CUY-90-14.90

PID 77332/85531

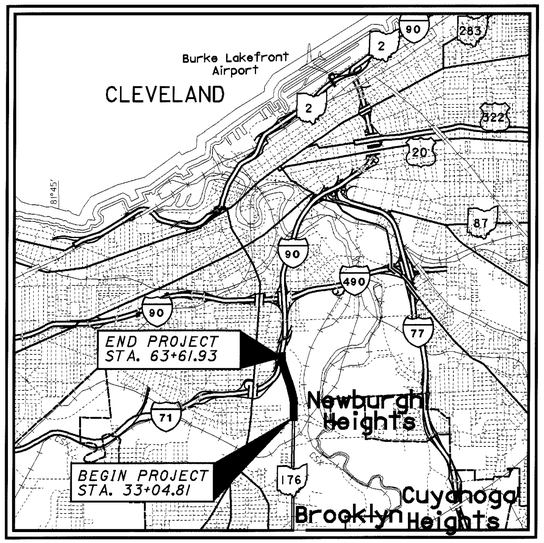
APPENDIX EX-36

CUY-176-1276 PID 19509
(Reference Document)

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

Innerbelt Bridge
Construction Contract Group 1 (CCG1)

Revision Date: 2000



LOCATION MAP

LATITUDE: 41 °27'30" LONGITUDE: 81 °41'20"

SCALE IN MILES

0 1 2 3 4

N

PORTION TO BE IMPROVED

INTERSTATE & DIVIDED HIGHWAY

UNDIVIDED STATE & FEDERAL ROUTES

OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2001)	58000
DESIGN YEAR ADT (2021)	69400
DESIGN HOURLY VOLUME (2021)	10%
DIRECTIONAL DISTRIBUTION	62%
TRUCKS (24 HOUR B&C)	9%
DESIGN SPEED	60 MPH
LEGAL SPEED	60 MPH

DESIGN FUNCTIONAL CLASSIFICATION - URBAN FREEWAY

DESIGN EXCEPTIONS

NONE

UNDERGROUND UTILITIES
TWO WORKING DAYS
BEFORE YOU DIG
CALL 1-800-362-2764 (TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY

PLAN PREPARED BY:

OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT TWELVE
PRODUCTION SECTION

ENGINEERS SEAL:

STATE OF OHIO
JON E. LORINCZ
E-61714
REGISTERED
PROFESSIONAL ENGINEER

JON E. LORINCZ

SIGNED: Jon E. Lorincz

DATE: July 27, 2000

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

CUY-176J-12.76

CITY OF CLEVELAND
CUYAHOGA COUNTY

INDEX OF SHEETS:

PROJECT DESCRIPTION

ROADWAY UPGRADING OF SR-176 IN THE CITY OF CLEVELAND. WORK INCLUDES WEARING COURSE REPLACEMENT, CONCRETE BASE REPAIR, GUARDRAIL, LIGHTING, DRAINAGE, AND TRAFFIC CONTROL

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.

1997 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING 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.

UNDER AUTHORITY OF SECTION 4511.21, DIVISION (I) 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.

APPROVED _____ DISTRICT DEPUTY DIRECTOR

DATE 7/27/2000

APPROVED Gordon Proctor

DATE 8/31/00 DIRECTOR, DEPARTMENT OF TRANSPORTATION

STANDARD CONSTRUCTION DRAWINGS

										SUPPLEMENTAL SPECIFICATIONS	
CB-1.1M	7-12-95	MT-98.12M	6-24-93	GR-1.1M	10-21-97	HL-20.11M	03-31-95	TC-7.65M	2-1-94	806	9-9-97
CB-2.1M	7-12-95	MT-98.13M	6-24-93	GR-1.2M	1-3-96	HL-20.13M	01-31-97	TC-18.24M	2-1-94	828	7-28-98
CB-2.2M	7-12-95	MT-98.14M	6-24-93	GR-1.3M	11-30-94	HL-20.21M	08-31-94	TC-21.10M	12-10-96	830	10-21-98
CB-2.3M	7-12-95	MT-98.15M	6-24-93	GR-2.1M	4-14-98	HL-20.22M	03-31-95	TC-21.40M	2-1-94	870	8-10-99
CB-3.1M	7-12-95	MT-98.16M	6-24-93	GR-3.1M	10-21-97	HL-20.23M	03-31-95	TC-22.20M	2-1-94	880	6-15-99
CB-3.2M	7-12-95	MT-35.10M	1-30-95	GR-3.2M	10-21-97	HL-30.11M	03-31-95	TC-31.21M	3-31-94	814	6-2-98
		MT-35.11M	1-30-95	GR-4.2M	10-21-97	HL-30.21M	05-01-95	TC-32.10M	3-31-94	842	1-6-99
1-1.2M	9-6-95	MT-95.30M	4-25-94			HL-30.22M	03-31-95	TC-32.11M	3-31-94	863	10-21-99
1-2.1M	4-14-98	MT-95.40M	4-25-94	RM-4.2M	10-21-97	HL-30.31M	05-01-95	TC-51.11M	9-30-94	865	2-22-00
		MT-102.10M	1-30-95	RM-4.3M	10-21-97	HL-30.32M	08-14-96	TC-65.10M	11-1-95	877	4-13-99
MH-1.1M	10-21-97	MT-105.10M	4-25-94	RM-4.4M	10-21-97	HL-40.10M	03-31-95	TC-65.11M	11-1-95	899	10-21-99
MH-1.2M	9-6-95	MT-105.11M	4-25-94	RM-4.5M	10-21-97	HL-50.11M	03-31-95	TC-71.10M	9-1-93	905	4-1-98
						HL-60.11M	05-01-95	TC-72.20M	9-1-93	906	5-5-98
F-1.1M	4-8-97	BP-1.1M	10-28-94			HL-60.12M	03-31-95	TC-82.10	1-19-99	907	10-21-98
F-3.1M	4-21-95	BP-2.1M	4-8-97	DM-1.1M	10-21-97	HL-60.21M	03-31-95	TC-82.11	1-19-99	908	3-28-00
F-3.2M	4-8-97	BP-2.2M	10-21-97	DM 1.2M	10-21-97	HL-60.31M	03-31-95				
		BP-2.5M	4-8-97	DM-4.2M	6-30-95	HL-10.11M	05-01-95				
		BP-3.1M	10-28-94	DM-4.3M	4-29-99	HL-10.12M	05-01-95				
		BP-5.1M	10-28-94	DM-4.4M	4-29-99	HL-10.13M	05-01-95				
		BP-8.1M	4-8-97			HL-10.31M	03-31-95				

FEDERAL PROJECT NO. 100% STATE

PID NO. 19509

CONSTRUCTION PROJECT NO.

RAILROAD INVOLVEMENT NONE

CUY-176J-12.76

1/117

CUY - SR 176J - 12.76
010096 PID - 19509
Dist 12 2/21/01

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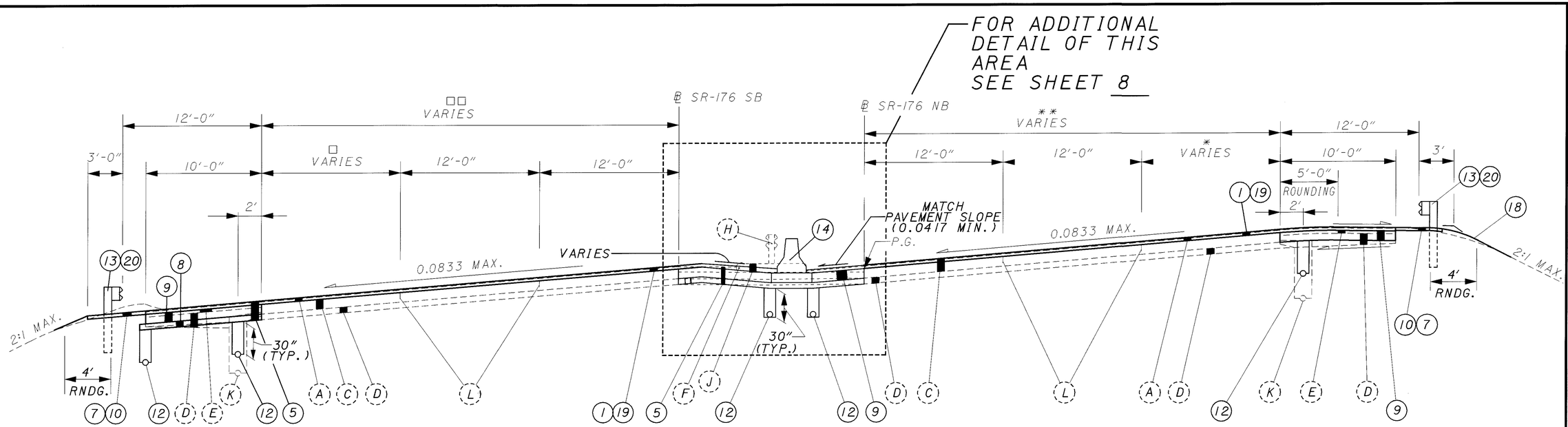


VARIABLE WIDTH - SUPERELEVATED

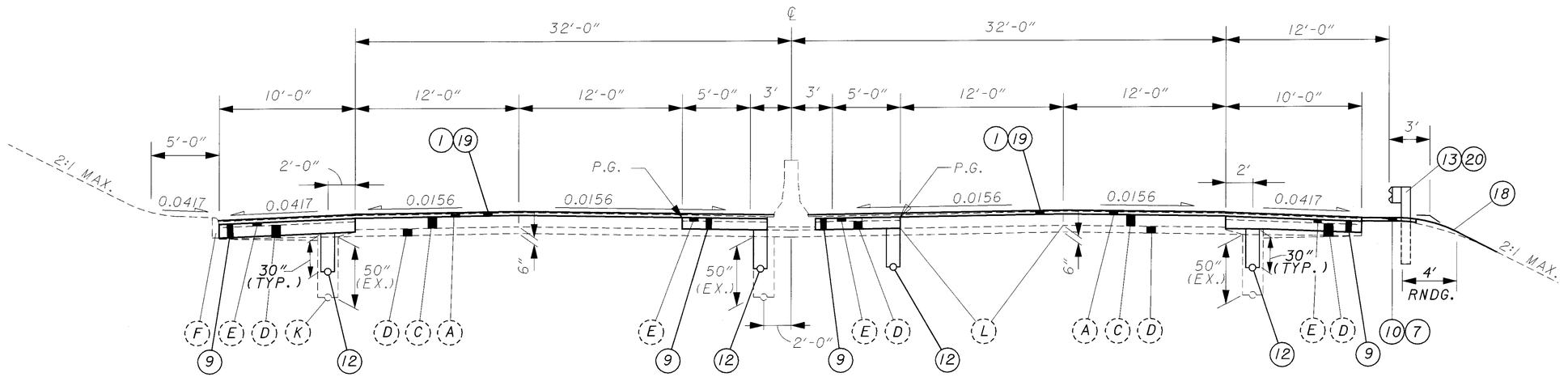
SR-176 NB STA. 36+71.62 TO STA. 43+25.00

□ VARIES 17' AT STA. 36+83.08 TO 12' AT STA. 38+49.54
12' AT STA. 41+04.81 TO 0' AT 42+04.81
0' FROM STA. 42+04.81 TO 43+23.61

□□ VARIES 41' AT STA. 36+83.08 TO 36' AT STA. 38+49.54
36' AT STA. 41+04.81 TO 24' AT STA. 42+04.81
24' FROM STA. 42+04.81 TO 43+23.61

* VARIES 20' AT STA. 36+71.62 TO 1.6' AT STA. 43+25

** VARIES 44' AT STA. 36+71.62 TO 25.6' AT STA. 43+25



JENNINGS FREEWAY

NORTHBOUND STA. 33+04.81 TO STA. 34+94.03
SOUTHBOUND STA. 33+04.81 TO STA. 35+05.23

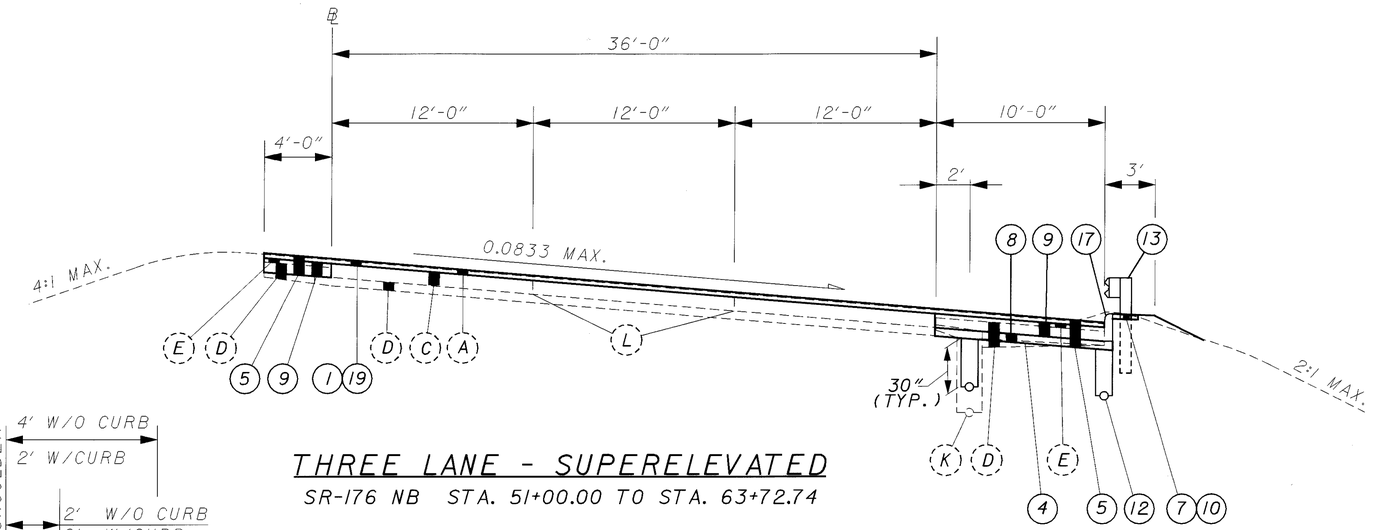
FOR LEGEND SEE SHEET 3

TYPICAL SECTIONS - JENNINGS FREEWAY

CALCULATED | CHECKED

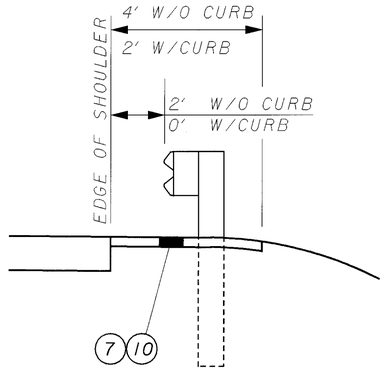
EXISTING TYPICAL SECTIONS

CUY-176J-12.76

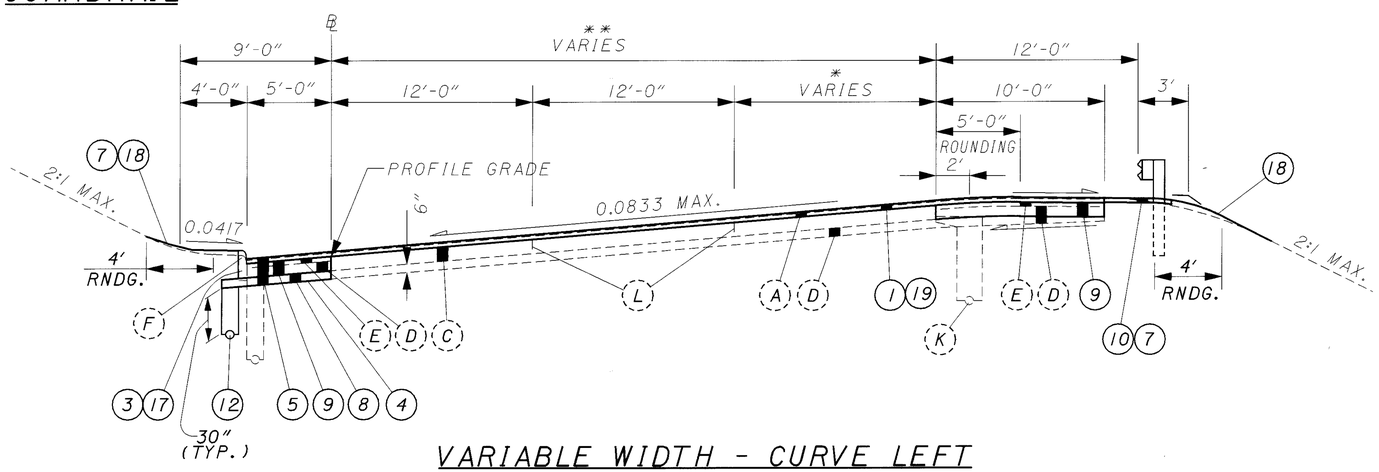


THREE LANE - SUPERELEVATED

SR-176 NB STA. 51+00.00 TO STA. 63+72.74



PAVING UNDER GUARDRAIL



VARIABLE WIDTH - CURVE LEFT

SR-176 NB STA. 43+25.00 TO STA. 51+00.00

* VARIES 1.6' AT STA. 43+25 TO 0' AT STA. 43+80.98
0' FROM STA. 43+80.98 TO STA. 44+40.56
25' AT STA. 44+40.56 TO 12' AT STA. 48+93.01

** VARIES 25.6' AT STA. 43+25 TO 24' AT STA. 43+80.98
24' FROM STA. 43+80.98 TO STA. 44+40.56
49' AT STA. 44+40.56 TO 36' AT STA. 48+93.01

PROPOSED LEGEND

1. 202-WEARING COURSE REMOVED
2. 202-PAVEMENT REMOVED
3. 202-CURB REMOVED
4. 203-SUBGRADE COMPACTION
5. 203-EXCAVATION, NOT INCLUDING EMBANKMENT CONST.
6. 203-EMBANKMENT
7. 203-LINEAR GRADING, METHOD A OR B
8. 304-AGGREGATE BASE, AS PER PLAN
9. 305-10" CONCRETE BASE
10. 448-3" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I, PG64-22 (UNDER GUARDRAIL)
11. 451-12" REINFORCED CONCRETE PAVEMENT
12. 605-6" SHALLOW PIPE UNDERDRAIN, W/FABRIC WRAP
13. 606-GUARDRAIL
14. 622-CONCRETE BARRIER TYPE B, AS PER PLAN
15. 622-CONCRETE BARRIER TYPE D, AS PER PLAN
16. 830-CURB, TYPE 2A
17. 830-CURB, TYPE 2B
18. 870-SEEDING AND MULCHING
19. 880-3½" ASPHALT CONCRETE (5 YEAR WARRANTY)
20. 202-GUARDRAIL REMOVED

EXISTING LEGEND

- A 2.5" ASPHALT OVERLAY
- B 9" REINFORCED CONCRETE PAVEMENT
- C 10" REINFORCED CONCRETE PAVEMENT
- D AGGREGATE BASE COURSE
- E 3" WATERPROOFED AGGREGATE BASE
- F CONCRETE CURB, TYPE 6
- G CONCRETE CURB, TYPE 2A
- H GUARDRAIL
- I CONCRETE BARRIER
- J 6" CONCRETE MEDIAN
- K 6" PIPE UNDERDRAIN
- L LONGITUDINAL JOINT

TYPICAL SECTIONS - JENNINGS FREEWAY

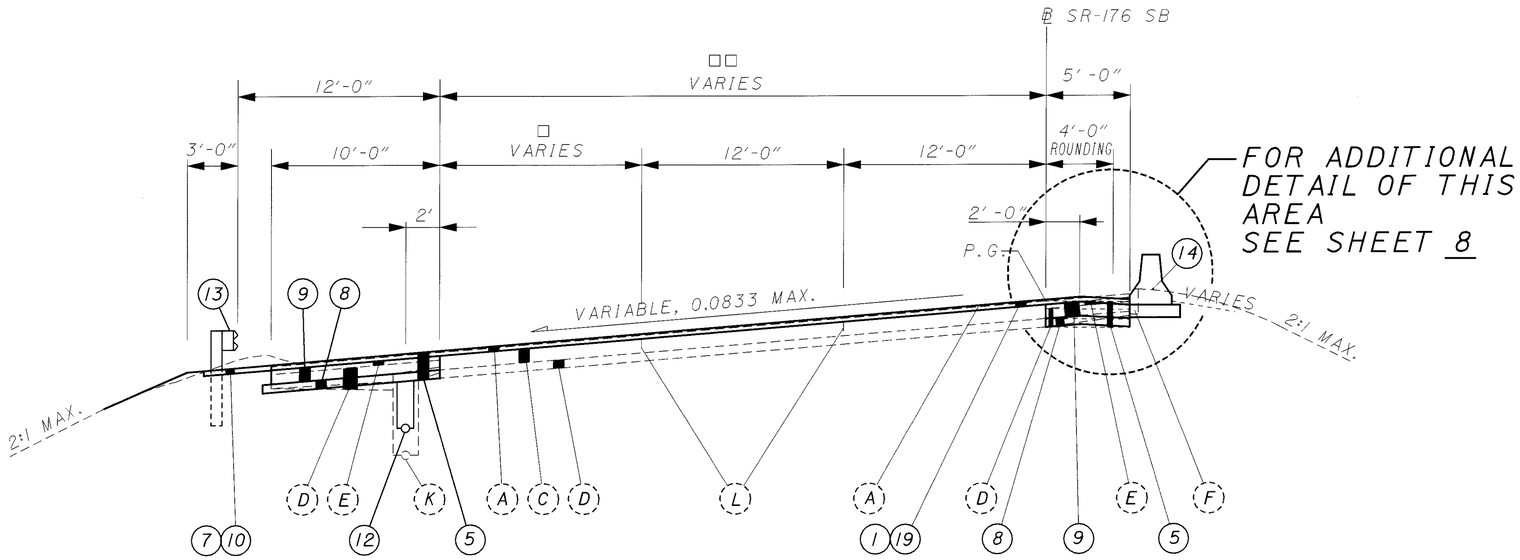
CALCULATED | CHECKED

EXISTING TYPICAL SECTIONS

CUY-176J-12.76

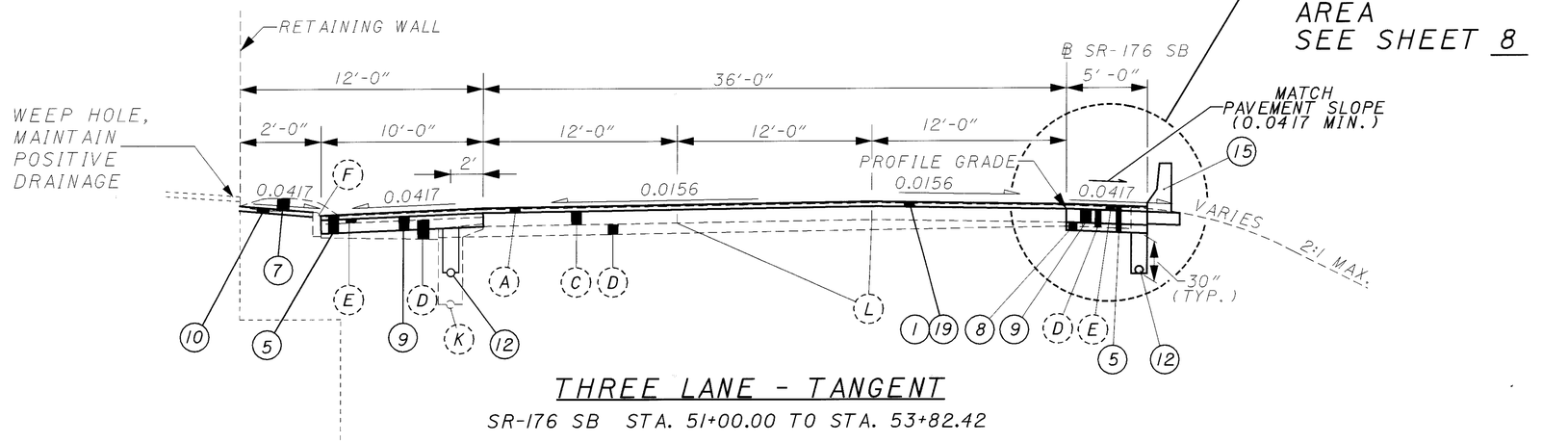
□ VARIES 0′ FROM STA. 42+04.81 TO 43+23.61
10′ FROM STA. 43+23.61 TO STA. 44+23.61
28′ AT STA. 44+23.61 TO 0′ AT STA. 46+81.45

□□ VARIES 24′ FROM STA. 42+04.81 TO 43+23.61
34′ FROM STA. 43+23.61 TO STA. 44+23.61
52′ AT STA. 44+23.61 TO 24′ AT STA. 46+81.45



VARIABLE WIDTH - SUPERELEVATED

SR-176 SB STA. 43+17.00 TO STA. 51+00.00



THREE LANE - TANGENT

SR-176 SB STA. 51+00.00 TO STA. 53+82.42

FOR LEGEND SEE SHEET 3

TYPICAL SECTIONS - JENNINGS FREEWAY

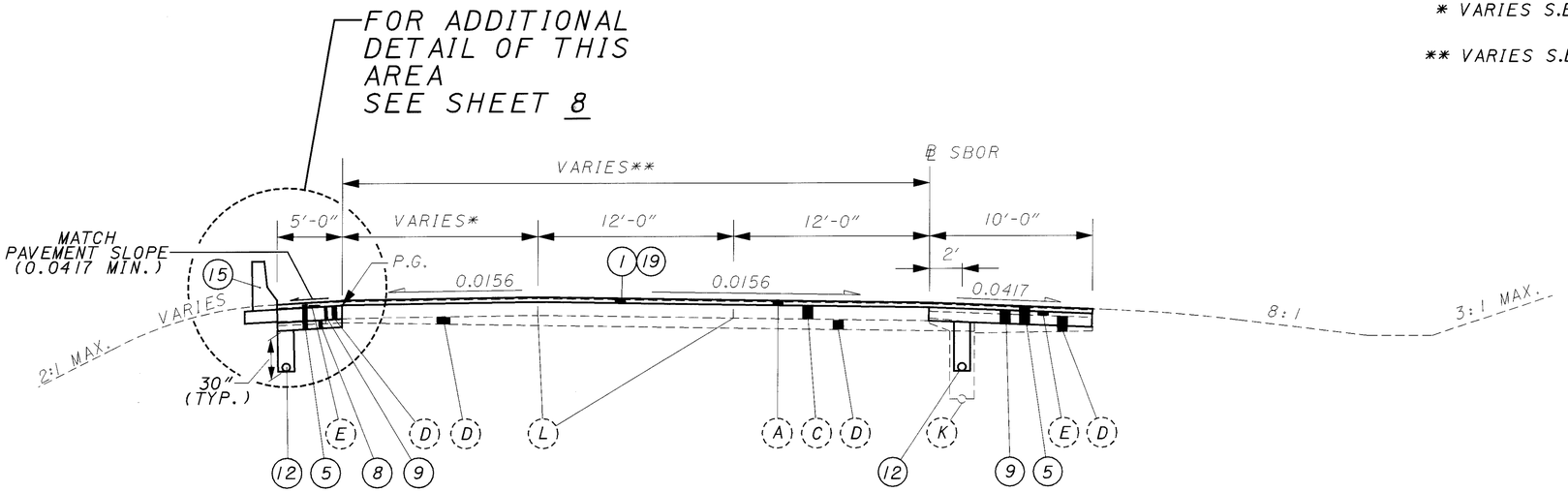
CALCULATED | CHECKED

EXISTING TYPICAL SECTIONS

CUY-176J-12.76

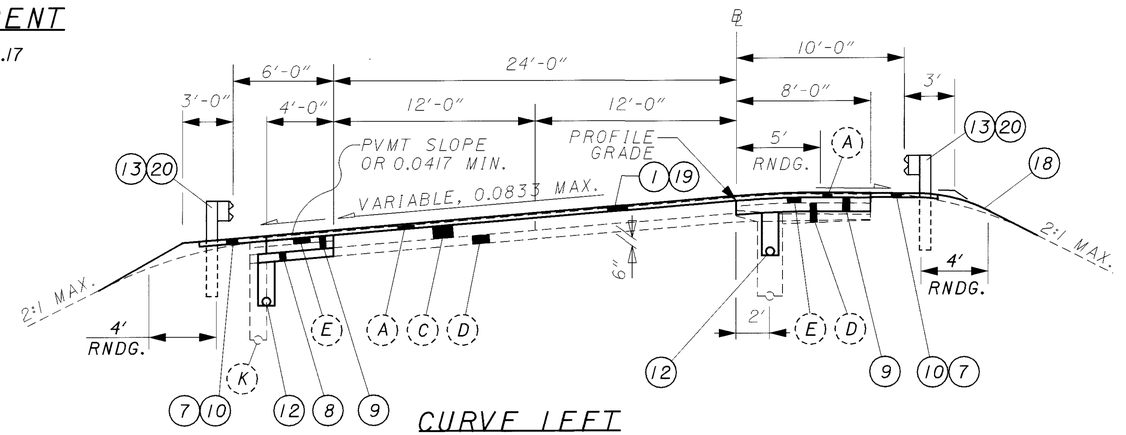
* VARIES S.B.O.R. 21' AT STA. 40+58.81 TO 12' AT STA. 41+80.17

** VARIES S.B.O.R. 45' AT STA. 40+58.81 TO 36' AT STA. 41+80.17



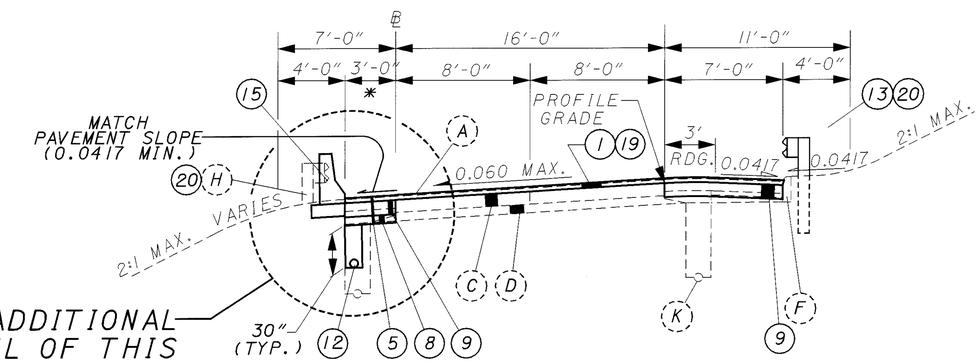
VARIABLE WIDTH - TANGENT

S.B.O.R. STA. 40+58.81 TO STA.41+80.17



CURVE LEFT

S.B.O.R. STA. 35+18.37 TO STA. 40+58.81



FOR ADDITIONAL DETAIL OF THIS AREA SEE SHEET 8

CURVE LEFT
SINGLE LANE PAVEMENTS

LANE M-J STA. 3+95.50 TO STA. 10+97.21

* VARIES 3'-0" AT STA. 8+97 TO 5'-0" AT STA. 10+97

FOR LEGEND SEE SHEET 3

TYPICAL SECTIONS - SBOR & LANE M-J

CALCULATED | CHECKED

EXISTING TYPICAL SECTIONS

CUY-176J-12.76

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117

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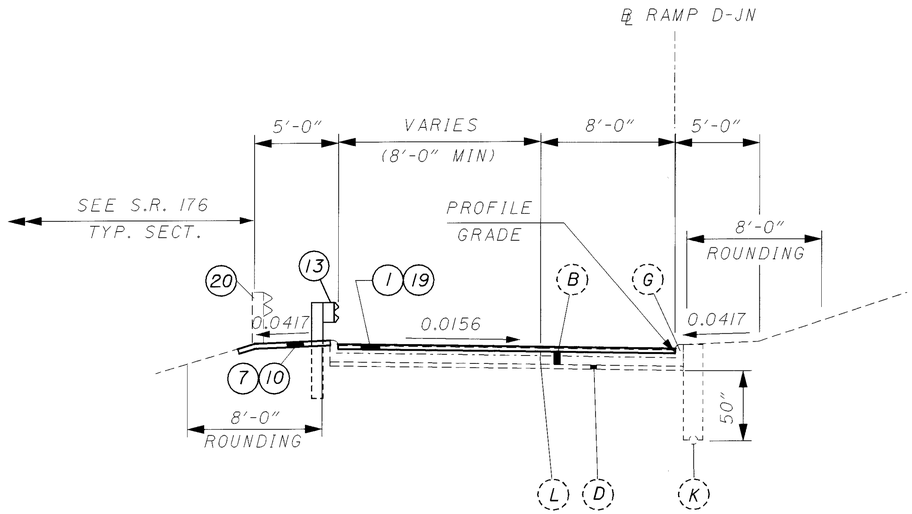
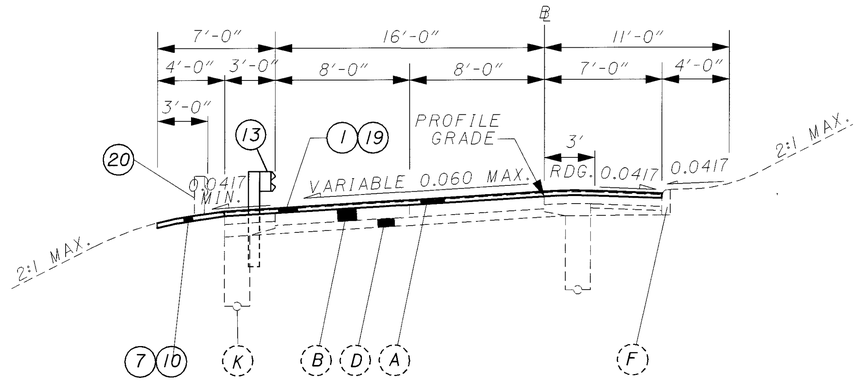


RAMP D-JN

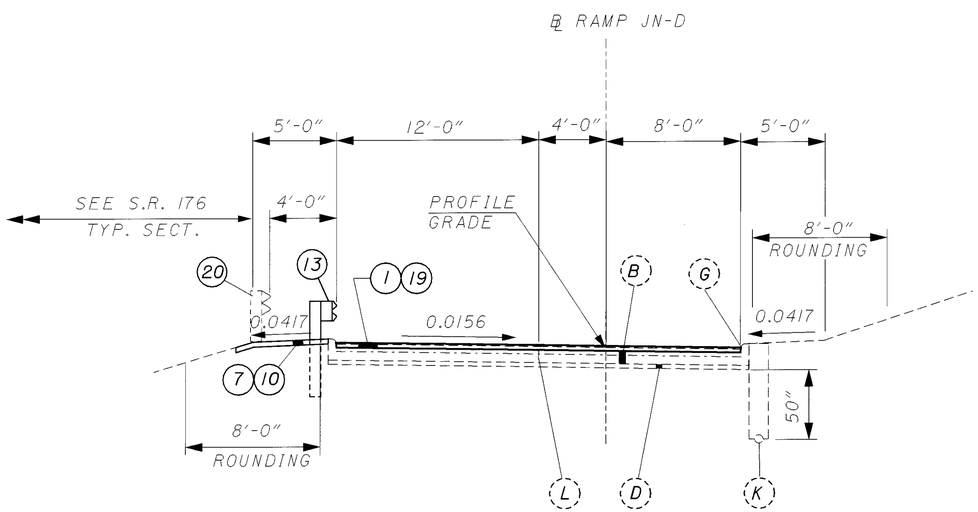
STA. 0+59.81 TO STA. 2+95.43



CURVE LEFT
SINGLE LANE PAVEMENTS

RAMP D-JN STA. 2+95.43 TO STA. 10+14.61

RAMP JN-D STA. 4+41.51 TO STA. 11+75.00



RAMP JN-D

STA. 11+75.00 TO STA. 13+56.43

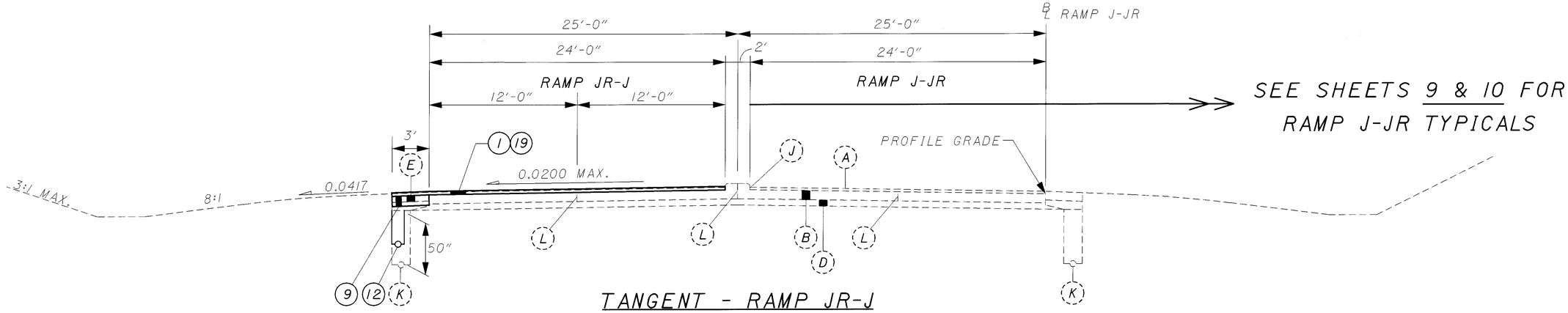
FOR LEGEND SEE SHEET 3

TYPICAL SECTIONS - RAMPS

CALCULATED | CHECKED

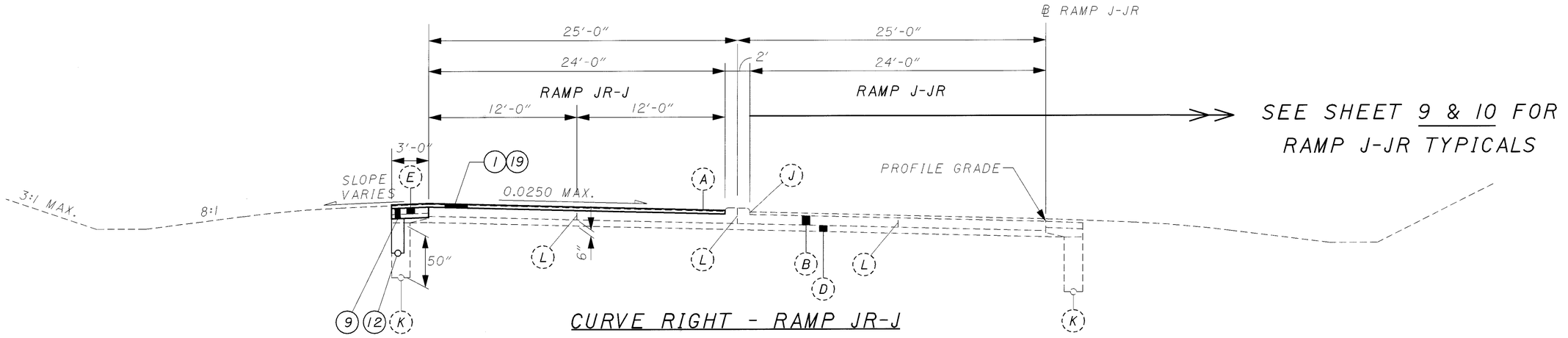
EXISTING TYPICAL SECTIONS

CUY-176J-12.76



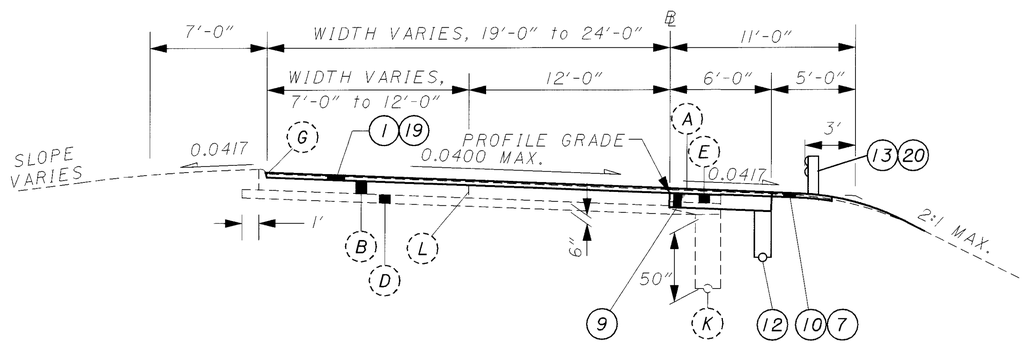
TANGENT - RAMP JR-J

RAMP J-JR STA. 15+24.62 TO STA. 17+82.20



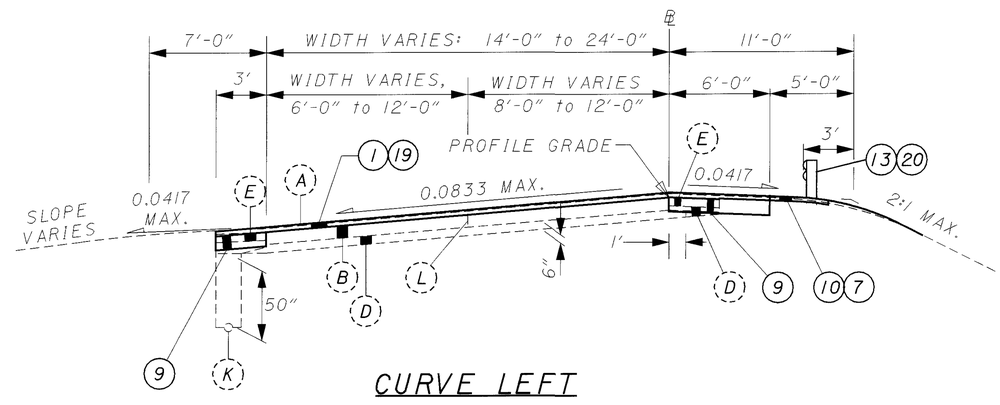
CURVE RIGHT - RAMP JR-J

RAMP J-JR STA. 17+82.20 TO STA. 20+00.00



TANGENT - CURVE RIGHT

RAMP JR-J STA. 0+00.00 TO STA. 6+81.60



CURVE LEFT

RAMP JR-J STA. 6+81.60 TO STA. 11+35.82

* See Paved Shoulder Details, Sheet No. 10

FOR LEGEND SEE SHEET 3

TYPICAL SECTIONS - RAMPS J-JR, JR-J

CALCULATED

CHECKED

EXISTING TYPICAL SECTIONS

CUY-176J-12.76

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117

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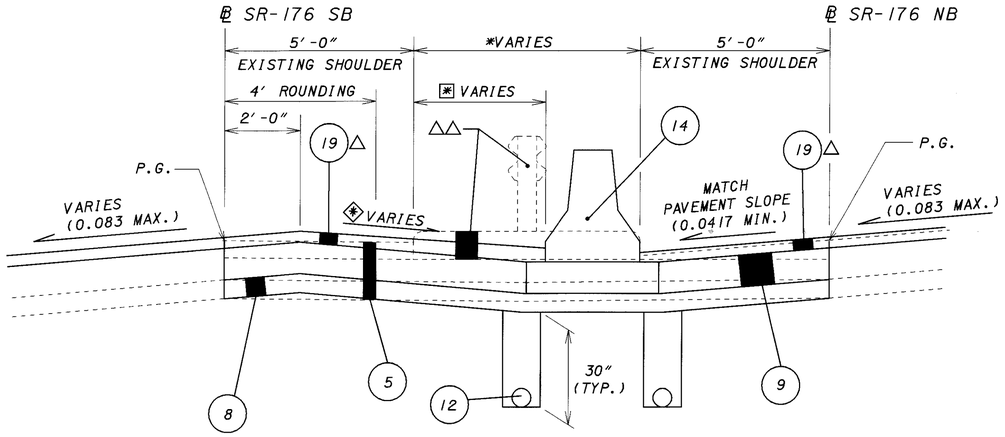


SR-176

STA. 36+77.35± TO STA. 43+25 (NBJ) = 647.65 LIN. FT.

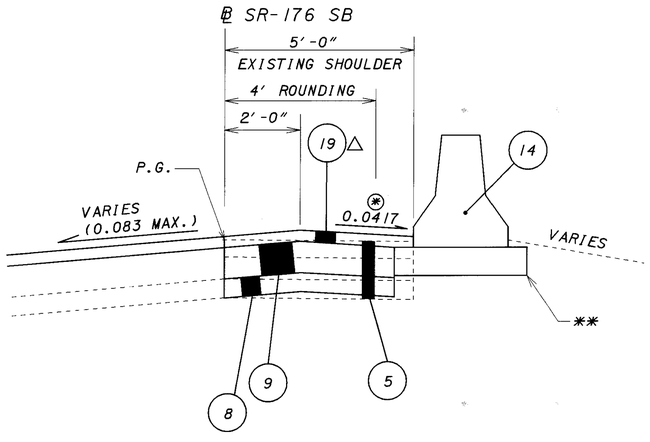
✱ 1′-9″ AT STA. 37+02.35 TO
14′-6″ AT STA. 43+25.

* WIDTH OF EXISTING RAISED CONCRETE MEDIAN VARIES FROM 2′-6″ AT STA. 37+02.35± TO 6′-0″ AT STA. 38+00± TO 10′-0″ AT STA. 40+00±.

◈ THE CROSS SLOPE OF THE CONCRETE SHOULDER BASE (ITEM 305) SHALL BE ADJUSTED TO MEET THE TOP OF THE CONCRETE BARRIER BASE. THE CONCRETE BARRIER BASE ELEVATION SHALL BE DETERMINED FROM THE SR-176 NB BASELINE.
THE CROSS SLOPE OF THE FINISHED SHOULDER SURFACE (TOP OF ITEM 880) SHALL EQUAL THAT OF THE CONCRETE BASE, BUT SHALL NOT BE MORE THAN 0.0417 FT/FT. ADJUSTMENTS TO THE FINISHED SHOULDER CROSS SLOPE SHALL BE ACCOMPLISHED IN THE ASPHALT CONCRETE.

△ THICKNESS OF ASPHALT OVERLAY VARIES IN THE SHOULDER (3½″ MIN.)

△△ CONCRETE MEDIAN AND BARRIER GUARDRAIL REMOVED UNDER:
ITEM 202 - CONCRETE MEDIAN REMOVED
ITEM 202 - GUARDRAIL REMOVED, BARRIER DESIGN

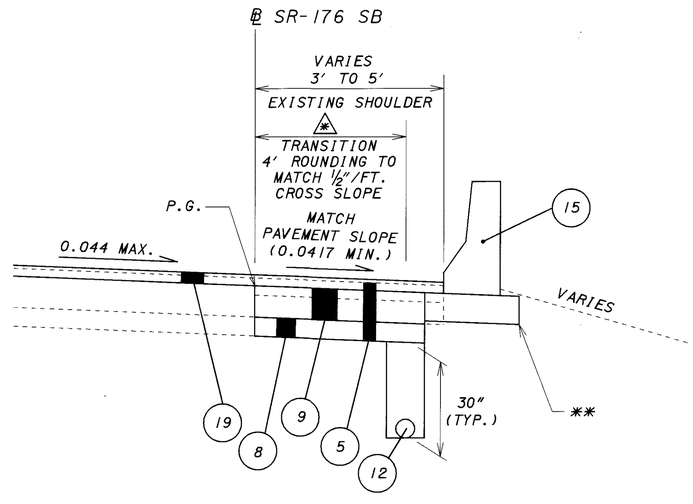


SR-176 SB

STA. 43+17 (SBJ) TO STA. 49+00 (SBJ) = 583.00 LIN. FT.

✱ VARIES 0.0332 AT STA. 43+25 TO 0.0417 AT STA. 43+50.

** THE CONTRACTOR HAS THE OPTION OF POURING THE BASE FOR THE CONCRETE BARRIER INTEGRAL WITH THE 10″ CONCRETE BASE FOR THE SHOULDER. IF HE CHOOSES TO DO THIS, IT WILL BE AT HIS EXPENSE WITH NO ADDITIONAL PAYMENT BY THE STATE.



SR-176 SB / LANE M-J / I-71 SB

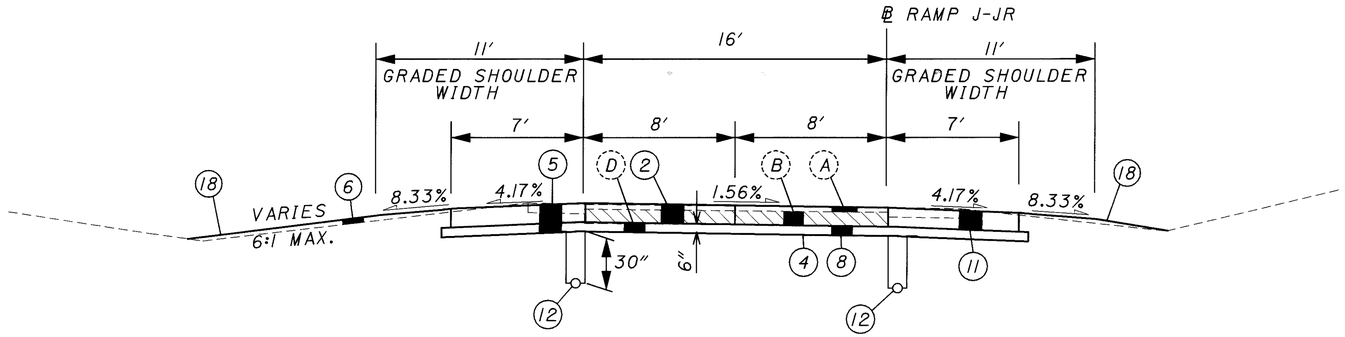
STA. 49+00 (SBJ) TO STA. 50+00 (SBJ) = STA. 12+17.23 (M-J) = 100.00 LIN. FT.
STA. 12+17.23 (M-J) TO STA. 3+95 (M-J) = STA. 921+80.42 (I-71 SB) = 822.23 LIN. FT.
STA. 921+80.42 (I-71 SB) TO STA. 923+20 (I-71 SB) = 139.58 LIN. FT.
TOTAL = 1061.81 LIN. FT.

✱ STA. 49+00 TO STA. 49+25

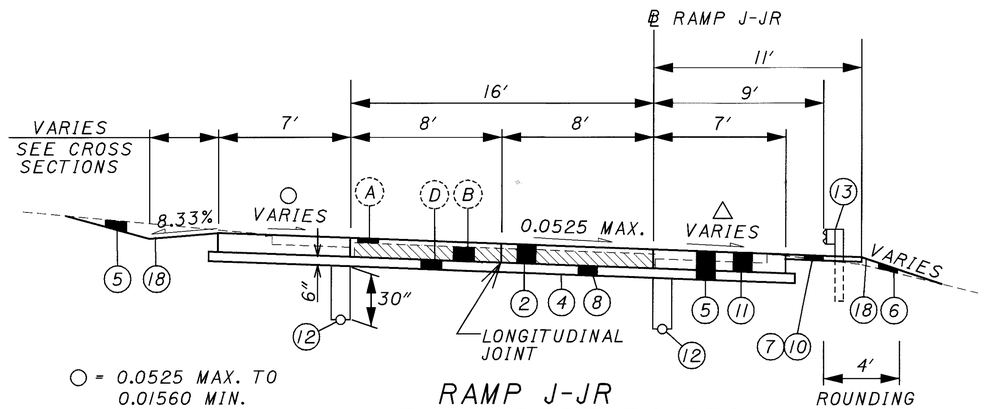
FOR LEGEND SEE SHEET 3

TYPICAL SECTIONS

CUY-176J-12.76

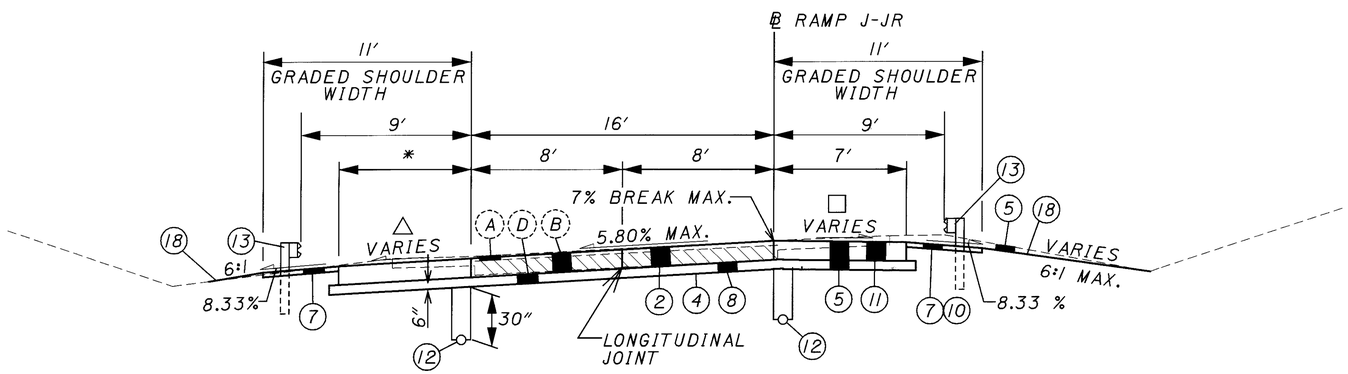


RAMP J-JR
NORMAL SECTION
STA. 104+75 TO STA. 106+25



○ = 0.0525 MAX. TO 0.01560 MIN.

RAMP J-JR
1 LANE - SUPERELEVATED
STA. 103+50 TO STA. 104+75



△ = 0.0417 OR PAVEMENT SLOPE IF GREATER

□ = 0.0417 MAX. TO 0.0120 MIN.

RAMP J-JR
1 LANE - SUPERELEVATED
STA. 106+25 TO STA. 112+25

▨ 202 - PAVEMENT REMOVED

* - 7′ FROM 106+25 TO 112+00
- TRANSITION FROM 7′ TO 8′ FROM 112+00 TO 112+25

PROPOSED LEGEND

(1) 202-WEARING COURSE REMOVED
(2) 202-PAVEMENT REMOVED
(3) 202-CURB REMOVED
(4) 203-SUBGRADE COMPACTION
(5) 203-EXCAVATION, NOT INCLUDING EMBANKMENT CONST.
(6) 203-EMBANKMENT
(7) 203-LINEAR GRADING, METHOD A OR B
(8) 304-AGGREGATE BASE, AS PER PLAN
(9) 305-10″ CONCRETE BASE
(10) 448-3″ ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I, PG64-22 (UNDER GUARDRAIL)
(11) 451-12″ REINFORCED CONCRETE PAVEMENT
(12) 605-6″ SHALLOW PIPE UNDERDRAIN, W/ FABRIC WRAP
(13) 606-GUARDRAIL
(14) 622-CONCRETE BARRIER TYPE B, AS PER PLAN
(15) 622-CONCRETE BARRIER TYPE D, AS PER PLAN
(16) 830-CURB, TYPE 2A
(17) 830-CURB, TYPE 2B
(18) 870-SEEDING AND MULCHING
(19) 880-3½″ ASPHALT CONCRETE (7 YEAR WARRANTY)

EXISTING LEGEND

(A) 2.5″ ASPHALT OVERLAY
(B) 9″ REINFORCED CONCRETE PAVEMENT
(C) 10″ REINFORCED CONCRETE PAVEMENT
(D) AGGREGATE BASE COURSE
(E) 3″ WATERPROOFED AGGREGATE BASE
(F) CONCRETE CURB, TYPE 6
(G) CONCRETE CURB, TYPE 2A
(H) GUARDRAIL
(I) CONCRETE BARRIER
(J) 6″ CONCRETE MEDIAN
(K) 6″ PIPE UNDERDRAIN
(L) LONGITUDINAL JOINT

CALCULATED | CHECKED

RAMP J-JR TYPICAL SECTIONS

CUY-176J-12.76

9
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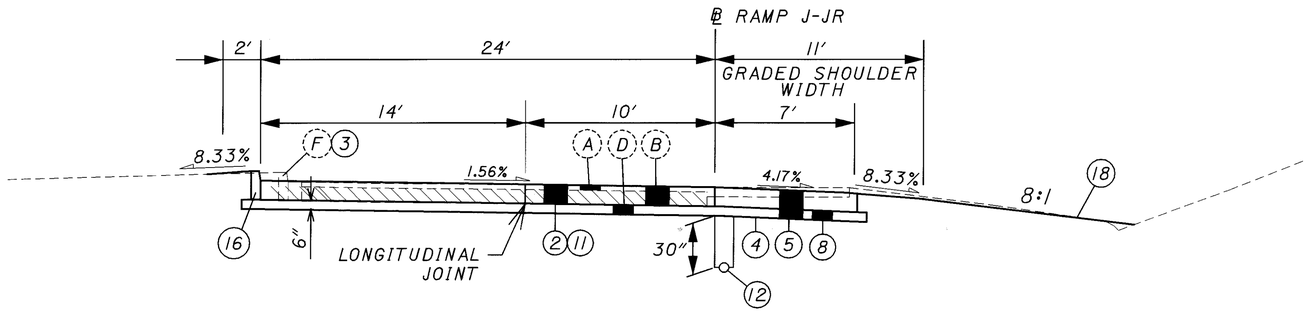
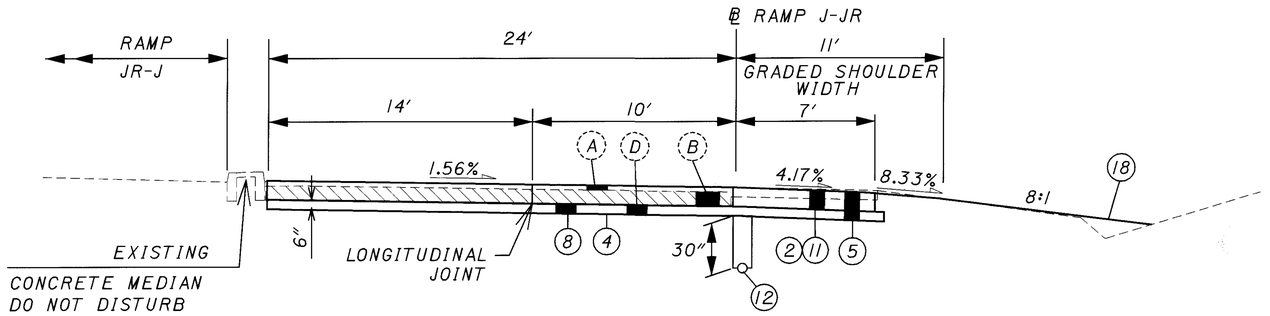
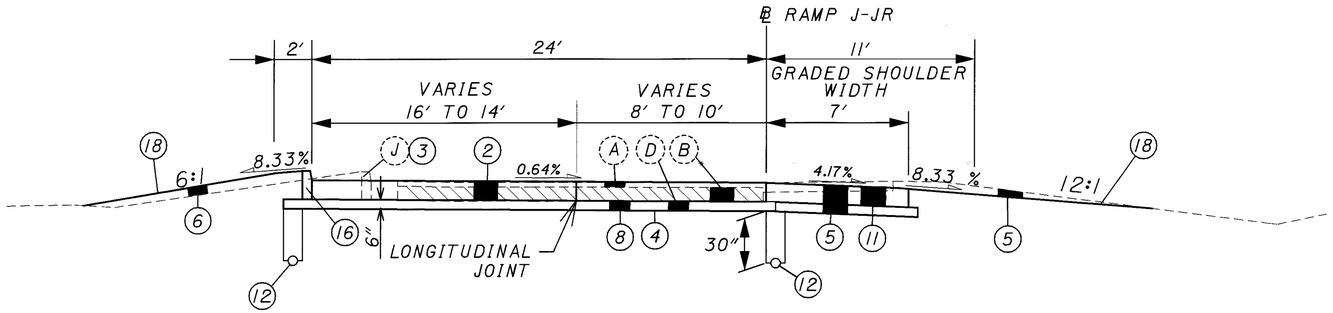


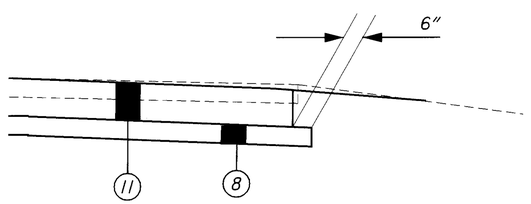
RAMP J-JR
2 LANE - NORMAL SECTION
STA. 112+75 TO STA. 114+83



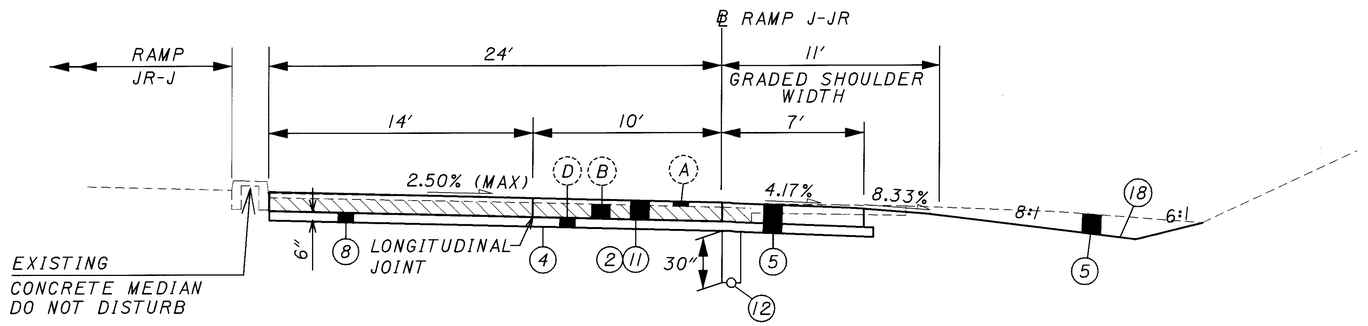
RAMP J-JR
2 LANE - NORMAL SECTION
STA. 114+83 TO STA. 117+75



RAMP J-JR
2 LANE - SUPERELEVATED
STA. 112+25 TO STA. 112+75



EDGE OF PAVEMENT DETAIL
(TYPICAL)



RAMP J-JR
2 LANE SUPERELEVATED
STA. 117+75 TO STA. 119+86.50

SEE SHEET 9 FOR LEGEND

CALCULATED | CHECKED

RAMP J-JR TYPICAL SECTIONS

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PROFILE AND ALIGNMENT
THE PROPOSED PAVEMENT RESURFACING SHALL FOLLOW THE ALIGNMENT AND PROFILE OF THE EXISTING PAVEMENT. THE PROPOSED ASPHALT CONCRETE OVERLAY SHALL HAVE A UNIFORM THICKNESS OF 3.5 INCHES.

UTILITIES
LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

Ameritech
13630 Lorain Ave. - 4th Floor
Cleveland, Ohio 44111
Attn: Dick Licht
Phone: (216) 476-6142
Fax: (216) 476-6013

Cleveland Electric Illuminating Co. - West
6896 Miller Road
Brecksville, OH 44131
Attn: Frank Dibbs
Phone: (216) 520-9579
Fax: (216) 634-7232

Cleveland Public Power (Melp)
1300 Lakeside Ave.
Cleveland, Ohio 44114
Attn: Dale Turkovich Ext. 115
Phone: (216) 664-4245
Fax: (614) 664-2777

City of Cleveland Division
of Water Pollution Control
12302 Kirby Road
Cleveland, Ohio 44108
Attn: Rachid Zoghaib
Phone: (216) 664-2786

City of Cleveland Water Dept.
1201 Lakeside Ave.
Cleveland, Ohio 44114
Attn: Don Trebar
Phone: (216) 644-2444
Fax: 664-2378

East Ohio Gas Co.
1201 East 55th Street
Cleveland, Ohio 44103
Attn: Sam Mercurio
Phone: (216) 736-6675
Fax: (440) 736-6780

MCI
12300 Ridge Road
North Royalton, Ohio 44133
Steve Maryman
Phone: (440) 237-0700

NEORSD
3826 Euclid Ave
Cleveland, Ohio 44115-2504
Attn: Richard Switalski
Phone: (216) 881-6600
Fax: (216) 881-2738

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.

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.

EXISTING TYPICAL SECTIONS
EXISTING TYPICAL SECTIONS HAVE BEEN TAKEN FROM THE RECORDS AND ARE BELIEVED TO REPRESENT THE EXISTING PAVEMENT CONDITIONS, BUT THE STATE OF OHIO WILL NOT GUARANTEE THE ACCURACY OF THE SAME.

COOPERATION BETWEEN CONTRACTORS
THE CONTRACTOR SHALL COOPERATE AND COORDINATE HIS 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 MATERIALS SPECIFICATIONS IS INTENDED.

ELEVATION DATUM
THE ELEVATIONS IN THIS PLAN ARE BASED ON THE DATUM USED BY THE ORIGINAL CONSTRUCTION PLANS. THE ELEVATIONS IN THE ORIGINAL CONSTRUCTION PLANS WERE BASED ON THE CLEVELAND REGIONAL GEODETIC SURVEY PLANE. RAMP J-JR ELEVATIONS ARE BASED UPON AN ASSUMED ELEVATION DATUM. SEE SHEET 38 FOR DETAILS OF THE ASSUMED DATUM.

WORK LIMITS
THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. THE INSTALLATION AND OPERATION OF ALL TEMPORARY TRAFFIC CONTROL AND TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS SHALL BE PROVIDED BY THE CONTRACTOR WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

CONVERSION OF STANDARD CONSTRUCTION DRAWINGS
THE METRIC STANDARD DRAWINGS REFERENCED IN THIS PLAN SHALL BE CONVERTED TO ENGLISH UNITS USING THE SI (METRIC) TO ENGLISH CONVERSION FACTORS PROVIDED IN SECTION 109.011 OF THE 1997 CONSTRUCTION AND MATERIALS SPECIFICATIONS. THE APPENDIX OF ASTM E 380 SHALL BE UTILIZED FOR ANY ADDITIONAL CONVERSION FACTORS REQUIRED. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY ENGLISH VALUES WHERE SUITABLE.

CELLULAR PHONE
THE CONTRACTOR SHALL PROVIDE TWO (2) CELLULAR PHONES FOR USE BY ODOT ENGINEERS/SUPERVISORS/INSPECTORS.

PAYMENT FOR ALL MATERIAL, LABOR AND EQUIPMENT, INSTALLATION AND MAINTENANCE INCLUDING SERVICE SHALL BE MADE AT THE CONTRACT BID PRICE FOR ITEM SPECIAL-CELLULAR PHONE

SPEC, CELLULAR PHONE 2 EA.

CLEARING AND GRUBBING
ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

PAYMENT FOR THE REMOVAL OF THE IVY ON THE RETAINING WALLS THAT ARE TO BE SEALED SHALL BE INCLUDED UNDER ITEM 201 - CLEARING AND GRUBBING.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL
THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE PLACED BY THE CONTRACTOR WITH THE ENGINEERS CONCURRENCE FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

877, TEMPORARY SEEDING AND MULCHING	1000 SQ. YD.
877, TEMPORARY PERIMETER FILTER FABRIC FENCE	1000 LIN. FT.
877, TEMPORARY DITCH CHECK FILTER FABRIC FENCE	200 LIN. FT.
877, TEMPORARY INLET PROTECTION FILTER FABRIC FENCE	200 LIN. FT.
877, SEDIMENT REMOVAL	25 CU. YD.
870, COMMERCIAL FERTILIZER	0.05 TON
870, REPAIR SEEDING AND MULCHING	500 SQ. YD.
870, WATER	2.70 M. GAL.
601, ROCK CHANNEL PROTECTION, TYPE C (WITHOUT FILTER)	10 CU. YD.

ITEM 203 - LINEAR GRADING, METHOD A
THIS ITEM OF WORK SHALL CONSIST OF EXCAVATING ALONG THE OUTSIDE EDGE OF THE PAVED SHOULDER, AS DETAILED ON THE TYPICAL SECTIONS, TO PREPARE THE GROUND SURFACE FOR PAVING UNDER GUARDRAIL. THIS ITEM SHALL BE USED TO PREPARE PROPOSED GUARDRAIL AND EXISTING GUARDRAIL RUNS.

ALL COLLECTED DEBRIS SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN SECTION 203.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATION.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT BID STATION PRICE FOR ITEM 203 - LINEAR GRADING, METHOD A AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO PERFORM THIS ITEM OF WORK.

ITEM 203-LINEAR GRADING, METHOD B
THIS ITEM OF WORK SHALL CONSIST OF GRADING ALONG THE OUTSIDE EDGE OF THE PAVED SHOULDER, AS DETAILED ON THE TYPICAL SECTIONS, TO ENSURE POSITIVE DRAINAGE.
ALL COLLECTED DEBRIS SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN SECTION 203.05 OF THE CMS.
THIS ITEM SHALL BE MEASURED IN STATIONS PER EACH SIDE OF THE ROADWAY THAT THIS WORK IS PERFORMED.
PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT BID STATION PRICE FOR ITEM 203-LINEAR GRADING, METHOD B AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO PERFORM THIS WORK.

ITEM 203 - LINEAR GRADING, METHOD B 80 STATIONS

CALCULATED XXX CHECKED XXX

GENERAL NOTES

CUY-176J-12.76

PROTECTION OF RIGHT-OF-WAY LANDSCAPING
THE CONTRACTOR SHALL CONSTRICT ALL OF HIS/HER ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS. UNLESS OTHERWISE IDENTIFIED IN THE PLANS OR PROPOSAL, THE CONSTRUCTION LIMITS ARE IDENTIFIED AS 30 FEET FROM THE EDGE OF PAVEMENT. SHOULD THE CONTRACTOR WISH TO USE ANY AREA OUTSIDE THESE LIMITS, A REQUEST IN WRITING MUST BE SUBMITTED TO THE PROJECT ENGINEER. THE DOCUMENT SUBMITTED MUST CLEARLY IDENTIFY THE AREA THAT THE CONTRACTOR PLANS TO USE AND EXPLAIN THE PROPOSED USE AND RESTORATION OF THE AREA. THE ENGINEER SHALL APPROVE THE REQUEST IN WRITING BEFORE THE CONTRACTOR HAS PERMISSION TO USE THE AREA. PRIOR TO BEGINNING WORK, THE CONTRACTOR, SUPERINTENDENT OR HIS REPRESENTATIVE, THE PROJECT ENGINEER, AND A REPRESENTATIVE OF THE MAINTAINING AGENCY SHALL REVIEW AND RECORD ALL LANDSCAPING ITEMS WITHIN THE RIGHT-OF-WAY (BOTH WITHIN AND OUTSIDE THE CONSTRUCTION LIMITS). A RECORD OF THIS REVIEW WILL BE KEPT IN THE PROJECT ENGINEER'S FILES. PRIOR TO FINAL ACCEPTANCE, A FINAL REVIEW OF LANDSCAPING ITEMS WILL BE MADE. ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED IN KIND OR AS DIRECTED BY THE PROJECT ENGINEER.

CONTRACTION JOINTS IN CONCRETE PAVEMENT OR BASE WIDENING
WHERE NEW CONCRETE IS PLACED ADJACENT TO EXISTING CONCRETE, CONTRACTION JOINTS SHALL BE PROVIDED IN THE NEW CONCRETE SO AS TO FORM CONTINUOUS JOINTS WITH THOSE IN THE EXISTING CONCRETE. THE MAXIMUM DISTANCE BETWEEN THE JOINTS IN THE NEW CONCRETE SHALL BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING BP-2.2M, IF NECESSARY, ADDITIONAL JOINTS SHALL BE PROVIDED IN THE NEW CONCRETE AT APPROXIMATELY EQUAL INTERVALS BETWEEN EXISTING JOINTS THAT EXCEED THE MAXIMUM SPACING.

ITEM 304 - AGGREGATE BASE, AS PER PLAN
THE ONLY SLAG MATERIALS PERMITTED FOR THIS ITEM SHALL BE CRUSHED AIR-COOLED BLAST FURNACE SLAG, A MIXTURE OF CRUSHED AND GRANULATED SLAGS, OR OPEN HEARTH SLAG FROM APPROVED SOURCES ON FILE AT THE LABORATORY.

ALL MATERIALS OR BLENDED MATERIALS SHALL MEET THE GRADATION REQUIREMENTS OF 304.02.

ANY GRANULATED SLAG MATERIAL USED SHALL MEET THESE GRADATION REQUIREMENTS IN LIEU OF 703.08.

ITEM 413 - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS
THE FOLLOWING QUANTITY HAS BEEN PROVIDED FOR THIS WORK:

ITEM 413 - SAWING AND SEALING ASPHALT
CONCRETE PAVEMENT JOINTS 10000 LIN. FT.

PAVEMENT REPAIRS
THESE WORK ITEMS ARE FOR USE AS DIRECTED BY THE ENGINEER FOR THE PURPOSE OF PAVEMENT REPAIR. THE DEPARTMENT ANTICIPATES THAT THE EXISTING PAVEMENT WILL REQUIRE EXTENSIVE BASE REPAIR. THE QUANTITIES PROVIDED BELOW WERE BASED ON 210-12'X8' FULL DEPTH REPAIRS AND 70-12'X1' PARTIAL DEPTH (3" MAX.) REPAIRS. ALL LABOR AND MATERIAL NECESSARY TO PERFORM THIS WORK ACCORDING TO SECTION 250 OF THE CMS SHALL BE INCLUDED FOR PAYMENT UNDER:

ITEM 251 - PARTIAL DEPTH (3" MAX.) PAVEMENT REPAIR 93 SQ.YD.
ITEM 255 - FULL DEPTH PAVEMENT REMOVAL AND
RIGID REPLACEMENT, CLASS MS 2240 SQ.YD.
ITEM 255 - FULL DEPTH PAVEMENT SAWING 6720 LIN. FT.

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 APPURTENANCE 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 A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 603 CONDUIT ITEMS.

CASTINGS ADJUSTED TO GRADE
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.

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 604 - MANHOLE ADJUSTED TO GRADE, APP 10 EA.
ITEM 604 - CATCH BASIN ADJUSTED TO GRADE, APP . . . 10 EA.
ITEM 604 - MONUMENT BOX ADJUSTED TO GRADE, APP . . . 5 EA.

ITEM 604 - CATCH BASIN OR MONUMENT BOX RECONSTRUCTED TO GRADE
THE CONTRACTOR AND FIELD ENGINEER SHALL FIELD CHECK ALL EXISTING CATCH BASINS OR MONUMENT BOXES LOCATED WITHIN THE LIMITS OF THE PROJECT. ANY CATCH BASIN OR MONUMENT BOX 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. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 604 - MANHOLE RECONSTRUCTED TO GRADE 2 EA.
ITEM 604 - CATCH BASIN, RECONSTRUCTED TO GRADE . .5 EA.
ITEM 604 - MONUMENT BOX, RECONSTRUCTED TO GRADE . . 2 EA.

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 MATERIAL SHALL MEET ITEM 604 OF THE SPECIFICATIONS AND SHALL HAVE THE PRIOR APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.
SPECIAL, MISCELLANEOUS METAL 2500 POUNDS

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.

CONCRETE SHOULDER CONSTRUCTION
PROPOSED CONCRETE SHOULDERS SHALL BE TIED TO THE EXISTING PAVEMENT WITH A TYPE D JOINT AND INCLUDED FOR PAYMENT UNDER THE APPLICABLE SHOULDER CONCRETE PAY ITEM.

EXISTING UNDERDRAINS
EXISTING UNDERDRAINS ENCOUNTERED DURING CONSTRUCTION, SHOULD BE PROVIDED A POSITIVE OUTLET, WHERE FEASIBLE. THE FOLLOWING CONTINGENCY QUANTITIES SHALL BE USED AS NEEDED TO PROVIDE POSITIVE OUTLETS. THESE ITEMS SHALL INCLUDE ANY ADDITIONAL WORK NECESSARY TO MODIFY THE PROPOSED DRAINAGE STRUCTURE TO ACCEPT THE ADDITIONAL UNDERDRAIN OUTLETS.

603, 6" CONDUIT, TYPE F 50 L.F.
605, 6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP 200 L.F.
605, 6" UNCLASSIFIED UNDERDRAIN, WITH FABRIC WRAP 200 L.F.

ITEM SPECIAL - PIPE CLEANOUT
THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS SPECIFIED IN THE PLANS. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 203.05. ALL SEWERS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE PIPE SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL - PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE ABOVE NOTED WORK:

SPECIAL, 12" PIPE CLEANOUT 300 LIN. FT.

ITEM 203 - DITCH CLEANOUT
THIS WORK SHALL CONSIST OF REESTABLISHING THE CROSS-SECTION OF AN EXISTING DITCH. SURPLUS OR UNSUITABLE MATERIAL, AS DETERMINED BY THE ENGINEER, SHALL BE DISPOSED OF AS PER 203.05. EMBANKMENT REQUIRED FOR ERODED CONDITIONS SHALL MEET THE REQUIREMENTS OF 203.07 EXCEPT THAT THE COMPACTION REQUIREMENTS ARE WAIVED.

MEASUREMENT OF THE DITCH CLEANOUT SHALL BE THE ACTUAL LINEAR FEET MEASURED ALONG THE CENTERLINE OF THE DITCH. PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THIS ITEM.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER:

203, DITCH CLEANOUT - 1000 L.F.
670, DITCH EROSION PROTECTION - 833 S.Y.

GUARDRAIL REPLACEMENT
NO HAZARD SHALL BE LEFT UNPROTECTED EXCEPT FOR THE ACTUAL TIME NECESSARY TO REMOVE THE EXISTING GUARDRAIL, PREPARE THE SITE, AND INSTALL NEW GUARDRAIL IN A CONTINUOUS OPERATION. THE REMOVAL OF ALL GUARDRAIL SHALL AT ALL TIMES BE AS DIRECTED BY THE ENGINEER. NO GUARDRAIL SHALL BE REMOVED UNTIL THE REPLACEMENT MATERIAL IS ON THE SITE, READY FOR INSTALLATION. FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE DEEMED SUFFICIENT CAUSE TO ORDER WORK SUSPENDED UNTIL SUCH TIME AS THE ENGINEER IS ASSURED OF COMPLIANCE.

ITEM 202 - GUARDRAIL REMOVED
THIS ITEM SHALL INCLUDE BOTH STANDARD AND BARRIER TYPE RAILS INCLUDING ANCHOR ASSEMBLIES AND TERMINAL ASSEMBLIES.

CALCULATED XXX CHECKED XXX

GENERAL NOTES

CUY-176J-12.76

PAVING UNDER GUARDRAIL
THIS OPERATION SHALL INCLUDE PREPARATION OF THE GRADED SHOULDER USING ITEM 203 - LINEAR GRADING, METHOD A AND PAVING UNDER THE GUARDRAIL USING ITEM 448 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG64-22, UNDER GUARDRAIL.

ITEM 203 - LINEAR GRADING, METHOD A SHALL CONSIST OF EXCAVATING TOPSOIL AND PLACING MATERIAL AS SPECIFIED IN THE PLANS AND IN ACCORDANCE WITH THE FOLLOWING:

ALL COLLECTED DEBRIS AND TOPSOIL, INCLUDING RHIZOMES, ROOTS AND OTHER VEGETATIVE PLANT MATERIAL SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN 203.05.

THE REMOVED MATERIAL SHALL BE REPLACED WITH MATERIAL AS DETAILED ON THE TYPICAL SECTIONS OR AS APPROVED BY THE ENGINEER.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 203 - LINEAR GRADING, METHOD A.

PAVING UNDER GUARDRAIL SHALL CONSIST OF PLACING ITEM 448 TO THE DEPTH SPECIFIED USING ONE OF THE FOLLOWING METHODS:

METHOD A:
1) SET GUARDRAIL POSTS
2) PLACE ITEM 448

METHOD B:
1) PLACE ITEM 448
2) BORE ASPHALT AT POST LOCATIONS (MAY BE OMITTED OF STEEL POSTS ARE USED)
3) SET GUARDRAIL POSTS
4) PATCH AROUND POSTS. THE MATERIALS USED FOR PATCHING SHALL BE A BITUMINOUS CONCRETE APPROVED BY THE ENGINEER. PATCHING AREAS SHALL BE COMPACTED USING EITHER HAND OR MECHANICAL METHODS. FINISHED SURFACES SHALL BE SMOOTH AND SLOPED TO DRAIN AWAY FROM THE POSTS.

ALL EQUIPMENT, MATERIALS, AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE, WITH THE EXCEPTION OF SETTING GUARDRAIL POSTS, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 448 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG64-22, UNDER GUARDRAIL.

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

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL
WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED OR PUNCHED. THE CONNECTION SHALL BE MADE USING A "W-BEAM RAIL SPLICE" AS SHOWN ON STANDARD CONSTRUCTION DRAWING GR-1.1M. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

TYPE 5A GUARDRAIL POST SPACING
WHEN THE OFFSET BETWEEN THE FACE OF THE GUARDRAIL AND BRIDGE PIERS, MAJOR SIGNS, SIGN SUPPORTS, OR OTHER FIXED OBSTACLES IS LESS THAN 5 FEET 6 INCHES THE GUARDRAIL SHALL BE STIFFENED BY PROVIDING 3 FEET 1.5 INCH POST SPACING FROM 12.5 FEET IN ADVANCE OF THE OBSTRUCTION TO ITS END, AS PER STANDARD DRAWING GR-2.1M. THE COST SHALL BE INCLUDED IN THE TYPE 5A UNIT BID PRICE.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED, AS DIRECTED BY THE ENGINEER, IN PLACE OF TYPE 5 GUARDRAIL, AS OUTLINED ABOVE:

ITEM 606 - GUARDRAIL, TYPE 5A	100 LIN.FT.

ITEM 606 - ANCHOR ASSEMBLY, TYPE E-98
SEE NOTES AND DETAILS ON SHEET 76 FOR THIS ITEM.

ITEM 622 - CONCRETE BARRIER, TYPE B, AS PER PLAN
THIS ITEM SHALL BE USED TO CONSTRUCT A 32", TYPE B CONCRETE BARRIER FROM STATION 36+77.35 +/- TO STATION 49+00 +/- AS SHOWN IN THE PLANS AND ON THE DETAIL SHEETS 79 AND 80 INCLUDING ALL TRANSITIONS. SEE STANDARD DRAWING RM-4.3M FOR DIMENSIONS NOT SHOWN IN THE DETAIL SHEETS. ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CONSTRUCT THE CONCRETE BARRIER INCLUDING TRANSITIONS SHALL BE PAID UNDER THE UNIT BID PRICE FOR ITEM 622 - CONCRETE BARRIER, TYPE B, AS PER PLAN.

ITEM 622 - CONCRETE BARRIER, TYPE D, AS PER PLAN
THIS ITEM SHALL BE USED TO CONSTRUCT A 32", TYPE D CONCRETE BARRIER FROM STATION 49+00 +/- TO STATION 923+20 AS SHOWN IN THE PLANS AND ON THE DETAIL SHEET 80 INCLUDING ALL TRANSITIONS. SEE STANDARD DRAWING RM-4.3M FOR DIMENSIONS NOT SHOWN IN THE DETAIL SHEETS. ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CONSTRUCT THE CONCRETE BARRIER INCLUDING TRANSITIONS SHALL BE PAID UNDER THE UNIT BID PRICE FOR ITEM 622 CONCRETE BARRIER, TYPE D, AS PER PLAN.

FENCE LENGTHS
THE LENGTHS OF FENCE SHOWN IN THE PLANS ARE HORIZONTAL DIMENSIONS. MEASUREMENTS OF THE FINAL QUANTITIES SHALL BE MADE IN ACCORDANCE WITH ITEM 607.

ITEM 202 - FENCE REMOVED, AS PER PLAN
ITEM 607 - FENCE, TYPE CLT
ITEM 607 - GATE, TYPE CL
THE FOLLOWING ESTIMATED QUANTITIES SHALL BE USED TO REMOVE THE EXISTING FENCE AND SUBSEQUENTLY REPLACE IT WITH TYPE CLT FENCE IN ITS CURRENT LOCATION. THE LIMITS FOR THE REMOVAL AND REPLACEMENT FOR NORTHBOUND SR-176 ARE STA.. 225+00 (DENISON) TO STA.. 64+00 INCLUDING ALL INTERCHANCES AND OVERPASSES. THE LIMITS FOR THE REMOVAL AND REPLACEMENT FOR SOUTHBOUND SR-176 ARE STA.. 225+00 (DENISON) TO STA.. 35+00 (RAMP SBOR) INCLUDING ALL INTERCHANGES AND OVERPASSES.

THE EXISTING FENCE LOCATIONS ARE NOT SHOWN IN THESE PLANS.

THE CONTRACTOR SHALL STAKE ALL HORIZONTAL DEFLECTION POINTS OF THE EXISTING FENCE DURING REMOVAL FOR USE WHEN LAYING OUT THE PROPOSED FENCE. STAKING OF DEFLECTION POINTS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 202 - FENCE REMOVED, AS PER PLAN.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 202 - FENCE REMOVED, AS PER PLAN. . . . . 7100 LIN.FT.
ITEM 607 - FENCE, TYPE CLT. . . . . .7100 LIN.FT.
ITEM 607 - GATE, TYPE CL . . . . . 1 EACH

ITEM 870 - SEEDING AND MULCHING
THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

870, SEEDING AND MULCHING	6,500 SQ. YD.
870, AGRICULTURAL LIME	2.69 TON
870, COMMERCIAL FERTILIZER	0.88 TON
870, SOIL ANALYSIS TEST	2 EACH
870, WATER	35 MGAL

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING, ARE BASED ON THESE LIMITS.

THE CONTRACTOR IS REQUIRED TO ESTABLISH A GOOD STAND OF GRASS OF UNIFORM COLOR AND DENSITY TO THE SATISFACTION OF THE ENGINEER.

CALCULATED XXX CHECKED XXX

GENERAL NOTES

CUY-176J-12.76

MAINTENANCE OF TRAFFIC

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

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

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

B. DURING THE REPAIR OF WINGWALL PARAPETS OR IF THE EXISTING GUARDRAIL IS FOR THE PROTECTION OF AN OBSTACLE (I.E. SIGN SUPPORT, BRIDGE PARAPET, ETC.) THE CONTRACTOR SHALL ERECT PORTABLE CONCRETE BARRIER IN THE DIRECTION OF TRAFFIC. THE REQUIREMENTS OF PARAGRAPH "A" SHALL APPLY TO THE REMAINING GUARDRAIL WITHIN THE RUN. TEMPORARY BARRIER SHALL BE FLARED AT A 13:1 (MINIMUM) TAPER RATE AND SHALL INCLUDE A TEMPORARY END TERMINAL AS PER RM-4.2M.

C. THE REQUIREMENTS STATED IN "A" SHALL APPLY FOR A PERIOD NOT TO EXCEED ONE WEEK. WHERE THE REBUILDING OR CONSTRUCTION OF ANY RUN OF GUARDRAIL CANNOT BE ACCOMPLISHED WITHIN ONE WEEK. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY CONCRETE BARRIER IN THE INTERIM TIME IT TAKES TO COMPLETE THE WORK THE APPROACH END OF THE PORTABLE CONCRETE BARRIER SHALL BE BE FLARED 10 FEET, (130 FEET @ 13:1 TAPER) AND SHALL INCLUDE A TEMPORARY END TERMINAL AS PER RM-4.2M. IN ADDITION, A TYPE II BARRICADE WITH TYPE B (HIGH INTENSITY FLASHER) WARNING LIGHT SHALL BE PLACED IN FRONT OF THIS INITIAL SECTION OF TEMPORARY BARRIERS TO PROVIDE FOREWARNING TO THE APPROACHING TRAFFIC.

WHEN THE LANE ADJACENT TO THE GUARDRAIL IS CLOSED TO TRAFFIC THE PROVISIONS OF PARAGRAPH "A" ABOVE SHALL APPLY AFTER 1 DAY. THE PROVISIONS OF PARAGRAPH "B" ABOVE SHALL APPLY AFTER 10 DAYS AND THE PROVISIONS OF PARAGRAPH "C" ABOVE SHALL APPLY AFTER 15 DAYS.

THE TERM "GUARDRAIL" AS USED HEREIN SHALL BE UNDERSTOOD TO COVER ALL TYPES OF GUARDRAIL, EXISTING OR PROPOSED FOR THE PROJECT, INCLUDING BARRIER DESIGN GUARDRAIL, BRIDGE WINGWALL PARAPETS, AND CONCRETE BARRIER.

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

ITEM 614 - MAINTAINING TRAFFIC
GENERALLY THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS AS TO MAKE THE PROPOSED REPAIR WITH A MINIMUM OF HAZARD, DELAY AND INCONVENIENCE TO THE MOTORISTS USING THE HIGHWAY AFFECTED BY THE WORK DONE UNDER THIS CONTRACT: FURTHERMORE, IN ADDITION TO THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, THE FOLLOWING SPECIFIC PROVISIONS ARE MANDATORY.

I. NOTIFICATION

SINCE FUNCTIONAL TRAFFIC CONTROL IS A MAJOR CONCERN ON THIS PROJECT, IT IS ESSENTIAL THAT THE MOTORING PUBLIC BE ADEQUATELY FOREWARNED OF FUTURE LANE CLOSURES AND TRAFFIC CONSTRICTIONS. THEREFORE, THE CONTRACTOR SHALL SUBMIT A WRITTEN SCHEDULE TO THE ENGINEER, RESPONSIBLE LAW ENFORCEMENT AGENCIES, AND THE ODOT PUBLIC INFORMATION OFFICE (216-581-2333 EXT 244) INDICATING THE LOCATIONS AND DATES OF THE LANE CLOSURES AT LEAST 3 DAYS PRIOR TO THE IMPLEMENTATION OF ANY SUCH CLOSURES.

II. NIGHTTIME WORK (THE HOURS FROM SUNSET TO SUNRISE 7:00 PM - 6:00 AM)

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. LIGHTING PLAN FOR NIGHT-TIME OPERATIONS SHALL BE PRESENTED TO AND APPROVED BY THE ENGINEER.

III. RESTRICTIONS

SEE "PARAMETERS FOR MAINTAINING TRAFFIC CONTROL" NOTE ON SHEET 15.

IV. MAINTENANCE OF TRAFFIC SYSTEMS

A. WHEN REQUIRED

WHENEVER ANY PART OF THE TRAVELED SURFACE IS BEING WORKED UPON OR IS OTHERWISE NOT SUITABLE FOR SAFE AND CONVENIENT USE BY VEHICLES, TRAFFIC CONTROL DEVICES SUFFICIENT TO PROTECT SUCH AREAS TO ASSURE THE SAFE AND CONVENIENT PASSAGE OF VEHICULAR TRAFFIC SHALL BE INSTALLED AND MAINTAINED. SUCH TRAFFIC CONTROL DEVICES AND THE MANNER IN WHICH THEY ARE USED SHALL BE CONSISTENT WITH THESE PLANS AND THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, HEREINAFTER REFERRED TO AS

THE "MANUAL". THE TRAFFIC CONTROL DEVICE SYSTEM SHALL CONSTITUTE THE MINIMUM PROVISIONS FOR TRAFFIC CONTROL FOR EACH PARTICULAR SITUATION. WHENEVER THE ENGINEER DEEMS IT NECESSARY ESPECIALLY WHERE A GRADE, CURVE, OR MERGE CONDITIONS EXISTS, HE MAY DIRECT THAT ADDITIONAL OR ALTERNATIVE DEVICES BE USED.

B. CONDITIONS

DURING ALL PARTS OF THIS PROJECT, SIGNING, BARRICADES, FLASHING ARROWS, ETC. SHALL BE LOCATED AS INDICATED IN THE MANUAL. THE NUMBER OF LANES AND THE MINIMUM LANE WIDTHS MAINTAINED SHALL BE AS INDICATED ON THE TABLE ON SHEET 15.

C. ADVANCE WARNING SIGNS

ALL ADVANCE WARNING SIGNS FOR ANY CONDITION WHICH RESTRICTS TRAFFIC SHALL BE ERECTED BEFORE ANY SUCH RESTRICTION IS PUT INTO EFFECT. ALL SUCH SIGNS SHALL BE COVERED OR REMOVED FROM THE VIEW OF TRAFFIC WHENEVER THEY ARE NOT APPLICABLE.

D. FLASHING ARROW REQUIREMENT

WHENEVER ANY PART OF THE TRAVELED SURFACE IS CLOSED, THE MOTORISTS SHALL BE WARNED AND DIRECTED BY THE CONTRACTOR THROUGH THE USE OF ONE FLASHING ARROW FOR EACH LANE CLOSED. ADDITIONALLY, THE PROVISIONS SET FORTH IN THE "MANUAL" AND THE APPLICABLE STANDARD CONSTRUCTION DRAWINGS SHALL BE MET.

E. PROTECTION OF PUBLIC

PERSONAL CARS SHALL NOT BE PARKED WITHIN THE L/A.

F. FAILURE TO COMPLY

IF THERE IS ANY FAILURE TO COMPLY WITH PROVISIONS FOR TRAFFIC CONTROL SET OUT IN THESE PLANS AND NOTES, OR WITH THE PROVISIONS OF THE "MANUAL", THE HIGHWAY IN THE VICINITY OF THE WORK AREA SHALL NOT BE CONSIDERED IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC. ANY FAILURE TO KEEP THE HIGHWAY, IN THE VICINITY OF THE WORK AREA, IN A CONDITION FOR THE SAFE AND CONVENIENT USE BY THE TRAVELING PUBLIC SHALL BE CONSIDERED A BREACH OF THIS CONTRACT. WORK SHALL BE SUSPENDED UNTIL THE CONTRACTOR COMPLIES WITH THE PROVISIONS OF THE AFOREMENTIONED ITEMS.

V. 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.

B. SIGN SUPPORTS

SIGN SUPPORTS SHALL BE OF SUFFICIENT SIZE AND HEIGHT AS TO SUPPORT THE SIGNS AT THE APPROPRIATE HEIGHT. SUPPORTS SHALL BE ADEQUATE IN MASS AND STABILITY TO PREVENT THE SIGNS FROM BEING BLOWN OVER BY WIND OR VEHICULAR GENERATED AIR TURBULENCE.

C. FLASHING ARROWS

WHENEVER ANY PART OF THE TRAVELED SURFACE IS CLOSED, THE MOTORIST SHALL BE WARNED AND DIVERTED BY THE CONTRACTOR THROUGH THE USE OF ONE FLASHING ARROW BARRICADE FOR EACH LANE CLOSED. THE CONTRACTOR SHALL REFER TO STANDARD CONSTRUCTION DRAWING MT-35.10 AND THE PROVISIONS SET FORTH IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR ALL INFORMATION REGARDING FURNISHING, MAINTAINING, AND USE OF FLASHING ARROW BARRICADES. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614-MAINTAINING TRAFFIC.

D. DRUMS

DRUMS SHALL BE IN ACCORDANCE WITH PERTINENT SECTIONS OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. ALL COSTS FOR INSTALLING, MAINTAINING AND SUBSEQUENT REMOVAL OF SAID DRUMS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614-MAINTAINING TRAFFIC.

E. FLASHERS

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.

F. SMALL BARRICADES

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

VI. PAYMENT

PAYMENT FOR PROVIDING, ERECTING, MAINTAINING AND REMOVING TEMPORARY MAINTENANCE OF TRAFFIC CONTROL DEVICES SHALL BE MADE UNDER THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

CALCULATED XXX CHECKED XXX

MAINTENANCE OF TRAFFIC NOTES

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ITEM SPECIAL - TRAFFIC CONTROL PLANNING AND IMPLEMENTATION
THIS ITEM SHALL INCLUDE THE PREPARATION AND IMPLEMENTATION OF TRAFFIC CONTROL PLANS BASED ON THE CONTRACTOR'S SCHEDULE OF WORK ACTIVITIES. THIS WILL REQUIRE A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF OHIO, TO BE IN CHARGE OF DESIGNING, IMPLEMENTING AND MONITORING TRAFFIC MAINTENANCE PLANS COORDINATED WITH THE SCHEDULE FOR THE WORK. THIS ENGINEER IS HEREIN REFERRED TO AS THE TRAFFIC CONTROL ENGINEER.

THE TRAFFIC CONTROL ENGINEER AND HIS STAFF SHALL HAVE EXPERIENCE IN THIS FIELD SATISFACTORY TO THE OHIO DEPARTMENT OF TRANSPORTATION. THIS DOCUMENTATION SHALL BE FURNISHED AT THE PRELIMINARY CONSTRUCTION MEETING FOR REVIEW AND APPROVAL. IN ADDITION, THE TRAFFIC CONTROL ENGINEER SHALL HAVE DESIGN EXPERIENCE IN THIS FIELD ACCEPTABLE TO ODOT.

THE TRAFFIC CONTROL ENGINEER AND HIS TEAM SHALL HAVE EXPERTISE AND RESOURCES TO:

1. DEVELOP AND DESIGN TRAFFIC CONTROL PLANS MEETING CURRENT STANDARDS. THESE PLANS SHALL BE SUBMITTED TO AND APPROVED BY ODOT.
2. MONITOR ACCIDENT DATA AND RECOMMEND CHANGES, IF NEEDED AFTER APPROVAL AND IMPLEMENTATION, BASED ON THIS ANALYSIS.
3. PROVIDE, INSTALL, MAINTAIN AND SUBSEQUENTLY REMOVE THE REQUIRED TRAFFIC CONTROL EQUIPMENT AND PAVEMENT MARKING FEATURES.
4. PROVIDE QUICK RESPONSE TO ON SITE PROBLEMS OR ACCIDENT DAMAGE.

THE FOLLOWING REQUIREMENTS WILL BE INCLUDED IN THIS ITEM:

1. **TRAFFIC CONTROL PLANS:**
TRAFFIC CONTROL PLANS PROPOSED SHALL BE SUBMITTED TO ODOT TWO WEEKS PRIOR TO WORK IN THE AREA COVERED BY THE PLAN. THIS SUBMITTAL SHALL CONSIST OF FIVE COPIES OF THE PLANS FOR REVIEW AND DISTRIBUTION. NO WORK SHALL BEGIN AT ANY LOCATION UNTIL THE TRAFFIC CONTROL PLAN HAS BEEN APPROVED BY ODOT.

2. **PLAN CHANGES**:
THE TRAFFIC CONTROL ENGINEER SHALL OBTAIN ACCIDENT DATA FROM THE LAW ENFORCEMENT AGENCY AND ANALYZE CAUSES AND FURNISH RECOMMENDATION FOR CHANGE TO REDUCE THE ACCIDENT FREQUENCY. NO CHANGES TO THE APPROVED TRAFFIC CONTROL PLAN SHALL BE MADE UNTIL APPROVAL IS OBTAINED FROM ODOT IN WRITING.

3. **PLAN IMPLEMENTATION**:
THE TRAFFIC CONTROL ENGINEER SHALL BE RESPONSIBLE FOR PROVIDING, INSTALLING, MAINTAINING AND THE SUBSEQUENT REMOVAL OF ALL TRAFFIC CONTROL EQUIPMENT, PAVEMENT MARKING, SIGNS, OVERLAYS OR OTHER FEATURES NECESSARY TO IMPLEMENT THE APPROVED PLAN AT EACH WORK SITE. ALL REQUIREMENTS OF ITEM 614 SHALL APPLY TO THIS CONTRACT. EXCEPT AS LISTED HEREAFTER, THIS WORK SHALL BE INCLUDED FOR PAYMENT WITH THIS ITEM SPECIAL.

4. **RESPONSE PLAN:**
PROVIDE A MEANS OF QUICK RESPONSE TO ON SITE PROBLEMS OR ACCIDENTS TO MAINTAIN THE SYSTEM 24 HOURS A DAY AND 7 DAYS A WEEK TO THE SATISFACTION OF THE ENGINEER. THE TRAFFIC CONTROL ENGINEER SHALL HAVE NECESSARY AUTHORITY TO PERFORM ANY WORK NECESSARY TO RECTIFY ANY PROBLEMS. THE TRAFFIC CONTROL ENGINEER AND THE PROJECT ENGINEER SHALL HAVE A CONSTANT MEANS OF COMMUNICATION FOR THE PURPOSE OF MAINTAINING TRAFFIC CONTROL. THE MEANS OF COMMUNICATIONS SHALL BE A TWO-WAY RADIO, OR EQUIVALENT, FURNISHED AND SERVICED BY THE CONTRACTOR.

A REACTION PLAN SHALL BE DEVELOPED SO AS TO MINIMIZE RESPONSE TIME TO CORRECT ON SITE PROBLEMS IMMEDIATELY AFTER NOTIFICATION OF ODOT OF THE NEED. CORRECTION SHALL BE MADE WITHIN FOUR HOURS OF NOTIFICATION. THIS PLAN SHALL BE FURNISHED TO THE ENGINEER PRIOR TO THE START OF WORK AND SHALL BE UPDATED AS REQUIRED BY THE ENGINEER.

5. **COORDINATION:**
COORDINATION OF THE CONTRACTOR'S ACTIVITIES WITH SPECIAL EVENTS MAY BE NECESSARY. THE TRAFFIC CONTROL ENGINEER SHALL BE AVAILABLE TO ASSIST THE ENGINEER IN THIS AREA IF NECESSARY. HOWEVER, ALL INSTRUCTIONS SHALL BE FURNISHED BY THE PROJECT ENGINEER.

6. **PAYMENT:**
PAYMENT SHALL BE MADE AS FOLLOWS: AT THE LUMP SUM BID FOR ITEM SPECIAL, TRAFFIC CONTROL PLANNING AND IMPLEMENTATION.
-30% UPON APPROVAL AND IMPLEMENTATION OF THE INITIAL PLAN AND INSTALLATION OF REQUIRED TRAFFIC CONTROL DEVICES.
-70% PRORATED OVER THE REMAINING WORKING TIME IN THE CONTRACT. THE ENGINEER SHALL CONSIDER THE MAGNITUDE OF TRAFFIC CONTROL BEING IMPLEMENTED TO THE ESTIMATE PERIOD AND PRORATE THE COST ACCORDINGLY.

PARAMETERS FOR MAINTAINING TRAFFIC CONTROL
THE TRAFFIC CONTROL ENGINEER SHALL DESIGN PLANS TO MEET THE FOLLOWING REQUIREMENTS:

1. IT IS THE INTENTION TO PERFORM THE REQUIRED WORK WITH THE LEAST INCONVENIENCE TO, AND THE MAXIMUM SAFETY TO THE CONTRACTOR AND THE TRAVELING PUBLIC. ANY VARIANCES FROM THESE MAINTENANCE OF TRAFFIC NOTES MUST BE APPROVED IN ADVANCE BY ODOT EXCEPT AS MODIFIED BELOW OR AS SHOWN IN THE MAINTENANCE OF TRAFFIC PLANS. THE REQUIREMENTS FOR MAINTAINING TRAFFIC AS INDICATED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, CURRENT EDITION WITH LATEST REVISIONS, AND PERTINENT ITEMS OF THE SPECIFICATIONS AND PROPOSAL SHALL APPLY.

2. THE CONTRACTOR SHALL ARRANGE HIS OPERATIONS SO AS TO PREVENT ANY INTERFERENCE TO THE CONTINUOUS FLOW OF TRAFFIC. ALL VEHICLES, EQUIPMENT, MEN AND THEIR ACTIVITIES ARE RESTRICTED AT ALL TIMES TO ONE SIDE OF THE PAVEMENT. VEHICLE AND EQUIPMENT SHALL NOT PARK OR STOP EXCEPT WITHIN DESIGNATED WORK AREAS, AND SHALL ENTER AND LEAVE WORK AREAS IN A MANNER WHICH WILL NOT BE HAZARDOUS TO, OR INTERFERE WITH THE NORMAL TRAFFIC FLOW. PERSONAL VEHICLES WILL NOT BE PERMITTED TO PARK WITHIN THE RIGHT OF WAY EXCEPT IN SPECIFIC AREAS AS DESIGNATED BY THE ENGINEER.

3. A "ROAD CONSTRUCTION AHEAD" SIGN (OW-128) SHALL BE PLACED ON ALL RAMPS APPROACHING THE WORK AREAS. THERE SHALL BE AVAILABLE ON THE JOB, AT ALL TIMES, SPECIAL BLACK AND ORANGE "WATCH FOR STOPPED TRAFFIC" SIGNS (OW-166 48" X 48") WITH TYPE A FLASHING WARNING LIGHTS ON TOP. THERE SHALL BE TWO FOR EACH DIRECTION OF TRAFFIC. THESE SIGNS SHALL BE MOUNTED ON A PORTABLE BARRICADE AND ARE TO BE USED IN THE VENT THAT TRAFFIC BACKS UP. THEY SHALL BE LOCATED APPROXIMATELY 1300 FT. IN ADVANCE OF THE BACKUP AND WILL BE MOVED BACK AS THE BACKUP INCREASES.

4. IN ANY INSTANCE WHERE EITHER THE ACCELERATION LANE OR THE DECELERATION LANE IS SHORTENED OR OBSTRUCTED DUE TO WORK AND/OR STANDARD LANE CLOSURES, SUCH WORK SHALL BE COMPLETED "AS SOON AS POSSIBLE" SO AS TO PERMIT THE LANE CLOSURES TO BE MOVED TO A LOCATION WHERE SAID ACCELERATION OR DECELERATION LANES ARE NO LONGER SHORTENED.

5. A MINIMUM OF 1-11' LANE SHALL BE MAINTAINED ON ALL RAMPS. THE FOLLOWING TABLE SHALL BE USED TO DETERMINE THE MINIMUM NUMBER OF LANES OPEN AND AVAILABLE TO TRAFFIC ON SR-176:

MINIMUM NUMBER OF LANES TO BE MAINTAINED:

NUMBER OF LANES	WEEKDAY	WEEKEND
1 (11' MIN.) IN EACH DIRECTION	7 P.M. - 6 A.M.	10 P.M. FRI. - 10 A.M. SAT. 10 P.M. SAT. - 11A.M. SUN. 10 P.M. SUN. - 6 A.M. MON.
2 (11' MIN.) IN EACH DIRECTION	ALL OTHER TIMES	ALL OTHER TIMES

LANE CLOSURE ANALYSIS FOR ADDITIONAL LANE CLOSURE TIMES.
LANE CLOSURES MAY TAKE PLACE DURING THE DAY, WEEKDAYS, IF THE CONTRACTOR DOES A **LANE CLOSURE ANALYSIS** AND THE RESULTS MEET THE CRITERIA BELOW . LANES MAY NOT BE CLOSED IN THE INBOUND DIRECTION FROM 6AM TO 8:30AM AND IN THE OUTBOUND DIRECTION FROM 3:30PM TO 6:30PM ON WEEKDAYS.

THE LANE CLOSURE ANALYSIS SHALL BE DONE AND DOCUMENTED IN THE FOLLOWING MANNER.

THE CONTRACTOR SHALL TAKE 10, ONE MINUTE TRAFFIC COUNTS FOR EACH DIRECTION AND FOR EACH HOUR THAT THE CONTRACTOR IS PROPOSING TO CLOSE A LANE. THE COUNTS SHALL BE TAKEN EVERY 6 MINUTES WITHIN THE HOUR. ALL VEHICLES THAT PASS THE POINT OF CLOSURE SHALL BE COUNTED. THE COUNTS FOR ONE HOUR SHALL BE AVERAGED. THE AVERAGE SHALL BE MULTIPLIED BY 60 TO GET THE COUNT INTO VEHICLES PER HOUR.
EACH LANE IN A WORK ZONE CAN CARRY 1500 VEHICLES PER HOUR.
IF IT IS A 2 LANE SECTION THE LANE MAY BE CLOSED (EXCEPT FOR THE RESTRICTIONS LISTED ABOVE) DURING THE HOURS THE TRAFFIC COUNTS ARE BELOW 1500 VEHICLES PER HOUR.
IF IT IS A 3 LANE SECTION 1 LANE MAY BE CLOSED DURING THE HOURS THE TRAFFIC COUNTS ARE BELOW 3000 VEHICLES PER HOUR.

THE TRAFFIC COUNTS AND ANALYSIS SHALL BE SUPPLIED TO THE PROJECT ENGINEER FOR APPROVAL.
IF IT IS FOUND TRAFFIC IS DELAYED DURING ADDITIONAL HOURS THE CONTRACTOR IS REQUESTING THE LANES SHALL NOT BE CLOSED AGAIN AT THE TIMES UNTIL ANOTHER TRAFFIC ANALYSIS IS DONE. IF THERE ANOTHER TRAFFIC BACK UP (BACK UP= STOP AND GO TRAFFIC) OR DELAY(DELAY = SPEEDS BELOW 40MPH) THEN THE LANE SHALL NOT BE CLOSED AT THOSE TIMES. THE CONTRACTOR WILL BE ASSESSED LIQUIDATED DAMAGES IF BACKUPS OR DELAYS CONTINUE.

SPECIAL EVENTS
LANE CLOSURES TIME SHALL BE ADJUSTED FOR SPECIAL EVENTS THAT EXCEED 25000 IN ATTENDANCE IN THE DOWNTOWN CLEVELAND AREA. THE CONTRACTOR SHALL NOT CLOSE A LANE (S) IN THE INBOUND DIRECTION 2 HOURS BEFORE AND EVENT AND IN THE OUTBOUND DIRECTION 2 HOURS AFTER AN EVENT ENDS.

PARAMETERS FOR MAINTAINING TRAFFIC CONTROL (CONTINUED)
HOLIDAYS
THERE SHALL BE NO LANE CLOSURES ON HOLIDAYS OR HOLIDAY WEEKENDS. THE FOLLOWING ARE CONSIDERED HOLIDAYS. MEMORIAL DAY, FOURTH OF JULY, LABOR DAY, THANKSGIVING, CHRISTMAS , NEW YEARS, EASTER. NO LANE CLOSURES ARE ALLOWED AFTER 12 NOON ON THE DAY PRECEDING A HOLIDAY. FOR HOLIDAY WEEKENDS NO LANE CLOSURES ARE ALLOWED AFTER FRI. 12 NOON UNTIL 6 AM THE DAY AFTER THE HOLIDAY.

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED LIQUIDATED DAMAGES IN THE AMOUNT OF $68.00 PER EACH MINUTE THESE REQUIREMENTS ARE NOT MET.

CALCULATED XXX CHECKED XXX

MAINTENANCE OF TRAFFIC NOTES

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6. DROP-OFFS IN WORK ZONES SHALL BE TREATED ACCORDING TO THE DETAILS ON SHEET 18.

7. CHANGES IN TRAFFIC PATTERNS WILL NOT BE PERMITTED BETWEEN THE HOURS OF 6:00 A.M. TO 9:00 A.M., AND 3:00 P.M. TO 6:00 P.M. ON ANY WEEKDAY.

8. A PORTABLE ELECTRIC FLASHING ARROW PANEL AS DESCRIBED ON STANDARD DRAWING MT-35.10M (REVISION 1/30/95) SHALL BE PLACED AT THE FORWARD END OF ALL TAPERS.

9. PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE USED AS REQUIRED FOR THE PURPOSE OF ADVANCED WARNING.

10. BERMS AND SHOULDER AREAS MAY BE USED TO MAINTAIN TRAFFIC, IF APPROVED. SHOULDER WORK AS DETAILED IN THIS PLAN SHALL BE COMPLETED PRIOR TO USING THE SHOULDER FOR MAINTAINING TRAFFIC.

11. ALL OPERATIONS AFFECTING THE FLOW OF TRAFFIC SHALL BE RESTRICTED TO ONE SIDE OF DIRECTIONAL LANES UNLESS OTHERWISE APPROVED.

12. ALL NECESSARY TEMPORARY AN/OR PAVEMENT SIGNING AND PAVEMENT MARKING SHALL BE IN PLACE PRIOR TO REOPENING PAVEMENT TO TRAFFIC.

13. THE ADVISORY SPEED SHALL BE 45 MPH ON MAINLINE PAVEMENT.

UNLESS SEPARATELY ITEMIZED IN THE PLANS, THE ABOVE WORK SHALL BE PAID FOR AS ITEM SPECIAL, MAINTAINING TRAFFIC, MISC.: TRAFFIC CONTROL PLANNING AND IMPLEMENTATION.

THE FOLLOWING QUANTITIES HAVE BEEN PROVIDED FOR ESTIMATING PURPOSES ONLY:

ITEM 622 - PORTABLE CONCRETE BARRIER, 32"---------- 4500 LF
ITEM 614 - WORK ZONE MARKING SIGN ----------40 EA
ITEM 614 - BIT. CONC. FOR MAINT. TRAFFIC----------100 CU YD
ITEM 615 - TEMPORARY PAVEMENT, CLASS B----------200 SQ YD
ITEM 615 - TEMPORARY ROADS----------LUMP SUM
ITEM 614 - TEMP. EDGE LINE, CLASS I, 642 PAINT----------8.8 MILE
ITEM 614 - TEMP. EDGE LINE, CLASS I, 740.06 TYPE I----------2.0 MILE
ITEM 614 - TEMP. CHAN. LINE, CLASS I, 740.06 TYPE I ---------2000 LF
ITEM 614 - TEMP. CHAN. LINE, CLASS I, 642 PAINT----------1000 LF
ITEM 614 - TEMP. LANE LINE, CLASS I, 642 PAINT---------- 4.0 MILE
ITEM 616 - WATER---------- 10 M. GAL
ITEM 616 - CALCIUM CHLORIDE----------1 TON

OVERNIGHT TRENCH CLOSING
THE BASE WIDENING SHALL BE COMPLETED TO A DEPTH OF NO MORE THAN 10 INCHES BELOW THE EXISTING CONCRETE PAVEMENT BY THE END OF EACH WORK DAY. NO TRENCH SHALL BE LEFT OPEN OVERNIGHT EXCEPT FOR A SHORT LENGTH (25 FEET OR LESS) OF A WORK SECTION AT THE END OF THE TRENCH. IN CASE WORK MUST BE SUSPENDED BECAUSE OF INCLEMENT WEATHER OR OTHER REASONS, THE TRENCH FOR THE UNCOMPLETED BASE WIDENING SHALL BE BACKFILLED AT THE DIRECTION OF THE ENGINEER.

ITEM SPECIAL - REPLACEMENT SIGN
FLAT SHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL TO THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT SIGNS SHALL BE NEW. OTHER MATERIALS MAY BE IN USED BUT GOOD CONDITION SUBJECT TO APPROVAL BY THE ENGINEER. PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE CONTRACT PRICE PER SQUARE METER FOR ITEM SPECIAL, REPLACEMENT SIGN, AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF DAMAGED SIGNS, HARDWARE AND SUPPORTS, AND PROVIDING THE NECESSARY REPLACEMENT HARDWARE, SUPPORTS, ETC. AN ESTIMATED QUANTITY OF 50 SQUARE FEET HAS BEEN PROVIDED IN THE GENERAL SUMMARY.

REPLACEMENT DRUM
DRUMS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT DRUMS SHALL BE NEW. PAYMENT FOR THE NEW DRUMS SHALL BE INCLUDED UNDER THE LUMP SUM BID FOR ITEM 614-MAINTAINING TRAFFIC, AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF THE DAMAGED DRUM, AND PROVIDING AND MAINTAINING THE REPLACEMENT DRUM IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL DRUM.

ITEM 614 - WORK ZONE SPEED LIMIT SIGN
THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN, COVER DURING SUSPENSION OF WORK, AND SUBSEQUENTLY REMOVE WORK ZONE SPEED LIMIT SIGNS AND SUPPORTS (R-10) (45 SPEED LIMIT) WITHIN THE WORK LIMITS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS. THE CONTRACTOR SHALL COVER OR REMOVE ANY EXISTING SPEED LIMIT OR MINIMUM SPEED SIGNS WITHIN THE REDUCED SPEED ZONE. THESE SIGNS SHALL BE RESTORED DURING SUSPENSION OR TERMINATION OF THE REDUCED SPEED LIMIT. THE EXPENSE OF COVERING OR REMOVAL AND RESTORATION OF EXISTING SPEED LIMIT OR MINIMUM SPEED SIGNS SHALL BE INCLUDED IN THE PAY ITEM FOR THE WORK ZONE SPEED LIMIT SIGNS. THE WORK ZONE SPEED LIMIT SIGNS MAY BE ERECTED OR UNCOVERED NO MORE THAN 4 HOURS BEFORE THE ACTUAL START OF WORK. THE SIGNS SHALL BE REMOVED OR COVERED NO LATER THAN 4 HOURS FOLLOWING RESTORATION OF ALL LANES TO TRAFFIC WITH NO RESTRICTIONS, OR SOONER AS DIRECTED BY THE ENGINEER. (THE CONTRACTOR SHALL ERECT A WORK ZONE SPEED LIMIT SIGN IN ADVANCE OF ANY LANE RESTRICTION EXPECTED TO LAST AT LEAST 30 DAYS, OR AS DIRECTED BY THE ENGINEER. THE SIGN SHALL BE MOUNTED ON BOTH SIDES OF DIVIDED HIGHWAYS, 500 FEET IN ADVANCE OF THE LANE REDUCTION TAPER. THE SIGN SHALL BE MOUNTED ON THE RIGHT SIDE, 250 FEET IN ADVANCE OF THE LANE REDUCTION TAPER ON UNDIVIDED HIGHWAYS. THE SIGN SHALL BE REPEATED, ON THE SIDE NEAREST TRAFFIC, EVERY 1 MILE FOR 55 MPH ZONES AND EVERY ½ MILE FOR 45 MPH ZONES. THESE SIGNS SHALL ALSO BE ERECTED IMMEDIATELY AFTER EACH OPEN ENTRANCE RAMP WITHIN THE ZONE.) A SIGN(S) TO INDICATE THE RESUMPTION OF THE STATURORY SPEED LIMIT SHALL E ERECTED AT THE END OF ANY REDUCED SPEED ZONE. R-10 SIGNS (SPEED LIMIT)SHALL BE USED ON UNDIVIDED ROADWAY. R-10 (SPEED LIMIT) AND R-9A SIGNS (SPEED LIMIT) SHALL BE USED ON DIVIDED ROADWAYS. WHEN USED THE R-10 AND R-9A SIGNS SHALL BE MOUNTED SIDE-BY-SIDE ON SEPARATE SUPPORTS. 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 730.19 AND U.S. DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL SPECIFICATION FOR TYPE III-C SHEETING, FP-85. WORK ZONE SPEED LIMIT SIGNS SHALL BE MOUNTED ON TWO (2) ITEM 630 GROUND MOUNTED SUPPORTS, NO. 3 POSTS. WORK ZONE SPEED LIMIT SIGNS AND SUPPORTS WILL BE MEASURED AS THE NUMBER OF SIGN INSTALLATIONS, INCLUDING THE SIGNS AND NECESSARY SUPPORTS. IF A SIGN AND SUPPORT COMBINATION IS REMOVED AND REERECTED AT ANOTHER LOCATION WITHIN THE PROJECT DUE TO CHANGES IN THE SPEED ZONE 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 REMOVING THE SIGNS AND SUPPORTS.

614, WORK ZONE SPEED LIMIT SIGN 10 EACH

GUARDRAIL PROTECTION
NO SIGN SUPPORTS SHALL BE ERECTED BEFORE THE NECESSARY GUARDRAIL PROTECTION IS IN PLACE. SIMILARLY, EXISTING GUARDRAIL WHICH PROTECTS AN OBSTRUCTION OR SLOPE WHICH IS TO BE UPGRADED TO ELIMINATE GUARDRAIL, SHALL NOT BE REMOVED UNTIL THAT WORK HAS BEEN COMPLETED. EXISTING GUARDRAIL WHICH IS SCHEDULED TO BE REPLACED WITH TYPE 5 GUARDRAIL, SHALL NOT BE REMOVED UNTIL THE NEW GUARDRAIL IS READY TO BE INSTALLED, UNDER NO CIRCUMSTANCES SHALL ANY HAZARD BE WITHOUT GUARDRAIL PROTECTION FOR MORE THAN 24 HOURS. (SEE PUBLIC SAFETY NOTE ON SHEET 14)

ITEM 614 - BARRIER REFLECTORS AND/OR OBJECT MARKERS
BARRIER REFLECTORS AND/OR OBJECT MARKERS SHALL BE INSTALLED ON ALL PORTABLE CONCRETE BARRIER USED FOR TRAFFIC CONTROL. BARRIER REFLECTORS, OBJECT MARKERS AND THEIR INSTALLATION SHALL CONFORM TO THE APPROPRIATE PROPOSAL NOTE AND ITEM 626 EXCEPT THAT THE SPACING SHALL BE 25 FEET. AN ESTIMATED QUANTITY OF 180 EACH OF ITEM 614 BARRIER REFLECTOR, TYPE B, AND 180 EACH OF ITEM 614 OBJECT MARKERS HAVE BEEN PROVIDED AND CARRIED TO THE GENERAL SUMMARY.

FLOODLIGHTING
FLOODLIGHTING OF THE WORK SITE FOR OPERATIONS CONDUCTED DURING NIGHT TIME PERIODS SHALL BE ACCOMPLISHED SO THAT THE LIGHTS DO NOT CAUSE GLARE TO THE DRIVERS ON THE ROADWAY. TO ENSURE THE ADEQUACY OF THE FLOODLIGHT PLACEMENT, THE CONTRACTOR AND THE ENGINEER SHALL DRIVE THROUGH THE WORK SITE EACH NIGHT WHEN THE LIGHTING IS IN PLACE AND OPERATIVE PRIOR TO COMMENCING ANY WORK. IF GLARE IS DETECTED THE LIGHT PLACEMENT AND SHIELDING SHALL BE ADJUSTED TO THE SATISFACTION OF THE ENGINEER BEFORE WORK PROCEEDS. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR MAINTAINING TRAFFIC.

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, BY CLASS,AS PER PLAN
THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND REMOVE, WHEN NO LONGER NEEDED, A CHANGEABLE MESSAGE SIGN, ON SITE, FOR THE DURATION OF THE PROJECT. THE SIGN SHALL BE OF A TYPE SHOWN ON THE LIST OF APPROVED PCMS UNITS MAINTAINED BY THE DIRECTOR. THE LIST CURRENTLY CONTAINS CLASS I UNITS WITH MINIMUM LEGIBILITY DISTANCES OF 1200 FT.

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.

CALCULATED XXX CHECKED XXX

MAINTENANCE OF TRAFFIC NOTES

CUY-176J-12.76

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN(CONTINUED)
THE LOCATIONS AND WORK LIMITS FOR THOSE LOCATIONS WILL BE AS DIRECTED 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 WILL BE OFF.

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.

THE PCMS UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF 614.03(C). 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 AND THE ENTIRE COST TO CONTROL TRAFFIC ACCRUED BY THE DEPARTMENT WILL BE DEDUCTED FROM MONEYS DUE, OR TO BECOME DUE THE CONTRACTOR ON HIS CONTRACT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR 24 HOURS PER DAY OPERATION AND MAINTENANCE OF THESE SIGNS ON THE PROJECT FOR THE DURATION OF THE PHASES WHEN THE PLAN REQUIRES THEIR USE. THE REQUIREMENT TO FURNISH, INSTALL, MAINTAIN AND REMOVE A PCMS UNIT ON THIS PROJECT SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES AS OUTLINED IN 104.04.

PAYMENT FOR THE ABOVE DESCRIBED ITEM SHALL BE AT THE CONTRACT UNIT PRICE BID PER SIGN MONTH FOR EACH ITEM 614 PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN AND SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, FUELS, LUBRICATING OILS, SOFTWARE, HARDWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED WORK.

THE PCMS SHALL CONTAIN A CELLULAR TELEPHONE DATA LINK WHICH WILL (IN ACTIVE CELLULAR PHONE AREAS) ALLOW REMOTE SIGN ACTIVATION, DEACTIVATION, MESSAGE CHANGES, MESSAGE ADDITIONS AND REVISIONS TO TIME OF DAY PROGRAMS. THE SYSTEM SHALL ALSO PERMIT VERIFICATION OF CURRENT AND PROGRAMMED MESSAGES. ONE REMOTE DATA INPUT DEVICE

EACH PCMS SHALL BE EQUIPPED WITH A MYRAID SAFETY BEAM OR AN APPROVED EQUAL AS DETERMINED BY THE ENGINEER. THE MYRAID SAFETY BEAM SENDS OUT A SIGNAL THAT ACTIVATED RADAR DETECTORS AND THE BEAM IS APPROVED BY THE F.C.C.. THE MYRAID SAFETY BEAM SHALL USE THE SAME POWER SUPPLY AS THE PCMS. THE MYRAID SAFETY BEAM SHALL BE ABLE TO BE ACTIVATED WITH THE SIGN RUNNING OR NOT. THE MYRAID SAFETY BEAM IS DISTRIBUTED EXCLUSIVELY BY:

THE TRIPLEX GROUP, INC.
P.O. BOX 428
NEW HOPE, PA 18938
PHONE: (215) 862-5077

1. CLASS I PCMS ARE VISIBLE FROM 1200 FT. CLASS II PCMS VISIBLE FROM 850 FT.

2. TWO PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE A CLASS I. THE CLASS I PCMS WILL BE AVAILABLE AT THE START OF THE PROJECT AND WILL BE USED FOR THE DURATION OF THE PROJECT.

TWO ADDITIONAL PORTABLE CHANGEABLE MESSAGE SIGNS WILL BE CLASS II

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN(CONTINUED)
AND WILL ONLY BE USED WHEN DIRECTED BY THE ENGINEER.

IF THE PCMS ARE NOT BEING USED AS DETERMINED BY THE ENGINEER OR WHEN CONSTRUCTION HAS BEEN SUSPENDED FOR THE WINTER SEASON THE PROJECT ENGINEER MAY DIRECT THE CONTRACTOR TO REMOVE THE PCMS AND DISCONTINUE PAYMENTS FOR THIS TIME.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

(ESTIMATED QUANTITY - 2 CLASS I AND 2 CLASS II SIGNS @ 9 MONTHS EACH = 36 SIGN MONTHS)

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, CLASS I, AS PER PLAN
18 SIGN MONTHS

ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, CLASS II, AS PER PLAN.
18 SIGN MONTHS

ITEM 614-LAW ENFORCEMENT OFFICER WITH PATROL CAR
IN ADDITION TO THE REQUIREMENTS OF 614 AND THE LATEST EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD), A UNIFORMED LAW ENFORCEMENT OFFICER AND PATROL CAR WITH WORKING TOP MOUNTED EMERGENCY FLASHING LIGHTS SHALL BE PROVIDED FOR CONTROLLING TRAFFIC FOR THE FOLLOWING 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.

DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

LAW ENFORCEMENT OFFICERS (L.E.O.'S) SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED. THE LEO'S ARE CONSIDERED TO BE EMPLOYED B THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE PROJECT ENGINEER SHALL HAVE CONTROL OVER THEIR PLACEMENT. THE OFFICIAL PATROL CAR SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH:

LAW ENFORCEMENT OFFICERS WITH PATROL CAR REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM SPECIAL-LAW ENFORCEMENT OFFICER WITH PATROL CAR. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR----------200 HOUR

THE HOURS PAID SHALL INCLUDE MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

NIGHT VEST
ALL OF THE CONTRACTORS AND SUB-CONTRACTORS PERSONNEL WORKING DURING THE HOURS OF DARKNESS SHALL WEAR A 100% SILVER REFLECTIVE VEST. THE SAFETY VEST SHALL BE PROVIDED BY THE CONTRACTOR. THE VEST MAY HAVE SEVERAL LIME OR ORANGE STRIPES ON IT.

RAMP J-JR REPLACEMENT
THE EXISTING LIGHT POLES ON RAMP J-JR ARE NOT MOUNTED ON BREAK-AWAY FOUNDATION BASES. THE CONTRACTOR SHALL ADEQUATELY PROTECT OR REMOVE THESE POLES PRIOR TO SHIFTING TRAFFIC, AS DIRECTED BY THE ENGINEER.

PAYMENT FOR ANY TEMPORARY PROTECTION (IF EMPLOYED) SHALL BE INCLUDED WITH THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC.

CALCULATED XXX CHECKED XXX

MAINTENANCE OF TRAFFIC NOTES

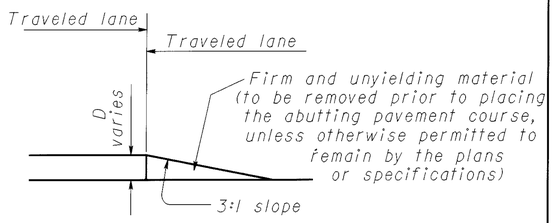
CUY-176J-12.76

GENERAL NOTES

1. It is intended that this drawing be used for treatment of drop-offs that develop during construction operations, and that are not otherwise provided for in the construction plans. Where the plans do not provide specific items for labor, equipment, or materials to implement the drop-off treatments specified hereon, they shall be included for payment in the lump sum bid for Item 614 - Maintaining Traffic.
2. While the need for certain advisory signing is noted hereon, it is not intended that this be indicative of all signing that may be required to advise or warn motorists, and all requirements of the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) must be fulfilled.
3. In urban or otherwise heavily developed areas where pedestrians and/or bicyclists may be present in significant numbers, additional signing and protective measures other than those shown hereon may be required.
4. The drop-off treatment selected for use at any given location shall be as appropriate for the prevailing conditions at the site.
5. Where concrete barrier is specified, it shall be in accordance with Standard Construction Drawing MC-9.2 and Item 622.
6. When drums are specified for a dropoff condition, a minimum number of four drums shall be used. Spacing shall be as indicated in the plans or as specified in the OMUTCD.
7. When OW-15l (Low Shoulder) signs or OW-17l (Uneven Lanes) and OWP-17l signs are required, they shall be placed 750′ in advance of the condition, on all intersecting entrance ramps within the limits of the condition and immediately beyond all intersecting roadways within the limits of the condition. When the dropoff condition extends more than one-half mile, additional signs should be erected at intervals of one mile or less.
8. For locations, such as at ramps, lane shifts, lane closures, etc., where traffic is required to negotiate any difference in elevation between pavements, a 3:1 slope treatment similar to the Optional Wedge Treatment shall be provided.
9. Portable concrete barrier shall be placed on the same level as the traffic surface and shall not encroach on lane width(s) designated as the minimum required for traffic use. Where drums are used, and their presence would reduce traveled lane widths to less than 10′, drums may be placed on the opposite level from that of traffic provided the dropoff depth does not exceed 5″ and approval is granted by the Project Engineer.
10. Pavement Repairs (or similar work):
    a. Lengths greater than 60 feet - utilize appropriate treatment from Condition I.
    b. Lengths of 60 feet or less - repairs shall be effected in accordance with 255.08. Drums may be used as a separator adjacent to the traveled lane.

OPTIONAL WEDGE TREATMENT
(MILLING OR RESURFACING)

1. This treatment may be used when permitted for Condition I only.
2. OW-17l and OWP-17l signs required.

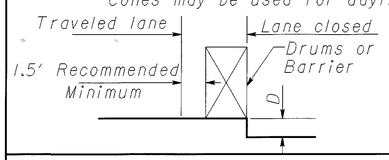


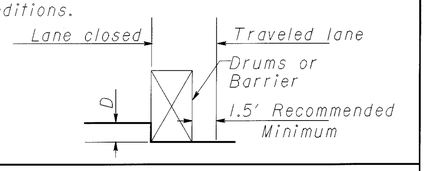
CONDITION I
DROPOFFS BETWEEN TRAVELED LANES

1. These treatments are to be used for resurfacing, pavement planing, excavation, etc. between or within traveled lanes.

D (In.)	Treatment
≤1½	Erect OW-17l and OWP-17l signs.
>1½-3	1) Lane closure utilizing drums* as shown below OR 2) Optional Wedge Treatment
>3-5	Lane closure utilizing drums as shown below.
>5	Lane closure utilizing portable concrete barrier as shown below.

*Cones may be used for daytime only conditions.



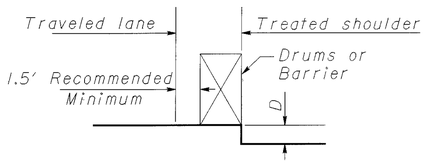


CONDITION II
DROPOFFS WITHIN GRADED SHOULDER AREA

1. The treatments indicated below are for use in conjunction with resurfacing, planing, or excavations within the graded shoulder area.
2. The graded shoulder area is that flat or gradually sloping area between the edge of a normally traveled lane and the more steeply sloping ditch foreslope or embankment slope. Its surface may be soil or turf, and/or it may be inclusive of a "treated" area (improved with aggregates, asphaltic materials, or concrete). For the purposes herein, its maximum width shall be considered to be twelve (12) feet.

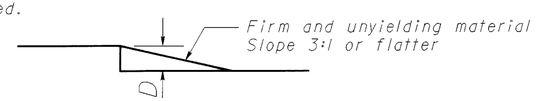
D (In.)	Treatment
≤1½	1) If edgelines are present, no treatment necessary OR 2) Erect OW-17l and OWP-17l signs.
>1½-5	1) If min. lane width* requirements can be met, maintain lanes utilizing drums as shown below OR 2) If min. lane width* requirements cannot be met, close adjacent lane utilizing drums OR 3) Optional Shoulder Treatment.
>5-12 Daylight only	If min. lane width* requirements can be met, maintain lanes utilizing drums as shown below.
>5-24	1) If min. lane width* requirements can be met, maintain lanes utilizing portable concrete barrier as shown below. OR 2) If min. lane width* requirements cannot be met, close adjacent lane utilizing drums.
>24	Lane closure utilizing portable concrete barrier as shown below.

*Minimum lane widths shall be 10′ unless otherwise specified in the plans.



OPTIONAL SHOULDER TREATMENT

1. This treatment may not be used within a bituminous shoulder where a hot longitudnal joint per 40l.15 is required.
2. OW-15l signs required.

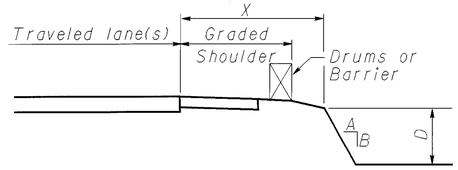


CONDITION III
DROPOFFS BEYOND GRADED SHOULDER OR BACK OF CURB

1. See Note 2 under Condition II.
2. Use Chart A or B below, as applicable.

CHART A

USE FOR: 1. Uncurbed Facilities.
2. Curbed Facilities, where:
   a. Curbs are less than 6″ in height.
   b. Curbs are 6″ or greater in height and the legal speed is greater than 40 mph.

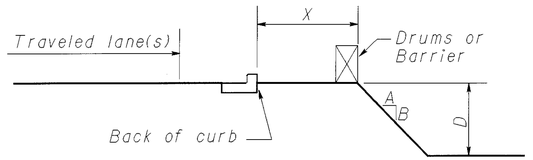


X (Ft.)	D (In.)	A/B	Treatment Required	
			Day	Night
0-4	Any	Any	(a)	(a)
4-30	Any	3:1 or Flatter	None	None
4-12	≤3	Steeper than 3:1	None	None
4-12	>3-≤12	Steeper than 3:1	Drums	Drums
4-12	>12	Steeper than 3:1	Drums	Barrier
>12-20	≤12	Steeper than 3:1	None	None
>12-20	>12-≤24	Steeper than 3:1	Drums	Drums
>12-20	>24	Steeper than 3:1	Drums	Barrier
>20-30	≤24	Steeper than 3:1	None	Drums
>20-30	>24	Steeper than 3:1	Drums	Barrier
>30	Any	Any	None	None

(a) Use treatment specified under Condition II.

CHART B

USE FOR: Curbed facilities, where the curb is 6″ or greater in height and the legal speed is 40 mph or less.



X (Ft.)	D (In.)	A/B	Treatment Required	
			Day	Night
0-10	<12	Any	None	Drums
0-10	>12	Any	Drums	Drums
>10	Any	Any	None	None

CALCULATED
CHECKED

DROPOFFS IN WORK ZONES

CUY-176J-12.76

18
117

SHEET NUMBER													ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
11	12	13	15	16	17	22	23	24	25	26	27	74						
																	ROADWAY	
LUMP													201	11000	LUMP	LS	CLEARING AND GRUBBING	
							3585						202	23000	3585	SY	PAVEMENT REMOVED	
						30386							202	23500	30386	SY	WEARING COURSE REMOVED	
								225					202	30500	225	LF	CONCRETE MEDIAN REMOVED	
								25					202	30700	25	LF	CONCRETE BARRIER REMOVED	
						2055	283						202	32000	2338	LF	CURB REMOVED	
											1066		202	35100	1066	LF	PIPE REMOVED, 24" AND UNDER	
								10450					202	38000	10450	LF	GUARDRAIL REMOVED	12
								100					202	38300	100	LF	GUARDRAIL REMOVED, BARRIER DESIGN	
											13		202	58300	13	EACH	CATCH BASIN OR INLET REMOVED	
	300												SPEC	20270100	300	LF	SPECIAL - PIPE CLEANOUT (12")	12
		7100											202	75001	7100	LF	FENCE REMOVED, AS PER PLAN	13
						4993	2003	10					203	12000	7006	CY	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	
							78						203	20000	78	CY	EMBANKMENT	
						5306	5761						203	50000	11067	SY	SUBGRADE COMPACTION	
	1000												203	55000	1000	LF	DITCH CLEANOUT	
								72					203	60200	72	STA	LINEAR GRADING, METHOD A	11
80													203	60204	80	STA.	LINEAR GRADING, METHOD B	11
						863	960	3					304	20001	1826	CY	AGGREGATE BASE, AS PER PLAN	12
						11799	78						305	14000	11877	SY	10" CONCRETE BASE	
							5539						451	16000	5539	SY	12" REINFORCED CONCRETE PAVEMENT	
												1150	SPEC	51267500	1150	SY	SPECIAL - SEALING OF CONCRETE SURFACES	
								6538					606	13000	6538	LF	GUARDRAIL, TYPE 5	
		100						288					606	13050	388	LF	GUARDRAIL, TYPE 5A	
								10					606	22010	10	EACH	ANCHOR ASSEMBLY, TYPE E-98	13
								8					606	26500	8	EACH	ANCHOR ASSEMBLY, TYPE T	
								6					606	35000	6	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 1	
								7					606	35100	7	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 2	
								2					606	35141	2	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 4, AS PER PLAN	78
		7100											607	23000	7100	LF	FENCE, TYPE CLT	
		1											607	50900	1	EACH	GATE, TYPE CL	
								9					620	10300	9	EACH	DELINEATOR, TYPE C, POST MOUNTED	
								1108					622	23401	1108	LF	CONCRETE BARRIER, TYPE B, AS PER PLAN	13
								406					622	24000	406	LF	CONCRETE BARRIER, TYPE D	
								962					622	24001	962	LF	CONCRETE BARRIER, TYPE D, AS PER PLAN	13
								86					626	100	86	EACH	BARRIER REFLECTOR, TYPE A	
								31					626	200	31	EACH	BARRIER REFLECTOR, TYPE B	
							258						830	14000	258	LF	CURB, TYPE 2-A	
						2028							830	16000	2028	LF	CURB, TYPE 2-B	
		2											870	00100	2	EACH	SOIL ANALYSIS TEST	
		6500					4938						870	10000	11438	SY	SEEDING AND MULCHING	
500													870	14000	500	SY	REPAIR SEEDING AND MULCHING	
0.05		0.88											870	20000	0.93	TON	COMMERCIAL FERTILIZER	
		2.69											870	30000	2.69	TON	AGRICULTURAL LIME	
2.70		35											870	35000	37.70	MGAL	WATER	
						4132	8						880	10000	4140	CY	ASPHALT CONCRETE (5 YEAR WARRANTY)	

CALCULATED

CHECKED

GENERAL SUMMARY

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SHEET NUMBER													ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
11	12	13	15	16	17	22	23	24	25	26	27	74						
																	EROSION CONTROL	
										0.8			601	28000	0.8	CY	DUMPED ROCK FILL, TYPE D	
10													601	34200	10	CY	ROCK CHANNEL PROTECTION, TYPE C (WITHOUT FILTER)	
	833									917			670	40000	1750	SY	DITCH EROSION PROTECTION	
1000													877	10000	1000	SY	TEMPORARY SEEDING AND MULCHING	
1000													877	30100	1000	LF	TEMPORARY PERIMETER FILTER FABRIC FENCE	
200													877	30200	200	LF	TEMPORARY DITCH CHECK FILTER FABRIC FENCE	
200													877	30300	200	LF	TEMPORARY INLET PROTECTION FILTER FABRIC FENCE	
25													877	60000	25	CY	SEDIMENT REMOVAL	
																	DRAINAGE	
	50								425				603	1500	475	LF	6" CONDUIT, TYPE F	
										5	1042		603	5900	1047	LF	15" CONDUIT, TYPE B	
											736		603	6100	736	LF	15" CONDUIT, TYPE C	
										5			603	8900	5	LF	21" CONDUIT, TYPE B	
										5			603	11900	5	LF	27" CONDUIT, TYPE B	
										3			604	400	3	EACH	CATCH BASIN, NO. 3	
										5			604	401	5	EACH	CATCH BASIN, NO. 3, AS PER PLAN	
										1			604	1601	1	EACH	CATCH BASIN, NO. 5, AS PER PLAN	
	5												604	9500	5	EACH	CATCH BASIN RECONSTRUCTED TO GRADE	
	10												604	9001	10	EACH	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	12
										5			604	14602	5	EACH	INLET, NO. 3B50	
										2			604	17500	2	EACH	INLET, NO. 2-A-6	
										2			604	17900	2	EACH	INLET, NO. 2-A-8	
										4			604	31500	4	EACH	MANHOLE, NO. 3	
	10												604	34501	10	EACH	MANHOLE ADJUSTED TO GRADE, AS PER PLAN	12
	2									3			604	35500	5	EACH	MANHOLE RECONSTRUCTED TO GRADE	
	5												604	39501	5	EACH	MONUMENT BOX ADJUSTED TO GRADE, AS PER PLAN	12
	2												604	39600	2	EACH	MONUMENT BOX RECONSTRUCTED TO GRADE	
	2500												SPEC	60450000	2500	LB	SPECIAL - MISCELLANEOUS METAL	12
	200								15350				605	11110	15350	LF	6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP	
	200								620				605	13410	620	LF	6" UNCLASSIFIED PIPE UNDERDRAIN WITH FABRIC WRAP	
																	PAVEMENT	
	93												251	1000	93	SY	PARTIAL DEPTH (3" MAX.) PAVEMENT REPAIR	
	6720												255	20000	6720	LF	FULL DEPTH PAVEMENT SAWING	
	2240												255	10150	2240	SY	FULL DEPTH PAVEMENT REMOVAL AND RIGID	
																	REPLACEMENT, CLASS MS	
	10000												413	14000	10000	LF	SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS	
								266					448	46060	266	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I,	12
																	PG64-22 (UNDER GUARDRAIL)	

CALCULATED

CHECKED

GENERAL SUMMARY

CUY-176J-12.76

SHEET NUMBER													ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
11	12	13	15	16	17	22	23	24	25	26	27	74						
																	TRAFFIC CONTROL	
																	SEE SHEET 97 FOR TRAFFIC CONTROL GENERAL SUMMARY	
																	LIGHTING	
																	SEE SHEET 105 FOR LIGHTING GENERAL SUMMARY	
																	MAINTENANCE OF TRAFFIC	
					200								614	11100	200	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR	
				40									614	12460	40	EACH	WORK ZONE MARKING SIGN	
				10									614	12470	10	EACH	WORK ZONE SPEED LIMIT SIGN	
				50									SPEC	61412500	50	SF	SPECIAL - REPLACEMENT SIGN	16
				100									614	13000	100	CY	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	
				180									614	13300	180	EACH	BARRIER REFLECTOR, TYPE B	
				180									614	13350	180	EACH	OBJECT MARKER	
													614	18601	18	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, CLASS I, AS PER PLAN	
					18								614	18601	18	SNMT	PORTABLE CHANGEABLE MESSAGE SIGN, CLASS II, AS PER PLAN	
					18													
				4.0									614	20100	4.0	MILE	TEMPORARY LANE LINE, CLASS I, 642 PAINT	
				8.8									614	22100	8.8	MILE	TEMPORARY EDGE LINE, CLASS I, 642 PAINT	
				2.0									614	22200	2.0	MILE	TEMPORARY EDGE LINE, CLASS I, 740.06, TYPE I	
				1000									614	23200	1000	LF	TEMPORARY CHANNELIZING LINE, CLASS I, 642 PAINT	
				2000									614	23400	2000	LF	TEMPORARY CHANNELIZING LINE, CLASS I, 740.06, TYPE I	
			LUMP										SPEC	61418002	LUMP	LS	MAINTAINING TRAFFIC, MISC.: TRAFFIC CONTROL PLANNING AND IMPLEMENTATION	15
				LUMP									615	10000	LUMP	LS	TEMPORARY ROAD	
				200									615	25000	200	SY	TEMPORARY PAVEMENT, CLASS B	
				10									616	10000	10	MGAL	WATER	
				1									616	20000	1	TON	CALCIUM CHLORIDE	
				4500									622	40020	4500	LF	PORTABLE CONCRETE BARRIER, 32"	
													614	11000	LUMP	LS	MAINTAINING TRAFFIC	
													623	10000	LUMP	LS	CONSTRUCTION LAYOUT STAKES	
													624	10000	LUMP	LS	MOBILIZATION	
2													SPEC	69086000	2	EACH	SPECIAL - CELLULAR PHONE	11
													806	16010	8	MONTH	FIELD OFFICE, TYPE B	

GENERAL SUMMARY

CALCULATED

CHECKED

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* AVERAGE WIDTH OF SECTION

STATION FROM	STATION TO	WIDTH	LIN. FT.	202 WEARING COURSE REMOVED	880 3 1/2" ASPHALT CONCRETE W/ WARRANTY	
				SQ. YD.	CU. YD.	
NORTHBOUND I-176						
33+04.81	34+94.03	24.0	189	505	49.1	
36+71.62	43+80.98	34.5*	709	2719	264.4	
43+80.98	44+40.56	24.0	59	159	15.4	
44+40.56	48+93.01	42.5*	452	2137	207.7	
48+93.01	63+72.74	36.0	1479	5919	575.5	
SOUTHBOUND I-176						
33+04.81	34+04.81	24.0	100	267	25.9	
34+04.81	35+05.23	56.0*	100	625	60.7	
36+83.08	38+49.54	37.0*	166	684	66.5	
38+49.54	41+04.81	36.0	255	1021	99.3	
41+04.81	42+04.81	30.0*	100	333	32.4	
42+04.81	43+23.61	24.0	118	317	30.8	
43+23.61	44+23.61	34.0	100	378	36.7	
44+23.61	46+81.45	47.5*	257	1361	132.3	
46+81.45	53+82.42	36.0	700	2804	272.6	
Alignment	S.B.O.R.:					
41+80.17	40+58.81	39.0*	121	526	51.1	
RAMP JN-D						
4+41.51	5+41.51	17.0*	100	189	18.4	
5+41.51	11+00.00	16.0	558	993	96.5	
11+00.00	11+75.00	18.0	75	150	14.6	
11+75.00	12+91.92	24.0	116	312	30.3	
12+91.92	13+20.00	44.5*	28	139	13.5	
RAMP D-JN						
0+95.00	1+35.00	47.0*	40	209	20.3	
1+35.00	2+15.00	20.0*	80	178	17.3	
2+15.00	8+14.61	16.0	599	1066	103.6	
8+14.61	9+14.61	15.0*	100	167	16.2	
9+14.61	9+92.43	15.5*	77	134	13.0	
RAMP JR-J						
Alignment	J-JR:					
20+00.00	19+78.12	55.0*	21	134	13.0	
19+78.12	15+24.62	24.0	453	1209	117.6	
Alignment	J-RJ:					
+0.00	5+35.82	24.0	535	1429	138.9	
5+35.82	10+35.87	19.0	500	1056	102.6	
10+35.87	11+35.87	15.0	100	167	16.2	
RAMP J-JR						
2+47.64	3+47.64	17.0*	100	189	18.4	
S.B.O.R.						
35+18.37	38+25.00	27.5*	306	631	91.1	
38+25.00	39+61.14	26.0*	136	682	37.5	
39+61.14	40+58.81	24.0	97	260	25.3	
LANE M-J						
3+95.50	4+95.50	26.0	100	289	28.1	
4+95.50	8+97.21	16.0	401	714	69.4	
8+97.21	9+97.21	15.0*	100	167	16.2	
9+97.21	10+97.21	15.0*	100	167	16.2	
TOTALS				30386	2955	

STATION FROM	STATION TO	SIDE	WIDTH	LIN. FT.	202 CURB REMOVED	202 WEARING COURSE REMOVED	203 SUBGRADE COMPACTION	203 EXCAVATION, NOT INCL. EMB. CONSTRUCTION (12.5" DEPTH)	203 EXCAVATION, NOT INCL. EMB. CONSTRUCTION (18.5" DEPTH)	304 AGGREGATE BASE, AS PER PLAN	305 10" CONCRETE BASE	830 CURB, TYPE 2B	880 3 1/2" ASPHALT CONCRETE W/ WARRANTY	
					L.F.	SQ. YD.	SQ. YD.	CU. YD.	CU. YD.	CU. YD.	SQ. YD.	L.F.	CU. YD.	
SHOULDERS:														
NB JENNINGS														
36+72.00	40+00.00	LT	5	328			182.2		103	33	182.2		17.7	
40+00.00	43+25.00	LT	5	325	325		180.6		102	33	180.6		17.6	
43+25.00	50+55.00	LT	5	730	730		446.1		229	74	446.1	730	39.4	
50+55.00	51+55.00	LT	4.5	100	100			17			50		4.9	
51+55.00	63+73.00	LT	4	1218				188			541.3		52.6	
33+04.81	34+80.00	RT	14	175.19				95			272.5		26.5	
36+40.00	42+16.00	RT	8	576				178			512		49.8	
42+16.00	44+40.00	RT	14	224				121			348.4		33.9	
44+40.00	48+13.00	RT	8	373				115			331.6		32.2	
48+13.00	48+93.00	RT	9	80				28			80		7.8	
48+93.00	50+75.00	RT	10	182				70			202.2		19.7	
50+75.00	63+73.00	RT	10	1298			1514.3		778	252	1514.3	1298	140.2	
SB JENNINGS														
33+04.81	35+05.00	RT	5	200.19				39			111.2		10.8	
36+83.00	40+00.00	RT	8.1	317			285.3		146.6	48	285.3		27.7	
40+00.00	43+17.00	RT	14.4	317	317		507.2		260.6	85	507.2		49.3	
43+17.00	49+00.00	RT	5	583	583		323.9		166.4	54	323.9		31.5	
49+00.00	53+82.00	RT	5	482			267.8		137.6	45	267.8		26	
37+11.00	41+05.00	LT	8	394			372.1		191.2	62	350.2		34	
41+05.00	42+05.00	LT	9	100			105.6		54.2	18	100		9.7	
42+05.00	43+24.00	LT	10	119			138.8		71.3	23	132.2		12.9	
43+24.00	44+24.00	LT	15	100			172.2						16.2	
44+24.00	46+81.00	LT	9	257			271.3		139.4	45	257		25	
46+81.00	53+25.00	LT	10	644				248			715.6		69.6	
53+25.00	53+83.00	LT	10	58				22			64.4		6.3	
LANE M-J														
3+95.00	8+97.00	LT	3	502			167.3		86	28	167.3		16.3	
8+97.00	10+97.00	LT	4	200			88.9		45.7	15	88.9		8.6	
10+97.00	12+17.00	LT	5	120			66.7		34.3	11	66.7		6.5	
4+95.00	5+71.00	RT	8.5	76				25			71.8		7	
5+71.00	7+72.00	RT	7	201				54			156.3		15.2	
7+72.00	8+97.00	RT	4.5	125				22			62.5		6.1	
8+97.00	9+97.00	RT	2	100				8			22.2		2.2	
RAMP S.B.O.R.														
35+50.00	39+61.00	RT	8	411				127			365.3		35.5	
39+61.00	40+59.00	RT	10	98				38			108.9		10.6	
40+59.00	41+80.00	RT	10	121				47			134.4		13.1	
35+10.00	35+73.00	LT	4.5	63			35		18	6	31.5		3.1	
37+73.00	39+83.00	LT	4	210			105		54	18	93.3		9.1	
39+83.00	40+59.00	LT	9	76			76		39.1	13	76		7.4	
RAMP JN-D														
3+05.00	11+75.00	RT	7	870				235			676.7		65.8	
4+40.00	11+75.00	LT	3	735				85			245		23.8	
RAMP D-JN														
2+95.00	9+92.00	RT	7	697				188			542.1		52.7	
2+95.00	9+15.00	LT	3	620				72			206.7		20.1	
RAMP JR-J														
19+75.00	15+25.00	LT	3	450				52			150		14.6	
0+0.00	9+36.00	RT	6	936				217			624		60.7	
9+36.00	11+36.00	RT	6	200				46			133.3		13	
1+50.00	9+00.00	LT	3	750									24.3	
GRAND TOTALS CARRIED TO GENERAL SUMMARY					2055	30386	5306	2337	2656	863	11799	2028	4132	

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PAVEMENT SUBSUMMARY

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coop2
15-AUG-2000 11:41AM
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SHEET NO.	203 EXCAVATION, NOT INCLUDING EMBANKMENT CONSTRUCTION	203 EMBANKMENT	870 SEEDING AND MULCHING	
	CU. YD.	CU. YD.	SQ. YD.	
43	24	0	69	
44	24	0	96	
45	99	1	220	
46	100	3	252	
47	88	6	252	
48	28	4	224	
49	61	5	143	
50	98	1	244	
51	103	3	246	
52	79	0	218	
53	39	0	187	
54	72	0	157	
55	69	2	147	
56	78	0	186	
57	76	0	151	
58	67	2	184	
59	70	5	189	
60	58	7	173	
61	58	1	145	
62	58	1	143	
63	55	2	133	
64	52	3	100	
65	46	2	101	
66	46	3	110	
67	74	9	163	
68	72	13	164	
69	46	5	75	
70	80	0	175	
71	68	0	136	
72	90	0	155	
73	25	0	0	
TOTAL	2003	78.	4938	

STATION FROM	STATION TO	SIDE	LIN. FT.	WIDTH	202 PAVEMENT REMOVED	202 CURB REMOVED	203 SUBGRADE COMPACTION	304 AGGREGATE BASE, AS PER PLAN	451 12" REINFORCED CONCRETE PAVEMENT	830 CURB, TYPE 2A	305 10" REINFORCED CONCRETE BASE	880 3.5" ASPHALT CONCRETE W/ WARRANTY
				L.F.	SQ. YD.	L.F.	SQ. YD.	CU. YD.	SQ. YD.	L.F.	SQ. YD.	CU. YD.
PAVEMENT												
103+50	112+25		875	16	1556		1556	259.3	1556			
112+25	114+83		258	24	688		688	114.7	688			
114+83	119+86		503	24	1341		1341	223.5	1341			
SHOULDERS												
102+50	103+50	RT	100	7			83.3	13.8			77.8	7.5
103+50	119+86	RT	1636	7			1363	227.2	1272			
103+50	112+00	LT	850	7			708	118.0	661			
112+00	112+25	LT	25	7.5		25	22	3.7	21			
112+25	114+83	LT	258	-		258				258		
TOTALS CARRIED OVER TO GENERAL SUMMARY					3585	283	5761	960	5539	258	78	8

EARTHWORK AND PAVEMENT SUMMARIES

RAMP J-JR

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FOR GUARDRAIL DETAILS SEE SHEETS (75-78).
FOR DRAINAGE QUANTITIES, SEE SHEETS (25-27).
FOR LIGHTING QUANTITIES, SEE SHEETS (105-108).
FOR SHOULDER QUANTITIES, SEE SHEET 22.

* - QUANTITY FOR REPAIR OF DAMAGED SECTIONS; NOT A TOTAL REPLACEMENT.

GUARDRAIL AND RELATED QUANTITIES

SHEET NO.	REFERENCE NO.	EXISTING LOCATIONS FROM	EXISTING LOCATIONS TO	PROPOSED LOCATIONS FROM	PROPOSED LOCATIONS TO	DIRECTION	SIDE		202 GUARDRAIL REMOVED		606 GUARDRAIL, TYPE 5	GUARDRAIL, TYPE 5A			ANCHOR ASSEMBLY, TYPE E-98	ANCHOR ASSEMBLY, TYPE T		BRIDGE TERMINAL ASSEMBLY, TYPE 1	BRIDGE TERMINAL ASSEMBLY, TYPE 2	BRIDGE TERMINAL ASSEMBLY, TYPE 4, AS PER PLAN		620 DELINEATOR, TYPE C POST MOUNTED	622 CONCRETE BARRIER, TYPE D	203 LINEAR GRADING, METHOD A	448 ASPHALT CONCRETE (INTERMEDIATE COURSE-TYPE 1, P664-22 (UNDER GUARDRAIL)	626 BARRIER REFLECTOR, TYPE A
									L.F.		L.F.	L.F.			EA.	EA.		EA.	EA.	EA.		EA.	L.F.	STA.	C.Y.	L.F.
28/29	1-G	194+17 ℄ DENISON AVE.	5+77 ℄ RAMP D-JN	194+17 ℄ DENISON AVE.	5+77 ℄ RAMP D-JN	NB	LT		475		462.5					1			1					4.8	18	5
29/30	2-G	8+45 RAMP D-JN	9+70 ℄ RAMP D-JN	8+45 ℄ RAMP D-JN	9+75 ℄ RAMP D-JN	NB	RT		125		125				1			1				1		1.3	5	3
30/32	3-G	36+50	41+75	36+50	41+75	NB	RT		525		512.5					1			1					5.3	19	5
30/32-37	4-G	0+00 RAMP JR-J	63+59.93	0+00 RAMP JR-J	63+59.93	NB	RT		3062.5		2987.5	25			1					1		1		30.7	114	31
33	5-G	44+00	45+75			NB	LT		175																	
34/35	6-G	50+57	52+44.5	50+64	52+00	NB	LT		187.5		50				1			1				1	36	1.0	4	3
36/37	7-G	59+12.50	63+59.93	59+53.93	63+59.93	NB	LT		450		25				1			1				1	300	1.5	6	5
28/29	8-G*	191+85 ℄ DENISON AVE.	7+27 ℄ RAMP JN-D	191+85 ℄ DENISON AVE.	7+27 ℄ RAMP JN-D	SB	LT		50		50															1
30	9-G	3+14 RAMP JN-D	3+76.5 ℄ RAMP JN-D	3+14 RAMP JN-D	3+76.5 ℄ RAMP JN-D	SB	RT		112.5		100					1			1					1.1	4	2
32	10-G	NOT USED																								
32/33	11-G	37+32	42+57	37+32	42+57	SB	RT		575		525				1			1				1		5.3	20	6
33	12-G	0+00 RAMP J-JR	4+75 ℄ RAMP J-JR	0+00 RAMP J-JR	4+75 ℄ RAMP J-JR	SB	RT		475		462.5					1			1					4.8	18	5
30	13-G	9+92 RAMP J-JR	12+05 ℄ RAMP J-JR	9+92 RAMP J-JR	12+05 ℄ RAMP J-JR	SB	RT		212.5		162.5	50			1							1		2.6	10	3
30/32	14-G	9+47 RAMP J-JR	11+70 ℄ RAMP J-JR	8+20 RAMP J-JR	11+70 ℄ RAMP J-JR	SB	LT		225		237.5	50			1							1		3.5	13	3
35	15-G	40+58.59 ℄ S.B.O.R.	53+04	41+34 ℄ S.B.O.R.	53+04	SB	RT		200		25	25			1					1		1		1.3	5	3
36	16-G	5+39 LANE M-J	7+89 ℄ LANE M-J	4+95.5 LANE M-J	7+45.5 ℄ LANE M-J	SB	RT		250		162.5	25			1	1						1		2.5	9	3
36	17-G	34+75 ℄S.B.O.R.	38+00 ℄ S.B.O.R.	34+75 ℄ S.B.O.R.	38+00 ℄ S.B.O.R.	SB	LT		325		275					1		1	2				70	2.8	10	3
36	18-G	35+50	38+50	35+50	38+50	SB	RT		300		175	112.5				1			1					3.0	11	3
37	19-G	922+95 I-71	924+82.5 I-71	923+00 I-71	924+82.5 I-71	SB	LT		187.5		200				1	1										2
TOTALS CARRIED TO GENERAL SUMMARY									7912.5		6538	288			10	8		5	7	2		9	406	72	266	86

GUARDRAIL AND RELATED QUANTITIES

SHEET NO.	REFERENCE NO.	EXISTING LOCATIONS FROM	EXISTING LOCATIONS TO	PROPOSED LOCATIONS FROM	PROPOSED LOCATIONS TO	DIRECTION	SIDE		202 GUARDRAIL REMOVED	GUARDRAIL REMOVED, BARRIER DESIGN	CONCRETE BARRIER REMOVED	CONCRETE MEDIAN REMOVED	203 EXCAVATION, NOT INCLUDING EMBANKMENT CONSTRUCTION		304 AGGREGATE BASE AS PER PLAN			606 BRIDGE TERMINAL ASSEMBLY, TYPE 1		622 CONCRETE BARRIER, TYPE B, AS PER PLAN	CONCRETE BARRIER, TYPE D, AS PER PLAN			626 BARRIER REFLECTOR, TYPE B	
									L.F.	L.F.	L.F.	SQ.YD.	CU.YD.		CU.YD.			EA.		L.F.	L.F.			L.F.	
30/32/33	20-G	36+77	48+00	36+77	43+25	NB	LT/MED		525	100	25	225	10		3.3					648				14	
33-37	21-G	48+00	923+20 ℄ LANE M-J	43+17	923+20 ℄ LANE M-J	SB	RT/MED		2012.5									1		580	1062			17	
		DEDUCT LIGHT TOWER MEDIAN FOUNDATIONS: 2 @ 10 FT. EACH																		(20)					
		DEDUCT INLET BARRIER: 5/5 @ 20 FT. EACH																		(100)	(100)				
TOTALS CARRIED TO GENERAL SUMMARY									2537.5	100	25	225	10		3			1		1108	962			31	

220 FEET OF CONCRETE BARRIER WAS DEDUCTED FROM THE TOTAL TO ACCOUNT FOR LIGHT TOWER FOUNDATIONS AND INLETS.

CALCULATED LGM
CHECKED JEL

BARRIER AND GUARDRAIL QUANTITIES

CUY-176J-12.76

SHEET NO.	REFERENCE NO.	LOCATION	SIDE	STATION FROM	STATION TO	605 6" SHALLOW PIPE UNDERDRAIN W/ FABRIC WRAP	605 6" UNCLASSIFIED PIPE UNDERDRAIN W/ FABRIC WRAP	603 6" CONDUIT, TYPE F
						LIN. FT.	LIN. FT.	LIN. FT.
28-30	U-1	D-JN	RT	2+90	9+60	670		10
29/30	U-2	NBJ	LT	33+05	34+75	170		10
30/32-33	U-3	NBJ	RT	36+40	43+00	660		10
30/32	U-4	NBJ	LT	36+80	40+25	345		10
30/31	U-5	J-JR/JR-J	LT/RT	19+50	1+95	620		10
30/32/33	U-6	JR-J	RT	2+00	9+25	725		30
32/33	U-7	NBJ	LT	40+25	43+15	290		10
33	U-8	NBJ	LT	43+15	46+00	285		10
33	U-9	JR-J	RT	9+30	11+00	170		10
33/34	U-10	NBJ	LT	46+00	50+50	450		10
34	U-11	NBJ	LT	50+50	51+00		50	10
34/35	U-12	NBJ	RT	50+50	55+25	475		10
		NBJ	RT	50+75	55+25	450		
35/36	U-13	NBJ	RT	55+30	58+00	270		10
		NBJ	RT	55+30	58+00	270		
36/37	U-14	NBJ	RT	58+05	63+60	555		10
		NBJ	RT	58+05	63+60	555		
28/29	U-15	JN-D	LT	5+00	11+00	600		10
29/30	U-16	SBJ	RT	33+05	34+75	170		10
29	U-17	SBJ	LT	33+05	33+95	90		10
29/30	U-18	JN-D	LT	3+25	5+05	180		10
30/32	U-19	SBJ	RT	36+80	40+25	345		10
32/33	U-19A	SBJ	RT	40+25	43+15	290		10
32	U-20	SBJ	LT	37+10	41+90	480		30
		SBJ	LT	37+10	41+90	480		
33/38	U-21	J-JR	RT	0+15	3+00	285		30
38/39	U-22	J-JR	RT	103+00	110+75	775		10
38/39	U-23	J-JR	LT	103+50	109+25	575		10
39/40	U-24	J-JR	LT	109+30	113+00		370	25
39/40	U-25	J-JR	RT	110+80	113+00	220		10
40/41	U-26	J-JR	RT	113+05	120+00	695		10
33-35	U-27	SBJ	LT	46+75	53+50	675		10
34/35	U-28	SBJ/MJ	RT	50+00	10+25	525		10
35/36	U-29	M-J	RT	6+00	10+20	420		10
36	U-30	M-J	RT	4+75	5+95	120		10
36	U-31	M-J	RT	4+39	4+70	31		10
36	U-32	M-J	RT	4+10	4+34	24		10
35/36	U-33	S.B.O.R	RT	35+50	42+15	665		10
35/36	U-34	S.B.O.R	LT	35+00	40+45	545		10
TOTALS CARRIED TO GENERAL SUMMARY						15150	420	425

CALCULATED

CHECKED

DRAINAGE SUBSUMMARY

CUY-176J-12.76

REF NO.	SHEET NO.	STATION TO STATION	202 PIPE REMOVED, 24" AND UNDER (LIN FT)	202 INLET OR CATCH BASIN REMOVED (EACH)	603 15"CONDUIT, TYPE B (LIN FT)	603 15" CONDUIT, TYPE C (LIN FT)	603 21"CONDUIT, TYPE B (LIN FT)	603 27"CONDUIT, TYPE B (LIN FT)	604 INLET NO. 2-A-6 (EACH)	604 INLET NO. 2-A-8 (EACH)	604 INLET, NO. 3B50 (EACH)	604 CATCH BASIN, NO. 3 (EACH)	604 CATCH BASIN, NO. 3, AS PER PLAN (EACH)	604 CATCH BASIN, NO. 5, AS PER PLAN (EACH)	604 MH NO. 3 (EACH)	604 MH RECONSTRUCTED TO GRADE (EACH)		601 DUMP ROCK FILL, TYPE D (C.Y.)	670 DITCH EROSION PROTECTION (S.Y.)
D-1	32	37+65 SR176 NB									1								
D-2	32	40+25 SR176 NB									1								
D-3	33	43+15 SR176 NB									1								
D-4	33	44+18 SR176 SB			5		5	5							1				
D-5	33	46+00 SR176 NB								1									
D-6	33	46+88 SR176 SB														1			
D-7	34	46+92 SR176 SB									1								
D-8	34	47+12 SR176 SB									1								
D-9	34	47+12 SR176 SB													1				
D-10	34	48+50 SR176 SB													1				
D-11	34	50+00 SR176 SB											1						
D-12	34	48+00 SR176 NB								1									
D-13	34	49+25 SR176 NB							1										
D-14	34	50+50 SR176 NB							1										
D-15	36	57+47 SR176 NB										1							
D-16	36	58+00 SR176 NB														1			
D-17	36	58+14 SR176 NB										1							
D-18	36	58+65 SR176 NB										1							
D-19	36	6+00 LANE M-J											1						
D-20	36	5+59 LANE M-J													1				
D-21	36	4+75 LANE M-J											1						
D-22	36	4+39 LANE M-J											1						
D-23	36	4+10 LANE M-J											1						
D-24	36	60+18 SR176 NB														1			
D-25	36	58+00 SR176 NB												1					
E-1	36	58+14 SR176 NB																0.8	
E-2	36	56+50 SR176 NB TO 58+00 SR 176 NB																	125
E-3	36	58+00 SR176 NB TO 60+00 SR 176 NB																	167
E-4	40/41	113+00 RAMP J-JR TO 120+00 RAMP J-JR																	583
E-5	41	120+00 RAMP J-JR TO 120+50 RAMP J-JR																	42
TOTALS CARRIED TO GENERAL SUMMARY					5		5	5	2	2	5	3	5	1	4	3		0.8	917

CALCULATED DRL CHECKED

DRAINAGE SUBSUMMARY

CUY-176J-12.76

REF NO.	SHEET NO.	STATION TO STATION	202 PIPE REMOVED, 24" AND UNDER LIN FT	202 CATCH BASIN OR INLET REMOVED EACH	603 15"CONDUIT, TYPE B LIN FT	603 15" CONDUIT, TYPE C LIN FT	603 21"CONDUIT, TYPE B LIN FT	603 27"CONDUIT, TYPE B LIN FT		604 INLET NO. 2-A-6 EACH	604 INLET NO. 2-A-10 EACH	604 INLET, NO. 3B50, AS PER PLAN EACH	604 CATCH BASIN, NO. 3 EACH	604 CATCH BASIN, NO. 3, AS PER PLAN EACH	604 MH NO. 3 EACH	604 MH RECONSTRUCTED TO GRADE EACH		601 DUMP ROCK FILL, TYPE D C.Y.	
P-1	32	37+65 SR 176 NB TO 40+25 SR 176 NB			259														
P-2	32/33	40+25 SR 176 NB TO 43+15 SR 176 NB			288														
P-3	33	43+15 SR 176 NB TO 44+18 SR 176 SB			112														
P-4	33	46+00 SR 176 NB TO 46+88 SR 176 NB				85													
P-5	33/34	46+88 SR 176 NB TO 47+12 SR 176 NB				42													
P-6	34	46+92 SR 176 SB TO 47+12 SR 176 SB			20														
P-7	34	47+12 SR 176 SB TO 47+12 SR 176 SB				9													
P-8	34	47+12 SR 176 SB TO 48+50 SR 176 NB				140													
P-9	34	48+50 SR 176 SB TO 50+50 SR 176 SB				150													
P-10	34	48+00 SR 176 NB TO 49+25 SR 176 NB				124													
P-11	34	49+25 SR 176 NB TO 50+50 SR 176 NB				123													
P-13	36	57+47 SR 176 NB TO 58+00 SR 176 NB			51														
P-14	36	58+00 SR 176 NB TO 58+14 SR 176 NB			14														
P-15	36	58+14 SR 176 NB TO 58+65 SR 176 NB			49														
P-16	36	5+59 LANE M-J TO 60+18 SR 176 NB				63													
P-17	36	6+00 LANE M-J TO 5+59 LANE M-J			40														
P-18	36	5+59 LANE M-J TO 4+75 LANE M-J			85														
P-19	36	4+75 LANE M-J TO 4+39 LANE M-J			36														
P-20	36	4+39 LANE M-J TO 4+10 LANE M-J			29														
P-21	40	113+00 RAMP J-JR			59														
R-1	32	38+75 SR 176 SB TO 40+75 SR 176 SB	200	1															
R-2	32	40+75 SR 176 SB TO 42+00 SR 176 NB	120	1															
R-3	33	42+00 SR 176 NB TO 42+75 SR 176 SB	83	1															
R-4	33	42+75 SR 176 SB TO 44+18 SR 176 SB	143	1															
R-5	33	44+18 SR 176 SB TO 44+75 SR 176 SB	58	1															
R-6	33	46+00 SR 176 NB TO 46+90 SR 176 NB	93	2															
R-7	34	46+90 SR 176 NB TO 47+12 SR 176 SB	42	1															
R-8	34	49+00 SR 176 NB TO 50+50 SR 176 NB	150	1															
R-9	34	50+50 SR 176 NB		1															
R-10	36	57+47 SR 176 NB TO 58+00 SR 176 NB	54	1															
R-11	36	58+00 SR 176 NB TO 58+65 SR 176 NB	64	2															
R-12	40	113+00 RAMP J-JR	59																
TOTALS CARRIED TO GENERAL SUMMARY			1066	13	1042	736													

CALCULATED DRL CHECKED

DRAINAGE SUBSUMMARY

CUY-176J-12.76

888.88 ⟵ EX. CONC. ELEV.
888.88 ⟵ PROP. UD ℄

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GUARDRAIL	24
DRAINAGE	26-27
UNDERDRAIN	25
SHOULDER	22
PAVEMENT	22

N

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED
CHECKED

PLAN SHEET
STA. 224+00 TO STA. 229+00

CUY-176J-12.76

28
117

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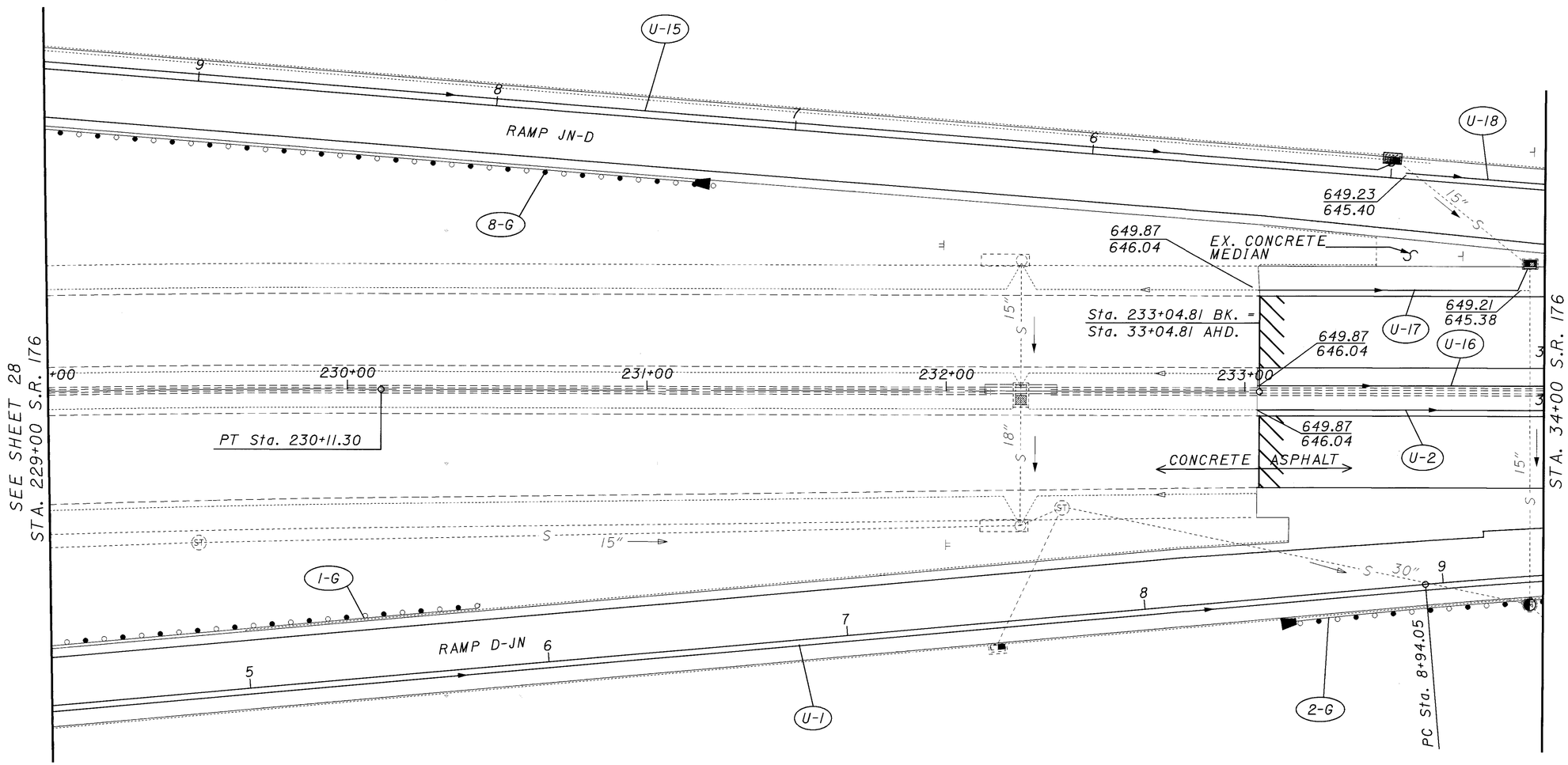

888.88 ⟵ EX. CONC. ELEV.
888.88 ⟵ PROP. UD ℄

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UNDERDRAIN	25
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PAVEMENT	22

N

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED | CHECKED

PLAN SHEET
STA. 229+00 TO STA. 34+00

CUY-176J-12.76

29
117

I:\PROJECTS\Pid19509\geopak\plan202.dgn 26-JUL-2000 2:25PM coop2

SEE SHEETS 38-41 FOR RAMP J-JR
PAVEMENT REPLACEMENT DETAILS

888.88 ⟵ EX. CONC. ELEV.
888.88 ⟵ PROP. UD ℄

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SEE SHEET 31
STA. 16+00 RAMP J-JR

RAMP J-JR

EX. CONCRETE MEDIAN
(DO NOT DISTURB)

PC STA. 0+00 RAMP JR-J
=STA. 15+24.62 RAMP J-JR

RAMP JR-J

M.H. NO. 1

628.45
624.62

PT Sta. 2+75.16

4-G
U-5
U-6

SEE SHEET 29
STA. 34+00 S.R. 176

RAMP JN-D

2-G
U-1
U-2
U-16
U-18
648.73
644.90
9+60
648.63
644.80
PT Sta. 10+14.62
648.26
644.43
9-G
TS Sta. 35+60.98
TS Sta. 35+95.05
14-G
PT Sta. 2+58.62
13-G
648.93
645.10
U-3
3-G
648.00
644.17
U-4
20-G
U-19

STA. 37+00 S.R. 176
SEE SHEET 32

PLAN SHEET
STA. 34+00 TO STA. 37+00

CUY-176J-12.76

30
117

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED
CHECKED

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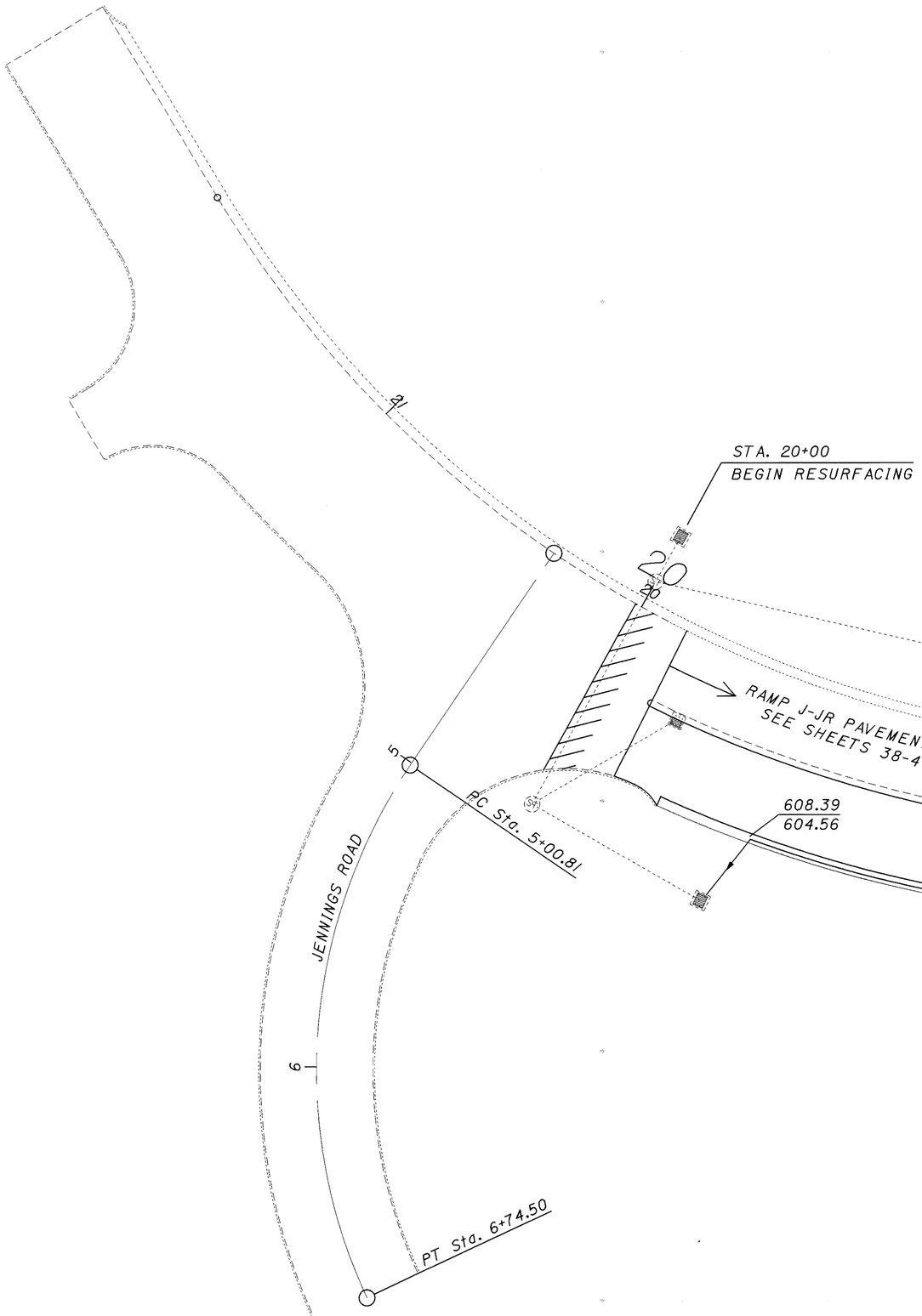

SUB SUMMARY INDEX	
GUARDRAIL	24
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UNDERDRAIN	25
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CALCULATED
CHECKED

0 10 20 40
HORIZONTAL
SCALE IN FEET

PLAN SHEET
STA. 21+16 TO STA. 16+00

CUY-176J-12.76

31
117

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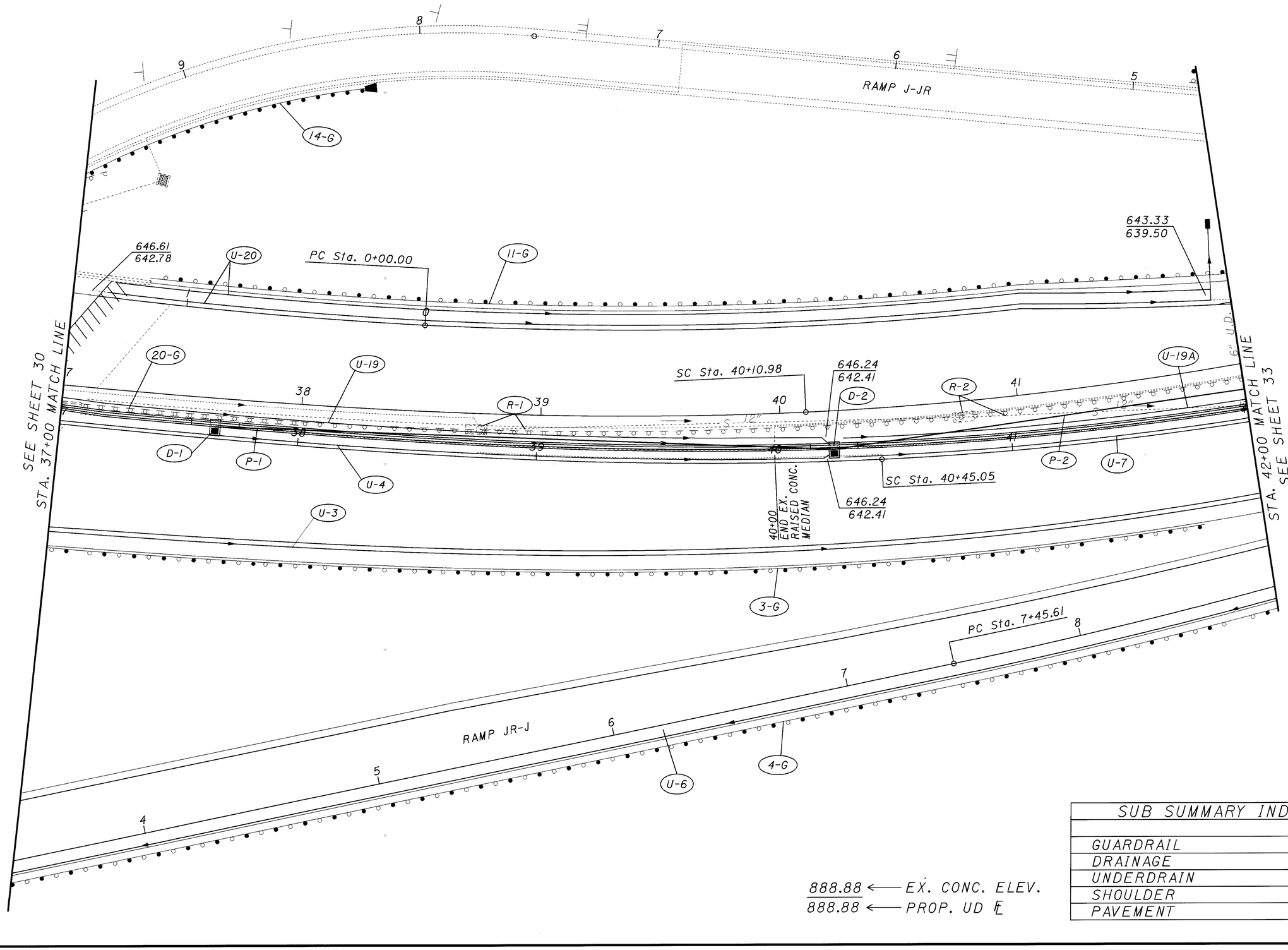

SUB SUMMARY INDEX	
GUARDRAIL	24
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UNDERDRAIN	25
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PAVEMENT	22

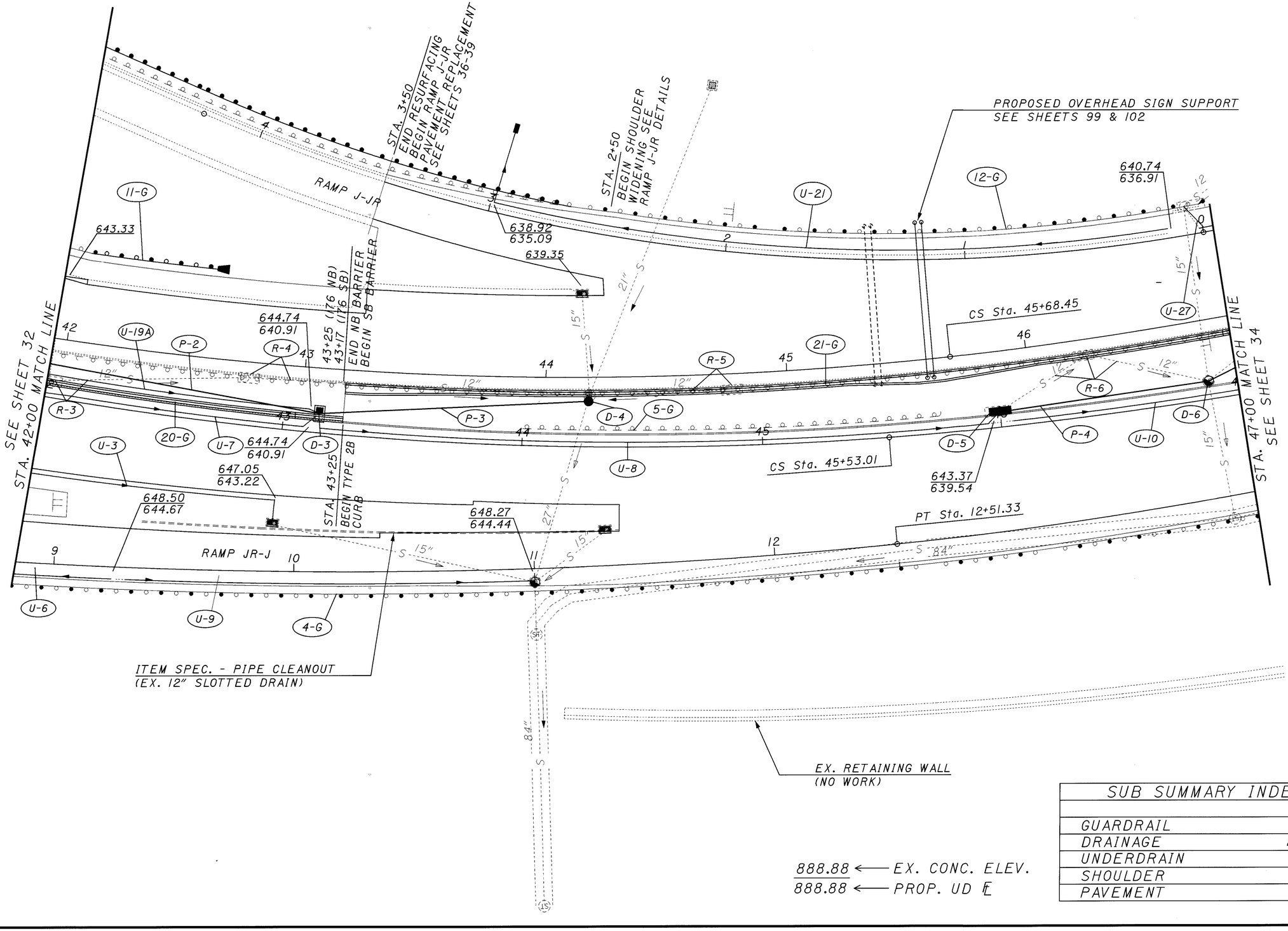
HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED
CHECKED

PLAN SHEET
STA. 37+00 TO STA. 42+00

CUY-176J-12.76

32
117



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888.88 ← EX. CONC. ELEV.
888.88 ← PROP. UD ℄

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED | CHECKED

PLAN SHEET
STA. 42+00 TO STA. 47+00

CUY-176J-12.76

33
117

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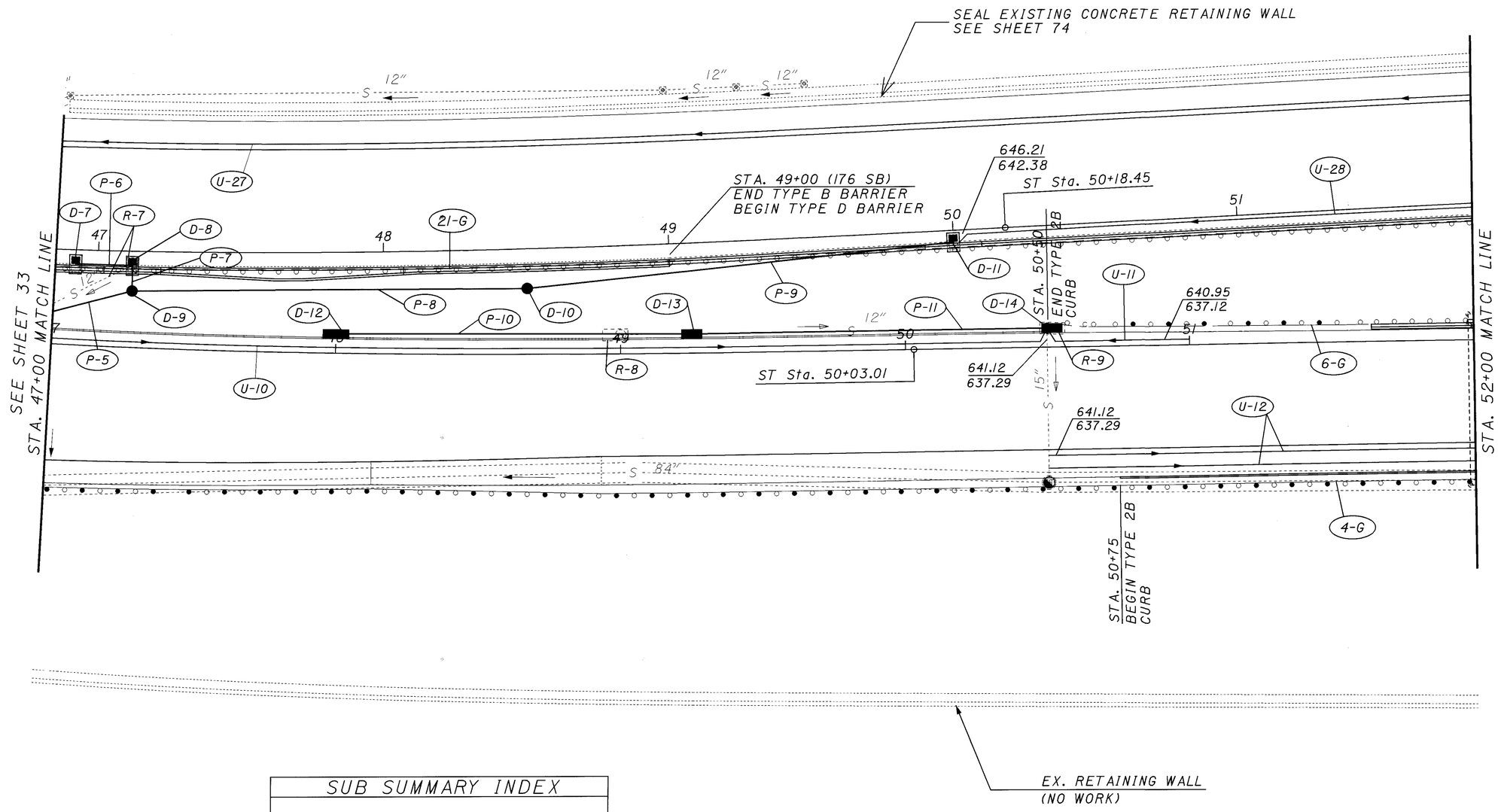

888.88 ← EX. CONC. ELEV.
888.88 ← PROP. UD ℄

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HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED
CHECKED

PLAN SHEET
STA. 47+00 TO STA. 52+00

CUY-176J-12.76

34
117

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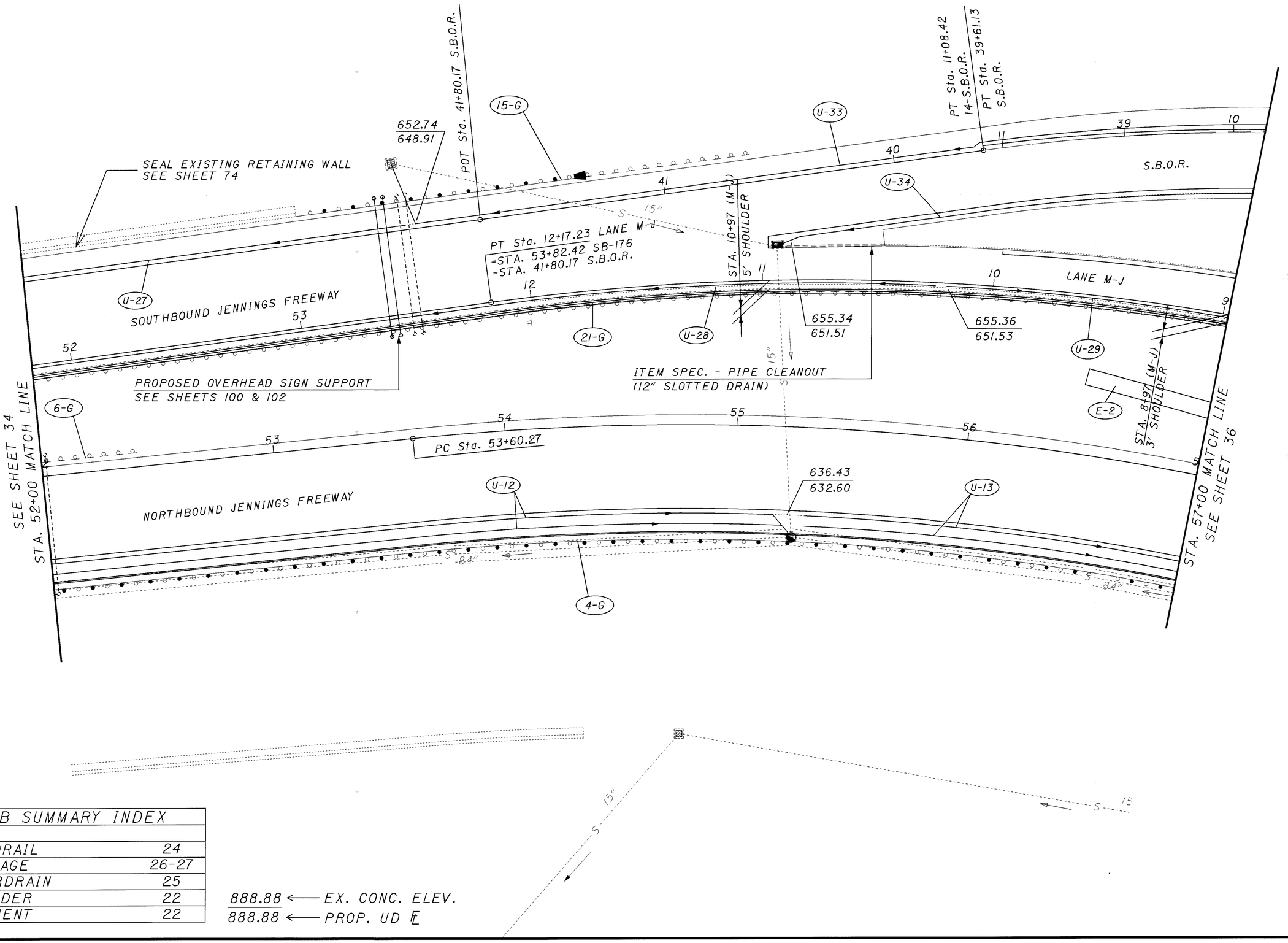

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888.88 ← EX. CONC. ELEV.
888.88 ← PROP. UD ℄

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED
CHECKED

PLAN SHEET
STA. 52+00 TO STA. 57+00

CUY-176J-12.76

35
117

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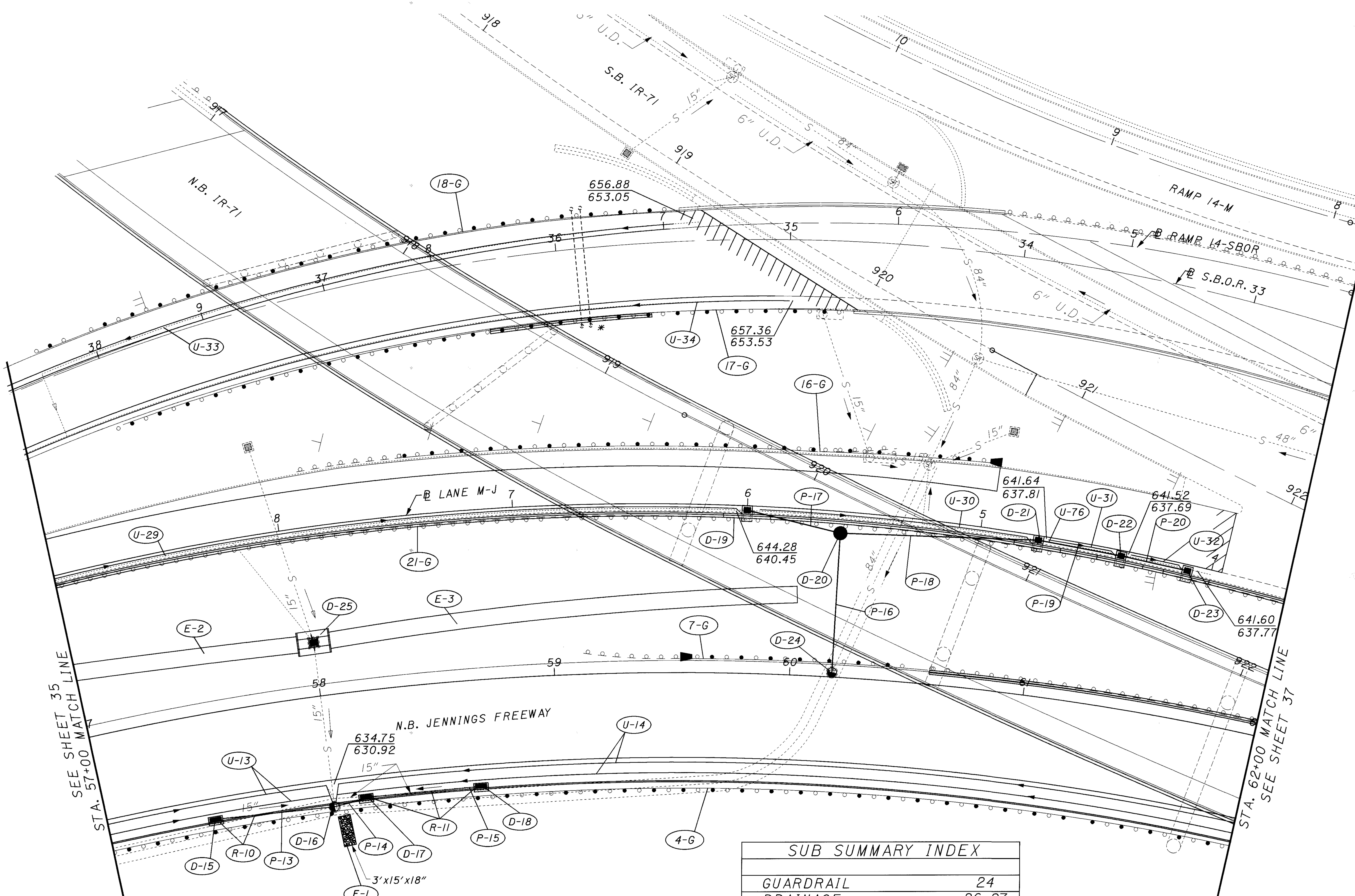

SUB SUMMARY INDEX	
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888.88 ← EX. CONC. ELEV.
888.88 ← PROP. UD ℄

* PLACE PROPOSED CONCRETE BARRIER TO PROTECT BOTH THE BRIDGE PIER AND OVERHEAD SIGN SUPPORT AT STA. 35+90

HORIZONTAL SCALE IN FEET (0, 10, 20, 40)

CALCULATED | CHECKED

PLAN SHEET
STA. 57+00 TO STA. 62+00

CUY-176J-12.76

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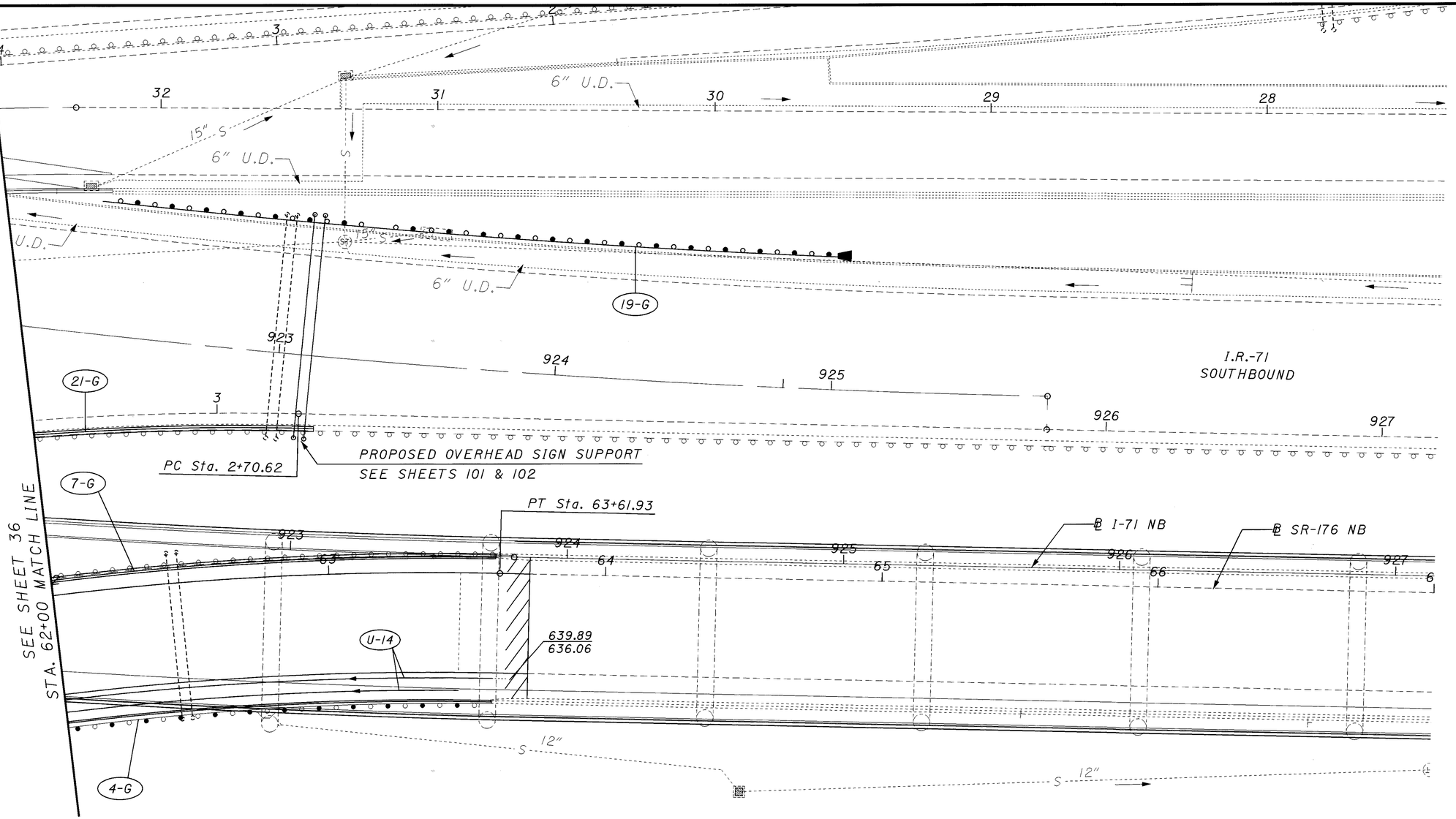

888.88 ⟵ EX. CONC. ELEV.
888.88 ⟵ PROP. UD ℄

SUB SUMMARY INDEX	
GUARDRAIL	24
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HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED
CHECKED

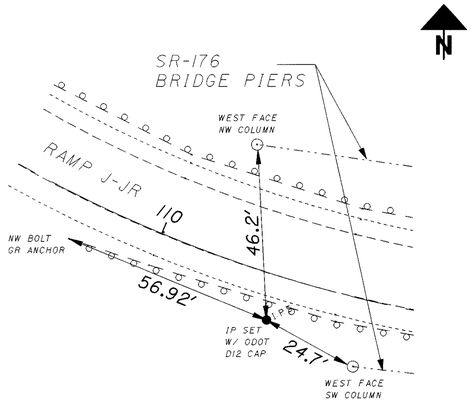
PLAN SHEET
STA. 62+00 TO STA. 67+00

CUY-176J-12.76

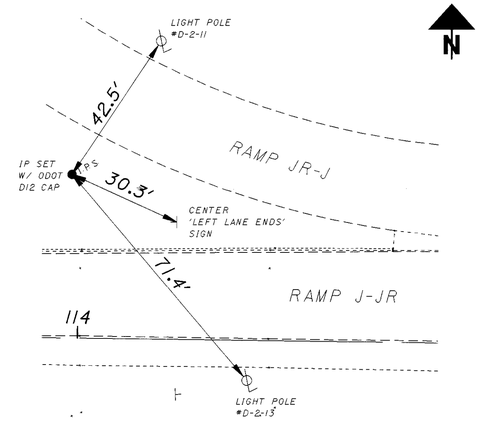
37
117

I:\PROJECTS\Pid9509\geopak\plan210.dgn 04-AUG-2000 1:39PM coop2

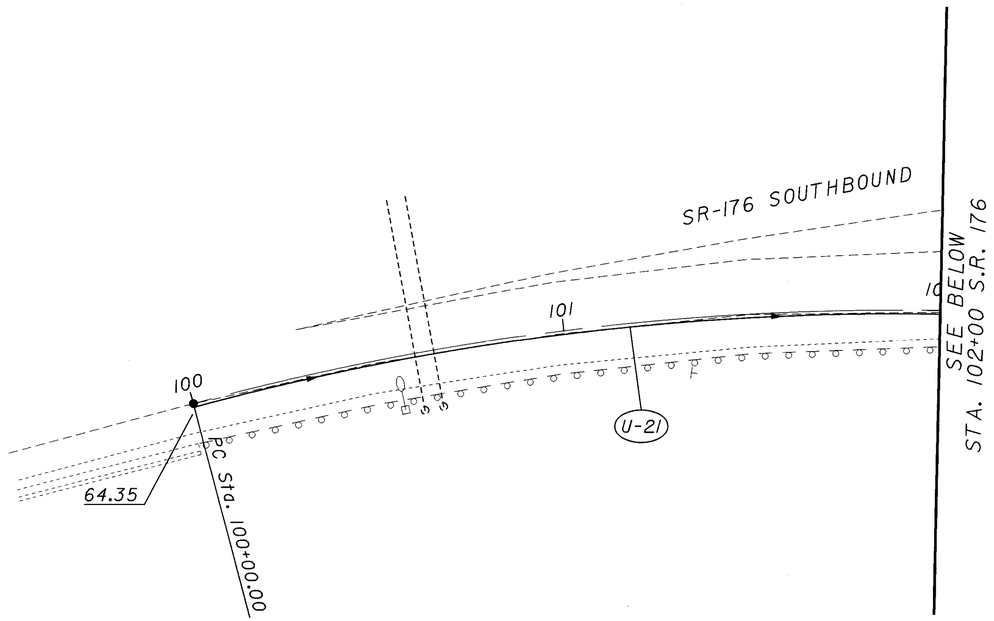
RAMP J-JR REFERENCE CONTROL

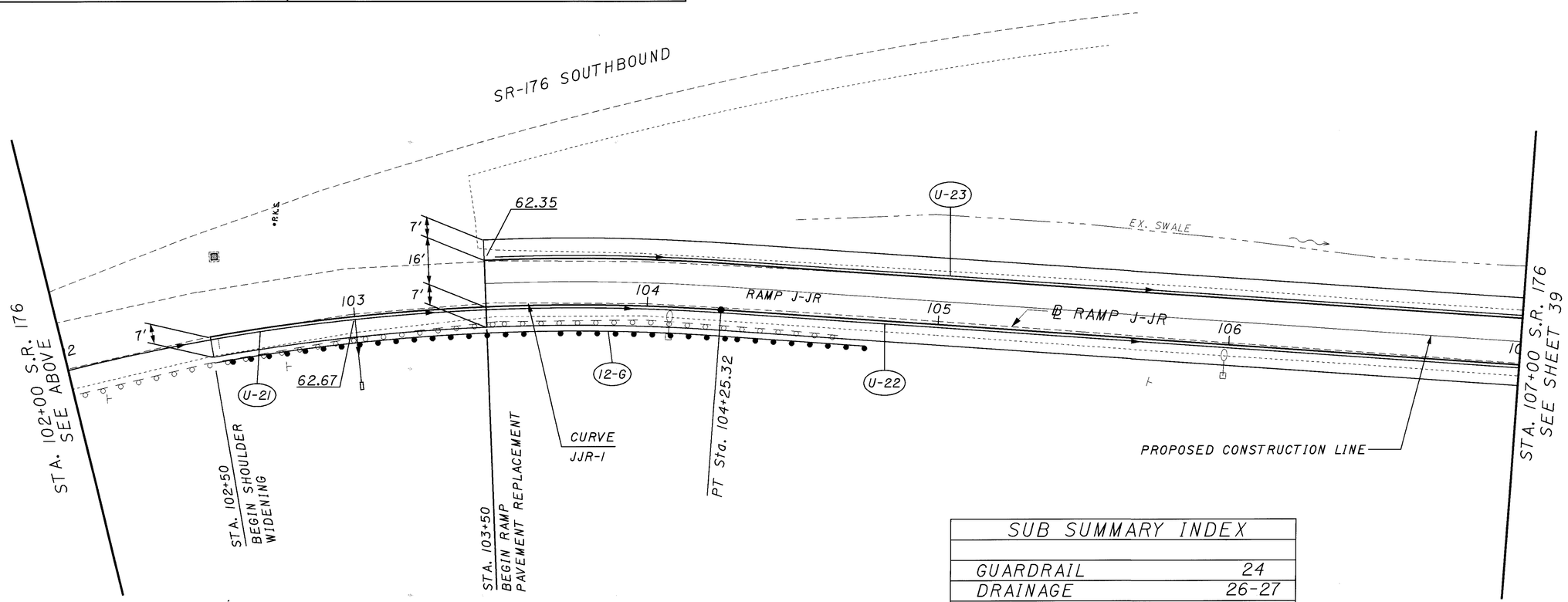


STA. 110+33.33, 12.02' RIGHT (℄ RAMP J-JR)
N - 73154.73
E - 86900.80
ELEV. - 56.57 (RAMP J-JR BENCH)
ELEV. - 628.57 (ORIG. CONST. BENCH)



STA. 113+97.79, 43.19' LEFT (℄ RAMP J-JR)
N - 73025.13
E - 87245.92
ELEV. - 55.09 (RAMP J-JR BENCH)
ELEV. - 627.09 (ORIG. CONST. BENCH)





888.88 ← EX. CONC. ELEV.
888.88 ← PROP. UD ℄

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PAVEMENT	23

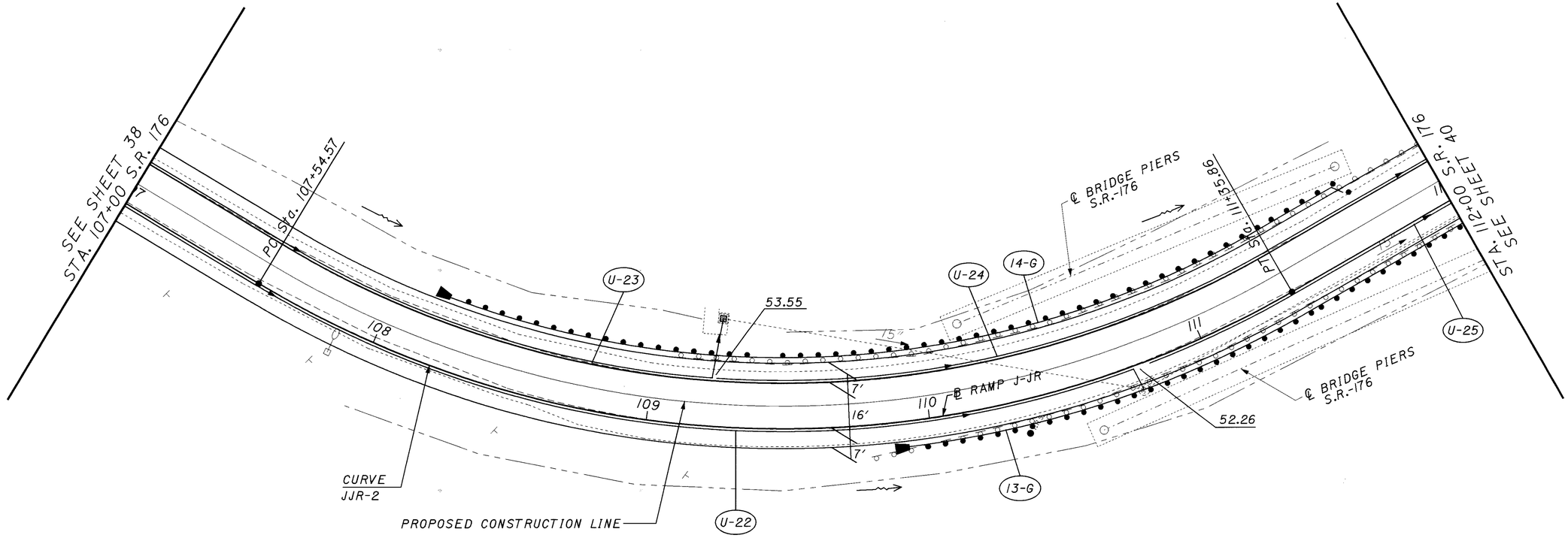
SEE SHEET 39 FOR CURVE DATA

HORIZONTAL SCALE IN FEET
0 20 40
CALCULATED
CHECKED

RAMP J-JR REPLACEMENT

CUY-176J-12.76

38
117



888.88 ⟵ EX. CONC. ELEV.
888.88 ⟵ PROP. UD ℄

SUB SUMMARY INDEX	
GUARDRAIL	24
DRAINAGE	26-27
UNDERDRAIN	25
SHOULDER	23
PAVEMENT	23

AS BUILT RAMP J-JR RAMP GEOMETRICS

CURVE	PC			PI			PT			DELTA	Dc	T	L	R	E	e_{max}
	STATION	N-COORD.	E-COORD.	STATION	N-COORD.	E-COORD.	STATION	N-COORD.	E-COORD.							
JJR-1	100+00.00	74135.73	74135.73	102+19.14	73958.87	86775.81	104+25.32	73739.89	86784.08	34°01'30.93"	8°00'00"	219.14	425.32	716.20	32.77	0.083
JJR-2	107+54.57	73410.87	73410.87	109+65.53	73200.05	86804.45	111+35.86	73104.83	86992.69	61°00'20.41"	16°00'00"	210.96	381.29	358.10	57.52	*0.058
JJR-3	118+06.81	72801.96	72801.96	119+94.02	72717.46	87758.45	121+50.26	72531.49	87779.86	56°36'00.00"	16°28'47.76"	187.20	343.45	347.67	47.20	0.025

* - MAXIMUM SUPERELEVATION RATE FOR CURVE JJR-2
MODIFIED TO MEET CURRENT STANDARDS

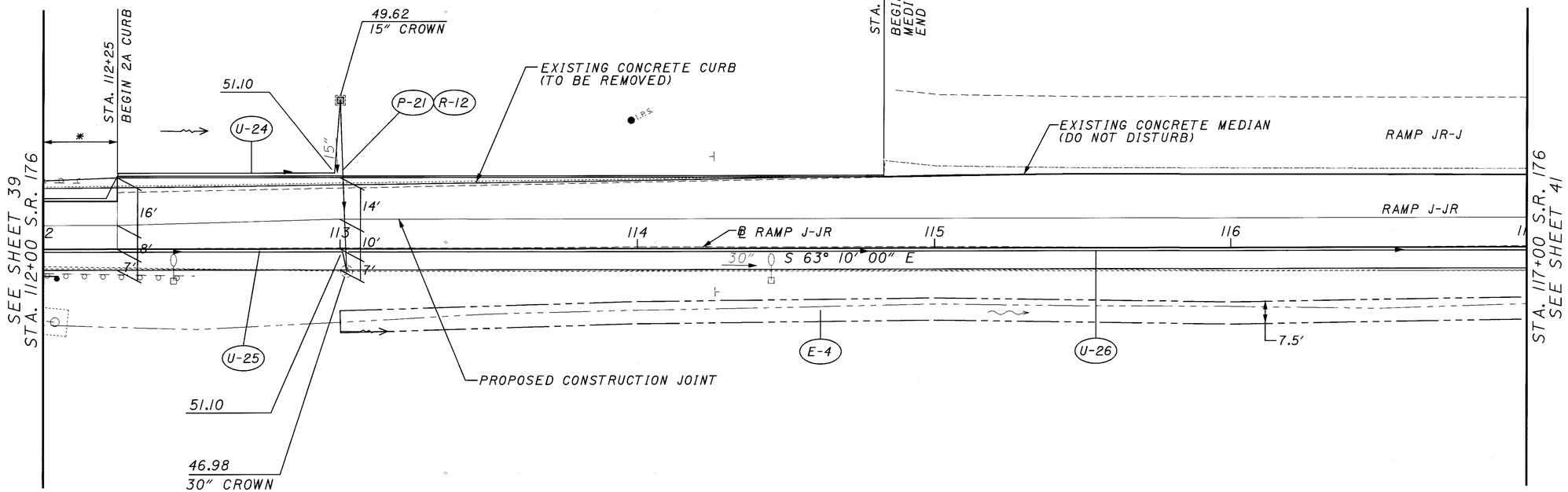
HORIZONTAL SCALE IN FEET
0 20 40
CALCULATED
CHECKED

RAMP J-JR REPLACEMENT

CUY-176J-12.76

39
117

* - LEFT SHOULDER TRANSITION WIDTH
FROM 7′ TO 8′ IN 25′



888.88 ← EX. CONC. ELEV.
888.88 ← PROP. UD ℄

SUB SUMMARY INDEX	
GUARDRAIL	24
DRAINAGE	26-27
UNDERDRAIN	25
SHOULDER	23
PAVEMENT	23

SEE CROSS SECTION SHEET 60 FOR PROFILE OF P-21 R-12

HORIZONTAL SCALE IN FEET
0 20 40
CALCULATED
CHECKED

RAMP J-JR REPLACEMENT

CUY-176-12.76

40
117

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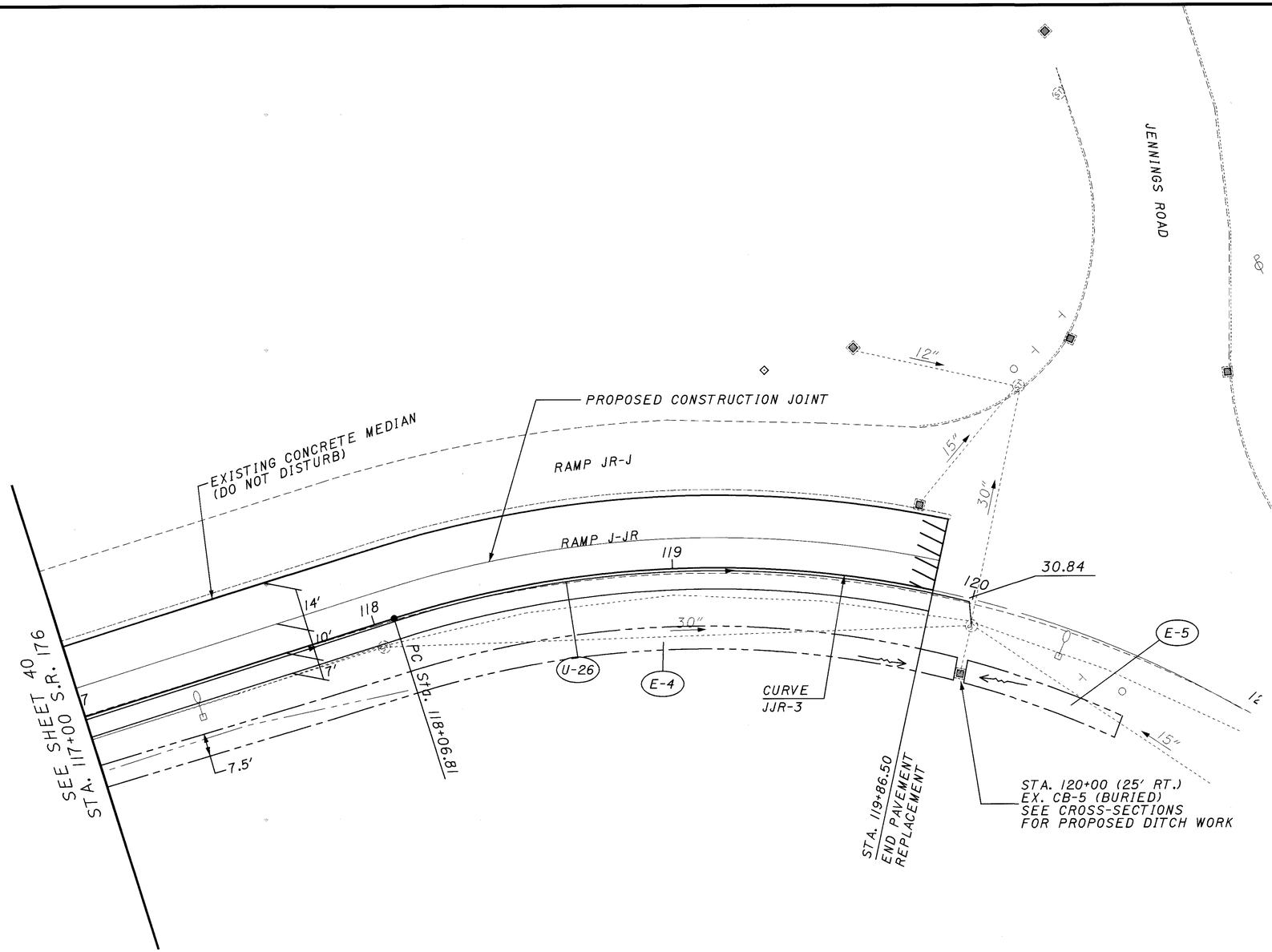

888.88 ← EX. CONC. ELEV.
888.88 ← PROP. UD ℄

SUB SUMMARY INDEX	
GUARDRAIL	24
DRAINAGE	26-27
UNDERDRAIN	25
SHOULDER	23
PAVEMENT	23

SEE SHEET 39 FOR CURVE DATA

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED | CHECKED

RAMP J-JR REPLACEMENT

CUY-176J-12.76

LEFT SHOULDER			PAVEMENT EDGE		CONST. JOINT			BASELINE					RIGHT SHOULDER	
ELEVATION	SLOPE	UD FLOWLINE	ELEVATION	OFFSET	ELEVATION	OFFSET	TRANSITION RATE @ 16' OFFSET	SLOPE	STATION	PROFILE GRADE	UD FLOWLINE	REMARKS	SLOPE	ELEVATION
67.56	0.0525	63.19	67.19	16.00	66.77	8.00		0.05250	103+50	66.35	62.35	Begin Pavt Repl	0.0525	65.98
66.95	0.0289	62.75	66.75	16.00	66.39	8.00	211.7:1	0.04512	103+75	66.03	62.03		0.0451	65.71
66.31	0.0054	62.27	66.27	16.00	65.97	8.00		0.03774	104+00	65.67	61.67		0.0417	65.38
65.69	-0.0181	61.82	65.82	16.00	65.57	8.00		0.03036	104+25	65.33	61.33	PT	0.0417	65.04
65.06	-0.0417	61.35	65.35	16.00	65.16	8.00		0.02298	104+50	64.98	60.98		0.0417	64.69
64.56	-0.0417	60.85	64.85	16.00	64.72	8.00		0.01560	104+75	64.60	60.60	Normal Crown	0.0417	64.31
64.18	-0.0417	60.47	64.47	16.00	64.34	8.00		0.01560	105+00	64.22	60.22		0.0417	63.93
63.79	-0.0417	60.08	64.08	16.00	63.95	8.00		0.01560	105+25	63.83	59.83		0.0417	63.54
63.39	-0.0417	59.68	63.68	16.00	63.55	8.00		0.01560	105+50	63.43	59.43		0.0417	63.14
62.96	-0.0417	59.25	63.25	16.00	63.12	8.00		0.01560	105+75	63.00	59.00		0.0417	62.71
62.54	-0.0417	58.83	62.83	16.00	62.70	8.00		0.01560	106+00	62.58	58.58		0.0417	62.29
62.08	-0.0417	58.37	62.37	16.00	62.24	8.00		0.01560	106+25	62.12	58.12	Normal Crown	0.0417	61.83
61.48	-0.0417	57.77	61.77	16.00	61.72	8.00		0.00640	106+50	61.67	57.67		0.0417	61.38
60.93	-0.0417	57.23	61.23	16.00	61.25	8.00		-0.00280	106+75	61.27	57.27		0.0417	60.98
60.37	-0.0417	56.66	60.66	16.00	60.75	8.00		-0.01200	107+00	60.85	56.85		0.0417	60.56
59.81	-0.0417	56.10	60.10	16.00	60.27	8.00		-0.02120	107+25	60.44	56.44		0.0417	60.15
59.25	-0.0417	55.54	59.54	16.00	59.79	8.00		-0.03040	107+50	60.03	56.03		0.0396	59.75
59.16	-0.0417	55.46	59.46	16.00	59.71	8.00	169.8:1	-0.03208	107+54.57	59.97	55.97	PC	0.0379	59.70
58.74	-0.0417	55.04	59.04	16.00	59.35	8.00		-0.03960	107+75	59.67	55.67		0.0304	59.46
58.12	-0.0488	54.46	58.46	16.00	58.85	8.00		-0.04880	108+00	59.24	55.24		0.0212	59.09
57.55	-0.058	53.95	57.95	16.00	58.42	8.00		-0.05800	108+25	58.88	54.88	Full Super	0.0120	58.80
57.11	-0.058	53.51	57.51	16.00	57.98	8.00		-0.05800	108+50	58.44	54.44		0.0120	58.36
56.80	-0.058	53.20	57.20	16.00	57.67	8.00		-0.05800	108+75	58.13	54.13		0.0120	58.05
56.45	-0.058	52.85	56.85	16.00	57.32	8.00		-0.05800	109+00	57.78	53.78		0.0120	57.70
56.22	-0.058	52.62	56.62	16.00	57.09	8.00		-0.05800	109+25	57.55	53.55		0.0120	57.47
55.91	-0.058	52.55	56.31	16.00	56.78	8.00		-0.05800	109+50	57.24	53.24		0.0120	57.16
55.75	-0.058	52.47	56.15	16.00	56.62	8.00		-0.05800	109+75	57.08	53.08		0.0120	57.00
55.52	-0.058	52.39	55.92	16.00	56.39	8.00		-0.05800	110+00	56.85	52.85		0.0120	56.77
55.31	-0.058	52.32	55.71	16.00	56.18	8.00		-0.05800	110+25	56.64	52.64		0.0120	56.56
55.04	-0.058	52.24	55.44	16.00	55.91	8.00		-0.05800	110+50	56.37	52.37		0.0120	56.29
54.93	-0.058	52.16	55.33	16.00	55.80	8.00		-0.05800	110+75	56.26	52.26	Full Super	0.0120	56.18
54.98	-0.0488	52.09	55.32	16.00	55.71	8.00		-0.04880	111+00	56.10	52.10		0.0212	55.95
55.12	-0.0396	52.01	55.40	16.00	55.71	8.00		-0.03960	111+25	56.03	52.03		0.0304	55.82
55.17	-0.0356	51.98	55.42	16.00	55.71	8.00		-0.03560	111+35.86	55.99	51.99	PT	0.0344	55.75
55.23	-0.0304	51.93	55.44	16.00	55.69	8.00		-0.03040	111+50	55.93	51.93		0.0396	55.65
55.33	-0.0212	51.86	55.48	16.00	55.65	8.00		-0.02120	111+75	55.82	51.82		0.0417	55.53
55.43	-0.012	51.78	55.52	16.00	55.61	8.00		-0.01200	112+00	55.71	51.71		0.0417	55.42
55.52	-0.0028	51.70	55.55	16.00	55.57	8.00		-0.00280	112+25	55.59	51.59	8' Left Shoulder	0.0417	55.30
-	-	51.70	55.52	24.00	55.57	8.00		-0.00280	112+25	55.59	51.59	Begin 2 LANE	0.0417	55.30
-	-	51.63	55.63	24.00	55.54	8.67		0.00640	112+50	55.48	51.48		0.0417	55.19
-	-	51.55	55.66	24.00	55.44	9.33		0.01560	112+75	55.29	51.29	Normal Crown	0.0417	55.00
-	-	51.47	55.47	24.00	55.26	10.00		0.01560	113+00	55.10	51.10		0.0417	54.81
-	-		55.16	24.00	54.95	10.00		0.01560	113+25	54.79	50.79		0.0417	54.50
-	-		54.86	24.00	54.65	10.00		0.01560	113+50	54.49	50.49		0.0417	54.20
-	-		54.40	24.00	54.19	10.00		0.01560	113+75	54.03	50.03		0.0417	53.74
-	-		53.94	24.00	53.73	10.00		0.01560	114+00	53.57	49.57		0.0417	53.28
-	-		53.36	24.00	53.15	10.00		0.01560	114+25	52.99	48.99		0.0417	52.70
-	-		52.77	24.00	52.56	10.00		0.01560	114+50	52.40	48.40		0.0417	52.11
-	-		51.92	24.00	51.71	10.00		0.01560	114+75	51.55	47.55		0.0417	51.26
-	-		51.06	24.00	50.85	10.00		0.01560	115+00	50.69	46.69		0.0417	50.40
-	-		50.11	24.00	49.90	10.00		0.01560	115+25	49.74	45.74		0.0417	49.45
-	-		49.16	24.00	48.95	10.00		0.01560	115+50	48.79	44.79		0.0417	48.50
-	-		47.24	24.00	47.03	10.00		0.01560	115+00	46.87	42.87		0.0417	46.58
-	-		46.19	24.00	45.98	10.00		0.01560	116+25	45.82	41.82		0.0417	45.53
-	-		45.14	24.00	44.93	10.00		0.01560	116+50	44.77	40.77		0.0417	44.48
-	-		44.23	24.00	44.02	10.00		0.01560	116+75	43.86	39.86		0.0417	43.57
-	-		43.33	24.00	43.12	10.00		0.01560	117+00	42.96	38.96		0.0417	42.67
-	-		42.36	24.00	42.15	10.00		0.01560	117+25	41.99	37.99		0.0417	41.70
-	-		41.38	24.00	41.17	10.00		0.01560	117+50	41.01	37.01		0.0417	40.72
-	-		40.42	24.00	40.21	10.00		0.01560	117+75	40.05	36.05	Normal Crown	0.0417	39.76
-	-		39.51	24.00	39.26	10.00		0.01795	118+00	39.08	35.08		0.0417	38.79
-	-		39.33	24.00	39.07	10.00		0.01859	118+06.81	38.88	34.88	PC	0.0417	38.59
-	-		38.79	24.00	38.50	10.00		0.02030	118+25	38.30	34.30		0.0417	38.01
-	-		38.01	24.00	37.70	10.00	443.3:1	0.02265	118+50	37.47	33.47		0.0417	37.18
-	-		37.52	24.00	37.17	10.00		0.02500	118+75	36.92	32.92	Full Super	0.0417	36.63
-	-		36.92	24.00	36.57	10.00		0.02500	119+00	36.32	32.32		0.0417	36.03
-	-		36.51	24.00	36.16	10.00		0.02500	119+25	35.91	31.91		0.0417	35.62
-	-		36.03	24.00	35.68	10.00		0.02500	119+50	35.43	31.43		0.0417	35.14
-	-		35.74	24.00	35.39	10.00		0.02500	119+75	35.14	31.14		0.0417	34.85
-	-		35.44	24.00	35.09	10.00		0.02500	120+00	34.84	30.84		0.0417	34.55

PI STA. 102+19.14 Dc=8°00'00.00"
PI STA. 109+65.53 Dc=16°00'00.00"
PI STA. 119+94.02 Dc=16°28'47.76"

ELEVATIONS SHOWN ARE BASED ON AN ASSUMED BENCH.
SEE SHEET 38 FOR BENCH LOCATION AND DATA

CALCULATED JEL
CHECKED JEL

RAMP J-JR SUPERELEVATION TABLE

CUY-176J-12.76

SEEDING	
END WIDTH	SQ. YDS.
	22
7	
	22
9	
	25
9	
	69

50 40 30 20 10 0 10 20 30 40 50

70
65
60
55

66.89
103+00.00
66.89

67.14
102+75.00
67.14

BEGIN RIGHT SHOULDER WIDENING

67.34
102+50.00
67.34

50 40 30 20 10 0 10 20 30 40 50

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
13	0		
		12	0
13	0		
		12	0
13	0		
		24	0

SHEET TOTAL

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

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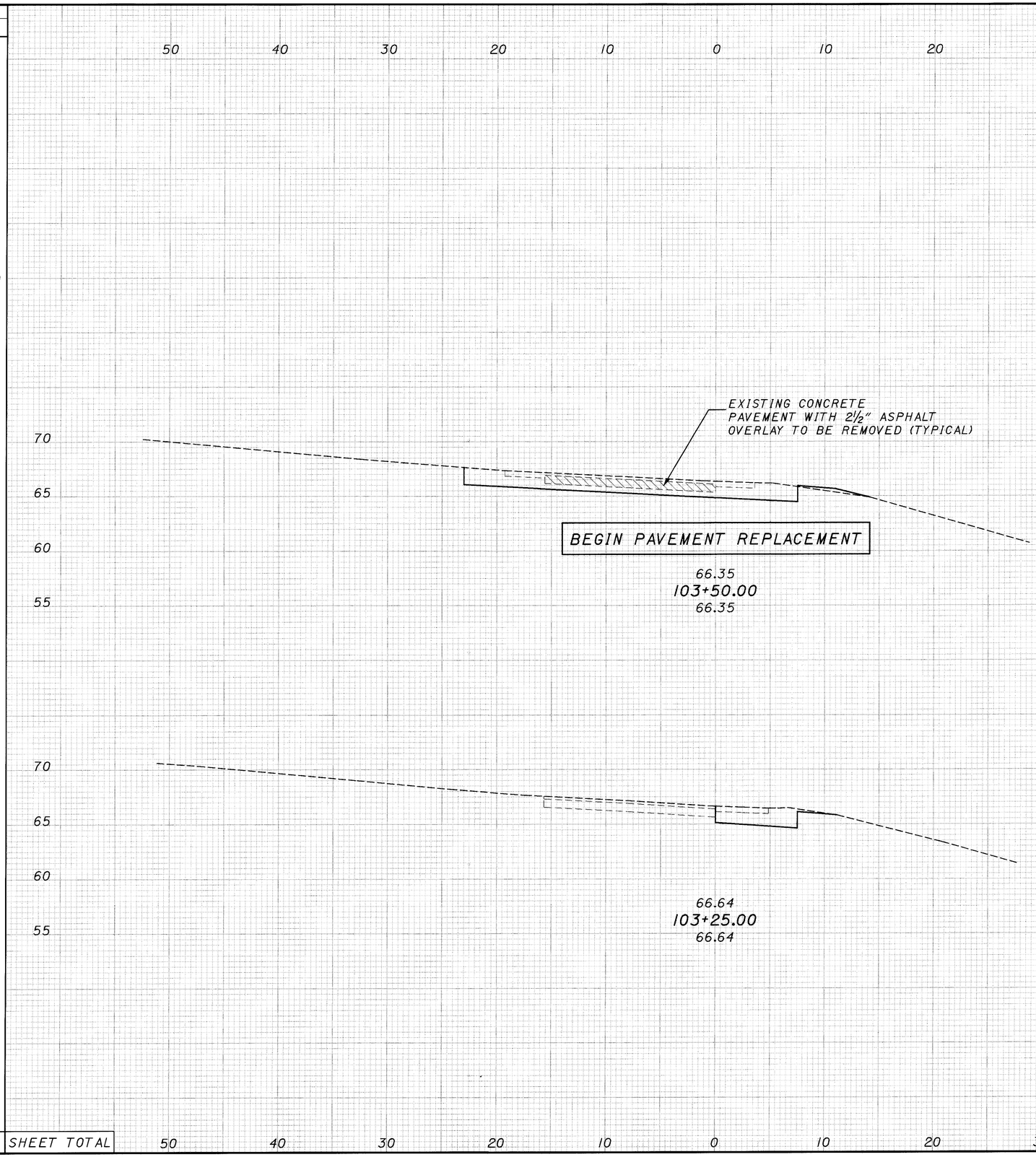
SEEDING	
END WIDTH	SQ. YDS.
	60
17	
	36
9	
96	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
30	1		
13	0		
		12	0
13	0		
		12	0
	SHEET TOTAL	24	0

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

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117

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SEEDING	
END WIDTH	SQ. YDS.
	71
25	
	74
28	
	75
26	
	220

50 40 30 20 10 0 10 20 30 40 50

70
65
60
55

8.4:1
65.36
6:1

65.34
104+25.00
65.34

EXISTING CONCRETE PAVEMENT WITH 2½" ASPHALT OVERLAY TO BE REMOVED (TYPICAL)

6:1
65.98
6:1

65.68
104+00.00
65.68

6:1
66.63
6:1

66.04
103+75.00
66.04

SHEET TOTAL

50 40 30 20 10 0 10 20 30 40 50

END AREA		VOLUME	
CUT	FILL	CUT	FILL
34	0		
		33	0
38	0		
		35	0
37	0		
		31	1
		99	1

SHEET TOTAL

CALCULATED

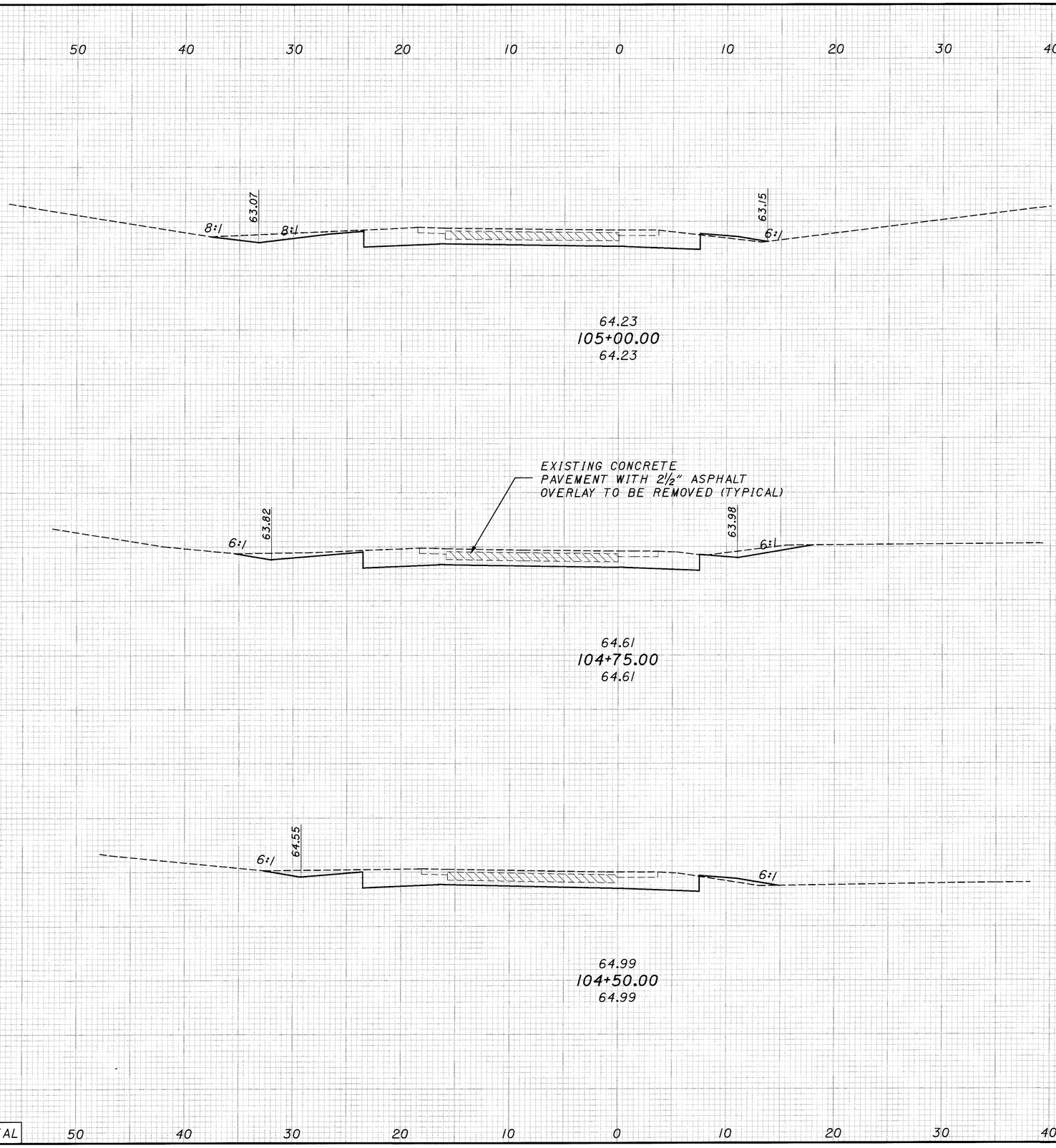
CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

45
117

SEEDING	
END WIDTH	SQ. YDS.
	85
30	
	86
32	
	81
26	
	252



END AREA		VOLUME	
CUT	FILL	CUT	FILL
36	1		
		35	1
39	0		
		34	1
34	2		
		31	1
		100	3

SHEET TOTAL

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

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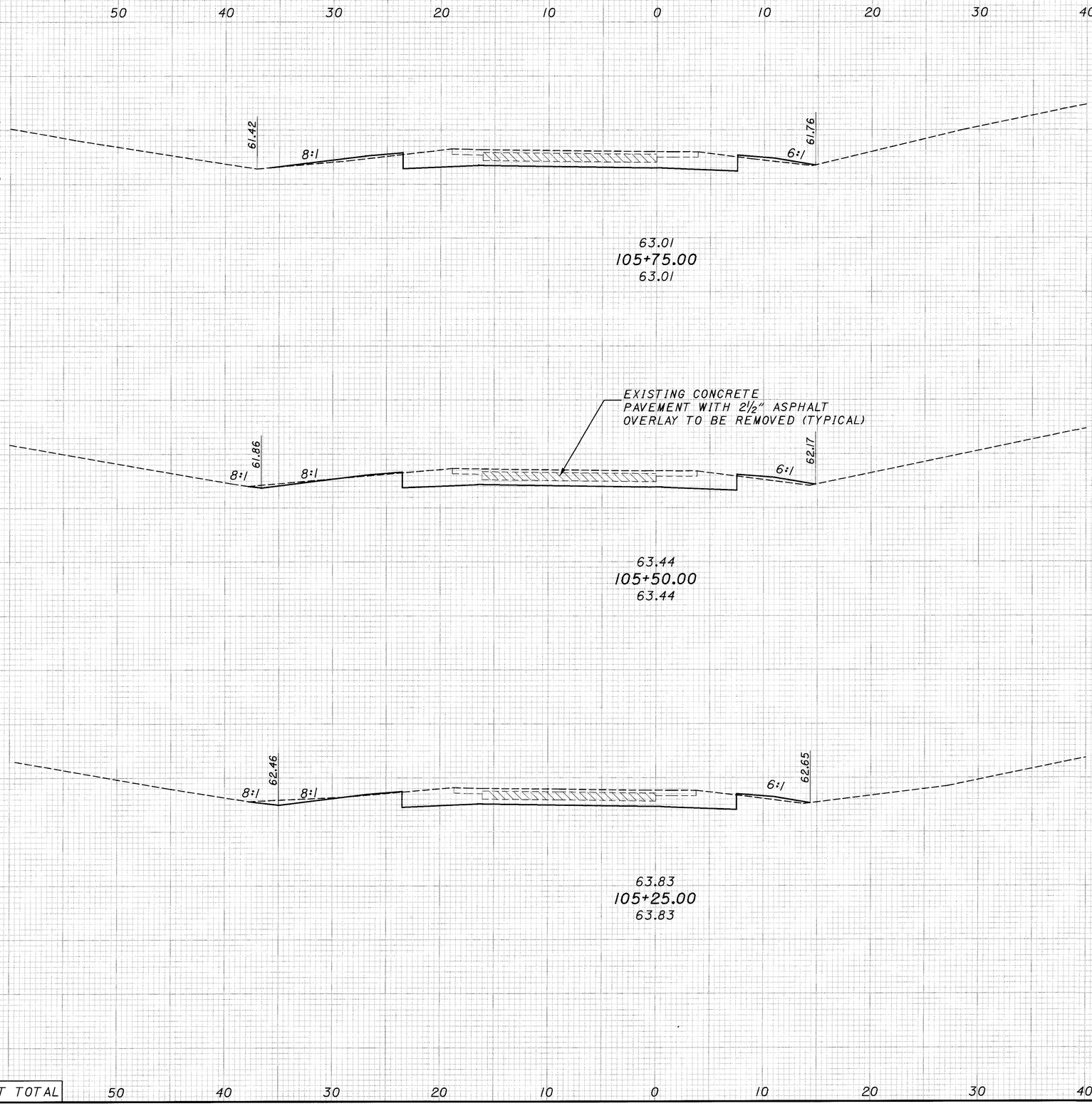
SEEDING END WIDTH	SEEDING SQ. YDS.
	83
29	
	83
31	
	86
31	
SHEET TOTAL	252



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
30	4		
		28	3
31	2		
		29	2
32	2		
		31	1
SHEET TOTAL		88	6

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

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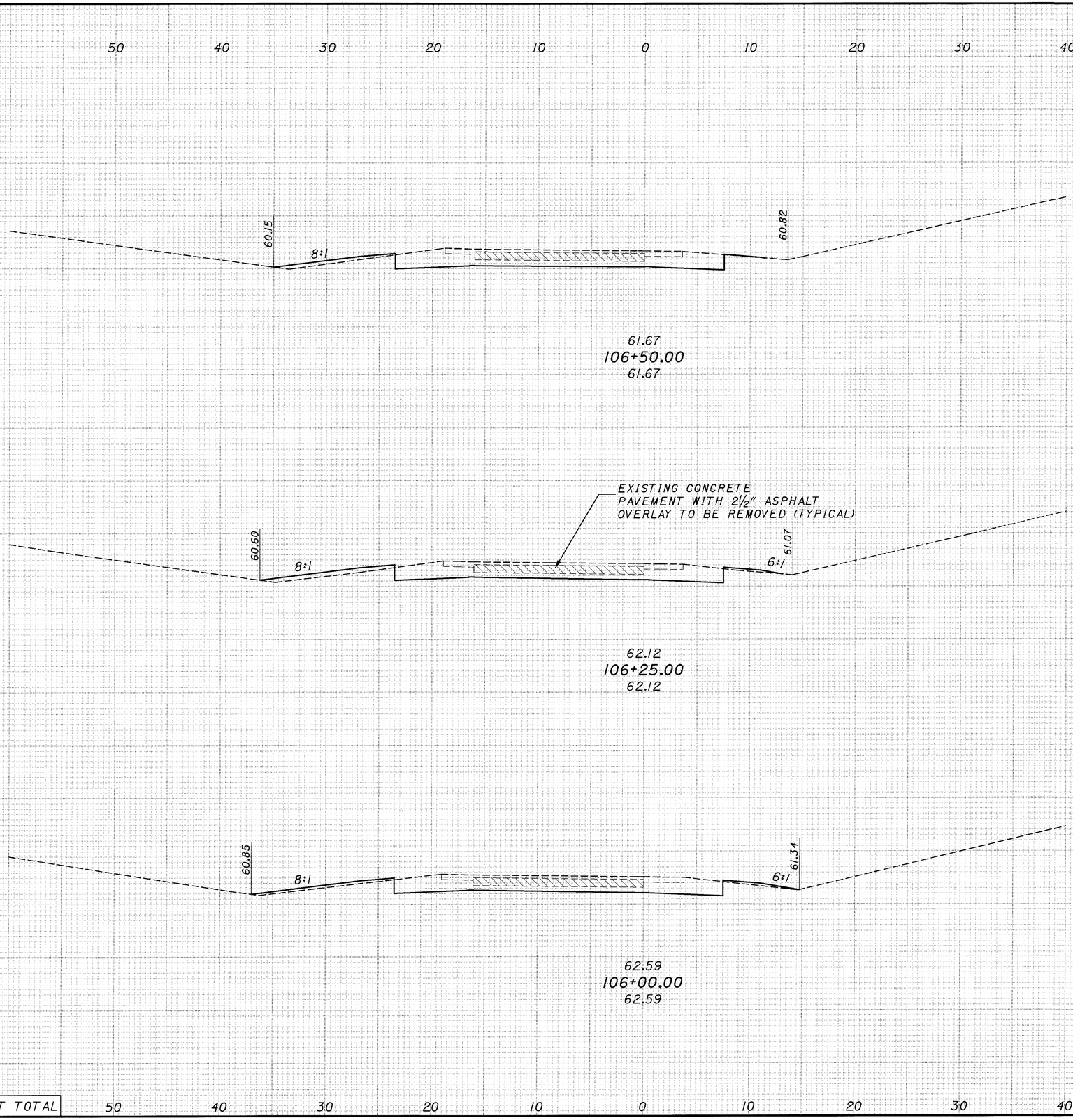
SEEDING	
END WIDTH	SQ. YDS.
	65
26	
	76
29	
	83
31	
	224



END AREA		VOLUME	
CUT	FILL	CUT	FILL
32	4		
		29	4
30	6		
		28	5
30	4		
SHEET TOTAL		28	4

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

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117

SEEDING	
END WIDTH	SQ. YDS.
	76
27	
	67
21	
143	SHEET TOTAL

50 40 30 20 10 0 10 20 30 40 50

65
60
55
50

EXISTING CONCRETE PAVEMENT WITH 2½" ASPHALT OVERLAY TO BE REMOVED (TYPICAL)

59.10 8:1 60.10

60.86
107+00.00
60.86

59.63 8:1 60.59

61.27
106+75.00
61.27

END AREA		VOLUME	
CUT	FILL	CUT	FILL
35	2		
		31	2
32	2		
		30	3
		61	5
SHEET TOTAL			

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

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SEEDING END WIDTH	SEEDING SQ. YDS.
	81
29	
	82
30	
	81
28	
	244

50 40 30 20 10 0 10 20 30 40 50

65
60
55
50

57.31 8:1 58.51

59.68
107+75.00
59.68

EXISTING CONCRETE PAVEMENT WITH 2½" ASPHALT OVERLAY TO BE REMOVED (TYPICAL)

57.86 8:1 59.24

60.03
107+50.00
60.03

58.49 8:1 59.67

60.45
107+25.00
60.45

SHEET TOTAL

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
35	1		
		33	0
37	0		
		33	0
35	0		
		32	1
		98	1

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

50
117

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SEEDING END WIDTH	SEEDING SQ. YDS.
	93
27	
	75
27	
	78
29	
	246

50 40 30 20 10 0 10 20 30 40 50

60
55
50

6:1 55.94 8:1 56.63

58.45
108+50.00
58.45

EXISTING CONCRETE PAVEMENT WITH 2½" ASPHALT OVERLAY TO BE REMOVED (TYPICAL)

6:1 56.30 8:1 6:1 57.14

58.88
108+25.00
58.88

6:1 56.83 8:1 57.73

59.25
108+00.00
59.25

SHEET TOTAL

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
37	1		
		35	1
39	1		
		35	1
36	1		
		33	1
		103	3

CALCULATED

CHECKED

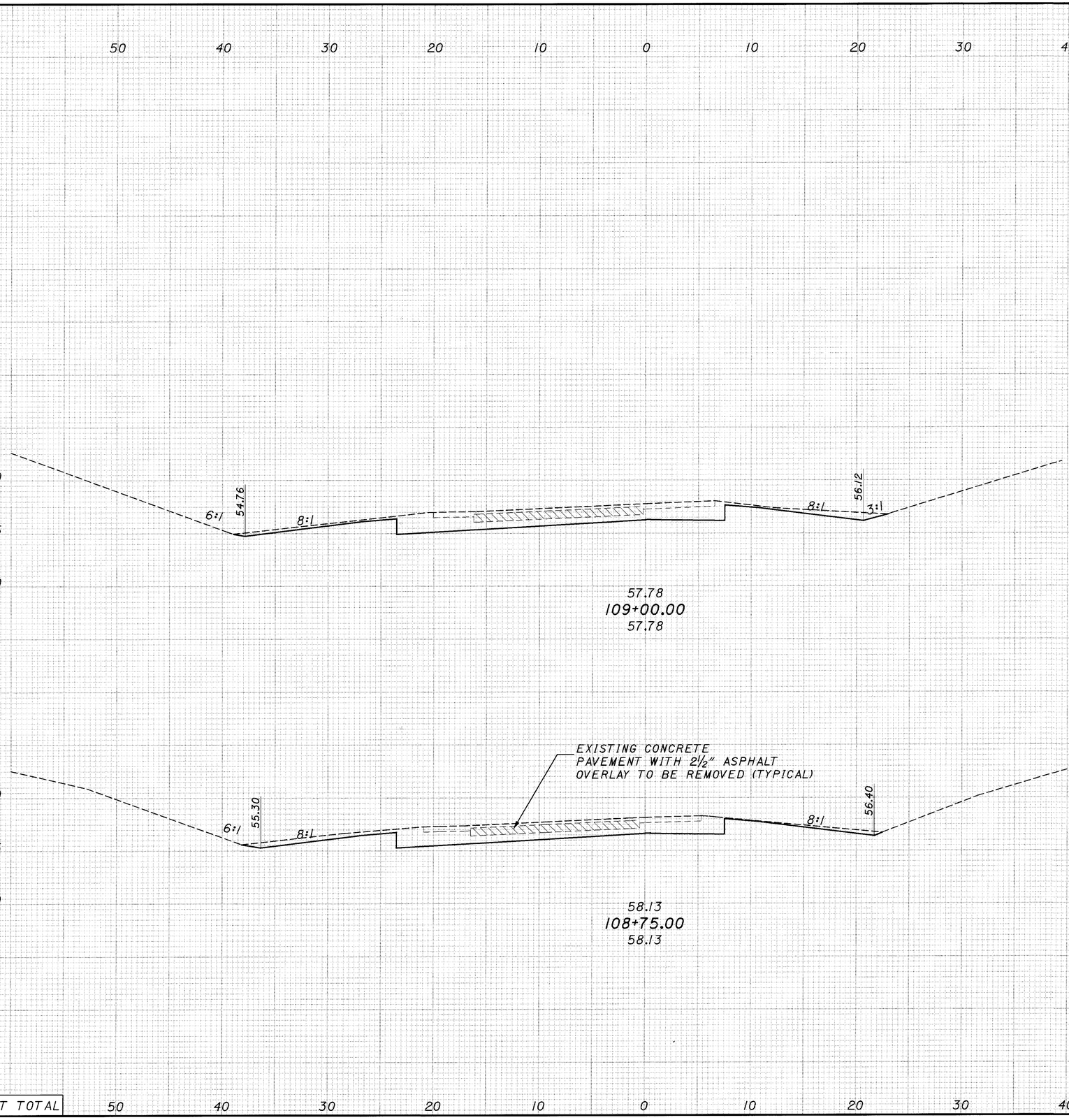
CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

51
117

I:\PROJECTS\Pid19509\ramp j-jr\geopak\jjrgxb.dgn 11-AUG-2000 1:48PM jgrmovse

SEEDING	
END WIDTH	SQ. YDS.
	106
41	
	112
40	
218	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
45	0		
		41	0
44	0		
		38	0
SHEET TOTAL		79	0

CALCULATED

CHECKED

CROSS SECTIONS

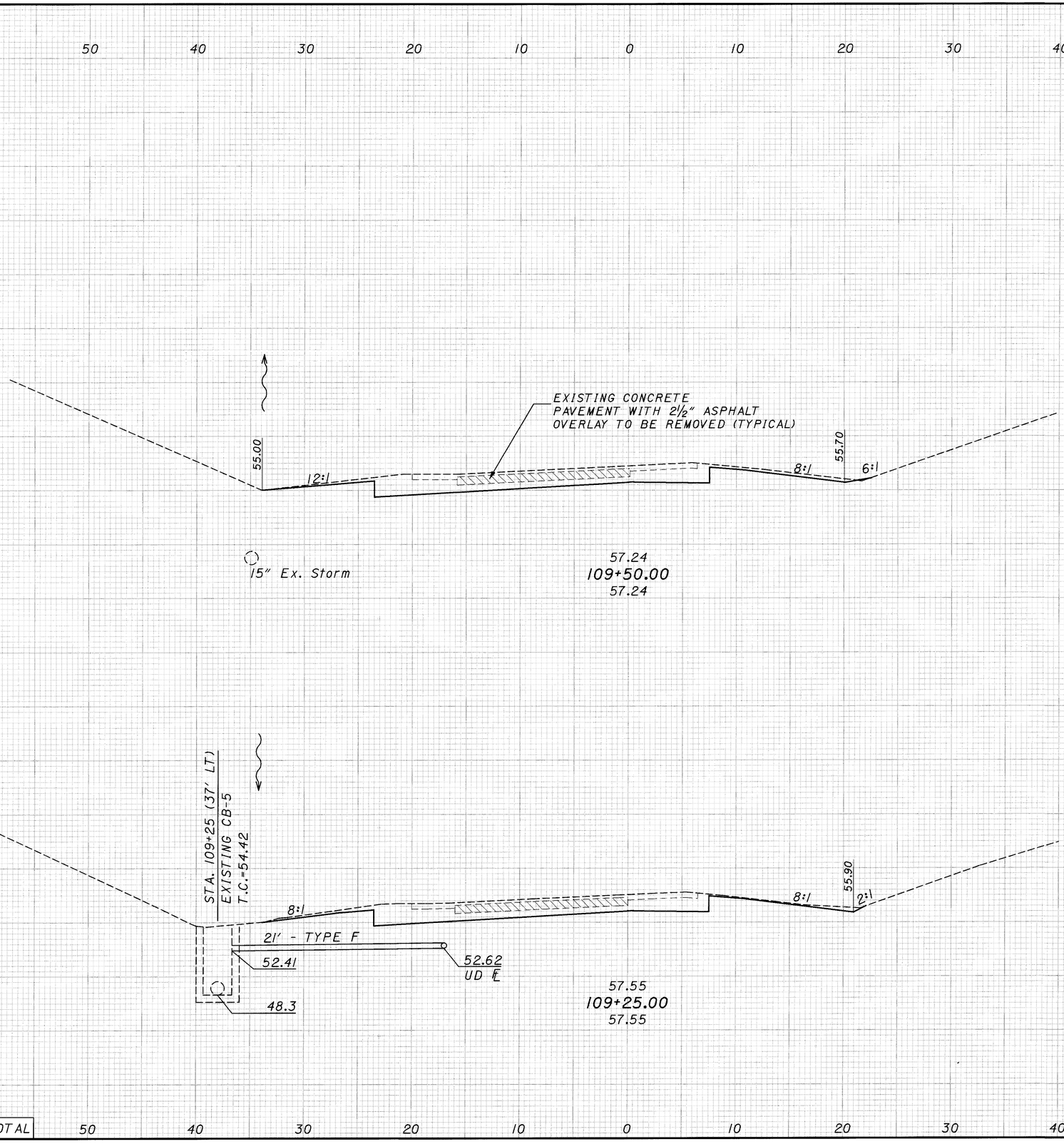
RAMP J-JR REPLACEMENT

CUY-176J-12.76

52
117

I:\PROJECTS\Pid19509\rampj-jr\geopak\jjrgxb.dgn 11-AUG-2000 1:49PM jgrmovse

SEEDING	
END WIDTH	SQ. YDS.
	90
35	
	97
35	
	187



END AREA		VOLUME	
CUT	FILL	CUT	FILL
41	0		
		38	0
40	0		
SHEET TOTAL		39	0

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

53
117

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SEEDING	
END WIDTH	SQ. YDS.
	76
28	
	81
30	
	157

50 40 30 20 10 0 10 20 30 40 50

60
55
50
45

EXISTING CONCRETE PAVEMENT WITH 2½" ASPHALT OVERLAY TO BE REMOVED (TYPICAL)

54.48
6:1
7:1
55.19

15" Ex. Storm
56.86
110+00.00
56.86

54.75
12:1
6.7:1
55.40

15" Ex. Storm
57.09
109+75.00
57.09

SHEET TOTAL

50 40 30 20 10 0 10 20 30 40 50

END AREA		VOLUME	
CUT	FILL	CUT	FILL
37	0		
		35	0
39	0		
		37	0
		72	0

SHEET TOTAL

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

54
117

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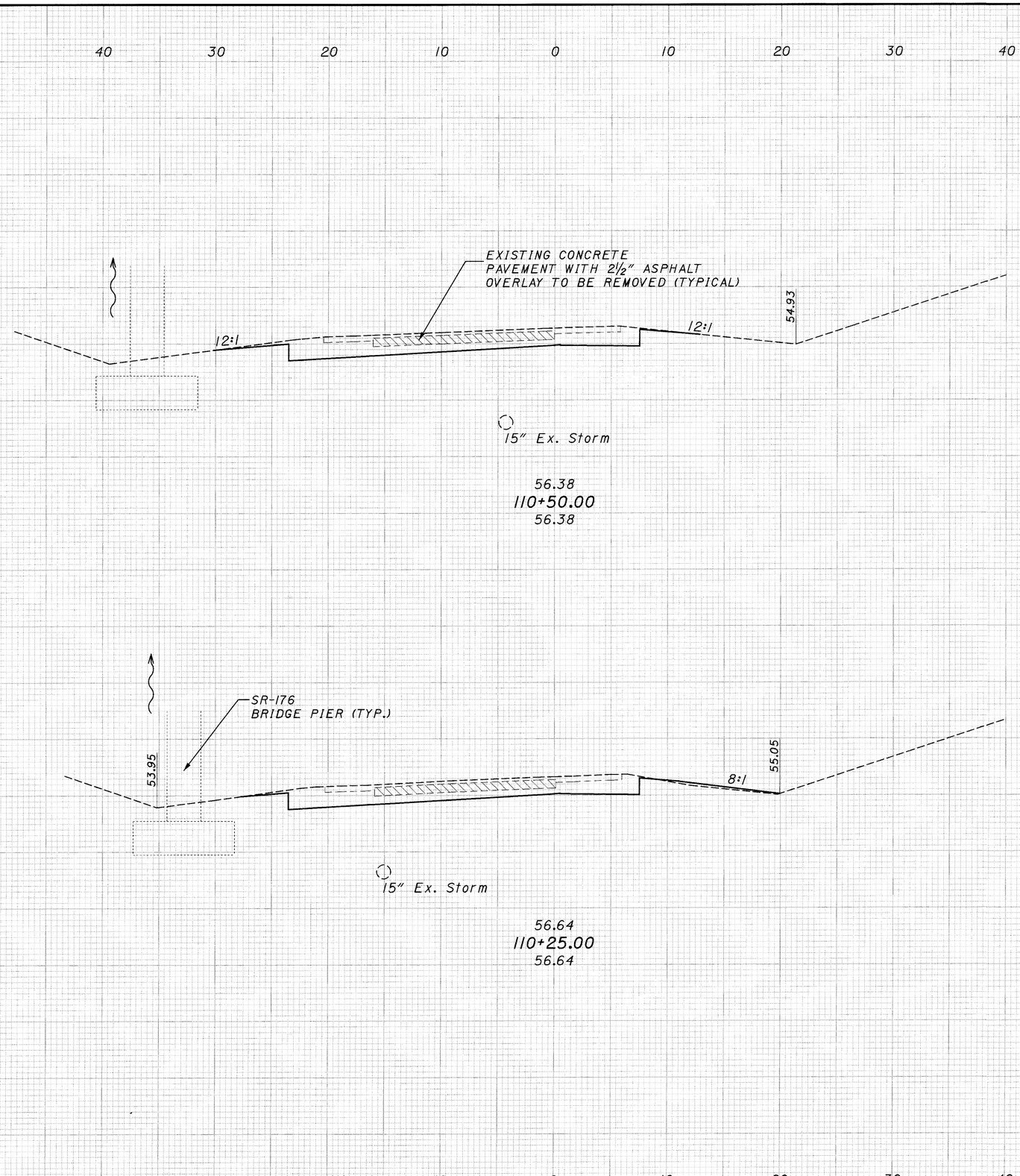
SEEDING	
END WIDTH	SQ. YDS.
	79
22	
	68
27	
	147



END AREA		VOLUME	
CUT	FILL	CUT	FILL
38	0		
		35	1
37	2		
		34	1
SHEET TOTAL		69	2

CALCULATED

CHECKED

CROSS SECTIONS

RAMP J-JR REPLACEMENT

CUY-176J-12.76

55
117

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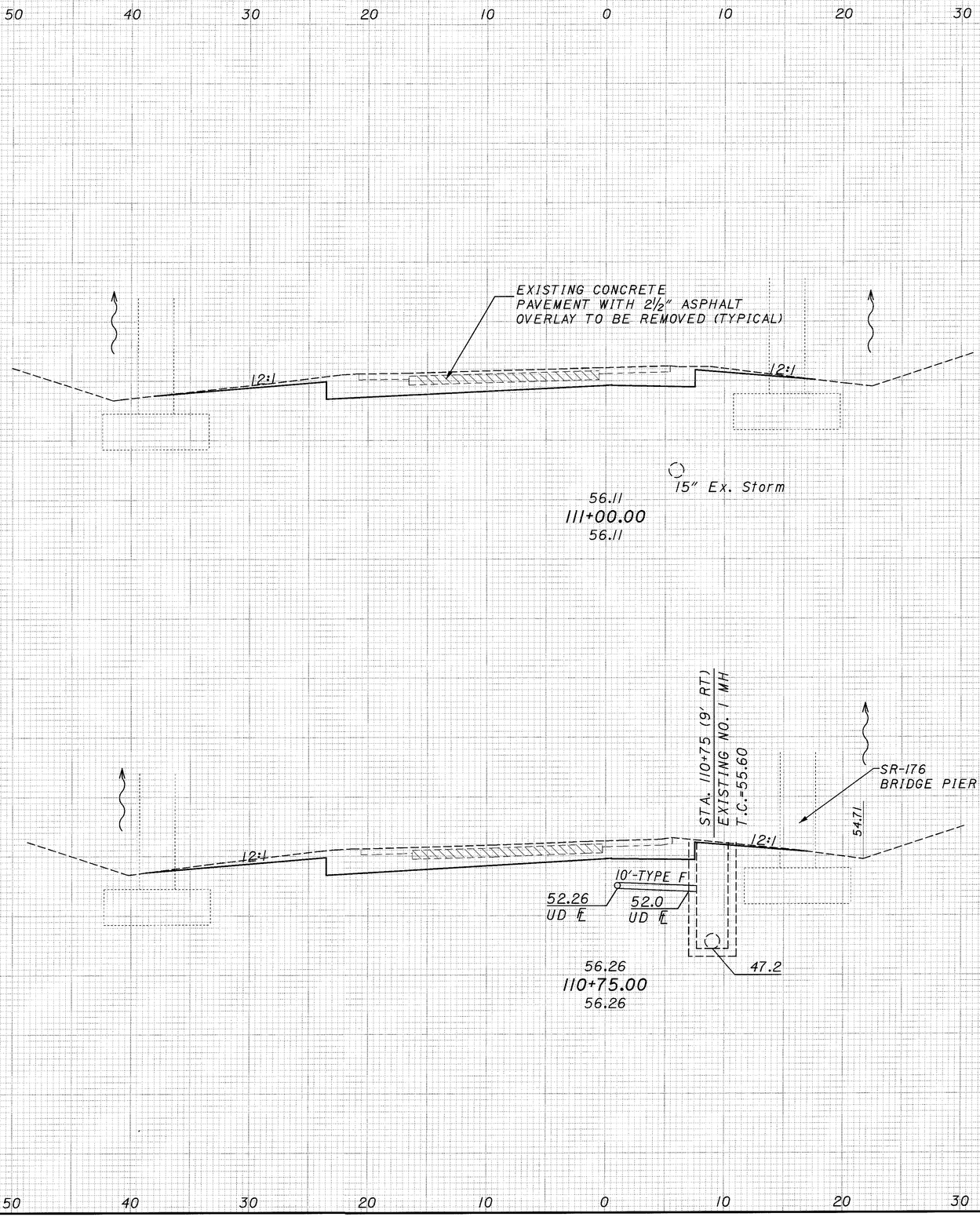
SEEDING	
END WIDTH	SQ. YDS.
	89
35	
	97
35	
186	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
42	0		
		40	0
45	0		
		38	0
		78	0

SHEET TOTAL

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

56
117

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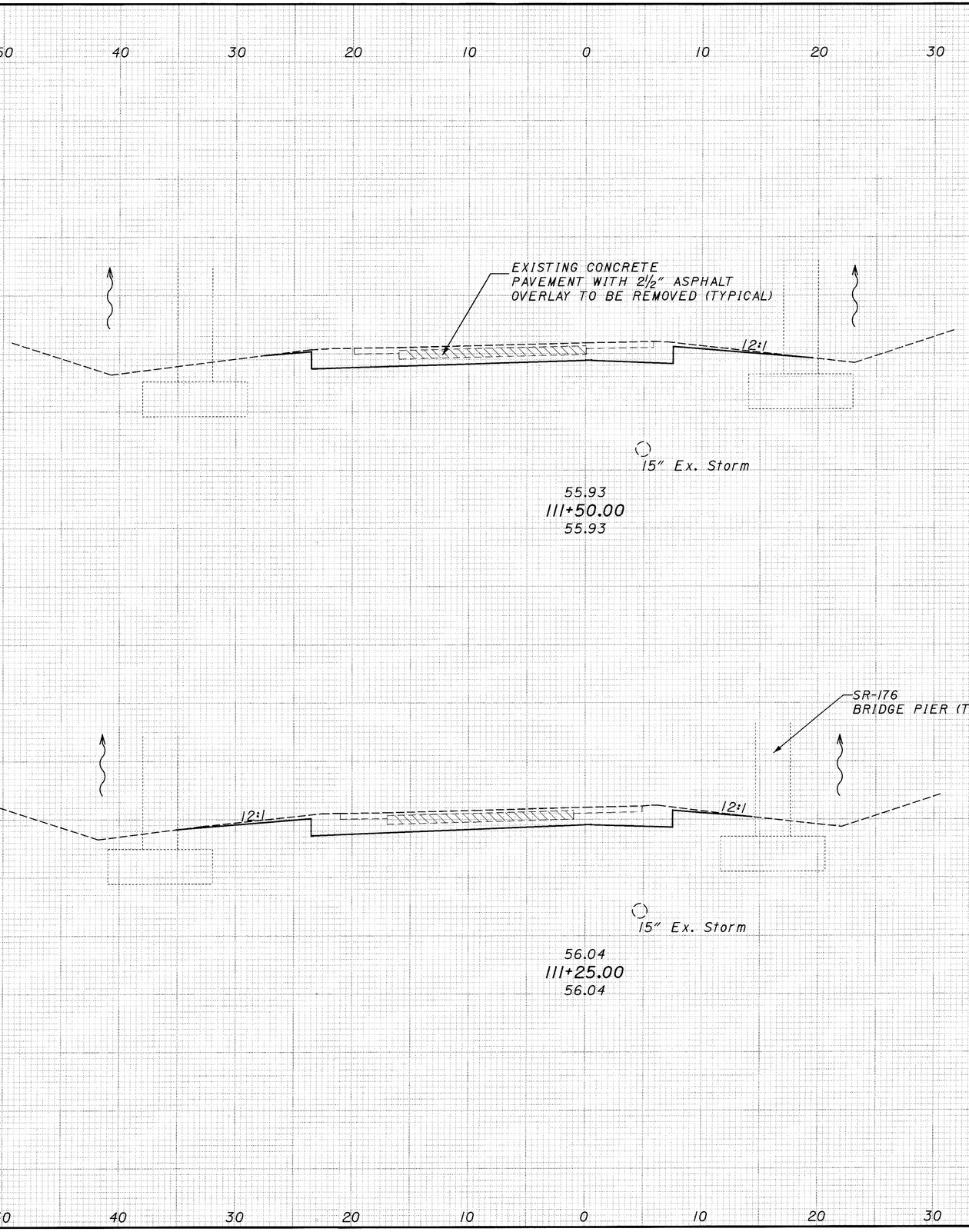
SEEDING	
END WIDTH	SQ. YDS.
	75
26	
	76
29	
151	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
36	0		
		38	0
39	0		
		38	0
		76	0

CALCULATED

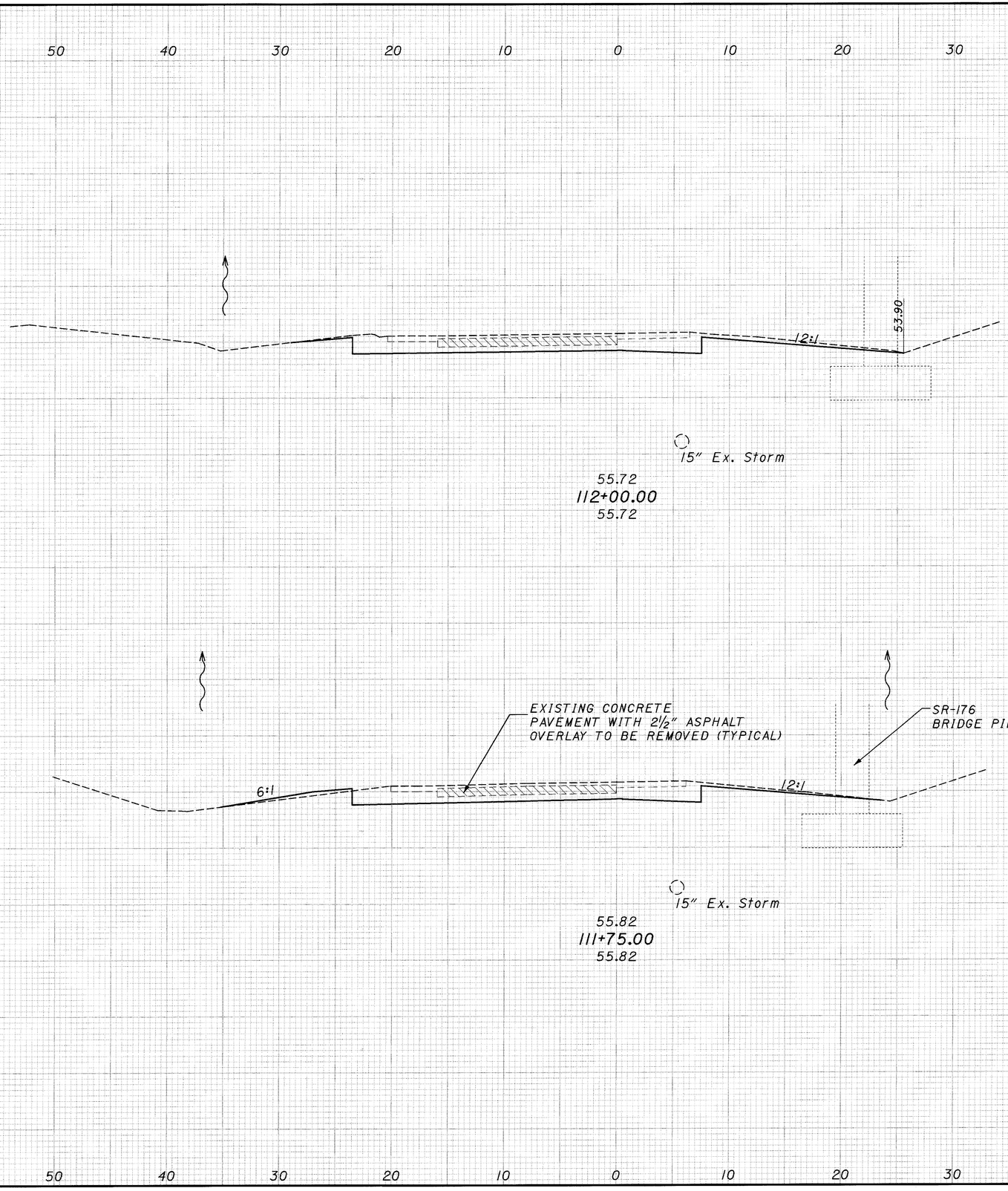
CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

57
117

SEEDING	
END WIDTH	SQ. YDS.
	99
33	
	85
28	
184	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
38	0		
		34	1
36	2		
		33	1
	SHEET TOTAL	67	2

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

58
117

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SEEDING	
END WIDTH	SQ. YDS.
	89
34	
	100
38	
	189

50 40 30 20 10 0 10 20 30 40 50

EXISTING CONCRETE PAVEMENT WITH 2½" ASPHALT OVERLAY TO BE REMOVED (TYPICAL)

6:1 12:1 53.23

55 50 45 40

15" Ex. Storm

55.48
112+50.00
55.48

EXISTING CONCRETE CURB (TO BE REMOVED)

6:1 12:1 53.56

55 50 45 40

15" Ex. Storm

55.59
112+25.00
55.59

50 40 30 20 10 0 10 20 30 40 50

SHEET TOTAL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
34	4		
		34	3
39	4		
		36	2
		70	5

CALCULATED

CHECKED

CROSS SECTIONS

RAMP J-JR REPLACEMENT

CUY-176J-12.76

59
117

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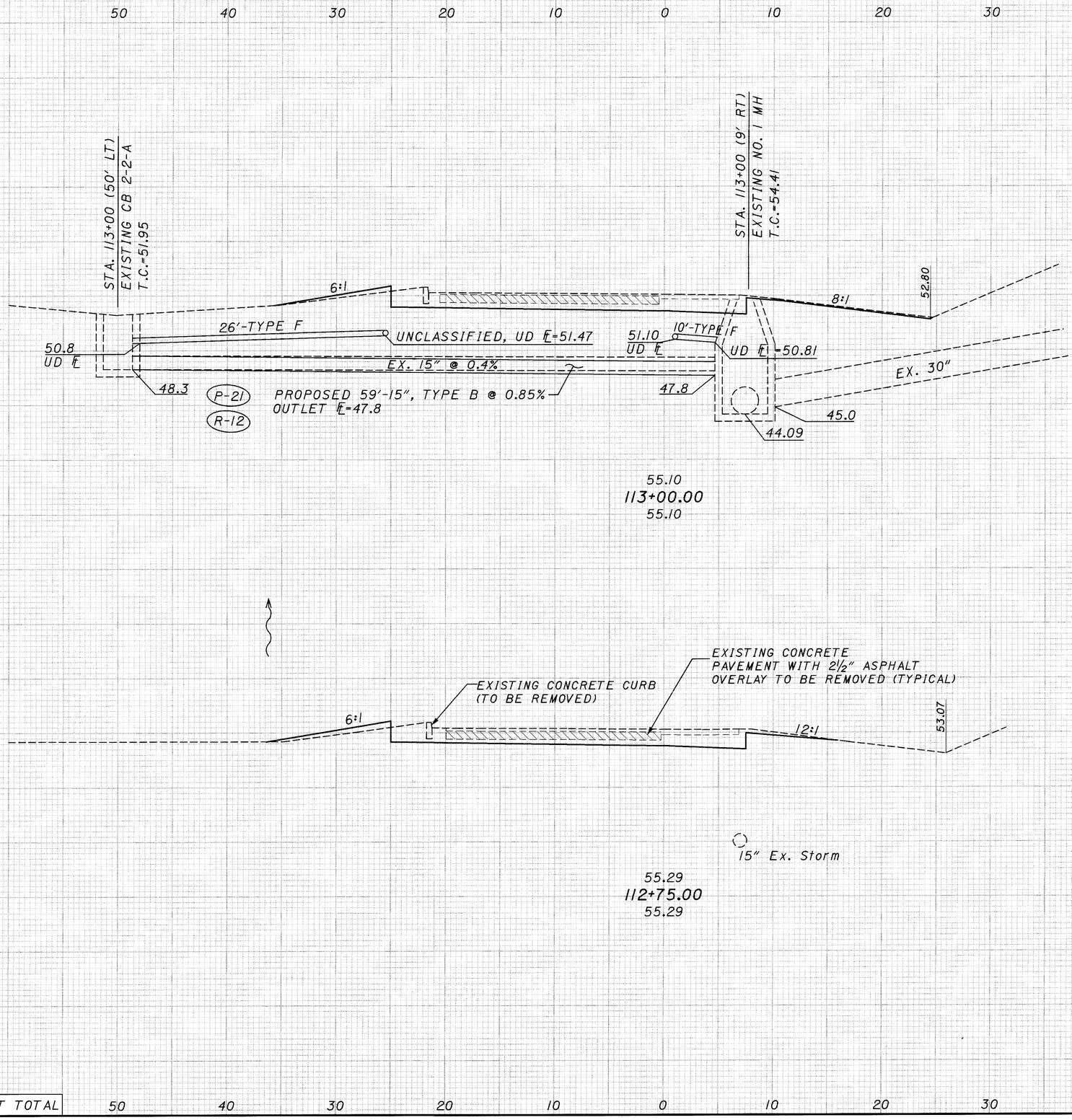
SEEDING	
END WIDTH	SQ. YDS.
	79
38	
	94
30	
173	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
31	3		
30	4		
28	3		
30	4		
SHEET TOTAL		58	7

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

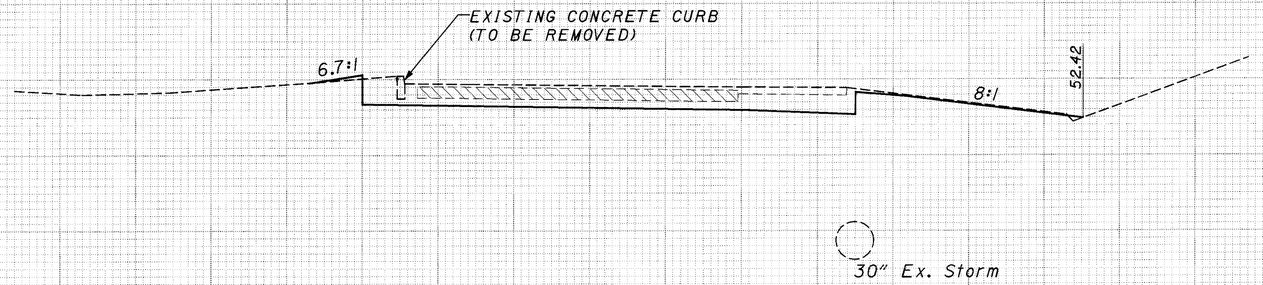
CUY-176J-12.76

60
117

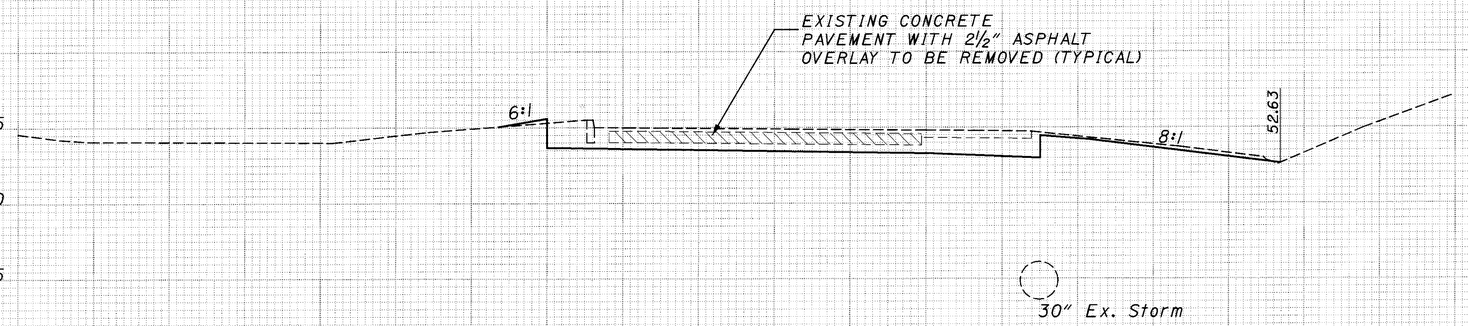
I:\PROJECTS\Pid9509\ramp j-jr\geopak\jjrgxb.dgn 11-AUG-2000 1:53PM jgrmovse

SEEDING	
END WIDTH	SQ. YDS.
	78
29	
	67
19	
145	SHEET TOTAL

50 40 30 20 10 0 10 20 30 40 50



54.49
113+50.00
54.49



54.80
113+25.00
54.80

50 40 30 20 10 0 10 20 30 40 50

END AREA		VOLUME	
CUT	FILL	CUT	FILL
31	1		
		29	0
32	0		
		29	1
SHEET TOTAL		58	1

CALCULATED

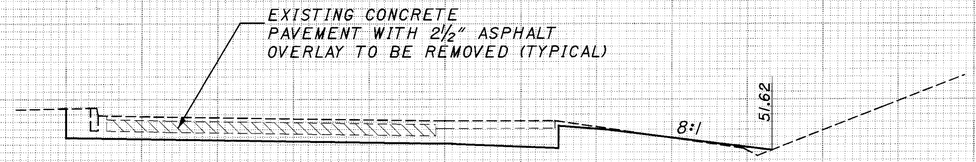
CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

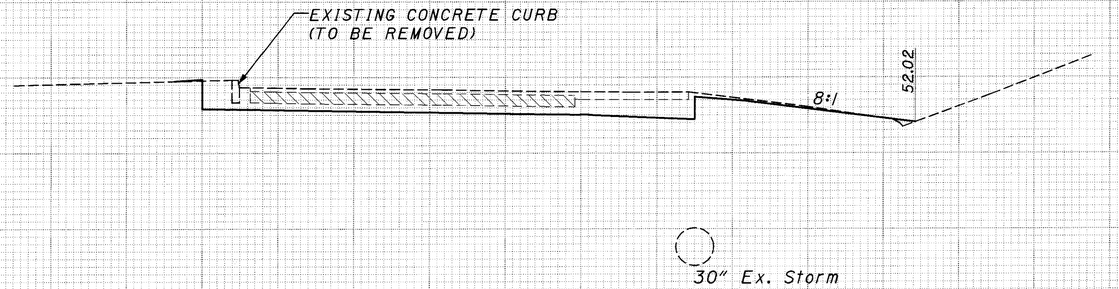
CUY-176J-12.76

61
117

SEEDING	
END WIDTH	SQ. YDS.
25	71
27	72
	143



53.57
114+00.00
53.57



54.03
113+75.00
54.03

END AREA		VOLUME	
CUT	FILL	CUT	FILL
31	1		
32	0		
		29	1
		29	0
		58	1

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

62
117

SEEDING	
END WIDTH	SQ. YDS.
	61
26	
	72
26	
	133

50 40 30 20 10 0 10 20 30 40 50

55 50 45 40 35

EXISTING CONCRETE CURB (TO BE REMOVED)

8:1

50.45

30" Ex. Storm

52.40
114+50.00
52.40

EXISTING CONCRETE PAVEMENT WITH 2½" ASPHALT OVERLAY TO BE REMOVED (TYPICAL)

8:1

51.04

30" Ex. Storm

52.99
114+25.00
52.99

SHEET TOTAL

50 40 30 20 10 0 10 20 30 40 50

55 50 45 40 35

END AREA		VOLUME	
CUT	FILL	CUT	FILL
29	2		
30	1		
27	1		
28	1		
55	2		

SHEET TOTAL

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

63
117

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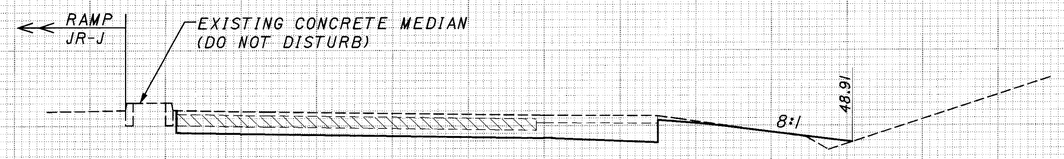
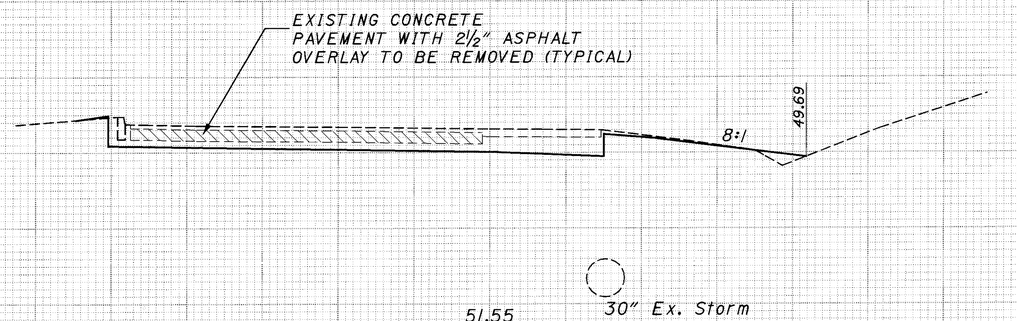
SEEDING	
END WIDTH	SQ. YDS.
	50
18	
	50
18	
	50
18	
	100

50 40 30 20 10 0 10 20 30 40 50



50 45 40 35

END CURB REMOVAL STA. 114+83



55 50 45 40 35

50 45 40 35

50 40 30 20 10 0 10 20 30 40 50

END AREA		VOLUME	
CUT	FILL	CUT	FILL
25	1		
		25	1
30	2		
		27	2
SHEET TOTAL		52	3

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

64
117

I:\PROJECTS\Pid9509\ramp j-jr\geopak\jjrgxb.dgn 11-AUG-2000 1:55PM jgrmovse

SEEDING	
END WIDTH	SQ. YDS.
	51
18	
	50
18	
101	SHEET TOTAL

50 40 30 20 10 0 10 20 30 40 50

50
45
40
35

EXISTING CONCRETE
PAVEMENT WITH 2½" ASPHALT
OVERLAY TO BE REMOVED (TYPICAL)

8:1

46.94

30" Ex. Storm

48.80
115+50.00
48.80

RAMP
JR-J

EXISTING CONCRETE MEDIAN
(DO NOT DISTURB)

8:1

47.91

30" Ex. Storm

49.74
115+25.00
49.74

END AREA		VOLUME	
CUT	FILL	CUT	FILL
25	1		
25	1		
		23	1
25	1		
		23	1
SHEET TOTAL		46	2

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

65
117

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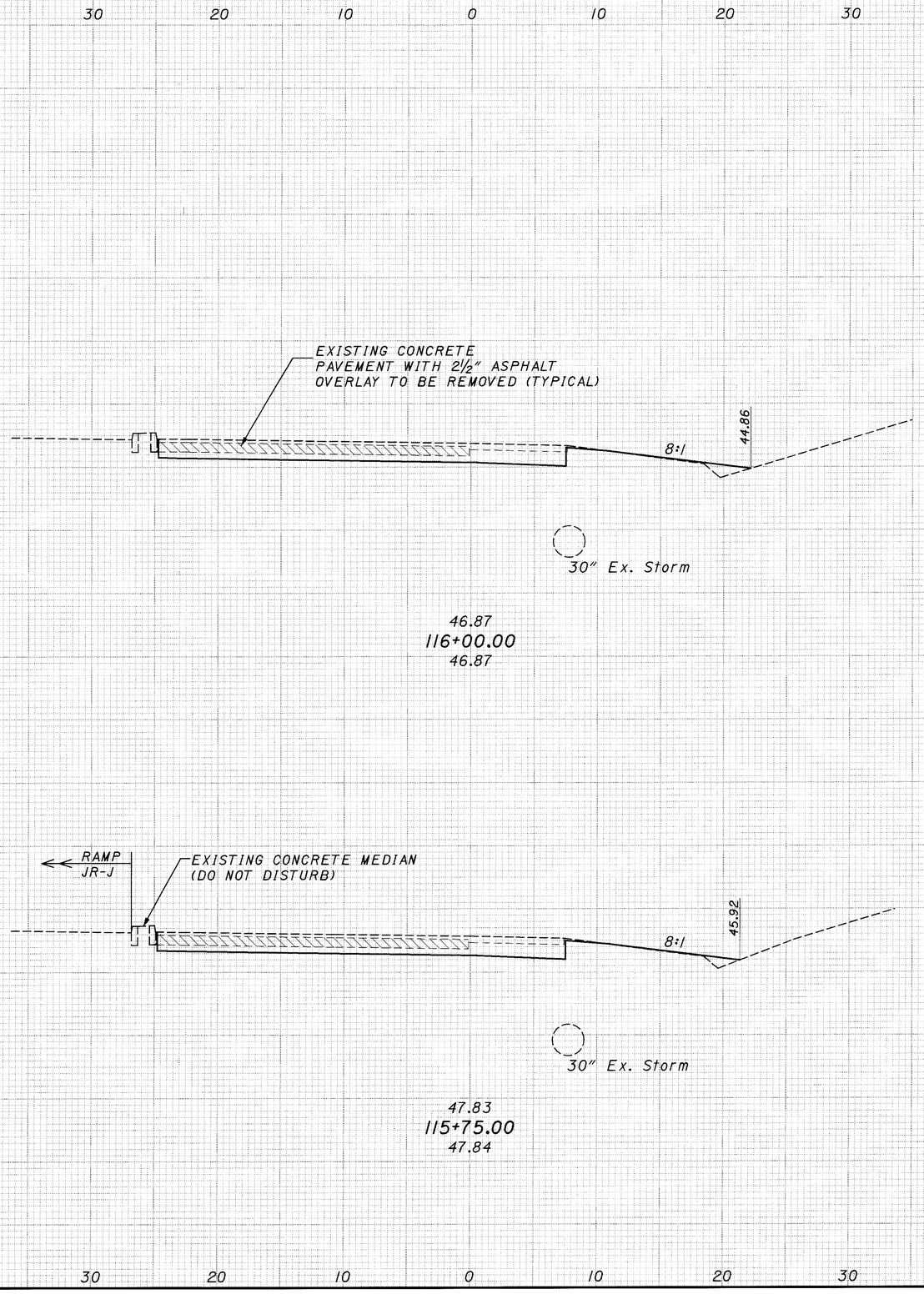
SEEDING	
END WIDTH	SQ. YDS.
	56
20	
	54
19	
	110



END AREA		VOLUME	
CUT	FILL	CUT	FILL
25	2		
		23	2
		23	1
25	2		
SHEET TOTAL		46	3

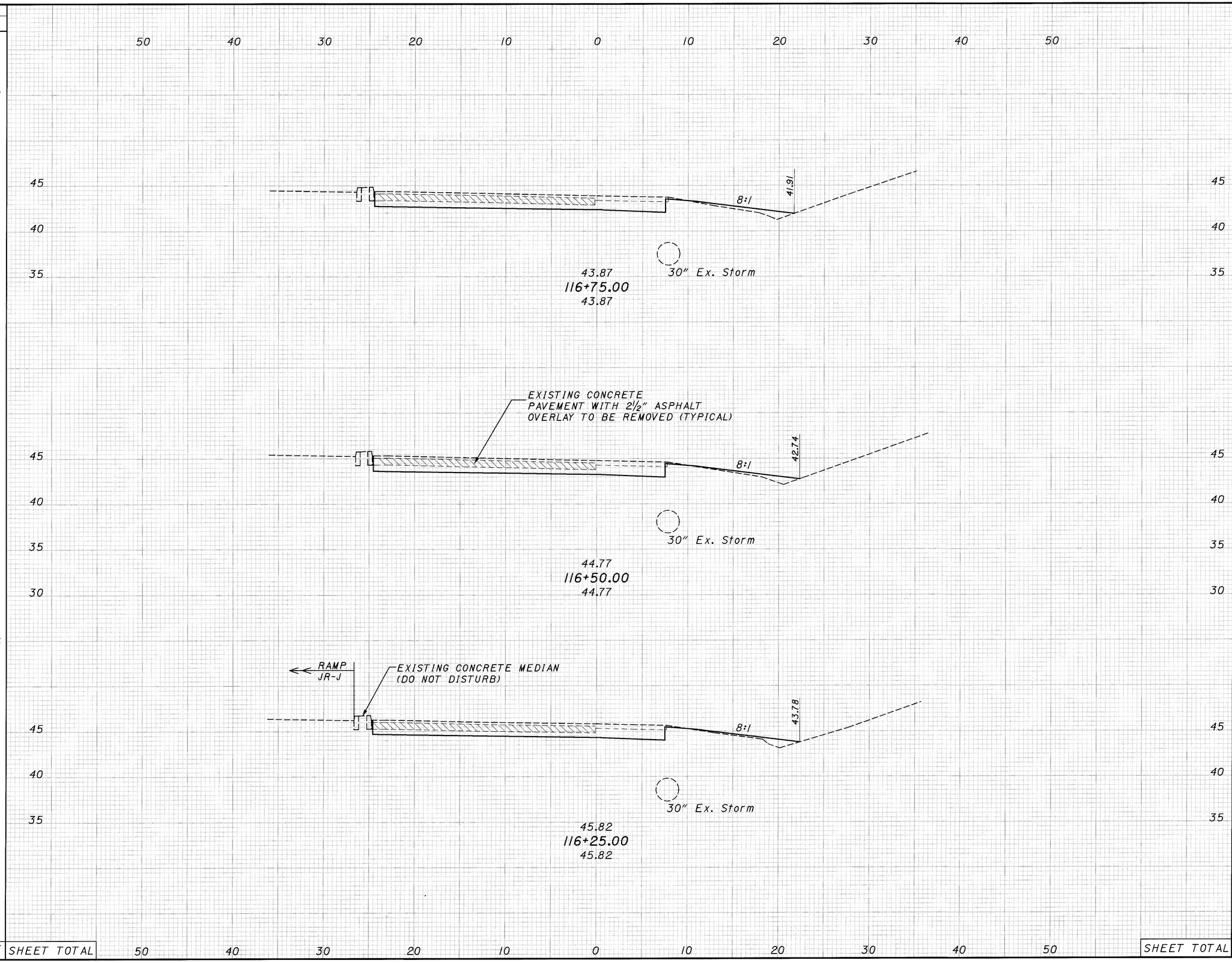
CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

SEEDING	
END WIDTH	SQ. YDS.
	53
19	
	54
20	
	56
20	
	163



END AREA		VOLUME	
CUT	FILL	CUT	FILL
27	4		
		25	3
27	3		
		25	3
26	3		
		24	3
		74	9

CALCULATED

CHECKED

CROSS SECTIONS

RAMP J-JR REPLACEMENT

CUY-176J-12.76

67
117

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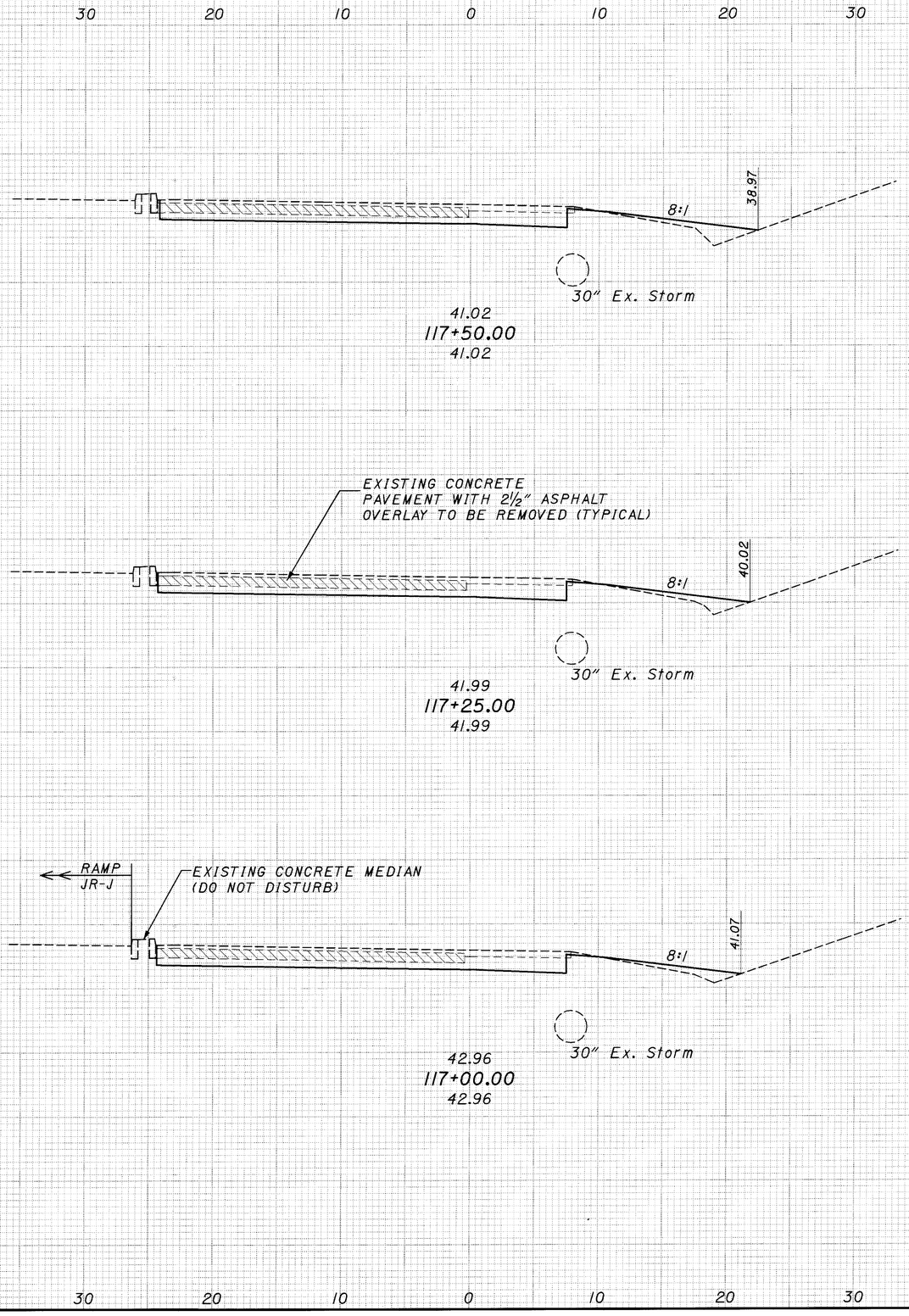
SEEDING END WIDTH	SEEDING SQ. YDS.
	57
20	
	54
19	
	53
19	
	164



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
25	6		
		23	5
25	5		
		24	4
26	4		
		25	4
SHEET TOTAL		72	13

CALCULATED

CHECKED

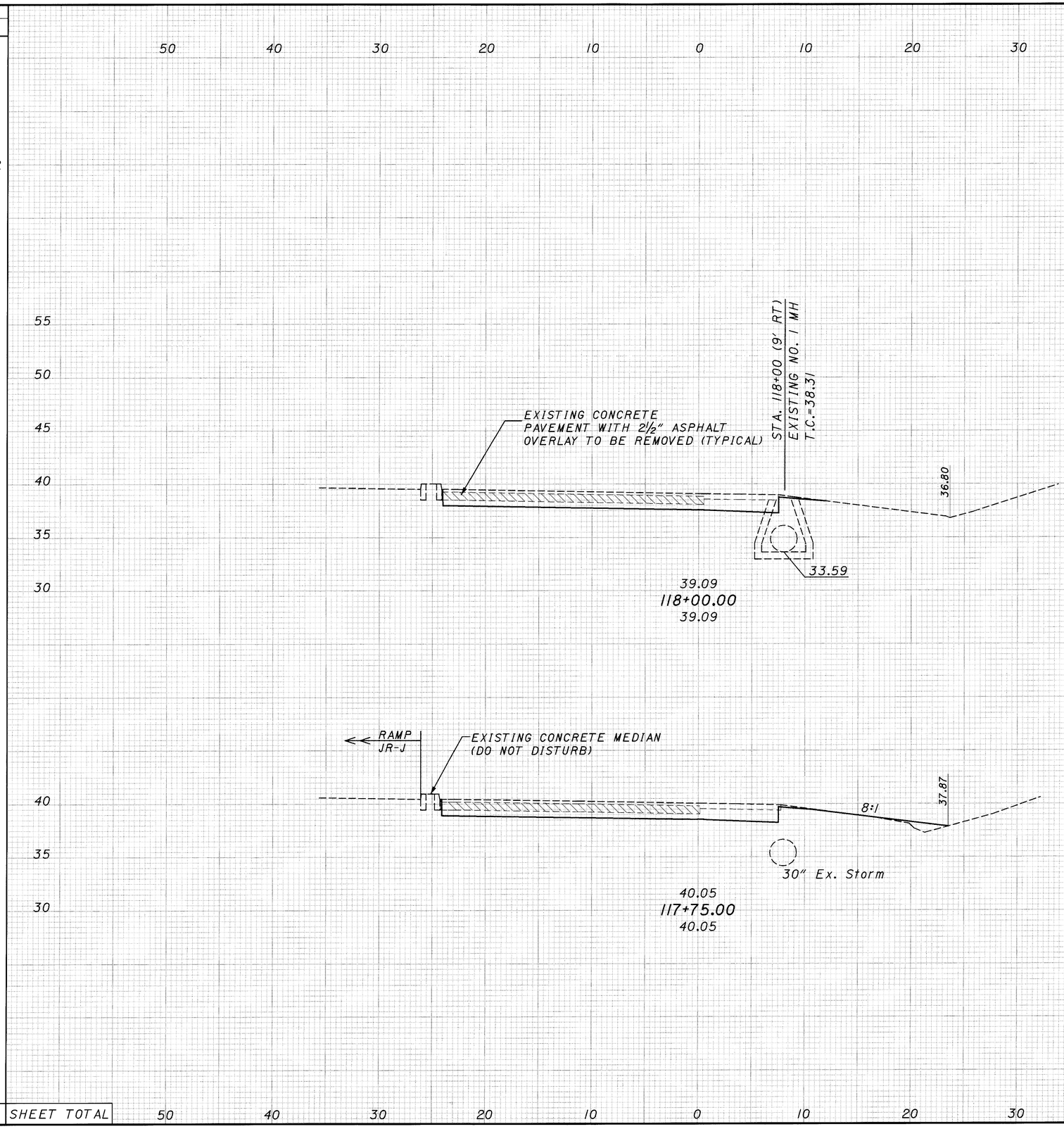
CROSS SECTIONS

RAMP J-JR REPLACEMENT

CUY-176J-12.76

68
117

SEEDING	
END WIDTH	SQ. YDS.
	32
10	
	43
21	
	75



END AREA		VOLUME	
CUT	FILL	CUT	FILL
24	0		
		23	1
25	2		
		23	4
		46	5

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

69
117

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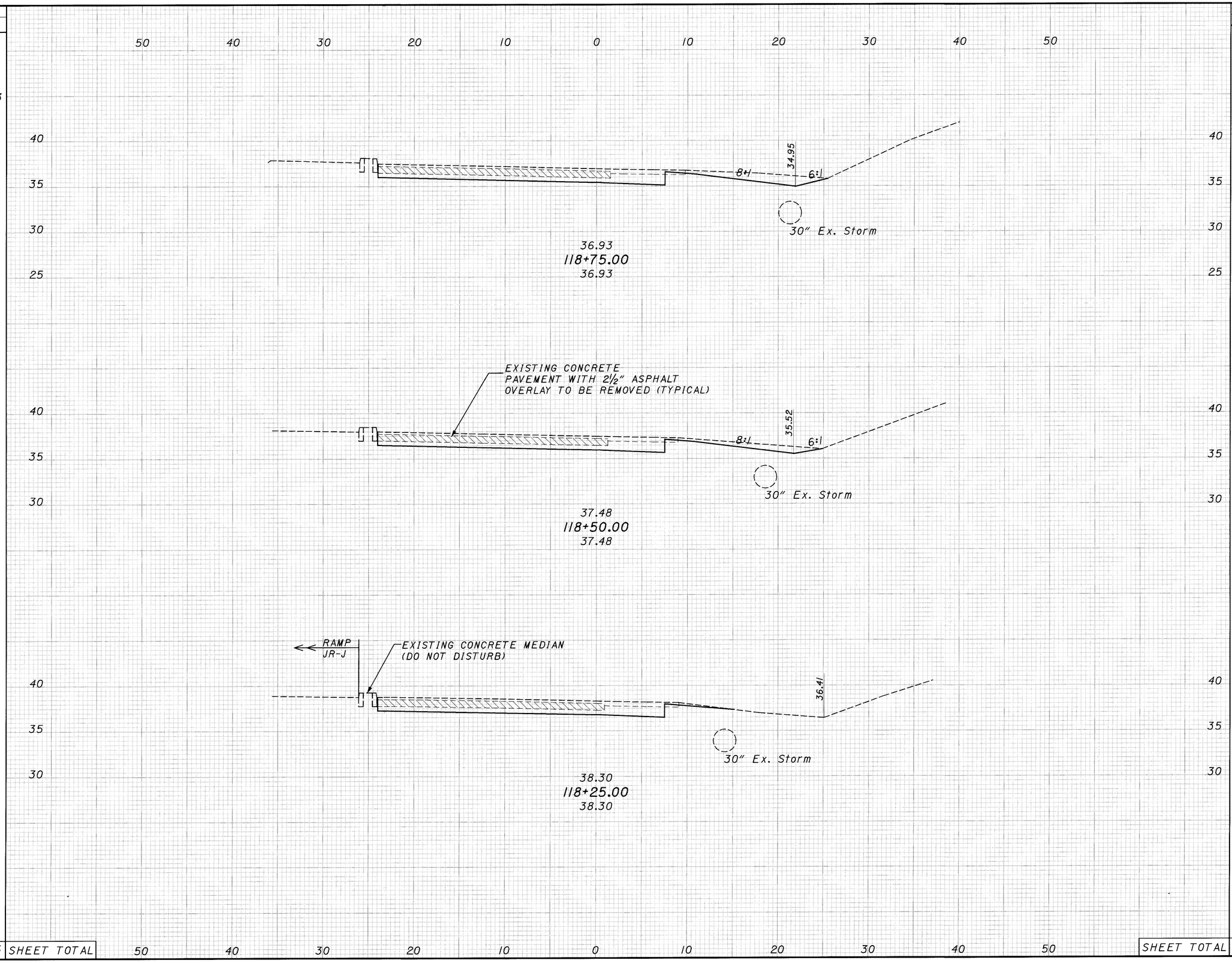
SEEDING	
END WIDTH	SQ. YDS.
	63
23	
	63
22	
	49
13	
175	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
35	0		
		31	0
31	0		
		26	0
25	0		
		23	0
		80	0

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

70
117

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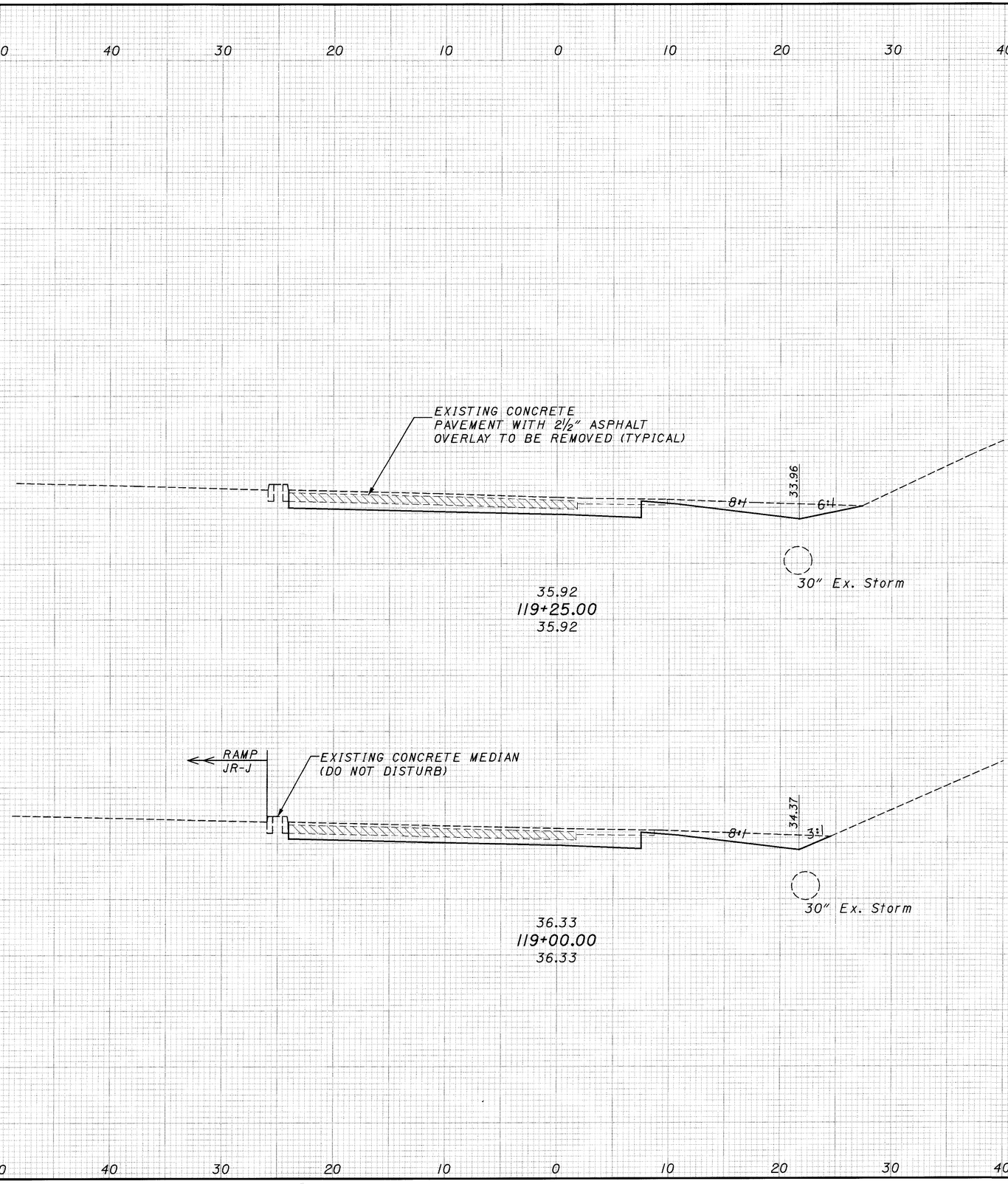
SEEDING	
END WIDTH	SQ. YDS.
25	71
	65
22	
136	SHEET TOTAL



END AREA		VOLUME	
CUT	FILL	CUT	FILL
39	0		
		35	0
36	0		
		33	0
SHEET TOTAL		68	0

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

71
117

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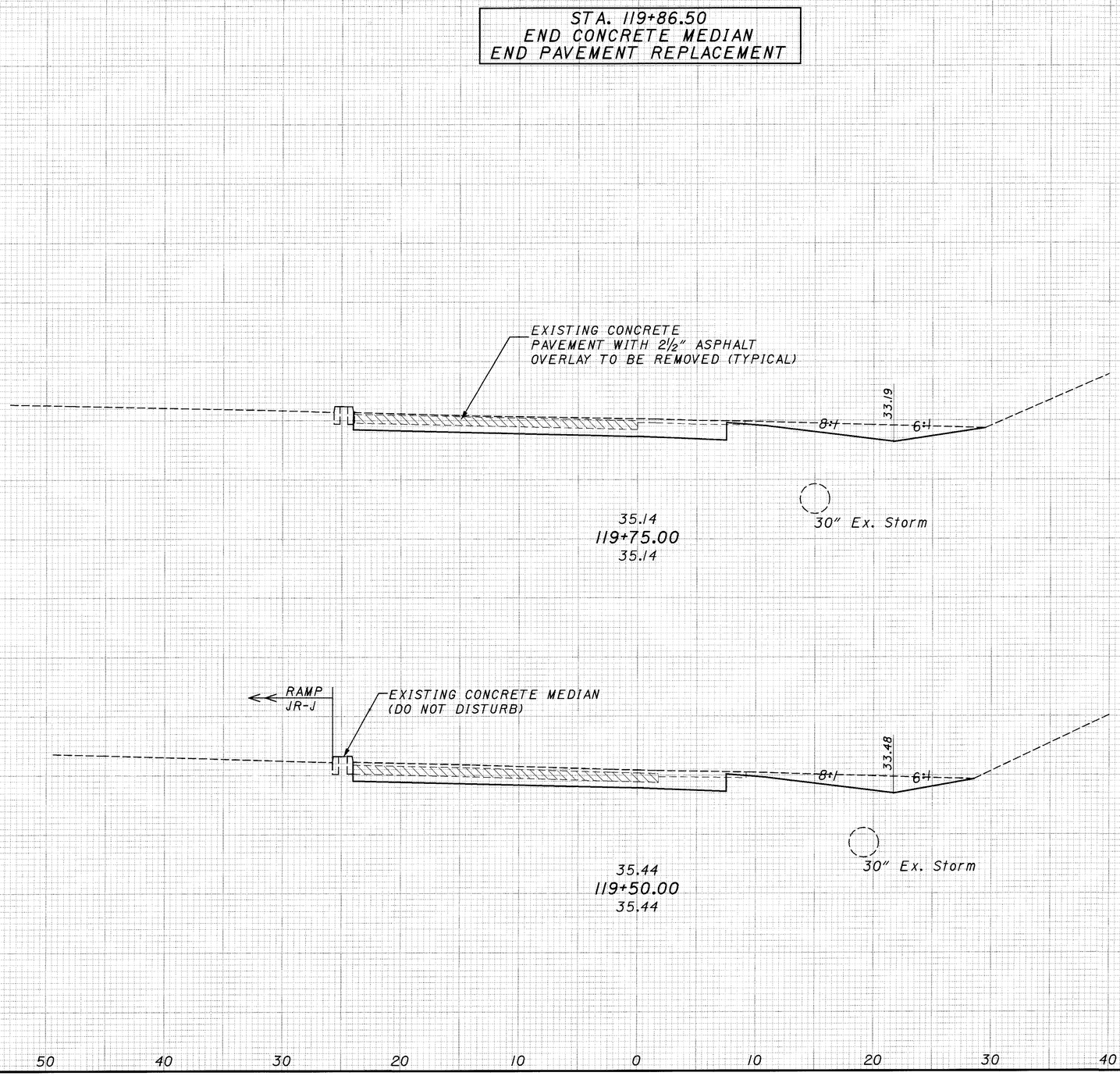
SEEDING	
END WIDTH	SQ. YDS.
	81
27	
	74
26	
	155

STA. 119+86.50
END CONCRETE MEDIAN
END PAVEMENT REPLACEMENT



	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
+86.50 (AH)	19	0		
+86.50 (BK)	38	0		
			16	0
	38	0		
			37	0
	41	0		
			37	0
SHEET TOTAL			90	0

CALCULATED | CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

72
117

SEEDING	
END WIDTH	SQ. YDS.
31	
SHEET TOTAL	

50 40 30 20 10 0 10 20 30 40 50

DITCH REGRADING

REGRADE TO PROVIDE POSITIVE DRAINAGE TO EX. CATCH BASIN AT STA. 120+00

STA. 120+00 (9' RT) EXISTING NO. 1 MH T.C.=34.39

STA. 120+00 (25' RT) EXISTING CB-5 (BURIED) T.C.=32.56

8:1

2:1

10'-TYPE F

30.84 UD

30.5 UD

30" Ex. Storm

34.85
120+00.00
34.85

50 45 40 35 30 25 20 15

50 40 30 20 10 0 10 20 30 40 50

END AREA		VOLUME	
CUT	FILL	CUT	FILL
		15	
19	0		
		9.5	0
+86.50 (AH) 19	0		
		24.5	0

CALCULATED

CHECKED

CROSS SECTIONS
RAMP J-JR REPLACEMENT

CUY-176J-12.76

73
117

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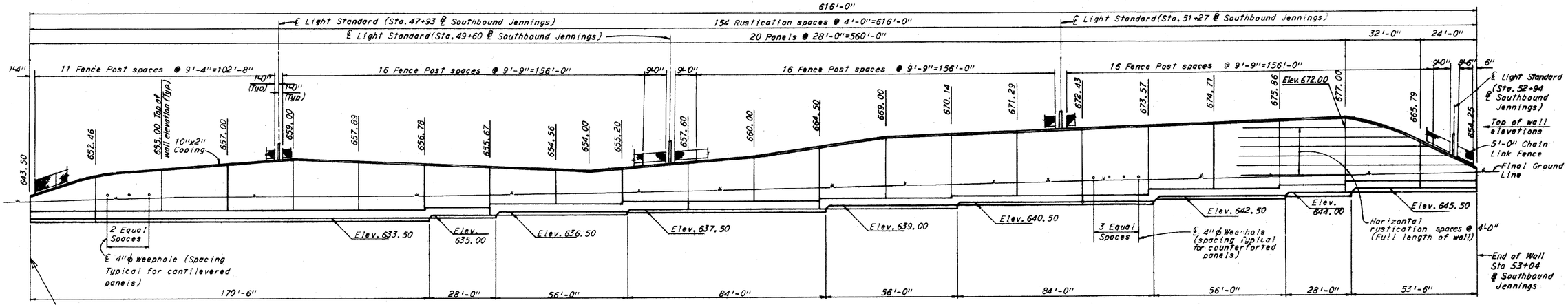
ITEM SPECIAL - SEALING OF CONCRETE SURFACES

512E67500

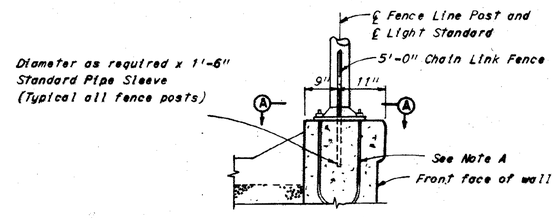
THIS ITEM OF WORK SHALL BE USED TO SEAL THE EXPOSED SURFACES OF THE RETAINING WALL SHOWN ON THIS SHEET. THE FOLLOWING QUANTITY IS PROVIDED FOR THIS WORK.

ITEM SPECIAL - SEALING OF CONCRETE SURFACES..... 1150 S.Y.

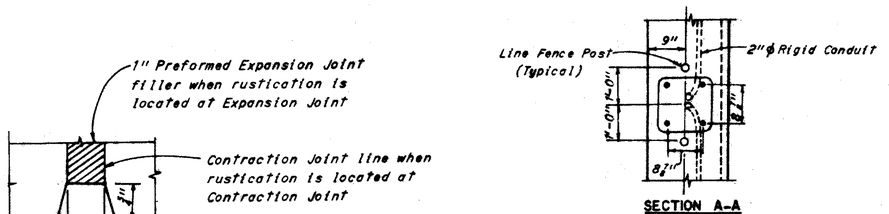


DEVELOPED ELEVATION

BEGIN WALL
STA. 46+88
℄ S.B. JENNINGS



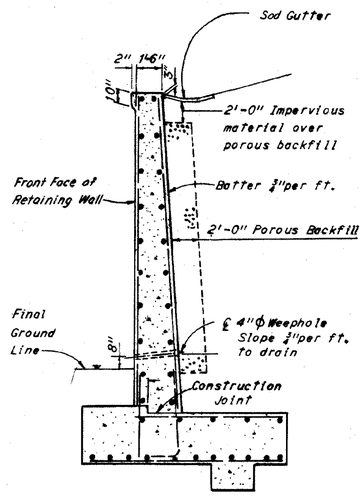
LIGHT STANDARD DETAIL



RUSTICATION DETAIL

SECTION A-A

Note A:
2-1" ϕ Anchor U-bolts, 5'-4" long, with 2 lock nuts and anchor nuts for each bolt. Extend bolts 3" above concrete.



WALL TYPICAL SECTION

CROSS REFERENCE	
ITEM	SHEET

NOT TO SCALE

CALCULATED

CHECKED

EXISTING RETAINING WALL DETAIL SHEET
SOUTHBOUND JENNINGS FREEWAY
STA. 46+88± TO STA. 53+04±

CUY-176J-12.76

74
117

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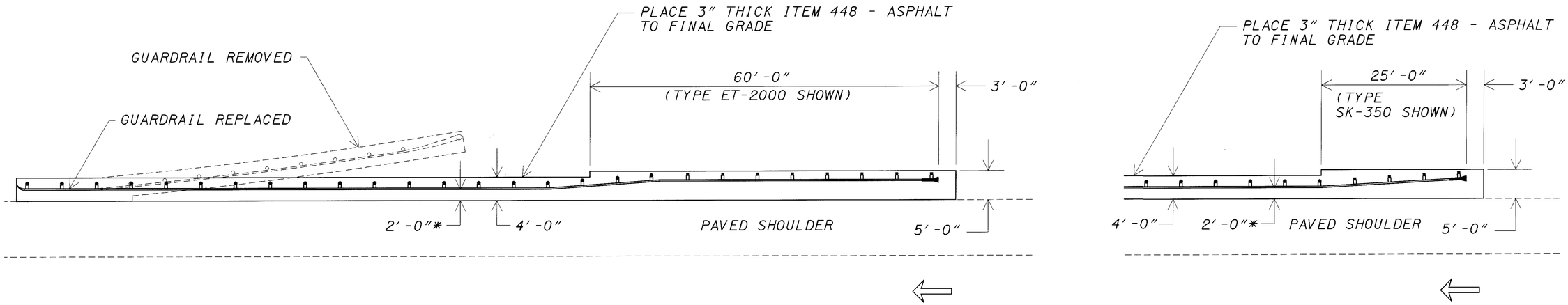
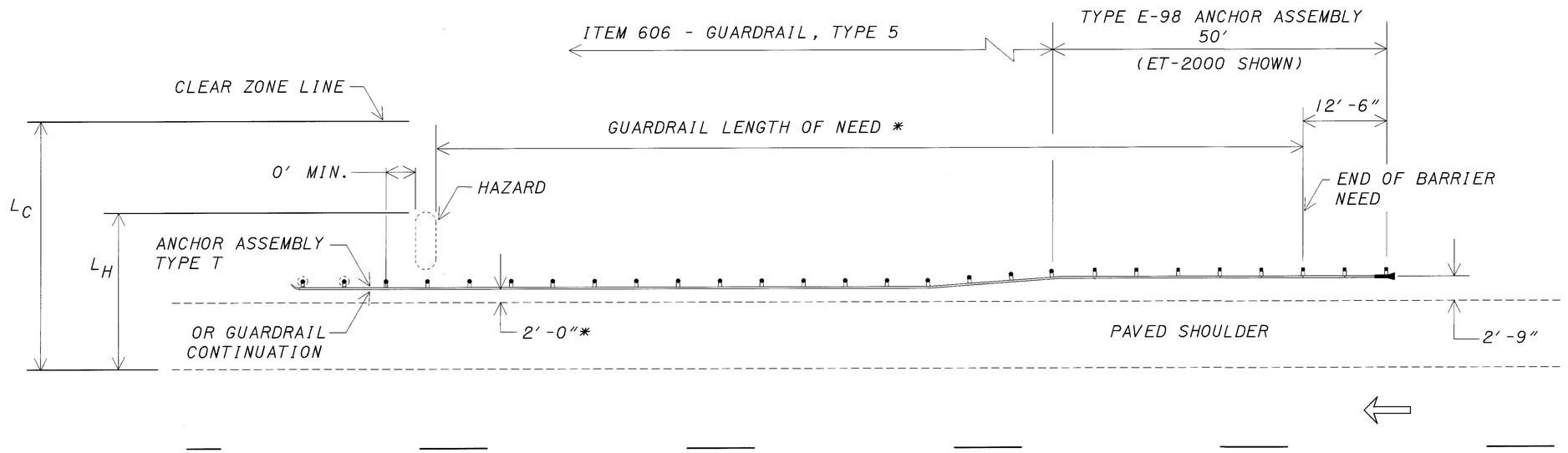


ITEM 448 FOR EROSION CONTROL WITH TYPE E-98 ANCHOR ASSEMBLY



TYPICAL GUARDRAIL PROTECTION OF HAZARDS

* 0'-0" AT LOCATIONS WITH CURB

CALCULATED EMK
CHECKED ENF

GUARDRAIL PROTECTION OF HAZARDS

CUY-176J-12.76

75
117

PLOT SUBMITTED:07-AUG-2000 17:30

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19509GRA.DGN

ITEM 606 - ANCHOR ASSEMBLY, TYPE E-98

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING EITHER OF THE FOLLOWING GUARDRAIL END TERMINALS.

1) THE ET-2000 (1997) MANUFACTURED BY
SYRO, INC.
1170 N. STATE STREET
GIRARD, OHIO 44420
TELEPHONE: (330) 545-4373.

THE LENGTH OF THE ET-2000 (1997) SYSTEM IS CONSIDERED TO BE 15.24 m (50 FT), INCLUSIVE OF TWO 7.62 m (25 FT) LONG RAIL ELEMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PREAPPROVED SHOP DRAWING:

DWG. #	DRAWING NAME	DWG./REV. DATE	ODOT APPROVAL
SS265M	ET-2000 (1997) PLAN, ELEVATION & SECTIONS	6/20/97	3/6/98

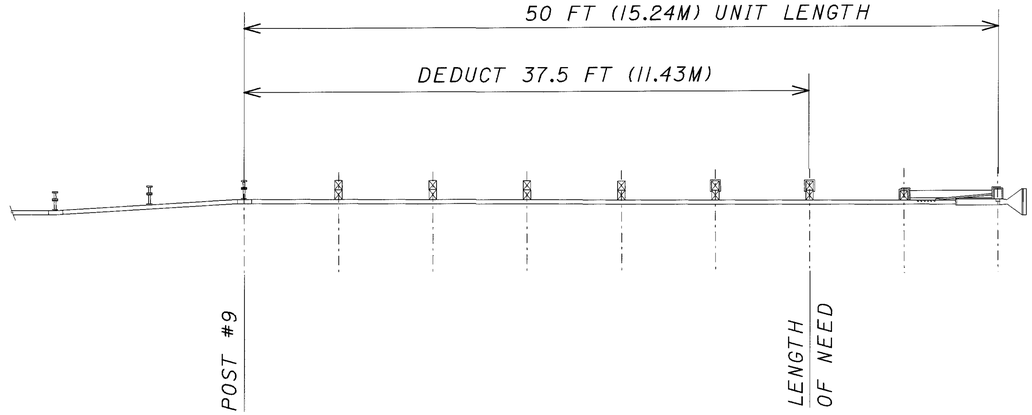
2) THE SKT-350 MANUFACTURED BY
ROAD SYSTEMS, INC.
NEW CASTLE DRIVE
FRANKFORT, IL 60423
TELEPHONE: (815) 464-5917.

THE LENGTH OF THE SKT-350 SYSTEM IS CONSIDERED TO BE 15.24 m (50 FT), INCLUSIVE OF FOUR 3.81 m (12.5 FT) LONG RAIL ELEMENTS. INSTALLATION SHALL BE AT LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AS DETAILED ON THE FOLLOWING PRE-APPROVED SHOP DRAWINGS:

DWG. #	DRAWING NAME	DWG./REV. DATE	ODOT APPROVAL
SKT-4M	SEQUENTIAL KINKING TERMINAL (SKT-350) ASSEMBLY WITH 4 FOUNDATION TUBES	12/11/97	3/6/98

A TYPE C DELINEATOR SHALL BE INSTALLED AT THE HEAD OF ALL TYPE E-98 UNITS LOCATED ON THE RIGHT SIDE OF THE THROUGH ROADWAY. A TYPE D DELINEATOR SHALL BE INSTALLED AT THE HEAD OF ALL TYPE E-98 UNITS LOCATED ON THE LEFT SIDE OF THE THROUGH ROADWAY. DELINEATORS SHALL COMPLY WITH STANDARD TRAFFIC DRAWING TC-61.10M.

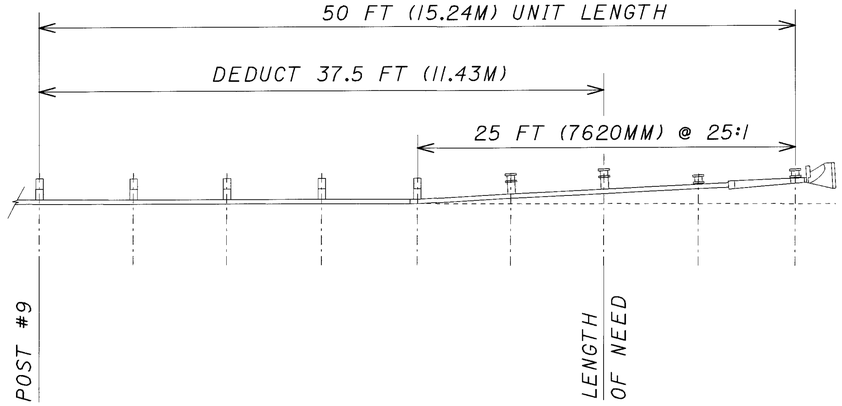
PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE FOR ITEM 606, ANCHOR ASSEMBLY, TYPE E-98, EACH, AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM; INCLUDING ALL RELATED TRANSITIONS, HARDWARE AND GRADING, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.



POST #9 IS INCLUDED FOR PAYMENT WITH STANDARD GUARDRAIL

LENGTH OF NEED @ POST #3

ET-2000



POST #9 IS INCLUDED FOR PAYMENT WITH STANDARD GUARDRAIL

LENGTH OF NEED @ POST #3

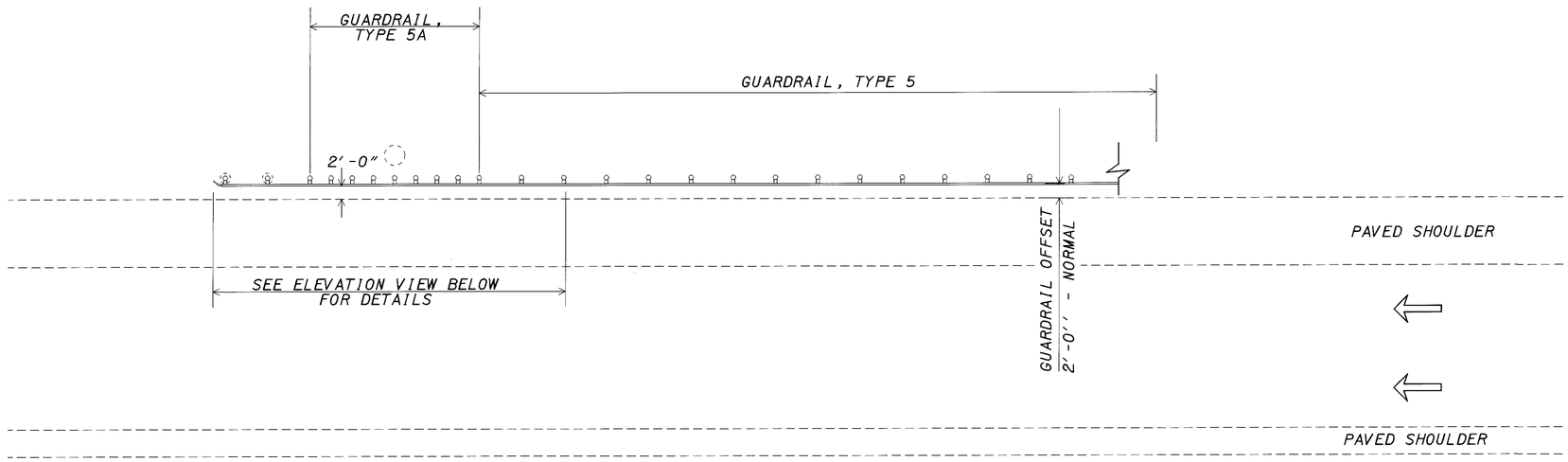
SKT-350

NCHRP REPORT 350 COMPLIANCE

CALCULATED EMK
CHECKED ENF

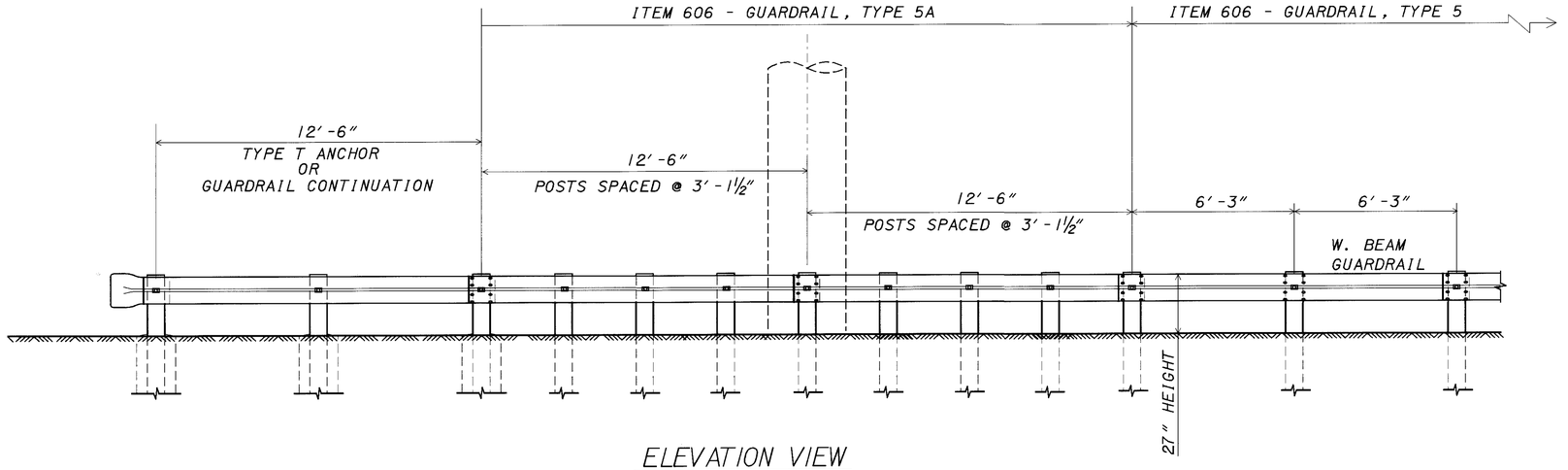
TYPE E-98 ANCHOR ASSEMBLY DETAILS

CUY-176J-12.76

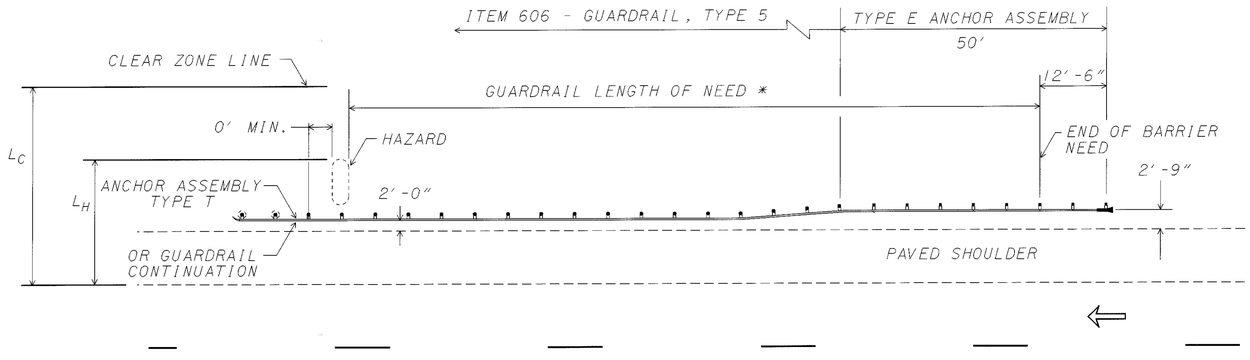


TYPE 5A GUARDRAIL PROTECTION FOR OVERHEAD SIGN SUPPORTS

REQUIRED WHEN FACE OF HAZARD IS BETWEEN 5'-6" AND 3'-6" OF FACE OF GUARDRAIL



ELEVATION VIEW

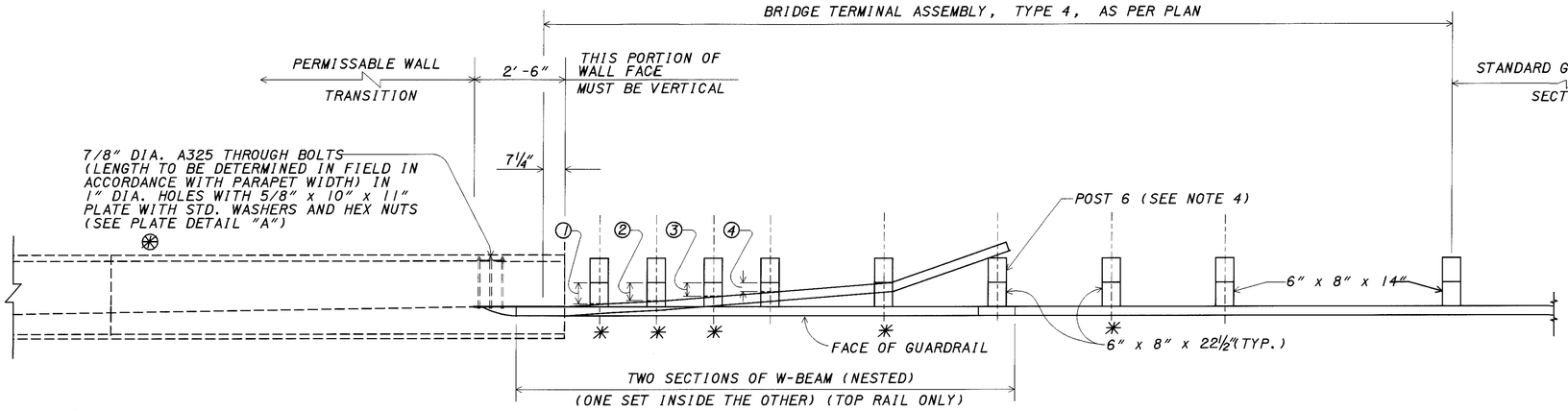


TYPICAL GUARDRAIL PROTECTION OF HAZARDS

DRAWN LGM
REVISED XXX
CALCULATED LGM
CHECKED ENF

GUARDRAIL DETAILS
TYPE 5 PROTECTION AT OVERHEAD SIGN SUPPORTS

CUY-176J-12.76



PLAN

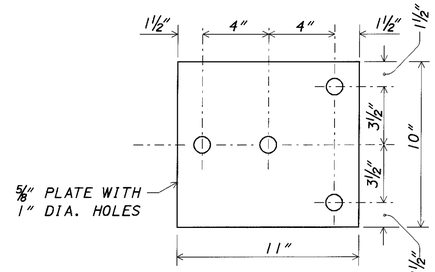
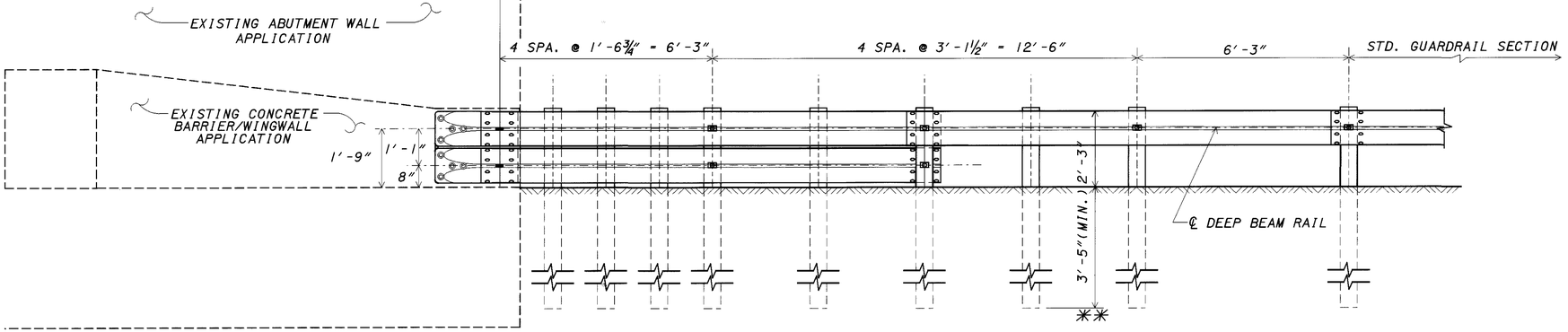


PLATE DETAIL "A"

⊛ —FOR ATTACHMENT TO ABUTMENT WALLS, THIS ITEM REQUIRES THE USE OF POLYESTER RESIN ANCHORS WITH FEMALE THREADED INSERTS (10" LONG) TO ACCEPT 7/8" DIAMETER BOLTS. (PLATE DETAIL NOT REQUIRED)

✳ GUARDRAIL NOT ATTACHED TO POSTS. BLOCKOUT FASTENED TO POST WITH STD. POST BOLT.



ELEVATION

✳✳SEE STD. CONSTRUCTION DRAWING GR-1.2 FOR ADDITIONAL POST EMBEDMENT DETAILS.

GENERAL NOTES

1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE AND AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY SHAPE BARRIERS SHOULD BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUARDRAIL CONNECTION.
2. THE RUBRAIL MAY BE SHOP BENT IN THE LAST 3 FEET TO FACILITATE INSTALLATION.
3. BOTTOM WOOD BLOCKS, LOCATED ON POSTS 1,2,3, AND 4 ARE CENTER DRILLED AND SECURED WITH 5/8" CARRIAGE BOLTS.
4. POSTS 1,2,3,4, AND 6 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKS AND/OR LOWER BEAM.
5. SEE STANDARD CONSTRUCTION DRAWINGS GR-1.2M AND GR-3.4M FOR ADDITIONAL DETAILS.

BLOCKOUT CHART BOTTOM BEAM WOOD BLOCKS 1'-2" X 6"	
POST	THICKNESS
①	7"
②	6"
③	4.5"
④	3"

THIS DETAIL MODIFIES A BRIDGE TERMINAL ASSEMBLY, TYPE 4 FOR CONNECTION TO A VERTICAL WALL.
ALL DIMENSIONS AND DETAILS SHOWN ARE IN AGREEMENT WITH THE APPROVED CRASHWORTHY GUARDRAIL TRANSITION FOUND IN "FHWA TECHNICAL ADVISORY T 5040.26" AND THE "ROADSIDE DESIGN GUIDE"

CALCULATED | CHECKED

BRIDGE TERMINAL ASSEMBLY, TYPE 4, AS PER PLAN

CUY-176J-12.76

78
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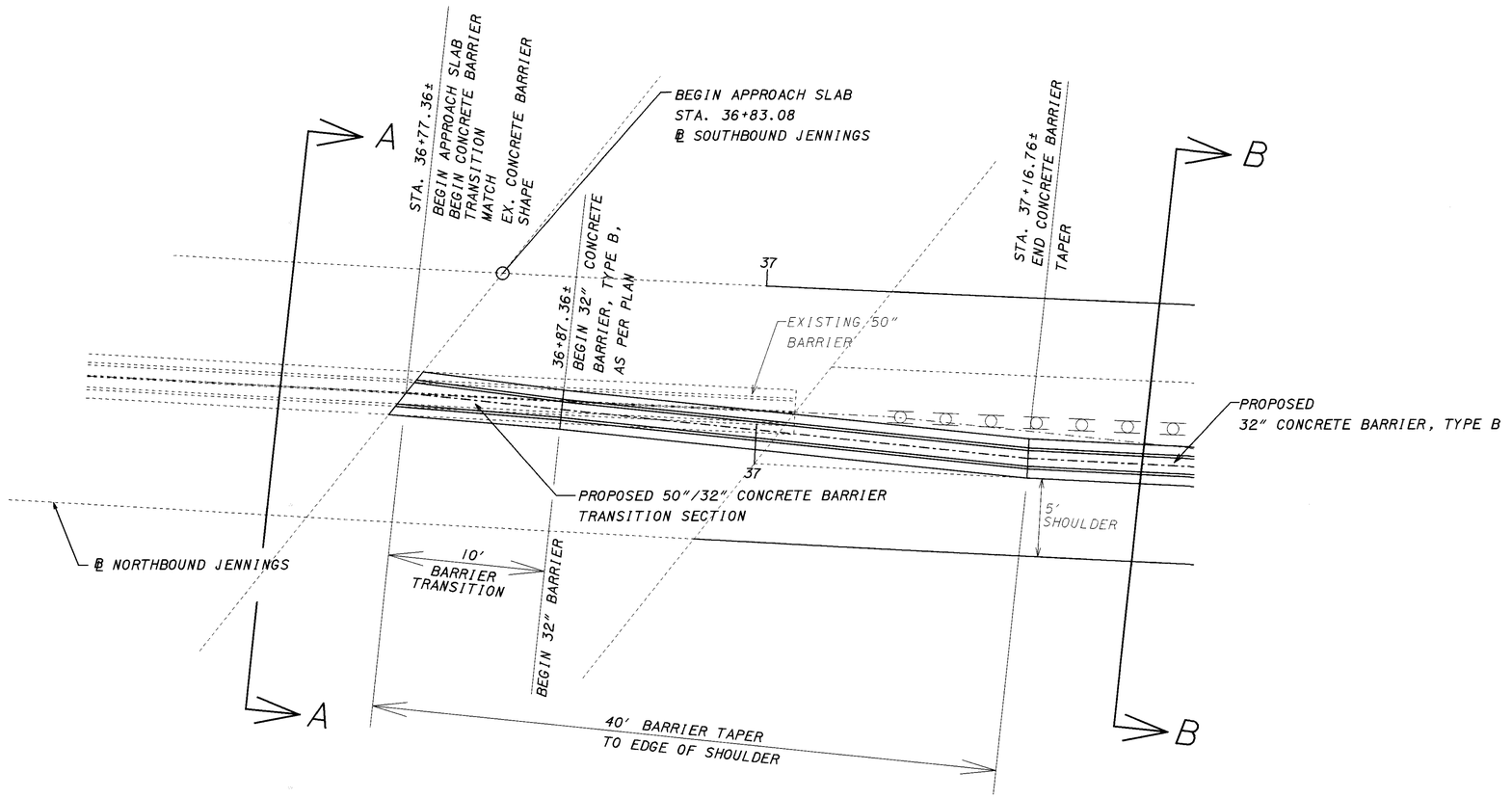
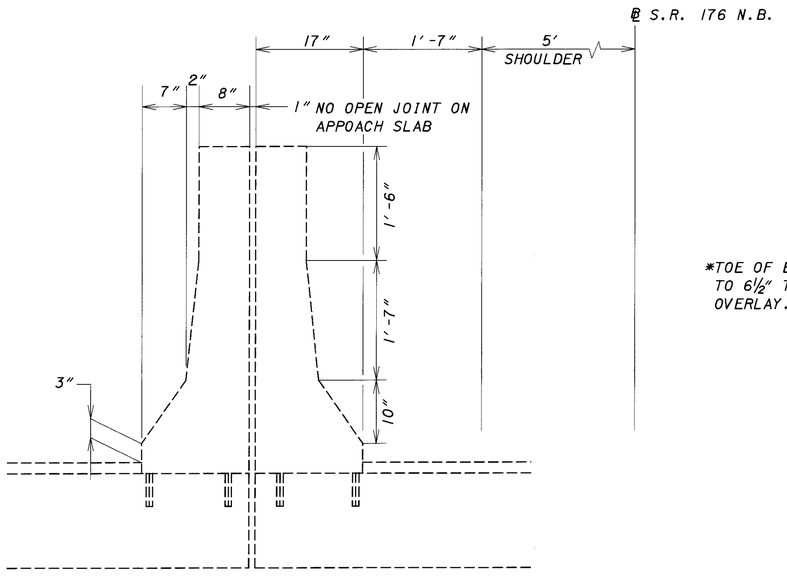
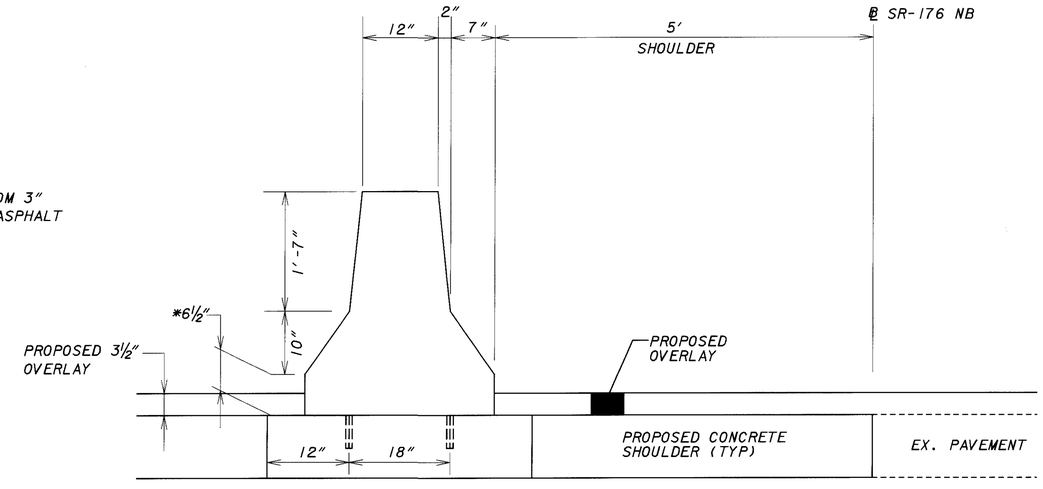


PLAN VIEW



SECTION A-A
EXISTING BRIDGE PARAPET WALL

*TOE OF BARRIER HEIGHT INCREASED FROM 3" TO 6½" TO ACCOMODATE 3½" PROPOSED ASPHALT OVERLAY.



SECTION B-B
32" CONCRETE BARRIER, TYPE B, AS PER PLAN

CALCULATED LGM CHECKED

CONCRETE BARRIER TRANSITION DETAIL

CUY-176J-12.76

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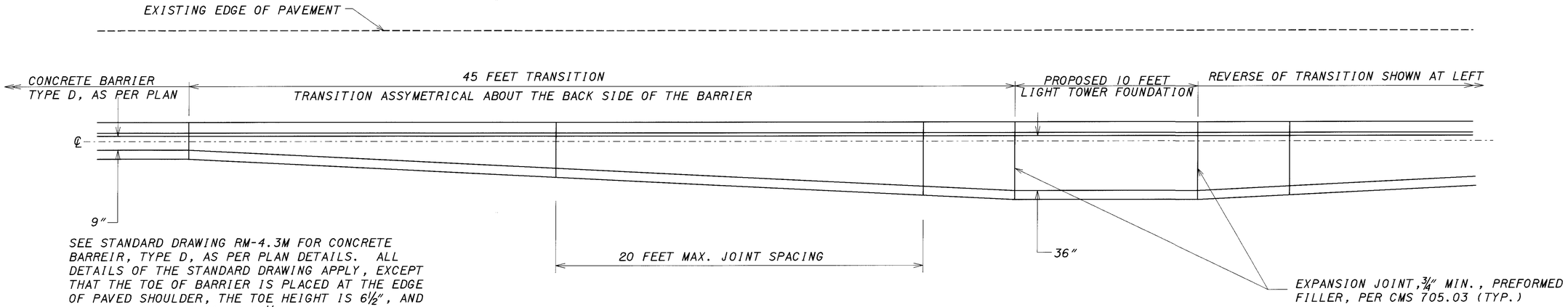
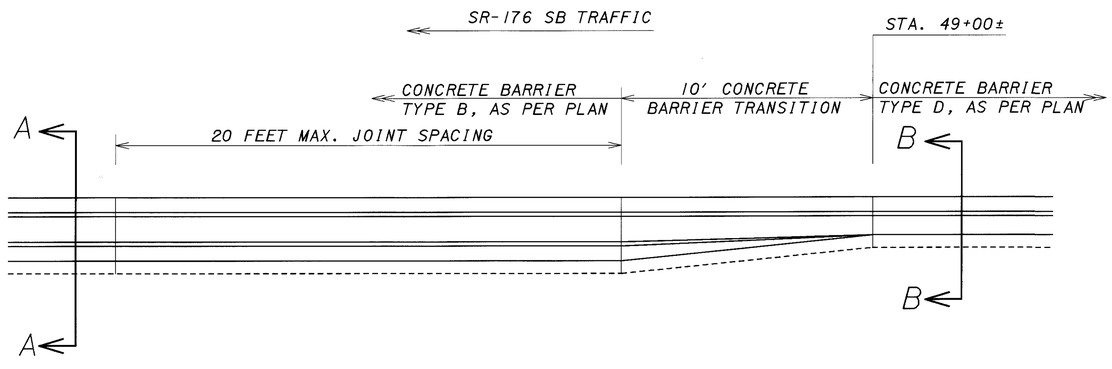


SEE STANDARD DRAWING RM-4.3M FOR CONCRETE BARREIR, TYPE D, AS PER PLAN DETAILS. ALL DETAILS OF THE STANDARD DRAWING APPLY, EXCEPT THAT THE TOE OF BARRIER IS PLACED AT THE EDGE OF PAVED SHOULDER, THE TOE HEIGHT IS 6½″, AND THE OVERALL HEIGHTS IS 35½″.

PLAN

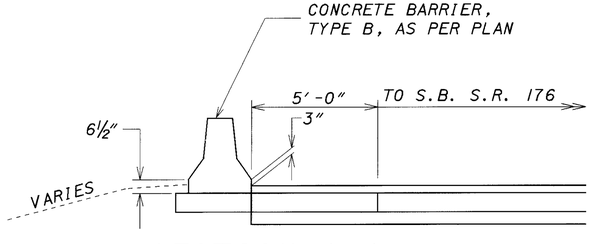
(TRANSITION DETAIL FOR LIGHT TOWER SUPPORT IN TYPE D, AS PER PLAN BARRIER)

SEE DETAIL SHEET 116 FOR LIGHT TOWER FOUNDATION DETAILS. THE TOE OF BARRIER IS PLACED AT THE EDGE OF PAVED SHOULDER. TOE HEIGHT IS 6½″.



PLAN

(TRANSITION DETAIL FROM TYPE B BARRIER TO TYPE D)



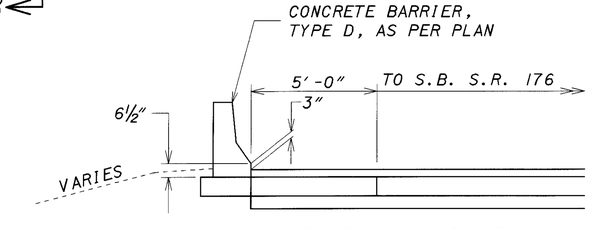
SECTION A-A

TOE OF PROPOSED CONCRETE BARRIER AT EDGE OF PAVED SHOULDER

SEE TYPICAL SECTION SHEET 8 FOR PAVEMENT THICKNESS AND COMPOSITION.

SEE STANDARD DRAWING RM-4.3M FOR BARRIER DIMENSIONS NOT SHOWN.

NOTE THAT THE TOE DIMENSION IS 6½″ FOR THE CONCRETE BARRIER



SECTION B-B

TOE OF PROPOSED CONCRETE BARRIER AT EDGE OF PAVED SHOULDER

SEE TYPICAL SECTION SHEET 8 FOR PAVEMENT THICKNESS AND COMPOSITION.

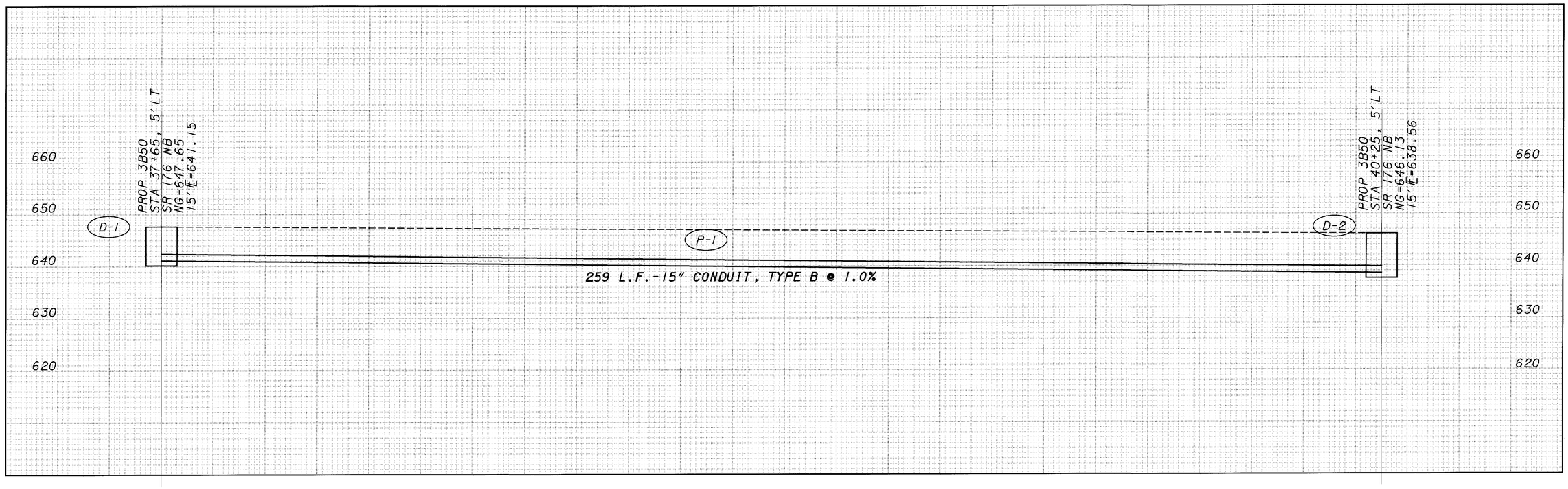
SEE STANDARD DRAWING RM-4.3M FOR BARRIER DIMENSIONS NOT SHOWN.

NOTE THAT THE TOE DIMENSION IS 6½″ FOR THE CONCRETE BARRIER

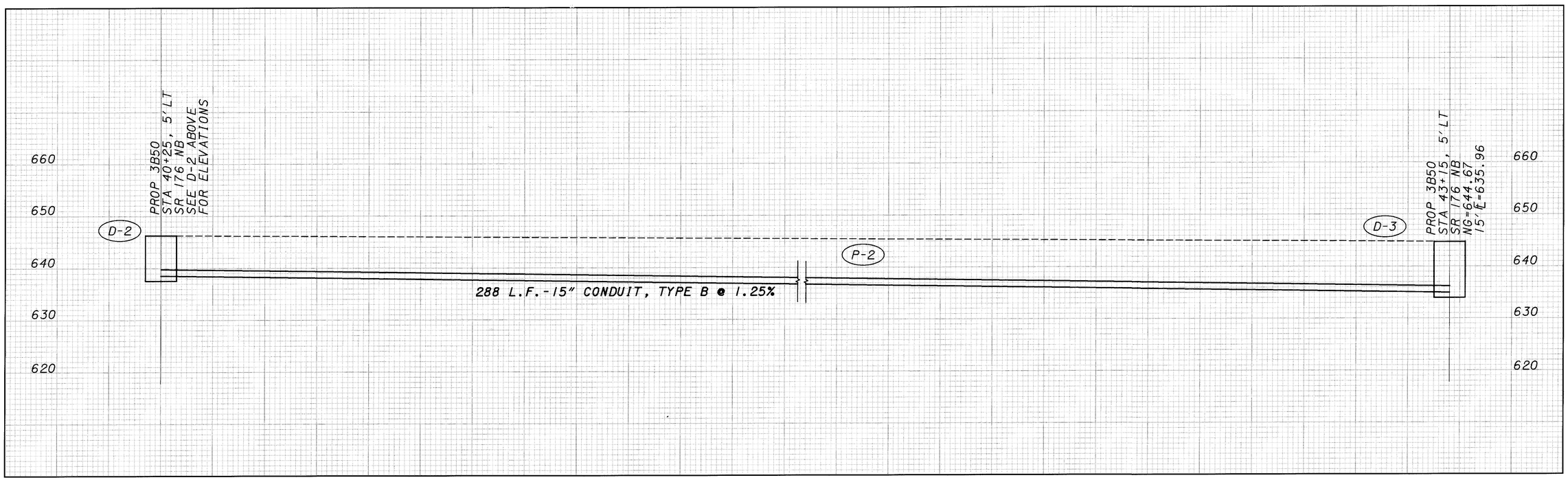
CALCULATED LGM CHECKED

CONCRETE BARRIER TRANSITION DETAILS

CUY-176J-12.76



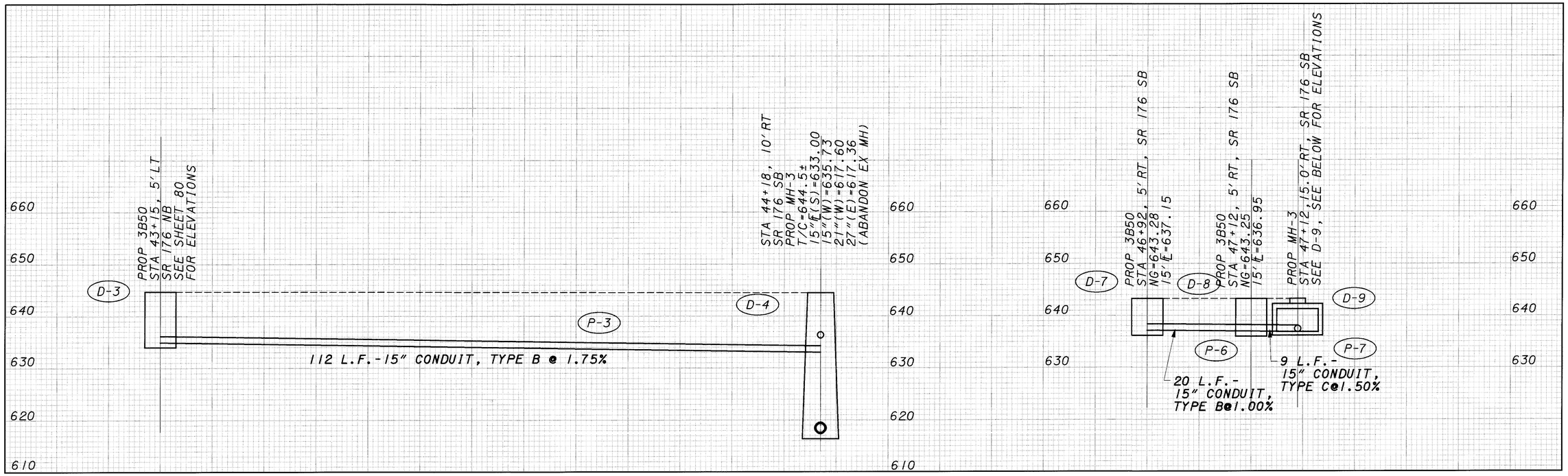
NOTE:
ALL EXISTING ELEVATIONS HAVE BEEN OBTAINED FROM RECORD CONSTRUCTION PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ELEVATIONS OF THE EXISTING AND PROPOSED DRAINAGE STRUCTURES PRIOR TO PRECASTING THEM. PAYMENT FOR THIS SURVEY WORK SHALL BE CONSIDERED INCIDENTAL TO THE ASSOCIATED 603 OR 604 PAY ITEM. SEE SHEET 38 FOR ORIGINAL PLAN ELEVATION BENCH.



CALCULATED DRL
CHECKED

STORM SEWER PROFILES

CUY-176J-12.76



NOTE:
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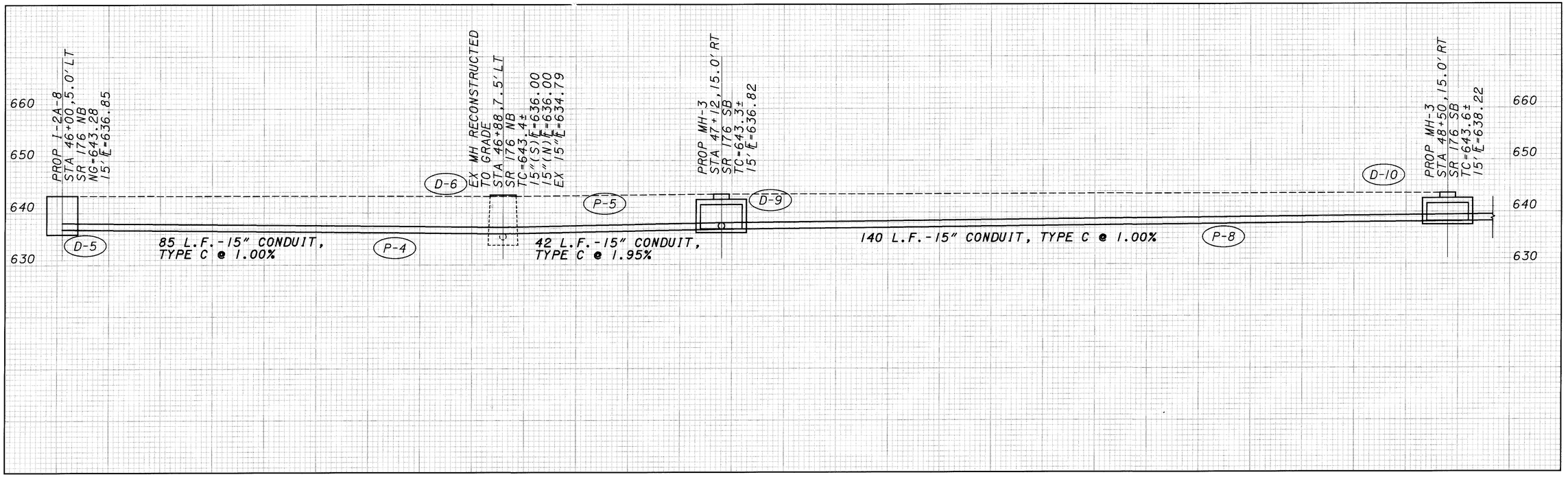

STORM SEWER PROFILES

CALCULATED DRL
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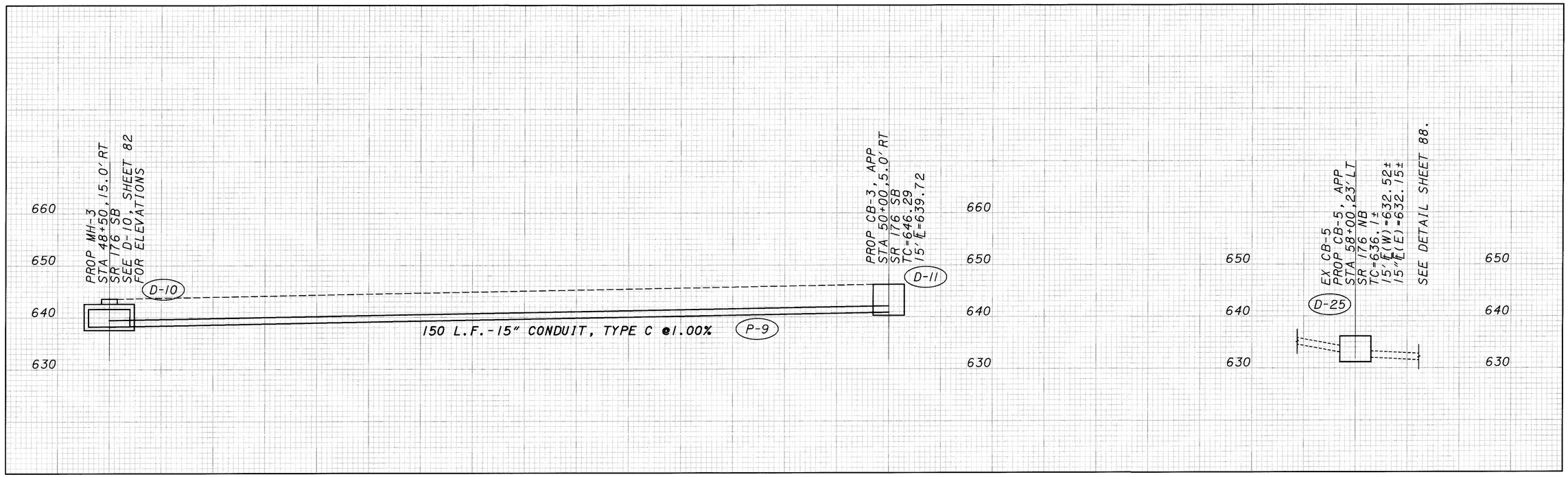
CUY-176J-12.76



NOTE:
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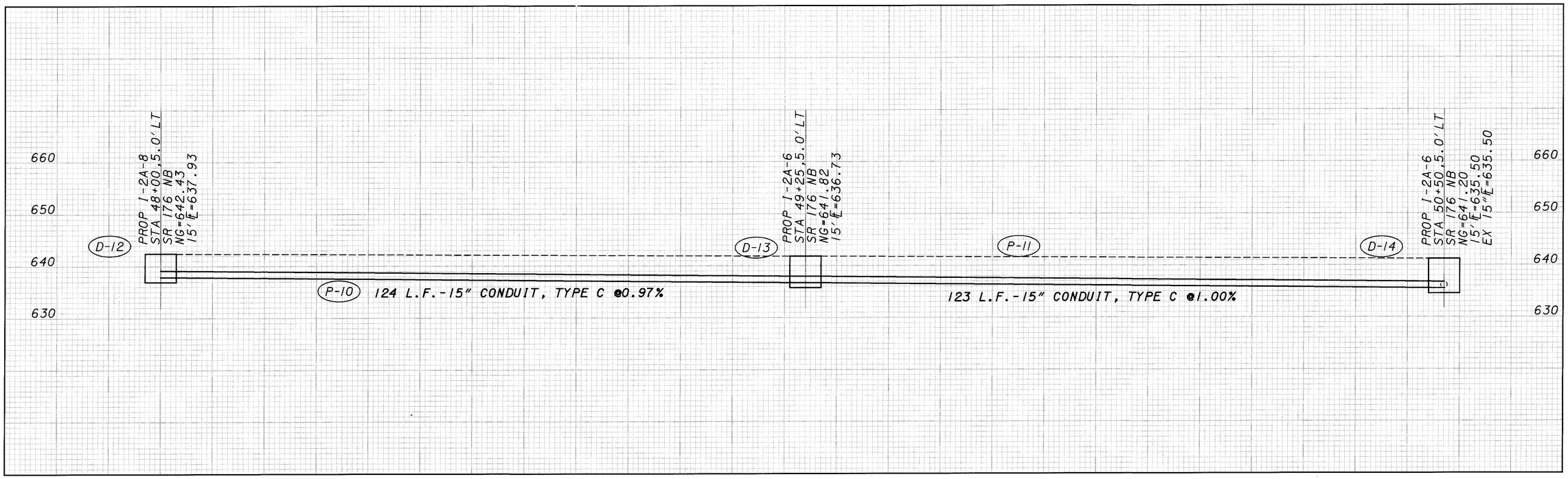

CALCULATED DRL
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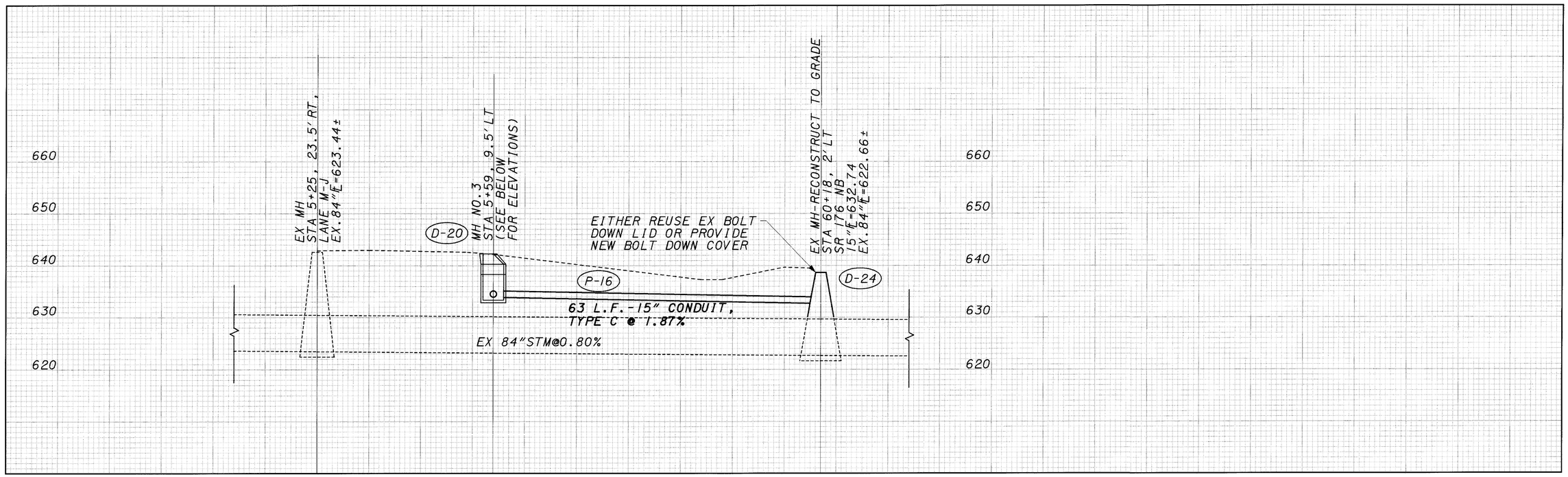
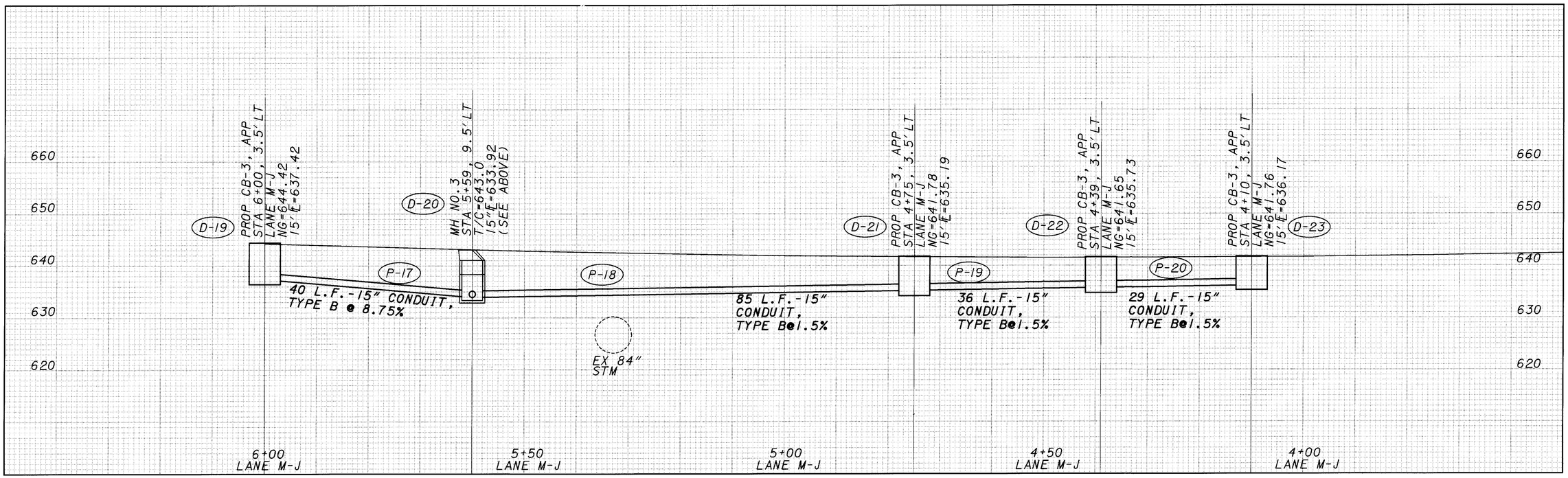
STORM SEWER PROFILES

CUY-176J-12.76



NOTE:
ALL EXISTING ELEVATIONS HAVE BEEN OBTAINED FROM RECORD CONSTRUCTION PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ELEVATIONS OF THE EXISTING AND PROPOSED DRAINAGE STRUCTURES PRIOR TO PRECASTING THEM. PAYMENT FOR THIS SURVEY WORK SHALL BE CONSIDERED INCIDENTAL TO THE ASSOCIATED 603 OR 604 PAY ITEM. SEE SHEET 38 FOR ORIGINAL PLAN ELEVATION BENCH.



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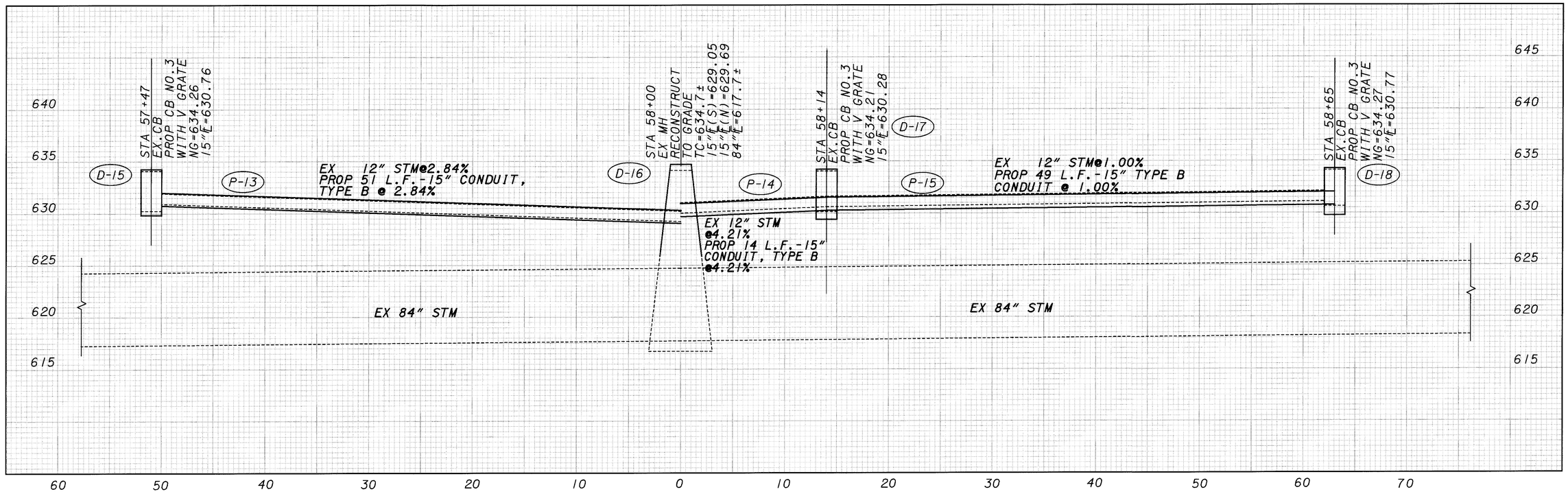
CALCULATED DRL CHECKED

STORM SEWER PROFILES

CUY-176J-12.76

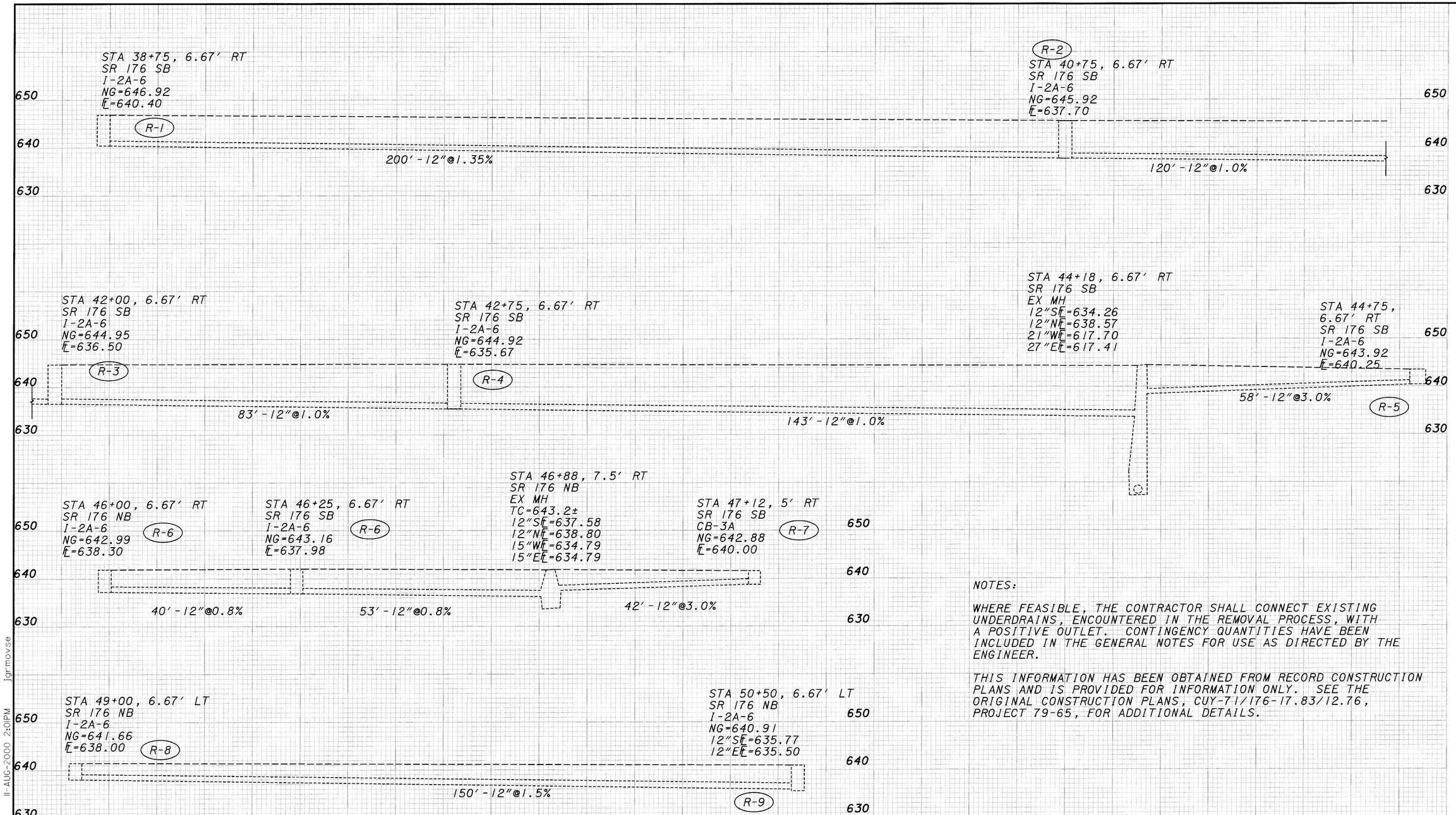


NOTE:
ALL EXISTING ELEVATIONS HAVE BEEN OBTAINED FROM RECORD CONSTRUCTION PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ELEVATIONS OF THE EXISTING AND PROPOSED DRAINAGE STRUCTURES PRIOR TO PRECASTING THEM. PAYMENT FOR THIS SURVEY WORK SHALL BE CONSIDERED INCIDENTAL TO THE ASSOCIATED 603 OR 604 PAY ITEM. SEE SHEET 38 FOR ORIGINAL PLAN ELEVATION BENCH.

CALCULATED DRL
CHECKED

STORM SEWER PROFILES

CUY-176J-12.76



NOTES:

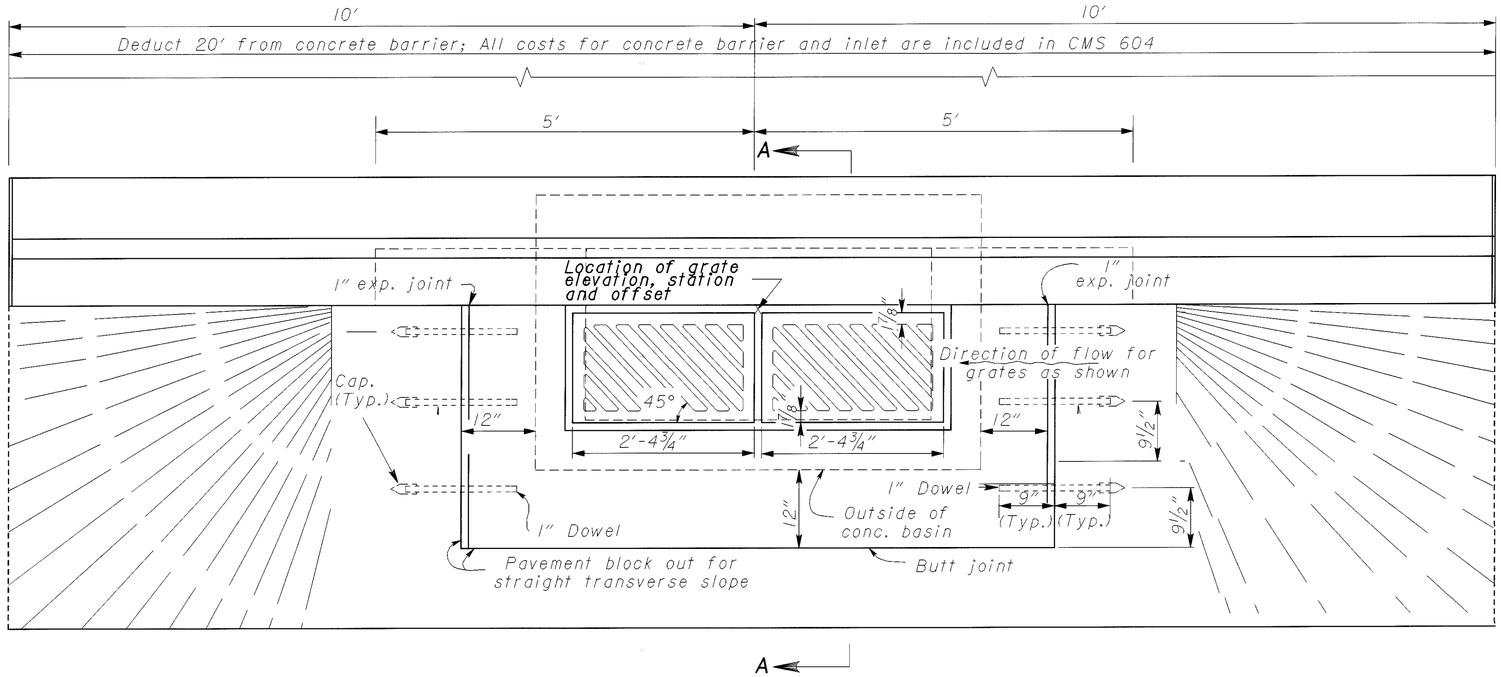
WHERE FEASIBLE, THE CONTRACTOR SHALL CONNECT EXISTING UNDERDRAINS, ENCOUNTERED IN THE REMOVAL PROCESS, WITH A POSITIVE OUTLET. CONTINGENCY QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL NOTES FOR USE AS DIRECTED BY THE ENGINEER.

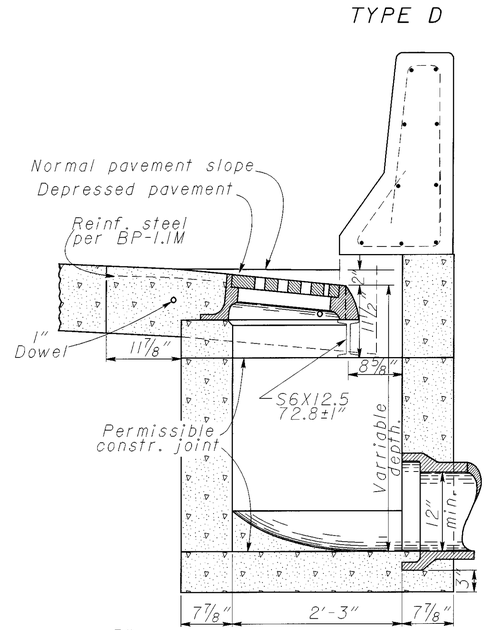
THIS INFORMATION HAS BEEN OBTAINED FROM RECORD CONSTRUCTION PLANS AND IS PROVIDED FOR INFORMATION ONLY. SEE THE ORIGINAL CONSTRUCTION PLANS, CUY-71/176-17.83/12.76, PROJECT 79-65, FOR ADDITIONAL DETAILS.

CALCULATED DRL
CHECKED

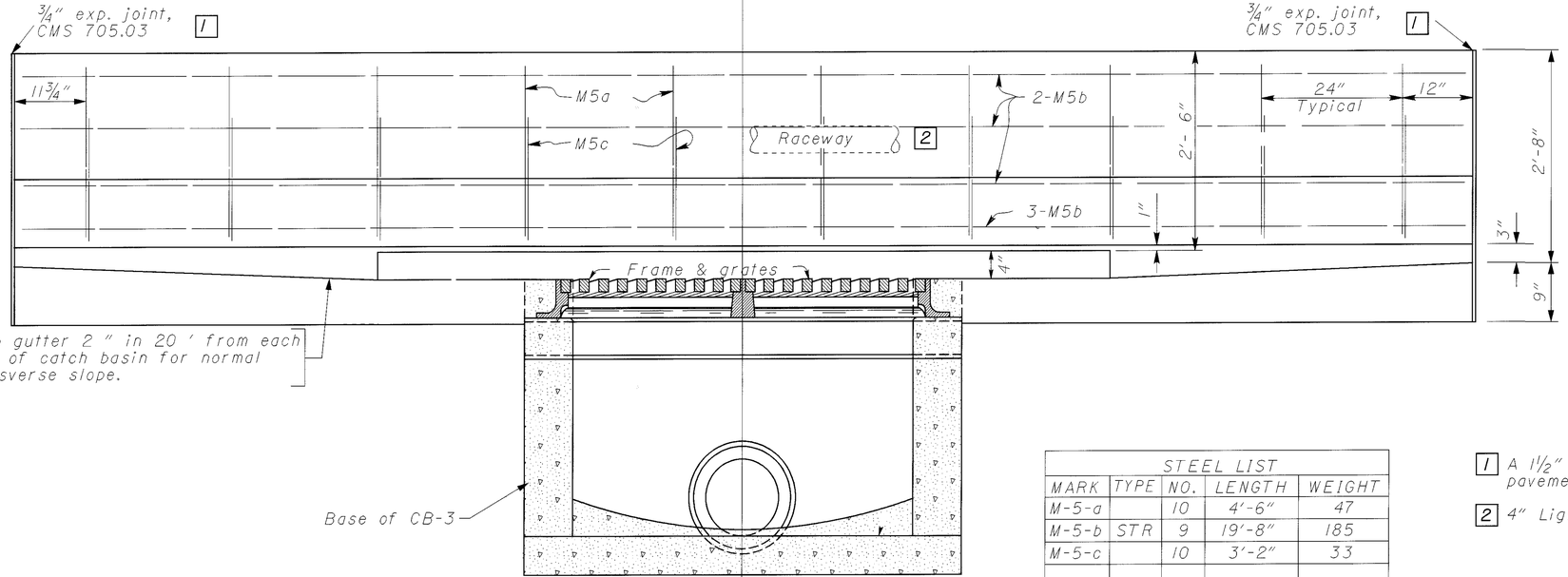
EXISTING STORM SEWER PROFILES

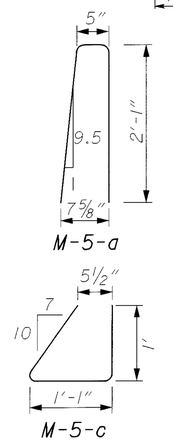
CUY-176J-12.76





SECTION A-A





LEGEND

NOTES:
THE STEEL LIST TABLE QUANTITY IS INCLUDED WITH THIS DRAWING FOR ESTIMATIONG PURPOSES ONLY.

FOR NOTES, DIMENSIONS AND DETAILS NOT SHOWN, SEE STANDARD CONSTRUCTION DRAWING CB-2.1M AND I-2.1M.

STEEL LIST				
MARK	TYPE	NO.	LENGTH	WEIGHT
M-5-a		10	4′-6″	47
M-5-b	STR	9	19′-8″	185
M-5-c		10	3′-2″	33
TOTAL STEEL				265 lbs.

1 A 1½″ minimum exp. joint shall be provided in concrete pavement or concrete shoulders.

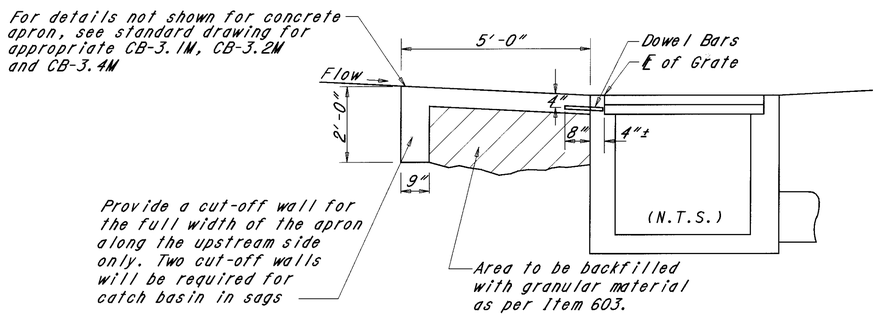
2 4″ Lighting raceway, if required elsewhere by the plans

CALCULATED DRL CHECKED

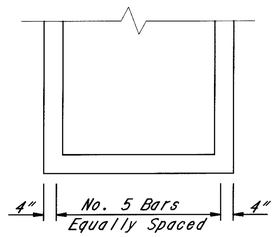
CATCH BASIN, NO.3, AS PER PLAN

CUY-176J-12.76

SEE APPLICABLE STD DWG FOR
CB GRATE ORIENTATION



BAR LOCATION DETAIL



CATCH BASIN NO.	TOTAL # OF BARS FOR A	
	STD. APRON	SAG APRON
4	7	14
5	4	8
8	4	8

The unit price for each catch basin, as per plan shall include the replacement of any connecting sewer pipes damaged during the removal or installation of the basin. The new pipe shall match the material type of the existing pipe and shall meet the requirements of Item 603.

Payment for the above work shall be included in the unit bid price for the various pay item(s) listed below and shall constitute full compensation for furnishing all materials, labor, tools, and equipment incidental to complete this item of work.

The furnishing and placing of steel for the 5/8" x 12" dowel bars shall be per 509 reinforcing steel. The dowel bars shall be epoxy coated per 509.10. The dowel bars shall be installed per 510 or cast into the basin. Bolt or inserts may be used. The catch basin shall be precast or cast-in-place concrete. Brick or concrete block will not be permitted. The 6" concrete apron shall be reinforced per 601.04(3).

For details not shown see Std. Dwg. CB-3.1M, CB-3.2M, and CB-3.4M

CATCH BASIN NO. 4, AS PER PLAN
CATCH BASIN NO. 5, AS PER PLAN
CATCH BASIN NO. 8, AS PER PLAN

CALCULATED DRL
CHECKED JEL

DRAINAGE DETAILS

CUY-176J-12.76

88
117

I:\PROJECTS\Pid19509\dgn\19509ddb.dgn 27-JUL-2000 7:09AM coop2

TRAFFIC CONTROL

FORMER CONSTRUCTION PLANS

FOR EXISTING SIGNING DETAILS REFER TO APPLICABLE PLANS LISTED BELOW:

CUY-71-17.83
PROJECT NO. 79-65

CUY-176-10.88
PROJECT NO. 305-96

CUY-176-12.61
PROJECT NO. 790-76

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

TRAFFIC CONTROL STANDARD DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857, 858, 861, 957, 958 AND 961 ON TRAFFIC CONTROL STANDARD DRAWINGS IN THESE PLANS SHALL CONSIDERED TO READ AS REFERENCES TO ITEMS 630, 631, 633, 730, 731 AND 733.

REMOVAL OF EXISTING ITEMS

ALL 630 REMOVAL ITEMS NOT SPECIFICALLY INCLUDING STORAGE OR REERECTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR. REMOVAL AND DISPOSAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

SIGN LOCATIONS

SIGN LOCATIONS OF EXISTING AND PROPOSED SIGNS ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR PRIOR TO ERECTION OF ALL SIGN SUPPORTS SHALL STAKE THE PROPOSED LOCATION, INCLUDING OFFSET. OVERHEAD SUPPORT LOCATIONS SHALL ALSO INCLUDE FOUNDATION ELEVATIONS. THE ENGINEER SHALL APPROVE ALL SUPPORT LOCATIONS AND MAY ADJUST THE LOCATION TO CORRECT SLOPE AND SUBSURFACE DIFFICULTIES, SIGN SIGHT DISTANCE OBSTRUCTIONS, IMPROVE SAFETY AND ELIMINATE OVERHEAD OBSTACLES.

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

RAISED PAVEMENT MARKERS

MATERIALS SUPPLIED BY THE DEPARTMENT

FOR THIS PROJECT THE RPM CASTINGS SUPPLIED BY ODOT WILL COME WITH REFLECTORS ATTACHED.

ALL MATERIALS ARE TO BE CONTRACTOR FURNISHED, EXCEPT THAT THE DEPARTMENT SHALL SUPPLY RPM MATERIALS IN THE QUANTITIES SHOWN HEREIN TO THE CONTRACTOR. PAY ITEMS FOR THE DEPARTMENT SUPPLIED MATERIALS SHALL BE INDICATED AS "INSTALLATION ONLY". THE TYPE OF DEPARTMENT SUPPLIED MATERIAL SHALL BE RAISED PAVEMENT MARKER CASTINGS.

THE CONTRACTOR SHALL PICK UP THE DEPARTMENT SUPPLIED RPM MATERIALS AT THE OPI WAREHOUSE IN COLUMBUS, OHIO. (SEE SUPPLEMENT 1082)

THE CONTRACTOR SHALL PICK UP DEPARTMENT SUPPLIED RPM MATERIALS AT THE SPECIFIED LOCATION(S) FOR TRANSPORT TO THE WORK SITE OR TO THE CONTRACTOR'S STORAGE FACILITY. THE RECYCLED RAISED PAVEMENT MARKER (RPM) AUTHORIZATION FORM IS TO BE SIGNED BY THE DISTRICT CONSTRUCTION ENGINEER PRIOR TO PICK UP OF THE RPMS. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AND / OR THE PARTIES LISTED ON THE AUTHORIZATION FORM IN WRITING AT LEAST FIVE (5) CALENDAR DAYS PRIOR TO PICK UP OF THE DEPARTMENT SUPPLIED MATERIALS. THE CONTRACTOR SHALL STORE THE RPMS WITHOUT DAMAGE OR CONTAMINATION WITH FOREIGN MATTER. A DEDUCTION IN THE AMOUNT OF THE ACTUAL COST TO THE DEPARTMENT SHALL BE MADE FOR MATERIALS DAMAGED BY THE CONTRACTOR OR FOR CASTINGS RECEIVED BY THE CONTRACTOR WHICH WERE NOT INSTALLED AND WERE NOT RETURNED TO THE DEPARTMENT.

RETURN OF NON-PERFORMED RAISED PAVEMENT MARKER MATERIALS SUPPLIED BY THE DEPARTMENT

RAISED PAVEMENT MARKER MATERIALS SUPPLIED BY THE DEPARTMENT, THAT ARE NON-PERFORMED SHALL BE CAREFULLY REPACKED OR PACKED IN THE BOXES IN THE SAME STYLE AND QUANTITY AS ORIGINALLY RECEIVED FROM THE DEPARTMENT. CASTING STYLES SHALL NOT BE MIXED WITHIN ANY ONE CONTAINER. THE CONTRACTOR SHALL CLEARLY MARK ON THE OUTSIDE OF EACH CONTAINER THE STYLE OF CASTING. BOXES SHALL BE PLACED ON SKIDS OR PALLETS IN THE SAME STYLE (LOW PROFILE OR CONVENTIONAL, REFLECTORISED OR NON REFLECTORISED) AND NO MORE THAN 420 RPMS (OR 21 BOXES) ON ONE SKID.

ONLY USE THE BOXES SUPPLIED BY THE RAISED PAVEMENT MARKER RECYCLER. BOXES MUST BE MARKED WITH THE RECYCLER'S PART OR CATALOG NUMBER AND THE PROJECT NUMBER. THE RECYCLER'S CATALOG OR PART NUMBERS MAY BE OBTAINED FROM THE OFFICE OF TRAFFIC ENGINEERING IN COLUMBUS, OHIO OR FROM THE RECYCLER. BOXES NOT MARKED WITH THE PROPER RECYCLER'S CATALOG OR PART NUMBERS, AND THE DEPARTMENT'S PROJECT NUMBER WILL NOT BE ACCEPTED AT THE RECYCLER'S WAREHOUSE.

NON PERFORMED MATERIALS WILL BE RETURNED TO THE LOCATION AS SPECIFIED BY THE DISTRICT CONSTRUCTION ENGINEER WITHIN 30 DAYS OF THE COMPLETION OF THE PROJECT.

THE ABOVE WORK INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL NEEDED TO PERFORM THE WORK, SHALL BE CONSIDERED INCIDENTAL TO THE RESPECTIVE PAY ITEM.

IF THE DEPARTMENT HAS TO REPACKAGE THE RPMS CORRECTLY, THE CONTRACTOR WILL BE ASSESSED THE ACTUAL COST FOR REPACKAGING THE MATERIALS BY THE DEPARTMENT'S FORCES.

LOADING OF MATERIALS SUPPLIED BY THE DEPARTMENT AT THE RECYCLER'S WAREHOUSE

TRUCKS SHALL HAVE A LOADING HEIGHT OF 48 INCHES AND BE ABLE TO BACK UP FLUSH TO THE LOADING DOCK.

TRUCKS SHALL NOT HAVE ANY OBSTRUCTIONS OR PROTRUSIONS THAT PREVENT THE LOADING BY A STANDARD FORKLIFT OR LIFT TRUCK.

SEMI TRUCKS OR 20 FOOT COMMERCIAL TRUCKS ARE THE MOST APPROPRIATE TRUCKS FOR LOADS IN EXCESS OF 4 PALLETS (ONE PALLET = 21 BOXES = 2100 LBS).

STAKE BODY TRUCKS ARE APPROPRIATE TO LOAD LESS THAN 4 PALLETS, PROVIDED THE TRUCK IS RATED FOR THE LOAD AND THE LOAD CAN BE SAFELY SECURED FOR TRANSPORT BY CHAINING OR STRAPPING DOWN AS NEEDED.

PICKUP TRUCKS ARE APPROPRIATE FOR LOADS OF APPROXIMATELY ONE PALLET, PROVIDED THE PICKUP TRUCK IS RATED FOR THE LOAD AND THE LOAD CAN BE SAFELY SECURED FOR TRANSPORT.

DUMP TRUCKS, TILT BED TRUCKS, AND NON COMMERCIAL MOVING VANS WILL NOT BE LOADED BY THE RECYCLERS WAREHOUSE.

THE WAREHOUSE SUPERVISOR WILL REFUSE TO LOAD ANY TRUCK THAT IS UNSAFE TO LOAD OR UNSUITABLE FOR THE LOAD BEING PLACED ON THE TRUCK.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY. THE CONTRACTOR SHALL INSTALL RECYCLED RAISED PAVEMENT MARKERS WITH PRISMATIC REFLECTORS:

ITEM 621-RAISED PAVEMENT MARKER,INSTALLATION ONLY.....153 EACH

RETROREFLECTOR REPLACEMENT

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER TO REPLACE THE RETROREFLECTORS IN THE RPM CASTINGS THAT ARE ON THE BRIDGE DECKS WITHIN THE PROJECT LIMITS.

THIS ITEM SHALL INCLUDE THE COST OF REMOVING THE RETROREFLECTOR AND REPLACING IT WITH A CONTRACTOR SUPPLIED REFLECTOR OF THE REQUIRED COLOR.

ITEM 621-PRISMATIC RETROREFLECTOR, AS PER PLAN.....14 EACH

RAISED PAVEMENT MARKERS ON STRUCTURES

RAISED PAVEMENT MARKER CASTINGS SHALL NOT BE REMOVED AND REPLACED ON STRUCTURES.

RAISED PAVEMENT MARKER SPACING

THE RAISED PAVEMENT MARKER SPACING SHALL BE 120 FEET (36 m) AS PER STANDARD DRAWING TC-65.10M.

ENTRANCE AND EXIT MARKINGS

THE ENTRANCE AND EXIT PAVEMENT MARKINGS SHALL BE LOCATED AND INSTALLED AS PER STANDARD CONSTRUCTION DRAWING TC-72.20M. PLAN DETAILS SHOWING GORE LOCATIONS ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE TO PERFORM AS MANY MEASUREMENTS AS NEEDED TO DETERMINE THE CORRECT LOCATION OF THE MARKINGS.

ITEM 630 - SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN

THIS ITEM SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO PROVIDE AND INSTALL THE MEDIAN MOUNTED SIGN POST AS DETAILED ON SHEET 207.

ITEM 631-REMOVAL OF DISCONNECT SWITCH ENCLOSURE AND DISPOSAL

INCIDENTAL TO THE REMOVAL OF THE DISCONNECT SWITCH ENCLOSURE, THE DISCONNECT SWITCH SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

ITEM 631-REMOVAL OF LUMINAIRE AND DISPOSAL

INCIDENTAL TO THE REMOVAL OF THE LUMINAIRE, THE WIRING AND THE BALLAST SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

ITEM 631-BALLAST, BY TYPE, INTEGRAL

BALLAST FOR MERCURY VAPOR LUMINAIRES SHALL BE MOUNTED WITHIN THE LUMINAIRE HOUSING (INTEGRAL) OR MOUNTED IN A WEATHERPROOF HOUSING ATTACHED TO OR BESIDE THE LUMINAIRE (CONTIGUOUS). BALLAST HOUSINGS SHALL BE OF A CORROSION RESISTANT MATERIALS.

INTEGRAL BALLASTS SHALL BE USED TO LIGHT ALL NON-STRUCTURALLY MOUNTED OVERHEAD SIGNS AS SHOWN IN THE PLANS.

CALCULATED FLK
CHECKED JEL

TRAFFIC CONTROL GENERAL NOTES

CUY-176J-12.76

ITEM 631-ENCLOSURE PADLOCKS

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

LOOP DETECTORS

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 REPAIR OR BUTT JOINT OPERATIONS.

NEW LOOP DETECTORS SHALL BE PLACED AT THE SAME LOCATIONS AND SAME SIZE AS THE EXISTING. THE LOOP DETECTOR WIRE SHALL BE REPLACED TO THE PULL BOX OR POLE, WHICHEVER IS APPLICABLE, UNDER ITEM 632 AND TC-82.10M. THE NEW CABLE SPLICE KITS SHALL BE INCLUDED IN THIS PAY ITEM.

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

ITEM 632-DETECTOR LOOP, AS PER PLAN.....2 EACH

REF. #	LOCATION	SHT. #	SIZE	# OF TURNS
L-1	RAMP JN-D	98	8'x25'	2-4-2
L-2	RAMP JN-D	98	8'x25'	2-4-2

PROTECTIVE COATING OF OVERHEAD SIGN SUPPORT SECTIONS

GENERAL

OVERHEAD SIGN SUPPORTS CAN BE SEPARATED INTO MAJOR SECTIONS SUCH AS END FRAMES, TRUSSES, VERTICAL POLES AND CANTILEVER ARMS. DURING THE IMPLEMENTATION OF THIS WORK ITEM IT WILL BE BENEFICIAL TO REFER TO THE MAJOR SECTIONS OF THE OVERHEAD SIGN SUPPORTS RATHER THAN THE WHOLE SUPPORT. MORE SPECIFIC INSTRUCTIONS AND FLEXIBILITY CAN BE GIVEN BASED UPON THE UNIT OF MEASURE AND PAYMENT PER MAJOR SUPPORT SECTION.

THE PROTECTIVE COATING OF OVERHEAD SIGN SUPPORT SECTIONS SHALL BE A FOUR PART PROCESS TO INCLUDE SURFACE PREPARATION FOLLOWED BY A THREE STEP COATING SYSTEM. THIS THREE STEP COATING SYSTEM SHALL CONSIST OF AN EPOXY PRIME COAT, AN EPOXY INTERMEDIATE COAT, AND A URETHANE TOP COAT, WITH EACH COAT A DIFFERENT COLOR. FOR AN EXPLANATION OF THE MATERIALS TO BE USED SEE NOTE ENTITLED "COATING SYSTEM". THE PURPOSE OF THIS COATING IS TO PROVIDE PROTECTION FOR NEW (UNWEATHERED) AND OLDER (WEATHERED) GALVANIZED STEEL SUPPORT SECTIONS FROM CORROSIVE ELEMENTS IN THE ATMOSPHERE. COATING AND SURFACE PREPARATION OF THE NEW GALVANIZED SUPPORT SECTIONS SHALL BE DONE BY THE MANUFACTURER AS PER THE COATING SUPPLIER'S SPECIFICATIONS LISTED IN THIS NOTE.

FIELD COATING OF SIGN SUPPORTS

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO COMPLY WITH POLLUTION LAWS. RULES OR REGULATIONS OF FEDERAL, STATE, OR LOCAL AGENCIES. THE COATING MATERIALS SPECIFIED FOR THE WORK CAN BE HAZARDOUS TO THE HEALTH OF THE APPLICATOR IF NOT APPLIED AS PER THE MANUFACTURER'S INSTRUCTIONS. THE CONTRACTOR SHALL FOLLOW THE DATA SHEET AND THE LABEL ON THE PAINT CONTAINERS. THESE PRECAUTIONS SHALL INCLUDE THE USE OF RESPIRATORS AND EYE AND SKIN PROTECTION AS SPECIFIED. THE CONTRACTOR SHALL ALSO INSURE THAT HIS PAINTING OPERATIONS AND LOCATION WILL NOT ENDANGER OR ADVERSELY AFFECT THE PUBLIC IN GENERAL.

THE PROPOSED CLEANING AND COATING OPERATIONS SHALL BE PERFORMED ONLY WHEN THE AMBIENT TEMPERATURE IS 50 DEGREES F OR ABOVE FOR A PERIOD OF 24 CONTINUOUS HOURS. PAINT SHALL NOT BE APPLIED DURING RAIN, FOG, OR MIST, OR WHEN THE STEEL SURFACE TEMPERATURE IS LESS THAN 5 DEGREES F ABOVE THE DEW POINT. PAINT SHALL NOT BE APPLIED TO WET OR DAMP SURFACES OR ON FROSTED OR ICE COATED SURFACES. PAINT SHALL NOT BE APPLIED WHEN THE RELATIVE HUMIDITY IS GREATER THAN 85%. ALL STEEL SURFACES OF TRUSS AND END FRAMES INCLUDING THE WELDED AREAS, BALLAST ENCLOSURE MOUNTING BRACKET AND THE BASE PLATES ARE TO BE CLEANED AND COATED. BEFORE EACH COATING IS APPLIED, IT SHALL BE MIXED WITH AN APPROVED POWER MECHANICAL MIXER TO A UNIFORM CONSISTENCY WHICH SHALL BE MAINTAINED DURING ITS APPLICATION. EACH COAT SHALL BE APPLIED IN A WORKMANLIKE MANNER AS A CONTINUOUS FILM OF UNIFORM THICKNESS WHICH IS FREE OF HOLIDAYS, PORES, RUNS, OR SAGS. ALL COATS SHALL BE APPLIED BY BRUSH. THINNING OF PAINT IS STRICTLY PROHIBITED. PAINT NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED. THE COATING SHALL PENETRATE ALL JOINTS AND CONNECTIONS. THE ENGINEER SHALL BE NOTIFIED 24 HOURS PRIOR TO ANY CLEANING OR COATING OPERATIONS SO THAT INSPECTION SERVICES CAN BE PROVIDED.

TO PROVIDE ASSURANCES THAT NO THINNING OF THE PROTECTIVE COATING MATERIAL IS BEING DONE, PERIODIC CHECKS BY A STATE INSPECTOR WILL BE MADE OF THE MATERIAL. THESE CHECKS WILL BE MADE UTILIZING A VISCOSITY TEST CUP PROCEDURE AS PROVIDED BY THE MANUFACTURER OF THE MATERIAL. THE FREQUENCY OF THESE CHECKS WILL BE DETERMINED BY THE ENGINEER BASED UPON FIELD EVALUATION AND JOB PERFORMANCE.

IF THE VISCOSITY CHECK REVEALS THAT THE MATERIAL HAS BEEN THINNED, IMMEDIATE REJECTION OF THE MATERIAL SHALL BE MADE. THIS REJECTION SHALL REQUIRE THE CONTRACTOR TO IMMEDIATELY STOP USING THE MATERIAL AND PROVIDE NEW MATERIAL OF THE PROPER SPECIFICATION PER PLAN. IN ADDITION, THE COATING OF THE SIGN SUPPORT WITH THE NON-APPROVED MATERIAL BE COSIDERED UNACCEPTABLE. THEREFORE THE SUPPORT SHALL BE STRIPPED AND RE-COATED WITH APPROVED MATERIAL (UNTHINNED MATERIAL).

3 TO 4 VISCOSITY CHECKS INDICATING A PERPETUAL QUALITY CONTROL PROBLEM (THINNED MATERIAL) SHALL BE CONSIDERED SUFFICIENT JUSTIFICATION TO TERMINATE THE CONTRACT.

THE COST FOR THE VISCOSITY TEST KIT SHALL BE BORN BY THE CONTRACTOR AND CONSIDERED INCIDENTAL TO THE ITEM SPECIALS PER COAT.THE TEST KIT SHALL CONTAIN ITEMS SUCH AS INSTRUCTIONS, VISCOSITY CUP, STANDARD COMPARISON RATES, CARRYING CASE, CLEANING EQUIPMENT, STOPWATCH, ETC. THE KIT SHALL BE GIVEN TO THE STATE INSPECTOR FOR USE DURING THE PERFORMANCE OF THE WORK. AFTER THE PROJECT IS COMPLETE, THE TEST KIT SHALL REVERT TO THE STATE AS STATE PROPERTY.

COATING SYSTEM

THE COATING SYSTEM SHALL CONSIST OF A POLYAMIDE-CURED EPOXY PRIME COAT, A POLYAMIDE-CURED EPOXY INTERMEDIATE COAT AND AN ALIPHATIC POLYURETHANE TOP COAT. THE COATING MATERIALS USED SHALL BE THOSE AS LISTED FROM ONE OF THE FOLLOWING MANUFACTURERS OR AN APPROVED EQUAL:

1. AMERON
   210 NORTH BERRY STREET
   BREA, CALIFORNIA 92622
   LOCAL TELEPHONE CONTACT : (419) 885-5336
   PRIME COAT : AMERCOAT 385
   INTERMEDIATE COAT : AMERLOCK 400
   TOP COAT : AMERCOAT 450 HS

2. ICI/DEVOE COATINGS
   5480 CLOVERLEAF PKWY. #5
   VALLEY VIEW, OHIO 44125
   LOCAL TELEPHONE CONTACT : (216) 328-1581
   PRIME COAT : DEVRAN 4170 CORROSION RESISTANT EPOXY
   INTERMEDIATE COAT : DEVRAN 4170 CORROSION RESISTANT EPOXY
   TOP COAT : DEVTHANE 4708 ALIPHATIC URETHANE ENAMEL

3. PORTER PAINT CO.
   400 SOUTH 13TH STREET
   LOUISVILLE, KY 40201
   LOCAL TELEPHONE CONTACT : (419) 666-0026
   PRIME COAT : PORTER PAINTS MCR 4300
   INTERMEDIATE COAT : PORTER PAINTS MCR 4300
   TOP COAT : PORTER PAINTS HYTHANE

4. POLYCARB
   33095 BAINBRIDGE ROAD
   P.O. BOX 39278
   SOLON, OHIO 44139
   LOCAL TELEPHONE CONTACT : (440) 248-1223
   PRIME COAT : MARK-60 (ULTRAPOX)
   INTERMEDIATE COAT : MARK-60 (ULTRAPOX)
   TOP COAT : MARK-73 (ULTRA-KOTE)

5. SHERWIN-WILLIAMS COMPANY
   671 BETA DRIVE
   MAYFIELD VILLAGE, OHIO 44143
   LOCAL TELEPHONE CONTACT : (440) 461-3310
   PRIME COAT : TILE-CLAD II HI-BILD PRIMER
   INTERMEDIATE COAT : HI-SOLIDS CATALYZED EPOXY
   TOP COAT : HI-BILD ALIPHATIC POLYURETHANE ENAMEL

ALL THREE COATS OF THE SYSTEM SHALL BE MANUFACTURED BY THE SAME COMPANY TO INSURE COMPATIBILITY AMONG COATS.

CALCULATED FLK
CHECKED JEL

CONTROL GENERAL NOTES

TRAFFIC

CUY-176J-12.76

CALCULATED FLK CHECKED JEL

TRAFFIC CONTROL GENERAL NOTES

CUY-176J-12.76

SURFACE PREPARATIONS, NEW SUPPORT SECTIONS

NEW UNWEATHERED GALVANIZED SUPPORT SECTIONS SHALL HAVE THEIR SURFACE PREPARATION AS WELL AS THEIR PROTECTIVE COATING DONE AT THE MANUFACTURER OF THE SUPPORT SECTIONS.

THE SUPPORT SECTIONS SHALL BE PREPARED FOR COATING BY SSPC - SP1 FOLLOWED BY SSPC - SP7 (SOLVENT CLEANING) FOLLOWED BY A BRUSH-OFF BLAST. BLASTING ABRASIVES CONTAINING MORE THAN 1% FREE SILICA SHALL NOT BE ALLOWED. BEFORE THE PREPARED SURFACE DEGRADES FROM THE PRESCRIBED STANDARDS, THE PRIME COAT SHALL BE APPLIED. IN EVERY CASE, THE SURFACE SHALL BE COATED WITH THE EPOXY PRIME COAT ON THE SAME DAY OF SURFACE PREPARATION. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT AND SCRAPING, MARRING, OR OTHER SURFACE DAMAGE TO THE PREPARED SURFACE.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING, TRANSPORTATION COSTS AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK PER MAJOR SUPPORT SECTION.

BASIS OF PAYMENT WILL BE AS FOLLOWS:
ITEM 630-SURFACE PREPARATION, NEW SUPPORT SECTIONS AT THE CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

SURFACE PREPARATION, EXISTING SUPPORT SECTIONS

EXISTING, WEATHERED GALVANIZED SUPPORT SECTIONS SHALL HAVE THEIR SURFACE PREPRATION AS WELL AS THEIR PROTECTIVE COATING UNDER CONDITIONS OF TEMPERATURE AND HUMIDITY WITHIN THE SAME RANGE AS SPECIFIED BY THE MANUFACTURER OF THE EPOXY - PRIME COAT MATERIAL TO BE USED IMMEDIATELY AFTER THIS CLEANING OPERATION. THE SUPPORT SECTIONS SHALL BE PREPARED FOR COATING BY SSPC - SP1 FOLLOWED BY SSPC - SP6 (SOLVENT CLEANING FOLLOWED BY A COMMERCIAL BLAST CLEANING). BEFORE THE PREPARED SURFACE DEGRADES FROM THE PRESCRIBED STANDARDS, THE PRIME COAT SHALL BE APPLIED. IN EVERY CASE, THE SURFACE SHALL BE COATED WITH THE EPOXY PRIME COAT ON THE SAME DAY AS THE SURFACE PREPARATION. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING, OR OTHER SURFACE DAMAGE TO THE PREPARED SURFACE.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING, TRANSPORTATION COSTS AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK PER MAJOR SUPPORT SECTION.

BASIS OF PAYMENT WILL BE AS FOLLOWS:
ITEM 630-SURFACE PREPARATION, EXISTING SUPPORT SECTIONS AT THE CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

COATING, EPOXY PRIME COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF ONE (1) COAT OF AN EPOXY PRIMER TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL BE BETWEEN 1.5 AND 2.0 MILS. IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COAT SHALL BE BORNE BY THE CONTRACTOR.

FIELD COATING: THIS COAT SHALL IN ALL CASES BE APPLIED BY BRUSH OVER SURFACES THAT WERE PREPARED EARLIER THAT SAME DAY. THE THINNING OF THE EPOXY MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED 1.5 BUT IS AT LEAST 1.25 MILS, THE CONTRACT BID PRICE FOR THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 16-2/3%. IF THE DEFICIENCY OF COATING IS MORE THAN 16-2/3% (I.E. THE AVERAGE DRY FILM THICKNESS IS LESS THAN 1.25 MILS) THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL.

THE EPOXY PRIME COAT CHOSEN BY THE CONTRACTOR SHALL BE ONE OF THE FOLLOWING TWO-COMPONENT COMPOSITIONS CONFORMING TO ITS LISTED PROPERTIES:

AMERCOAT 385
% SOLIDS BY VOLUME : 47% +/- 3 %
POT LIFE : 8 HRS. @ 77 DEGREES F (25 DEGREES C)
DRYING TIME : 4 HRS. @ 77 DEGREES F

DEVRAN 4170 CORROSION RESISTANT EPOXY PRIMER 5465 SERIES
% SOLIDS BY VOLUME : 54% +/- 1%
% SOLIDS BY WEIGHT : 71 % +/- 1%
POT LIFE : 4 HRS. @ 77 DEGREES F
DRYING TIME : TOUCH 1-2 HRS., RECOAT 7 HRS.
VISCOSITY : 95-100 KU

MCR-4301 EPOXY PRIMER
% SOLIDS BY VOLUME : 48.0% +/- 2%
POT LIFE : 30 HRS. @ 50-60 DEGREES F
16 HRS. @ 80-100 DEGREES F
DRYING TIME : 4-6 HRS. @ 50-60 DEGREES F

MARK-60 ULTRAPOX
% SOLIDS BY WEIGHT : 70-75% +/- 2%
POT LIFE : 6 HRS. @ 75 DEGREES F
DRYING TIME : 2-3 HRS. INITIAL SET @ 75 DEGREES F
VISCOSITY : 300-500 CPS @ 75 DEGREES F

TILE-CLAD II HI-BILD PRIMER
% SOLIDS BY VOLUME : 48% +/- 2%
% SOLIDS BY WEIGHT : 63% +/- 2%
POT LIFE : 8 HRS. @ 77 DEGREES F
@ 77 DEGREES F
DRYING TIME : 1 HR. TO TOUCH, 6 HRS. TO RECOAT

FOR NEW SUPPORT SECTIONS THIS PRIME COAT SHALL BE DONE AT THE MANUFACTURER OF THE SUPPORT SECTIONS. VERIFICATION BY THE MANUFACTURER OF THE COATING MATERIAL FOR THE PRIME COAT PROCEDURES WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE PRIME COAT.

THE PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COSTS, AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK. THIS PRIME COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE INTERMEDIATE AND TOP COATS. A PROPERLY CALIBRATED DRY FILM THICKNESS INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE AS FOLLOWS:
ITEM 630-COATING, EPOXY PRIME COAT, SUPPORT SECTIONS, AT THE CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

COATING EPOXY INTERMEDIATE COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE (1) COAT OF EPOXY TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL NOT BE LESS THAN SIX (6.0) MILS. IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COAT SHALL BE BORNE BY THE CONTRACTOR.

FIELD COATING: THIS COAT SHALL BE APPLIED BY BRUSH. THINNING OF THE EPOXY MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED SIX (6.0) MILS, BUT IS AT LEAST FIVE (5.0) MILS, THE CONTRACT PRICE FOR THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 16-2/3%. IF THE DEFICIENCY OF COATING IS MORE THAN 16-2/3 %, (I.E. THE AVERAGE FILM THICKNESS IS LESS THAN 5.0 MILS), THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT, AND MATERIAL. THE EPOXY INTERMEDIATE COAT CHOSEN BY THE CONTRACTOR SHALL BE ONE OF THE FOLLOWING TWO-COMPONENT COMPOSITIONS CONFORMING TO ITS LISTED PROPERTIES:

AMERLOCK 400
% SOLIDS BY VOLUME : 83% +/- 2%
POT LIFE : 2-1/2 HRS. @ 70 DEGREES F
DRYING TIME : 20 HRS. @ 70 DEGREES F

DEVRAN 4170 CORROSION RESISTANT EPOXY PRIMER 5465 SERIES
% SOLIDS BY VOLUME : 54% +/- 1%
% SOLIDS BY WEIGHT : 71 % +/- 1%
POT LIFE : 4 HRS. @ 77 DEGREES F
DRYING TIME : TOUCH 1-2 HRS., RECOAT 7 HRS.
VISCOSITY : 95-100 KU
70 DEGREES F, 50% R.H.

MCR-4301 EPOXY PRIMER
% SOLIDS BY VOLUME : 48.0% +/- 2%
POT LIFE : 30 HRS. @ 50-0 DEGREES F, 16 HRS.
@ 80 DEGREES F
DRYING TIME : 1-2 HRS. @ 60-80 DEGREES F

MARK-60 ULTRAPOX
% SOLIDS BY WEIGHT : 70-75% +/- 2%
POT LIFE : 6 HRS. @ 75 DEGREES F
DRYING TIME : 2-3 HRS. INITIAL SET @ 75 DEGREES F

HI-SOLIDS CATALYZED EPOXY
% SOLIDS BY VOLUME : 61% +/- 2% (SLATE GRAY)
% SOLIDS BY WEIGHT : 77% +/- 2%
POT LIFE : 5 HRS. @ 77 DEGREES F
DRYING TIME : 1 HR. TO TOUCH, 4 HRS. TACK FREE
6 HRS. TO RECOAT @ 77 DEGREES F, 50% R.H.

AT LEAST 24 HOURS BUT NO MORE THAN THREE (3) DAYS SHALL ELAPSE AFTER THE APPLICATION OF THE EPOXY PRIME COAT AND BEFORE THE APPLICATION OF THE EPOXY INTERMEDIATE COAT. SURFACES SHALL IN ALL CASES BE CLEAN BEFORE THE INTERMEDIATE COAT IS APPLIED.

FOR NEW SUPPORT SECTIONS, THE INTERMEDIATE COAT SHALL BE DONE AT THE MANUFACTURER OF THE SUPPORT SECTIONS. VERIFICATION BY THE MANUFACTURER FOR THE INTERMEDIATE COAT PROCEDURE WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE INTERMEDIATE COAT.

THE PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COSTS AND MATERIAL NECESSARY TO ACCOMPLISH THIS ITEM OF WORK. THIS INTERMEDIATE COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE PRIME AND TOP COATS. A PROPERLY CALIBRATED DRY FILM THICKNESS INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE AS FOLLOWS:
ITEM 630-COATING, EPOXY, INTERMEDIATE COAT, SUPPORT SECTIONS AT THE CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

COATING, URETHANE TOP COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE (1) COAT OF URETHANE TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL NOT BE LESS THAN ONE AND ONE-HALF (1.5) MILS. IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COAT SHALL BE BORNE BY THE CONTRACTOR.

FIELD COATING: THIS COAT SHALL BE APPLIED BY BRUSH. THINNING OF THE URETHANE MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED ONE AND ONE-HALF (1.5) MILS BUT IS AT LEAST ONE (1.0) MIL, THE CONTRACT PRICE FOR

THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 33 1/3%. IF THE DEFICIENCY OF THE COATING IS MORE THAN 33 1/3% , (I.E. THE AVERAGE DRY FILM THICKNESS IS LESS THAN 1.0 MIL), THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL.

THE URETHANE TOP COAT CHOSEN BY THE CONTRACTOR SHALL BE ONE OF THE FOLLOWING MATERIALS CONFORMING TO ITS LISTED PROPERTIES:

AMERCOAT 450 HS
% SOLIDS BY VOLUME : 45% +/- 2%
POT LIFE : 20 HRS. @ 77 DEGREES F
DRYING TIME : 8 HRS. @ 77 DEGREES F DRY THROUGH

DEVTHANE 4708 ALIPHATIC URETHANE ENAMEL (6200/6252)
% SOLIDS BY VOLUME : 48 +/- 1%
% SOLIDS BY WEIGHT : 59 +/- 1%
POT LIFE : 6 HRS. @ 70 DEGREES F
DRYING TIME: 4 HRS. @ 77 DEGREES F RECOAT

HYTHANE
% SOLIDS BY VOLUME : 42 +/- 2%
POT LIFE : 16 HRS. @ 50 DEGREES F
12 HRS. @ 75 DEGREES F

MARK-73 (ULTRA-KOTE)
% SOLIDS BY VOLUME : 52.5% +/- 2%
% SOLIDS BY WEIGHT : 55% +/- 2%
POT LIFE : 8 HRS. @ 75 DEGREE F
DRYING TIME : 4-5 HRS. @ 75 DEGREES F TACK FREE
VISCOSITY : 70-75 KU @ 75 DEGREES F

HI-BILD ALIPHATIC POLYURETHANE ENAMEL
% SOLIDS BY VOLUME : 40% +/- 2% (CATALYZED)
% SOLIDS BY WEIGHT : 48 % +/- 2%
POT LIFE : 6 HRS. @ 77 DEGREES F
DRYING TIME : 30 MIN. TO TOUCH, 4 HRS. TAK FREE
18 HRS. MIN. 72 HRS. MAX TO RECOAT

AT LEAST 24 HOURS BUT NO MORE THAN THREE (3) DAYS SHALL ELAPSE AFTER THE APPLICATION OF THE EPOXY INTERMEDIATE COAT AND BEFORE THE APPLICATION OF THE URETHANE TOP COAT. SURFACES SHALL IN ALL CASES BE CLEAN BEFORE THE TOP COAT IS APPLIED.

FOR NEW SUPPORT SECTIONS, THIS TOP COAT SHALL BE DONE AT THE MANUFACTURER OF THE SUPPORT SECTIONS. VERIFICATION BY THE MANUFACTURER FOR THE TOP COAT PROCEDURE WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE TOP COAT.

THE PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COST AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK. THIS TOP COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE PRIME AND INTERMEDIATE COATS. A PROPERLY CALIBRATED DRY FILM INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE AS FOLLOWS:
ITEM 630-COATING, URETHANE TOP COAT, SUPPORT SECTIONS AT THE CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

PREQUALIFICATION

PRIOR TO USE, THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR COPIES OF THE MANUFACTURER'S CERTIFIED TEST DATA SHOWING THAT THE MATERIAL COMPLIES WITH THE REQUIREMENTS OF THIS SPECIFICATION. THE TEST DATA SHALL INCLUDE THE BRAND NAME OF THE PAINT, NAME OF MANUFACTURER, NUMBER OF THE LOT TESTED AND DATE OF MANUFACTURE. WHEN THE PAINT HAS BEEN APPROVED BY THE DIRECTOR, FURTHER PERFORMANCE TESTING BY THE MANUFACTURER WILL NOT BE REQUIRED UNLESS THE FORMULATION OR MANUFACTURING PROCESS HAS BEEN CHANGED, IN WHICH CASE NEW CERTIFIED TEST RESULTS WILL BE REQUIRED.

ACCEPTANCE

THE MANUFACTURER SHALL SUBMIT CERTIFIED TEST DATA IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION. THE STATE RESERVES THE RIGHT TO SAMPLE AND TEST DELIVERED LOTS FOR COMPLIANCE.

LOCATIONS

THE FOLLOWING SUMMARY OF MAJOR SUPPORT SECTIONS TO HAVE A PROTECTIVE COATING APPLIED IS NOTE BELOW:

SUPPORT NO.	MAJOR SECTIONS
29	2 END FRAMES
30	2 END FRAMES
43*	2 END FRAMES
45*	2 END FRAMES
48*	2 END FRAMES

*-NEW SUPPORT

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

ITEM SPECIAL-SURFACE PREPARATION, EXISTING SUPPORT SECTIONS.....4 EACH
ITEM SPECIAL-SURFACE PREPARATION, NEW SUPPORT SECTIONS.....6 EACH
ITEM SPECIAL-COATING, EPOXY PRIME COAT, SUPPORT SECTIONS..10 EACH
ITEM SPECIAL-COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTIONS.....10 EACH
ITEM SPECIAL-COATING, URETHANE TOP COAT, SUPPORT SECTIONS.....10 EACH

CALCULATED FLK
CHECKED JEL

TRAFFIC CONTROL GENERAL NOTES

CUY-176J-12.76

LOCATION	STATION		828											621			
			EDGE LINES		LANE LINES	CHANNELIZING LINES		TRANSVERSE LINES (WHITE)	DOTTED LINE, 4"	STOP LINES	CROSSWALK LINES	LANE ARROWS	WORD ON PAVEMENT, 72"	RAISED PAVEMENT MARKER, INSTALLATION ONLY			
			WHITE	YELLOW		GORE	*							W	Y	W/R	Y/R
	FROM	TO	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH			
SR-176J NB	33+04.81	34+78	174	174	174									2			
	34+78	36+35	314	157	157	157								2		4	
	36+35	39+00	265	265	530									3			
	39+00	44+40	540	540	540									5			
	44+40	48+15	750	375	375	375								3		9	
	48+15	63+48	1533	1533	3066									25			
RAMP D-JN	1+10	10+10	900	900							85						11
RAMP JR-J	15+24.62	19+85	460	460	460												6
	0+00	5+35	535	535	535												7
	5+35	11+35	600	600													7
SR-176J SB	33+04+81	34+05	100	100	100									1			
	34+05	36+30	225	225	225	450		215						2		11	
	36+30	38+75	245	245	490									2			
	38+75	44+20	545	545	545									5			
	44+20	45+52	132	132	132	264		130						1		6	
	45+52	54+45	893	893	1786									14			
RAMP JN-D	4+45	12+00	755	755													9
	12+00	12+90	90	90			90			27	75	4	2				1
SBOR	35+08	40+10	502	502	502									5			
	40+10	41+15	210	105	105	105								1		3	
LANE M-J	3+95	10+48	653	653													
RAMP J-JR	2+50	15+24.62	1275	1275													16
	15+24.62	19+85	460	460	460					24							6
IR-71 SB	924+00	929+50							550								
TOTAL			12156	11519	10182	1351	90	345	550	51	160	4	2	71		33	63
SHEET TOTALS			= 4.48 MILE		= 1.93 MILE	1441		345	550	51	160	4	2	67		23	63
														153			

BRIDGE DEDUCTION (-14)

QUANTITIES CARRIED TO THE ROADWAY GENERAL SUMMARY ON SHEET 97 .

CALCULATED FLK
CHECKED JEL

PAVEMENT MARKING/RAISED PAVEMENT MARKER SUB-SUMMARY

CUY-176J-12.76

93
117

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Material Furnished by the Department
Installation Only

Description	One-Way White		One-Way Yellow		Two-Way White		Two-Way Yellow		Two-Way White-Red		Two-Way Yellow-Red	
	Cols.	Dist.	Cols.	Dist.	Cols.	Dist.	Cols.	Dist.	Cols.	Dist.	Cols.	Dist.
Raised Pavement Marker, Installation Only	67								23		63	
Total By Color	67								23		63	

	Total	Number of Conventional High Profile	Number of Tapered Low Profile	District Stored	Columbus Stored
Raised Pavement Marker, Installation Only	153		153		153
Raised Pavement Marker Casting, Installation Only					
Prismatic Retro-Reflectors					
Raised Pavement Marker Misc.: Replacement of Raised Pavement Marker					

CALCULATED FLK
CHECKED JEL

MATERIALS SUPPLIED BY THE DEPARTMENT

CUY-176J-12.76

OVERHEAD MOUNTED SIGNS

SIGN NO.	PLAN SHEET NO.	ELEVATION VIEW SHEET NO.	LOCATION	SIGN CODE NO.	SIGN SIZE	630 SIGNS, EXTRUSHEET TYPE G	630 REMOVAL OF STRUCTURE MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	630 REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	630 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL	630 REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-18.24	630 OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6, 64'-0" SPAN	630 OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6, 66'-0" SPAN	630 OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8, 82'-0" SPAN	630 OVERPASS STRUCTURE MOUNTED SIGN SUPPORT, TYPE TC-18.24	630 SIGN ATTACHMENT ASSEMBLY	625 RIGID OVERHEAD SIGN SUPPORT FOUNDATION	625 GROUND ROD	631 REMOVAL OF LUMINAIRE AND DISPOSAL	631 REMOVAL OF LUMINAIRE AND REERECTION	631 REMOVAL OF DISCONNECT SWITCH AND DISPOSAL	631 REMOVAL OF DISCONNECT SWITCH AND REERECTION	631 DISCONNECT SWITCH WITH ENCL., TYPE X	631 SIGN SERVICE	631 SIGN WIRED	631 SIGN WIRED, OVERPASS STRUCTURE MOUNTED	630 LUMINAIRE SUPPORT ASSEMBLY TC-31.21 3'-3" ARMS	630 LUMINAIRE SUPPORT ASSEMBLY TC-31.21 4'-3" ARMS	630 LUMINAIRE SUPPORT ASSEMBLY TC-31.21 5'-9" ARMS	631 MERCURY VAPOR LUMINAIRE, TYPE TC-31.21 W/ 175 WATT LAMP	631 BALLAST, TYPE CMRI-175-480, INTEGRAL	631 BALLAST, TYPE CMRI-175-480, REMOTE
					FT x FT	SQ.FT.	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EA	EACH	EACH	EACH	EACH	EACH	EA	EA	EACH	EA	EA	EA	EACH	EACH	EACH
28	98		35+00 SR-176A SB																					1									
29A	99		52+00 SR-176A NB	GG	13'X 10'																	1		1	1								
29B	99			GB	13'X 12'																				1								
29C	99			GB	16'X 10'																				1								
42A	98		45+50 SR-176A SB	GB	17'X 9'				1	1										2		1											
42B	98			GB	16'X 9'				1											2													
43A	98	102	45+60 SR-176A SB	GG	13'X 7.5'	97.5							1				2	2						1	1	1				2	2	
43B	98			GB	17'X 9'	153																				1				2	2	
43C	98			GB	16'X 9'	144																				1				2	2	
44A	99		53+50 SR-176A SB	GB	17'X 8.5'				1	1										2		1											
44B	99			GB	17'X 7'				1											2													
45A	99	102	53+40 SR-176A SB	GB	17'X 9'	153						1					2	2						1	1	1				2	2	
45B	99			GB	17'X 6.5'	110.5																				1				2	2	
46A	100	102	69+84 LOWER ROADWAY NB	GE	12'X 7'	84	1										3			2		1		1	1		1	2			2		2
46B	100			GE	12'X 7'	84	1										3			2							1	2			2		2
46C	100			GE	15'X 8'	120	1				1					1				2							1				2		2
47A	100		923+00 IR-71 SB	GE	16'X 7.5'			1		1											2	1											
				GEP-96	8'X 2'			1																									
47B	100			GG	25'X 10'				1											3													
48A	100	102	923+10 IR-71 SB	GE	16'X 7.5'										1			2	2					1	1	1							
				GEP-96	8'X 2'																												
48B	100			GG	25'X 10'	250																				1				3	3	
TOTALS						1196	3	2	5	3	1	1	1	1	1	1	6	6	6	17	2	4	1	4	6	10	3	4			19	13	6

CALCULATED FLK
CHECKED JEL

OVERHEAD MOUNTED SIGN SUB-SUMMARY

CUY-176J-12.76

GROUND MOUNTED SIGNS

SIGN NO.	PLAN SHEET NO.	ELEVATION VIEW SHEET NO.	LOCATION	SIGN CODE NO.	SIGN SIZE	630 SIGNS, FLAT SHEET, TYPE 6 SQ.FT.		630 GROUND MOUNTED SUPPORT, NO. 3 POST LIN.FT.	630 GROUND MOUNTED SUPPORT, NO. 4 POST LIN.FT.	630 SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN EACH		630 REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL EACH					
1	99		22+30 RAMP J-JR	R-10-24	24"X 10"	1.67				1		1					
2	99		17+36 RAMP J-JR	R-41A-36	36"X 24"	6				1		1					
				R-11A-36	36"X 48"	12				1		1					
3	100		54+69 SR-176 NB	IM-8-36	36"X 18"							1					
				IM-38-36	36"X 18"							1					
				M-5-36-2	36"X 36"							1					
				RP-38R-24	24"X 24"							1					
4	100		54+89 SR-176 NB	IM-8-36	36"X 18"	4.5			19/20								
				IM-38-36	36"X 18"	4.5											
				M-5-36-2	36"X 36"	9											
				RP-38R-24	24"X 24"	4											
TOTALS						41.67			39	3		7					

CALCULATED FLK
CHECKED JEL

GROUND MOUNTED SIGN SUB-SUMMARY

CUY-176J-12.76

96
117

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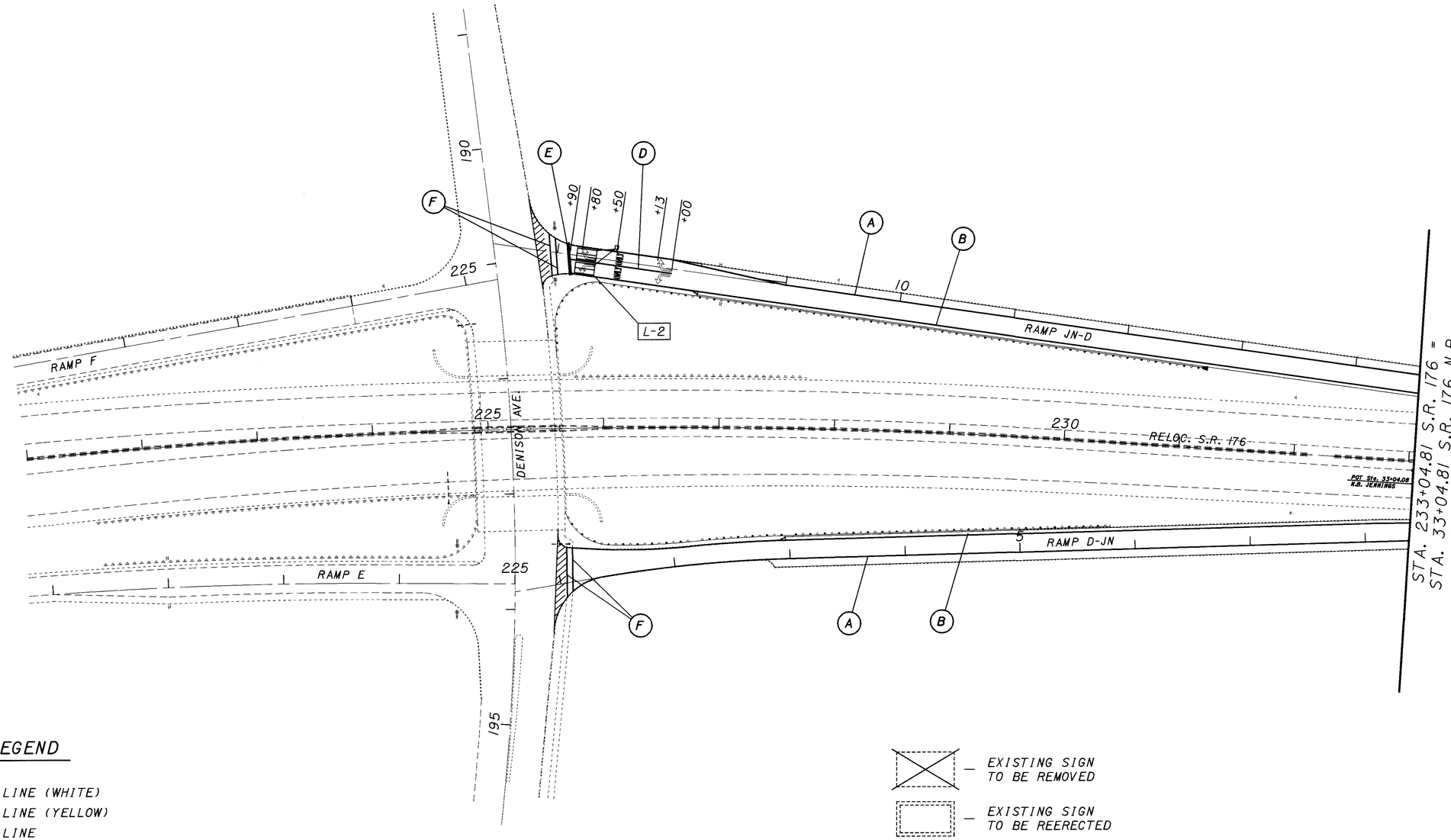
PLOTTED FROM: I:\PROJECTS\P:d19509\dgn\19509tsb.dgn
PLOT SUBMITTED: 07-AUG-2000 17:33
19509TSB.DGN

SHEET NUMBER														ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
														89	90	92	93	95	96						
																								TRAFFIC CONTROL	
														153						621	00200	153	EACH	RAISED PAVEMENT MARKER, INSTALLATION ONLY	
														14						621	00301	14	EACH	PRISMATIC RETROREFLECTOR, AS PER PLAN	
																		6		625	32000	6	EACH	GROUND ROD	
																			39	630	04100	39	LIN.FT.	GROUND MOUNTED SUPPORT, NO.4 POST	
																4				630	09100	4	EACH	SURFACE PREPARATION, EXISTING SUPPORT SECTION	90
																6				630	09102	6	EACH	SURFACE PREPARATION, NEW SUPPORT SECTION	90
																10				630	09104	10	EACH	COATING, EPOXY PRIME COAT, SUPPORT SECTION	90
																10				630	09106	10	EACH	COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTION	90
																10				630	09108	10	EACH	COATING, URETHANE TOP COAT, SUPPORT SECTION	90
																		2		630	35500	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6	
																		1		630	45500	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8	
																		6		630	75000	6	EACH	SIGN ATTACHMENT ASSEMBLY	
																		4		630	75106	4	EACH	LUMINAIRE SUPPORT ASSEMBLY, TYPE TC-31.21	
																		1		630	77000	1	EACH	OVERPASS STRUCTURE MOUNTED SIGN SUPPORT, TYPE TC-18.24	
																			3	630	79501	3	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN	89
																			41.67	630	80102	41.67	SQ.FT.	SIGN, FLAT SHEET, TYPE G	
																		1196		630	80204	1196	SQ.FT.	SIGN, EXTRUSHEET, TYPE G	
																		6		630	84510	6	EACH	RIGID OVERHEAD SIGN SUPPORT FOUNDATION	
																		3		630	86310	3	EACH	REMOVAL OF STRUCTURE MOUNTED SIGN AND DISPOSAL	
																		2		630	87100	2	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	
																		5		630	87400	5	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	
																			7	630	87500	7	EACH	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	
																		3		630	89702	3	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL	
																		1		630	89806	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-18.24	
																		6		631	84000	6	EACH	SIGN SERVICE	
																		10		631	84300	10	EACH	SIGN WIRED	
																		3		631	84400	3	EACH	SIGN WIRED, OVERPASS STRUCTURE MOUNTED	
																		4		631	85100	4	EACH	DISCONNECT SWITCH WITH ENCLOSURE, TYPE X	
																		6		631	87200	6	EACH	BALLAST, TYPE CMRI-175-480, REMOTE	
																		13		631	87202	13	EACH	BALLAST, TYPE CMRI-175-480, INTEGRAL	
																		19		631	89200	19	EACH	MERCURY VAPOR LUMINAIRE, TYPE TC-31.21 WITH 175 WATT LAMP	
																		2		631	94100	2	EACH	REMOVAL OF LUMINAIRE AND REERECTION	
																		17		631	94200	17	EACH	REMOVAL OF LUMINAIRE AND DISPOSAL	
																		4		631	94304	4	EACH	REMOVAL OF DISCONNECT SWITCH AND DISPOSAL	
																		1		631	94306	1	EACH	REMOVAL OF DISCONNECT SWITCH AND REERECTION	
															2					632	26500	2	EACH	DETECTOR LOOP, AS PER PLAN	90
																	4.48			828	10000	4.48	MILE	EDGE LINE	
																	1.93			828	10100	1.93	MILE	LANE LINE	
																	1441			828	10300	1441	LIN.FT.	CHANNELIZING LINE	
																	51			828	10400	51	LIN.FT.	STOP LINE	
																	160			828	10500	160	LIN.FT.	CROSSWALK LINE	
																	345			828	10600	345	LIN.FT.	TRANSVERSE LINE	
																	4			828	20300	4	EACH	LANE ARROW	
																	2			828	20400	2	EACH	WORD ON PAVEMENT, 72"	
																	550			828	20500	550	LIN.FT.	DOTTED LINE, 4"	

CALCULATED FLK
CHECKED JEL

TRAFFIC CONTROL
GENERAL SUMMARY

CUY-176J-12.76



LEGEND

- (A) EDGE LINE (WHITE)
- (B) EDGE LINE (YELLOW)
- (C) LANE LINE
- (D) CHANNELIZING LINE
- (E) STOP LINE
- (F) CROSSWALK LINE
- (G) TRANSVERSE LINE (WHITE), 12' c/c
- (H) DOTTED LINE, 4"

- EXISTING SIGN TO BE REMOVED
- EXISTING SIGN TO BE REERECTED
- PROPOSED SIGN (WITH NEW LEGEND)
- PROPOSED SIGN (WITH SAME LEGEND AS EXISTING)

SEE SHEET 93 FOR PAVEMENT MARKING SUB-SUMMARY

PAVEMENT MARKING LAYOUT - S.R. 176J
STA. 221+00 TO STA. 233+04.81 (BK.)

CALCULATED FLK
CHECKED JEL

HORIZONTAL SCALE IN FEET
0 50 100

CUY-176J-12.76

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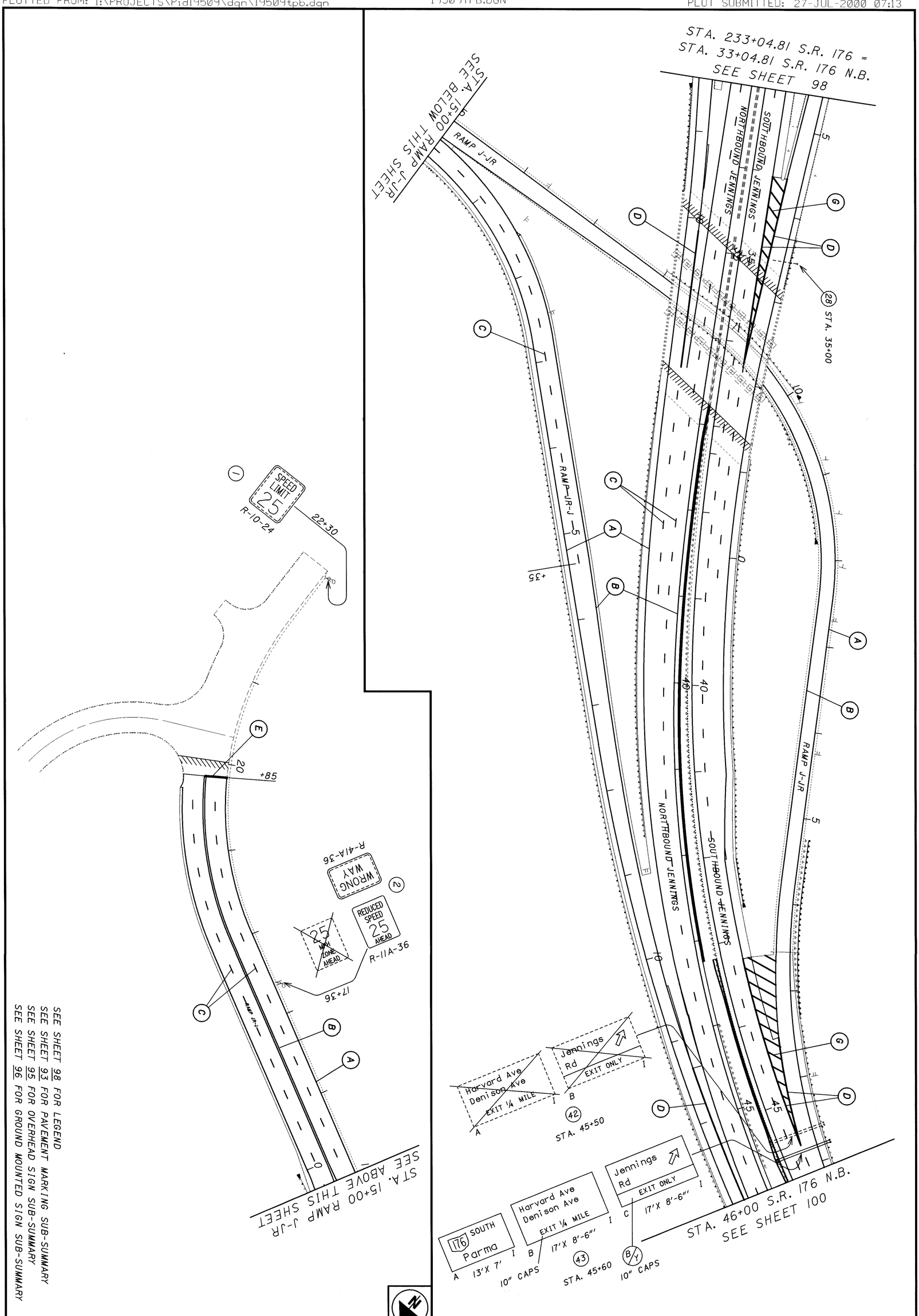
PLOTTED FROM: I:\PROJECTS\P1d19509\dgn\19509tpb.dgn
19509TPB.DGN
PLOT SUBMITTED: 27-JUL-2000 07:13



SEE SHEET 98 FOR LEGEND
SEE SHEET 93 FOR PAVEMENT MARKING SUB-SUMMARY
SEE SHEET 95 FOR OVERHEAD SIGN SUB-SUMMARY
SEE SHEET 96 FOR GROUND MOUNTED SIGN SUB-SUMMARY

99 / 117

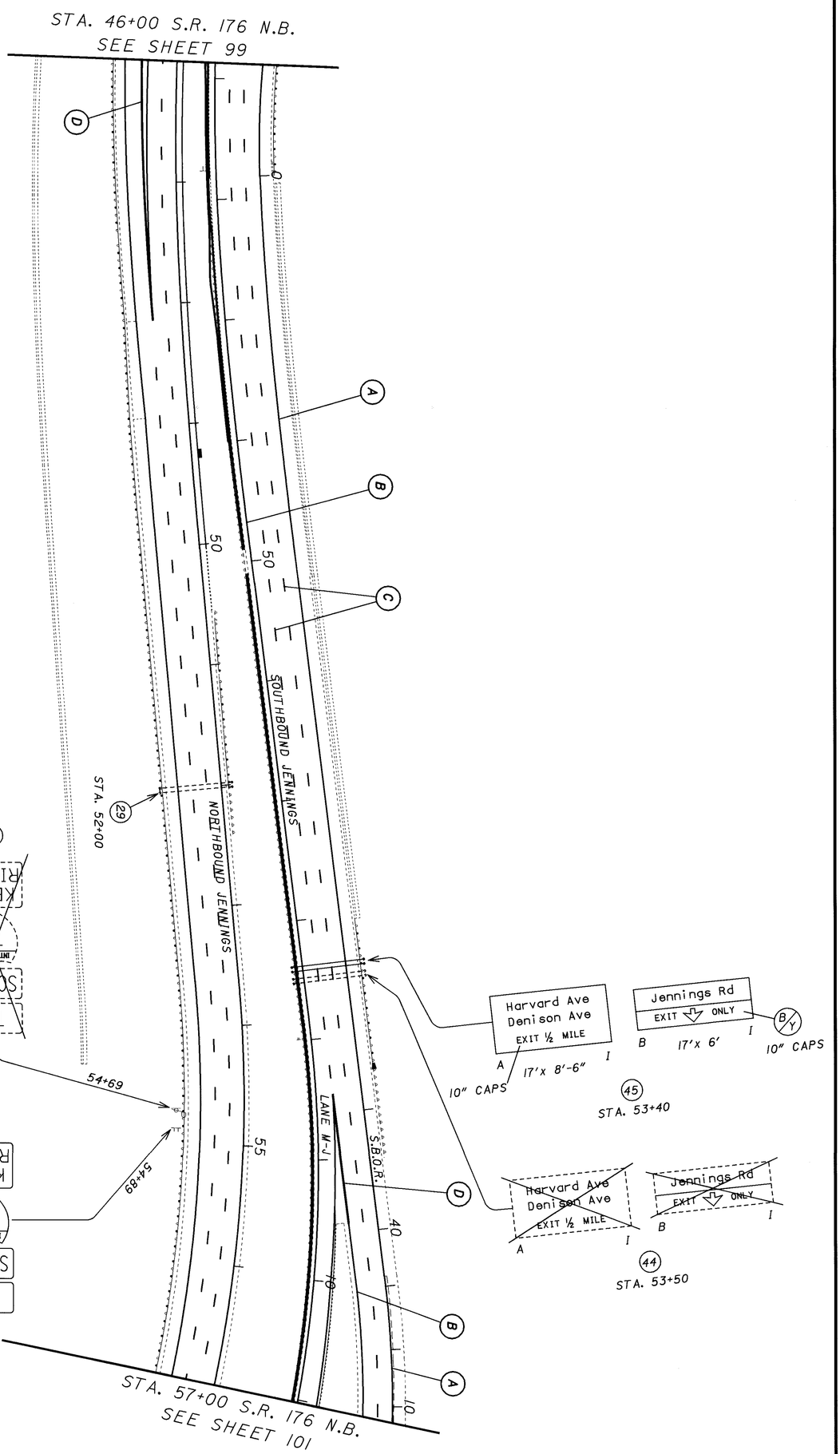
CUY-176J-12.76

PAVEMENT MARKING LAYOUT - S.R. 176J
STA. 33+04.81 (BK.) TO STA. 46+00

CALCULATED FLK
CHECKED JEL

0 50 100
HORIZONTAL SCALE IN FEET

PLOTTED BY: coop2
PLOTTED FROM: I:\PROJECTS\Pid19509\dgn\19509tpc.dgn
19509TPC.DGN
PLOT SUBMITTED: 27-JUL-2000 07:14



SEE SHEET 98 FOR LEGEND
SEE SHEET 93 FOR PAVEMENT MARKING SUB-SUMMARY
SEE SHEET 95 FOR OVERHEAD SIGN SUB-SUMMARY
SEE SHEET 96 FOR GROUND MOUNTED SIGN SUB-SUMMARY

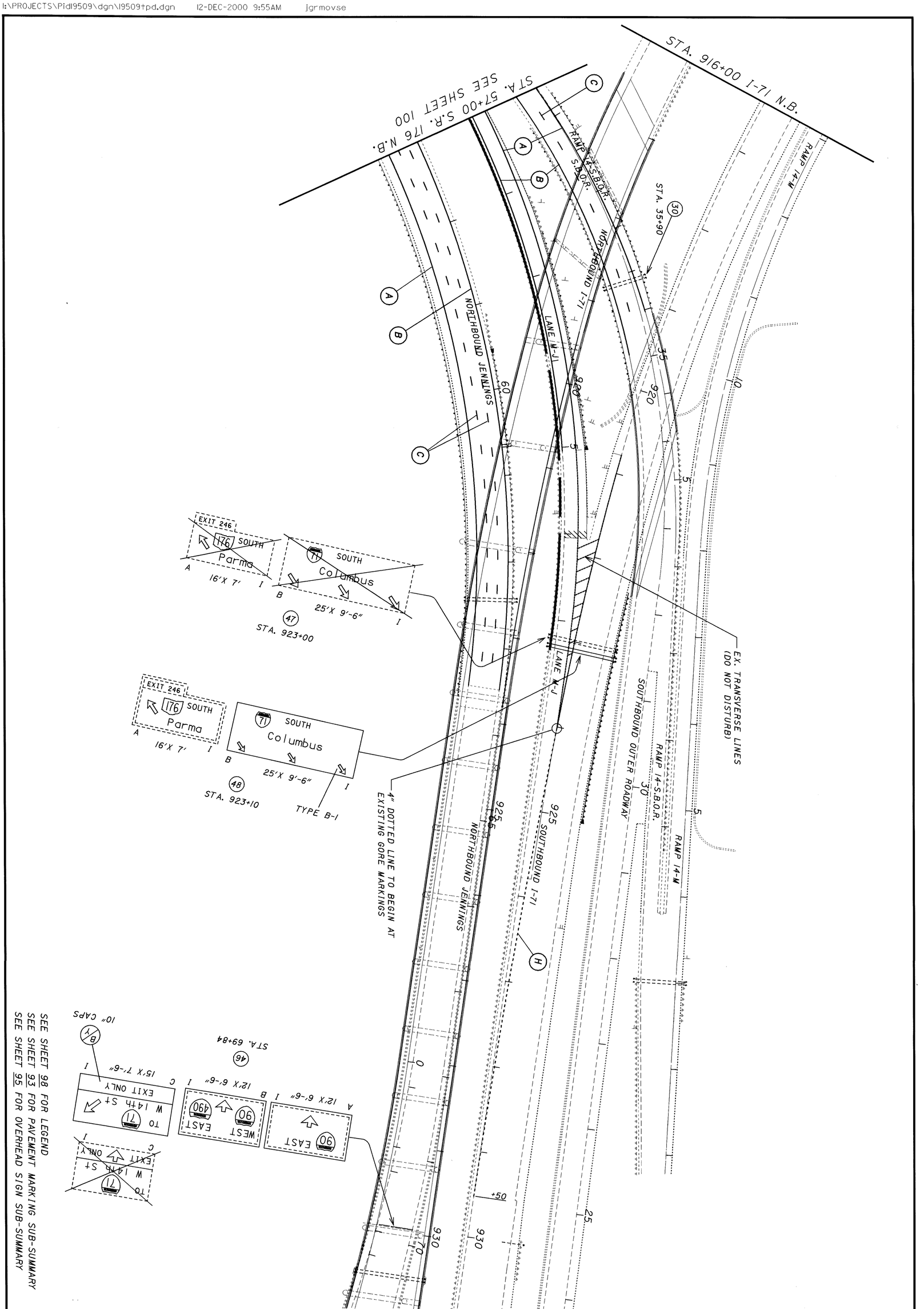
100/117

CUY-176J-12.76

PAVEMENT MARKING LAYOUT - S.R. 176J
STA. 46+00 TO STA. 57+00

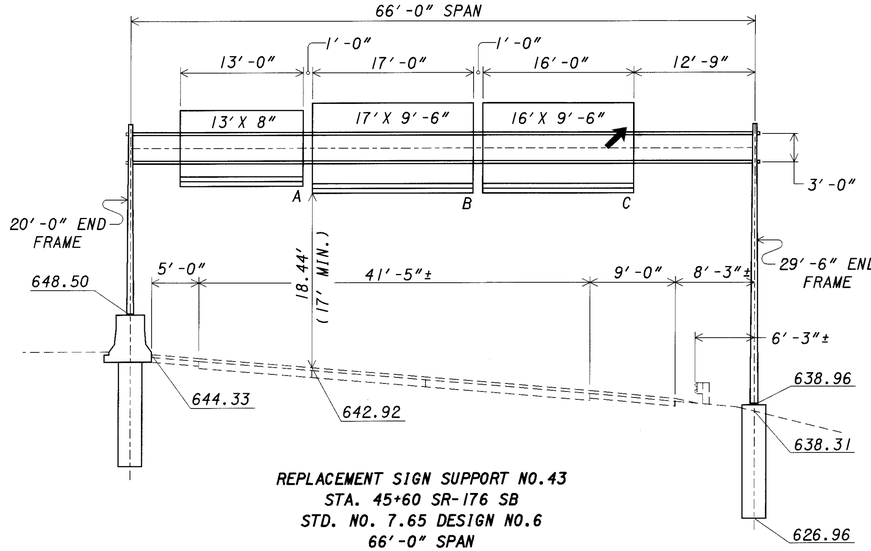
CALCULATED FLK
CHECKED JEL

0 50 100
HORIZONTAL SCALE IN FEET

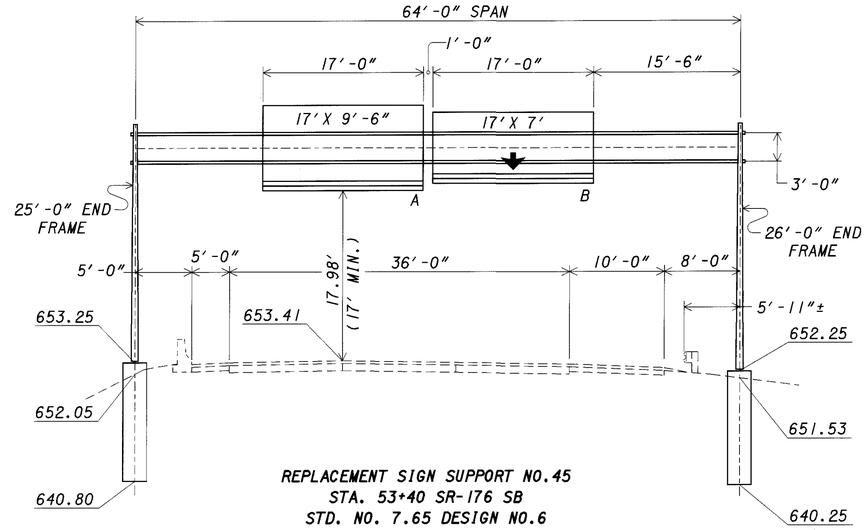


SEE SHEET 98 FOR LEGEND
SEE SHEET 93 FOR PAVEMENT MARKING SUB-SUMMARY
SEE SHEET 95 FOR OVERHEAD SIGN SUB-SUMMARY

101 / 117	CUY-176J-12.76	PAVEMENT MARKING LAYOUT - S.R. 176J STA. 57+00 TO STA. 930+00 (IR-71)	CALCULATED FLK / CHECKED JEL	0 50 100 HORIZONTAL SCALE IN FEET



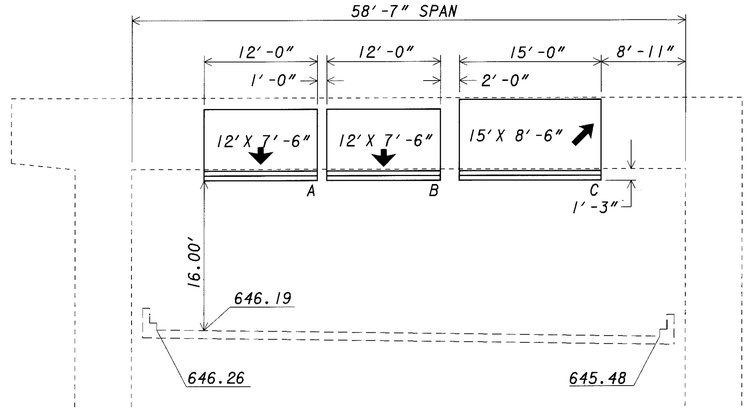
REPLACEMENT SIGN SUPPORT NO.43
STA. 45+60 SR-176 SB
STD. NO. 7.65 DESIGN NO.6
66′-0″ SPAN



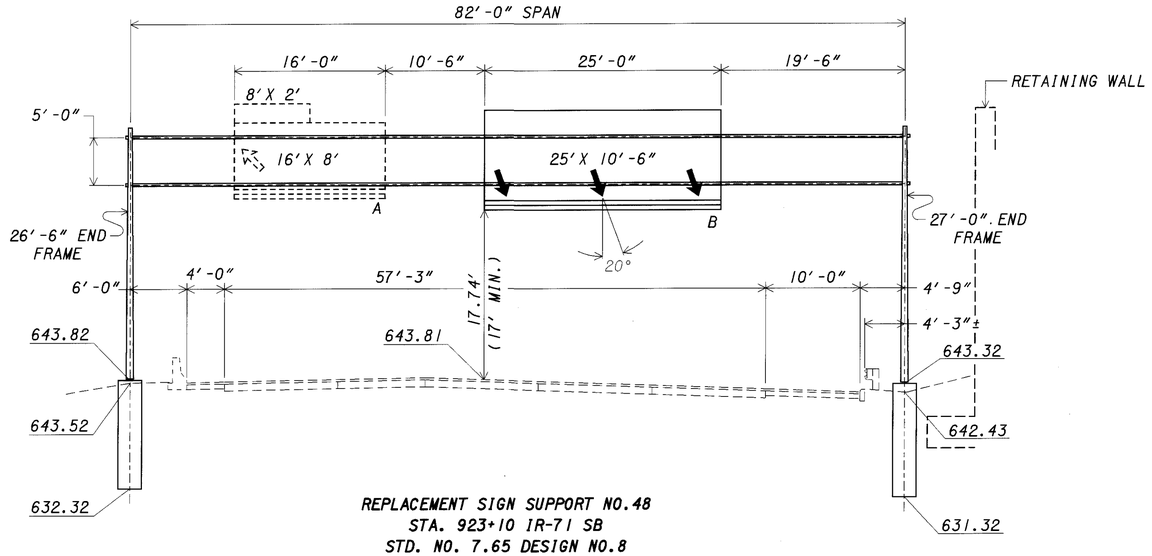
REPLACEMENT SIGN SUPPORT NO.45
STA. 53+40 SR-176 SB
STD. NO. 7.65 DESIGN NO.6
64′-0″ SPAN

NOTES:

1. *ELEVATIONS ARE TAKEN FROM ORIGINAL CONSTRUCTION PLANS AND ARE FOR REFERENCE ONLY. THEY SHOULD BE FIELD VERIFIED TO INSURE PROPER ERECTION.*
2. *ALL ELEVATION VIEWS ARE SHOWN IN DIRECTION OF VIEWING SIGN FACES.*



OVERHEAD SIGN SUPPORT NO.46
STA. 69+84 SR-176 NB



REPLACEMENT SIGN SUPPORT NO.48
STA. 923+10 IR-71 SB
STD. NO. 7.65 DESIGN NO.8
82′-0″ SPAN

CALCULATED FLK
CHECKED JEL

ELEVATION VIEWS

CUY-176J-12.76

LIGHTING GENERAL NOTES

GENERAL

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS:

CLEVELAND PUBLIC POWER (MELP)
1300 LAKESIDE AVE.
CLEVELAND, OHIO 44114

SUPPLIED POWER IS CONTROLLED 480 VOLTS, 3 WIRE, WITH GROUNDED NEUTRAL.

PORTABLE POWER UNIT

THE CONTRACTOR SHALL SUPPLY A PORTABLE UNIT AS SPECIFIED IN THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS. A QUANTITY OF "1 EACH" OF "ITEM 625 - PORTABLE POWER UNIT" IS INCLUDED IN THE GENERAL SUMMARY FOR THIS PURPOSE.

HIGH VOLTAGE DIRECT CURRENT TEST

A HIGH VOLTAGE DIRECT CURRENT TEST, AS DESCRIBED IN THE SPECIFICATIONS SHALL BE PERFORMED ON ALL DISTRIBUTION CABLE AND DUCT CABLE SYSTEMS TO BE INSTALLED ON THIS PROJECT. THE TEST SHALL NOT BE PERFORMED UNTIL AFTER ALL NEW CONSTRUCTION, SUCH AS GUARD RAIL,FENCE, DELINEATOR POSTS, SIGN SUPPORTS, ETC., IN THE IMMEDIATE LOCATION OF THE CABLE RUN BEING TESTED, HAS BEEN COMPLETED. A LUMP SUM PAYMENT FOR THIS TEST HAS BEEN INCLUDED IN THE LIGHTING GENERAL SUMMARY.

ELECTRICAL SERVICE FOR ILLUMINATED SIGNS

THE PAY ITEMS IN THE LIGHTING GENERAL SUMMARY INCLUDE THE PULL BOX ADJACENT TO EACH LIGHTED SIGN AND THE ELECTRICAL SERVICE CONNECTIONS LEADING INTO THE BOX, INCLUDING SPLICE KITS IN THE PULL BOX. QUANTITIES FOR ELECTRICAL SERVICE FROM THE CONNECTION IN THE PULL BOX TO THE SIGN ARE INCLUDED IN THE TRAFFIC CONTROL SUMMARY.

SOIL INFORMATION

SUBSURFACE INVESTIGATIONS WERE MADE FOR THE ORIGINAL CONSTRUCTION OF I.R. 71. COPIES OF THIS DATA (CUY-71 -17.83/CUY-176-12.76, SHEETS 21/50 THRU 26/50) MAY BE INSPECTED AT THE DISTRICT 12 DESIGN OFFICE, 5500 TRANSPORTATION BLVD., GARFIELD HTS. OHIO.

HIGH MAST LUMINARIES

THE LUMINAIRE ARRAYS AND ASSOCIATED ILLUMINATION TEST AREAS SPECIFIED IN SECTION 713.21 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS ARE HEREBY WAIVED FOR THIS PROJECT. INSTEAD, THE LUMINARIES FOR TOWER LIGHTING SHALL MEET THE FOLLOWING REQUIREMENTS.

SYMMETRIC, TYPE V, LUMINARIES FOR TOWER LIGHTING SHALL BE HOLOPHANE "HMSC" TEST #43842, GE 7365(II), OR APPROVED EQUAL.

IN ADDITION, OTHER CUT OFF STYLE LUMINARIES WILL BE CONSIDERED IF THE DESIGNED INTENSITY AND UNIFORMITY ARE PROVIDED USING THE DESIGNED POLE LOCATIONS AND THE DESIGNED NUMBER AND TYPE OF FIXTURES PER POLE.

HIGH MAST LIGHT TOWERS

THE MANUFACTURER SHALL SUBMIT A REPORT FROM AN INDEPENDENT TESTING LABORATORY TO SHOW THAT THE LUMINAIRES DO NOT RECEIVE MORE THAN THESPECIFIED ACCELERATION LOAD. THE TESTING LABORATORY'S REPORT SHALL SPECIFY IN DETAIL THE MOUNTING LOCATIONS OF THE ACCELEROMETERS AND THE TEST PROCEDURES USED. IN ADDITION TO THIS REPORT ODOT RESERVES THE RIGHTTO CONDUCT FIELD MEASUREMENTS OF THOSE ACCELERATION LOADS AND TO ACCEPT ONLY THOSE DESIGNS IN WHICH THE TESTED INSTALLATIONS MEET THE SPECIFICATIONS.THE TERMINAL BLOCK SHOWN ON THE STANDARD CONSTRUCTION DRAWINGS SHALL BE INCLUDED IN THE PRICE OF THE LIGHT TOWER.

ITEM SPECIAL - MAINTAIN EXISTING LIGHTING

EXISTING ROADWAYS WHICH ARE TO REMAIN OPEN TO TRAFFIC DURING CONSTRUCTION OF THIS PROJECT AND WHICH ARE LIGHTED SHALL HAVE THE LIGHTING MAINTAINED AS DESCRIBED HEREIN.

BEFORE ANY WORK IS STARTED IN THE IMMEDIATE VICINITY OF ANY EXISTING LIGHTING CIRCUITS, REPRESENTATIVES OF THE STATE, THE MAINTAINING AGENCY, AND THE CONTRACTOR SHALL MAKE A VISUAL INSPECTION OF THE EXISTING ROADWAY LIGHTING CIRCUITS TO BE MAINTAINED. DURING THIS INSPECTION, A WRITTEN RECORD OF THE CONDITION OF THE EXISTING LIGHTING SHALL BE MADE BY THE STATE REPRESENTATIVE. THIS WRITTEN REPORT SHALL NOTE INDIVIDUAL LUMINAIRES WHICH ARE NOT IN WORKING ORDER, INDIVIDUAL POLES WHICH ARE NOT STANDING, AND INDIVIDUAL CIRCUITS WHICH ARE NOT IN WORKING ORDER. THE COMPLETED REPORT SHALL BE SIGNED BY THE REPRESENTATIVES OF THE STATE, THE MAINTAINING AGENCY, AND THE CONTRACTOR.

IF, AS A RESULT OF THIS INSPECTION, IT IS DETERMINED THAT THE CONDITION OF THE EXISTING SYSTEM IS BELOW THAT REQUIRED FOR THE SAFETY OF THE TRAVELING PUBLIC, THEN THE MAINTAINING AGENCY SHALL MAKE REPAIRS NECESSARY TO RETURN THE SYSTEM TO AN ACCEPTABLE CONDITION. FOLLOWING THESE REPAIRS, THE SYSTEM SHALL AGAIN BE INSPECTED AND A REPORT MADE AND SIGNED AS OUTLINED HEREIN.

WHEN THE EXISTING SYSTEM IS IN AN ACCEPTABLE CONDITION, IT SHALL BE TURNED OVER TO THE CONTRACTOR WHO SHALL THEN BE REQUIRED TO MAINTAIN THE EXISTING LIGHTING TO THE CONDITION OUTLINED IN THIS REPORT WITH THE EXCEPTION OF KNOCKDOWNS DUE TO TRAFFIC ACCIDENTS.

REPLACEMENT OF KNOCKED DOWN UNITS SHALL BE DONE ONLY WHEN THE ENGINEER HAS DETERMINED THAT THE REPLACEMENT OF THE KNOCKED DOWN UNIT IS NECESSARY AND SHALL BE PAID SEPARATELY ON A UNIT BASIS.

SHOULD THE CONTRACTOR DESIRE THE REMOVAL OF THE EXISTING LIGHTING BEFORE THE NEW LIGHTING IS OPERATIONAL, THE CONTRACTOR SHALL THEN BE RESPONSIBLE FOR ADEQUATE TEMPORARY LIGHTING OF THAT PORTION OF THE EXISTING ROADWAY AFFECTED BY THE REMOVAL OF THE EXISTING LIGHTING. ****TEMPORARY LIGHTING TO MAINTAIN THE EXISTING LIGHTING IS NOT REQUIRED PROVIDED THAT SERVICE IS ONLY INTERRUPTED FOR A TOTAL OF 60 DAYS OR LESS.*****

PRIOR TO INSTALLING SUCH LIGHTING, THE CONTRACTOR SHALL PREPARE AND SUBMIT FOUR SETS OF THE TEMPORARY LIGHTING PLAN TO THE DIRECTOR FOR REVIEW AND APPROVAL.

THIS PLAN SHALL SHOW LOCATION OF POLES, LENGTH OF BRACKET ARMS, STYLE OF LUMINAIRES, MOUNTING HEIGHT, WIRING METHODS, AND OTHER PERTINENT INFORMATION. THE TEMPORARY LIGHTING SHALL PROVIDE AN AVERAGE INITIAL INTENSITY OF 1.0 FOOTCANDLES WITH AN AVERAGE TO MINIMUM UNIFORMITY NOT TO EXCEED 4:1. MOUNTING HEIGHT FOR TEMPORARY LUMINAIRES SHALL NOT BE LESS THAN 27 FEET AND MINIMUM OVERHEAD CONDUCTOR CLEARANCE SHALL BE 20 FEET. TEMPORARY OVERHEAD CONSTRUCTION SHALL NOT BE LESS THAN GRADE "B" FOR STRENGTH REQUIREMENTS AS DEFINED BY THE NATIONAL ELECTRIC SAFETY CODE. WOOD POLES WITH OVERHEAD WIRING MAY BE USED. HOWEVER, TEMPORARY LIGHTING SHALL MEET FEDERAL AND STATE SAFETY CRITERIA. IF BREAKAWAY POLES ARE USED TO MEET THESE CRITERIA, THEN UNDERGROUND WIRING SHALL BE USED. RECONDITIONED OR USED MATERIALS MAY BE FURNISHED FOR TEMPORARY LIGHTING.

ALL MATERIALS NECESSARY TO COMPLETE THE TEMPORARY LIGHTING SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. WHEN NO LONGER NEEDED, THE TEMPORARY LIGHTING INSTALLATION SHALL BE REMOVED AND PROPERLY DISPOSED OF BY THE CONTRACTOR.

SEQUENCE OF OPERATIONS

THE EXISTING LIGHTS SHALL REMAIN OPERATIVE UNTIL ALL OF THE PROPOSED TOWERS AND THE PROPOSED CIRCUITS HAVE BEEN INSTALLED. THE CONTRACTOR SHALL ESTABLISH A FUNCTIONING NEW LIGHTING SYSTEM PRIOR TO DISCONNECTING THE EXISTING SYSTEM. ALL COSTS FOR SEQUENCING THIS WORK AND PROVIDING A TEMPORARY CIRCUIT CONNECTION SHALL BE CONSIDERED AS INCIDENTAL TO THE LIGHTING PAY ITEMS.

LIGHT POLES SHALL BE REMOVED, AT THE PROJECT ENGINEER'S DISCRETION, IF THE MAINTENANCE OF TRAFFIC OR OTHER NECESSARY OPERATIONS REQUIRE THEIR REMOVAL PRIOR TO THE NEW LIGHTING SYSTEM IS IN PLACE.

LIGHTING ABANDONED OR REMOVED

THE REMOVAL OR ABANDONMENT OF ANY ITEMS WHICH ARE NOT ITEMIZED SEPARATELY SHALL BE CONSIDERED INCIDENTAL TO THE ADJACENT WORK ITEM.

EXISTING DUCT CABLE AND CONDUIT

THE LOCATIONS OF EXISTING CONDUIT AND DUCT CABLE SHOWN ON THE PLANS HAVE BEEN OBTAINED BY SEARCHES OF AVAILABLE RECORDS AND FIELD CHECKS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT, HOWEVER, THE STATE OF OHIO DOES NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. SEVERAL LIGHT POLES AND SIGNS HAVE BEEN REWIRED OVERHEAD SINCE THE ORIGINAL CONSTRUCTION. FIELD VERIFY ALL CIRCUITS.

EXISTING PLANS ARE:
CUY-71/176-17.83/12.76, CONSTRUCTION PROJECT NO. 79-65
CUY-176-12.61, CONSTRUCTION PROJECT NO. 790-76
CUY-71-14.96 CONSTRUCTION PROJECT NO. 87-79

UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO STANDARD DRAWING HL-30.11 FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY 20 FEET. AN ESTIMATED QUANTITY OF "ITEM 603 - 4" CONDUIT, TYPE E" IS INCLUDED IN THE LIGHTING GENERAL SUMMARY FOR THIS PURPOSE. THIS ITEM SHALL ALSO INCLUDE THE COST OF RESTORING PAVED SHOULDER AREAS WHEN NECESSARY TO DRAIN THE PULL BOX INTO EXISTING DRAINS.

ITEM 603 - 4" CONDUIT, TYPE E — 360 LIN. FT.

ITEM 202 - DISCONNECT EXISTING CIRCUIT

THIS ITEM OF WORK SHALL CONSIST OF THE DISCONNECTION OF AN EXISTING LIGHT CIRCUIT AT A PULL BOX OR A LIGHT POLE.

DISCONNECTION AT A PULL BOX SHALL INVOLVE CUTTING THE EXISTING CIRCUIT AND REMOVING ALL SPLICE KITS. ANY CABLE THAT IS TO BE ABANDONED SHALL BE TERMINATED IN A MANNER SUCH THAT NO CABLE IS LEFT REMAINING IN THE PULL BOX.

DISCONNECTION AT A LIGHT SHALL INVOLVE THE REMOVAL OF THE PART OF CABLE TO BE ABANDONED FROM THE POLE. THOSE ENDS OF THE CONNECTOR KITS FROM WHICH THE ABANDONED CABLE IS REMOVED SHALL BE PLUGGED AND TAPED.

ANY CABLE THAT IS TO BE REUSED IN A PULL BOX OR LIGHT POLE SHALL BE CUT IN SUCH A MANNER SO THAT THERE IS SUFFICIENT LENGTH OF CABLE LEFT FOR RECONNECTION. CABLE SPLICE KITS AND CONNECTOR KITS WILL BE PAID FOR RESPECTIVELY UNDER ITEM 625.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH ITEM 202 "DISCONNECT EXISTING CIRCUIT" AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THE WORK.

CALCULATED BJK
CHECKED

LIGHTING GENERAL NOTES

CUY-176J-12.76

LIGHTING GENERAL NOTES

ITEM 625 - LIGHT TOWER FOUNDATIONS, AS PER PLAN

LIGHT TOWER FOUNDATIONS NOT LOCATED ON A CONCRETE BARRIER SHALL CONFORM TO THE DESIGN SHOWN ON STANDARD CONSTRUCTION DRAWING HL-20.2IM EXCEPT THEY SHALL PROJECT ABOVE GRADE 18" IN OR ADJACENT TO DITCHES AND 6" ELSEWHERE.

LIGHT TOWER FOUNDATIONS LOCATED ON A BARRIER MEDIAN SHALL CONFORM TO THE DESIGN SHOWN ON SHEET ___. THE CONTRACTOR SHALL ACCURATELY LOCATE UNDERGROUND CONDUITS PRIOR TO DRILLING FOR FOUNDATIONS. FOUNDATION LOCATIONS SHALL BE SHIFTED, AS DIRECTED BY THE ENGINEER, TO AVOID ANY UNDERGROUND UTILITIES OR CONDUITS BY AT LEAST 10 FEET, PROVIDED THE NEW LOCATION IS LOCATED IN A CLEAR ZONE OR PROTECTED WITH BARRIER. ALL FOUNDATION RELOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO DRILLING. ALL COSTS OF REMOVAL OF EXCAVATED MATERIAL, GRADING, AND RESTORATION OF ALL DISTURBED AREAS IN ACCORDANCE WITH ITEM 659 SHALL BE CONSIDERED AS INCIDENTAL TO THE LIGHT TOWER FOUNDATION ITEM.

ITEM 202 - LIGHT POLE FOUNDATION REMOVED, AS PER PLAN

THIS ITEM OF WORK SHALL BE IN ACCORDANCE WITH ITEM 202 AND SHALL CONSIST OF REMOVING EXISTING LIGHT POLE FOUNDATIONS TO A MINIMUM OF TWO (2) FEET BELOW FINISHED GRADE AND BACKFILLING THE RESULTANT DEPRESSION WITH COMPACTED SOIL AND RESTORING THE DISTURBED AREA.

PAYMENT SHALL BE MADE PER EACH LIGHT POLE FOUNDATION REMOVED TO A MINIMUM OF TWO (2) FEET BELOW GRADE. WHEREVER THE LIGHTING PLANS INDICATE "LIGHT POLE TO BE REMOVED" OR "LIGHT POLE FOUNDATION TO BE REMOVED", THE FOUNDATIONS SHALL BE REMOVED TO A MINIMUM OF TWO (2) FEET BELOW FINISHED GRADE.

ITEM 202 - LIGHT POLE REMOVED

THIS ITEM OF WORK SHALL BE IN ACCORDANCE WITH ITEM 202 AND SHALL CONSIST OF REMOVING EITHER A GROUND MOUNTED OR BRIDGE MOUNTED LIGHT POLE FROM ITS FOUNDATION OR BRIDGE PILASTER AND PROPERLY DISPOSING OF IT OFF THE PROJECT SITE.

PAYMENT SHALL BE MADE PER EACH LIGHT POLE REMOVED AND SHALL NOT BE DIFFERENTIATED BY GROUND MOUNTED OR BRIDGE MOUNTED TYPE.

CONDUIT ON STRUCTURE

CONDUITS ON STRUCTURE SHALL BE 713.04 (STEEL). ALL COSTS FOR CONDUITS, FITTINGS, FASTENING TO OUTSIDE OF THE PARAPET OR UNDER THE STRUCTURE, ETC., UP TO THE FIRST PULLBOX OFF THE STRUCTURE ARE INCLUDED WITH THE CONDUIT ITEM FOR PAYMENT.

EXPANSION FITTINGS FOR CONDUIT ON STRUCTURES SHALL BE OZ TYPE AX-4, CROUSE-HINDS TYPE XJ-4, APPLETON TYPE XJ-4, OR EQUAL APPROVED BY THE ENGINEER FOR ALL BRIDGES. EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

LAMPS-HIGH PRESSURE SODIUM (HPS)

HIGH PRESSURE SODIUM LAMPS SHALL BE GENERAL ELECTRIC "LUCALOX" CROUSE-HINDS "CERAMALUX", SYLVANIA "LUMALUX", OR EQUAL APPROVED BY THE ENGINEER.

ITEM 625 - PULL BOX, MISC.: POLYMER 30" x 18" x 24" DEEP

MATERIALS USED IN THE MANUFACTURE OF POLYMER CONCRETE PULL BOXES AND PULL BOX COVERS SHALL CONSIST OF POLYESTER RESIN MIXED WITH QUARTZ AGGREGATE FILLER. MATERIAL SHALL BE CHEMICALLY RESISTANT TO 50% SULFURIC ACID, SODIUM CHLORIDE, MOTOR OILS, GASOLINE AND ROAD SALTS. FINISHED PRODUCTS SHALL MEET H-20 LOADING AND HAVE A COMPRESSIVE STRENGTH OF 12,500 PSI MINIMUM.

PULL BOXES AND PULL BOX COVERS SHALL BE COMPLETELY INTERCHANGEABLE WITH THE STANDARD CLEVELAND PUBLIC POWER (CPP) STREET LIGHTING PULL BOX (13-3-1), AS MANUFACTURED BY:

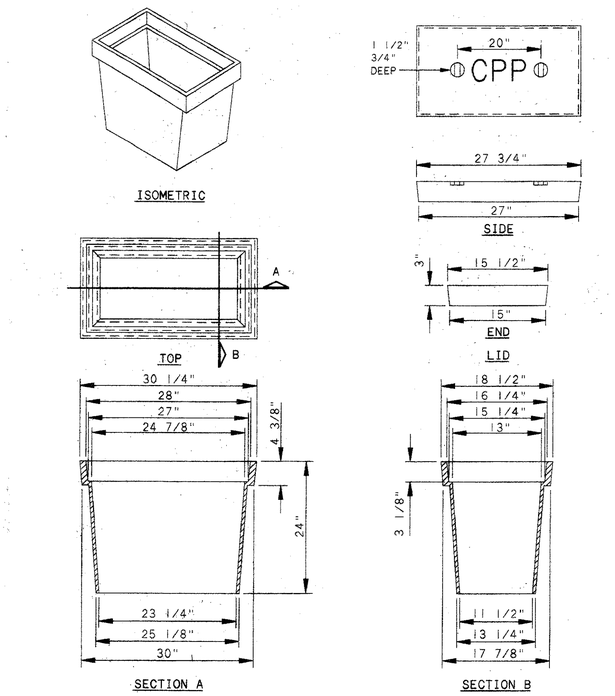
ACO POLYMER PRODUCTS
12080 RAVENNA ROAD
CHARDON, OHIO 44024

OR

ASSOCIATED PLASTICS
18140 EUCLID STREET
FOUNTAIN VALLEY, CA 92708

BOTH OF THESE BOXES HAVE BEEN AVAILABLE THROUGH:

LEADER ELECTRIC
4300 SUPERIOR AVE.
CLEVELAND, OHIO 44103



DETAIL-PULLBOX; MISC.: POLYMER 30" x 18" x 24" DEEP
NOT TO SCALE

625 - POWER SERVICE, AS PER PLAN

ELECTRIC ENERGY FROM EXISTING POWER SERVICES SHALL CONTINUE TO BE CHARGED TO THE MAINTAINING AGENCY, CLEVELAND PUBLIC POWER (CPP).

THIS ITEM OF WORK SHALL INCLUDE ALL COSTS OF EQUIPMENT, MATERIALS AND LABOR TO CONSTRUCT A POWER SERVICE AS DETAILED IN THE PLANS. THE SERVICE WILL BE GROUND MOUNTED CONTROL CENTER FOR ODOT CIRCUITS 11D, 12D AND 13D. THE SERVICE WILL BE POLE MOUNTED CABINET FOR EXISTING CPP CIRCUIT 6D. THERE IS AN EXISTING CPP SERVICE POLE WITH A 37.5 KVA TRANSFORMER. THE PLAN INTENT IS REUSE THE SERVICE POLE IN THE SAME LOCATION.

SINCE THE SERVICE POLE IS A CONSIDERABLE DISTANCE FROM THE ODOT CONTROL CENTER, IT MIGHT BE A BENEFIT TO MOVE THE SERVICE POLE OR PROVIDE A NEW POLE CLOSER TO THE PROPOSED CONTROL CENTER. THE CONTRACTOR IS TO COORDINATE AND REQUEST PERMISSION FROM CPP IF THE EXISTING SERVICE POLE LOCATION COULD BE MOVED CLOSER TO JENNINGS FREEWAY, BUT STILL MUST REMAIN ON THE OUTER LIMITS OF THE EXISTING FENCE. IF A NEW SERVICE POLE IS PLACED, IT SHALL BE INCLUDED UNDER THIS ITEM FOR PAYMENT.

IN ADDITION TO THE REQUIREMENTS OF 625.18, THIS ITEM SHALL INCLUDE ALL COSTS OF PROVIDING POWER SERVICE FROM CPP POLE MOUNTED TRANSFORMER ON THE SERVICE POLE TO A GROUND MOUNTED POWER SERVICE INCLUDING TWO 20 AMP BY-PASS SWITCH COMPLETE WITH WIRE AND CONDUITS. CLEVELAND PUBLIC POWER WILL MAKE THE FINAL CONNECTION TO THE SWITCH FOR MANUAL BYPASS CONTROL OR THEIR LIGHTING CONTROLLER. ANY TRANSFORMATIONS COSTS THAT ARE INCURRED BY CPP WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRENCHING, UNDERGROUND WIRING, UNDERGROUND CONDUIT, AND ALL COSTS OF EXTENDING POWER FROM THE EXISTING SERVICE POLE TO THE ODOT CONTROL CENTER.

SERVICE CONDUIT LOCATIONS, CONDUIT TYPES AND TERMINATION HEIGHTS ON THE SERVICE POLE SHALL BE AS DIRECTED BY CPP. THE CONTRACTOR SHALL ARRANGE WITH UTILITY COMPANY FOR A FIELD INSPECTION OF SERVICE LOCATION PRIOR TO HIS INSTALLATION OF THE SERVICE EQUIPMENT.

THE CONTROL CENTER INSIDE THE RAMP SHALL CONTAIN CIRCUITS 11D, 12D, AND 13D IN ONE CABINET. THE CABINET SHOULD BE SIZED ADEQUATELY TO HOUSE 3 - 3" CONDUITS. THESE CIRCUITS IN THIS CABINET SHALL FEED 176 AND THE RAMPS. THIS CABINET SHALL BE STENCILED "ODOT" THE EXISTING CIRCUIT 6D ON DENISON AVENUE SHALL HAVE IT'S OWN CABINET AND PLACED ON THE SERVICE POLE. THIS CABINET SHALL BE STENCILED "CPP". THE ODOT CABINET SHALL HAVE AN ODOT KEYED LOCK AND THE CPP CABINET SHALL HAVE A CPP KEYED LOCK.

TWO CONCRETE WORK PADS, AS DETAILED IN THE PLANS SHALL BE INCLUDED IN THIS ITEM.

THIS ITEM OF WORK SHALL INCLUDE ALL COSTS OF EQUIPMENT, MATERIALS AND LABOR TO CONSTRUCT A POWER SERVICE AS DETAILED IN THE PLANS. PAYMENT SHALL BE INCLUDED IN 625 - POWER SERVICE, AS PER PLAN

CALCULATED BJK
CHECKED

LIGHTING GENERAL NOTES

CUY-176J-12.76

SHEET NUMBER								PARTICIPATION			ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
			103		106	108										
															LIGHTING	
					9						202	75300	9	EACH	PULL BOX REMOVED	
					53						202	75400	53	EACH	LIGHT POLE REMOVED	104
					51						202	75501	51	EACH	LIGHT POLE FOUNDATION REMOVED, AS PER PLAN	104
					53						202	75506	53	EACH	LUMINAIRE REMOVED	
					500						202	75550	500	LF	DISTRIBUTION CABLE REMOVED	
					6						202	75800	6	EACH	DISCONNECT EXISTING CIRCUIT	103
			360								603	00400	360	LF	4" CONDUIT, TYPE E	
						38					625	00500	38	EACH	CONNECTOR KIT, TYPE II	
						57					625	01500	57	EACH	CABLE SPLICING KIT	
						19					625	03206	19	EACH	LIGHT POLE, DESIGN AT12B32.5	
						5					625	13400	5	EACH	LIGHT TOWER, BBBBBB100	
						1					625	13406	1	EACH	LIGHT TOWER, BBBBBB120	
						19					625	14000	19	EACH	LIGHT POLE FOUNDATION, 24" X 6' DEEP	
						4					625	15201	4	EACH	LIGHT TOWER FOUNDATION, 36" X 25' DEEP, AS PER PLAN	104
						2					625	15700	2	EACH	LIGHT TOWER FOUNDATION, MISC.: MEDIAN MOUNTED, 36"X 25' DEEP	
			1								625	20000	1	EACH	PORTABLE POWER UNIT	
						2					625	21200	2	EACH	LIGHT TOWER MAINTENANCE PLATFORM, TYPE C	
						927					625	22900	927	LF	NO. 1/0 AWG 5000 VOLT DISTRIBUTION CABLE	
						1,107					625	23200	1,107	LF	NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	
						240					625	23300	240	LF	NO. 2 AWG 5000 VOLT DISTRIBUTION CABLE	
						570					625	23400	570	LF	NO. 10 AWG POLE AND BRACKET CABLE	
						1,180					625	24314	1,180	LF	1-1/2" DUCT CABLE WITH THREE NO. 1/0 AWG 5000 VOLT CABLES	
						4,848					625	24320	4,848	LF	1-1/2" DUCT CABLE WITH THREE NO. 4 AWG 5000 VOLT CABLES	
						1,340					625	24330	1,340	LF	1-1/2" DUCT CABLE WITH THREE NO. 2 AWG 5000 VOLT CABLES	
						443					625	25500	443	LF	CONDUIT, 3", 713.04	
						293					625	25900	293	LF	CONDUIT, JACKED OR DRILLED UNDER PAVEMENT, 3"	
						19					625	26250	19	EACH	LUMINAIRE, CONVENTIONAL, TYPE II, 400W HIGH PRESSURE SODIUM, 480 V	
						36					625	26260	36	EACH	LUMINAIRE, HIGH MAST SYMMETRIC, 400W HIGH PRESSURE SODIUM, 713.21, 480V	
						6,613					625	29002	6,613	LF	TRENCH, 24" DEEP	
						18					625	31600	18	EACH	PULL BOX, MISC.: POLYMER 30" x 18" x 24" DEEP	104
						33					625	32000	33	EACH	GROUND ROD	
						1					625	34001	1	EACH	POWER SERVICE, AS PER PLAN	104
			LUMP								625	38000	LUMP		HIGH VOLTAGE TEST	
			LUMP								SPECIAL	62540000	LUMP		MAINTAIN EXISTING LIGHTING	

CALCULATED BJK CHECKED

LIGHTING GENERAL SUMMARY

CUY-176J-12.76

REF.	SIDE	STA.	LOCATION	202 PULL BOX REMOVED EACH	202 LIGHT POLE REMOVED EACH	202 LIGHT POLE FOUNDATION REMOVED, AS PER PLAN EACH	202 LUMINAIRE REMOVED EACH	202 DISTRIBUTION CABLE REMOVED LIN.FT.	202 DISCONNECT EXISTING CIRCUIT EACH
PB	RT/LT	12+80.00	JN-D	2					1
1D1	RT	11+10.00	JN-D		MISSING	1	MISSING		
1D2	RT	9+34.00	JN-D		1	1	1		
1D3	RT	7+58.00	JN-D		1	1	1		
1D4	RT	5+82.00	JN-D		1	1	1		
1D5	LT	34+40.00	176SB		1	1	1		
1D6	RT	2+50.00	JN-D		1	PILASTER	1		
1D7	LT	37+63.00	176SB		1	1	1		
1D8	LT	39+31.00	176SB		1	1	1		
1D9	LT	41+04.00	176SB		1	1	1		
1D10	LT	42+82.00	176SB		1	1	1		
1D11	RT	4+07.00	J-JR		1	1	1		
PB				1					
1D12	LT	44+65.00	176SB		1	1	1		
1D13	LT	46+26.00	176SB		1	1	1		
1D14	LT	47+93.00	176SB		1	WALL	1		
1D15	LT	49+60.00	176SB		1	WALL	1		
1D16	LT	51+27.00	176SB		1	WALL	1		
1D17	LT	52+94.00	176SB		1	WALL	1		
1D18	LT	41+07.00	176SB		MISSING	1	MISSING		
1D19	LT	10+95.00	SBOR		MISSING	1	MISSING		
PB	RT		J-JR	2					1
2D3	RT	5+98.00	J-JR		1	1	1		
2D4	RT	7+86.00	J-JR		1	1	1		
2D5	RT	9+80.00	J-JR		MISSING	1	MISSING		
2D6	RT	12+43.00	J-JR		1	1	1		
2D7	RT	6+51.00	JR-J		1	1	1		
2D8	RT	4+47.00	JR-J		1	1	1		
2D9	LT	18+84.00	J-JR		1	WOOD	1		
2D10	LT	15+88.00	J-JR		1	WOOD	1		
2D11	RT	1+36.00	JR-J		1	1	1		
2D12	RT	2+47.00	JR-J		1	1	1		
2D13	RT	14+43.00	J-JR		1	1	1		
2D14	RT	17+36.00	J-JR		1	1	1		
2D15	RT	20+32.00	J-JR		1	1	1		
PB	RT		J-JR	1					
2D16	LT	21+00.00	J-JR		1	1	1		
2D17	RT	22+30.00	J-JR		1	1	1		
SUB-TOTAL				6	30	27	30	0	2

REF.	SIDE	STA.	LOCATION	202 PULL BOX REMOVED EACH	202 LIGHT POLE REMOVED EACH	202 LIGHT POLE FOUNDATION REMOVED, AS PER PLAN EACH	202 LUMINAIRE REMOVED EACH	202 DISTRIBUTION CABLE REMOVED LIN.FT.	202 DISCONNECT EXISTING CIRCUIT EACH
PB	RT			1					*1
3D4	RT	1+45.00	D-JN		1	1	1		
3D5	RT	2+93.00	D-JN		1	1	1		
3D6	RT	4+41.00	D-JN		1	1	1		
3D7	RT	6+17.00	D-JN		1	1	1		
3D8	RT	7+93.00	D-JN		1	1	1		
3D9	RT	9+68.00	D-JN		1	1	1		
3D10	RT	11+28.00	D-JN		1	PILASTER	1		
3D11	RT	37+65.00	176NB		1	1	1		
3D12	RT	39+35.00	176NB		1	1	1		
3D13	RT	41+06.00	176NB		1	1	1		
PB	RT		176NB	2					
3D14	RT	8+47.00	JR-J		1	1	1		
3D15	RT	42+92.00	176NB		1	1	1		
3D16	RT	10+47.00	JR-J		1	1	1		
3D17	RT	44+81.00	176NB		1	1	1		
3D18	RT	46+73.00	176NB		1	1	1		
3D19	RT	48+72.00	176NB		1	1	1		
3D20	RT	50+68.00	176NB		1	1	1		
3D21	RT	52+70.00	176NB		1	1	1		
3D22	RT	54+69.00	176NB		1	1	1		
3D23	RT	56+68.00	176NB		1	1	1		
4V6		5+03.00	M-J						*1
4V5		7+70.00	M-J		1	1	1		
4V4		9+58.00	M-J		MISSING	1	MISSING		
6V7		9+38.00	SB OUTER		MISSING	1	MISSING		
6V8		35+50.00	SB OUTER						*1
1H22	RT	58+62.00	176NB		1	1	1		
1H21	RT	60+66.00	176NB		1	1	1		
1H20	RT	62+59.00	176NB						1
VARIOUS								*500	
SUB-TOTAL				3	23	24	23	500	4
SUB-TOTAL FROM PREVIOUS COLUMN				6	30	27	30	0	2
TOTALS CARRIED TO LIGHTING GENERAL SUMMARY				9	53	51	53	500	6

* FIELD VERIFY, NON-PERFORM IF UNNECESSARY

CALCULATED BJK CHECKED

LIGHTING SUBSUMMARY

CUY-176J-12.76

106
117

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REF.	SIDE	FROM	TO	625 CONNECTOR KIT, TYPE II EACH	625 CABLE SPLICING KIT EACH	625 LIGHT POLE, DESIGN AT12B32.5 EACH	625 LIGHT TOWER, BBBBBB100 EACH	625 LIGHT TOWER, BBBBBB120 EACH	625 LIGHT POLE FOUNDATION 24" X 6' DEEP EACH	625 LIGHT TOWER FOUNDATION, 36" X 25' DEEP, AS PER PLAN EACH	625 LIGHT TOWER FOUNDATION, MISC.; MEDIAN MOUNTED 36" X 25' DEEP EACH	625 LIGHT TOWER MAINTENANCE PLATFORM, TYPE C EACH	625 NO. 1/0 AWG 5000 VOLT DISTRIBUTION CABLE LIN.FT.	625 NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE LIN.FT.	625 NO. 2 AWG 5000 VOLT DISTRIBUTION CABLE LIN.FT.	625 NO. 10 AWG POLE AND BRACKET CABLE LIN.FT.	625 1-1/2" DUCT CABLE WITH THREE NO. 1/0 AWG 5000 VOLT CABLES LIN.FT.	625 1-1/2" DUCT CABLE WITH THREE NO. 4 AWG 5000 VOLT CABLES LIN.FT.	625 1-1/2" DUCT CABLE WITH THREE NO. 2 AWG 5000 VOLT CABLES LIN.FT.	625 CONDUIT, 3" 713.04 LIN.FT.	625 CONDUIT, JACKED OR DRILLED UNDER PAVEMENT, 3" LIN.FT.	625 LUMINAIRE, CONVENTIONAL, TYPE II, 400W HIGH PRESSURE SODIUM, 480V EACH	625 LUMINAIRE, HIGH MAST SYMMETRIC, 400W HIGH PRESSURE SODIUM, 713.21, 480V EACH	625 TRENCH, 24" DEEP LIN.FT.	625 PULL BOX, MISC.: POLYMER 30" X 18" X 24" DEEP EACH	625 GROUND ROD EACH	625 POWER SERVICE, AS PER PLAN EACH
CONTOL POWER	Ramp JN-D																											
SERVICE POLE D	RT	12+80.00																									1	
PB2	RT	12+80.00																								1		
PB1	LT	12+80.00																								1		
CC D	LT	12+80.00																									1	1
		SERVICE POLE D	CC D		NO SPLICES FROM SERVICE POLE TO CONTROL CENTER D								*900	* INCLUDED IN POWER SERVICE AS PER PLAN						*255	45			*255				
CIRCUITS 11D & 12D	Ramp JN-D	CC D	PB1		NO SPLICES IN PB1								72	72						14				14				
" "		PB1	PB2		6								165	165							45							
CIRCUIT 11D		PB2	11D1															20						10				
11D1	RT	12+86.00		2		1			1							30						1		1				
		PB2	11D2															180						170				
11D2	RT	11+10.00		2		1			1							30						1		1				
		11D2	11D3															190						180				
11D3	RT	9+34.00		2		1			1							30						1		1				
		11D3	11D4															190						180				
11D4	RT	7+58.00		2		1			1							30						1		1				
		11D4	11D5															190						180				
11D5	RT	5+82.00		2		1			1							30						1		1				
		11D5	11D6															190						180				
	176SB																											
11D6	LT	34+40.00		2		1			1							30						1		1				
		11D6	EX PB															40						30				
		EX PB	EX SIGN 28		SIGN SERVICE																							
	Ramp JN-D																											
CIRCUIT 12D		PB2	PB3														532							522				
PB3	RT	7+58.00			3																				1			
		PB3	PB4														448							438				
	176 SB																											
PB4	LT	35+20.00			3																				1			
		PB4	PB5										690							220								
PB5	LT	37+40.00			3																				1			
		PB5	12D1														200							190				
12D1	LT	39+30.00					1			1													6			2		
		12D1	PB6																410					400				
PB6	LT	43+30.00			3																				1			
		PB6	PB7												180						50							
PB7	RT	43+30.00			3																				1			
		PB7	12D2																20					10				
12D2	RT	43+22.00					1				1												6			2		
		PB7	PB8																230					220				
PB8	RT	45+50.00			3																				1			
		PB8	SIGN 43		SIGN SERVICE										60													
SIGN 43	LT	45+60.00																										
		PB8	PB9																227					217				
PB9	RT	47+67.00			3																				1			
		PB9	12D3																10					5				
12D3	RT	47+67.00					1				1												6			2		
		PB9	12D4																443					433				
12D4	RT	52+00.00					1			1		1											6			2		
		12D4	PB10															40						30				
PB10	RT	52+00.00			SIGN SERVICE																				1			
SIGN 29	RT																											
		12D4	PB11															140						130				
PB11	RT	53+30.00			3																				1			
		PB11	SIGN 45		SIGN SERVICE													20						10				
SIGN 45	RT	53+40.00																										
		PB11	12D5															360						350				
	Lane M-J																											
12D5	LT	9+00.00					1			1		1											6			2		
SHEET TOTALS				12	30	6	5	0	6	3	2	2	927	237	240	180	1,180	1,560	1,340	234	140	6	30	3,899	11	18	1	

CALCULATED BJK CHECKED

LIGHTING SUBSUMMARY

CUY-176J-12.76

LIGHTING SUBSUMMARY

CALCULATED BJK CHECKED

REF.	SIDE	FROM	TO	625 CONNECTOR KIT, TYPE II EACH	625 CABLE SPLICING KIT EACH	625 LIGHT POLE, DESIGN ATI2B32.5 EACH	625 LIGHT TOWER, BBBBBB100 EACH	625 LIGHT TOWER, BBBBBB120 EACH	625 LIGHT POLE FOUNDATION 24" X 6' DEEP EACH	625 LIGHT TOWER FOUNDATION, 36" X 25' DEEP, AS PER PLAN EACH	625 LIGHT TOWER FOUNDATION, MISC.; MEDIAN MOUNTED 36" X 25' DEEP EACH	625 LIGHT TOWER MAINTENANCE PLATFORM, TYPE C EACH	625 NO. 1/0 AWG 5000 VOLT DISTRIBUTION CABLE LIN.FT.	625 NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE LIN.FT.	625 NO. 2 AWG 5000 VOLT DISTRIBUTION CABLE LIN.FT.	625 NO. 10 AWG POLE AND BRACKET CABLE LIN.FT.	625 1-1/2" DUCT CABLE WITH THREE NO. 1/0 AWG 5000 VOLT CABLES LIN.FT.	625 1-1/2" DUCT CABLE WITH THREE NO. 4 AWG 5000 VOLT CABLES LIN.FT.	625 1-1/2" DUCT CABLE WITH THREE NO. 2 AWG 5000 VOLT CABLES LIN.FT.	625 CONDUIT, 3" 713.04 LIN.FT.	625 CONDUIT, JACKED OR DRILLED UNDER PAVEMENT, 3" LIN.FT.	625 LUMINAIRE, CONVENTIONAL, TYPE II, 400W, HIGH PRESSURE SODIUM, 480V EACH	625 LUMINAIRE, HIGH MAST SYMMETRIC, 400W HIGH PRESSURE SODIUM, 713.21, 480V EACH	625 TRENCH, 24" DEEP LIN.FT.	625 PULL BOX, MISC.: POLYMER 30" X 18" X 24" DEEP EACH	625 GROUND ROD EACH	625 POWER SERVICE, AS PER PLAN EACH
CIRCUIT 13D	DENISON																													
		CC D	PB20											150							40				40					
PB20	RT	191+97.00			3																									
		PB20	PB21											357							109					1				
PB21	RT	193+06.00			3																									
		PB21	EX PB																49						39					
EX PB	RT	193+45.00			3																									
		EX PB	EX PB											138																
EX PB	RT	193+81.00			3																									
		EX PB	13D1																50						40					
	RAMP D-JN																													
13D1	RT	1+45.00		2		1			1								30							1				1		
		13D1	13D2																160						150					
13D2	RT	2+93.00		2		1			1								30							1				1		
		13D2	13D3																160						150					
13D3	RT	4+41.00		2		1			1								30							1				1		
		13D3	13D4																190						180					
13D4	RT	6+17.00		2		1			1								30							1				1		
		13D4	13D5																190						180					
13D5	RT	7+93.00		2		1			1								30							1				1		
		13D5	PB22																110						100					
PB22	RT	33+34.00			3																									
		PB22	PB23																180						170					
	RAMP J-JR																													
PB23	RT	13+00.00			3																									
		PB23	PB24																330			60	40		60					
PB24	LT	35+65.00			3																									
		PB24	PB25																174				48							
PB25	RT	2+14.00			3																									
		PB23	13D6																155						145					
13D6	RT	14+43.00		2		1			1								30							1				1		
		13D6	13D7																310						300					
13D7	RT	17+36.00		2		1			1								30							1				1		
		13D7	13D8																290						280					
13D8	RT	20+32.00		2		1			1								30							1				1		
		13D8	PB26																75						65					
PB26	RT	20+90.00			3																									
		PB26	13D9																160						150					
13D9	RT	22+30.00		2		1			1								30							1				1		
		PB26	13D10											225									65							
13D10	LT	21+00.00		2		1			1								30							1				1		
13D11	LT	18+84.00		2		1			1								30							1				1		
		13D11	13D12																310						300					
13D12	LT	15+88.00		2		1			1								30							1				1		
	RAMP JR-J	13D12	13D13																210						200					
13D13	RT	1+36.00		2		1			1								30							1				1		
		13D13	PB25																95						85					
	176 NB																													
13D14	RT	36+00.00						1		1																6			2		
		13D14	PB24																90						80					
SHEET TOTALS				26	27	13	0	1	13	1	0	0	0	870	0	390	0	3,288	0	209	153	13	6	2,714	7	15	0			
SUB-TOTAL SHT. 107				12	30	6	5	0	6	3	2	2	927	237	240	180	1,180	1,560	1,340	234	140	6	30	3,899	11	18	1			
GRAND TOTAL				38	57	19	5	1	19	4	2	2	927	1,107	240	570	1,180	4,848	1,340	443	293	19	36	6,613	18	33	1			

CUY-176J-12.76

108
117

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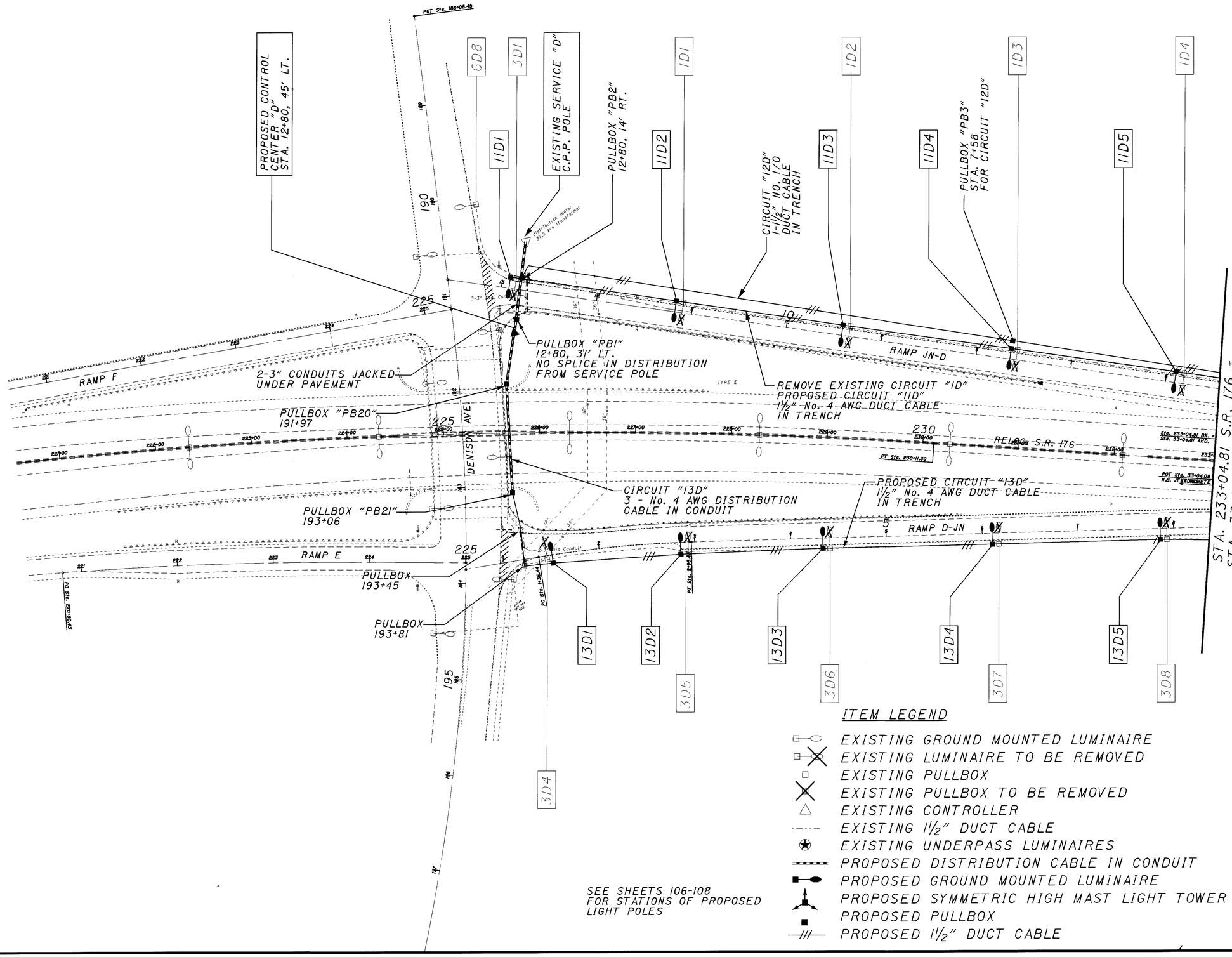
LIGHTING PLAN



SEE SHEETS 106-108 FOR STATIONS OF PROPOSED LIGHT POLES

ITEM LEGEND

- EXISTING GROUND MOUNTED LUMINAIRE
- EXISTING LUMINAIRE TO BE REMOVED
- EXISTING PULLBOX
- EXISTING PULLBOX TO BE REMOVED
- EXISTING CONTROLLER
- EXISTING 1½" DUCT CABLE
- EXISTING UNDERPASS LUMINAIRES
- PROPOSED DISTRIBUTION CABLE IN CONDUIT
- PROPOSED GROUND MOUNTED LUMINAIRE
- PROPOSED SYMMETRIC HIGH MAST LIGHT TOWER
- PROPOSED PULLBOX
- PROPOSED 1½" DUCT CABLE

HORIZONTAL SCALE IN FEET
0 50 100

CALCULATED
CHECKED

CUY-176J-12.76

CIRCUIT "12D" 1-1½" No. 1/0 DUCT CABLE IN TRENCH

1ID6 | 1D5 | 1D7 | 2D4 | 1D8 | 2D3 | 1D9 | 1D11 | 1D10 | 1D12

EX. PULLBOX FOR SIGN "28"

PULLBOX "PB4" STA. 35+20 CIRCUIT "12D"

3-No. 1/0 DISTRIBUTION CABLE IN PROPOSED CONDUIT ATTACHED TO OUTSIDE PARAPET

1D6

CONNECT SIGN "28" ON CIRCUIT "11D" 3 - 175's WATT

2D5

PULLBOX "PB5" STA. 37+40

CIRCUIT "12D" 1-1½" No. 1/0 DUCT CABLE IN TRENCH

12D1 STA. 39+30, 65' LT., SB 176 BBBBBB100, V

RAMP J-JR

CIRCUIT "12D" 1-1½" No. 2 AWG DUCT CABLE IN TRENCH

PULLBOX "PB6" STA. 43+30

3 - No. 2 AWG IN CONDUIT, JACKED OR DRILLED UNDER PAVEMENT, 3"

SIGN 43 CIRCUIT "12D" 6 - 175 WATTS =1050 WATTS

STA. 233+04.81 S.R. 176 = STA. 33+04.81 S.R. 176 N.B. SEE SHEET 109

SOUTHBOUND JENNINGS

NORTHBOUND JENNINGS

STA. 46+00 S.R. 176 N.B. SEE SHEET 111

PULLBOX "PB8" STA. 45+50

DISCONNECT CIRCUIT

PULLBOX "PB22" STA. 33+34 CIRCUIT "13D"

CIRCUIT "13D"

3 No. 4 AWG DISTRIBUTION CABLE IN CONDUIT

13D14 STA. 36+00, 130' RT., NB 176 BBBBBB120, V

CIRCUIT ID 1-1½" No. 2 AWG DUCT CABLE IN TRENCH

PULLBOX "PB7" 43+30

PULLBOX "PB23" STA. 13+00, 14' RT. CIRCUIT "13D"

3" dia conduit

13D6 | 3D9 | 2D6 | 3D10 | RAMP JR-J | 3D12 | 2D7 | 3D13 | 3D14 | 3D15 | 3D16 | 3D17

12D2 STA. 43+22, 7' RT., SB 176 BBBBBB100, V ON MEDIAN BARRIER FOUNDATION

CIRCUIT "13D" 1-1½" No. 4 AWG DUCT CABLE IN TRENCH

DISCONNECT CIRCUIT

PULLBOX "PB24" STA. 2+14, 31' LT. RAMP JR-J

PULLBOX "PB25" CIRCUIT "13D" STA. 2+14, 14' RT. RAMP JR-J

STA. 15+00 SEE BELOW THIS SHEET

RAMP JR-J

RAMP J-JR

13D13 | 2D13 | 2D11 | 2D12 | 3D11 | 2D8

EXISTING & PROPOSED PULLBOX "PB26"

2D15 | 13D8 | 13D7 | 2D14

CIRCUIT "13D" 1½" No. 4 AWG DUCT CABLE IN TRENCH

STA. 15+00 RAMP J-JR SEE ABOVE THIS SHEET

CIRCUIT "13D" 1½" No. 4 AWG DUCT CABLE IN TRENCH

2D17 | 13D9 | 2D16 | 13D10 | 2D9 | 13D11 | 13D12 | 2D10

* – EXISTING SIGNS BANDED TO POLE REMOVE & RE-ERECT TO POLE

** – EXISTING WOOD POLE

HORIZONTAL SCALE IN FEET

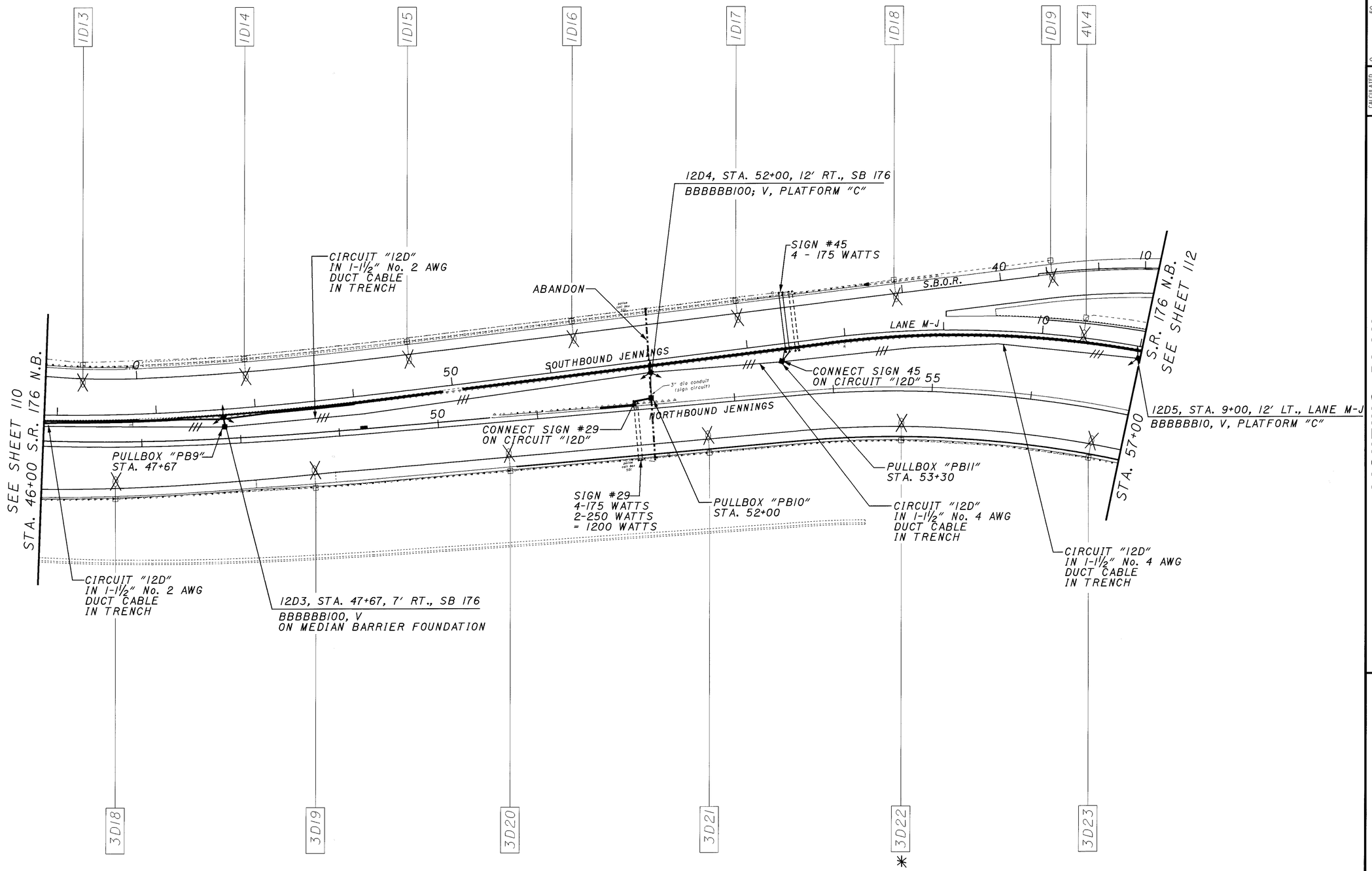
CALCULATED | CHECKED

LIGHTING PLAN

CUY-176J-12.76

110 | 117

I:\PROJECTS\PID19509\geopak\19509lpb.dgn 07-AUG-2000 5:37PM coop2



* – EXISTING SIGNS BANDED TO POLE REMOVE SIGNS AND PLACE ON GROUND MOUNTED SUPPORTS.

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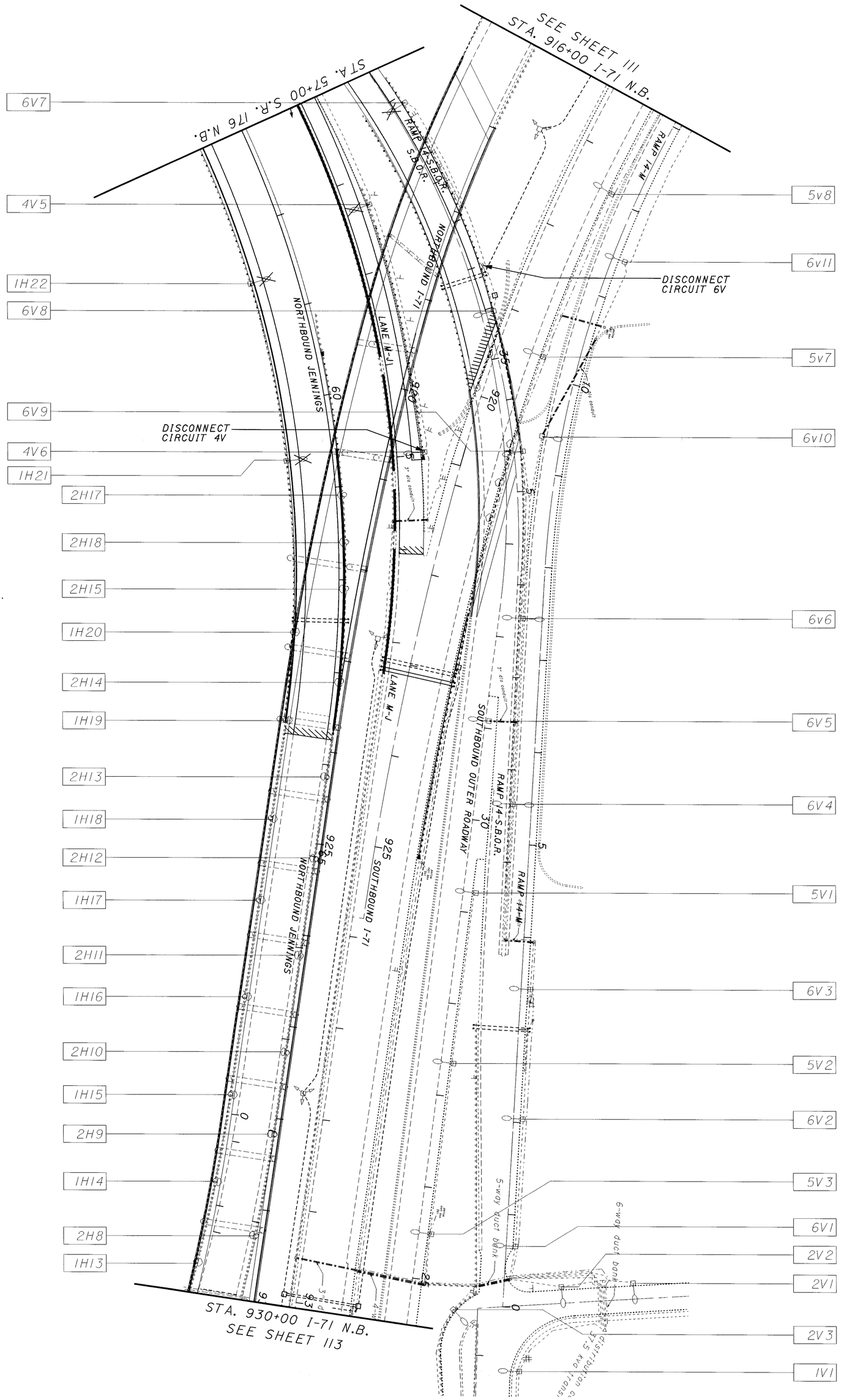

117 / 112	CUY-176J-12.76	LIGHTING PLAN	CALCULATED / CHECKED	0 50 100 HORIZONTAL SCALE IN FEET

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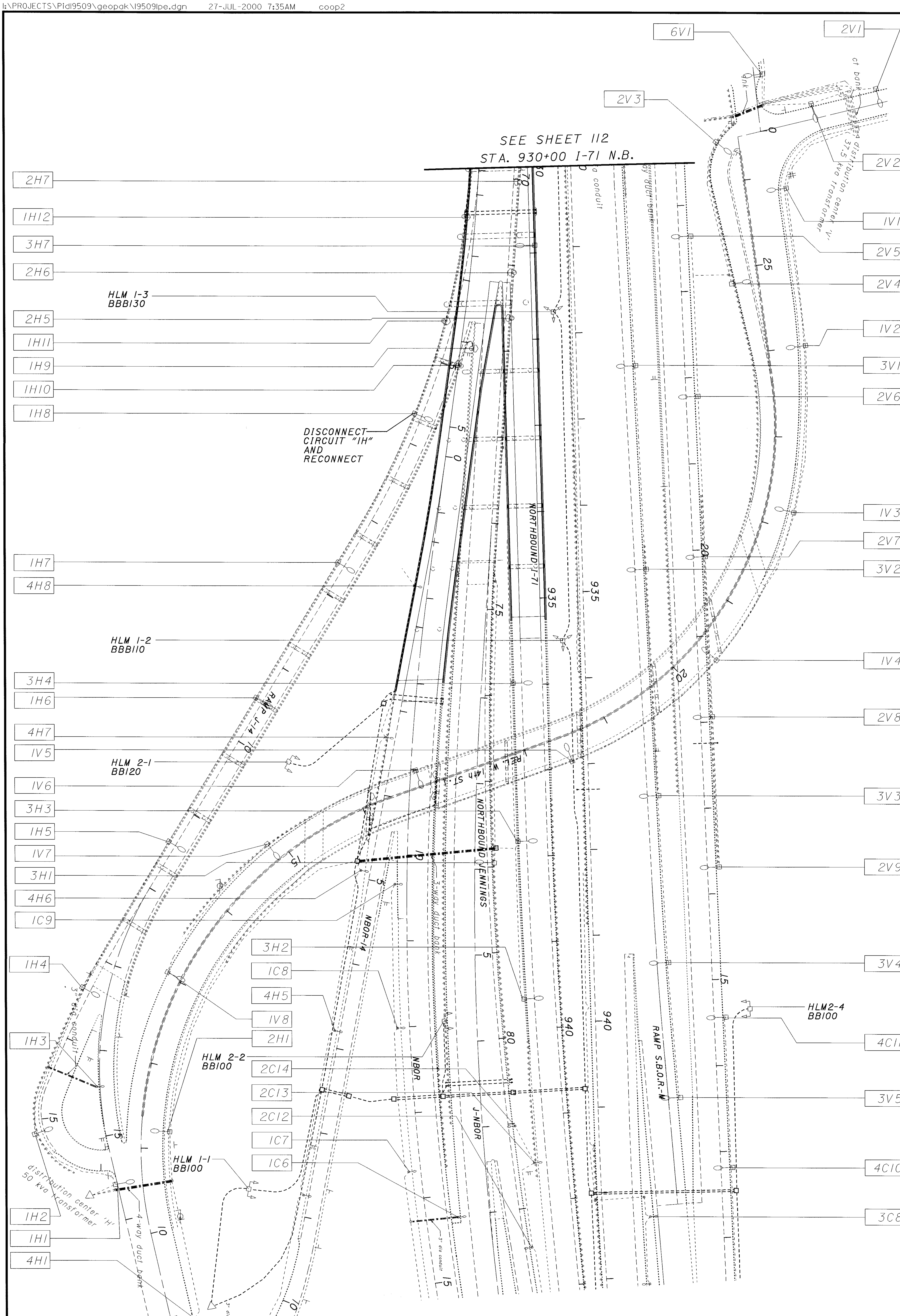
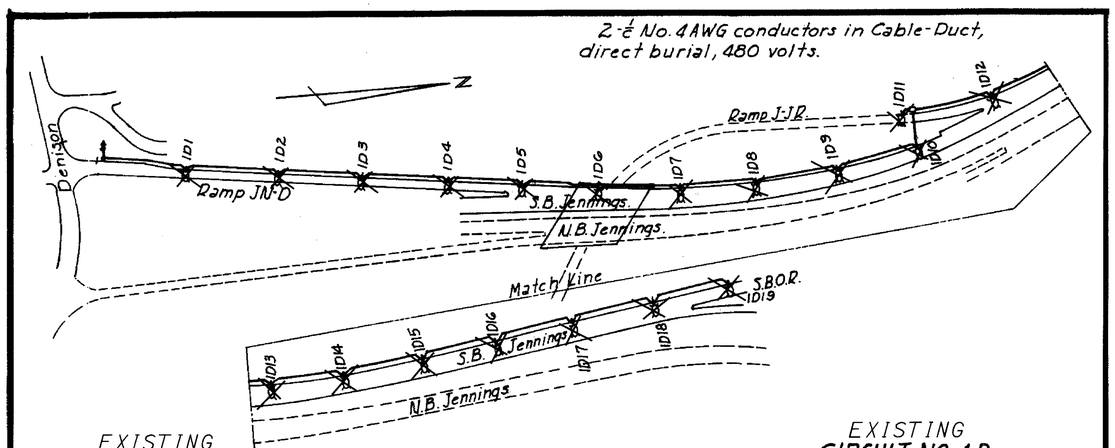
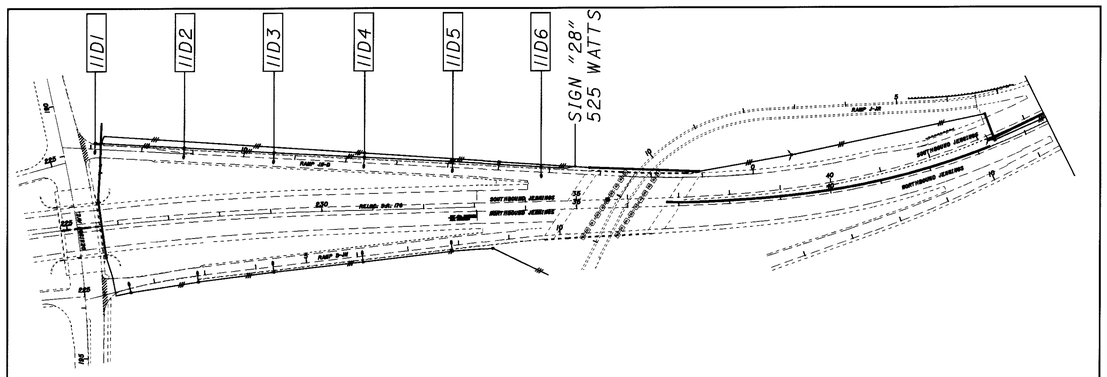


113 / 117	CUY-176J-12.76	LIGHTING PLAN	CALCULATED / CHECKED — HORIZONTAL SCALE IN FEET (0, 50, 100)



EXISTING
19-400 Watt MV Units

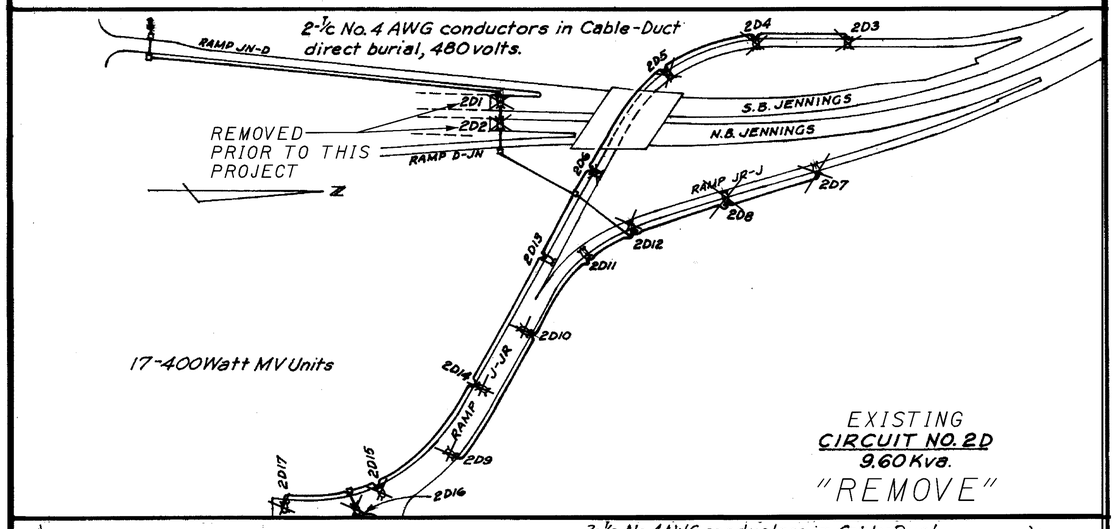
EXISTING
CIRCUIT NO. 1D
9.2 Kva
"REMOVE"



6 - 400W CONVENTION = 2400 WATTS
1 - SIGN = 525 WATTS
= 2,925 WATTS

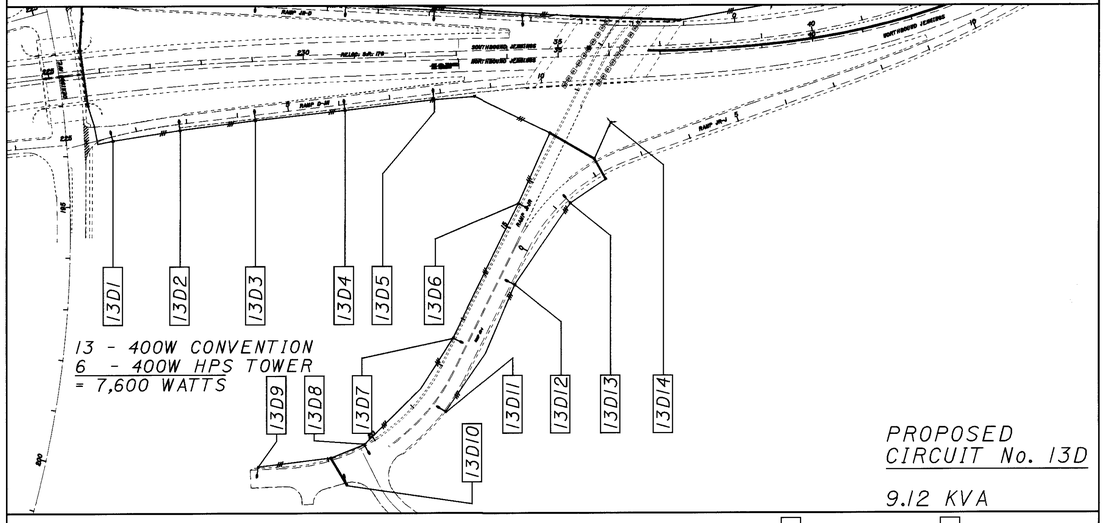
PROPOSED
CIRCUIT No. IID

3.51 KVA



17-400Watt MV Units

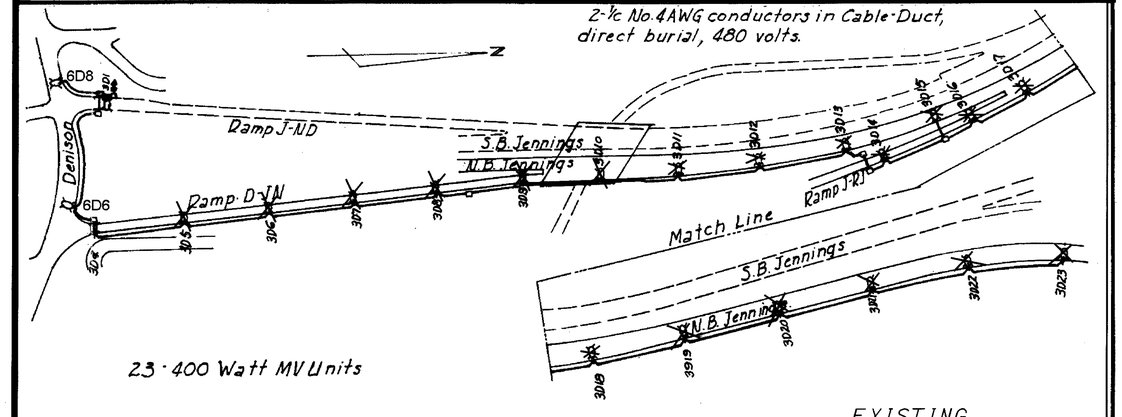
EXISTING
CIRCUIT NO. 2D
9.60Kva.
"REMOVE"



13 - 400W CONVENTION
6 - 400W HPS TOWER
= 7,600 WATTS

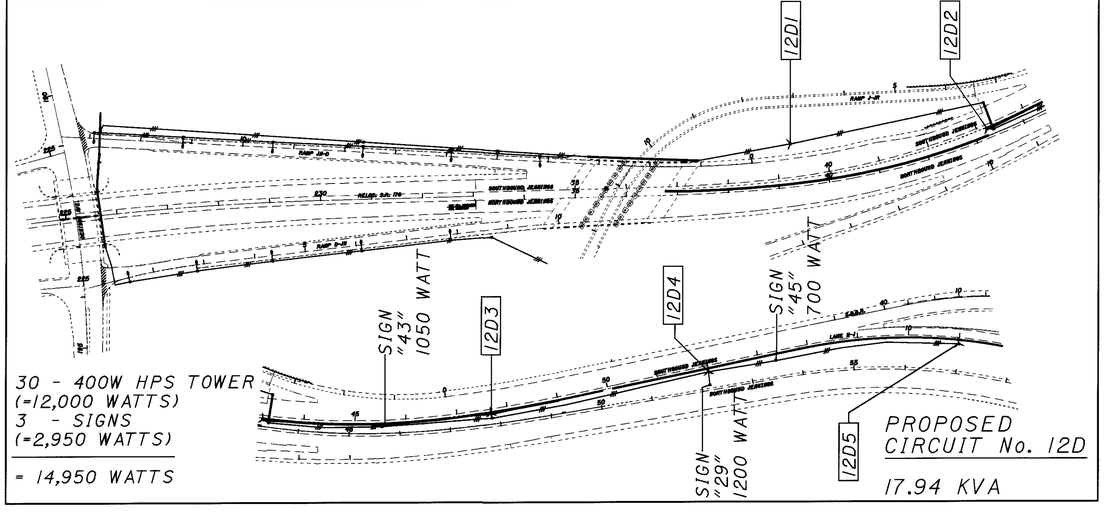
PROPOSED
CIRCUIT No. 13D

9.12 KVA



23-400 Watt MV Units

EXISTING
CIRCUIT NO. 3D
11.04 Kva.
"REMOVE"



30 - 400W HPS TOWER
(=12,000 WATTS)
3 - SIGNS
(=2,950 WATTS)

= 14,950 WATTS

PROPOSED
CIRCUIT No. 12D

17.94 KVA

FIELD VERIFY EXISTING CIRCUITS

N

INFORMATION NOT TO SCALE

CALCULATED BJK
CHECKED

LIGHTING CIRCUIT MAPS
CONTROL CENTER "D"

CUY-176J-12.76

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117

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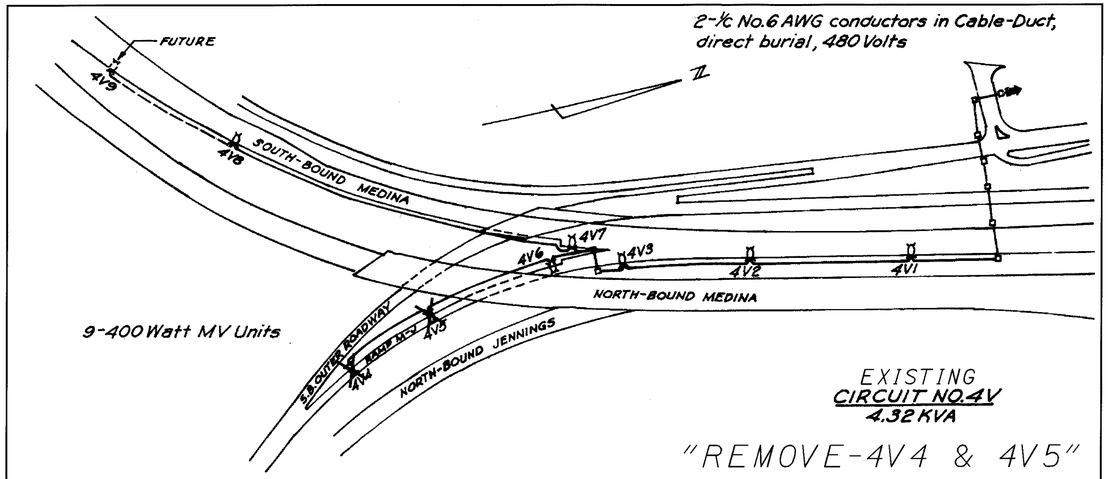

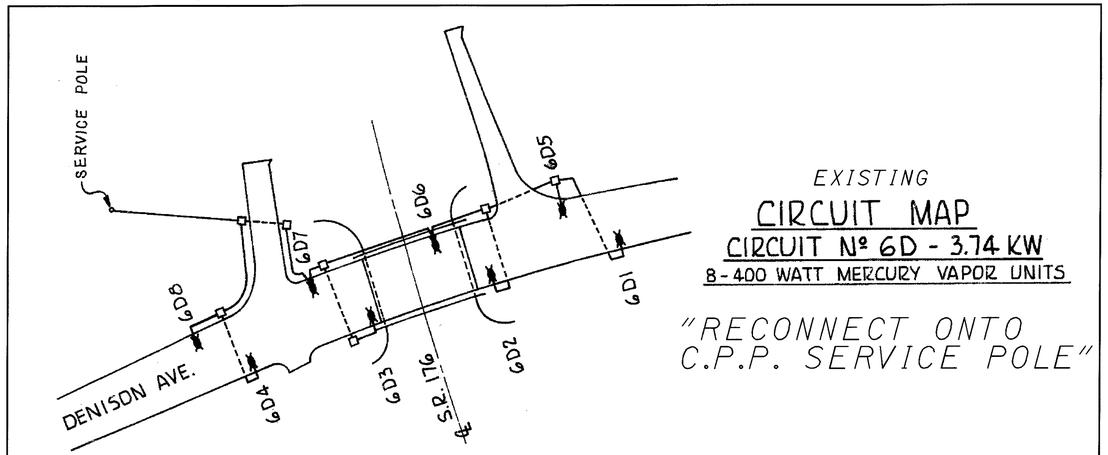

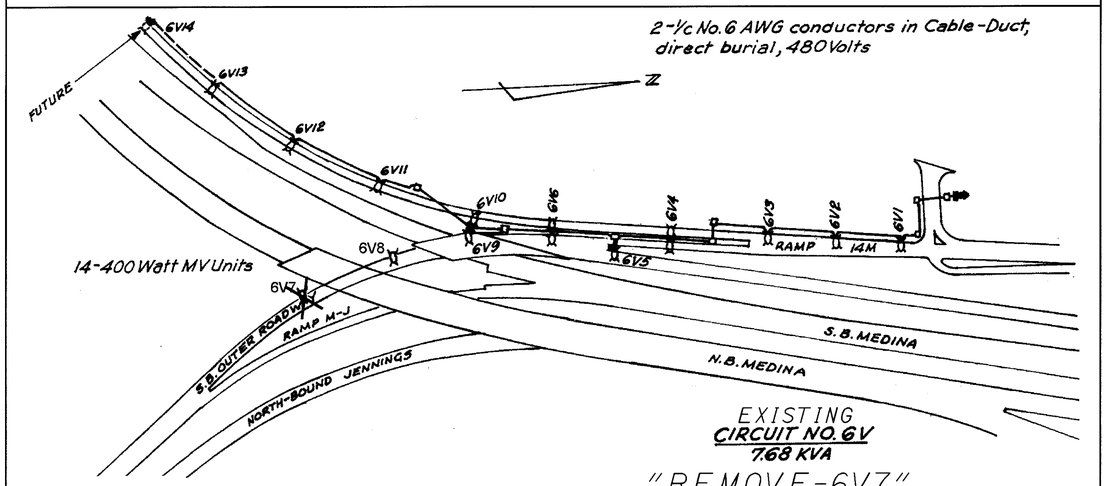

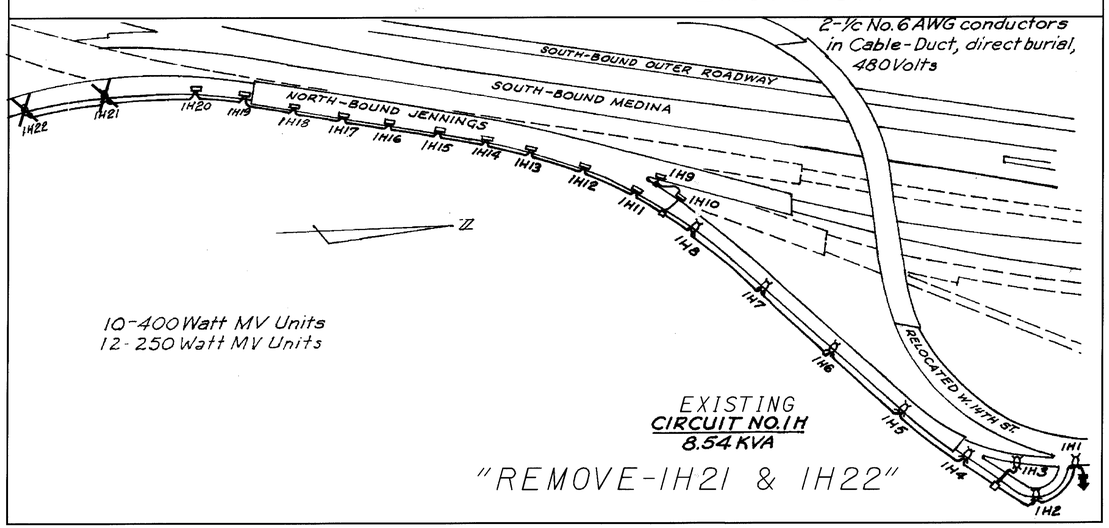

FIELD VERIFY EXISTING CIRCUITS

LIGHTING CIRCUIT MAPS
CONTROL CENTER "V","H"&"D"

CUY-176J-12.76

115
117

INFORMATION NOT TO SCALE

CALCULATED BJK | CHECKED

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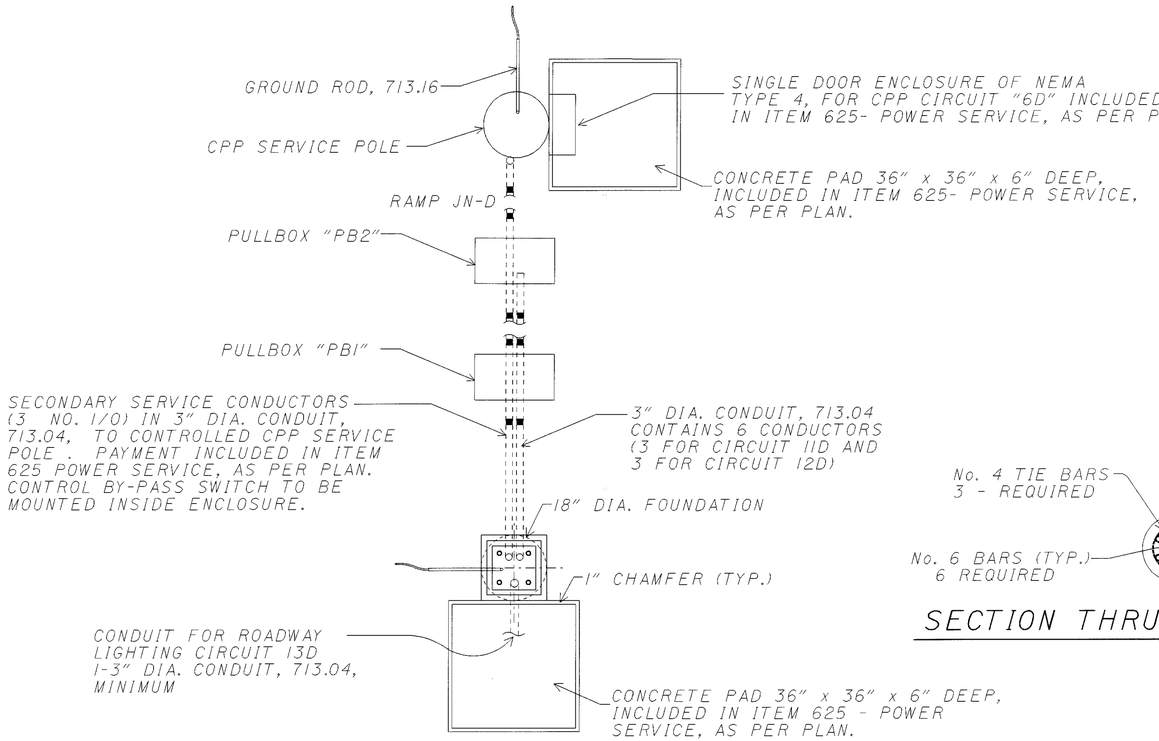
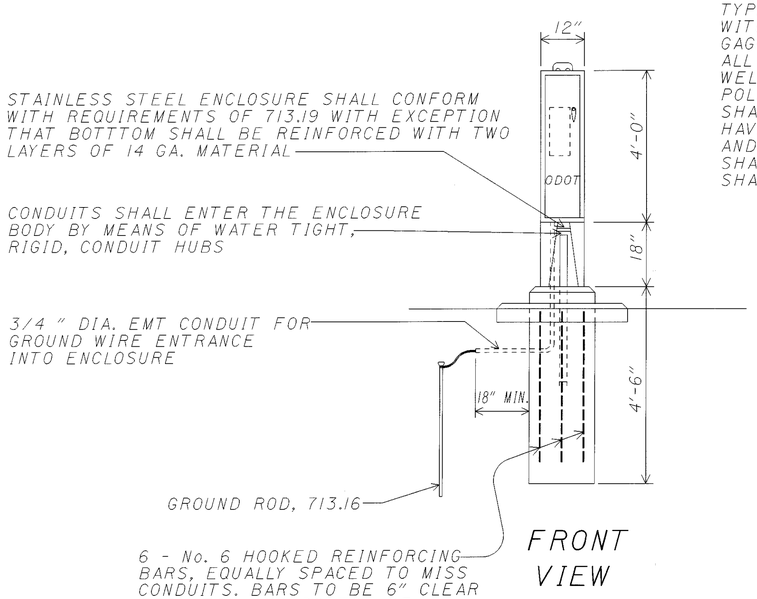


PLAN

CONTROL CENTER LOCATION	POWER SERVICE	CONNECTED LOAD (KVA)	SERVICE ENTRANCE CONDUCTOR SIZE AWG.	ENCLOSURE RATING (AMPS)	CIRCUIT NUMBER	CIRCUIT LOADS (AMPS)	CIRCUIT FUSE SIZE (AMPS)	REMARKS	MAINTAINING AGENCY
CPP SERVICE POLE	480, 3W 1Ø GROUNDED NEUTRAL	3.74	AS PER NEC CODE	60	6D	EXISTING	60	EXISTING	CITY OF CLEVELAND
D STA. 12+80 45' LT.	480, 3W 1Ø GROUNDED NEUTRAL	30.57	AS PER NEC CODE	60	11D	7.31	60	11D1-6 OH 28	ODOT
					12D	37.38	60	12D1-D5 OH 29, 43, 45	ODOT
					13D	19.00	60	13D1-D13, 13D14	ODOT

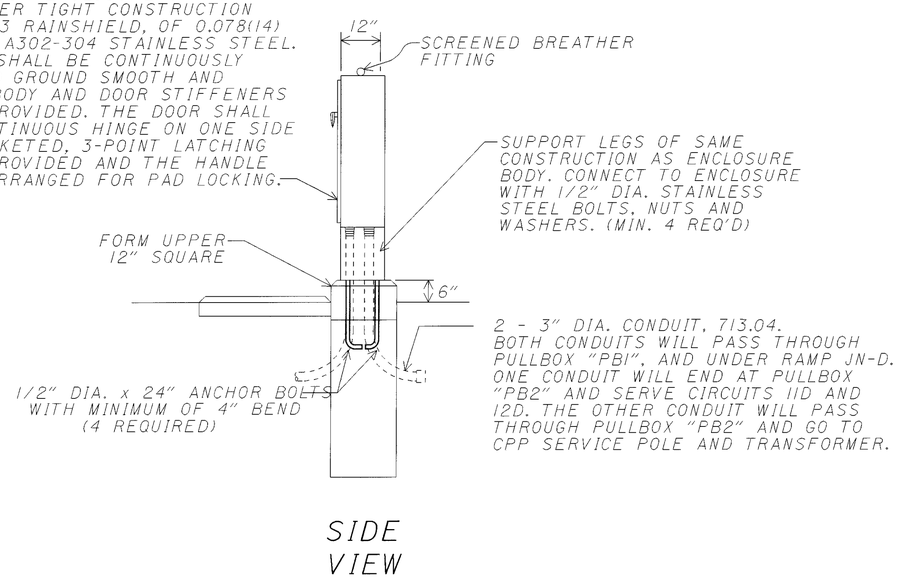
SECTION THRU FOUNDATION

** CABINET SIZE (12" X 12" SHOWN) A LARGER CABINET MAY BE REQUIRED, DEPENDENT ON QUANTITY OF CIRCUITS AND CONDUITS. IF A LARGER CABINET IS NEEDED, IT SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST. THE FOUNDATION AND WORK PAD SIZE SHALL BE ADJUSTED ADEQUATELY. IF THE OVERALL CABINET WIDTH IS 24", THEN A 48"X36"X6" PAD SHALL BE PROVIDED AT NO ADDITIONAL COST.



FRONT VIEW

**SINGLE DOOR ENCLOSURE OF NEMA TYPE 4 WATER TIGHT CONSTRUCTION WITH NEMA 3 RAINSHIELD, OF 0.078(14) GAGE, ASTM A302-304 STAINLESS STEEL. ALL SEAMS SHALL BE CONTINUOUSLY WELDED AND GROUND SMOOTH AND POLISHED, BODY AND DOOR STIFFENERS SHALL BE PROVIDED. THE DOOR SHALL HAVE A CONTINUOUS HINGE ON ONE SIDE AND BE GASKETED, 3-POINT LATCHING SHALL BE PROVIDED AND THE HANDLE SHALL BE ARRANGED FOR PAD LOCKING.



SIDE VIEW

GROUND MOUNTED POWER SERVICE DETAILS

CALCULATED BJK CHECKED

LIGHTING DETAILS

CUY-176J-12.76

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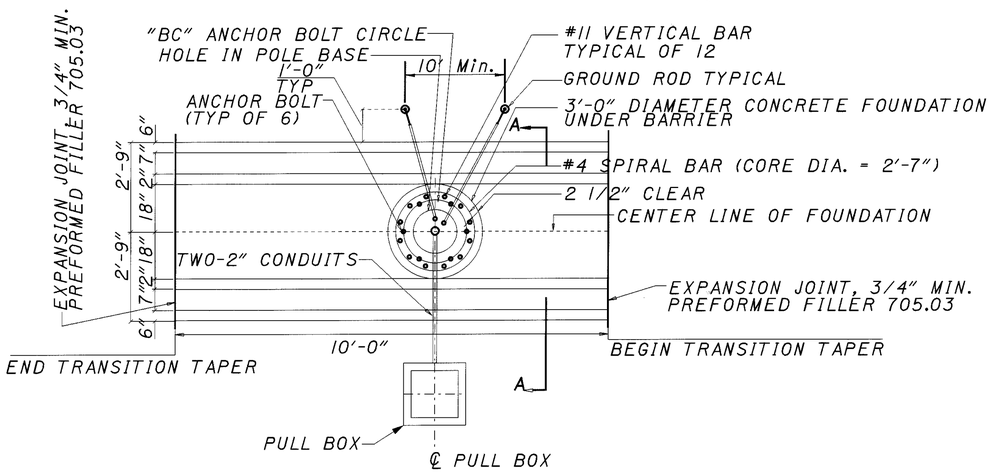
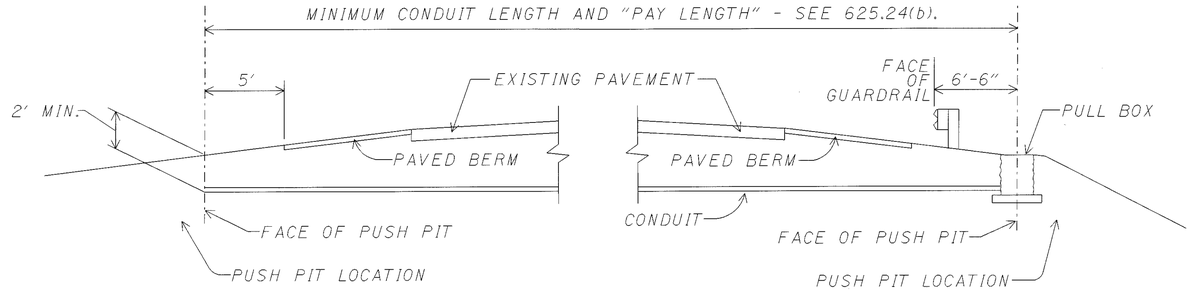


PLAN OF LIGHT TOWER FOUNDATION MISC: MEDIAN MOUNTED, 36" x 25' DEEP

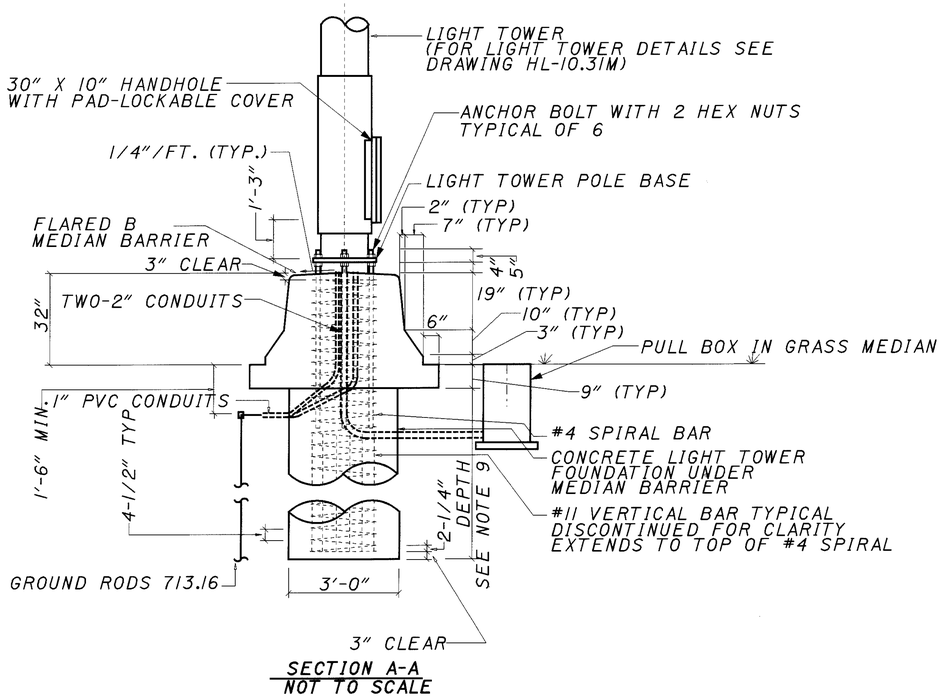
NOT TO SCALE



WITHOUT PULLBOX

WITH PULLBOX

CONDUIT JACKED OR DRILLED UNDER PAVEMENT



SECTION A-A

NOT TO SCALE

NOTES

1. FOUNDATION TO BE CAST-IN-PLACE CLASS "C" CONCRETE AS PER SS899.
2. REINFORCING TO COMPLY WITH AND BE PLACED IN ACCORDANCE WITH 509.
3. LIGHT POLE ANCHOR BOLT SIZE AND SPACING TO FIT MOUNTING PLATE SUPPLIED WITH TOWER. HOWEVER, BOLT CIRCLE SHALL BE EQUAL TO OR LESS THAN 26". THE MINIMUM LENGTH ANCHOR BOLT SHALL BE 70" AND THE BOLTS SHALL HAVE EITHER A 6" "L" BEND OR A 5" X 5" PLATE ON THE EMBEDDED END.
4. CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS CURRENT SPECS. AND SUPPLEMENTAL SPECS.
5. GROUND RODS WILL BE PAID SEPARATELY.
6. SEE LIGHTING PLANS TO DETERMINE NUMBER AND SIZES OF CONDUITS ENTERING MEDIAN PULL BOXES AT EACH TOWER LIGHT FOUNDATION LOCATION AND AT EACH CONDUIT CROSSOVER AND SIGN SERVICE LOCATION.
7. THE UNIT PRICE BID FOR EACH ITEM 625 - LIGHT TOWER FOUNDATION, MISC: MEDIAN MOUNTED, 36" x 25' DEEP, AS PER PLAN, SHALL BE FULL COMPENSATION FOR FURNISHING AND PLACING ANCHOR BOLTS, CONCRETE FOUNDATION, CONDUIT RACEWAYS, REINFORCING, MEDIAN PULL BOX, EMT. THE 10' SECTION OF CONCRETE BARRIER, AND ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.
8. DEDUCT 10 LINEAR FEET FROM ITEM 622 - CONCRETE BARRIER, TYPE B, AS PER PLAN FOR EACH MEDIAN MOUNTED LIGHT TOWER FOUNDATION.
9. EXTEND REINFORCING STEEL AND CONCRETE 5 FEET DEEPER FOR 30' DEEP FOUNDATION.
10. PROVIDE TWO-2" CONDUITS FROM PULL BOX TO EACH LIGHT TOWER BASE. (3" CONDUIT MAY BE SUBSTITUTED)
11. ALL WIRING SHALL BE FED THROUGH THE PULL BOX DIRECTLY INTO THE BASE OF THE LIGHT TOWER WHERE ALL CONNECTIONS SHALL BE MADE. NO CONNECTIONS OR SPLICES SHALL BE MADE IN THE PULL BOX.

CALCULATED BJK CHECKED

LIGHTING DETAILS

CUY-176J-12.76

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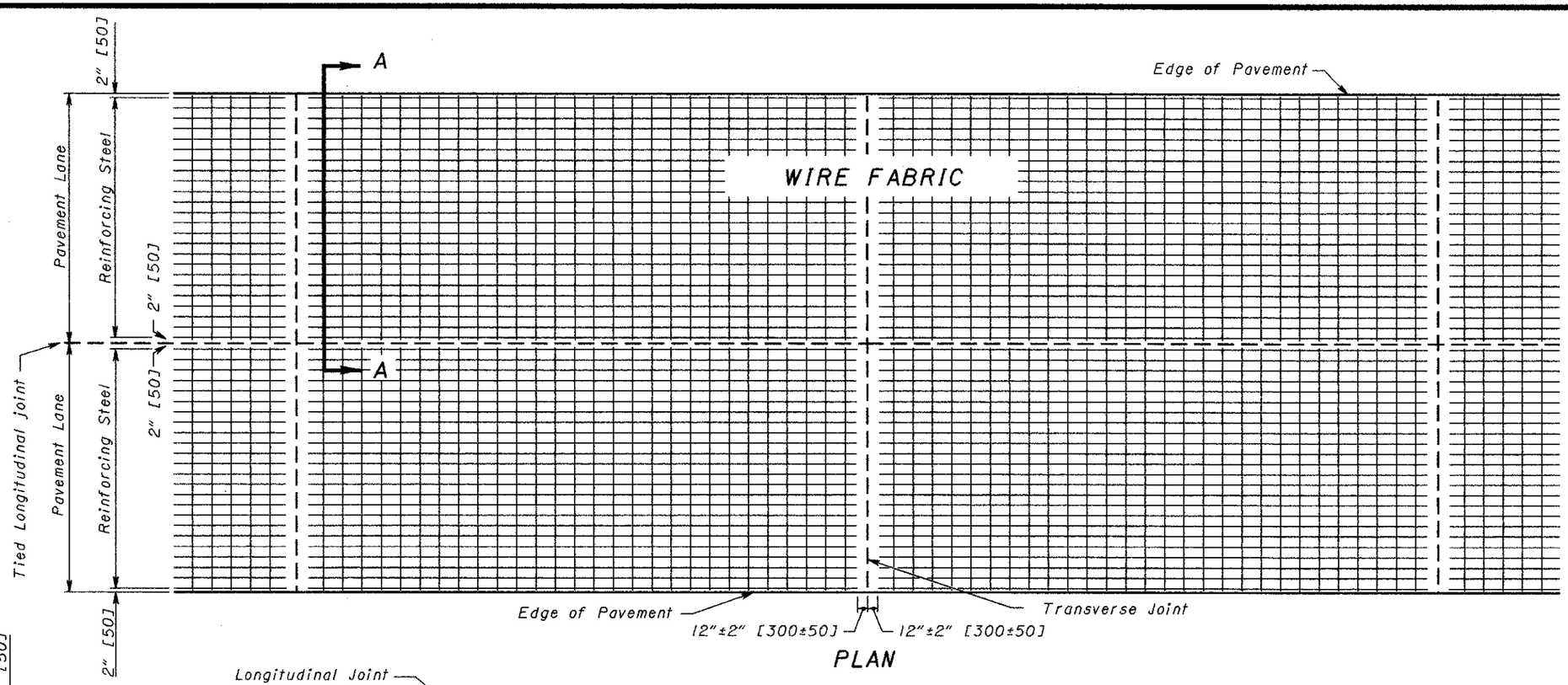
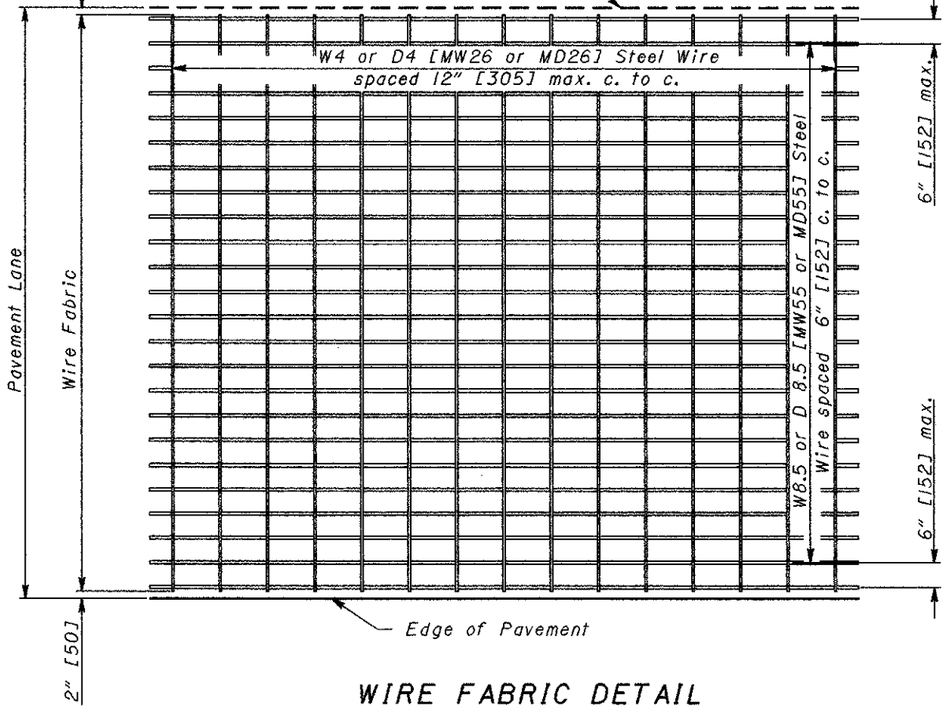
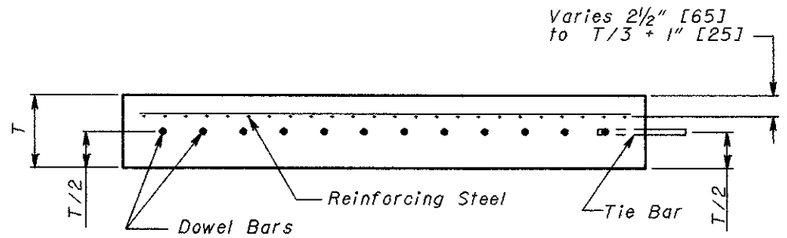


PLAN



WIRE FABRIC DETAIL



SECTION A-A

NOTES

STEEL REINFORCING: *In normal or wider lane widths, reinforcing may consist of two units with an approved longitudinal hinge. The hinge shall consist of W4 or D4 [MW26 or MD26] steel wires connecting the two units such that the longitudinal members on either side of the hinge will be properly spaced when the reinforcing is in the final position.*

Reinforcing steel in final position shall not touch either the dowels or tie bars.

THIS DRAWING REPLACES BP-1.1M DATED 10-28-94.

REVISIONS

STDS. ENGR. M. Evans
DRAWN D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER
7-28-00
DATE

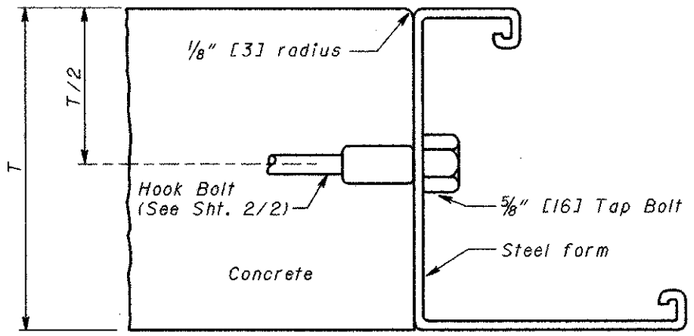
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING

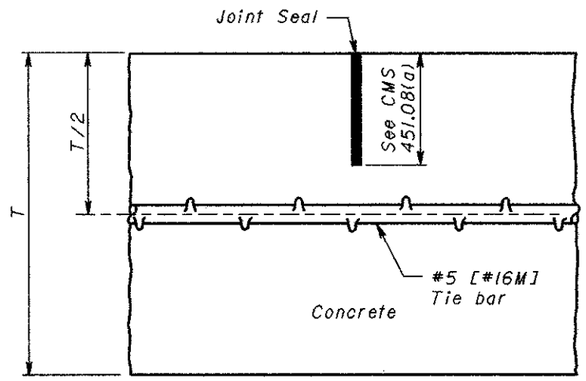
CONCRETE PAVEMENT REINFORCING

NUMBER BP-1.1

1 / 1



ACCEPTABLE METHOD OF FORMING JOINT



SAWED JOINT

NOTES

GENERAL: *Longitudinal joints shall be used when specified on the typical section and shall be constructed as shown on this drawing in Items 451 and 452 Pavement and Item 305 Base.*

The joint shall be on the centerline of the pavement unless otherwise shown on the plans. Where the pavement width exceeds 16' [5.0 m], an additional longitudinal joint shall be introduced into the jointing details as directed by the Engineer.

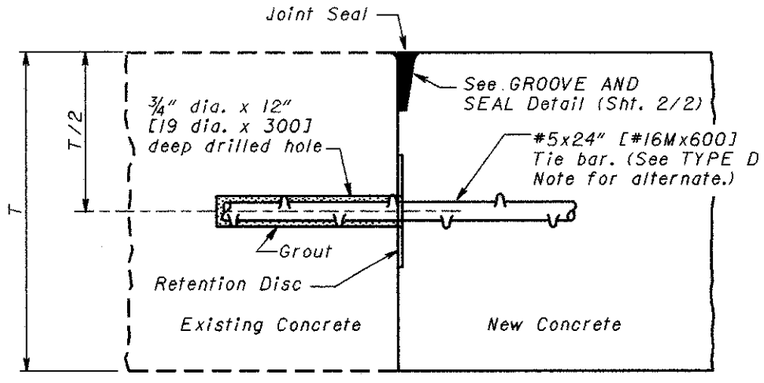
Tie bars shall be #5 [#16M] deformed bars. A satisfactory device shall be used to hold the tie bars in proper position or they may be installed by a mechanical installing device. Tie bars shall be centered on the longitudinal joint as nearly as practical.

BUTT JOINT: *The longitudinal joint between adjoining slabs poured in separate operations shall be a butt joint with hook bolts or tie bars, unless otherwise shown on the plans. Bent tie bars shall not be permitted.*

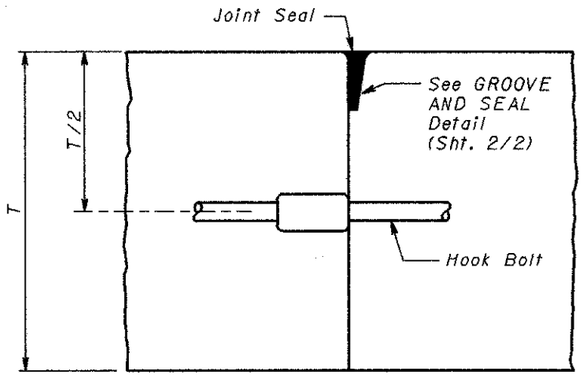
TYPE D (DRILLED TIED LONGITUDINAL) JOINT: *Type D joints shall be constructed in accordance with CMS 255.05. The nylon or plastic retention disc shall be clear or opaque white in color. Grout shall meet the requirements of CMS 255.02. 5/8" [16] expansion anchors, FF-S-325, Group VIII, Type 1 or Group II Type 4, Class 1 may be used lieu of the #5x24" [#16Mx600] deformed bar and shall be installed according to the manufacturer's recommendations.*

The use of self drilling expansion shield anchors, FF-S-325, Group III, Type 1 (a) and (c) shall not be permitted.

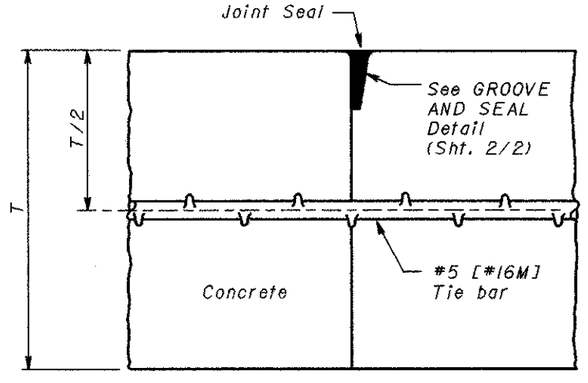
See Sheet 2/2 for additional details.



TYPE D (DRILLED TIED LONGITUDINAL) JOINT



BUTT JOINT
w/ HOOK BOLT



BUTT JOINT
W/ TIE BAR

THIS DRAWING REPLACES BP-2.1M DATED 4-8-97.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER
DATE 7-28-00

REVISIONS

STDS. ENGR. M. Evans
DRAWN D. Focke

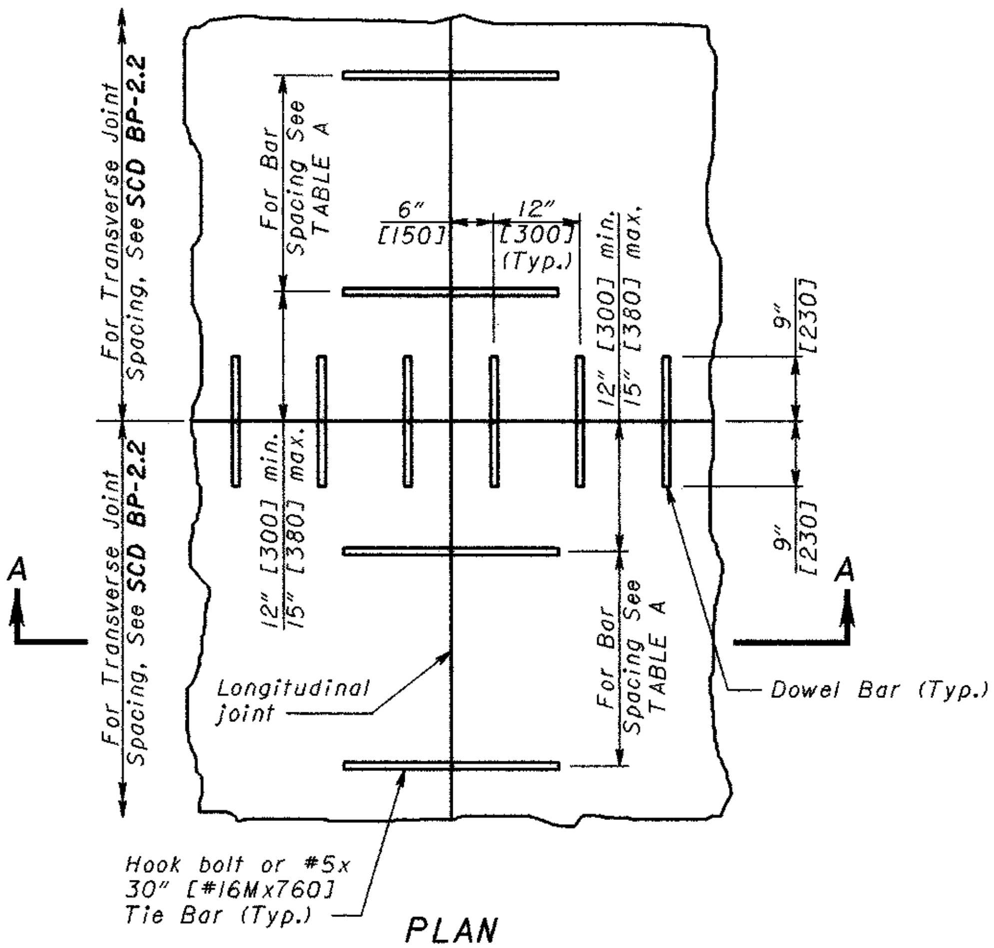
All metric dimensions [in brackets ( )] are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

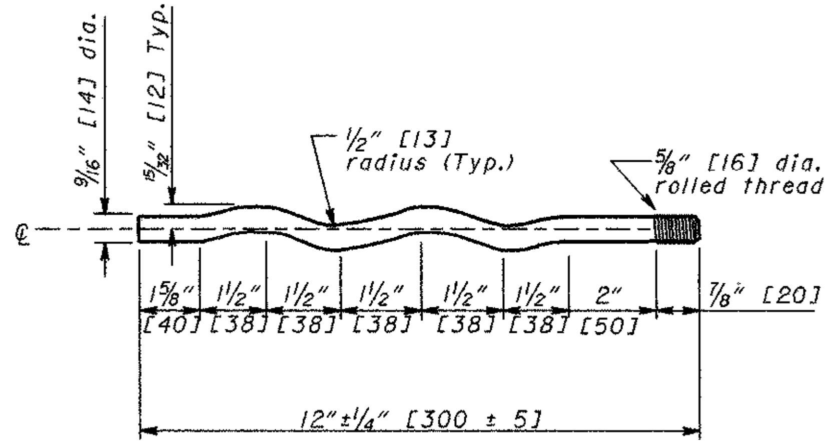
STANDARD ROADWAY CONSTRUCTION DRAWING
LONGITUDINAL PAVEMENT JOINTS

NUMBER BP-2.1

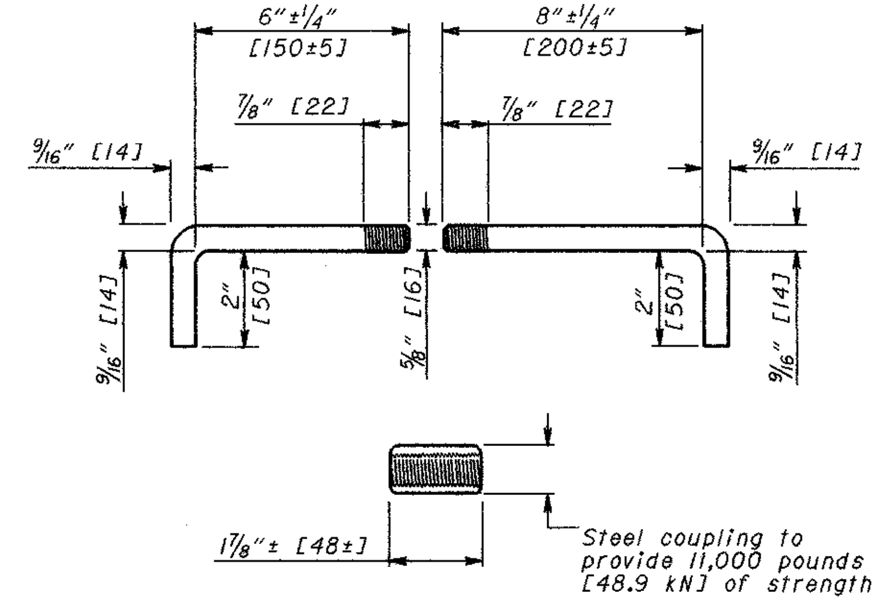
1 / 2



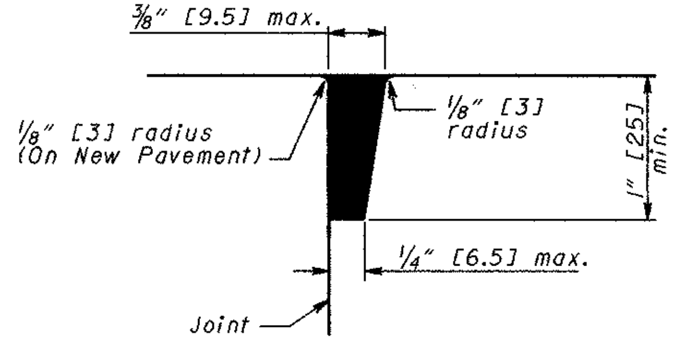
PLAN



HOOK BOLT ALTERNATE

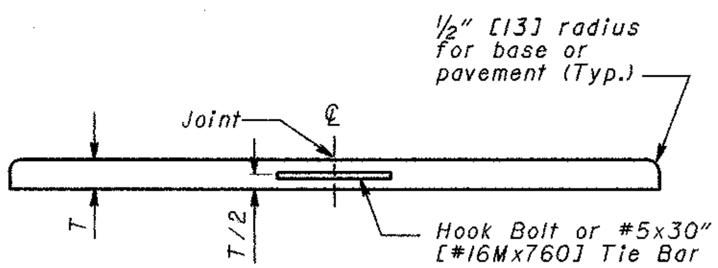


HOOK BOLT



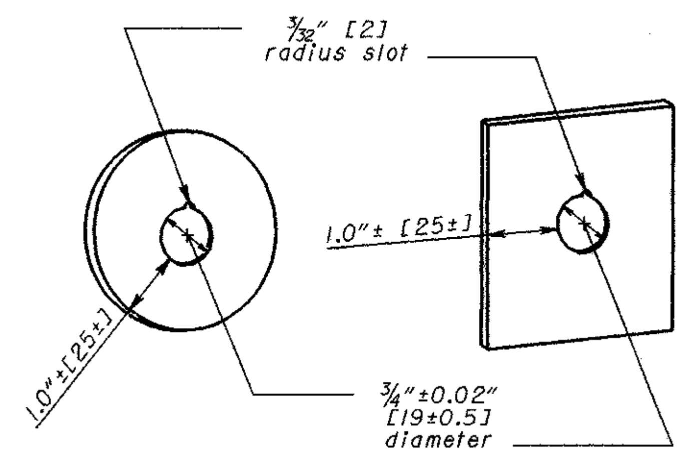
GROOVE AND SEAL DETAIL

TABLE A			
Thickness of Pavement	**Transverse Joint Spacing**	**Number of Tie Bars per Slab**	**Max. spacing between Tie Bars**
10" [250] or less	15' [4.6 m]	7	26" [660]
	21' [6.5 m]	10	26" [660]
Greater than 10" [250]	15' [4.6 m]	9	20" [508]
	21' [6.5 m]	13	20" [508]



SECTION A-A

TIE BAR OR HOOK BOLT SPACING



NYLON OR PLASTIC GROUT RETENTION DISCS FOR DOWEL/TIE BARS

(1/16" [1.6] min. thick)

NOTES

GROOVES: Grooves for sealing expansion bolt or butt joints in Item 451 or 452 pavements shall be formed by depressing a device or bar into the newly deposited concrete adjacent to the existing or previously poured lane. The device or bar shall be removed as soon as the concrete is in such condition as to preclude distortion of the concrete.

Adjoining slabs adjacent to grooved joints shall be edged with a thin metal edger having a radius of 1/8" [3]. Any impression left in the surface of the pavement by the flat part of the edging tool shall be eliminated.

In lieu of the above method the longitudinal joint may be constructed in accordance with CMS 451.08(a).

After the joint is formed it shall be protected from dirt and foreign matter until the joint seal is placed.

SEALING JOINTS: Sawed or hand-formed joints may be sealed with CMS 705.04 or 705.11 joint sealer.

HOOK BOLTS: Threaded hook bolts and alternates shall be turned to a tight fit when installed in couplings.

METAL STRENGTH: Tie bars, hook bolt assemblies and the hook bolt alternate shall have a minimum strength of 11,000 pounds [48.9 kN].

SPACING: Tie bars shall not be located within 12" [300] of any transverse joint.

THIS DRAWING REPLACES BP-2.1M DATED 4-8-97.

OHIO DEPARTMENT OF TRANSPORTATION
7-28-00
ROADWAY DESIGN ENGINEER DATE

REVISIONS

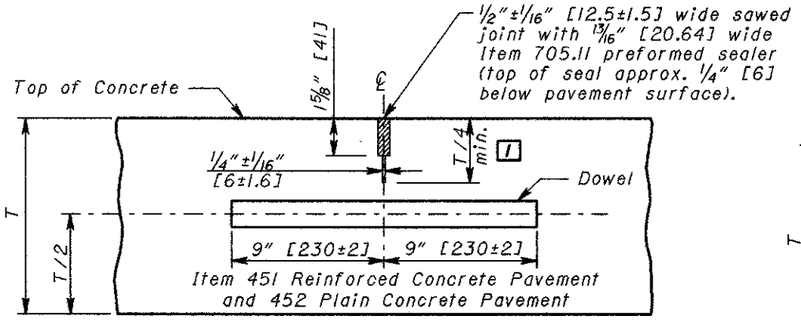
STDS. ENGR. M. Evans
DRAWN D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

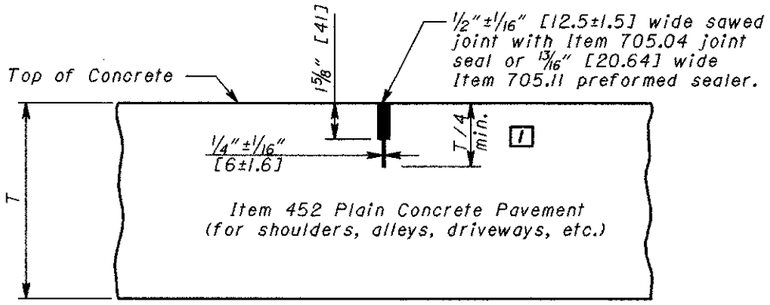
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING
LONGITUDINAL PAVEMENT JOINTS

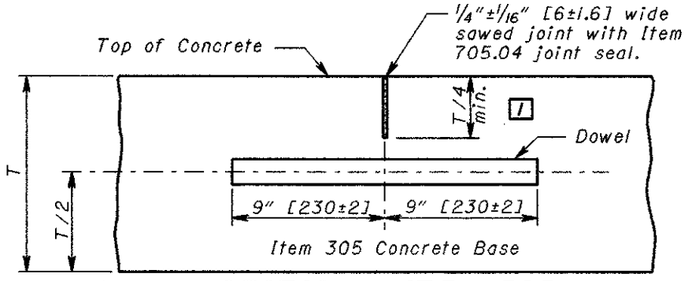
NUMBER BP-2.1



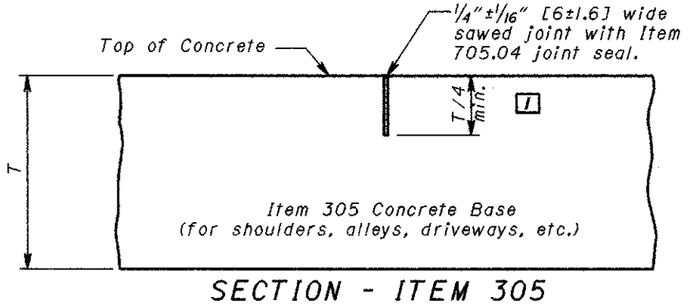
SECTION - ITEM 451 & 452



SECTION - ITEM 452

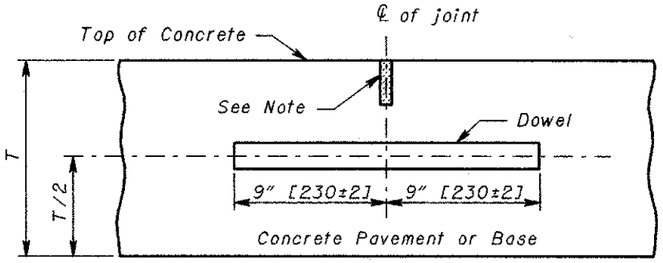


SECTION - ITEM 305



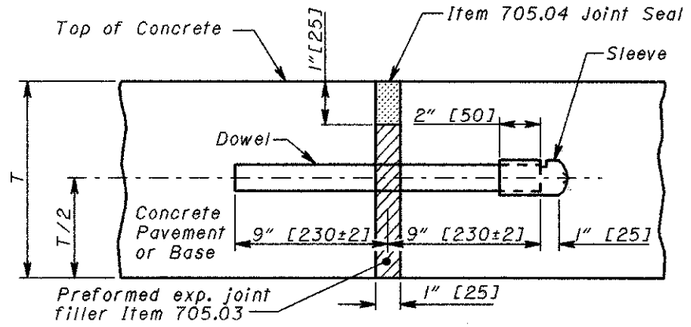
SECTION - ITEM 305

CONTRACTION JOINTS

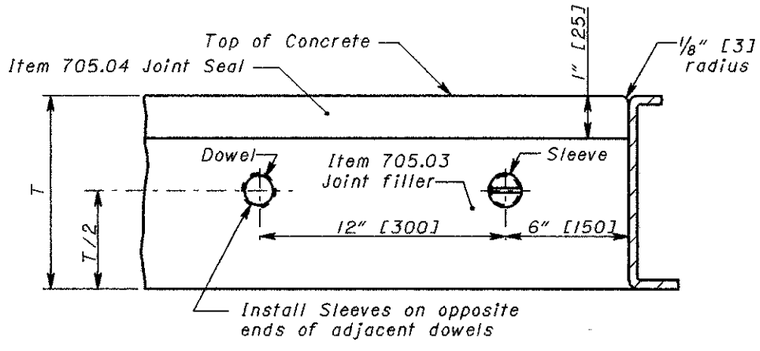


SECTION THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINT



SECTION THROUGH EXP. JOINT



SIDE ELEVATION OF EXP. JOINT
(through Concrete Pavement or Base)

EXPANSION JOINT

NOTES

GENERAL: *Notes and details shown on this drawing shall be considered in conjunction with and supplemental to the pertinent specifications for portland cement concrete pavement and bases, and related incidentals.*

JOINT COMPONENTS: *This drawing is intended for use with a uniform depth pavement. When the project involves the placing of variable depth pavement, the joint components shall be held in place in accordance with the method shown in the plans or as approved by the Engineer.*

CONTRACTION JOINTS: *Contraction joints in Item 305 Concrete Base shall be dowelled where they are located in mainline pavement, ramps, acceleration/deceleration lanes, or collector/distributor lanes, or in shoulders within 500' [150 m] of a pressure relief joint.*

Contraction joints in Item 305 Concrete Base shall not be dowelled in alleys, private drives, or commercial drives.

Contraction joints of the type specified shall be spaced in accordance with the CONTRACTION JOINT SPACING Table.

CONTRACTION JOINT SPACING	
Types of Pavement or Base	***Maximum Spacing Between Joints***
Item 451 Reinforced Concrete Pavement	*21' [6.5 m]*
Item 452 Plain Concrete Pavement	*15' [4.6 m]*
Item 305 Concrete Base	*15' [4.6 m]*

CONSTRUCTION JOINTS: *In Item 305 Concrete Base, a construction joint shall not be located closer than than 6' [1.8 m] to another parallel joint.*

Kerf and seal conforming in all respects to details shown for contraction joints shall be provided at each construction joint in concrete pavement and base.

SEALING BASE CONTRACTION JOINTS: *All contraction joints for concrete base shall be sealed as detailed on this drawing and the cost included in the unit price bid for Item 305.*

LEGEND

1 *Where T > 10" [255], the sawcut depth shall be T/3.*

THIS DRAWING REPLACES BP-2.2M DATED 10-21-97.

OHIO DEPARTMENT OF TRANSPORTATION — 7-28-00
ROADWAY DESIGN ENGINEER — DATE

REVISIONS

STDS. ENGR. M. Evans
DRAWN D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

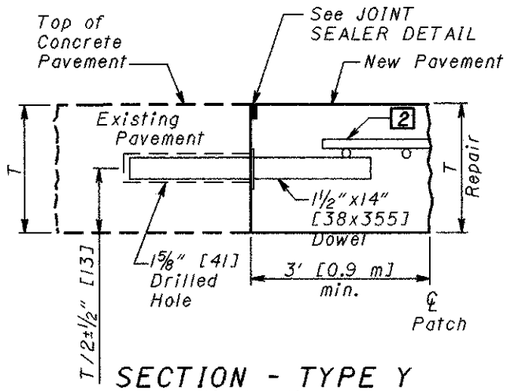
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING

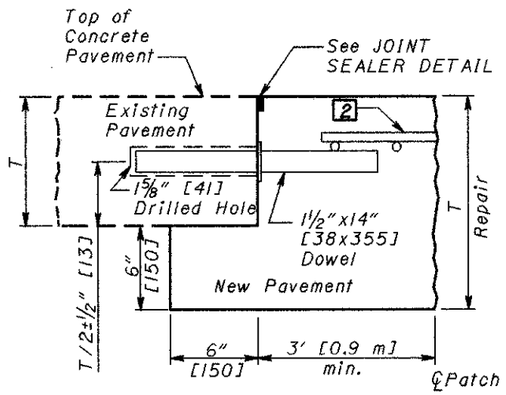
TRANSVERSE PAVEMENT JOINTS

NUMBER **BP-2.2**

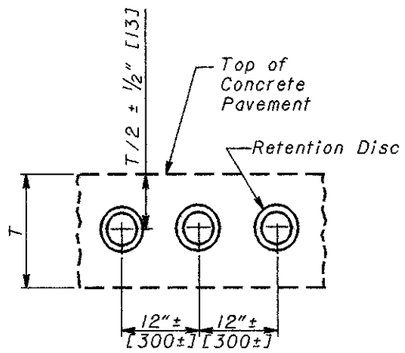
1 / 1



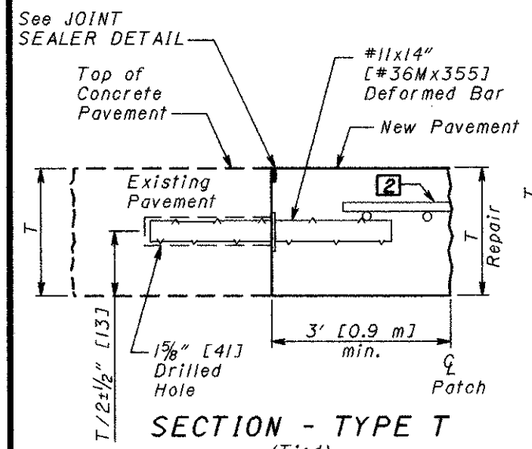
SECTION - TYPE Y
(Contraction)



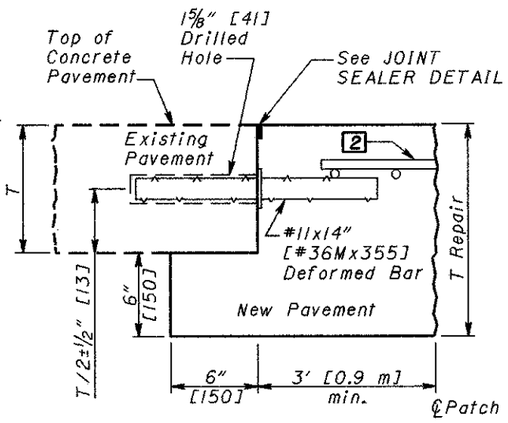
SECTION - TYPE YU
(Undercut : Contraction)



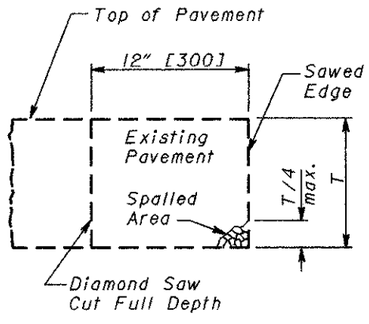
HOLE DRILLING DETAIL



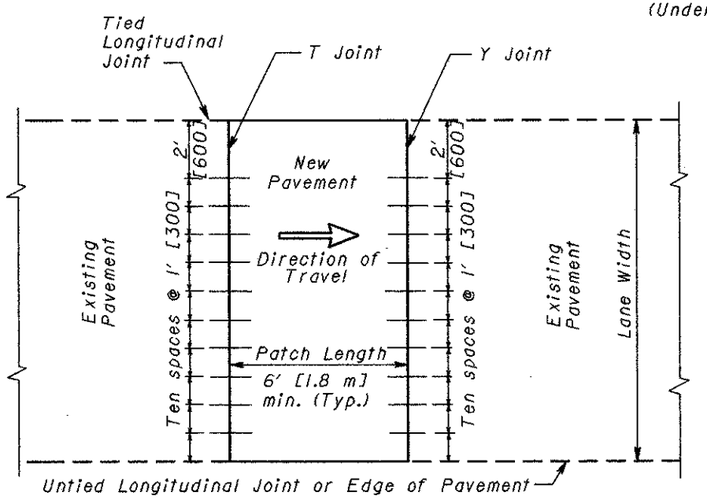
SECTION - TYPE T
(Tied)



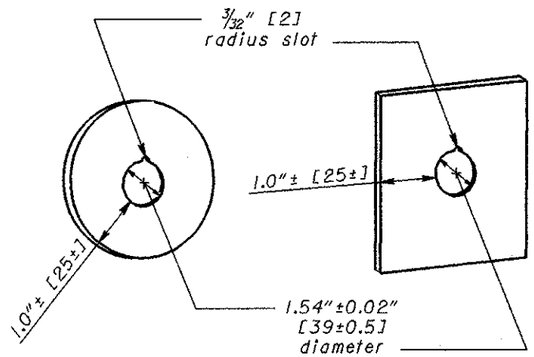
SECTION - TYPE TU
(Undercut : Tied)



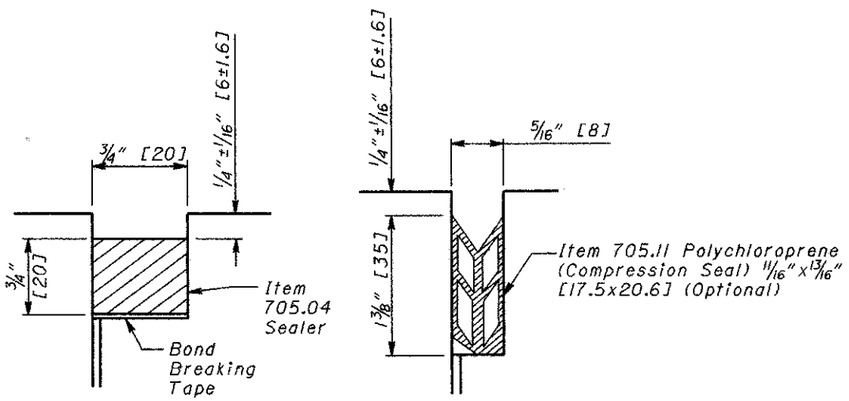
ADDITIONAL PAVEMENT REMOVALS



TIE / DOWEL BAR PLACEMENT DETAIL
(See [1] for Bar Placement)



NYLON OR PLASTIC GROUT RETENTION DISCS FOR DOWEL/TIE BARS [3]
(1/16" [1.6] min. thickness)



JOINT SEALER DETAIL

NOTES

GENERAL: *All joints shall be constructed normal to the centerline of the pavement lane unless otherwise specified in the plans.*

All dowel holes shall be drilled by a mechanical device that will allow independent adjustment of all drill shafts in the horizontal and vertical direction. The device shall be capable of drilling a minimum of three holes at a time.

All smooth dowels shall be coated with a thin layer of oil or other "bond-breaking" material after they have been installed in the existing pavement and just prior to placing the patch. All dowels shall be placed parallel to the pavement surface and the centerline of the pavement lane.

This standard drawing is intended for use in repairing both concrete and composite pavements. For clarity, asphalt overlays are not shown.

When Prefabricated Edge Drains are used, they shall be placed after joint repairs are completed.

TYPE N JOINT: *Joints referred to as Type N joints on the plan shall be constructed as contraction joints per* ***SCD BP-2.2.***

ADDITIONAL PAVEMENT REMOVAL: *If, after the sawing and removal of the pavement from the area to be repaired, the face of the remaining pavement is spalled or deteriorated for a height greater than one-fourth (1/4) the thickness of the rigid pavement, an additional saw cut shall be made as shown and as directed by the Engineer. This additional work shall be measured for additional payment for full depth pavement sawing, rigid pavement removal and replacement.*

LONGITUDINAL JOINT: *For patches 10' [3.0 m] or greater in length, the longitudinal joint shall be constructed per* ***SCD BP-2.1.***

The tie bars or hook bolts shall be spaced at no more than 30" [760] nor less than 24" [610] on center.

LEGEND

[1] *Bars shall be placed 2' [600] from the tied longitudinal joint and continue across with a 1' [300] spacing to the edge of pavement or an untied longitudinal joint. Where lane widths are between two tied longitudinal joints, begin bars 2' [600] from each tied longitudinal joint and continue across with a 1' [300] spacing.*

[2] *Reinforcement will be required for all repairs greater than 10' [3.0 m] in length or for repairs that will be opened to traffic within 24 hours of placement. The fabric shall consist of W8.5 or D8.5 [MW55 or MD55] longitudinal wires spaced 6" [150] c/c and W4 or D4 [MW26 or MD26] transverse wires spaced 12" [300] c/c. The clearance from the end of the wire fabric to the edge of pavement or new transverse joint shall be 4"±2" [100±50].*

[3] *Nylon or plastic grout retention discs shall be clear or opaque white in color.*

THIS DRAWING REPLACES BP-2.5M DATED 4-8-97.

OHIO DEPARTMENT OF TRANSPORTATION — DATE 7-28-00
ROADWAY DESIGN ENGINEER — Paul F. Ballard

REVISIONS	STDS. ENGR. M. Evans	DRAWN D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

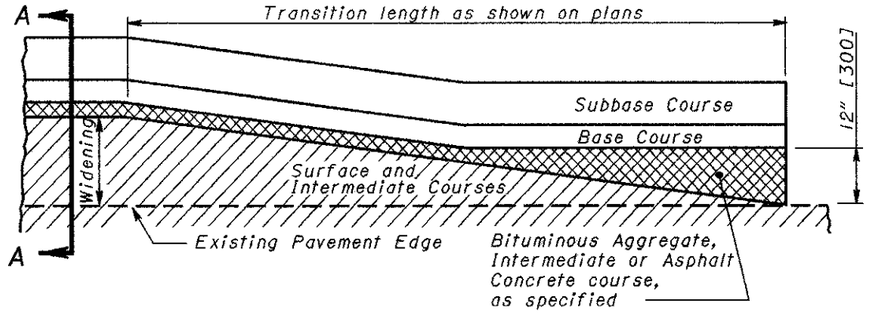
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING

RIGID REPLACEMENT

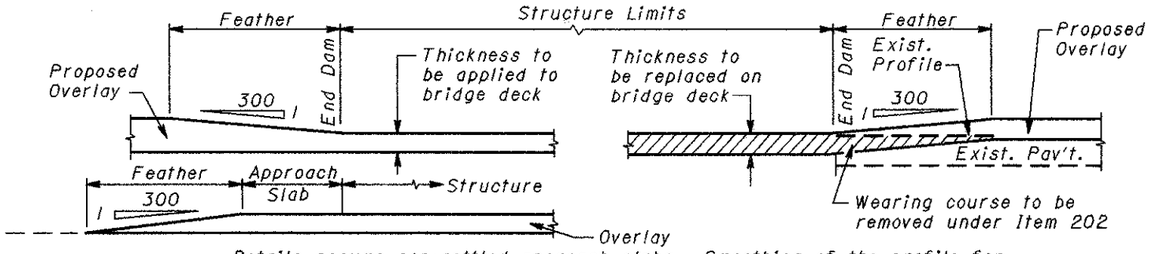
NUMBER **BP-2.5**

1 / 1



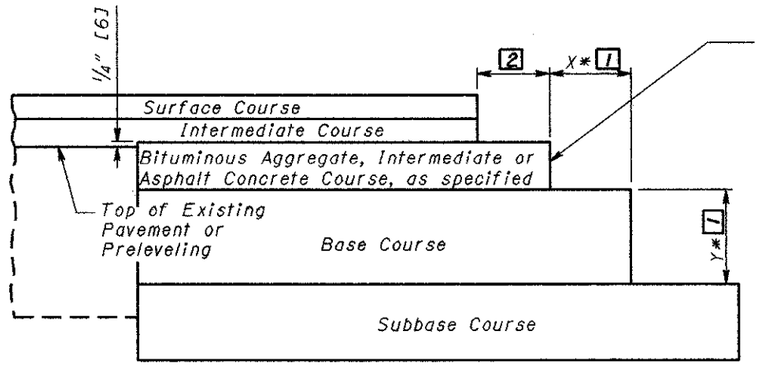
PLAN

MERGING EDGE OF PAVEMENT WIDENING WITH EDGE OF EXISTING PAVEMENT



Details assume non-settled approach slabs. Smoothing of the profile for settlement is required per plan grades or as directed by the Engineer.

FEATHERING AT STRUCTURES



The Bituminous Aggregate in the upper part of the base widening shall finish approximately 1/4" [6] above the edge of the existing pavement where no preleveling is used. Where a preleveling (using intermediate course material) is specified it shall be placed prior to excavation of the widening trench and the upper course of the base widening shall finish approximately 1/4" [6] above the preleveling.

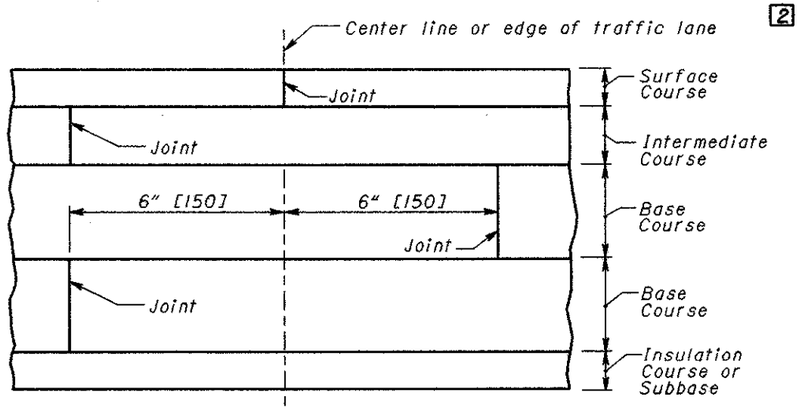
SECTION A-A

COURSE DETAIL FOR WIDENING

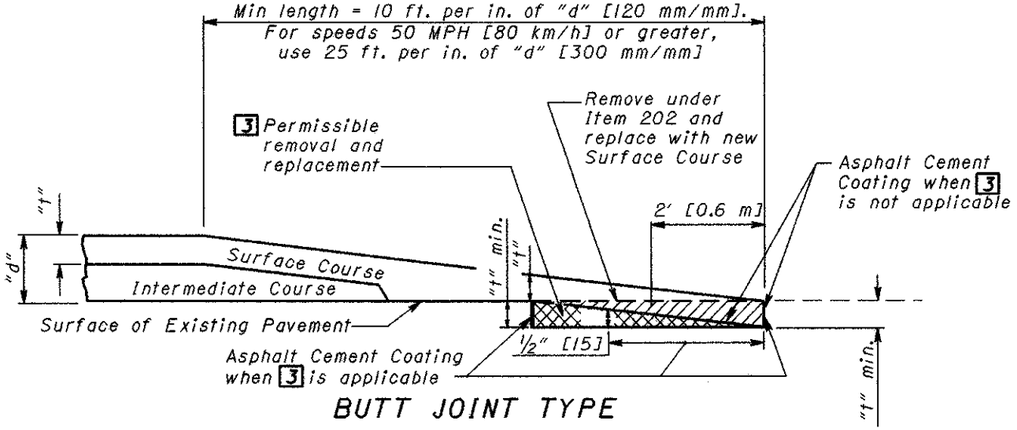
LEGEND

1 The extended width (X) of a base or subbase course shall be equal to the depth (Y) of that particular course, unless otherwise specified in the plans.

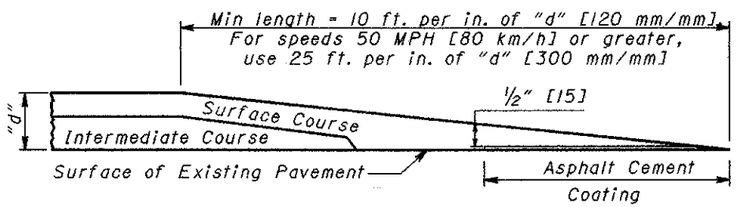
2 The extended width shall be equal to the thickness of the surface course plus the intermediate course, or 4 inches [100], whichever is greater.



LAPPING LONGITUDINAL JOINTS



BUTT JOINT TYPE



TAPER EDGE TYPE

NOTE: Either butt or taper type may be used unless type is specified by the plan.

PLACING FEATHERED AREAS

Values for "t" and "d" are obtained from the plan.

THIS DRAWING REPLACES BP-3.1M DATED 10-28-94.

OHIO DEPARTMENT OF TRANSPORTATION — DATE: 7-28-00
ROADWAY DESIGN ENGINEER

REVISIONS	STDS. ENGR. M. Evans	DRAWN D. Focke

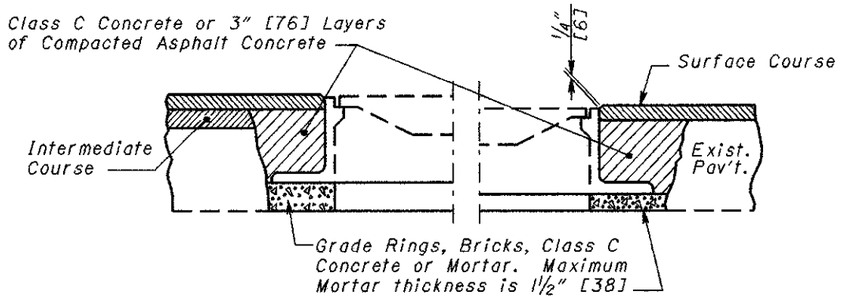
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

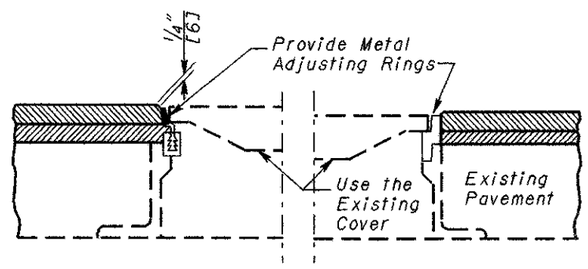
STANDARD ROADWAY CONSTRUCTION DRAWING

RESURFACING

NUMBER BP-3.1



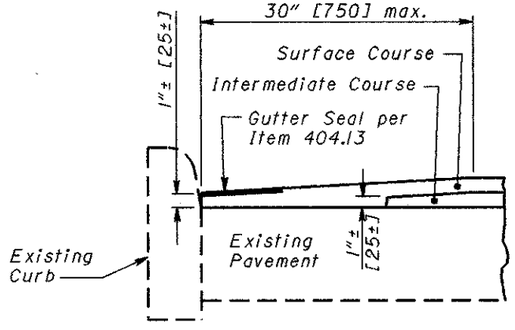
USING CONCRETE OR MORTAR



USING METAL ADJUSTING RINGS

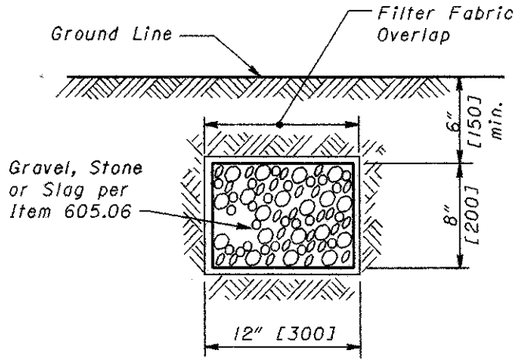
Metal adjusting rings shall:
(a) attach securely to the existing frame by welding or mechanical devices;
(b) consist either of cast metal having an integral rim and seat, or be fabricated metal with a sturdy connection between the seat and rim; and
(c) provide an even seat for the manhole cover.
In addition, the adjusting ring type shall be a design acceptable to the local governmental agency responsible for street and sewer maintenance. Any installation unacceptable to the Engineer shall be replaced by the Contractor at his expense.

MANHOLES ADJUSTED TO GRADE



Special care shall be taken during construction to obtain maximum compaction of bituminous concrete in gutters.

GUTTER FINISH



Aggregate drains to be placed where and as directed by Engineer. Provide Filter Fabric when specified as a separate pay item.

AGGREGATE DRAIN

THIS DRAWING REPLACES BP-3.1M DATED 10-28-94.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER — DATE 1-28-00

REVISIONS

STDS. ENGR. M. Evans
DRAWN D. Focke

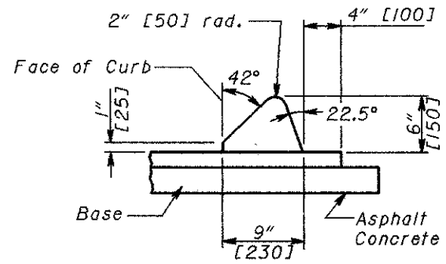
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

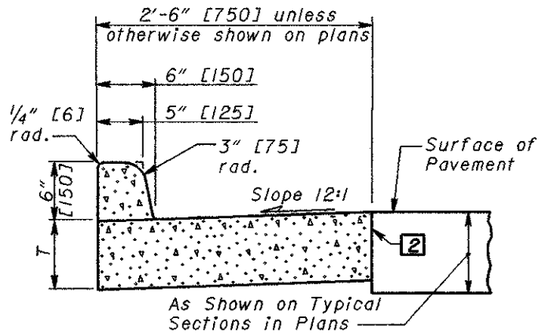
STANDARD ROADWAY CONSTRUCTION DRAWING
RESURFACING

NUMBER BP-3.1

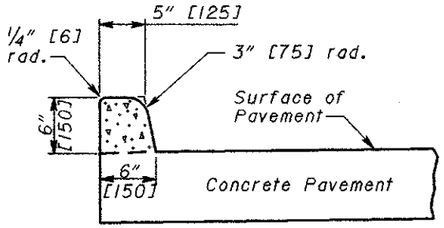
2/2



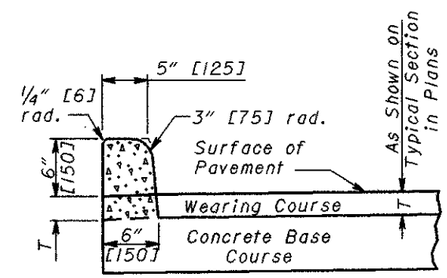
TYPE 1



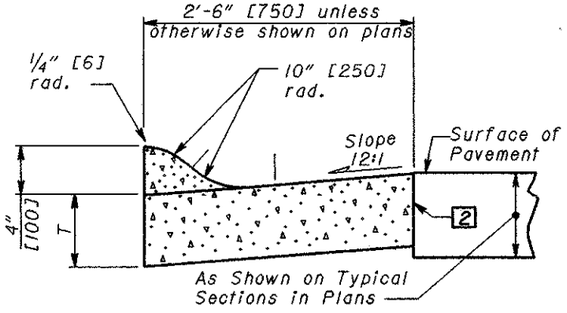
TYPE 2



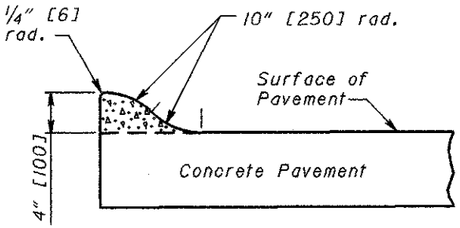
TYPE 2-A



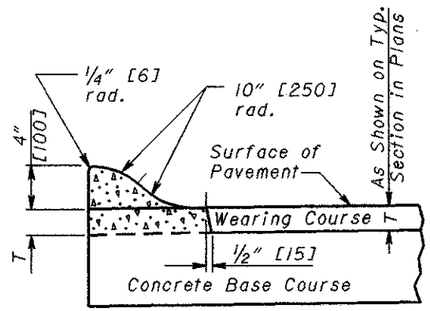
TYPE 2-B



TYPE 3



TYPE 3-A



TYPE 3-B

NOTES

GENERAL: *This drawing shows alternate types of curb that may be used on various types of pavement. The typical section of the project shows the type to be used, also the thickness of the edge of the pavement or the edge of the curb and gutter section.*

JOINTS: *1" [25] expansion joints shall extend up to the top of the curb and shall be constructed in the curb and gutter section in such a manner that the joint seal will extend the full width of the gutter and into the curb face a sufficient distance to seal the joint to an elevation of at least 2" [50] above the flow line of the gutter. Dowel bars shall be used in the curb and gutter section at expansion joints and to the surface fo the pavement.*

Transverse expansion joint material shall meet the requirements of Item 705.03.

GUTTER PLATE THICKNESS: *Thickness of gutter plate "T" shall be 9" [230] unless otherwise shown on the plans.*

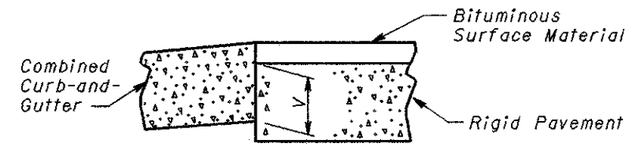
TOLERANCES: *Dimensional tolerances are as follows:*
Curbs: -1/32" to +1/4" [-1 to +5],
Gutters: 0 to +1/2" [0 to +12].

LEGEND

1 *Expansion joint material and joint sealer are not required for the portion of the curb that is adjacent to a flexible pavement type. Both materials are required, as detailed, for the full height of rigid pavement and concrete bases.*

2 *Butt joints shall be provided between combined curb-and-gutter and new or existing rigid pavements, with tie bars or hook bolts provided at intervals of 5' [1.5 m]. See* ***SCD BP-2.1*** *for details of tie bars and hook bolts.*

If the combined curb-and-gutter adjoins a new rigid base or an existing rigid base or pavement that is to be surfaced with bituminous material, a butt joint shall also be provided. However, tie bars or hook bolts shall be omitted when the vertical overlap ("V" in detail below) between the curb-and-gutter and rigid pavement is less. than 7" [175].



THIS DRAWING REPLACES BP-5.1M DATED 10-28-94.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER — DATE 5-26-00

REVISIONS

STDS. ENGR. M. Evans
DRAWN D. Focke

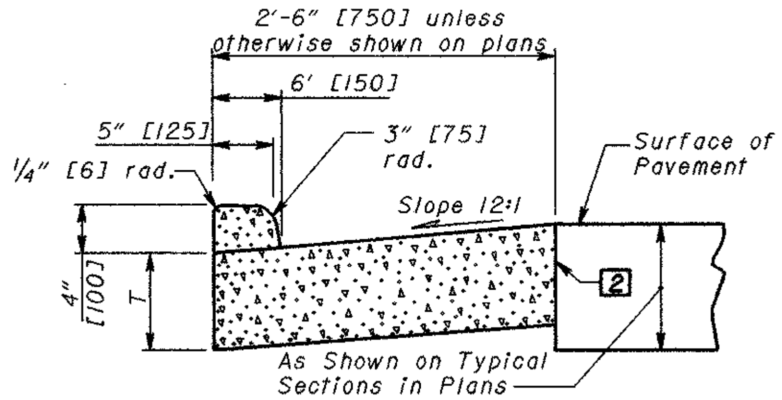
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

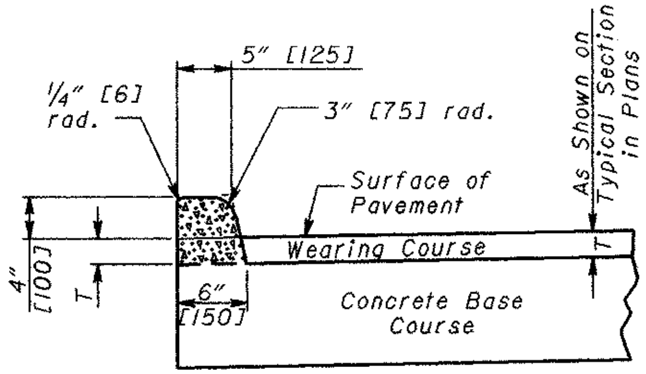
STANDARD ROADWAY CONSTRUCTION DRAWING
CONCRETE CURBS AND COMBINED CURB AND GUTTERS

NUMBER BP-5.1

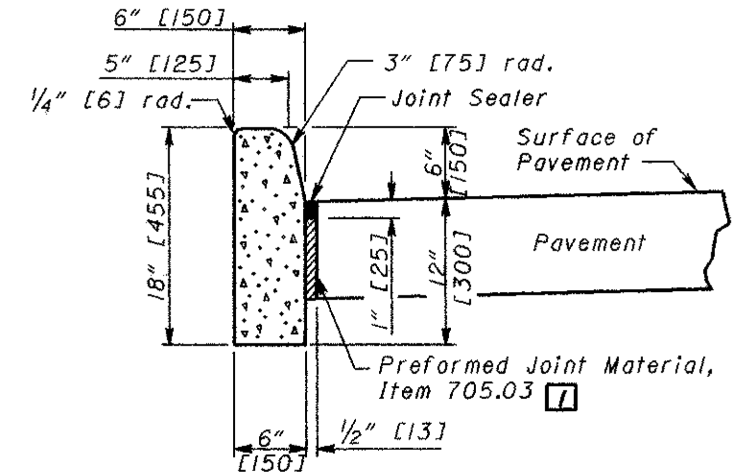
1 / 2



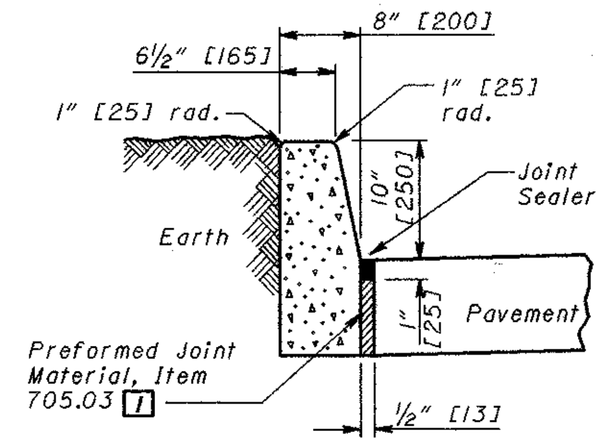
TYPE 4



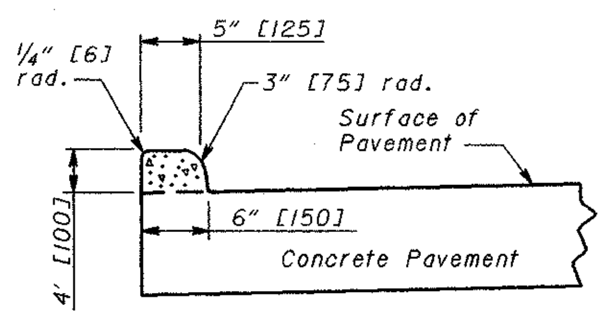
TYPE 4-B



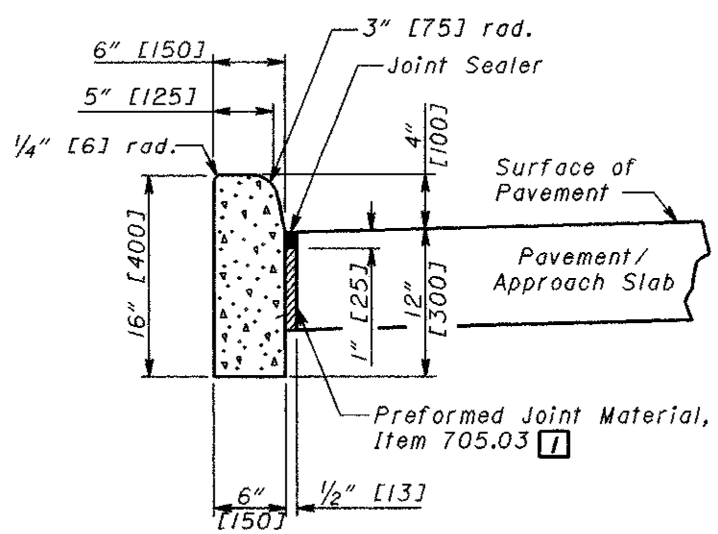
TYPE 6



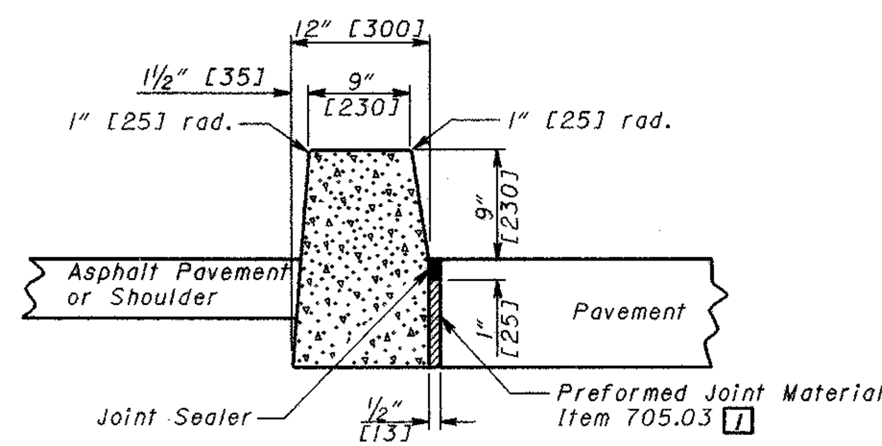
TYPE 7



TYPE 4-A



TYPE 4-C



TYPE 8

See Sheet 1 of 2 for Notes and Legend.

THIS DRAWING REPLACES BP-5.1M DATED 10-28-94.

STANDARD ROADWAY CONSTRUCTION DRAWING
CONCRETE CURBS AND COMBINED CURB AND GUTTERS

ROADWAY ENGINEERING SERVICES

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

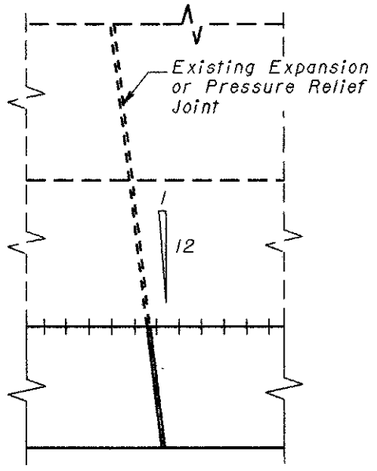
STDS. ENGR. M. Evans
DRAWN D. Focke

REVISIONS

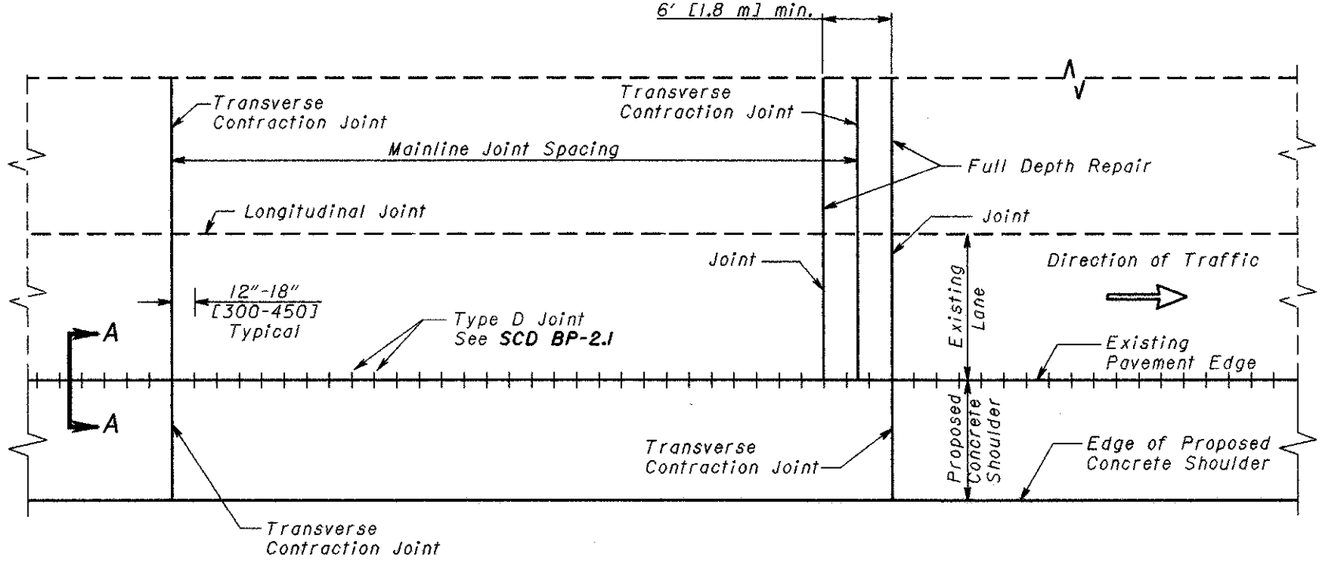
OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER
7-28-00 DATE

NUMBER BP-5.1

2/2

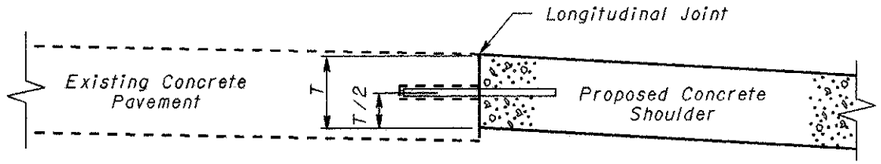


PRESSURE RELIEF OR EXPANSION JOINTS



NEW OR EXISTING TRANSVERSE JOINT

NEW OR EXISTING JOINT REPAIR



SECTION A-A

NOTES

SHOULDERS: *shall have the same joint spacing, sawing, and sealing requirements as the mainline pavement.*

EXPANSION, PRESSURE RELIEF AND CONTRACTION JOINTS: *Care shall be taken to make the expansion, pressure relief or contraction joints in the shoulder a straight line continuation of the new or existing expansion, pressure relief or contraction joints.*

For clarity, transverse joints have been shown normal to the centerline. When placed next to mainline pavement with skewed joints, the joints in the shoulder shall be skewed to match the skew of the mainline joints.

TIE BAR SPACING: *shall be per Table A on* **SCD BP-2.1** *and shall be based on the thickness of the concrete shoulder where it meets the existing concrete pavement. The number of tie bars per slab shall vary depending on the existing joint spacing, but the maximum spacing between tie bars shall not be exceeded.*

THIS DRAWING REPLACES BP-8.1M DATED 4-8-97.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER — DATE 1-28-00

REVISIONS

STDS. ENGR. M. Evans
DRAWN D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

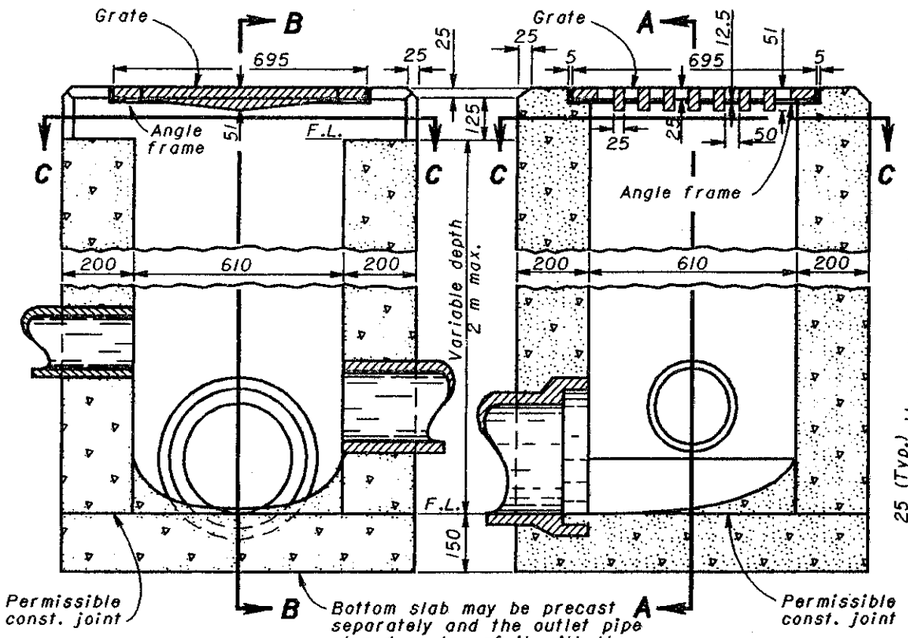
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING
CONCRETE SHOULDERS

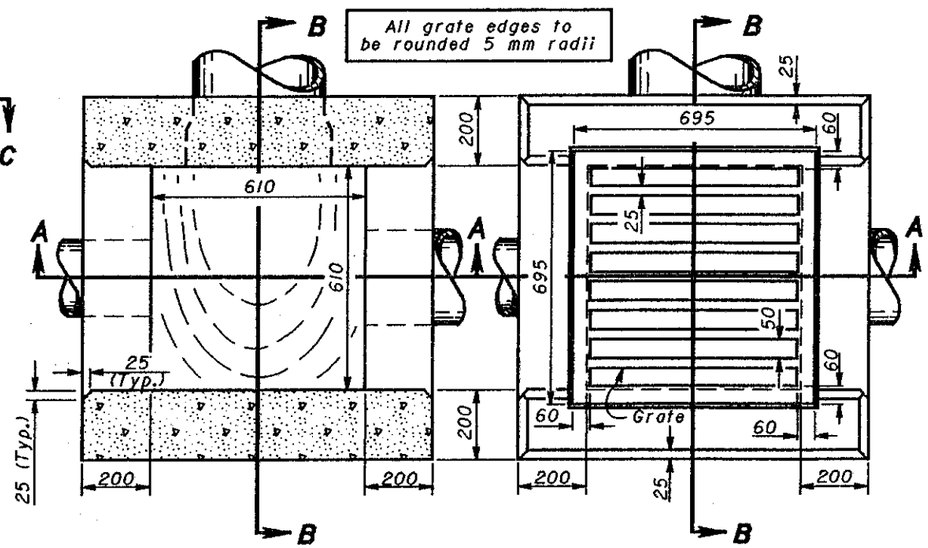
NUMBER BP-8.1

1 / 1

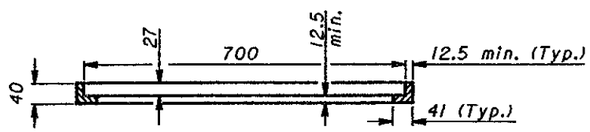
CATCH BASIN No. 2-2A



SECTION A-A SECTION B-B

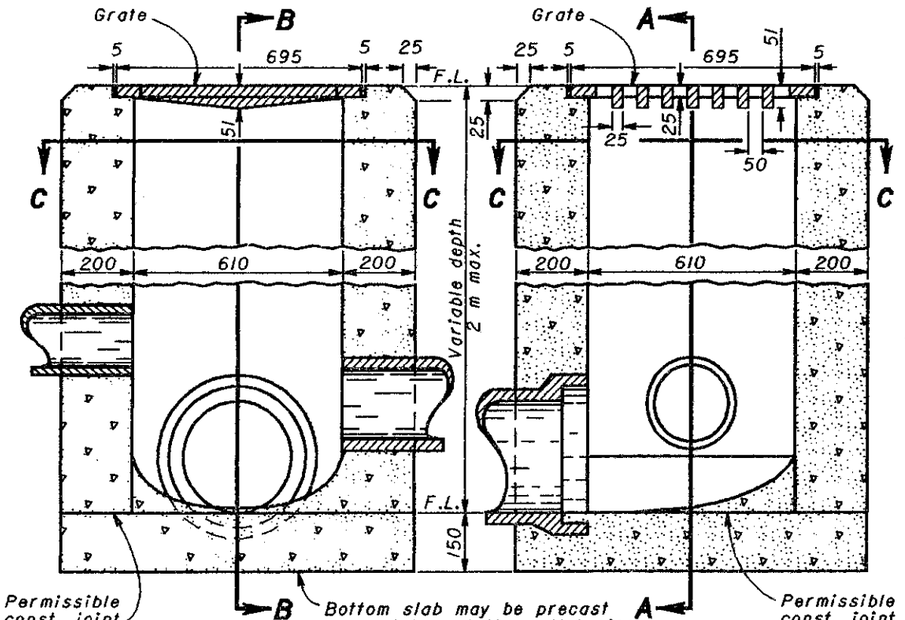


SECTION C-C PLAN

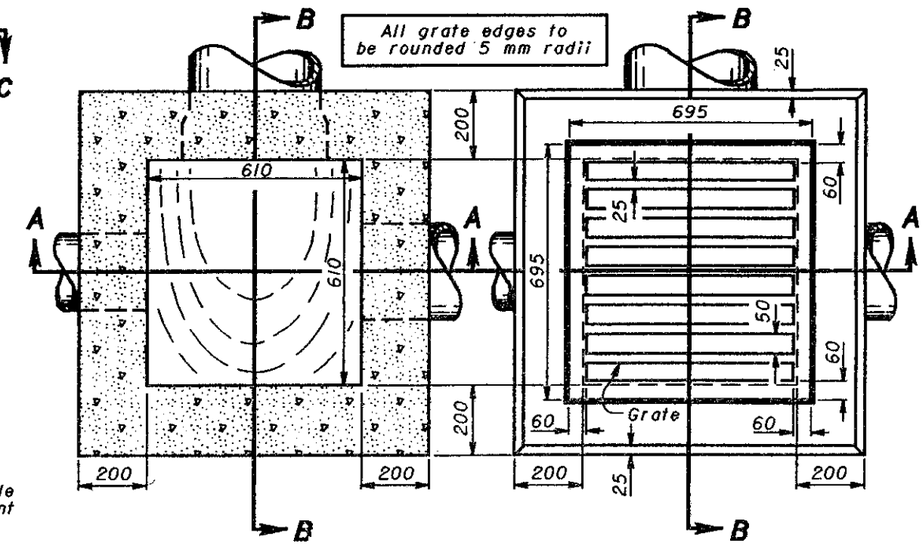


SECTION THRU ANGLE FRAME
FOR STANDARD No. 2-2A CATCH BASIN

CATCH BASIN No. 2-2B



SECTION A-A SECTION B-B



SECTION C-C PLAN

NOTES

GRATE AND FRAME: The design shall be essentially the same and equally as strong as the one shown hereon.

WALLS: Brick or cast-in-place walls have a nominal thickness of 200 mm. Precast walls shall have a minimum thickness of 150 mm and be reinforced sufficiently to permit shipping and handling without damage. Brick shall not be used above the flow line of the side opening for Type 2-2A.

CONCRETE: Cast-in-place concrete is to be Class C. All precast concrete shall meet the requirements of CMS 706.13 with a minimum of 4% entrained air in the hardened concrete and be marked with the catch basin number.

PRECAST BASE: If a precast base is used, it shall be set deep enough so that the top can be placed on the base to provide the grade elevation specified in the plans. Layers of brick shall not be used to adjust the top elevation.

LOCATION AND ELEVATION: When given on the plans, location and elevation are at the top center of the grate. When side openings are provided, the elevation shall be at the flow line of the side inlet.

MINIMUM DEPTH: The minimum depth of CB No. 2-2A shall be the outside diameter (O.D.) of the outlet pipe plus 180 mm. The minimum depth for CB No. 2-2B shall be the O.D. of the outlet pipe plus 105 mm.

2-2B GRATE ELEVATION: Grate elevation is to be placed 100 to 150 mm below normal ditch, returning to normal 3 to 5 m each side of inlet.

OPENINGS: Pipe openings shall be the O.D. of the pipe being supplied plus 50 mm when fabricated or field cut. The interstitial space shall be filled with grout per CMS 601.

2-2A SIDE INLETS: Inlets shall be provided on both sides of the No. 2-2A catch basin in sags and on upstream side only where the ditch has a continuous down grade past the catch basin. Side inlets shall not be used within the Clear Zone. The flow line should be 100 to 150 mm below the normal elevation of the ditch flow line, returning to normal within 3 to 5 m of the basin.

CONSTRUCTION INFORMATION
Minimum mass of grate, 54 kg
Minimum mass of frame, 18 kg

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces CB-2-2 A & B.

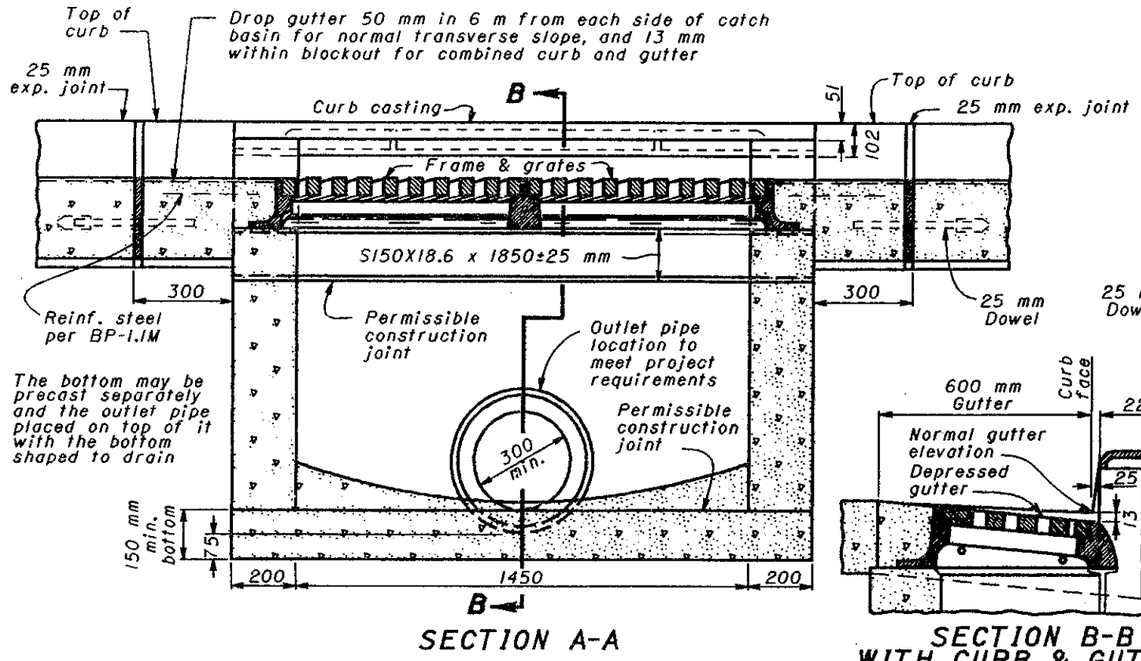
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

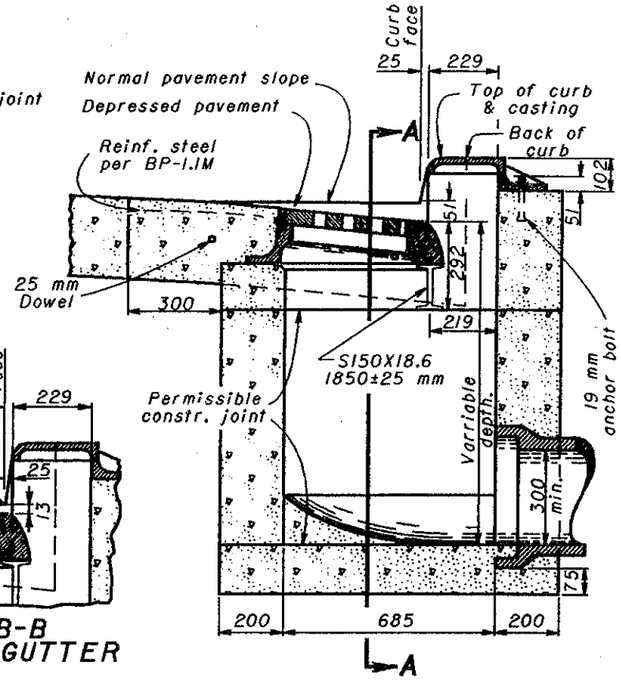
CATCH BASINS No's 2-2A & B

DATE 7-12-95

STANDARD CONSTRUCTION DRAWING **CB-1.1M**

APPROVED W. K. Hulman
ENGR., L & D





NOTES

GRATES: Two required. **For details, see Std. Constr. Dwg. CB-2.2M.** Grate "V" shall be provided unless the plans specifically require the diagonal grate. If the diagonal grate is specified, it shall be placed so that the diagonal bars direct drainage flow toward the curb.

CASTINGS: The design shall be essentially the same and equally as strong as those shown. Minimum mass: Curb Casting 138 kg, two Grates 115 kg, Frame 267 kg, and two Grates "V" 95 kg.

BEARING AREAS: The frame and grate shall be so fitted and finished as to provide a firm and even seat. No projections shall exist on bearing areas and the grate shall seat in its frame without rocking.

WALLS: When used in place of concrete, brick side walls shall be 200 mm nominal thickness.

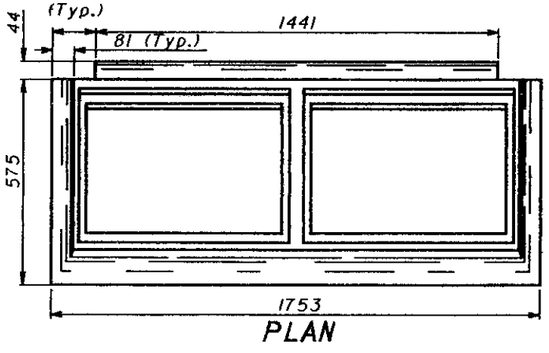
PRECAST CONSTRUCTION: Permitted, except for the apron. Concrete shall meet requirements of CMS 706.13 with a minimum of 4% entrained air in the hardened concrete. Precast walls shall have a minimum thickness of 150 mm and reinforcing shall be sufficient to permit shipping and placement without damage.

MINIMUM DEPTH: The minimum depth shall be the outside diameter (O.D.) of the outlet pipe plus 360 mm.

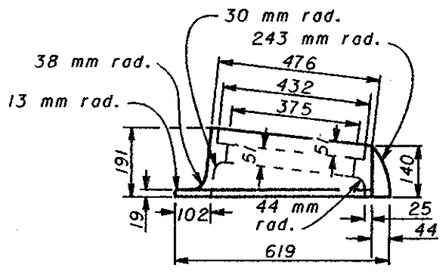
OPENINGS: Pipe openings shall be the O.D. of the pipe being supplied plus 50 mm when fabricated or field cut. The interstitial space shall be filled with grout per CMS 601.

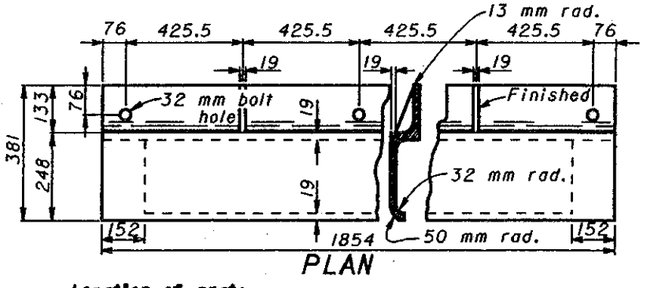
DOWELS: Four 25x460 mm dowels are required for concrete pavement or gutter blockout. See BP-2.2M for dowel details.

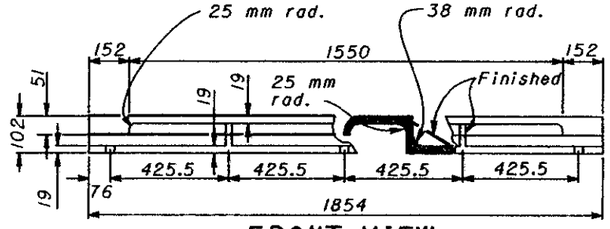
BLOCKOUT: Blockouts shall be paved with Class C concrete in PCC pavement or gutter and paid for as part of the pavement or gutter with no deduction in pavement, curb or gutter quantities because of castings. A Class C concrete apron the size of the 600 mm gutter blockout shall be cast-in-place in asphalt pavement (no dowels required) with the cost included in the catch basin bid price. No deduction to be made in curb quantities.



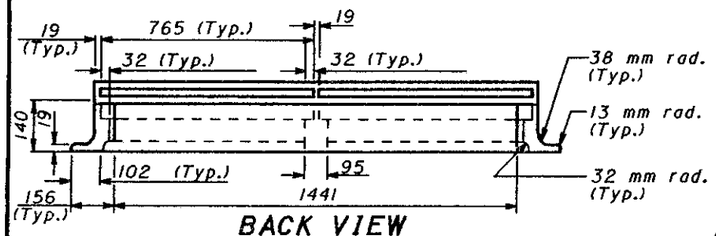
CATCH BASIN

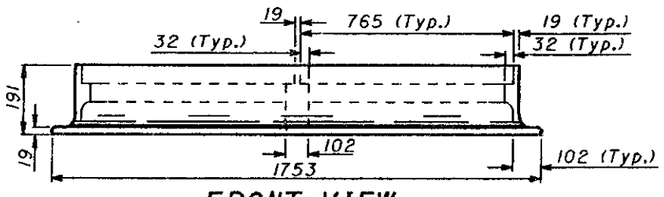


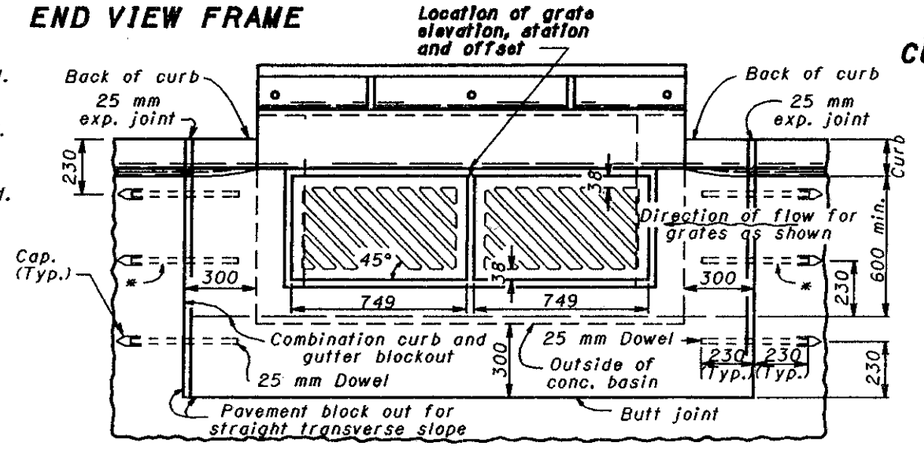




CURB CASTING







metric units

All dimensions are in millimeters unless otherwise noted.

This Drawing Replaces CB-3.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

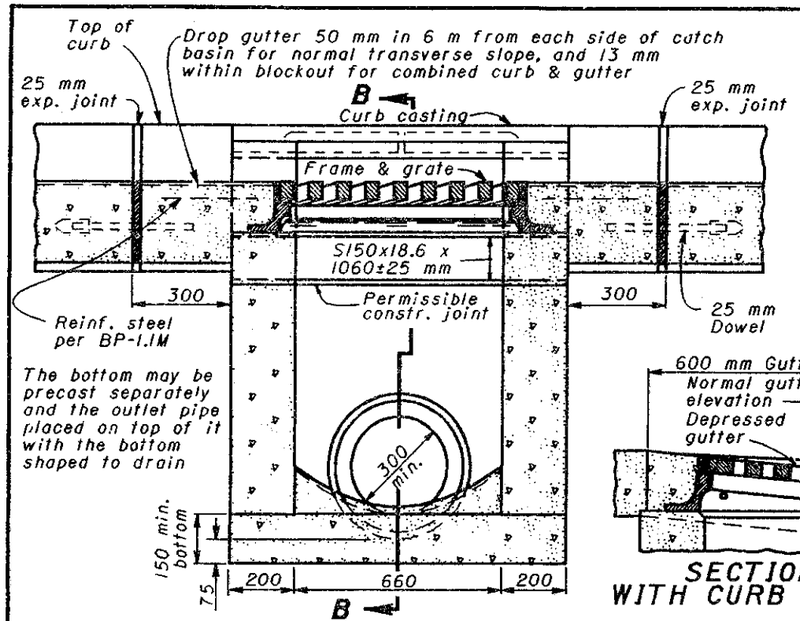
CATCH BASIN No. 3

DATE 7-12-95

STANDARD CONSTRUCTION DRAWING **CB-2.1M**

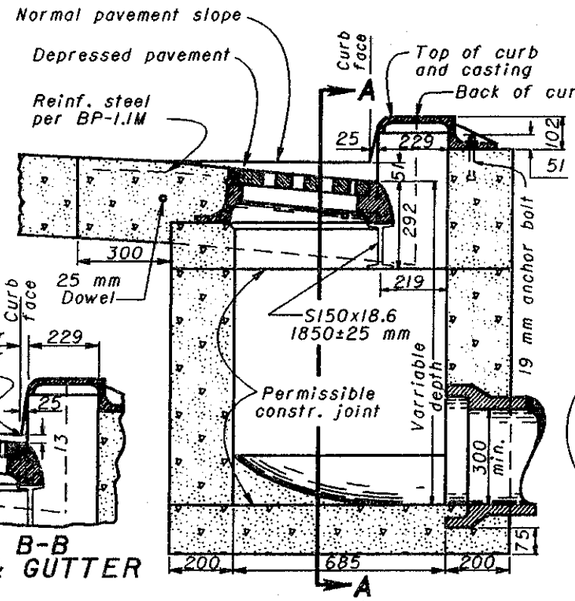
APPROVED D.K. Hulsman
ENGR., L & D

CATCH BASIN

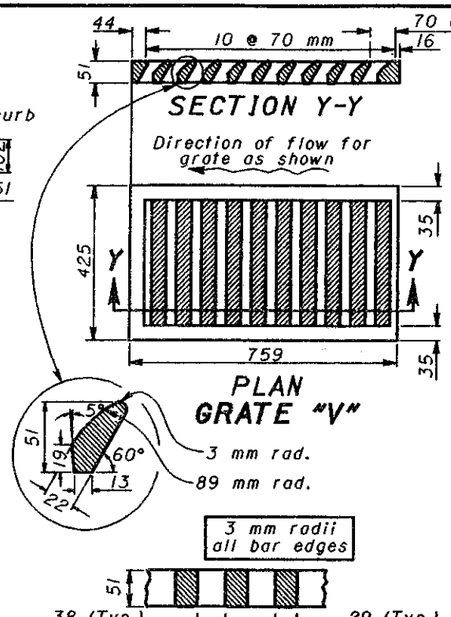


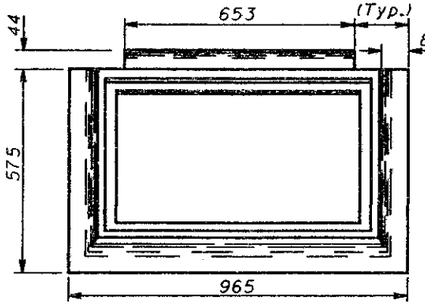
SECTION A-A

SECTION B-B
WITH CURB & GUTTER

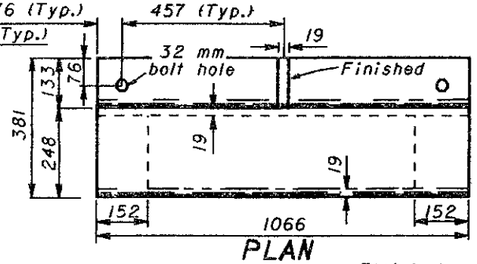


SECTION B-B

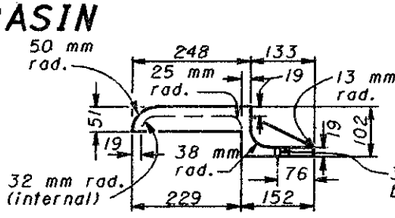




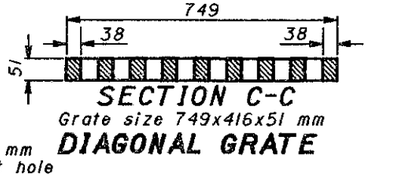
PLAN



PLAN



END VIEW
CURB CASTING



DIAGONAL GRATE

NOTES

GRATE: The Grate "V" shall be provided unless the plans specifically require the diagonal grate. If the diagonal grate is specified, it shall be placed so that the diagonal bars direct drainage flow toward the curb.

CASTINGS: The design shall be essentially the same and equally as strong as those shown. Minimum mass: Curb Casting 77 kg, Standard Grate 57 kg, Frame 145 kg, and Grate "V" 47 kg.

BEARING AREAS: The frame and grate shall be so fitted and finished as to provide a firm and even seat. No projections shall exist on bearing areas of either casting and the grate shall seat in its frame without rocking.

WALLS: When used in place of concrete, brick side walls shall be 200 mm nominal thickness.

PRECAST CONSTRUCTION: Permitted, except for the apron. Concrete shall meet the requirements of CMS 706.13 with a minimum of 4% entrained air in the hardened concrete. Precast walls shall have a minimum thickness of 150 mm and reinforcing shall be sufficient to permit shipping and placement without damage.

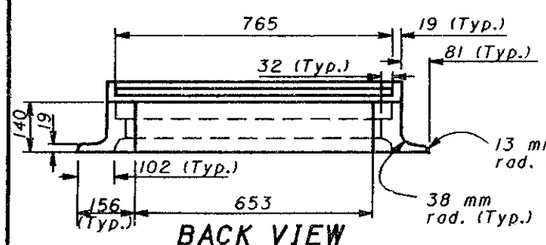
MINIMUM DEPTH: The minimum depth shall be the outside diameter (O.D.) of the outlet pipe plus 360 mm.

OPENINGS: Pipe openings shall be the O.D. of the pipe being supplied plus 50 mm when fabricated or field cut. The interstitial space shall be filled with grout per CMS 601.

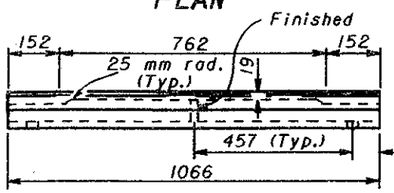
DOWELS: Four 25x460 mm dowels are required for concrete pavement or gutter blockout. See Std. Constr. Dwg. BP-2.2M for dowel details.

BLOCKOUT: Blockouts shall be paved with Class C concrete in PCC pavement or gutter and paid for as a part of the pavement or gutter with no deduction in pavement, curb or gutter quanitities because of the castings. A Class C concrete apron the size of the 600 mm gutter shall be cast-in-place in asphalt pavement (no dowels required) with the cost included in the catch basin bid price. No deduction to be made in curb quantities.

All dimensions are in millimeters unless otherwise noted.

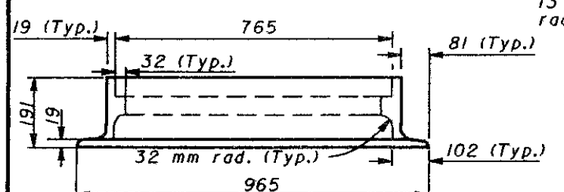


BACK VIEW

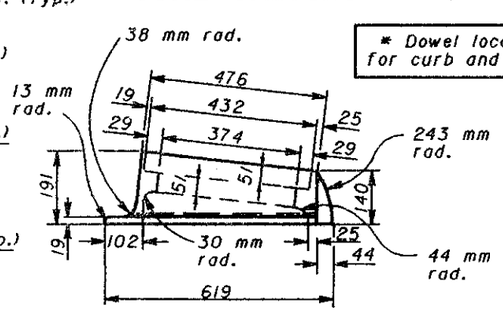


FRONT VIEW
CURB CASTING

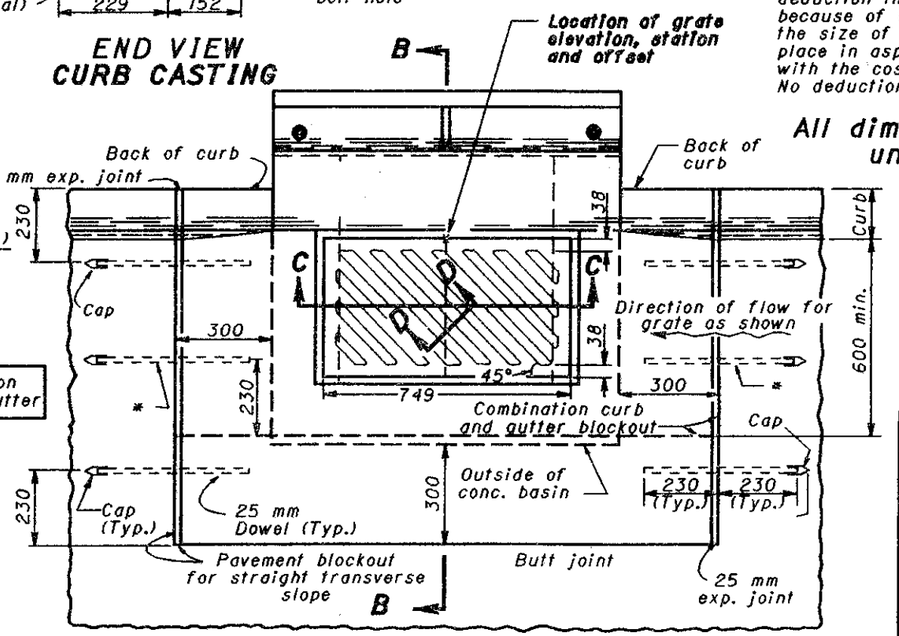
* Dowel location for curb and gutter



FRONT VIEW
FRAME



END VIEW FRAME



PLAN OF CATCH BASIN AND PAVEMENT JOINTS

metric units

This Drawing Replaces CB-3A.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

CATCH BASIN No. 3A

DATE 7-12-95

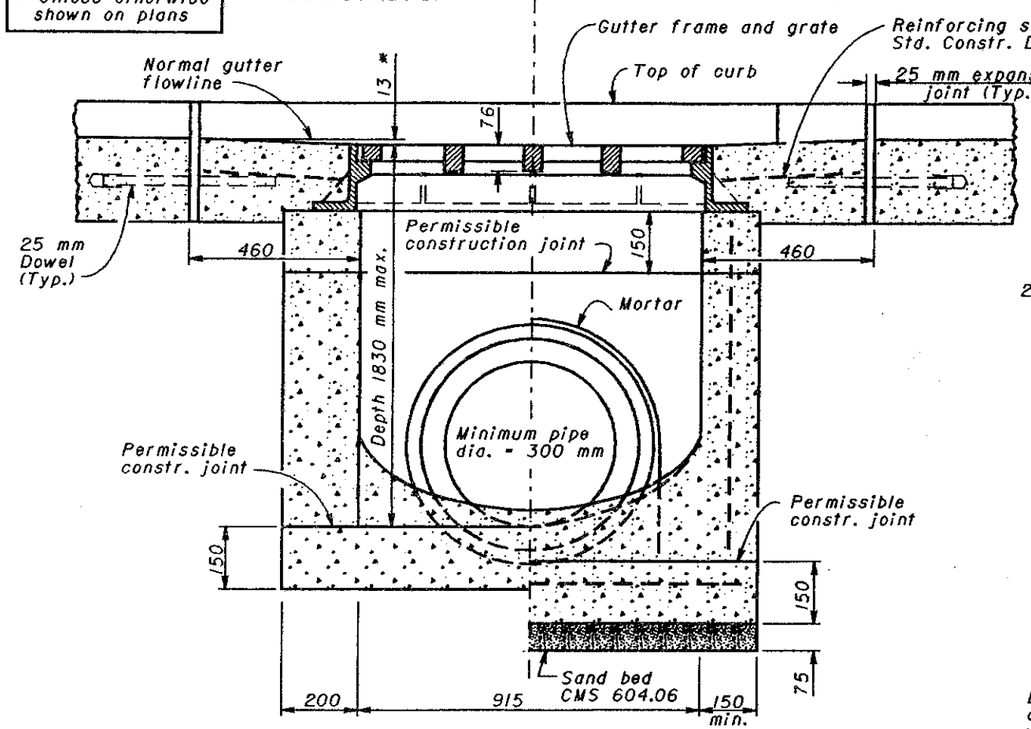
STANDARD CONSTRUCTION DRAWING **CB-2.2M**

APPROVED W. K. Hahnman
ENGR., L & D

CAST-IN-PLACE CONCRETE

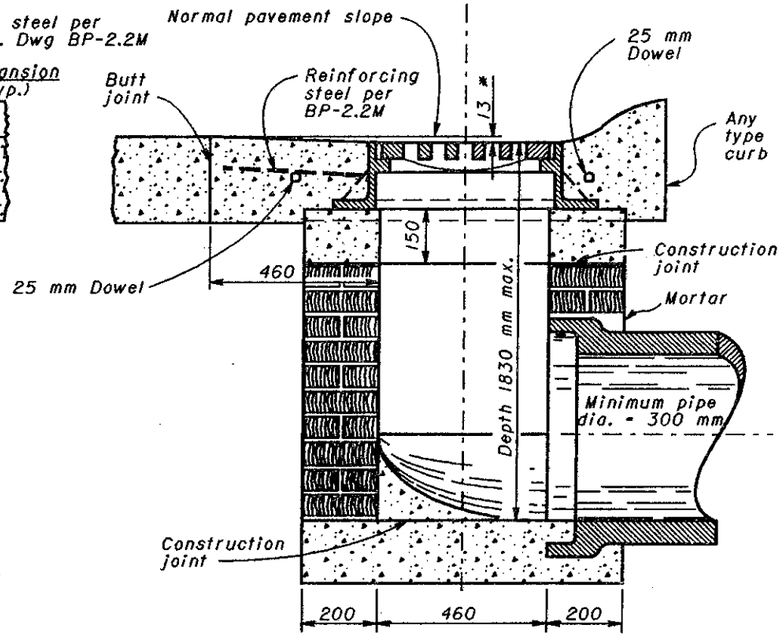
REINFORCED PRECAST CONCRETE

* Unless otherwise shown on plans

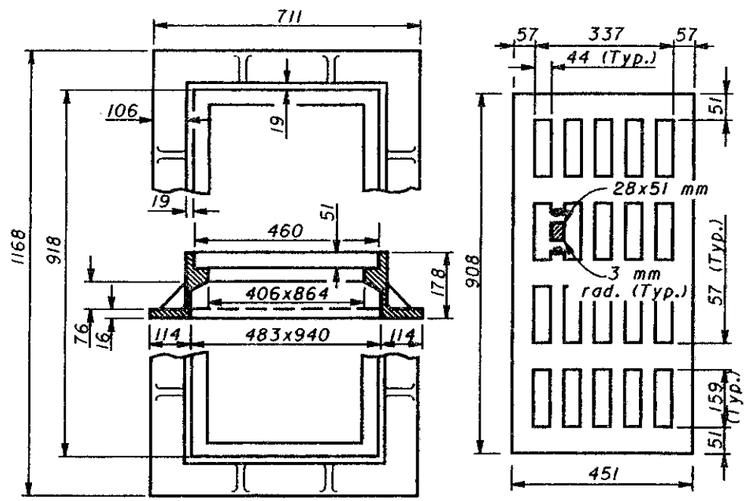


SECTION A-A

BRICK WALLS

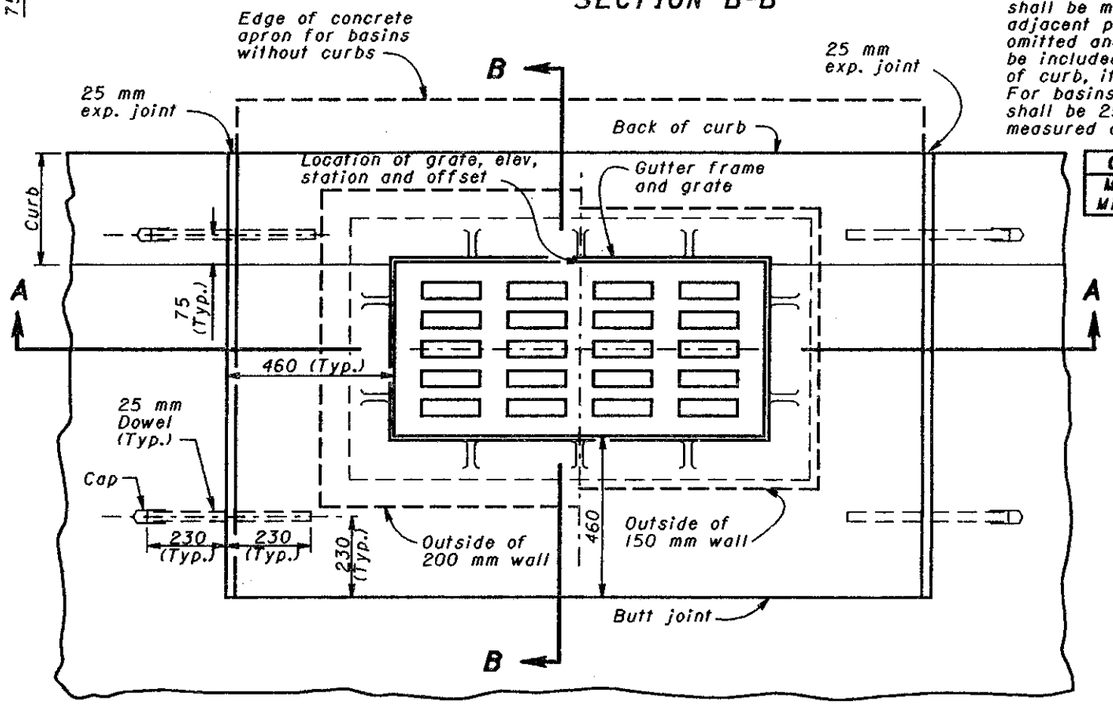


SECTION B-B



FRAME

GRATE



PLAN OF CATCH BASINS AND PAVEMENT JOINTS

NOTES

GRATE AND FRAME: The design shall be essentially the same and equally as strong as those shown hereon.

BEARING AREAS: of frame and grate shall be so fitted and finished as to provide a firm and even seat for all portions of the grate in the frame. No projections shall exist on bearing areas of either casting and the grate shall seat in its frame without rocking. Frame and grate shall be fitted, matched and marked before delivery to the project.

WALLS: Brick or cast-in-place walls shall have a nominal thickness of 200 mm. Precast walls shall have a minimum thickness of 150 mm and be reinforced sufficiently to permit shipping and handling without damage.

CONCRETE: Cast-in-place concrete shall be Class C. Precast concrete shall meet the requirements of CMS 706.13 with a minimum of 4% entrained air in the hardened concrete and be marked with the catch basin number.

MINIMUM DEPTH: The minimun depth shall be the outside diameter (O.D.) of the outlet pipe plus 385 mm.

OPENINGS: Pipe openings shall be the O.D. of the pipe being supplied plus 50 mm when fabricated or field cut. The interstitial space shall be filled with grout per CMS 601.

DOWELS: Four 25x460 mm dowels are required for concrete pavement and curb. See Std. Constr. Dwg. BP-2.2M for dowel detail.

BLOCKOUT APRONS: Shall be Class C concrete. Cost of apron shall not be included in catch basin bid price when located in PCC pavement, and no deduction in normal pavement quantities shall be made because of the blockout. When adjacent paving is asphalt, the dowels shall be omitted and the cost of the concrete apron shall be included in the catch basin bid price. Cost of curb, if any, shall be included in CMS 609. For basins without curb, the grate elevation shall be 25 mm below the normal pavement slope measured at the center of the grate.

CONSTRUCTION INFORMATION
Minimum mass of grate, 95 kg
Minimum mass of frame, 120 kg

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces CB-6.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

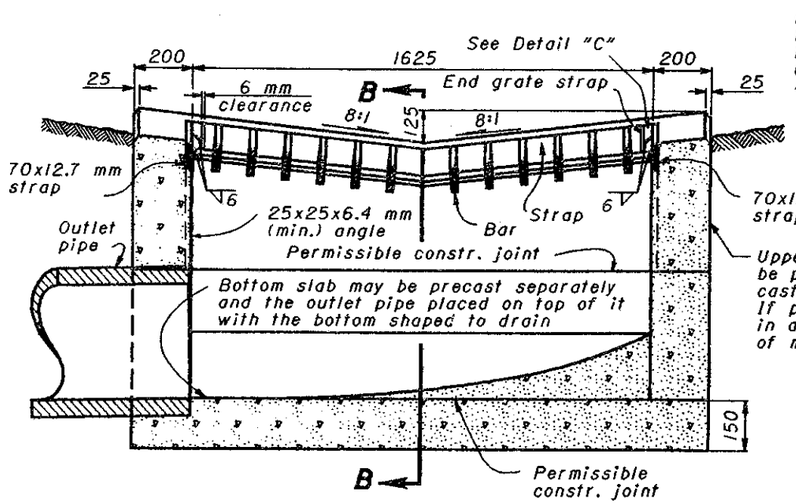
CATCH BASIN No. 6

DATE 7-12-95

STANDARD CONSTRUCTION DRAWING CB-2.3M

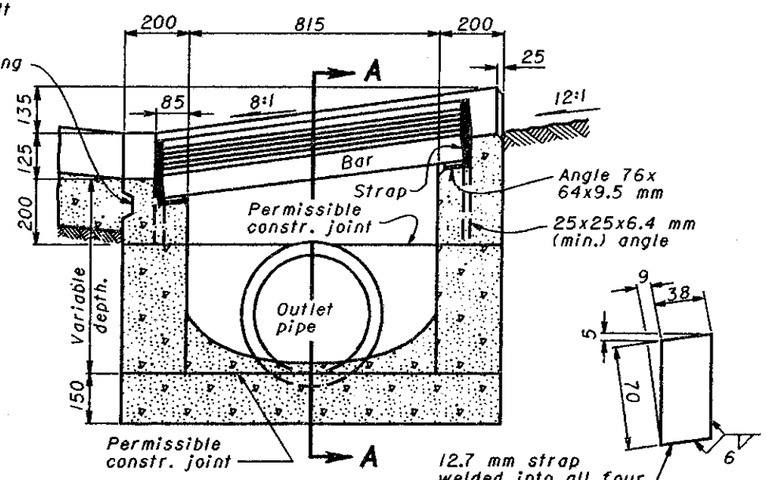
APPROVED D. K. Hedman
ENGR., L & D

CATCH BASIN No. 4



SECTION A-A

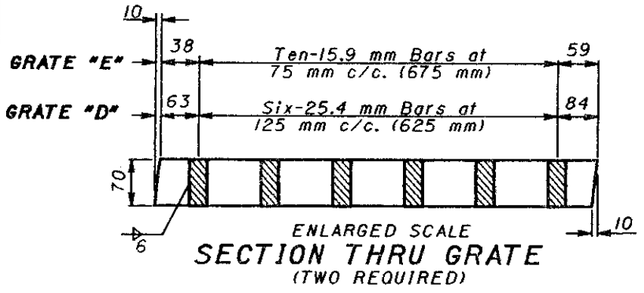
Key joint or 16x150 mm bolt in insert or CMS 712.01 at 450 mm spacing



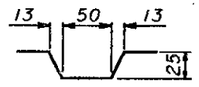
SECTION B-B

12.7 mm strap welded into all four corners of frame

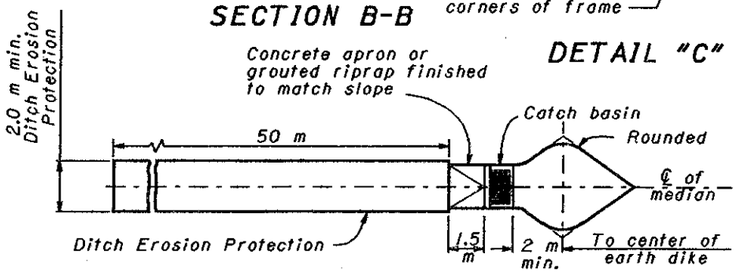
DETAIL "C"



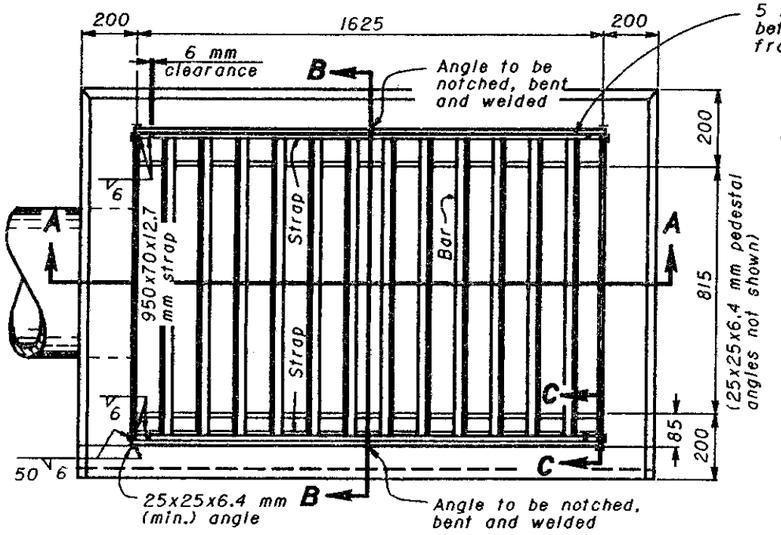
SECTION THRU GRATE
(TWO REQUIRED)



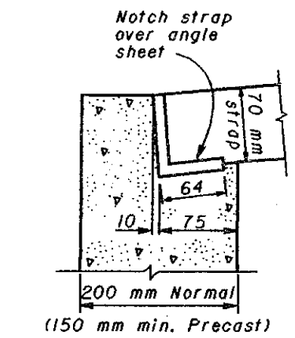
KEY JOINT



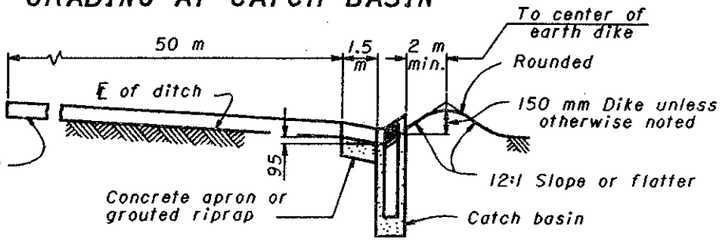
PLAN OF MEDIAN GRADING AT CATCH BASIN



PLAN OF CATCH BASIN

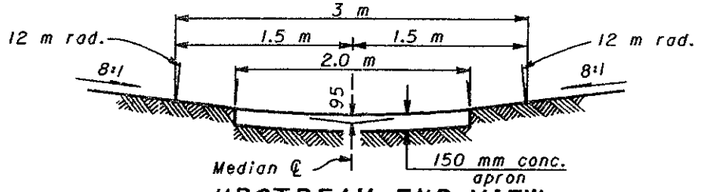


(150 mm min. Precast)
SECTION C-C



VERTICAL SCALE DISTORTED

PROFILE OF MEDIAN GRADING AT CATCH BASIN



UPSTREAM END VIEW OF CONCRETE APRON OR GROUTED RIPRAP

NOTES

GRATE AND FRAME: Shall be of structural steel in accordance with CMS 711.01 and 513. The design shall be essentially the same and equally as strong as the on shown hereon.

GRATE: Shall be depressed 95 mm below the upstream end of the concrete apron at the centerline of the ditch. Unless Grate "E" is specifically required by the plans, Grate "D" shall be furnished and installed.

WALLS: Brick or cast-in-place walls shall have a nominal thickness of 200 mm from the bottom slab to the upper box. Precast walls shall have a minimum thickness of 150 mm and be reinforced sufficiently to permit shipping and handling without damage.

STEPS: Steps meeting the requirements of Std. Constr Dwg. MH-1.1M shall be provided where the depth exceeds 1.8 m.

BASINS OVER 3.5 m IN DEPTH: Shall be precast or cast-in-place concrete; reinforced with #15M bars on 300 mm centers both vertically and horizontally with 50 mm clearance form inside wall face.

LOCATION AND ELEVATION: When given on the plans, location is the center of the grate. Elevation is the lowest point on the grate.

OPENINGS: Pipe openings shall be the outside diameter of the pipe being supplied plus 50 mm when prefabricated or field cut. The interstitial space shall be filled with grout per CMS 601.

CONCRETE APRONS: Aprons are to be constructed in such a manner that the outside edges are at equal elevation.

DITCH PROTECTION: Provide a 50 m length of ditch erosion protection as shown. Installation and payment for the ditch erosion protection shall comply with CMS 670.

BASINS IN SAG: When in a sag, omit the earth dike and longitudinal slope of the grate, and provide concrete apron and ditch protection on each side of the basin.

COST: The concrete apron or grouted riprap and downstream dike shall be considered incidental to Item 604, Catch Basins. However, the apron is not required when Item 604, Catch Basins, Without Apron is specified.

CONSTRUCTION INFORMATION
Typical mass of grate - 170 kg
Typical mass of frame - 45 kg

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces CB-4.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

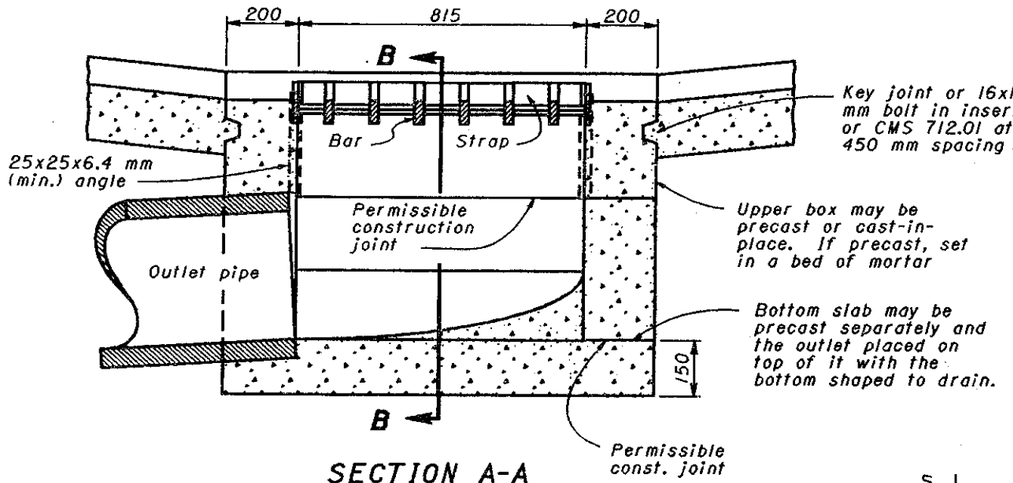
CATCH BASIN No. 4

DATE 7-12-95

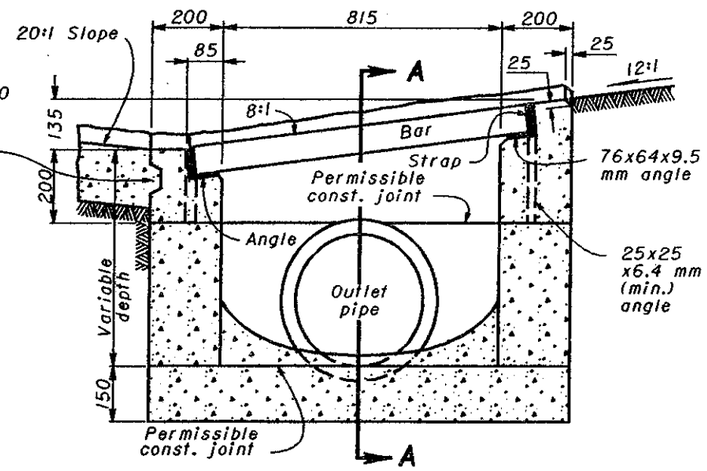
STANDARD CONSTRUCTION DRAWING **CB-3.1M**

APPROVED D. K. Hulsman
ENGR., L & D

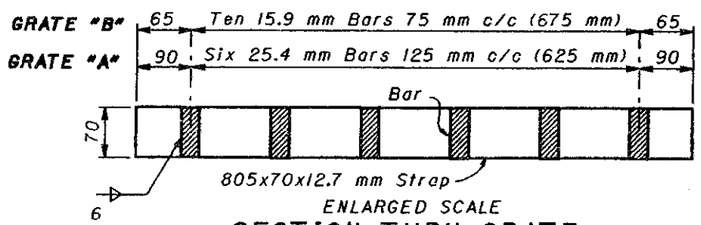
CATCH BASIN No. 5



SECTION A-A

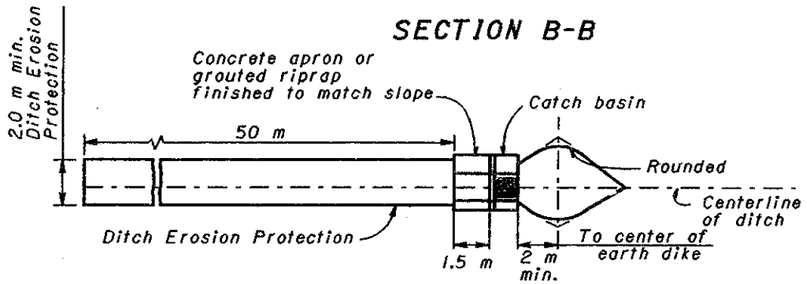


SECTION B-B

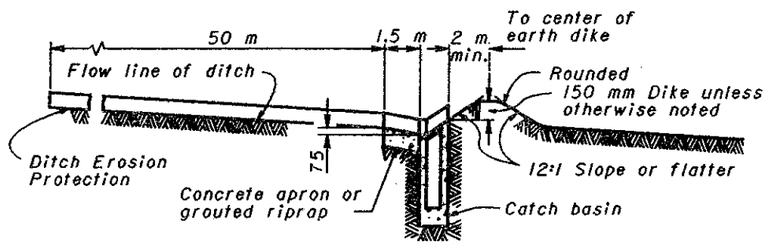


ENLARGED SCALE

SECTION THRU GRATE

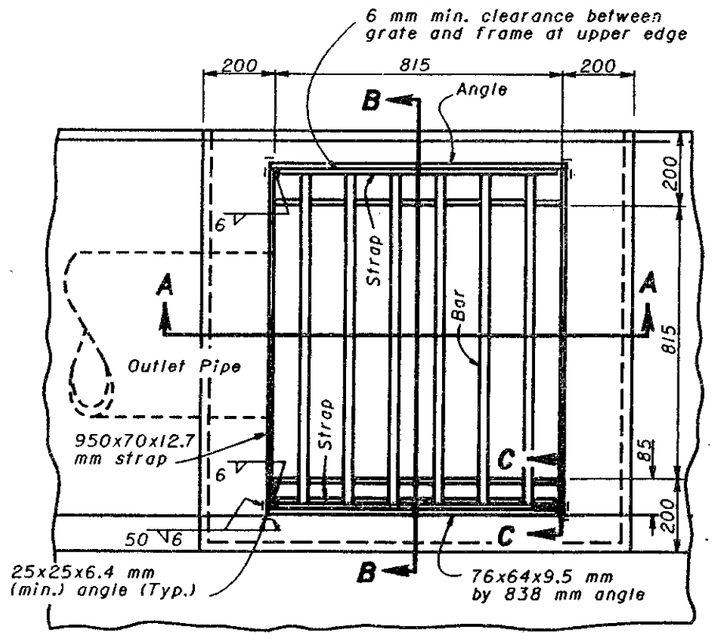


PLAN OF ROADSIDE DITCH GRADING AT CATCH BASIN

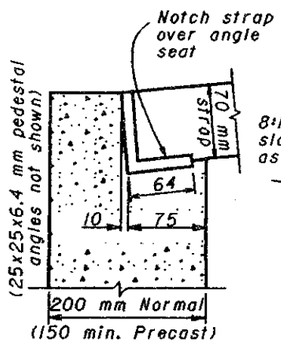


VERTICAL SCALE DISTORTED

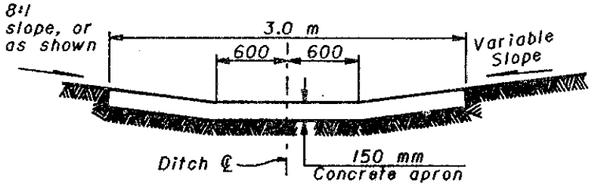
PROFILE OF ROADSIDE DITCH GRADING AT CATCH BASIN



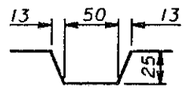
PLAN OF CATCH BASIN



SECTION C-C



UPSTREAM END VIEW OF CONCRETE APRON OR GROUTED RIPRAP



KEY JOINT

NOTES

GRATE AND FRAME: Shall be of structural steel in accordance with CMS 711.01 and 513. The design shall be essentially the same and equally as strong as the one shown hereon.

GRATE: Shall be depressed 75 mm below the upstream end of the concrete apron at the centerline of the ditch. Unless Grate "B" is specifically required by the plans, Grate "A" shall be furnished and installed.

WALLS: Brick or cast-in-place walls shall have a nominal thickness of 200 mm from the bottom slab to the upper box. Precast walls shall hava a minimum thickness of 150 mm and be reinforced sufficiently to permit shipping and handling without damage.

STEPS: Steps meeting the requirements of Std. Constr. Dwg. MH-1.1M shall be provided where the depth exceeds 1.8 m.

BASINS OVER 3.5 m IN DEPTH: Shall be precast or cast-in-place concrete; reinforced with #15M bars on 300 mm centers both vertically and horizontally with 50 mm clearance from inside wall face.

LOCATION AND ELEVATION: When given on the plans, the location is the center of the grate. The elevation is the lowest point on the grate.

OPENINGS: Pipe openings shall be the outside diameter of the pipe being supplied plus 50 mm when prefabricated or field cut. The interstitial space shall be filled with grout per CMS 601.

CONCRETE APRONS: Aprons are to be constructed in such a manner that the outside edges are at equal elevation.

DITCH PROTECTION: Provide a 50 m length of ditch erosion protection as shown. Installation and payment for ditch erosion protection shall comply with CMS 670.

BASINS IN SAG: When in a sag, omit the earth dike and longitudinal slope of the grate, and provide concrete and ditch protection on each side of the basin.

COST: The concrete apron or grouted riprap and dike shall be considered incidental to Item 604, Catch Basins. However, the apron is not required when Item 604, Catch Basins, Without Apron is specified.

CONSTRUCTION INFORMATION
Typical mass of grate - 84 kg
Typical mass of frame - 27 kg

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces CB-5.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

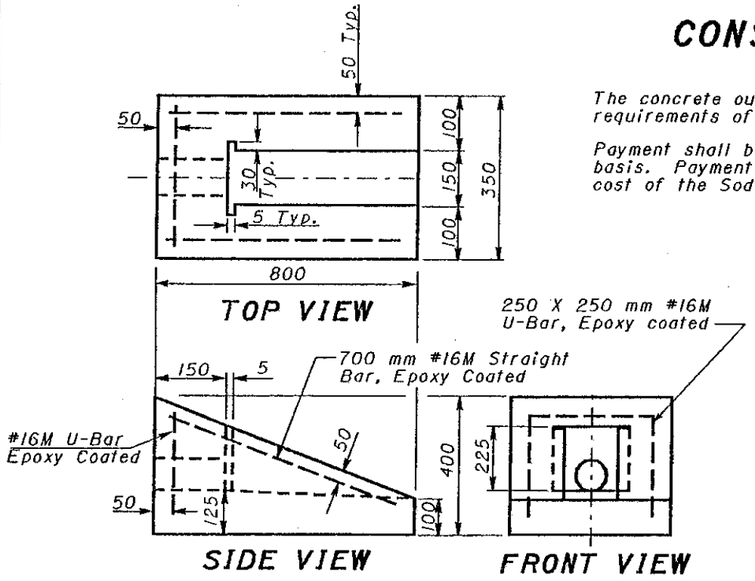
CATCH BASIN No. 5

DATE 7-12-95

STANDARD CONSTRUCTION DRAWING **CB-3.2M**

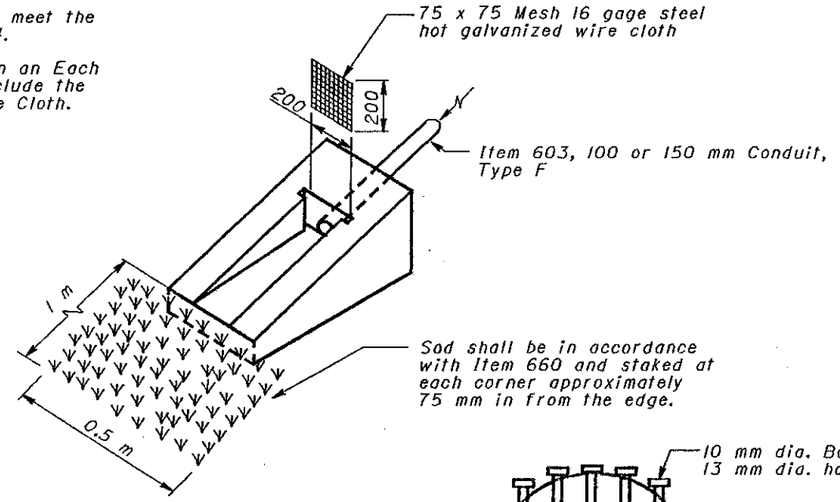
APPROVED W. K. Hulman
ENGR., L & D

CONSTRUCTION METHODS



The concrete outlet shall meet the requirements of CMS 604.

Payment shall be made on an Each basis. Payment shall include the cost of the Sod and Wire Cloth.

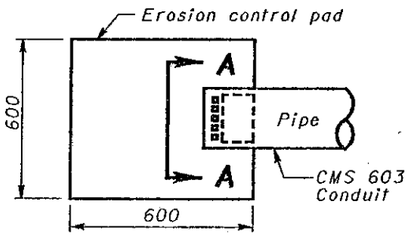


PRECAST REINFORCED CONCRETE OUTLET

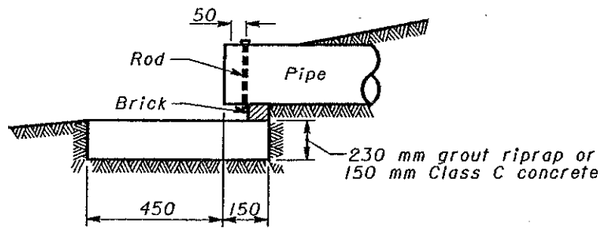
NOTES

MASONRY COLLARS: A masonry collar shall be provide where plans require that a pipe extension be joined to the end of an existing pipe with a butt joint. The cost shall be included in the unit price bid for the new conduit.

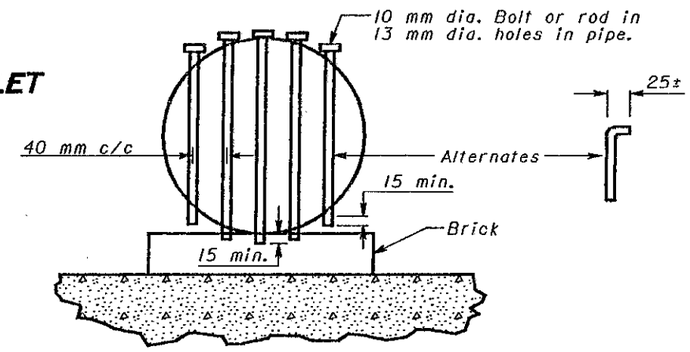
EROSION CONTROL PAD AND ANIMAL GUARDS: These items shall be provided at the outlet end of all farm drains except where they outlet into a drainage structure.
The steel bolts or rods for the animal guard shall be galvanized per CMS 710.06.
In lieu of drilling or punching the 13 mm diameter holes into the pipe, a metal collar meeting all of the above requirements may be clamped onto the pipe if approved by the Engineer.
Payment for the erosion control pads and animal guards shall be included in the unit price bid for Item 603 __ mm Conduit, Type __ .



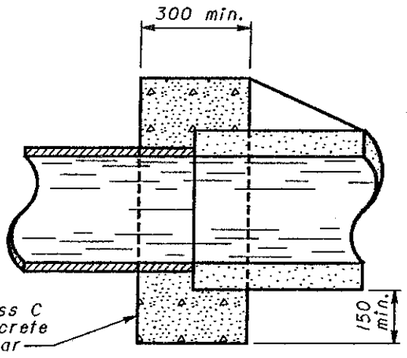
PLAN



PROFILE



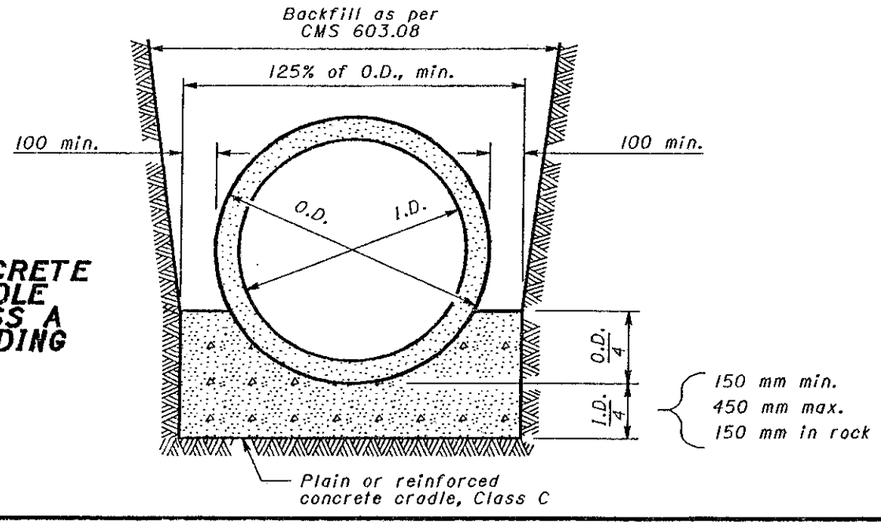
SECTION A-A



MASONRY COLLAR

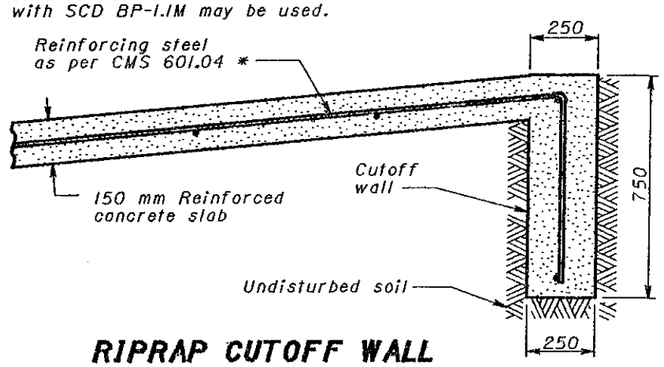
EROSION CONTROL PAD AND ANIMAL GUARD FOR OUTLET PIPE

Conduit Size (mm)	100	150	200	250	300	375	450
No. of Bolts	2	3	5	6	7	9	11



CONCRETE CRADLE CLASS A BEDDING

* If wire fabric is used in the slab, #10M bars at 600 mm overlapping the fabric. 300 mm, or wire fabric in accordance with SCD BP-1.1M may be used.



RIPRAP CUTOFF WALL

The cost of the cutoff wall shall be included in the unit price bid for Item 601 Riprap using 150 mm reinforced concrete slab

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces MC-4.

OHIO DEPARTMENT OF TRANSPORTATION

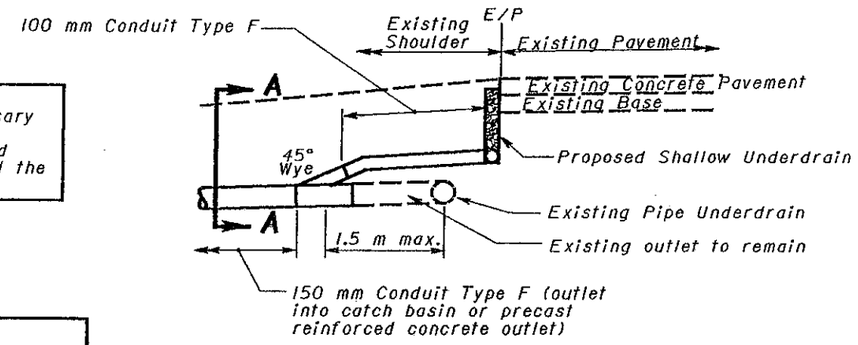
OUTLETS, DRAINS AND SEWERS

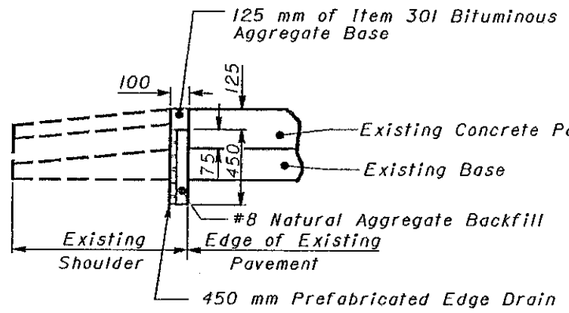
DATE: 6-30-95, 10-21-97

STANDARD CONSTRUCTION DRAWING **DM-1.1M**

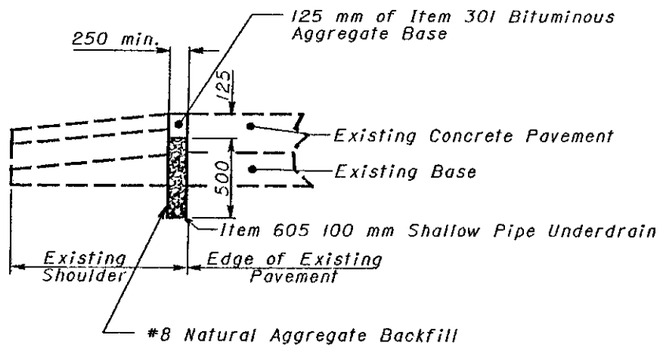
APPROVED Larry F. Sutherland

NOTE:
The cost of the 100 mm Conduit Type F and necessary pipe bends and branches needed to connect the existing and proposed underdrains shall be included with the cost of the 150 mm Conduit Type F beyond the existing underdrain.

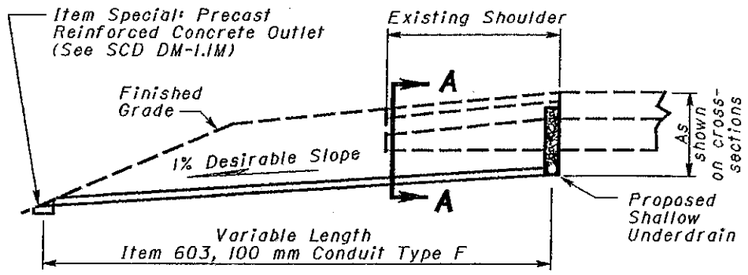


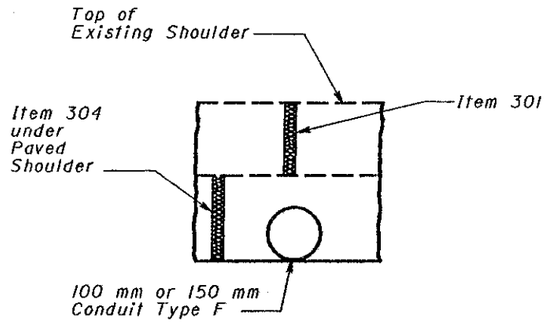


PREFABRICATED EDGE DRAIN SYSTEM



PIPE UNDERDRAIN SYSTEM





SECTION A-A

SHALLOW UNDERDRAIN SYSTEM

NOTES

DESCRIPTION: This item shall consist of furnishing and installing either a pipe underdrain system or a prefabricated edge drain system in accordance with the specifications and with the details on the plans or as directed by the Engineer.

MATERIALS: The underdrain shall either be a pipe underdrain system or a prefabricated edge drain system meeting the requirements of CMS 605.

BASIS OF PAYMENT FOR PIPE UNDERDRAIN SYSTEM ONLY: Work completed, accepted and measured under this item shall be paid for the contract unit price bid for Item 605 - 100 mm Shallow Pipe Underdrain. The price shall be full compensation for excavation and backfill; for furnishing materials, including materials for outlet fittings and Item 301; and for all labor, tools, equipment and incidentals necessary to complete the work.

BASIS OF PAYMENT FOR SHALLOW UNDERDRAIN SYSTEM: Work completed, accepted and measured under this item shall be paid for at the contract unit price bid for Item 605 - Shallow Underdrain. The price shall be full compensation for excavation and backfill; for removing and disposing of all surplus excavation in accordance with CMS 203; for furnishing materials, including materials for splices, outlet fittings, and Item 301; and for all labor, tools, equipment and incidentals necessary to complete the work associated with the installation of prefabricated edge drains or pipe underdrains.

BASIS OF PAYMENT FOR PREFABRICATED EDGE DRAIN SYSTEM: Work completed, accepted and measured under this item shall be paid for at the contract unit price bid for Item 605 - 450 mm Prefabricated Edge Drain. The price shall be full compensation for excavation and backfill; for removing and disposing of all surplus excavation in accordance with CMS 203; for furnishing materials, including materials for splices, outlet fittings, and Item 301; and for all labor, tools, equipment and incidentals necessary to complete the work associated with the installation of prefabricated edge drains or pipe underdrains.

All dimensions are in millimeters unless otherwise noted.

metric units

OHIO DEPARTMENT OF TRANSPORTATION

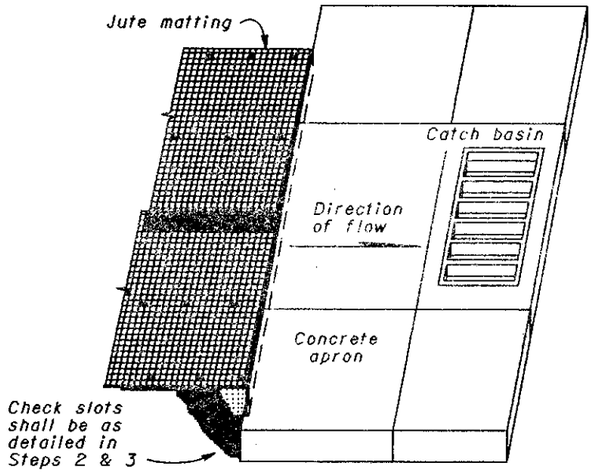
SHALLOW UNDERDRAINS

DATE
6-30-95
10-21-97

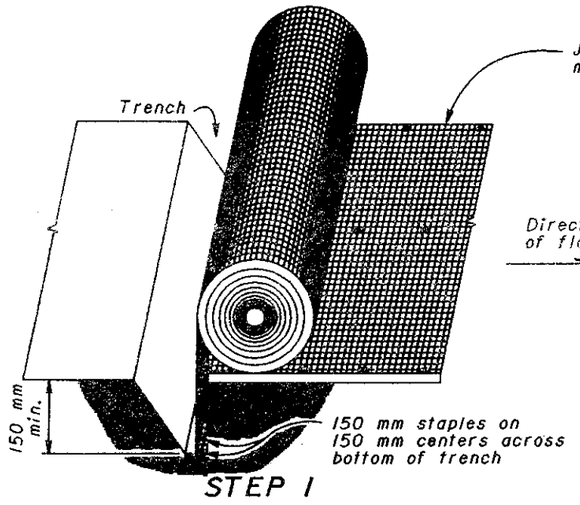
STANDARD CONSTRUCTION DRAWING **DM-1.2M**

APPROVED Gary F. Sutherland

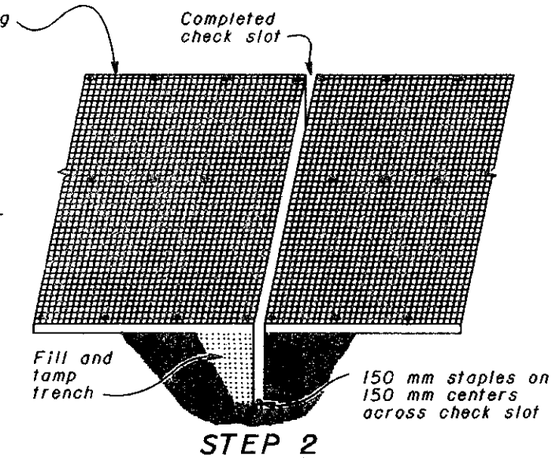
JUTE MATTING INSTALLATION



CHECK SLOT AT STRUCTURES

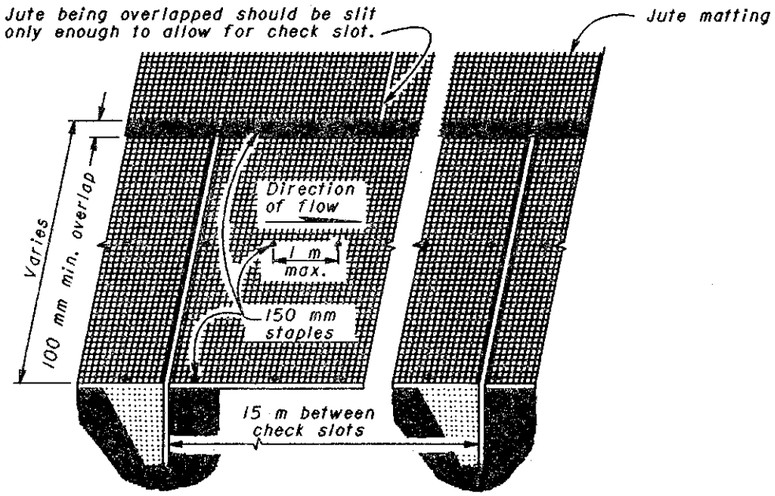


STEP 1

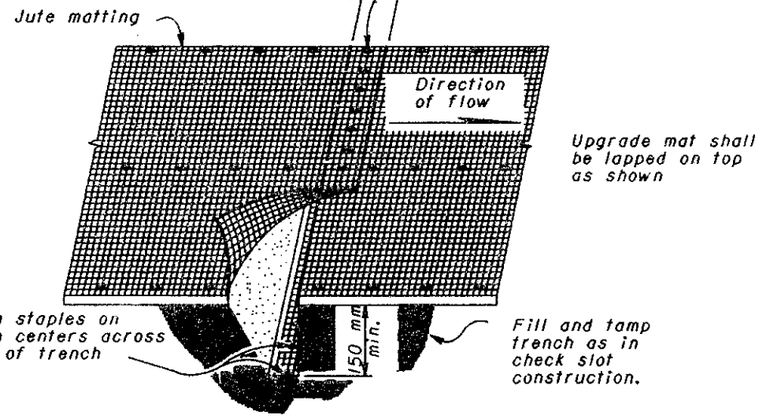


STEP 2

CHECK SLOT CONSTRUCTION DETAILS

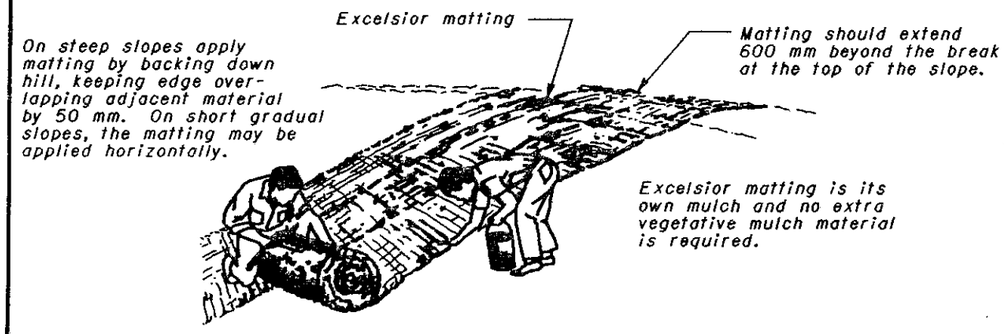


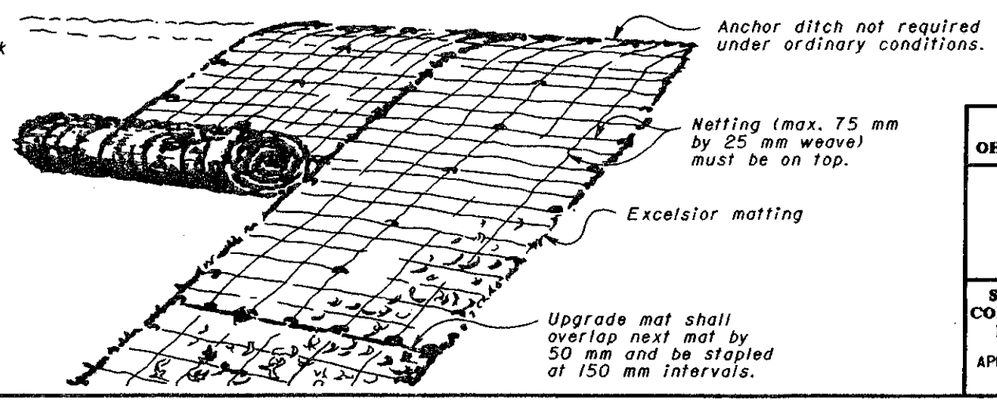
TYPICAL INSTALLATION



END OF ROLL OVERLAP

EXCELSIOR MATTING INSTALLATION





NOTES

GENERAL: The details shown hereon shall govern the installation of jute and excelsior matting unless otherwise shown in the plan.

END OF RUN: Jute matting shall have a check slot and be stapled in the slot as shown in Step 4. Matting placed for ditch protection shall start from the downstream end, as shown in Step 1.

EXCELSIOR MATTING: Matting shall be stapled as detailed for jute matting except the roll ends and 50 mm end overlaps shall be stapled on 150 mm centers without a buried end; and a 150 mm overfold shall be placed across long rolls at intervals of 15 m or less and stapled on 150 mm centers.

STAPLES: Staples shall be in accordance with CMS 667.02.

metric units

This Drawing Replaces MC-10.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

JUTE & EXCELSIOR MATTING

DATE 6-30-95

STANDARD CONSTRUCTION DRAWING **DM-4.2M**

APPROVED D. K. Hulman
ENGR., L & D

STRAW OR HAY BALES

BALE PLACEMENT: Bales shall be tightly placed adjacently and entrenched 2" [50] to 3" [75] before staking; or a small amount of loose soil shall be lightly compacted along the upstream edge of the bales.

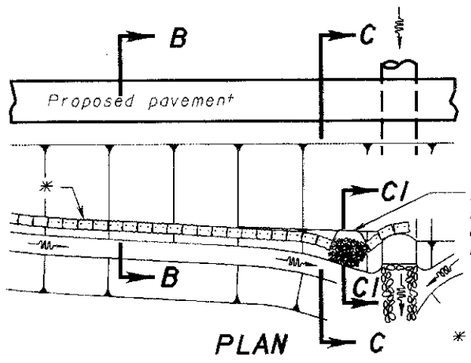
Each bale shall be firmly staked with a minimum of two stakes at least 3' [1 m] in length. Stakes shall be wooden 2"x2" [50x50], reinforcing bars or fence posts.

Loose straw or hay shall be wedged between and under staked bales.

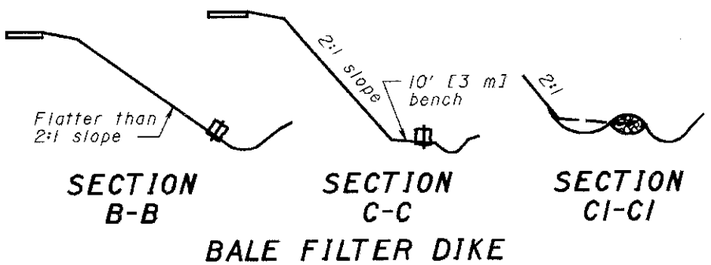
PITS: Sediment pits shall be provided and their cost included in the unit price bid for the adjacent SS 877 items.

MAINTENANCE: The maintenance or replacement will be paid for by the Department under unit bid prices, agreed unit price, or under 109.04.

BASIS OF PAYMENT: Straw or hay bale installation shall be paid for under **Item 877 - Temporary Perimeter Filter Fabric Fence.** Cost will include placing, staking and removing.

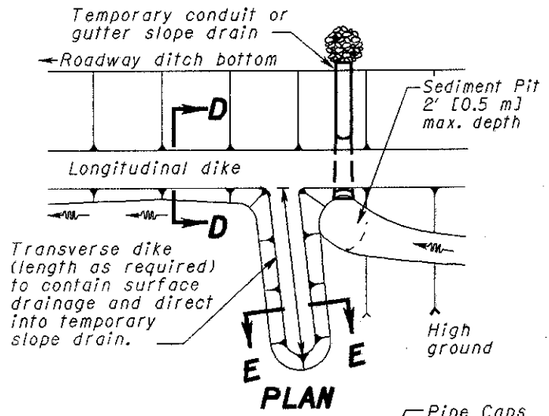


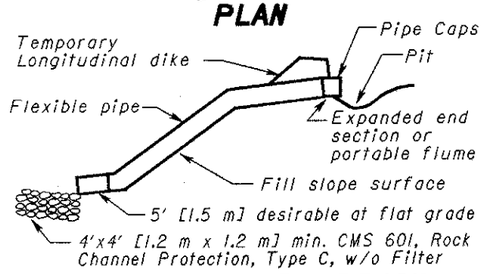
*Use Bales or Temporary Perimeter Filter Fabric Fence constructed per **SCD DM-4.4**



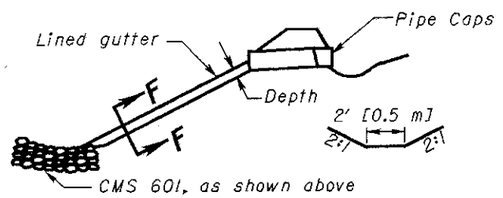
BALE FILTER DIKE

DIKES AND SLOPE PROTECTION

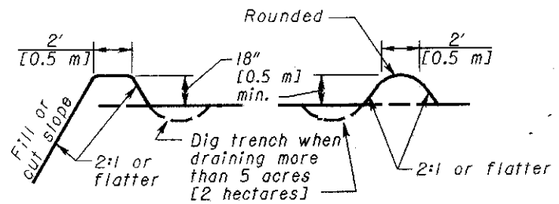




CONDUIT SLOPE DRAIN



SECTION F-F
GUTTER SLOPE DRAIN



SECTION D-D SECTION E-E

TEMPORARY SLOPE DRAINS RECOMMENDED SIZES				
Area in acres [hectares]	Pipe Sizes			Gutter depth
	Smooth	Corrugated	Half-round	
0-4 [0-1.6]	6" [150]	6" [150]	18" [450]	8" [200]
4-8 [1.6-3.2]	8" [200]	12" [300]	18" [450]	8" [200]
8-12 [3.2-4.9]	10" [250]	15" [375]	21" [525]	12" [300]

GENERAL: Dikes & drains shown shall be used when earthwork operations on slopes are higher than 8' [2.5 m] and fill operations are suspended for three weeks or more. Smaller dikes used at the end of a day's operation shall be considered as part of the earthwork. Temporary slope drains shall be suitably positioned and anchored to prevent movement or undermining.

LONGITUDINAL DIKES: Longitudinal dikes shall be constructed of suitable material as per CMS 203 and compacted to 85% of maximum density.

CONDUITS: Conduits for slope drains shall be corrugated steel pipe, corrugated or smooth plastic pipe, rubber conduit, or an approved equal.

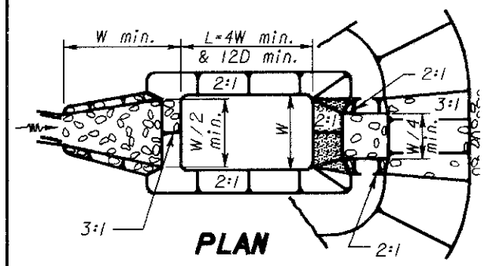
GUTTERS: Gutters for slope drains shall be lined with Type C rock channel protection, crushed aggregate slope protection, portland cement concrete, bituminous concrete, plastic sheeting (on slopes 4:1 max.), partial pipe sections or approved equal.

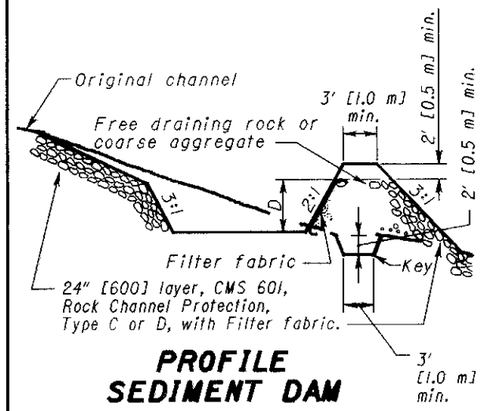
PITS: Sediment pits shall be provided and their cost included in the unit price bid for the adjacent items.

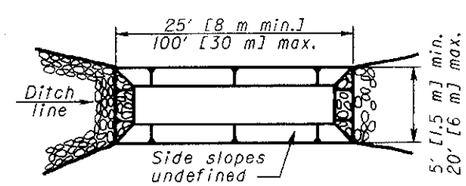
MAINTENANCE: Dikes and slope protection shall be acceptably maintained. The maintenance or replacement cost will be paid for by the Department under unit bid prices, agreed unit prices, or CMS 109.04.

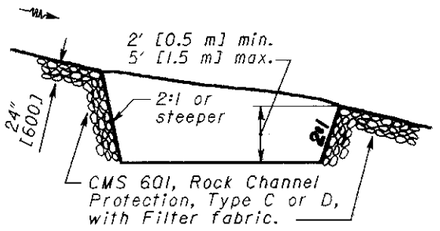
BASIS OF PAYMENT: Temporary dikes shall be paid for under **Item 877-Temporary Dikes.** Temporary slope drains shall be paid for under **Item 877-Temporary Slope Drains.** Rock required shall be paid for under **Item 601, Rock Channel protection, Type C, w/o Filter.**

SEDIMENT BASINS & DAMS









EMBANKMENT: Sediment basin embankment construction shall be as per CMS 203.

FILTERS: Filter fabric shall be per CMS 601.02 and installed per CMS 601.08 or as detailed here. Such fabrics may be cleaned in lieu of replacement. The cost of all filter fabric required to construct the sediment basin or dam shall be included in the cost of the Item 601, Rock Channel Protection, with Filter Fabric.

SIZE: The volume shown on the plans is the total storage volume required for the sediment basin or dam (67 cubic yards per acre [127 cubic meters per hectare]). A series of smaller basins or dams may be substituted for a larger basin or dam.

MAINTENANCE: Sediment pits, dams and basins shall be acceptably maintained. The maintenance or replacement cost will be paid for by the Department under unit bid prices, agreed unit prices, or CMS 109.04.

BASIS OF PAYMENT: Sediment Dams and Basins shall be paid for under **Item 877-Sediment Basin and Dams.** The pay quantity shall be the actual number of cubic yards [cubic meters] of excavation and embankment required to construct the basin or dam. Rock required shall be paid for under **Item 601, Rock Channel Protection, Type C or D, with Filter.**

THIS DRAWING REPLACES DM-4.3M DATED 6-30-95.

OHIO DEPARTMENT OF TRANSPORTATION — DATE 4-29-99
ROADWAY DESIGN ENGINEER

REVISIONS

STDS. ENGR. W. EVANS — DRAWN D. FOCKE

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

DESIGN AGENCY: OFFICE OF PLANNING

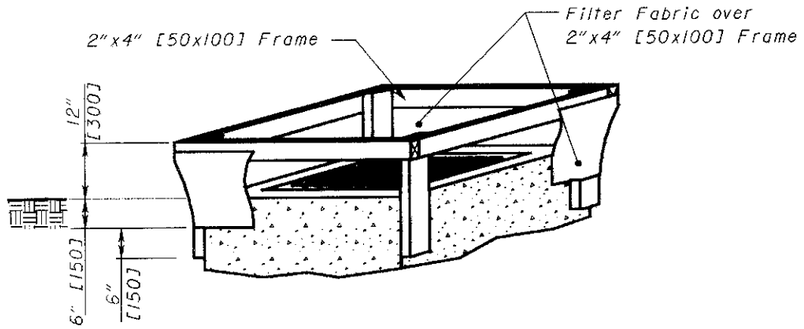
STANDARD ROADWAY CONSTRUCTION DRAWING

TEMPORARY EROSION CONTROL

NUMBER DM-4.3

1 / 1

TEMPORARY INLET PROTECTION FILTER FABRIC FENCE



MATERIALS: Filter Fabric shall meet the requirements of CMS 712.09, Type C. The framing wood shall be construction grade 2"x4" [50x100] lumber.

CONSTRUCTION: Excavate a 6" [150] deep trench around the inlet, then drive the 2"x4" [50x100] posts 6" [150] below the excavated trench. Construct the wooden frame using the overlap joint detail shown above. The filter fabric shall be stretched around the wooden frame and securely fastened. The filter fabric shall overlap across one side of the inlet such that the ends of the filter fabric are not attached to the same post. Backfill and compact the excavated soil. Other devices may be used with the approval of the Director.

MAINTENANCE: The filter fabric shall be maintained to be functional, This shall include removal of trapped sediment and required cleaning, repair, and/or replacement of the filter fabric. The maintenance or replacement cost will be paid for by the Department under unit bid prices, agreed unit prices, or under CMS 109.04.

PAYMENT: The cost of all materials, construction and removal shall be paid for under **Item 877 - Temporary Inlet Protection Filter Fabric Fence, Linear Foot [Meter].**

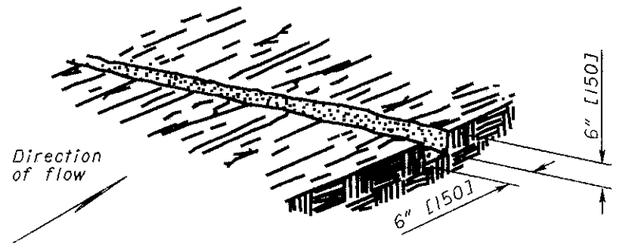
NOTES

MATERIALS: Filter fabric shall meet the requirements of CMS 712.09, Type C. Support stakes shall be a minimum of 1.5"x1.5" [38x38], nominal, and shall be hardwood of sound quality. The stakes shall be driven a minimum of 6" [150] below the bottom of the filter fabric. The maximum spacing between support stakes shall be 10' [3 m].

CONSTRUCTION: The bottom of the fabric shall be buried 6" [150] below the ground. The ends of adjacent sections of fence shall be overlapped with the end stake of each section wrapped together prior to installation. The ground elevation of the fence shall be held constant except that the end elevations shall be raised upslope to prevent flow around the end of the fence.

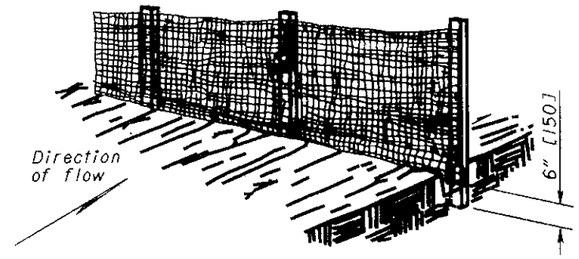
MAINTENANCE: The filter fabric fence shall be maintained to be functional. This shall include removal of trapped sediment and required cleaning, repair, and replacement of the filter fabric. The maintenance or replacement cost will be paid for by the Department under unit bid prices, agreed unit prices, or CMS 109.04.

PAYMENT: The cost of all materials, construction and removal shall be paid for under **Item 877 - Temporary Perimeter Filter Fabric Fence or Temporary Ditch Check Filter Fabric Fence, Linear Foot [Meter].**



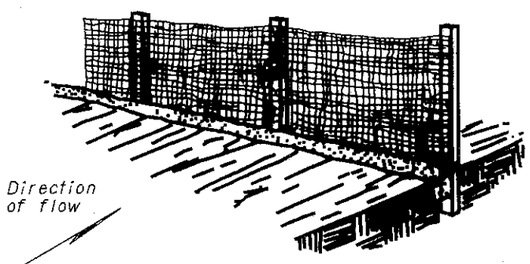
Excavate a 6"x6" [150x150] trench along the proposed fence line.

STEP 1



Place fabric and support stakes and extend fabric into the trench.

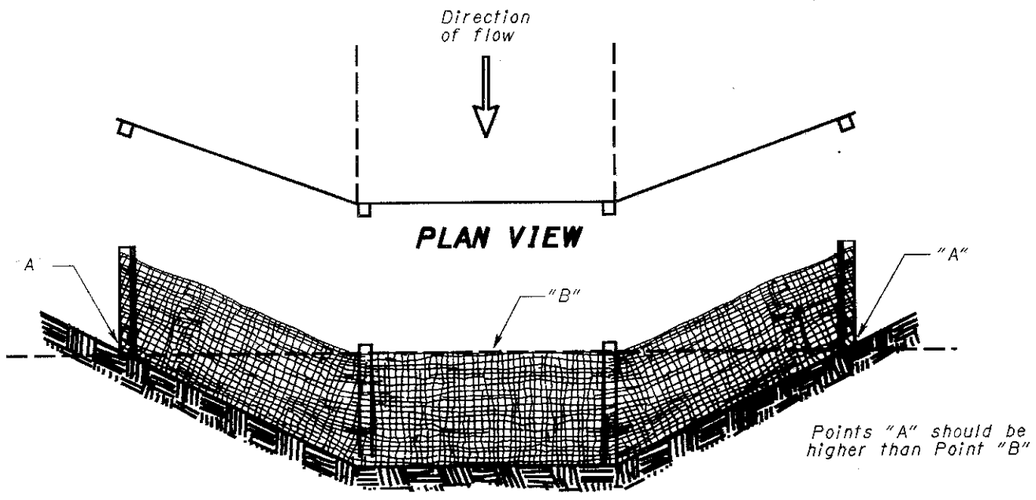
STEP 2



Backfill and compact the excavated soil.

STEP 3

PLACEMENT AND CONSTRUCTION OF PERIMETER FILTER FABRIC FENCE



PLACEMENT AND CONSTRUCTION OF DITCH CHECK FILTER FABRIC FENCE

THIS DRAWING REPLACES DM-4.4M DATED 6-30-95.

OHIO DEPARTMENT OF TRANSPORTATION
Randy St. Clair 4-29-99
ROADWAY DESIGN ENGINEER — DATE

REVISIONS

STDS. ENGR. M. EVANS
DRAWN D. FOCKE

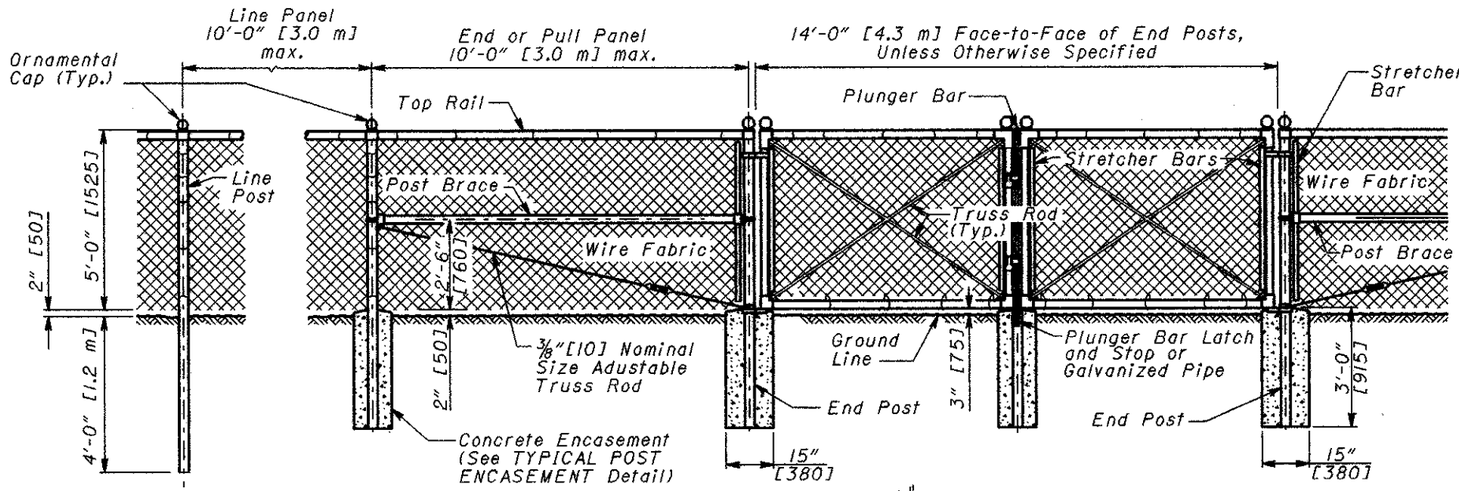
All metric dimensions [in brackets [ ]] are in millimeters unless otherwise noted.

DESIGN AGENCY
OFFICE OF PLANNING

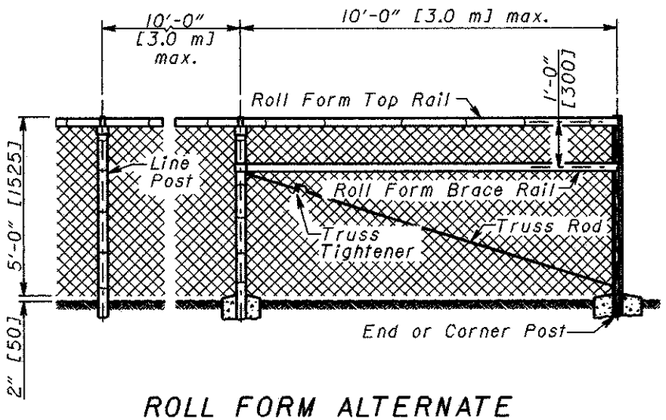
STANDARD ROADWAY CONSTRUCTION DRAWING
TEMPORARY EROSION CONTROL

NUMBER DM-4.4

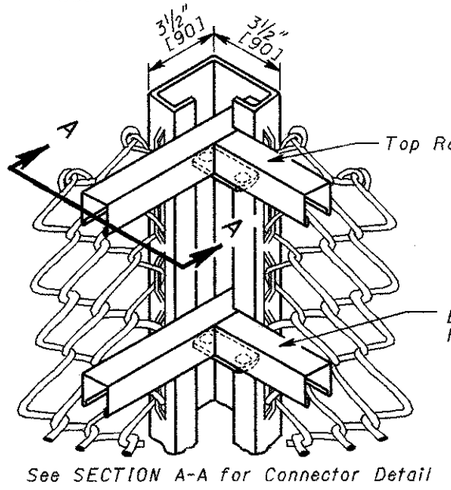
1 / 1



TYPE CL FENCE

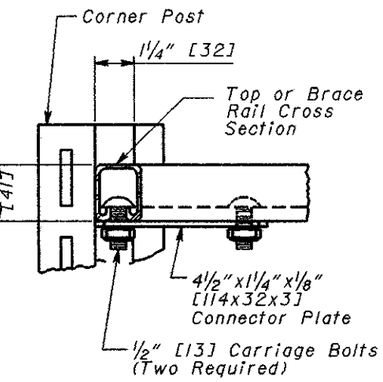


ROLL FORM ALTERNATE

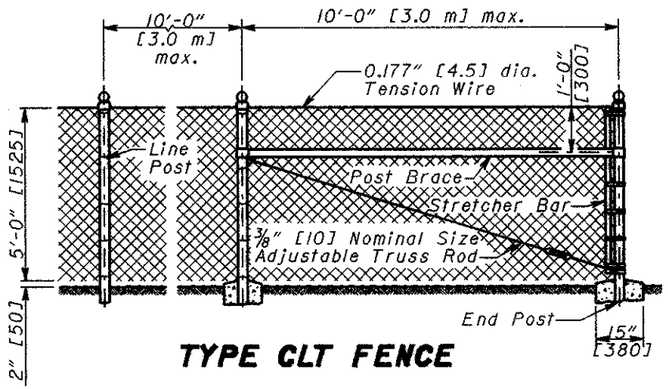


See SECTION A-A for Connector Detail

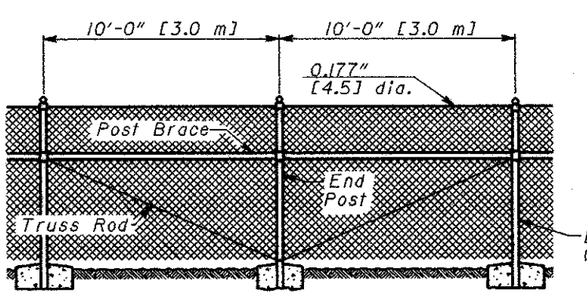
ROLL FORM ALTERNATE
CORNER POST
Fabric Outside



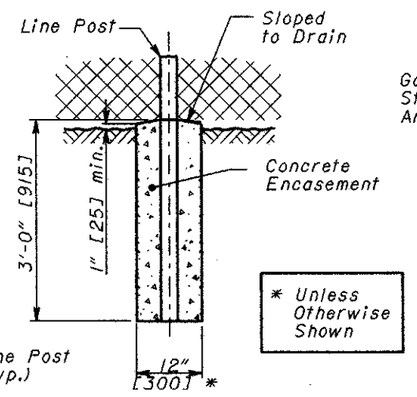
SECTION A-A



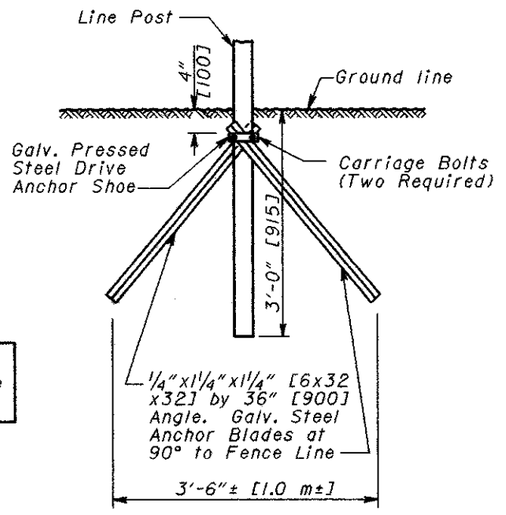
TYPE CLT FENCE



INTERMEDIATE ANCHOR POST ASSEMBLY
For Type CLT Fence



TYPICAL POST ENCASEMENT



DRIVE ANCHOR DETAIL
For Line Post Alternate

NOTES

STREAM CROSSINGS: *Where chain link fence is to be constructed continuously across streams, and stream crossing closures are required by the plans, the closure shall be constructed in accordance with the details shown on* ***SCD F-3.4,*** *modified as necessary to conform to chain link fence dimensions and details.*

TENSION WIRE: *Wire shall be used instead of the top rail when specified on the plans as Item 607 - Fence, Type CLT. The wire shall be stretched taut and fastened to or passed through the top fitting. The fence shall be fastened to the tension wire with fabric ties consisting of hog rings every 24" [600] or less.*

GATES: *Each gate shall be equipped with an approved padlock with a double locking bolt, a five-pin tumbler, a laminated steel case, and a brass cylinder, and shall be rust-proof. Where companion gates are installed on opposite sides of the highway, tumblers shall be identically set in each lock so that the same key will open each lock. Two keys shall be furnished with each padlock. The cost of the padlock and keys shall be included in the cost of the gate.*

POST ENCASEMENT: *Line posts shall normally be driven to an embedment depth of 48" [1.2 m]. Where soil or other conditions do not permit driving to this depth, post holes shall be dug or bored and the posts encased in concrete. Posts located in unconsolidated fills or other loose soils, in dips or other depressions in the ground surface, or installed with fabric exceeding 60" [1525] in height shall also be encased in concrete.*

Steel drive anchors may be used as an alternate to concrete encasement of line posts. All end, corner and pull panel posts shall be encased in concrete. See DRIVE ANCHOR DETAIL.

FRAMEWORK AND FABRIC: *Materials may be any type permitted by CMS 710.03.*

FENCE GROUNDING: *When needed for overhead electrical lines, grounding is to be in accordance with the* ***Office of Traffic Engineering's SCD HL-50.11.***

THIS DRAWING REPLACES F-1.1M DATED 4-8-97.

OHIO DEPARTMENT OF TRANSPORTATION
Paul F. Sturgeon 7-28-00
ROADWAY DESIGN ENGINEER — DATE

REVISIONS

STDS. ENGR. M. Evans
DRAWN D. Focke

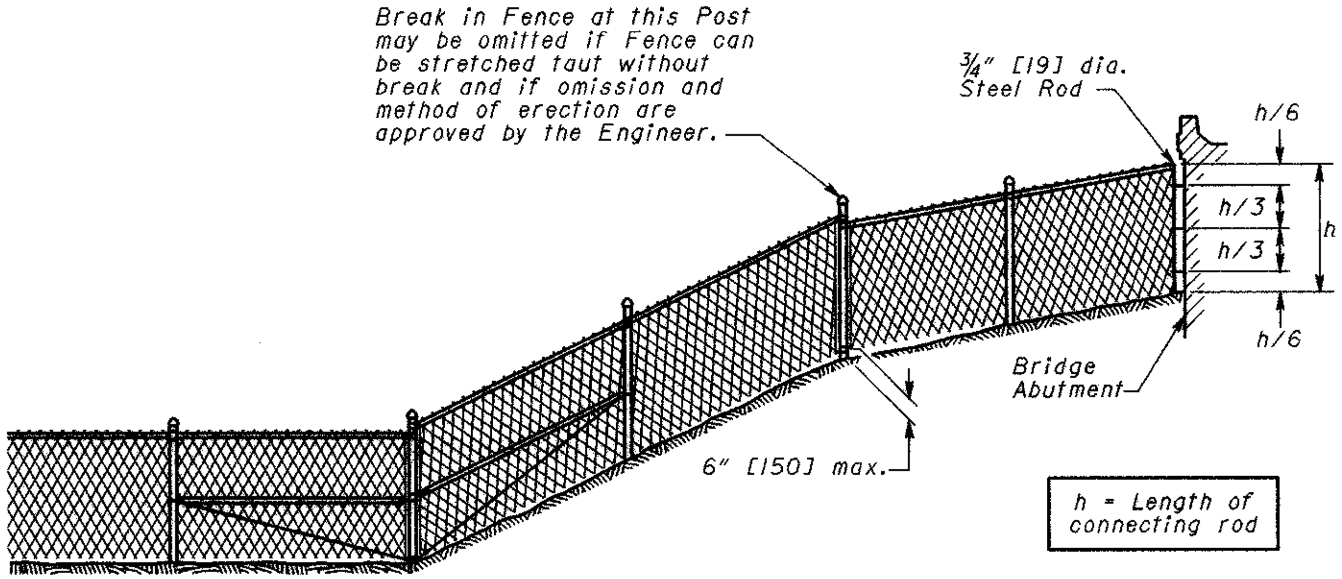
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

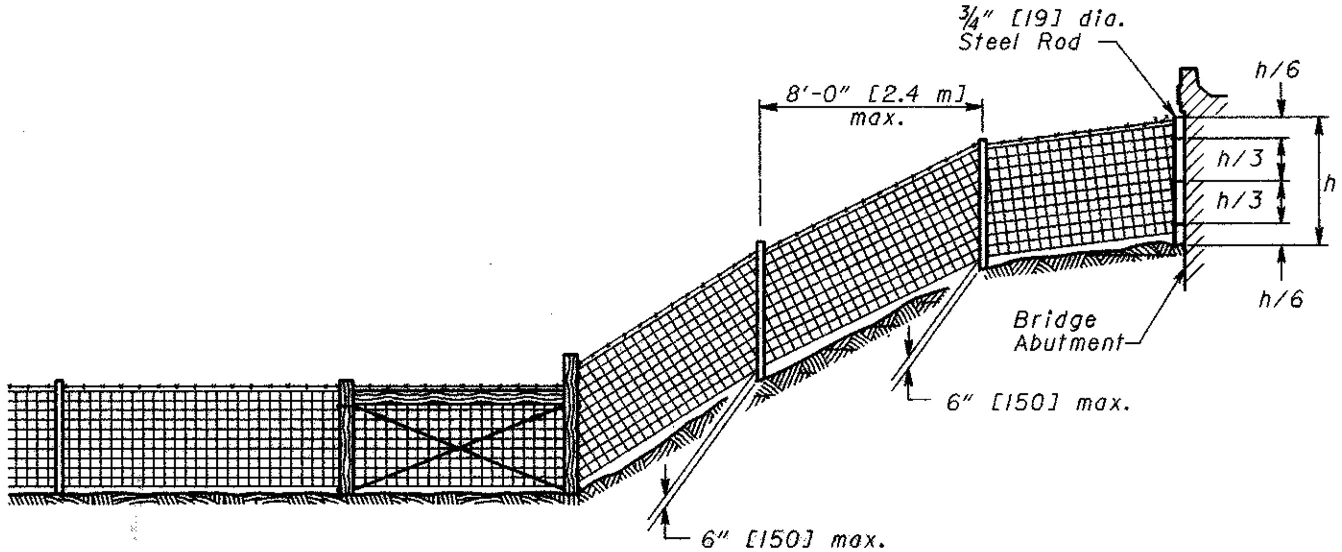
STANDARD ROADWAY CONSTRUCTION DRAWING
CHAIN LINK FENCE

NUMBER F-1.1

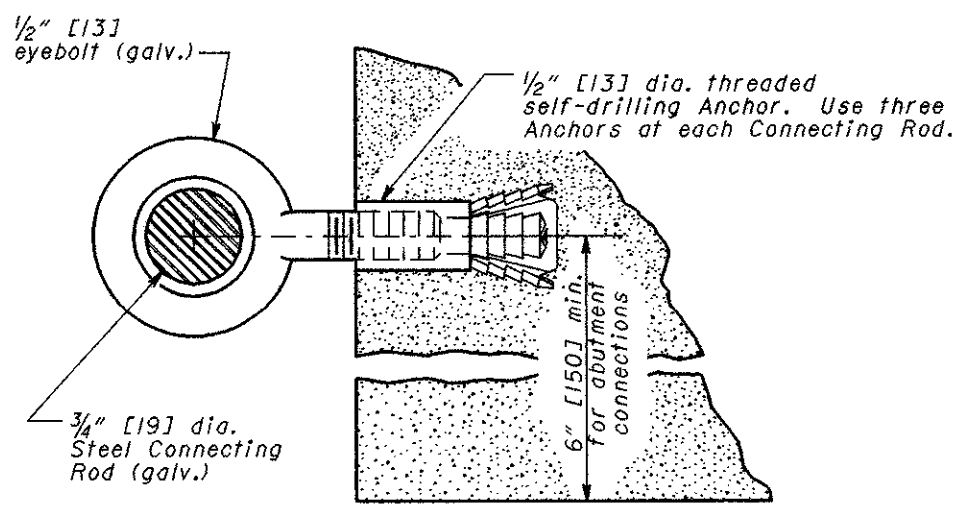
1 / 1



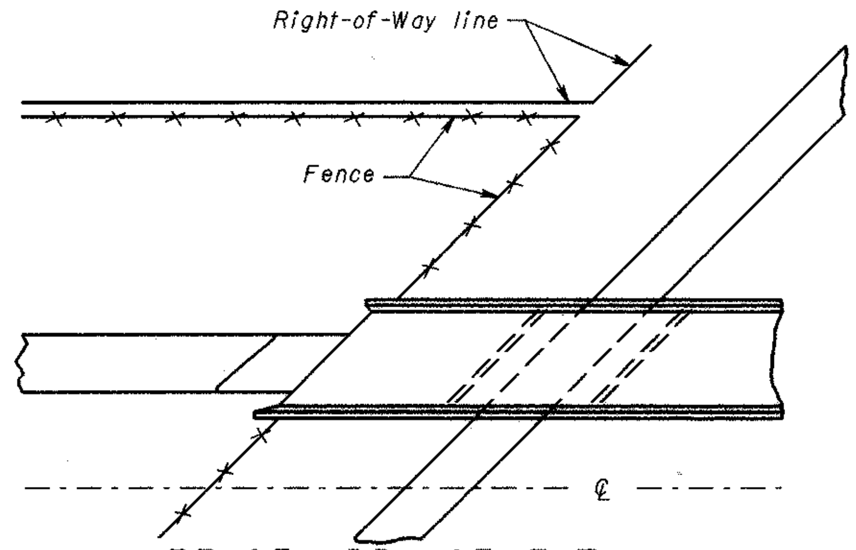
CHAIN LINK FENCE



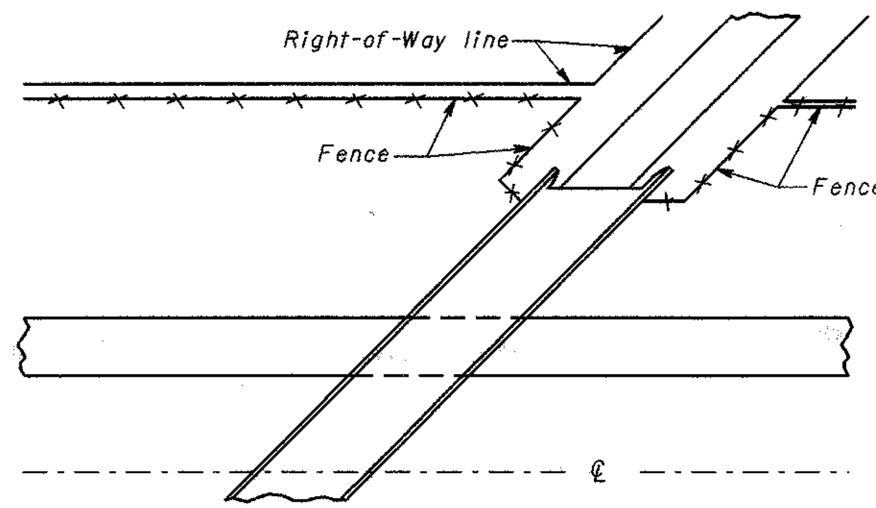
WOVEN WIRE FENCE



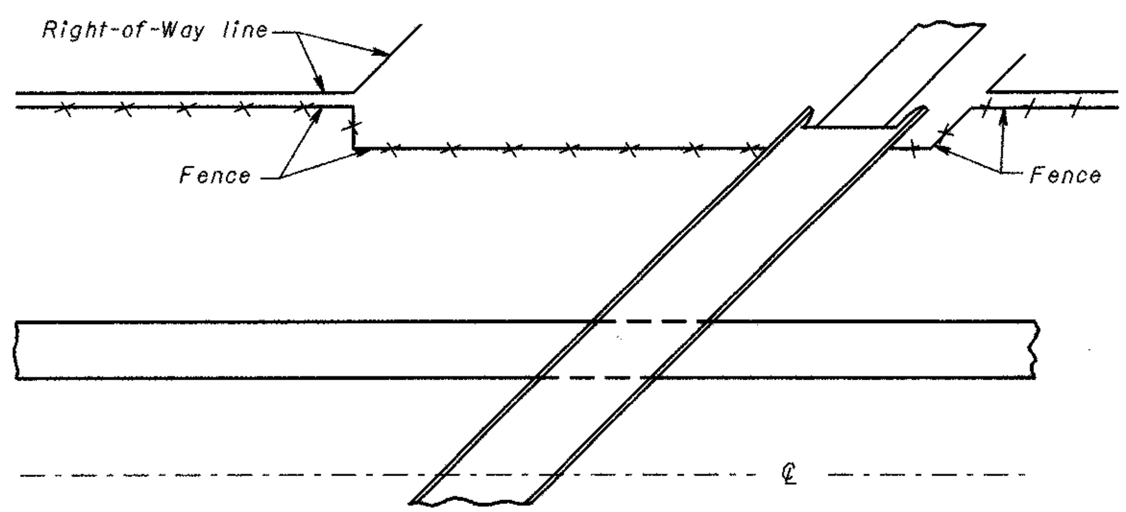
ABUTMENT CONNECTION



FENCE ARRANGEMENT AT FREEWAY OVERPASS



FENCE ARRANGEMENT CROSS ROAD ON ORIGINAL PROFILE



FENCE ARRANGEMENT CROSS ROAD ON HIGH FILL

NOTES

GENERAL: Details shown hereon shall be used with **SCD F-1.1** and **SCD F-2.1.**

ABUTMENT CONNECTION: The cost of furnishing and installing connecting rods, eyebolts, and anchors shall be included in the unit price bid per Linear Foot [Meter] of fence. Where needed to clear deck projections or other irregularities, the shaft length of the eyebolt may vary.

ANCHORS: Self-drilling anchors shall conform to CMS 712.01. Threaded steel inserts may be cast-in-place when the structure is constructed instead of using using self-drilling anchors.

EYEBOLTS: The steel shall be in accordance with ASTM A 489, except that the bend test is waived. The eyebolt shall be galvanized in accordance with ASTM A 153.

CLEARANCE: On embankments approaching bridges, the clearance of the lower fence wires may vary from 0 to 6" [150].

THIS DRAWING REPLACES F-3.1M DATED 4-21-95.

OHIO DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN ENGINEER
-28-00
DATE

REVISIONS

STDS. ENGR. M. Evans
DRAWN D. Focke

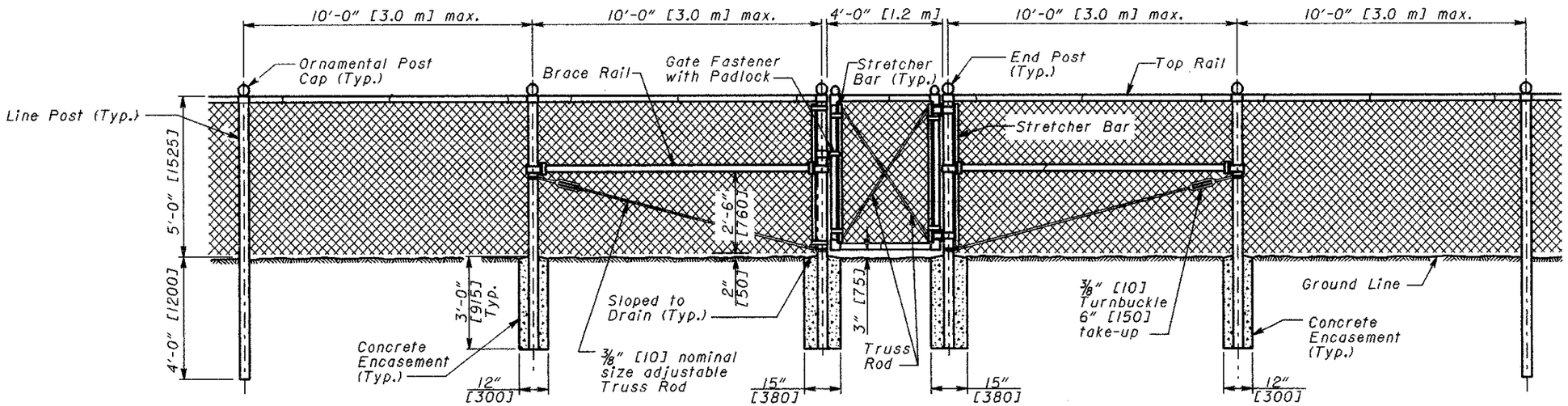
All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

ROADWAY ENGINEERING SERVICES

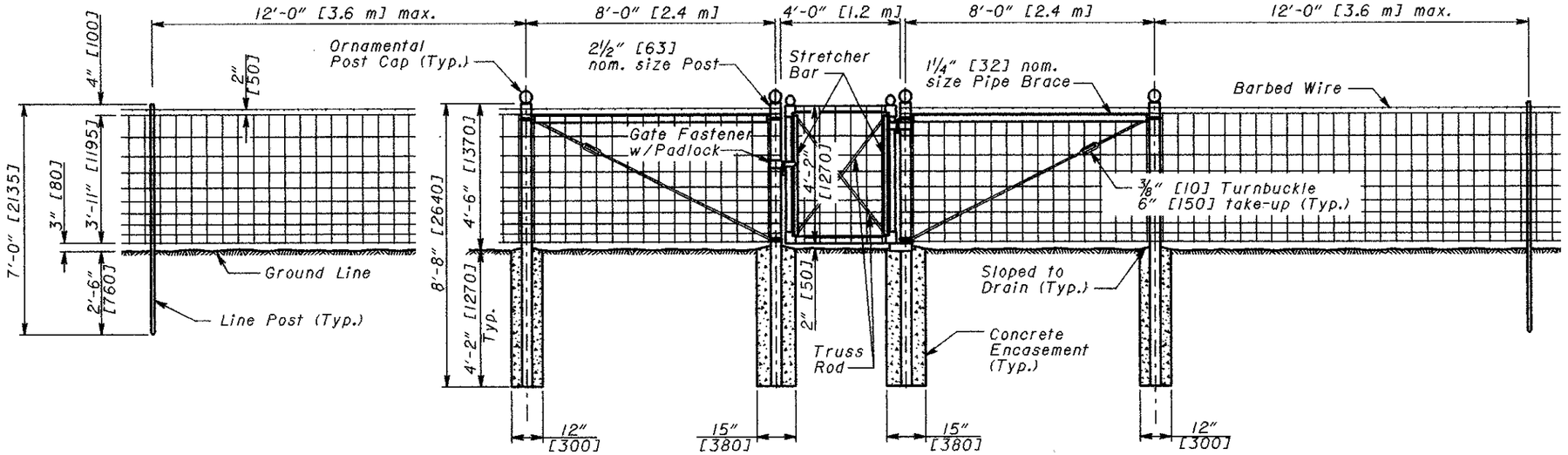
STANDARD ROADWAY CONSTRUCTION DRAWING
FENCE DETAILS AT BRIDGES

NUMBER F-3.1

1/1



CHAIN LINK WALK GATE



TYPE 47 WALK GATE

NOTES

GATES: Each gate shall be equipped with an approved padlock with a double locking bolt, a five-pin tumbler, a laminated steel case, and a brass cylinder, and shall be rust-proof. Where companion gates are installed on opposite sides of the highway, tumblers shall be identically set in each lock so that the same key will open each padlock. The cost of the padlock and keys shall be included in the cost of the gate.

TRUSS RODS: Rods may be omitted from gate frames if welded joints are furnished.

TYPE 47 WALK GATE: Walk gate and end post assemblies at gate openings shall conform to CMS 607, except as shown otherwise on this drawing.

THIS DRAWING REPLACES F-3.2M DATED 4-8-97.

OHIO DEPARTMENT OF TRANSPORTATION
Paul F. Sutherland — 7-28-00
ROADWAY DESIGN ENGINEER — DATE

REVISIONS	STDS. ENGR. M. Evans	DRAWN D. Focke

All metric dimensions (in brackets [ ]) are in millimeters unless otherwise noted.

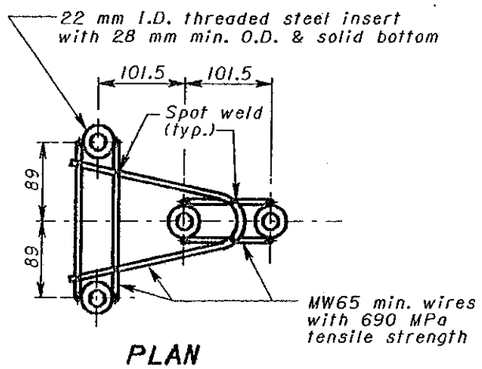
ROADWAY ENGINEERING SERVICES

STANDARD ROADWAY CONSTRUCTION DRAWING

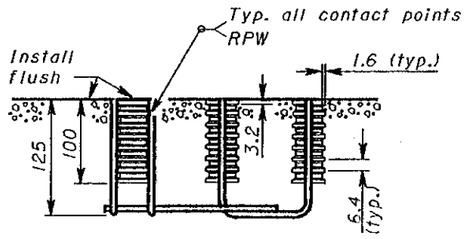
WALK GATES

NUMBER F-3.2

1 / 1



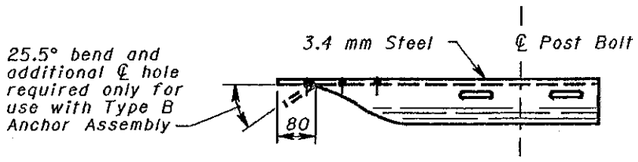
PLAN



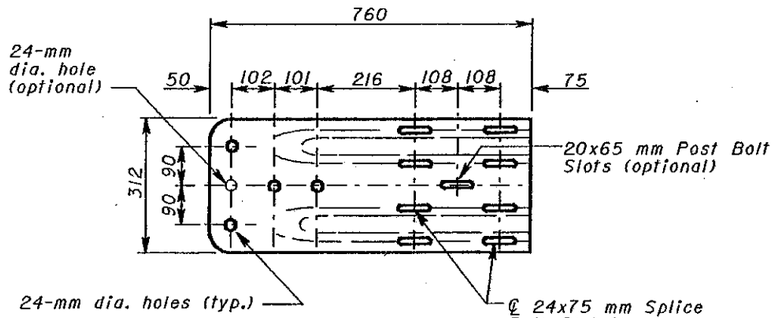
Four 22-mm bolts required

ELEVATION

CONCRETE INSERT ANCHOR ASSEMBLY (W-BEAM ONLY)

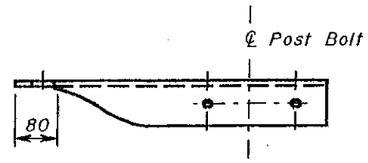


PLAN

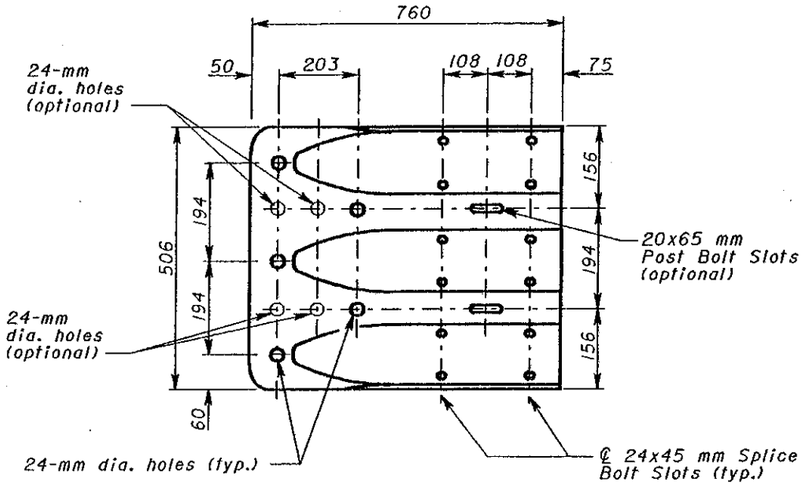


ELEVATION

W-BEAM TERMINAL CONNECTOR

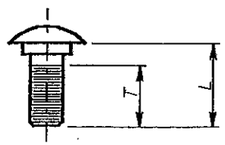


PLAN



ELEVATION

THRIE-BEAM TERMINAL CONNECTOR



L (mm)	T min. (mm)	Bolt Use
455 (Standard Rail)	85	Type 5: WP/WB, PB
660 (Barrier Rail)		
255	60	Type 4: WP Type 5: SP/WB, PB
50	35	Type 4: SP
32	Full	Splice Bolt

WP- wood post WB- wood blockout
SP- steel post PB- plastic blockout
Longer bolt may be needed for round WP larger than 200 mm dia.

BUTTON HEAD BOLT

(For post and splice bolts)

NOTE

Refer to AASHTO M 180 for dimensional details of W-Beam and Thrie-Beam rail elements, related buffer and end sections, beam splices, post and splice bolts and nuts, and Type 1 W-Beam to Thrie-Beam Transition section.

All dimensions are in millimeters unless otherwise noted.

metric units

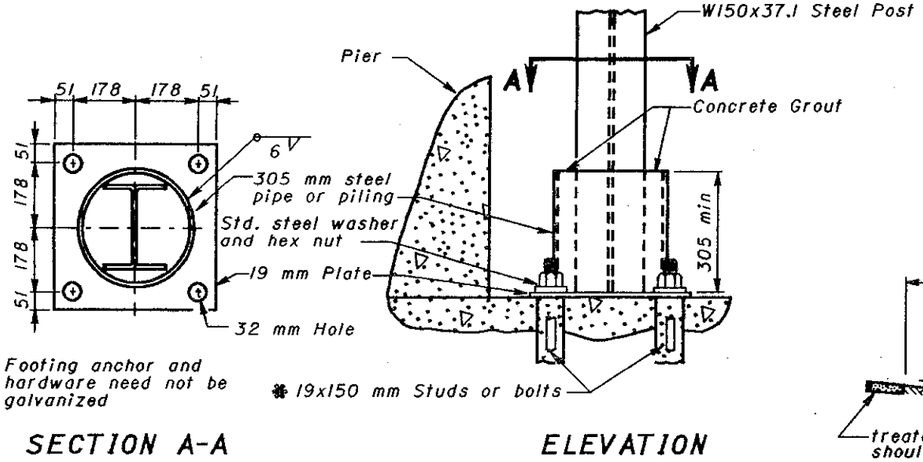
OHIO DEPARTMENT OF TRANSPORTATION

GUARDRAIL DETAILS

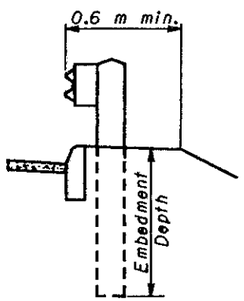
DATE
11-30-94
10-21-97

STANDARD CONSTRUCTION DRAWING GR-1.1M

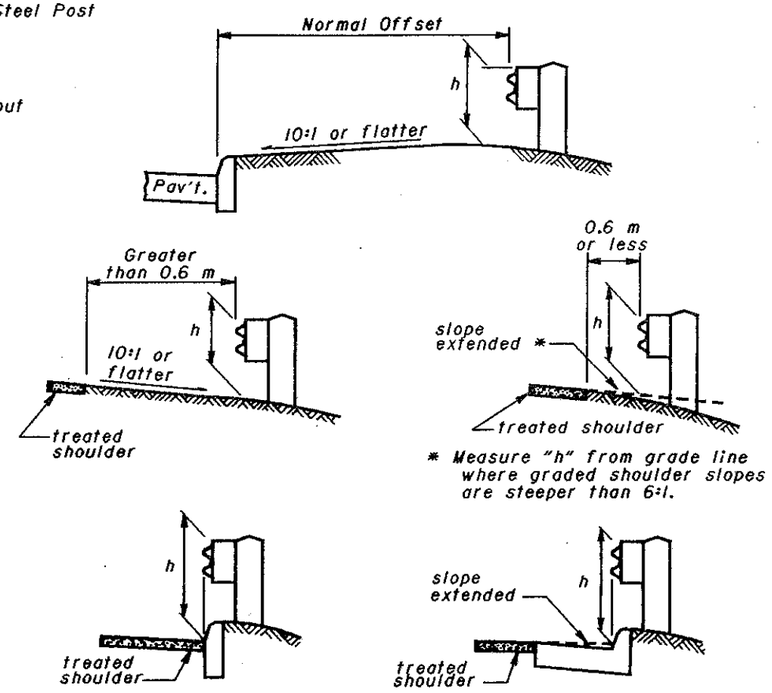
APPROVED Gary F. Sutherland



FOOTING ANCHOR

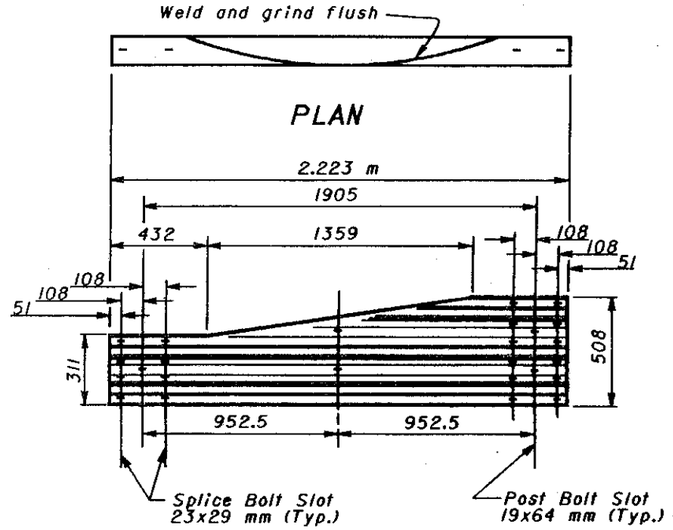


DETAIL A



h = Standard height (Tolerance ±25 mm)

MEASURING GUARDRAIL HEIGHT



TYPE 2 TRANSITION SECTION *
(W-Beam to Thrie-Beam)

* For details of Type 1 Transition Section, refer to AASHTO M 180, Figure 4.

NOTES

BEAM RAIL ELEMENTS: Elements shall be 3.81 m effective length, unless otherwise specified, with 19x64 mm post bolt slots on 1.905 m centers regardless of post spacing. Field punching or drilling of bolt holes or slots for irregularly spaced posts shall be according to CMS 606.05.

BEAM RAIL SPLICE between two rail elements or between a rail and terminal connector shall be lapped in the direction of traffic. The buffer or flared end sections shall lap on the traffic face. A 305 mm length of beam rail (Back-up Plate), with a 19 mm diameter bolt hole or a 19x64 mm slot, shall be provided at steel posts not having a rail splice.

EMBEDMENT DEPTH: Where less than 0.6 m of graded shoulder width (10:1 or flatter) exists, measured from the face of the guardrail (see Detail "A"), longer posts shall be used so that a minimum of 1.65 m embedment depth is provided. Payment for the longer posts will be made at the unit price bid per Each, Item 606 - Guardrail Post, 2.75 m.

PROTECTIVE COATING: In lieu of the requirements of CMS 710.06, expansion shields, anchors and insert anchor assemblies installed (embedded) in concrete shall be coated in accordance with ASTM A 153 or be of stainless steel. Any bolts screwed into these embedded devices shall meet CMS 710.06.

SPECIAL POST MOUNTINGS:

Posts located over a drainage inlet or structure shall be encased or anchored per the details shown on Standard Construction Drawing GR-2.2M.

Posts located over a footing with a cover of less than 0.75 m shall be installed with a footing anchor as detailed hereon. (A plate, as detailed on Section B-B of Standard Construction Drawing GR-2.2M, may be used as an alternate attachment method.) Where the cover is between 0.75 m and 1.04 m, the footing anchor may be omitted and the post encased instead with 100 mm (min.) of concrete.

Posts located over a culvert with less than 1.3 m of cover shall not be driven, but shall be set in drilled or dug holes. Where the available post embedment depth is less than 1.04 m, the post shall be encased with 100 mm (min.) of concrete.

All costs associated with special post mountings shall be included in the unit price bid for 606 Guardrail of the type specified in the plans.

*** ANCHORS:** Holes and grouting shall comply with CMS 510. Either cement or nonshrink, nonmetallic grout may be used.

Expansion shield anchors conforming to CMS 712.01 may be substituted except where concrete deterioration has occurred, as determined by the Engineer. The same bolt diameter specified shall be required. Where self-drilling anchors are used, the holes shall be drilled with the expansion shield (not by a drill bit) and the shield installed flush with the concrete surface.

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces GR-1.2.

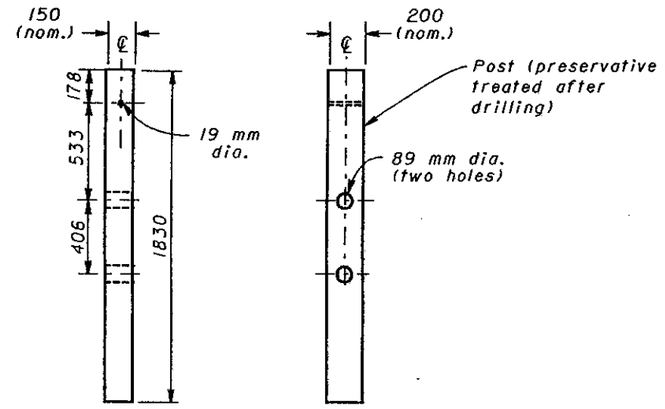
OFFICE OF ROADWAY ENGINEERING
OHIO DEPARTMENT OF TRANSPORTATION

GUARDRAIL DETAILS

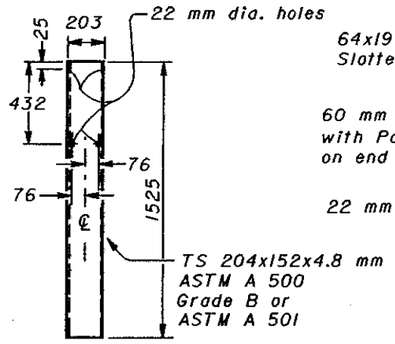
DATE 1-3-96

STANDARD CONSTRUCTION DRAWING **GR-1.2M**

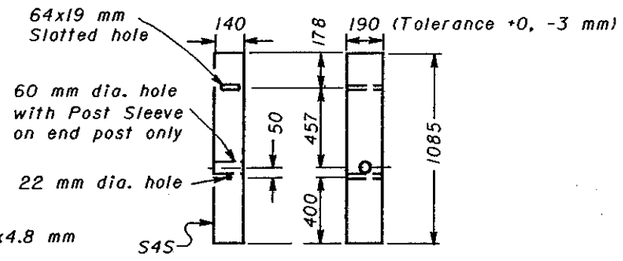
APPROVED D.K. Huelman, P.E.
ADMINISTRATOR



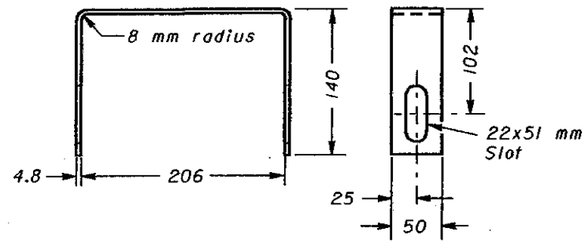
TYPE 1 BREAKAWAY POST



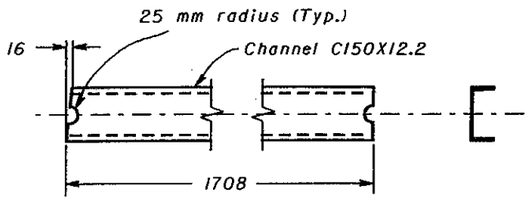
STEEL TUBE



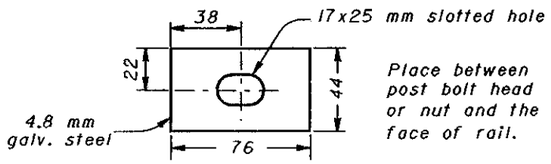
TYPE 2 BREAKAWAY POST



YOKE DETAILS

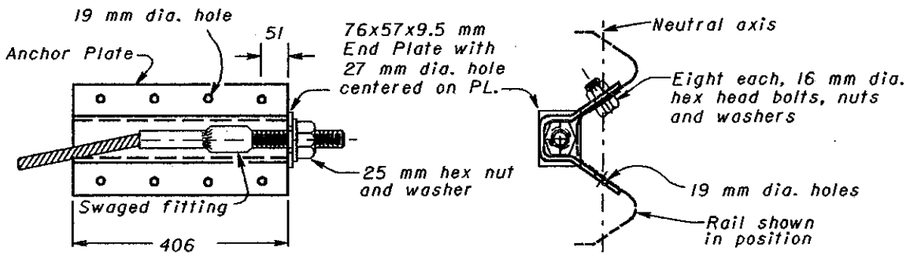


STRUT DETAILS

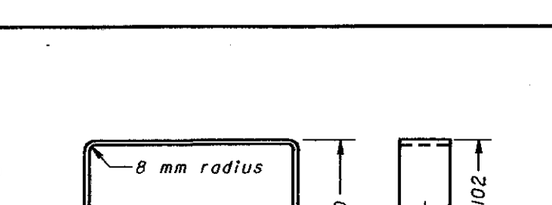


RECTANGULAR WASHER

(Not to be used in typical Type 4, 5 or 5A guardrail installations. Use only where specified.)



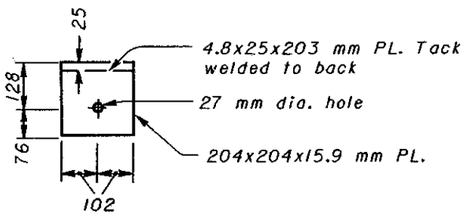
ANCHOR PLATE ASSEMBLY DETAILS



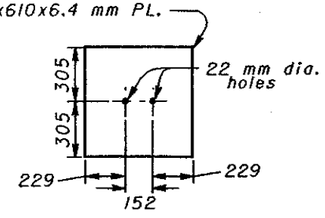
STRUT AND YOKE ASSEMBLY

All dimensions are in millimeters unless otherwise noted.

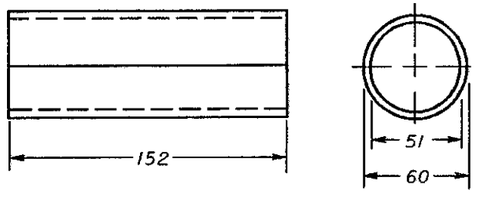
metric units



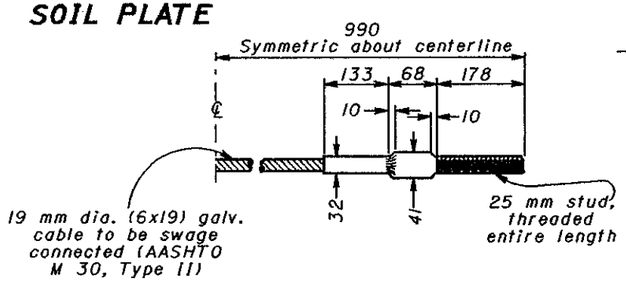
BEARING PLATE



SOIL PLATE

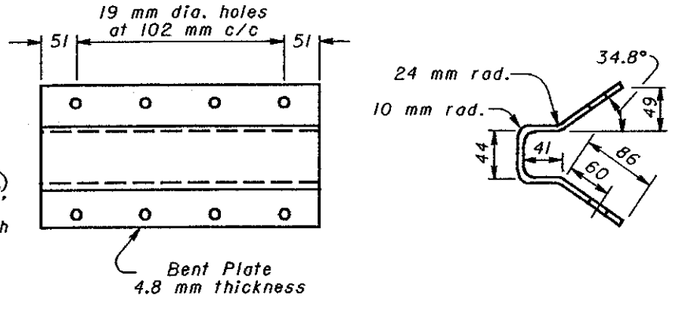


POST SLEEVE



STANDARD SWAGED FITTING AND STUD

CABLE ASSEMBLY



ANCHOR PLATE

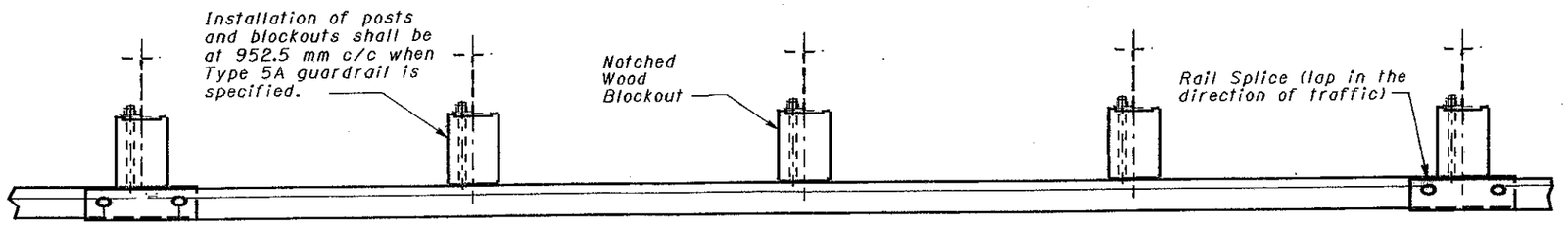
BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

GUARDRAIL DETAILS

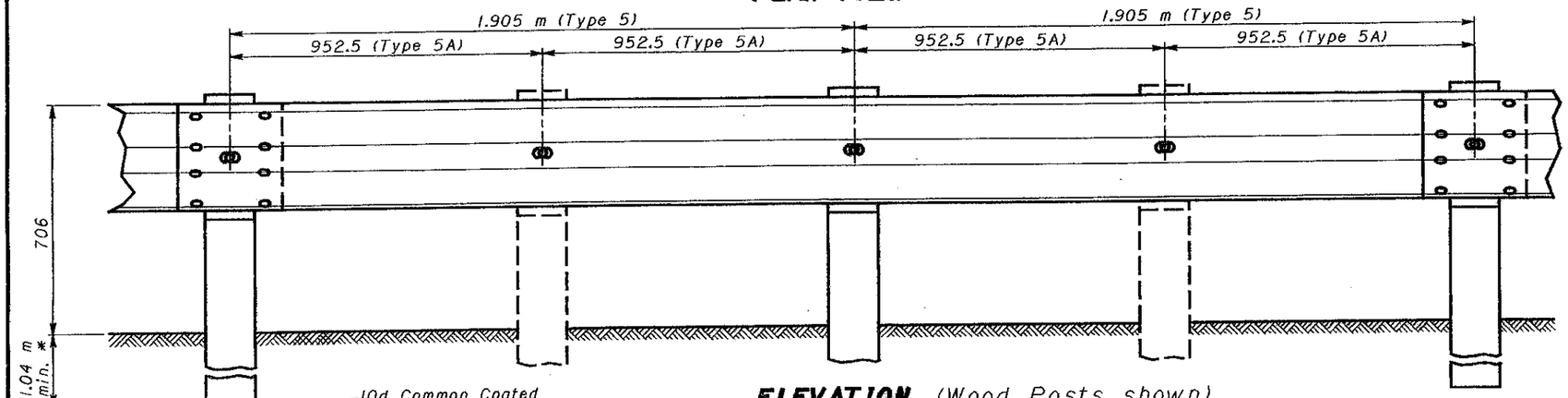
DATE 11-30-94

STANDARD CONSTRUCTION DRAWING **GR-1.3M**

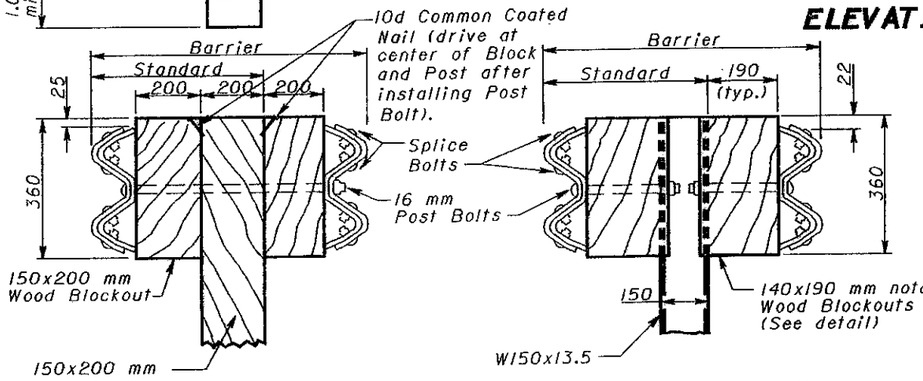
APPROVED D. K. Hulman
ENGR., L & D



PLAN VIEW (Steel Posts shown)

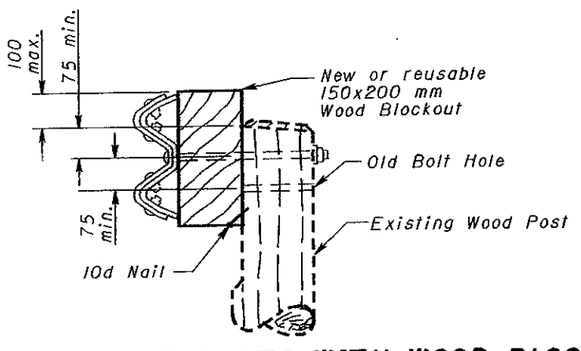


ELEVATION (Wood Posts shown)

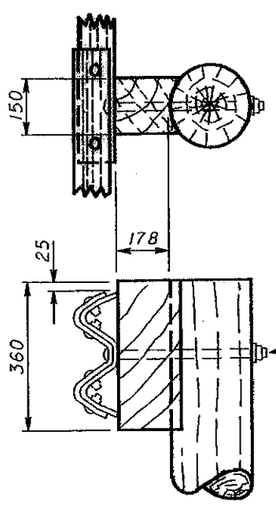


SQUARE WOOD POST

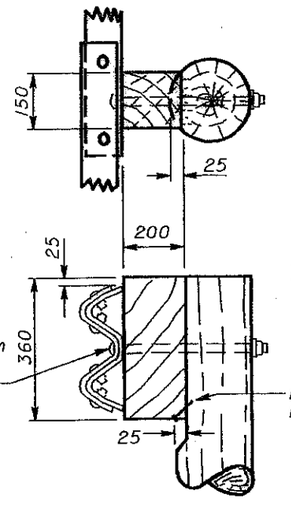
STEEL POST



WOOD POSTS WITH WOOD BLOCK RAISING EXISTING GUARDRAIL HEIGHT



METHOD 1



METHOD 2

Alternate methods of placing the blockouts on round posts may be submitted for consideration and approved by the Engineer.

ROUND WOOD POSTS

All dimensions are in millimeters unless otherwise noted.

NOTES

POSTS: *Posts may be round (standard single rail only) or 150x200 mm square-sawed pressure-treated wood or W150x13.5 galvanized steel. The same type post shall be used throughout the length of the project unless otherwise required by the plans or permitted by the Engineer. Round posts shall be 200 mm ± 25 mm in diameter at the top and not more than 75 mm larger at the butt with a uniform taper. Post may be set in drilled holes or may be driven to grade.*

Wood posts shall be fabricated with square ends. Posts and blockouts shall be pressure-treated per CMS 710.14. Bolt holes shall be bored and the tops of posts shall be trimmed as shown, if required, after posts are set.

ALTERNATE BLOCKOUTS: *Approved plastic blockouts may be used in lieu of the wood blockouts shown. The approved list is maintained by the Office of Materials Management.*

WASHERS: *Standard galvanized steel washers of the appropriate size shall be installed on the nut side of bolts through wood posts.*

WELDED BEAMS: *Welded beam guardrail posts may be used for Item 606, Guardrail, provided the web and flange sizes are as shown hereon. Welding of the web to the flanges shall conform to ASTM A 769M, Class I using Grade 36 steel (250 MPa yield point) with the following exceptions:*

Sec. 7.2 Test reports of tensile properties for each lot shall accompany each shipment.

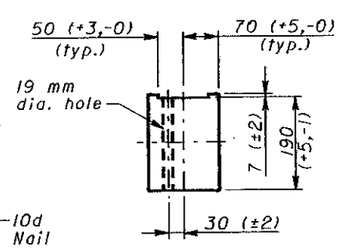
Sec. 12 Beams that have imperfections repaired by welding shall not be accepted for use in Item 606.

Sec. 13 Random samples shall be tested by the Department from materials delivered to the project site or other locations designated by the Laboratory.

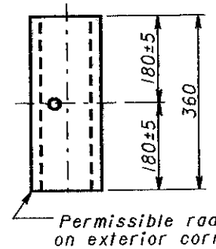
* ***POST EMBEDMENT DEPTH:*** *For specific depth requirements, see SCD GR-1.2M.*

STEEL BEAM POSTS				
Size	Beam depth	Flange width	Flange thickness	Web thickness
Rolled W150x12.6	148 mm	100 mm	4.9 mm	4.3 mm
Rolled W150x13.5	150 mm	100 mm	5.5 mm	4.3 mm
Welded 150x12.6	152 mm	100 mm	4.9 mm	4.3 mm
Welded 150x13.5	152 mm	100 mm	5.5 mm	4.3 mm

MISCELLANEOUS: *For details not shown see SCD's GR-1.1M and GR-1.2M.*



PLAN



ELEVATION

NOTCHED BLOCKOUTS FOR STEEL POSTS

OHIO DEPARTMENT OF TRANSPORTATION

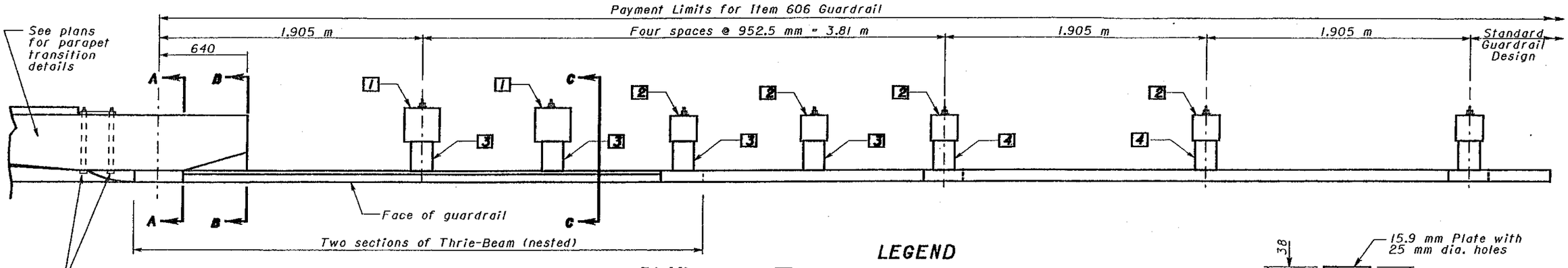
GUARDRAIL TYPE 5 & 5A

DATE: 11-30-94, 10-21-97, 4-14-98

STANDARD CONSTRUCTION DRAWING **GR-2.1M**

APPROVED Larry F. Sutherland

metric units

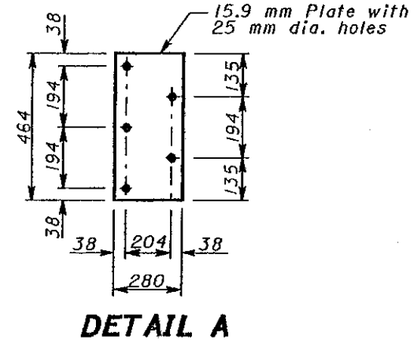


PLAN

22 mm dia. ASTM A 325M through bolts (length to be determined in field in accordance with parapet width) in 25 mm dia.holes with 464 x 280 x 15.9 mm plate with standard washers and hex nuts (See Detail A)

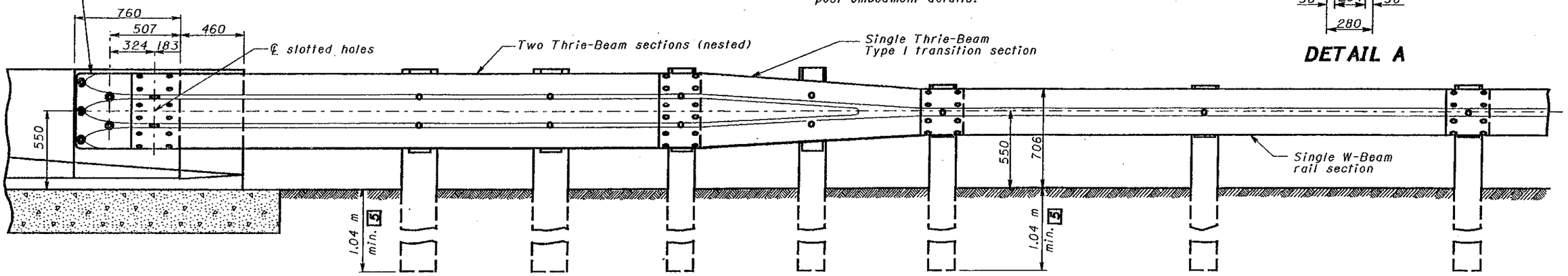
LEGEND

1	250 x 250 mm wood post
2	200 x 200 mm wood post
3	150 x 200 x 570 mm wood blockout (See ALTERNATE POSTS AND BLOCKOUTS note)
4	150 x 200 x 355 mm wood blockout (See ALTERNATE POSTS AND BLOCKOUTS note)
5	See SCD GR-1.2M for additional post embedment details.



DETAIL A

NOTE: The Thrie-Beam terminal connector shall be placed so that the lap is in the direction of traffic.



ELEVATION

All dimensions are in millimeters unless otherwise noted.

NOTES

GENERAL:
For additional details, see SCD's GR-1.1M, GR-1.2M and other drawings pertaining to the design of specific guardrail types.

APPLICATION:
The Type I Bridge Terminal Assembly shall be used to connect guardrail runs to bridges having concrete deflector parapet railing. It shall be used to connect guardrail runs to the approach end of bridge parapets or other concrete barrier installations and to anchor guardrail runs to the trailing end of bridge parapets or other concrete barrier installations on undivided, bidirectional highways.

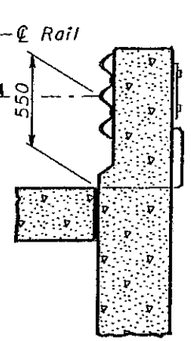
POSTS:
GENERAL - Posts may be set in drilled holes or driven to grade.

WOOD POSTS - shall be square sawed pressure treated wood as per CMS 710.14 and fabricated with square ends. Bolt holes shall be bored and tops of posts trimmed, if required, after posts are set.

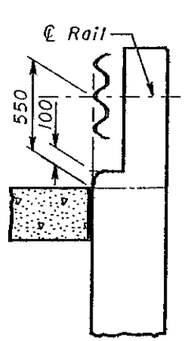
ALTERNATE POSTS AND BLOCKOUTS for Type I Bridge Terminal Assemblies may be furnished according to the following chart. Plastic blockouts shall not be permitted for Type I Bridge Terminal Assemblies.

Wood Posts & Blockouts	250x250 mm	200x200 mm
Steel Posts	W200x35.9	W150x37.1
Wood Blockouts	150x200 mm	
Steel Blockouts	W150x13.5	

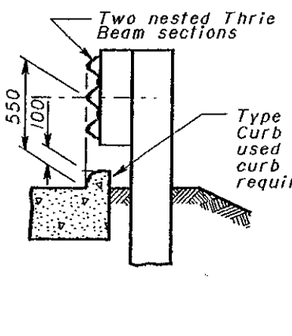
PAYMENT:
Payment for Item 606 - Each, Bridge Terminal Assembly, Type I, shall include the extra cost, in excess of normal guardrail cost, for additional and different type posts and blockouts, nested Thrie-Beam sections, terminal connector, Thrie-Beam transition section, steel plate, bolts, hex nuts, washers, and other hardware.



SECTION A - A



SECTION B - B



SECTION C - C

metric units

This Drawing Replaces GR-3.1.

OHIO DEPARTMENT OF TRANSPORTATION

BRIDGE TERMINAL ASSEMBLY, TYPE 1

DATE
11-30-94
10-21-97

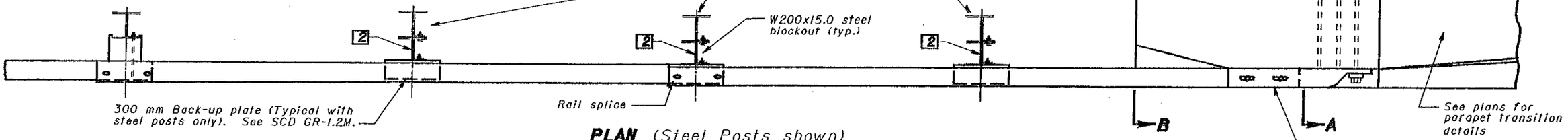
STANDARD CONSTRUCTION DRAWING **GR-3.1M**

APPROVED Larry F. Sutherland

LEGEND

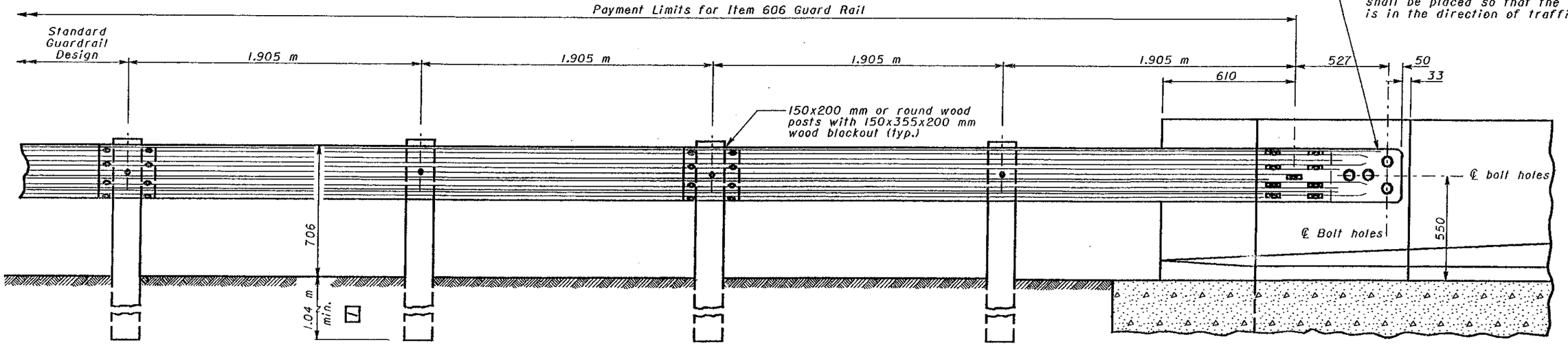
[1] See SCD GR-1.2M for additional post embedment details.

[2] Plastic blockouts shall not be permitted for Type 2 Bridge Terminal Assemblies.



PLAN (Steel Posts shown)

The W-Beam terminal connector shall be placed so that the lap is in the direction of traffic.



ELEVATION (Wood Posts shown)

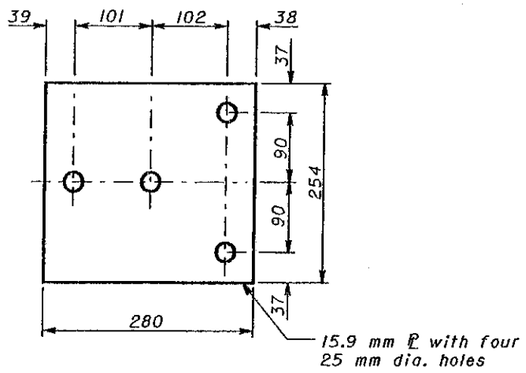
NOTES

GENERAL:
For additional details, see SCD's GR-1.1M, GR-1.2M and other drawings pertaining to the design of specific guardrail types.

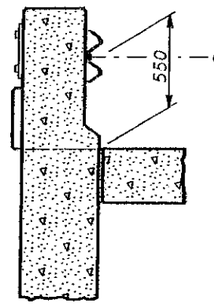
APPLICATION:
The Type 2 Bridge Terminal Assembly shall be used to connect guardrail runs to the trailing end of bridge parapets or other concrete barrier installations on one-direction roadways.

POSTS:
Posts shall be of standard size and material specified for the appropriate type of guardrail to be installed leaving the bridge or barrier.

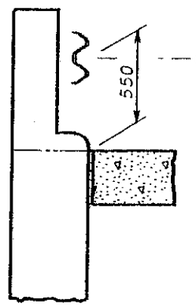
PAYMENT:
Payment for Item 606 - Each, Bridge Terminal Assembly, Type 2 shall include the extra cost, in excess of normal guardrail cost, for the terminal connector, steel blockouts, plates, bolts, hex nuts, washers and other hardware.



DETAIL A



SECTION A - A



SECTION B - B

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces GR-3.2.

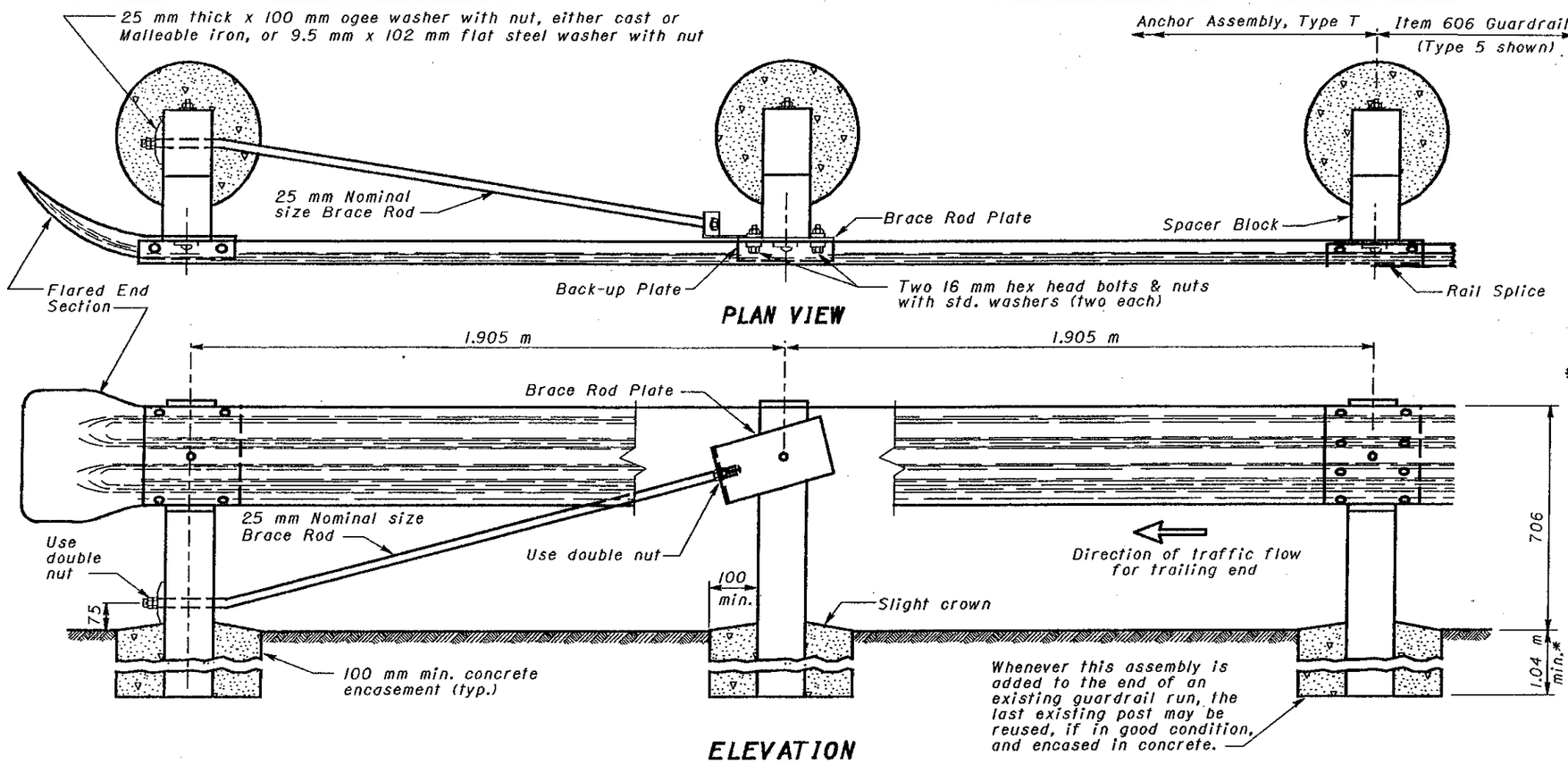
OHIO DEPARTMENT OF TRANSPORTATION

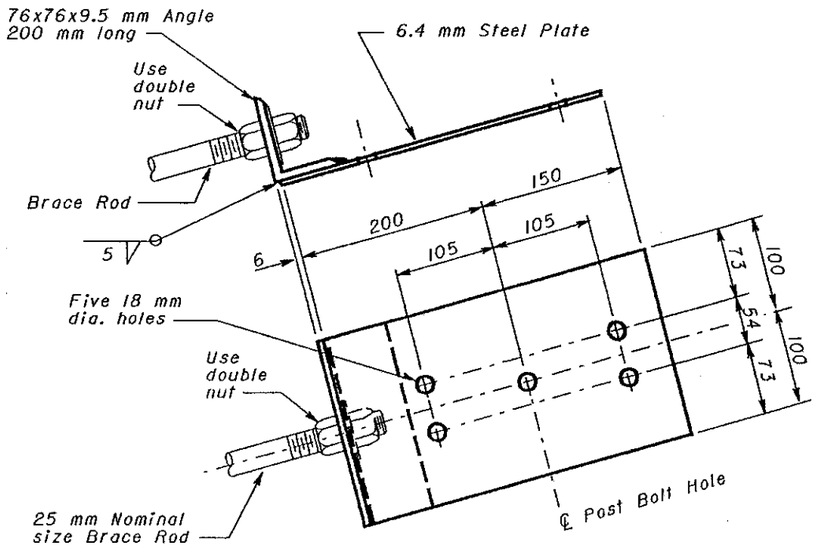
BRIDGE TERMINAL ASSEMBLY, TYPE 2

DATE
11-30-94
10-21-97

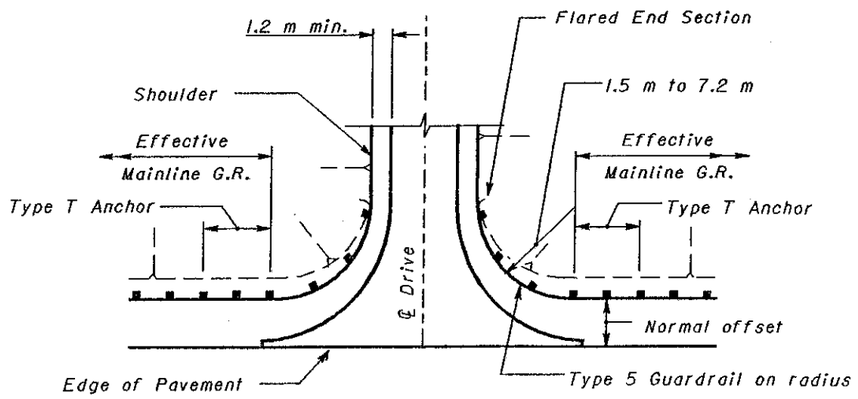
STANDARD CONSTRUCTION DRAWING **GR-3.2M**

APPROVED Lowell F. Sutherland





BRACE ROD PLATE



DRIVEWAY OPENING

NOTES

FOR DETAILS NOT SHOWN: See SCD's GR-1.1M, GR-1.2M and other Drawings pertaining to design of specific guardrail types.

WASHERS: All washers indicated are standard galvanized steel of the appropriate size.

POSTS: Posts shall be the same as used on the adjacent guardrail, with 100 mm minimim concrete encasement.

SPACER BLOCKS: Blocks may be notched in the field, in a manner satisfactory to the Engineer, to accommodate the installation of the brace rod plate 16 mm attachment bolts.

BRACE ROD ASSEMBLY: Rods shall be galvanized and develop a tensile strength of at least 178 kN.

* **FOR SPECIFIC POST EMBEDMENT:** See SCD GR-1.2M for depth requirements.

All dimensions are in millimeters unless otherwise noted.

metric units

OHIO DEPARTMENT OF TRANSPORTATION

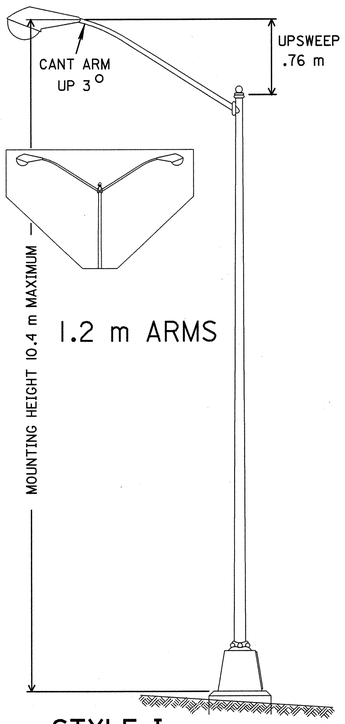
TYPE T ANCHOR ASSEMBLY

DATE
4-21-95
10-21-97

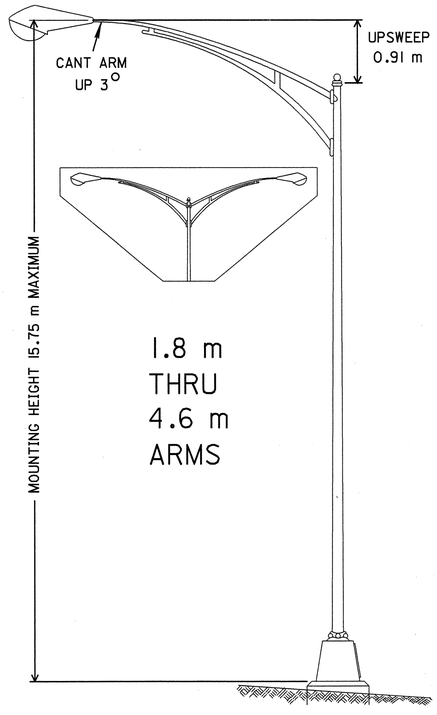
STANDARD CONSTRUCTION DRAWING **GR-4.2M**

APPROVED Gary F. Sutherland

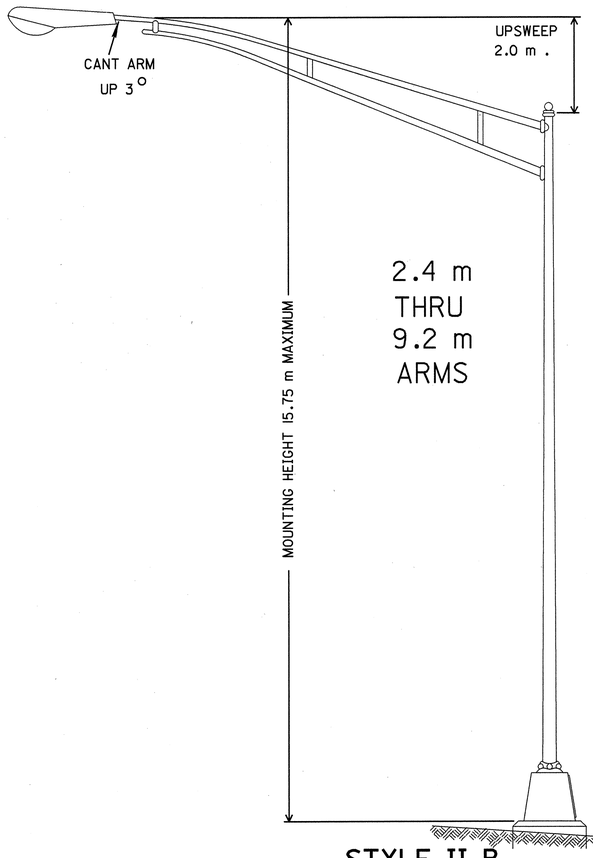
LIGHT POLE STYLES



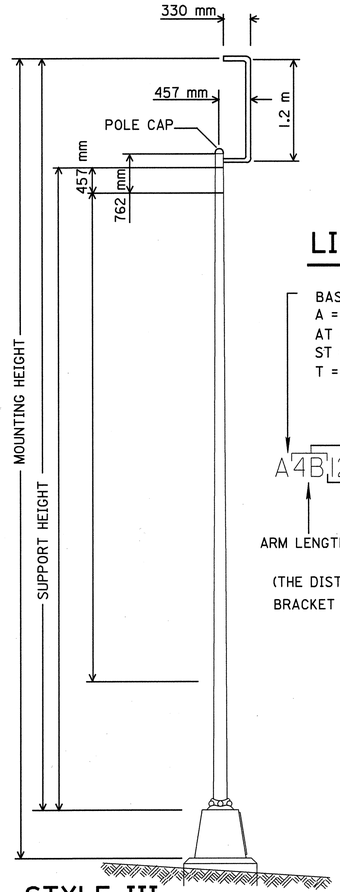
STYLE I



STYLE II A

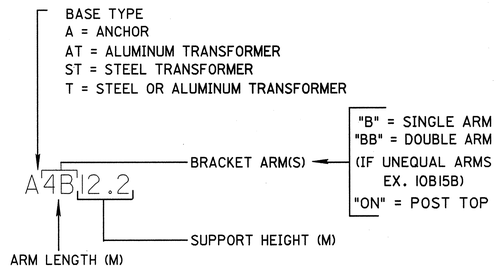


STYLE II B

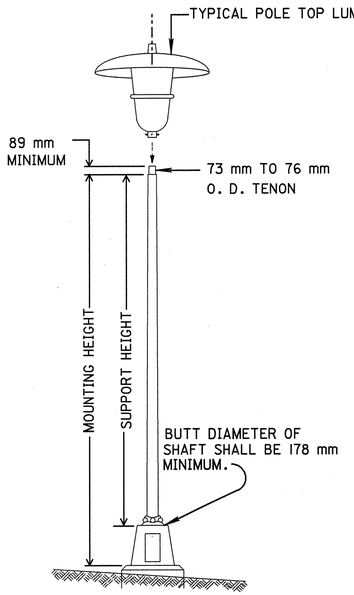


STYLE III

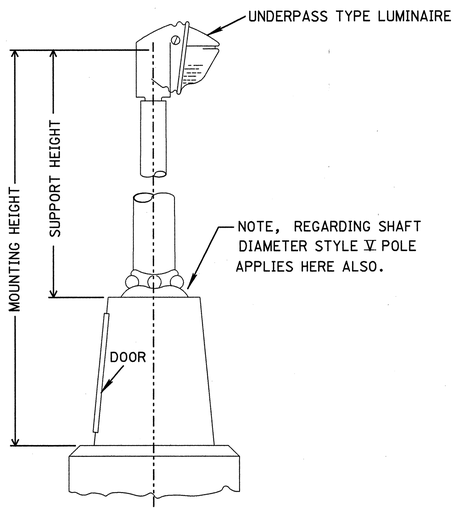
LIGHT POLE DESIGN NUMBER



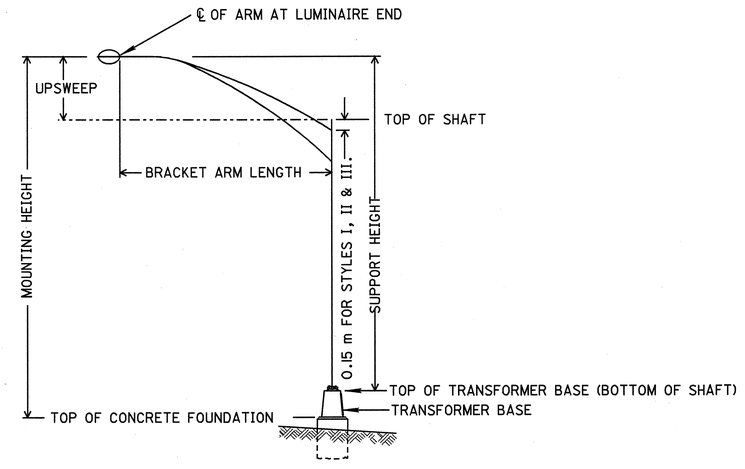
(THE DISTANCE FROM BOTTOM OF POLE TO THE CENTER OF THE BRACKET ARM AT THE LUMINAIR END)



STYLE V



STYLE VI



POLE COMPONENTS

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metric units

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HIGHWAY LIGHTING	DATE 05/01/95
LIGHT POLE STYLES	
STANDARD CONSTRUCTION DRAWING HL-10.11M	

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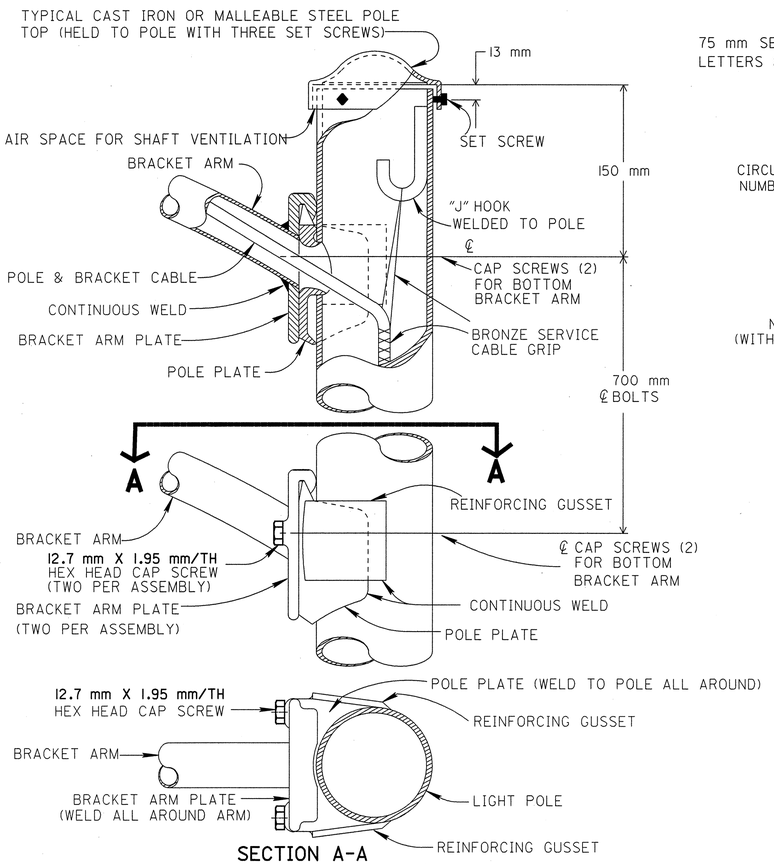
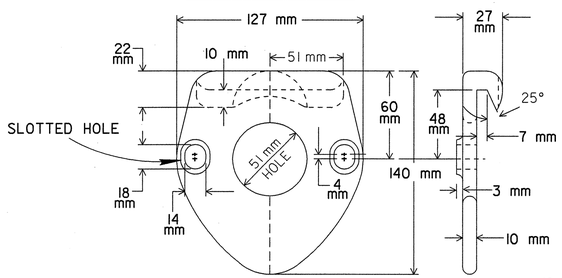
LIGHT POLE DETAILS

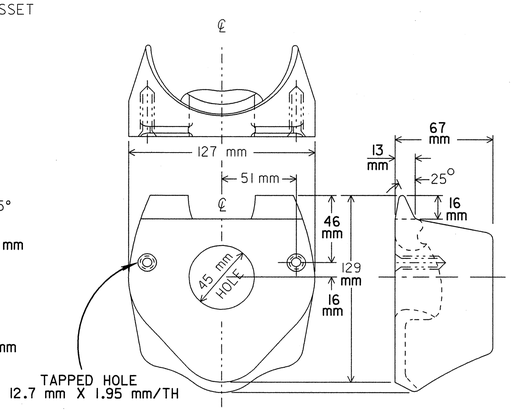


SECTION A-A

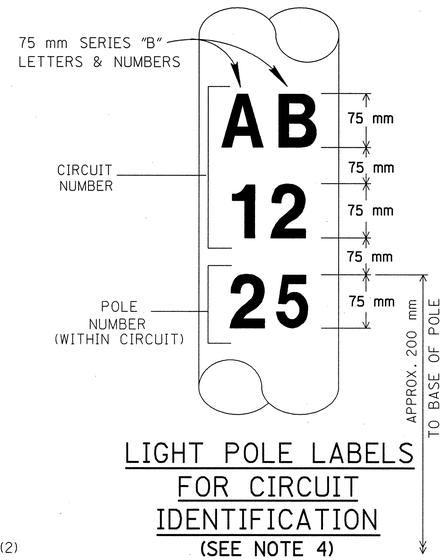
POLE TOP AND BRACKET ARM ASSEMBLIES



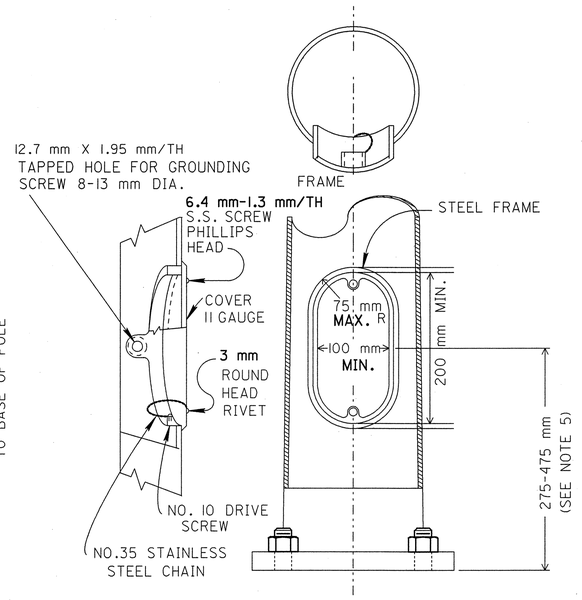
BRACKET ARM PLATE
(CAST STEEL)



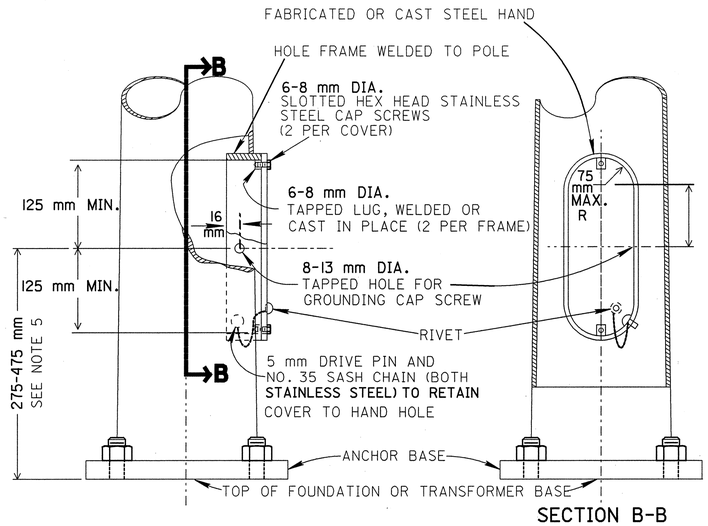
POLE PLATE
(CAST STEEL)



LIGHT POLE LABELS FOR CIRCUIT IDENTIFICATION
(SEE NOTE 4)



ALTERNATE HAND HOLE



SECTION B-B

HAND HOLE WITH COVER
(SEE NOTES 1 & 2)

NOTES

1. HANDHOLES ARE NOT REQUIRED ON POLES WITH TRANSFORMER BASES.
2. HANDHOLES SHALL BE OPPOSITE THE ROADWAY UNLESS SUCH LOCATION RENDERS THEM INACCESSIBLE. (SEE NOTE 6)
3. USE OF REINFORCING GUSSETS IS OPTIONAL.
4. CIRCUIT AND LIGHT POLE NUMBERS SHALL BE AS SCHEDULED ON LIGHT PLAN SHEETS. LABELS SHALL MEET THE REQUIREMENTS OF 713.18 AND SHALL CONTAIN 75 mm SERIES "B" LETTERS AND NUMBERS AS PER THE "STANDARD ALPHABETS FOR HIGHWAY SIGNS" PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
5. HAND HOLES FOR BRIDGE POLES SHALL BE ON ROADWAY SIDE AND 430 mm FROM CENTER OF HANDHOLE TO BOTTOM OF BASE.
6. ALL LIGHT POLES MOUNTED ON RAISED CONCRETE MEDIAN BARRIERS SHALL BE EQUIPPED WITH HANDHOLES. HANDHOLES SHALL BE LOCATED BENEATH THE BRACKET ARM EXTENDING OVER THE NORTHBOUND OR WESTBOUND TRAFFIC LANES.
7. DETAILS SHOWN HEREON ARE ESSENTIALLY FOR GALVANIZED STEEL POLE DESIGNS MEETING 713.01 REQUIREMENTS. FOR ALUMINUM DESIGNS, OR OTHER PERMITTED STEEL MATERIAL DESIGNS, VARIATIONS FROM THESE DETAILS WILL BE ACCEPTABLE, AS APPROVED BY THE ENGINEER.
8. CIRCUIT IDENTIFICATION DETAILS ARE APPLICABLE TO ALL POLE DESIGNS.
9. SEE HL-60.11M FOR DETAILS OF TERMINATION FOR GROUND CABLE.

metric units

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LIGHT POLE DETAILS	
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POLE BASE DETAILS

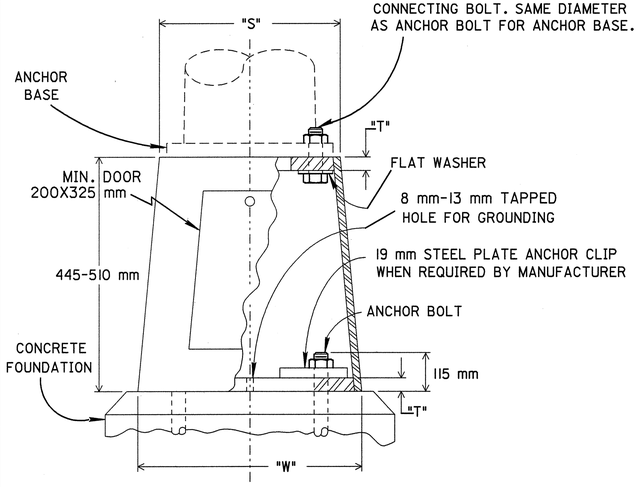
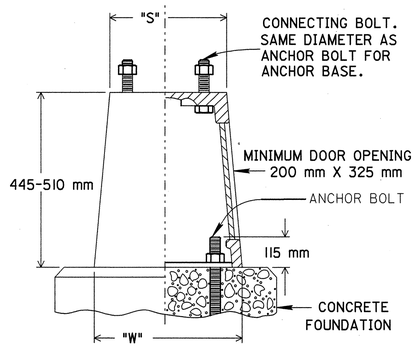
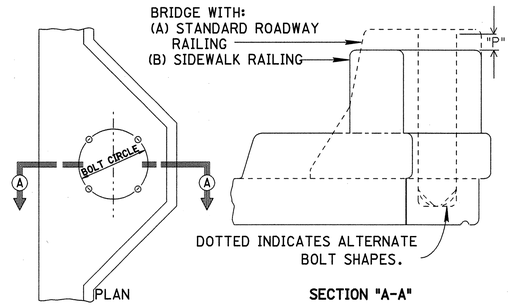


TABLE NO. 1							
STEEL TRANSFORMER BASES IN MILLIMETERS							
TYPE	SHAFT SIZE	"T"	"S"	"W"	BOLT CIRCLE	"P"	BOLTS
ST-A	152 - 234	19 min.	330sq.	406sq.	381	115	31.8X1220
ST-C	216 - 254	32 min.	381 sq.	457sq.	438	115	31.8X1220
ST-B	279 - 305	32	432sq.	635sq.	559	115	38.1X1520





LIGHT POLE PILASTER

BRIDGE MOUNTED POLES

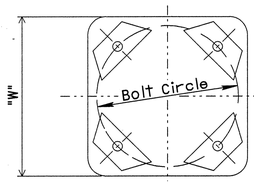
+ FOR PILASTER DIMENSIONAL DETAILS, SEE HL-20.14

TABLE NO. 3						
ALUMINUM TRANSFORMER BASES IN MILLIMETERS						
TYPE	"P"	"S"	"W"	BOLT CIRCLE	SHAFT SIZE	BOLTS
AT-A	115	330	416	381	SEE NOTE 2	31.8X1220
AT-C	115	371	438	438	SEE NOTE 3	31.8X1220
AT-X	115	330	356	318	SEE NOTE 7	EXISTING

(TABLE NO.2 NOT USED)

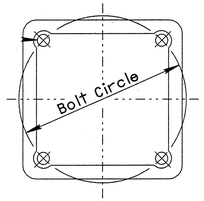
NOTES

1. FOR POLE GROUNDING DETAILS SEE HL-60.11M.
2. FRANGIBLE BASES SHALL NOT BE USED UNDER POLE IN EXCESS OF MANUFACTURES RATED LIMITS FOR BASE.
3. CAST ALUMINUM TRANSFORMER BASES SHALL NOT BE USED WHERE OVERHEAD WIRING IS REQUIRED.
4. U-BOLT LENGTHS SHOWN IN BRIDGE MOUNT POLES ARE DEVELOPED LENGTHS AND MAY VARY ± 13 mm. LENGTHS ARE FOR 25 mm, THROUGH 44.5 mm DIAMETER BOLTS. LENGTH FOR BRIDGES WITH SIDEWALK RAILING IS 2060 mm AND FOR BRIDGES HAVING A STANDARD ROADWAY RAILING IS 2240 mm. BOLT CIRCLE AS SPECIFIED BY POLE MANUFACTURE OR 381 mm FOR FUTURE POLE.
5. FOR ANCHOR BOLT DATA WHEN TRANSFORMER BASES ARE TO BE MOUNTED ON BRIDGE PILASTERS, SEE TABLE NO. 1 AND TABLE NO. 3.
6. FOR MEDIAN-MOUNTED POLE BASE DETAILS, SEE HL-20.13M.
7. THE AT-X BASES ARE TO BE USED ONLY TO PROVIDE A BREAK-A-WAY FEATURE FOR ANCHOR BASE POLES HAVING EXISTING BOLT CIRCLES FROM 267 mm THRU 330 mm, FOR POLES WHOSE BOLT CIRCLE EXCEED 320 mm, THE TOP-SLOTS OF THE AT-X BASE WILL REQUIRE SPECIAL MACHINING FOR FIT.
8. 1010 mm BOLTS INCLUDE 102 mm BEND, 1220 mm, 1520 mm AND 2280 mm BOLTS INCLUDE A 152 mm BEND.



BASE FRAME

STEEL TRANSFORMER BASES



BASE FRAME

CAST ALUMINUM TRANSFORMER BASES

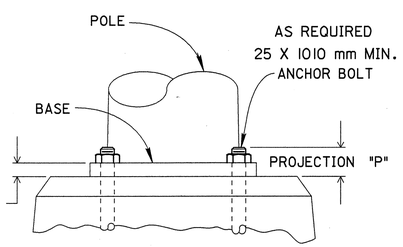
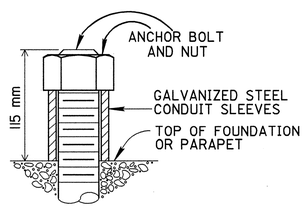


TABLE NO. 4						
ANCHOR BOLTS FOR STEEL ANCHOR BASES IN MILLIMETERS						
SHAFT SIZE	BOLT CIRCLE	BOLT* PROJ. "P"	"†"	POLE GUAGE NO. 11	POLE GUAGE NO. 7	POLE GUAGE NO. 3
165	241	75	22	25 x 1010	32 x 1220	32 x 1220
178	254	75	25			
191	267	75	29			
203	279	75	30			
216	292	75	32			
229	318	75	33			38 x 1520
241	330	80	35	32 x 1220		
254	343	85	37			
279	381	90	41		38 x 1520	44 x 2280
305	406	100	43			

* BASED ON CAST STEEL ANCHOR BASES ONLY. FOR PLATE BASES THE PROJECTION SHALL BE INCREASED BY THE AMOUNT THE PLATE THICKNESS EXCEEDS THE "†" DIMENSION SHOWN.

STEEL ANCHOR BASES



ANCHOR BOLT COVER

NOTE: TO BE PLACED ON ALL LIGHT POLE ANCHOR BOLTS PROVIDED FOR FUTURE LIGHTING INSTALLATIONS.

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metric units

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POLE BASE DETAILS

STANDARD CONSTRUCTION DRAWING HL-10.13M

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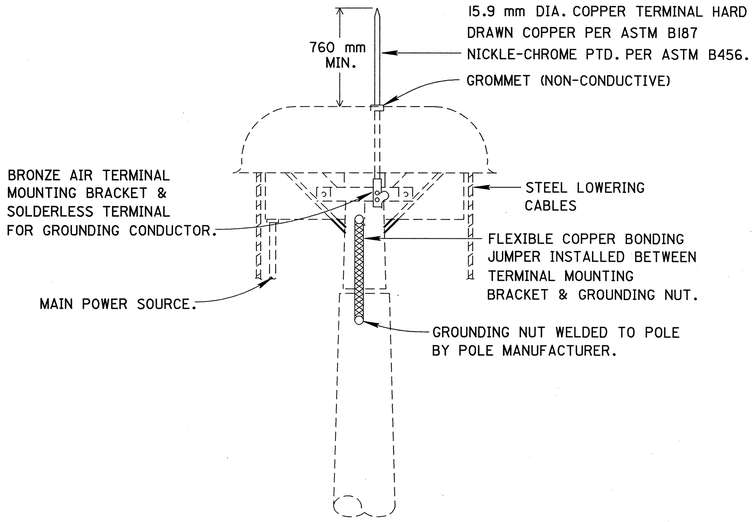
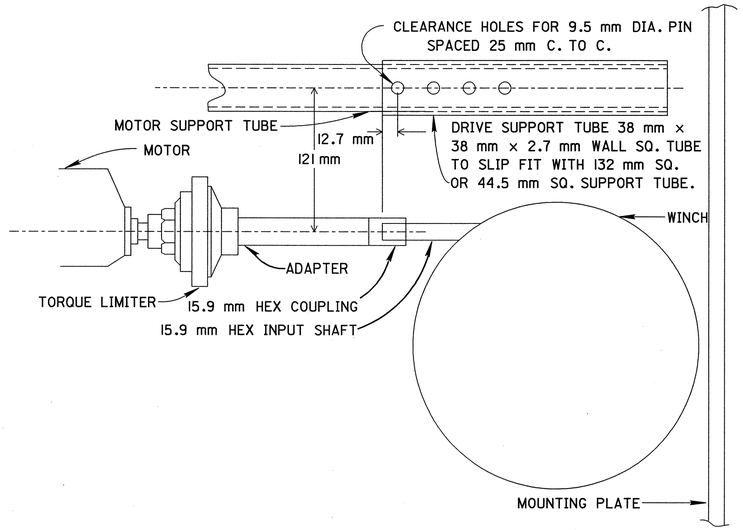


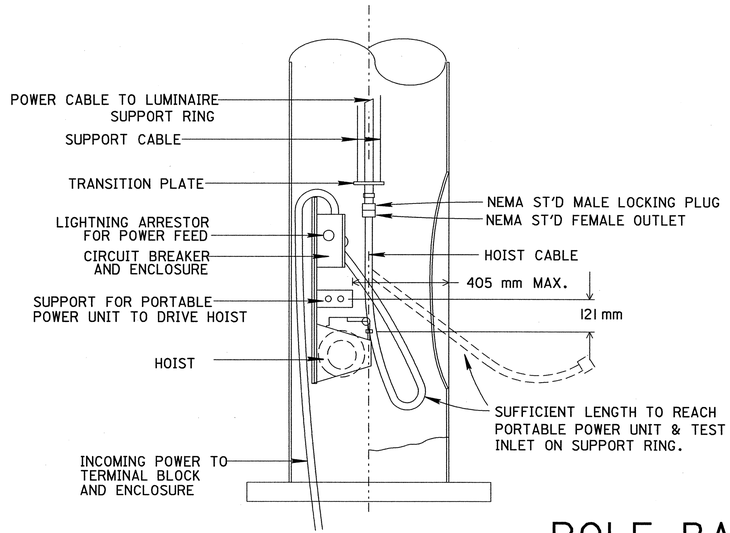
LIGHTNING PROTECTION SYSTEM



PORTABLE POWER UNIT DETAILS

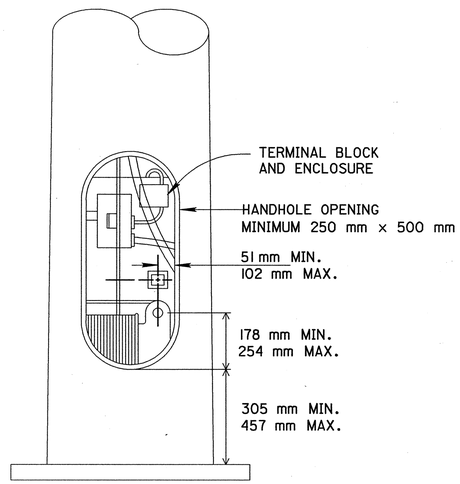
NOTES

1. MOTOR SUPPORT TUBE MAY BE 32 mm SQ. OR 44.5 mm SQ. TO MATE ON THE INSIDE OR OUTSIDE OF DRIVE SUPPORT TUBE.
2. THE DRIVE ASSEMBLY SHALL HAVE SUFFICIENT OUTPUT TORQUE TO HANDLE THE PAYLOAD. (MINIMUM DRIVING TORQUE SHALL BE 54 NEWTON METERS) THE DRIVE SYSTEM SHALL INCLUDE A TORQUE LIMITER OF A SIZE AND RATING AS RECOMMENDED BY THE MANUFACTURER TO PREVENT OVERLOADING.
3. ELECTRICAL CONNECTOR ON FLEXIBLE POWER CORDS, SUPPORT RING AND PORTABLE POWER UNIT SHALL CONFORM TO NEMA STANDARD PIN CONFIGURATIONS FOR LOCKING TYPE CONNECTORS AND BE RATED FOR 20 AMPERES FOR 480 VOLT Ø . CIRCUITS AND 30 AMPERES FOR 250 VOLT Ø . CIRCUITS.
4. WHEN GRADING OR MAINTENANCE PLATFORM IS REQUIRED, POLE HANDHOLE SHALL BE ON THE DOWNSLOPE SIDE OF POLE. ALL OTHER HANDHOLES SHALL BE LOCATED ON THE SIDE OF THE POLE OPPOSITE THE ROADWAY FROM WHICH THE TOWER IS STATIONED.
5. UNLESS OTHERWISE SPECIFIED IN THE PLANS, ALL LUMINAIRES WITH ASYMMETRIC DISTRIBUTIONS SHALL BE INSTALLED SO THE "ARROW" OR "STREET SIDE" DESIGNATION ON THE OPTICAL ASSEMBLY IS POSITIONED PERPENDICULAR TO THE CENTERLINE OR BASELINE OF THE PAVEMENT FROM WHICH THE TOWER IS STATIONED. ANY OPTICAL ROTATION CALLED FOR WILL BE EXPRESSED AS A CLOCKWISE (CW) OR COUNTERCLOCKWISE (CCW) ANGULAR MEASUREMENT FROM THE NORMAL "ARROW" ORIENTATION.

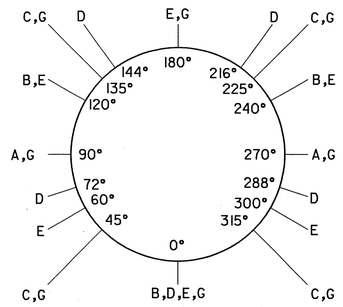


VIEW A

POLE BASE DETAILS



VIEW B



EDGE OF PAVEMENT

LUMINAIRE TENON LOCATIONS	
NO. OF LUMINAIRES	LOCATION
2	A
3	B
4	C
5	D
6	E
8	G

metric units

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HIGHWAY LIGHTING

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LIGHT TOWER DETAILS

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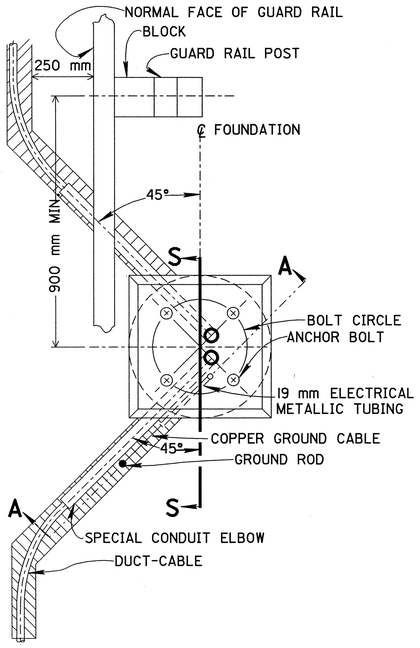
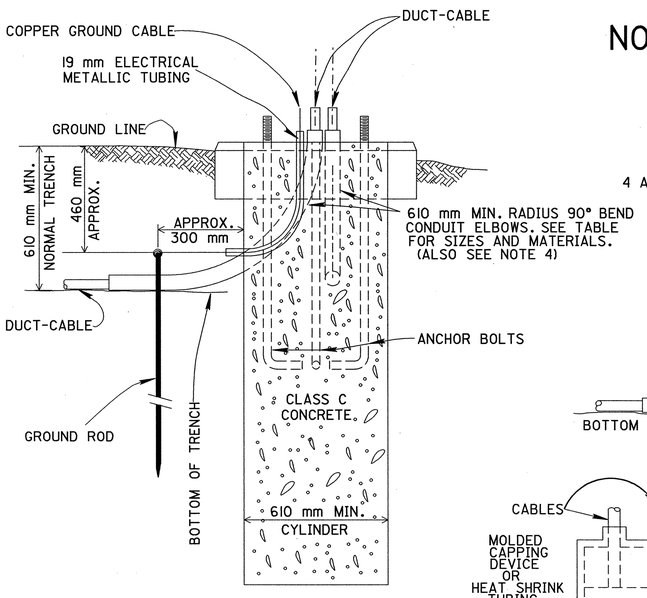
FOUNDATION AND TRENCH DETAILS



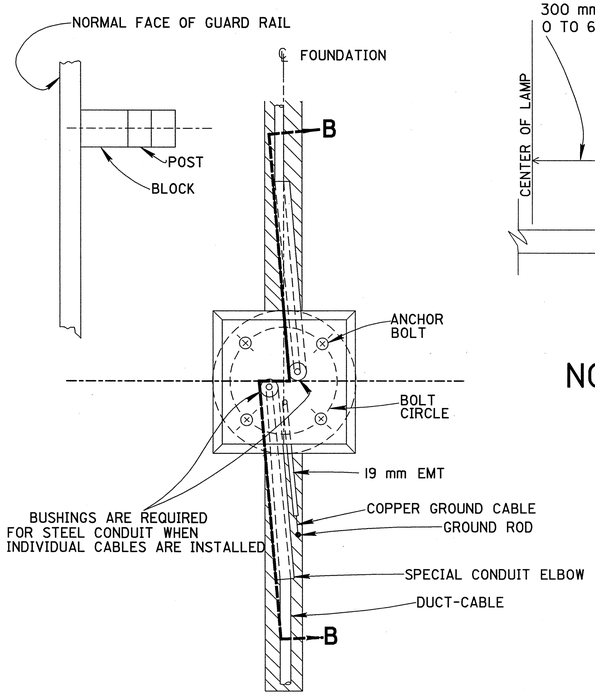
ALTERNATE TRENCH ALIGNMENT

(USE AS DIRECTED BY THE ENGINEER)

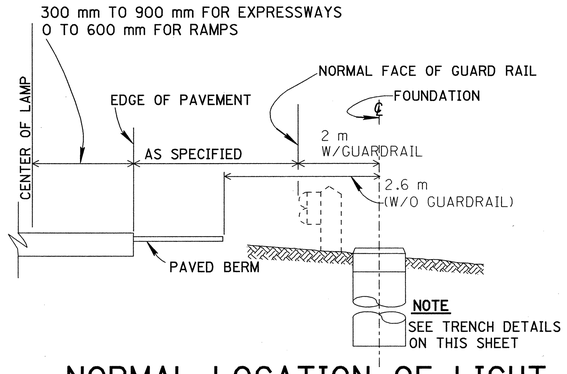


SEE SECTION B-B FOR LOCATION OF SECOND GROUND ROD WHEN REQURIED

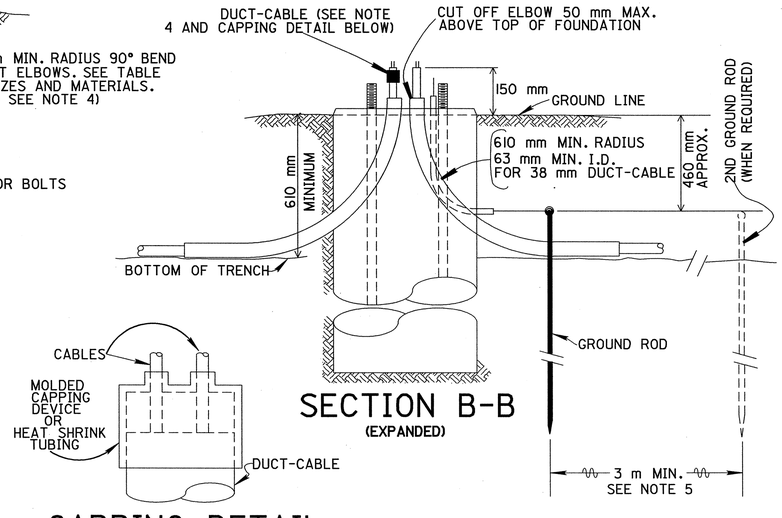
SECTION A-A



NORMAL TRENCH ALIGNMENT



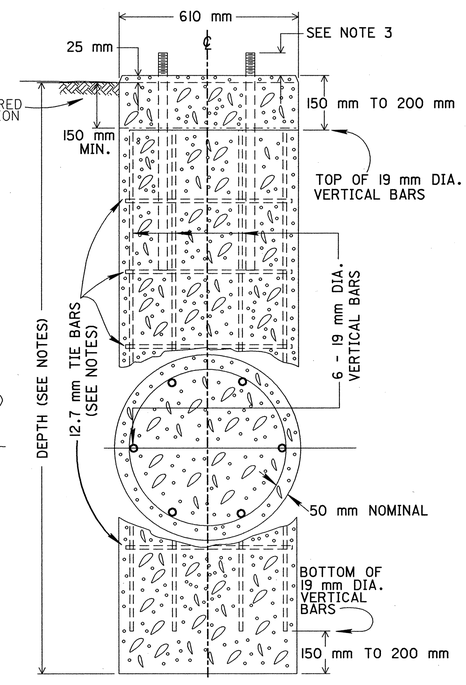
NORMAL LOCATION OF LIGHT POLE FOUNDATION



SECTION B-B

(EXPANDED)

CAPPING DETAIL

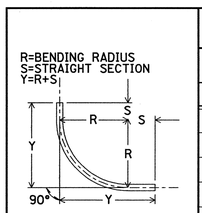


SECTION S-S

REINFORCING STEEL

NOTES

1. FOUNDATION
   MINIMUM DEPTHS TO BE AS FOLLOWS:
   1.8 m FOR POLES HAVING A MOUNTING HEIGHT LESS THAN 12.2 m.
   2.4 m FOR POLES HAVING A MOUNTING HEIGHT 12.2 m THRU 13.5 m.
   2.7 m FOR POLES HAVING A MOUNTING HEIGHT 13.6 m THRU 15 m.
   3 m FOR POLES HAVING A MOUNTING HEIGHT OF 15.1 m 16.8 m.
   12.7 mm DIA. TIE BARS REQUIRED AS FOLLOWS:
   4 12.7 mm DIA. TIE BARS FOR 1.8 m DEPTH
   5 12.7 mm TIE BARS FOR 2.4 m AND 2.7 m DEPTH
   6 12.7 mm TIE BARS FOR 3 m DEPTH
   ROTATE BARS TO CLEAR CONDUITS.
2. COPPER GROUND CABLE:
   NO. 4 AWG, STRANDED INSULATED COPPER GROUND CABLE SHALL BE USED. EXOTHERMICALLY WELD CABLE TO GROUND ROD, RUN FREE END THROUGH 19 mm EMT AND CONNECT AS SHOWN ON HL-60.11M.
   USE TWO COATS OF INSULATING VARNISH OVER EXOTHERMIC WELD AND EXPOSED CONDUCTOR.
3. ANCHOR BOLT DATA:
   FOR ANCHOR BOLT DATA SEE HL-10.13M, POLE BASE DETAILS.
4. CONDUIT:
   WHERE 51 mm OR 76 mm DIAMETER CONDUIT TERMINATES IN A FOUNDATION THE CONDUIT ELBOWS IN THE FOUNDATION SHALL BE THE SAME SIZE AS THE CONDUIT. THE ENDS OF THE CONDUIT ELBOWS CONTAINING DISTRIBUTION CABLE SHALL BE CLOSED AS DESCRIBED IN 625.13.
   WHEN THE TERMINATING CONDUIT IS STEEL, THE CONDUIT ELBOWS IN THE POLE FOUNDATION SHALL ALSO BE STEEL. AT THE LAST LIGHT POLE ON A CIRCUIT, THE VACANT CONDUIT ELBOW IN THE LIGHT POLE FOUNDATION SHALL BE STUBBED OUT AND CAPPED.
5. GROUND RODS:
   WHEN A SECOND GROUND ROD IS REQUIRED IT SHALL BE INSTALLED IN THE CABLE TRENCH AS SHOWN IN SECTION B-B.
6. REINFORCING STEEL:
   REINFORCING STEEL MAY BE ASSEMBLED IN CAGES BY APPROVED WELDING OF BARS. SUBJECT TO APPROVAL OF THE ENGINEER CAGES MAY BE ASSEMBLED IN A SPIRAL CONFORMATION.



SPECIAL CONDUIT ELBOWS 90° BEND (IN MILLIMETERS)					
50 mm, 64 mm & 76 mm 713.04			76 mm 713.07		
R	S	Y	R	S	Y
610	279	889	610	203	813
762	279	1041			
914	279	1194	914	50	965
1067	305	1372			
1219	305	1524			

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metric units

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HIGHWAY LIGHTING	DATE 03/31/95
FOUNDATION AND TRENCH DETAILS	
STANDARD CONSTRUCTION DRAWING	HL-20.11M

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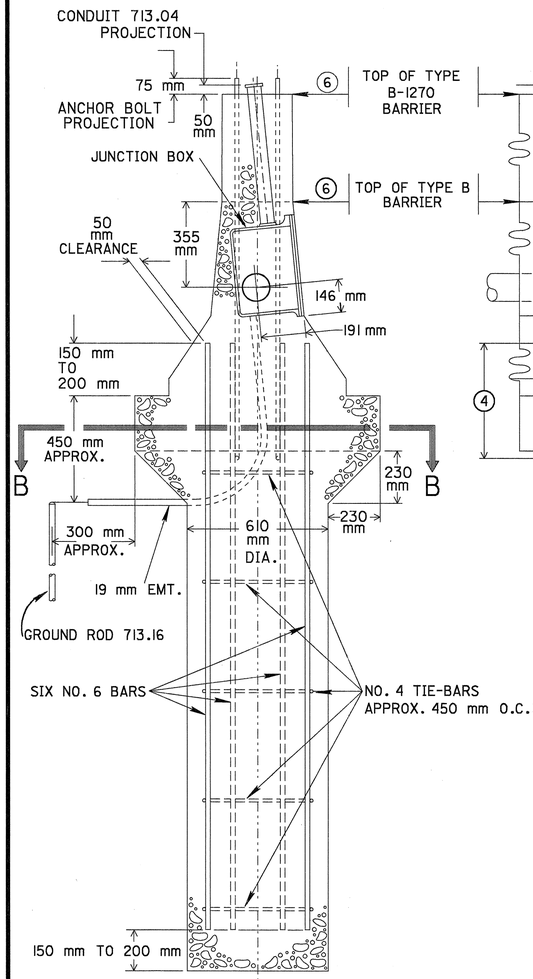
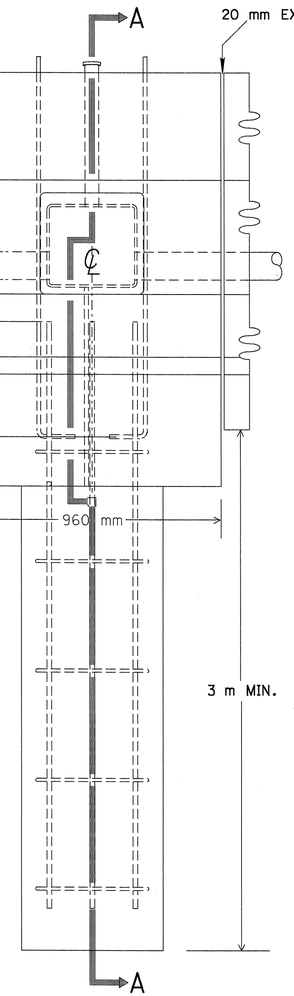
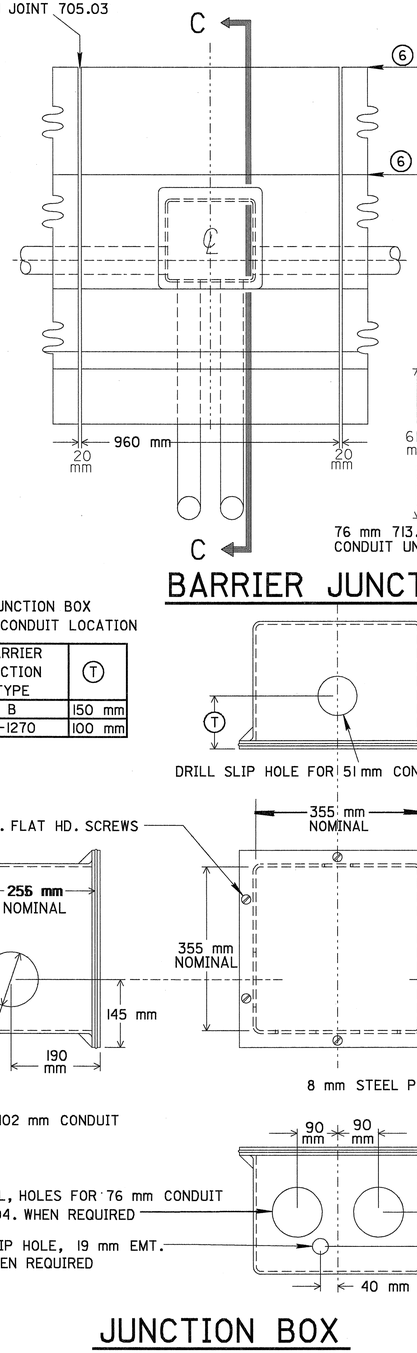
FOUNDATION AND JUNCTION BOX DETAILS - MEDIAN MOUNTED LIGHT POLES - TYPE 3

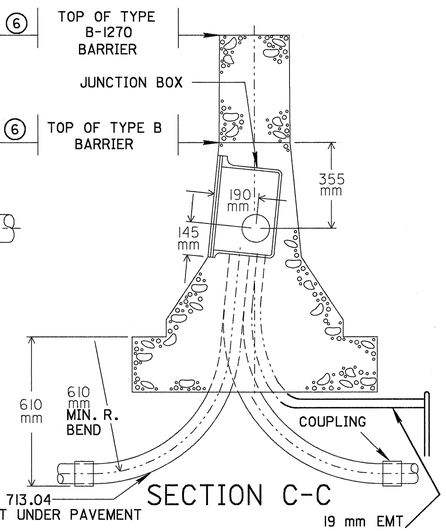


SECTION A-A

MEDIAN LIGHT POLE FOUNDATION







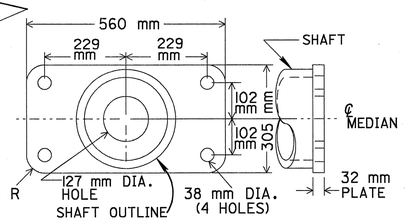
SECTION C-C

BARRIER JUNCTION BOX

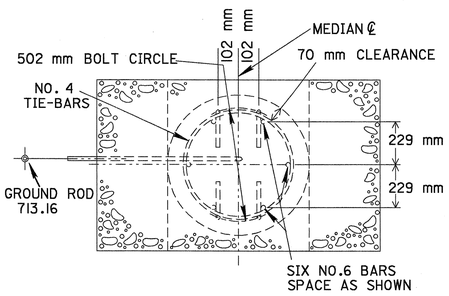
JUNCTION BOX
50 mm CONDUIT LOCATION

BARRIER SECTION TYPE	Ⓣ
B	150 mm
B-1270	100 mm

JUNCTION BOX



DETAIL OF POLE BASE PLATE



SECTION B-B

NOTES

1. FOUNDATION TO BE CAST-IN-PLACE CLASS "C" CONCRETE.
2. REINFORCING TO COMPLY WITH AND BE PLACED IN ACCORDANCE WITH 509.
3. LIGHT POLE ANCHOR BOLTS TO BE 32 mm DIA. X LENGTH "L" INCLUDING 150 mm L-BEND, WITH ONE HEX NUT PER BOLT, PROJECTION ABOVE CONCRETE 75 mm, THREAD LENGTH 100 mm, GALVANIZED LENGTH 125 mm.
4. MAINTAIN MINIMUM 430 mm OVERLAP OF ANCHOR BOLTS AND REINFORCEMENT BARS PER AASHTO.
5. THE TOP OF THE CONCRETE BARRIER SHALL BE FLAT, SMOOTH AND LEVEL TO ELIMINATE NEED FOR LIGHT POLE SHIMS. GRIND SURFACE, IF REQUIRED, TO MAKE CONCRETE LEVEL.
6. REFER TO STANDARD CONSTRUCTION DRAWING MC-9 FOR BARRIER DIMENSIONS.
7. JUNCTION BOXES SHALL CONFORM TO 713.10 EXCEPT THAT GALVANIZED STEEL PLATE COVERS SHALL CONFORM TO ASTM A-242 OR A-36.
8. THE UNIT PRICE BID FOR EACH "ITEM 625, MEDIAN LIGHT POLE FOUNDATION," SHALL BE FULL COMPENSATION FOR FURNISHING AND PLACING CONCRETE ANCHOR BOLTS, REINFORCING, JUNCTION BOX EMT, AND ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.
9. THE UNIT PRICE BID FOR EACH "ITEM 625, BARRIER JUNCTION BOX", SHALL BE FULL COMPENSATION FOR FURNISHING AND PLACING CONCRETE, JUNCTION BOX, CONDUIT ELLS, AND ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.
10. CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF 622 AND 625.
11. BARS DESIGNATED AS 4XX OR NO. 4 MAY BE EITHER 16 mm DIA. (15m) OR 12.7 mm DIA.
12. BARS DESIGNATED AS 6XX OR NO. 6 MAY BE EITHER 19.5 mm DIA. (20 m) OR 19.05 mm DIA.
13. GROUND ROD FOR JUNCTION BOX (NOT LIGHT POLE) MAY BE ELIMINATED IF AT LEAST 10 METERS OF UNDERGROUND METAL CONDUIT IS CONNECTED TO BOX.

metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING

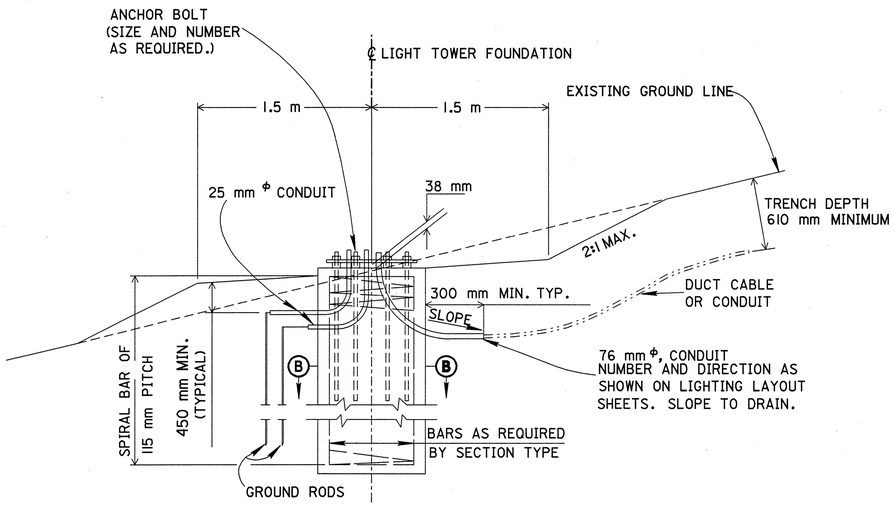
FOUNDATION & JUNCTION BOX DETAILS MEDIAN MOUNTED LIGHT POLES TYPE 3

DATE 05/01/95 01/31/97

STANDARD CONSTRUCTION DRAWING HL-20.13M

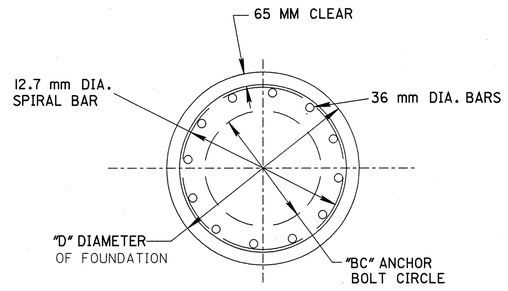
APPROVED _____ ADMINISTRATOR

WCC

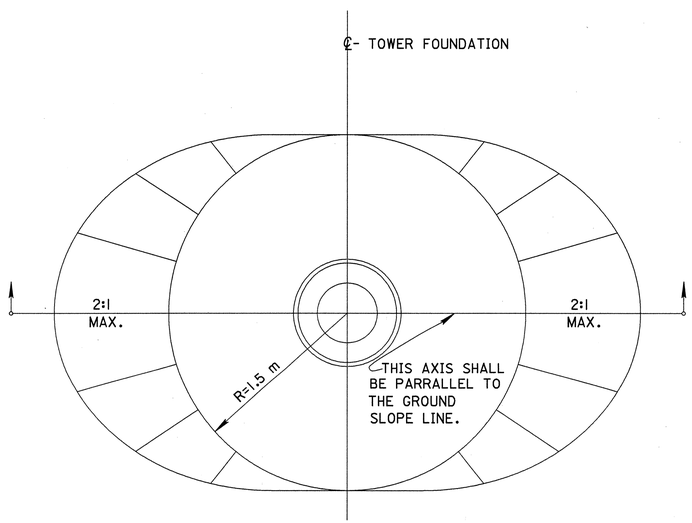


FOUNDATION WITHOUT MAINTENANCE PLATFORM

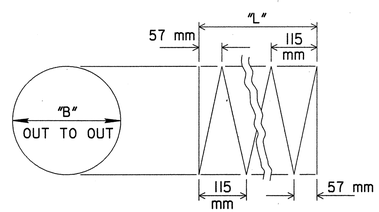
FOUNDATION



SECTION B - B



GRADING PLAN



12.7 mm DIA. SPIRAL BAR BENDING DIAGRAM

TABLE #1

FOUNDATION DATA IN mm			
TYPE	D	B	BC MAX
I	915	785	660
II	1070	940	813

NOTES

1. FOUNDATIONS ARE DESIGNED FOR STRUCTURES WITH ROUND TAPERED SHAFTS DESIGNED IN ACCORDANCE WITH THE LATEST AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", FOR A 90 MPH WIND ZONE WHEN SUPPORTING THE FOLLOWING:

   SIX (6) CYLINDRICAL LUMINAIRES WITH PROJECTED AREA OF .325 m^2 (CD=0.5) AND WEIGHING 34 kg EACH.

   ONE (1) CYLINDRICAL HEAD WITH PROJECTED AREA OF .492 m^2 (CD=1.0) AND 154 kg TOPLATCHED LOWERING DEVICE.

2. TOWER HAND HOLES SHALL BE ON DOWN-SLOPE SIDE OF TOWER.

3. FOUNDATION DEPTH BASED ON SOIL ANALYSIS. SEE CHART IN PLANS FOR REQUIRED DEPTHS. IF SOLID ROCK IS ENCOUNTERED BEFORE REACHING REQUIRED DEPTH, THE REMAINING FOUNDATION DEPTH MAY BE DECREASED BY 50%.

4. ANCHOR BOLT SIZE AND SPACING TO FIT MOUNTING PLATE SUPPLIED WITH TOWER. HOWEVER, BOLT CIRCLE SHALL BE EQUAL TO OR LESS THAN THE MAXIMUM BOLT CIRCLE PERMITTED IN TABLE NO.1. THE MINIMUM LENGTH ANCHOR BOLT SHALL BE 60" AND THE BOLTS SHALL HAVE EITHER A 152 mm "L" BEND OR A 127 mm X 127 mm PLATE ON THE EMBEDDED END.

5. THE LENGTH "L" OF THE 12.7 mm DIA. SPIRAL BAR IS THE FOUNDATION EMBEDMENT DEPTH WITH A 76 mm CLEARANCE AT EACH END. FOUR STEEL CHANNELS, TEE OR ANGLE SPACERS, WEIGHING APPROXIMATELY 363 kg PER FOOT OF SPACER SHALL BE PROVIDED FOR EACH SPRIAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG THE PERIPHERY OF THE COIL. THE NUMBER OF TURNS OF THE NO.4 SPIRAL BAR SHALL INCLUDE A FULL UNPITCHED TURN AT EACH END.

6. CONCRETE SHALL BE AS PER 499, CLASS "C".

7. FLATTENING OF GRADE AROUND BASE OF TOWER IS NOT REQUIRED IF NORMAL SLOPE IS 12 : 1 OR FLATTER. INSTALL MAINTENANCE PLATFORM WHEN CROSS SLOPE EXCEEDS 3.75 : 1 OR WHEN SPACE FOR GRADING IS INSUFFICIENT.

8. GROUND RODS, MAINTENANCE PLATFORMS, GRADING WILL BE PAID SEPARATELY.

9. CONDUITS IN THE FOUNDATION SHALL CONFORM TO 625 AND 713. THE FOUNDATION CONDUIT SHALL BE OF THE SAME MATERIAL AS THAT USED TO PROTECT THE CIRCUIT EXTENSION BEYOND THE FOUNDATION.

metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING

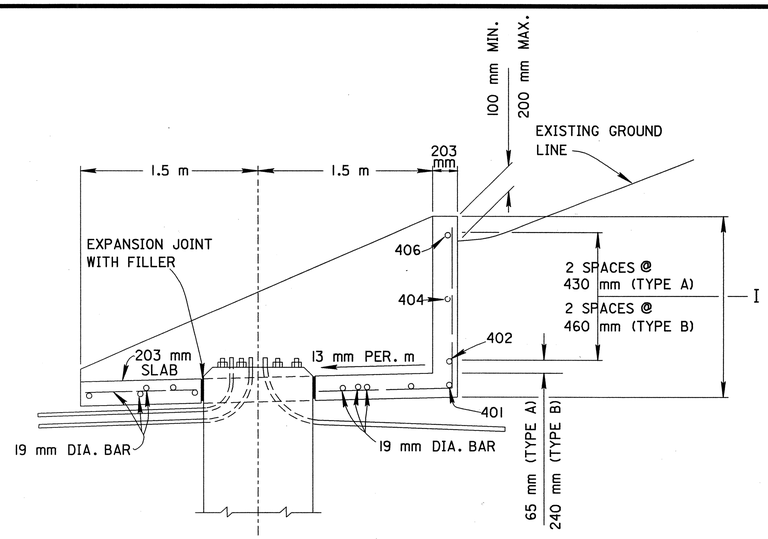
DATE 08/31/94

LIGHT TOWER FOUNDATIONS

STANDARD CONSTRUCTION DRAWING HL-20.2IM

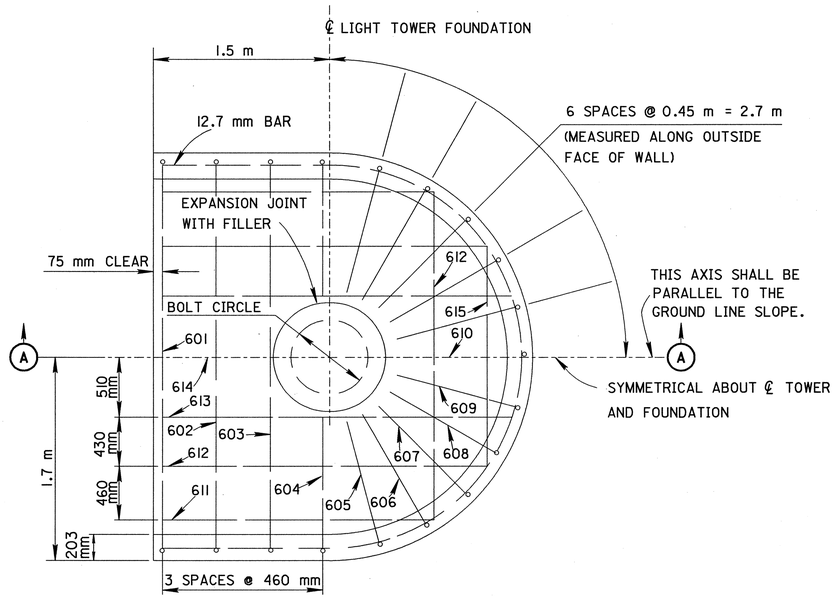
APPROVED _____ ADMINISTRATOR

WCC

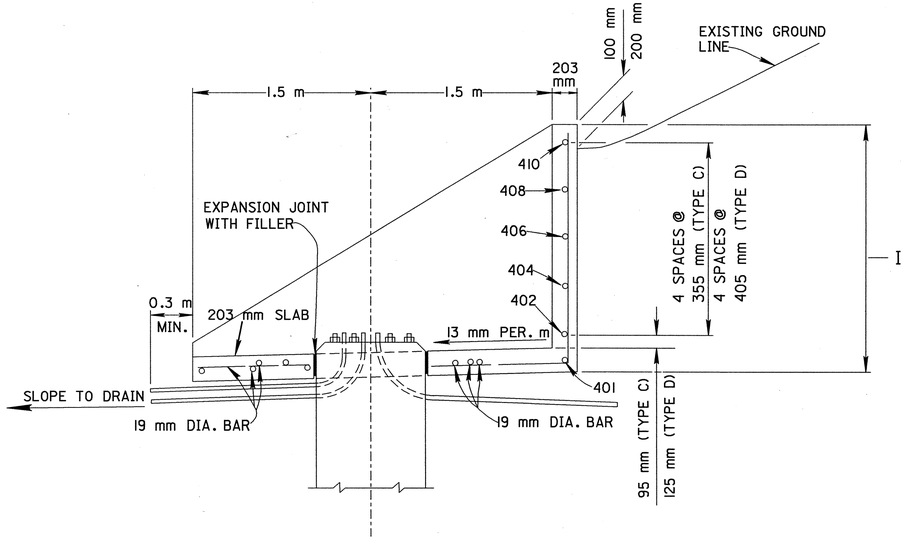


SECTION A - A

(TYPE A AND TYPE B)

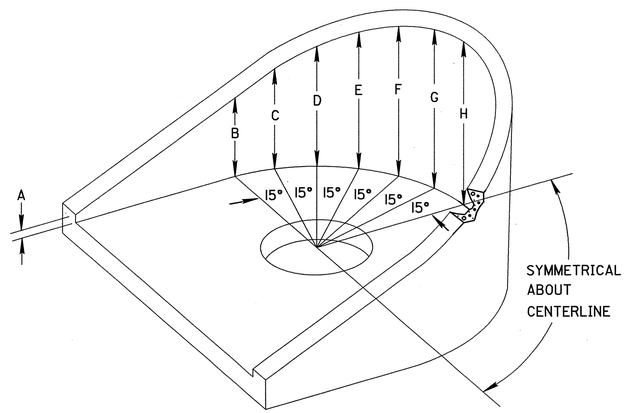


PLAN



SECTION A - A

(TYPE C AND TYPE D)



PLATFORM GROUPING		WALL ELEVATION DATA (METERS)								
TYPE	SLOPE	A	B	C	D	E	F	G	H	I
A	3.0:1 TO 3.75:1	0.09	0.54	0.68	0.80	0.91	1.00	1.05	1.07	1.26
B	2.5:1 TO 2.99:1	0.09	0.65	0.82	0.97	1.11	1.21	1.28	1.30	1.49
C	2.0:1 TO 2.49:1	0.09	0.82	1.04	1.24	1.41	1.55	1.63	1.66	1.85
D	1.75:1 TO 1.99:1	0.09	0.93	1.18	1.41	1.61	1.76	1.85	1.89	2.08

NOTES

1. MINIMUM 75 mm CLEARANCE FROM REBAR TO SURFACE OF CONCRETE UNLESS NOTED.
2. CONCRETE AS PER 499, CLASS C.
3. EXTEND CONDUIT ELLS 0.3 METER MINIMUM BEYOND PLATFORM AND SLOPE TO DRAIN AWAY.
4. THE EXPANSION JOINT BETWEEN THE PLATFORM AND FOUNDATION SHALL BE 25 mm AND FILLED WITH A FILLER MEETING THE REQUIREMENTS OF 705.04.
5. SEE DRAWING HL-20.23M FOR REINFORCING STEEL LIST.

metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING

DATE 03/31/95

LIGHT TOWER MAINTENANCE PLATFORMS I

STANDARD CONSTRUCTION DRAWING HL-20.22M

APPROVED _____ ADMINISTRATOR

WCC

WALL TYPE A

MARK	NO.	LENGTH	TYPE	A	B	R
401	1	8.0 m	144	5.1 m	1.4 m	1.6 m
402	1	7.3 m	144	5.1 m	1.1 m	1.6 m
404	1	4.8 m	121	4.8 m		1.6 m
406	1	1.9 m	121	1.9 m		1.6 m
601	1	3.6 m	105	0.2 m	3.3 m	
602	1	3.9 m	105	0.4 m	3.3 m	
603	1	4.2 m	105	0.5 m	3.3 m	
604	2	1.7 m	104	0.6 m	1.1 m	
605	2	1.8 m	108	0.8 m		
606	2	2.0 m	108	0.9 m		
607	2	2.1 m	108	1.0 m		
608	2	2.2 m	108	1.1 m		
609	2	2.2 m	108	1.1 m		
610	1	2.2 m	108	1.1 m		
611	2	2.3 m	STR.			
612	3	2.8 m	STR.			
613	2	3.0 m	STR.			
614	1	0.9 m	STR.			
615	1	2.0 m	STR.			

WALL TYPE B

MARK	NO.	LENGTH	TYPE	A	B	R
401	1	8.0 m	144	5.1 m	1.4 m	1.6 m
402	1	6.6 m	144	5.1 m	0.8 m	1.6 m
404	1	4.4 m	121	4.4 m		1.6 m
406	1	1.8 m	121	1.8 m		1.6 m
601	1	3.7 m	105	0.23 m	3.3 m	
602	1	4.0 m	105	0.4 m	3.3 m	
603	1	4.3 m	105	0.6 m	3.3 m	
604	2	1.8 m	104	0.7 m	1.1 m	
605	2	2.0 m	108	0.9 m		
606	2	2.2 m	108	1.1 m		
607	2	2.3 m	108	1.2 m		
608	2	2.4 m	108	1.3 m		
609	2	2.5 m	108	1.4 m		
610	1	2.5 m	108	1.4 m		
611	2	2.3 m	STR.			
612	3	2.8 m	STR.			
613	2	3.0 m	STR.			
614	1	0.9 m	STR.			
615	1	2.0 m	STR.			

WALL TYPE C

MARK	NO.	LENGTH	TYPE	A	B	R
401	1	8.0 m	144	5.1 m	1.4 m	1.6 m
402	1	7.5 m	144	5.1 m	1.2 m	1.6 m
404	1	6.1 m	121	5.1 m	0.5 m	1.6 m
406	1	4.8 m	121	4.8 m		1.6 m
408	1	3.5 m	121	3.5 m		1.6 m
410	1	1.5 m	121	1.5 m		1.6 m
601	1	3.7 m	105	0.23 m	3.3 m	
602	1	4.1 m	105	0.5 m	3.3 m	
603	1	4.5 m	105	0.7 m	3.3 m	
604	2	2.0 m	104	0.9 m	1.1 m	
605	2	2.2 m	108	1.1 m		
606	2	2.4 m	108	1.3 m		
607	2	2.6 m	108	1.5 m		
608	2	2.7 m	108	1.6 m		
609	2	2.8 m	108	1.7 m		
610	1	2.8 m	108	1.8 m		
611	2	2.3 m	STR.			
612	3	2.8 m	STR.			
613	2	3.0 m	STR.			
614	1	0.9 m	STR.			
615	1	2.0 m	STR.			

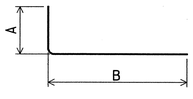
WALL TYPE D

MARK	NO.	LENGTH	TYPE	A	B	R
401	1	8.0 m	144	5.1 m	1.4 m	1.6 m
402	1	7.7 m	144	5.1 m	1.3 m	1.6 m
404	1	6.3 m	144	5.1 m	0.6 m	1.6 m
406	1	4.9 m	121	4.9 m		1.6 m
408	1	3.4 m	121	3.4 m		1.6 m
410	1	1.4 m	121	1.4 m		1.6 m
601	1	3.7 m	105	0.23m	3.3 m	
602	1	4.2 m	105	0.5 m	3.3 m	
603	1	4.7 m	105	0.7 m	3.3 m	
604	2	2.1 m	104	1.0 m	1.1 m	
605	2	2.4 m	108	1.3 m		
606	2	2.6 m	108	1.5 m		
607	2	2.8 m	108	1.7 m		
608	2	2.9 m	108	1.8 m		
609	2	3.0 m	108	1.9 m		
610	1	3.1 m	108	2.0 m		
611	2	2.3 m	STR.			
612	3	2.8 m	STR.			
613	2	3.0 m	STR.			
614	1	0.9 m	STR.			
615	1	2.0 m	STR.			

NOTES

1. ALL REINFORCING STEEL SHALL MEET 509 & 709, BASIC UNIT STRESS 1.38 X 10^5 PASCALS
2. REINFORCING BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT OF A 3 DIGIT MARK INDICATES THE BAR SIZE NUMBER. (ie 401 IS A NO. 4 SIZE BAR WHICH IS 12.7 mm DIA.). #4 = 12.7 mm DIA, #5 = 15.8 mm DIA., #6 = 19 mm DIA.

BENDING DIAGRAMS



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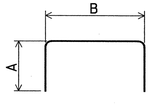

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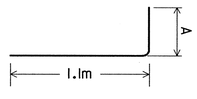

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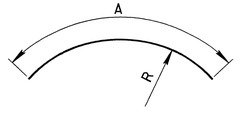

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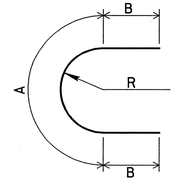


144

metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING

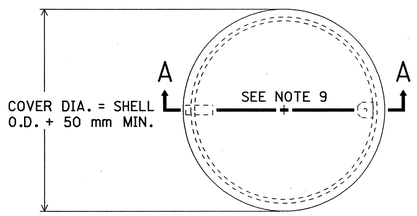
DATE 03/31/95

LIGHT TOWER
MAINTENANCE PLATFORM III

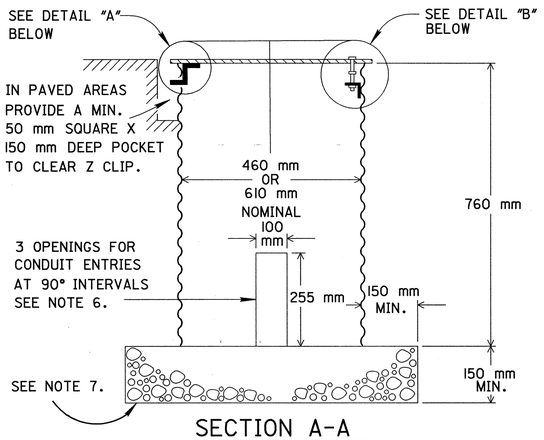
STANDARD CONSTRUCTION DRAWING HL-20.23M

APPROVED _____ ADMINISTRATOR

WCC

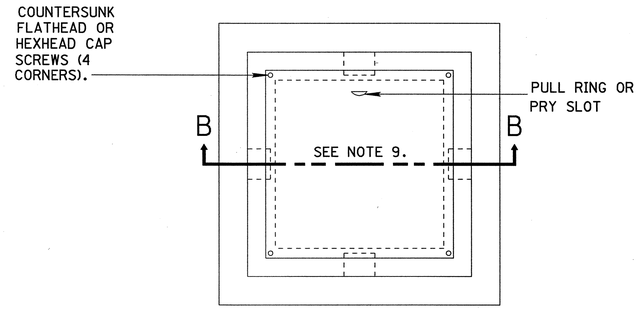


PLAN VIEW

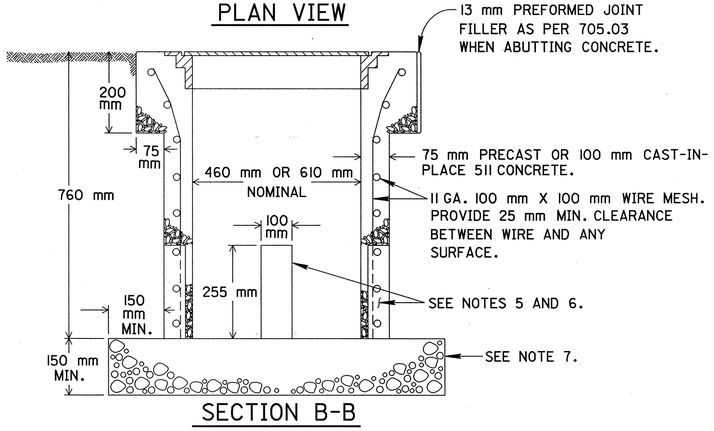


SECTION A-A

CORRUGATED STEEL PULL BOX

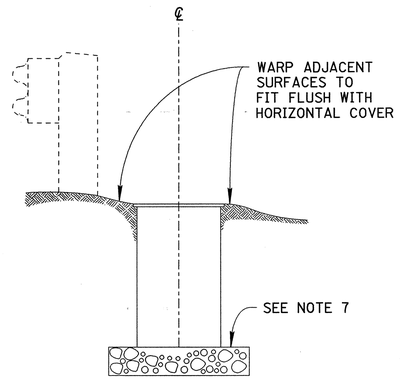


PLAN VIEW



SECTION B-B

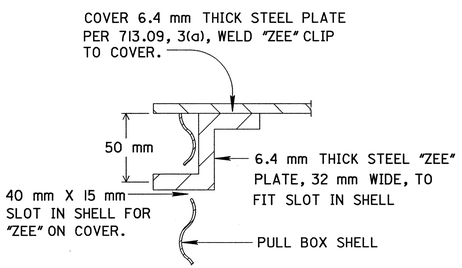
CONCRETE PULL BOX



NORMAL INSTALLATION

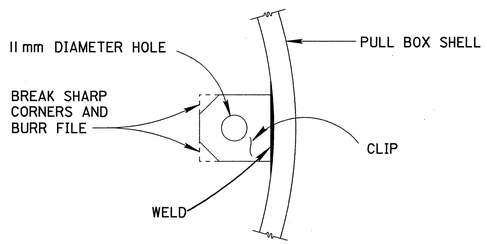
NOTES

1. PULL BOXES SHALL CONFORM WITH 625.11, 713.08, 713,081 AND 713.09.
2. CONCRETE PULL BOXES SHALL HAVE FERROUS METAL COVERS AND MATCHING FRAMES BY NEENAH, JOSAM OR ZURN FOUNDRIES, OR APPROVED EQUAL. COVERS MAY BE 13 mm MINIMUM GALVANIZED PLATE STEEL OR CAST IRON WITH REINFORCING RIBS.
3. TAPERED THICKNESS CONCRETE PULL BOX WALLS MAY BE USED: HOWEVER, MINIMUM WALL THICKNESS SHALL BE AS INDICATED.
4. LIFTING RINGS OR WIRE PULLING RINGS MAY BE INCORPORATED INTO PRECAST CONCRETE PULL BOX WALLS.
5. CONDUIT ENTRIES FOR CAST-IN-PLACE CONCRETE PULL BOXES SHALL BE CAST AS REQUIRED. PRECAST PULL BOXES MAY HAVE BLOCKED OUT SECTIONS OF THE WALL AS KNOCKOUTS IN THE QUANTITY OF ONE PER WALL.
6. UNUSED OPENING AREAS SURROUNDING CONDUITS SHALL BE BLOCKED AFTER CONDUIT INSTALLATION.
7. AGGREGATE USED FOR PULL BOXES SHALL BE NO. 7 OR 8, AT LEAST 150 mm DEEP. COST FOR AGGREGATE SHALL BE INCLUDED WITH THE UNIT PRICE BID FOR EACH PULL BOX.
8. PULL BOX DRAINS IN ACCORDANCE WITH 603 SHALL BE INSTALLED WHEN SPECIFIED, OR AS DIRECTED BY THE ENGINEER. ALTERNATE DRAIN LOCATION MAY BE USED WHEN NORMAL RUN WOULD EXCEED 6.1 m.
9. SEE 713.09 FOR COVER MARKING REQUIREMENTS.

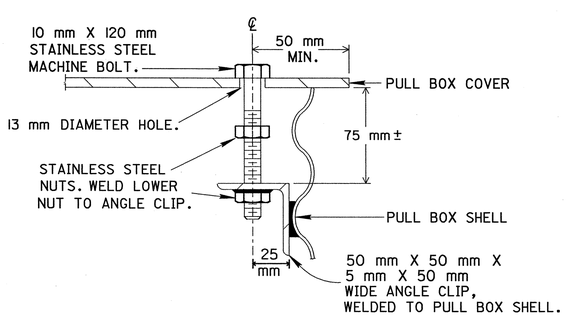


ELEVATION

DETAIL A

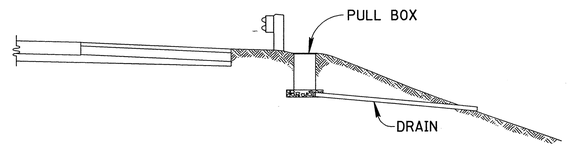


PLAN VIEW

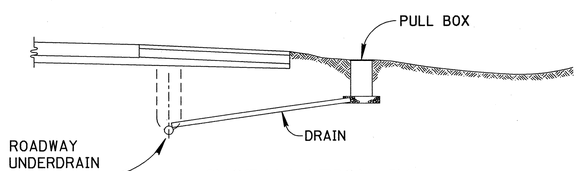


ELEVATION

DETAIL B



INSTALLATION IN ROADWAY FILL SECTION



INSTALLATION IN ROADWAY CUT SECTION

UNDERDRAINS FOR PULL BOXES

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

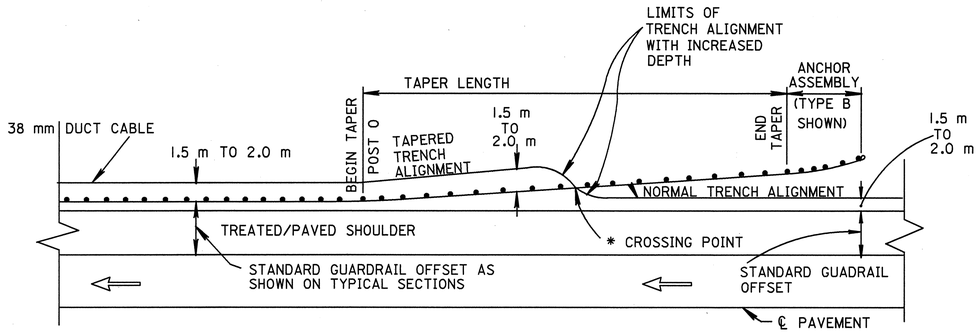
metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING	DATE 03/31/95
PULL BOX DETAILS I	
STANDARD CONSTRUCTION DRAWING	HL-30.11M

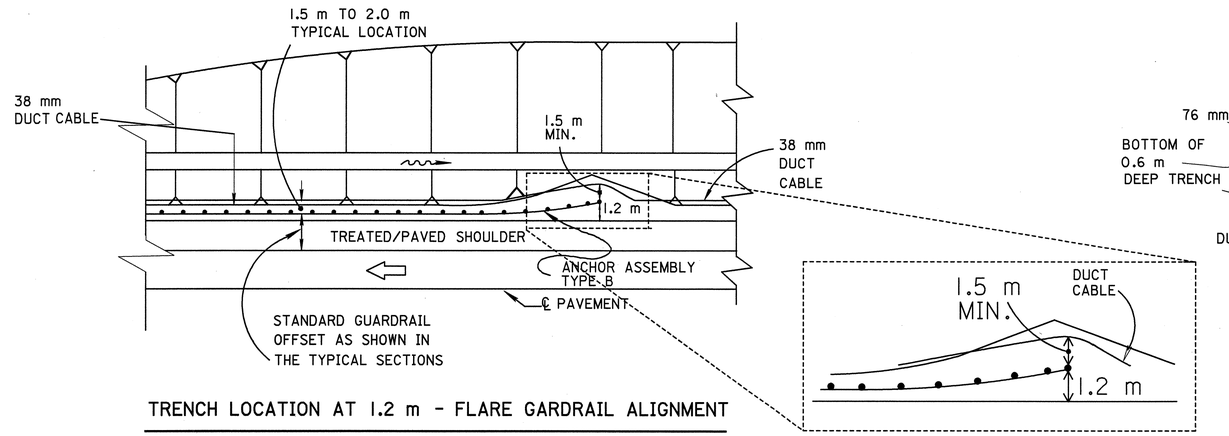
APPROVED _____ ADMINISTRATOR

WCC

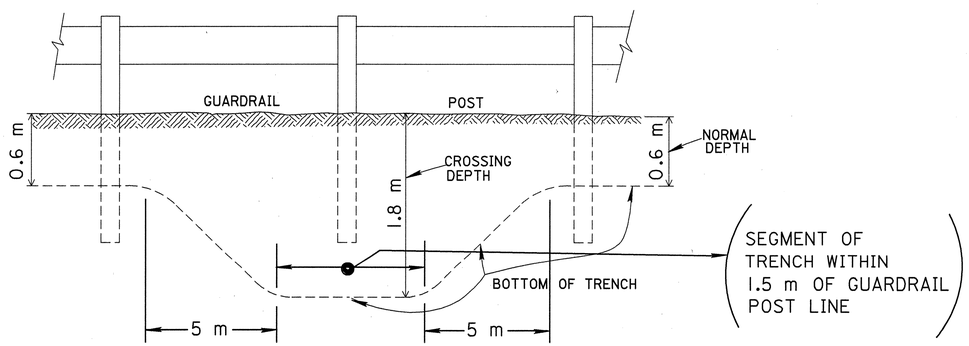


* CHOOSE CROSSING POINT SUCH THAT GUARDRAIL POST ALIGNMENT IS APPROXIMATELY MIDWAY BETWEEN TAPERED TRENCH ALIGNMENT AND NORMAL TRENCH ALIGNMENT

TRENCH LOCATION AT TAPERED OR WIDE FLARE GUARDRAIL ALIGNMENT



TRENCH LOCATION AT 1.2 m - FLARE GARDRAIL ALIGNMENT



METHOD FOR PROTECTING DUCT-CABLE UNDER GUARDRAIL

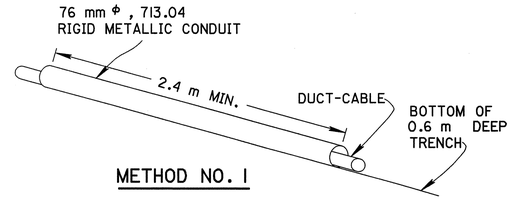
INCREASED DEPTH OF CABLE TRENCH AT POINT OF CROSSING
TO BE USED WHEN CIRCUIT IS INSTALLED PRIOR TO GUARDRAIL INSTALLATION

NOTES

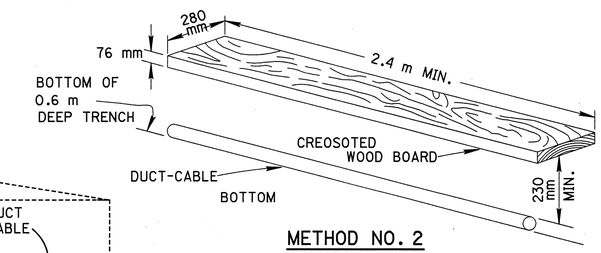
1. PAYMENT FOR PROTECTION OF DUCT-CABLE AND DISTRIBUTION CABLE UNDER GUARDRAIL, AS DETAILED IN METHODS I THRU 4, SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE AFFECTED CABLE AND TRENCH ITEMS.

METHODS OF PROTECTING DUCT-CABLE

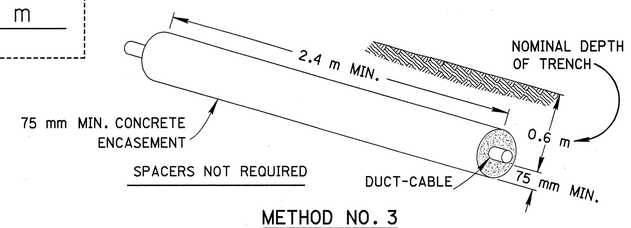
(SEE NOTE I)



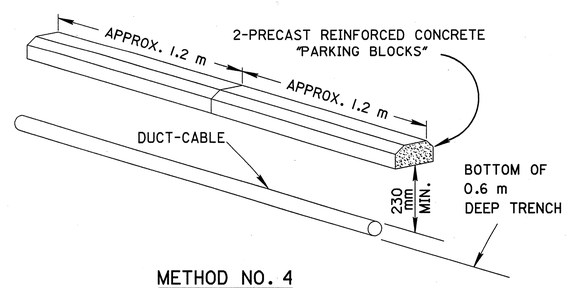
METHOD NO. I



METHOD NO. 2



METHOD NO. 3



METHOD NO. 4

metric units

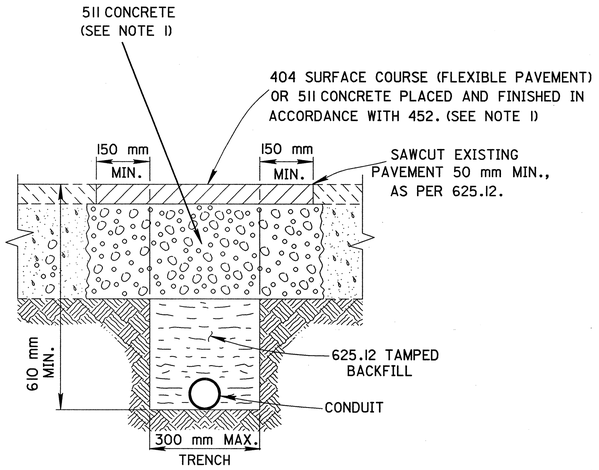
OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING	DATE 05/01/95
ROADWAY CONDUIT DETAILS I	
STANDARD CONSTRUCTION DRAWING HL-30.21M	

APPROVED _____ ADMINISTRATOR

WCC

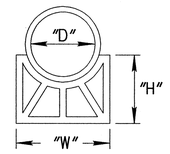
CONCRETE ENCASED CONDUIT



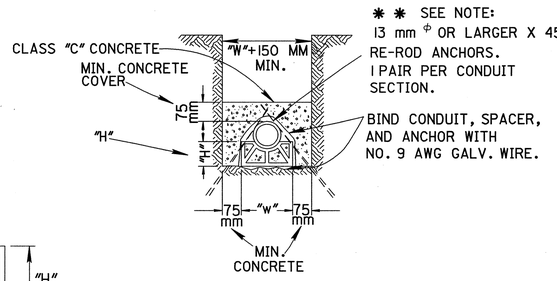
TRENCH IN PAVED AREAS

"D"	"H"	"W"
51 mm	90 mm	140 mm
76 mm	100 mm	165 mm
102 mm	105 mm	195 mm
127 mm	115 mm	225 mm

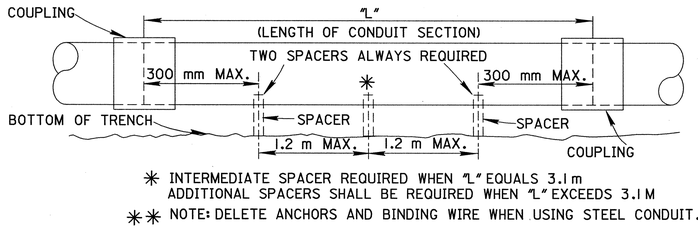
NORMAL SPACER DIMENSIONS



TYPICAL SPACER
("D"=NOM.I.D. OF CONDUIT)



TRENCH SECTION



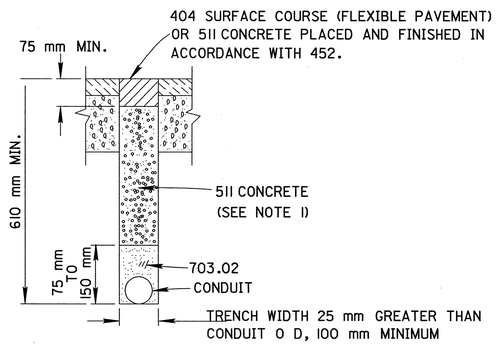
* INTERMEDIATE SPACER REQUIRED WHEN "L" EQUALS 3.1 m
ADDITIONAL SPACERS SHALL BE REQUIRED WHEN "L" EXCEEDS 3.1 M

** NOTE: DELETE ANCHORS AND BINDING WIRE WHEN USING STEEL CONDUIT.

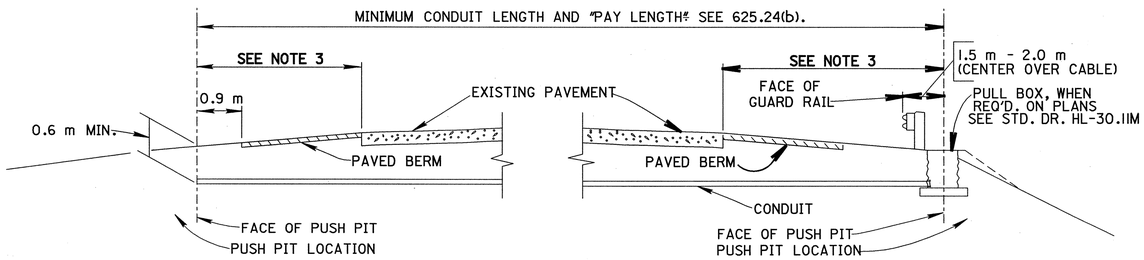
SIDE ELEVATION

NOTES

1. AT TRENCH LOCATIONS IN PAVED AREAS, REPLACEMENT OFDISTURBED FLEXIBLE PAVEMENT SHALL CONSIST OF 511 CONCRETE PLACED TO WITHIN 51 mm OF THE SURFACE AND A 404 SURFACE COURSE MATCHING THE EXISTING SURFACE. REPLACEMENT OF DISTURBED RIGID PAVEMENT SHALL CONSIST OF 511 CONCRETE WITH SURFACE PLACED AND FINISHED IN ACCORDANCE WITH 452.
2. SITE CLEARING AND RESTORATION SHALLBE IN ACCORDANCE WITH 603.09.
3. WHEN UNDERMINING SHOULDER AREAS THAT DO NOT HAVE PAVED BERMS, PROVIDE 19 mm THICK STEEL SURFACE PLATES. CORRUGATED PIPE SLEEVES, SHORING OR OTHER APPROVED MEANS TO PREVENT CAVE-IN.
4. WHEN CONDUIT IS JACKED OR DRILLED UNDER DIVIDED PAVEMENTS, CABLE MAY BE INSTALLED IN A TRENCH THROUGH THE MEDIAN AREA WHEN SPECIFIED IN THE PLANS.



NARROW SLIT TYPE TRENCH



CONDUIT JACKED UNDER PAVEMENT

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING

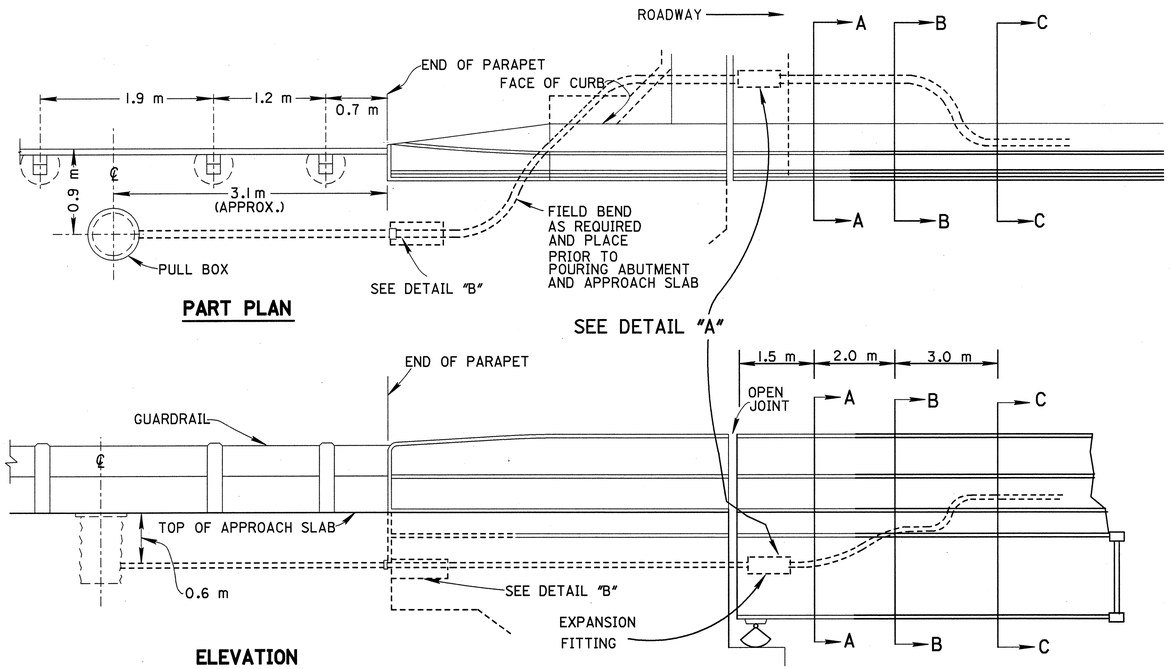
DATE 03/31/95

ROADWAY
CONDUIT DETAILS II

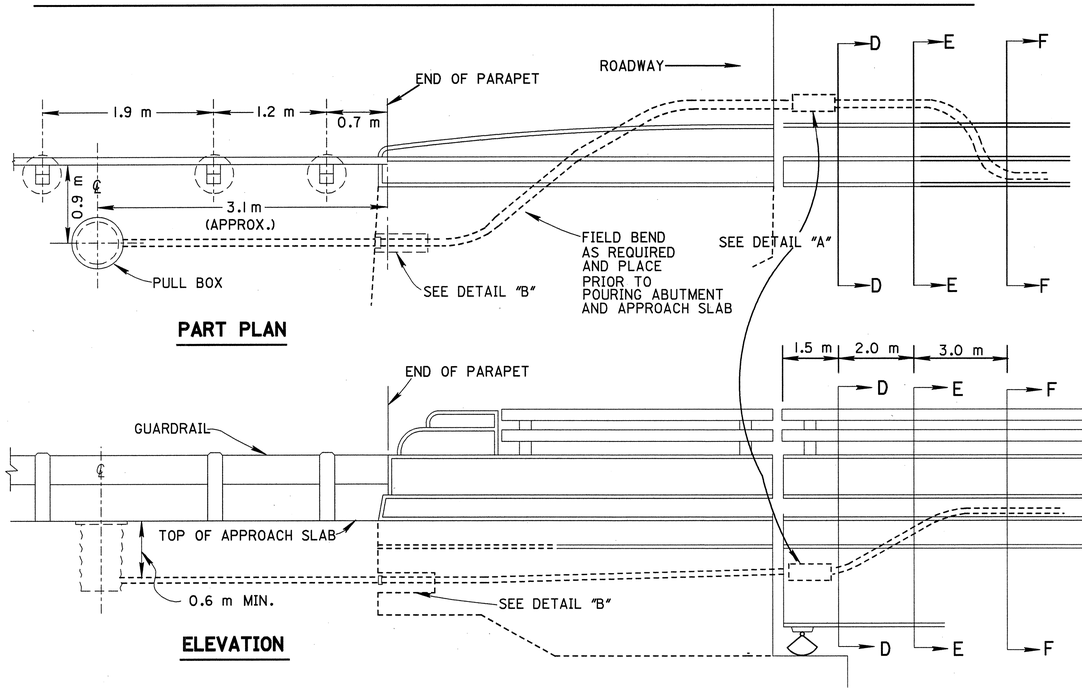
STANDARD CONSTRUCTION DRAWING HL-30.22M

APPROVED _____ ADMINISTRATOR

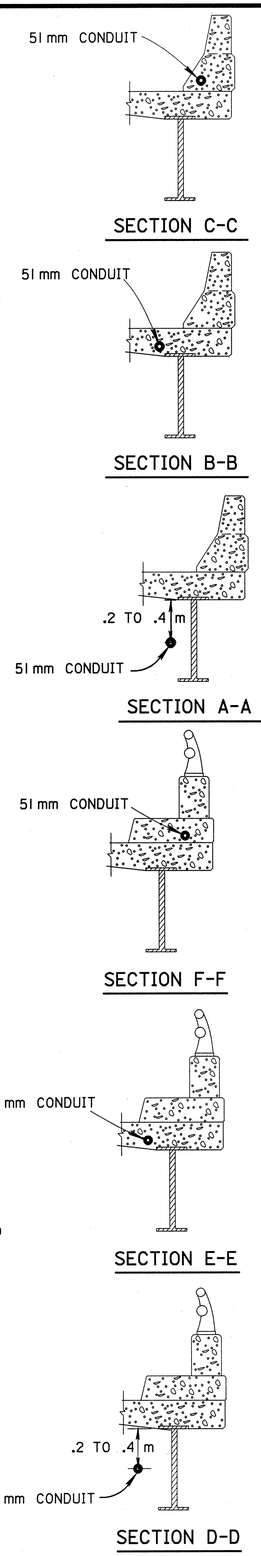
WCC

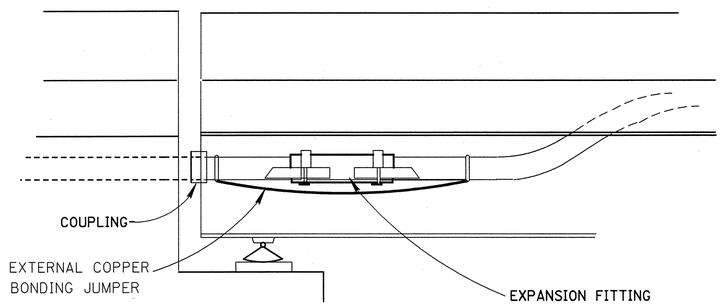


CONDUIT DETAILS FOR BRIDGE WITH STANDARD ROADWAY RAILING



CONDUIT DETAILS FOR BRIDGE WITH SIDEWALK RAILING

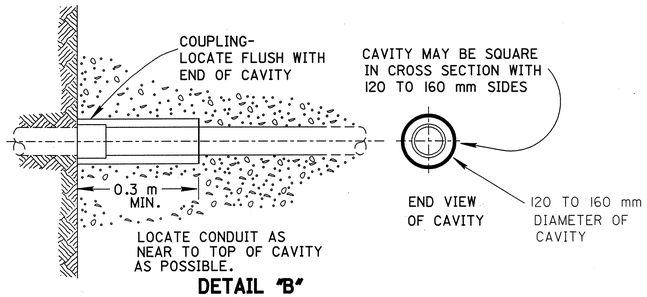




DETAIL "A"

CONDUIT EXPANSION FITTING

DIMENSIONS MAY BE ALTERED TO FIT ABUTMENT DESIGN



DETAIL "B"

CAVITY FOR CONDUIT CONNECTION AT BRIDGE ABUTMENTS

DIMENSIONS MAY BE ALTERED TO FIT ABUTMENT DESIGN
CAVITY FORMS MAY BE LEFT IN PLACE PROVIDING THEY DO NOT REDUCE CAVITY DIMENSIONS BEYOND THE MINIMUMS

OFFICE OF TRAFFIC ENGINEERING
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OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING

DATE 05/01/95

STRUCTURE
CONDUIT DETAILS I

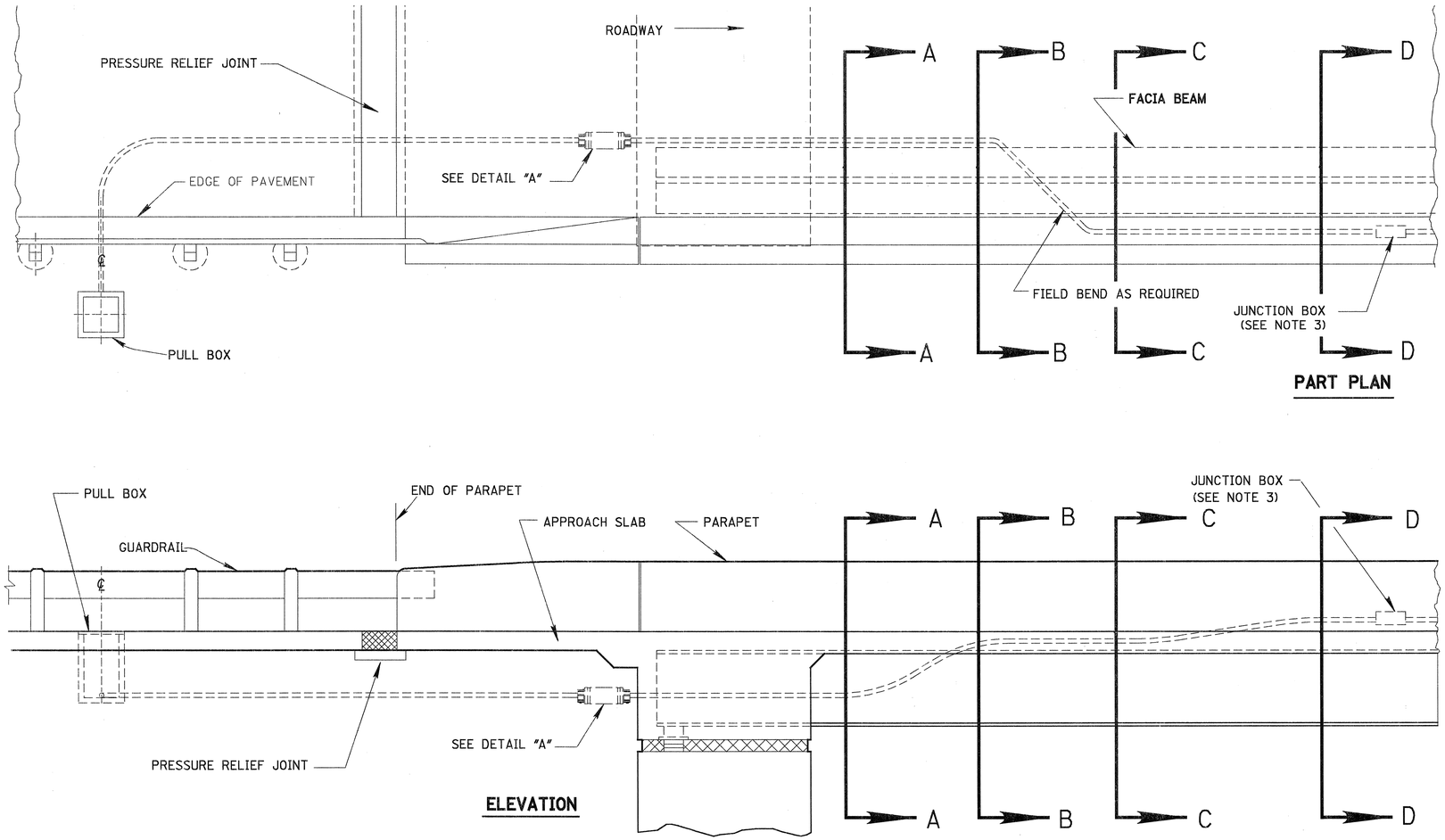
STANDARD CONSTRUCTION DRAWING HL-30.31M

APPROVED _____ ADMINISTRATOR

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

WCC



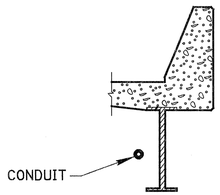
PART PLAN

ELEVATION

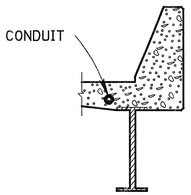
NOTES

1. THE EXPANSION/DEFLECTION FITTING (NEMA 4 RATING) SHALL CONSIST OF IRON OR BRONZE END COUPLINGS IN A HEAVY-DUTY NEOPRENE SLEEVE HELD IN PLACE BY STAINLESS STEEL BANDS. A COPPER BRAID BONDING JUMPER SHALL BE INSTALLED INSIDE THE SLEEVE BETWEEN THE END COUPLINGS FOR GROUNDING CONTINUITY.
2. AT THE END OF THE ABUTMENT, PLACE CONDUIT IN CONCRETE WITH THREADS ONLY EXPOSED, COMPACT BACKFILL UP TO LEVEL OF CONDUIT, THEN ATTACH EXPANSION/DEFLECTION FITTING ALONG WITH REMAINING CONDUIT AND COMPLETE COMPACTION OF BACKFILL.
3. IF NO OTHER PULLING CAPABILITY IS LOCATED NEAR THE END OF THE BRIDGE, AN INTERNAL-FLANGE JUNCTION BOX MEETING 713.10 AND A MINIMUM LENGTH OF 5 CONDUIT DIAMETERS, SHALL BE INSTALLED.

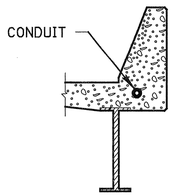
CONDUIT DETAILS FOR INTEGRAL AND SEMI-INTEGRAL BRIDGES



SECTION A-A



SECTION B-B



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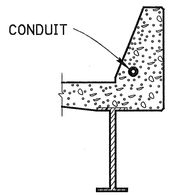
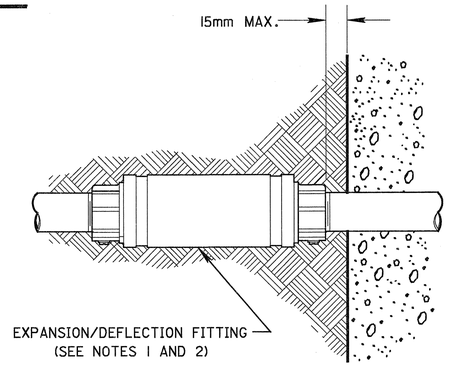


SECTION D-D



DETAIL "A"

metric units

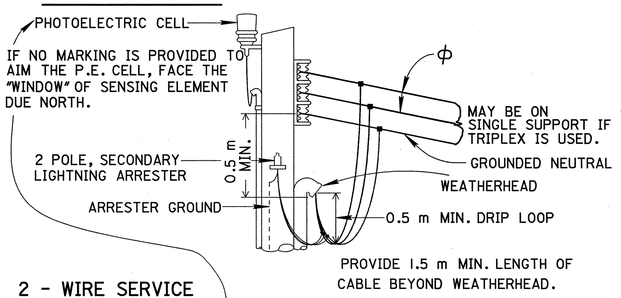
OFFICE OF TRAFFIC ENGINEERING DIVISION OF ENGINEERING POLICY OHIO DEPARTMENT OF TRANSPORTATION	
HIGHWAY LIGHTING	DATE 08/14/96
STRUCTURE CONDUIT DETAILS II	
STANDARD CONSTRUCTION DRAWING APPROVED _____ ADMINISTRATOR	HL-30.32M

GT JR.

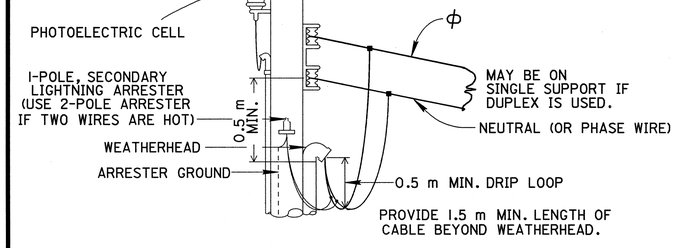
SERVICE POLES AND CONTROL CENTERS

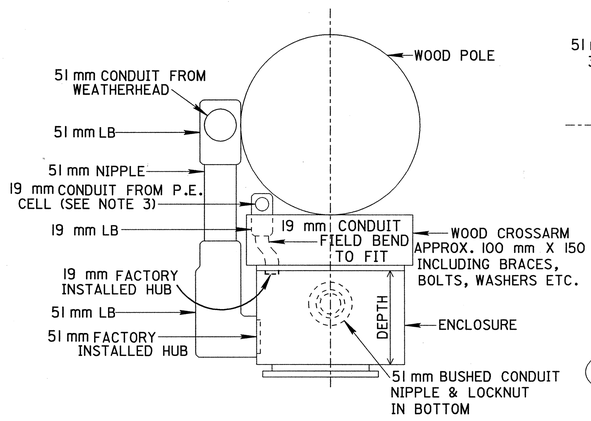
TYPICAL SERVICE POLE HEADS

3 - WIRE SERVICE



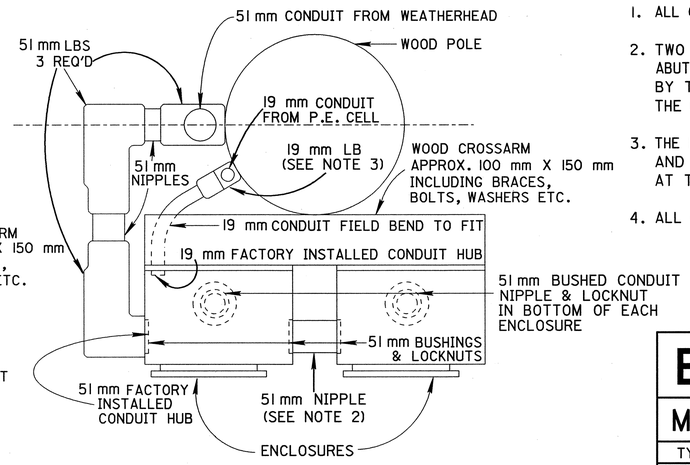
2 - WIRE SERVICE





PLAN

SINGLE ENCLOSURE



PLAN

DOUBLE ENCLOSURES

NOTES

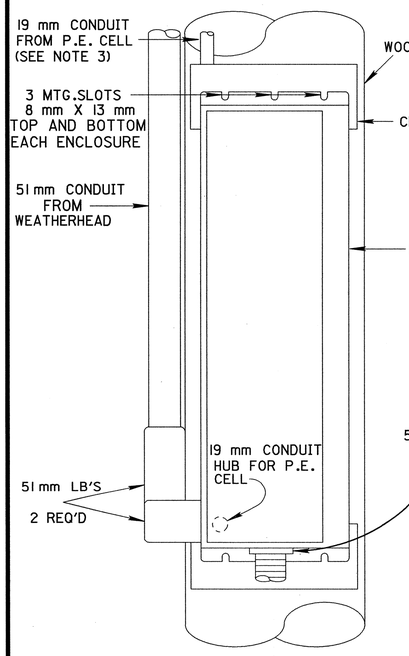
1. ALL OPENINGS IN ENCLOSURES SHALL BE MADE BY FABRICATOR.
2. TWO OR MORE ENCLOSURES MAY BE MOUNTED WITH SIDES ABUTTING. THE 51 mm NIPPLE SHOWN SHALL THEN BE REPLACED BY THE INSTALLATION OF 51 mm INSULATED BUSHINGS IN THE OPENINGS OF ENCLOSURES.
3. THE 19 mm CONDUIT FOR CONTROL WIRING BETWEEN P.E. CELL AND CONTACTOR ENTERS THE BACK OF THE ENCLOSURE AT THE BOTTOM.
4. ALL CONDUIT SHALL CONFORM TO 713.04.

ENCLOSURE TYPES

MINIMUM INTERIOR DIMENSIONS

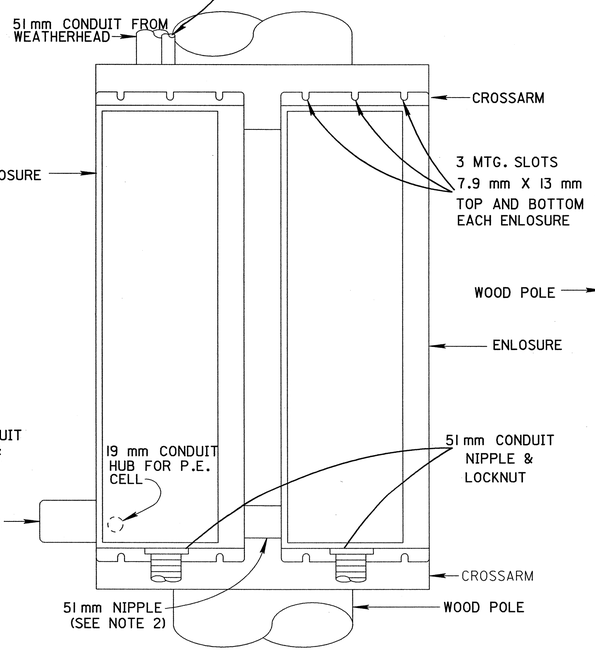
TYPE	PRINCIPLE CONTENTS	WIDTH	HEIGHT	DEPTH*
S-60	60 AMPERE FUSED SWITCH	250 mm	450 mm	150 mm
S-100	100 AMPERE FUSED SWITCH	350 mm	600 mm	175 mm
SC-60	60 AMPERE COMBINATION FUSED SWITCH & CONTACTOR	350 mm	850 mm	200 mm
SC-100	100 AMPERE COMBINATION FUSED SWITCH & CONTACTOR	450 mm	950 mm	200 mm

*SEE "PLAN" VIEW OF SINGLE ENCLOSURE. THE INTERIOR DEPTH DIMENSION SHALL NOT INCLUDE ANY PART OF THE ENCLOSURE DOOR WHICH MAY PROTRUDE INTO THE INTERIOR OF THE ENCLOSURE.



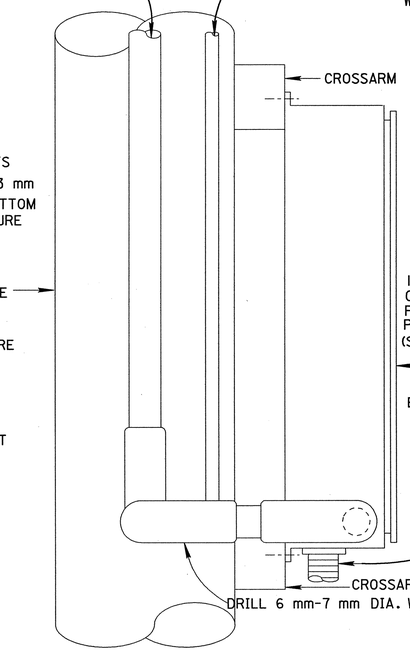
FRONT ELEVATION

SINGLE ENCLOSURE



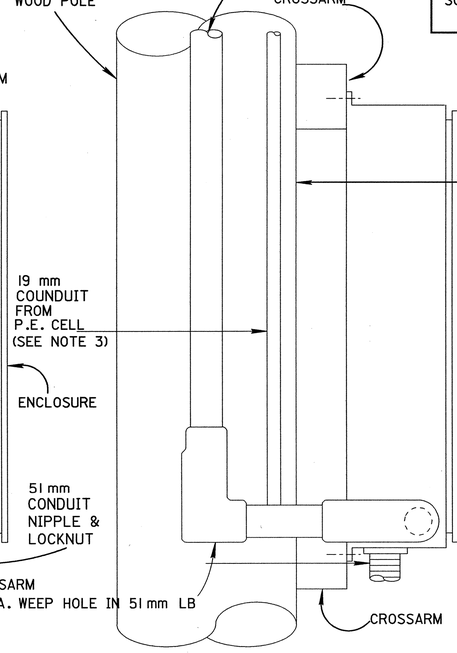
FRONT ELEVATION

DOUBLE ENCLOSURES



LEFT SIDE VIEW

DOUBLE ENCLOSURE



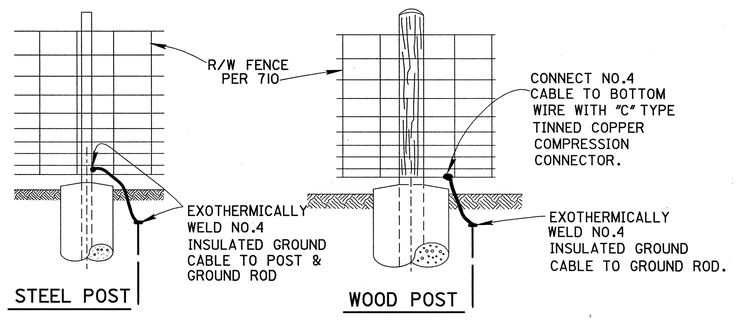
LEFT SIDE VIEW

SINGLE ENCLOSURES

metric units

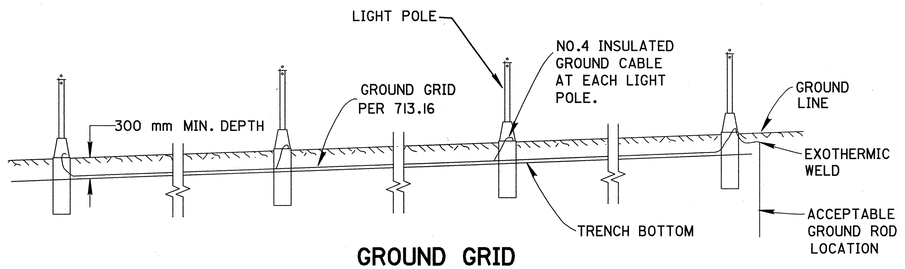
OFFICE OF TRAFFIC ENGINEERING DIVISION OF ENGINEERING POLICY OHIO DEPARTMENT OF TRANSPORTATION	
HIGHWAY LIGHTING	DATE 03/31/95
CONTROL CENTERS	
STANDARD CONSTRUCTION DRAWING HL-40.10M APPROVED _____ ADMINISTRATOR	

WCC



R/W FENCE GROUND

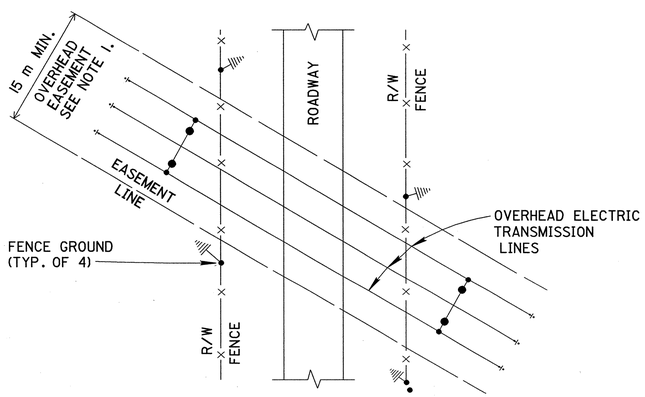
WHEN SPECIFICALLY NOTED ON THE PLANS, AND IN NOTES 1, 2, & 3, R/W FENCES SHALL BE GROUNDED AS SHOWN ABOVE. SEE ALSO NOTE 4.



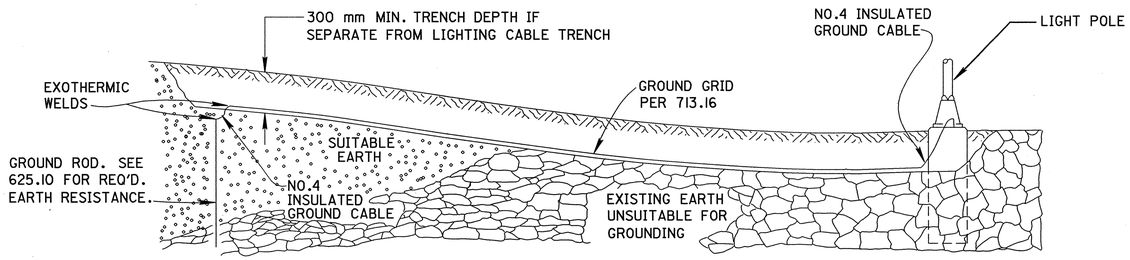
GROUND GRID

NOTES

1. WHERE OVERHEAD TRANSMISSION LINE EASEMENTS 15 m OR MORE IN WIDTH CROSS A FENCED ROADWAY RIGHT-OF-WAY, EACH FENCE SHALL BE GROUNDED AS SHOWN HEREON.
2. WHERE OVERHEAD ELECTRIC POWER LINE EASEMENTS LESS THAN 15 m IN WIDTH CROSS A FENCED ROADWAY RIGHT-OF-WAY, EACH FENCE SHALL BE GROUNDED DIRECTLY BELOW THE CENTERLINE OF THE POWER LINE CROSSING.
3. WHERE OVERHEAD TRANSMISSION LINES RATED 110 KV OR HIGHER ARE PARALLEL TO ROADWAY FENCES AND THE TRANSMISSION LINE EASEMENT IS CONTIGUOUS TO THE ROADWAY RIGHT-OF-WAY THE ROADWAY FENCES SHALL BE GROUNDED AT LEAST EVERY 100 m.
4. FENCE GROUNDS WILL BE PAID FOR AT THE UNIT PRICE BID FOR 625 GROUND ROD.
5. APPLY TWO COATS OF INSULATING VARNISH OVER ALL EXOTHERMIC WELDS AND EXPOSED CABLE.



FENCE GROUNDS AT TRANSMISSION LINE CROSSING



MODIFIED GROUND GRID - INDIVIDUAL POLE

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

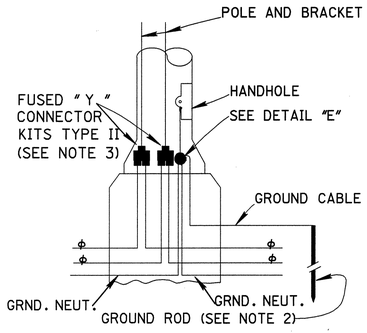
metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

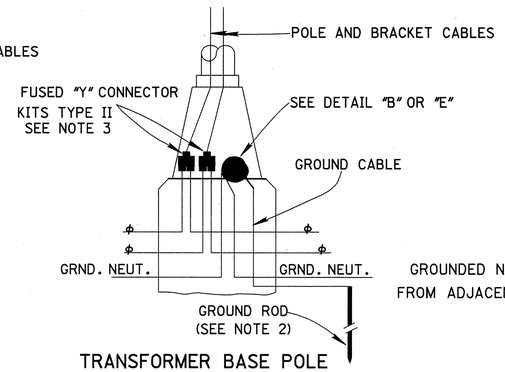
HIGHWAY LIGHTING	DATE 03/31/95
GROUNDING DETAILS	
STANDARD CONSTRUCTION DRAWING HL-50.11M	

APPROVED _____ ADMINISTRATOR

WCC

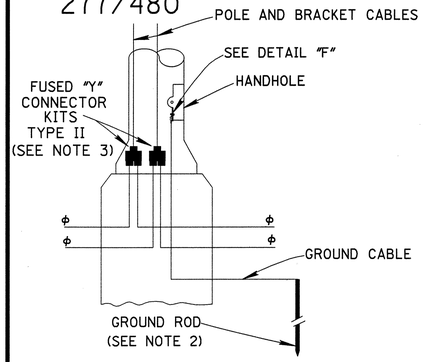


ANCHOR BASE POLE

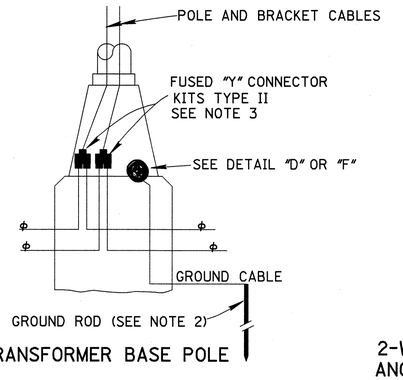


TRANSFORMER BASE POLE

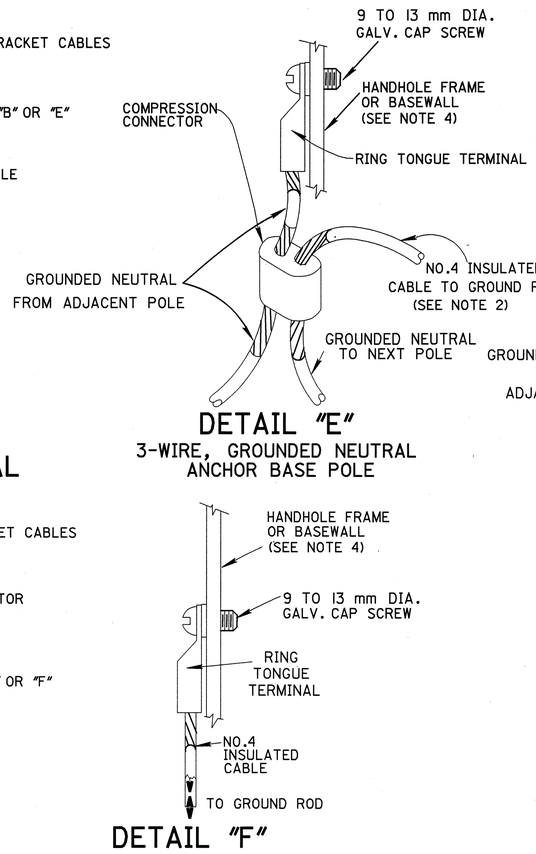
120/240 240/480 VOLTS, THREE WIRE, GROUNDED NEUTRAL 277/480



ANCHOR BASE POLE

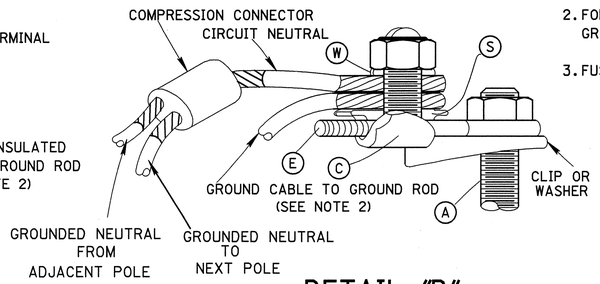


TRANSFORMER BASE POLE



DETAIL "E"

3-WIRE, GROUNDED NEUTRAL
ANCHOR BASE POLE

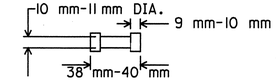


DETAIL "B"

3-WIRE, GROUNDED NEUTRAL
TRANSFORM BASE POLE

NOTES

1. PROVIDE SUFFICIENT SLACK IN ALL CABLES TO PERMIT BRINGING KITS OUTSIDE OF POLE BASE THROUGH HANDHOLE OF ANCHOR BASE POLES OR DOOR IN TRANSFORMER BASE POLES.
2. FOR STRUCTURE-MOUNTED POLES SUBSTITUTE "STRUCTURE GROUNDING SYSTEM " FOR " GROUND ROD."
3. FUSES FOR CONNECTOR KITS SHALL BE AS FOLLOWS:

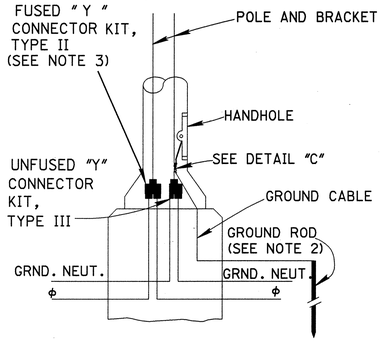


ANY STANDARD MIDGET FERRULE TYPE FUSE,(EXCEPT GLASS TUBE) MAY BE USED IN THIS CONNECTION.

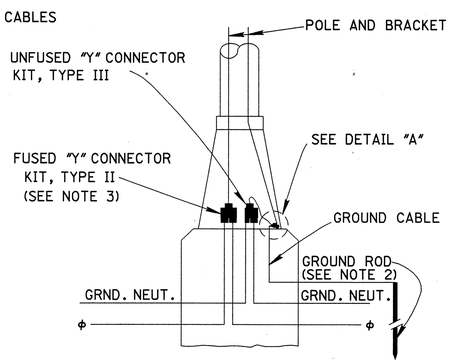
FUSES RATED 600 VOLTS AND 10 AMPERES, MINIMUM SHALL BE USED UNLESS OTHERWISE SPECIFIED.

4. USE DETAILS "C", "F", "E" ONLY WHEN HOLE FOR GROUNDING LUG IS PROVIDED BY FACTORY. OTHERWISE USE DETAILS "A", "B", "D".

240 OR 480 VOLTS, TWO-WIRE, UNGROUNDED



ANCHOR BASE POLE

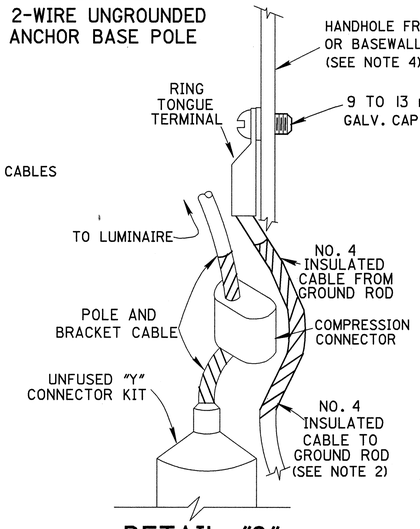


TRANSFORMER BASE POLE

480 VOLT, TWO-WIRE, GROUNDED NEUTRAL

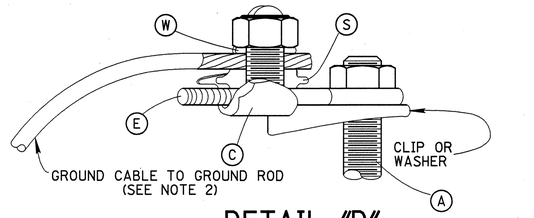
DETAIL "F"

2-WIRE UNGROUNDED
ANCHOR BASE POLE



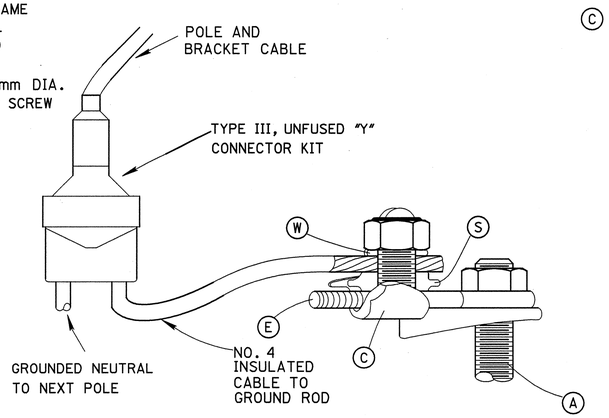
DETAIL "C"

2-WIRE, GROUNDED NEUTRAL
ANCHOR BASE POLE



DETAIL "D"

2-WIRE UNGROUNDED CIRCUIT
TRANSFORMER BASE POLE



DETAIL "A"

2-WIRE GROUNDED NEUTRAL
TRANSFORMER BASE POLE

LEGEND OF ITEMS COMMON TO DETAILS "A", "B", & "D"

(A) ANCHOR BOLT

(C) TIN PLATED COPPER SPLIT BOLT CONNECTOR WITH THE FOLLOWING COMPONENTS:

(S) SPACER (TIN PLATED)

(W) WASHER

(E) DIA. 8-10 mm; LENGTH 100-125 mm GALV. STEEL EYEBOLT

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

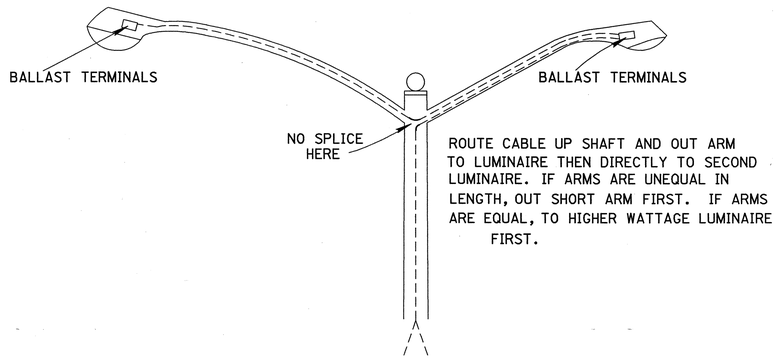
metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

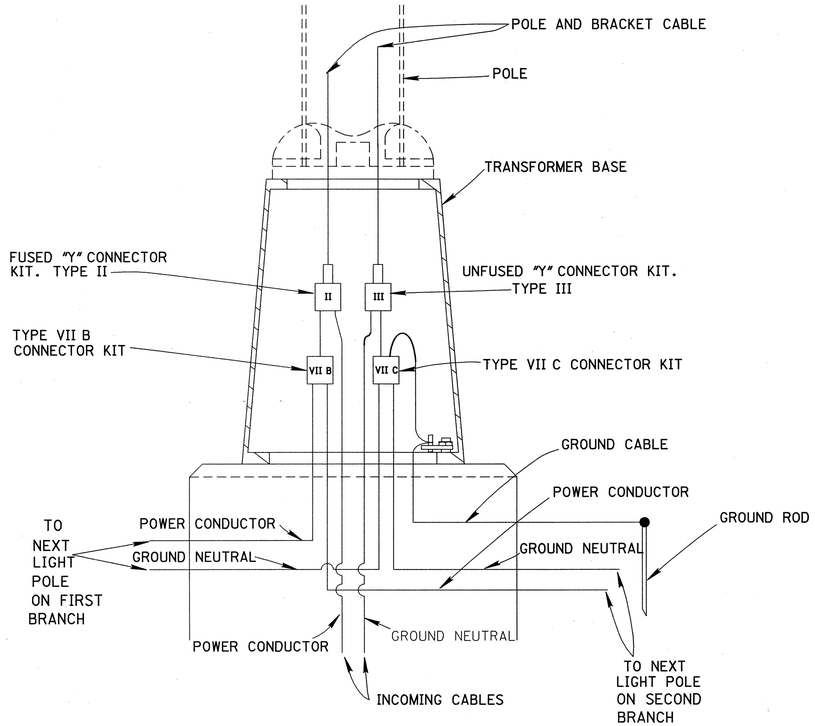
HIGHWAY LIGHTING	DATE 08/31/94 05/01/95
POLE WIRING I	
STANDARD CONSTRUCTION DRAWING HL-60.11M	

APPROVED _____ ADMINISTRATOR

WCC



WIRING FOR TWIN-LUMINAIRE POLES

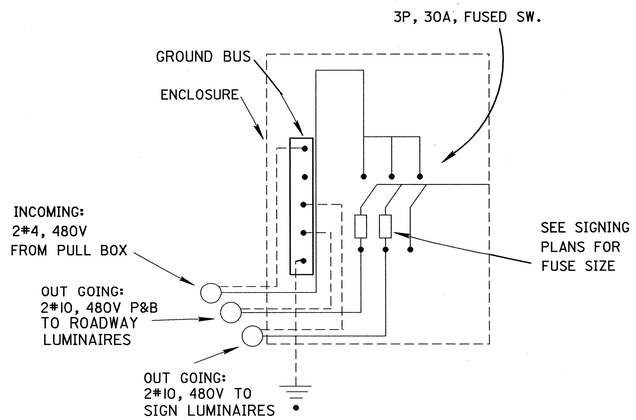


POLE BASE WIRING
FOR CIRCUIT BRANCH
(2-WIRE, GROUNDED NEUTRAL SHOWN)

ELEVATION PARALLEL TO ROADWAY

ELEVATION PERPENDICULAR TO ROADWAY

WIRING FOR COMBINATION LIGHT AND SIGN POLE



WIRING DIAGRAM
COMBINATION LIGHT AND SIGN POLE
(2-WIRE, GROUNDED NEUTRAL SHOWN)

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

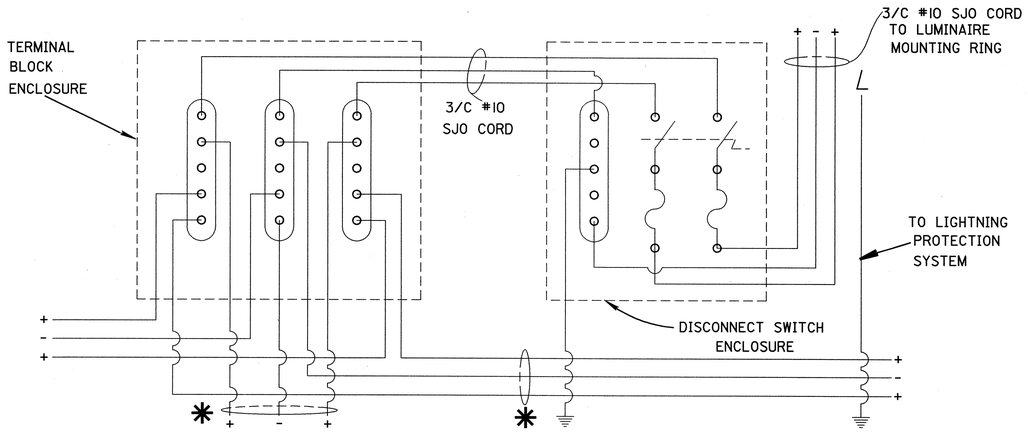
metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

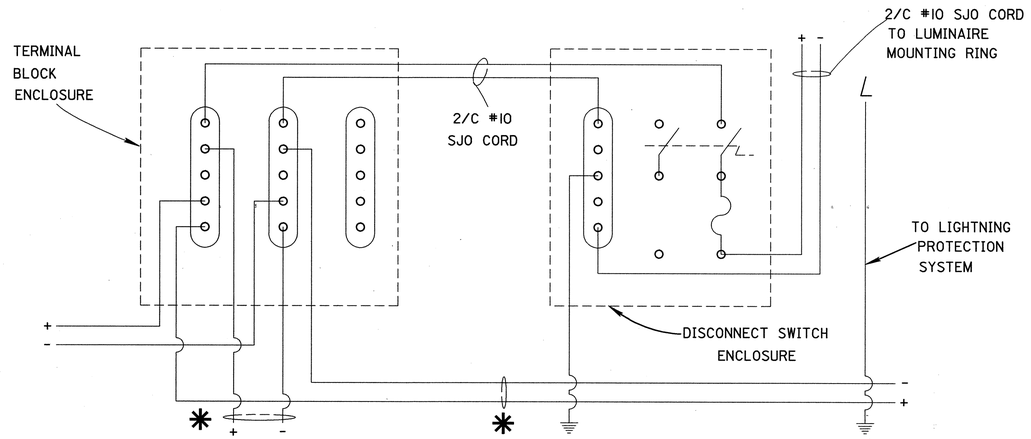
HIGHWAY LIGHTING	DATE 03/31/95
POLE WIRING II	
STANDARD CONSTRUCTION DRAWING HL-60.12M	

APPROVED _____ ADMINISTRATOR

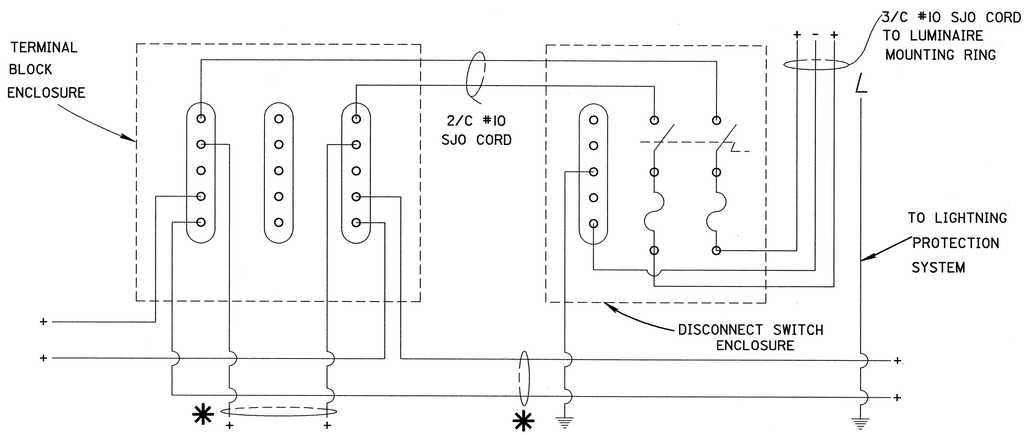
WCC



120/240 VOLT, THREE-WIRE GROUNDED
240/480 VOLT, THREE-WIRE GROUNDED
277/480 VOLT, THREE-WIRE GROUNDED



120 VOLT, TWO-WIRE GROUNDED
480 VOLT, TWO-WIRE GROUNDED



240 OR 480 VOLT, TWO-WIRE UNGROUNDED

* TO OTHER TOWERS WHEN REQUIRED

metric units

OFFICE OF TRAFFICE ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

HIGHWAY LIGHTING

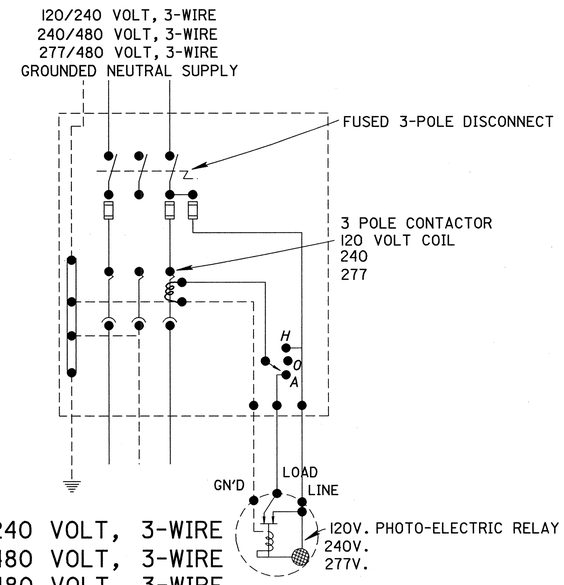
DATE 03/31/95

TOWER WIRING DETAILS

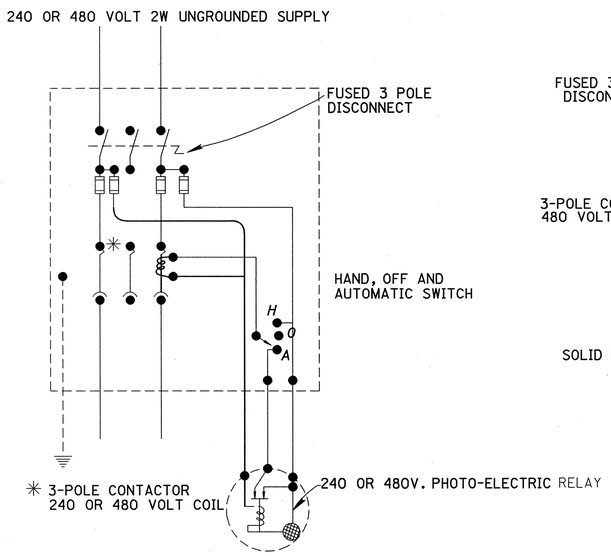
STANDARD CONSTRUCTION DRAWING HL-60.21M

APPROVED _____ ADMINISTRATOR

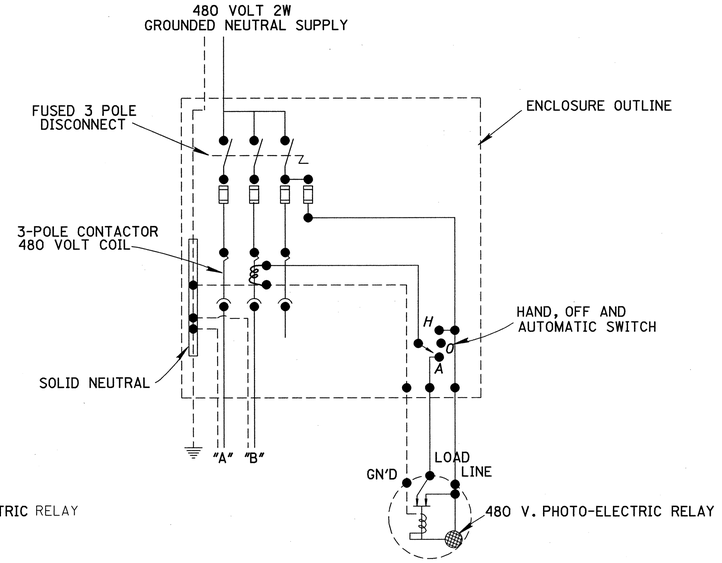
WCC



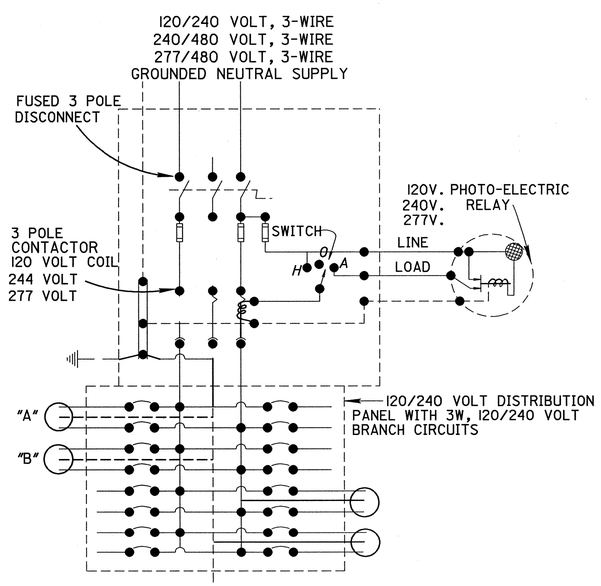
120/240 VOLT, 3-WIRE
240/480 VOLT, 3-WIRE
277/480 VOLT, 3-WIRE
GROUNDED NEUTRAL
SINGLE CIRCUIT



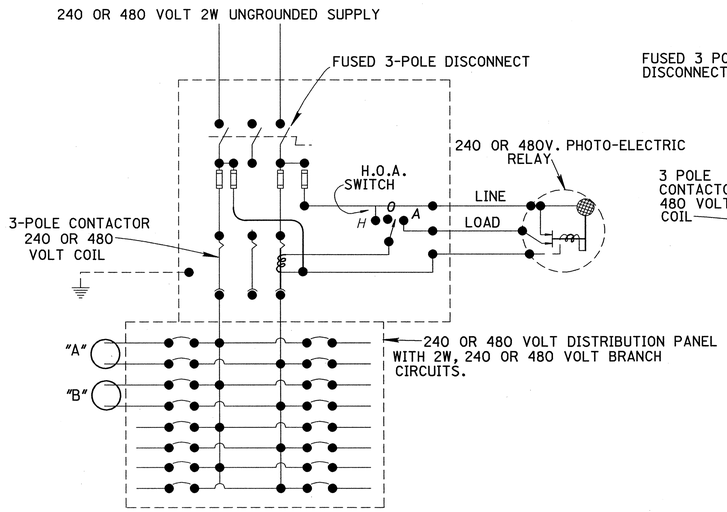
240 OR 480 VOLT, 2-WIRE
UNGROUNDED SINGLE CIRCUIT



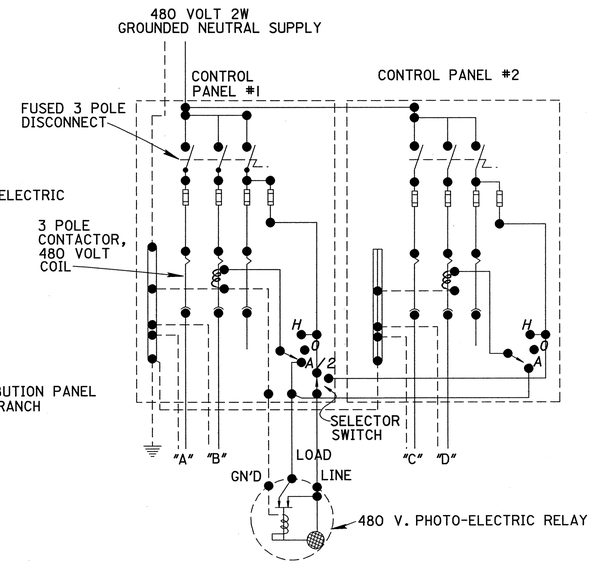
480 VOLT, 2-WIRE
GROUNDED NEUTRAL
SINGLE UNIT



120/240 VOLT, 3-WIRE
240/480 VOLT, 3-WIRE
277/480 VOLT, 3-WIRE
GROUNDED NEUTRAL
MULTIPLE CIRCUIT



240 OR 480 VOLT, 2-WIRE
UNGROUNDED MULTIPLE CIRCUIT



480 VOLT, 2-WIRE
GROUNDED NEUTRAL
DOUBLE UNIT

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

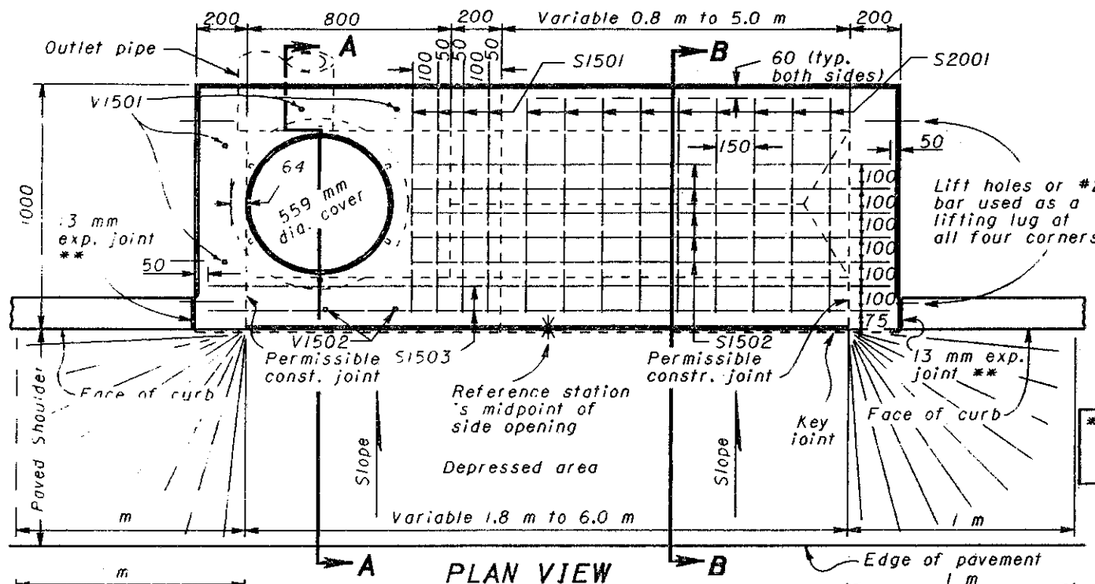
HIGHWAY LIGHTING	DATE 03/31/95
CONTROL CENTER WIRING	
STANDARD CONSTRUCTION DRAWING HL-60.31M	

APPROVED _____ ADMINISTRATOR

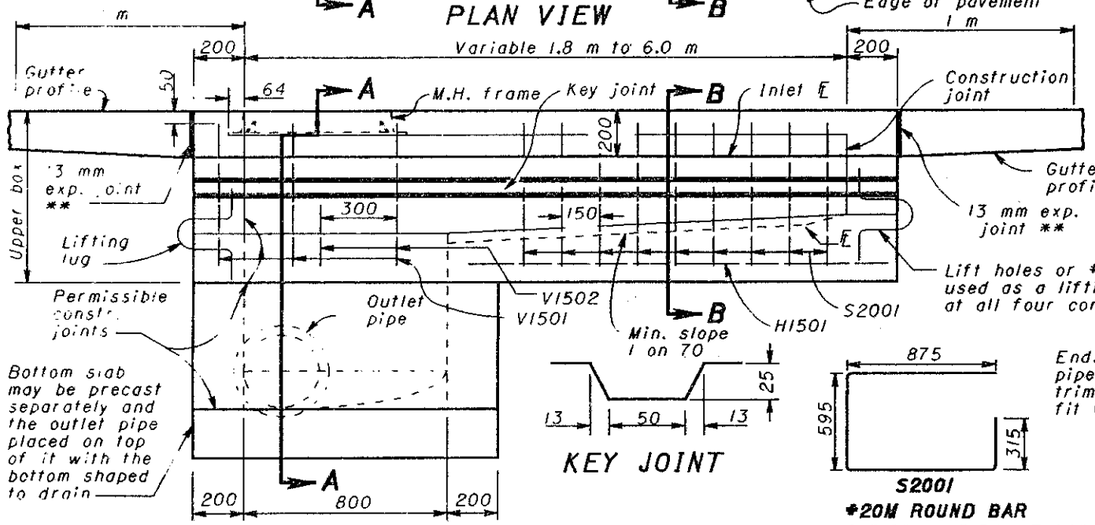
WCC

PAVEMENT INLETS (1.8 m to 6.0 m)

** A 25 mm minimum expansion joint shall be provided in concrete pavement or concrete shoulders.



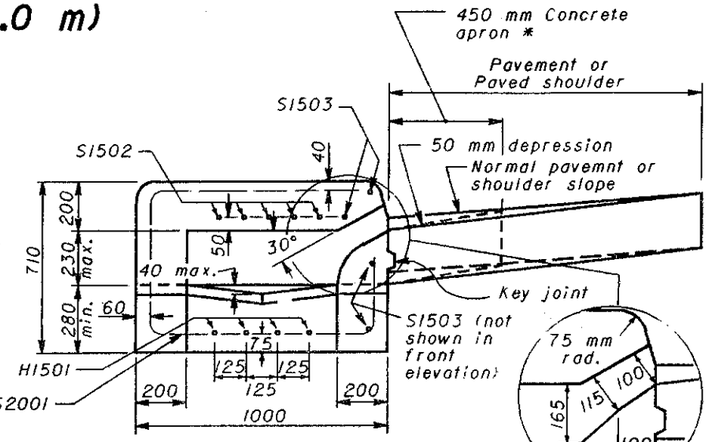
PLAN VIEW



FRONT ELEVATION

KEY JOINT

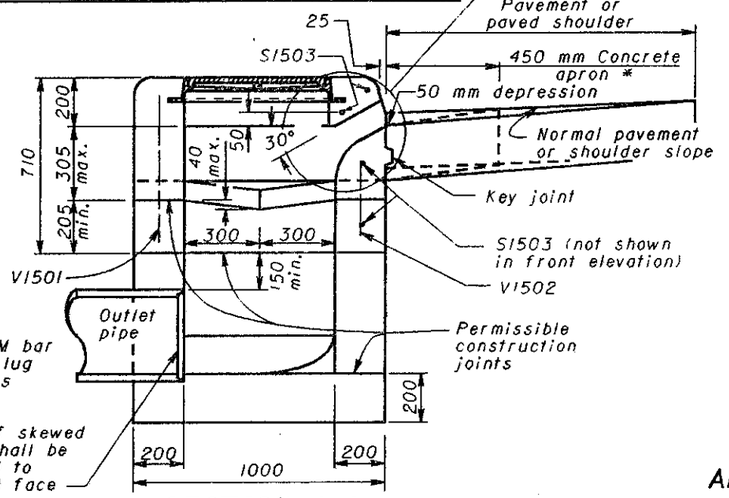
S2001
#20M ROUND BAR
BENDING DIAGRAM



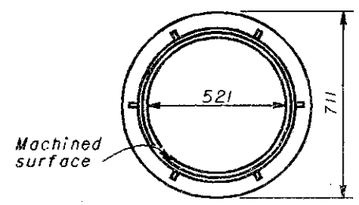
SECTION B-B

ALTERNATE OPENING

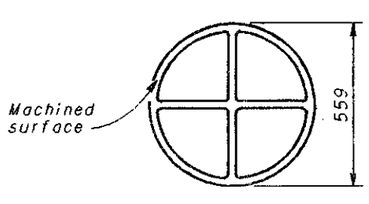
* When the inlet is placed at the edge of pavement, a concrete apron, as shown on Std. Constr. Dwg. 1-1.1M, shall be provided in lieu of the depressed shoulder shown hereon.



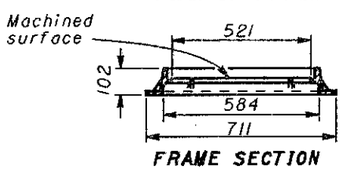
SECTION A-A



PLAN OF FRAME

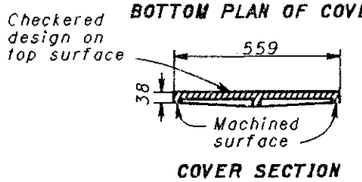


BOTTOM PLAN OF COVER



FRAME SECTION

MANHOLE FRAME



COVER SECTION

MANHOLE COVER

CONCRETE AND REINFORCING QUANTITIES

Inlet Length	Concrete	Reinforcing																Mass
		S2001		S1501		S1502		S1503		H1501		V1501		V1502				
(m)	(m^3)	No.	Length (mm)	No.	Length (mm)	No.	Length (mm)	No.	Length (mm)	No.	Length (mm)	No.	Length (mm)	No.	Length (mm)			(kg)
1.8	1.8	5	2660	4	865	5	1300	4	2100	4	1100	4	610	2	300			72
2.4	2.1	9	2660	4	865	5	1900	4	2700	4	1700	4	610	2	300			109
3.0	2.4	13	2660	4	865	5	2500	4	3300	4	2300	4	610	2	300			146
3.6	2.8	17	2660	4	865	5	3100	4	3900	4	2900	4	610	2	300			184
4.2	3.1	21	2660	4	865	5	3700	4	4500	4	3500	4	610	2	300			221
4.8	3.4	25	2660	4	865	5	4300	4	5100	4	4100	4	610	2	300			258
5.4	3.7	29	2660	4	865	5	4900	4	5700	4	4700	4	610	2	300			296
6.0	4.0	33	2660	4	865	5	5500	4	6300	4	5300	4	610	2	300			333

Note: The above table of quantities is included with this drawing for estimating purposes only. The cost of furnishing and placing all concrete, reinforcing steel, casting, etc., shall be included in Item 604 for payment. All straight bars are #15M.

NOTES

CASTINGS: The design shall be essentially the same and equally as strong as those shown hereon.

Bearing areas of frame and cover shall be so fitted and finished as to provide a firm and even seat for the entire cover in the frame. No projections shall exist on bearing areas of either casting and the cover shall seat in its frame without rocking.

Minimum mass of frame and cover: 88 kg.

SUMP WALLS: Walls between the upper box and bottom slab may be brick, concrete block, cast-in-place or precast concrete construction. Precast walls may have a minimum thickness of 150 mm and shall be reinforced sufficiently to permit shipping and handling without damage.

CONCRETE: Cast-in-place concrete is to be Class C. All precast concrete shall meet the requirements of CMS 706.13 with a minimum of 4% entrained air content in the hardened concrete. Required markings shall include the inlet number. Exposed concrete surfaces of the inlet shall be sealed with an approved sealer.

REINFORCING STEEL: All reinforcing steel shall be epoxy coated in accordance wiht CMS 509.10.

QUANTITIES: Curb quantities within the limits of the inlet shall be deducted from the project quantities.

SIDE OPENING: Details shown for the right side of the inlet shall also apply to left side openings where needed for drainage of the opposite outside shoulder as shown in the plans. The sump shall be located at the downgrade end of the inlet for both right and left side openings.

OPENINGS: Pipe openings shall be the outside diameter of the pipe being supplied plus 50 mm when fabricated or field cut. The interstitial space shall be filled with grout per CMS 601.

UPPER BOX: May be precast, or cast-in-place. If precast, it shall be set in a bed of mortar at the sump walls and in a bed of compacted sand at all other points. Reinforcing steel for precast upper boxes shall be equivalent to the design shown hereon. Construction joints other than those shown are permitted in the endwalls to facilitate the removal of precasting forms. The interior trough may have a flat bottom.

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces I-2A.

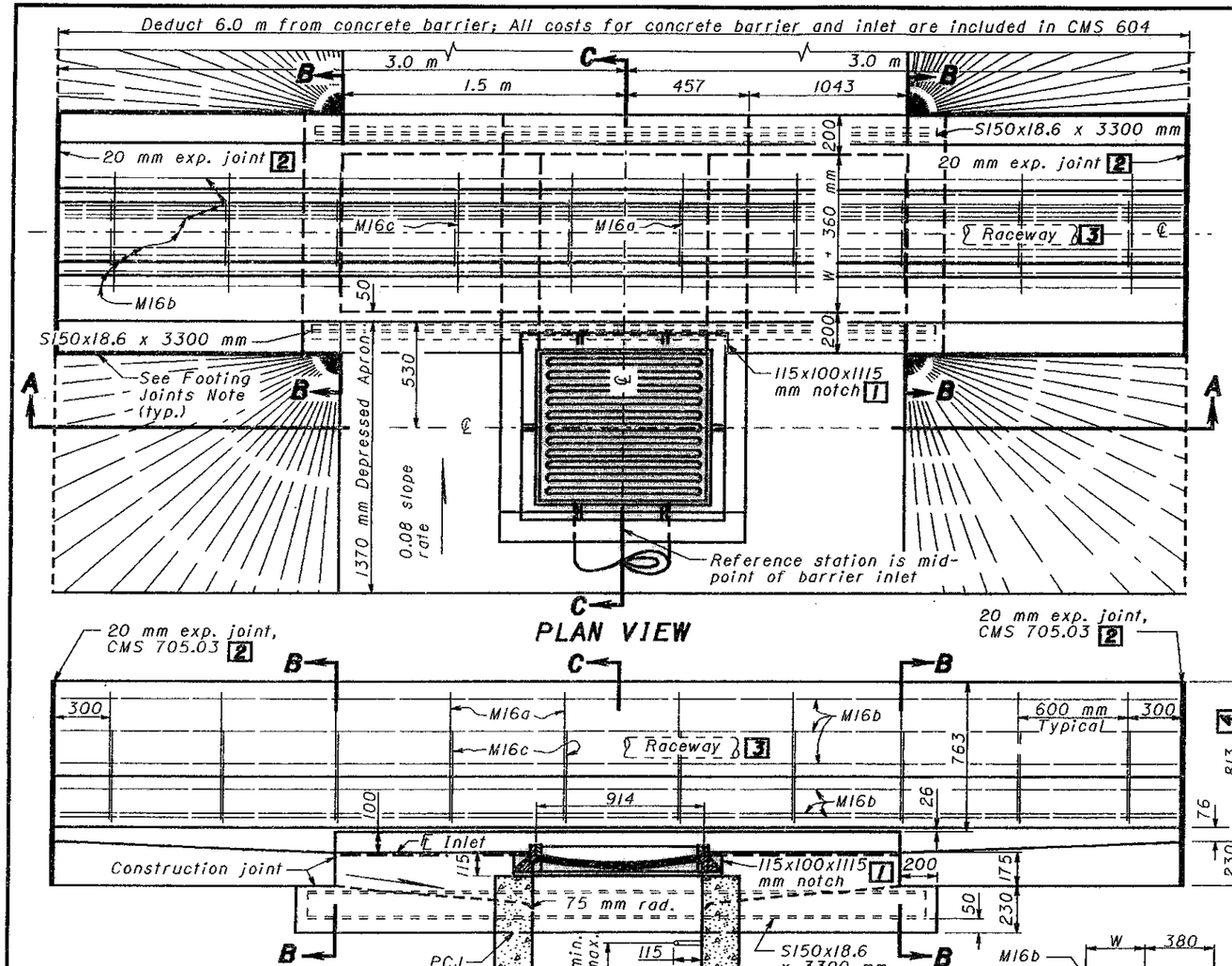
OFFICE OF ROADWAY ENGINEERING
OHIO DEPARTMENT OF TRANSPORTATION

PAVEMENT INLETS

DATE 9-6-95

STANDARD CONSTRUCTION DRAWING **I-1.2M**

APPROVED D.K. Hulman, P.E.
ADMINISTRATOR



NOTES

GENERAL: For details of concrete barriers, see SCD RM-4.3M. Minimum mass of frame and cover shall be 245 kg.

WALLS: The walls between the bottom slab and the upper permissible construction joint may be built of brick, concrete block or cast-in-place concrete, 200 mm nominal thickness for depths of 3.5 m or less. Precast walls shall have a minimum thickness of 150 mm and be reinforced sufficiently to permit shipping and handling without damage. The unit above the upper permissible construction joint may be precast or cast-in-place.

HEIGHT: When placed in 1270 mm high barrier the 763 mm height shall be made 1220 mm.

CONCRETE: Cast-in-place concrete is to be Class C. All precast concrete shall meet the requirements of CMS 706.13 with a minimum of 4% entrained air content in the hardened concrete. Required markings shall include the inlet number. Exposed concrete surfaces of the barrier shall be sealed with an approved sealer

REINFORCING STEEL: Reinforcing steel shall be epoxy coated in accordance with CMS 509.10.

FOOTING JOINTS: The vertical walls between the barrier footing and a concrete pavement or concrete base shall be provided with a sealed joint as detailed on SCD RM-4.3M.

STEPS: Steps shall be in accordance with SCD MH-1.1M.

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

INLETS OVER 3.5 m IN DEPTH: Such inlets shall be precast or cast-in-place concrete; reinforced with #16M bars on 300 mm centers both vertically and horizontally with 50 mm clearance from the inside wall face.

OPENINGS: Pipe openings shall be the outside diameter of the pipe being supplied plus 50 mm when fabricated or field cut. The interstitial space shall be filled with grout per CMS 601.

STEEL LIST

INLET NO.	W	M16a		M16b		M16c		S150x18.6	
		No.	Length	No.	Length	No.	Length	No.	Length
I-3A	152	10	1370	13	5900	10	940	2	3300
I-3B	305	10	1525	13	5900	10	1370	2	3300

Included for estimating purposes only. The cost of furnishing and placing all reinforcing steel shall be included in Item 604 for payment.

LEGEND

1. After casting is placed, fill notch with Class C concrete
2. A 37 mm minimum exp. joint shall be provided in concrete pavement or concrete shoulders.
3. 100 mm Lighting raceway, if required elsewhere by the plans
4. Barrier height equals either 813 mm or 1270 mm.

PCJ - Permissible construction joint

STANDARD INLET NO.

Barrier	W-152 mm	W-305 mm
813 mm	I-3A	I-3B
1270 mm	I-3A 1270	I-3B 1270

This Drawing Replaces I-3A & B.

All dimensions are in millimeters unless otherwise noted.

metric units

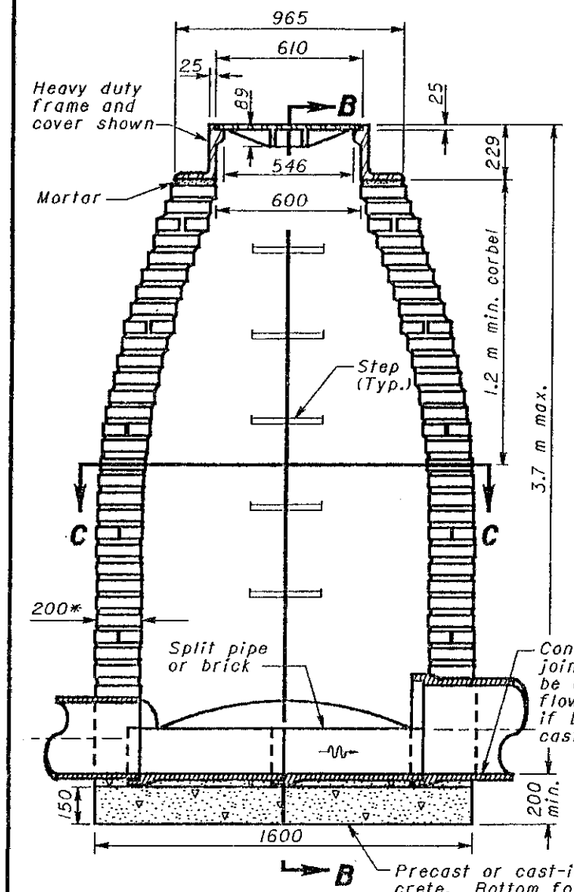
OHIO DEPARTMENT OF TRANSPORTATION

BARRIER MEDIAN INLETS 3A & 3B

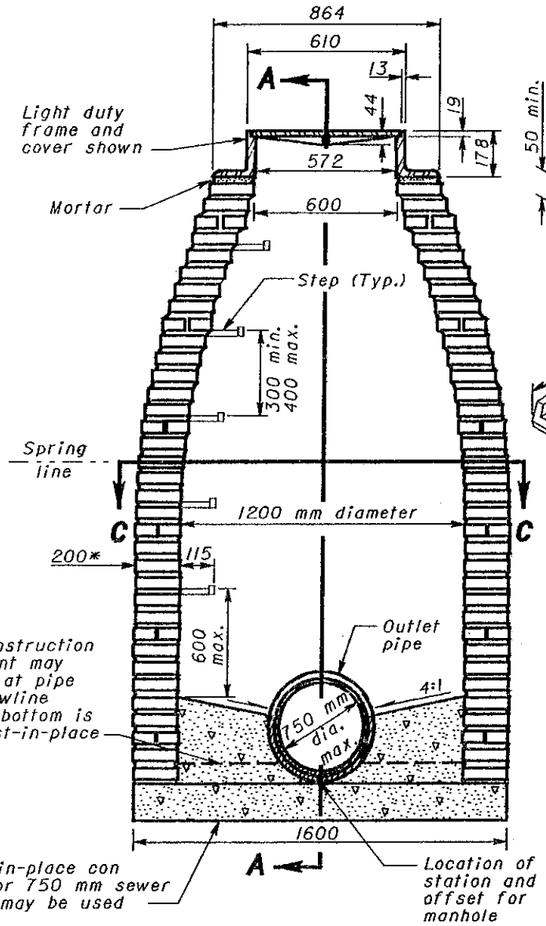
STANDARD CONSTRUCTION DRAWING I-2.1M

APPROVED Gary L. Sutherland

DATE: 9-6-95, 4-8-97, 10-21-97, 4-14-98

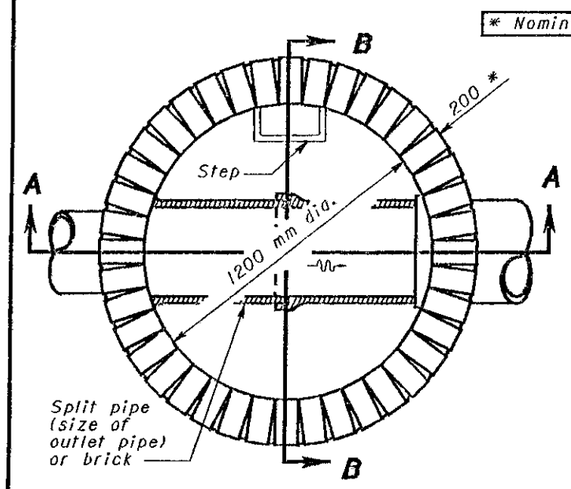


SECTION A-A

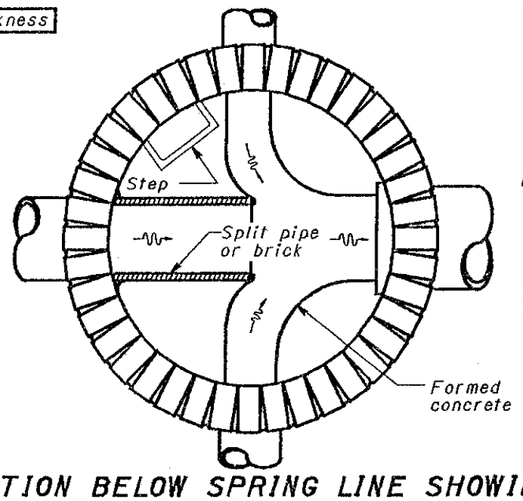


SECTION B-B

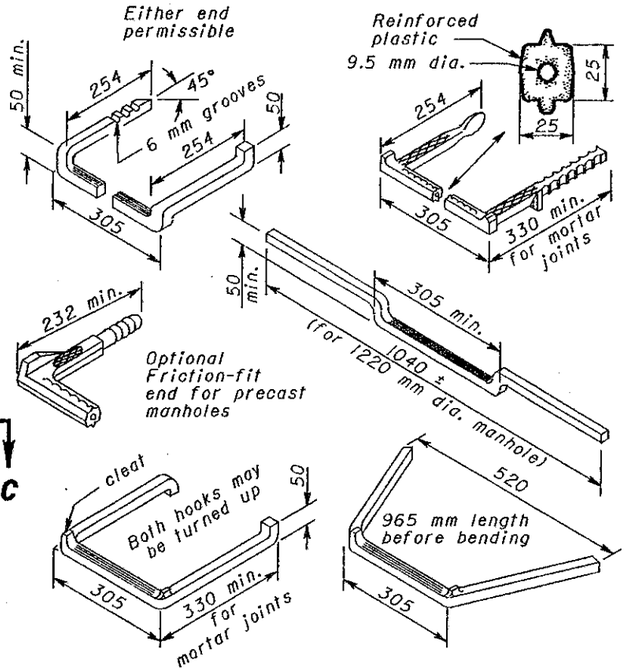
* Nominal thickness



SECTION C-C

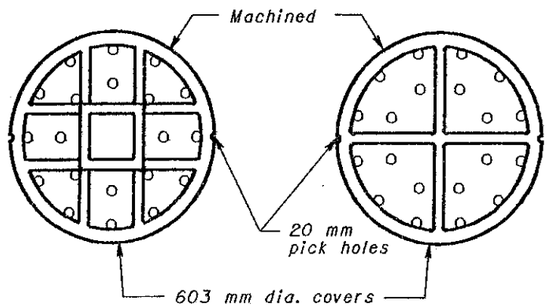


SECTION BELOW SPRING LINE SHOWING METHOD OF TURNING SIDE DRAINS



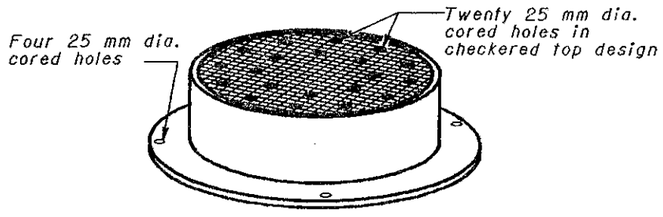
Steps shall have a minimum cross sectional dimension of 25 mm for ferrous metal and 19 mm for aluminum.

STEP DETAILS



HEAVY DUTY COVERS - BOTTOM VIEW

LIGHT DUTY



FRAME & COVER

NOTES

CONSTRUCTION: Manhole No. 1 is for sewers 750 mm diameter or less. The design shown is for brick construction with every sixth course a stretcher course. The 150 mm bottom may be precast or cast-in-place concrete. The bottom channel section shall be built with concrete and lined with split pipe or brick except curved channels may be formed in the concrete.

Precast solid concrete radial blocks or cast-in-place concrete reinforced with #16M bars on 300 mm centers both vertically and horizontally, may be used with a wall thickness of 150 mm or greater. Precast manholes detailed on SCD's MH-1.2M or MH-1.3M may be used in lieu of the design shown hereon unless otherwise specified by the plans.

FRAME AND COVER: The frame and cover shall be of heavy design (215 kg min. total mass) when the manhole is placed within the limits of the pavement or shoulder. Otherwise, the light design (124 kg min.) may be used. Bearing areas shall be finished smooth and fitted so as to provide a firm and even seat for all portions of the cover in the frame. Each cover shall seat in its frame without rocking and shall be marked as a matched frame and cover before delivery to the project. The base of the frame shall be set in a full bed of Portland cement mortar and adjusted to conform to the finished pavement or shoulder elevation and slope. Castings meeting CMS 604 requirements and designed essentially the same and equally as strong as those shown hereon shall be provided.

STEPS: Steps shall conform to the material requirements of CMS 604. All steps shall have a depressed tread or a 13 mm minimum cleat height at the ends.

Steps installed in fresh concrete shall be embedded to a minimum depth of 100 mm. Steps installed in mortar joints shall be embedded to a minimum depth or 175 mm.

Friction-fit steps meeting the requirements of CMS 711.31 with a rebar may be used in precast manholes. The receiving holes for friction-fit steps shall not penetrate the manhole wall.

The Engineer may require the contractor to test load a maximum of one step per manhole to a proof load of 1780 N in direct pull. The equipment and method used shall meet the approval of the Engineer. If the selected step fails the pullout test, the remaining steps in that manhole shall also be tested. All steps not passing the pullout test shall be removed and a new step installed and tested to the satisfaction of the Engineer. Cost of testing shall be incidental to the unit price bid for the manhole.

DROP PIPE: When specified on the plans, the drop pipe shall be constructed as shown on SCD MH-3.1M.

SANITARY SEWER: Covers shall be without the pick and vent holes shown hereon and shall include a sealing gasket affixed to the bearing surface. Bolt-down covers shall not be used unless specified in the plans.

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces MH-1.

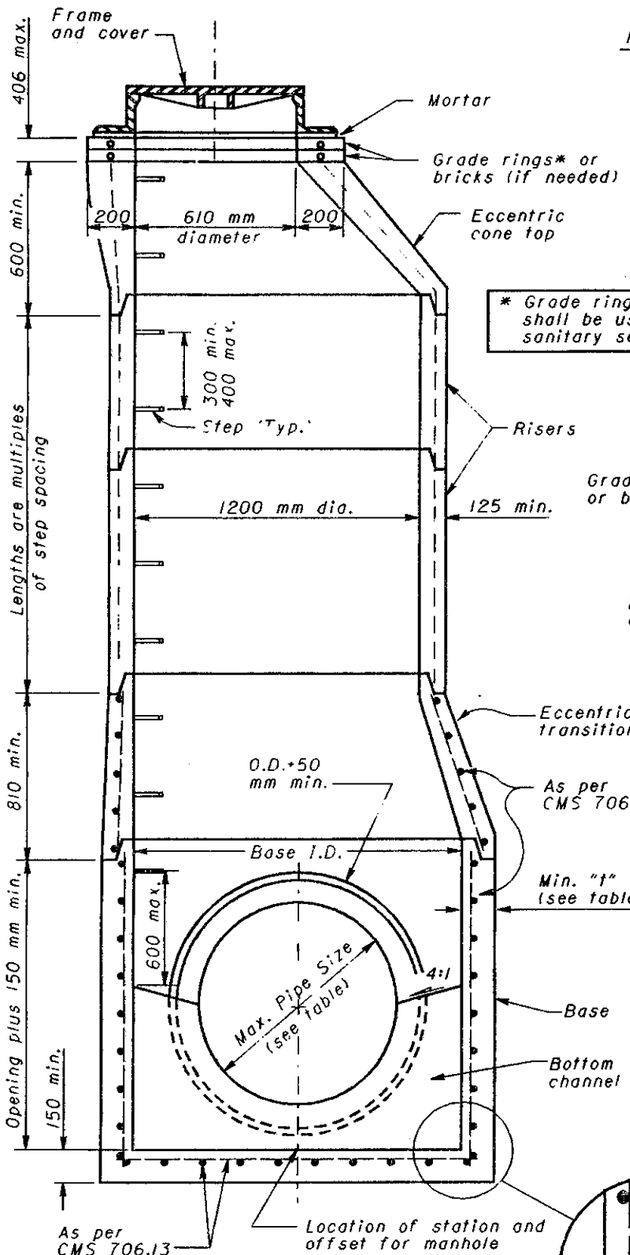
OHIO DEPARTMENT OF TRANSPORTATION

MANHOLE No. 1

DATE 9-6-95 10-21-97

STANDARD CONSTRUCTION DRAWING **MH-1.1M**

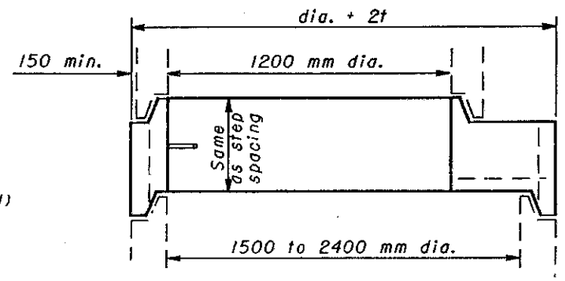
APPROVED: Gary F. Sutherland



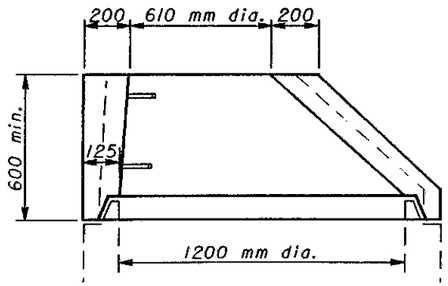
1500 to 2400 mm PRECAST BASE

SEE TABLE FOR MAXIMUM PIPE SIZES

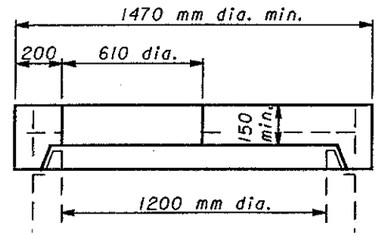
* Grade rings shall be used on sanitary sewers



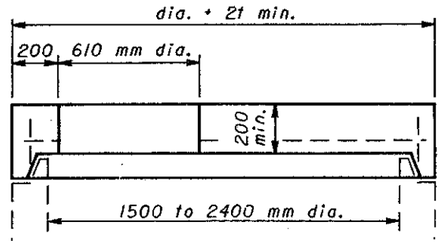
FLAT SLAB TRANSITION



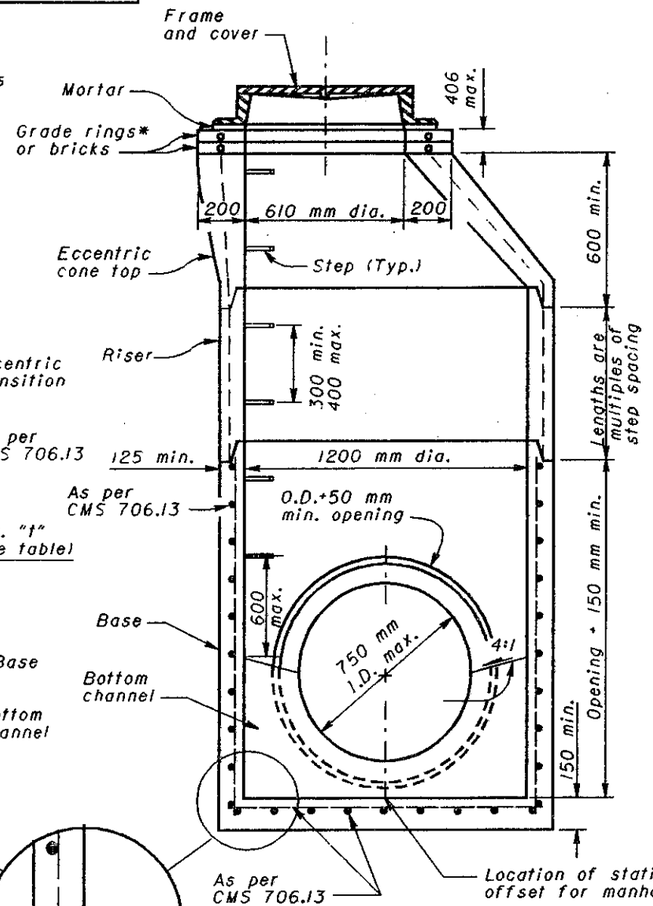
ALTERNATE ECCENTRIC CONE TOP



FLAT SLAB TOP



FLAT SLAB TOP



1200 mm PRECAST BASE

FOR 750 mm AND SMALLER PIPE

ALTERNATE

SECTION VIEWS OF REINFORCED PRECAST MANHOLES

Base I.D. (mm)	Min. "t" (mm)	Max. Pipe Size (mm)
1500	125	900
1950	150	1200
2100	175	1350
2250	190	1500
2400	200	1500

NOTES

GENERAL: With normal soil and site conditions this standard precast manhole may be used for any required manhole depth.

Sections of the precast manhole shall be cast and assembled with either all tongue or all groove ends up. Lift holes may be provided in each section for handling.

TOP AND TRANSITION (OR REDUCER): This section shall be a flat slab unless an eccentric cone is specified.

BASE: Manhole No. 3 is shown with a monolithic floor and riser which may be cast in one or two operations. A permissible alternate is to cast and ship the floor and barrel separately. Openings for inlet and outlet pipes shall be provided, either when the unit is cast or later, to meet project requirements. Bottom channels may be formed of concrete, precast in the base or field constructed as shown on Std. Constr. Dwgs. MH-1.1M and MH-3.1M.

RISER SECTIONS: Openings for 450 mm and smaller inlet pipes may be either prefabricated, or cut in the field provided the sides of the pipe at the springline do not project into the manhole.

CONNECTIONS: Connections between precast manhole sections and pipes on sanitary sewers may be sealed with resilient connectors conforming to ASTM C 923.

JOINT SEAL: Seal between precast manhole sections on sanitary sewers shall be resilient and flexible gasket joints per CMS 706.11.

MATERIALS: Materials for bases and other precast sections, including reinforcement not specified hereon, shall comply with the requirements of CMS 706.13.

DROP PIPE: When specified on the plans, drop pipe shall be constructed as shown on MH-3.1M.

STEPS, FRAMES AND COVERS: Shall comply with the requirements set forth on MH-1.1M.

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces MH-3.

OFFICE OF ROADWAY ENGINEERING
OHIO DEPARTMENT OF TRANSPORTATION

MANHOLE No. 3

DATE 9-6-95

STANDARD CONSTRUCTION DRAWING **MH-1.2M**

APPROVED D.K. Hukman, P.E.
ADMINISTRATOR

TABLE I

MINIMUM DISTANCE (METERS)	A	B
MAJOR STANDARD	152	152
URBAN FREEWAY & EXPRESSWAY	152 TO 305	152 TO 305
RURAL FREEWAY & EXPRESSWAY	792	488

TABLE II

SPEED (MPH)	TAPER RATE (R) (m/m)	MAXIMUM SPACING (S) OF DRUMS (m)
30 - 40	14:1	12
45 - 55	28:1	12
60 - 65	33:1	18

GENERAL NOTES:

1. THE LOCATION OF THE TRANSITION TAPER AND THE ADVANCE WARNING SIGNS SHOULD BE ADJUSTED TO PROVIDE FOR ADEQUATE SIGHT DISTANCE FOR THE EXISTING VERTICAL AND HORIZONTAL ROADWAY ALIGNMENT.

2. THE SPACING BETWEEN PROPOSED SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 61 m CLEARANCE TO EXISTING SIGNS.

3. THIS TRAFFIC CONTROL PLAN SHOULD BE USED WHEN THE WORK AREA EXTENDS INTO EITHER THE RIGHT OR LEFT HAND LANE OF A MULTIPLE LANE DIVIDED HIGHWAY AND IT IS NOT DESIRABLE, FOR CAPACITY REASONS, TO REDUCE THE NUMBER OF AVAILABLE LANES. THE MINIMUM RESULTANT WIDTH OF ANY LANE IS 3 m. THE PLAN SHOWN IS FOR A LEFT-LANE CLOSURE. WHEN THERE IS A RIGHT-LANE CLOSURE, MAKE THE FOLLOWING SIGN SUBSTITUTIONS: AN OC-49L FOR THE OC-49R: AN OC-39AR, FOR THE OC-39AL: AN OW-6A OR OW-6B FOR THE OW-5A OR OW-5B: AND AN OW-5A OR OW-5B, FOR THE OW-6A OR OW-6B.

4. PORTABLE CONCRETE BARRIER (PCB) AS DESCRIBED IN STANDARD CONSTRUCTION DRAWINGS SHALL BE USED FOR THIS WORK PROTECTION PLAN. THE TAPER RATE FOR THE BARRIER APPROACH TAPER SHOULD BE 20 TO 1. WHEN USED TO PROTECT WORK AREAS AT LANE CLOSURES ON MULTI-LANE ROADWAYS. PCB'S SHOULD BE PRECEEDED BY CHANNELIZING DEVICES TO DIRECT TRAFFIC FROM THE CLOSED LANE AT LEAST 91 m PRIOR TO THE BEGINNING OF THE PCB.

   PCB SHALL BE DELINEATED AS FOLLOWS:

PCB TYPE	DELINEATION
813 mm HIGH WITHOUT GLARE SCREEN	BARRIER REFLECTORS AT 7.6 m C-C (MAX.) ALTERNATED WITH TOP MOUNTED OBJECT MARKERS (229 X 381 mm) AT 7.6 m C-C (MAX.)
813 mm HIGH WITH GLARE SCREEN	BARRIER REFLECTORS AT 7.6 m C-C VERTICAL ORANGE REFLECTORIZED STRIPES ON PADDLES (51 X 305 mm) AT 3.8 m C-C (MAX.)
1270 mm HIGH	BARRIER REFLECTORS AT 3.8 m C-C (MAX.)
TAPERED END SECTION AND EXPOSED END	OBJECT MARKERS (229 X 381 mm) TOP MOUNTED AT EACH END

5. THE ADVISORY SPEED SIGN OW-143 SHALL BE USED WHEN SPECIFIED IN THE PLAN.

6. THE DISTANCE PLATE OW-145A SHALL INDICATE THE DISTANCE TO THE BEGINNING OF THE PAVEMENT TAPER (L). DISTANCES LESS THAN 1 MILE MAY BE EXPRESSED IN FEET.

7. THE TAPER RATE OF DRUMS SHALL BE BASED UPON THE AVERAGE APPROACH SPEED OR SPEED LIMIT WHICHEVER IS GREATER AND SHALL BE (R) AS SHOWN IN TABLE II. EXECPT THAT THE RESULTING LENGTH OF TAPER SHOULD NOT BE LESS THAN 90 m, THE TAPER (L) SHALL EQUAL THE TAPER RATE (R) MULTIPLIED BY THE OFFSET (O). A MINIMUM OF FIVE CHANNELIZING DEVICES SHALL BE USED TO FORM THE TAPER ON THE SHOULDER.

8. THE TYPE A FLASHING WARNING LIGHTS SHOWN ON OW-128 SIGNS, AND OC-39AL SIGNS ARE REQUIRED.

9. THE EXISTING CONFLICTING PAVEMENT MARKINGS AND REFLECTORS FROM THE RAISED PAVEMENT MARKERS (RPM'S) SHALL BE REMOVED AND THE APPROPRIATE COLOR TEMPORARY LINES SHALL BE APPLIED. TEMPORARY LINES WHICH WOULD CONFLICT WITH FINAL TRAFFIC LANES SHALL BE REMOVABLE (740.05 TYPE-C) TAPE UNLESS THE AREA WILL BE RESURFACED IN THE NEXT WORK PHASE. AFTER COMPLETION OF THE WORK, TEMPORARY MARKINGS SHALL BE REMOVED IN ACCORDANCE WITH 641.10 AND THE ORGINAL MARKINGS AND RAISED PAVEMENT MARKER REFLECTORS SHALL BE RESTORED AT NO ADDITIONAL COST.

10. THE MAXIMUM SPACING OF THE OC-49R, NEAR THE WORK AREA IS 457 m. WHEN THE DISTANCE "X" IS LESS THAN 518 m. THE SECOND OC-49R SHOULD BE DELETED. ALSO IF IT WOULD BE WITHIN 61 m OF THE OW-6A OR OW-6B SIGN THE OC-49R SIGN SHOULD BE DELETED.

11. LIGHTING POLES NOT LOCATED BEHIND EXISTING GUARDRAIL SHALL BE SET BACK 12.0 m FROM EDGE OF THE NEAREST TRAFFIC LANE (INCLUDING ANY SHOULDER OR TEMPORARY PAVEMENT USED AS A TRAFFIC LANE). WHERE LOCAL CONDITIONS PREVENT THE 12.0 m SET BACK, IT MAY BE REDUCED TO 9.0 m WITH THE APPROVAL OF THE ENGINEER. WHEN LOCATED BEHIND EXISTING GUARDRAIL, LIGHT POLES SHALL BE A MINIMUM OF .9 m CLEAR FROM BACK OF GUARDRAIL POST TO FACE OF POLE. ANY POLES PROVIDED FOR POWER SERVICE SHALL BE SET BACK AT LEAST AS FAR AS THE LIGHTING POLES. SPACING AND TYPE OF LUMINAIRES SHALL PROVIDE AN AVERAGE ILLUMINATION OF 10.8 lux TO 12.9 lux WITH MAXIMUM UNIFORMITY RATIOS OF 4:1 AVERAGE TO MINIMUM AND 10:1 MAXIMUM TO MINIMUM THROUGHOUT THE LIGHTED AREA. WHEN TAPERS ARE REQUIRED TO BE LIGHTED AND DIMENSION "X" IS LESS THAN 610 m LIGHTING SHALL BE CONTINUOUS BETWEEN TAPERS.

12. 36 INCH WARNING SIGN SIZES MAY BE USED ON DIVIDED ROADWAYS THAT ARE NOT CLASSIFIED AS FREEWAYS OR EXPRESSWAYS.

13. THE OC-8 SIGNS ARE ONLY REQUIRED FOR LANE CLOSURES OF MORE THAN ONE DAY AND MAY BE OMITTED IF THEY FALL WITHIN THE LIMITS OF A CONSTRUCTION PROJECT.

14. IF DISTANCE "X" IS LESS THAN 305 m, PLACE THE OW-6A OR OW-6B SIGN AT THE MID POINT OF DISTANCE "X".

METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

TRANSITION PLAN FOR USE OF SHOULDER WITH PCB

DATE 01/30/95

STANDARD CONSTRUCTION DRAWING MT-102.10M

APPROVED [signature] ENGR. OF DESIGN SERVICES

WCC

TEMPORARY SIGN SUPPORT REQUIREMENTS

A. PLACEMENT OF SIGNS WHICH WILL REMAIN MORE THAN ONE DAY:

1) LATERAL PLACEMENT TO NEAREST EDGE OF SIGNS SHALL BE AS FOLLOWS:

a) ON THE RIGHT SIDE OF THE ROAD FOR APPROACHING TRAFFIC (EXCEPT FOR DUAL MOUNTED SIGNS AND SIGNS DESIGNATED IN THE PLANS FOR LEFT SIDE MOUNTING).

b) CURBED ROADWAY - MINIMUM 0.6 m BEHIND FACE OF CURB.

c) UNCURBED ROADWAY- 3.7 m FROM EDGE OF TRAFFIC LANE OR 1.8 m FROM EDGE OF PAVED OR USEABLE SHOULDER, WHICHEVER IS GREATER.

d) BEHIND GUARDRAIL OR BARRIER - PREFERABLY 0.6 m BEHIND FACE OF GUARDRAIL (MINIMUM 0.3 m) FOR SIGNS ON CLASS A SUPPORTS: 1.2 m FOR CLASS B OR C SUPPORTS: 0.3 m BEHIND FACE OF CONCRETE BARRIER UNLESS BARRIER TOP MOUNTING IS REQUIRED BY THE PLAN.

2) VERTICAL CLEARANCE OF SIGNS, MEASURED ABOVE ROADWAY ELEVATION; SHALL BE AS FOLLOWS:

a) RURAL - 1.5 m WHEN PARKED CARS, CONSTRUCTION EQUIPMENT, ETC WILL NOT OBSCURE SIGN VISIBILITY.

b) RURAL AREAS WITH PARKED CARS OR CONSTRUCTION EQUIPMENT - 2.1 m

c) URBAN - 2.1 m

d) CARE SHALL BE TAKEN TO ASSURE THAT SIGNS WILL NOT BE OBSCURED BY CONSTRUCTION EQUIPMENT, TREES, WEEDS OR OTHER OBSTACLES. BRUSH, WEEDS OR GRASS WITHIN THE RIGHT OF WAY SHALL BE TRIMMED AS NECESSARY. SIGNS SHALL NORMALLY BE VISIBLE TO TRAFFIC 122 m TO 183 m IN ADVANCE OF THE SIGN.

3) SUPPORTS FOR SIGNS WHICH WILL REMAIN IN PLACE MORE THAN ONE DAY SHALL BE FIXED RATHER THAN PORTABLE EXCEPT IN SITUATIONS WHERE THE SIGN MUST REST ON PERMANENT PAVEMENT OR OTHER SURFACE WHICH WOULD BE DAMAGED BY INSERTION OF POST TYPE SUPPORTS.

B. PLACEMENT OF SIGNS WHICH WILL REMAIN FOR ONE DAY OR LESS:

1) SAME AS A-1 ABOVE EXCEPT THAT SIGNS MAY BE PLACED ON THE ROADWAY ONLY IF THEY DO NOT INTRUDE INTO A TRAFFIC LANE IN USE.

2) MINIMUM OF 0.3 m ABOVE ROADWAY

C. CLASSES OF SUPPORTS:

ALL TEMPORARY SIGN SUPPORTS SHALL BE OF THE FOLLOWING TYPES:

1) CLASS A:

SUPPORTS SHALL BE USED FOR EXPOSED LOCATIONS ON HIGHWAYS WHERE TRAFFIC APPROACH SPEEDS OF 40 MPH AND HIGHER ARE ENCOUNTERED. THEY ARE ALSO SUITABLE FOR USE IN ALL OTHER LOCATIONS.

2) CLASS B:

SUPPORTS SHALL BE USED FOR EXPOSED LOCATIONS ON HIGHWAYS WHERE TRAFFIC APPROACH SPEEDS OF LESS THAN 40 MPH ARE ENCOUNTERED. THEY ARE ALSO SUITABLE FOR USE IN ALL APPLICATIONS DEFINED FOR CLASS C SUPPORTS.

3) CLASS C:

SUPPORTS MAY ONLY BE USED WHERE FULLY PROTECTED BY GUARDRAIL, CONCRETE BARRIER AND IN LOCATIONS POSITIVELY PROTECTED FROM TRAFFIC SUCH AS ON RETAINING WALLS OR WHERE TRAFFIC APPROACH SPEEDS ARE LESS THAN 25 MPH.

D. TRAFFIC APPROACH SPEEDS:

TRAFFIC APPROACH SPEEDS SHALL BE THE LOCALLY POSTED SPEED (NOT ADVISORY SPEED SIGNS) OR THE MEASURED ACTUAL (85TH PERCENTILE) SPEED (IF AVAILABLE) OF APPROACHING TRAFFIC, WHICHEVER IS HIGHER, ADJACENT TO THE SIGN LOCATION.

TABLE

APPROACH SPEED (MPH)	COMPLETELY PROTECTED BY GUARDRAIL OR BARRIER	PARTLY PROTECTED BY GUARDRAIL OR BARRIER *	GREATER THAN 9 m FROM EDGE OF PAVEMENT	WITHIN 9 m FROM EDGE OF PAVEMENT
40 AND HIGHER	A, B OR C	A OR B	A OR B **	A ONLY
26 TO 39	A, B OR C	A OR B	A OR B	A OR B
0 TO 25	A, B OR C	A, B OR C	A, B OR C	A, B OR C

* IF SUPPORTS ARE BEHIND GUARDRAIL BUT NOT FULLY 1.7 m BEHIND FACE OF RAIL OR IF SIGN IS NOT 0.3 m BEHIND FACE OF CONCRETE BARRIER.

** 9 m CRITERION IS BASED UPON STRAIGHT ROADWAY AND A SLOPE OF 6 to 1 OR FLATTER. SUPPORTS ON THE OUTSIDE OF CURVES OR LOCATED DOWN A SLOPE (STEEPER THAN 6 : 1) WILL REQUIRE USE OF CLASS A SUPPORTS.

E. BALLASTING

BALLASTING OF PORTABLE SUPPORTS SHALL BE WITH SANDBAGS PLACED WITHIN 0.3 m OF THE GROUND. IN NO CASE SHALL HARD OBJECTS BE USED FOR BALLAST.

F. STRENGTH OF SIGN SUPPORTS

THE CONTRACTOR SHALL CHOOSE SIGN SUPPORTS OF ADEQUATE STRENGTH AND WITH ADEQUATE FOUNDATIONS AND ANCHORAGE TO SUPPORT THE SIGN SIZES ERECTED. PROPRIETARY DEVICES SHALL NOT BE LOADED BEYOND THE LIMITS RECOMMENDED BY THE MANUFACTURER. SLIP BASE TYPE BREAKAWAY BEAM CONNECTIONS SHALL BE AT LEAST PARTIALLY EMBEDDED IN CONCRETE CONSISTING OF A 0.3 m DEEP BY 0.3 m DIAMETER COLLAR. SIGN SUPPORTS WHICH FAIL UNDER TYPICAL WIND LOAD CONDITIONS SHALL BE IMMEDIATELY MODIFIED OR REPLACED WITH A SUPPORT OF ADEQUATE STRENGTH.

G. PROHIBITED SUPPORTS

THE FOLLOWING SUPPORT TYPES SHALL NOT BE PERMITTED ON PROJECTS:

1) SUPPORTS FABRICATED FROM AUTOMOTIVE AXLE DIFFERENTIAL ASSEMBLIES AND SIMILARLY HEAVY ASSEMBLIES WHICH CANNOT BE CONSIDERED BREAKAWAY TYPE.

2) SUPPORTS CONSISTING OF VERTICAL POSTS WITH ANGLED BRACES MADE FROM DRIVEPOST OR OTHER RIGID ELEMENTS.

CLASS A SUPPORTS

FIXED SUPPORTS

1) ALL #2 AND #3 POST WHEN INSTALLED SINGLY OR IN PAIRS (SIDE BY SIDE) ACCORDING TO THE DETAILS OF TC-41.20M. THE NUMBER OF SUPPORTS SHALL BE AS SHOWN ON TC-52.10M AND TC-52.20M.

2) THE FOLLOWING POST TYPES, WHEN INSTALLED SINGLY, BY IMBEDMENT OR DRIVING INTO EARTH TO A DEPTH OF ABOUT 1.1 m.

a) - UP TO 102 X 102 mm WOOD.

b) - UP TO 51 mm DIAMETER SCHEDULE 40 STEEL PIPE.

c) - UP TO 76 mm DIAMETER SCHEDULE 40 ALUMINUM PIPE.

d) - UP TO 56.4 mm SQUARE, 12 GAUGE WALL, PUNCHED STEEL POST.

e) - UP TO 152 X 203 mm WOOD WITH BREAKAWAY HOLES SHOWN BELOW.

3) THE FOLLOWING POST TYPES WHEN INSTALLED IN PAIRS (SIDE BY SIDE) WITH LESS THAN 2 m BETWEEN POSTS, BY IMBEDMENT OR DRIVING INTO EARTH TO A DEPTH OF ABOUT 1.1 m :

a) - UP TO 102 X 102 mm WOOD.

b) - UP TO 51 mm DIAMETER SCHEDULE 40 STEEL PIPE.

c) - UP TO 76 mm DIAMETER SCHEDULE 40 ALUMINUM PIPE.

d) - UP TO 51 mm SQUARE, 14 GAUGE WALL, PUNCHED STEEL POST.

4) FIXED TYPE III BARRICADES:

5) ALL BREAKAWAY CONNECTION BEAM SUPPORTS, WHEN INSTALLED ACCORDING TO THE PROPER DETAILS SHOWN ON TC-41.10M WITH A MINIMUM CLEAR DISTANCE BETWEEN SUPPORTS OF 2.1 m FOR SUPPORTS LARGER THAN W6 X 9.

6) ANY BREAKAWAY POST OR POST AND CONNECTION WHICH HAS BEEN CRASH TESTED AND APPROVED BY THE FHWA AS SATISFYING THE BREAKAWAY CRITERIA DESCRIBED IN 630.06.

(CONTINUED ON MT-105.11M)

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC | DATE 04/25/94

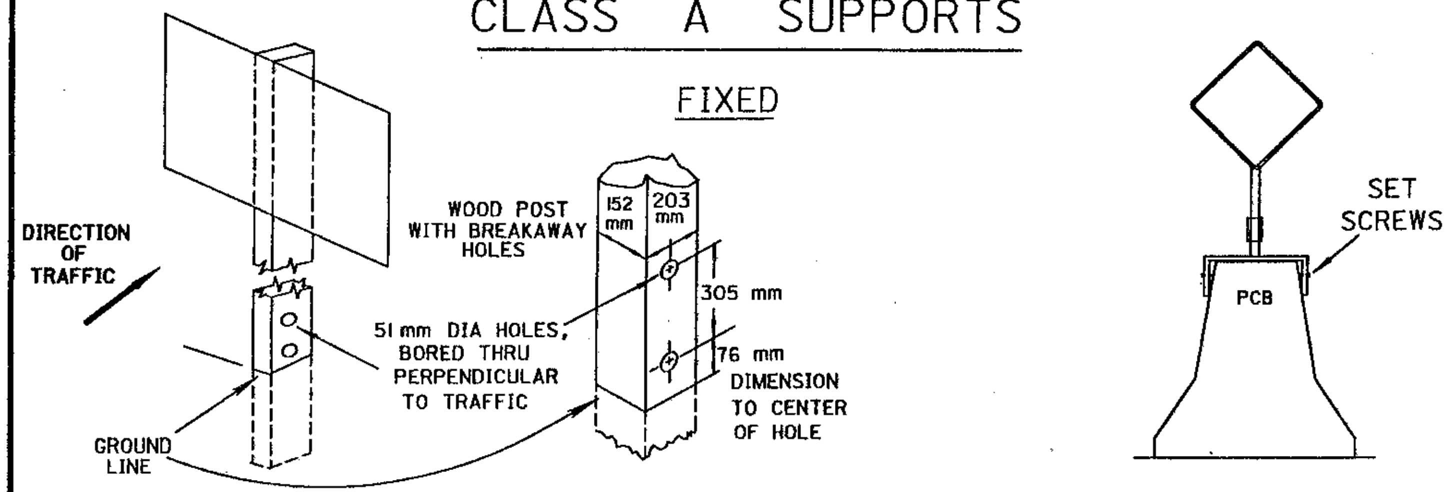
TEMPORARY SIGN SUPPORT

STANDARD CONSTRUCTION DRAWING MT-105.10M

APPROVED [signature] ENGR. OF DESIGN SERVICES

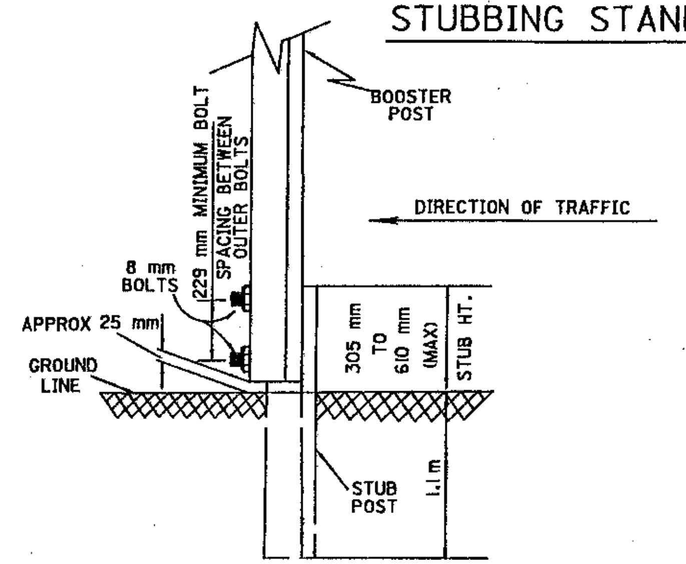
CLASS A SUPPORTS

FIXED



CLASS A SUPPORTS

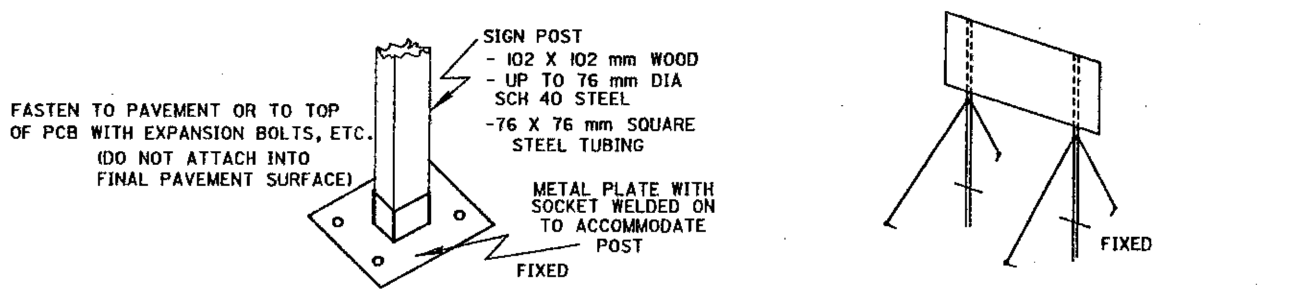
STUBBING STANDARD



NOTES

1. FOR USE WITH #3 POST OR SMALLER ONLY
2. BOLTS SHALL BE STEEL OR ALUMINUM
3. A MINIMUM OF TWO FASTENERS SHALL BE USED PER ASSEMBLY
4. BOOSTER POST SHALL BE MOUNTED BEHIND STUB POST
5. BOOSTER POST SHALL BE THE SAME OR 1.5 kg/m LESS THAN STUB POST

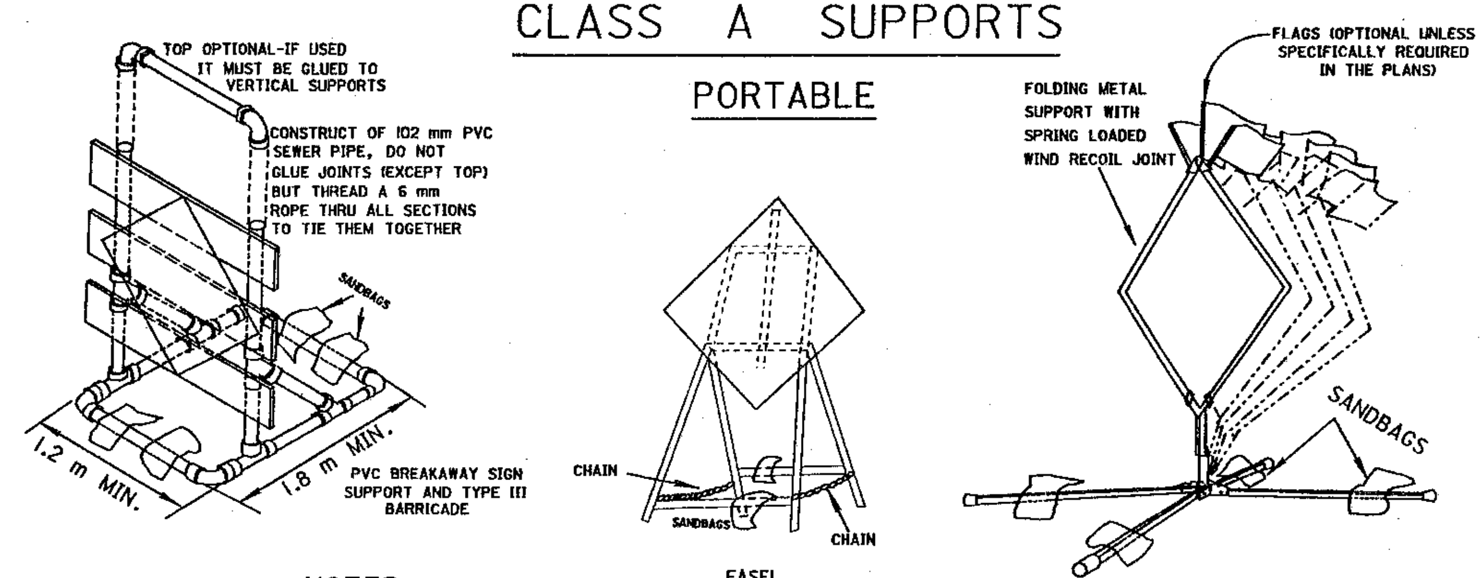
CLASS B SUPPORTS



ANY CLASS A SIGN POST WITH GUY WIRES ADDED TO INCREASE SIGN CARRYING ABILITY. (GUY WIRES SHALL NOT BE HEAVIER THAN 3.2 mm DIA. BRAIDED CABLE. GUY ANCHORS SHALL NOT EXTEND MORE THAN 152 mm ABOVE GROUND SURFACE).

CLASS A SUPPORTS

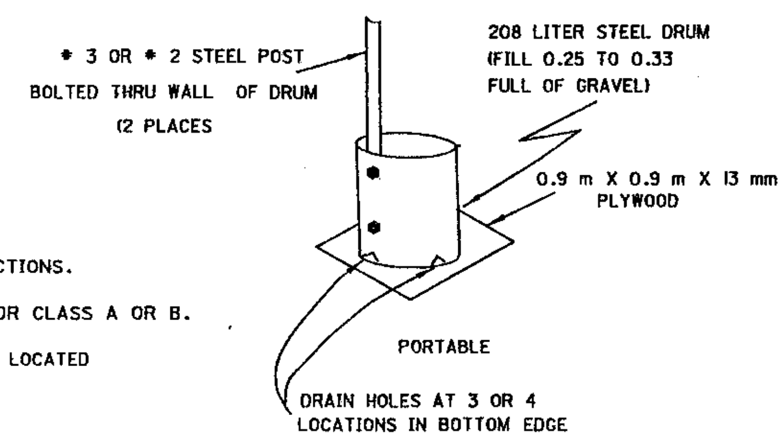
PORTABLE



NOTES

RAIL MATERIALS:
- 25 X 203 mm OR 51 X 203 mm COMMON LUMBER
- 203 mm X (16 mm TO 25 mm) THICK EXTERIOR PLYWOOD
- EXTRUDED PLASTIC OR FORMED SHEET METAL WITH A 203 mm WIDE SURFACE AND OF SUFFICENT STIFFNESS TO RESIST TYPICAL WIND LOADS OF UP TO 147 kg/m², BUT HAVING A WEIGHT OF NOT MORE THAN 7.5 kg/m.

CLASS C SUPPORTS



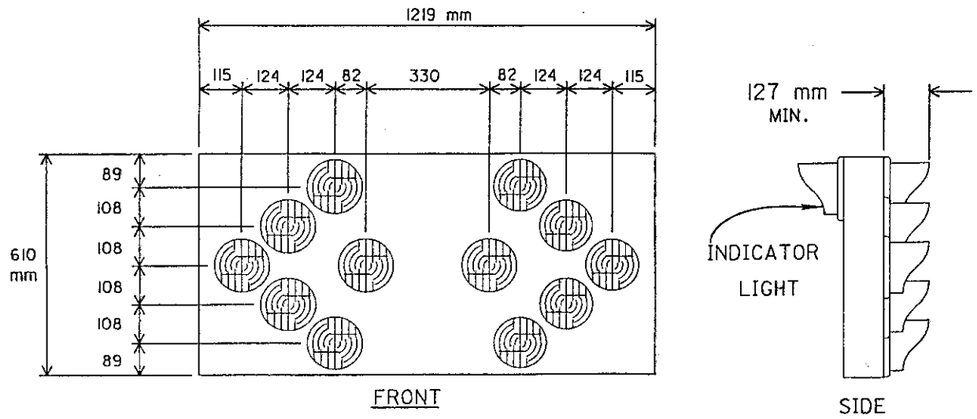
1. ALL BEAM TYPE SUPPORTS WITHOUT BREAKAWAY CONNECTIONS.
2. SUPPORTS SIMILAR TO BUT LARGER THAN PERMITTED FOR CLASS A OR B.
3. THE STEEL DRUM(S) SHOWN BELOW MAY BE USED ONLY WHEN LOCATED BEHIND GUARDRAIL OR BARRIER.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF THE OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

METRIC

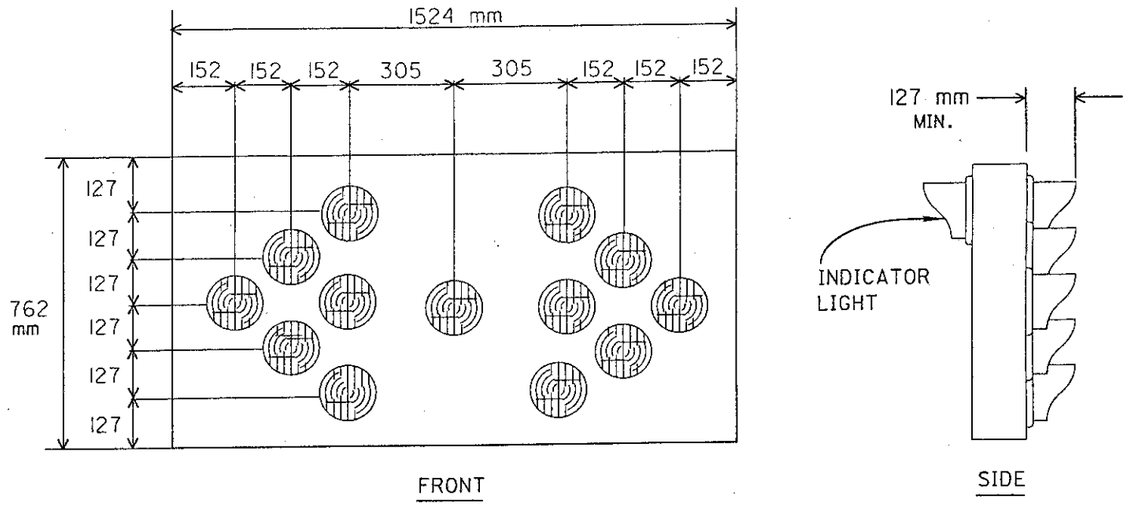
BUREAU OF DESIGN SERVICES DIVISION OF HIGHWAYS OHIO DEPARTMENT OF TRANSPORTATION	
MAINTENANCE OF TRAFFIC	DATE
TEMPORARY SIGN SUPPORT	04/25/94
STANDARD CONSTRUCTION DRAWING	MT-105.11M
APPROVED [signature] ENGR. OF DESIGN SERVICES	

ALL MEASUREMENTS ARE IN MILLIMETERS



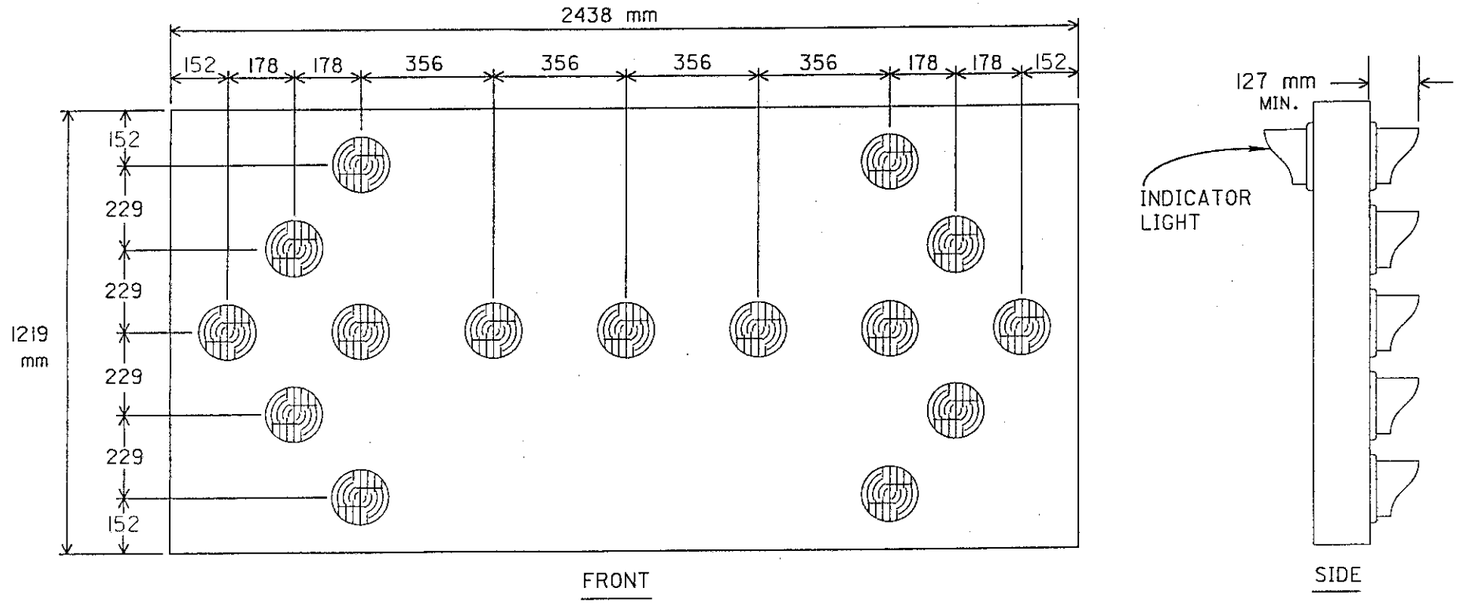
TYPE A PANEL

ALL MEASUREMENTS ARE IN MILLIMETERS



TYPE B PANEL

ALL MEASUREMENTS ARE IN MILLIMETERS



TYPE C PANEL

METRIC

(SEE MT-35.11M FOR NOTES)

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

DATE 01/30/95

FLASHING ARROW PANEL

STANDARD CONSTRUCTION DRAWING

MT-35.10M

APPROVED _____ ENGR. OF DESIGN SERVICES

WCC

FLASHING ARROW PANEL

THE FLASHING ARROW PANEL SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FLASHER PANEL

B. LAMPS

C. CONTROLS

D. POWER SUPPLY

E. MOUNTING

A. FLASHER PANEL

THE FLASHER PANEL SHALL BE OF EXTERIOR TYPE PLYWOOD BY CORROSION RESISTANT METAL CONSTRUCTION OF ADEQUATE DESIGN AND STRENGTH. THE PANEL FINISH SHALL BE FLAT BLACK.

A FLASHER PANEL SHALL BE ONE OF THREE SIZES. THE TYPE A PANEL SHALL BE A NOMINAL 610 MILLIMETERS HIGH BY 1219 MILLIMETERS WIDE. TYPE B SHALL BE A NOMINAL 762 MILLIMETERS HIGH BY 1524 MILLIMETERS WIDE. TYPE C SHALL BE A NOMINAL 1219 MILLIMETERS HIGH BY 2438 MILLIMETERS WIDE.

FLASHING ARROW PANELS, SHALL NORMALLY UTILIZE HIGH OUTPUT (4412A AND 4415A) LAMPS POWERED BY AN ENGINE DRIVEN GENERATOR WHEN PERMITTED BY THE PLANS. THE CONTRACTOR MAY ALSO FURNISH UNITS POWERED BY A SOLAR ARRAY AND BATTERIES OR ONLY BATTERIES; HOWEVER THESE UNITS SHALL NOT BE USED WHERE THE APPROACHING TRAFFIC WOULD BE ON A HORIZONTAL CURVE IN EXCESS OF 3 DEGREES. THESE UNITS SHALL NOT BE USED IF THE APPROACHING TRAFFIC, CLOSER THAN 1.6 km (.8 km WHERE SPEED LIMITS ARE LESS THAN 64 km/h), IS MORE THAN 5½ DEGREES HORIZONTALLY OR 2 DEGREES VERTICALLY FROM THE CENTRAL AXIS OF THE LENSE UNITS.

B. LAMPS

FOR ENGINE POWERED GENERATOR UNITS, LAMPS SHALL BE ANSI NUMBER 4412A (PAR 46) FOR TYPE B AND C AND 4415A (PAR 36) FOR TYPE A. THE LAMP SHALL BE FITTED WITH AN UPPER HOOD OF NOT LESS THAN 180° AT LEAST 127 MILLIMETERS LONG. ARROW PANELS MAY USE A LOWER POWER (WATTAGE) LAMP THAN THE STANDARD ARROW PANELS. THE LAMPS SHALL BE APPROXIMATELY 127 MILLIMETER DIAMETER WITH A PARABOLIC REFLECTOR. THE LAMP SHALL PROVIDE IMPROVED LIGHT DISTRIBUTION CONTROL BY MEANS OF HIGH QUALITY REFLECTORS AND REFRACTORS. THE LIGHT OUTPUT FROM EACH LAMP OF THE ARROW SHALL NOT BE LESS THAN SHOWN IN FIGURE I WHEN OPERATING AT FULL DAYTIME BRIGHTNESS:

THE LAMPS SHALL BE SECURELY MOUNTED AND POSITIONED IN THE PANEL PERPENDICULAR TO THE PANEL FACE AND ORIENTED SO THAT THE LAMP LOCATION LUG (ON BACK OF THE LAMP) IS ON THE HORIZONTAL CENTER LINE THROUGH THE LENS. THE LUG WILL BE ON THE RIGHT SIDE OF THE LAMP AS VIEWED FROM THE FRONT.

THE LAMPS SHALL BE WIRED IN CIRCUITS THAT CAN BE SWITCHED TO DISPLAY ANY ONE OF THE FOLOWING MESSAGES: LEFT ARROW, RIGHT ARROW, LEFT AND RIGHT, AND CAUTION BAR. A MINIMUM OF THREE INDICATOR LIGHTS SHALL BE PLACED ON THE BACK OF THE PANEL TO INDICATE WHICH MESSAGE MODE IS IN OPERATION.

EACH PANEL SHALL CONTAIN THE FOLLOWING NUMBER OF LAMPS AS A MINIMUM: TYPE A-12 LAMPS, TYPE B-13 LAMPS, TYPE C-15 LAMPS.

LUX POWER CHART

		215	215	215			4°
108	1076	1614	2152	1614	1076	108	2°
215	2152	4304	5380	4304	2152	215	0° HORIZONTAL
108	1076	1614	2152	1614	1076	108	- 2°
		215	215	215			- 4°
7.5°	5°	2.5°	0°	2.5°	5°	7.5°	
LEFT			CENTER			RIGHT	

FIGURE I

(1) MEASUREMENTS EXPRESSED IN LUX.

(2) COLOR OF OUTPUT LIGHT SHALL BE YELLOW TO LIGHT YELLOW.

C. CONTROLS

EACH FLASHING ARROW PANEL SHALL CONTAIN A FLASHER CONTROL AND A DIMMER CONTROL UNIT HOUSED IN A CABINET WHICH CAN BE LOCKED.

1. FLASHER CONTROL

THE FLASH RATE FOR THE SIGN PANEL SHALL BE 25 TO 40 FLASHES PER MINUTE. THE FLASHER SHALL NOT CAUSE ELECTROMAGNETIC INTERFERENCE. THE LAMPS SHALL HAVE A MINIMUM "ON TIME" OF 50% AND A MAXIMUM OF 66%.

2. DIMMER CONTROL

LAMP INTENSITY SHALL BE VARIABLE BY MEANS OF A PHOTOELECTRICALLY CONTROLLED CIRCUIT WHICH SHALL REDUCE LAMP OUTPUT DURING LOW AMBIENT LIGHT CONDITIONS. THE PHOTOELECTRIC CONTROL SHALL BE CALIBRATED TO ACTUATE A LAMP DIMMING CIRCUIT AT 22 TO 54 AMBIENT LUX AND TO RESTORE THE LIGHTS TO NORMAL AT 54 TO 108 AMBIENT LUX. A TIME DELAY SHALL BE BUILT INTO THE CONTROL TO PREVENT FALSE OPERATION DUE TO LIGHT FLASHES. THE PHOTOELECTRIC CONTROL SHALL CONTAIN A SWITCH WHICH SHALL OVERRIDE THE PHOTOELECTRIC CONTROL. THE DIMMING CIRCUIT SHALL BE EXTERNALLY ADJUSTABLE SUCH THAT THE LIGHT OUTPUT MAY BE ADJUSTED WITHIN THE RANGE OF 50% TO 100% OF THE NORMAL LAMP OUTPUT. IT SHALL NORMALLY BE SET AT 50% UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

D. POWER SUPPLY

THE FLASHING ARROW PANEL SHALL OPERATE FROM POWER SOURCES CAPABLE OF CONTINUOUSLY FURNISHING THE PROPER VOLTAGE TO THE LAMPS A MINIMUM OF 24 HOURS WITHOUT ATTENDANCE.

D. CONT.

MOTOR GENERATORS, IF USED SHALL BE OF MODERN DESIGN TO PROVIDE LOW EMISSION OF POLLUTANTS AND SHALL BE PROPERLY MUFFLED. THE MOTOR GENERATOR SHALL BE ENCLOSED IN A MESH ENCLOSURE WHICH CAN BE LOCKED. THE FUEL TANK SHALL HAVE A CAP WHICH CAN BE LOCKED. MOTOR GENERATORS SUPPLYING POWER TO A FLASHING ARROW SIGN SHALL NOT BE USED TO SUPPLY POWER TO OTHER EQUIPMENT. GASOLINE FUELED ENGINES SHALL NOT BE USED.

BATTERY AND SOLAR/BATTERY UNITS SHALL HAVE A NO-CHARGE-LIFE OF NOT LESS THAN 15 DAYS. NO-CHARGE-LIFE IS THE NUMBER OF CONSECUTIVE DAYS THAT THE SYSTEM CAN CONTINUE TO FUNCTION (DOUBLE ARROW MODE, NORMAL DIMMING DURING 12 HOUR NIGHT, FULL OUTPUT DURING 12 HOUR DAY) STARTING WITH A FULL BATTERY CHARGE AND WITH NO ADDITIONAL CHARGE BEING PROVIDED BY THE SOLAR CELLS. THE NO-CHARGE-LIFE MAY BE BASED UPON CALCULATIONS PROVIDING THAT MANUFACTURER'S RATINGS AND EFFICIENCY CALCULATIONS ARE FURNISHED FOR EACH MAJOR COMPONENT.

E. MOUNTING

THE FLASHING ARROW PANEL MAY BE TRAILER OR VEHICLE MOUNTED OR MOUNTED ON A RIGID SUPPORTING DEVICE SUITABLE FOR MAINTAINING IT IN THE DESIGNATED POSITION. EACH OF THE MOUNTING METHODS SHALL BE SUITABLY STABLE SUCH AS TO PREVENT MOVEMENT DUE TO HIGH WINDS OR PASSAGE OF LARGE VEHICLES.

WHEN A TRAILER IS USED, CONSTRUCTION SHALL BE SUCH AS TO TRANSPORT THE FLASHING ARROW PANEL AND APPURTANCES ADEQUATELY AND LEGALLY AS WELL AS SUPPORT THEM PROPERLY DURING OPERATION. THE TRAILER SHALL BE EQUIPPED WITH DEVICES WHICH SHALL PROVIDE LEVELING AND STABILITY DURING OPERATION.

MINIMUM ARROW PANEL MOUNTING HEIGHT SHALL BE 2.1 m ABOVE THE PAVEMENT SURFACE (MEASURED TO THE BOTTOM OF THE PANEL).

USE AND OPERATION

THE FLASHING ARROW PANEL SHALL BE LOCATED AS SHOWN IN THE MAINTAINENCE OF TEAFFIC DRAWINGS OR AS DIRECTED BY THE ENGINEER AND OPERATED CONTINUOUSLY DURING TRAFFIC MAINTAINED PERIODS. THE CONTRACTOR SHALL SUPPLY ALL FUEL, LUBRICANTS AND PARTS NECESSARY TO OBTAIN CONTINUOUS OPERATION AND SHALL PROVIDE ALL SERVICE. THE CONTRACTOR SHALL INSPECT THE OPERATION OF THE UNIT DAILY, INCLUDING WEEKENDS AND HOLIDAYS. THE CONTRACTOR SHALL ARRANGE WITH THE ENGINEER, AN ACCEPTABLE METHOD OF OBTAINING SERVICE FOR A MALFUNCTIONING PANEL WITHIN 30 MINUTES OF A REPORTED MALFUNCTION. LAMP INTENSITY SHALL BE ADJUSTED TO PROVIDE MINIMUM LEGIBILITY DISTANCES OF .8 km (TYPE A), 1.2 1 km (TYPE B) AND 1.6 km (TYPE C).

TYPE C PANELS SHALL BE USED FOR STATIONARY OPERATIONS ON HIGH SPEED (88 km/h OR GREATER), HIGH VOLUME ROADWAYS. TYPE B SHALL BE USED FOR STATIONARY OPERATIONS ON INTERMEDIATE SPEED (64-80 km/h) FACILITIES, AND TYPE A ON LOW SPEED (32-56 km/h) FACILITIES.

IN ADDITION, TYPE B PANELS SHALL BE USD FOR MOVING OPERATIONS ON FREEWAYS AND EXPRESSWAYS AND TYPE A FOR MOVING OPERATIONS ON OTHER FACILITIES.

BATTERY AND SOLAR/BATTERY UNITS SHALL BE FULLY CHARGED WHEN FIRST SET UP. THEY SHALL HAVE GAUGES TO INDICATE APPROXIMATE BATTERY CHARGE REMAINING. THE CONTRACTOR SHALL VERIFY DAILY THAT THE UNIT IS OPERATING SATISFACTORILY AND THE REMAINING BATTERY CHARGE IS SUFFICIENT FOR AT LEAST 2 MORE DAYS.

FLASHING ARROW PANELS ARE NOT TO BE USED ON TWO LANE-TWO WAY ROADWAYS.

WHEN LEFT UNATTENDED THE CONTROL CABINET, MOTOR GENERATOR ENCLOSURE AND FUEL TANK SHALL BE LOCKED.

TYPE A AND TYPE B PANELS USED IN MOVING OPERATIONS MAY BE POWERED BY THE VEHICLE'S ELECTRICAL SYSTEM BUT SHALL NOT BE LEFT UNATTENDED WHEN SO POWERED.

WHEN NOT IN USE, THE FLASHING ARROW PANEL SHALL BE STORED AT A LOCATION WHICH WILL NOT BE HAZARDOUS TO TRAFFIC OR PEDESTRIANS.

THE PANELS SHALL BE DESIGNED FOR OPERATION IN 100% HUMIDITY AND TEMPERATURES FROM -29 TO + 54 DEGREES CELCIUS.

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC	DATE 01/30/95
FLASHING ARROW PANEL NOTES	
STANDARD CONSTRUCTION DRAWING MT-35.11M	
APPROVED Jay Berger ENGR. OF DESIGN SERVICES	

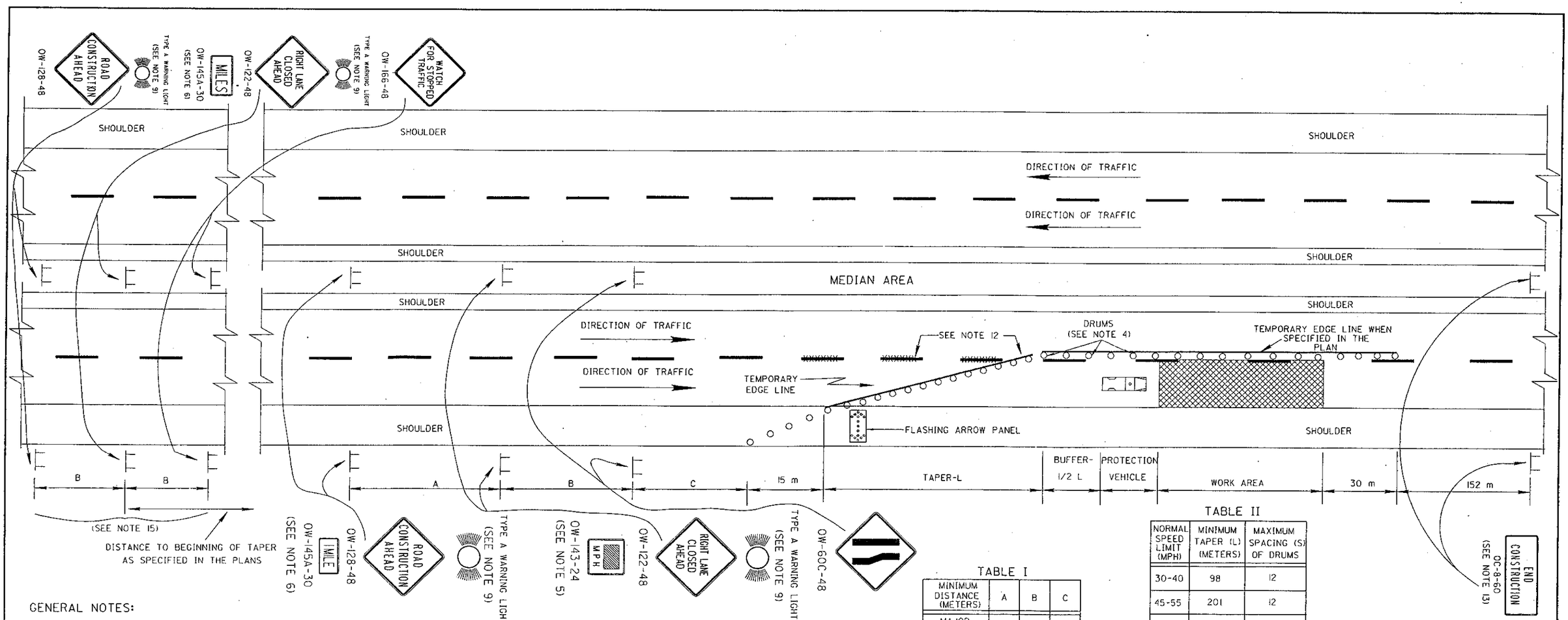


TABLE I

MINIMUM DISTANCE (METERS)	A	B	C
MAJOR STANDARD	152	152	152
URBAN FREEWAY & EXPRESSWAY	152 TO 305	152 TO 305	152 TO 305
RURAL FREEWAY & EXPRESSWAY	792	488	305

TABLE II

NORMAL SPEED LIMIT (MPH)	MINIMUM TAPER (L) (METERS)	MAXIMUM SPACING (S) OF DRUMS
30-40	98	12
45-55	201	12
60-65	238	18

GENERAL NOTES:

1. THE LOCATION OF THE MERGING TAPER AND THE ADVANCE WARNING SIGNS SHOULD BE ADJUSTED TO PROVIDE FOR ADEQUATE SIGHT DISTANCE FOR THE EXISTING VERTICAL AND HORIZONTAL ROADWAY ALIGNMENT.

2. THE SPACING BETWEEN PROPOSED SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 61m CLEARANCE TO EXISTING SIGNS.

3. THE TAPER LENGTH (L) AND SPACING (S) OF DRUMS SHALL CONFORM TO TABLE II. DRUM SPACING (S) SHALL BE USED FOR THE MERGING TAPER, THE BUFFER AREA AND FOR THE FIRST 305 m OF THE WORK AREA AND AT OTHER HAZARDOUS LOCATIONS AS DIRECTED BY THE ENGINEER. THE MAXIMUM DRUM SPACING FOR THE BALANCE OF THE WORK AREA IS TO BE TWO TIMES THE SPACING (S) IN TABLE II. A MINIMUM OF 5 DRUMS SHALL BE USED TO CLOSE THE SHOULDER.

4. CONES HAVING A MINIMUM HEIGHT OF 0.7 m MAY BE SUBSTITUTED FOR DRUMS FOR DAYTIME LANE CLOSURES. PROVISIONS SHALL BE MADE TO SAFELY STABILIZE THE CONES TO PREVENT THEM FROM BLOWING OVER. IF THIS CANNOT BE ACHIEVED, DRUMS SHALL BE USED.

5. THE ADVISORY SPEED SIGN OW-143 SHALL BE USED WHEN SPECIFIED IN THE PLAN.

6. THE DISTANCE PLATE OW-145A SHALL INDICATE THE DISTANCE TO THE BEGINNING OF THE MERGING TAPER (L). DISTANCES LESS THAN ONE MILE MAY BE EXPRESSED IN FEET. THE PLAQUE MAY BE OMITTED IF EXTRA ADVANCE SIGN GROUPS ARE NOT USED.

7. THE PROTECTION VEHICLE, LOCATED CLOSE TO THE WORK, SHALL BE IN PLACE AND UNOCCUPIED WHENEVER WORKERS ARE IN THE WORK AREA. THIS VEHICLE SHALL BE REMOVED FROM THE PAVEMENT WHENEVER WORKERS ARE NOT IN THE WORK AREA. THE VEHICLE SHALL BE EQUIPPED WITH A 360 DEGREE ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF 402 m. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE PROTECTION VEHICLE SHOWN WHEN APPROVED BY THE ENGINEER.

8. THE FLASHING ARROW PANEL SHALL MEET REQUIREMENTS OF STANDARD CONSTRUCTION DRAWING TC-35.10M.

9. TYPE A FLASHING WARNING LIGHTS SHOWN ON THE OW-128 AND OW-122 - (123) SIGNS ARE REQUIRED WHENEVER A NIGHT LANE CLOSURE IS NECESSARY

10. WHEN WORK IS BEING PERFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY, OW-123 SIGNS SHALL BE SUBSTITUTED FOR THE OW-122 SIGNS AND OW-60D SIGNS SHALL BE SUBSTITUTED FOR THE OW-60C SIGNS.

11. 36 INCH WARNING SIGN SIZES MAY BE USED ON DIVIDED ROADWAYS THAT ARE NOT CLASSIFIED AS FREEWAYS OR EXPRESSWAYS.

12. IF THE CONSTRUCTION OPERATION REQUIRES THE LANE CLOSURE FOR MORE THAN ONE DAY THEN THE EXISTING CONFLICTING PAVEMENT MARKINGS AND REFLECTORS FROM THE RAISED PAVEMENT MARKERS (RPMS) SHALL BE REMOVED AND THE APPROPRIATE COLOR TEMPORARY EDGE LINES SHALL BE APPLIED ALONG THE TAPER. TEMPORARY EDGE LINES WHICH WOULD CONFLICT WITH FINAL TRAFFIC LANES SHALL BE REMOVABLE (740.05 TYPE C) TAPE UNLESS

12. CONT. THE AREA WILL BE RESURFACED IN THE NEXT WORK PHASE. AFTER COMPLETION OF THE WORK, PAVEMENT MARKINGS OTHER THAN 740.05 TYPE C SHALL BE REMOVED IN ACCORDANCE WITH 641.10. THE ORIGINAL MARKINGS AND PAVEMENT MARKER REFLECTORS SHALL BE RESTORED AT NO ADDITIONAL COST.

13. THE OC-8 SIGNS ARE ONLY REQUIRED FOR LANE CLOSURES OF MORE THAN ONE DAY AND MAY BE OMITTED IF THEY FALL WITHIN THE LIMITS OF A CONSTRUCTION PROJECT.

14. OW-128 SIGNS SHALL BE PROVIDED ON ENTRANCE RAMPS AND/OR SIDE ROADS LOCATED WITHIN THE WORK LIMITS OR THE ADVANCE WARNING SIGN GROUP. WITHIN THE LENGTH OF CLOSURE, PROVISION SHALL BE MADE TO CONTROL TRAFFIC ENTERING FROM INTERSECTING STREETS AND DRIVEWAYS. THREE DRUMS SHALL BE PLACED ON EACH SIDE ACROSS THE CLOSED LANE AT EACH INTERSECTION AND DRIVEWAY.

15. EXTRA ADVANCE WARNING SIGN GROUPS CONSISTING OF OW-128, OW-122 AND OW-166 SIGNS PLUS DISTANCE PLATES MAY BE SPECIFIED IN THE PLANS OR REQUIRED TO BE ERECTED AT THE DIRECTION OF THE ENGINEER.

16. ALL MATERIAL AND EQUIPMENT SHALL BE REMOVED FROM THE CLOSURE AND THE WORK AREA WHEN NO WORK IS BEING DONE.

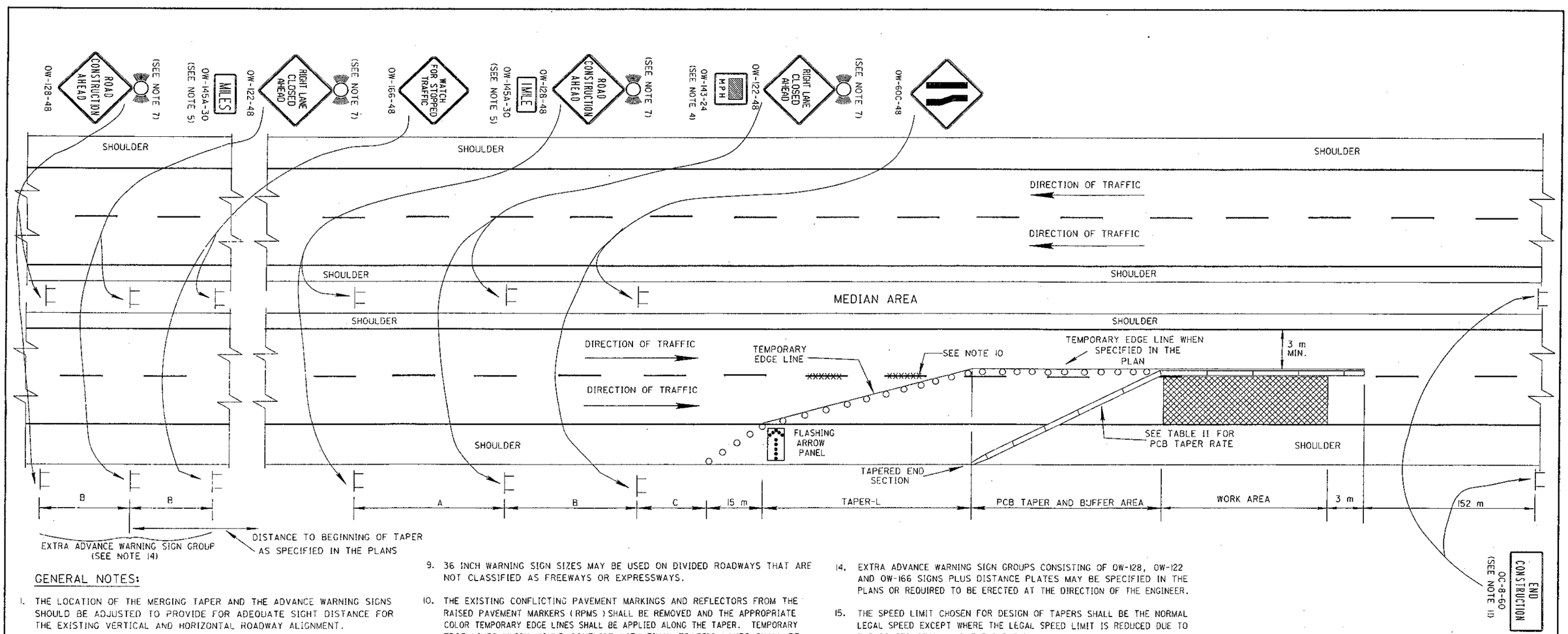
METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAININC TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC	DATE
CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH DRUMS	04/25/94
STANDARD CONSTRUCTION DRAWING MT-95.30M	

APPROVED _____ ENGR. OF DESIGN SERVICES



GENERAL NOTES:

1. THE LOCATION OF THE MERGING TAPER AND THE ADVANCE WARNING SIGNS SHOULD BE ADJUSTED TO PROVIDE FOR ADEQUATE SIGHT DISTANCE FOR THE EXISTING VERTICAL AND HORIZONTAL ROADWAY ALIGNMENT.

2. THE SPACING BETWEEN PROPOSED SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 61 m CLEARANCE TO EXISTING SIGNS.

3. THE TAPER LENGTH (L) AND SPACING (S) OF DRUMS SHALL CONFORM TO TABLE II. DRUM SPACING (S) SHALL BE USED FOR THE MERGING TAPER AND THE BUFFER AREA. A MINIMUM OF 5 DRUMS SHALL BE USED TO CLOSE THE SHOULDER.

4. THE ADVISORY SPEED SIGN OW-143 SHALL BE USED WHEN SPECIFIED IN THE PLAN.

5. THE DISTANCE PLATE OW-145A SHALL INDICATE THE DISTANCE TO THE BEGINNING OF THE MERGING TAPER (L). DISTANCES LESS THAN ONE MILE MAY BE EXPRESSED IN FEET THE PLAQUE MAY BE OMITTED IF EXTRA ADVANCE SIGN GROUPS ARE NOT USED.

6. THE FLASHING ARROW PANEL SHALL MEET REQUIREMENTS OF STANDARD CONSTRUCTION DRAWING TC-35.10M.

7. TYPE A FLASHING WARNING LIGHTS SHOWN ON THE OW-128 AND OW122 (123) SIGNS ARE REQUIRED.

8. WHEN WORK IS BEING PERFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY, OW-123 SIGNS SHALL BE SUBSTITUTED FOR THE OW-122 SIGNS AND OW-60D SIGNS SHALL BE SUBSTITUTED FOR THE OW-60C SIGNS.

9. 36 INCH WARNING SIGN SIZES MAY BE USED ON DIVIDED ROADWAYS THAT ARE NOT CLASSIFIED AS FREEWAYS OR EXPRESSWAYS.

10. THE EXISTING CONFLICTING PAVEMENT MARKINGS AND REFLECTORS FROM THE RAISED PAVEMENT MARKERS (RPMS) SHALL BE REMOVED AND THE APPROPRIATE COLOR TEMPORARY EDGE LINES SHALL BE APPLIED ALONG THE TAPER. TEMPORARY EDGE LINES WHICH WOULD CONFLICT WITH FINAL TRAFFIC LANES SHALL BE REMOVABLE (740.05 TYPE-C) TAPE UNLESS THE AREA WILL BE RESURFACED IN THE NEXT WORK PHASE. AFTER COMPLETION OF THE WORK, PAVEMENT MARKINGS OTHER THAN 740.05, TYPE C SHALL BE REMOVED IN ACCORDANCE WITH 641.10. THE ORIGINAL MARKINGS AND PAVEMENT MARKER REFLECTORS SHALL BE RESTORED AT NO ADDITIONAL COST.

11. THE OC-8 SIGNS MAY BE OMITTED IF THEY FALL WITHIN THE LIMITS OF A CONSTRUCTION PROJECT.

12. PCB SHALL BE DELINEATED AS FOLLOWS:

PCB TYPE	DELINEATION
813 mm HIGH WITHOUT GLARE SCREEN	BARRIER REFLECTORS @ 7.6 m C-C (MAX.) TOP MOUNTED OBJECT MARKERS (229 X 381mm) @ 7.6 m C-C (MAX.)
813 mm HIGH WITH GLARE SCREEN	BARRIER REFLECTORS @ 7.6 m C-C VERTICAL STRIPES ON PADDLES 51 X 305 mm) @ 3.8 m C-C (MAX.)
1270 mm HIGH	BARRIER REFLECTORS @ 3.8 m C- C (MAX.)
TAPERED END SECTION AND EXPOSED END	OBJECT MARKERS (229 X 381mm) TOP MOUNTED @ EACH END

13. OW-128 SIGNS SHALL BE PROVIDED ON ENTRANCE RAMPS AND/OR SIDE ROADS LOCATED WITHIN THE WORK LIMITS OR THE ADVANCE WARNING SIGN GROUP. WITHIN THE LENGTH OF CLOSURE, PROVISION SHALL BE MADE TO CONTROL TRAFFIC ENTERING FROM INTERSECTING STREETS AND DRIVEWAYS. THREE DRUMS SHALL BE PLACED ACROSS THE CLOSED LANE AT EACH INTERSECTION AND DRIVEWAY.

14. EXTRA ADVANCE WARNING SIGN GROUPS CONSISTING OF OW-128, OW-122 AND OW-166 SIGNS PLUS DISTANCE PLATES MAY BE SPECIFIED IN THE PLANS OR REQUIRED TO BE ERECTED AT THE DIRECTION OF THE ENGINEER.

15. THE SPEED LIMIT CHOSEN FOR DESIGN OF TAPERS SHALL BE THE NORMAL LEGAL SPEED EXCEPT WHERE THE LEGAL SPEED LIMIT IS REDUCED DUE TO THE CONSTRUCTION AND THE SUBJECT LANE CLOSURE IS NOT THE FIRST ACTIVE CONSTRUCTION AREA ENCOUNTERED BY TRAFFIC WITHIN THE PROJECT.

16. NO EQUIPMENT OR MATERIAL SHALL BE LOCATED OTHER THAN BEHIND THE PCB.

LEGEND

DRUMS	○ ○ ○ ○ ○ ○
PORTABLE CONCRETE BARRIER (PCB)	
REMOVE EXISTING MARKINGS	XXXXXXXXX

TABLE I

MINIMUM DISTANCE METERS	A	B	C
MAJOR STANDARD	152	152	152
URBAN FREEWAY & EXPRESSWAY	152 TO 305	152 TO 305	152 TO 305
RURAL FREEWAY & EXPRESSWAY	792	488	305

TABLE II

SPEED LIMIT (MPH) *	MINIMUM DRUM TAPER (L) METERS	MAXIMUM SPACING (S) OF DRUMS METERS	PCB TAPER RATE
30-40	98	12	11 : 1
45-55	201	12	16 : 1
60-65	238	18	19 : 1

* SEE NOTE (15)

METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF THE OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

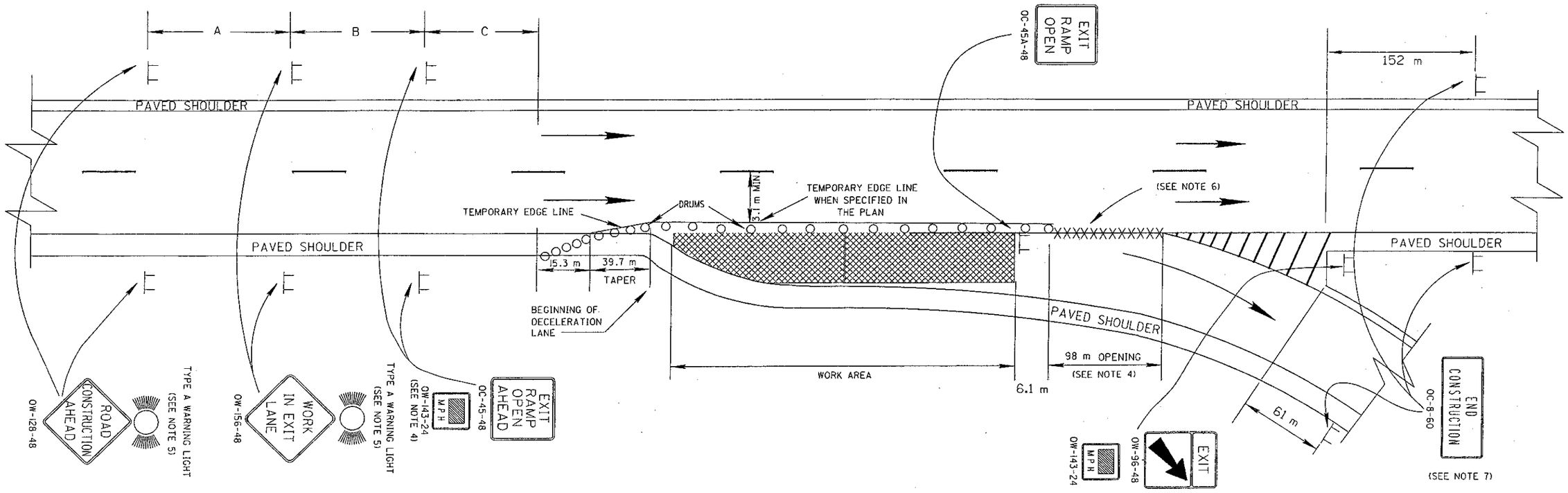
CLOSING RIGHT OR LEFT LANE OF A MULTI-LANE DIVIDED HIGHWAY WITH PORTABLE CONCRETE BARRIER

STANDARD CONSTRUCTION DRAWING MT-95.40M

APPROVED Gary L. Krieger ENGR. OF DESIGN SERVICES

DATE 04/25/94

WCC



GENERAL NOTES:

1. THE LOCATION OF THE ADVANCE WARNING SIGNS SHOULD BE ADJUSTED TO PROVIDE FOR ADEQUATE SIGHT DISTANCE FOR THE EXISTING VERTICAL AND HORIZONTAL ROADWAY ALIGNMENT.

2. THE SPACING BETWEEN PROPOSED SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 61 m CLEARANCE TO EXISTING SIGNS, EXCEPT THE OW-96-48 SIGN WHICH MAY BE ADJACENT TO THE GF SIGN IN THE GORE.

3. ALONG THE CLOSURE DRUMS SHALL BE SPACED AT 6.1 m CENTER TO CENTER. A MINIMUM OF 5 DRUMS SHALL BE USED TO CLOSE THE SHOULDER. CONES HAVING A MINIMUM HEIGHT OF 0.7 m MAY BE SUBSTITUTED FOR DRUMS FOR DAYTIME LANE CLOSURES. PROVISIONS SHALL BE MADE TO SAFELY STABILIZE THE CONES TO PREVENT THEM FROM BLOWING OVER. IF THIS CANNOT BE ACHIEVED, DRUMS SHALL BE USED.

4. THE OPENING TO THE RAMP SHALL BE 98 m OR MORE, WHENEVER POSSIBLE. A LESSER OPENING MAY BE PROVIDED IF NO OTHER ALTERNATIVE IS AVAILABLE. WHEN A LESSER OPENING IS PROVIDED, ADVISORY SPEED PLAQUES (OW-143) SHALL BE ADDED TO THE OW-96 AND OC-45 SIGNS AS FOLLOWS:

OPENING	ADVISORY SPEED
88 m	80 km/h - 50 MPH
79 m	72 km/h - 45 MPH
70 m	64 km/h - 40 MPH
35 m	56 km/h - 35 MPH

IF A 61 m OPENING CANNOT BE PROVIDED, THE RAMP SHOULD BE CLOSED.

4. CONT. THE ADVISORY SPEED DISPLAYED SHALL NOT BE GREATER THAN WOULD OTHERWISE BE REQUIRED TO ACCOMMODATE THE PERMANENT RAMP GEOMETRY NEAR THE EXIT.

ADVISORY SPEEDS WITHIN 16 km/h OF THE LEGAL SPEED LIMIT NEED NOT BE DISPLAYED.

5. TYPE A FLASHING WARNING LIGHTS SHOWN ON THE "ROAD CONSTRUCTION AHEAD" AND "WORK IN EXIT LANE" SIGNS ARE REQUIRED WHENEVER A NIGHT LANE CLOSURE IS NECESSARY.

6. IF THE CONSTRUCTION OPERATION REQUIRES THE LANE CLOSURE FOR MORE THAN ONE DAY THEN THE EXISTING CONFLICTING PAVEMENT MARKINGS AND REFLECTORS FROM THE RAISED PAVEMENT MARKERS (RPMS) SHALL BE REMOVED AND THE APPROPRIATE COLOR TEMPORARY EDGE LINES SHALL BE APPLIED ALONG THE TAPER. TEMPORARY EDGE LINES WHICH WOULD CONFLICT WITH FINAL TRAFFIC LANES SHALL BE REMOVABLE (740.05 TYPE C) TAPE UNLESS THE AREA WILL BE RESURFACED IN THE NEXT WORK PHASE. AFTER COMPLETION OF THE WORK, PAVEMENT MARKINGS OTHER THAN 740.05 TYPE C SHALL BE REMOVED IN ACCORDANCE WITH 641.10. THE ORIGINAL MARKINGS AND PAVEMENT MARKER REFLECTORS SHALL BE RESTORED AT NO ADDITIONAL COST.

7. THE OC-8 SIGNS ARE ONLY REQUIRED FOR LANE CLOSURES OF MORE THAN ONE DAY AND MAY BE OMITTED IF THEY FALL WITHIN THE LIMITS OF A CONSTRUCTION PROJECT.

8. ALL MATERIAL AND EQUIPMENT SHALL BE REMOVED FROM THE CLOSURE AND THE WORK AREA WHEN NO WORK IS BEING DONE.

TABLE I

MINIMUM DISTANCE (METERS)			
	A	B	C
URBAN FREEWAY & EXPRESSWAY	152 TO 305	152 TO 305	152 TO 305
RURAL FREEWAY & EXPRESSWAY	792	488	305

METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

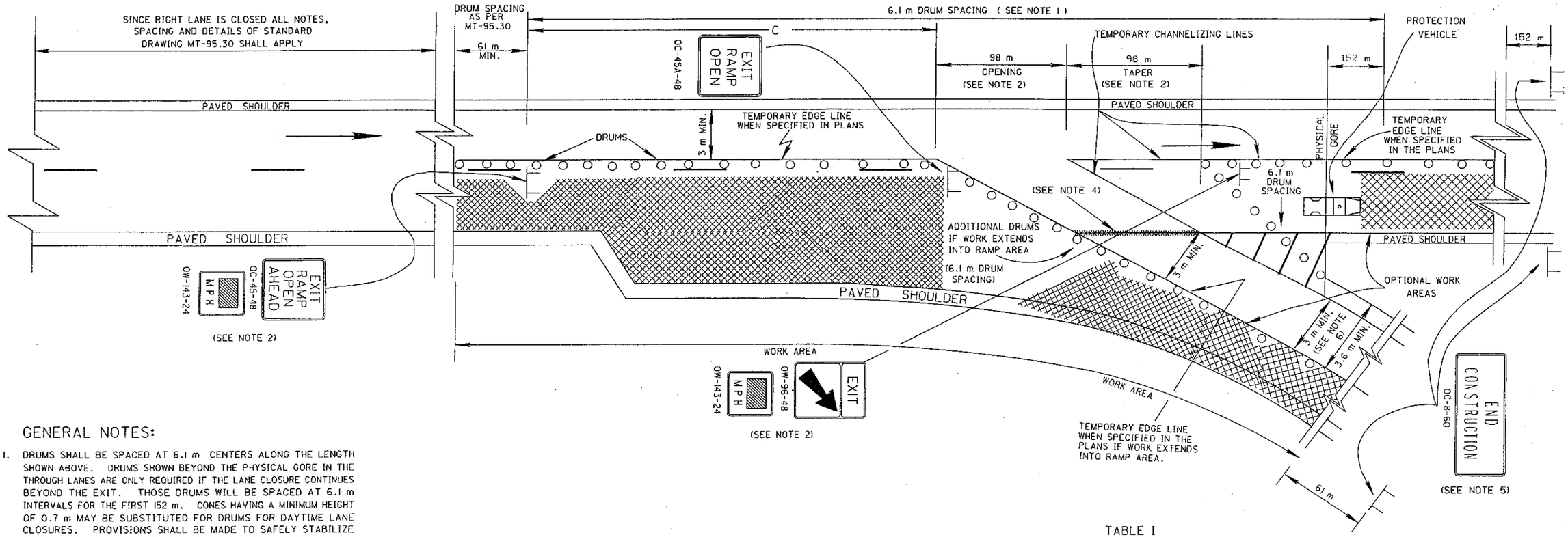
LANE CLOSURE IN DECELERATION LANE

DATE 06/24/93

STANDARD CONSTRUCTION DRAWING MT-98.12M

APPROVED Lloyd Cooper ENGR. OF DESIGN SERVICES

WCC



GENERAL NOTES:

1. DRUMS SHALL BE SPACED AT 6.1 m CENTERS ALONG THE LENGTH SHOWN ABOVE. DRUMS SHOWN BEYOND THE PHYSICAL GORE IN THE THROUGH LANES ARE ONLY REQUIRED IF THE LANE CLOSURE CONTINUES BEYOND THE EXIT. THOSE DRUMS WILL BE SPACED AT 6.1 m INTERVALS FOR THE FIRST 152 m. CONES HAVING A MINIMUM HEIGHT OF 0.7 m MAY BE SUBSTITUTED FOR DRUMS FOR DAYTIME LANE CLOSURES. PROVISIONS SHALL BE MADE TO SAFELY STABILIZE THE CONES TO PREVENT THEM FROM BLOWING OVER. IF THIS CANNOT BE ACHIEVED, DRUMS SHALL BE USED.

2. THE OPENING TO THE RAMP AND THE TAPER ACROSS THE CLOSED LANE SHOULD EACH BE 98 m OR MORE WHENEVER POSSIBLE. A LESSER OPENING AND/OR TAPER MAY BE PROVIDED IF NO OTHER ALTERNATIVE IS AVAILABLE. THE OPENING SHALL NEVER BE LESS THAN THE TAPER, BUT MAY BE MORE. WHEN LESSER OPENING AND/OR TAPER LENGTHS ARE PROVIDED, ADVISORY SPEED PLAQUES (OW-143) SHALL BE ADDED TO THE OW-96 AND OC-45 SIGNS AS FOLLOWS:

OPENING/TAPER	ADVISORY SPEED
88 m	80 km/h - 50 MPH
79 m	72 km/h - 45 MPH
70 m	64 km/h - 40 MPH
61 m	56 km/h - 35 MPH

IF 61 m MINIMUM DIMENSIONS CANNOT BE PROVIDED, THE RAMP SHOULD BE CLOSED.

THE ADVISORY SPEED DISPLAYED SHALL NOT BE GREATER THAN WOULD OTHERWISE BE REQUIRED TO ACCOMMODATE THE PERMANENT RAMP GEOMETRY NEAR THE EXIT.

ADVISORY SPEEDS WITHIN 16.1 km/h OF THE LEGAL SPEED LIMIT NEED NOT BE DISPLAYED.

3. THE PROTECTION VEHICLE LOCATED CLOSE TO THE WORK SHALL BE IN PLACE AND UNOCCUPIED WHENEVER WORKERS ARE IN THE WORK AREA. THIS VEHICLE SHALL BE REMOVED FROM THE PAVEMENT WHENEVER WORKERS ARE NOT IN THE WORK AREA. THE VEHICLE SHALL BE EQUIPPED WITH A 360 DEGREE ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF 402 m. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE PROTECTION VEHICLE SHOWN WHEN APPROVED BY THE ENGINEER.

4. IF THE CONSTRUCTION OPERATION REQUIRES THE LANE CLOSURE FOR MORE THAN ONE DAY THEN THE EXISTING CONFLICTING PAVEMENT MARKINGS AND REFLECTORS FROM THE RAISED PAVEMENT MARKERS (RPMS) SHALL BE REMOVED AND a) TEMPORARY CHANNELIZING LINES SHALL BE APPLIED AND b) THE APPROPRIATE COLOR TEMPORARY EDGE LINES SHALL BE APPLIED WHEN SPECIFIED IN THE PLANS. TEMPORARY CHANNELIZING LINES AND EDGE LINES WHICH WOULD CONFLICT WITH FINAL TRAFFIC LANES SHALL BE REMOVABLE (740.05 TYPE C) TAPE UNLESS THE AREA WILL BE RESURFACED IN THE NEXT WORK PHASE. AFTER COMPLETION OF THE WORK, PAVEMENT MARKINGS OTHER THAN 740.05 TYPE C SHALL BE REMOVED IN ACCORDANCE WITH 641.10. THE ORIGINAL MARKINGS AND PAVEMENT MARKER REFLECTORS SHALL BE RESTORED AT NO ADDITIONAL COST.

5. THE OC-8 SIGNS ARE ONLY REQUIRED FOR LANE CLOSURES OF MORE THAN ONE DAY AND MAY BE OMITTED IF THEY FALL WITHIN THE LIMITS OF A CONSTRUCTION PROJECT.

6. NORMALLY A 3 m MINIMUM RAMP WIDTH SHALL BE MAINTAINED ON EXISTING RAMP PAVEMENT. WHERE THIS IS NOT POSSIBLE, A MINIMUM WIDTH OF 3.6 m INCLUDING THE PAVED SHOULDER MAY BE USED ONLY: (1) IF THE TRAFFIC WILL BE ON THE SHOULDER LESS THAN ONE DAY AND THE SHOULDER IS IN GOOD CONDITION, OR (2) IF THE SHOULDER PAVEMENT IS STRENGTHENED TO HOLD THE ANTICIPATED LOAD.

7. ALL MATERIAL AND EQUIPMENT SHALL BE REMOVED FROM THE CLOSURE AND THE WORK AREA WHEN NO WORK IS BEING DONE.

TABLE I

MINIMUM DISTANCE (METERS)	
	C
URBAN FREEWAY & EXPRESSWAY	152 TO 305
RURAL FREEWAY & EXPRESSWAY	305

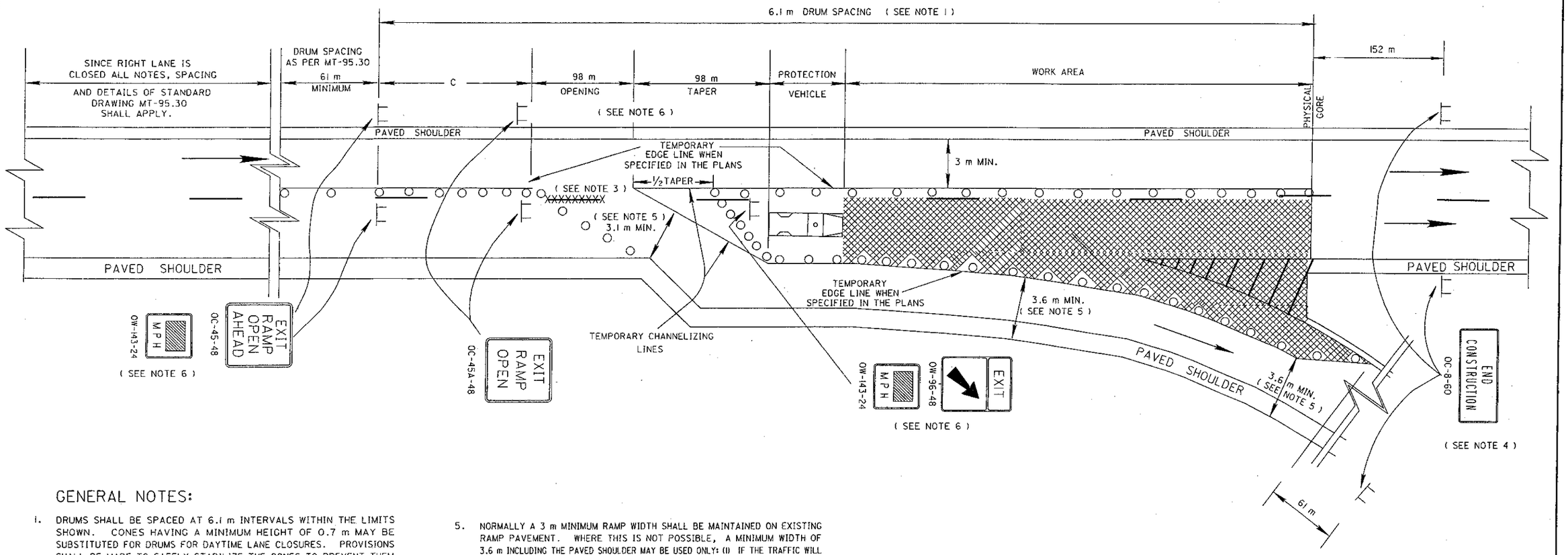
METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC	DATE 06/24/93
LANE CLOSURE BEFORE EXIT GORE	
STANDARD CONSTRUCTION DRAWING MT-98.13M	
APPROVED Gary L Creager ENGR. OF DESIGN SERVICES	

WCC



GENERAL NOTES:

1. DRUMS SHALL BE SPACED AT 6.1 m INTERVALS WITHIN THE LIMITS SHOWN. CONES HAVING A MINIMUM HEIGHT OF 0.7 m MAY BE SUBSTITUTED FOR DRUMS FOR DAYTIME LANE CLOSURES. PROVISIONS SHALL BE MADE TO SAFELY STABILIZE THE CONES TO PREVENT THEM FROM BLOWING OVER. IF THIS CANNOT BE ACHIEVED, DRUMS SHALL BE USED.

2. THE PROTECTION VEHICLE LOCATED CLOSE TO THE WORK SHALL BE IN PLACE AND UNOCCUPIED WHENEVER WORKERS ARE IN THE WORK AREA. THIS VEHICLE SHALL BE REMOVED FROM THE PAVEMENT WHENEVER WORKERS ARE NOT IN THE WORK AREA. THE VEHICLE SHALL BE EQUIPPED WITH A 360 DEGREE ROTATING OR FLASHING AMBER BEACON CLEARLY VISIBLE A MINIMUM OF 402 m. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE PROTECTION VEHICLE SHOWN WHEN APPROVED BY THE ENGINEER.

3. IF THE CONSTRUCTION OPERATION REQUIRES THE LANE CLOSURE FOR MORE THAN ONE DAY THEN THE EXISTING CONFLICTING PAVEMENT MARKINGS AND REFLECTORS FROM THE RAISED PAVEMENT MARKERS (RPMS) SHALL BE REMOVED AND a) TEMPORARY CHANNELIZING LINES SHALL BE APPLIED AND b) THE APPROPRIATE COLOR TEMPORARY EDGE LINES SHALL BE APPLIED WHEN SPECIFIED IN THE PLANS. TEMPORARY CHANNELIZING LINES AND EDGE LINES WHICH WOULD CONFLICT WITH FINAL TRAFFIC LANES SHALL BE REMOVABLE (740.05 TYPE C) TAPE UNLESS THE AREA WILL BE RESURFACED IN THE NEXT WORK PHASE. AFTER COMPLETION OF THE WORK, PAVEMENT MARKINGS OTHER THAN 740.05 TYPE C SHALL BE REMOVED IN ACCORDANCE WITH 641.10. THE ORIGINAL MARKINGS AND PAVEMENT MARKER REFLECTORS SHALL BE RESTORED AT NO ADDITIONAL COST.

4. THE OC-8 SIGNS ARE ONLY REQUIRED FOR LANE CLOSURES OF MORE THAN ONE DAY AND MAY BE OMITTED IF THEY FALL WITHIN THE LIMITS OF A CONSTRUCTION PROJECT.

5. NORMALLY A 3 m MINIMUM RAMP WIDTH SHALL BE MAINTAINED ON EXISTING RAMP PAVEMENT. WHERE THIS IS NOT POSSIBLE, A MINIMUM WIDTH OF 3.6 m INCLUDING THE PAVED SHOULDER MAY BE USED ONLY: (1) IF THE TRAFFIC WILL BE ON THE SHOULDER LESS THAN ONE DAY AND THE SHOULDER IS IN GOOD CONDITION, OR (2) IF THE SHOULDER PAVEMENT IS STRENGTHENED TO HOLD THE ANTICIPATED LOAD.

6. THE OPENING TO THE RAMP AND THE TAPER IN ADVANCE OF THE CLOSED LANE SHOULD EACH BE 98 m OR MORE WHENEVER POSSIBLE. A LESSER OPENING AND/OR TAPER LENGTH MAY BE PROVIDED IF NO OTHER ALTERNATIVE IS AVAILABLE. THE OPENING SHALL NEVER BE LESS THAN THE TAPER, BUT MAY BE MORE. WHEN LESSER OPENING AND/OR TAPER LENGTHS ARE PROVIDED, ADVISORY SPEED PLAQUES (OW-143) SHALL BE ADDED TO THE OW-96 AND OC-45 SIGNS AS FOLLOWS:

OPENING/TAPER	ADVISORY SPEED
88 m	80 km/h - 50 MPH
79 m	72 km/h - 45 MPH
70 m	64 km/h - 40 MPH
61 m	56 km/h - 35 MPH

IF 61 m MINIMUM DIMENSION CANNOT BE PROVIDED, THE RAMP SHOULD BE CLOSED.

THE ADVISORY SPEED DISPLAYED SHALL NOT BE GREATER THAN WOULD OTHERWISE BE REQUIRED TO ACCOMMODATE THE PERMANENT RAMP GEOMETRY NEAR THE EXIT.

ADVISORY SPEEDS WITHIN 16.1 km/h OF THE LEGAL SPEED LIMIT NEED NOT BE DISPLAYED.

7. ALL MATERIAL AND EQUIPMENT SHALL BE REMOVED FROM THE CLOSURE AND THE WORK AREA WHEN NO WORK IS BEING DONE.

TABLE I

MINIMUM DISTANCE (METERS)	
	C
URBAN FREEWAY & EXPRESSWAY	152 TO 305
RURAL FREEWAY & EXPRESSWAY	305

METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

DATE 06/24/93

LANE CLOSURE
AT EXIT GORE

STANDARD CONSTRUCTION DRAWING MT-98.14M

APPROVED Daryl Cregg ENGR. OF DESIGN SERVICES

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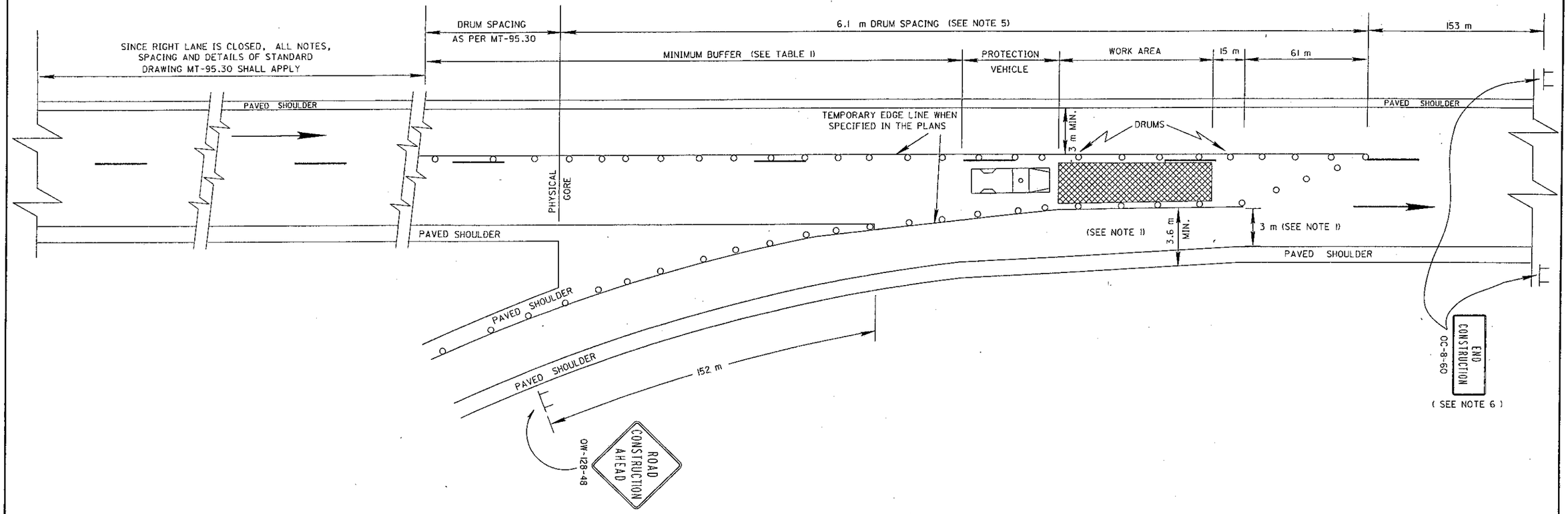

GENERAL NOTES:

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL BE EMPLOYED ONLY WHEN THE LATERAL CLEARANCE BETWEEN THE CHANNELIZING DEVICES AT THE RIGHT EDGE OF THE WORK AREA AND THE EDGE OF THE RAMP PAVEMENT IS 3 m OR MORE. NORMALLY A 3 m MINIMUM RAMP WIDTH SHALL BE MAINTAINED ON EXISTING RAMP PAVEMENT. WHERE THIS IS NOT POSSIBLE, A MINIMUM WIDTH OF 3.6 m INCLUDING THE PAVED SHOULDER MAY BE USED ONLY: (1) IF THE TRAFFIC WILL BE ON THE SHOULDER LESS THAN ONE DAY AND THE SHOULDER IS IN GOOD CONDITION, OR (2) IF THE SHOULDER PAVEMENT IS STRENGTHENED TO HOLD THE ANTICIPATED LOAD. WHEN THE RAMP IS CLOSED APPROPRIATE DETOUR SIGNS SHALL BE PROVIDED.

2. WHEN THE RAMP IS NOT LONG ENOUGH TO ALLOW SIGN PLACEMENT AS SPECIFIED ABOVE, THEY MAY BE SPACED PROPORTIONATELY WITHIN THE SPACE AVAILABLE AS DETERMINED BY THE ENGINEER (A 61 m MINIMUM SPACING MUST BE MAINTAINED).

3. THE PROTECTION VEHICLE LOCATED CLOSE TO THE WORK AREA SHALL BE IN PLACE AND UNOCCUPIED WHENEVER WORKERS ARE IN THE WORK AREA. THIS VEHICLE SHALL BE REMOVED FROM THE PAVEMENT WHENEVER WORKERS ARE NOT IN THE WORK AREA. THE VEHICLE SHALL BE EQUIPPED WITH A 360 DEGREE ROTATING OR FLASHING AMBER BEACON VISIBLE A MINIMUM OF 402 m. OTHER PROTECTIVE DEVICES MAY BE USED IN LIEU OF THE PROTECTION VEHICLE SHOWN WHEN APPROVED BY THE ENGINEER.

4. IF THE CONSTRUCTION OPERATION REQUIRES THE LANE CLOSURE FOR MORE THAN ONE DAY THEN THE EXISTING CONFLICTING PAVEMENT MARKINGS AND REFLECTORS FROM THE RAISED PAVEMENT MARKERS (RPMS) SHALL BE REMOVED AND THE APPROPRIATE COLOR TEMPORARY EDGE LINES SHALL BE APPLIED WHEN SPECIFIED IN THE PLANS. TEMPORARY EDGE LINES WHICH WOULD CONFLICT WITH FINAL TRAFFIC LANES SHALL BE REMOVABLE (740.05 TYPE C) TAPE UNLESS THE AREA WILL BE RESURFACED IN THE NEXT WORK PHASE. AFTER COMPLETION OF THE WORK, PAVEMENT MARKINGS OTHER THAN 740.05 TYPE C SHALL BE REMOVED IN ACCORDANCE WITH 641.10. THE ORIGINAL MARKINGS AND PAVEMENT MARKER REFLECTORS SHALL BE RESTORED AT NO ADDITIONAL COST.

5. DRUMS SHALL BE SPACED AT 6.1 m INTERVALS ON BOTH SIDES OF THE WORK AREA WITHIN THE LIMITS SHOWN. CONES HAVING A MINIMUM HEIGHT OF 0.7 m MAY BE SUBSTITUTED FOR DRUMS FOR DAYTIME LANE CLOSURES. PROVISIONS SHALL BE MADE TO SAFELY STABILIZE THE CONES TO PREVENT THEM FROM BLOWING OVER. IF THIS CANNOT BE ACHIEVED, DRUMS SHALL BE USED.

6. THE OC-8 SIGNS ARE ONLY REQUIRED FOR LANE CLOSURES OF MORE THAN ONE DAY AND MAY BE OMITTED IF THEY FALL WITHIN THE LIMITS OF A CONSTRUCTION PROJECT.

7. ALL MATERIAL AND EQUIPMENT SHALL BE REMOVED FROM THE CLOSURE AND THE WORK AREA WHEN NO WORK IS BEING DONE.

TABLE I

NORMAL SPEED LIMIT		MINIMUM BUFFER
(MPH)	(km/h)	(METERS)
45 - 50	72 - 88	101
60 - 65	96 - 104	119

METRIC

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC

LANE CLOSURE AT
ENTRANCE RAMP: PLAN A

DATE 06/24/93

STANDARD CONSTRUCTION DRAWING MT-98.15M

APPROVED Doug Kreuger ENGR. OF DESIGN SERVICES

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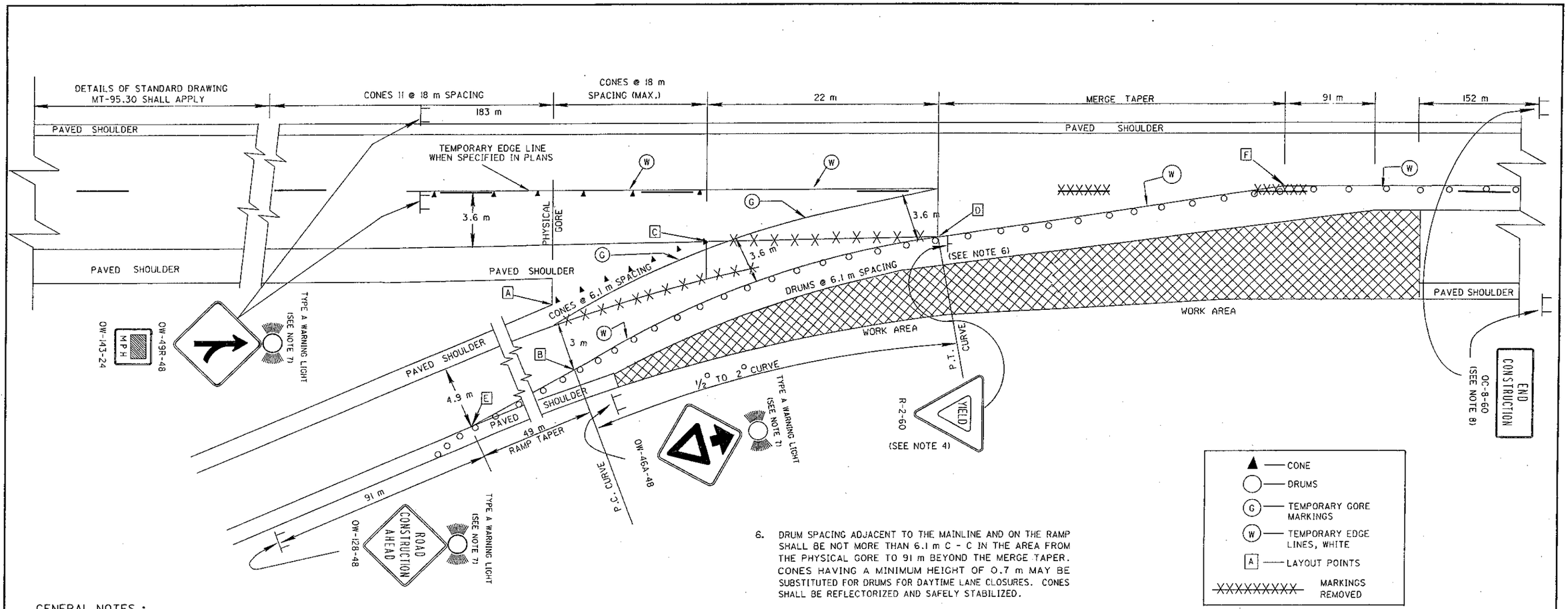


GENERAL NOTES :

1. THIS WORK AREA TRAFFIC CONTROL APPLICATION SHALL BE EMPLOYED WHEN: (1) THE LATERAL CLEARANCE BETWEEN CHANNELIZING DEVICES AT THE RIGHT EDGE OF THE WORK AREA AND THE EDGE OF PAVEMENT IS LESS THAN 3 m (3.6 m IF THE SHOULDER PAVEMENT IS USED) AS SHOWN ON DRAWING MT-98.15, AND (2) THE REQUIRED RAMP TAPERS AND CURVES CAN BE PROVIDED AS SHOWN EXCEPT AS DESCRIBED IN NOTE 4. IN THE EVENT THE WORK ZONE CONDITION WOULD PERMIT THE USE OF EITHER MT-98.15 OR MT-98.16, MT-98.15 SHALL BE USED. THIS TRAFFIC CONTROL MEASURE SHALL NOT BE PLACED IN EFFECT UNTIL IMMEDIATELY BEFORE THE CONTRACTOR IS FULLY PREPARED TO PERFORM THE WORK ON THE RAMP OR LANE ADJACENT TO IT. ONCE THIS MEASURE IS PLACED INTO EFFECT, THE CONTRACTOR SHALL EXPEDITIOUSLY PURSUE THE WORK (WORKING CONTINUOUSLY WITH FULL CREW IN THE RAMP AREA ON ALL NORMAL WORKING DAYS) UNTIL IT IS COMPLETED AND SHALL IMMEDIATELY OPEN THE AREA TO NORMAL TRAFFIC OR, AS A MINIMUM, REVERT TO THE METHODS SHOWN ON MT-98.15. IT IS THE INTENT THAT THE LONGEST MERGING TAPER LENGTH POSSIBLE SHALL BE CHOSEN, COMMENSURATE WITH THE REQUIREMENTS OF CONSTRUCTION.

2. THE RAMP TAPER SHALL DESIRABLY BE LOCATED TO PROVIDE A 3 m MINIMUM PATH BETWEEN DRUMS AND THE PAVED SHOULDER IN THE GORE. THE RAMP TRAFFIC MAY BE PLACED ON THE PAVED GORE AS SHOWN ABOVE ONLY IF: (1) THE TRAFFIC WILL USE THE PAVED SHOULDER PAVEMENT LESS THAN ONE DAY AND THE SHOULDER PAVEMENT IS IN GOOD CONDITION AND IS LEVEL AND SMOOTH OR (2) IF THE SHOULDER PAVEMENT IS ADEQUATELY STRENGTHENED, LEVELED AND SMOOTHED TO CARRY THE ANTICIPATED LOAD. A MINIMUM OF 3 DRUMS SHALL BE USED TO CLOSE THE RAMP SHOULDER.

3. WHEN THE RAMP IS NOT LONG ENOUGH TO ALLOW SIGN PLACEMENT AS SPECIFIED ABOVE, THEY MAY BE SPACED PROPORTIONATELY WITHIN THE SPACE AVAILABLE AS DETERMINED BY THE ENGINEER (A 61 m MINIMUM SPACING MUST BE MAINTAINED).

4. IT WILL BE NECESSARY TO MOVE THE LOCATION OF ANY EXISTING YIELD SIGN. IN THESE CASES, THE PERMANENT R-2 SIGN INSTALLATION SHALL BE REMOVED (AND SUBSEQUENTLY RESTORED) AND THE TEMPORARY INSTALLATION SHALL BE MOUNTED APPROPRIATELY. IF THE REQUIRED DISTANCES (RAMP TAPER, CURVE AND MERGE TAPER) CANNOT BE OBTAINED, THE ENGINEER MAY APPROVE SLIGHTLY LOWER VALUES FOR A SHORT TIME, IN WHICH CASE THE YIELD SIGN SHALL BE REMOVED AND A 1.2 m STOP SIGN PLACED APPROPRIATELY TO BE VIDIBLE TO RAMP TRAFFIC BUT NOT BE OBTRUSIVE TO MAINLINE TRAFFIC.

5. IF THE CONSTRUCTION OPERATION REQUIRES THE LANE CLOSURE FOR MORE THAN ONE DAY THEN THE EXISTING CONFLICTING PAVEMENT MARKINGS AND REFLECTORS FROM THE RAISED PAVEMENT MARKERS (RPMS) SHALL BE REMOVED AT NO ADDITIONAL COST. THE APPROPRIATE COLOR TEMPORARY EDGE LINES SHALL BE APPLIED ALONG THE TAPER. TEMPORARY PAVEMENT MARKINGS WHICH WOULD CONFLICT WITH FINAL TRAFFIC LANES SHALL BE REMOVABLE (740.05 TYPE C TAPE UNLESS THE AREA WILL BE RESURFACED IN THE NEXT WORK PHASE. AFTER COMPLETION OF THE WORK, TEMPORARY PAVEMENT MARKINGS SHALL BE REMOVED IN ACCORDANCE WITH 641.10 AND THE ORIGINAL MARKINGS AND RAISED PAVEMENT MARKER REFLECTORS SHALL BE RESTORED AT NO ADDITIONAL COST.

6. DRUM SPACING ADJACENT TO THE MAINLINE AND ON THE RAMP SHALL BE NOT MORE THAN 6.1 m C - C IN THE AREA FROM THE PHYSICAL GORE TO 91 m BEYOND THE MERGE TAPER. CONES HAVING A MINIMUM HEIGHT OF 0.7 m MAY BE SUBSTITUTED FOR DRUMS FOR DAYTIME LANE CLOSURES. CONES SHALL BE REFLECTORIZED AND SAFELY STABILIZED.

7. TYPE A FLASHING WARNING LIGHTS ARE REQUIRED ON THE ROAD CONSTRUCTION AHEAD (OW-128-48), MERGE (OW-49R-48) AND THE YIELD AHEAD (OW-46-48) SIGNS WHENEVER A NIGHT LANE CLOSURE IS NECESSARY.

8. THE OC-8 SIGNS ARE ONLY REQUIRED FOR LANE CLOSURES OF MORE THAN ONE DAY AND MAY BE OMITTED IF THEY FALL WITHIN THE LIMITS OF A CONSTRUCTION PROJECT.

9. FROM THE END OF THE GORE AREA GRADED SHOULDER (POINT A), LOCATE THE PC OF THE CURVE BY MEASURING PERPENDICULAR TO THE RAMP CENTERLINE 3 m OF RAMP PAVEMENT, NOT INCLUDING PAVED SHOULDER WIDTH (POINT B). FROM THE END OF THE GORE AREA PAVED SHOULDER (POINT C), LOCATE THE PT OF THE CURVE BY MEASURING 22 m FROM POINT C ALONG THE EDGE OF PAVEMENT EXTENDED (POINT D).

10. PLACEMENT OF DRUMS SHALL BEGIN AT (POINT E) 49 m UPSTREAM FROM THE PREVIOUSLY LOCATED PC (POINT B) AND AT THE RIGHT EDGE OF RAMP PAVEMENT. FROM THIS POINT A DRUM TAPER SHALL BE PLACED TO THE PC (POINT B) AND THEN ALONG A CURVE AS SHOWN TO THE PT (POINT D) WHERE A 48:1 (MIN.) MERGE TAPER SHALL MEET MAINLINE TRAFFIC CONTROL (POINT F).

11. ALL MATERIAL AND EQUIPMENT SHALL BE REMOVED FROM THE CLOSURE AND THE WORK AREA WHEN NO WORK IS BEING DONE.

METRIC

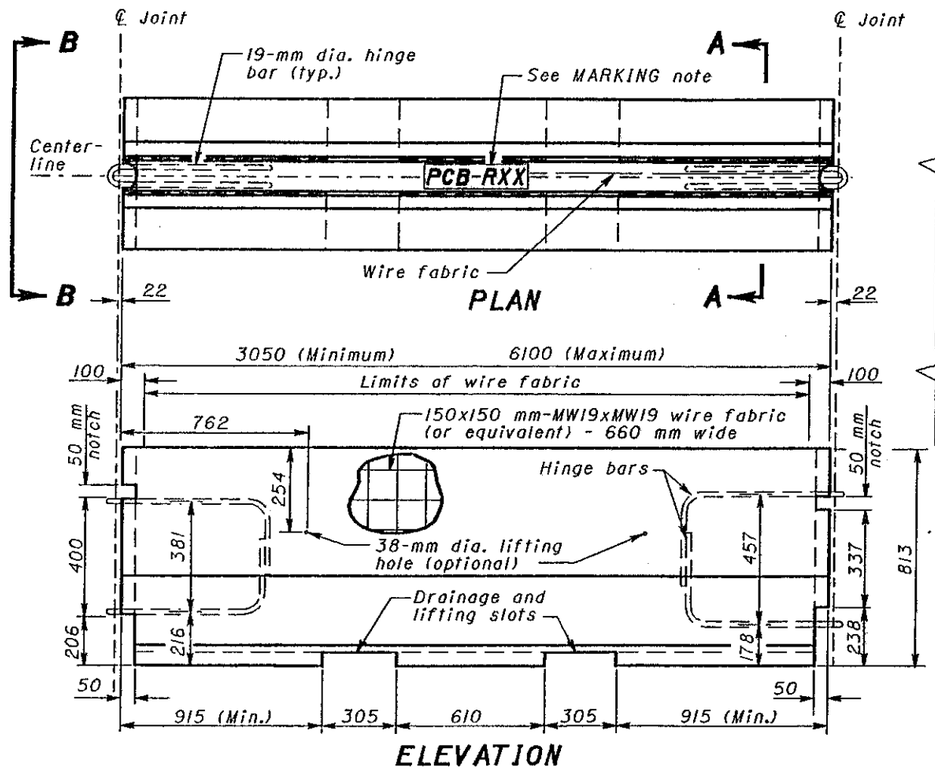
ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH 614 AND OTHER APPLICABLE PORTIONS OF THE C & M SPECIFICATIONS AS WELL AS IN ACCORDANCE WITH PART 7 OF THE OMUTCD. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS TO PROVIDE THIS METHOD OF TRAFFIC CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR 614 MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC	DATE 06/24/93
LANE CLOSURE AT ENTRANCE RAMP: PLAN B	
STANDARD CONSTRUCTION DRAWING MT-98.16M	

APPROVED Gary L. Crager ENGR. OF DESIGN SERVICES

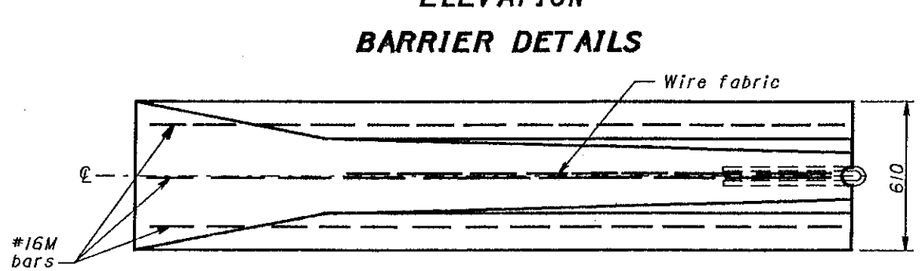
WCC



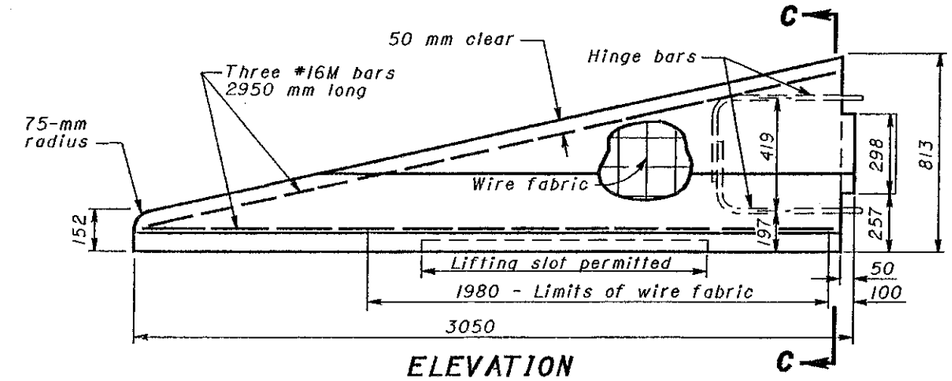
PLAN

ELEVATION

BARRIER DETAILS

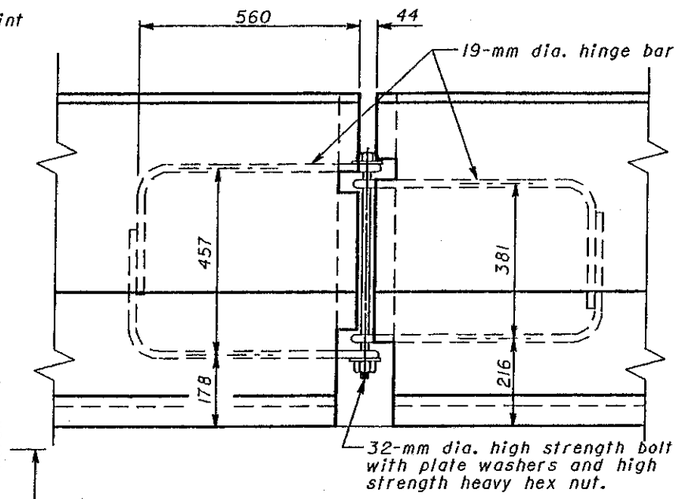


PLAN

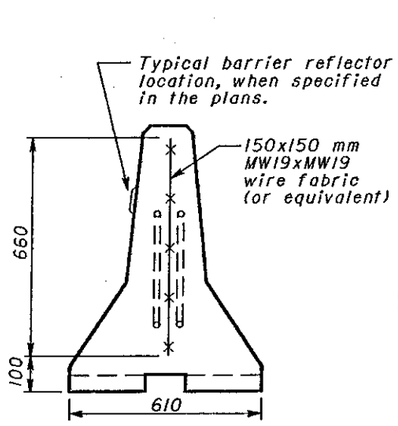


ELEVATION

TAPERED END SECTION DETAILS

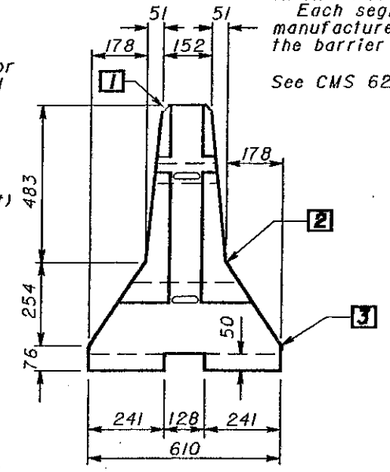


DETAIL AT HINGED CONNECTION

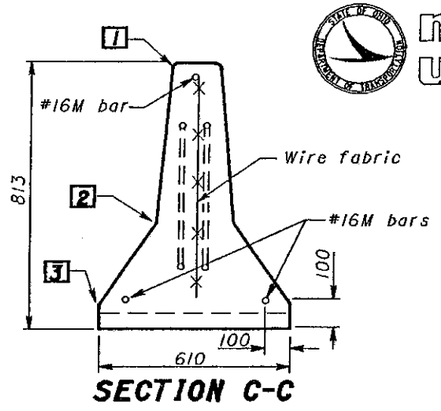


Vertical edges on keyway and drainage slots may be battered. Depth 50±6 mm.

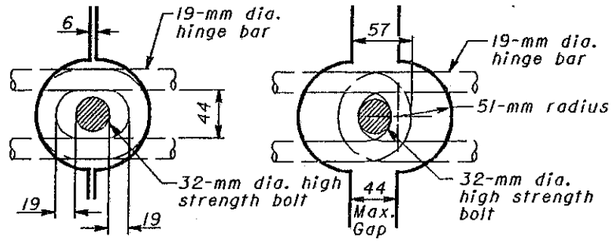
SECTION A-A



VIEW B-B



SECTION C-C



CLOSED JOINT

Barriers shall initially be placed close together so that bolts can be easily inserted through hinge bar loop.

OPEN JOINT

Barrier joints shall be fully open before the nut is tightened onto bolt.

JOINT CONNECTION DETAILS

NOTES

PORTABLE CONCRETE BARRIER (PCB): PCB, as shown, shall not be used on bridge deck edges. PCB, Bridge Mounted, shall be used at such locations in accordance with the Office of Structural Engineering's Standard Drawing PCB-91M.

WIRE FABRIC: Shall meet the requirements of CMS 709.10.

CONNECTING HARDWARE: Bolts, washers and hex nuts shall be galvanized after fabrication as per CMS 711.02 and shall meet the requirements of CMS 711.09 except that the Rotational Capacity test specified in ASTM A 325M shall be waived.

In lieu of the pin and loop connections detailed on this Standard Construction Drawing, barrier sections with "J-J Hooks" end connections may be utilized.

Transition barrier sections with pin and loop connections on one end and "J-J Hooks" on the other shall be used to connect runs of "J-J Hooks" barrier to other permitted barrier types. The heights of the transition sections shall be the same as the barrier runs being connected.

"J-J Hooks" is a trademark of Easi-Set Industries, P.O. Box 300, Midland, VA 22728, (540) 439-8911 or (800) 547-4045.

HINGE AND REINFORCING BARS: The 19-mm hinge bars and #16M reinforcing bars shall meet the requirements of CMS 509.

HANDLING DEVICES: Such devices may be used in lieu of the lifting slot for moving the barrier. They may be of any design sufficient to handle the weight of the section being lifted. No handling devices shall protrude from the surface of the barrier when in place.

MARKING: All barrier segments shall be marked as shown, where XX indicates the year cast. These markings shall be permanently impressed in the barrier using a minimum of 50-mm high lettering.

Each segment shall have, on its top, a unique identification as to its manufacturer and, somewhere on the barrier, the day and month that the barrier was manufactured.

See CMS 622 for additional information.

metric units

All dimensions are in millimeters unless otherwise noted.

This Drawing Replaces MC-9.2.

LEGEND

1. 25-mm radius or 19-mm chamfer, all top and end corners.
2. Permissible 250-mm radius.
3. Permissible 25-mm radius.

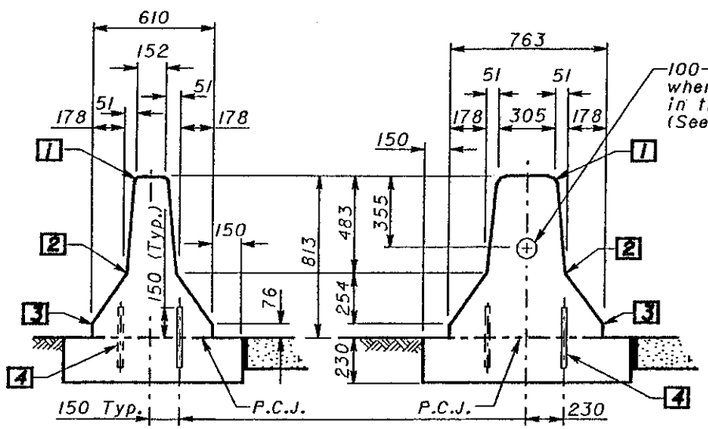
OHIO DEPARTMENT OF TRANSPORTATION

813-mm PORTABLE CONCRETE BARRIER

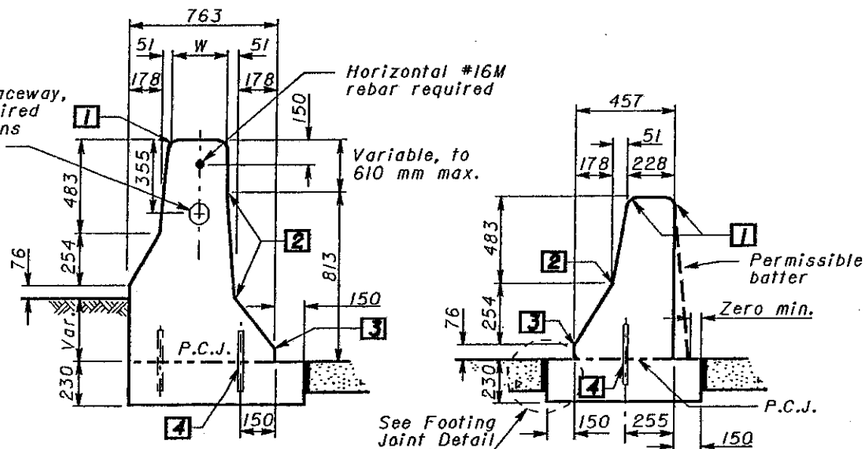
DATE: 6-30-95, 10-21-97

STANDARD CONSTRUCTION DRAWING **RM-4.2M**

APPROVED Roger F. Sutherland



TYPE A TYPE B



TYPE C

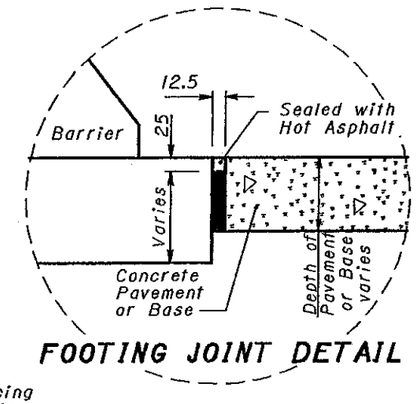
TYPE D

NORMAL SECTIONS

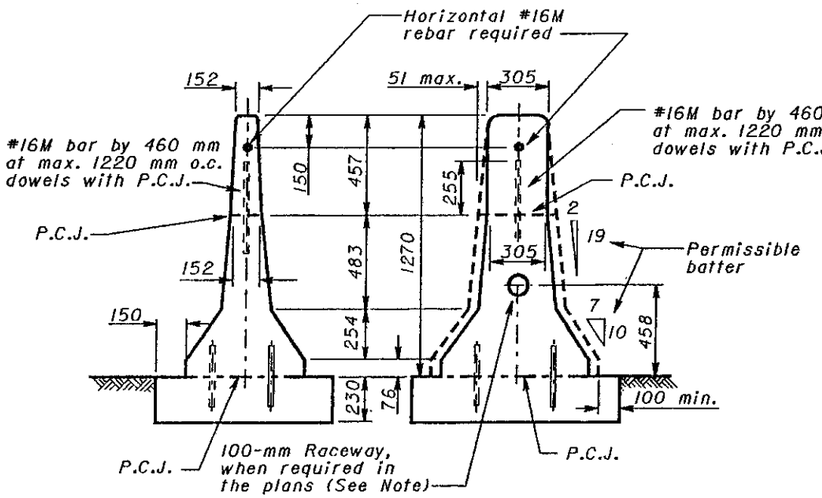
LEGEND

1. 25-mm radius or 19-mm chamfer.
2. Permissible 250-mm radius.
3. Permissible 25-mm radius.
4. #25M epoxy coated deformed steel bars, 305 mm long, spaced 1220 mm between successive bars on a staggered pattern except in Type D. Omit dowels when the top is constructed integrally with the base.

W = 152 or 305 mm barrier width, as specified in the plans.



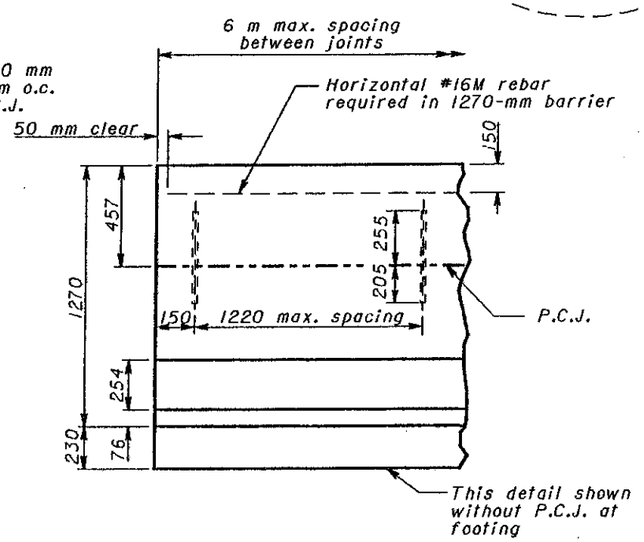
FOOTING JOINT DETAIL



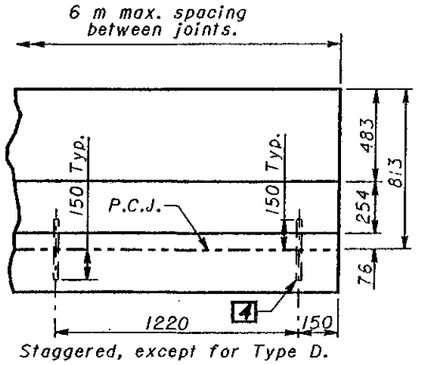
TYPE AI TYPE BI

1270-mm BARRIERS - TYPICAL SECTIONS

See Type A and Type B Normal Section Details for dimensions that are not shown.



1270-mm BARRIER



813-mm BARRIER

Staggered, except for Type D.

BARRIER ELEVATIONS

NOTES

JOINTS: Unsealed contraction joints spaced at 6 m maximum shall be constructed throughout the run of Concrete Barrier except that expansion joints shall be used at the center line of and around each bridge pier column and on either side of overhead sign supports, inlets and light pole foundations. If the inlet top is slip formed, the expansion joints adjacent to it may be omitted.

Contraction joints may be constructed with metal inserts inside the forms, preformed full width joint filler, a grooving tool, or by sawing. Inserts, tooled or sawed joints shall have a 75-mm minimum depth. All joints shall be constructed for the full height of the barrier including the footing. Sawing shall be done as soon as curing will allow, to prevent spalling.

FOOTING JOINTS: The vertical walls between the barrier footing and a concrete pavement or concrete base shall be provided with a sealed joint as shown. Sealing material shall conform to CMS 705.04.

P.C.J. - Permissible Construction Joint

MEASUREMENT: Item 622, Concrete Barrier, including transitions and pier sections detailed on SCD RM-4.4M, is paid for in meters as one of the four types (A, B, C or D) or as Type AI and BI, (for 1270 mm high barrier), with appropriate deductions for other items such as:

Item 604 I-3 Median inlet	6 meters.
Item 625 Light pole foundation or pullbox	1 meter.
Item 630 Overhead sign support foundation	3 meters.
Item 630 Barrier wall assembly	3 meters.

1270-mm BARRIER: High barrier shall be built in locations specified in the plans. Construct the lower 813 mm of the barrier base using the same dimensions as shown in the corresponding Normal Section. The upper 457 mm may be constructed integral with the bottom, or separately with #15M rebar dowels at 1220 mm maximum spacing. Start and end dowels 150 mm from barrier contraction joints.

RACEWAY: The contractor shall ensure that the electrical raceway is clear of internal obstructions. Cost of the 100 mm polyvinyl chloride raceway and No. 10 AWG copper-clad or aluminum-clad wire if needed for future installation of circuits shall be included in the unit cost per meter for Item 622, Concrete Barrier.

STATION MARKING: Marking shall be impressed in the "green" concrete on both sides at the top of the barrier if specified the plans, which cost shall be incidental to the unit cost per meter bid for Item 622, Concrete Barrier.

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces MC-9.3.

OHIO DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIERS

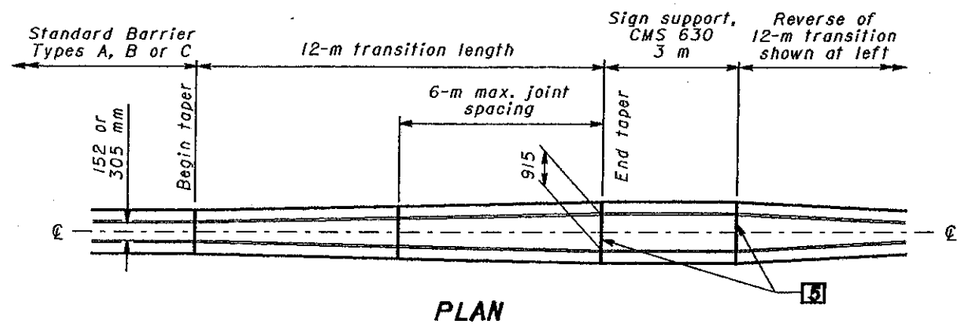
DATE: 6-30-95, 10-21-97

STANDARD CONSTRUCTION DRAWING **RM-4.3M**

APPROVED Gary F. Sutherland

LEGEND

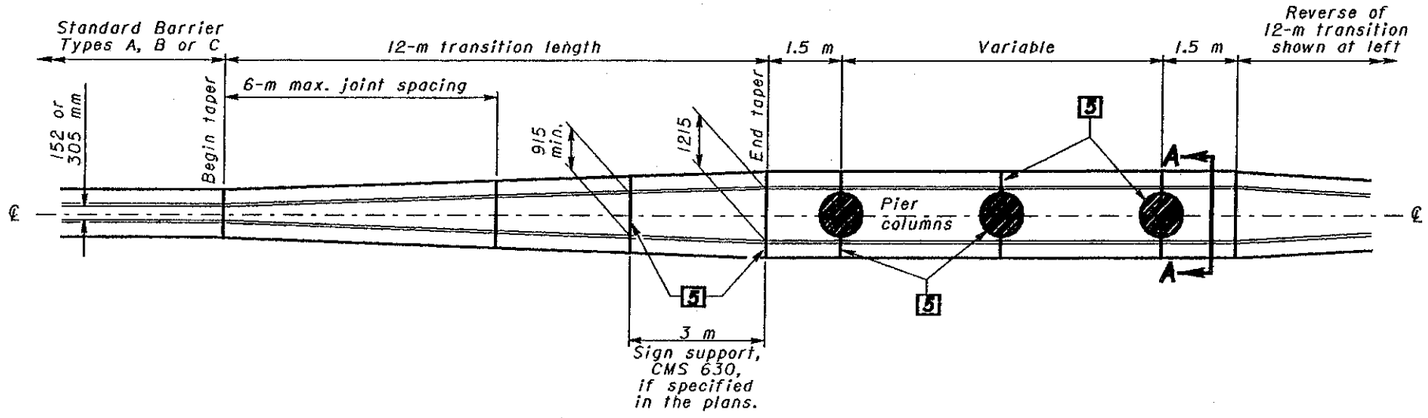
1. 25-mm radius or 19-mm chamfer.
2. Permissible 250-mm radius.
3. Permissible 25-mm radius.
4. #25M epoxy coated deformed steel bars, 300 mm long, spaced 600 mm between successive bars on a staggered pattern. Dowel bars shall begin 1220 mm from the leading edge of the End Terminal. Omit dowels when the top is constructed integrally with the base.
5. Expansion joint, 19-mm min. Preformed Filler, CMS 705.03.



PLAN

SIGN SUPPORT TRANSITION

(For 1270-mm barriers, the upper 457 mm varies from a 152 mm or 305 mm width to a 915 mm width.)



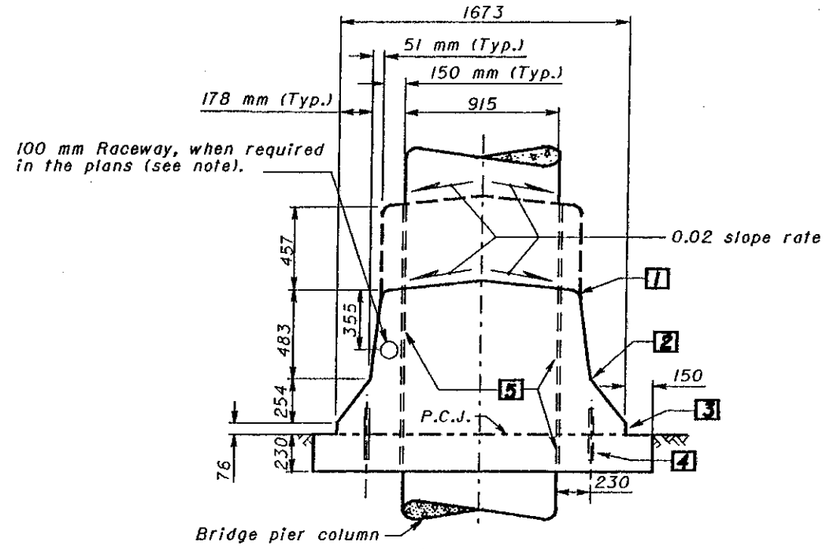
PLAN

BRIDGE PIER TRANSITION

(With Sign Support)

NOTE

STANDARD BARRIERS: Types A, B, or C concrete barriers shall be constructed as per SCD RM-4.3M or as detailed in the plans.



SECTION A-A

All dimensions are in millimeters unless otherwise noted.

metric units

This Drawing Replaces MC-9.4.

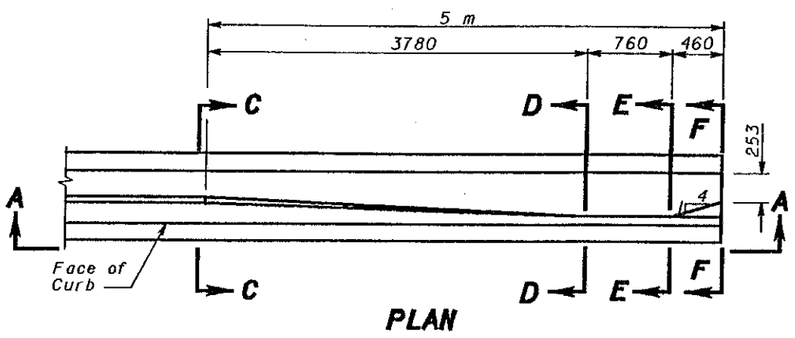
OHIO DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER TRANSITIONS

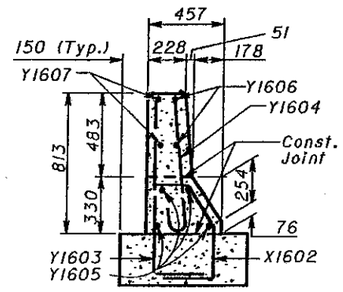
DATE
6-30-95
10-21-97

STANDARD CONSTRUCTION DRAWING **RM-4.4M**

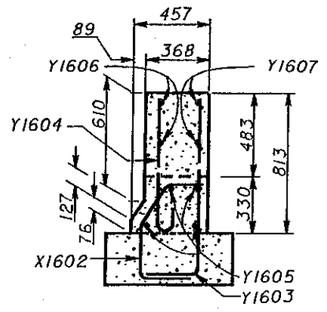
APPROVED Gary F. Sutherland



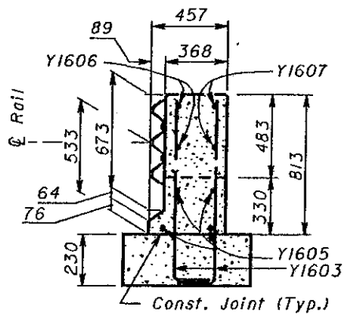
PLAN



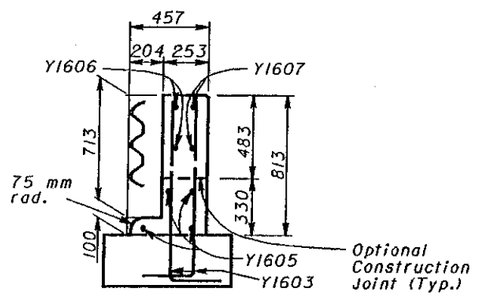
SECTION C-C



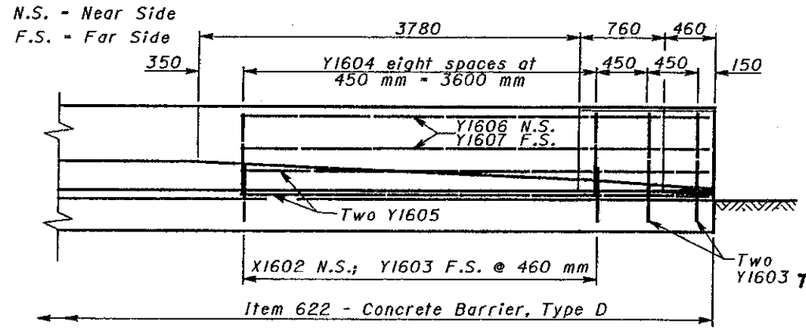
SECTION D-D



SECTION E-E



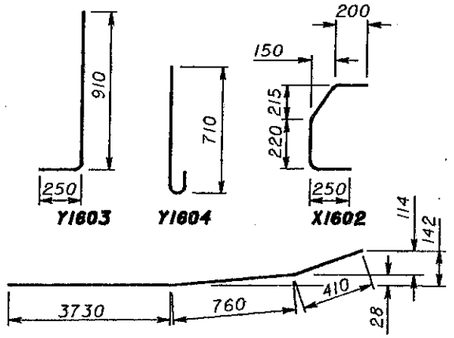
SECTION F-F



SECTION A-A

REINFORCING BAR LIST

MARK	LENGTH (mm)	SHAPE	NO.	MASS (kg)
X1602	850	Bent	9	12
Y1603	1120	Bent	13	23
Y1604	880	Bent	9	13
Y1605	4900	Str.	4	31
Y1606	4900	Bent	2	15
Y1607	4900	Str.	2	15
TOTAL MASS (For info. only)				109



BENDING DIAGRAMS

NOTES

LOCATION: Concrete barrier at obstructions shall be constructed with the toe of the barrier slope at the normal guardrail offset from the roadway. Installations within continuous runs shall be constructed so that no approach or trailing guardrail tapers are required to connect to the barrier.

Installations that cannot be constructed at the normal guardrail offset and are to be connected to approach or trailing guardrail runs shall have a 25:1 guardrail taper to meet the existing or normal guardrail offset.

Installations that are not to be connected to approach or trailing guardrail runs shall include the standard guardrail flare as per SCD GR-5.1M.

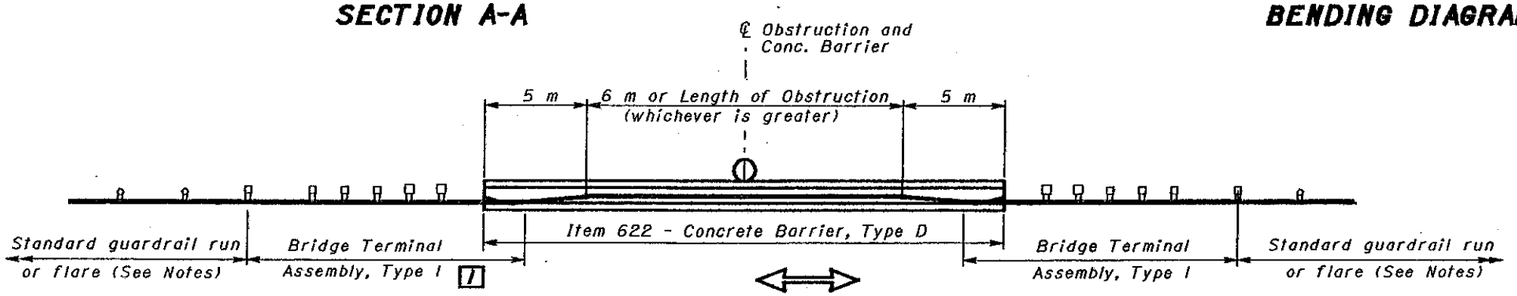
INCORPORATED INSTALLATIONS: For barrier installations that cannot be constructed at the normal guardrail offset, the incorporated installations shown may be installed at vertical walls. piers or other similar obstructions. For pier-incorporated installations the contractor may use the optional treatment, forming the back face of the Type D Concrete Barrier to the location shown (between piers only), with any additional cost being included in the cost of Item 622.

REINFORCING: All reinforcing bars shall be epoxy coated and shall meet the requirements of CMS 509.

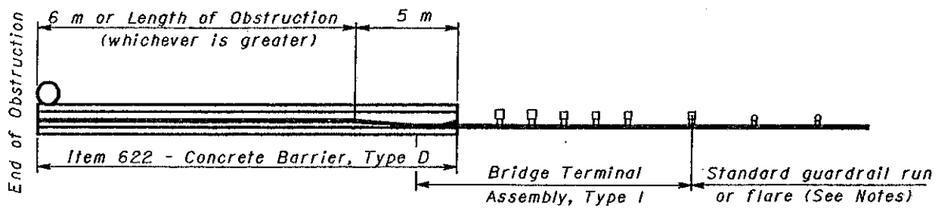
MISCELLANEOUS: For Bridge Terminal Assembly, Type 1 and Type 2 details and connections, see SCD's GR-3.1M and GR-3.2M, respectively. For Type D Concrete Barrier details see SCD RM-4.3M.

PAYMENT: Payment for Item 622, Concrete Barrier, Type D shall include all materials, labor and reinforcing steel required to construct the barrier as shown.

All dimensions are in millimeters unless otherwise noted.



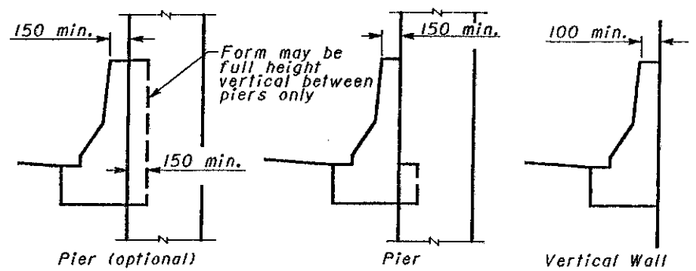
Bi-directional Travel or Directional Travel where trailing guardrail is used.



1 Bridge Terminal Assembly, Type 2 shall be used for directional roadways where trailing guardrail is used and is out of the clear zone of opposite direction traffic.

Directional Travel where no trailing guardrail is used.

TYPICAL INSTALLATIONS



INCORPORATED INSTALLATIONS

metric units

This Drawing Replaces GR-8J.

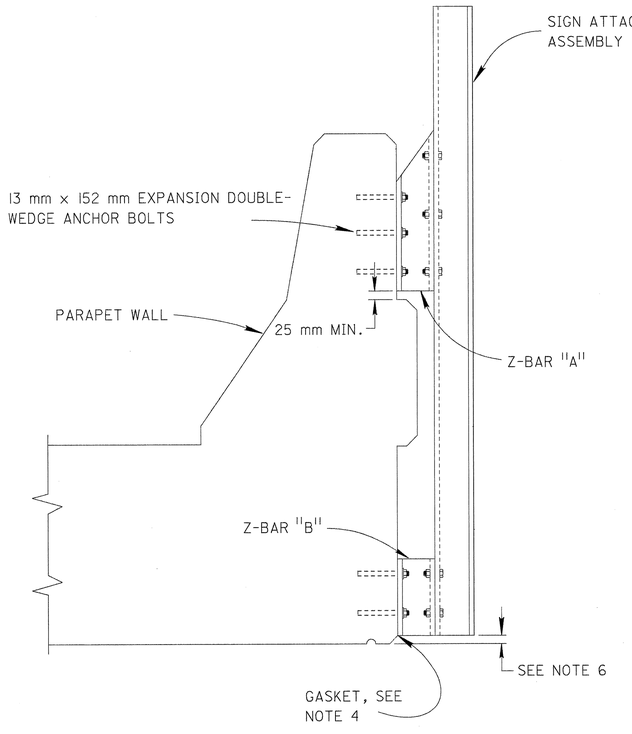
OHIO DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER AT OBSTRUCTIONS

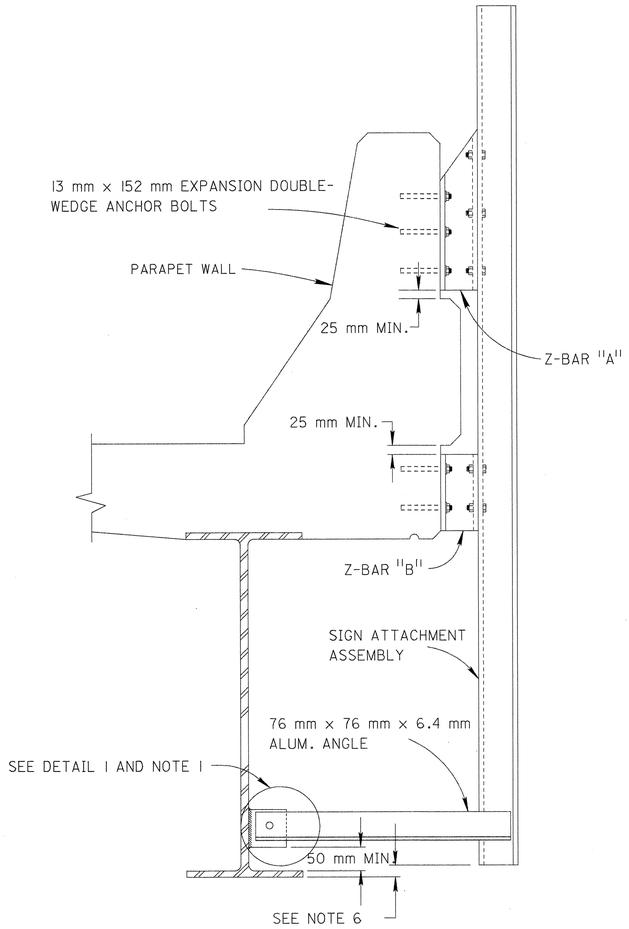
DATE: 6-30-95, 10-21-97

STANDARD CONSTRUCTION DRAWING **RM-4.5M**

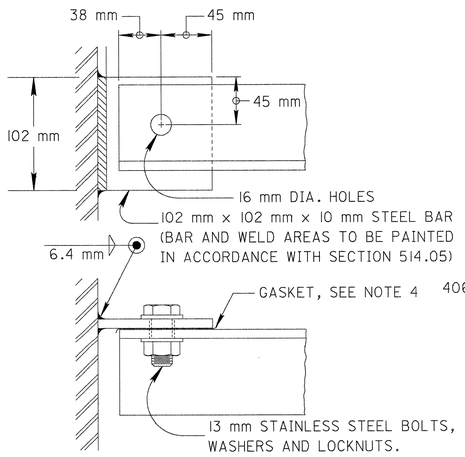
APPROVED: Lowell F. Sutherland



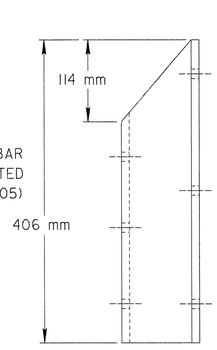
SLAB BRIDGE MOUNT

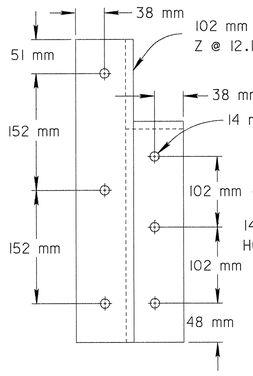


BEAM BRIDGE MOUNT

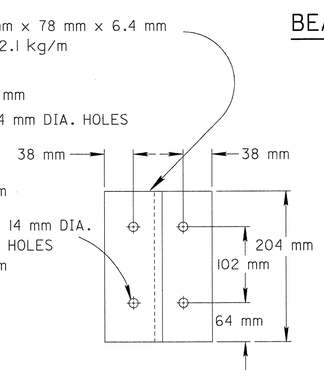


DETAIL I





Z-BAR "A"



(GALVANIZED STEEL)

Z-BAR "B"

NOTES

1. ON PRE-CAST BEAM BRIDGES, CHANGE THE 102 mm x 102 mm x 10 mm BAR IN DETAIL I TO A 102 mm x 102 mm x 152 mm ANGLE AND USE 2-13 mm x 152 mm EXPANSION BOLTS TO FASTEN TO CONCRETE. THE PROPOSED LOCATIONS OF ANCHORS IN PRESTRESSED BEAMS SHALL BE APPROVED BY THE ENGINEER PRIOR TO ANY FIELD DRILLING.
2. FOR SIGN ATTACHMENT ASSEMBLIES TO BE FURNISHED WITH THIS SUPPORT, SEE DRAWING TC-22.20M.
3. ALL HARDWARE, INCLUDING EXPANSION BOLTS, SHALL BE STAINLESS STEEL.
4. CONTACT BETWEEN ALUMINUM AND GALVANIZED PARTS SHALL BE PREVENTED WITH A MINIMUM 1.6 mm THICK CHLOROPRENE GASKET OR APPROVED EQUAL. A GASKET SHALL ALSO BE INSTALLED BETWEEN GALVANIZED STEEL AND CONCRETE.
5. ALL SIGN BRACKETS SHALL BE INSTALLED AT THE SAME ELEVATION, BY ADJUSTING THEIR POSITION ON Z-BAR "A" AND "B", REGARDLESS OF BRIDGE SLOPE.
6. FOR BRIDGE CLEARANCE ABOVE ROADWAY OF LESS THAN 5.2 m THE CLEARANCE ABOVE BOTTOM OF BRIDGE SHALL BE 75 mm MINIMUM WITHOUT, OR 400 mm MINIMUM WITH SIGN LIGHTING FIXTURES.

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

DATE 02/01/94

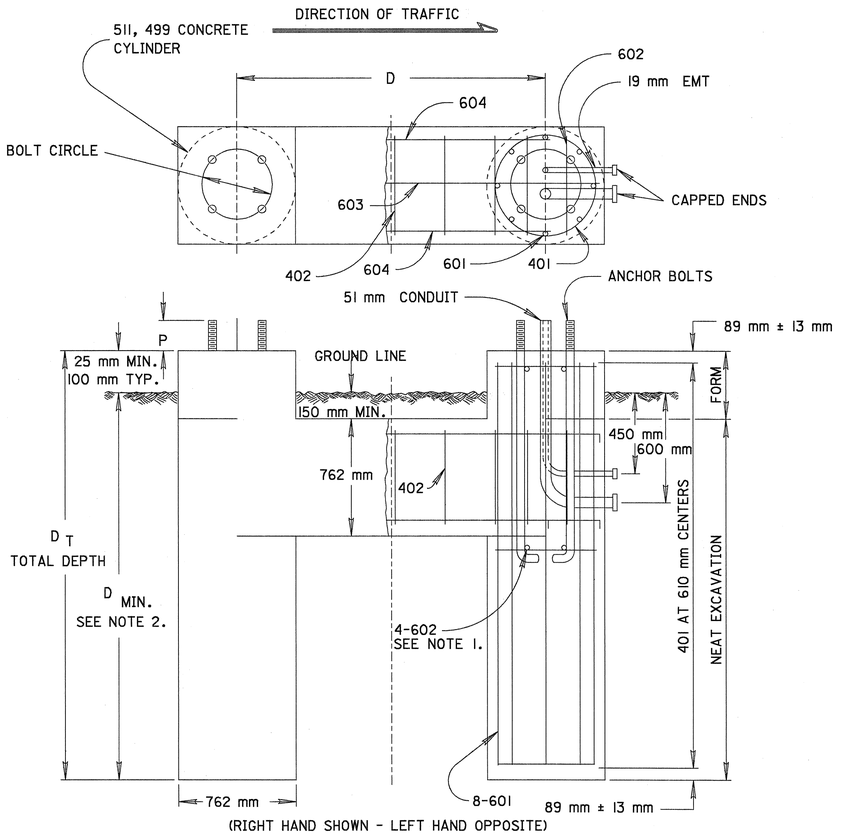
FLUSH STRUCTURE MOUNTED SIGN SUPPORT

STANDARD CONSTRUCTION DRAWING

TC-18.24M

APPROVED Gary L. Craig ENGR. OF DESIGN SERVICES

WCC

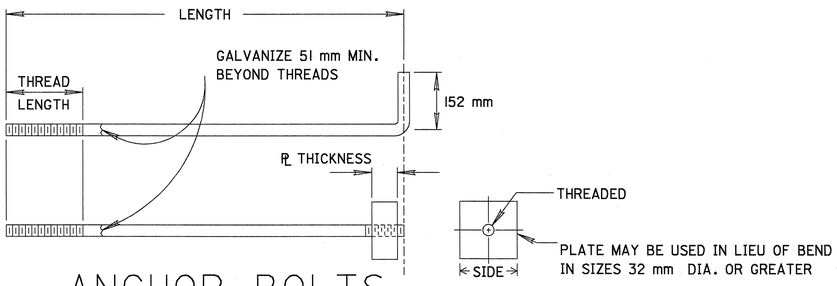


ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED

SUPPORT TYPE	TRUSS BOX SIZE	"D"	"$D_{MIN.}$"	ANCHOR BOLTS							
				CIRCLE	DIA.	LENGTH	THREAD LENGTH	P	PL THICK	PL SIDE	THREAD
7.65 AND 7.2-7.6 (AL. TRUSS)	0.91 m	1.35 m	3.35 m	279	32	1067	203	127	38	102	32 - 3.6
	1.22 m	1.70 m									
	1.52 m	2.01 m									
15.115 AND 15.8 (ST. TRUSS)	1.02 m ±	1.60 m	3.66 m	318	38	1372	229	152	38	102	38 - 4.2
	1.52 m	2.01 m									

NOTES

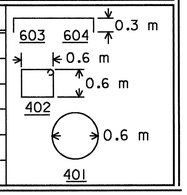
1. ANCHOR BOLTS SHALL BE TIED TO REBAR CAGE NEAR THE TOP AND BOTTOM OF THE ANCHOR BOLTS.
2. "D MIN." MAY BE DEEPER AS REQUIRED IN THE PLANS.
3. WHEN REQUIRED BY LOCAL CONDITIONS AND APPROVED BY THE ENGINEER, ALTERNATE FOUNDATION DESIGNS ARE ACCEPTABLE.
4. ALL ANCHOR BOLTS SHALL BE PROVIDED WITH ATANDARD STEEL HEX NUTS, LEVELING NUTS, PLAIN AND LOCKWASHERS. THE NUTS SHALL BE CAPABLE OF DEVELOPING THE FULL STRENGTH OF THE ANCHOR BOLTS.



ANCHOR BOLTS

REINFORCEMENT SCHEDULE
(FOR EACH FOUNDATION)

MARK	NO.	LENGTH	TYPE
401	610 mm c/c	2.29 m	401
402	305 mm c/c	2.59 m	402
601	16	D_T - 152 mm	STR.
602	8	0.6 m	STR.
603	2	D + 1.2 m	603
604	4	D + 0.6 m	604



metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

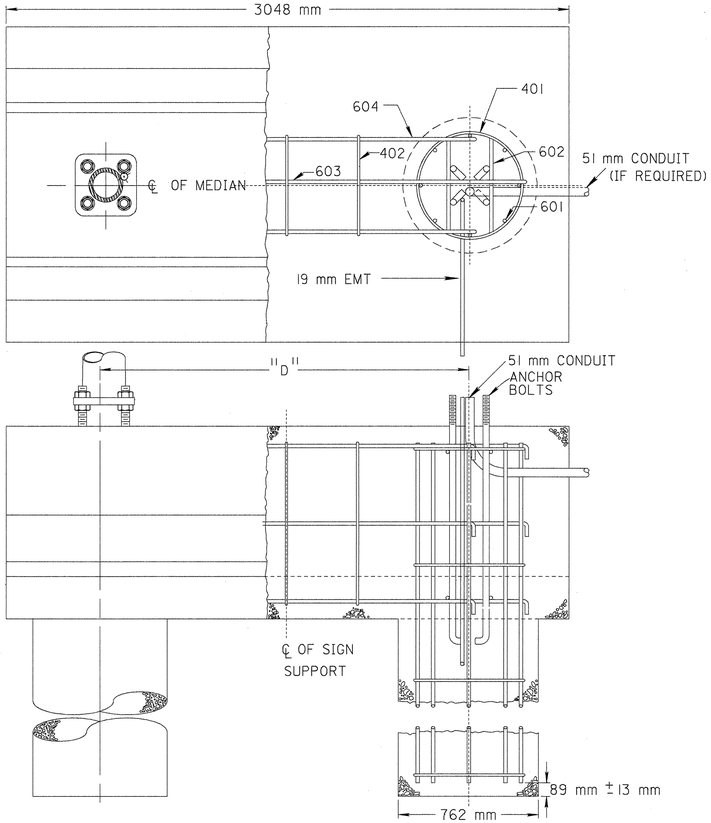
SIGN SUPPORT FOUNDATIONS

STANDARD CONSTRUCTION DRAWING TC-21.10M

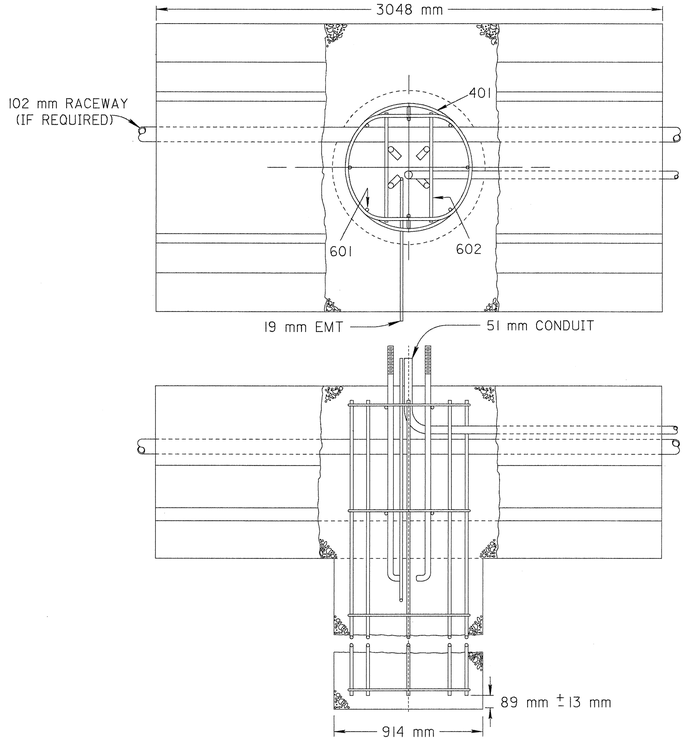
APPROVED _____ ADMINISTRATOR

DATE
02/01/94
12/10/96

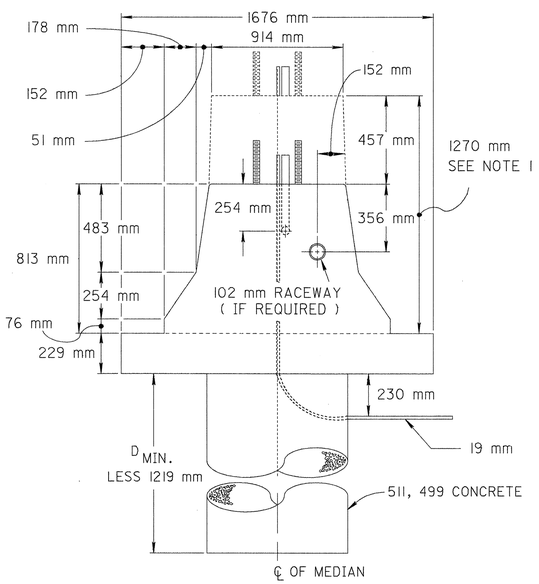
WCC



SPAN TYPE



CANTILEVER, BUTTERFLY OR CENTER MOUNT TYPE



NOTES

1. IF A 1270 mm WALL IS REQUIRED THE REINFORCING STEEL AND ANCHOR BOLTS SHALL REMAIN IN THE SAME POSITION, RELATIVE TO THE TOP OF THE WALL, AS IN THE 813 mm WALL.

2. REFER TO DRAWINGS TC-21.10M AND TC-32.10M FOR TYPICIAL DIMENSIONS WITH THE FOLLOWING MODIFICATIONS TO THE REINFORCEMENT SCHEDULES:

   813 mm WALL

   MARK 601 LENGTH = D MIN. - 330 mm
   MARK 603 NUMBER = 3
   MARK 604 NUMBER = 6
   MARK 402 VERTICAL DIMENSION = 864 mm

   1270 mm WALL

   MARK 601 LENGTH = D MIN. + 127 mm
   MARK 603 NUMBER = 4
   MARK 604 NUMBER = 8
   MARK 402 VERTICAL DIMENSION = 1321 mm

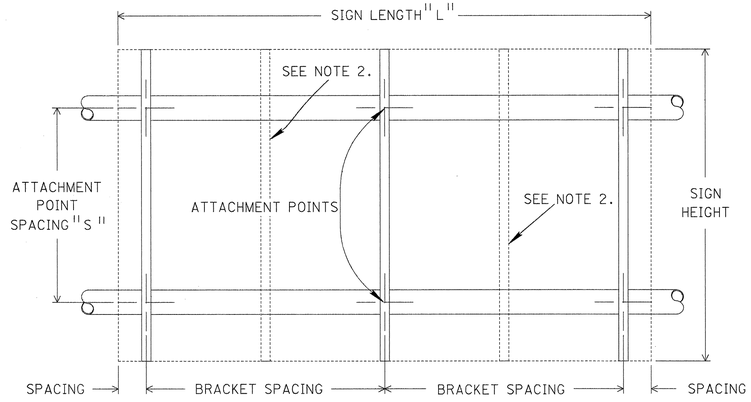
3. FOR INFORMATION REGARDING THE TRANSITION SECTIONS OF THE BARRIER WALL, SEE DRAWING MC-9.4.

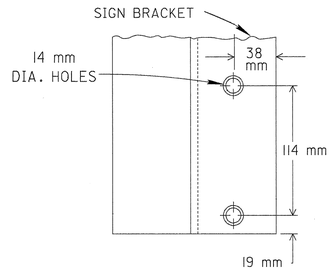
METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL	DATE 02/01/94
CONCRETE BARRIER MEDIAN OVERHEAD SIGN SUPPORT FOUNDATIONS	
STANDARD CONSTRUCTION DRAWING TC-21.40M	
APPROVED Lloyd J. Cruze ENGR. OF DESIGN SERVICES	

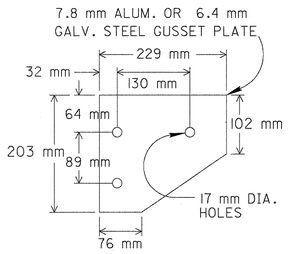
WCC



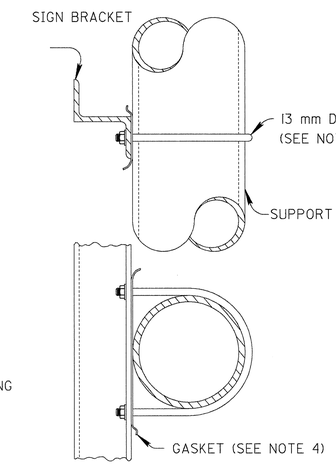


DETAIL C

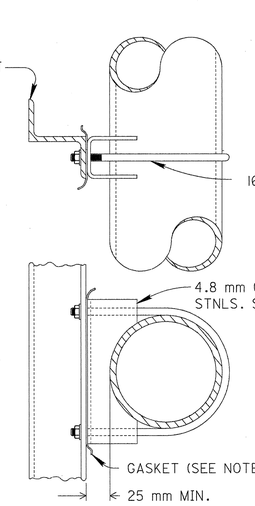
(SEE NOTE 7)



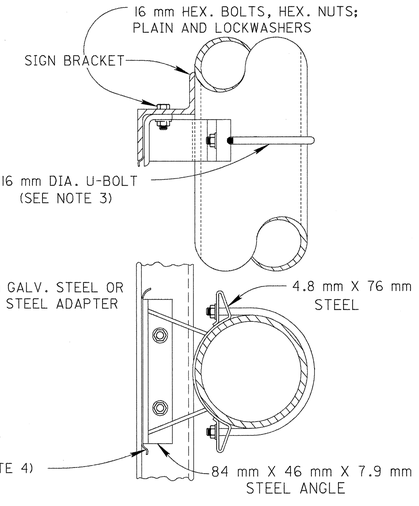
GUSSET PLATE



DOUBLE CHORDS



SINGLE ARM

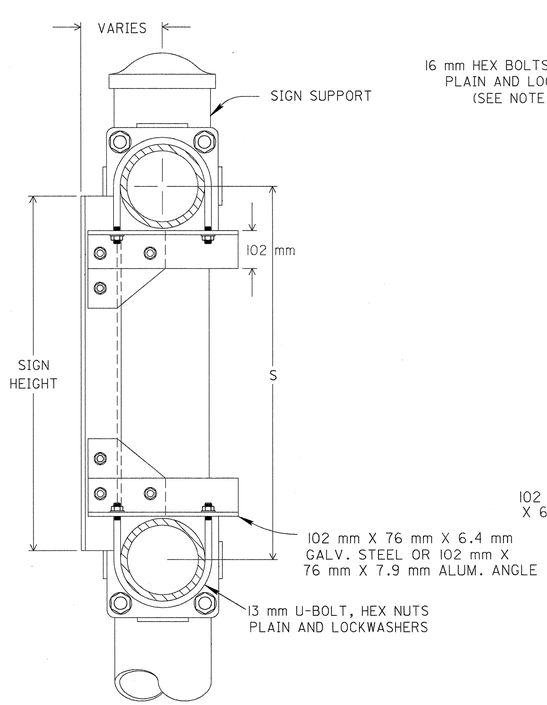


ALTERNATE CLAMP

NOTES

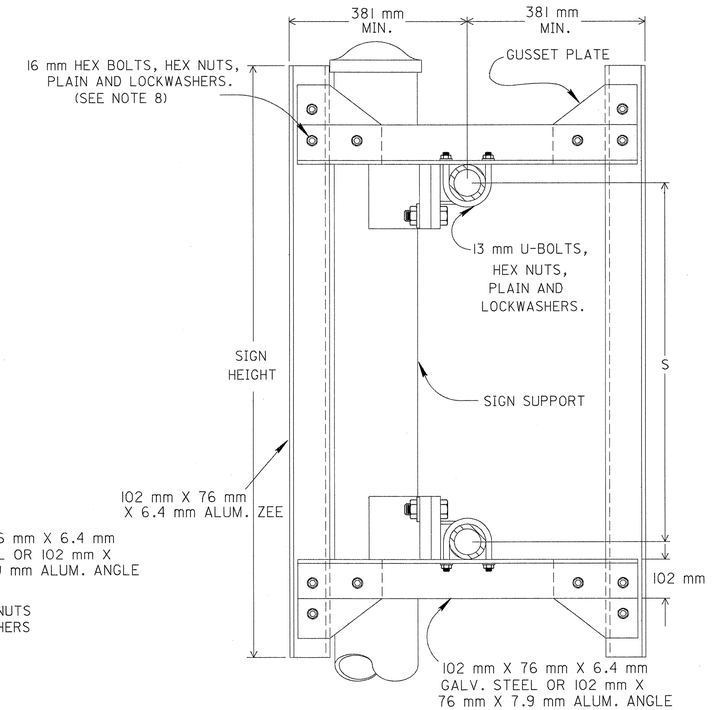
1. SIGN BRACKETS SHALL BE A 102 mm X 76 mm X 6.4 mm ALUMINUM ZEE AT 4.23 kg/m.
2. INTERMEDIATE SIGN BRACKETS SHALL BE PROVIDED IF THE SIGN EXTENDS MORE THAN 1.2 m ABOVE OR BELOW AN ATTACHMENT POINT.
3. U-BOLTS, OTHER BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL FOR USE WITH ALUMINUM CHORDS. WHEN USED WITH GALVANIZED SIGN STRUCTURES THE U-BOLTS ONLY MAY BE GALVANIZED STEEL.
4. CONTACT BETWEEN ALUMINUM AND GALVANIZED PARTS SHALL BE PREVENTED WITH A MINIMUM 1.6 mm THICK CHLOROPRENE GASKET OR APPROVED EQUAL.
5. TYPE A SHALL BE FOR SUPPORTS WHERE THE SIGN HEIGHT IS LESS THAN 0.3 m GREATER THAN THE ATTACHMENT POINT SPACING.
6. TYPE B SHALL BE FOR BACK TO BACK MOUNTED SIGNS.
7. DETAIL C - FIXTURE SUPPORT ARM MOUNTING FOR MERCURY VAPOR LIGHTED SIGNS COMPLYING WITH TC-31.21M.
8. GUSSET PLATES MAY BE ATTACHED BY BOLTING OR WELDING.

ATTACHMENT POINT SPACING			SIGN BRACKET						
SUPPORT TYPE	DESIGN	S (meter)	L (meter)	NUMBER OF BRACKETS	BRACKET SPACING (millimeters)				
7.2	1	0.7	1.2	2	150	900	150		
	2	0.9	1.5		150	1200	150		
	3	1.2	1.8		150	1500	150		
7.3	1 & 2	0.9	2.1		150	1800	150		
	3 & 4	1.2	2.4		250	1900	250		
7.4	1	0.9	2.7		400	1900	400		
7.5	2 & 3	1.2	3.0		250	2500	250		
7.6	4	1.5	3.3		400	2500	400		
7.65	6 & 6 ALT.	0.9	3.6	3	150	1650	1650	150	
	8 & 8 ALT.	1.5	3.9		150	1800	1800	150	
9.12	SINGLE ARM		4.2		200	1900	1900	200	
9.24	1 THRU 4	1.2	4.5		350	1900	1900	350	
10.48	1 THRU 5	1.2	4.8		200	1900	2500	200	
	6 THRU 8	1.8	5.1		350	1900	2500	350	
11.08	SINGLE ARM		5.4		200	2500	2500	200	
12.24	1 THRU 4	1.2	5.7		350	2500	2500	350	
	5 THRU 8	1.8	6.0	4	150	1900	1900	1900	150
12.30	1 THRU 4 ALT.	1.2	6.3		300	1900	1900	1900	300
	5 THRU 12 ALT.	1.8	6.6		150	1900	1900	2500	150
15.8	ALL	0.9	6.9		300	1900	1900	2500	300
15.115	ALL	1.5	7.2		150	1900	2500	2500	150
16.10	SINGLE ARM		7.5		300	1900	2500	2500	300
			7.8		150	2500	2500	2500	150
			8.1		300	2500	2500	2500	300



TYPE A

(SEE NOTE 5)



TYPE B

(SEE NOTE 6)

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

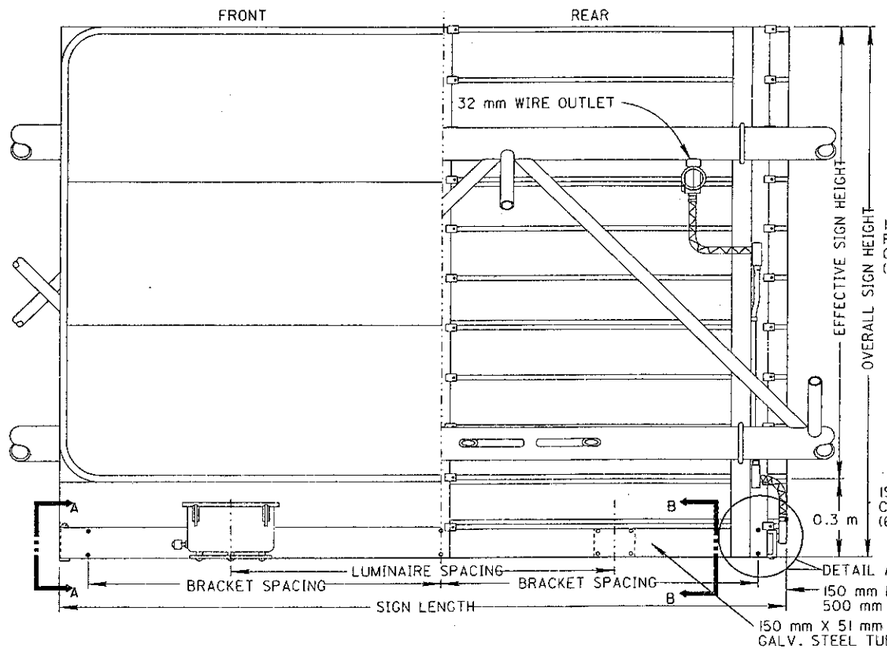
DATE 02/01/94

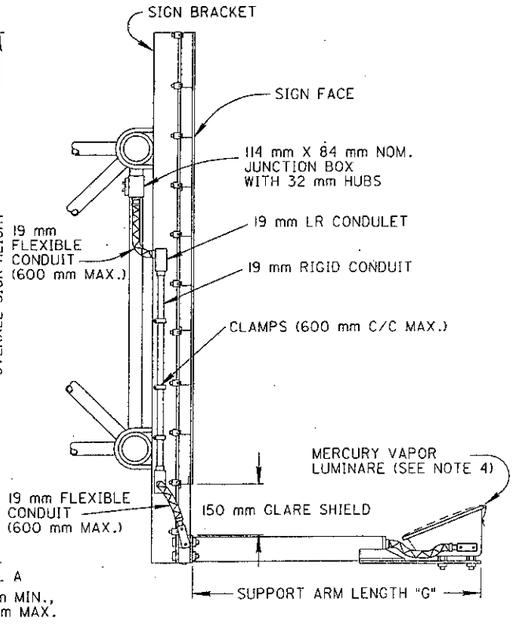
SIGN ATTACHMENT ASSEMBLIES

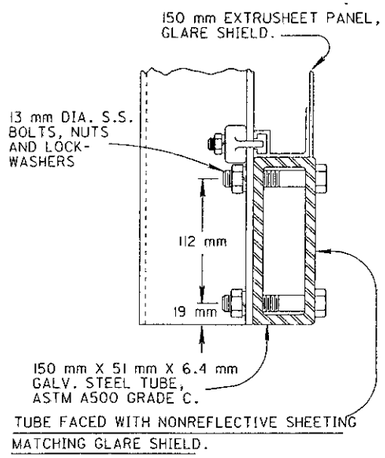
STANDARD CONSTRUCTION DRAWING TC-22.20M

APPROVED Dary L Craig ENGR. OF DESIGN SERVICES

WCC







SECTION A-A

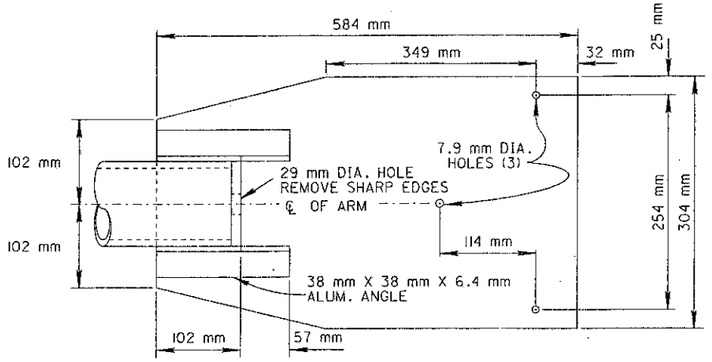
NOTES

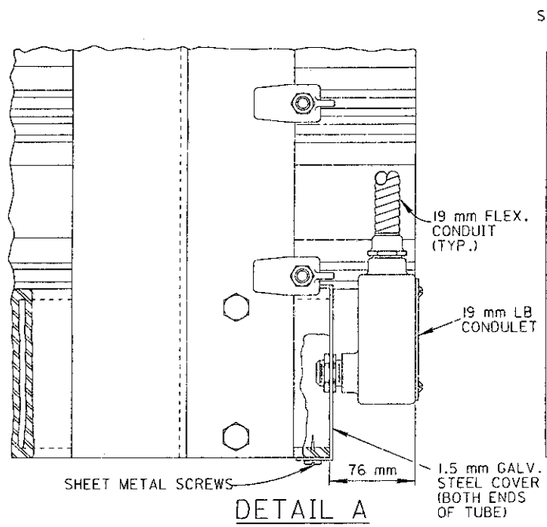
1. TWO WIRE OUTLETS SHALL BE USED FOR INSTALLATIONS OF MORE THAN TWO LUMINAIRES PER SIGN.
2. FOR MISCELLANEOUS OVERHEAD SIGN SUPPORT DETAILS, SEE DRAWING TC-22.10M.
3. THE EXIT PANEL, ATTACHED AT THE SIGN TOP, SHALL NOT BE CONSIDERED PART OF THE OVERALL SIGN HEIGHT.
4. LUMINAIRES SHALL BE ADJUSTED TO PROPER AIMING ANGLE ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
5. CONTACT BETWEEN ALUMINUM AND GALVANIZED PARTS SHALL BE PREVENTED WITH A MINIMUM 1.6 mm THICK CHLOROPRENE GASKET OR APPROVED EQUAL.

OVERALL SIGN HEIGHT	SUPPORT ARM LENGTH "G"	LAMP WATTS	ANSI LAMP CODE	BALLAST TYPE
1.5 m TO 1.8 m	0.8 m	100	H38HT-100	CMRI-100(a)
1.95 m TO 2.25 m	1.0 m	175	H39KB-175	CMRI-175(a)
2.4 m TO 3.45 m	1.3 m	175	H39KB-175	CMRI-175(a)
3.6 m TO 4.2 m	1.7 m	250	H37KB-250	CMRI-250(a)

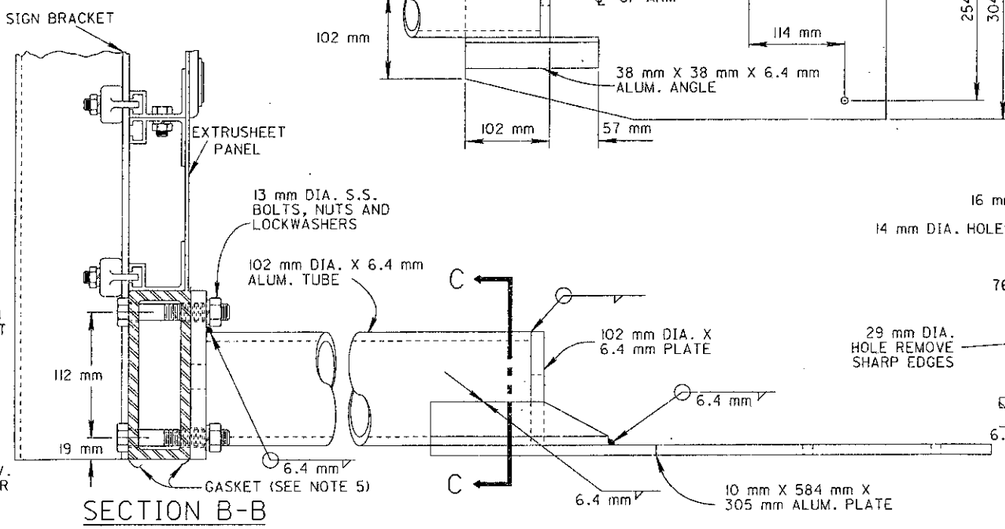
(a)=OPERATING VOLTAGE

SIGN LENGTH (METERS)	NUMBER OF LUMINAIRES	LUMINAIRE & SUPPORT ARM SPACING (METERS)					NUMBER OF BRACKETS	SIGN BRACKET SPACING (MILLIMETERS)				
1.2	1	0.6	0.6				2	150	900	150		
1.5		0.75	0.75					150	1200	150		
1.8		0.9	0.9					150	1500	150		
2.1		1.05	1.05					150	1800	150		
2.4		1.2	1.2					250	1900	250		
2.7		1.35	1.35					400	1900	400		
3.0		1.5	1.5					250	2500	250		
3.3		1.65	1.65					400	2500	400		
3.6	2	0.9	1.8	0.9			3	150	1650	1650	150	
3.9		1.05	1.8	1.05				150	1800	1800	150	
4.2		1.2	1.8	1.2				200	1900	1900	200	
4.5		1.35	1.8	1.35				350	1900	1900	350	
4.8		1.2	2.4	1.2				200	1900	2500	200	
5.1		1.35	2.4	1.35				350	1900	2500	350	
5.4		1.2	3.0	1.2				200	2500	2500	200	
5.7		1.35	3.0	1.35				350	2500	2500	350	
6.0	3	1.2	1.8	1.8	1.2		4	150	1900	1900	1900	150
6.3		1.35	1.8	1.8	1.35			300	1900	1900	1900	300
6.6		1.2	2.1	2.1	1.2			150	1900	1900	2500	150
6.9		1.35	2.1	2.1	1.35			300	1900	1900	2500	300
7.2		1.2	2.4	2.4	1.2			150	1900	2500	2500	150
7.5		1.35	2.4	2.4	1.35			300	1900	2500	2500	300
7.8	4	1.2	1.8	1.8	1.8	1.2		150	2500	2500	2500	150
8.1		1.35	1.8	1.8	1.8	1.35		300	2500	2500	2500	300

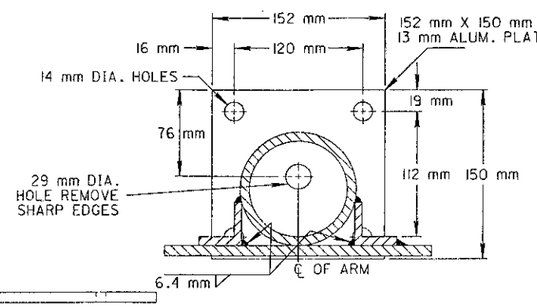




DETAIL A



SECTION B-B



SECTION C-C

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

DATE 03/31/94

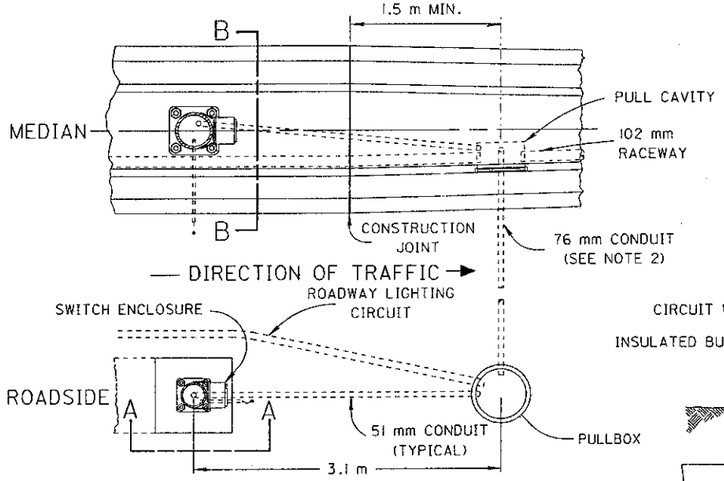
MERCURY VAPOR SIGN LIGHTING DETAILS II

STANDARD CONSTRUCTION DRAWING

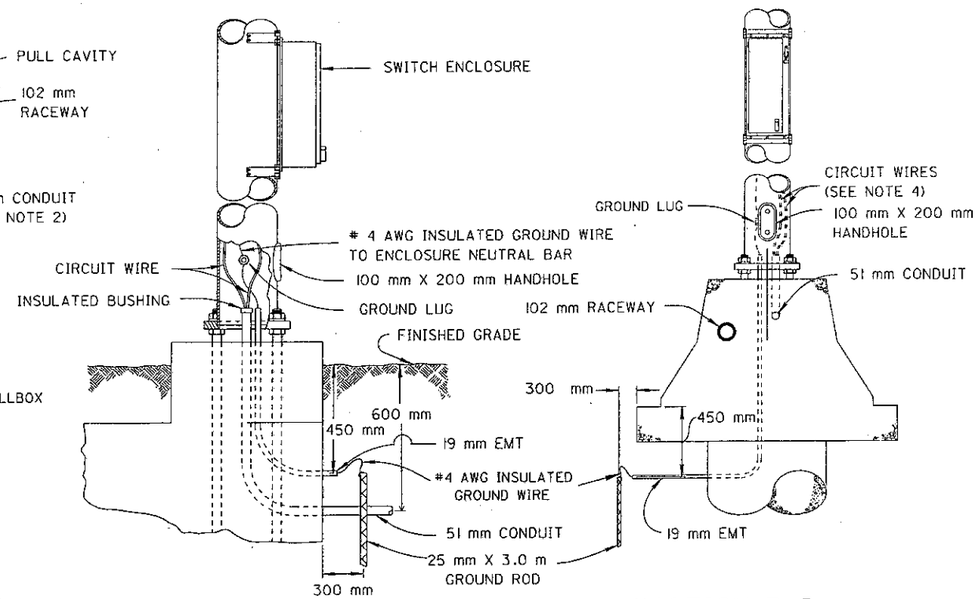
TC-31.21M

APPROVED _____ ENGR. OF DESIGN SERVICES

WCC

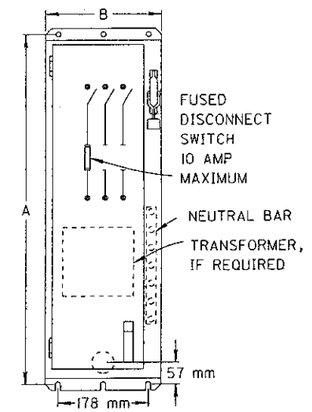


SIGN SERVICE



SECTION A-A

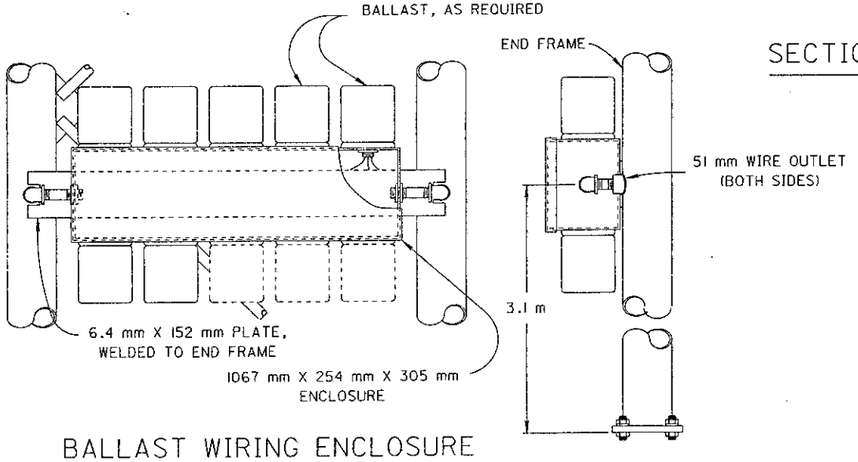
SECTION B-B



SWITCH ENCLOSURE

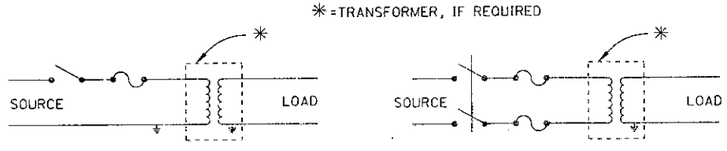
NOMINAL DIMENSIONS

TYPE	A	B	DEPTH
X	406 mm	228 mm	168 mm



BALLAST WIRING ENCLOSURE

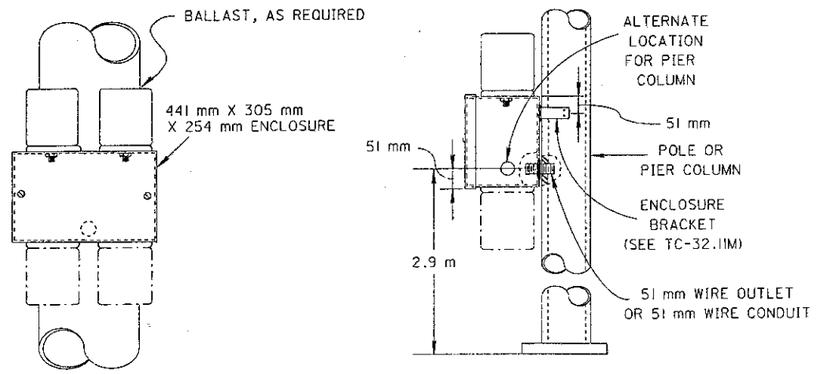
TYPE A



GROUNDED SERVICE

UNGROUNDED SERVICE

ENCLOSURE WIRING



BALLAST WIRING ENCLOSURE

TYPE B

NOTES

1. ELECTRICAL SERVICE FOR OVERHEAD SIGN SUPPORTS SHALL, WHENEVER POSSIBLE, BE PROVIDED FROM A ROADWAY LIGHTING PULLBOX.
2. 76 mm CONDUIT SHALL BE USED TO PROVIDE CROSSOVER ACCESS BETWEEN SIGN SUPPORT AND LIGHTING CIRCUITS.
3. GROUND ONLY THE TRANSFORMER SECONDARY SIDE WITH UNGROUNDED SERVICE.
4. THE CIRCUIT WIRE FROM PULLBOX TO DISCONNECT SWITCH SHALL BE THE SAME AS THE LIGHTING CIRCUIT WIRE.

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

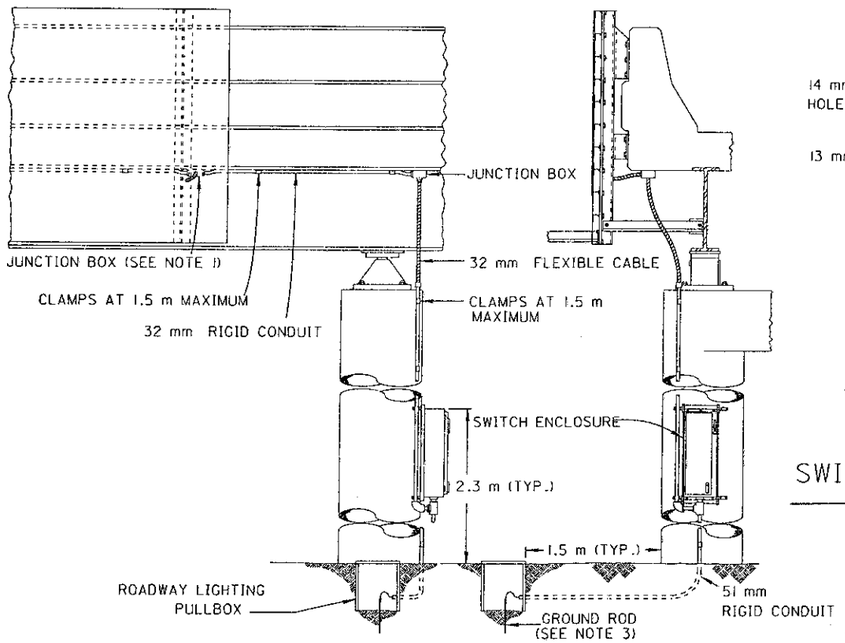
DATE 03/31/94

SIGN SERVICE
DETAILS I

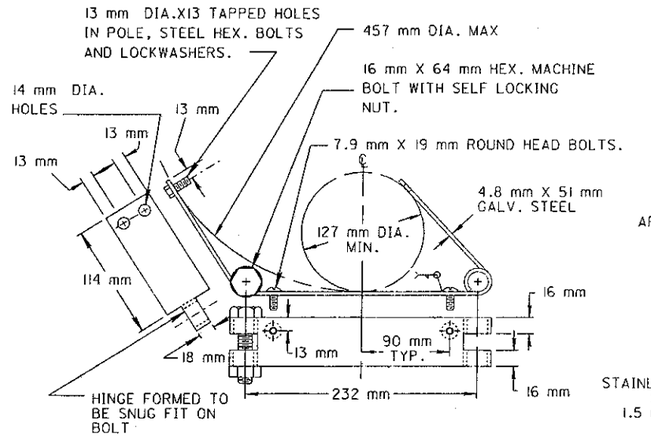
STANDARD CONSTRUCTION DRAWING TC-32.10M

APPROVED _____ ENGR. OF DESIGN SERVICES

WCC

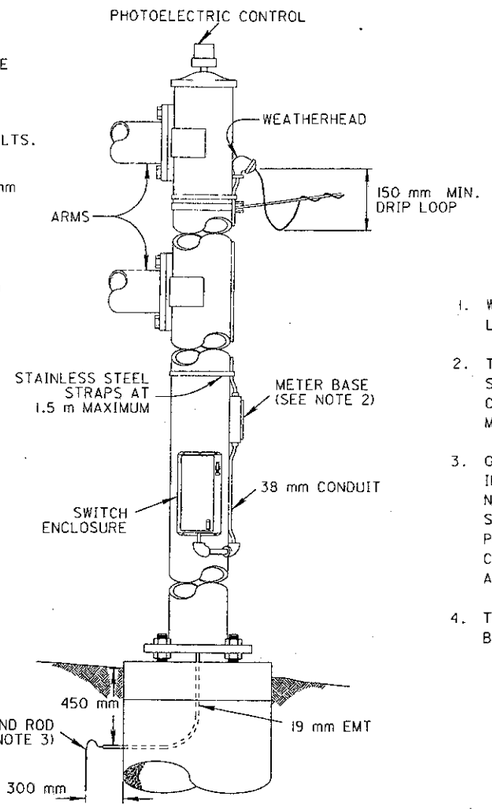


OVERPASS STRUCTURE MOUNTED SIGN



SWITCH ENCLOSURE MOUNTING BRACKET

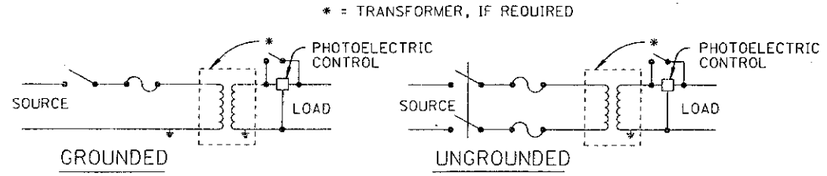
OVERHEAD SIGN SUPPORT



DIRECT DROP SERVICE

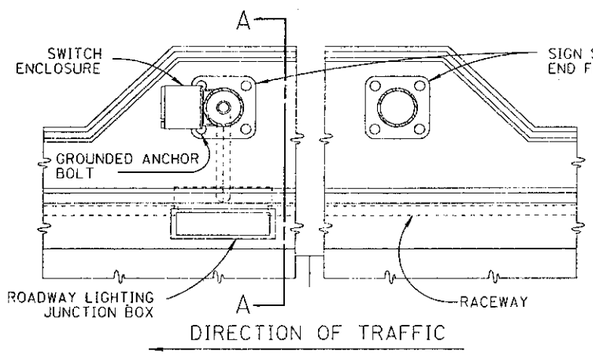
NOTES

1. WIRING FROM THE JUNCTION BOX BEHIND THE SIGN TO THE LUMINAIRES SHALL BE AS SHOWN ON DRAWING TC-31.2IM.
2. THE METER BASE SHALL BE FURNISHED BY THE POWER SUPPLYING AGENCY AND SHALL BE INSTALLED BY THE CONTRACTOR WHEN METERING IS REQUIRED. THE TOP OF THE METER BASE SHALL NOT EXCEED 1.8 METERS ABOVE THE GROUND.
3. GROUNDING SHALL BE ACCOMPLISHED BY USE OF A #4 INSULATED GROUND WIRE FROM THE SWITCH ENCLOSURE NEUTRAL BAR TO THE GROUND ROD OR STRUCTURE GROUNDING SYSTEM WITH CONNECTION TO THE GROUNDING LUG ON POLE TYPE SUPPORTS. ALL CONDUITS OR SUPPORT MEMBERS CONTAINING CIRCUIT WIRE SHALL BE INSTALLED TO PROVIDE A CONTINUOUS GROUND TO THE NEUTRAL BAR.
4. THE ALTERNATE GROUND CONNECTION SHALL BE USED FOR BRIDGES WITHOUT STEEL BEAMS.

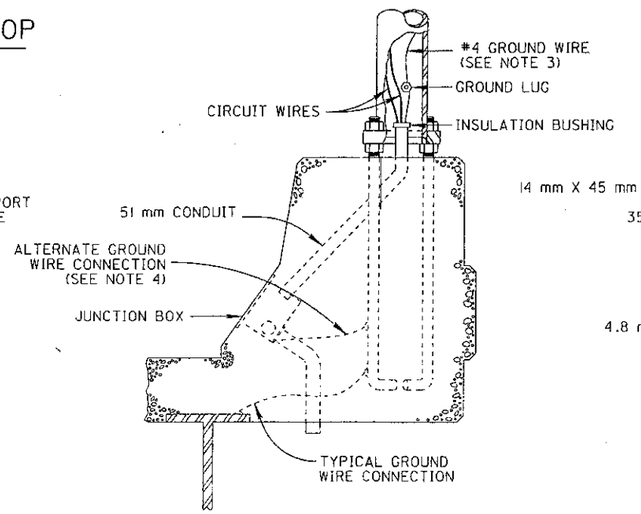


WIRING FOR DIRECT DROP

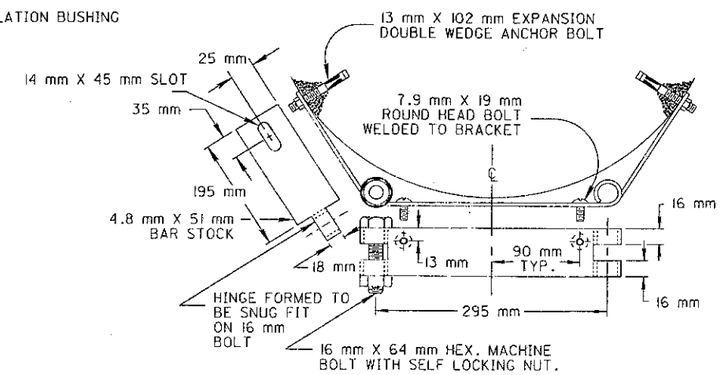
(UNCONTROLLED SERVICE)



OVERHEAD SIGN ON PARAPET



SECTION A-A



SWITCH ENCLOSURE MOUNTING BRACKET

BRIDGE

METRIC

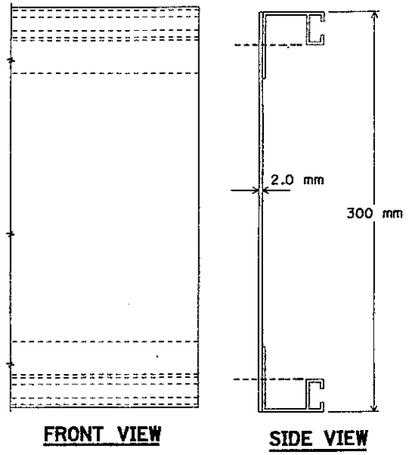
BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL	DATE 03/31/94
SIGN SERVICE DETAILS II.	
STANDARD CONSTRUCTION DRAWING TC-32.11M	

APPROVED _____ ENGR. OF DESIGN SERVICES

WCC

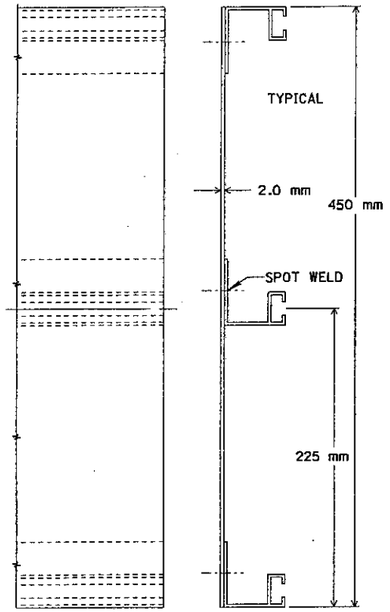
300 mm BOLTED EXTRUSHEET PANEL



FRONT VIEW

SIDE VIEW

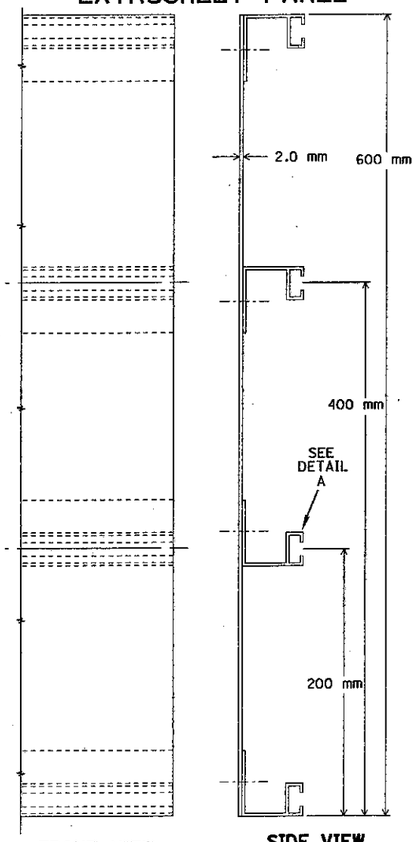
450 mm BOLTED EXTRUSHEET PANEL



FRONT VIEW

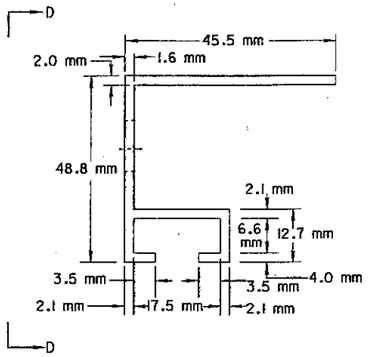
SIDE VIEW

600 mm BOLTED EXTRUSHEET PANEL

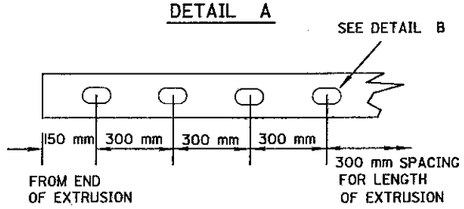


FRONT VIEW

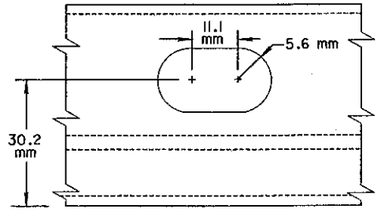
SIDE VIEW



DETAIL A



SECTION D-D

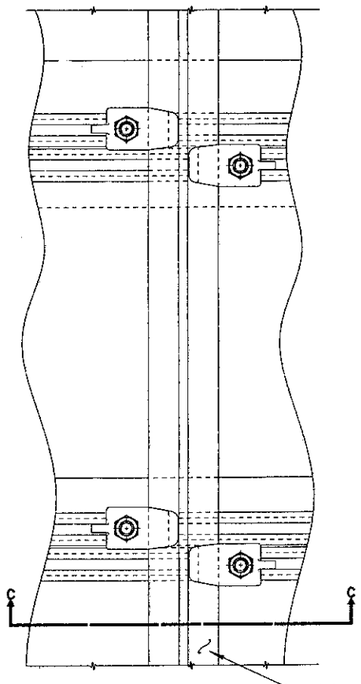


DETAIL B

NOTES

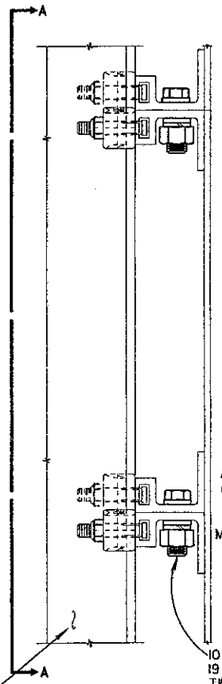
1. COMBINATIONS OF 300 mm, 450 mm AND 600 mm PANELS SHOULD BE USED TO ATTAIN REQUIRED SIGN HEIGHT. 750 mm, 900 mm, 1050 mm, 1200 mm PANEL HEIGHTS ARE ALLOWED, BUT THEIR USE IS NOT REQUIRED.
2. THE PANELS SHALL BE ERECTED HORIZONTALLY AND BOLTED ON 600 mm CENTERS.
3. THE PANELS SHALL BE FASTENED TO EACH VERTICAL SUPPORT MEMBER WITH MOUNTING CLIPS; ALTERNATELY AT EACH HORIZONTAL EXTRUSION; BOTH SIDES AT EACH JOINT, AND BOTH SIDES AT TOP AND BOTTOM EDGES OF SIGNS.
4. FOR THE 150 mm GLARE SHIELD EXTRUSHEET PANEL, CHANGE THE 300 mm DIMENSION IN THE 300 mm BOLTED EXTRUSHEET PANEL DETAIL TO 150 mm. ALL OTHER DETAILS ARE THE SAME.
5. SPOT WELDS SHALL BE SPACED AT A MAXIMUM OF 100 mm CENTER TO CENTER.

PANEL HEIGHT (MILLIMETERS)	NO. OF STIFFENERS
150	2
300	2
450	3
600	4
750	4
900	5
1050	6
1200	7

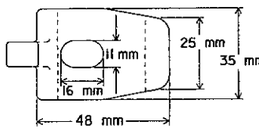


SECTION A-A

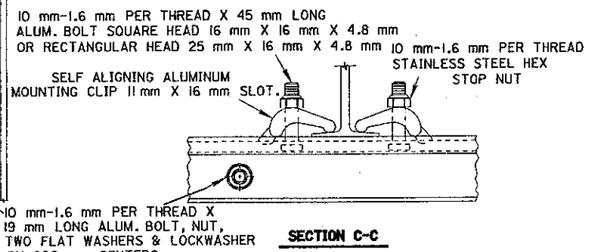
BEAM SUPPORT



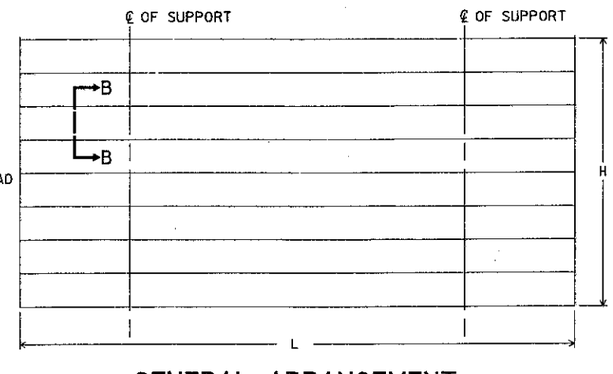
SECTION B-B



CLIP DETAIL



SECTION C-C



GENERAL ARRANGEMENT

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

DATE 09/30/94

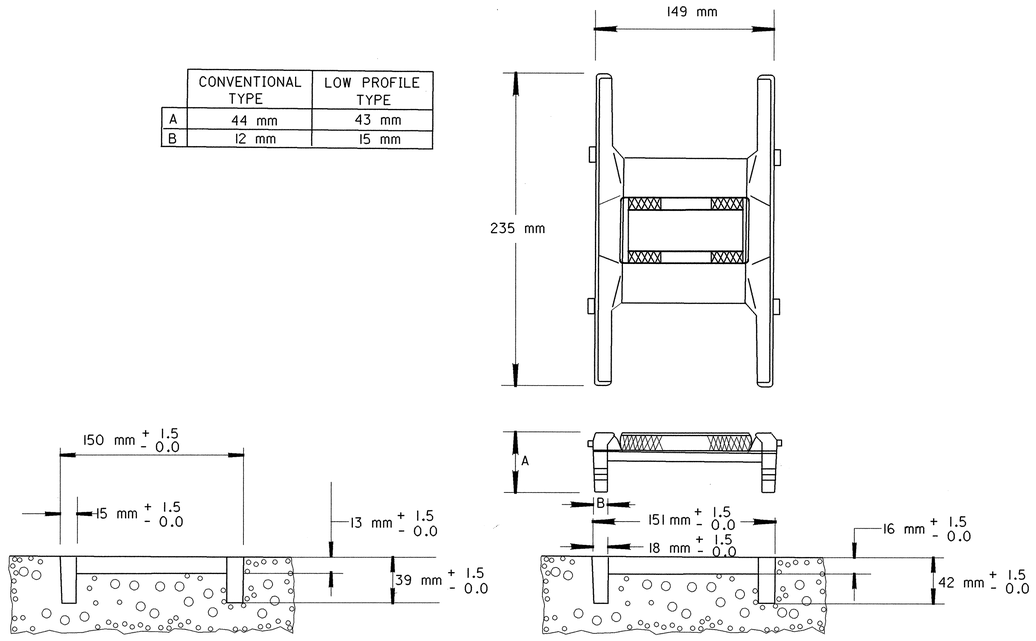
ALUMINUM BOLTED-EXTRUSHEET PANEL SIGN

STANDARD CONSTRUCTION DRAWING TC-51.11M

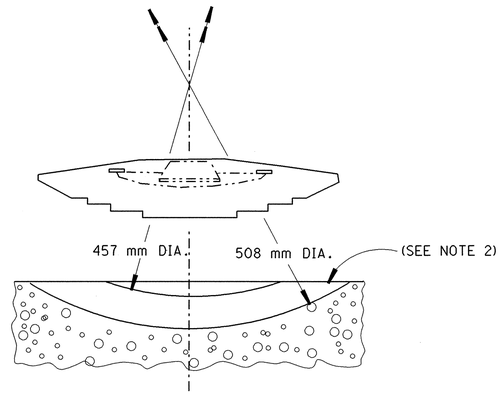
APPROVED _____ ENGR. OF DESIGN SERVICES

WCC

	CONVENTIONAL TYPE	LOW PROFILE TYPE
A	44 mm	43 mm
B	12 mm	15 mm



OPTIONAL FOR CONVENTIONAL TYPE



NOTES

1. CENTER LINE MARKERS SHALL BE PLACED BETWEEN THE TWO LINES. MARKERS INSTALLED ALONG AN EDGE LINE OR CHANNELIZING LINE SHALL BE PLACED SO THAT THE CASTING IS NO MORE THAN 25 mm FROM THE NEAR EDGE OF THE LINE. MARKERS INSTALLED ALONG A LANE LINE OR DASHED YELLOW CENTER LINE SHALL BE PLACED BETWEEN AND IN LINE WITH THE DASHES. MARKERS SHALL NOT BE PLACED OVER THE LINES EXCEPT WHERE THE LINES DEVIATE VISIBLY FROM THEIR CORRECT ALIGNMENT, AND THEN ONLY WITH THE APPROVAL OF THE ENGINEER.

2. TO FACILITATE THE CUTTING OF THE TWO PARALLEL SLOTS AND INTERVENING CONCAVED SURFACE SIMULTANEOUSLY, IT IS RECOMMENDED THAT AN ARBOR AND SAW BLADES ASSEMBLY BE USED. FOR ADDITIONAL DETAILS AND TOLERANCES OF THE CASTING AND ARBOR-SAW ASSEMBLY CONTACT THE CASTING MANUFACTURE.

3. FOR HORIZONTAL CURVE RADIUS OF 380 METERS OR LESS, THE SPACING OF THE CENTER LINE MARKERS SHALL BE REDUCED TO 12 m BETWEEN P.C. OR T.S. AND P.T. OR S.T.

4. FOR HORIZONTAL CURVE RADIUS OF 250 METERS OR LESS, THE SPACING OF THE CENTER LINE MARKERS MAY BE REDUCED TO 6 m BETWEEN P.C. OR T.S. AND P.T. OR S.T. WHEN USING 6m SPACING, 12 RAISED PAVEMENT MARKERS AT 12 m SPACING SHALL BE INSTALLED ON EACH END OF THE 6 m SPACING.

5. WHEN A CHANNELIZING LINE IS LESS THAN 24 m IN LENGTH, ONE RAISED PAVEMENT MARKER SHALL BE PLACED AT EACH END OF THE LINE AND ONE SHALL BE PLACED IN THE CENTER OF THE LINE.

6. RAISED PAVEMENT MARKERS ON LANE LINES ON FREEWAYS SHALL BE ONE WAY WHITE SPACED AT 36 METERS. ALL OTHER RAISED PAVEMENT MARKERS ON LANE LINES ON MULTILANE OR DIVIDED ROADWAYS SHALL BE TWO WAY RED/WHITE SPACED AT 24 METERS.

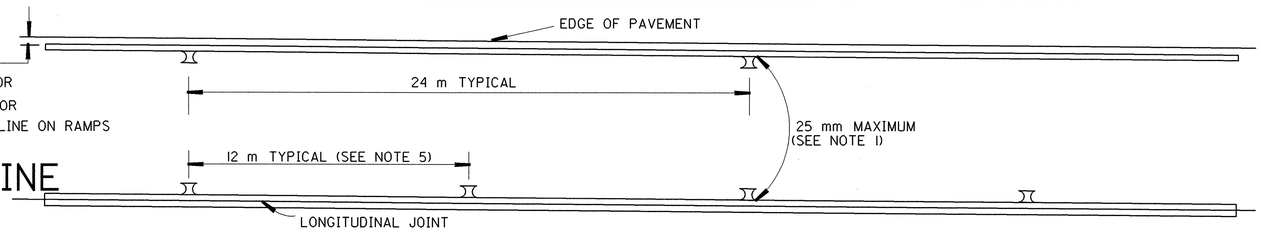
CASTING AND SAW CUT DETAILS

EDGE LINE

ONE WAY (WHITE) WITH RIGHT EDGE LINE OR
ONE WAY (YELLOW) WITH LEFT EDGE LINE OR
TWO WAY (YELLOW/RED) WITH LEFT EDGE LINE ON RAMPS
YELLOW SIDE FACING TRAFFIC

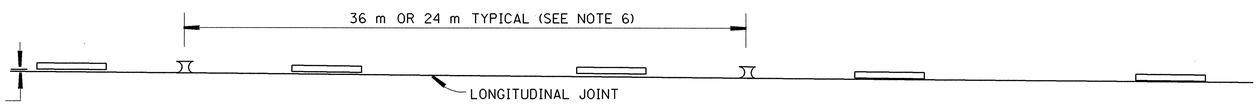
CHANNELIZING LINE

TWO WAY (WHITE/RED)
WHITE SIDE FACING TRAFFIC



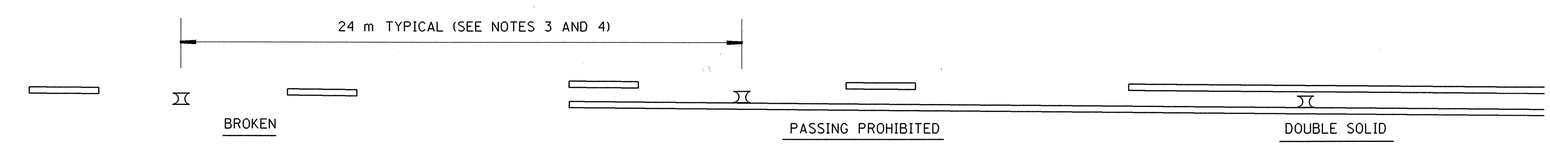
LANE LINE

ONE WAY (WHITE) OR
TWO WAY (WHITE/RED)
WHITE SIDE FACING TRAFFIC



CENTER LINE

TWO WAY (YELLOW/YELLOW)



TYPICAL RAISED PAVEMENT MARKER PLACEMENT WITH LONGITUDINAL PAVEMENT MARKINGS

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

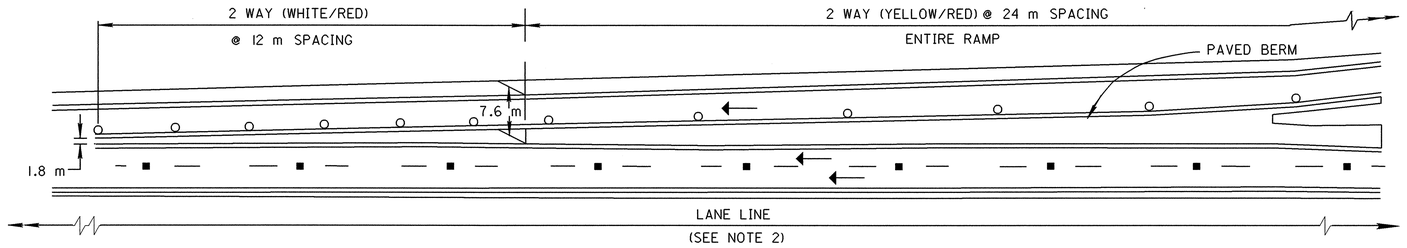
RAISED PAVEMENT MARKER INSTALLATION DETAILS

DATE
11/03/93
11/01/95

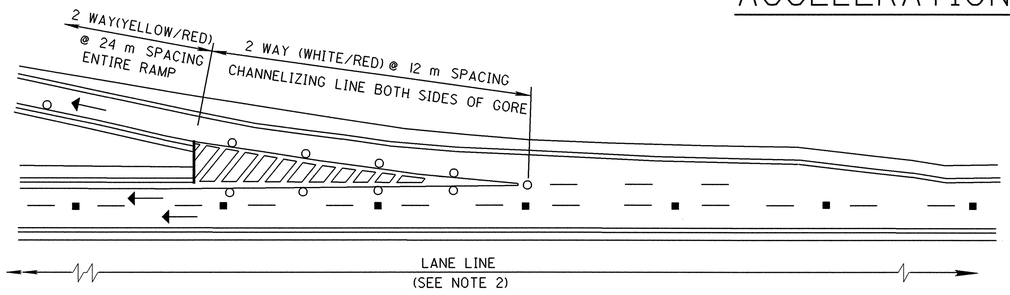
STANDARD CONSTRUCTION DRAWING TC-65.10M

APPROVED _____ ADMINISTRATOR

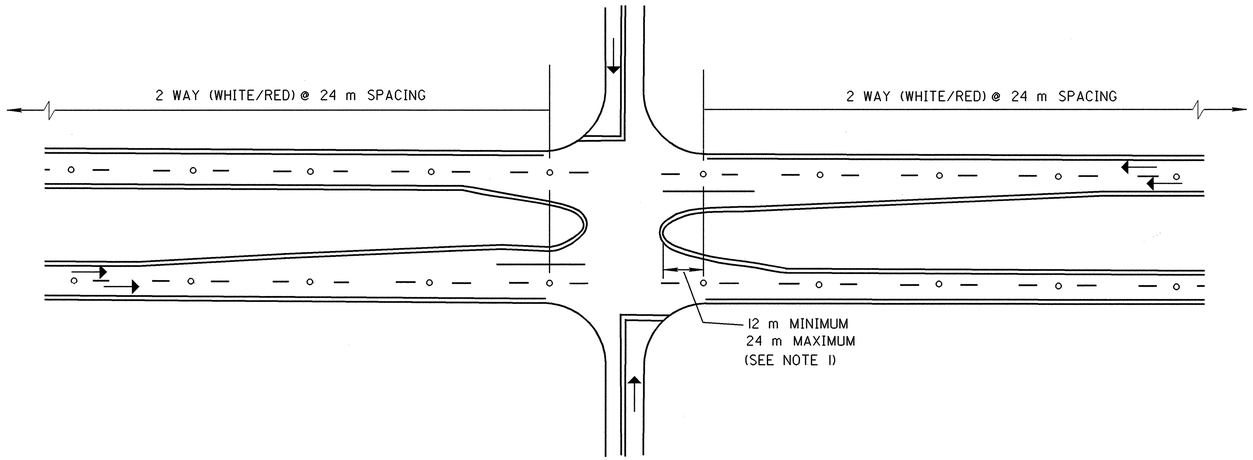
WCC



ACCELERATION LANE

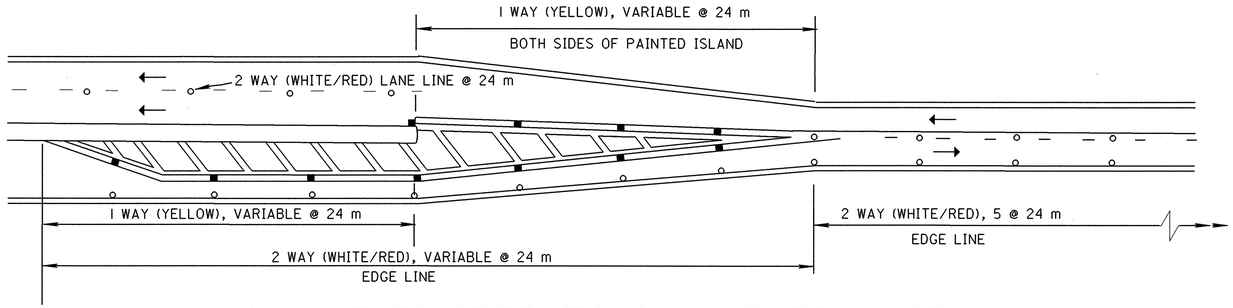


DECELERATION LANE

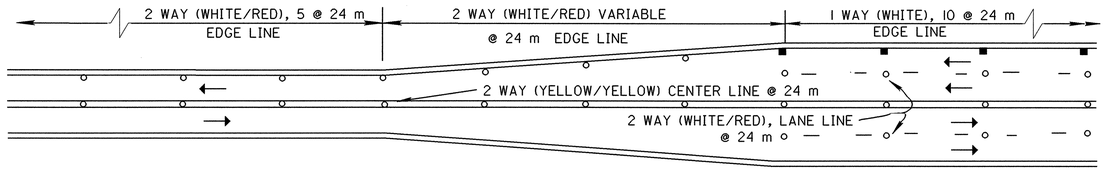


MULTILANE DIVIDED-CONTROLLED ACCESS

(SEE NOTE 2)



4 LANE DIVIDED TO 2 LANE TRANSITION



4 LANE UNDIVIDED TO 2 LANE TRANSITION

NOTES

1. RAISED PAVEMENT MARKERS SHALL NOT BE PLACED IN THE DIRECTIONAL ROADWAYS WITHIN THE INTERSECTION AREA.
2. RAISED PAVEMENT MARKERS ON LANE LINES ON FREEWAYS SHALL BE ONE WAY WHITE SPACED AT 36 METERS. ALL OTHER RAISED PAVEMENT MARKERS ON LANE LINES ON MULTILANE OR DIVIDED ROADWAYS SHALL BE TWO WAY RED/WHITE SPACED AT 24 METERS.

LEGEND

- ■ 1 WAY REFLECTORS
- ○ 2 WAY REFLECTORS

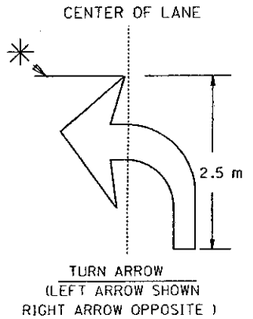
STATE OF OHIO DEPARTMENT OF TRANSPORTATION

metric units

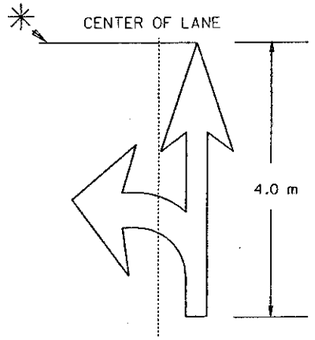
OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL	DATE 11/03/93 11/01/95
RAISED PAVEMENT MARKER DETAILS I	
STANDARD CONSTRUCTION DRAWING TC-65.11M	
APPROVED _____ ADMINISTRATOR	

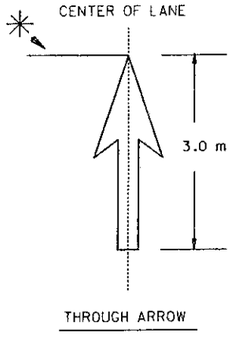
WCC



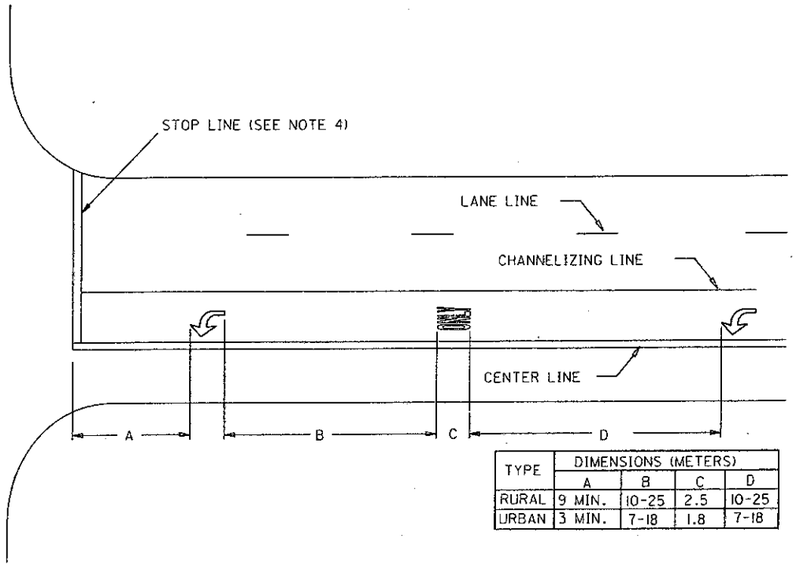
TURN ARROW
(LEFT ARROW SHOWN
RIGHT ARROW OPPOSITE)



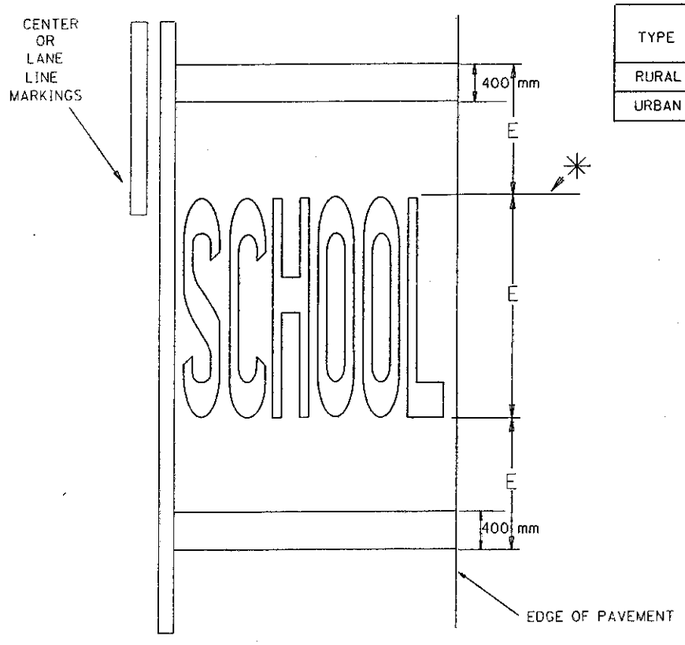
COMBINED ARROW
(THREE HEAD DIRECTIONAL ARROWS
CAN BE ACHIEVED BY THE COMBINATION
OF TURN ARROWS.)



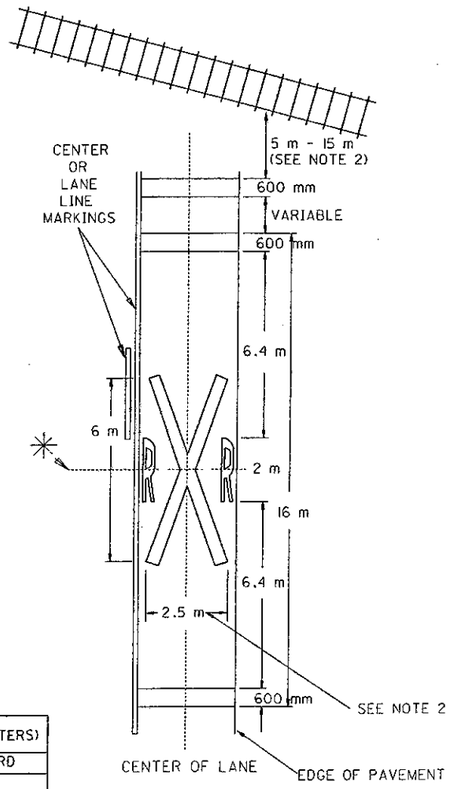
THROUGH ARROW

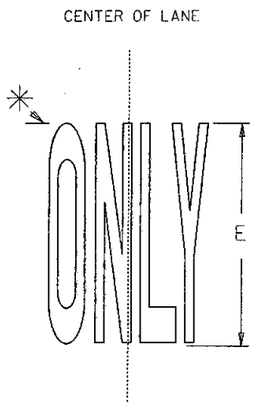


TYPE	DIMENSIONS (METERS)			
	A	B	C	D
RURAL	9 MIN.	10-25	2.5	10-25
URBAN	3 MIN.	7-18	1.8	7-18



TYPE	E (MILLIMETERS)
	STANDARD
RURAL	2500
URBAN	1800





NOTES

1. ON MULTI-LANE APPROACHES, THE TRANSVERSE LINES USED WITH THE RAILROAD SYMBOLS SHALL EXTEND ACROSS ALL APPROACH LANES AND SYMBOLS SHALL BE PLACED IN EACH APPROACH LANE.

2. THE RAILROAD SYMBOL SHALL BE LOCATED SO THAT THE W-94, "RAILROAD ADVANCE WARNING SIGN", IS WITHIN THE TWO TRANSVERSE BOUNDARY LINES OF THE RAILROAD SYMBOL. THE STOP LINE SHALL BE LOCATED FOR BEST SIGHT DISTANCE WITHIN 5 METERS TO 15 METERS OF THE NEAR EDGE OF THE TRACKS. WIDTH OF "X" MAY VARY ACCORDING TO LANE WIDTH. STOP LINES SHALL BE APPROXIMATELY 2.4 METERS FROM A GATE (IF PRESENT).

3. PREFERABLY, THE WORD "SCHOOL" SHOULD BE CONTAINED IN A SINGLE LANE. ON ONE LANE APPLICATIONS, THE TRANSVERSE LINES SHALL EXTEND ACROSS THE LANE WHICH APPROACHES THE ZONE WITH THE WORD "SCHOOL" CENTERED ACROSS THAT LANE. FOR TWO APPROACH LANES, EACH LANE SHOULD HAVE A SEPARATE WORD "SCHOOL" CENTERED ACROSS IT. ON TWO LANE, TWO WAY ROADWAYS WITH INSUFFICIENT PAVEMENT WIDTH, THE WORD AND TRANSVERSE LINES SHALL EXTEND ACROSS BOTH LANES OF TRAFFIC. ON FOUR LANE, TWO WAY ROADWAYS WITH INSUFFICIENT PAVEMENT WIDTH, THE WORD AND TRANSVERSE LINES SHALL EXTEND ACROSS BOTH LANES ENTERING THE SCHOOL ZONE. CENTER OR LANE LINES SHALL NOT PASS THROUGH THE "SCHOOL" MARKING.

4. THE STOP LINE SHOULD BE PLACED WHERE CROSS-CORNER VISION IS MAXIMUM, IN NO CASE MORE THAN 9.1 METERS OR LESS THAN 1.2 METERS FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY. FOR NORMAL INTERSECTIONS A MAXIMUM DISTANCE OF 3 METERS IS RECOMMENDED.

   IF A MARKED CROSSWALK IS PRESENT, THE STOP LINE SHOULD BE PLACED 1.2 METERS IN ADVANCE OF AND PARALLEL TO THE NEAREST CROSSWALK LINE.

5 FOR TRAFFIC PAINT AND POLYESTER APPLICATION, TEMPLATE GAPS SHALL BE FILLED WITH MARKING MATERIAL IN ACCORDANCE WITH 641.03. FOR EXTRUDED THERMOPLASTIC MATERIAL, THESE GAPS MAY REMAIN UNFILLED IN ACCORDANCE WITH 644.03.

6. USE STANDARD DIMENSIONS CONFORMING TO REQUIREMENTS OF OMUTCD SECTIONS 3B-40, 3B-41 AND 3B-43 WHICH CONFORMS TO THE 1977 METRIC EDITION STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKING WITH ERRATA.

✳ - INDICATES STATION REFERENCE POINT

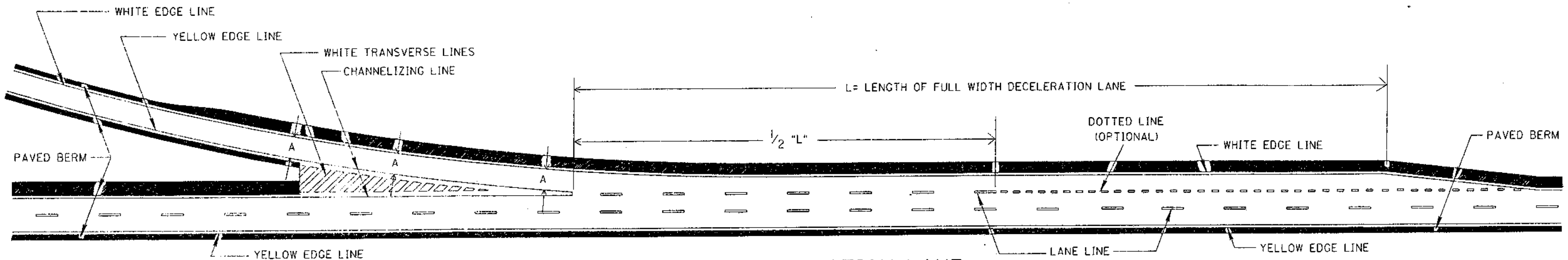
METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

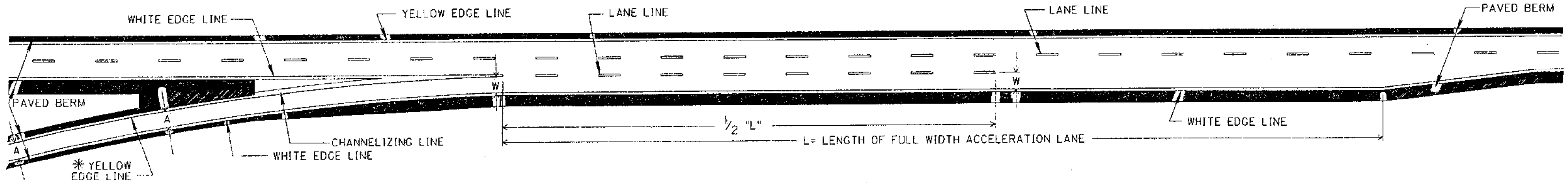
TRAFFIC CONTROL	DATE 09/01/93
WORDS , SYMBOLS AND ARROWS	
STANDARD CONSTRUCTION DRAWING TC-71.10M	

APPROVED _____ ENGR. OF DESIGN SERVICES

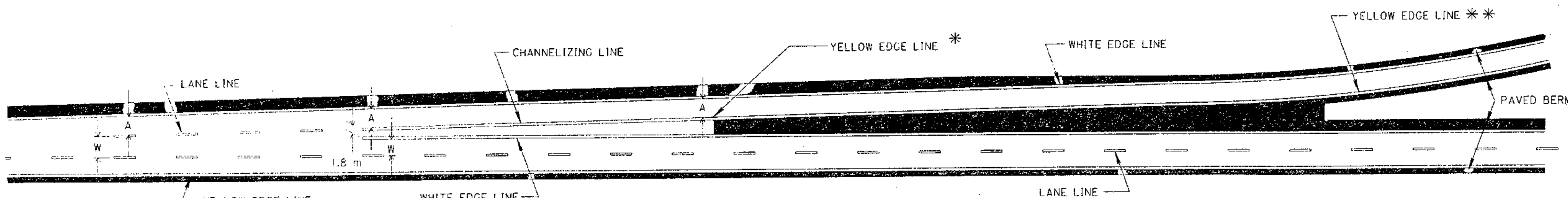
WCC



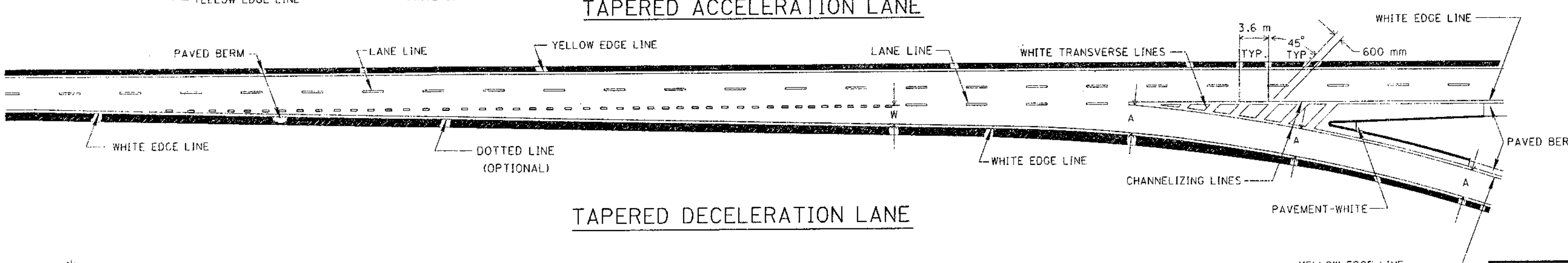
PARALLEL DECELERATION LANE



PARALLEL ACCELERATION LANE



TAPERED ACCELERATION LANE



TAPERED DECELERATION LANE

* THE RAMP YELLOW EDGE LINE SHALL EXTEND TO WHERE THE PAVED BERM ENDS.

** ANY EXISTING CURB SHALL BE PAINTED WHITE.

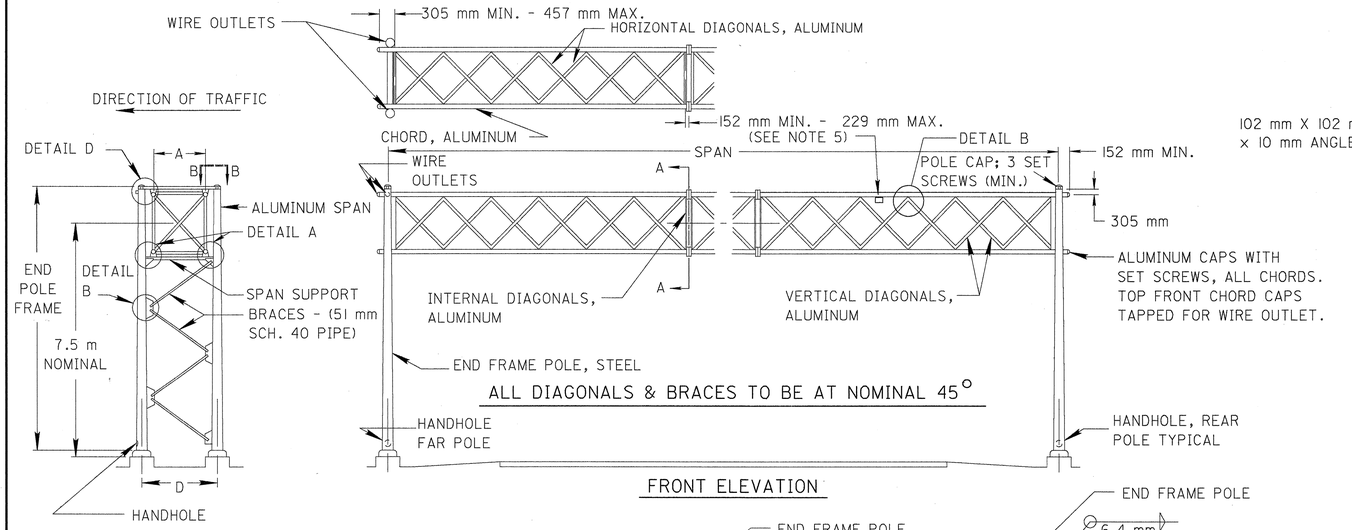
A = UNIFORM RAMP WIDTH

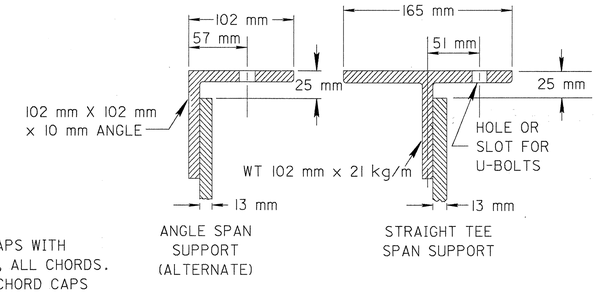
W = LANE WIDTH

METRIC

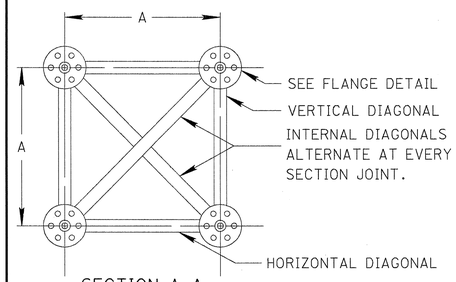
BUREAU OF DESIGN SERVICES DIVISION OF HIGHWAYS OHIO DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL	DATE 09/01/93
FREEWAY ENTRANCE AND EXIT MARKINGS	
STANDARD CONSTRUCTION DRAWING TC-72.20M	
APPROVED [signature] ENGR. OF DESIGN SERVICES	

WCC

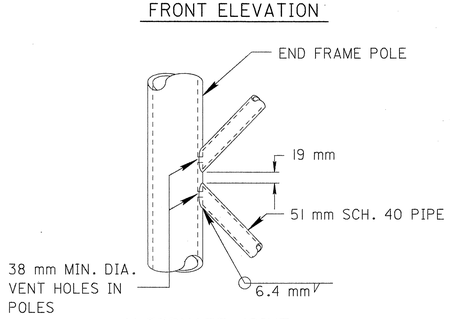




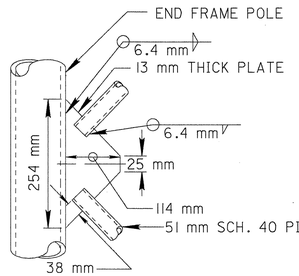
SECTION D-D



SECTION A-A

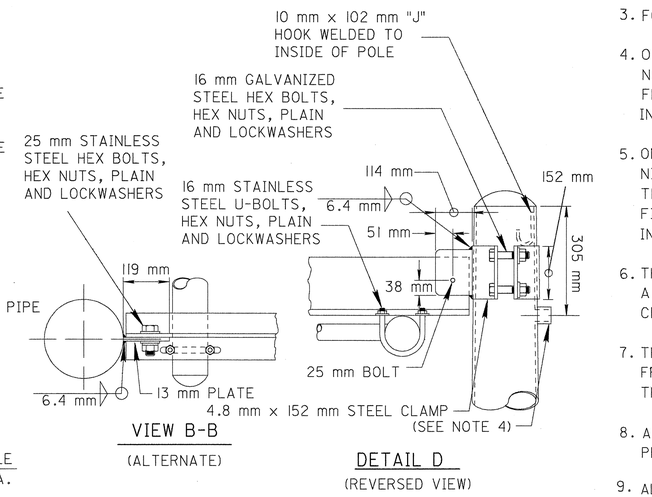


ALTERNATE JOINT



DETAIL B

(SEE NOTE 7)



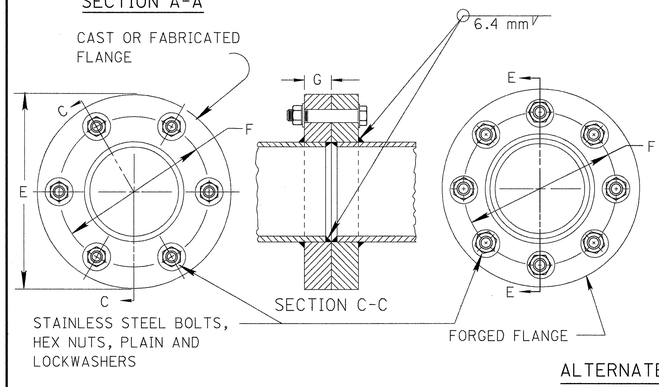
VIEW B-B

(ALTERNATE)

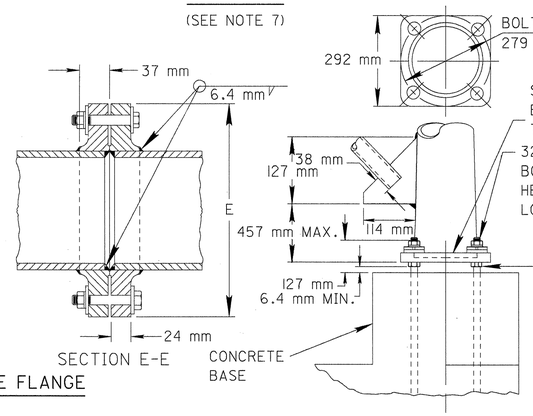
DETAIL D

(REVERSED VIEW)

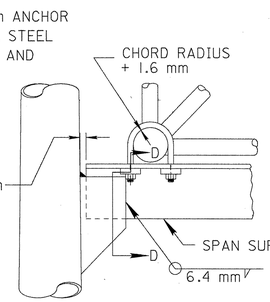
UPPER SPAN SUPPORT

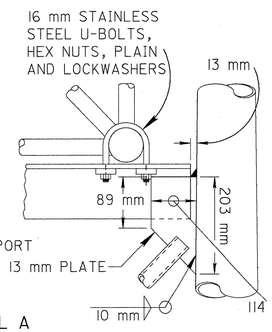


ALTERNATE FLANGE



POLE BASE DETAIL





DETAIL A

LOWER SPAN SUPPORT

FLANGE DETAILS

ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED										
DESIGN & ALT. NO.	A	END FRAME		TRUSS		FLANGE			STAINLESS STEEL FLANGE BOLTS	
		D	POLE SIZES	CHORD SIZES	DIAGONALS	E	F	G	NUMBER	DIAMETER
DESIGN 6	0.9 m	1.4 m	7.9 m x 203 x 111 x 6	121 x 4.8	51 x 4.8	235	189	35	6	19
ALT. DES. 6	0.9 m	1.4 m	7.9 m x 168 x 11	114 x 6	48 x 5	229	191		8	16
DESIGN 8	1.5 m	2.0 m	8.4 m x 203 x 105 x 6	140 x 6.4	64 x 4.8	279	216	38	6	19
ALT. DES. 8	1.5 m	2.0 m	8.4 m x 168 x 11	141 x 6.6	60 x 5.5	254	216		8	19

NOTES

1. UNLESS OTHERWISE NOTED, DIMENSIONS AND INSTRUCTIONS APPLY TO BOTH THE STANDARD AND ALTERNATE DESIGNS.
2. FOR SIGN ATTACHMENT ASSEMBLIES TO BE FURNISHED WITH THIS SUPPORT, CONSTRUCTION DETAILS AND LOCATION OF HANDHOLES AND SWITCH ENCLOSURE MOUNTING BRACKETS. SEE DRAWINGS TC-22.10M AND TC-22.20M.
3. FOR FOUNDATION DETAILS, SEE DRAWING TC-21.10M.
4. ONE THREADED STEEL 32 mm PIPE COUPLING OR SHORT NIPPLE SHALL BE WELDED TO THE OUTSIDE OF EACH END FRAME POLE AS SHOWN IN DETAIL "D". ALL SHARP EDGES INSIDE THE POLE AND PIPE COUPLING SHALL BE REMOVED.
5. ONE THREADED ALUMINUM 32 mm PIPE COUPLING OR SHORT NIPPLE SHALL BE WELDED TO THE FRONT TOP CHORD OF THE TRUSS APPROXIMATELY 300 mm OUTBOARD OF THE FIRST SIGN BRACKET FOR EACH SIGN. ALL SHARP EDGES INSIDE THE CHORD AND PIPE COUPLING SHALL BE REMOVED.
6. THE TRUSS SHALL BE CAMBERED A MINIMUM OF 25 mm FOR A SPAN OF 15.2 m OR LESS. THE CAMBER SHALL BE INCREASED 6.4 mm FOR EACH 1.5 m OF SPAN OVER 15.2 m.
7. THE ALTERNATE JOINT CONFIGURATION SHOWN FOR THE END FRAME (DETAIL B) SHALL ALSO BE USED FOR ASSEMBLING THE ALUMINUM TRUSS MEMBERS.
8. ALL UNUSED STEEL COUPLINGS AND WIRE OUTLETS SHALL BE PROVIDED WITH A REMOVABLE GALVANIZED CAST IRON PLUG.
9. ALL UNUSED ALUMINUM COUPLINGS AND WIRE OUTLETS SHALL BE PROVIDED WITH A REMOVABLE ALUMINUM PLUG.
10. CONTACT BETWEEN ALUMINUM AND GALVANIZED PARTS SHALL BE PREVENTED WITH A MINIMUM 1.6 mm THICK CHLOROPHENE GASKET OR APPROVED EQUAL.

METRIC

BUREAU OF DESIGN SERVICES
DIVISION OF HIGHWAYS
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL

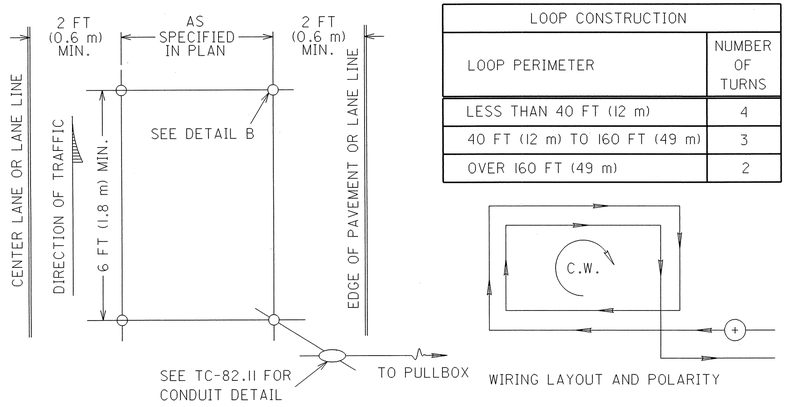
DATE 02/01/94

ALUMINUM TRUSS OVERHEAD SIGN SUPPORT

STANDARD CONSTRUCTION DRAWING TC-7.65M

APPROVED Gary L. Craager ENGR. OF DESIGN SERVICES

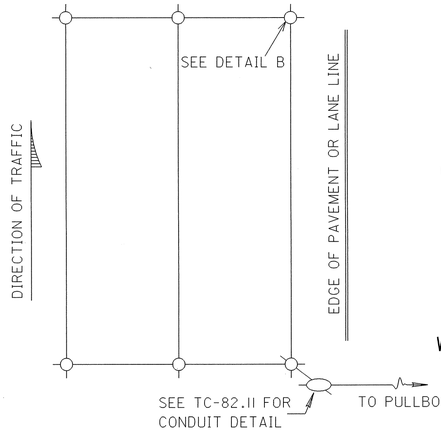
WCC

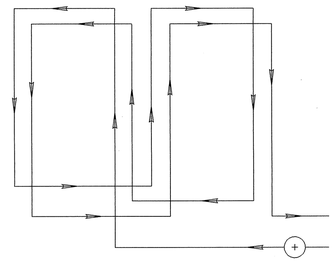


LOOP CONSTRUCTION	
LOOP PERIMETER	NUMBER OF TURNS
LESS THAN 40 FT (12 m)	4
40 FT (12 m) TO 160 FT (49 m)	3
OVER 160 FT (49 m)	2

WIRING LAYOUT AND POLARITY

TYPICAL DETECTOR LOOP DETAILS

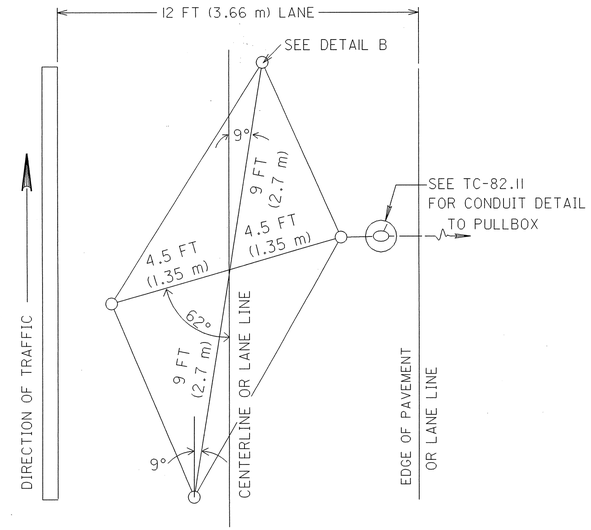




WIRING LAYOUT AND POLARITY

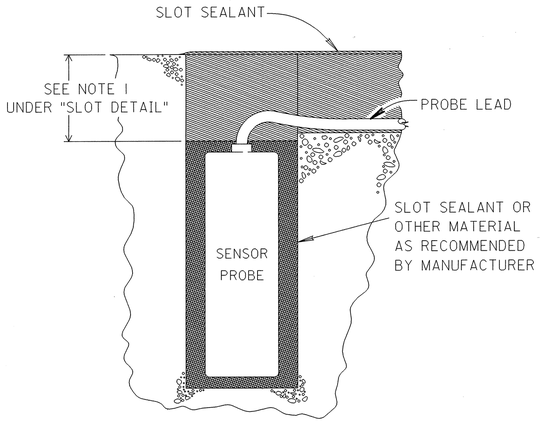
NUMBER OF TURNS
2-4-2 OR AS
SHOWN IN PLANS

FIGURE 8 (QUADRUPOLE) LOOP DETAILS



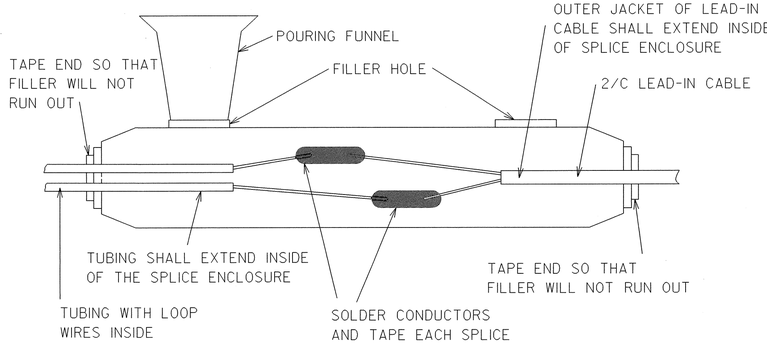
OTHER SIZES CAN BE DESIGNATED AS LONG AS THE ANGLES REMAIN THE SAME AS SHOWN AND THE DIMENSION RATIO REMAINS 2:1.

ANGULAR DESIGN DETECTION LOOP DETAIL



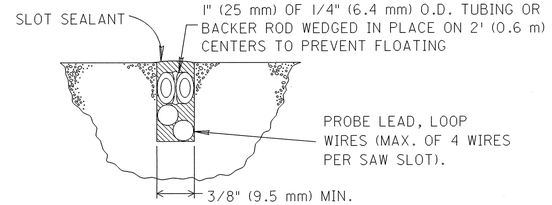
THE MAGNETOMETER HOLE SIZE SHALL BE APPROXIMATELY 3/4" (19 mm) LARGER THAN THE DETECTOR PROBE DIAMETER AND A DEPTH AS RECOMMENDED BY THE MANUFACTUER OR AS DIRECTED BY THE ENGINEER.

MAGNETOMETER SENSOR PROBE DETAIL



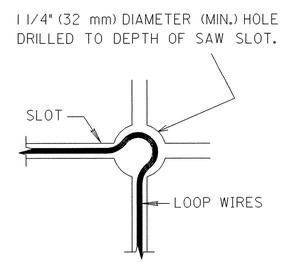
1. LOOP DETECTOR WIRE TO LEAD-IN CABLE SPLICES WITHIN THE ENCAPSULATED SPLICE ENCLOSURE SHALL BE SOLDERED.
2. IF A PULLBOX IS NOT SPECIFIED IN THE PLANS, THE WATERPROOF SPLICE ENCLOSURE SHALL BE LOCATED IN THE FIRST ENTERED POLE OR PEDESTAL, EXCEPT IF THE CONTROLLER CABINET IS MOUNTED ON THAT POLE OR PEDESTAL, IN WHICH CASE THE LOOP WIRES SHALL BE ROUTED DIRECTLY INTO THE CABINET WITHOUT SPLICING.
3. VISIBLE AIR BUBBLES (VOIDS) OF 1/4" (6 mm) OR GREATER MAY BE CAUSE FOR REJECTION OF THE SPLICE.

SPLICE ENCLOSURE DETAIL



1. MINIMUM SAW SLOT DEPTH: ASPHALT 4" (100 mm), CONCRETE 2" (50 mm)
2. LOOP DETECTOR WIRE IN TUBING SHALL BE AS SPECIFIED IN CMS TABLE 732.19.
3. LOOP DETECTOR SEALANT SHALL BE A PREQUALIFIED PRODUCT IN ACCORDANCE WITH SUPPLEMENT 1048.
4. SAW SLOTS AND PROBE HOLES SHALL BE THOROUGHLY CLEANED AND DRIED PRIOR TO INSTALLATION OF SEALANT.
5. WIRE INSTALLATIONS IN NEW ASPHALT MAY BE SAWED AND EMBEDDED WITH SEALANT IN A SUB-SURFACE COURSE WITH SUBSEQUENT COVERING BY THE SURFACE COURSE, IF SPECIFIED IN PLAN.

SLOT DETAIL



DETAIL B

OFFICE OF TRAFFIC ENGINEERING
DIVISION OF ENGINEERING POLICY
OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL	DATE 01/19/99
VEHICLE DETECTOR INSTALLATION DETAILS I	
STANDARD CONSTRUCTION DRAWING TC-82.10	

APPROVED _____ ADMINISTRATOR

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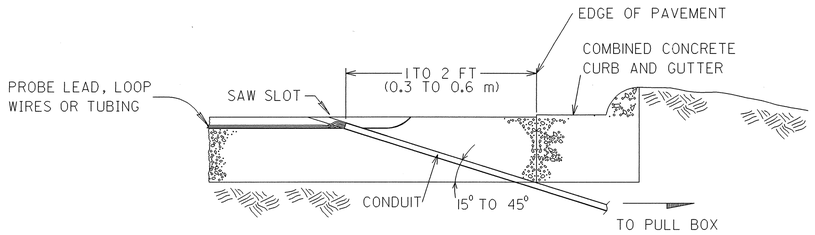
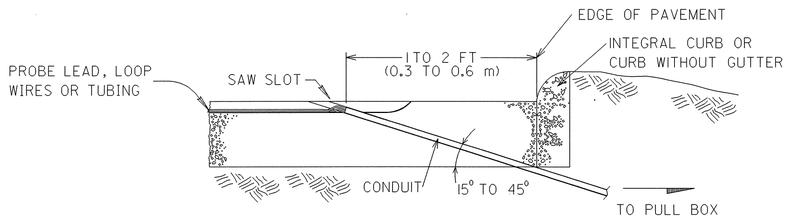
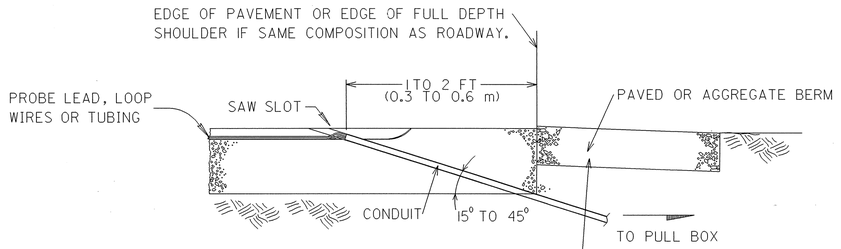


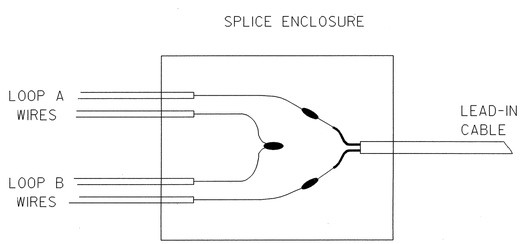




NO TRENCHING OR UNDERCUTTING CLOSER THAN 2 FEET (0.6 m) FROM THE EDGE OF PAVEMENT. BACKFILL TRENCH UNDER BERM WITH LOW STRENGTH MORTAR.

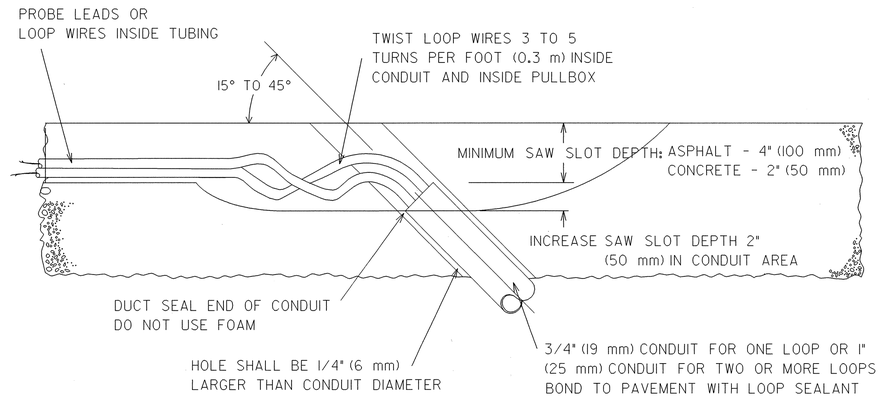
1. THE DRILLED HOLE SHALL BE LOCATED AS SHOWN ABOVE AND WITHIN THE FULL DEPTH PAVEMENT. IT SHALL NOT BE DRILLED OR CUT THROUGH THE PAVED BERM, CURB OR CURB AND GUTTER SECTION.
2. IN AREAS OF POOR PAVEMENT CONDITION, THE SAW SLOT DEPTH SHALL BE INCREASED TO INSURE ADEQUATE WIRE EMBEDMENT. ALL FIELD ADJUSTMENTS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

TYPICAL DRILLED HOLE LOCATIONS

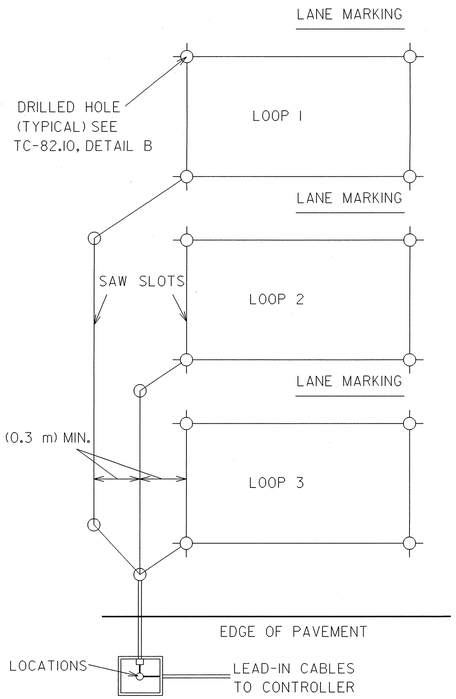


1. WHERE MULTIPLE LOOPS USE A SINGLE LEAD-IN CABLE, SERIES CONNECTIONS SHALL BE USED.
2. A MAXIMUM OF 2 LOOPS (3 WIRE SPLICES) SHALL BE USED IN ANY ENCAPSULATED SPLICE KIT.

SERIES CONNECTIONS

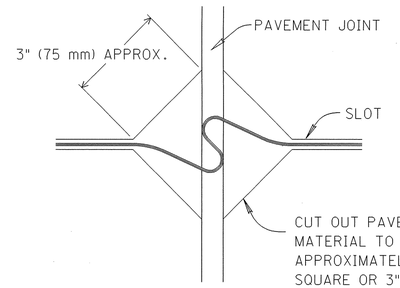


CONDUIT DRILLED HOLE DETAIL



1. ONLY ONE SET OF LOOP WIRES SHALL BE RUN IN A SAW SLOT OVER TO THE CONDUIT HOLE LOCATION.
2. ALL ADJACENT SAW SLOTS SHALL HAVE A MINIMUM DISTANCE OF 1FOOT (0.3 m) BETWEEN THEM. NO SAW SLOT SHALL BE LOCATED WITHIN 1FOOT (0.3 m) OF A LONGITUDINAL OR TRANSVERSE JOINT IN P.C.C. PAVEMENTS IF THE SLOT IS PARALLEL TO THE JOINT.

MULTIPLE LOOP LAYOUT



JOINT CROSSING DETAIL IN P.C.C. PAVEMENTS

OFFICE OF TRAFFIC ENGINEERING
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OHIO DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL	DATE 01/19/99
VEHICLE DETECTOR INSTALLATION DETAILS II	
STANDARD CONSTRUCTION DRAWING TC-82.11	
APPROVED: [signature] ADMINISTRATOR	

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