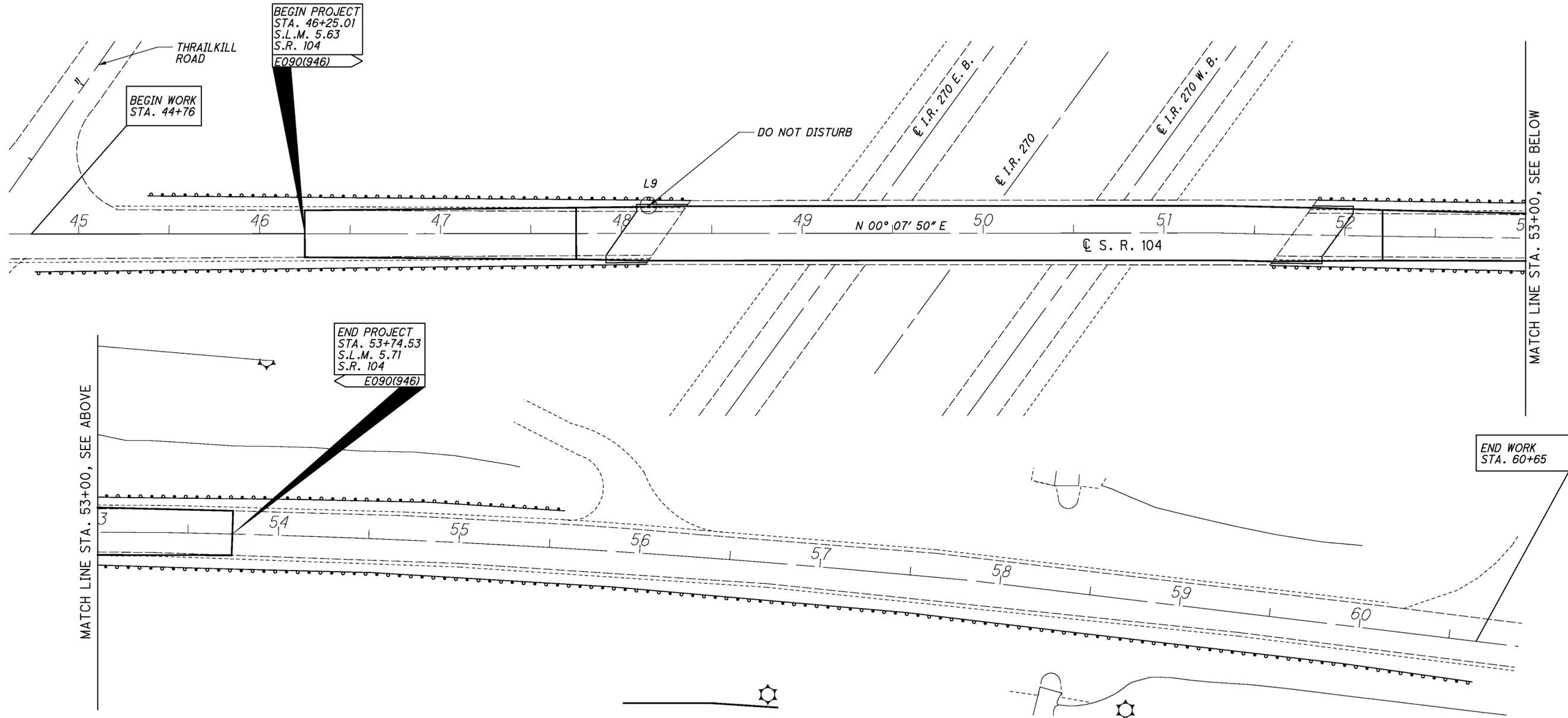




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BEGIN PROJECT  
 STA. 46+25.01  
 S.L.M. 5.63  
 S.R. 104  
 E090(946)

BEGIN WORK  
 STA. 44+76

END PROJECT  
 STA. 53+74.53  
 S.L.M. 5.71  
 S.R. 104  
 E090(946)

END WORK  
 STA. 60+65

MATCH LINE STA. 53+00, SEE ABOVE

MATCH LINE STA. 53+00, SEE BELOW

P.I. = 55+58.22  
 $\Delta = 6^{\circ} 57' 40''$   
 $D = 1^{\circ} 00' 00''$   
 $R = 5729.578'$   
 $T = 348.484'$   
 $L = 696.111'$

SURVEY MONUMENT

FRANKLIN COUNTY ENGINEER  
 VERTICAL CONTROL MONUMENT NO. L9  
 VERTICAL DATUM: NAVD 88  
 ELEVATION: 727.859 FT.  
 VERTICAL ORDER: 2  
 VERTICAL CLASS: 1  
 DATE: 1994

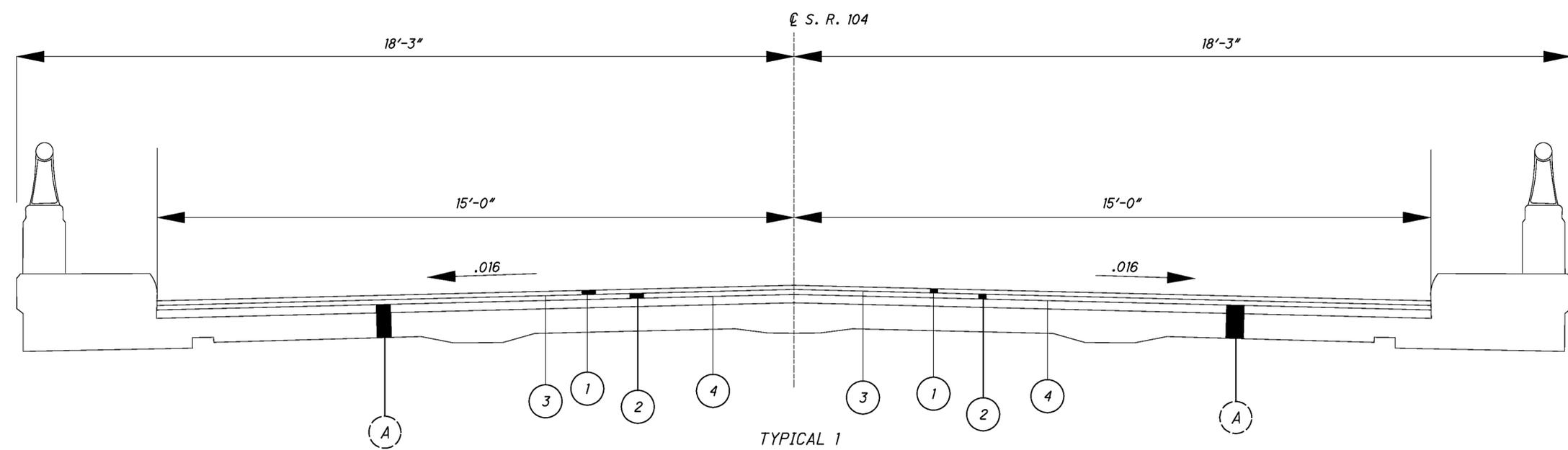
DESCRIPTION:  
 BRASS PLUG ON THE SOUTHWEST CORNER OF JACKSON PIKE BRIDGE  
 FRA-104-0563 OVER I-270, 0.65 MILES NORTH OF STRINGTOWN ROAD,  
 16.1 FEET WEST OF THE CENTERLINE OF JACKSON PIKE (S.R. 104).

CALCULATED MK  
 CHECKED KF

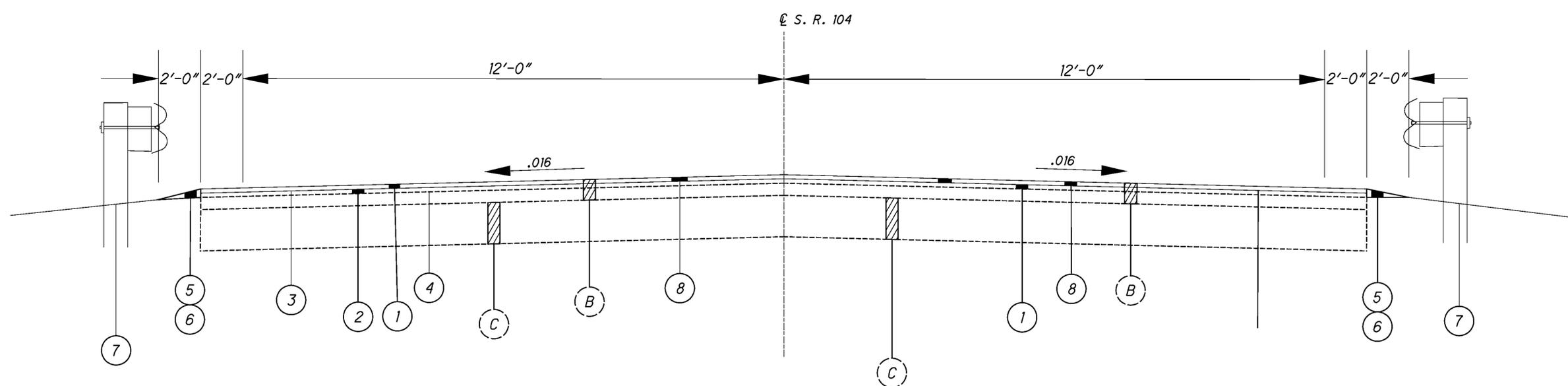
0 30 60  
 1" = 60'  
 HORIZONTAL SCALE IN FEET

SCHEMATIC PLAN

FRA-104-5.63



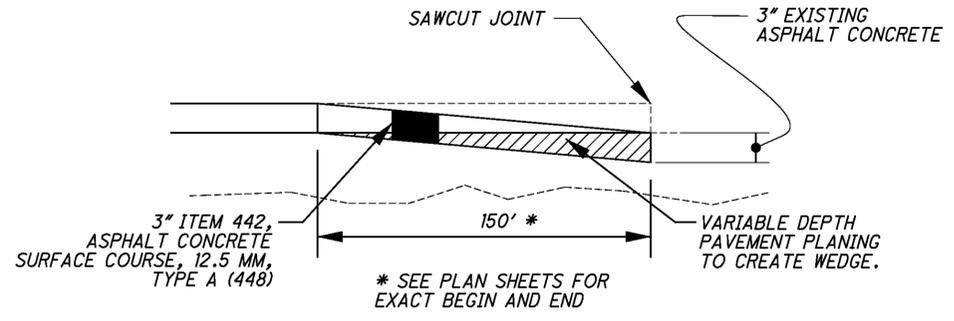
TYPICAL 1  
 FRA-104-5.63  
 SFN: 2508583  
 (N.T.S.)  
 STA. 48+25.47 TO STA. 51+74.53



TYPICAL 2  
 FRA-104-5.63  
 STA. 46+27.47 TO STA. 48+25.47  
 STA. 51+74.53 TO STA. 52+74.53  
 (N.T.S.)

- ① 1.25" - ITEM 442 - ASPHALT CONCRETE SURFACE COURSE, 12.5mm, TYPE A (448)
- ② 1.75" - ITEM 442 - ASPHALT CONCRETE INTERMEDIATE COURSE, 19 mm, TYPE A (448)
- ③ ITEM 409 TACK COAT FOR INTERMEDIATE COURSE
- ④ ITEM 409 TACK COAT, 702.13
- ⑤ ITEM 617 - COMPACTED AGGREGATE, 4" AVERAGE
- ⑥ ITEM 617 - SHOULDER PREPARATION
- ⑦ ITEM 606 - MGS GUARDRAIL
- ⑧ ITEM 254 - PAVEMENT PLANING ASPHALT CONCRETE, VARIABLE 0" - 3"
- (A) EXISTING BRIDGE DECK
- (B) 4" ASPHALT CONCRETE PAVEMENT
- (C) 12" AGGREGATE BASE

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TYPICAL BUTT JOINT

**GENERAL:**

THE CONTRACTOR SHALL SUBMIT IN WRITING A SCHEDULE OF OPERATIONS TO THE ENGINEER AND RECEIVE APPROVAL IN WRITING BEFORE WORK IS STARTED ON THIS PROJECT. ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

**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.

**EXISTING SCUPPERS:**

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 SCUPPERS 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.

THESE SCUPPERS ARE TO REMAIN IN FULL OPERATION AT ALL TIMES. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR, AT THEIR EXPENSE, TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 442.

**CONTRACTORS EQUIPMENT - OPERATION AND STORAGE:**

THE CONTRACTOR'S EQUIPMENT SHALL BE OPERATED IN THE DIRECTION OF TRAFFIC WHERE PRACTICAL. EQUIPMENT SHALL HAVE AT LEAST ONE AMBER FLASHING LIGHT. WHEN PARKED ALONG THE HIGHWAY, THE EQUIPMENT SHALL BE LOCATED EITHER A MINIMUM OF THIRTY FEET FROM THE EDGE OF PAVEMENT OR SIX FEET BEHIND GUARDRAIL WITH A MINIMUM OF 125 FEET OF GUARDRAIL PRECEDING THE EQUIPMENT. ALL OTHER EQUIPMENT, INCLUDING PRIVATE VEHICLES, SHALL BE STORED AT AN APPROVED CONTRACTOR'S STORAGE AREA.

**ITEM 407 - TACK COAT, 702.13:**

**ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE:**

THE RATE OF APPLICATION OF ITEM 407 - TACK COAT AND ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. FOR ESTIMATING PURPOSES ONLY, THE PLAN INDICATES AN AVERAGE APPLICATION RATE OF TACK COAT AT 0.075 GALLON PER SQUARE YARD AND AN AVERAGE APPLICATION RATE OF TACK COAT FOR INTERMEDIATE COURSE AT 0.05 GALLON PER SQUARE YARD. THIS ITEM IS FOR USE WITH ITEM 446 AS DIRECTED BY THE ENGINEER. A COVER AGGREGATE SHALL BE USED IF HEAVY TRACKING OF THE TACK COAT ON TO THE EXISTING PAVEMENT SHOULD OCCUR DURING THE PAVING OPERATIONS. THE COST OF THE COVER AGGREGATE SHALL BE INCLUDED IN THE COST OF THIS ITEM.

**ITEM 623 - CONSTRUCTION LAYOUT STAKES & SURVEYING, AS PER PLAN:**

THIS ITEM SHALL CONSIST OF STATIONING USING 3 FT LATH STAKES OR PAINT MARKINGS. THE STAKES OR PAINT MARKINGS SHALL BE SPACED AT 50 FT INTERVALS AND EXTEND THROUGHOUT THE LENGTH OF THE PROJECT. PLACEMENT OF THE STAKES OR PAINT MARKINGS SHALL BE AS DIRECTED BY THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY DAMAGED, MISSING STAKES, OR PAINT MARKINGS. PAINT MARKINGS SHALL BE PLACED ON CURBS AND USED IN AREAS WERE THE PLACEMENT OF STAKES IS NOT POSSIBLE AND APPROVED BY THE PROJECT ENGINEER.

CONSTRUCTION LAYOUT STAKES WILL BE PAID FOR AT THE CONTRACT LUMP SUM BID, WHICH PRICE SHALL BE FULL COMPENSATION FOR ALL SERVICES, MATERIALS, LABOR, EQUIPMENT, TOOLS, AND

**ITEM 623 - CONSTRUCTION LAYOUT STAKES & SURVEYING, AS PER PLAN (CONT.):**

INCIDENTALS, INCLUDING THE REMOVAL, NECESSARY TO COMPLETE THIS ITEM.

**ITEM 630 - SIGN, FLAT SHEET:**

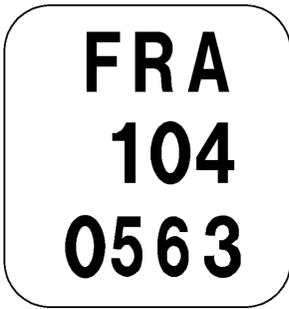
**ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST:**

THESE ITEMS SHALL BE USED TO PLACE NEW STRUCTURE IDENTIFICATION SIGNS AT THE FOLLOWING STRUCTURES:

FRA-104-0563

EACH SIGN SHALL BE ATTACHED TO THE CONCRETE PARAPET WITH CONCRETE ANCHORS AT THE RIGHT REAR LOCATION. IF THE BRIDGE DOES NOT HAVE A CONCRETE PARAPET, THE SIGN SHALL BE POST MOUNTED TO ONE NEW NO. 2 POST AS PER STANDARD CONSTRUCTION DRAWING TC-41.20 (MOST CURRENT REVISION) USING TWO 5/16" ALUMINUM BOLTS 2 1/2" IN LENGTH. THE POST SHALL BE 7'-0" LONG.

SIGNS SHALL BE SIZED AS PER SIGN I-H25A AS GIVEN IN THE ODOT SIGN DESIGN MANUAL (MOST CURRENT VERSION). ALL INCIDENTALS WILL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 630 - SIGN, FLAT SHEET.



BRIDGE ID SIGN

SIGN CODE I-H25a

THE FOLLOWING ITEMS HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 630 - SIGN, FLAT SHEET = 1.0 SQFT  
ITEM 630 - GROUND MOUNTED SUPPORT, NO. 2 POST = 7 FT

**UTILITIES:**

THERE ARE NO KNOWN UNDERGROUND OR OVERHEAD UTILITIES WITHIN THE PROJECT CONSTRUCTION LIMITS.

**ALIGNMENT AND PROFILE:**

THE WORK PROPOSED BY THIS PROJECT IS FOR THE RESURFACING OF THE EXISTING PAVEMENT. THE ALIGNMENT OF THE EXISTING PAVEMENT WILL NOT BE CHANGED, AND THE PROFILE OF THE PROPOSED SURFACE WILL BE SIMILAR TO THAT OF THE EXISTING PAVEMENT.

**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.

**ITEM 644 - PAVEMENT MARKING:**

THE LOCATIONS, SIZES AND SHAPES OF PROPOSED PAVEMENT MARKINGS WILL BE THE SAME AS EXISTING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION, SIZE AND SHAPE OF THE EXISTING PAVEMENT MARKINGS BEFORE THE PAVEMENT PLANING AND

**ITEM 644 - PAVEMENT MARKING (CONT.):**

RESURFACING OBLITERATES THEM. THE CONTRACTOR SHALL REMOVE PRIOR TO THE PLACEMENT OF ALL PERMANENT PAVEMENT MARKINGS ALL WORK ZONE MARKINGS. ANY PERMANENT PAVEMENT MARKING WHICH IS PLACED OVER WORK ZONE CENTERLINES, LANE LINES, AUXILIARY MARKINGS OR PLACED IN THE WRONG LOCATION SHALL BE REMOVED AND THE PERMANENT MARKING REPAIRED AT THE CONTRACTORS EXPENSE.

**SURVEYING PARAMETERS:**

USE THE FOLLOWING VERTICAL POSITIONING AND HORIZONTAL POSITIONING PARAMETERS FOR ALL SURVEYING:

VERTICAL POSITIONING  
ORTHOMETRIC HEIGHT DATUM: NAVD 1988  
GEOID: GEOID 03  
HORIZONTAL POSITIONING  
REFERENCE FRAME: NAD 83 (CORS 96)  
ELLIPSOID: WGS84  
MAP PROJECTION: LAMBERT CONFORMAL CONIC  
COORDINATE SYSTEM: OHIO STATE PLANE (SOUTH)  
COMBINED SCALE FACTOR: 1.000057560

UNITS ARE IN U.S. SURVEY FEET. USE THE FOLLOWING CONVERSION FACTOR: 1 METER = 3.280833333 U.S. SURVEY FEET.

**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 IN AASHTO M 180. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

**ITEM 606 - GUARDRAIL, TYPE MGS:**

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

**GUARDRAIL POST HOLES:**

ALL HOLES REMAINING AFTER REMOVAL OF GUARDRAIL POSTS SHALL BE FILLED WITH GRANULAR MATERIAL, EXCESS MATERIAL RESULTING FROM GUARDRAIL RECONSTRUCTION, OR EXCESS MATERIAL FROM BERM RESHAPING. FILL MATERIAL CONTAINING SOD SHALL NOT BE USED. ALL FILL MATERIAL SHALL BE APPROVED BY THE ENGINEER. MATERIAL PLACED IN HOLES SHALL BE THOROUGHLY COMPACTED AND LEVELED OFF AS DIRECTED BY THE ENGINEER. PAYMENT FOR THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPLICABLE GUARDRAIL ITEM.

**ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E:**

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING ANY OF THE GUARDRAIL END TERMINALS AS LISTED ON ROADWAY ENGINEERING'S WEB PAGE UNDER ROADSIDE SAFETY DEVICES FOR APPROVED GUARDRAIL END TREATMENTS. INSTALLATION SHALL BE AT THE LOCATIONS SPECIFIED IN THE PLANS, IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

THE FACE OF THE MGS TYPE E IMPACT HEAD SHALL BE COVERED WITH A SHEET OF TYPE G REFLECTIVE SHEETING, PER CMS 730.19.

REFER TO THE MANUFACTURER'S INSTRUCTIONS REGARDING THE INSTALLATION OF, AND THE GRADING AROUND THE FOUNDATION TUBES AND GROUND STRUT. THE TOP OF ANY FOUNDATION TUBE SHOULD BE LESS THAN 4 INCHES ABOVE THE GROUND. THE PLACEMENT OF THE FOUNDATION TUBES SHOULD BE AN APPROPRIATE DEPTH BELOW THE LEVEL LINE IN ORDER TO MAINTAIN THE FINISHED GUARDRAIL HEIGHT OF 27.75 INCHES FROM THE EDGE OF THE SHOULDER.

ON-SITE GRADING IS REQUIRED IF THE TOP OF THE FOUNDATION TUBES OR TOP OF THE GROUND STRUT DOES PROJECT MORE THAN 4 INCHES ABOVE THE GROUND LINE.

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GENERAL NOTES

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**ITEM 606 - ANCHOR ASSEMBLY, MGS TYPE E (CONT.):**  
PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT PRICE  
BID FOR ITEM 606, ANCHOR ASSEMBLY, MGS TYPE E, EACH, AND

SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS  
NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR  
ASSEMBLY SYSTEM, INCLUDING ALL RELATED TRANSITIONS,  
REFLECTIVE SHEETING, HARDWARE, GRADING, EMBANKMENT AND  
EXCAVATION NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE  
MANUFACTURER.

**ITEM 606 - CURVED RAIL ELEMENTS:**

ALL RADII OF CURVED RAIL ARE ESTIMATED AND ACTUAL RADII  
OF PROPOSED RAIL SHALL BE DETERMINED IN THE FIELD BY THE  
CONTRACTOR PRIOR TO ORDERING. LENGTH OF CURVED RAIL  
ELEMENTS, WHERE CALLED FOR IN A RUN, SHALL BE INCLUDED IN  
THE TOTAL LENGTH OF RUN SHOWN IN THE GUARDRAIL COLUMN AND  
THE CURVED RAIL ELEMENT TOTAL ARE INCLUDED WITH THE  
GUARDRAIL TOTALS ON THE GENERAL SUMMARY SHEET.

**ITEM 203 - EMBANKMENT:**

THIS ITEM IS TO BE USED IN CONJUNCTION WITH THE PROPOSED  
GUARDRAIL TO ENSURE PROPER PLACEMENT OF THE PROPOSED ANCHOR  
ASSEMBLIES.

A QUANTITY OF ITEM 203 - EMBANKMENT HAS BEEN PROVIDED TO  
BUILD UP FORE-SLOPES WHERE NECESSARY IN ORDER TO INSTALL  
GUARDRAIL. THE CONTRACTOR SHALL BE PREPARED TO USE EMBANKMENT  
AT ALL THE LOCATIONS WITHIN THIS PLAN.

THIS ITEM SHALL BE DIRECTED BY THE ENGINEER. THE FOLLOWING  
CONTINGENCY QUANTITY HAS BEEN PROVIDED AND CARRIED TO THE  
GENERAL SUMMARY FOR THIS PURPOSE.

ITEM 203 - EMBANKMENT = 83 CU YD

**TYPE 5 GUARDRAIL TO TYPE MGS GUARDRAIL TRANSITION:**

THIS SHALL TAKE PLACE AT THE END OF THE ITEM 606 - BRIDGE  
TERMINAL ASSEMBLY, TYPE F. THIS TRANSITION SHALL BE AS PER  
STANDARD CONSTRUCTION DRAWING MGS-4.3.

**ITEM 202 - BRIDGE TERMINAL ASSEMBLY REMOVED, AS PER PLAN:**

FOR THESE, ALL EXISTING CONCRETE BELOW GRADE IS TO BE REMOVED  
COMPLETELY. THIS WILL REMOVE ANY CONFLICTS WITH THE NEW  
BRIDGE TERMINAL ASSEMBLIES TO BE INSTALLED. ALL VOIDS THUS  
CREATED ARE TO BE FILLED AND COMPACTED AS PART OF THIS ITEM.

**ITEM 254 - PAVEMENT PLANING, ASPHALT CONCRETE:**

THE CONTRACTOR SHALL BE TOTALLY RESPONSIBLE FOR ANY AND ALL  
DAMAGE TO THE CONTRACTORS EQUIPMENT THAT MAY RESULT FROM THE  
PLANING OPERATION, INCLUDING DAMAGE CAUSED BY CASTINGS AND  
LOOP DETECTORS. THE DEPTH OF PLANING CLOSE TO THE CASTINGS  
SHALL BE AS DIRECTED; TO ACHIEVE A SMOOTH RIDING FINISHED  
PAVEMENT. GREAT CARE SHALL BE TAKEN TO PREVENT THE REMOVAL  
OF THE EXISTING PAVEMENT CROSS-SLOPE (CROWN) DURING THE  
PLANING OPERATIONS.

ALL PLANED PAVEMENT SHALL BE PLANED TO A DEPTH OF 0 - 3  
INCHES AND RESURFACED WITH 1.5 INCHES OF THE ASPHALT CONCRETE  
INTERMEDIATE COURSE WITHIN THE SAME WORK PERIOD. FAILURE TO  
MEET THIS REQUIREMENT WILL SUBJECT THE CONTRACTOR TO A  
DISINCENTIVE OF \$1,000/DAY FOR EACH DAY THE PLANED SURFACE IS  
NOT RESURFACED.

CALCULATED  
MK  
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GENERAL NOTES

FRA-104-5.63

**GENERAL:**

ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (CURRENT EDITION). COPIES ARE AVAILABLE FROM:

THE OHIO DEPARTMENT OF TRANSPORTATION  
BUREAU OF TRAFFIC,  
1980 WEST BROAD STREET  
COLUMBUS, OHIO 43223.

**NOTIFICATION OF CONSTRUCTION INITIATION:**

AT LEAST FOURTEEN DAYS PRIOR TO STARTING INITIAL CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL ADVISE THE DISTRICT OFFICE OF COMMUNICATIONS VIA EMAIL AT d06.pio@dot.state.oh.us, THE DISTRICT WORK ZONE TRAFFIC MANAGER VIA EMAIL AT d06.mot@dot.state.oh.us AND THE CENTRAL OFFICE SPECIAL HAUL PERMITS SECTION BY FAX AT (614)728-4099 OF THE ANTICIPATED START DATE OF ANY CONSTRUCTION ACTIVITIES INCLUDING BUT NOT LIMITED TO THE PLACING OF WORK ZONE SIGNS. THE NOTIFICATION SHALL ALSO INCLUDE THE PROJECT NUMBER, PID, NAME AND PHONE NUMBER OF THE CONTRACTOR, A POINT OF CONTACT AND THE ANTICIPATED IMPACT ON TRAFFIC. THE CONTRACTOR WILL IMMEDIATELY INFORM THE DISTRICT OFFICE OF COMMUNICATIONS AND THE DISTRICT WORK ZONE TRAFFIC MANAGER OF ANY AND ALL DELAYS AND/OR CHANGES REGARDING THE CONSTRUCTION INITIATION DATE.

**NOTIFICATION OF TRAFFIC RESTRICTIONS:**

THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES. THE CONTRACTOR SHALL ENSURE THE WRITTEN NOTIFICATION IS SUBMITTED IN A TIMELY MANNER TO ALLOW THE PROJECT ENGINEER TO MEET THE REQUIRED TIME FRAMES SET FORTH IN THE TABLE BELOW. THIS NOTIFICATION SHALL BE RECEIVED BY THE PROJECT ENGINEER PRIOR TO THE PHYSICAL SETUP OF ANY APPLICABLE SIGNS OR MESSAGE BOARDS.

INFORMATION SHOULD INCLUDE BUT IS NOT LIMITED TO ALL CONSTRUCTION ACTIVITIES THAT IMPACT OR INTERFERE WITH TRAFFIC AND SHOULD LIST THE SPECIFIC LOCATION, TYPE OF WORK, ROAD STATUS, DATE AND TIME OF RESTRICTION, DURATION OF RESTRICTION, NUMBER OF LANES MAINTAINED, DETOUR ROUTES IF APPLICABLE, AND ANY OTHER INFORMATION REQUESTED BY THE PROJECT ENGINEER.

**Notification Time Frame Table**

Item	Duration of Closure	Notification due to District 6 Communications Office
Ramp & Road Closures	>= 2 weeks	14 calendar days prior to closure
	> 12 hours & < 2 weeks	7 calendar days prior to closure
	< 12 hours	2 business days prior to closure
Lane Closures & Restrictions	>= 2 weeks	7 calendar days prior to closure
	< 2 weeks	2 business days prior to closure

ANY UNFORESEEN CONDITIONS NOT SPECIFIED IN THE PLANS REQUIRING TRAFFIC RESTRICTIONS SHALL ALSO BE REPORTED TO THE PROJECT ENGINEER USING THE NOTIFICATION TIME FRAME TABLE.

**PUBLIC OUTREACH AND NOTIFICATION:**

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE DISTRICT 6 PUBLIC INFORMATION OFFICE VIA EMAIL AT d06.pio@dot.state.oh.us TO COORDINATE EFFORTS TO NOTIFY ADJACENT RESIDENTS AND BUSINESSES OF THE UPCOMING RESURFACING PROJECT. ADVANCE NOTIFICATION SHALL OCCUR NO LATER THAN FOURTEEN (14) DAYS PRIOR TO THE FIRST DAY OF WORK. ALL

**PUBLIC OUTREACH AND NOTIFICATION (CONT):**

NOTIFICATIONS SHALL BE MADE UTILIZING THE TEMPLATE PROVIDED BY THE DISTRICT 6 PUBLIC INFORMATION OFFICE.

**LANES OPEN DURING HOLIDAYS AND SPECIAL EVENTS:**

NO WORK SHALL BE PERFORMED AND THE SAME NUMBER OF LANES AS WERE AVAILABLE AT THE START OF THE PROJECT SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS AND EVENTS:

- HOLIDAYS
- CHRISTMAS FOURTH OF JULY
- NEW YEAR'S EVE LABOR DAY
- MEMORIAL DAY THANKSGIVING

THE PERIOD OF TIME THAT THE LANES ARE TO BE OPEN DEPENDS ON THE DAY OF THE WEEK ON WHICH THE HOLIDAY FALLS. THE FOLLOWING SCHEDULE SHALL BE USED TO DETERMINE THIS PERIOD:

DAY OF HOLIDAY	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00 NOON FRIDAY THROUGH 6:00 AM MONDAY
MONDAY	12:00 NOON FRIDAY THROUGH 6:00 AM TUESDAY
TUESDAY	12:00 NOON MONDAY THROUGH 6:00 AM WEDNESDAY
WEDNESDAY	12:00 NOON TUESDAY THROUGH 6:00 AM THURSDAY
THURSDAY	12:00 NOON WEDNESDAY THROUGH 6:00 AM FRIDAY
THANKSGIVING	5:00 AM WEDNESDAY THROUGH 6:00 AM MONDAY
FRIDAY	12:00 NOON THURSDAY THROUGH 6:00 AM MONDAY
SATURDAY	12:00 NOON FRIDAY THROUGH 6:00 AM MONDAY

NO EXTENSIONS OF TIME SHALL BE GRANTED FOR DELAYS IN MATERIAL DELIVERIES, UNLESS SUCH DELAYS ARE INDUSTRY WIDE, OR FOR LABOR STRIKES, UNLESS SUCH STRIKES ARE AREA WIDE.

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED A DISINCENTIVE IN THE AMOUNT OF \$100 FOR EACH MINUTE THE ABOVE DESCRIBED LANE CLOSURE RESTRICTIONS ARE VIOLATED.

**WORKING HOURS:**

WORKING HOURS ARE LIMITED TO 9AM TO 3PM AND 7PM - 5AM MONDAY - FRIDAY, AND ANYTIME SATURDAY & SUNDAY.

**ITEM 614 - MAINTAINING TRAFFIC:**

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES BY USE OF THE EXISTING AND COMPLETED PAVEMENT. WORK ZONES SHALL BE LIMITED IN LENGTH TO THE AMOUNT OF WORK THAT CAN BE PERFORMED THAT DAY.

**ITEM 614, MAINTAINING TRAFFIC:**

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH CMS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

**ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR)**

**FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS:**

USE OF LAW ENFORCEMENT OFFICERS (LEOS) BY CONTRACTORS OTHER THAN THE USES SPECIFIED BELOW WILL NOT BE PERMITTED AT PROJECT COST. LEOS SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED.

**ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR)**

**FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS (CONT.):**

IN ADDITION TO THE REQUIREMENTS OF CMS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHALL BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS:

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

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH:

THE OHIO HIGHWAY PATROL  
614-466-2660

LEOS SHOULD NOT FORGO THEIR TRAFFIC CONTROL RESPONSIBILITIES TO APPREHEND MOTORISTS FOR ROUTINE TRAFFIC VIOLATIONS. HOWEVER, IF A MOTORIST'S ACTIONS ARE CONSIDERED TO BE RECKLESS, THEN PURSUIT OF THE MOTORIST IS APPROPRIATE.

THE LEOS WORK AT THE DIRECTION OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE SERVICES OF THE LEOS WITH THE APPROPRIATE AGENCIES AND COMMUNICATING THE INTENTIONS OF THE PLANS WITH RESPECT TO DUTIES OF THE LEOS. THE ENGINEER SHALL HAVE FINAL CONTROL OVER THE LEOS' DUTIES AND PLACEMENT, AND WILL RESOLVE ANY ISSUES THAT MAY ARISE BETWEEN THE TWO PARTIES.

THE LEO SHALL REPORT IN TO THE CONTRACTOR PRIOR TO THE START OF THE SHIFT, IN ORDER TO RECEIVE INSTRUCTIONS REGARDING SPECIFIC WORK ASSIGNMENTS DURING HIS/HER SHIFT. THE LEO IS EXPECTED TO STAY AT THE PROJECT SITE FOR THE ENTIRE DURATION OF HIS/HER SHIFT. THE LEO SHALL REPORT TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT. ONCE THE LEO HAS COMPLETED THE DUTIES DESCRIBED ABOVE AND STILL HAS TIME REMAINING ON HIS/HER SHIFT, THE LEO MAY BE ASKED TO PATROL THROUGH THE WORK ZONE (WITH FLASHING LIGHTS OFF) OR BE PLACED AT A LOCATION TO DETER MOTORISTS FROM SPEEDING. SHOULD IT BE NECESSARY TO LEAVE THE PROJECT SITE, THE LEO SHALL NOTIFY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE LEO WITH A TWO-WAY COMMUNICATION DEVICE WHICH SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

LEOS (WITH PATROL CAR) REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614, LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 40 HOURS

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

ANY ADDITIONAL COSTS (ADMINISTRATIVE OR OTHERWISE) INCURRED BY THE CONTRACTOR TO OBTAIN THE SERVICES OF AN LEO ARE INCLUDED

WITH THE BID UNIT PRICE FOR ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE.

**USE OF WEIGHTED CHANNELIZERS:**

THE WEIGHTED CHANNELIZER MAY BE USED IN ACCORDANCE WITH THIS SECTION. THE WEIGHTED CHANNELIZER SHALL BE PREDOMINANTLY ORANGE IN COLOR AND SHALL BE MADE OF LIGHTWEIGHT, FLEXIBLE, AND DEFORMABLE MATERIAL. THEY SHALL BE AT LEAST 42 INCHES IN HEIGHT WITH A WEIGHTED BASE. THEY MAY HAVE A HANDLE OR LIFTING DEVICE WHICH EXTENDS ABOVE THE 42 INCHES MINIMUM HEIGHT.

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MAINTENANCE OF TRAFFIC  
GENERAL NOTES

FRA-104-5.63

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**USE OF WEIGHTED CHANNELIZERS (CONT.):**

THE MARKINGS ON THE WEIGHTED CHANNELIZER SHALL BE HORIZONTAL, CIRCUMFERENTIAL, ALTERNATING ORANGE AND WHITE RETROREFLECTIVE STRIPES 6 INCHES WIDE. EACH WEIGHTED CHANNELIZER SHALL HAVE A MINIMUM OF TWO ORANGE AND TWO WHITE STRIPES. ANY NON-RETROREFLECTIVE SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES SHALL NOT EXCEED 2 INCHES WIDE. THE WEIGHTED CHANNELIZER SHALL HAVE A 4-INCH MINIMUM WIDTH, REGARDLESS OF ORIENTATION.

USE OF WEIGHTED CHANNELIZERS ON FREEWAYS AND MULTILANE HIGHWAYS SHALL BE LIMITED TO SHORT-TERM OPERATIONS FOR EITHER DAY OR NIGHT. UPON COMPLETION OF WORK, THE WEIGHTED **USE OF** CHANNELIZERS SHALL BE REMOVED. THE WEIGHTED CHANNELIZERS MAY AGAIN BE PLACED ON THE HIGHWAY WHEN THE WORK IS TO RESUME ON THE FOLLOWING DAY OR NIGHT. ANY LANE CLOSURE USING CHANNELIZATION DEVICES, EXPECTED TO REMAIN FOR MORE THAN TWELVE HOURS, SHALL REQUIRE THE USE OF DRUMS OR BARRICADES.

WHEN USED AT NIGHT, WEIGHTED CHANNELIZERS SHALL ONLY BE PLACED IN THE TANGENT AREA AND AT A MAXIMUM SPACING OF 40 FEET. THE TANGENT AREA IS DEFINED AS THE AREA AFTER THE TRANSITION TAPER WHERE THE WORK TAKES PLACE. DRUMS SHALL BE USED IN THE TRANSITION TAPERS FOR NIGHT OPERATIONS.

STEPS SHOULD BE TAKEN TO ENSURE THAT THE WEIGHTED CHANNELIZERS WILL NOT BE BLOWN OVER OR DISPLACED BY WIND OR MOVING TRAFFIC. BALLASTS SHOULD NOT PRESENT A HAZARD IF THE WEIGHTED CHANNELIZERS ARE IN ADVERTENTLY STRUCK, NOR SHOULD THEY AFFECT THE VISIBILITY OF THE WEIGHTED CHANNELIZERS. ALL BALLASTS USED SHOULD BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

PAYMENT SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614 MAINTAINING TRAFFIC.

**WORK SITE LIGHTING:**

FLOODLIGHTING FOR THE WORK SITE FOR OPERATIONS DURING NIGHTTIME PERIODS SHALL BE ACCOMPLISHED SO THAT THE LIGHTS DO NOT CAUSE GLARE TO THE DRIVERS ON THE HIGHWAY. 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 AND PRIOR TO COMMENCING ANY WORK. IF GLARE IS DETECTED, THE LIGHT PLACEMENT AND SHIELDS SHALL BE ADJUSTED TO THE SATISFACTION OF THE ENGINEER BEFORE WORK PROCEEDS.

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL, TO THE DISTRICT SIX MAINTENANCE OF TRAFFIC COORDINATOR, THE CONTRACTOR'S MAINTENANCE OF TRAFFIC PLAN WITH CONSTRUCTION PHASING DESCRIPTIONS, PRIOR TO BEGINNING WORK.

**USE OF STANDARD DRAWINGS:**

FOR THE PURPOSE OF THIS PROJECT, "MOVING OPERATION" SHALL BE LIMITED TO PAVEMENT MARKING/STRIPING.

IT MAY BE NECESSARY TO EXTEND THE ADVANCE WARNING AND BUFFER ZONES BEYOND THE MINIMUM DISTANCES SHOWN ON THE STANDARD DRAWINGS. THIS MAY BE DUE TO HORIZONTAL ALIGNMENT, VERTICAL ALIGNMENT, RAMP LOCATIONS, OR OTHER SIGHT OBSTRUCTIONS. LOCATIONS OF THE TAPER ZONES MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER, BUT TAPER LENGTHS MUST MEET THE MINIMUM STANDARDS. TAPERS SHOULD BE PLACED IN TANGENT SECTIONS WHENEVER POSSIBLE. ADDITIONAL YIELD SIGNS MAY BE REQUIRED FOR RAMPS WITHIN 1,000 FEET OF A WORK ZONE. PAYMENT SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

FOR ANY MULTILANE HIGHWAY, DEVICE SPACING SHALL BE A MAXIMUM OF 40' CENTER ON CENTER IN THE TAPERS AND 80' CENTER ON CENTER IN THE TANGENT SECTIONS.

**ITEM 614 - WORK ZONE MARKING SIGN:**

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AT LOCATIONS IDENTIFIED BY THE ENGINEER FOR WORK ZONE MARKING SIGNS PER THE REQUIREMENTS OF MT-101.90, 614.04 AND 614.11. (PLACE ON BOTH SIDES OF ROADWAY).

LOC	BEGIN SLM	END SLM	SIDE	W8-H12a	W14-3
				NO EDGE LINES	NO PASSING LINE
				EACH	EACH
FRA-104	5.63	5.71	NB	2	2
FRA-104	5.63	5.71	SB	2	2
TOTAL				4	4

THE FOLLOWING QUANTITY HAS BEEN PROVIDED AND THE TOTAL HAS BEEN CARRIED TO THE GENERAL SUMMARY.  
ITEM 614 - WORK ZONE MARKING SIGN = 8 EACH

**DRUM REQUIREMENTS:**

IN ADDITION TO THE REQUIREMENTS OF THE PLANS, SPECIFICATION AND PROPOSAL, DRUMS FURNISHED BY THE CONTRACTOR SHALL BE NEW AND UNUSED AT THE TIME OF ARRIVAL ON THE PROJECT. ANY DRUMS BROUGHT ON THE PROJECT, WHICH HAVE PREVIOUSLY BEEN USED ELSEWHERE, WILL NOT BE ACCEPTED.

PAYMENT FOR DRUMS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR MAINTAINING TRAFFIC UNLESS SEPARATELY ITEMIZED.

**ITEM 614 - WORK ZONE CENTER LINE, CLASS II, 740.06, TYPE 1:**

WORK ZONE CENTER LINE SHALL BE PLACED TO REFLECT THE PROPOSED CENTER LINE AS DETERMINED FROM THE PROPOSED MARKINGS WITHIN THE PROJECT LIMITS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION, SIZE, AND TYPE OF WORK ZONE MARKINGS NEEDED MEETING THE REQUIREMENTS OF ITEM 614 BEFORE THE REMOVAL OR RESURFACING OBLITERATES THE EXISTING.

LOCATION	BEGIN SLM	END SLM	APP	TOTAL	UNIT
FRA-104	5.63	5.71	2	0.16	MI
TOTAL				0.16	MI

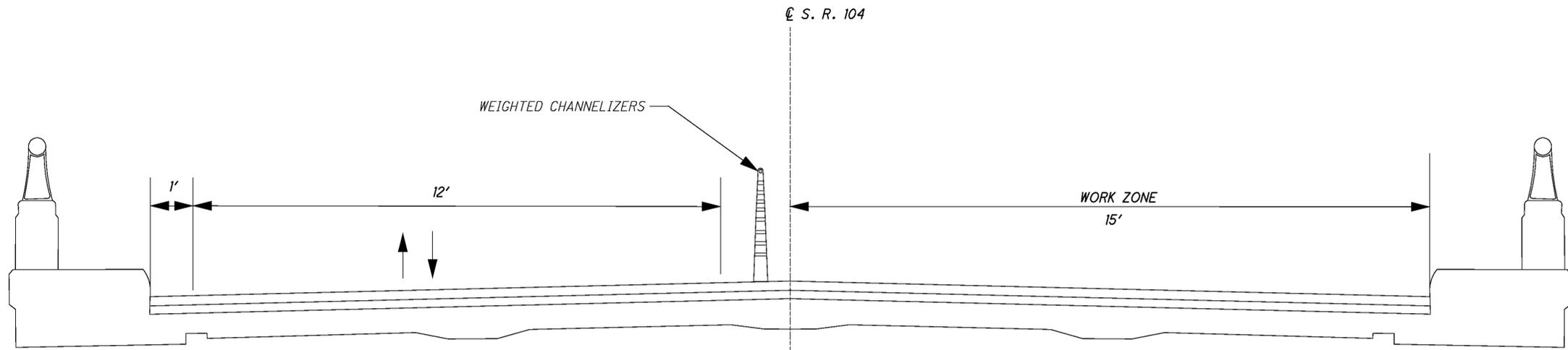
THE FOLLOWING QUANTITY HAS BEEN PROVIDED AND THE TOTAL HAS BEEN CARRIED TO THE GENERAL SUMMARY.  
ITEM 614 - WORK ZONE CENTER LINE, CLASS II, 740.06, TYPE 1 = 0.16 MI

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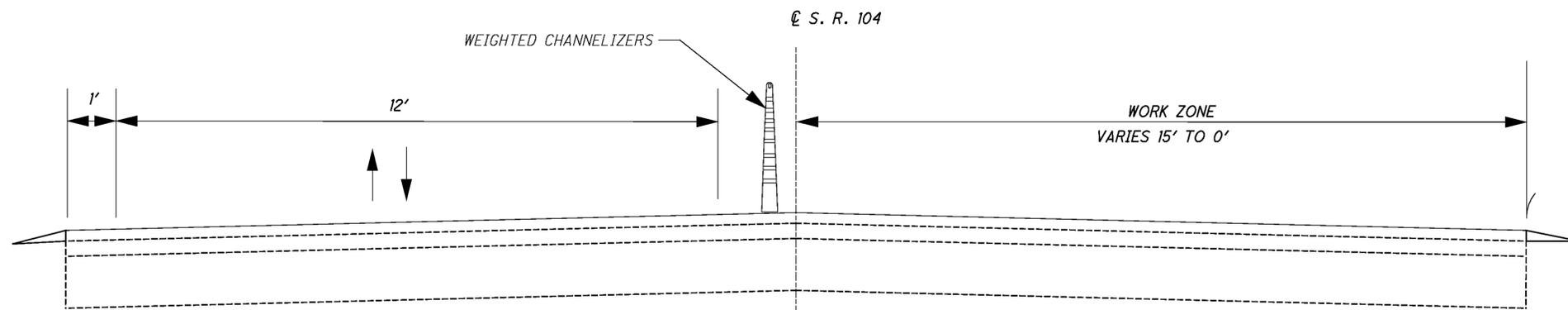
MAINTENANCE OF TRAFFIC  
GENERAL NOTES

FRA-104-5.63

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FRA-104-5.63  
SFN: 2508583  
(N.T.S.)  
STA. 48+25.47 TO STA. 51+74.53



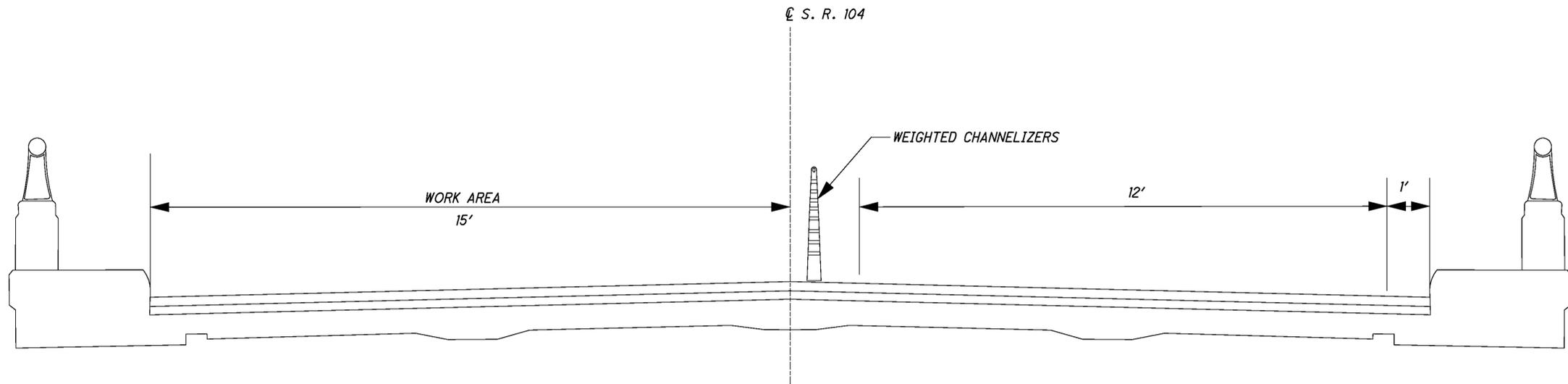
FRA-104-5.63  
STA. 47+75.47 TO STA. 48+25.47  
STA. 51+74.53 TO STA. 52+24.53  
(N.T.S.)

CALCULATED	MK
CHECKED	KF

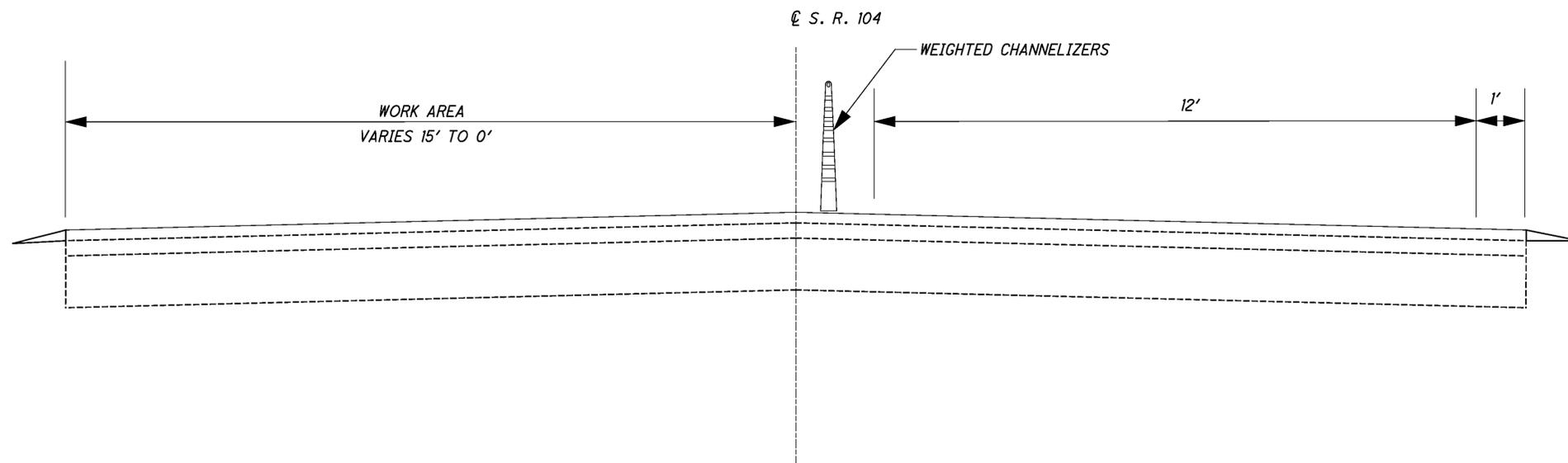
**MAINTENANCE OF TRAFFIC PLAN TYPICAL SECTIONS  
PHASE 1**

**FRA-104-5.63**

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FRA-104-5.63  
SFN: 2508583  
(N.T.S.)  
STA. 48+25.47 TO STA. 51+74.53

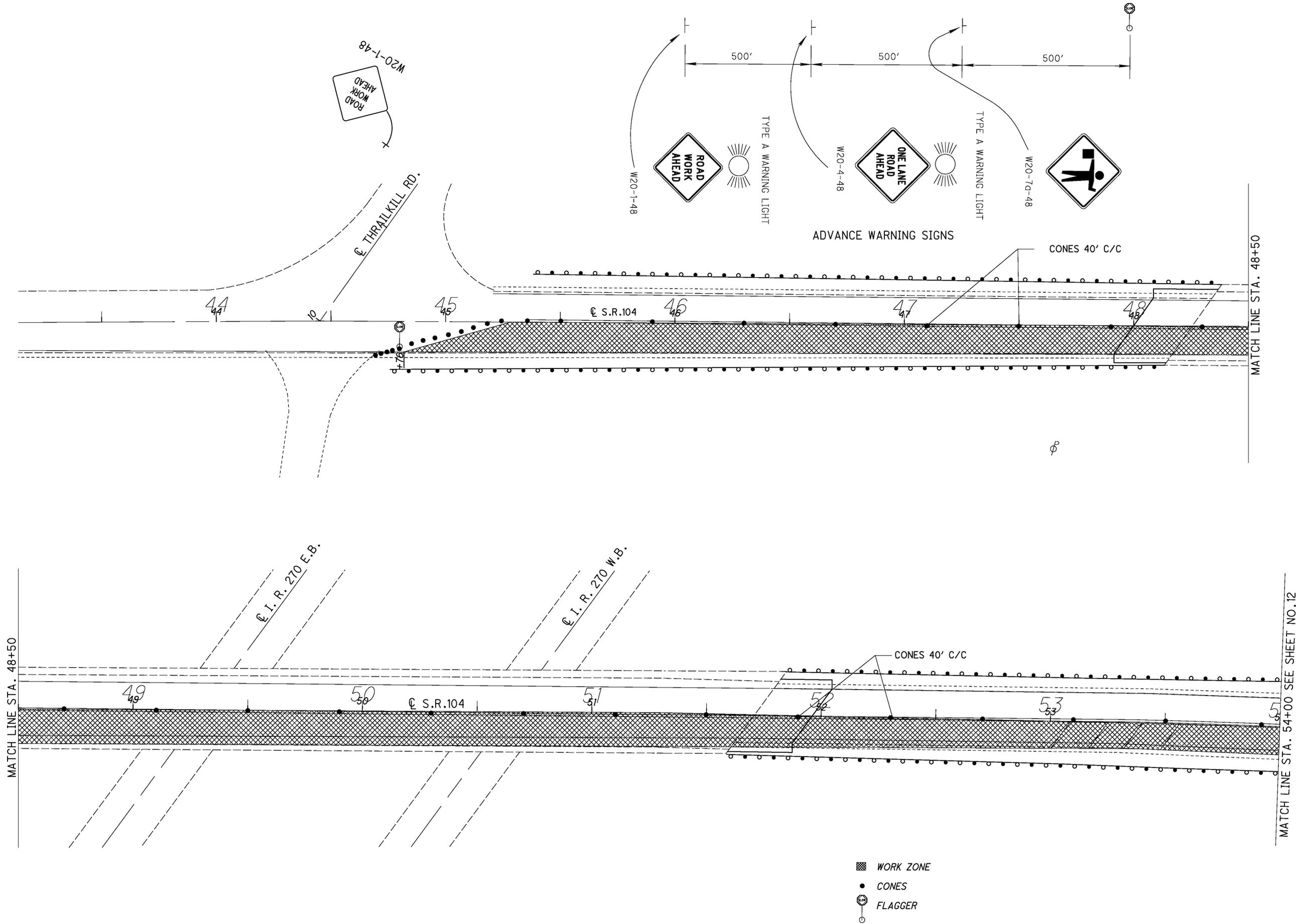


FRA-104-5.63  
STA. 47+75.47 TO STA. 48+25.47  
STA. 51+74.53 TO STA. 52+24.53  
(N.T.S.)

CALCULATED	MK
CHECKED	KF

MAINTENANCE OF TRAFFIC PLAN TYPICAL SECTIONS  
PHASE 2

FRA-104-5.63

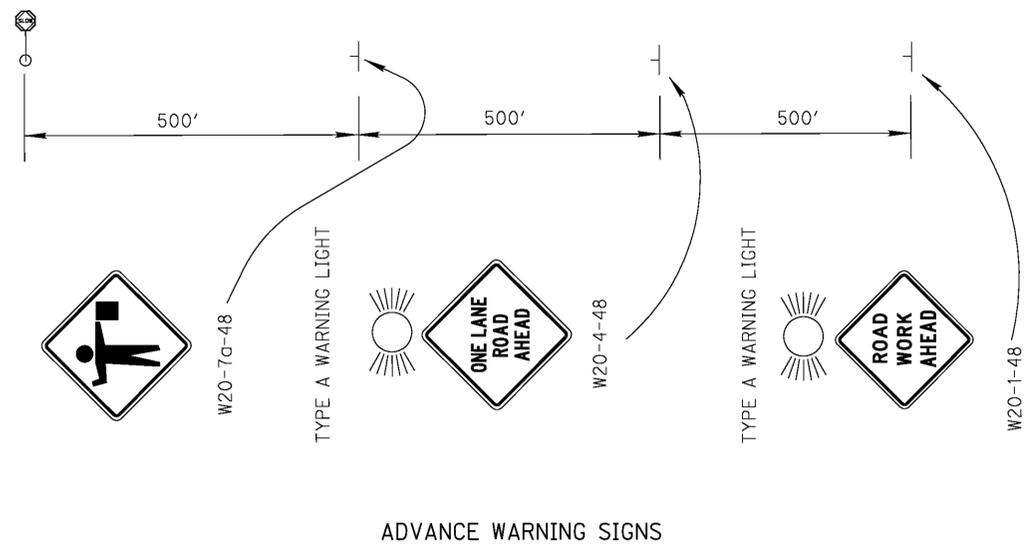
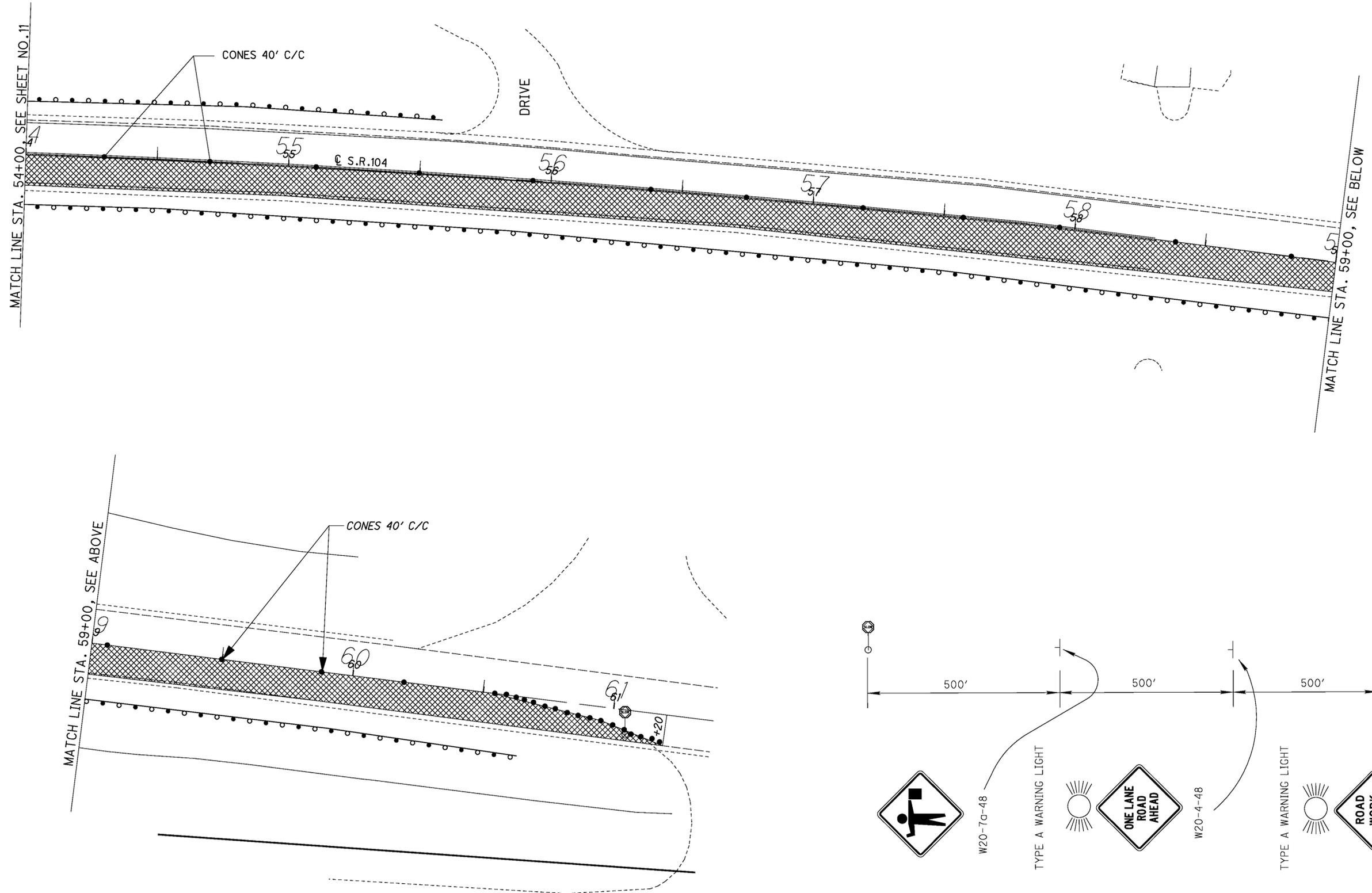


CALCULATED MK  
CHECKED KF

0 10 20 40  
HORIZONTAL SCALE IN FEET

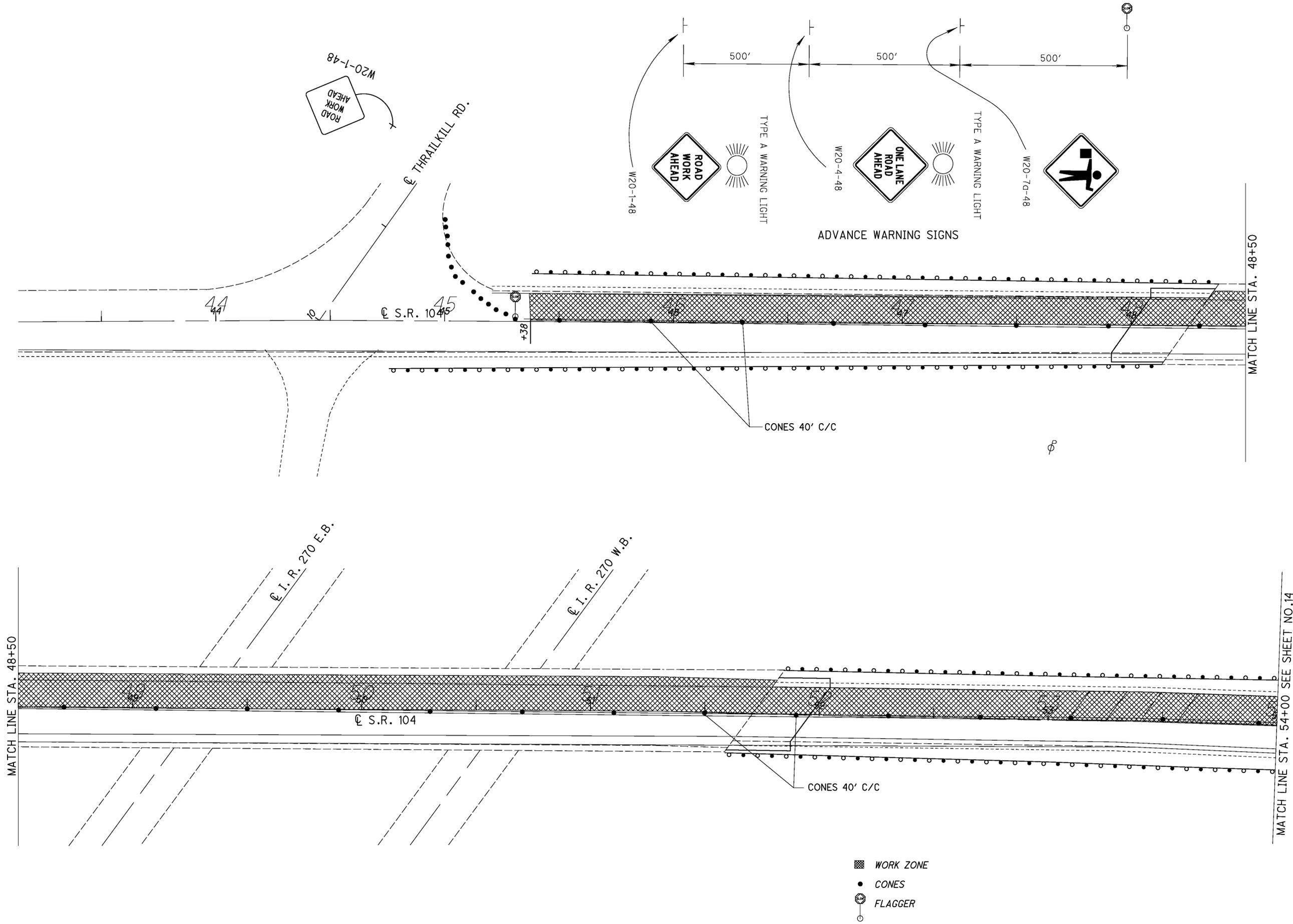
**MAINTENANCE OF TRAFFIC PLAN  
PHASE 1**

-  WORK ZONE
-  CONES
-  FLAGGER



ADVANCE WARNING SIGNS

	 <p>HORIZONTAL SCALE IN FEET</p>	<p>CALCULATED MK</p> <p>CHECKED KF</p>	<p><b>MAINTENANCE OF TRAFFIC PLAN</b></p> <p><b>PHASE 1</b></p>
<p><b>FRA-104-5.63</b></p>		<p>12 24</p>	



- WORK ZONE
- CONES
- ⊙ FLAGGER

CALCULATED MK  
CHECKED KF

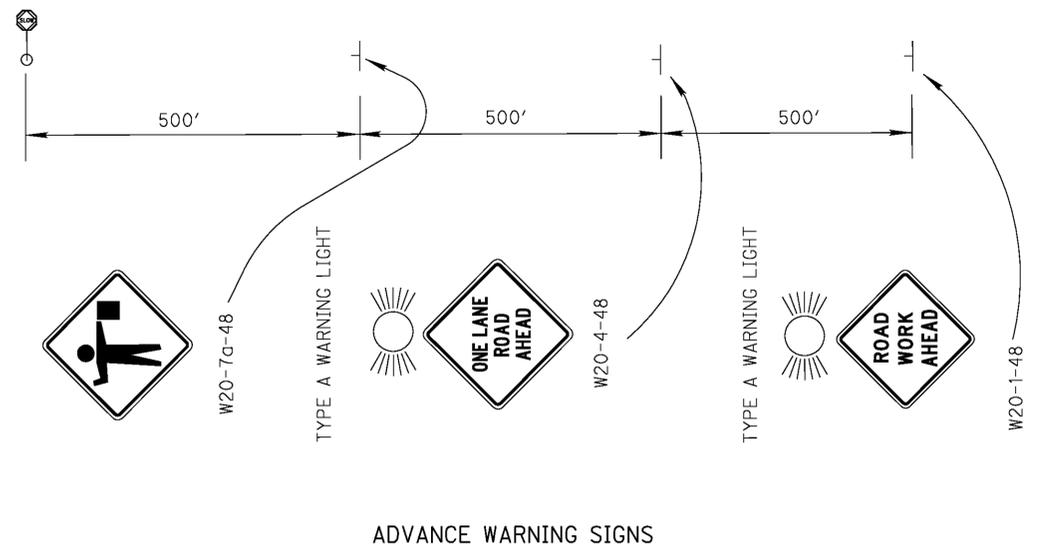
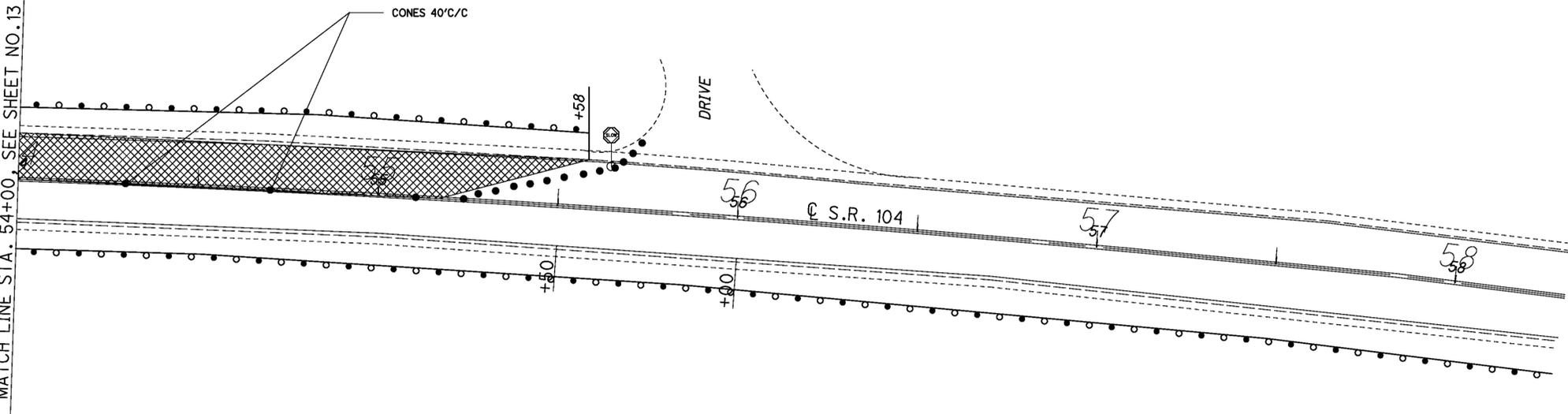
0 10 20 40  
HORIZONTAL SCALE IN FEET

N

**MAINTENANCE OF TRAFFIC PLAN  
PHASE 2**

**FRA-104-5.63**

MATCH LINE STA. 54+00, SEE SHEET NO. 13



ADVANCE WARNING SIGNS

- WORK ZONE
- CONES
- FLAGGER

PHOENIX GOLF COURSE

☉ S.R. 104

CALCULATED	
MK	KF
CHECKED	

0 10 20 40  
HORIZONTAL SCALE IN FEET

**MAINTENANCE OF TRAFFIC PLAN  
PHASE 2**

**FRA-104-5.63**

SHEET NUMBER

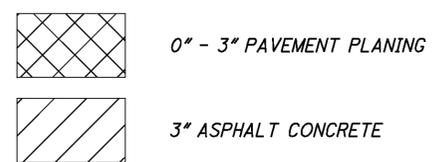
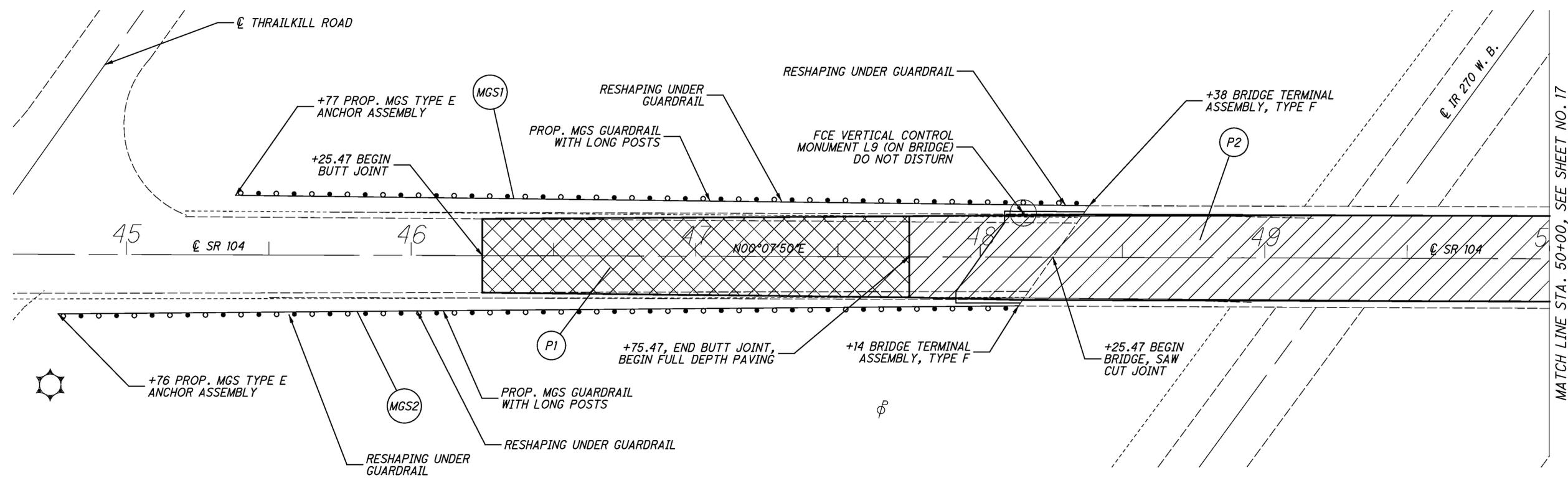
I:\Projects\fra\104\0563\014\86212\production\Roadway\SUMMARY\_SHEETS.dgn 8/25/2014 6:50:54 AM mkatona

SHEET NUMBER								STRUCTURES				PARTICIPATION				ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
5-6	7-8	16	17	18	20	21	22-24	FRA-104-0563 2508583	01/TMS/BR												
																		ROADWAY			
		550	650	572					1,772					202	38000	1,772	FT	GUARDRAIL REMOVED			
		2		2					4					202	42000	4	EACH	ANCHOR ASSEMBLY REMOVED, TYPE A			
83		2	2						4					202	47001	4	EACH	BRIDGE TERMINAL ASSEMBLY REMOVED, AS PER PLAN	6		
									83					203	20000	83	CU YD	EMBANKMENT			
		5.5	6.5	5.7					17.7					209	15000	17.7	STATION	RESHAPING UNDER GUARDRAIL			
		550	650	568.75					1,768.75					606	15100	1,768.75	FT	GUARDRAIL, TYPE MGS WITH LONG POSTS			
		2		2					4					606	26150	4	EACH	ANCHOR ASSEMBLY, MGS TYPE E			
		2	2						4					606	32500	4	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE F			
																		EROSION CONTROL			
									1,000					832	30000	1,000	EACH	EROSION CONTROL			
																		PAVEMENT			
		453	447						900					254	01000	900	SQ YD	PAVEMENT PLANING, ASPHALT CONCRETE			
		88	90						178					407	13900	178	GALLON	TACK COAT, 702.13			
		58	60						118					407	14000	118	GALLON	TACK COAT FOR INTERMEDIATE COURSE			
		32	34						66					442	20000	66	CU YD	ASPHALT CONCRETE SURFACE COURSE, 12.5MM, TYPE A (448)			
		56	47						103					442	20200	103	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, 19MM, TYPE A (448)			
		4	47						51					617	10100	51	CU YD	COMPACTED AGGREGATE			
		89	447						536					617	20000	536	SQ YD	SHOULDER PREPARATION			
		3	4						7					617	25000	7	M GAL	WATER			
																		TRAFFIC CONTROL			
									11					621	00100	11	EACH	RPM			
									11					621	54000	11	EACH	RAISED PAVEMENT MARKER REMOVED			
7		7	8	9					24					626	00100	24	EACH	BARRIER REFLECTOR			
1.0									7					630	02100	7	FT	GROUND MOUNTED SUPPORT, NO. 2 POST			
									1.0					630	80100	1.0	SQ FT	SIGN, FLAT SHEET			
									0.28					644	00100	0.28	MILE	EDGE LINE, 4"			
									0.14					644	00300	0.14	MILE	CENTER LINE			
																		STRUCTURE (20' AND OVER) FRA-104-0563			
								60	60					SPECIAL	51631200	60	FT	SAWING AND SEALING BITUMINOUS CONCRETE JOINTS	24		
								74	74					SPECIAL	51631300	74	FT	POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM	23		
								142	142					SPECIAL	51912300	142	SQ YD	PATCHING CONCRETE BRIDGE DECK - TYPE B	23		
																		MAINTENANCE OF TRAFFIC			
	40								40					614	11110	40	hour	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE			
	8								8					614	12460	8	EACH	WORK ZONE MARKING SIGN			
	0.16								0.16					614	21600	0.16	MILE	WORK ZONE CENTER LINE, CLASS II, 740.06, TYPE I	8		
LUMP									LUMP					614	11000	LUMP		MAINTAINING TRAFFIC			
									LUMP					623	10001	LUMP		CONSTRUCTION LAYOUT STAKES AND SURVEYING, AS PER PLAN	5		
									LUMP					624	10000	LUMP		MOBILIZATION			

GENERAL SUMMARY

FRA - 104 - 5.63

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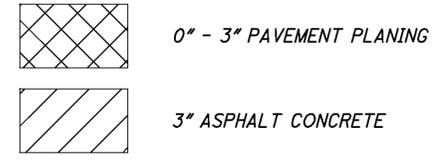
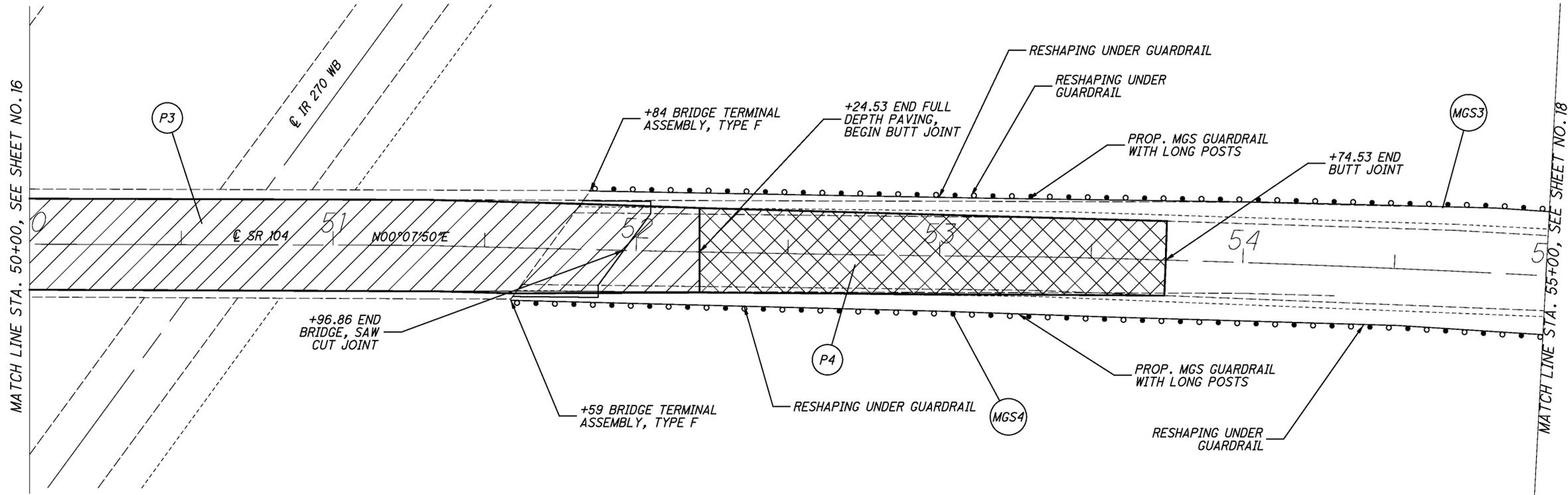


- NOTES:
- BUTT JOINT IS TO BE PLACED AT BEGINNING AND END OF FULL DEPTH PAVEMENT. SEE SHEET 4/23 FOR BUTT JOINT DETAIL.
  - GUARDRAIL HEIGHT IS TO BE TRANSITIONED AS PER STANDARD CONSTRUCTION DRAWING MGS-4.3

REF. NO.	BEGIN STATION	END STATION	TYPICAL	AVG. PAVEMENT AND SHOULDER WIDTH	407		442		254		617		209		202		626		606		REMARKS	
					TACK COAT, 702.13	TACK COAT, INTERMEDIATE COURSE	ASPHALT CONCRETE SURFACE COURSE, 12.5mm, TYPE A (448) 1.25"	ASPHALT CONCRETE INTERMEDIATE COURSE, 19 mm, TYPE A (448) 1.75"	PAVEMENT PLANING, ASPHALT CONCRETE	COMPACTED AGGREGATE	SHOULDER PREPARATION	WATER	RESHAPING UNDER GUARDRAIL	GUARDRAIL REMOVED	TYPE A ANCHOR ASSEMBLY REMOVED	BRIDGE TERMINAL ASSEMBLY REMOVED, AS PER PLAN	BARRIER REFLECTORS, TYPE A2	GUARDRAIL, TYPE MGS WITH LONG POSTS	ANCHOR ASSEMBLY, MGS TYPE E	BRIDGE TERMINAL ASSEMBLY, TYPE F		
					GAL	GAL	CU YD	CU YD	SQ YD	CU YD	SQ YD	M GAL	STATION	FT	EACH	EACH	EACH	FT	EACH	EACH		
P1	46+27.47	47+75.47	2	28.0	35	23	8	22	453	2	67	2										
P2	47+75.47	50+00.00	1	29.5	53	35	24	34		2	22	1										
MGS1	45+77.00	50+00.00											2.4	237.5	1	1	3	237.5	1	1		
MGS2	45+76.00	50+00.00											3.1	312.5	1	1	4	312.5	1	1		
CARRIED TO GENERAL SUMMARY					88	58	32	56	453	4	89	3	5.5	550.0	2	2	7	550.0	2	2		

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- NOTES:
- BUTT JOINT IS TO BE PLACED AT BEGINNING AND END OF FULL DEPTH PAVEMENT. SEE SHEET 4/23 FOR BUTT JOINT DETAIL.
  - GUARDRAIL HEIGHT IS TO BE TRANSITIONED AS PER STANDARD CONSTRUCTION DRAWING MGS-4.3

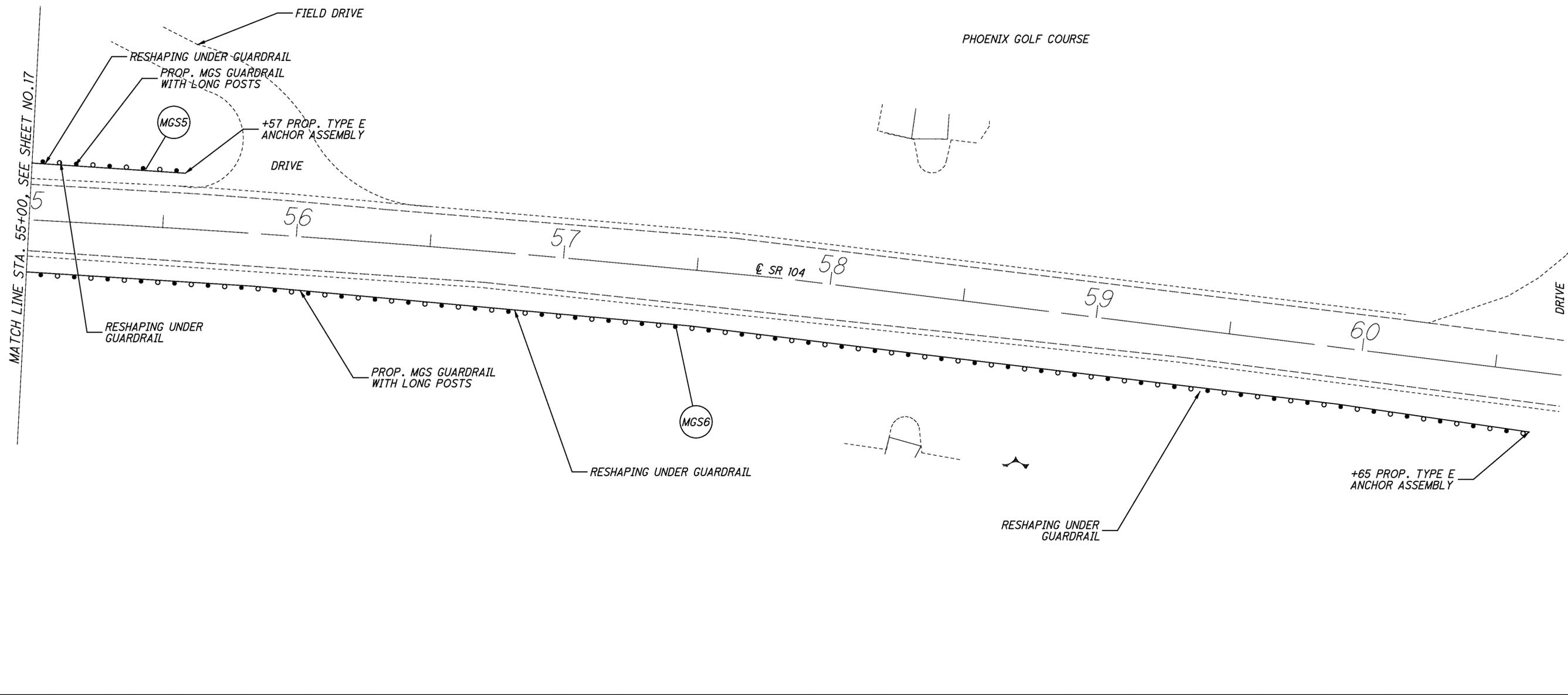
REF. NO.	BEGIN STATION	END STATION	TYPICAL	AVG. PAVEMENT AND SHOULDER WIDTH	407		442		254		617		209		202		626		606		REMARKS	
					TACK COAT, 702.13	TACK COAT, INTERMEDIATE COURSE	ASPHALT CONCRETE SURFACE COURSE, 12.5mm, TYPE A (448) 1.25"	ASPHALT CONCRETE INTERMEDIATE COURSE, 19 mm, TYPE A (448) 1.75"	PAVEMENT PLANING, ASPHALT CONCRETE	COMPACTED AGGREGATE	SHOULDER PREPARATION	WATER	RESHAPING UNDER GUARDRAIL	GUARDRAIL REMOVED	TYPE A ANCHOR ASSEMBLY REMOVED	BRIDGE TERMINAL ASSEMBLY REMOVED, AS PER PLAN	BARRIER REFLECTORS, TYPE A2	GUARDRAIL, TYPE MGS WITH LONG POSTS	ANCHOR ASSEMBLY, MGS TYPE E	BRIDGE TERMINAL ASSEMBLY, TYPE F		
					GAL	GAL	CU YD	CU YD	SQ YD	CU YD	SQ YD	M GAL	STATION	FT	EACH	EACH	EACH	FT	EACH	EACH		
P3	50+00.00	52+24.53	1	29.5	55	37	26	36	447	2	22	1										
P4	52+24.53	53+74.53	2	28.0	35	23	8	11		2	67	2										
MGS3	51+84.00	55+00.00											3.1	312.5		1	4	312.5		1		
MGS4	51+59.00	55+00.00											3.4	337.5		1	4	337.5		1		
CARRIED TO GENERAL SUMMARY					90	60	34	47	447	4	89	3	6.5	650.0		2	8	650.0		2		



PLAN SHEET  
FROM STA. 50+00 TO STA. 55+00

FRA-104-5.63

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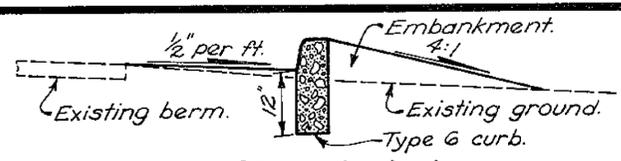
REF. NO.	BEGIN STATION	END STATION	TYPICAL AVG. PAVEMENT AND SHOULDER WIDTH	407		617			209		202		626		606			REMARKS
				TACK COAT, 702.13 GAL	ASPHALT CONCRETE SURFACE COURSE, 12.5mm, TYPE A (448) 3" CU YD	COMPACTED AGGREGATE CU YD	SHOULDER PREPARATION SQ YD	WATER M GAL	RESHAPING UNDER GUARDRAIL STATION	GUARDRAIL REMOVED FT	TYPE A ANCHOR ASSEMBLY REMOVED EACH	BRIDGE TERMINAL ASSEMBLY REMOVED EACH	BARRIER REFLECTOR, TYPE A2 EACH	GUARDRAIL, TYPE MGS WITH LONG POSTS FT	ANCHOR ASSEMBLY, MGS TYPE E EACH	BRIDGE TERMINAL ASSEMBLY, TYPE F EACH		
MGS5	55+00.00	55+57.00								0.3	32	1	3	31.25	1			
MGS6	55+00.00	60+65.00								5.4	540	1	6	537.5	1			
CARRIED TO GENERAL SUMMARY										5.7	572	2	9	568.75	2			

**PLAN SHEET**  
**FROM STA. 55+00 TO STA. 60+65**

**FRA-104-5.63**

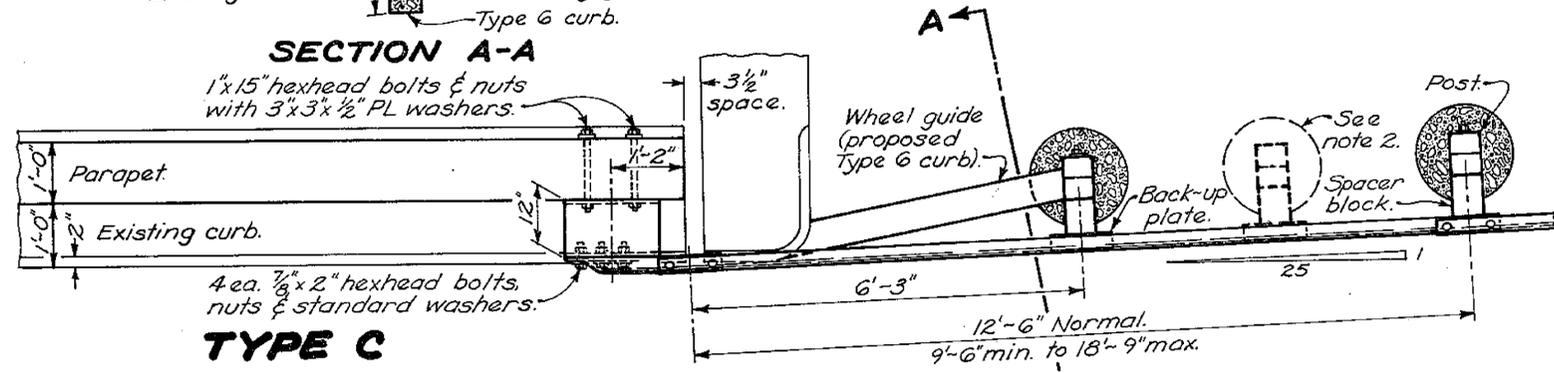
18  
24

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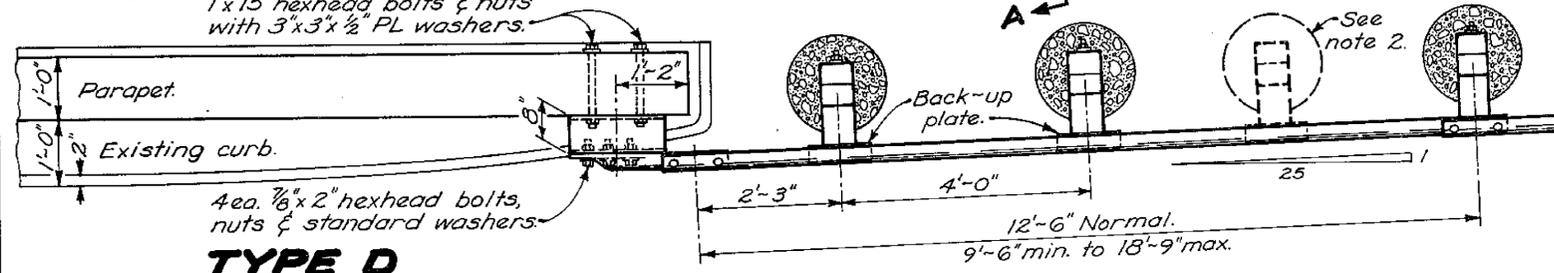
**SECTION A-A**

1"x15" hexhead bolts & nuts with 3"x3"x1/2" PL washers.



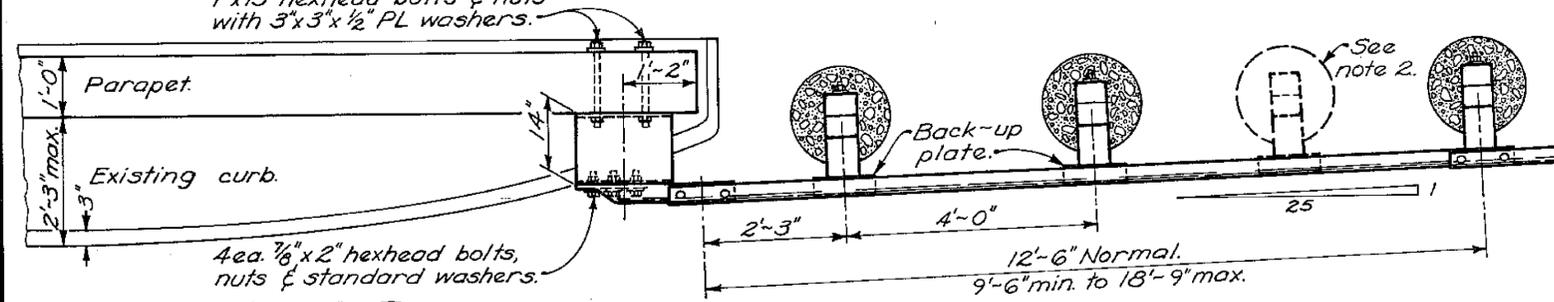
**TYPE C**

1"x15" hexhead bolts & nuts with 3"x3"x1/2" PL washers.



**TYPE D**

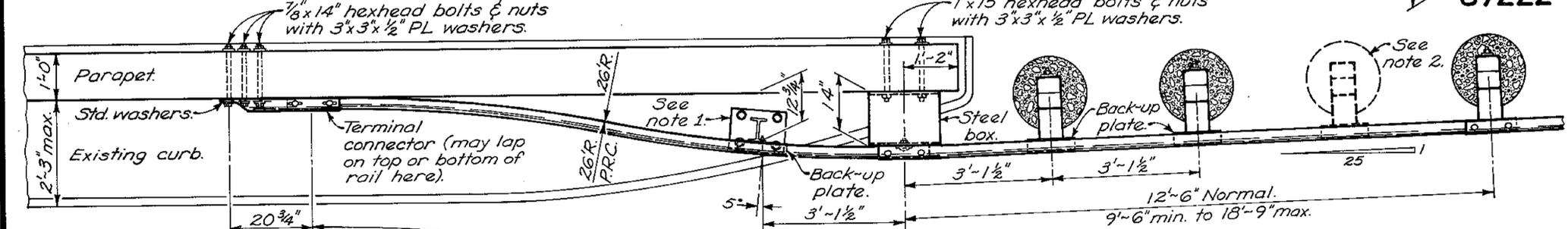
1"x15" hexhead bolts & nuts with 3"x3"x1/2" PL washers.



**TYPE E**

7/8"x14" hexhead bolts & nuts with 3"x3"x1/2" PL washers.

1"x15" hexhead bolts & nuts with 3"x3"x1/2" PL washers.



**TYPE F**

(Two-way cross road)

Tighten bolts for expansion per 606.05.

606 Guardrail. See payment note.

**NOTES**

**PAYMENT** for item 606, each, Bridge terminal assembly, Type \_\_\_\_, shall include the additional cost in excess of normal guardrail cost, such as: additional or heavier posts, concrete encasement, extra rail, steel box, curb, embankment, terminal connector, anchors and other hardware, etc.

**POSTS** shall be 6"x8" wood or W6x15 steel (except note 1 post) of the same material type as used on approach guardrail, with 4" minimum concrete encasement.

**NOTE 1:** Use W6x9 inlet mounted post as detailed on GR-1 with length to mount rail top 27" above bridge deck.

**NOTE 2:** Place one additional encased post halfway between adjacent posts when the 12'-6" normal rail section is increased.

**FOR DETAILS** not shown, see GR-1 and other Standard Construction Drawings pertaining to design of specific guardrail type.

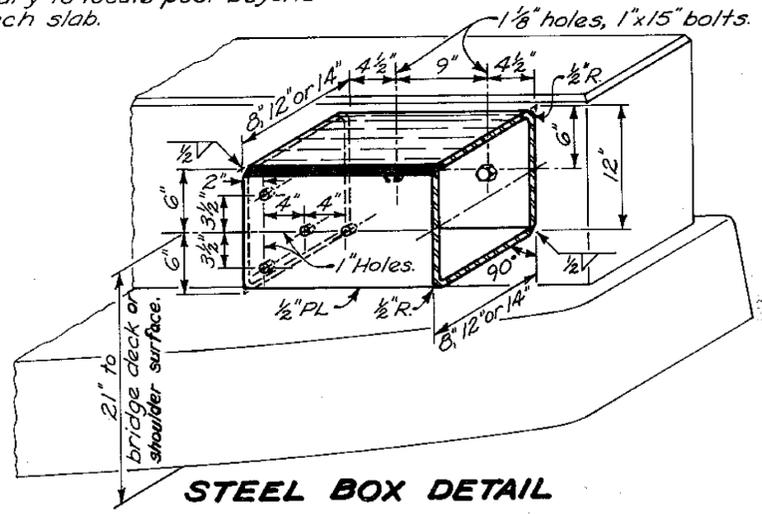
**GUARDRAIL TERMINATION** as directed by the Engineer. The 12'-6" normal rail section may vary as shown to facilitate connection of or reconstruction of existing approach guardrail. The 1'-2" terminal connector location dimension may be increased to avoid existing parapet steel.

**SELF-DRILLING ANCHORS** meeting requirements of 712.04 or Group VIII Type 1 anchors per FF-5-325, with 7/8"x1 1/2" bolts with washers may be substituted for the 7/8"x14" bolts shown in the parapet for Type F.

Anchor installations not satisfactory to the Engineer shall be replaced with bolts as shown extending through the parapet or as directed by the Engineer.

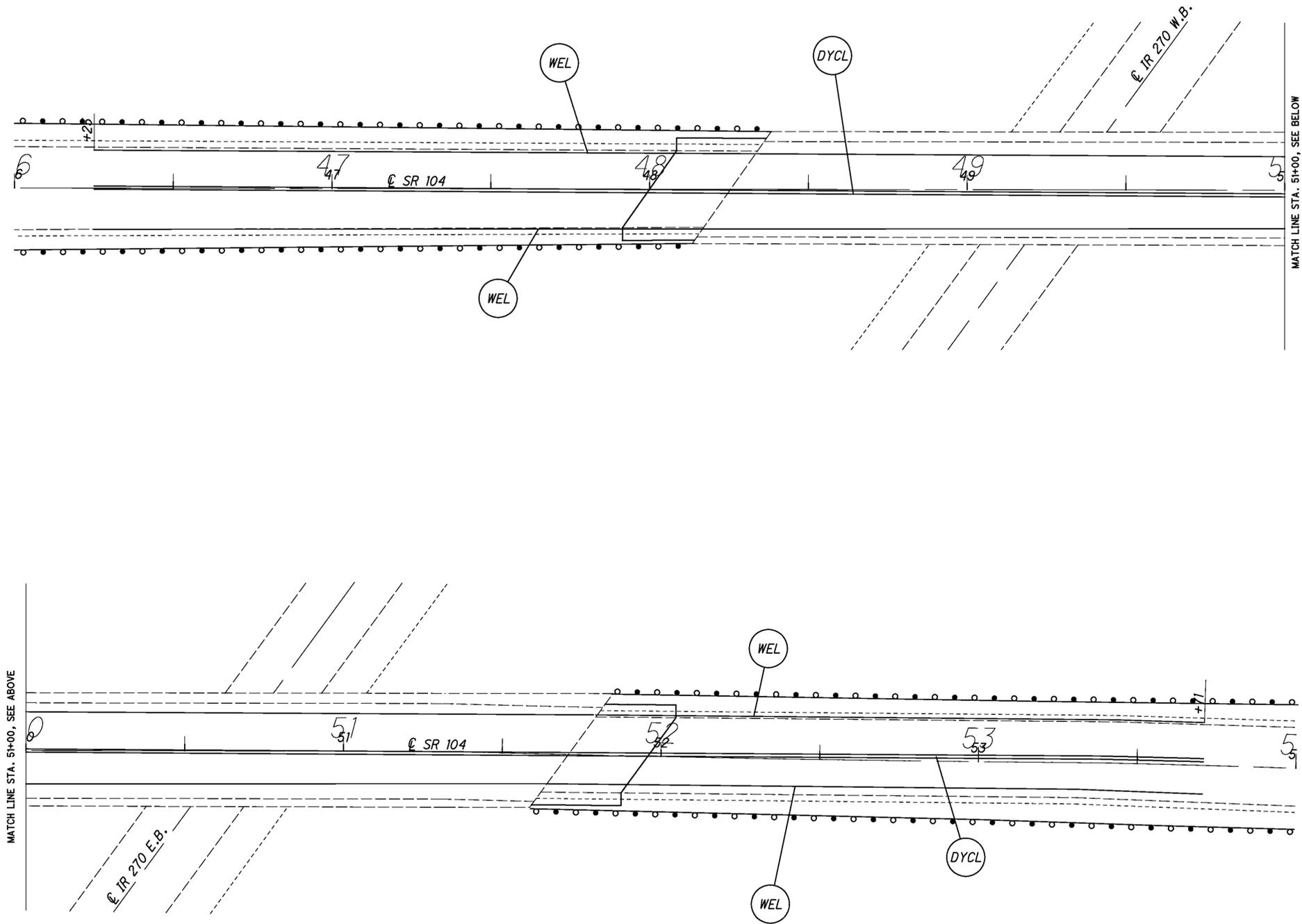
**STEEL BOX** of the appropriate size, galvanized after welding any two opposite corners, shall be mounted on the parapet so the rail top is 27" above the bridge deck.

**SPACER BLOCK** size may be increased if necessary to locate post beyond wide approach slab.



BUREAU OF LOCATION AND DESIGN OHIO DEPARTMENT OF TRANSPORTATION	
<b>BRIDGE TERMINAL ASSEMBLIES</b>	
<b>STANDARD CONSTRUCTION DRAWING</b>	
<b>GR-3A</b>	
DATE 12-6-76 2-5-82	APPROVED <i>[Signature]</i> ENGR., L. & D.

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REF. NO.	BEGIN STATION	END STATION	LOCATION	QUANTITY	UNIT	REMARKS
DYCL	46+25	53+75	C	0.14	MILE	DOUBLE YELLOW CENTERLINE
WEL	46+25	53+75	L	0.14	MILE	4" WHITE EDGE LINE
WEL	46+25	53+75	R	0.14	MILE	
CARRIED TO TRAFFIC CONTROL SUMMARY				0.28	0.14	

**FRA - 104 - 5.63**

**PAVEMENT MARKING PLAN**  
**STA. 46+00 TO STA. 54+00**

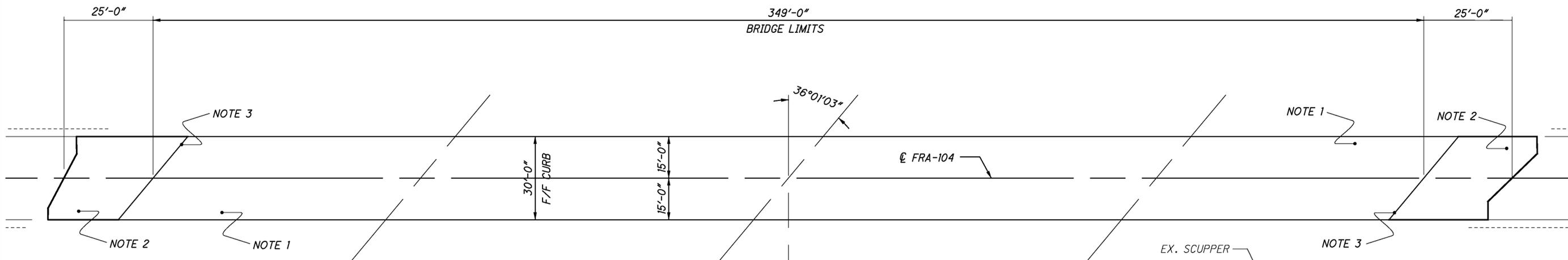
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CHECKED KF

HORIZONTAL SCALE IN FEET  
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**NOTES:**

NOTE 1:  
DECK IS TO BE PATCHED WITH TYPE B PATCHING MATERIAL BEFORE BEING OVERLAID.

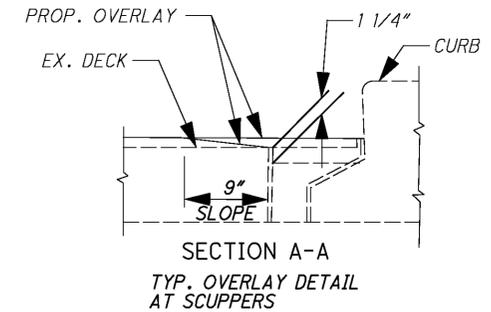
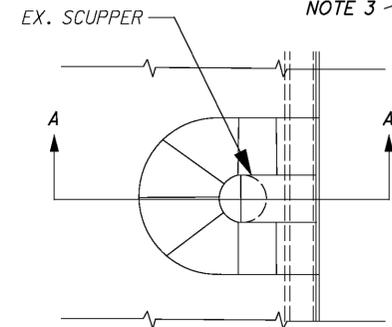
NOTE 2:  
APPROACH SLABS ARE PAVED WITH ASPHALT CONCRETE.

NOTE 3:  
SAW AND SEAL ABOVE APPROACH SLAB/BRIDGE JOINT AND APPROACH SLAB/ ROADWAY USING ITEM 409 - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS.

\* FOR ASPHALT OVERLAY QUANTITIES AND DETAILS, SEE SHEETS 16-18.

FOR EXPANSION JOINT SAWING AND SEALING DETAIL, SEE SHEET 24.

**BRIDGE PLAN**  
FRA-104-5.63 (2508583)  
CONTINUOUS STEEL BEAM OVER I-270



**QUANTITIES**

**STRUCTURE NOTES**

ITEM	516	516	519												
	ITEM SPECIAL - SAWING AND SEALING BITUMINOUS CONCRETE JOINTS	ITEM SPECIAL - POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM	ITEM SPECIAL - PATCHING CONCRETE DECK - TYPE B												
	FT	FT	SQ YD												
			142												
	30	37													
	30	37													
	60	74	142												

FRA-104-0563 (2508583)

DECK AREA = 12,745 SQ. FT. = 1,416 SQ. YD.

PATCHING - 10% OF DECK AREA

JOINT BETWEEN DECK AND APPROACH SLAB STA. 48+25.47  
JOINT BETWEEN ROADWAY AND APPROACH SLAB STA. 48+00.47

JOINT BETWEEN DECK AND APPROACH SLAB STA. 51+74.53  
JOINT BETWEEN ROADWAY AND APPROACH SLAB STA. 51+99.53

TOTALS CARRIED TO GENERAL SUMMARY

CALCULATED MK  
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 DESIGN AGENCY DIST. #6 IN-HOUSE DESIGN  
 DATE  
 REVIEWED DATE  
 SFN 2508583  
**STRUCTURE SUBSUMMARY AND DETAILS**  
**BRIDGE OVER I-270**  
**FRA-104-5.63**  
 1 2  
 22  
 24

**STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:**

REFER TO THE FOLLOWING PROPOSAL NOTES:  
 PN512 DATE (REVISED) 12/31/12

**DESIGN SPECIFICATIONS:**

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2002, AND THE ODOT BRIDGE DESIGN MANUAL.

**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 THE PROJECT.

**EXISTING STRUCTURE VERIFICATION:**

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

BASE CONTRACT BID PRICES UPON RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE. HOWEVER, THE DEPARTMENT WILL PAY FOR ALL PROJECT WORK BASED UPON ACTUAL DETAILS AND DIMENSIONS THAT HAVE BEEN VERIFIED IN THE FIELD.

**PROPOSED STRUCTURE WORK:**

BELOW IS A SUMMARY OF THE STRUCTURE WORK REQUIRED ON THIS PROJECT. NOTE, THIS IS NOT INTENDED TO SERVE AS AN ALL-INCLUSIVE LIST OF WORK BUT RATHER A GENERAL GUIDELINE OF PRIMARY WORK ITEMS.

- ITEM 519 - SPECIAL - PATCHING OF CONCRETE DECK FOLLOWING PN 512 TYPE B
- PLACE 3" ITEM 442 - ASPHALT CONCRETE SURFACE COURSE, 12.5mm, TYPE A (448) IN TWO 1.5" LIFTS
- ITEM 409 - SPECIAL - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS

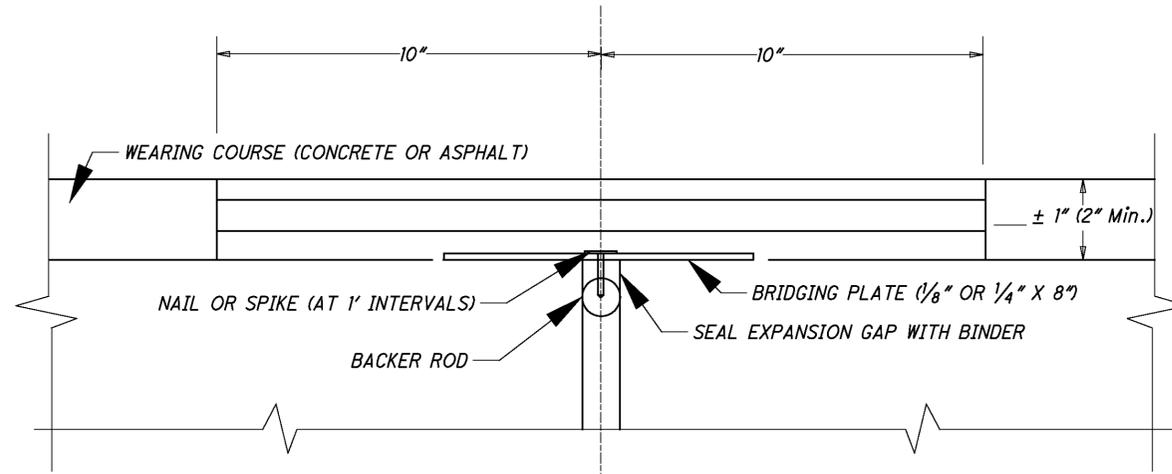
**GENERAL NOTES AND DETAILS FOR POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM**

**ITEM 846 - POLYMER MODIFIED ASPHALT EXPANSION SYSTEM**

THIS ITEM WILL BE USED TO SEAL THE EXPANSION/CONTRACTION JOINTS AS PER THESE DETAILS AND THE MANUFACTURER'S REQUIREMENTS USING A POLYMER-MODIFIED ASPHALT SYSTEM. THE WORK SHALL CONFORM TO SUPPLEMENTAL SPECIFICATION 846, DATED 10/18/2013.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT:**

THE DEPARTMENT WILL MEASURE THE JOINT BY THE NUMBER OF FEET AND WILL PAY FOR ACCEPTED QUANTITIES AT THE CONTRACT PRICE AS: ITEM 846, FEET, POLYMER MODIFIED ASPHALT EXPANSION JOINT SYSTEM.



TYPICAL CONCRETE SLAB JOINT

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<b>STRUCTURE NOTES BRIDGE OVER I-270</b>			<b>FRA-104-5.63</b>	
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			23	24

**ITEM SPECIAL-SAWING AND SEALING BITUMINOUS CONCRETE JOINTS**

**1) DESCRIPTION:**

THIS WORK SHALL CONSIST OF CUTTING AND SEALING TRANSVERSE JOINTS IN THE NEW BITUMINOUS CONCRETE OVERLAY OF BRIDGES. BITUMINOUS CONCRETE JOINTS SHALL BE CONSTRUCTED DIRECTLY OVER, AND IN LINE WITH, THE EXISTING UNDERLYING TRANSVERSE ABUTMENT AND APPROACH SLAB JOINTS.

**2) MATERIALS:**

THE JOINT SEALANT SHALL MEET THE REQUIREMENTS OF ITEM 705.04, JOINT SEALANTS, HOT-POURED, FOR CONCRETE AND ASPHALT PAVEMENTS. ACCEPTABLE ALTERNATE MATERIALS ARE:

A SILICONE SEALANT MEETING FEDERAL SPECIFICATIONS TT-S-001543A CLASS A (ONE-PART SILICONE SEALANTS) AND TT-S-00230C CLASS A (ONE-COMPONENT SEALANTS), SUCH AS THOSE MANUFACTURED BY GENERAL ELECTRIC, SILICONE PRODUCTS DIVISION, 4015 EXECUTIVE PARK DRIVE, CINCINNATI, OHIO 45242 (513-243-1953) OR DOW CORNING, 400 TECHNE CENTER, SUITE 103, MILFORD, OHIO 45150 (513-831-3586); OR SOF-SEAL, A COLD-APPLIED, LOW-MODULUS, TWO-COMPONENT POLY-MERIC COMPOUND HORIZONTAL SEALANT AS MANUFACTURED BY W.R.MEADOWS, INC., P.O. BOX 543, ELGIN, ILLINOIS 60121 (800-342-5976).

**3) CONSTRUCTION DETAILS:**

A) GENERAL: THE CONTRACTOR SHALL CONDUCT HIS OPERATION SO THAT THE CUTTING, CLEANING AND SEALING OF TRANSVERSE JOINTS IS A CONTINUOUS OPERATION THAT WILL BE PERFORMED AS SOON AS PRACTICAL AFTER THE PAVING, BUT NO LATER THAN FOUR (4) DAYS AFTER PLACEMENT OF THE ASPHALT CONCRETE SURFACE COURSE. TRAFFIC SHALL NOT BE ALLOWED TO KNEAD TOGETHER OR DAMAGE JOINT CUT PRIOR TO SEALING.

B) CUTTING OF TRANSVERSE JOINTS: THE CONTRACTOR SHALL SAW OR ROUT TRANSVERSE JOINTS TO THE DIMENSIONS SHOWN IN THE DETAILS ON THIS SHEET. THE CUT JOINTS SHALL LIE DIRECTLY ABOVE EACH TRANSVERSE JOINT.

THE BLADE OR BLADES SHALL BE OF SUCH SIZE THAT THE FULL WIDTH AND DEPTH OF THE CUT CAN BE MADE WITH ONE PASS. DRY OR WET CUTTING WILL BE ALLOWED. JOINTS SHALL EXTEND THE FULL WIDTH OF THE BRIDGE.

C) CLEANING JOINTS: DRY SAWED JOINTS SHALL BE THOROUGHLY CLEANED WITH A SUFFICIENT AMOUNT OF COMPRESSED AIR TO REMOVE ANY DIRT, DUST, OR DELETERIOUS MATTER. WET SAWED JOINTS SHALL BE WASHED CLEAN OF ALL CUTTINGS BY FLUSHING WITH A JET OF WATER AND WITH OTHER TOOLS AS NECESSARY. AFTER FLUSHING, THE JOINT SHALL BE BLOWN OUT WITH COMPRESSED AIR. WHEN THE SURFACES ARE THOROUGHLY CLEAN AND DRY, AND JUST PRIOR TO PLACING THE JOINT SEALER, COMPRESSED AIR HAVING A PRESSURE OF AT LEAST 90 PSI SHALL BE USED TO BLOW OUT THE JOINT AND REMOVE ALL TRACES OF DUST.

IN THE EVENT FRESHLY CUT JOINTS BECOME CONTAMINATED BEFORE THEY ARE SEALED, THEY SHALL BE RE-CLEANED OF ALL FOREIGN MATERIAL BY HIGH PRESSURE WATER JET.

D) SEALING JOINTS: THE JOINT SHALL BE THOROUGHLY DRY WHEN THE SEALANT IS PLACED. AFTER CLEANING AND DRYING, A BOND-BREAKER MATERIAL SHALL BE APPLIED TO THE BOTTOM OF THE GROOVE.

HOT-POURED JOINT SEALANT MATERIAL SHALL BE HEATED IN A KETTLE OR MELTER CONSTRUCTED AS A DOUBLE BOILER, WITH THE SPACE BETWEEN THE INNER AND OUTER SHELLS FILLED WITH OIL OR OTHER HEAT TRANSFER MEDIUM. POSITIVE TEMPERATURE CONTROL AND MECHANICAL AGITATION SHALL BE PROVIDED. HEATING MUST BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. JOINT SEALER MATERIAL SHALL NEVER BE KEPT HEATED AT THE POURING TEMPERATURE FOR MORE THAN FOUR (4) HOURS AND SHALL NEVER BE REHEATED. SEALER LEFT IN THE APPLICATOR AT THE END OF A DAY'S WORK SHALL NOT BE USED.

HOT-POURED SEALANT SHALL BE APPLIED IMMEDIATELY THROUGH A NOZZLE, WHICH MUST PROJECT INTO THE SAWED JOINT, FILLING FROM THE BOTTOM UP. THE SEALANT SHALL COMPLETELY FILL THE JOINT IN SUCH A MANNER THAT, AFTER COOLING, THE LEVEL OF THE SEALANT WILL NOT BE HIGHER THAN 1/8" BELOW THE PAVEMENT SURFACE. ANY DEPRESSION IN THE COOLED SEAL GREATER THAN 1/4" SHALL BE BROUGHT UP TO THE SPECIFIED LIMIT BY FURTHER ADDITION OF HOT-POURED SEALANT. CARE SHALL BE TAKEN IN THE SEALING OF THE JOINTS SO THAT THE FINAL APPEARANCE WILL PRESENT A NEAT FINE LINE.

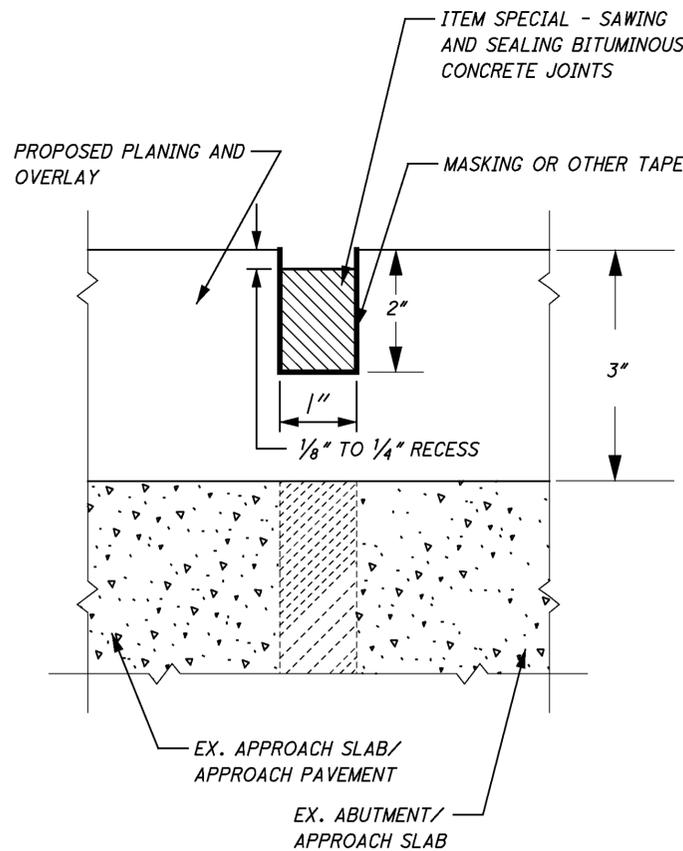
THE COLD APPLIED SEALANT MATERIALS (POLYURETHANE, SILICONE, AND POLYMERIC COMPOUNDS) SHALL BE INSTALLED AS PER MANUFACTURERS' RECOMMENDATIONS, EXCEPT AS MODIFIED BY THIS DRAWING. THE SEALANT SHALL BE INSTALLED WHEN THE AMBIENT TEMPERATURE IS 40 DEGREES F OR HIGHER. TRAFFIC SHALL NOT BE ALLOWED ON THE JOINT FOR ONE HOUR AFTER APPLICATION OF THE SEALANT.

**4) METHOD OF MEASUREMENT:**

THE QUANTITY TO BE PAID FOR UNDER THIS ITEM WILL BE THE NUMBER OF LINEAR FEET OF JOINTS SAWED AND SEALED AS PER THE ABOVE REQUIREMENTS.

**5) BASIS OF PAYMENT:**

THE UNIT PRICE PER LINEAR FOOT FOR ITEM SPECIAL - "SAWING AND SEALING BITUMINOUS CONCRETE JOINTS" SHALL INCLUDE THE COST OF ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK, INCLUDING THE FURNISHING AND PLACING OF THE JOINT SEALER MATERIAL.



NOT TO SCALE

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			SPN	2508583
<b>STRUCTURE NOTES</b>			<b>SAWING AND SEALING BIT. CONC. JOINTS</b>	
<b>FRA-104-5.63</b>			(24) 24	