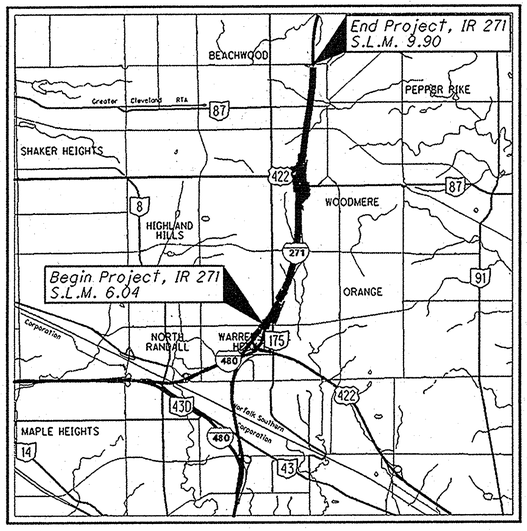
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

CUY-271-6.04

City of Warrensville Heights
City of Orange
City of Beachwood
City of Pepper Pike
CUYAHOGA COUNTY



LOCATION MAP

LATITUDE: 41°26'06" LONGITUDE: -81°30'01"

SCALE IN MILES
0 1 2 3 4

N

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
FEDERAL ROUTES
STATE ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

	SLM 6.26 - 6.68	SLM 7.19 - 7.72
CURRENT ADT (2014)	159,000	150,000
DESIGN YEAR ADT (2034)	184,000	170,000
DESIGN HOURLY VOLUME (2034)	17,000	15,000
DIRECTIONAL DISTRIBUTION	53%	53%
TRUCKS (24 HOUR B&C)	9%	10%
DESIGN SPEED	65 mph	65 mph
LEGAL SPEED	60 mph	60 mph

DESIGN FUNCTIONAL CLASSIFICATION:
Urban Interstate
NHS PROJECT ..... Yes

DESIGN EXCEPTIONS

None

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG
CALL
1-800-362-2764
(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY
OIL & GAS PRODUCERS UNDERGROUND
PROTECTION SERVICE CALL: 1-800-925-0988

PLAN PREPARED BY:
ODOT - District 12
Planning and Engineering
5500 Transportation Blvd.
Garfield Heights, OH 44125

INDEX OF SHEETS:

PROJECT DESCRIPTION

Preventative maintenance resurfacing of mainline IR-271 from Emery Rd to Fairmount Rd in Warrensville Hts, Orange, Beachwood, and Pepper Pike.

PROJECT EARTH DISTURBED AREA: N/A (Maintenance Project)
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: N/A (Maintenance Project)
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (Maintenance Project)

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 OHIO REVISED CODE.

2013 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.

ENGINEERS SEAL:

STATE OF OHIO
ERIC M. KALLIO
E-59990
REGISTERED PROFESSIONAL ENGINEER

SIGNED: Eric M. Kallio
DATE: 3-3-14

STANDARD CONSTRUCTION DRAWINGS							SUPPLEMENTAL SPECIFICATIONS		SPECIAL PROVISIONS
BP-3.1	4/20/12	TC-52.10	10/18/13				800	10/17/14	
BP-7.1	10/15/10	TC-65.10	1/17/14				821	4/20/12	
BP-9.1	7/19/13	TC-65.11	1/17/14				832	01/17/14	
		TC-71.10	1/17/14				921	4/20/12	
		TC-72.20	7/20/12						
MT-95.30	7/19/13	TC-82.10	10/18/13						
MT-95.50	7/19/13								
MT-98.10	7/19/13								
MT-98.11	7/19/13								
MT-98.20	7/19/13								
MT-98.22	7/19/13								
MT-98.28	7/19/13								
MT-98.29	7/19/13								
MT-99.20	7/19/13								
MT-105.10	7/19/13								

UNDER AUTHORITY OF SECTION 4511.21, DIVISION (H) OF THE OHIO REVISED CODE, THE REVISED PRIMA FACIE SPEED LIMITS AS INDICATED HEREIN ARE DETERMINED TO BE REASONABLE AND SAFE, AND ARE HEREBY ESTABLISHED FOR THE DURATION OF THIS PROJECT. THE PRIMA FACIE SPEED LIMIT OR LIMITS HEREBY ESTABLISHED SHALL BECOME EFFECTIVE WHEN APPROPRIATE SIGNS GIVING NOTICE THEREOF ARE ERECTED.

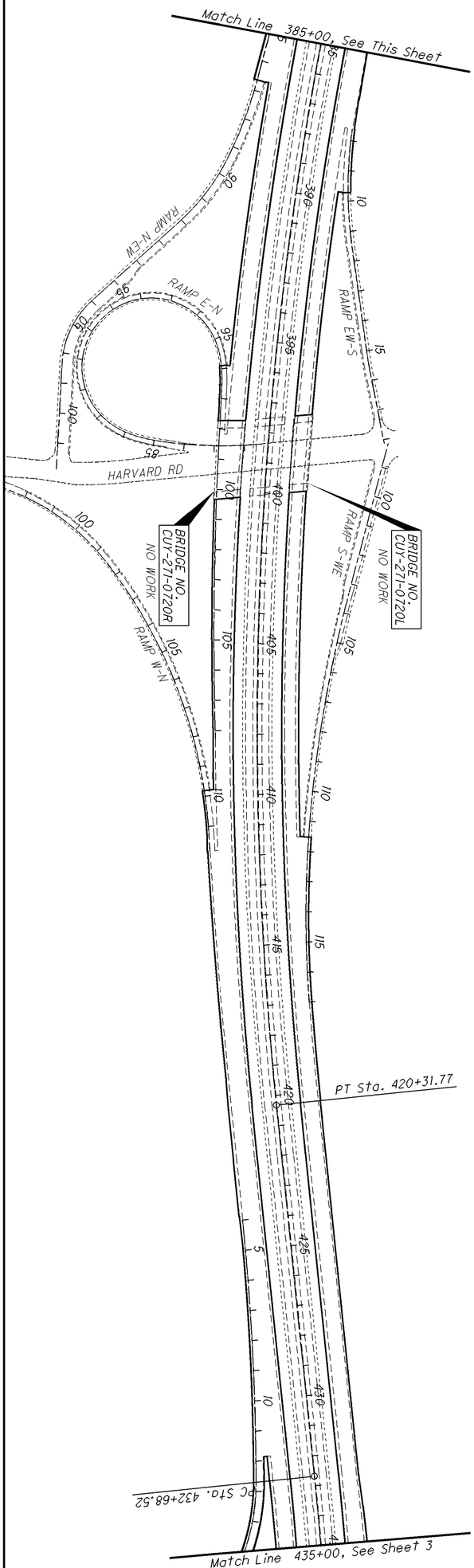
I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

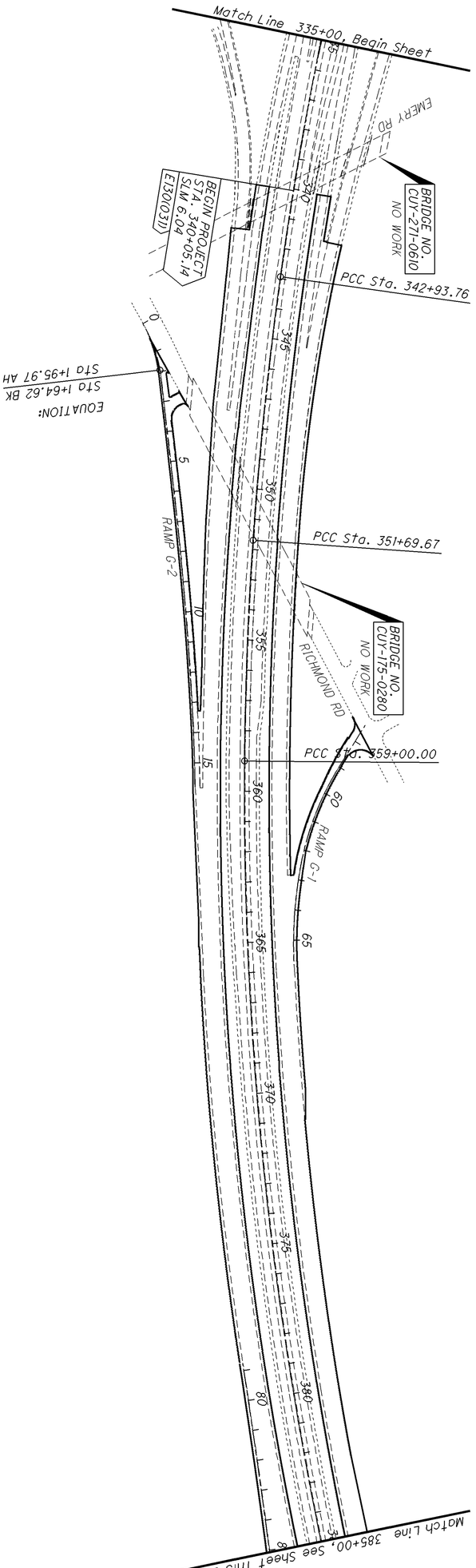
APPROVED Mgm S. Ell
DATE 03.03.14 DISTRICT DEPUTY DIRECTOR

APPROVED Jerry Wray for
DATE 10/23/14 DIRECTOR, DEPARTMENT OF TRANSPORTATION

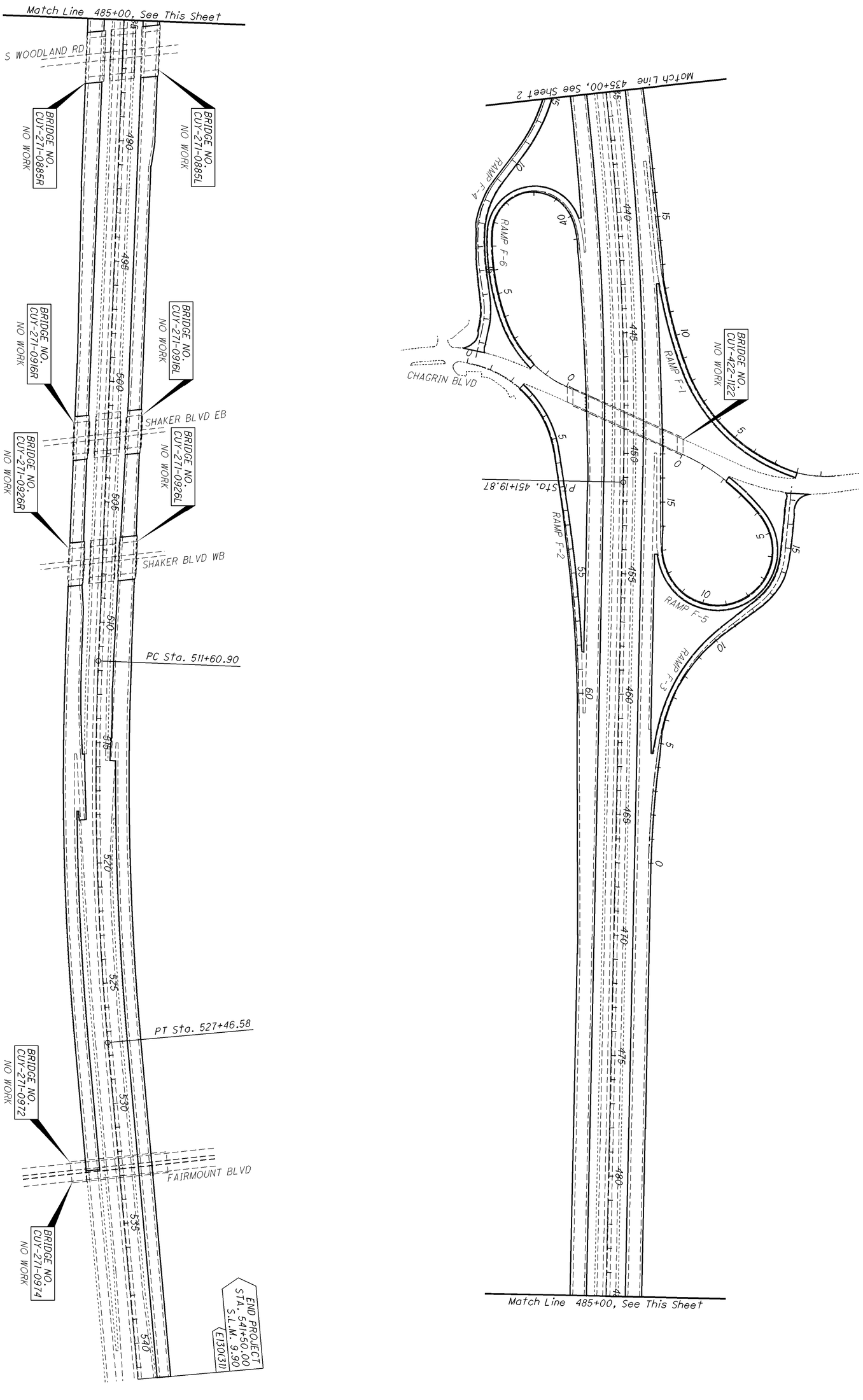
FEDERAL PROJECT NO. E130(031)
PID NO. 94005
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT None
CUY-271-6.04
1 / 41

I:\PROJECTS\CUY\94005\roadway\sheets\94005GB001.dgn 25-FEB-2014 3:41PM bemery

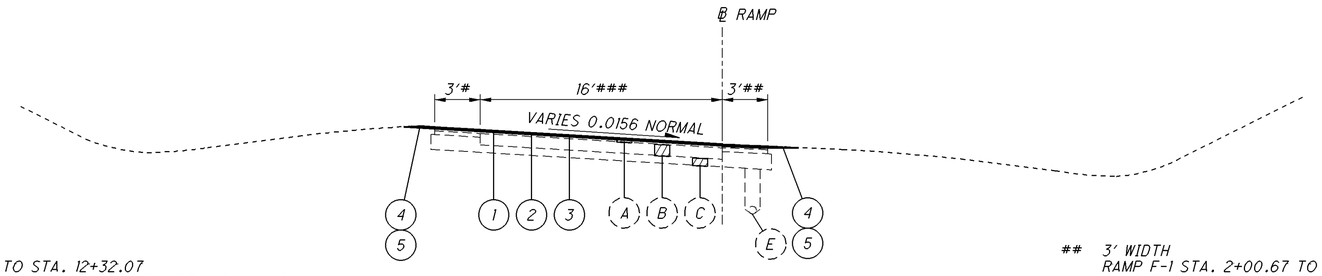




2 / 41	CUY-271-6.04	Schematic Plan IR-271, Sta. 335+00 to Sta. 435+00	CALCULATED BPE CHECKED EMK	0 200 100 400 HORIZONTAL SCALE IN FEET



3 / 41	CUY-271-6.04	Schematic Plan IR-271, Sta. 435+00 to Sta. 532+68.89	CALCULATED BPE CHECKED EMK	0 200 100 400 HORIZONTAL SCALE IN FEET



CURVE RIGHT OR TANGENT RAMP SECTION

RAMP F-1 STA. 2+00.67 TO STA. 17+33.71
RAMP F-2 STA. 2+45.70 TO STA. 8+21.80(BK)/STA. 52+61.22(AH)
RAMP F-2 STA. 52+61.22(AH)/STA. 8+21.80(BK) TO STA. 60+80.91
RAMP F-5 STA. 2+12.37 TO STA. 13+01.06
RAMP F-6 STA. 1+63.35 TO STA. 9+67.78(BK)/STA. 37+38.97(AH)
RAMP F-6 STA. 37+38.97(AH)/STA. 9+67.78(BK) TO STA. 41+57.62

\# 3' WIDTH
RAMP F-1 STA. 2+00.67 TO STA. 12+32.07
RAMP F-2 STA. 2+45.70 TO STA. 8+21.80(BK)/STA. 52+61.22(AH)
RAMP F-2 STA. 52+61.22(AH)/STA. 8+21.80(BK) TO STA. 60+80.91
RAMP F-5 STA. 2+12.37 TO STA. 13+01.06
RAMP F-6 STA. 1+63.35 TO STA. 9+67.78(BK)/STA. 37+38.97(AH)
RAMP F-6 STA. 37+38.97(AH)/STA. 9+67.78(BK) TO STA. 41+57.62

0' WIDTH
RAMP F-1 STA. 12+32.07 TO STA. 17+33.71

16' WIDTH
RAMP F-1 STA. 2+00.67 TO STA. 13+32.07
RAMP F-2 STA. 2+45.70 TO STA. 8+21.80(BK)/STA. 52+61.22(AH)
RAMP F-2 STA. 52+61.22(AH)/STA. 8+21.80(BK) TO STA. 60+80.91
RAMP F-5 STA. 2+12.37 TO STA. 13+01.06
RAMP F-6 STA. 1+63.77 TO STA. 9+67.78(BK)/STA. 37+38.97(AH)
RAMP F-6 STA. 37+38.97(AH)/STA. 9+67.78(BK) TO STA. 37+58.22

WIDTH VARIES 16' TO 14'
RAMP F-1 STA. 13+32.07 TO STA. 17+33.71

WIDTH VARIES 16' TO 18'
RAMP F-6 STA. 37+58.22 TO STA. 38+38.32

18' WIDTH
RAMP F-6 STA. 38+38.32 TO STA. 41+57.62

\## 3' WIDTH
RAMP F-1 STA. 2+00.67 TO STA. 12+32.07
RAMP F-2 STA. 2+45.70 TO STA. 8+21.80(BK)/STA. 52+61.22(AH)
RAMP F-2 STA. 52+61.22(AH)/8+21.80(BK) TO STA. 52+63.63
RAMP F-5 STA. 2+12.37 TO STA. 13+01.06
RAMP F-6 STA. 1+63.77 TO STA. 9+67.78(BK)/STA. 37+38.97(AH)
RAMP F-6 STA. 37+38.97(AH)/9+67.78(BK) TO STA. 37+58.22

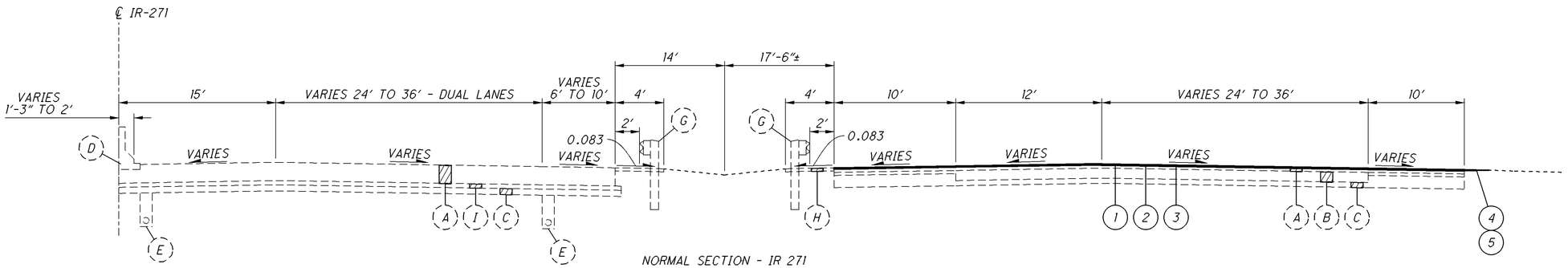
WIDTH VARIES 3' TO 6'
RAMP F-2 STA. 52+63.63 TO STA. 53+38.63
RAMP F-6 STA. 37+58.22 TO STA. 38+33.32

6' WIDTH
RAMP F-2 STA. 53+38.63 TO STA. 60+30.91
RAMP F-6 STA. 38+33.32 TO STA. 41+07.62

WIDTH VARIES 6' TO 8'
RAMP F-2 STA. 60+30.91 TO STA. 60+80.91
RAMP F-6 STA. 41+07.62 TO STA. STA. 41+57.62

WIDTH VARIES 3' TO 10'
RAMP F-1 STA. 12+32.07 TO STA. 13+32.07

10' WIDTH
RAMP F-1 STA. 13+32.07 TO STA. 17+33.71



NORMAL SECTION - IR 271

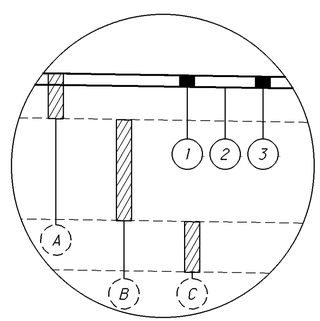
STA. 340+05.14 TO STA. 397+52.75 (RT./LT.)
STA. 397+52.75 TO STA. 400+07.76 (RT./LT.) (BRIDGE CUY-271-0720)
STA. 400+07.76 TO STA. 485+34.97 (RT./LT.)
STA. 485+34.97 TO STA. 487+48.99 (RT./LT.) (BRIDGE CUY-271-0885)
STA. 487+48.99 TO STA. 501+32.44 (RT./LT.)
STA. 501+32.44 TO STA. 503+12.46 (RT./LT.) (BRIDGE CUY-271-0916)
STA. 503+12.46 TO STA. 506+54.43 (RT./LT.)
STA. 506+54.43 TO STA. 508+34.53 (RT./LT.) (BRIDGE CUY-271-0926)
STA. 508+34.53 TO STA. 541+50.00 (RT./LT.)

EXISTING

- (A) ±6" ASPHALT PAVEMENT OVERLAY
- (B) REINFORCED CONCRETE PAVEMENT
- (C) SUBBASE
- (D) CONCRETE BARRIER
- (E) UNDERDRAIN
- (F) CONCRETE BASE
- (G) GUARDRAIL
- (H) ASPHALT UNDER GUARDRAIL
- (I) ASPHALT TREATED BASE
- (J) 15" TRENCH DRAIN

PROPOSED

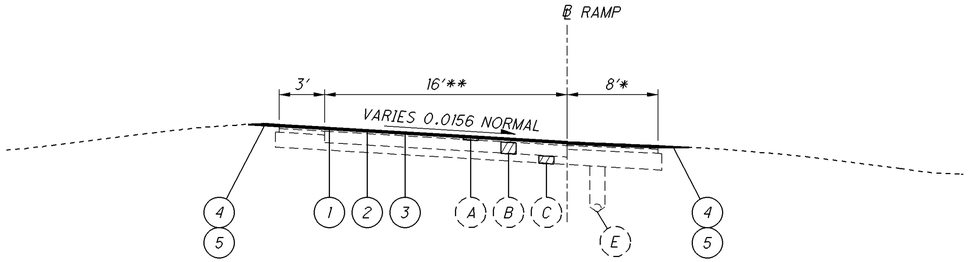
1. ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN (1-1/2" AVG)
2. ITEM SPECIAL - TACK COAT, TRACKLESS TACK
3. ITEM 442 - ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), AS PER PLAN, A (1-1/2") (MAINLINE)
   ITEM 442 - ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), AS PER PLAN, B (1-1/2") (RAMPS)
4. ITEM 617 - COMPACTED AGGREGATE, AS PER PLAN
5. ITEM 209 - LINEAR GRADING, AS PER PLAN



PROPOSED SURFACE TREATMENT

Typical Sections - 1 of 3

CUY-271-6.04



CURVE RIGHT OR TANGENT RAMP SECTION

RAMP F-3 STA. 4+53.07 TO STA. 12+35.05
RAMP F-4 STA. 11+85.81 TO STA. 17+57.50(BK)/STA. 9+64.08(AH)
RAMP F-4 STA. 9+64.08(AH)/STA. 17+57.50(BK) TO STA. 11+03.19
RAMP F-4 STA. 15+16.42 TO STA. 18+37.57

* WIDTH VARIES 10.00′ TO 3.00′
RAMP F-3 STA. 4+53.07 TO STA. 5+53.07

3.00′ WIDTH
RAMP F-3 STA. 5+53.07 TO STA. 12+35.05
RAMP F-4 STA. 15+16.42 TO STA. 17+53.98

8.00′ WIDTH
RAMP F-4 STA. 11+85.81 TO STA. 17+57.50(BK)/STA. 9+64.08(AH)
RAMP F-4 STA. 9+64.08(AH)/ STA. 17+57.50(BK) TO STA. 11+03.19

0′ WIDTH
RAMP F-4 STA. 17+53.98 TO STA. 18+37.57

** 16′ WIDTH
RAMP F-3 STA. 5+53.07 TO STA. 7+20.00

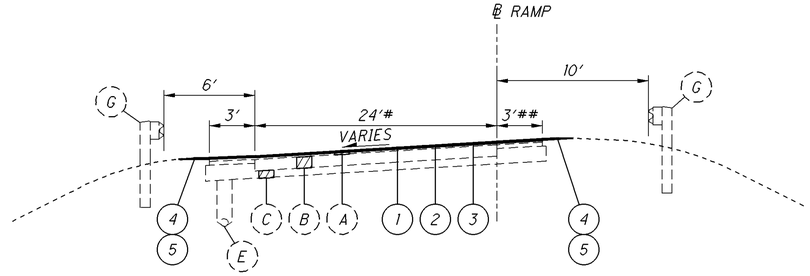
WIDTH VARIES 18′ TO 16′
RAMP F-3 STA. 4+53.07 TO STA. 5+53.07

WIDTH VARIES 16′ TO 28.88′
RAMP F-3 STA. 7+20.00 TO STA. 12+35.05

24′ WIDTH
RAMP F-4 STA. 11+85.81 TO STA. 17+57.50(BK)/STA. 9+64.08(AH)
RAMP F-4 STA. 9+64.08(AH)/STA. 17+57.50(BK) TO STA. 11+03.19

WIDTH VARIES 33.79′ TO 36′
RAMP F-4 STA. 15+16.42 TO STA. 16+05.00

36′ WIDTH
RAMP F-4 STA. 16+05.00 TO STA. 18+37.57



CURVE LEFT RAMP SECTION

RAMP F-3 STA. 12+35.05 TO STA. 17+28.66
RAMP F-4 STA. 11+03.19 TO STA. 15+16.42

\# WIDTH VARIES 28.88′ TO 36′
RAMP F-3 STA. 12+35.05 TO STA. 15+20.00

36′ WIDTH
RAMP F-3 STA. 15+20.00 TO STA. 17+28.66

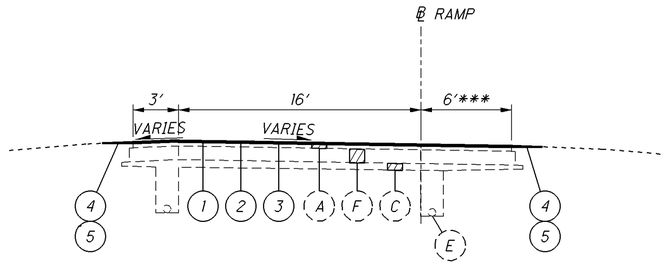
24′ WIDTH
RAMP F-4 STA. 11+03.19 TO STA. 11+25.00

WIDTH VARIES 24′ TO 33.79′
RAMP F-4 STA. 11+25.00 TO STA. 15+16.42

\## 3′ WIDTH
RAMP F-3 STA. 12+35.05 TO STA. 17+28.66
RAMP F-4 STA. 13+37.74 TO STA. 15+16.42

8′ WIDTH
RAMP F-4 STA. 11+03.19 TO STA. 13+07.74

WIDTH VARIES 8′ TO 3′
RAMP F-4 STA. 13+07.74 TO STA. 13+37.74



NORMAL ONE LANE RAMP SECTION

RAMP G-2 STA. 0+71.76 TO STA. 1+64.62(BK)/1+95.97(AH)
RAMP G-2 STA. 1+95.97(AH)/1+64.62(BK) TO STA. 15+51.21
RAMP G-1 STA. 57+65.35 TO STA. 65+81.55

*** 6′ WIDTH
RAMP G-2 STA. 1+18.31 TO STA. 15+01.21
RAMP G-1 STA. 57+65.35 TO STA. 62+00.00

WIDTH VARIES 6′ TO 10′
RAMP G-1 STA. 62+00.00 TO STA. 62+86.48

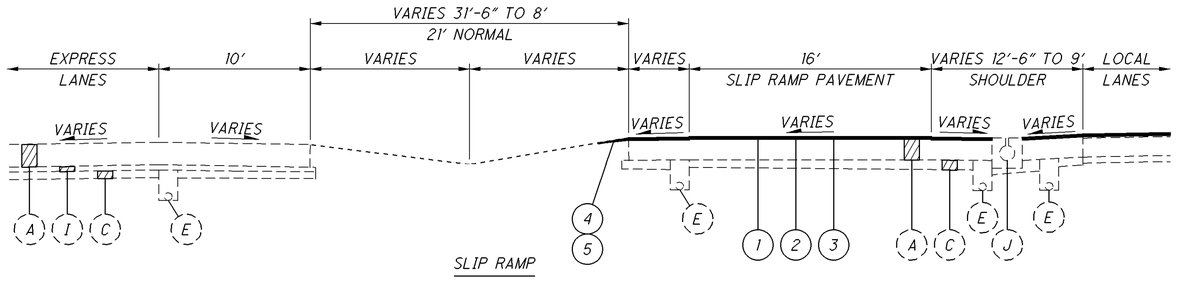
WIDTH VARIES 6′ TO 8′
RAMP G-2 STA. 15+01.21 TO STA. 15+51.21

10′ WIDTH
RAMP G-1 STA. 62+86.48 TO STA. 65+81.55

For Legend, See Sheet 4

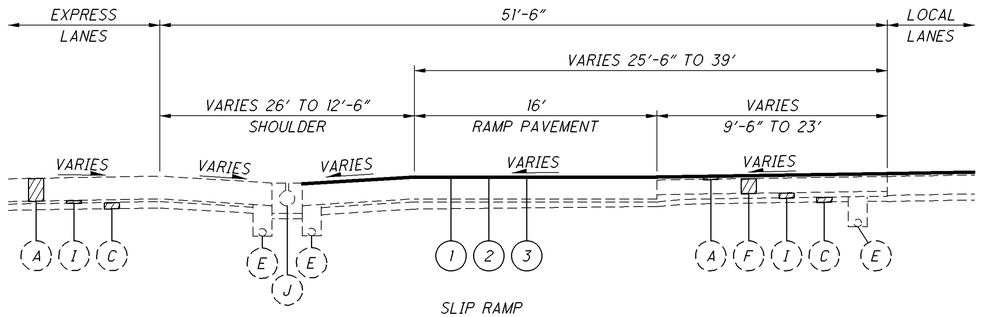
Typical Sections - 2 of 3

CUY-271-6.04



SLIP RAMP

STA. 515+00 LT. TO STA. 515+74.55 LT. (SB)



SLIP RAMP

STA. 515+48.10 RT. TO STA. 517+85.00 RT. (NB)

For Legend, See Sheet 4

General

Project Description

This project involves the improvement of IR-271 by removing 1.5" of asphalt and overlaying the roadway with 1.5" of Item 442, Asphalt Concrete Surface Course, 12.5mm, Type A (446), As Per Plan from Emery Rd (SLM 6.04) to Fairmount Blvd (SLM 9.90). Incidental work includes pavement repairs, pavement markings and raised pavement markers.

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 following location:

Ohio Department of Transportation
District 12 Office
5500 Transportation Boulevard
Garfield Heights, Ohio 44125

Plan Sheet Stationing

The roadway was not surveyed prior to the preparation of these plans. Record drawings were used to prepare plan sheets and calculate estimated pavement area quantities and pavement marking quantities.

Contingency Quantities

The Contractor shall not order materials or perform work for items designated by plan note to be used "as directed by the Engineer" unless authorized by the Engineer. The actual work locations and quantities used for such items shall be incorporated into the final change order governing completion of this project.

Equipment and Material Storage

In order to provide for the safety of the traveling public the Contractor's attention is directed to 614.03. In addition the following provisions shall apply:

1. Any removed items shall not be stored on the right of way for more than thirty (30) days.
2. 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 approved by the Engineer.
3. All disturbed areas shall be returned to their original condition at no expense to the state.

Cooperation Between Contractors

The Contractor shall cooperate and coordinate his/her operations with the contractors on other projects that may be in force during the life of the contract. No waiver of any provisions of 105.07 of the Construction and Material Specifications is intended.

Right of Way

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

Work Limits

The work limits shown on these plans are for physical construction only. Provide the installation and operation of all work zone traffic control and work zone traffic control devices required by these plans whether inside or outside these work limits.

Staging Areas

There are no specific areas given in the plans for the Contractor to use as a staging area(s). If the Contractor wants to use an area(s) for staging, regardless if it falls within the project limits or not, the Contractor is to contact Jill Powers at 216-584-2195 at District 12 in order to apply for a permit per Section 107.02 of the CMS.

If a permit is granted, all conditions of the permit shall be met in addition to the requirements of 104.04 of the CMS, at no additional cost to the State. If the Project Engineer deems that all the conditions of the permit were not met, then 10% of the Contract bid amount for mobilization shall be withheld until all the conditions of the permit are satisfied.

Item 619 – Field Office, Type B, As Per Plan

A Type B Field Office is required for this project.

The following revisions to equipment supplied with the Type B Field Office, as specified in Table 619.02-1, Field Office, shall apply:

- The copier supplied must meet the requirements of copier supplied with the Type C Field Office.
- The broadband internet connection must meet a minimum download speed of 10MB per second and a minimum upload speed of 5MB per second.

All other field office items supplied shall meet the requirements of a Type B, Field Office.

Item 619 – Field Office, Type B, As Per Plan..... **6 Months**

Item 623 - Construction Layout Stakes and Surveying, As Per Plan

In addition to the requirements of the CMS, this item of work will include the following additional requirements.

An Ohio professional surveyor shall determine the minimum vertical clearances of all existing and new bridges within the project limits after completion of all the work, but prior to final acceptance of the project. At a minimum, measurements shall be taken along the centerline of each fascia beam at the edge of shoulders, edge lines, lane lines, and crown of the roadway below. The measurements shall be documented on the ODOT vertical clearance survey form. The form shall bear the stamp or seal of the Ohio professional surveyor who has taken the measurements. The Ohio professional surveyor shall submit the completed form to the Project Engineer and the district bridge maintenance engineer prior to final acceptance of the project.

Payment for all of the above work shall be at the unit price bid for Item 623 – Construction Layout Stakes, As Per Plan, which shall include all labor, equipment, materials and incidentals necessary to complete the above work.

Utilities

Listed below are all known utilities located within the project construction limits together with their respective owners. The Ohio Department of Transportation has used the best available information to determine the utility companies serving this area but cannot guarantee that this utility company list is complete.

There are no underground utilities shown on this plan. The nature of the work required by this project will not affect any known underground utilities that exist under or adjacent to the work area.

City of Cleveland
Division of Water Pollution Control
12302 Kirby Road
Cleveland, Ohio 44108
Attn: Rachid Zoghaib
Phone: (216) 664-3785

AT&T
13630 Lorain Ave. – 2nd Floor
Cleveland, Ohio 44111
Attn: James Janis
Phone: (216) 476-6142
Fax: (216) 476-6013

Dominion East Ohio Gas Co.
320 Springside Dr.
Fairlawn, Ohio 44333
Attn: Ed Goubeaux
Phone: (330) 664-2494
Mobile: (330) 604-7482
edward.t.goubeaux@dom.com

The Illuminating Co.
6896 Miller Rd.
Brecksville, Ohio 44141
Attn: Mark Robinson
Phone: (440) 717-6845
Cell: (440) 550-9001
Fax: (440) 546-8780
robinsonme@firstenergycorp.com

City of Cleveland Division of Water
1201 Lakeside Ave.
Cleveland, Ohio 44114
Attn: Guy Singer
Phone: (216) 664-2444, Ext. 5555
Fax: (216) 664-2378

Cuyahoga County Sanitary Engineer
6100 West Canal Road
Valley View, Ohio 44125
Attn: Michael Deuer
Phone: (216) 443-8205
Fax: (216) 443-8236

Ohio Department of Transportation
District 12 – Roadway Services
5500 Transportation Blvd.
Garfield Heights, Ohio 44125
Attn: Travis Bonnett, P.E.
Phone: (216) 584-2220
Travis.bonnett@dot.state.oh.us

Roadway and Erosion Control

Item 209 - Linear Grading, As Per Plan

This item of work shall consist of grading along the outside edge of the paved shoulder to eliminate high spots and provide positive sheet flow off the pavement and shoulder into roadside ditches or drainage structures. This item is not intended to be used to excavate a uniform depth to place Item 617 – Compacted Aggregate, As Per Plan.

Any debris collected shall be removed and disposed of as specified in Section 105.16 & 105.17 of the Construction and Material Specifications.

Payment for the above work shall be made at the unit bid price for Item 209, Station, Linear Grading, As Per Plan and shall include all labor, tools, equipment and materials necessary to perform this item of work.

The following estimated quantity has been carried to the general summary for use as directed by the engineer:

Item 209 – Linear Grading, As Per Plan..... **690 Sta.**

Item 659 –Seeding, Misc.: Seeding and Mulching

This item shall be used to seed and mulch all disturbed areas adjacent to curb ramps, curb, and sidewalk, as directed by the Engineer. Use Class 1 Lawn Mixture.

At disturbed areas, remove top 2" of soil and replace with material conforming to 659.05. Provide a single application of commercial fertilizer per the requirements of 659.04. Placement of topsoil and application of fertilizer are incidental to this item.

The following estimated quantity is carried to the general summary for this purpose:

Item 659 – Seeding, Misc.:
Seeding and Mulching..... **Lump Sum**

Item 608 - Curb Ramp, By Type, As Per Plan

Under this pay item, the Contractor shall be responsible for laying out American with Disabilities Act (ADA) compliant curb ramps and landings that comply with the requirements of ODOT Standard Construction Drawing BP-7.1. Curb ramp types are indicated on the plans for estimating purposes only. The type of curb ramp is subject to change due to field conditions, and shall be determined in the field to fit best. No additional payment will be made if a curb ramp of a type other than the type indicated on the plans is used.

Payment shall include any additional costs for surveying, construction layout and formwork necessary to comply with the requirements of ODOT C&MS, Std. Dwg. BP-7.1 and project plans.

The time between the walk removal and new curb ramp placement shall not exceed 14 calendar days.

Any curb ramp not meeting ADA and ODOT requirements will be removed and replaced by the contractor, at his/her cost, to the satisfaction of District 12.

The Department will pay for accepted quantities at the contract price for Item 608 – Curb Ramp, By Type, As Per Plan, Square Foot.

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 all existing sewers which are to remain in service and which may be affected by the work. The condition of the existing conduits and their appurtenances shall be determined from field observations. Records of the inspection shall be kept in writing by the State.

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

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

Payment for all operations described above shall be included in the contract price for the pertinent 611 drainage items.

Castings Adjusted to Grade, As Per Plan

All castings shall be adjusted to the finished roadway elevation by the Contractor. The time between adjusting the castings and resurfacing shall be kept to an absolute minimum. No adjusting rings shall be permitted. When performing this work, the pavement shall be sawcut prior to removal and hook bolts shall be used where practical to connect existing pavement to new concrete.

The following estimated quantities have been carried to the General Summary:

Item 611 – Catch Basin Adjusted to Grade,
As Per Plan..... **22 Each**
Item 611 – Manhole Adjusted to Grade,
As Per Plan..... **11 Each**

Castings Reconstructed to Grade

The Contractor and Field Engineer shall field check all existing catch basins, manholes, or monument boxes located within the limits of the project. Any casting found that exhibits substantial deterioration and requires more work than is specified under "Castings Adjusted to Grade" shall be "Reconstructed to Grade", as directed by the Engineer. If none are needed, these items are to be non-performed.

The following estimated quantities have been carried to the General Summary for use as directed by the Engineer:

Item 611 – Catch Basin Reconstructed to Grade ..... **2 Each**

Item 611 – Manhole Reconstructed to Grade ..... **1 Each**

Item Special – Miscellaneous Metal

Existing castings may prove to be unsuitable for reuse, as determined by the Engineer. It shall be the Contractor's responsibility to provide the castings of the required type, size, and strength (heavy duty) for the particular structure in question. All materials must meet Item 611 of the CMS and shall have the prior approval of the Engineer.

The Contractor is cautioned to use extreme care in the removal, storage, and replacement of all existing castings. Castings damaged by the negligence of the Contractor, as determined by the Engineer, shall be replaced with the proper new castings at the expense of the Contractor.

The Contractor shall not order materials until authorized by the Engineer, and if none are needed, the item shall be non-performed.

The following estimated quantity has been carried to the General Summary for use as directed by the Engineer:

Item Special – Miscellaneous Metal..... **5,000 Lbs.**

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Pavement

Profile and Alignment

Place the proposed pavement to follow the alignment of the existing pavement. Place the proposed asphalt concrete with a uniform thickness of 1.5" as shown on the typical sections. The intent of the plans is to maintain the existing profile.

Item 251 - Partial Depth Pavement Repair, As Per Plan A

This item shall be used for the repair of unsound, cold-patch, or pop-out areas of longitudinal joints as directed by the engineer. This work shall be performed after the milling operation and prior to resurfacing. The depth of the repair shall be 3" below the top of the planed asphalt surface.

The following estimated quantity has been carried to the general summary:

Item 251 – Partial Depth Pavement Repair,
As Per Plan A..... **750 Sq Yd**

Item 251 - Partial Depth Pavement Repair, As Per Plan B

This item shall be used for the repair of unsound, cold-patch, or pop-out areas of transverse joints and cracks as directed by the engineer. This work shall be performed prior to the milling operation. The depth of the repair shall be 6" below the top of the existing surface. The width of the repair shall be 24" centered on the existing joint or crack. Place and compact approved Item 301 asphalt concrete base as necessary to finish flush with the adjacent pavement surface.

The following estimated quantity has been carried to the general summary:

Item 251 – Partial Depth Pavement Repair,
As Per Plan B..... **1500 Sq Yd**

Item 251 - Partial Depth Pavement Repair, As Per Plan C

This item shall be used for the repair of unsound, cold-patch, or pop-out areas of transverse joints and cracks as directed by the engineer. This work shall be performed after the milling operation and prior to resurfacing. The depth of the repair shall be 3" below the top of the planed asphalt surface. The width of the repair shall be 24" centered on the existing joint or crack.

The following estimated quantity has been carried to the general summary:

Item 251 – Partial Depth Pavement Repair,
As Per Plan C ..... **500 Sq Yd**

Item 254 – Pavement Planing, Asphalt Concrete, As Per Plan

This item shall be used to remove the existing asphalt overlay full width to a depth of one and one-half inches (1-1/2").

Areas which have transverse wedges (butt joints) may be removed in two passes as required for maintaining traffic, or plane one pass and utilize asphalt for maintaining traffic to ramp transverse discontinuity. No additional payment shall be made for the second pass.

The depth of pavement planing may be variable across the pavement width, however, the depth may be adjusted, by the Engineer, in order to achieve appropriate pavement crown for drainage and/or to minimize removal of material in areas with less than typical or average structural strength. All provisions stated in Item 254 – Pavement Planing shall be followed.

All costs associated with planing the transitions and the extra planing under the overhead bridges shall be included in the bid for Item 254 – Pavement Planing, Asphalt Concrete, As Per Plan.

Item Special - Tack Coat, Trackless Tack

Description: This work consists of preparing and treating a paved surface with NTSS-1HM Trackless Tack produced by Blacklidge Emulsions, Inc. Meet all requirements of Construction and Material Specifications Item 407 Tack Coat except as noted below.

Material: Conform to the following typical physical properties:

Parameter	Test Method	Min.	Max.
Saybolt Furol Viscosity			
SFS @ 25°C	ASTM D88	15	100
Storage Stability, 24 Hrs, %	ASTM D244	--	1
Storage Stability, 5 Days, %	ASTM D244	--	5
Residue by Distillation, %	ASTM D244	50	--
Oil Distillate, %	ASTM D244	--	1
Sieve Test, %	ASTM D244	--	0.3
Test on Residue:			
Penetration, @ 25°C	ASTM D5	--	20
Softening Point Range, °C	ASTM D36	65	--
Solubility, %	ASTM D2042	97.5	--
Original Binder DSR @ 82°C			
G*sin(δ), 10 rad/sec	AASHTO T111	1	--

Note: Product should not contain filler such as clay, etc. Keep from freezing.

Supply certified test data to the Engineer showing the material supplied was tested for and meets the above properties.

Equipment: All requirements of 407.03 apply. See manufacturer's representative for correct distributor settings. Thoroughly clean all equipment if cationic emulsion was previously used.

Weather Limitations: All requirements of 407.04 apply.

Preparation of Surface: All requirements of 407.05 apply.

Application of Asphalt Material: Uniformly apply the asphalt material with a distributor per the requirements of 407.06 except as noted.

Uniformly apply the asphalt material with a distributor per the requirements of 407.06 except as noted.

Dilution is not allowed.

If product is stored for an extended period of time, prior to application, agitate or gently circulate the material.

All nozzles and spray patterns shall be identical to one another along the distributor spray bar. The angle of the nozzle should a 15 to 30 degree angle to the spray bar axis to maximize overlap or as recommended by the nozzle manufacturer. Contact the manufacturer's representative for required spray nozzle size, and distributor and nozzle settings.

Apply at a rate of 0.04 to 0.08 gallons per square yard. Recommended application temperature is 160°F to 180° F. Do not exceed 180°F.

The Engineer and manufacturer's representative will approve rate of application, temperature, distributor settings, and areas to be treated before application of the tack coat. The Engineer will determine the actual application in gallons per square yard by a check on the project.

The application is considered satisfactory when the material is applied uniformly with no visible evidence of streaking or ridging and the application rate is ±10% of the specified rate.

Method of Measurement: All requirements of 407.07 apply.

Basis of Payment: The Department will not pay for non-uniformly applied materials as defined in 407.06. The department will pay for accepted quantities at the contract price for Item Special – Tack Coat, Trackless Tack.

Item 442 – Asphalt Concrete Surface Course, 12.5mm, Type A (446), As Per Plan, A

The coarse virgin aggregate for this item shall be limited to a blend of air cooled blast furnace slag (ACBFS) or Trap Rock from Ontario and limestone. The Contractor shall use a minimum 60% of ACBFS or Trap Rock from Ontario with limestone comprising the remaining percentage.

When ACBFS is used for a fraction of the aggregate, all requirements of C&MS 442 apply, except provide a total asphalt binder content greater than or equal to 6.2 percent. If ACBFS makes up 100% of the coarse aggregate, all requirements of C&MS 442 apply.

Use a PG 76-22M binder for this item.

Item 442 – Asphalt Concrete Surface Course, 12.5mm, Type A (446), As Per Plan, B

The coarse virgin aggregate for this item shall be limited to air cooled blast furnace slag (ACBFS) or Trap Rock from Ontario.

Use a PG 76-22M binder for this item.

Polishing and Determining Friction of Gyratory Compacted Asphalt Specimens

On this project conduct laboratory polishing and friction measurement of the surface course asphalt mixture as described below. Conduct polishing and friction testing on the surface course mix design approval submittal samples and QC six inch diameter gyratory samples. For mix design approval submit two polished gyratory specimens with BPN friction measurements (per ASTM E 303) and two unpolished specimens with the submittal packet to the Laboratory. Submit tabular BPN vs time values for a friction degradation curve in electronic Excel format. For QC conduct polishing and BPN friction measurement on two polished gyratory specimens, one chosen randomly by the Contractor from the second day of production and one chosen randomly by the District from remaining surface course production. Submit tested QC samples and data to the Laboratory. Submit tabular BPN vs time values for a friction degradation curve in electronic Excel format with identification of the project and JMF. Use the Excel file layout available from FPO or the ODOT OMM lab. Note on the Excel file any notes of value such as if new or used polishing disc was used. Submit electronic TE-199s representing asphalt mix used for preparing the polished gyratory samples.

Polishing And Determining Friction Number
Of Gyratory Compacted Specimens

Asphalt Polishing Machine Requirements
Asphalt Polishing Machine Operation
British Pendulum Testing for Determining British Pendulum Number
Laboratory Test Procedure for Friction Degradation Curve

Asphalt Polishing Machine Requirements. The Polisher is a laboratory accelerated polishing device to polish the cross sectional surface of a gyratory compacted asphalt mixture sample using a rotating rubber disc at a constant rotating speed and under constant vertical force. Ensure that the polishing machine meets the following requirements:

1. Hold a gyratory compacted asphalt mixture sample in place while it is being subjected to rotational polishing action on the cross sectional surface of the sample by a rubber polishing disc.
2. Accommodate a gyratory compacted sample size of 6 in (15.2 cm) diameter by 6 in (15.24 cm) height or 6 in (15.24 cm) diameter by 4 in (10.2 cm) height.
3. Maintain flat contact between the rubber polishing disc and the asphalt mixture sample cross sectional surface during the entire duration of polishing action .
4. Maintain a constant vertical force of 290 lb (131.5 kg) during polishing.
5. Maintain a constant rotational speed of the rubber polishing disc at 30 rpm.
6. Maintain constant water flow of 100 ml (3.38 oz) per minute onto the contact interface between the sample top surface and bottom surface of rubber disc during polishing. Provide an easily seen flow meter.
7. Automatic timer to shut off rubber polishing disc rotation at every one hour interval.
8. The rubber polishing disc is made of 90 Durometer SBR rubber.

Asphalt Polishing Machine Operation. The Polisher must be operated in accordance with the operator manual instructions. However, certain potential problems should be watched for.

1. The water flow rate is critical for maximizing the life of the rubber pad, but too much water will stop the wearing process on the aggregate. If the flow rate is set while the machine is stopped expect some flow rate change during operation. Set the flow rate to achieve the required flow rate of 100ml/minute during polisher operation. Experience will determine the best setting to start with to achieve the correct flow rate.
2. Some mix types with high friction aggregate like slag or crushed gravel will wear polishing discs quickly. If wear is excessive bits of rubber can clog the disc water flow channels. As needed, remove the pad or otherwise verify channels are clear for flow of water.
3. Even wear on the polishing disc is desired. Uneven wear with greater disc degradation towards the outside of the disc indicates uneven water flow.
4. Multiple discs may be necessary to complete a full cycle of polishing depending on aggregate type.
5. Evenly worn discs may be re-used.

British Pendulum Testing for Determining British Pendulum Number. Test samples with a calibrated British Pendulum Tester in accordance with ASTM E 303 to determine a British Pendulum Number (BPN). Record the final reading as the BPN for the asphalt mixture. Measure four BPN numbers and average for each test.

Laboratory Test Procedure for Friction Degradation Curve. The Friction Degradation Curve is a curve obtained from tests using the Polisher. It is a curve showing the BPN values, measured by the British Pendulum Tester in accordance with ASTM E 303, versus polishing time at one hour intervals until reaching the 8-hour duration.

Two gyratory compacted samples prepared in accordance with the JMF are required. The procedure consists of the following steps.

Step 1: Measure the initial BPN of sample cross sectional surface using the British Pendulum Tester and record it as BPN_0 at time t_0.

Step 2: Subject sample to one hour polishing in the Polisher.

Step 3: Measure the friction value using the British Pendulum Tester and record it as BPN at t, where t indicates accumulated polishing duration.

Repeat Step 2 and Step 3 for the next one-hour polishing and measurement, until a total of 8 hours polishing duration is complete.

Any additional labor, equipment or material costs necessary to perform the testing described above shall be included in the unit price bid for Item 442 – Asphalt Concrete Surface Course, 12.5mm, Type A (446), As Per Plan, A.

Asphalt Concrete Surface Course Sealing Requirements

In addition to the gutter sealing requirements specified in SCD BP-3.1 and C&MS 401.15, after completion of the surface course, the contractor shall use a certified 702.01 PG binder to seal the following locations:

- All castings including but not limited to monuments, manholes, water valves, catch basins, curb inlets.
- Butt joints and feather joints including bridge approaches.
- Forward joint for driveway asphalt and trailing joint when butting to existing asphalt drive.
- Perimeter of all pavement repairs or other asphalt inlays when pavement repairs/inlays are not overlaid with an asphalt concrete surface course.
- All cold longitudinal joints between paved shoulders and guardrail asphalt.

The material used shall be a certified 702.01 PG binder. The width of the sealer shall be 2-3 inches.

Any additional costs associated with the work identified in this note shall be included in the appropriate asphalt concrete surface course item of work.

Longitudinal Joints (Flexible Pavement)

Longitudinal joints between a pavement lane and adjoining shoulder or speed change lane, and between a speed change lane and the adjoining shoulder 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.

Item 617 – Compacted Aggregate, As Per Plan

This item shall be used to place compacted aggregate at a variable depth only where needed to fill in low spots along the shoulder and eliminate drop offs. Material shall be limited to reclaimed asphalt concrete pavement.

The actual depth of compacted aggregate placed will vary depending upon existing conditions. For estimating purposes, an average depth of one inch (1") has been used. Water, if needed, shall be applied as per 617.05 and included under Item 617 – Compacted Aggregate, As Per Plan.

The following estimated quantity has been carried to the general summary for use as directed by the engineer:

Item 617 – Compacted Aggregate, As Per Plan..... **425 Cu Yd**

Item 618 – Rumble Strips (Asphalt Concrete)

The following estimated quantity shall be used to construct Item 618 – Rumble Strips (Asphalt Concrete) as per Standard Drawing BP-9.1:

Item 618 – Rumble Strips (Asphalt Concrete)..... **14.37 Mile**

Traffic Control

ODOT Automatic Traffic Recorder Site

The Contractor is advised that an automatic traffic recording (ATR) site is located on IR-271 within the project limits. ATR Site #579 is located near Sta. 393+00 ± (SLM 7.08) approximately 0.1 miles south of the Harvard Rd. underpass (SLM 7.19).

ODOT Project Engineer shall contact the Office of Technical Services, Attention Lindsey Pflum, (614) 752-4057, prior to pavement operations and upon completion of the overlay. The Department will restore operation of the ATR site.

Raised Pavement Markers

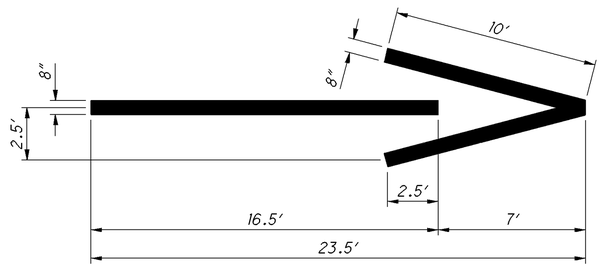
Install raised pavement markers for lane lines at a spacing of eighty feet (80') center-to-center.

Pavement Markings

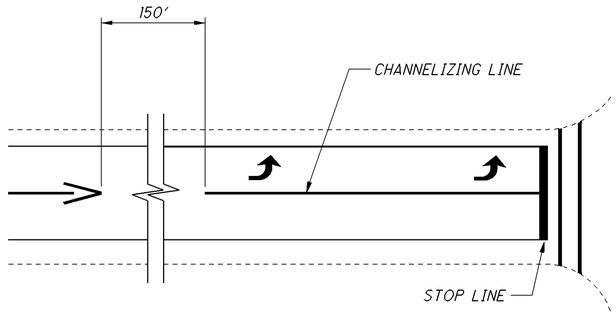
Auxiliary markings shall be located and installed as per Standard Drawing TC-71.10

Item 630 - Pavement Marking Misc.: Wrong Way Arrow

This item shall consist of installing a wrong way arrow on Exit Ramp G-1 to discourage drivers from traveling the wrong direction. See below for dimensions and location details.



WRONG WAY ARROW



MULTI LANE RAMP

Item 621 – Raised Pavement Marker Removed

This item shall include the removal and disposal of RPMs.

The following estimated quantity has been carried to the general summary:

Item 621 – Raised Pavement Marker Removed..... **1700 Each**

Permanent Pavement Markings on Bridges

Proposed pavement markings on bridges shall be placed on top of existing markings.

Item 632 – Detector Loop, As Per Plan

Prior to planing the pavement, the Contractor shall field survey the locations of the existing loop detectors within the project limits. The Project Engineer shall confirm these locations. The survey shall include the location of the loop, size of the loop, offset from curb and/or centerline and the location of the stub. A copy of this survey shall be given to the Project Engineer.

An estimated quantity of Item 632 – Detector Loop, As Per Plan has been provided as a contingency when wire is cut, broken, or destroyed due to pavement planing operations.

All stop line inductance detector loops shown in the plans shall be the powerhead configuration shown on TC-82.10. The stop line detector loops shall not be wired to any other loops and shall have its own detector channel. The location of these loops shall be such that the powerhead is located at the stop line, not past it.

All dilemma zone inductance detector loops called for in the plans shall be the Angular Design Detection (ADD) loop as shown on TC-82.10.

System loops shall be as depicted in the plans.

All stop line detection shall be tested for a bicycle target and all dilemma detection zones shall be tested for a motorcycle target.

When replacing the loop detectors, the loop detector wire shall be replaced to the pull box or pole, whichever is applicable, under Item 632 and Standard Drawing TC-82.10. The new cable splice kits shall be included in this pay item.

The Contractor shall contact the Project Engineer and Travis Bonnett, (216) 584-2220, District 12 Traffic Engineer, seven (7) days prior to planing through an intersection to adjust signal operation as needed. The detector loops shall be placed in the surface course prior to the placement of the surface course.

Refer to plan sheets for approximate locations. These locations are from record plans and field verification is needed.

The following estimated quantity has been carried to the general summary:

Item 632 – Detector Loop, As Per Plan..... **9 Each**

Detector Loop Locations

REFERENCE NO.	LOCATION	632 6' X 20' LOOP SIZE EACH
L-1	Ramp G-1 (Richmond Rd.), All Lanes	3
L-2	Ramp F-4 (Chagrin Blvd.), All Lanes	3
L-3	Ramp F-3 (Chagrin Blvd.), All Lanes	3
TOTAL CARRIED TO GEN. SUMMARY		9

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General

It is the responsibility of the Contractor to provide through vehicular access in both directions at all times throughout the project area. The project shall be constructed in phases in order to minimize traffic disruption and inconvenience to the general public. The Contractor shall be responsible for providing all equipment, materials and manpower needed to adequately maintain traffic as provided for in the plans and specifications.

The Contractor is reminded that, in the conduct of this project, the sequence of operations shall be planned in a fashion which minimizes the number of lane reductions and/or lane width reductions required to maintain traffic through the project.

Permitted lane closures shall be as shown on the "Schedule of Through Lanes to be Maintained" table. The time limits shown in this table shall be adhered to or road user costs will be assessed.

Schedule of Through Lanes to be Maintained

Location	Lane Reductions		Permitted Ramp Closures			Half Width Ramp Paving
	1 Lane Closure	2 Lane Closure	Yes / No	Short Term Closure		
				Weekdays	Weekends	
IR-271 3 or 4 Lanes	Weekday ♦	Weekday ♦				
	Weekend ♦	Weekday ♦				
IR-271 2 Lanes	Weekday ♦	NA				
	Weekend ♦	NA				
All One Lane Ramps			NO	NO	NO	10:00PM - 6:00AM
All Two Lane Ramps	10:00PM - 6:00AM		NO	NO	NO	10:00PM - 6:00AM

♦ - All lane closures listed above may only be implemented at the times permitted by the "District 12, Permitted Lane Closure Times" list, which is located on the ODOT website at:

www.dot.state.oh.us/districts/D12/HighwayManagement/Pages/PermittedLaneClosures.aspx

The latest revision, at 14 days prior to the bid date, shall be in effect for this project. No lane or shoulder closures shall be in place when no work is being performed.

Road User Costs - Short Term Lane Closures

Short term lane closures are those which are permitted by the "Schedule of Through Lanes to be Maintained" table. These times shall not be revised without prior approval from the District 12 Work Zone Traffic Control Engineer.

If short term lane closures are in place outside the specified times, the Contractor will be assessed road user costs in the amount of $100.00 per minute for each minute the lane remains closed past the specified time.

Short term lane closures shall only be implemented when work is being continuously performed. The closure shall be removed as soon as possible after work has stopped.

Holiday Closures

No work shall be performed and all existing lanes shall be open to traffic during the following designated holidays or events:

Christmas	New Years	Mothers Day
Memorial Day	Fourth of July	Easter
Labor Day	Thanksgiving	

The period of time that the lanes are to be open depends on the day of the week on which the holiday or event falls. The following schedule shall be used to determine this period:

Day	Times All Lanes Must Be Open
Sunday	12 noon Friday Through 12 noon Monday
Monday	12 noon Friday Through 12 noon Tuesday
Tuesday	12 noon Monday Through 12 noon Wednesday
Wednesday	12 noon Tuesday Through 12 noon Thursday
Thursday	12 noon Wednesday Through 12 noon Monday
Friday	12 noon Thursday Through 12 noon Monday
Saturday	12 noon Friday Through 12 noon Monday

No extensions of time shall be granted for delays in material deliveries, unless such delays are industry-wide, or for labor strikes, unless such strikes are area-wide.

Should the Contractor fail to meet any of these requirements, the Contractor shall be assessed a disincentive in the amount of $125 for each minute the above described lane closure restrictions are violated.

Suspension of Work

If the Contractor fails to comply with the provisions for traffic control as set forth in these plans or with provisions of the OMUTCD, the Engineer shall suspend work until the Contractor complies with the necessary requirements.

Planing Requirements

The duration of time between planing the asphalt and placing the asphalt overlay shall be kept to a minimum. In no instance shall this time exceed 14 calendar days. This is to ensure that the potential degradation of the exposed pavement due to traffic is kept to a minimum. This requirement applies to both mainline and ramps alike.

Construction Traffic

All construction traffic shall use acceptable truck routes to access the construction area. Use of local residential streets is strictly prohibited unless allowed in writing by the local enforcement authorities.

The Contractor shall be responsible for any damage to turn-arounds located within the project limits. Any damage caused by the Contractor's actions shall be repaired at no cost to the State.

Contractor's Equipment – Operation and Storage

Vehicles and equipment must always move with, not across or against, the flow of traffic. Vehicles and other equipment must not park or stop except within designated work areas; and shall not enter and leave work areas in a manner which will be hazardous to, or interfere with normal traffic flow.

Personal vehicles are not permitted to park within the right-of-way except in specific areas designated by the Engineer.

Equipment, vehicles and materials shall not be stored or parked within 30 feet of the traveled way unless 6 feet behind PCB or guardrail.

All work vehicles and equipment entering the work zone more than once a day must be equipped with at least one flashing, rotating, or oscillating amber light that is visible in all directions of traffic for at least one quarter of a mile, day or night.

Maintenance of Traffic Control Zones

The Contractor shall be responsible to maintain the signs, drums or cones specified in the standard drawings. When the Contractor is notified of deficiencies, he/she shall correct the deficiencies as soon as possible, preferably within 12 hours and no later than 24 hours. If any noted deficiencies are not corrected within 24 hours the Engineer shall deduct one day pay for Item 614 – Maintaining Traffic, not as a penalty but as road user costs. The Contractor shall be subject to these road user costs for each and every day that these provisions are not met. All costs for maintaining the work zones as described above shall be included under Item 614 – Maintaining Traffic.

Maintaining Traffic – General Provisions

6. Traffic shall be maintained in accordance with the "Schedule of Through Lanes to be Maintained." The Contractor shall set up and operate his equipment in such a manner as to minimize encroachment upon the traveled width of pavement

7. The Contractor shall notify the Engineer, the responsible law enforcement agency and the Ohio Department of Transportation, District 12 Public Information Officer ((216) 584-2007) not less than seventy-two (72) hours prior to a scheduled disruption of traffic.

8. Nighttime work shall be permitted in accordance with these plans and notes. The Contractor shall provide flood lighting of the work area in order to assure the safest conditions during nighttime work. A lighting plan for nighttime operations shall be presented to and approved by the Engineer.

9. The Contractor shall furnish, erect and maintain all new warning and information signs necessary for maintaining traffic. The Contractor shall determine what signs are needed and advise the Engineer two (2) weeks in advance of his/her detailed plans. See the OMUTCD and standard drawings for the minimum signage required.

10. Traffic control devices shall be set up prior to the start of construction, and shall be properly maintained during the time 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 our of the view of traffic.

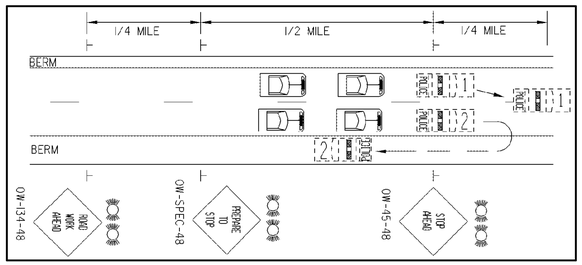
11. Placement of final roadway pavement markings and raised pavement markers shall be accomplished in accordance with the "Schedule of Through Lanes to be Maintained." The Contractor shall provide two (2) trailing vehicles as per MT-99.20M following the pavement marking equipment. The trailing vehicles shall travel 500' apart with the remote vehicle traveling on the shoulder (left or right as applicable) where usable shoulder is available. The first trail vehicle in a traffic lane shall be equipped with a truck mounted attenuator meeting NCHRP 350 requirements. Each trailing vehicle shall have a yellow flashing beacon plus 48" 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.

12. During non-working periods, open excavations shall be delineated with warning flashers and/or other approved devices as deemed appropriate by the Engineer.

13. Existing signs located within the road work areas which are necessary for interim or permanent traffic control shall be removed and re-erected in locations as approved by the Engineer.

14. No stoppage of traffic shall occur without law enforcement personnel at each location to direct traffic.

15. Any time traffic must be completely stopped on a freeway or interstate, it shall be as follows. The complete traffic stoppage of all lanes of any directional roadway shall be no more than 10 minutes in any one consecutive 30 minute period. A minimum of two (2) law enforcement officers (LEOs) with patrol vehicles shall be used to pace motorists to a stop. One LEO with patrol car should be provided for each lane of traffic to be closed. After traffic has been slowed, one (1) patrol vehicle shall travel along the roadway shoulder 500' behind the back up of stopped vehicles. Where stoppage occurs in the vicinity of freeway entrances, the Contractor shall place flaggers on the ramps to stop traffic. Patrol vehicles shall have flashing beacons. To provide adequate visibility to approaching motorists, the Contractor shall erect and maintain "Road Work Ahead", "Prepare to Stop", and "Stop Ahead" signs with two flashing 12" traffic signal heads in accordance with 632.05. Flares may be substituted for flashing lights and sign illumination. These signs shall be illuminated during night operations and shall be 48" by 48" signs. Stopping traffic shall be done when the greatest numbers of lanes are permitted to be closed according to the "Schedule of Through Lanes To Be Maintained." A portable changeable message sign shall be placed 1.5 miles to 2 miles in advance of the closure. Patrol vehicles and signs shall be located in accordance with the sketch below.



16. For any operation not specifically mentioned in these plans, the traffic shall be maintained in accordance with the OMUTCD.

17. 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.

Maintenance of Traffic Materials

A. Signs
Sign dimensions and specifications, including letter sizes shall be as provided in the "Manual", or in 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 materials as described in the OMUTCD.

B. Sign Supports
Temporary sign supports shall be as shown on Standard Drawings MT-105.10.

C. Flashing Arrow Panels
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 the OMUTCD for all information regarding furnishing, maintaining, and use of flashing arrow barricades. If the flashing arrow panel is within 300 feet of a residence or on a surface street, a solar powered flashing arrow panel shall be used. Payment for the above shall be included in the lump sum bid for Item 614 – Maintaining Traffic.

D. Drums
Drums shall be in accordance with pertinent sections of the OMUTCD. All permanent lane closures shall be delineated with drums spaced at 50 feet center to center. All costs for installing, maintaining and subsequent removal of said drums shall be included in the lump sum bid price for Item 614 – Maintaining Traffic.

E. Lighting Devices
Flashers shall be 12 volt battery-operated models with 7 inch diameter yellow lenses illuminated by rapid intermittent flashers of short duration and shall be placed on all signs at all times as required by the OMUTCD and the standard drawings.

Major Work Items

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

A. Removal of existing RPMs
B. Planing of asphalt concrete
C. Completion of partial depth pavement repairs
D. Placing of asphalt concrete
E. Placing proposed pavement markings and raised pavement markers
F. Placing of rumble strips

Item 614 – Asphalt Concrete for Maintaining Traffic, As Per Plan

This item shall be used to provide temporary asphalt ramps for transverse discontinuities. Ramping shall be placed at the rate of 1" per 10' or to be used as directed by the Engineer. Remove temporary asphalt ramps as part of this item.

Item 614 – Asphalt Concrete for Maintaining Traffic ..... **50 Cu Yd**

Item 614 – Work Zone Pavement Markings

The following estimated quantities have been carried to the General Summary, to be used as directed by the Engineer, to place work zone pavement markings after the contractor has planed the asphalt and after the surface course has been placed.

Item 614 – Work Zone Lane Line, Class 1,
642 Paint..... **37.64 Mile**
Item 614 – Work Zone Edge Line, Class 1,
642 Paint..... **36.46 Mile**
Item 614 – Work Zone Channelizing Line, Class 1,
642 Paint..... **39172 Ft**
Item 614 – Work Zone Dotted Line, Class 1,
642 Paint..... **26546 Ft**
Item 614 – Work Zone Stop Line, Class 1,
642 Paint..... **340 Ft**
Item 614 – Work Zone Crosswalk Line, Class 1,
642 Paint..... **1830 Ft**
Item 614 – Work Zone Arrow, Class 1,
642 Paint..... **28 Each**

Item 614 – Portable Changeable Message Signs, As Per Plan

The Contractor shall furnish, install, maintain and remove, when no longer needed, a changeable message sign. The sign shall be of a type shown on a list of approved PCMS units available on the Office of Materials Management web page. The list contains Class A and B units with minimum legibility distances of 650 feet and 475 feet, respectively.

Each sign shall be trailer-mounted and equipped with a functional dimming mechanism, to dim the sign during darkness, and a tamper and vandal proof enclosure. Each sign shall be provided with appropriate training and operation instructions to enable on-site personnel to operate and troubleshoot the unit. The sign shall also be capable of being powered by an electrical service drop from a local utility company. The PCMS shall be delineated in accordance with CMS 614.03.

The probable PCMS locations and work limits for those locations shall be determined by the Engineer. Placement, operation, maintenance and all activation of the signs by the Contractor shall be as directed by the Engineer. The PCMS shall be located in a highly visible position yet protected from traffic. The Contractor shall, at the direction of the Engineer, relocate the PCMS to improve visibility or accommodate changed conditions. When not in use, the PCMS shall be turned off. Additionally, when not in use for extended periods of time, the PCMS shall be turned away from all traffic.

The Engineer shall be provided access to each sign unit and shall be provided with appropriate training and operation instructions to enable ODOT personnel to operate and troubleshoot the unit, and to revise sign messages, if necessary.

All messages to be displayed on the sign will be provided by the Engineer. A list of all required pre-programmed messages will be given to the Contractor at the project preconstruction conference. The sign shall have the capability to store up to 99 messages. Message memory or pre-programmed displays shall not be lost as a result of power failures to the on-board computer. The sign legend shall be capable of being changed in the field. Three-line presentation formats with up to six message phases shall be supported. PCMS format shall permit the complete message for each phase to be read at least twice.

The PCMS shall contain an accurate clock and programming logic which will allow the sign to be activated, deactivated or messages changed automatically at different times of the day for different days of the week.

The PCMS unit shall be maintained in good working order by the Contractor in accordance with the provisions of CMS 614.07. The Contractor shall, prior to activating the unit, make arrangements, with an authorized service agent for the PCMS, to assure prompt service in the event of failure. Any failure shall not result in the sign being out of service for more than 12 hours, including weekends. Failure to comply may result in an order to stop work and open all traffic lanes and/or in the Department taking appropriate action to safely control traffic. The entire cost to control traffic, accrued by the Department due to the Contractor's noncompliance, will be deducted from moneys due, or to become due the Contractor on his contract.

The Contractor shall be responsible for 24-hour-per-day operation and maintenance of these signs on the project for the duration of the phases when the plan requires their use.

Payment for the above described item shall be at the contract unit price. Payment shall include all labor, materials, equipment, fuels, lubricating oils, software, hardware and incidentals to perform the above described work.

The estimated quantity provides for two changeable message signs at 60 days each.

The following estimated quantity has been carried to the general summary:

Item 614 – Portable Changeable Message Sign,
As Per Plan ..... **120 Days**

Item 614 – Law Enforcement Officer with Patrol Car for Assistance

Use of Law Enforcement Officers (LEOs) by contractors other than the uses specified below will not be permitted at project cost. LEOs should not be used where the OMUTCD intends that flaggers be used.

In addition to the requirements of CMS 614 and the latest edition of the OMUTCD, a uniformed LEO with an official patrol car (car with top-mounted emergency flashing lights and complete markings of the appropriate law enforcement agency) shall be provided for the following traffic control tasks:

- During the entire advance preparation and closure sequence where complete blockage of traffic is required.
- During a traffic signal installation when impacting the normal function of the signal or the flow of traffic or when traffic needs to be directed through an energized traffic signal contrary to the signal display (e.g., directing motorists through a red light).

In addition to the requirement of CMS 614 and the OMUTCD, a uniformed LEO with an official patrol car (car with top-mounted emergency flashing lights and complete markings of the appropriate law enforcement agency) should be provided for the following traffic control tasks:

- For lane closures: during initial set-up periods, tear down periods, substantial shifts of a closure point or when new lane closure arrangements are initiated for long-term lane closures/shifts (for the first and last day of major changes in traffic control setup). In general, LEOs should be positioned at the point of lane restriction or road closure and to manually control traffic movements through intersections in work zones.
- When construction vehicles are entering/exiting the work zone directly from/into an open lane of traffic. If a lane has been closed to provide an acceleration/deceleration lane for the vehicle, the LEO will not be required.

LEOs should not forgo their traffic control responsibilities to apprehend motorists for routine traffic violations. However, if a motorist's actions are considered to be reckless, then pursuit of the motorist is appropriate.

The LEOs work at the direction of the Contractor. The Contractor is responsible for securing the services of the LEOs with the appropriate agencies and communicating the intentions of the plans with respect to duties of the LEOs. The Engineer shall have final control over the LEOs' duties and placement, and will resolve any issues that may arise between the two parties.

The LEO shall report in to the Contractor prior to the start of the shift, in order to receive instructions regarding specific work assignments during his/her shift. The LEO is expected to stay at the project site for the entire duration of his/her shift. The LEO shall report to the Contractor at the end of his/her shift. Once the LEO has completed the duties described above and still has time remaining on his/her shift, the LEO may be asked to patrol through the work zone (with flashing lights off) or be placed at a location to deter motorists from speeding. Should it be necessary to leave the project site, the LEO shall notify the Engineer. The Contractor shall provide the LEO with a two-way communication device which shall be returned to the Contractor at the end of his/her shift.

LEOs (with patrol car) required by the traffic maintenance tasks above shall be paid for on a unit price (hourly) basis under Item 614, Law Enforcement Officer (With Patrol Car) for Assistance. The following estimated quantities have been carried to the General Summary.

Item 614 – Law Enforcement Officer
With Patrol Car for Assistance..... **500 Hours**

The hours paid shall include any minimum show-up time required by the law enforcement agency involved.

Any additional costs (administrative or otherwise) incurred by the Contractor to obtain the services of an LEO are included with the bid price for Item 614, Law Enforcement Officer with Patrol Car for Assistance.

Item 614 - Worksite Traffic Supervisor

Subject to approval of the Engineer, the Contractor shall employ and identify (someone other than the superintendent) a certified Worksite Traffic Supervisor (WTS) before starting work in the field. The WTS shall be certified from one of the following organizations:

1. American Traffic Safety Service Association (ATSSA), phone number 1-800-272-8772, certified Traffic Control Supervisor (TCS).

2. National Highway Institute, Design and Operation of Work Zone Traffic Control, phone number 1-703-235-0528.

3. The Ohio Contractors Association, Traffic Control Supervisor (OCA/TCS) work zone class, only if taken after May 5, 2004, phone number 1-800-229-1388.

4. Ohio Laborers' Training, Traffic Control Supervisors Class, phone number 1-740-599-7915.

A copy of each WTSs certification and 24-hour contact information shall be provided to the Engineer at the preconstruction conference. If the designated WTS will not be available full time (24/7) the Contractor may designate an alternate WTS to be available when the primary is off duty. Each WTS shall have a current WTS certification (with an expiration date no more than 5 years from the date of issue) from any of the approved organizations.

The WTS position has the responsibility of monitoring traffic control deficiencies for the entire work zone. The duties of the WTS are as follows:

1. Be available on a 24-hour per day basis, and be able to be on site for all emergency traffic control needs within one hour of notification by police or project staff and be prepared to effect corrective measures immediately on existing work zone traffic control devices.

2. Attend preconstruction and all project meetings where traffic control management is discussed.

3. Be available for meetings or discussions with the Engineer upon request or within 36 hours.

4. Coordinate a Traffic Incident Management meeting each year before construction work begins with ODOT and the Safety Forces that will respond to incidents on the project. Items to be discussed will be the:

    a. Traffic Incident Management Plan (TIMP);

    b. Emergency Response and Notification;

    c. Project work/phasing concerns (e.g., ramp closures); and

    d. Responders concerns.

5. Be aware of, and coordinate if necessary, all traffic control operations, including those of subcontractors and suppliers.

6. Coordinate project activities with all Law Enforcement Officers (LEOs). A WTS shall also be the main contact person with the LEOs while they are on the project.

7. Coordinate meetings with ODOT personnel, LEOs and other applicable entities before each plan phase switch to discuss work zone traffic control.

8. Ensure compliance with the contract documents for signs, barricades, temporary concrete barrier, pavement markings, portable message signs, and other traffic control devices on a daily basis; and facilitate any corrective action necessary.

9. Notify the Contractor of the need for cleaning and maintenance of all traffic control devices, including the covering and removal of inapplicable signs.

10. Inspect, evaluate, propose necessary modifications to, and document the effectiveness of, the traffic control devices and/or traffic operations on a DAILY BASIS (7 days a week). In addition, a weekly night inspection of the work zone setup for daytime work operations; and one daytime inspection per week for nighttime projects. This shall include (but not be limited to) documentation on the following project events:

    a. Initial traffic control setup (day and night review).

    b. Daily traffic control setup and removal.

    c. When construction staging causes a change in the traffic control setup.

    d. Crash occurrences within the construction area.

    e. Removal of traffic control devices at the end of a phase or project.

    f. All other emergency traffic control needs.

11. Complete the Department approved Long Term Inspection form (CA-D-8) after each inspection as required in # 10 and submit it to the Engineer the following work day. These reports shall include a checklist of all traffic control maintenance items to be reviewed. A copy of the form will be provided at the pre-construction meeting. Any deficiencies observed shall be noted, along with recommended corrective actions and the dates by which such corrections were, or will be, completed. A copy of this document can be found in current revision of the Department of Transportation Construction Inspection Forms Manual.

12. Verify that all flagging operations are being conducted per the Ohio Manual of Uniform Traffic Control Devices.

13. Have copies of the ODOT Temporary Traffic Control Manual and applicable standards and specifications included in the contract documents available at all times on the project.

14. Identify and contact all possible response personnel; preplan and keep an updated roster with phone numbers:

    a. Federal, State, and local transportation agencies (Traffic Management Center);

    b. Regional, county or local 911 dispatch; and

    c. Towing and recovery providers.

15. Comply with the provisions of OMUTCD Chapter 6I, Control of Traffic Through Traffic Incident Management Areas.

16. Propose a response/action plan to:

    a. Establish alternate route plans per the provided ODOT Playbook;

    b. Remove traffic demand from impacted roadway(s);

    c. Divert traffic to routes that can accommodate demands;

    d. Detour traffic away from sensitive areas (such as schools, hospitals, etc.);

    e. Discuss methods of determining a staging area for responders within or near the construction zone; and

    f. Discuss methods of developing ingress and egress sites within the construction zone.

    The response/action plan shall be submitted to ODOT for acceptance before the Contractor's first day of work.

17. Perform, at a minimum, the following functions in incident detection and verification:

    a. Call 911/ notify Traffic Management Center and provide the following:

        I. Location – including milepost number and direction of travel.
        II. Number and type of vehicles involved.
        III. Estimated extent of damage or injury.
        IV. Estimated number of patients involved.
        V. Any potential hazardous conditions.
        VI. The placard number on any hazardous materials placard from a safe distance.

    b. Initiate traffic management/provide traffic control.

    c. Assist motorist with disabled vehicles.

    d. Recommend roadway repair needs.

    e. Provide repair resources.

18. Attend post-incident debriefings if required.

The Department will deduct the prorated daily amount of the unit price bid for the WTS for any day on which the Contractor fails to perform the duties set forth above. Should the Contractor's failure to perform any of the duties described above result in a maintenance of traffic safety issue, the Department will deduct the prorated daily amount for Item 614 Maintenance of Traffic from the Contractor's next scheduled estimate.

If three or more failures to perform the duties set forth above occur, the WTS shall be immediately removed from the work in accordance with C&MS 108.05.

The following estimated quantity has been carried to the general summary for the Worksite Traffic Supervisor:

Item 614 – Worksite Traffic Supervisor ..... **4 Months**

Surface Condition Signs

The contractor shall erect a "Grooved Pavement" sign (W8-H15) 250 feet in advance of any section of roadway where traffic must travel on a planed surface. Ensure these signs are in place before opening the roadway to traffic. Erect these signs on each entrance ramp and at intersections of through routes to warn traffic of this surface condition. Payment shall be made under the lump sum for Item 614 – Maintaining Traffic.

Item 630 – Signing Misc.: Additional Signs, Ground Mounted, As Directed by the Engineer

When additional signing is needed to maintain traffic, the Contractor shall furnish the sign or signs as directed by the Engineer. These signs shall be ground mounted and meet all the specifications of the plan, proposal and current year CMS.

Payment for this item shall include, but not be limited to, the cost to furnish and erect the sign, including driving posts or other approved methods of sign support, maintaining the sign and removal of the sign. The following estimated quantity has been carried to the general summary to be used as directed by the Engineer:

Item 630 – Signing Misc.: Additional Signs, Ground Mounted, As Directed by the Engineer..... **300 Sq Ft**

Covering of Ground-Mounted Signs--General

When required by other items or incidentally to Item 614 – Maintaining Traffic, cover existing ground-mounted signs with plywood or OSB blanks (1/2" minimum thickness) covering 80% of the sign area and all of the sign legend. The use of low quality materials such as duct tape and black plastic is not permitted.

Item 614 Maintaining Traffic – Work Zone Speed Zone Signs for Freeway Resurfacings

A Work Zone Speed Zone is an approved speed limit revision to be implemented on this project to enhance the safety of both workers and motorists within the limits of active work zones. Work Zone Speed Zones are temporary in nature and will be in effect only during the times which lane closures are in place.

Implementation of Work Zone Speed Zones is required for all operations requiring the closure of one or more lanes to perform items of work detailed in the plans, except for lane closures needed to install pavement markings and raised pavement markers.

The District Speed Zone Coordinator will retain the official Work Zone Speed Limit Revision and justification report. The Project Engineer will retain all records furnished by the Worksite Traffic Supervisor indicating what signs were in place on every day that Work Zone Speed Zones were in place.

Furnish, install, maintain, cover during suspension of work, and subsequently remove Work Zone Speed Limit (R2-1) (50 mph speed limit) signs and supports within the work limits in accordance with the following requirements:

Cover or remove any existing speed limit signs within active work zone speed zones. Restore existing speed limit signs once lane closures are no longer in place.

Erect or uncover Work Zone Speed Limit signs no more than one hour before the start of work requiring lane closures. Remove or cover Speed Reduction and Work Zone Speed Limit signs and restore existing speed limit signs no later than one hour once lane closures are no longer in place.

Erect Speed Reduction (Speed Zone Ahead symbol) signs (W3-5) approximately 1250' in advance of the first Work Zone Speed Limit signs. Provide a dual installation where inside shoulder is greater than 5'.

Erect the first Work Zone Speed Limit signs approximately 500' in advance of a lane closure as depicted in SCD MT-95.30. Provide a dual installation where inside shoulder is greater than 5'. Repeat Work Zone Speed Limit signs every 1 mile for 60 and 55 mph zones and every one-half mile for 50 mph and 45 mph zones. Erect a Work Zone Speed Limit sign immediately after each open entrance ramp within the zone.

Erect signs indicating the resumption of the statutory speed limit at the end of the lane closure. Provide a dual installation. The Contractor may use signs and supports in used, but good condition, provided the signs meet current ODOT specifications. Sign faces shall be retro-reflectorized with Type G sheeting complying with the requirements of CMS 730.19.

Mount Work Zone Speed Limit signs on two No. 3 posts in accordance with Item 630, unless mounted on a temporary sign support per SCD MT 105.10.

Observe all requirements of the OMUTCD for Work Zone speed limit and related sign sizes, placement, supports, etc with two exceptions: 1) expressway size speed limit signs may be used on freeways and expressways, if necessary; 2) the height of signs mounted on portable supports should be the height required for ground-mounted signs but shall not be more than 1 foot lower than the height required by the OMUTCD, or as directed by the Engineer. Portable supports should not be used for more than 3 consecutive days.

Provide Work Zone Speed Limit signs and supports and cover, remove, and restore existing Speed Limit or Minimum Speed Limit signs incidental to Item 614 Maintaining Traffic.

The following table provides details on work zone speed zones approved for use on this project.

WZSZ Revision Number	County & Route	SLM		Phase/ Part & Direction	Approved Speed Limit (mph)	Specific Warranting Conditions and Factors
		From	To			
WZ-65159	CUY-271	Varies[A]	Varies[A]	All	50 MPH	Lane closures necessary to improve highway.

[A]The begin and end point of the WZSZ will vary within the project limits based on where lane reductions are in place to perform work required by the plans.

Item 614 Work Zone Increased Penalties Sign

R11-H5A-48 signs shall be furnished, erected, and maintained in good condition and/or replaced as necessary and subsequently removed by the Contractor. Signs shall be mounted at the appropriate offsets and elevations as prescribed by the Ohio Manual of Uniform Traffic Control Devices. They shall be maintained on supports meeting current safety criteria.

Uncover or place Work Zone Increased Penalties signs once the pavement surface is under construction for overlay removal, pavement repair, and placement of intermediate and surface courses. Uncover or place increased penalties signs no more than four hours before the actual start of work. Do not cover signs when lanes are re-opened to traffic subject to the provisions of the "Schedule of Through Lanes to be Maintained." Cover or remove signs between October 15 and April 1 each year. Remove signs once all work requiring lane closures is complete.

The signs shall be dual mounted. The first sign shall be placed between the Road Work Ahead (W20-1) sign and the next sign in the sequence. Signs shall be erected on each entrance ramp and every 2 miles (3 kilometers) through the construction work limits.

The Contractor may use signs and supports in used, but good condition provided the signs meet current ODOT specifications. Sign faces shall be reflectorized with Type G sheeting complying with the requirements of CMS 730.19.

Work Zone Increased Penalties signs and supports will be measured as the number of sign installations, including the sign and necessary supports. If a sign and support combination is removed and re-erected at another location as directed by the Engineer, it shall be considered another unit.

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 furnishing, erecting, maintaining, covering during suspension of work, and removal of the sign and support.

Item 614 - Work Zone Increased Penalties Sign..... **20 Each**

Item 614 Worksite Traffic Supervisor

In addition to the plan requirements for Worksite Traffic Supervisor, complete a department-approved inspection form for each day a work zone speed zone is implemented. In the inspection report, note the disposition of all existing and work zone speed limit signing, including the actual times that the work zone speed limit signs were in place each day. Submit these daily inspection reports to the Engineer at least as often as the weekly inspection reports required in Item 9 of the Work Zone Supervisor plan note.

SHEET NUMBER												PLAN SPLITS		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
7	8	9	10	11	14	15	16	19	20	21	25	#1							
												01/IMS/PV							
																		ROADWAY	
										2381		2,381		202	30000	2,381	SQ FT	WALK REMOVED	
										24		24		202	30900	24	SQ YD	PORTION OF TRAFFIC ISLAND REMOVED	
										380		380		202	32000	380	FT	CURB REMOVED	
	690											690		209	60201	690	STATION	LINEAR GRADING, AS PER PLAN	8
										548		548		608	10000	548	SQ FT	4" CONCRETE WALK	
										160		160		608	52011	160	SQ FT	CURB RAMP, TYPE A1, AS PER PLAN	8
										294		294		608	52021	294	SQ FT	CURB RAMP, TYPE A2, AS PER PLAN	8
										704		704		608	52031	704	SQ FT	CURB RAMP, TYPE B1, AS PER PLAN	8
										432		432		608	52045	432	SQ FT	CURB RAMP, TYPE B3, AS PER PLAN	8
																		EROSION CONTROL	
												LUMP		659	98700	LUMP		SEEDING, MISC.: SEEDING AND MULCHING	8
												1,000		832	30000	1,000	EACH	EROSION CONTROL	
																		DRAINAGE	
	22											22		611	98631	22	EACH	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	8
	2											2		611	98635	2	EACH	CATCH BASIN RECONSTRUCTED TO GRADE, AS PER PLAN	8
	11											11		611	99655	11	EACH	MANHOLE ADJUSTED TO GRADE, AS PER PLAN	8
	1											1		611	99661	1	EACH	MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN	8
	5000											5,000		SPECIAL	61199820	5,000	POUND	MISCELLANEOUS METAL	8
																		PAVEMENT	
		750										750		251	01001	750	SQ YD	PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN, A	9
		1500										1,500		251	01001	1,500	SQ YD	PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN, B	9
		500										500		251	01001	500	SQ YD	PARTIAL DEPTH PAVEMENT REPAIR, AS PER PLAN, C	9
								299915	26898			326,813		254	01001	326,813	SQ YD	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN	9
								22494	2017			24,511		SPECIAL	40720500	24,511	GALLON	TACK COAT, TRACKLESS TACK	19
								12496				12,496		442	10001	12,496	CU YD	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446), AS PER PLAN, A	9
									1121			1,121		442	10001	1,121	CU YD	ASPHALT CONCRETE SURFACE COURSE, 12.5 MM, TYPE A (446), AS PER PLAN, B	9
										212		212		609	26000	212	FT	CURB, TYPE 6	
										6		6		609	70000	6	SQ YD	4" CONCRETE MEDIAN	
			425									425		617	10101	425	CU YD	COMPACTED AGGREGATE, AS PER PLAN	10
			14.37									14.37		618	40600	14.37	MILE	RUMBLE STRIPS, (ASPHALT CONCRETE)	
																		TRAFFIC CONTROL	
											1737	1,737		621	00100	1,737	EACH	RPM	
				1700								1,700		621	54000	1,700	EACH	RAISED PAVEMENT MARKER REMOVED	
							300					300		630	97800	300	SQ FT	SIGNING, MISC.: ADDITIONAL SIGNS, GROUND MOUNTED, AS DIRECTED BY THE ENGINEER	16
											20.49	20.49		646	10010	20.49	MILE	EDGE LINE, 6"	
											19.06	19.06		646	10110	19.06	MILE	LANE LINE, 6"	
											2663	2,663		646	10300	2,663	FT	CHANNELIZING LINE, 8"	
											18819	18,819		646	10310	18,819	FT	CHANNELIZING LINE, 12"	
											270	270		646	10400	270	FT	STOP LINE	
											1330	1,330		646	10500	1,330	FT	CROSSWALK LINE	
											840	840		646	10600	840	FT	TRANSVERSE/DIAGONAL LINE	
											38	38		646	20300	38	EACH	LANE ARROW	
											2	2		646	20350	2	EACH	LANE REDUCTION ARROW	
											6	6		646	20410	6	EACH	WORD ON PAVEMENT, 96"	
											9528	9,528		646	20504	9,528	FT	DOTTED LINE, 6"	
											3745	3,745		646	20510	3,745	FT	DOTTED LINE, 12"	
											1	1		646	98000	1	EACH	PAVEMENT MARKING, MISC.: WRONG WAY ARROW	11

CALCULATED BPE
CHECKED EMK

General Summary - 1 of 2

CUY-271-6.04

SHEET NUMBER												PLAN SPLITS		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
7	8	9	10	11	14	15	16	19	20	21	25	#1							
												01/IMS/PV							
																		TRAFFIC SIGNALS	
				9								9		632	26501	9	EACH	DETECTOR LOOP, AS PER PLAN	11
																		MAINTENANCE OF TRAFFIC	
					500							500		614	11110	500	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
						4						4		614	11500	4	MONTH	WORKSITE TRAFFIC SUPERVISOR	
							20					20		614	12484	20	EACH	WORK ZONE INCREASED PENALTIES SIGN	
					50							50		614	13001	50	CU YD	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC, AS PER PLAN	14
					120							120		614	18401	120	DAY	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	14
					37.64							37.64		614	20100	37.64	MILE	WORK ZONE LANE LINE, CLASS I, 642 PAINT	
					36.46							36.46		614	22100	36.46	MILE	WORK ZONE EDGE LINE, CLASS I, 642 PAINT	
					39172							39,172		614	23200	39,172	FT	WORK ZONE CHANNELIZING LINE, CLASS I, 642 PAINT	
					26546							26,546		614	24200	26,546	FT	WORK ZONE DOTTED LINE, CLASS I, 642 PAINT	
					340							340		614	26200	340	FT	WORK ZONE STOP LINE, CLASS I, 642 PAINT	
					1830							1,830		614	27200	1,830	FT	WORK ZONE CROSSWALK LINE, CLASS I, 642 PAINT	
					28							28		614	30200	28	EACH	WORK ZONE ARROW, CLASS I, 642 PAINT	
																		INCIDENTALS	
												LUMP		614	11000	LUMP		MAINTAINING TRAFFIC	
6												6		619	16011	6	MONTH	FIELD OFFICE, TYPE B, AS PER PLAN	7
												LUMP		623	10001	LUMP		CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN	7
												LUMP		624	10000	LUMP		MOBILIZATION	
												LUMP		SPECIAL	10830000	LUMP		CPM PROGRESS SCHEDULE SHORT DURATION PROJECTS	PN105

CALCULATED BPE
CHECKED EMK

General Summary - 2 of 2

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STATION TO STATION		LENGTH	BEGIN WIDTH	ENDING WIDTH	AVERAGE WIDTH	AREA	254 PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 1-1/2" (AVG.)	407 Tack Coat, Trackless Tack	442 ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), AS PER PLAN, A, 1-1/2"
		FT.	FT.	FT.	FT.	SQ. YD.	SQ. YD.	GALLON	CU. YD.
IR-271 NORTHBOUND									
340+05.14	341+55.58	150.44	44.0	44.0	44.0	735	735	55	31
341+55.58	355+80.61	1425.03	103.0	68.0	85.5	13538	13538	1015	564
355+80.61	357+37.07	156.46	68.0	68.0	68.0	1182	1182	89	49
357+37.07	359+39.00	201.93	100.3	89.0	94.6	2124	2124	159	88
359+39.00	359+89.00	50.00	89.0	91.0	90.0	500	500	38	21
359+89.00	364+29.00	440.00	91.0	78.0	84.5	4131	4131	310	172
364+29.00	365+09.00	80.00	78.0	80.0	79.0	702	702	53	29
365+09.00	378+75.01	1366.01	80.0	80.0	80.0	12142	12142	911	506
378+75.01	386+55.26	780.25	80.0	106.0	93.0	8063	8063	605	336
386+55.26	395+90.78	935.52	68.0	68.0	68.0	7068	7068	530	295
395+90.78	397+52.75	161.97	103.0	90.3	96.7	1740	1740	130	72
BRIDGE NO. CUY-271-0720R									
400+07.76	408+17.75	809.99	85.6	66.0	75.8	6820	6820	512	284
408+17.75	409+82.11	164.36	66.0	66.0	66.0	1205	1205	90	50
409+82.11	411+32.42	150.31	102.4	89.0	95.7	1598	1598	120	67
411+32.42	411+82.42	50.00	89.0	91.0	90.0	500	500	38	21
411+82.42	419+31.80	749.38	91.0	78.0	84.5	7036	7036	528	293
419+31.80	420+31.80	100.00	78.0	80.0	79.0	878	878	66	37
420+31.80	423+86.91	355.11	80.0	80.0	80.0	3157	3157	237	132
423+86.91	424+86.91	100.00	80.0	78.0	79.0	878	878	66	37
424+86.91	431+86.91	700.00	78.0	114.0	96.0	7467	7467	560	311
431+86.91	440+12.07	825.16	68.0	68.0	68.0	6235	6235	468	260
440+12.07	441+57.62	145.55	105.4	91.0	98.2	1588	1588	119	66
441+57.62	451+07.62	950.00	91.0	67.3	79.1	8352	8352	626	348
451+07.62	451+57.62	50.00	67.3	68.0	67.6	376	376	28	16
451+57.62	458+27.69	670.07	68.0	68.0	68.0	5063	5063	380	211
458+27.69	460+80.91	253.22	101.0	91.0	96.0	2701	2701	203	113
460+80.91	470+80.91	1000.00	91.0	68.0	79.5	8833	8833	663	368
470+80.91	485+34.97	1454.06	68.0	68.0	68.0	10986	10986	824	458
BRIDGE NO. CUY-271-0885R									
487+48.99	492+13.51	464.52	68.0	68.0	68.0	3510	3510	263	146
492+13.51	499+33.51	720.00	68.0	56.0	62.0	4960	4960	372	207
499+33.51	501+32.44	198.93	56.0	56.0	56.0	1238	1238	93	52
BRIDGE NO. CUY-271-0916R									
503+12.46	506+54.43	341.97	56.0	56.0	56.0	2128	2128	160	89
BRIDGE NO. CUY-271-0926R									
508+34.53	509+50.00	115.47	56.0	66.0	61.0	783	783	59	33
509+50.00	511+60.90	210.90	66.0	66.0	66.0	1547	1547	116	64
511+60.90	515+48.10	387.20	66.0	79.5	72.8	3130	3130	235	130
515+48.10	517+85.00	236.90	79.5	93.0	86.3	2270	2270	170	95
517+85.00	532+68.89	1483.89	56.0	56.0	56.0	9233	9233	692	385
TOTALS, LEFT COLUMN							154,395	11,580	6,433

STATION TO STATION		LENGTH	BEGIN WIDTH	ENDING WIDTH	AVERAGE WIDTH	AREA	254 PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 1-1/2" (AVG.)	407 Tack Coat, Trackless Tack	442 ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), AS PER PLAN, A, 1-1/2"
		FT.	FT.	FT.	FT.	SQ. YD.	SQ. YD.	GALLON	CU. YD.
IR-271 SOUTHBOUND									
340+05.14	341+57.27	152.1	44.0	44.0	44.0	744	744	56	31
341+57.27	351+12.65	955.4	104.0	68.0	86.0	9129	9129	685	380
351+12.65	362+81.31	1168.7	68.0	68.0	68.0	8830	8830	662	368
362+81.31	365+81.56	300.3	107.0	80.0	93.5	3119	3119	234	130
365+81.56	370+00.00	418.4	80.0	80.0	80.0	3719	3719	279	155
370+00.00	371+00.00	100.0	80.0	72.0	76.0	844	844	63	35
371+00.00	382+40.00	1140.0	70.0	70.0	70.0	8867	8867	665	369
382+40.00	386+60.00	420.0	70.0	76.5	73.3	3418	3418	256	142
386+60.00	387+60.00	100.0	76.5	79.0	77.8	864	864	65	36
387+60.00	389+76.71	216.7	79.0	98.4	88.7	2135	2135	160	89
389+76.71	397+52.75	776.0	56.0	56.0	56.0	4829	4829	362	201
BRIDGE NO. CUY-271-0720L									
400+07.76	411+44.66	1136.9	56.0	56.0	56.0	7074	7074	531	295
411+44.66	417+00.01	555.3	93.0	66.0	79.5	4906	4906	368	204
417+00.01	432+78.11	1578.1	66.0	66.0	66.0	11573	11573	868	482
432+78.11	433+78.11	100.0	66.0	70.5	68.3	758	758	57	32
433+78.11	438+00.00	421.9	70.5	81.0	75.8	3551	3551	266	148
438+00.00	441+94.65	394.7	81.0	95.8	88.4	3875	3875	291	161
441+94.65	443+04.27	109.6	95.8	96.3	96.0	1169	1169	88	49
443+04.27	449+98.10	693.8	66.3	81.0	73.6	5676	5676	426	236
449+98.10	454+16.39	418.3	81.0	88.0	84.5	3927	3927	295	164
454+16.39	461+43.38	727.0	56.0	56.0	56.0	4523	4523	339	188
461+43.38	462+45.32	101.9	56.0	60.0	58.0	657	657	49	27
462+45.32	466+98.16	452.8	95.0	68.0	81.5	4101	4101	308	171
466+98.16	485+34.97	1836.8	68.0	68.0	68.0	13878	13878	1041	578
BRIDGE NO. CUY-271-0885L									
487+48.99	490+00.00	251.0	68.0	68.0	68.0	1897	1897	142	79
490+00.00	491+00.00	100.0	68.0	56.0	62.0	689	689	52	29
491+00.00	500+00.00	900.0	56.0	56.0	56.0	5600	5600	420	233
500+00.00	500+50.00	50.0	56.0	54.8	55.4	308	308	23	13
500+50.00	501+32.44	82.4	54.8	55.8	55.3	507	507	38	21
BRIDGE NO. CUY-271-0916L									
503+12.46	506+54.43	342.0	58.9	64.6	61.7	2346	2346	176	98
BRIDGE NO. CUY-271-0926L									
508+34.53	512+74.55	440.0	67.6	75.2	71.4	3492	3492	262	145
512+74.55	513+74.55	100.0	75.2	72.9	74.1	823	823	62	34
513+74.55	515+00.00	125.4	72.9	75.0	74.0	1031	1031	77	43
515+00.00	515+74.55	74.6	75.0	78.5	76.8	636	636	48	26
515+74.55	541+50.00	2575.5	56.0	56.0	56.0	16025	16025	1202	668
TOTALS, RIGHT COLUMN							145,520	10,914	6,063
TOTALS, LEFT COLUMN							154,395	11,580	6,433
TOTALS CARRIED TO GENERAL SUMMARY							299,915	22,494	12,496

CALCULATED BPE
CHECKED EMK

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STATION TO STATION		LENGTH	BEGIN WIDTH	ENDING WIDTH	AVERAGE WIDTH	AREA	254 PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 1-1/2" (AVG.)	407 Tack Coat, Trackless Tack	442 ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), AS PER PLAN, B, 1-1/2"
		FT.	FT.	FT.	FT.	SQ. YD.	SQ. YD.	GALLON	CU. YD.
RAMP G-1									
57+65.35	60+00.00	234.65			CADD	1010	1010	76	42
60+00.00	62+00.00	200.00	25.0	25.0	25.0	556	556	42	23
62+00.00	62+87.00	87.00	25.0	29.0	27.0	261	261	20	11
RAMP G-2									
0+54.87	3+65.30	279.08			CADD	870	870	65	36
3+65.30	13+28.79	963.49	25.0	25.0	25.0	2676	2676	201	112
RAMP F-1									
2+00.67	3+00.67	100.00	26.0	22.0	24.0	267	267	20	11
3+00.67	12+22.39	921.72	22.0	22.0	22.0	2253	2253	169	94
RAMP F-2									
2+46.38	3+46.38	100.0	24.0	22.0	23.0	256	256	19	11
3+46.38	8+21.80	475.4	22.0	22.0	22.0	1162	1162	87	48
STA. 8+21.80 (BK) = STA. 52+61.22 (AH)									
52+61.22	53+38.63	77.4	22.0	25.0	23.5	202	202	15	8
53+38.63	58+28.70	490.1	25.0	25.0	25.0	1361	1361	102	57
RAMP F-3									
4+53.07	5+53.07	100.0	31.0	22.0	26.5	294	294	22	12
5+53.07	7+20.00	166.9	22.0	22.0	22.0	408	408	31	17
7+20.00	15+20.00	800.0	22.0	42.0	32.0	2844	2844	213	119
15+20.00	16+45.35	125.4	42.0	42.0	42.0	585	585	44	24
16+45.35	17+31.45	86.1			CADD	460	460	34	19
RAMP F-4									
11+85.81	17+57.50	571.69	35.0	35.0	35.0	2223	2223	167	93
STA. 17+57.50 (BK) = STA. 9+64.08 (AH)									
9+64.08	11+25.00	160.92	35.0	35.0	35.0	626	626	47	26
11+25.00	13+07.74	182.74	35.0	39.6	37.3	757	757	57	32
13+07.74	13+37.74	30.00	39.6	35.3	37.4	125	125	9	5
13+37.74	16+05.00	267.26	35.3	42.0	38.7	1148	1148	86	48
16+05.00	17+57.40	152.40	42.0	42.0	42.0	711	711	53	30
17+57.40	18+37.94	80.54			CADD	448	448	34	19
TOTALS, LEFT COLUMN							21,503	1,613	896

STATION TO STATION		LENGTH	BEGIN WIDTH	ENDING WIDTH	AVERAGE WIDTH	AREA	254 PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN, 1-1/2" (AVG.)	407 Tack Coat, Trackless Tack	442 ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (446), AS PER PLAN, B, 1-1/2"
		FT.	FT.	FT.	FT.	SQ. YD.	SQ. YD.	GALLON	CU. YD.
RAMP F-5									
2+12.20	3+12.20	100.00	21.0	19.0	20.0	222	222	17	9
3+12.20	12+01.06	888.86	22.0	22.0	22.0	2173	2173	163	91
12+01.06	12+85.24	84.18	22.0	24.0	23.0	215	215	16	9
RAMP F-6									
1+63.35	2+63.35	100.00	24.0	22.0	23.0	256	256	19	11
2+63.35	9+67.78	704.43	22.0	22.0	22.0	1722	1722	129	72
STA. 9+67.78 (BK) = STA. 37+38.97 (AH)									
37+38.97	37+58.22	19.25	22.0	22.0	22.0	47	47	4	2
37+58.22	38+38.22	80.00	22.0	27.0	24.5	218	218	16	9
38+38.22	40+18.78	180.56	27.0	27.0	27.0	542	542	41	23
TOTALS, RIGHT COLUMN							5,394	405	225
TOTALS, LEFT COLUMN							21,503	1,613	896
TOTALS CARRIED TO GENERAL SUMMARY							26,898	2,017	1,121

CALCULATED BPE
CHECKED EMK

Pavement Subsummary - 2 of 2

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REF. NO.	SHEET NO.	LOCATION	202 WALK REMOVED	202 PORTION OF TRAFFIC ISLAND REMOVED	202 CURB REMOVED	608 4" CONCRETE WALK	608 CURB RAMP, TYPE A1, APP	608 CURB RAMP, TYPE A2, APP	608 CURB RAMP, TYPE B1, APP	608 CURB RAMP, TYPE B3, APP	609 CURB, TYPE 6	609 4" CONCRETE MEDIAN
			SQ. FT.	SQ. YD.	FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	SQ. FT.	FT.	SQ. YD.
		RAMP G-2										
CR-1	26	Richmond Rd, S Corner	136		38	36				136	7	
CR-2	26	Richmond Rd, S Corner of Island		8			72					
CR-3	26	Richmond Rd, N Corner of Island		10			88					
CR-4	26	Richmond Rd, N Corner	71		19					71	4	
		RAMP G-1										
CR-5	27	Richmond Rd, SE Corner	118		18	36				60	9	
CR-6	27	Richmond Rd, NE Corner	151		18	36				59	8	
CR-7	27	College Driveway, SW Corner	114		18	36				52	10	
CR-8	27	College Driveway, NW Corner	105		14	36				54	6	
CR-9	27	Richmond Rd, NW Corner	107		23			87			16	
		RAMP F-4										
CR-10	34	Chagrin Blvd, SE Corner	188		15	36			93		8	
CR-11	34	Chagrin Blvd, SW Corner	152		15	36		67			9	
		RAMP F-6										
CR-12	34	Chagrin Blvd, SE Corner	161		15	36			83		9	
CR-13	34	Chagrin Blvd, SW Corner	133		28	80			54		16	
		RAMP F-2										
CR-14	34	Chagrin Blvd, NE Corner	109		29	36			79		16	
CR-15	34	Chagrin Blvd, NW Corner	183		10	36			110		4	
		RAMP F-1										
CR-16	36	Chagrin Blvd, SE Corner	117	6	44	36			84		38	6
CR-17	36	Chagrin Blvd, SW Corner	75		26			78			20	
		RAMP F-5										
CR-18	36	Chagrin Blvd, NE Corner	195		28	36			94		22	
CR-19	36	Chagrin Blvd, NW Corner	199		12	36			107		6	
		RAMP F-3										
CR-20	36	Chagrin Blvd, NE Corner	67		10			62			4	
TOTALS CARRIED TO GENERAL SUMMARY			2381	24	380	548	160	294	704	432	212	6

CALCULATED BPE CHECKED EMK

Curb Ramp Subsummary

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REF. NO.	SHEET NO.	STATION TO STATION		LENGTH	646														621		
					EDGE LINE, 6" (YELLOW)	EDGE LINE, 6" (WHITE)	LANE LINE, 6"	CHANNELIZING LINE, 8"	CHANNELIZING LINE, 12"	STOP LINE	CROSSWALK LINE	TRANSVERSE/DIAGONAL LINE	LANE ARROW	LANE REDUCTION ARROW	WORD ON PAVEMENT, 96"	DOTTED LINE, 6"	DOTTED LINE, 12"	PAVEMENT MARKING MISC.: WRONG WAY ARROW	RPM (WHITE)	RPM (WHITE/RED)	RPM (YELLOW/RED)
				FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	EACH	EACH	EACH	FT.	FT.	EACH	EACH	EACH	EACH
		IR-271 NORTHBOUND																			
		340+05.14	341+55.58	150	150	150	150												2		
		341+55.58	351+10.00	954	954	954	2863		1909										36		
		351+10.00	357+37.07	627	627	627	1881												24		
		357+37.07	365+09.00	772	772	772	2316		1544										29	20	
		365+09.00	380+00.00	1491	1491	1491	4473										1491		75		
		380+00.00	383+26.00	326	326	326	978		326										13	9	
		383+26.00	386+55.26	329	329	329	988		988			140							13	25	
		386+55.26	395+90.78	936	936	936	2807												36		
		395+90.78	400+05.00	414	414	414	1243		828										16	11	
		400+05.00	408+18.00	813	813	813	2439									813			31		
		408+18.00	409+82.11	164	164	164	492												7		
		409+82.11	416+00.00	618	618	618	1854		1236										24	16	
		416+00.00	424+00.00	800	800	800	2400										800		40		
		424+00.00	428+55.00	455	455	455	1365		455										18	12	
		428+55.00	431+86.91	332	332	332	996		996			140							13	25	
		431+86.91	440+12.07	825	825	825	2475												31		
		440+12.07	442+02.00	190	190	190	570		380										8	5	
		442+02.00	451+58.00	956	956	956	2868									956			36		
		451+58.00	458+27.69	670	670	670	2009												26		
		458+27.69	462+00.00	372	372	372	1117		745										14	10	
		462+00.00	470+81.00	881	881	881	2643									881			34		
		470+81.00	492+14.00	2133	2133	2133	6399							2					80		
		492+14.00	499+34.00	720	720	720	1440									720			18		
		499+34.00	508+50.00	916	916	916	1832												23		
		508+50.00	514+14.00	564	564	564	1128									564			15		
		514+14.00	517+85.00	371	371	371	742		742			170							10	19	
		517+85.00	518+20.00	35	70	70	70												1		
		518+20.00	532+68.89	1449	1449	1449	2898												37		
		TOTALS CARRIED TO SHEET 25			19299	19299	53435		10148			450		2		3934	2291		710	152	

CALCULATED BPE CHECKED EMK

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REF. NO.	SHEET NO.	STATION TO STATION		LENGTH	646														621		
					EDGE LINE, 6" (YELLOW)	EDGE LINE, 6" (WHITE)	LANE LINE, 6"	CHANNELIZING LINE, 8"	CHANNELIZING LINE, 12"	STOP LINE	CROSSWALK LINE	TRANSVERSE/DIAGONAL LINE	LANE ARROW	LANE REDUCTION ARROW	WORD ON PAVEMENT, 96"	DOTTED LINE, 6"	DOTTED LINE, 12"	PAVEMENT MARKING MISC.: WRONG WAY ARROW	RPM (WHITE)	RPM (WHITE/RED)	RPM (YELLOW/RED)
				FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	EACH	EACH	EACH	FT.	FT.	EACH	EACH	EACH	EACH
		IR-271 SOUTHBOUND																			
		340+05.14	341+57.27	152	152	152	152												2		
		341+57.27	345+62.00	405	405	405	1214		809			160							16	21	
		345+62.00	362+81.31	1719	1719	1719	5158												65		
		362+81.31	366+18.00	337	337	337	1010		673										13	17	
		366+18.00	371+46.00	528	528	528	1584									528			20		
		371+46.00	380+00.00	854	854	854	2562												33		
		380+00.00	389+76.71	977	977	977	1953		1953										25	25	
		389+76.71	411+44.66	2168	2168	2168	4336												55		
		411+44.66	414+86.00	341	341	341	683		683			120							9	18	
		414+86.00	418+25.00	339	339	339	678		339										9	9	
		418+25.00	432+79.00	1454	1454	1454	2908										1454		55		
		432+79.00	438+19.00	540	540	540	1080		1080										14	14	
		438+19.00	443+04.27	485	485	485	971		971							485			13	13	
		443+04.27	448+84.00	580	580	580	1159									580			15		
		448+84.00	454+16.39	532	532	532	1065		1065										14	14	
		454+16.39	462+45.32	829	829	829	1658												21		
		462+45.32	465+24.00	279	279	279	557		557										7	14	
		465+24.00	491+00.00	2576	2576	2576	5152									2576			65		
		491+00.00	500+00.00	900	900	900	1800												23		
		500+00.00	514+25.00	1425	1425	1425	2850									1425			36		
		514+25.00	515+74.55	150	150	150	299		299										4	4	
		515+74.55	518+15.55	241		241	482		241										7		
		518+15.55	541+50.00	2334	2334	2334	4669												59		
		TOTALS CARRIED TO SHEET 25			19904	20145	43980		8671			280				5594	1454		580	149	

CALCULATED BPE
CHECKED EMK

Traffic Control Subsummary - 2 of 4

CUY-271-6.04

REF. NO.	SHEET NO.	STATION TO STATION	LENGTH	646														621		
				EDGE LINE, 6" (YELLOW)	EDGE LINE, 6" (WHITE)	LANE LINE, 6"	CHANNELIZING LINE, 8"	CHANNELIZING LINE, 12"	STOP LINE	CROSSWALK LINE	TRANSVERSE/DIAGONAL LINE	LANE ARROW	LANE REDUCTION ARROW	WORD ON PAVEMENT, 96"	DOTTED LINE, 6"	DOTTED LINE, 12"	PAVEMENT MARKING MISC.: WRONG WAY ARROW	RPM (WHITE)	RPM (WHITE/RED)	RPM (YELLOW/RED)
			FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	EACH	EACH	EACH	FT.	FT.	EACH	EACH	EACH	EACH
		RAMP G-1																		
		57+65.35 58+81.00	116	116	116		116		50	200	110	2								2
		58+81.00 62+87.00	406	406	406												1			6
		RAMP G-2																		
		0+54.87 1+64.62	110	110	110					250										2
		STA. 1+64.62 (BK) = STA. 1+95.97 (AH)																		
		1+95.97 13+28.79	1133	1133	1133															15
		RAMP N-EW																		
		86+64.49 94+65.97	801	801	801	801														
		94+65.97 96+01.57	136	136	136	271														
		96+01.57 101+53.43	552	552	552		1104		60	130		12		3						
		RAMP EW-S																		
		9+71.81 17+51.30	779	779	779					75										
		RAMP E-N																		
		84+30.35 95+90.30	1160	1160	1160					55										
		RAMP S-WE																		
		98+90.20 102+86.30	396	396	396		792		40	100		12		3						
		102+86.30 105+00.00	214	214	214	214														
		105+00.00 111+50.44	650	650	650															
		RAMP W-N																		
		97+11.75 109+81.04	1269	1269	1269					55										
		RAMP F-1																		
		2+00.67 12+22.39	1022	1022	1022					45										13
		RAMP F-2																		
		2+46.38 8+21.80	575	575	575					50										8
		STA. 8+21.80 (BK) = STA. 52+61.22 (AH)																		
		52+61.22 58+28.70	567	567	567															8
		RAMP F-3																		
		4+53.07 10+40.00	587	587	587															8
		10+40.00 15+07.40	467	467	467	467													6	6
		15+07.40 17+31.45	224	224	224		448		60	135		6								3
TOTALS CARRIED TO SHEET 25				11165	11165	1754	2460		210	1095	110	32		6			1		6	71

CALCULATED BPE
CHECKED EMK

Traffic Control Subsummary - 3 of 4

CUY-271-6.04

REF. NO.	SHEET NO.	STATION TO STATION	LENGTH	646														621		
				EDGE LINE, 6" (YELLOW)	EDGE LINE, 6" (WHITE)	LANE LINE, 6"	CHANNELIZING LINE, 8"	CHANNELIZING LINE, 12"	STOP LINE	CROSSWALK LINE	TRANSVERSE/DIAGONAL LINE	LANE ARROW	LANE REDUCTION ARROW	WORD ON PAVEMENT, 96"	DOTTED LINE, 6"	DOTTED LINE, 12"	PAVEMENT MARKING MISC.: WRONG WAY ARROW	RPM (WHITE)	RPM (WHITE/RED)	RPM (YELLOW/RED)
			FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	EACH	EACH	EACH	FT.	FT.	EACH	EACH	EACH	EACH
		RAMP F-4																		
		11+85.81 17+57.50	572	572	572	572													8	8
		STA. 17+57.50 (BK) = STA. 9+64.08 (AH)																		
		9+64.08 16+07.00	643	643	643	643													9	9
		16+07.00 17+36.32	129	129	129	259													2	2
		17+36.32 18+37.94	102	102	102		203		60	135		6								2
		RAMP F-5																		
		2+12.20 12+85.24	1073	1073	1073					50										14
		RAMP F-6																		
		1+63.35 9+67.78	804	804	804					50										11
		STA. 9+67.78 (BK) = STA. 37+38.97 (AH)																		
		37+38.97 40+18.78	280	280	280															4
TOTALS FROM THIS SHEET				3603	3603	1473	203		60	235		6							19	50
TOTALS CARRIED FROM SHEET 22				19299	19299	53435		10148			450		2		3934	2291		710	152	
TOTALS CARRIED FROM SHEET 23				19904	20145	43980		8671			280				5594	1454		580	149	
TOTALS CARRIED FROM SHEET 24				11165	11165	1754	2460		210	1095	110	32		6			1		6	71
TOTALS CARRIED TO GENERAL SUMMARY				20.49 MI		19.06 MI	2663	18819	270	1330	840	38	2	6	9528	3745	1	1737		

CALCULATED BPE
CHECKED EMK

Traffic Control Subsummary - 4 of 4

CUY-271-6.04

25
41

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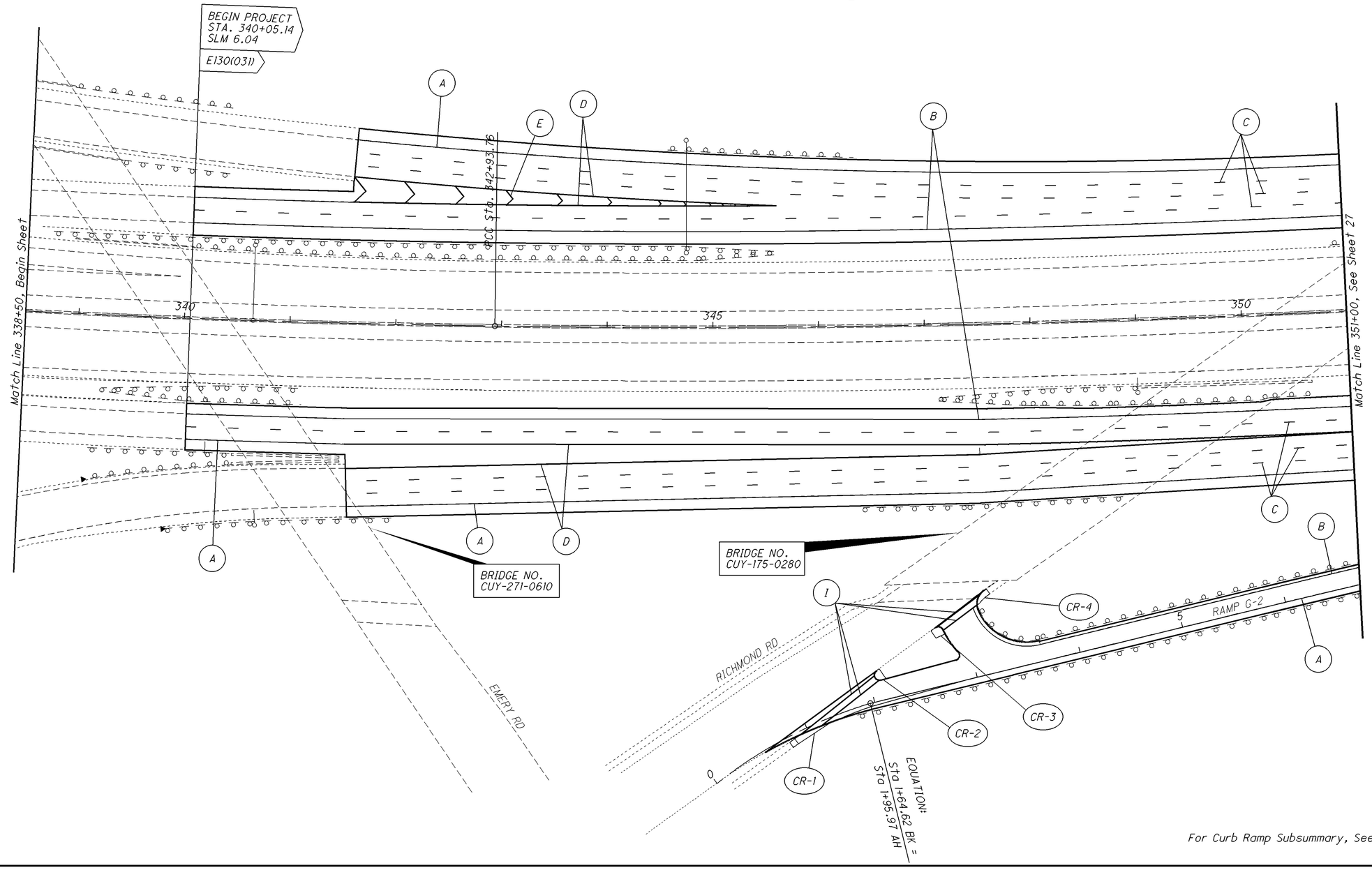
LEGEND

(A) EDGE LINE (WHITE)	(F) DOTTED LINE, 6"	(K) CHANNELIZING LINE, 8"
(B) EDGE LINE (YELLOW)	(G) DOTTED LINE, 12"	(L) WORD "ONLY" ON PAVEMENT
(C) LANE LINE	(H) STOP LINE	(M) WRONG WAY ARROW
(D) CHANNELIZING LINE, 12"	(I) CROSSWALK LINE	(N) LANE REDUCTION ARROW
(E) TRANSVERSE LINE (WHTIE)	(J) LANE ARROW	



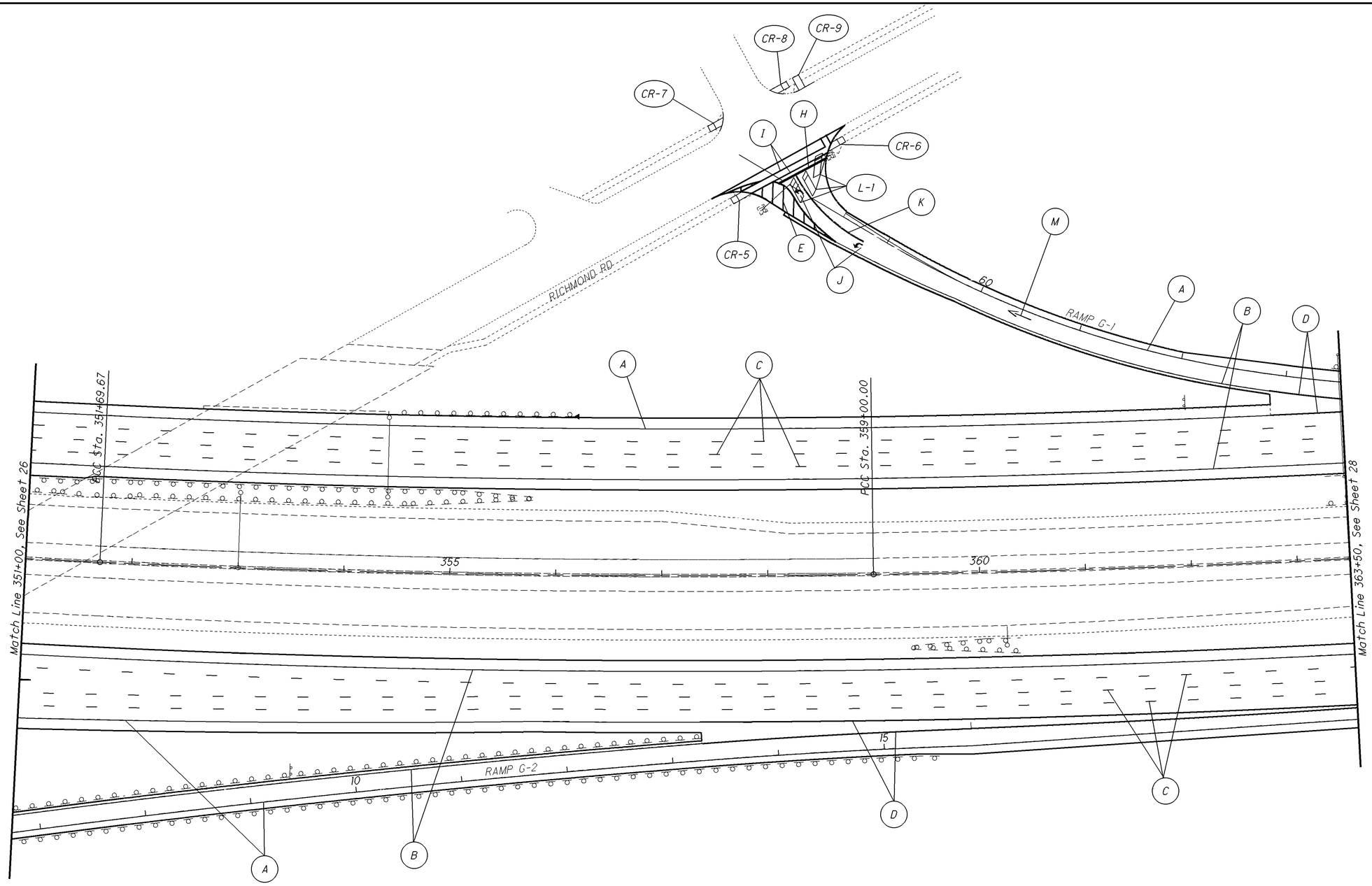
For Curb Ramp Subsummary, See Sheet 21

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED BPE
CHECKED EMK

General Plan
IR-271, Sta. 338+50 to Sta. 351+00

CUY-271-6.04



FOR LEGEND, SEE SHEET 26

For Detector Loop Quantities, See Sheet 11
For Curb Ramp Subsummary, See Sheet 21

HORIZONTAL SCALE IN FEET
0 25 50 100

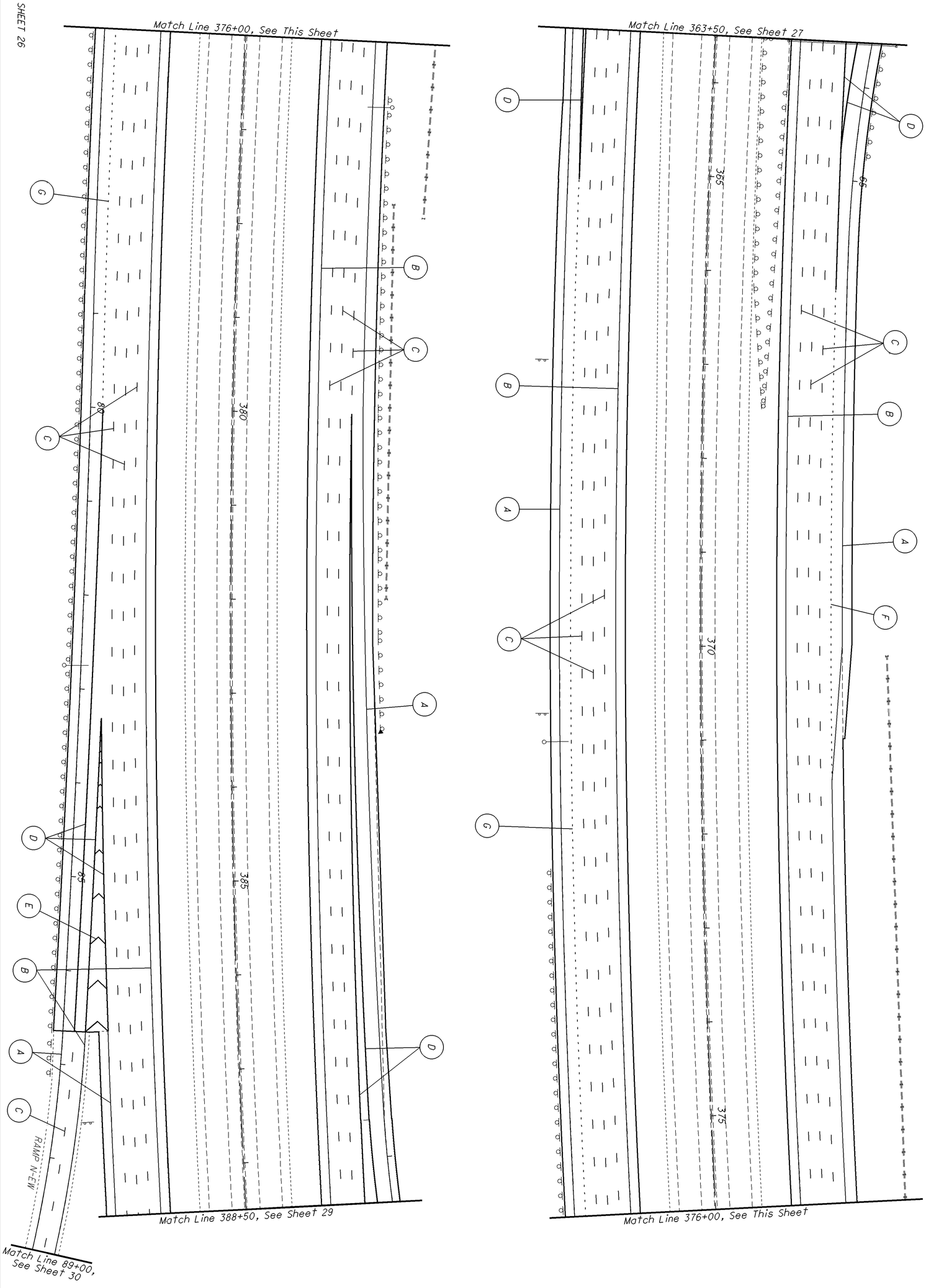
CALCULATED BPE
CHECKED EMK

General Plan
IR-271, Sta. 351+00 to Sta. 363+50

CUY-271-6.04

27
41

FOR LEGEND, SEE SHEET 26



28 / 41	CUY-271-6.04	General Plan IR-271, Sta. 363+50 to Sta. 388+50	CALCULATED BPE CHECKED EMK	0 50 25 100 HORIZONTAL SCALE IN FEET

FOR LEGEND, SEE SHEET 26

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED BPE
CHECKED EMK

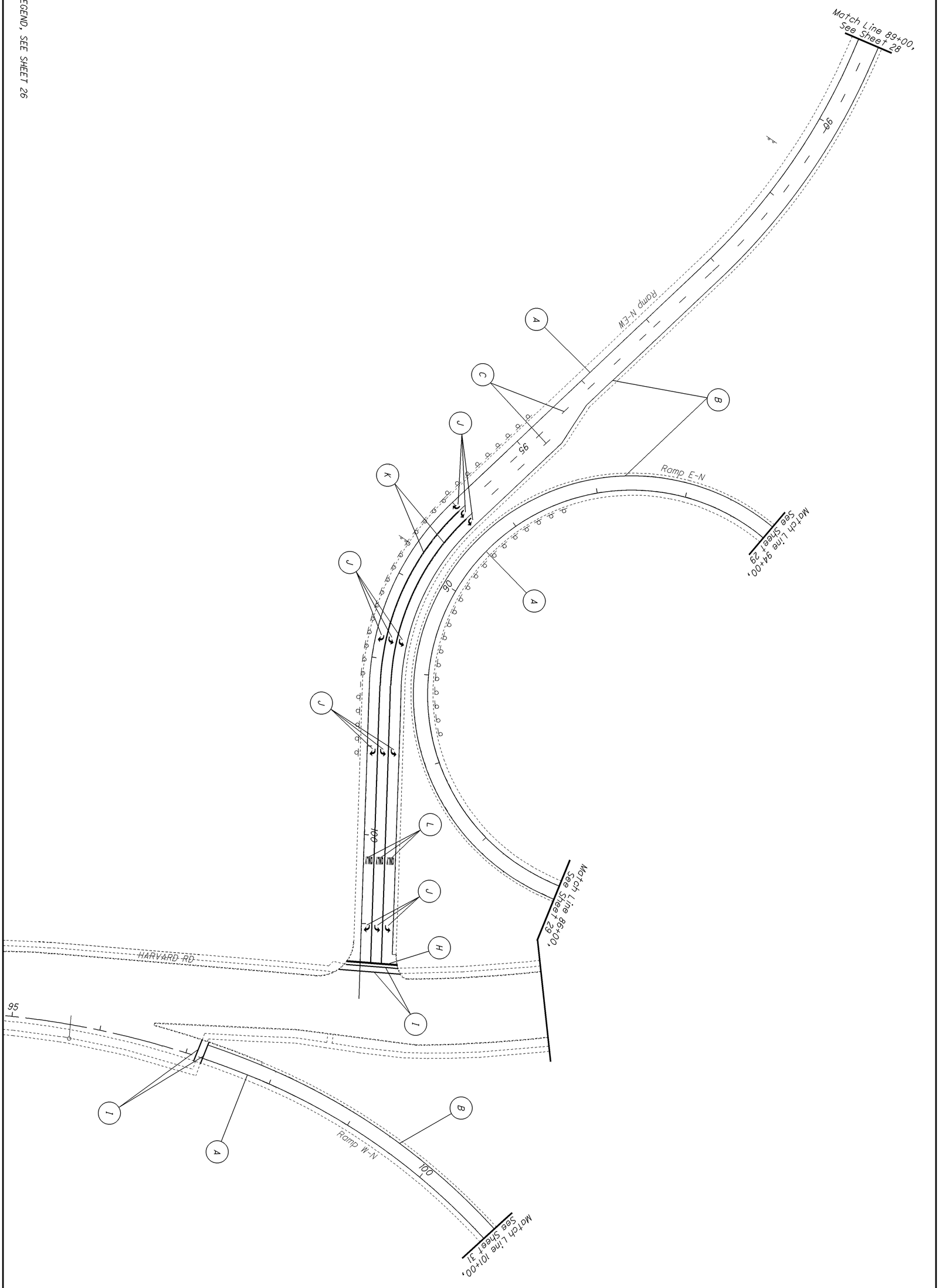
General Plan

IR-271, Sta. 388+50 to Sta. 401+00

CUY-271-6.04

29
41

FOR LEGEND, SEE SHEET 26



CUY-271-6.04

General Plan
Ramps N-EW, E-N, W-N

CALCULATED BPE
CHECKED EMK

0 50
25 100
HORIZONTAL SCALE IN FEET

N

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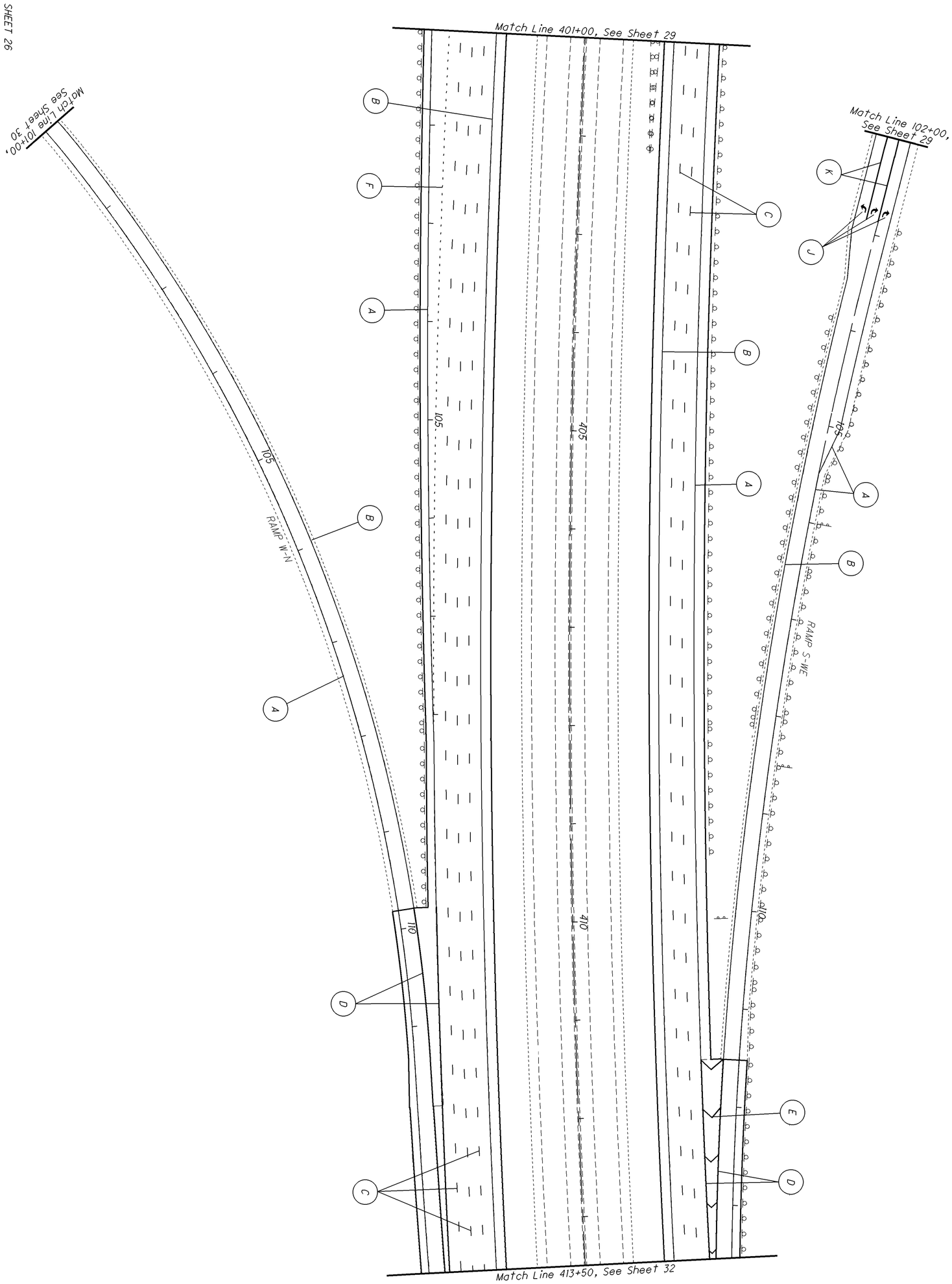
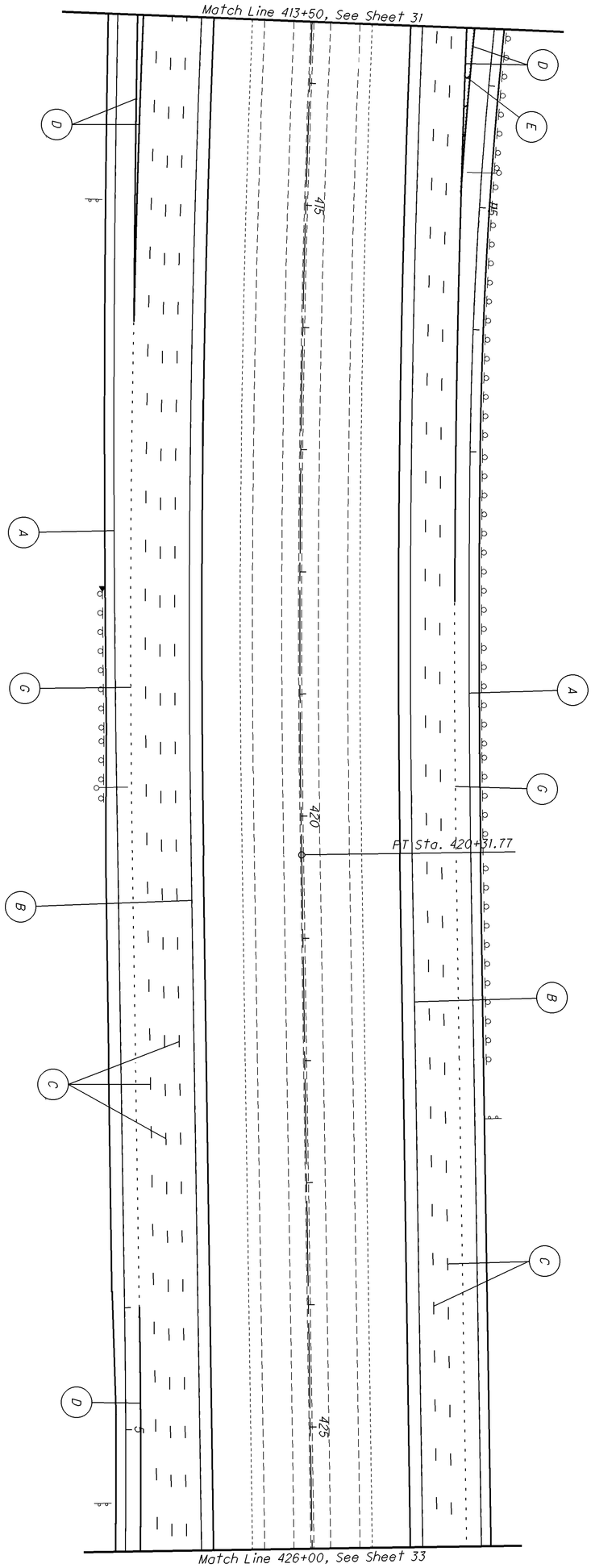
FOR LEGEND, SEE SHEET 26



31/41	CUY-271-6.04	General Plan IR-271, Sta. 401+00 to Sta. 413+50	CALCULATED BPE CHECKED EMK	0 50 25 100 HORIZONTAL SCALE IN FEET	N

FOR LEGEND, SEE SHEET 26



CUY-271-6.04

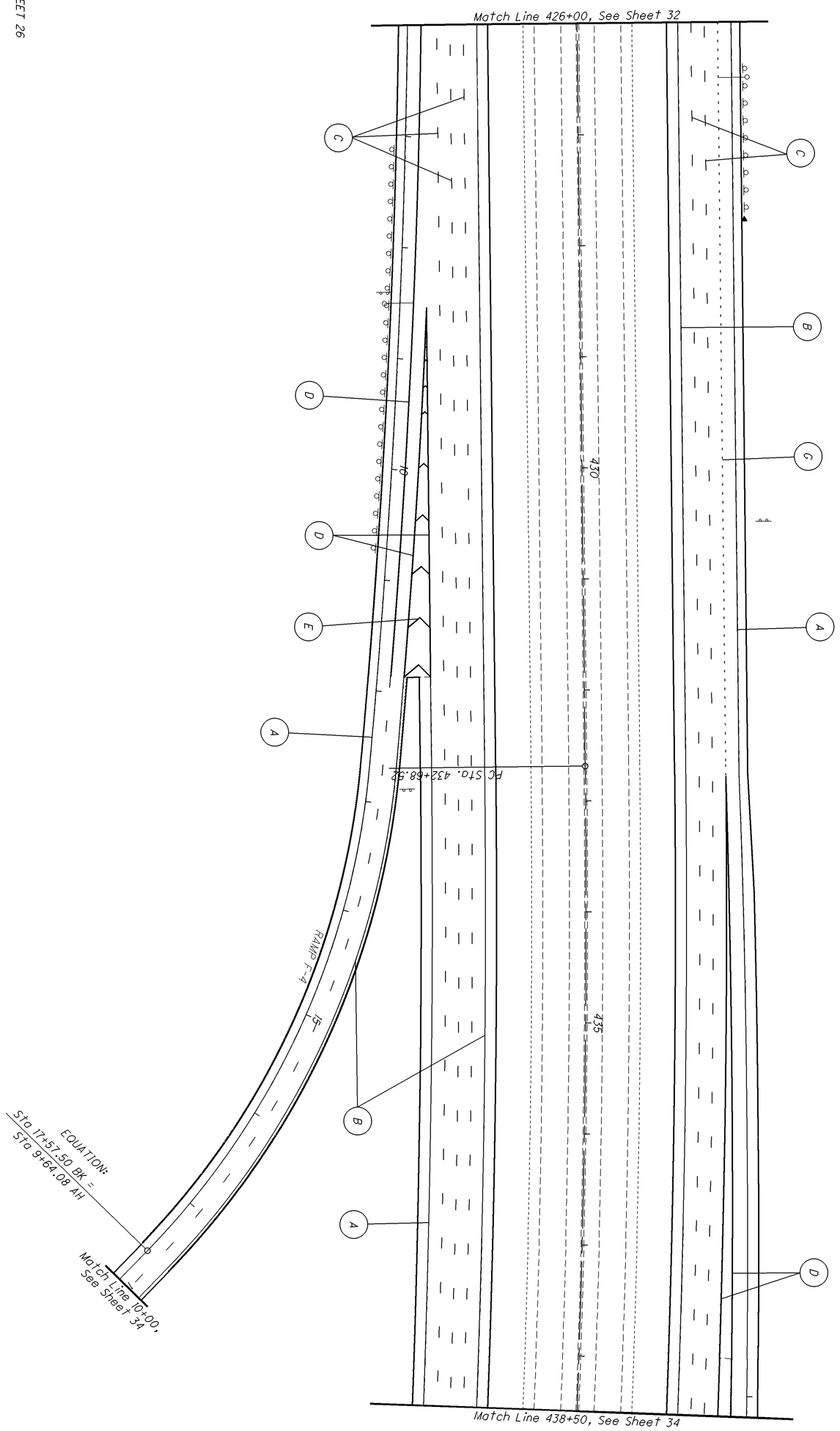
General Plan
IR-271, Sta. 413+50 to Sta. 426+00

CALCULATED BPE
CHECKED EMK

0 50
25 100
HORIZONTAL SCALE IN FEET

N

FOR LEGEND, SEE SHEET 26



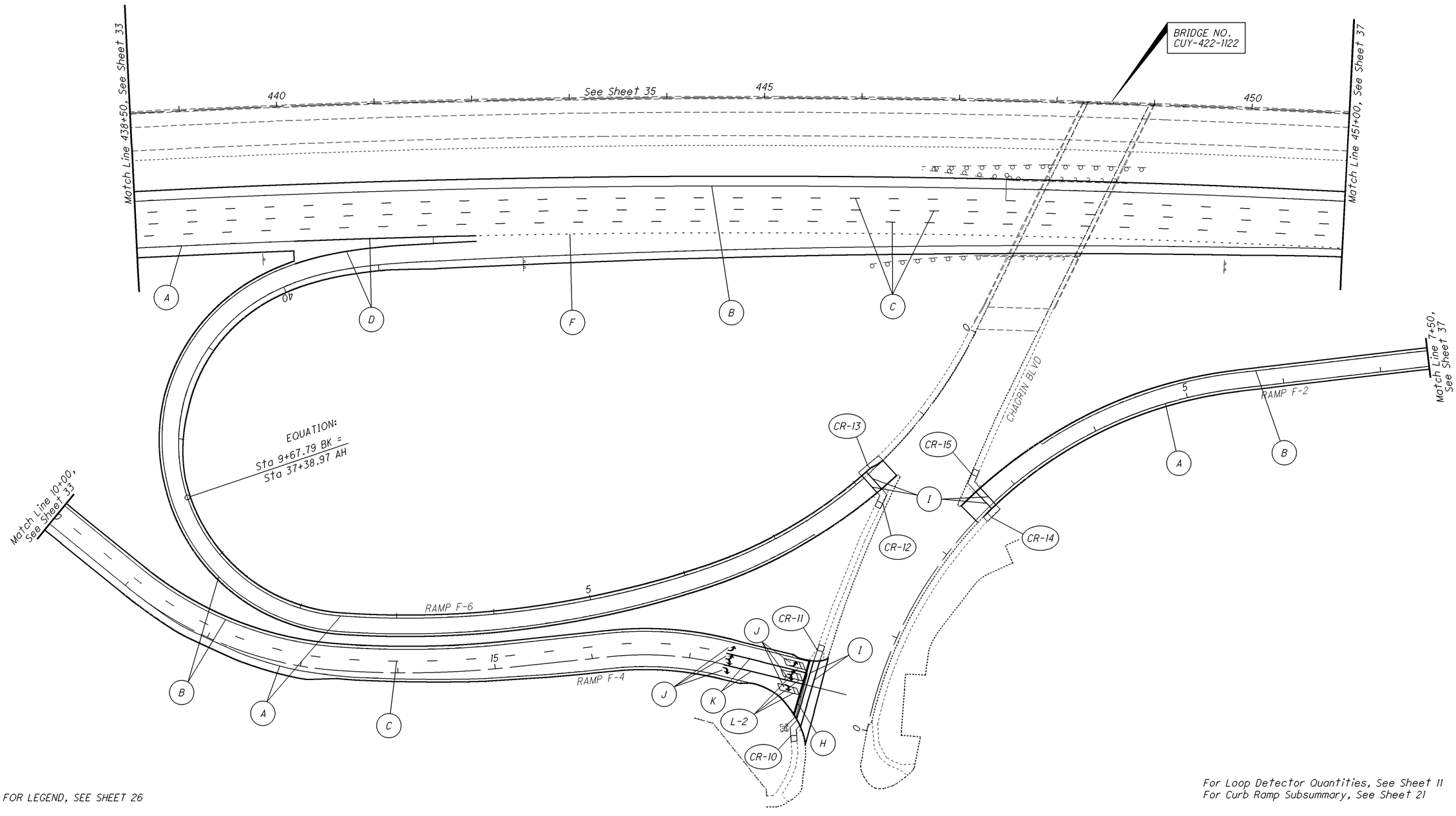
CUY-271-6.04

General Plan
IR-271, Sta. 426+00 to Sta. 438+50

CALCULATED BPE
CHECKED EMK

0 50
25 100
HORIZONTAL SCALE IN FEET

N



FOR LEGEND, SEE SHEET 26

For Loop Detector Quantities, See Sheet 11
For Curb Ramp Subsummary, See Sheet 21

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HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED BPE
CHECKED EMK

General Plan
IR-271, Sta. 438+50 to Sta. 451+00

CUY-271-6.04

34
41

FOR LEGEND, SEE SHEET 26

N

0 25 50 100
HORIZONTAL SCALE IN FEET

CALCULATED BPE
CHECKED EMK

General Plan
IR-271, Sta. 438+50 to Sta. 451+00

CUY-271-6.04

35
41

FOR LEGEND, SEE SHEET 26

For Loop Detector Quantities, See Sheet 11
For Curb Ramp Subsummary, See Sheet 21

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED BPE
CHECKED EMK

General Plan
Ramps F-1, F-3, F-5

CUY-271-6.04

36
41

FOR LEGEND, SEE SHEET 26

N

0 25 50 100
HORIZONTAL SCALE IN FEET

CALCULATED BPE
CHECKED EMK

General Plan
IR-271, Sta. 451+00 to Sta. 463+50

CUY-271-6.04

FOR LEGEND, SEE SHEET 26

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N

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED BPE
CHECKED EMK

General Plan
IR-271, Sta. 463+50 to Sta. 488+50

CUY-271-6.04

38
41

FOR LEGEND, SEE SHEET 26

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N

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED BPE
CHECKED EMK

General Plan
IR-271, Sta. 488+50 to Sta. 513+50

CUY-271-6.04

FOR LEGEND, SEE SHEET 26

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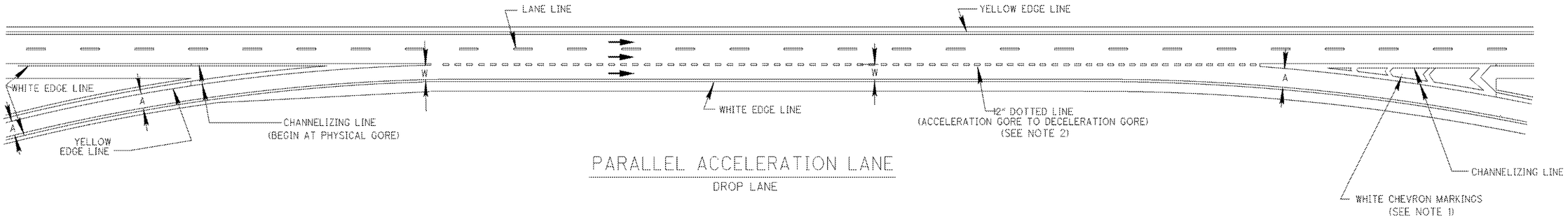
N

HORIZONTAL SCALE IN FEET
0 25 50 100

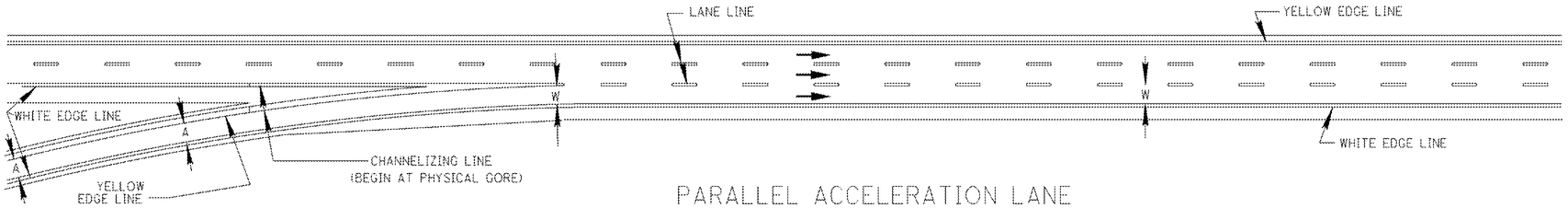
CALCULATED BPE
CHECKED EMK

General Plan
IR-271, Sta. 513+50 to Sta. 541+50

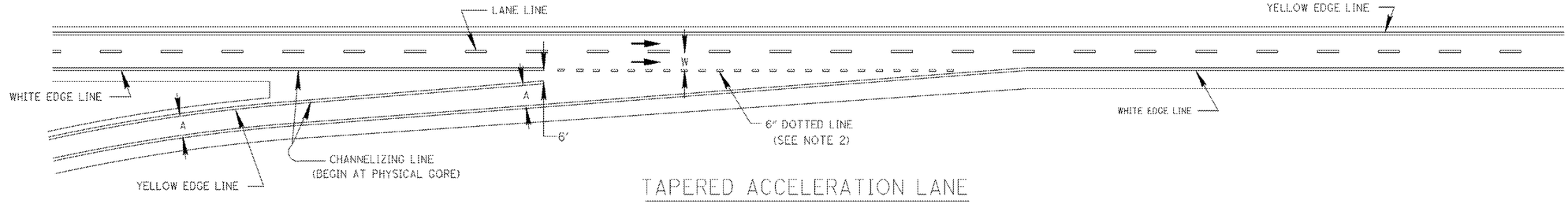
CUY-271-6.04



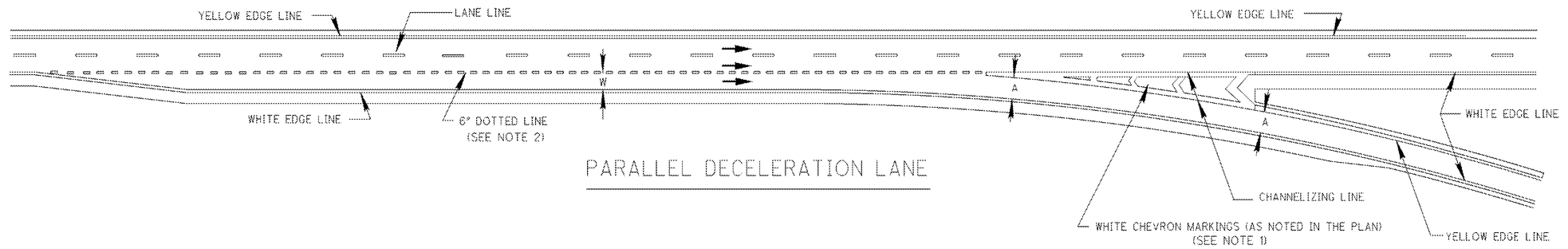
PARALLEL ACCELERATION LANE
DROP LANE



PARALLEL ACCELERATION LANE
ADD LANE



TAPERED ACCELERATION LANE



PARALLEL DECELERATION LANE

NOTES

1. Chevron markings when used in neutral areas of exit ramps are 24 inch wide lines and are placed at the spacing shown in the Chevron Markings Spacing Table.

2. Dotted lines are white dotted line segments 3 feet in length separated by 9 foot gaps.

CHEVRON MARKINGS SPACING TABLE

FROM (feet)	TO (feet)	CHEVRON MARKINGS SPACING (feet)
0	48	12 on Centers
49	96	24 on Centers
97	Greater than 97	48 on Centers

A = UNIFORM RAMP WIDTH
W = LANE WIDTH
→ = DIRECTION OF TRAVEL

FREEWAY ENTRANCE AND EXIT PAVEMENT MARKINGS

CUY-271-6.04