01-S

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CUY - 271 - 6.04

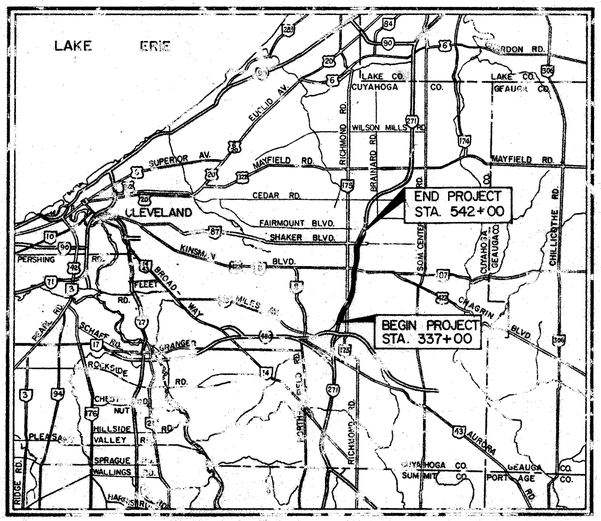
MICROFILMED
SEP 10 1991

CUYAHOGA COUNTY CUY - 271 - 6.04	OHIO FHWA REGION 5	1 99
IR - 271 - 6 (54) 242	FEDERAL PROJECT	

DESIGN DESIGNATIONS	I-271
CURRENT ADT (1980)	= 80,292
DESIGN ADT (2000)	= 102,684
D.H.V.	= 10,268
D	= 55%
T	= 9%
V	= 70 MPH

CITY OF WARRENSVILLE HTS.
WARRENSVILLE TOWNSHIP
VILLAGE OF WOODMERE
CITY OF BEACHWOOD
CITY OF PEPPER PIKE
VILLAGE OF ORANGE

CUYAHOGA COUNTY



LOCATION MAP

SCALE IN MILES
0 1 2 5 10

Portion to be improved
State & Federal Routes
Other Roads

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.

1983 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 these plans and estimates.

Approved Martin A. Sabbit
Date 3-4-83 District Deputy Director of Transportation

Approved Robert B Pfeifer
Date 4-18-83 Engineer, Bureau of Bridges and Structural Design

Approved Wayne H. Kauble
Date 6-1-83 Chief Engineer, Planning and Design

Approved Warren J. Smith
Date 6-1-83 Director, Department of Transportation

CONVENTIONAL SIGNS

County Line
Township Line
Section Line
Corporation Line or
Fence Line (existing) (proposed)
Center Line 352 353
Trees, Stumps, (to be removed)
Utility Poles: Telephone, Power, Light.

Limited Access (only) LA
Right of Way (only) RW
Limited Access & Right of Way LA & RW
Existing Right of Way
Property Line (in existing fence)
Railroad or
Guardrail (existing) (proposed)

INDEX OF SHEETS

SHEET 60 DELETED

LINE DATA

I-271	PROJECT LIMITS			
	STA. 337+00 TO STA. 542+00	=	20500.00 L.F.	
	DEDUCT FOR STATION EQUATIONS	−	00.00 L.F.	
	SUB-TOTAL		20500.00 L.F.	
	DEDUCT FOR BRIDGES	−	973.66 L.F.	
	LENGTH OF PROJECT		19526.34 L.F.	3.698 MILES
	ADDITIONAL WORK (PROJECT SUB-TOTAL	=	20500.00 L.F.)	
	STA. 318+90 TO STA. 337+00	= +	1810.00 L.F.	
	STA. 542+00 TO STA. 550+00	= +	800.00 L.F.	
USR 422	STA. 0-7+00 TO STA. 36+00	= +	4300.00 L.F.	
EMERY ROAD	STA. 108+25 TO STA. 131+00	= +	2275.00 L.F.	
RICHMOND ROAD	STA. 11+30 TO STA. 27+25	= +	1595.00 L.F.	
	LENGTH OF WORK		31280.00 L.F.	5.924 MILES

SCALES

Plan 0 25 50 100
Profile: Horizontal, Vertical
Cross Sections: Horizontal 0 5 10 20, Vertical 0 5 10 20

SUPPLEMENTAL SPECIFICATIONS		
843	10-23-75	
847	4-3-76	
848	2-17-83	
839	11-25-70	
849	10-19-81	
921	12-4-72	
956	6-26-78	

SUPPLEMENTAL PRINTS OF STANDARD CONSTRUCTION DRAWINGS

BP-3	12-6-76	GR-2B	2-5-82	MC-8	11-1-77	HL-1	4-6-73	TC-32.11	3-21-79	TC-71.10	4-9-79
BP-4	7-16-81	GR-3	2-5-82	MC-9	5-1-81	HL-5	1-21-76	TC-35.10	10-5-77	TC-72.20	2-26-82
BP-5	7-16-81			MC-11	8-1-78	HL-16	4-6-73	TC-41.10	12-23-81	TC-81.10	4-10-79
		GR-3B	2-5-82			TC-7.65	3-1-79	TC-41.20	3-26-79		
BP-7	12-6-76	GR-4	2-5-82			TC-12.30	6-10-81	TC-41.41	8-2-79	TC-82.10	4-11-79
BP-11	1-3-75	GR-4A	2-5-82			TC-15.115	3-1-79	TC-41.50	3-26-79	TC-83.10	4-13-79
		GR-5	2-5-82					TC-42.10	8-19-77	TC-83.20	4-17-79
CB-3	5-1-79	GR-6	2-5-82	HL-1	9-6-73	TC-21.10	5-24-79	TC-42.20	3-26-79	TC-84.20	4-17-79
CB-458A	5-1-79			HL-4	1-21-76	TC-21.20	5-31-79	TC-51.10	3-30	TC-85.10	4-13-79
F-1	5-1-76	MH-1	MH-6-12-75	HL-6	3-22-77	TC-22.10	3-1-79	TC-51.11	4-3-79	TC-85.20	4-18-79
F-3	5-1-76			HL-7	1-21-76	TC-22.20	3-1-79	TC-52.10	4-3-79		
F-6	5-1-76	M-6	6-1-73	HL-10	6-1-79	TC-31.21	3-6-79	TC-52.20	4-3-79	BR-1	5-29-79
GR-1	2-5-82	MC-4	7-26-83	HL-11	6-1-79	TC-32.10	3-8-79	TC-61.10	4-5-82	SD-1-69	6-12-79

Rev. 9-22-83

Prepared By
O.D.O.T. DISTRICT 12
Location and Design

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED:
DIVISION ADMINISTRATOR DATE

TITLE SHEET

3569
Date of letting 19 , Contract No.

(10300) Rev. 9-3-75

FHWA REGION	STATE	PROJECT	
5	OHIO		

2
99

CUYAHOGA COUNTY
CUY - 271 - 6.04

SCHEMATIC PLAN

SCALE
0 200 400 800

I-480 N

I-271
BEGIN WORK
STA. 318+90

BEGIN PROJECT
STA. 337+00
S.L.M. 6.04

IR-271-6 (54)242

P.T. STA 322+74.72

P.C. STA. 334+44.43

BEGIN WORK
STA. 108+25

EMERY RD.

BRIDGE NO.
CUY-271-0610

WARRENSVILLE TWP
WARRENSVILLE HTS.

BRIDGE NO.
CUY-271-0626

RICHMOND RD.
SR 175

RAMP G-1

BRIDGE NO.
CUY-271-0720L

BRIDGE NO.
CUY-271-0720R

HARVARD RD

MATCH LINE
STA 415+00

MILES AVE

RAMP H-2

LANE E S

LANE N W

LANE S E

LANE N E

LANE E N

LANE W N

WARRENSVILLE HTS
BEDFORD HTS.

RAMP H-1

RAMP G-2

BEGIN WORK
STA. 11+30

END WORK
STA. 21+25

END WORK
STA. 15+00

WARRENSVILLE TWP
WARRENSVILLE HTS.

330 340 350 360 370 380 390 400 410

I-271

BEGIN WORK
STA. 0-7+00

CHAGRIN BLVD
USR 422

BRIDGE NO.
CUY-271-0813

RAMP F-1

RAMP F-5

RAMP F-3

RAMP F-2

RAMP F-4

RAMP F-6

P.T. STA 420+33.70

WARRENSVILLE TWP
BEACHWOOD

P.C. STA. 432+67.26

BEACHWOOD

420 430 440 450 460 470 480 490 500 510 520 530 540

I-271

BRIDGE NO.
CUY-271-0885L

BRIDGE NO.
CUY-271-0916L

P.C. STA. 511+63.97

P.T. STA 527+91.47

BRIDGE NO.
CUY-271-0975

BRIDGE NO.
CUY-271-0885R

BRIDGE NO.
CUY-271-0916R

BRIDGE NO.
CUY-271-0973

S. WOODLAND RD

SHAKER BLVD. E

SHAKER BLVD. W

FAIRMOUNT BLVD

PEPPER PIKE

MATCH LINE
STA. 415+00

BEACHWOOD
ORANGE

WOODMERE

PEPPER PIKE

P.T. STA 451+25.48

END WORK
STA. 36+00

END WORK I-271
STA. 550+00

END PROJECT
STA. 542+00
S.L.M. 9.92

IR-271-6 (54) 242

SCHEMATIC PLAN

TYPICAL SECTIONS

TYPE 848

SCALE
0 1 2 4 6

FHWA REGION	STATE	PROJECT		3 / 99
5	OHIO			

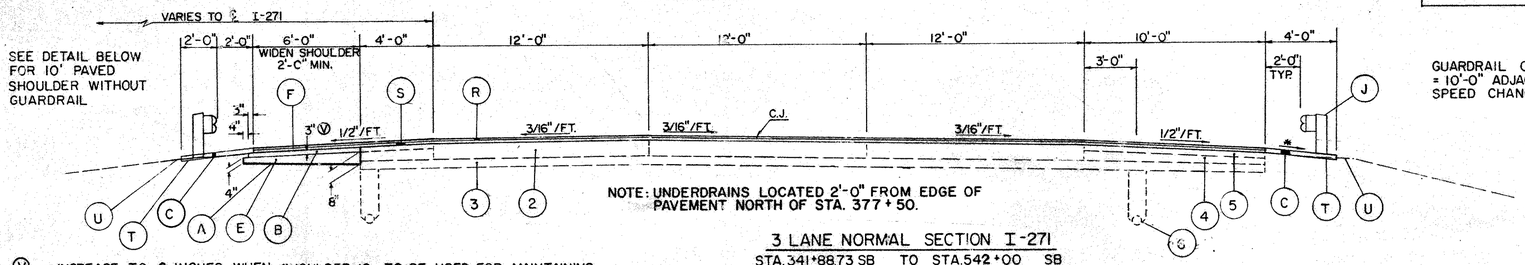
CUYAHOGA COUNTY
CUY - 271 - 6.04

NOTES

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

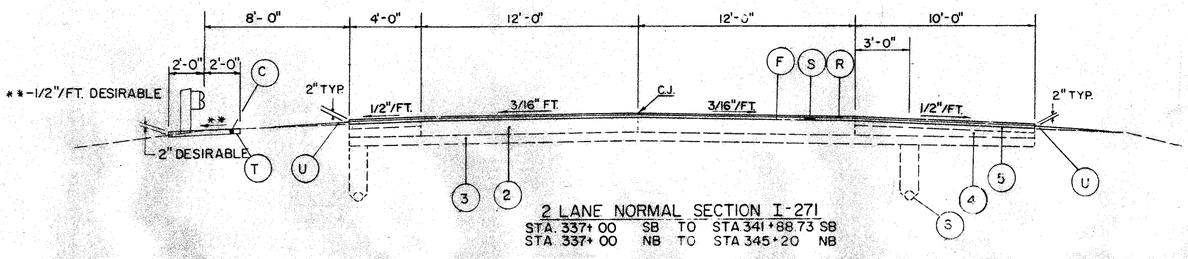
SPREADING EQUIPMENT: AN AUTOMATIC SCREED CONTROL HAVING A 40 FOOT SKI ARM SHALL BE USED FOR PLACING THE INTERMEDIATE COURSE (SEE PROPOSAL NOTE). FOR FULL WIDTH PAVING, THE WIDTH LAID SHALL NOT EXCEED THE PAVER'S RATED WIDTH AS RECOMMENDED BY THE PAVER MANUFACTURER.

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.



3 LANE NORMAL SECTION I-271
STA. 341+88.73 SB TO STA. 542+00 SB
STA. 345+20 NB TO STA. 542+00 NB

Ⓥ – INCREASE TO 6 INCHES WHEN SHOULDER IS TO BE USED FOR MAINTAINING TRAFFIC. CONSTRUCT SHOULDER WIDENING CONCURRENTLY WITH ITEM 301 (FOR MAINTAINING TRAFFIC) WHEN USED. THE ADDITIONAL 3 INCHES OF ITEM 301 IN THE SHOULDER WIDENING AREA SHALL BE PAID FOR AS ITEM 301 – BITUMINOUS AGGREGATE BASE, AS PER PLAN AC-20, RT-11 OR RT-12.



2 LANE NORMAL SECTION I-271
STA. 337+00 SB TO STA. 341+88.73 SB
STA. 337+00 NB TO STA. 345+20 NB

SEE DETAIL BELOW FOR SHOULDERS WITHOUT GUARDRAIL

GUARDRAIL OFFSET = 10'-0" ADJACENT TO SPEED CHANGE LANE

LEGEND

EXISTING

1. 9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT
2. 10" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT
3. SUBBASE
4. AGGREGATE BASE
5. WATERPROOFED AGGREGATE BASE
6. UNDERDRAIN
7. CURB
8. GUARD RAIL
9. CONCRETE MEDIAN

PROPOSED

Ⓐ	ITEM 203	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION (MEASUREMENT SHALL BE BASED ON PLAN DIMENSIONS)
Ⓑ	ITEM 301	BITUMINOUS AGGREGATE BASE, AC-20, RT-11 OR RT-12
Ⓒ	ITEM 301	3" BITUMINOUS AGGREGATE BASE, AS PER PLAN, AC-20, RT-11, OR RT-12
Ⓓ	ITEM 305	9" PORTLAND CEMENT CONCRETE BASE
Ⓔ	ITEM 310	SUBBASE TYPE II
Ⓕ	ITEM 407	TACK COAT AND COVER AGGREGATE (SEE GENERAL NOTES)
Ⓗ	ITEM 605	6" PIPE UNDERDRAIN
Ⓙ	ITEM 606	GUARD RAIL, TYPE 5
Ⓚ	ITEM 609	CURB, STD. TYPE 2B
Ⓟ	ITEM 622	CONCRETE BARRIER, STANDARD TYPE D (SEE SH. 37 & 38)
Ⓡ	ITEM 848	1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, AS PER PLAN
Ⓢ	ITEM 848	1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2 (1 3/4" AVG)
Ⓣ	ITEM SPEC	HERBICIDES FOR WEED CONTROL
Ⓤ	ITEM 203	LINEAR GRADING (TO BE USED ON ALL SHOULDERS)

TYPICAL SECTIONS

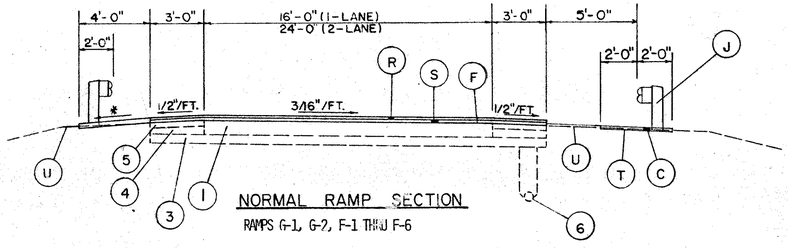
FHWA REGION	STATE	PROJECT	
5	OHIO		

4
99

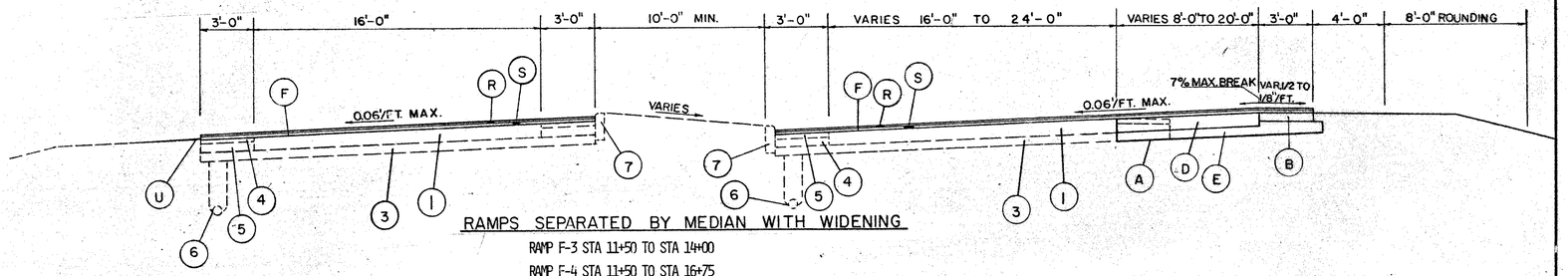
CUYAHOGA COUNTY
CUY - 271 - 6.04

TYPE 848

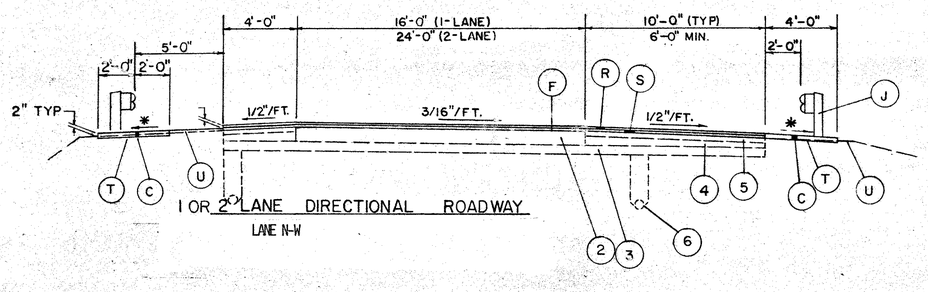
SCALE
0 1 2 4 6



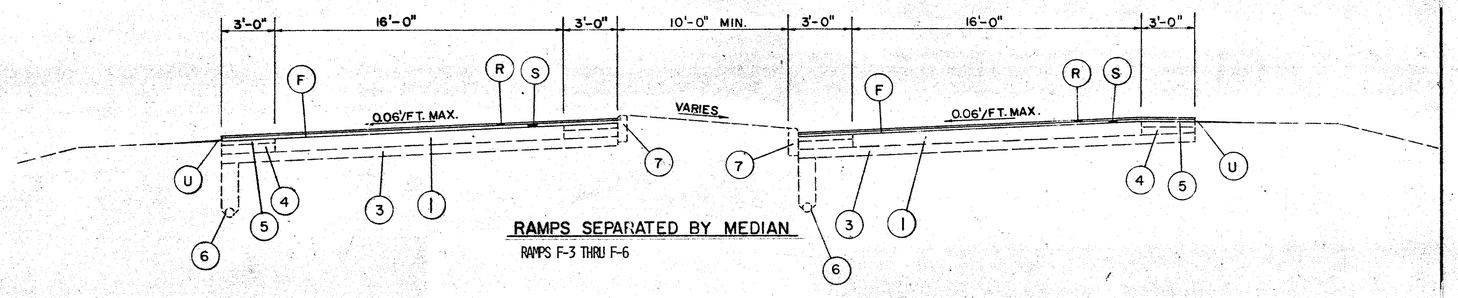
NORMAL RAMP SECTION
RAMPS G-1, G-2, F-1 THRU F-6



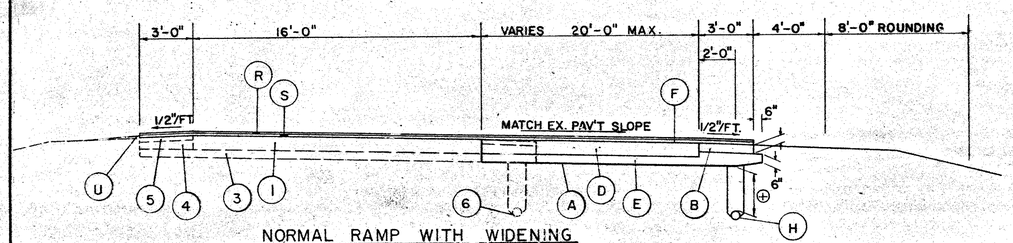
RAMPS SEPARATED BY MEDIAN WITH WIDENING
RAMP F-3 STA 11+50 TO STA 14+00
RAMP F-4 STA 11+50 TO STA 16+75



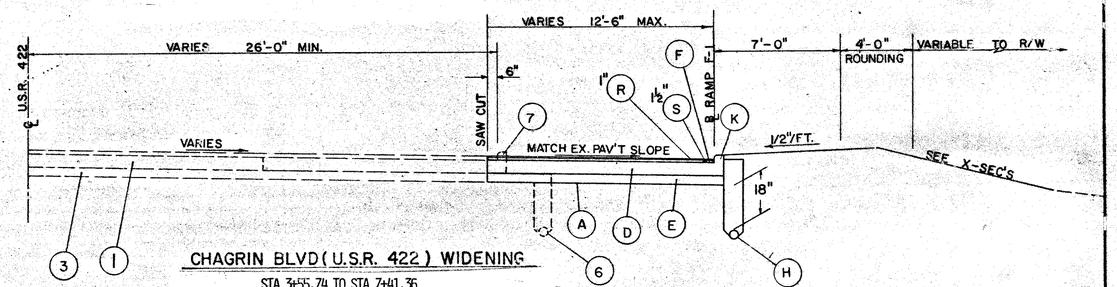
1 OR 2 LANE DIRECTIONAL ROADWAY
LANE N-W



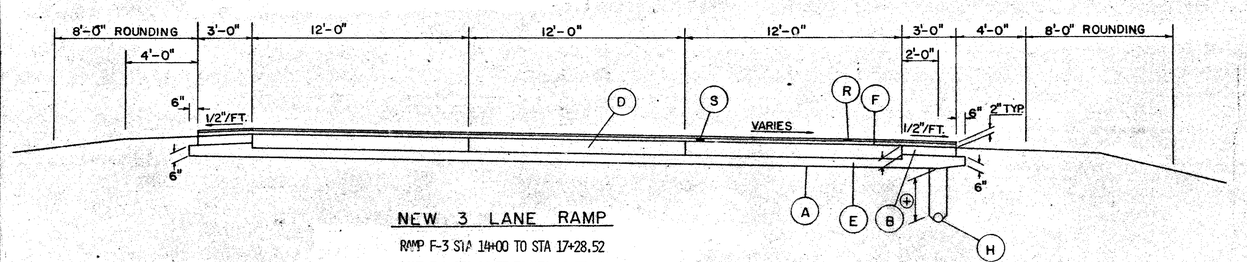
RAMPS SEPARATED BY MEDIAN
RAMPS F-3 THRU F-6



NORMAL RAMP WITH WIDENING
RAMP F-3 STA 7+20 TO STA 11+50
RAMP F-4 STA 11+25 TO STA 11+50
STA 16+25 TO STA 16+50



CHAGRIN BLVD (U.S.R. 422) WIDENING
STA 3+55.74 TO STA 7+41.36



NEW 3 LANE RAMP
RAMP F-3 STA 14+00 TO STA 17+28.52
RAMP F-4 STA 16+75 TO STA 18+37.11

⊕ — SEE PLAN SHEETS FOR UNDERDRAIN DEPTH OF COVER (30 INCH IF NOT SPECIFIED).

SEE SHEET Nº 3 FOR LEGEND

GENERAL NOTES

COMPUTED BY: ENF
CHECKED BY: EMH

FHWA REGION	STATE	PROJECT	
5	OHIO		

5/99

CUYAHOGA COUNTY
CUY - 271 - 6.04

GENERAL

ITEM 624 - MOBILIZATION, AS PER PLAN

THE CONTRACTOR SHALL PROVIDE A SUITABLE FIELD OFFICE HAVING A MINIMUM OF 800 SQ. FT. OF FLOOR SPACE WHICH SHALL BE IN ACCORDANCE WITH 619.01 AND 619.02. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 624 MOBILIZATION, AS PER PLAN.

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.

ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

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

RIGHT OF WAY

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

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, 10100 BROADWAY AVENUE, GARFIELD HEIGHTS, OHIO 44125.

COOPERATION BETWEEN CONTRACTOR'S

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.

ALTERNATE METHODS

IF THE CONTRACTOR SO ELECTS, HE MAY SUBMIT ALTERNATE METHODS FOR THE MAINTENANCE OF TRAFFIC, PROVIDED THE INTENT OF THE ABOVE PROVISIONS IS FOLLOWED AND NO ADDITIONAL INCONVENIENCE TO THE TRAVELING PUBLIC RESULTS THEREFROM. NO ALTERNATE PLAN SHALL BE PLACED INTO EFFECT UNTIL APPROVAL HAS BEEN GRANTED, IN WRITING, BY THE DIRECTOR.

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 FEET BEYOND THE TRAVELED WAY.
2. ANY REMOVED ITEMS SHALL NOT BE STORED ON THE RIGHT OF WAY FOR MORE THAN THIRTY DAYS.
3. THE STORAGE OF EQUIPMENT, MATERIALS AND VEHICLES WITHIN THE HIGHWAY RIGHT OF WAY WILL BE PERMITTED. THE NUMBER OF AREAS AND EXACT LOCATIONS SHALL BE AS APPROVED BY THE ENGINEER.
4. ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE STATE.

COST PARTICIPATION

THE QUANTITIES WHICH APPEAR IN THE PLANS HAVE BEEN PLACED IN ONE OF THE FOLLOWING PARTICIPATION AREAS:
ALL ITEMS ARE COST PARTICIPATION II UNLESS SHOWN OTHERWISE

COST PARTICIPATION II

FEDERAL INTERSTATE REPAIR AND STATE PARTICIPATION

COST PARTICIPATION III

100% STATE PARTICIPATION

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 ORC.

EAST OHIO GAS COMPANY
1201 E. 55TH STREET
CLEVELAND, OHIO 44103
361-2753

O.D.O.T.
10100 BROADWAY AVE.
GARFIELD HEIGHTS, OHIO 44125
641-1926

CLEVELAND WATER DEPARTMENT
1201 LAKESIDE AVENUE
CLEVELAND, OHIO 44110
664-3346

OHIO BELL TELEPHONE COMPANY
320 WEST SUPERIOR AVENUE
CLEVELAND, OHIO 44113
822-6241

CLEVELAND ELECTRIC ILLUMINATING CO.
55 PUBLIC SQUARE
CLEVELAND, OHIO 44101
623-1350

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

UTILITIES NOTIFICATION

AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN AN AREA WHICH MAY INVOLVE UNDERGROUND UTILITY FACILITIES, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER, THE REGISTERED UTILITY PROTECTION SERVICE AND THE OWNERS OF EACH UNDERGROUND UTILITY FACILITY SHOWN IN THE PLANS.

THE OWNER OF THE UNDERGROUND UTILITY FACILITY SHALL, WITHIN FORTY-EIGHT HOURS, EXCLUDING SATURDAYS, SUNDAYS AND LEGAL HOLIDAYS, AFTER NOTICE IS RECEIVED, STAKE, MARK OR OTHERWISE DESIGNATE THE LOCATION OF THE UNDERGROUND UTILITY FACILITIES IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING OR LOCATING SHALL BE COORDINATED TO STAY APPROXIMATELY TWO DAYS AHEAD OF THE PLANNED CONSTRUCTION.

ROADWAY

ITEM 202 - WEARING COURSE REMOVED

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED TO REMOVE THE EXISTING ASPHALT RAMPS (ADJACENT TO PREVIOUSLY OVERLAYED BRIDGE DECKS) PRIOR TO RESURFACING.

	I-271
ITEM 202 - WEARING COURSE REMOVED	4600 S.Y.

PAVEMENT REMOVED, AS PER PLAN

THE EXISTING PAVEMENT SHALL BE REMOVED BY SAWING A NEAT LINE FOR THE FULL DEPTH REQUIRED BY THE PAVEMENT REPLACEMENT DETAILS, SHEET 42. IN ADDITION THE COST OF REMOVING THE SUBBASE MATERIAL FOR THE 3'6 REPLACEMENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PAVEMENT REMOVAL ITEM. ALL LOOSE AND BROKEN CONCRETE MUST BE REMOVED FROM THE JOINTS. ADEQUATE PROTECTION AGAINST DAMAGING THE ABUTTING PAVEMENT SHALL BE TAKEN. THE CONTRACTOR'S ATTENTION IS DIRECTED TO 107.12 OF THE SPECIFICATIONS. THE COST OF RESHAPING AND RECOMPACTING THE SUBBASE OR SUBGRADE DISTURBED DURING THE REMOVAL OPERATIONS, AND ANY ADDITIONAL EXCAVATION ALONG THE EXISTING PAVED BERM NECESSARY FOR THE PAVEMENT REPLACEMENT OPERATIONS, SHALL ALSO BE INCLUDED IN THE UNIT PRICE BID FOR THE PAVEMENT REMOVAL ITEM.

ITEM 203 - LINEAR GRADING

THIS ITEM SHALL BE PERFORMED ALONG THE OUTSIDE EDGE OF ALL PAVED SHOULDERS INCLUDING THOSE WHICH ARE TO BE SURFACED WITH ITEM 301 - BITUMINOUS AGGREGATE BASE FOR EROSION CONTROL (SEE REF. C OF THE TYPICAL SECTION). THIS ITEM OF WORK SHALL INCLUDE ALL SITE RESTORATION, EXCAVATION AND EMBANKMENT OPERATIONS NECESSARY TO PROVIDE A 2 INCH DROP AT THE EDGE OF THE SHOULDER RESURFACING. THIS WORK SHALL ALSO INCLUDE REGRADING OF THE SHOULDER AREAS WHERE TRAFFIC AND WEATHER MAY HAVE BUILT A RIDGE OF EARTH AND DEBRIS. THE CONTRACTOR SHALL PROVIDE SMOOTH SHOULDER SLOPES (1/2 INCH PER FOOT MINIMUM, 1 INCH PER FOOT MAXIMUM) TO ASSURE POSITIVE SHOULDER DRAINAGE. ALL AREAS DISTURBED BY THIS ITEM OF WORK SHALL BE RESEEDED AS PER ITEM 659.

ALL COST FOR EXCAVATION, EMBANKMENT, GRADING AND SEEDING AND MULCHING SHALL BE INCLUDED UNDER THIS ITEM OF WORK.

ITEM 404 - BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC

THIS ITEM SHALL BE USED TO REPAIR HOLES IN THE BRIDGE DECKS, ROADWAY SURFACE AND BERMS WHICH ARE DAMAGED DURING THE CLOSURE. THE CONTRACTOR SHALL USE THIS ITEM TO MAINTAIN THE HIGHWAY ACCORDING TO SEC. 614.02. THE CONTRACTOR SHALL PERFORM THE ABOVE WORK BETWEEN THE HOURS OF 9:00 A.M. AND 3:00 P.M. AND SHALL NOT CLOSE MORE THAN ONE ADDITIONAL LANE TO DO THIS WORK. 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.

	I-271
ITEM 404 - BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	150 C.Y.

DUST CONTROL

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

	I-271
ITEM 616 - WATER	50 M. GAL.
ITEM 616 - CALCIUM CHLORIDE	4 TONS

GENERAL NOTES

COMPUTED BY O.A.D.
CHECKED BY O.P.

FHWA REGION	STATE	PROJECT	
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ROADWAY

FASTENING OF BRIDGE TERMINAL ASSEMBLIES

BRIDGE TERMINAL ASSEMBLIES WHICH ARE TO BE FASTENED TO EXISTING CONCRETE PARAPETS BY STEEL BOX BLOCKOUTS SHALL BE ATTACHED BY MEANS OF THROUGH BOLTS. EXPANSION ANCHOR BOLTS WILL NOT BE PERMITTED.

WHERE SELF-DRILLING ANCHORS ARE PERMITTED AND ARE USED, THE HOLES SHALL BE DRILLED WITH THE TUBULAR EXPANSION SHELL, RATHER THAN WITH A BIT, TO INSURE A PROPER FIT. THE ANCHORS SHALL BE INSTALLED FLUSH WITH THE SURFACE OF CONCRETE.

WHERE ANCHORAGE BY EXPANSION BOLTS TO A DETERIORATED CONCRETE SURFACE WOULD RESULT IN A QUESTIONABLE ATTACHMENT, THROUGH BOLTS SHALL BE USED INSTEAD, AT THE DISCRETION OF THE ENGINEER.

RAISING EXISTING TYPE 5 GUARDRAIL

EXISTING TYPE 5 GUARDRAIL WHICH IS NOT SCHEDULED FOR REPLACEMENT IN THESE PLANS SHALL BE RAISED TO THE PROPER HEIGHT AFTER RESURFACING HAS BEEN COMPLETED. (SEE STD. CONST. DRAWING GR-2B). DAMAGED RAIL ELEMENTS OR POSTS SHALL BE REPLACED IN KIND DURING THIS OPERATION. PAYMENT FOR REPLACEMENT GUARDRAIL ELEMENTS OR POSTS SHALL INCLUDE REMOVAL OF THE DAMAGED ITEM AND INSTALLING THE NEW ITEM. PAYMENT FOR RAISING EXISTING GUARDRAIL SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY TO RAISE THE GUARDRAIL IN CONFORMANCE WITH ITEM 606 AND THE STANDARD CONSTRUCTION DRAWINGS. PAYMENT FOR REPLACEMENT GUARDRAIL ELEMENTS OR POSTS SHALL BE IN ADDITION TO THE PAYMENT FOR EXISTING GUARDRAIL.

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

	I-271	
ITEM 606 - RAISING EXISTING GUARDRAIL	1400	L.F.
ITEM 606 - REPLACEMENT GUARDRAIL ELEMENT	300	L.F.
ITEM 606 - REPLACEMENT GUARDRAIL POST	50	50 EACH

TYPE 5 GUARDRAIL POST SPACING

WHEN THE OFFSET BETWEEN THE FACE OF GUARDRAIL AND BRIDGE PIERS OR OTHER FIXED OBJECTS IS LESS THAN 4 FEET THE GUARDRAIL SHALL BE STIFFENED BY PROVIDING 3 FT. 1½ INCH POST SPACING FROM 12.5 FEET IN ADVANCE OF THE OBSTRUCTION TO THE END OF THE OBSTRUCTION. COST INCLUDED IN THE TYPE 5 UNIT BID PRICE.

GUARDRAIL PROTECTION

NO SIGN SUPPORTS SHALL BE ERECTED 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 SAFETY NOTE, SHEET 14)

LOCATIONS OF GUARDRAIL

THE LOCATIONS OF GUARDRAIL RUNS AS SHOWN IN THESE PLANS ARE SUBJECT TO ADJUSTMENT TO ASSURE THAT THE PLANNED INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

GUARD RAIL OVER CULVERTS

WHEN SUFFICIENT POST DEPTH IS NOT AVAILABLE DUE TO A CULVERT, THE GUARD RAIL POSTS DIRECTLY OVER THE CULVERT SHALL NOT BE DRIVEN BUT SET IN HOLES. IF THE DISTANCE BETWEEN THE GROUND LINE AND THE TOP OF THE CULVERT IS LESS THAN 3 FT., THE POST SHALL BE ENCASED IN A MINIMUM OF 4" THICKNESS OF CLASS C CONCRETE FOR THE FULL DEPTH OF THE POST. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 606, GUARD RAIL TYPE 5.

SEQUENCE OF OPERATIONS FOR GUARDRAIL INSTALLATION

A. RAMP GUARDRAIL

GUARDRAIL WORK ALONG RAMPS MAY BE PERFORMED AT ANY TIME

B. GUARDRAIL ADJACENT TO INSIDE MAINLINE LANE

1. REMOVE EXISTING GUARDRAIL (INSTALL TEMPORARY CONCRETE BARRIER AT HAZARDS - SEE PUBLIC SAFETY NOTE)
2. CONSTRUCT 6 FT. SHOULDER WIDENING WHEN APPLICABLE (SEE DETAIL ON SHEET NO. 36 FOR INFORMATION REGARDING SPECIAL GUARDRAIL FLARE AND SHOULDER TAPERS ADJACENT TO BRIDGES.)
3. COMPLETE ALL ITEM 848 RESURFACING COURSES
4. CONSTRUCT 4 FT. STRIP OF ITEM 301 - BITUMINOUS AGGREGATE BASE, AS PER PLAN ALONG SHOULDER PRIOR TO INSTALLING GUARDRAIL. ITEM 301 CONSTRUCTION SHALL BE AS SHOWN ON SHEET 34 & 36
5. INSTALL NEW GUARDRAIL

C. GUARDRAIL ADJACENT TO OUTSIDE MAINLINE LANES

1. COMPLETE ALL ITEM 848 RESURFACING COURSES
2. REMOVE EXISTING GUARDRAIL (INSTALL TEMPORARY CONCRETE BARRIER AT HAZARDS - SEE PUBLIC SAFETY NOTE)
3. CONSTRUCT 4 FT. STRIP OF ITEM 301 - BITUMINOUS AGGREGATE BASE, AS PER PLAN ALONG OUTSIDE EDGE OF SHOULDER AS DETAILED ON SHEET NO. 34 & 36
4. INSTALL NEW GUARDRAIL

RESTORATION OF DISTURBED AREAS ASSOCIATED WITH WORK FOR GUARDRAIL AND FENCE ITEMS

THE CONTRACTOR SHALL RESTORE ALL SEEDED AND SODDED AREAS, PAVED SHOULDERS, AND ALL OTHER DISTURBED SURFACES TO A CONDITION AT LEAST EQUAL TO THAT EXISTING BEFORE THIS WORK WAS STARTED. ALL REPLACEMENTS SHALL BE DONE IN ACCORDANCE WITH THE PERTINENT SPECIFICATION ITEMS AND AS DIRECTED BY THE ENGINEER. PAYMENT FOR ALL RESTORATION WORK, INCLUDING MATERIALS, EQUIPMENT, LABOR, INCIDENTALS AND DISPOSAL OF ALL SURPLUS MATERIALS, SHALL BE INCLUDED IN THE UNIT PRICES BID FOR VARIOUS 606 AND 607 ITEMS.

ITEM SPECIAL - DYNAFLECT TESTING OF EXISTING PAVEMENT

THIS ITEM OF WORK SHALL BE PERFORMED ON EACH PAVEMENT PANEL AND ON ALL TRANSVERSE PAVEMENT JOINTS AND DISTRESSED CRACKS. THE INFORMATION FROM THIS TESTING WILL BE ANALYZED BY THE ENGINEER TO DETERMINE ALL PAVEMENT PANEL AND JOINT REPAIR LOCATIONS, AND PAVEMENT SUBSEALING LOCATIONS.

THE DYNAFLECT IS A MOBILE ELECTROMECHANICAL DEVICE USED FOR INDUCING AND MEASURING PAVEMENT DEFLECTIONS. THE PAVEMENT DEFLECTIONS AT FIVE POINTS (W_1, W_2, W_3, W_4 AND W_5) ARE MEASURED SIMULTANEOUSLY AT EACH TEST LOCATION.

ON EACH AND EVERY LANE THE FOLLOWING TESTS AND DATA ANALYSIS IS REQUIRED:

1) MID SLAB TEST - THE UNIT SHALL BE POSITIONED APPROXIMATELY MIDWAY BETWEEN ORIGINAL TRANSVERSE JOINTS AND RELATIVELY MIDWAY BETWEEN ANY TRANSVERSE CRACKS IN THE PAVEMENT. THE DEFLECTION READINGS SHALL BE TAKEN AND THE FOLLOWING INFORMATION SHALL BE DETERMINED;

   A) SPREADABILITY = SPR = $\frac{W_1+W_2+W_3+W_4+W_5}{5W_1} \times 100$

   B) BASE INDICATOR = W_5

2) CRACK AND JOINT TESTS - THE UNIT SHALL BE POSITIONED SUCH THAT DEFLECTION SENSORS 1 AND 2 STRADDLE THE EXISTING TRANSVERSE PAVEMENT JOINT OR CRACK. THE DEFLECTION READINGS SHALL BE TAKEN AND THE FOLLOWING INFORMATION SHALL BE DETERMINED;

   A) SURFACE CURVATURE INDEX = SCI = $W_1 - W_2$ B) SPREADABILITY = SPR (SEE ABOVE)
   C) RELATIVE STRENGTH = RS = W_1 (TEST REQ'D ON BOTH SIDES OF THE JOINT)

AT EACH TEST LOCATION THE AFOREMENTIONED TEST INFORMATION SHALL BE PAINTED DIRECTLY ONTO THE PAVEMENT FOR EVALUATION BY THE ENGINEER. ("SPR. AND "W_5" FOR MIDSLAB TESTS, "SCI", "SPR" AND BOTH W_1 VALUES FOR FOR CRACK AND JOINT TESTS.)

MAINLINE DYNAFLECT TESTING SHALL BE DONE BEHIND PERMANENT LANE CLOSURES. RAMPS MAY BE TESTED DURING PARTIAL LANE CLOSURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-MARKING ANY TEST DATA WHICH IS OBLITERATED BY TRAFFIC PRIOR TO JOINT EVALUATION.

ALL DYNAFLECT TESTS MUST BE PERFORMED WHEN THE PAVEMENT IS COOL. DURING SUMMER TESTS MUST BE PERFORMED DURING THE FIRST SEVERAL HOURS OF DAYLIGHT OR AT NIGHT. DURING SPRING OR FALL TESTS MAY ALSO BE PERFORMED DURING OVERCAST DAYTIME HOURS. OUTSIDE TEMPERATURES SHOULD BE BELOW 70° DURING TESTING. SUNLIGHT AND/OR HIGH TEMPERATURES CAUSE THE JOINTS TO "LOCK UP", SUBSEQUENTLY GIVING THE INDICATION OF A SOUND JOINT. TESTING SHALL BE SUSPENDED WHEN THIS OCCURS AND ANY QUESTIONABLE TEST AREA MUST BE RE-TESTED AFTER THE PAVEMENT RELEASES. PAVEMENT AREAS WHICH ARE SUBSEALED SHALL BE RE-TESTED TO DETERMINE THE EFFECTIVENESS OF THE SUBSEALING OPERATION.

PAYMENT FOR THIS ITEM OF WORK SHALL BE BASED ON THE NUMBER OF LANE-MILES TESTED. (SEE LANE MILE DEFINITION)

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

ITEM SPECIAL - DYNAFLECT TESTING OF EXISTING PAVEMENT I-271

28.7 LANE MILES

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:

	I-271
ITEM 203 - EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION, AS PER PLAN	1000 C.Y.

GENERAL NOTES

COMPUTED BY: D.A.O.
CHECKED BY: E.M.M.

FHWA REGION	STATE	PROJECT	
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PAVEMENT

PROFILE

THE PROFILE OF THE PROPOSED ASPHALT CONCRETE COURSE SHALL BE APPROXIMATELY 3 INCHES ABOVE THAT OF THE EXISTING PAVEMENT.

PART-WIDTH CONSTRUCTION

BECAUSE OF THE NECESSITY OF BUILDING (PORTIONS OF) THIS PROJECT UNDER TRAFFIC AND CONSTRUCTING THE FULL PAVEMENT WIDTH IN STAGES, EXTREME CARE SHALL BE TAKEN TO PREVENT THE CONSTRUCTION OF A BUTT JOINT ON CENTERLINE IN THE BASE COURSES. LONGITUDINAL JOINTS SHALL BE LAPPED AS SHOWN ON STANDARD CONSTRUCTION DRAWING BP-5.

ITEM 301 - BITUMINOUS AGGREGATE BASE, AS PER PLAN

THIS ITEM SHALL BE USED ON ALL MAINLINE TERMS PRIOR TO MOVING TRAFFIC ONTO THEM. IT SHALL ALSO BE USED TO REPAIR BADLY DAMAGED BERM AREAS AS DIRECTED BY THE ENGINEER. THIS WORK SHALL INCLUDE THE REMOVAL OF 6" OF THE EXISTING SHOULDER MATERIAL AND THE CONSTRUCTION OF A 6" COURSE OF ITEM 301 ON THE EXISTING SUBBASE OR NEW SUBBASE. THIS ITEM OF WORK SHALL BE PERFORMED FOR THE WIDTHS SHOWN ON THE TRAFFIC CONTROL PLANS. ALL COST OF EXCAVATION AND INSTALLATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 301 - BITUMINOUS AGGREGATE BASE, AS PER PLAN. THE CONTRACTOR SHALL PERFORM THE ABOVE BETWEEN THE HOURS OF 9:00 A.M. AND 3:00 P.M. AND SHALL NOT CLOSE MORE THAN ONE LANE IN EACH DIRECTION AT ANY ONE TIME.

THIS ITEM SHALL ALSO BE USED FOR EROSION CONTROL UNDER GUARDRAIL AS SHOWN ON THE TYPICAL SECTIONS. WHEN USED AS SUCH, THIS ITEM OF WORK SHALL INCLUDE ALL COSTS OF EXCAVATION AND EMBANKMENT OPERATIONS NECESSARY FOR THE PLACEMENT OF THIS ITEM IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 203. THE SITE RESTORATION WORK WILL BE INCLUDED UNDER ITEM 203 - LINEAR GRADING. (THIS ITEM SHALL BE PLACED BEFORE THE GUARDRAIL IS INSTALLED)

WHEN WORKING UNDER EXISTING GUARDRAIL THE COMPACTION METHOD SHALL BE AS APPROVED BY THE ENGINEER. BEFORE COMPLETION OF WORK ON THIS PROJECT BY THE CONTRACTOR, ANY DAMAGE TO THIS ITEM CAUSED BY THE INSTALLATION OF GUARDRAIL OR OTHER ITEMS OF WORK SHALL BE REPAIRED, AT NO ADDITIONAL COST TO THE STATE. WHEN GUARDRAIL RAISING IS PROPOSED THE INSTALLATION SHALL BE PERFORMED WHEN THE RAIL ELEMENT IS REMOVED.
PAYMENT FOR THIS ITEM OF WORK WILL BE BASED ON PLAN DIMENSIONS OR WEIGHT CONVERSION TICKETS, WHICHEVER IS LOWER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE FOR THE RECONSTRUCTION OF PAVED SHOULDERS. (QUANTITY FOR USE FOR EROSION CONTROL CARRIED ELSEWHERE)

ITEM 301 - BITUMINOUS AGGREGATE BASE, AS PER PLAN I-271
5100 C.Y.

ITEM 305 - 16" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN

ALL PATCHES ARE TO BE UNDERCUT A MINIMUM OF 6 INCHES BELOW THE BOTTOM OF THE EXISTING PAVEMENT AND SHALL EXTEND BACK UNDER THE EXISTING PAVEMENT 9 INCHES ALONG ALL SIDES. DOWELS ARE REQUIRED AT THE JOINTS. AS SHOWN ON SHEET Nº 42 , THE COST TO BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 305, 16" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN.

ITEM 305 - 10" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN

THIS ITEM OF WORK SHALL INVOLVE THE REPLACEMENT OF PAVEMENT SECTIONS AS DESIGNATED IN THE PLANS ON SHEET 42 , REMOVAL OF PAVEMENT FULL DEPTH AND CUTTING OFF ALL PROTRUDING DOWEL BARS. BEFORE ANY SECTION IS REPLACED, THE EXISTING BASE SHALL BE EXAMINED AND DETERMINED IF SUITABLE BY THE ENGINEER. THE SURFACE SMOOTHNESS REQUIRED BY 451.12 SHALL BE WAIVED. DOWELS ARE REQUIRED AT THE TRANSVERSE JOINTS AND HOOK BOLTS, AS PER BP-3 AT 5 FOOT INTERVALS AT LONGITUDINAL JOINTS ABUTTING EXISTING PAVEMENT.

PAYMENT FOR ALL OPERATIONS AND MATERIAL NECESSARY TO PERFORM THE WORK SHALL BE AT THE UNIT PRICE BID PER SQUARE YARD OF ITEM 305, 10" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN.

DIMENSIONS FOR PAVEMENT REPLACEMENTS

THE DIMENSIONS FOR THE CONCRETE PAVEMENT REPLACEMENTS SHOWN IN THE PLANS ARE APPROXIMATE. THE FIELD DIMENSIONS FOR THE REPLACEMENTS MAY BE ADJUSTED BY THE ENGINEER AND FINAL PAYMENT QUANTITIES SHALL BE ACTUAL COMPLETED WORK DIMENSIONS.

UNSTABLE MATERIALS REMOVED AND REPLACED

THIS WORK SHALL CONSIST OF REMOVING OF UNSTABLE SUBBASE AND SUBGRADE MATERIALS AS ENCOUNTERED IN AREAS OF 305 PAVEMENT REPLACEMENT. WORK SHALL INCLUDE PREPARING A NEW SURFACE AS REQUIRED, FURNISHING, PLACING, AND COMPACTING SUBBASE, TYPE II, AS CLOSE AS POSSIBLE TO CONFORM WITH EXISTING CROSS-SECTIONS. ALL UNDER CUT AREAS ARE TO BE DRAINED TO EXISTING UNDERDRAIN, COST TO BE INCLUDED IN THIS ITEM. THIS WORK SHALL BE PERFORMED ONLY WHEN DEEMED NECESSARY AND IN SPECIFIC AREAS DETERMINED BY THE ENGINEER. THE SPECIFICATIONS FOR ITEM 310, EXCEPT AS NOTED IN THE PLANS, SHALL APPLY WHERE PERTINENT TO THE OPERATIONS BEING PERFORMED. OTHERWISE WORK SHALL BE AS DIRECTED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY IS TO BE USED AS DIRECTED BY THE ENGINEER FOR REPLACING UNSUITABLE MATERIAL, PAYMENT FOR ACCEPTED QUANTITIES, COMPLETE IN PLACE, SHALL BE MADE AT THE UNIT PRICE BID FOR:

ITEM 310 - SUBBASE, TYPE II, AS PER PLAN I-271
300 C.Y.

ITEM 310 - SUBBASE, TYPE I AS PER PLAN

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

ITEM 310 - SUBBASE, TYPE I AS PER PLAN I-271
160 C.Y.

ITEM 407 - TACK COAT

THE TACK COAT AND COVER AGGREGATE OPERATIONS SHALL BE AS DETERMINED AT A PRE-CONSTRUCTION CONFERENCE AS PER SECTION 407.05. THE APPLICATION RATE SHALL NOT EXCEED 0.10 GAL. PER SQUARE YARD FOR TACK COAT AND 7 LBS. PER SQUARE YARD FOR COVER AGGREGATE. COVER AGGREGATE SHALL BE AS PER 703.06.

ITEM 609 - ASPHALT CONCRETE CURB

THIS ITEM SHALL BE USED TO RE-DIRECT THE FLOW OF WATER AWAY FROM BRIDGE ABUTMENT(S) LOCATED AT THE DOWNGRADE SIDE OF EACH STRUCTURE.

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

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

ITEM 609 - ASPHALT CONCRETE CURB
AC-20, STANDARD TYPE I I-271
300 L.F.

ITEM 848 - ASPHALT CONCRETE AS PER PLAN

THE AGGREGATE IN THE 848 SURFACE COURSE TYPE I IS RESTRICTED TO SLAG. IF THE SURFACE COURSE IS NOT PLACED WITHIN TEN DAYS, RETACKING SHALL BE AT THE CONTRACTORS EXPENSE.

ITEM 848 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED TO REPAIR AND/OR PRELEVEL DAMAGED PAVED SHOULDERS DURING RESURFACING.

ITEM 848 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2 I-271
1100 C.Y.

ITEM 848

ON THIS PROJECT, ITEM 848, TABLE 2-2, PROPERTIES OF MIXTURES SHALL BE FOR HEAVY TRAFFIC VOLUMES.

ASPHALT APPROACHES AT BRIDGES

THE FINAL GRADE OF THE ASPHALT OVERLAY ON THE APPROACH SLAB SHALL BE DETERMINED BY EXTENDING THE BRIDGE STRUCTURE GRADE ACROSS THE APPROACH SLAB. MAXIMUM VARIATION FROM SET GRADE SHALL NOT EXCEED± 1/4 INCH AT THE ROADWAY END OF THE APPROACH SLAB. TRANSITIONING FROM THAT POINT SHALL PROCEED AT A RATE OF 25 FEET PER INCH AS PER BP-5. THE CONTRACTOR SHALL ESTABLISH CONTROLS AT 25 FOOT INTERVALS, BOTH ACROSS THE APPROACH SLAB AND IN THE TRANSITION AREA. VARIATIONS FROM THE SET GRADE ACROSS THE APPROACH SLAB IN EXCESS OF 1/4 INCH SHALL DEEM THE WORK UNACCEPTABLE AT WHICH TIME A MINIMUM OF 1 INCH OF ASPHALT ON THE APPROACH SLAB SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE STATE.

STATION MARKINGS IN ASPHALT CONCRETE SURFACE COURSE

THE CONTRACTOR SHALL INSTALL AN INLAID THERMOPLASTIC MARKING EACH 100 FEET INTO THE WARM SURFACE BY THE USE OF A MECHANICAL ROLLER. (THIS DOES NOT APPLY ADJACENT TO A CONCRETE BARRIER WITH STATIONING).

THE MARKINGS SHALL BE LOCATED SIX (6) INCHES IN FROM THE RIGHT EDGE OF THE PAVED SHOULDER AND SHALL BE SHAPED AS FOLLOWS:

1) ONE 4 INCH X 12 INCH RECTANGLE AT EACH 1000 FOOT STATIONS. (EXAMPLE: STA. 220+00)
2) TWO 4 INCH DOTS AT EACH 500 FOOT STATIONS. (EXAMPLE: STA. 225+00)
3) ONE 4 INCH DOT AT ALL REMAINING 100 FOOT STATIONS. (EXAMPLE: STA. 223+00)

ALL COSTS OF MATERIALS AND INSTALLATION SHALL BE INCLUDED IN THE PERTINENT ASPHALT CONCRETE SURFACE COURSE ITEM.

GENERAL NOTES

COMPUTED BY: E.N.F.
CHECKED BY: E.M.N.

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PAVEMENT

ITEM SPECIAL - PARTIAL DEPTH PAVEMENT REPAIR:

THIS ITEM OF WORK SHALL CONSIST OF PARTIAL DEPTH REMOVAL OF EXISTING PAVEMENTS IN AREAS EXHIBITING DETERIORATION AT THE SURFACE, APPLYING ITEM 407, TACK COAT, AND PLACING AND COMPACTING ITEM 848, ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2, OR ITEM 402, ASPHALT CONCRETE.

THE ENGINEER WILL DESIGNATE THE LOCATION AND THE LIMITS OF THE AREAS TO BE REPAIRED. THE REPAIR AREAS WILL BE RECTANGULAR IN SHAPE WITH DIMENSIONS AS REQUIRED TO ENVELOP SURFACE DETERIORATION. UNLESS OTHERWISE SHOWN IN THE PLANS, OR DIRECTED BY THE ENGINEER, TYPICAL REPAIR AREAS WILL EXTEND THE FULL WIDTH OF A TRAFFIC LANE AT TRANSVERSE JOINTS AND ALONG PORTIONS OF LONGITUDINAL JOINTS AND THE DEPTH OF REMOVAL SHALL BE ONE TO THREE INCHES.

THE PAVEMENT SHALL BE REMOVED TO THE SPECIFIED DEPTH WITHIN THE DESIGNATED LIMITS BY A METHOD THAT WILL NOT LOOSEN OR OTHERWISE DAMAGE ADJACENT PAVEMENT. PAVEMENT SO REMOVED SHALL BE DISPOSED OF IN ACCORDANCE WITH 203.05.

AFTER REMOVAL OF THE PAVEMENT, ITEM 407, TACK COAT, SHALL BE APPLIED IN SUFFICIENT QUANTITY TO THOROUGHLY COAT THE EXPOSED SURFACE AND TO FILL CRACKS AND JOINT OPENINGS.

ITEM 848, ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2, OR ITEM 402, ASPHALT CONCRETE THEN SHALL BE PLACED AND COMPACTED TO FINISH FLUSH WITH THE ADJACENT PAVEMENT SURFACE.

THE NUMBER OF SQUARE YARDS TO BE PAID FOR SHALL BE CALCULATED USING THE DIMENSIONS ESTABLISHED BY THE ENGINEER. PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE THE WORK INCLUDING TACK COAT AND ASPHALT CONCRETE, PAYMENT WILL BE MADE UNDER:

ITEM	UNIT	DESCRIPTION
SPECIAL	SQUARE YARD	PARTIAL DEPTH PAVEMENT REPAIR

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

ITEM SPECIAL - PARTIAL DEPTH PAVEMENT REPAIR I-271

1600 S.Y.

RETRO-REFLECTORS ON CONCRETE BARRIERS

RETRO-REFLECTORS SHALL BE MOUNTED AT 100 FOOT SPACING ON THE FACE OF ALL CONCRETE BARRIERS. THE TOP OF THE REFLECTOR SHALL BE MOUNTED 26 INCHES ABOVE THE NEAR EDGE OF PAVEMENT, BUT NOT LESS THAN 3 INCHES BELOW THE TOP OF THE BARRIER. THE REFLECTOR SHALL BE INSTALLED WITH A SLIGHT BACKWARDS SLANT SO THAT IT IS EXPOSED TO RAIN.

THE REFLECTOR SHALL BE AMBER OR CRYSTAL. (TO MATCH THE ADJACENT EDGE LINE PAVEMENT MARKING) THE REFLECTOR SHALL BE A MINIMUM OF APPROXIMATELY 8 SQUARE INCHES AND TILTED APPROXIMATELY 15 DEGREES TO THE NORMAL. THE REFLECTOR SHALL BE AS MANUFACTURED BY "STIMSONITE", "ASTRO-OPTICS", OR AN APPROVED EQUAL.

THE ADHESIVE SHALL BE "FRANKLIN PANEL AND METAL FRAMING ADHESIVE" OR "PRODUCTS RESEARCH AND CHEMICAL CORPORATION PR-35" OR AN APPROVED EQUAL. SUFFICIENT ADHESIVE SHOULD BE USED TO COVER THE ATTACHMENT AREA. "FLASHING" SHALL BE EMPLOYED TO ENHANCE THE ADHESION.

ALL COSTS OF MATERIAL AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO THE PERTINENT CONCRETE BARRIER ITEM.

CONTRACTION JOINTS IN BASE WIDENING

WHERE NEW CONCRETE BASE IS PLACED ADJACENT TO EXISTING CONCRETE PAVEMENT, CONTRACTION JOINTS SHALL BE PROVIDED IN THE NEW BASE SO AS TO FORM A CONTINUOUS JOINT WITH THAT IN THE EXISTING PAVEMENT.

THE MAXIMUM DISTANCE BETWEEN THE JOINTS IN NEW BASE SHALL BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING BP-4. IF NECESSARY, ADDITIONAL JOINTS SHALL BE PROVIDED IN NEW BASE AT APPROXIMATELY EQUAL INTERVALS BETWEEN EXISTING JOINTS THAT EXCEED THE MAXIMUM SPACING.

ITEM SPECIAL, PAVEMENT SAWING

ALL REPAIR AREAS WILL BE LOCATED BY THE ENGINEER AND MARKED WITH PAINT PRIOR TO THE START OF PAVEMENT SAWING OPERATIONS.

THE EXISTING RIGID PAVEMENT SHALL BE SAWED FULL DEPTH AT THE LIMITS OF THE DESIGNATED AREAS. THE CONTRACTOR MAY ELECT TO MAKE ADDITIONAL CUTS TO FACILITATE THE REMOVAL OF THE PAVEMENT. HOWEVER, ONLY THE CUTS DESIGNATED BY THE ENGINEER WILL BE MEASURED FOR PAYMENT. PAVEMENT IN THE REPAIR AREA SHALL THEN BE REMOVED COMPLETELY IN ACCORDANCE WITH 202 AND IN A MANNER THAT WILL NOT DAMAGE OR UNDERMINE THE PAVEMENT THAT IS TO REMAIN IN PLACE.

THIS ITEM IS TO BE USED AT THE PAVEMENT REPAIR AREAS AS SHOWN ON SHEET 42.

ITEM SPECIAL - JOINT AND CRACK SEALING IN CONCRETE PAVEMENT

ALL JOINTS AND CRACKS IN THE EXISTING PORTLAND CEMENT CONCRETE PAVEMENT, INCLUDING THE LOGITUDINAL JOINT BETWEEN THE PAVEMENT AND PAVED SHOULDER, SHALL BE CLEANED, EXPOSED AS NECESSARY AND SEALED UNDER THIS ITEM OF WORK. THE WORDS JOINT AND CRACK ARE USED INTERCHANGEABLY AND REFERENCE TO EITHER SHALL APPLY TO BOTH.

ALL JOINTS SHALL BE PREPARED AS FOLLOWS:

CASE 1 - JOINTS LESS THAN 1/2 INCH WIDE.

THE JOINT SHALL BE ROUTED OPEN A MINIMUM OF 1/2 INCH WIDE BY 1 INCH DEEP.

CASE 2 - JOINTS 1/2 INCH TO 2 INCH WIDE.

THE JOINT SHALL BE GOUGED OR ROUTED CLEAN A MINIMUM OF 1 INCH DEEP.

CASE 3 - JOINTS WIDER THAN 2 INCHES.

ALL EXISTING PATCHING MATERIALS SHALL BE REMOVED AS NECESSARY TO EXPOSE A RELATIVELY VERTICAL JOINT BELOW. IF THE UNDERLYING JOINT IS LESS THAN 2 INCHES WIDE IT SHOULD BE TREATED AS PER THE APPROPRIATE CASE 1 OR 2 ABOVE. IF THE UNDERLYING JOINT IS GREATER THAN 2 INCHES IT SHALL BE GOUGED OR ROUTED CLEAN AN ADDITIONAL 1 INCH DEEP.

ALL JOINT PREPARATIONS LISTED ABOVE SHALL BE CONTINUED UNTIL THE JOINT IS FREE OF OLD SEALING MATERIALS, DUST, DIRT, WATER, ICE OR OTHER FOREIGN MATERIALS. SANDBLASTING AND/OR AIR BLASTING AS NECESSARY TO CLEAN THE JOINT WILL ALSO BE REQUIRED. PRIOR TO PLACING ANY SEALING MATERIAL THE JOINT PREPARATION SHALL BE APPROVED BY THE ENGINEER.

THE JOINT SEAL MATERIAL SHALL BE A HOT APPLIED JOINT SEALER MEETING THE REQUIREMENTS OF ASTM D 3405. THE MATERIAL SHALL MEET THE -20° F BOND TEST AS DESCRIBED IN SECTION 4.4 OF D 3405.

ALL JOINTS SHALL BE SEALED AS FOLLOWS:

CASE 1 AND CASE 2

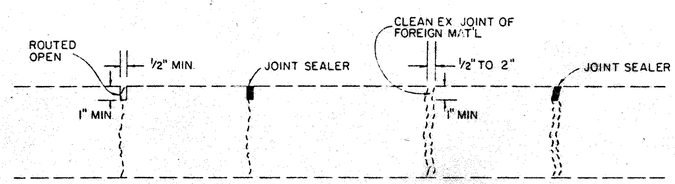
THE PREPARED JOINT SHALL BE FILLED FLUSH WITH JOINT SEAL MATERIAL. IF THE BOTTOM OF THE JOINT IS OPEN THE CONTRACTOR MAY, AT HIS OPTION, FILL THE BOTTOM OF THE JOINT USING ROPE CAULKING, INSULATING FOAM OR OTHER SIMILAR COMPRESSIBLE MATERIAL. THE TOP 1 INCH OF THE JOINT MUST REMAIN OPEN TO ACCEPT THE JOINT SEAL MATERIAL.

CASE 3

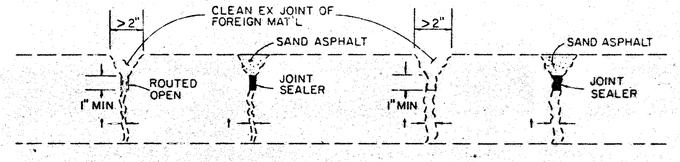
THE PREPARED VERTICAL PORTION OF THE JOINT SHALL BE TOTALLY FILLED WITH JOINT SEAL MATERIAL. THE REMAINING VOID SHALL BE FILLED FLUSH WITH SAND ASPHALT. IF THE BOTTOM OF THE JOINT IS OPEN THE CONTRACTOR MAY FILL THE JOINT BOTTOM TO CONTAIN THE JOINT SEAL MATERIAL AS DESCRIBED IN CASE 1 AND CASE 2.

ANY HEIGHT VARIATIONS ACROSS THE JOINTS GREATER THAN 1/2 INCH (ESPECIALLY ALONG THE PAVED SHOULDER) SHALL BE TRANSITIONED WITH SAND ASPHALT AT THE RATE OF 1 INCH PER FOOT.

TYPICAL APPLICATIONS:



CASE 1 CASE 2



CASE 3

THIS ITEM OF WORK SHALL INCLUDE ALL EQUIPMENT, LABOR AND MATERIALS NECESSARY TO SEAL ALL JOINTS AND CRACKS AS OUTLINED ABOVE.

THE METHOD OF MEASUREMENT SHALL BE THE ACTUAL NUMBER OF LANE MILES PREPARED AND SEALED. (SEE LANE MILE DEFINITION).

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

ITEM SPECIAL - JOINT AND CRACK SEALING IN CONCRETE PAVEMENT I-271

28.7 LANE MILES

LANE MILE DEFINITION (PORTLAND CEMENT CONCRETE PAVEMENT ONLY)

MAINLINE - ONE LANE PER 12 FT. WIDTH ANY FRACTIONAL PORTION OF A LANE SHALL BE CONSIDERED A FULL LANE (I.E. 0.1' to 12.0' IS ONE LANE)

RAMP - TYPICALLY 1 LANE IS 16 FT. WIDE (18 FT. WIDE AT GORES). WHEN THE PAVEMENT WIDTH EXCEEDS THE SINGLE LANE WIDTH A SECOND LANE IS COUNTED (UP TO 24 FT. WIDE) THEREAFTER MULTIPLES OF 12 FT. DEFINE EACH LANE AS IN THE MAINLINE DEFINITION.

A LANE MILE IS ONE LANE, AS DEFINED ABOVE, ONE MILE LONG.

GENERAL NOTES

COMPUTED BY: P.B.
CHECKED BY: E.M.F.

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PAVEMENT

ITEM SPECIAL - SUBSEALING EXISTING CONCRETE PAVEMENT

1.1) DESCRIPTION

THIS ITEM OF WORK SHALL CONSIST OF SEALING VOIDS UNDER THE EXISTING CONCRETE PAVEMENT.

2.1) SUBSEALING LOCATIONS

THE LOCATIONS FOR SUBSEALING SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE BASED UPON THE RESULTS OF THE DYNAFLECT TESTING.

3.1) MIX DESIGN

THE MIX DESIGN FOR SUBSEALING IS AS FOLLOWS:
1 PART (BY VOLUME) PORTLAND CEMENT TYPE 1 OR 11
3 PARTS (BY VOLUME) POZZOLAN (NATURAL OR ARTIFICIAL)
WATER TO ACHIEVE REQUIRED FLUIDITY

IF AMBIENT TEMPERATURES ARE BELOW 55°F. AN ACCELERATOR WILL BE USED SUBJECT TO APPROVAL OF THE ENGINEER.

3.2) PORTLAND CEMENT

PORTLAND CEMENT SHALL MEET THE REQUIREMENTS. PORTLAND CEMENT TYPE 1, 11 OR 111 AS PER ASTM C-150.

3.3) POZZOLANS

POZZOLANS SHALL MEET THE REQUIREMENTS OF ASTM C-618, EXCEPT THAT THE CONTRACTOR MAY USE OTHER POZZOLANS IF HE CAN SHOW TEST DATA MEETING REQUIREMENTS OUTLINED IN THIS SECTION AND PREVIOUS USE OF THE MATERIAL FOR THIS PURPOSE ON OTHER PUBLIC WORKS PROJECTS.

3.4 FLOW CONE

FLUIDITY OF THE GROUT SLURRY SHALL BE MEASURED BY THE CORPS OF ENGINEERS FLOW CONE METHOD AS PER THEIR SPECIFICATION CRD-C 79-77. TIME OF EFFLUX FOR POZZOLANIC GROUTS SHALL RANGE FROM 10 TO 16 SECONDS. THESE MEASUREMENTS SHALL BE MADE TWO TIMES ON EACH SHIFT BY THE CONTRACTOR.

3.5 MATERIAL SUBMISSION

THE CONTRACTOR SHALL SUBMIT IN ADVANCE A PROPOSAL FOR MATERIALS AND ADDITIVES MEETING THE REQUIREMENTS OF SECTION 3.1 ABOVE. SUBMITTALS SHALL INCLUDE MILL CERTIFICATIONS FOR THE CEMENT, PHYSICAL AND CHEMICAL ANALYSIS FOR THE POZZOLANS AND INDEPENDENT LABORATORY TESTING OF THE GROUT SLURRY SHOWING ONE DAY, THREE DAY, AND SEVEN DAY STRENGTHS, FLOW CONE TIMES, SHRINKAGE AND EXPANSION OBSERVED AND TIME OF INITIAL SET. THE SEVEN DAY STRENGTH SHALL NOT BE LESS THAN 800 PSI.

4.1 EQUIPMENT

THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT NECESSARY OR INCIDENTAL TO THE ADEQUATE PERFORMANCE OF THIS WORK AS FOLLOWS:

4.2 GROUT PLANT

THE GROUT PLANT SHALL CONSIST OF A POSITIVE DISPLACEMENT CEMENT INJECTION PUMP AND A HIGH SPEED COLLOIDAL MIXING MACHINE. THE COLLOIDAL MIXING MACHINE SHALL OPERATE AT A MINIMUM SPEED OF 800 RPM, MAXIMUM SPEED TO 2000 RPM, AND SHALL CONSIST OF A ROTOR OPERATING IN CLOSE PROXIMITY TO A STATOR, CREATING A HIGH SHEARING ACTION AND SUBSEQUENT PRESSURE RELEASE TO MAKE A HOMOGENEOUS MIXTURE.

THE DRY MATERIALS SHALL BE ACCURATELY MEASURED BY WEIGHT IF IN BULK OR SHALL BE PACKAGED IN UNIFORM VOLUME SACKS AND THE WATER SHALL BE BATCHED THROUGH A METER OR SCALE WITH A TOTALIZER FOR THE DAY'S CONSUMPTION.

4.3 WATER TANKER

WATER SHALL BE SUPPLIED FROM A WATER TRUCK WITH ADEQUATE CAPACITY AND PRESSURE FOR DELIVERY TO THE GROUT PLANT.

4.4 DRILLING

AN AIR COMPRESSOR AND ROCK DRILLS OR OTHER DEVICE CAPABLE OF DRILLING THE GROUT INJECTION HOLES THROUGH THE PAVEMENT AND BASE MATERIAL. THE EQUIPMENT SHALL BE IN GOOD CONDITION AND OPERATED IN SUCH A MANNER THAT THE HOLES ARE VERTICAL AND NOT "OUT-OF-ROUND". THE ROCK DRILL SHALL NOT BE HEAVIER THAN SIXTY POUNDS AND THE DOWNFEED PRESSURE WHETHER BY HAND OR MECHANICAL MEANS SHALL NOT EXCEED 200 POUNDS.

4.5 TRANSPORT

NECESSARY MATERIAL TRANSPORT AND HANDLING EQUIPMENT.

4.6 MISCELLANEOUS

ALL NECESSARY HOSES, VALVING AND VALVE MANIFOLDS AND POSITIVE CUT-OFF AND BYPASS PROVISIONS TO CONTROL PRESSURE AND VOLUME, PRESSURE GAUGES WITH GAUGE PROTECTORS, EXPANDING PACKERS OR HOSE FOR POSITIVE SEAL DURING GROUT INJECTION, WOOD PLUGS, HOLE WASHING TOOLS, DRILL STEEL AND BITS.

4.7 VERTICAL MOVEMENT TESTING

THE CONTRACTOR SHALL SUPPLY EQUIPMENT TO MEASURE SLAB LIFT WHICH SHALL BE CAPABLE OF DETECTING SIMULTANEOUSLY THE LIFT OF THE PAVEMENT EDGE OR OF ANY TWO OUTSIDE CORNER SLABS ADJACENT TO A JOINT AND THE ADJOINING SHOULDER. THE EQUIPMENT SHALL HAVE THE CAPABILITY OF MAKING SUCH MEASUREMENTS TO 0.001 INCH. THESE DEVICES TO MAKE LIFT MEASUREMENTS AGAINST A STABLE REFERENCE POINT SHALL BE OF A DESIGN SATISFACTORY TO THE ENGINEER.

6.1 DRILLING HOLES

GROUT INJECTION HOLES WILL BE DRILLED IN A PATTERN DETERMINED BY THE ENGINEER IN CONSULTATION WITH THE CONTRACTOR. THEY SHALL NOT BE LARGER THAN 2 INCHES IN DIAMETER, DRILLED VERTICALLY AND ROUND, AND TO A DEPTH SUFFICIENT TO PENETRATE ANY STABILIZED BASE.

6.2 WASHING HOLES

SUBJECT TO THE ENGINEER'S APPROVAL, HOLES MAY BE WASHED OR BLOWN TO CREATE A SMALL CAVITY, TO BETTER INTERCEPT THE VOID STRUCTURE.

6.3 SUBSEALING

DURING THE SUBSEALING OPERATION, A POSITIVE MEANS OF MONITORING LIFT SHALL BE USED AS DESCRIBED IN SECTION 4.7. THE UPWARD MOVEMENT OF THE PAVEMENT IN NO EVENT SHALL BE GREATER THAN 0.05 INCH. AN EXPANDING RUBBER PACKER OR HOSE CONNECTED TO THE DISCHARGE FROM THE PLANT SHALL BE LOWERED INTO THE HOLE. THE DISCHARGE END OF THE PACKER OR HOSE SHALL NOT EXTEND BELOW THE LOWER SURFACE OF THE CONCRETE PAVEMENT. EACH HOLE SHALL BE PUMPED UNTIL MAXIMUM PRESSURE IS BUILT UP OR MATERIAL IS OBSERVED FLOWING FROM HOLE TO HOLE. MAXIMUM ALLOWABLE PRESSURE SHALL NOT BE ALLOWED TO EXCEED 200 POUNDS PER SQUARE INCH OR OTHER VALUES SPECIFIED BY THE ENGINEER TO MINIMIZE SLAB RAISING. THE PRESSURE SHALL BE MONITORED BY AN ACCURATE PRESSURE GAUGE IN THE GROUT LINE THAT IS PROTECTED FROM THE GROUT SLURRY. WATER DISPLACED FROM THE VOID STRUCTURE BY THE GROUT SHALL BE ALLOWED TO FLOW OUT FREELY. EXCESSIVE LOSS OF THE GROUT THROUGH CRACKS, JOINTS, OR FROM BACKPRESSURE IN THE HOSE OR IN THE SHOULDER AREA SHALL NOT BE TOLERATED. PAY QUANTITIES WILL BE REDUCED BY THE ENGINEER ACCORDINGLY.

6.4 CORRECTING PANEL DISPLACEMENT

PAVEMENT WHICH HAS BEEN RAISED IN EXCESS OF THE 0.05 INCH ALLOWABLE TOLERANCE SHALL BE DEEMED UNACCEPTABLE, NO PAYMENT FOR ANY SUBSEALING MATERIAL AT THE SUBJECT LOCATION SHALL BE MADE WHEN THIS TOLERANCE IS EXCEEDED.

6.5 RADIAL CRACKS

CRACKS EMANATING RADIALLY FROM THE GROUT INJECTION HOLES WILL BE PRESUMED TO HAVE BEEN CAUSED BY IMPROPER INJECTION TECHNIQUES BY THE CONTRACTOR. FOR EACH 5 LINEAL FEET OF SUCH CRACK MEASURED, THE CONTRACTOR'S PAY QUANTITY SHALL BE REDUCED BY ONE CUBIC FOOT OF GROUT.

6.6 TRANSVERSE CRACKS

IN THE EVENT THAT TRANSVERSE CRACKS DEVELOP BETWEEN ADJACENT GROUT INJECTION HOLES, THE CONTRACTOR WILL BE REQUIRED TO REPAIR THESE CRACKS BY THE EPOXY INJECTION METHOD TO THE SATISFACTION OF THE ENGINEER OR AT THE DISCRETION OF THE ENGINEER, HE MAY REQUIRE REPLACEMENT OF THE ENTIRE PANEL OR A PORTION THEREOF.

6.7 HOLE PATCHING

UPON COMPLETION OF THE SUBSEALING, ALL DRILL HOLES WILL BE SEALED FLUSH WITH THE SURFACE OF THE PAVEMENT WITH A FAST SETTING SAND/CEMENT MATERIAL TO BE APPROVED BY THE ENGINEER.

6.8 WEATHER CONDITIONS

GROUT SUBSEALING SHALL NOT BE PERFORMED WHEN DAY TIME TEMPERATURES ARE BELOW 35°F. OR IF THE SUBGRADE AND/OR BASE COURSE MATERIAL IS FROZEN.

6.9 UNANTICIPATED CONDITIONS

IN THE EVENT THE ENGINEER DETERMINES THAT CONTINUED GROUT INJECTION AT ANY SPECIFIC LOCATION DUE TO MAJOR VOIDS IS NO LONGER ECONOMICALLY FEASIBLE, HE MAY DIRECT THE CONTRACTOR TO CEASE GROUT INJECTION AT THAT LOCATION. THE CONTRACTOR WILL BE PAID AT THE UNIT PRICE FOR THE MATERIAL USED UP TO THAT POINT.

7.1 OPERATIONAL LIMITS

THIS WORK SHALL BE PERFORMED AS PER THE MAINTENANCE OF TRAFFIC REQUIREMENTS.

8.1 MEASUREMENT

THE QUANTITIES TO BE PAID FOR WILL BE MEASURED AS FOLLOWS:

8.1.1 HOLES

HOLES DRILLED THROUGH THE EXISTING CONCRETE SLABS, AT THE LOCATION AND TO THE DEPTH SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER WILL BE MEASURED PER EACH. HOLES WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH. SUCH PAYMENT WILL BE FULL COMPENSATION FOR DRILLING, PLUGGING, AND SEALING THE HOLE AFTER THE SUBSEALING IS COMPLETED.

8.1.2 SUBSEAL MATERIAL

THE SUBSEAL MATERIAL SHALL BE PAID FOR ON THE BASIS PER CUBIC FOOT (DRY MEASURE) OF MATERIAL INCORPORATED INTO THE PAVEMENT STRUCTURE.

THE UNIT CONTRACT PRICE PER CUBIC FOOT (DRY MATERIAL) SHALL BE FULL COMPENSATION FOR THE FURNISHING OF ALL LABOR, MATERIALS, INCLUDING WATER AND ADDITIVES, EQUIPMENT AND TOOLS, AND ALL OTHER COSTS NECESSARY AND INCIDENTAL TO ACCOMPLISH THE SUBSEALING OF THE PAVEMENT AT THE DESIGNATED LOCATIONS IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE DETAILS ON THE PLANS.

8.2 DEDUCTIONS

8.2.1 MIXED MATERIAL MAY NOT BE HELD IN THE MIXER OR INJECTION PUMP SUMP FOR MORE THAN ONE HOUR AFTER MIXING. ANY MATERIAL HELD FOR LONGER TIMES SHALL BE WASTED AND WILL NOT BE PAID FOR.

8.2.2 MATERIAL WASTED BY UNCONTROLLED FLOW AS DESCRIBED IN SECTION 6.3 WILL NOT BE PAID FOR AND WILL BE DEDUCTED FROM THE PAY QUANTITIES BY THE ENGINEER.

9.1 QUANTITIES

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

	I-271	
ITEM SPECIAL - HOLE FOR SUBSEALING	8000	EACH
ITEM SPECIAL - SUBSEAL MATERIAL	8000	C.F.

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COMPUTED BY: DB
CHECKED BY: ENF

GENERAL NOTES

EROSION CONTROL

REPAIR OF EROSION AREAS

THIS ITEM OF WORK SHALL BE USED AT THE I-271 MEDIAN NEAR U.S.R. 422 AS WELL AS ANY OTHER LOCATIONS AS DIRECTED BY THE ENGINEER.

BECAUSE OF THE PRESENCE OF SHALE, AND THE RESULTING HIGH ACIDITY OF THE SOIL, VEGETATION HAS FAILED TO EXIST IN THESE AREAS.

THE INTENT OF THIS WORK IS AS FOLLOWS:

1) TO LOOSEN UP THE EXISTING SOIL AND PERFORM MINOR REGRADING AS NECESSARY. (INCLUDES EMBANKMENT AND EXCAVATION)
2) TO LIME THE PREPARED BASE (INCORPORATION INTO THE SOIL IS NOT REQUIRED IF EVENLY SPREAD)
3) PLACE FOUR INCHES OF TOPSOIL OVER THE PREPARED AREAS. INCORPORATE FERTILIZER AS SPECIFIED AND LIME INTO THE TOPSOIL TO ACHIEVE A PH OF BETWEEN 6.5 AND 7.0
4) PLACE 8'-0" MINIMUM WIDTH OF SOD IN ALL DITCHES
5) PLACE SEEDING AND MULCHING ON ALL REPAIR AREAS.

REPAIR AREA PREPARATION

PRIOR TO PLACING THE TOPSOIL ALL AREAS TO RECEIVE TOPSOIL SHALL BE MACHINE SCARIFIED TO A DEPTH OF 3 INCHES OR MORE BY DISCS, HARROW, TOOTHED DOZER BLADE OR SIMILAR DEVICE. DURING THIS OPERATION GRADING OPERATIONS SHALL BE PERFORMED AS NECESSARY TO INSURE THAT DRAINAGE FLOW TO THE DITCHES AND ALONG THE DITCHES WILL BE MAINTAINED AFTER THE PLACEMENT OF THE FOUR INCH TOPSOIL LAYER. (SEE TOPSOIL NOTE)

PAYMENT FOR THIS OPERATION SHALL BE INCLUDED IN THE COST OF ITEM 653, TOPSOIL FURNISHED AND PLACED, AS PER PLAN.

AGRICULTURAL LIMING

PRIOR TO PLACING THE TOPSOIL ALL PREPARED AREAS AS OUTLINED ABOVE SHALL BE TREATED WITH AGRICULTURAL LIMING AT THE RATE OF 100 POUNDS PER 1000 SQUARE FEET. LIMING BY HYDRO PROCESS SHALL NOT BE PERMITTED. THIS LIMING APPLICATION NEED NOT BE RAKED INTO THE SOIL PROVIDING THAT IT IS UNIFORMLY APPLIED.

TOPSOIL FURNISHED AND PLACED, AS PER PLAN

GENERALLY FOUR INCHES OF TOPSOIL SHALL BE PLACED OVER ALL PREPARED AREAS. THE BOUNDARIES OF THE TOPSOIL PLACEMENT SHALL BE FEATHERED BEYOND THE PREPARED AREAS TO ACHIEVE A GRADUAL TRANSITION AND INSURE DRAINAGE FLOW. REGRADING AND EXCAVATION OF THE EXISTING DITCHES IS NECESSARY SO THAT THE DITCH FLOW LINE MATCHES THE CORRECT ELEVATION AT THE DRAINAGE STRUCTURE AND ALSO TO MAINTAIN A MINIMUM 18 INCH DROP FROM THE EDGE OF PAVEMENT TO THE DITCH FLOW LINE. ADDITIONAL EXCAVATION AND REGRADING TO INSURE FLOW SHALL ALSO BE REQUIRED WHEN THE REPAIR AREA IS ADJACENT TO PAVED SHOULDERS.

THE ORGANIC MATTER REQUIREMENT OF 653.02 IS HEREBY WAIVED FOR THIS ITEM OF WORK.

FERTILIZING AND AGRICULTURAL LIMING, AS PER PLAN

COMMERCIAL FERTILIZER SHALL BE PLACED ON ALL AREAS COVERED WITH TOPSOIL AS PER 659.08.

QUANTITIES FOR AGRICULTURAL LIMING OF THE TOPSOIL ARE INCLUDED TO BE USED TO ACHIEVE A PH OF BETWEEN 6.5 AND 7.0. QUANTITIES ARE SUFFICIENT FOR THE ENTIRE PROJECT, BUT WILL BE NON-PERFORMED WHERE TESTS SHOW THAT LIMING IS NOT REQUIRED.

SODDING

ALL DITCHES SHALL BE SOD LINED 8'-0" WIDE. THIS APPLIES IN GENERAL UNLESS THE REPAIR AREA CONSISTS OF AN ERODED DITCH LESS THAN 8'-0" WIDE, WHICH SHALL BE SOD LINED FOR THE REPAIR WIDTH ONLY.

SEEDING AND MULCHING

THIS ITEM SHALL BE APPLIED ON ALL REPAIR AREAS.

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

	I-271
ITEM 653 - TOPSOIL FURNISHED AND PLACED, AS PER PLAN	600 C.Y.
ITEM 659 - SEEDING AND MULCHING	5000 S.Y.
ITEM 659 - AGRICULTURAL LIMING	2.6 TONS
ITEM 659 - AGRICULTURAL LIMING AS PER PLAN	2.6 TONS
ITEM 659 - COMMERCIAL FERTILIZER	0.5 TONS
ITEM 660 - SODDING	800 S.Y.

ITEM SPECIAL - HERBICIDES FOR WEED CONTROL

PRIOR TO PLACING THE ITEM 301 BITUMINOUS AGGREGATE, AN APPLICATION OF PRINCEP 80W, OR AMISINE OR AN APPROVED EQUAL, SHALL BE APPLIED TO THE SHOULDER BED. THE RATE AND METHOD OF APPLICATION FOR AMISINE OR OF AN APPROVED EQUAL SHALL BE IN STRICT CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER SQUARE YARD, "ITEM SPECIAL - HERBICIDES FOR WEED CONTROL", WHICH PRICE SHALL CONSTITUTE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND WATER REQUIRED TO COMPLETE THIS ITEM OF WORK.

AGRICULTURAL LIMING, AS PER PLAN

THE LOCATION AND NEED FOR AGRICULTURAL LIMING WILL BE DETERMINED BY LABORATORY TESTS, AFTER ROUGH GRADING OPERATIONS HAVE BEEN PERFORMED. QUANTITIES OF AGRICULTURAL LIMING, AS SHOWN ON THE PLANS, ARE SUFFICIENT FOR THE ENTIRE PROJECT, BUT WILL BE NON-PERFORMED FOR THE AREAS WHERE TESTS SHOW THAT THE LIMING IS NOT REQUIRED.

AGGREGATE SLOPE PROTECTION REPAIR

BOTH LARGE AND SMALL AREAS OF EXISTING CRUSHED AGGREGATE SLOPE PROTECTION HAVE 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 INCH DEEP) ALONG THE LINE OF THE 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.

ALL COSTS OF FURNISHING AND PLACING THE EMBANKMENT SHALL BE INCLUDED UNDER ITEM 601 - CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN OR ITEM 601 - RIPRAP, CLOTH OR BURLAP 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.

COST PARTICIPATION II	I-271
ITEM 601 - CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN	250 S.Y.
ITEM 601 - RIPRAP, CLOTH OR BURLAP BAGS, AS PER PLAN	75 S.Y.

GENERAL NOTES

COMPUTED BY: ENF
CHECKED BY: ENM

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EROSION CONTROL

SEEDING AREAS (REGRADING AREAS)

QUANTITIES FOR SEEDING ARE CALCULATED FROM THE PAVED SHOULDER TO TWO (2) FEET BEYOND THE CONSTRUCTION LIMIT SHOWN ON THE CROSS SECTIONS.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

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

I-271

ITEM 207 - TEMPORARY SEEDING AND MULCHING	3000	S.Y.
ITEM 207 - STRAW OR HAY BALES	80	EACH
ITEM 659 - MOWING	35	M.S.F.
ITEM 659 - COMMERCIAL FERTILIZER	01	TONS
ITEM 659 - REPAIR SEEDING AND MULCHING	750	S.Y.
ITEM 659 - WATER	65	M.GAL.

DRAINAGE

ITEM 604 - CATCH BASIN RECONSTRUCTED TO GRADE AS PER PLAN

THIS ITEM OF WORK SHALL INCLUDE THE REPLACEMENT OF THE UPPER PORTION OF THE EXISTING CATCH BASIN WITH AN MH-1 TOP.

DRAINAGE

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.

UNDERDRAIN OUTLETS IN EARTHWORK AREAS

EXISTING UNDERDRAIN OUTLETS WHICH ARE ENCOUNTERED IN THE EARTHWORK OR CULVERT EXTENSION AREAS SHALL BE EXTENDED AS DIRECTED BY THE ENGINEER USING 6 INCH CONDUIT, TYPE F. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE:

	I-271
ITEM 603 - 6" CONDUIT, TYPE F	50 L.F.

ITEM 605 - AGGREGATE DRAIN

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:

	I-271
ITEM 605 - AGGREGATE DRAIN	150 L.F.

LOCATION AND FLOW LINE ELEVATIONS OF EXISTING SEWERS AND EXISTING UNDERDRAINS

FLOW LINE ELEVATIONS AND LOCATIONS OF EXISTING SEWERS AND EXISTING UNDERDRAINS HAVE BEEN OBTAINED FROM THE EXISTING DESIGN PLANS.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE THE EXISTING SEWERS AND EXISTING UNDERDRAINS BOTH AS TO LINE AND GRADE, BEFORE CONNECTING THE PIPES TO THE PROPOSED MEDIAN INLETS.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTIMENT 604 STRUCTURE ITEM.

FLUSHING AND REPAIR OF UNDERDRAINS:

ALL EXISTING UNDERDRAINS SHALL BE FLUSHED WITH WATER TO DETERMINE IF THEY ARE FUNCTIONING PROPERLY AND IF NOT THE OBSTRUCTIONS ARE TO BE LOCATED AND REPAIRED. THE FOLLOWING PROCEDURES AND METHODS OF PAYMENT ARE PROVIDED FOR THIS PURPOSE. A COPY OF THE ORIGINAL CONSTRUCTION PLANS SHOWING THE LOCATION OF THE UNDERDRAINS AND OUTLETS WILL BE ON FILE IN THE PROJECT OFFICE.

1. ITEM SPECIAL - UNDERDRAIN OPENING - (EACH). THIS ITEM SHALL CONSIST OF EXPOSING THE FIRST TILE AT THE UPPER END OF AN UNDERDRAIN LINE OR A SUBSEQUENT INTERMEDIATE UNDERDRAIN OPENING AS PROVIDED HEREIN. EACH OPENING SHALL INCLUDE THE TRENCH EXCAVATION LENGTHWISE OVER THE EXISTING TILE, REPLACING THE 6" TILE BROKEN IN MAKING THE OPENING AND THE FULL DEPTH BACKFILL WITH NO. 8 AGGREGATE, ALL IN ACCORDANCE WITH SPECIFICATION SECTION 605. PAYMENT FOR THE OPERATIONS DESCRIBED ABOVE SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS INCIDENTAL TO COMPLETING THE ITEM INCLUDING A MAXIMUM OF 6 LIN. FT. OF 6" TILE AND SHALL BE MADE FOR "EACH" - - ITEM SPECIAL - - UNDER DRAIN OPENING.

2. ITEM SPECIAL-WATER-(M. GALS.). AFTER THE UNDERDRAIN OPENING HAS BEEN MADE AND THE EXPOSED TILE REMOVED, THE LINE SHALL BE FLUSHED WITH WATER USING A MINIMUM SIZE HOSE OF 2" AND A MAXIMUM VOLUME OF WATER CALCULATED AT 1-1/2 GALLONS PER LIN. FT. OF UNDERDRAIN LINE. THE FLUSHING OPERATION MAY BE STOPPED AT ANY TIME BY THE ENGINEER IF FIELD OBSERVATIONS SHOW THE LINE TO BE EITHER PLUGGED OR OPERATING EFFICIENTLY.

   IN THE EVENT THE LINE IS FOUND TO BE PLUGGED OR FLOW RESTRICTED, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE RESTRICTION BY RODDING OR OTHER SIMILAR METHOD APPROVED BY THE ENGINEER. AN INTERMEDIATE UNDERDRAIN OPENING WILL BE PERMITTED AND PAID FOR PROVIDING IT IS NO CLOSER THAN 750 FT. TO THE INITIAL OPENING OR AT THE MID POINT OF THE LINE. THE COST OF RODDING THE LINE IS TO BE INCLUDED IN THE UNIT BID PRICE FOR WATER.

   THE METHOD OF MEASUREMENT FOR THE ITEM SPECIAL - - WATER WILL BE IN ACCORDANCE WITH SPECIFICATION SECTION 616.03 AND PAYMENT WILL BE PER THOUSAND GALLONS (M.GAL.) USED.

3. WHERE A SECTION OF TILE IS FOUND TO BE PLUGGED OR BROKEN, IT IS TO BE ISOLATED AS NOTED ABOVE BY RODDING. THE BLOCKAGE SHALL BE REMOVED BY THE USE OF A 2000 NOMINAL P.S.I. SEWER JET. IF THE BLOCKAGE CANNOT BE REMOVED BY SEWER JET OR IF THE TILE IS BROKEN THE SECTION SHALL THEN BE REPLACED AT APPROXIMATELY THE SAME LINE AND GRADE USING 6" TILE IN ACCORDANCE WITH SPECIFICATION SECTION 605.03. THE COST OF REMOVAL OF THE EXISTING TILE IS CONSIDERED TO BE INCIDENTAL TO THIS WORK AND EXTREME CARE IS TO BE EXERCISED IN NOT DAMAGING OR REMOVING ANY MORE TILE THAN IS NECESSARY. MEASUREMENT AND PAYMENT FOR THIS WORK WILL BE AS PER SECTION 605.07 RESPECTIVELY. MEASUREMENT AND PAYMENT FOR THE SEWER JET WILL BE THE ACTUAL NUMBER OF HOURS OF ACCEPTED SEWER JET TIME, WHICH INCLUDES ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO PERFORM THIS ITEM OF WORK. NO MEASUREMENT OF TIME WILL BE MADE FOR IDLE EQUIPMENT DUE TO BREAKDOWN OR REPAIRS. THE SEWER JET SHALL BE BROUGHT TO THE JOB ONLY WHEN DIRECTED BY THE ENGINEER. TRAVEL TIME BETWEEN LOCATIONS AND SET UP TIME SHALL ALSO BE INCLUDED IN THE MEASURED TIME.

4. AFTER ALL REPAIRS HAVE BEEN MADE TO A LINE A FINAL FLUSHING WILL BE PERFORMED TO ASCERTAIN THE LINE IS FUNCTIONING PROPERLY AFTER WHICH THE CLOSING OF THE INITIAL OPENING WILL BE PERMITTED.

   THE FOLLOWING ESTIMATED QUANTITIES ARE PROVIDED IN THE SUMMARY FOR THIS WORK ON THE PARTS OF THIS PROJECT:

	I-271	
ITEM SPECIAL - UNDERDRAIN OPENING	120	EACH
ITEM SPECIAL - WATER	150	M. GAL.
ITEM SPECIAL - SEWER JET	50	HOURS
ITEM 605 - 6" UNCLASSIFIED PIPE UNDERDRAINS	1200	L.F.

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614 Maintaining Traffic (Contractor Supplied PCMS Unit)

In addition to the requirements of 614, the following requirements shall apply.

The contractor shall purchase, use and maintain for the duration of this project a portable (trailer mounted) changeable message sign (PCMS). The PCMS unit shall be employed primarily for lane closures on this project.

The PCMS device shall be employed in order to cause a.) greater amounts of preparatory vehicle lane-change activity in advance of the closure, b.) reduced occurrence of "late exit" behaviors (exiting from the closed lane within 100 feet of the taper) and c.) reduced speeds at the beginning of the taper on this project.

The PCMS device shall be placed approximately 3/4 mile in advance of the lane closure. It may be necessary to alter advance placement slightly to assure ample sight distance to the PCMS device. The PCMS device should be placed on the shoulder on the same side of the highway as the closed lane. PCMS devices are considered to be supplemental in nature to currently applied standard traffic control device schemes employing fixed message signing. PCMS devices are not to be employed as an alternative to flashing arrow panels.

The PCMS may be employed for other work activities than lane closures with message and application subject to the approval of the Engineer.

The PCMS shall have two different memories. Memory Number 1 shall be a programmable read only memory (PROM) and Memory Number 2 shall be a random access memory (RAM) with a keyboard entry.

Memory Number 1 shall have a minimum of 99 different pre-programmed messages stored on factory supplied chips. 16 of these 99 different pre-programmed messages shall be as follows:

MAX SPEED ** MPH	TWO WAY TRAFFIC
RIGHT LANE CLOSED	REDUCE SPEED
LEFT LANE CLOSED	REDUCE SPEED TO ** MPH
MERGE LEFT	MERGING TRAFFIC AHEAD
MERGE RIGHT	CAUTION VEHICLE CROSSING
KEEP RIGHT	MEN WORKING ON ROAD
KEEP LEFT	ROAD WORK AHEAD
DO NOT PASS	PREPARE TO STOP

Memory Number 2 shall provide for the programming of an additional minimum of 99 different messages. All messages other than those appearing on the pre-programmed (Memory Number 1) message list shall require the approval of the District Traffic Engineer prior to use. A list of additional required pre-programmed messages will be given to the Contractor at the project pre-construction conference. If prospective bidders are interested in seeing this list prior to contract letting a copy may be obtained from the Bureau of Traffic, 25 S. Front St., Columbus, Ohio 43215, phone no. (614) 466-3601.

In order to convey a maximum of information at a single glance, only three-line presentation formats with a maximum of six messsages phases shall be employed. PCMS format shall permit the complete message for each phase to be read at once.

The PCMS shall be capable of displaying any of the following five different types of message combinations for lane closures: a.) speed and lane closure advisories b.) speed and merge advisories, c.) merge and lane closure advisories, d.) lane closure advisory and e.) speed advisory.

Any one of the five message combinations for lane closures as shown in the following table may be used with the approval of the Engineer.

PCMS	Message Type	Display	
		Phase 1	Phase 2
Three-Line Bulb Matrix	Speed and Lane Closure Advisory	MAX SPEED 45 MPH	RIGHT* LANE CLOSED
	Speed and Merge Advisory	MAX SPEED 45 MPH	MERGE LEFT
	Merge and Lane Closure Advisory	LEFT LANE CLOSED	MERGE RIGHT
	Lane Closure Advisory	RIGHT LANE CLOSED	RIGHT LANE CLOSED
	Speed Advisory	MAX SPEED 45 MPH	MAX SPEED 45 MPH

* Where "RIGHT" is shown "LEFT" may be required at times and vice versa.

Sign message shall be legible from 650' minimum. Minimum character size shall be 13". A lamp matrix bulb not smaller than 1-3/4" in diameter and utilizing not more than 20 watts per bulb and having a mean life expectancy of not less than 10,000 hours shall be used to form the letters used in the PCMS. Spacing between characters must be not less than one column of lamps. Character spacing shall increase to two columns where number of characters and board width permits. The character spacing must equal at least 14 percent of the character height.

PCMS Hardware Requirements:

Board Size:
- minimum area: 48 square feet
- minimum horizontal dimension: 94 inches
- minimum depth dimension: 8 inches
- maximum horizontal dimension: 113 inches
- minimum no. of rows per line: 7
- minimum no. of columns per line: 40
- minimum height to bottom of sign from roadway surface: 4½ feet

Lamp Matrix Bulbs: GE 1385 or Wagner 3607, outdoor, shock mounted, 10,000 hour life, minimum diameter 1.75 inches. Mixed use of bulb types shall not be allowed.

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Sign Board Cover: Anti vandal steel mesh screen or lexan cover (if lexan cover is used cooling fan for sign board shall be provided).

Sunscreen: A louvered grid shall be required to protect the sign message from being obliterated by glare when non-encapsulated lamp matrix bulbs are used.

Dimming: Automatic dimming shall be required based on ambient light conditions. Manual dimming shall provide for either adjustable or three different bulb intensity settings independent of automatic dimming system.

Flash Rates: Capability to vary flash rate manually based upon highway speed. Steady-on capability also required.

Power: Power shall be furnished by a diesel generator (ONAN 12.0 DHC-3CR), minimum tank storage 25 gallons, electric start 12 KW size. In addition, one straight blade, 3 wire, 120 VAC 15 amp, weatherproof duplex outlet shall be provided, located for easy accessibility near the lockable generator housing compartment.

Brake: The trailer shall have surge brakes of sufficient rating to stop the trailer in the event it breaks away when being towed.

Raise and Lower Mechanism: The Sign Board shall be raised or lowered by either a hydraulic system or an electric motor driven mechanical hand crank.

Sign Controller: Sign controller shall be trailer mounted.

Paint: Trailer frame shall have two coats of federal yellow. Sign panel, sunscreen and anti vandal steel mesh screen shall be painted a flat black.

Time of Day Clock: The time of day clock shall provide the following flexibility to enable the sign to operate with minimum operator attendance.

A. 4 events per day - an event is a time slot which contains a series of commands to operate any or all of the sign functions.

B. 5 day programs - a day program is a collection of a maximum of 4 events per day.

C. 3 weekly programs - a week program is a collection of the operator chosen day programs.

D. 16 exception days - an exception day is any 24 hour period (day) in which an operator would like to inject a different day program than that which would normally be called for during that week program.

Additional Requirements:

Sturdy trailer hitch with safety chain and electric light (12V) connection. Hitch shall use a 2" ball.

Turning wheel and screw jack which disengages for travel behind towing vehicle.

Outriggers required. Each outrigger shall extend horizontally and vertically for installation on uneven surfaces.

Welded 2"x4" rectangular steel tube frame (min. 4,000 lb.), supporting entire PCMS assembly. Steel tubing primed and covered with two coats of baking enamel.

Wheel size: Minimum of 15". Tire load class: Load range D.

All metal welded and bolted cover for Onan diesel generator. Covers must be removable for maintenance.

Lockable door must be opened to start or stop generator.

Pre-heat switch and generator start switch.

Ammeter to indicate battery charge; hour meter and fuel gauge shall also be required.

Tail light and turn signal indications, one on each side.

Locked compartment for keyboard control.

Back side of the CMS shall contain a flashing arrow panel conforming to the requirements of Section 7G-8, OMUTCD. Size shall be Type C as per Table 7-7 OMUTCD and shall provide for all functions required by OMUTCD.

Sign rest used when sign is in the down position for travel to job site.

Trailer shall have a chevron pattern of 4" wide stripes, alternating black and yellow reflective Type G sheeting conforming to 730.19, slanted at 45° in an inverted "V" form with the "V" located at the center of the rear of PCMS.

For the Contractor provided PCMS unit, the Contractor shall keep in stock 3 spare lamp driver boards and (60) spare lamp matrix bulbs which will be ready for immediate replacement in the event of a failure. In addition to requirements of 106.06 and 106.07, all spare parts shall be stored in a dust free environment suitable for electronic equipment.

The frequency and type of maintenance performed on this unit shall be in accordance with manufacturer's recommended maintenance procedures. The contractor shall obtain from the manufacturer and turn over to the State a maintenance manual including schematic drawings and a list of the machine language program for the software containing devices.

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PCMS GENERAL NOTES

When all work on the travelled lanes of this project have been completed so that the PCMS device is no longer required to be used, as determined by the Engineer, the device shall be stored within the limits of the project at a location approved by the Engineer for removal by State Forces. The Contractor shall notify the Equipment Superintendent of the Ohio Department of Transportation, District No. 12 at Garfield Heights, Ohio that the PCMS device is being stored and is ready for removal. The Contractor shall allow the District Equipment Superintendent 5 calendar days after notification to remove the PCMS device from the project. Spare lamp driver boards and lamp matrix bulbs will be transferred to the State with the complete sign.

After inspection and determination of the unit condition, the unit shall become the property of the State of Ohio provided it is in a complete, undamaged state and is in good working order.

The PCMS device shall be maintained in good working order during its employment on the project in accordance with the provision of 614.03(c).

The requirement to provide, maintain and use a PCMS device on this project shall not in any way relieve the Contractor of his responsibilities as outlined in 104.04.

Until final acceptance of the PCMS by the State, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the employment or from the nonemployment of the PCMS device. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the PCMS device occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the PCMS device due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God, of the public enemy or governmental authorities.

In the event it is not in an acceptable condition pursuant to the requirements above, the Contractor shall be notified and if it is not placed in an acceptable condition the Contractor will be obligated to pay the cost the State incurs in obtaining an acceptable unit. All manufacturer's guarantees and warranties for the PCMS and its component sub-systems (generator, electronics, etc.), whether written or implied, which are transferable shall not be voided by this change of title from the Contractor to the State of Ohio.

The cost of this Item shall be included in Item 614 Maintaining Traffic.

614 Maintaining Traffic (State Furnished PCMS Unit)

In addition to the requirements for the Contractor furnished PCMS, the following shall apply:

At the request of the Contractor and with the Engineer's approval the State will furnish to the Contractor a second PCMS for use on this project. This sign shall be a Winko-Matic Model GEN II (Winko-Matic Signal Company, 659 Miller Road, Avon Lake, Ohio 40012). This second PCMS unit shall be used by the Contractor in like manner to the Contractor furnished PCMS unit for controlling traffic when lanes are closed in both directions or, with the approval of the Engineer, for other locations or situations. The State will deliver the State furnished PCMS unit to the project for transfer to the Contractor. Arrangements for delivery and transfer will be coordinated by the Engineer. The Contractor shall be responsible for hauling, placing, positioning, moving and operating the State furnished PCMS unit on the project.

While the PCMS unit is in his possession, the Contractor shall perform routine maintenance in accordance with the manufacturer's recommended maintenance procedures. The Contractor will furnish fuel for the generator and engine oil when necessary. Major mechanical or electronic malfunctions are to be reported immediately to the Engineer who will arrange for repair of the unit or delivery of an operable substitute unit as soon as practicable.

For the State furnished PCMS unit, the Contractor will furnish 3 spare lamp driver boards and sixty (60) spare lamp matrix bulbs for immediate replacement in the event of failure of one of these components in the State furnished PCMS unit.

In addition to the requirements of 106.06 and 106.07, all spare parts shall be stored in a dust free environment suitable for electronic equipment.

When all work on the travelled lanes of this project has been completed so that that State furnished PCMS device is no longer required to be used, as determined by the Engineer, the device and spare parts shall be stored within the limits of the project at a location approved by the Engineer for removal by the State Forces. After inspection and determination that the unit is fit for return to the State, remaining spare lamp driver boards, and remaining spare matrix bulbs shall be returned to the State of Ohio. Arrangements for transfer of the State furnished PCMS back to the State will be coordinated by the Engineer.

The PCMS device shall be maintained in good working order during its employment on the project in accordance with the provisions of 614.03(c).

The requirement to use and maintain this State-furnished PCMS device on this project shall not in any way relieve the Contractor of his responsibilities as outlined in 104.04.

Until return of the PCMS to the State, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the employment or from the nonemployment of the PCMS device. The Contractor shall rebuild, repaid, restore to the condition at the time the PCMS unit was delivered to the project, and make good all injuries or damages to any portion of the PCMS device occasioned by the above and shall bear the expense thereof except damage to the PCMS device due to the unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God, of the public enemy or governmental authorities.

In the event it is not in an acceptable condition pursuant to the requirements above, the Contractor shall be notified and if it is not placed in an acceptable condition the Contractor will be obligated to pay the cost the State incurs in repairing the unit.

The cost of this Item shall be included in Item 614 Maintaining Traffic.

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CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: D.A.D.
CHECKED BY: E.M.M.

GENERAL NOTES

TRAFFIC MAINTENANCE

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.

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

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 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 SHALL BE USED 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 STRIPES. THIS PANEL SHALL BE AT LEAST 12" WIDE AND 24" HIGH. A SINGLE FACED FLASHER SHALL BE LOCATED AT THE TOP OF THE BARRICADE AT THE END NEAREST TO TRAFFIC. THE FLASH SHALL FACE ONCOMING TRAFFIC. THE BARRICADES SHALL BE OF SUFFICIENT STABILITY SO THAT WIND OR TRAFFIC AIR TURBULANCE WILL NOT UPSET THEM. BARRICADES SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

E. LIGHTING DEVICES

FLASHERS SHALL BE 12 VOLT BATTERY-OPERATED MODELS WITH 7 INCH 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 INCH DIAMETER YELLOW LENSES, THEY SHALL BE PLACED ABOVE THE GROUND ON THE TOPS OF BARRELS OR BARRICADES AND SPACED AT 50 FT. 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 35.10, AND THE PROVISION SET FORTH IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION, LATEST REVISION, FOR ALL INFORMATION REGARDING FURNISHING, MAINTAINING, AND USE OF FLASHING ARROW BARRICADES. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614, MAINTAINING TRAFFIC.

G. ITEM 614 - TEMPORARY PAVEMENT MARKINGS (LANE SHIFTS)

TEMPORARY PAVEMENT MARKINGS SHALL BE REQUIRED AT ALL WORK AREAS AS DETAILED ON SHEET 16. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED FOR LANE SHIFTS.

	I-271
ITEM 614 - TEMPORARY EDGE LINE, CLASS I, TAPE	75,000 L.F.
ITEM 614 - TEMPORARY EDGE LINE, CLASS I	26,000 L.F.
ITEM 614 - 4" TEMPORARY CHANNELIZING LINE, CLASS I, TAPE	14,000 L.F.
ITEM 614 - 4" TEMPORARY CHANNELIZING LINE, CLASS I	26,000 L.F.

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

TEMPORARY MARKINGS SHALL BE PLACED AT THE JOINTS AS SHOWN ON THE TYPICAL SECTIONS. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AFTER RESURFACING OR AFTER LANE SHIFT REMOVALS:

	I-271
ITEM 614 - TEMPORARY LANE LINES, CLASS II	340 MI.
ITEM 614 - TEMPORARY EDGE LINES, CLASS I	54.0 MI.
ITEM 614 - TEMPORARY GORE MARKING, CLASS II	800 L.F.

I. ITEM 622 - TEMPORARY CONCRETE BARRIER

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

THE BARRIER SECTIONS PROVIDED FOR THE FIRST PHASE OF THE PARAPET RECONSTRUCTION SHALL BE MOVED AND RE-USED FOR THE SECOND PHASE (OPPOSITE PARAPET) AND PAID FOR EACH TIME THEY ARE MOVED.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE FOR THE PARAPET RECONSTRUCTION BRIDGE NO. CUY-271-0916L&R AND CUY-271-0813.

	I-271
ITEM 622 - TEMPORARY CONCRETE BARRIER	4400 L.F.

J. 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 MAY BE USED, SUBJECT TO APPROVAL BY THE ENGINEER.

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

	I-271
ITEM SPECIAL - REPLACEMENT SIGNS	400 S.F.

K. 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:

	I-271
ITEM SPECIAL - REPLACEMENT DRUMS	500 EACH

L. 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.

THE FOLLOWING PAY ITEM AND QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY;

	I-271
ITEM SPECIAL - LAW ENFORCEMENT OFFICER WITH PATROL CAR	300 HOURS

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ARRANGEMENTS REGARDING SCHEDULING AND PAYMENT OF LAW ENFORCEMENT OFFICER WITH PATROL CAR.

GENERAL NOTES

TRAFFIC MAINTENANCE

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 RENUCTIONS 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 (EXCEPT THE ASPHALT CONCRETE OVERLAY AND PAVEMENT MARKING) SHALL BE PERFORMED IN AN ORDERLY SEQUENCE SUCH THAT IT WILL NOT BE NECESSARY TO AGAIN CLOSE THAT LANE UNTIL THE OVERLAY AND PAVEMENT MARKING OPERATIONS BEGIN.

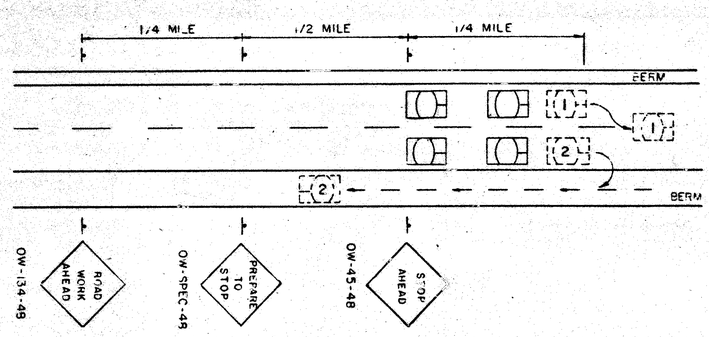
IT IS THE INTENT OF THIS PROJECT TO MAINTAIN A MINIMUM OF TWO LANES OF TRAFFIC IN EACH DIRECTION ON THE MAIN-LINE PAVEMENT UNLESS OTHERWISE NOTED. ALSO, THE CONTRACTOR IS REMINDED THAT THE FLOW OF TRAFFIC SHALL NOT BE "SPLIT" WHEN BEING DIVERTED AROUND A WORK AREA UNLESS THE WORK IS BEING DONE IN THE GORE AREAS OF AN EXIT RAMP.

OVERHEAD SIGN SUPPORTS THAT ARE BEING INSTALLED TO REPLACE EXISTING SIGN SUPPORTS SHALL BE IN PLACE PRIOR TO THE REMOVAL OF THE EXISTING SIGNS AND SUPPORTS.

MAINTAINING VEHICULAR TRAFFIC

GENERAL PROVISIONS

1. TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE SCHEDULE OF THRU LANES TO BE MAINTAINED DESCRIBED IN THESE PLANS. THE CONTRACTOR SHALL SET UP AND OPERATE HIS EQUIPMENT IN SUCH A MANNER AS TO MINIMIZE ENCROACHMENT UPON THE TRAVELED WIDTH OF PAVEMENT.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE RESPONSIBLE LAW ENFORCEMENT AGENCY NOT LESS THAN TWENTY-FOUR (24) HOURS PRIOR TO A SCHEDULED DISRUPTION OF TRAFFIC.
3. NO STOPPAGE OF TRAFFIC OR ESTABLISHMENT OF LANE RESTRICTIONS SHALL OCCUR WITHOUT LAW ENFORCEMENT PERSONNEL AT EACH LOCATION TO DIRECT TRAFFIC.
4. 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.
5. DURING NON-WORKING PERIODS, OPEN EXCAVATIONS SHALL BE COVERED WITH STEEL PLATES AND DELINEATED WITH WARNING FLASHES AND/OR OTHER APPROVED DEVICES AS DEEMED APPROPRIATE BY THE ENGINEER. STEEL PLATES SHALL BE ANCHORED AS DIRECTED BY THE ENGINEER.
6. 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.
7. THE CONTRACTOR SHALL FURNISH, ERECT AND MAINTAIN ALL NEW WARNING AND INFORMATION SIGNS NECESSARY FOR MAINTAINING TRAFFIC. THE CONTRACTOR SHALL DETERMINE WHAT SIGNS ARE NEEDED AND ADVISE THE ENGINEER TWO (2) WEEKS IN ADVANCE OF HIS DETAILED PLANS. (SEE "ADVANCE WARNING SIGNS" TABLE FOR MINIMUM SIGNING APPLICATIONS)
8. 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.
9. ERECTION OF SPAN TYPE AND BRIDGE MOUNTED OVERHEAD SUPPORTS SHALL BE ACCOMPLISHED IN SUCH A MANNER THAT COMPLETE TRAFFIC STOPPAGE ON ALL LANES OF ANY DIRECTIONAL ROADWAY IS NOT MORE THAN TEN (10) MINUTES IN ANY ONE (1) CONSECUTIVE THIRTY (30) MINUTE PERIOD. A MINIMUM OF TWO (2) LAW ENFORCEMENT PATROL VEHICLES SHALL BE USED TO PACE MOTORISTS TO A STOP. AFTER TRAFFIC HAS BEEN SLOWED, ONE (1) PATROL VEHICLE SHALL TRAVEL ALONG THE ROADWAY SHOULDER 500 FEET BEHIND THE BACKUP OF STOPPED VEHICLES. WHERE STOPPAGES OCCUR IN THE VICINITY OF FREEWAY ENTRANCES, THE CONTRACTOR SHALL PLACE FLAGMEN ON THE RAMPS TO STOP TRAFFIC. PATROL VEHICLES SHALL HAVE HIGH-RISE FLASHING BEACONS TO PROVIDE ADEQUATE VISIBILITY TO APPROACHING MOTORISTS. WHEN THE ENGINEER DEEMS APPROPRIATE, THE CONTRACTOR SHALL ERECT AND MAINTAIN "ROADWORK AHEAD", "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 OPERATION. 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 P.M. AND 6 A.M. WHEN THE REMOVAL OR ERECTION OF A SIGN REQUIRES CLOSING MORE LANES THAN PERMITTED ON SHEET NO. 16 THAT WORK SHALL ALSO BE PERFORMED AT NIGHT.



NOTE: DETAIL IS SHOWN FOR 2 LANE DIRECTIONAL TRAFFIC. IF ADDITIONAL DIRECTIONAL LANES EXIST THE STOPPAGE OF TRAFFIC SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE EXISTING ROADWAY CONDITIONS. (3 PATROL VEHICLES ARE REQUIRED IN 3 LANE SECTIONS)

10. 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. WITH A MAXIMUM OF ONE LANE EACH DIRECTION CLOSED AT ANY ONE TIME.

    THE CONTRACTOR SHALL PROVIDE TWO (2) TRAILING VEHICLES PLUS A POLICE CRUISER WITH FLASHING BEACON FOLLOWING THE PAVEMENT MARKING EQUIPMENT WHEN MARKINGS ARE PLACED IN ORDER TO PROVIDE ADVANCE WARNING TO THE MOTORIST OF THE TEMPORARY LANE CLOSURE AND CONSTRUCTION. THE TWO (2) TRAILING VEHICLES SHALL TRAVEL 500 FEET APART WITH THE REMOTE VEHICLE TRAVELING ON THE SHOULDER (LEFT OR RIGHT AS APPLICABLE) WHERE USABLE SHOULDER IS AVAILABLE. THE INTERMEDIATE TRAILING VEHICLE SHALL TRAVEL IN THE CLOSED LANE 500 FEET BEHIND THE PAVEMENT MARKING EQUIPMENT. THE POLICE CRUISER SHALL TRAVEL 500 TO 1000 FEET BEHIND THE REMOTE TRAILING VEHICLE.

    EACH TRAILING VEHICLE SHALL HAVE YELLOW FLASHING BEACONS PLUS ORANGE AND BLACK CONSTRUCTION WARNING SIGNS MOUNTED ON THE BACK FACING TRAFFIC WITH STANDARD TYPE MESSAGES ADVISING MOTORISTS OF THE WORK AHEAD, ADVISORY WARNING SPEED, AND WHICH LANE IS CLOSED.

11. THE CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO MAINTAIN TRAFFIC IN ACCORDANCE WITH THE PRECEEDING REQUIREMENTS.
12. 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, EXCEPT THAT PAYMENT FOR THE 6" ITEM 301 CONSTRUCTED FOR TRAFFIC MAINTENANCE SHALL BE AT THE UNIT PRICE BID PER CUBIC YARD FOR ITEM 301 BITUMINOUS AGGREGATE BASE, AS PER PLAN.

MAJOR WORK ITEMS

THE FOLLOWING MAJOR WORK ITEMS WILL REQUIRE TRAFFIC MAINTENANCE PROCEDURES WHICH SHALL BE INCORPORATED INTO THE CONTRACTOR'S SEQUENCE OF OPERATIONS:

A. REMOVAL OF OVERHEAD SIGN SUPPORTS
B. INSTALLATION OF OVERHEAD SIGN SUPPORTS, INCLUDING SIGNS
C. REPAIR OF PAVEMENT JOINTS AND PANELS
D. INSTALLATION OF CONCRETE MEDIAN BARRIER
E. REPAIR OF BRIDGE PARAPETS
F. JACKING CONDUIT UNDER PAVEMENT
G. ASPHALT CONCRETE OVERLAY
H. PAVEMENT MARKING

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GENERAL NOTES

TRAFFIC MAINTENANCE

TRAFFIC CONTROL TIMING AND SEQUENCE OF OPERATIONS FOR ASPHALT CONCRETE WORK (ITEM 848 COURSES)

ALL ASPHALT CONCRETE OPERATIONS SHALL BE CONDUCTED IN A MANNER THAT WILL ASSURE MINIMUM DANGER AND INCONVENIENCE TO THE HIGHWAY USERS. MAINLINE ASPHALT CONCRETE WORK SHALL BE PERFORMED AT NIGHT BETWEEN THE HOURS OF 8:00 P.M. AND 6:00 A.M. RAMP SHALL BE PAVED DURING DAYLIGHT HOURS.

IN EITHER TRAVELED DIRECTION, ALL OF THE INTERMEDIATE LEVELING COURSE SHALL BE PLACED BEFORE WORK IS BEGUN ON THE SURFACE COURSE. THE 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 THAN DURING THE PERMITTED WORKING HOURS AND THEN ONLY WHEN SUCH PROPER TRAFFIC CONTROL DEVICES ARE IN PLACE AS WILL PREVENT SUCH A DISCONTINUITY BEING A DANGER TO HIGHWAY USERS.

TRAFFIC MUST BE MAINTAINED AT ALL TIMES IN BOTH DIRECTIONS: HOWEVER, EITHER THE RIGHT (2) OR LEFT (2) LANE (S) IN EITHER DIRECTION MAY BE CLOSED ONLY DURING THE PERMITTED WORK HOURS TO ALLOW THE LAYING OF ASPHALT CONCRETE. TRAFFIC CONTROL FOR SUCH LANE CLOSING SHALL BE IMPLEMENTED USING TYPE II BARRICADES WITH STEADY BURN WARNING LIGHTS (50' ON CENTERS), ANY LANE CLOSURES SHALL BE IMPLEMENTED AT A 55:1 MAXIMUM TAPER RATE, ADVANCE WARNING SIGNS SHALL BE AS SHOWN ON SHEET NO. 14.

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.

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

THIS NOTE DOES NOT APPLY TO ITEM 301 WORK.

PARAPET RECONSTRUCTION - GENERAL

WHENEVER ANY WORK IS BEING DONE DIRECTLY OVER A TRAVELLED LANE OR SHOULDER THE CONTRACTOR SHALL SUPPLY SUFFICIENT SAFETY EQUIPMENT AS APPROVED BY THE ENGINEER TO PROTECT THE TRAVELING PUBLIC FROM ANY CONSTRUCTION DEBRIS.

PUBLIC SAFETY

THE PERIOD OF TIME THAT A HAZARD IS LEFT UNPROTECTED BY THE REMOVAL OF GUARDRAIL SHALL BE HELD TO AN ABSOLUTE MINIMUM AND IN NO CASE SHALL SUCH PERIOD BE LONGER THAN ONE WORKING DAY. IF, AFTER ONE DAY, THE ENTIRE RUN OF GUARDRAIL CONSTRUCTION IS NOT COMPLETED, THE FOLLOWING SHALL APPLY:

A. IN AREAS WHERE EXISTING GUARDRAIL HAS BEEN REMOVED OR THE GUARDRAIL IS IN A PARTIAL STAGE OF COMPLETION THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TYPE II BARRICADES WITH TYPE C (STEADY BURNING) WARNING LIGHTS WITHIN THE LIMITS OF THE UNPROTECTED AREA. THE BARRICADES SHALL BE PLACED AT 50' INTERVALS AND OFFSET AT LEAST TWO FEET FROM THE EDGE OF TRAVELED ROADWAY AND IN CLOSE PROXIMITY TO THE CONSTRUCTION. THE APPROACH END OF A PARTIALLY COMPLETED RUN OF GUARDRAIL SHALL BE FASTENED AT GROUND LEVEL TO A STEEL DRUM.

B. IF THE EXISTING GUARDRAIL IS FOR THE PROTECTION OF AN OBSTACLE (I.E. SIGN SUPPORT, BRIDGE PARAPET, ETC.) THE CONTRACTOR SHALL ERECT TEMPORARY CONCRETE BARRIER FOR A MINIMUM LENGTH OF 50 FEET PRECEEDING THE OBSTACLE IN THE DIRECTION OF TRAFFIC. THE REQUIREMENTS OF PAR. 1 (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.

C. THE REQUIREMENTS STATED IN (A) AND (B) SHALL APPLY AT ALL TIMES INCLUDING WHEN THE ADJACENT LANE IS CLOSED. WHEN THE ADJACENT LANE IS OPENED (OR RE-OPENED) AND THE CONSTRUCTION OF ANY RUN OR GUARDRAIL OR CONCRETE BARRIER IS NOT COMPLETED 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 CONCRETE BARRIER SHALL BE FLARED 10 FT. (SEE SHEET NO. 16) 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 THE INITIAL BARRIER SECTION.

D. TEMPORARY CONCRETE BARRIER IS REQUIRED (ONE SIDE ONLY) ALONG THE I-480 MEDIAN PRIOR TO REMOVING THE EXISTING BARRIER GUARDRAIL. THE TEMPORARY CONCRETE BARRIER SHALL BE MAINTAINED UNTIL THE NEW CONCRETE BARRIER MEDIAN IS IN PLACE.

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 THESE SAFETY PROCEDURES SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614, MAINTAINING TRAFFIC.

ADVANCE WARNING SIGNS

	DISTANCE	SIGN	SIZE	DESCRIPTION
LEFT LANE CLOSED	500'	OW-123 MOD	48" X 48"	LEFT LANE CLOSED 500 FT.
		OW-143	30" X 30"	35 MPH
	1000'	OW-123 MOD	48" X 48"	LEFT LANE CLOSED 1000 FT.
	2000'	OW-123 MOD	48" X 48"	LEFT LANE CLOSED 2000 FT.
	3000'	OW-134	48" X 48"	ROAD WORK AHEAD
	5200'	OW-134	48" X 48"	ROAD WORK AHEAD
LEFT 2 LANES CLOSED	500'	OW-123 MOD	48" X 48"	LEFT 2 LANES CLOSED 500 FT.
		OW-143	30" X 30"	35 MPH
	1000'	OW-123 MOD	48" X 48"	LEFT 2 LANES CLOSED 1000 FT.
	2000'	OW-123 MOD	48" X 48"	LEFT 2 LANES CLOSED 2000 FT.
	3000'	OW-134	48" X 48"	ROAD WORK AHEAD
	5200'	OW-134	48" X 48"	ROAD WORK AHEAD
RIGHT LANE CLOSED	500'	OW-122 MOD	48" X 48"	RIGHT LANE CLOSED 500 FT.
		OW-143	30" X 30"	35 MPH
	1000'	OW-122 MOD	48" X 48"	RIGHT LANE CLOSED 1000 FT.
	2000'	OW-122 MOD	48" X 48"	RIGHT LANE CLOSED 2000 FT.
	3000'	OW-134	48" X 48"	ROAD WORK AHEAD
	5200'	OW-134	48" X 48"	ROAD WORK AHEAD
RIGHT 2 LANES CLOSED	500'	OW-122 MOD	48" X 48"	RIGHT 2 LANES CLOSED 500 FT.
		OW-143	30" X 30"	35 MPH
	1000'	OW-122 MOD	48" X 48"	RIGHT 2 LANES CLOSED 1000 FT.
	2000'	OW-122 MOD	48" X 48"	RIGHT 2 LANES CLOSED 2000 FT.
	3000'	OW-134	48" X 48"	ROAD WORK AHEAD
	5200'	OW-134	48" X 48"	ROAD WORK AHEAD
LANE SHIFT	1000'	OW-134 MOD	48" X 48"	ROAD WORK 1000 FT.
		OW-143	30" X 30"	35 MPH
	2000'	OW-134	48" X 48"	ROAD WORK AHEAD
	3000'	OW-134	48" X 48"	ROAD WORK AHEAD
EXIT RAMP ACROSS CLSD. LANE	GORE	OW-SPEC.	48"X48"	EXIT RAMP
	500'	OW-SPEC	48"X48"	EXIT RAMP 500 FT.
	1000'	OW-SPEC	48"X48"	EXIT RAMP 1000 FT.

614 TEMPORARY PAVEMENT MARKINGS
NOTE B

GENERAL

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

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

MATERIALS

UNLESS OTHERWISE INDICATED ON THE PLANS, TEMPORARY PAVEMENT MARKINGS MAY BE OF PAINT, PAVEMENT MARKING TAPE OR REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE).

A. PAINT

PAINT SHALL COMPLY WITH 708.14 AND SHALL BE APPLIED IN ACCORDANCE WITH 621 EXCEPT AS MODIFIED HEREIN.

B. PAVEMENT MARKING TAPE

FLEXIBLE RETROREFLECTIVE PREFORMED PRESSURE SENSITIVE TAPE SHALL HAVE STRAIGHT EDGES AND BE FREE OF CRACKS. THE TAPE SHALL CONSIST OF PIGMENT AND FILLERS WITH SUFFICIENT BINDER AND PLASTICIZER TO RETAIN GLASS BEADS HAVING A REFRACTIVE INDEX MEETING THE MINIMUM REFLECTIVE INTENSITY STANDARD STATED IN THE MANUFACTURERS INFORMATION. THE TAPE SHALL BE FLEXOLITE "WET REFLECTIVE", 3M "SCOTCHLANE", OR AN APPROVED EQUAL.

THE GLASS BEADS SHALL BE DISTRIBUTED UNIFORMLY THROUGHOUT THE TAPE WITH SUFFICIENT SURFACE BEADS TO PROVIDE OPTIMUM REFLECTORIZATION AT ALL TIMES.

PAVEMENT MARKING TAPE SHALL COMPLY WITH THE COLOR REQUIREMENTS OF 708.14.

THE TAPE SHALL HAVE A PRECOATED ADHESIVE LAYER FOR PAVEMENT APPLICATION WITHOUT THE USE OF HEAT, SOLVENTS OR ADDITIONAL ADHESIVES. THE ADHESIVE SHALL BE SUFFICIENT TO RETAIN COMPLETE MARKINGS ON THE PAVEMENT SURFACE THROUGHOUT THE USEFUL LIFE OF THE MARKINGS.

IN ADDITION TO THE FOREGOING, ALL TEMPERATURE APPLICATION REQUIREMENTS AND OTHER APPLICABLE MANUFACTURERS MATERIAL AND APPLICATION INSTRUCTIONS SHALL BE FOLLOWED.

WHEN APPROVED BY THE ENGINEER THE CONTRACTOR MAY USE REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE), IN LIEU OF THAT DESCRIBED ABOVE, TO FACILITATE REMOVAL OF MARKINGS.

C. REMOVABLE PAVEMENT MARKING TAPE (TYPE R TAPE)

THE MARKING MATERIAL SHALL BE A MIXTURE OF POLYMERIC MATERIALS, PIGMENTS, REINFORCING MEDIUM TO FACILITATE REMOVAL, GLASS BEADS THROUGHOUT THE PIGMENTED PORTION, AND A RETROREFLECTIVE LAYER OF GLASS BEADS BONDED TO THE TOP SURFACE.

THE TAPE SHALL BE PRECOATED WITH A PRESSURE SENSITVE ADHESIVE CAPABLE OF TEMPORARILY BONDING TO ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE PAVEMENT AT AN AMBIENT TEMPERATURE OF NOT LESS THAN 50° F AND RISING, AT A PAVEMENT TEMPERATURE OF NOT LESS THAN 50° F NOR MORE THAN 150° F, WITHOUT THE USE OF HEAT, SOLVENTS, AND ADDITIONAL ADHESIVES OR ACTIVATORS.

MATERIALS SHALL CONFORM TO THE COLOR REQUIREMENTS OF 708.14.

THE TAPE SHALL BE REMOVABLE FROM APSHALT AND PORTLAND CEMENT CONCRETE INTACT OR IN LARGE PIECES AT TEMPERATURES ABOVE 40° F WITHOUT USE OF HEAT, SOLVENTS, GRINDING, OR SANDBLASTING. REMOVAL SHALL NOT RESULT IN DAMAGE TO OR OBJECTIONABLE STAINING OF THE PAVEMENT.

GLASS BEADS SHALL BE PROVIDED IN A PROPER SIZE, QUANTITY AND DISTRIBUTION TO ASSURE OPTIMUM RETROREFLECTIVITY AS THE FILM WEARS. THE FOLLOWING INITIAL AVERAGE REFLECTANCE VALUES AT 86.0° ENTRANCE ANGLE AS MEASURED IN ACCORDANCE WITH THE TESTING PROCEDURES OF FEDERAL TEST METHOD 370 SHALL BE CERTIFIED:

	WHITE		YELLOW	
OBSERVATION ANGLE	0.2	0.5	0.2	0.5
SPECIFIC LUMINANCE (MCD/FT²)/FC	1770	1270	1310	810

THE TAPE SHALL BE 3-M COMPANY'S "STAMARK, DETOUR GRADE (SERIES 5710, 5711, 6270, 6211)" OR AN APPROVED EQUAL.

THE CONTRACTOR SHALL FURNISH TO THE ENGINEER CERTIFICATION THAT THE MATERIAL SUPPLIED MEETS THE PROPERTIES SPECIFIED HEREIN.

LAYOUT

THE TEMPORARY MARKINGS SHALL BE ACCURATELY LAID OUT IN CONFORMANCE WITH 621.051 AND SHALL BE LOCATED IN A TRUE LINE ON THE CENTER LINE, LANE LINE, EDGE LINE, OR CHANNELIZING LINE WHERE PERMANENT MARKINGS WOULD LIE UNLESS OTHERWISE SPECIFIED IN THE PLANS.

PLACEMENT

TEMPORARY MARKINGS SHALL BE PLACED IN ACCORDANCE WITH LAYOUTS ON SHEETS _____ AND THE FOLLOWING REQUIREMENTS, UNLESS OTHERWISE SPECIFIED IN THE PLANS.

TEMPORARY MARKINGS SHALL BE COMPLETE AND IN PLACE ON ALL PAVEMENT PRIOR TO EXPOSING IT TO TRAFFIC. WHEN TEMPORARY MARKINGS ARE NO LONGER NEEDED, THEY SHALL BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH 621.134 AND NECESSARY PAVEMENT MARKINGS INSTALLED BEFORE THE FLOW OF TRAFFIC IS CHANGED TO THE NEXT PHASE OR RETURNED TO ITS NORMAL CHANNEL.

WHERE PERMANENT PAVEMENT MARKINGS ARE CALLED FOR IN THE PLANS, THE CONTRACTOR SHALL FURNISH AND PLACE THE PERMANENT MARKINGS WITHIN 30 CALENDAR DAYS FOLLOWING COMPLETION OF ALL SURFACE COURSES IN A SINGLE ROADWAY OR PRIOR TO THE END OF THE CONSTRUCTION SEASON, WHICHEVER COMES FIRST. PERMANENT MARKINGS SHALL NOT BE PLACED OVER ANY TAPE MARKINGS.

A. CLASS I MARKINGS

CLASS I MARKINGS SHALL BE AS DEFINED IN 621, EXCEPT AS FOLLOWS:
1) LANE LINES SHALL BE 4-INCHES IN WIDTH.
2) TRANSVERSE LINES SHALL BE 8-INCHES IN WIDTH.
3) STOP LINES SHALL BE 12-INCHES IN WIDTH.
4) CROSS WALK LINES SHALL BE 8-INCHES IN WIDTH.

GORE MARKINGS SHALL CONSIST OF TWO CHANNELIZING LINES PLACED AT THE THEORETICAL OR TEMPORARY CORE OF RAMPS AND DIVERGING OR CONVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 8 GALLONS PER MILE FOR SOLID 4-INCH LINES, 24 GALLONS PER MILE FOR SOLID 6-INCH LINES, 48 GALLONS PER MILE FOR SOLID 12-INCH LINES, AND 4 GALLONS PER MILE FOR 4-INCH DASHED LINES.

B. CLASS II MARKINGS

CENTER LINES SHALL CONSIST OF SINGLE, YELLOW 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

LANE LINES SHALL CONSIST OF WHITE 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 40-FOOT INTERVALS.

CHANNELIZING LINES SHALL CONSIST OF WHITE 12-INCH BY 4-INCH DASHES SPACED AT A MAXIMUM OF 20-FOOT INTERVALS.

GORE MARKINGS SHALL BE TWO CONTINUOUS, WHITE 50 FOOT BY 4-INCH LINES PLACED AT THE THEORETICAL GORE OF AN EXIT RAMP OR DIVERGING ROADWAYS.

THE PAINT APPLICATION RATE SHALL BE NOT LESS THAN 16 GALLONS PER MILE FOR GORE MARKINGS, 0.8 GALLONS PER MILE FOR CHANNELIZING LINE, AND 0.4 GALLONS PER MILE FOR LANE LINE AND CENTER LINE.

CONFLICTING MARKINGS

THE CONTRACTOR SHALL, PRIOR TO PLACING TEMPORARY MARKINGS, REMOVE ALL EXISTING CONFLICTING MARKINGS VISIBLE TO THE TRAVELING PUBLIC DURING DAYLIGHT OR NIGHTTIME HOURS IN ACCORDANCE WITH 621.134. THE COST FOR REMOVAL OF CONFLICTING MARKINGS SHALL BE INCIDENTAL TO THE VARIOUS PAY ITEMS.

METHOD OF MEASUREMENT

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

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

BASIS OF PAYMENT

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

ITEM	UNIT	DESCRIPTION
614	MILES	TEMPORARY LANE LINES, CLASS ____, (PAINT, TAPE OR TYPE R TAPE)
614	MILES	TEMPORARY CENTER LINES, CLASS ____, (PAINT, TAPE OR TYPE R TAPE)
614	MILES/LIN. FT.	TEMPORARY CHANNELIZING LINES, CLASS ____, (PAINT, TAPE OR TYPE R TAPE)
614	MILES	TEMPORARY EDGE LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY GORE MARKING, CLASS II, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY STOP LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY CROSSWALK LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	EACH	TEMPORARY LANE ARROWS, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	EACH	TEMPORARY WORD "ONLY" ON PAVEMENT, 72-INCH, CLASS I, (PAINT, TAPE OR TYPE R TAPE)
614	LIN. FT.	TEMPORARY TRANSVERSE LINES, CLASS I, (PAINT, TAPE OR TYPE R TAPE)

TRAFFIC MAINTENANCE

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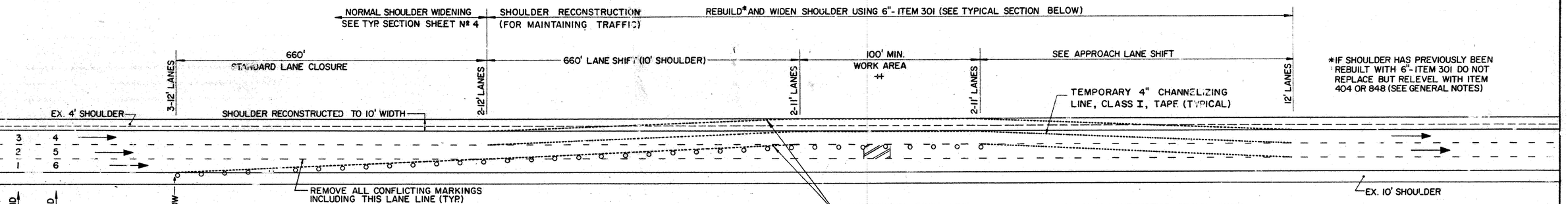


*IF SHOULDER HAS PREVIOUSLY BEEN REBUILT WITH 6"- ITEM 301 DO NOT REPLACE BUT RELEVEL WITH ITEM 404 OR 848 (SEE GENERAL NOTES)

ALL TAPERS ARE 55:1 MAXIMUM UNLESS SHOWN OTHERWISE

NORTHBOUND
SOUTHBOUND
LANE NUMBERING

CLOSING 1 LANE OF A 3 LANE ROADWAY

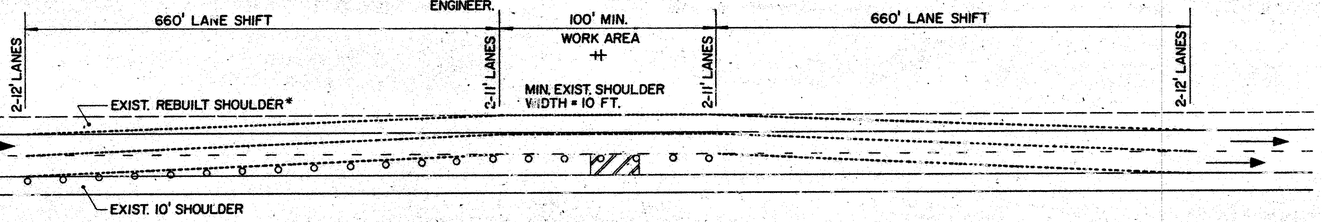
(UTILIZE LANE SHIFT IF CENTER LANE REPAIRS ARE NECESSARY)

DETAIL SHOWN INDICATES LEFT SHOULDER SHIFT AND SHALL BE USED EXCLUSIVELY UNLESS RIGHT SHOULDER SHIFT IS NECESSARY DUE TO NARROW LEFT SHOULDER WIDTH. BOTH RIGHT SHOULDER AND LEFT SHOULDER LANE SHIFTS ARE REQUIRED TO REPAIR THE CENTER LANE ADJACENT TO STRUCTURE 0916R & L. RIGHT SHOULDER LANE SHIFTS WILL BE NECESSARY TO REPAIR CENTER LANE WORK AREAS BETWEEN STATIONS 349+20 NB TO 350+10 NB, 447+70 NB TO 448+75 NB, 448+50 SB TO 449+50 SB AND ELSEWHERE AS APPROVED BY THE ENGINEER.

++ TEMPORARY PAVEMENT MARKINGS WITHIN THE WORK AREA LIMITS MAY BE PAINT OR TAPE. IF PAINT IS USED REMOVAL OF SAID MARKINGS WILL NOT BE REQUIRED UNLESS A PAVEMENT MARKING CONFLICT OCCURS.

MINIMUM LANE WIDTH(S) OF 11 FT. SHALL BE MAINTAINED AT ALL TIMES

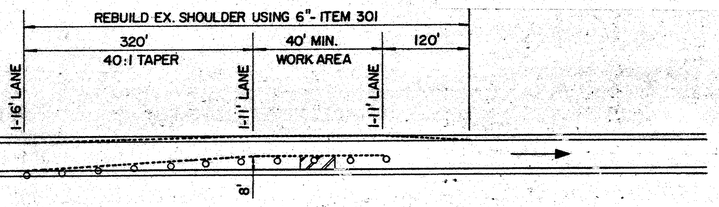
o o o — DRUMS SPACED 50 FT. CENTER TO CENTER



NORTHBOUND
SOUTHBOUND
LANE NUMBERING

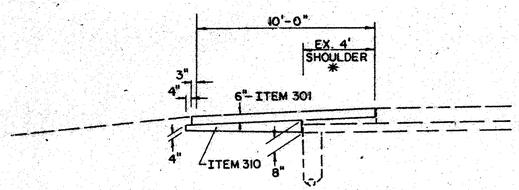
LANE SHIFT TO REPAIR 1 LANE OF A 2 LANE ROADWAY

(UTILIZE ONLY WHEN SHOULDERS HAVE PREVIOUSLY BEEN REBUILT)

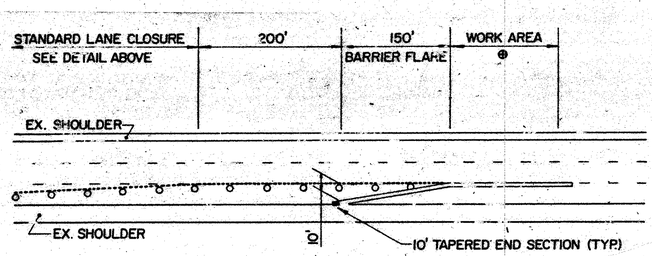


REPAIR OF 1 LANE RAMP

LEFT SHOULDER SHIFT SHOWN, REVERSE FOR RIGHT SHOULDER SHIFT.



SHOULDER RECONSTRUCTION
(FOR MAINTAINING TRAFFIC)



TYPICAL TEMP. CONCRETE BARRIER

REQUIRED FOR PARAPET RECONSTRUCTION (CUY-271-0916 L&R). ALSO REQUIRED FOR TEMPORARY HAZARD PROTECTION AS DISCUSSED IN THE GENERAL NOTES. LANE CLOSURE AND BARRIER FLARE NOT APPLICABLE TO TEMP. BARRIER INSTALLATION FOR PARAPET RECONSTRUCTION OF CUY-271-0813.

⊕-WORK AREA INCLUDES AREAS WHERE HEAVY EQUIPMENT OR MATERIALS MAY BE STORED.

SCHEDULE OF THRU LANES TO BE MAINTAINED

APPROXIMATE STATION LIMITS	NUMBER OF THRU LANES EACH DIRECTION	NUMBER OF LANES TO BE MAINTAINED	PERMISSIBLE 1 LANE ADDITIONAL CLOSURE FOR (....) WORK ITEMS ONLY
I-271			
337+00 SB TO 342+00 SB 337+00 NB TO 346+00 NB	2	2 π	10 AM TO 2 PM (A & B) 8 PM TO 6 AM (B & C)
342+00 SB TO 542+00 SB 346+00 NB TO 542+00 NB	3	2	10 AM TO 2 PM (A & B) 8 PM TO 6 AM (B & C)
RAMPS			
ALL	1 OR MORE	1 Ø	
U.S.R. 422			
3+00 TO 24+00	2	2	10 AM TO 2 PM (D) 8 PM TO 6 AM (D & E)

π-UTILIZE LANE SHIFT WHEREVER POSSIBLE. (SEE DETAIL). NOTE "Θ" APPLIES ONLY AFTER ALL POSSIBLE LANE SHIFTS HAVE BEEN UTILIZED.

Θ-REDUCE TO 1 LANE DURING PAVEMENT PANEL AND/OR JOINT REPAIRS AS DETAILED ON SHEET Nº 42. THE CONTRACTOR SHALL SCHEDULE HIS OPERATIONS TO MAKE ALL REPAIRS TO A GIVEN LANE (WITHIN THESE STATION LIMITS) SIMULTANEOUSLY, AND SHALL RE-OPEN THE LANE WITHIN 7 DAYS. (701.05-HIGH EARLY PORTLAND CEMENT IS REQUIRED FOR THIS WORK)

∩-CLOSE CENTER LANES DURING BARRIER MEDIAN CONSTRUCTION AND CENTER LANE PAVEMENT REPAIR.

Ø-MAINTAIN 2 LANES AT INTERSECTION AS DETAILED ON SHEET Nº 17.

WORK ITEMS

A-CONSTRUCTION ZONE SET UPS AND TAKE DOWNS (LANE SHIFTS)
B-PARTIAL DEPTH PAV'T REPAIR, JOINT CLEANING, PRESSURE RELIEF JOINTS, PAVING FABRIC INSTALLATION
C-ASPHALT OVERLAY
D-CURB WORK ASSOCIATED WITH RAMPS F-3, F-4, & U.S.R. 422 RECONSTRUCTION
E-PARAPET RECONSTION

FHWA REGION	STATE	PROJECT	
5	OHIO		

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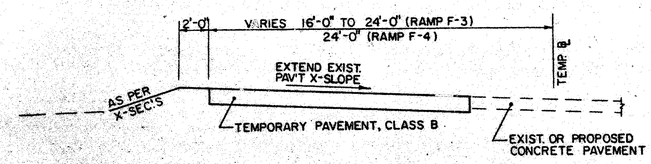
CUYAHOGA COUNTY
CUY - 271 - 6.04

TEMP. RAMP F-3 LAYOUT DATA (MEASURED OFFSETS FROM RAMP F-3 ℄)		
STATION	TEMP. ℄	RIGHT EDGE
12+40	0.0'	16.0'
13+00	7.0'	23.0'
+50	13.0'	29.5'
14+00	20.5'	36.5'
+50	28.5'	45.0'
15+00	32.5'	54.0'
+50	34.5'	58.5'
16+00	36.0'	60.0'
+50	38.0'	60.0'
17+00	38.0'	54.0'
+25	34.0'	50.0'



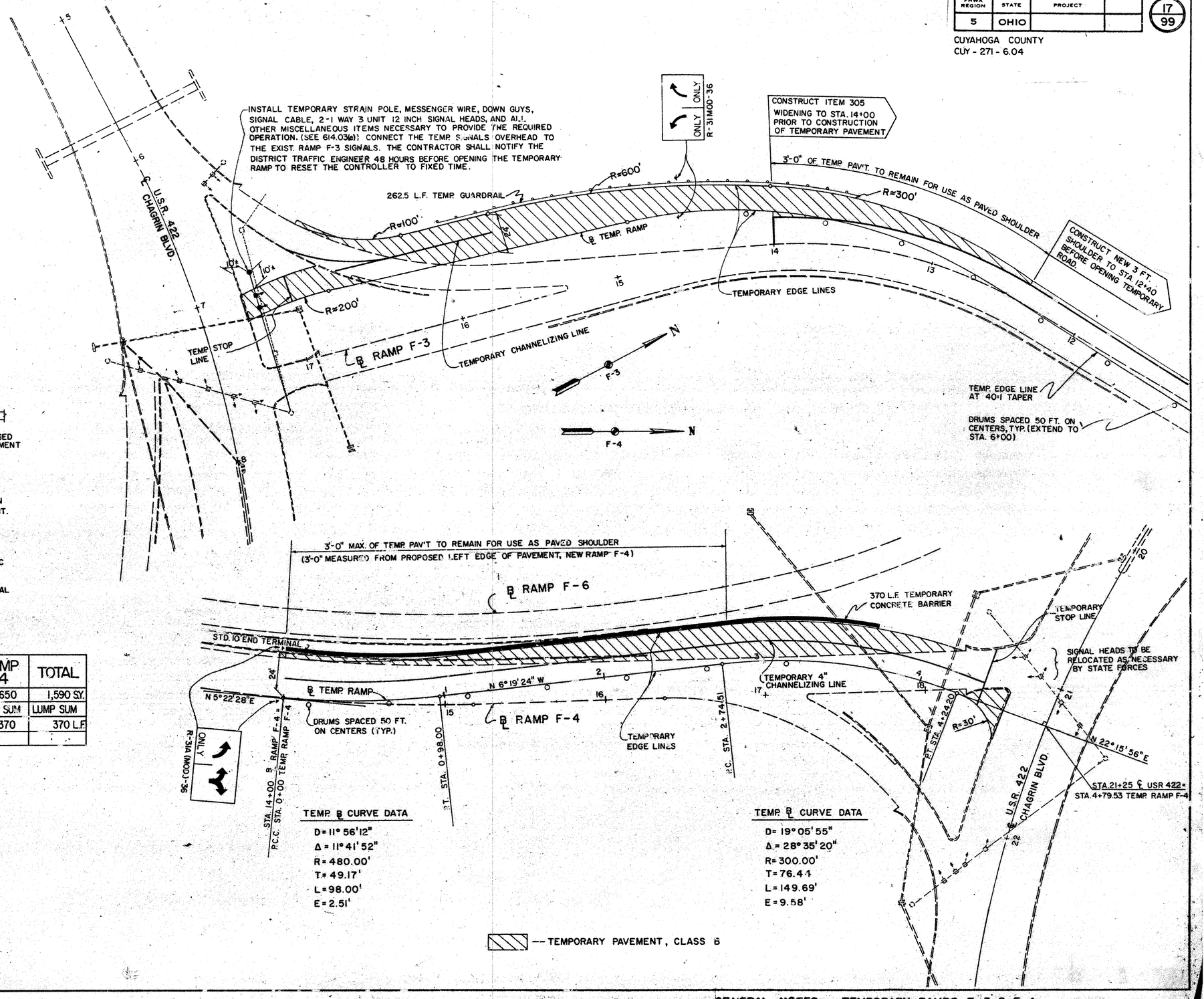
TYPICAL TEMPORARY PAVEMENT
(FACING NORTHBOUND)

SEE CROSS SECTIONS FOR ℄ PROFILE AND CROSS SLOPES WHEN TEMPORARY PAVEMENT IS NOT ADJACENT TO CONCRETE PAVEMENT.

CURB REMOVAL

EXISTING CURBS SHALL BE REMOVED AS NECESSARY FOR TRAFFIC CONTROL PURPOSES. PAYMENT FOR SAID REMOVAL SHALL BE INCLUDED UNDER EITHER ITEM 202 - PAVEMENT REMOVED (INTEGRAL CURB) OR ITEM 202 - CURB REMOVED (TYPE 6 CURB).

ESTIMATED QUANTITIES	RAMP F-3	RAMP F-4	TOTAL
ITEM 615-TEMPORARY PAVEMENT, CLASS B	940	650	1,590 SY.
ITEM 615-TEMPORARY ROADS	LUMP SUM	LUMP SUM	LUMP SUM
ITEM 622-TEMPORARY CONCRETE BARRIER		370	370 L.F.



TEMP. ℄ CURVE DATA
D = 11° 56'12"
Δ = 11° 41'52"
R = 480.00'
T = 49.17'
L = 98.00'
E = 2.51'

TEMP. ℄ CURVE DATA
D = 19° 05'55"
Δ = 28° 35'20"
R = 300.00'
T = 76.44
L = 149.69'
E = 9.58'

▨ -- TEMPORARY PAVEMENT, CLASS B

GENERAL NOTES - TEMPORARY RAMPS F-3 & F-4

RESURFACING QUANTITIES

COMPUTED BY: D.B.
CHECKED BY: J.E.N.F.

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY - 271 - 6.04

ITEM 848 - RESURFACING QUANTITIES

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	1 1/4" SURFACE (CU.YDS.)	1 3/4" INTER. (CU.YDS.)
I-271	NORTH BOUND					
DEDUCT FOR	FEATHER	NB				-10.3
337 + 00	337 + 60	NB	38	2533	8.8	12.3
337 + 60	338 + 00	NB	42	186.7	6.5	9.1
338 + 00	341 + 44	NB	44	1681.8	58.4	81.8
341 + 44	345 + 20	NB	50	2088.9	72.5	101.5
345 + 20	348 + 80	NB	79	3158.0	109.7	153.5
348 + 80	349 + 20	NB	72.4	322.0	11.2	15.7
349 + 20	350 + 10	NB	68.8	687.5	23.9	33.4
350 + 10	357 + 20	NB	64.0	5048.9	175.3	245.4
357 + 20	359 + 50	NB	56	1431.1	49.7	69.6
359 + 50	363 + 65	NB	62	2858.9	99.3	139.0
363 + 65	375 + 65	NB	67.5	9000.0	312.5	437.5
375 + 65	397 + 33	NB	56	13489.3	468.4	655.8
397 + 33	397 + 73	NB	54	240.0	8.3	11.7
397 + 73	398 + 18	NB	50	250.0	8.7	12.2
ADJUST FOR	FEATHER	NB			+1.0	-11.4
ADJUST FOR	FEATHER	NB			+1.1	-12.7
399 + 70.56	400 + 23.56	NB	54.5	321.1	11.1	15.6
400 + 23.56	420 + 50	NB	56	12609.0	437.8	612.9
420 + 50	421 + 50	NB	62	688.9	23.9	33.5
421 + 50	428 + 12.53	NB	68	5005.3	173.8	243.3
428 + 12.53	432 + 67.26	NB	81.5	4117.3	143.0	200.2
432 + 67.26	433 + 67.26	NB	58	644.4	22.4	31.3
433 + 67.26	440 + 32	NB	56	4136.2	143.6	201.1
440 + 32	440 + 95	NB	61.5	430.5	14.9	20.9
440 + 95	445 + 00	NB	57	2565.0	89.1	124.7
445 + 00	447 + 54	NB	78.4	2211.3	76.8	107.5
447 + 54	447 + 74	NB	74.5	165.6	5.8	8.1
447 + 74	448 + 74	NB	72.5	805.3	28.0	39.2
448 + 74	457 + 00	NB	64.6	5928.3	205.9	288.2
457 + 00	457 + 67.5	NB	56	420.0	14.6	20.4
457 + 67.5	462 + 50	NB	62	3323.9	115.4	161.6
462 + 50	474 + 50	NB	68.5	9133.3	317.1	444.0
474 + 50	484 + 75	NB	56	6377.8	221.5	310.0
484 + 75	484 + 15	NB	54	240.0	8.3	11.7
485 + 15	485 + 75.89	NB	50	338.3	11.7	16.4
ADJUST FOR	FEATHER	NB			+1.0	-11.4
ADJUST FOR	FEATHER	NB			+1.1	-12.7
487 + 42.43	487 + 51	NB	50.5	48.1	1.7	2.3
487 + 51	500 + 40	NB	56	8020.4	278.5	389.9
500 + 40	500 + 80	NB	54	240.0	8.3	11.7
500 + 80	501 + 76.91	NB	48.5	522.2	18.1	25.4
ADJUST FOR	FEATHER	NB			+0.9	-10.9
ADJUST FOR	FEATHER	NB			+1.0	-12.3
508 + 31.47	509 + 15	NB	54.5	505.0	17.5	24.5
509 + 15	542 + 00	NB	56	20440.0	709.7	993.6
DEDUCT FOR	FEATHER	NB				-15.9
I-271	SOUTH BOUND					
DEDUCT FOR	FEATHER	SB				-10.8
337 + 00	337 + 60	SB	38	253.3	8.8	12.3
337 + 60	338 + 00	SB	42	186.7	6.5	9.1
338 + 00	340 + 88.73	SB	44	1411.6	49.0	68.6
340 + 88.73	341 + 88.73	SB	46	511.1	17.7	24.8
341 + 88.73	348 + 30	SB	69.3	4937.8	171.5	240.0
348 + 30	363 + 69.49	SB	56	9579.0	332.6	465.6
363 + 69.49	370 + 75.75	SB	72.4	5677.3	197.1	276.0
370 + 75.75	371 + 75.75	SB	61	677.8	23.5	32.9
371 + 75.75	397 + 31	SB	56	15899.3	552.1	772.9
397 + 31	397 + 81	SB	54.8	304.4	10.6	14.8
ADJUST FOR	FEATHER	SB			+1.1	-12.7
ADJUST FOR	FEATHER	SB			+1.0	-11.4
399 + 33.91	400 + 00	SB	50	367.2	12.8	17.9
400 + 00	401 + 00	SB	54	600.0	20.8	29.2

ITEM 848 - RESURFACING QUANTITIES

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	1 1/4" SURFACE (CU.YDS.)	1 3/4" INTER. (CU.YDS.)
401 + 00	426 + 00	SB	56	15555.6	540.1	756.2
426 + 00	433 + 00	SB	66	8800.0	305.6	427.8
438 + 00	443 + 00	SB	67.2	3733.3	129.6	181.5
443 + 00	448 + 57	SB	72.2	4468.4	155.2	217.2
448 + 57	449 + 47	SB	77.1	771.2	26.8	37.5
449 + 47	449 + 67	SB	79.1	175.3	6.1	8.5
449 + 67	450 + 00	SB	80.6	295.7	10.3	14.4
450 + 00	454 + 05	SB	62	2790.0	96.9	135.6
454 + 05	461 + 45.27	SB	56	4606.1	159.9	223.9
461 + 45.27	462 + 45.27	SB	58	644.4	22.4	31.3
462 + 45.27	467 + 00	SB	81.5	4117.3	143.0	200.2
467 + 00	473 + 50	SB	68	4911.1	170.5	238.7
473 + 50	474 + 50	SB	62	688.9	23.9	33.5
474 + 50	485 + 28	SB	56	6707.6	232.9	326.1
485 + 28	485 + 44.17	SB	51.5	92.5	3.2	4.5
ADJUST FOR	FEATHER	SB			+1.1	-12.7
ADJUST FOR	FEATHER	SB			+1.0	-11.4
487 + 10.71	487 + 73	SB	50	346.1	12.0	16.8
487 + 73	488 + 13	SB	54	240.0	8.3	11.7
488 + 13	500 + 60	SB	56	7759.1	269.4	377.2
500 + 60	501 + 43.53	SB	53.6	497.5	17.3	24.2
ADJUST FOR	FEATHER	SB			+1.0	-12.3
ADJUST FOR	FEATHER	SB			+0.9	-10.9
507 + 98.09	508 + 95	SB	48.5	522.2	18.1	25.4
508 + 95	509 + 35	SB	54	240.0	8.3	11.7
509 + 35	542 + 00	SB	56	20315.6	705.4	987.6
DEDUCT FOR	FEATHER	SB				-15.9
RAMP F-1						
DEDUCT FOR	FEATHER					-2.5
2 + 00.67	11 + 31.27		22	2397.0	83.2	116.5
11 + 81.27	12 + 31.27		21.5	119.4	4.1	5.8
12 + 31.27	13 + 31.27		23.5	261.1	9.1	12.7
13 + 31.27	17 + 33.78		25	1118.1	38.8	54.4
RAMP F-2						
DEDUCT FOR	FEATHER					-2.8
2 + 46	3 + 46		24	266.7	9.3	13.0
3 + 46	13 + 60.32		22	2479.4	86.1	120.5
13 + 60.32	14 + 10.32		21.5	119.4	4.1	5.8
14 + 10.31	15 + 10.32		23.5	261.1	9.1	12.7
15 + 10.32	18 + 10.32		25	833.3	28.9	40.5
RAMP F-3						
4 + 53.07	5 + 53.07		26.5	294.4	10.2	14.3
5 + 53.07	7 + 20		22	408.1	14.2	19.8
7 + 20	15 + 20		32	2844.1	98.8	138.3
15 + 20	16 + 54		42	625.3	21.7	30.4
16 + 54	17 + 28.52		49.8	412.0	14.3	20.0
RAMP F-4						
4 + 53.07	5 + 53.07		26.5	294.4	10.2	14.3
5 + 53.07	11 + 25		2[illegible]	1398.1	48.5	68.0
11 + 25	16 + 05		32	1706.7	59.3	83.0
16 + 05	17 + 57.24		42	710.5	24.7	34.5
17 + 57.24	18 + 37.11		49.7	441	15.3	21.4
RAMP F-5						
DEDUCT FOR	FEATHER					-2.5
2 + 23.82	12 + 51.6		22	2512.4	87.2	122.1
12 + 51.6	13 + 01.6		21.5	119.4	4.1	5.8
13 + 01.6	14 + 01.6		23.5	261.1	9.1	12.7
14 + 01.6	17 + 02.62		25	836.2	29.0	40.6

ITEM 848 - RESURFACING QUANTITIES

Stations From	Stations To	Side	End Widths (Ft.)	Surface Area (Sq. Yds.)	1 1/4" SURFACE (CU.YDS.)	1 3/4" INTER. (CU.YDS.)
RAMP F-6						
DEDUCT FOR	FEATHER					-2.8
1 + 63.33	2 + 63.33		23	255.6	8.9	12.4
2 + 63.33	12 + 81.12		22	2487.9	86.4	120.9
12 + 81.12	13 + 31.12		21.5	119.4	4.1	5.8
13 + 31.12	14 + 31.12		23.5	261.1	9.1	12.7
14 + 31.12	17 + 31.12		25	833.3	28.9	40.5
RAMP G-1						
DEDUCT FOR	FEATHER					-2.2
57 + 75	58 + 44.72		24.4	189.0	6.6	9.2
58 + 44.72	62 + 75.76		22	1053.7	36.6	51.2
62 + 75.76	63 + 75.76		24.5	272.2	9.5	13.2
RAMP G-1A						
DEDUCT FOR	FEATHER					-2.4
57 + 10.04	58 + 02.98			83.3	2.9	4.0
RAMP G-2						
DEDUCT FOR	FEATHER					-2.5
1 + 33.72	2 + 68.29		22	328.9	11.4	16.0
2 + 68.29	3 + 33.22		27.4	197.7	6.9	9.6
3 + 33.22	14 + 68.13		22	126.1	4.4	6.1
14 + 68.13	15 + 68.13		21.5	238.9	8.3	11.6
15 + 68.13	16 + 68.13		20	222.2	7.7	10.8
16 + 68.13	17 + 68.13		18.4	204.4	7.1	9.9
17 + 68.13	19 + 21.22		18.8	319.8	11.1	15.5
RAMP G-2A						
DEDUCT FOR	FEATHER					-3.4
0 + 58	0 + 90.17			222.2	7.7	10.8
LANE E-N						
70 + 18.76	73 + 75		38	1504.1	52.2	73.1
ADD FOR	FEATHER				+11.0	+4.6
LANE N-W						
ADD FOR	FEATHER				+8.1	+3.4
28 + 77.08	22 + 90		33	2152.6	74.7	104.6
22 + 90	17 + 03.09		38	2478.1	86.0	120.5
ADD FOR	FEATHER (LANE N-E)				+7.5	+3.2
17 + 03.09	9 + 03.75		50.9	4524.9	157.1	220.0
9 + 03.75	6 + 31.78		38.4	1159.4	40.3	56.4
TOTALS I-271					10,405.9	14,307.9

FHWA REGION	STATE	PROJECT	
5	OHIO		

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COMPUTED BY: D.B.
CHECKED BY: E.N.F.

CUYAHOGA COUNTY
CUY - 271 - 6.04

ITEM 203 - LINEAR GRADING

Stations From	Stations To	Side	OUTSIDE OR INSIDE	LENGTH (FT.)
I-271	NORTH BOUND			
337+00	341 + 70	NB	OUTSIDE	470
345 + 20	359 + 50	NB	OUTSIDE	1430
363 + 65	398 + 10	NB	OUTSIDE	3445
399 + 90	432 + 67.26	NB	OUTSIDE	3277
433 + 67.26	440 + 32	NB	OUTSIDE	665
445 + 00	455 + 67.5	NB	OUTSIDE	1068
462 + 50	485 + 70	NB	OUTSIDE	2320
487 + 58	501 + 70	NB	OUTSIDE	1412
508 + 40	542 + 00	NB	OUTSIDE	3360
16 + 98.38	26 + 60	NB	INSIDE	962
41 + 00	140 + 06.77	NB	INSIDE	9907
151 + 20	252 + 57	NB	INSIDE	10137
255 + 19	268 + 75	NB	INSIDE	1356
272 + 00	292 + 32	NB	INSIDE	2032
294 + 45	398 + 00	NB	INSIDE	10355
399 + 80	485 + 60	NB	INSIDE	8580
487 + 51	501 + 65	NB	INSIDE	1414
508 + 35	542 + 00	NB	INSIDE	3365
I-271	SOUTH BOUND			
337 + 00	340 + 88.73	SB	OUTSIDE	389
341 + 88.73	397 + 65	SB	OUTSIDE	5576
398 + 40	438 + 00	SB	OUTSIDE	3960
443 + 00	450 + 00	SB	OUTSIDE	700
454 + 05	461 + 45.27	SB	OUTSIDE	740
462 + 45.27	485 + 28	SB	OUTSIDE	2283
487 + 18	501 + 35	SB	OUTSIDE	1417
508 + 00	542 + 00	SB	OUTSIDE	3400
16 + 98.38	34 + 10	SB	INSIDE	1712
48 + 25	139 + 85	SB	INSIDE	9160
150 + 76	252 + 95	SB	INSIDE	10219
255 + 60	269 + 30	SB	INSIDE	1370
272 + 20	292 + 22	SB	INSIDE	2002
294 + 32	397 + 75	SB	INSIDE	10343
398 + 50	485 + 38	SB	INSIDE	8688
487 + 28	501 + 45	SB	INSIDE	1417
508 + 05	542 + 00	SB	INSIDE	3395
LANE	N-E			
69 + 16.14	69 + 91.14		RIGHT	75
69 + 16.14	69 + 91.14		LEFT	75
LANE	E-N			
70 + 18.76	74 + 50		RIGHT	431
LANE	N-W			
7 + 32	29 + 52		LEFT	2220
6 + 32	29 + 52		RIGHT	2320
RAMP	F-1			
2 + 00.67	17 + 33.78		RIGHT	1533
2 + 00.67	11 + 76.27		LEFT	976
RAMP	F-2			
2 + 46	18 + 10.32		RIGHT	1564
3 + 46	13 + 30		LEFT	984
RAMP	F-3			
4 + 53.07	7 + 20		RIGHT	267
5 + 53.07	11 + 50		LEFT	597
RAMP	F-4			
4 + 53.07	11 + 25		RIGHT	672
5 + 53.07	11 + 50		LEFT	597
16 + 25	16 + 75		LEFT	50

ITEM 203 - LINEAR GRADING

Stations From	Stations To	Side	LEFT OR RIGHT	LENGTH (FT.)
RAMP	F-5			
2 + 23.82	17 + 01.6		RIGHT	1478
3 + 23.82	4 + 74 ±		LEFT	151
8 + 50	12 + 96		LEFT	446
RAMP	F-6			
1 + 63.33	17 + 31.12		RIGHT	1568
2 + 63.33	4 + 80		LEFT	217
8 + 45	12 + 71		LEFT	426
RAMP	G-1			
57 + 71	63 + 75.76		RIGHT	605
57 + 92.8	63 + 75.76		LEFT	583
RAMP	G-1A			
57 + 40.04	58 + 03		LEFT	99
RAMP	G-2A			
0 + 66	1 + 38.41		LEFT	72
RAMP	G-2			
1 + 33.72	19 + 21.22		RIGHT	1788
3 + 33.22	13 + 53		LEFT	1020
TOTAL I-271				153,140

= 1531 STATIONS

REFERENCE NO.	STATION FROM	STATION TO	SIDE	202 GUARDRAIL REMOVED	606 GUARDRAIL TYPE 5	606 ANCHOR ASSEMBLY, TYPE A	606 ANCHOR ASSEMBLY, TYPE T	606 BRIDGE TERMINAL ASSEMBLY, TYPE J	BRIDGE TERM. ASSEMBLY, TYPE A
				LIN. FT	LIN.FT.	EACH	EACH	EACH	EACH
95 - G	18 + 37.5 (N-W)	28 + 75 (N-W)	LT	950	1012.5	1			
96 - G	15 + 85 (N-W)	22 + 87.5 (N-W)	RT	512.5	702.5				
97 - G	8 +40.50(N-W)	10 + 65.5 (N-W)	RT	137.5	187.5	1	1		
98 - G	338 + 70	339 +82.5	LT	112.5					
99 - G	338 + 83.5	341 + 10	LT	137.5	187.5	1	1		
100 - G	339 + 05	341 + 28.5	RT	137.5	187.5	1	1		
101 - G	339 + 50	341 + 72.6	RT	137.5	187.5	1	1		
102 - G	343 + 40	345 + 45	LT	175	112.5	1	1		
103 - G	343 + 40	345 + 45	LT	175	112.5	1	1		
104 - G	346 + 35	348 +94.66	RT	125	175	1	1		
105 - G	2 + 20 (G-2)	14 + 45 (G-2)	RT	950	1187.5	1	1		
106 - G	0 + 30 (G-2A)	12 + 62.5 (G-2)	LT	925	1000		1	1	
107 - G	347 + 95.84	349 + 20	RT	125	112.5	1			
108 - G	351 + 51	353 + 65	LT	125	175	1	1		
109 - G	352 + 64.96	354 + 80	LT	125	175	1	1		
110 - G	360 + 22	361 + 10	LT	87.5					
111 - G	366 + 15.71	367 + 18.55	LT	100	75	1			
112 - G	365 + 39.40	367 + 16.73	LT	175	112.5	1	1		
113 - G	377 + 12.5	397 + 85	RT	2087.5	2037.5	1			
114 - G	378 + 70	381 + 70	LT	300					
115 - G	386 + 00	397 + 52.5	LT	1150	1125		1		
116 - G	394 + 50	397 + 87.5	RT	312.5	137.5	1			
117 - G	399 + 65	410 + 01.65	LT	975	1012.5	1			
118 - G	399 + 75	403 + 27.35	LT	327	325	1			
119 - G	400 + 02.5	408 + 05.97	RT	775	800		1		
120 - G	415 + 90	418 + 65	RT	275					
121 - G	417 + 46.78	421 + 50	LT	262.5	362.5	1	1		
122 - G	427 + 75	431 + 12.5	RT	287.5	175	1	1		
123 - G	430 + 00	433 + 50	LT	350					
124 - G	446 + 35	448 + 63.1	RT	175	187.5	1	1		
125 - G	446 + 48.16	447 + 74	RT	175	100	1			
126 - G	448 + 77.46	450 + 99.35	LT	175	187.5	1	1		
127 - G	449 + 47	450 + 71.17	LT	175	100	1			
128 - G	465 + 75	473 + 50	LT	650	337.5	1	1		
129 - G	468 + 50	485 + 45	RT	1725	1625	1			
130 - G	479 + 00	485 + 15.5	LT	612.5	462.5		1		
131 - G	482 + 35	485 + 33	RT	287.5	125	1			
132 - G	487 + 47	501 + 35	LT	1375	1375				1
133 - G	487 + 53	490 + 58	LT	287.5	125	1			
134 - G	487 + 76.75	501 + 80	RT	1393.75	1409.5				1
135 - G	490 + 30	501 + 70	RT	325	200	1			1
136 - G	508 + 05	511 + 45	LT	337.5	200	1			1
137 - G	508 + 40	509 + 90	RT	150	100		1		1
138 - G	508 +00	512 + 00.41	LT	262.5	325	1			1
139 - G	531 +00	533 + 37.5	RT	187.5	200	1	1		
140 - G	531 +00	533 + 37.5	RT	187.5	200	1	1		
141 - G	531 + 97.5	534 + 35.	LT	187.5	200	1	1		
142 - G	531 + 97.5	534 + 35.	LT	187.5	200	1	1		
TOTAL I-271				21170.75	19337.0	35	25	1	6

COMPUTATIONS & SUB-SUMMARIES

COMPUTED BY: AOG 4/81
CHECKED BY : EMF 10/1

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY - 271 - 6.04

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CONCRETE BARRIER QUANTITIES

ROUTE	STATIONS FROM	STATIONS TO	SIDE	CONCRETE BARRIER, STD. TYPE D L.F.
271	349 + 20	350 + 09.41	RT.	90
271	447 + 74	448 + 74.66	RT.	100
271	448 + 57.59	449 + 47	LT.	90
	TOTAL	(I-271)		280

EARTHWORK RECAP

SHEET NO.	203 EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION CU. YDS.	203 EMBANKMENT CU. YDS.	659 SEEDING AND MULCHING SQ. YDS.	660 SODDING SQ. YDS.
46	14	198	760	
47	52	378	1361	
48	238	0	0	382
49	50	87	1034	
50	80	143	778	
51	161	8	103	
52	426	347	1419	
53	1138	85	2255	
54	43	0	180	
55	228	171	961	
56	700	129	1003	
20	7014			
I-271 TOTAL	10,144	1546	9854	382

SHOULDER WIDENING QUANTITIES

Stations From	Stations To	Side	AVG. END WIDTH (FT.)	℄ LENGTH (FT.)	203 EXCAVATION	301 AGGR. BASE	310 SUBBASE II
337 + 60	338 + 00	NB	4'	40	5.1	1.6	3.4
338 + 00	348 + 80	NB	6'	1080	197.5	62.5	131.7
348 + 80	349 + 20	NB	4'	40	5.1	1.6	3.4
349 + 20	350 + 09.41	NB	1.92'	89.41	13.9	1.6	8.6
350 + 09.41	397 + 15	NB	6'	4705.59	860.5	272.3	573.7
397 + 15	397 + 55	NB	4'	40	5.1	1.6	3.4
399 + 80	447 + 54	NB	6'	4774	873.0	276.3	582.0
447 + 54	447 + 74	NB	5'	20	3.1	1.0	2.1
447 + 74	448 + 74.66	NB	4.17'	100.66	23.6	3.9	15.5
448 + 74.66	484 + 75	NB	6'	3600.34	658.4	208.4	438.9
484 + 75	485 + 15	NB	4'	40	5.1	1.6	3.4
487 + 48	500 + 35	NB	6'	1287	235.4	74.5	156.9
500 + 35	500 + 75	NB	4'	40	5.1	1.6	3.4
508 + 35	542 + 00	NB	6'	3365	615.4	194.7	410.2
337 + 60	338 + 00	SB	4'	40	5.1	1.6	3.4
338 + 00	397 + 75	SB	6'	5975	1092.6	345.8	728.4
400 + 00	401 + 00	SB	4'	100	12.7	3.9	8.5
401 + 00	448 + 57.59	SB	6'	4757.59	870.0	275.3	580.0
448 + 57.59	449 + 47	SB	4.17'	89.41	20.9	3.4	13.8
449 + 47	449 + 67	SB	5'	20	3.1	1.0	2.1
449 + 67	485 + 38	SB	6'	3571	653.0	206.7	435.4
487 + 73	488 + 13	SB	4'	40	5.1	1.6	3.4
488 + 13	501 + 45	SB	6'	1332	243.6	77.1	162.4
509 + 00	509 + 40	SB	4'	40	5.1	1.6	3.4
509 + 40	542 + 00	SB	6'	3260	596.2	188.7	397.4
TOTAL (I-271)					7013.7 C.Y. (SUB-TOTAL)	2210 C.Y.	4675 C.Y.

ITEM 203 - SUBGRADE COMPACTION (SHOULDER WIDENING AREAS)

NB 6 FT. x 18,811.9 FT. $\times \frac{1 \text{ S.Y.}}{9 \text{ S.F.}}$ = 12,541 S.Y.

SB 6 FT. x 18,895.6 FT. $\times \frac{1 \text{ S.Y.}}{9 \text{ S.F.}}$ = 12,597 S.Y.

TOTAL (I-271) (12,541 + 12,597) S.Y. = 25,138 S.Y.

ITEM 301 - BITUMINOUS AGGREGATE BASE, AS PER PLAN

AREA = 4' x (19,274.5 L.F. + 1400 L.F.) + 35 {4'(25'+3') + 40'x2'+2'}
(GR. TYPE E GR. RAISING LENGTH + 4' x (12.5+2') 25' A.A. TYPE T) (A.A. TYPE A LENGTH FLARE)
= 89,468 S.F.

VOLUME = 89,468 FT^2 x 3" ÷ 12 in/ft ÷ 27 = 828 C.Y.

ITEM SPECIAL - HERBICIDE FOR WEED CONTROL

FROM ABOVE 89,468 (ITEM 301 AREA) ÷ 9 = 9941 S.Y.

ITEM 407 - TACK COAT

I-271 ((10,406 C.Y. $\times \frac{36"/\text{YD.}}{1.25 \text{ IN.}}$) + (C.Y. $\times \frac{36"/\text{YD.}}{1.5 \text{ IN.}}$)) $\times \frac{0.1 \text{ GAL.}}{\text{S.Y.}}$ = 29969 GAL.

ITEM 407 - COVER AGGREGATE

I-271 299,693 S.Y. $\times \frac{7 \text{ LBS.}}{\text{S.Y.}} \times \frac{1 \text{ TON}}{2000 \text{ LBS.}}$ = 1049 TONS

PRESSURE RELIEF JOINTS

LOCATION	SPACING	SPECIAL PRESSURE RELIEF JOINT, TYPE C LIN. FT.	605 AGGREGATE DRAINS LIN. FT.
271	2000@	720	720
ALL RAMPS	MIDWAY	200	200
CUY-271-0813	AS PER BP-11	106	80
TOTAL (I-271)		1026	1000

@ APPROXIMATELY MIDWAY BETWEEN EXISTING PRESSURE RELIEF JOINTS

ITEM 659 - COMMERCIAL FERTILIZER

I-271 (9854 + 382) S.Y. $\times \frac{9 \text{ S.F.}}{\text{S.Y.}} \times \frac{20 \text{ LBS.}}{1000 \text{ S.F.}} \times \frac{1 \text{ TON}}{2000 \text{ LBS.}}$ = 0.9 TONS

ITEM 659 - AGRICULTURAL LIMING, AS PER PLAN

I-271 (9854 + 382) S.Y. $\times \frac{9 \text{ S.F.}}{\text{S.Y.}} \times \frac{100 \text{ LBS.}}{1000 \text{ S.F.}} \times \frac{1 \text{ TON}}{2000 \text{ LBS.}}$ = 4.6 TONS

DRAINAGE QUANTITIES

COMPUTED BY AOG 9/81
CHECKED BY GMP 10/81

FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
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REFERENCE	LOCATION FROM	LOCATION TO	SIDE	202 CATCH BASIN OR INLET ABANDONED EACH	602	603 6" CONDUIT, TYPE F L.F.	603 12" CONDUIT TYPE B L.F.	604 MANHOLE ADJUSTED TO GRADE WITH HEAVY DUTY FRAME & COVER EACH	604 MANHOLE ADJUSTED TO GRADE EACH	604 CATCH BASIN ADJUSTED TO GRADE EACH	604 CATCH BASIN RECONSTRUCTED TO GRADE AS PER PLAN. EACH	604 STD. NO. 3 C.B. MOD. AS PER PLAN A EACH	604 STD. NO. 3 C.B. MOD. AS PER PLAN B EACH	605 6" SHALLOW PIPE UNDERDRAINS L.F.	605 6" UNCLASSIFIED PIPE UNDERDRAINS L.F.
38-D	432 + 70		RT							1					
39-D	441 + 75		LT	1											
40-D	18 + 00 (F-4)		LT								1				
41-D	444 + 75		RT	1											
42-D	447 + 75		RT						1						
43-D	4 + 85 (422)		RT									1			
44-D	5 + 00 (422)		RT								1				
45-D	5 + 34 (422)		RT					1							
46-D	7 + 05 (422)		RT				18						1		
47-D	16 + 97 (F-3)		RT								1				
48-D	453 + 50		LT	1											
49-D	458 + 00		RT						1						
50-D	462 + 00		RT	1											
51-D	462 + 40		LT							1					
2-U	16 + 00 (F-4)	22 + 53 (422)	RT			10								75	219
3-U	3 + 67 (422)	4 + 85 (422)	RT			10									114
4-U	5 + 78 (422)	7 + 05 (422)	RT			10									110
5-U	15 + 50 (F-3)	16 + 90 (F-3)	LT			10									168
6-U	7 + 20 (F-3)	11 + 50 (F-3)	RT												430
TOTAL I-271				4		40	18	1	2	2	3	1	1	75	1041

GENERAL SUMMARY

FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
CUY - 271 - 6.04

Comp. By - D.B.
CHK'D By - E.N.F.

ALL ITEMS COST PARTICIPATION II UNLESS SHOWN OTHERWISE

ITEM	I-271 SHEET NUMBER 5	6	10	11	12	17	19	20	21	39	40	42	44	ITEM	QUANT.	UNIT	DESCRIPTION
																	ROADWAY
202	4600													202	4600	S.Y.	WEARING COURSE REMOVED
202												18500		202	18500	S.Y.	PAVEMENT REMOVED, AS PER PLAN
202										150	250			202	400	L.F	CURB REMOVED
202										1423	870			202	2293	S.Y.	PAVEMENT REMOVED
202							21171							202	21171	L.F	GUARDRAIL REMOVED
202									4				4	202	8	EACH	CATCH BASIN OR INLET ABANDONED
202													2495	202	2495	L.F	CURB REMOVED, AS PER PLAN
202													4208	202	4208	L.F	FENCE REMOVED
203								25138		2748	1354			203	29240	S.Y.	SUBGRADE COMPACTION
203								1546						203	1546	C.Y.	EMBANKMENT
203								10144						203	10144	C.Y.	EXCAVATION, NOT INCLUDING EMBANKMENT CONSTRUCTION
203		1000												203	1000	C.Y.	EXCAVATION, NOT INCLUDING EMBANKMENT CONSTRUCTION, AS PER PLAN
203							1531							203	1531	STA.	LINEAR GRADING
404	150													404	150	C.Y.	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC
		50															
606		300												606	50	EACH	REPLACEMENT GUARDRAIL POST
606		1400												606	300	L.F	REPLACEMENT GUARDRAIL ELEMENT
606							19337							606	1400	L.F	RAISING EXISTING GUARDRAIL
606							35							606	19337	L.F	GUARDRAIL, TYPE 5
606							25							606	35	EACH	ANCHOR ASSEMBLY, TYPE A, STANDARD
606							6							606	25	EACH	ANCHOR ASSEMBLY, TYPE T, STANDARD
606														606	6	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE A, STANDARD
606							1							606	1	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE J, STANDARD
607													4686	607	4686	L.F	FENCE, TYPE CL
614					75000									614	75000	L.F	TEMPORARY EDGE LINES, CLASS I, TAPE
614					26000									614	26000	L.F	TEMPORARY EDGE LINES, CLASS I
614					14000									614	14000	L.F	4" TEMPORARY CHANNELIZING LINES, CLASS I, TAPE
614					26000									614	26000	L.F	4" TEMPORARY CHANNELIZING LINES, CLASS I
614					34.0									614	34.0	MI.	TEMPORARY LANE LINES, CLASS II
614					54.0									614	54.0	MI.	TEMPORARY EDGE LINES, CLASS I
614					800									614	800	L.F	TEMPORARY GORE MARKINGS, CLASS II
615						1590								615	1590	S.Y.	TEMPORARY PAVEMENT, CLASS B
615						LUMP								615	LUMP	L.S.	TEMPORARY ROADS
616	4													616	4	TONS	CALCIUM CHLORIDE
616	50													616	50	M.GALS	WATER
622					4400	370								622	4770	L.F	TEMPORARY CONCRETE BARRIER
SPEC												29000		SPECIAL	29000	L.F	PAVEMENT SAWING
SPEC		28.7												SPECIAL	28.7	LN. MI.	DYNAFLECT TESTING OF EXISTING PAVEMENT
SPEC					400									SPECIAL	400	S.F.	REPLACEMENT SIGNS
SPEC					500									SPECIAL	500	EACH	REPLACEMENT DRUMS
																	EROSION CONTROL
207				3000										207	3000	S.Y.	TEMPORARY SEEDING AND MULCHING
207				80										207	80	EACH	STRAW OR HAY BALES
601			250											601	250	S.Y.	CRUSHED AGGREGATE SLOPE PROTECTION, AS PER PLAN
601			75											601	75	S.Y.	RIPRAP, CLOTH OR BURLAP BAGS, AS PER PLAN
653			600											653	600	C.Y.	TOPSOIL FURNISHED AND PLACED, AS PER PLAN
659			5000					9854						659	14854	S.Y.	SEEDING AND MULCHING
659			2.6											659	2.6	TONS	AGRICULTURAL LIMING
659			2.6					4.6						659	7.2	TONS	AGRICULTURAL LIMING, AS PER PLAN
659			0.5	0.1				0.9						659	1.5	TONS	COMMERCIAL FERTILIZER
659				35										659	35	M.S.F.	MOWING
659				750										659	750	S.Y.	REPAIR SEEDING AND MULCHING
659				7										659	7	M.GALS	WATER
660			800					382						660	1182	S.Y.	SODDING
SPEC								9941						SPECIAL	9941	S.Y.	HERBICIDES FOR WEED CONTROL

GENERAL SUMMARY

COMPUTED BY D.B.
CHECKED BY ENF

FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
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ALL ITEMS COST PARTICIPATION II UNLESS SHOWN OTHERWISE

ITEM	I-271 SHEET NUMBER 5	7	8	9	11	12	18	20	21	39	40	41	42	43	ITEM	QUANT.	UNIT	DESCRIPTION
																		PAVEMENT
301		5100						828							301	5928	C.Y.	BITUMINOUS AGGREGATE BASE, AS PER PLAN AC-20, RT-11, OR RT-12
301								2210		67	41				301	2318	C.Y.	BITUMINOUS AGGREGATE BASE AC-20, RT-11, OR RT-12
305										2475	1217				305	3692	S.Y.	9" PORTLAND CEMENT CONCRETE BASE
305													12000		305	12000	S.Y.	10" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN
305													6500		305	6500	S.Y.	16" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN
310								4675		515	264				310	5454	C.Y.	SUBBASE, TYPE II
310		160													310	160	C.Y.	SUBBASE, TYPE I, AS PER PLAN
310		300													310	300	C.Y.	SUBBASE, TYPE II, AS PER PLAN
407								29969		37		99			407	30105	GALS.	TACK COAT
407								1049		1		3			407	1053	TONS.	COVER AGGREGATE
452										100					452	100	S.Y.	8" PLAIN PORTLAND CEMENT CONCRETE PAVEMENT
609										558	244				609	802	L.F.	CURB, STANDARD TYPE 2B
609		300													609	300	L.F.	ASPHALT CONCRETE CURB, AC-20, STANDARD TYPE I
609										200	225				609	425	L.F.	CURB, STANDARD TYPE 6
622								280							622	280	L.F.	CONCRETE BARRIER, STANDARD TYPE D, AS PER PLAN
848							10406			10		34			848	10450	C.Y.	ASPHALT CONCRETE, SURFACE COARSE, TYPE I, AS PER PLAN
848		1100					14308			15		48			848	15471	C.Y.	ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 2, AS PER PLAN
SPEC			28.7												SPECIAL	28.7	LN MI.	JOINT AND CRACK SEALING IN CONCRETE PAVEMENT
SPEC			1600												SPECIAL	1600	S.Y.	PARTIAL DEPTH PAVEMENT REPAIR
SPEC								1026							SPECIAL	1026	L.F.	PRESSURE RELIEF JOINTS, TYPE C
SPEC				8000											SPECIAL	8000	EACH	HOLE FOR SUBSEALING
SPEC				8000											SPECIAL	8000	C.F.	SUBSEAL MATERIAL
																		DRAINAGE
603					50				40						603	90	L.F.	6" CONDUIT, TYPE F
603									18						603	18	L.F.	12" CONDUIT, TYPE B
604									1						604	1	EACH	MANHOLE ADJUSTED TO GRADE WITH HEAVY DUTY FRAME AND COVER
604									2						604	2	EACH	MANHOLE ADJUSTED TO GRADE
604									2						604	2	EACH	CATCH BASIN ADJUSTED TO GRADE
604									3						604	3	EACH	CATCH BASIN RECONSTRUCTED TO GRADE, AS PER PLAN
604									1						604	1	EACH	STANDARD Nº 3 CATCH BASIN MODIFIED AS PER PLAN A
604									1						604	1	EACH	STANDARD Nº 3 CATCH BASIN MODIFIED AS PER PLAN B
605					150			1000							605	1150	L.F.	AGGREGATE DRAINS
605									75						605	75	L.F.	6" SHALLOW PIPE UNDERDRAINS
605					1200				1041						605	2241	L.F.	6" UNCLASSIFIED PIPE UNDERDRAINS
605														28000	605	28000	L.F.	AGGREGATE DRAIN AS PER PLAN USING Nº 8 AGGREGATE
SPEC					120										SPECIAL	120	EACH	UNDERDRAIN OPENING
SPEC					150										SPECIAL	150	M.GAL.	WATER
SPEC					50										SPECIAL	50	HOURS	SEWER JET
SPEC						300									SPECIAL	300	HOURS	LAW ENFORCEMENT OFFICER WITH PATROL CAR
																		FOR TRAFFIC CONTROL GENERAL SUMMARY, SEE SHEET NO. 61-63
																		FOR ELECTRICAL GENERAL SUMMARY, SEE SHEET Nº 96
																		FOR STRUCTURE GENERAL SUMMARY, SEE SHEET Nº 92
614						LUMP									614	LUMP	L.S.	MAINTAINING TRAFFIC
623															623	LUMP	L.S.	CONSTRUCTION LAYOUT STAKES
624	LUMP														624	LUMP	L.S.	MOBILIZATION, AS PER PLAN

FHWA REGION	STATE	PROJECT	
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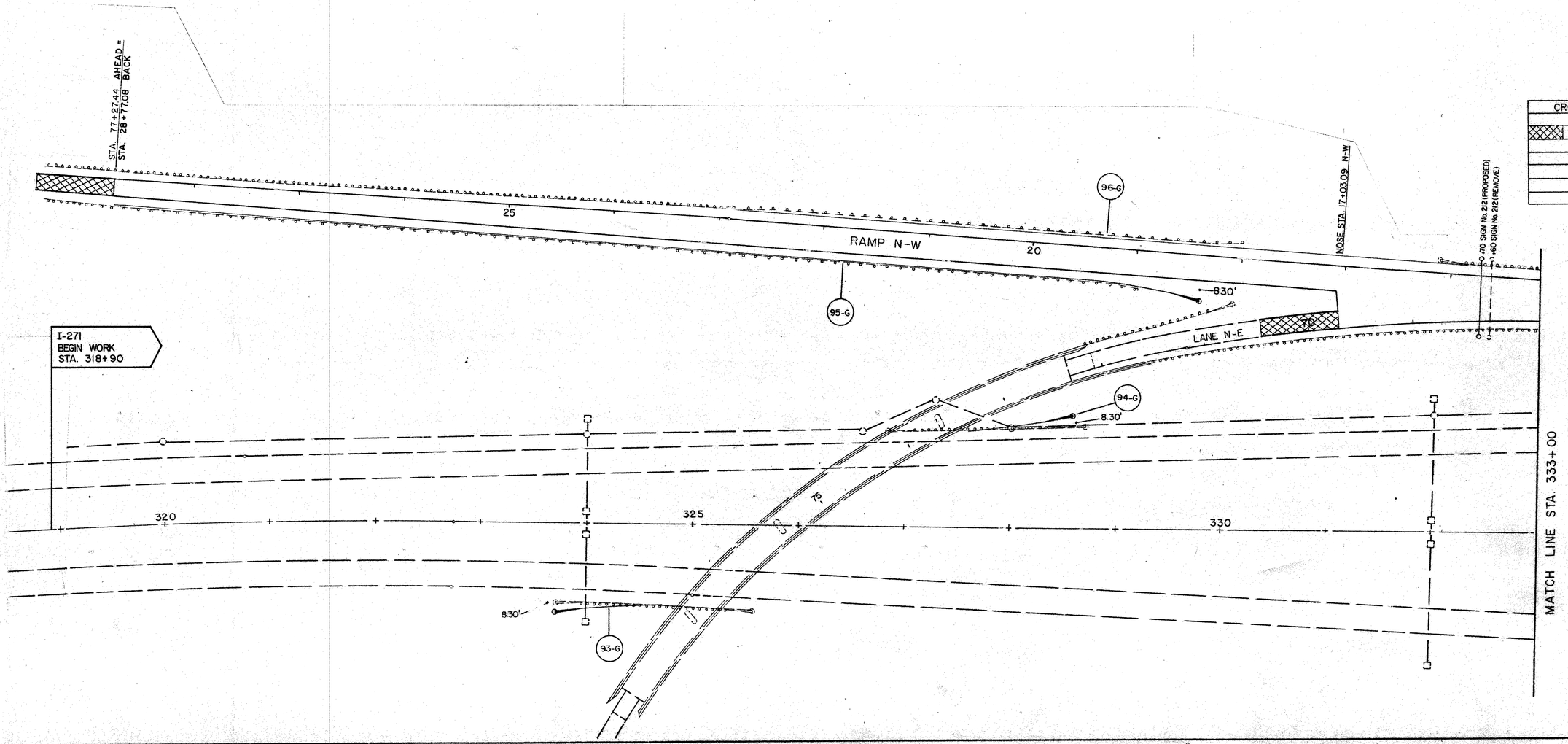
CUYAHOGA COUNTY
CUY - 271 - 6.04

CROSS REFERENCE	
ITEM	SHEET
FEATHERING	41
GUARDRAIL	19
SIGNING	70



STA 305+00 TO STA. 333+00

FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
CUY - 271 - 6.04

BEGIN PROJECT
STA. 337+00
S.L.M. 6.04

IR. - 271 - 6 (54) 24.7

P.C. STA. 66+70.63 ℄ LANE N-E
STA. 14+00.36 LT ℄ RAMP N-W

RAMP N-W

NOSE STA. 6+31.78 N-W

+65 SIGN No. 209 (REMOVE)

+20 SIGN No. 209 (PROPOSED)

97-G 98-G 99-G 100-G 101-G 102-G 103-G 104-G 105-G

8.30'

MATCH LINE STA. 333+00

335 340 345

+60 BEGIN SHLD. WIDEN, 2'

+00 END SHLD. WIDEN, 6'

40' TRANS.

MATCH LINE STA. 348+00

LANE E-N

REMOVE CURB, SEE SHEET Nº 44 FOR DETAILS

NOSE STA. 70+18.67 E-N*
STA. 345+20.1-271

EMERY RD.

RICHMOND RD.

RAMP G-2A

RAMP G-2

NOSE STA. 1+38.41 G-2A*
STA. 3+33.22.18 LT. G-2

CROSS REFERENCE	
ITEM	SHEET
FEATHERING	41
SIGNING	70
GUARDRAIL	19

STA. 333+00 TO STA. 348+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

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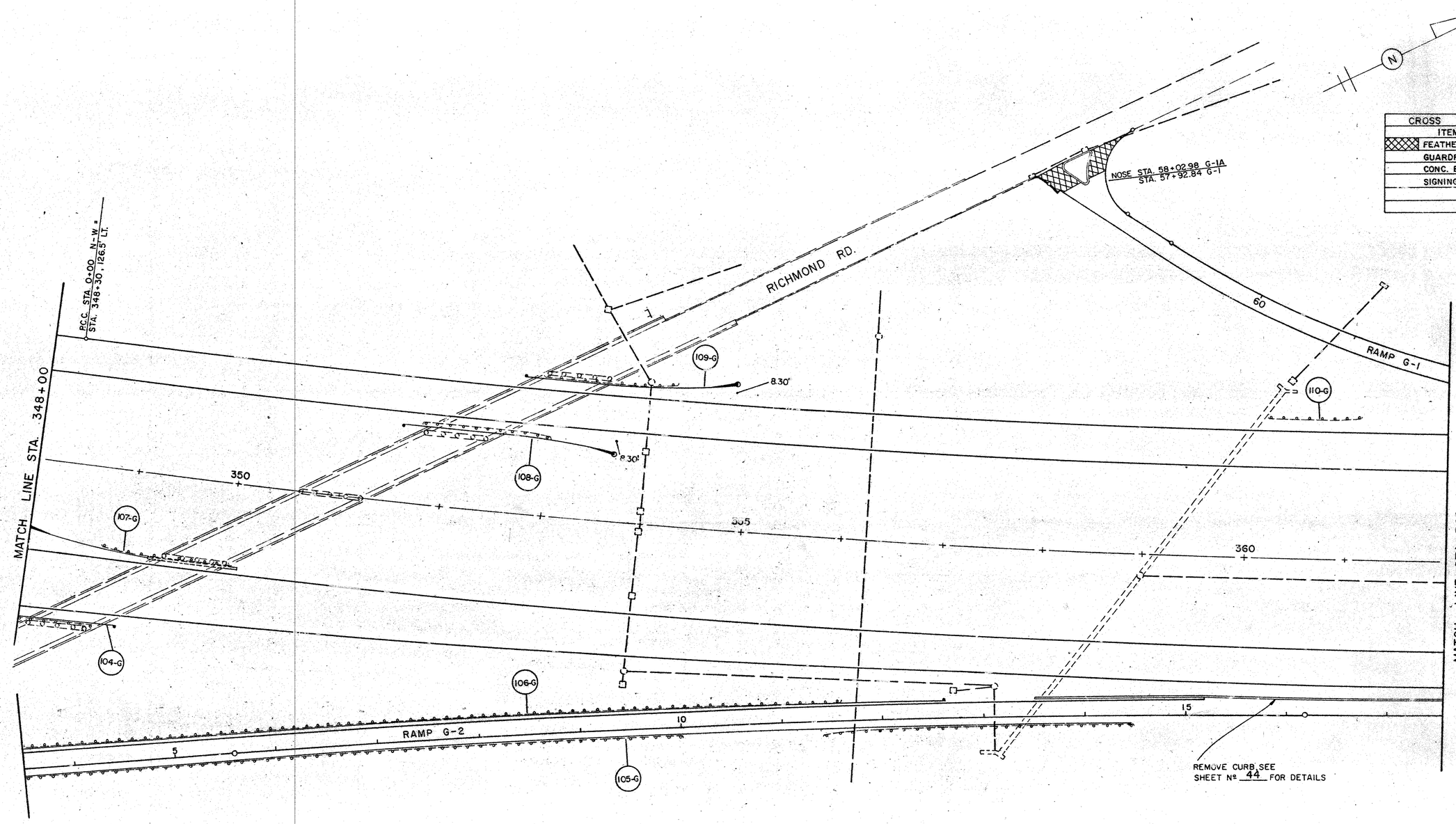
CUYAHOGA COUNTY
CUY - 271 - 6.04

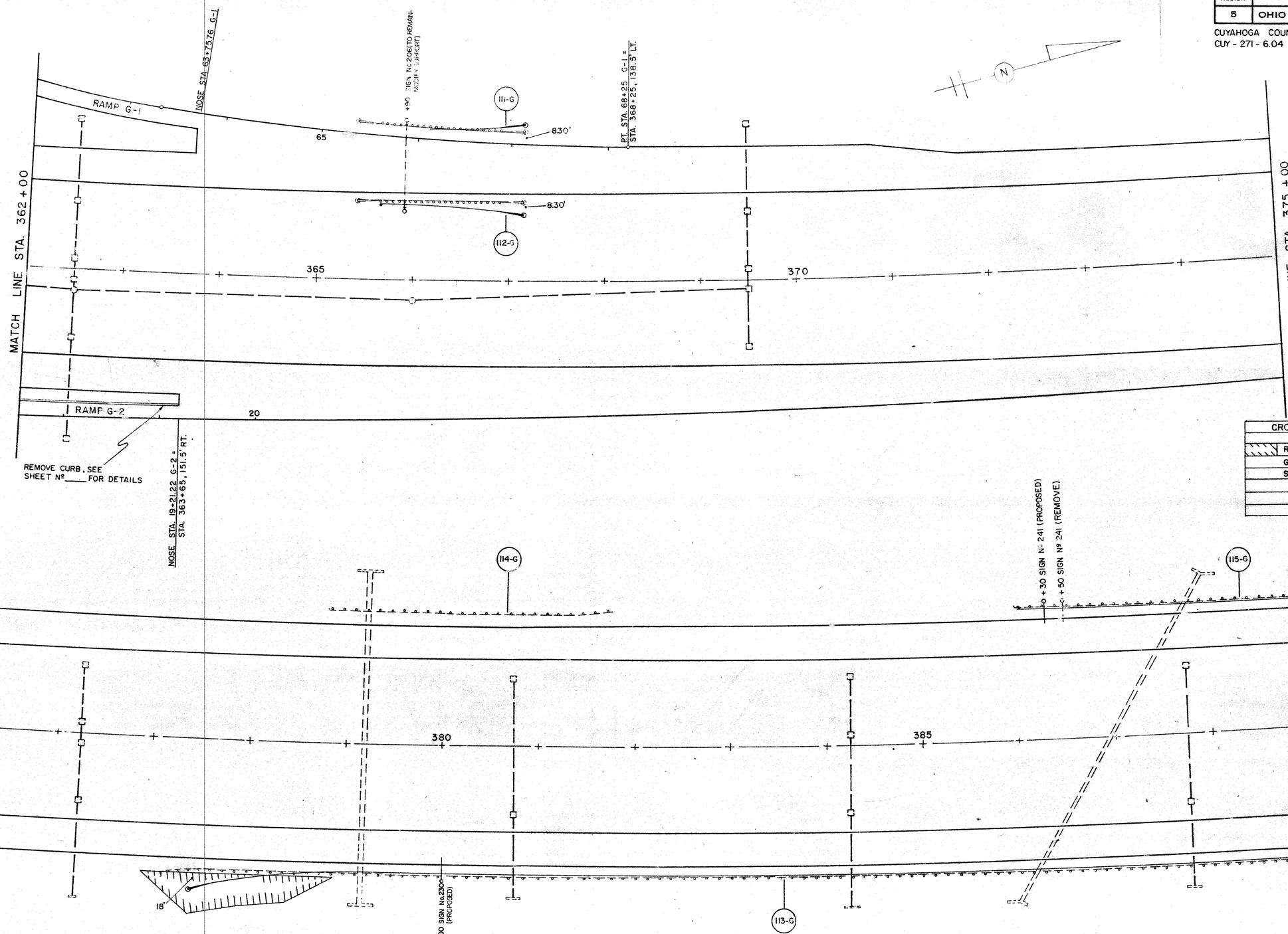
CROSS REFERENCE	
ITEM	SHEET
FEATHERING	41
GUARDRAIL	19
CONC. BARRIER	37
SIGNING	70



STA. 348+00 TO STA. 362+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY - 271 - 6.04



CROSS REFERENCE	
ITEM	SHEET
REGRADING	46
GUARDRAIL	19
SIGNING	70, 71

STA. 362+00 TO STA. 389+00

FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
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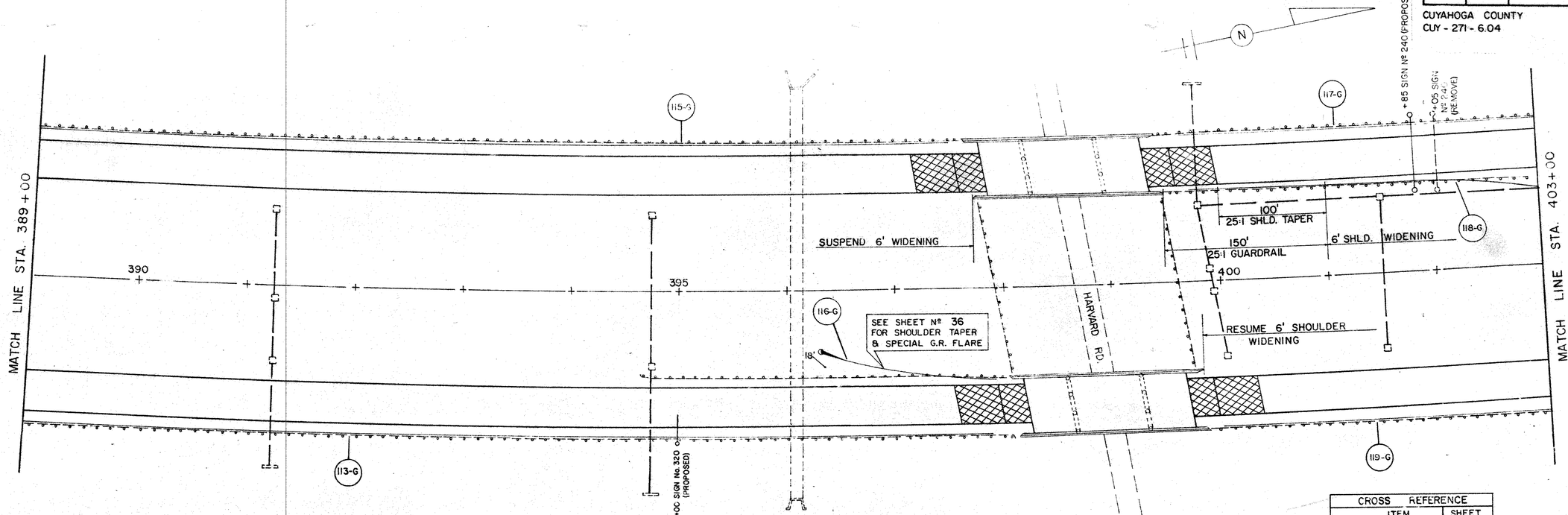
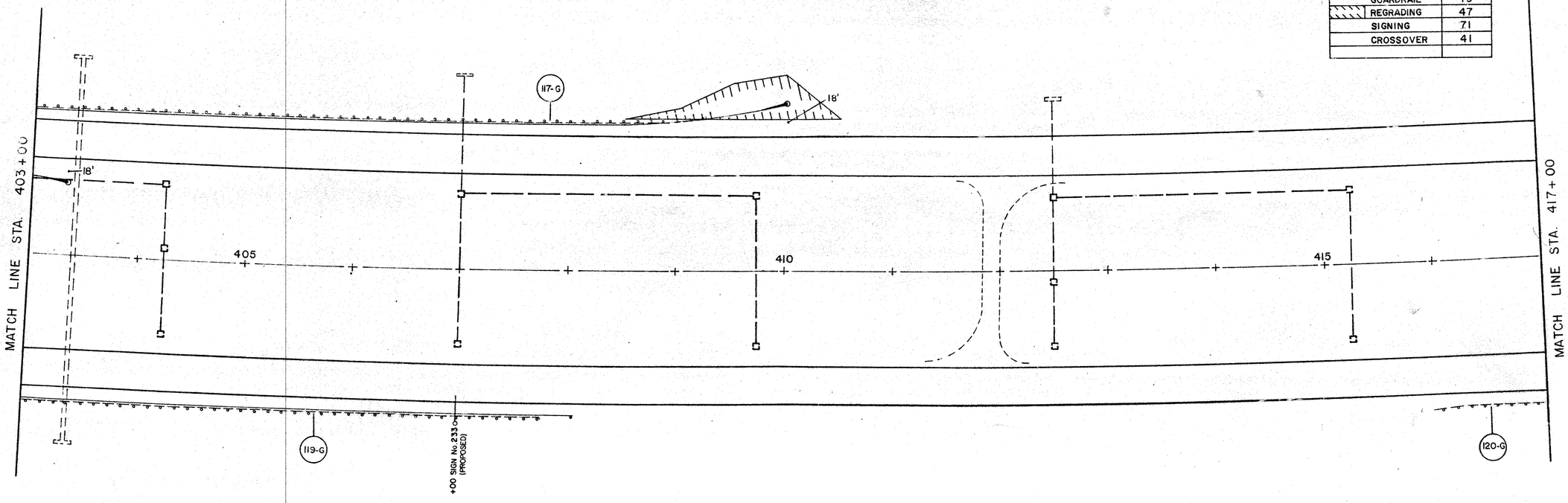


CROSS REFERENCE	
ITEM	SHEET
FEATHERING	41
GUARDRAIL	19
REGRADING	47
SIGNING	71
CROSSOVER	41

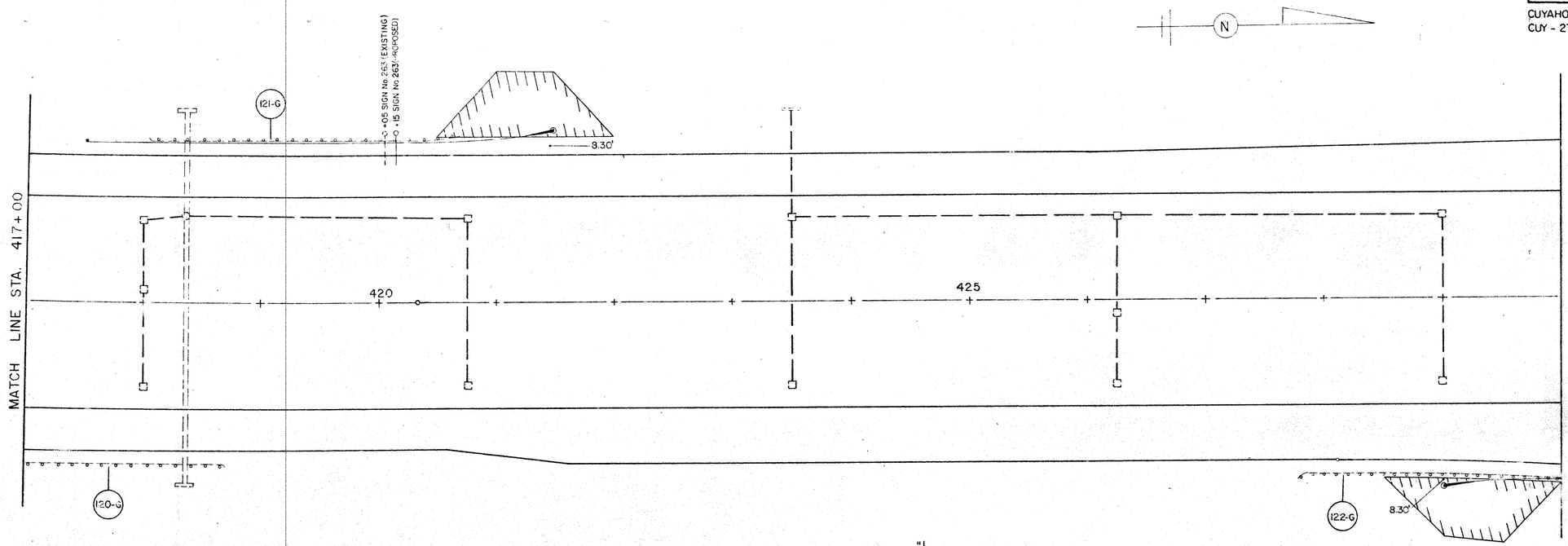


STA. 389+00 TO STA. 417+00

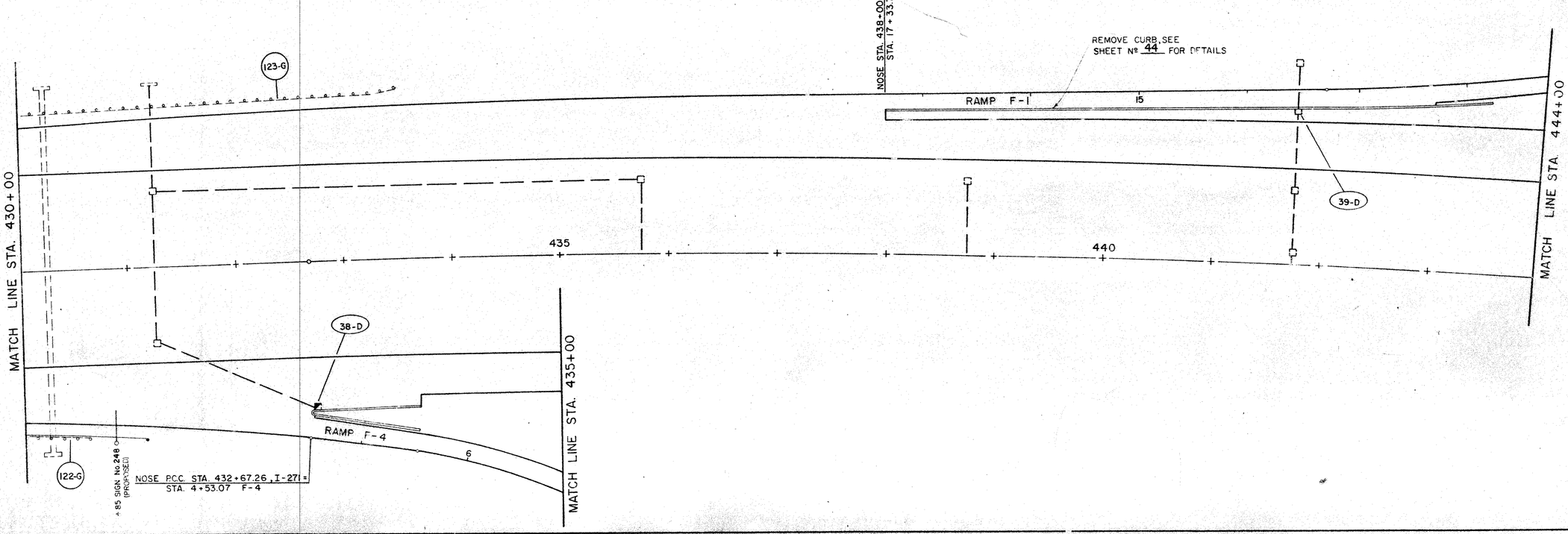
FHWA REGION	STATE	PROJECT	
5	OHIO		

29
99

CUYAHOGA COUNTY
CUY - 27 - 6.04



CROSS REFERENCE	
ITEM	SHEET
REGRADING	47,49
DRAINAGE	21
GUARDRAIL	19
SIGNING	71, 72



STA. 417+00 TO STA. 444+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY - 271 - 6.04

CROSS REFERENCE	
ITEM	SHEET
FEATHERING	41
DRAINAGE	21
REGRADING	51,54,55,56
SIGNING	72
GUARDRAIL	19
F - 4 RAMP DETAILS	40
CONC. BARRIER	38
SIGNALS	79,80

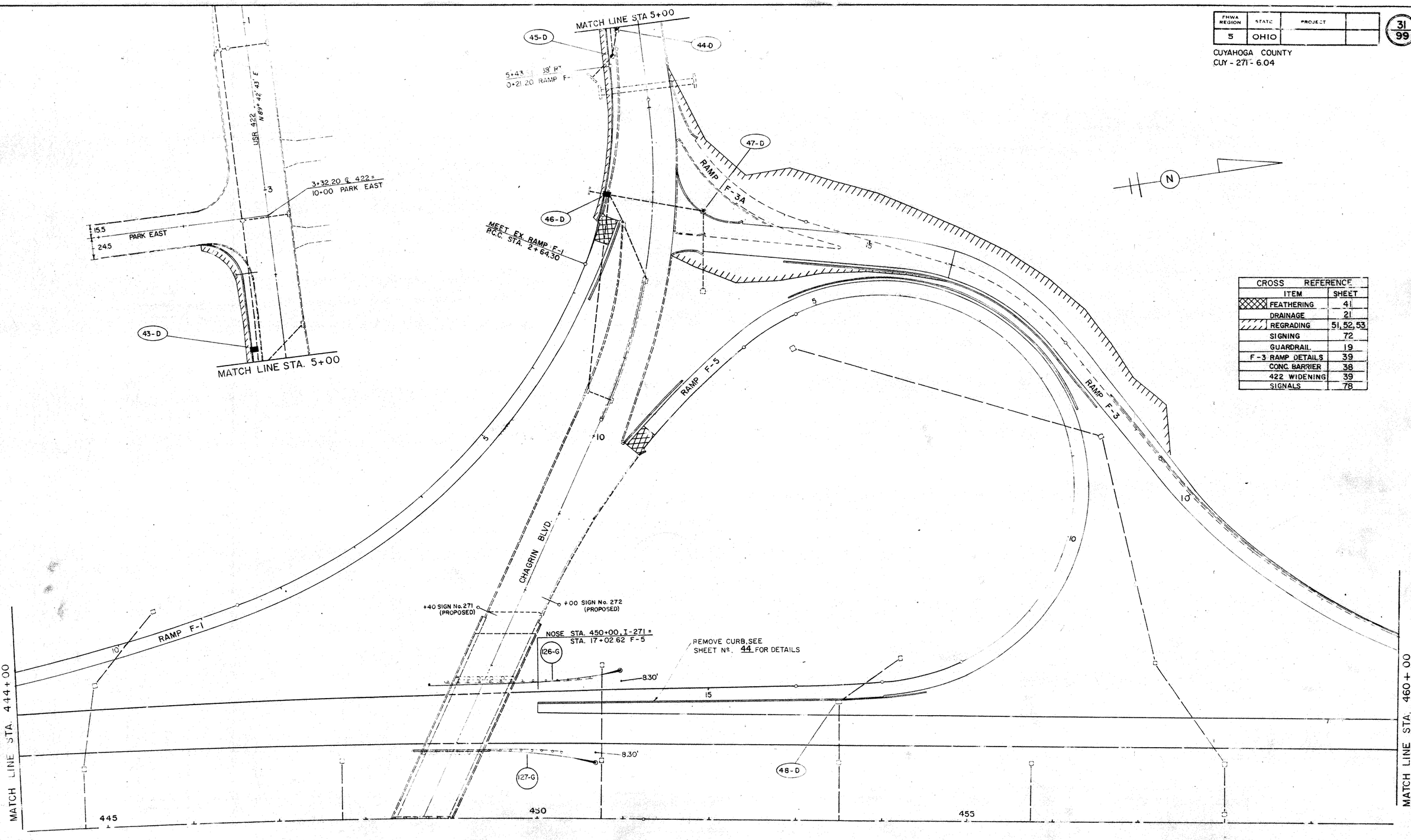
STA. 435+00 N.B. TO STA. 451+00 N.B.

FHWA REGION	STATE	PROJECT	
5	OHIO		

31
99

CUYAHOGA COUNTY
CUY - 271 - 6.04

CROSS REFERENCE	
ITEM	SHEET
FEATHERING	41
DRAINAGE	21
REGRADING	51, 52, 53
SIGNING	72
GUARDRAIL	19
F-3 RAMP DETAILS	39
CONC. BARRIER	38
422 WIDENING	39
SIGNALS	78

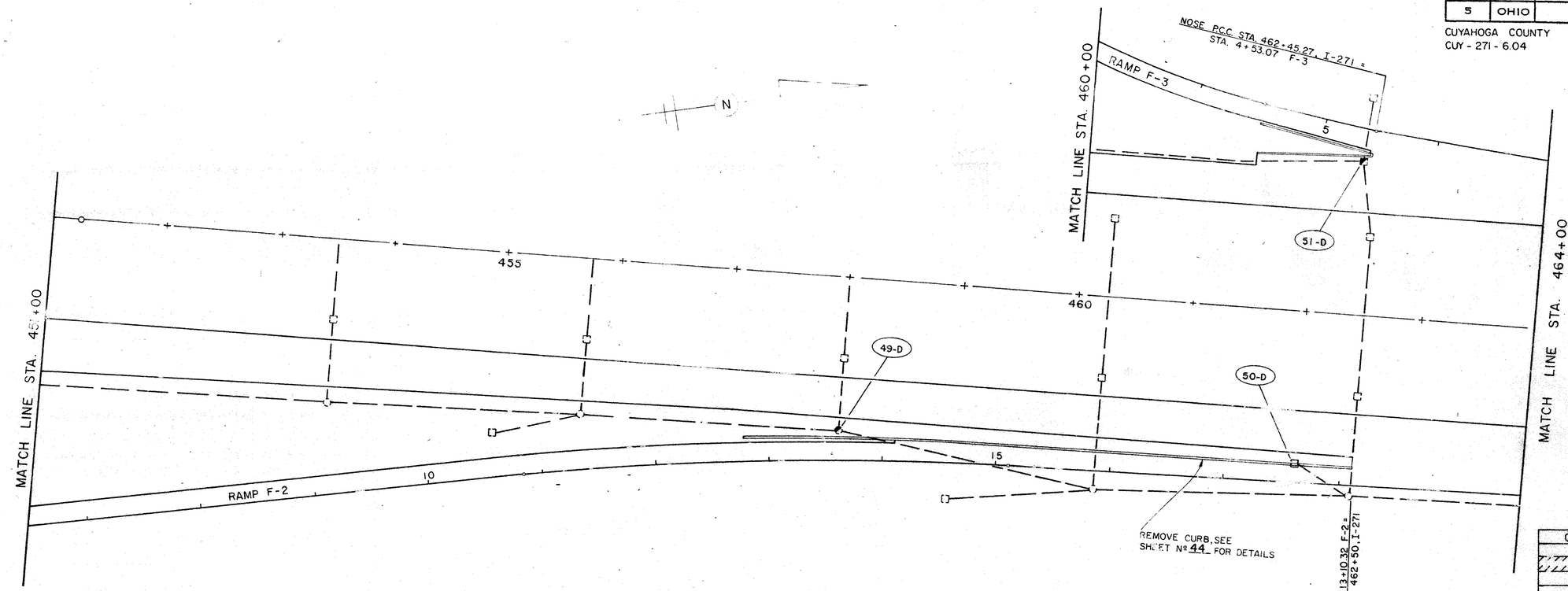


STA. 444+00 S.B. TO STA. 460+00 S.B.

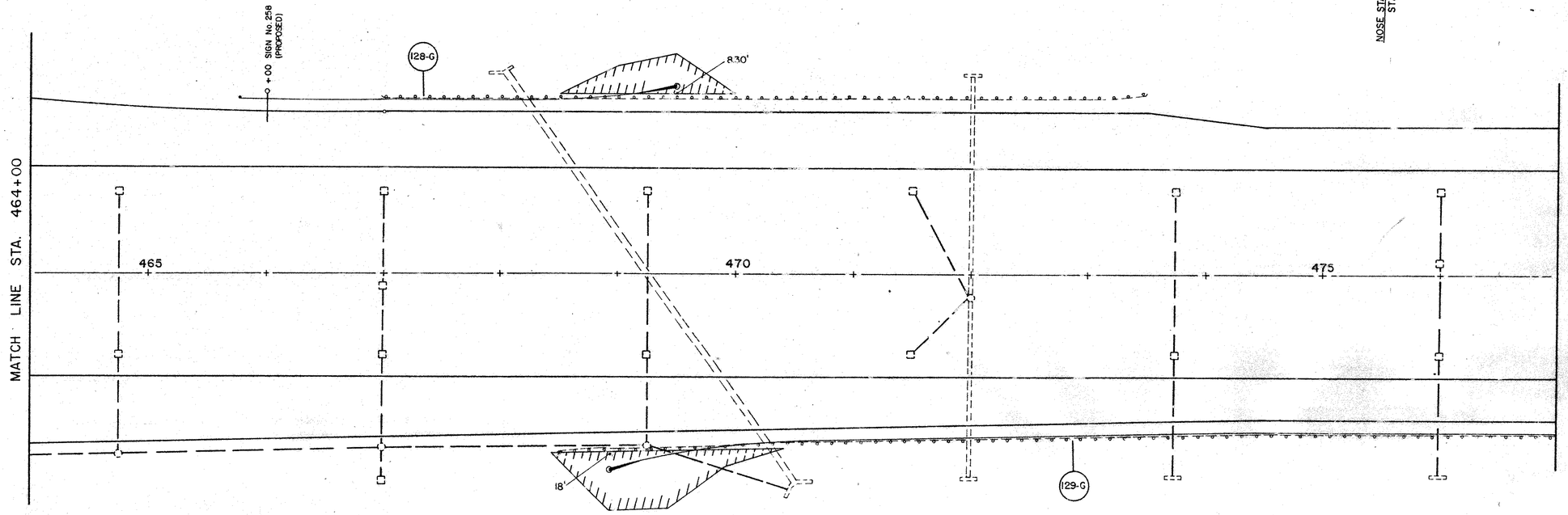
FHWA REGION	STATE	PROJECT	
5	OHIO		

32
99

CUYAHOGA COUNTY
CUY - 271 - 6.04



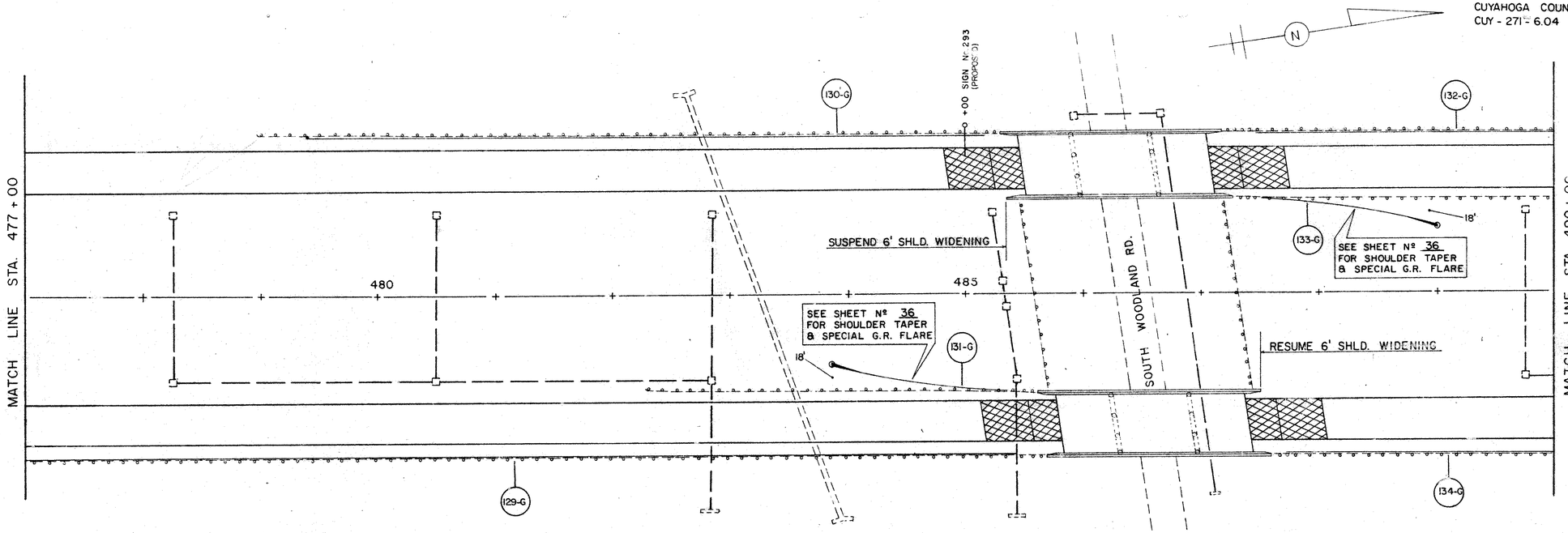
CROSS REFERENCE	
ITEM	SHEET
REGRADING	50
SIGNING	72
DRAINAGE	21
GUARDRAIL	19



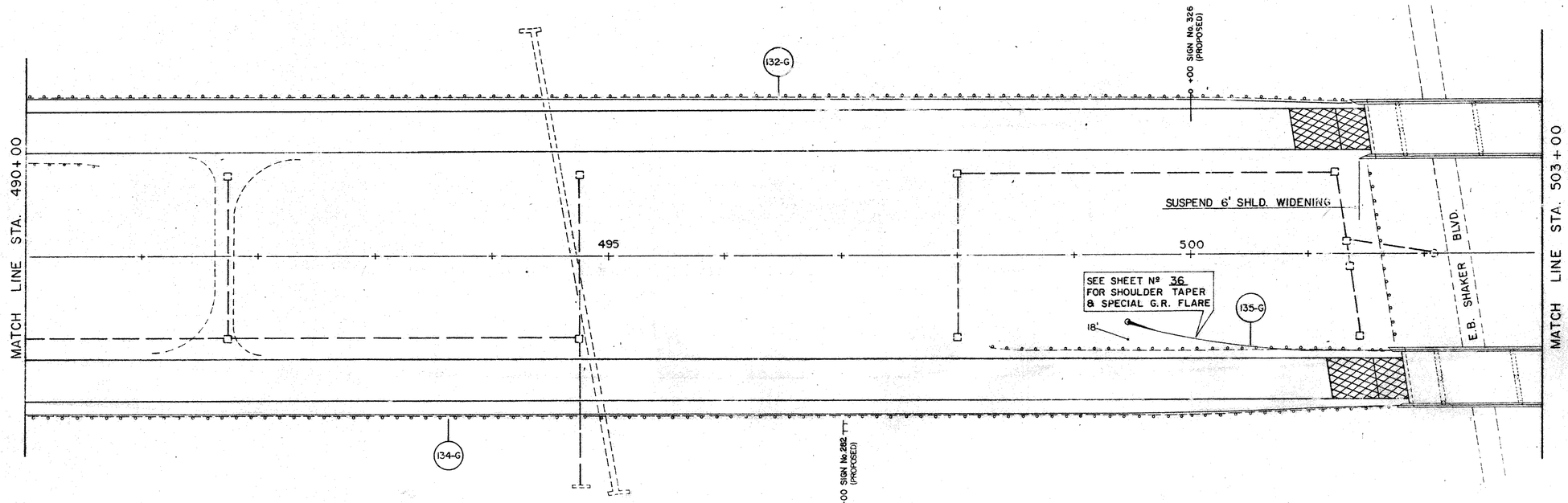
STA. 451+00 TO STA. 477+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY - 271 - 6.04



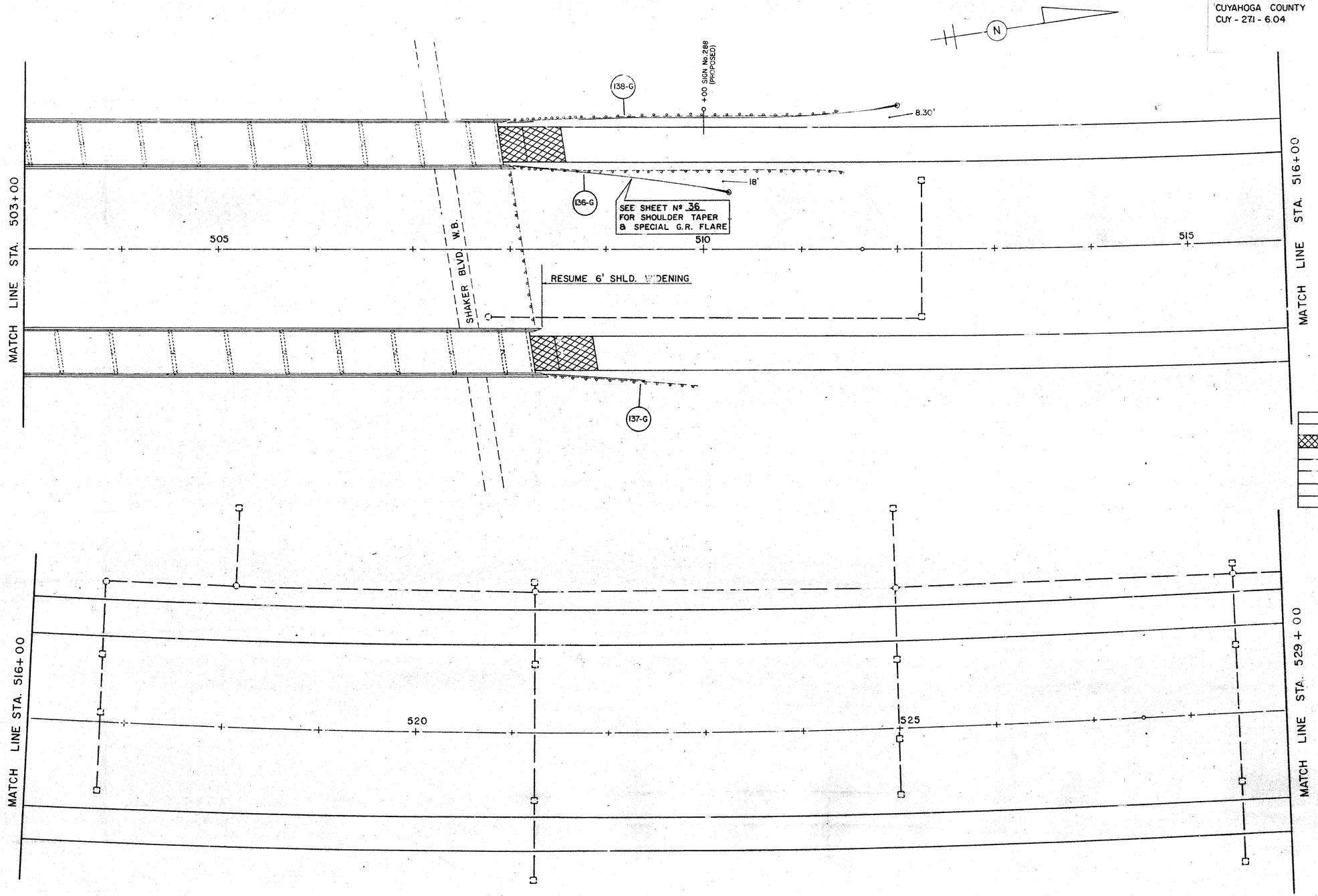
CROSS REFERENCE	
ITEM	SHEET
CROSSOVER	41
SIGNING	72,73
FEATHERING	41
GUARDRAIL	19



STA. 477+00 TO STA. 503+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY - 271 - 6.04



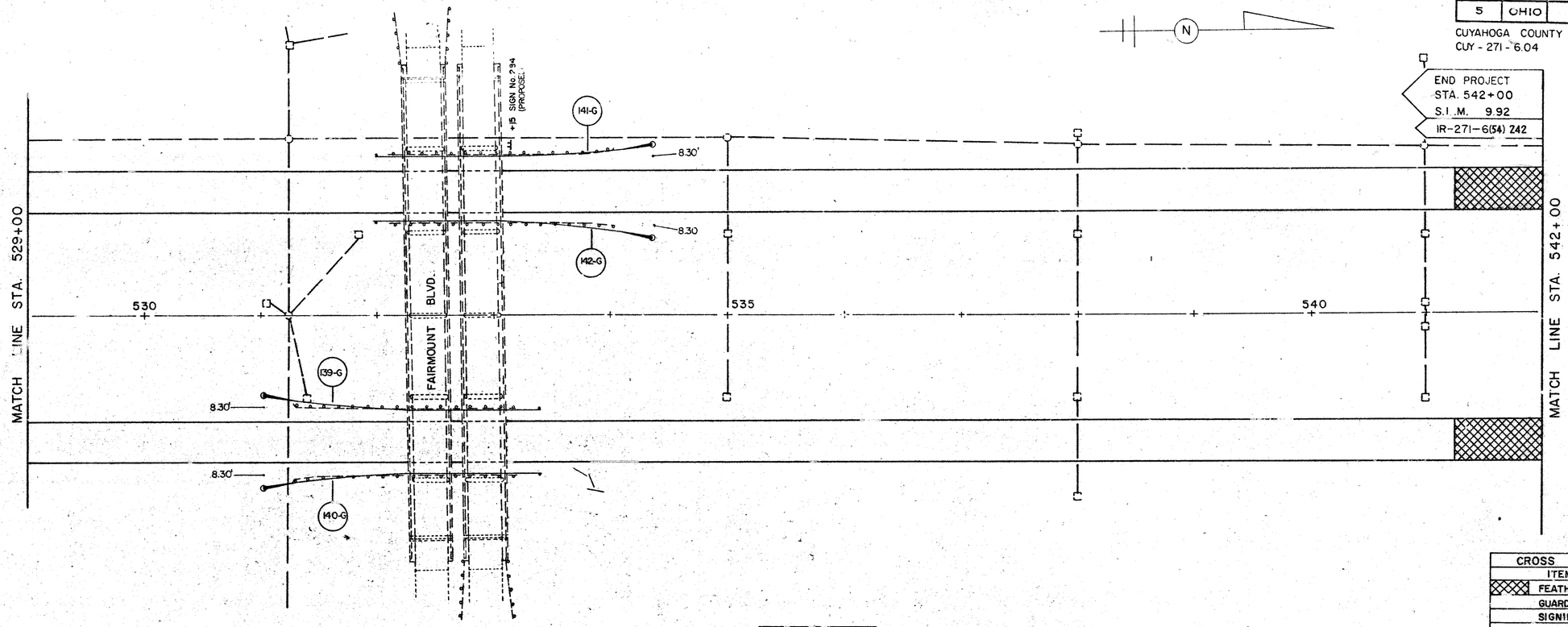
CROSS REFFRENCE	
ITEM	SHEET
FEATHERING	41
SIGNING	73
GUARDRAIL	19

STA. 503+00 TO STA. 529+00

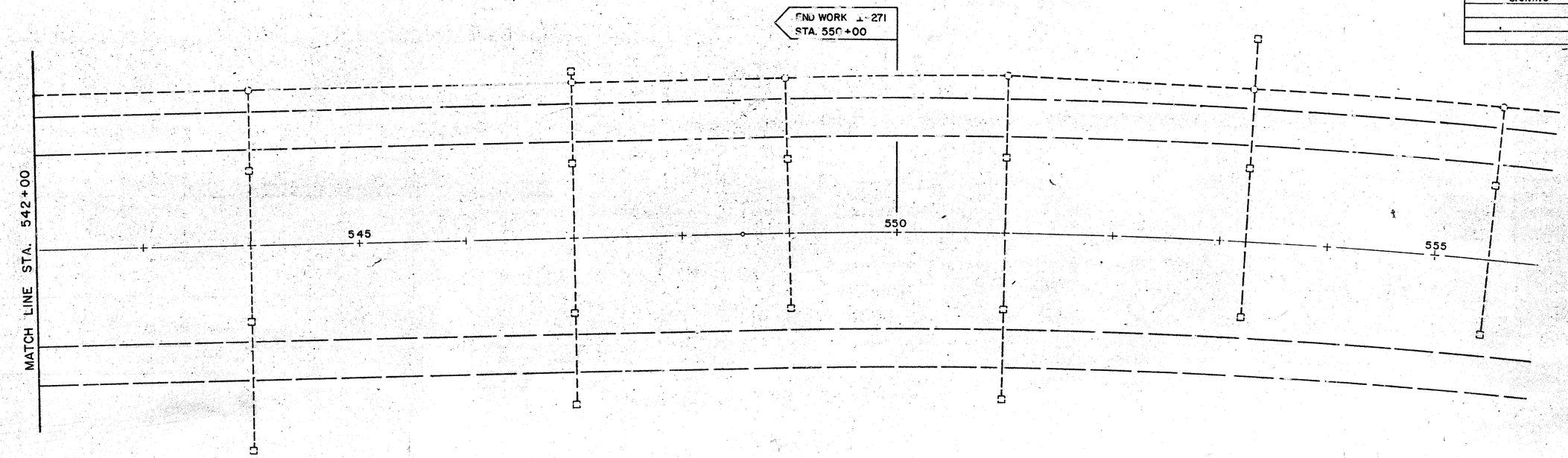
FHWA REGION	STATE	PROJECT	
5	OHIO		

35
99

CUYAHOGA COUNTY
CUY - 271 - 6.04



CROSS REFERENCE	
ITEM	SHEET
FEATHERING	41
GUARDRAIL	19
SIGNING	73

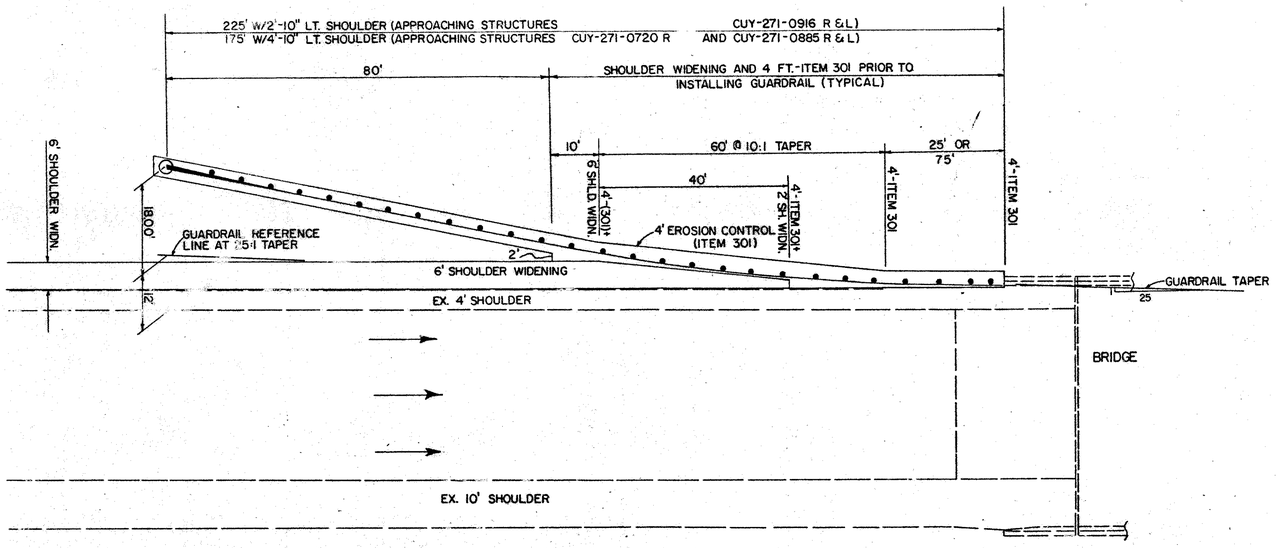


STA. 529+00 TO STA. 555+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

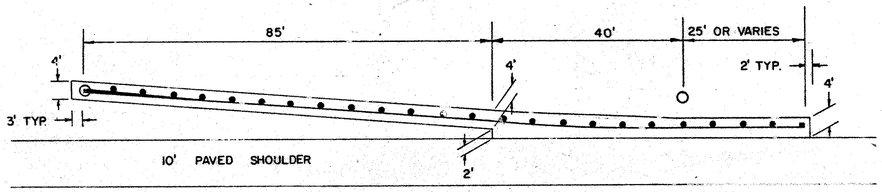
36
99

CUYAHOGA COUNTY
CUY - 271 - 6.04



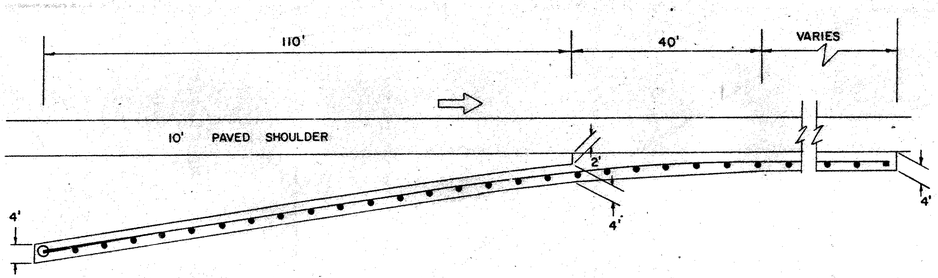
SPECIAL MEDIAN GUARDRAIL AND SHOULDER FLARES

SCALE
0 10 15



ITEM 301 FOR EROSION CONTROL WITH 8.30' GUARDRAIL FLARE

A 4' WIDE STRIP OF ITEM 301 SHALL BE CONSTRUCTED UNDER ALL PROPOSED GUARDRAIL. SEE TYPICAL SECTIONS FOR DETAILS WHEN GUARDRAIL OFFSET EXCEEDS 2 FEET FROM EDGE OF PAVED BERM.

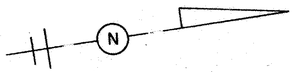


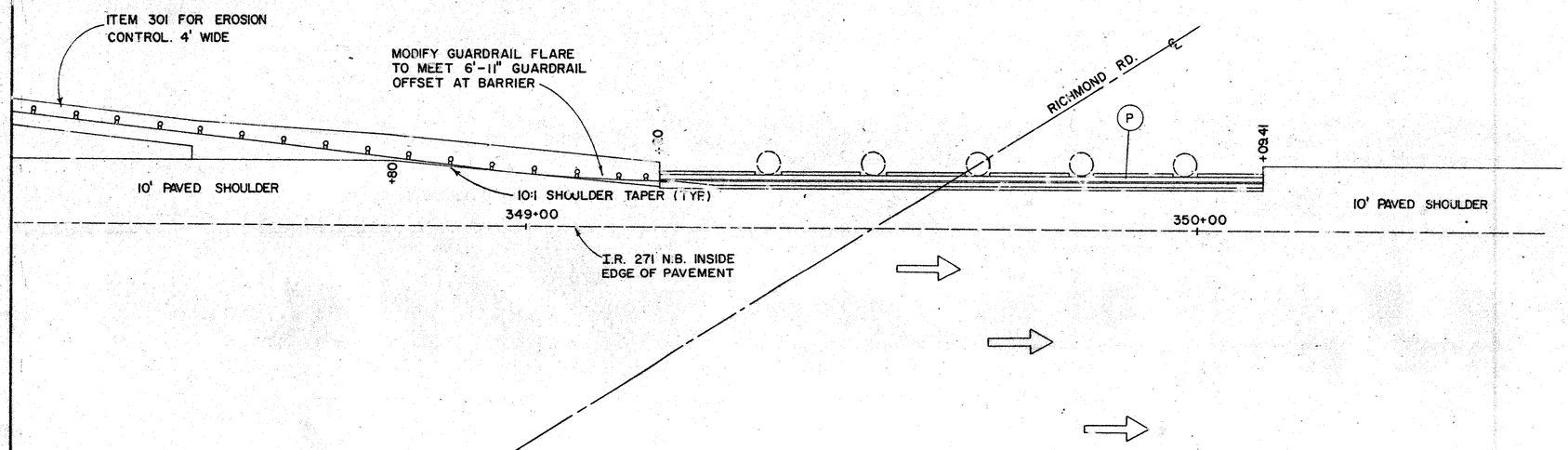
ITEM 301 FOR EROSION CONTROL WITH 18' GUARDRAIL FLARE

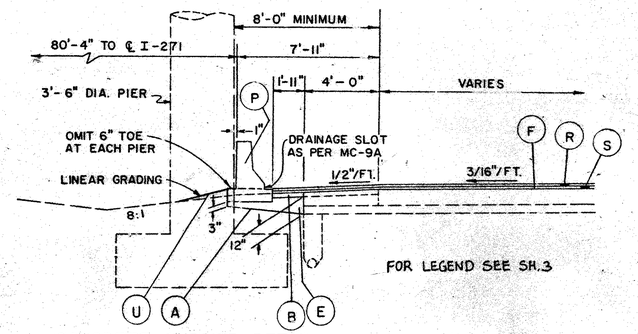
FHWA REGION	STATE	PROJECT	
5	OHIO		

37
99

CUYAHOGA COUNTY
CUY - 271 - 6.04







FOR LEGEND SEE SH.3

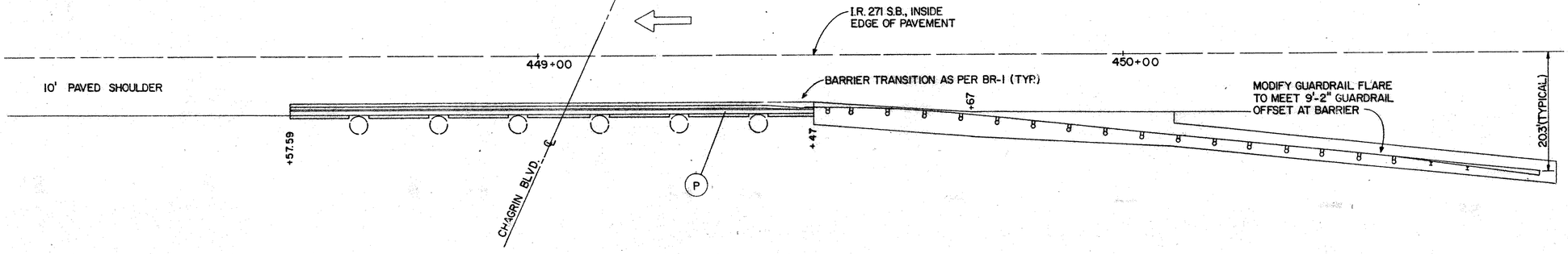
CONCRETE BARRIER DETAIL
STA. 349+20 N.B. TO STA. 350+09.41 N.B.

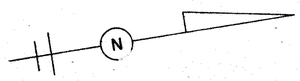
CONCRETE BARRIER DETAILS

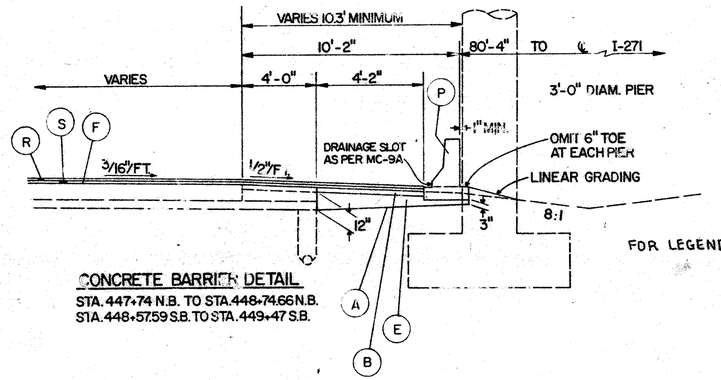
FHWA REGION	STATE	PROJECT	
5	OHIO		

38
99

CUYAHOGA COUNTY
CUY - 271 - 6.04

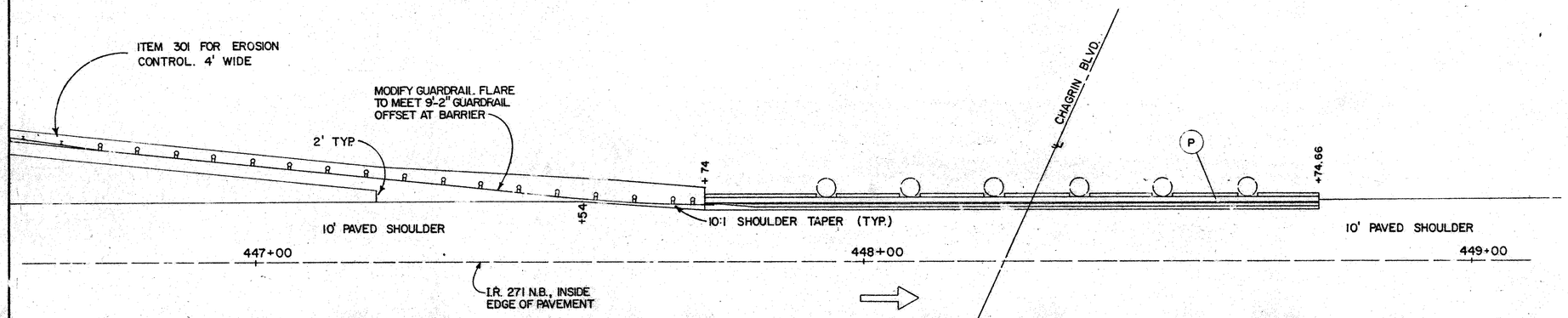






FOR LEGEND SEE SH. 3

CONCRETE BARRIER DETAIL
STA. 447+74 N.B. TO STA. 448+74.66 N.B.
STA. 448+57.59 S.B. TO STA. 449+47 S.B.

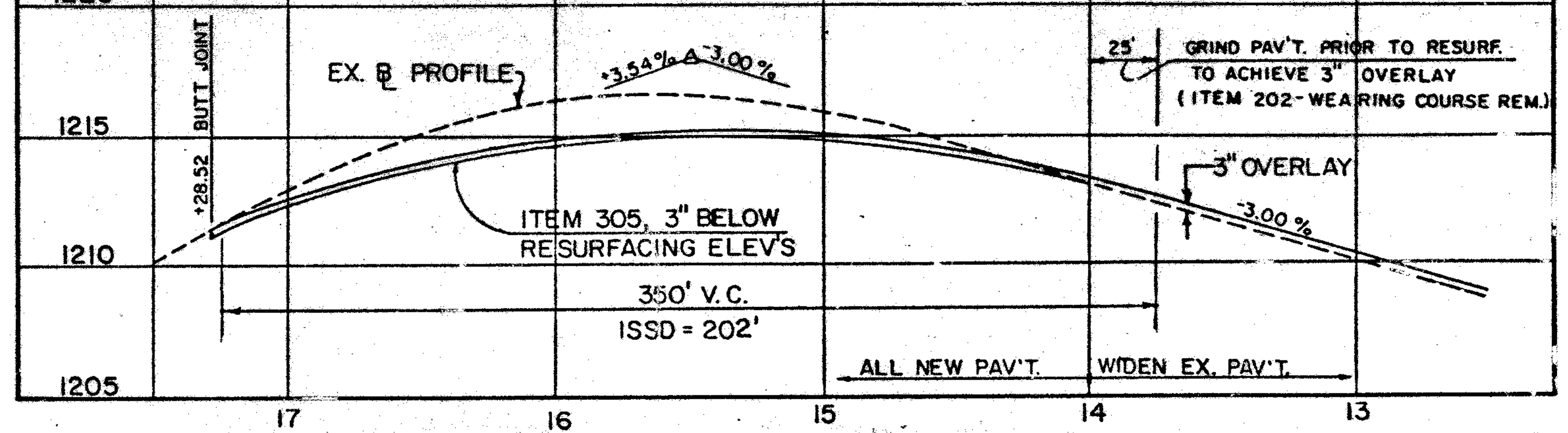


CUYAHOGA COUNTY
CUY-271-6.04

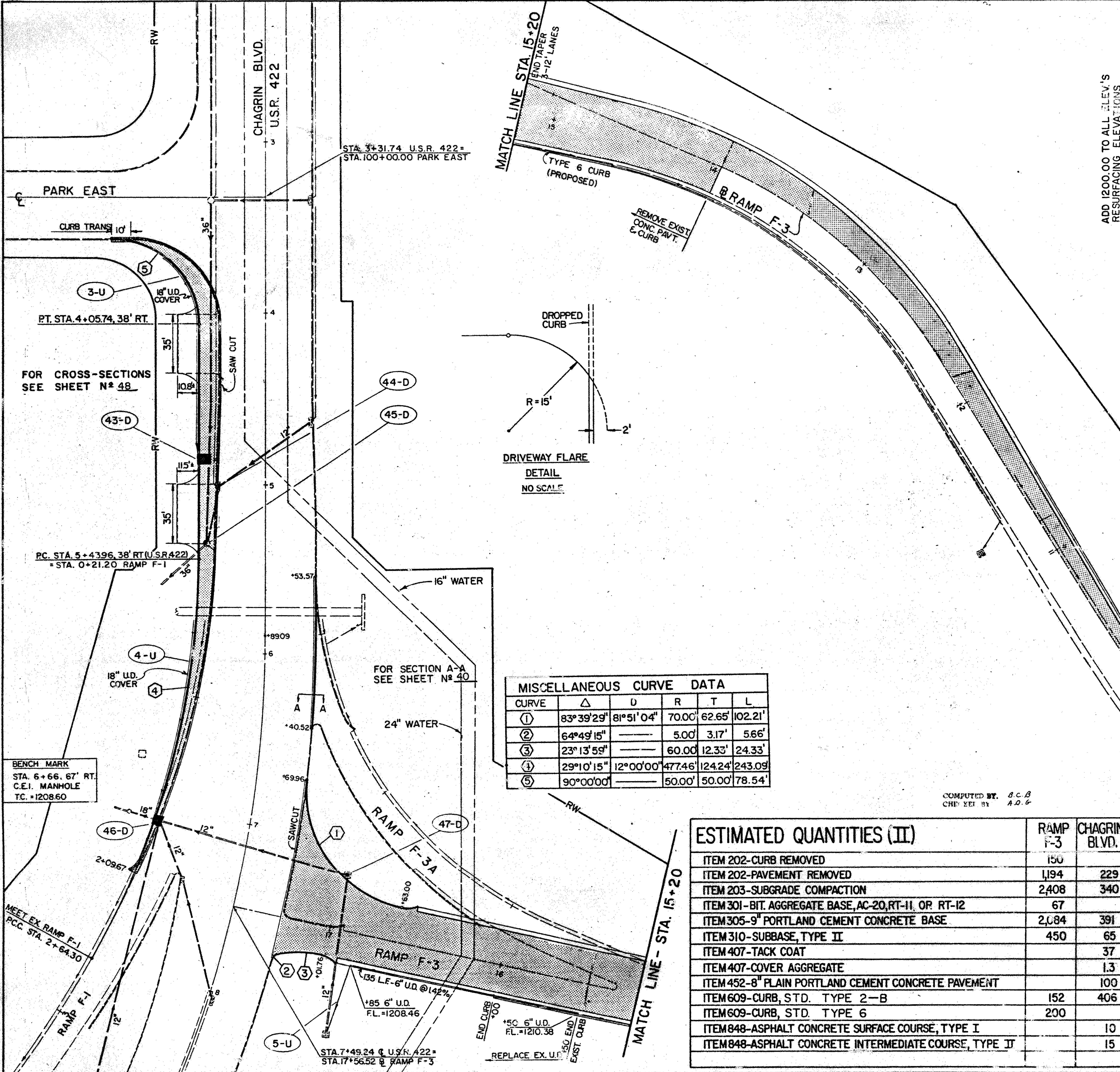
FHWA REGION	STATE	PROJECT	
5	OHIO		

ADD 1200.00 TO ALL ELEV.'S RESURFACING ELEVATIONS

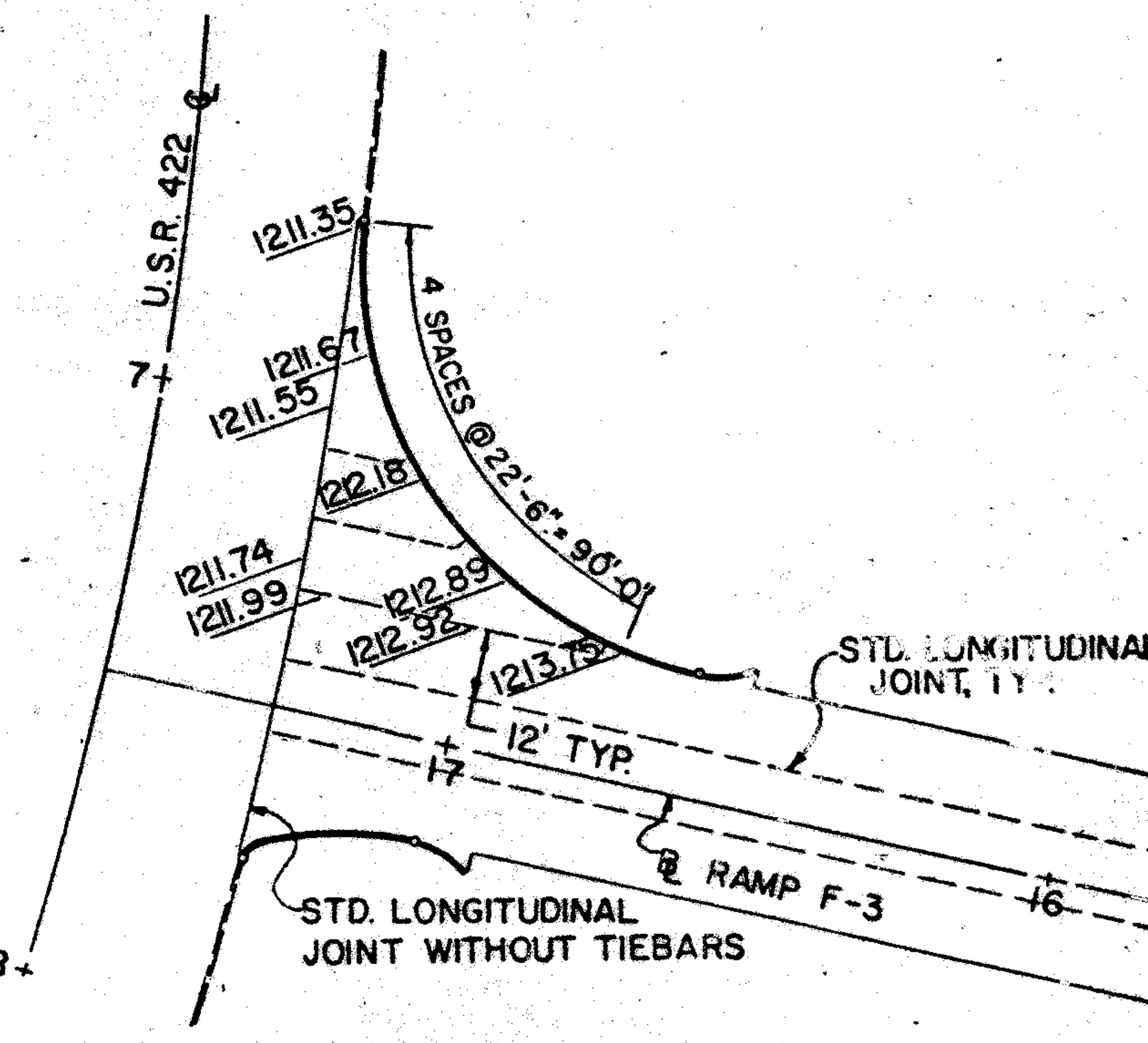
RIGHT EDGE (20' RT.)	11.99	12.92	13.75	14.44	14.90	15.24	15.46	15.57	15.69	15.70	15.59	15.37	15.04	14.58		14.02	
RIGHT EDGE (8' RT.)	12.05	12.90	13.64	14.25	14.71	15.05	15.27	15.38	15.43	15.36	15.18	14.88	14.47	13.94		13.30	
PROFILE GRADE	12.09	12.88	13.57	14.13	14.59	14.93	15.15	15.26	15.26	15.14	14.90	14.55	14.09	13.51		12.82 (12.57)	
LEFT EDGE (4' LT.)	12.11	12.86	13.46	13.94	14.40	14.74	14.96	15.07	15.17	15.03	14.76	14.39	13.90	13.30		12.58	
LEFT EDGE (16' LT.)	12.17	12.85	13.42	13.88	14.34	14.68	14.90	15.01	14.92	14.69	14.35	13.89	13.33	12.65	(12.44)	11.86	(11.61)
	+25		+75	+50	+25		+75	+50	+25		+75	+50	+25		EX.	+75	EX.



℄ PROFILE RAMP F-3



MISCELLANEOUS CURVE DATA					
CURVE	Δ	D	R	T	L
①	83°39'29"	81°51'04"	70.00'	62.65'	102.21'
②	64°49'15"	———	5.00'	3.17'	5.66'
③	23°13'59"	———	60.00'	12.33'	24.33'
④	29°10'15"	12°00'00"	477.46'	124.24'	243.09'
⑤	90°00'00"	———	50.00'	50.00'	78.54'



PAVEMENT ELEVATIONS

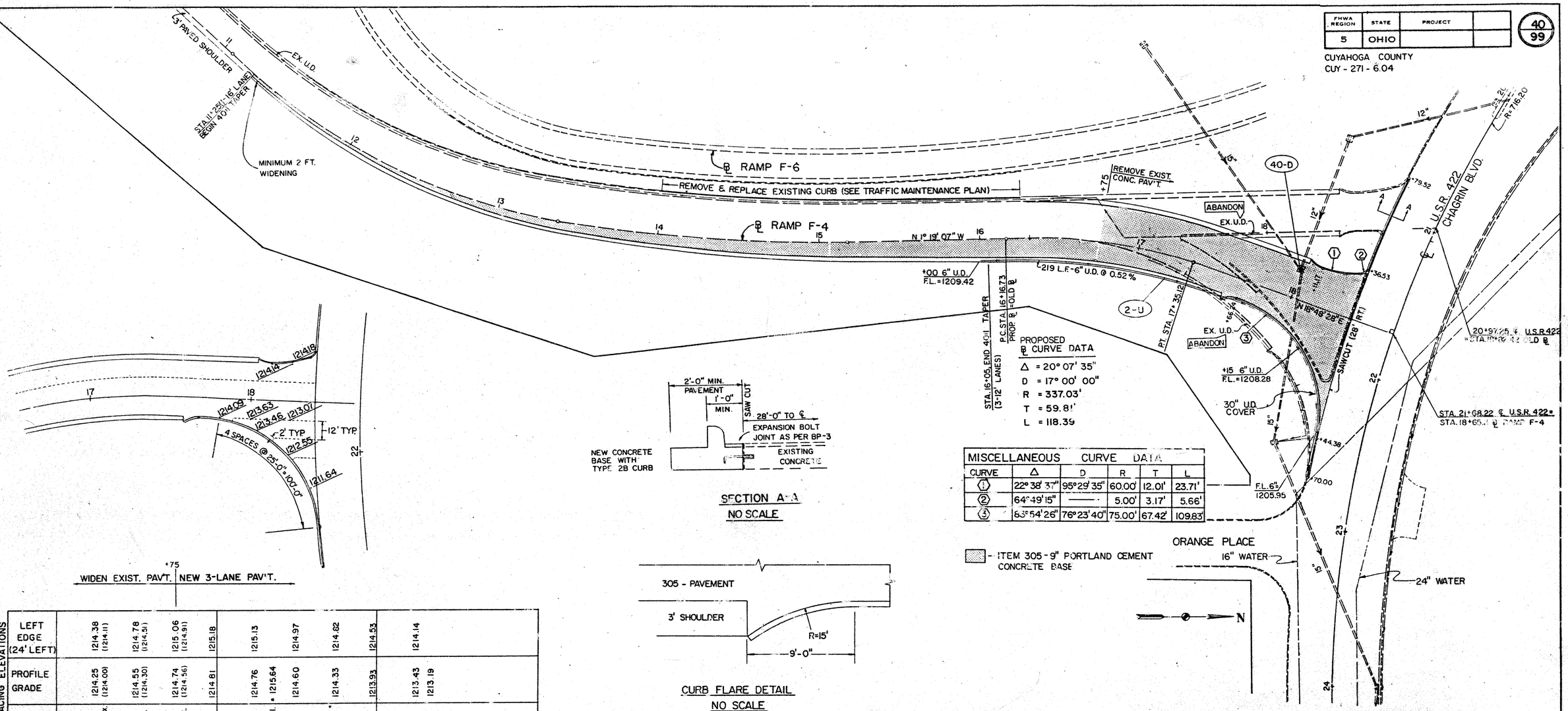
COMPUTED BY. B.C.B
CHECKED BY A.D.G

ESTIMATED QUANTITIES (II)	RAMP F-3	CHAGRIN BLVD.	TOTAL
ITEM 202-CURB REMOVED	150		150 L.F.
ITEM 202-PAVEMENT REMOVED	1,194	229	1,423 S.Y.
ITEM 203-SUBGRADE COMPACTION	2,408	340	2,748 S.Y.
ITEM 301-BIT. AGGREGATE BASE, AC-20, RT-11, OR RT-12	67		67 C.Y.
ITEM 305-9" PORTLAND CEMENT CONCRETE BASE	2,084	391	2,475 S.Y.
ITEM 310-SUBBASE, TYPE II	450	65	515 C.Y.
ITEM 407-TACK COAT		37	37 GAL.
ITEM 407-COVER AGGREGATE		1.3	1.3 TONS
ITEM 452-8" PLAIN PORTLAND CEMENT CONCRETE PAVEMENT		100	100 S.Y.
ITEM 609-CURB, STD. TYPE 2-B	152	406	558 L.F.
ITEM 609-CURB, STD. TYPE 6	200		200 L.F.
ITEM 848-ASPHALT CONCRETE SURFACE COURSE, TYPE I		10	10 C.Y.
ITEM 848-ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE II		15	15 C.Y.

FHWA REGION	STATE	PROJECT	
5	OHIO		

40/99

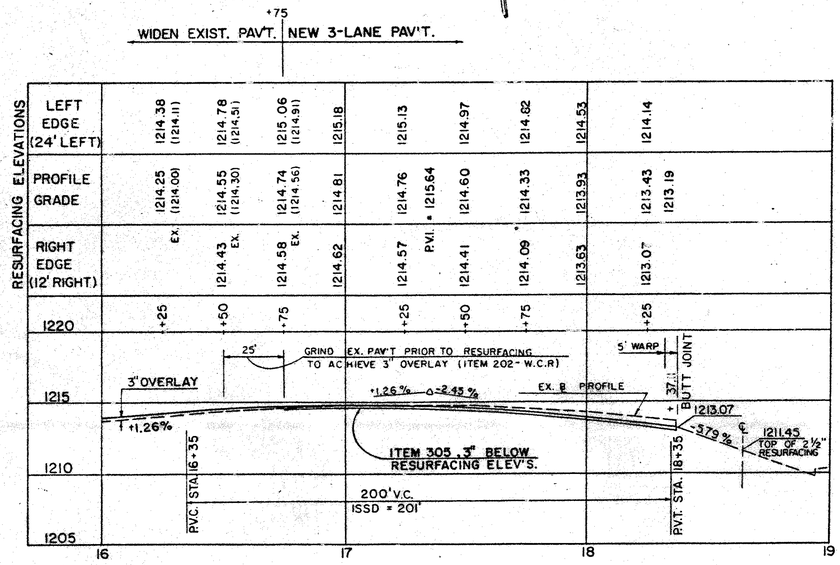
CUYAHOGA COUNTY
CUY - 271 - 6.04



SECTION A-A
NO SCALE

MISCELLANEOUS CURVE DATA					
CURVE	Δ	D	R	T	L
1	22° 38' 37"	95° 29' 35"	60.00'	12.01'	23.71'
2	64° 49' 15"	———	5.00'	3.17'	5.66'
3	83° 54' 26"	76° 23' 40"	75.00'	67.42'	109.83'

CURB FLARE DETAIL
NO SCALE



℄ PROFILE RAMP F-4

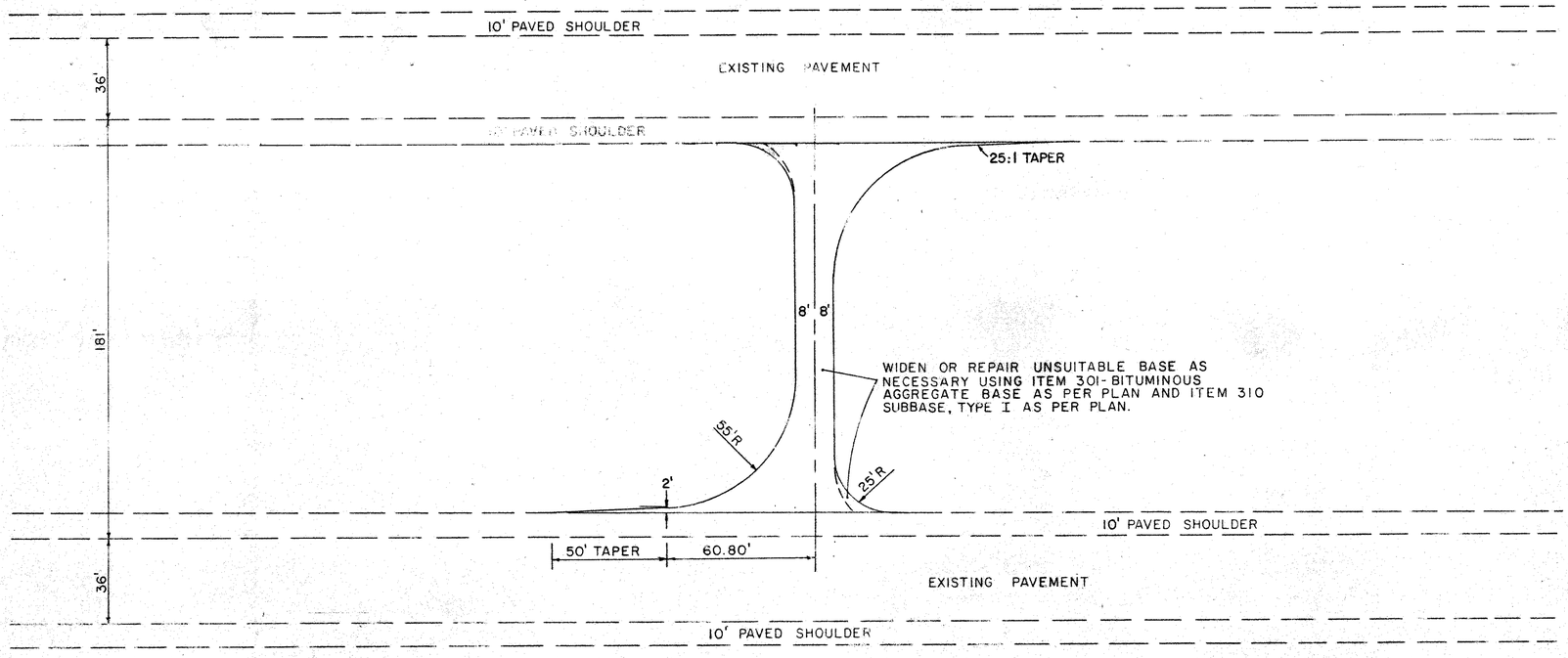
COMPUTED BY: A.D.G.
CHECKED BY: B.C.B.

ESTIMATED QUANTITIES (II)	TOTAL	
ITEM 202 - PAVEMENT REMOVED	870	S.Y.
ITEM 202 - CURB REMOVED (TYPE 6)	250	L.F.
ITEM 203 - SUBGRADE COMPACTION	1,354	S.Y.
ITEM 301 - BIT. AGGREGATE BASE, AC-20, RT-11, OR RT-12	41	C.Y.
ITEM 305 - 9" PORTLAND CEMENT CONCRETE BASE	1,217	S.Y.
ITEM 310 - SUBBASE, TYPE II	264	C.Y.
ITEM 609 - CURB, TYPE 6	225	L.F.
ITEM 609 - CURB, TYPE 2-B	244	L.F.

FHWA REGION	STATE	PROJECT	
5	OHIO		

41
99

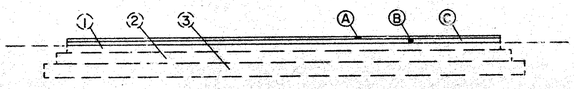
CUYAHOGA COUNTY
CUY - 271 - 6.04



PLAN

SCALE

0 15 30



TYPICAL SECTION

LEGEND

EXISTING

(1) - 3" - ITEM 301
(2) - 5" - ITEM 304
(3) - 6" - ITEM 310

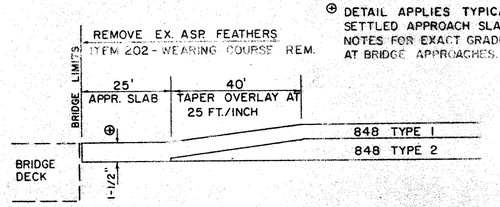
PROPOSED

Ⓐ - 1¼ - ITEM 848, ASPHALT CONCRETE SURFACE COURSE, TYPE 1
Ⓑ - 1¾ - ITEM 848, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2
Ⓒ - ITEM 407, TACK COAT, AND COVER AGGREGATE

COMPUTED BY: D.A.D.
CHECKED BY: E.N.F.

ESTIMATED QUANTITIES

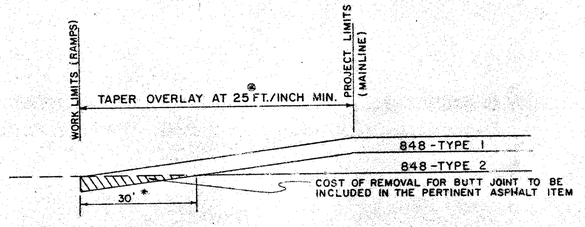
SHEET NO.	LOCATION	407 COVER AGGREGATE	407 TACK COAT	848 ASPHALT CONCRETE SURFACE COURSE TYPE 1	848 ASPHALT CONCRETE INTERMEDIATE COURSE TYPE 2	
	I-271	TONS	GALS.	CU. YDS.	CU. YDS.	
	411+92	1.7	49.4	17.2	24.0	
	491+71	1.7	49.4	17.2	24.0	
	TOTAL (II)	3.4	98.8	34.4	48.0	



⊕ DETAIL APPLIES TYPICALLY TO NON SETTLED APPROACH SLABS, SEE GENERAL NOTES FOR EXACT GRADE REQUIREMENTS AT BRIDGE APPROACHES.

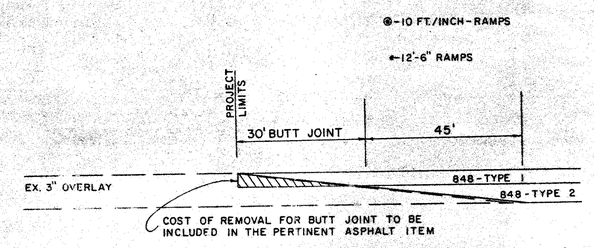
FEATHER DETAIL ADJACENT TO OVERLAID STRUCTURE

NO SCALE



FEATHER DETAIL ADJACENT TO NON-OVERLAID STRUCTURE OR ROADWAY

NO SCALE



FEATHER DETAIL ADJACENT TO PREVIOUSLY OVERLAID ROADWAY

NO SCALE

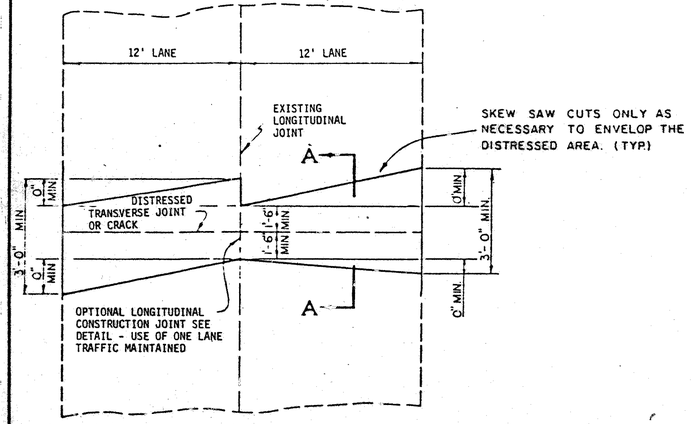
CROSSOVER DETAILS AND FEATHERING

FHWA REGION	STATE	PROJECT	
5	OHIO		

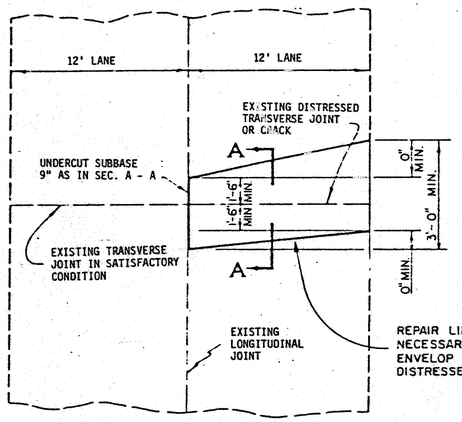
42
99

CUYAHOGA COUNTY
CUY - 271 - 6.04

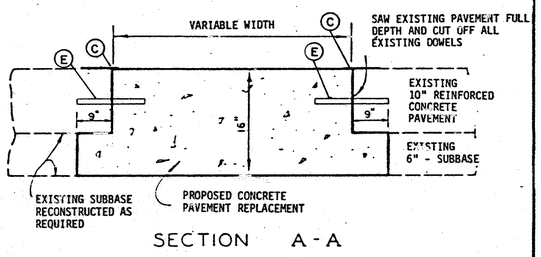
305 PAVEMENT REPLACEMENT DETAILS (PAVEMENT JOINTS OR CRACKS)



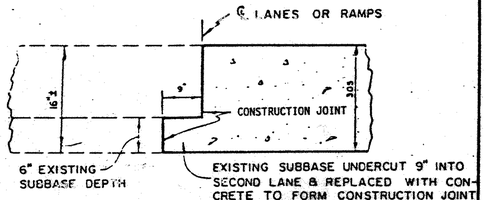
TWO LANE REPLACEMENT



SINGLE LANE REPLACEMENT



SECTION A-A



OPTIONAL LONGITUDINAL CONSTRUCTION JOINT FOR FULL WIDTH REPLACEMENT WHERE ONE LANE OF TRAFFIC MAINTAINED

SEE SHEET No 7 FOR GENERAL NOTES PERTAINING TO PAVEMENT REMOVAL AND REPLACEMENT

NOTE:

THIS WORK IS FOR THE REPAIRING OF DETERIORATED TRANSVERSE PAVEMENT JOINTS AND OTHER SMALL DETERIORATED AREAS. THE LOCATION AND SIZES OF THE REPAIRS SHALL BE AT THE DIRECTION OF THE ENGINEER.

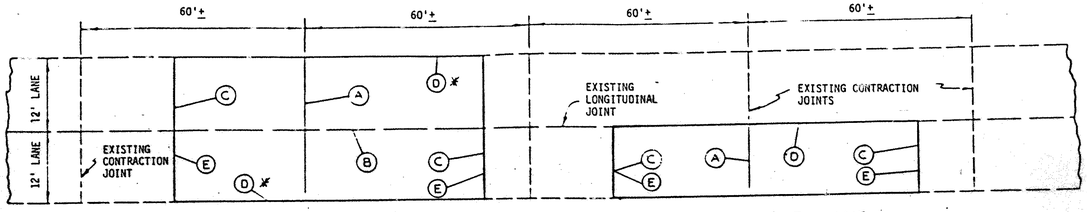
THE COST OF RESHAPING, RECONSTRUCTING AND RECOMPACTING OF THE EXISTING SUBBASE AS NECESSARY SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 305, 16" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN.

THIS DETAIL ALSO APPLIES TO THE REPAIR OF EXISTING 9" REINFORCED CONCRETE.
PAYMENT SHALL BE FOR 16" - ITEM 305 FOR EITHER THICKNESS.

ESTIMATED QUANTITIES (II)

ITEM 305 - 16" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN I-271 6500 S.Y.	ITEM 305 - 10" PORTLAND CEMEMT CONCRETE BASE, AS PER PLAN I-271 12,000 S.Y.
ITEM 202 - PAVEMENT REMOVED I-271 18,500 S.Y.	
ITEM SPEC. - PAVEMENT SAWING I-271 29,000 L.F.	

305 PAVEMENT REPLACEMENT DETAILS (PAVEMENT PANELS)



TYPICAL TWO LANE REPLACEMENT

TYPICAL ONE LANE REPLACEMENT

* REQUIRED IF PAVEMENT REPLACEMENT IS ADJACENT TO EXISTING PAVEMENT.

Ⓐ STANDARD CONTRACTION JOINT AS PER STD DRWG BP-4 - LOCATE, ON STRAIGHT LINE EXTENSION OF EXISTING JOINT FOR SINGLE LANE PAVEMENT

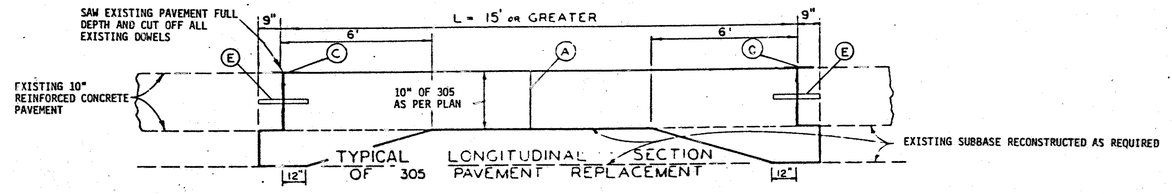
Ⓑ LONGITUDINAL JOINT - LONGITUDINAL CONSTRUCTION JOINT AS PER BP-3

Ⓒ JOINT AND CRACK SEALING (SEE GENERAL NOTES)

Ⓓ EXPANSION BOLT JOINT AS PER BP-3, AT 5'-0" INTERVALS

Ⓔ DOWELLED CONSTRUCTION JOINT, SEE DETAIL

SEE SHEET No 7 FOR GENERAL NOTES PERTAINING TO PAVEMENT REMOVAL AND REPLACEMENT



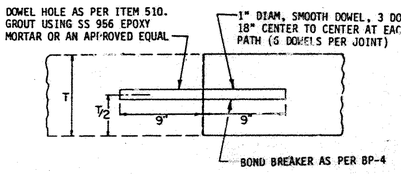
TYPICAL LONGITUDINAL SECTION OF 305 PAVEMENT REPLACEMENT

NOTE:

THIS WORK IS FOR THE REPAIRING OF THE LARGER SIZE DETERIORATED PAVEMENT AREAS OF EITHER SINGLE OR TWO LANE WIDTHS. THE LOCATIONS AND SIZES OF THESE REPAIRS SHALL BE AT THE DIRECTION OF THE ENGINEER.

THE COST OF RESHAPING, RECONSTRUCTING AND RECOMPACTING OF THE EXISTING SUBBASE AS NECESSARY SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 305 10" PORTLAND CEMENT CONCRETE BASE, AS PER PLAN.

THIS DETAIL ALSO APPLIES TO THE REPAIR OF 9" REINFORCED CONCRETE.
PAYMENT SHALL BE FOR 10" - ITEM 305 FOR EITHER THICKNESS.



DOWELLED CONSTRUCTION JOINT

LONGITUDINAL & TRANSVERSE AGGREGATE DRAIN DETAILS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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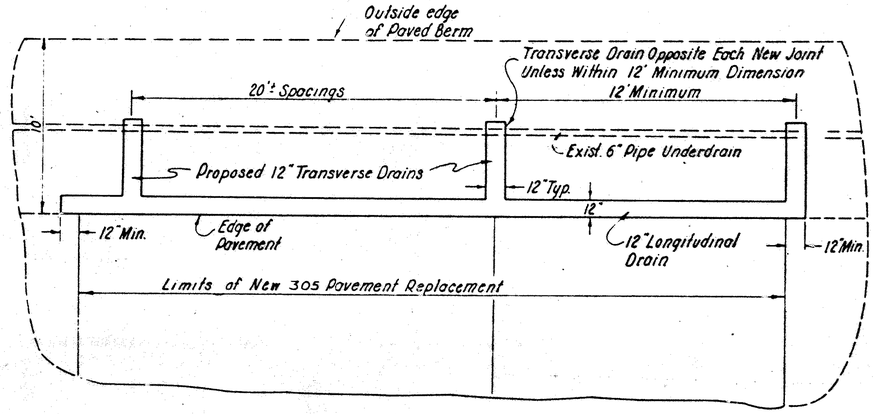
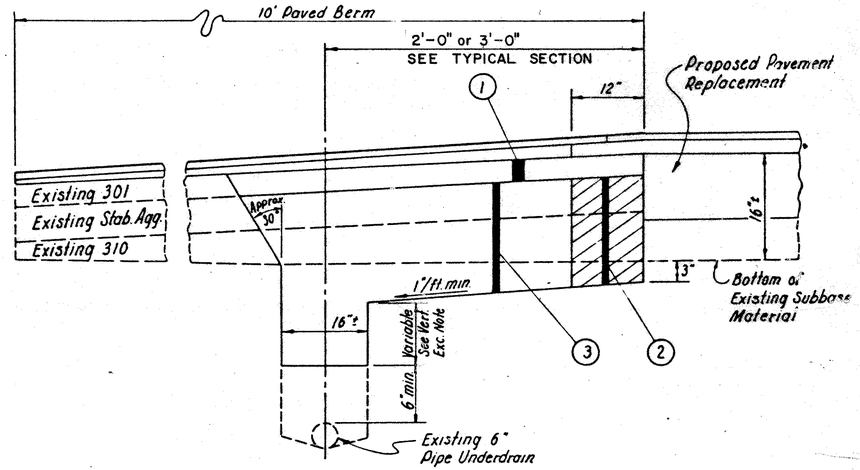
99

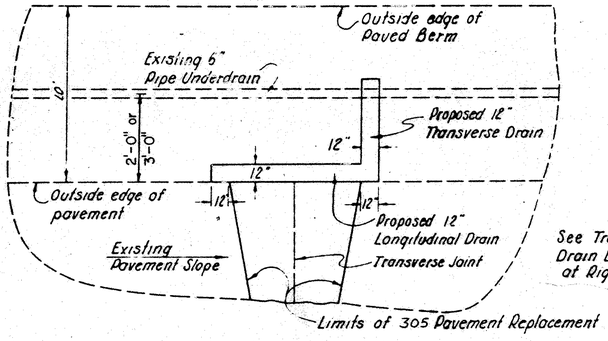
For Full Width 305 Replacement, the Spacing of the Transverse Drains on the Inside Berm shall be the same as for the Outside Berm.



TYPICAL LONGITUDINAL AND TRANSVERSE AGGREGATE DRAIN DETAILS WITH 305 PAVEMENT REPLACEMENTS

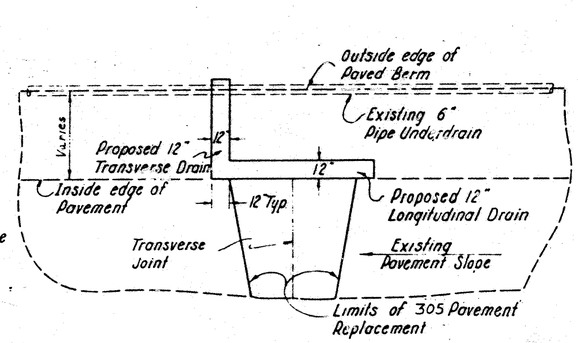


TRANSVERSE DRAIN DETAIL FOR OUTSIDE BERM



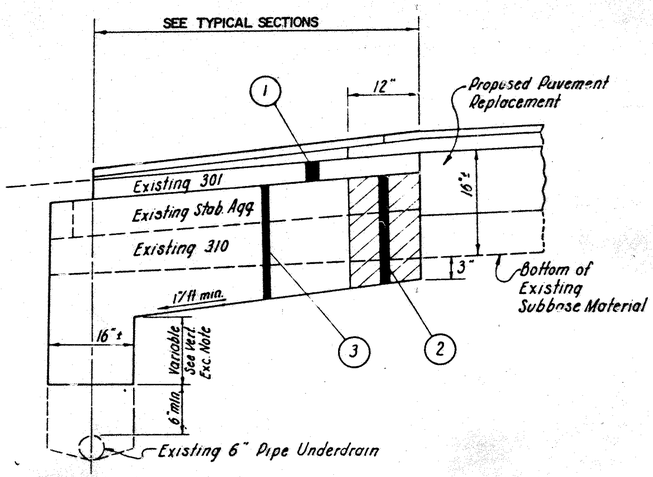
OUTSIDE PAVEMENT EDGE

See Transverse Drain Details at Right



INSIDE PAVEMENT EDGE

TYPICAL LONGITUDINAL AND TRANSVERSE AGGREGATE DRAIN DETAILS WITH 305 PAVEMENT REPLACEMENTS



TRANSVERSE DRAIN DETAIL FOR MEDIAN BERM

NOTES

LONGITUDINAL AGGREGATE DRAINS SHALL BE CONSTRUCTED CONTINUOUSLY ALONG THE PAVEMENT EDGES FOR THE FULL LENGTH OF 305 PAVEMENT REPLACEMENTS (SEE SHEET _ FOR DETAILS). TRANSVERSE AGGREGATE DRAINS SHALL BE CONSTRUCTED AT 20 FEET MAXIMUM SPACING ALONG THE LENGTH OF THE PAVEMENT REPLACEMENTS OR AS DIRECTED BY THE ENGINEER.

THE VERTICAL LIMIT OF THE EXCAVATION SHALL BE TO SIX (6) INCHES ABOVE THE TOP OF THE EXISTING PIPE UNDERDRAIN OR TO THE TOP OF VERTICAL LIMIT OF THE EXISTING AGGREGATE UNDERDRAIN TRENCH BACKFILL. POSITIVE DRAINAGE MUST BE SECURED. ANY TILE BROKEN OR DAMAGED AS A RESULT OF THIS OPERATION SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.

THE UNIT PRICE BID FOR ITEMS 605 AGGREGATE DRAINS USING NO. 8 AGGREGATE, AS PER PLAN, SHALL INCLUDE THE REMOVING AND DISPOSING OF EXISTING BERM MATERIALS, THE FURNISHING, PLACING AND COMPACTING OF THE NO. 8 AGGREGATE, FURNISHING, PLACING AND COMPACTING OF THE ASPHALT CONCRETE AND ALL INCIDENTAL REQUIREMENTS NECESSARY TO COMPLETE THESE ITEMS.

THE ASPHALT CONCRETE SHALL BE PLACED AND COMPACTED ON THE BERMS AS DIRECTED BY THE ENGINEER FOR THE AGGREGATE DRAIN ESTIMATED QUANTITIES.

ESTIMATED QUANTITIES (II)
QUANTITY CALCULATIONS LONGITUDINAL DRAINS — APPROXIMATELY 1 L.F./S.Y. OF PAV'T. REPLACEMENT TRANSVERSE DRAINS — APPROXIMATELY 1/2 L.F./S.Y. OF PAV'T. REPLACEMENT
COMBINED AGGREGATE DRAIN QUANITY = 1.5 L.F./S.Y.
ITEM 605, AGGREGATE DRAIN, AS PER PLAN USING Nº 8 AGGREGATE I-271 28,000 L.F.

(1) 3" Min. Asphalt Concrete AC-20 (Item 402 or 848) Match Ex. Thickness
(2) 605 Longitudinal Aggregate Drain, As Per Plan, Using No. 8 Aggregate
(3) 605 Transverse Aggregate Drain, As Per Plan, Using No. 8 Aggregate

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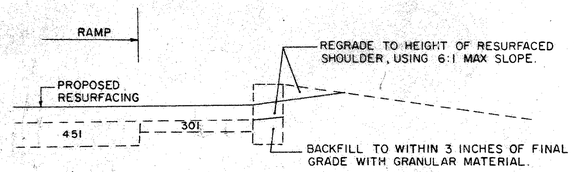
ITEM 202 - CURB REMOVED, AS PER PLAN

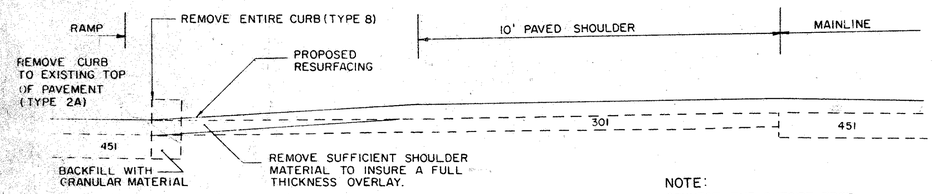
THE FOLLOWING DETAILS AND SPECIFICATIONS SHALL APPLY TO THIS ITEM OF WORK:

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



NOTE:
CONNECT THE OUTSIDE EDGE OF THE 10 FT. PAVED SHOULDER AND THE CURB GUTTER LINE WITH A STRAIGHT GRADE.

FENCE REPLACEMENT I-271 (II)

FROM		TO		202	607	COMMENTS
STATION	FENCE OFFSET	STATION	FENCE OFFSET	FENCE REMOVE	FENCE TYPE CL	
370+18	198.00' LT.	387+90	198.00' LT.	1744'	1744'	
425+80.90	211.64' RT.	432+47	232.00' RT.	667'	667'	
430+10	198.00' LT.	434+00	195.00' LT.	390'	390'	
⊕ 433+38 ±	255' RT. ±	437+35 ±	517' RT. ±	—	478'	EX. FENCE MISSING
536+00	219.00' LT.	550+00	205' LT. ±	1407	1407'	
TOTALS				4208'	4686'	

⊕ LOCATE NEW FENCE IN LINE WITH CORNER POSTS AT 432+47, 230' RT., 434+43, 278' RT. AND 438+48, 604' RT..

ESTIMATED QUANTITIES

RAMP Nº	LOCATION		202		DRAINAGE REFERENCE NUMBER
			CURB REMOVED AS PER PLAN	CATCH BASIN ABANDONED	
	FROM	TO	LIN. FT.	EACH	
F-1	11+80.78	17+33.78	553	1	39-D
F-2	12+79.32	18+10.32	531	1	50-D
F-5	12+41.62	17+02.62	461	1	48-D
F-6	12+31.12	17+31.12	500	1	41-D
G-2	14+71.22	19+21.22	450		
	TOTALS		2495	4	

01-S

STATE DISTRICT	STATE	PROJECT	
5	OHIO		

45
99

CUYAHOGA COUNTY
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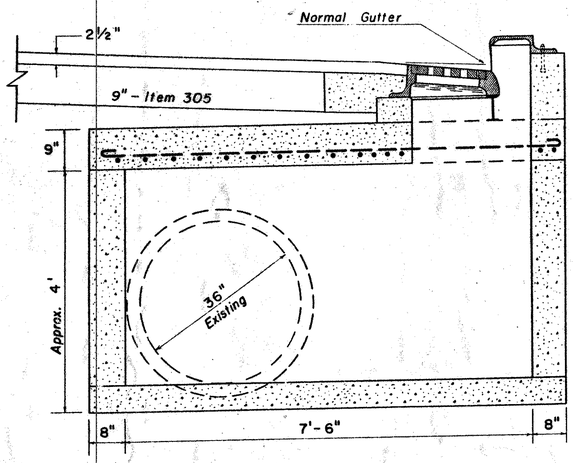
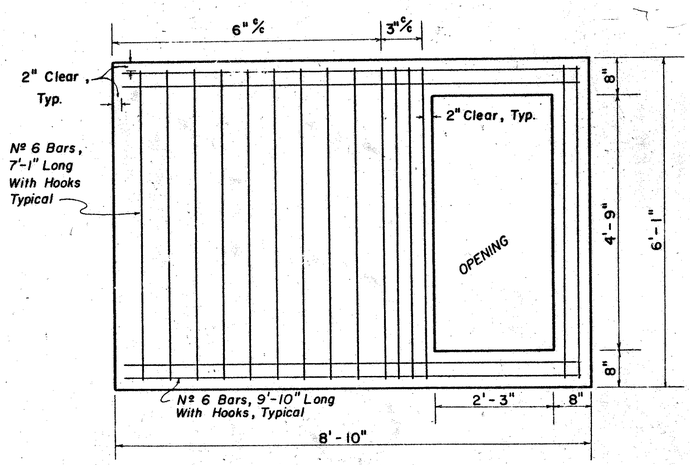


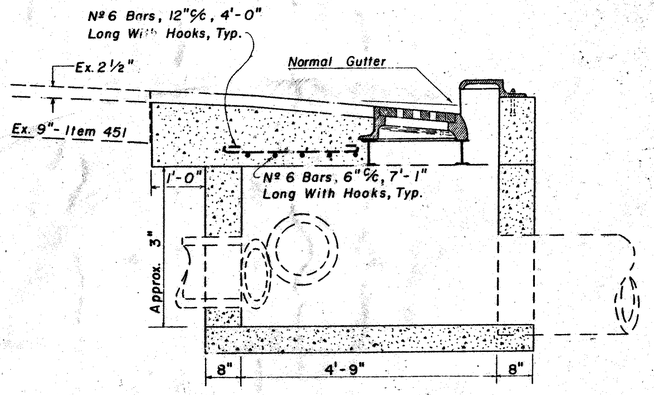
SIDE VIEW



TOP SLAB DETAIL

Note: For Additional Details See Standard Construction Drawings CB-3 & CB-458A

STANDARD № 3 CATCH BASIN, MODIFIED AS PER PLAN, TYPE A



STANDARD № 3 CATCH BASIN, MODIFIED AS PER PLAN, TYPE B

Note: For Additional Details See Standard Construction Drawing CB-3 & CB-458A

FHWA REGION	STATE	PROJECT	
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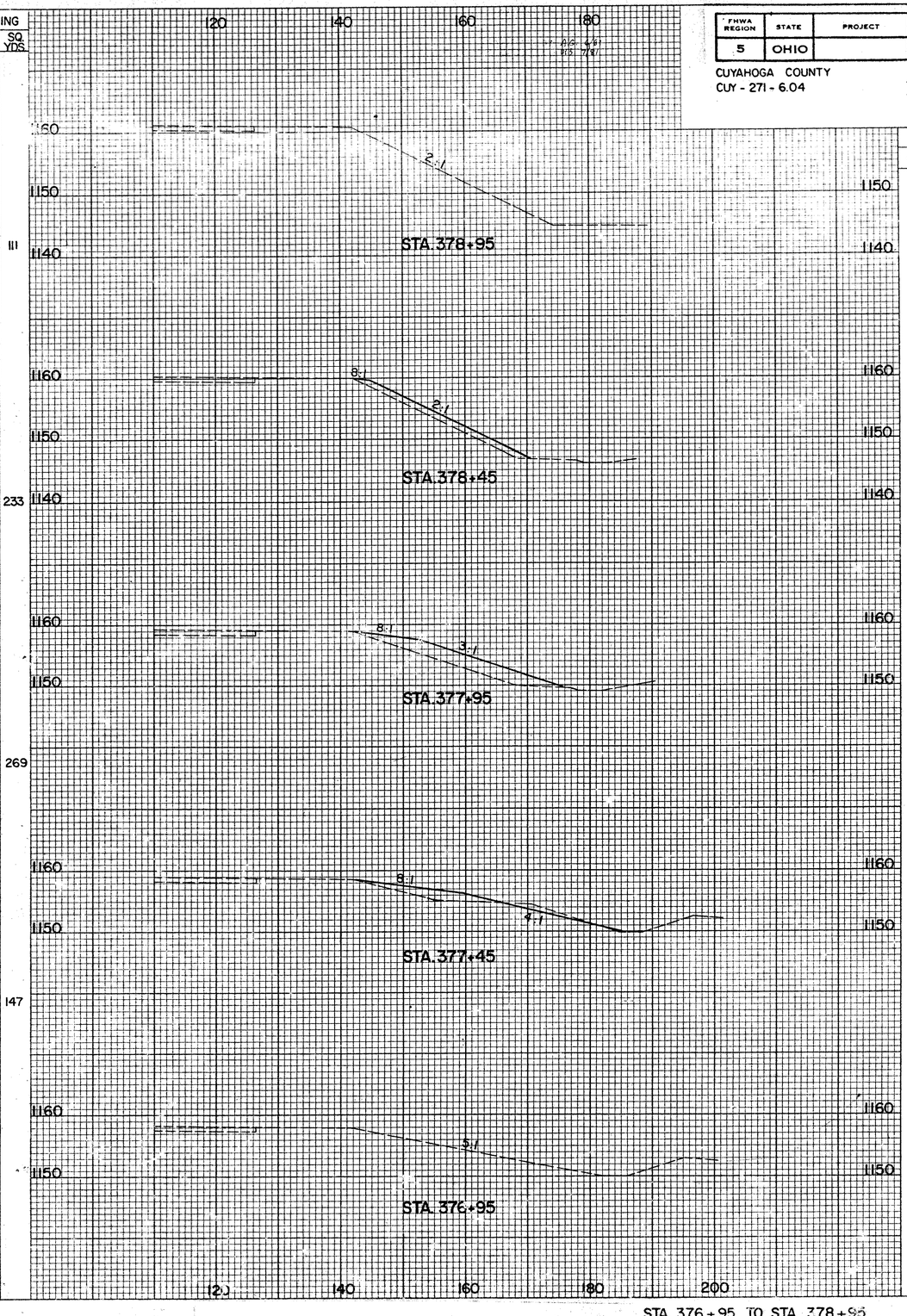
SEEDING END WIDTH	SEEDING SQ. YDS.
	0
	111
	40
	233
	44
	269
	53
	147
	0



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	0		27
	29		78
0	55		
		7	72
7	23		
		7	21
0	0		

STA. 376+95 TO STA. 378+95

FHWA REGION	STATE	PROJECT	
5	OHIO		

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98

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SEEDING END WIDTH	SEEDING SQ. YDS.	STA.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0				0		69
	142	410+50				
51				74		116
	264	410+00				
44				51		49
	172	409+50				
18				2		2
	50	409+00				
0				0		
		408+50				

SEEDING END WIDTH	SEEDING SQ. YDS.	STA.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0			0	0		
	183	422+00			19	48
66			20	52		
	367	421+50			26	71
66			8	25		
	183	421+00			7	23
0			0	0		
		420+50				

CROSS SECTIONS STA. 408+50 TO STA. 410+50, STA. 420+50 TO STA. 422+00

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SODDING END WIDTH	SODDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL	SODDING END WIDTH	SODDING SQ. YDS.
10		22	0				
	67			34	0	0	
14		18	0				0
	78			40	0	0	
14		25	0				
	78			44	0		
14		22	0				
	59			39	0		
10		26	0				
						17	
							36
							47

STA. 5+50
(U.S.R. 422)
60" X 38"
36"

STA. 5+00
C.B. RECONSTRUCTED TO GRADE WITH MH-1 TOP

STA. 5+34
MANHOLE ADJUSTED TO GRADE PROVIDING NEW HEAVY DUTY FRAME AND COVER

44-D
45-D

STA. 5+00
(U.S.R. 422)

STA. 4+85
STD. Nº 3 C.B. MODIFIED AS PER PLAN, TYPE A
N.G. = 1210.73
F.L. EX. 36" = 1204.8 ±

43-D

STA. 4+50
(U.S.R. 422)

STA. 4+00
(U.S.R. 422)

BEGIN SODDING
STA. 3+56

BEGIN EARTHWORK
STA. 3+56

STA. 7+50
(U.S.R. 422)

END EARTHWORK
STA. 7+42

STA. 7+05
STD. Nº 3 CATCH BASIN
MODIFIED AS PER PLAN, TYPE B
F.L. EX. 12" E = 1203.55, F.L. EX. 12" N = 1203.65
F.L. EX. 12" NE = 1203.63, F.L. EX. 18" S = 1203.38
N.G. = 1207.05

46-D

STA. 7+00
(U.S.R. 422)

STA. 6+50
(U.S.R. 422)

STA. 6+00
(U.S.R. 422)

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
6	0		
		9	0
6	0		
		15	0
10	0		
		23	0
15	0		
		34	0

CROSS SECTIONS U.S.R. 422 STA 4+00 TO STA 7+50

FHWA REGION	STATE	PROJECT	
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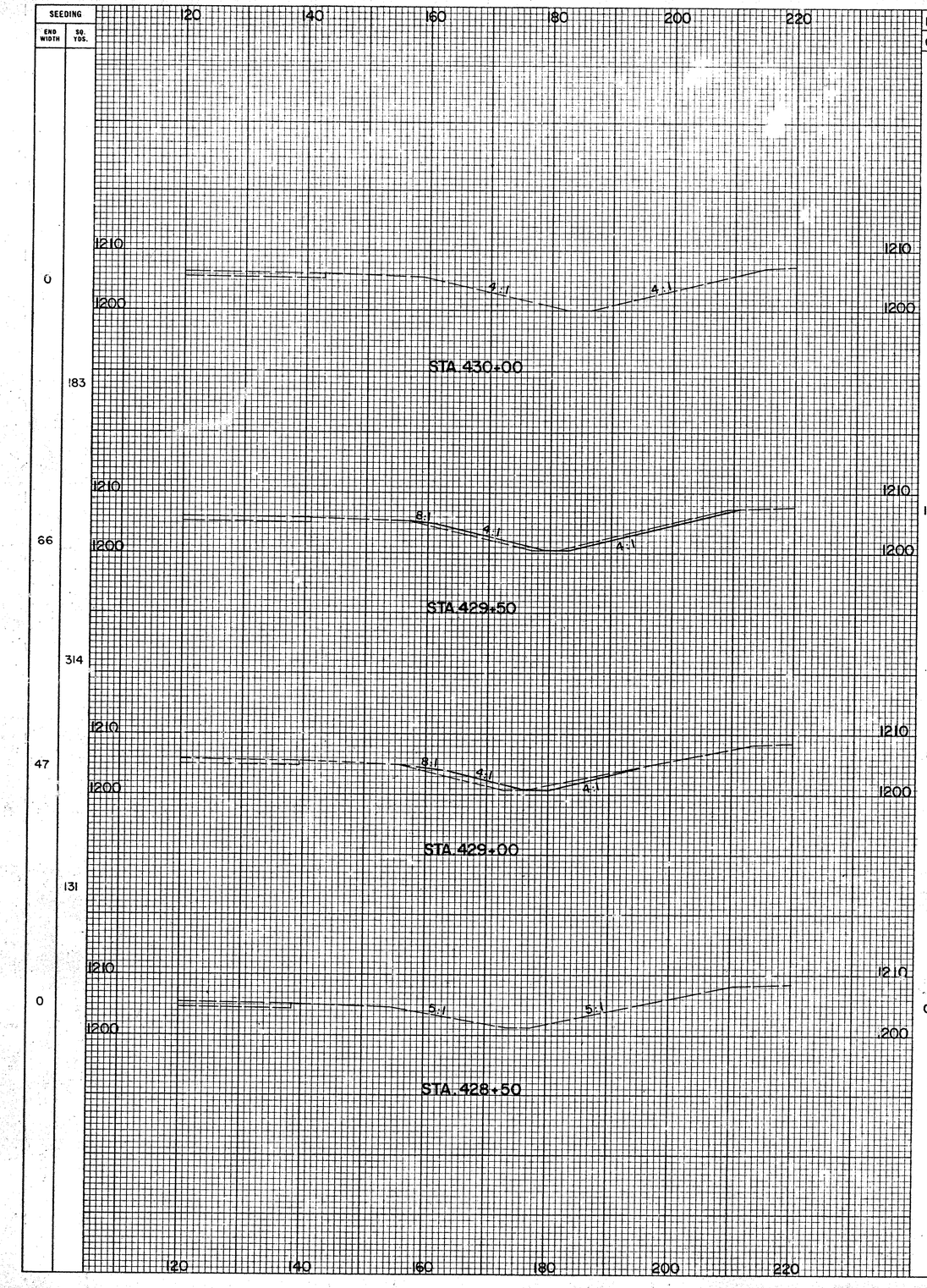
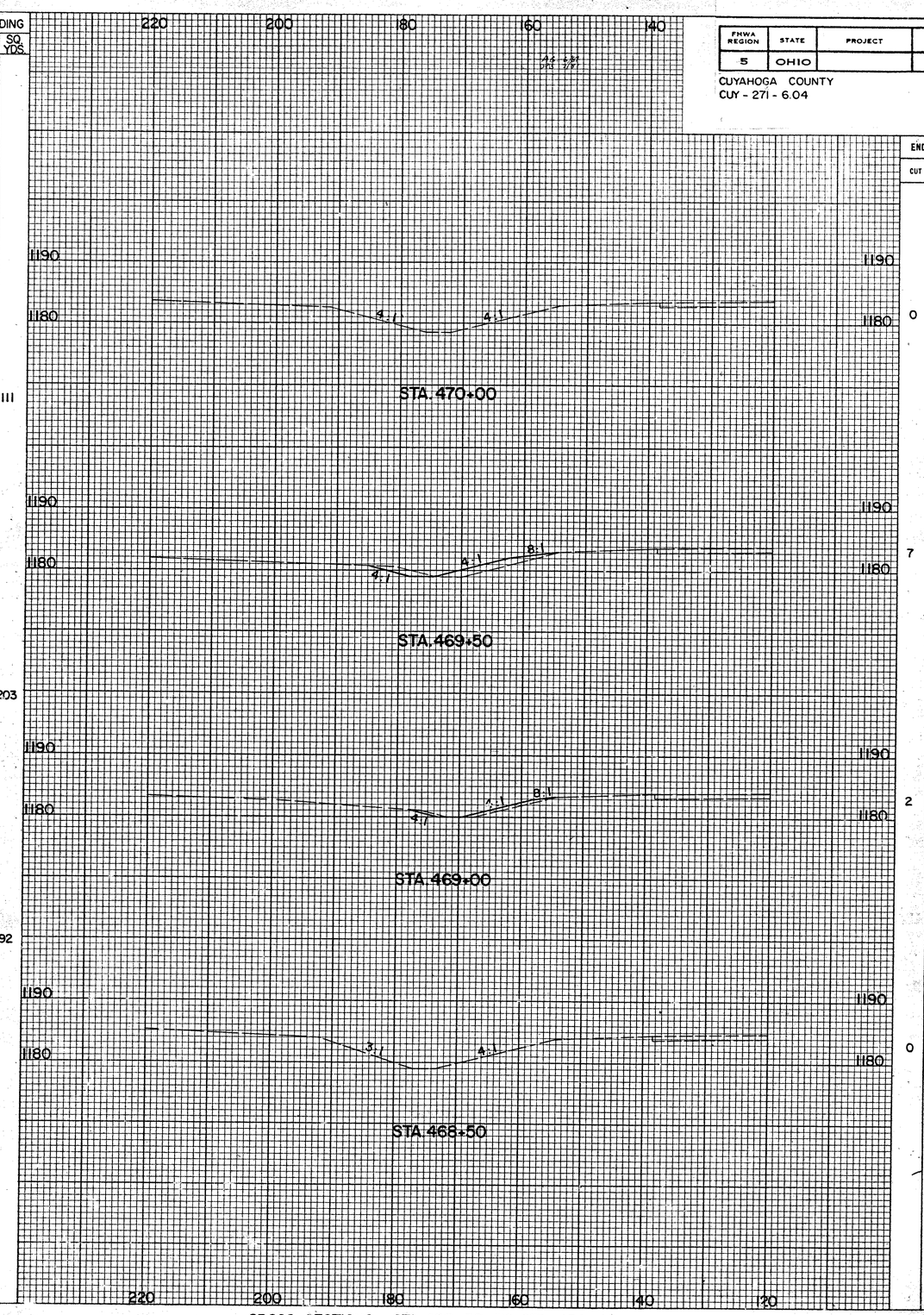
SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL
0		0	0		
	183			9	10
66		10	11		
	314			17	23
47		8	14		
	131			7	13
0		0	0		

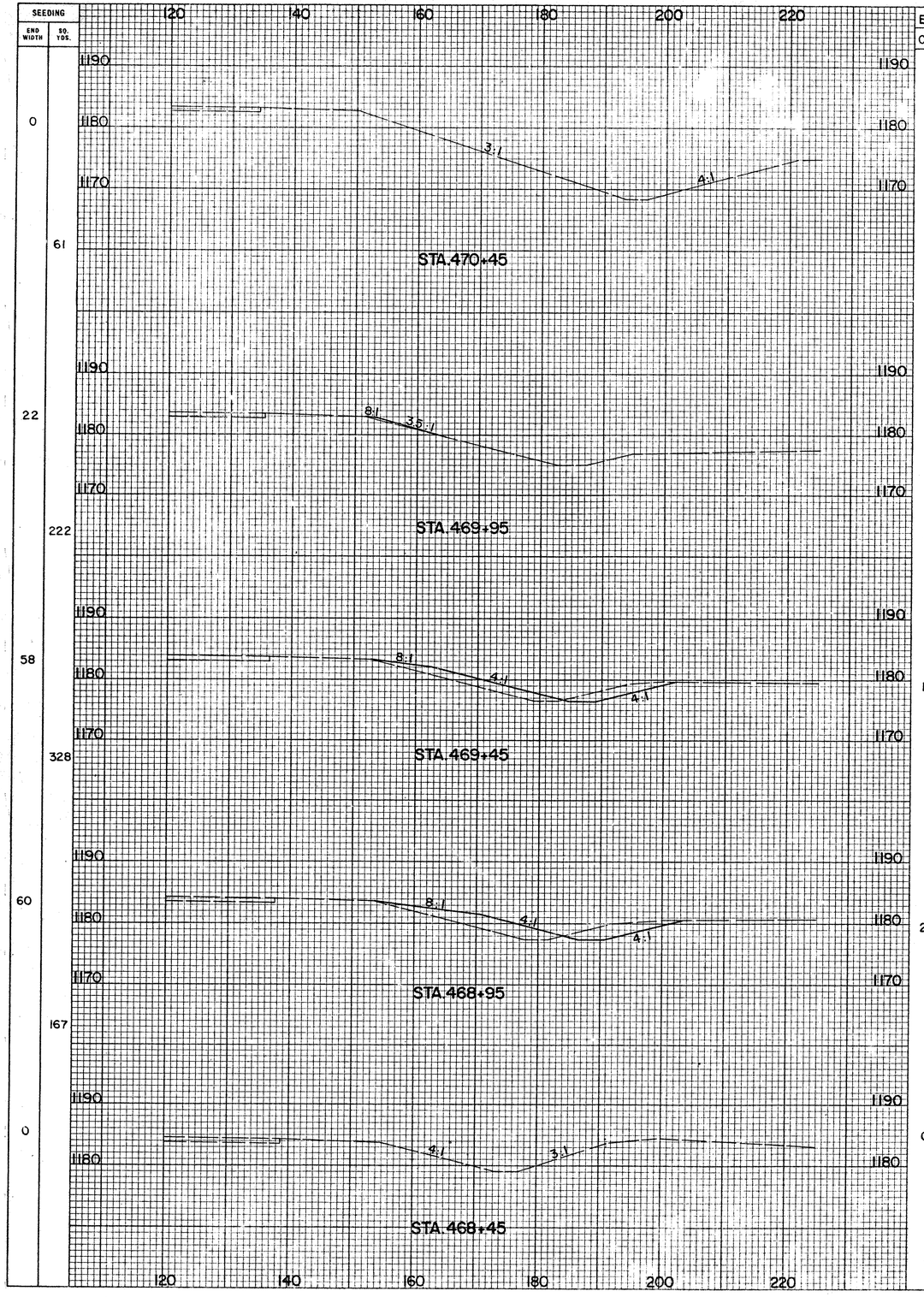


SEEDING		END AREA		VOLUME	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL
0		0	0		
	111			7	14
40		7	15		
	203			8	20
33		2	7		
	92			2	7
0		0	0		



CROSS SECTIONS STA. 428+50 TO STA. 430+00, STA. 468+50 TO STA. 470+00

SEEDING		END AREA		VOLUME		SEEDING	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL	END WIDTH	SQ. YDS.
0			0				
	61			0	1		
22		0	1				
	222			18	31		
58		19	32				
	328			40	70		
60		24	44				
	167			22	41		
0		0	0				



FHWA REGION	STATE	PROJECT	
5	OHIO		

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END AREA		VOLUME	
CUT	FILL	CUT	FILL

CROSS SECTIONS STA. 468+45 TO STA. 470+45

FHWA REGION	STATE	PROJECT	
5	OHIO		

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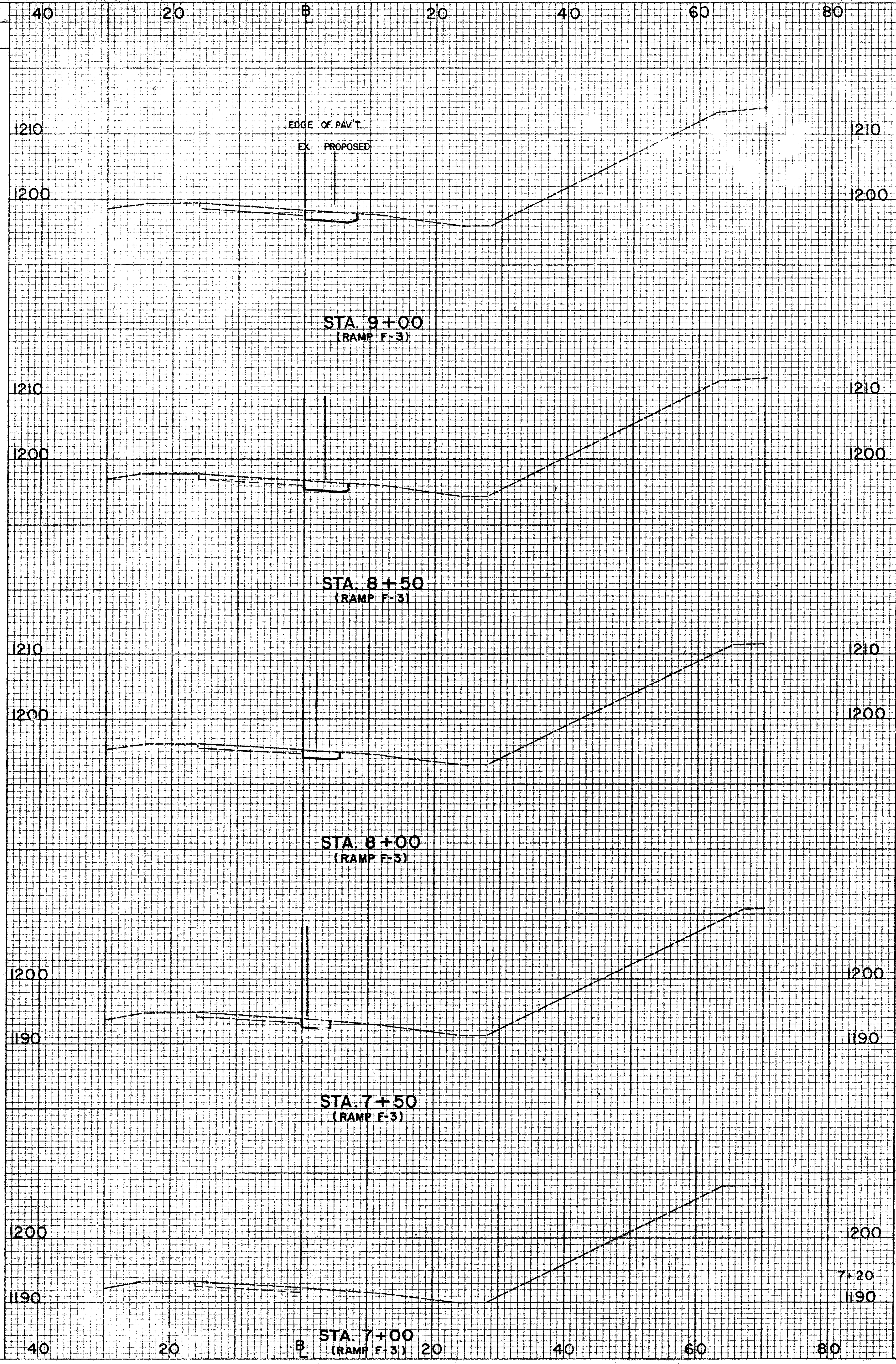
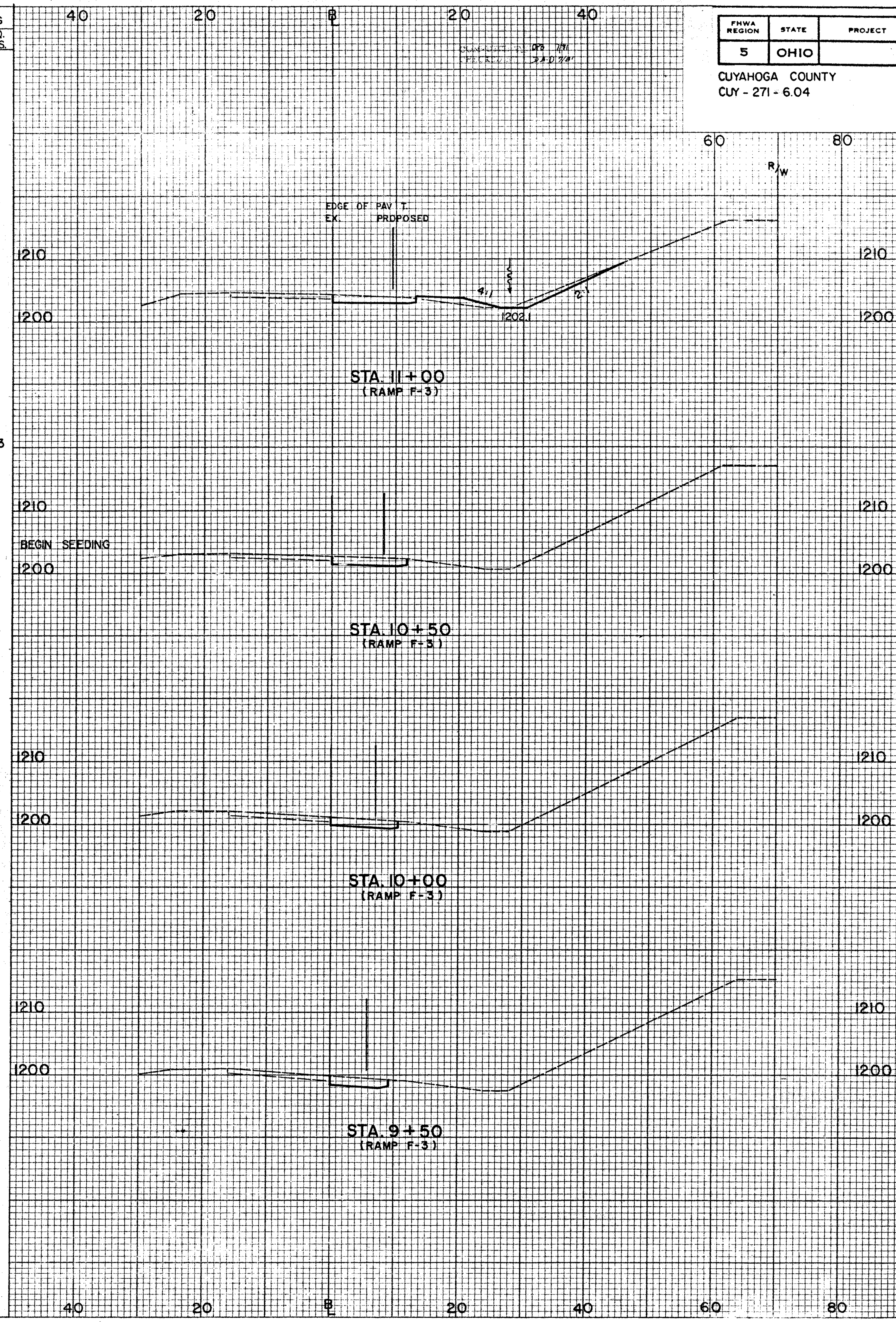


SEEDING	
END WIDTH	SQ. YDS.

END AREA		VOLUME		SEEDING	
CUT	FILL	CUT	FILL	END WIDTH	SQ. YDS.
10					
				37	
		18			
					103
9					
				0	
		15			
7					
		12			
6					
		9			
4	0				



END AREA		VOLUME	
CUT	FILL	CUT	FILL
22	9		
		34	8
15	0		
		26	
13			
		25	
14			
		22	

CROSS SECTIONS, RAMP F-3, STA. 7+00 TO STA. 11+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

52
99

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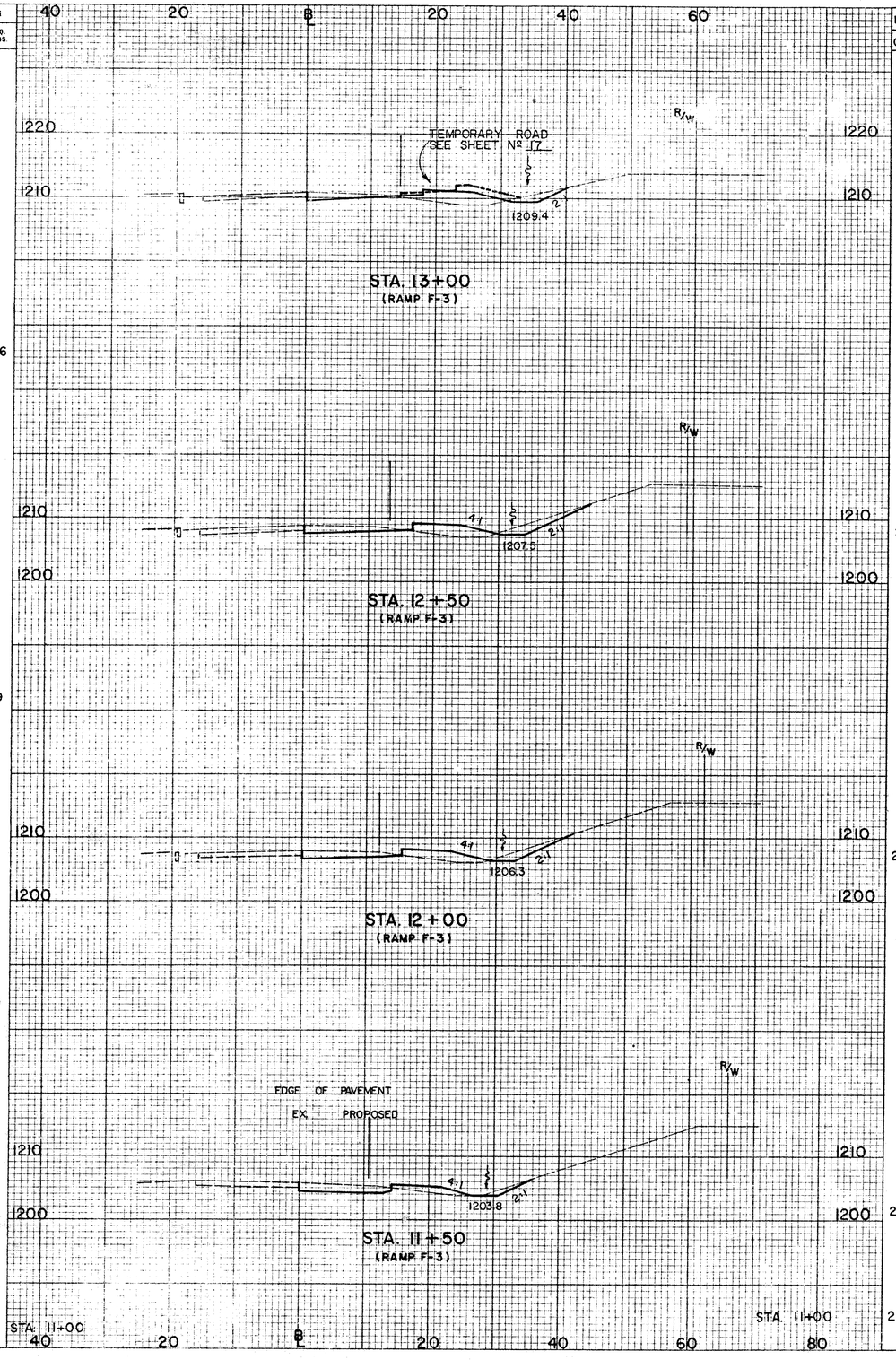
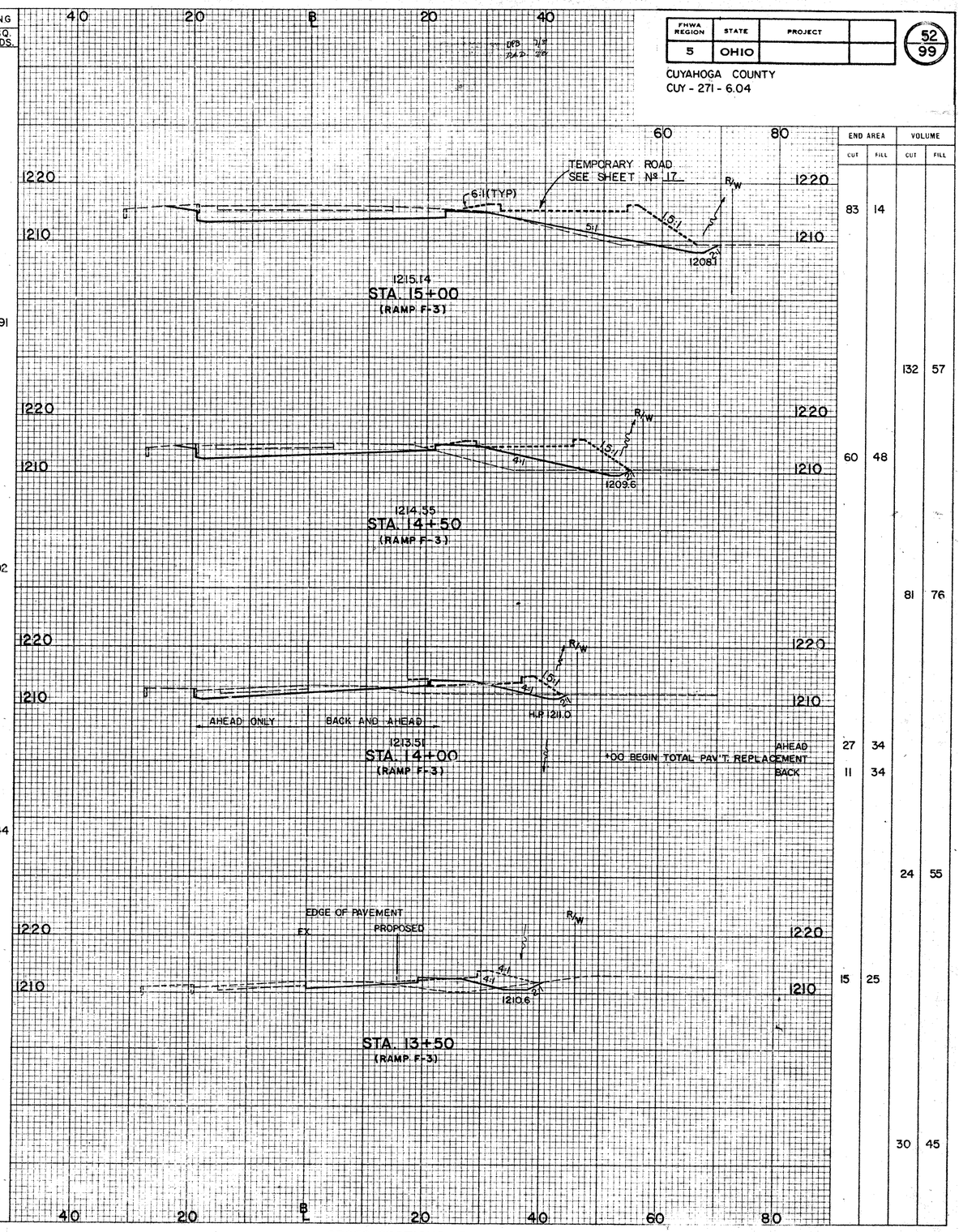
SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
25	156	17	24	38	39
31	169	24	18	42	30
30	153	21	14	39	25
25	172	21	13	40	20
37		22	9		



SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
58	291	83	14	132	57
42	192	60	48	81	76
27	144	27	34	24	55
24	142	11	34	30	45
		15	25		



CROSS SECTIONS, RAMP F-3, STA. 11+50 TO STA. 15+00

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5	OHIO		

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SEEDING END WIDTH	SEEDING SQ. YDS.
120	361
108	544
88	514
97	472
73	364
58	

END SEEDIND
STA. 17+28.52

STA. 16+97, 32.5' RT.
CATCH BASIN RECONSTRUCTED
WITH MH-1 TOP
T.C.=1213.29

47-D

1212.88
STA. 17+00
(RAMP F-3)

EXCAVATE EXISTING SUBBASE (TYP)
AND FILL WITH SUITABLE
EMBANKMENT (TOPSOIL)
(COSTS INCIDENTAL TO ITEM 203)

END WORK STA. 17+28

PAV'T. TO BE REMOVED

1214.3
STA. 16+50
(RAMP F-3)

+00 END CURB

1214.93
STA. 16+00
(RAMP F-3)

24" WATER

16" WATER

TEMPORARY ROAD
SEE SHEET Nº 17

1215.26
STA. 15+50
(RAMP F-3)

1207.8

EX. RAMP F-3A

CUYAGRIN BLVD.

TEMPORARY RAMP ℄ PROFILE

STA 15+00

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
152	0		
		122	18
84	34		
		215	31
148	0		
		301	6
177	6		
		294	11
140	6		
		206	19
83	14		

CROSS SECTIONS, RAMP F-3, STA. 15+50 TO STA. 17+00

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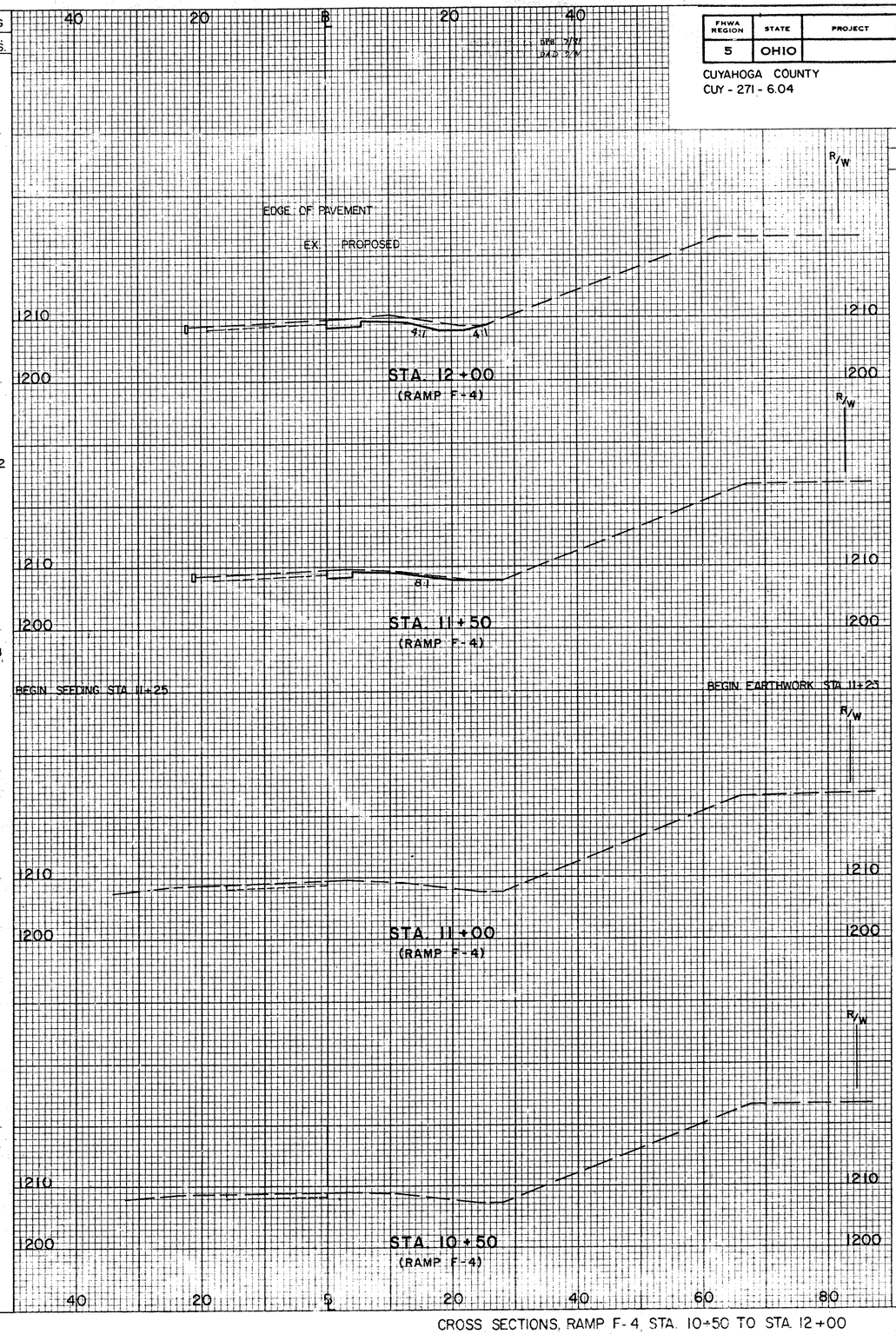
SEEDING		END AREA		VOLUME		SEEDING	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL	END WIDTH	SQ. YDS.
						24	142
						27	38
						0	



END AREA		VOLUME	
CUT	FILL	CUT	FILL
24			
		35	
14			
		8	
4	0		

CROSS SECTIONS, RAMP F-4 STA. 10+50 TO STA. 12+00

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SEEDING		END AREA		VOLUME		SEEDING	
END WIDTH	SQ. YDS.	CUT	FILL	CUT	FILL	END WIDTH	SQ. YDS.
15	86	12	6			32	164
16	103	9	6	19	11	27	150
21	125	19	0	26	6	27	117
24	133	23	24	39	15	44	83

STA. 14+00
(RAMP F-4)

STA. 13+50
(RAMP F-4)

STA. 13+00
(RAMP F-4)

STA. 2+50
(RAMP F-4)

STA. 16+00
(RAMP F-4)

STA. 15+50
(RAMP F-4)

STA. 15+00
(RAMP F-4)

STA. 14+50
(RAMP F-4)

END AREA		VOLUME	
CUT	FILL	CUT	FILL
14	53		
15	36	27	82
16	15	29	47
10	6	24	14
		20	11

CROSS SECTIONS, RAMP F-4, STA 12+50 TO STA. 16+00

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SEEDING	
END WIDTH	SQ. YDS.
100	
	467
119	
	244
49	
	156
39	
	136
17	
	32
32	

END SEEDING
STA. 18+37

STA. 18+00, 19' LT.
CATCH BASIN RECONSTRUCTED
WITH MH-1 TOP
T.C = 1214.42

40-D

30:1

24:1

EX. 12" @ 4.18%

EX. 15" @ 1.03%

1205.97

1202.20

1202.00

EX. 15" @ 1.9%

1200.00

STA. 18+00
(RAMP F-4)

8:1

45:1

STA. 17+50
(RAMP F-4)

8:1

4:1

STA. 17+00
(RAMP F-4)

TEMPORARY ROAD
SEE SHEET Nº 117

4:1

STA. 16+50
(RAMP F-4)

	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
END EARTHWORK STA. 18+37				
1210	163	10	235	14
1200	180	10	261	9
1220				
1210	102	0	127	21
1200				
1220				
1210	35	23	32	18
1200				
AHEAD	35	16		
STA. 16+75 BEGIN FULL WIDTH PAVEMENT REPLACEMENT				
BACK	18	16	16	11
1220				
1210	17	8		
1200				
			29	56
STA. 16+00	14	53		

CROSS SECTIONS, RAMP F-4, STA. 16+50 TO STA. 18+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

57
99

CUYAHOGA COUNTY
CUY - 271 - 6.04

847 BROKEN LINE PAVEMENT MARKINGS

THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 847.03 SHALL BE MODIFIED FOR APPLICATION OF BROKEN LINES. THE LINES SHALL BE APPLIED IN A 40-FOOT CYCLE CONSISTING OF A 10-FOOT DASH AND A 30-FOOT SPACE BETWEEN DASHES.

630 REMOVAL OF SIGN SERVICE

INCIDENTAL TO THE REMOVAL OF A SIGN SUPPORT IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 630.12, SIGN SERVICE TO THE SUPPORT SHALL ALSO BE REMOVED. SIGN SERVICE CABLES SHALL BE DISCONNECTED AT THE SERVICE PULLBOX AND REMOVED. CONNECTION OF THE REMAINING CABLES SHALL CONFORM TO 625.17 TO INSURE CIRCUIT CONTINUITY.

631 ENCLOSURE PADLOCKS

DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 631.08 SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNON 660, WITH LOCK BODY OF BRONZE OR BRASS, AND KEYING IN ACCORDANCE WITH THE FOREGOING SPECIFICATION.

630 SIGN LOCATIONS

SIGN LOCATIONS OF EXISTING AND PROPOSED SIGNS SHOWN 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 AND SIGN SIGHT DISTANCE OBSTRUCTIONS, TO IMPROVE SAFETY AND TO ELIMINATE OVERHEAD OBSTACLES.

PAYMENT FOR STAKING SHALL BE INCIDENTAL TO THE VARIOUS SIGN SUPPORT ITEMS.

631 SIGNS WIRED

INCIDENTAL TO THE WIRING OF OVERHEAD SIGNS IN ACCORDANCE WITH 631.07, TRANSFORMERS SHALL BE REMOVED FROM SWITCH ENCLOSURES ON ALL EXISTING OVERHEAD SUPPORTS EXCEPT THOSE BEING REMOVED FOR STORAGE. TRANSFORMERS SHALL BE CAREFULLY REMOVED AND STORED ON THE PROJECT FOR SALVAGE BY THE STATE.

631 BALLAST ENCLOSURE MOUNTING BRACKET

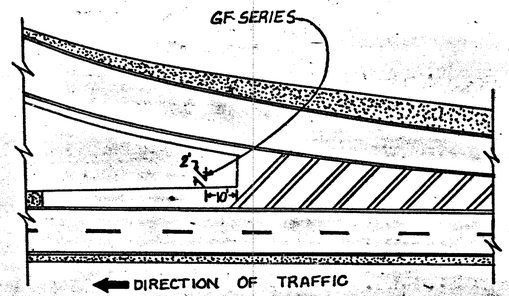
BALLAST ENCLOSURE MOUNTING BRACKET ASSEMBLIES SHALL BE FURNISHED FOR INSTALLATION ON EXISTING OVERHEAD SIGN SUPPORTS BY BOLTS IN TAPPED HOLES AND ON CONCRETE STRUCTURES BY EXPANSION BOLTS. BRACKETS SHALL BE IN ACCORDANCE WITH PLAN DETAILS AND GALVANIZED IN ACCORDANCE WITH 711.02. BRACKETS SHALL BE OF TWO SIZES: TYPE A FOR SPAN TYPE SUPPORTS AS SHOWN ON TC-32.10 AND TYPE B FOR SINGLE POLE AND OVERPASS STRUCTURES AS DETAILED IN THE PLANS AND ON TC-32.11.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH ASSEMBLY WHICH SHALL INCLUDE ALL NECESSARY BRACKETS, FIELD DRILLING AND HARDWARE, FURNISHED AND IN PLACE.

631 - BALLAST ENCLOSURE MOUNTING BRACKET, BY TYPE

TYPICAL PLACEMENT OF GF SERIES SIGNS

THE SKETCH BELOW DETAILS THE PLACEMENT OF THE GF SERIES SIGNS LOCATED IN THE GORE.

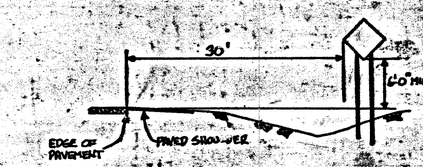


630 OVERHEAD MOUNTED SIGNS

AT VARIOUS LOCATIONS THERE ARE EXISTING SUPPORTS THAT ARE TO BE REUSED FOR NEW SIGNS. FOR THESE CASES THERE IS NO ELEVATION INFORMATION SHOWN IN THE PLANS. INFORMATION IS AVAILABLE IN DISTRICT 12 OR AT DESIGN SERVICES IN CENTRAL OFFICE. MOST OF THE INFORMATION FOR THESE SIGNS WAS OBTAINED FROM PROJECT NUMBER 305-65.

630 FLATSHEET SIGN INSTALLATIONS

ALL FREEWAY FLATSHEET SIGN INSTALLATIONS NOT BEHIND GUARDRAIL SHALL BE OFFSET 30' FROM THE EDGE OF PAVEMENT.



USE STANDARD DRAWING TC-42.20 FOR FLATSHEET SIGNS INSTALLED BEHIND GUARDRAIL, ON CROSSROADS, AND ON RAMPS.

620 - DELINEATORS, BY TYPE, AS PER PLAN

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING DELINEATORS AS SPECIFIED. THE REFLECTORS SHALL BE 3 INCHES BY 5 INCHES RECTANGULAR REFLECTIVE SHEETING BONDED DIRECTLY TO THE DELINEATOR POST (NOT SCREWED OR BOLTED). THE POSTS SHALL BE NON METALLIC, ULTRA VIOLET RESISTANT, AND DESIGNED TO WITHSTAND REPEATED AUTO IMPACTS AT 55 MPH AND RETURN VERTICAL WITH LITTLE OR NO DAMAGE TO THE VEHICLE. THE POSTS SHALL BE CAPABLE OF BEING HAND DRIVEN. WHERE ADVERSE SOIL CONDITIONS CAUSE THE DELINEATOR POST TO EXCEED ¼ INCH PER FOOT OUT OF PLUMB IN ANY DIRECTION, THE CONTRACTOR SHALL DRIVE A PILOT SHAFT BEFORE DRIVING THE POST. ALL POSTS SHALL HAVE A MINIMUM EMBEDMENT OF 30 INCHES.

620 - DELINEATORS, BY TYPE, AS PER PLAN (CONT'D)

THE SEAL TEST AS PER 620.03 SHALL NOT APPLY TO THE DELINEATORS WHICH ARE BONDED TO THE NON-METALLIC POSTS.

ALL COSTS FOR FURNISHING AND INSTALLING DELINEATORS AS SPECIFIED SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 620 - DELINEATOR, BY TYPE, AS PER PLAN

631 - REMOVAL OF SWITCH ENCLOSURE AND REERECTION

THIS WORK SHALL CONSIST OF THE REMOVAL OF A DISCONNECT SWITCH WITH ENCLOSURE FROM AN EXISTING OVERHEAD SIGN SUPPORT AND ITS REERECTION ON A NEW OVERHEAD SIGN SUPPORT AS SHOWN ON THE PLANS. WORK SHALL ALSO INCLUDE THE DISCONNECTION OF ANY UNNECESSARY WIRING AND ANY NECESSARY FIELD DRILLING AND MOUNTING HARDWARE.

BASIS OF PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER EACH DISCONNECT SWITCH WITH ENCLOSURE.

631 - REMOVAL OF LUMINAIRE

IN ADDITION TO THE PROVISIONS OF 631.16, ALL REMOVED FLUORESCENT FIXTURES SHALL BE DISPOSED OF BY THE CONTRACTOR. THE COST OF THIS DISPOSAL WILL BE INCIDENTAL TO THE REMOVAL ITEM.

630 PREPARATION AND SHIPMENT OF STORED OVERHEAD SIGN SUPPORTS, BY TYPE

OVERHEAD SIGN SUPPORTS REMOVED AND STORED UNDER OTHER ITEMS OF WORK SHALL BE PROCESSED AND SHIPPED TO THE DISTRICT 12 MAINTENANCE YARD AT EMERY ROAD AND SR-175 IN WARRENSVILLE HEIGHTS, OHIO.

PROCESSING OF OVERHEAD SIGN SUPPORTS SHALL INCLUDE THE DISMANTLING OF THE SUPPORT INTO EASILY TRANSPORTABLE COMPONENTS. PRIOR TO DISMANTLING, THE SUPPORT SHALL BE CLEARLY IDENTIFIED AND MATCH MARKED USING EMBOSSED METAL TAGS. SUPPORT HARDWARE SUCH AS BOLTS AND NUTS SHALL BE SUITABLY PACKAGED SUCH AS IN BURLAP BAGS AND ATTACHED TO THE SUPPORT COMPONENTS. THE DISTRICT 12 TRAFFIC ENGINEER SHALL BE NOTIFIED AT LEAST 3 DAYS PRIOR TO THE DELIVERY OF THE SUPPORTS TO THE MAINTENANCE YARD. THE SUPPORTS SHALL BE TRANSPORTED BY THE CONTRACTOR TO THE MAINTENANCE YARD. THE CONTRACTOR SHALL UNLOAD THE OVERHEAD SUPPORTS AT A PLACE DESIGNATED BY THE DISTRICT TRAFFIC ENGINEER AND PLACE THEM ON ADEQUATE WOOD BLOCKS TO KEEP THE SUPPORTS OFF THE GROUND.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER EACH SUPPORT INCLUDING ALL LABOR, EQUIPMENT, WOOD BLOCKS, TRANSPORTATION, AND MISCELLANEOUS MATERIAL NECESSARY TO PERFORM THE WORK.

630 EACH PREPARATION AND SHIPMENT OF STORED OVERHEAD SIGN SUPPORTS, BY TYPE.

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 AT EMERY ROAD AND SR-176 IN WARRENSVILLE HEIGHTS, 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 WOODEN PALLETS APPROXIMATELY 4'x4'. SIGN BUNDLES SHALL ALSO BE BANDED TO THE PALLETS. LOADED PALLETS SHALL HAVE A MAXIMUM WEIGHT OF 1000 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 FEET. 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 1000 POUNDS. BANDING SHALL BE WITH A MINIMUM OF 2 STEEL STRAPS AND CLIPS AND SHALL BE SPACED NO MORE THAN 5 FEET APART. EXTRUSHEET SIGNS WEIGH APPROXIMATELY 2.25 POUNDS PER SQUARE FOOT. BUNDLES SHALL BE LOADED ONTO WOODEN PALLETS APPROXIMATELY 4'x4'. SIGN BUNDLES SHALL BE BANDED TO THE PALLETS. LOADED PALLETS SHALL HAVE A MAXIMUM WEIGHT OF 1000 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 1000 POUND CAPACITY WILL BE PROVIDED BY THE STATE TO THE CONTRACTOR FOR UNLOADING.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER EACH SIGN INCLUDING ALL LABOR, EQUIPMENT, BANDING MATERIAL, PALLETS, TRANSPORTATION, AND MISCELLANEOUS MATERIAL NECESSARY TO PERFORM THE WORK.

630- EACH, PREPARATION AND SHIPMENT OF STORED SIGNS, FLATSHEET.
630- EACH, PREPARATION AND SHIPMENT OF STORED SIGNS, EXTRUSHEET.

630- PREPARATION AND SHIPMENT OF STORED GROUND MOUNTED SIGN SUPPORTS

GROUND MOUNTED SIGN SUPPORTS REMOVED AND STORED UNDER OTHER ITEMS OF WORK SHALL BE PROCESSED AND SHIPPED TO THE DISTRICT 12 MAINTENANCE YARD AT EMERY ROAD AND SR-176 IN WARRENSVILLE HEIGHTS, OHIO.

PROCESSING OF GROUND MOUNTED SUPPORTS SHALL INCLUDE THE REMOVAL OF ANY CONCRETE FOUNDATION. ONLY GROUND MTD. SUPPORTS 5 FT. AND LONGER AND IN GOOD CONDITION AS DETERMINED BY THE ENGINEER SHALL BE PROCESSED AND SHIPPED. SUPPORTS DETERMINED UNSATISFACTORY FOR SHIPMENT SHALL BE DISPOSED OF BY THE CONTRACTOR.

GROUND MOUNTED SUPPORTS OF LIKE SIZE AND LENGTH SHALL BE BANDED TOGETHER INTO 1000 POUND (MAXIMUM) BUNDLES. BANDING SHALL BE WITH A MINIMUM OF 2 STEEL STRAPS AND CLIPS SPACED NO MORE THAN 3 FEET APART.

THE DISTRICT 12 TRAFFIC ENGINEER SHALL BE NOTIFIED AT LEAST 3 DAYS PRIOR TO THE DELIVERY OF THE SIGN SUPPORTS TO THE MAINTENANCE YARD.

THE SUPPORTS SHALL BE TRANSPORTED BY THE CONTRACTOR TO THE MAINTENANCE YARD WHERE THEY WILL BE UNLOADED AND STORED. A FORK LIFT OF 1000 POUND CAPACITY WILL BE PROVIDED BY THE STATE TO THE CONTRACTOR FOR UNLOADING.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER EACH SUPPORT INCLUDING ALL LABOR, EQUIPMENT, BANDING MATERIAL, TRANSPORTATION, AND MISCELLANEOUS MATERIAL NECESSARY TO PERFORM THE WORK.

630- EACH, PREPARATION AND SHIPMENT OF STORED GROUND MOUNTED SIGN SUPPORTS.

631- BALLAST WIRING ENCLOSURE

BALLAST ENCLOSURES SHALL BE FURNISHED AND INSTALLED ON OVERHEAD SIGN SUPPORTS AS SHOWN ON TC-32.10 OR DETAILED IN THE PLANS. THE ENCLOSURE SHALL BE MOUNTED ON BRACKETS WHICH ARE A PART OF NEW OVERHEAD SUPPORTS OR SEPARATELY FURNISHED FOR EXISTING SUPPORTS OR OVERPASS STRUCTURES.

ENCLOSURES SHALL BE WEATHERPROOF NEMA TYPE 4 IN ACCORDANCE WITH PLAN DETAILS, FABRICATED OF 0.06 INCH STEEL GALVANIZED IN ACCORDANCE WITH 711.02. THE FRONT COVER SHALL BE REMOVABLE AND BEAR A WARNING SIGN CONFORMING TO 713.20, PARAGRAPH 8d. CONDUIT FITTINGS AND ATTACHMENT HARDWARE SHALL BE FURNISHED WITH THE ENCLOSURE. ENCLOSURES SHALL CONTAIN A STEEL PANEL COMPLYING WITH 713.20, PARAGRAPH 8e FOR INSTALLING TERMINAL BLOCKS AND BUSBARS, RATED AT 600 VOLTS AND PROVIDED WITH MARKER STRIPS AND CAPABLE OF TERMINATING THE WIRE GAGE USED. BALLASTS SHALL BE ARRANGED IN THE ENCLOSURE IN THE SAME RELATIVE POSITION AS THEIR ASSOCIATED LUMINAIRE ON THE SIGN SUPPORT STRUCTURE.

ENCLOSURES SHALL BE OF TWO SIZES: TYPE A FOR SPAN TYPE SUPPORTS AS SHOWN ON TC.-32.10 AND TYPE B FOR SINGLE POLE AND OVERPASS STRUCTURES AS DETAILED IN THE PLANS AND IN ACCORDANCE WITH THE FOLLOWING TABLE:

	TYPE A	TYPE B
SIZE (NOMINAL), INCHES	42 x 12 x 10	18 x 12 x 10
BARRIER TERMINAL BLOCK; NO. UNITS, NO. TERMINALS (MIN)	2, 10	2, 4
SOLID INSULATED BUSBAR; NO. UNITS NO. TERMINALS (MIN)	2, 11	2, 5
SOLID UNINSULATED BUSBAR; NO. UNITS NO. TERMINALS (MIN)	1, 11	1, 5

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH ENCLOSURE, FURNISHED, IN PLACE, COMPLETE AND READY FOR SERVICE.

631- BALLAST WIRING ENCLOSURE, BY TYPE,

632- CONDUIT RISER, AS PER PLAN

IN ADDITION TO SPECIFICATION 632.19 REQUIREMENTS, THIS ITEM OF WORK SHALL INCLUDE THE ADDITIONAL PULLING FITTINGS OR CONDUIT BENDS AS SHOWN ON SHEET 82 FOR ATTACHMENT TO EXISTING POLES.

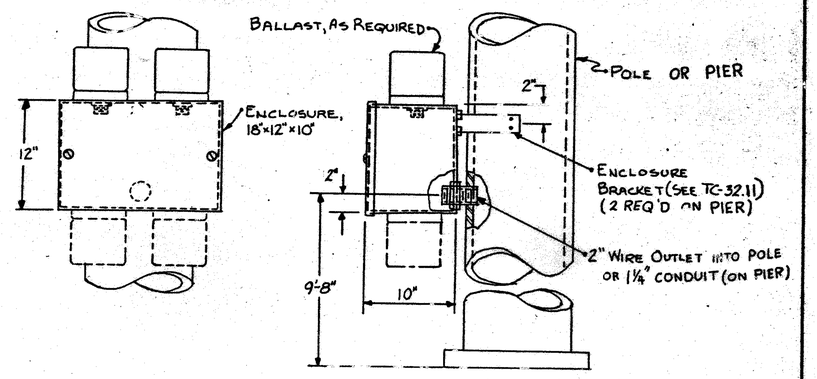
632- DOWN GUY, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF SPECIFICATION 632.17, THIS ITEM OF WORK SHALL INCLUDE THE REMOVAL OF THE DOWN GUY AFTER THE ADDITIONAL LOADING (EXISTING SIGNAL HEADS AND MESSENGER WIRE) IS REMOVED FROM THE EXISTING POLES.

608- 4" CONCRETE WALKS, AS PER PLAN

A QUANTITY OF 9 SQUARE FEET OF 4" CONCRETE WALKS, AS PER PLAN, IS INCLUDED FOR USE WHEN DIRECTED BY THE ENGINEER. THIS IS TO PROVIDE 3 FT. X 3 FT. PLATFORMS NEAR POLE OR PEDESTAL MOUNTED SIGNAL CONTROL CABINETS IN UNPAVED AREAS, FROM WHICH SIGNAL MAINTENANCE PERSONNEL CAN CONVENIENTLY REACH THE SIGNAL EQUIPMENT FOR SERVICE.

631 BALLAST WIRING ENCLOSURE, TYPE B



TRAFFIC CONTROL GENERAL NOTES

614 MAINTENANCE OF TRAFFIC SIGNAL/FLASHER INSTALLATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL/ FLASHER INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

A) EXISTING SIGNAL/FLASHER INSTALLATIONS WHICH THE PLANS REQUIRE THE CONTRACTOR TO ADJUST, MODIFY, ADD ONTO OR REMOVE, OR WHICH THE CONTRACTOR ACTUALLY ADJUSTS, MODIFIES OR OTHERWISE DISTURBS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATIONS FIRST DISTURB THE INSTALLATION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK IS ACCEPTED.

B) NEW OR REUSED SIGNAL/FLASHER INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE DISTRICT TRAFFIC ENGINEER AND THE PROJECT ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY 24 HOURS A DAY, 7 DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE

ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE, ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE.

IF POLES AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED 8-HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS OR REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION, THEN THE ALLOTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION OF ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION, AT THESE LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF SECTION 105.15 AND ANY SUBSEQUENT BILLINGS TO THE STATE FOR POLICE SERVICES AND MAINTENANCE SERVICES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS FORCES OR HE MAY CHOOSE TO ENTER INTO A COOPERATIVE UNDERSTANDING WITH THE LOCAL MAINTAINING AGENCY TO PROVIDE THE MAINTENANCE IN THE FOLLOWING METHODS (OR ANOTHER METHOD AS MAY BE AGREED BY THE CONTRACTOR, LOCAL AGENCY AND THE ENGINEER):

1. NEOGTIATED DAYLIGHT HOURS ON WEEKDAYS WITH THE LOCAL MAINTAINING AGENCY PROVIDING COVERAGE DURING THE REMAINING WEEKDAY HOURS AND WEEKENDS AT THE CONTRACTOR'S EXPENSE AS PREVIOUSLY PROVIDED HEREIN.

2. COMPLETE STATE MAINTENANCE AT THE CONTRACTOR'S EXPENSE, AS PREVIOUSLY PROVIDED HEREIN.

THE CONTRACTOR SHALL INFORM THE ENGINEER, IN WRITING, OF THE MAINTENANCE METHOD SELECTED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY TRAFFIC SIGNAL COMPONENTS REQUIRED TO BE HANDLED DURING THE RELOCATION OF POLES AND REVISIONS TO THE SIGNAL SYSTEM.

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR, DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED 6 HOURS AND SHALL NOT INCLUDE THE HOURS OF 7 TO 9 AM AND 4 TO 6 PM. ANY SIGNALIZED INTERSECTION, WHERE THE SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES, OR DUE TO AN OUTAGE OR MALFUNCTION OF EQUIPMENT AS DESCRIBED ABOVE, SHALL BE PROTECTED BY OFF-DUTY CITY POLICE, HIRED BY THE CONTRACTOR.

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN 632.24.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857, 858, 859, 957, 958, AND 959 ON THE TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 630, 631, 632, 730, 731 AND 732.

631 SIGN SERVICE

IN LIEU OF THE REQUIREMENTS OF 631.06, CABLE FOR SIGN SERVICE SHALL BE RATED THE SAME AS THE HIGHWAY LIGHTING DISTRIBUTION AND CIRCUIT CABLE USED ON THIS PROJECT.

625 TRENCH IN PAVED AREAS

IN LIEU OF THE DETAILS ON STANDARD CONSTRUCTION DRAWING HL-11, THE CONTRACTOR MAY PROVIDE THE NARROW SLIT TYPE TRENCH AS DETAILED ON SHEET 82.

FOUNDATION CONDUIT

UNLESS OTHERWISE DETAILED IN THE PLANS, ALL SIGN SUPPORT OR SIGNAL SUPPORTS FOUNDATIONS SHALL CONTAIN A MINIMUM OF ONE 2 INCH CAPPED CONDUIT ELL IN CONFORMANCE WITH STANDARD CONSTRUCTION DRAWING TC-21.20.

632 LOOP DETECTOR WIRE, AS PER PLAN AND
632 LOOP DETECTOR PAVEMENT CUTTING, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 632.10 AND 632.22, LOOP DETECTOR WIRE AND PAVEMENT CUTTING SHALL BE FURNISHED AND INSTALLED AS DESCRIBED IN THE NOTES AND DETAILS ON SHEET 83.

843 SIGNAL CONTROLLER CABINET MOUNTING

IN LIEU OF THE DETAILS SHOWN ON STANDARD CONSTRUCTION DRAWING TC-83.10, POLE MOUNTED CONTROLLER CABINET(S) SHALL BE MOUNTED AS SHOWN IN DETAIL ON SHEET 82. THE BLIND HALF COUPLING FOR THE 2-1/2" LB SHALL BE CENTERED 6"BELOW THE BOTTOM OF THE HANDHOLE FRAME AND AT 90° TO THE HANDHOLE.

843-CONTROLLER, BY TYPE, SOLID STATE DIGITAL, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF SUPPLEMENTAL SPECIFICATION 843, CONTROLLERS SHALL HAVE THE FOLLOWING REQUIREMENTS OR FEATURES.

LIGHTNING PROTECTION SHALL BE AS SHOWN ON SHEET 82.

THE CONTROLLER UNIT, FLASHER, LOAD SWITCHES AND CONFLICT MONITOR SHALL CONFORM TO NEMA SPECIFICATION TS-1-1976, PARTS 1 THRU 6 AND 8.

SIGNAL LOAD SWITCHES SHALL HAVE INPUT AND OUTPUT INDICATOR LIGHTS FOR EACH CIRCUIT, VISIBLE FROM THE FRONT.

CONFLICT MONITORS SHALL CAUSE THE SIGNAL TO FLASH: WHEN ALL OF THE RED LAMPS ON A LOAD SWITCH ARE BURNED OUT; WHEN THE MONITOR IS DISCONNECTED; OR WHEN TWO DIFFERENT COLORS ARE ENERGIZED ON THE SAME PHASE. IT SHALL DISPLAY ON ITS FRONT PANEL INDICATORS THE EXACT CHANNEL IN WHICH A LOAD SWITCH OUTPUT FAILURE OCCURS.

CONTROLLER CABINET SIZE SHALL SATISFY 843, ASSUMING THE CONTROLLER UNIT FRAME SIZE TO BE NOT LESS THAN SHOWN IN THE FOLLOWING TABLE:

NUMBER OF PHASE	DIMENSION (INCHES) WIDTH	HEIGHT	DEPTH
2	15	14	14
3	19	14	14
4	22	21	14
8	22	22	14

THE CONTROLLER HARNESS LENGTH SHALL BE SUFFICIENT TO REACH ANY PONT WITHIN THE SPACE PROVIDED FOR THE CONTROLLER UNIT.

THE CABINET LOCKS SHALL BE KEYED TO THE STATE MASTER.

CABINETS SHALL BE PAINTED YELLOW (FEDERAL STANDARD 595, COLOR 13655).

CABINETS SHALL BE EQUIPPED WITH A DUPLEX (3 WIRE) OUTLET AND A STANDARD INCANDESCENT LAMP AND SOCKET WHICH WILL BOTH BE WIRED IN ADVANCE OF THE POWER SWITCH ON THE POLICE PANEL.

CABINET SHALL BE BASE OR POLE MOUNTED AS SHOWN ON THE PLANS.

632 LOOP DETECTOR AMPLIFIERS, BY TYPE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 632 AND 732.07 or 732.08, LOOP DETECTOR AMPLIFIERS SHALL HAVE THE FOLLOWING REQUIREMENTS OR FEATURES:

THE OUTPUT DEVICE SHALL BE A RELAY, AND ALL CONTACTS SHALL BE INCLUDED IN THE WIRING HARNESS.

THE UNIT SHALL BE SELF TUNING.

THE UNIT'S ELECTRICAL CONNECTION PLUGS OR WIRING HARNESS SHALL ALLOW READY REPLACEMENT WITH A SINGLE CHANNEL AMPLIFIER AS DESCRIBED IN THE FINAL PARAGRAPH OF 732.07.

632 - REMOVAL OF TRAFFIC SIGNAL INSTALLATION

IN ADDITION TO THE REQUIREMENTS OF 632.25, THE CONTRACTOR SHALL DELIVER ALL REMOVED ITEMS AND EQUIPMENT, EXCEPT AS NOTED BELOW, TO THE ODOT WARRENSVILLE MAINTENANCE YARD DURING THE HOURS OF 8 A.M. TO 4 P.M. WEEKDAYS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR UNLOADING ALL DELIVERED ITEMS.

632 POWER SERVICE, AS PER PLAN

THE DISCONNECT SWITCH WITH ENCLOSURE PROVIDED AS PART OF THIS ITEM, SHALL CONFORM TO 732.21 AND ADDITIONALLY SHALL BE DESIGNED OR MODIFIED SUCH THAT IT CAN BE PADLOCKED IN EITHER THE "ON" OR "OFF" POSITIONS.

843 - COORDINATOR DIAL

COORDINATORS FOR BACKGROUND CYCLE INTERCONNECTED SYSTEMS SHALL COMPLY WITH SUPPLEMENTAL SPECIFICATION 843, AND ALSO, WHEN SUPERVISING ACTUATED LOCAL CONTROLLER OF 3 OR MORE PHASES, THEY SHALL PRODUCE A PHASE ASSOCIATED FORCE OFF SIGNAL FOR EACH ACTUATED PHASE WHICH WILL AFFECT ONLY THE DESIGNATED PHASE.

843 - TRAFFIC SIGNAL CONTROLLER CABINETS

CABINETS SHALL BE ALUMINUM, EITHER CAST, FORMED OF SHEET OR DRAWN WITH WELDED BRACING AND STIFFENERS AS NEEDED TO ASSURE A STRONG, RIGID AND WEATHERPROOF CABINET.

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857, 858, 859, 957, 958 AND 959 ON THE TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 630, 631, 632, 730, 731 AND 732.

GENERAL SUMMARY

FHWA REGION	STATE	PROJECT	
5	OHIO		

61/99

CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: D.B.
CHECKED BY: E.N.F.

ALL ITEMS COST PARTICIPATION II

ITEM	SHEET NUMBER 65	66	67	68	69	ITEM	QUANT.	UNIT	DESCRIPTION
847	21.0					847	21.0	MILES	4-INCH EDGE LINES, 847.09
847	15.6					847	15.6	MILES	4-INCH LANE LINES, 847.09
847	8,302					847	8302	LIN FT	8-INCH CHANNELIZING LINES, 847.09
847	327					847	327	LIN FT	24-INCH STOP LINES, 847.09
847	1,845					847	1845	LIN FT	24-INCH BROAD TRANSVERSE LINES, 847.09
847	9					847	9	EACH	LANE ARROWS, 847.09
847	8					847	8	EACH	WORD "ONLY" ON PAVEMENT, 72-INCH, 847.09
847	.05					847	.05	MILES	4-INCH CENTER LINES, SOLID DOUBLE
625				6	14	625	20	EACH	GROUND ROD
630				42	45	630	87	C.Y.	CONCRETE FOR ANCHOR BASE FOUNDATIONS
630		2	12			630	14	C.Y.	CONCRETE FOR EMBEDDED FOUNDATIONS
630		40	90			630	130	LIN FT	GROUND MOUNTED SUPPORTS, NO. 3 POST, DRIVEN
630		523	381			630	904	LIN FT	GROUND MOUNTED SUPPORTS, NO. 4 POST, DRIVEN
630		62	157			630	219	LIN FT	GROUND MOUNTED SUPPORTS, S4x7.7 BEAM
630		69				630	69	LIN FT	GROUND MOUNTED SUPPORTS, W6x9 BEAM
630			159			630	159	LIN FT	GROUND MOUNTED SUPPORTS, W10x12 BEAM
630		8	14			630	22	EACH	BREAKAWAY BEAM CONNECTION
630					3	630	3	EACH	SIGN ATTACHMENT ASSEMBLY
630				22	4	630	26	EACH	LUMINAIRE SUPPORT ASSEMBLY
630		193	302			630	495	S.F.	SIGNS, FLAT SHEET
630		325	446	716	1440	630	2927	S.F.	SIGNS, EXTRUSHEET
630		2	3			630	5	EACH	REMOVAL OF GROUND MOUNTED MAJOR SIGN AND STORAGE
630									
630		25	23			630	48	EACH	REMOVAL OF GROUND MOUNTED SIGN AND STORAGE
630		2				630	2	EACH	REMOVAL OF GROUND MOUNTED BEAM SUPPORT
630		27	42			630	69	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT
630				4	1	630	5	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND STORAGE.
630				12	1	630	13	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION
630				1		630	1	EACH	OVERHEAD SIGN SUPPORT MODIFICATION TYPE 15.8, DESIGN # 3 MOD, NEW BOX TRUSS SECTION OF 10 FEET.
630				1		630	1	EACH	OVERHEAD SIGN SUPPORT MODIFICATION TYPE 7.4, DESIGN # 2 MOD, NEW BOX TRUSS SECTION OF 8 FEET.
630				1		630	1	EACH	OVERHEAD SIGN SUPPORT MODIFICATION TYPE 7.6, DESIGN # 2 MOD, NEW BOX TRUSS SECTION OF 7 FEET.
630				152		630	152	SQ.FT.	OVERLAY
630				1		630	1	EACH	REMOVAL OF OVERLAY
631				6	14	631	20	EACH	SIGN SERVICE
631				10	15	631	25	EACH	SIGNS WIRED
631				3	12	631	15	EACH	DISCONNECT SWITCH WITH ENCLOSURE, TYPE X
631				3	5	631	8	EACH	SWITCH ENCLOSURE MOUNTING BRACKET ASSEMBLY
631				11	12	631	23	EACH	BALLAST, TYPE CMRI-175, 480 VOLT
631				17	4	631	21	EACH	BALLAST, TYPE CMRI-250, 480 VOLT
631				11	12	631	23	EACH	MERCURY VAPOR LUMINAIRE WITH 175 WATT LAMP
631				17	4	631	21	EACH	MERCURY VAPOR LUMINAIRE WITH 250 WATT LAMP
631				23	2	631	25	EACH	REMOVAL OF LUMINAIRE
631									
631				4		631	4	EACH	BALLAST WIRING ENCLOSURE, TYPE A
631				3	14	631	17	EACH	BALLAST WIRING ENCLOSURE, TYPE B
631				4		631	4	EACH	BALLAST WIRING ENCLOSURE MOUNTING BRACKET, TYPE A
631					2	631	2	EACH	BALLAST WIRING ENCLOSURE MOUNTING BRACKET, TYPE B
631					8	631	8	EACH	MERCURY VAPOR LUMINAIRE WITH 100 WATT LAMP
631					8	631	8	EACH	BALLAST, TYPE CMRI-100, 120 VOLT

LD0303
12-28-67

GENERAL SUMMARY

FHWA REGION	STATE	PROJECT	
5	OHIO		

62/99

CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: D.B.
CHECKED BY : E.N.F.

☒ - 100 % STATE

ALL ITEMS COST PARTICIPATION II UNLESS SHOWN OTHERWISE

ITEM	SHEET NUMBER 64	66	67	68	69	ITEM	QUANT.	UNIT	DESCRIPTION
				1	1	630	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 6, ARM 23 FEET
					1	630	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 6, ARM 25 FEET
				2		630	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 7, ARM 24 FEET
					4	630	4	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 8, ARM 26 FEET
		2☒	3☒	4☒	1☒	630	II 10	EACH	PREPARATION AND SHIPMENT OF STORED EXTRUSHEET SIGNS
		25☒	23☒			630	II 48	EACH	PREPARATION AND SHIPMENT OF STORED FLATSHEET SIGNS
		29☒	42☒			630	II 71	EACH	PREPARATION AND SHIPMENT OF STORED GROUND MOUNTED SIGN SUPPORTS
	144					620	144	EACH	DELINEATORS, TYPE C POST MOUNTED, AS PER PLAN
	45					620	45	EACH	DELINEATORS, TYPE C POST MOUNTED
	3					620	3	EACH	DELINEATORS, TYPE C BRACKET MOUNTED
	48					620	48	EACH	DELINEATORS, TYPE D POST MOUNTED, AS PER PLAN
					2	630	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 1, ARM 16 FEET
					3	630	3	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 1, ARM 14 FEET
					1	630	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 1, ARM 15 FEET

GENERAL SUMMARY

FHWA REGION	STATE	PROJECT		63 / 99
5	OHIO			

CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY E.N.F.
CHECKED BY J.D.B.

ITEM	SHEET NUMBER 78	78 & 79 ACROSS BRIDGE	79
			47
	12		8
			5
	4		5
	492		380
	562		516
	1		2
	653	460'	424
			1
			1
	1		
			1.98
	1		
	440		1024
	155		381
	444		1305
	1		3
	1		2
	399		1647
	150		233
	33		43
	1		2
	1		1
	7		12
	1		1
	1		
	2.40		5.06
	7		7
			4
			1
	2		2
	202		546
			1
	5.0		10.0
	1		2
	1		1
			1
	9		

ALL ITEMS COST PARTICIPATION II

ITEM	QUANT.	UNIT	DESCRIPTION
625	47	L.F.	CONDUIT, 1", 713.04
625	20	L.F.	CONDUIT, 2", 713.04
625	5	L.F.	CONDUIT, 3", 713.04
625	9	EA.	PULLBOX 18", CONCRETE, 713.08
625	872	L.F.	CONDUIT, 1½", 713.04
625	1078	L.F.	TRENCH
625	3	EA.	GROUND ROD
632	1537	L.F.	INTERCONNECT CABLE, 7-CONDUCTOR, NO. 14 AWG
843	1	EA.	CONTROLLER, 4 PHASE SEMI-ACTUATED, SOLID STATE, DIGITAL, WITH CABINET, AS PER PLAN
843	1	EA.	COORDINATOR, 3 DIAL ELECTROMECHANICAL, SECONDARY/MASTER
843	1	EA.	COORDINATOR, 3 DIAL ELECTROMECHANICAL, SECONDARY
843	1.98	C.Y.	CONCRETE FOR CABINET FOUNDATION
632	1	EA.	DOWN GUY, AS PER PLAN
632	1464	L.F.	LOOP DETECTOR WIRE, TYPE E
632	536	L.F.	LOOP DETECTOR PAVEMENT CUTTING
632	1749	L.F.	LOOP DETECTOR LEAD-IN CABLE
632	4	EA.	LOOP DETECTOR AMPLIFIER, AS PER PLAN
632	3	EA.	LOOP DETECTOR AMPLIFIER, DELAY AND EXTENSION TYPE
632	2046	L.F.	SIGNAL CABLE, 5/C, NO. 14 AWG
632	383	L.F.	MESSENGER WIRE, 7 STRAND, 3/8" DIA. WITH ACCESSORIES
632	76	L.F.	POWER CABLE, 2/C, NO. 8 AWG
632	3	EA.	CABLE SUPPORT ASSEMBLY
632	2	EA.	POWER SERVICE
632	19	EA.	COVERING FOR VEHICULAR SIGNAL HEAD
632	2	EA.	REMOVAL OF TRAFFIC SIGNAL INSTALLATION
632	1	EA.	CONDUIT RISER, 1" DIA.
632	7.46	C.Y.	CONCRETE FOR ANCHOR BASE FOUNDATIONS
632	14	EA.	VEHICULAR SIGNAL HEAD, 3-SECTION, 12-INCH LENS, 1-WAY
632	4	EA.	VEHICULAR SIGNAL HEAD, 3-SECTION, 12-INCH LENS, 2-WAY
632	1	EA.	VEHICULAR SIGNAL HEAD, 5-SECTION, 12-INCH LENS, 1-WAY
632	4	EA.	PEDESTRIAN PUSHBUTTON
632	748	L.F.	SIGNAL CABLE, 2/C, NO. 14 AWG.
632	1	EA.	CONDUIT RISER, 3" DIA. (AS PER PLAN)
630	15.0	S.F.	SIGNS, FLAT SHEET
630	3	EA.	SIGN HANGER ASSEMBLY, SPAN WIRE, TYPE 2
632	2	EA.	SIGNAL SUPPORT, TYPE TC-81.10, DESIGN 6
632	1	EA.	SIGNAL SUPPORT, TYPE TC-81.10, DESIGN 8
632	1	EA	CONDUIT RISER, 1" DIA (AS PER PLAN)
632	1	EA	CONDUIT RISER, 1½" DIA. (AS PER PLAN)
608	9	SQ.FT.	4" CONCRETE WALKS, AS PER PLAN

LD 0303
12-29-67

620 DELINEATORS

FHWA REGION	STATE	PROJECT	
5	OH10		

64
99

CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: D.B.
CHECKED BY: E.N.F.

ROADWAY	STATION TO STATION		SIDE	INTERVAL	TYPE C APP POST	TYPE C APP BRACK.	TYPE C POST	TYPE C BRACK.
MAINLINE								
271-NB	337+16	342+44	RT.	528'	2			
271-NB	364+24	416+48	RT.	528'	2		6	
271-NB	416+48	420+56	RT.	408'	1			
271-NB	433+75	441+75	RT.	400'	3			
271-NB	475+90	538+26	RT.	528'	5		6	1
271-NB	538+26	542+00	RT.	374'	1			
MAINLINE								
271-SB	542+00	478+64	RT.	528'	7		5	1
271-SB	478+64	474+40	RT.	424'	1			
271-SB	461+40	450+84	RT.	528'	3			
271-SB	419+05	376+81	RT.	528'	3		5	1
271-SB	376+81	371+70	RT.	511'	1			
271-SB	363+65	353+09	RT.	528'	2		1	
271-SB	340+86		RT.	528'				
			SUB TOTAL MAINLINE		32		23	3
RAMPS	(MAINLINE STATIONING)							
271-NB	346+89	362+89	RT.	200'	8		1	
271-NB	364+24	374+24	RT.	200'	6			
271-NB	420+56	432+56	RT.	200'	5		1	
271-NB	445+69	457+69	RT.	200'	6		1	
271-NB	463+90	475+90	RT.	200'	7			
RAMPS	(MAINLINE STATIONING)							
271-SB	474+40	464+40	RT.	200'	2		3	
271-SB	449+02	441+02	RT.	200'	4		1	
271-SB	436+33	424+33	RT.	200'	7			
271-SB	371+70	369+70	RT.	200'	1			
RAMPS	(RAMP STATIONING)							
F-3	4+58	6+58	RT.	200'	2			
F-3	11+58	16+58	RT.	100'	6			
F-5	2+00	4+00	RT.	200'	2			
F-5	14+00	16+00	RT.	200'	2			
F-1	0+00	4+00	RT.	200'	3			
F-1	4+00	5+00	RT.	100'	1			
F-1	12+00	13+00	RT.	100'	2			
F-1	13+00	17+00	RT.	200'	2			
G-1	67+70	59+70	RT.	200'	4		1	
G-1	59+70	58+70	RT.	100'	1			
N-W	0+49	28+49	RT.	200'	8		7	
G-2	1+80	17+80	RT.	200'	3		6	
F-4	6+42		RT.		1			
F-4	9+42	13+42	RT.	100'	5			
F-4	13+42	17+42	RT.	200'	2			
F-6	1+00	7+00	RT.	100'	7			
F-6	13+00	14+00	RT.	100'	2			
F-6	14+00	16+00	RT.	200'	1			
F-2	1+50	3+50	RT.	100'	3			
F-2	3+50	17+50	RT.	200'	7			
LANE E-N	74+50	70+50	RT.	200'	2		1	
	SUB-TOTALS (RAMPS)				112		22	

ROADWAY	STATION TO STATION		SIDE	INTERVAL	TYPE D APP POST	TYPE D APP BRACK.	TYPE D POST	TYPE D BRACK.
RAMPS	(NORTHBOUND)							
F-4	6+42	9+42	LT.	100'	4			
F-6	7+00	8+00	LT.	100'	2			
F-6	8+00	13+00	LT.	50'	10			
RAMPS	(SOUTHBOUND)							
F-3	6+58	11+58	LT.	100'	6			
F-5	4+00	6+00	LT.	100'	3			
F-5	6+00	13+00	LT.	50'	14			
F-5	13+00	14+00	LT.	100'	1			
F-1	5+00	12+00	LT.	100'	8			
	SUB-TOTALS (RAMPS)				48		9	

SUB-TOTALS	TYPE C, APP POST	TYPE C, APP BRACK.	TYPE C POST	TYPE C BRACK.	TYPE D, APP POST	TYPE D, APP BRACK.	TYPE D POST	TYPE D BRACK.
TYPE C, MAINLINE	32		23	3				
TYPE C, RAMPS	112		22					
TYPE D, RAMPS					48			
SHEET TOTALS (I-271)	144		45	3	48		9	

TRAFFIC CONTROL QUANTITIES

FHWA REGION	STATE	PROJECT	
5	OHIO		

65/99

CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: D.B.
CHECKED BY : E.N.F.

PAVEMENT MARKINGS

ROADWAY	SIDE	STATION FROM	STATION TO	EDGE LINE (WHITE)	EDGE LINE (YELLOW)	4" LANE LINE		CENTER LINE SOLID DOUBLE	CENTER LINE BROKEN SINGLE	CENTER LINE BROKEN AND SOLID DOUBLE		8" CHANNEL LINE (WHITE)	8" CHANNEL LINE (YELLOW)	24" STOP LINE	24" BROAD TRANSVERSE LINE (WHITE)	24" BROAD TRANSVERSE LINE (YELLOW)	LANE ARROWS	WORD "ONLY" ON PAVEMENT		
				LIN. FT	LIN. FT	LIN. FT		LIN. FT	LIN. FT	LIN. FT		LIN. FT	LIN. FT	LIN. FT	LIN. FT	LIN. FT	EACH	EACH		
I-271- NB		337+00	347+28	1028	1028	1028														
MAINLINE		347+28	350+10	564	282	564						282								
		350+10	363+60	1350	1350	2700														
		363+60	366+25	530	265	530						265								
		366+25	369+15	290	290	870														
		369+15	425+90	5675	5675	11350														
		425+90	430+10	420	420	1260														
		430+10	433+70		360	720						620			220					
		433+70	455+00	1130	1130	2260														
		455+00	448+03	606	303	606						303								
		448+03	462+50	1447	1447	2894														
		462+50	465+35	570	285	570						285								
		465+35	468+12	277	277	831														
		468+12	542+00	7388	7388	14776														
I-271-NB-RAMPS																				
G-2		3+50	19+33	1583	1583															
F-4		2+00	4+60	260																
F-4		4+60	18+40	1380	1380	491						448		70			3	3		
F-6		1+60	17+23	1563	1563															
F-2		2+55	18+15	1560	1560															
E-N		70+19	74+50	431	431	431														
I-271-SB		337+00	340+88	388	388	388														
MAINLINE		340+88	348+00		862	712						1474			1009					
		348+00	363+75	1575	1575	1575						1575								
		363+75	367+50		375	535						965			414					
		367+50	369+15	165	165	495														
		369+15	431+92	6277	6277	12554														
		431+92	434+70	278	278	834														
		434+70	438+00	660	330	660						330								
		438+00	444+60	660	660	1320														
		444+60	447+62	302	302	906														
		447+62	450+00	476	238	476						238								
		450+00	461+45	1145	1145	2290														
		461+45	465+08		363	726						626								
		465+08	469+38	430	430	1290														
		469+38	542+00	7262	7262	14524														
I-271-SB-RAMP																				
N-W		0+25	7+86	761																
N-W		7+86	8+90	104	104															
N-W		8+90	12+40	350	350															
N-W		12+40	29+52	1712	1712															
G-1		67+50	63+70	380																
G-1		63+70	58+08	562	562															
G-1		58+08	57+60	48	48									20			1			
G-1A		58+08	57+60	48	48									18						
F-1		2+09	17+40	1531	1531															
F-5		2+30	17+00	1470	1470															
F-3		1+90	4+60	270																
F-3		4+60	17+30	1270	1270	380						420		75			3	3		
N-E		68+02	69+70									336			202					
N-E		69+70	70+45	75	75															
CHAGRIN BLVD @ RAMP F-4		20+00	25+00			1000		245				135		144			2	2		
GRAND TOTALS (I-271, RAMPS, CHAGRIN)				56,251	54,837	82,546		245				8302	448	327	1845		9	8		
					= 21.04 MILES	= 15.63 mi														

PAVEMENT MARKING QUANTITIES

TRAFFIC CONTROL QUANTITIES

☒ – 100% STATE (PREPARATION AND SHIPMENT)

IR FUNDS

COMPUTED BY: D.B.
CHECKED BY : E.N.F.

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY - 271 - 6.04

66
99

GROUND MOUNTED SIGNS

REF. NO.	STATION	SIDE	CODE	SIZE	SIGNS - 630		GROUND MOUNTED SIGN SUPPORTS - 630							630	630	630	630	630	630
					FLAT SHEET	EXTRU SHEET	NO. 2 POST	NO. 3 POST	NO. 4 POST	S 4 x 7.7	W 6 x 9			CONCRETE FOR EMBEDDED FOUNDATION	BREAKAWAY BEAM CONNECTION	REMOVAL OF GROUND MTD MAJOR SIGN AND REERECT	REMOVAL OF GRD. MTD. SIGN AND STORAGE	REMOVAL OF GRD. MTD. MAJOR SIGN AND STORAGE	REMOVAL OF GRD. MTD. BEAM SUPPORT	REMOVAL OF GRD. MTD. POST SUPPORT
				INCHES	SQ. FT.	SQ. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.			CU. FT.	EACH	EACH	EACH	EACH	EACH	EACH
200	340+30 NB	RT	W-49R-48	48 x [illegible]	16.0				15-16								2			2
201	347+00 NB	RT	W-53-48	48 x 48	16.0				15-16								1			2
			W-145B-24	24 x 18	3.0												1			
202	358+50 NB	RT	W-49R-48	48 x 48	16.0				15-16								2			1
203	377+25 NB	RT	IM-37-36	36 x 18	4.5												1			
			M-5-36-3	48 x 36	12.0				15-16								1			1
204	370+50 SB	LT		132 x 42		38.5				15-15				0.54	2					
205	365+50 SB	LT	W-1-36	36 x 36	9.0				15								1			1
			W-143-24	24 x 24	4.0												1			
207	363+00 SB	LT	GF-72	72 x [illegible]		30				16-16				0.54	2					
208	354+25 SB	LT															1			2
210	341+20 SB	LT	GF-108	10[illegible] x 60		45					17-17			0.66	2					
211	339+40 SB	LT															1			1
214	27+25 RICHMOND	LT	M-45-42	42 x 66		19.25			16-17											
215	25+00 RICHMOND	RT	M-45-42	42 x 60		17.5			16 [illegible]											
216	20+40 RICHMOND	LT	M-45-42	42 x 60		17.5			16-16											
217	19+60 RICHMOND	RT	M-52A-108	108 x 30		22.5			14-15											
218	11+30 RICHMOND	RT	M-52A-108	108 x 30		22.5			14-15											
219	63+00 RAMP G-100	LT	W-47-48	48 x 48	16.0				15-15								2			2
220	61+00 RAMP G-100	LT	M-2-30-3	37.5 x 30	7.8															
			M-25-24	24 x 18	3.0															
			D-4E	108 x 36		27					17-18			0.66	2		3			3
			D-4D	108 x 24		18														
221	131+00 EMERY	LT	IM-17-21	21 x 15	2.2															
			M-5-24-3	30 x 24	5.0			14												
222	121+50 EMERY	RT	M-52A-108	108 x 30		22.5			14-15											
223	120+50 EMERY	LT	M-52A-108	108 x 30		22.5			14-15											
224	111+25 EMERY	RT	M-52A-108	108 x 30		22.5			14-15											
225	108+25 EMERY	RT	IM-17-21	21 x 15	2.2															
			M-5-30-3	40 x 30	8.3				14											
231	384+90 NB	RT															1	1		3
232	387+20 NB	RT	R-10-48	48 x 60	20.0				17-18									1	2	2
234	407+50 NB	RT															2			1
235	412+00 NB	MED	R-123-36	36 x 36	9.0				14								1			1
236	412+00 NB	MED	R-19-24	24 x 30	5.0			13									1			1
237	412+00 SB	MED	R-19-24	24 x 30	5.0			13									2			2
238	412+00 SB	MED	R-123-36	36 x 36	9.0				14								1			2
239	409+10 SB	LT	R-10-48	48 x 60	20.0				17-18											
	SUB-TOTAL – 100% STATE																25 ☒	2 ☒	2 ☒	27 ☒
	IR-FUNDS				193.0	325.3		40.0	523.0	62.0	69.0			2.4	8		25	2	2	27

GROUND MOUNTED SIGN QUANTITIES

TRAFFIC CONTROL QUANTITIES

☒ – 100% STATE (PREPARATION AND SHIPMENT)

IR FUNDS

CALCULATIONS MADE BY GLR DATE 8-4-82
CHECKED GEH DATE 8-6-82

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
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GROUND MOUNTED SIGNS

REF. NO.	STATION	SIDE	CODE	SIZE	SIGNS - 630		GROUND MOUNTED SIGN SUPPORTS - 630					
					FLAT SHEET	EXTRU SHEET	NO. 2 POST	NO. 3 POST	NO. 4 POST	S 4x7.7	W 6x9	W 10 x 12
				INCHES	SQ. FT.	SQ. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.
246	420+50 NB	RT										
247	425+00 NB	RT	GN	108 x 42		31.5				15-16		
249	430+70 NB	RT	W-97-48	48 x 60	20.0				16-17			
250	433+50 NB	RT	GF-72	72 x 60		30				16-16		
251	440+00 NB	RT	W-49R-48	48 x 48	16.0				16-16			
252	450+00 NB	RT	GN	120 x 42		36				15-15		
253	457+30 NB	RT	W-49R-48	48 x 48	16.0				16-16			
254	474+00 NB	RT	W-68-48	48 x 48	16.0				16-17			
255	477+50 NB	RT	1M-37-36	36 x 18	4.5							
			M-5-36-3	36 x 36	12.0				15-16			
256	480+00 NB	RT										
257	474+75 SB	LT										
259	463+60 SB	LT	W-97-48	48 x 60	20.0				16-17			
260	462+80 SB	LT	GF-72	72 x 60		30				16-16		
261	453+80 SB	LT	W-49R-48	48 x 48	16.0				16-16			
262	443+25 SB	LT	W-49R-48	48 x 48	16.0				16-16			
266	36+00 US-422	LT	1M-17-21	21 x 15	2.2							
			M-5-30-3	40 x 30	8.3				15			
275	0-7+00 US-422	RT	1M-17-21	21 x 15	2.2							
			M-5-30-3	40 x 30	8.3				15			
273	7+52 US-422	RT	GF-72	72 x 60		30				16-16		
295	14+16 RAMP F-4	BOTH	R-31GG-48 (2)	2 (48 x 30)	20.0			16-16				
296	15+20 RAMP F-3	BOTH	R-31W-48 (2)	2 (48 x 30)	20.0			16-16				
280	487+80 NB	RT	R-10-48	48 x 60	20.0				16-17			
281	491+90 NB	MED	R-123-36	36 x 36	9.0				14			
282	497+00 NB	RT		132 x 84		77					21-23	
283	537+90 SB	LT										
284	533+15 SB	LT		156 x 84		91					21-22	
285	522+25 SB	LT	W-68-48	48 x 48	16.0				16-16			
286	515+25 SB	LT										
287	511+75 SB	LT										
289	493+90 SB	LT										
290	491+80 SB	MED	R-123-36	36 x 36	9.0				14			
291	491+80 SB	MED	R-19-24	24 x 30	5.0			13				
292	491+90 NB	MED	R-19-24	24 x 30	5.0			13				
323	13+56 RAMP F-4	RT	M-1-30-3	37.5 x 30	7.81							
			M-25-24	24 x 18	3.00							
			M-2-30-2	30 x 30	6.25							
			M-25-24	24 x 18	3.00							
			D-4E	120 x 72		60.0					36	
324	12+70 RAMP F-3	LT	M-1-30-3	37.5 x 30	7.81							
			M-25-24	24 x 18	3.00							
			M-2-30-2	30 x 30	6.25							
			M-25-24	24 x 18	3.00							
			D-4E	120 x 72		60.0					36	
			SUB-TOTAL	100% STATE								
				IR-FUNDS	301.12	445.5	90.0	381.0	157.0		159.0	

REF. NO.	630 CONCRETE FOR EMBEDDED FOUNDATION	630 BREAKAWAY BEAM CONNECTION	630 REMOVAL OF GROUND MTD. MAJOR SIGN AND REERECT	630 REMOVAL OF GRD. MTD. SIGN AND STORAGE	630 REMOVAL OF GRD. MTD. MAJOR SIGN AND STORAGE	630 REMOVAL OF GRD. MTD. BEAM SUPPORT	630 REMOVAL OF GRD. MTD. POST SUPPORT
	CU. FT.	EACH	EACH	EACH	EACH	EACH	EACH
246					1		3
247	0.54	2		1			2
249							
250	0.54	2		1			2
251				1			2
252	0.54	2		1			2
253				1			2
254				1			1
255				2			1
256				2			2
257					1		3
259				1			2
260	0.54	2		1	1		2
261				1			2
262				1			2
266							
275							
273	0.54	2					
295				1			2
296				1			1
280				1			2
281				1			1
282	2.20			1			2
283							
284	2.20			1			1
285				1	1		3
286				1			2
287				2			2
289				2			1
290							
291							
292							
323							
	2.20	2					
324							
	2.20	2					
	11.5	14.0		23 ☒ 23	3 ☒ 3		42 ☒ 42

GROUND MOUNTED SIGN QUANTITIES

☒ 100% STATE (PREPARATION AND SHIPMENT)

IR FUNDS
EX- EXISTING.
⊕-FOR INFORMATION ONLY

TRAFFIC CONTROL QUANTITIES

CALCULATIONS
MADE BY GJR DATE 8-4-82
CHECKED MEH DATE 8-6-82

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
CUY - 271 - 6.04

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OVERHEAD SIGN SUPPORTS

REF. NO.	ROADWAY	SIDE	STATION	CODE	SIZE	630 SIGNS EXTRUSHEET SQ.FT.	630 SIGNS FLATSHEET SQ.FT.	630 OVERLAY SQ.FT.	630 REMOVAL OF OVERLAY EA.	630 REMOVAL OF OVERHEAD SIGN FOR... STORAGE EA.	630 REMOVAL OF OVERHEAD SIGN FOR... REERECTION EA.	630 12.30 DESIGN #8, 23'-ARMS (MOD) EA.	630 12.30 DESIGN #7, 24'-ARMS EA.	630 OVERHEAD SIGN SUPPORT MODIFICATION TYPE 15B, DESIGN #3 MOD, NEW BOX TRUSS, SECTION 10 FEET (3-BOX) EA.	630 OVERHEAD SIGN SUPPORT MODIFICATION TYPE 7.4, DESIGN #2 MOD, NEW BOX TRUSS SECTION 8 FEET (4'-BOX) EA.	630 12.30 DESIGN #6, 23'ARMS EA.	630 REMOVAL OF OVERHEAD SUPPORT FOR RE-ERECTION EA.	630 CONCRETE FOR ANCHOR BASE FOUNDATIONS CU.YDS.	631 LUMINAIRE SUPPORT ASSEMBLY 3'-3" EA.	631 LUMINAIRE SUPPORT ASSEMBLY 4'-3" EA.	631 LUMINAIRE SUPPORT ASSEMBLY 5'-9" EA.	631 SIGN ATTACHMENT ASSEMBLY EA.	630 OVERHEAD SIGN SUPPORT MODIFICATION TYPE 7.4, DESIGN #2 MOD, NEW BOX TRUSS SECTION 7 FEET (4-BOX) EA.	631 MERCURY VAPOR LUMINAIRE WITH LAMP 175 WATT EA.	631 MERCURY VAPOR LUMINAIRE WITH LAMP 250 WATT EA.	631 BALLASTS TYPE CMRI-175-480 VOLT EA.	631 BALLASTS TYPE CMRI-250-480 VOLT EA.	625 GROUND ROD EA.	621 SIGNS WIRED EA.	631 SIGN SERVICE EA.	631 DISCONNECT SWITCH WITH ENCLOSURE EA.	631 SWITCH ENCLOSURE MOUNTING BRACKET ASSEMBLY EA.	631 BALLAST WIRING ENCLOSURE TYPE A EA.	631 BALLAST WIRING ENCLOSURE TYPE B EA.	631 BALLAST WIRING ENCLOSURE MOUNTING BRACKET, TYPE A EA.	631 BALLAST WIRING ENCLOSURE MOUNTING BRACKET, TYPE B EA.	631 REMOVAL OF LUMINAIRES EA.
206	I-271 SB	Lt.	365+90		23'x12.5'	EX.					1			1		1	10.66			3	EX.			3		3	1	1	1			1		1		3
					17'x12.5'	EX.					1								2		EX.			2		2		1								2
					11'x2'	EX.					1																		1							
				OVERLAY	6'-3"x 5'			31.25																												
					20'x10.5'	EX.					1								3		EX.			3		3		1							3
				GEP-84	7'x2'	14.0																													
209	I-271 SB	Lt.	343+65		22'x12.5'	EX.					1							1																	3
					11'x10.5'	EX.				1⊕																									1
					9'x2'	EX.				1⊕																									
					17'x10.5'	EX.				1⊕																									2
					8'x2'	EX.				1⊕																									
	I-271 SB	Lt.	344+20		22'x12.5'	EX.											10.59			3	EX.			3		3	1	1	1			1		1		
					16'x12.5'	200.0														2	3			2		2		1							
				GEP-132	11'x2'	22.0																													
				OVERLAY	6'-3"x 5'			31.25																												
				OVERLAY	6'x 4'			24.00																												
212	LANE N-W SB	Lt.	15+60		15'x8'	EX.					1			1			1																	2
					8'x2'	EX.				1	1																									
					15'x12.5'	EX.					1																									2
					8'x2'	EX.					1																									
	LANE N-W	Lt.	15+710		15'x8'	EX.											9.50			2	EX.			2		2	1	1	1			1		1		
					8'x2'	EX.																														
					15'x12.5'	EX.														2	EX.			2		2		1								
					8'x2'	EX.																														
230	I-271 NB	Rt.	380+00		17'x10'	170.0								1			3.97		2⊕					2		2	1	1	1	1	1		1		1⊕		
				GEP-84	7'x2'	14.0																														
233	I-271 NB	Rt.	407+00		17'x10'	170.0								1			3.97		2⊕					2		2	1	1	1	1	1		1		1⊕		
				EP-84	7'x2'	14.0																														
240	I-271 SB	Lt.	402+05		23'x12.5'	EX.					1						1						1												3
					17'x12.5'	EX.					1																									2
					11'x2'	EX					1																									
	I-271 SB	Lt.	401+85		23'x12.5'	EX.														3	EX.			3		3		1				1				
					17'x12.5'	EX.														2	EX.			2		2										
					11'x2'	EX																														
				OVERLAY	6'-3"x 5'			31.25																												
				OVERLAY	17'x2'			34.00																												
320	I-271 NB	Rt.	395+00		13'x7.5'	97.5										1		2,92	2⊕					2		2	1	1	1	1	1		1		1⊕		
				GEP-84	7'x2'	14.0																														
			TOTALS	100% IR	STATE FUNDS	715.5		151.8	1	4⊕	12		2	1	1	1	4	41.6		7	15		1	11	17	11	17	6	10	6	3	3	4	3	4		23

OVERHEAD SIGN SUPPORT QUANTITIES

☒ 100% STATE (PREPARATION AND SHIPMENT)

IR FUNDS
EX - EXISTING.

⊕ - FOR INFORMATION ONLY.

TRAFFIC CONTROL QUANTITIES

CALCULATIONS
MADE BY JJR DATE 8-4-82
CHECKED DEH DATE 8-6-82

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OVERHEAD SIGN SUPPORTS

REF. NO.	ROADWAY	SIDE	STATION	CODE	SIZE	630 SIGNS EXTRUSHEET SQ FT	630 SIGNS FLATSHEET SQ FT	630 REMOVAL OF OVERHEAD SUPPORT AND REERECTION EA	630 REMOVAL OF OVERHEAD SIGN FOR... STORAGE EA	630 REMOVAL OF OVERHEAD SIGN FOR... REERECTION EA	630 12.30 DESIGN #6, 25' ARMS EA	630 12.30 DESIGN #8, 26' ARMS EA	630 CONCRETE FOR ANCHOR BASE FOUNDATIONS CU YDS	630 LUMINAIRE SUPPORT ASSEMBLY 25'-9" EA	630 LUMINAIRE SUPPORT ASSEMBLY 41-3" EA	630 LUMINAIRE SUPPORT ASSEMBLY 51-9" EA	630 SIGN ATTACHMENT ASSEMBLY* EA	631 MERCURY VAPOR LUMINAIRE WITH LAMP 100 WATT	631 MERCURY VAPOR LUMINAIRE WITH LAMP 175 WATT EA	631 MERCURY VAPOR LUMINAIRE WITH LAMP 250 WATT EA	631 BALLASTS TYPE CMRI-175-480 VOLT EA	631 BALLASTS TYPE CMRI-250-480 VOLT EA	625 GROUND ROD EA	631 SIGNS WIRED EA	631 SIGN SERVICE EA	631 DISCONNECT SWITCH WITH ENCLOSURE EA	631 SWITCH ENCLOSURE MOUNTING BRACKET ASSEMBLY EA	631 BALLAST W/HNG ENCLOSURE TYPE B	631 BALLAST W/HNG ENCLOSURE MOUNTING BRACKET, TYPE B EA	631 REMOVAL OF LUMINAIRES	630 12.30 DESIGN #6 25' ARMS	630 12.30 DESIGN #1 16' ARMS	630 12.30 DESIGN #1 14' ARMS	630 12.30 DESIGN #1 15' ARMS	631 BALLAST TYPE CMRI-100-120 VOLT
241	I-271 SB	Lt.	386+50		17'x12.5'	EX.		1		1																				2					
	I-271 SB	Lt.	386+30		17'x12.5'	EX.							4.26			2	EX.		2		2	1	1	1			1		1						
				GEP-84	7'x2'	14.0																														
248	I-271 NB	Rt.	430+8[illegible]		20'x7.5'	150.0						1	3.97		3⊕				3		3	1	1	1			1		1⊕						
				GEP-84	7'x2'	14.0																														
258	I-271 SB	Lt.	466+00		20'x7.5'	150.0						1	3.97		3⊕				3		3	1	1	1	1	1	1		1⊕						
				GEP-84	7'x2'	14.0																														
263	I-271 SB	Lt.	420+05			EX.		1	1⊕																										
	I-271 SB	Lt.	420+15		17'x12.5'	212.5							4.26			2	3		2		2	1	1	1	1	1	1		1						
				GEP-84	7'x2'	14.0																														
288	I-271 SB	Lt.	510+00		17'x10'	170.0						1	3.97		2⊕				2		2	1	1	1	1	1	1		1⊕						
				GEP-84	7'x2'	14.0																														
293	I-271 SB	Lt.	485+00		17'x10'	170.0						1	3.97		2⊕				2		2	1	1	1	1	1	1		1⊕						
				GEP-84	7'x2'	14.0																														
326	I-271 SB	LT.	500+00		13'x7.5'	97.5						1	2.92		2⊕				2		2	1	1	1	1	1	1		1⊕						
				GEP-84	7'x2'	14.0																														
267	CHAGRIN BLVD.	LT	2'15+40	M-528-120	10'x4.5'	45.0							2.40	1⊕																					
268	CHAGRIN BLVD.	LT.	20+65		9'x5.5'	49.5							2.40	1⊕																					
269	CHAGRIN BLVD.	LT.	17+50		9'x5.5'	49.5							2.40	1⊕																					
270	CHAGRIN BLVD.	RT	17+75		9'x5.5'	49.5							2.92	1⊕																					
271	CHAGRIN BLVD.	RT	12+40		9'x5.5'	49.5							2.40	1⊕																					
272	CHAGRIN BLVD.	LT	12+00		9'x5.5'	49.5							2.40	1⊕																					
274	CHAGRIN BLVD	RT.	3+95		9'x5.5'	49.5							2.92	1⊕																					
					9'x5.5'	49.5								1⊕																					
			TOTALS	100% IR	STATE FUNDS	1439.5	2	1	1⊕	1	1	4	45.2			4	3	8	12	4	12	4	14	15	14	12	5		14		2	2	1	2	3	1	8

OVERHEAD SIGN SUPPORT QUANTITIES

FHWA REGION	STATE	PROJECT	
5	OHIO		

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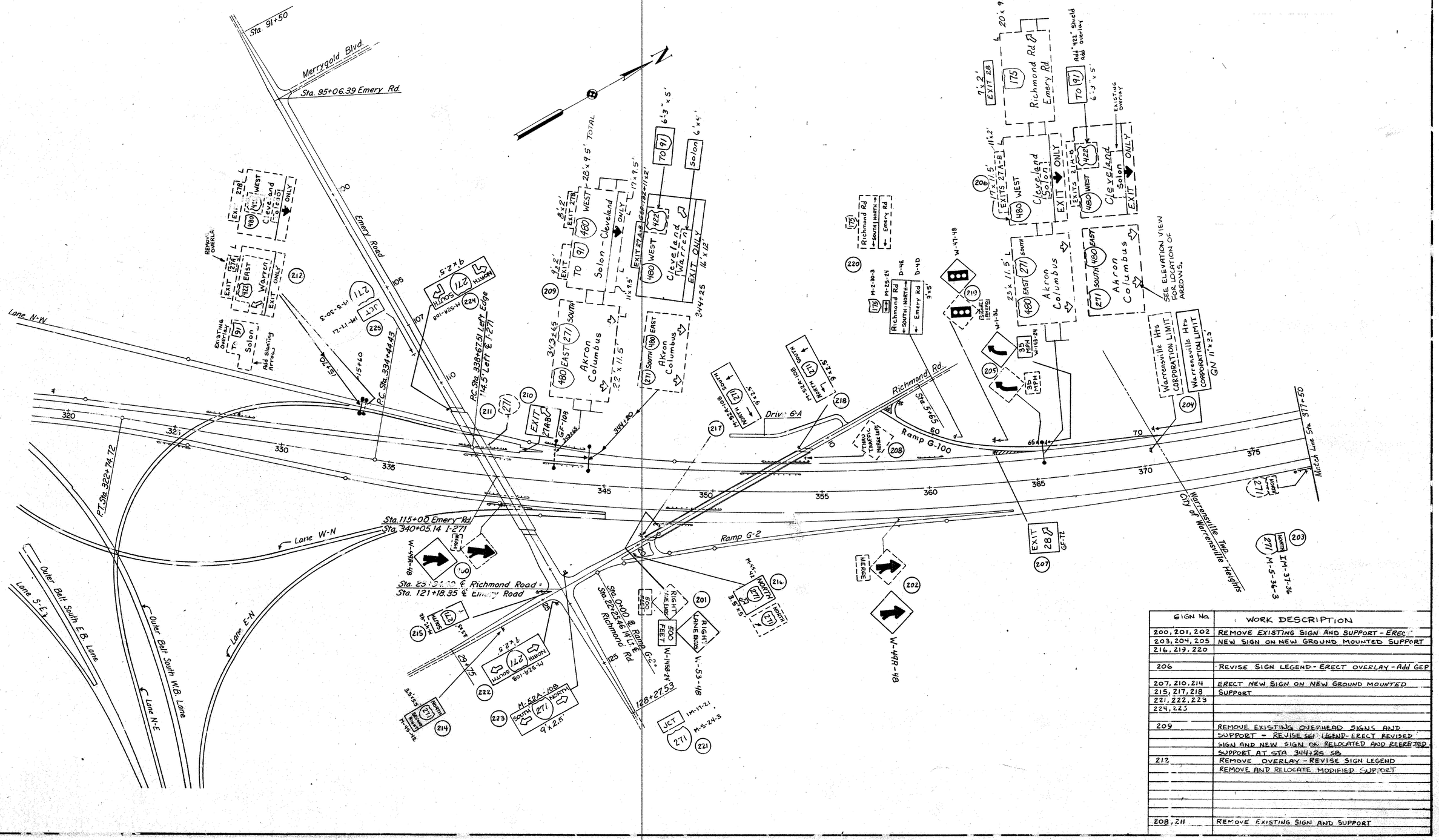
CUYAHOGA COUNTY
CUY - 271 - 6.04



SIGN №	WORK DESCRIPTION
200, 201, 202	REMOVE EXISTING SIGN AND SUPPORT - ERECT
203, 204, 205	NEW SIGN ON NEW GROUND MOUNTED SUPPORT
216, 219, 220	
206	REVISE SIGN LEGEND - ERECT OVERLAY - ADD GEP
207, 210, 214	ERECT NEW SIGN ON NEW GROUND MOUNTED
215, 217, 218	SUPPORT
221, 222, 223	
224, 225	
209	REMOVE EXISTING OVERHEAD SIGNS AND SUPPORT - REVISE SIGN LEGEND - ERECT REVISED SIGN AND NEW SIGN ON RELOCATED AND REERECTED SUPPORT AT STA 344+25 SB
212	REMOVE OVERLAY - REVISE SIGN LEGEND REMOVE AND RELOCATE MODIFIED SUPPORT
208, 211	REMOVE EXISTING SIGN AND SUPPORT

STA 318+00 TO STA 377+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
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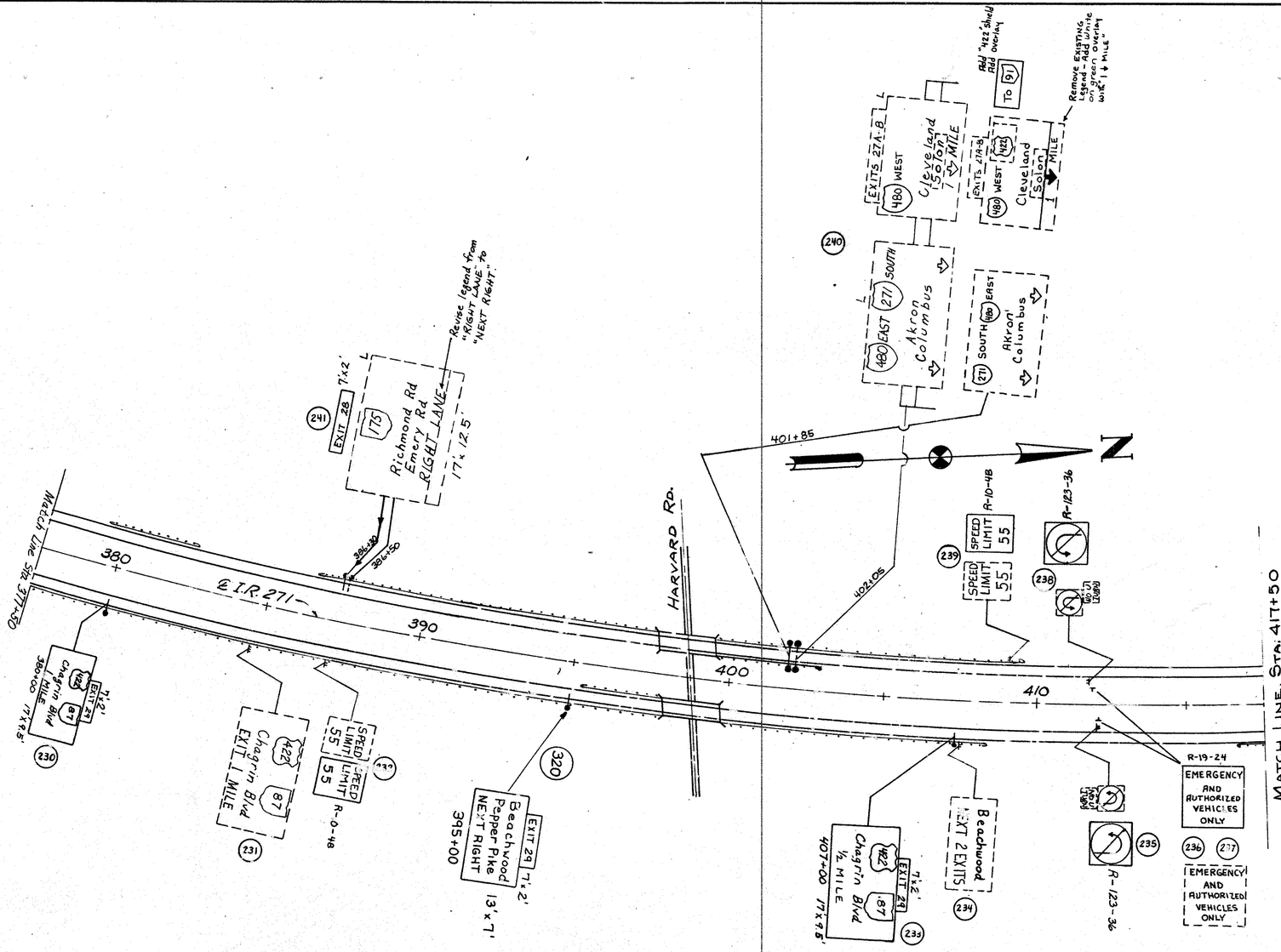

SIGN No.	WORK DESCRIPTION
230, 233	ERECT NEW OVERHEAD SIGN ON NEW
320	OVERHEAD SUPPORT
231, 234	REMOVE EXISTING SIGN AND SUPPORT
232, 235	REMOVE EXISTING SIGN AND SUPPORT - ERECT
236, 237	NEW SIGN ON NEW GROUND MOUNTED
238, 239	SUPPORT
240	REVISE SIGN LEGEND - ADD OVERLAY SIGN - REL. SUP
241	REVISE SIGN LEGEND - ALC GEP-84
	REMOVE AND RELOCATE SUPPORT

STA 377+50 TO STA 417+50

FHWA REGION	STATE	PROJECT	
5	OHIO		

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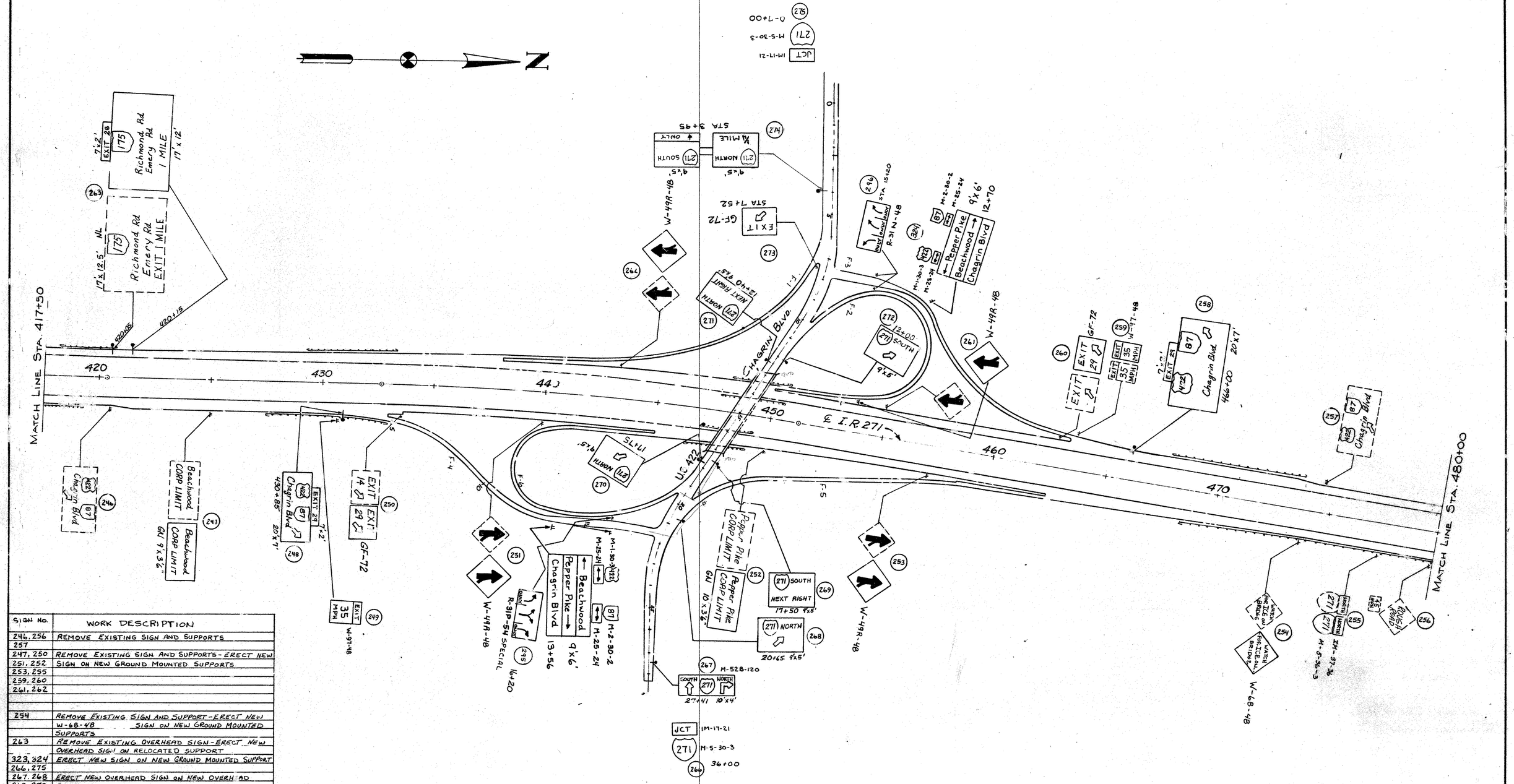
CUYAHOGA COUNTY
CUY - 271 - 6.04



SIGN NO.	WORK DESCRIPTION
246, 256	REMOVE EXISTING SIGN AND SUPPORTS
257	
247, 250	REMOVE EXISTING SIGN AND SUPPORTS - ERECT NEW
251, 252	SIGN ON NEW GROUND MOUNTED SUPPORTS
253, 255	
259, 260	
261, 262	
254	REMOVE EXISTING SIGN AND SUPPORT - ERECT NEW
	W-68-48 SIGN ON NEW GROUND MOUNTED
	SUPPORTS
263	REMOVE EXISTING OVERHEAD SIGN - ERECT NEW
	OVERHEAD SIGN ON RELOCATED SUPPORT
323, 324	ERECT NEW SIGN ON NEW GROUND MOUNTED SUPPORT
266, 275	
267, 268	ERECT NEW OVERHEAD SIGN ON NEW OVERH AD
269, 270	SUPPORT
271, 272	
273, 274	
248, 258	
249	ERECT NEW SIGN ON NEW GROUND MOUNTED SUPPORTS

STA 417+50 TO STA 480+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
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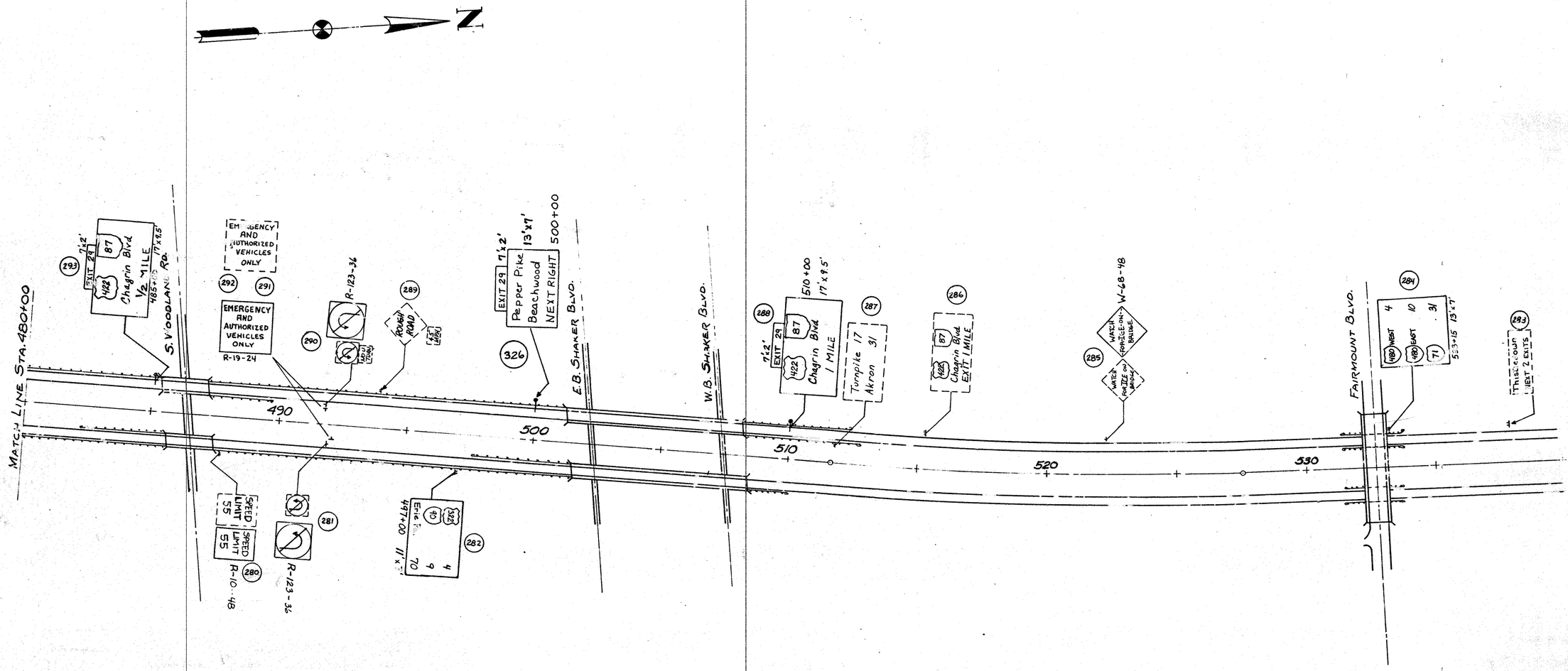

SIGN No.	WORK DESCRIPTION
280, 281	REMOVE EXISTING SIGN AND SUPPORT - ERECT
290, 291	NEW SIGN ON NEW GROUND MOUNTED SUPPORT
292	
282, 284	ERECT NEW SIGN ON NEW GROUND MOUNTED
	SUPPORTS
285	REMOVE EXISTING SIGN AND SUPPORT - ERECT
	NEW W-68-48 SIGN ON NEW GROUND
	MOUNTED SUPPORTS
283, 286	REMOVE EXISTING SIGN AND SUPPORTS
287, 289	
288, 293	ERECT NEW OVERHEAD SIGN ON NEW OVERHEAD
326	SUPPORT

STA 480+00 TO STA 540+00

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
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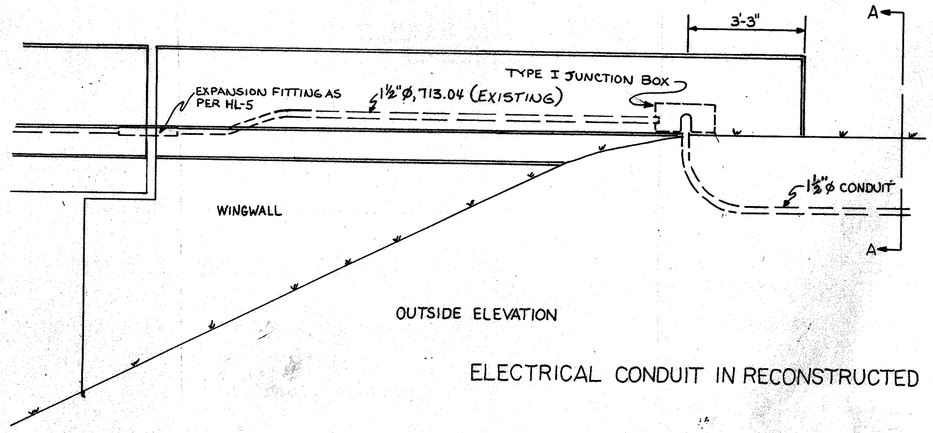
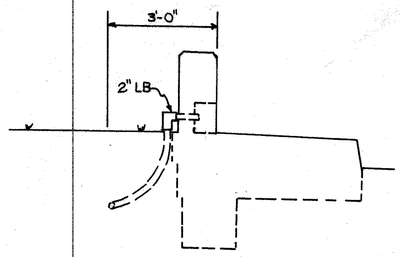


OUTSIDE ELEVATION



SECTION A-A

ELECTRICAL CONDUIT IN RECONSTRUCTED PARAPET

RELOCATED EXISTING SUPPORT FROM STA 343+65 SB

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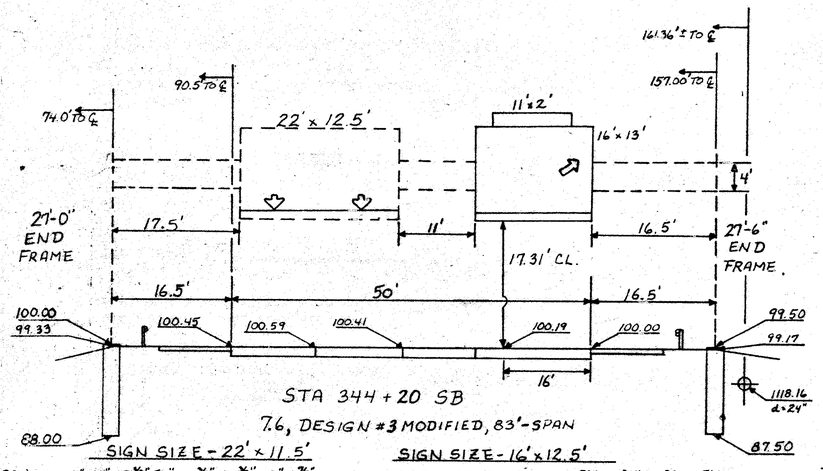


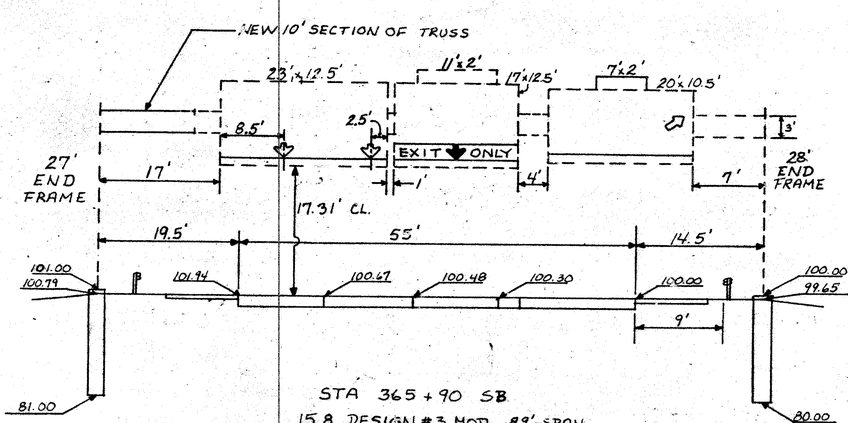
STA 344+20 SB
7.6, DESIGN #3 MODIFIED, 83'-SPAN

SIGN SIZE - 22' x 11.5'
BRKT SP- 7", 38", 37⅜", 50", 49⅜", 37⅜", 38", 6⅜"
No. OF BRKTS-7, Y₂-BRKTS, HEIGHT-12.5'

SIGN SIZE - 16' x 12.5'
BRACKET SPACING - 8⅝", 75⅜", 99⅜", 8⅝"
No. OF BRACKETS-3, Z-BRKTS, HEIGHT 13'

MODIFIED EXISTING SUPPORT

206



STA 365+90 SB
15.8, DESIGN #3 MOD., 89'-SPAN

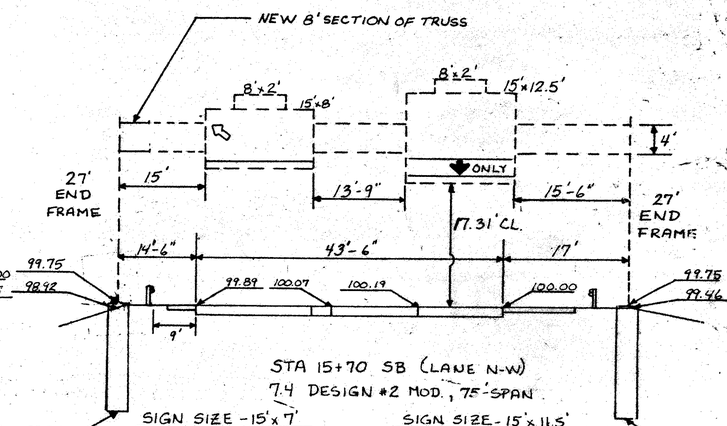
SIGN SIZE - 23' x 11.5'
BRKT SP-13", 38", 37⅜", 38", 38¾", 38", 37⅜", 38", 12⅜"
No. OF BRKTS-8, Y₂-BRKTS, HEIGHT-12.5'

SIGN SIZE - 17' x 11.5'
BRKT SP- 14⅝", 38", 37⅜", 38", 38⅜", 38", 14⅝"
No. OF BRKTS-6, Y₂-BRKTS, HEIGHT-12.5'

SIGN SIZE - 20' x 9.5'
BRKT SP-7", 38", 37⅜", 38", 37⅜", 38", 6⅜"
No. OF BRKTS-7, Y₂-BRKTS, HEIGHT-10.5'

RELOCATED AND MODIFIED EXISTING SUPPORT FROM STA 15+60 SB

212



STA 15+70 SB (LANE N-W)
7.4 DESIGN #2 MOD., 75'-SPAN

SIGN SIZE - 15' x 7'
BRKT SP- 14⅝", 75⅜", 75⅜", 14⅝"
No. OF BRKTS-3, Y₂-BRKTS, HT-8.0'

SIGN SIZE - 15' x 11.5'
BRKT SP- 14⅝", 38", 37⅜", 37⅜", 38", 14⅝"
No. OF BRKTS-5, Y₂-BRKTS, HT-12.5'

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
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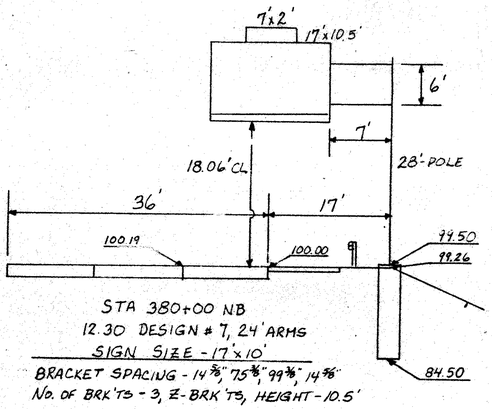
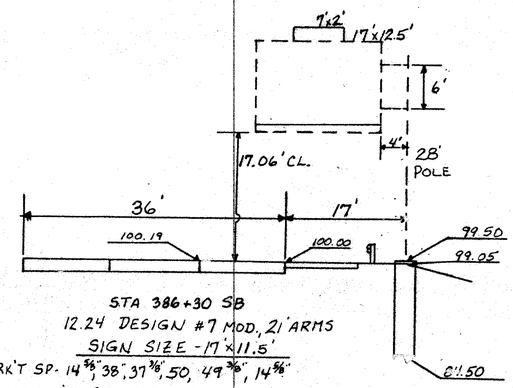
NEW SUPPORT 230



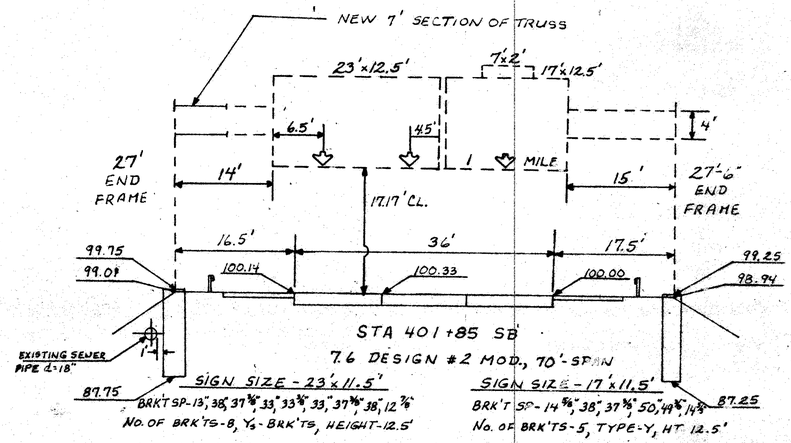
STA 380+00 NB
12.30 DESIGN # 7, 24' ARMS
SIGN SIZE - 17'x10'
BRACKET SPACING - 14 5/8", 75 3/8", 99 3/8", 14 5/8"
No. OF BRK'TS - 3, Z-BRK'TS, HEIGHT - 10.5'

RELOCATED EXISTING SUPPORT FROM STA 387+50 SB 241



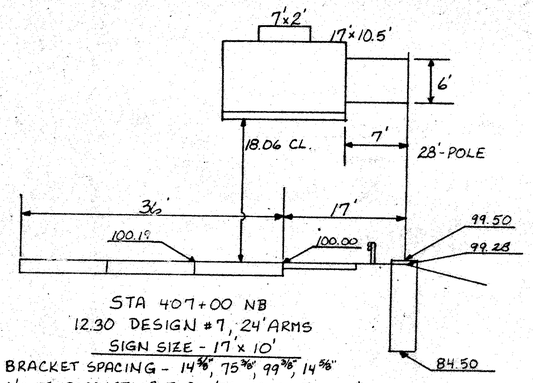
STA 386+30 SB
12.24 DESIGN #7 MOD., 21' ARMS
SIGN SIZE - 17'x11.5'
BRK'T SP - 14 5/8", 38", 37 3/8", 50, 49 3/8", 14 5/8"
No. OF BRK'TS-5, TYPE-Y, HEIGHT-12.5'

RELOCATED AND MODIFIED EXISTING SUPPORT FROM STA 402+00 SB 240



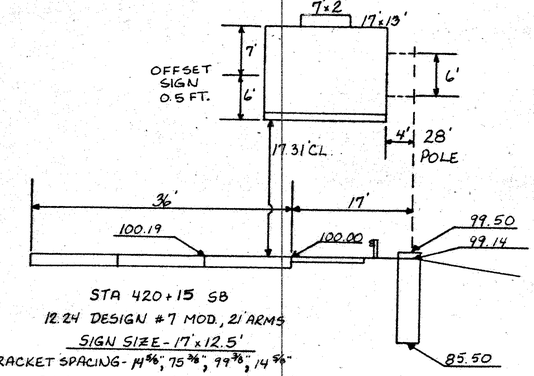
STA 401+85 SB
7.6 DESIGN #2 MOD., 70'-SPAN
SIGN SIZE - 23'x11.5'
BRK'T SP-13", 38", 37 3/8", 33", 33 3/8", 33", 37 3/8", 38", 12 7/8"
No. OF BRK'TS-8, Y's-BRK'TS, HEIGHT-12.5'
SIGN SIZE - 17'x11.5'
BRK'T SP-14 5/8", 38", 37 3/8", 50, 49 3/8", 14 5/8"
No. OF BRK'TS-5, TYPE-Y, HT. 12.5'

NEW SUPPORT 233



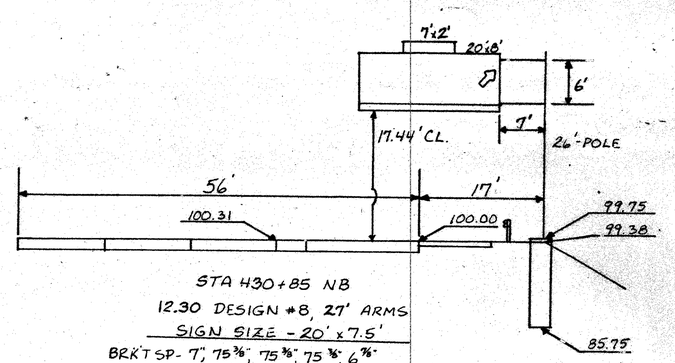
STA 407+00 NB
12.30 DESIGN #7, 24' ARMS
SIGN SIZE - 17'x 10'
BRACKET SPACING - 14 5/8", 75 3/8", 99 3/8", 14 5/8"
No. OF BRACKETS-3, Z-BRK'TS, HEIGHT - 10.5'

RELOCATED EXISTING SUPPORT FROM STA 420+25 SB 263



STA 420+15 SB
12.24 DESIGN #7 MOD., 21' ARMS
SIGN SIZE - 17'x12.5'
BRACKET SPACING - 14 5/8", 75 3/8", 99 3/8", 14 5/8"
No. OF BRK'TS - 3, Z - BRK'TS, HEIGHT - 13'

NEW SUPPORT 248



STA 430+85 NB
12.30 DESIGN #8, 27' ARMS
SIGN SIZE - 20' x 7.5'
BRK'T SP - 7", 75 3/8", 75 3/8", 75 3/8", 6 7/8"
No. OF BRK'TS - 3, Z-BRK'TS, HT - 8'

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
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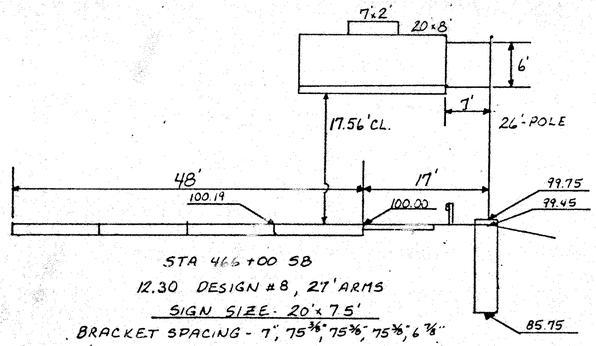
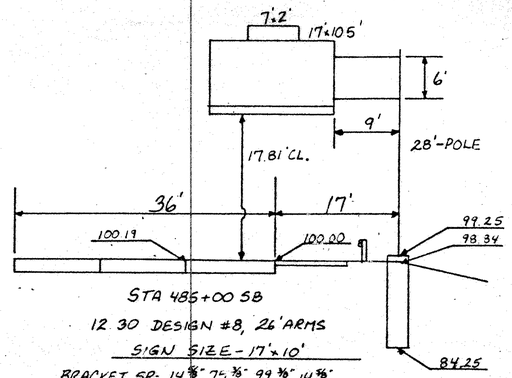
NEW SUPPORT 258



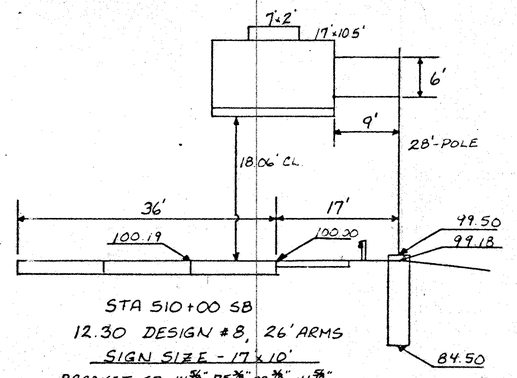
STA 466+00 SB
12.30 DESIGN #8, 27'ARMS
SIGN SIZE - 20'x 7.5'
BRACKET SPACING - 7', 75 3/16", 75 3/16", 75 3/16", 6 7/8"
No. OF BRACKETS-3, Z-BRK'TS, HEIGHT- 8'

NEW SUPPORT 293



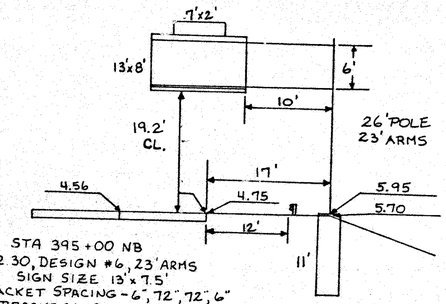
STA 485+00 SB
12.30 DESIGN #8, 26'ARMS
SIGN SIZE - 17'x 10'
BRACKET SP- 14 3/16", 75 3/16", 99 3/16", 14 3/16"
No. OF BRK'TS - 3, Z-BRK'TS, HT- 10.5'

NEW SUPPORT 288



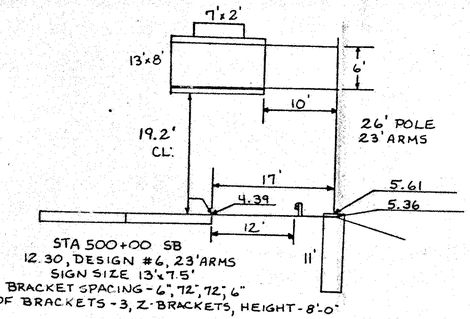
STA 510+00 SB
12.30 DESIGN #8, 26'ARMS
SIGN SIZE - 17'x 10'
BRACKET SP- 14 3/16", 75 3/16", 99 3/16", 14 3/16"
No. OF BRK'TS - 3, Z-BRK'TS, HEIGHT- 10.5'

320



STA 395+00 NB
12.30, DESIGN #6, 23'ARMS
SIGN SIZE 13'x 7.5'
BRACKET SPACING - 6", 72", 72", 6"
NO. OF BRACKETS - 3, Z-BRACKETS, HEIGHT- 8'-0"

326



STA 500+00 SB
12.30, DESIGN #6, 23'ARMS
SIGN SIZE 13'x 7.5'
BRACKET SPACING - 6", 72", 72", 6"
NO. OF BRACKETS - 3, Z-BRACKETS, HEIGHT- 8'-0"

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5	OHIO			

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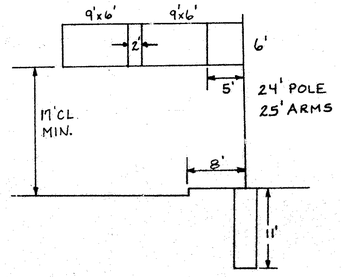
CHAGRIN BLVD. (U.S. 422) STA. 3+95 — 274

TC-12.30, DESIGN #6, 24' POLE, 25' ARMS
SIGN SIZE - 9'x 5.5' (2)
BRACKET SPACING - 16 3/8", 75 3/8", 16 1/4" (EA. SIGN)
NO. OF BRACKETS - 2, Z-BRACKETS, HEIGHT-6.0' (EA. SIGN)

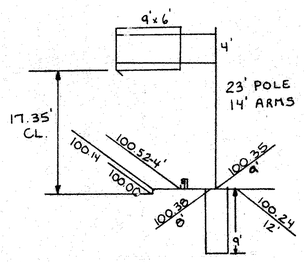


CHAGRIN BLVD. (U.S. 422) STA. 12+00 — 272

TC-12.30, DESIGN #1, 23' POLE, 16' ARMS
SIGN SIZE - 9'x 5.5'
BRACKET SPACING - 16 3/8", 75 3/8", 16 1/4"
NO. OF BRACKETS - 2, Z-BRACKETS, HEIGHT - 6.0'

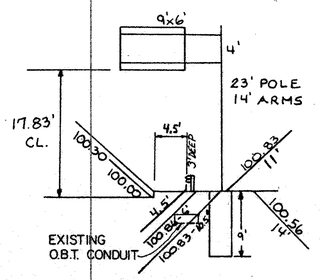
CHAGRIN BLVD. (U.S. 422) STA. 12+40 — 271

TC - 12.30, DESIGN # 1, 23' POLE, 14' ARMS
SIGN SIZE - 9'x 5.5'
BRACKET SPACING - 16 3/8", 75 3/8", 16 1/4"
NO. OF BRACKETS - 2, Z-BRACKETS, HEIGHT-6.0'



CHAGRIN BLVD. (U.S. 422) STA. 17+50 — 269

TC-12.30, DESIGN #1, 23' POLE, 14' ARMS
SIGN SIZE - 9'x 5.5'
BRACKET SPACING - 16 3/8", 75 3/8", 16 1/4"
NO. OF BRACKETS - 2, Z - BRACKETS, HEIGHT - 6.0'

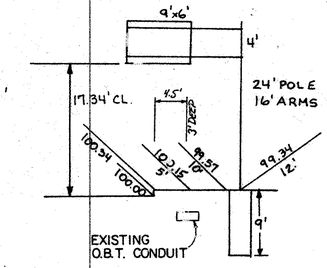


CHAGRIN BLVD. (U.S. 422) STA 17+75 — 270

TC-12.30, DESIGN # 1, 23' POLE, 14' ARMS
SIGN SIZE - 9'x 5.5'
BRACKET SPACING - 16 3/8", 75 3/8", 16 1/4"
NO. OF BRACKETS - 2, Z - BRACKETS, HEIGHT - 6.0'

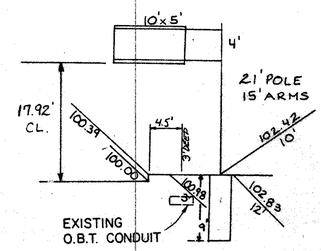
CHAGRIN BLVD. (U.S. 422) STA. 20+65 — 268

TC - 12.30, DESIGN # 1, 24' POLE, 16' ARMS
SIGN SIZE - 9'x 5.5'
BRACKET SPACING - 16 3/8", 75 3/8", 16 1/4"
NO. OF BRACKETS - 2, Z - BRACKETS, HEIGHT - 6.0'



CHAGRIN BLVD. (U.S. 422) STA. 27+40 — 267

TC-12.30, DESIGN # 1, 21' POLE, 15' ARMS
SIGN SIZE - 10'x 4.5'
BRACKET SPACING - 10 3/8", 99 3/8", 10 1/4"
NO. OF BRACKETS - 2, Z - BRACKETS, HEIGHT - 5.0'



FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
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INTERVAL DIAGRAM

PHASE	A			B			FLASH
SIGNAL HEAD \ INTERVAL	1	2	3	4	5	6	
A	↑	Y	R	R	R	R	Y
B	G	Y	R	R	R	R	Y
C	↑	Y	R	R	R	R	Y
D	↑	Y	R	R	R	R	Y
E	R	R	R	G	Y	R	R
F	R	R	R	G	Y	R	R
G	↗	↗	↗	↗	↗	↗	Y

TIMING CHART

PHASE / INTERVAL	A	B
MINIMUM GREEN		
INITIAL GREEN	——	5
VEHICLE EXTENSION	——	3
MAXIMUM GREEN	——	
YELLOW CLEARANCE	3	3
ALL RED	2	1
RECALL	ON	OFF

PHASING DIAGRAM

SIGNAL HEADS

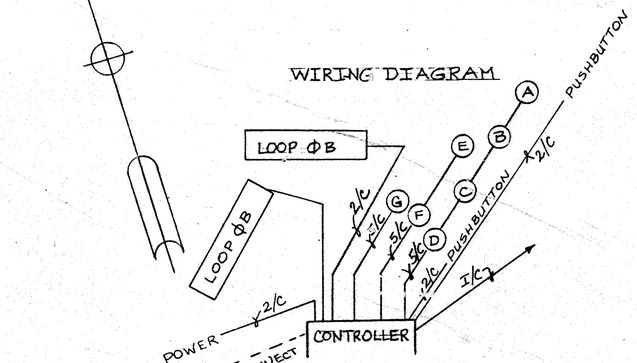
SIGN S-1.

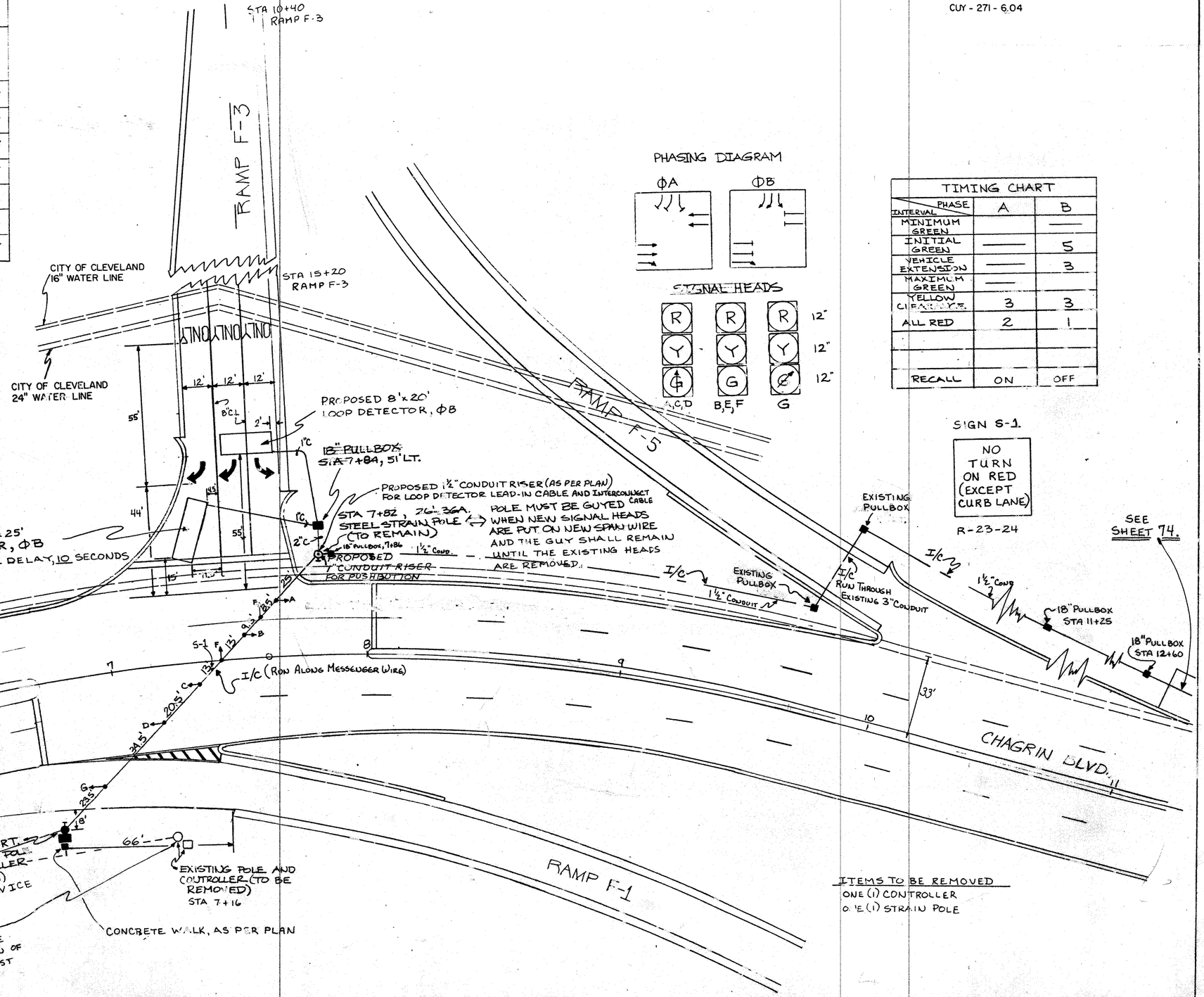
NO TURN ON RED (EXCEPT CURB LANE)

R-23-24

SEE SHEET 74.

WIRING DIAGRAM





ITEMS TO BE REMOVED
ONE (1) CONTROLLER
ONE (1) STRAIN POLE

CHAGRIN BLVD. AND RAMP F-3

FHWA REGION	STATE	PROJECT	
5	OHIO		

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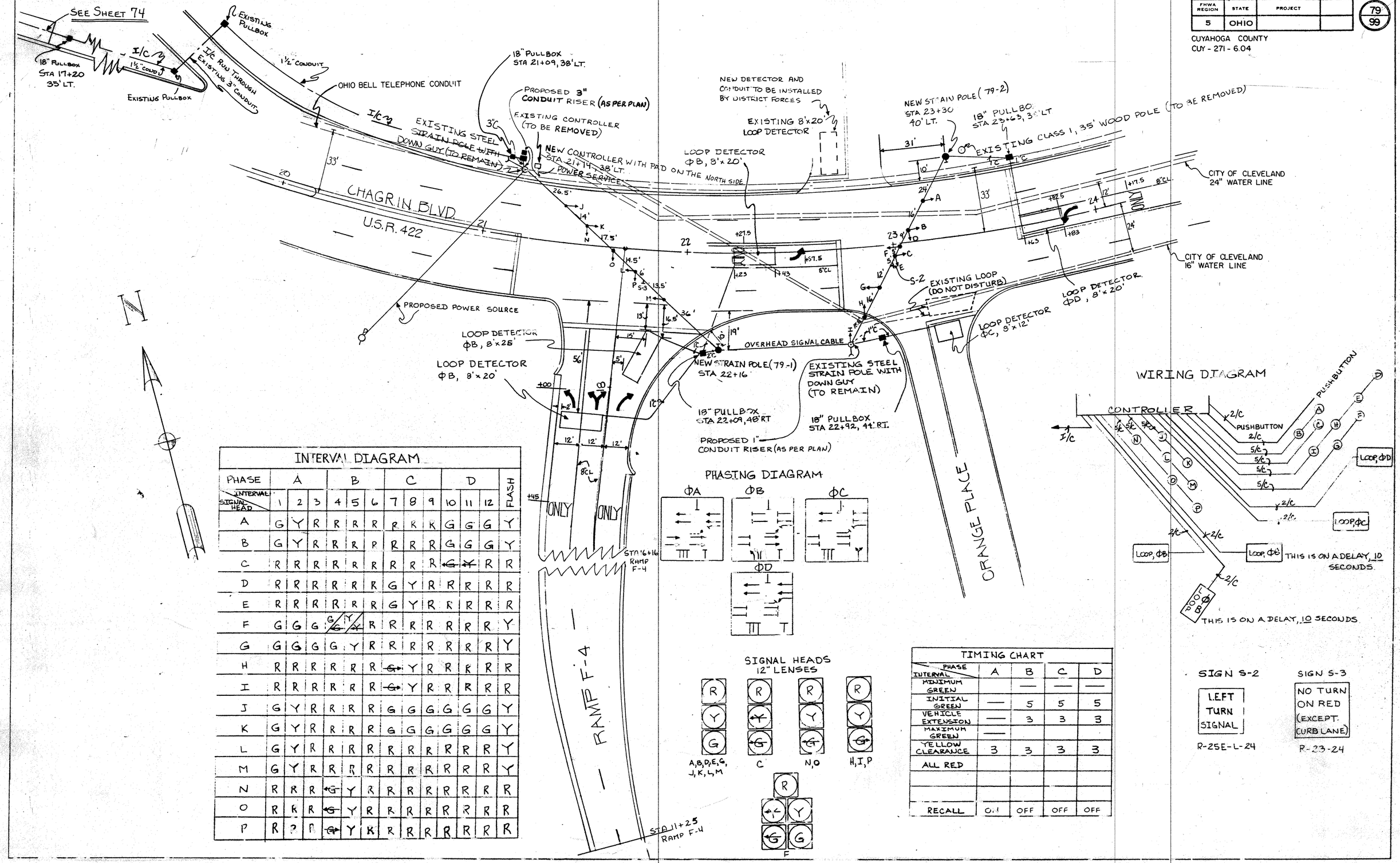

INTERVAL DIAGRAM

PHASE	A			B			C			D			FLASH
INTERVAL / SIGNAL HEAD	1	2	3	4	5	6	7	8	9	10	11	12	
A	G	Y	R	R	R	R	R	R	R	G	G	G	Y
B	G	Y	R	R	R	R	R	R	R	G	G	G	Y
C	R	R	R	R	R	R	R	R	R	~~G~~	~~Y~~	R	R
D	R	R	R	R	R	R	G	Y	R	R	R	R	R
E	R	R	R	R	R	R	G	Y	R	R	R	R	R
F	G	G	G	G/~~G~~	Y/~~Y~~	R	R	R	R	R	R	R	Y
G	G	G	G	G	Y	R	R	R	R	R	R	R	Y
H	R	R	R	R	R	R	~~G~~	Y	R	R	R	R	R
I	R	R	R	R	R	R	~~G~~	Y	R	R	R	R	R
J	G	Y	R	R	R	R	G	G	G	G	G	G	Y
K	G	Y	R	R	R	R	G	G	G	G	G	G	Y
L	G	Y	R	R	R	R	R	R	R	R	R	R	Y
M	G	Y	R	R	R	R	R	R	R	R	R	R	Y
N	R	R	R	~~G~~	Y	R	R	R	R	R	R	R	R
O	R	R	R	~~G~~	Y	R	R	R	R	R	R	R	R
P	R	R	R	~~G~~	Y	R	R	R	R	R	R	R	R

PHASING DIAGRAM

SIGNAL HEADS 12" LENSES

TIMING CHART

PHASE / INTERVAL	A	B	C	D
MINIMUM GREEN		—	—	—
INITIAL GREEN	—	5	5	5
VEHICLE EXTENSION	—	3	3	3
MAXIMUM GREEN	—			
YELLOW CLEARANCE	3	3	3	3
ALL RED				
RECALL	0.1	OFF	OFF	OFF

WIRING DIAGRAM

SIGN S-2
LEFT TURN SIGNAL
R-25E-L-24

SIGN S-3
NO TURN ON RED (EXCEPT CURB LANE)
R-23-24

CHAGRIN BLVD. AND RAMP F-4

FHWA REGION	STATE	PROJECT	
5	OHIO		

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99

CUYAHOGA COUNTY
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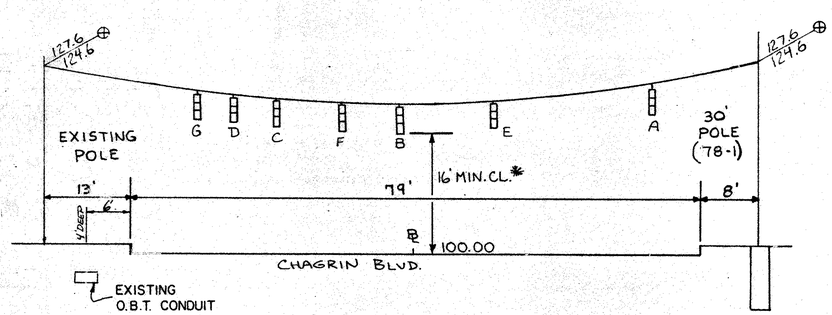
* NOTE: MAINTAIN A CLEARANCE OF 16'-17' FROM BOTTOM OF SIGNAL HEAD TO PAVEMENT SURFACE WITH MINIMUM LENGTH OF DROP PIPES.

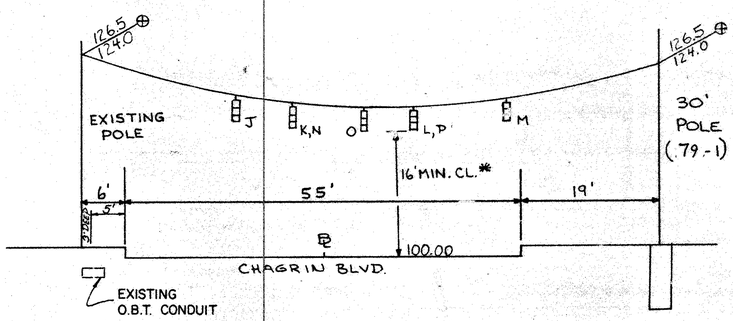
ELEV. A / ELEV. B
ELEV. A IS SPAN WIRE ATTACHMENT HT. BASED ON 5% SAG
ELEV. B IS SPAN WIRE ATTACHMENT HT. BASED ON 3% SAG
ACTUAL ELEV. SHALL FALL WITHIN THESE LIMITS

BROADWAY AVE AND FAIR OAKS RD.

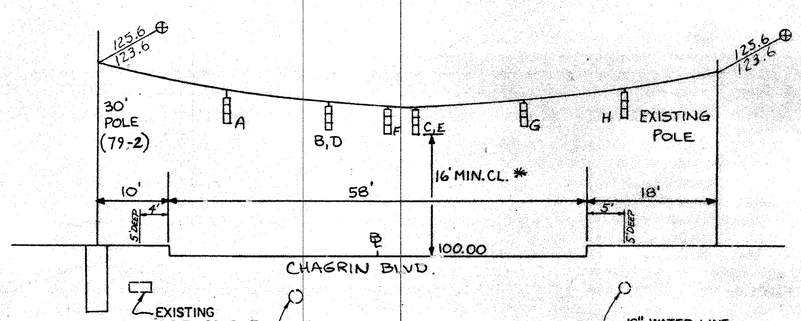
CHAGRIN BLVD. @ RAMP 3



CHAGRIN BLVD @ RAMP F-4



CHAGRIN BLVD. @ ORANGE PLACE



TRAFFIC SIGNAL ELEVATION VIEWS

TRAFFIC CONTROL QUANTITIES

CALCULATIONS
MADE BY GJR DATE 8-4-82
CHECKED RFH DATE 8-6-82

FHWA REGION	STATE	PROJECT	
5	OHIO		

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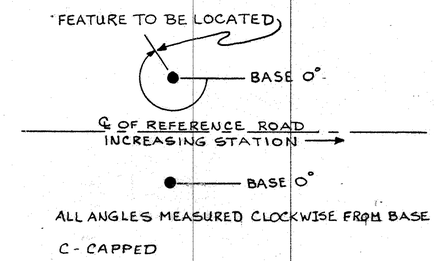
POLE NO.	STATION	OFFSET	TC-81.10 DESIGN NUMBER No. 6 EA	No. 8 EA	POLE LENGTH — FT.	ORIENTATION ANGLES 2½" BHC CONTROLLER	1½" BHC POWER	2" BHC SIGNAL CABLES	PED SIGNALS	PED PUSHBUTTON	HANDHOLE	TC-81.20 DESIGN No. 12 POLE DESIGN No. 3 ARMS
78-1	6+71	CHAGRIN BLVD. 59' RT.	1		30	90°	250°	315°	—	270°	45°	
SHEET 78	7+82 (EXISTING POLE)	CHAGRIN BLVD. 40' LT.				—	—	—	—	90°		
79-1	22+16	CHAGRIN BLVD. 47' RT.	1		30	—	—	225°	—	270°	45°	
79-2	23+30	CHAGRIN BLVD. 40' LT.		1	30	—	—	120°	—	90°	315°	



ALL ANGLES MEASURED CLOCKWISE FROM BASE

C - CAPPED

SIGNAL SUPPORTS AND ORIENTATION ANGLES

FHWA REGION	STATE	PROJECT	
5	OHIO		

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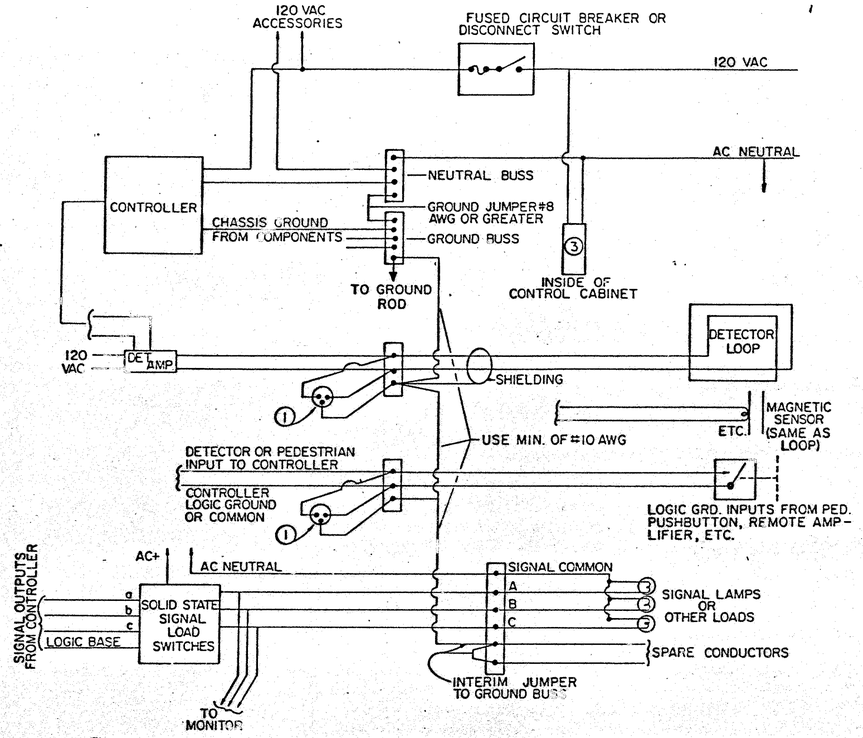
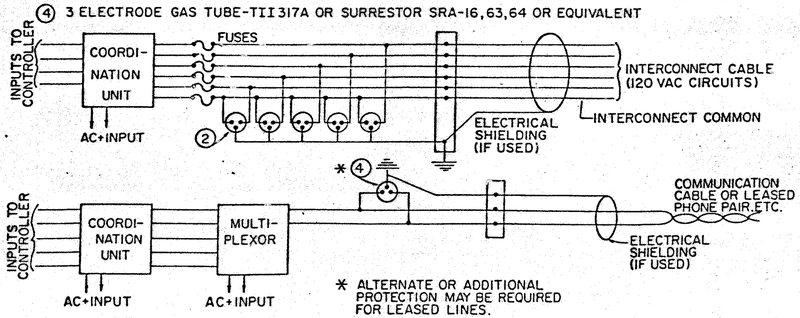
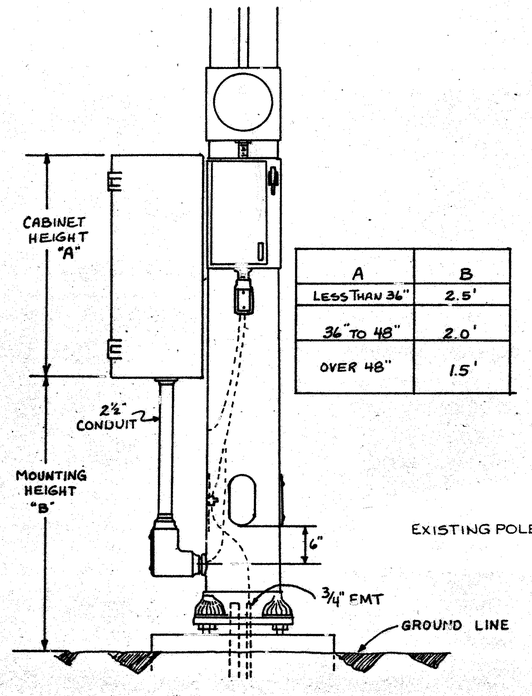


(1) 3 ELECTRODE GAS TUBE-TII 317A OR SURRESTOR SRA-16 OR EQUIVALENT (FOR LOOP AMP NOT EXCEEDING 20V ON LOOP CIRCUIT)
(2) 3 ELECTRODE GAS TUBE-TII 317B OR SURRESTOR SPA-60A OR EQUIVALENT
(3) POWER LINE ARRESTOR (3 ELECTRODE) TII 412A-(20) OR SURRESTOR SPA 500
NOTE: ALL UNUSED CONDUCTORS MUST BE GROUNDED AT BOTH ENDS AND ALL ARRESTORS SHOULD BE MOUNTED AS CLOSE AS POSSIBLE TO THE FIRST TERMINATION OF INCOMING PROTECTED LINE.
(4) 3 ELECTRODE GAS TUBE-TII 317A OR SURRESTOR SRA-16, 63, 64 OR EQUIVALENT

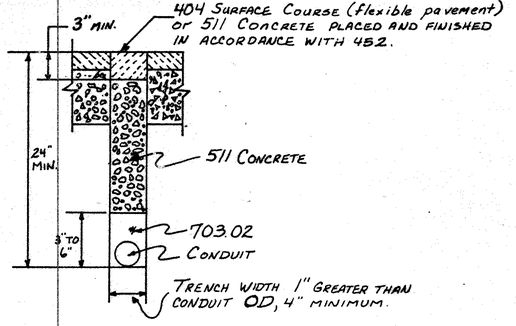


LIGHTNING PROTECTION SYSTEM

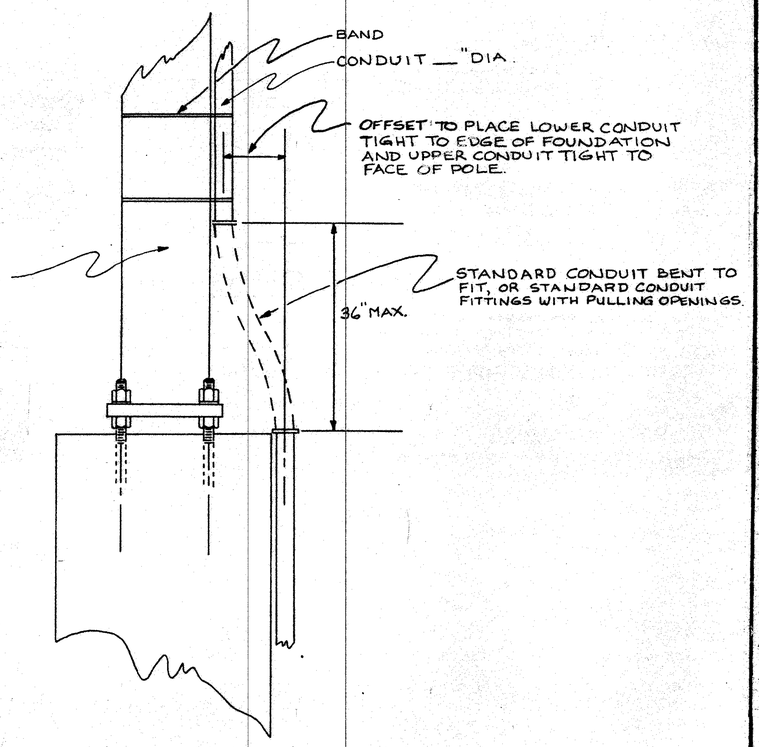


A	B
LESS THAN 36"	2.5'
36" TO 48"	2.0'
OVER 48"	1.5'

CONTROLLER CABINET MOUNTING



NARROW SLIT TYPE TRENCH



CONDUIT RISER, AS PER PLAN

CALC. BY			OHIO	83
DATE			FHWA REGION 5	99
CHKD. BY				
DATE				

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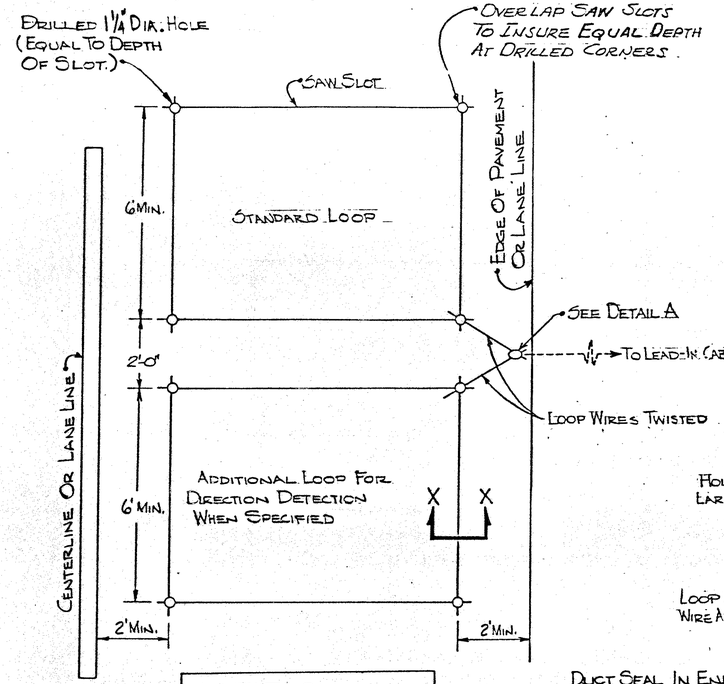
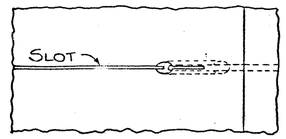
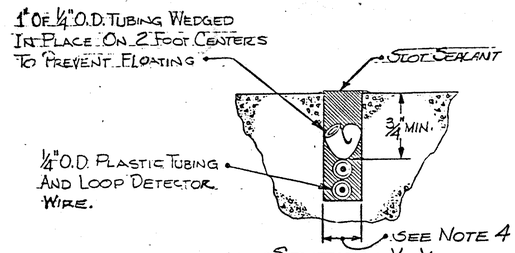
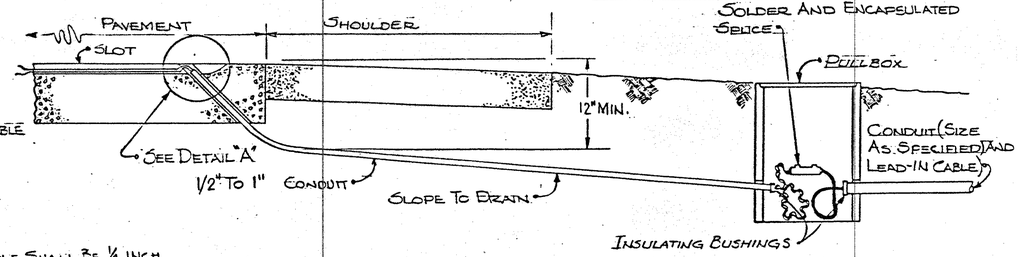


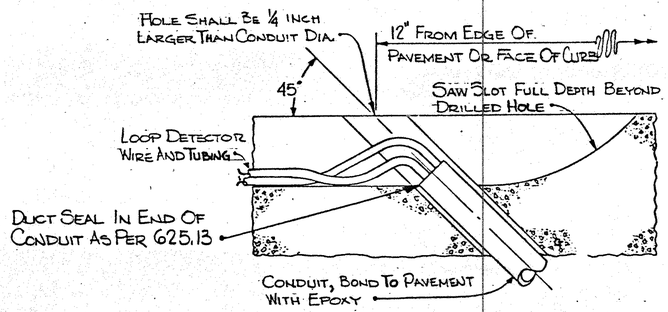


Plan View



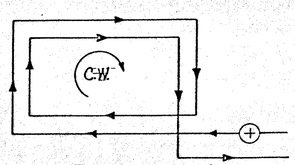
Section X-X



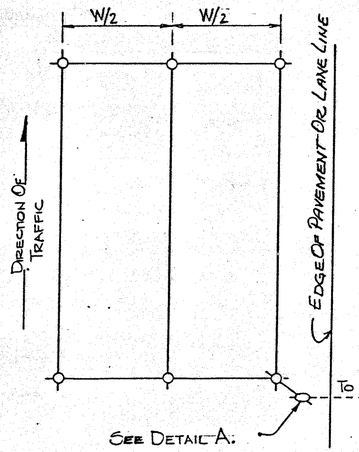


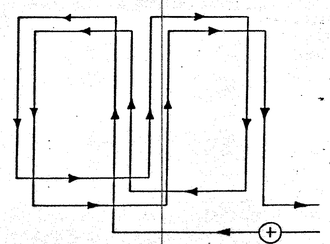
Detail "A"

Loop Wire Construction	
Loop Perimeter	Number Of Turns
Less Than 40 Feet	3
40 To 160 Feet	2
Over 160 Feet	1



Typical Polarity Marking





Wiring Layout And Polarity

Figure 8 Loop Details

Bureau of Design Services 1/19/81
Revised 12/31/81

Revised 2-2-83

Loop Detector Details, Type E

FHWA REGION	STATE	PROJECT	
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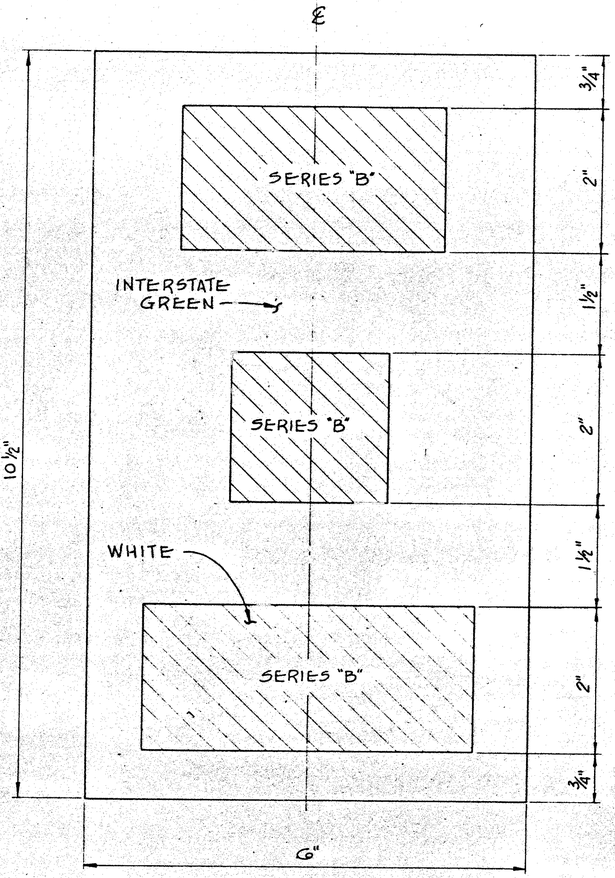

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271
31.49

EXAMPLE

LEGEND VARIES, SEE TABLE

SUPPORT NO.	STATION	LOCATION	DIRECTION	DECAL LEGENDS		
				COUNTY	RT	MILEAGE
212	333 + 30	LANE N-W	SB	CUY	271	27.73
209	344 + 20	I.R. 271	SB	CUY	271	27.93
206	365 + 90	I.R. 271	SB	CUY	271	28.34
230	380 + 00	I.R. 271	NB	CUY	271	28.61
241	386 + 30	I.R. 271	SB	CUY	271	28.73
240	401+85	I.R. 271	SB	CUY	271	29.03
233	407 + 00	I.R. 271	NB	CUY	271	29.12
263	420 + 15	I.R. 271	SB	CUY	271	29.37
248	430 + 85	I.R. 271	NB	CUY	271	29.57
258	466 + 00	I.R. 271	SB	CUY	271	30.24
293	485 + 00	I.R. 271	SB	CUY	271	30.60
288	510 + 00	I.R. 271	SB	CUY	271	31.07
320	395+00	I.R. 271	NB	CUY	271	28.89
326	500+00	I.R. 271	SB	CUY	271	30.88

SIGN SUPPORT IDENTIFICATION DECALS

EACH EXISTING AND PROPOSED SIGN SUPPORT INSTALLATION LISTED HEREIN SHALL BE IDENTIFIED BY A COMBINATION OF LETTERS AND NUMBERS WHICH WILL INDICATE THE ROUTE, AND INTERSTATE LINE MILEAGE (SAMPLE: I.R. 271-31.49)

IDENTIFYING NUMBERS SHALL BE AS INDICATED ON THIS SHEET IN THESE PLANS OR AS SPECIFIED BY THE MAINTAINING AGENCY.

IDENTIFICATION DECALS SHALL BE AS PER 630.06 AND 713.18.

THE COST OF FURNISHING AND ATTACHING THE SIGN SUPPORT DECALS SHALL BE AN INCIDENTAL ITEM TO THE VARIOUS SIGN SUPPORT AND SIGNING ITEMS.

SIGN SUPPORT IDENTIFICATION DECALS

FHWA REGION	STATE	PROJECT	
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CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: E.N.F.
CHECKED BY: D.B.

GENERAL NOTES

SPECIFICATIONS

THESE NOTES ARE SUPPLEMENTAL TO ITEMS 625 AND 713 OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS.

REFERENCE SHALL BE MADE TO STANDARD CONSTRUCTION DRAWINGS LISTED ON THE TITLE SHEET OF THESE PLANS.

POWER SUPPLY

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS:
THE CLEVELAND ELECTRIC ILLUMINATING CO.
55 PUBLIC SQUARE
CLEVELAND, OHIO 44101

UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO STANDARD DRAWING HL-10 FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY 50 FEET. THIS ITEM SHALL ALSO INCLUDE THE COST OF RESTORING PAVED SHOULDER AREAS WHEN NECESSARY TO DRAIN THE PULLBOX INTO EXISTING UNDERDRAINS.
THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE LIGHTING GENERAL SUMMARY TO BE USED AS OUTLINED ABOVE:

ITEM 605 - 4" SHALLOW PIPE UNDERDRAINS	I-271
	80 L.F.

ITEM 625 - CONDUIT JACKED UNDER PAVEMENT

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING CONDUIT OF THE SIZE OR SIZES INDICATED UNDER EXISTING PAVEMENT AND CONTIGUOUS SHOULDERS BY AN APPROVED METHOD SUCH AS "DRILLING" OR "JACKING".

THE CONTRACTOR SHALL PLACE THE CONDUIT WITH THE LEAST AMOUNT OF DISTURBANCE TO THE EXISTING PAVEMENT, SUBBASE, BERM PAVEMENT, OR SHOULDERS OF THE ROADWAY. ALL PUSH PITS OR ANY NECESSARY EXCAVATIONS SHALL BE BACKFILLED AND RESTORED IN ACCORDANCE WITH 625.01.

MEASUREMENT OF THE CONDUIT SHALL BE THE ACTUAL AMOUNT OF LINEAL FEET INSTALLED UNDER PAVEMENT AND SHOULDERS, MEASURED IN PLACE, AS ACCEPTED BY THE ENGINEER. THE UNIT PRICE BID FOR ITEM 625 "CONDUIT JACKED UNDER PAVEMENT," SHALL BE FULL COMPENSATION FOR EXCAVATION, DRILLING OR JACKING, BACKFILLING, COMPACTION, RESTORATION, AND ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.

REPAIR OF EXISTING LIGHTING CIRCUITS

THIS ITEM OF WORK SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO RENDER OPERATIVE ALL EXISTING LIGHTING CIRCUITS WITHIN THE PROJECT LIMITS, (CIRCUIT MAPS ARE AVAILABLE FOR REFERENCE AT THE DISTRICT 12 OFFICE).
THE CONTRACTOR SHALL LOCATE AND REPAIR ALL CIRCUIT BREAKS IN THE FOLLOWING MANNER:

A. IN DUCT CABLE CIRCUITS, ALL FAULTS AND/OR BREAKS SHALL BE REPAIRED BY MEANS OF CABLE SPLICING KITS AS PER 713.15, THE "PULLING" REQUIREMENTS OF 625.15 ARE HEREBY WAIVED.
B. IN CONDUIT CIRCUITS, DAMAGED CONDUCTORS SHALL BE REMOVED, DUCT CABLE PULLED THROUGH AND CONNECTED WITH CABLE SPLICING KITS.

ALL REPAIR MATERIALS SHALL BE CONSISTENT WITH THE ORIGINAL DESIGN AND SHALL MEET THE REQUIREMENTS OF 713.
THE CONTRACTOR SHALL LOCATE CIRCUIT FAULTS BY NON-DESTRUCTIVE TESTING ONLY.
THE BASIS OF PAYMENT SHALL BE "PER EACH" FAULT AND/OR BREAK LOCATED AND REPAIRED, FUSES, CABLE SPLICING KITS, AND MISCELLANEOUS HARDWARE SHALL BE REPLACED AS NECESSARY AND SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM OF WORK.

PAYMENT SHALL BE "PER EACH" LOCATION REGARDLESS OF THE NUMBER OF CONDUCTORS REPAIRED. REPLACEMENT DUCT CABLE SHALL BE PAID FOR SEPARATELY PER LINEAR FOOT AND SHALL INCLUDE ALL COSTS FOR TRENCHING, BACKFILLING AND RESTORATION.

ALL DAMAGED DISCONNECT SWITCHES AND/OR SWITCH ENCLOSURES SHALL ALSO BE REMOVED AND REPLACED WHERE AND AS DIRECTED BY THE ENGINEER. ALL COSTS FOR REMOVAL AND INSTALLATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 631 DISCONNECT SWITCH OR ITEM 631 - SWITCH ENCLOSURE.

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

ITEM 625 - REPAIR OF EXISTING LIGHTING CIRCUIT	15 EACH
ITEM 631 - DISCONNECT SWITCH	5 EACH
ITEM 625 - DUCT CABLE, AS PER PLAN	400 LIN. FT.
ITEM 631 - PHOTOELECTRIC CONTROL	5 EACH
ITEM 631 - SWITCH ENCLOSURE	5 EACH

ITEM SPECIAL - PLASTIC CAUTION TAPE

THE LOCATION OF UNDERGROUND DUCT CABLE OR NON-METALLIC CONDUIT, WHEN INSTALLED IN LOCATIONS OTHER THAN THE NORMAL OR ALTERNATE TRENCH ALIGNMENT SHOWN ON STANDARD CONSTRUCTION DRAWING HL-1, SHALL BE MARKED BY THE USE OF A CONTINUOUS IDENTIFYING TAPE BURIED IN THE TRENCH ABOVE THE LINE. THE IDENTIFYING TAPE SHALL BE AN INERT MATERIAL, APPROXIMATELY 6" WIDE, COMPOSED OF POLYETHYLENE PLASTIC, HIGHLY RESISTANT TO ALKALIS, ACID OR OTHER CHEMICAL COMPONENTS LIKELY TO BE ENCOUNTERED IN SOILS. THE TAPE SHALL BE BRIGHT YELLOW WITH IDENTIFYING PRINTING "ELECTRIC" IN BLACK LETTERS, ONE SIDE ONLY. TAPES SHALL BE SUPPLIED IN CONTINUOUS ROLLS WITH THE IDENTIFYING LETTERING REPEATED CONTINUOUSLY THE FULL LENGTH OF THE TAPE. IDENTIFYING TAPES SHALL BE BURIED IN THE ELECTRIC LINE TRENCH WITH ONE STRIP PLACED APPROXIMATELY DOWN THE CENTERLINE AND LOCATED APPROXIMATELY 8" TO 12" BELOW THE FINAL FINISHED GRADE. THE TAPE SHALL BE PLACED IN THE TRENCH WITH PRINTED SIDE UP AND SHALL BE ESSENTIALLY PARALLEL WITH THE FINISHED SURFACE. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO INSURE THAT THE TAPE IS NOT PULLED, DISTORTED, OR OTHERWISE MISPLACED IN COMPLETING THE TRENCH BACKFILL. TAPE SHALL BE ALLEN SYSTEM'S, TERRA TAPE, TECTA TAPE OR EQUAL AS APPROVED BY THE ENGINEER.

THE TAPE SHALL BE PAID FOR PER LINEAR FEET OF "ITEM SPECIAL - PLASTIC CAUTION TAPE", COMPLETE AND IN PLACE.

HIGH VOLTAGE DIRECT CURRENT TEST

A HIGH VOLTAGE DIRECT CURRENT TEST, AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 839, SHALL BE PERFORMED ON ALL DISTRIBUTION CABLE AND DUCT CABLE SYSTEMS TO BE INSTALLED ON THIS PROJECT. THE TEST SHALL NOT BE PERFORMED UNTIL AFTER ALL NEW CONSTRUCTION, SUCH AS GUARDRAIL, FENCE, DELINEATOR POSTS, SIGN SUPPORTS, ETC., IN THE IMMEDIATE VICINITY OF THE LOCATION OF THE CABLE RUN BEING TESTED, HAS BEEN COMPLETED.

COMPUTED BY G.S.
CHECKED E.M.M.

FHWA REGION	STATE	PROJECT	
5	OHIO		

CUYAHOGA COUNTY
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LIGHTING GENERAL SUMMARY

ALL ITEMS COST PARTICIPATION II UNLESS SHOWN OTHERWISE

GENERAL LIGHTING QUANTITIES

ITEM	SPEC. No.	I-271 SHEET NUMBERS 85	I-271 SHEET NUMBERS 87	ROADWAY TOTAL	ITEM	UNIT	DESCRIPTION
605		80		80	605	L.F.	4" SHALLOW PIPE UNDERDRAIN
625			1886	1886	625	L.F.	Nº 4 AWG 5000 V DISTRIBUTION CABLES
625			18	18	625	EACH	18" PULLBOX, 713.08
625			5364	5364	625	L.F.	TRENCH 24" DEEP
625			512	512	625	L.F.	3" CONDUIT 713.04 JACKED UNDER PAVEMENT
625			923	923	625	L.F.	2" CONDUIT, 713.04
625			5877	5877	625	L.F.	1½" DUCT CABLE WITH 2 Nº 4 AWG, 5000 VOLT CABLES
625		400		400	625	L.F.	DUCT CABLE, AS PER PLAN
625			46	46	625	EACH	CABLE SPLICING KIT
625		15		15	625	EACH	REPAIR OF EXISTING LIGHTING CIRCUIT
625			1	1	625	EACH	STRUCTURE GROUNDING SYSTEM , BR Nº CUY-271-0885 L
625			1	1	625	EACH	STRUCTURE GROUNDING SYSTEM , BR Nº CUY-271-0916 L
625			1	1	625	EACH	POWER SERVICE
839				LUMP	839	LUMP	HIGH VOLTAGE TEST
631		5		5	631	EACH	DISCONNECT SWITCH
631		5		5	631	EACH	SWITCH ENCLOSURE
631		5		5	631	EACH	PHOTOELECTRIC CONTROL
SPEC			697	697	SPEC.	L.F.	PLASTIC CAUTION TAPE

COMPUTED BY: D.J.S.
CHECKED BY : E.M.C.

FHWA REGION	STATE	PROJECT	
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REFERENCE NO.	STATION TO	STATION		625 NO. 4 AWG 5000 V DISTRIBUTION CABLES	625 18" PULLBOX, 713.08	625 TRENCH 24" DEEP	625 3" CONDUIT, JACKED UNDER PAVEMENT	625 1 1/2 " DUCT CABLE	SPECIAL PLASTIC CAUTION TAPE	625 CABLE SPLICING KITS	625 2" CONDUIT, 713.04	625 STRUCTURE GROUNDING SYSTEM, BR. NO. CUY-271-0885L	625 STRUCTURE GROUNDING SYSTEM, BR. NO. CUY-271-0916L	625 POWER SERVICE (CSTA, 510-45)
				L.F.	EACH	L.F.	L.F.	L.F.	L.F.	EACH	L.F.	EACH	EACH	EACH
	FROM	TO												
E-10	344 + 30				1					2				
E-17	390 + 10				2	155	198	293	155	6				
E-18	386 + 40									2				
E-19	401 + 95									2				
E-20	407 + 10				2	155	128	293	155	6				
E-21	420 + 00	430 + 75			3	1236	128	1394	155	8				
E-22	466 + 10	510 + 45		1936	8	3663		3604	77	16	923	1	1	1
E-23	395 + 10				2	155	128	293	155	4				
	TOTAL	I-271		1886	18	5364	512	5877	697	46	923	1	1	1

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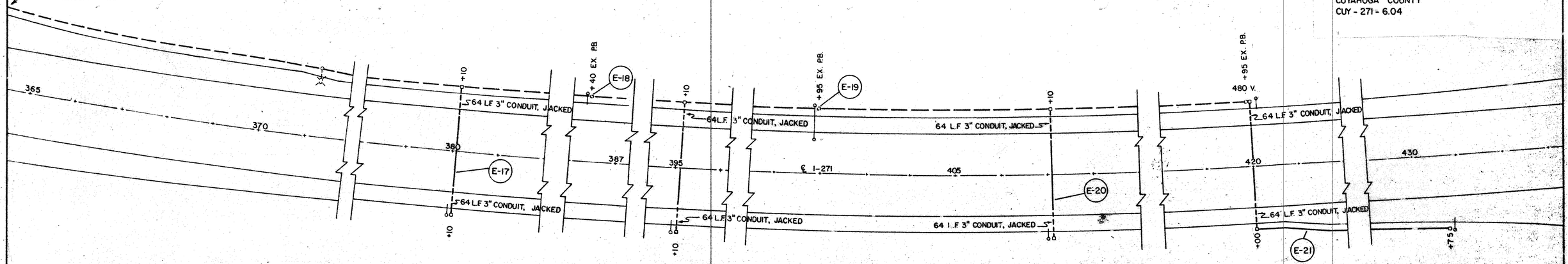

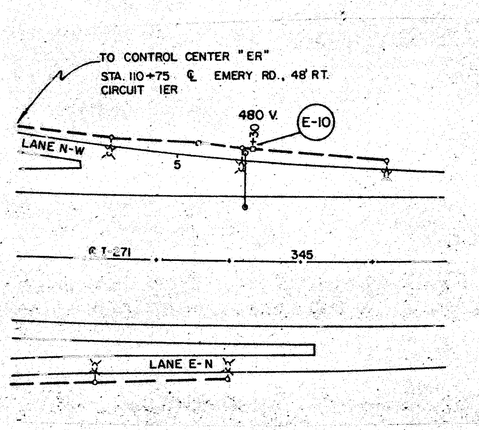

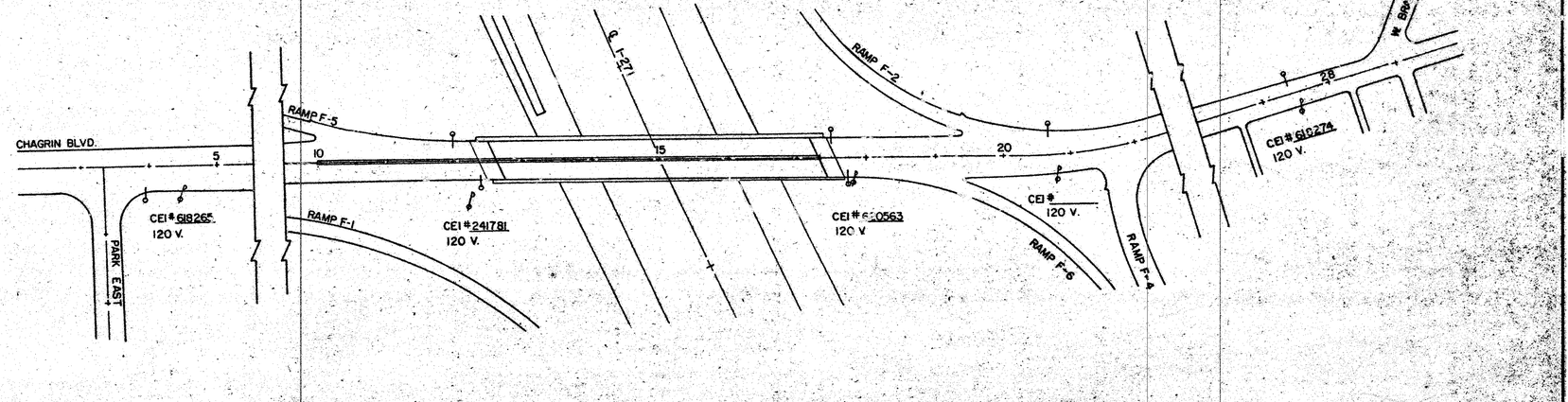

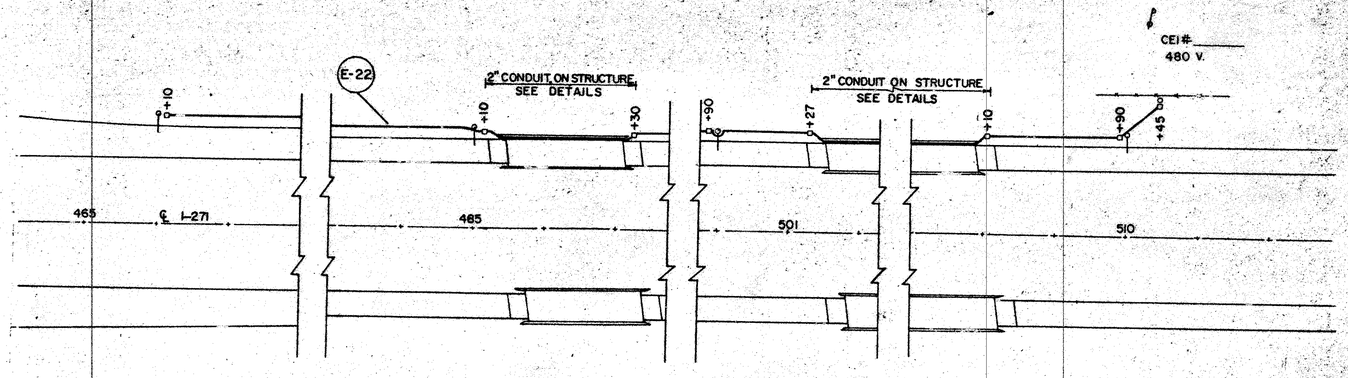

CIRCUIT MAPS

FHWA REGION	STATE	PROJECT	
5	OHIO		

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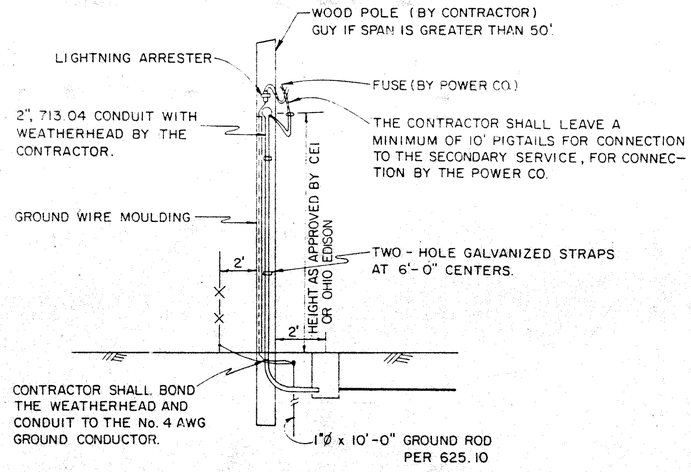
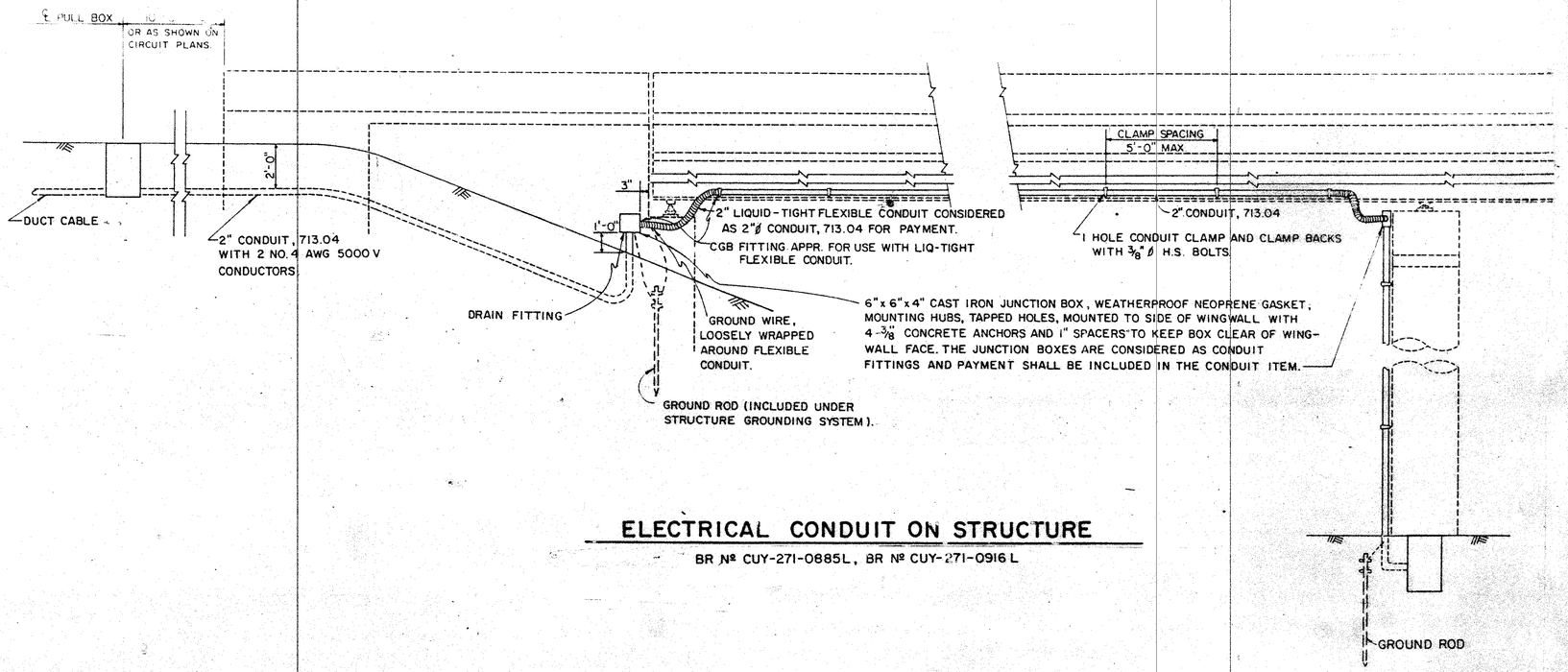
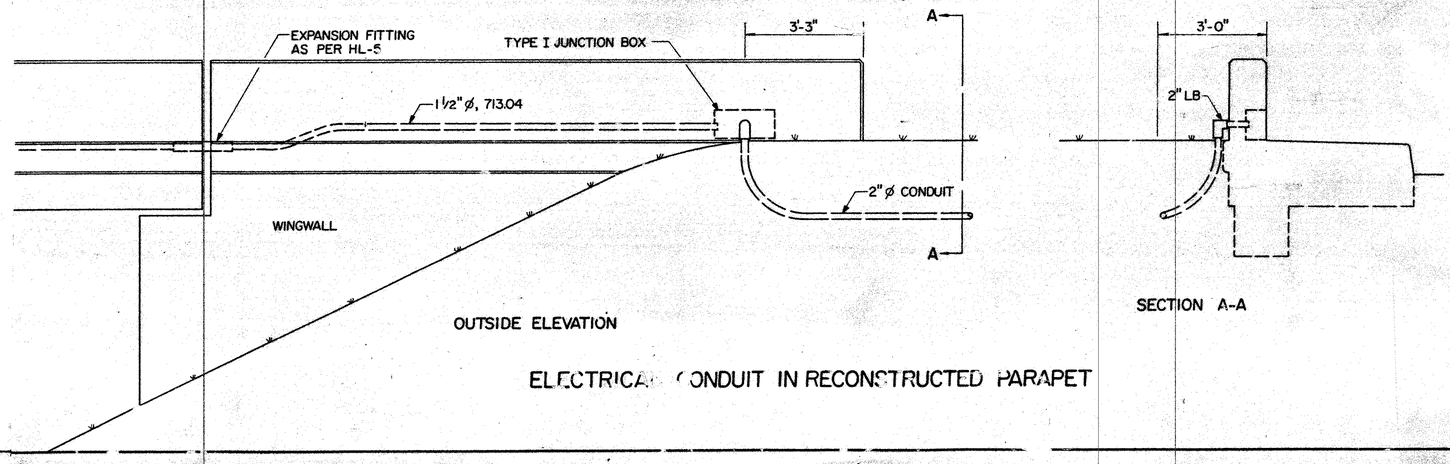


POWER SERVICE



ELECTRICAL CONDUIT ON STRUCTURE

BR № CUY-271-0885L, BR № CUY-271-0916 L



ELECTRICAL CONDUIT IN RECONSTRUCTED PARAPET

GENERAL NOTES

FHWA REGION	STATE	PROJECT		90 99
5	OHIO			

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ITEM 511 - CLASS "S" CONCRETE, SUPERSTRUCTURE, AS PER PLAN

DESCRIPTION

THIS ITEM SHALL BE USED TO RECONSTRUCT EXISTING PARAPETS AS DETAILED ON SHEET NO. 94 & 97 ALL COSTS OF REMOVAL SHALL BE INCLUDED UNDER ITEM 202 - PORTIONS OF STRUCTURES REMOVED.

REMOVAL OF CONCRETE

IN ADDITION TO THE REMOVAL AREAS AS SHOWN ON THE STRUCTURE MODIFICATION DETAILS ALL LOOSE, SOFT, HONEYCOMBED AND DISINTEGRATED CONCRETE PLUS ONE-FOURTH INCH DEPTH OF SOUND CONCRETE SHALL BE REMOVED. WHERE THE BOND BETWEEN THE CONCRETE AND A REINFORCING BAR HAS BEEN DESTROYED, OR WHERE MORE THAN ONE-HALF THE PERIPHERY OF SUCH A BAR HAS BEEN EXPOSED, THE ADJACENT CONCRETE SHALL BE REMOVED TO A DEPTH THAT WILL PROVIDE A MINIMUM THREE-FOURTH INCH CLEARANCE AROUND THE BAR, EXCEPT WHERE OTHER REINFORCING BARS MAKE THIS IMPRACTICAL. AFTER COMPLETION OF THE REMOVAL OPERATION, THE ENGINEER SHALL SOUND THE PAPAPET TO INSURE THAT ONLY SOUND CONCRETE REMAINS. ALL WORK SHALL BE DONE IN SUCH A MANNER AS NOT TO DAMAGE OR SHATTER THE CONCRETE THAT IS TO REMAIN AND PREVENT THE REINFORCING STEEL THAT IS TO REMAIN FROM BEING CUT, ELONGATED OR DAMAGED IN ANY WAY.

CONCRETE MAY BE REMOVED BY CHIPPING OR HAND DRESSING. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 35 POUND CLASS, WHERE EXISTING REINFOPCING BARS WOULD BE LESS THAN ONE INCH 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.

SURFACE PREPARATION

NOT MORE THAN 24 HOURS PRIOR TO PLACING THE PATCH, ALL SURFACES TO WHICH THE PATCH IS TO BOND, INCLUDING EXPOSED REINFORCING AND STRUCTURAL STEEL, SHALL BE CLEANED BY ABRASIVE BLASTING OR AN APPROVED METHOD OF WATER BLASTING. THESE SURFACES SHALL BE MADE FREE OF SPALLS, LAITANCE AND ALL TRACES OF FOREIGN MATERIAL, IF NECESSARY, DETERGENT CLEANING SHALL PRECEDE BLAST CLEANING TO INSURE THE REMOVAL OF CONTAMINANTS DETRIMENTAL TO ACHIEVING AN ADEQUATE BOND.

REINFORCING STEEL

ALL COSTS OF LABOR AND MATERIALS NECESSARY TO CUT AND BEND THE EXISTING NO. 4 REBAR AS SHOWN ON THE MODIFIED PARAPET DETAIL SHALL BE INCLUDED UNDER THIS ITEM OF WORK. ALL OTHER STEEL WILL BE PAID FOR SEPARATELY UNDER ITEMS 509 AND 516.

MATERIALS

CONCRETE SHALL BE CLASS "S" AND SHALL BE SEALED WITH ITEM SPECIAL - SEALING OF CONCRETE (PAID FOR SEPARATELY)

OR

CONCRETE SHALL BE CLASS "C" WITH A SUPER WATER REDUCING ADMIXTURE (S.W.R.) MEETING THE FOLLOWING REQUIREMENTS:

1) THE ADMIXTURE SHALL BE FX-32 AS MANUFACTURED BY FOX INDUSTRIES, BALTIMORE MARYLAND.
2) AN EPOXY BONDING AGENT, FX-762, BY FOX INDUSTRIES SHALL BE REQUIRED. THE PROPORTIONING AND APPLICATION OF FX-32, FX-762 AND THE CONCRETE SLUMP SHALL BE AS APPROVED BY A FOX INDUSTRIES REPRESENTATIVE (REQUIRED AT THE INITIAL APPLICATIONS)
3) THE CONCRETE MIX SHALL BE BROUGHT TO THE SITE DRY, FX-32 SHALL BE ADDED AND THEN WATER SHALL BE ADDED TO ACHIEVE THE DESIRED SLUMP. (START WITH APPROXIMATELY 50% OF THE NORMAL WATER REQUIREMENT).
4) THE AIR-ENTRAINING AGENT RATE SHALL BE INCREASED BY APPROXIMATELY 100%. THE EXACT RATE AND THE TYPE USED SHALL BE AS APPROVED BY THE FOX INDUSTRY REPRESENTATIVE.
5) ITEM SPECIAL- SEALING OF CONCRETE SHALL NOT BE REQUIRED ON THE NEW PARAPET SURFACE. (IT IS STILL REQUIRED ELESWHERE) PAYMENT SHALL BE MADE FOR ITEM SPECIAL SEALING OF CONCRETE FOR THE SURFACE AREA OF THE PARAPETS EVEN THOUGH THIS WORK WILL NOT BE PERFORMED. THE VALUE OF THIS PAYMENT SHOULD BE REFLECTED IN A REDUCED UNIT COST OF ITEM 511.

METHOD OF MEASUREMENT

VOLUME SHALL BE BASED ON PLAN DIMENSIONS FOR REGULAR SHAPED AREAS. WHEN IRREGULAR AREAS ARE ENCOUNTERED THE VOLUME SHALL BE THE TOTAL NUMBER OF CUBIC YARDS MEASURED AS INDICATED BY METER PRINTOUT, OR AS INDICATED BY VOLUME TICKET (TRANSIT MIX) LESS ANY VOLUME NOT USED.

ITEM 511 - CLASS "S" CONCRETE, SUBSTRUCTURE AS PER PLAN
AND
ITEM SPECIAL - MAGNESIUM PHOSPHATE CONCRETE

DESCRIPTION OF WORK

THIS ITEM SHALL BE USED TO REPAIR THE TOP OF BACKWALLS AS SHOWN ON THE BACKWALL REPAIR DETAIL ON SHEET NO. 95

MAGNESIUM PHOSPHATE CONCRETE SHALL ONLY BE USED WHEN TRAFFIC CONTROL CONSIDERATIONS DICTATE THAT THE REPAIR BE COMPLETED IN A SHORT PERIOD OF TIME, (TYPICALLY THE CENTER LANE OF A THREE LANE BRIDGE), OR FOR RELATIVELY THIN REPAIRS (LESS THAN 4 INCHES THICK).
ALL OTHER REPAIRS SHALL BE MADE USING CLASS "S" CONCRETE AND PERFORMED WHEN THAT PARTICULAR LANE IS CLOSED FOR PAVEMENT REPAIRS.

REMOVAL OF CONCRETE

ALL LOOSE, SOFT, HONEYCOMBED, AND DISINTEGRATED CONCRETE PLUS ONE-FOURTH INCH DEPTH OF SOUND CONCRETE, SHALL BE REMOVED. WHERE THE BOND BETWEEN THE CONCRETE AND A REINFORCING BAR HAS BEEN DESTROYED, OR WHERE MORE THAN ONE-HALF OF THE PERIPHERY OF SUCH A BAR HAS BEEN EXPOSED, THE ADJACENT CONCRETE SHALL BE REMOVED TO A DEPTH THAT WILL PROVIDE A MINIMUM THREE-FOURTH INCH CLEARANCE AROUND THE BAR, EXCEPT WHERE OTHER REINFORCING BARS MAKE THIS IMPRACTICABLE. AFTER COMPLETION OF THE REMOVAL OPERATION, THE ENGINEER WILL SOUND THE BACKWALL TO INSURE THAT ONLY SOUND CONCRETE REMAINS. ALL WORK SHALL BE DONE IN SUCH A MANNER AS NOT TO DAMAGE OR SHATTER THE CONCRETE THAT IS TO REMAIN AND PREVENT THE REINFORCING STEEL THAT IS TO REMAIN FROM BEING CUT, ELONGATED OR DAMAGED IN ANY WAY. SQUARE OR PREFERABLY SLIGHTLY UNDERCUT SHOULDERS SHALL BE MADE AT THE EDGES OF ALL REPAIR AREAS.

CONCRETE MAY BE REMOVED BY CHIPPING OR HAND DRESSING. CHIPPING HAMMERS SHALL NOT BE HEAVIER THAN THE NOMINAL 35 POUND CLASS. WHERE EXISTING REINFORCING BARS WOULD BE LESS THAN ONE INCH 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.

SURFACE PREPARATION

NOT MORE THAN 24 HOURS PRIOR TO PLACING THE PATCH, ALL SURFACES TO WHICH THE PATCH IS TO BOND, INCLUDING EXPOSED REINFORCING AND STRUCTURAL STEEL SHALL BE CLEANED BY ABRASIVE BLASTING OR AN APPROVED METHOD OF WATER BLASTING. THESE SURFACES SHALL BE MADE FREE OF SPALLS, LAITANCE AND ALL TRACES OF FOREIGN MATERIAL. IF NECESSARY, DETERGENT CLEANING SHALL PRECEDE BLAST CLEANING TO INSURE THE REMOVAL OF CONTAMINANTS DETRIMENTAL TO ACHIEVING AN ADEQUATE BOND.

PLACING OF CONCRETE

CLASS "S" CONCRETE SHALL BE PLACED AS PER 511.08.

MAGNESIUM PHOSPHATE CONCRETE SHALL ONLY BE PLACED WHEN THE REPAIR SURFACES ARE COMPLETELY DRY.* THE MIXING, PROPORTIONING, AND CURING PROCEDURES, INCLUDING THE TOOLS, EQUIPMENT, LABOR AND MATERIALS NECESSARY SHALL BE ACCORDING TO THE CONCRETE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

MATERIALS

HIGH EARLY PORTLAND CEMENT (701.05) SHALL BE USED FOR CLASS "S" CONCRETE.

MATERIALS FOR ITEM SPECIAL SHALL BE MAGNESIUM PHOSPHATE CONCRETE.

MAGNESIUM PHOSPHATE CONCRETE IS A CHEMICAL CONCRETE WHICH CONTAINS NO PORTLAND CEMENT, GYPSUM OR EPOXY RESINS. IT IS A TWO COMPONENT PRODUCT, A POLY LINED BAG OF CONCRETE, AND A FLUID CHEMICAL AGENT (OR WATER). THE CONTRACTOR SHALL USE ONE OF THE FOUR FOLLOWING PRODUCTS:

HORN 240 CONCRETE
FAST CRETE
BOSTIK 276
SET 45

* EXCEPT: FOR SET 45, THE REPAIR SURFACE SHALL BE LEFT IN THE CONDITION AS RECOMMENDED BY THE MANUFACTURER.

BASIS OF PAYMENT

ALL COSTS OF REMOVAL OF OLD CONCRETE, FORMING, AND OF PLACING NEW CONCRETE, INCLUDING ALL TOOLS, EQUIPMENT, LABOR, AND MATERIALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT ITEM.

METHOD OF MEASUREMENT

THE QUANTITY SHALL BE THE VOLUME OF THE ACTUAL REPAIRED AREA DETERMINED BY MONITORING THE VOLUME MIXED, AND PLACED LESS ANY WASTE OR RESIDUE.

CLASS "S" CONCRETE SHALL BE MEASURED IN CUBIC YARDS. MAGNESIUM PHOSPHATE CONCRETE SHALL BE MEASURED IN CUBIC FEET.

ITEM 516 - 7" X 4" PREFORMED EXPANSION JOINT SEAL, AS PER PLAN

DESCRIPTION

THIS ITEM SHALL BE USED TO SEAL THE MEDIAN JOINT IN BRIDGE NO. CUY - 271 - 0813.

REMOVAL OF CONCRETE

GENERALLY THE OPENING REQUIRED TO ACCEPT THE JOINT SEAL WILL BE FORMED DURING THE CONCRETE PATCHING OF THE EXISTING SPALLED JOINT. WHEN PATCHING IS NOT REQUIRED THE REMOVAL OF THE EXISTING CONCRETE, UTILIZING SAW CUTS, SHALL BE INCLUDED UNDER THIS ITEM OF WORK.

MATERIALS

THE SEAL MATERIAL SHALL BE "EMSEAL", AN OPEN CELL BITUMEN IMPREGNATED POLYURETHANE FOAM MANUFACTURED BY EMSEAL U.S.A. INC., STAMFORD, CONNECTICUT. THE SEAL SHALL BE EMSEAL PRECOMPRESSED SELF ADHESIVE, 7 INCHES WIDE BY 4 INCHES DEEP.

INSTALLATION

ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND SPECIFICATIONS. A MANUFACTURERS REPRESENTATIVE SHALL BE PRESENT DURING THE INITIAL INSTALLATION.

BASIS OF PAYMENT

ALL COSTS OF MATERIALS AND INSTALLATION SHALL BE INCLUDED IN THE UNIT COST FOR ITEM 516 - 7" X 4" PREFORMED EXPANSION JOINT SEAL, AS PER PLAN.

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY - 271 - 6.04

GENERAL NOTES

ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN

THIS ITEM OF WORK SHALL BE USED TO REPAIR SPALLED OR UNSOUND SURFACE AREAS OF CONCRETE ON THE FACE OF BACKWALLS, PARAPETS, SIDEWALKS, CURBS, BRIDGE SEATS, ABUTMENTS, PIERS AND PIER CAPS WHERE DIRECTED BY THE ENGINEER.

IN ADDITION TO, OR EXCEPTION TO, THE REQUIREMENTS OF ITEM 519 THE FOLLOWING PROVISIONS SHALL APPLY:

519.01 DESCRIPTION

MINIMUM THICKNESS SHALL BE NOT LESS THAN 1/4 INCHES. WELDED STEEL WIRE FABRIC SHALL NOT BE REQUIRED.

519.02 MATERIALS

MATERIALS SHALL BE MAGNESIUM PHOSPHATE CONCRETE WHICH IS A CHEMICAL CONCRETE THAT CONTAINS NO PORTLAND CEMENT, GYPSUM OR EPOXY RESINS. IT IS A TWO COMPONENT PRODUCT COMPRISED OF A POLY LINED BAG OF CONCRETE AND A FLUID CHEMICAL AGENT (OR WATER).

THE CONTRACTOR SHALL USE ONE OF THE FOUR FOLLOWING PRODUCTS, OR AN APPROVED EQUAL:

HORN 240 CONCRETE SET 45
FAST CRETE
BOSTIK 276

519.03 REMOVAL OF CONCRETE

WHERE THE BOND BETWEEN EXISTING CONCRETE AND REINFORCING STEEL HAS BEEN DESTROYED, OR WHERE MORE THAN ONE HALF THE PERIPHERY OF THE STEEL IS EXPOSED, THE CONCRETE ADJACENT TO THE BAR SHALL BE REMOVED TO A DEPTH OF ONE-INCH WHICH WILL PERMIT CONCRETE TO BOND TO THE ENTIRE PERIPHERY OF THE BAR SO EXPOSED.

BEFORE REPAIRS BEGIN AND WITHIN 24 HOURS, THE ENTIRE CONCRETE SURFACE SHALL BE SANDBLASTED AND REBARS SHALL BE SANDBLASTED TO WHITE METAL. IF THE SURFACE CONTAINS GREASE, OIL, DIRT, OR OTHER FOREIGN MATTER, SANDBLASTING, DETERGENT CLEANING, WATERBLASTING, AND/OR AIR BLASTING OR ANY COMBINATION THEREOF, SHALL BE REQUIRED TO INSURE BOND. ALL UNCHIPPED SURFACES SHALL BE MECHANICALLY ROUGHENED PRIOR TO RECEIVING NEW CONCRETE.

519.04 PREPARATION

THE PREPARED MASONRY SURFACE SHALL BE COMPLETELY DRY PRECEDING THE PLACEMENT OF THE NEW CONCRETE.*

519.06 PATCHING

ALL REPAIRS SHALL BE MADE WITH MAGNESIUM PHOSPHATE CONCRETE. THE MIXING, PROPORTIONING, AND CURING PROCEDURES, INCLUDING THE TOOLS, EQUIPMENT, LABOR AND MATERIALS NECESSARY SHALL BE ACCORDING TO THE CONCRETE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS. THE SURFACE OF THE REPAIR AREA SHALL BE FLUSH WITH THE SURROUNDING AREA.

BASIS OF PAYMENT

ALL COSTS OF REMOVAL OF OLD CONCRETE, FORMING, AND OF PLACING NEW CONCRETE, INCLUDING ALL TOOLS, EQUIPMENT, LABOR, AND MATERIALS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 519 - PATCHING CONCRETE STRUCTURES, AS PER PLAN.

* EXCEPT: FOR SET 45, THE REPAIR SURFACE SHALL BE LEFT IN THE CONDITION AS RECOMMENDED BY THE MANUFACTURER.

ITEM SPECIAL - EPOXY SEALING OF CONCRETE

THIS ITEM SHALL CONSIST OF CLEANING, BY ABRASIVE BLASTING OR APPROVED HIGH PRESSURE WATER BLASTING, EXISTING AND NEW CONCRETE SURFACES AND SEALING BY APPLYING TWO COATS OF AN EPOXY SEALER. THE SEALER SHALL BE AN EPOXY SEALER OF AT LEAST 50% SOLIDS CONTENT. THE PERFORMANCE OF THIS EPOXY SEALER SHALL BE DETERMINED BY THE SOUTHERN EXPOSURE TEST METHODS OUTLINED IN NCHRP REPORT 244 AND SHALL EQUAL OR SURPASS THE PERFORMANCE OF EPOXY SAMPLE 16-E OF THAT SAME REPORT. TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. AFTER BLASTING AND AIR CLEANING, THE EPOXY SHALL BE APPLIED TO THE CONCRETE SURFACES UNDER CONDITIONS AND IN THE MANNER SPECIFIED BY THE MANUFACTURER AT THE RATE OF 120 SQUARE FEET PER GALLON FOR EACH COAT. THE SECOND COAT SHALL BE TINTED THE COLOR OF CONCRETE.

TREATMENT SHALL BE APPLIED TO EXPOSED BRIDGE SIDEWALKS, MEDIANS, BACKWALLS, CURBS, PARAPETS (ALL SIDES), PIERS AND PIER CAPS LOCATED ADJACENT TO A ROADWAY, ABUTMENTS AND WINGWALLS. THE EDGES OF THE DECK, THE UNDERSIDE OF THE DECK IN ANY INTERIOR BAY LOCATED BENEATH AN OPEN JOINT (OR SEALED OPEN JOINT) AND THE UNDERSIDE OF THE DECK EXTENDING BEYOND THE EXTERIOR BEAMS SHALL ALSO BE TREATED.

THIS TREATMENT SHALL NOT BE PERFORMED UNTIL ALL CONCRETE REPAIRS TO A GIVEN BRIDGE HAVE BEEN COMPLETED. LATEX MODIFIED CONCRETE SHALL NOT BE TREATED.

THE QUANTITY SHALL BE THE ACTUAL AREA IN SQUARE YARDS OF EPOXY SEALING, COMPLETE IN PLACE AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS AND TESTING COSTS NECESSARY TO COMPLETE THE ITEM. PAYMENT WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM SPECIAL - SQ. YDS. - EPOXY SEALING OF CONCRETE.

ITEM SPECIAL, SEALING OF CONCRETE SURFACES: Specified surfaces shall be sealed using either silane or an epoxy sealer. See the Proposal Note for areas to be sealed, surface preparation requirements, application rates, material requirements and application procedures.

EXISTING STRUCTURE VERIFICATION: DETAILS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND/OR FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND/THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05 AND 105.02.

CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED BY THE CONTRACTOR IN THE FIELD.

ITEM 510 — DOWEL HOLES AS PER PLAN

THIS ITEM SHALL CONSIST OF ALL NECESSARY LABOR, EQUIPMENT, AND MATERIALS TO CONSTRUCT DOWEL HOLES AS FOLLOWS:

1. THE HOLES SHALL BE DRILLED BY METHODS THAT WILL NOT SHATTER OR DAMAGE THE CONCRETE ADJACENT TO THE HOLES. (DO NOT CORE)
2. THE DIAMETER OF THE DRILLED HOLES SHALL BE 1/2 INCH LARGER THAN THE NOMINAL REBAR DOWEL SIZE.
3. HOLES SHALL BE THOROUGHLY CLEANED OF DUST AND OTHER DELETERIOUS MATERIAL.
4. A PORTLAND CEMENT GROUT WITH TYPE I CEMENT 701.04 SHALL BE USED FOR BONDING REBAR DOWELS INTO THE DRILLED HOLES.
   - A. THE W/C RATIO OF THE GROUT SHALL BE 0.35 (4.0 GALLONS OF WATER PER BAG).
   - B. CLEAN HOLES SHALL BE SATURATED THOROUGHLY WITH WATER FOR A MINIMUM OF 5 MINUTES PRIOR TO PLACING GROUT. IMMEDIATELY PRIOR TO GROUTING, ALL FREE WATER SHALL BE REMOVED FROM THE HOLES.
   - C. AFTER THE INITIAL MIXING, THINNING OR RETEMPERING OF THE GROUT, 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.
   - D. DOWELS SHALL NOT BE INSTALLED IF THE MEAN AIR TEMPERATURE IS LESS THAN 50°F. FURTHERMORE, AFTER PLACING, THE FRESH GROUT SHALL BE MAINTAINED AT A TEMPERATURE OF NOT LESS THAN 50°F FOR 72 HOURS, AND NOT LESS THAN 45°F FOR AN ADDITIONAL 4 DAYS.
   - E. THE TEMPERATURE OF THE MIXED GROUT, IMMEDIATELY BEFORE PLACING, SHALL NOT BE LESS THAN 50°F NOR MORE THAN 90°F.
   - F. REBAR DOWELS SHALL BE HELD IN POSITION WHEN THEY ARE PLACED.
   - G. THE CEMENT GROUT SHALL BE CURED CONTINUOUSLY WITH WET RAGS FOR A MINIMUM PERIOD OF 3 DAYS WITHOUT DISTURBING THE DOWELS.

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: D.B.
CHECKED BY: E.N.F.

GENERAL SUMMARY

ITEM	TOTAL	UNITS		BRIDGE Nº CUY-271-0610	BRIDGE Nº CUY-271-0626	BRIDGE Nº CUY-271-0720 L	BRIDGE Nº CUY-271-0720 R	BRIDGE Nº CUY-271-0813	BRIDGE Nº CUY-271-0885 L	BRIDGE Nº CUY-271-0885 R	BRIDGE Nº CUY-271-0916 L	BRIDGE Nº CUY-271-0916 R	BRIDGE Nº CUY-271-0973	BRIDGE Nº CUY-271-0975	PARTICIPATION		
																II Interstate	III 100% State
202	LUMP SUM	L.S.	PORTIONS OF STRUCTURES REMOVED					LUMP			LUMP	LUMP				LUMP	
509	43,285	POUNDS	REINFORCING STEEL					8623			17,331	17,331				43285	
510	1,366	EACH	DOWEL HOLES, AS PER PLAN								683	683				1366	
511	18	C.Y.	CLASS "S" CONCRETE, SUBSTRUCTURE, AS PER PLAN			3	3		3	3	3	3				18	
511	366	C.Y	CLASS "S" CONCRETE, SUPERSTRUCTURE, AS PER PLAN					86			140	140				366	
516	6	L.F.	STRUCTURAL EXPANSION JOINT								3	3				6	
516	6	L.F.	VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINTS AS PER PLAN								3	3				6	
516	473	L.F.	7"x4" PREFORMED EXPANSION JOINT SEAL, AS PER PLAN					473								473	
519	5300	S.F.	PATCHING CONCRETE STRUCTURES, AS PER PLAN	600	75	225	180	2350	210	180	150	150	440	740		2650	2650
607	1,018	L.F.	FENCE, TYPE CL, AS PER PLAN					1018								1018	
SPEC.	216	C.F.	MAGNESIUM PHOSPHATE CONCRETE			36	36		36	36	36	36				216	
SPEC.	19,598	S.Y.	Sealing of Concrete surfaces	3182	3004	766	739	2868	764	822	2148	2148	1589	1568		19,598	

CUY-271-0916 L & R

FHWA REGION	STATE	PROJECT	
5	OHIO		

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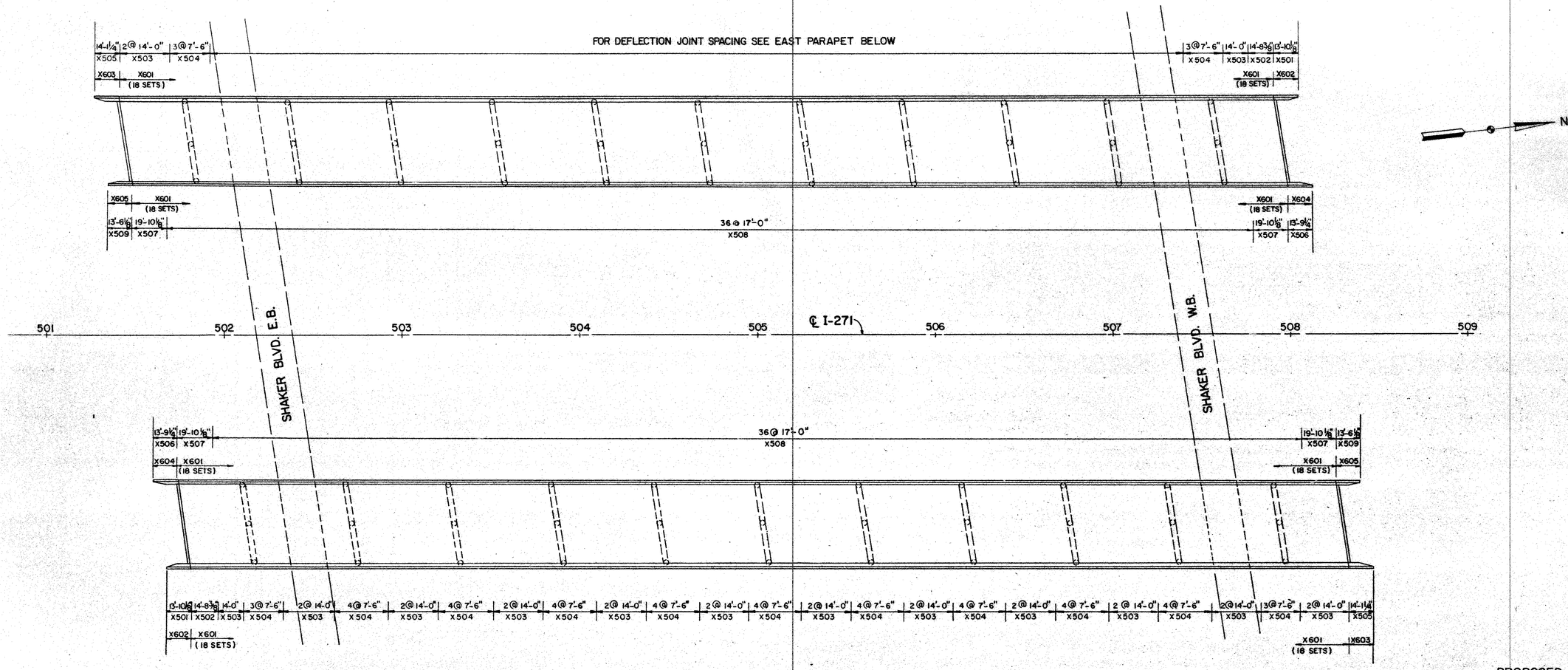
CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: E.N.F.
CHECKED BY : A.G.

SCALE
0 30 60



PROPOSED WORK

CUY-271-0916 L & R

REPLACE EXISTING PARAPETS WITH SAFETY SHAPE PARAPETS. EXISTING STRUCTURE WIDTH = 44'-8", F/F CURBS. PROPOSED STRUCTURE WIDTH = 46'-4", F/F BARRIERS.

FHWA REGION	STATE	PROJECT	
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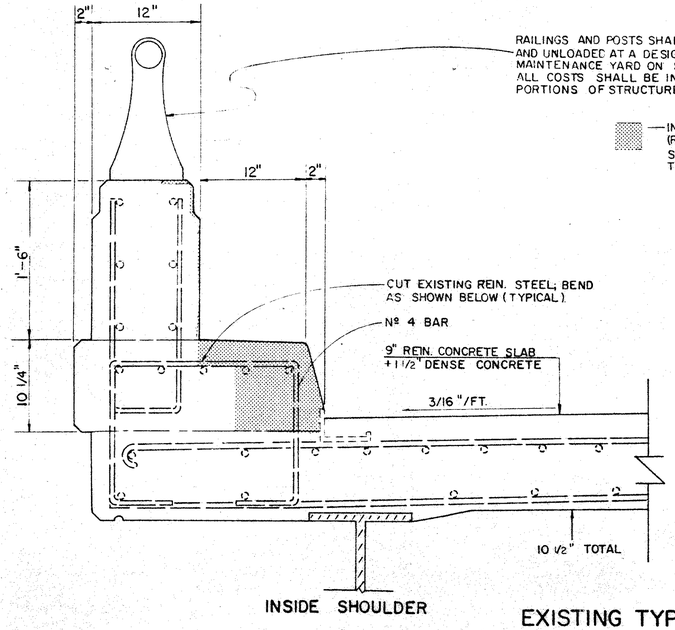
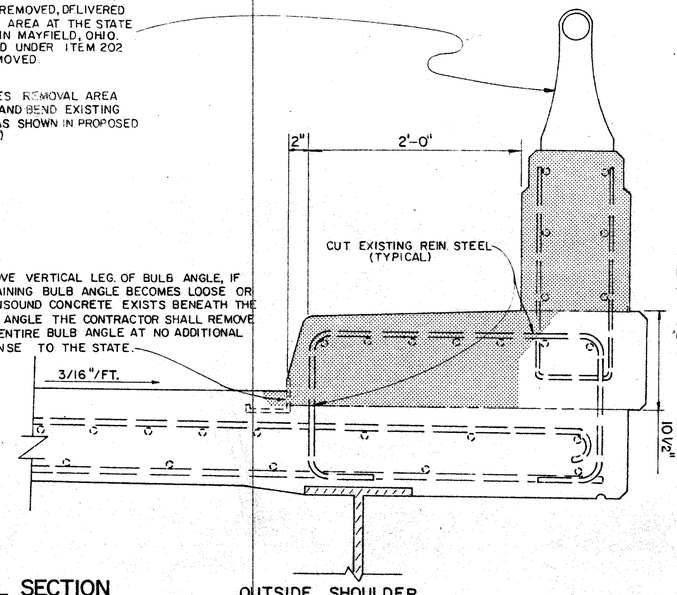
CUYAHOGA COUNTY
CUY - 271 - 6.04

COMPUTED BY: E.N.F
CHECKED BY : A.G.

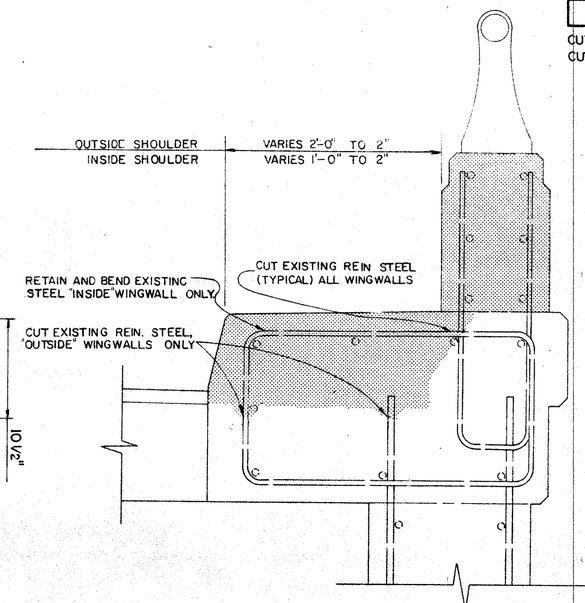




EXISTING TYPICAL SECTION

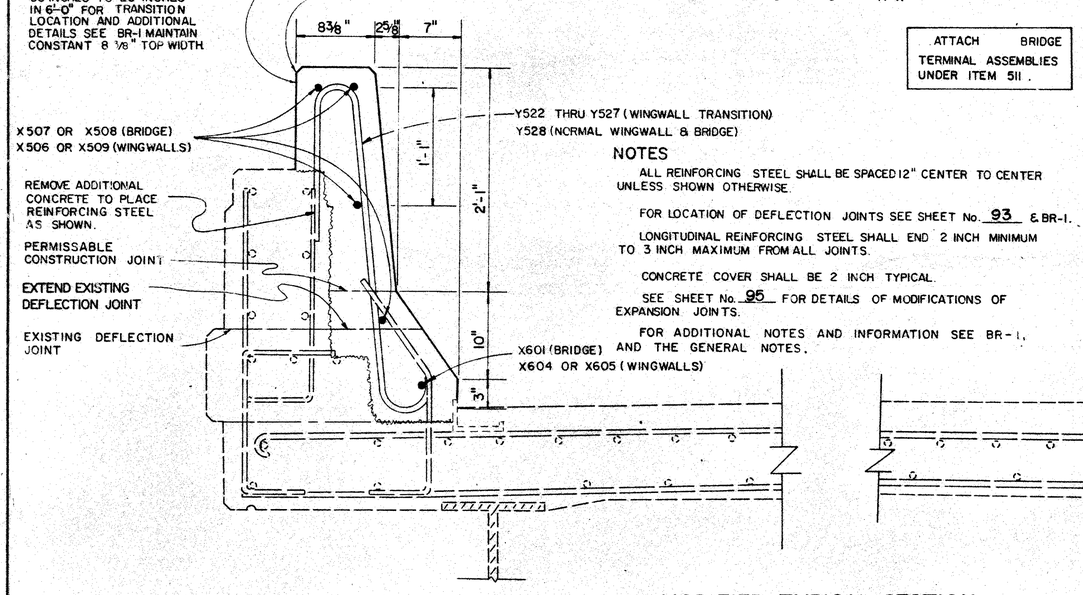
CUY-271-0916 L & R

SCALE
0 6" 1FT.



EXISTING WINGWALL

(OUTSIDE SHOULDER SHOWN, INSIDE SHOULDER SIMILAR)



NOTES

ALL REINFORCING STEEL SHALL BE SPACED 12" CENTER TO CENTER UNLESS SHOWN OTHERWISE.

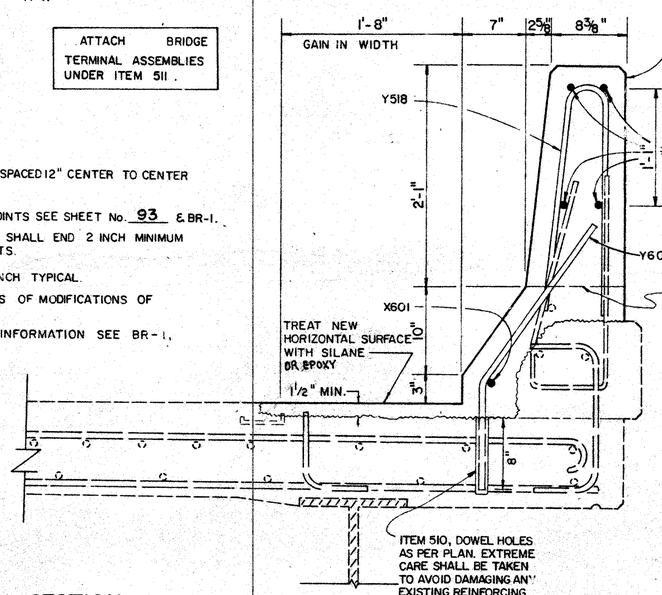
FOR LOCATION OF DEFLECTION JOINTS SEE SHEET No. 93 & BR-1.

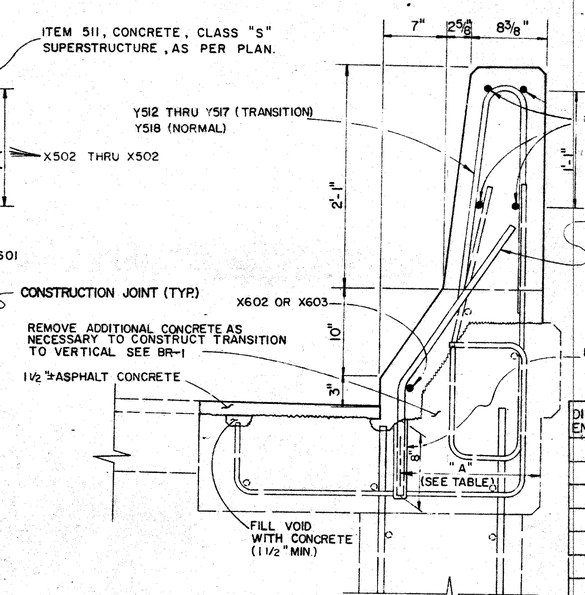
LONGITUDINAL REINFORCING STEEL SHALL END 2 INCH MINIMUM TO 3 INCH MAXIMUM FROM ALL JOINTS.

CONCRETE COVER SHALL BE 2 INCH TYPICAL.

SEE SHEET No. 95 FOR DETAILS OF MODIFICATIONS OF EXPANSION JOINTS.

FOR ADDITIONAL NOTES AND INFORMATION SEE BR-1, AND THE GENERAL NOTES.





DISTANCE FROM END OF WINGWALL	DIM. "A"	REINFORCING STEEL	
0'-3", 1'-0", 2'-0"	6"	Y512	Y602
3'-0"	9 3/8"	Y513	Y603
4'-0"	10 5/8"	Y514	Y604
5'-0"	11 7/8"	Y515	Y605
6'-0"	13 1/8"	Y516	Y606
7'-0"	14 3/8"	Y517	Y607
8'-0"	15 5/8"	Y518	Y608

MODIFIED TYPICAL SECTION

CUY-271-0916 L & R

MODIFIED WINGWALL

STEEL SHOWN FOR OUTSIDE SHOULDER
SEE LEFT TYPICAL FOR INSIDE SHOULDER

PARAPET DETAILS CUY-271-0916 L & R

COMPUTED BY: E.N.F.
CHECKED BY : R.W.L.

FHWA REGION	STATE	PROJECT	
5	OHIO		

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CUYAHOGA COUNTY
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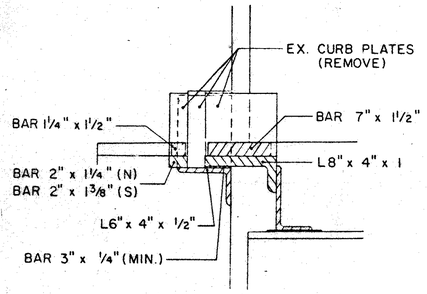

SECTION A - A
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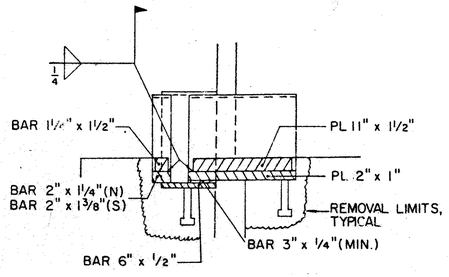
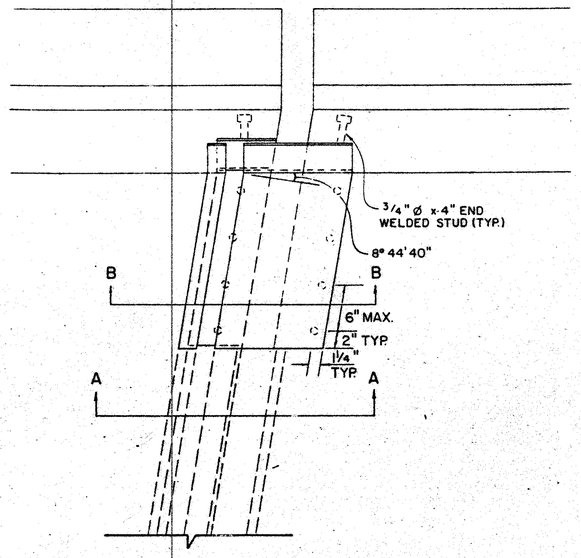
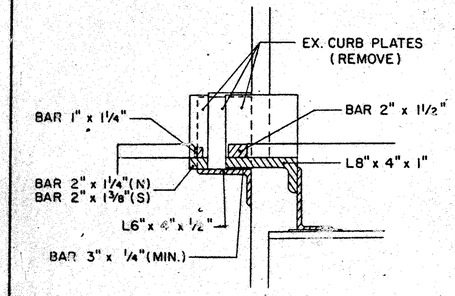


SECTION B - B
(PROPOSED)

BRIDGE Nº CUY-271-0916 L



PLAN VIEW



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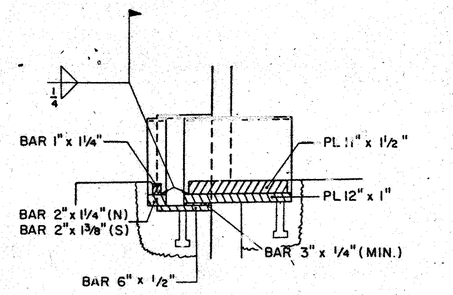
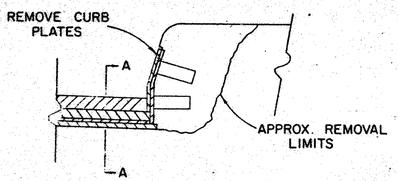
(EXISTING)



SECTION B - B
(PROPOSED)

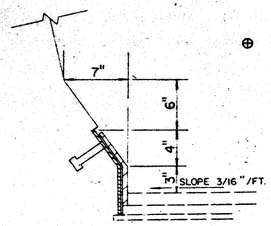
BRIDGE Nº CUY-271-0916 R

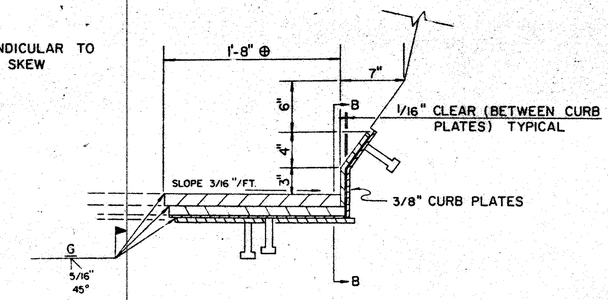
NOTE:
MATERIALS AND INSTALLATION OF THE EXPANSION JOINT EXTENSION AND BOTH CURB PLATES ARE INCLUDED UNDER ITEM 516 - STRUCTURAL EXPANSION JOINT.
THE BAR RAISINGS SHALL BE PAID FOR SEPARATELY UNDER ITEM 516, VERTICAL EXTENSION OF STRUCTURAL EXPANSION JOINT, AS PER PLAN.
FOR ADDITIONAL INFORMATION SEE SD-1-69.



EXISTING CURB PLATES

⊕ MEASURED PERPENDICULAR TO CURB, ADJUST FOR SKEW

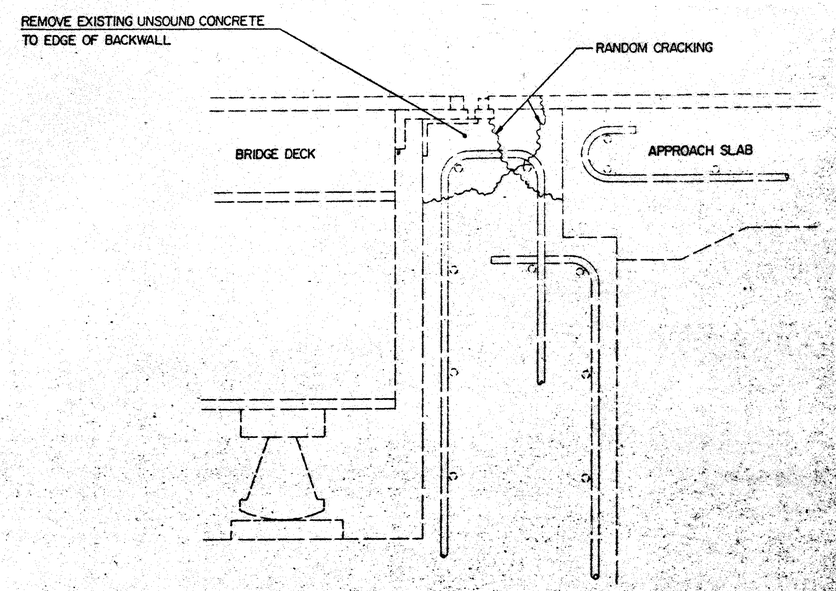




PROPOSED CURB PLATES

EXP. JOINT MODIFICATION

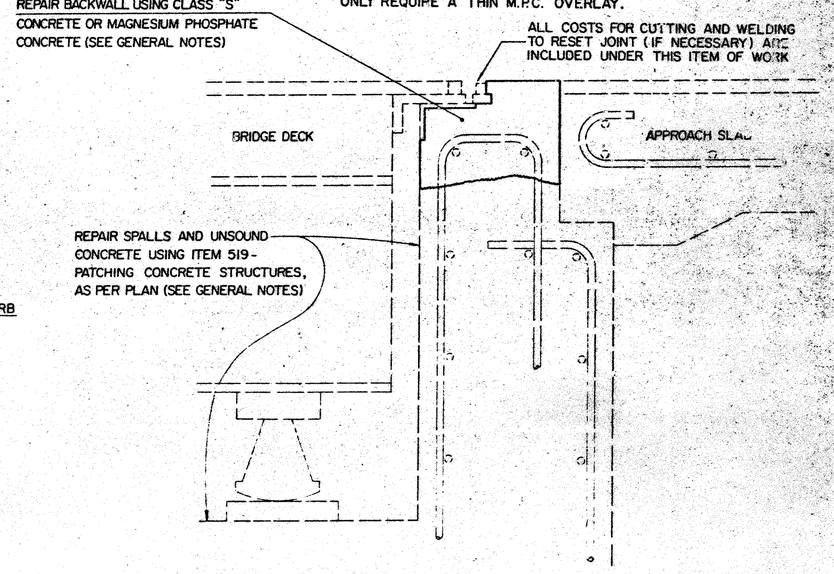
SCALE 0 6" 1 FT.



EXISTING BACKWALL

(ALL STRUCTURES ON I-271 MAINLINE)

ALL REPAIRS SHALL BE AS DIRECTED BY THE ENGINEER. SOME BACKWALLS MAY ONLY REQUIRE A THIN M.P.C. OVERLAY.



PROPOSED BACKWALL REPAIR

(ALL STRUCTURES ON I-271 MAINLINE)

CUY-271-0813

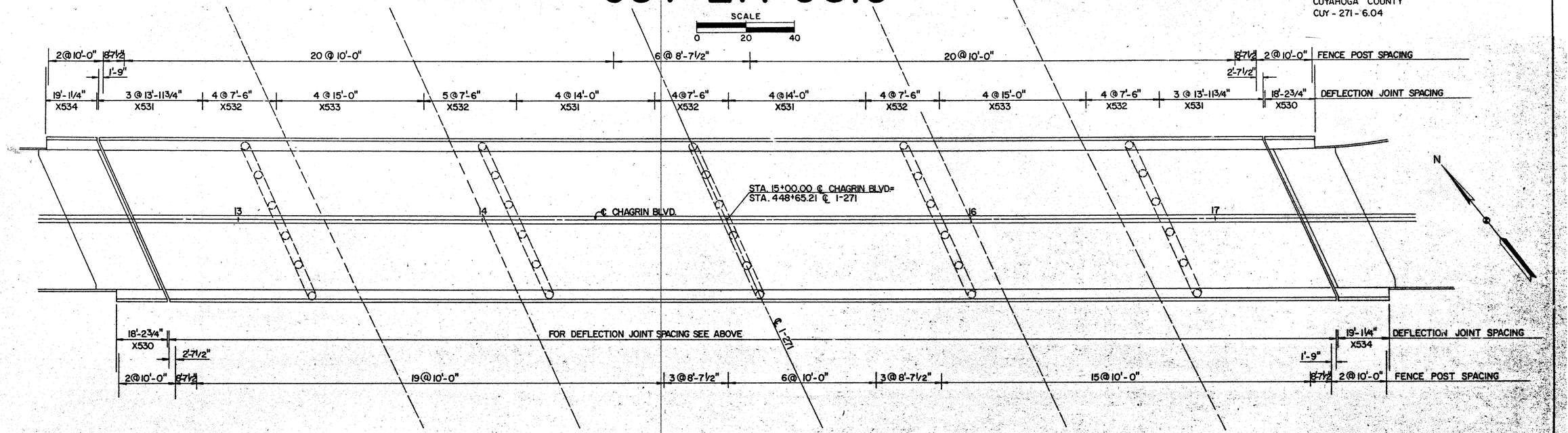
COMPUTED BY: E.N.F.
CHECKED BY : A.G.

FHWA REGION	STATE	PROJECT	
5	OHIO		

96
99

CUYAHOGA COUNTY
CUY - 271 - 6.04

SCALE
0 20 40



PROPOSED WORK

CUY-271-0813

REPLACE EXISTING PARAPETS WITH NEW 2'-3" PARAPETS. REPAIR AND SEAL OPEN MEDIAN JOINT. INSTALL 6'-0" FENCE ON RECONSTRUCTED PARAPETS.

CUY-271-0813

COMPUTED BY: E.N.E.
CHECKED BY: D.P.C.

FHWA REGION	STATE	PROJECT	
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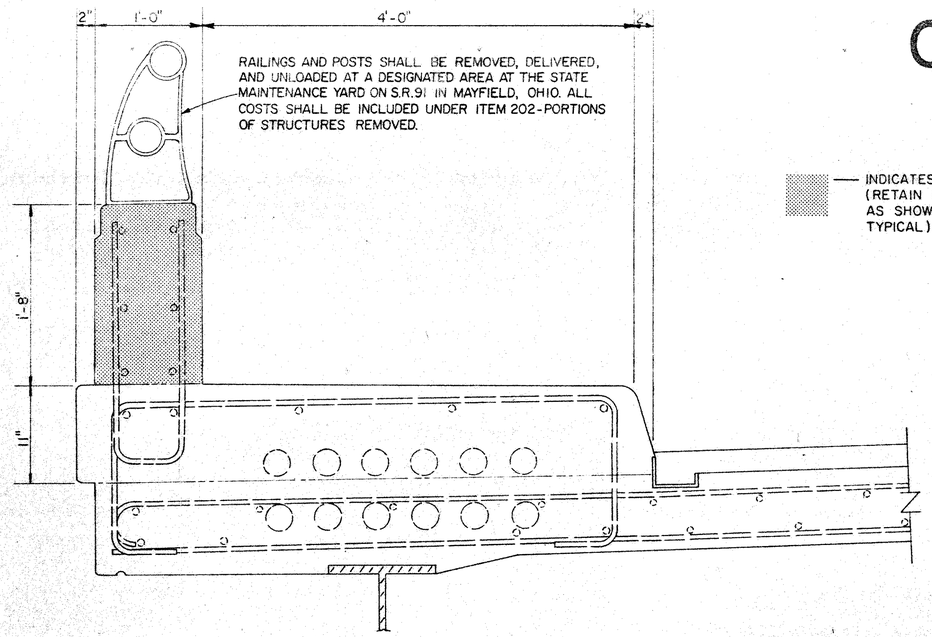
CUYAHOGA COUNTY
CUY - 271 - 6.04 -



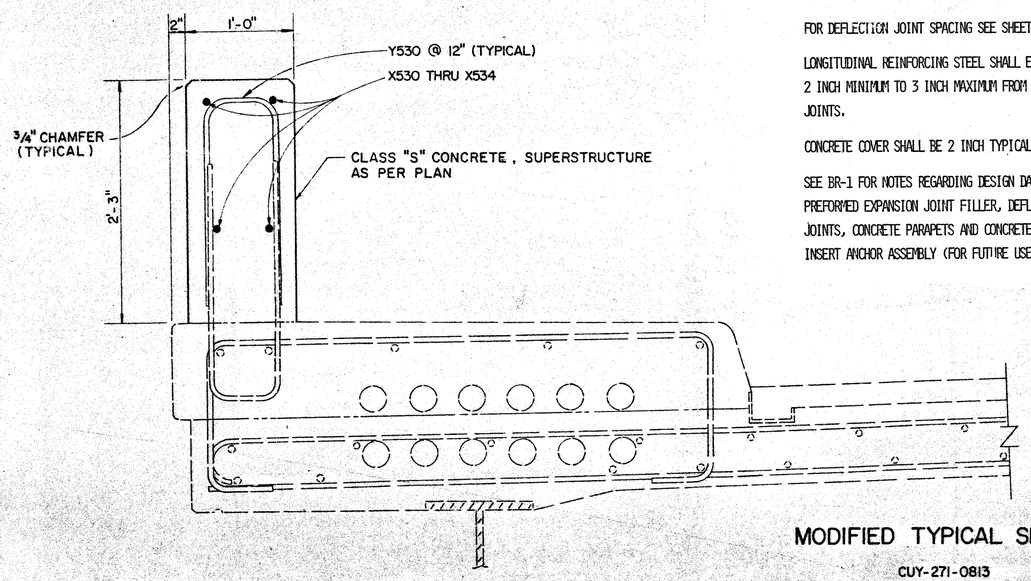
INDICATES REMOVAL AREA (RETAIN EXISTING STEEL AS SHOWN IN PROPOSED TYPICAL)

EXISTING TYPICAL SECTION

CUY-271-0813

SCALE
0 6" 1FT.

PROPOSED FENCE NOT SHOWN.
SEE SHEET Nº 164 FOR DETAILS.



MODIFIED TYPICAL SECTION

CUY-271-0813

NOTES:

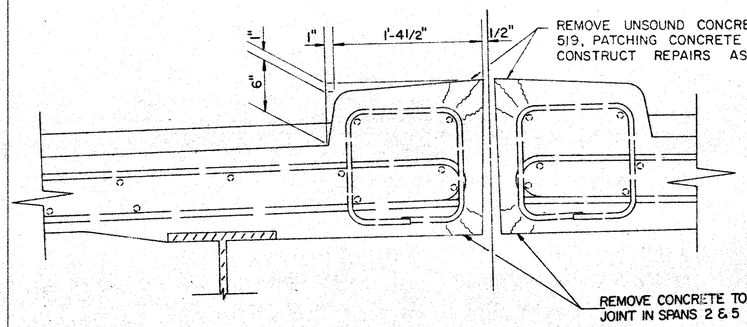
FOR DEFLECTION JOINT SPACING SEE SHEET NO. 96

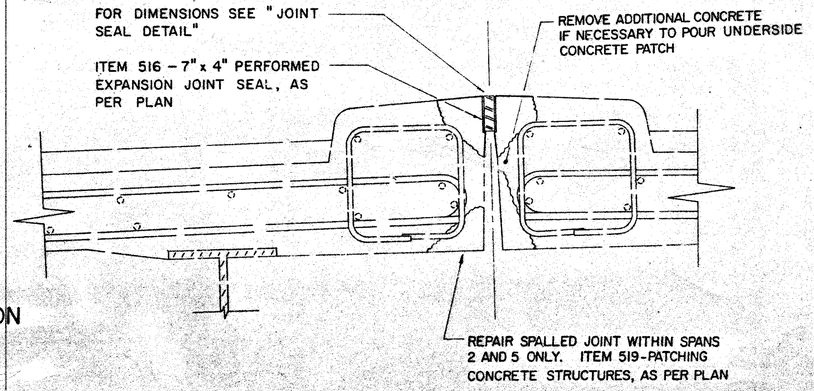
LONGITUDINAL REINFORCING STEEL SHALL END 2 INCH MINIMUM TO 3 INCH MAXIMUM FROM ALL JOINTS.

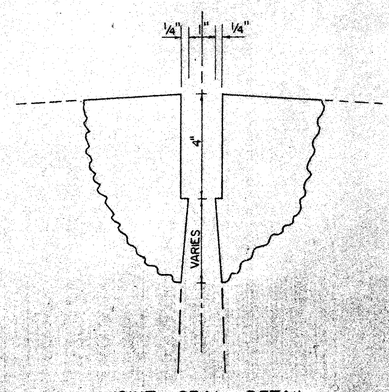
CONCRETE COVER SHALL BE 2 INCH TYPICAL.

SEE BR-1 FOR NOTES REGARDING DESIGN DATA, PREFORMED EXPANSION JOINT FILLER, DEFLECTION JOINTS, CONCRETE PARAPETS AND CONCRETE INSERT ANCHOR ASSEMBLY (FOR FUTURE USE).

SAW CUTS TO CONSTRUCT 1½" VERTICAL OPEN JOINT, 4" DEEP, IF CONCRETE REPAIRS ARE NOT NEEDED. COSTS TO BE INCLUDED UNDER THE JOINT SEAL ITEM.







JOINT SEAL DETAIL
(SEAL NOT SHOWN)

FHWA REGION	STATE	PROJECT	
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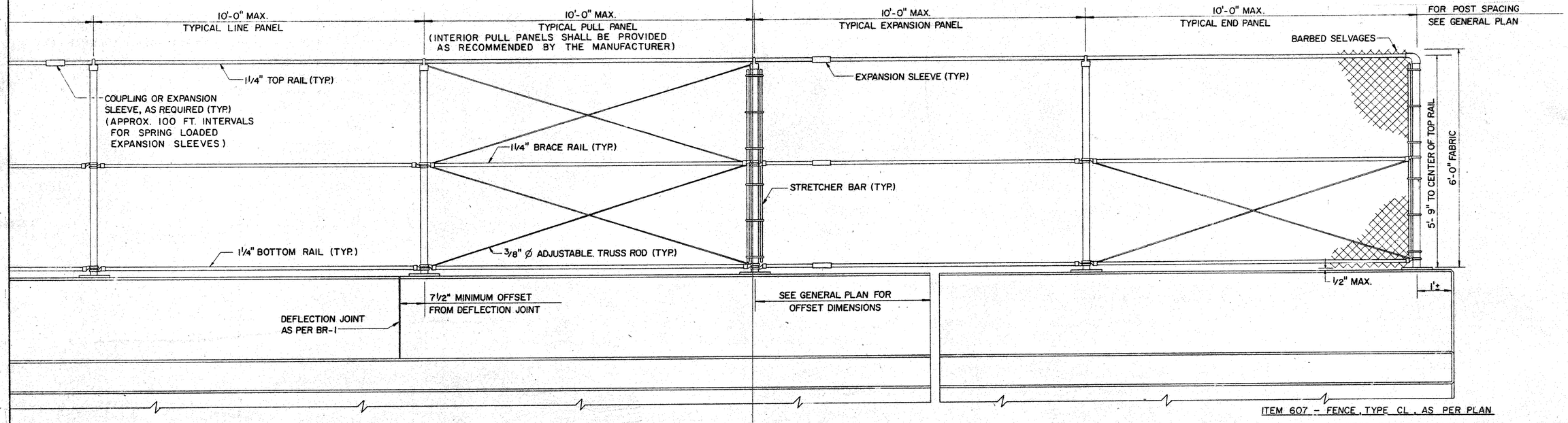
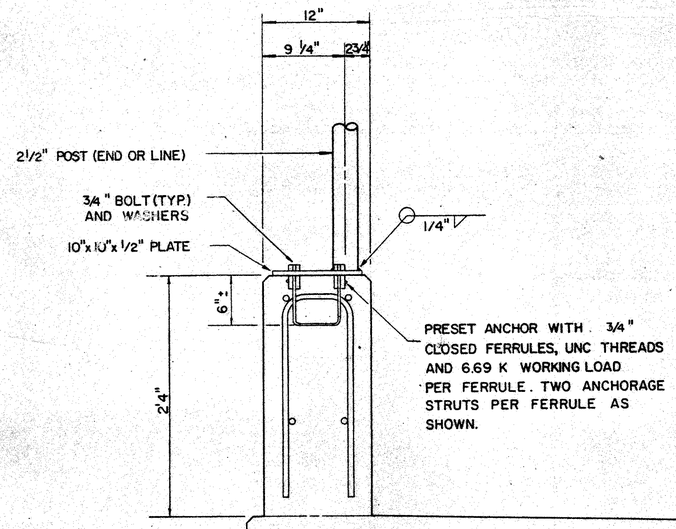
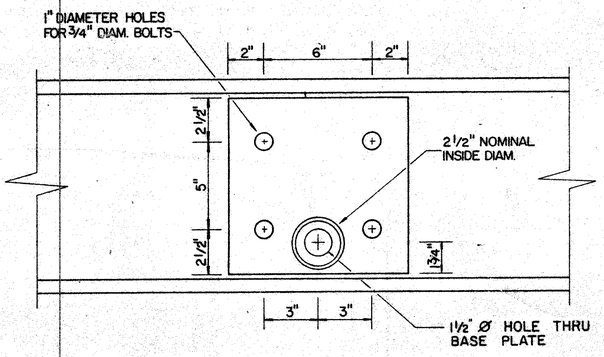
CUYAHOGA COUNTY
CUY - 271 - 6.04



OUTSIDE ELEVATION



TYPICAL SIDEWALK SECTION



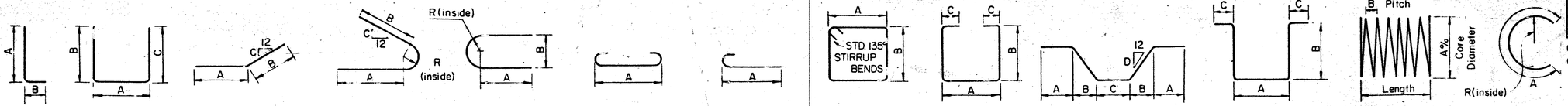
PLAN VIEW

ITEM 607 - FENCE, TYPE CL, AS PER PLAN

THIS ITEM INCLUDES THE FURNISHING OF ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE FENCING. TENSION BANDS SHALL BE A MINIMUM OF 12 GAUGE STEEL BY 7/8 INCHES WIDE ASSEMBLED WITH 5/16 INCH DIAMETER BY 1¼ INCH GALVANIZED OR CADMIUM PLATED BOLTS. ONE TENSION BAND SHALL BE REQUIRED FOR EACH FOOT OF FABRIC HEIGHT. FENCE POSTS AND ANCHOR BOLTS SHALL BE PERPENDICULAR TO GRADE. RAILS SHALL BE PARALLEL TO GRADE. THE FABRIC AND RAILS SHALL BE FREE TO EXPAND OR CONTRACT ACROSS BRIDGE EXPANSION JOINTS. MATERIALS AND WORKMANSHIP SHALL MEET THE REQUIREMENTS OF ITEM 607 EXCEPT THAT ALUMINUM ALLOY POSTS AND BASE PLATES SHALL NOT BE USED. FABRIC TIES SHALL BE SPACED 14 INCH C/C MAXIMUM ON LINE OR END POSTS AND 24 INCH C/C MAXIMUM ON ALL RAILS. ALL POSTS AND PIPE SIZES ARE NOTED IN TERMS OF THE NOMINAL INSIDE DIAMETER OF STANDARD WEIGHT PIPE, SCHEDULE 40. STRETCHER BARS AND MISCELLANEOUS HARDWALL SHALL BE THAT OF THE CHAIN LINK FENCE INDUSTRY STANDARD. BASE PLATES AND MISCELLANEOUS BRACKETS FOR STEEL POSTS MAY BE OF ANY COMMERCIALLY WELDABLE STEEL HAVING A YIELD STRENGTH OF NOT LESS THAN 33,000 P.S.I. ALUMINUM ALLOY FABRIC (AASHTO M-181, TYPE III) SHALL BE USED.

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 12 LOCATION & DESIGN

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
K.N.F.			D.W.L.			



FHWA REGION	STATE	PROJECT	
5	OHIO		

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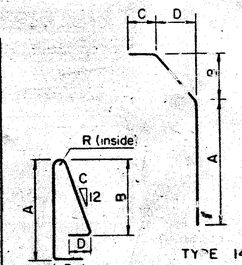
99

CUYAHOGA COUNTY
CUY - 271 - 6.04

MARK			CUY-271 L	-0916 R	TOTAL NO	LENGTH	WEIGHT	TYPE	A	B	C	D	R
X501			4	4	8	13'-4"	111	STR.					
X502			4	4	8	14'-2"	118	STR.					
X503			92	92	184	13'-6"	2591	STR.					
X504			168	168	336	7'-0"	2453	STR.					
X505			4	4	8	13'-7"	113	STR.					
X506			4	4	8	13'-3"	111	STR.					
X507			8	8	16	19'-4"	323	STR.					
X508			144	144	288	16'-6"	4956	STR.					
X509			4	4	8	13'-0"	108	STR.					
X601			36	36	72	38'-0"	4109	STR.					
X602			1	1	2	13'-4"	40	STR.					
X603			1	1	2	13'-7"	41	STR.					
X604			1	1	2	13'-3"	40	STR.					
X605			1	1	2	13'-0"	39	STR.					
Y601			653	653	1306	2'-10"	5558	3	12"	1'-10"	8 3/8"		
Y602			6	6	12	2'-10"	51	STR.	12"	1'-10"			
Y603			2	2	4	2'-10"	17	3	12"	1'-10"	3 3/8"		
Y604			2	2	4	2'-10"	17	3	12"	1'-10"	4 3/8"		
Y605			2	2	4	2'-10"	17	3	12"	1'-10"	5 3/8"		
Y606			2	2	4	2'-10"	17	3	12"	1'-10"	6 3/8"		
Y607			2	2	4	2'-10"	17	3	12"	1'-10"	7 3/8"		
Y608			14	14	28	2'-10"	119	3	12"	1'-10"	8 3/8"		
Y5			6	6	12	2'-9 1/2"	35	4	1'-1	2'-1 1/2"	0"		1 3/4"
Y5			2	2	4	3'-1"	13	4	1'-3	1'-3 1/4"	3/		1 3/4"
Y5			2		4	3'-4 1/2"	14	4	1'-5"		5/8"		1 3/4"
Y5			2	2	4	3'-7 1/2"	15	4	1'-6 1/2"	1'-6 1/2"	0		1
Y5 6			2	2	4	3'-11"	16	4	1'-8 1/4"	1'-8 1/4"	1"		1 3/4"
Y5 7			2	2	4	4'-2 1/2"	18	4	1'-10"	1'-10"	1 1/8"		1 3/4"
Y5 8			667	667	1	4'-5 1/2"	6213	4	1'-11 1/2"	1'-11 1/2"	1 1/4"		1 3/4"
Y522			6	6	12	3'-6 1/2"	44	19	5"	1'-10"	0"	1"	1 3/4"
Y523				2	4	3'-10"	16	19	6 3/4"	1'-11 3/8"	3/8"	1"	1 3/4"
Y524			2	2	4	4'-1"	17	19	8 1/4"	2'-1 1/2"	5/8"	1"	1 3/4"
Y52			2	2	4	4'-4 1/2"	18	19	10"	2'-3"	3/4"	1"	1 3/4"
Y526			2	2	4	4'-8"	19	19	11 3/4"	2'-4 3/4"	1"	1"	1 3/4"
Y527			2	2	4	4'-11"	21	19	1'-1 1/4"	2'-6 1/4"	1 1/8"	1"	1 3/4"
Y528			667	667	1334	5'-2 1/2"	7247	19	1'-3"	2'-8"	1 1/4"	1"	1 3/4"
TOTAL WEIGHT			CUY-271	-0916	L & R		34662						

MARK			CUY-271 SOUTH	-0813 NORTH	TOTAL NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	R
X530			4	4	8	17'-9"	148	STR.					
X531			56	56	112	13'-6"	1577	STR.					
X532			84	84	168	7'-0"	1227	STR.					
X533			32	32	64	14'-6"	968	STR.					
X534			4	4	8	18'-7"	155	STR.					
Y530			513	513	1026	4'-3"	4548	2	8"	1'-11"	1'-11"		
TOTAL WEIGHT			CUY-271	-0813			8623						

MARK					TOTAL NO.	LENGTH	WEIGHT	TYPE	A	B	C	D	R



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, indicates the bar size number. For example E601 is a No. 6 size bar and E1101 is a No. 11 size bar.

* SPIRAL DETAILS shall be in accordance with CRSI Standard Practice, except as otherwise shown.

BAR DIMENSIONS shown are out, to out, unless otherwise indicated.

"STD" written in place of a dimension indicates a standard bend at the end of the bar

FORMAT 2

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
DIVISION OF DESIGN AND CONSTRUCTION
BUREAU OF BRIDGES

REINFORCING STEEL LIST

DESIGNED	DRAWN	TRACED	CHECKED	REVISED	DATE	SECT.
E.N.F.	R.A.J.		A.W.L.			