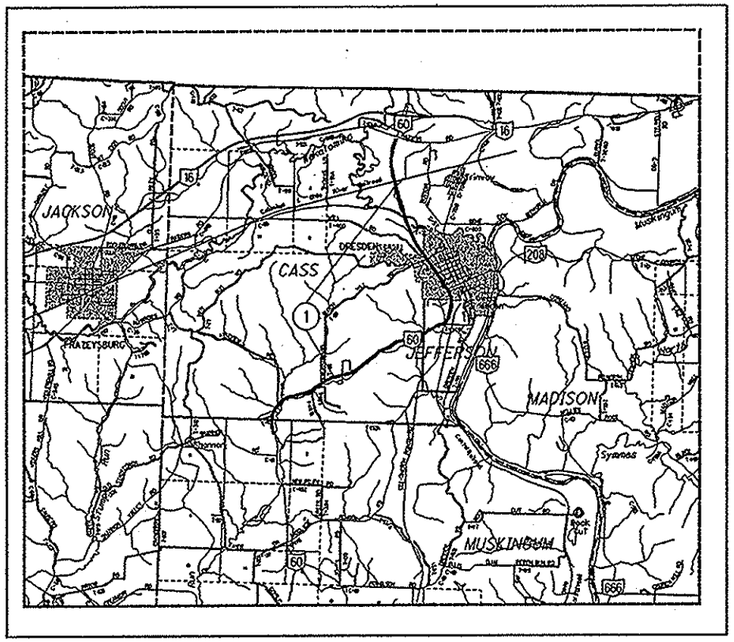


LOCATION MAP
LON/LAT: 82° 01' 01" / 40° 06' 33"

PORTION TO BE IMPROVED

DESIGN DESIGNATION	LOC. 1
	SR 60
Functional Classification	RMA
Current ADT (2011)	4,800
Design Year ADT (2023)	5,900
Design Hourly Volume (2023)	590
Directional Distribution	55%
Trucks (24 Hour B&C)	6%
Design Speed	55mph
Legal Speed	55mph

RMA = RURAL MINOR ARTERIAL

DESIGN EXCEPTIONS: NONE

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

PLAN PREPARED BY:
OHIO DEPARTMENT OF TRANSPORTATION
DISTRICT 5 PRODUCTION OFFICE

ENGINEER'S SEAL
STATE OF OHIO
DOUGLAS N. MORGAN
E-63839
REGISTERED PROFESSIONAL ENGINEER
SIGNED: Douglas N. Morgan
DATE: 8-29-2010

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

MUS-60-28.36

MUSKINGUM, JEFFERSON AND CASS TOWNSHIPS

MUSKINGUM COUNTY

INDEX OF SHEETS:

PROJECT DESCRIPTION:

ASPHALT CONCRETE RESURFACING, AND RELATED WORK, ON S.R. 60 IN MUSKINGUM COUNTY AND A SERVICE ROAD IN COSHOCTON COUNTY. ALSO, INSTALLATION OF A NEW TRAFFIC SIGNAL IN MUSKINGUM COUNTY.

Project Earth Disturbed Area = 0.09 Acres
N/A (Maintenance Project)
Estimated Contractor Earth Disturbed Area = 0.21 Acres
N/A (Maintenance Project)
Notice of Intent Earth Disturbed Area = 0.00 Acres
N/A (Maintenance Project)

LOCATION	COUNTY	ROUTE	BEGIN SLM	END SLM	LENGTH MILES	CITY/VILLAGE
1	MUS	60	28.36	34.76	6.40	DRESDEN

2010 SPECIFICATIONS

THE STANDARD 2010 SPECIFICATIONS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND THE PROPOSAL SHALL GOVERN THESE IMPROVEMENTS.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THESE IMPROVEMENTS WILL NOT REQUIRE THE CLOSING OF THE HIGHWAY AND PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS INDICATED IN THE PROPOSAL.

STANDARD CONSTRUCTION DRAWINGS

												SUPPLEMENTAL SPECIFICATIONS	
BP-3.1	1-19-07	MT-97.10	4-17-09	HL-30.11	10-16-09	TC-21.20	10-16-09					800	10-15-10
BP-4.1	7-16-04	MT-97.12	4-17-09	HL-30.22	4-17-09	TC-22.10	1-19-01					832	5-5-09
		MT-99.20	1-16-09			TC-65.10	1-21-05						
		MT-101.90	1-16-09			TC-65.11	1-21-05						
		MT-105.10	1-16-09			TC-71.10	1-15-10						
		MT-120.00	1-16-09			TC-73.10	1-19-01						
						TC-81.10	4-17-09						
						TC-82.10	7-16-10						
						TC-83.10	1-19-07						
						TC-83.20	1-19-07					SPECIAL PROVISIONS	
						TC-84.20	1-19-07						
						TC-84.21	1-19-07						
						TC-85.20	1-15-10						
						TC-85.21	1-15-10						

APPROVED [signature] DISTRICT DEPUTY DIRECTOR
DATE 9-2-10

APPROVED [signature] DIRECTOR, DEPARTMENT OF TRANSPORTATION
DATE 9-9-10

FEDERAL PROJECT NO. E036 (442)
PID NO. 76452
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
MUS-60-28.36
1/31

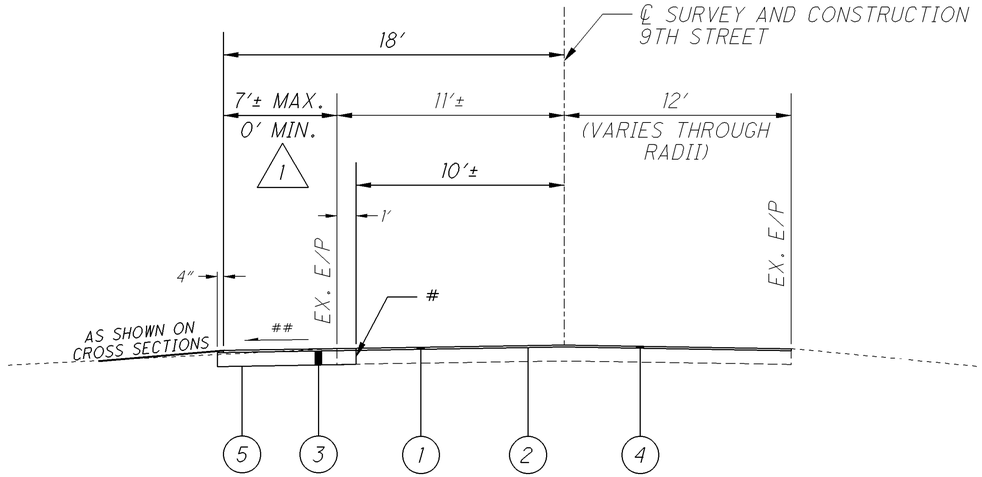
MUS - SR-60-28.36
100573 PID - 76452
Dist 5 12/2/2010

M060_MTS_001.DGN 8/19/10

△1 TAPERS FROM 0′ @ STA. 0+06.62 TO
7′± @ STA. 0+49.11.
7′± FROM STA. 0+49.11 TO STA. 1+43.64.

- SAW CUT AS PER 203.04(E).

- MATCH EXISTING PAVEMENT SLOPE.



9TH STREET (PAVEMENT WIDENING) SECTION APPLIES:

STA. 0+06.62 TO STA. 1+43.64 = 137.02 FT.
TOTAL 137.02 FT.

LEGEND

(1) ITEM 448, 1 1/4″ ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 70-22M
(2) ITEM 407, TACK COAT
(3) ITEM 301, 9″ ASPHALT CONCRETE BASE, PG64-22
(4) ITEM 254, PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN
(5) ITEM 204, SUBGRADE COMPACTION

CALCULATED LME CHECKED DNM

PROPOSED TYPICAL SECTION (9TH STREET)

MUS-60-28.36

2/31

M060_TYP_001.DGN 8/18/10

UTILITIES

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

AMERICAN ELECTRIC POWER CO. (DISTRIBUTION)
850 TECH CENTER DRIVE
GAHANNA, OHIO 43230
ATTN: PAUL PAXTON
614-883-6831

AT&T OHIO
3935 NORTH POINT DRIVE
ZANESVILLE, OHIO 43701
ATTN: SANDI RANDOLPH
740-454-3455

COLUMBIA GAS OF OHIO
920 WEST GOODALE BLVD.
COLUMBUS, OHIO 43212
ATTN: BRIAN KOPACHY
614-315-8610

NATIONAL GAS AND OIL COOPERATIVE
120 O'NEIL DRIVE
HEBRON, OHIO 43025
ATTN: GREG WILSON
740-348-5412

TIME WARNER CABLE
3760 INTERCHANGE DRIVE
COLUMBUS, OHIO 43204
ATTN: TERRY ALLEN
614-255-6349

NOTIFICATION OF ROAD CLOSURE OR RESTRICTION

IN ORDER FOR ODOT TO PROPERLY PERMIT OVERSIZE LOADS, PREPARE PROPER SIGNING WHEN REQUIRED AND FURTHER TO NOTIFY THE GENERAL MOTORING PUBLIC, THE CONTRACTOR SHALL NOTIFY (IN WRITING THE DISTRICT 5 HIGHWAY MANAGEMENT ADMINISTRATOR WITH COPIES FOR THE DISTRICT 5 ROADWAY SERVICES MANAGER AND PROJECT ENGINEER NOT LESS THAN 21 DAYS BEFORE SUCH CLOSURE OR LANE RESTRICTIONS.

SEND NOTIFICATION TO:
DISTRICT 5 HIGHWAY MANAGEMENT ADMINISTRATOR
P.O. BOX 306
JACKSONSTOWN, OH 43030
PHONE: (740) 323-4400 EXT. 5241

ITEM 617, COMPACTED AGGREGATE, AS PER PLAN

ALL AGGREGATE SHALL BE 100% CRUSHED LIMESTONE. ALL QUALITY REQUIREMENTS EXCEPT SHALE SHALL BE WAIVED. OTHER GRADATION REQUIREMENTS SHALL BE AS SPECIFIED EXCEPT THE INDEX SHALL BE WAIVED. IF SO PERMITTED, THE CONTRACTOR MAY USE ASPHALT CONCRETE PAVEMENT (RACP MEETING REQUIREMENTS OF 617.02) IN LIEU OF CRUSHED LIMESTONE.

ITEM 407, TACK COAT

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

ITEM 407, TACK COAT FOR INTERMEDIATE COURSE

THE RATE OF APPLICATION OF THE 407 TACK COAT FOR INTERMEDIATE COURSE SHALL BE SUBJECT TO ADJUSTMENT AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AN AVERAGE APPLICATION RATE OF 0.05 GALLONS PER SQUARE YARD FOR ESTIMATING PURPOSES ONLY.

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.

MAIL BOX TURN OUTS

A QUANTITY OF ASPHALT CONCRETE HAS BEEN PROVIDED IN THE PLAN TO COVER MAIL BOX TURN-OUTS. TURN-OUTS SHALL BE PAVED AS SHOWN IN THE DETAIL IN DRAWING BP-4.1. ANY EXTRA GRADING OF THE SHOULDERS, PRIME OR TACK COAT, MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE MAIL BOX TURN OUTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEMS LISTED BELOW.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR THE ABOVE PURPOSES.

ITEM 448, ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 70-22M 5 CU.YD.

ITEM 202, WEARING COURSE REMOVED 170 SQ.YD.

ITEM 408, PRIME COAT, AS PER PLAN

THE CONTRACTOR SHALL APPLY ONE COAT OF MC-70 (AS PER SECTION 702) AT A RATE OF 0.40 GALLON PER SQUARE YARD TO THE COMPLETED AGGREGATE SHOULDER (ITEM 617) AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE A SHIELD TO PREVENT THE SPRAYING OR DRIFTING OF LIQUID BITUMINOUS MATERIAL ONTO THE EDGE OF PAVEMENT OR EDGE LINE. THE ATTENTION OF THE CONTRACTOR IS DIRECTED TO 107.10 OF THE SPECIFICATIONS.

THE FOLLOWING QUANTITY OF PRIME COAT, AS PER PLAN HAS BEEN CARRIED TO THE GENERAL SUMMARY AND SHALL INCLUDE ALL LABOR, MATERIAL AND EQUIPMENT TO PERFORM THE ABOVE MENTIONED WORK.

ITEM 408, PRIME COAT, AS PER PLAN
(33,792 FT x 4.0 FT)/9 x 0.40 GAL./SQ YD = 6,008 GAL.

PAVEMENT MARKING

STOP LINES, CROSSWALK LINES, CHANNELIZING LINES, ETC., SHOWN IN THE PLANS ARE TAKEN FROM EXISTING MARKINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DOCUMENT EXISTING MARKING LOCATIONS (i.e. BY USE OF VIDEO, PICTURES) AND PLACE NEW PAVEMENT MARKINGS AS NEAR AS POSSIBLE TO THE EXISTING LOCATIONS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. DOCUMENTATION OF PAVEMENT MARKING SHALL BE SUPPLIED TO THE ENGINEER BEFORE COMMENCEMENT OF ANY OPERATION WHICH WILL REMOVE/OBLITERATE MARKINGS.

ITEM 614, WORK ZONE MARKING SIGN

IN ACCORDANCE WITH CMS SECTION 614.04, THE QUANTITY OF WORK ZONE MARKING SIGN HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER.

W8-H12a (NO EDGE LINES) - 8 EACH

W8-H15 (GROOVED PAVEMENT) - 16 EACH

R4-1 (DO NOT PASS) - 19 EACH

R4-2 (PASS WITH CARE) - 18 EACH

ITEM 614, WORK ZONE MARKING SIGN 61 EACH

RESIDENTIAL AND COMMERCIAL DRIVES

AN ESTIMATED QUANTITY OF ITEM 448 ASPHALT CONCRETE, HAS BEEN INCLUDED IN THE PLAN TO BE USED AS DIRECTED BY THE ENGINEER TO PAVE APPROACH AREAS TO EXISTING DRIVEWAYS. PAVING SHALL TYPICALLY EXTEND 4' INTO THE DRIVEWAY (MEASURED FROM THE EDGE OF PAVEMENT OR PAVED SHOULDER IF PRESENT). THERE ARE 5 TYPES OF DRIVES: CONCRETE, ASPHALT, GRAVEL, GRAVEL WITH ASPHALT APRON, AND FIELD/OIL WELL DRIVES. FIELD DRIVES AND OIL WELL DRIVES SHALL NOT BE PAVED. GRAVEL DRIVES SHALL BE PAVED BACK 4' INTO THE DRIVE-WAY UNLESS OTHERWISE DIRECTED BY THE ENGINEER. CONCRETE AND ASPHALT DRIVES SHALL HAVE BUTT JOINTS OR AS SHORT AN ASPHALT TAPER AS POSSIBLE (PREFERRED 4') AS DIRECTED BY THE ENGINEER SO AS TO PROVIDE A SMOOTH TRANSITION. GRAVEL DRIVES WITH ASPHALT APRONS SHALL ALSO HAVE BUTT JOINTS OR AS SHORT A ASPHALT TAPER AS POSSIBLE (PREFERRED 4') BUT ONLY IF THE EXISTING ASPHALT APRON IS IN AN ACCEPTABLE CONDITION TO BE PAVED OVER AS DIRECTED BY THE ENGINEER. IF THE ASPHALT APRON CANNOT BE PAVED OVER (FOR EXAMPLE, BROKEN INTO SMALL PIECES) AS DETERMINED BY THE ENGINEER, IT SHALL BE REMOVED BEFORE BEING PAVED BACK 4' INTO THE DRIVEWAY. ALL GRADING, PRIME OR TACK COAT, MATERIALS, LABOR, EQUIPMENT TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE DRIVES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEMS LISTED BELOW.

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR THE ABOVE DESCRIBED PURPOSE.

ITEM 448, ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 70-22M 20 CU.YD.

ITEM 202, WEARING COURSE REMOVED 690 SQ.YD.

ITEM 621, RAISED PAVEMENT MARKER REMOVED

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE PLANS TO REMOVE RAISED PAVEMENT MARKERS FOR DISPOSAL BY THE CONTRACTOR. RPM REMOVAL SHALL NOT OCCUR SOONER THAN 10 DAYS PRIOR TO RESURFACING OF THE ROADWAY. ALL RPM'S REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THE ABOVE DESCRIBED PURPOSE.

ITEM 621, RAISED PAVEMENT MARKER REMOVED 553 EACH

CALCULATED LME CHECKED DNM

GENERAL NOTES

MUS-60-28.36

3
31

M060_MGN_001.DGN 7-12-10

ITEM 209, LINEAR GRADING

IN ORDER TO PROVIDE POSITIVE DRAINAGE FROM THE ROADWAY SURFACE TO THE SHOULDER BREAK, THE EXISTING ROADWAY SHOULDERS SHALL BE GRADED AND SHAPED USING A GRADER OF ADEQUATE SIZE TO PERFORM THE WORK TO THE SATISFACTION OF THE ENGINEER. ALL EXCESS MATERIAL REMAINING AROUND GUARDRAIL AND OTHER AREAS AFTER THE GRADER WORK IS COMPLETED AND NOT DISPOSED OF ON THE SITE, SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. ALL EQUIPMENT, LABOR, OR INCIDENTALS REQUIRED TO COMPLETE THIS ITEM SHALL BE INCLUDED FOR PAYMENT IN THE UNIT PRICE BID FOR ITEM 209 LINEAR GRADING.

THIS WORK MAY BE INTERMITTENT AND SPREAD THROUGHOUT THE PROJECT LIMITS, AS DIRECTED BY THE ENGINEER. THE CONTRACTOR WILL BE PAID FOR INTERSECTIONS AND GAPS IF THEY ARE WITHIN THE LIMITS OF A SECTION MARKED BY THE ENGINEER FOR GRADING.

ALL LINEAR GRADING WORK SHALL BE DONE BEFORE PLACING THE ASPHALT SURFACE COURSE

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE SUB-SUMMARIES FOR THE ABOVE PURPOSES.

ITEM 209, LINEAR GRADING **6 MILE**

ITEM 253, PAVEMENT REPAIR

AN ESTIMATED QUANTITY FOR PAVEMENT REPAIR HAS BEEN INCLUDED IN THE PLAN TO BE USED AS DIRECTED BY THE ENGINEER. REPAIRS SHALL TAKE PLACE PRIOR TO THE PLANING OPERATIONS. THE INTENT OF THIS OPERATION IS TO REPAIR THOSE AREAS OF PAVEMENT WHICH HAVE COMPLETELY FAILED (PUMPING OF SUB-BASE MATERIAL) AND NOT TO CORRECT SURFACE IRREGULARITIES. DEPTH OF EXCAVATION SHALL BE APPROXIMATELY 8". AFTER EXCAVATION HAS BEEN COMPLETED, THE FACE OF THE REPAIR SHALL BE COATED WITH 407 TACK COAT. REPLACEMENT MATERIAL WILL BE 8" OF ITEM 301 ASPHALT CONCRETE BASE, PG64-22 (PLACED AND COMPACTED AS DIRECTED). REPAIR QUANTITIES MAY BE USED ON THE MAINLINE PAVEMENT OR ON PAVED SHOULDERS. ALL EXCAVATION, MATERIALS, LABOR, EQUIPMENT, TOOLS, TRAFFIC CONTROL AND INCIDENTALS NEEDED TO COMPLETE THE WORK DESCRIBED ABOVE SHALL BE PAID FOR UNDER ITEM 253 PAVEMENT REPAIR, AS PER PLAN.

THE FOLLOWING CONTINGENCY QUANTITY HAS BEEN CARRIED TO THE SUB-SUMMARY FOR THE ABOVE DESCRIBED PURPOSE.

ITEM 253, PAVEMENT REPAIR **250 CU. YD.**

ITEM 254, PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN

DEPTH OF PLANING SHALL BE 1.5" FULL WIDTH OF PAVEMENT (INCLUDING PAVED SHOULDERS). THE ROADWAY SHALL BE PLANED SUCH THAT POSITIVE DRAINAGE IS CREATED FROM THE CENTER LINE TO THE EDGE OF PAVEMENT IN TANGENT SECTIONS AND SHALL FOLLOW EXISTING SUPERELEVATIONS WHERE APPLICABLE. ALL REQUIREMENTS OF ITEM 254 SHALL APPLY.

4,500 TON OF GRINDINGS (RACP) SHALL BE DELIVERED TO THE OHIO DEPARTMENT OF TRANSPORTION DRESDEN OUTPOST, S.R. 60, 10520 FRAZEYSBURG RD., DRESDEN, OH. 43821. HAULING OF THE RACP SHALL BE PAID FOR UNDER THE FOLLOWING ITEM:

ITEM 690, SPECIAL MISC.: HAULING RACP **4,500 TON**

ITEM 516, 2" DEEP JOINT SEALER, AS PER PLAN

THE CONTRACTOR SHALL PLACE A 1" X 2.0" DEEP BEAD OF JOINT SEALER (AS PER 705.04) AT THE LOCATIONS SHOWN IN PLANS. THE CONTRACTOR SHALL SAW CUT A CHANNEL FOR THE JOINT SEALER. THE COST FOR SAW CUTTING THE CHANNEL FOR THE JOINT SEALER SHALL BE INCLUDED FOR PAYMENT WITH ITEM 516, 2" DEEP JOINT SEALER, AS PER PLAN.

ITEM 632, LOOP DETECTOR LEAD-IN CABLE (FOR RAIDERS ROAD)

THIS ITEM HAS INCLUDED IN THE PLANS TO PROVIED A QUANTITY OF DETECTOR LOOP LEAD-IN CABLE TO HOOK UP THE NEW STOP LINE LOOPS FOR THE EASTBOUND AND WESTBOUND THRU APPROACHES. A DRAWING SHOWING THE EXISTING AND PROPOSED LOOP LOCATIONS SHALL BE PROVIDED TO THE CONTRACTOR AT THE PRE-CONSTRUCTION MEETING.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THE ABOVE DESCRIBED PURPOSE.

ITEM 632, LOOP DETECTOR LEAD-IN CABLE **260 FT**

ITEM 632, SIGNALIZATION MISC.: CHANGE SIGNAL HEAD AND DETECTOR LOOP WIRE HOOKUPS IN CABINET (FOR RAIDERS ROAD)

THIS ITEM SHALL INCLUDE ALL NECESSARY EQUIPMENT, TOOLS, MANPOWER AND TEMPORARY TRAFFIC CONTROL TO DISCONNECT FIELD TERMINALS FOR SIGNAL HEADS AND LOOP DETECTOR LEAD-IN CABLES IN THE EXISTING CABINET AND RECONNECT ACCORDING TO THE NEW CONFIGURATION. THE CONTRACTOR SHALL ENSURE ALL CABLES ARE CORRECTLY LABELED ACCORDING TO THE NEW WIRING CONFIGURATION, BOTH IN THE CABINET AND THE PULL BOXES. TABLES SHOWING THE EXISTING AND PROP0OSED FIELD TERMINAL HOOK UPS SHALL BE PROVIDED TO THE CONTRACTOR AT THE PRE-CONSTRUCTION MEETING.

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THE ABOVE DESCRIBED PURPOSE.

ITEM 632, SIGNALIZATION MISC.: CHANGE SIGNAL HEAD AND DETECTOR LOOP WIRE HOOKUPS IN CABINET **LUMP SUM**

BUTT JOINT

A BUTT JOINT WILL BE REQUIRED AT LOCATIONS SPECIFIED BELOW AND AT THE EXTRA AREAS WITH WEARING COURSE REMOVED.

BUTT JOINTS SHALL BE AS PER STANDARD CONSTRUCTION DRAWING BP-3.1 UNLESS OTHERWISE SHOWN IN THE PLANS.

MINIMUM BUTT JOINT LENGTHS SHALL BE 35' ON THE MAINLINE AND 10' ON THE EXTRA AREAS.

LOCATION	ROUTE	DESCRIPTION	S.L.M.	ITEM 614, ASPHALT CONCRETE FOR MAINTAINING TRAFFIC CU. YD.
1	S.R. 60	BEGIN WORK	28.36	0.5
1	S.R. 60	BRIDGE: MUS-60-2889	28.89	0.6
1	S.R. 60	BRIDGE: MUS-60-3351	33.51	0.6
1	S.R. 60	BRIDGE: MUS-60-3405	34.05	0.6
1	S.R. 60	END WORK	34.76	0.5
TOTAL				2.8

ITEM 632, DETECTOR LOOP, AS PER PLAN

ALL STOP LINE INDUCTANCE DETECTOR LOOPS SHALL BE THE QUADRUPOLE CONFIGURATION SHOWN ON TC-82.10. THE WIDTH SHALL BE AS SPECIFIED ON TC-82.10 AND THE LENGTH SHALL BE AS CURRENTLY CALLED FOR IN THE PLANS. THE STOP LINE DETECTOR LOOPS SHALL NOT BE WIRED TO ANY OTHER LOOPS AND SHALL HAVE ITS OWN DETECTOR CHANNEL.

ALL DILEMMA ZONE INDUCTANCE DETECTOR LOOPS CALLED FOR IN THE PLANS SHALL BE THE ANGULAR DESIGN DETECTION (ADD) LOOP AS SHOWN ON TC-82.10. DIMENSIONS SHALL BE AS SPECIFIED ON TC-82.10.

SYSTEM LOOPS SHALL BE AS DEPICTED IN THE PLANS.

ALL STOP LINE DETECTION SHALL BE TESTED FOR A BICYCLE TARGET AND ALL DILEMMA DETECTION ZONES SHALL BE TESTED FOR A MOTORCYCLE TARGET.

ALL DETECTOR LOOPS SHALL BE CUT INTO THE PLANED SURFACE OR THE PROPOSED INTERMEDIATE COURSE AT A DEPTH OF 4" FROM THE PROPOSED SURFACE ELEVATION. IF THE CONTRACTOR SO CHOOSES, THEY MAY CUT THE DETECTOR LOOPS INTO THE EXISTING ASPHALT BEFORE PLANING BUT SHALL MAKE SURE THE MATERIAL USED TO FILL THE SAW CUT IS LEFT FAR ENOUGH BELOW THE SURFACE COURSE THAT IT WILL NOT BE DISTURBED DURING THE PLANING OPERATION. THE CONTRACTOR SHALL TEST ALL LEAD-IN CABLES PRIOR TO MAKING THE FINAL SPLICE. PLACEMENT SHALL BE AS PER SPECIFICATION 632.10. FINAL LOCATIONS, SIZE AND ORIENTATION SHALL BE PROVIDED TO THE CONTRACTOR AT THE PRE-CONSTRUCTION MEETING. ALL MATERIALS, LABOR, TOOLS, EQUIPMENT, TRAFFIC CONTROL AND INCIDENTALS NECESSARY TO PERFORM THE WORK DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 632, DETECTOR LOOP, AS PER PLAN.

AT NORTHPOINTE DRIVE
5 - POWERHEAD DETECTOR LOOPS @ STOP BARS
5 - ANGULAR DESIGN DETECTOR LOOPS FOR DILEMMA ZONE

AT WEST 3RD STREET/DAVE LONGABERGER AVE.
4 - POWERHEAD DETECTOR LOOPS @ STOP BARS
2 - ANGULAR DESIGN DETECTOR LOOPS FOR DILEMMA ZONE

AT RAIDERS ROAD
6 - POWERHEAD DETECTOR LOOPS @ STOP BARS
5 - ANGULAR DESIGN DETECTOR LOOPS FOR DILEMMA ZONE

THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THE ABOVE DESCRIBED PURPOSE.

ITEM 632, DETECTOR LOOP, AS PER PLAN **27 EACH**

ITEM 659, SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

COMMERCIAL FERTILIZER **0.01 TON**
138 SQ. YD. x 9 = 1,242 SQ. FT.
((1,242 x 20/1000)/2000) = 0.01 TON

LIME **0.03 ACRE**
138 SQ. YD. x 0.00021 = 0.03 ACRE

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.

CALCULATED LME CHECKED DNM

GENERAL NOTES

MUS-60-28.36

M060_MGN_002.DGN 7-12-10

ITEM 614, MAINTAINING TRAFFIC (AT ALL TIMES)

A MINIMUM OF 1 LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES BY USE OF THE EXISTING PAVEMENT.

AT NO TIME SHALL TRAFFIC BE MAINTAINED ON THE PLANED SURFACE, AT LEAST ONE COURSE OF ASPHALT CONCRETE SHALL BE IN PLACE BEFORE OPENING TO TRAFFIC.

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT, IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

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.

TRENCH FOR WIDENING

TRENCH EXCAVATION FOR BASE WIDENING SHALL BE ONLY ON ONE SIDE OF THE PAVEMENT AT A TIME. THE OPEN TRENCH SHALL BE ADEQUATELY MAINTAINED AND PROTECTED WITH DRUMS OR BARRICADES AT ALL TIMES. PLACEMENT OF PROPOSED SUBBASE AND BASE MATERIAL SHALL FOLLOW AS CLOSELY AS POSSIBLE BEHIND EXCAVATION OPERATIONS. THE LENGTH OF WIDENING TRENCH WHICH IS OPEN AT ANY ONE TIME SHALL BE HELD TO A MINIMUM AND SHALL AT ALL TIMES BE SUBJECT TO APPROVAL OF THE ENGINEER.

OVERNIGHT TRENCH CLOSING

THE BASE WIDENING SHALL BE COMPLETED TO A DEPTH OF NO MORE THAN **1 1/4** INCHES BELOW THE EXISTING 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 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.

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 A TRAFFIC SIGNAL INSTALLATION WHEN IMPACTING THE NORMAL FUNCTION OF THE SIGNAL OR THE FLOW OF TRAFFIC OR WHEN TRAFFIC NEEDS TO BE DIRECTED THROUGH AN ENERGIZED TRAFFIC SIGNAL CONTRARY TO THE SIGNAL DISPLAY (E.G., DIRECTING MOTORISTS THROUGH A RED LIGHT).

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

- FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED FOR LONG-TERM LANE CLOSURES/SHIFTS (FOR THE FIRST AND LAST DAY OF MAJOR CHANGES IN TRAFFIC CONTROL SETUP). IN GENERAL, LEOS SHOULD BE POSITIONED AT THE POINT OF LANE RESTRICTION OR ROAD CLOSURE AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH INTERSECTIONS IN WORK ZONES
- WHEN CONSTRUCTION VEHICLES ARE ENTERING/EXITING THE ZONE DIRECTLY FROM/INTO AN OPEN LANE OF TRAFFIC. IF A LANE HAS BEEN CLOSED TO PROVIDE AN ACCELERATION/DECELERATION LANE FOR THE VEHICLE, THE LEO WILL NOT BE REQUIRED.

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

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

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

ITEM 614, LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS (con't.)

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.

CALCULATED LME CHECKED DNM

MAINTENANCE OF TRAFFIC GENERAL NOTES

MUS-60-28.36

SHEET NUMBER											80%/20% FED/STATE	100% STATE	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET
3 (80/20)	4 (80/20)	4 (100)	8 (80/20)	9 (80/20)	10 (80/20)	10 (100)	11 (80/20)	12 (80/20)	14 (80/20)	15 (80/20)								
																	ROADWAY	
860					3,143	349					4,003	349	202	23500	4,352	SQ YD	WEARING COURSE REMOVED	
									39		39		203	10000	39	CU YD	EXCAVATION	
									5		5		203	20000	5	CU YD	EMBANKMENT	
								106			106		204	10000	106	SQ YD	SUBGRADE COMPACTION	
		6									6		209	60500	6	MILE	LINEAR GRADING	
																	EROSION CONTROL	
									138		138		659	00500	138	SQ YD	SEEDING AND MULCHING, CLASS 1	
		0.01									0.01		659	20000	0.01	TON	COMMERCIAL FERTILIZER	
		0.03									0.03		659	31000	0.03	ACRE	LIME	
											1,800		832	30000	1,800	EACH	EROSION CONTROL	
																	PAVEMENT	
		250									250		253	02000	250	CU YD	PAVEMENT REPAIR	
			92,106	26,518				422		1,350	120,398		254	01001	120,398	SQ YD	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN	4
								27			27		301	46000	27	CU YD	ASPHALT CONCRETE BASE, PG64-22	
			6,909	1,964	237	454		40		102	9,252	454	407	10000	9,706	GALLON	TACK COAT	
			4,606	1,310	41						5,957		407	14000	5,957	GALLON	TACK COAT FOR INTERMEDIATE COURSE	
6,008											6,008		408	10001	6,008	GALLON	PRIME COAT, AS PER PLAN	3
			4,478	1,273	40						5,791		448	46020	5,791	CU YD	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1, PG64-22	
25			3,199	910	110	210		19		47	4,310	210	448	46904	4,520	CU YD	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M	
							255				255		516	31011	255	FT	2" DEEP JOINT SEALER, AS PER PLAN	4
				835							835		617	10101	835	CU YD	COMPACTED AGGREGATE, AS PER PLAN	3
		4,500										4,500	690	98800	4,500	TON	SPECIAL - MISC.: HAULING RACP	4

CALCULATED LME CHECKED DNM

GENERAL SUMMARY

MUS-60-28.36

6
31

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SHEET NUMBER									80%/20% FED/STATE	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET
3 (80/20)	4 (80/20)	5 (80/20)	8 (80/20)	16 (80/20)	17 (80/20)	21 (80/20)	26 (80/20)	31 (80/20)							
														TRAFFIC CONTROL	
						591			591	621	00100	591	EACH	RPM	
553									553	621	54000	553	EACH	RAISED PAVEMENT MARKER REMOVED	
							4		4	630	79500	4	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED	
							18.4		18.4	630	80100	18.4	SQ FT	SIGN, FLAT SHEET	
					1,252				1,252	644	00400	1,252	FT	CHANNELIZING LINE	
					360				360	644	00500	360	FT	STOP LINE	
					685				685	644	00700	685	FT	TRANSVERSE/DIAGONAL LINE	
					19				19	644	01300	19	EACH	LANE ARROW	
					5				5	644	01410	5	EACH	WORD ON PAVEMENT, 96"	
				12.80					12.80	817	00100	12.80	MILE	EDGE LINE	
				7.18					7.18	817	00300	7.18	MILE	CENTER LINE	
														TRAFFIC SIGNAL	
								880	880	625	25402	880	FT	CONDUIT, 2", 725.05	
								32	32	625	25502	32	FT	CONDUIT, 3", 725.05	
								896	896	625	29003	896	FT	TRENCH, 24" DEEP, AS PER PLAN	23
								8	8	625	30700	8	EACH	PULL BOX, 725.08, 18"	
								1	1	625	30706	1	EACH	PULL BOX, 725.08, 24"	
								5	5	625	32000	5	EACH	GROUND ROD	
								6	6	632	04911	6	EACH	VEHICULAR SIGNAL HEAD, (LED) BLACK, 3-SECTION, 12" LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN	23
								2	2	632	04925	2	EACH	VEHICULAR SIGNAL HEAD, (LED) BLACK, 4-SECTION, 12" LENS, 1-WAY, WITH BACKPLATE, AS PER PLAN	23
								8	8	632	25000	8	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
								10	10	632	26500	10	EACH	DETECTOR LOOP	
	27									632	26501	27	EACH	DETECTOR LOOP, AS PER PLAN	23
								323	323	632	29900	323	FT	MESSENGER WIRE, 7 STRAND, 1/4" DIAMETER WITH ACCESSORIES	
								323	323	632	30600	323	FT	TETHER WIRE, WITH ACCESSORIES	
								742	742	632	40700	742	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
								4	4	632	64000	4	EACH	STRAIN POLE FOUNDATION	
	260							3,448	3,708	632	65200	3,708	FT	LOOP DETECTOR LEAD-IN CABLE	
								48	48	632	67200	48	FT	POWER CABLE, 2 CONDUCTOR, NO. 8 AWG	
								82	82	632	67300	82	FT	POWER CABLE, 3 CONDUCTOR, NO. 8 AWG	
								1	1	632	70001	1	EACH	POWER SERVICE, AS PER PLAN	23
								4	4	632	82800	4	EACH	STRAIN POLE, TYPE TC-81.10, DESIGN 8	
	LUMP								LUMP	632	90300	LUMP		SIGNALIZATION, MISC.: CHANGE SIGNAL HEAD AND DETECTOR LOOP WIRE HOOKUPS IN CABINET	4
								1	1	633	01581	1	EACH	CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1, AS PER PLAN	23
								1	1	633	67000	1	EACH	CABINET RISER	
								1	1	633	67200	1	EACH	CONTROLLER WORK PAD	
														MAINTENANCE OF TRAFFIC	
		40							40	614	11110	40	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	
61									61	614	12460	61	EACH	WORK ZONE MARKING SIGN	
	3								3	614	13000	3	CU YD	ASPHALT CONCRETE FOR MAINTAINING TRAFFIC	
			6.29						6.29	614	21400	6.29	MILE	WORK ZONE CENTER LINE, CLASS II	
			6.29						6.29	614	21550	6.29	MILE	WORK ZONE CENTER LINE, CLASS III, 642 PAINT	
										103	05000	LUMP		PREMIUM FOR CONTRACT PERFORMANCE BOND AND FOR PAYMENT BOND	
		LUMP								614	11000	LUMP		MAINTAINING TRAFFIC	
										619	16000	3	MONTH	FIELD OFFICE, TYPE A	
										623	10000	LUMP		CONSTRUCTION LAYOUT STAKES	
										624	10000	LUMP		MOBILIZATION	

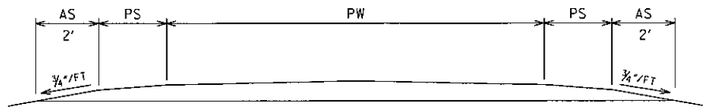
CALCULATED LME CHECKED DNM

GENERAL SUMMARY

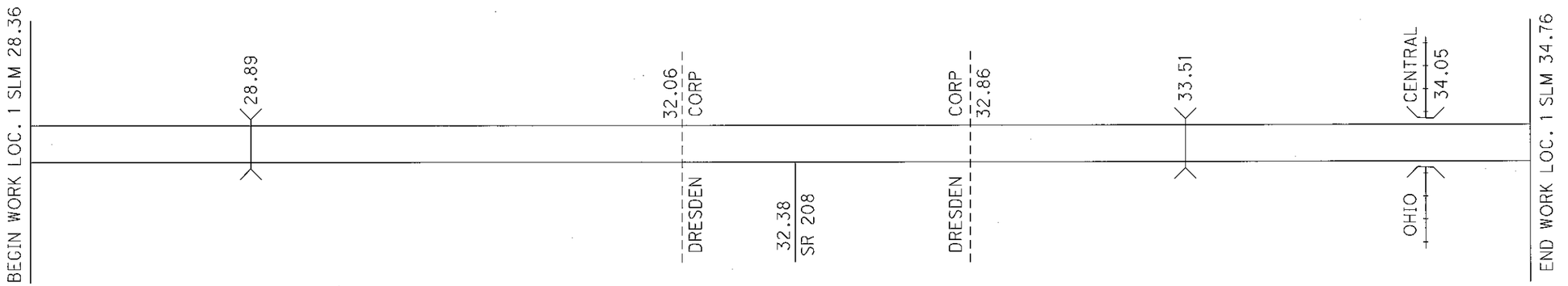
MUS-60-28.36

M60_MGS_002.DGN 8/20/10

TYPICAL 1



PW = PAVEMENT WIDTH
PS = PAVED SHOULDER
AS = AGGREGATE SHOULDER



CALCULATED LME
CHECKED DNM

ASPHALT CONCRETE DATA

PAVEMENT DATA

LOCATION	COUNTY	ROUTE	BEGIN LOG POINT SLM	END LOG POINT SLM	LENGTH		PAVEMENT WIDTH (FEET)	TYPICAL	EXISTING PAVEMENT TYPE	PAVEMENT AREA	254	407		448 ASPHALT CONCRETE				614	
					MILES	LIN. FT.				SQ. YD.	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN SQ. YD.	TACK COAT @ 0.075 GAL./S.Y. GAL.	TACK COAT FOR INTERMEDIATE COURSE @ 0.05 GAL./S.Y. GAL.	THICKNESS INCHES	INTERMEDIATE COURSE, TYPE 1, PG 64-22 CU. YD.	THICKNESS INCHES	SURFACE COURSE, TYPE 1, PG 70-22M CU. YD.	WORK ZONE CENTER LINE, CLASS II MILE	WORK ZONE CENTER LINE, CLASS III, 642 PAINT MILE
1	MUS	S.R. 60	28.36	31.49	3.13	16,526.40	24.0	1	448	44,070.4	44,070.4	3,305.3	2,203.6	1.75	2,142.4	1.25	1,530.3	3.13	3.13
1	MUS	S.R. 60	31.49	31.57	0.08	422.40	30.0 AVG	1	448	1,408.0	1,408.0	105.6	70.4	1.75	68.5	1.25	48.9	0.08	0.08
1	MUS	S.R. 60	31.57	31.68	0.11	580.80	36.0	1	448	2,323.2	2,323.2	174.3	116.2	1.75	113.0	1.25	80.7	0.11	0.11
1	MUS	S.R. 60	31.68	31.74	0.06	316.80	48.0	1	448	1,689.6	1,689.6	126.8	84.5	1.75	82.2	1.25	58.7	0.06	0.06
1	MUS	S.R. 60	31.74	31.75	0.01	52.80	42.0	1	448	246.4	246.4	18.5	12.4	1.75	12.0	1.25	8.6	0.01	0.01
1	MUS	S.R. 60	31.75	31.91	0.16	844.80	30.0 AVG	1	448	2,816.0	2,816.0	211.2	140.8	1.75	136.9	1.25	97.8	0.16	0.16
1	MUS	S.R. 60	31.91	34.56	2.65	13,992.00	24.0	1	448	37,312.0	37,312.0	2,798.4	1,865.6	1.75	1,813.8	1.25	1,295.6	2.65	2.65
1	MUS	S.R. 60	34.56	34.67	0.11	580.80	30.0 AVG	1	448	1,936.0	1,936.0	145.2	96.8	1.75	94.2	1.25	67.3	0.11	0.11
1	MUS	S.R. 60	34.67	34.76	0.09	475.20	36.0	1	448	1,900.8	1,900.8	142.6	95.1	1.75	92.4	1.25	66.0	0.09	0.09
	DEDUCT FOR BRIDGES (FROM SHEET 11)									(1,594.7)	(1,594.7)	(119.7)	(79.8)	1.75	(77.6)	1.25	(55.4)	(0.11)	(0.11)
	TOTALS (CARRIED TO GENERAL SUMMARY)										92,107.7	6,908.2	4,605.6		4,477.8		3,198.5	6.29	6.29

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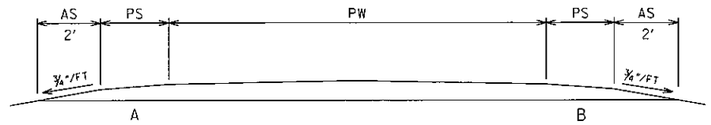
M060_MAC_001.DGN 8-23-10

PW = PAVEMENT WIDTH
PS = PAVED SHOULDER
AS = AGGREGATE SHOULDER

CALCULATED LME
CHECKED DNM

PAVED SHOULDER DATA

TYPICAL 1



SHOULDER DATA

LOCATION	COUNTY	ROUTE	BEGIN LOG POINT SLM	END LOG POINT SLM	LENGTH		TYPICAL	PROPOSED WIDTH (FT.)		SHOULDER AREA	254	407		448 ASPHALT CONCRETE				617	
					MILES	LIN. FT.		A	B	SQ. YD.	PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN SQ. YD.	TACK COAT @ 0.075 GAL./S.Y. GAL.	TACK COAT FOR INTERMEDIATE COURSE @ 0.05 GAL./S.Y. GAL.	THICKNESS INCHES	INTERMEDIATE COURSE, TYPE 1, PG 64-22 CU. YD.	THICKNESS INCHES	SURFACE COURSE, TYPE 1, PG 70-22M CU. YD.	THICKNESS INCHES	COMPACTED AGGREGATE, AS PER PLAN (2' WIDTH) CU. YD.
1	MUS	S.R. 60	28.36	31.48	3.12	16473.6	1	2.5	2.5	9,152.0	9,152.0	686.4	457.6	1.75	444.9	1.25	317.8	2.00	406.8
1	MUS	S.R. 60	31.48	31.90	0.42	2217.6	1	8	8	3,942.4	3,942.4	295.7	197.2	1.75	191.7	1.25	136.9	2.00	54.8
1	MUS	S.R. 60	31.90	34.76	2.86	15100.8	1	4	4	13,422.9	13,422.9	1,006.8	671.2	1.75	652.6	1.25	466.1	2.00	372.9
	DEDUCT FOR BRIDGES (FROM SHEET 11)									(332.2)		(25.0)	(16.7)	1.75	(16.2)	1.25	(11.6)		
TOTALS (CARRIED TO GENERAL SUMMARY)											**26,517.3**	**1,963.9**	**1,309.3**		**1,273.0**		**909.2**		**834.5**

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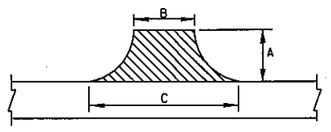
M060_MPS_001.DGN 7-13-10

EXTRA AREAS

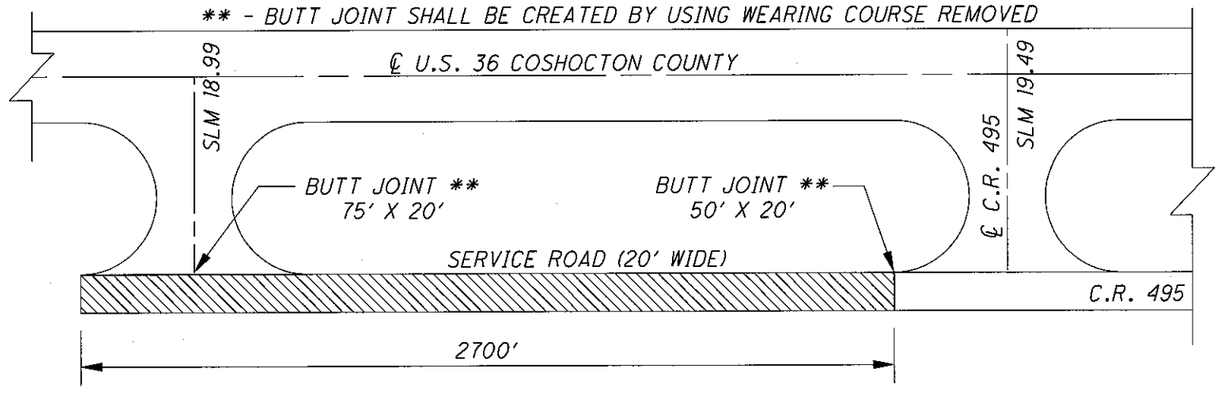
LOCATION	COUNTY	ROUTE	SIDE	DESCRIPTION	INTERSECTIONS DETAIL DIMENSION A	B	C	AREA	202 WEARING COURSE REMOVED	407 TACK COAT @ 0.075 GAL./SQ. YD.	407 TACK COAT FOR INTERMEDIATE COURSE@ 0.05 GAL./SQ. YD.	448 ASPHALT CONCRETE THICKNESS	448 INTERMEDIATE COURSE, TYPE 1, PG 64-22	448 THICKNESS	448 SURFACE COURSE, TYPE 1, PG 70-22M
					FT.	FT.	FT.	SQ. YD.	SQ. YD.	GAL.	GAL.	IN.	CU. YD.	IN.	CU. YD.
1	MUS	S.R. 60	LT.	MCINTIRE LN	25	23	80	143.1	143.1	10.8				1.25	5.0
1	MUS	S.R. 60	LT.	AIRY VIEW DR	40	22	93	255.6	255.6	19.2				1.25	8.9
1	MUS	S.R. 60	RT.	FULTON LN	30	15	67	136.7	136.7	10.3				1.25	4.8
1	MUS	S.R. 60	RT.	LOCKMAN LN	15	18	36	45.0	45.0	3.4				1.25	1.6
1	MUS	S.R. 60	LT.	N. MORRISON RD	35	19	65	163.4	163.4	12.3				1.25	5.7
1	MUS	S.R. 60	LT.	MAPLECRAFT DR	20	19	45	71.2	71.2	5.4				1.25	2.5
1	MUS	S.R. 60	RT.	CARLTON DR	45	21	102	307.5	307.5	23.1				1.25	10.7
1	MUS	S.R. 60	LT.	MITCHELL HILL DR	45	21	64	212.5	212.5	16.0				1.25	7.4
1	MUS	S.R. 60	RT.	MAIN ST	50	38	151	525.0	525.0	39.4	26.3	1.75	25.6	1.25	18.3
1	MUS	S.R. 60	RT.	NORTHPOINTE RD	30	61	115	293.4	293.4	22.1	14.7	1.75	14.3	1.25	10.2
1	MUS	S.R. 60	RT.	S.R. 208 (9TH ST)	SEE SHEET 15										
1	MUS	S.R. 60	LT.	9TH ST	SEE SHEET 12										
1	MUS	S.R. 60	RT.	DAVE LONGBERGER AVE	53	27	98	368.1	368.1	27.7				1.25	12.8
1	MUS	S.R. 60	LT.	DAVE LONGBERGER AVE	40	27	84	246.7	246.7	18.6				1.25	8.6
1	MUS	S.R. 60	LT.	NARROWS RD	50	24	111	375.0	375.0	28.2				1.25	13.1
TOTALS (CARRIED TO GENERAL SUMMARY)									**3,143.2**	**236.5**	**41.0**		**39.9**		**109.6**
*	COS	SERVICE RD	RT.	SERVICE ROAD (SEE DETAIL 1)	2700	20		6,048.9	348.9	453.7				1.25	210.1
TOTALS (CARRIED TO GENERAL SUMMARY)									**348.9**	**453.7**					**210.1**



INTERSECTIONS

$$\text{AREA} = \left[\frac{A\ (B + C)}{2}\right] / 9$$

* - THE CONTRACTOR SHALL PLACE A 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG 70-22M ON THE SERVICE ROAD SHOWN IN DETAIL 1. THE CONTRACTOR SHALL PAVE THE APPROACH AREAS OF THE DRIVEWAYS LOCATED WITHIN THE AREA TO BE PAVED AS PER THE NOTE LOCATED ON SHEET 3 LABELED "RESIDENTIAL AND COMMERICAL DRIVES". A QUANTITY OF 11 DRIVEWAYS HAS BEEN INCLUDED IN THE CALCULATIONS USING AN AVERAGE AREA OF 40 SQ. FT. FOR EACH DRIVEWAY.



DETAIL 1

CALCULATIONS FOR DETAIL 1

AREA = [(2700' X 20') + 11(40 SQ. FT.)]/9 = 6048.9 SQ. YD.

WEARING COURSE REMOVED = [(75' X 20') + (50' X 20') + 11(40 SQ. FT.)]/9 = 348.9 SQ. YD.

CALCULATED LME CHECKED DNM

EXTRA AREAS DATA

MUS-60-28.36

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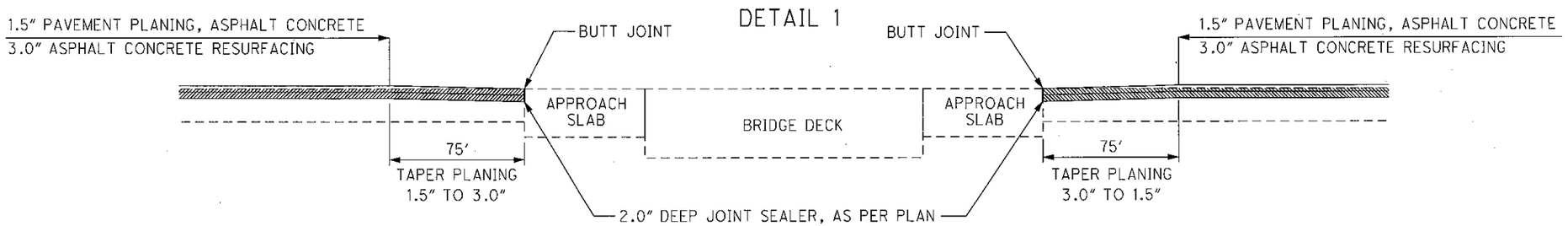
MO60_MEA_001.DGN 7-13-10

CALCULATED LME CHECKED DNM

BRIDGE DECK TREATMENT

DETAIL 1



BRIDGE DATA

LOCATION	COUNTY, ROUTE, BRIDGE NO.	LENGTH (BRIDGE LIMITS)	WIDTH	AREA	APPROACH SLAB LENGTH	APPROACH SLAB WIDTH	APPROACH SLAB AREA (INCLUDES BOTH APPROACH SLABS)	DETAIL (THIS SHEET)	MAINLINE DEDUCTIONS (CARRIED TO SHEET 8)	SHOULDER DEDUCTIONS (CARRIED TO SHEET 9)	202	407		448 ASPHALT CONCRETE				516
											WEARING COURSE REMOVED	TACK COAT FOR INTERMEDIATE COURSE @ 0.05 GAL./S.Y.	TACK COAT @ 0.075 GAL./S.Y.	THICKNESS	INTERMEDIATE COURSE, TYPE 2, PG 64-22	THICKNESS	SURFACE COURSE, TYPE 1, PG 70-22M	2" DEEP JOINT SEALER, AS PER PLAN
		LIN. FT.	LIN. FT.	SQ. YD.	LIN. FT.	LIN. FT.	SQ. YD.		SQ.YD.	SQ.YD.	SQ.YD.	GAL.	GAL.	INCHES	CU. YD.	INCHES	CU. YD.	FEET
1	MUS-60-2889	66.7	40	296.5	25	40.0	222.3	1	311.2	64.8								80.0
1	MUS-60-3351	210.8	45.3	1,061.1	25	45.3	251.7	1	695.5	144.9								90.0
1	MUS-60-3405	170.5	42.5	805.2	25	42.5	236.2	1	588.0	122.5								85.0
	SUB-TOTALS								1,594.7	332.2								
	TOTALS (CARRIED TO GENERAL SUMMARY)																	**255.0**

BRIDGE

MUS-60-28.36

11
31

M060_MBT_001.dgn 7-12-10

BENCHMARK LIST

BM1 - TOP OF 5/8 INCH REBAR WITH O.D.O.T. CAP;
19.96 FEET LEFT OF CENTERLINE OF CONSTRUCTION
STA. 460+19.01

ELEV. = 750.35

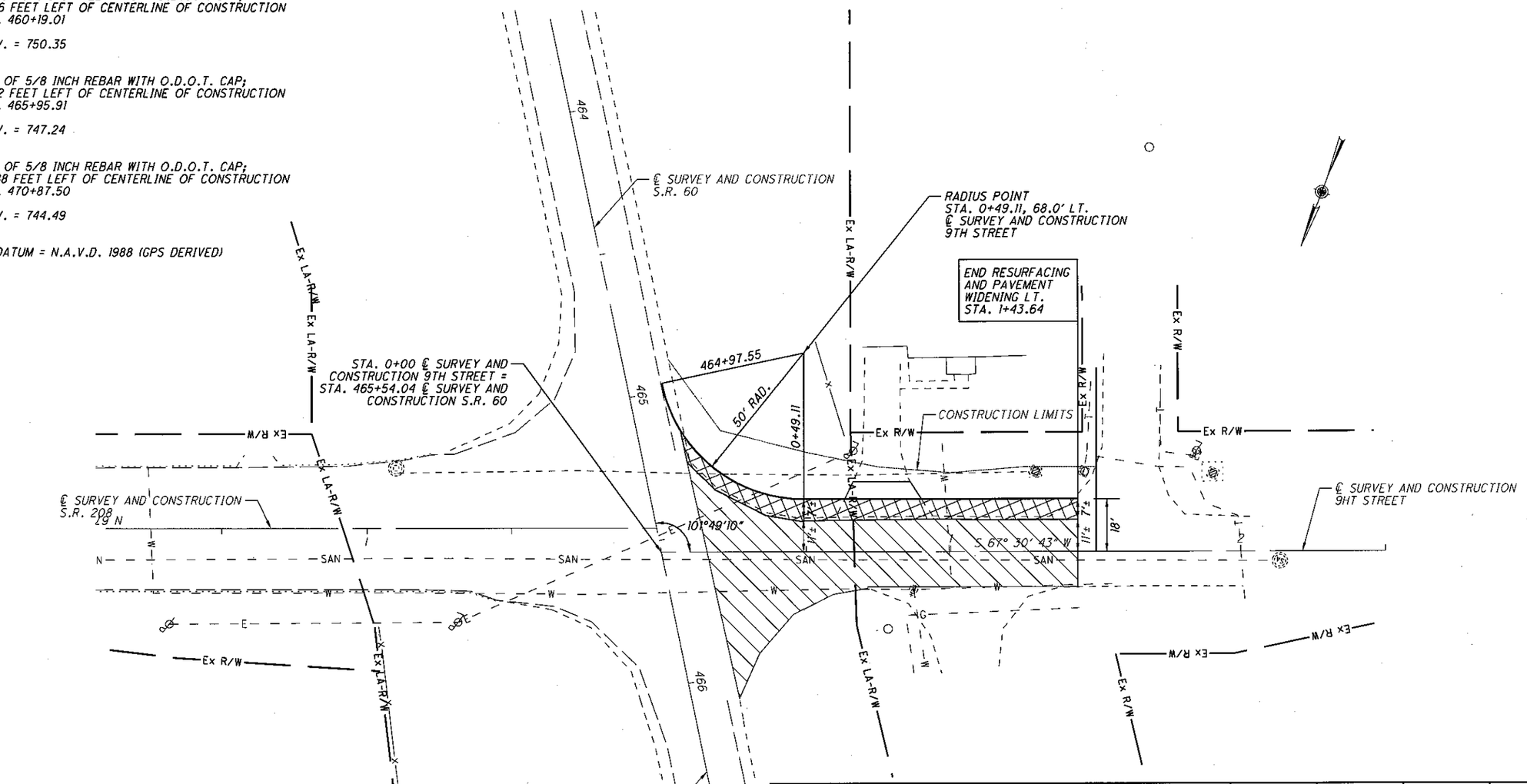
BM2 - TOP OF 5/8 INCH REBAR WITH O.D.O.T. CAP;
71.22 FEET LEFT OF CENTERLINE OF CONSTRUCTION
STA. 465+95.91

ELEV. = 747.24

BM3 - TOP OF 5/8 INCH REBAR WITH O.D.O.T. CAP;
20.88 FEET LEFT OF CENTERLINE OF CONSTRUCTION
STA. 470+87.50

ELEV. = 744.49

VERTICAL DATUM = N.A.V.D. 1988 (GPS DERIVED)



SURVEY AND CONSTRUCTION	PAVEMENT AREA (BY COMPUTER)	204 SUBGRADE COMPACTION	254 PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN (1.25")	301 9" ASPHALT CONCRETE BASE, PG64-22	407 TACK COAT @ 0.075 GAL./SQ. YD.	448 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M
	SQ. YD.	SQ. YD.	SQ. YD.	CU. YD.	GAL.	CU. YD.
9TH STREET						
EXISTING PAVEMENT	421.9		421.9		31.7	14.7
PAVEMENT WIDENING	105.6	105.6		26.4	8.0	3.7
TOTALS (CARRIED TO GENERAL SUMMARY)		105.6	421.9	26.4	39.7	18.4

HORIZONTAL SCALE IN FEET
0 20 40

CALCULATED LME
CHECKED DNM

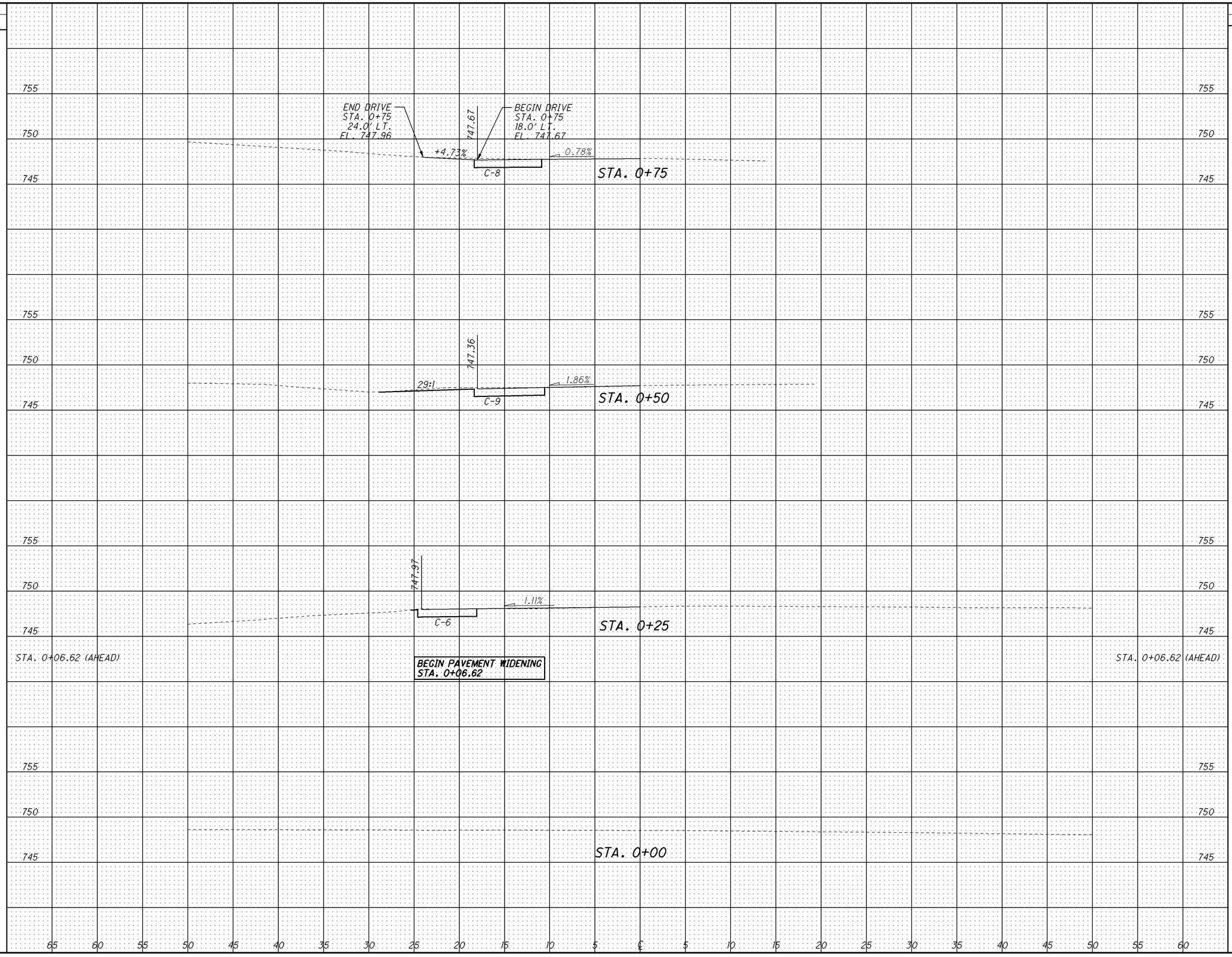
PLAN SHEET (9TH STREET)
STA. 0+00 TO STA. 2+50

MUS-60-28.36

12
31

M060_PLN_001.DGN 8/09/10

SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0	23	8	0	8	0
16	32	9	0	7	0
7	15	6	0	5	0
7		6	0		



CALCULATED LME
CHECKED DNM

CROSS SECTIONS (9TH STREET)
STA. 0+00.00 TO STA. 0+75.00

MUS-60-28.36

13
31

SHEET 1

9TH_PXS.DGN 8/11/10

SEEDING END WIDTH	SEEDING SQ. YDS.		END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
	138	TOTAL (CARRIED TO GENERAL SUMMARY)			39	5
12		STA. 1+43.64 (BACK)	6	3		
	25				5	3
12			6	3		
	30				7	2
9			7	0		
	13				7	0

TOTALS (CARRIED TO GENERAL SUMMARY)

STA. 1+43.64 (BACK)

STA. 1+50

END PAVEMENT WIDENING
STA. 1+43.64

STA. 1+25

STA. 1+00

755
750
745

748.81
748.19
3:1
12:1
F-3
C-6
C-7
1.31%
1.11%
20.8' LT
E EL. 747.9

65 60 55 50 45 40 35 30 25 20 15 10 5 ℄ 5 10 15 20 25 30 35 40 45 50 55 60

CALCULATED LME
CHECKED DNM

CROSS SECTIONS (9TH STREET)
STA. 1+00.00 TO STA. 1+50.00

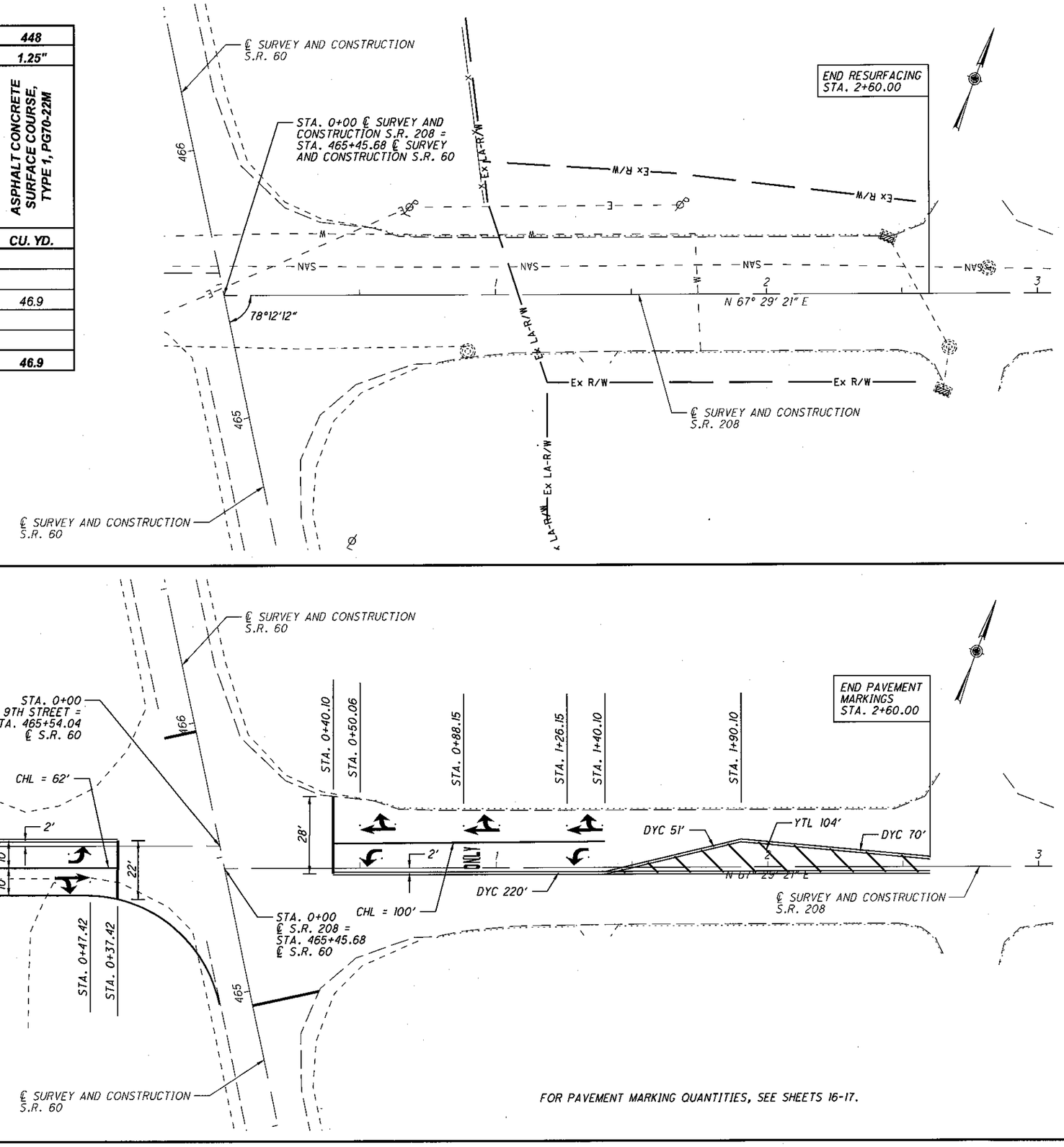
MUS-60-28.36

14
31

SHEET 2

9TH_PXS.DGN 8/12/10

SURVEY AND CONSTRUCTION	PAVEMENT AREA (BY COMPUTER)	254 PAVEMENT PLANING, ASPHALT CONCRETE, AS PER PLAN (1.25")	407 TACK COAT @ 0.075 GAL./SQ. YD.	448 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG70-22M
	SQ. YD.	SQ. YD.	GAL.	CU. YD.
S.R. 208				
EXISTING PAVEMENT	1,349.3	1,349.3	101.2	46.9
TOTALS (CARRIED TO GENERAL SUMMARY)		1,349.3	101.2	46.9



DYC - DOUBLE YELLOW CENTER LINE
WEL - WHITE EDGE LINE
CHL - CHANNELIZING LINE
YTL - YELLOW TRANSVERSE/DIAGONAL LINE

FOR PAVEMENT MARKING QUANTITIES, SEE SHEETS 16-17.

M060_PLN_002.DGN 8/10/10

HORIZONTAL SCALE IN FEET
0 20 40
CALCULATED LME
CHECKED DNM

PLAN SHEET (S.R. 208)
STA. 0+00 TO STA. 2+60

MUS-60-28.36

15
31

CALCULATED LME
CHECKED DNM

ITEM 817 EDGE LINE

LOCATION	COUNTY	ROUTE	S.L.M.		TOTAL LENGTH (MILES)	INFORMATION ONLY			TOTAL EDGE LINE MILES	REMARKS
						WHITE EDGE LINE QUANTITIES				
			FROM	TO		TOTAL MILES	HIGHWAY MILES	RAMP MILES		
1	MUS	S.R. 60	28.36	34.76	6.40	12.80	12.80		12.80	
TOTAL (CARRIED TO GENERAL SUMMARY)									**12.80**	

ITEM 817 CENTER LINE

LOCATION	COUNTY	ROUTE	S.L.M.		TOTAL LENGTH (MILES)	INFORMATION ONLY			TOTAL CENTER LINE MILES	REMARKS
						CENTER LINE QUANTITIES				
			FROM	TO		TOTAL MILES	EQUIVALENT SOLID LINE			
1	MUS	S.R. 60	28.36	34.76	6.40	6.48	11.612		6.48	
1	MUS	S.R. 60	31.49	31.58	0.09	0.17	0.340		0.17	EXTRA CENTER LINE AT TURN LANE
1	MUS	S.R. 60	31.74	31.91	0.17	0.25	0.500		0.25	EXTRA CENTER LINE AT TURN LANE
1	MUS	S.R. 60	34.56	34.68	0.12	0.20	0.400		0.20	EXTRA CENTER LINE AT TURN LANE
1	MUS	S.R. 208	0.00	0.05	0.05	0.06			0.06	EXTRA CENTER LINE AT TURN LANE
1	MUS	.9TH ST.	0.00	0.03	0.03	0.02			0.02	
TOTAL (CARRIED TO GENERAL SUMMARY)									**7.18**	

EDGE / CENTER LINE DATA

MUS-60-28.36

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644 THERMOPLASTIC AUXILARY MARKING

LOCATION	COUNTY	ROUTE	DESCRIPTION	SIDE	SLM	TRANSEVERSE/ DIANGONAL LINES (24")		STOP LINE (24")	12" CROSSWALK LINE	8" CHANNELIZING LINE	WORD ON PAVEMENT ONLY		SCHOOL SYMBOL MARKING		LANE ARROW			ISLAND MARKING	RAILROAD MARKING SYMBOL	REMARKS
						WHITE	YELLOW				72"	96"	72"	96"	LEFT	THRU/RIGHT	RIGHT			
						FT.	FT.	FT.	FT.	FT.	EACH	EACH	EACH	EACH	EACH	EACH	EACH	SQ. FT.	EACH	
1	MUS	S.R. 60	MCINTIRE LN	LT.				26												PLACE 22' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	AIRY VIEW DR	LT.				22												PLACE 23' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	FULTON LN	RT.				15												PLACE 24' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	LOCKMAN LN	RT.				12												PLACE 19' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	N. MORRISON RD	LT.				23												PLACE 23' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	MAPLECRAFT DR	LT.				15												PLACE 21' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	CARLTON DR	RT.				33												PLACE 22' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	MITCHELL HILL DR	LT.				18												PLACE 25' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	ON S.R. 60 BEFORE NORTHPOINTE RD	CL			186	24		330		1			3					SEE SHEET 18
1	MUS	S.R. 60	ON S.R. 60 AFTER NORTHPOINTE RD	CL			207	36		485		2			2		3			SEE SHEET 19
1	MUS	S.R. 60	S.R. 208 (9TH ST)	RT.			104	28		100		1			2	3				SEE SHEET 15
1	MUS	S.R. 60	9TH ST	LT.				22		62					2	2				SEE SHEET 15
1	MUS	S.R. 60	DAVE LONGBERGER AVE	RT.				21												PLACE 41' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	DAVE LONGBERGER AVE	LT.				26												PLACE 29' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	NARROWS RD	LT.				15												PLACE 27' FROM SR 60 CENTER LINE
1	MUS	S.R. 60	ON S.R. 60 AT RAIDERS RD.	CL			188	24		275		1			2					SEE SHEET 20
	TOTALS (CARRIED TO GENERAL SUMMARY)						685	360		1,252		5			11	5	3			

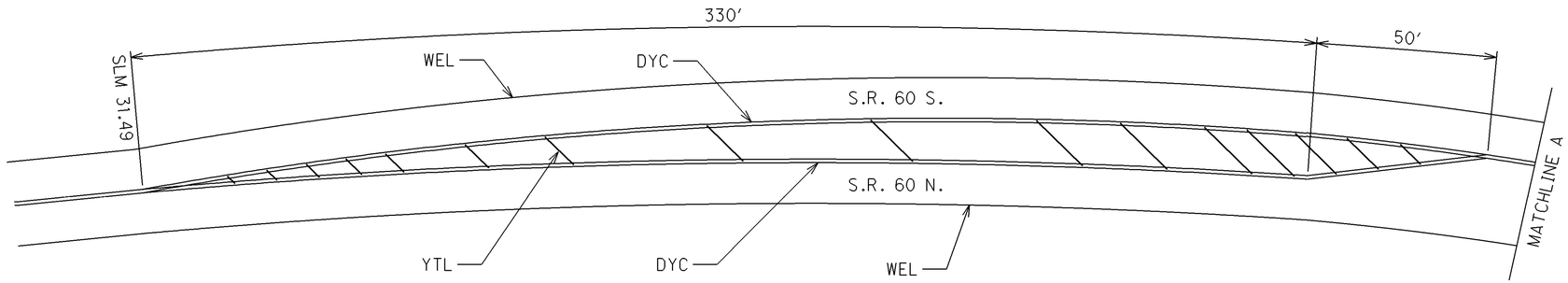
CALCULATED LME CHECKED DNM

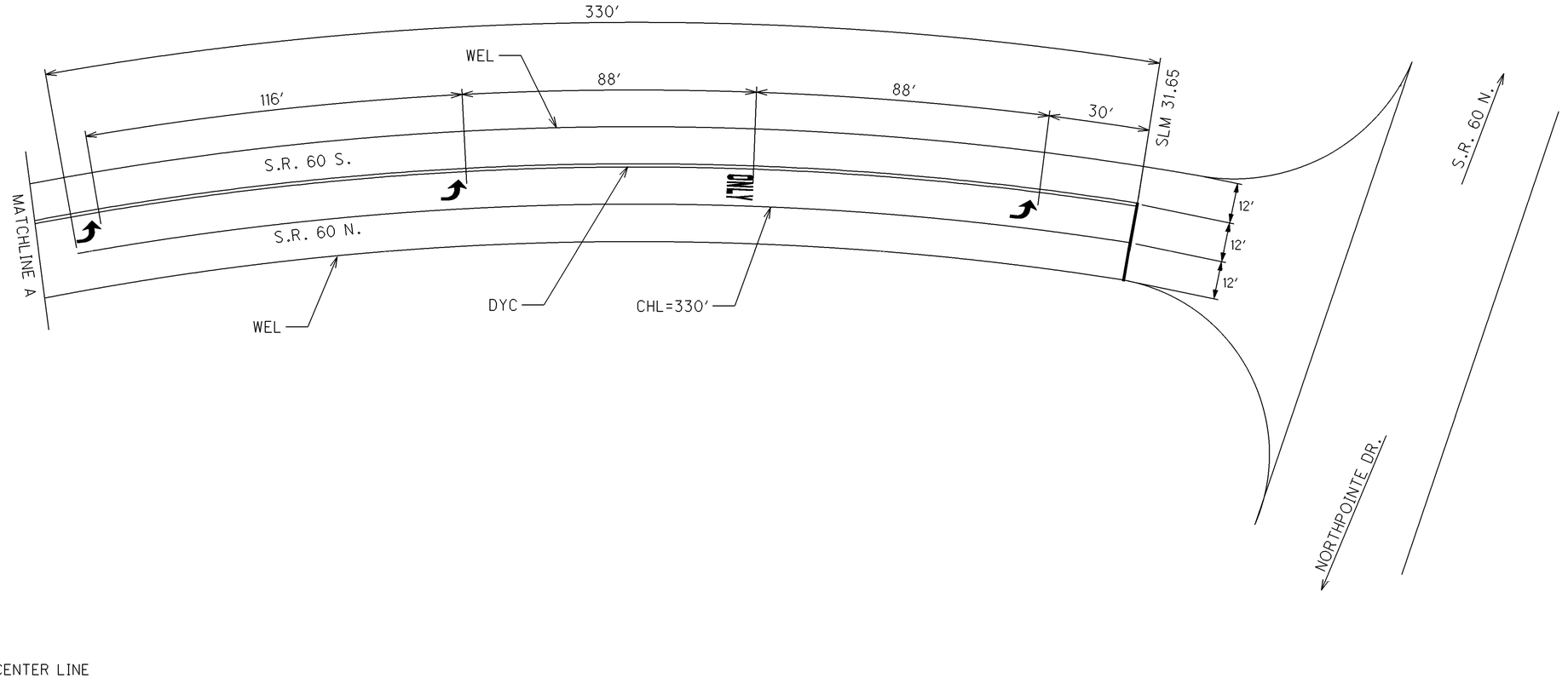
AUXILARY MARKING DATA

MUS-60-28.36

17/31

M060_PMS_002.DGN 7-13-10





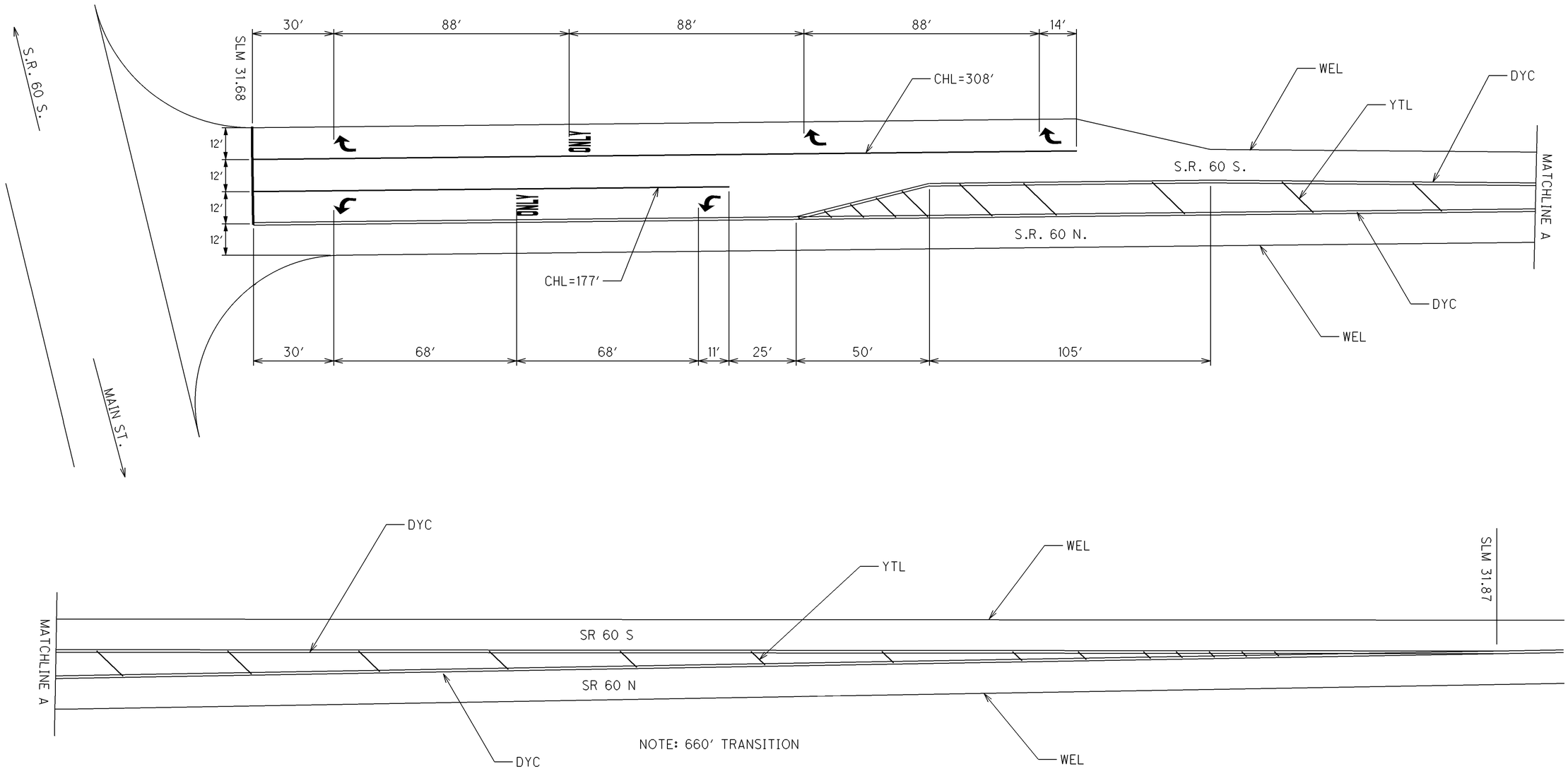
DYC = DOUBLE YELLOW CENTER LINE
WEL = WHITE EDGE LINE
CHL = CHANNELIZING LINE
YTL = YELLOW TRANSVERSE/DIAGONAL LINE

M060_PMD_001.DGN 8-18-10

CALCULATED LME
CHECKED DNM

TRAFFIC CONTROL DETAIL - S.R. 60

MUS-60-28.36



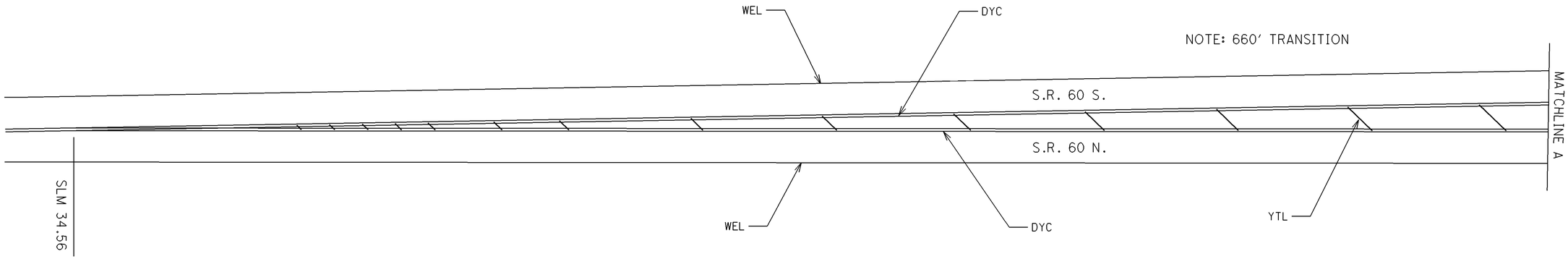
DYC = DOUBLE YELLOW CENTER LINE
WEL = WHITE EDGE LINE
CHL = CHANNELIZING LINE
YTL = YELLOW TRANSVERSE/DIAGONAL LINE

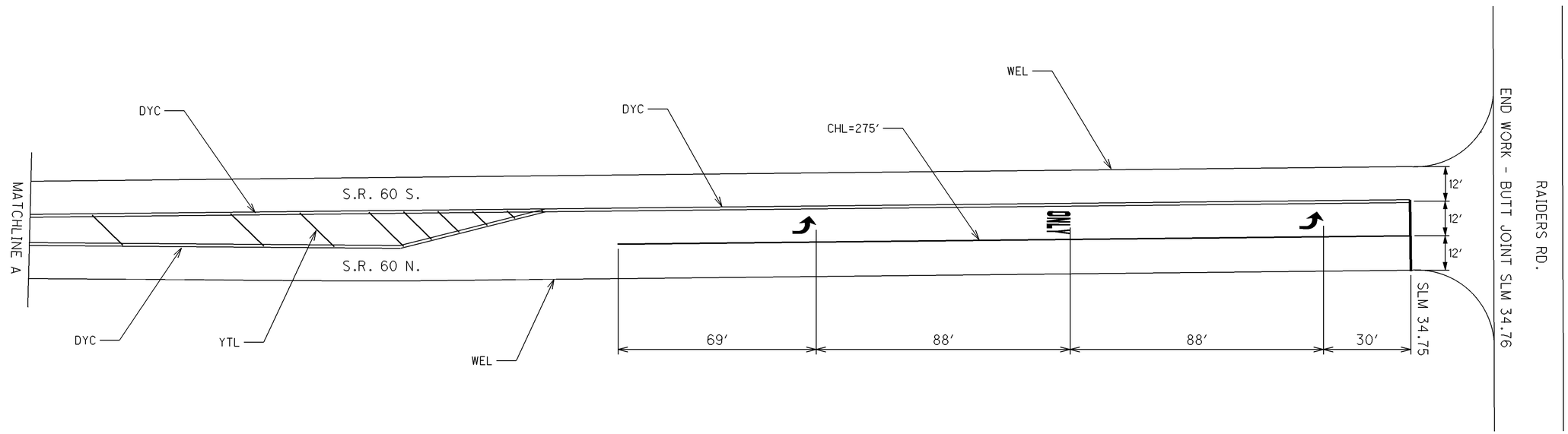
M060_PMD_001.DGN 8-18-10

CALCULATED LME
CHECKED DNM

TRAFFIC CONTROL DETAIL - S.R. 60

MUS-60-28.36





DYC = DOUBLE YELLOW CENTER LINE
WEL = WHITE EDGE LINE
CHL = CHANNELIZING LINE
YTL = YELLOW TRANSVERSE/DIAGONAL LINE

CALCULATED LME
CHECKED DNM

TRAFFIC CONTROL DETAIL - S.R. 60

MUS-60-28.36

20
31

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DETAIL	SEE STD. DWG. TC-65.11
1	TAPERED ACCELERATION LANE
2	DECELERATION LANE
3	MULTILANE DIVIDED/ CONTROLLED ACCESS

DETAIL	SEE STD. DWG. TC-65.11
4	4 LANE DIVIDED TO 2 LANE TRANSITION
5	4 LANE UNDIVIDED TO 2 LANE TRANSITION
6	ONE LANE BRIDGE
7	STOP APPROACH
8	THRU APPROACH
9	TWO WAY LEFT TURN LANE

DETAIL	SEE STD. DWG. TC-65.11
10	APPROACH W/LT. TURN LANE
11	HORIZONTAL CURVE 40'
12	HORIZONTAL CURVE ALT.
GAP	CENTERLINE AT 80' TYP.

ITEM 621 RPM SUB-SUMMARY

LOCATION	COUNTY	ROUTE	BEGIN LOG POINT SLM	END LOG POINT SLM	LENGTH		DETAIL	621 RPM	PRISMATIC RETRO-REFLECTOR COLORS INFORMATION ONLY					REMARKS
									ONE-WAY		TWO-WAY			
					MILES	LIN.FT.		EACH	WHITE	YELLOW	YELLOW / YELLOW	WHITE / RED	YELLOW / RED	
1	MUS	S.R. 60	28.36	29.73	1.37	7,234	GAP	90			90			
1	MUS	S.R. 60	29.73	29.77	0.04	211	11	5			5			PC 29.73 PT 29.77 L=211' DEG 9
1	MUS	S.R. 60	29.77	30.44	0.67	3,538	GAP	44			44			
1	MUS	S.R. 60	30.44	30.48	0.04	211	11	5			5			PC 30.44 PT 30.48 L=211' DEG 9
1	MUS	S.R. 60	30.48	30.88	0.40	2,112	GAP	26			26			
1	MUS	S.R. 60	30.88	31.10	0.22	1,162	12	35			35			PC 30.97 PT 31.01 L=211' DEG 16
1	MUS	S.R. 60	31.10	31.26	0.16	845	GAP	11			11			
1	MUS	S.R. 60	31.26	31.32	0.06	317	11	8			8			PC 31.26 PT 31.32 L=317' DEG 9
1	MUS	S.R. 60	31.32	34.76	3.44	18,163	GAP	227			227			
1	MUS	S.R. 60	31.49	31.65	0.16	845	7,10	36	16		11	9		
1	MUS	S.R. 60	31.68	31.87	0.19	1,003	7,10	40	16		11	13		
1	MUS	S.R. 60	AT S.R. 208				7	32	32					
1	MUS	S.R. 60	34.56	34.75	0.19	1,003	7,10	32	16		9	7		
SUB-TOTALS									80		482	29		
TOTAL (CARRIED TO GENERAL SUMMARY)								591						

CALCULATED LME
CHECKED DNM

PAVEMENT MARKER DATA

RAISED PA

MUS-60-28.36

M060_TRM_001.DGN 7-13-10

GENERAL

THE CONTRACTOR SHALL FURNISH AND INSTALL TRAFFIC CONTROL EQUIPMENT AND MATERIALS IN CONFORMANCE TO THESE PLANS AND SPECIFICATIONS AND THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS (2010) AND ALL SUPPLEMENTAL SPECIFICATIONS. BEFORE ANY EQUIPMENT IS ORDERED OR INSTALLATION IS BEGUN, THREE (3) SETS OF A COMPLETE SCHEDULE OF EQUIPMENT INCLUDING CATALOG CUTS, DIAGRAMS, DRAWINGS, BROCHURES OR OTHER DESCRIPTIVE DATA SHALL BE SUBMITTED TO THE ENGINEER. ONE COPY WILL BE RETURNED MARKED "APPROVED" IF FOUND SATISFACTORY. WORK MAY BEGIN WHEN THE APPROVED COPY IS RECEIVED BY THE CONTRACTOR.

THE CONTRACTOR SHALL SUBMIT IN WRITING A SCHEDULE OF WORK FOR THE PROJECT TO THE PROJECT ENGINEER FOR APPROVAL. THIS SCHEDULE SHALL BE SUBMITTED NOT LESS THAN TWO (2) WEEKS IN ADVANCE OF STARTING WORK.

REFERENCE TO A PARTICULAR TRADE NAME, MANUFACTURER'S CATALOG OR MODEL NUMBER IS MADE FOR DESCRIPTIVE PURPOSES TO GUIDE THE BIDDER. IN INTERPRETING THE REQUIREMENTS OF THE CONTRACT, THEY SHOULD NOT BE CONSTRUED AS EXCLUDING PROPOSALS ON OTHER MATERIALS, EQUIPMENT OR SUPPLIES THAT ARE EQUAL TO OR BETTER THAN THOSE REFERRED TO.

ANY EQUIPMENT OR MATERIAL NOT SPECIFICALLY CALLED FOR IN THESE SPECIFICATIONS BUT NECESSARY TO PROVIDE A COMPLETE AND SUCCESSFULLY OPERATING SYSTEM SHALL BE FURNISHED AS INCIDENTAL TO THE CONTRACT. PAYMENT FOR SUCH ITEMS WILL BE MADE UNDER THE APPROPRIATE RELATED ITEM AT THE CONTRACT BID PRICE, COMPLETE AND IN PLACE.

PLAN AND SPECIFICATION COMPLIANCE

THESE SPECIFICATIONS, TOGETHER WITH THE ACCOMPANYING PLANS, ARE INTENDED TO DESCRIBE THE TYPE, SIZE AND LOCATION OF THE PRODUCTS AND MATERIALS TO BE PROVIDED AND INSTALLED UNDER VARIOUS BID ITEMS RELATED TO TRAFFIC CONTROL. THE CONTRACTOR SHALL FURNISH AND INSTALL TRAFFIC CONTROL DEVICES AND RELATED MATERIALS IN COMPLIANCE WITH THESE PLANS AND SPECIFICATIONS, AS WELL AS THE 2010 OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS, THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, THE TRAFFIC ENGINEERING MANUAL, AND THE STANDARD CONSTRUCTION DRAWINGS ISSUED BY THE OHIO DEPARTMENT OF TRANSPORTATION. THESE SPECIFICATIONS SET FORTH THE MINIMUM PERFORMANCE AND OPERATING REQUIREMENTS OF THE TRAFFIC CONTROL ITEMS REFERRED TO HEREIN.

TRAFFIC SIGNAL CONTROL EQUIPMENT SHALL MEET OR EXCEED THE STANDARDS SPECIFIED IN THE FOLLOWING DOCUMENTS:

(A) SPECIFICATIONS LISTED IN THIS PLAN
(B) NEMA STANDARDS PUBLICATION NO. TS1-1989 AND/OR TS2-1992 (OR CURRENT NEMA ISSUE) SECTIONS 1, 2, 5, 6, 8, 11, 13, & 14.
(C) 2010 ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS 625, 632, 633, 725, 732 AND 733.

IN CASE OF A CONFLICTING SPECIFICATION STATEMENT, THE SPECIFICATION DOCUMENT HIERARCHY SHALL BE IN THE ORDER LISTED FROM (A) – HIGHEST TO (C) - LOWEST.

MAINTENANCE OF TRAFFIC SIGNAL INSTALLATION

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

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

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. THE CONTRACTOR SHALL PROVIDE THE STATE AND THE ENGINEER ADDRESSES AND PHONE NUMBERS WHERE THE CONTRACTOR'S MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL ALSO PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS CONTINUALLY AVAILABLE 24 HOURS A DAY, 7 DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MIS-ALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK INTO SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE.

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

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

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

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

WHEN THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION, WITHIN THE PERIODS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF SECTION 105.15. ANY SUBSEQUENT BILLINGS TO THE STATE FOR POLICE SERVICES AND MAINTENANCE SERVICES BY STATE FORCES WILL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

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

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN SECTION 632.25.

GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 180 DAYS FOLLOWING COMPLETION OF THE 10-DAY PERFORMANCE TEST. IN THE EVENT OF UNSATISFACTORY OPERATION THE CONTRACTOR SHALL CORRECT FAULTY INSTALLATIONS, MAKE REPAIRS AND REPLACE DEFECTIVE PARTS WITH NEW PARTS OF EQUAL OR BETTER QUALITY. EQUIPMENT, MATERIAL AND LABOR COSTS INCURRED IN CORRECTING AN UNSATISFACTORY OPERATION SHALL BE BORNE BY THE CONTRACTOR.

THE GUARANTEE SHALL COVER THE FOLLOWING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT AND DETECTOR UNITS.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR THE FOREGOING ITEMS SHALL BE TURNED OVER TO THE STATE OR THE MAINTAINING AGENCY FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

THE COST OF GUARANTEEING THE TRAFFIC CONTROL SYSTEM WILL BE INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE SYSTEM.

ELECTRICAL INSPECTION BY STATE LICENSED INSPECTOR

MOST ELECTRIC COMPANIES REQUIRE THAT ALL NEW OR RELOCATED ELECTRIC SERVICE ENCLOSURES ARE TO BE INSPECTED BY A LICENSED STATE INSPECTOR PRIOR TO CONNECTION TO A UTILITY DISTRIBUTION LINE. THIS IS A NEW SITUATION FOR ODOT BECAUSE INSPECTIONS ARE NOW BEING REQUIRED FOR TRAFFIC CONTROL DEVICES.

THE CONTRACTOR SHALL HIRE A LICENSED ELECTRICAL INSPECTOR(S); PAY THE APPROPRIATE FEE(S), AND ADVISE THE ODOT PROJECT ENGINEER OF THE TIME OF THE INSPECTION(S) SO THAT HE/SHE MAY HAVE A REPRESENTATIVE IN ATTENDANCE. IT IS TO BE NOTED THAT THE INSPECTION DOES NOT SUBSTITUTE FOR ODOT'S FINAL INSPECTION, NOR DOES IT SUPERSEDE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.

THE COST OF THE INSPECTIONS SHALL BE CONSIDERED AS INCIDENTAL TO AND INCLUDED IN THE CONTRACT UNIT PRICE OF THE VARIOUS ITEMS MAKING UP THE TRAFFIC CONTROL DEVICES.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITIES AS REQUIRED BY SECTION 153.64 OF THE OHIO REVISED CODE. ODOT ASSUMES NO RESPONSIBILITY FOR THE LOCATION OR THE DEPTHS OF THE UNDERGROUND FACILITIES SHOWN ON THESE PLANS.

AT LEAST 48 HOURS BEFORE DIGGING, THE CONTRACTOR SHALL CALL THE OHIO UTILITIES PROTECTION SERVICE AT THE NUMBER LISTED ON THE TITLE SHEET. NON-MEMBER UTILITY COMPANIES MUST BE CALLED DIRECTLY. SEE SHEET **3** OF **31** FOR THE NAMES AND ADDRESSES OF THE UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS.

CALCULATED DNM CHECKED

TRAFFIC SIGNAL GENERAL NOTES

MUS-60-28.36

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STRAIN POLE FOUNDATION ELEVATIONS

ELEVATIONS SHOWN IN THE PLANS FOR STRAIN POLE FOUNDATIONS ARE FOR COMPUTATIONAL PURPOSES ONLY. THE ACTUAL ELEVATION OF THE FOUNDATION SHALL BE IN ACCORDANCE WITH SCD TC-21.20 PROVIDED THE EXISTING SLOPE IS LESS THAN 6:1.

AT LOCATIONS WHERE THE EXISTING SLOPE IS 6:1 OR GREATER, THE BURIED DEPTH OF FOUNDATION, AS SHOWN IN SCD TC-21.20 SHALL APPLY TO THE LOW SIDE OF THE SLOPE. THE TOP OF THE FOUNDATION SHALL BE SET 2 INCHES ABOVE THE EXISTING SURFACE ON THE HIGH SIDE OF THE SLOPE.

THE ADDITIONAL DEPTH OF FOUNDATION NECESSARY TO MEET THESE REQUIREMENTS SHALL BE ADDED TO THE FORMED TOP.

ITEM 625, TRENCH, 24" DEEP, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 625.12 AND THE STANDARD CONSTRUCTION DRAWINGS, WITHIN EACH TRENCH, THE LOCATION OF UNDERGROUND CABLE OR CONDUIT SHALL BE MARKED BY THE USE OF A CONTINUOUS IDENTIFYING TAPE BURIED IN THE TRENCH ABOVE THE LINE. THE IDENTIFYING TAPE SHALL BE AN INERT MATERIAL, APPROXIMATELY 6.0" WIDE, COMPOSED OF POLYETHYLENE PLASTIC, HIGHLY RESISTANT TO ALKALIS ACIDS OR OTHER CHEMICAL COMPONENTS LIKELY TO BE ENCOUNTERED IN SOILS. THE TAPE SHALL BE BRIGHT RED WITH IDENTIFYING PRINTING "ELECTRIC" IN BLACK LETTERS, ONE SIDE ONLY. TAPES SHALL BE SUPPLIED IN CONTINUOUS ROLLS WITH THE IDENTIFYING LETTERING REPEATED CONTINUOUSLY THE FULL LENGTH OF THE TAPE. IDENTIFYING TAPES SHALL BE BURIED IN THE ELECTRIC LINE TRENCH WITH ONE STRIP PLACED APPROXIMATELY 8.0" TO 12.0" BELOW THE FINISHED GRADE. THE TAPE SHALL BE PLACED PARALLEL WITH THE FINISHED SURFACE. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO INSURE THAT THE TAPE IS NOT PULLED, DISTORTED OR OTHERWISE MISPLACED IN COMPLETING THE TRENCH BACKFILL. THE TAPE SHALL BE ALLEN SYSTEM'S, TERRA TAPE OR EQUAL, AS APPROVED BY THE ENGINEER. PAYMENT SHALL BE INCLUDED IN THE BID PRICE PER LINEAR FOOT OF ITEM 625, TRENCH, 24" DEEP, AS PER PLAN, COMPLETE AND IN PLACE.

ITEM 632, DETECTOR LOOP, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS ITEM 632 AND CMS 732.07 OR 732.08, DETECTOR LOOPS SHALL HAVE THE FOLLOWING REQUIREMENTS OR FEATURES:

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

THE UNIT SHALL BE SELF TUNING.

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

EACH UNIT SHALL BE LABELED TO CORRESPOND TO ITS PHASE AND DIRECTION.

DELAY INHIBIT SHALL BE CONNECTED ON ALL DETECTOR HARNESSES FOR THEIR RESPECTIVE PHASE GREENS.

ITEM 632, POWER SERVICE, AS PER PLAN

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS:

AEP SOLUTION CENTER
1-800-672-2231

POWER SERVICE SHALL BE AS PER CMS ITEM 632 AND STD. DWG. TC-83.10 WITH THE FOLLOWING EXCEPTIONS:

1. THE METER BASE MOUNTING HEIGHT SHALL BE NO MORE THAN 5 FEET HIGH TO THE CENTER OF THE METER BASE FROM THE GROUND.
2. THE CONTRACTOR SHALL SUPPLY THE NECESSARY METER BASE.
3. ALL POWER SERVICES SHALL BE METERED. THE METER SHALL HAVE A LEVER OPERATED BYPASS.

THE CONTRACTOR SHALL CONTACT THE METER SECTION OF THE POWER COMPANY FOR INFORMATION REGARDING THE METER BASE INSTALLATION PRIOR TO ORDERING POLES. THE CONTRACTOR WILL BE RESPONSIBLE FOR REQUESTING AND SCHEDULING ANY INSPECTIONS THE POWER COMPANY MAY REQUIRE FOR THE POWER SERVICE HOOK UP. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT THE POWER COMPANY FOR THE ELECTRICAL SERVICE CONNECTION. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR SPLICE POWER CABLE INTO THE POWER COMPANY'S CIRCUITS. THE VOLTAGE SUPPLIED SHALL BE NOMINALLY 120 VOLTS. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY NECESSARY PERMITS AND THE PAYING OF ALL FEES. THE CONTRACTOR SHALL PAY ALL POWER CHARGES UNTIL THE SIGNAL AND LIGHTING IS ACCEPTED BY THE MAINTAINING AGENCY.

ITEM 633, CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS ITEM 633 AND 733, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. LOOP DETECTOR UNITS SHALL BE FOUR-CHANNEL AND RACK MOUNTED.

PAYMENT FOR ITEM 633 "CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1, AS PER PLAN" SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH CABINET, IN PLACE, COMPLETELY INSTALLED IN THE LOCATION SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

ITEM 632, VEHICULAR SIGNAL HEAD, (LED) BLACK, BY TYPE, WITH BACKPLATES, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CMS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL ALSO APPLY:

SIGNAL SECTIONS:

1. SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.
2. PIPE, SPACERS AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC SHALL BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
3. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.

MOUNTING HARDWARE:

1. ALL UPPER SIGNAL SUPPORT HARDWARE AND PIPING UP TO AND INCLUDING THE WIRE INLET FITTING SHALL BE FERROUS METAL FOR SIGNAL DISPLAYS OF TWO OR MORE SECTIONS.
2. THE ENTRANCE FITTING SHALL BE OF THE TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.
3. ALL BALANCE ADJUSTERS SHALL HAVE A MINIMUM THREE-QUARTER INCH EYE BOLT AND THREE-QUARTER INCH WIDE SLOT. EYE BOLTS ARE CAST FROM 316 STAINLESS STEEL AND PROVIDED WITH A SATIN FINISH. THREE-QUARTER INCH BODY HALVES ARE CAST FROM A MINIMUM 65-45-12 DUCTILE IRON AND PROVIDED WITH A BRIGHT ZINC FINISH (ZN1). BALANCE ADJUSTERS SHALL ONLY BE USED WHERE SPECIFIED.

THE DEPARTMENT WILL MEASURE VEHICULAR SIGNAL HEAD, (LED) BLACK, BY TYPE, WITH BACKPLATES, AS PER PLAN BY THE NUMBER OF COMPLETE UNITS FURNISHED AND INSTALLED, AND WILL INCLUDE ALL SUPPORT AND MOUNTING HARDWARE, DISCONNECT HANGERS, CLOSURE CAPS, DIMMERS, AND LAMPS AS SPECIFIED.

CALCULATED DNM
CHECKED

TRAFFIC SIGNAL GENERAL NOTES

MUS-60-28.36

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GROUNDING AND BONDING

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) AND THE HL AND TC SERIES OF STANDARD CONSTRUCTION DRAWINGS ARE MODIFIED AS FOLLOWS:

1) ALL METALLIC PARTS CONTAINING ELECTRICAL CONDUCTORS SHALL BE PERMANENTLY JOINED TO FORM AN EFFECTIVE GROUND FAULT CURRENT PATH BACK TO THE GROUNDED CONDUCTOR IN THE POWER SERVICE DISCONNECT SWITCH.

   A. PROVIDE AN EQUIPMENT GROUNDING CONDUCTOR IN METALLIC CONDUITS (725.04) IN ADDITION TO THE CONDUCTORS SPECIFIED AND BOND THE CONDUIT TO THIS GROUNDING CONDUCTOR.

   B. WHEN AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED IN PLASTIC CONDUIT (725.05), THE INSTALLATION SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN ADDITION TO THE CONDUCTORS SPECIFIED.

   C. METALLIC CONDUIT CARRYING THE LOOP WIRES FROM IN THE PAVEMENT TO THE PULL BOX SPLICE LOCATION WILL ONLY BE BONDED AT THE PULL BOX END, AND WILL NOT CONTAIN AN EQUIPMENT GROUNDING CONDUCTOR.

   D. METAL PULL BOX LIDS SHALL BE BONDED BY ATTACHMENT OF THE EQUIPMENT GROUNDING CONDUCTOR TO THE FRAME DIAGONAL AS PROVIDED ON HL-30.11.

   E. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.

   F. IF AN EQUIPMENT GROUNDING CONDUCTOR IS NEEDED IN CONDUIT BETWEEN SIGNALIZED INTERSECTIONS FOR UNDERGROUND INTERCONNECT CABLE, THE GROUNDING SYSTEM FOR EACH SIGNALIZED INTERSECTION WILL BE SEPARATED ABOUT MIDWAY BETWEEN THE INTERSECTIONS.

   G. THE MESSENGER WIRE AT SIGNALIZED INTERSECTIONS WILL BE USED AS THE CONDUCTIVE PATH FROM CORNER TO CORNER IF CONDUIT IS NOT PROVIDED UNDER THE ROADWAY. WHEN CONDUIT CONNECTS THE CORNERS OF AN INTERSECTION, AN EQUIPMENT GROUNDING CONDUCTOR SHALL BE USED IN THE CONDUIT.

2) CONDUITS.

   A. THE 725.04 CONDUIT SHALL HAVE GROUNDING BUSHINGS INSTALLED AT ALL TERMINATION POINTS. THE BUSHING MATERIAL SHALL BE COMPATIBLE WITH GALVANIZED STEEL CONDUIT AND THE GROUNDING LUG MATERIAL SHALL BE COMPATIBLE FOR USE WITH COPPER WIRE. THREADED OR COMPRESSION TYPE BUSHINGS MAY BE USED.

   B. THE 725.05 CONDUIT SHALL HAVE THE INSIDE AND OUTSIDE DIAMETERS OF THE CONDUIT DEBURRED AT ALL TERMINATION POINTS.

   C. BOTH ENDS OF METALLIC CONDUIT SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

   D. METALLIC CONDUIT MAY BE BONDED TO METALLIC BOXES THROUGH THE USE OF CONDUIT FITTINGS UL APPROVED FOR THIS TYPE OF CONNECTION, WITH THE BOX BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

3) WIRE FOR GROUNDING AND BONDING.

   A. USE INSULATED, COPPER WIRE FOR THE EQUIPMENT GROUNDING CONDUCTOR. BONDING JUMPERS IN BOXES AND ENCLOSURES MAY BE BARE OR INSULATED COPPER WIRE. WIRE SIZE SHALL BE AS FOLLOWS:

      I) USE 4 AWG BETWEEN THE POWER SERVICE AND SUPPORTS, POLES, PEDESTALS, CONTROLLER OR FLASHER CABINETS.

      II) USE A MINIMUM 8 AWG BETWEEN LOOP DETECTOR PULL BOXES AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.

      III) USE A MINIMUM 8 AWG BETWEEN THE "PREPARE TO STOP WHEN FLASHING" INSTALLATION (INCLUDING SUPPORT) AND THE FIRST CONDUIT THAT REQUIRES A LARGER SIZE AS SPECIFIED IN 3.A.I ABOVE.

      IV) THE INSULATION SHALL BE GREEN OR GREEN WITH YELLOW STRIPE(S). FOR 4 AWG OR LARGER, INSULATION MAY ALSO BE BLACK WITH GREEN TAPE/LABELS INSTALLED AT ALL ACCESS POINTS.

   B. IN A HIGHWAY LIGHTING SYSTEM, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE THE SAME WIRE SIZE AS THE DUCT CABLE OR DISTRIBUTION CABLE CIRCUIT CONDUCTORS, WITH THE MINIMUM CONDUCTOR SIZE OF 4 AWG. BONDING JUMPERS WILL BE MINIMUM SIZE 4 AWG.

4) GROUND ROD.

   A. A 3/4 INCH SCHEDULE 40 PVC CONDUIT WILL BE USED IN FOUNDATIONS AND CONCRETE WALLS FOR THE GROUNDING CONDUCTOR (GROUND WIRE) RACEWAY TO THE GROUND ROD. SHOULD METALLIC CONDUIT BE USED, BOTH ENDS OF THE CONDUIT SHALL BE BONDED TO THE GROUNDING CONDUCTOR.

   B. THE TYPICAL GROUNDING CONDUCTOR (GROUND WIRE) SHALL BE 4 AWG INSULATED, COPPER.

5) THE GREEN CONDUCTOR IN SIGNAL CABLES (CONDUCTOR #4) SHALL NOT BE USED TO SUPPLY POWER TO A SIGNAL INDICATION. IT WILL BE CONNECTED TO THE SIGNAL BODY AS AN EQUIPMENT GROUND IN ALUMINUM HEADS AND IT WILL BE UNUSED IN PLASTIC HEADS. UNUSED CONDUCTORS SHALL BE GROUNDED IN THE CABINET. TYPICAL USE OF CONDUCTORS IS AS FOLLOWS:

COND. NO.	COLOR	VEHICLE SIGNAL	PEDESTRIAN SIGNAL
1	BLACK	GREEN BALL	#1 WALK
2	WHITE	AC NEUTRAL	AC NEUTRAL
3	RED	RED BALL	#1 DW/FDW
4	GREEN	EQUIPMENT GROUND	EQUIPMENT GROUND
5	ORANGE	YELLOW BALL	#2 DW/FDW
6	BLUE	GREEN ARROW	# 2 WALK
7	WHITE/BLACK STRIPE	YELLOW ARROW	NOT USED

6) POWER SERVICE AND DISCONNECT SWITCH.

   A. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC-) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UNSPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT SPICE.

   B. THE SERVICE NEUTRAL (AC-) SHALL ONLY BE CONNECTED TO GROUND AT THE PRIMARY POWER SERVICE DISCONNECT SWITCH.

      I) NEMA CONTROLLER CABINETS: IF A POWER SERVICE DISCONNECT SWITCH IS LOCATED BEFORE THE CONTROLLER CABINET, THE NEUTRAL (AC-) AND THE GROUNDING BARS IN THE CONTROLLER CABINET SHALL NOT BE CONNECTED TOGETHER AS SHOWN IN NEMA TS-2, FIGURE 5-4.

      II) IF SECONDARY DISCONNECT SWITCHES ARE CONNECTED AFTER THE PRIMARY DISCONNECT SWITCH, THE NEUTRAL (AC-) SHALL ONLY BE GROUNDED AT THE PRIMARY SWITCH. EQUIPMENT GROUNDING CONDUCTORS SHALL BE BROUGHT TO THE PRIMARY SWITCH, BUT SHALL BE GROUNDED AT BOTH SECONDARY AND PRIMARY SWITCHES.

7) STRUCTURE GROUNDING: HL-50.21 SHOWS A 1/0 AWG STRANDED COPPER CABLE USED FOR STRUCTURE GROUNDING. ADDITIONALLY, THIS SAME CABLE SHALL BE INSULATED AND ANY CONNECTIONS AND BARE COPPER STRANDS EXPOSED TO CONCRETE SHALL BE COVERED WITH MASTIC TO PREVENT CONTACT WITH THE CONCRETE.

8) PAYMENT.

   A. ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

   B. WORK ON BRIDGES MAY BE INCLUDED IN THE BID ITEM FOR "ITEM 625, STRUCTURE GROUNDING."

   C. IN A 3-WIRE HIGHWAY LIGHTING SYSTEM, THE THIRD CONDUCTOR OF THE DUCT CABLE OR DISTRIBUTION CABLE WILL BE USED AS THE EQUIPMENT GROUNDING CONDUCTOR AND MAY AS SUCH BE PART OF THE CABLE BID ITEM.

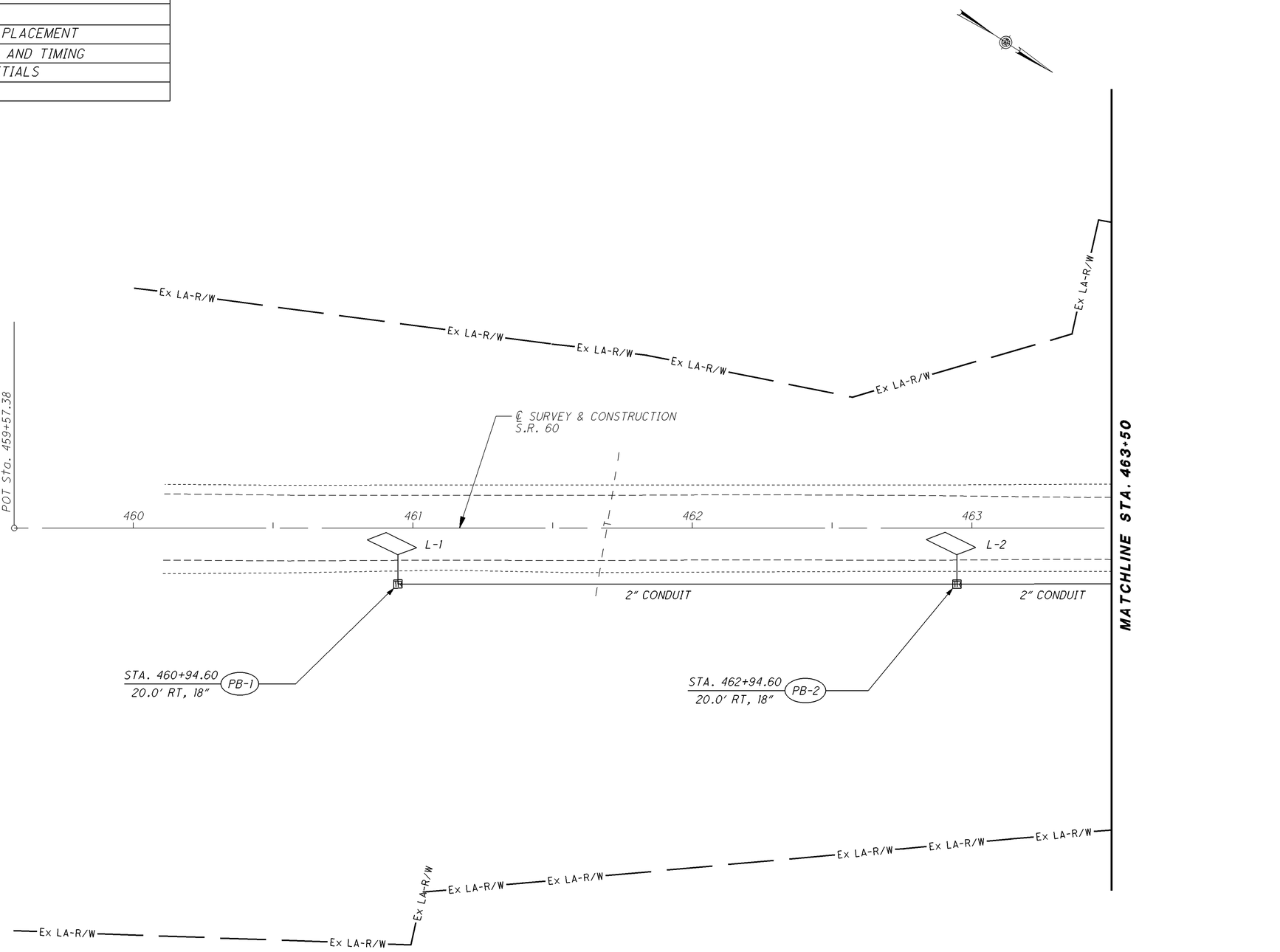
CALCULATED DNM
CHECKED

TRAFFIC SIGNAL GENERAL NOTES

MUS-60-28.36

CROSS REFERENCES	
SHEET(S)	DESCRIPTION
28	WIRING DIAGRAM AND SIGNAL HEAD PLACEMENT
29	DETECTOR CHART, SIGNAL PHASING AND TIMING
30	SIGNAL POLE OREINTATION AND DETIALS
31	TRAFFIC SIGNAL SUBSUMMARY

NOTE: ALL CONDUIT IS 2" UNLESS
OTHERWISE SPECIFIED



LEGEND

ANGULAR DESIGN DETECTION LOOP.....

18" OR 24" PULL BOX .....

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DNM
CHECKED DNM

S.R. 60 SIGNAL DETAIL SHEET
STA. 459+57.38 TO STA. 463+50

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25
31

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SIGNAL INDICATIONS
ALL 12" LENS

SIGNAL: C,G	SIGNAL: A,B,D,E,F,H
R, ~~Y~~, Y, ~~G~~, G	R, Y, G

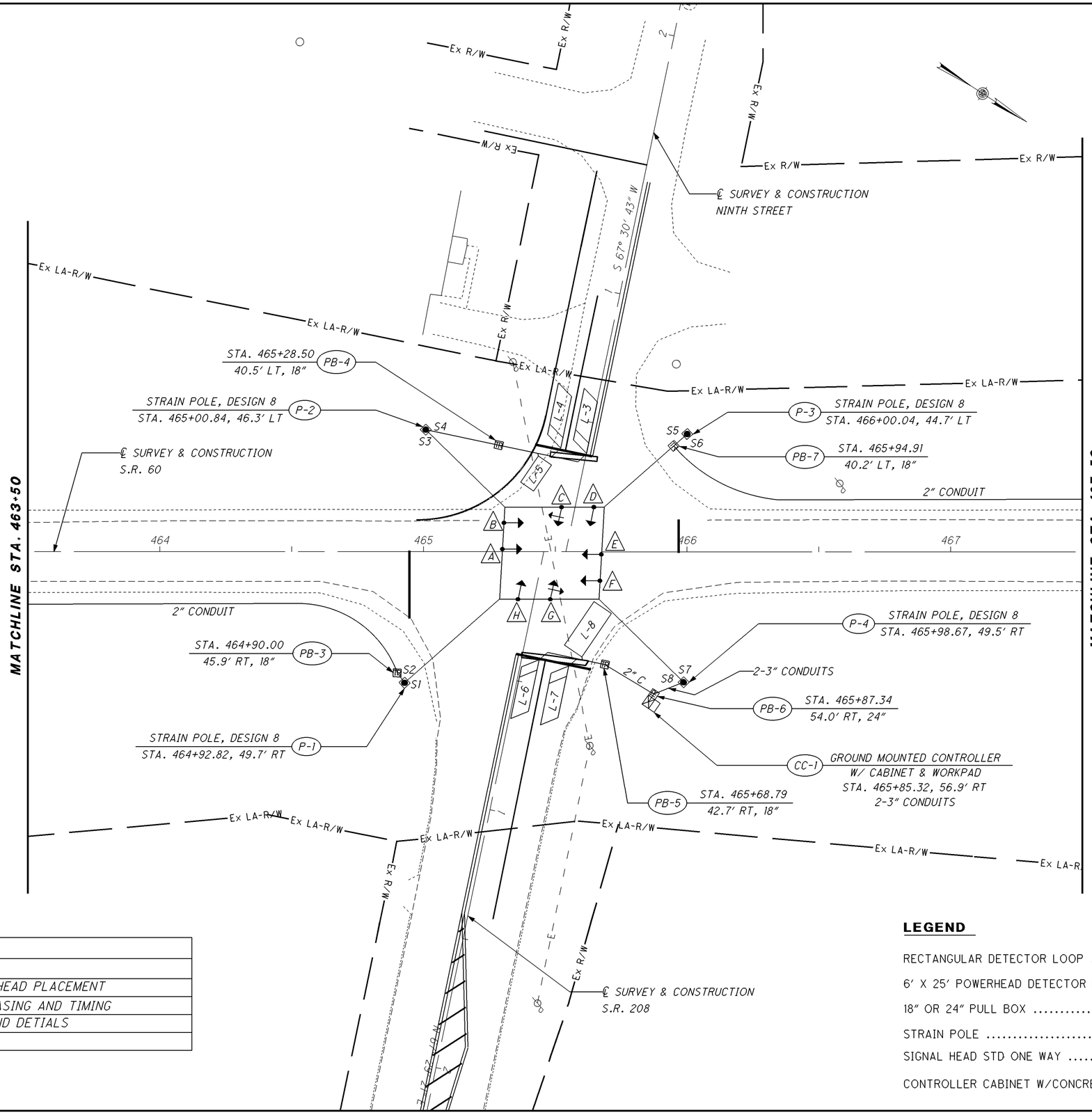
R9-3A-18
18" x 18"
(AREA = 2.3 S.F.)

S1, S2, S3, S4,
S5, S6, S7 & S8

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

ITEM 630 - SIGN SUPPORT ASSEMBLY, POLE MOUNTED - 8 EACH

ITEM 630 - SIGN, FLAT SHEET
8 X 2.3 S.F. = 18.4 S.F.



CROSS REFERENCES	
SHEET(S)	DESCRIPTION
28	WIRING DIAGRAM AND SIGNAL HEAD PLACEMENT
29	DETECTOR CHART, SIGNAL PHASING AND TIMING
30	SIGNAL POLE OREINTATION AND DETIALS
31	TRAFFIC SIGNAL SUBSUMMARY

NOTE: ALL CONDUIT IS 2" UNLESS OTHERWISE SPECIFIED

LEGEND

- RECTANGULAR DETECTOR LOOP .....
- 6' X 25' POWERHEAD DETECTOR LOOP .....
- 18" OR 24" PULL BOX ..... IR
- STRAIN POLE .....
- SIGNAL HEAD STD ONE WAY .....
- CONTROLLER CABINET W/CONCRETE PAD .....

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DNM
CHECKED DNM

S.R. 60 SIGNAL DETAIL SHEET
STA. 463+50 TO STA. 467+50

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26
31

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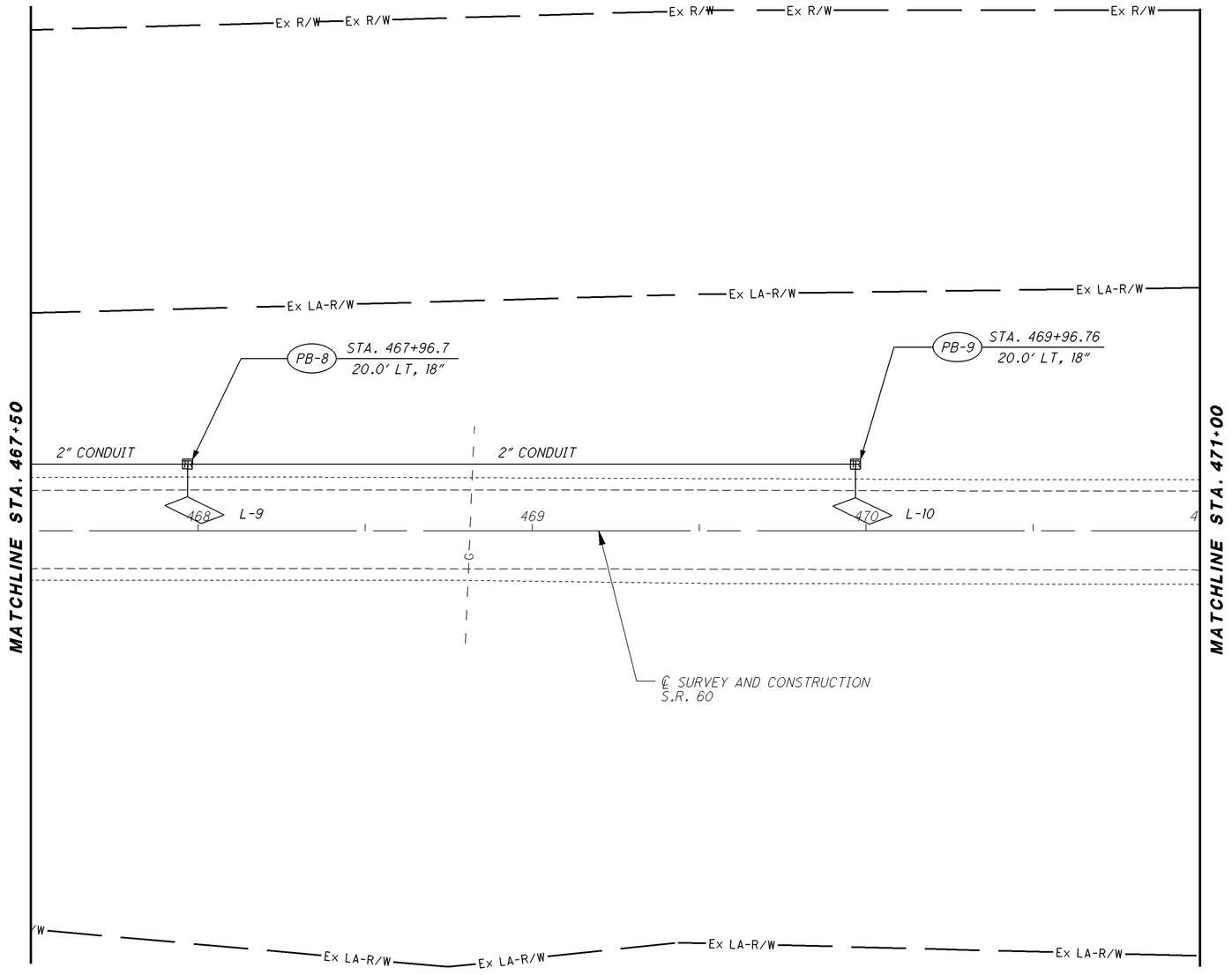

CROSS REFERENCES	
SHEET(S)	DESCRIPTION
28	WIRING DIAGRAM AND SIGNAL HEAD PLACEMENT
29	DETECTOR CHART, SIGNAL PHASING AND TIMING
30	SIGNAL POLE OREINTATION AND DETIALS
31	TRAFFIC SIGNAL SUBSUMMARY

NOTE: ALL CONDUIT IS 2" UNLESS OTHERWISE SPECIFIED

LEGEND

ANGULAR DESIGN DETECTION LOOP.....

18" OR 24" PULL BOX .....

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED DNM
CHECKED DNM

S.R. 60 SIGNAL DETAIL SHEET
STA. 467+50 TO STA. 471+00

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31

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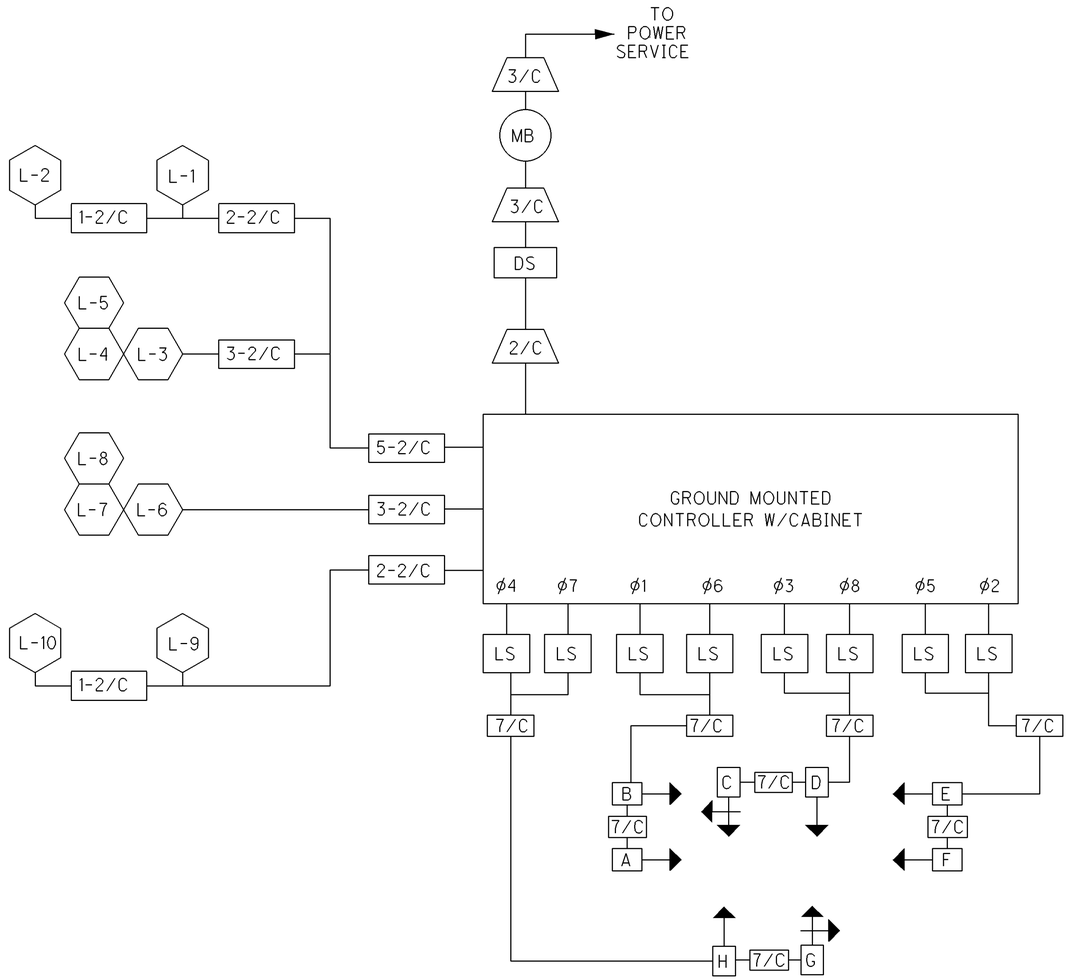
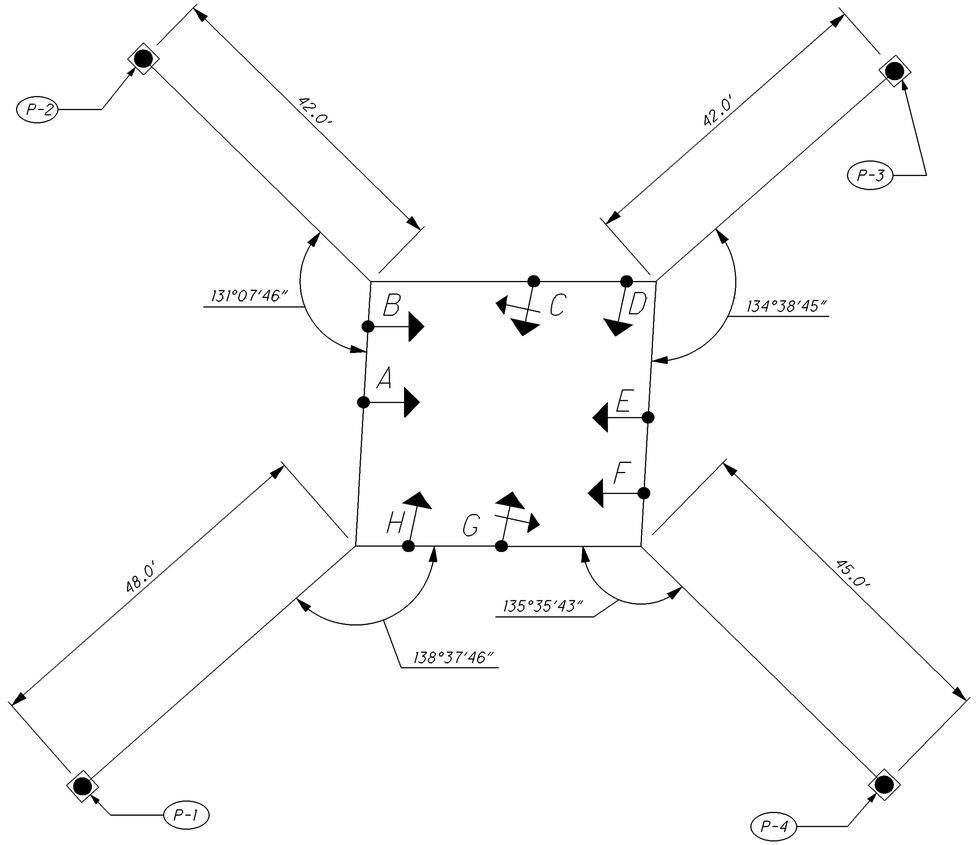
TRAFFIC SIGNAL WIRING DIAGRAM

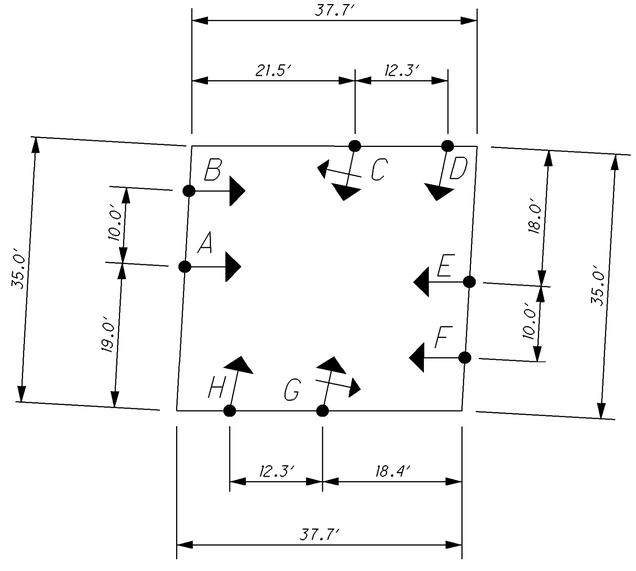


LEGEND

- SIGNAL HEAD WITH TURN ARROW
- SIGNAL HEAD
- L-1 — VEHICLE DETECTOR LOOP
- DS — 30 AMP DISCONNECT SWITCH
- MB — METER BASE
- 2/C OR 3/C #8 AWG POWER CABLE
- LS — LOAD SWITCH
- 2/C — 2/C #14 AWG (LEAD-IN CABLE)
- 7/C — 7/C #14 AWG SIGNAL CABLE

TRAFFIC SIGNAL HEAD PLACEMENT





CALCULATED DNM
CHECKED DNM

TRAFFIC SIGNAL PLAN DETAILS

MUS-60-28.36

28
31

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FIELD WIRING HOOK-UP CHART

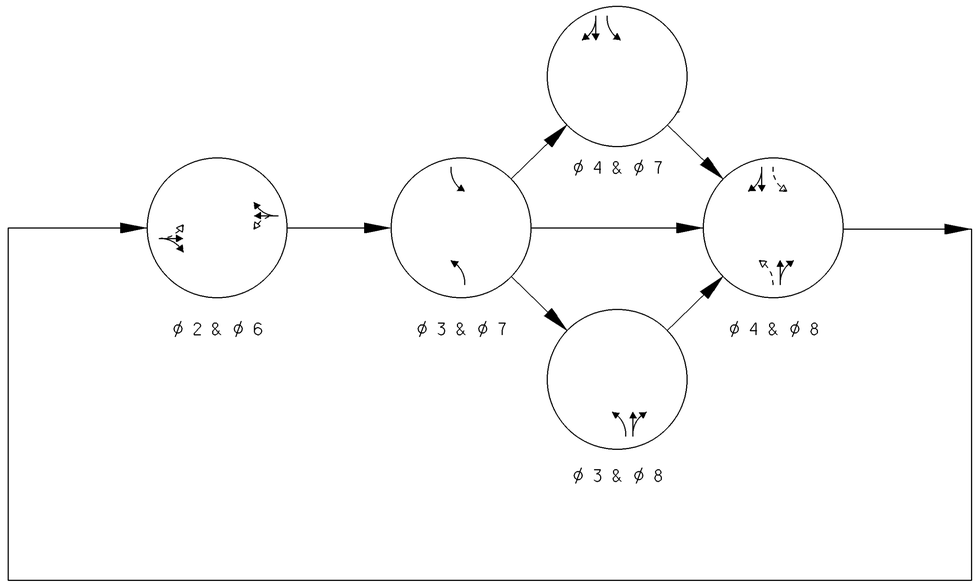
SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH	SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
A,B (SB)	R	ϕ6 R	Y	E,F (NB)	R	ϕ2 R	Y
	Y	ϕ6 Y			Y	ϕ2 Y	
	G	ϕ6 G			G	ϕ2 G	
C (WBLT)	R	ϕ8 R	R	G (EBLT)	R	ϕ4 R	R
	Y	ϕ8 Y			Y	ϕ4 Y	
	G	ϕ8 G			G	ϕ4 G	
	~~Y~~	ϕ3 Y			~~Y~~	ϕ7 Y	
	~~G~~	ϕ3 G			~~G~~	ϕ7 G	
D (WB)	R	ϕ8 R	R	H (EB)	R	ϕ4 R	R
	Y	ϕ8 Y			Y	ϕ4 Y	
	G	ϕ8 G			G	ϕ4 G	

TRAFFIC SIGNAL DETECTOR CHART

LOOP DESIGNATION	CONTROLLER PHASE	SIZE (FT)	PULSE OR PRESENCE	EXTENSION (SEC.)	DELAY (SEC.)	DELAY INHIBITED DURING	CONNECT TO DETECTOR UNIT (Unit-Channel)	LOOP DETECTION TYPE
L-1	2	39′	PULSE				1-1	A.D.D.
L-2	2	39′	PULSE				2-1	A.D.D.
L-3	7	6′X25′	PRESENCE		3	ϕ7	1-2	P.D.
L-4	4	6′X25′	PRESENCE		2	ϕ4	2-2	P.D.
L-5	4	6′X12′	PRESENCE		10	ϕ4	1-3	R.D.
L-6	3	6′X25′	PRESENCE		3	ϕ3	1-4	P.D.
L-7	8	6′X25′	PRESENCE		2	ϕ8	2-3	P.D.
L-8	8	8′X20′	PRESENCE		10	ϕ8	3-1	R.D.
L-9	6	39′	PULSE				2-4	A.D.D.
L-10	6	39′	PULSE				3-2	A.D.D.

A.D.D. - ANGULAR DESIGN DETECTION LOOP P.D. - POWERHEAD DETECTION LOOP
R.D. - RECTANGULAR DETECTION LOOP

SIGNAL PHASING



TRAFFIC SIGNAL TIMING CHART

TIMING SCHEDULE

INTERVAL OR FEATURE			ϕ2	ϕ3	ϕ4	ϕ6	ϕ7	ϕ8
INTERSECTION MOVEMENT			NB	WB LT	EB	SB	EB LT	WB
MINIMUM GREEN (TRUE)		(SEC.)	12.0	8.0	10.0	12.0	8.0	10.0
PASSAGE TIME		(SEC.)	3.0	3.0	3.0	3.0	3.0	3.0
MAXIMUM GREEN I		(SEC.)	40.0	10.5	15.5	40.0	10.5	15.5
MAXIMUM GREEN II		(SEC.)						
YELLOW CHANGE		(SEC.)	4.0	3.5	3.5	4.0	3.5	3.5
ALL RED CLEARANCE		(SEC.)	1.0	1.0	1.0	1.0	1.0	1.0
ADDED INITIAL		(SEC./ACTUATION)						
MAXIMUM INITIAL		(SEC.)						
TIME BEFORE REDUCTION		(SEC.)						
TIME TO REDUCE		(SEC.)						
MINIMUM GAP		(SEC.)	3.0	3.0	3.0	3.0	3.0	3.0
START UP GREEN			X			X		
START UP YELLOW								
START UP RED				X	X		X	X
RECALL	MINIMUM		X			X		
	MAXIMUM							
LOCKING DETECTOR								
NON-LOCK								
FLASH			Y	R	R	Y	R	R

CALCULATED DNM CHECKED DNM

TRAFFIC SIGNAL PLAN DETAILS

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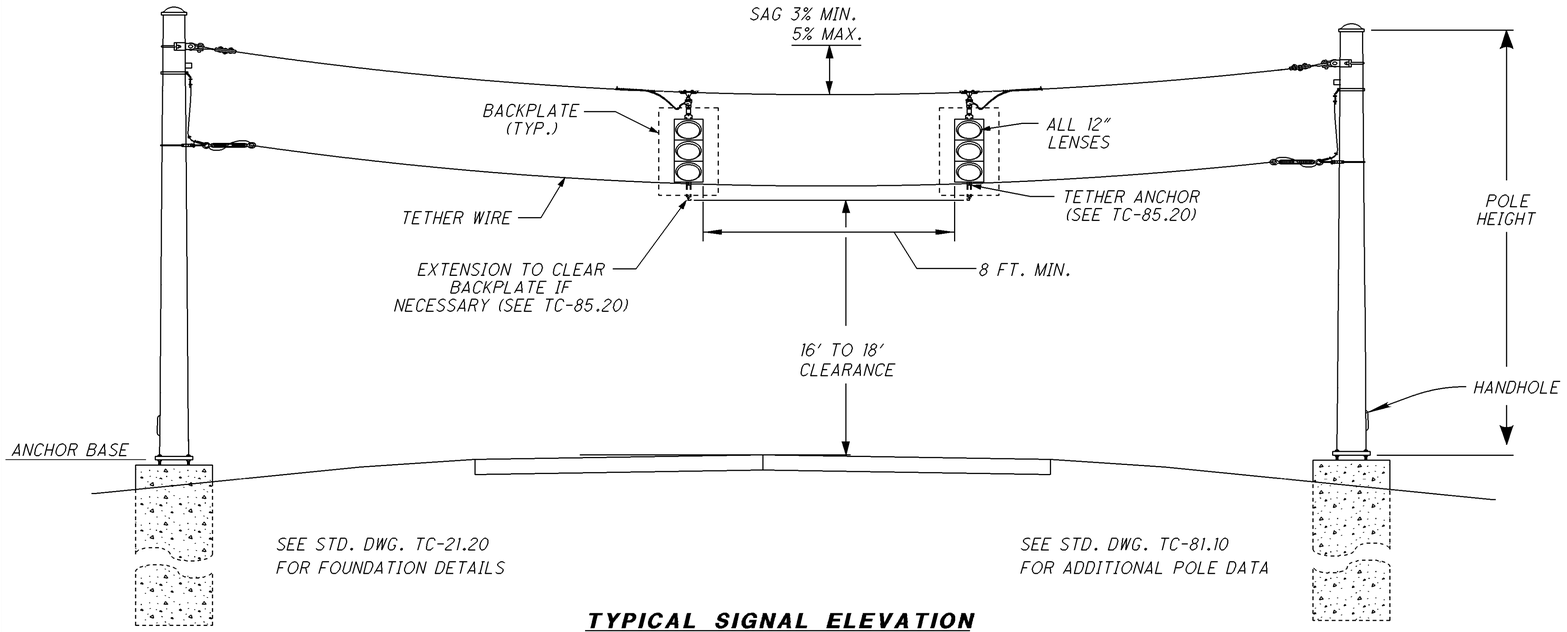
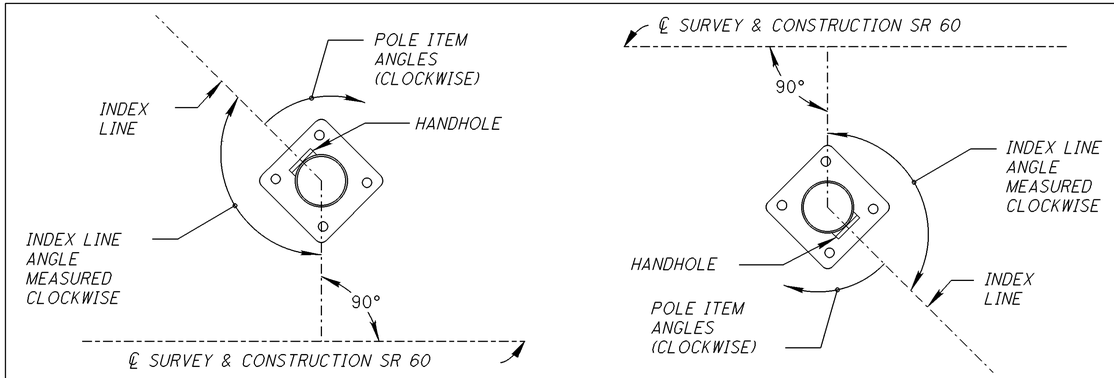


TYPICAL SIGNAL ELEVATION

NOTES:

(1) THE ATTACHEMENT HEIGHTS FOR THE MIN. SAG (3%) AND MAX. SAG (5%) HAVE BEEN PROVIDED IN THE TABLE. THE CONTRACTOR SHALL ATTACH THE MESSENGER WIRE AT A HEIGHT THAT PROVIDES ADEQUATE CLEARANCE TO THE SIGNAL HEADS AS SHOWN IN THE SIGNAL ELEVATION VIEW. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROVIDE THE PROPER CLEARANCE WITHOUT THE USE OF DROP PIPES.

(2) ELECTRICAL SERVICE SHALL BE AS PER TC-83.10, AND ORIENTATED AT THE ANGLE SHOWN IN THE TABLE.



SUPPORT NO.	REFERENCE ROADWAY	MINIMUM STANDARD DESIGN NO.	POLE HEIGHT (FEET)	STATION	OFFSET	FOUNDATION ELEVATION	SPAN WIRE ATTACHMENT HEIGHT 3% SAG (FEET)	SPAN WIRE ATTACHMENT HEIGHT 5% SAG (FEET)	INDEX LINE ANGLE	ANGLES FROM INDEX LINE		
										POWER SERVICE	CABLE ENTRANCE 12" FROM TOP	HANDHOLE
1	SR 60	8	30	464+92.82	49.7' RT	748.00	25.25'	28.00'	228.6°		180°	0°
2	SR 60	8	30	465+00.84	46.3' LT	748.00	25.31'	28.09'	134.4°		180°	0°
3	SR 60	8	30	466+00.04	44.7' LT	748.00	25.41'	28.26'	228.6°		180°	0°
4	SR 60	8	33	465+98.67	49.5' RT	745.00	28.34'	31.15'	134.4°	101.5°	180°	0°

SIGNAL POLE DIAGRAM

CALCULATED DNM CHECKED DNM

TRAFFIC SIGNAL PLAN DETAILS

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SHEET NO.	LOCATION			SIDE	625						632															633		
	BR = BULL RING * - PULL BOX IN QUANTITIES			LT./RT.	CONDUIT, 2", 725.05 FT.	CONDUIT, 3", 725.05 FT.	TRENCH, 24" DEEP, AS PER PLAN FT.	PULL BOX, 725.08, 18" EACH	PULL BOX, 725.08, 24" EACH	GROUND ROD EACH	VEHICULAR SIGNAL HEAD, (LED), BLACK, 3-SECTION, 12" LENS, 1-WAY, WITH BACKPLATE, A.P.P. EACH	VEHICULAR SIGNAL HEAD, (LED), BLACK, 5-SECTION, 12" LENS, 1-WAY, WITH BACKPLATE, A.P.P. EACH	COVERING OF VEHICULAR SIGNAL HEAD EACH	DETECTOR LOOP EACH	LOOP DETECTOR LEAD-IN CABLE FT.	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG. FT.	POWER SERVICE, AS PER PLAN EACH	POWER CABLE, 2-CONDUCTOR, NO. 8 AWG. FT.	POWER CABLE, 3-CONDUCTOR, NO. 8 AWG. FT.	TETHER WIRE, WITH ACCESSORIES FT.	STRAIN POLE FOUNDATION EACH	STRAIN POLE, TYPE TC-81.10, DESIGN 8 EACH	MESSENGER WIRE, 7 STRAND, 1/4" DIAMETER WITH ACCESSORIES EACH	CONTROLLER WORK PAD EACH	CABINET RISER EACH	CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS1, AS PER PLAN EACH
	S.R. 60/S.R. 208																											
25	*PB-1	TO	*PB-2	RT.	200		200	2						1	210													
	PB-2	TO	STA. 463+50	RT.	56		56							1	122													
26	STA. 463+50	TO	*PB-3	RT.	152		152	1							314													
	PB-3	TO	P-1	RT.	5		5			1					36						1	1						
	P-1	TO	P-1(BR)	RT.											166					48			48					
	*PB-4	TO	P-2	LT.	29		29	1		1				3	132						1	1						
	P-2	TO	PB-2(BR)	LT.											231					42			42					
	P-2(BR)	TO	P-1(BR)	CL.							2		2		105	54				35			35					
	P-1(BR)	TO	P-4(BR)	RT.							1	1	2		190	85				38			38					
	P-2(BR)	TO	P-3(BR)	LT.							1	1	2			32				38			38					
	STA. 467+50	TO	*PB-7	LT.	162		162	1							334													
	PB-7	TO	PB-3	LT.	7		7			1					44						1	1						
	P-3	TO	P-3(BR)	LT.											154					42			42					
	P-3(BR)	TO	P-4(BR)	CL							2		2		70	67				35			35					
	P-4(BR)	TO	P-4	RT.						1					581	332				45	1	1	45					
	P-4	TO	*PB-6	RT.		24	12		1						189	108	1	32	82									
	*PB-5	TO	PB-6	RT.	22		22	1						3	96													
	PB-6	TO	CC-1	RT.		8	4			1					160	64		16								1	1	1
27	STA. 467+50	TO	*PB-8	LT.	47		47	1						1	104													
	PB-8	TO	*PB-9	LT.	200		200	1						1	210													
TOTALS (CARRIED TO GENERAL SUMMARY)					880	32	896	8	1	5	6	2	8	10	3,448	742	1	48	82	323	4	4	323	1	1	1		

CALCULATED DNM
CHECKED DNM

TRAFFIC SIGNAL SUB-SUMMARY

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