ROAD COMMISSION for OAKLAND COUNTY

TRAFFIC–SAFETY DEPARTMENT

MARCH, 2014

STANDARD CONSTRUCTION DETAILS–ENGLISH

FOR TRAFFIC SIGNAL CONTRACTS

PLANS PREPARED BY:	APPROVED BY:
Danielle Deneau 3-13-14	3-13-14
DANIELLE M. DENEAU, P.E. DATE	GARY PIOTROWICZ, P.E., P.T.O.E. DATE
DIRECTOR, TRAFFIC–SAFETY	DEPUTY MANAGING DIRECTOR/ COUNTY HIGHWAY ENGINEER
STATE OF MICHIGAN ★ REGISTERED PROFESSIONAL ENGINEER ★ DANIELLE M. DENEAU ENGINEER NO. 55358	STATE OF MICHIGAN ★ REGISTERED PROFESSIONAL ENGINEER ★ GARY PIOTROWICZ ENGINEER NO. 43256
(SEAL)	(SEAL)

DATE	REVISIONS
MAR, 2014	ADDITIONAL DETAILS INCLUDED ON THE FOLLOWING PAGES: 59, 60, 61
APR, 2010	REVISIONS MADE TO THE FOLLOWING PAGES: 1, 2, 3, 4, 6, 7, 8, 9, 10, 11,
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JUL, 2007	4th REVISION
MAR, 2006	3rd REVISION
FEB, 2006	2nd REVISION
DEC, 2000	1st REVISION

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LEGEND SHEET

TRAFFIC SIGNAL

- INSTALL 3-SECTION 8" TRAFFIC SIGNAL (1-WAY SHOWN)
- INSTALL 3-SECTION TRAFFIC SIGNAL WITH SALVAGED HEADS (1-WAY SHOWN)
- REMOVE 3-SECTION TRAFFIC SIGNAL (1-WAY SHOWN)
- EXISTING 3-SECTION TRAFFIC SIGNAL (1-WAY SHOWN)
- INSTALL 3-SECTION, 12" TRAFFIC SIGNAL (1-WAY SHOWN)
- INSTALL 12" PEDESTRIAN (WALK-DON'T WALK) TRAFFIC SIGNAL (1-WAY SHOWN)
- INSTALL PEDESTRIAN (WALK-DON'T WALK) TRAFFIC SIGNAL WITH SALVAGED HEAD (1-WAY SHOWN)
- REMOVE PEDESTRIAN (WALK-DON'T WALK) TRAFFIC SIGNAL (1-WAY SHOWN)
- EXISTING PEDESTRIAN (WALK-DON'T WALK) TRAFFIC SIGNAL (1-WAY SHOWN)

TRAFFIC SIGNAL

- INSTALL AUTOSCOPE CAMERA MOUNTED AS INDICATED ON THE PLANS.
- EXISTING AUTOSCOPE CAMERA
- REMOVE AUTOSCOPE CAMERA
- INSTALL LOOP DETECTOR & CABINET (EXCEPT AS OTHERWISE INDICATED).
- AUTOSCOPE DETECTION AREA
- 6' X 15' TRAFFIC LOOP
- OPTI-COM UNIT
- EXISTING WOOD POST
- INSTALL WOOD POST

- INSTALL OVERHEAD PLASTIC JACKETED CABLE
- EXISTING OVERHEAD PLASTIC JACKETED CABLE
- REMOVE OVERHEAD PLASTIC JACKETED CABLE
- INSTALL TRAFFIC SIGNAL CONTROLLER (NEW OR SALVAGED AS INDICATED). (EXCEPT AS OTHERWISE INDICATED)
- INSTALL MAST ARM STD. & MAST ARM ON NEW FOUNDATION (EXCEPT AS OTHERWISE INDICATED).
- INSTALL TRAFFIC SIGNAL PEDESTAL ON NEW FOUNDATION (EXCEPT AS OTHERWISE INDICATED).
- INSTALL ANCHOR BASE STEEL STRAIN POLE ON NEW FOUNDATION. (SIZE AS DIRECTED). (USE 18" BOLT CIRCLE FOR ALL NEW STRAIN POLES).
- EXISTING TRAFFIC SIGNAL CONTROLLER
- EXISTING MAST ARM STANDARD
- EXISTING PEDESTAL
- EXISTING STEEL STRAIN POLE
- BACK-OUT LAMPS & HOOD SIGNALS (INCLUDED IN INSTALLATION OF T.S. ON THIS CONTRACT).
- REMOVE HOOD & INSTALL LAMPS (INCLUDED IN INSTALLATION OF T.S. ON THIS CONTRACT).
- POCH — POLE CONTACT HEIGHT OF T.S. SPAN WIRE
- L.C.H. — LOW CONTACT HEIGHT OF SPAN WIRE T.S. TO SPAN WIRE.
- INSTALL WARNING SIGN (TYPE AS INDICATED ON PLANS).
- INSTALL 2-WAY CASE SIGN
- REMOVE 2-WAY CASE SIGN
- EXISTING 2-WAY CASE SIGN
- INSTALL 4-WAY CASE SIGN
- REMOVE 4-WAY CASE SIGN
- EXISTING 4-WAY CASE SIGN

UNDERGROUND

- M.H. 1234 — EXISTING MANHOLE
- EXISTING HANDHOLE
- EXISTING DUCT RUN
- ABANDON EXISTING DUCT RUN
- 2-3" D.B. — BUILD ENCASED CONDUIT (E.C.) OR DIRECT BURIAL CONDUIT (D.B.) (2-3" D.B. SHOWN)
- 2-3" — GALVANIZED IRON CONDUIT (2-3" SHOWN)
- M.H. 5678 — BUILD NEW MANHOLE (2-WAY)
- M.H. 9012 — BUILD NEW MANHOLE (3-WAY)
- M.H. 3456 — BUILD NEW MANHOLE (4-WAY)
- M.H. 7890 — BUILD NEW MANHOLE (CORNER)
- BUILD ROUND HANDHOLE
- BUILD SQUARE HANDHOLE
- EXISTING DIRECT BURIAL OR PARKWAY CABLE
- ABANDON DIRECT BURIAL OR PARKWAY CABLE
- INSTALL DIRECT BURIAL CABLE (NO. & SIZE AS INDICATED)
- EXISTING U.G.-FED ST. LTG. UNIT
- REMOVE U.G.-FED ST. LTG. UNIT & FDN. (EXCEPT AS OTHERWISE INDICATED)
- INSTALL 36FT. COMB. T.S. & ST. LTG. STD., & 6 FT. BRACKET ARM (S-TYPE) ON NEW FDN. INSTALL 250W. H.P.S. TYPE LUMINARE. (SEE DETAIL SHEET OC-33)

ROAD COMMISSION OAKLAND COUNTY						
TRAFFIC-SAFETY DEPARTMENT	DATE MARCH 2014				SHEET 4	TOTAL 61

LEGEND SHEET

OVERHEAD

- EXISTING WOOD POLE (AS INDICATED)
- REMOVE WOOD POLE (AS INDICATED)
- INSTALL WOOD POLE (HEIGHT & CLASS AS INDICATED) (USE SALVAGED POLE WHERE INDICATED)
- EXISTING OVERHEAD ST. LTG. UNIT
- REMOVE OVERHEAD ST. LTG. UNIT
- INSTALL OVERHEAD ST. LGT. UNIT
- EXISTING OVERHEAD LINE
- REMOVE OVERHEAD LINE
- INSTALL OVERHEAD LINE
- INSTALL & LATER REMOVE OVERHEAD LINE
- INSTALL GUY & ANCHOR (1/2" GUY SHOWN)
- REMOVE GUY & ANCHOR ROD
- INSTALL POLE GUY (1/2" GUY SHOWN)
- INSTALL ARM GUY (3/8" GUY SHOWN)
- REMOVE GUY (TYPE AS INDICATED)
- IN. — MATERIAL TO BE INSTALLED
- RM. — MATERIAL TO BE REMOVED
- MSS — MAKE WOOD POLE SELF-SUPPORTING IN CONCRETE
- C.P. — CABLE POLE

WIRING DIAGRAMS

(U.G.-FED ST. LTG. STD. SYMBOLS SAME AS UNDERGROUND LEGEND OF THIS SHEET).

- M.H. 1234 — PROPOSED MANHOLE
- M.H. 5678 — EXISTING MANHOLE
- H.H. — PROPOSED HANDHOLE
- H.H. — EXISTING HANDHOLE
- M.H. 9012 — PROPOSED MANHOLE IN SAME LOCATION AS EX. HOLE
- INSTALL U.G. CABLE (NO. & SIZE AS INDICATED).
- EXISTING U.G. CABLE
- U.G. CABLE TO BE ABANDONED
- U.G. CABLE TO BE REMOVED
- DISCONNECT, INSULATE & CAP CABLE END.
- SPLICE STRAIGHT THRU
- SPLICES

GENERAL

- PROPERTY LINE
- PAVEMENT JOINTLINE & CURB FACE
- FUTURE PAVEMENT
- S — SEWER LINE, MANHOLE & CATCH BASIN
- E — DTE. U.G. LINE & MANHOLE
- T — TELEPHONE U.G. LINE & MANHOLE
- W — WATERMAIN & GATEWELL (OTHER UTILITIES SIMILAR)
- G — GAS U.G. LINE & MANHOLE

GENERAL INFORMATION SHEET

1. CALL MISS DIG (800-482-7171) OR (811) 3 WORKING DAYS PRIOR TO ANY EXCAVATION FOR THE LOCATIONS OF UNDERGROUND UTILITIES.
2. WHERE ABANDONING OF U.G. CABLES IS CALLED FOR ON PLANS OR DIAGRAMS, CONTRACTOR SHALL CUT AND REMOVE CABLES WITHIN MANHOLES, HANDHOLES, AND CONDUIT. ALL CONDUIT SHALL BE PLUGGED.
3. WHERE INSTALLATION OF NEW MANHOLES OVER EXISTING CONDUITS (TO ACCOMMODATE NEW & EXISTING CONDUITS) IS CALLED FOR ON PLANS, CONTRACTOR SHALL CAREFULLY & SO AS NOT TO DAMAGE EXIST. CABLES, REMOVE THE EXISTING CONDUITS & ENCASEMENT WITHIN MANHOLES. EXIST. CABLES SHALL BE EXTENDED & PROPERLY TRAINED, RACKED & SUPPORTED.
4. ALL EXISTING STREET LIGHTING, TRAFFIC SIGNAL, TRAFFIC SIGNAL COMMUNICATION, PRIMARY, TRANMISSION ETC. CIRCUITS SHALL ALWAYS BE MAINTAINED IN AN OPERATIONAL CONDITION (EXCEPT WHERE OTHERWISE NOTED).
5. ALL CONDUITS NOT TERMINATING IN STRUCTURES SUCH AS MANHOLES, HANDHOLES OR FOUNDATIONS SHALL EXTEND 2 FEET BEYOND PAVEMENT LIMIT (EXCEPT AS OTHERWISE INDICATED). ALL UNOCCUPIED CONDUITS SHALL BE PLUGGED.
6. ALL TREE TRIMMING REQUIRED TO CLEAR NEW OR SALVAGED ST. LTG. & TRAFFIC SIGNAL STD.'S, O.H. ST. LTG. & TRAFFIC SIGNAL UNITS SHALL BE INCLUDED IN THE PAY-ITEM & NO EXTRA PAYMENT SHALL BE MADE.
7. EXISTING O.H. & T.S. FACILITIES ARE NOT NECESSARILY SHOWN ON PLANS.
8. ALL OVERHEAD WIRES & UNDERGROUND CABLES SHALL CONSIST OF COPPER CONDUCTORS AS PER SPECIFICATIONS.
9. NEW CONDUITS BROKEN INTO EXISTING MANHOLES OR HANDHOLES SHALL NOT INTERFERE WITH RACKING AND/OR TRAINING OF CABLES.
10. ALL NEW ANCHOR GUYS SHALL BE INSTALLED ON A 1:1 RATIO OR AS NEARLY AS POSSIBLE (EXCEPT WHERE OTHERWISE NOTED). (STRUT GUYS ARE ACCEPTED).
11. ALL CABLES SHALL BE TAGGED IN ALL MANHOLES, HANDHOLES, AND CABINETS IN A PERMANENT MANNER.
12. INSTALL WOOD POLES SO AS NOT TO INTERFERE WITH TRAFFIC OR FUTURE CONSTRUCTION STAGES.
13. ALL SALVAGED WOOD POLES SHALL BE PREVIOUSLY INSTALLED NEW ON THIS CONTRACT. (EXCEPT AS OTHERWISE INDICATED)
14. ALL TRAFFIC SIGNS SUCH AS "NO PARKING", "NO STANDING", "STREET NAME", ETC. SHALL BE TRANSFERRED FROM OLD STD. OR POLE TO NEW STD. OR POLE AT THE SAME LOCATION OR IN CLOSE PROXIMITY BY CONTRACTOR.
15. ALL TRAFFIC SIGNALS SHALL BE MOUNTED WITH NEW STANDARD TRAFFIC SIGNAL BRACKETS & FITTINGS.
16. ALL TRAFFIC SIGNAL ITEMS, AS CALLED FOR ON PLANS, SHALL HAVE INCLUDED IN THE THE TRAFFIC SIGNAL ITEM ALL CABLES FROM THE CONTROLLER TO THE TRAFFIC SIGNALS, FOUNDATIONS & PIPE EXTENSIONS NEEDED TO MAINTAIN 17'-0" UNDER CLEARANCE AS INDICATED.
17. WHEN ENTERING PROPOSED CONDUIT INTO EXISTING MANHOLES & HANDHOLES EXERCISE CAUTION NOT TO DISTURB EXISTING CABLES.
18. ALL SALVAGED TRAFFIC SIGNALS SHALL BE TRAFFIC SIGNALS PREVIOUSLY INSTALLED NEW ON THIS CONTRACT. (EXCEPT AS OTHERWISE INDICATED).
19. RED TRENCH TAPE SHALL BE INSTALLED OVER ALL DIRECT BURIAL CONDUIT.
20. THE CONTRACTOR SHALL DELIVER TO R.C.O.C. THE T.S. CONTROLLER AND CABINET FOR TIMING. R.C.O.C. WILL DELIVER T.S. CONTROLLER AND CABINET TO THE CONTRACTOR WHEN READY FOR INSTALLATION.
21. PROPOSED T.S. SHALL BE PUT INTO OPERATION AT TIME OF REMOVAL OF EXISTING T.S. FACILITIES, CONTRACTOR SHALL NOTIFY R.C.O.C. IF UNABLE TO MAINTAIN T.S. IN AN OPERABLE CONDITION AT ALL TIMES.
22. A MINIMUM CLEARANCE OF 3'-6" HORIZONTAL & 1'-0" VERTICAL MUST BE MAINTAINED BETWEEN PROPOSED FACILITIES & EXISTING U.G. WATER FACILITIES.
23. ALL EQUIPMENT INSTALLED ON EXISTING UTILITY WOOD POLES SHALL MAINTAIN 48 INCHES OF CLEARANCE FROM PRIMARY OR OVERHEAD POWER CABLES. ALL OTHER EQUIPMENT INSTALLED SHALL MAINTAIN 10 FEET OF CLEARANCE FROM PRIMARY OR OVERHEAD POWER CABLES

GENERAL INFORMATION SHEET

24. LOCAL UTILITY CO. SERVICE INSTALLATION FEES, METERED SERVICE CHARGES AND OTHER CHARGES AS DETAILED ON THE PLANS (FOR LENGTH OF CONTRACT) ARE TO BE ORDERED & PAID BY THE CONTRACTOR.

25. CONTACT ROAD COMMISSION FOR OAKLAND COUNTY–TRAFFIC OPERATIONS CENTER AT (248) 858–7250, (48) HOURS PRIOR TO INSTALLATION AND INSPECTION OF TRAFFIC SIGNALS.

26. ALL MATERIAL THAT IS REMOVED ON THIS CONTRACT IS THE PROPERTY OF R.C.O.C UNTIL DEEMED UNSALVAGEABLE BY R.C.O.C. ALL MATERIAL DEEMED TO BE UN–SALVAGEABLE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

27. BAGGING OF TEMP. OR FINAL T.S. REQUIRED BY THE ENGINEER SHALL BE INCLUDED IN THE INSTALLATION OF T.S. ON THIS CONTRACT.

28. ALL O.H. TRAFFIC SIGNAL CABLE SHALL BE SUPPORTED BY 5/16" E.H.S. MESSENGER WIRE. (INCLUDED IN THE INSTALLATION OF T.S. ON THIS CONTRACT.)

29. ALL TRAFFIC SIGNAL SPANS SHALL BE GROUNDED. THE GROUND SHALL HAVE A RESISTANCE NO GREATER THAN 10 OHM WHEN INSTALLED.

30. ALL CONDUIT BENDS SHALL HAVE MINIMUM RADII IN ACCORDANCE WITH THE CURRENT N.E.C.

31. ALL TRAFFIC SIGNAL FITTINGS (SCREWS, BOLTS, PINNACLES, ETC.) SHALL BE GREASED WITH A NON–OXIDE TYPE GREASE.

32. ALL GROUND WIRE SHALL BE #6 AWG STRANDED COPPER.

33. WHEN SPLICING TRAFFIC SIGNAL CABLES, USE UN–INSULATED SOLID BARREL COMPRESSION TYPE CONNECTORS. TAPE OVER EACH INDIVIDUAL BARREL AND ANY BARE WIRE WITH SCOTCH SUPER 33 PLUS TAPE OR EQUIVALENT. THEN TAPE OVERALL SPLICE WITH SCOTCH 130C LINERLESSS RUBBER SPLICING TAPE OR EQUIVALENT. TAPE OVER WITH A LAYER OF SCOTCH SUPER 33 PLUS TAPE OR EQUIVALENT OVER LAPPING CABLE JACKET BY ONE INCH. ALL TAPE SHOULD COVER SPLICES FROM CABLE JACKET TO CABLE JACKET AND BE 1/2 LAPPED. THE FINAL LAYER OF TAPE SHOULD BE WRAPPED IN AN UPWARD MOTION SO THAT CUT OFF END DOES NOT ALLOW MOISTURE BACK INTO SPLICE.

34. NO CHANGES FROM PLANS IN LOCATION OF SUPPORTING STRUCTURES, SIGNAL HEAD PLACEMENT OR TRAFFIC SIGNAL EQUIPMENT WILL BE ALLOWED WITHOUT PRIOR APPROVAL OF THE ROAD COMMISSION FOR OAKLAND COUNTY. CONTACT ROAD COMMISSION FOR OAKLAND COUNTY–TRAFFIC OPERATIONS CENTER AT (248)–858–7250.

35. STEMMING OF SIGNAL HEADS TO MAINTAIN EQUAL UNDER CLEARANCE FOR EACH SPAN WIRE MOUNTED SIGNAL HEAD (AT ALL INTERSECTIONS ON THIS CONTRACT) IS INCLUDED IN THE INSTALLATION OF T.S. ON THIS CONTRACT.

36. ALL JACKED–BORED, OPEN CUT OR DIRECT BURIAL CONDUIT CALLED FOR ON PLANS IS THE PREFERRED METHOD OF INSTALLATION. IF THE METHOD OF CONDUIT INSTALLATION IS IMPOSSIBLE TO CONSTRUCT OR IF THE CONTRACTOR PREFERS TO USE ANY OTHER METHOD, THE CHANGE OF METHOD MAY BE MADE UPON APPROVAL BY THE PROJECT ENGINEER. NO EXTRA PAYMENT WILL BE ALLOWED IF CONTRACTOR CHOOSES TO CHANGE THE METHOD OF CONDUIT INSTALLATION.

37. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING OR ANTICIPATING HIS NEED OR DESIRE TO INSTALL CONDUIT BY ANY OTHER METHOD AND TO INCLUDE THE COST IN HIS CONTRACT BID.

38. THE CONTRACTOR SHALL MAKE THE PERMANENT CONNECTION TO LOCAL UTILITY COMPANY 120V. SERVICE USING APPROVED PARRALLEL GROOVRD CONNECTORS WITH NON–OXIDE GREASE. (INCLUDED IN THE INSTALLATION OF TRAFFIC SIGNALS ON THIS CONTRACT).

39. NO HDPE TO PVC CONNECTIONS ALLOWED.

GENERAL INFORMATION SHEET

40. ALL AUTOSCOPE CAMERA CLAMP–ON BRACKET ARMS SHALL BE INSTALLED ON WOOD OR STEEL POLES PERPENDICULAR TO THE CURB UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

41. THE AUTOSCOPE CAMERAS, MOUNTING BRACKETS, CABLES, AND JUNCTION BOXES WILL BE FURNISHED BY R.C.O.C. AND INSTALLED BY THE CONTRACTOR. THE CONTRACTOR WILL FURNISH AND INSTALL ALL CABLES & CONNECTORS FROM THE VIDEO INTERFACE PANEL TO THE JUNCTION BOX AND/OR CAMERA. (INCLUDED IN THE INSTALLATION OF AUTOSCOPE CAMERA.)

42. ALL LOOP, CAMERA, AND PHONE SERVICE CABLE SHALL BE BELDEN YM 49001: POWER LIMITED TRAY CABLE – 5 & 1/2 PAIRS. FOUR PAIRS ARE AWG (7X26) BARE COPPER + 1 & 1/2 PAIRS ARE 16 AWG (7X24) BARE COPPER. PVC INSULATION, OVERALL BEND FOIL SHIELD WITH A 16 AWG TINNED COPPER DRAIN WIRE. OVERALL PVC JACKET WITH NYLON RIPCORD.

43. EXISTING OPTI–COM EQUIPMENT SHALL BE RELOCATED BY CONTRACTOR AS DIRECTED BY THE ENGINEER. RELOCATION, CABLES & EQUIPMENT REQUIRED SHALL BE INCLUDED IN THE INSTALLATION OF T.S. ON THIS CONTRACT.

44. ALL WEATHERHEADS AND LB'S INSTALLED NEW ON THIS CONTRACT SHALL BE METAL.

45. THE "PLOWING IN CONDUIT" METHOD SHALL NOT BE USED ON THIS CONTRACT UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

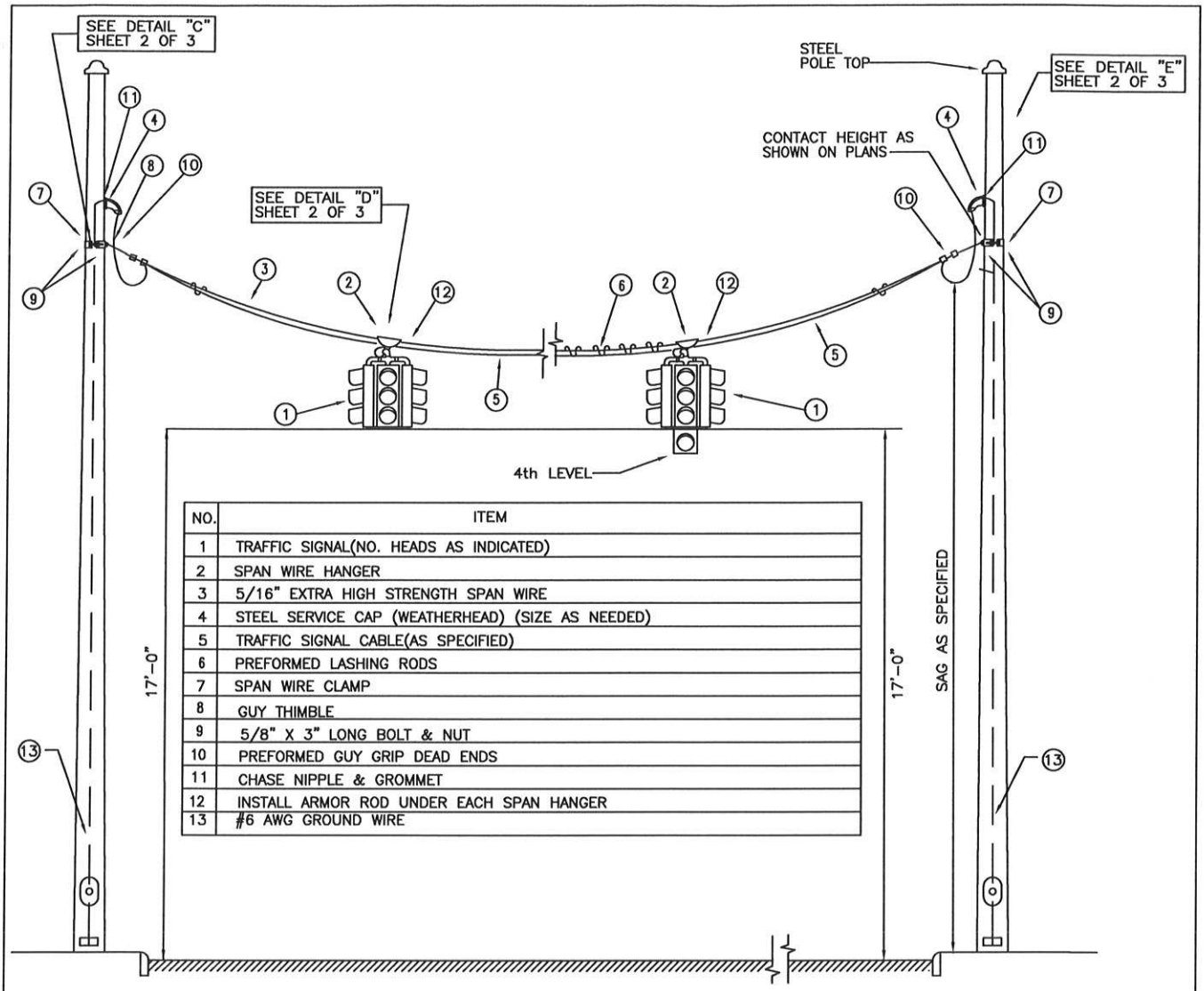
46. WHEN CONTRACTOR IS INSTALLING A NEW STEEL STRAIN POLE FOR INSTALLATION OF A NEW SPAN WIRE BY LOCAL UTILITY CO., A SPAN WIRE ATTACHMENT CLAMP SHALL BE PROVIDED BY THE CONTRACTOR. (INCLUDED IN THE INSTALLATION OF STEEL POLE ON THIS CONTRACT.)

47. ALL TRAFFIC SIGNALS, PEDESTRIAN TRAFFIC SIGNALS, CASE SIGNS, AND SPAN MOUNTED STATIC SIGNS THAT ARE NOT BEING USED WILL BE HOODED, TURNED, OR TAKEN DOWN TO CLEARLY INDICATE THAT THEY ARE NOT IN OPERATION. BAGGING MATERIAL WILL BE OF SUCH CON–STRUCTION AS TO NOT ALLOW ANYTHING TO BE VISIBLE THROUGH THE MATERIAL. BAGGING MATERIAL WILL BE OF SUCH CONSTRUCTION AS TO HOLD UP TO WIND AND OTHER ADVERSE WEATHER CONDITIONS. ALL TRAFFIC SIGNALS AND CASE SIGNS WILL BE DISABLED SO THAT NO LIGHTS ARE OPERATIONAL.

48. ALL TRAFFIC SIGNALS SHALL BE MOUNTED SUCH THAT A 17'–0" UNDER CLEARANCE IS MAINTAINED AT ALL TIMES.

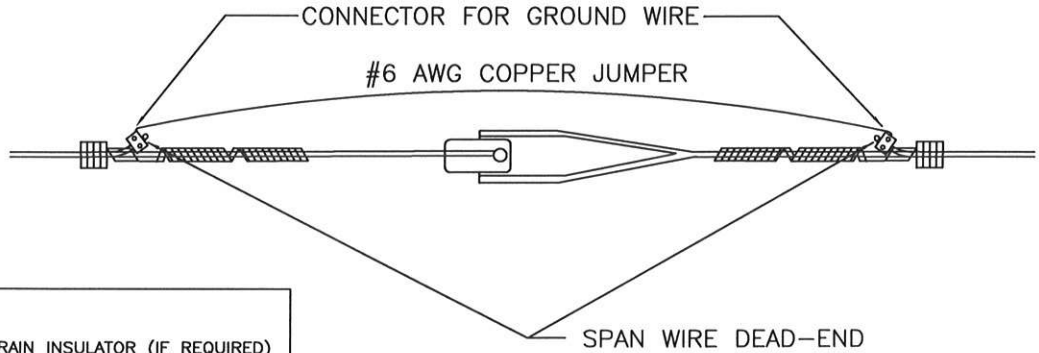
49. THE CONTRACTOR IS REQUIRED TO PROVIDE AN INDEPENDENT CERTIFICATION ON BOLTS USED IN ANCHOR BASE STEEL STRAIN POLE AND MAST ARM STANDARD FOUNDATIONS. THE CERTIFICATION MUST COME FROM AN MDOT APPROVED TESTING FACILITY AND SHOW THAT THE BOLT MEETS R.C.O.C. SPECIFICATIONS. PRIOR TO TESTING, AN R.C.O.C. REPRESENTATIVE MUST INSPECT THE BOLT PILE AT THE CONTRACTOR'S YARD. ANCHOR BOLTS SHALL NOT BE HEATED NOR HAMMERED AFTER ACCEPTANCE FOR USE ON THIS PROJECT. CONTACT R.C.O.C. AT (248–858–7250) FOR INSPECTION.

50. CUTOVERS OF INTERSECTIONS WILL TAKE PLACE ON MONDAY THRU THURSDAY FROM 9:00 AM TO 3:00 PM ONLY. UNLESS OTHERWISE DIRECTED BY THE ENGINEER.



NO.	ITEM
1	TRAFFIC SIGNAL(NO. HEADS AS INDICATED)
2	SPAN WIRE HANGER
3	5/16" EXTRA HIGH STRENGTH SPAN WIRE
4	STEEL SERVICE CAP (WEATHERHEAD) (SIZE AS NEEDED)
5	TRAFFIC SIGNAL CABLE(AS SPECIFIED)
6	PREFORMED LASHING RODS
7	SPAN WIRE CLAMP
8	GUY THIMBLE
9	5/8" X 3" LONG BOLT & NUT
10	PREFORMED GUY GRIP DEAD ENDS
11	CHASE NIPPLE & GROMMET
12	INSTALL ARMOR ROD UNDER EACH SPAN HANGER
13	#6 AWG GROUND WIRE

DETAIL A | INSTALLATION OF SPAN WIRE T.S. ON STEEL POLES



NOTE:
PORCELAIN STRAIN INSULATOR (IF REQUIRED) SHALL MEET THE CODES AND PLACEMENT REQUIREMENTS OF THE LOCAL UTILITY CO.

DETAIL B | CONNECTOR FOR GROUND WIRE

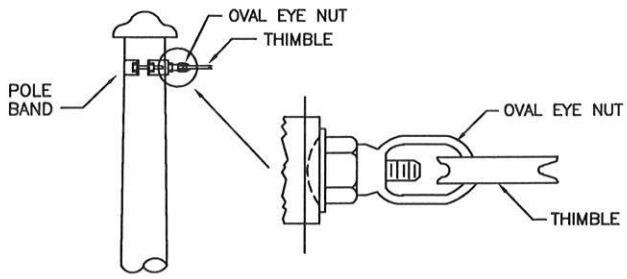
SH. 1 OF 3

OC-1

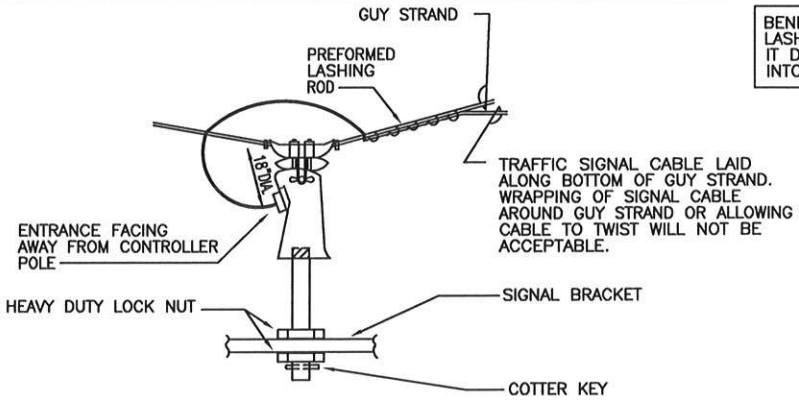
ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

SPAN WIRE T.S. ON STEEL POLES

DATE				SHEET	TOTAL
MARCH 2014				9	61



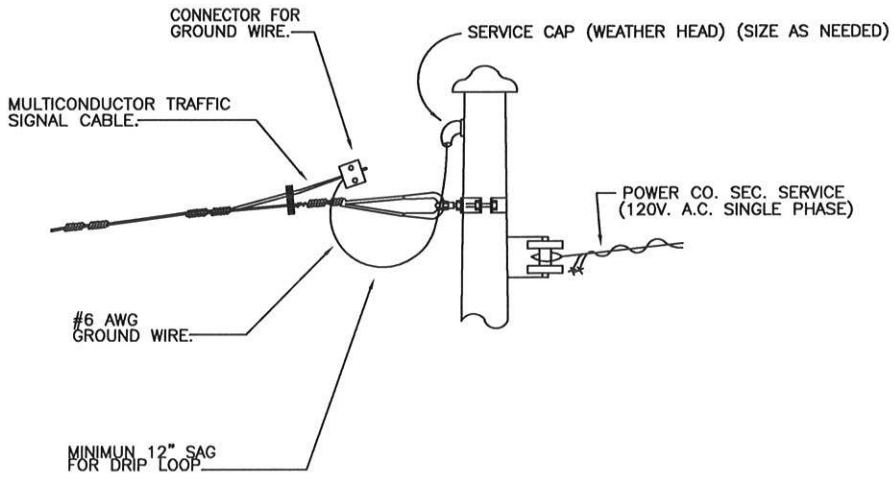
DETAIL C | POLE BAND



BEND ENDS OF LASHING ROD SO IT DOES NOT DIG INTO CABLES

WHEN SPLICING TRAFFIC SIGNAL CABLES, USE UN-INSULATED SOLID BARREL COMPRESSION TYPE CONNECTORS. TAPE OVER EACH INDIVIDUAL BARREL AND ANY BARE WIRE WITH SCOTCH SUPER 33 PLUS TAPE OR EQUIVALENT. THEN TAPE OVERALL SPLICE WITH SCOTCH 130C LINERLESSS RUBBER SPLICING TAPE OR EQUIVALENT. TAPE OVER WITH A LAYER OF SCOTCH SUPER 33 PLUS TAPE OR EQUIVALENT OVER LAPPING CABLE JACKET BY ONE INCH. ALL TAPE SHOULD COVER SPLICES FROM CABLE JACKET TO CABLE JACKET AND BE 1/2 LAPPED. THE FINAL LAYER OF TAPE SHOULD BE WRAPPED IN AN UPWARD MOTION SO THAT CUT OFF END DOES NOT ALLOW MOISTURE BACK INTO SPLICE.

DETAIL D | HANGER ATTACHMENT



SH. 2 OF 3

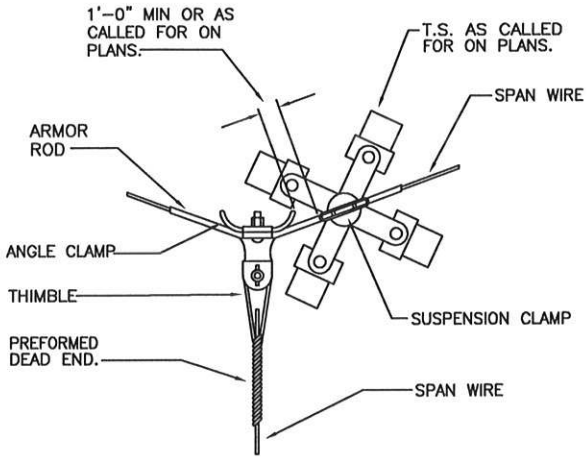
DETAIL E | CABLING

OC-1

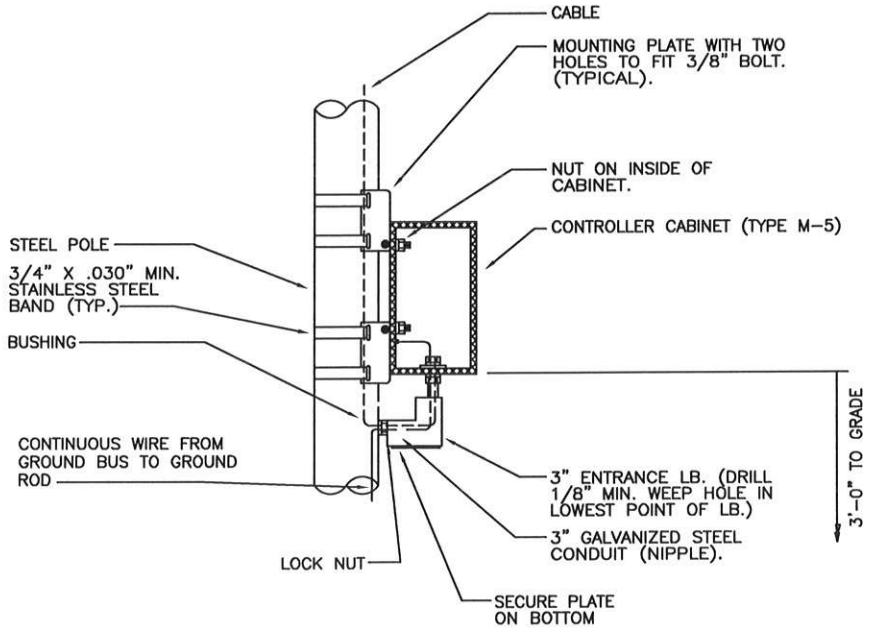
ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

SPAN WIRE T.S. ON STEEL POLES

DATE				SHEET	TOTAL
MARCH 2014				10	61



DETAIL F | PULL-OFF CONNECTION FOR 3-WAY SUSPENSION



DETAIL G | CONTROLLER MOUNTING

SH. 3 OF 3

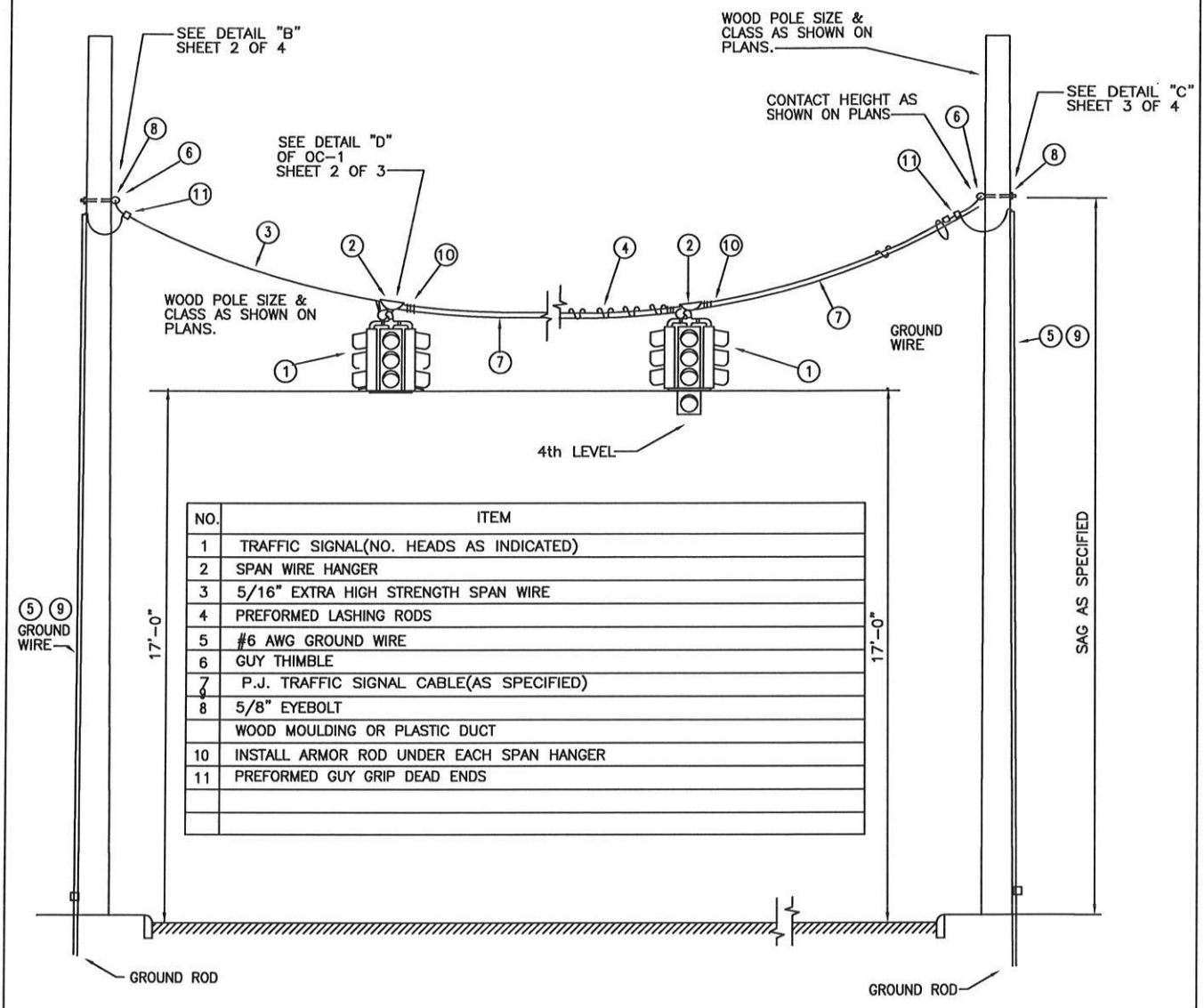
OC-1

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

SPAN WIRE T.S. ON STEEL POLES

DATE				SHEET	TOTAL
MARCH 2014				11	61



NO.	ITEM
1	TRAFFIC SIGNAL(NO. HEADS AS INDICATED)
2	SPAN WIRE HANGER
3	5/16" EXTRA HIGH STRENGTH SPAN WIRE
4	PREFORMED LASHING RODS
5	#6 AWG GROUND WIRE
6	GUY THIMBLE
7	P.J. TRAFFIC SIGNAL CABLE(AS SPECIFIED)
8	5/8" EYEBOLT
	WOOD MOULDING OR PLASTIC DUCT
10	INSTALL ARMOR ROD UNDER EACH SPAN HANGER
11	PREFORMED GUY GRIP DEAD ENDS

DETAIL A | INSTALLATION OF SPAN WIRE T.S. ON WOOD POLE

NOTE:

SPAN WIRE SHALL NOT BE WRAPPED AROUND WOOD POLE.

SH. 1 OF 4

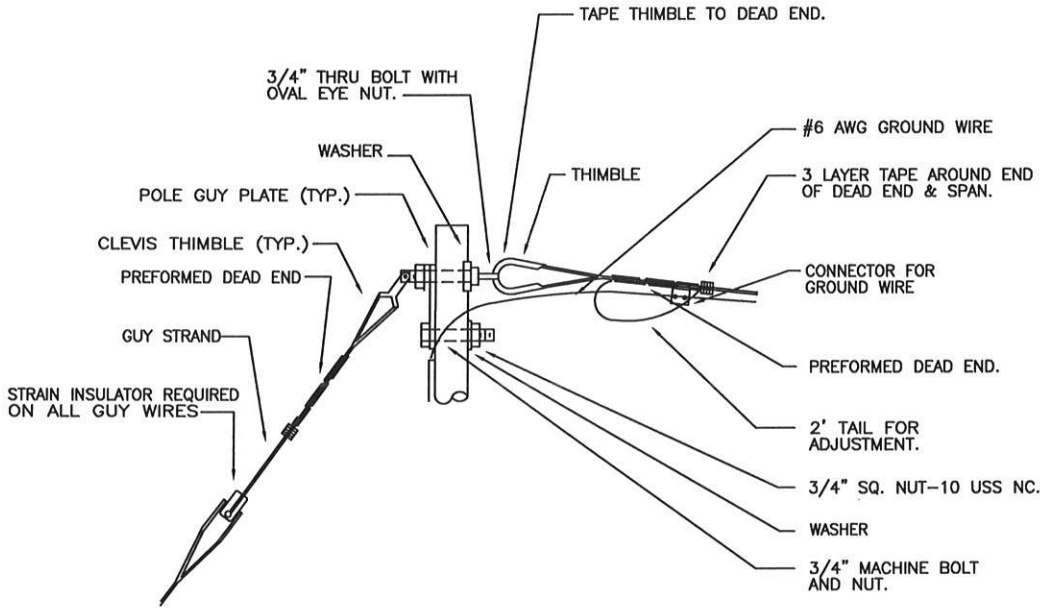
OC-1B

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

SPAN WIRE T.S. ON WOOD POLES

DATE				SHEET	TOTAL
MARCH 2014				12	61



DETAIL B | POLE PLATE AND HARDWARE

SH. 2 OF 4

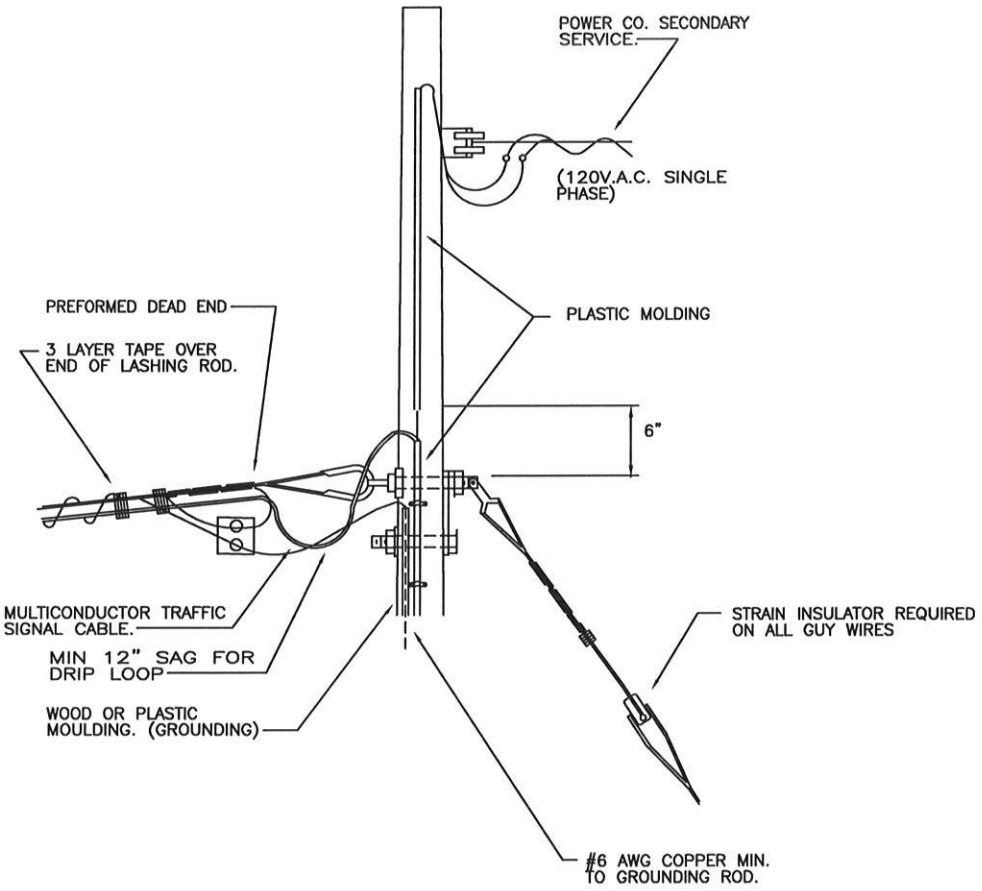
OC-1B

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

SPAN WIRE T.S. ON WOOD POLES

DATE				SHEET	TOTAL
MARCH 2014				13	61



DETAIL C | CABLING

SH. 3 OF 4

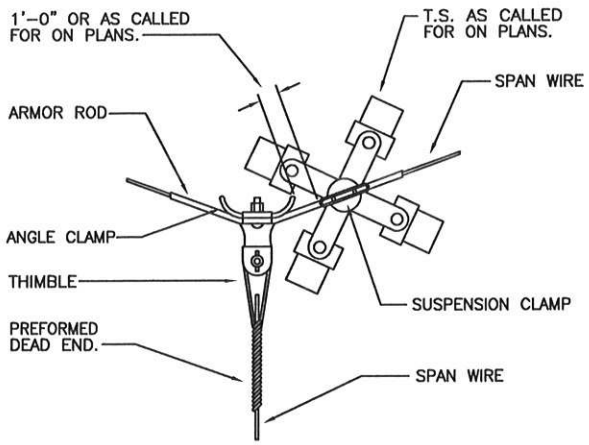
OC-1B

ROAD COMMISSION OAKLAND COUNTY

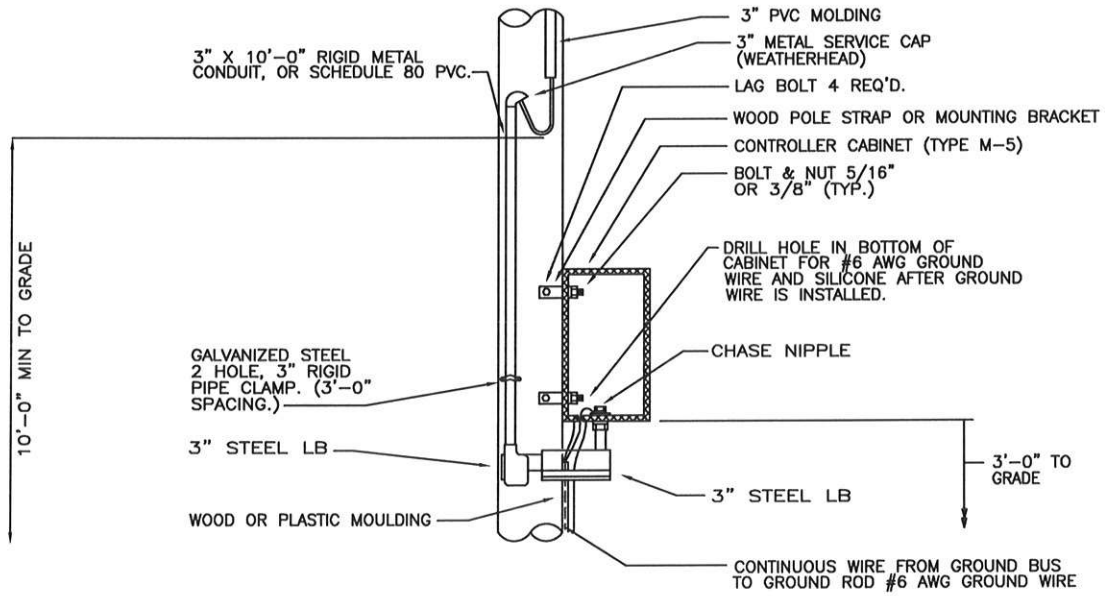
TRAFFIC-SAFETY DEPARTMENT

SPAN WIRE T.S. ON WOOD POLES

DATE				SHEET	TOTAL
MARCH 2014				14	61



DETAIL D | PULL-OFF CONNECTION FOR 3-WAY SUSPENSION



DETAIL E | CONTROLLER MOUNTING

SH. 4 OF 4

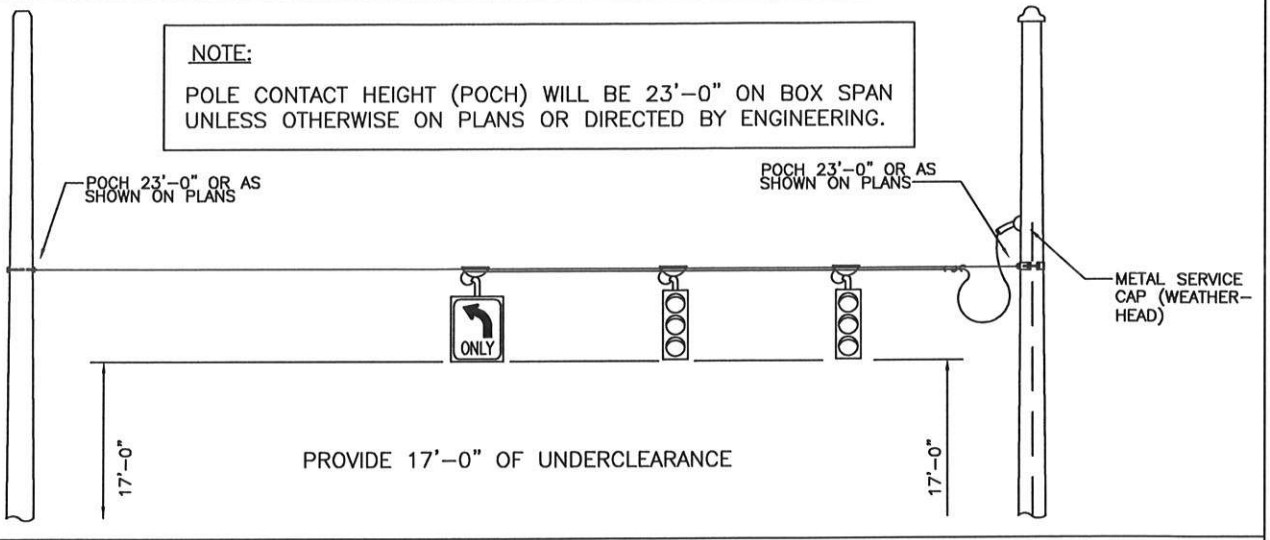
OC-1B

ROAD COMMISSION OAKLAND COUNTY

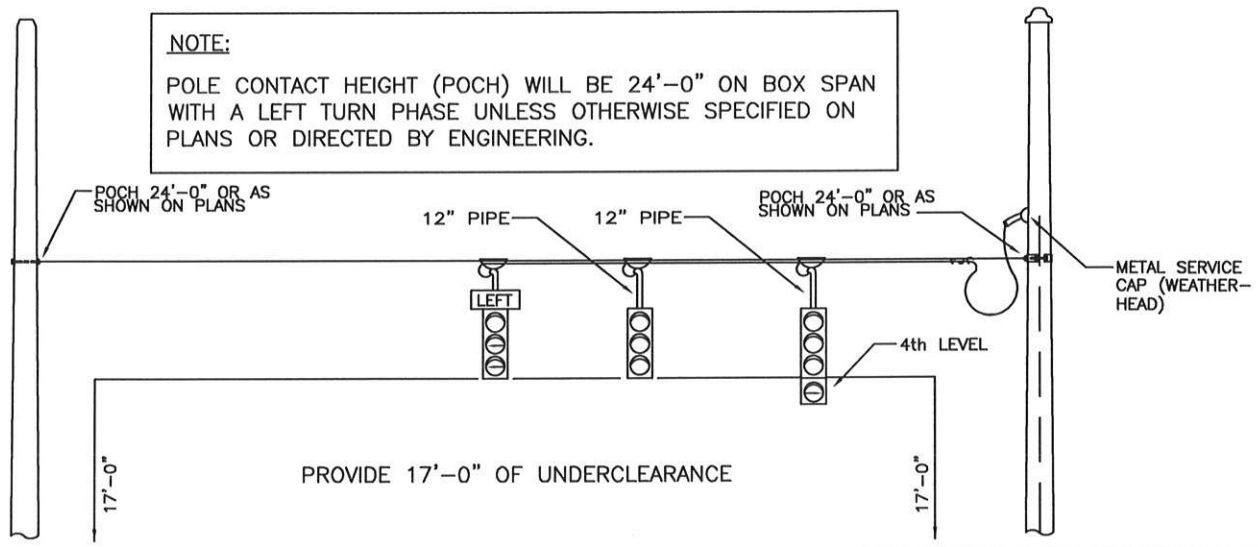
TRAFFIC-SAFETY DEPARTMENT

SPAN WIRE T.S. ON WOOD POLES

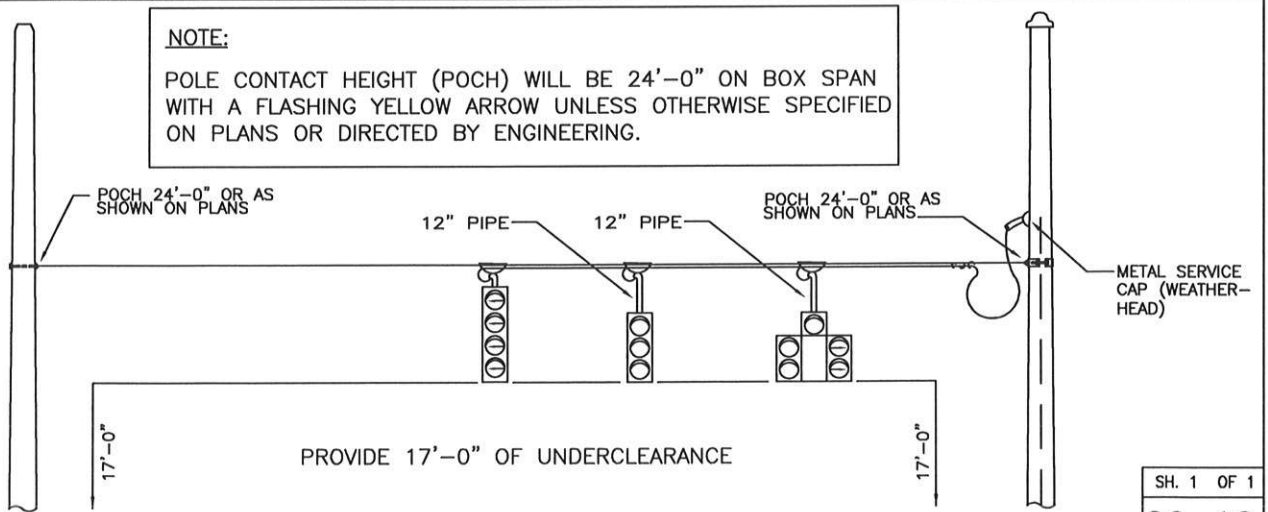
DATE				SHEET	TOTAL
MARCH 2014				15	61



DETAIL : A | INSTALLATION OF BOX SPAN WIRE T.S. ON STEEL OR WOOD POLES



DETAIL : B | INSTALLATION OF BOX SPAN WIRE T.S. W/LT PHASE OR 4th LEVEL ON STEEL OR WOOD POLES



SH. 1 OF 1

OC–1C

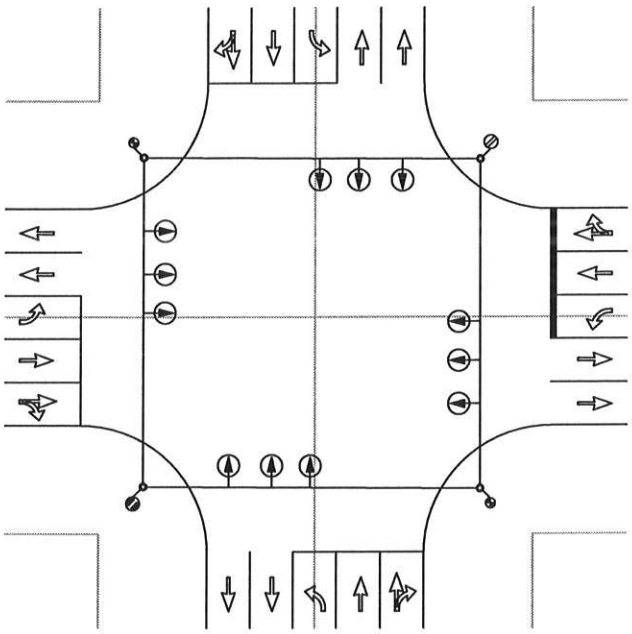
DETAIL : C | INSTALLATION OF BOX SPAN WIRE T.S. FYA AND DOGHOUSE ON STEEL OR WOOD POLES

ROAD COMMISSION OAKLAND COUNTY

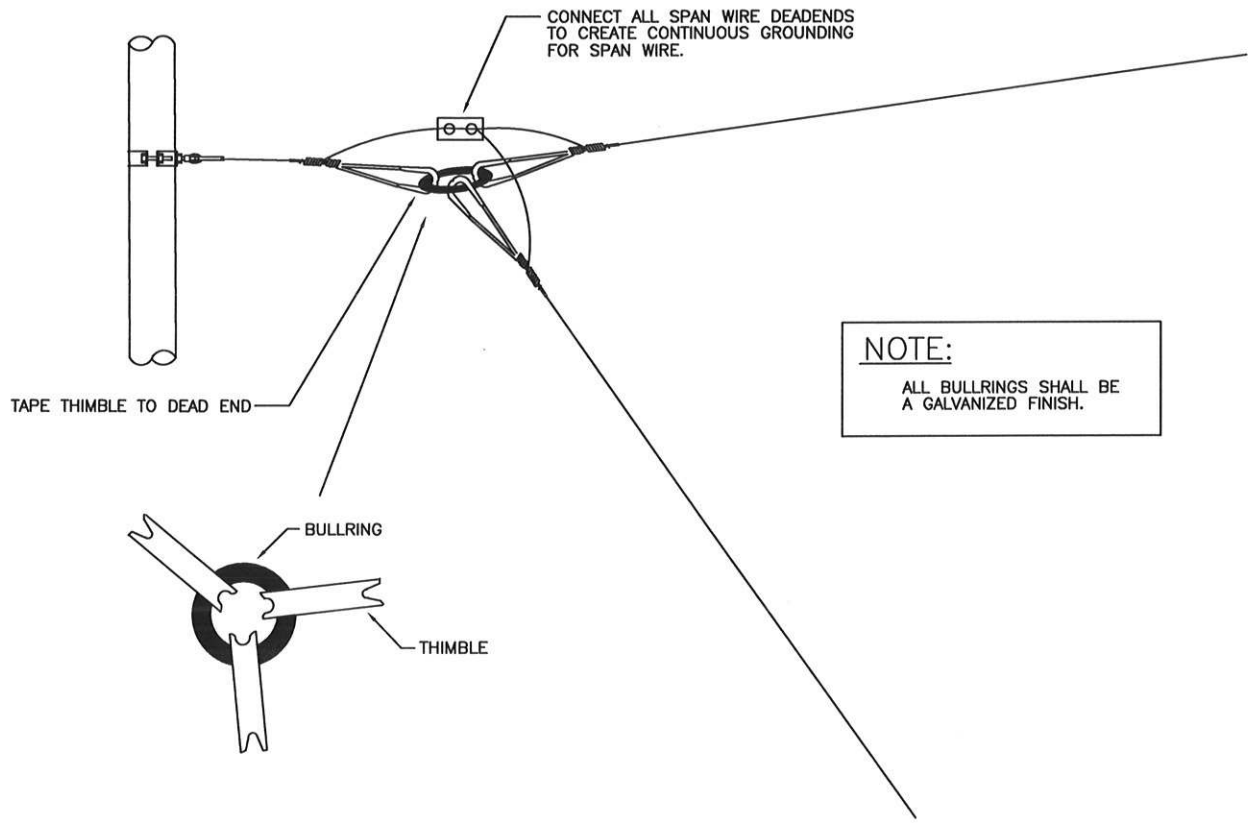
TRAFFIC–SAFETY DEPARTMENT

BOX SPAN WIRE T.S. ON STEEL OR WOOD POLES

DATE				SHEET	TOTAL
MARCH 2014				16	61



DETAIL A | OVERHEAD BULLRING SAMPLE INTERSECTION



NOTE:
ALL BULLRINGS SHALL BE A GALVANIZED FINISH.

DETAIL B | BULLRING ATTACHMENT

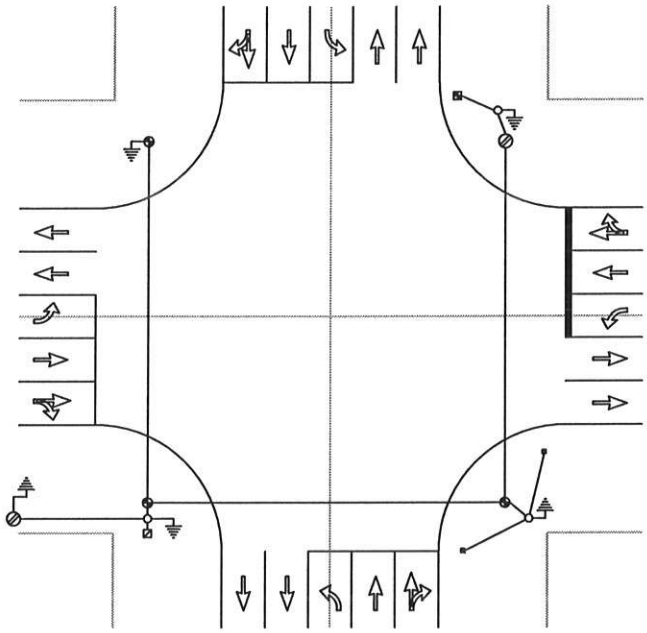
SH. 1 OF 1

OC–1D

ROAD COMMISSION OAKLAND COUNTY
TRAFFIC–SAFETY DEPARTMENT

SPAN WIRE/BULLRING MOUNTED TS ON STEEL OR WOOD POLES

DATE				SHEET	TOTAL
MARCH 2014				17	61



DETAIL : A | TYPICAL GROUNDING SYSTEM DIAGRAM

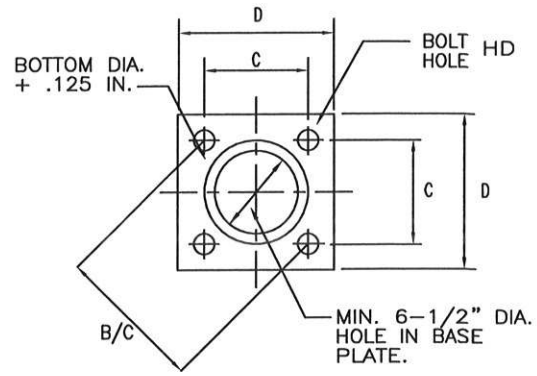
1. ALL GROUND RODS SHALL BE 3/4" X 10' IN LENGTH COPPERCLAD.
2. GROUND RODS SHALL BE DRIVEN STRAIGHT DOWN, SO THAT ONLY THE REQUIRED PORTION OF THE GROUND ROD IS EXPOSED TO ATTACH THE GROUND WIRES.
3. ALL GROUND RODS SHALL BE CONNECTED TO EACH OTHER WITH A SINGLE #6 AWG COPPER CONDUCTOR.
4. EACH GROUND WIRE ATTACHING TO A GROUND ROD SHALL HAVE IT'S OWN APPROVED CONNECTOR.
5. DO NOT INSTALL ANY GROUND RODS WITHIN 10' OF ANY OTHER GROUND RODS FROM OTHER GROUNDING SYSTEMS.
6. THE GROUNDING SYSTEM SHALL MEASURE 10 OHMS OR LESS.
7. A SEPARATE #6 AWG COPPER GROUND IS REQUIRED FROM THE SERVICE DISCONNECT (SAFETY SWITCH) TO THE GROUND BUSSBAR IN THE CONTROLLER CABINET.

DETAIL : B | GROUNDING SYSTEM | OC-1E

ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

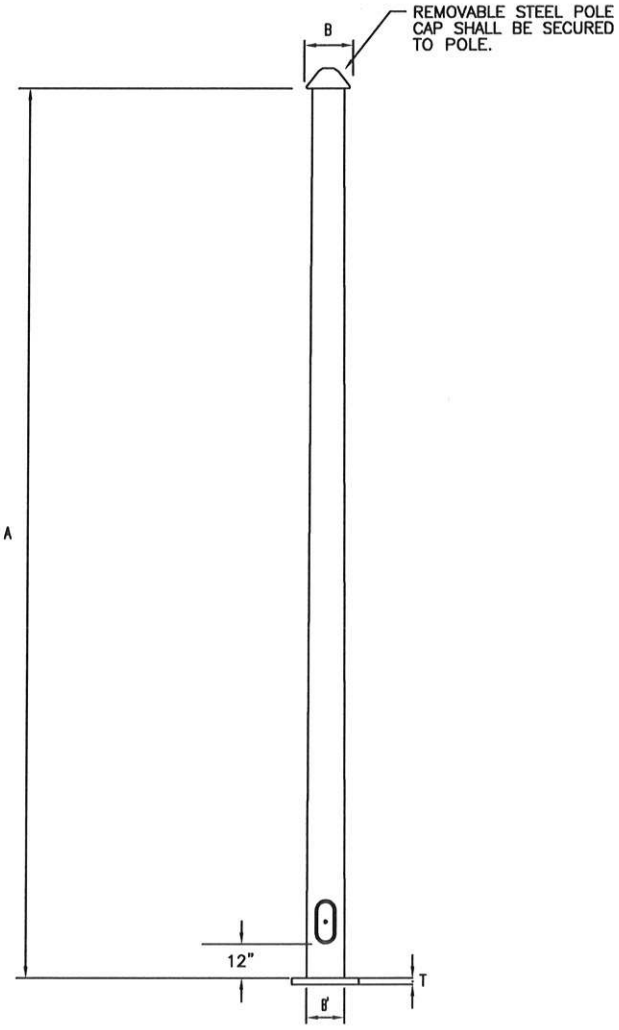
GROUNDING SYSTEM

DATE				SHEET	TOTAL
MARCH 2014				18	61

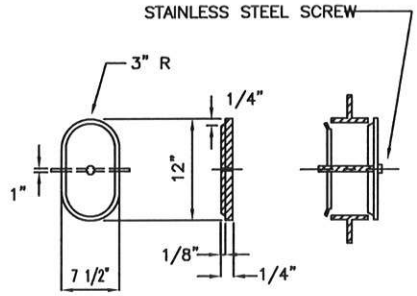


BASE PLATE

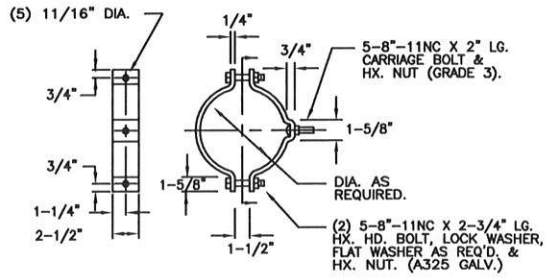
SEE SH. 2 OF 4 FOR DIMENSIONS



ANCHOR BASE STEEL STRAIN POLE



HAND HOLE COVER



POLE BAND
(ASTM A36 STEEL)

SH. 1 OF 4

DETAIL A | ANCHOR BASE STEEL STRAIN POLE FOUNDATION | OC-2

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

ANCHOR BASE STEEL STRAIN POLE AND FOUNDATION

DATE				SHEET	TOTAL
MARCH 2014				19	61

POLE REQUIREMENTS					
LENGTH	A	SHEET 19	30FT.	36FT.	40FT.
GAUGE			#0–1 PLY (MIN.) (5/16")	#0–1 PLY (MIN.) (5/16")	#0–1 PLY (MIN.) (5/16")
POLE DIA. AT TOP AT BOTTOM	B B'	SHEET 19	9" MIN +1/2" 14"	8" MIN +1/2" 14"	8 1/2" MIN +1/2" 14"
MAX. DEFLECTION LOAD 18" FROM TOP FOR UNGUYED POLE			3700 LBS.	3700 LBS.	3700 LBS.
DEFLECTION 18" FROM TOP			NOT GREATER THAN 0.40"/100LBS.	NOT GREATER THAN 0.40"/100LBS.	NOT GREATER THAN 0.52"/100LBS.
FULL LENGTH TAPER			+.002IN/FT. 0.14IN/FT. –.000IN/FT.	+.002IN/FT. 0.14IN/FT. –.000IN/FT.	+.002IN/FT. 0.14IN/FT. –.000IN/FT.
ANCHOR BOLT CORD	C	SHEET 19	12–3/4 IN.	12–3/4 IN.	12–3/4 IN.
BASE PLATE	D	SHEET 19	18 IN.	18 IN.	18 IN.
BASE PLATE THICKNESS	T	SHEET 19	2 IN.	2 IN.	2 IN.
ANCHOR BOLT CIRCLE	BC	SHEET 19	18 IN.	18 IN.	18 IN.
ANCHOR BASE BOLT HOLE DIA.	HD	SHEET 19	2–1/4" IN.	2–1/4" IN.	2–1/4" IN.
ANCHOR BOLT DIA.	d	SHEET 22	2 IN.	2 IN.	2 IN.
ANCHOR BOLT LENGTH (INCLUDING 6" "L" BEND)	L	SHEET 22	120 IN.	120 IN.	120 IN.
POLE BAND (SPAN CLAMP)	8.5"	SHEET 19	POCH 25'–6"–29'–6"	POCH 32'–6"–35'–6"	
	9.5"	SHEET 19	POCH 20'–0"–25'–0"	POCH 25'–0"–32'–0"	
	10.5"	SHEET 19			POCH 30'–6"–39'–6"
	11.5"	SHEET 19			POCH 29'–0"–30'–0"

NOTES:

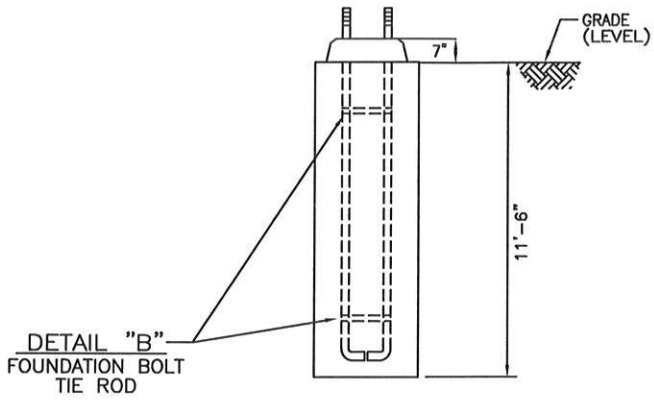
1. ACCEPTABLE MILL TOLERANCES TO APPLY TO ALL NOMINAL DIMENSIONS.
2. HANDHOLE SHALL BE PROVIDED & BE PERPENDICULAR TO EYE BOLT HOLE.
3. MATERIAL ( ) GALVANIZED FINISH.
   - A. SHAFT STEEL SHALL BE ASTM A572, Fy=50KSI.
   - B. BASE PLATE ASTM A36.
   - C. ALL GALVANIZING SHALL MEET ASTM A123.
   - D. ANCHOR BOLTS SHALL BE ASTM A563, Fy=50KSI. IN ACCORDANCE WITH (ART. 807.15) OF MDOT SPECIFICATIONS.
4. WELDING
   - A. WELDING SHALL CONFORM TO AWS D1.1
   - B. ULTRASONIC INSPECTION FOR ALL 100% WELDS AND VISUAL AND/OR MAGNETIC PARTICLE FOR ALL OTHERS.
5. TOLERANCES OVERALL HEIGHT_+ 1%.
   - A. SWEEP AND CAMBER 1/8" PER FEET.
   - B. TWIST 10' MAX. OVERALL.
6. DESIGN CONFORMING TO CURRENT AASHTO
   - A. SPECIFICATIONS FOR DESIGN OF STRUCTURAL SUPPORTS FOR TRAFFIC SIGNALS ASSUMING A SAG OF 10% OF SPAN WITH MAXIMUM OF 5 SIGNALS WITH PLASTIC HEADS NOT TETHERED.
7. REQUIRED HOLES MUST BE DRILLED ONLY.

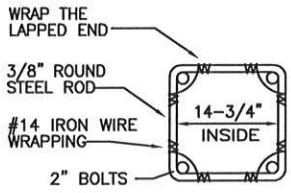
ROAD COMMISSION OAKLAND COUNTY

TRAFFIC–SAFETY DEPARTMENT

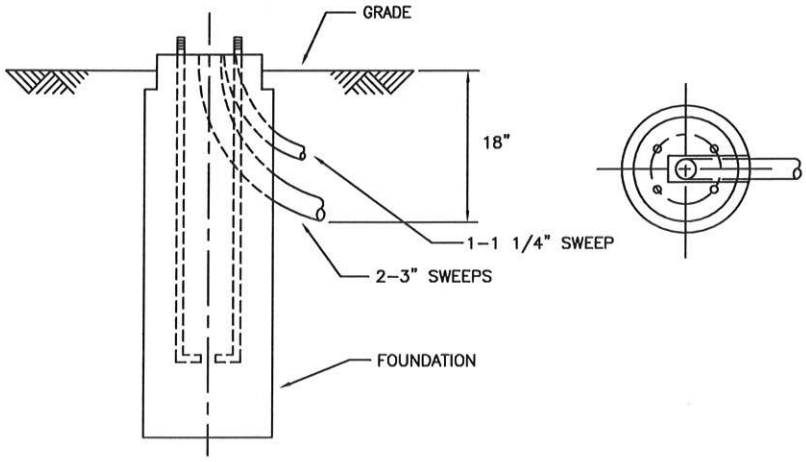
ANCHOR BASE STEEL STRAIN POLE AND FOUNDATION

DATE				SHEET	TOTAL
MARCH 2014				20	61





DETAIL B | ANCHOR BASE STEEL STRAIN POLE FOUNDATION



NOTE:

1. INSTALL 2-3" PLASTIC BEND IN ALL FOUNDATIONS.
2. 1-1 1/4" CONDUIT FOR GROUND TO NEAREST HANDHOLE.
3. CONDUIT SHALL EXTEND ABOVE FOUNDATION ONLY ENOUGH TO ACCOMMODATE THE INSTALLATION OF BELL ENDS.
4. INDICATE DIRECTION OF BENDS IN FOUNDATION TOP.
5. INSTALL GROUND ROD IN NEAREST HANDHOLE.

DETAIL C | INSTALLING CONDUIT INTO FOUNDATION

SH. 3 OF 4

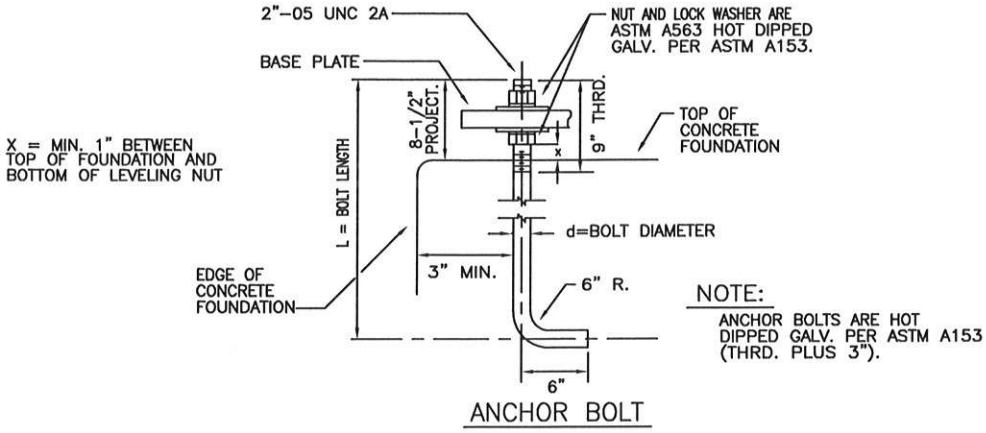
OC-2

ROAD COMMISSION OAKLAND COUNTY

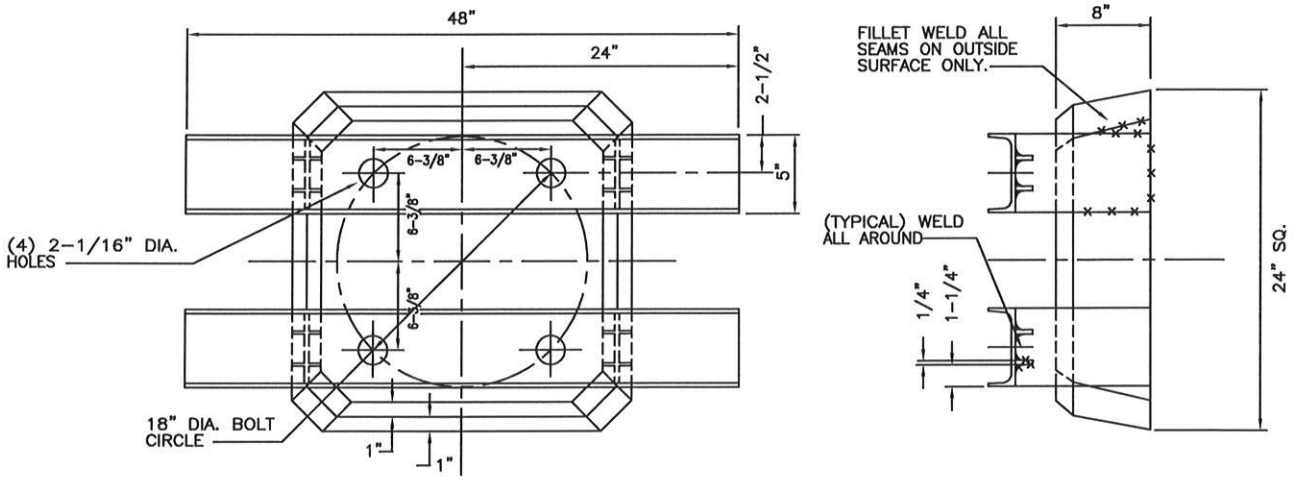
TRAFFIC-SAFETY DEPARTMENT

ANCHOR BASE STEEL STRAIN POLE AND FOUNDATION

DATE				SHEET	TOTAL
MARCH 2014				21	61



ANCHOR BOLT



DETAIL D | ANCHOR BASE STEEL STRAIN POLE FOUNDATION TEMPLATE

SH. 4 OF 4

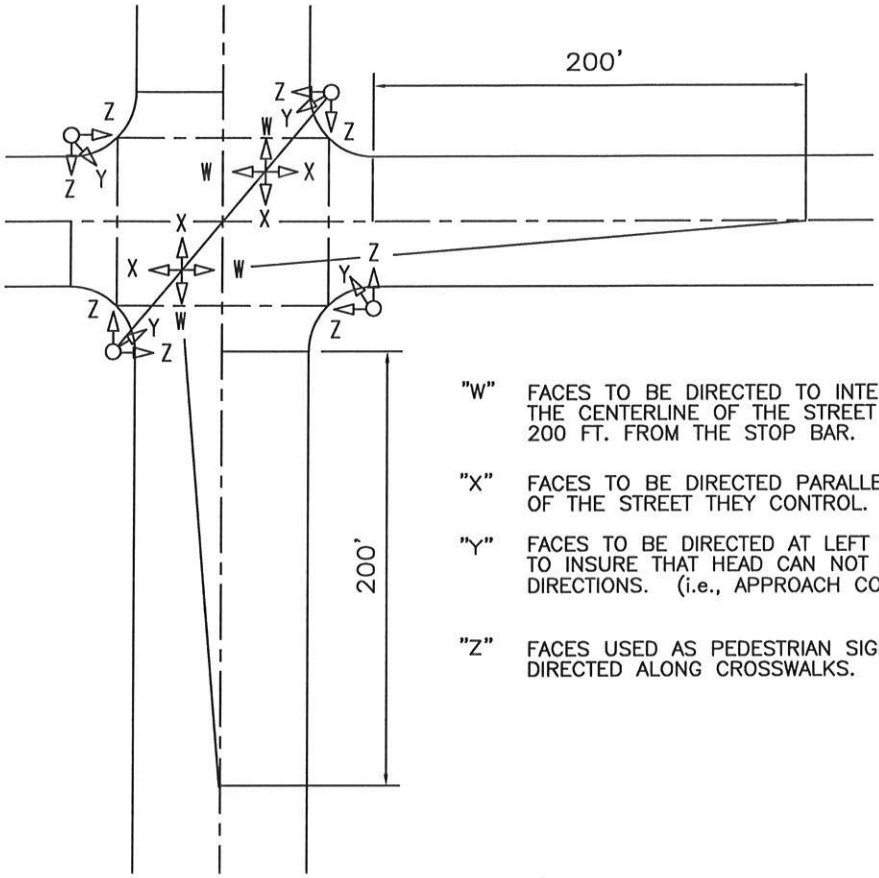
OC-2

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

ANCHOR BASE STEEL STRAIN POLE AND FOUNDATION

DATE				SHEET	TOTAL
MARCH 2014				22	61



"W" FACES TO BE DIRECTED TO INTERSECT A POINT ON THE CENTERLINE OF THE STREET THEY CONTROL 200 FT. FROM THE STOP BAR.

"X" FACES TO BE DIRECTED PARALLEL TO THE CENTERLINE OF THE STREET THEY CONTROL.

"Y" FACES TO BE DIRECTED AT LEFT TURN STOP BAR. ADJUST TO INSURE THAT HEAD CAN NOT BE VIEWED FROM OTHER DIRECTIONS. (i.e., APPROACH COUNTER CLOCKWISE)

"Z" FACES USED AS PEDESTRIAN SIGNALS TO BE DIRECTED ALONG CROSSWALKS.

STANDARD FOR DIRECTIONAL SETTINGS OF TRAFFIC SIGNALS

N.T.S.

NOTE:

WHERE FIELD CONDITIONS REQUIRE DEVIATION FROM THESE STANDARDS, ENGINEER WILL FURNISH SPECIFIC DIRECTIONAL SETTING FOR SIGNALS AT TIME OF INSTALLATION.

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

DIRECTIONAL SETTING & WIRING OF SIGNALS

DATE				SHEET	TOTAL
MARCH 2014				23	61

		DIAGONAL SPAN IF REQUIRED	ALL TRAFFIC SIGNALS	PEDESTRIAN	PUSHBUTTON	CASE SIGN OR STREET SIGN IF REQUIRED
	COLOR	20/C	7/C	7/C	2/C	3/C
1	WHITE	COMMON (CASE SIGN)	COMMON	COMMON	COMMON	COMMON
2	BLACK	CASE SIGN	SPARE	SPARE	24V+	120V AC
3	RED	A Ø–RED	A Ø–RED	DW1		GROUND
4	GREEN	A Ø–GREEN	A Ø–GREEN	W1		
5	ORANGE	A Ø–AMBER	A Ø–AMBER	DW2		
6	BLUE	GREEN ARROW	GREEN ARROW	W2		
7	WHITE W/BLACK TRACER	C Ø–AMBER	FYA	SPARE COMMON		
8	GREEN W/BLACK TRACER	B Ø–GREEN				
9	ORANGE W/BLACK TRACER	B Ø–AMBER				
10	RED W/BLACK TRACER	B Ø–RED				
11	BLUE W/BLACK TRACER	C Ø–GREEN				
12	BLACK W/WHITE TRACER	C Ø–RED				
13	GREEN W/WHITE TRACER	D Ø–GREEN				
14	ORANGE W/RED TRACER	D Ø–AMBER				
15	RED W/WHITE TRACER	D Ø–RED				
16	BLACK W/RED TRACER	FYA				
17	BLUE W/WHITE TRACER	SPARE				
18	BLUE W/RED TRACER	COMMON				
19	WHITE W/RED TRACER	COMMON				
20	RED W/GREEN TRACER	CASE SIGN GROUND				

#12/3–CONDUCTOR–COLORS 1 THROUGH 3
#16/7–CONDUCTOR–COLORS 1 THROUGH 7
#14/12–CONDUCTOR–COLORS 1 THROUGH 12
#14/20–CONDUCTOR–COLORS 1 THROUGH 20
#12/2–CONDUCTOR SHIELDED 1 THROUGH 2

COLOR CODE FOR WIRING CONNECTING SIGNAL LAMPS

NOTE:

NEUTRALS FROM EACH LED SHALL BE ON INDIVIDUAL TERMINALS ON TERMINAL STRIP INSIDE SIGNAL HEAD. SO THAT EACH NEUTRAL CAN BE INDIVIDUALLY REMOVED WITHOUT AFFECTING THE PERFORMANCE OF ANY OTHER LED.

NOTE:

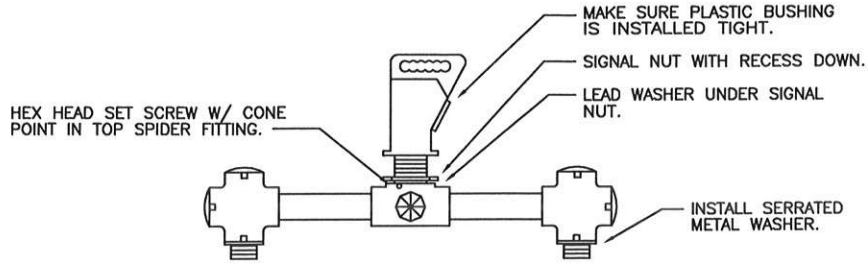
FOR 7/C TRAFFIC SIGNAL WIRES APPLY PHASE TAPE AT ANY TERMINATION POINT AS FOLLOWS:

A Ø–GREEN
B Ø–ORANGE
C Ø–RED
D Ø–BLUE

ROAD COMMISSION OAKLAND COUNTY
TRAFFIC–SAFETY DEPARTMENT

DIRECTIONAL SETTING & WIRING OF SIGNALS

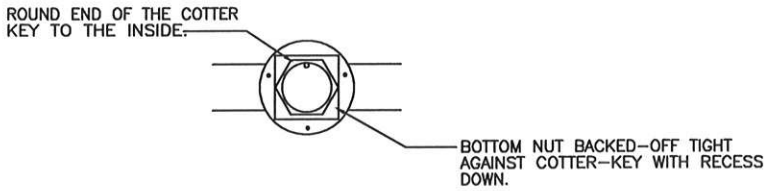
DATE				SHEET	TOTAL
MARCH 2014				24	61



SPAN WIRE MOUNTED T.S. BRACKET ASSEMBLY

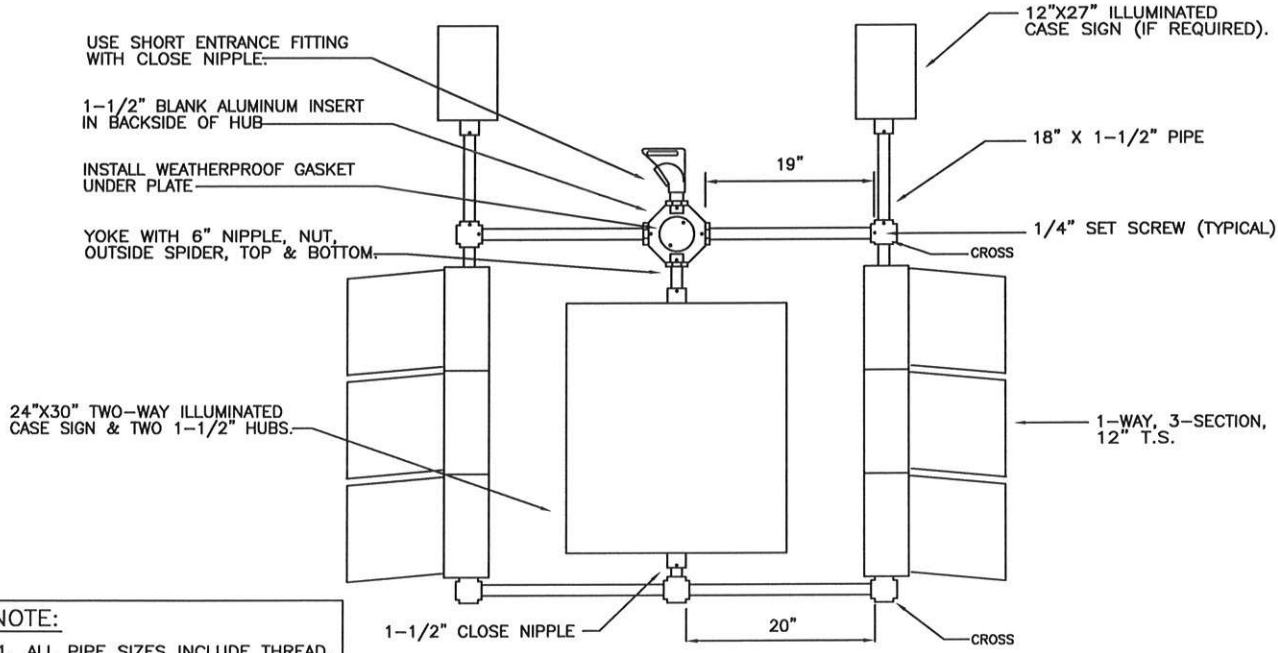
(2-WAY T.S. SHOWN 3-WAY & 4-WAY SIMILAR)

N.T.S.



DETAIL OF HUB WITH BOTTOM PLATE OFF

N.T.S.



NOTE:

1. ALL PIPE SIZES INCLUDE THREAD.
2. INSTALL PINNACLES IN ALL UNUSED OPENINGS IN HUBS, CROSSES & TEES.
3. 2-WAY CASE SIGN LEGEND TO BE AS SHOWN ON PLANS.
4. ALL CASE SIGNS MUST HAVE GROUNDING CONDUCTOR

DETAIL: A

N.T.S.

SH. 1 OF 1

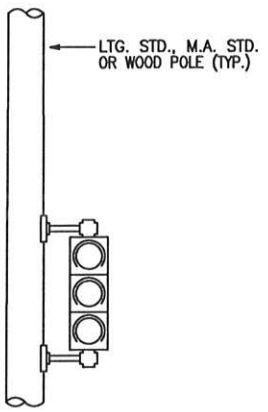
OC-3A

ROAD COMMISSION OAKLAND COUNTY

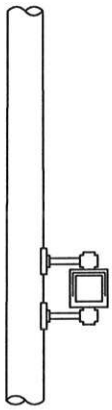
TRAFFIC-SAFETY DEPARTMENT

SPAN WIRE MOUNTED T.S. BRACKET ASSEMBLY

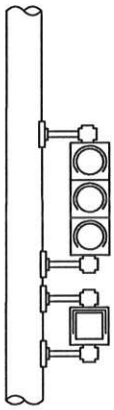
DATE				SHEET	TOTAL
MARCH 2014				25	61



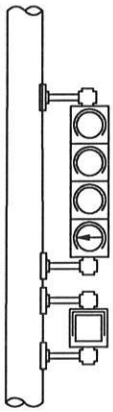
DETAIL "A–1"



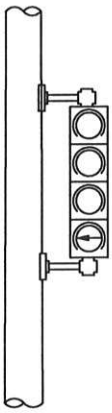
DETAIL "B–1"



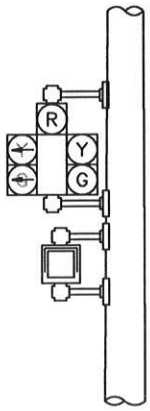
DETAIL "E–1"



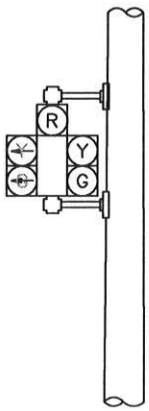
DETAIL "U–1"



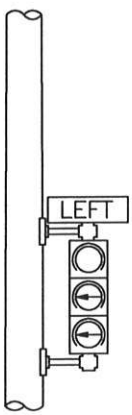
DETAIL "N–1"



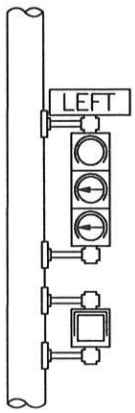
DETAIL "Y–1"



DETAIL "Z–1"



DETAIL "AA–1"



DETAIL "EE–1"

SH. 1 OF 2

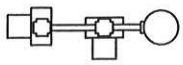
OC–4

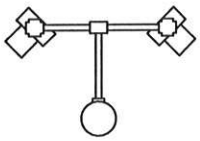
ROAD COMMISSION OAKLAND COUNTY

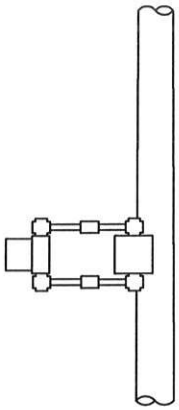
TRAFFIC–SAFETY DEPARTMENT

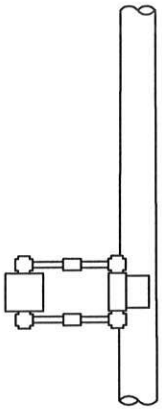
TYPICAL POLE MOUNTED SIGNALS

DATE				SHEET	TOTAL
MARCH 2014				26	61









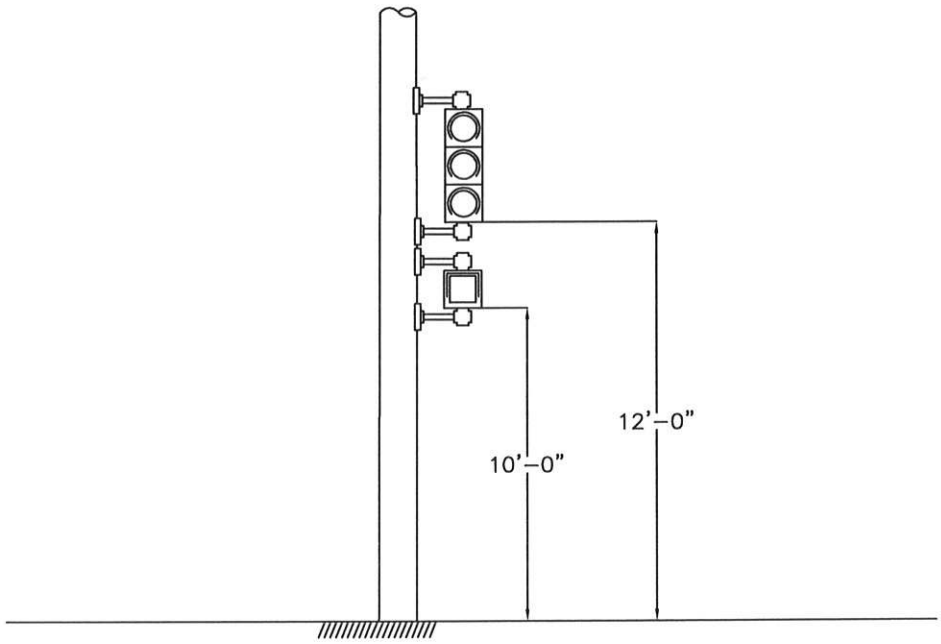
DETAIL "D–1"

DETAIL "B–3"

OVERHEAD VIEW OF BRACKET COMBINATIONS

NOTE:

PIPE ASSEMBLY SHALL BE OF SUCH LENGTH AND HEIGHT AS TO ACCOMMODATE TRAFFIC SIGNALS AND PEDESTRIAN SIGNALS FOR PROPER MAINTENANCE AND CLEAR VEHICULAR AND PEDESTRIAN VIEWING.



SH. 2 OF 2

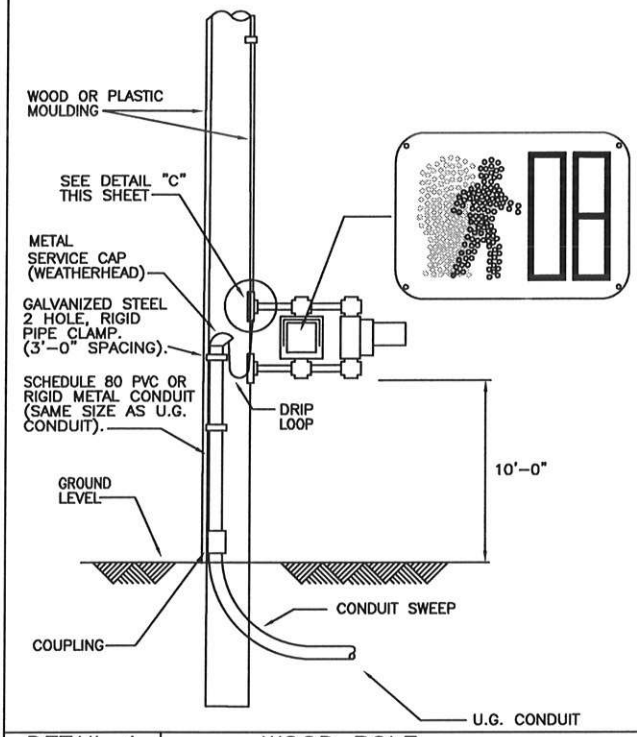
OC–4

ROAD COMMISSION OAKLAND COUNTY

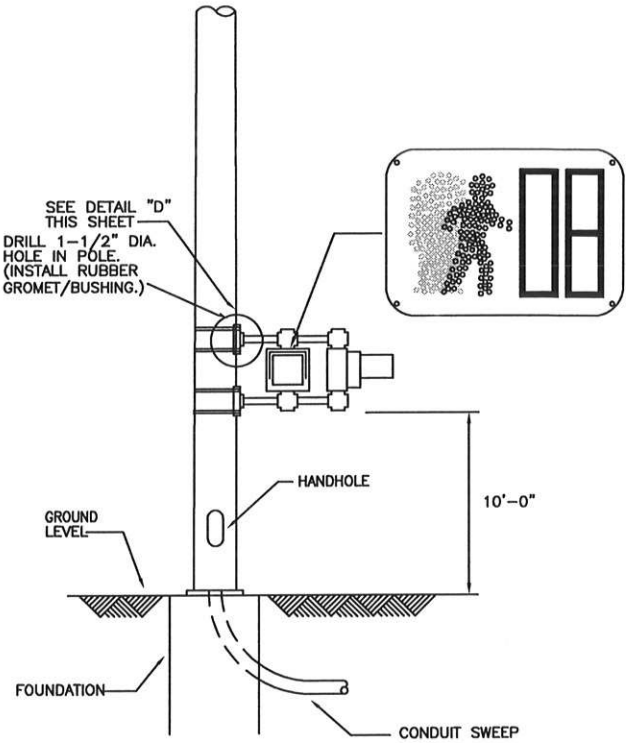
TRAFFIC–SAFETY DEPARTMENT

TYPICAL POLE MOUNTED SIGNALS

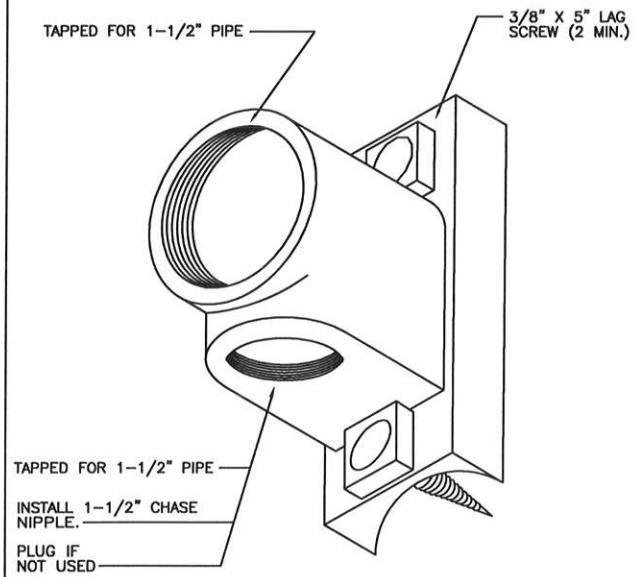
DATE				SHEET	TOTAL
MARCH 2014				27	61



DETAIL A | WOOD POLE

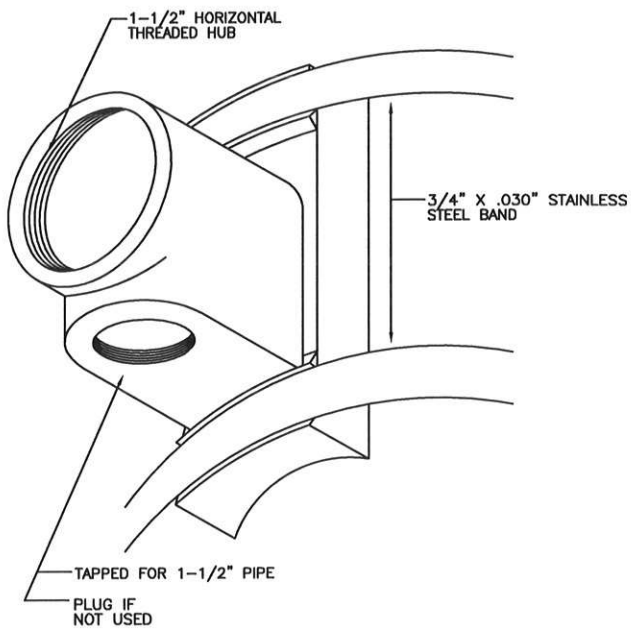


DETAIL B | STEEL POLE



N.T.S.

DETAIL C | WOOD POLE



N.T.S.

DETAIL D | STEEL POLE

SH. 1 OF 1

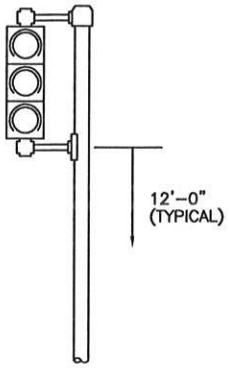
OC-4A

ROAD COMMISSION OAKLAND COUNTY

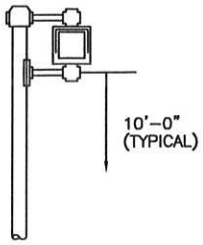
TRAFFIC-SAFETY DEPARTMENT

TYPICAL POLE MOUNTED PEDESTRIAN SIGNALS

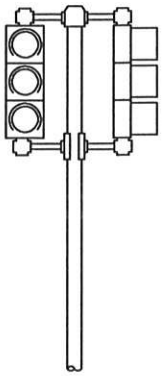
DATE				SHEET	TOTAL
MARCH 2014				28	61



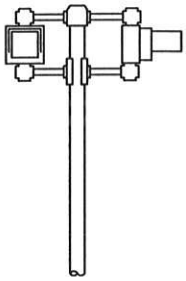
DETAIL "A-2"



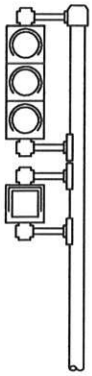
DETAIL "B-2"



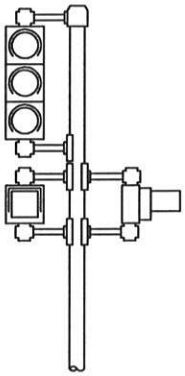
DETAIL "C-2"



DETAIL "D-2"

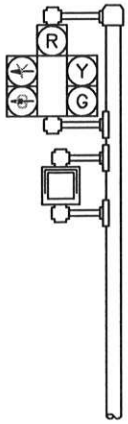


DETAIL "E-2"

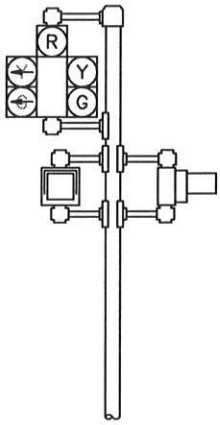


DETAIL "F-2"

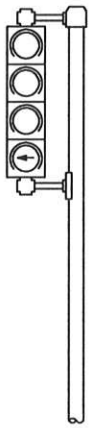
DETAIL "G-2"



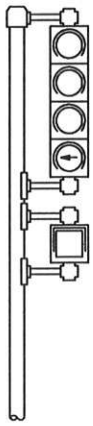
DETAIL "H-2"



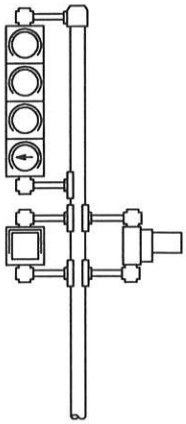
DETAIL "I-2"



DETAIL "M-2"



DETAIL "T-2"



DETAIL "U-2"

SH. 1 OF 2

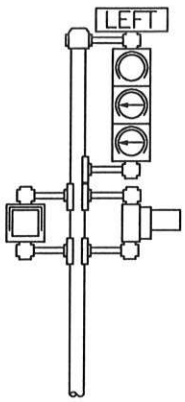
OC-5

ROAD COMMISSION OAKLAND COUNTY

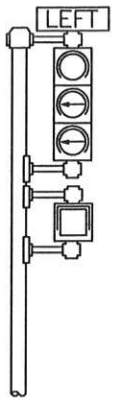
TRAFFIC-SAFETY DEPARTMENT

TYPICAL PEDESTAL MOUNTED SIGNALS

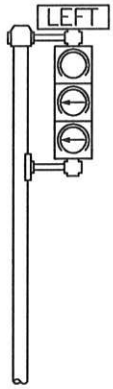
DATE				SHEET	TOTAL
MARCH 2014				29	61



DETAIL "Y–2"



DETAIL "X–2"



DETAIL "Z–2"

NOTE:

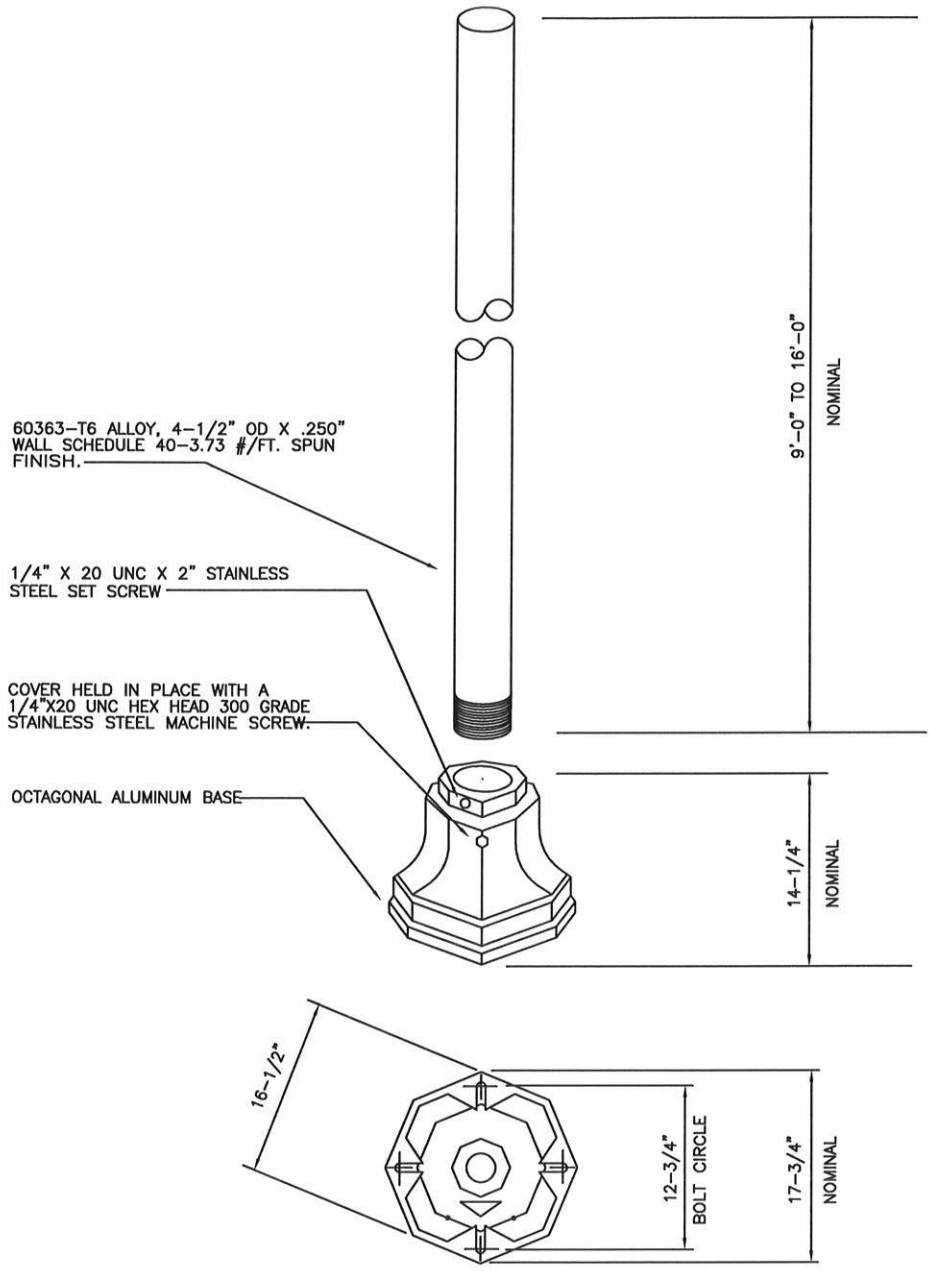
ALL TRAFFIC SIGNALS ARE 12 INCH
ALL PEDESTRIAN TRAFFIC SIGNALS ARE 16 INCH

NOTE:

PIPE ASSEMBLY SHALL BE SUCH LENGTH AND HEIGHT AS TO ACCOMMODATE TRAFFIC SIGNALS AND PEDESTRIAN SIGNALS FOR PROPER MAINTENANCE AND CLEAR VEHICULAR AND PEDESTRIAN VIEWING.

ROAD COMMISSION OAKLAND COUNTY
TRAFFIC–SAFETY DEPARTMENT

DATE				SHEET	TOTAL
MARCH 2014				30	61



DETAIL A | BOTTOM PLAN

SH. 1 OF 2

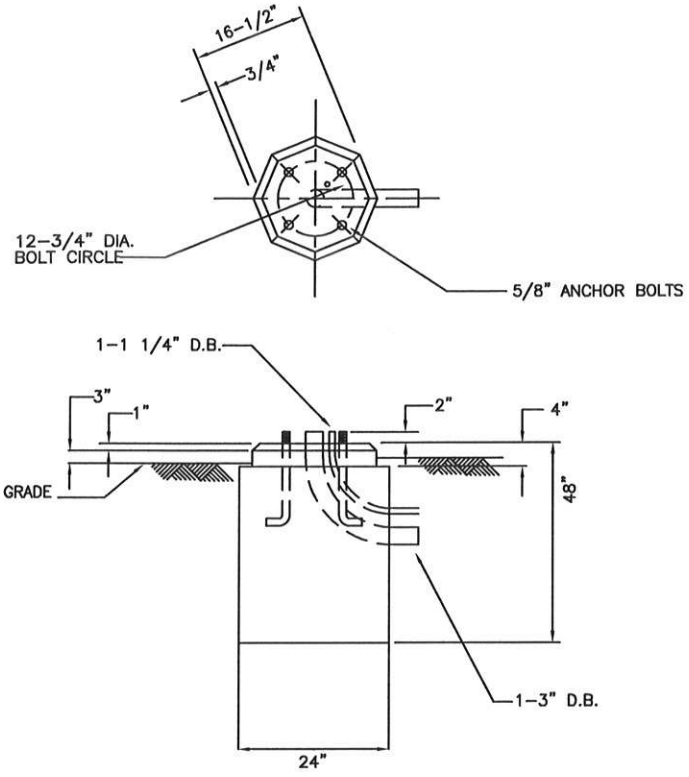
OC-5A

ROAD COMMISSION OAKLAND COUNTY

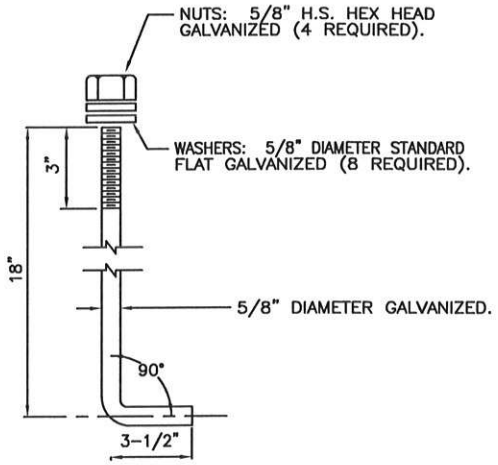
TRAFFIC-SAFETY DEPARTMENT

PEDESTAL FOUNDATION & BRACKETING

DATE				SHEET	TOTAL
MARCH 2014				31	61



DETAIL B | PEDESTAL FOUNDATION



ANCHOR BOLTS ARE TO BE 307 STEEL
(4 REQUIRED)

DETAIL C | ANCHOR BOLT

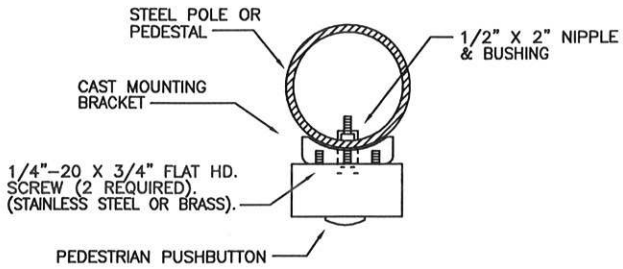
NOTE:

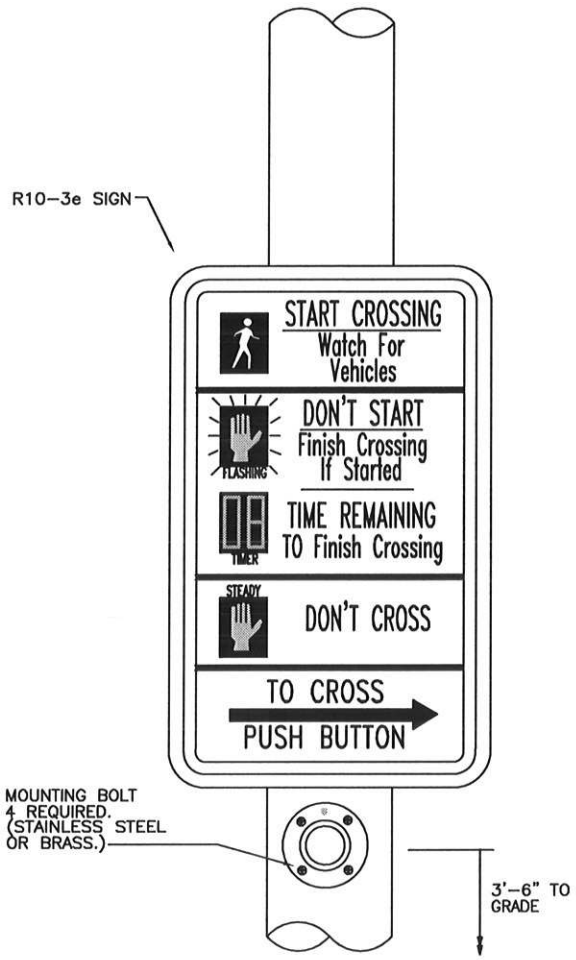
1. INSTALL 1-3" PLASTIC BEND IN ALL FOUNDATIONS
2. 1-1 1/4" CONDUIT FOR GROUND TO NEAREST HANDHOLE.
3. CONDUIT SHALL EXTEND ABOVE FOUNDATION ONLY ENOUGH TO ACCOMMODATE THE INSTALLATION OF BELL ENDS.
4. #6 AWG STRANDED COPPER GROUND WIRE (SHALL BE ATTACHED TO INSIDE OF BASE).

ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

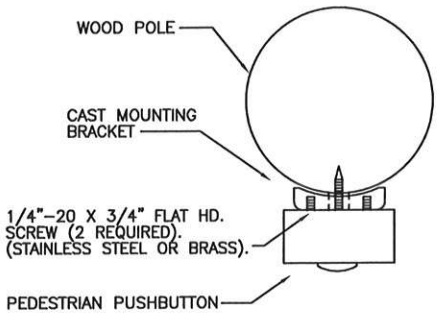
PEDESTAL FOUNDATION & BRACKETING

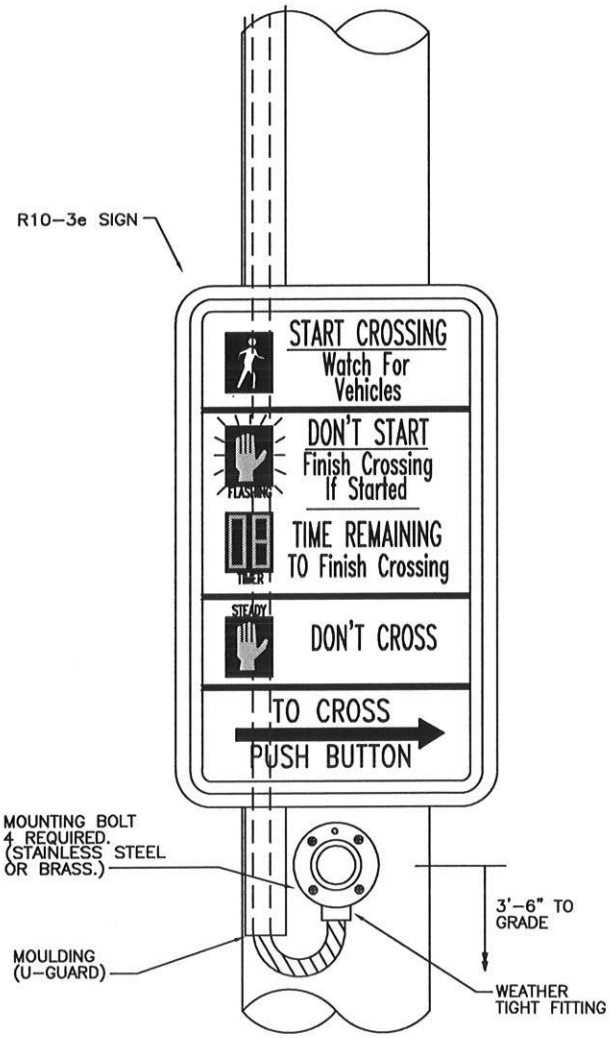
DATE				SHEET	TOTAL
MARCH 2014				32	61





DETAIL A | PUSHBUTTON ON STEEL POLE OR PEDESTAL





DETAIL B | PUSHBUTTON ON WOOD POLE

NOTE:
ARROW ON R10–3e SIGN CAN BE LEFT OR RIGHT.

SH. 1 OF 3

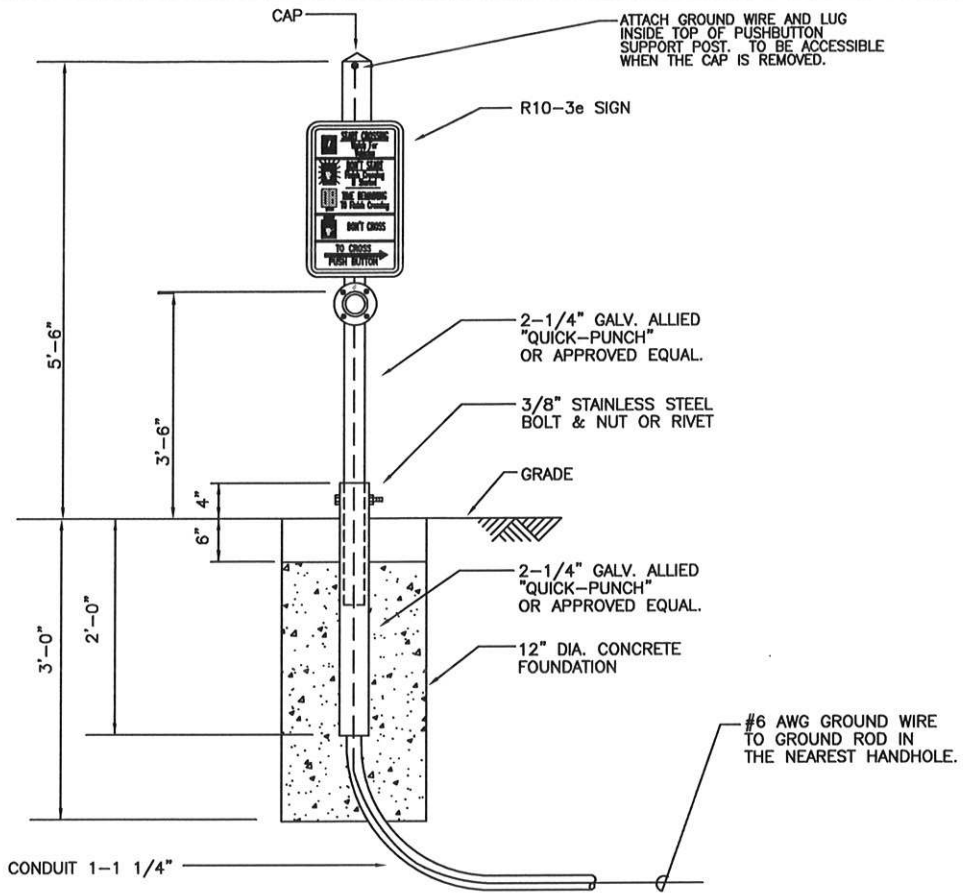
OC–7

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC–SAFETY DEPARTMENT

PUSHBUTTON

DATE				SHEET	TOTAL
MARCH 2014				33	61



DETAIL B | PUSHBUTTON & PUSHBUTTON SUPPORT

NOTE:

GROUNDING SYSTEM SHALL MEASURE 10 OHM OR LESS TO GROUND.

NOTE:

PUSH BUTTON MUST BE WITHIN 12-18 INCHES OF SIDEWALK OR BIKE PATH IF IT EXISTS.

SH. 2 OF 3

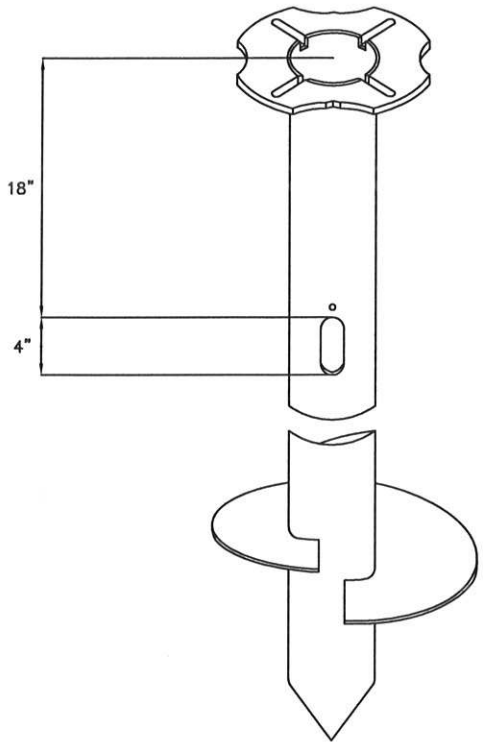
OC-7

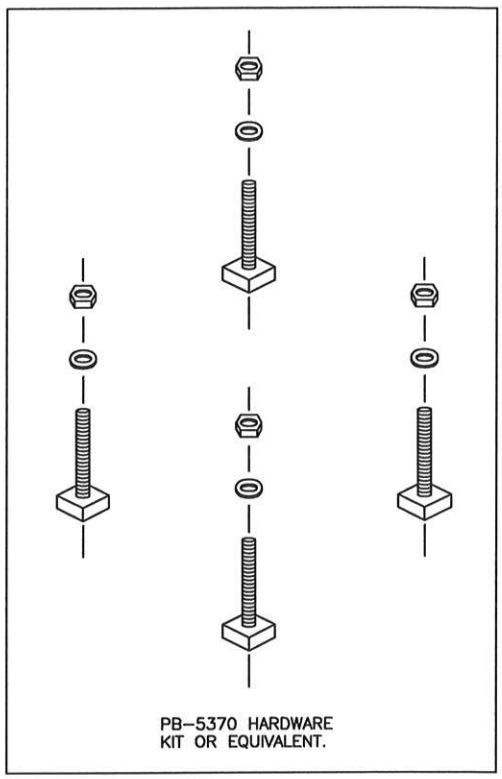
ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

PUSHBUTTON

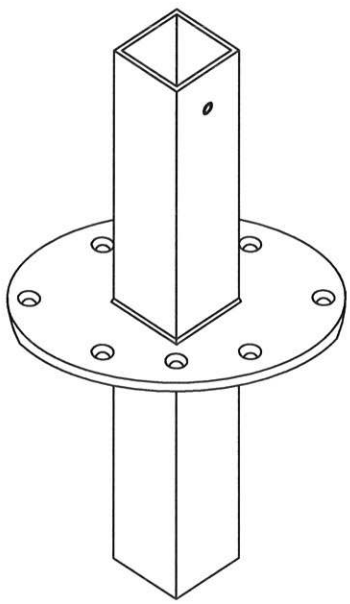
DATE				SHEET	TOTAL
MARCH 2014				34	61





PB-5370 HARDWARE
KIT OR EQUIVALENT.

DETAIL C | HELIX FOUNDATION SYSTEM



DETAIL D | SQUARED PED POLE ADAPTER, FOR STEEL FOUNDATION ANCHORS

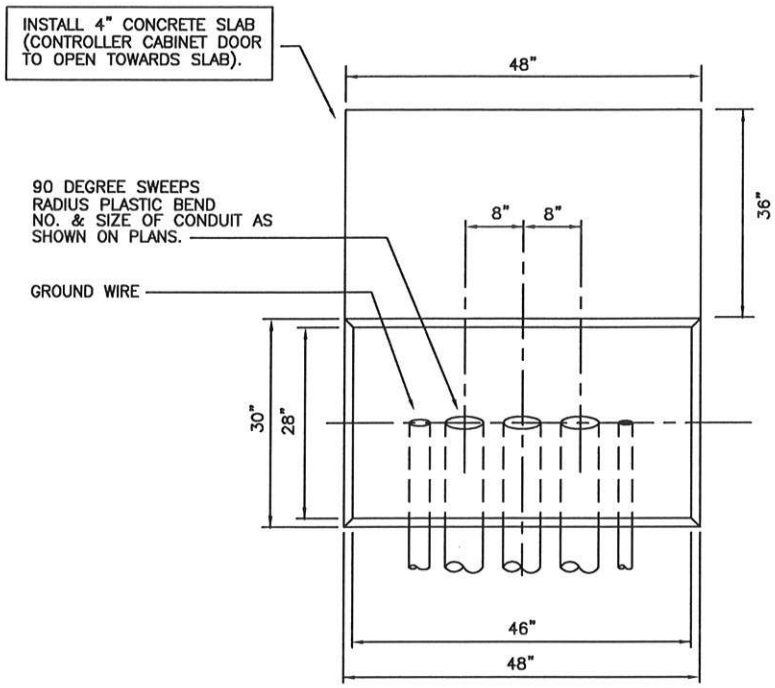
OC-7

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

PUSHBUTTON

DATE				SHEET	TOTAL
MARCH 2014				35	61



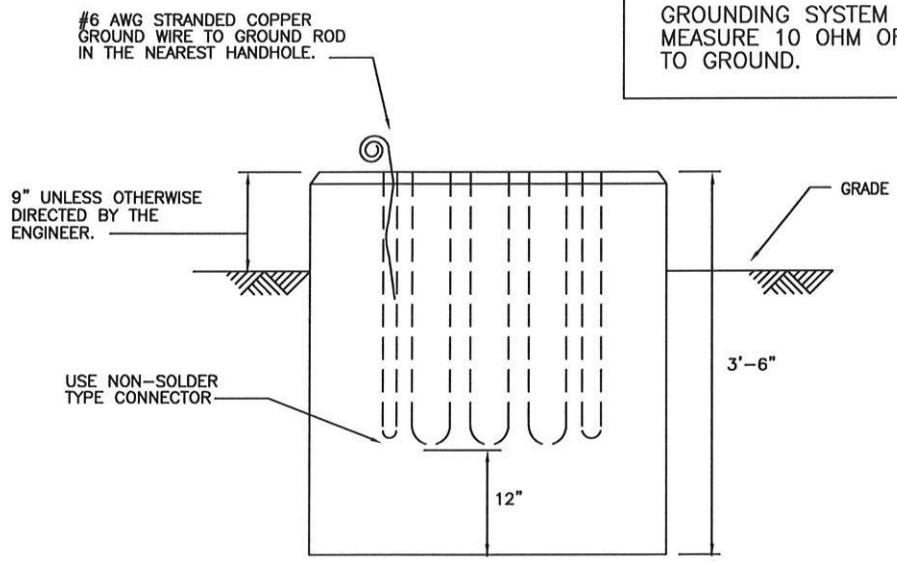
NOTES:

1. INSTALL 3-4", 1-3", & 1-1 1/4" PLASTIC BEND IN ALL FOUNDATIONS.
2. 1-1 1/4" CONDUIT FOR GROUND TO NEAREST HANDHOLE.
3. 1-3" SHALL BE CAPPED IN BOTH THE HANDHOLE & THE CABINET, & IS FOR RCOC USE ONLY.
4. CONDUIT SHALL EXTEND ABOVE FOUNDATION ONLY ENOUGH TO ACCOMMODATE THE INSTALLATION OF BELL ENDS.
5. INSTALL 1/2" LEAD ANCHORS WITH LARGE FLAT WASHERS FOR ATTACHMENT OF CABINET TO THE FOUNDATION.
6. USE GALVANIZED ANCHORS OR APPROVED DRILL IN ANCHORS.
7. CAULK AROUND THE CABINET AT THE BASE.

DETAIL A | BASE MOUNTED CONTROLLER FOUNDATION-PLAN

NOTE:

GROUNDING SYSTEM SHALL MEASURE 10 OHM OR LESS TO GROUND.



DETAIL B | BASE MOUNTED CONTROLLER FOUNDATION-PROFILE

SH. 1 OF 1

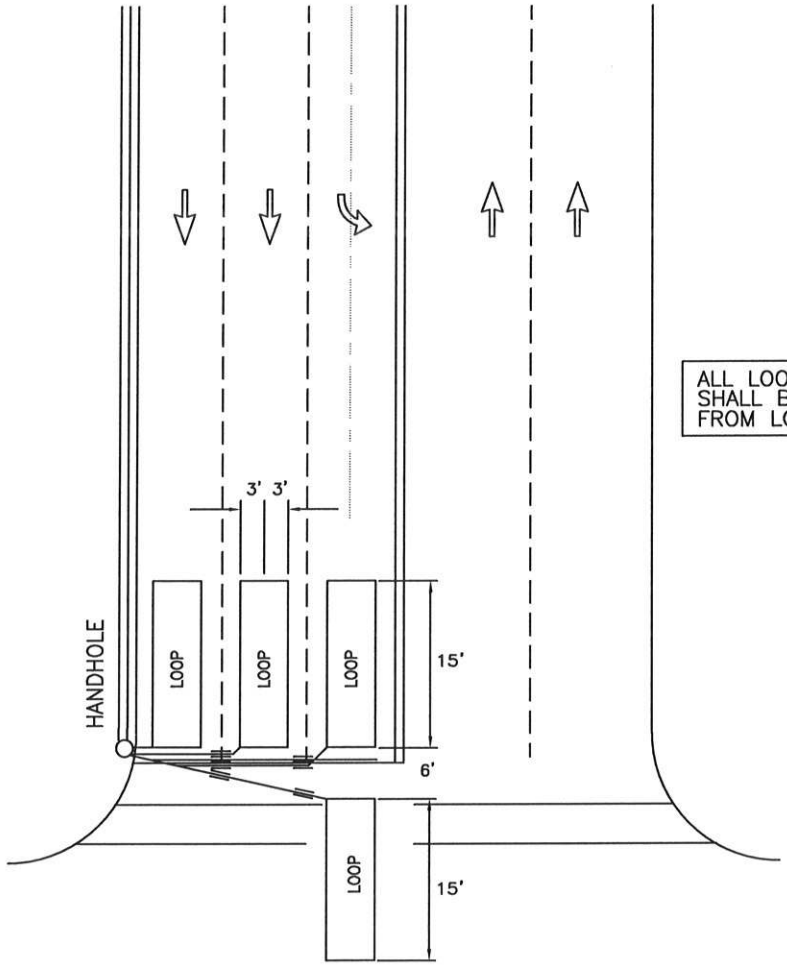
OC-7A

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

BASE MOUNTED CONTROLLER & CABINET

DATE				SHEET	TOTAL
MARCH 2014				36	61

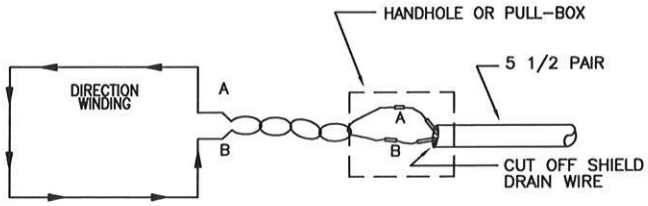


ALL LOOP LEAD IN WIRES SHALL BE IN OWN SLOT FROM LOOP TO HANDHOLE.

DETAIL A | LOOP LAYOUT PLAN

NOTE:

SPLICING MUST BE DONE WITH APPROVED MATERIALS AND METHODS AS DIRECTED BY THE ENGINEER.



DETAIL B | SERIES LOOP CONNECTION

SH. 1 OF 2

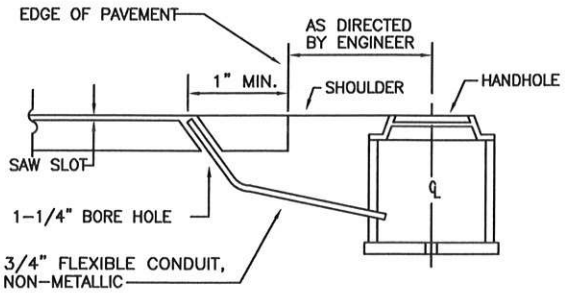
OC-8A

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

TRAFFIC LOOP

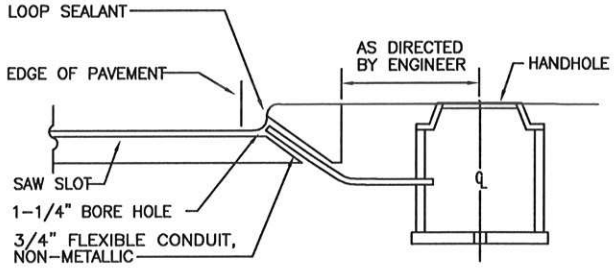
DATE				SHEET	TOTAL
MARCH 2014				37	61



LOOP LEAD- IN WIRES TWISTED PER SPECIFICATION

PLUG/CAULK AROUND WIRES TO KEEP SEALANT FROM ENTERING CONDUIT.

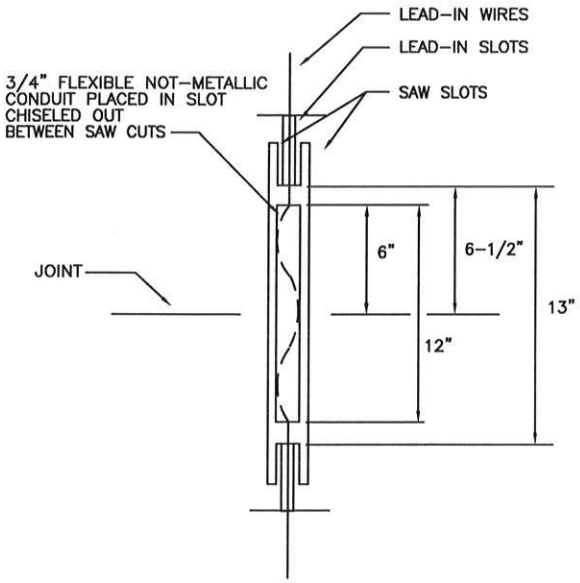
DETAIL C | LOOP LEAD-IN WIRE TO HANDHOLE-SHOULDER



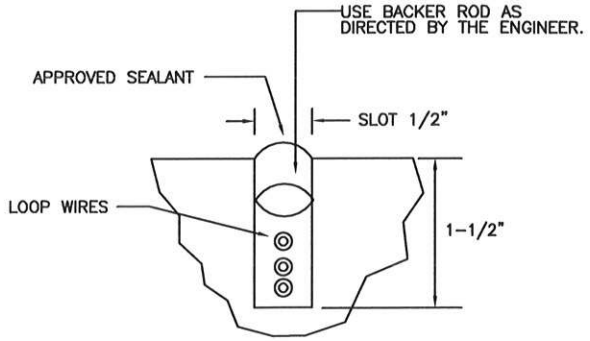
LOOP LEAD- IN WIRES TWISTED PER SPECIFICATION

PLUG/CAULK AROUND WIRES TO KEEP SEALANT FROM ENTERING CONDUIT.

DETAIL D | LOOP LEAD-IN WIRE TO HANDHOLE-CURB



DETAIL E | EXPANSION JOINT TREATMENT PLAN



DETAIL F | SLOT CROSS SECTION

SH. 2 OF 2

0C-8A

ROAD COMMISSION OAKLAND COUNTY

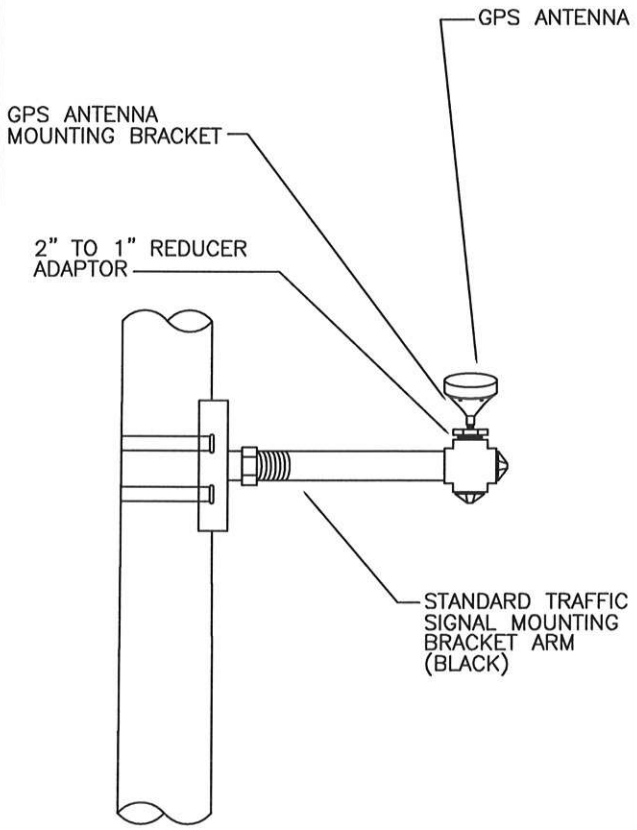
TRAFFIC-SAFETY DEPARTMENT

LOOP PLAN

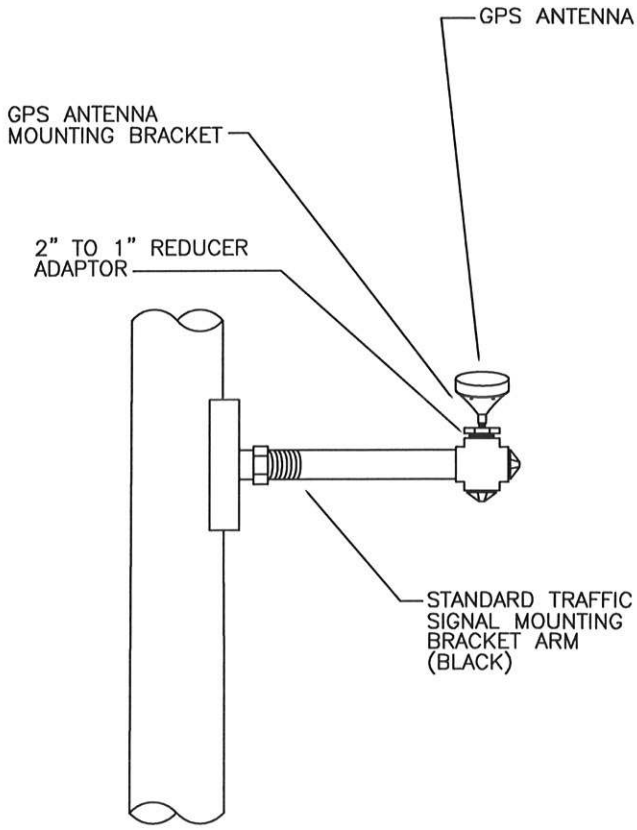
DATE				SHEET	TOTAL
MARCH 2014				38	61

NOTE:

MOUNT ON THE SOUTH SIDE OF POLE, AS HIGH AS FACTORY WIRING PERMITS.



DETAIL A | GPS ANTENNA INSTALLATION ON STEEL POLE



DETAIL B | GPS ANTENNA INSTALLATION ON WOOD POLE

SH. 1 OF 1

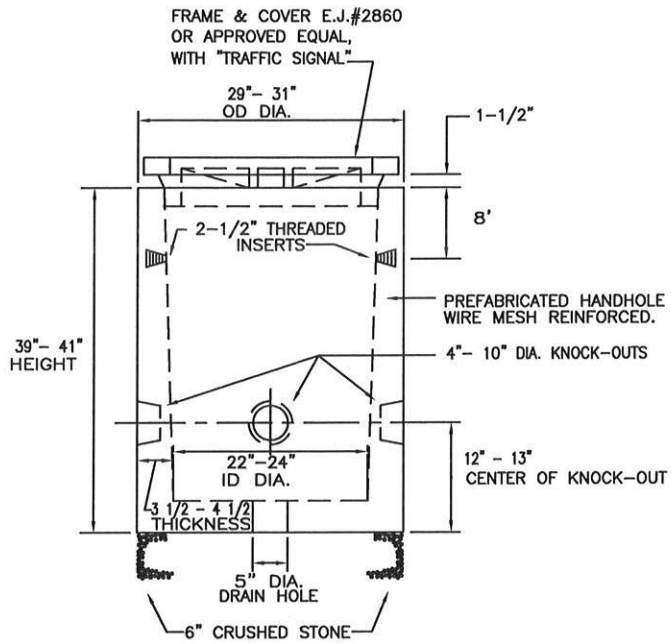
OC-10

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

GPS ANTENNA

DATE				SHEET	TOTAL
MARCH 2014				39	61



DETAIL A | PRECAST ROUND HANDHOLE WITH FLOOR

NOTES:

THE MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT R.C.O.C. AND M.D.O.T. STANDARD SPECIFICATIONS.

ALL CONCRETE MASONRY SHALL BE GRADE 30M.

THE INNER SURFACE OF THE HANDHOLE SHALL BE SMOOTH.

HEAVY DUTY COVERS SHALL BE CASTINGS WHICH MEET THE REQUIREMENTS OF THE CURRENT SPECIFICATIONS FOR GRAY IRON CASTINGS ASTM DESIGNATION A48 AND SHALL HAVE A MINIMUM STRENGTH AS PROVIDED FOR CLASS NO. 30 GRAY IRON CASTINGS.

THE SEATING FACE OF THE COVER AND THE SEAT FOR THE SAME ON THE FRAME IF REQUIRED, SHALL BE GROUND OR MACHINED SO THAT THE COVER SHALL HAVE AN EVEN BEARING ON ITS SEAT TO PREVENT ROCKING OR TILTING.

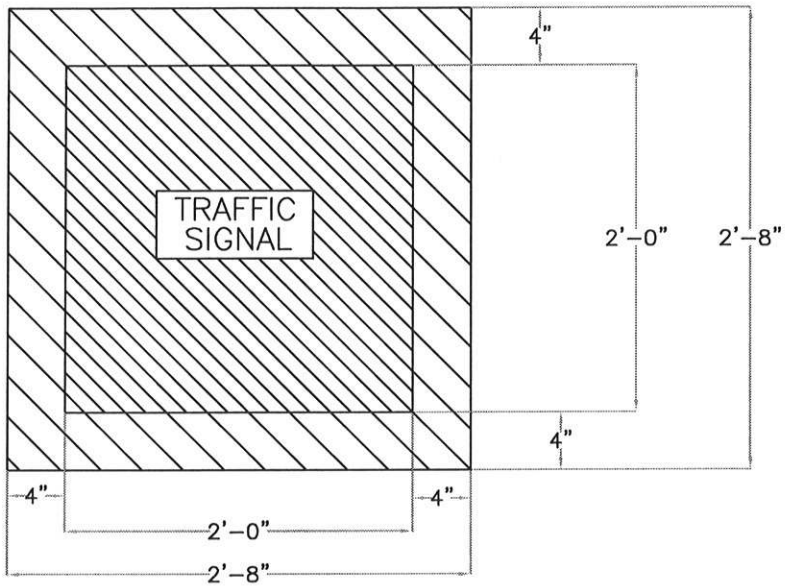
THE CASTINGS SHALL BE FREE OF POURING FAULTS, BLOW HOLES, CRACKS, AND OTHER IMPERFECTIONS. THEY SHALL BE SOUND, TRUE TO FORM AND THICKNESS, CLEAN AND NEATLY FINISHED AND SHALL BE COATED WITH TAR PITCH VARNISH.

ROAD COMMISSION OAKLAND COUNTY
TRAFFIC–SAFETY DEPARTMENT

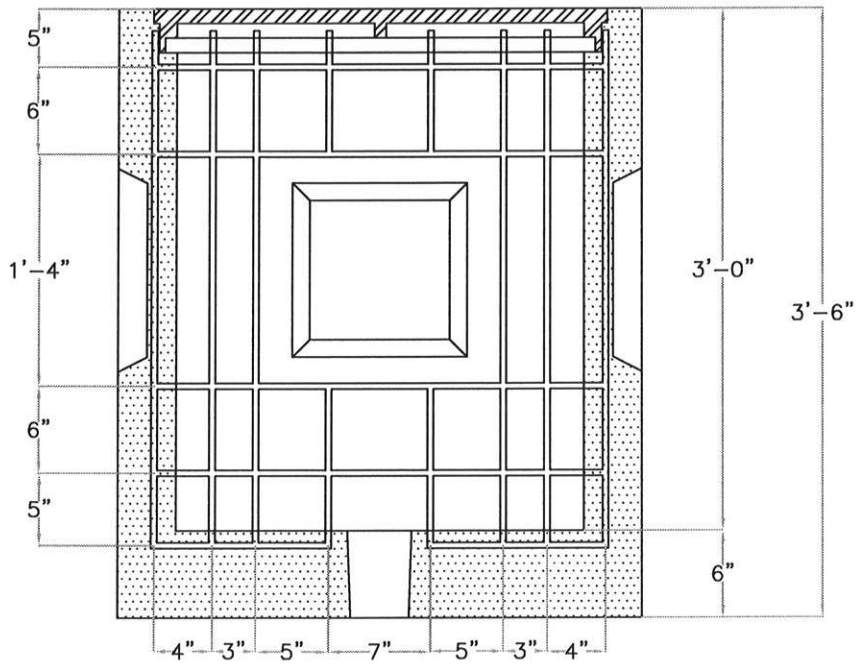
HANDHOLES

DATE				SHEET	TOTAL
MARCH 2014				40	61

CONCRETE: 4500 P.S.I. @ 28 DAYS
REINFORCEMENT: GRADE 60 REBAR
ALL BARS ARE #4



PLAN VIEW
WITH OUT FRAME & COVER



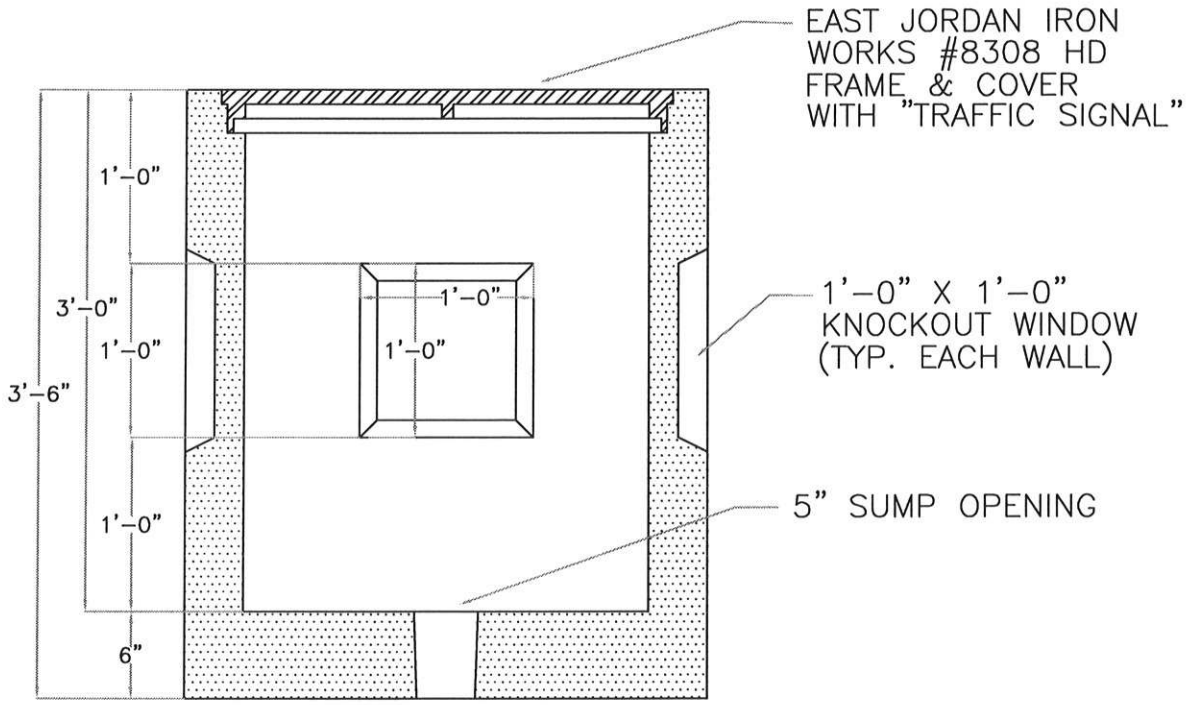
SECTION VIEW
TYP. REINFORCEMENT ALL WALLS

SH. 1 OF 2
OC-21A

ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

2' X 2' SQUARE X 3' HANDHOLE

DATE				SHEET	TOTAL
MARCH 2014				41	61

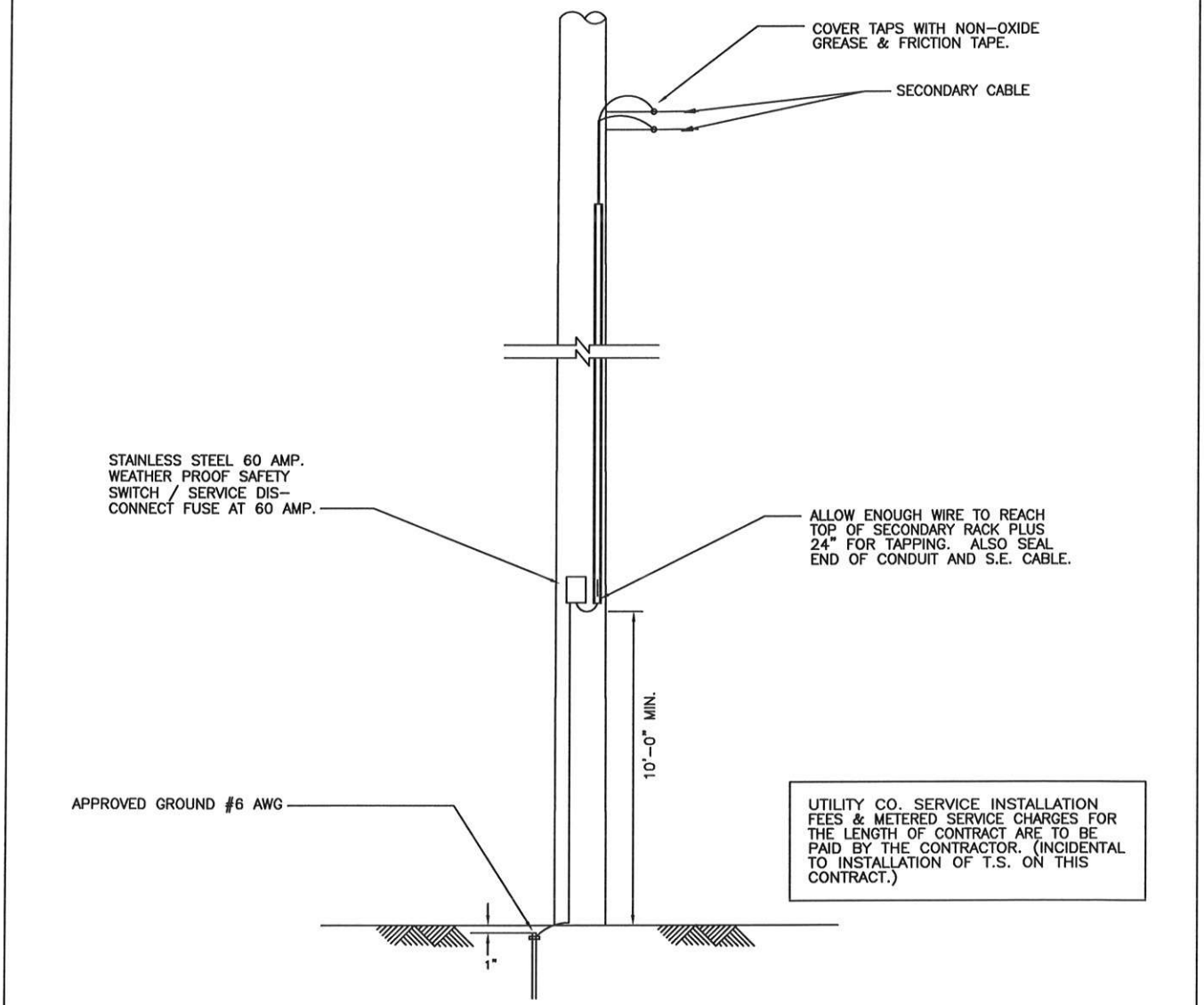


SECTION VIEW

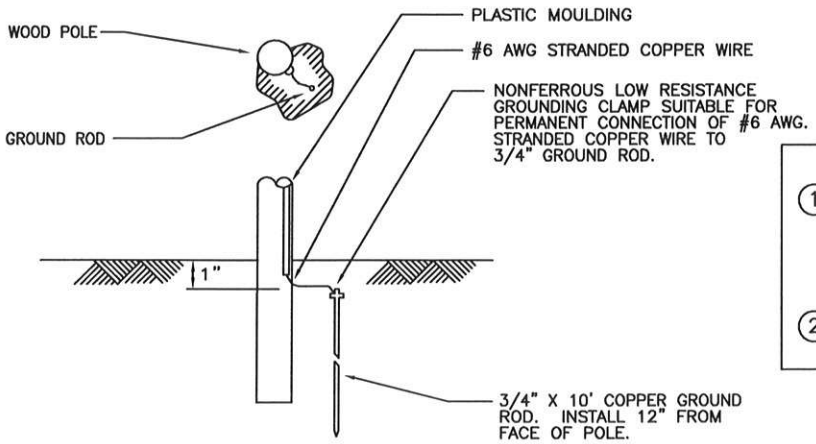
SH. 2 OF 2

OC-21A

ROAD COMMISSION OAKLAND COUNTY	2' X 2' SQUARE X 3' HANDHOLE					
TRAFFIC-SAFETY DEPARTMENT	DATE MARCH 2014				SHEET 42	TOTAL 61



DETAIL A | SERVICE POLE



NOTE:

1. FOR ALL CABLE POLES, INSTALL ONE 3/4" X 10'-0" GROUND ROD AS SHOWN ON "GROUND ROD INSTALLATION". CONNECT GROUND ROD WITH #6 AWG COPPER WIRE.
2. GROUND MUST READ 10 OHMS OR LESS.

DETAIL B | GROUND ROD INSTALLATION

SH. 1 OF 2

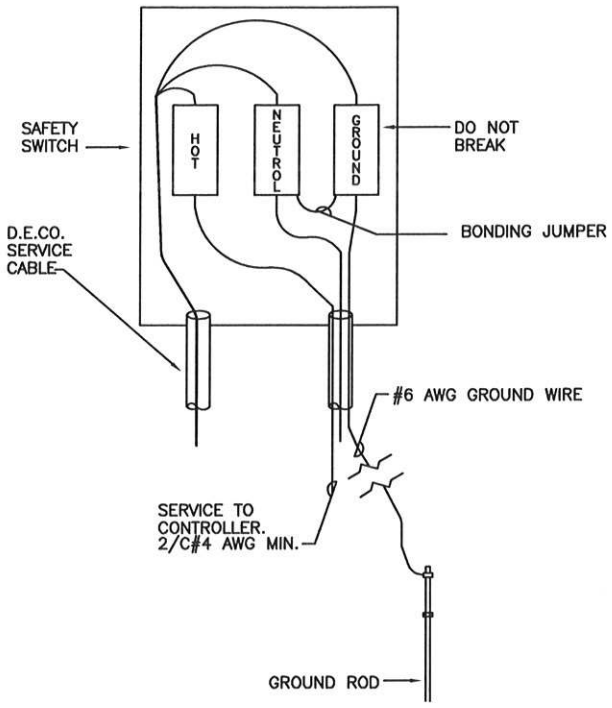
OC-24

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

TYPICAL CABLE POLES

DATE				SHEET	TOTAL
MARCH 2014				43	61



NOTE:
CHECK FOR 10 OHMS OR LESS.

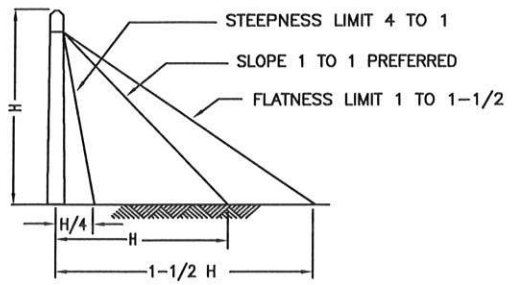
DETAIL C | 60A. SAFETY SWITCH

NOTE: SEPARATE GROUND RODS SHALL BE USED WHEN CONTROLLER & SAFETY SWITCH ARE NOT ON THE SAME POLE.

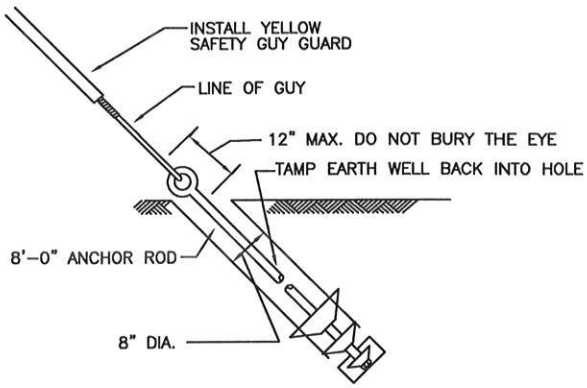
ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

TYPICAL CABLE POLES

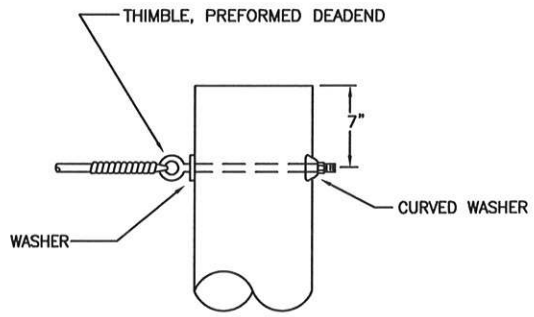
DATE				SHEET	TOTAL
MARCH 2014				44	61



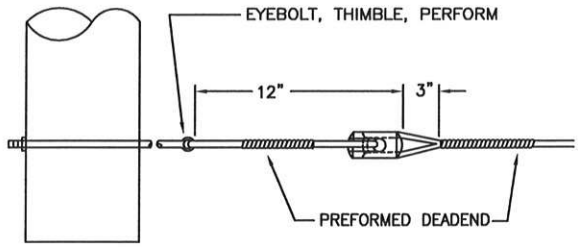
DETAIL A | SLOPE LIMITS FOR ANCHOR GUYS



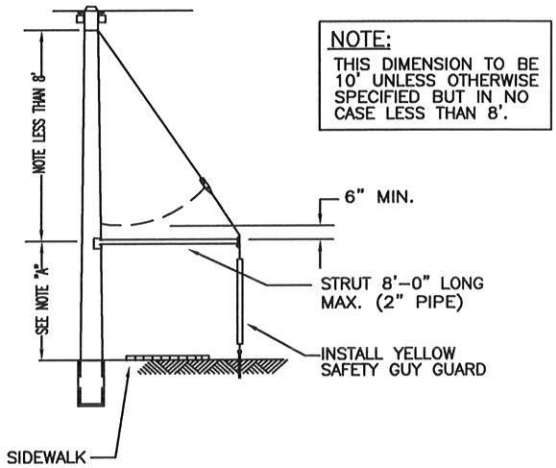
DETAIL B | SCREW IN ANCHOR



DETAIL C | POLE GUY

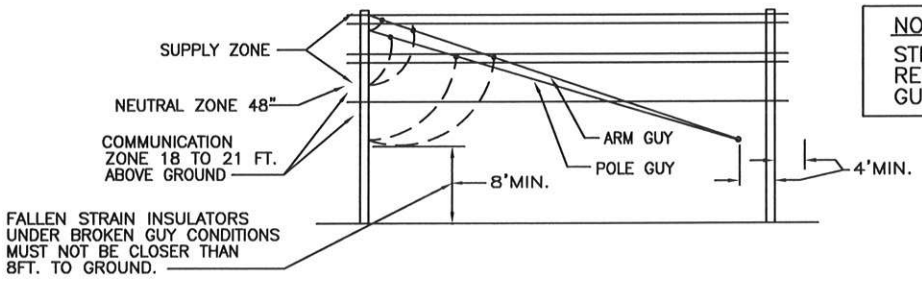


DETAIL D | ARM GUY DETAILS



NOTE:
THIS DIMENSION TO BE 10' UNLESS OTHERWISE SPECIFIED BUT IN NO CASE LESS THAN 8'.

DETAIL E | STRUT GUY



NOTE:
STRAIN INSULATOR REQUIRED ON ALL GUY INSTALLATIONS.

DETAIL F | STRAIN INSULATOR POSITION IN GUY WIRES

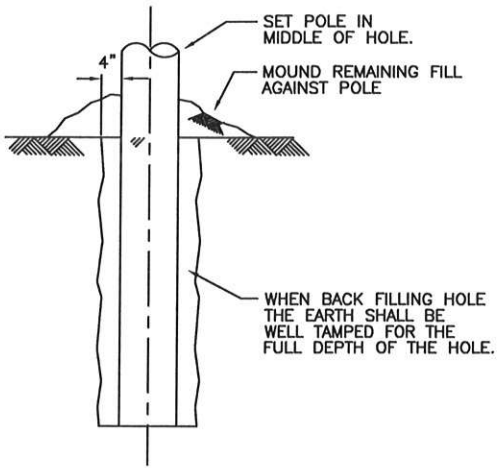
SH. 1 OF 2

OC-25

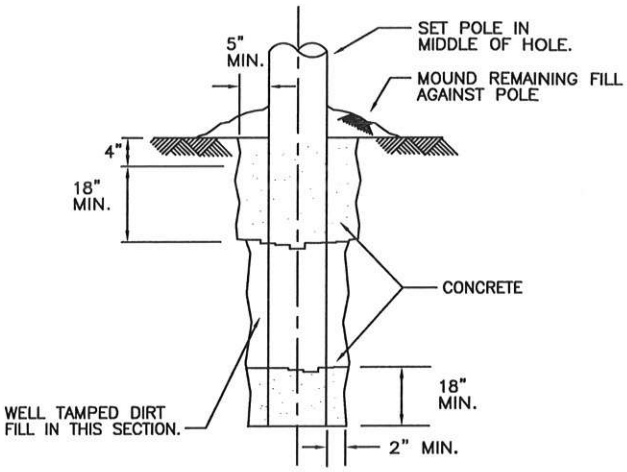
ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

WOOD POLE INSTALLATION AND GUYING

DATE				SHEET	TOTAL
MARCH 2014				45	61



DETAIL G | WOOD POLE INSTALLATION



DETAIL H | SELF SUPPORTING WOOD POLE IN CONCRETE

POLE HEIGHT	SETTING DEPTH
30'	6.0'
35'	6.0'
40'	6.0'
45'	6.5'
50'	7.0'
55'	7.5'
60'	8.0'

DETAIL I | WOOD POLE SETTING DEPTH

SH. 2 OF 2

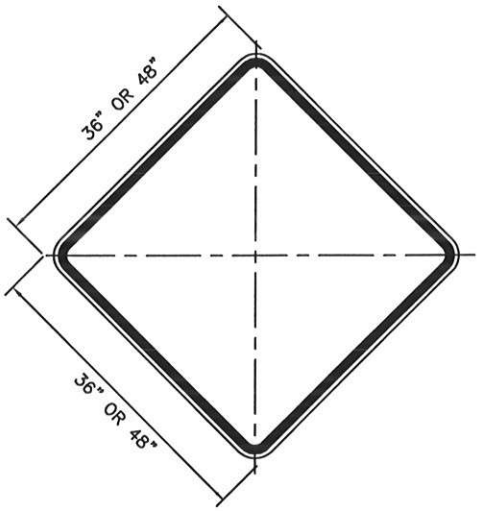
OC-25

ROAD COMMISSION OAKLAND COUNTY

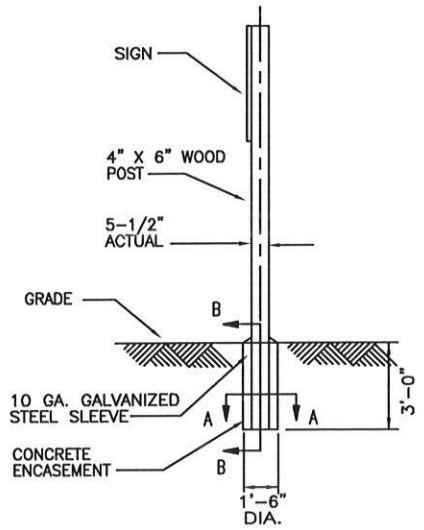
TRAFFIC-SAFETY DEPARTMENT

WOOD POLE INSTALLATION AND GUYING

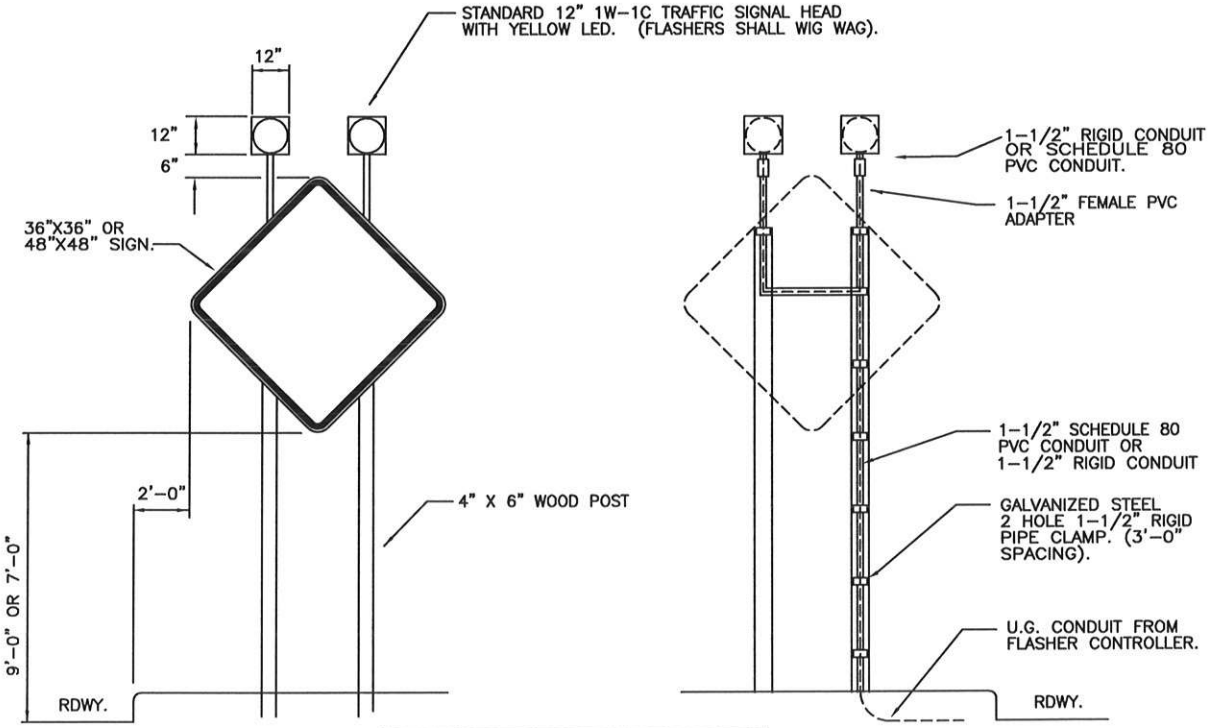
DATE				SHEET	TOTAL
MARCH 2014				46	61



DETAIL A | SIGN DETAIL



DETAIL B | ELEVATION



FRONT VIEW

NOTE:
FOR 1 OR 2 FLASHERS USE 12" FLASHER

BACK VIEW

DETAIL C | WARNING SIGN WITH FLASHER (UNDER GROUND CONNECTION)

SH. 1 OF 3

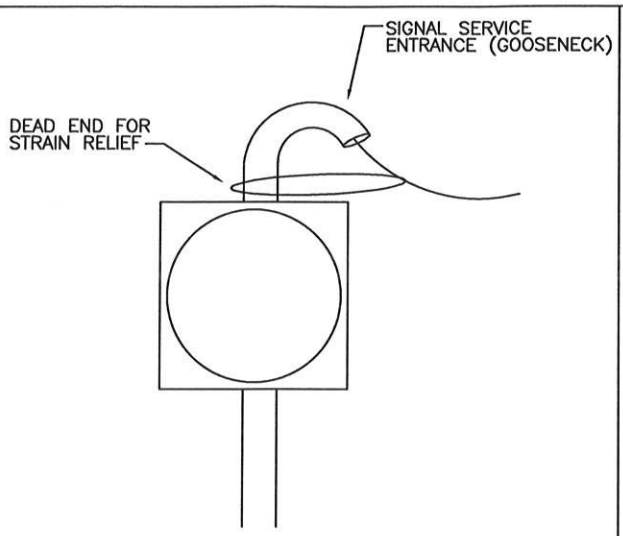
OC-27

ROAD COMMISSION OAKLAND COUNTY

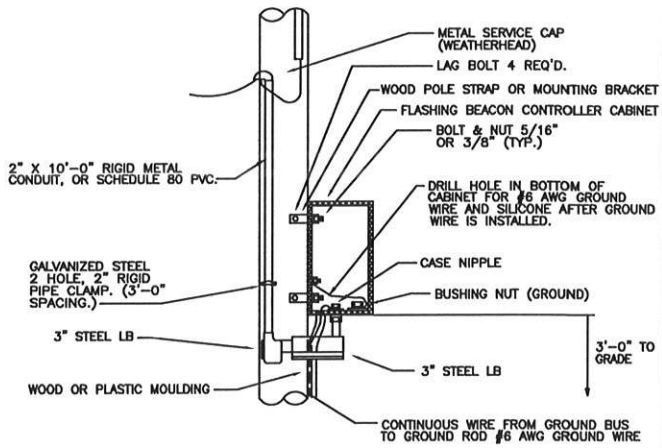
TRAFFIC-SAFETY DEPARTMENT

SIGNAL AHEAD SIGN

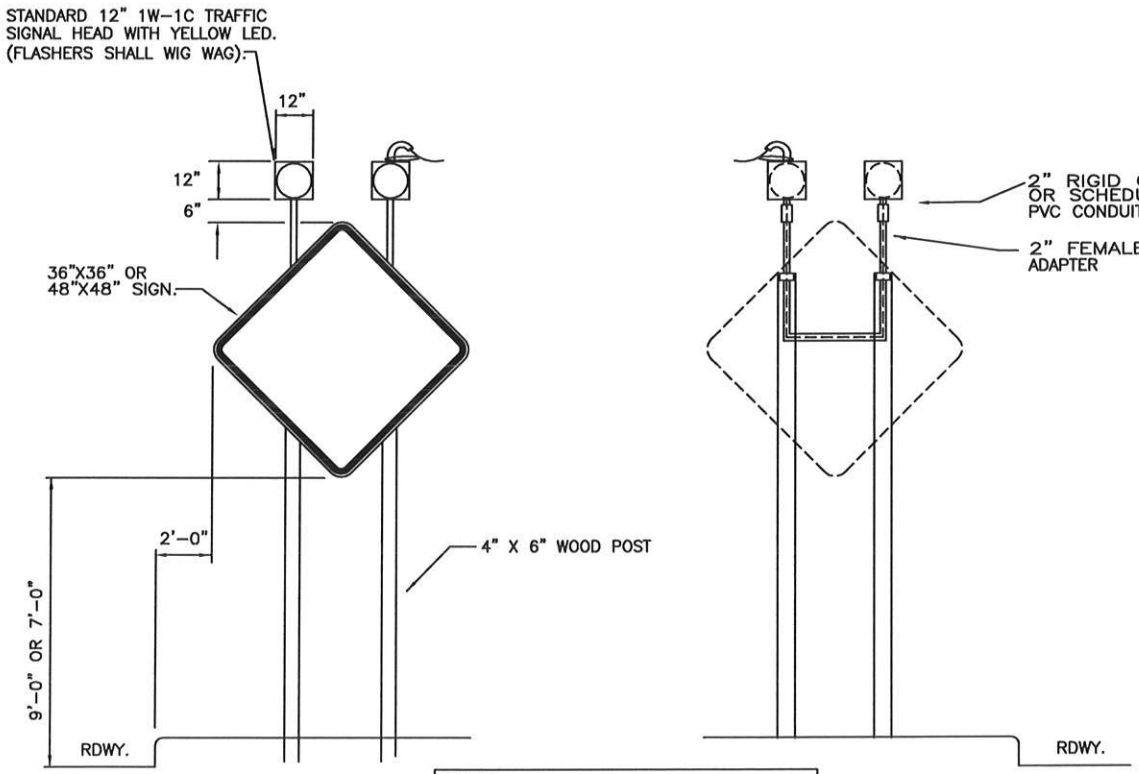
DATE				SHEET	TOTAL
MARCH 2014				47	61



DETAIL D | OVER HEAD SERVICE ENTRANCE



DETAIL E | WOOD POLE



FRONT VIEW

NOTE:
FOR 1 OR 2 FLASHERS USE 12" FLASHER

BACK VIEW

DETAIL F | WARNING SIGN WITH FLASHER (OVER HEAD CONNECTION)

SH. 2 OF 3

OC-27

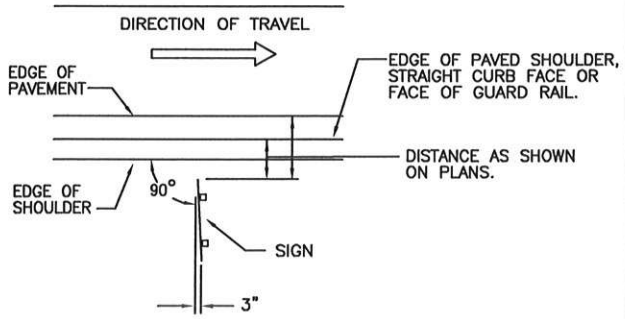
ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

SIGNAL AHEAD SIGN

DATE				SHEET	TOTAL
MARCH 2014				48	61

NOTE:

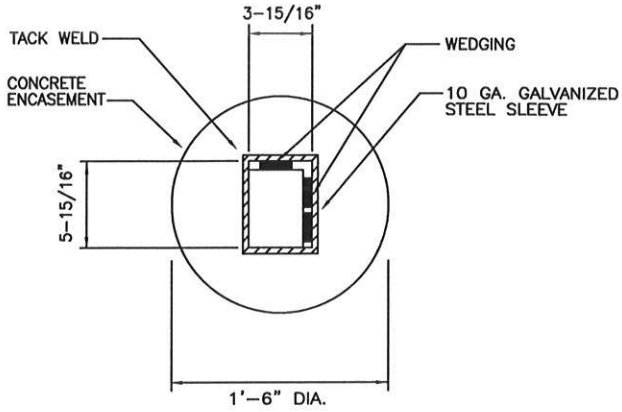
WHEN 48"X48" SIGN IS CALLED FOR ON PLANS USE TWO WOOD POSTS (SET 40" APART).



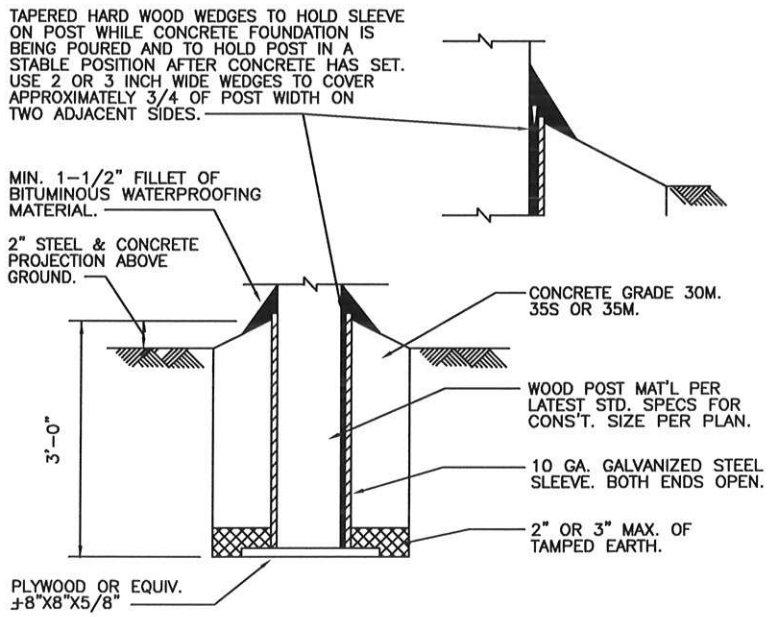
DETAIL G | LOCATION SKETCH

NOTE:

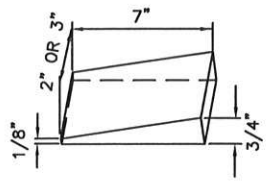
INSIDE DIMENSIONS OF SLEEVE MAY BE A MAXIMUM OF 1/8" GREATER THAN SHOWN.



DETAIL H | SECTION A-A



DETAIL I | SECTION B-B



DETAIL J | WEDGE

SH. 3 OF 3

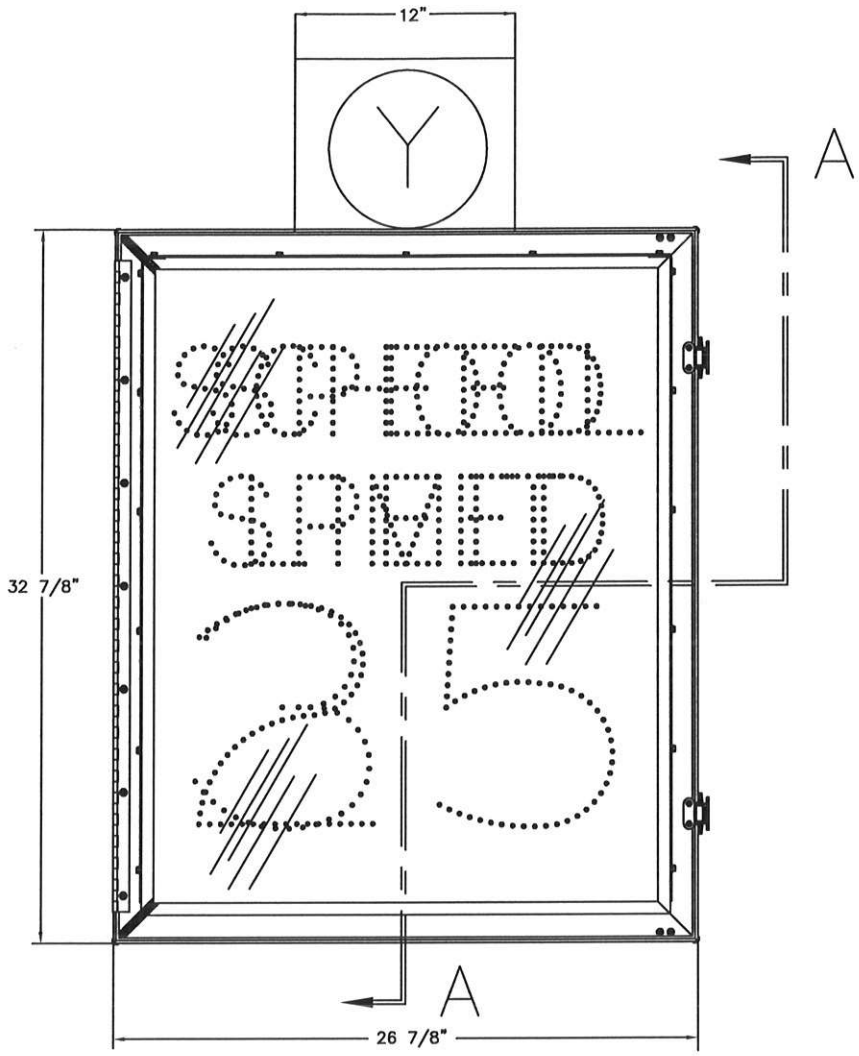
OC-27

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

SIGNAL AHEAD SIGN

DATE				SHEET	TOTAL
MARCH 2014				49	61



NOTES:

1) SIGN SHALL BE FULLY GASKETED AND WATERTIGHT.
2) MESSAGE SHALL BE VISIBLE ANYWHERE WITHIN A 60 DEGREE CONE CENTERED ABOUT THE OPTIC AXIS.
3) SIGN SHALL BE EQUIPED WITH FOUR DRAIN HOLES LOCATED IN THE LOWER CORNERS OF THE HOUSING.
4) HINGE AND ALL FASTENERS TO BE STAINLESS STEEL.
5) LETTERS TO BE 4" HIGHWAY ALPHABET SERIES "D" FONT AND 10" HIGHWAY ALPHABET SERIES "E" FONT.
7) MESSAGES FORMED BY A SINGLE ROW OF FIBER OPTIC BUNDLES.
6) SIGN SHALL BE CAPEABLE OF DISPLAYING THE FOLLOWING MESSAGES:
   M1= SCHOOL SPEED XX (LETTERS YELLOW, NUMBERS WHITE) (AS REQUIRED)
   M2= SPEED LIMIT XX (WHITE) (AS REQUIRED)
8) NO TWO CONSECUTIVE ENDTIPS SHALL BE ILLUMINATED BY THE SAME LAMP.
9) WHEN NOT ENERGIZED, SIGN SHALL BLANK OUT WITH NO PHANTOM IMAGES.

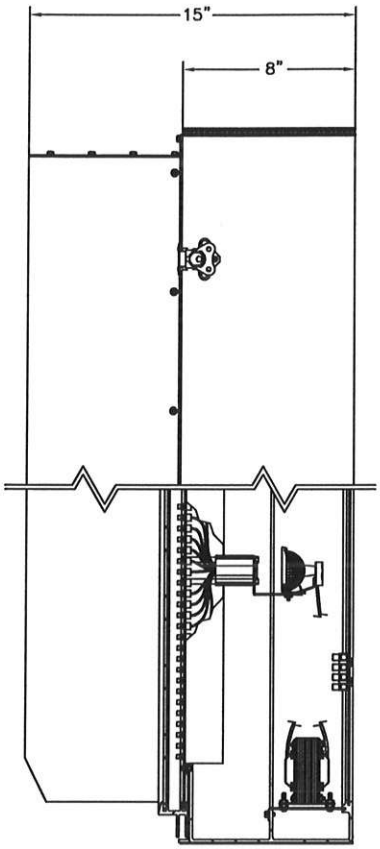
DETAIL A	FIBER OPTIC VARIABLE SPEED LIMIT SIGN

SH. 1 OF 2
OC-31A

ROAD COMMISSION OAKLAND COUNTY
TRAFFIC-SAFETY DEPARTMENT

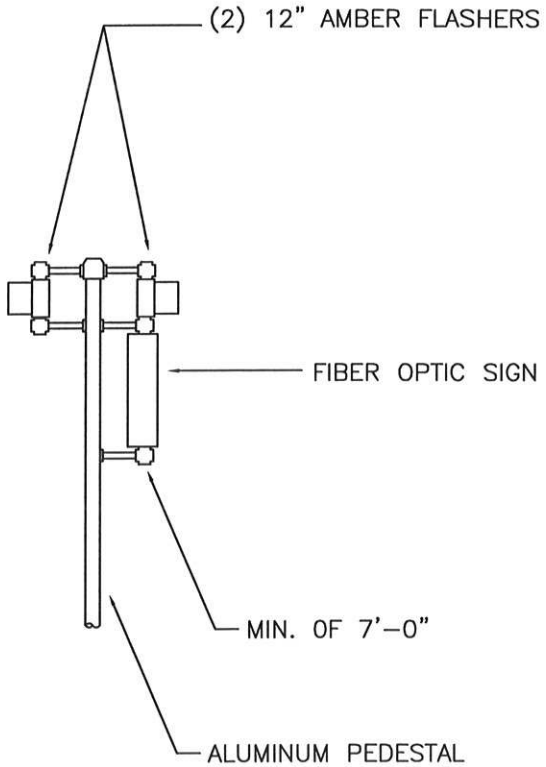
FIBER OPTIC VARIABLE SPEED LIMIT SIGN

DATE				SHEET	TOTAL
MARCH 2014				50	61



SECTION A—A

DETAIL B | FIBER OPTIC VARIABLE SPEED LIMIT SIGN



DETAIL C | SIDE VIEW

COLOR	USE
GREEN	SAFETY GROUND
BLUE	HIGH SPEED
RED	LOW SPEED
ORANGE	FLASHER
WHITE	COMMON
WHITE/BLACK	COMMON
BLACK	SPARE

DETAIL D | WIRING COLOR CODE

SH. 2 OF 2

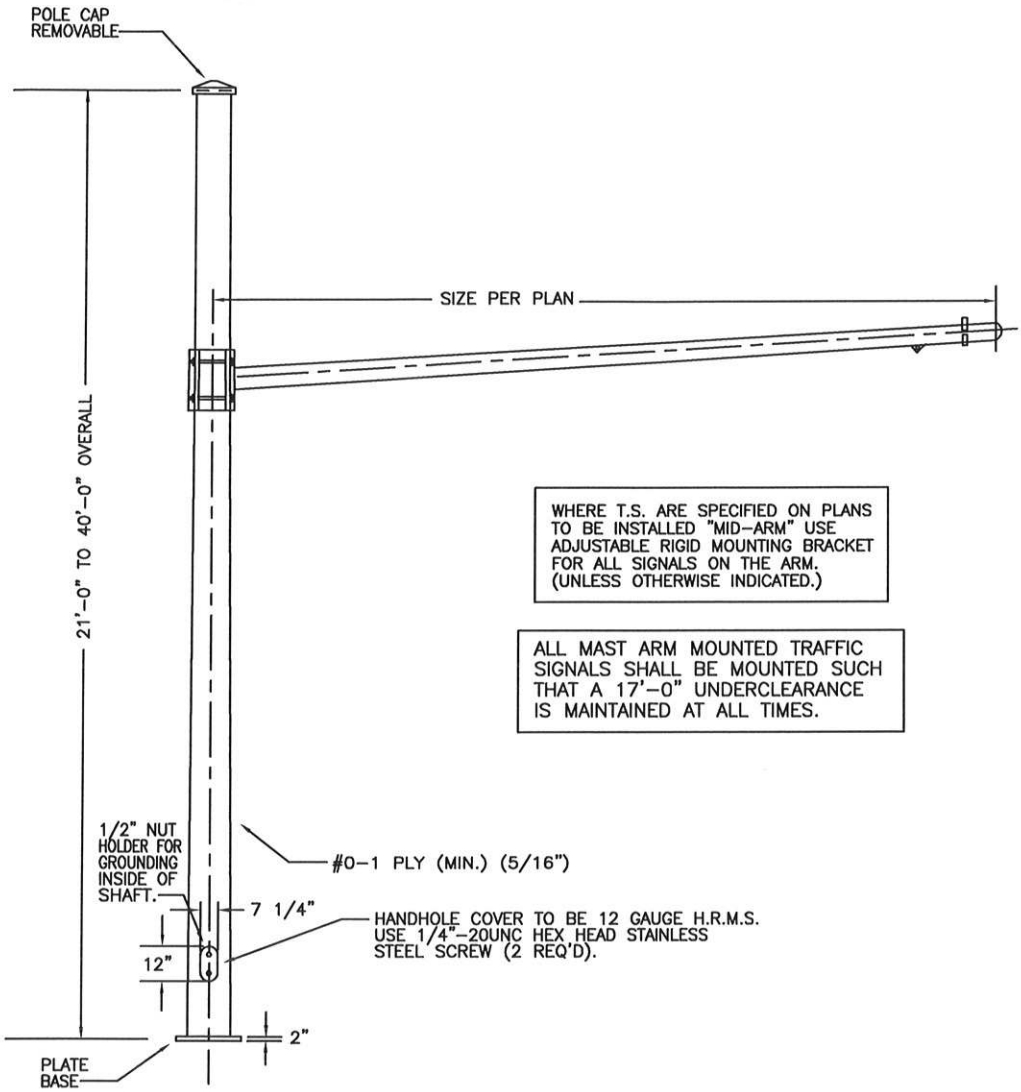
0C-31A

ROAD COMMISSION OAKLAND COUNTY

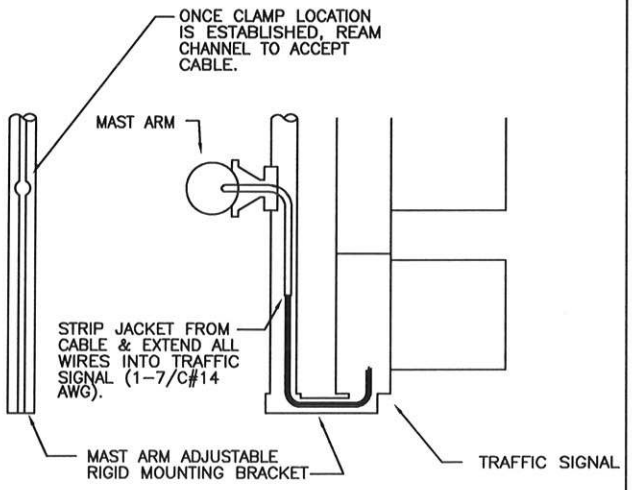
TRAFFIC-SAFETY DEPARTMENT

FIBER OPTIC VARIABLE SPEED LIMIT SIGN

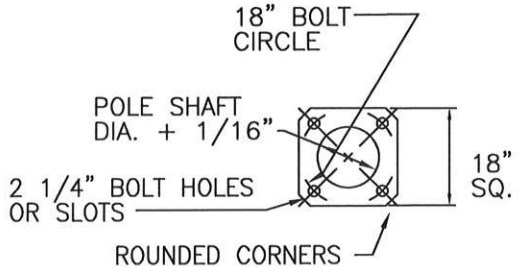
DATE				SHEET	TOTAL
MARCH 2014				51	61



DETAIL A | CANTILEVER TYPE MAST ARM ASSEMBLY (MAST ARM OR COMBINATIONS STANDARD)



DETAIL B | MOUNTING SIGNAL



DETAIL C | BASE PLATE

SH. 1 OF 1

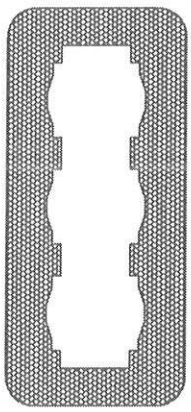
OC-33

ROAD COMMISSION OAKLAND COUNTY

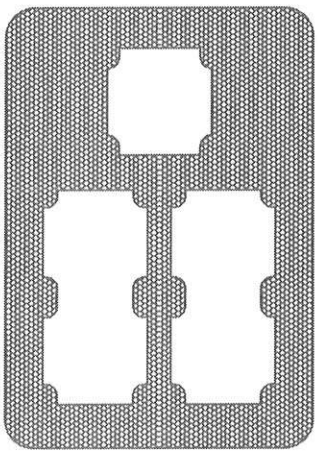
TRAFFIC-SAFETY DEPARTMENT

MAST ARM/COMBINATION STANDARD AND MAST ARM

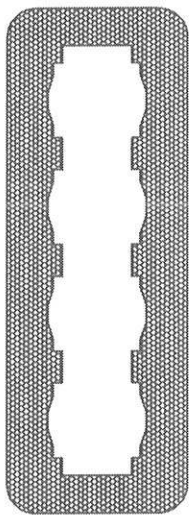
DATE				SHEET	TOTAL
MARCH 2014				52	61



3–SECTION 12"



5–SECTION 12"



4–SECTION 12"

NOTES:

1. BACKPLATES ARE REQUIRED FOR ALL MAST ARM MOUNTED TRAFFIC SIGNALS. BACKPLATES FOR SPAN WIRE SIGNALS ARE REQUIRED WHEN CALLED FOR ON THE PLANS. BACKPLATES WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN PAYMENT FOR THE INSTALLED TRAFFIC SIGNAL.
2. BACKPLATES SHALL BE A ONE PIECE CONSTRUCTION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. DO NOT CUT BACKPLATE FOR INSTALLATION.

DETAIL A	TRAFFIC SIGNAL BACKPLATES

SH. 1 OF 1

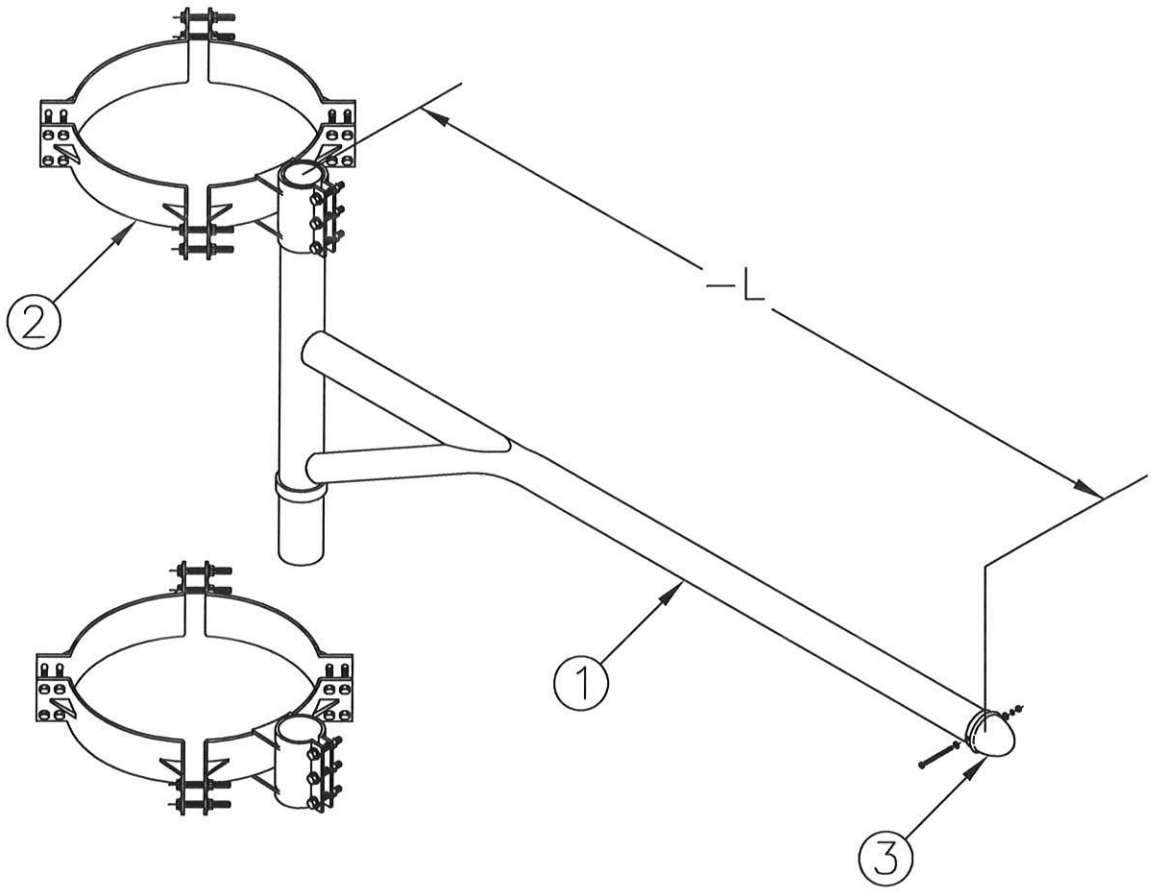
OC–33A

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC–SAFETY DEPARTMENT

TRAFFIC SIGNAL BACKPLATES

DATE				SHEET	TOTAL
MARCH 2014				53	61



DETAIL A | 6' – 10' MAST ARM ASSEMBLY (MAST ARM OR COMBINATIONS STANDARD)

ITEM	PART NO.	DESCRIPTION	QTY.
1	SP–5312–L	CANTILEVER ARM (–L) = (ARM LENGTH)	1
2	SP–1042	ADJ. CLAMP ASSY, 4–SEGMENT, 14"–18" DIA. POLE	2
3	PB–5411	ACORN POST CAP, 3" O.D. POLE	1

NOTE:

REQUIRED FOR ALL ILLUMINATED STREET SIGN INSTALLATIONS WHEN STRAIGHT ARMS ARE NOT USED.

SH. 1 OF 1

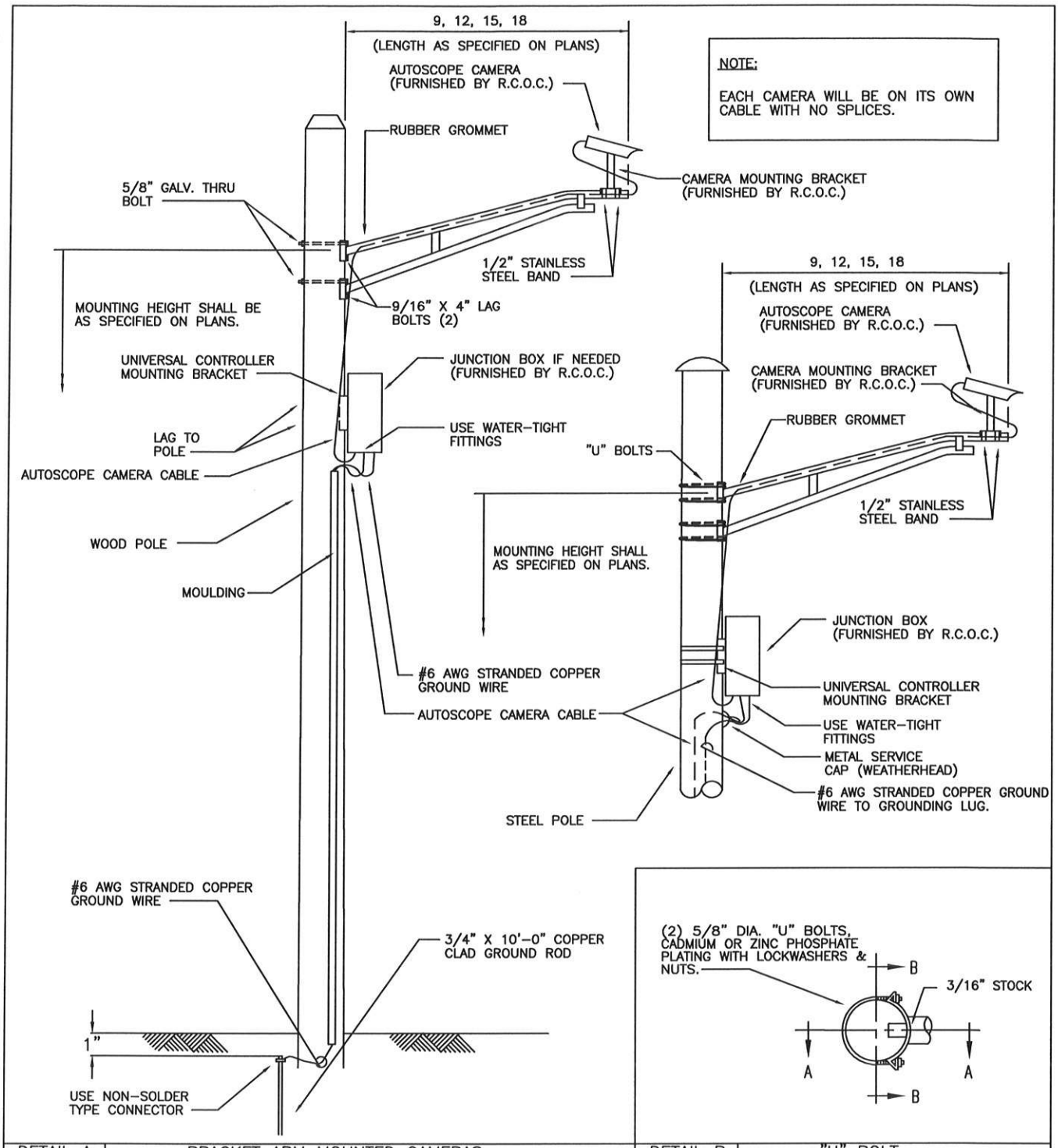
OC–35A

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC–SAFETY DEPARTMENT

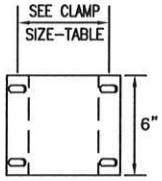
6' – 10' MAST ARM ASSEMBLY FOR ILLUMINATED STREET SIGN

DATE				SHEET	TOTAL
MARCH 2014				54	61



DETAIL A | BRACKET ARM MOUNTED CAMERAS

DETAIL B | "U" BOLT



CLAMP SIZE TABLE

TYPE	POLE DIAMETER
A	3.6"- 4.5"
B	6.1"- 6.9"
C	7.5"- 8.5"

DETAIL C | CLAMPS

SH. 1 OF 2

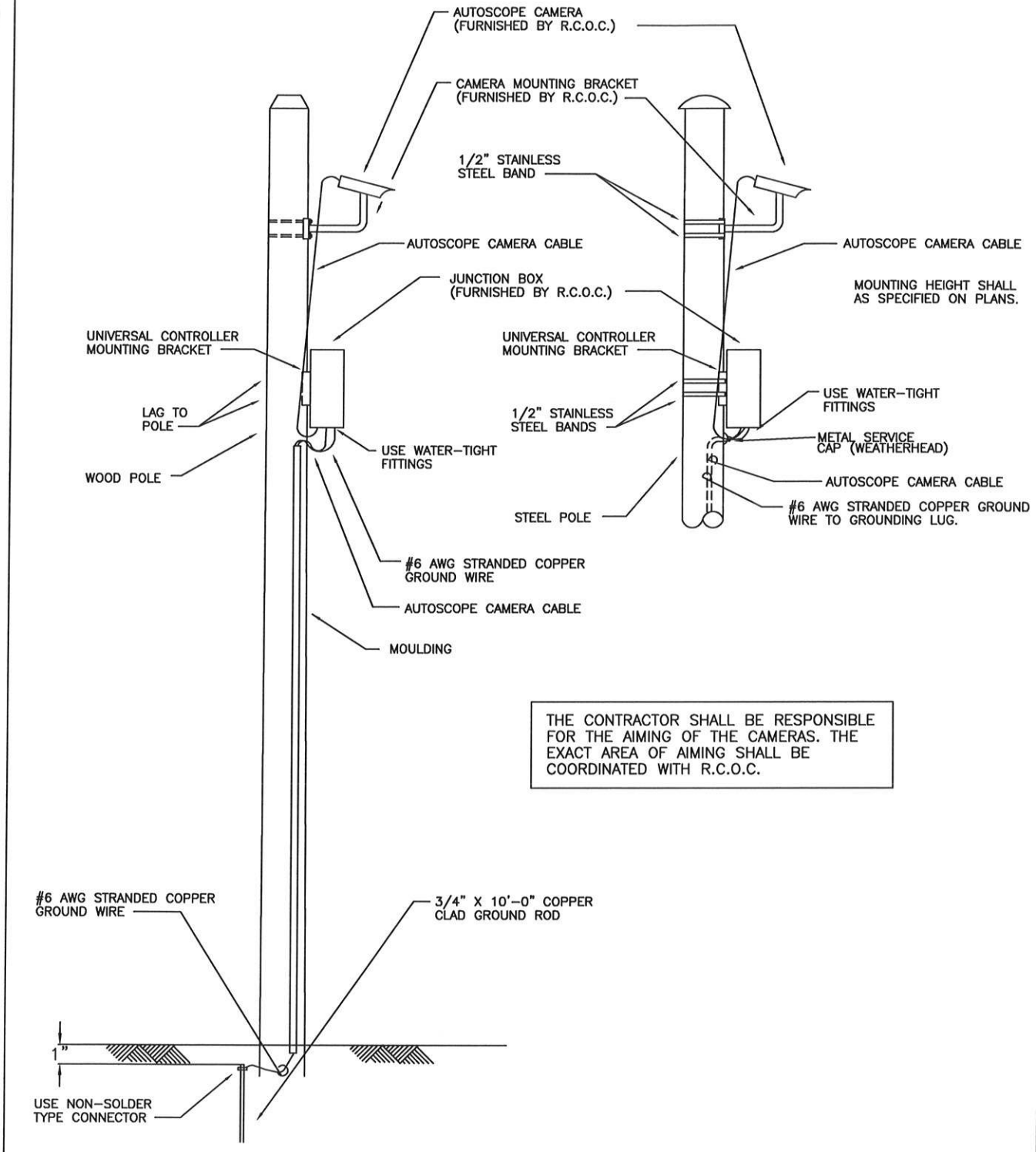
OC-40

ROAD COMMISSION OAKLAND COUNTY

TRAFFIC-SAFETY DEPARTMENT

AUTOSCOPE CAMERA INSTALLATION

DATE				SHEET	TOTAL
MARCH 2014				55	61



DETAIL D | POLE MOUNTED CAMERAS

SH. 2 OF 2

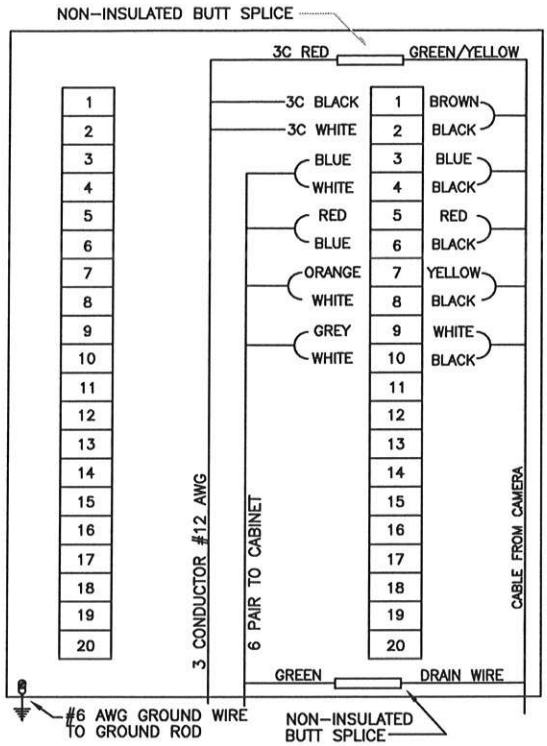
OC-40

ROAD COMMISSION OAKLAND COUNTY

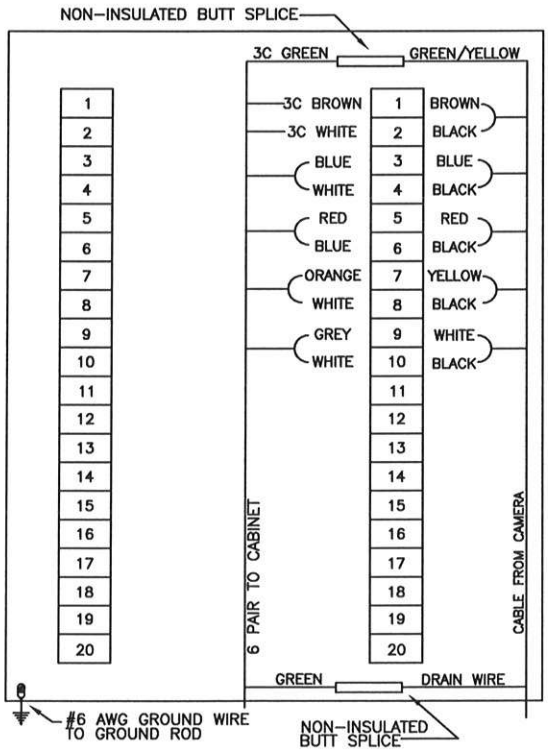
TRAFFIC-SAFETY DEPARTMENT

AUTOSCOPE CAMERA INSTALLATION

DATE				SHEET	TOTAL
MARCH 2014				56	61



DETAIL : A | AUTOSCOPE SOLO WIRING DIAGRAM FOR LOCATIONS OF MORE THAN 650'



DETAIL : B | AUTOSCOPE SOLO WIRING DIAGRAM FOR LOCATIONS OF 650' OR LESS

SH. 1 OF 1

OC-40A

ROAD COMMISSION OAKLAND COUNTY

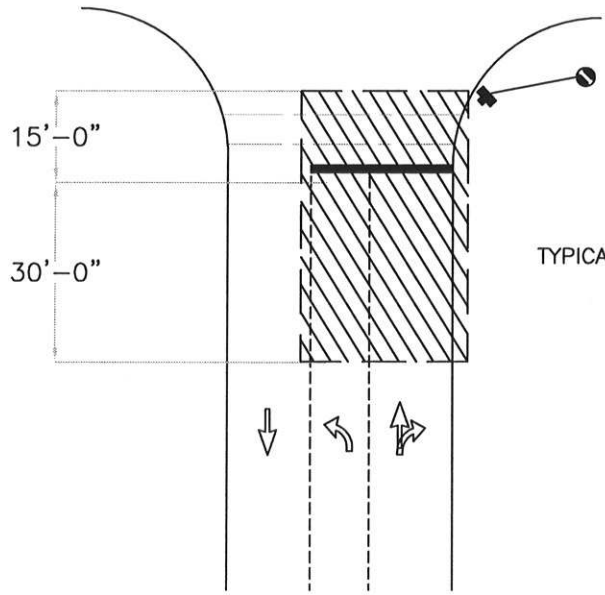
TRAFFIC-SAFETY DEPARTMENT

AUTOSCOPE SOLO WIRING DIAGRAM

DATE				SHEET	TOTAL
MARCH 2014				57	61

WIRE COLOR	SIGNAL	TERMINAL
BROWN	24V. PWR	1
WHITE	24V. RTN	2
GREEN	EARTH GRD	3
BLUE	SUP RX+	4
WHITE	SUP RX–	5
RED	SUP TX+	6
BLUE	SUP TX–	7
ORANGE	DET+	8
WHITE	DET–	9
GREY	VIDEO+	10
WHITE	VIDEO–	11

DETAIL : C | AUTOSCOPE SOLO COMMUNICATIONS INTERFACE PANEL DIAGRAM



TYPICAL AUTOSCOPE SOLO FIELD OF VIEW

DETAIL : D | TYPICAL AUTOSCOPE SOLO FIELD OF VIEW DIAGRAM

SH. 1 OF 1

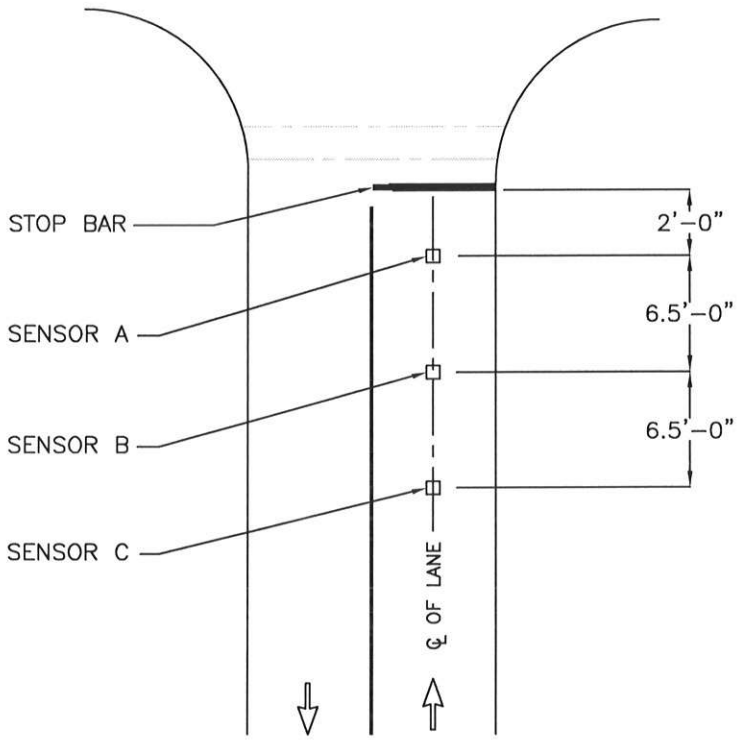
OC–40B

ROAD COMMISSION OAKLAND COUNTY

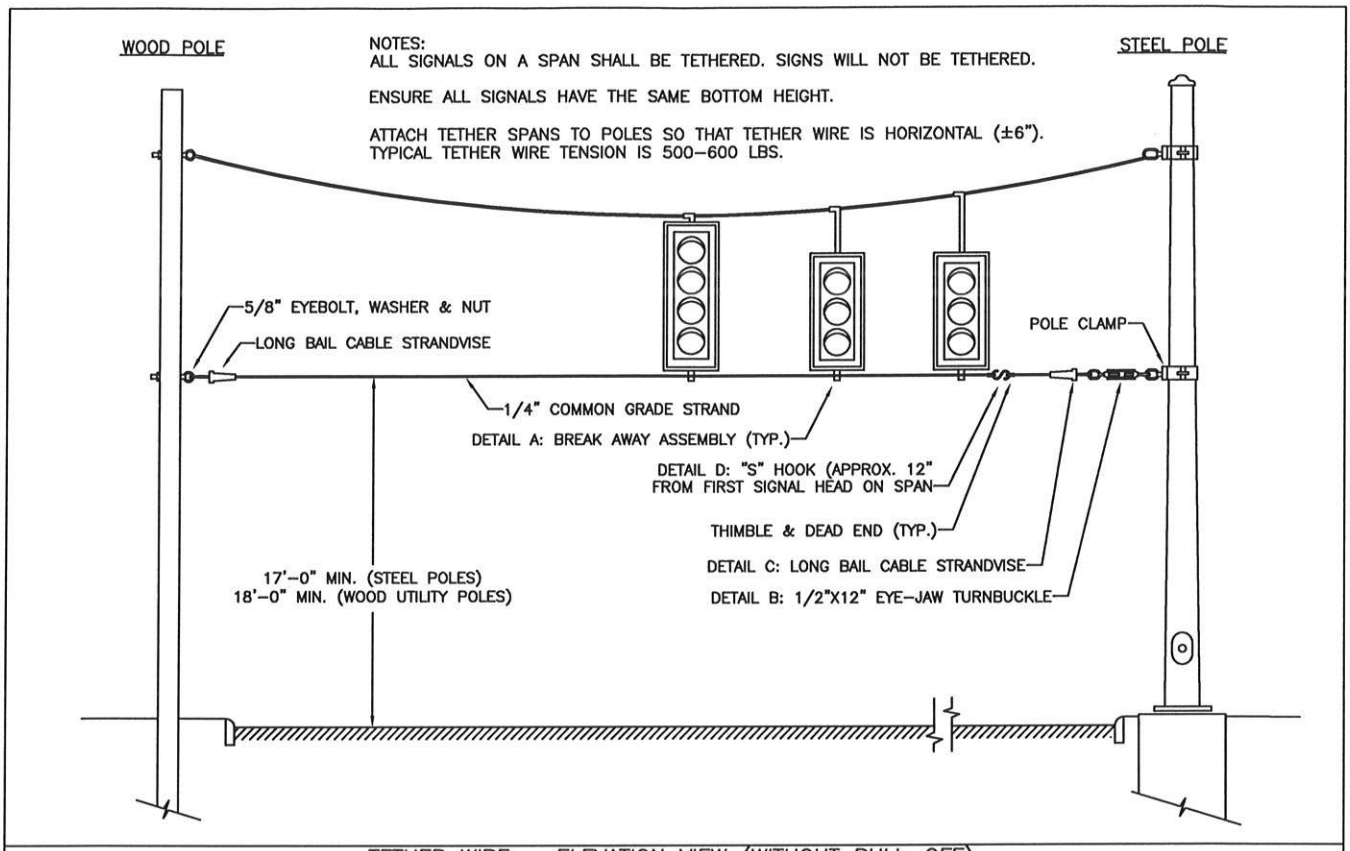
TRAFFIC–SAFETY DEPARTMENT

AUTOSCOPE SOLO COM. INTERFACE & FIELD OF VIEW DIAGRAM

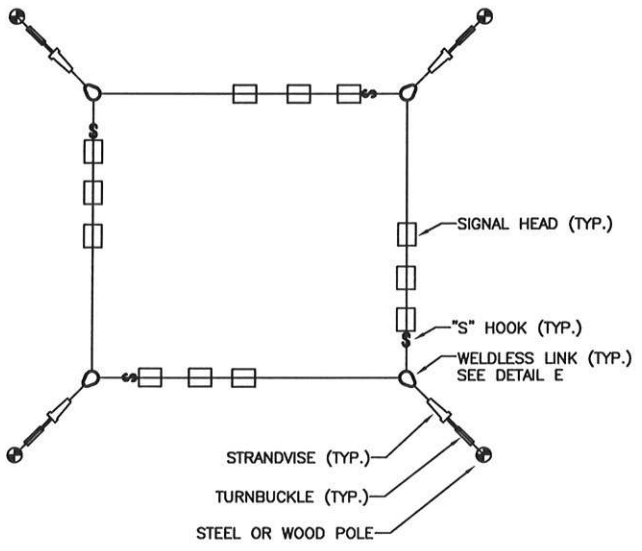
DATE				SHEET	TOTAL
MARCH 2014				58	61



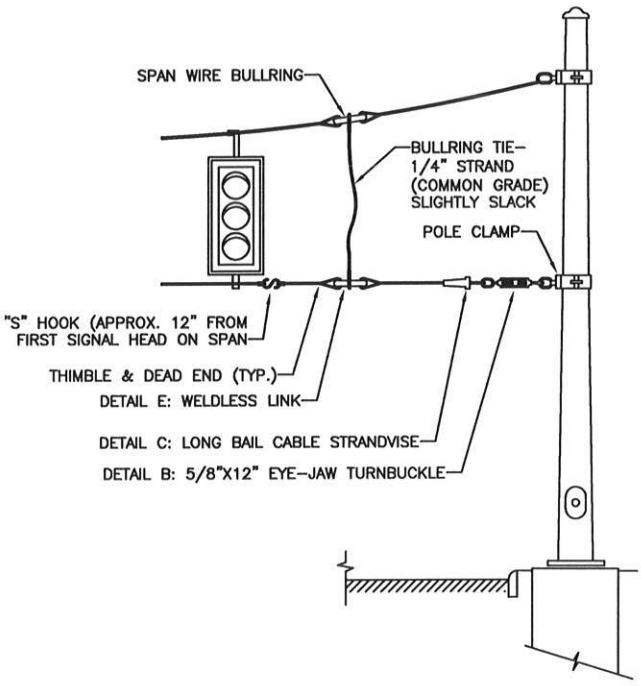
DETAIL : 1	TYPICAL PLAN				SH. 1 OF 1	
					OC–41	
ROAD COMMISSION OAKLAND COUNTY	RECOMMENDED SENSOR SPACING					
TRAFFIC–SAFETY DEPARTMENT	DATE MARCH 2014				SHEET 59	TOTAL 61



TETHER WIRE – ELEVATION VIEW (WITHOUT PULL–OFF)



TETHER WIRE – PLAN VIEW WITH PULL–OFFS



TETHER WIRE – ELEVATION VIEW WITH PULL–OFFS

SH. 1 OF 2

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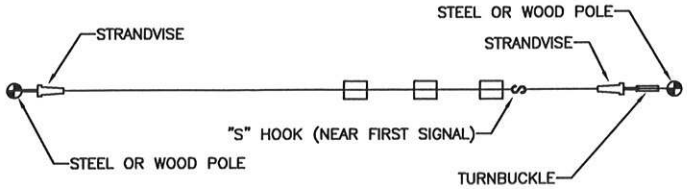
ROAD COMMISSION OAKLAND COUNTY

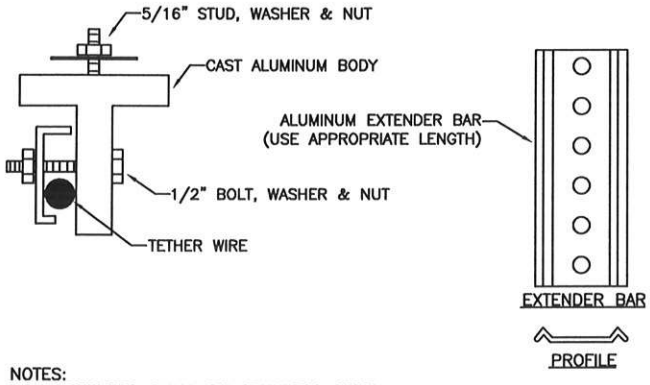
TRAFFIC–SAFETY DEPARTMENT

BOTTOM TETHER WIRE

DATE				SHEET	TOTAL
MARCH 2014				60	61



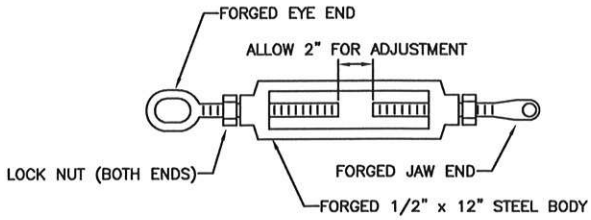
TETHER WIRE – PLAN VIEW WITHOUT PULL–OFF



NOTES:
ALL FASTENERS SHALL BE STAINLESS STEEL.

USE EXTENDER BAR ONLY IF NECESSARY TO CLEAR BACKPLATE.

DETAIL A | BREAK AWAY ASSEMBLY

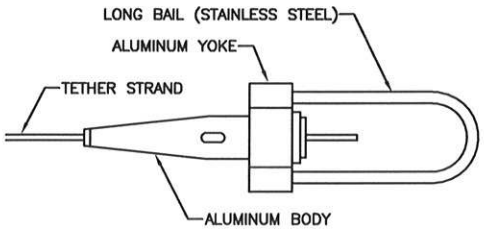


NOTES:
ALL COMPONENTS SHALL BE HOT DIP GALVANIZED. AND MEET ASTM F–1145 TYPE 1, GRADE 1.

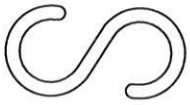
LOCK NUTS SHALL BE PROVIDED ON BOTH ENDS, DO NOT OVER TIGHTEN. "MOUSING" WITH 1/8" SOFT TEMPER STAINLESS WIRE IS ALSO ACCEPTABLE.

A TURNBUCKLE WITH (2) JAW ENDS IS ALSO ACCEPTABLE.

DETAIL B | TURNBUCKLE ASSEMBLY



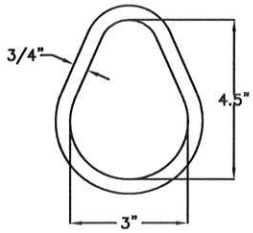
DETAIL C | STRANDVISE ASSEMBLY



NOTES:
3/8" HOT DIP GALVANIZED LOW CARBON STEEL.

SHALL RELEASE AT 50–75% OF THE BREAKING STRENGTH OF THE TETHER STRAND.

DETAIL D | "S" HOOK



NOTES:
3/4" PEAR SHAPED LINK.

FORGED STEEL WITH HOT DIP GALVANIZED FINISH.

SHALL HAVE WORKING LOAD LIMIT OF APPROX. 6000 LBS.

DETAIL E | WELDLESS LINK

SH. 2 OF 2

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ROAD COMMISSION OAKLAND COUNTY

TRAFFIC–SAFETY DEPARTMENT

BOTTOM TETHER WIRE

DATE				SHEET	TOTAL
MARCH 2014				61	61