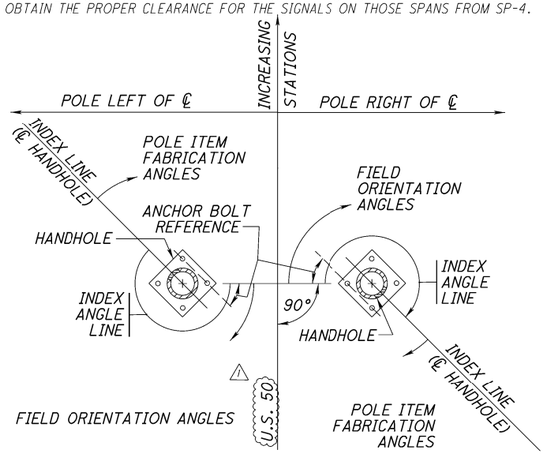
TRAFFIC SIGNAL STRAIN POLE AND PEDESTRAIN PEDESTAL CHART

POLE NO.	FOUNDATION ELEVATION (FT)	POLE TYPE	DESIGN NUMBER	POLE HEIGHT (FT)	ATTACHMENT HEIGHT (FT)	INDEX ANGLE (DEG)	ANGLES (DEG) FROM INDEX LINE: POWER SERVICE	PEDESTRIAN SIGNAL HEAD	PEDESTRIAN PUSH BUTTON	CABLE ENTRANCE (TOP)	POLE MOUNTED SIGN
SP-1	575.17	TC-81.10	12	27'	26	126				180	126
SP-2	570.17	TC-81.10	12	32'	31	182				180	180
SP-3	567.22	TC-81.10	12	32'	31.2	225	277			180	
SP-4	566.28	TC-81.10	12	33'	32.5	180				180	
PS-3	567.00	TC-83.20		8'							
PS-4	566.03	TC-83.20		8'							

1 DUE TO UTILITY CONFLICTS, SP-4 WAS RELOCATED 6.5' EAST OF THE ORIGINAL POLE APPROVED LOCATION. THE SAG ON THE SPANS FROM SP-4 NEED TO BE REDUCED TO OBTAIN THE PROPER CLEARANCE FOR THE SIGNALS ON THOSE SPANS FROM SP-4.



POLE ORIENTATION DETAIL NOTES:

A. ALL ANGLES MEASURED CLOCKWISE.

B. INDEX LINE GOES THROUGH THE CENTER OF THE HANDHOLE.

C. HANDHOLE SHALL BE SQUARE TO ANCHOR BASE (AS SHOWN).

PROPOSED SIGN DETAIL

S1, S3, S4, S5
R3-5L
30" x 36"

S2
R10-12
24" x 30"

S6 ON SP-1
S7 ON SP-2
R9-3
18" x 18"

S8 ON PS-4
R10-3E-9
9" x 15"

S9 ON PS-3
R10-3E-9
9" x 15"

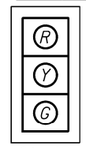
EXISTING SIGN LEGEND

RS1, RS3
REMOVE R3-5L

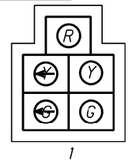
RS2
REMOVE R3-5L

PROPOSED SIGNAL DETAIL
VEHICLE SIGNAL HEAD, LED, BLACK, 12" LENS, WITH BACKPLATES AND REFLECTIVE TAPE, CUTAWAY VISOR, AS PER PLAN

1-WAY, POLYCARBONATE



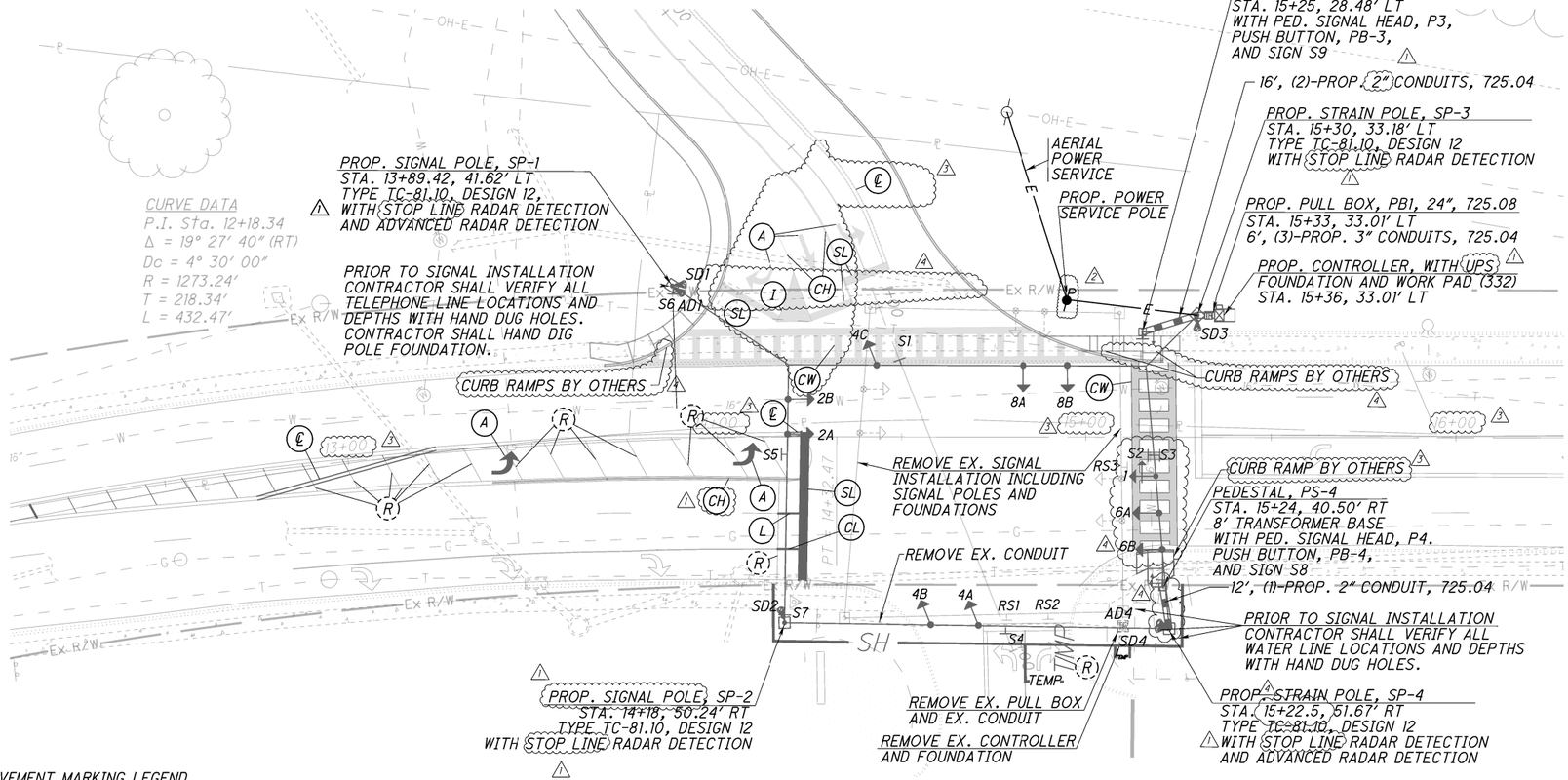
2A, 2B,
4A, 4B, 4C
6A, 6B,
8A, 8B



1

PEDESTRIAN HEADS
(LED, COUNTDOWN, TYPE D2)

P3, P4



LEGEND

- VEHICLUAR SIGNAL HEAD TO BE REMOVED
- PROP. VEHICULAR SIGNAL HEAD, SH1
- EX. SIGNAL POLE
- PROP. SIGNAL POLE, SP-X
- PROP. PEDESTRIAN SIGNAL HEAD, P1, PROP. PEDESTAL, PS-X, AND PROP. PUSHBUTTON, PB-X
- EX. PULL BOX
- PROP. PULL BOX, PBX
- PROP. CONDUIT
- STOP LINE RADAR DETECTION
- ADVANCED RADAR DETECTION
- PROP. CONTROL CABINET, WORKPAD (332), AND UPS

PAVEMENT MARKING LEGEND

- (SL) ITEM 644 - STOP LINE, 24"
- (CW) ITEM 644, CROSSWALK LINE, 24", 10' WIDE @ 5.5' SPACING
- (℄) ITEM 644 - CENTER LINE
- (L) ITEM 644 - LANE LINE, 6"
- (A) ITEM 644 - LANE ARROW
- (CH) ITEM 644 - CHANNELIZING LINE, 12", WITH RPM (WHITE/RED)
- (R) ~~REMOVAL OF PAVEMENT MARKING,~~ INCLUDING RPM (YELLOW/YELLOW), WHEN CENTERLINE IS REMOVED.
- (I) ITEM 644 - ISLAND MARKING

ADDENDUM	
1	ADDENDUM 1 - ISSUED 12/17/19
2	ADDENDUM 2 - ISSUED 12/31/19
3	ADDENDUM 3 - ISSUED 01/17/20
4	ADDENDUM 4 - ISSUED 04/27/21

STANDARD CONSTRUCTION DRAWINGS

1	TC-21.20 07/20/18	TC-84.20 10/18/13	
	TC-41.40 10/18/13	TC-84.21 10/18/13	
	TC-41.41 7/19/19	TC-85.10 01/18/19	
	TC-52.20 7/20/18	TC-85.21 01/20/17	
	TC-65.10 1/17/14	TC-85.22 01/19/18	
	TC-65.11 7/21/17	MT-95.30 04/19/19	
	TC-71.10 01/19/18	MT-95.31 04/19/19	
	TC-81.10 07/15/16	MT-95.32 04/19/19	
1	TC-83.10 01/19/18	MT-101.90 07/21/17	
	TC-83.20 07/21/17	MT-120.00 01/19/18	

3 DELETED TC-17.10

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.

UNDERGROUND UTILITIES

OHIO811.org Before You Dig

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.

HORIZONTAL SCALE IN FEET: 0, 20, 40, 80

CALCULATED CDS | CHECKED CFD

TRAFFIC SIGNAL PLAN
MARIEMONT HIGH SCHOOL
PROMENADE SHOPPING CENTER INTERSECTION

HAM-50-31.28

1 / 6

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ROUNDING

THE ROUNDING AT SLOPE BREAKPOINTS SHOWN ON THE TYPICAL SECTIONS APPLIES TO ALL CROSS-SECTIONS EVEN THOUGH OTHERWISE SHOWN.

UTILITIES

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

CINCINNATI BELL TELEPHONE (JASON NUNNELLEY)
1099 SR 28
MILFORD, OHIO 45150
(513) 565-1418(O) (513) 503-1729(C)
JASON.NUNNELLEY@CINBELL.COM

DUKE ENERGY - ELECTRIC (BRIAN KELLS)
139 E. FOURTH STREET, ROOM 467A
CINCINNATI, OHIO 45202
(513) 713-3773(C)
BRIAN.KELLS@DUKE-ENERGY.COM

DUKE ENERGY - GAS (ROBBIE STUMPF)
139 E. FOURTH STREET, ROOM 460A
CINCINNATI, OHIO 45202
(513) 340-0672(O)
ROBERT.STUMPF@DUKE-ENERGY.COM

GREATER CINCINNATI WATER WORKS
4747 SPRING GROVE AVENUE (MATT SMITH)
CINCINNATI, OHIO 45232
(513) XXX-XXXX
MATT.SMITH@GCWW.CINCINNATI-OH.GOV

METROPOLITAN SEWER DISTRICT OF
GREATER CINCINNATI (ROB FRANKLIN)
1600 GEST STREET
CINCINNATI, OHIO 45204
(513) 557-7167
ROB.FRANKLIN@CINCINNATI-OH.GOV

SPECTRUM (CHARTER) (DUSTIN QUINLAN)
11252 CORNELL PARK DRIVE
CINCINNATI, OHIO 45242
(614) 481-5277 (O) (614) 852-7397 (C)
DUSTIN.QUINLAN@CHARTER.COM

VILLAGE OF MARIEMONT
6907 WOOSTER PIKE
MARIEMONT, OHIO 45227
(513) 271-3246 (CHRIS ERTEL)
CHRIS.ERTEL@CINCINNATI-OH.GOV

GREATER CINCINNATI WATER WORKS NOTIFICATION

THE CONTRACTOR WILL NOTIFY THE GREATER CINCINNATI WATER WORKS TWO (2) BUSINESS DAYS PRIOR TO THE START OF WORK. CONTACT MARK NIEHE AT (513) 591-7870.

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.

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.

POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM DUKE ENERGY AT THE LOCATION INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 120 VOLTS.

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 CONSTRUCT ABILITY 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 EFFECT 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 ODOT 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.

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 SCDTC-21.20 PROVIDED THE EXISTING SLOPE IS LESS THAN 6:1.

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

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.

DETECTION MAINTENANCE, CONTINUED

IF THE LOSS OF VEHICLE DETECTION IS KNOWN PRIOR TO THE START OF CONSTRUCTION, IT SHALL BE DISCUSSED AT THE PRE-CONSTRUCTION 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 INSURE 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 ABANDON, 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.

GUARANTEE

THE CONTRACTOR SHALL GUARANTEE THAT THE TRAFFIC CONTROL SYSTEM INSTALLED AS PART OF THIS CONTRACT SHALL OPERATE SATISFACTORILY FOR A PERIOD OF 120 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: CONTROLLER, CABINET, UNINTERRUPTIBLE POWER SUPPLY, VEHICLE DETECTION EQUIPMENT, LED LAMP UNITS, NETWORK AND COMMUNICATION/INTERCONNECT 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 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 632.25 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 08 JIM JUDD (513)933-6692 IN ACCORDANCE WITH THE LISTING GIVEN HEREIN.

ITEMS TO BE REUSED: MODEM FOR COMMUNICATION
ITEMS TO BE STORED: CONTROLLER AND CABINET, UPS, AND CABINET

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.

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

IN ADDITION TO THE REQUIREMENTS OF C&MS 632 AND 732, THE FOLLOWING REQUIREMENTS SHALL APPLY:

1. SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC WITH VISORS AS SPECIFIED AND MEET ITE SPECIFICATIONS.

2. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.

3. ALL UPPER SIGNAL SUPPORT HARDWARE AND PIPING UP TO AND INCLUDING THE WIRE INLET FITTING SHALL BE FERROUS METAL.

4. THE ENTRANCE FITTING SHALL BE OF THE TRI-STUD DESIGN WITH SERRATED RINGS IN ORDER TO ACHIEVE POSITIVE LOCKING.

5. ALL SIGNAL HEADS SHALL BE RIGIDLY MOUNTED TO THE MAST ARM WITH THE (COLOR) MODULE LOCATED IN FRONT OF THE MAST ARM.

6. ALUMINUM BACK-PLATES SHALL BE IN ACCORDANCE WITH THE C&MS AND INCLUDE A FLUORESCENT YELLOW REFLECTIVE BORDER.

7. THE LIGHT EMITTING DIODE (LED) MODULES SHALL MEET THE REQUIREMENTS OF C&MS 732.04-C. THE CONTRACTOR SHALL PROVIDE ODOT, IN WRITING, WITH THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE FOR ALL LED UNITS THAT ARE TO BE USED IN THE SIGNAL HEAD PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES.

8. SIGNAL HEADS SHALL HAVE A MINIMUM WALL THICKNESS OF 0.117 INCHES.

9. SIGNAL HEADS SHALL INCLUDE CUTAWAY TYPE VISORS UNLESS OTHERWISE SPECIFIED IN THE PLANS.

10. APPLY A BEAD OF SILICONE TO THE SIGNAL HEAD, WASHER, AND ENTRANCE ADAPTER SERRATIONS TO PREVENT WATER INTRUSION. ALSO, FILL THE SPACE BETWEEN CONCENTRIC SERRATION RINGS ON THE TOP OF THE SIGNAL HEAD TO COMPLETELY EXCLUDE WATER FROM THE SPACE BETWEEN THE CONCENTRIC RINGS.

11. BALANCE ADJUSTERS SHALL NOT BE USED ON ONE-WAY HEADS OR TETHERED HEADS.

PAYMENT FOR ITEM 632 VEHICULAR SIGNAL HEAD, LED, BLACK, (BY TYPE), WITH BACKPLATE, AS PER PLAN SHALL BE MADE FOR COMPLETE SIGNAL HEAD FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS, AND NEW ATTACHMENT HARDWARE.

CALCULATED CDS
CHECKED CFD

GENERAL NOTES
MARIEMONT HIGH SCHOOL
PROMENADE SHOPPING CENTER INTERSECTION

HAM-50-31.23

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

IN ADDITION TO THE REQUIREMENTS OF C&MS 632 AND 732 THE FOLLOWING SHALL APPLY:

1.SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF BLACK POLYCARBONATE PLASTIC AND MEET ITE SPECIFICATIONS.

2.PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.

3.PIPE, SPACERS AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.

4.THE PEDESTRIAN SIGNAL HEAD SHALL BE OF THE LED COUNTDOWN TYPE.

5.NEW ATTACHMENT HARDWARE AND FITTINGS SHALL BE USED

6.THE LIGHT EMITTING DIODE (LED) MODULES SHALL MEET THE REQUIREMENTS OF C&MS 732.04-C. THE CONTRACTOR SHALL PROVIDE ODOT, IN WRITING, WITH THE LED MANUFACTURER NAME, SERIAL NUMBER, PART NUMBER, DESCRIPTION OF LAMP, AND DATE OF MANUFACTURE FOR ALL LED UNITS THAT ARE TO BE USED IN THE SIGNAL HEAD PRIOR TO INSTALLATION, FOR ACCEPTANCE AND WARRANTY PURPOSES.

PAYMENT FOR ITEM 632 PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), TYPE D2, AS PER PLAN SHALL BE MADE FOR THE NUMBER OF COMPLETE SIGNAL HEAD FURNISHED AND INSTALLED, INCLUDING ALL LABOR, EQUIPMENT, MATERIALS AND NEW ATTACHMENT HARDWARE.

ITEM 632 - POWER SERVICE, AS PER PLAN

POWER SERVICE SHALL BE AS PER SPECIFICATION 632 AND STANDARD CONSTRUCTION DRAWING TC-83.10 WITH THE FOLLOWING EXCEPTIONS:

1. THE METER BASE MOUNTING HEIGHT SHALL BE NO MORE THAN FIVE (5) FEET HIGH TO THE CENTER OF THE METER BASE FROM THE GROUND.
2. THE CONTRACTOR SHALL SUPPLY THE NECESSARY METER BASES.
3. ALL POWER SERVICES SHALL BE METERED. THE METER SHALL HAVE A LEVER OPERATED BYPASS.
4. THE POWER SERVICE BLIND HALF COUPLING SHALL BE TWENTY-SEVEN (27) INCHES ABOVE THE BOTTOM OF THE STRAIN POLE BASE PLATE AND SHALL BE WELDED TO THE STRAIN POLE.
5. CONDUIT FROM THE BOTTOM OF THE DISCONNECT SWITCH ENCLOSURE INTO THE BOTTOM OF THE CONTROLLER CABINET WILL NOT BE PERMITTED. POWER SERVICE WIRES FROM THE DISCONNECT SWITCH ENCLOSURE TO THE CONTROLLER CABINET SHALL BE ROUTED THROUGH THE STRAIN POLE.
6. IF INTERSECTION LIGHTING IS SPECIFIED THEN SEPARATE DISCONNECT SWITCHES SHALL BE INSTALLED AND LABELED "LIGHTING" AND "TRAFFIC SIGNAL" WITH A WEATHER PROOF STICKER. MARKER ON THE OUTSIDE OF THE ENCLOSURE IS NOT ACCEPTABLE.

DISCONNECT SWITCH ENCLOSURES FURNISHED SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 49KA 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

ITEM 632 - POWER SERVICE, AS PER PLAN, CONTINUED

REQUIRE FOR THE POWER SERVICE HOOK UP. THE CONTRACTOR SHALL CONTACT ODOT DISTRICT 8 TRAFFIC OPERATIONS TO OBTAIN THE POWER SERVICE ADDRESS TO BE USED FOR ON ALL INSPECTIONS. ONCE THE SIGNAL HAS PASSED INSPECTION, THE CONTRACTOR WILL NOTIFY THE PROJECT ENGINEER WHO WILL IN TURN NOTIFY ODOT DISTRICT 8 TRAFFIC OPERATIONS. ODOT DISTRICT 8 TRAFFIC OPERATIONS WILL THEN MAKE APPLICATION FOR POWER FROM THE UTILITY.

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 EXISTING METER, IF APPLICABLE, IS THE PROPERTY OF THE POWER COMPANY AND SHALL NOT BE REMOVED BY THE CONTRACTOR. PRIOR TO THE EXISTING TRAFFIC SIGNAL REMOVAL, ODOT DISTRICT 8 TRAFFIC OPERATIONS WILL REQUEST THE REMOVAL OF THE METER AND CLOSURE OF THE ACCOUNT.

THE CONTRACTOR SHALL FURNISH AND INSTALL AN ADDRESS STICKER WITH 4-INCH LETTERING TO THE CABINET. ADDRESS MUST BE VISIBLE FROM THE STREET.

THE DEPARTMENT WILL MEASURE ITEM 632, POWER SERVICE, AS PER PLAN, BY THE NUMBER OF COMPLETE UNITS AND WILL INCLUDE: WEATHERHEAD, CONDUIT, FITTINGS, CLAMPS, AND OTHER NECESSARY HARDWARE, INSTALLATION OF METER BASE, GROUND WIRE CONNECTIONS, DISCONNECT SWITCH WITH ENCLOSURE, AND COORDINATION WORK WITH UTILITIES.

ANY ADDITIONAL CABLE OR WOOD POLES NECESSARY TO ESTABLISH A POWER SERVICE WITH THE UTILITY COMPANY SHALL BE COVERED UNDER THE PERTINENT PAY ITEMS.

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 MEET WITH THE PROJECT ENGINEER TO LOCATE THE PROPOSED SUPPORT LOCATION TO INSURE THERE ARE NO CONFLICTS WITH UTILITIES. IF THERE ARE ISSUES, PROJECT ENGINEER SHALL PROVIDE GUIDANCE AS TO THE RELOCATION OF THE SUPPORT POLES.

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.

ITEM 633 UNINTERPRETABLE POWER SUPPLY (UPS), 1000 WATT, 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 UPS OUTPUT NOTIFICATIONS FOR ON BATTERY, BATTERY 2-HOUR TIMER, AND LOW BATTERY SHALL BE WIRED INTO THE CABINET BACK PANEL TO PROVIDE SPECIAL STATUS ALARMS FOR EACH OUTPUT INTO THE SIGNAL CONTROLLER.

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

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 AND CENTERED ON THE TOP SURFACE OF THE UPS CABINET 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.

ITEM 633 CONTROLLER ITEM MISC.: CONTROLLER UNIT, TYPE COBALT, WITH ASC-3 SOFTWARE, WITH CABINET, TYPE 332

IN ADDITION TO THE REQUIREMENTS OF C&MS 633 AND 733, THE FOLLOWING REQUIREMENTS SHALL APPLY:

CONTROLLER SHALL BE AN ECONOLITE COBALT RACKMOUNT AND SHALL HAVE AN ATC COMPLIANT ENGINE BOARD. THE CONTROLLER SHALL BE DESIGNED FOR USE IN CALTRANS CABINETS USING THE BACKSIDE C1 CONNECTOR AS THE PRIMARY CONTROLLER-TO-CABINET INTERFACE. THE CONTROLLER SHALL BE SUPPLIED WITH ASC-3 SOFTWARE. FOR WARRANTY PURPOSES, A VENDOR-SPECIFIC DECAL, AS PER ODOT CMS 733.02 SHALL BE APPLIED TO EACH CONTROLLER UNIT AT THE TIME OF DELIVERY TO THE PROJECT.

THE CABINET SHALL BE FURNISHED WITH AN EDI 2018ECLLIF CONFLICT MONITOR AS ALLOWED ON THE TAP/APPROVED PRODUCTS LIST. THE CONFLICT MONITOR TEST SHALL BE PERFORMED AT A MAXIMUM OF SIX (6) MONTHS PRIOR TO THE INSTALLATION OF THE CONTROLLER IN THE FIELD. THE CURRENT CONFLICT MONITOR TEST SHALL BE STORED IN THE CABINET UPON INSTALLATION IN THE FIELD. AN AUXILIARY OUTPUT FILE SHALL ALSO BE PROVIDED IN THE CABINET.

THE CONTRACTOR SHALL NOT REASSIGN THE CABINET DETECTOR INPUTS TO REDUCE THE NUMBER OF 2-CHANNEL DETECTOR UNITS SUPPLIED BUT SHALL USE THE STANDARD CALTRANS INPUT FILE DESIGNATIONS.

A CABINET RISER SHALL ALSO BE SUPPLIED AS PART OF THIS PAY ITEM.

THE CONTROLLER SHALL BE INSTALLED WITH THE TIMING PLAN PROGRAMMED MAKING THE CONTROLLER FULLY FUNCTIONAL AND READY FOR INSTALLATION.

PAYMENT SHALL BE MADE AT THE UNIT PRICE BID FOR EACH UNIT, COMPLETE IN PLACE, AND SHALL INCLUDE ALL LABOR, EQUIPMENT, MATERIAL, CABINET AND MOUNTING HARDWARE, AND ALL OTHER INCIDENTALS NECESSARY FOR A FULLY OPERATIONAL CONTROLLER CABINET, ALL CONNECTIONS TESTED AND ACCEPTED.

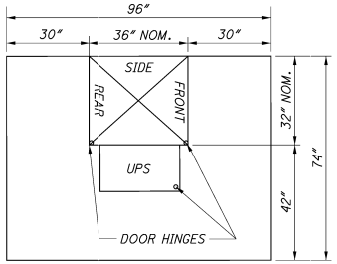
ITEM 633 CABINET FOUNDATION, AS PER PLAN

THIS ITEM SHALL CONSIST OF CONSTRUCTING A MODIFIED CONTROLLER CABINET FOUNDATION IN ACCORDANCE WITH O.D.O.T. STANDARD CONSTRUCTION DRAWING TC-83.20 AND O.D.O.T. CONSTRUCTION MATERIAL SPECIFICATIONS 633.10, 499, AND 511, EXCEPT AS SHOWN IN THE DETAIL BELOW.

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

PAYMENT FOR ITEM 633, CABINET FOUNDATION, SHALL BE MADE AT THE CONTRACT UNIT PRICE PER EACH COMPLETE AND IN PLACE, AND SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK.

CABINET & WORK PAD DETAIL



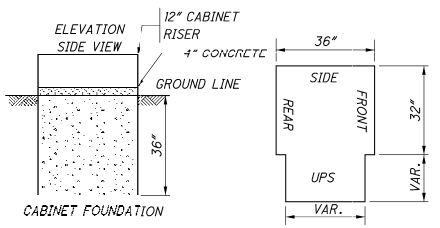
PLAN VIEW

ITEM 633 CONTROLLER WORK PAD, AS PER PLAN

THIS ITEM SHALL CONSIST OF CONSTRUCTING A CONTROLLER WORK PAD IN ACCORDANCE WITH O.D.O.T. STANDARD CONSTRUCTION DRAWING TC-83.20 EXCEPT THE SIZE AND SHAPE OF THE PAD SHALL BE AS SHOWN IN THE DETAIL BELOW.

PAYMENT FOR ITEM 633, CONTROLLER WORK PAD, SHALL BE MADE AT THE CONTRACT UNIT PRICE PER EACH COMPLETE AND IN PLACE, AND SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK.

CABINET FOUNDATION DETAIL



CALCULATED CDS
CHECKED CFD

GENERAL NOTES
MARIEMONT HIGH SCHOOL
PROMENADE SHOPPING CENTER INTERSECTION

HAM-50-31.23

3
6

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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, CONTINUED

      IV. THE INSULATION SHALL BE GREEN OR GREEN WITH YELLOW STRIPE(S). FOR 4 AWG OR LARGER, INSULATION MAY ALSO BE BLACK WITH GREEN TAPE/LABELS INSTALLED AT ALL ACCESS POINTS.
   B. IN A HIGHWAY LIGHTING SYSTEM, THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE THE SAME WIRE SIZE AS THE DUCT CABLE OR DISTRIBUTION CABLE CIRCUIT CONDUCTORS, WITH THE MINIMUM CONDUCTOR SIZE OF 4 AWG. BONDING JUMPERS WILL BE MINIMUM SIZE 4 AWG.

4. GROUND ROD.
   A. A ¾ INCH SCHEDULE 40 PVC CONDUIT WILL BE USED IN FOUNDATIONS AND CONCRETE WALLS FOR THE GROUNDING CONDUCTOR (GROUND WIRE) RACEWAY TO THE GROUND ROD. SHOULD METALLIC CONDUIT BE USED, BOTH ENDS OF THE CONDUIT SHALL BE BONDED TO THE GROUNDING CONDUCTOR.

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

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

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

6. POWER SERVICE AND DISCONNECT SWITCH.
   A. AT THE POWER SERVICE LOCATION, THE GROUNDING CONDUCTOR (GROUND WIRE) FROM THE DISCONNECT SWITCH NEUTRAL (AC-) BAR TO THE GROUND ROD SHALL BE A CONTINUOUS, UN-SPLICED 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.

GROUNDING AND BONDING, CONTINUED

      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.

ITEM 809 ADVANCE RADAR DETECTION

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A WAVETRONIX SMARTSENSOR ADVANCE DETECTION UNIT (MODEL SS-200F). 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 ON-SITE 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.

PAYMENT FOR ITEM 809 ADVANCE RADAR DETECTION 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

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 COMPATIELE 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 ON-SITE 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.

PAYMENT FOR ITEM 809 STOP LINE RADAR DETECTION 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.

ADDENDUM

1	ADDENDUM 1 - ISSUED 12/17/19
2	ADDENDUM 2 - ISSUED 12/31/19

CALCULATED CDS
CHECKED CFD

GENERAL NOTES
MARIEMONT HIGH SCHOOL
PROMENADE SHOPPING CENTER INTERSECTION

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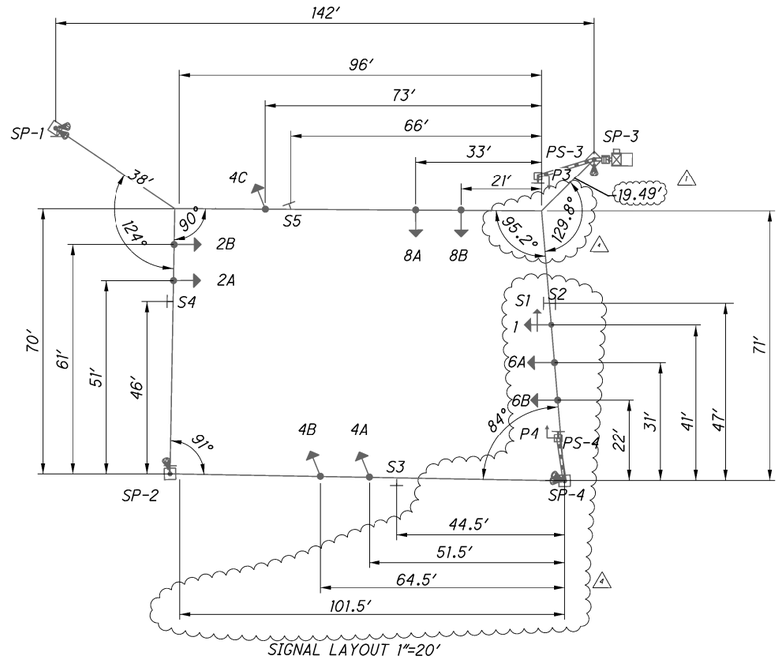


SIGNAL LAYOUT 1"=20'

LEGEND

5 SECTION VEHICULAR SIGNAL HEAD, 1-WAY

3 SECTION VEHICULAR SIGNAL HEAD, 1-WAY

PEDESTRIAN SIGNAL HEAD

PEDESTRIAN PUSHBUTTON

DILEMMA ZONE RADAR DETECTION UNIT

STOP BAR RADAR DETECTION UNIT

(3C) SIGNAL CABLE, 3 CONDUCTOR, NO. 14 AWG

(5C) SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG

(7C) SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG

(RC) RADAR DETECTION CABLE

POWER SOURCE

(SC) SERVICE CABLE, 3 CONDUCTOR NO. 4 AWG

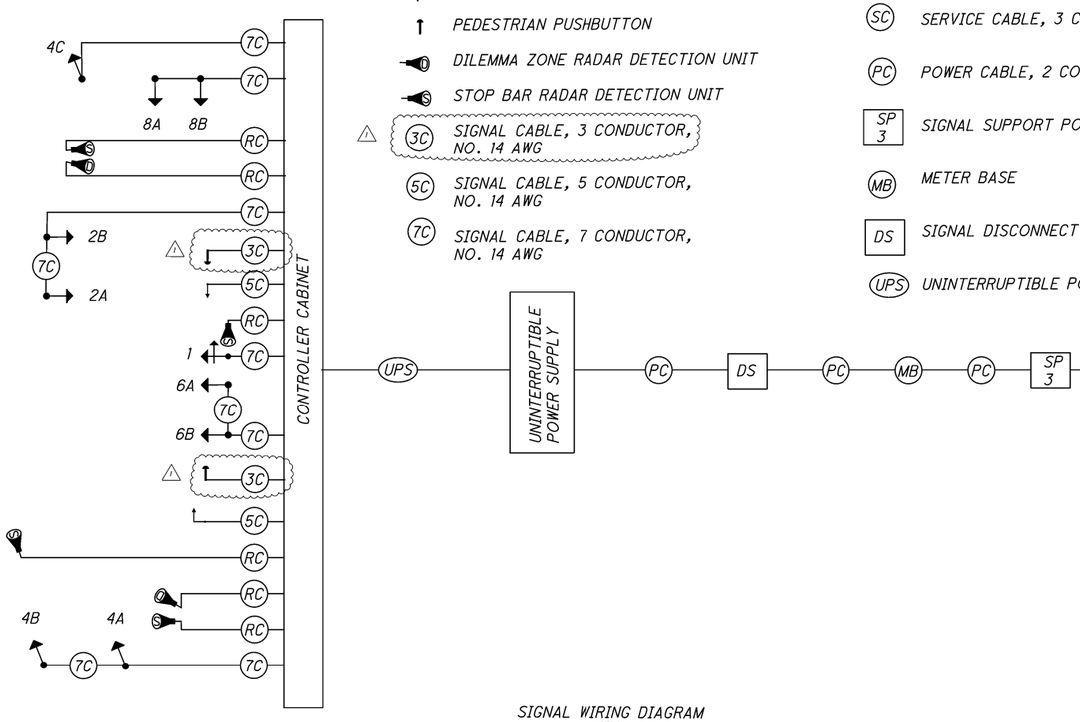
(PC) POWER CABLE, 2 CONDUCTOR, NO. 8 AWG

SP 3 SIGNAL SUPPORT POLE # SP-3

(MB) METER BASE

DS SIGNAL DISCONNECT SWITCH

(UPS) UNINTERRUPTIBLE POWER SUPPLY CABLE

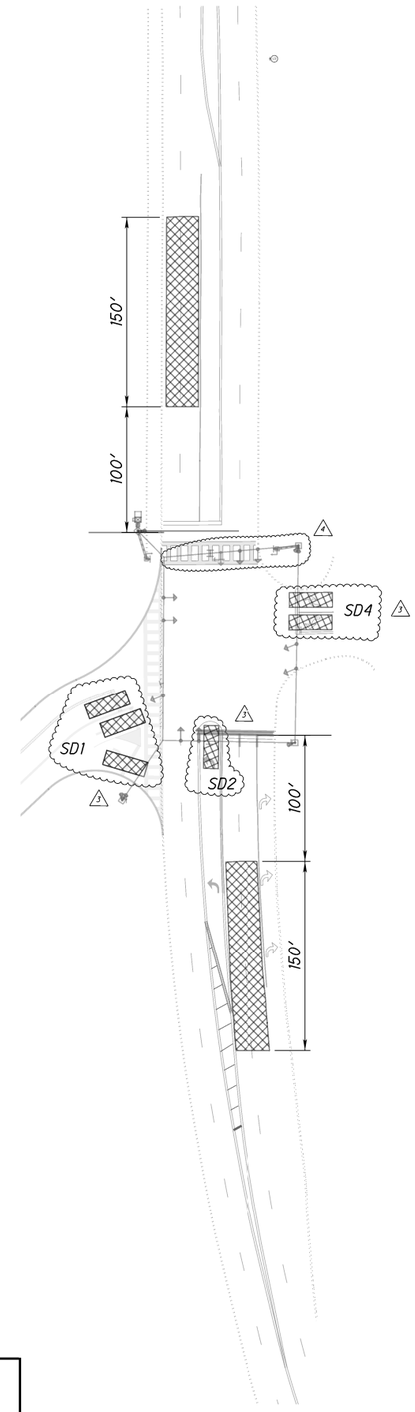


SIGNAL WIRING DIAGRAM
NTS

LEGEND

STOP ZONES

ADVANCE ZONES



RADAR LOOP ZONES 1"=40'

ADDENDUM	
1	ADDENDUM 1 - ISSUED 12/17/19
2	ADDENDUM 2 - ISSUED 12/31/19
3	ADDENDUM 3 - ISSUED 1/17/20
4	ADDENDUM 4 - ISSUED 4/27/21

CALCULATED CDS
CHECKED CFD

TRAFFIC SIGNAL DETAIL
MARIEMONT HIGH SCHOOL
PROMENADE SHOPPING CENTER INTERSECTION

HAM-50-31.28

5
6

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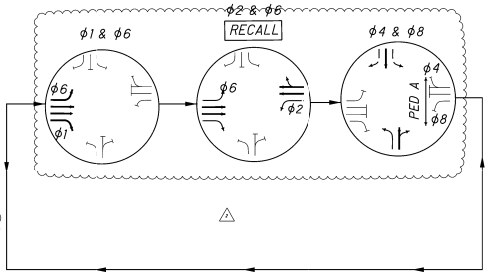
ITEM #	ITEM EXT.	DESCRIPTION	UNIT	QUANTITY
ITEM 621	00100	RPM	EACH	6
ITEM 622	54000	RAISED PAVEMENT MARKER REMOVED	EACH	2
ITEM 625	25400	CONDUIT, 2"	FT	44
ITEM 625	25500	CONDUIT, 3"	FT	18
ITEM 625	29000	TRENCH	FT	33
ITEM 625	36000	PLASTIC CAUTION TAPE	FT	33
ITEM 625	30706	PULL BOX, 725.08, 24"	EACH	1
ITEM 625	32000	GROUND ROD	EACH	7
ITEM 630	60100	SIGN, FLAT SHEET	SQ. FT.	40
ITEM 630	79000	SIGN HANGER ASSEMBLY, SPAN WIRE	EACH	5
ITEM 630	79001	SIGN HANGER ASSEMBLY, MAST ARM	EACH	2
ITEM 632	05007	VEHICULAR SIGNAL HEAD, (LED), BLACK, 3-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, WITH BACKPLATE, AS PER PLAN	EACH	9
ITEM 632	05087	VEHICULAR SIGNAL HEAD, (LED), BLACK, 5-SECTION, 12" LENS, 1-WAY, POLYCARBONATE, WITH BACKPLATE, AS PER PLAN	EACH	1
ITEM 632	20730	PEDESTRIAN SIGNAL HEAD (LED), (COUNTDOWN), TYPE D2	EACH	2
ITEM 632	25000	COVERING OF VEHICULAR SIGNAL HEAD	EACH	10
ITEM 633	25010	COVERING OF PEDESTRIAN SIGNAL HEAD	EACH	2
ITEM 632	26000	PEDESTRIAN PUSH BUTTON	EACH	2
ITEM 632	30100	MESSENGER WIRE, 7 STRAND, 5/16" DIAMETER WITH ACCESSORIES	FT	387
ITEM 632	30600	TETHER WIRE, WITH ACCESSORIES	FT	387
ITEM 632	40700	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	FT	847
ITEM 632	40500	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	FT	262
ITEM 632	64010	SIGNAL SUPPORT FOUNDATION	EACH	4
ITEM 632	64020	PEDESTAL FOUNDATION	EACH	2
ITEM 632	68300	POWER CABLE, 2 CONDUCTOR, NO. 6 AWG	FT	61
ITEM 632	69800	SERVICE CABLE, 3 CONDUCTOR, NO. 6 AWG	FT	50
ITEM 632	70001	POWER SERVICE, AS PER PLAN	EACH	1
ITEM 632	83200	SIGNAL SUPPORT, TYPE TC-81.21, DESIGN 12	EACH	4
ITEM 632	89900	PEDESTAL, 8', TRANSFORMER BASE	EACH	2
ITEM 632	90100	REMOVAL OF TRAFFIC SIGNAL INSTALLATION	EACH	1
ITEM 633	99000	CONTROLLER ITEM MISC.: CONTROLLER UNIT, TYPE COBALT, WITH ASC-3 SOFTWARE, WITH CABINET, TYPE 332	EACH	1
ITEM 633	67101	CABINET FOUNDATION	EACH	1
ITEM 633	67201	CONTROLLER WORK PAD, AS PER PLAN	EACH	1
ITEM 633	75001	UNINTERUPTIBLE POWER SUPPLY (UPS), 1000 WATT, AS PER PLAN	EACH	1
ITEM 616	11000	MAINTAINING TRAFFIC	LUMP	1
ITEM 614	1110	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	HOURS	4
ITEM 623	10000	CONSTRUCTION LAYOUT STAKES AND SURVEYING	LUMP	1
ITEM 624	10000	MOBILIZATION	LUMP	1
ITEM 644	00240	LANE LINE, 6"	MILE	0.01
ITEM 644	00300	CENTERLINE	MILE	0.03
ITEM 644	00404	CHANNELIZING LINE, 12"	FEET	181
ITEM 644	00500	STOP LINE	FEET	139
ITEM 644	00600	CROSSWALK LINE	FEET	780
ITEM 644	01300	LANE ARROW	EACH	5
ITEM 644	00900	ISLAND MARKING	SQ. FT.	60
ITEM 644	30000	REMOVAL OF PAVEMENT MARKING	FEET	200
ITEM 644	30020	REMOVAL OF PAVEMENT MARKING	EACH	1
ITEM 809	69000	ADVANCE RADAR DETECTION	EACH	2
ITEM 809	69100	STOP LINE RADAR DETECTION	EACH	4

RADAR DETECTION CHART

DETECTION ZONE	MOVEMENT	PULSE OR PRESENCE	ASSOCIATED PHASE	DELAY PROGRAMEND IN CONTROLLER *SEC*	EXTENSION PROGRAMED IN CONTROLLER *SEC*	DELAY INHIBIT PHASE	PURPOSE	DETECTION ZONE LENGTH *FT*
SD1	SB	PRESENCE	4	8	-	-	STOP LINE	-
AD1	WB	PRESENCE	2	-	2	-	ADVANCE	150
SD2	EB	PRESENCE	1	-	-	-	STOP LINE	-
SD4	NB	PRESENCE	8	-	-	-	STOP LINE	-
AD4	EB	PRESENCE	6	-	2	-	ADVANCE	150
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-



FIELD WIRING HOOK-UP CHART

SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
2A,2B (WB)	R	φ2 R	R
	Y	φ2 Y	
	G	φ2 G	
4A,4B (SB)	R	φ4 R	R
	Y	φ4 Y	
	G	φ4 G	
PEDESTRIAN MOVEMENTS			
F3,F4 (EB)	W	φ8	OUT
	DW	φ8	

SIGNAL HEAD	INDICATION	FIELD TERMINAL	FLASH
1 (EBLT)	R	φ6 R	R
	Y	φ6 Y	
	G	φ6 G	
	~~Y~~	φ1 G	
	~~G~~	φ1 G	
6A,6B (EB)	R	φ6 R	R
	Y	φ6 Y	
	G	φ6 G	
8A,8B (NB)	R	φ8 R	R
	Y	φ8 Y	
	G	φ8 G	

LEGEND

VEHICLE φ
PERMITTED φ
PEDESTRIAN φ

COORDINATION TIMING PLANS

DAYS OF WEEK	PLAN NAME	HOURS	PLAN NO. C/S/O	CYCLE LENGTH (SEC)
M-F	1	00:00 TO 11:59	-	120
SAT-SUN	2	00:00 TO 11:59	-	100

COORDINATION TIMING CHART (ITEM FORM 496-5)

	SPLITS (G+Y+AR IN SECONDS)								OFFSET 1 (SEC)	OFFSET 2 (SEC)
PHASE	1	2	3	4	5	6	7	8		
DIRECTION	EB	WB	-	SB	-	EB	-	NB		
PLAN NO./C/S/O	INTERSECTION 1									
1	12	95	-	25	-	95	-	25	51	-
2	12	75	-	25	-	75	-	25	4	-

TRAFFIC SIGNAL CONTROLLER TIMING CHART

INTERSECTION: US-50 & PROMINADE/MARIEMONT HS
MAINTAINING AGENCY: ODOT

START UP
START IN : Y/R FLASH [ ] OR ALL RED [X]
TIME FOR FLASH OR ALL RED: 5 SECS.
FIRST PHASES: 2 & 6
FIRST INTERVAL DISPLAYED: [X] GREEN [ ] YEL.

DUAL ENTRY: 2, & 6, 4 & 8
REST IN RED: RING 1 [ ] RING 2 [ ]

			OVERLAP PHASES							
							A	B	C	D
CONTROLLER MOVEMENT			1	2	3	4	5	6	7	8
INTERSECTION MOVEMENT			WB	EB		NB		WB		SB
MINIMUM GREEN (INITIAL)		(SEC.)	7	20		10		20		10
ADDED INITIAL		*(SEC./ACTUATION)								
MAXIMUM INITIAL		(SEC.)								
PASSAGE (PRESET CAP)		(SEC.)	3	2		3		2		3
TIME BEFORE REDUCTION		*(SEC.)								
MINIMUM GAP		*(SEC.)								
TIME TO REDUCE		*(SEC.)								
MAXIMUM GREEN I		(SEC.)		60		25		60		25
MAXIMUM GREEN II		(SEC.)								
YELLOW CHANGE		(SEC.)	3.2	1.1		3		4.1		3
ALL RED CLEARANCE		(SEC.)	1.5	1		1.9		1.1		1.6
WALK		(SEC.)								9
PEDESTRIAN CLEARANCE		(SEC.)								11
RECALL	MAXIMUM	(ON/OFF)	OFF	OFF		OFF		OFF		OFF
	MINIMUM	(ON/OFF)	OFF	ON		OFF		ON		OFF
	PEDESTRIAN	(ON/OFF)	OFF	OFF		OFF		OFF		OFF
MEMORY		(ON/OFF)	OFF	OFF		OFF		OFF		OFF
CALL TO NON ACTUATION	NO. 1									
	NO. 2									

* VOLUME DENSITY CONTROLS

OMIT CALLS TO PHASE 1 DURING PHASE 2 GREEN

ADDENDUM

1	ADDENDUM 1 - ISSUED 12/17/19
2	ADDENDUM 2 - ISSUED 12/31/19
3	ADDENDUM 3 - ISSUED 1/17/20

CALCULATED CDS
CHECKED CFD

TRAFFIC SIGNAL DETAIL
MARIEMONT HIGH SCHOOL
PROMENADE SHOPPING CENTER INTERSECTION

HAM-50-31.28

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