

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

# D11-TSG-FY2023

**PROJECT DESCRIPTION**

UPGRADE EXISTING TRAFFIC SIGNAL HARDWARE AT FIVE INTERSECTIONS. THREE INTERSECTIONS IN COLUMBAINA COUNTY. TWO LOCATIONS ON U.S 62 AND ONE ON C.R. 447. ONE INTERSECTION IN HOLMES COUNTY ON S.R. 39. ONE INTERSECTION IN TUSCARAWAS COUNTY ON U.S. 250.

**EARTH DISTURBED AREAS**

PROJECT EARTH DISTURBED AREA: 0.1 ACRES  
ESTIMATED CONTRACTOR EARTH DISTURBED AREA: 0.0 ACRES  
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (NOI NOT REQUIRED)\*  
\*ROUTINE MAINTENANCE PROJECT

**LIMITED ACCESS**

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

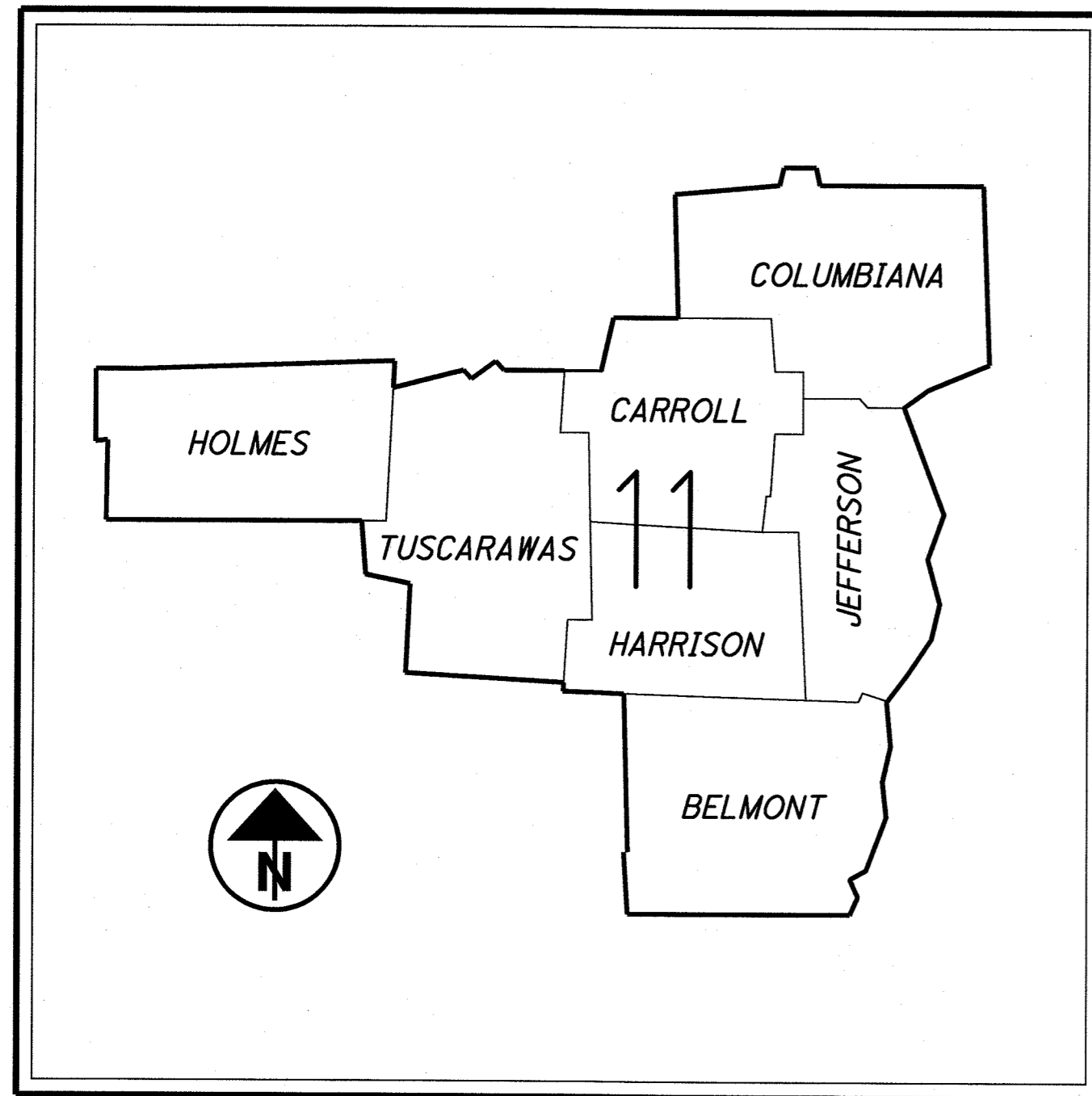
**2019 SPECIFICATIONS**

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

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

APPROVED Kevin B. Coy  
DATE 8/29/2022 DISTRICT DEPUTY DIRECTOR

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_ DIRECTOR, DEPARTMENT OF TRANSPORTATION



LOCATION MAP

LATITUDE: 40°27'19" LONGITUDE: 81°24'29"

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FOR DESIGN DESIGNATION, SEE GENERAL NOTES ON SHEET 2.

DESIGN EXCEPTIONS: NONE REQUIRED

ADA DESIGN WAIVER: NONE REQUIRED

**UNDERGROUND UTILITIES**  
Contact Two Working Days  
Before You Dig



OHIO811, 8-1-1, or 1-800-362-2764  
(Non-members must be called directly)



PLAN PREPARED BY:  
ODOT DISTRICT II  
ENGINEERING  
NEW PHILADELPHIA, OHIO

ENGINEERS SEAL:



SIGNED: DAH  
DATE: 8/29/2022

STANDARD CONSTRUCTION DRAWINGS								SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS
DM-4.3	1/15/16	MT-95.30	7/19/19	TC-16.22	7/16/21	TC-83.10	1/17/20	800-2019 SEE PROPOSAL	
DM-4.4	1/15/16	MT-95.31	7/19/19	TC-21.21	7/15/22	TC-83.20	7/15/22	809	7/15/22
		MT-95.32	4/19/19	TC-22.10	4/17/20	TC-84.20	10/18/13	813	10/19/18
HL-10.11	7/15/22	MT-95.50	7/21/17	TC-41.20	10/18/13	TC-84.21	10/18/13	821	4/20/12
HL-10.12	1/20/17	MT-97.10	4/19/19	TC-41.40	10/18/13	TC-85.10	4/17/20	825	1/17/20
HL-10.13	4/17/20	MT-98.28	1/17/20	TC-42.20	10/18/13	TC-85.20	7/20/18	832	7/15/22
HL-20.11	1/15/21	MT-101.90	7/17/20	TC-52.10	10/18/13	TC-85.21	7/16/21	913	4/16/21
HL-30.11	1/15/21	MT-105.10	1/17/20	TC-52.20	1/15/21	TC-85.22	1/19/18	921	4/20/12
HL-30.21	4/17/20	MT-120.00	7/15/22	TC-81.11	7/16/21				
HL-30.22	1/15/21			TC-81.22	7/15/22				
HL-40.10	7/17/20	BP-5.1	7/15/22						
HL-40.20	7/15/22	BP-7.1	7/15/22	TC-71.10	7/15/22				
				TC-74.10	1/21/22				
DM-1.1	7/17/20	CB-3	7/16/21						

FEDERAL PROJECT NO. **E191(558)**  
PID NO. **107591**  
CONSTRUCTION PROJECT NO. \_\_\_\_\_  
RAILROAD INVOLVEMENT **NONE**  
**D11-TSG-FY2023**  
1/47

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	<u>COL-62-2.86</u>				<u>COL-62-13.26</u>				<u>COL-CR447-3.39</u>			
<b>DESIGN DESIGNATION</b>	U.S. 62 WEST LEG	U.S. 62 EAST LEG	S JOHNSON RD. NORTH LEG	KNOX SCHOOL RD. SOUTH LEG	U.S. 62 WEST LEG	U.S. 62 EAST LEG	N ELLSWORTH AVE NORTH LEG	N ELLSWORTH AVE SOUTH LEG	U.S. 30 RAMP 'A' WEST LEG	WALMART ENTRANCE EAST LEG	C.R. 447 NORTH LEG	C.R. 447 SOUTH LEG
CURRENT ADT (2023)	12,200	11,300	2,600	1,350	5,200	5,250	4,200	3,700	4,850	6,000	10,200	5,000
DESIGN YEAR ADT (2043)	12,700	11,300	3,150	1,850	6,000	6,000	4,200	3,700	6,250	7,300	13,400	6,550
DESIGN HOURLY VOLUME (2043)	1,270	1,130	320	190	600	500	500	440	630	730	1,340	660
DIRECTIONAL DISTRIBUTION	53%	53%	54%	64%	54%	54%	53%	52%	100%	70%	58%	52%
TRUCKS (24 HOUR B&C)	6%	6%	6%	7%	9%	6%	5%	2%	3%	1%	2%	2%
DESIGN SPEED	45 MPH	55 MPH	35 MPH	55 MPH	55 MPH	55 MPH	55 MPH	45 MPH	70 MPH	55 MPH	55 MPH	55 MPH
LEGAL SPEED	45 MPH	55 MPH	35 MPH	55 MPH	55 MPH	55 MPH	55 MPH	45 MPH	70 MPH	55 MPH	55 MPH	55 MPH
DESIGN FUNCTIONAL CLASSIFICATION:	05 MAJOR COLLECTOR (URBAN)	05 MAJOR COLLECTOR (URBAN)	07 LOCAL (URBAN)	05 MAJOR COLLECTOR (URBAN)	03 PRINCIPAL ARTERIAL (URBAN)	03 PRINCIPAL ARTERIAL (URBAN)	04 MINOR ARTERIAL (URBAN)	04 MINOR ARTERIAL (URBAN)	02 OTHER FREEWAY AND EXPRESSWAY (URBAN)	07 LOCAL (URBAN)	04 MINOR ARTERIAL (URBAN)	04 MINOR ARTERIAL (URBAN)
NHS PROJECT	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

	<u>HOL-39-28.25</u>				<u>TUS-250-21.73</u>		
<b>DESIGN DESIGNATION</b>	U.S. 39 WEST LEG	U.S. 39 EAST LEG	S.R. 515 NORTH LEG	T.R. 403 SOUTH LEG	U.S. 250 RAMP EAST LEG	U.S. 250 NORTH LEG	U.S. 250 SOUTH LEG
CURRENT ADT (2023)	10,800	10,200	4,550	480	6,100	26,500	21,200
DESIGN YEAR ADT (2043)	14,000	13,300	5,450	540	8,600	30,500	24,100
DESIGN HOURLY VOLUME (2043)	1,260	1,200	550	50	1,120	3,050	2,410
DIRECTIONAL DISTRIBUTION	61%	63%	55%	51%	100%	53%	65%
TRUCKS (24 HOUR B&C)	9%	10%	7%	6%	12%	8%	6%
DESIGN SPEED	50 MPH	50 MPH	25 MPH	55 MPH	55 MPH	50 MPH	50 MPH
LEGAL SPEED	50 MPH	50 MPH	25 MPH	55 MPH	55 MPH	50 MPH	50 MPH
DESIGN FUNCTIONAL CLASSIFICATION:	04 MINOR ARTERIAL (RURAL)	04 MINOR ARTERIAL (RURAL)	06 MINOR COLLECTOR (RURAL)	07 LOCAL (RURAL)	02 OTHER FREEWAY AND EXPRESSWAY (URBAN)	02 OTHER FREEWAY AND EXPRESSWAY (URBAN)	02 OTHER FREEWAY AND EXPRESSWAY (URBAN)
NHS PROJECT	NO	NO	NO	NO	YES	YES	YES

CALCULATED  
LHW  
CHECKED  
DAH

GENERAL NOTES

D11-TSG-FY 2023

**UTILITIES**

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

COL-62-2.86

ACCESS  
ATTN: LISA SMITH  
493 BEV RD, UNIT #1  
BOARDMAN, OHIO 44512  
330-702-7868  
SMITH@ACCESS-K12.ORG

DORFMAN PRODUCTION  
ATTN: TIFFANY MOORE  
19220 US 62  
BELIOT, OHIO 44069  
330-938-2172  
TMOORE@DORFMANPROD.COM

AEP OHIO POWER COMPANY  
ATTN: CLARKE SAUNDERS  
777 HOPEWELL DRIVE  
HEATH, OHIO 43056  
614-460-4794  
CMSAUNDERS@AEP.COM

G & O REOURCES  
ATTN: LEE CARTER  
96 E. CROSIER ST  
AKRON, OHIO 44311  
330-253-2525 ext: 307  
GANDORESOURCES@AOL.COM

CHARTER COMMUNICATIONS  
ATTN: RON ICKES  
5520 WHIPPLE AVE NEW  
NORTH CANTON, OHIO 44720  
330-494-9200  
RON.ICKES@CHARTER.COM

VILLAGE OF SEBRING  
ATTN: BILL SANOR  
135 EAST OHIO AVE.  
SEBRING OHIO 44672  
330-938-9340

OHIO EDISON COMPANY  
ATTN MIKE BECK  
730 SOUTH AVE.  
YOUNGSTOWN, OHIO 44502  
330-740-7704  
BECKM@FIRSTENERGYCORP.COM

COL-62-13.26

AT&T OHIO, INC.  
ATTN: TORRICE ROBINSON  
50 WEST BOWERY ST.  
AKRON, OHIO 44308  
330-384-9851  
TR3463@ATT.COM

OHIO EDISON COMPANY  
ATTN MIKE BECK  
730 SOUTH AVE.  
YOUNGSTOWN, OHIO 44502  
330-740-7704  
BECKM@FIRSTENERGYCORP.COM

COLUMBIA GAS OF OHIO, INC.  
ATTN: CHRISTIAN RILEY  
1985 W. MAIN STREET  
ALLIANCE, OHIO 44601  
724-454-0256  
CJRILEY@NISOURCE.COM

CITY OF SALEM  
WATER AND SEWER DEPARTMENT  
ATTN: DON WEINGART  
231 SOUTH BROADWAY  
SALEM, OHIO 44460  
330-337-8723  
WEINGART@CITYOFSALEMOHIO.ORG

COL-CR447-3.39

AEP OHIO POWER COMPANY  
ATTN: CLARKE SAUNDERS  
777 HOPEWELL DRIVE  
HEATH, OHIO 43056  
614-460-4794  
CMSAUNDERS@AEP.COM

AT&T OHIO, INC.  
ATTN: TORRICE ROBINSON  
50 WEST BOWERY ST.  
AKRON, OHIO 44308  
330-384-9851  
TR3463@ATT.COM

COMCAST  
ATTN: DAVID TATAREK  
2810 DARLINGTON ROAD  
BEAVER FALLS, PA 15010  
724-384-1861  
DAVID.TATAREK@COMCAST.COM

**UTILITIES (CONT.)**

HOL-39-28.25

AEP OHIO POWER COMPANY  
ATTN: CLARKE SAUNDERS  
777 HOPEWELL DRIVE  
HEATH, OHIO 43056  
614-460-4794  
CMSAUNDERS@AEP.COM

NORTHEAST OHIO NATURAL GAS  
ATTN: MARK WETZEL  
9081 STATE ROUTE 250  
STRASBURG, OHIO 44680  
300-878-5589  
MWETZEL@EGAS.NET

CHARTER COMMUNICATIONS  
ATTN: RON ICKES  
5520 WHIPPLE AVE NEW  
NORTH CANTON, OHIO 44720  
330-494-9200  
RON.ICKES@CHARTER.COM

BELDEN BRICK COMPANY  
ATTN: KELLY SCHROCK  
P.O. BOX 910  
CANTON, OHIO 44702  
330-456-0031  
KELLY.SCHROCK@BELDENBRICK.COM

MASSILLON CABLE TV  
ATTN: JEREMY LEHMAN  
444 W. MILLTOWN RRD  
WOOSTER, OHIO 44691  
330-804-0219  
JLEHMAN@MCTVOHIO.COM

WALNUT CREEK WATER  
ATTN: RANDALL HOCHSTETLER  
PO BOX 28  
WALNUT CREEK OHIO 44687  
330-893-2510  
RHOCHSTE@YAHOO.COM

FRONTIER COMMUNICATIONS  
ATTN: GIOVANNI LORETI  
1534 STATE ROUTE 511  
ASHLAND, OHIO 44805  
419-282-6551  
GIOVANNI.LORETI@FTR.COM

TUS-250-21.73

AEP OHIO POWER COMPANY  
ATTN: CLARKE SAUNDERS  
777 HOPEWELL DRIVE  
HEATH, OHIO 43056  
614-460-4794  
CMSAUNDERS@AEP.COM

TWIN CITY WATER AND SEWER DISTRICT  
ATTN: DONNIE FAWCETT  
308 GRANT STREET  
DENNISON, OHIO 44621  
740-922-1460  
FAWCETT@TWINCITYWS.COM

THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS AS REQUIRED BY SECTION 153.64 O.R.C.

**UTILITIES (CONT.)**

THE OHIO DEPARTMENT OF TRANSPORTATION HAS UTILITY FACILITIES (HIGHWAY LIGHTING AND/OR TRAFFIC SIGNALS) WITHIN THE LIMITS OF THIS PROJECT.

IN ADDITION TO THE INFORMATION OUTLINED IN THIS CONTRACT, THE CONTRACTOR SHALL TAKE THE FOLLOWING ACTION TO PROTECT ODOT'S FACILITIES DURING CONSTRUCTION:

HIGHWAY LIGHTING AND/OR TRAFFIC SIGNALS: EVEN THOUGH ODOT IS LISTED AS A MEMBER OF THE OHIO UTILITIES PROTECTION SERVICE (OUPS), THE CONTRACTOR IS REQUIRED TO CONTACT ODOT DIRECTLY SO THAT THE ODOT UTILITIES LOCATED WITHIN THIS PROJECT ARE MARKED. THE CONTRACTOR SHALL NOTIFY THE ODOT PROJECT ENGINEER/PROJECT SUPERVISOR, FOURTEEN (14) CALENDAR DAYS IN ADVANCE OF ANY WORK, FOR THE NEED TO MARK ODOT OWNED UTILITIES.

THE ABOVE REQUIREMENTS ARE IN ADDITION TO SECTION 105.07 & 107.16 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE CONTRACTOR SHALL NOTIFY OTHER UTILITIES THROUGH OUPS OR DIRECTLY A MINIMUM OF FORTY-EIGHT HOURS IN ADVANCE OF ANY WORK.

**EXISTING PLANS**

EXISTING PLANS ENTITLED MAY BE INSPECTED IN THE ODOT DISTRICT 11 OFFICE IN NEW PHILADELPHIA:

- COL-30-32.22, PID 16843 (1997)
- COL-62-2.86, PID 78607 (2006)
- COL-62-20.938, PID 12148 (1998)
- HOL-39-46.140, PID 16744 (2001)
- TUS-250-21.44, PID 19513 (2000)

IN ADDITION, THE EXISTING PLANS CAN BE FOUND ON THE DEPARTMENT'S WEBSITE AT THE FOLLOWING ADDRESS:

<http://www.dot.state.oh.us/pub/contracts/attach>

**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.

**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.

**PROTECTION OF RIGHT-OF-WAY LANDSCAPING**

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

CONSTRUCT ALL ACTIVITIES, EQUIPMENT STORAGE, AND STAGING TO WITHIN THE CONSTRUCTION LIMITS. UNLESS OTHERWISE IDENTIFIED IN THE PLANS OR PROPOSAL, THE CONSTRUCTION LIMITS ARE IDENTIFIED AS 30 FEET FROM THE EDGE OF PAVEMENT.

SUBMIT A WRITTEN REQUEST TO THE PROJECT ENGINEER TO USE ANY AREA OUTSIDE 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.

**CONSTRUCTION NOISE**

ACTIVITIES AND LAND USE ADJACENT TO THIS PROJECT MAY BE AFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, DO NOT OPERATE POWER-OPERATED CONSTRUCTION-TYPE DEVICES BETWEEN THE HOURS OF 7:00 AM AND 7:00 PM. IN ADDITION, DO NOT OPERATE AT ANY TIME ANY DEVICE 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.

**PAVEMENT RESTORATION FOR CURB RAMP INSTALLATION**

THE FOLLOWING QUANTITY IS PROVIDED FOR PAVEMENT RESTORATION FOLLOWING INSTALLATION OF ITEM 608, CURB RAMP; ITEM 608, CONCRETE WALK; AND ITEM 609, CURB.

ITEM 301, ASPHALT CONCRETE BASE, PG64-22  
10 CU. YDS.  
(03/STR/OT)

THE ABOVE QUANTITY IS BASED ON A 301 THICKNESS OF 8 INCHES AND A WIDTH OF TWO FEET ADJACENT TO THE NEW CURB RAMP, CONCRETE WALK, OR CURB.

PROVIDE ANY MATERIALS USED OUTSIDE THE LIMITS STATED ABOVE AT NO ADDITIONAL COST.

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GENERAL NOTES

D11-TSG-FY2023



**SURVEYING PARAMETERS**

PRIMARY PROJECT CONTROL MONUMENTS GOVERN ALL POSITIONING ON ODOT PROJECTS. SEE SHEETS 16, 22, 29, 35, AND 43 OF THE PLANS FOR TABLES CONTAINING PROJECT CONTROL INFORMATION.

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

PROJECT CONTROL

POSITIONING METHOD: ODOT VRS  
MONUMNET TYPE: TYPE B

VERTICAL POSITIONING

ORTHOMETRIC HEIGHT DATUM: NAVD 88  
GEOID: GEOID 18

HORIZONTAL POSITIONING

REFERENCE FRAME: NAD 83 (2011)  
ELLIPSOID: GRS 1980  
MAP PROJECTION: LAMBERT CONFORMAL CONIC  
COORDINATE SYSTEM: OHIO STATE PLANE, NORTH ZONE  
COMBINED SCALE FACTOR: 1.000000000000  
ORIGIN OF COORDINATE SYSTEM: (0,0)

USE THE POSITIONING METHODS AND MONUMENT TYPE USED IN THE ORIGINAL SURVEY TO RESTORE ALL MONUMENTS RELATED TO PRIMARY PROJECT CONTROL THAT ARE DAMAGED OR DESTROYED BY CONSTRUCTION ACTIVITIES. RESTORE THE DAMAGED OR DESTROYED MONUMENTS IN ACCORDANCE WITH CMS 623.

UNITS ARE IN U.S. SURVEY FEET.

**AIRWAY/HIGHWAY CLEARANCE FOR AIRPORTS AND HELIPOINTS**

THIS PROJECT HAS BEEN IDENTIFIED AS BEING WITHIN THE INFLUENCE AREA OF A PUBLIC USE AIRPORT OR HELIPOINT. NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT AT MAXIMUM OPERATING HEIGHT SHALL EXCEED THE FOLLOWING HEIGHTS:

COL-62-2.86: 260 FT  
COL-CR447-3.39: 179 FT

IF ANY TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT WILL EXCEED THIS HEIGHT, FURTHER COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA), AND ODOT OFFICE OF AVIATION, WILL BE NECESSARY PRIOR TO ERECTING SUCH TEMPORARY STRUCTURES OR OPERATING SUCH EQUIPMENT ON THE PROJECT. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT FORM 7460-1 TO THE FAA. NOTIFY THE ODOT OFFICE OF AVIATION WHEN SUBMITTING FAA FORM 7460-1.

NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT SHALL EXCEED THE PERMISSIBLE HEIGHT, UNTIL A COPY OF THE FAA APPROVAL AND THE ODOT OFFICE OF AVIATION PERMIT HAS BEEN FURNISHED TO THE PROJECT ENGINEER.

FEDERAL AVIATION ADMINISTRATION  
SOUTHWEST REGIONAL OFFICE  
OBSTRUCTION EVALUATION GROUP  
10101 HILLWOOD PARKWAY  
FORT WORTH, TX 76177  
FAX: (817) 222-5920  
HTTP://CEAAA.FAA.GOV

OHIO DEPARTMENT OF TRANSPORTATION  
OFFICE OF AVIATION  
2829 WEST DUBLIN-GRANVILLE ROAD  
COLUMBUS, OHIO 43235  
OHIO.AIRPORT.PROTECTION@DOT.OHIO.GOV

**AIRWAY/HIGHWAY CLEARANCE FOR AIRPORTS AND HELIPOINTS**

THIS PROJECT HAS BEEN IDENTIFIED AS BEING WITHIN THE INFLUENCE AREA OF A PUBLIC USE AIRPORT OR HELIPOINT. NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT AT MAXIMUM OPERATING HEIGHT SHALL EXCEED A HEIGHT OF:

COL-62-13.26: --- FT.

IF ANY TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT WILL EXCEED THIS HEIGHT, FURTHER COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA), AND THE ODOT OFFICE OF AVIATION, WILL BE NECESSARY PRIOR TO ERECTING SUCH TEMPORARY STRUCTURES OR OPERATING SUCH EQUIPMENT ON THE PROJECT. THE CONTRACTOR WILL BE REQUIRED TO FILE A NEW FAA FORM 7460-1, ADVISING THE FAA THAT AERONAUTICAL STUDY NO. --- IS BEING RESUBMITTED AND THAT AN ALTERATION TO THE ORIGINAL SUBMISSION IS REQUESTED.

NOTIFY THE ODOT OFFICE OF AVIATION WHEN RESUBMITTING FAA FORM 7460-1. NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT SHALL EXCEED THE PERMISSIBLE HEIGHT, UNTIL A COPY OF THE FAA APPROVAL AND THE ODOT OFFICE OF AVIATION PERMIT HAS BEEN FURNISHED TO THE PROJECT ENGINEER.

FAA APPROVAL MAY TAKE UP TO 45 DAYS. ALL SUBMISSIONS SHALL BE DIRECTED TO THESE OFFICES:

EXPRESS PROCESSING CENTER  
THE FEDERAL AVIATION ADMINISTRATION  
SOUTHWEST REGIONAL OFFICE  
AIR TRAFFIC AIRSPACE BRANCH ASW-520  
2601 MEACHAN BLVD.  
FORT WORTH, TX 76137-4298

OHIO DEPARTMENT OF TRANSPORTATION  
OFFICE OF AVIATION  
2829 WEST DUBLIN-GRANVILLE ROAD  
COLUMBUS, OHIO 43235  
614-387-2346

**ITEM 659 - SEEDING, MISC.: CURB RAMP GRADING RESTORATION**

THIS ITEM OF WORK CONSISTS OF REWORKING, OR RESHAPING THE GRADING ADJACENT TO THE NEW CURB RAMPS, WALK, AND/OR WALK REMOVED. THE CONTRACTOR SHALL SEED AND MULCH AS PER ITEM 659, AND PROVIDE ALL ADDITIONAL MATERIALS AND EQUIPMENT NECESSARY TO RESTORE THE GRADING TO THE SATISFACTION OF THE ENGINEER.

A QUANTITY OF FOUR SQUARE FEET PER LINEAR FOOT, PER SIDE WITH ACCOMPANYING GRADED BORDER, OF NEW RAMP, WALK, AND/OR WALK REMOVED SHALL BE CALCULATED FOR THIS ITEM OF WORK. FINAL CONVERSION OF QUANTITIES FROM SQUARE FOOT TO SQUARE YARDS SHALL BE PERFORMED IN THE SUMMARY LEVEL. PAYMENT FOR THE AFOREMENTIONED WORK SHALL BE MADE AT THE UNIT PRICE BID FOR ITEM 659, SEEDING MISC.: CURB RAMP GRADING RESTORATION, SQ. YD., AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT, AND MATERIALS NECESSARY TO COMPLETE ALL WORK TO THE SATISFACTION OF THE ENGINEER.

**ITEM 609 - COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN**

THIS ITEM SHALL CONFORM TO CMS 609.04 AND SCD BP-5.1 EXCEPT THAT THE CURB SHALL TRANSITION FROM A COMBINATION CURB AND GUTTER, TYPE 3 WHERE IT MEETS THE EXISTING TO A COMBINATION CURB AND GUTTER, TYPE 2 WITH A 6" CURB HEIGHT AT THE LOCATION OF THE NEW CATCH BASIN, NO. 3.

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GENERAL NOTES

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**ITEM 614, MAINTAINING TRAFFIC**

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES, EXCEPT AS OTHERWISE SHOWN IN THE PLANS, BY USE OF THE EXISTING PAVEMENT.

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

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN SIGNS AND SIGN SUPPORTS, AS DETAILED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AND TYPE III BARRICADES OF THE TYPE AND LOCATION AS SHOWN IN THE PLANS

NO WORK SHALL BE PERFORMED AND ALL EXISTING LANES SHALL BE OPEN TO TRAFFIC DURING THE FOLLOWING DESIGNATED HOLIDAYS OR EVENTS:

MEMORIAL DAY	FOURTH OF JULY
LABOR DAY	THANKSGIVING

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

DAY OF THE WEEK	TIME ALL LANES MUST BE OPEN TO TRAFFIC
SUNDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY
MONDAY	12:00N FRIDAY THROUGH 6:00 AM TUESDAY
TUESDAY	12:00N MONDAY THROUGH 6:00 AM WEDNESDAY
WEDNESDAY	12:00N TUESDAY THROUGH 6:00 AM THURSDAY
THURSDAY	12:00N WEDNESDAY THROUGH 6:00 AM FRIDAY
THURSDAY (THANKSGIVING ONLY)	6:00 AM WEDNESDAY THROUGH 6:00 AM MONDAY
FRIDAY	12:00N THURSDAY THROUGH 6:00 AM MONDAY
SATURDAY	12:00N FRIDAY THROUGH 6:00 AM MONDAY

SHOULD THE CONTRACTOR FAIL TO MEET ANY OF THESE REQUIREMENTS, THE CONTRACTOR SHALL BE ASSESSED A DISINCENTIVE IN THE AMOUNT OF \$3,000 FOR EACH HOUR THE ABOVE DESCRIBED LANE CLOSURE RESTRICTIONS ARE VIOLATED.

WHEN THE TRAFFIC SIGNALS ARE TO BE INSTALLED, TRAFFIC SHALL BE MAINTAINED PER OMUTCD TA-24, TA-25, TA-26 AND TA-27. HOWEVER THERE MAY BE SHORT INSTANCES WHENEVER CONTRACTOR EQUIPMENT OR PERSONNEL MAY ENCROACH ON ANY PORTION OF A TRAVELED LANE. IF THIS IS TO HAPPEN, THEN THE ENTIRE LANE SHALL BE CLOSED TO TRAFFIC. WHEN IT IS NECESSARY TO CLOSE ONE LANE OF TRAFFIC ADJACENT TO THE WORK, THE CLOSURE SHALL BE ACCOMPLISHED BY THE APPLICATION OF TRAFFIC CONTROL DEVICES AS SPECIFIED BY THE PERTINENT STANDARD CONSTRUCTION DRAWINGS.

ALL ADVANCE WARNING SIGNS FOR ANY CONDITION THAT RESTRICTS TRAFFIC SHALL BE ERECTED BEFORE ANY SUCH RESTRICTION IS PUT INTO EFFECT. ALL SUCH SIGNS SHALL BE COVERED OR REMOVED FROM VIEW OF TRAFFIC WHEN NOT APPLICABLE, AS DETERMINED BY THE ENGINEER. THE CONTRACTOR'S FAILURE TO COMPLY WITH THE PROVISIONS FOR TRAFFIC CONTROL AS SET FORTH IN THESE PLANS AND THE OMUTCD WHICH RESULTS IN A CONDITION AT THE WORK SITE THAT IS UNSAFE FOR TRAFFIC SHALL BE CAUSE FOR THE ENGINEER TO SUSPEND WORK UNTIL THE CONTRACTOR COMPLIES WITH THE NECESSARY REQUIREMENTS.

**ITEM 614, MAINTAINING TRAFFIC (CONT.)**

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

**NOTIFICATION OF TRAFFIC RESTRICTIONS**

THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES. THE CONTRACTOR SHALL ENSURE THE WRITTEN NOTIFICATION IS SUBMITTED IN A TIMELY MANNER TO ALLOW THE PROJECT ENGINEER TO MEET THE REQUIRED TIME FRAMES SET FORTH IN THE TABLE BELOW TO INFORM THE SPECIAL HAULING PERMITS SECTION (HAULING.PERMITS@DOT.OHIO.GOV) AND THE DISTRICT PUBLIC INFORMATION OFFICE (PIO). THIS NOTIFICATION SHALL BE RECEIVED BY THE PROJECT ENGINEER PRIOR TO THE PHYSICAL SETUP OF ANY APPLICABLE SIGNS OR MESSAGE BOARDS.

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

NOTIFICATION TIME TABLE		
ITEM	DURATION OF CLOSURE	NOTICE DUE TO PERMITS & PIO
RAMP & ROAD CLOSURES	>= 2 WEEKS	21 CALENDAR DAYS PRIOR TO CLOSURE
	> 12 HOURS & < 2 WEEKS	14 CALENDAR DAYS PRIOR TO CLOSURE
	<= 12 HOURS	4 BUSINESS DAYS PRIOR TO CLOSURE
LANE CLOSURES & RESTRICTIONS	>= 2 WEEKS	14 CALENDAR DAYS PRIOR TO CLOSURE
	< 2 WEEKS	5 BUSINESS DAYS PRIOR TO CLOSURE
START OF CONSTRUCTION & TRAFFIC PATTERN CHANGES	N/A	14 CALENDAR DAYS PRIOR TO IMPLEMENTATION

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

**MAINTENANCE OF TRAFFIC SIGNAL INSTALLATION**

THE CONTRACTOR SHALL BE RESPONSBLE FOR MAINTAINING TRAFFIC SIGNAL INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

- EXISTING SIGNAL INSTALLATIONS WHICH THE PLANS REQUIRE THE CONTRACTOR TO ADJUST, MODIFY, ADD ONTO OR REMOVE, OR WHICH THE CONTRACTOR ACTUALLY ADJUSTS, MODIFIES OR OTHERWISE DISTURBS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATIONS FIRST DISTURB THE INSTALLATION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK ACCEPTED.
- NEW OR REUSED SIGNAL INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE MAINTAINING AGENCY AND THE 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, 7 DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MIS-ALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK 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 ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN 8 HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE. THE CONTRACTOR SHALL ARRANGE FOR FULL TRAFFIC CONTROL UNTIL THE SIGNAL IS BACK IN OPERATION.

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

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OR CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, 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.

**MAINTENANCE OF TRAFFIC SIGNAL INSTALLATION (CONT.)**

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 ENGINEER MAY INVOKE THE PROVISIONS OF SECTION 105.15 AND ANY SUBSEQUENT BILLINGS TO THE STATE FOR POLICE SERVICES AND MAINTENANCE SERVICES BY CITY FORCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

THE CONTRACTOR SHALL PROVIDE THE MAINTENANCE SERVICE ENTIRELY WITH HIS FORCES OR HE MAY CHOOSE TO ENTER INTO A COOPERATIVE UNDERSTANDING WITH THE LOCAL MAINTAINING AGENCY TO PROVIDE THE MAINTENANCE. THE CONTRACTOR SHALL INFORM THE ENGINEER, IN WRITING, OF THE MAINTENANCE METHOD SELECTED.

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

WHEN A TRAFFIC SIGNAL MUST BE TAKEN OUT OF SERVICE BY THE CONTRACTOR, DUE TO CONSTRUCTION PROCEDURES, THIS OUTAGE SHALL NOT EXCEED 2 HOURS AND SHALL NOT INCLUDE THE HOURS OF 7 AM TO 9 AM AND 3 PM TO 6 PM. 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 OFF-DUTY LAW ENFORCEMENT OFFICER (LEO), 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 632.25.

THE CONTRACTOR SHALL MAINTAIN COMPLETE RECORDS OF MALFUNCTIONS INCLUDING:

- TIME OF NOTIFICATION OF MALFUNCTION;
- TIME OF WORK CREWS ARRIVAL TO CORRECT THE MALFUNCTION;
- ACTIONS TAKEN TO CORRECT THE MALFUNCTION, INCLUDING A LIST OF PARTS REPAIRED OR REPLACED;
- A DIAGNOSIS OF REASON FOR THE MALFUNCTION AND PROBABILITY OF REOCCURRENCE;
- TIME OF COMPLETION OF THE REPAIR AND SYSTEM RESTORED TO FULL SERVICE.

A COPY OF THESE RECORDS SHALL BE PROVIDED TO THE ENGINEER WITHIN THREE (3) WORKING DAYS FOLLOWING COMPLETION OF EACH REPAIR.

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

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**ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS**

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

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

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

IN ADDITION TO THE REQUIREMENT OF C&MS 614 AND THE OMTCD, 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.

ENSURE PROVIDED LEOS HAVE BEEN TRAINED APPROPRIATE TO THE JOB DECISIONS THEY ARE REQUIRED TO MAKE WHILE ON THE PROJECT, IN ACCORDANCE WITH C&MS 614.03.

**ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS (CONT.)**

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. 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 THAT SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

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

COL-62-2.86 (02/S<2/OT) =	60 HOURS
COL-62-13.26 (02/S<2/OT) =	60 HOURS
COL-CR447-3.39 (02/S<2/OT) =	120 HOURS
HOL-39-28.25 (03/STR/OT) =	120 HOURS
TUS-250-21.73 (01/NHS/OT) =	60 HOURS
<u>TOTAL =</u>	<u>420 HOURS</u>

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

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MAINTENANCE OF TRAFFIC GENERAL NOTES

D11-TSG-FY2023

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SHEET NUM.											PART.			ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
3			15	21	27	28	34	40	42		01/ NHS/OT	02/ S&2/OT	03/ STR/OT						
<b>ROADWAY</b>																			
LS											LS	LS	LS	201	11000	LS	CLEARING AND GRUBBING		
								696					696	202	30000	696	SF	WALK REMOVED	
								4					4	202	32000	4	FT	CURB REMOVED	
								10					10	202	32500	10	FT	CURB AND GUTTER REMOVED	
								6					6	202	30200	6	FT	STEPS REMOVED	
				21								21		203	10000	21	CY	EXCAVATION	
				13								13		203	20000	13	CY	EMBANKMENT	
				118								118		204	10000	118	SY	SUBGRADE COMPACTION	
								501					501	608	10000	501	SF	4" CONCRETE WALK	
								297					297	608	52000	297	SF	CURB RAMP	
<b>EROSION CONTROL</b>																			
								171					171	659	98000	171	SY	SEEDING, MISC.: CURB RAMP GRADING RESTORATION	4
										1,000	3,000	1,000		832	30000	5,000	EACH	EROSION CONTROL	
<b>DRAINAGE</b>																			
		20	20		20	20			20	60	20			611	00400	100	FT	4" CONDUIT, TYPE E	
								8					8	611	04400	8	FT	12" CONDUIT, TYPE B	
			40								40			611	07900	40	FT	18" CONDUIT, TYPE D, (706.01)	
								1					1	611	98150	1	EACH	CATCH BASIN, NO. 3	
								1					1	611	98630	1	EACH	CATCH BASIN ADJUSTED TO GRADE	
													2	611	99654	2	EACH	MANHOLE ADJUSTED TO GRADE	
<b>PAVEMENT</b>																			
10													10	301	46000	10	CY	ASPHALT CONCRETE BASE, PG64-22	
				20								20		304	20000	20	CY	AGGREGATE BASE	
								17					17	609	12001	17	FT	COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN	4
								66					66	609	26000	66	FT	CURB, TYPE 6	

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**GENERAL SUMMARY**  
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SHEET NUM.										PART.			ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
5	6	15	21	28	34	42	01/ NHS/OT	02/ S<2/OT	03/ STR/OT									
<b>TRAFFIC SIGNALS</b>																		
		8	10	7	8	4	4	25	8	632	05006	37	EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE				
			2	1	1	3	632	05064	3	EACH	VEHICULAR SIGNAL HEAD, (LED), 4-SECTION, 12" LENS, 1-WAY, POLYCARBONATE							
					6		632	05086	4	EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE							
		8	12	8	9	7	632	20730	6	EACH	PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN							
					6		632	25000	44	EACH	COVERING OF VEHICULAR SIGNAL HEAD							
					6		632	25010	6	EACH	COVERING OF PEDESTRIAN SIGNAL HEAD							
					6		632	26000	6	EACH	PEDESTRIAN PUSHBUTTON							
			651	422	405	385	632	30200	1,863	FT	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER WITH ACCESSORIES							
			651	422	405	385	632	30600	1,863	FT	TETHER WIRE, WITH ACCESSORIES							
					1,230		632	40500	1,230	FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG							
		716	1,810	852	718	559	632	40700	4,655	FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG							
			4	4	4	4	632	64000	16	EACH	STRAIN POLE FOUNDATION							
		3					632	64010	3	EACH	SIGNAL SUPPORT FOUNDATION							
					6		632	64020	6	EACH	PEDESTAL FOUNDATION							
		52	77	179	65	61	632	68300	434	FT	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG							
		107	59	63	100	473	632	69800	802	FT	SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG							
		1	1	1	1	1	632	70001	5	EACH	POWER SERVICE, AS PER PLAN	10						
		1					632	71368	1	EACH	SIGNAL SUPPORT, TYPE TC-12.31 DESIGN 10 POLE, WITH MAST ARMS TC-81.22 DESIGN 13 AND DESIGN 12							
		2					632	72100	2	EACH	SIGNAL SUPPORT, TYPE TC-81.22, DESIGN 2							
				2	4		632	86140	6	EACH	STRAIN POLE, TYPE TC-81.11, DESIGN 12							
						3	632	86150	3	EACH	STRAIN POLE, TYPE TC-81.11, DESIGN 13							
				2			632	87140	2	EACH	COMBINATION STRAIN POLE, TYPE TC-81.11, DESIGN 12							
						1	632	87150	1	EACH	COMBINATION STRAIN POLE, TYPE TC-81.11, DESIGN 13							
		4					632	87160	4	EACH	COMBINATION STRAIN POLE, TYPE TC-81.11, DESIGN 14							
					6		632	89600	6	EACH	PEDESTAL, 8'							
		1	1	1	1	1	632	90100	5	EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION							
		1	1	1	1	1	633	65522	5	EACH	CABINET, TYPE 332L							
		1	1	1	1	1	633	67100	5	EACH	CABINET FOUNDATION							
		1	1	1	1	1	633	67200	5	EACH	CONTROLLER WORK PAD							
		1	1	1	1	1	633	68511	5	EACH	COMMUNICATIONS, AS PER PLAN	12						
		1	1	1	1	1	633	75001	5	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	11						
		2	4	2	2	2	809	69001	12	EACH	ADVANCE RADAR DETECTION, AS PER PLAN	12						
		4	4	3	4	1	809	69101	16	EACH	STOP LINE RADAR DETECTION, AS PER PLAN	12						
		1	1	1	1	1	809	69123	5	EACH	ATC V6.24 CONTROLLER, AS PER PLAN (PROGRAM AND INSTALL ONLY)	10						
<b>MAINTENANCE OF TRAFFIC</b>																		
		420					60	240	120	614	11110	420	HOUR	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE				
<b>INCIDENTALS</b>																		
LS							LS	LS	LS	614	11000	LS		MAINTAINING TRAFFIC				
							LS	LS	LS	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING				
							LS	LS	LS	624	10000	LS		MOBILIZATION				

**GENERAL SUMMARY**

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### 632 REMOVAL OF TRAFFIC SIGNAL INSTALLATION

TRAFFIC SIGNAL INSTALLATIONS, INCLUDING SIGNAL HEADS, CABLE, MESSENGER WIRE, STRAIN POLES, CABINET, CONTROLLER, ETC., SHALL BE REMOVED IN ACCORDANCE WITH CMS 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 ODOT DISTRICT 11 IN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

#### ITEMS TO BE STORED (ALL PROJECT LOCATIONS):

MODEMS  
CONTROLLERS  
UPS  
CABINET AND ALL HARDWARE (LESS THE UPS BATTERIES)

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

### SIGNAL ACTIVATION

PRIOR TO ACTIVATING THE NEW TRAFFIC SIGNAL TO STOP AND GO MODE AND/OR REMOVING THE EXISTING TRAFFIC SIGNAL FROM SERVICE, ALL ITEMS IN THE PROPOSED SIGNAL PLAN SHALL BE FULLY COMPLETED, (I.E., VEHICLE DETECTION, PEDESTRIAN SIGNAL HEADS, ETC.). IF THERE ARE CONSTRUCTABILITY ISSUES (I.E., ROADWAY WIDENING, ETC.) THAT PREVENT THE SIGNAL FROM BEING COMPLETED PRIOR TO ACTIVATION, IT SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER AND DISTRICT TRAFFIC ENGINEER. THE DISTRICT TRAFFIC ENGINEER WILL THEN REVIEW, APPROVE OR REJECT PROPOSALS TO ACTIVATE THE TRAFFIC SIGNAL PRIOR TO COMPLETION.

THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER AND DISTRICT TRAFFIC ENGINEER AT LEAST 10 WORKING DAYS PRIOR TO SCHEDULING THE FINAL INSPECTION OF THE SIGNAL INSTALLATION. FINAL INSPECTION IS NOT CONSIDERED COMPLETE UNTIL DESIGNATED DISTRICT TRAFFIC PERSONNEL INSPECT THE TRAFFIC SIGNAL AND ISSUE WRITTEN APPROVAL. IF ISSUES ARE FOUND DURING THE FINAL INSPECTION THAT AFFECT THE SAFETY OF THE TRAVELING PUBLIC AND/OR THE EFFICIENCY OF THE INTERSECTION, THE SIGNAL SHALL NOT BE ACTIVATED ON THE PROPOSED DATE. ANY PUNCH LIST ITEMS THAT ARE FOUND SHALL BE CORRECTED AND REINSPECTED BY DISTRICT TRAFFIC PERSONNEL PRIOR TO FINAL ACCEPTANCE. ODOT FORCES SHALL ONLY ASSUME DAY TO DAY MAINTENANCE OF THE TRAFFIC SIGNAL AFTER FINAL WRITTEN ACCEPTANCE HAS BEEN ISSUED.

### 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.

### DETECTION MAINTENANCE

IF VEHICLE DETECTION BECOMES UNEXPECTEDLY DISABLED, REQUIRES MODIFICATION, OR IS SCHEDULED TO BE TEMPORARILY REMOVED DURING THE CONSTRUCTION PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER AND DISTRICT TRAFFIC ENGINEER.

IF THE LOSS OF VEHICLE DETECTION IS KNOWN PRIOR TO THE START OF CONSTRUCTION, IT SHALL BE DISCUSSED AT THE PRECONSTRUCTION MEETING. AT SUCH TIME, THE DISTRICT TRAFFIC ENGINEER SHALL ADVISE THE PROJECT ENGINEER AND CONTRACTOR ON THE APPROPRIATE ACTION TO RECTIFY ANY LOSS OF VEHICLE DETECTION. THIS MAY INCLUDE PLACING THE TRAFFIC SIGNAL ON MINIMUM OR MAXIMUM RECALL, MODIFYING THE MINIMUM GREEN TIMES, AND REMOVING THE MALFUNCTIONING DETECTION FROM SERVICE. WHERE NON-INTRUSIVE DETECTION (I.E. VIDEO, RADAR) ALREADY EXISTS, THE CONTRACTOR SHALL ENSURE THAT DETECTION IS OPERATING AND MAINTAINED BY RECONFIGURING THE DETECTION UNITS ACCORDINGLY DURING ALL CONSTRUCTION PHASES. THIS IS TO AVOID THE SIGNAL FROM MAXING OUT THE EFFECTED SIGNAL PHASE AND CREATING UNNECESSARY DELAYS.

LOCATIONS WHERE NON-INTRUSIVE DETECTION IS PROPOSED AND THE EXISTING VEHICLE DETECTION IS TO BE ABANDONED, THE NON-INTRUSIVE VEHICLE DETECTION SHALL BE INSTALLED, CONFIGURED AND MADE FULLY FUNCTIONAL PRIOR TO THE EXISTING DETECTION BEING DISABLED. THE CONTRACTOR SHALL CONTINUE TO MAINTAIN AND MODIFY THE DETECTION UNTIL FINAL ACCEPTANCE OF THE TRAFFIC SIGNAL. THIS IS TO ENSURE VEHICLE DETECTION REMAINS FULLY FUNCTIONAL THROUGHOUT CONSTRUCTION.

### STRAIN POLE AND PEDESTAL FOUNDATION ELEVATIONS

ELEVATIONS SHOWN IN THE PLANS FOR STRAIN POLE AND PEDESTAL FOUNDATIONS ARE FOR COMPUTATIONAL PURPOSES ONLY. THE ACTUAL ELEVATION OF THE FOUNDATION SHALL BE IN ACCORDANCE WITH TRAFFIC SCD TC-21.21 PROVIDED THE EXISTING SLOPE IS LESS THAN 6:1.

AT LOCATIONS WHERE THE EXISTING SLOPE IS 6:1 OR GREATER, THE BURIED DEPTH OF FOUNDATION, AS SHOWN IN SCD TC-21.21 SHALL APPLY TO THE LOW SIDE OF THE SLOPE. THE TOP OF THE FOUNDATION SHALL BE SET 2 INCHES ABOVE THE EXISTING SURFACE ON THE HIGH SIDE OF THE SLOPE. THE ADDITIONAL DEPTH OF FOUNDATION NECESSARY TO MEET THESE REQUIREMENTS SHALL BE ADDED TO THE FORMED TOP.

### 632 POWER SERVICE, AS PER PLAN

ELECTRIC POWER SHALL BE OBTAINED FROM AEP OR OHIO EDISON COMPANY AT THE LOCATIONS INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 120 VOLTS.

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

1. THE CONTRACTOR SHALL MEET WITH A REPRESENTATIVE FROM THE POWER SUPPLY AGENCY TO CONFIRM HOW THE PROPOSED POWER SERVICE IS TO BE WIRED, HOOKED UP, AND ITS LOCATION.
2. ALL POWER SERVICES SHALL BE METERED. THE METER SHALL HAVE A LEVER OPERATED BYPASS.

DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH CMS ITEM 632, POWER SERVICE, AS PER PLAN, SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNON 660, WITH LOCK BODY OF BRONZE OR BRASS AND KEYING SHALL BE TO THE STATE MASTER.

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

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 632, "POWER SERVICE, AS PER PLAN" WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

### ARC FLASH CALCULATIONS AND LABEL, (LOCATION)

THIS ITEM OF WORK SHALL CONSIST OF PERFORMING ARC FLASH CALCULATIONS AND APPLYING AN EXTERNAL LABEL AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 825. THIS WORK SHALL BE PERFORMED FOR EACH DISCONNECT SWITCH, SIGNAL CABINET, AND UPS ENCLOSURE. THE LABEL USED SHALL BE ODOT VERSION A (PREFERRED). THE FOLLOWING INTERSECTIONS SHALL HAVE THE CALCULATIONS PERFORMED AND LABELS APPLIED:

COL-62-2.86  
COL-62-13.26  
COL-CR 447-3.39  
HOL-39-28.25  
TUS-250-21.73

PAYMENT FOR ITEM 625 ARC FLASH CALCULATIONS AND LABEL, (LOCATION) SHALL BE MADE FOR EACH INTERSECTION AND SHALL BE FULL COMPENSATION FOR ALL LABOR, EQUIPEMENT, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK.

### ITEM 809 - ATC CONTROLLER, AS PER PLAN (PROGRAM AND INSTALL ONLY)

ALL REQUIREMENTS OF SS 809 SHALL BE FOLLOWED, ALONG WITH THE ADDITIONAL DESCRIPTION AS STATED BELOW. THE ATC CONTROLLER WILL BE PROVIDED BY THE DISTRICT WITHOUT PROGRAMMING. IN THE CASE OF A 332/336 CABINET TYPE, THE CONTROLLER WILL BE PROVIDED WITH THE POWER CORD.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROGRAMMING THE CONTROLLER TO THE PROPOSED CONDITIONS ACCORDING TO THE PLANS. ODOT WILL NOT BE RESPONSIBLE FOR THE PROGRAMMING.

THE CONTROLLER SHALL BE LISTED ON THE TAP AND BE AN ECONOLITE COBALT AND COMPATIBLE WITH THE CABINET TYPE BEING INSTALLED.

PAYMENT SHALL BE MADE ONCE THE CONTROLLER IS PROGRAMMED, INSTALLED, TESTED, FUNCTIONING ACCORDING TO THE PLANS, AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS TO COMPLETE THE WORK.

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**GUARANTEE**

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM 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 THE FOLLOWING ITEMS OF THE TRAFFIC CONTROL SYSTEM: CONTROLLERS AND ASSOCIATED EQUIPMENT, DETECTOR UNITS, INTERCONNECTION ITEMS AND MASTER CONTROL EQUIPMENT.

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

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

**ITEM 632 SIGNAL SUPPORT FOUNDATION**

PRIOR TO ORDERING THE SIGNAL SUPPORTS, THE CONTRACTOR SHALL CONTACT OUPS TO HAVE ALL THE UTILITIES LOCATED IN THE FIELD. THEN THE CONTRACTOR SHALL MEET THE PROJECT ENGINEER TO LOCATE THE PROPOSED SUPPORT LOCATIONS TO INSURE THERE ARE NO CONFLICTS WITH UTILITIES. IF THERE ARE ISSUES, THE PROJECT ENGINEER SHALL PROVIDE GUIDANCE AS TO THE RELOCATION OF THE SUPPORTS.

DUE TO THE FURTHER POSSIBILITY OF CONFLICT WITH EXISTING OR PROPOSED UNDERGROUND OBSTRUCTIONS (INCLUDING THE POSSIBILITY OF UNRECORDED OBSTRUCTIONS) WHICH COULD AFFECT THE LOCATION OF THE FOUNDATION FOR THIS ITEM, AND CONSEQUENTLY, THE DESIGN OF THE SUPPORT AND/OR ARMS, THE CONTRACTOR SHALL NOT PLACE FINAL ORDERS FOR THE ITEM UNTIL THE FOUNDATIONS HAVE BEEN INSTALLED, AT FINAL GRADE, AND THE CONTRACTOR HAS RECEIVED, FROM ENGINEER, WRITTEN NOTICE TO PROCEED WITH THE ORDERS FOR THE ITEM.

IF ANY FOUNDATION LOCATIONS MUST BE ADJUSTED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND MAINTAINING AGENCY, WHO WILL DETERMINE THE REVISED LOCATION AND IF NEEDED, THE SUPPORT DESIGN. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR DETERMINING THE REVISED DESIGN. THE ENGINEER WILL INFORM THE CONTRACTOR OF ANY CHANGES NECESSARY AND AUTHORIZE THE CONTRACTOR TO ORDER THE SUPPORT.

THE CONTRACTOR SHALL, WHEN DEVELOPING THE PROGRESS SCHEDULE, AND THOSE OF SUBCONTRACTORS, ENSURE THAT THE FOUNDATIONS ARE INSTALLED AT THE EARLIEST TIME AS IS FEASIBLE AND PRACTICAL, AND SHALL INCLUDE SUFFICIENT TIME IN THE PROGRESS SCHEDULE FOR ORDERING, MANUFACTURING, DELIVERY, AND INSTALLATION OF THE SUPPORT ITEMS AFTER THE FOUNDATIONS ARE IN PLACE.

NO PAYMENTS FOR DELIVERED MATERIALS FOR THE FOUNDATION OR SUPPORT ITEMS SHALL BE MADE UNTIL THE FOUNDATIONS ARE IN PLACE, AND IF CHANGES IN THE DESIGN OF THIS ITEM ARE REQUIRED, NO PAYMENT SHALL BE MADE FOR THE ITEMS MANUFACTURED TO THE ORIGINAL DESIGN.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE AND WILL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND OTHER INCIDENTALS NECESSARY FOR EACH SUPPORT FURNISHED, IN PLACE, COMPLETE AND ACCEPTED.

**GROUNDING AND BONDING**

THE REQUIREMENTS OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS (CMS) 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:
    - 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.

**GROUNDING AND BONDING (CONT.)**

- 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. 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.	VEHICLE SIGNAL	PEDESTRIAN SIGNAL
1	BLACK GREEN BALL	#1 WALK
2	WHITE AC NEUTRAL	AC NEUTRAL
3	RED RED BALL	#1 DW/FDW
4	GREEN EQUIPMENT GROUND	EQUIPMENT GROUND
5	ORANGE YELLOW BALL	#2 DW/FDW
6	BLUE GREEN ARROW	#2 WALK
7	WHITE/BLACK STRIPE YELLOW ARROW	NOT USED
6. POWER SERVICE AND DISCONNECT SWITCH.
  - A. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC-) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UNSPLICED CONDUCTOR. IF SPLICED, IT SHALL BE AN EXOTHERMIC WELD BUTT 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.

**633 UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATTS, AS PER PLAN**

IN ADDITION TO THE REQUIREMENTS OF C&MS 633 AND 733, POLE ATTACHMENT HARDWARE WILL BE INCLUDED FOR POLE-MOUNTED CABINETS, AND A CABINET RISER (8-INCH MINIMUM) AND ANCHOR BOLTS WILL BE PROVIDED FOR BASE-MOUNTED CABINETS. BEFORE PERFORMING THE WORK, THE CONTRACTOR, THE DISTRICT TRAFFIC ENGINEER AND THE PROJECT ENGINEER WILL PERFORM A SITE INSPECTION TO ESTABLISH THE LOCATION OF THE UPS CABINET AND FOUNDATION.

THE UPS CABINET SHALL INCLUDE A GENERATOR POWER PANEL WITH A HEAVY-DUTY POWER RELAY VERSUS THE LINE VOLTAGE GENERATOR SWITCH. THE GENERATOR INLET SHALL BE A RECESSED PANEL WITH A DOOR THAT IS FLUSH WITH THE EXTERNAL SIDE OF THE UPS CABINET. IT SHALL INCLUDE A RECESSED PLUG, AUTOMATIC TRANSFER SWITCH AND A DOOR THAT SECURELY CLOSES OVER THE POWER CORD.

THE CABINET SHALL HAVE A DOOR STOP MECHANISM AND THERMOSTATICALLY CONTROLLED FAN.

THE CABINET SHALL INCLUDE A BATTERY BALANCING DEVICE THAT REGULATES THE BATTERIES AND OPTIMIZES PERFORMANCE.

AFTER FOUR (4) HOURS OF BATTERY RUNTIME, THE SYSTEM SHALL BE PROGRAMMED TO SWITCH THE INTERSECTION FROM FULL OPERATION TO CONTROLLER AUTOMATIC FLASH OPERATION THROUGH THE MONITOR. THE CONTROLLER SHALL BE PROGRAMMED SO THAT FLASH OPERATION SHALL BEGIN ONCE THE INTERSECTION RUNS MINOR STREET GREEN (TYP. PH. 4 & 8), ALL-RED CLEARANCE, AND THEN FLASH OPERATION.

THE UPS OUTPUT NOTIFICATIONS FOR ON BATTERY, BATTERY 2-HOUR TIMER, AND LOW BATTERY SHALL BE WIRED INTO THE TRAFFIC SIGNAL CABINET BACK PANEL OR THROUGH THE CONTROLLER WITH A CII TO PROVIDE SPECIAL STATUS ALARMS FOR EACH OUTPUT INTO THE SIGNAL CONTROLLER.

THIS ITEM SHALL INCLUDE A RED LED STATUS INDICATOR LAMP TO ALLOW MAINTENANCE PERSONNEL AND LAW ENFORCEMENT TO QUICKLY ASSESS WHETHER A TRAFFIC SIGNAL CABINET IS BEING POWERED BY A UPS. THE LED HOUSING SHALL BE NEMA 4X, IP65 OR IP66, RATED FOR OUTDOOR USE AND BE TAMPER/SHATTER RESISTANT. IT SHALL BE A DOMED ENCLOSURE CONTAINING A RED LENS WITH LED THAT IS VISIBLE FROM 100 FOOT MINIMUM. THE ENCLOSURE AND LED MODULE SHOULD BE PLACED ON THE SIDE OF THE UPS CABINET FACING TOWARDS THE MAINLINE ROADWAY AND SEALED FROM WATER INTRUSION. IT SHOULD BE WIRED USING MINIMUM 20GA STRANDED, INSULATED HOOKUP WIRE TO THE STATUS RELAY OUTPUTS OF THE UPS. THE WIRES SHALL BE TERMINATED BY LUGS AT THE DISPLAY END AND PERMANENTLY LABELED "BACKUP POWER STATUS DISPLAY," WITH WIRE POLARITY INDICATED. THE RED LED SHALL ONLY ILLUMINATE TO INDICATE THE CABINET IS OPERATING UNDER UPS BACKUP POWER (THE "BACKUP" OPERATING CONDITION). THIS ITEM INCLUDES PROGRAMMING THE UPS STATUS RELAY OUTPUTS TO PRODUCE THE LAMP STATUS DISPLAYS. THESE STATUS DISPLAYS WILL BE SOLID 100% DUTY CYCLE (NOT FLASHING) DISPLAYS. THE OPERATING VOLTAGE OF THE LED LAMP SHALL BE 120V AC UNLESS OTHERWISE INDICATED.

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**ITEM 809 ADVANCE RADAR DETECTION, AS PER PLAN**

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A WAVETRONIX SMARTSENSOR ADVANCE DETECTION UNIT (MODEL SS-200E). THE DETECTION UNIT SHALL INCLUDE THE FOLLOWING:

1. POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.
2. ALL REQUIRED INPUTS CARDS SHALL BE INCLUDED IN THE TRAFFIC CABINET AND SHALL BE COMPATIBLE WITH CALTRANS, NEMA TS1 AND NEMA TS2 DETECTOR RACKS. THE CARDS SHALL PROVIDE TRUE PRESENCE DETECTOR CALLS OR CONTACT CLOSURE TO THE TRAFFIC CONTROLLER.
3. THE UNIT SHALL BE MOUNTED DIRECTLY TO A POLE OR MAST ARM, AS RECOMMENDED BY THE MANUFACTURER. CABLE(S) SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER.
4. SURGE PROTECTION DEVICES, AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE UNIT IS LOCATED TO PROTECT THE UNIT AND IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.
5. THE MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION AND TESTING AND SHALL PROVIDE ONSITE TRAINING ON THE SETUP, OPERATION AND MAINTENANCE OF THE UNIT.
6. A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND ETHERNET CABLE (MINIMUM 7 FEET).
7. THE POWER SUPPLY AND COMMUNICATION MODULES SHALL BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.
8. THE CONTRACTOR SHALL INSTALL THE RADAR DETECTION PRIOR TO MILLING/DISABLING EXISTING LOOPS.
9. THE INSTALLATION SHALL INCLUDE ALL CONTROLLER PROGRAMMING FOR COMPLETE INSTALLATION, WHICH INCLUDES MODIFICATIONS FOR REMOVAL OF EXISTING DETECTION. PAYMENT FOR ITEM 809 ADVANCE RADAR DETECTION, AS PER PLAN SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH UNIT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT, CONNECTIONS TESTED AND ACCEPTED, AND ANY OTHER NECESSARY HARDWARE TO ESTABLISH A FULLY FUNCTIONAL DETECTION SYSTEM.

PAYMENT FOR ITEM 809 ADVANCE RADAR DETECTION, AS PER PLAN SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH UNIT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT, CONNECTIONS TESTED AND ACCEPTED, AND ANY OTHER NECESSARY HARDWARE TO ESTABLISH A FULLY FUNCTIONAL DETECTION SYSTEM.

**ITEM 809 STOP-LINE RADAR DETECTION, AS PER PLAN**

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A WAVETRONIX SMARTSENSOR MATRIX DETECTION UNIT. THE DETECTION UNIT SHALL INCLUDE THE FOLLOWING:

1. POWER SHALL BE PROVIDED FROM THE TRAFFIC CABINET.
2. ALL REQUIRED INPUTS CARDS SHALL BE INCLUDED IN THE TRAFFIC CABINET AND SHALL BE COMPATIBLE WITH CALTRANS, NEMA TS1 AND NEMA TS2 DETECTOR RACKS. THE CARDS SHALL PROVIDE TRUE PRESENCE DETECTOR CALLS OR CONTACT CLOSURE TO THE TRAFFIC CONTROLLER.
3. THE UNIT SHALL BE MOUNTED DIRECTLY TO A POLE OR MAST ARM, AS RECOMMENDED BY THE MANUFACTURER. CABLE(S) SHALL BE PROVIDED AS REQUIRED AND RECOMMENDED BY THE MANUFACTURER.
4. SURGE PROTECTION DEVICES, AS RECOMMENDED BY THE MANUFACTURER SHALL BE INCLUDED BOTH AT THE POLE WHERE THE UNIT IS LOCATED TO PROTECT THE UNIT AND IN THE TRAFFIC CABINET TO PROTECT THE CABINET ELECTRONICS.
5. THE MANUFACTURER'S REPRESENTATIVE SHALL BE ON SITE DURING INSTALLATION AND TESTING AND SHALL PROVIDE ONSITE TRAINING ON THE SETUP, OPERATION AND MAINTENANCE OF THE UNIT.
6. A SERIAL TO ETHERNET COMMUNICATIONS MODULE AND ETHERNET CABLE (MINIMUM 7 FEET).
7. THE POWER SUPPLY AND COMMUNICATION MODULES SHALL BE SECURED TO A SINGLE PANEL THAT CAN BE MOUNTED INTERIOR TO THE TRAFFIC CABINET. THE PANEL SHALL INCLUDE MODULAR-PLUG STYLE CONNECTIONS FOR UP TO FOUR (4) SENSOR CABLES. ADDITIONAL SENSORS MAY BE HARD-WIRED TO THE COMMUNICATION MODULES, AS NECESSARY.
8. THE CONTRACTOR SHALL INSTALL THE RADAR DETECTION PRIOR TO MILLING/DISABLING EXISTING LOOPS.
9. THE INSTALLATION SHALL INCLUDE ALL CONTROLLER PROGRAMMING FOR COMPLETE INSTALLATION, WHICH INCLUDES MODIFICATIONS FOR REMOVAL OF EXISTING DETECTION.

PAYMENT FOR ITEM 809 STOP-LINE RADAR DETECTION, AS PER PLAN SHALL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH UNIT, COMPLETE AND IN PLACE INCLUDING ALL REQUIRED CABINET HARDWARE, MOUNTING BRACKETS, CABLES, CONDUIT AND CONNECTIONS TESTED AND ACCEPTED.

**ITEM 633 COMMUNICATIONS, AS PER PLAN**

FURNISH A CELLULAR MODEM, ONE 3-ANTENNA ASSEMBLY (PART #6001136), AND A 10' ETHERNET CABLE FOR REMOTE WIRELESS CELLULAR COMMUNICATION.

FOR NETWORK CONSISTENCY CELLULAR MODEMS SHALL BE THE SIERRA WIRELESS: MODEM, AIRLINK MP70 ETHERNET WITH AC TO DC POWER CABLE - MODEL 1102709KIT

THIS ITEM SHALL INCLUDE THE FURNISHING A MOUNTING BRACKET FOR THE ANTENNA WITH ALL NECESSARY HARDWARE INCLUDING BUT NOT LIMITED TO SPRING NUTS, WASHERS, AND BOLTS THAT INSTALLS TO THE MOUNTING CHANNEL ON THE SIDE OF THE SIGNAL CABINET.

THE CELLULAR MODEM EQUIPMENT SHALL BE DELIVERED TO ODOT DISTRICT 11 TRAFFIC FOR PROGRAMMING AND INSTALLATION.

ODOT DISTRICT 11 TRAFFIC  
ATTN: JOE PARISI  
2201 REISER AVE. S.E.  
NEW PHILADELPHIA, OH 44663

THE CONTRACTOR SHALL PROVIDE THE MODEM SERIAL NUMBERS AND NECESSARY ESN NUMBERS FOR ODOT TO ESTABLISH WIRELESS SERVICE.

THE DEPARTMENT WILL MEASURE "COMMUNICATIONS, AS PER PLAN" BY THE NUMBER OF COMPLETE UNITS FURNISHED, RECEIVED, AND ACCEPTED BY ODOT DISTRICT 11 TRAFFIC.

**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.

**UNDERDRAINS FOR PULLBOXES**

REFERENCE TRAFFIC SCD HL-30.11 FOR DETAILS ABOUT DRAINING PULLBOXES. 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 20 FEET.

**ITEM 625 - LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), (150W LED, 120V), AS PER PLAN**

IN ADDITION TO THE REQUIREMENTS OF ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATIONS, LUMINAIRES FOR CONVENTIONAL LIGHTING UNITS SHALL BE AS FOLLOWS:

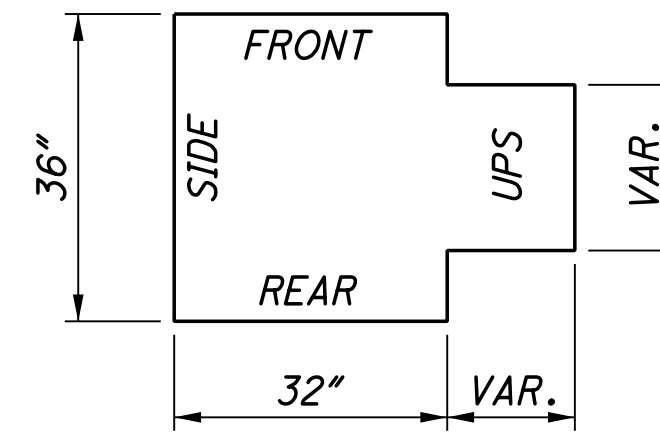
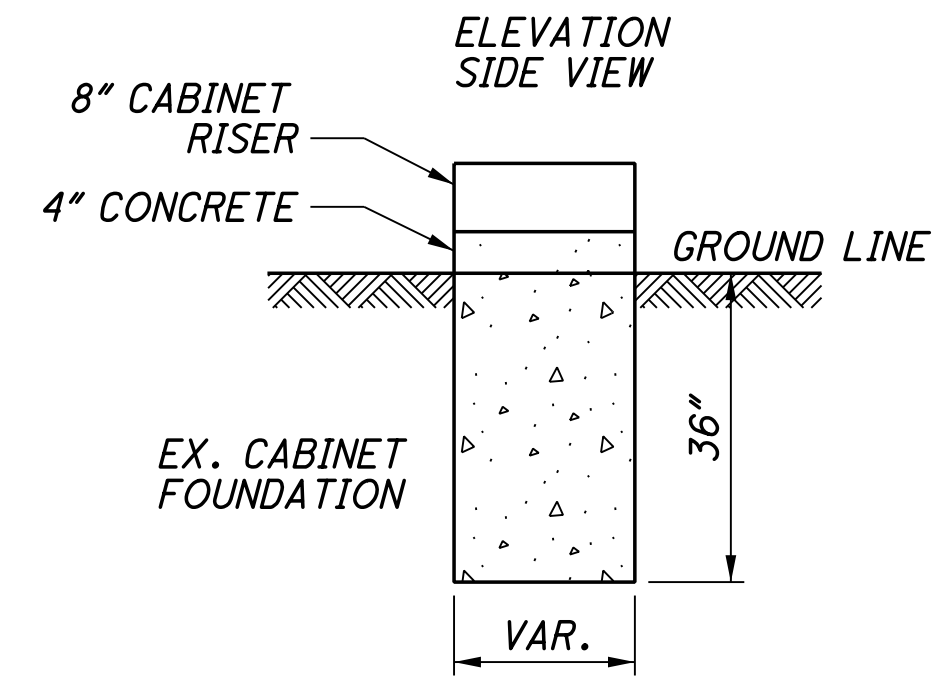
LUMINAIRES FOR CONVENTIONAL LIGHTING UNITS WITH 150 WATT LED LAMPS, 120 VOLT. THE ACCEPTABLE MANUFACTURERS ARE:

1. AMERICAN ELECTRIC ATB2-P901-R5-4K
2. COOPER LIGHTING ARCH-L-PA3-280-740-U-5WQ
3. LEOTEK GCL2-80J-MV-40K-5-XX-265
4. OR EQUAL, AS APPROVED BY THE ENGINEER

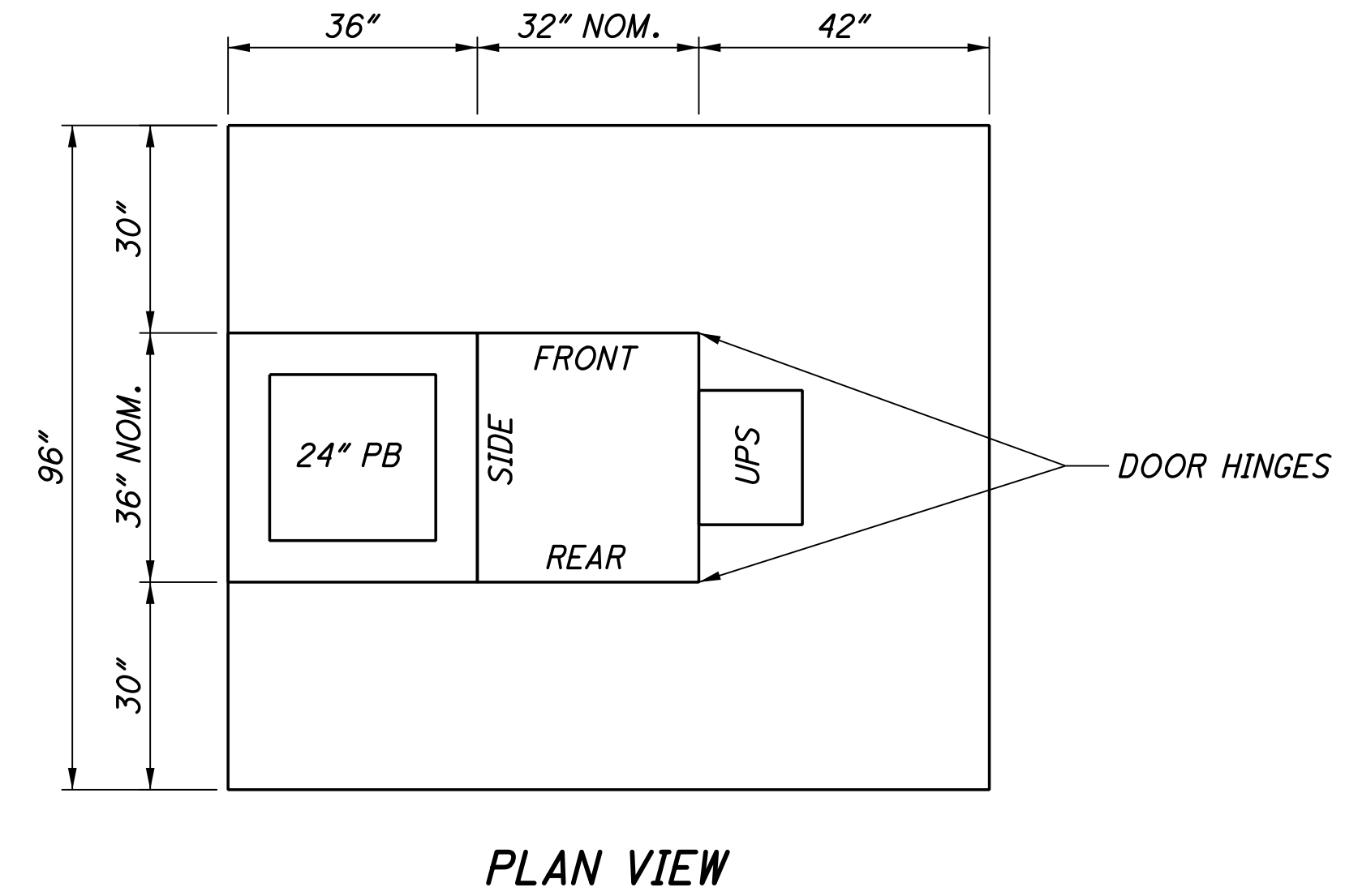
PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH CMS ITEM 625, "LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), AS PER PLAN" FOR EACH LUMINAIRE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

MODEL 332 CABINET DETAIL (TYP.)

UPS FOUNDATION DETAIL



UPS WORK PAD DETAIL



**NOTES:**

- 1) THE SIZE OF THE UPS FOUNDATION MAY VARY BASED ON THE CABINET SIZE PROVIDED.
- 2) UPS FOUNDATION ELEVATION SHOULD MATCH CABINET FOUNDATION ELEVATION.
- 3) THE UPS CABINET SHALL BE MOUNTED FLUSH UP AGAINST THE SIGNAL CABINET AND SEALED.
- 4) CONDUIT AND WIRING FROM THE SIGNAL CABINET TO THE UPS SHALL BE INSTALLED THROUGH THE CABINET RISER.

CALCULATED  
GBS  
CHECKED  
DAH

TRAFFIC SIGNAL GENERAL NOTES

D11-TSG-FY2023

SEPAC AND ASC/3 INPUT FILE INFORMATION FOR THE 332 CABINET

UPPER INPUT FILE (FILE=I)

C U P P A N E N R E L	PHASE	1	2	2	2	3	4	4	4	1	MANUAL CONTROL ADV.	2	6	FLASH	
	DEFAULT FUNCTION	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	SPARE	PED	PED	SENSE	
	SEPAC DETECTOR NO.	VEH 1	VEH 3	VEH 5	VEH 7	VEH 9	VEH 11	VEH 13	VEH 15	VEH 17		PED 2	PED 6		
	ASC/3 DETECTOR NO.	VEH 1	VEH 2	VEH 3	VEH 4	VEH 5	VEH 6	VEH 7	VEH 8	VEH 9		PED 2	PED 6		
	C1 PIN NUMBER	56	39	63	47	58	41	65	49	60		80	67	68	81
FIELD TERMINALS	1-D,E	2-D,E	3-D,E	4-D,E	5-D,E	6-D,E	7-D,E	8-D,E	9-D,E	10-D,E	11-D,E	12-D,E	13-D,E	14-D,E	
SLOT NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14
C L H O A W N E R E L	PHASE	1	2	2	2	3	4	4	4	3	ADV.	4	8	STOP	
	DEFAULT FUNCTION	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	SPARE	ENABLE	PED	PED	TIME
	SEPAC DETECTOR NO.	VEH 1	VEH 4	VEH 6	VEH 7	VEH 9	VEH 12	VEH 14	VEH 15	VEH 18			PED 4	PED 8	
	ASC/3 DETECTOR NO.	VEH 1	VEH 10	VEH 11	VEH 4	VEH 5	VEH 14	VEH 15	VEH 8	VEH 13			PED 4	PED 8	
	C1 PIN NUMBER	56	43	76	47	58	45	78	49	62		53	69	70	82
FIELD TERMINALS	1-J,K	2-J,K	3-J,K	4-J,K	5-J,K	6-J,K	7-J,K	8-J,K	9-J,K	10-J,K	11-J,K	12-J,K	13-J,K	14-J,K	

LOWER INPUT FILE (FILE=J)

C U P P A N E N R E L	PHASE	5	6	6	6	7	8	8	8	5	SPARE	SPARE	EV - A	EV - B	RR - 1
	DEFAULT FUNCTION	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	SPARE	SPARE			
	SEPAC DETECTOR NO.	VEH 19	VEH 21	VEH 23	VEH 25	VEH 29	VEH 31	VEH 33	VEH 35	VEH 37					
	ASC/3 DETECTOR NO.	VEH 17	VEH 18	VEH 19	VEH 20	VEH 21	VEH 22	VEH 23	VEH 24	VEH 25					
	C1 PIN NUMBER	55	40	64	48	57	42	66	50	59		54	71	72	51
FIELD TERMINALS	1-D,E	2-D,E	3-D,E	4-D,E	5-D,E	6-D,E	7-D,E	8-D,E	9-D,E	10-D,E	11-D,E	12-D,E	13-D,E	14-D,E	
SLOT NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14
C L H O A W N E R E L	PHASE	5	6	6	6	7	8	8	8	7	SPARE	SPARE	EV - C	EV - D	RR - 2
	DEFAULT FUNCTION	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	SPARE	SPARE			
	SEPAC DETECTOR NO.	VEH 19	VEH 22	VEH 24	VEH 25	VEH 29	VEH 32	VEH 34	VEH 35	VEH 38					
	ASC/3 DETECTOR NO.	VEH 17	VEH 26	VEH 27	VEH 20	VEH 21	VEH 30	VEH 31	VEH 24	VEH 29					
	C1 PIN NUMBER	55	44	77	48	57	46	79	50	61		75	73	74	52
FIELD TERMINALS	1-J,K	2-J,K	3-J,K	4-J,K	5-J,K	6-J,K	7-J,K	8-J,K	9-J,K	10-J,K	11-J,K	12-J,K	13-J,K	14-J,K	

SEPAC AND ASC/3 INPUT FILE INFORMATION FOR THE 336 CABINET

C U P P A N E N R E L	PHASE	1	2	3	4	5	6	7	8	RR - 1	EV - A	EV - B	2	6	FLASH
	DEFAULT FUNCTION	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	RR - 1	EV - A	EV - B	PED	PED	SENSE
	SEPAC DETECTOR NO.	VEH 1	VEH 3	VEH 9	VEH 11	VEH 19	VEH 21	VEH 29	VEH 31				PED 2	PED 6	
	ASC/3 DETECTOR NO.	VEH 1	VEH 2	VEH 5	VEH 6	VEH 17	VEH 18	VEH 21	VEH 22				PED 2	PED 6	
	C1 PIN NUMBER	56	39	58	41	55	40	57	42	51	71	72	67	68	81
FIELD TERMINALS	1-D,E	2-D,E	3-D,E	4-D,E	5-D,E	6-D,E	7-D,E	8-D,E	9-D,E	10-D,E	11-D,E	12-D,E	13-D,E	14-D,E	
SLOT NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13	14
C L H O A W N E N R E L	PHASE	2	2	4	4	6	6	8	8	RR - 2	EV - C	EV - D	4	8	STOP
	DEFAULT FUNCTION	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	EXT-CALL	RR - 2	EV - C	EV - D	PED	PED	TIME
	SEPAC DETECTOR NO.	VEH 7	VEH 4	VEH 15	VEH 12	VEH 25	VEH 22	VEH 35	VEH 32				PED 4	PED 8	
	ASC/3 DETECTOR NO.	VEH 4	VEH 10	VEH 8	VEH 14	VEH 20	VEH 26	VEH 24	VEH 30				PED 4	PED 8	
	C1 PIN NUMBER	47	43	49	45	48	44	50	46	52	73	74	69	70	82
FIELD TERMINALS	1-J,K	2-J,K	3-J,K	4-J,K	5-J,K	6-J,K	7-J,K	8-J,K	9-J,K	10-J,K	11-J,K	12-J,K	13-J,K	14-J,K	

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THIS DRAWING REPLACES PIS 203324 DATED 10-18-2013.

DESIGNED XXX	REVIEWED XXX	OFFICE OF ROADWAY ENGINEERING
PLAN INSERT SHEET		
SEPAC AND ASC / 3 INPUT FILE INFORMATION FOR 332 AND 336 CABINETS		
PIS 203324		
1 / 1		
14 / 47		



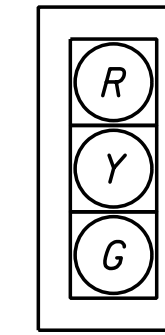
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SHEET NO.	LOCATION (COL-62-2.86)  FUNDING: 02/ S< 2/ OT	611											625											632											633						809		
		4" CONDUIT, TYPE E	CONDUIT, 2", 725.04	CONDUIT, 3", 725.04	CONDUIT, 3.5", 725.04	3" CONDUIT, JACKED OR DRILLED, 725.04	TRENCH	GROUND ROD	PULL BOX, 725.08, 18"	PULL BOX, 725.08, 24"	UNDERGROUND WARNING/MARKING TAPE	ARC FLASH CALCULATIONS AND LABEL, (COL-62-2.86)	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	COVERING OF VEHICULAR SIGNAL HEAD	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	SIGNAL SUPPORT FOUNDATION	POWER CABLE, 3 CONDUCTOR, NO 6. AWG	SERVICE CABLE, 3 CONDUCTOR , NO. 6 AWG	POWER SERVICE, AS PER PLAN	SIGNAL SUPPORT, TYPE TC-12.31 DESIGN 10 POLE, WITH MAST ARMS TC-81.22 DESIGN 13 AND DESIGN 12	SIGNAL SUPPORT, TYPE TC-81.22 DESIGN 2	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	CABINET, TYPE 332L	COMMUNICATIONS, AS PER PLAN	CABINET FOUNDATION	CONTROLLER WORK PAD	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	ADVANCE RADAR DETECTION, AS PER PLAN	STOP LINE RADAR DETECTION, AS PER PLAN	ATC CONTROLLER, AS PER PLAN (PROGRAM AND INSTALL ONLY)													
		FT	FT	FT	FT	FT	FT	EACH	EACH	EACH	FT	EACH	EACH	EACH	FT	EACH	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH													
16	POWER IN														52	107	1																										
16	CONTROLLER	20						1		1		1											1	1	1	1	1		1														
16	CONTROLLER TO SP-3			16	16					32																																	
16	SP-3										1			4	4	159	1				1							1	2														
16	SP-3 TO PB-1			12						12																																	
16	PB-1 TO PB-2					69					1																																
16	PB-2 TO SP-2		40						40																																		
16	SP-2										1										1								1														
16	PB-2 TO PB-3					73						1																															
16	PB-3 TO SP-1		26						26																																		
16	SP-1										1			2	2	58	1				1						1	1															
16	EXISTING TO BE REMOVED																					1																					
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>		20	66	28	16	142	110	4	3	1	110	1	8	8	716	3	52	107	1	1	2	1	1	1	1	1	2	4	1														

<b>D11 - TSG - FY 2023</b>	CALCULATED
	GBS CHECKED DAH
<b>TRAFFIC SIGNAL SUBSUMMARY (COL - 62 - 2.86)</b>	15 47

PID 107591 COL-62-02.86							
POINT ID	NORTHING	EASTING	ELEVATION	CODE	STATION	OFFSET	ALIGNMENT
CP01	453215.301	2374232.241	1094.59	CNPT	177+22.38	69.48 RT	CL_RW_US62
CP02	453330.731	2374750.769	1095.76	CNPT	182+42.65	-36.32 LT	CL_RW_US62
CP03	453204.707	2373842.674	1091.24	CNPT	74.70 RT	CL_RW_US62	
CL1	453218.016	2369388.514	0.00	POT	128+79.15	CL	CL_RW_US62
CL2	453285.456	2374280.599	0.00	PI	177+71.70	CL	CL_RW_US62
CL3	453353.886	2377877.848	0.00	POT	213+69.60	CL	CL_RW_US62
CL4	452905.647	2374340.305	0.00	PC	10+93.87	CL	CL_CONST_CR19
CL5	453146.873	2374296.046	0.00	PT	13+39.32	CL	CL_CONST_CR19
CL6	453259.852	2374283.357	0.00	PC	14+53.01	CL	CL_CONST_CR19
CL7	453308.934	2374280.392	0.00	PT	15+02.21	CL	CL_CONST_CR19

**SIGNAL HEADS**

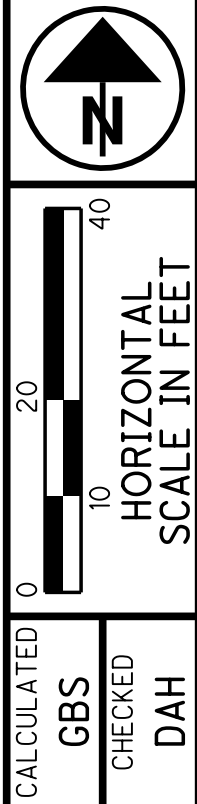


2A, 2B, 4A, 4B, 6A, 6B, 8A, 8B

ALL SIGNAL HEADS BLACK POLYCARBONATE, 12" GLASS LENSES, CUTAWAY VISORS, WITH BACKPLATES

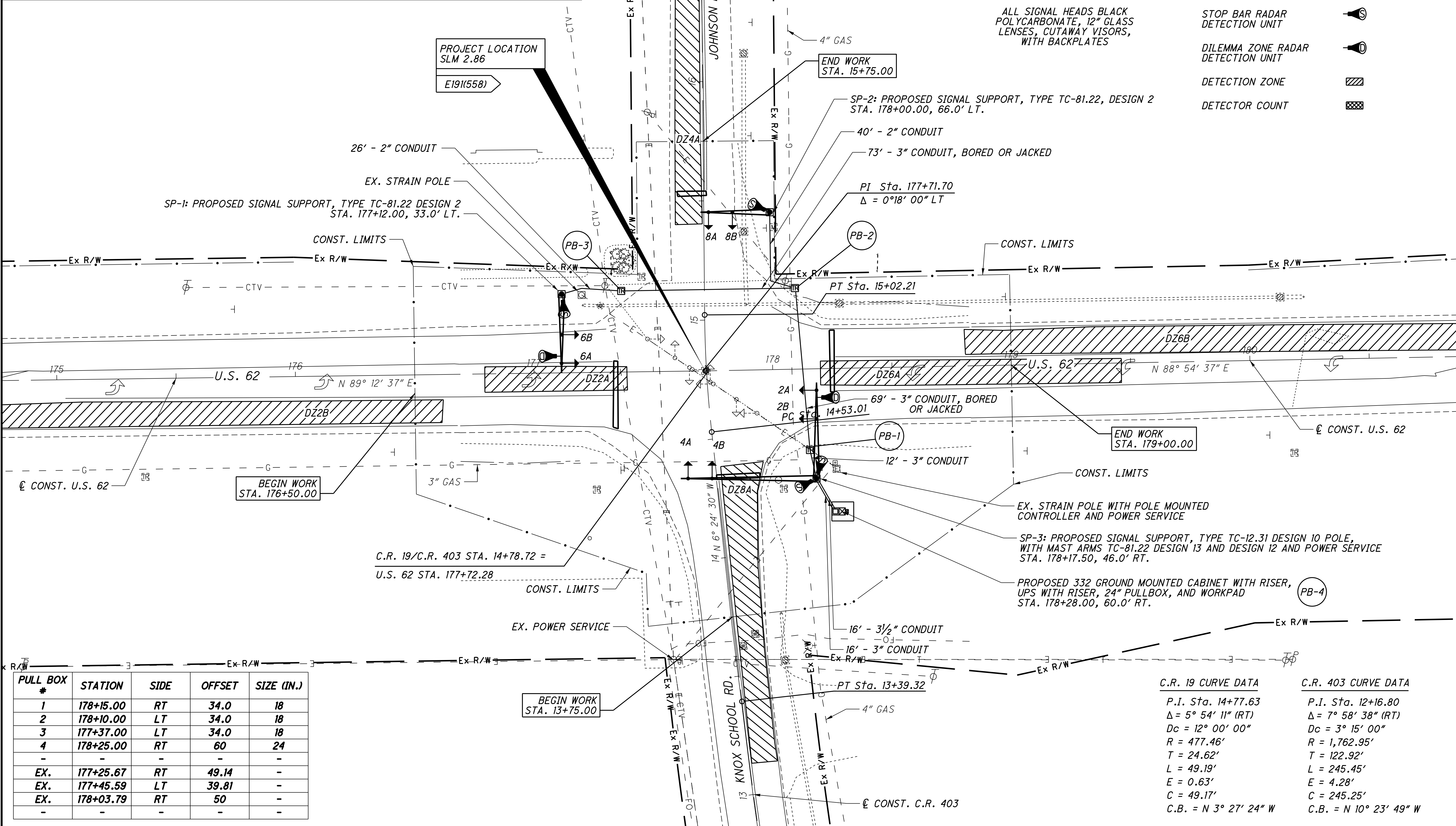
**LEGEND**

PROP	EXIST



**TRAFFIC SIGNAL PLAN (COL-62-2.86)  
COL-62 & KNOX SCHOOL RD.**

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PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
1	178+15.00	RT	34.0	18
2	178+10.00	LT	34.0	18
3	177+37.00	LT	34.0	18
4	178+25.00	RT	60	24
-	-	-	-	-
EX.	177+25.67	RT	49.14	-
EX.	177+45.59	LT	39.81	-
EX.	178+03.79	RT	50	-
-	-	-	-	-

C.R. 19 CURVE DATA		C.R. 403 CURVE DATA	
P.I. Sta.	14+77.63	P.I. Sta.	12+16.80
Δ	5° 54' 11" (RT)	Δ	7° 58' 38" (RT)
Dc	12° 00' 00"	Dc	3° 15' 00"
R	477.46'	R	1,762.95'
T	24.62'	T	122.92'
L	49.19'	L	245.45'
E	0.63'	E	4.28'
C	49.17'	C	245.25'
C.B.	N 3° 27' 24" W	C.B.	N 10° 23' 49" W

**D11-TSG-FY2023**

**SIGNAL TIMING CHART (TEM FORM 496-3)**

INTERSECTION: COL US 62 & KNOX SCHOOL									
MAINTAINING AGENCY: ODOT DISTRICT 11									
START UP	DUAL ENTRY:	YES	PHASES:				2&6, 4&8		
	REST IN RED:	RING 1		RING 2					
START IN:	-								
TIME FOR: FLASH, ALL RED (SEC.):	9, 6								
FIRST PHASE(S):	2 & 6								
COLOR DISPLAYED:	GREEN								
INTERVAL OR FEATURE	CONTROLLER MOVEMENT NO.								
INTERSECTION MOVEMENT (PHASE)	1	2	3	4	5	6	7	8	
DIRECTION	-	EB	-	SB	-	WB	-	NB	
MINIMUM GREEN (INITIAL) (SEC.)	-	20	-	15	-	20	-	15	
ADDED INITIAL *(SEC./ACTUATION)	-	5	-	3	-	5	-	3	
MAXIMUM INITIAL *(SEC.)	-	-	-	-	-	-	-	-	
PASSAGE TIME (PRESET GAP) (SEC.)	-	1.5	-	1.5	-	1.5	-	1.5	
TIME BEFORE REDUCTION *(SEC.)	-	-	-	-	-	-	-	-	
MINIMUM GAP *(SEC.)	-	-	-	-	-	-	-	-	
TIME TO REDUCE *(SEC.)	-	-	-	-	-	-	-	-	
MAXIMUM GREEN I (SEC.)	-	50	-	30	-	50	-	30	
MAXIMUM GREEN II (SEC.)	-	50	-	30	-	50	-	30	
YELLOW CHANGE (SEC.)	-	5	-	4.5	-	5	-	4.5	
ALL RED CLEARANCE (SEC.)	-	1.5	-	2	-	1.5	-	2	
DELAYED GREEN (LPI) * (SEC.)	-	-	-	-	-	-	-	-	
FLASHING YELLOW ARROW DELAY* (SEC.)	-	-	-	-	-	-	-	-	
WALK (SEC.)	-	-	-	-	-	-	-	-	
PEDESTRIAN CLEARANCE (SEC.)	-	-	-	-	-	-	-	-	
RECALL	MAXIMUM (ON/OFF)	-	OFF	-	OFF	-	OFF	-	OFF
	MINIMUM (ON/OFF)	-	ON	-	OFF	-	ON	-	OFF
	PEDESTRIAN (ON/OFF)	-	OFF	-	OFF	-	OFF	-	OFF
MEMORY (ON/OFF)	-	OFF	-	OFF	-	OFF	-	OFF	

\*VOLUME DENSITY CONTROLS

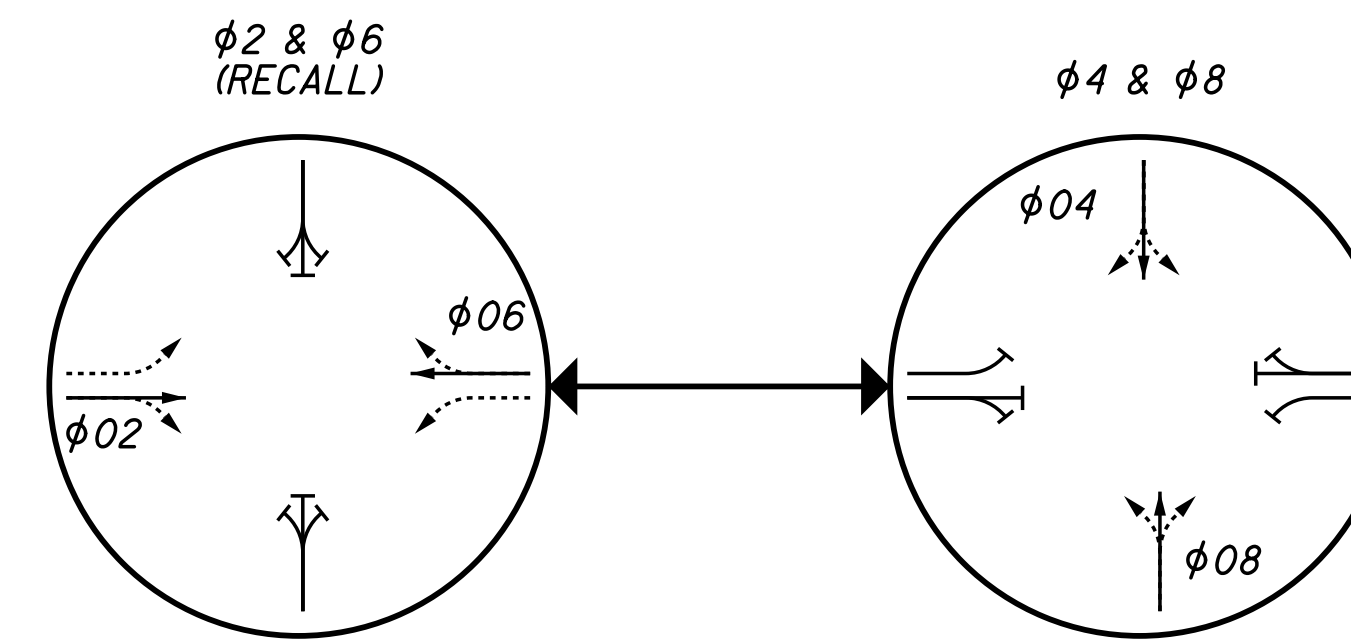
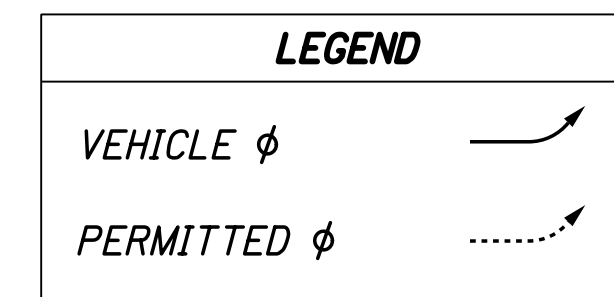
#FOR CROSSING WITH PEDESTRIAN PUSHBUTTONS, LPI'S (LEADING PEDESTRIAN INTERVALS) MAY BE IMPLEMENTED (3-6 SEC.) IN ACCORDANCE WITH LPI DURATION TIME PER THE ODOT SIGNAL CALCULATIONS - CLEARANCE INTERVALS SPREADSHEET.

\*WHEN IMPLEMENTING FYA, A MINIMUM 3 SECOND DELAY SHALL BE PROGRAMMED.

**NOTES:**

- ALL MOVEMENTS SHALL BE ACTUATED. THE PRIMARY THRU MOVEMENT SHOULD HAVE MIN RECALL ACTIVE TO REST IN GREEN.
- FOR PROTECTED/PERMISSIVE PHASES, IMPLEMENT CALL OMITTS TO AVOID YELLOW BALL TRAP.
- ENABLE  $\phi 1, 3$  &  $\phi 5, 7$  DETECTOR SWITCHING TO ALLOW  $\phi 1$  &  $\phi 5$  TO EXTEND  $\phi 2$  &  $\phi 6$  OR  $\phi 3$  &  $\phi 7$  TO EXTEND  $\phi 4$  &  $\phi 8$ , RESPECTIVELY, WHEN ALLOCATED GREEN TIME FOR LEFT TURN PHASES ARE EXHAUSTED.
- RADAR DETECTION UNITS FOR DILEMMA ZONE DETECTION SHALL PLACE A CONSTANT CALL TO THE CONTROLLER WHEN VEHICLES TRAVEL TIMES TO THE STOP BAR ARE BETWEEN 2.5 AND 6 SECONDS. SPEED TRIGGER SHALL BE SET FOR VEHICLES TRAVELING 35 MPH AND GREATER.
- RADAR SHALL HAVE QUEUE DETECTION CONFIGURED AND A ZONE PLACED AT 100-200 FEET FROM STOP BAR FOR SLOW MOVING VEHICLE EXTENSIONS. SPEED TRIGGER SHALL BE SET AT 1-35 MPH.
- ALL DETECTOR DELAYS SHALL BE PLACED IN THE CONTROLLER.
- FOR ANY ENTRY TO FLASHING OPERATION, PROGRAMMING SHALL RUN MINOR STREET GREEN (TYP.  $\phi 4$  &  $\phi 8$ ), ALL-RED CLEARANCE, AND THEN FLASHING OPERATION.

**PHASING DIAGRAM (TYPICAL)**



**RADAR DETECTION CHART (TEM FORM 496-4)**

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMMED IN CONTROLLER (SEC.)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
DZ2A	EB LT	PRESENCE	2	6	2	CALL/EXTEND PHASE 2	-5 TO 55
DZ2B	EB THRU	PULSE	2	-	-	DILEMMA ZONE	50 TO 900
DZ4A	SB THRU	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-10 TO 120
DZ6A	WB LT	PRESENCE	6	6	6	CALL/EXTEND PHASE 6	-5 TO 120
DZ6B	WB THRU	PULSE	6	-	-	DILEMMA ZONE	50 TO 900
DZ8A	NB THRU	PRESENCE	8	6	8	CALL/EXTEND PHASE 8	-5 TO 120

NOTE: ADVANCED DILEMMA ZONE SPEED THRESHOLD >30 MPH  
PURPOSE: STOP-LINE OR ADVANCED DETECTION

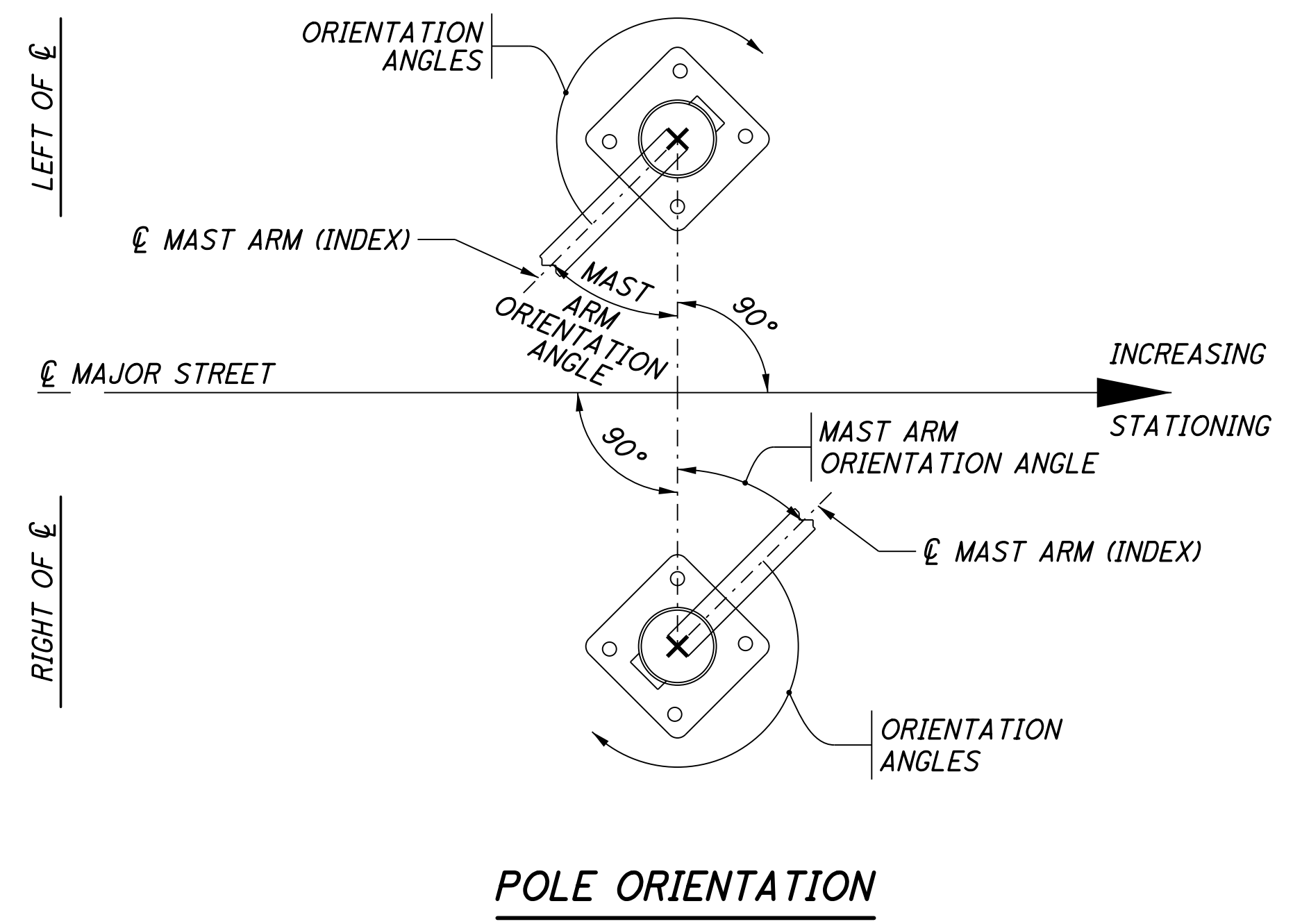
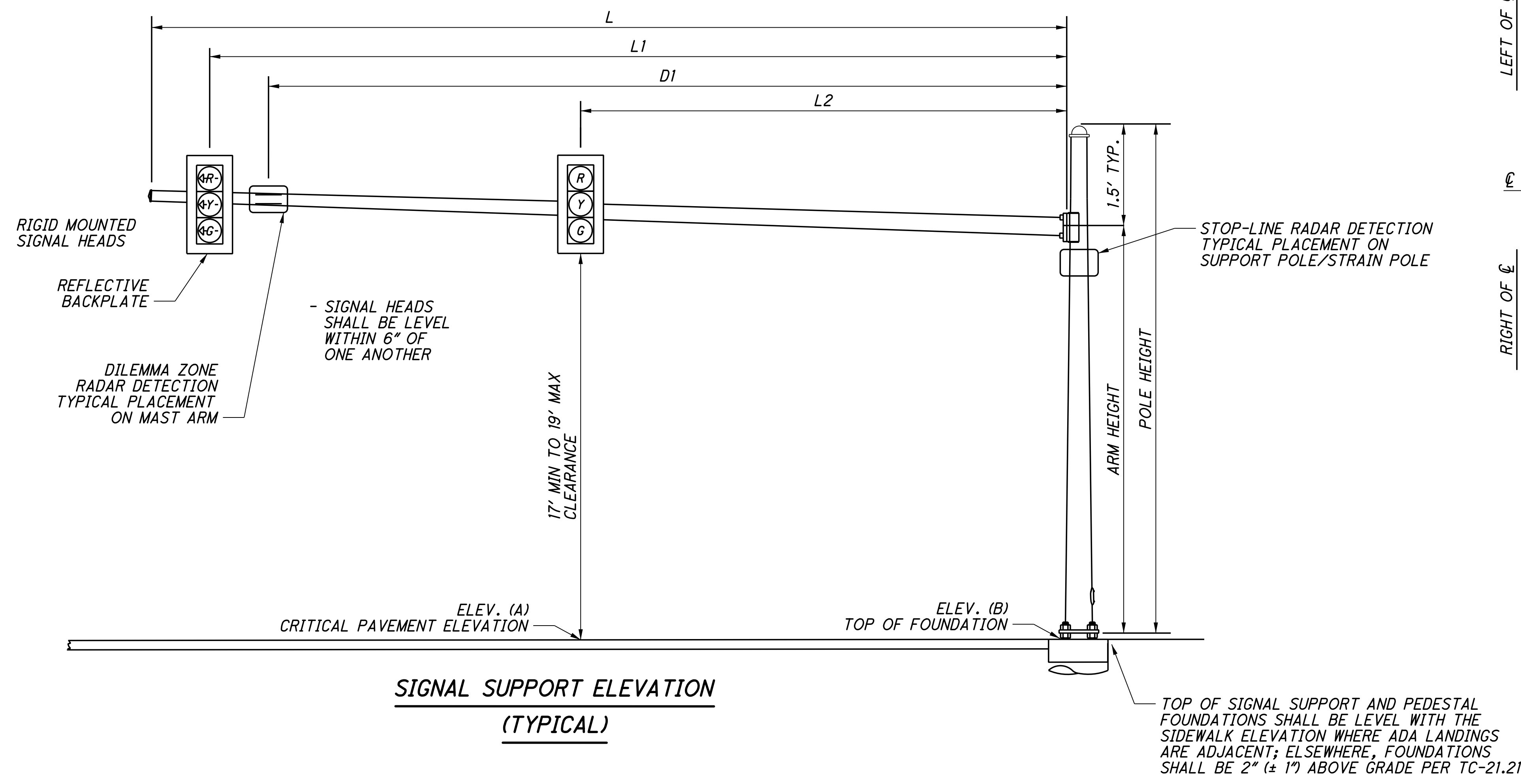
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CALCULATED  
GBS  
CHECKED  
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TRAFFIC SIGNAL PLAN DETAILS (COL-62-2.86)  
COL-62 & KNOX SCHOOL RD.

D11-TSG-FY2023





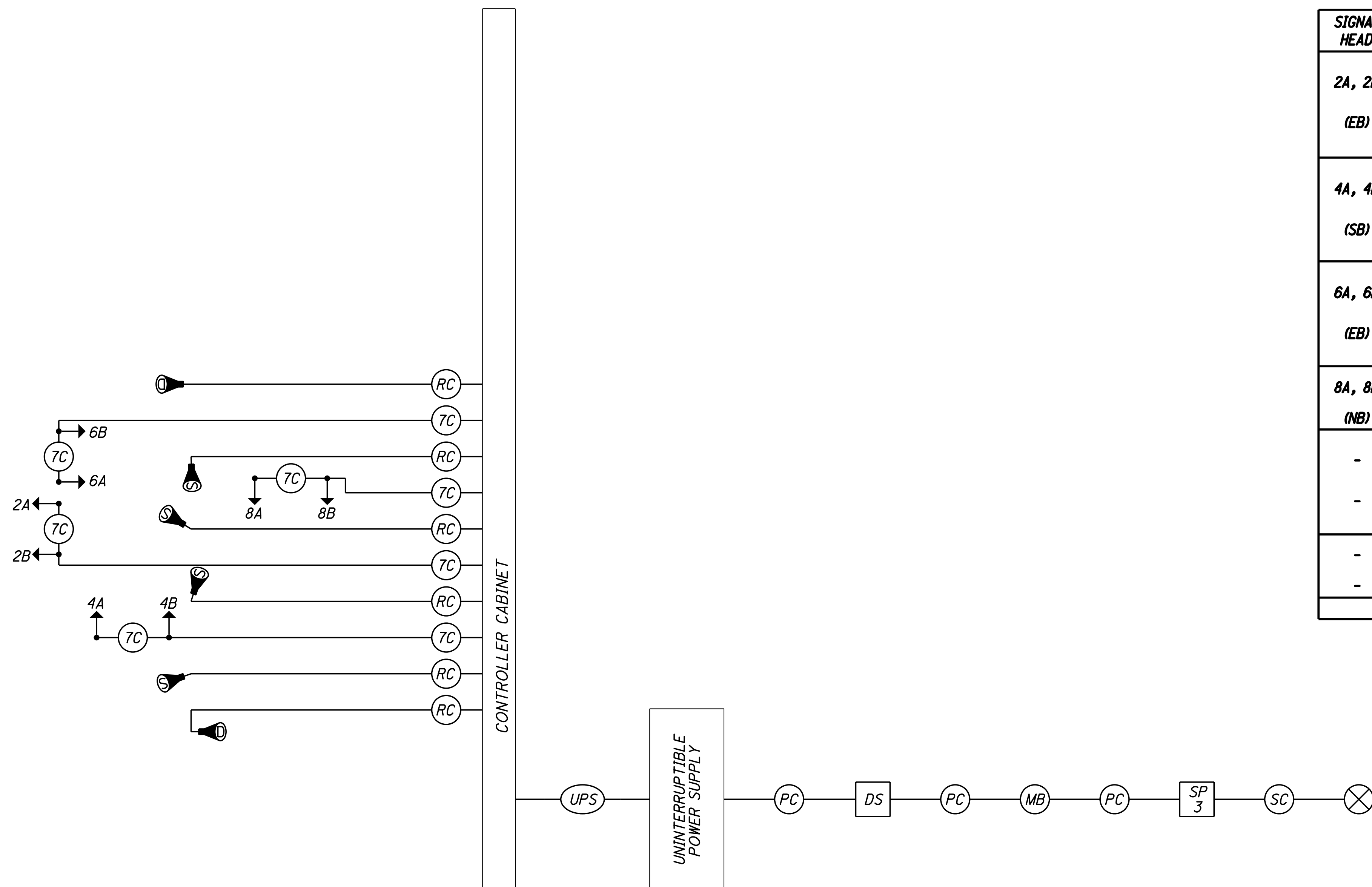
MAST ARM TABLE (TEM FIGURE 498-37 & 38)

SUPPORT NO.	STATION	OFFSET	TEM Fig. 498-37: Plan Details for Signal Supports - Arm Lengths										TEM Fig. 498-38: Plan Details for Signal Supports - Mast Arm Orientation					
			ELEVATION		SIGNAL SUPPORT DETAILS								ORIENTATION ANGLES FROM MAST ARM A					
			A (Pavt. Elev.)	B (Top of Found.)	DESIGN TYPE	DESIGN NO.	POLE HEIGHT	ARM HEIGHT	L	L1	L2	D1	MAST ARM A ANGLE	MAST ARM B ANGLE	POWER SERVICE	HANDHOLE		
				FT	FT	FT	FT	FT	FT	FT	FT	DEG	DEG	DEG	DEG			
SP-1	177+12.00	33.0' LT	1095.33	1095.34	TC-81.22	2	21	19.5	31.0	27.8	15.8	24.8	0			180		
SP-2	178+00.00	66.0' LT	1095.97	1096.45	TC-81.22	2	21	19.5	28.0	24.4	14.4		90			180		
SP-3	178+17.50	46.0' RT	1095.16	1095.51	TC-81.22	13	21	19.5	56.0	52.6	42.5		270	306		180		
SP-3	178+17.50	46.0' RT	1095.70	1095.51	TC-81.22	12	21	19.5	39.0	35.8	23.8	32.8		0				

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WIRING DIAGRAM (TYPICAL)

FIELD WIRING HOOK-UP CHART (TEM FORM 496-16)



SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH	SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
2A, 2B (EB)	R	φ 2 R	R	-	-	-	-
	Y	φ 2 Y		-	-	-	
	G	φ 2 G		-	-	-	
	-	-		-	-	-	
4A, 4B (SB)	R	φ 4 R	R	-	-	-	-
	Y	φ 4 Y		-	-	-	
	G	φ 4 G		-	-	-	
	-	-		-	-	-	
6A, 6B (EB)	R	φ 6 R	R	-	-	-	-
	Y	φ 6 Y		-	-	-	
	G	φ 6 G		-	-	-	
	-	-		-	-	-	
PEDESTRIAN MOVEMENTS							
8A, 8B (NB)	R	φ 8 R	R	-	-	-	-
	Y	φ 8 Y		-	-	-	
	G	φ 8 G		-	-	-	
OVERLAPS							
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

LS = LOAD SWITCH

LEGEND

	TRAFFIC SIGNAL, 3 UNIT, HEAD 12"		SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG
	DILEMMA ZONE RADAR DETECTION UNIT		POWER CABLE, 2 CONDUCTOR, NO. 6 AWG
	STOP LINE RADAR DETECTION UNIT		SIGNAL SUPPORT POLE NO. ...
	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG		METER BASE
	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG		UNINTERRUPTIBLE POWER SUPPLY CABLE
	RADAR DETECTION CABLE		DUAL LIGHTING/SIGNAL DISCONNECT SWITCH
	POWER SOURCE		

NOTES:

- FOR LOCATIONS WITH LEFT TURN LANES RUN 7C FOR POTENTIAL PT/PM LT PHASE IF INITIAL DESIGN IS FOR PERMITTED ONLY.
- OVERLAPS SHALL BE WIRED TO THE APPROPRIATE LOAD SWITCHES AS PER THE FIELD HOOKUP CHART AND CONFIGURED IN THE CONTROLLER SOFTWARE PER THE SIGNAL TIMING CHART.

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CALCULATED  
GBS  
CHECKED  
DAH

TRAFFIC SIGNAL PLAN DETAILS (COL-62-2.86)  
COL-62 & KNOX SCHOOL RD.

D11-TSG-FY2023

VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	EB	-	-	SB	-	-	WB	-	-	NB	-
PLAN NO.	US 62 & KNOX SCHOOL AM PEAK											
LEFT	-	32	-	-	24	-	-	9	-	-	17	-
THRU	-	250	-	-	9	-	-	360	-	-	21	-
RIGHT	-	12	-	-	34	-	-	25	-	-	14	-
U-TURN	-	0	-	-	0	-	-	0	-	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-	-
VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	EB	-	-	SB	-	-	WB	-	-	NB	-
PLAN NO.	US 62 & KNOX SCHOOL PM PEAK											
LEFT	-	65	-	-	26	-	-	25	-	-	5	-
THRU	-	446	-	-	19	-	-	398	-	-	6	-
RIGHT	-	19	-	-	60	-	-	21	-	-	26	-
U-TURN	-	0	-	-	0	-	-	0	-	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-	-

COUNT INFORMATION			
Month/Year:	1/20/2021	Day of Week:	WED
Time Period(s):	7:00 AM TO 7:00 PM		
Total Number of Hours:	12		
Method of Obtaining Counts:	VIDEO		
Type of Count2:	TURNING MOVEMENT COUNT (TMC)		



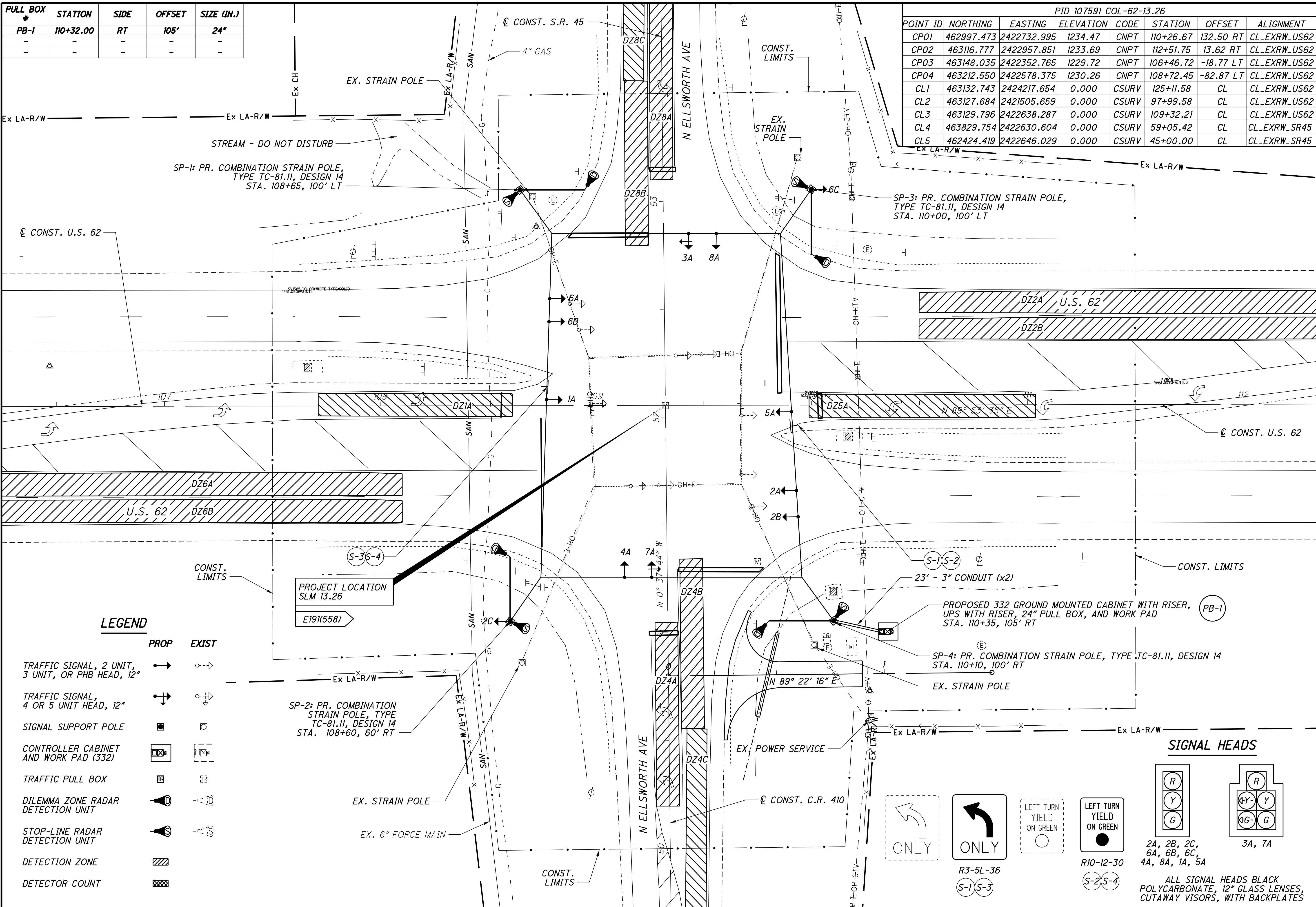
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SHEET NO.	REFERENCE NO.	LOCATION (COL-62-13.26)  FUNDING: 02 / S < 2 / OT	611	625							630			632										633							809		
			4" CONDUIT, TYPE E	BRACKET ARM, 30'	CONDUIT, 3", 725.04	TRENCH	GROUND ROD	PULL BOX, 725.08, 24"	UNDERGROUND WARNING/ MARKING TAPE	ARC FLASH CALCULATIONS AND LABEL, (COL-62-13.26)	SIGN HANGER ASSEMBLY, SPAN WIRE	SIGN, FLAT SHEET	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	COVERING OF VEHICULAR SIGNAL HEAD	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER WITH ACCESSORIES	TETHER WIRE, WITH ACCESSORIES	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	STRAIN POLE FOUNDATION	POWER CABLE, 3 CONDUCTOR, NO 6. AWG	SERVICE CABLE, 3 CONDUCTOR , NO. 6 AWG	POWER SERVICE, AS PER PLAN	COMBINATION STRAIN POLE, TYPE TC-81.II, DESIGN 14	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	CABINET, TYPE 332	COMMUNICATIONS, AS PER PLAN	CABINET FOUNDATION	CONTROLLER WORK PAD	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	ADVANCE RADAR DETECTION, AS PER PLAN	STOP LINE RADAR DETECTION, AS PER PLAN	ATC CONTROLLER, AS PER PLAN (PROGRAM AND INSTALL ONLY)	
			FT	EACH	FT	FT	EACH	EACH	FT	EACH	EACH	SF	EACH	EACH	EACH	FT	FT	FT	EACH	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH			
22		CONTROLLER	20				1	1		1														1	1	1	1	1		1			
22		POWER TO SP-4			46	23			23																								
22		CONTROLLER TO SP-4														168		33															
22		POLE SP-1		1						1									1										1	1			
22		POLE SP-2		1						1						24													1	1			
22		POLE SP-3		1						1						42													1	1			
22		POLE SP-4		1						1						234	1	44		1		1						1	1				
22		BOX SPAN											10	2	12	651	651	1342															
22		POWER IN																			59												
22		EXISTING TO BE REMOVED																						1									
22	S-1	108+77									1	10.5																					
22	S-2	108+77										7.5																					
22	S-3	109+91									1	10.5																					
22	S-4	109+91										7.5																					
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>			20	4	46	23	5	1	23	1	2	36	10	2	12	651	651	1810	4	77	59	1	4	1	1	1	1	1	4	4	1		

PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
PB-1	110+32.00	RT	105'	24"
-	-	-	-	-
-	-	-	-	-

PID 107591 COL-62-13.26

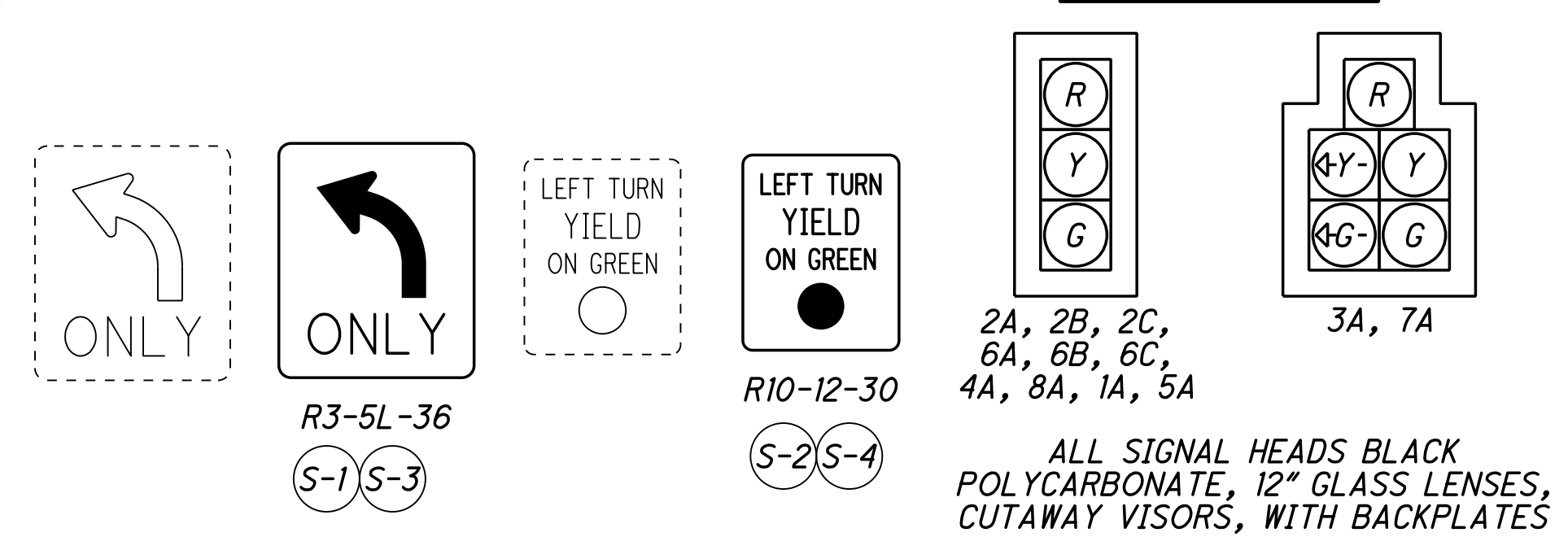
POINT ID	NORTHING	EASTING	ELEVATION	CODE	STATION	OFFSET	ALIGNMENT
CP01	462997.473	2422732.995	1234.47	CNPT	110+26.67	132.50 RT	CL_EXRW_US62
CP02	463116.777	2422957.851	1233.69	CNPT	112+51.75	13.62 RT	CL_EXRW_US62
CP03	463148.035	2422352.765	1229.72	CNPT	106+46.72	-18.77 LT	CL_EXRW_US62
CP04	463212.550	2422578.375	1230.26	CNPT	108+72.45	-82.87 LT	CL_EXRW_US62
CL1	463132.743	2424217.654	0.000	CSURV	125+11.58	CL	CL_EXRW_US62
CL2	463127.684	2421505.659	0.000	CSURV	97+99.58	CL	CL_EXRW_US62
CL3	463129.796	2422638.287	0.000	CSURV	109+32.21	CL	CL_EXRW_US62
CL4	463829.754	2422630.604	0.000	CSURV	59+05.42	CL	CL_EXRW_SR45
CL5	462424.419	2422646.029	0.000	CSURV	45+00.00	CL	CL_EXRW_SR45



**LEGEND**

- |  | PROP | EXIST |
|--|------|-------|
| TRAFFIC SIGNAL, 2 UNIT, 3 UNIT, OR PHB HEAD, 12" |      |       |
| TRAFFIC SIGNAL, 4 OR 5 UNIT HEAD, 12"            |      |       |
| SIGNAL SUPPORT POLE                              |      |       |
| CONTROLLER CABINET AND WORK PAD (332)            |      |       |
| TRAFFIC PULL BOX                                 |      |       |
| DILEMMA ZONE RADAR DETECTION UNIT                |      |       |
| STOP-LINE RADAR DETECTION UNIT                   |      |       |
| DETECTION ZONE                                   |      |       |
| DETECTOR COUNT                                   |      |       |

**SIGNAL HEADS**



TRAFFIC CONTROL PLAN (COL-62-13.26)  
COL US 62 & SR 45 (ELLSWORTH)

D11-TSG-FY2023

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SIGNAL TIMING CHART (TEM FORM 496-3)

INTERSECTION: COL US 62 & SR 45 (ELLSWORTH)									
MAINTAINING AGENCY: ODOT DISTRICT 11									
START UP		DUAL ENTRY:	YES	PHASES:				2&6, 4&8	
START IN:		REST IN RED:		RING 1		RING 2			
TIME FOR: FLASH, ALL RED (SEC.):		OVERLAP		A	B	C	D		
FIRST PHASE(S):		PHASES		-	-	-	-		
COLOR DISPLAYED:				-	-	-	-		
ALL-RED FLASH									
9, 6									
2 & 6									
GREEN									
INTERVAL OR FEATURE		CONTROLLER MOVEMENT NO.							
INTERSECTION MOVEMENT (PHASE)		1	2	3	4	5	6	7	8
DIRECTION		-	EB	NB LT	SB	-	WB	SB LT	NB
MINIMUM GREEN (INITIAL) (SEC.)		-	25	7	15	-	25	7	25
ADDED INITIAL *(SEC./ACTUATION)		-	1	-	-	-	1	-	-
MAXIMUM INITIAL *(SEC.)		-	20	-	-	-	20	-	-
PASSAGE TIME (PRESET GAP) (SEC.)		-	1.5	1.5	1.5	-	1.5	1.5	1.5
TIME BEFORE REDUCTION *(SEC.)		-	15	-	-	-	15	-	-
MINIMUM GAP *(SEC.)		-	2	-	2	-	2	-	2
TIME TO REDUCE *(SEC.)		-	10	-	-	-	10	-	-
MAXIMUM GREEN I (SEC.)		-	50	25	40	-	50	25	40
MAXIMUM GREEN II (SEC.)		-	50	25	40	-	50	25	25
YELLOW CHANGE (SEC.)		-	5	4.5	4.5	-	5	4.5	4.5
ALL RED CLEARANCE (SEC.)		-	2	2.5	2	-	2	2.5	2
DELAYED GREEN (LPI) * (SEC.)		-	-	-	-	-	-	-	-
FLASHING YELLOW ARROW DELAY* (SEC.)		-	-	-	-	-	-	-	-
WALK (SEC.)		-	-	-	-	-	-	-	-
PEDESTRIAN CLEARANCE (SEC.)		-	-	-	-	-	-	-	-
RECALL	MAXIMUM (ON/OFF)	-	OFF	OFF	OFF	-	OFF	OFF	OFF
	MINIMUM (ON/OFF)	-	ON	OFF	OFF	-	ON	OFF	OFF
	PEDESTRIAN (ON/OFF)	-	OFF	OFF	OFF	-	OFF	OFF	OFF
MEMORY (ON/OFF)		-	OFF	OFF	OFF	-	OFF	OFF	OFF

\*VOLUME DENSITY CONTROLS

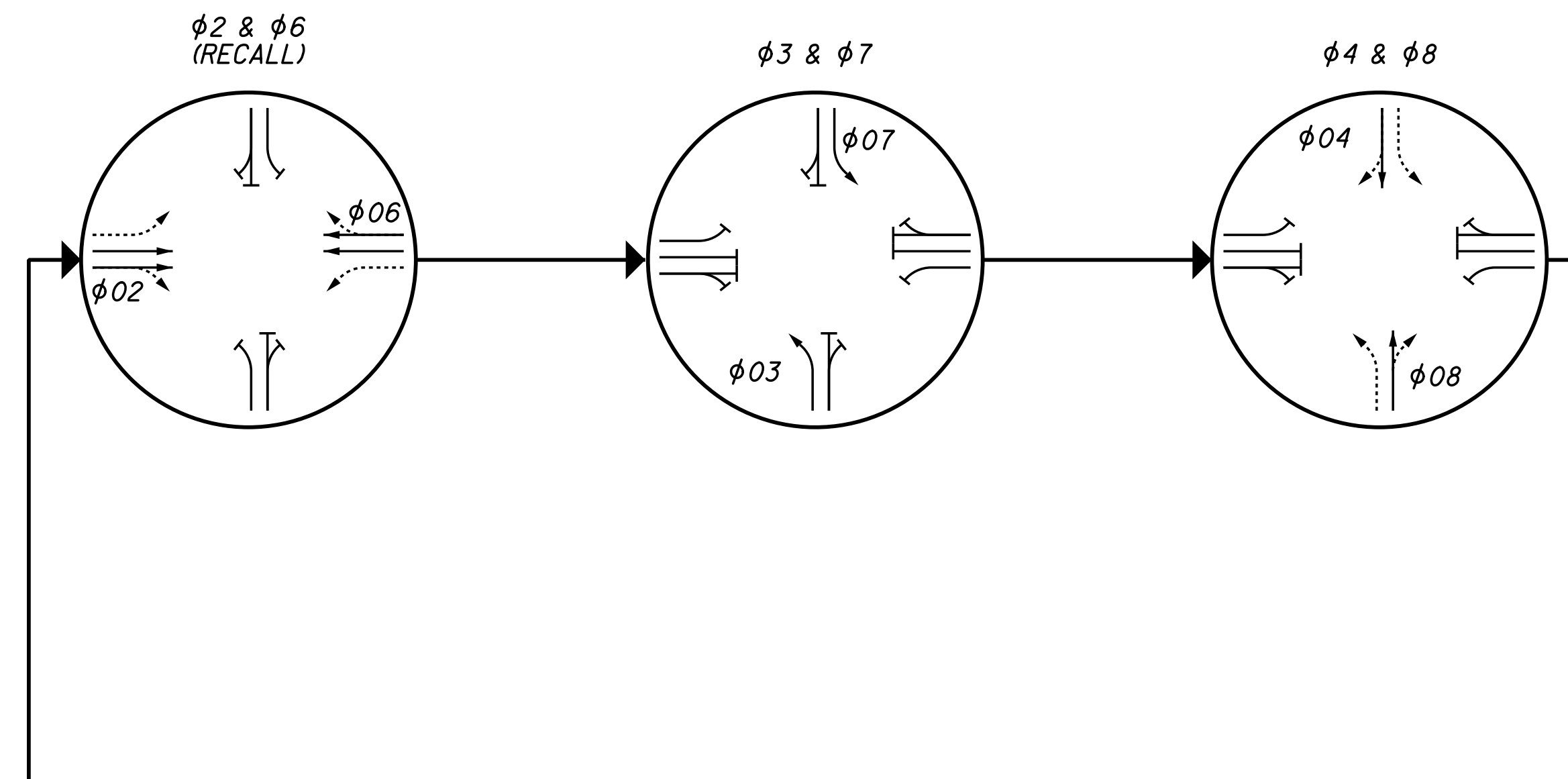
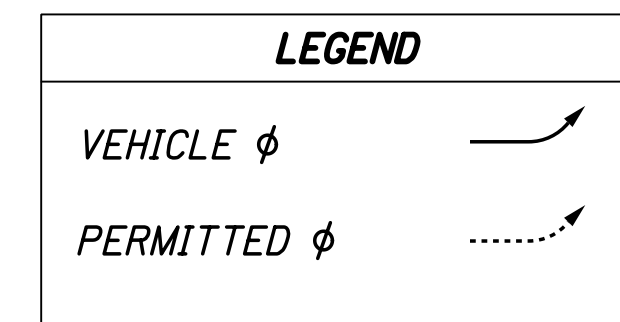
#FOR CROSSING WITH PEDESTRIAN PUSHBUTTONS, LPI'S (LEADING PEDESTRIAN INTERVALS) MAY BE IMPLEMENTED (3-6 SEC.) IN ACCORDANCE WITH LPI DURATION TIME PER THE ODOT SIGNAL CALCULATIONS - CLEARANCE INTERVALS SPREADSHEET.

\*WHEN IMPLEMENTING FYA, A MINIMUM 3 SECOND DELAY SHALL BE PROGRAMMED.

NOTES:

- ALL MOVEMENTS SHALL BE ACTUATED. THE PRIMARY THRU MOVEMENT SHOULD HAVE MIN RECALL ACTIVE TO REST IN GREEN.
- FOR PROTECTED/PERMISSIVE PHASES, IMPLEMENT CALL OMITTS TO AVOID YELLOW BALL TRAP.
- ENABLE  $\phi 1, 3$  &  $\phi 5, 7$  DETECTOR SWITCHING TO ALLOW  $\phi 1$  &  $\phi 5$  TO EXTEND  $\phi 2$  &  $\phi 6$  OR  $\phi 3$  &  $\phi 7$  TO EXTEND  $\phi 4$  &  $\phi 8$ , RESPECTIVELY, WHEN ALLOCATED GREEN TIME FOR LEFT TURN PHASES ARE EXHAUSTED.
- RADAR DETECTION UNITS FOR DILEMMA ZONE DETECTION SHALL PLACE A CONSTANT CALL TO THE CONTROLLER WHEN VEHICLES TRAVEL TIMES TO THE STOP BAR ARE BETWEEN 2.5 AND 6 SECONDS. SPEED TRIGGER SHALL BE SET FOR VEHICLES TRAVELING 35 MPH AND GREATER.
- RADAR SHALL HAVE QUEUE DETECTION CONFIGURED AND A ZONE PLACED AT 100-200 FEET FROM STOP BAR FOR SLOW MOVING VEHICLE EXTENSIONS. SPEED TRIGGER SHALL BE SET AT 1-35 MPH.
- ALL DETECTOR DELAYS SHALL BE PLACED IN THE CONTROLLER.
- FOR ANY ENTRY TO FLASHING OPERATION, PROGRAMMING SHALL RUN MINOR STREET GREEN (TYP.  $\phi 4$  &  $\phi 8$ ), ALL-RED CLEARANCE, AND THEN FLASHING OPERATION.

PHASING DIAGRAM (TYPICAL)



RADAR DETECTION CHART (TEM FORM 496-4)

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMMED IN CONTROLLER (SEC.)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
DZ1A	EB LT	PRESENCE	6	6	6	CALL/EXTEND PHASE 6	-5 TO 35
DZ2A	WB THRU	PULSE	2	-	-	DILEMMA ZONE	50 TO 900
DZ2B	WB THRU	PULSE	2	-	-	DILEMMA ZONE	50 TO 900
DZ4A	NB LT	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ4B	NB THRU	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ4C	NB THRU	PULSE	4	-	-	DILEMMA ZONE	50 TO 900
DZ5A	WB LT	PRESENCE	2	6	2	CALL/EXTEND PHASE 2	-5 TO 35
DZ6A	EB THRU	PULSE	6	-	-	DILEMMA ZONE	50 TO 900
DZ6B	EB THRU	PULSE	6	-	-	DILEMMA ZONE	50 TO 900
DZ8A	SB LT	PRESENCE	8	6	8	CALL/EXTEND PHASE 8	-5 TO 35
DZ8B	SB THRU	PRESENCE	8	6	8	CALL/EXTEND PHASE 8	-5 TO 35
DZ8C	SB THRU	PULSE	8	-	-	DILEMMA ZONE	50 TO 900

NOTE: ADVANCED DILEMMA ZONE SPEED THRESHOLD >30 MPH  
PURPOSE: STOP-LINE OR ADVANCED DETECTION

CALCULATED  
GBS  
CHECKED  
DAH

TRAFFIC SIGNAL PLAN DETAILS (COL-62-13.26)  
COL US 62 & SR 45 (ELLSWORTH)

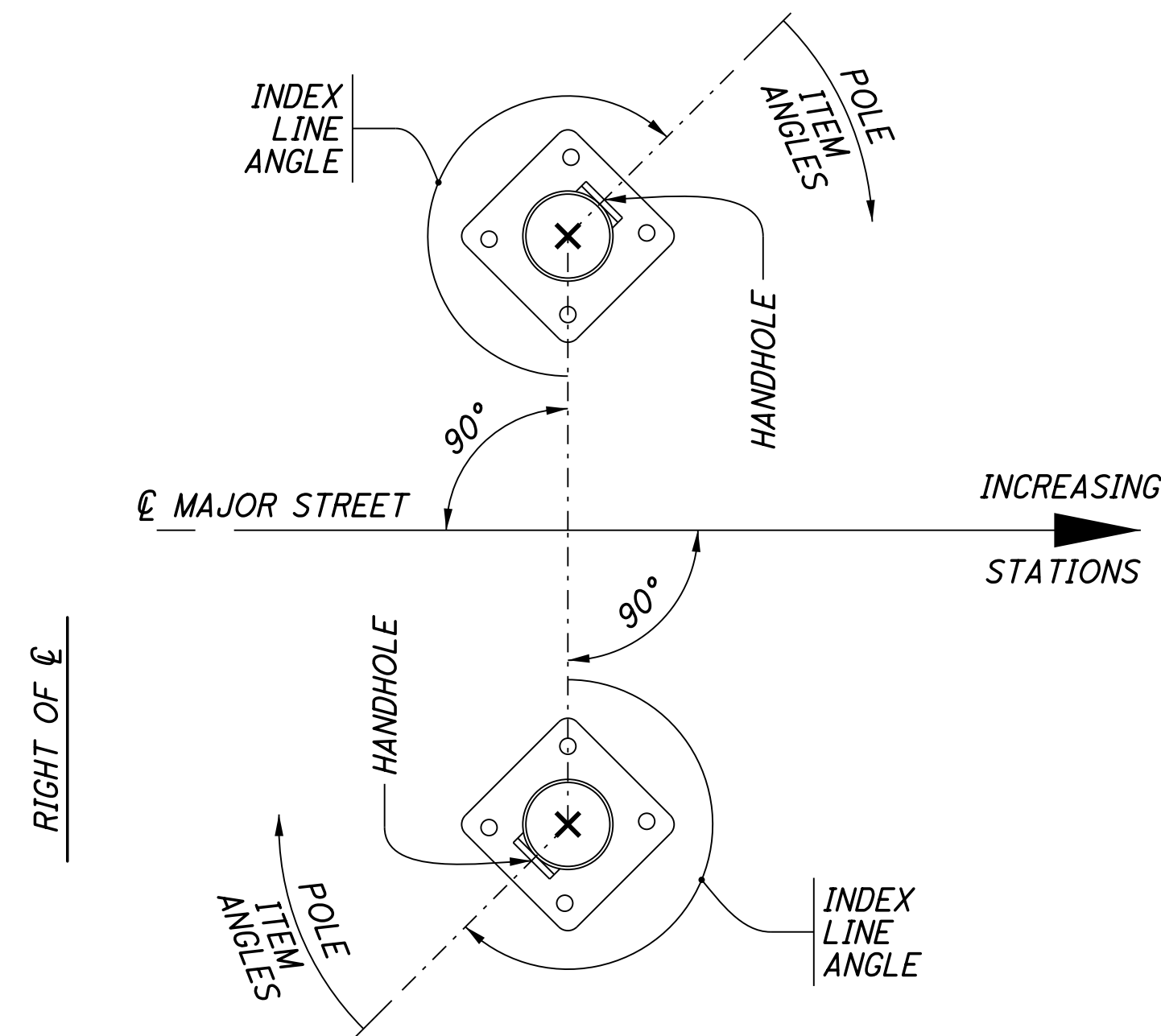
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PLAN DETAILS FOR STRAIN POLES (TEM FIGURE 498-36)

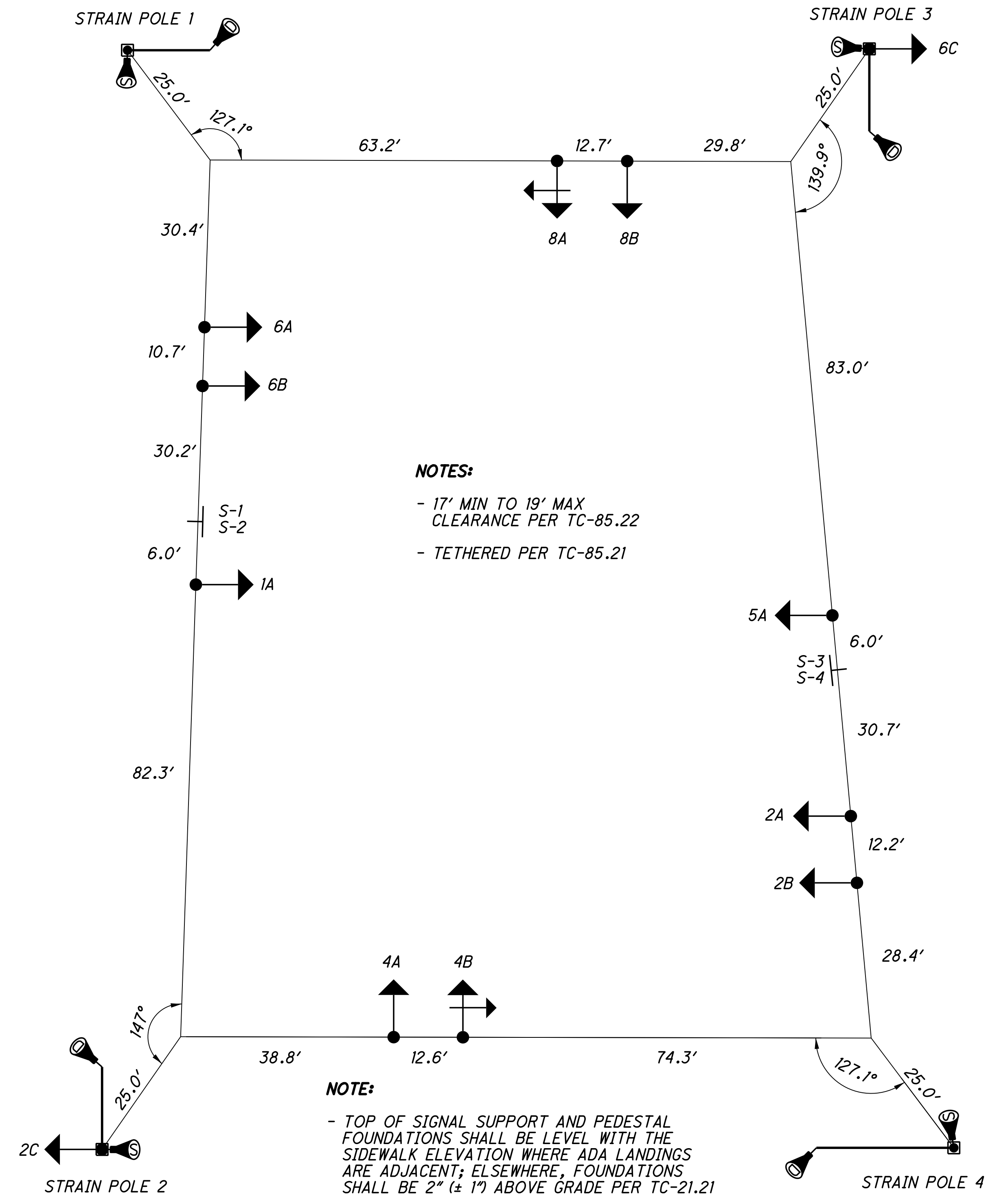
REFERENCE SHEET NO.*	STATION & OFFSET*	POLE NO.	DESIGN NO.	POLE HEIGHT (FT.)	FOUNDATION ELEV.*	SPAN WIRE ATTACHED HEIGHT*	CABLE ENTRANCE DISTANCE FROM TOP (IN.)	INDEX LINE ANGLE (DEG.)	POWER SERVICE	CABLE ENTRANCE	BRACKET ARM		
22	108+65.00, 100.0' LT.	SP-1	14	39	1228.2	1261.7	24	143.13	-	180	126.98	-	-
22	108+60.00, 100.0' RT	SP-2	14	36	1230.9	1261.7	24	214.89	-	180	145.11	-	-
22	110+00.00, 100.0' LT	SP-3	14	34	1233.4	1261.6	24	214.89	-	180	145.11	-	-
22	110+15.00, 100.0' RT	SP-4	14	38	1230.2	1261.9	24	143.13	197	180	126.98	-	-



- NOTES:
- ALL ANGLES ARE MEASURED CLOCKWISE.
  - THE INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

POLE DIAGRAM

PLAN VIEW FOR TYPICAL SPANWIRE (BOX) DETAIL



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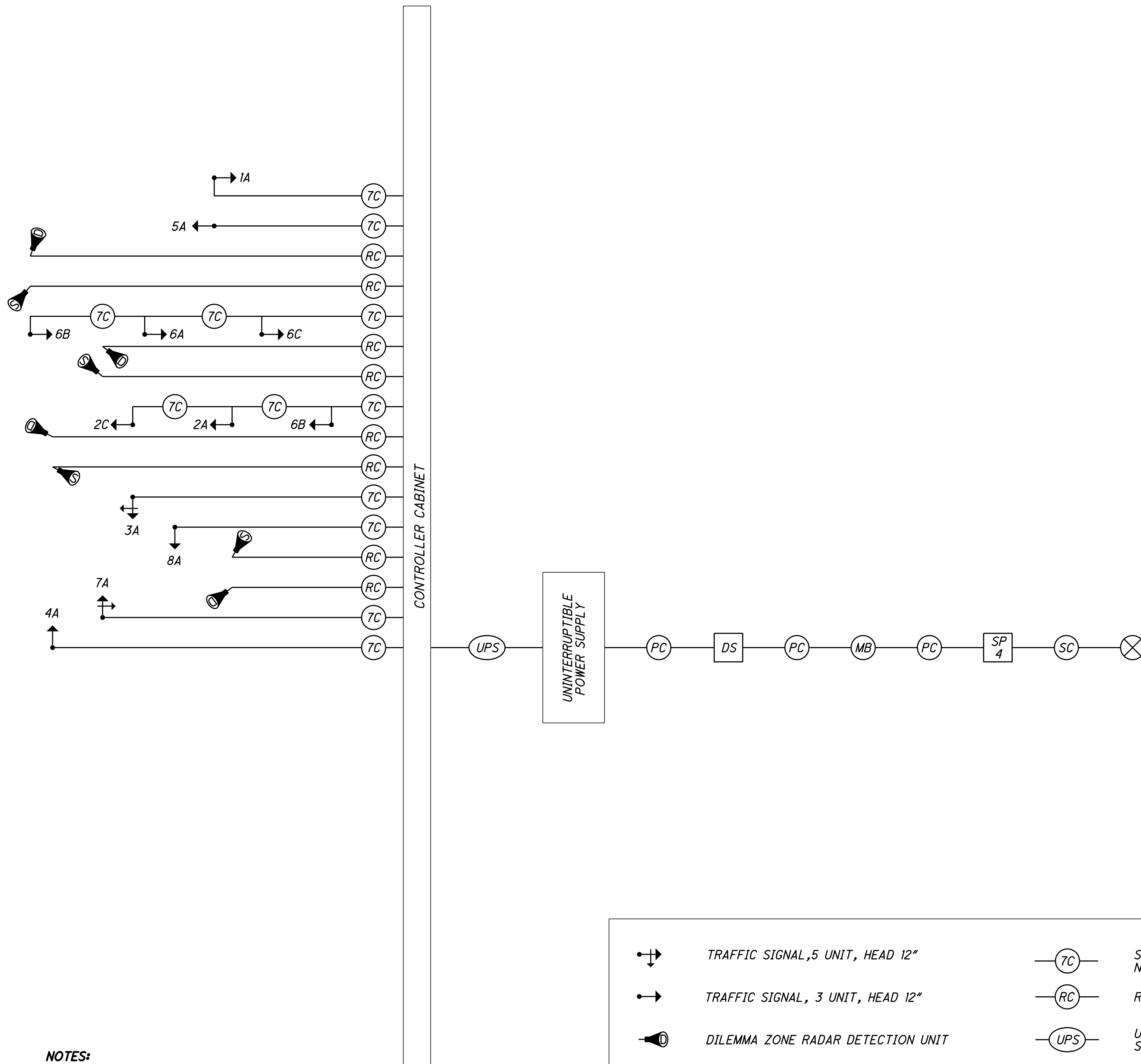
CALCULATED  
GBS  
CHECKED  
DAH

TRAFFIC SIGNAL PLAN DETAILS (COL-62-13.26)  
COL US 62 & SR 45 (ELLSWORTH)

D11-TSG-FY2023

WIRING DIAGRAM (TYPICAL)

FIELD WIRING HOOK-UP CHART (TEM FORM 496-16)

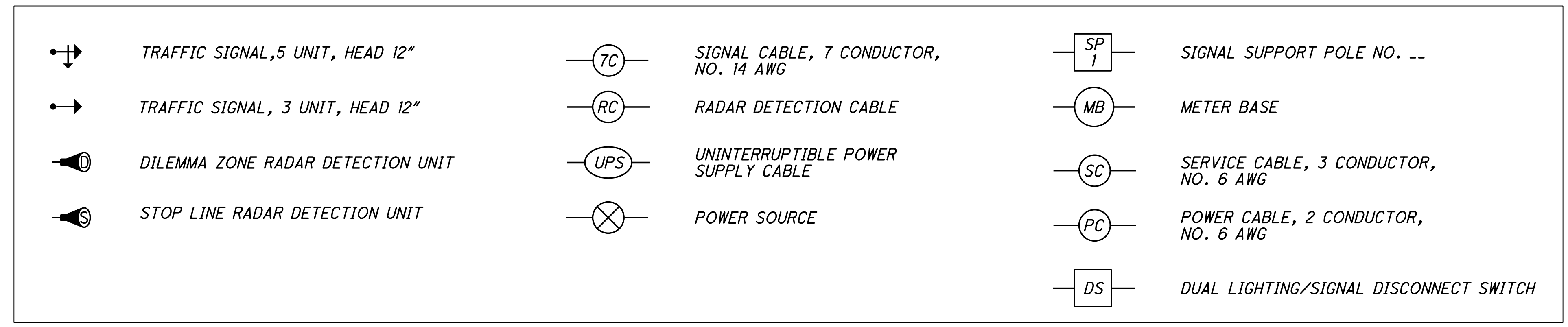


SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH	SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
2A, 2B (WB)	R	φ2 R	R	-	-	-	
	Y	φ2 Y		-	-	-	
	G	φ2 G		-	-	-	
1A (WB LT)	R	φ1 R	R	-	-	-	-
	G	φ1 Y		-	-	-	
	Y	φ1 G		-	-	-	
5A (EB LT)	R	φ5 R	R	-	-	-	
	Y	φ5 Y		-	-	-	
	G	φ5 G		-	-	-	
3A (NB LT)	R	φ8 R	R	-	-	-	-
	Y	φ8 Y		-	-	-	
	G	φ8 G		-	-	-	
	<--Y-->	φ3 Y		-	-	-	
4A (SB)	R	φ4 R	R	-	-	-	-
	Y	φ4 Y		-	-	-	
	G	φ4 G		-	-	-	
	-	-		-	-	-	
<b>PEDESTRIAN MOVEMENTS</b>							
6A, 6B (EB)	R	φ6 R	R	-	-	-	-
	Y	φ6 Y		-	-	-	
	G	φ6 G		-	-	-	
7A (SB LT)	R	φ4 R	R	-	-	-	-
	Y	φ4 Y		-	-	-	
	G	φ4 G		-	-	-	
	<--Y-->	φ7 Y		-	-	-	
<b>OVERLAPS</b>							

**NOTES:**

- FOR LOCATIONS WITH LEFT TURN LANES RUN 7C FOR POTENTIAL PT/PM LT PHASE IF INITIAL DESIGN IS FOR PERMITTED ONLY.
- OVERLAPS SHALL BE WIRED TO THE APPROPRIATE LOAD SWITCHES AS PER THE FIELD HOOKUP CHART AND CONFIGURED IN THE CONTROLLER SOFTWARE PER THE SIGNAL TIMING CHART.

LEGEND



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VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	EB	-	SB LT	SB	-	-	WB	-	NB LT	NB	-
PLAN NO.	COL US 62 & SR 45 (ELLSWORTH) AM PEAK											
LEFT	-	45	-	26	0	-	-	31	-	13	0	-
THRU	-	131	-	0	53	-	-	141	-	0	43	-
RIGHT	-	18	-	0	51	-	-	26	-	0	34	-
U-TURN	-	0	-	0	0	-	-	0	-	0	0	-
-	-	-	-	-	-	-	-	-	-	-	-	-

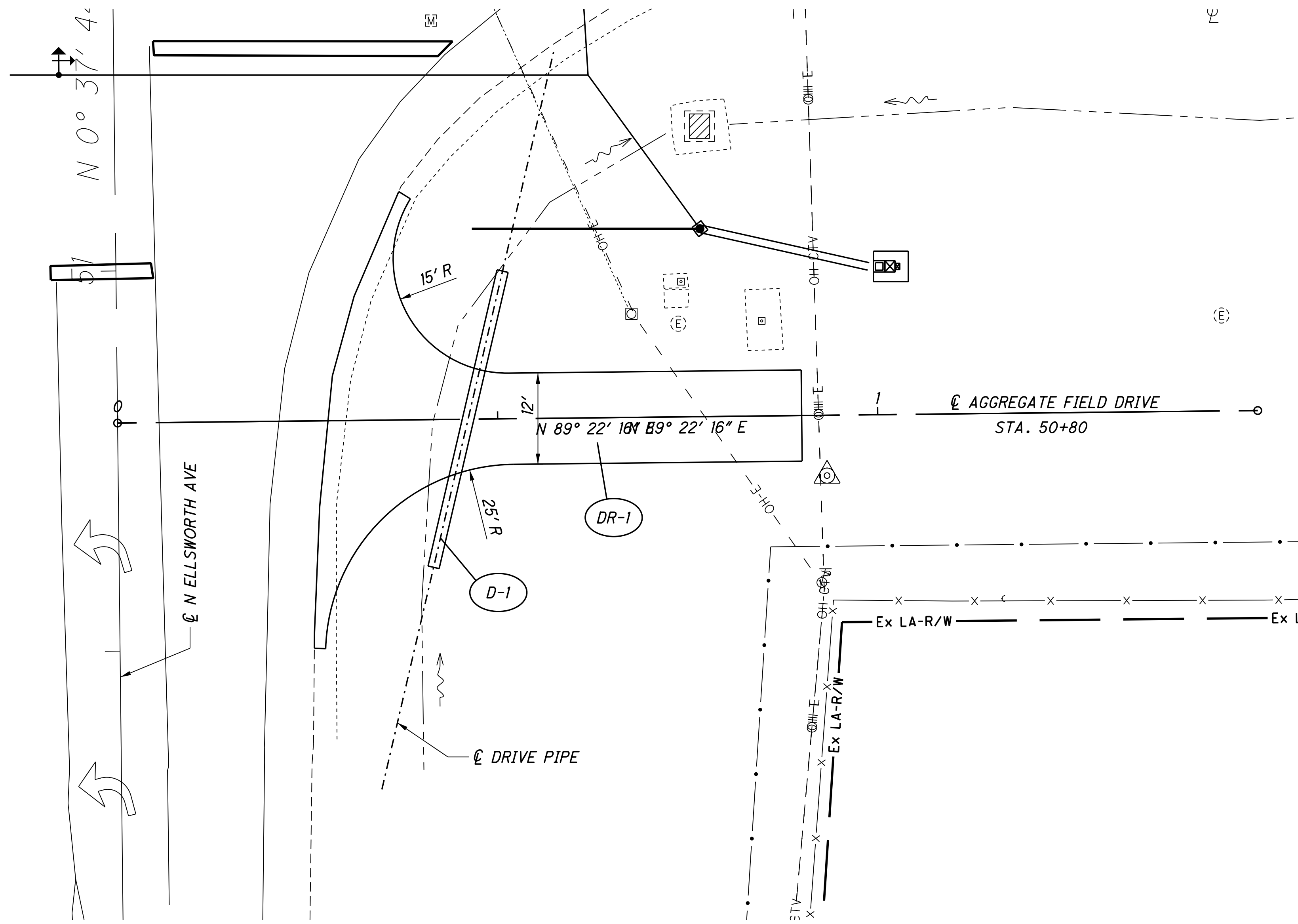
  

VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	EB	-	SB LT	SB	-	-	WB	-	NB LT	NB	-
PLAN NO.	COL US 62 & SR 45 (ELLSWORTH) PM PEAK											
LEFT	-	61	-	25	0	-	-	47	-	27	0	-
THRU	-	193	-	0	80	-	-	131	-	0	80	-
RIGHT	-	34	-	0	58	-	-	43	-	0	40	-
U-TURN	-	0	-	0	0	-	-	0	-	0	0	-
-	-	-	-	-	-	-	-	-	-	-	-	-

COUNT INFORMATION	
Month/Year:	2/23/2021 Day of Week: TUES
Time Period(s):	7:00 AM TO 7:00 PM
Total Number of Hours:	12
Method of Obtaining Counts:	VIDEO
Type of Count2:	TURNING MOVEMENT COUNT (TMC)



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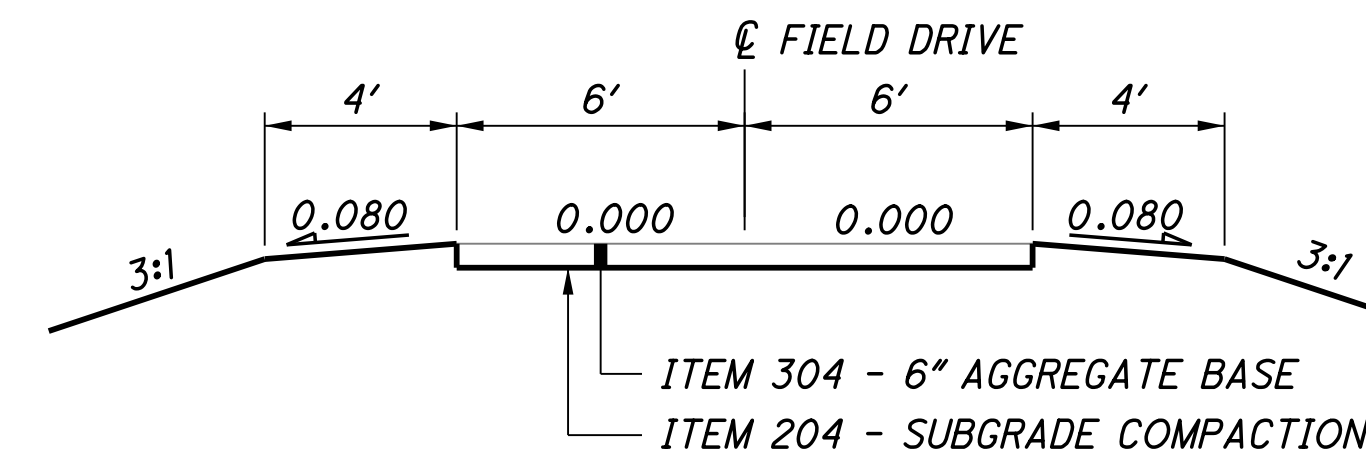


FIELD DRIVE PLAN

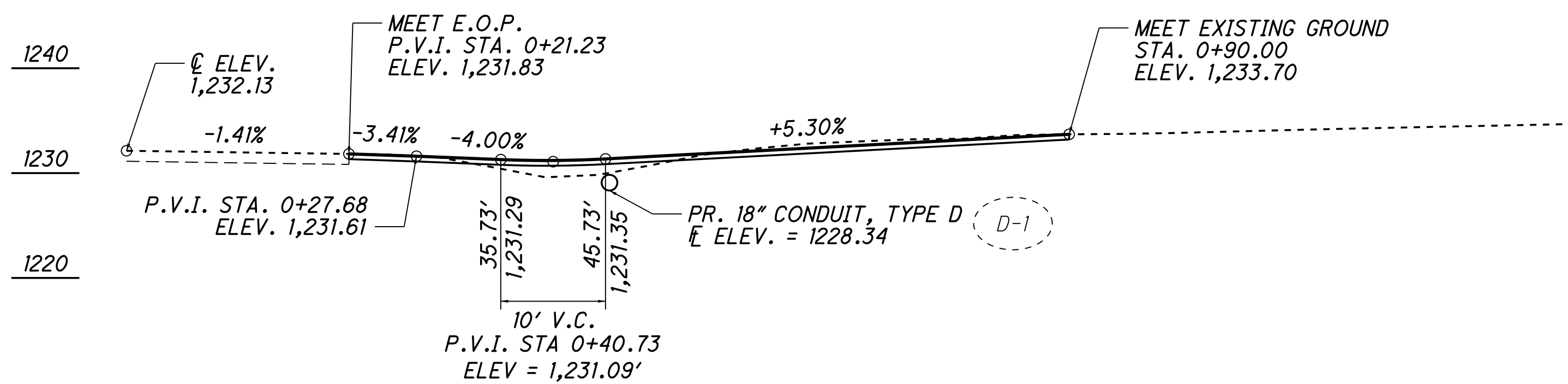
FIELD DRIVE QUANTITIES (02/S<2/OT)

- ITEM 203 - EXCAVATION  
USE 21 CU. YD.
- ITEM 203 - EMBANKMENT  
USE 13 CU. YD.
- ITEM 204 - SUBGRADE COMPACTION  
1,057 S.F. ÷ 9 = 117.44 SQ. YD. USE 118 SQ. YD.
- ITEM 304 - AGGREGATE BASE  
(6" THICK × 1,057 S.F.) ÷ 27 = 19.57 CU. YD. USE 20 CU. YD.
- ITEM 611 - 18" CONDUIT, TYPE D, 706.01  
USE 40'

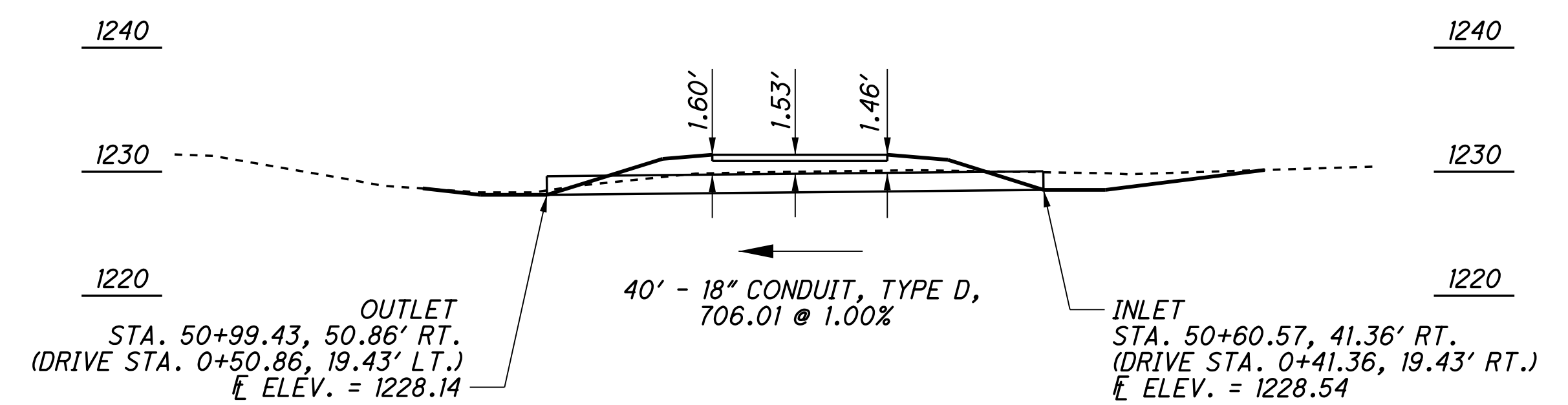
TOTALS CARRIED TO THE GENERAL SUMMARY



FIELD DRIVE TYPICAL SECTION (DR-1)



FIELD DRIVE PROFILE (DR-1)



FIELD DRIVE CULVERT PROFILE (D-1)

TRAFFIC SIGNAL (COL-62-13.26)  
PR. FIELD DRIVE DETAILS & QUANTITIES

D11-TSG-FY2023

27  
47

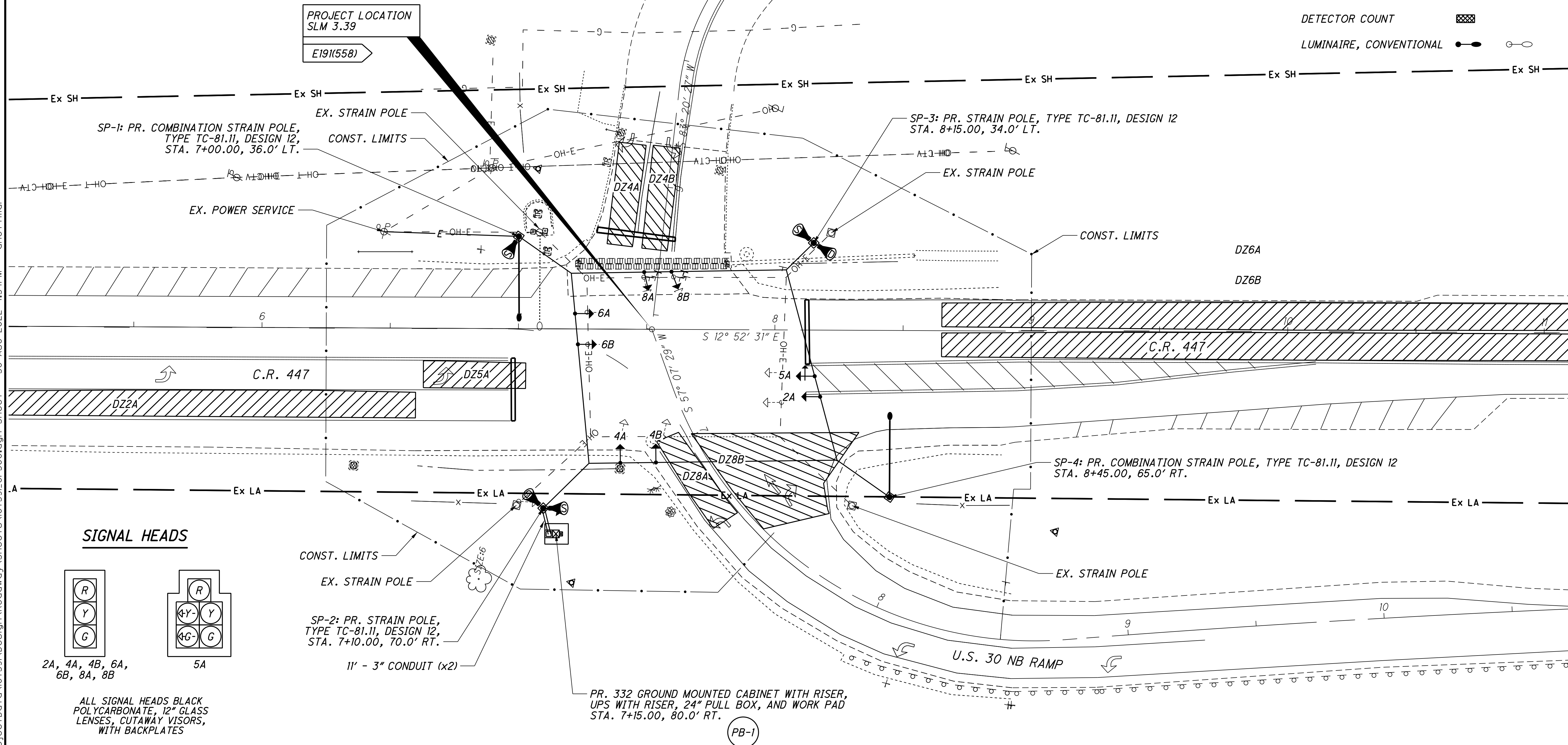
SHEET NO.	LOCATION (COL-CR447-3.39)  FUNDING: 02 / S < 2 / OT	611	625														632											633					809						
		4" CONDUIT, TYPE E	CONNECTION, FUSED PULL APART	CONNECTION, UNFUSED PULL APART	CONNECTION, UNFUSED PERMANENT	NO. 4 AWG 2400 VOLT DISTRIBUTION CABLE	NO. 10 AWG POLE AND BRACKET CABLE	LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), AS PER PLAN	CONDUIT, 3", 725.04	TRENCH	GROUND ROD	PULL BOX, 725.08, 24"	UNDERGROUND WARNING/MARKING TAPE	ARC FLASH CALCULATIONS AND LABEL, (COL-CR447-3.39)	BRACKET ARM, 30'	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	COVERING OF VEHICULAR SIGNAL HEAD	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER WITH ACCESSORIES	TETHER WIRE, WITH ACCESSORIES	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	STRAIN POLE FOUNDATION	POWER CABLE, 3 CONDUCTOR, NO 6. AWG	SERVICE CABLE, 3 CONDUCTOR , NO. 6 AWG	POWER SERVICE, AS PER PLAN	STRAIN POLE, TYPE TC-81.11, DESIGN 12	COMBINATION STRAIN POLE, TYPE TC-81.11, DESIGN 12	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	CABINET, TYPE 332	COMMUNICATIONS, AS PER PLAN	CABINET FOUNDATION	CONTROLLER WORK PAD	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	ADVANCE RADAR DETECTION, AS PER PLAN	STOP LINE RADAR DETECTION, AS PER PLAN	ATC CONTROLLER, AS PER PLAN (PROGRAM AND INSTALL ONLY)			
		FT	EACH	EACH	EACH	FT	FT	EACH	FT	FT	EACH	EACH	FT	EACH	EACH	EACH	EACH	FT	FT	FT	EACH	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH		
29	CONTROLLER	20							1	1		1																										1	
29	POWER TO SP-2						22	11				11																											
29	CONTROLLER TO SP-2				6	32														80		16																	
29	SP-1		1	1										1																							1		
29	SP-2		2	2																165		34		1													1		
29	SP-3																																				1		
29	SP-4		1	1										1																							1		
29	BOX-SPAN					272										7	1	8	422	422	607			129															
29	POWER IN																																						
29	EXISTING TO BE REMOVED																																						
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>		20	4	4	6	304	245	2	22	11	5	1	11	1	2	7	1	8	422	422	852	4	179	63	1	2	2	1	1	1	1	1	1	1	2	3	1		

PID 107591 COL-CR 447-3.39							
POINT ID	NORTHING	EASTING	ELEVATION	CODE	STATION	OFFSET	ALIGNMENT
CP01	368851.087	2498415.290	1090.259	CNPT	9+09.66	78.18 RT	CLCONSTCR447
CP02	369030.201	2498352.997	1103.784	CNPT	7+21.17	99.00 RT	CLCONSTCR447
CP03	369079.612	2498507.297	1116.085	CNPT	7+07.38	-62.43 LT	CLCONSTCR447
TJ410	369755.297	2498288.809	0.000	CSURV	0+00.00	CL	CLCONSTCR447
TJ411	368194.306	2498645.612	0.000	CSURV	16+01.25	CL	CLCONSTCR447

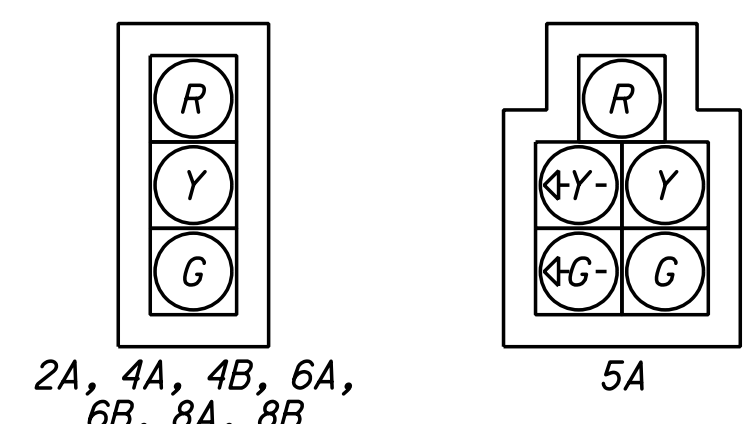
PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
PB-1	7+12.00	RT	80.0'	24"
-	-	-	-	-
EX.	7+11.23	LT	30.3'	-
EX.	7+59.66	RT	71.2'	-
-	-	-	-	-

**LEGEND**

	PROP	EXIST
TRAFFIC SIGNAL, 2 UNIT, 3 UNIT, OR PHB HEAD, 12"		
TRAFFIC SIGNAL, 4 OR 5 UNIT HEAD, 12"		
SIGNAL SUPPORT POLE		
CONTROLLER CABINET AND WORK PAD (332)		
TRAFFIC PULL BOX		
DILEMMA ZONE RADAR DETECTION UNIT		
STOP-LINE RADAR DETECTION UNIT		
DETECTION ZONE		
DETECTOR COUNT		
LUMINAIRE, CONVENTIONAL		



**SIGNAL HEADS**



ALL SIGNAL HEADS BLACK POLYCARBONATE, 12" GLASS LENSES, CUTAWAY VISORS, WITH BACKPLATES

SP-2: PR. STRAIN POLE, TYPE TC-81.11, DESIGN 12, STA. 7+10.00, 70.0' RT.  
11' - 3" CONDUIT (x2)

PR. 332 GROUND MOUNTED CABINET WITH RISER, UPS WITH RISER, 24" PULL BOX, AND WORK PAD STA. 7+15.00, 80.0' RT.

(PB-1)

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CALCULATED GBS CHECKED DAH  
TRAFFIC SIGNAL PLAN (COL-CR447-3.39)  
COL US 30 NB RAMP & CR447 (DRESEDEN AVE.)

D11-TSG-FY2023



**SIGNAL TIMING CHART (TEM FORM 496-3)**

INTERSECTION: COL US 30 NB RAMP & DRESDEN AVE. MAINTAINING AGENCY: ODOT DISTRICT 11									
START UP		DUAL ENTRY:	YES	PHASES:				2&5, 2&6, 4&8	
START IN:		REST IN RED:		RING 1		RING 2			
TIME FOR: FLASH, ALL RED (SEC.):		9, 6		A		B		C	
FIRST PHASE(S):		2 & 6		-		-		-	
COLOR DISPLAYED:		GREEN		-		-		-	
INTERVAL OR FEATURE		CONTROLLER MOVEMENT NO.							
INTERSECTION MOVEMENT (PHASE)		1	2	3	4	5	6	7	8
DIRECTION		-	SB	-	WB	SB LT	NB	-	EB
MINIMUM GREEN (INITIAL) (SEC.)		-	20	-	10	7	20	-	10
ADDED INITIAL *(SEC./ACTUATION)		-	0.7	-	1	-	0.7	-	-
MAXIMUM INITIAL *(SEC.)		-	20	-	15	-	20	-	-
PASSAGE TIME (PRESET GAP) (SEC.)		-	1.5	-	1.5	1.5	1.5	-	1.5
TIME BEFORE REDUCTION *(SEC.)		-	15	-	15	-	15	-	-
MINIMUM GAP *(SEC.)		-	4	-	4	-	4	-	-
TIME TO REDUCE *(SEC.)		-	15	-	15	-	15	-	-
MAXIMUM GREEN I (SEC.)		-	28	-	50	30	28	-	50
MAXIMUM GREEN II (SEC.)		-	28	-	50	30	28	-	50
YELLOW CHANGE (SEC.)		-	4.5	-	4.5	4	4.5	-	4.5
ALL RED CLEARANCE (SEC.)		-	1	-	1	2	1	-	1
DELAYED GREEN (LPI) * (SEC.)		-	-	-	-	-	-	-	-
FLASHING YELLOW ARROW DELAY* (SEC.)		-	-	-	-	-	-	-	-
WALK (SEC.)		-	-	-	-	-	-	-	-
PEDESTRIAN CLEARANCE (SEC.)		-	-	-	-	-	-	-	-
RECALL	MAXIMUM (ON/OFF)	-	OFF	-	OFF	OFF	OFF	-	OFF
	MINIMUM (ON/OFF)	-	ON	-	OFF	OFF	ON	-	OFF
	PEDESTRIAN (ON/OFF)	-	OFF	-	OFF	OFF	OFF	-	OFF
MEMORY	(ON/OFF)	-	OFF	-	OFF	OFF	OFF	-	OFF

\*VOLUME DENSITY CONTROLS

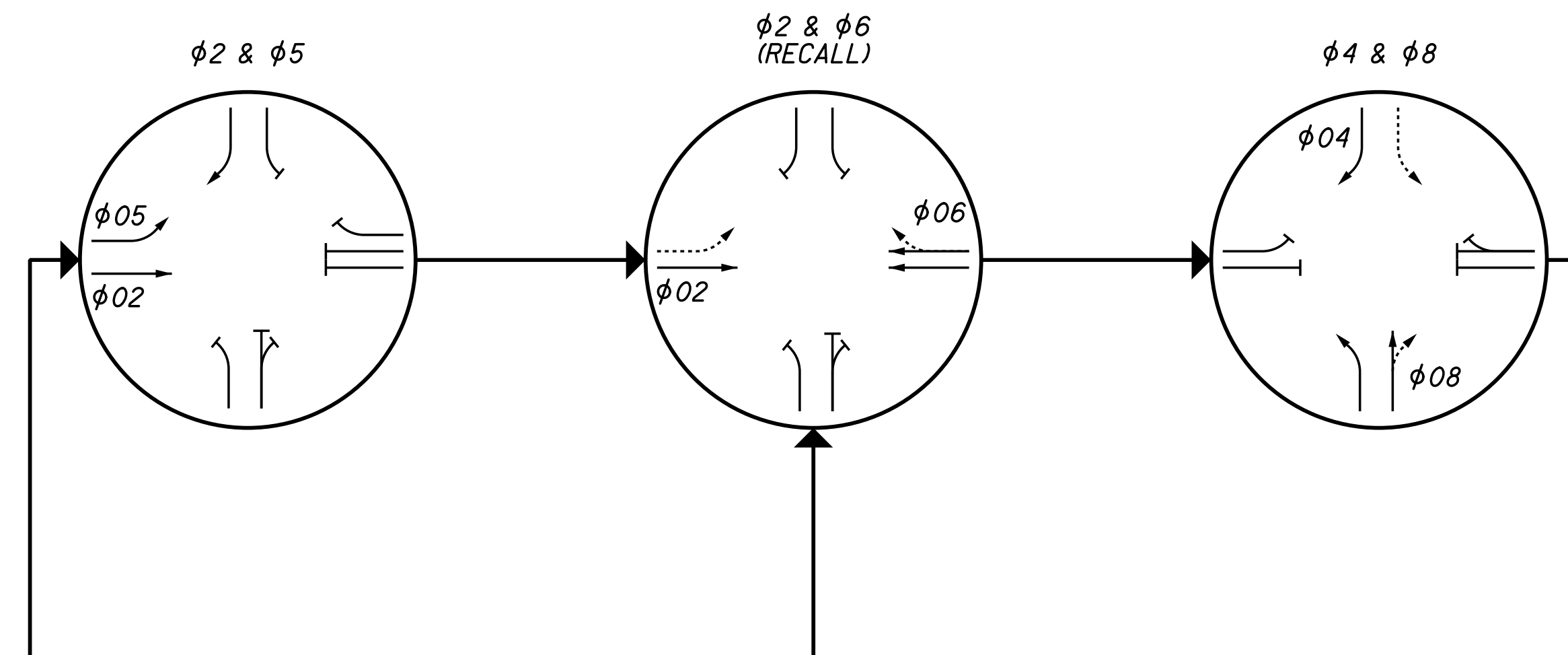
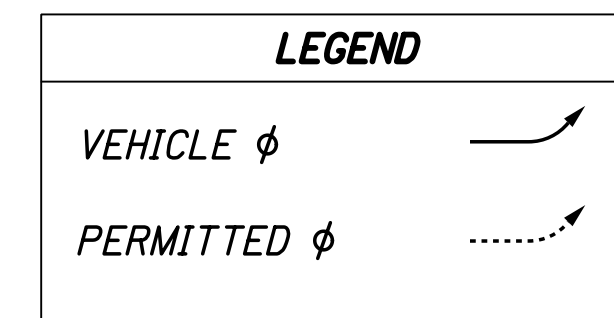
#FOR CROSSING WITH PEDESTRIAN PUSHBUTTONS, LPI'S (LEADING PEDESTRIAN INTERVALS) MAY BE IMPLEMENTED (3-6 SEC.) IN ACCORDANCE WITH LPI DURATION TIME PER THE ODOT SIGNAL CALCULATIONS - CLEARANCE INTERVALS SPREADSHEET.

\*WHEN IMPLEMENTING FYA, A MINIMUM 3 SECOND DELAY SHALL BE PROGRAMMED.

**NOTES:**

- ALL MOVEMENTS SHALL BE ACTUATED. THE PRIMARY THRU MOVEMENT SHOULD HAVE MIN RECALL ACTIVE TO REST IN GREEN.
- FOR PROTECTED/PERMISSIVE PHASES, IMPLEMENT CALL OMITTS TO AVOID YELLOW BALL TRAP.
- ENABLE  $\phi 1, 3$  &  $\phi 5, 7$  DETECTOR SWITCHING TO ALLOW  $\phi 1$  &  $\phi 5$  TO EXTEND  $\phi 2$  &  $\phi 6$  OR  $\phi 3$  &  $\phi 7$  TO EXTEND  $\phi 4$  &  $\phi 8$ , RESPECTIVELY, WHEN ALLOCATED GREEN TIME FOR LEFT TURN PHASES ARE EXHAUSTED.
- RADAR DETECTION UNITS FOR DILEMMA ZONE DETECTION SHALL PLACE A CONSTANT CALL TO THE CONTROLLER WHEN VEHICLES TRAVEL TIMES TO THE STOP BAR ARE BETWEEN 2.5 AND 6 SECONDS. SPEED TRIGGER SHALL BE SET FOR VEHICLES TRAVELING 35 MPH AND GREATER.
- RADAR SHALL HAVE QUEUE DETECTION CONFIGURED AND A ZONE PLACED AT 100-200 FEET FROM STOP BAR FOR SLOW MOVING VEHICLE EXTENSIONS. SPEED TRIGGER SHALL BE SET AT 1-35 MPH.
- ALL DETECTOR DELAYS SHALL BE PLACED IN THE CONTROLLER.
- FOR ANY ENTRY TO FLASHING OPERATION, PROGRAMMING SHALL RUN MINOR STREET GREEN (TYP.  $\phi 4$  &  $\phi 8$ ), ALL-RED CLEARANCE, AND THEN FLASHING OPERATION.

**PHASING DIAGRAM (TYPICAL)**



**RADAR DETECTION CHART (TEM FORM 496-4)**

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMMED IN CONTROLLER (SEC.)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
DZ2A	SB THRU	PULSE	2	-	-	DILEMMA ZONE	50 TO 900
DZ4A	WB RT	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ4B	WB LT	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ5A	SB LT	PRESENCE	5	6	5	CALL/EXTEND PHASE 5	-5 TO 35
DZ6A	NB THRU	PULSE	6	-	-	DILEMMA ZONE	50 TO 900
DZ6B	NB THRU	PULSE	6	-	-	DILEMMA ZONE	50 TO 900
DZ8A	EB LT	PRESENCE	8	6	8	CALL/EXTEND PHASE 8	-5 TO 35
DZ8B	EB THRU	PRESENCE	8	6	8	CALL/EXTEND PHASE 8	-5 TO 35

NOTE: ADVANCED DILEMMA ZONE SPEED THRESHOLD >30 MPH  
PURPOSE: STOP-LINE OR ADVANCED DETECTION

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CALCULATED  
GBS  
CHECKED  
DAH

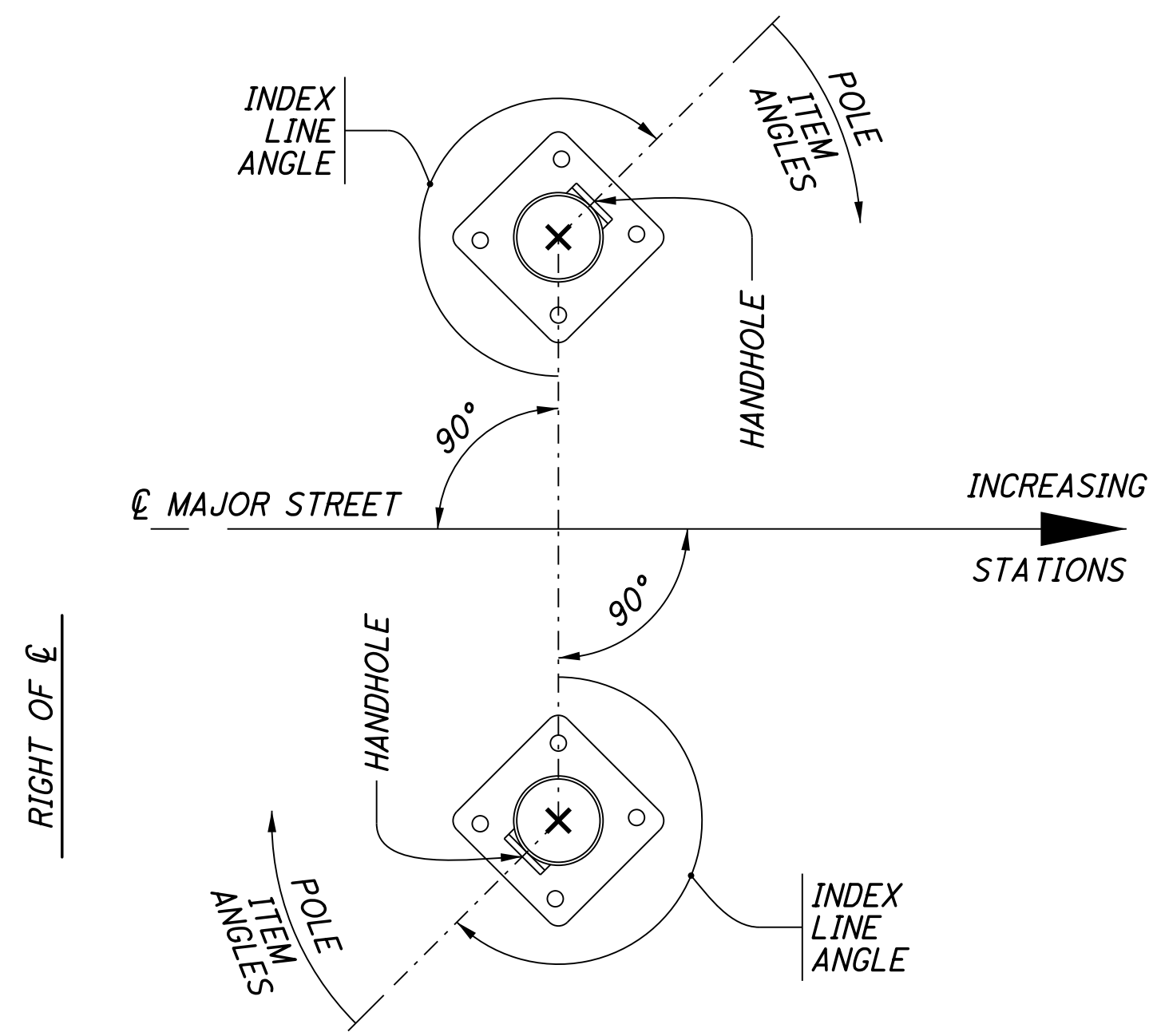
TRAFFIC SIGNAL PLAN DETAILS (COL-CR447-3.39)  
COL US 30 NB RAMP & CR447 (DRESDEN AVE.)

D11-TSG-FY2023

PLAN DETAILS FOR STRAIN POLES (TEM FIGURE 498-36)

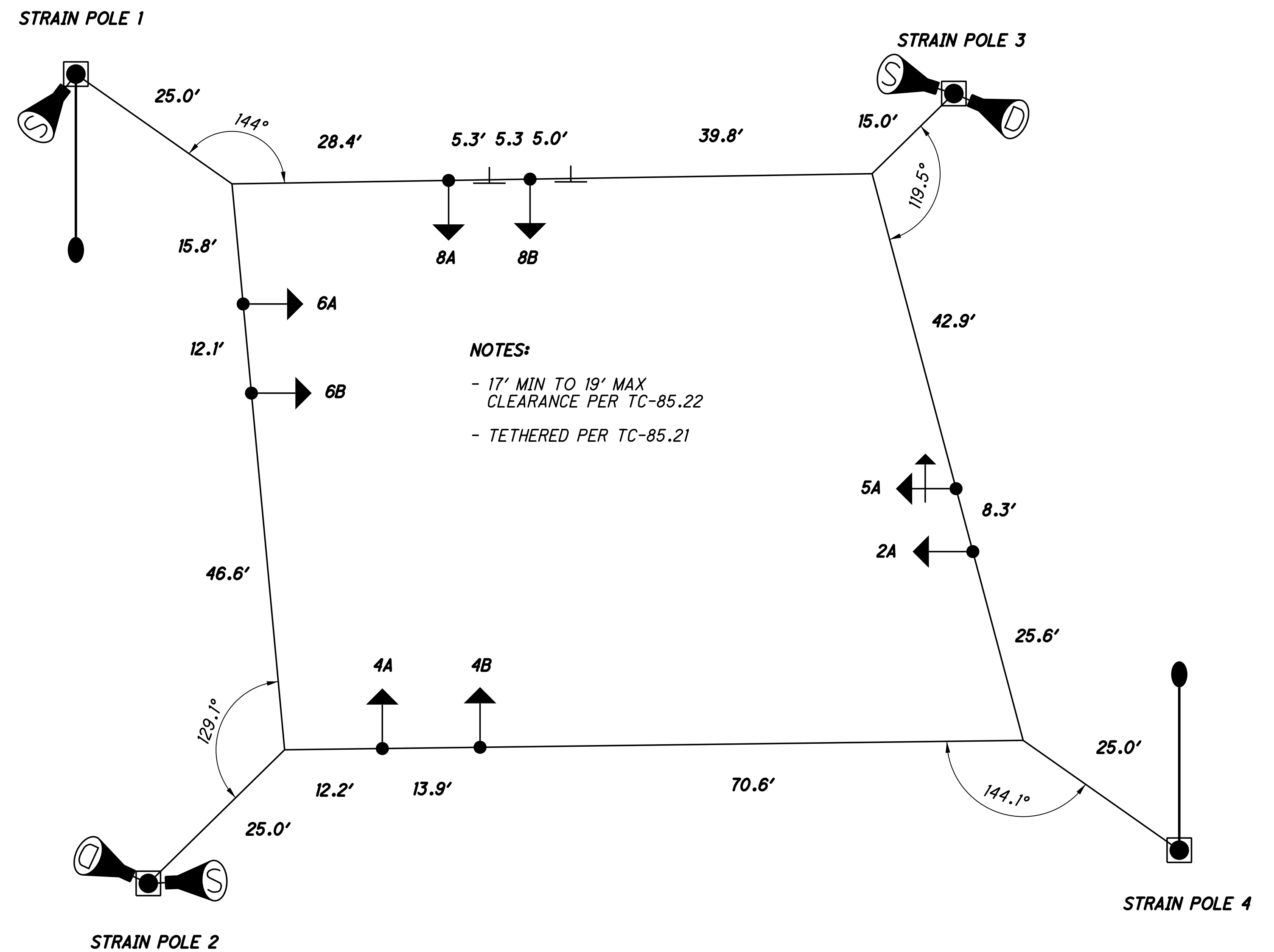
REFERENCE SHEET NO.*	STATION & OFFSET*	POLE NO.	DESIGN NO.	POLE HEIGHT (FT.)	FOUNDATION ELEV.*	SPAN WIRE ATTACHED HEIGHT*	CABLE ENTRANCE DISTANCE FROM TOP (IN.)	INDEX LINE ANGLE (DEG.)	POWER SERVICE	CABLE ENTRANCE	BRACKET ARM		
29	7+00.00, 36.0' LT	SP-1	12	29	1104.1	1131.76	24	125.3	147	180	234.7	-	-
29	7+10.00, 70.0' RT	SP-2	12	29	1103.6	1132	24	225.3	-	180	-	-	-
29	8+15.00, 34.0' LT	SP-3	12	37	1093.6	1129.52	24	225.3	-	180	-	-	-
29	8+45.00, 65.0' RT	SP-4	12	40	1092	1130.74	24	124.9	-	180	235.1	-	-

PLAN VIEW FOR TYPICAL SPANWIRE (BOX) DETAIL



- NOTES:
- ALL ANGLES ARE MEASURED CLOCKWISE.
  - THE INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

POLE DIAGRAM



- NOTES:
- 17' MIN TO 19' MAX CLEARANCE PER TC-85.22
  - TETHERED PER TC-85.21

- NOTE:
- 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-21.21

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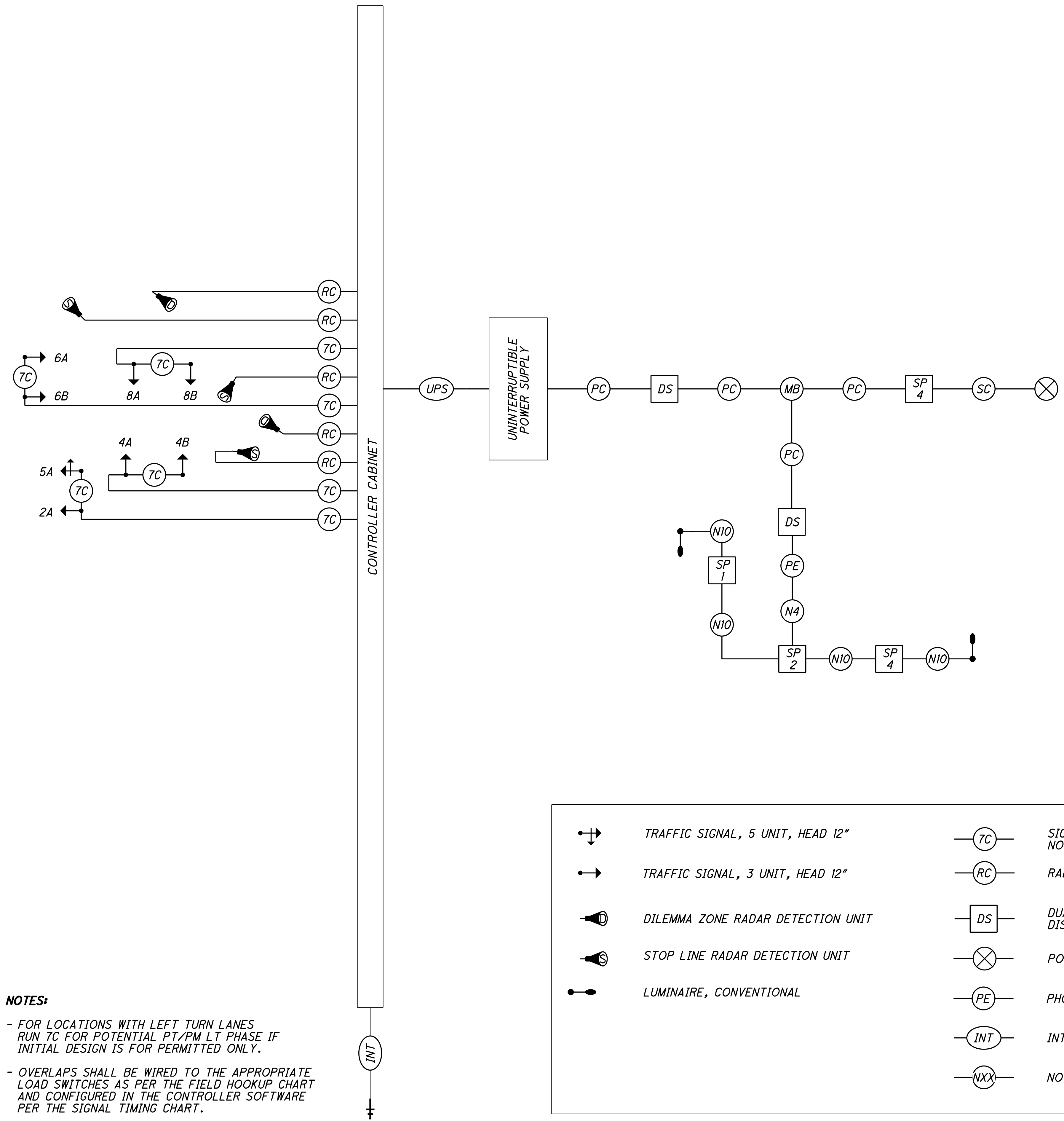
CALCULATED  
GBS  
CHECKED  
DAH

TRAFFIC SIGNAL PLAN DETAILS (COL-CR447-3.39)  
COL US 30 NB RAMP & CR447 (DRESEDEN AVE.)

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WIRING DIAGRAM (TYPICAL)

FIELD WIRING HOOK-UP CHART (TEM FORM 496-16)



SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH	SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
2A (SB)	R	φ 2 R	R	-	-	-	-
	Y	φ 2 Y		-	-	-	
	G	φ 2 G		-	-	-	
	-	-		-	-	-	
4A, 4B (NB)	R	φ 4 R	R	-	-	-	-
	Y	φ 4 Y		-	-	-	
	G	φ 4 G		-	-	-	
	-	-		-	-	-	
5A (SB LT)	R	φ 2 R	R	-	-	-	-
	Y	φ 2 Y		-	-	-	
	G	φ 2 G		-	-	-	
	←-Y---	φ 5 Y		PEDESTRIAN MOVEMENTS			
6A, 6B (NB)	R	φ 6 R	R	-	-	-	-
	Y	φ 6 Y		-	-	-	
	G	φ 6 G		-	-	-	
	-	-		-	-	-	
8A, 8B (EB)	R	φ 8 R	R	-	-	-	-
	Y	φ 8 Y		-	-	-	
	G	φ 8 G		-	-	-	
	-	-		-	-	-	
OVERLAPS							
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
LS = LOAD SWITCH							

LEGEND

	TRAFFIC SIGNAL, 5 UNIT, HEAD 12"		SIGNAL CABLE, 7 CONDUCTOR, NO. XX AWG		SERVICE CABLE, 3 CONDUCTOR, NO. X AWG
	TRAFFIC SIGNAL, 3 UNIT, HEAD 12"		RADAR DETECTION CABLE		POWER CABLE, 2 CONDUCTOR, NO. X AWG
	DILEMMA ZONE RADAR DETECTION UNIT		DUAL LIGHTING/SIGNAL DISCONNECT SWITCH		SIGNAL SUPPORT POLE NO. ...
	STOP LINE RADAR DETECTION UNIT		POWER SOURCE		METER BASE
	LUMINAIRE, CONVENTIONAL		PHOTOELECTRIC CELL		UNINTERRUPTIBLE POWER SUPPLY CABLE
			INTERCONNECT CABLE		NO. X AWG DISTRIBUTION CABLE
			NO. XX AWG POLE & BRACKET CABLE		DUAL LIGHTING/SIGNAL DISCONNECT SWITCH

NOTES:

- FOR LOCATIONS WITH LEFT TURN LANES RUN 7C FOR POTENTIAL PT/PM LT PHASE IF INITIAL DESIGN IS FOR PERMITTED ONLY.
- OVERLAPS SHALL BE WIRED TO THE APPROPRIATE LOAD SWITCHES AS PER THE FIELD HOOKUP CHART AND CONFIGURED IN THE CONTROLLER SOFTWARE PER THE SIGNAL TIMING CHART.

CALCULATED  
GBS  
CHECKED  
DAH

TRAFFIC SIGNAL PLAN DETAILS (COL-CR447-3.39)  
COL US 30 NB RAMP & CR447 (DRESEDEN AVE.)

D11-TSG-FY2023



VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	SB	-	-	WB	-	SB LT	NB	-	-	EB	-
PLAN NO.	COL US 30 NB RAMP & CR447 (DRESDEN AVE) AM PEAK											
LEFT	-	162	-	-	32	-	162	0	-	-	196	-
THRU	-	73	-	-	0	-	0	93	-	-	59	-
RIGHT	-	0	-	-	48	-	0	56	-	-	15	-
U-TURN	-	0	-	-	0	-	0	0	-	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-	-

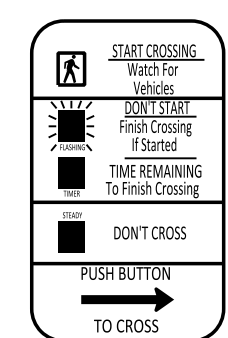
  

VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	SB	-	-	WB	-	SB LT	NB	-	-	EB	-
PLAN NO.	COL US 30 NB RAMP & CR447 (DRESDEN AVE) PM PEAK											
LEFT	-	0	-	-	83	-	217	0	-	-	276	-
THRU	-	141	-	-	0	-	0	140	-	-	79	-
RIGHT	-	0	-	-	81	-	0	84	-	-	21	-
U-TURN	-	0	-	-	0	-	0	0	-	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-	-

COUNT INFORMATION	
Month/Year:	1/20/2021 Day of Week: WED
Time Period(s):	7:00 AM TO 7:00 PM
Total Number of Hours:	12
Method of Obtaining Counts:	VIDEO
Type of Count2:	TURNING MOVEMENT COUNT (TMC)

SHEET NO.	LOCATION (HOL-39-28.25)  FUNDING: 03/STR/OT	611				625							632											633						809					
		4" CONDUIT, TYPE E FT	CONDUIT, 2", 725.04 FT	CONDUIT, 4", 725.04 FT	TRENCH FT	UNDERGROUND WARNING/MARKING TAPE FT	GROUND ROD EACH	PULL BOX, 725.08, 24" EACH	ARC FLASH CALCULATIONS AND LABEL, (HOL-39-28.25) EACH	VEHICULAR SIGNAL HEAD, (LED), 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN EACH	VEHICULAR SIGNAL HEAD, (LED), 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN EACH	COVERING OF VEHICULAR SIGNAL HEAD EACH	PEDESTRIAN PUSHBUTTON EACH	PEDESTRIAN SIGNAL HEAD (LED), TYPE D2, COUNTDOWN EACH	COVERING OF PEDESTRIAN SIGNAL HEAD EACH	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER WITH ACCESSORIES FT	TETHER WIRE, WITH ACCESSORIES FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG FT	STRAIN POLE FOUNDATION EACH	POWER CABLE, 3 CONDUCTOR, NO 6. AWG FT	SERVICE CABLE, 3 CONDUCTOR , NO. 6 AWG FT	POWER SERVICE, AS PER PLAN EACH	STRAIN POLE, TYPE TC-81.1I, DESIGN 12 EACH	PEDESTAL, FOUNDATION EACH	PEDESTAL, 8' EACH	REMOVAL OF TRAFFIC SIGNAL INSTALLATION EACH	CABINET, TYPE 332 EACH	COMMUNICATIONS, AS PER PLAN EACH	CABINET FOUNDATION EACH	CONTROLLER WORK PAD EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN EACH	ADVANCE RADAR DETECTION, AS PER PLAN EACH	STOP LINE RADAR DETECTION, AS PER PLAN EACH	ATC CONTROLLER, AS PER PLAN (PROGRAM AND INSTALL ONLY) EACH
35	CONTROLLER	20				1	1	1																			1	1	1	1	1			1	
35	POWER TO SP-1																				100	1													
35	CONTROLLER TO SP-1			30	15	15										60	80		65																
35	POLE SP-1					1			1							120	180	1					1									1	1		
35	POLE SP-2					1										40		1					1								1	1			
35	POLE SP-3					1										40		1					1								1	1			
35	POLE SP-4					1										115		1					1								1	1			
35	BOX SPAN								7	1	8				405	405	490	458																	
35	SP-4 TO PEDESTAL P2A	17			17	17	1					1	1	1											1	1									
35	SP-3 TO PEDESTAL P2B	38			38	38	1					1	1	1										1	1										
35	SP-1 TO PEDESTAL P4A	31			31	31	1					1	1	1										1	1										
35	SP-4 TO PEDESTAL P4B	24			24	24	1					1	1	1										1	1										
35	SP-1 TO PEDESTAL P6A	21			21	21	1					1	1	1										1	1										
35	SP-2 TO PEDESTAL P6B	8			8	8	1					1	1	1										1	1										
35	EXISTING TO BE REMOVED																										1								
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>		20	139	30	154	154	11	1	1	8	1	9	6	6	6	405	405	1230	718	4	65	100	1	4	6	6	1	1	1	1	1	1	2	4	1

TO CROSS  
STREET  
PUSH BUTTON  
WAIT FOR  
GREEN LIGHT  
R10-3a-9

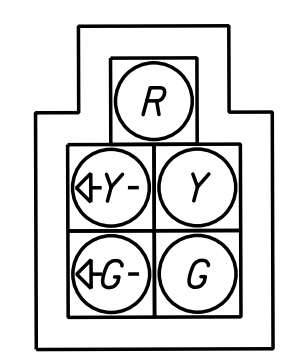


**R10-3E**  
(LEFT OR RIGHT ARROWS,  
SIGN IS INCLUDED  
WITH PUSH BUTTON)  
PB2A, PB2B, PB4A,  
PB4B, PB6A, PB6B

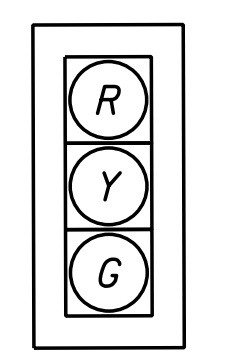
**SIGNAL HEADS**



PEDESTRIAN  
SIGNAL HEAD  
P2A, P2B, P4A,  
P4B, P6A, P6B

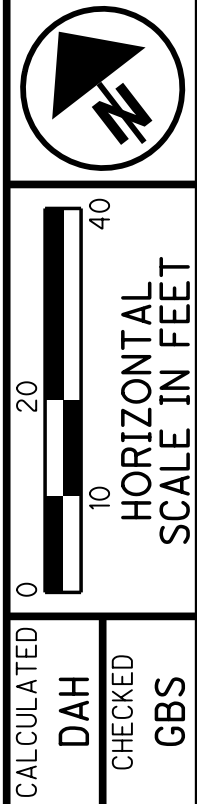


5A



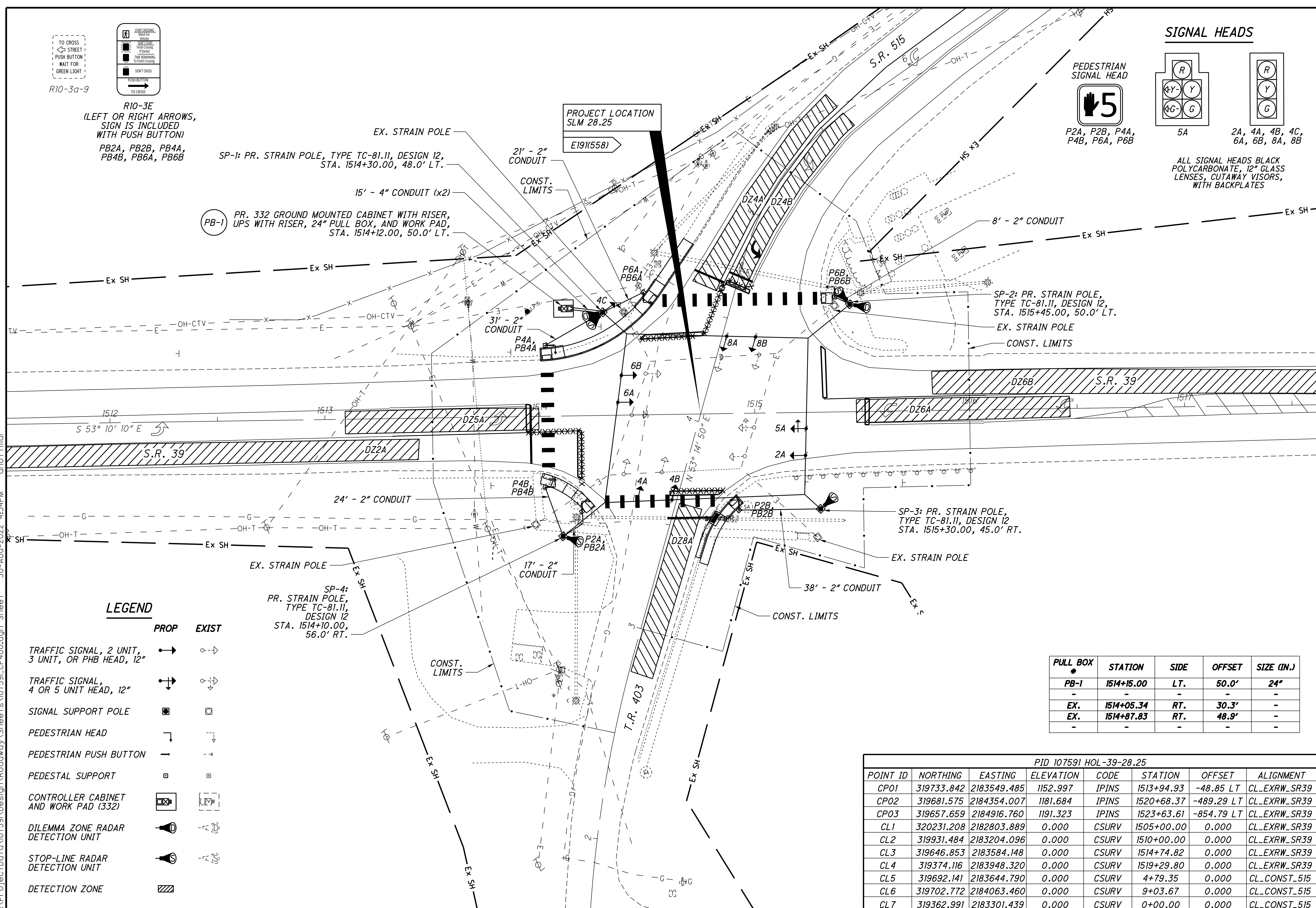
2A, 4A, 4B, 4C,  
6A, 6B, 8A, 8B

ALL SIGNAL HEADS BLACK  
POLYCARBONATE, 12" GLASS  
LENSES, CUTAWAY VISORS,  
WITH BACKPLATES



**TRAFFIC SIGNAL PLAN (HOL-39-28.25)  
S.R. 39 AND S.R. 515**

PROJECT LOCATION  
SLM 28.25  
E191(558)



**LEGEND**

	PROP	EXIST
TRAFFIC SIGNAL, 2 UNIT, 3 UNIT, OR PHB HEAD, 12"		
TRAFFIC SIGNAL, 4 OR 5 UNIT HEAD, 12"		
SIGNAL SUPPORT POLE		
PEDESTRIAN HEAD		
PEDESTRIAN PUSH BUTTON		
PEDESTAL SUPPORT		
CONTROLLER CABINET AND WORK PAD (332)		
DILEMMA ZONE RADAR DETECTION UNIT		
STOP-LINE RADAR DETECTION UNIT		
DETECTION ZONE		

PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
PB-1	1514+15.00	LT.	50.0'	24"
EX.	1514+05.34	RT.	30.3'	-
EX.	1514+87.83	RT.	48.9'	-
-	-	-	-	-

PID 107591 HOL-39-28.25							
POINT ID	NORTHING	EASTING	ELEVATION	CODE	STATION	OFFSET	ALIGNMENT
CP01	319733.842	2183549.485	1152.997	IPINS	1513+94.93	-48.85 LT	CL_EXRW_SR39
CP02	319681.575	2184354.007	1181.684	IPINS	1520+68.37	-489.29 LT	CL_EXRW_SR39
CP03	319657.659	2184916.760	1191.323	IPINS	1523+63.61	-854.79 LT	CL_EXRW_SR39
CL1	320231.208	2182803.889	0.000	CSURV	1505+00.00	0.000	CL_EXRW_SR39
CL2	319931.484	2183204.096	0.000	CSURV	1510+00.00	0.000	CL_EXRW_SR39
CL3	319646.853	2183584.148	0.000	CSURV	1514+74.82	0.000	CL_EXRW_SR39
CL4	319374.116	2183948.320	0.000	CSURV	1519+29.80	0.000	CL_EXRW_SR39
CL5	319692.141	2183644.790	0.000	CSURV	4+79.35	0.000	CL_CONST_515
CL6	319702.772	2184063.460	0.000	CSURV	9+03.67	0.000	CL_CONST_515
CL7	319362.991	2183301.439	0.000	CSURV	0+00.00	0.000	CL_CONST_515

**D11-TSG-FY2023**

SIGNAL TIMING CHART (TEM FORM 496-3)

INTERSECTION: S.R. 39 AND S.R. 515 MAINTAINING AGENCY: ODOT DISTRICT II									
START UP		DUAL ENTRY:	YES	PHASES:				2, 4, 6, 8	
START IN:		REST IN RED:		RING 1		RING 2			
ALL-RED FLASH									
TIME FOR: FLASH, ALL RED (SEC.):								9, 6	
FIRST PHASE(S):								2 AND 6	
COLOR DISPLAYED:								GREEN	
INTERVAL OR FEATURE		CONTROLLER MOVEMENT NO.							
INTERSECTION MOVEMENT (PHASE)		1	2	3	4	5	6	7	8
DIRECTION		-	SB	-	WB	SB LT	NB	-	EB
MINIMUM GREEN (INITIAL) (SEC.)		-	25	-	10	7	25	-	10
ADDED INITIAL *(SEC./ACTUATION)		-	1.5	-	-	-	1.5	-	-
MAXIMUM INITIAL *(SEC.)		-	35	-	-	-	35	-	-
PASSAGE TIME (PRESET GAP) (SEC.)		-	5	-	3	3	5	-	3
TIME BEFORE REDUCTION *(SEC.)		-	35	-	-	-	35	-	-
MINIMUM GAP *(SEC.)		-	2	-	-	-	2	-	-
TIME TO REDUCE *(SEC.)		-	15	-	-	-	15	-	-
MAXIMUM GREEN I (SEC.)		-	60	-	40	20	60	-	40
MAXIMUM GREEN II (SEC.)		-	60	-	40	20	60	-	40
YELLOW CHANGE (SEC.)		-	5	-	4.5	4.5	5	-	4.5
ALL RED CLEARANCE (SEC.)		-	2	-	2	2.5	2	-	2
DELAYED GREEN (LPI) * (SEC.)		-	-	-	-	-	-	-	-
FLASHING YELLOW ARROW DELAY* (SEC.)		-	-	-	-	-	-	-	-
WALK (SEC.)		-	9	-	8	-	9	-	-
PEDESTRIAN CLEARANCE (SEC.)		-	16	-	13	-	20	-	-
RECALL	MAXIMUM (ON/OFF)	-	-	-	-	-	-	-	-
	MINIMUM (ON/OFF)	-	YES	-	NO	NO	YES	-	NO
	PEDESTRIAN (ON/OFF)	-	NO	-	NO	-	NO	-	-
MEMORY (ON/OFF)		-	NO	-	NO	NO	NO	-	NO

\*VOLUME DENSITY CONTROLS

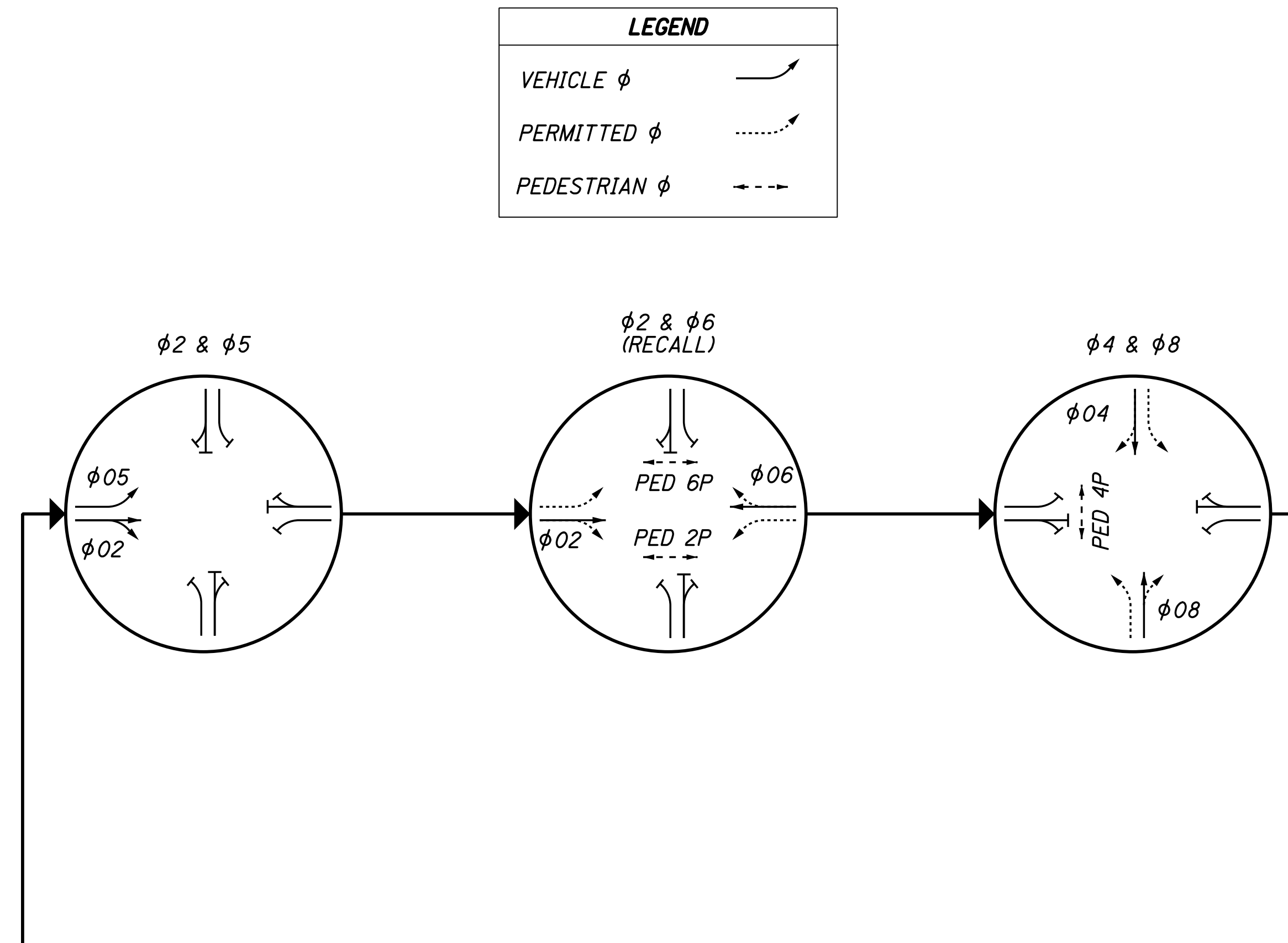
#FOR CROSSING WITH PEDESTRIAN PUSHBUTTONS, LPI'S (LEADING PEDESTRIAN INTERVALS) MAY BE IMPLEMENTED (3-6 SEC.) IN ACCORDANCE WITH LPI DURATION TIME PER THE ODOT SIGNAL CALCULATIONS - CLEARANCE INTERVALS SPREADSHEET.

\*WHEN IMPLEMENTING FYA, A MINIMUM 3 SECOND DELAY SHALL BE PROGRAMMED.

NOTES:

- ALL MOVEMENTS SHALL BE ACTUATED. THE PRIMARY THRU MOVEMENT SHOULD HAVE MIN RECALL ACTIVE TO REST IN GREEN.
- FOR PROTECTED/PERMISSIVE PHASES, IMPLEMENT CALL OMITTS TO AVOID YELLOW BALL TRAP.
- ENABLE  $\phi 1, 3$  &  $\phi 5, 7$  DETECTOR SWITCHING TO ALLOW  $\phi 1$  &  $\phi 5$  TO EXTEND  $\phi 2$  &  $\phi 6$  OR  $\phi 3$  &  $\phi 7$  TO EXTEND  $\phi 4$  &  $\phi 8$ , RESPECTIVELY, WHEN ALLOCATED GREEN TIME FOR LEFT TURN PHASES ARE EXHAUSTED.
- COUNTDOWN PEDESTRIAN SIGNALS SHALL GO TO ZERO ON YELLOW PER ODOTCD FIGURE 4E-2.
- RADAR DETECTION UNITS FOR DILEMMA ZONE DETECTION SHALL PLACE A CONSTANT CALL TO THE CONTROLLER WHEN VEHICLES TRAVEL TIMES TO THE STOP BAR ARE BETWEEN 2.5 AND 6 SECONDS. SPEED TRIGGER SHALL BE SET FOR VEHICLES TRAVELING 35 MPH AND GREATER.
- RADAR SHALL HAVE QUEUE DETECTION CONFIGURED AND A ZONE PLACED AT 100-200 FEET FROM STOP BAR FOR SLOW MOVING VEHICLE EXTENSIONS. SPEED TRIGGER SHALL BE SET AT 1-35 MPH.
- ALL DETECTOR DELAYS SHALL BE PLACED IN THE CONTROLLER.
- FOR ANY ENTRY TO FLASHING OPERATION, PROGRAMMING SHALL RUN MINOR STREET GREEN (TYP.  $\phi 4$  &  $\phi 8$ ), ALL-RED CLEARANCE, AND THEN FLASHING OPERATION.

PHASING DIAGRAM (TYPICAL)



RADAR DETECTION CHART (TEM FORM 496-4)

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMMED IN CONTROLLER (SEC.)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
DZ2A	SB THRU	PULSE	2	-	-	DILEMMA ZONE	50 TO 900
DZ4A	WB THRU	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ4B	WB LT	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ5A	SB LT	PRESENCE	5	6	5	CALL/EXTEND PHASE 5	-5 TO 35
DZ6A	NB LT	PRESENCE	6	6	6	CALL/EXTEND PHASE 6	-5 TO 35
DZ6B	NB THRU	PULSE	6	-	-	DILEMMA ZONE	50 TO 900
DZ8A	EB THRU	PRESENCE	8	6	8	CALL/EXTEND PHASE 8	-5 TO 35

NOTE: ADVANCED DILEMMA ZONE SPEED THRESHOLD >30 MPH  
PURPOSE: STOP-LINE OR ADVANCED DETECTION

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DAH  
CHECKED  
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TRAFFIC SIGNAL PLAN DETAILS (HOL-39-28.25)  
S.R. 39 AND S.R. 515

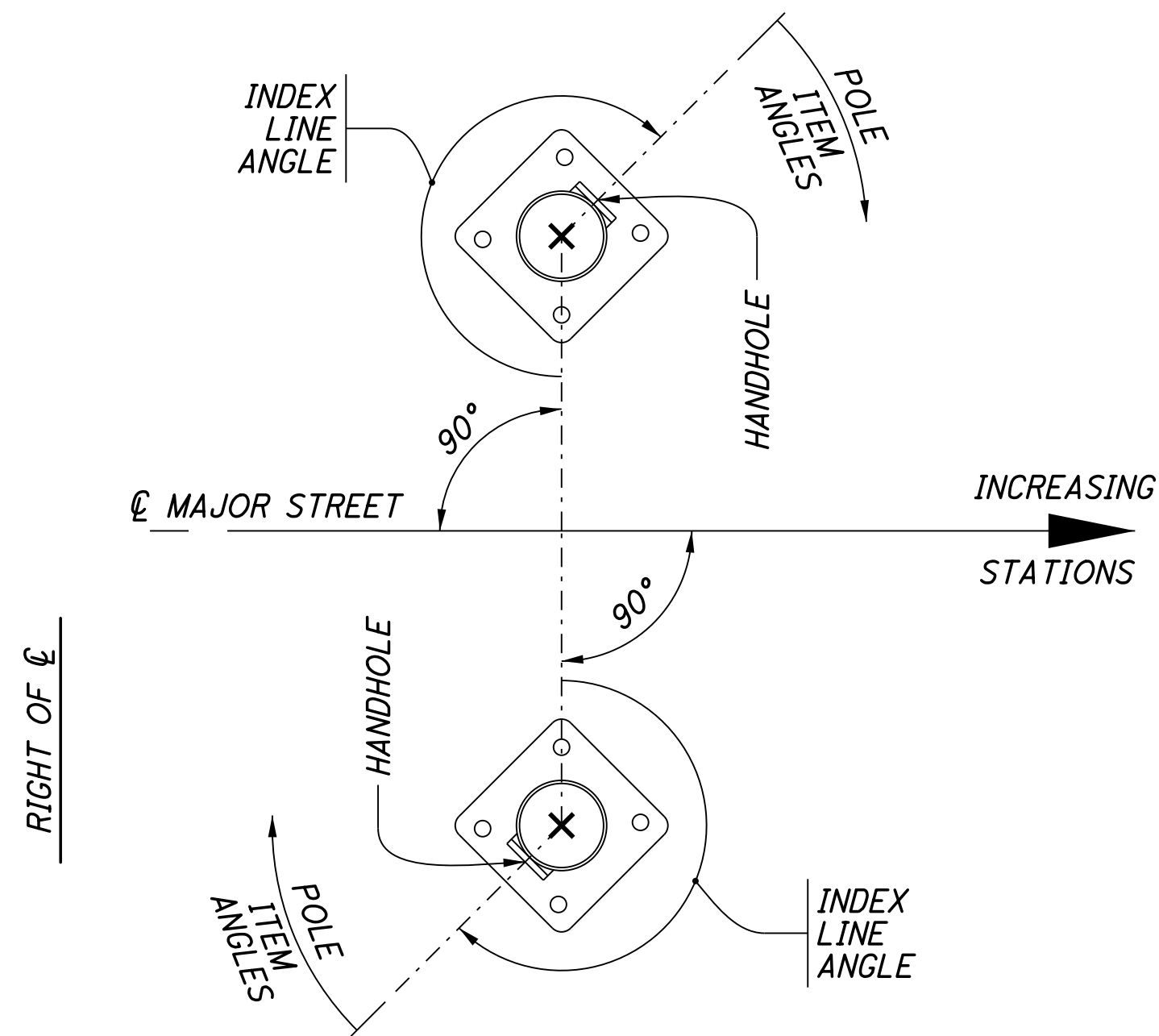
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PLAN DETAILS FOR STRAIN POLES (TEM FIGURE 498-36)

TEM Fig. 498-36: Plan Details for Strain Poles

REFERENCE SHEET NO.	STATION & OFFSET	POLE NO.	DESIGN NO.	POLE HEIGHT (FT.)	FOUNDATION ELEV.*	SPAN WIRE ATTACHED HEIGHT*	CABLE ENTRANCE DISTANCE FROM TOP (IN.)	INDEX LINE ANGLE (DEG.)	PEDESTRIAN SIGNALS	PEDESTRIAN PUSH BUTTONS	POWER SERVICE	CABLE ENTRANCE	2" CAPPED
35	1514+12.00, 50.0' LT	SP-1	12	35	1151.51	30.1		313			134		180
35	1515+45.00, 50.0' LT	SP-2	12	35	1150.85	32.5		52					180
35	1515+30.00, 45.0' RT.	SP-3	12	35	1146.91	33.7		313					180
35	1514+10.00, 56.0' RT	SP-4	12	35	1152.55	31.1		52					180
35	1514+19.00, 44.5' RT	P2A	PEDESTAL	8	1150.81			49	311	311			
35	1514+92.00, 45.0' RT	P2B	PEDESTAL	8	1150.48			315	45	45			
35	1514+03.00, 33.0' LT	P4A	PEDESTAL	8	1151.89			356	274	274			
35	1514+02.00, 33.0' RT	P4B	PEDESTAL	8	1151.65			18	72	72			
35	1514+49.00, 57.0' LT	P6A	PEDESTAL	8	1151.88			308	52	52			
35	1515+38.00, 53.5' LT	P6B	PEDESTAL	8	1151.28			90	90	90			

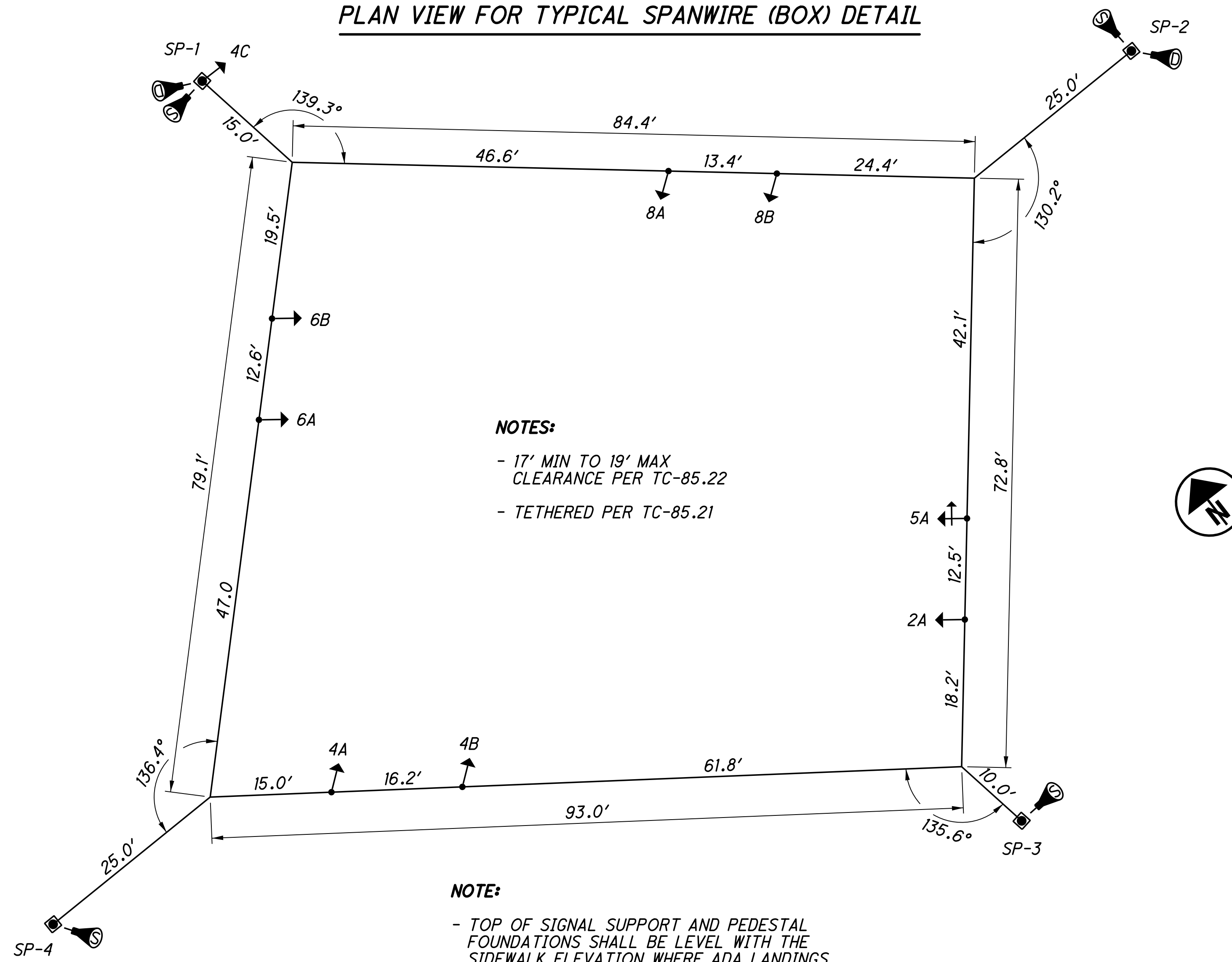


NOTES:

- ALL ANGLES ARE MEASURED CLOCKWISE.
- THE INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

**POLE DIAGRAM**

**PLAN VIEW FOR TYPICAL SPANWIRE (BOX) DETAIL**



NOTES:

- 17' MIN TO 19' MAX CLEARANCE PER TC-85.22
- TETHERED PER TC-85.21

NOTE:

- 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-21.21

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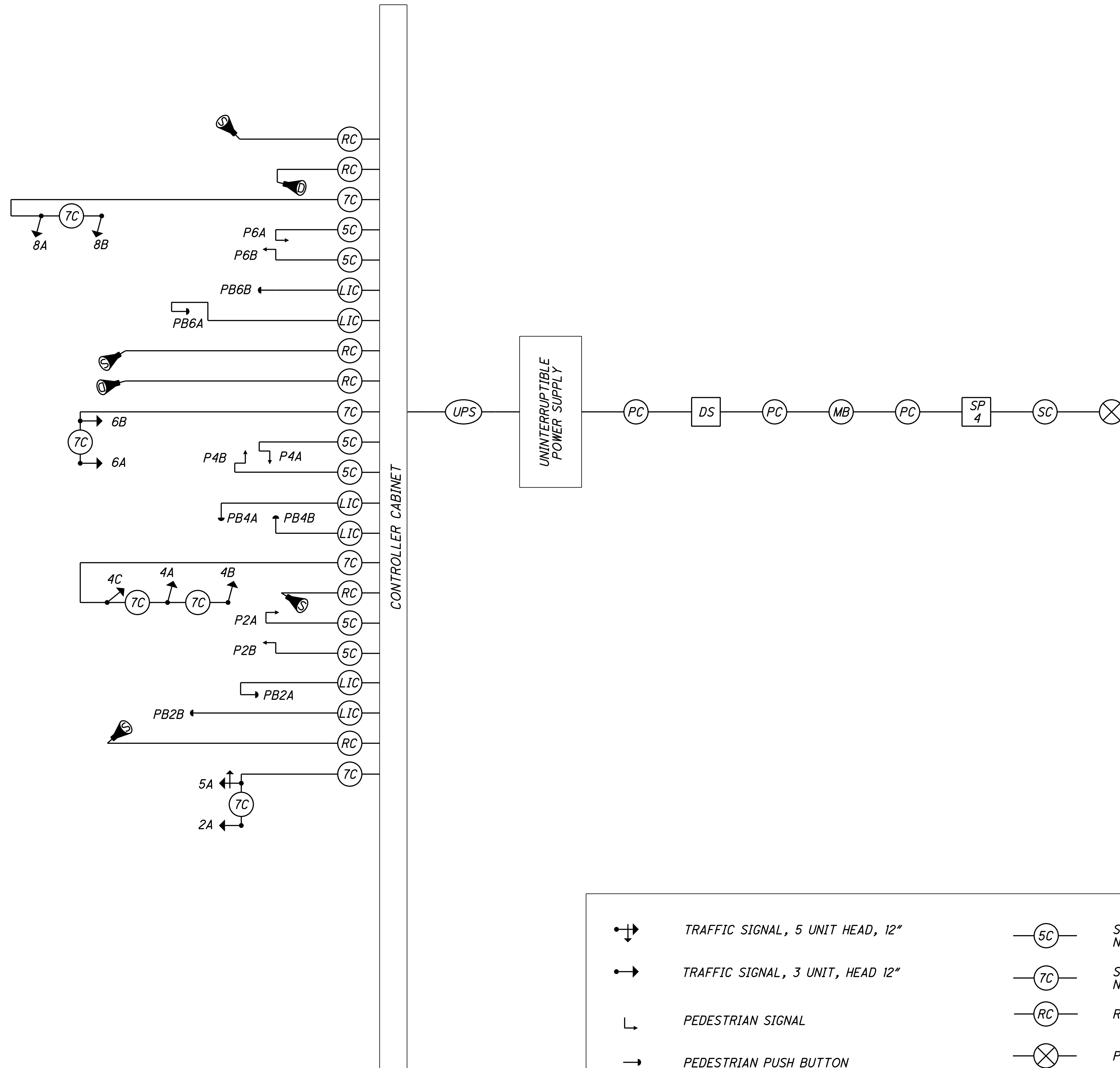
CALCULATED  
DAH  
CHECKED  
GBS

TRAFFIC SIGNAL PLAN DETAILS (HOL-39-28.25)

S.R. 39 AND S.R. 515

D11-TSG-FY2023

WIRING DIAGRAM (TYPICAL)



FIELD WIRING HOOK-UP CHART (TEM FORM 496-16)

SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH	SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
2A (EB)	R	φ 2 R	R	-	-	-	-
	Y	φ 2 Y		-	-	-	
	G	φ 2 G		-	-	-	
	-	-		-	-	-	
4A, 4B, 4C (SB)	R	φ 4 R	R	-	-	-	-
	Y	φ 4 Y		-	-	-	
	G	φ 4 G		-	-	-	
	-	-		-	-	-	
5A (EB LT)	R	φ 2 R	R	-	-	-	-
	Y	φ 2 Y		-	-	-	
	G	φ 2 G		-	-	-	
	←-Y---	φ 5 Y		-	-	-	
	←-G---	φ 5 G		-	-	-	
PEDESTRIAN MOVEMENTS							
6A, 6B (WB)	R	φ 6 R	R	P2A, P2B SOUTH	W	φ 2 PED/ LS 2P G	OUT
	Y	φ 6 Y		P4A, P4B WEST	DW	φ 4 PED/ LS 4P R	OUT
	G	φ 6 G		P6A, P6B NORTH	DW	φ 6 PED/ LS 6P R	OUT
8A, 8B (NB)	R	φ 8 R	R	-	-	-	-
	Y	φ 8 Y		-	-	-	-
	G	φ 8 G		-	-	-	-
OVERLAPS							
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

LS = LOAD SWITCH

LEGEND

	TRAFFIC SIGNAL, 5 UNIT HEAD, 12"		SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG		SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG
	TRAFFIC SIGNAL, 3 UNIT, HEAD 12"		SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG		POWER CABLE, 2 CONDUCTOR, NO. 6 AWG
	PEDESTRIAN SIGNAL		RADAR DETECTION CABLE		SIGNAL SUPPORT POLE NO. ...
	PEDESTRIAN PUSH BUTTON		POWER SOURCE		METER BASE
	DILEMMA ZONE RADAR DETECTION UNIT		DUAL LIGHTING/SIGNAL DISCONNECT SWITCH		2/C NO. 14 AWG (LEAD-IN CABLE)
	STOP LINE RADAR DETECTION UNIT		UNINTERRUPTIBLE POWER SUPPLY CABLE		

CALCULATED  
DAH  
CHECKED  
GBS

TRAFFIC SIGNAL PLAN DETAILS (HOL-39-28.25)  
S.R. 39 AND S.R. 515

D11-TSG-FY2023

VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	EB	-	-	SB	-	EB LT	WB	-	-	NB	-
PLAN NO.	SR 39 & SR 515 AM PEAK											
LEFT	-	0	-	-	40	-	61	0	-	-	4	-
THRU	-	205	-	-	3	-	0	311	-	-	5	-
RIGHT	-	4	-	-	75	-	0	34	-	-	5	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	EB	-	-	SB	-	EB LT	WB	-	-	NB	-
PLAN NO.	SR 39 & SR 515 PM PEAK											
LEFT	-	0	-	-	94	-	101	5	-	-	12	-
THRU	-	428	-	-	11	-	0	256	-	-	5	-
RIGHT	-	6	-	-	75	-	0	41	-	-	4	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

COUNT INFORMATION	
Month/Year:	1/12/2021 Day of Week: TUES
Time Period(s):	7:00 AM TO 7:00 PM
Total Number of Hours:	12
Method of Obtaining Counts:	VIDEO
Type of Count2:	TURNING MOVEMENT COUNT (TMC)

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REFERENCE NO.	SHEET NO.	STATION		CENTERLINE	SIDE	202				608		609		611				630				646				659	NOTES (FUNDING)	
		FROM	TO			WALK REMOVED	CURB REMOVED	CURB AND GUTTER REMOVED	STEPS REMOVED	4" CONCRETE WALK	CURB RAMP	CURB, TYPE 6	COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN	12" CONDUIT, TYPE B	CATCH BASIN, NO. 3	CATCH BASIN ADJUSTED TO GRADE	MANHOLE ADJUSTED TO GRADE	GROUND MOUNTED SUPPORT, NO. 2 POST	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	REMOVAL OF GROUND MOUNTED POST SUPPORT AND REERECTION	STOP LINE	CROSSWALK LIKE, 24"	LANE ARROW	REMOVAL OF PAVEMENT MARKING	REMOVAL OF PAVEMENT MARKING		SEEDING, MISC.: CURB RAMP GRADING RESTORATION
						SQ FT	FT	FT	FT	SQ FT	SQ FT	FT	FT	FT	EACH	EACH	EACH	FT	EACH	EACH	EACH	FT	FT	EACH	FT	EACH	SQ YD	
R-1	41	4+35	4+80	S.R. 515	LT	232	4																					
R-2	41	4+68	4+73	S.R. 515	RT	24																						
R-3	41	3+37	3+53	T.R. 403	RT	219		10																		32		
R-4	41	3+60	3+63	T.R. 403	RT				6																	5		
R-5	41	513+96	514+32	S.R. 39	RT	221																				50		
R-6	41	4+29	4+41	S.R. 515	LT																							
R-7	41	4+39	4+66	S.R. 515	LT																					30		
R-8	41		4+76	S.R. 515	RT																					27		
R-9	41	4+65	4+69	S.R. 515	RT																						1	
R-10	41		4+64	S.R. 515	LT/RT																						4	
R-11	41	3+63	3+72	T.R. 403	RT																						12	
R-12	41		1514+19	S.R. 39	RT																						25	
R-13	41	1513+93	1514+18	S.R. 39	RT																						23	
C-1	41	1514+12	1514+49	S.R. 39	LT							42																
C-2	41	4+57	4+79	S.R. 515	LT							24																
C-3	41	3+39	3+56	T.R. 403	RT								17															
CR-1	41	1514+00	1514+12	S.R. 39	LT						67																7	
CR-2	41	4+41	4+58	S.R. 515	LT						100																7	
CR-3	41	4+68	4+73	S.R. 515	RT						25																7	
CR-4	41	3+60	3+72	T.R. 403	RT						55																7	
CR-5	41	3+45	3+52	T.R. 403	LT						25																5	
CR-6	41	1514+00	1514+06	S.R. 39	RT						25																5	
D-1	41		1514+81.50	S.R. 39	RT									8	1													
D-2	41		1514+16	S.R. 39	RT											1												
PM-1	41		4+66	S.R. 515	LT																	15						
PM-2	41		4+88	S.R. 515	RT																		1					
PM-3	41		4+70	S.R. 515	LT/RT																	12						
PM-4	41	4+46	4+73	S.R. 515	LT/RT																				66			
PM-5	41	3+49	3+70	T.R. 403	LT/RT																				48			
PM-6	41	3+52	3+59	T.R. 403	RT																	21						
PM-7	41		1513+95	S.R. 39	RT																	14						
PM-8	41	1514+00	1514+06	S.R. 39	LT/RT																			42				
S-1	41		3+57	T.R. 403	RT														2									
S-2	41		3+41	T.R. 403	LT													12	1		1							
S-3	41		1514+10	S.R. 39	RT												10	2		1								
SA-1	41		3+68	T.R. 403	RT																							
SA-2	41		3+48	T.R. 403	LT																							
W-1	41	1514+11	1514+48	S.R. 39	LT						201																17	
W-2	41	4+57	4+80	S.R. 515	LT						116																10	
W-3	41	3+37	3+61	T.R. 403	RT						97																11	
W-4	41	1514+05	1514+22	S.R.39	RT						87																8	
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>						<b>696</b>	<b>4</b>	<b>10</b>	<b>6</b>	<b>501</b>	<b>297</b>	<b>66</b>	<b>17</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>22</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>62</b>	<b>156</b>	<b>1</b>	<b>146</b>	<b>1</b>	<b>171</b>	<b>(03/STR/OT)</b>

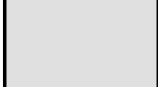
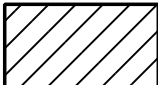

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CHECKED  
GBS

TRAFFIC SIGNAL (HOL-39-28.25)  
PEDESTRIAN FEATURE QUANTITIES

D11-TSG-FY2023



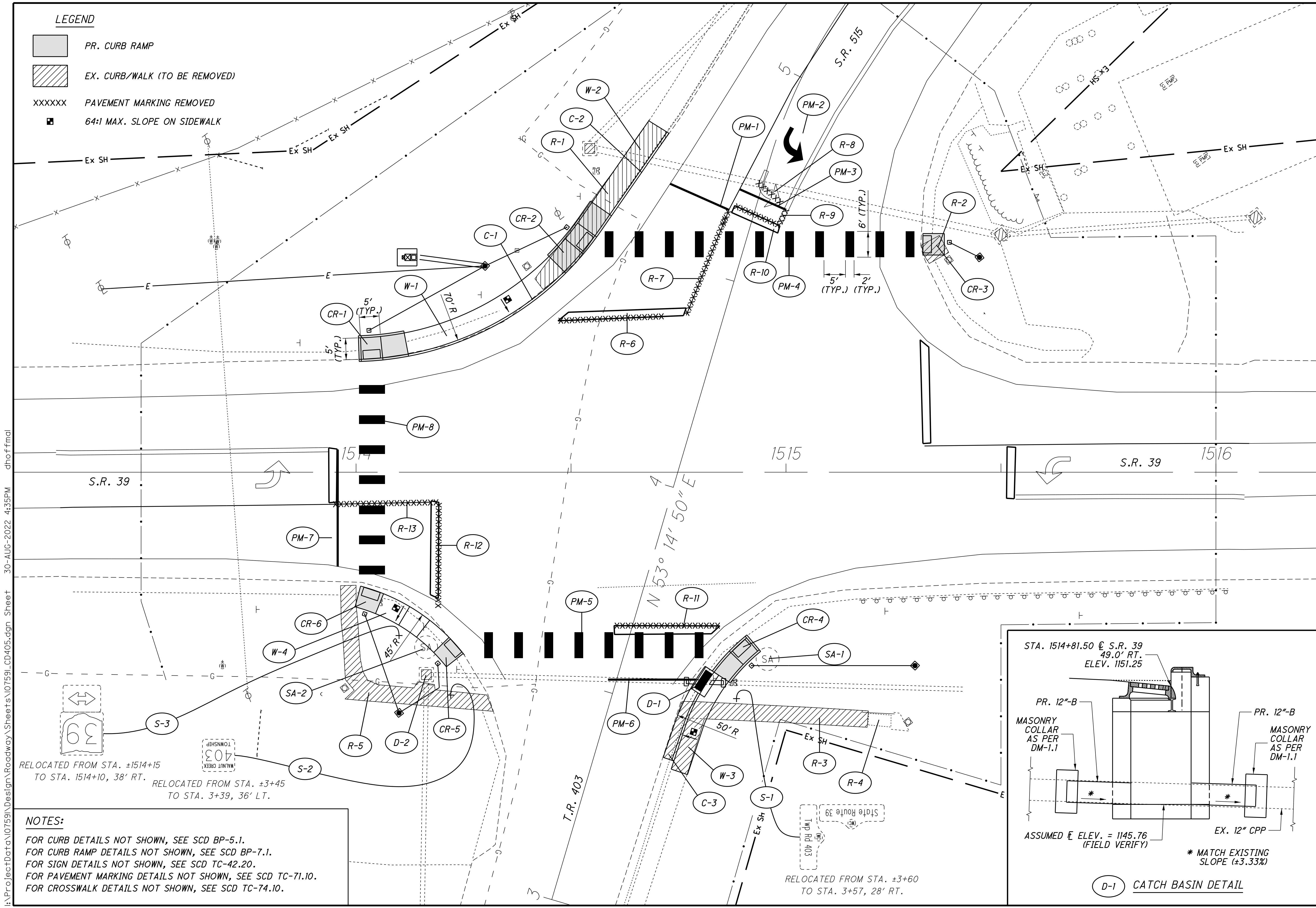
**LEGEND**

-  PR. CURB RAMP
-  EX. CURB/WALK (TO BE REMOVED)
- XXXXXX PAVEMENT MARKING REMOVED
-  64:1 MAX. SLOPE ON SIDEWALK



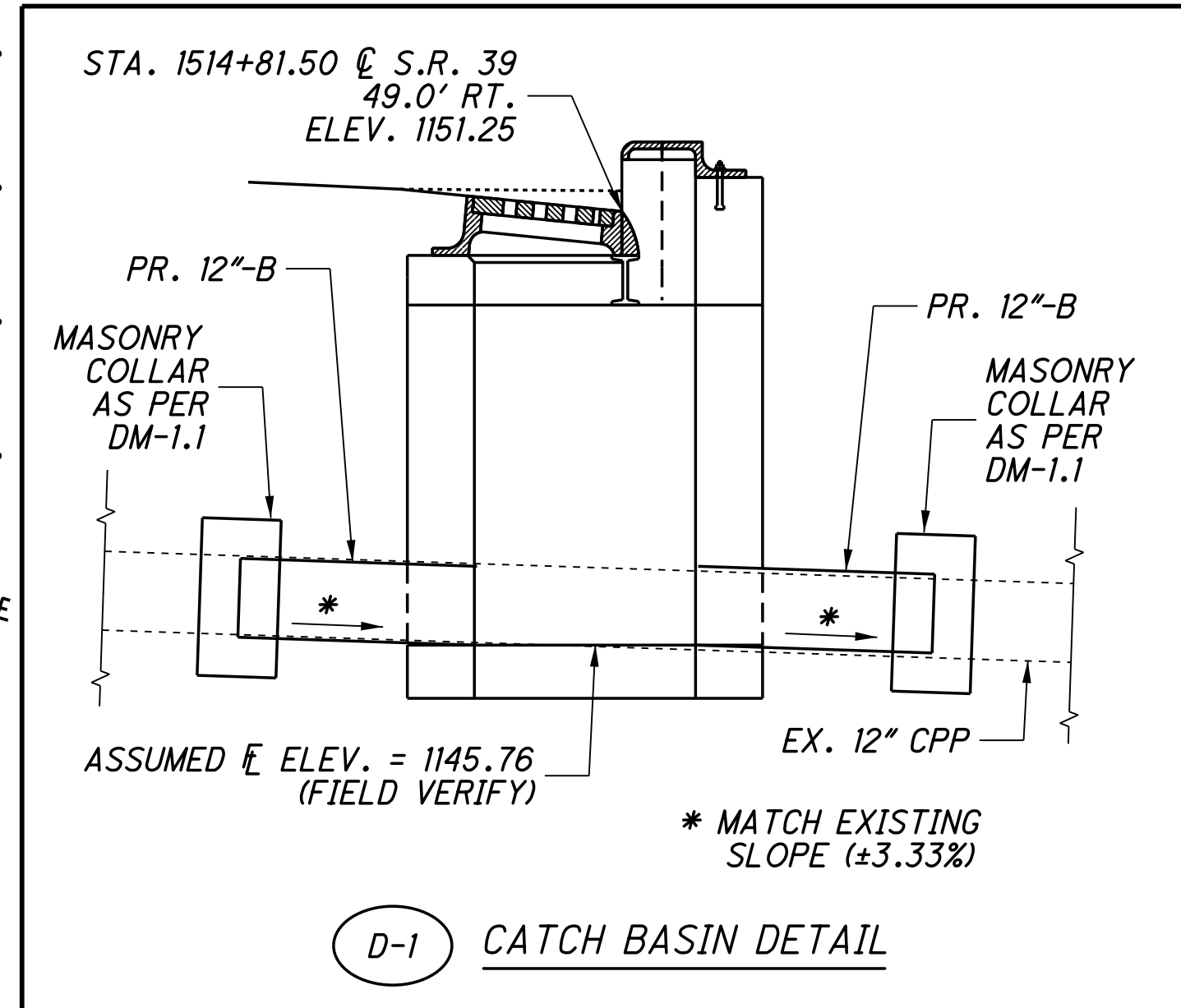
0 5 10 15 20  
HORIZONTAL SCALE IN FEET

CALCULATED  
DAH  
CHECKED  
GBS



RELOCATED FROM STA. ±1514+15 TO STA. 1514+10, 38' RT.  
 RELOCATED FROM STA. ±3+45 TO STA. 3+39, 36' LT.

**NOTES:**  
 FOR CURB DETAILS NOT SHOWN, SEE SCD BP-5.1.  
 FOR CURB RAMP DETAILS NOT SHOWN, SEE SCD BP-7.1.  
 FOR SIGN DETAILS NOT SHOWN, SEE SCD TC-42.20.  
 FOR PAVEMENT MARKING DETAILS NOT SHOWN, SEE SCD TC-71.10.  
 FOR CROSSWALK DETAILS NOT SHOWN, SEE SCD TC-74.10.



RELOCATED FROM STA. ±3+60 TO STA. 3+57, 28' RT.

**TRAFFIC SIGNAL (HOL-39-28.25)  
 PEDESTRIAN FEATURE DETAILS**

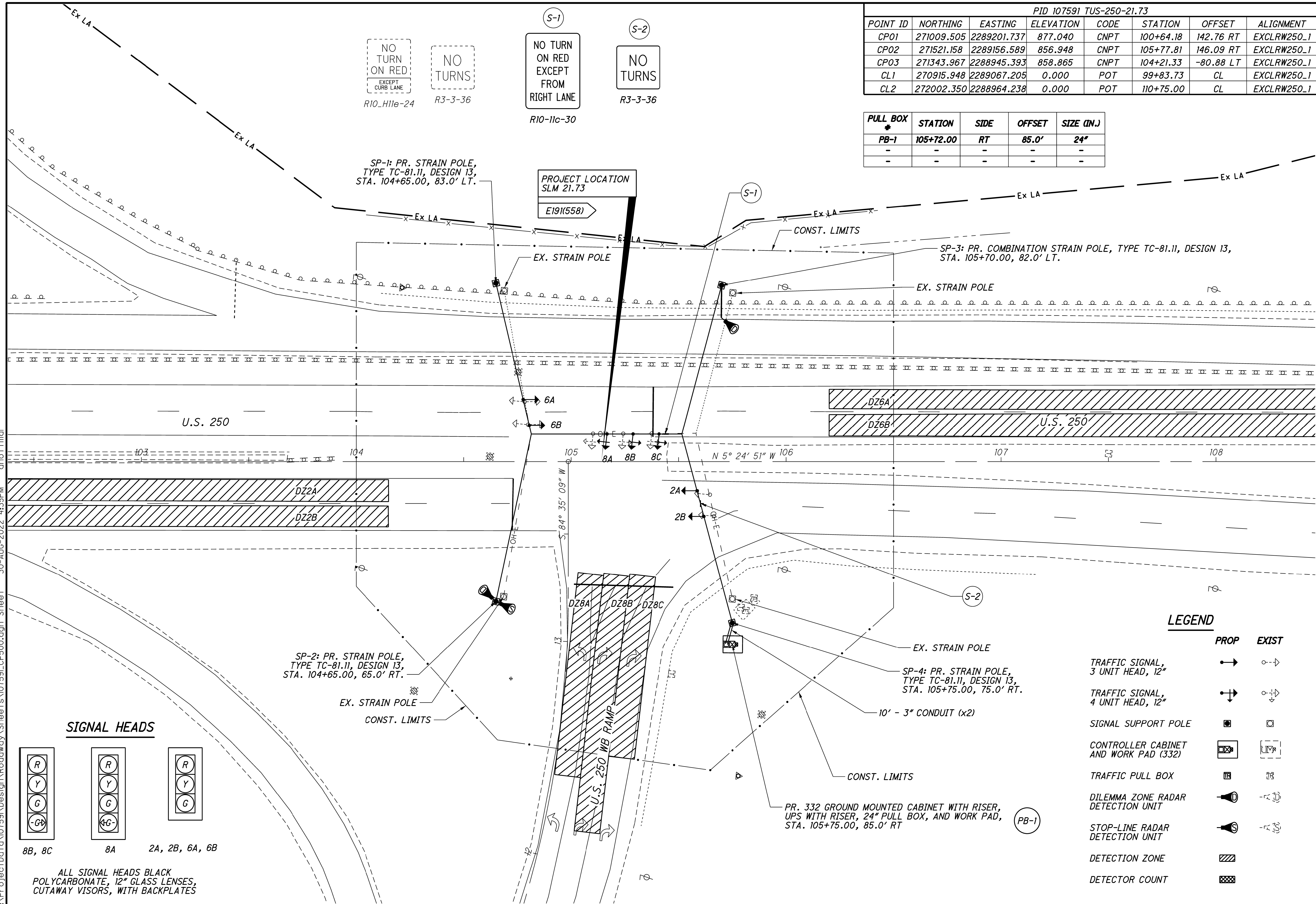
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SHEET NO.	REFERENCE NO.	LOCATION (TUS-250-21.73)  FUNDING: 01/ NHS/ OT	611		625					630		632													633					809		
			4" CONDUIT, TYPE E	BRACKET ARM, 30'	CONDUIT, 3", 725.04	TRENCH	GROUND ROD	PULL BOX, 725.08, 24"	UNDERGROUND WARNING/ MARKING TAPE	ARC FLASH CALCULATIONS AND LABEL, (TUS-280-21.73)	SIGN HANGER ASSEMBLY, SPAN WIRE	SIGN, FLAT SHEET	VEHICULAR SIGNAL HEAD, (LED), BLACK, 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	VEHICULAR SIGNAL HEAD, (LED), 4-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	COVERING OF VEHICULAR SIGNAL HEAD	MESSANGER WIRE, 7 STRAND, 3/8" DIAMETER WITH ACCESSORIES	TETHER WIRE, WITH ACCESSORIES	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	STRAIN POLE FOUNDATION	POWER CABLE, 3 CONDUCTOR, NO 6. AWG	SERVICE CABLE, 3 CONDUCTOR , NO. 6 AWG	POWER SERVICE, AS PER PLAN	STRAIN POLE, TYPE TC-81.II, DESIGN 13	COMBINATION STRAIN POLE, TYPE TC-81.II, DESIGN 13	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	CABINET, TYPE 332	COMMUNICATIONS, AS PER PLAN	CABINET FOUNDATION	CONTROLLER WORK PAD	UNINTERRUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	ADVANCE RADAR DETECTION, AS PER PLAN	STOP LINE RADAR DETECTION, AS PER PLAN
			FT	EACH	FT	FT	EACH	EACH	FT	EACH	SF	EACH	EACH	EACH	FT	FT	FT	EACH	FT	FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
43		CONTROLLER	20				1	1		1															1	1	1	1	1		1	
43		POWER TO SP-4			20	10			10																							
43		CONTROLLER TO SP-4															30	10														
43		POLE SP-1																					1									
43		POLE SP-2																					1									
43		POLE SP-3		1																												
43		POLE SP-4															108	41		1	1		1									
43		POWER IN																														
43		H-SPAN											4	3	7	385	385	406														
43		EXISTING TO BE REMOVED																														
43	S-1	105+44								1	8.8																					
43	S-2	105+60								1	9																					
<b>TOTALS CARRIED TO GENERAL SUMMARY</b>			20	1	20	10	5	1	10	1	2	17.8	4	3	7	385	385	559	4	61	473	1	3	1	1	1	1	1	1	2	1	1

PID 107591 TUS-250-21.73							
POINT ID	NORTHING	EASTING	ELEVATION	CODE	STATION	OFFSET	ALIGNMENT
CP01	271009.505	2289201.737	877.040	CNPT	100+64.18	142.76 RT	EXCLRW250_1
CP02	271521.158	2289156.589	856.948	CNPT	105+77.81	146.09 RT	EXCLRW250_1
CP03	271343.967	2288945.393	858.865	CNPT	104+21.33	-80.88 LT	EXCLRW250_1
CL1	270915.948	2289067.205	0.000	POT	99+83.73	CL	EXCLRW250_1
CL2	272002.350	2288964.238	0.000	POT	110+75.00	CL	EXCLRW250_1

PULL BOX #	STATION	SIDE	OFFSET	SIZE (IN.)
PB-1	105+72.00	RT	85.0'	24"
-	-	-	-	-
-	-	-	-	-



NO TURN ON RED EXCEPT FROM RIGHT LANE  
R10-11c-30

NO TURNS  
R3-3-36

NO TURN ON RED EXCEPT FROM RIGHT LANE  
R10-11c-30

NO TURNS  
R3-3-36

SP-1: PR. STRAIN POLE, TYPE TC-81.11, DESIGN 13, STA. 104+65.00, 83.0' LT.

PROJECT LOCATION  
SLM 21.73  
E191(558)

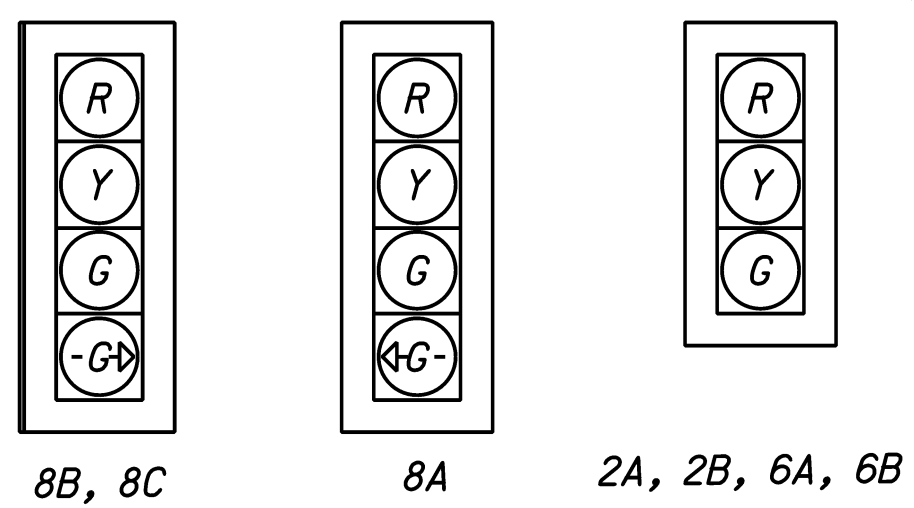
SP-3: PR. COMBINATION STRAIN POLE, TYPE TC-81.11, DESIGN 13, STA. 105+70.00, 82.0' LT.

SP-2: PR. STRAIN POLE, TYPE TC-81.11, DESIGN 13, STA. 104+65.00, 65.0' RT.

SP-4: PR. STRAIN POLE, TYPE TC-81.11, DESIGN 13, STA. 105+75.00, 75.0' RT.

PR. 332 GROUND MOUNTED CABINET WITH RISER, UPS WITH RISER, 24" PULL BOX, AND WORK PAD, STA. 105+75.00, 85.0' RT

**SIGNAL HEADS**



ALL SIGNAL HEADS BLACK POLYCARBONATE, 12" GLASS LENSES, CUTAWAY VISORS, WITH BACKPLATES

**LEGEND**

	PROP	EXIST
TRAFFIC SIGNAL, 3 UNIT HEAD, 12"		
TRAFFIC SIGNAL, 4 UNIT HEAD, 12"		
SIGNAL SUPPORT POLE		
CONTROLLER CABINET AND WORK PAD (332)		
TRAFFIC PULL BOX		
DILEMMA ZONE RADAR DETECTION UNIT		
STOP-LINE RADAR DETECTION UNIT		
DETECTION ZONE		
DETECTOR COUNT		

TRAFFIC SIGNAL PLAN (TUS-250-21.73)  
U.S. 250 AND WATER ST.

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43  
47

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**SIGNAL TIMING CHART (TEM FORM 496-3)**

INTERSECTION: U.S. 250 AND WATER ST. MAINTAINING AGENCY: ODOT DISTRICT II								
START UP	DUAL ENTRY:	YES	PHASES:				2,4,6	
	REST IN RED:	RING 1		RING 2		-		
START IN: ALL-RED FLASH								
TIME FOR: FLASH, ALL RED (SEC.):	9, 6							
FIRST PHASE(S):	2 AND 6							
COLOR DISPLAYED:	GREEN							
INTERVAL OR FEATURE	CONTROLLER MOVEMENT NO.							
INTERSECTION MOVEMENT (PHASE)	1	2	3	4	5	6	7	8
DIRECTION	-	SB	-	WB	-	NB	-	-
MINIMUM GREEN (INITIAL) (SEC.)	-	20	-	10	-	20	-	-
ADDED INITIAL *(SEC./ACTUATION)	-	1.5	-	0	-	1.5	-	-
MAXIMUM INITIAL *(SEC.)	-	35	-	0	-	35	-	-
PASSAGE TIME (PRESET GAP) (SEC.)	-	5	-	3	-	5	-	-
TIME BEFORE REDUCTION *(SEC.)	-	35	-	0	-	35	-	-
MINIMUM GAP *(SEC.)	-	2	-	0	-	2	-	-
TIME TO REDUCE *(SEC.)	-	15	-	0	-	15	-	-
MAXIMUM GREEN I (SEC.)	-	60	-	40	-	60	-	-
MAXIMUM GREEN II (SEC.)	-	60	-	40	-	60	-	-
YELLOW CHANGE (SEC.)	-	5	-	4	-	5	-	-
ALL RED CLEARANCE (SEC.)	-	1.5	-	2	-	1.5	-	-
DELAYED GREEN (LPI) * (SEC.)	-	-	-	-	-	-	-	-
FLASHING YELLOW ARROW DELAY* (SEC.)	-	-	-	-	-	-	-	-
WALK (SEC.)	-	-	-	-	-	-	-	-
PEDESTRIAN CLEARANCE (SEC.)	-	-	-	-	-	-	-	-
RECALL	MAXIMUM (ON/OFF)	-	NO	-	NO	-	NO	-
	MINIMUM (ON/OFF)	-	YES	-	NO	-	YES	-
	PEDESTRIAN (ON/OFF)	-	NO	-	NO	-	NO	-
MEMORY (ON/OFF)	-	NO	-	NO	-	NO	-	-

\*VOLUME DENSITY CONTROLS

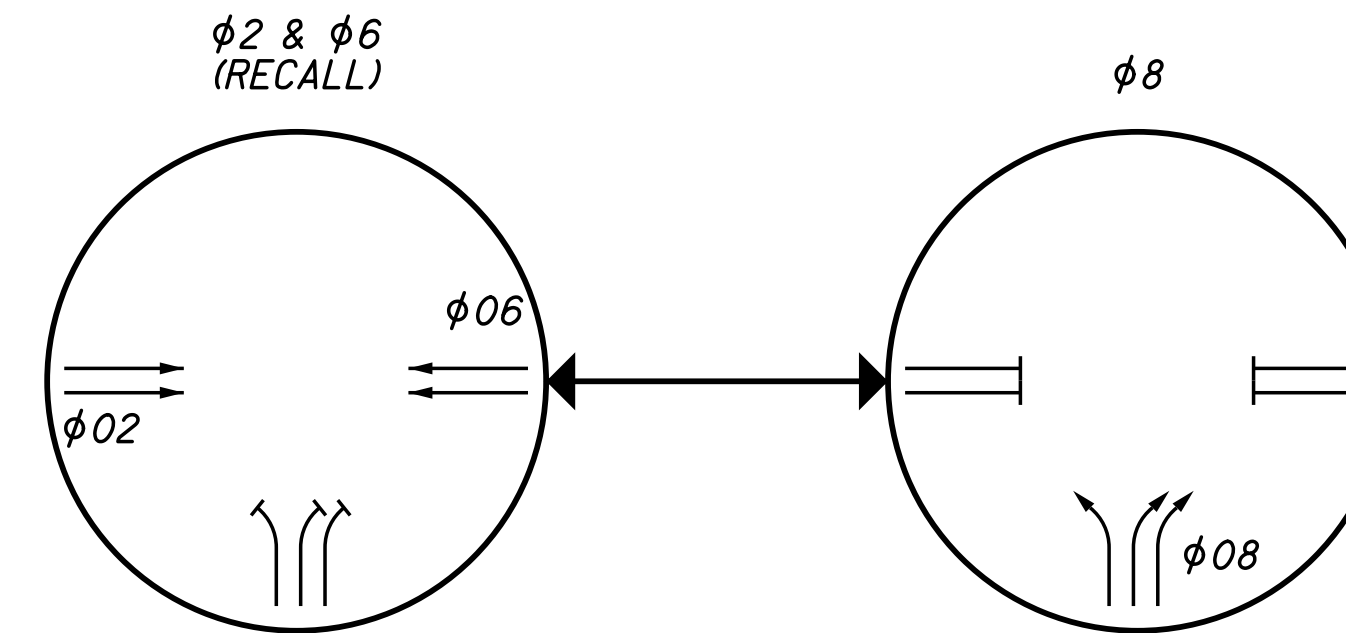
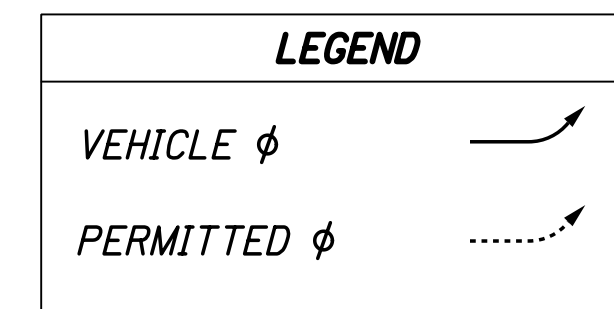
#FOR CROSSING WITH PEDESTRIAN PUSHBUTTONS, LPI'S (LEADING PEDESTRIAN INTERVALS) MAY BE IMPLEMENTED (3-6 SEC.) IN ACCORDANCE WITH LPI DURATION TIME PER THE ODOT SIGNAL CALCULATIONS - CLEARANCE INTERVALS SPREADSHEET.

\*WHEN IMPLEMENTING FYA, A MINIMUM 3 SECOND DELAY SHALL BE PROGRAMMED.

**NOTES:**

- ALL MOVEMENTS SHALL BE ACTUATED. THE PRIMARY THRU MOVEMENT SHOULD HAVE MIN RECALL ACTIVE TO REST IN GREEN.
- FOR PROTECTED/PERMISSIVE PHASES, IMPLEMENT CALL OMITTS TO AVOID YELLOW BALL TRAP.
- ENABLE  $\phi 1, 3$  &  $\phi 5, 7$  DETECTOR SWITCHING TO ALLOW  $\phi 1$  &  $\phi 5$  TO EXTEND  $\phi 2$  &  $\phi 6$  OR  $\phi 3$  &  $\phi 7$  TO EXTEND  $\phi 4$  &  $\phi 8$ , RESPECTIVELY, WHEN ALLOCATED GREEN TIME FOR LEFT TURN PHASES ARE EXHAUSTED.
- RADAR DETECTION UNITS FOR DILEMMA ZONE DETECTION SHALL PLACE A CONSTANT CALL TO THE CONTROLLER WHEN VEHICLES TRAVEL TIMES TO THE STOP BAR ARE BETWEEN 2.5 AND 6 SECONDS. SPEED TRIGGER SHALL BE SET FOR VEHICLES TRAVELING 35 MPH AND GREATER.
- RADAR SHALL HAVE QUEUE DETECTION CONFIGURED AND A ZONE PLACED AT 100-200 FEET FROM STOP BAR FOR SLOW MOVING VEHICLE EXTENSIONS. SPEED TRIGGER SHALL BE SET AT 1-35 MPH.
- ALL DETECTOR DELAYS SHALL BE PLACED IN THE CONTROLLER.
- FOR ANY ENTRY TO FLASHING OPERATION, PROGRAMMING SHALL RUN MINOR STREET GREEN (TYP.  $\phi 4$  &  $\phi 8$ ), ALL-RED CLEARANCE, AND THEN FLASHING OPERATION.

**PHASING DIAGRAM (TYPICAL)**



**RADAR DETECTION CHART (TEM FORM 496-4)**

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMMED IN CONTROLLER (SEC.)	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH (FT)
DZ6A	SB THRU	PULSE	2	-	-	DILEMMA ZONE	50 TO 900
DZ6B	SB THRU	PULSE	2	-	-	DILEMMA ZONE	50 TO 900
DZ8A	WB LT	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ8B	WB RT	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ8C	WB RT	PRESENCE	4	6	4	CALL/EXTEND PHASE 4	-5 TO 35
DZ2A	NB THRU	PULSE	6	-	-	DILEMMA ZONE	50 TO 900
DZ2B	NB THRU	PULSE	6	-	-	DILEMMA ZONE	50 TO 900

NOTE: ADVANCED DILEMMA ZONE SPEED THRESHOLD >30 MPH  
PURPOSE: STOP-LINE OR ADVANCED DETECTION

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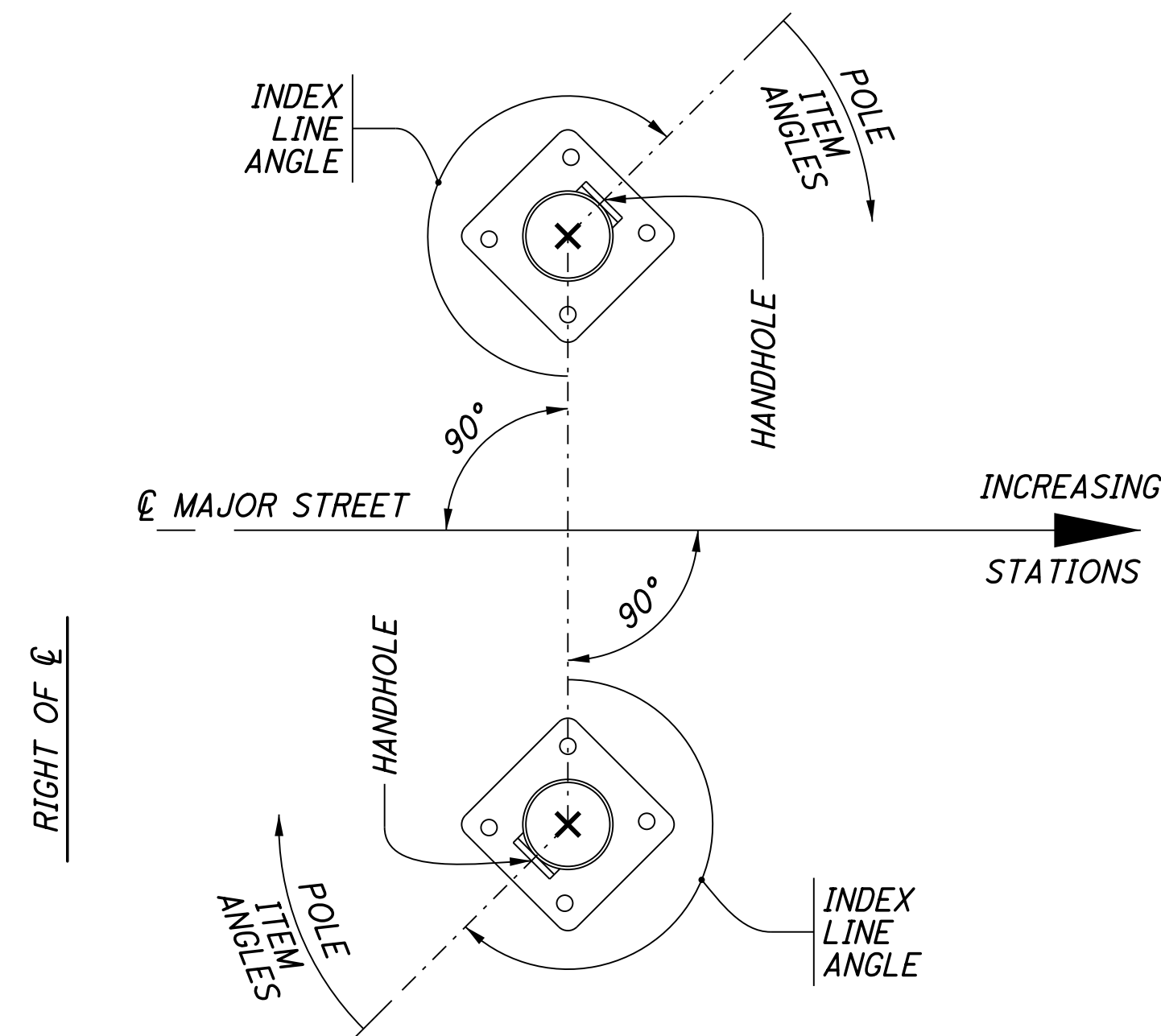
TRAFFIC SIGNAL PLAN DETAILS (TUS-250-21.73)  
U.S. 250 AND WATER ST.

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PLAN DETAILS FOR STRAIN POLES (TEM FIGURE 498-36)

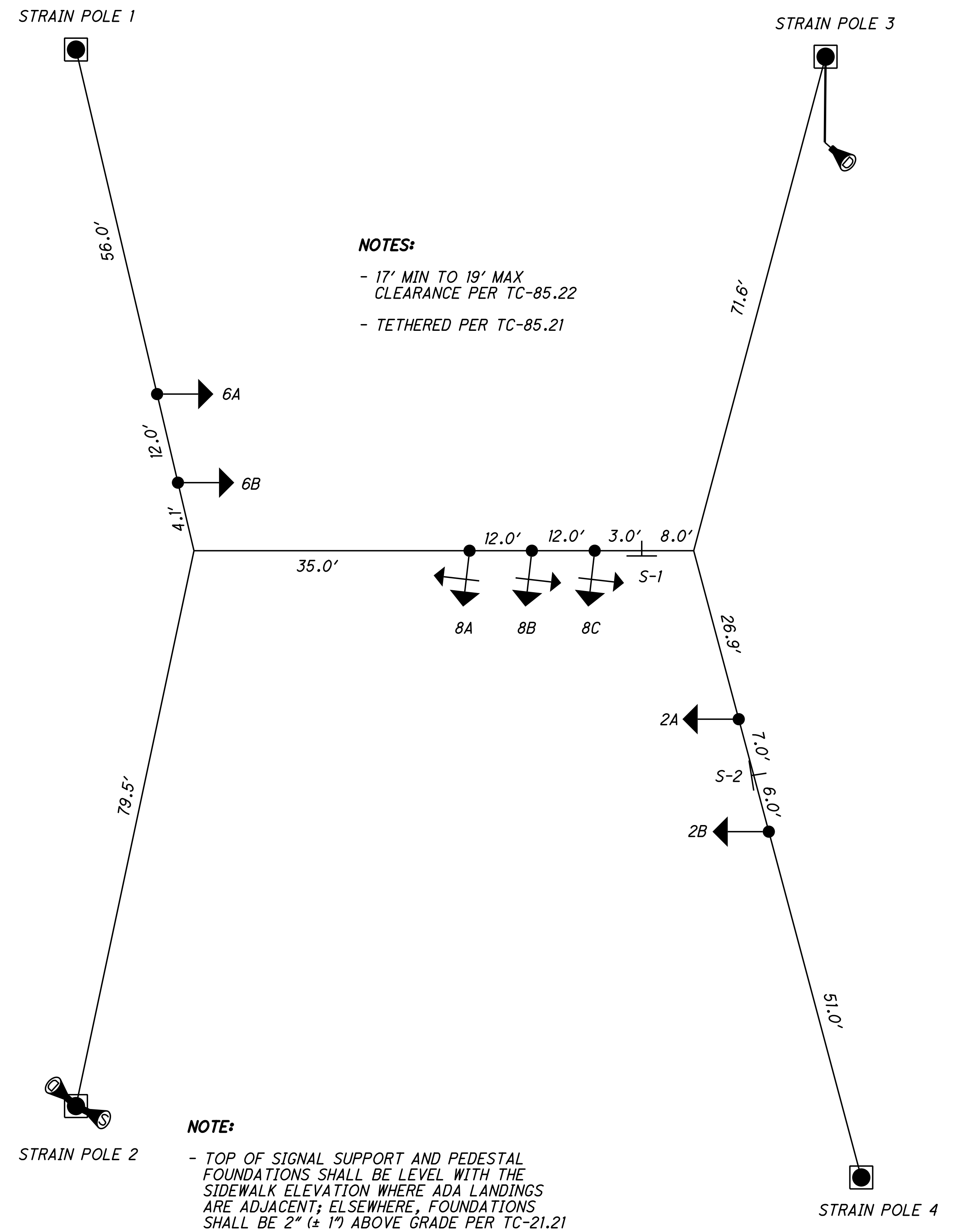
REFERENCE SHEET NO.*	STATION & OFFSET*	POLE NO.	DESIGN NO.	POLE HEIGHT (FT.)	FOUNDATION ELEV.*	SPAN WIRE ATTACHED HEIGHT*	CABLE ENTRANCE DISTANCE FROM TOP (IN.)	INDEX LINE ANGLE (DEG.)	POWER SERVICE	CABLE ENTRANCE	BRACKET ARM	2" CAPPED
43	104+65.00, 83.0' LT.	SP-1	13	33	886	887.5	24	166.8	-	180	-	0
43	104+65.00, 65.0' RT.	SP-2	13	33	886	887.3	24	192	-	180	-	0
43	105+70.00, 82.0' LT.	SP-3	13	35	887.5	887.1	24	194.4	-	180	165.6	0
43	105+75.00, 75.0' RT.	SP-4	13	36	887.5	886.6	24	165	27	180	-	0



- NOTES:
- ALL ANGLES ARE MEASURED CLOCKWISE.
  - THE INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

**POLE DIAGRAM**

**PLAN VIEW FOR TYPICAL SPANWIRE DETAIL**



- NOTES:
- 17' MIN TO 19' MAX CLEARANCE PER TC-85.22
  - TETHERED PER TC-85.21

- NOTE:
- 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-21.21

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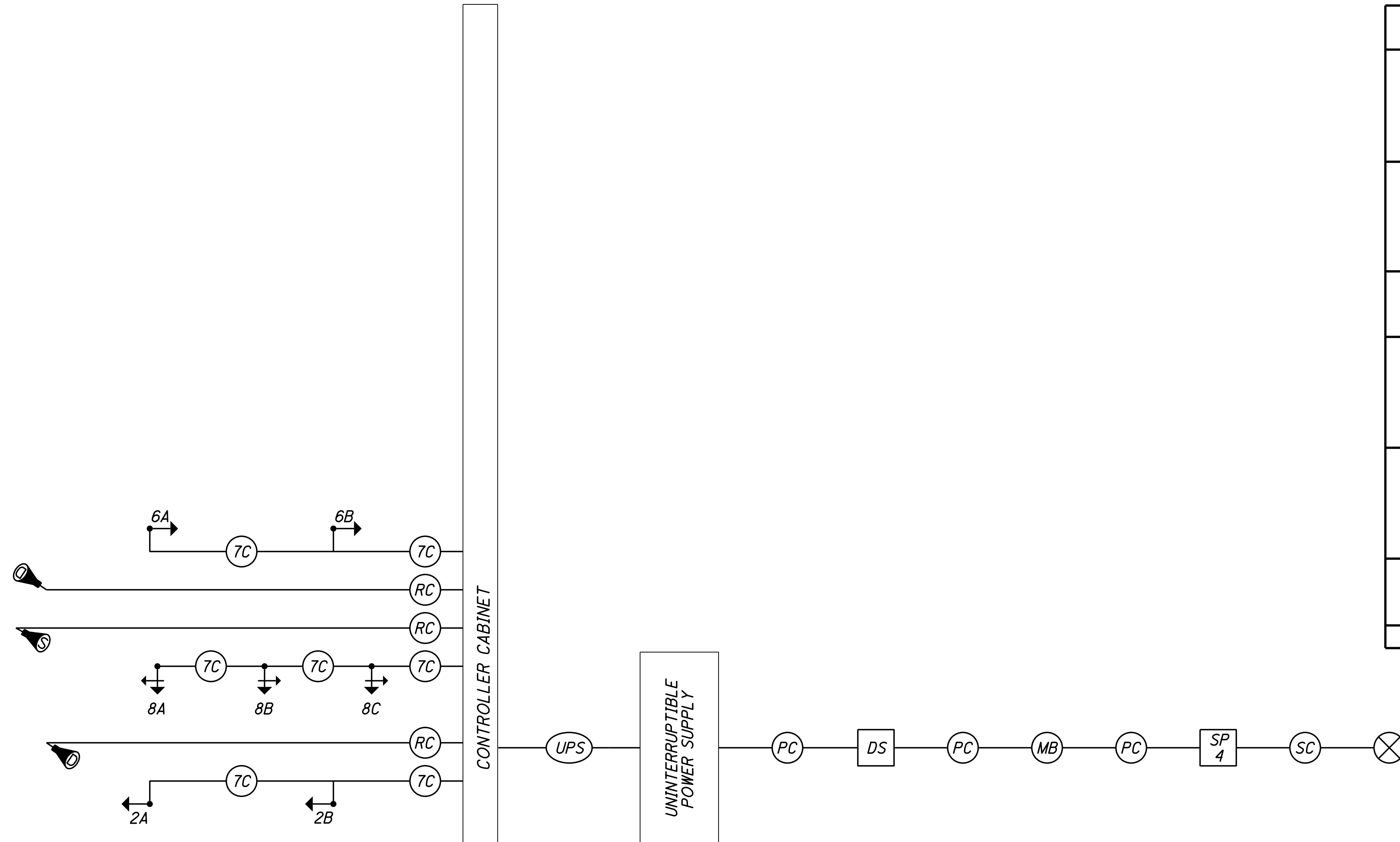
TRAFFIC SIGNAL PLAN DETAILS (TUS-250-21.73)  
U.S. 250 AND WATER ST.

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FIELD WIRING HOOK-UP CHART (TEM FORM 496-16)

SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH	SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
2A, 2B (NB)	R	φ 2R	R	-	-	-	-
	Y	φ 2Y		-	-	-	
	G	φ 2G		-	-	-	
	-	-		-	-	-	
8B, 8C (WB)	R	φ 4R	R	-	-	-	-
	Y	φ 4Y		-	-	-	
	G	φ 4G		-	-	-	
	---G-->	φ 4G		-	-	-	
6A, 6B (SB)	R	φ 6R	R	-	-	-	-
	Y	φ 6Y		-	-	-	
	G	φ 6G		-	-	-	
8A (WB LT)	R	φ 4R	R	PEDESTRIAN MOVEMENTS			
	Y	φ 4Y		-	-	-	-
	G	φ 4G		-	-	-	-
	<--G---	φ 4G		-	-	-	-
-	-	-	-	OVERLAPS			
	-	-		-	-	-	-
	-	-		-	-	-	-
	-	-		-	-	-	-
LS = LOAD SWITCH							



LEGEND

	TRAFFIC SIGNAL, 5 UNIT HEAD, 12"		SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG		SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG
	TRAFFIC SIGNAL, 3 UNIT HEAD, 12"		RADAR DETECTION CABLE		POWER CABLE, 2 CONDUCTOR, NO. 6 AWG
	DILEMMA ZONE RADAR DETECTION UNIT		POWER SOURCE		SIGNAL SUPPORT POLE NO. ...
	STOP LINE RADAR DETECTION UNIT		DUAL LIGHTING/SIGNAL DISCONNECT SWITCH		UNINTERRUPTIBLE POWER SUPPLY CABLE

CALCULATED  
GBS  
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TRAFFIC SIGNAL PLAN DETAILS (TUS-250-21.73)  
U.S. 250 AND WATER ST.

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VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	NB	-	-	WB	-	-	SB	-	WB LT	-	-
PLAN NO.	US 250 & US 36 AM PEAK											
LEFT	-	0	-	-	0	-	-	0	-	20	-	-
THRU	-	584	-	-	452	-	-	683	-	0	-	-
RIGHT	-	0	-	-	0	-	-	0	-	0	-	-
U-TURN	-	0	-	-	0	-	-	0	-	0	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
VEHICULAR/PED PEAK HOURLY VOLUME												
PHASE	1	2	2/PED	3	4	4/PED	5	6	6/PED	7	8	8/PED
DIRECTION	-	NB	-	-	WB	-	-	SB	-	WB LT	-	-
PLAN NO.	US 250 & US 36 PM PEAK											
LEFT	-	0	-	-	0	-	-	0	-	23	-	-
THRU	-	614	-	-	0	-	-	1130	-	0	-	-
RIGHT	-	0	-	-	413	-	-	0	-	0	-	-
U-TURN	-	0	-	-	0	-	-	0	-	0	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

COUNT INFORMATION			
Month/Year:	1/12/2021	Day of Week:	TUES
Time Period(s):	7:00 AM TO 7:00 PM		
Total Number of Hours:	12		
Method of Obtaining Counts:	VIDEO		
Type of Count2:	TURNING MOVEMENT COUNT (TMC)		

CALCULATED  
GBS  
CHECKED  
DAH

TRAFFIC SIGNAL VOLUME COUNTS (TUS - 250 - 21.73)

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