

CITY OF HILLIARD, OHIO CEMETERY RD./LACON RD. SIGNAL IMPROVEMENTS AND CEMETERY RD. FIBER IMPROVEMENTS

FRANKLIN COUNTY
2017
HILLIARD PLAN NO.

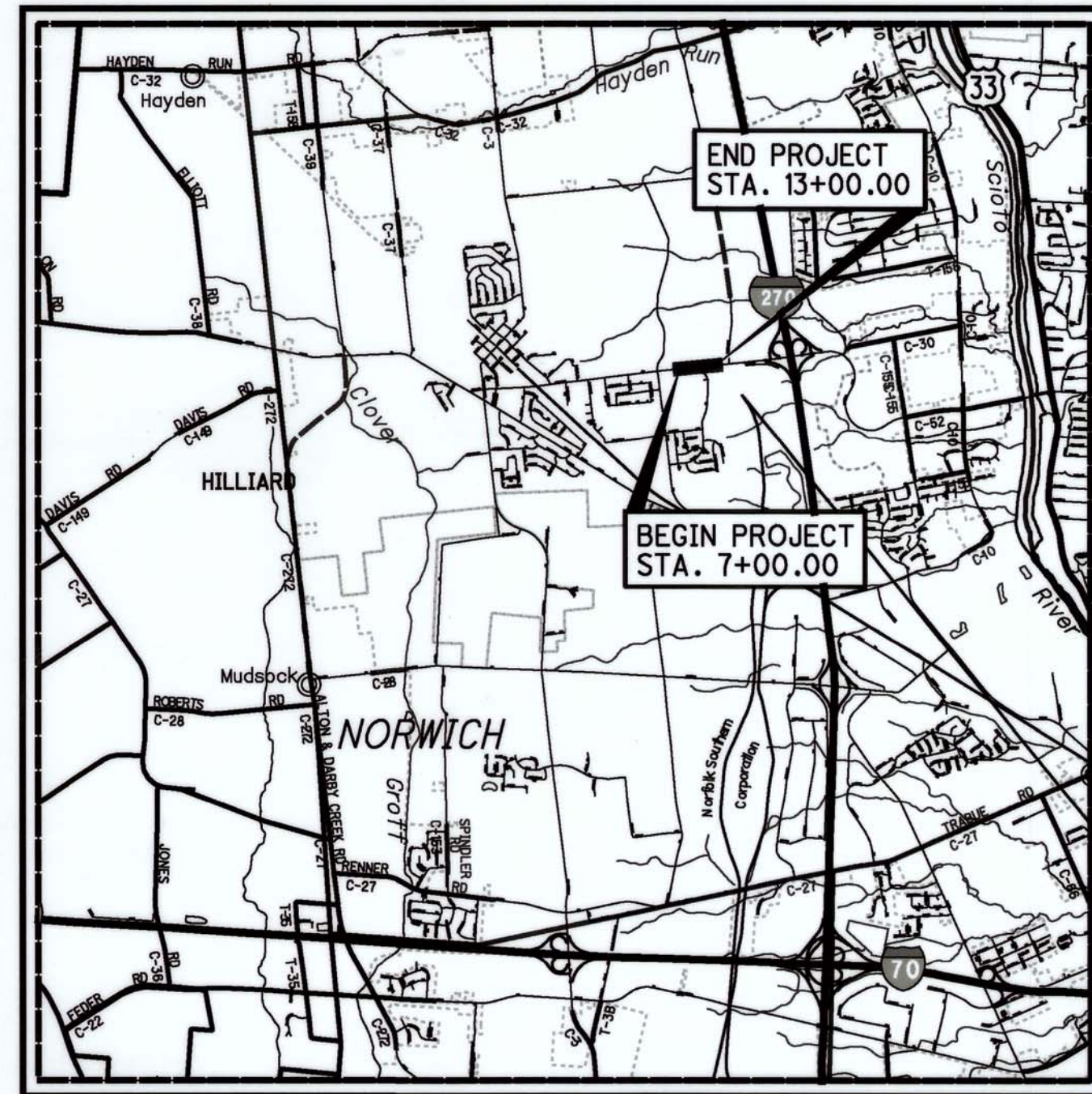
PROJECT DESCRIPTION

INSTALLATION OF A NEW MAST ARM SIGNAL AND ADA COMPLIANT CURB RAMPS AT THE INTERSECTION OF CEMETERY RD. AND LACON RD. INCLUDING NEW FIBER OPTIC INTERCONNECT.

PROJECT EARTH DISTURBED AREA: N/A
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: N/A
NOTICE OF INTENT EARTH DISTURBED AREA: N/A

SPECIFICATIONS

THE REGULATIONS AND CONSTRUCTION STANDARDS OF THE CITY OF HILLIARD, TOGETHER WITH THE 2012 CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) OF THE CITY OF COLUMBUS (COLS) AND THE 2016 C&MS OF THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT), INCLUDING ALL SUPPLEMENTS THERETO, SHALL GOVERN ALL CONSTRUCTION ITEMS THAT ARE A PART OF THIS PLAN UNLESS OTHERWISE NOTED.



LOCATION MAP

LATITUDE: 40°01'56"N LONGITUDE: 83°08'05"W

SCALE IN MILES



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

DESIGN DESIGNATION	CEMETERY RD.	LACON RD.
CURRENT ADT (2014)	N/A	N/A
TRUCKS (24 HOUR B&C)	N/A	N/A
DESIGN SPEED	40 MPH	30 MPH
LEGAL SPEED	35 MPH	25 MPH
DESIGN FUNCTIONAL CLASSIFICATION:	URBAN PRINCIPAL ARTERIAL	URBAN LOCAL
NHS PROJECT	NO	

DESIGN EXCEPTIONS: NONE REQUIRED

INDEX OF SHEETS:

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STANDARD CONSTRUCTION DRAWINGS						SUPPLEMENTAL SPECIFICATIONS			
CITY OF HILLIARD		CITY OF COLUMBUS		ODOT					
CD-1	4/25/13	1441	12/1/14	LA-1.1	10/15/10	TC-21.20	7/20/18	800	7/20/18
CG-2	4/25/13	2000	3/30/18			TC-41.41	10/18/13	804	1/20/17
CR-1	3/6/15	2203	12/1/14	MT-97.10	7/18/14	TC-52.20	7/20/18	816	7/20/18
DD-1	8/15/17	2319	3/30/18	MT-97.11	1/20/17	TC-71.10	1/19/18	904	7/15/16
MHA-1	4/25/13			MT-120.00	1/19/18	TC-81.21	7/20/18	907	1/20/12
SL-4	9/1/15					TC-82.10	7/17/15	916	1/19/18
SL-6	9/1/15			HL-30.11	7/20/18	TC-83.10	1/19/18		
SW-1	4/25/13			HL-30.22	1/17/14	TC-83.20	7/21/17		
TC-1	7/30/15			HL-40.10	1/20/17	TC-84.20	10/18/13		
						TC-84.21	10/18/13		
						TC-85.10	7/21/17		
						TC-85.20	7/20/18		

ENGINEERS SEAL:



SIGNED: *Scott D. Seaman*
DATE: 10-05-18

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

APPROVED: *Clark A. Gausch*
DATE: 10/9/2018 CITY ENGINEER, CITY OF HILLIARD

APPROVED: *Clyde R. Sealle*
DATE: 10/19/2018 DIRECTOR OF PUBLIC SERVICE, CITY OF HILLIARD

APPROVED: *John W. Wilson*
DATE: 10/10/2018 NORWICH TOWNSHIP FIRE DEPARTMENT



1-800-362-2764 OR 8-1-1
WWW.OUPS.ORG

PLAN PREPARED BY:



D:\2014\20140414\20140414.B1 - HILLIARD DES & T-124 CITYWIDE - YEAR 2\2-CEMETERY & LACON SIGNAL\ROADWAY\DRAMA\SHEETS\1395807861.DGN
8/30/2018 4:39:22 PM ODOT\B18TD\JBER

FEDERAL PROJECT NO. N/A
PID NO. N/A
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

RESTORATION OF DISTURBED AREAS

THE CONTRACTOR SHALL RESTORE ALL DISTURBED LANDSCAPED AREAS, PAVEMENT SURFACES, SIDEWALKS AND DRIVEWAYS TO A CONDITION EQUAL TO, OR BETTER THAN THAT WHICH EXISTED PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL PERFORM ALL RESTORATION WITH MATERIALS IDENTICAL TO THE EXISTING SURFACE, INCLUDING, BUT NOT LIMITED TO ASPHALT AND CONCRETE PAVEMENT, ASPHALT, CONCRETE AND BRICK SIDEWALK, INTEGRAL CURB, AND SPECIAL SURFACES (SUCH AS COLORED OR TEXTURED) AS ENCOUNTERED. PATCHING OF CONCRETE SIDEWALKS AND DRIVEWAYS SHALL NOT BE PERMITTED. THE CONTRACTOR SHALL REPLACE SIDEWALKS AND DRIVEWAYS IN ENTIRE ORIGINAL SLAB SECTIONS.

THE CONTRACTOR SHALL PERFORM ALL RESTORATION WORK IN ACCORDANCE WITH THE PERTINENT SPECIFICATION ITEMS AS DIRECTED BY THE ENGINEER. THE CITY WILL CONSIDER ALL RESTORATION WORK, INCLUDING MATERIALS, EQUIPMENT, LABOR, INCIDENTALS, AND DISPOSAL OF ALL SURPLUS MATERIALS AS INCIDENTAL TO THE VARIOUS ITEMS OF UNDERGROUND WORK. SEPARATE PAY ITEMS WILL BE PROVIDED FOR THE SIDEWALK REMOVAL AND REPLACEMENT ALONG WITH THE CURB RAMPS. NO OTHER SEPARATE PAY ITEMS WILL BE PROVIDED.

ITEM 201 - CLEARING AND GRUBBING

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

PROTECTION OF RIGHT-OF-WAY LANDSCAPING

PRIOR TO BEGINNING WORK, TOGETHER WITH THE PROJECT ENGINEER, THE CONTRACTOR AND A REPRESENTATIVE OF THE CITY OF HILLIARD SHALL REVIEW AND RECORD ALL LANDSCAPING ITEMS WITHIN THE RIGHT OF WAY (BOTH INSIDE AND OUTSIDE THE CONSTRUCTION LIMITS). A RECORD OF THIS REVIEW WILL BE KEPT IN THE PROJECT ENGINEER'S FILES. PRIOR TO FINAL ACCEPTANCE, A FINAL REVIEW OF LANDSCAPING ITEMS WILL BE MADE.

CONSTRUCT ALL ACTIVITIES, EQUIPMENT STORAGE, AND STAGING WITHIN THE CONSTRUCTION LIMITS. UNLESS OTHERWISE IDENTIFIED IN THE PLANS OR PROPOSAL, THE CONSTRUCTION LIMITS ARE IDENTIFIED AS THE AREA INSIDE THE PUBLIC RIGHT OF WAY.

SUBMIT A WRITTEN REQUEST TO THE PROJECT ENGINEER TO USE ANY AREA OUTSIDE OF THESE LIMITS. THE DOCUMENT SUBMITTED MUST CLEARLY IDENTIFY THE AREA AND EXPLAIN THE PROPOSED USE AND RESTORATION OF THE AREA. USE OF THESE AREAS FOR DISPOSAL OF WASTE MATERIAL AND CONSTRUCTION DEBRIS, EXCAVATION OF BORROW MATERIAL AND PLACEMENT OF PORTABLE PLANTS IS PROHIBITED.

THE REQUEST MUST BE APPROVED, IN WRITING, BEFORE THE CONTRACTOR HAS PERMISSION TO USE THE AREA.

ANY ITEMS DAMAGED BEYOND THE CONSTRUCTION LIMITS AS DEFINED ABOVE WILL BE REPLACED IN KIND OR AS APPROVED BY THE PROJECT ENGINEER AT THE CONTRACTOR'S EXPENSE.

TRIMMING OF TREES AND REMOVAL OF LANDSCAPING ITEMS IN THE RIGHT-OF-WAY

WHEN DIRECTED BY THE ENGINEER, TRIM EXISTING TREES IN OR EXTENDING OVER THE RIGHT-OF-WAY IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING LA-1.1, TO REMOVE OBSTRUCTIONS TO THE PROPOSED TRAFFIC SIGNAL EQUIPMENT, MAST ARMS, POLES, ETC. FOR TREES ON PRIVATE PROPERTY WHICH EXTEND OVER THE RIGHT-OF-WAY, NOTIFY THE PROPERTY OWNER IN WRITING BEFORE TRIMMING TREES.

WHEN DIRECTED BY THE ENGINEER, REMOVE LANDSCAPING ITEMS IN THE RIGHT OF WAY, SUCH AS SHRUBBERY, BOULDERS, ETC. WHICH OBSTRUCT THE PROPOSED TRAFFIC SIGNAL EQUIPMENT SUCH AS PULLBOXES, POLES, CONTROLLERS, CURB RAMPS, ETC. AT LEAST 3 DAYS PRIOR TO REMOVING THE LANDSCAPING ITEMS, NOTIFY THE ADJACENT PROPERTY OWNER IN WRITING OF THE ITEMS TO BE REMOVED.

PAYMENT FOR THIS WORK WILL BE CONSIDERED INCIDENTAL TO ITEM 201 - CLEARING AND GRUBBING.

PLAN AND SPECIFICATION COMPLIANCE

THE CONTRACTOR SHALL PERFORM ALL WORK IN COMPLIANCE WITH THESE PLANS AND SPECIFICATIONS AND SHALL MEET OR EXCEED THE STANDARDS IN THE FOLLOWING DOCUMENTS:

- (A) THE CITY OF HILLIARD DESIGN MANUAL
- (B) 2018 COC CONSTRUCTION AND MATERIAL SPECIFICATIONS AND COC STANDARD CONSTRUCTION DRAWINGS
- (C) THE CURRENT VERSION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD)

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

GENERAL NOTES

1. THE REGULATIONS AND CONSTRUCTION STANDARDS OF THE CITY OF HILLIARD, TOGETHER WITH THE 2012 CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) OF THE CITY OF COLUMBUS (COLS) AND THE 2016 C&MS OF THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT), INCLUDING ALL SUPPLEMENTS THERETO, SHALL GOVERN ALL CONSTRUCTION ITEMS THAT ARE A PART OF THIS PLAN UNLESS OTHERWISE NOTED.
2. THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE WILL MAKE INSPECTION OF THE WORK. THE CITY ENGINEER WILL REQUIRE AT LEAST 48 HOURS WRITTEN NOTICE BEFORE ANY WORK TAKES PLACE. FAILURE TO REQUEST THE NECESSARY INSPECTION MAY RESULT IN THE REJECTION OF THE WORK AND THE PROJECT.
3. IT IS THE INTENTION OF THE PLANS TO PROVIDE AND REQUIRE A COMPLETED PROJECT READY FOR OPERATION. ANY WORK ITEMS OMITTED FROM THE PLANS, WHICH ARE CLEARLY NECESSARY FOR COMPLETION OF THE WORK, AND ITS APPURTENANCES SHALL BE CONSIDERED A PART OF SUCH WORK, THOUGH NOT DIRECTLY SPECIFIED OR CALLED FOR IN THE PLANS. THIS INCLUDES, BUT IS NOT LIMITED TO SUCH INCIDENTAL ITEMS AS RELOCATION OF MAILBOXES, SAW CUTTING, AND REMOVAL AND/OR RELOCATION OF SIGNS, SPRINKLERS, OR OTHER MISCELLANEOUS ITEMS.
4. ALL ITEMS OF WORK CALLED FOR ON THE PLANS FOR WHICH NO SPECIFIC METHOD OF PAYMENT IS PROVIDED SHALL BE PERFORMED BY THE CONTRACTOR WITH THE COST TO BE INCLUDED IN THE UNIT PRICE BID FOR THE VARIOUS RELATED ITEMS.
5. THE CONTRACTOR OR DEVELOPER SHALL DEPOSIT THE TOTAL ESTIMATED COST FOR INSPECTIONS, AS DETERMINED BY THE CITY ENGINEER, WITH THE CITY OF HILLIARD PRIOR TO THE START OF CONSTRUCTION.
6. THE CONTRACTOR SHALL PROVIDE THE CITY OF HILLIARD, A SURETY, ACCEPTABLE TO THE CITY OF HILLIARD, EQUAL TO 100% OF CONSTRUCTION COSTS. THE SURETY SHALL GUARANTEE THE WORK FOR ONE YEAR AFTER ACCEPTANCE BY THE CITY.
7. THE CITY ENGINEER WILL NOT BE RESPONSIBLE FOR MEANS, METHODS, PROCEDURES, TECHNIQUES, OR SEQUENCES OF CONSTRUCTION THAT ARE NOT SPECIFIED HEREIN. THE CITY ENGINEER WILL NOT BE RESPONSIBLE FOR SAFETY ON THE WORK SITE, OR THE FAILURE BY THE CONTRACTOR TO PERFORM WORK ACCORDING TO PLANS.
8. APPROVAL OF THESE PLANS IS CONTINGENT UPON ALL EASEMENTS REQUIRED FOR CONSTRUCTION OF THE WORK BEING SECURED AND SUBMITTED TO THE CITY OF HILLIARD FOR RECORDING PRIOR TO COMMENCEMENT OF WORK. NO WORK, WHICH REQUIRES AN EASEMENT, WILL BE ALLOWED TO PROCEED UNTIL THIS IS DONE.
9. THE CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL SAFETY REQUIREMENTS INCLUDING THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970. THE CONTRACTOR SHALL EXERCISE PRECAUTION ALWAYS FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT SHALL ALSO BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTION AND PROGRAMS IN CONNECTION WITH THE WORK, INCLUDING THE REQUIREMENTS FOR CONFINED SPACES PER 29 CFR 1910.146.
10. THE CONTRACTOR/DEVELOPER SHALL BE RESPONSIBLE TO OBTAIN ALL NECESSARY PERMITS.
11. THE CONTRACTOR SHALL CONFINE HIS ACTIVITIES TO THE PROJECT SITE, EXISTING RIGHT-OF-WAYS, TEMPORARY AND PERMANENT EASEMENTS, AND SHALL NOT ENTER UPON OTHER PROPERTIES WITHOUT WRITTEN PERMISSION OF THE OWNER. IF THE PROPOSED WORK REQUIRES ENTERING EASEMENTS UPON OTHER PROPERTIES, THE CONTRACTOR SHALL NOTIFY THE OWNER(S) IN WRITING NO LESS THAN 72 HOURS IN ADVANCE OF THE COMMENCEMENT OF THE WORK, AND COPY THE CITY ON ALL CORRESPONDENCE. FAILURE TO NOTIFY AFFECTED PROPERTY OWNERS MAY SUBJECT THE CONTRACTOR TO THE PENALTIES ASSOCIATED WITH THE VIOLATION OF HILLIARD CITY CODE, SECTION 541.05, CRIMINAL TRESPASS.

12. THE CONTRACTOR SHALL CAREFULLY PRESERVE BENCHMARKS, PROPERTY CORNERS, REFERENCE POINTS, STAKES AND OTHER SURVEY REFERENCE MONUMENTS OR MARKERS. IN CASES OF WILLFUL OR CARELESS DESTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE. RESETTling THE MARKERS SHALL BE PERFORMED BY AN OHIO PROFESSIONAL SURVEYOR AS APPROVED BY THE CITY ENGINEER AT THE CONTRACTOR'S EXPENSE.
13. PROPERTY BOUNDARIES, INCLUDING PROPERTY LINES AND ROAD RIGHT-OF-WAY, ARE SHOWN FROM THE BEST INFORMATION AVAILABLE AND ARE NOT NECESSARILY COMPLETE OR CORRECT.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING THE FINISHED WORK CONFORM TO THE LINES, GRADES, ELEVATIONS AND DIMENSIONS CALLED FOR ON THE DRAWINGS AND TYPICAL SECTIONS.
15. ANY DEVICE SHALL NOT BE OPERATED AT ANY TIME IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTOMARILY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT. PURSUANT TO HILLIARD CITY CODE, SECTION 509.08, CONSTRUCTION ACTIVITY IS ONLY PERMITTED BETWEEN THE HOURS OF 7:30 A.M. AND 7:00 P.M. ANY CONSTRUCTION ACTIVITY BEYOND THESE HOURS REQUIRES A WRITTEN REQUEST TO THE DIRECTOR OF PUBLIC SERVICE MEETING THE REQUIREMENTS OF HILLIARD CITY CODE, SECTION 509.08(B).
16. PAVEMENTS SHALL BE CUT IN NEAT, STRAIGHT LINES THE FULL DEPTH OF THE EXISTING PAVEMENT, OR AS REQUIRED BY THE CITY ENGINEER.
17. ALL SOIL SUBGRADE SHALL BE PREPARED AND COMPACTED IN ACCORDANCE WITH ITEM 204 TO A DEPTH OF 12 INCHES BELOW THE SUBGRADE SURFACE. SUBGRADE SHALL BE SCARIFIED AND CONTAIN SUFFICIENT MOISTURE TO MEET ITEM 203 COMPACTION REQUIREMENTS.
18. THE CONTRACTOR IS NOT PERMITTED TO USE ANY RECLAIMED MATERIALS IN ITEM 304.
19. NON-RUBBER Tired VEHICLES SHALL NOT BE MOVED ON OR ACROSS PUBLIC STREETS OR HIGHWAYS WITHOUT THE WRITTEN PERMISSION OF THE CITY ENGINEER.
20. TRACKING OR SPILLING MUD, DIRT, OR DEBRIS UPON STREETS, RESIDENTIAL OR COMMERCIAL DRIVES, SIDEWALKS OR BIKE PATHS IS PROHIBITED PER HILLIARD CITY CODE, SECTION 905.12 AND ANY SUCH OCCURRENCE SHALL BE CLEANED UP IMMEDIATELY BY THE CONTRACTOR. IF THE CONTRACTOR FAILS TO REMOVE SAID MUD, DIRT, DEBRIS, OR SPILLAGE, THE CITY OF HILLIARD RESERVES THE RIGHT TO REMOVE THESE MATERIALS AND CLEAN AFFECTED AREAS, THE COST OF WHICH SHALL BE PAID BY THE CONTRACTOR/DEVELOPER PER HILLIARD CITY CODE, SECTION 905.13.
21. DURING CONSTRUCTION THE CONTRACTOR SHALL PROVIDE ADEQUATE DRAINAGE AND PROPER SOIL EROSION CONTROL MEASURES FOR PROTECTION OF ALL ADJACENT ROADS AND LANDS, PER COLS ITEM 207.
22. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EQUAL OR BETTER THAN EXISTED BEFORE CONSTRUCTION. DRAINAGE DITCHES OR WATERCOURSES THAT ARE DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO THE GRADES AND CROSS-SECTIONS THAT EXISTED BEFORE CONSTRUCTION.
23. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS TO MAINTAIN AT ALL TIMES SEWER, DRAIN, AND DITCH FLOWS THROUGH EXISTING FACILITIES TO REMAIN IN PLACE AND THROUGH EXISTING FACILITIES TO BE REPLACED UNTIL NEW FACILITIES ARE COMPLETED AND PUT INTO SERVICE. THE CONTRACTOR, TO A CONDITION SATISFACTORY TO THE CITY ENGINEER, SHALL RESTORE THE FLOW OF ALL SEWERS, DRAINS, AND OTHER WATERCOURSES DISTURBED DURING THE PROSECUTION OF THE WORK.
24. ANY MODIFICATION OF THE WORK AS SHOWN ON THESE DRAWINGS MUST HAVE PRIOR WRITTEN APPROVAL BY THE HILLIARD CITY ENGINEER.

25. THE CONTRACTOR SHALL CALL TOLL FREE, THE OHIO UTILITIES PROTECTION SERVICE (OUPS) AT 1-800-362-2764 SEVENTY-TWO (72) HOURS IN ADVANCE OF THE ANTICIPATED START OF CONSTRUCTION, AND SHALL NOTIFY ALL UTILITY COMPANIES AT LEAST FORTH-EIGHT (48) HOURS PRIOR TO WORK IN THE VICINITY OF THEIR LINES. LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN IN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:
 1. AT&T
150 EAST GAY STREET
COLUMBUS, OHIO 43215
(614)-223-8236
 2. AMERICAN ELECTRIC POWER
850 TECH CENTER DRIVE
GAHANNA, OHIO 43230-6605
(800)-672-2131
 3. COLUMBIA GAS
920 WEST GOODALE BLVD.
COLUMBUS, OHIO 43215
(614)-460-2169
 4. TIME WARNER CABLE
1266 DUBLIN ROAD
P.O. BOX 2553
COLUMBUS, OHIO 43216-2553
(614)-481-5262
 5. CITY OF COLUMBUS PUBLIC UTILITIES
910 DUBLIN ROAD
COLUMBUS, OHIO 43215
(614)-645-8276
26. EXISTING UTILITIES SHOWN ON THE PLAN ARE FROM THE BEST AVAILABLE RECORDS AND FIELD INVESTIGATION AND ARE NOT NECESSARILY COMPLETE OR CORRECT. THE CONTRACTOR IS RESPONSIBLE FOR THE INVESTIGATION, LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES WHETHER SHOWN OR NOT.
27. THE CONTRACTOR SHALL EXPOSE AND VERIFY THE LOCATION AND ELEVATION OF ANY UTILITIES WITHIN THE LIMITS OF THE PROPOSED CONDUIT PATH, PRIOR TO STARTING ANY EXCAVATION. IN CASE OF CONFLICT, ADJUSTMENTS IN LOCATION AND ELEVATION OF THE PROPOSED UTILITIES MAY BE MADE IF APPROVED PER GENERAL NOTE #24, OR ARRANGEMENTS SHALL BE MADE TO MOVE THE EXISTING UTILITY TO PROVIDE ADEQUATE CLEARANCE.
28. EXISTING DRAIN TILES ENCOUNTERED DURING CONSTRUCTION SHALL BE RECONNECTED OR CONNECTED TO THE STORM SEWER SYSTEM BY THE CONTRACTOR, AS APPROVED BY THE CITY ENGINEER. THE COST OF SAID WORK TO BE INCLUDED IN THE UNIT PRICE BID FOR THE VARIOUS RELATED ITEMS.
29. ALL TRENCHES WITHIN PAVEMENT, BERM, AND SHOULDER LIMITS SHALL BE BACKFILLED OR SECURELY PLATED DURING NON-WORKING HOURS.
30. ACCESS TO ALL ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES. AREAS WITH MULTIPLE DRIVES SHALL HAVE AT LEAST HALF OF THE DRIVES OPEN AT ALL TIMES. PROPERTIES WITH A SINGLE ACCESS WILL REQUIRE STAGED CONSTRUCTION; SHORT-TERM FULL CLOSURE OF A SINGLE ACCESS WILL BE PERMITTED WITH THE PROPERTY OWNER AND/OR TENANT'S AGREEMENT. SUCH FULL CLOSURES SHALL BE SCHEDULED AND COORDINATED WITH THE PROPERTY OWNER/TENANT.
31. COMPACTED GRANULAR MATERIAL, COLS ITEM 912 SHALL CONSIST OF NATURAL, BROKEN OR CRUSHED STONE, CRUSHED GRAVEL, OR CRUSHED SLAG. SYNTHETIC OR MAN-MADE MATERIALS ARE UNACCEPTABLE.
32. THE CONTRACTOR SHALL INSTALL STREET LIGHTS AT THE LOCATIONS SHOWN ON THE PLANS, INCLUDING ALL WIRING AND DISCONNECTS AND PROVIDE A COMPLETE OPERATING LIGHTING SYSTEM THAT COMPLIES WITH THE CITY OF HILLIARD SPECIFICATIONS.

33. ALL AREAS FOR UNDERGROUND ELECTRIC AND STREET LIGHTING ELECTRIC, TELEPHONE, AND CABLE TV INSTALLATIONS SHALL BE BROUGHT TO FINISHED GRADE, AS SHOWN ON THE GRADING PLAN, PRIOR TO THEIR BEING INSTALLED. ALL FILL REQUIRED SHALL BE COMPACTED IN ACCORDANCE WITH COLS ITEM 203.12, CONDITION 1. THIS WORK SHALL BE PERFORMED AS PART OF THIS PLAN AND THE COST SHALL BE INCLUDED UNDER ITEM 203.
34. ALL SEEDING SHALL BE APPLIED AT THE RATE OF 8 POUNDS (LB.) PER 1,000 SQUARE FEET (SF) AND SHALL USE THE FOLLOWING SEED MIXTURE:

40% TITIAN TALL FESCUE
40% TARHEEL TALL FESCUE
10% DENIM KENTUCKY BLUEGRASS
10% RENAISSANCE PERENNIAL RYE GRASS
35. COMMERCIAL-GRADE COMPLETE FERTILIZER OF NEUTRAL CHARACTER, CONSISTING OF FAST, AND SLOW RELEASE NITROGEN, 50% DERIVED FROM NATURAL ORGANIC SOURCES OF UREA-FORM, PHOSPHOROUS, AND POTASSIUM AND WITH THE FOLLOWING COMPOSITION SHALL BE APPLIED:

COMPOSITION: 13% NITROGEN, 26% PHOSPHOROUS,
AND 12% POTASSIUM BY WEIGHT.

FERTILIZER SHOULD BE APPLIED AT THE RATE OF 6
POUNDS (LB.) PER 1,000 SQUARE FEET (SF).
36. ALL SIGNS, LANDSCAPING, STRUCTURES OR OTHER APPURTENANCES DISTURBED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED OR REPAIRED TO THE SATISFACTION OF THE CITY ENGINEER. THE CONTRACTOR SHALL PAY FOR THE COST OF THIS WORK.
37. ITEM SPECIAL - #57 AGGREGATE
THE CONTRACTOR SHALL FURNISH AND INSTALL #57 AGGREGATE FOR THE CONCRETE DRIVE APRON BASE PER CITY OF HILLIARD STANDARD DRAWING DD-1 AND CITY OF COLUMBUS CMS 703.01.

PAYMENT SHALL BE MADE AT THE UNIT BID PRICE PER
CUBIC YARD FOR ITEM SPECIAL - #57 AGGREGATE AND
SHALL INCLUDE ALL LABOR, EQUIPMENT, AND MATERIALS
NECESSARY TO PERFORM THE WORK NOTED ABOVE.
38. THE CONTRACTOR SHALL LEAVE ANY EXISTING UNDERDRAIN IN PLACE DURING THE REPLACEMENT OF THE DRIVE, PAVEMENT, CURBS, CURB AND GUTTER, AND CURB RAMPS. EXISTING UNDERDRAIN DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT NO COST TO THE CITY.

MAINTAINING TRAFFIC

IN ADDITION TO THE REQUIREMENTS OF ITEM 614 MAINTAINING TRAFFIC, THE FOLLOWING SHALL APPLY:

- ALL TRAFFIC CONTROL DEVICES USED FOR MAINTENANCE OF TRAFFIC SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CONSTRUCTION AND MAINTENANCE OPERATIONS" (OMUTCD) (CURRENT EDITION), COPIES OF WHICH ARE AVAILABLE FROM THE OHIO DEPARTMENT OF TRANSPORTATION, BUREAU OF TRAFFIC, 1980 WEST BROAD STREET, COLUMBUS, OHIO, 43223.
- TRAFFIC CONTROL FOR ANY WORK THAT RESTRICTS TRAFFIC SHALL BE ERECTED IN ADVANCE AND SHALL BE REVIEWED BY THE OFFICE OF THE CITY ENGINEER AT LEAST 10 DAYS PRIOR TO THE START OF WORK. THE OFFICE OF THE CITY ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF THE ROAD CLOSURE AND IMPLEMENTATION OF THE MAINTENANCE OF TRAFFIC PLAN. ALL MAINTENANCE OF TRAFFIC SIGNS SHALL BE COVERED OR REMOVED FROM VIEW OF TRAFFIC WHEN THEY ARE NOT APPLICABLE, AS DETERMINED BY THE ENGINEER.
- LANE RESTRICTIONS OR LANE REDUCTIONS SHALL NOT BE PERMITTED AFTER NORMAL WORKING HOURS. NORMAL WORKING HOURS SHALL BE THOSE HOURS DURING WHICH THE CONTRACTOR HAS A FULL COMPLEMENT OF EMPLOYEES AND EQUIPMENT ACTIVELY REMOVING AND/OR PLACING PAVEMENT MATERIALS.
- ANY PROPOSED LANE CLOSURES SHALL BE IMPLEMENTED DURING THE HOURS OF 7:00 A.M. TO 9:00 A.M. OR 3:30 P.M. TO 6:00 P.M. DURING ALL OTHER HOURS, THE CONTRACTOR SHALL MAINTAIN TRAFFIC ACCORDING TO APPLICABLE GUIDELINES ESTABLISHED IN THE ODOT STANDARD CONSTRUCTION DRAWINGS AND IN THE OMUTCD.
- ON CEMETERY ROAD, THE CONTRACTOR SHALL MAINTAIN TWO LANES OF THROUGH EASTBOUND TRAFFIC AND TWO LANES OF THROUGH WESTBOUND TRAFFIC AT ALL TIMES.

IN CONSIDERATION OF THE HIGH TRAFFIC DEMAND OF CEMETERY ROAD AND IN AN EFFORT TO PRESERVE CEMETERY ROAD TRAFFIC OPERATIONS DURING CONSTRUCTION, THE CONTRACTOR IS ADVISED TO ACCESS THE WORK FROM LACON ROAD AND THE CHURCH DRIVE WHEN POSSIBLE. THE CONTRACTOR SHALL MAKE EFFORTS TO MINIMIZE THEIR IMPACT TO CEMETERY ROAD TRAFFIC.
- ON LACON ROAD, ONE-LANE, TWO-WAY OPERATIONS ARE PERMITTED IN ACCORDANCE WITH MT-97.10 AND MT-97.11 OF THE ODOT STANDARD CONSTRUCTION DRAWINGS AND FIGURE 6H-10 OF THE OMUTCD. UNIFORMED, OFF-DUTY CITY OF HILLIARD POLICE OFFICERS SHALL REPLACE THE FLAGMEN ON THESE PAGES, AND THE OFFICERS SHALL BE PRESENT WHENEVER ONE-LANE, TWO-WAY OPERATION IS IN EFFECT.
- A FLASHING ARROW PANEL (48" X 96" TYPE "C") SHALL BE USED FOR LANE CLOSURES IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- STEADY BURNING, TYPE "C" LIGHTS SHALL BE REQUIRED ON ALL BARRICADES, DRUMS, AND SIMILAR TRAFFIC CONTROL DEVICES IN USE AT NIGHT. CONES ARE NOT APPROVED FOR USE AT NIGHT.
- THE ROADWAY SHALL NOT BE OPENED TO TRAFFIC UNTIL PERMANENT TRAFFIC CONTROLS ARE IN PLACE, OR UNTIL TEMPORARY TRAFFIC CONTROLS, APPROVED BY THE CITY ENGINEER, ARE INSTALLED. THE CONTRACTOR ASSUMES ALL LIABILITY FOR THE PREMATURE REMOVAL OF TEMPORARY TRAFFIC CONTROLS.
- THE CONTRACTOR SHALL MAINTAIN ALL PERMANENT TRAFFIC CONTROLS NOT IN CONFLICT WITH THE TEMPORARY TRAFFIC CONTROLS THROUGHOUT THIS PROJECT. PERMANENT TRAFFIC CONTROLS MAY BE TEMPORARILY RELOCATED, AS APPROVED BY THE CITY ENGINEER. THE CONTRACTOR SHALL ASSUME LIABILITY FOR MISSING, DAMAGED AND IMPROPERLY PLACED SIGNS.

MAINTAINING TRAFFIC (CONTINUED)

- IT IS THE POLICY OF THE HILLIARD POLICE DEPARTMENT (HPD - 876-7321) TO PROVIDE SPECIAL DUTY OFFICERS FOR ALL PROJECTS IN THE CITY OF HILLIARD, WHEN REQUIRED OR REQUESTED. HOWEVER, TO COMPLY WITH THIS POLICY AND ALLOW APPROPRIATE TIME FOR SCHEDULING, THEY REQUIRE A FORTY-EIGHT(48) HOUR ADVANCE NOTIFICATION. IF THEY ARE UNABLE TO FILL THE REQUEST, THEY WILL GIVE THE APPROPRIATE CONTRACTOR TWENTY-FOUR (24) HOURS NOTICE, SO THEY MAY MAKE ALTERNATE ARRANGEMENTS. IN THE EVENT OF CANCELLATION, THEY REQUIRE AT LEAST TWO (2) HOURS NOTIFICATION, OTHERWISE THE CONTRACTOR WILL BE OBLIGATED TO PAY THREE (3) HOURS SHOW-UP TIME AT THE SPECIAL DUTY RATE. A POLICE OFFICER CAN BE FURNISHED AT NO CHARGE FOR SHORT DURATIONS OF FIFTEEN (15) MINUTES OR LESS WITH A TWO (2) HOUR PRIOR NOTICE TO THE HPD AND THE ENGINEER.
- IF, IN THE OPINION OF THE CITY ENGINEER OR POLICE, THE CONTRACTOR IS NOT PROVIDING PROPER MAINTENANCE OF TRAFFIC, THE CITY ENGINEER WILL INSTALL THE APPROPRIATE TRAFFIC CONTROL DEVICES, AND OFF DUTY POLICE OFFICERS WILL BE ASSIGNED TO THE PROJECT, ALL AT THE CONTRACTOR'S EXPENSE.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH C&MS 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.

LIFE COMMUNITY CHURCH DRIVE

ACCESS SHALL BE MAINTAINED TO THE LIFE COMMUNITY CHURCH PROPERTY AT ALL TIMES. CONSTRUCTION SHALL BE COMPLETED WITH PART-WIDTH CONSTRUCTION TO MAINTAIN ACCESS. THE PROPERTY OWNER SHALL BE PROVIDED WRITTEN NOTIFICATION BY THE CONTRACTOR A MINIMUM OF 24 HOURS PRIOR TO ANY CLOSURE. THE NOTICE SHALL LIST THE TIME THE CLOSURE WILL BE IN EFFECT AND SHALL LIST 24-HOUR EMERGENCY PHONE NUMBERS OF THE CONTRACTOR RESPONSIBLE FOR THE CLOSURE. THE TIMES SHALL BE COORDINATED WITH THE PROPERTY OWNER. DRIVE CLOSURES SHALL BE KEPT TO THE MINIMUM TIME NEEDED FOR CONSTRUCTION ACTIVITIES. EVERY EFFORT MUST BE MADE TO ACCOMMODATE THE OWNER'S NEED FOR ACCESS.

ITEM 614 - LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE, AS PER PLAN

USE OF LAW ENFORCEMENT OFFICERS (LEOS) BY CONTRACTORS OTHER THAN THE USES SPECIFIED BELOW WILL NOT BE PERMITTED AT PROJECT COST.

IN ADDITION TO THE REQUIREMENTS OF C&MS 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 REMOVAL.
- DURING A TRAFFIC SIGNAL INSTALLATION.

IN ADDITION TO THE REQUIREMENT OF C&MS 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 AS APPROVED BY THE ENGINEER:

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 IN ADVANCE OF AND ON THE SAME SIDE AS THE LANE RESTRICTION OR AT THE POINT OF ROAD CLOSURE, AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH SIGNALIZED INTERSECTIONS IN WORK ZONES.

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 MAINTENANCE OF TRAFFIC GENERAL SUMMARY.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 24 HOUR

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.

ITEM 614 - MAINTENANCE OF TRAFFIC SIGNAL INSTALLATION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL INSTALLATIONS WITHIN THE PROJECT FOR ALL NEW SIGNAL INSTALLATIONS OR DEVICES AND FOR ALL TESTING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF SIGNALS INSTALLED BY THE CONTRACTOR FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED, INCLUDING THE 10-DAY PERFORMANCE TEST. TESTING PROCEDURES SHALL FOLLOW CONSTRUCTION MATERIAL SPECIFICATION (CMS) 632.27.

THE CONTRACTOR SHALL CORRECT, AS QUICKLY AS POSSIBLE, ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE CITY ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY 24 HOURS A DAY, SEVEN DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS, AND MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE CITY ENGINEER WITH THE SIGNAL BACK TO 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 CITY ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE.

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

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

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

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

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR DUE TO CONSTRUCTION PROCEDURES, THE OUTAGE SHALL NOT EXCEED 7 HOURS AND SHALL NOT INCLUDE THE HOURS OF 7:00 A.M. TO 9:00 A.M. AND 4:00 P.M. TO 6:00 P.M. ADDITIONAL OUTAGE RESTRICTIONS MAY BE ENFORCED AT TRAFFIC SIGNALS LOCATED WITHIN SCHOOL ZONES. ANY SIGNALIZED INTERSECTION, WHERE THE SIGNAL IS OUT OF SERVICE DUE TO CONSTRUCTION PROCEDURES OR DUE TO AN OUTAGE OR MALFUNCTION OF EQUIPMENT AS DESCRIBED ABOVE, SHALL BE PROTECTED BY A SPECIAL DUTY UNIFORMED LAW ENFORCEMENT OFFICER, HIRED BY THE CONTRACTOR.

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING, WHICH WILL BE OUT OF OPERATION, SHALL BE COVERED IN THE MANNER DESCRIBED IN CMS 632.24. ALL SIGNAL HEADS, WHILE COVERED, SHALL BE DARK EITHER BY REMOVING, UNSCREWING, OR DISCONNECTING THE POWER TO THE BULBS. NO COVERED HEAD SHALL BLOCK THE VIEW OF AN OPERATING HEAD. ANY EXISTING VEHICULAR HEAD THAT IS NOT FUNCTIONAL SHALL BE REMOVED IMMEDIATELY OR COVERED.

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

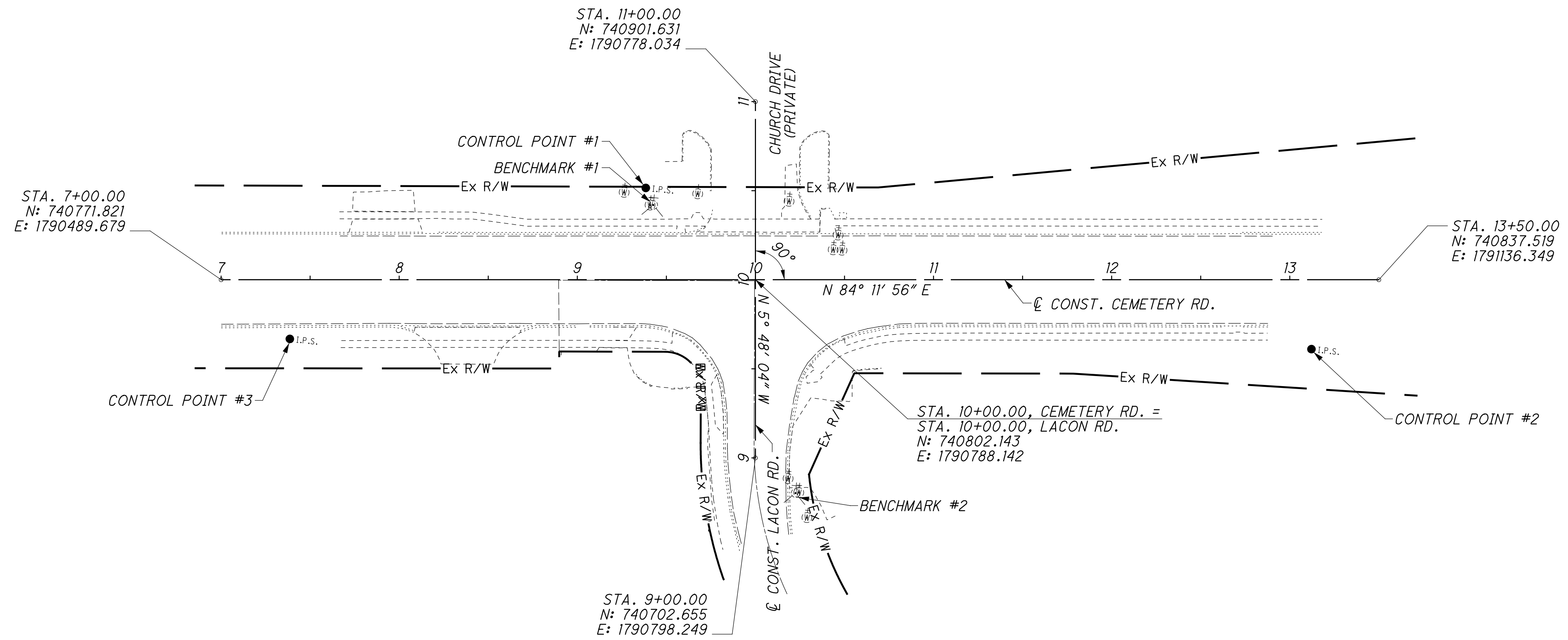
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SHEET NUMBERS												ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.	
4		8		9		10												
																	ROADWAY	
												*201	-	LS			CLEARING AND GRUBBING	
		83										*202	-	83	SY		PAVEMENT REMOVED	
		836										*202	-	836	SF		WALK REMOVED	
		66										*202	-	66	FT		CURB REMOVED	
		180										*202	-	180	FT		CURB AND GUTTER REMOVED	
												*203	-	50	CY		EXCAVATION	
		372										*204	-	372	SY		SUBGRADE COMPACTION	
		560										*608	-	560	SF		CONCRETE WALK (4")	
		335										*608	-	335	SF		CONCRETE WALK (8")	
		8										*608	-	8	EA		CURB RAMP	
		68										*608	-	68	SF		DETECTABLE WARNING, TYPE "E"	
																	EROSION CONTROL	
												*659	-	150	SY		SEEDING AND MULCHING, CLASS 1	
																	DRAINAGE	
		1										604	-	1	EACH		MANHOLE ADJUSTED TO GRADE	
		1										604	-	1	EACH		CATCH BASIN ADJUSTED TO GRADE	
																	PAVEMENT	
		14										*259	-	14	CY		PERMANENT PAVEMENT REPLACEMENT, TYPE 1	
		133										*305	-	133	SY		CONCRETE BASE (7")	
		8										*407	-	8	GAL		TACK COAT	
		10										*448	-	10	CY		2.5" ASPHALT CONCRETE SURFACE COURSE (MEDIUM TRAFFIC), PG64-22	
		86										*451	-	86	SY		8" P.C. CONCRETE PAVEMENT (CLASS "C") W/ MESH	
		180										*609	-	180	FT		COMBINATION CURB AND GUTTER, TYPE SPECIAL 8"	
		210										*609	-	210	FT		CURB, STRAIGHT 18"	
		10										SPECIAL	-	10	CY		#57 AGGREGATE (4")	3
																	WATER WORK	
		2										*807	-	2	EA		VALVE BOXES ADJUSTED TO GRADE	
																	MAINTENANCE OF TRAFFIC	
												614	11000	LS			MAINTAINING TRAFFIC	
24												614	1111	24	HOURL		LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE, AS PER PLAN	4
																	TRAFFIC CONTROL	
						4						630	79100	4	EACH		SIGN HANGER ASSEMBLY, MAST ARM	
						53.2						630	80100	53.2	SF		SIGN, FLAT SHEET	
						11						630	87500	11	EACH		REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL	
				121								644	00500	121	FT		STOP LINE	
				336								644	00600	336	FT		CROSSWALK LINE	
				1								644	01300	1	EACH		LANE ARROW	
				528								644	30000	528	FT		REMOVAL OF PAVEMENT MARKING	
				2								644	30020	2	EACH		REMOVAL OF PAVEMENT MARKING	
																	INCIDENTALS	
												*623	-	LS			CONSTRUCTION LAYOUT STAKES	
												*624	-	LS			MOBILIZATION	
																	*DENOTES ITEM FROM CITY OF COLUMBUS CMS (2018)	

GENERAL SUMMARY

CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

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CONTROL POINTS

NAME	DESCRIPTION	NORTHING	EASTING	ELEVATION	CL STATION
CONTROL POINT #1	5/8" X 30" REBAR WITH CAP "GPD"	740847.202	1790721.694	894.484	STA. 9+38.45, 51.54' LT., CEMETERY RD.
CONTROL POINT #2	5/8" X 30" REBAR WITH CAP "GPD"	740794.957	1791102.645	881.268	STA. 13+12.17, 38.938' RT., CEMETERY RD.
CONTROL POINT #3	5/8" X 30" REBAR WITH CAP "GPD"	740742.681	1790531.440	895.310	STA. 7+38.60, 33.212' RT., CEMETERY RD.

BENCHMARKS

NAME	DESCRIPTION	NORTHING	EASTING	ELEVATION	CL STATION
BENCHMARK #1	ARROW BOLT ON FIRE HYDRANT	740838.089	1790726.851	896.91	STA. 9+42.66, 41.96' LT., CEMETERY RD.
BENCHMARK #2	ARROW BOLT ON FIRE HYDRANT	740685.294	1790822.638	896.22	STA. 10+22.51, 119.74 RT., CEMETERY RD.

HORIZONTAL AND VERTICAL CONTROL
 CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

CALCULATED
 BEB
 CHECKED
 KMG

0 20 40 80
 HORIZONTAL SCALE IN FEET

7
 33

NOTE: ALL ELEVATIONS SHOWN ON EDGE OF PAVEMENT OR BOTTOM FACE OF CURB.

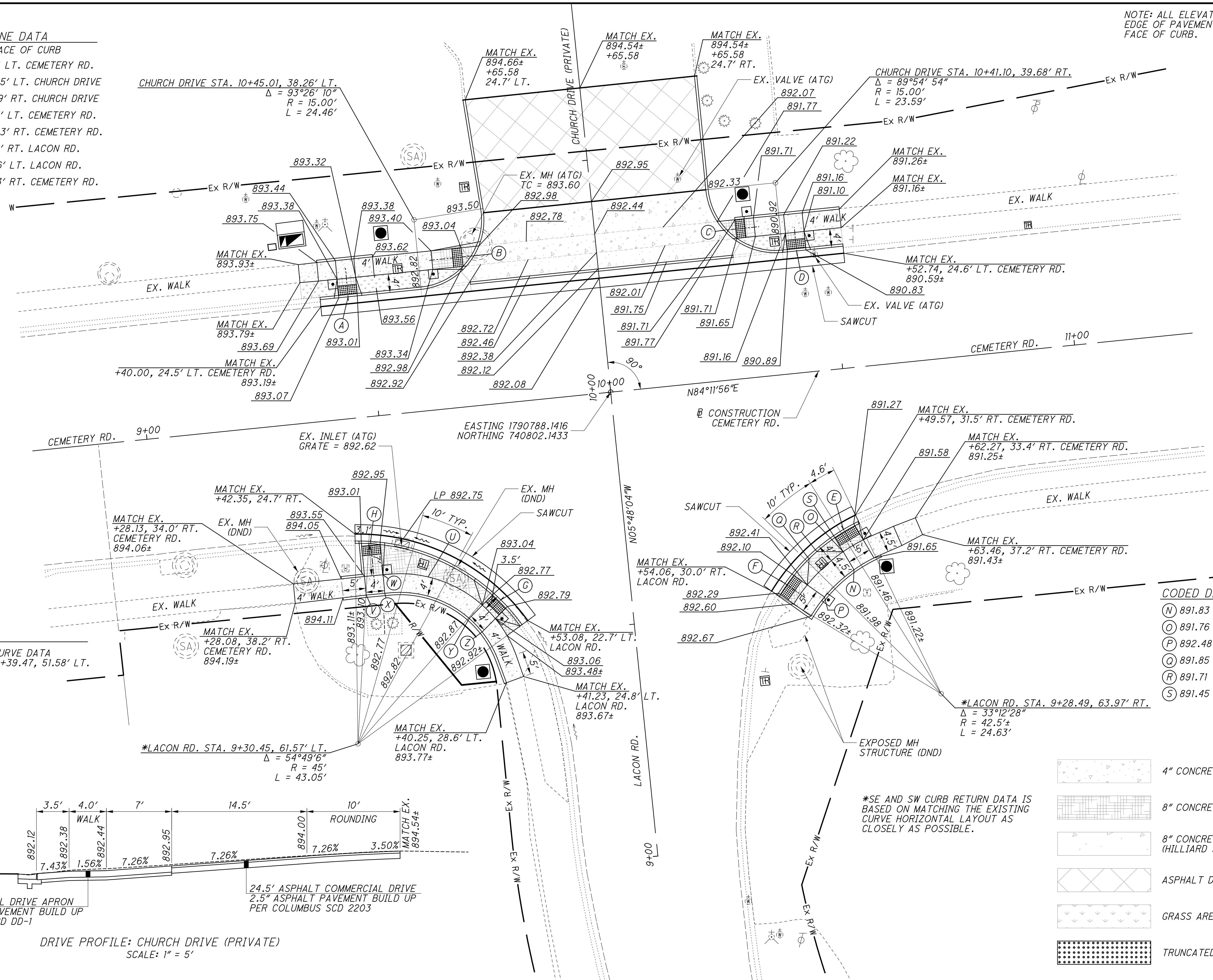


0 10 20
HORIZONTAL SCALE IN FEET

CALCULATED SMJ CHECKED SDS

RAMP CENTERLINE DATA

- MEASURED FROM FACE OF CURB
- (A) 9+46.01, 26.04' LT. CEMETERY RD.
 - (B) 10+32.06, 26.25' LT. CHURCH DRIVE
 - (C) 10+32.10, 27.69' RT. CHURCH DRIVE
 - (D) 10+42.74, 26.11' LT. CEMETERY RD.
 - (E) 10+46.69, 34.33' RT. CEMETERY RD.
 - (F) 9+55.41, 33.04' RT. LACON RD.
 - (G) 9+58.07, 27.96' LT. LACON RD.
 - (H) 9+45.32, 26.63' RT. CEMETERY RD.

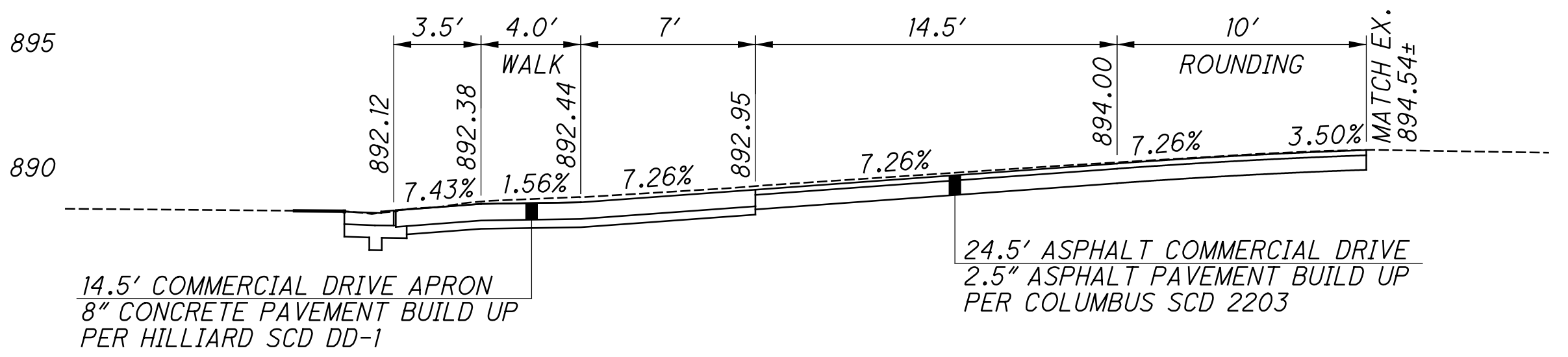


CODED DATA

- (U) FRONT OF WALK CURVE DATA
LACON RD. STA. 9+39.47, 51.58' LT.
 $\Delta = 74^{\circ}57'42''$
 $R = 26.5'$
 $L = 34.67'$
- (V) 893.61
- (W) 893.49
- (X) 893.55
- (Y) 893.10
- (Z) 893.12

CODED DATA

- (N) 891.83
- (O) 891.76
- (P) 892.48
- (Q) 891.85
- (R) 891.71
- (S) 891.45



DRIVE PROFILE: CHURCH DRIVE (PRIVATE)
SCALE: 1" = 5'

*SE AND SW CURB RETURN DATA IS BASED ON MATCHING THE EXISTING CURVE HORIZONTAL LAYOUT AS CLOSELY AS POSSIBLE.

	4" CONCRETE WALK
	8" CONCRETE WALK
	8" CONCRETE APRON (HILLIARD SCD DD-1)
	ASPHALT DRIVE
	GRASS AREA
	TRUNCATED DOME AREA

**INTERSECTION DETAIL
CEMETERY RD. AT LACON RD.**

**CEMETERY RD. SIGNAL AND
FIBER IMPROVEMENTS**

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SHEET NO.	REFERENCE NO.	LOCATION	STATION	SIDE	CODE	SIZE (INCHES)	630	630	630													
							SIGN HANGER ASSEMBLY, MAST ARM	SIGN, FLAT SHEET	REMOVAL OF POLE MOUNTED SIGN AND DISPOSAL													
							EACH	SF	EACH													
12	S-1	SIGNAL SUPPORT #2				D3-1-96	96 X 20	1	13.3													
12	S-2	SIGNAL SUPPORT #3				D3-1-96	96 X 20	1	13.3													
12	S-3	SIGNAL SUPPORT #1				D3-1-96	96 X 20	1	13.3													
12	S-4	SIGNAL SUPPORT #4				D3-1-96	96 X 20	1	13.3													
12	R-1	CEMETERY RD		LT	R10-3																	
					R10-3																	
12	R-2	CEMETERY RD		LT	D3-1																	
					D3-1																	
12	R-3	CEMETERY RD		LT	R10-3																	
					R10-3																	
12	R-4	CEMETERY RD		RT	R10-3																	
					R10-3																	
12	R-5	CEMETERY RD		RT	D3-1																	
12	R-6	CEMETERY RD		RT	R10-3																	
					R10-3																	
TOTALS CARRIED TO GENERAL SUMMARY								4	53.2	11												

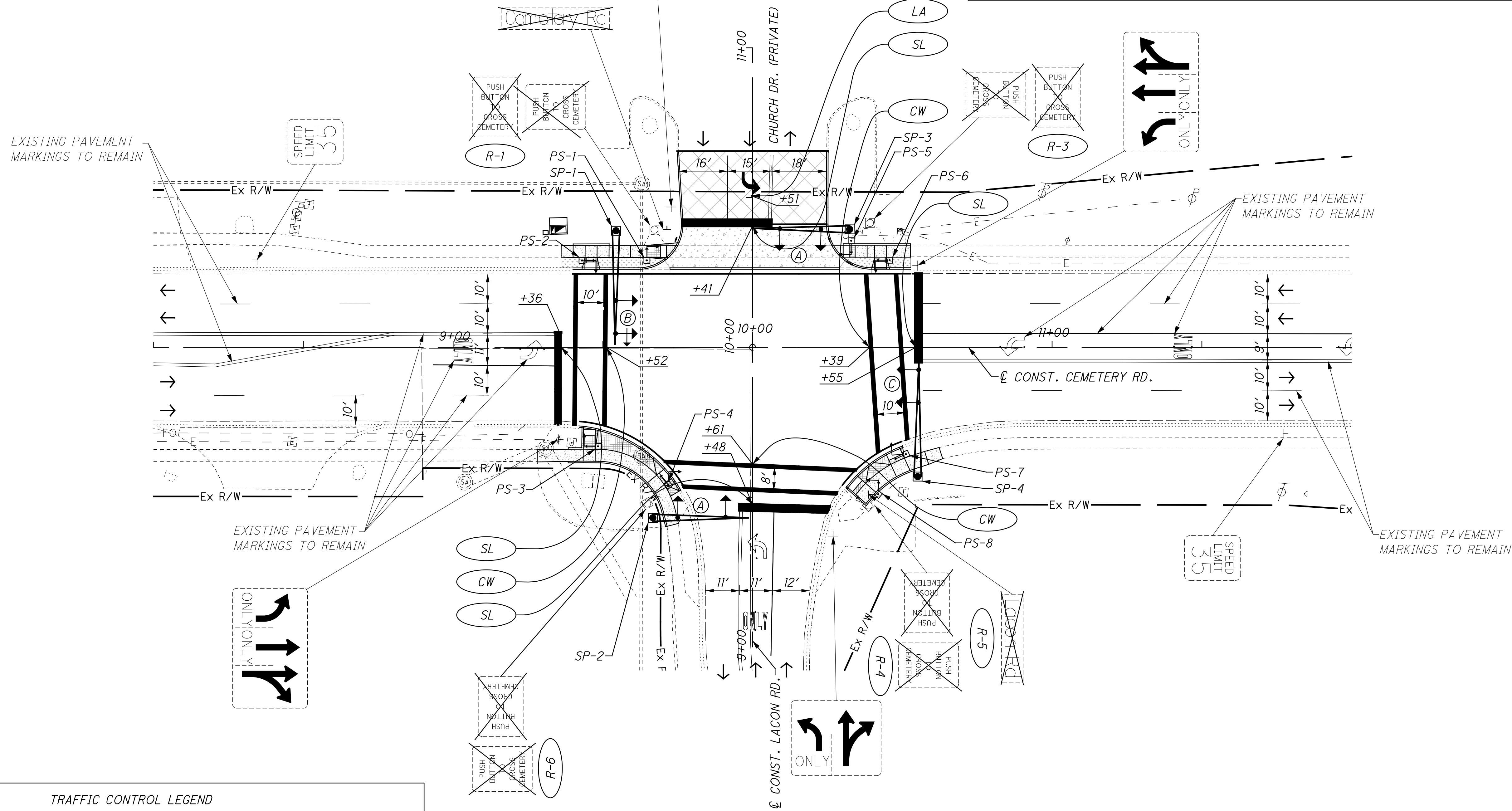
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MAST ARM SIGNAGE

Cemetery Rd <small>D3-1-96</small> (A) S-1, S-2	← Lacon Rd <small>D3-1-96</small> (B) S-3	Lacon Rd → <small>D3-1-96</small> (C) S-4
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HORIZONTAL SCALE IN FEET

CALCULATED	BEB	CHECKED	KMG
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TRAFFIC CONTROL LEGEND			
(R)	EXISTING SIGN TO BE REMOVED	→	TRAFFIC FLOW
(S)	PROPOSED SIGN	◇	PROPOSED SIGN
(SL)	STOP LINE, 24"	⊗	EXISTING SIGN TO BE REMOVED
(CW)	CROSSWALK LINE, 12"	+	SIGN SUPPORT
(LA)	LANE ARROW, 96"		

NOTIFICATION

THE CONTRACTOR SHALL GIVE THE CITY OF HILLIARD, (614)-876-7361, 10 WORKING DAYS NOTICE PRIOR TO THE NEW SIGNAL BEING PLACED IN OPERATION.

THE SIGNAL INSTALLATION SHALL BE INSPECTED BY CITY OF HILLIARD PERSONNEL. ALL DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR AND APPROVED BY THE CITY OF HILLIARD.

WORK INSPECTION

THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER AND DISTRICT TRAFFIC ENGINEER WITH 72 HOUR NOTICE OF ANY SIGNAL WORK TO BE PERFORMED AT THE INTERSECTION SITE(S) SO THAT INSPECTION SERVICES CAN BE SUPPLIED.

GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC SIGNAL SYSTEMS INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 90 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 ALL ITEMS ASSOCIATED WITH THE TRAFFIC SIGNAL SYSTEMS.

CUSTOMARY MANUFACTURER'S GUARANTEES FOR ALL TRAFFIC SIGNAL SYSTEM ITEMS SHALL BE TURNED OVER TO THE CITY OF HILLIARD FOLLOWING ACCEPTANCE OF THE EQUIPMENT.

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

INSTALLATION LAYOUT

THE TRAFFIC SIGNAL POLES AND ALL OTHER STATIONED SIGNAL ITEMS SHALL BE LOCATED AND MARKED BY A PROFESSIONAL SURVEYOR USING THE STATION NUMBERS AND OFFSETS PROVIDED IN THESE PLANS. COSTS INCURRED FOR THIS SERVICE SHALL BE INCIDENTAL TO THE COST OF THE PROJECT OR PROVIDED UNDER A CONSTRUCTION LAYOUT STAKES ITEM. THE SURVEYOR SHALL SET PROPER POLE AND CABINET FOUNDATION ELEVATIONS. THE ENGINEER OR ENGINEER'S DESIGNEE SHALL APPROVE ALL POLE FOUNDATION LOCATIONS AND ELEVATIONS PRIOR TO THE CONTRACTOR INSTALLING ANY FOUNDATION.

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 (CURRENT EDITION) AND ALL SUPPLEMENTAL SPECIFICATIONS. BEFORE ANY EQUIPMENT IS ORDERED OR INSTALLATION IS BEGUN, ONE (1) SET OF A COMPLETE SCHEDULE OF EQUIPMENT INCLUDING CATALOG CUTS, DIAGRAMS, DRAWINGS, BROCHURES OR OTHER DESCRIPTIVE DATA SHALL BE ELECTRONICALLY 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.

"ENGINEER" WITHIN THIS SPECIFICATION SHALL REFER TO THE CITY OF HILLIARD TRAFFIC ENGINEER OR HIS/HER DESIGNEE.

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

PLAN AND SPECIFICATION COMPLIANCE

THE CONTRACTOR SHALL FURNISH AND INSTALL TRAFFIC SIGNAL DEVICES IN COMPLIANCE WITH THESE SPECIFICATIONS AND CORRESPONDING PLANS PREPARED BY A LICENSED PROFESSIONAL ENGINEER, THE REQUIREMENTS OF THE CURRENT EDITIONS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS, ALL SUPPLEMENTAL SPECIFICATIONS, THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, AND THE STANDARD CONSTRUCTION DRAWINGS ISSUED BY ODOT. ITEM NUMBERS ARE ODOT REFERENCE SPECIFICATION ITEMS UNLESS OTHERWISE INDICATED.

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

- (A) SPECIFICATIONS LISTED PER PLAN
- (B) NEMA STANDARDS PUBLICATION NO. TS2-2003 (OR CURRENT NEMA ISSUE) AND/OR TSI-1989: SECTIONS 1, 2, 5, 6, 8, 11, 13 AND 14.
- (C) 2018 COC CONSTRUCTION AND MATERIAL SPECIFICATIONS.

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

GROUNDING AND BONDING

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (C&MS) AND THE 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. IF MULTIPLE CONDUIT RUNS BEGIN AND END AT THE SAME POINTS, ONLY ONE EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED.
E. 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.
F. 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:

GROUNDING AND BONDING (CONTINUED)

- 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 EQUIP. GRND. EQUIP. GR.
5 ORANGE YELLOW BALL #2 DW/FDW
6 BLUE GREEN ARROW #2 WALK
7 WHITE/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 SPLICE.
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. PAYMENT - ALL MATERIALS AND WORK REQUIRED TO COMPLETE THE EFFECTIVE GROUND FAULT CURRENT PATH SYSTEM ARE INCIDENTAL TO THE CONDUCTORS INSTALLED BY CONTRACT.

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TRAFFIC SIGNAL NOTES

CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

ITEM 632 - REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, STRAIN POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH C&MS 632.26 AND AS INDICATED ON THE PLANS. REMOVED ITEMS SHALL BE REUSED AS PART OF A NEW INSTALLATION ON THE PROJECT OR STORED ON THE PROJECT FOR SALVAGE BY THE CITY OF HILLIARD, IN ACCORDANCE WITH THE LISTING GIVEN HERIN. THE CONTRACTOR SHALL CONTACT THE CITY OF HILLIARD ENGINEERING DEPARTMENT AT (614)-876-7361 TO ARRANGE A MUTUALLY AGREEABLE TIME TO DELIVER THE SIGNAL MATERIALS TO THE CITY OF HILLIARD TO A LOCATION AS DIRECTED BY THE CITY.

ITEMS TO BE REMOVED:

CEMETERY RD. / LACON RD.

- 1 - CONTROLLER WORK PAD

ITEMS TO BE REUSED:

NONE

ITEMS TO BE STORED:

CEMETERY RD. / LACON RD.

- 7 - 3-SECTION VEHICULAR SIGNAL HEADS
- 1 - 5-SECTION VEHICULAR SIGNAL HEADS
- 8 - PEDESTRIAN SIGNAL HEADS
- 4 - PEDESTRIAN PUSHBUTTONS
- 4 - STRAIN POLES
- 1 - GROUND MOUNTED CONTROLLER
- 1 - SMART-MICRO RADAR DETECTION SYSTEM

CEMETERY RD. / NORWICH ST.

- 1 - CONTROLLER

IN THE EVENT THE ITEMS STORED ON THE PROJECT FOR DELIVERY TO THE LOCAL AGENCY ARE NOT ACCEPTED, THE CONTRACTOR SHALL, WHEN DIRECTED BY THE ENGINEER IN WRITING, REMOVE AND DISPOSE OF THE ITEMS AT NO ADDITIONAL COST TO THE PROJECT.

ITEM 625 - PULL BOX, 725.08, 18" OR 24", AS PER PLAN

PULL BOXES SHALL BE CONCRETE AND INSTALLED IN ACCORDANCE WITH ITEM 625.11 AND STANDARD CONSTRUCTION DRAWING (SCD) HL-30.11 AND THE DETAILS ON THE PLANS. ALL PULL BOXES SHALL BE MARKED "TRAFFIC". IF STEEL PLATE COVERS ARE USED, THE TAGS SHALL BE MARKED "TRAFFIC". THE TAGS SHALL BE DIE STAMPED ONLY. ETCHED OR ENGRAVED LETTERS ARE NOT ACCEPTABLE. THE PULL BOX LIDS SHALL BE SECURED WITH 3/8 NC X 1" STAINLESS STEEL HEX HEAD CAP SCREWS IN LIEU OF THE COUNTERSUNK FLAT HEAD SCREWS SPECIFIED ON SCD HL-30.11.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY TO CONSTRUCT ALL PULL BOXES.

ITEM 625 - PLASTIC CAUTION TAPE, AS PER PLAN

THE LOCATION OF UNDERGROUND CONDUIT AND BURIED ELECTRICAL CABLES SHALL BE MARKED BY THE USE OF A CONTINUOUS IDENTIFYING TAPE BURIED IN THE TRENCH ABOVE THE LINE. THE TAPE SHALL BE IN ACCORDANCE WITH C&MS 625.20 AND 725.22. THE TAPE SHALL BE PAID FOR PER LINEAR FOOT OF ITEM 625 - PLASTIC CAUTION TAPE COMPLETE AND IN PLACE.

UNDERDRAINS FOR PULLBOXES

REFERENCE IS MADE TO STANDARD CONSTRUCTION DRAWING HL-30.11 FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULLBOXES SHALL BE USED, AS DIRECTED BY THE ENGINEER, AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY 20 FEET. PAYMENT FOR THE REQUESTED UNDERDRAINS, ITEM 611, 4" CONDUIT, TYPE E, SHALL BE INCLUDED IN ITEM, 625, PULL BOX, 725.08, (BY-SIZE) AS PER STANDARD CONSTRUCTION DRAWING, HL-30.11, NOTE #4.

ITEM 625 - CONDUIT, MISC.: DIRECTIONALLY BORED, 725.05, (BY SIZE)

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING CONDUIT OF THE SIZE OR SIZES INDICATED UNDER PAVEMENT AND CONTIGUOUS SHOULDERS BY AN APPROVED METHOD, SUCH AS "DIRECTIONAL BORING". THE CONTRACTOR SHALL PLACE THE CONDUIT WITH THE LEAST AMOUNT OF DISTURBANCE TO THE PAVEMENT, SUBBASE, BERM PAVEMENT, OR SHOULDERS OF THE ROADWAY. ALL PUSH PITS OR ANY NECESSARY EXCAVATIONS SHALL BE BACKFILLED AND RESTORED IN ACCORDANCE WITH ITEM 625.

ALL CONDUIT SHALL BE SCHEDULE 80.

THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, MAY OPT TO PROVIDE AND INSTALL THE SPECIFIED CONDUITS IN STANDARD OPEN CUT TRENCH IN LIEU OF CONDUIT, DIRECTIONALLY BORED, PROVIDED THE TRENCH AND CONDUIT ARE INSTALLED PRIOR TO THE PLACEMENT OF ANY ASPHALT AND A LOW STRENGTH MORTAR BACKFILL IS PROPERLY PLACED IN THE TRENCH IN ACCORDANCE WITH ITEM 613. TRENCH IN ANY AREAS OF EXISTING PAVEMENT, SUCH AS ACROSS CEMETERY & LACON RD., SHALL BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING HL-30.22.

ITEM 625 - CONDUIT, MISC.: DIRECTIONALLY BORED, 725.05, (BY SIZE) SHALL BE PAID PER LINEAR FOOT OF CONDUIT COMPLETE AND IN PLACE. IF THE CONTRACTOR EXERCISES HIS OPTION TO TRENCH, PAYMENT SHALL BE AT THE UNIT COST FOR CONDUIT, DIRECTIONALLY BORED, 725.05, AS PER PLAN, (BY SIZE) AND SHALL INCLUDE TRENCH, CONDUIT, AND THE REQUIRED BACKFILL.

ITEM 632 - SIGNALIZATION, MISC.: TEST HOLE PERFORMED

IT IS ANTICIPATED THAT THE CONTRACTOR WILL ENCOUNTER UNDERGROUND UTILITIES WHILE EXCAVATING FOR SIGNAL SUPPORT FOUNDATIONS. IF, AFTER ACCURATELY IDENTIFYING THE PROPOSED LOCATION OF THE FOUNDATION, AS SHOWN IN THE PLAN, AND AFTER MODIFYING THAT LOCATION, IF NECESSARY, BASED ON THE FIELD MARKING OF UNDERGROUND UTILITY LOCATION, THE CONTRACTOR DISCOVERS A UTILITY CONFLICT DURING HIS EXCAVATION OPERATION, HE WILL BE COMPENSATED FOR THE LABOR AND EQUIPMENT COST ASSOCIATED FOR EACH PARTIAL FOUNDATION EXCAVATION ACCORDING TO HIS BID PRICE.

BEFORE THE CONTRACTOR BEGINS THE EXCAVATION AT THE MODIFIED LOCATION, HE SHALL VERIFY THAT THERE WILL BE NO OVERHEAD UTILITY CONFLICTS RESULTING FROM THE NEW SIGNAL SUPPORT LOCATION. NEW SUPPORT LOCATIONS ARE TO BE APPROVED BY THE ENGINEER.

THE CONTRACTOR'S WORK UNDER THIS BID ITEM SHALL INCLUDE BACKFILLING, COMPACTING, AND RESTORATION OF THE EXCAVATION TO ITS ORIGINAL CONDITION.

EXCAVATIONS SHALL NOT BE LEFT OPEN OVERNIGHT.

PAYMENT FOR THIS ITEM SHALL BE AT THE UNIT PRICE BID PER EACH ITEM 632 - SIGNALIZATION - MISC.: TEST HOLE PERFORMED. A QUANTITY OF 1 HAS BEEN CARRIED TO THE SIGNALIZATION GENERAL SUMMARY. TO BE USED AS DIRECTED BY THE ENGINEER.

ITEM 632 - VEHICULAR SIGNAL HEAD, (LED), (BY SECTION), 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN, BLACK

ALL VEHICULAR SIGNAL HEADS SHALL BE MADE OF A HIGH QUALITY POLYCARBONATE MATERIAL AND SHALL CONFORM TO SPECIFICATION 632 AND SHALL BE INSTALLED IN CONFORMANCE TO STANDARD CONSTRUCTION DRAWING TC-85.20 (RIGID SIGNAL HEAD MOUNTING FOR MAST ARMS). VEHICULAR SIGNAL HEADS SHALL BE RIGIDLY MOUNTED TO THE SIGNAL SUPPORT. ENTRANCE FITTINGS SHALL BE OF TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING. ALL BOLTS AND WASHERS FOR SECURING SECTIONS TOGETHER, ALL MOUNTING HARDWARE FOR THE LENS, ALL DOOR LATCHING BOLTS, AND ALL HINGE PINS SHALL BE STAINLESS STEEL.

THE EXTERIOR COLOR OF THE SIGNAL HEADS AND ALL ASSOCIATED MOUNTING HARDWARE SHALL BE BLACK. WHERE SPECIFIED, SIGNAL HEADS SHALL INCLUDE VENTILATED ALUMINUM BACKPLATES, BLACK IN COLOR WITH A FLUORESCENT YELLOW BORDER. ALL MATERIAL FOR THE SIGNAL HEAD AND BACKPLATES SHALL BE PROVIDED BY THE SAME SUPPLIER. SIGNAL HEADS SHALL BE SUPPLIED WITH ITE COMPLIANT HIGH FLUX LED LAMPS IN ALL SECTIONS AS MANUFACTURED BY DIALIGHT (INTEGRATED LED TRAFFIC SIGNAL MODEL), OR APPROVED EQUAL. PROPER ORIENTATION OF THE SIGNAL HEADS SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY TO INSTALL ALL VEHICULAR SIGNAL HEADS.

ITEM 632 - PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN

THE CONTRACTOR SHALL FURNISH AND INSTALL PEDESTRIAN SIGNAL HEADS AS CALLED OUT IN THE PLANS AS MANUFACTURED BY DIALIGHT (MODEL 430-6479-001X), GE LIGHTING SOLUTIONS (PS7-CFF1-26A), OR APPROVED EQUAL. THE UNIT SHALL BE A 16" X 18" SIZE. THE HEADS SHALL BE INSTALLED USING CLAMSHELL TYPE MOUNTING BRACKETS. THE OPTICAL UNIT SHALL CONSIST OF A LIGHT EMITTING DIODE (LED) LIGHT SOURCE. TWO MESSAGES SHALL BE OVERLAID ON ONE PANEL INSTALLED IN A ONE PIECE SIGNAL HOUSING WITH A COUNTDOWN TIMER TO THE RIGHT OF THE DISPLAY. THE UNITS SHALL BE CAPABLE OF DISPLAYING ALTERNATE MESSAGES CONSISTING OF AN SOLID UPRAISED PALM AND A SOLID WALKING PERSON ALONG WITH THE REMAIN WALK TIME SHOWN IN SECONDS. THE SIGNAL SHALL BLANK OUT COMPLETELY WHEN NOT ENERGIZED. THE SYMBOLS SHALL BE AT LEAST 9 INCHES HIGH AND SHALL DISPLAY THE COLORS SPECIFIED IN 732.05.

THE SIGNAL HEAD HOUSING SHALL INCLUDE A MATTE/CLEAR POLYCARBONATE LENS OVER THE DISPLAY THAT IS WEATHER TIGHT AND VANDAL RESISTANT. "HONEYCOMB" COVER SHALL NOT BE UTILIZED. THE HOUSING SHALL BE FIELD DRILLED TO FIT THE MOUNTING BRACKET AND REINFORCED WITH PARTS FURNISHED BY THE MANUFACTURER. BANDING WILL NOT BE PERMITTED. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY MOUNTING HARDWARE. THE BRACKETS SHALL BE COATED TO MATCH THE MAST ARM SUPPORTS.

THE SIGNAL HOUSING SHALL BE MADE OF A HIGH QUALITY POLYCARBONATE MATERIAL. THE EXTERIOR COLOR OF THE PEDESTRIAN SIGNAL HEADS AND ALL ASSOCIATED HARDWARE SHALL BE BLACK WITH THE COLOR BEING INTEGRAL THROUGHOUT THE POLYCARBONATE MATERIAL.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY TO INSTALL ALL PEDESTRIAN SIGNAL HEADS.

ITEM 632 - LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF CONSTRUCTION MATERIAL SPECIFICATION (CMS) ITEM 632 AND ITEM 732.08, LOOP DETECTOR UNITS SHALL HAVE THE FOLLOWING REQUIREMENTS OR FEATURES:

LOOP DETECTOR UNITS MANUFACTURED BY RENO A&E OR EBERLE DESIGN INC. SHALL BE USED. THE UNITS SHALL BE RACK MOUNTED, SHALL HAVE TWO SCANNING LOOP CHANNELS PER UNIT, SHALL HAVE A VEHICULAR COUNT OUTPUT, SHALL REMEMBER AND LOCK-IN AN INDICATION FOR INTERMITTENT AND/OR FAILED LOOP ON A PER CHANNEL BASIS, SHALL GENERATE AND SEND A "FAILED" LOOP OUTPUT SIGNAL TO THE CONTROLLER, AND SHALL HAVE DELAY/EXTENSION TIMING THAT CAN BE OPERATED CONCURRENTLY. FAILED AND COUNT SIGNALS SHALL BE ROUTED THROUGH THE UNIT'S EDGE CONNECTOR ONLY.

THE RACK AND DETECTOR TERMINATION PANELS SHALL BE MANUFACTURED BY ECONOLITE CONTROL PRODUCTS INC. THE RACK SHALL BE PROGRAMMABLE FOR INPUTS AND OUTPUTS. THE RACK SHALL BE WIRED SO ALL DETECTOR INPUTS AND OUTPUTS ARE ACCESSIBLE VIA BACKPANEL TERMINALS. IF MULTIPLE RACKS ARE USED, EACH RACK SHALL BE PROVIDED WITH A 12-VDC POWER CIRCUIT FROM THE CABINET POWER SUPPLY. MULTIPLE RACKS CAN BE HORIZONTALLY MOUNTED OR STACKED ON TOP OF EACH OTHER PROVIDED THAT THEY ARE FASTENED SECURELY, HAVE ADEQUATE AIR FLOW BETWEEN THEM, AND HAVE A MINIMUM OF 3/4" CLEARANCE BETWEEN THE RACK STRUCTURE AND THE SURROUNDING CABINET ITEMS. PAYMENT SHALL BE PER UNIT REGARDLESS OF THE NUMBER OF CHANNELS. PAYMENT OF THE RACK AND POWER SUPPLY MODULE SHALL BE CONSIDERED INCIDENTAL TO THIS PAY ITEM.

LOOP DETECTOR UNITS SHALL BE APPROPRIATELY LABELED (WITH ASSOCIATED PHASE AND DIRECTION) IN THE CONTROLLER CABINET IN ACCORDANCE WITH THE LABEL DESIGNATION PROVIDED IN THE PLANS.

ITEM 632 - PEDESTRIAN PUSHBUTTON, AS PER PLAN

PEDESTRIAN PUSHBUTTONS SHALL BE IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA). ONE ALUMINUM SIGN SHALL BE SUPPLIED WITH EACH PUSHBUTTON. PUSHBUTTONS ARE TO BE MOUNTED 42" ABOVE GROUND LEVEL.

THE PUSHBUTTON ASSEMBLY SHALL BE VANDAL RESISTANT AND OPERATED WITH A PIEZO DRIVEN SOLID STATE SWITCH. PEDESTRIAN PUSHBUTTONS SHALL BE PRESSURE ACTIVATED WITH A NON-MOVING BUTTON AND PROVIDE BOTH A TWO-TONE AUDIBLE BEEP AND A VISIBLE, MOMENTARY LED TO NOTIFY THE USER THAT THE SWITCH WAS ACTIVATED. AN ACCEPTABLE PUSHBUTTON SHALL BE THE BULLDOG III, MANUFACTURED BY POLARA ENGINEERING, INC., OR APPROVED EQUAL. THE OUTER HOUSING SHALL BE ROUND IN SHAPE, BLACK IN COLOR AND THE BUTTON SHALL BE SILVER. THE PUSHBUTTON SHALL BE CONSTRUCTED OF STAINLESS STEEL AND 2 INCHES IN DIAMETER. A CLEAR BEAD OF SILICON SEALANT SHALL BE APPLIED TO THE TOP OF THE PUSHBUTTON HOUSING (1 INCH EACH SIDE OF TOP CENTER) AGAINST THE POLE TO PREVENT WATER FROM ENTERING THE BACK OF THE PUSHBUTTON HOUSING.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY TO INSTALL ALL PEDESTRIAN PUSHBUTTONS.

ITEM 633 - UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A BATTERY BACKUP UPS SYSTEM CAPABLE OF MAINTAINING POWER AT AN INTERSECTION DURING A UTILITY POWER FAILURE. THE INTERSECTION SHALL REMAIN FULLY OPERATIONAL FOR A PERIOD OF A MINIMUM OF FOUR (4) HOURS UNDER A FULL LOAD OF 700 WATTS OR THE LOAD OF EQUIPMENT LISTED BELOW, WHICHEVER IS GREATER. EQUIPMENT THAT SHALL BE MAINTAINED OPERATIONAL DURING A POWER OUTAGE SHALL CONSIST OF THE FOLLOWING:

- (13) SIGNAL HEADS
- (8) COUNTDOWN PEDESTRIAN SIGNAL HEADS
- (8) PEDESTRIAN PUSHBUTTON STATIONS AND CONTROL UNIT
- (4) BLANK OUT MESSAGE SIGNS
- (2) SCHOOL FLASHER ASSEMBLIES
- ALL VIDEO DETECTION EQUIPMENT
- CONTROLLER/CONFLICT MONITOR UNITS

THE BATTERY BACKUP UPS SYSTEM SHALL BE MANUFACTURED BY CLARY CORPORATION OF MONROVIA, CALIFORNIA.

THE MANUFACTURER SHALL CONFIRM THE REQUIRED SIZE OF THE UPS SYSTEM SHALL SATISFY THE REQUIRED RUN TIME AND LIST OF OPERATIONAL EQUIPMENT. BASED ON THIS ANALYSIS, A LARGER CAPACITY SYSTEM MAY BE WARRANTED TO ACCOMPLISH DESIRED RUNTIME AND WILL SUPERSEDE THE 1000 WATT SPECIFICATION.

THE SYSTEM SHALL INCLUDE ONLY THE UPS HARDWARE AND THE REQUIRED NUMBER OF BATTERIES. THESE UPS SYSTEM ITEMS WILL BE HOUSED IN A SEPARATE VENTILATED CABINET WHICH IS PART OF THE DUAL COMPARTMENT CONTROLLER CABINET PAID FOR UNDER ITEM 633 - CONTROLLER UNIT, TYPE TS-2/A2 WITH CABINET, TYPE TS2, AS PER PLAN. THE UPS SHALL HAVE THE FOLLOWING FEATURES AND CAPABILITIES:

1. THE UNIT SHALL BE RATED FOR A MAXIMUM OUTPUT POWER EQUAL TO 70% OF THE ULTIMATE UPS WATTAGE SIZING.
2. OUTPUT VOLTAGE REGULATION OF +/- 5%.
3. ALLOW FOR HOT SWAPPABLE BATTERIES AND TEMPERATURE-COMPENSATED CHARGING TO MAXIMIZE BATTERY LIFE.
4. INTELLIGENT BOOST OPERATION FOR BROWNOUT PROTECTION - PROVIDING A STABLE OUTPUT DURING LOW VOLTAGE CONDITIONS.
5. INCLUDE SAFETY APPROVALS TO UL-1778, CSA-107.1 AND EN60950.
6. THE UPS SHALL BE CONFIGURABLE AND MONITORED BY A FRONT PANEL RS-232 PORT USING ASCII COMMANDS AND TERMINAL EMULATION SOFTWARE.
7. INCLUDE A MEANS TO SWITCH THE INTERSECTION FROM OPERATION TO FLASHING OPERATION AFTER 2-HOURS OF RUN- TIME. THIS IS TO CONSERVE BATTERY OPERATION DURING AN EXTENDED UTILITY POWER OUTAGE.
8. INCLUDE STANDARD FORM C RELAY CONTACTS TO TRIGGER AN ALARM WITHIN THE CONTROLLER ASSEMBLY, INFORMING A TECHNICIAN THE SYSTEM IS OPERATING ON BATTERY BACK UP.
9. INCLUDE AN AUTOMATIC TRANSFER SWITCH (ATS), SEPARATE FROM THE UPS TO CONNECT UPS POWER WHEN THE UTILITY LINE IS UNQUALIFIED. THE ATS WILL ALSO ALLOW FOR HOT SWAPPING OF THE UPS.

ITEM 633 - UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN (CONTINUED)

10. THE BATTERIES USED IN THE UPS SHALL USE ABSORBENT GLASS MAT (AGM) TECHNOLOGY AND SHALL BE OF THE VALVE REGULATED LEAD ACID(VLRA) CONSTRUCTION.
11. A MINIMUM OF FOUR (4) BATTERIES SHALL BE SUPPLIED WITH THE UPS SYSTEM, EACH BATTERY SHALL BE 12VDC AND BE RATED FOR 88-AHR, MINIMUM. (ADDITIONAL BATTERIES MAY BE REQUIRED BASED ON THE SIZING ANALYSIS.)
12. ALL BATTERIES SHALL BE PLACED ON BATTERY HEATER MATS IN THE ENCLOSURE TO EXTEND THE LIFE OF THE BATTERIES.
13. INCLUDE A GENERATOR POWER PANEL WITH AN EXTERNAL TWIST-LOCK PLUG IN THE CONTROLLER CABINET FOR THE PURPOSE IF USING A GENERATOR TO OPERATE THE SIGNAL IN THE EVENT OF A POWER FAILURE, FOR DETAILS SEE SHEET 27, WITH THE EXCEPTION THAT THE GENERATOR INLETS SHALL BE PROVIDED TO ACCEPT A THREE-PRONG, NOT A FOUR PRONG PLUG AS SHOWN.

PAYMENT FOR ITEM 633 - UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN SHALL BE MADE AT THE CONTRACT PRICE BID. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TESTING, CERTIFICATIONS AND OTHER INCIDENTALS NECESSARY TO FURNISH COMPLETE IN PLACE, INCLUDING ALL CONNECTIONS MADE AND WIRING COMPLETE, TESTED AND ACCEPTED.

ITEM 633 - CABINET FOUNDATION, AS PER PLAN

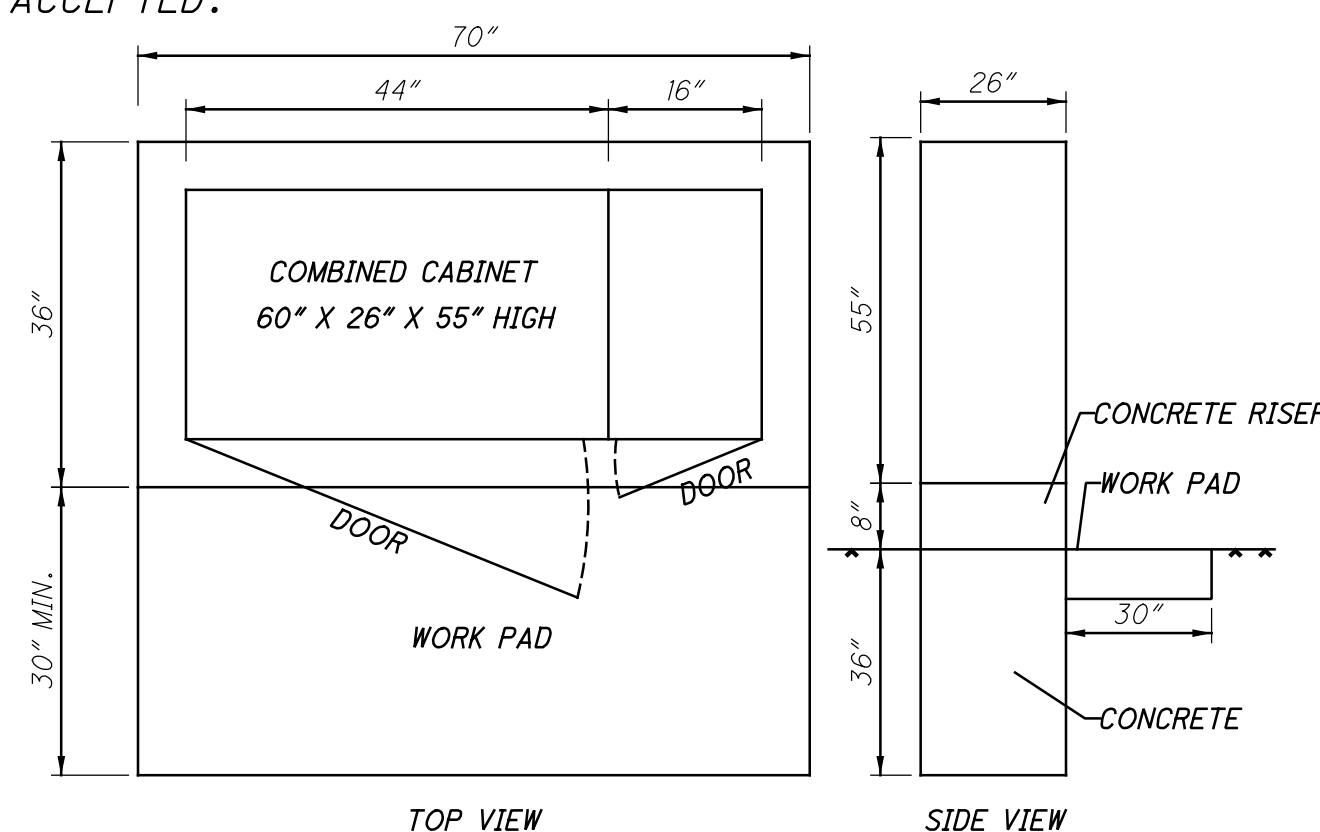
IN ADDITION TO THE ITEM 633 - CABINET FOUNDATION AND SCD TC-83.20, THE CONTRACTOR SHALL PROVIDE A FOUNDATION THAT A MINIMUM OF 70" IN LENGTH AND 36" IN WIDTH AND 36" IN DEPTH AS SHOWN ON THE FOUNDATION DETAIL PROVIDED BELOW.

ITEM 633 - CABINET FOUNDATION, AS PER PLAN WILL BE AT THE CONTRACT BID PRICE PER EACH COMPLETE, IN PLACE AND ACCEPTED.

ITEM 633 - CONTROLLER WORK PAD, AS PER PLAN

IN ADDITION TO THE ITEM 633 - CABINET FOUNDATION AND SCD TC-83.20, THE CONTRACTOR SHALL PROVIDE A WORK PAD WITH A MINIMUM OF 70" IN WIDTH AND 30" INCHES IN DEPTH AS SHOWN ON THE WORK PAD DETAIL PROVIDED BELOW.

ITEM 633 - CONTROLLER WORK PAD, AS PER PLAN WILL BE AT THE CONTRACT BID PRICE PER EACH COMPLETE, IN PLACE AND ACCEPTED.



SIGNAL CONTROLLER CABINET WITH UPS FOUNDATION AND WORK PAD DETAILS

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

IN ADDITION TO ITEM 633, THE CONTROLLER SHALL MEET THE FOLLOWING REQUIREMENTS:

THE CONTROLLER SHALL BE AN ECONOLITE ATC COBALT CLASSIC MODEL WITH A FSK COMMUNICATIONS MODULE THAT CAN BE CONFIGURED FOR RS232 OPERATION, MEETING THE REQUIREMENTS OF NEMA TS2 TYPE 2 AND PROVIDING UPWARD AND DOWNWARD COMPATIBILITY BETWEEN TS1 AND TS2 CABINETS. THE CONTROLLER SHALL BE SYSTEM READY FOR FUTURE INTERCONNECTION. THE CABINET POWER SUPPLY SHALL BE AS MANUFACTURED BY ECONOLITE CONTROL PRODUCTS INC.

A NEMA TS2 TYPE 1 CABINET SHALL BE USED. RACK-MOUNTED DETECTORS AND AN EDI MALFUNCTION MANAGEMENT UNIT (MMU) SHALL BE USED. AN ECONOLITE TYPE P (55") BASE-MOUNTED CABINET WITH A 12-POSITION BACKPANEL SHALL BE USED. EACH CONTROLLER CABINET SHALL BE EQUIPPED WITH TWO (2) EXHAUST FANS, A GFI CONVENIENCE OUTLET, LED INTERIOR CABINET LIGHTING AND A FLEXIBLE GOOSENECK LIGHT WITH LED LAMP. ALL CABINETS SHALL BE ARIES CLOSED LOOP SYSTEM-READY FOR EITHER FIBER OPTIC OR TWISTED PAIR COMMUNICATIONS. AN ECONOLITE TELEMETRY ISOLATION MODULE AND HARNESS SHALL BE PROVIDED. TWO (2) SERVICE/OPERATION MANUALS FOR EACH DIFFERENT PIECE OF EQUIPMENT SHALL BE PROVIDED IN EACH CABINET. A HEAVY CLEAR PLASTIC ENVELOPE CONTAINING A COPY OF THE SIGNAL PLAN AND DETAIL SHEETS SHALL BE ATTACHED TO THE INSIDE OF THE CABINET. THE EXTERIOR OF THE CABINET SHALL BE POWDERCOATED DARK BRONZE. THE INTERIOR COLOR SHALL BE WHITE.

THE CABINET SHALL BE SET ON 8 INCHES OF CONCRETE, INTEGRAL WITH THE CONTROLLER WORK PAD. THE USE OF CONCRETE SHALL BE AT THE CONTRACTOR'S EXPENSE. NO CABINET RISER SHALL BE UTILIZED.

A POLICE PANEL DOOR SHALL BE PROVIDED ON THE EXTERIOR OF THE CABINET. THE FOLLOWING SWITCHES SHALL BE ACCESSIBLE VIA THE POLICE PANEL DOOR: FLASH CONTROL AND MANUAL SWITCH WITH REMOTE SIGNAL PHASING CONTROL. THE LOCK ACCESSING THE POLICE PANEL DOOR SHALL BE COVERED.

THE CONTROLLER UNIT SHALL HAVE UPDATED PROGRAMMING FOR CURRENT DAYLIGHT SAVINGS TIME PRACTICES.

THE FOLLOWING SPECIFICATIONS SHALL BE REQUIRED ON ALL NEW SIGNAL CABINETS IN CASE OF POWER INTERRUPTION OR POWER FAILURE TO ADEQUATELY OPERATE SIGNALS:

1. GENERATOR INLET SHALL BE 20 AMP 125/250 VAC 3 WIRE GROUNDING AND MEET THE NEMA CONFIGURATION NUMBER 5-20P. THE INLET SHALL BE A LEVITON 5478-C OR EQUIVALENT.
2. THE POWER RELAY SHALL BE 30 AMP, 120 VAC, DPDT AND SHALL BE AN OMRON MODEL (MGN2C-M). IT SHALL HAVE A MG SERIES DUST COVER (DAYTON RC-35D013), ALSO REQUIRED. THE LINE VOLTAGE INDICATOR LIGHT SHALL BE A 120VAC LIGHT EMITTING DIODE WITH A RED LENS. LAMP IS DIALIGHT 585-5256, BASE IS SLI (CML/IDI) 5100-822, AND THE LENS IS SLI (CML/IDI) 25P306R. THE CIRCUIT BREAKER SHALL BE A SINGLE-POLE, SINGLE-THROW (SPST) AND A MINIMUM OF 30 AMP. THE AMPERAGE SHALL BE INCREASED TO ACCOMMODATE GREATER LOADS, IF NECESSARY. THE GAUGE OF POWER CABLE SHALL MEET N.E.C. STANDARDS.

ITEM 633 - CONTROLLER UNIT, TYPE TS2/A2 WITH CABINET, TYPE TS2, AS PER PLAN (CONTINUED)

3. ANY GAPS SURROUNDING CONDUIT, AS IT ENTERS THE CABINET FOUNDATION, SHALL BE PROPERLY SEALED TO PREVENT MOISTURE FROM ENTERING THE CABINET. ALL CONDUIT TERMINATIONS INSIDE THE CABINET SHALL BE PROPERLY SEALED TO PREVENT MOISTURE AND RODENTS FROM ENTERING THE CABINET VIA THE CONDUIT RUNS. THE SEAL SHALL BE FLEXIBLE AND REMOVABLE TO PROPERLY SERVICE CABLES ENTERING THE CABINET, WHEN NECESSARY.
4. THE CABINET SHALL HAVE A SEPARATE, ATTACHED, ADJACENT COMPARTMENT TO HOUSE THE BATTERY BACKUP SYSTEM WITH A VENTILATED DOOR. THE BATTERY BACKUP (UPS) SYSTEM IS PAID FOR UNDER A SEPARATE ITEM. THE ENCLOSURE SHALL BE CONSTRUCTED OF 5052-H32, 1/8", ALUMINUM. BOTH THE CONTROL CABINET DOOR AND THE BATTERY BACKUP DOOR SHALL BE LOCATED ON THE SAME SIDE AND BE KEYED TO THE STATE MASTER #2 LOCK AND INCLUDE TWO (2) KEYS (AMERICAN LOCK #1207B; KEY CODE 43737, OR EQUAL APPROVED BY THE ENGINEER). BOTH COMPARTMENTS OF THE ENCLOSURE SHALL INCLUDE A SEPARATE VENT, FAN AND THERMOSTAT.
5. AN ARC FLASH WARNING SIGN SHALL BE PROVIDED ON THE OUTSIDE FRONT DOOR OF THE CABINET IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, PARAGRAPH 110.16.

THE CITY OF HILLIARD MAINTAINS SEVERAL CLOSED LOOP SIGNAL SYSTEMS. THE FOLLOWING SPECIFICATIONS APPLY TO ALL SIGNALS WITHIN AN EXISTING SYSTEM OR TO ANY SIGNALS THAT MAY BE CONNECTED TO A SYSTEM IN THE FUTURE.

THE CONTROLLER SHALL BE INTERCONNECTED IN THE CITY OF HILLIARD SIGNAL SYSTEM. THE SYSTEM IS SUPERVISED BY AN ECONOLITE ASC/2M ARTERIAL SYSTEM MASTER AND A PC OFFICE MONITOR USING ARIES TRAFFIC MANAGEMENT SYSTEM. THE CONTROLLER AND SYSTEM MASTER (TO BE LOCATED AT THE CEMETERY RD. / NORWICH ST. INTERSECTION AS PART OF THIS PROJECT) SHALL BE PROGRAMMED ACCORDING TO THESE PLANS. ALL OFFSETS SHALL REFERENCE TO THE BEGINNING OF THE COORDINATED PHASE (PHASE 2 + PHASE 6) GREEN.

ITEM 625 - LUMINAIRE, MISC.: LUMINAIRE, LED, 120 VOLT

THE CONTRACTOR SHALL FURNISH AND INSTALL LUMINAIRES MEETING THE REQUIREMENTS SET FORTH BY THE CITY OF HILLIARD IN THE STANDARD DRAWING SL-4. COPIES ARE AVAILABLE BY CONTACTING THE CITY OF HILLIARD AT 3800 MUNICIPAL WAY, HILLIARD, OHIO 43026, (614)-876-7361.

THE LUMINAIRE SHALL BE A G.E. EANA LED ROADWAY LIGHT AND SHALL HAVE A DARK BRONZE FINISH.

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ITEM 632 - POWER SERVICE, AS PER PLAN

POWER SERVICE SHALL BE OBTAINED FROM AMERICAN ELECTRIC POWER (AEP) AT A LOCATION TO BE DETERMINED AT THE TIME OF CONSTRUCTION. THE PROVIDED METER BASE SHALL BE STAINLESS STEEL. POWER SERVICE SHALL BE RUN THROUGH A DISCONNECT SWITCH MOUNTED ON THE POWER METER CABINET. A SQUARE D HEAVY-DUTY SAFETY SWITCH, 30-AMP/250-VOLT STAINLESS STEEL DISCONNECT (OR APPROVED EQUAL) SHALL BE USED. THE DISCONNECT SWITCH SHALL INCLUDE A LOCKING MECHANISM (AMERICAN LOCK #1207B; KEY CODE 43737, OR EQUAL APPROVED BY THE ENGINEER). COORDINATION WITH THE UTILITY IS THE RESPONSIBILITY OF THE CONTRACTOR. THE POWER SHALL BE 120 VOLTS.

THE CONTRACTOR SHALL MAKE THE APPROPRIATE POWER SERVICE REQUESTS TO AEP BY CALLING AEP CUSTOMER SERVICE AT 1-800-672-2231 TO SET UP A NEW SIGNAL POWER METER WORK ORDER. AEP WILL ASSIGN A FIELD ENGINEER TO THE PROJECT AND THE CONTRACTOR WILL BE THE POINT OF CONTACT FOR THE ENTIRE PROJECT. BILLING INFORMATION FOR THE CITY OF HILLIARD MAY BE OBTAINED FROM THE ENGINEER. THE SERVICE ADDRESS FOR THE NEW METERED POWER FOR THE SIGNAL IS 4424 CEMETERY ROAD, HILLIARD, OHIO 43026. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION WITH AEP THROUGHOUT THE PROJECT.

THE CONTRACTOR SHALL INSTALL SEPARATE POWER SERVICES FOR THE TRAFFIC SIGNAL AND THE 120 VOLT LIGHTING WITHIN THE POWER METER CABINET AS INDICATED IN THE PLAN. EACH DISCONNECT SWITCH SHALL BE PERMANENTLY LABELED WITH ITS APPROPRIATE FUNCTION WITHIN THE POWER METER CABINET.

ITEM 632 - COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, (BY DESIGN), AS PER PLAN

ITEM 632 - PEDESTAL, 11', TRANSFORMER BASE, AS PER PLAN

ALL SIGNAL SUPPORTS AND PEDESTALS SHALL BE STANDARD ODOT DESIGNS, AS PER STANDARD CONSTRUCTION DRAWINGS TC-81.21 AND TC-83.20. ALL POLES AND ARMS SHALL BE SMOOTH-SIDED; MULTI-SIDED POLES OR ARMS SHALL NOT BE USED. THE EXTERIOR COLOR OF ALL SURFACES, INCLUDING ALL ANCHOR BOLT COVERS, SHALL BE DARK BRONZE (FEDERAL COLOR NO. 595-37056). THE POLES SHALL BE GALVANIZED AND POWDER COATED OR PAINTED USING A FOUR-PART EPOXY PAINT SYSTEM (AMERON'S AMER-LOC PROCESS OR APPROVAL EQUAL) THAT PROVIDES A FIVE YEAR FINISH WARRANTY.

SIGNAL SUPPORTS AND PEDESTALS SHALL BE MANUFACTURED BY THE SAME VENDOR WHICH INCLUDE VALMONT INDUSTRIES, MILLERBERND MANUFACTURING, UNION METAL INDUSTRIES CORP., OR APPROVED EQUAL. POLE VENDORS SHALL BE LISTED ON THE ODOT PREQUALIFIED VENDOR LIST.

ITEM 804 - FIBER OPTIC CABLE TESTING, AS PER PLAN

IN ACCORDANCE WITH THE REQUIRMENTS OF C&MS 804, THE CONTRACTOR SHALL TEST THE CITY OF HILLIARD'S FIBER OPTIC SYSTEM AFTER THE INSTALLATION OF THE NEW MASTER CONTROLLER AND FIBER OPTIC IS COMPLETE TO CONFIRM THE SYSTEM IS FUNCTIONING IN A SATISFACTORY MANNER. ANY DEFICIENCIES SHALL BE REPORTED TO THE PROJECT ENGINEER, WHO WILL AUTHORIZE REPAIRS, AS NECESSARY.

PAYMENT FOR ITEM 804 - FIBER OPTIC CABLE TESTING, AS PER PLAN SHALL BE MADE AT THE LUMP SUM PRICE AND INCLUDE ALL LABOR, TOOLS, AND MATERIALS TO PERFORM THE TESTING.

ITEM 632 - SIGNAL CABLE, MISC.: CAT 5E POE CABLE

THE CONTRACTOR SHALL INSTALL CAT 5E POE ARMORED CABLES AS DETAILED IN THE TRAFFIC SIGNAL PLANS. THE CONTRACTOR SHALL COIL AN EXTRA 50' OF CABLE ON THE J-HOOKS FOR THE CITY OF HILLIARD TO INSTALL A CCTV CAMERA AT A LATER DATE.

THE CAT 5E CABLE SHALL BE CAT 5E FTB NETWORK CABLE, GENESIS C5E 24/4PR SHLD FT CMR/FT4 BL AS MANUFACTURED BY HONEYWELL CABLE & COMMUNICATIONS.

PAYMENT FOR ITEM 632 - SIGNAL CABLE, MISC.: CAT 5E POE CABLE SHALL BE MADE AT THE CONTRACT BID PRICE AND SHALL INCLUDE ALL LABOR, EQUIPMENT AND TOOLS NECESSARY TO COMPLETE THE DESCRIBED WORK.

ITEM 633 - CONTROLLER ITEM, MISC.: FIBER OPTIC ETHERNET TRANSCEIVER

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING AN INDUSTRY HARDENED, FULLY MANAGED ETHERNET SWITCH PROVIDING DUAL FIBER OPTIC GIGABIT ETHERNET (1000BASEX) PORTS USING INDUSTRY STANDARD SC FIBER OPTIC CONNECTORS AND 8 FAST ETHERNET (10/100BASE TX) RJ45 COPPER PORTS. THE TRANSCEIVER SHALL OPERATE ON 120VAC, 10 WATTS AND SHALL MEET OR EXCEED NEMA TS2 ENVIRONMENTAL REQUIREMENTS.

THE FIBER OPTIC TRANSCEIVER SHALL INTERFACE TO SINGLE-MODE (8/125) FIBER OPTIC CABLE WITH AN OPTICAL WAVELENGTH OF 1310NM USING SC CONNECTORS. IT SHALL BE CAPABLE OF OPERATING OVER A DISTANCE OF AT LEAST 10KM WITH AN OPTICAL POWER BUDGET OF 17DB. THE TRANSCEIVER SHALL BE CAPABLE OF OPERATING IN A FAULT TOLERANT FIBER OPTIC LOOP.

PROVIDE A TRANSCEIVER THAT IS FULLY COMPLIANT WITH IEEE 802.3, 802.3U AND 802.3Z. THE TRANSCEIVER SHALL PROVIDE FULL-DUPLEX OPERATION AND FLOW CONTROL.

PROVIDE A SIMPLE INTUITIVE USER INTERFACE FOR CONFIGURATION AND MONITORING OF THE TRANSCEIVER VIA STANDARD HTML GRAPHICAL WEB BROWSER, INCLUDING DETAILED ONLINE HELP.

EVENT LOGGING AND RECORDING SHALL BE INCLUDED. ALL SIGNIFICANT EVENTS SHALL BE STORED IN A NON-VOLATILE SYSTEM LOG.

THE OPTICAL ETHERNET TRANSCEIVER SHALL CONNECT TO ALL ETHERNET DEVICES IN THE CONTROLLER CABINET INCLUDING CONTROLLER, MMU, UPS, VIDEO DETECTION COMMUNICATIONS INTERFACE PANEL AND VIDEO SERVERS, AND ANY OTHER ETHERNET DEVICES USING PROPERLY RATED CAT5E CABLES WITH RJ45 CONNECTORS.

PAYMENT FOR ITEM 633 - CONTROLLER, MISC.: FIBER OPTIC ETHERNET TRANSCEIVER SHALL BE MADE AT THE CONTRACT PRICE BID. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TESTING, CERTIFICATIONS AND OTHER INCIDENTALS NECESSARY TO FURNISH COMPLETE IN PLACE, INCLUDING ALL CONNECTIONS MADE AND WIRING COMPLETE, TESTED AND ACCEPTED.

ITEM 632 - COVERING OF VEHICULAR SIGNAL HEAD

COVER VEHICULAR SIGNAL HEADS IF ERECTED AT INTERSECTIONS WHERE TRAFFIC IS MAINTAINED BEFORE ENERGIZING THE SIGNALS. USE A STURDY OPAQUE COVERING MATERIAL SPECIFICALLY MADE FOR USE WITH TRAFFIC SIGNALS, AND ENSURE THAT THE COLOR OF THE COVER IS DIFFERENT THAN THE SIGNAL HEAD, TAN OR BEIGE, SO THAT IT IS CLEAR TO DRIVERS THE HEADS ARE COVERED, NOT DARK. USE A METHOD OF COVERING TO COVER ATTACHMENT AND MATERIALS, INCLUDING BACKPLATES, AS APPROVED BY THE ENGINEER. COVERS ARE TO BE FREE OF TEXT, PICTURES, OR ANY TYPE OF ADVERTISING. MAINTAIN COVERS, AND REMOVE THEM WHEN DIRECTED BY THE ENGINEER.

ITEM 804 - FIBER OPTIC CABLE, MISC.: ARMORED, 432 FIBER

IN ADDITION TO THE ODOT SUPPLEMENTAL SPECIFICATIONS 804 AND 904, THE CONTRACTOR SHALL INSTALL NEW FIBER OPTIC INTERCONNECT CABLE IN AN AERIAL MANNER FROM THE CEMETERY RD. / NORWICH ST. INTERSECTION TO THE CEMETERY RD. / LACON RD. INTERSECTION. THE FIBER OPTIC INTERCONNECT CABLE SHALL BE AERIALY LASHED TO THE EXISTING TWISTED PAIR INTERCONNECT, WITH THE TWISTED PAIR CABLE BEING ABANDONED IN PLACE. A SLACK INSTALLATION OF 100' OF CABLE SHALL BE PROVIDED AT EACH INTERSECTION.

THE CONTRACTOR SHALL FULLY CONNECT EACH OF THE FOLLOWING INTERSECTIONS TO THE CITY OF HILLIARD'S FIBER OPTIC INTERCONNECT SYSTEM:

- CEMETERY RD. / WESTBROOK DR. / BERRY LEAF LN.
- CEMETERY RD. / J.W. REASON ELEMENTARY SCHOOL DR.
- CEMETERY RD. / KROGER DR.
- CEMETERY RD. / LEAP RD.
- CEMETERY RD. / BROWN PARK DR.
- CEMETERY RD. / LACON RD.

THE TERMINATION PANELS FOR THE EXISTING CABINETS AT THE CEMETERY RD. / J.W. REASON ELEMENTARY SCHOOL DR. AND THE CEMETERY RD. / KROGER DR. INTERSECTIONS SHALL BE MINIMAL IN SIZE, WHILE ACCOMMODATING ALL NECESSARY CONNECTIONS DUE TO THE SIZE OF CABINET.

THIS ITEM OF WORK SHALL ALSO INCLUDE THE INSTALLATION OF NEW FIBER OPTIC CABLE IN AN AERIAL MANNER FROM THE CEMETERY RD. / NORWICH ST. INTERSECTION TO THE CITY OF HILLIARD MUNICIPAL BUILDING AS SHOWN ON PLAN SHEETS 25 & 26. THE CONTRACTOR SHALL UTILIZE THE EXISTING CONDUIT RISER AND CONDUIT FROM EXISTING UTILITY POLE NO.7 (AS SHOWN ON SHEET 26) TO INSTALL THE FIBER OPTIC CABLE TO THE MUNICIPAL BUILDING. THE CONTRACTOR SHALL COORDINATE THIS WORK WITH THE CITY OF HILLIARD'S DEPARTMENT OF INFORMATION TECHNOLOGY (DOUGLAS FRANCIS, 614-334-2563).

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY TO INSTALL THE FIBER OPTIC CABLE AS DESCRIBED ABOVE.

ITEM 633 - CONTROLLER ITEM, MISC.: UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT

THIS ITEM SHALL CONFORM TO THE REQUIREMENTS OF ITEM 633 - UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN EXCEPT FOR THE FOLLOWING:

1. THE BATTERY BACKUP UPS SYSTEM SHALL BE MANUFACTURED BY CLARY CORPORATION OF MONROVIA, CALIFORNIA.
2. THE MANUFACTURER SHALL CONFIRM THE REQUIRED SIZE OF THE UPS SYSTEM SHALL SATISFY THE REQUIRED RUN TIME AND LIST OF OPERATIONAL EQUIPMENT. BASED ON THIS ANALYSIS, A LARGER CAPACITY SYSTEM MAY BE WARRANTED TO ACCOMPLISH DESIRED RUNTIME AND WILL SUPER SUPERSEDE THE 1000 WATT SPECIFICATION.
3. THE CONTRACTOR SHALL PROVIDE A VENTILATED CABINET TO HOUSE THE UPS. THE CABINET SHALL BE BOLTED ON THE EAST SIDE OF THE EXISTING CABINET LOCATED AT THE CEMETERY RD. / NORWICH ST. INTERSECTION. THE EXTERIOR OF ALL SURFACES SHALL BE DARK BRONZE (FEDERAL COLOR NO. 595-37056). THE CABINET SHALL BE PAINTED USING A FOUR-PART EPOXY PAINT SYSTEM (AMERON'S AMER-LOC PROCESS OR APPROVED EQUAL) OR A POWDER COATED FINISH SYSTEM BOTH PROVIDING A FIVE YEAR FINISH WARRANTY.
4. THE CONTRACTOR SHALL PROVIDE A CABINET FOUNDATION. THE CABINET FOUNDATION SHALL MATCH THE WIDTH OF THE EXISTING CABINET AND BE A MINIMUM OF 36" DEEP.
5. THE CONTRACTOR SHALL PROVIDE A WORK PAD FOR THE UPS CABINET.
6. A GENERATOR POWER PANEL SHALL NOT BE SUPPLIED WITH THE UPS AS THE EXISTING GENERATOR POWER PANEL IS LOCATED ON THE WEST SIDE OF THE EXISTING CABINET.

PAYMENT FOR ITEM 633 - CONTROLLER ITEM, MISC.: UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT SHALL BE MADE AT THE CONTRACT PRICE BID. PAYMENT SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, TESTING, CERTIFICATIONS AND OTHER INCIDENTALS NECESSARY TO FURNISH COMPLETE IN PLACE, INCLUDING ALL CONNECTIONS MADE AND WIRING COMPLETE, TESTED AND ACCEPTED.

ITEM 633 - CONTROLLER, MASTER, TRAFFIC RESPONSIVE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF C&MS 733.06, THE MASTER CONTROLLER SHALL BE THE LATEST ECONOLITE ARTERIAL SYSTEM MASTER CONTROLLER.

THE MASTER CONTROLLER SHALL BE INSTALLED AT THE CEMETERY RD. / NORWICH ST. INTERSECTION.

THE CONTRACTOR SHALL CONNECT ALL EXISTING SIGNALIZED INTERSECTIONS TO THE NEW MASTER CONTROLLER.

THE CONTRACTOR SHALL COORDINATE WITH THE CITY OF HILLIARD TO TRANSFER THE EXISTING SIGNAL TIMINGS TO THE NEW MASTER CONTROLLER.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY TO CONNECT ALL INTERSECTIONS TO THE MASTER CONTROLLER.

ITEM 632 - INTERCONNECT, MISC.: INTERCONNECT SYSTEM EXPANSION (ALTERNATE 1)

THE CONTRACTOR SHALL INSTALL NEW FIBER OPTIC INTERCONNECT CABLE FROM THE CEMETERY RD. / LACON RD. INTERSECTION TO THE CEMETERY RD. / I.R. 270 SOUTHBOUND OFF-RAMP INTERSECTION. ALTERNATE 2 SHALL BE AN EXTENSION OF THE FIBER OPTIC INTERCONNECT SYSTEM INSTALLED WITH ALTERNATE 1.

THE FIBER OPTIC INTERCONNECT CABLE SHALL BE AERIALLY LASHED TO THE EXISTING TWISTED PAIR INTERCONNECT FROM THE CEMETERY RD. / LACON RD. INTERSECTION TO THE UTILITY POLE LOCATED ON THE NORTH SIDE OF CEMETERY RD., APPROXIMATELY 215' WEST OF THE CEMETERY RD. / BRITTON PKWY. / PARKWAY LN. INTERSECTION. THE EXISTING TWISTED PAIR CABLE SHALL BE ABANDONED IN PLACE. THE PROPOSED FIBER OPTIC CABLE SHALL BE INSTALLED UNDERGROUND IN THE EXISTING CONDUIT SYSTEM FROM THE PULL BOX LOCATED ON THE NORTH SIDE OF CEMETERY RD., APPROXIMATELY 215' WEST OF THE CEMETERY RD. / BRITTON PKWY. / PARKWAY LN. INTERSECTION TO THE CONTROLLER CABINET AT THE CEMETERY RD. / I.R. 270 SOUTHBOUND OFF-RAMP INTERSECTION. THE EXISTING TWISTED PAIR CABLE SHALL BE REMOVED FROM THE EXISTING CONDUITS AND DISPOSED OF BY THE CONTRACTOR.

THE CONTRACTOR SHALL CONNECT THE NEW FIBER OPTIC INTERCONNECT CABLE TO THE FOLLOWING INTERSECTIONS:

CEMETERY RD. / BRITTON PKWY. / PARKWAY LN.
CEMETERY RD. / LYMAN DR.
CEMETERY RD. / I.R. 270 SOUTHBOUND OFF-RAMP

ALL MATERIALS AND EQUIPMENT NECESSARY TO EXPAND THE FIBER OPTIC INTERCONNECT SYSTEM SHALL BE IN ACCORDANCE WITH ODOT C&MS SUPPLEMENTAL SPECIFICATION 804. A 24" PULL BOX WITH A SLACK INSTALLATION OF 100' OF CABLE SHALL BE PROVIDED AT EACH INTERSECTION.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN PROVIDED FOR THE CONTRACTOR'S USE FOR ITEM 632 - INTERCONNECT, MISC.: INTERCONNECT SYSTEM EXPANSION (ALTERNATE 1):

- ITEM 625 - 3" CONDUIT, 725.04 - 100 FT
- ITEM 625 - CONDUIT CLEANED AND CABLES REMOVED - 1700 FT
- ITEM 625 - PULL BOX, 725.08, 24", AS PER PLAN - 3 EACH
- ITEM 633 - CONTROLLER ITEM, MISC.: FIBER OPTIC ETHERNET TRANSCEIVER - 3 EACH
- ITEM 633 - CONTROLLER ITEM, MISC.: MALFUNCTION MANAGEMENT UNIT - 3 EACH
- ITEM 804 - FIBER OPTIC CABLE, MISC.: ARMORED, 432 FIBER - 2600 FT
- ITEM 804 - DROP CABLE, 6 FIBER - 3 EACH
- ITEM 804 - FIBER TERMINATION PANEL, 6 FIBER - 3 EACH
- ITEM 804 - SLACK INSTALLATION - 3 EACH
- ITEM 804 - SPLICE ENCLOSURE - 3 EACH

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY TO CONNECT THE ABOVE-REFERENCED INTERSECTIONS TO THE FIBER OPTIC INTERCONNECT SYSTEM.

ITEM 633 - CONTROLLER ITEM, MISC.: SPARE CONTROLLER EQUIPMENT

THE CONTRACTOR SHALL FURNISH ONE (1) SPARE CONTROLLER UNIT, TYPE TS2/A2 TO LARRY LESTER, DEPUTY DIRECTOR OF PUBLIC SERVICE, DEPARTMENT OF PUBLIC SERVICE, (614)-344-2467. THE CONTROLLER SHALL BE AN ECONOLITE ATC COBALT CLASSIC MODEL WITH A FSK COMMUNICATIONS MODULE THAT CAN BE CONFIGURED FOR RS232 OPERATION, MEETING THE REQUIREMENTS OF NEMA TS2 TYPE 2 AND PROVIDING UPWARD AND DOWNWARD COMPATIBILITY BETWEEN TS1 AND TS2 CABINETS. THE CONTROLLER SHALL BE SYSTEM READY FOR FUTURE INTERCONNECTION.

THE CONTRACTOR SHALL FURNISH ONE (1) SPARE MALFUNCTION MANAGEMENT UNIT TO LARRY LESTER, DEPUTY DIRECTOR OF PUBLIC SERVICE, DEPARTMENT OF PUBLIC SERVICE, (614)-344-2467. THE MALFUNCTION MANAGEMENT UNIT SHALL BE ED1 MMU2-16LEIP MMU AS MANUFACTURED BY EBERLE DESIGN INC., 3510 E. ATLANTA AVENUE, PHOENIX AZ, 85040.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL EQUIPMENT AND OTHER INCIDENTALS NECESSARY.

ITEM 816 - VIDEO DETECTION SYSTEM, AS PER PLAN (ALTERNATE 2)

IN ADDITION TO MEETING THE REQUIREMENTS OF ODOT SUPPLEMENTAL SPECIFICATIONS 816 AND 907, THE VIDEO DETECTION SYSTEM SHALL BE A GRIDSMART SYSTEM AS MANUFACTURED BY:

GRIDSMART
15045 HARDIN VALLEY ROAD
KNOXVILLE, TN 37932

THE SYSTEM SHALL INCLUDE THE FOLLOWING COMPONENT ITEMS AT A MINIMUM:

- 1 EACH GRIDSMART BELL CAMERA
- 1 EACH GRIDSMART GS2 PROCESSOR
- 1 EACH GRIDSMART PLUS MODULE
- 1 EACH SURGE PROTECTOR POWER PANEL FOR GRIDSMART VIDEO DETECTION SYSTEM
- 100 LF VIDEO COMPOSITE DETECTION AND RADAR CABLE WITH 600 VOLT INSULATION INCLUDES CONNECTORS

ALL MOUNTING HARDWARE, BRACKET ARMS AND OUTER CAMERA CASING SHALL BE PROVIDED BY THE CONTRACTOR WITH COSTS CONSIDERED INCIDENTAL TO THE PAY ITEM AND PAINTED TO MATCH THE SIGNAL SUPPORT (DARK BRONZE).

IF THE CITY OF HILLIARD ACCEPTS ALTERNATE 2, THEN THE FOLLOWING ITEMS SHALL BE NON-PERFORMED:

- ITEM 625 CONDUIT 2", 725.04 487 FT
- ITEM 625 TRENCH 487 FT
- ITEM 625 PULL BOX, 725.08, 18", AS PER PLAN 4 EACH
- ITEM 625 PLASTIC CAUTION TAPE, AS PER PLAN 487 FT
- ITEM 632 DETECTOR LOOP 10 EACH
- ITEM 632 LOOP DETECTOR UNIT, EXTENSION TYPE, AS PER PLAN 6 EACH
- ITEM 632 LOOP DETECTOR LEAD-IN CABLE 2366 FT

TRAINING IN THE OPERATION, SETUP AND MAINTENANCE OF THE VIDEO DETECTION SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 816.05.

PAYMENT FOR ITEM 816 - VIDEO DETECTION SYSTEM, AS PER PLAN (ALTERNATE 2) SHALL BE AT THE CONTRACT PRICE FOR EACH UNIT COMPLETE AND IN PLACE INCLUDING ALL CONNECTIONS TESTED AND ACCEPTED.

ITEM 632 - SIGNALIZATION, MISC.: POWER METER CABINET, BASE MOUNT, 36" X 20" X 15" WITH FOUNDATION

THIS ITEM SHALL INCLUDE THE POWER METER CABINET, POWER METER SOCKET, CONCRETE FOUNDATION AND INCIDENTALS AS DESCRIBED HEREIN.

THE CONCRETE FOUNDATION SHALL BE INSTALLED ACCORDING TO THE POWER METER CABINET TYPICAL DRAWING ON SHEET 24.

THE POWER METER CABINET SHALL BE A NEMA 3R, BASE-MOUNTED, LARGE SINGLE DOOR ENCLOSURE. THE DIMENSIONS OF THE CABINET SHALL BE 36 IN. HIGH X 20 IN. WIDE X 15 IN. DEEP. THE CABINET SHALL BE SUPPLIED WITH TWO (2) ADJUSTABLE "C" MOUNTING CHANNELS ON EACH SIDE WALL AND ON THE BACK WALL OF THE CABINET, AND THE CABINET SHALL BE SUPPLIED WITH AN ALUMINUM PANEL KIT THAT IS FULL HEIGHT OF THE CABINET. THE POWER METER SOCKET SHALL BE MOUNTED TO THE PANEL KIT CENTERED HORIZONTALLY IN THE POWER METER CABINET AND FOUR TO SIX INCHES FROM THE TOP. THE EXTERIOR OF THE CABINET SHALL BE POWDERCOATED DARK BRONZE. THE INTERIOR COLOR SHALL BE WHITE.

THE CABINET MATERIAL SHALL BE 5052 MARINE GRADE, 0.125 INCH THICK ALUMINUM SHEETING WITH A 32 HARDNESS IN ITS NATURAL COLOR. ALL EXTERIOR SEAMS SHALL BE EITHER CONTINUOUSLY WELDED, TACK WELDED, SEALED WITH A 15 TO 20 YEAR SILICONE SEALER, AND/OR OVERLAPPED SUCH THAT WATER DOES NOT ENTER THE CABINET. ALL CABINET EDGES SHALL BE SMOOTH (FREE FROM ANY SHARP EDGES). THE CABINET DOOR FRAME OPENING SHALL BE DOUBLE-FLANGED ON ALL FOUR SIDES. THE CABINET DOOR SHALL BE HINGED USING A HEAVY GAUGE CONTINUOUS HINGE THAT HAS A STAINLESS HINGE PIN. THE HINGE SHALL BE BOLTED TO THE CABINET SO THE DOOR CAN BE REMOVED. THE BOLTS AND NUTS SHALL BE MADE OF STAINLESS STEEL, BE TAMPERPROOF AND SECURELY FASTENED TO PREVENT VIBRATIONS FROM LOOSENING THE NUTS. THE DOOR, SEALED WITH A NEOPRENE GASKET, SHALL BE EQUIPPED WITH A THREE (3) POINT LATCHING MECHANISM AND A HANDLE WHICH CAN BE PADLOCKED. THE DOOR SHALL BE DESIGNED SUCH THAT THE DOOR CAN BE LOCKED IN AN OPEN POSITION AT 90, 135, AND 180 DEGREES (NOMINAL VALUES) TO THE CABINET FACE. BOLT PATTERN SHALL CONSIST OF AN ANCHOR BOLT POSITIONED IN EACH CABINET CORNER. A METAL BAR SHALL BE SUPPLIED THAT WILL FIT THROUGH THE LOCK HOLE ON THE HANDLE AND ALLOW TWO DIFFERENT PAD LOCKS THE ABILITY TO UNLOCK THE CABINET. THE CONTRACTOR SHALL INSTALL ITS LOCK ON ONE SIDE OF THE LOCKING BAR AND THE POWER SERVICE SUPPLIER SHALL LOCK THE OTHER SIDE UNTIL ACCEPTED BY THE CITY AT WHICH POINT THE CONTRACTOR SHALL REMOVE ITS LOCK AND THE CITY WILL PLACE THEIR LOCK.

THE POWER METER CABINET SHALL BE SUPPLIED WITHOUT A DOOR LOCK, SWITCH COMPARTMENT, AND POLICE DOOR ON THE CABINET DOOR.

THE POWER METER CABINET SUPPLIED SHALL BE AN APX TECHNOLOGIES, INC. BASE-MOUNTED ENCLOSURE (APX CATALOG NO. TC362015) WITH ALUMINUM PANEL KIT OPTION.

THE CONCRETE FOUNDATION SHALL BE INSTALLED ACCORDING TO THE POWER METER CABINET TYPICAL DRAWING. TWO 2-INCH CONDUITS SHALL EXTEND TWO TO FIVE INCHES ABOVE THE TOP OF THE FOUNDATIONS. FLEXIBLE NON-METALLIC CONDUIT OF SCHEDULE 40 SPECIFICATIONS SHALL BE SLEEVED ONTO THE CONDUIT ENTERING THE FOUNDATION INTO THE POWER METER SOCKET. ONE 3/4-INCH CONDUIT SHALL EXTEND 2-INCHES ABOVE THE TOP OF THE FOUNDATION. THE CONDUIT AND FOUR (4) ANCHOR BOLTS AND REQUIRED CONDUIT ELLS AND THEIR INSTALLATION SHALL BE INCIDENTAL TO THE COST OF THIS ITEM.

ITEM 632 - SIGNALIZATION, MISC.: POWER METER CABINET, BASE MOUNT, 36" X 20" X 15" WITH FOUNDATION (CONT.)

THE POWER METER SOCKET SHALL BE A 200 AMP, FIVE TERMINAL, RINGLESS, SINGLE POSITION LEVER BYPASS. THE POWER METER SOCKET SUPPLIED SHALL BE A (MILBANK CATALOG NO. U0551-RRL) OR (TALON CATALOG NO. 40405-020G). THE 3-CONDUCTOR POWER CABLE SHALL BE IN THE LEFT CONDUIT ENTERING THE FOUNDATION AND THE 2-CONDUCTOR POWER CABLE SHALL BE IN THE RIGHT CONDUIT ENTERING THE FOUNDATION.

A #4 WIRE LUG SHALL BE PROVIDED FOR ATTACHING A GROUNDING WIRE FROM A GROUND ROD. THE GROUNDING WIRE LUG SHALL BE ATTACHED TO THE ALUMINUM PANEL (BOTTOM MIDDLE). IT SHALL BE DIRECTLY GROUNDED TO THE CABINET. GROUND RODS SHALL BE INSTALLED TO BE 10 OHMS OR LESS AND ALL OTHER REQUIREMENTS OF THE CMSC 625.16 AND 725.16.

THE WORK AS DESCRIBED WILL BE MEASURED AS THE NUMBER OF POWER METER CABINETS FURNISHED AND INSTALLED AND SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND INCIDENTALS, INCLUDING HUBS, CONDUIT ELLS AND FLEXIBLE CONDUIT, AND WIRING IN THE POWER METER CABINET, NECESSARY TO COMPLETE THE WORK SPECIFIED, COMPLETE IN PLACE.

ITEM 633 - CONTROLLER ITEM, MISC.: MALFUNCTION MANAGEMENT UNIT

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A ED1 MMU2-16LEIP MALFUNCTION MANAGEMENT UNIT AS MANUFACTURED BY EBERLE DESIGN INC., 3510 E. ATLANTA AVENUE, PHOENIX AZ, 85040.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL EQUIPMENT AND OTHER INCIDENTALS NECESSARY.

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TRAFFIC SIGNAL NOTES

CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

SHEET	LOCATION	625	625	625	625	625	625	625	625	625	625	625	625	625	625	632	632	632	632	632	632	632	632	
		CONNECTION, FUSED PULL APART	CONNECTION, UNFUSED PULL APART	NO. 6 AWG 600 VOLT DISTRIBUTION CABLE	NO. 10 AWG POLE AND BRACKET CABLE	CONDUIT, 2", 725.04	CONDUIT, 3", 725.04	CONDUIT, 4", 725.04	CONDUIT, MISC.: DIRECTIONALLY BORED, 725.05, 4"	LUMINAIRE, MISC.: LUMINAIRE, LED, 120 VOLT	TRENCH	PULL BOX, 725.08, 18", AS PER PLAN	PULL BOX, 725.08, 24", AS PER PLAN	GROUND ROD	PLASTIC CAUTION TAPE, AS PER PLAN	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN, AS PER PLAN	COVERING OF VEHICULAR SIGNAL HEAD	COVERING OF PEDESTRIAN SIGNAL HEAD	PEDESTRIAN PUSHBUTTON, AS PER PLAN	DETECTOR LOOP	LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, AS PER PLAN	SIGNAL CABLE, 5 CONDUCTOR, NO.14 AWG
		EACH	EACH	FT	FT	FT	FT	FT	FT	EACH	FT	EACH	EACH	EACH	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	FT	
20	CEMETERY RD / LACON RD	4	4	1608	480	837	64	46	314	4	790	5	4	13	790	7	1	8	8	8	8	10	6	1121
TOTALS CARRIED TO GENERAL SUMMARY		4	4	1608	480	837	64	46	314	4	790	5	4	13	790	7	1	8	8	8	8	10	6	1121

SHEET	LOCATION	632	632	632	632	632	632	632	632	632	632	632	632	632	632	633	633	633	633					
		SIGNAL CABLE, 7 CONDUCTOR, NO.14 AWG	SIGNAL CABLE, MISC.: CAT 5E POE CABLE	SIGNAL SUPPORT FOUNDATION	PEDESTAL FOUNDATION	LOOP DETECTOR LEAD-IN CABLE	POWER CABLE, 2 CONDUCTOR, NO.6 AWG	POWER CABLE, 3 CONDUCTOR, NO.6 AWG	POWER SERVICE, AS PER PLAN	CONDUIT RISER, 2" DIAMETER	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 2, AS PER PLAN	COMBINATION SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 4, AS PER PLAN	PEDESTAL, 11", TRANSFORMER BASE, AS PER PLAN	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, AS PER PLAN	SIGNALIZATION, MISC.: POWER METER CABINET, BASE MOUNT, 36" X 20" X 15", WITH FOUNDATION	CONTROLLER UNIT, TYPE TS2/A2, WITH CABINET, TYPE TS2, AS PER PLAN	CABINET FOUNDATION, AS PER PLAN	CONTROLLER WORK PAD, AS PER PLAN	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN					
		FT	EACH	EACH	EACH	FT	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH					
20	CEMETERY RD / LACON RD	782	2	4	8	3389	81	286	1	1	2	2	8	1	1	1	1	1	1					
TOTALS CARRIED TO GENERAL SUMMARY		782	2	4	8	3389	81	286	1	1	2	2	8	1	1	1	1	1	1					

(1)-4" CONDUIT WITH (1)-7C, (2)-5C, (5)-2C LEAD-IN,
 (2)-LIGHTING AND (1)-DROP CABLE
 (1)-4" CONDUIT WITH (1)-POWER CABLE
 DIRECTIONAL BORE = 82'

PB-1

(1)-2" CONDUIT WITH (2)-2C LEAD-IN
 IN TRENCH = 23'

PS-1, WITH A PEDESTRIAN SIGNAL HEAD
 AND PEDESTRIAN PUSHBUTTON "P6B"
 STA. 9+64.7, 29.1' LT.

SP-1, TYPE TC-81.21, DESIGN 4 WITH A
 38' MAST ARM AND (1)-LUMINAIRE
 STA. 9+54.4, 38.9' LT.

(1)-2" CONDUIT WITH (1)-5C AND (1)-2C LEAD-IN
 IN TRENCH = 8'

(1)-3" CONDUIT WITH (1)-7C, (1)-CAT 5E
 AND (2)-LIGHTING
 IN TRENCH = 9'

PROPOSED GROUND MOUNTED CONTROLLER
 WITH UNINTERRUPTIBLE POWER SUPPLY
 AND WORK PAD
 STA. 9+35.9, 39.3' LT.

(2)-4" CONDUITS WITH (4)-7C, (8)-5C, (18)-2C LEAD-IN,
 (2)-CAT 5E, (1)-LIGHTING AND (1)-DROP CABLE
 (1)-2" CONDUIT WITH (1)-POWER CABLE
 IN TRENCH = 23'

PROPOSED POWER METER CABINET
 STA. 9+30.8, 38.2' LT.

(1)-2" CONDUIT WITH (2)-POWER CABLE
 IN TRENCH = 28'

PB-2

(1)-2" CONDUIT WITH (1)-5C AND (1)-2C LEAD-IN
 IN TRENCH = 15'

PS-2, WITH A PEDESTRIAN SIGNAL HEAD
 AND PEDESTRIAN PUSHBUTTON "P4A"
 STA. 9+43.0, 29.0' LT.

(1)-4" CONDUIT WITH (2)-7C, (4)-5C,
 (9)-2C LEAD-IN, (1)-CAT 5E AND (1)-LIGHTING
 DIRECTIONAL BORE = 64'

(1)-2" CONDUIT WITH (2)-2C LEAD-IN
 IN TRENCH = 207'

PB-3

PS-3, WITH A PEDESTRIAN SIGNAL HEAD
 AND PEDESTRIAN PUSHBUTTON "P4B"
 STA. 9+48.4, 33.0' RT.
 (SEE NOTE 3)

(1)-2" CONDUIT WITH (1)-5C AND (1)-2C LEAD-IN
 IN TRENCH = 8'

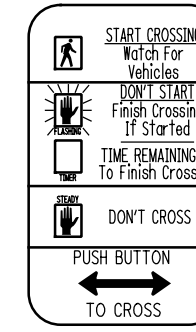
PB-4

(1)-2" CONDUIT WITH (1)-5C AND (1)-2C LEAD-IN
 IN TRENCH = 21'

(1)-3" CONDUIT WITH (1)-7C AND (2)-LIGHTING
 IN TRENCH = 27'

PULL BOX TABLE				
PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
PB-1	9+73.2	LT	47.0'	18
PB-2	9+57.2	LT	31.0'	24
PB-3	7+50.4	RT	38.8'	18
PB-4	9+56.3	RT	32.6'	24
PB-5	10+38.3	LT	28.6'	24
PB-6	10+92.7	LT	26.6'	18
PB-7	12+52.7	LT	26.6'	18
PB-8	10+41.3	RT	41.1'	24
PB-9	10+26.7	RT	64.9'	18

PEDESTRIAN SIGNALS



2- RIGHT ARROW (PS-6, PS-8)
 6- LEFT ARROW (PS-1, PS-2,
 PS-3, PS-4, PS-5, PS-7)

SP-3, TYPE TC-81.21 DESIGN 2 WITH A 32' MAST ARM
 AND (1)-LUMINAIRE
 STA. 10+32.4, 39.4' LT.

PS-5, WITH A PEDESTRIAN SIGNAL HEAD AND
 PEDESTRIAN PUSHBUTTON "P6A"
 STA. 10+32.9, 35.6' LT.

(1)-3" CONDUIT WITH (1)-7C AND (2)-LIGHTING
 IN TRENCH = 14'

(1)-2" CONDUIT WITH (1)-5C AND (1)-2C LEAD-IN
 IN TRENCH = 9'

PB-5

(1)-2" CONDUIT WITH (1)-5C AND (1)-2C LEAD-IN
 IN TRENCH = 8'

PS-6, WITH A PEDESTRIAN SIGNAL HEAD AND
 PEDESTRIAN PUSHBUTTON "P8B"
 STA. 10+45.7, 29.1' LT.

(1)-2" CONDUIT WITH (3)-2C LEAD-IN
 IN TRENCH = 56'

(1)-2" CONDUIT WITH (1)-POWER CABLE
 (1)-2" CONDUIT WITH (1)-DROP CABLE
 IN TRENCH = 111'

PB-6

PROPOSED POWER SOURCE LOCATION
 35" CONDUIT RISER (2" DIA.)
 STA. 11+46.7, 49.7' LT.

(1)-2" CONDUIT WITH (2)-2C LEAD-IN
 IN TRENCH = 160'

PB-7

PS-7 WITH A PEDESTRIAN SIGNAL HEAD AND
 PEDESTRIAN PUSHBUTTON "P8A"
 STA. 10+51.2, 35.6' RT.

(1)-2" CONDUIT WITH (1)-5C AND (1)-2C LEAD-IN
 IN TRENCH = 12'

SP-4, TYPE TC-81.21 DESIGN 4 WITH A 38' MAST ARM
 AND (1)-LUMINAIRE
 STA. 10+55.1, 43.1' RT.

(1)-3" CONDUIT WITH (1)-7C, (1)-CAT 5E
 AND (1)-LIGHTING
 IN TRENCH = 14'

PB-8

(1)-4" CONDUIT WITH (1)-7C, (2)-5C, (5)-2C LEAD-IN,
 (1)-CAT 5E AND (1)-LIGHTING
 DIRECTIONAL BORE = 86'

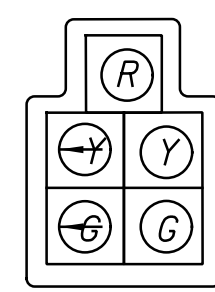
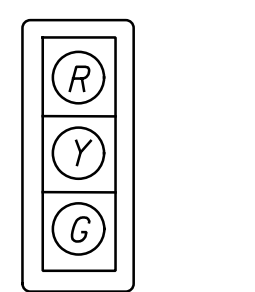
(1)-2" CONDUIT WITH (1)-5C AND (1)-2C LEAD-IN
 IN TRENCH = 8'

PS-8 WITH A PEDESTRIAN SIGNAL HEAD AND
 PEDESTRIAN PUSHBUTTON "P2B"
 STA. 10+41.9, 49.0' RT.
 (SEE NOTE 4)

(1)-2" CONDUIT WITH (3)-2C LEAD-IN
 IN TRENCH = 29'

PB-9

SIGNAL TYPES



NO'S. (2A), (2B), (4A), (4B),
 (6), (8A) & (8B)

NO'S. (1)

PEDESTRIAN HEADS
 (LED, COUNTDOWN,
 TYPE D2)

- ALL SIGNAL HEADS SHALL BE 12" LENSES WITH LED LAMPS.
- ALL SIGNAL HEADS SHALL BE BLACK IN COLOR AND HAVE BACKPLATES.
- ALL SIGNAL HEADS VISORS SHALL BE CUTAWAY TYPE.

LEGEND

TRAFFIC SIGNAL, 3 UNIT HEAD, 12"	→	CONTROLLER CABINET WITH UPS AND WORK PAD	☒
TRAFFIC SIGNAL, 4 OR 5 UNIT HEAD, 12"	→	TRAFFIC PULL BOX	☒
SIGNAL SUPPORT POLE	●	PTZ CAMERA	📷
PEDESTRIAN SIGNAL	→	DETECTOR LOOP	□
PEDESTRIAN PUSHBUTTON	→	SPLICE ENCLOSURE	▲
PEDESTAL SUPPORT	□	SLACK INSTALLATION	●

NOTES:

- THE CONTRACTOR SHALL ENSURE THAT ALL SIGNAL FACES ARE CLEARLY VISIBLE TO ALL ONCOMING VEHICLES; CLEAR OF ANY OBSTRUCTION ONCE MOUNTED ON THE MAST ARMS.
- THE CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL UTILITIES AND EXISTING SIGNAL HARDWARE AND APPARATUS PRIOR TO EXCAVATION.
- THE CONTRACTOR SHALL UTILIZE VACUUM EXCAVATION WHEN DIGGING THE PROPOSED FOUNDATION AS IT IS ANTICIPATED THAT THERE WILL BE UTILITIES WITHIN CLOSE PROXIMITY OF THE FOUNDATION LOCATION.
- THE CONTRACTOR SHALL NOT EXCAVATE AND POUR THE PROPOSED FOUNDATION UNTIL THE EXISTING SIGNAL HAS BEEN TAKEN OUT OF SERVICE AS THE EXISTING TRAFFIC CONDUIT WILL BE IN CONFLICT WITH THE PROPOSED FOUNDATION.
- FOR REFERENCE TO SIGNS (A), (B), (C) & (D), SEE SHEET 12.

SIGNAL TIMING CHART

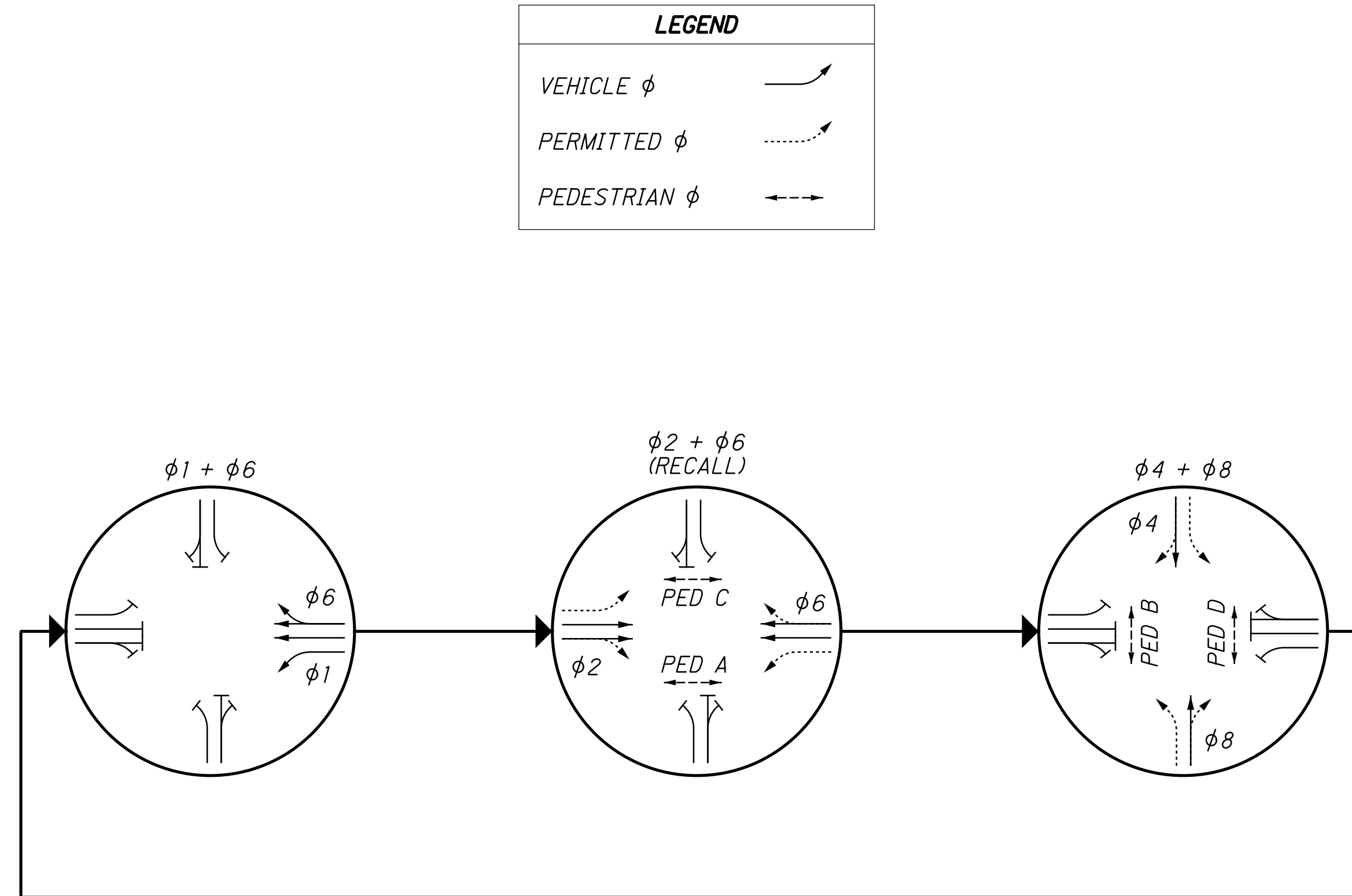
INTERSECTION: CEMETERY RD. / LACON RD. MAINTAINING AGENCY: CITY OF HILLARD									
START UP		DUAL ENTRY: YES		PHASES: 2, 4, 6, 8					
START IN: ALL RED		REST IN RED: RING 1 - RING 2 -		OVERLAP					
TIME FOR FLASH OR ALL RED: 5		OVERLAP		A	B	C	D		
FIRST PHASE(S): 2+6		PHASES		-	-	-	-		
COLOR DISPLAYED: GREEN									
INTERVAL OR FEATURE		CONTROLLER MOVEMENT NO.							
INTERSECTION MOVEMENT (PHASE)		1	2	3	4	5	6	7	8
DIRECTION		WB LT	EB	NB LT	SB	EB LT	WB	SB LT	NB
MINIMUM GREEN (INITIAL) (SEC.)		7	20	-	10	-	20	-	10
ADDED INITIAL *(SEC./ACTUATION)		-	-	-	-	-	-	-	-
MAXIMUM INITIAL (SEC.)		-	-	-	-	-	-	-	-
PASSAGE TIME (PRESET GAP) (SEC.)		3.0	3.0	-	3.0	-	3.0	-	3.0
TIME BEFORE REDUCTION *(SEC.)		-	-	-	-	-	-	-	-
MINIMUM GAP *(SEC.)		-	-	-	-	-	-	-	-
TIME TO REDUCE *(SEC.)		-	-	-	-	-	-	-	-
MAXIMUM GREEN I (SEC.)		20	60	-	30	-	60	-	30
MAXIMUM GREEN II (SEC.)		-	-	-	-	-	-	-	-
YELLOW CHANGE (SEC.)		3.0	4.2	-	3.5	-	4.2	-	3.5
ALL RED CLEARANCE (SEC.)		1.7	1.0	-	1.1	-	1.0	-	1.1
WALK (SEC.)		-	8	-	8	-	8	-	8
PEDESTRIAN CLEARANCE (SEC.)		-	15	-	15	-	15	-	15
RECALL	MAXIMUM (ON/OFF)	-	-	-	-	-	-	-	-
	MINIMUM (ON/OFF)	-	ON	-	-	-	ON	-	-
	PEDESTRIAN (ON/OFF)	-	ON	-	-	-	ON	-	-
MEMORY (ON/OFF)		-	-	-	-	-	-	-	-

*VOLUME DENSITY CONTROLS

NOTES:

- FOR PROTECTED/PERMISSIVE PHASES, IMPLEMENT CALL OMITTS TO AVOID YELLOW BALL TRAP.
- COUNTDOWN PEDESTRIAN SIGNALS SHALL GO TO ZERO ON YELLOW PER OMUTCD FIGURE 4E-2.
- ALL DETECTOR DELAYS SHALL BE PLACED IN THE CONTROLLER.

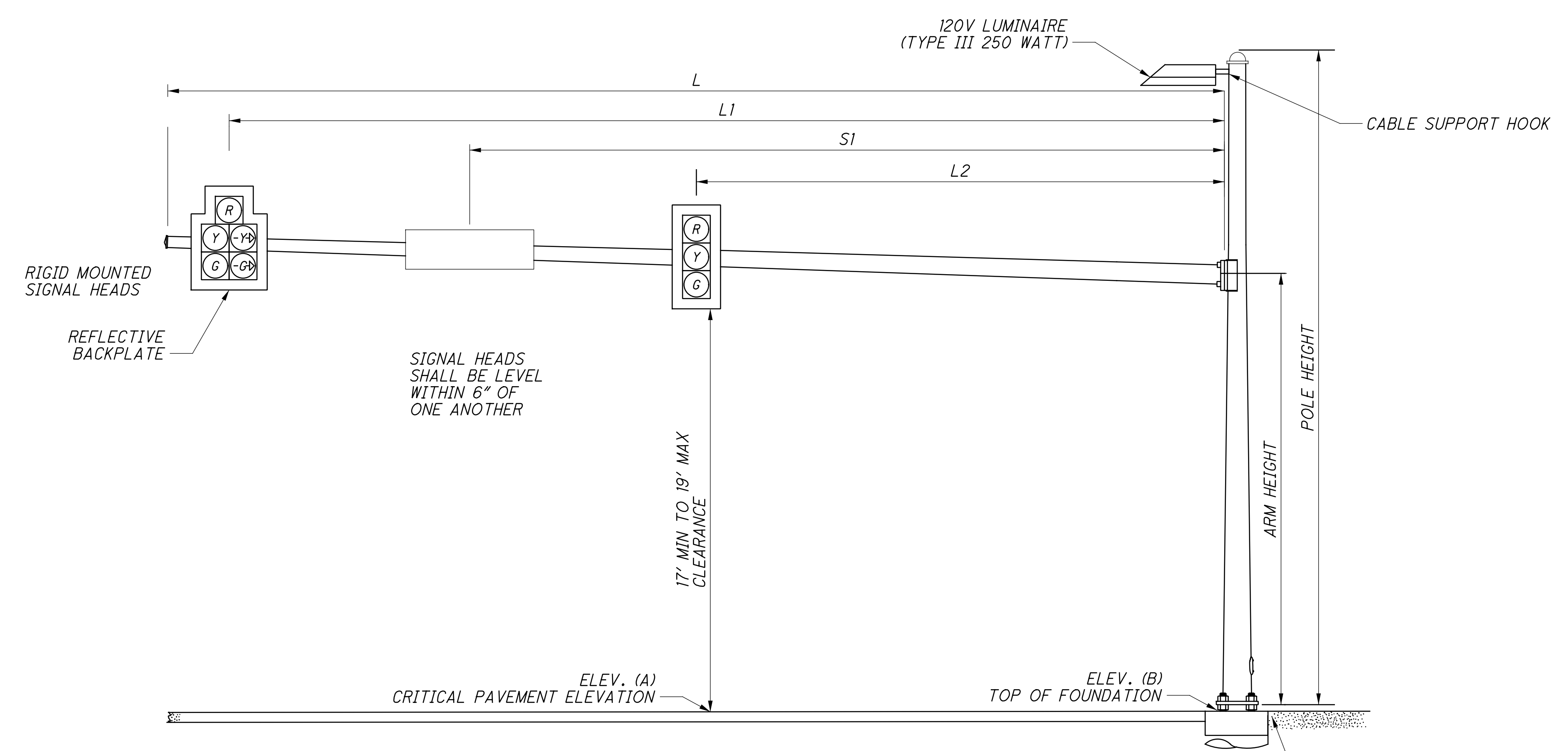
PHASING DIAGRAM (TYPICAL)



TRAFFIC SIGNAL DETECTOR CHART

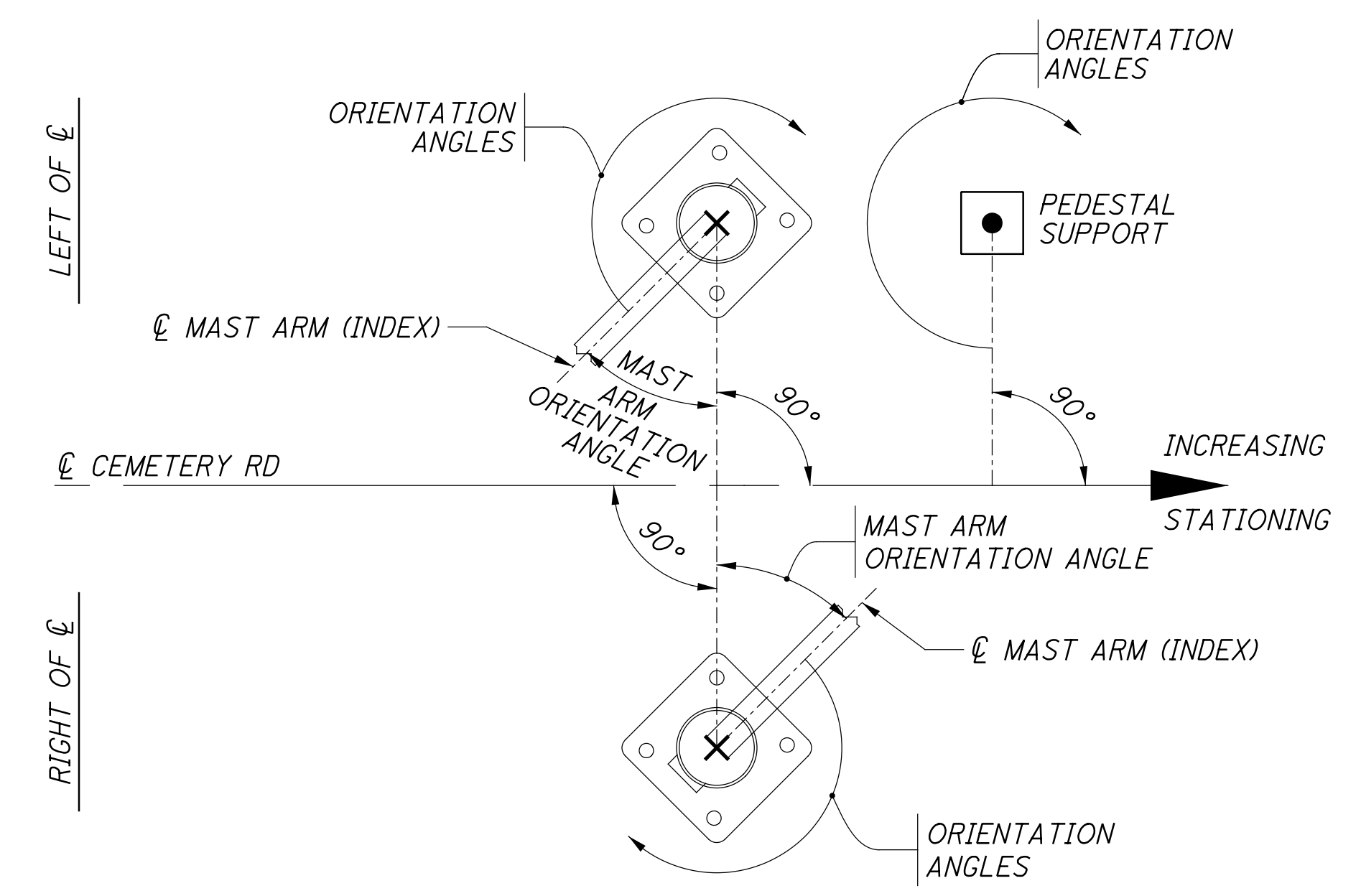
LOOP DESIGNATION	LOOP CONFIGURATION**	SIZE (FT.)	PULSE OR PRESENCE	DELAY (SEC.)	EXTENSION (SEC.)	CONNECT TO DETECTOR UNIT (UNIT-CHANNEL)	ASSOCIATED CONTROLLER PHASE
L-1	R	6 X 30	PRESENCE	3	-	1-1	φ1
L-2A	ADD	8 X 13	PULSE	-	3	2-1	φ2
L-2B	ADD	8 X 13	PULSE	-	3	2-2	φ2
L-4A	P	6 X 25	PRESENCE	7	-	3-1	φ4
L-4B	P	6 X 25	PRESENCE	-	-	3-2	φ4
L-6A	ADD	8 X 13	PULSE	-	3	4-1	φ6
L-6B	ADD	8 X 13	PULSE	-	3	4-2	φ6
L-8A	P	6 X 25	PRESENCE	7	-	5-1	φ8
L-8B	P	6 X 25	PRESENCE	-	-	5-2	φ8
L-8C	R	6 X 20	PRESENCE	7	-	6-1	φ8

** CONFIGURATIONS: POWERHEAD (P), QUADRUPOLE (Q), ANGULAR DESIGN DETECTOR (ADD), OR RECTANGULAR (R); PER TC-82.10



**SIGNAL SUPPORT ELEVATION
(TYPICAL)**

TOP OF SIGNAL SUPPORT AND PEDESTAL FOUNDATIONS SHALL BE LEVEL WITH THE SIDEWALK ELEVATION WHERE ADA LANDINGS ARE ADJACENT; ELSEWHERE, FOUNDATIONS SHALL BE 2" (± 1") ABOVE GRADE PER TC-21.20



POLE ORIENTATION

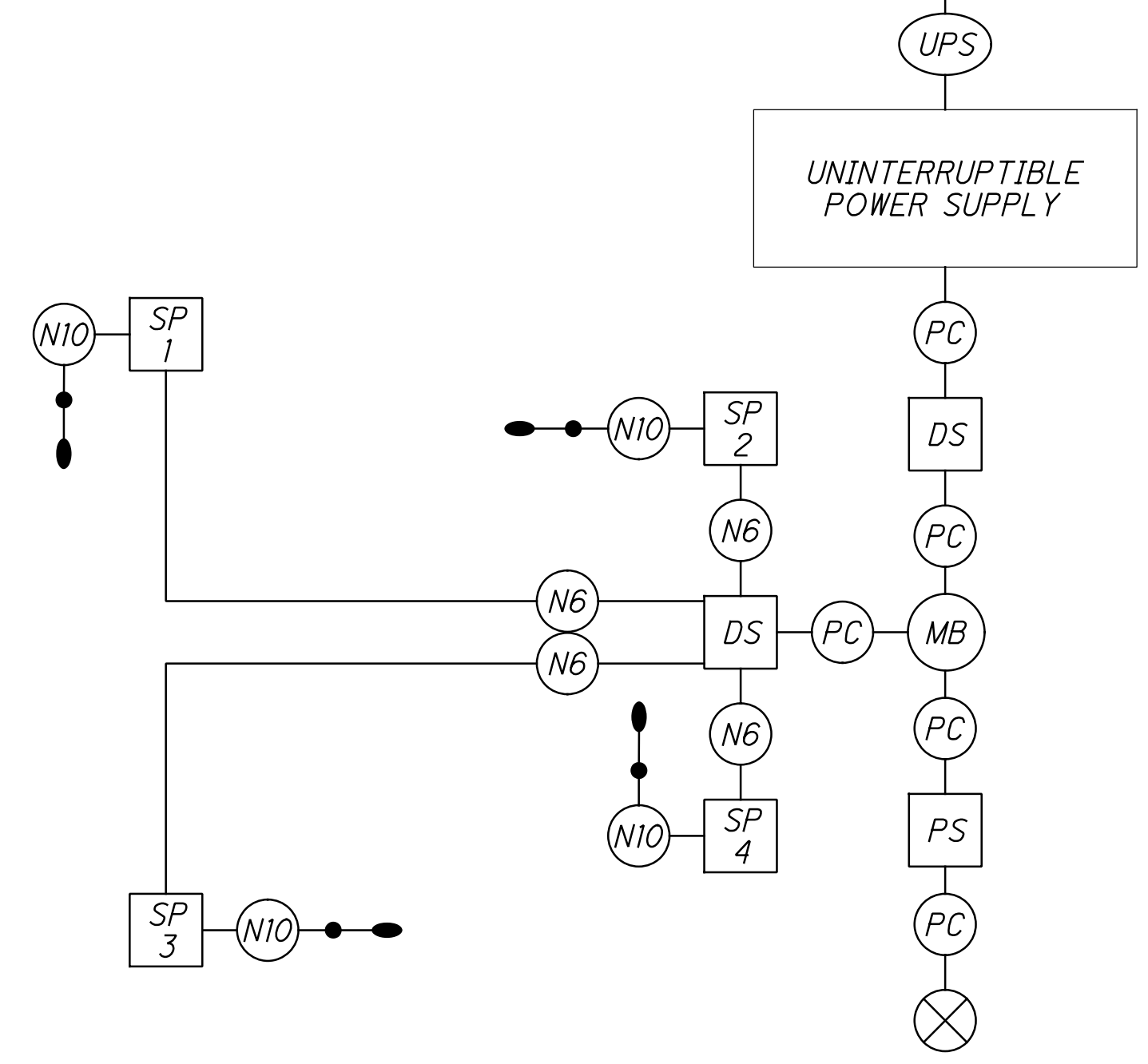
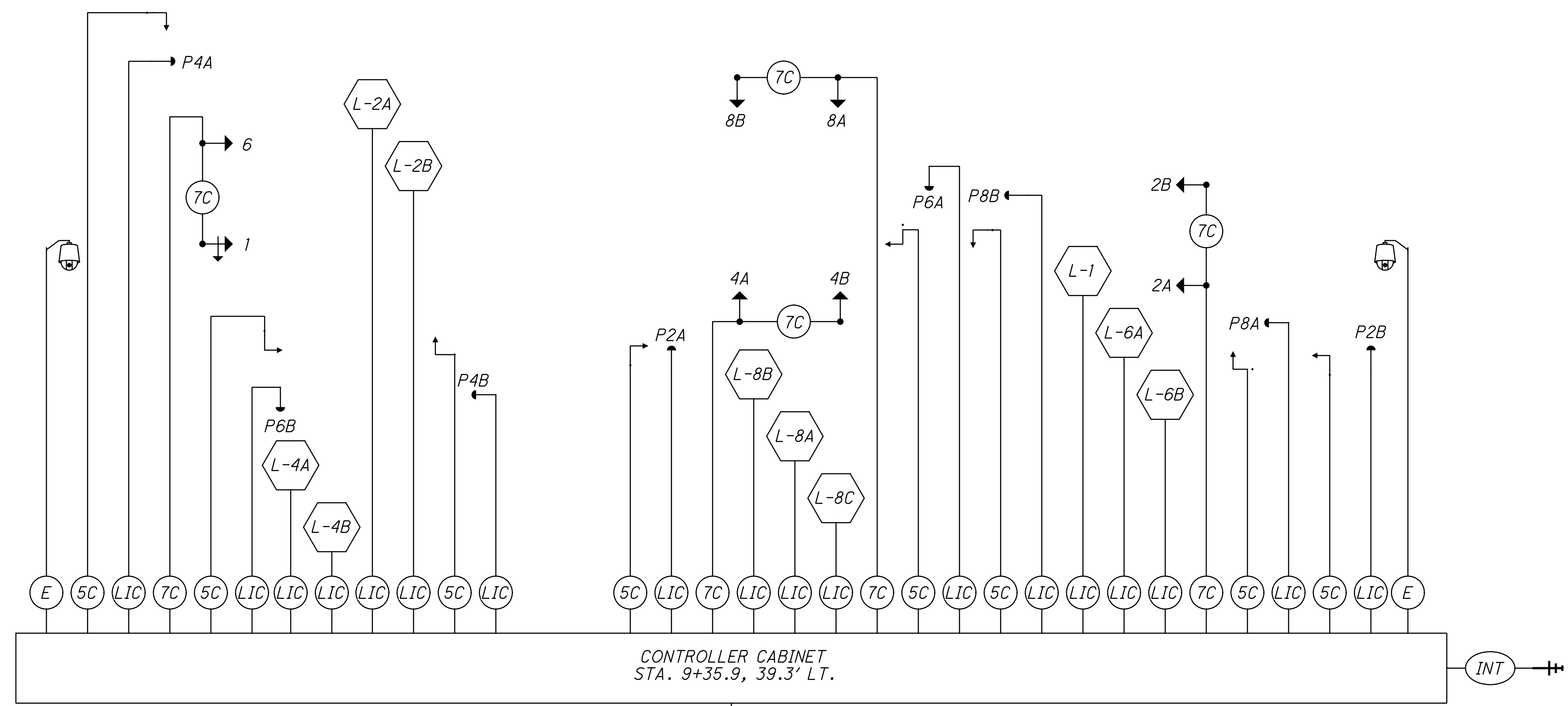
MAST ARM TABLE

SUPPORT NO.	STATION	OFFSET	ELEVATION		SIGNAL SUPPORT DETAILS								MAST ARM ANGLE	ORIENTATION ANGLES FROM MAST ARM / INDEX LINE			
			A	B	DESIGN TYPE	DESIGN NO.	POLE HEIGHT	ARM HEIGHT	L	L1	L2	S1		PEDESTRIAN SIGNAL	PEDESTRIAN BUTTON	LUMINAIRE	HANDHOLE
			FT	FT	FT	FT	FT	FT	FT	FT	FT	FT		DEG	DEG	DEG	DEG
SP-1	9+54.4	38.9' LT.	893.32	894.47	TC-81.21	4	30	19.5	38	34.5	23.5	29	0	-	-	0	180
SP-2	9+66.7	56.9' RT	893.62	894.28	TC-81.21	2	30	19.5	32	24.5	8.5	16.5	90	-	-	0	180
SP-3	10+32.4	39.4' LT.	892.65	893.26	TC-81.21	2	30	19.5	32	23.5	9.5	16.5	90	-	-	0	180
SP-4	10+55.1	43.1' RT.	891.38	893.12	TC-81.21	4	30	18.5	38	35	24	29.5	0	-	-	0	180
PS-1	9+64.7	29.1' LT.	-	-	-	-	8	-	-	-	-	-	-	180	180	-	180
PS-2	9+43.0	29.0' LT.	-	-	-	-	8	-	-	-	-	-	-	270	270	-	180
PS-3	9+48.4	33.0' RT.	-	-	-	-	8	-	-	-	-	-	-	270	270	-	180
PS-4	9+71.9	46.0' RT.	-	-	-	-	8	-	-	-	-	-	-	0	315	-	225
PS-5	10+32.9	35.6' LT.	-	-	-	-	8	-	-	-	-	-	-	0	0	-	180
PS-6	10+45.7	29.1' LT.	-	-	-	-	8	-	-	-	-	-	-	90	90	-	180
PS-7	10+51.2	35.6' RT.	-	-	-	-	8	-	-	-	-	-	-	270	245	-	155
PS-8	10+41.9	49.0' RT.	-	-	-	-	8	-	-	-	-	-	-	0	0	-	135

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FIELD WIRING HOOK-UP CHART

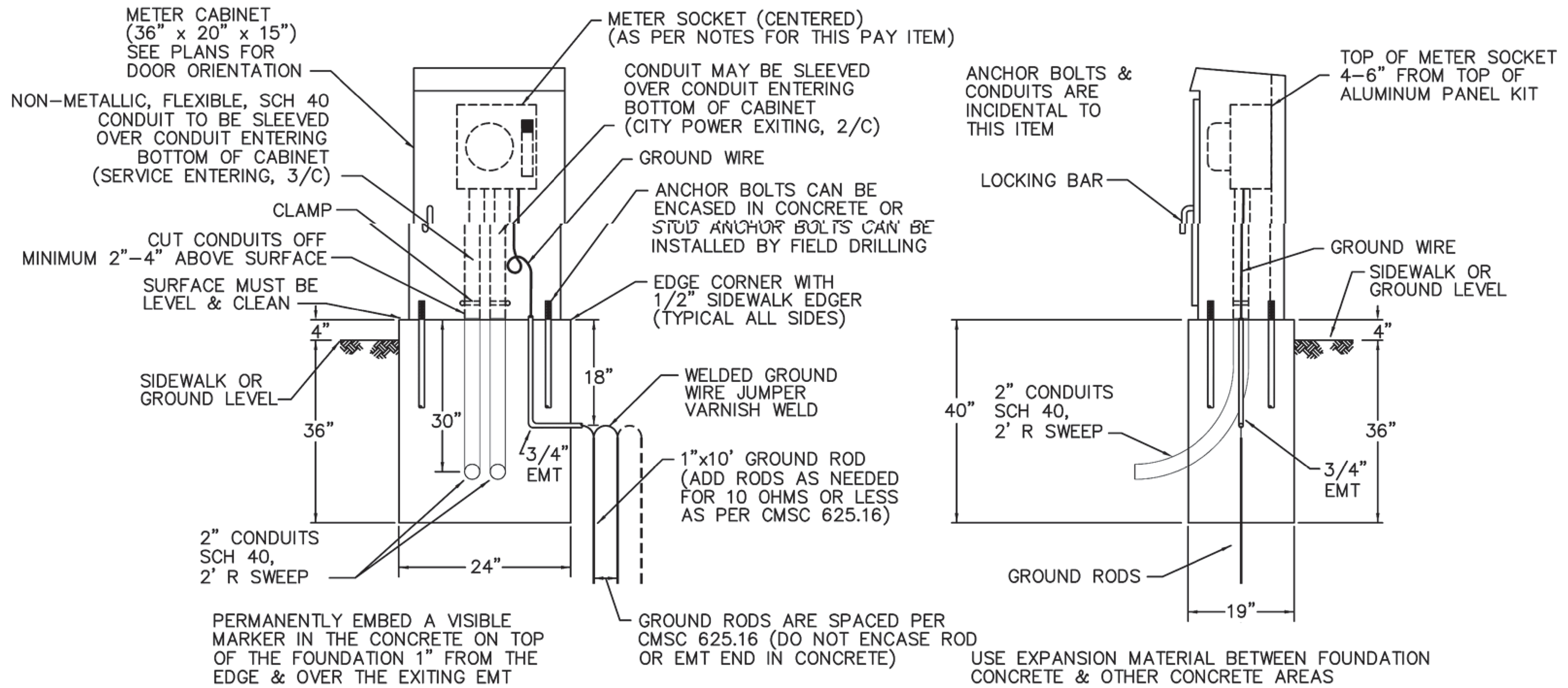
SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
1 (WB LT)	R	φ6 R	Y
	Y	φ6 Y	
	G	φ6 G	
	<--Y---	φ1 Y	
	<--G---	φ1 G	
2A, 2B (EB)	R	φ2 R	Y
	Y	φ2 Y	
	G	φ2 G	
4A, 4B (SB)	R	φ4 R	R
	Y	φ4 Y	
	G	φ4 G	
6 (WB)	R	φ6 R	Y
	Y	φ6 Y	
	G	φ6 G	
8A, 8B (NB)	R	φ8 R	R
	Y	φ8 Y	
	G	φ8 G	
PEDESTRIAN MOVEMENTS			
P2A-P2B SOUTH	W	PEDA φ2 G	OUT
	DW	PEDA φ2 R	
P4A-P4B WEST	W	PEDB φ4 G	OUT
	DW	PEDB φ4 R	
P6A-P6B NORTH	W	PEDC φ6 G	OUT
	DW	PEDC φ6 R	
P8A-P8B EAST	W	PEDD φ8 G	OUT
	DW	PEDD φ8 R	
OVERLAPS			
-	PEDA = LS9	PEDC = LS11	-
-	PEDB = LS10	PEDD = LS12	-
LS = LOAD SWITCH			



LEGEND

	5 SECTION VEHICULAR SIGNAL HEAD, 1-WAY		2/C NO. 14 AWG (LEAD-IN CABLE)
	3 SECTION VEHICULAR SIGNAL HEAD, 1-WAY		VEHICLE LOOP DETECTOR
	PEDESTRIAN SIGNAL HEAD		SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG
	PEDESTRIAN PUSH BUTTON		SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG
	FUTURE CAMERA		POWER SOURCE
	LUMINAIRE, CONVENTIONAL, 150 WATT, HPS, 120 VOLT, AS PER PLAN		POWER CABLE, 2 CONDUCTOR, NO. 6 AWG
	NO. 6 AWG DISTRIBUTION CABLE		METER BASE
	NO. 10 AWG POLE & BRACKET CABLE		DUAL LIGHTING/SIGNAL DISCONNECT SWITCH
	ETHERNET CAT 5E POE ARMORED CABLE		UNINTERRUPTIBLE POWER SUPPLY CABLE
	POWER SERVICE CABINET		

ITEM 632 - SIGNALIZATION, MISC.: POWER METER, BASE MOUNT, 36" X 20" X 15", WITH FOUNDATION



*SEE NOTES FOR ALL ITEMS INCLUDED IN THIS PAY ITEM

FOUNDATION - 24" WIDE x 19" DEEP x 40" HIGH

2/11/16

01/20/14/2014/041/2014/041.01 - HILLIARD GES & T-124 CITYWIDE - YEAR 2/2-GENETARY & LACON SIGNAL SIGNALS SHEETS/1395500100.DGN
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TRAFFIC SIGNAL DETAIL

CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

CALCULATED
BEB
CHECKED
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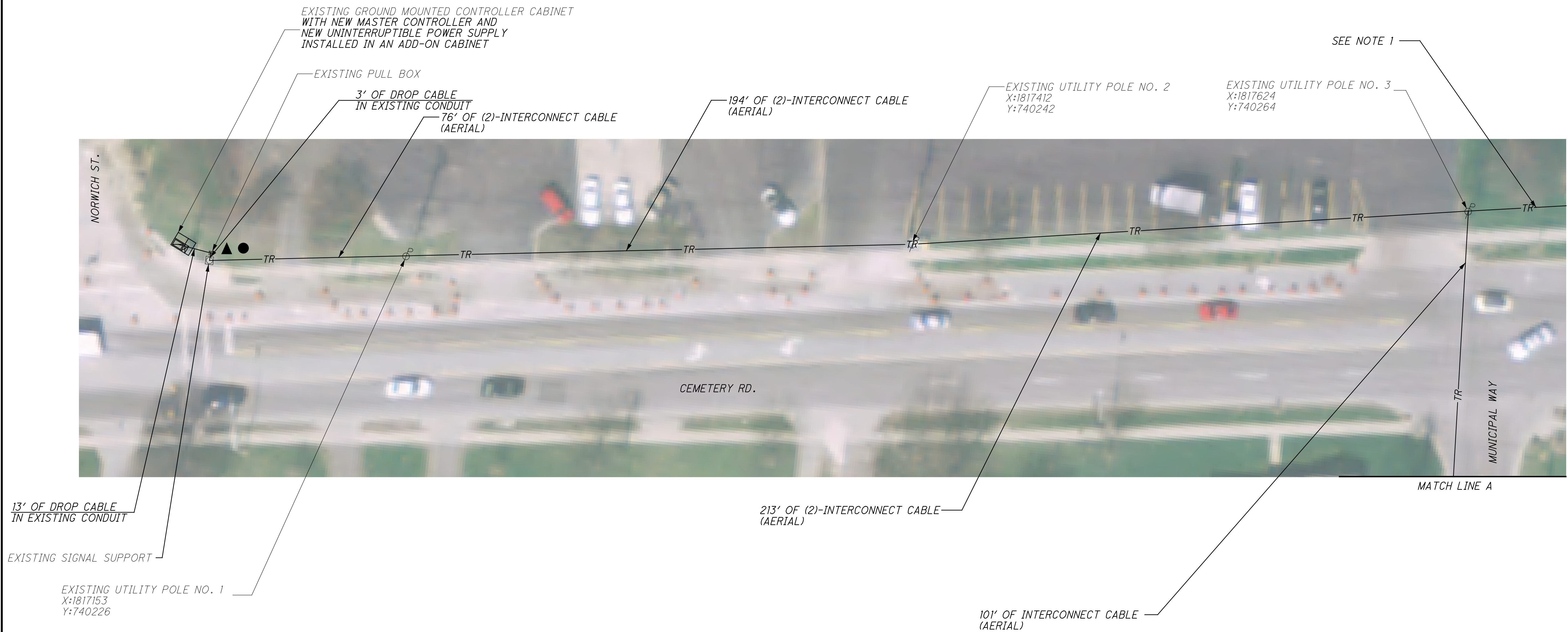
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CALCULATED
 BEB
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0 10 20 40
 HORIZONTAL
 SCALE IN FEET

**INTERCONNECT PLAN
 BEGIN TO MATCHLINE A**

**CEMETERY RD. SIGNAL AND
 FIBER IMPROVEMENTS**



NOTES:

- THE INTERCONNECT CABLE SHALL BE INSTALLED ALONG CEMETERY ROAD AS DESCRIBED IN THE "ITEM 804 - FIBER OPTIC CABLE, MISC.: ARMORED, 432 FIBER" NOTE ON SHEET 16.

LEGEND

- | | | | |
|--|--|--|-----------------------------|
| | PROPOSED PULL BOX | | PROPOSED CONDUIT |
| | EXISTING PULL BOX | | PROPOSED INTERCONNECT CABLE |
| | EXISTING GROUND MOUNTED CONTROLLER CABINET | | SPLICE ENCLOSURE |
| | EXISTING UTILITY POLE | | SLACK INSTALLATION |

0:\2014\2014341\2014341.01 - HILLIARD GES & T-124 CITYWIDE - YEAR 2'2-CENETARY & LACON SIGNALSIGNALS SHEETS\13953CP011.DGN
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EXISTING UTILITY POLE NO. 7
X:N/A
Y:N/A
WITH EX. 35' CONDUIT RISER (AT&T)

301' OF INTERCONNECT CABLE
WITH 100' OF SLACK
IN EXISTING CONDUIT

EXISTING UTILITY POLE NO. 6
X:1817658
Y:739949

EXISTING UTILITY POLE NO. 5
X:1817646
Y:740003

EXISTING UTILITY POLE NO. 4
X:N/A
Y:N/A

174' OF INTERCONNECT CABLE
(AERIAL)

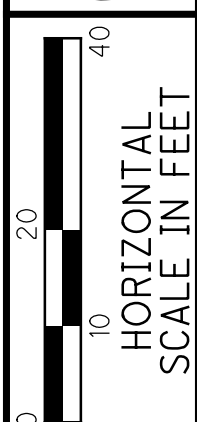
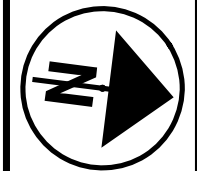
58' OF INTERCONNECT CABLE
(AERIAL)

94' OF INTERCONNECT CABLE
(AERIAL)

90' OF INTERCONNECT CABLE
(AERIAL)

MUNICIPAL WAY

MATCH LINE A



CALCULATED	
BEB	
CHECKED	
KMG	

INTERCONNECT PLAN
MATCH LINE A TO END

**CEMETERY RD. SIGNAL AND
FIBER IMPROVEMENTS**

FOR INTERCONNECT LEGEND SEE SHEET 25.

MATERIAL SPECIFICATIONS FOR BBS GENERATOR POWER PANEL EQUIPMENT

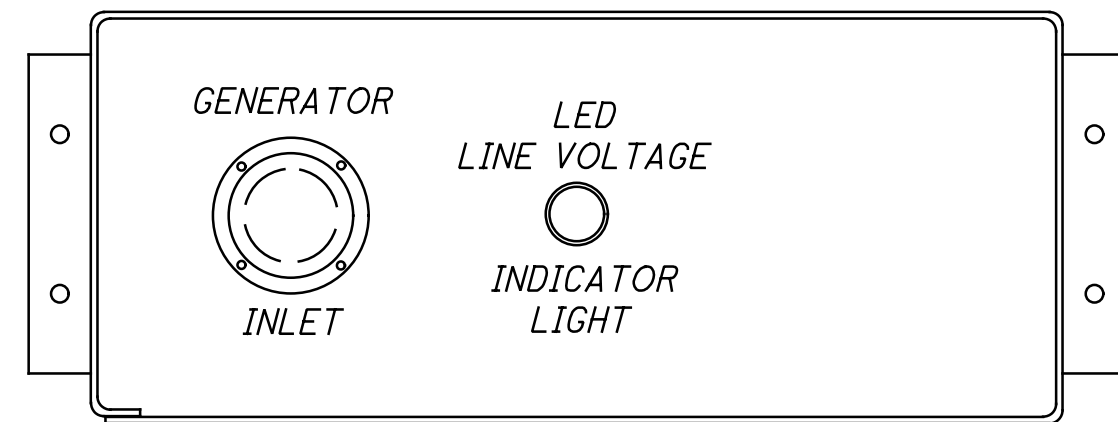
GENERATOR INLET - The inlet shall be 30 amp, 125/250V, locking, four (4) wire grounding and meet the NEMA configuration number L14-30-P 30A 125/250V specification. The inlet shall be a Hubbell catalog #2715.

LINE VOLTAGE GENERATOR SWITCH - The switch shall be 30 amp, 125/250V AC, two (2) pole, three (3) position (On, Off, On). The switch shall be a Hubbell catalog #1388.

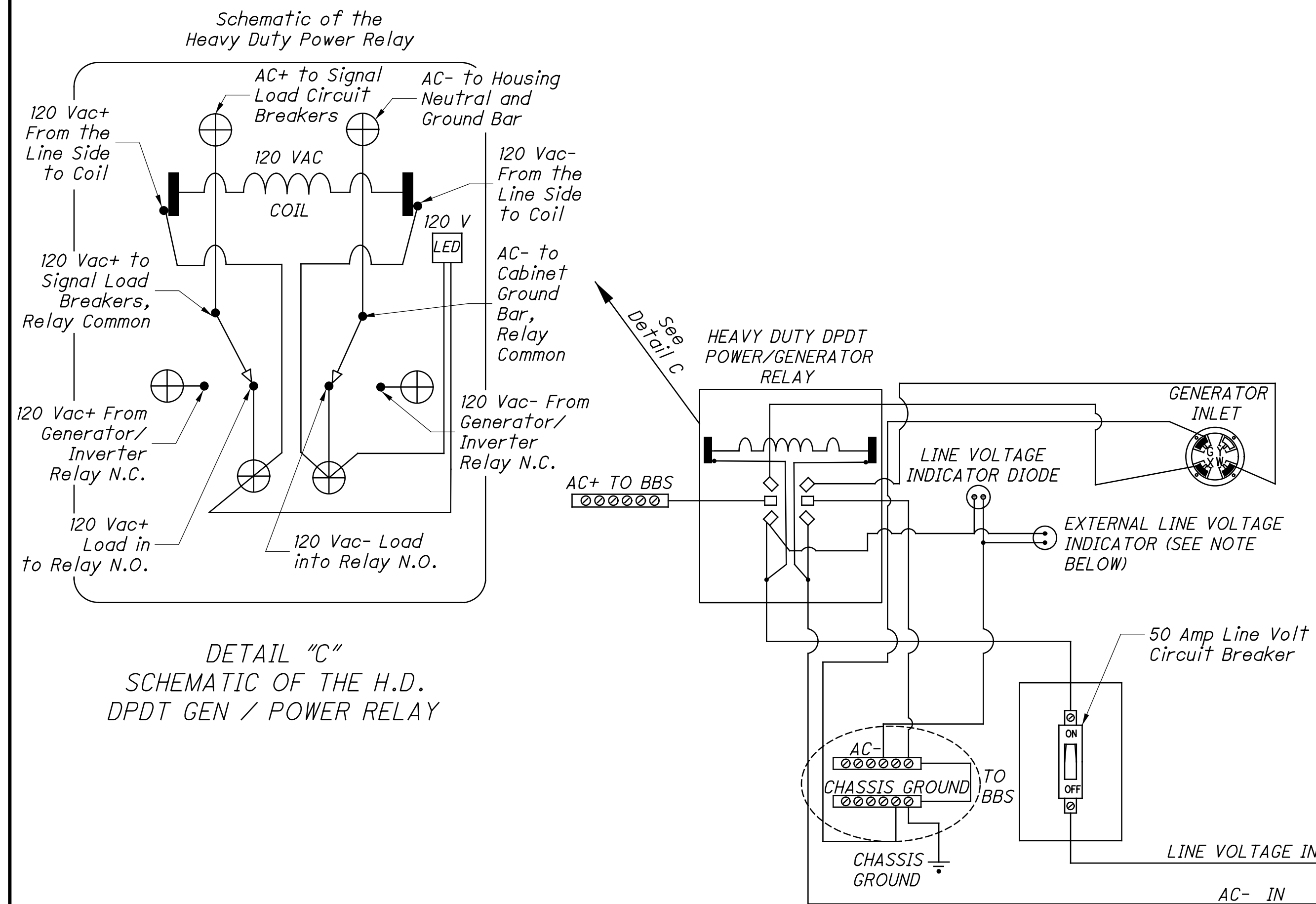
LINE VOLTAGE INDICATOR LIGHT - The indicator light shall be 125V AC light emitting diode with a red lens.

LINE VOLTAGE CIRCUIT BREAKER - The circuit breaker shall be single pole single throw and a minimum of 30 amps. The amperage shall be increased to accommodate greater loads, if necessary. The gauge of the power cable shall be of proper size per N.E.C.

EXTERNAL LINE VOLTAGE INDICATOR LIGHT - The indicator light shall be a 1" waterproof NEMA 4X or IP66 LED lamp with a green lens.



FRONT VIEW OF GENERATOR POWER PANEL

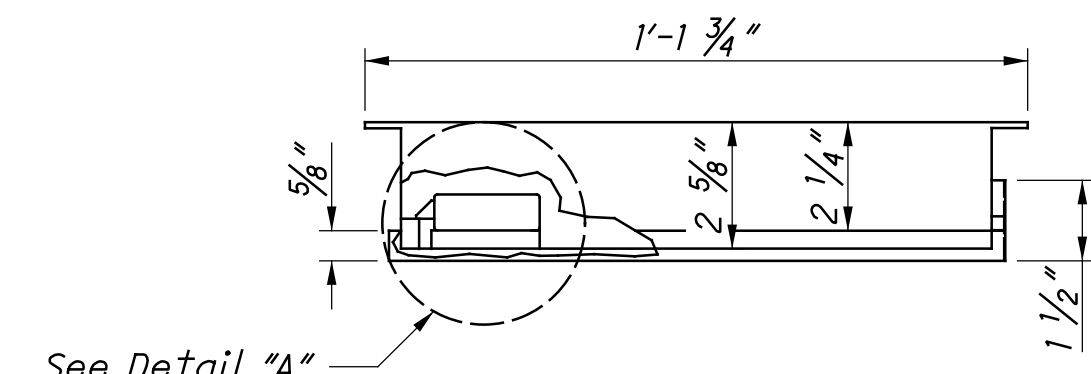


DETAIL "C"
SCHEMATIC OF THE H.D.
DPDT GEN / POWER RELAY

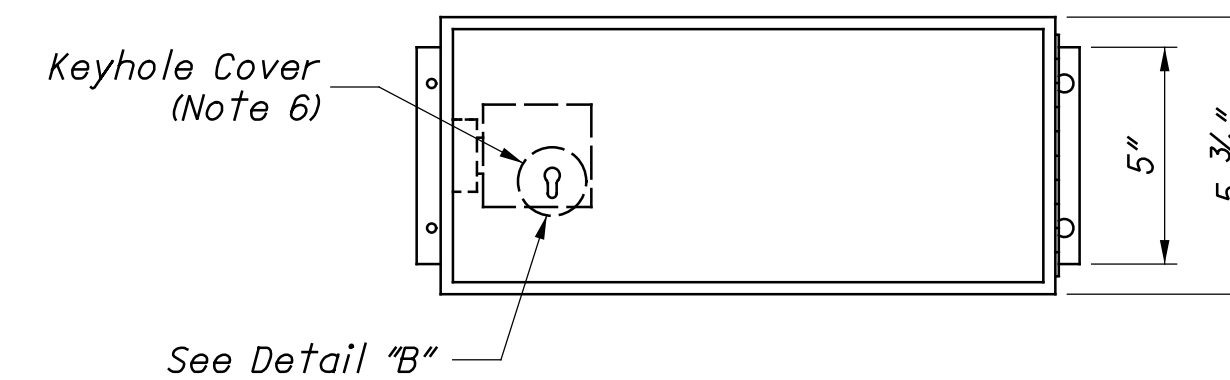
ELECTRICAL HOOKUP DETAIL FOR THE BBS GENERATOR POWER PANEL

NOTE: EXTERNAL LINE VOLTAGE INDICATOR LIGHT required when called for in the plans.
EXTERNAL LINE VOLTAGE INDICATOR LIGHT shall be located on the enclosure exterior for visibility from the adjacent roadway when all cabinet, and generator panel doors are closed.

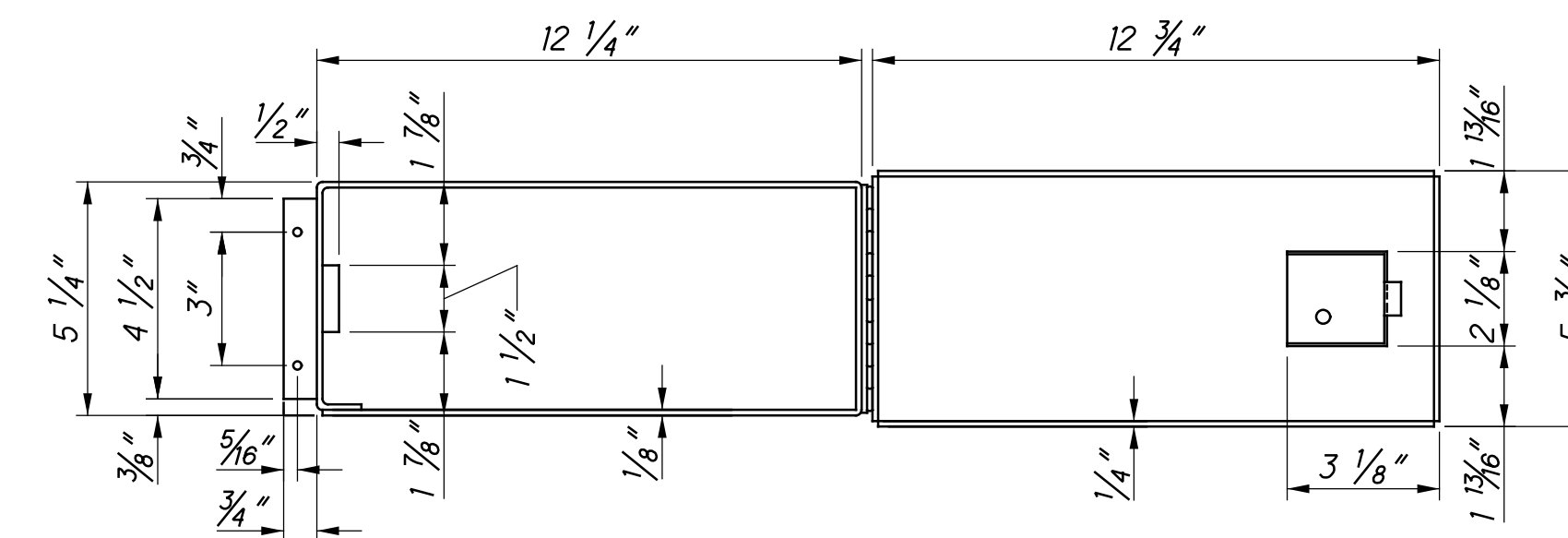
GENERATOR POWER PANEL ENCLOSURE



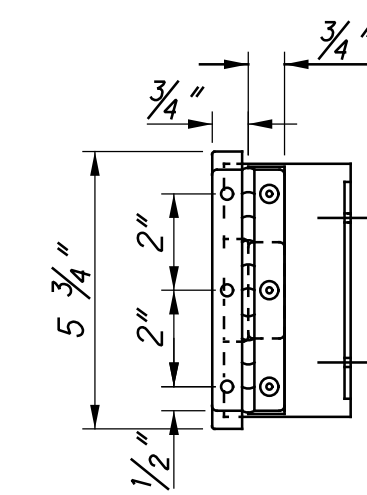
TOP VIEW



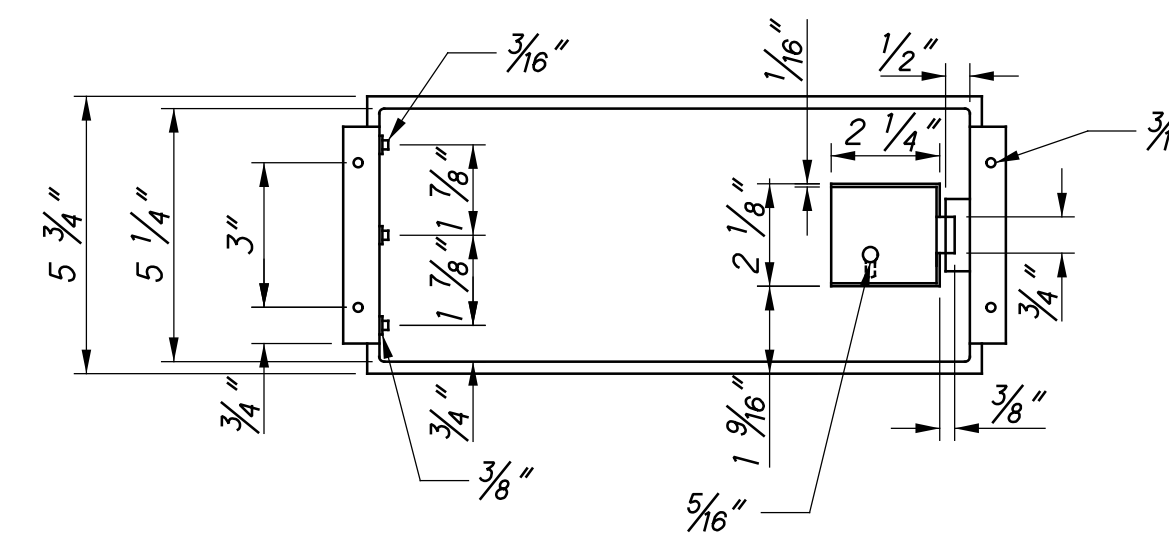
FRONT VIEW CLOSED DOOR



FRONT VIEW OPEN DOOR



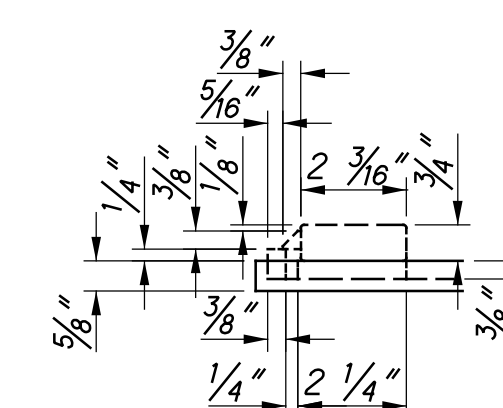
RIGHT SIDE VIEW
CLOSED DOOR



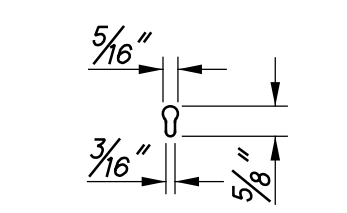
BACK VIEW CLOSED DOOR

NOTES:

- The enclosure shall be constructed of 1/8" thick aluminum.
- The lock shall be the standard police door type, keyed with the standard flasher door skeleton key.
- The door shall be sealed with a foam rubber gasket to prevent moisture from entering the enclosure.
- The enclosure shall be mounted onto the outside of the controller cabinet with non-accessible bolts and sealed with a high quality silicon caulk at all surfaces touching the cabinet.
- The hinge shall be of stainless steel or equivalent corrosive-resistant material.
- Keyhole shall be covered with a movable circular aluminum or brass cover with top pivot pin.



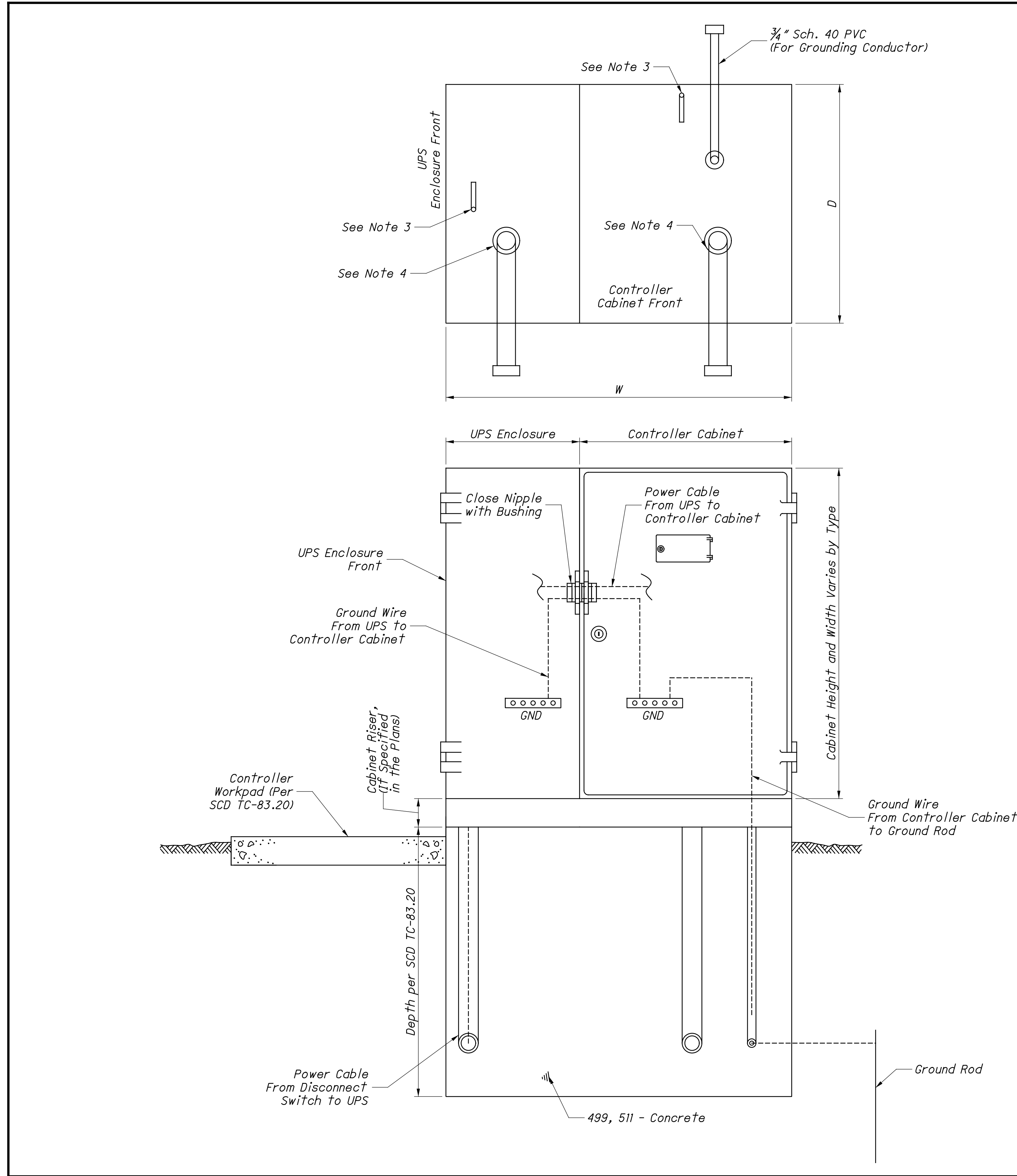
DETAIL "A"



DETAIL "B"

THIS DRAWING REPLACES PIS 203012 DATED 04-20-2012.

DESIGNED XXX	REVISION DATE 07-18-2014	CHECKED XXX	REVIEWED XXX	OFFICE OF
				ROADWAY ENGINEERING
PLAN INSERT SHEET				BATTERY BACKUP SYSTEM (BBS) GENERATOR POWER PANEL
PIS 203012				1 / 1



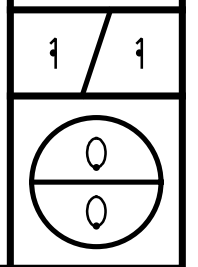
NOTES:

1. The Uninterruptible Power Supply (UPS) enclosure shall be mounted flush up against the traffic signal cabinet and sealed with silicone. The Contractor shall be responsible for providing the necessary power cable between the UPS unit and signal cabinet.
2. The UPS should be placed on the opposite side of the pull box on a 332/336 cabinet (per Standard Construction Drawing (SCD) TC-83.20). The UPS placement for a NEMA cabinet varies, placement should provide adequate access with respect to slope, guardrail spacing, etc.
3. The size, number, and location of anchor bolts shall be in accordance with the manufacturer's recommendations.
4. The size, number, and orientation of conduit ells shall be as shown in the plan, except that a 3/4" schedule 40 PVC shall be installed in each foundation.
5. 1/2" preformed joint filler as per CMS 705.03 shall be used between foundations and adjacent paved areas.
6. See SCD TC-83.20 for further details.

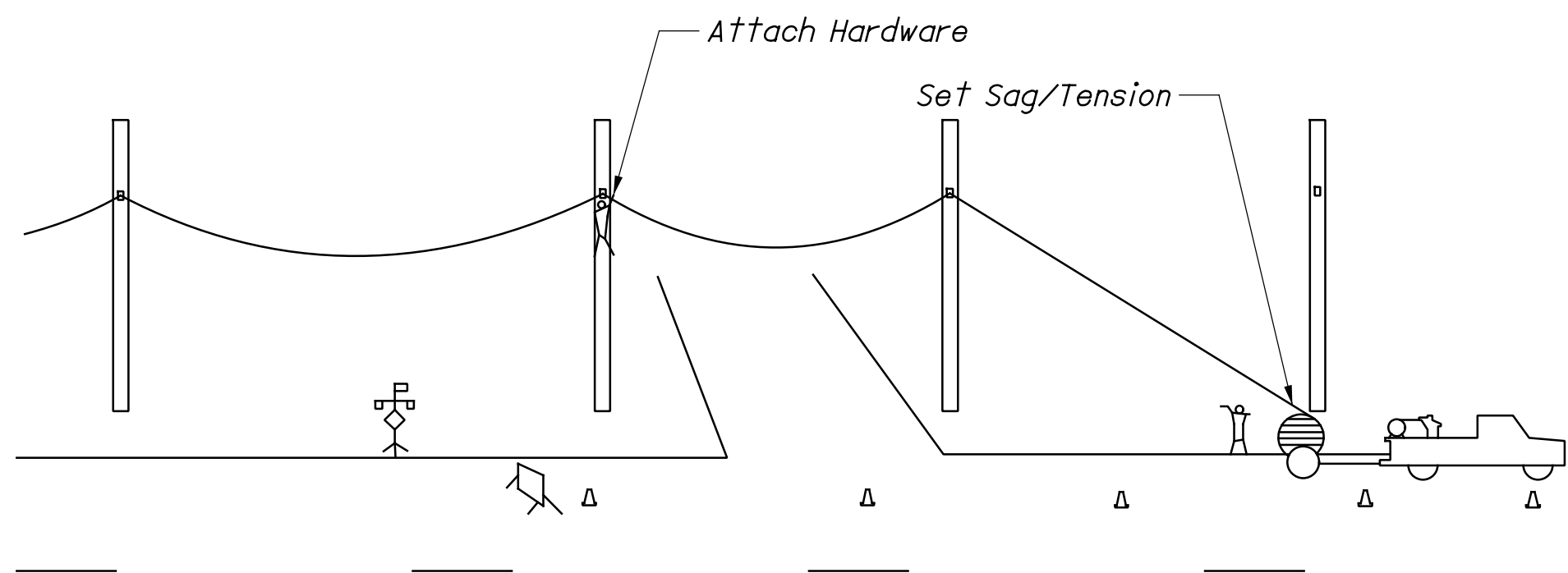
TYPE	W (IN.)	D (IN.)	FOUNDATION CONCRETE (CU. YD.)
TS-1	60	24	1.23
TS-2	70	36	2.16
2070/170	50	36	1.54

THIS DRAWING REPLACES PIS 208320 DATED 04-20-2012.

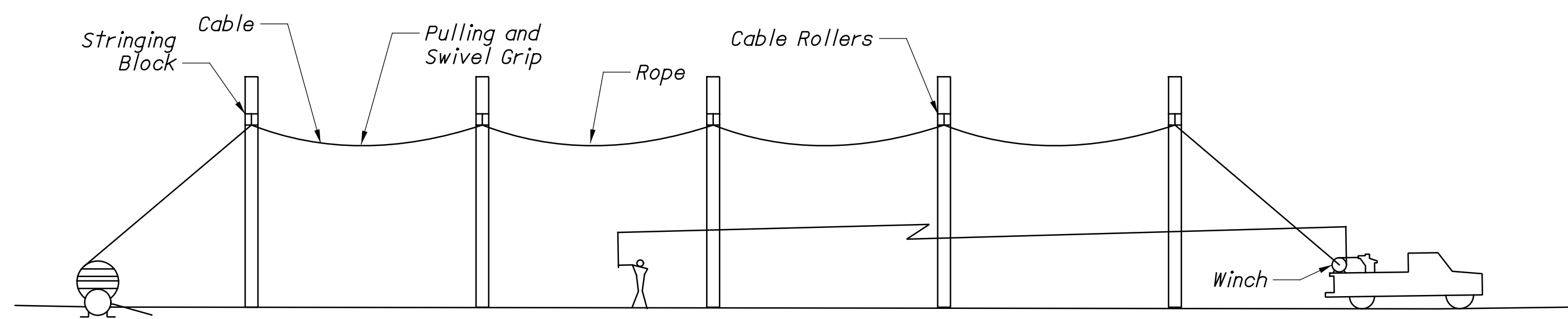
DESIGNED XXX REVISION DATE 07-18-2014	CHECKED XXX	OFFICE OF ROADWAY ENGINEERING
UNINTERRUPTIBLE POWER SUPPLY (UPS) AND CONTROLLER CABINET FOUNDATION		



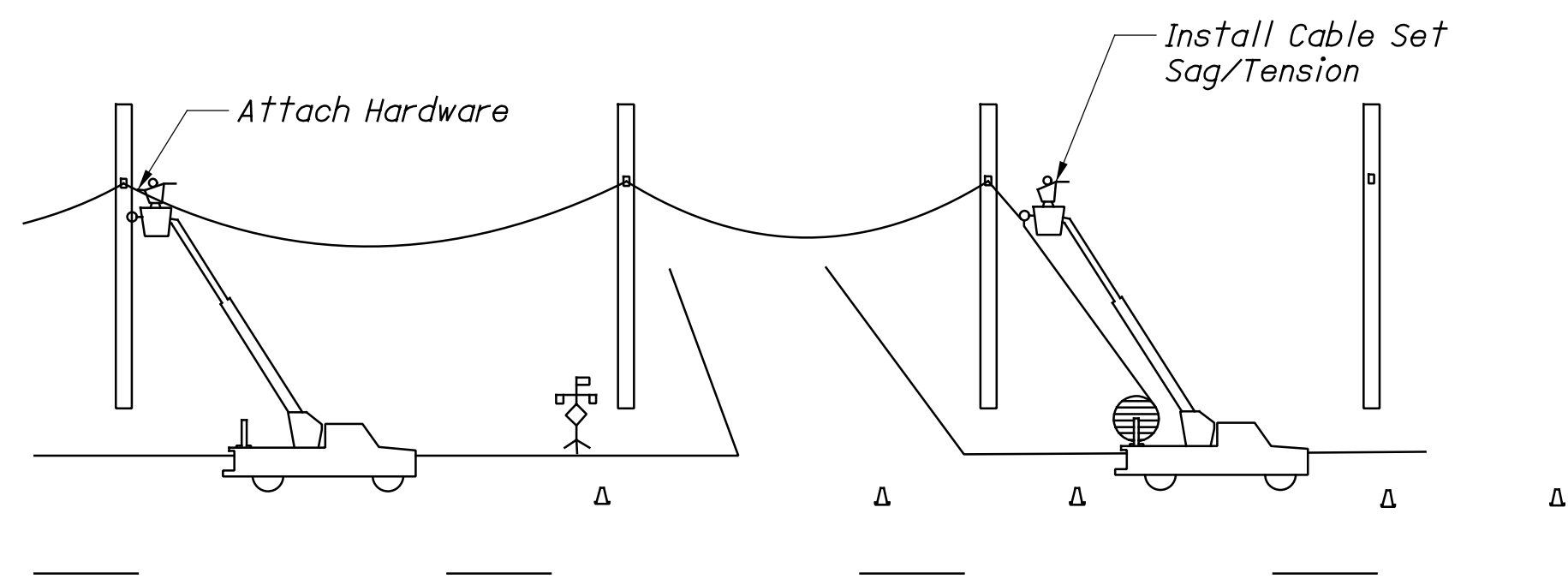
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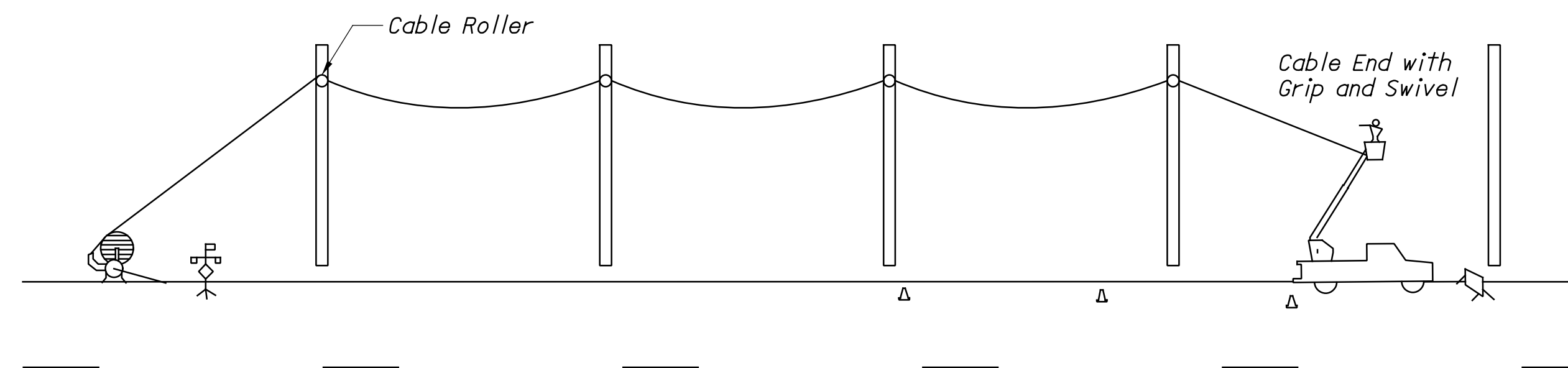
MOVING REEL METHOD



STATIONARY REEL METHOD USING A PRE-INSTALLED PULLING ROPE



MOVING REEL METHOD



STATIONARY REEL METHOD - WITHOUT THE USE OF A PRE-INSTALLED PULLING ROPE

NOTES:

All placement methods must use tension release devices to ensure against damaging the fiber optic cable by exceeding the manufacturer's minimum bending radius specifications.

THIS DRAWING REPLACES PIS 206011 DATED 11-27-2006.

DESIGNED XXX	REVIEWED XXX	OFFICE OF ROADWAY ENGINEERING	
		CHECKED	CHECKED
REVISION DATE 07-18-2014		AERIAL CABLE PLACEMENT METHODS	
PIS 206011		PLAN INSERT SHEET	

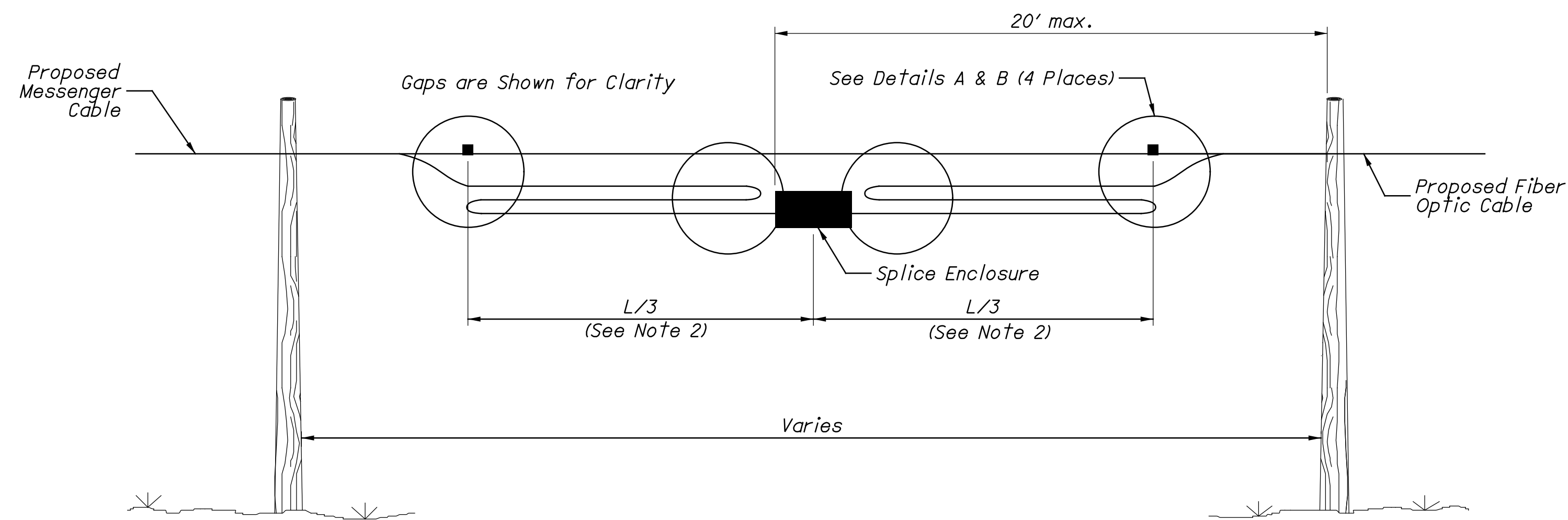
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CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

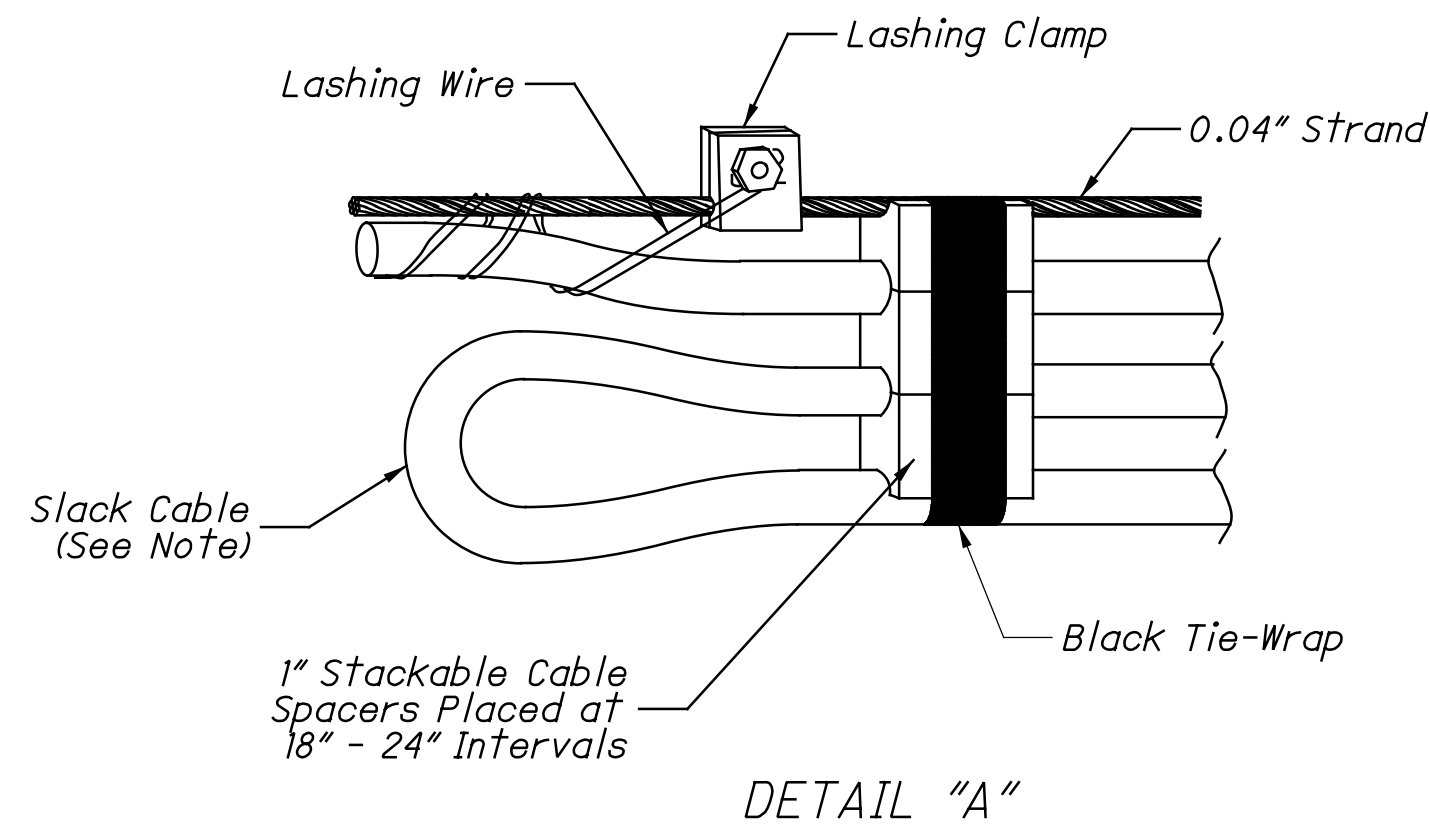
PLAN INSERT SHEET

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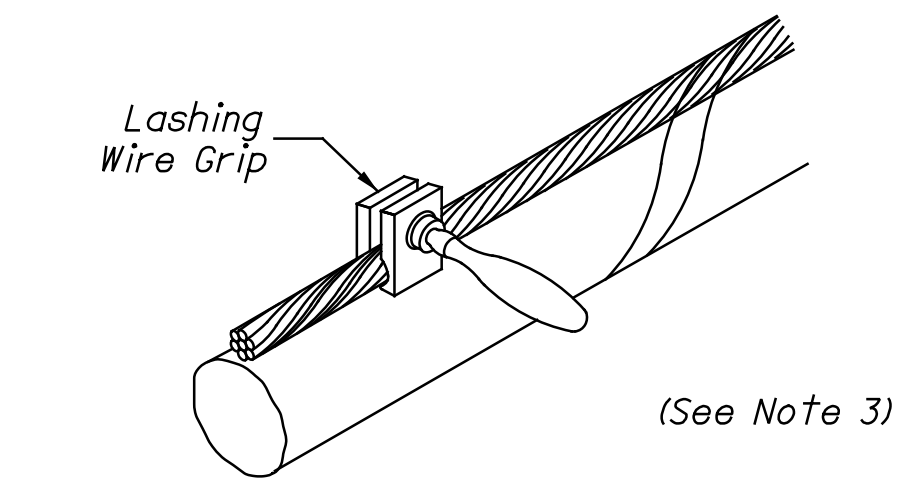
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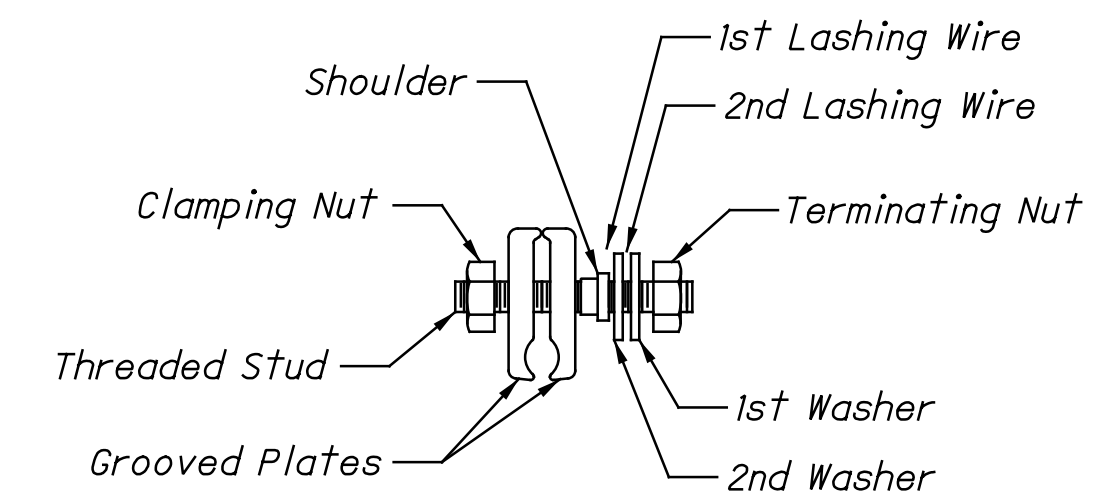
TYPICAL DETAIL FOR STORING EXCESS CABLE AT AERIAL SPLICE POINTS



DETAIL "A"



DETAIL "B"
 LASHING WIRE GRIP AND CLAMP INSTALLED ON STRAND



DETAIL "C"
 CABLE LASHING CLAMP

NOTES:

1. Do not exceed manufacturer's minimum bending radius specifications.
2. L = total length of slack as required by specifications.
3. Lashing wire shall follow lay of strand wires under grip and be twisted clockwise in bolt.

THIS DRAWING REPLACES PIS 206012 DATED 11-27-2006.

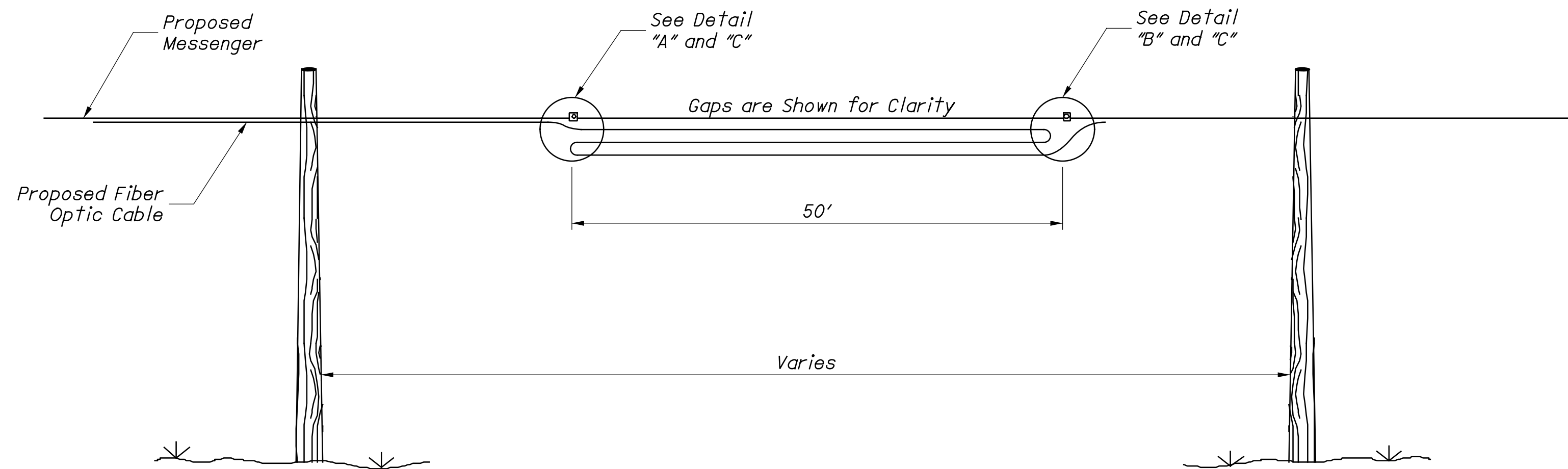
DESIGNED XXX	REVISION DATE 10-18-2013	CHECKED XXX	OFFICE OF ROADWAY ENGINEERING
PLAN INSERT SHEET			CABLE STORAGE DETAILS I
PIS 206012			1/1

CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

PLAN INSERT SHEET

CALCULATED
 BEB
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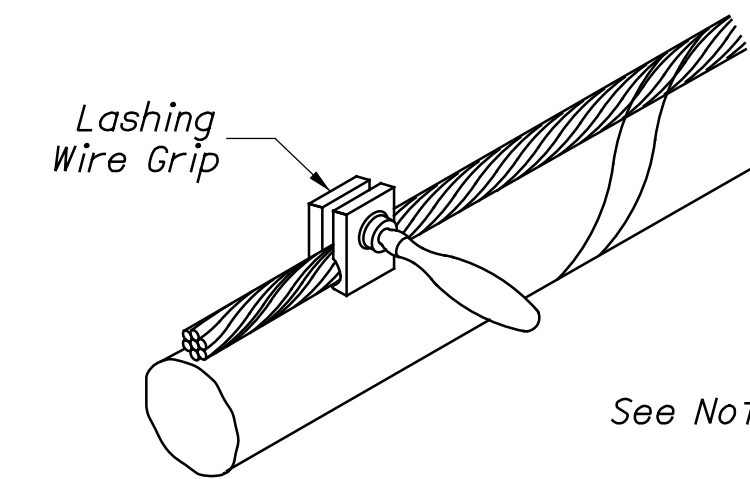
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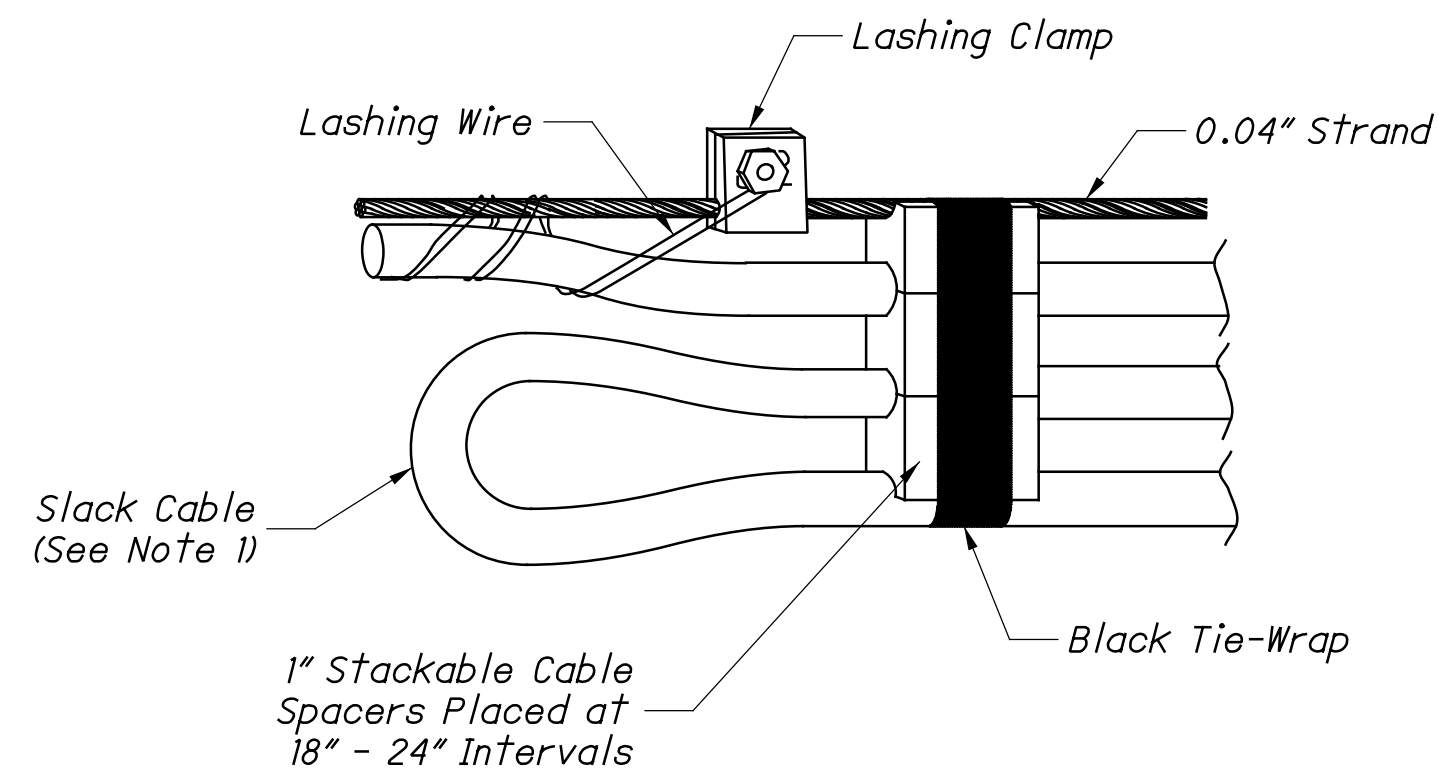
TYPICAL DETAIL FOR STORING EXCESS CABLE SLACK

NOTES:

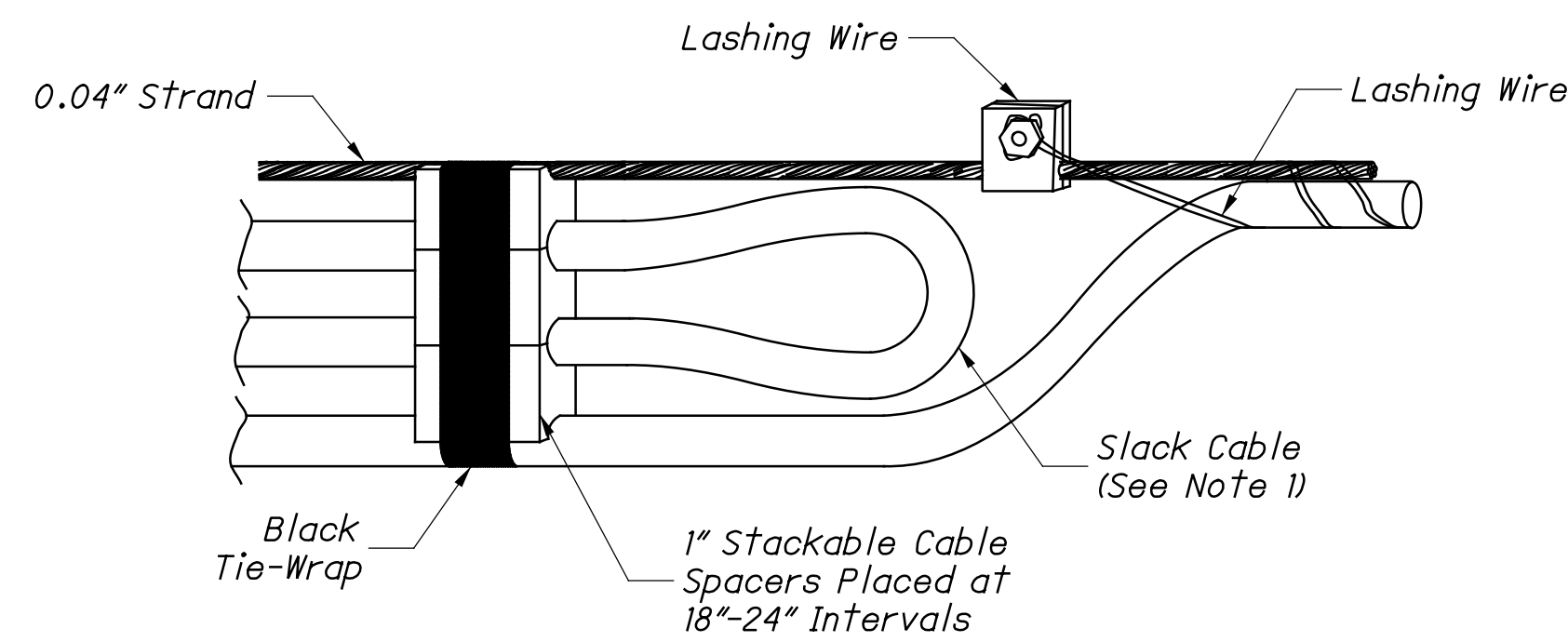
1. Do not exceed manufacturer's minimum bending radius specification.
2. Lashing wire shall follow lay of strand wires under grip and be twisted clockwise in bolt.



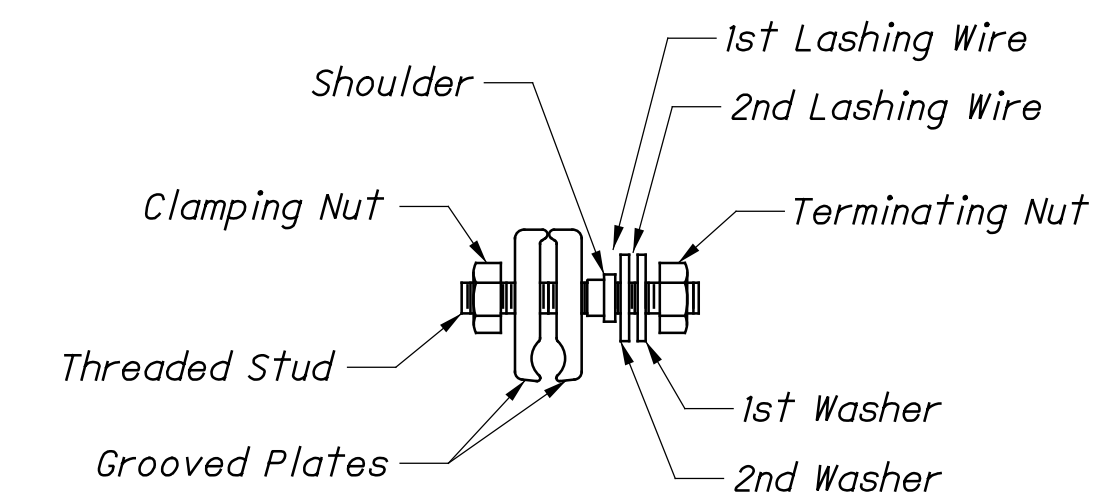
DETAIL "C"
 LASHING WIRE GRIP AND CLAMP
 INSTALLED ON STRAND



DETAIL "A"



DETAIL "B"



DETAIL "D"
 CABLE LASHING CLAMP

THIS DRAWING REPLACES PIS 206013 DATED 11-27-2006.

PIS 206013

CABLE STORAGE DETAILS II

PLAN INSERT SHEET

DESIGNED	XXX	OFFICE OF ROADWAY ENGINEERING
REVISION DATE	07-18-2014	
CHECKED	XXX	
REVIEWED	XXX	
CHECKED	XXX	

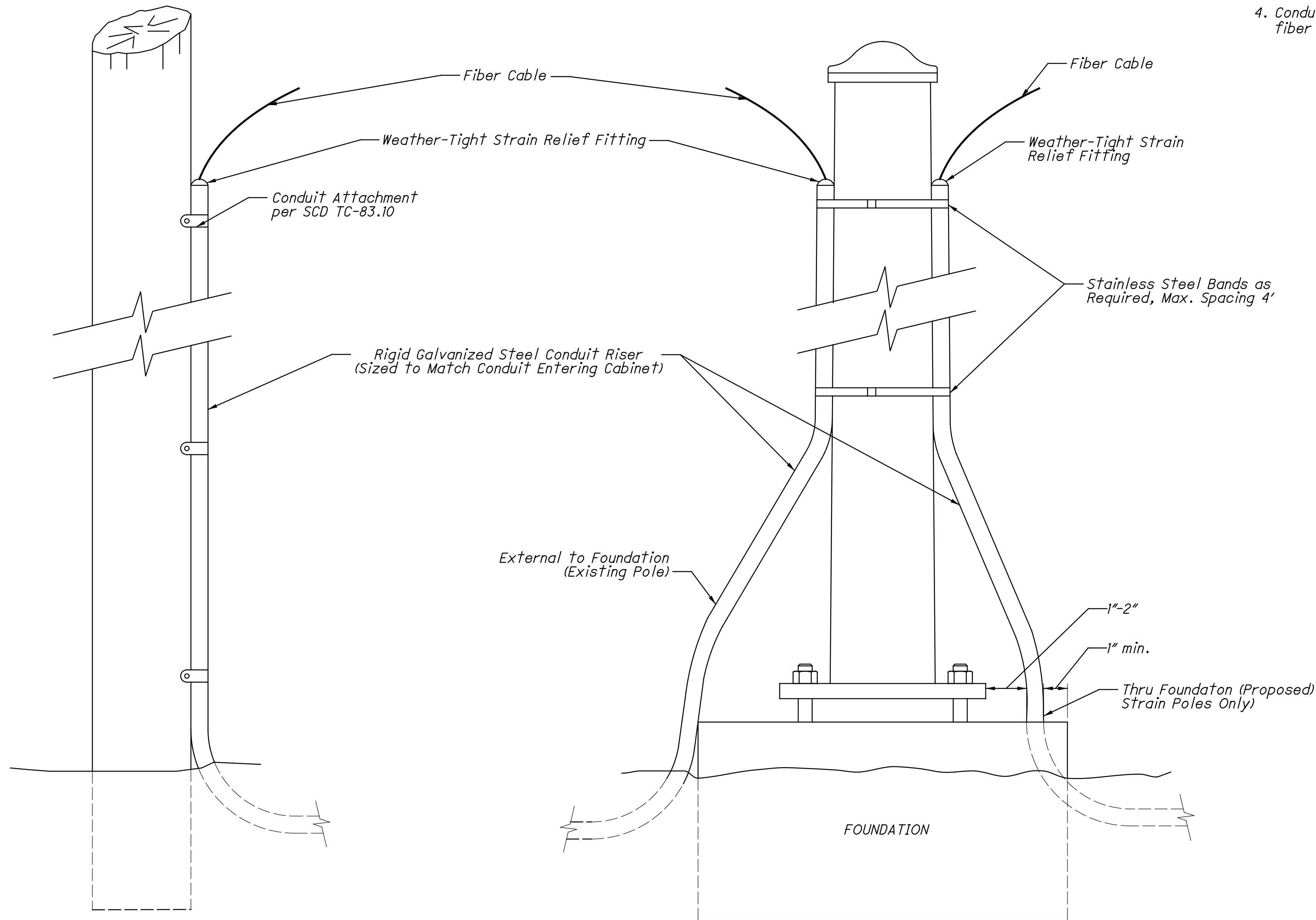
CEMETERY RD. SIGNAL AND FIBER IMPROVEMENTS

PLAN INSERT SHEET

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TYPICAL WOOD POLE FIBER ROUTING



ALTERNATE STRAIN POLE FIBER ROUTING
 (WHEN SPECIFIED IN PLAN)

NOTES:

1. Conduit shall be placed at a minimum depth of 24".
 Direct buried cable shall be placed at a minimum depth of 30" below the frost line.
2. Conduit shall be sealed with duct sealer after cable is installed.
3. Saw cut sidewalk at existing joints and replace entire section to match existing material.
4. Conduit bends shall not exceed minimum bending for fiber optic cable.

THIS DRAWING REPLACES PIS 206014 DATED 04-15-2011.

PIS 206014

MISCELLANEOUS FIBER OPTIC DETAILS

PLAN INSERT SHEET

OFFICE OF
 ROADWAY
 ENGINEERING

DESIGNED XXX	REVIEWED XXX
CHECKED XXX	CHECKED XXX

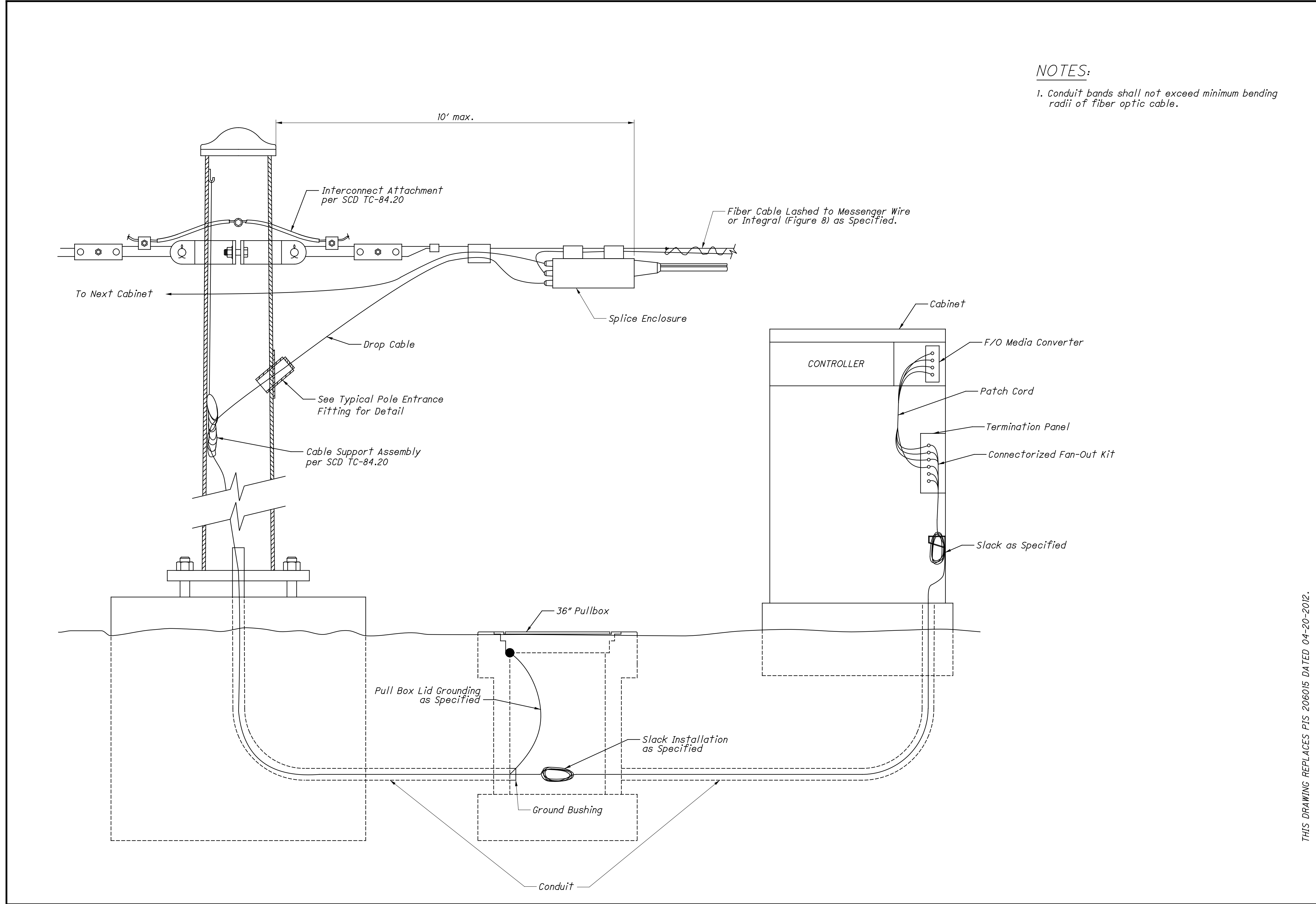
REVISION DATE
 10-18-2013

CEMETERY RD. SIGNAL AND
 FIBER IMPROVEMENTS

PLAN INSERT SHEET

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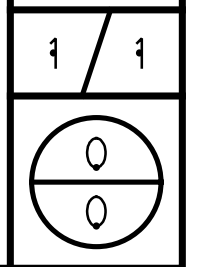


NOTES:

1. Conduit bands shall not exceed minimum bending radii of fiber optic cable.

THIS DRAWING REPLACES PIS 206015 DATED 04-20-2012.

DESIGNED XXX	REVIEWED XXX	OFFICE OF ROADWAY ENGINEERING
PLAN INSERT SHEET		TYPICAL LOOSE TUBE CABLE INSTALLATION
PIS 206015		



CEMETERY RD. SIGNAL AND
 FIBER IMPROVEMENTS

PLAN INSERT SHEET

CALCULATED
 BEB
 CHECKED
 KMG