ADAMS COUNTY
COLORADO

STANDARD SIGNAL DETAILS

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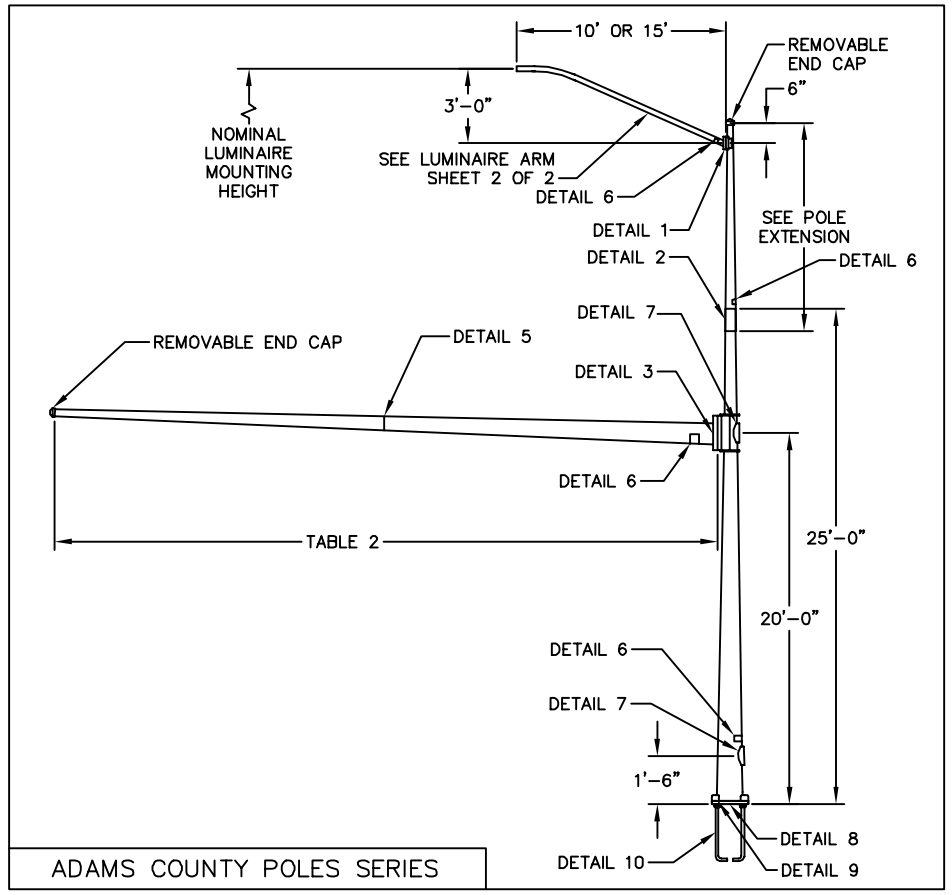
ADAMS COUNTY
COLORADO

ADAMS COUNTY
STANDARD SIGNAL DETAILS

TITLE SHEET

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

SHEET NO. 1 OF 18



ADAMS COUNTY POLES SERIES

POLE DATA

POLE TYPE	POLE TUBE				POLE BASE				ANCHOR BOLT					SIGNAL ARM
	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THICK (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	NO. OF A/B'S	SPAN (FT)
SFB	16.00	12.50	25.00	0.250	25.50	24.50	1.75	2.00	1.75	84.00	6.00	8.00	4	MAX 50'

SIGNAL ARM DATA

SIGNAL ARM TUBE				SIGNAL ARM ATTACHMENT SEE DET. 3				
SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GAUGE OR THICK (IN)	"A"	"B"	"C"	"D"	"F"
15.00	13.00	10.90	7	21.75"	18.00"	2.00"	0.50"	1.50" X 4.25"
20.00	13.00	10.20	7	**21.75"**	**18.00"**	**2.00"**	**0.50"**	**1.50" X 4.25"**
25.00	13.00	9.50	7	**21.75"**	**18.00"**	**2.00"**	**0.50"**	**1.50" X 4.25"**
30.00	13.00	8.80	7	**21.75"**	**18.00"**	**2.00"**	**0.50"**	**1.50" X 4.25"**
35.00	13.00	8.10	5	**21.75"**	**18.00"**	**2.00"**	**0.50"**	**1.50" X 4.25"**
40.00	13.00	7.40	3	**21.75"**	**18.00"**	**2.00"**	**0.50"**	**1.50" X 4.25"**
45.00	13.50	7.06	SEE DETAIL 5	**21.75"**	**18.00"**	**2.00"**	**0.50"**	**1.50" X 4.25"**
50.00	14.50	7.86	SEE DETAIL 5	21.75"	18.00"	2.00"	0.50"	1.50" X 4.25"

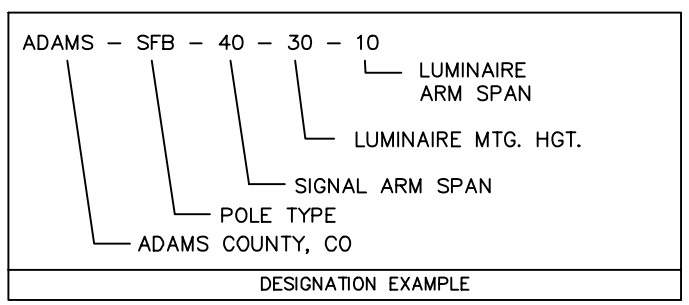
POLE EXTENSION DATA

EXTENSION TUBE					
POLE TYPE	NOM. LUM. MTG. HGT. (FT)	BASE O.D. (IN)	TOP O.D. (IN)	LENGTH	GAUGE OR THICK (IN)
SFB	30.00	13.26	12.53	5'-1"	0.188
	40.00	13.26	11.13	15'-1"	0.188

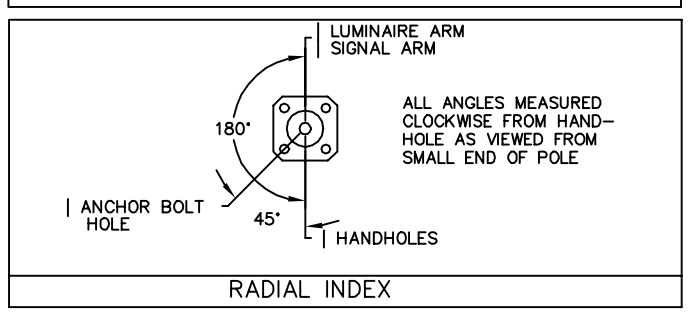
MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)	COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
SHAFT-11,7,5,3 GA.	A595 GR.A	55	GALVANIZING	A123 & A153	–
SHAFT-ALL OTHERS	A572 GR.65	65	ANCHOR BOLTS-AASHTO M314	GR.55	55
PLATE FOR 11,7,5,3 GA	A36	36			
PLATE FOR ALL OTHERS	A572	50			
LUMINAIRE CONN. BOLTS	SAE GR.5	–			
MAST ARM CONN. BOLTS	* A325	–			

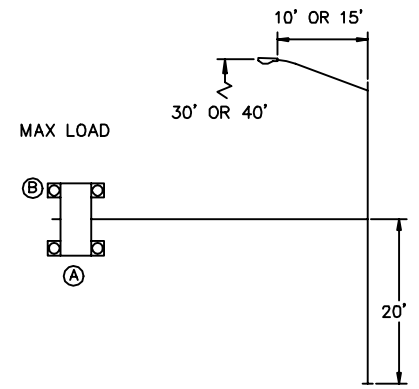
* LUBRICATE IN FIELD IF NECESSARY IN LIEU OF REQUIREMENT IN A325



DESIGNATION EXAMPLE



RADIAL INDEX



DEVICE	DESCRIPTION	PROJ.AREA (FT 2)	WEIGHT (LBS)
Ⓐ	4'X 6' SIGN	24	150
Ⓑ	(4) 12" FLASHER HEADS	4	100

SCHOOL FLASHING BEACON STRUCTURE - DETAIL DB00884

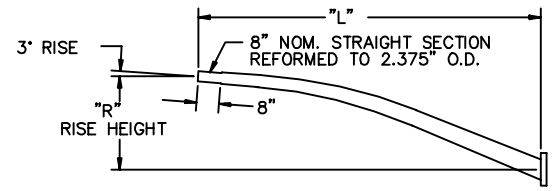
ADAMS COUNTY COLORADO

ADAMS COUNTY STANDARD SIGNAL DETAILS

SCHOOL FLASHER MAST ARM AND POLE

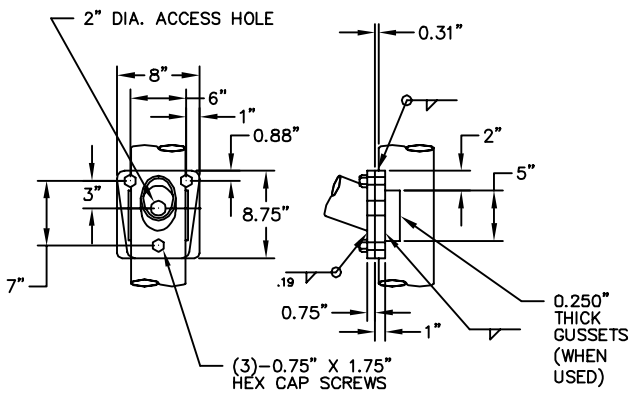
DATE: AUGUST 25, 2009

SCALE: NOT TO SCALE

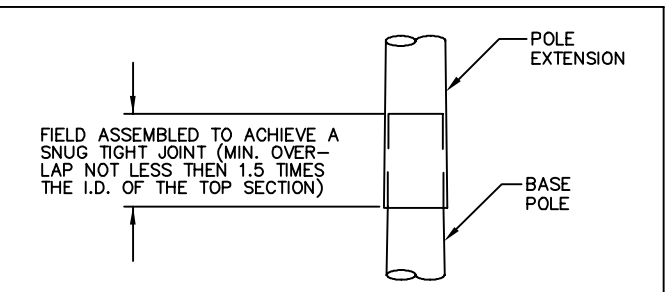


ARM SPAN "L" (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GA.	RISE HEIGHT "R"
10	3.89	2.38	11	3'-0"
15	4.58	2.38	11	3'-0"

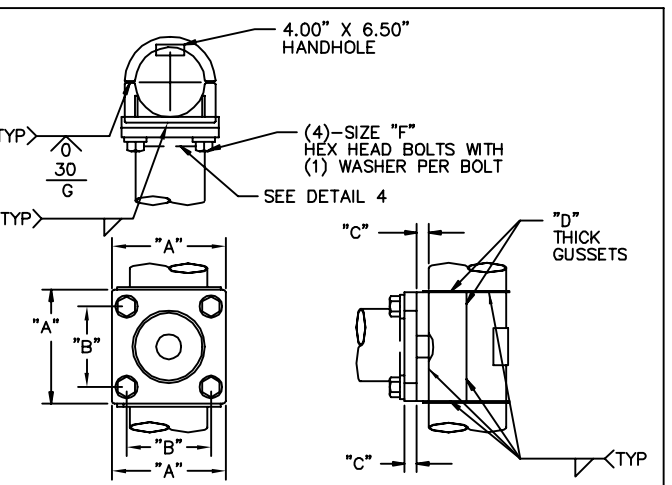
LUMINAIRE ARM



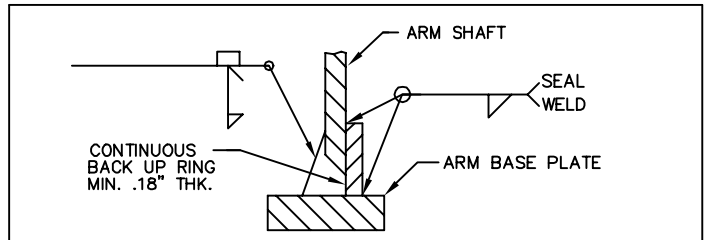
DETAIL 1 | LUMINAIRE ARM ATTACHMENT



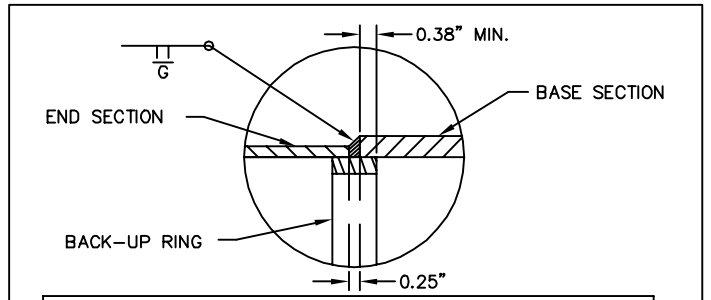
DETAIL 2 | LUMINAIRE EXTENSION SLIP JOINT



DETAIL 3 | SIGNAL ARM ATTACHMENT



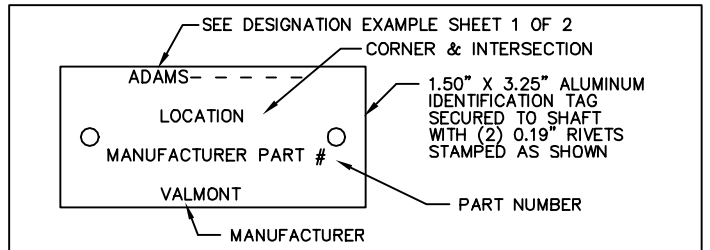
DETAIL 4 | SIGNAL ARM SIMPLEX PLATE WELD



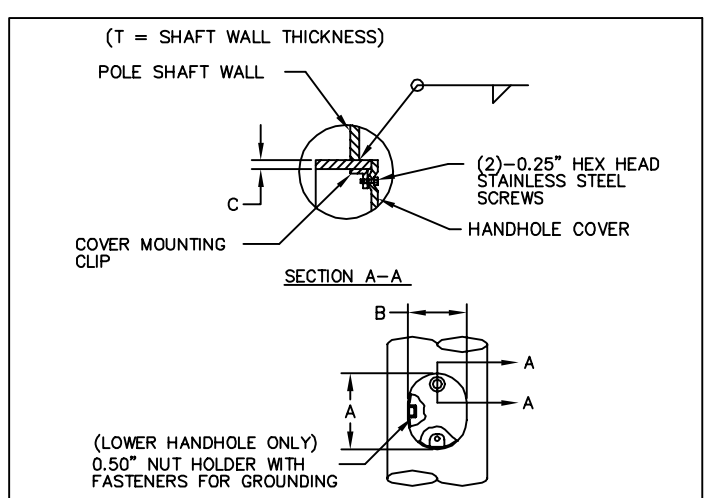
ARM SECTION DATA

ARM	BASE SECTION LENGTH	BASE SECTION THICK	END SECTION LENGTH	END SECTION GAUGE
45.00'	8.81'	0.3125"	36.22'	7
50.00'	15.95'	0.3125"	34.08'	7

DETAIL 5 | WELDED SIGNAL ARM SPLICE

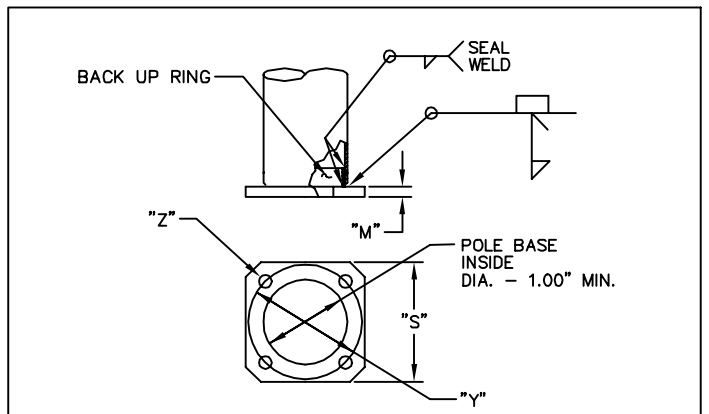


DETAIL 6 | I.D. TAG

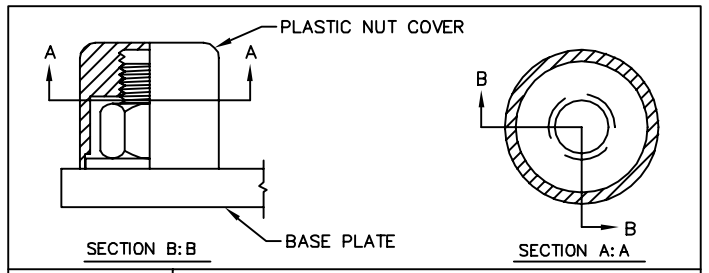


A	B	C
7.31"	5.63"	0.432"

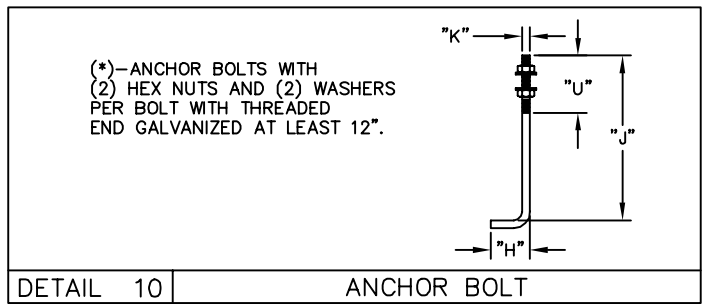
DETAIL 7 | HANDHOLE



DETAIL 8 | POLE BASE



DETAIL 9 | NUT COVER



DETAIL 10 | ANCHOR BOLT

VIBRATION NOTE:

ALTHOUGH RARE, VIBRATIONS SEVERE ENOUGH TO CAUSE DAMAGE CAN OCCASIONALLY OCCUR IN STRUCTURES OF ALL TYPES. BECAUSE THEY ARE INFLUENCED BY MANY INTERACTING VARIABLES, VIBRATIONS ARE GENERALLY UNPREDICTABLE. THE USER'S MAINTENANCE PROGRAM SHOULD INCLUDE OBSERVATION FOR EXCESSIVE VIBRATION AND EXAMINATION FOR ANY STRUCTURAL DAMAGE OR BOLT LOOSENING. THE VALMONT WARRANTY SPECIFICALLY EXCLUDES FATIGUE FAILURE OR SIMILAR PHENOMENA RESULTING FROM INDUCED VIBRATION, HARMONIC OSCILLATION OR RESONANCE ASSOCIATED WITH MOVEMENT OF AIR CURRENTS AROUND THE PRODUCT.

DESIGN NOTE:

THESE TRAFFIC SIGNAL SUPPORT STRUCTURES ARE DESIGNED IN ACCORDANCE WITH LOADING AND ALLOWABLE STRESS REQUIREMENTS OF 2001 AASHTO "STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", FOURTH EDITION. WIND LOADS ARE BASED ON A BASIC WIND SPEED OF 90 MPH WITH THE RECURRENCE INTERVAL OF 50 YEARS, AND A FATIGUE CATEGORY OF II. FATIGUE LOADS ARE BASE ON THE REQUIREMENTS OF SECTION 11.7 AND THE FOLLOWING DESIGN LOADS:

VORTEX SHEDDING: NOT APPLICABLE FOR STRUCTURES WITH TAPER OF AT LEAST 0.14 IN/FT, PER AASHTO.

NATURAL WIND GUSTS: THE YEARLY MEAN WIND SPEED FOR NATURAL WIND GUSTS WILL BE ASSUMED TO BE 11.2 MPH.

GALLOPING: STRUCTURES ARE NOT DESIGNED TO RESIST PERIODIC GALLOPING FORCES.

TRUCK-INDUCED GUST: STRUCTURES ARE DESIGNED TO INCLUDE TRUCK-INDUCED~GUSTS. (THE SPECIFIED AVERAGE TRUCK SPEED IS 65 MPH)

SCHOOL FLASHING BEACON STRUCTURE – DETAIL DB00884

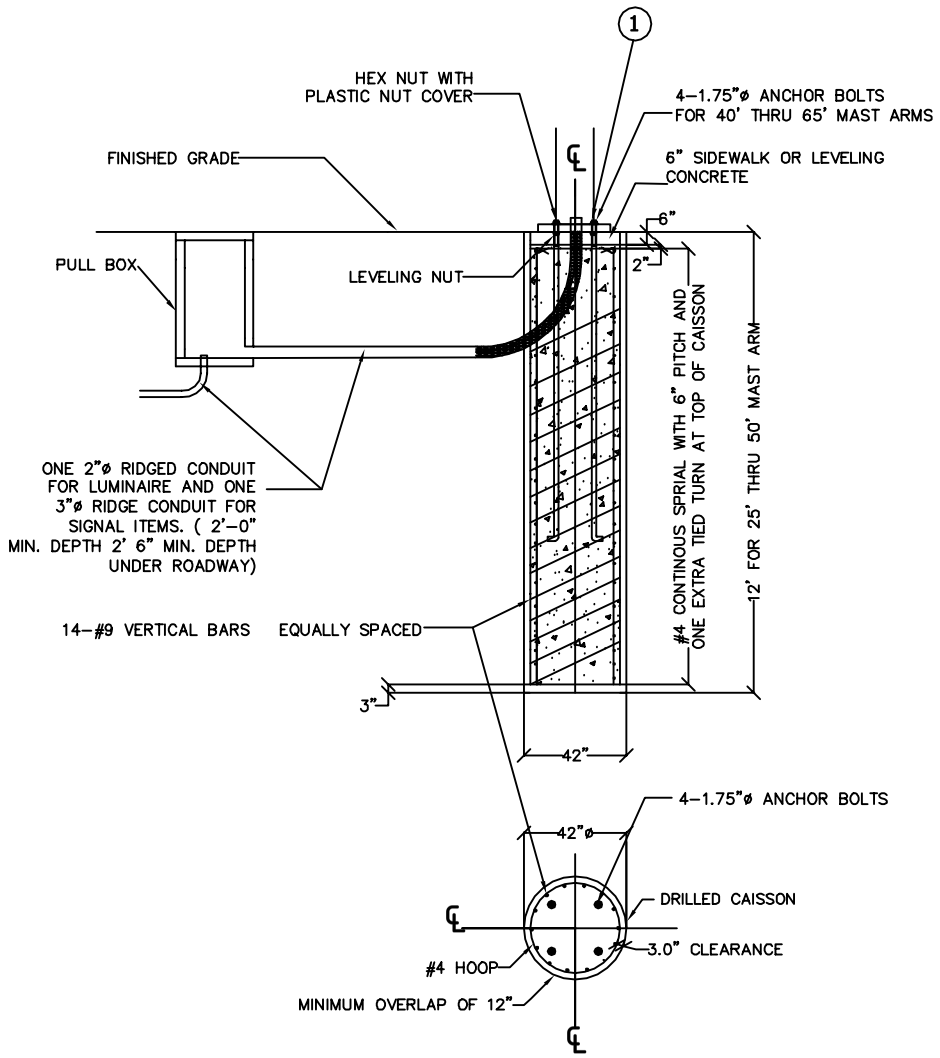
ADAMS COUNTY COLORADO

ADAMS COUNTY
STANDARD SIGNAL DETAILS

SCHOOL FLASHER MAST ARM AND POLE DETAILS

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

TYPICAL TRAFFIC SIGNAL POLE FOOTING FOR SCHOOL FLASHER ASSEMBLIES FOR MAST ARM POLES UP 50 FOOT



GENERAL NOTES

1. CONCRETE CLASS AS PER THE COLORADO DEPT. OF TRANSPORTATION. REINFORCED STEEL: PER AASHTO M31 SPECIFICATION, GRADE 60 FOR #9, #5 & #4 BARS.
2. SHAFT FOR CONCRETE FOUNDATION TO BE DRILLED BY MECHANICAL AUGER. CASING IF USED IN PLACING CONCRETE SHALL BE REMOVED UPON COMPLETING POUR.
3. FOUNDATION DESIGN REQUIRES THAT THE SHAFT BE FOUNDED IN COMPACT SAND, CLAY, OR SANDY CLAY. THE ALLOWABLE SAFE LATERAL BEARING CAPACITY OF SOIL (AROUND SHAFT) TO BE 1,300 LBS./SQ. FT. MINIMUM AT DEPTH OF 4.0 FT. BELOW TOP OF FOUNDATION. THE AVERAGE FRICTIONAL RESISTANCE OF THE SOIL (AROUND THE SHAFT) TO BE 460 LBS./SQ. FT. MINIMUM ALLOWABLE, UNDER WIND LOADING (TORSION). IF THE SOIL INVESTIGATION (CONDUCTED PRIOR TO CONSTRUCTION) INDICATES THE ABOVE NOTED REQUIREMENTS CANNOT BE MET, OR IF "EXPANSIVE" SOIL IS AN EXISTING PROBLEM, THEN THE FOUNDATION DESIGN SHOWN WILL HAVE TO BE MODIFIED AND APPROVED BY THE ENGINEER.
4. SHOULD ROCK BE ENCOUNTERED, THE SHAFT SHOULD EXTEND 6 FT. MINIMUM INTO ROCK. THE ALLOWABLE SAFE LATERAL BEARING CAPACITY OF ROCK TO BE 4,300 LBS./SQ. FT. THE SOIL (INCLUDING ROCK) SURROUNDING THE SHAFT SHOULD BE INVESTIGATED TO ENSURE IT WILL RESIST THE TORSIONAL MOMENT OF 93,435 FT. LBS.
5. CONCRETE SHALL BE POURED IN LIFTS NOT EXCEEDING 3 FEET IN DEPTH. AT THE POURING OF EACH LIFT, CONCRETE SHALL BE MECHANICALLY VIBRATED TO REMOVE AIR POCKETS.
6. FOUNDATIONS SHOULD BE POURED 10 TO 20 DAYS IN ADVANCE OF POLE INSTALLATION. SEE PROJECT SPECIAL PROVISIONS FOR SPECIFIC DIRECTIONS.
7. WHEN AMBIENT TEMPERATURE IS BELOW 40 F. POURED FOUNDATIONS POURED FOUNDATIONS SHALL BE COVERED WITH BLANKETS AND/OR STRAW PER DIRECTIONS OF THE ENGINEER.
8. ANCHOR BOLTS SHALL CONFORM TO THE MANUFACTURER'S SPECIFICATIONS AND EACH INDIVIDUAL BOLT SHALL HAVE A MINIMUM OF TWO (2) FLAT WASHERS, ONE (1) LOCK WASHER, AND TWO (2) NUTS. SHIMS OR OTHER SIMILAR DEVICES WILL NOT BE ALLOWED FOR PLUMBING OR RAKING.
9. BOTH FORMS AND GROUND, WHICH WILL BE IN CONTACT WITH THE CONCRETE, SHALL BE THOROUGHLY MOISTENED BEFORE PLACING CONCRETE. FORMS SHALL NOT BE REMOVED UNTIL THE CONCRETE HAS THOROUGHLY SET.
10. FORMS SHALL BE TRUE TO LINE AND GRADE. TOPS OF FOUNDATIONS, EXCEPT AS NOTED ON PLANS, SHALL BE FINISHED TO CURB OR SIDEWALK GRADE, OR AS ORDERED BY THE ENGINEER. FORMS SHALL BE RIGID AND SECURELY BRACED IN PLACE, AND INSPECTED BY THE ENGINEER PRIOR TO THE POURING OF CONCRETE. CONDUIT ENDS AND ANCHOR BOLTS SHALL BE PLACED IN PROPER POSITION AND TO TEMPLATE UNTIL THE CONCRETE SETS.

FOOTING NOTES

① INSTALL ANCHOR BOLTS(FURNISHED WITH POLE) PER MANUFACTURES TEMPLETE (FOURNISHED WITH ORDER).

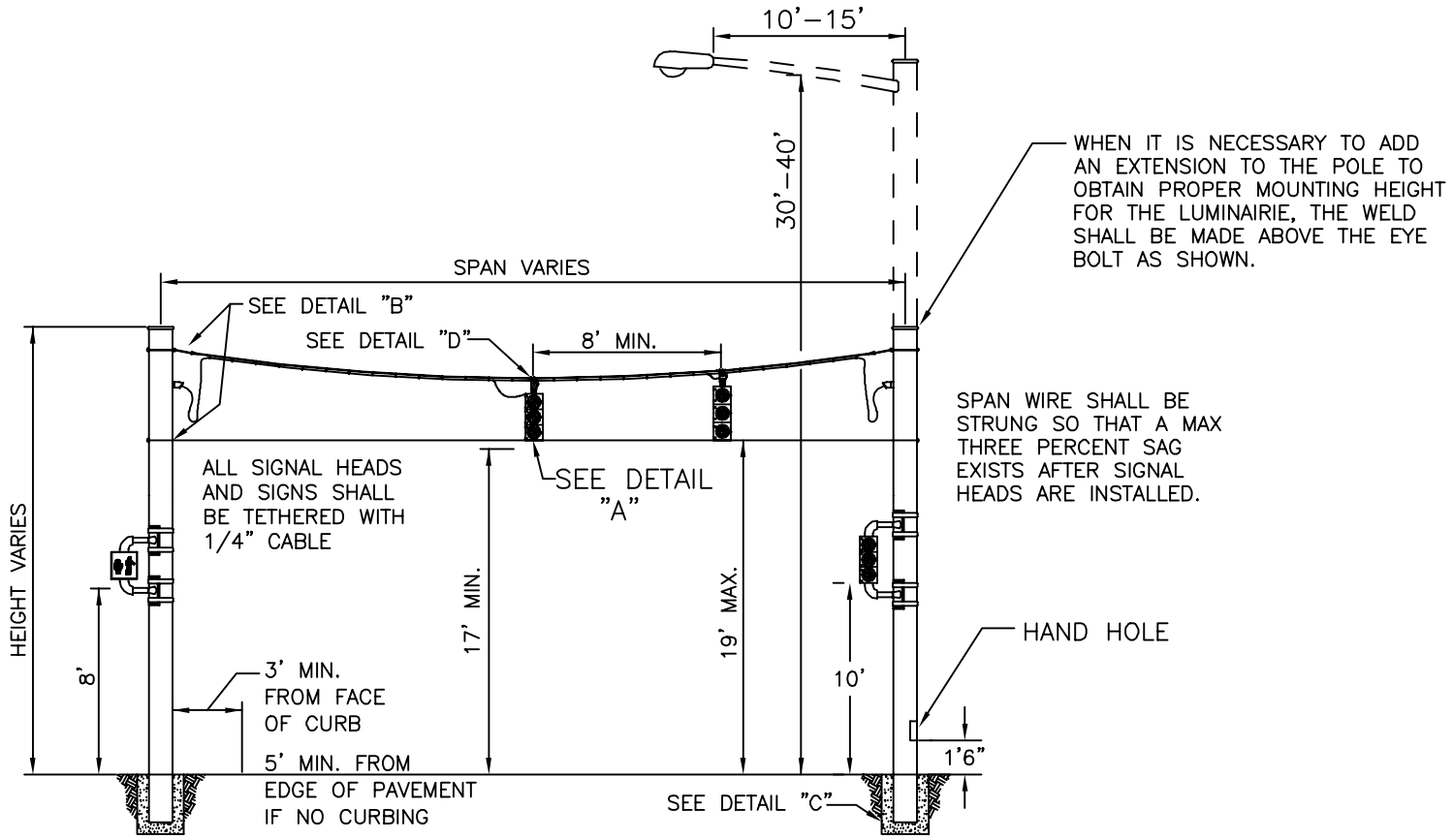
CASSION DATA (FOR SINGLE MAST ARM INSTALLATION)				
			V BARS	
DIA. (IN.)	DEPTH (D) (FT.)	MAST ARM LENGTH. (FT)	SIZE	TOTAL
42	12.0	25 THRU 50	#9	14

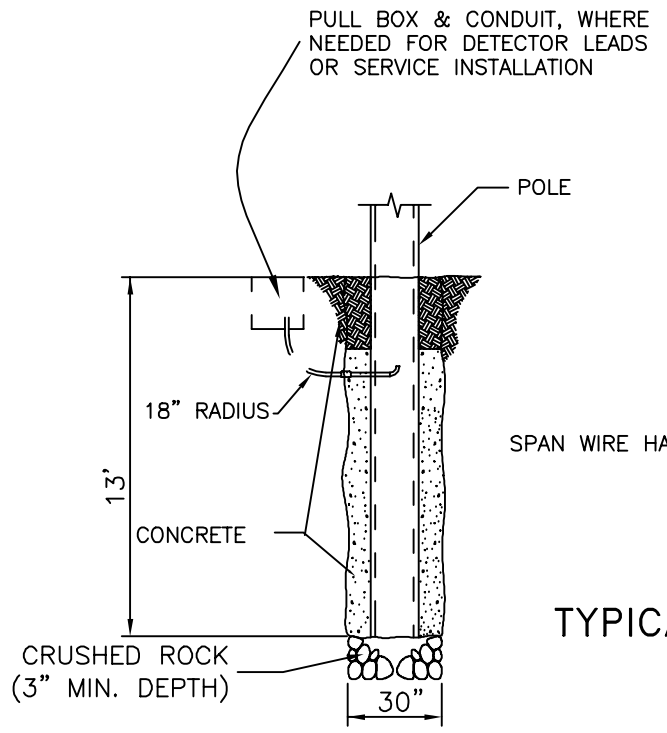
ADAMS COUNTY COLORADO

ADAMS COUNTY
STANDARD SIGNAL DETAILS

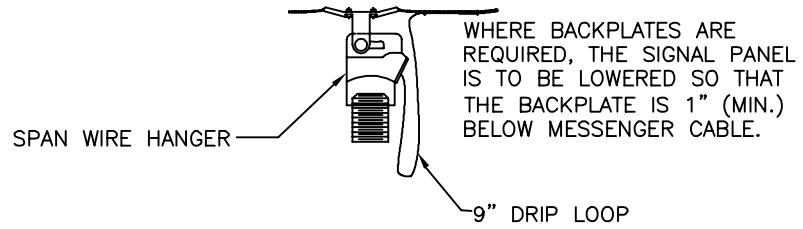
SCHOOL FLASHER MAST ARM POLE FOOTINGS

AUGUST 25, 2009
SCALE: NOT TO SCALE

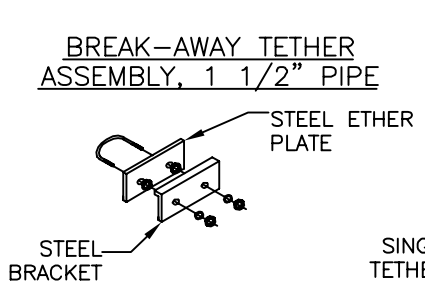


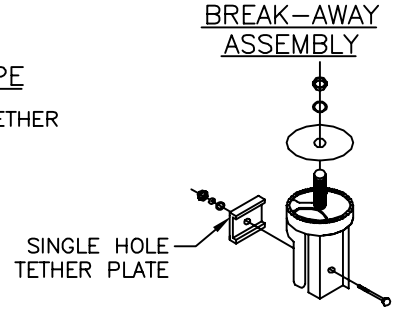


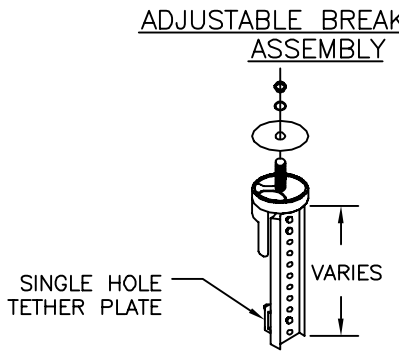
DETAIL "C"
TYPICAL TRAFFIC SIGNAL
SPAN WIRE POLE FOUNDATION
(CAST IN PLACE)



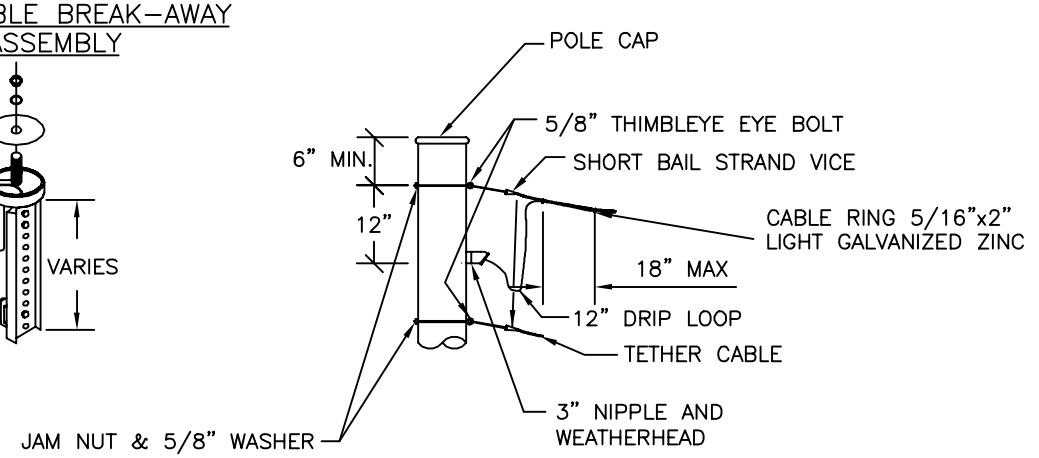
DETAIL "D"
TYPICAL SPAN WIRE MOUNTING







DETAIL "A"
TETHERING OPTIONS



DETAIL "B"
TYPICAL CABLE AND TETHER INSTALLATION

GENERAL NOTES

1. ALL STEEL POLES SHALL BE HOT DIPPED GALVANIZED INSIDE AND OUTSIDE AS PER ASTMA 123. ANY TOUCH UP INCLUDING THE AREA AROUND A HAND HOLE THAT WAS CREATED BY A TORCH, SHALL BE DONE WITH A ZINC RICH GALVANIZED SPRAY PAINT, OR AS SPECIFIED BY THE ENGINEER.
2. DESIGN CRITERIA SHALL MEET LATEST AASHTO EDITION OF "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS," FOR A WIND VELOCITY OF 90 MPH.
3. SPAN WIRE POLES SHALL BE FABRICATED OF STEEL WITH A MIN. YIELD STRENGTH OF 35 KSI. AND A MIN. WEIGHT PER LINEAR FOOT AS FOLLOWS: 49.5 LB. FOR 12" DIA. POLES. POLES SHALL BE INSTALLED SO THAT THEY WILL BE PLUMB WHEN DEFLECTED BY THE INSTALLED LOAD. SPAN WIRE CABLE SHALL BE A MINIMUM OF 3/8 INCH DIAMETER, RATED AT A MINIMUM OF 13,000 POUNDS.
4. SPAN WIRE SIGNAL HEADS SHALL HAVE ONE POWER FEED WIRE IN PER HEAD. CONNECTIONS SHALL BE MADE ONLY IN THE POLE AND ON THE SIGNAL HEAD TERMINALS, WITH NO EXTERNAL SPLICES.

SPAN WIRE POLE DETAIL

ADAMS COUNTY
COLORADO

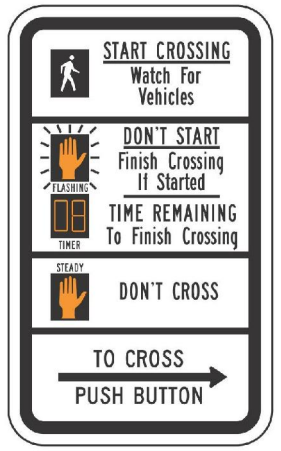
ADAMS COUNTY
STANDARD SIGNAL DETAILS

SPAN WIRE POLE

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

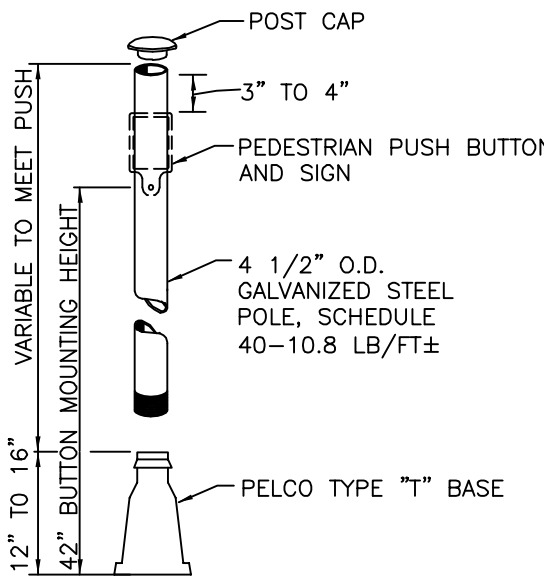
R10–3b
9"x12"

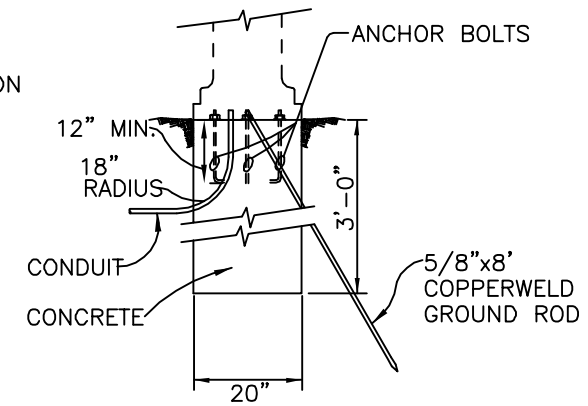
R10–3d
9"x12"



R10–3e
9"x15"

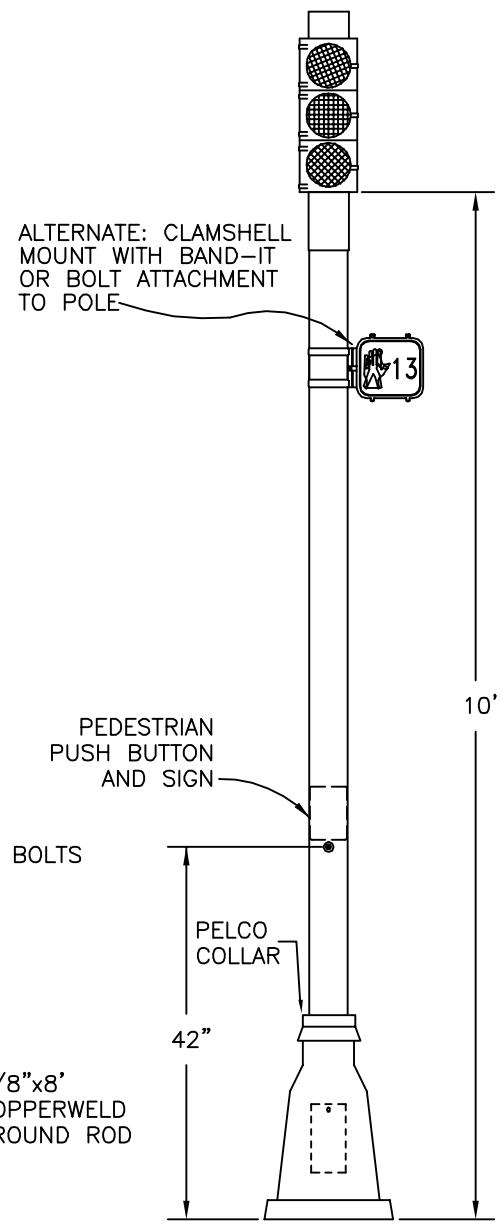
PEDESTRIAN PUSH–BUTTON SIGNS

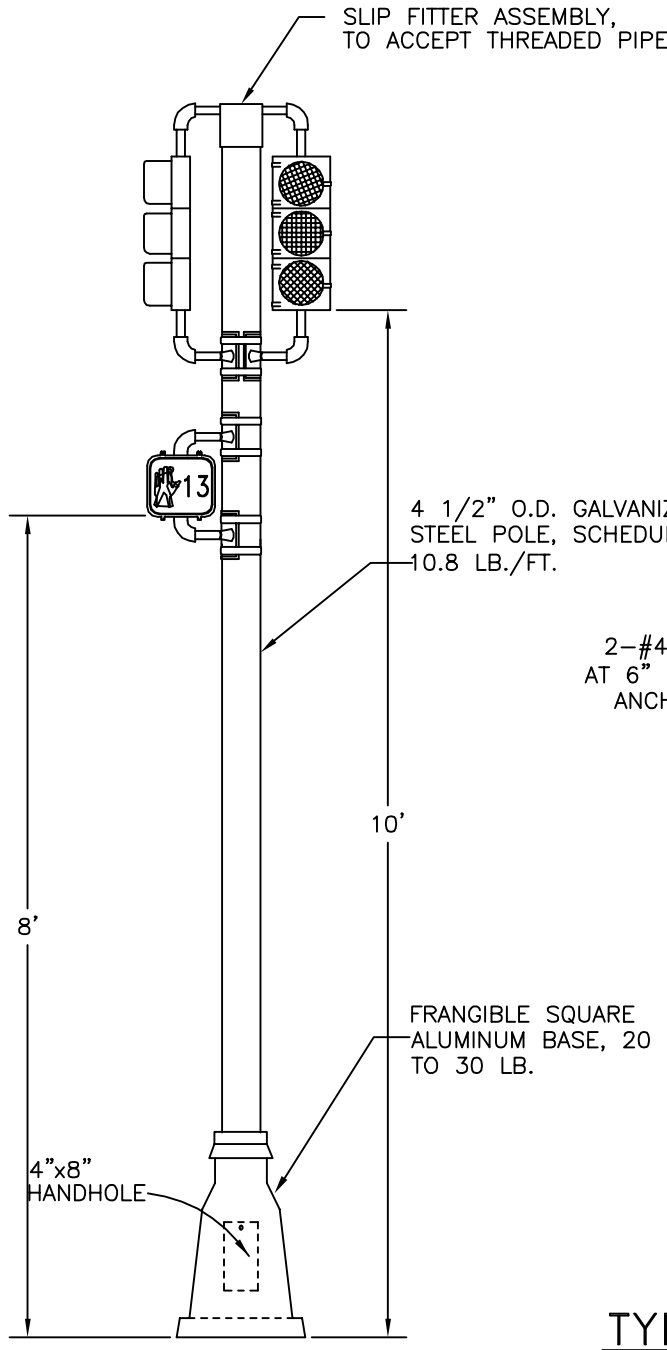




FOUNDATION DETAIL

PEDESTRIAN PUSH BUTTON POLE





PEDESTAL POLE SHALL BE HOT DIPPED GALVANIZED PER ASTM A123, EQUIVALENT TO 2 OZ. PER SQUARE FOOT, INSIDE AND OUT

TYPICAL PEDESTAL POLE DETAIL

1/4" SPLIT PIN SHALL BE INSTALLED IN THE UPPER PORTION OF THE ALUMINUM BASE AND SHALL COMPLETELY PENETRATE BASE AND POLE TO SECURE POLE TO PREVENT MOVEMENT OR TWISTING. PELCO COLLAR TO BE INSTALLED.

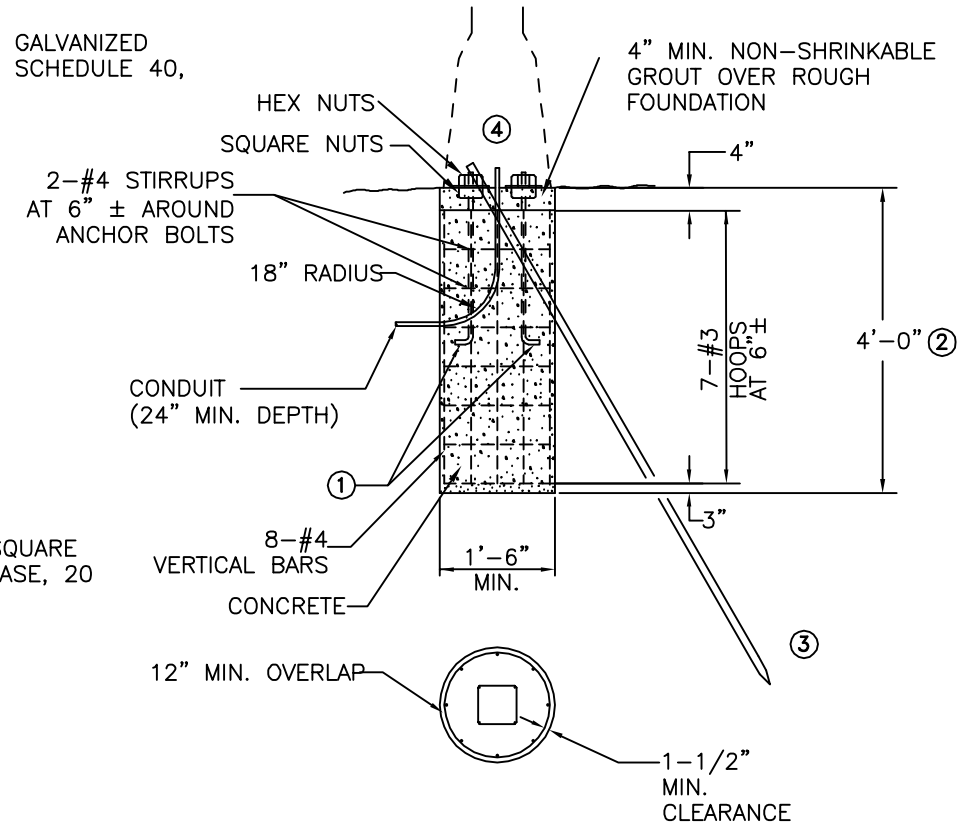
FOUNDATION NOTES

① ANCHOR BOLTS (FURNISHED WITH POLE) PER MANUFACTURER'S TEMPLATE.

② CAISSON DESIGNS REQUIRE THAT THE CAISSON BE FOUNDED IN COMPACT SAND, CLAY OR SANDY CLAY. IF, BY VISUAL INSPECTION OF THE HOLE' OTHER MATERIAL IS PRESENT, THE CAISSON DESIGN SHALL BE MODIFIED AND APPROVED BY THE ENGINEER.

③ 5/8"x8' COPPERWELD GROUND ROD THROUGH FOUNDATION, INTO GROUND.

④ HANDHOLE SHALL BE PROVIDED.



TYPICAL PEDESTAL POLE FOUNDATION
(CAST IN PLACE)

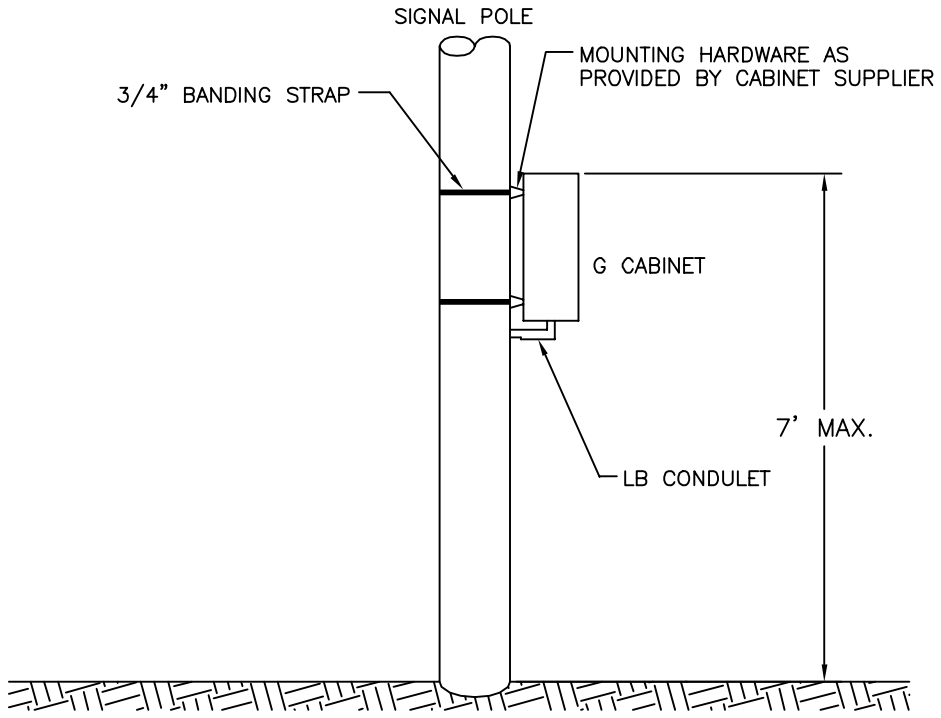
ADAMS COUNTY
COLORADO

ADAMS COUNTY
STANDARD SIGNAL DETAILS

PEDESTIAN PUSH BUTTON POLE & PEDESTAL POLE

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

SHEET NO. 6 OF 18



TYPICAL SIDE-OF-POLE MOUNTED CONTROLLER CABINET

NOTES

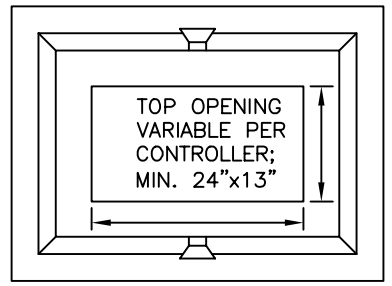
CABINET FOUNDATION SHALL BE PREFORMED TYPE, MANUFACTURED WITH FIRE RETARDANT RESIN AND A COMBINATION OF CHOPPED GLASS STRAYUP AND HAND LAYUP OF GLASS REINFORCEMENT. A 1/2" SHEET OF PLYWOOD SHALL BE EMBEDDED IN THE TOP SURFACE OF THE FOUNDATION. COLOR SHALL BE CEMENT GRAY. FOUNDATION DIMENSIONS (MINIMUMS) SHALL BE AS FOLLOWS:

CABINET FOUNDATION

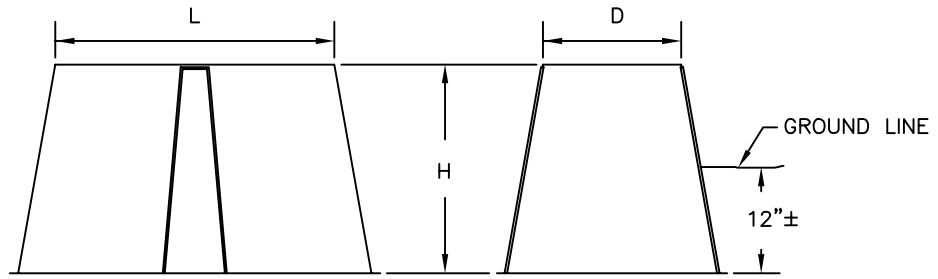
L	D	H
44"	26"	24"

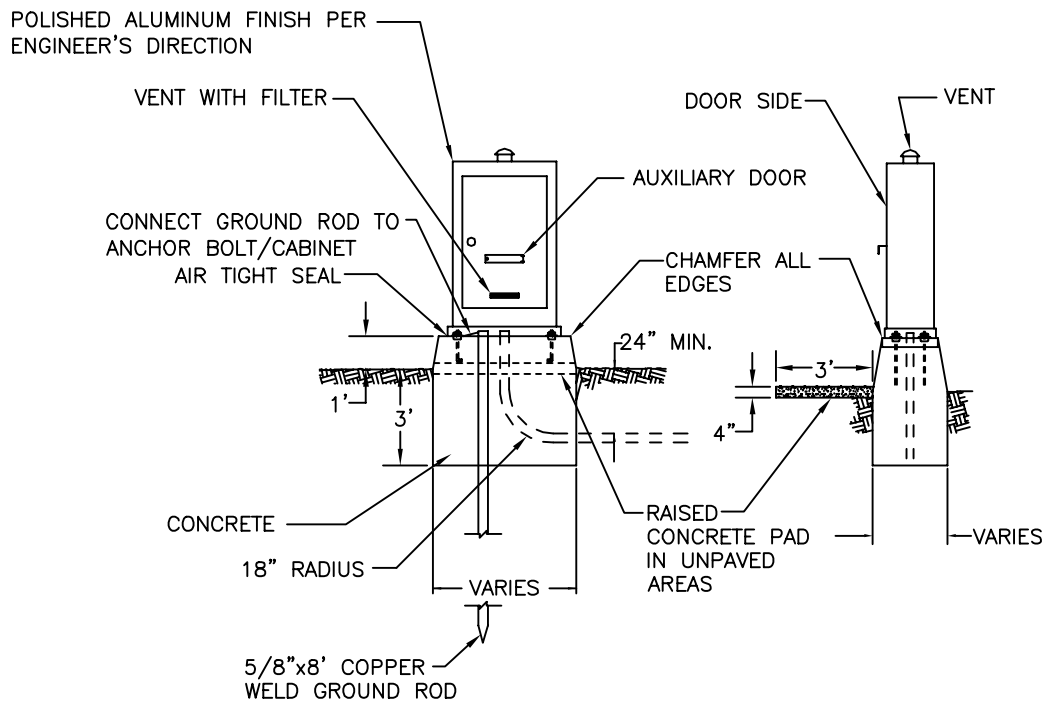
P CABINET

TOP VIEW

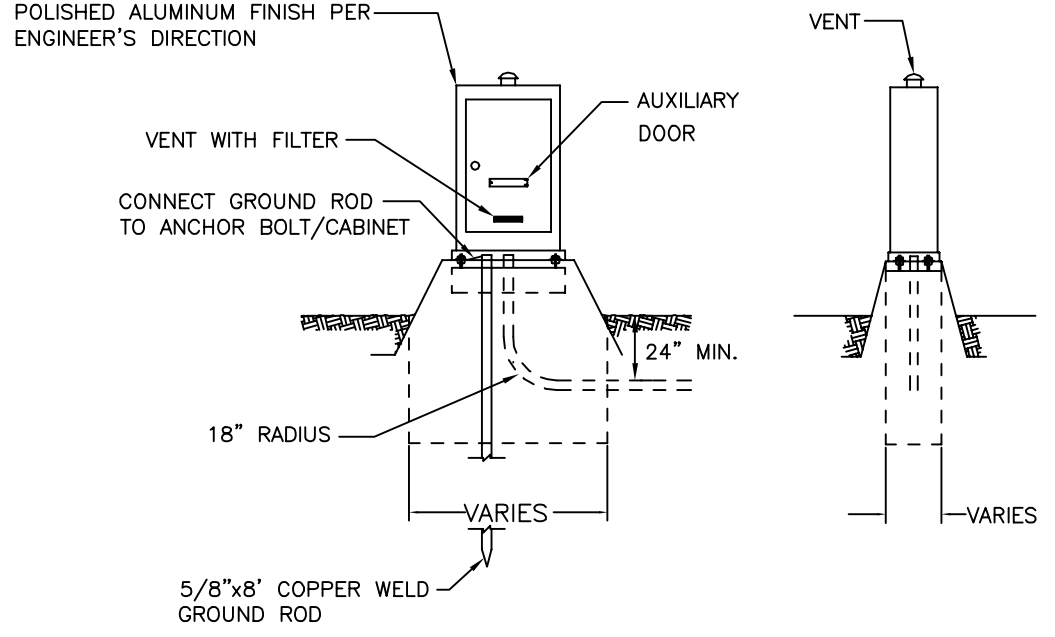


CABINET FOUNDATION





TYPICAL BASE MOUNTED CONTROLLER CABINET INSTALLATION AND CONCRETE FOUNDATION



TYPICAL BASE MOUNTED CONTROLLER CABINET INSTALLATION AND FIBERGLASS FOUNDATION

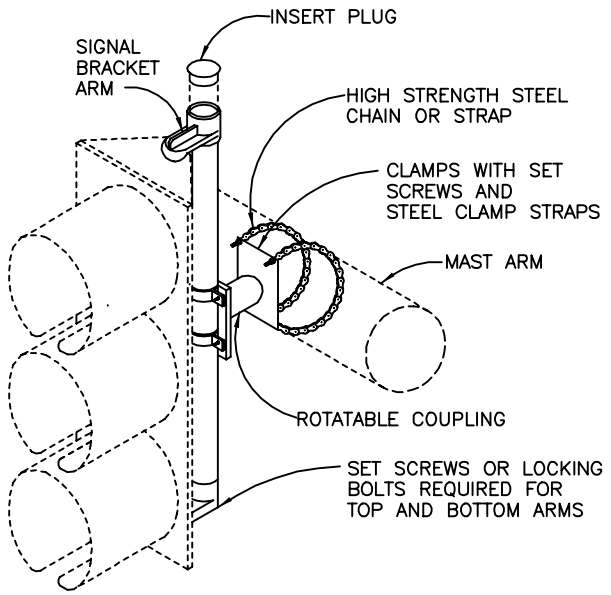
ADAMS COUNTY
COLORADO

ADAMS COUNTY
STANDARD SIGNAL DETAILS

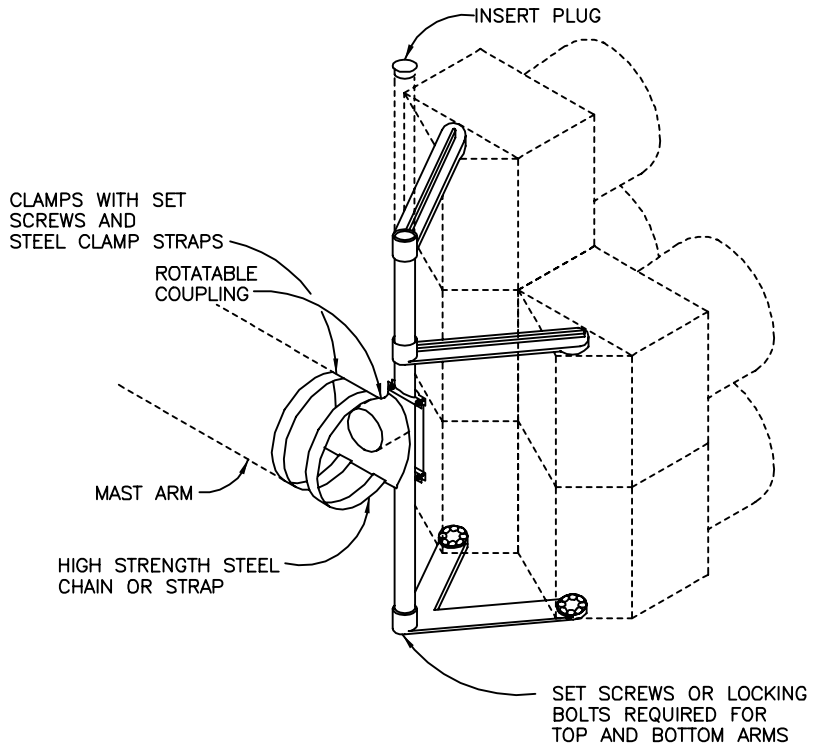
CONTROLLER CABINET INSTALLATION

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

SIGNAL HEAD MOUNTING



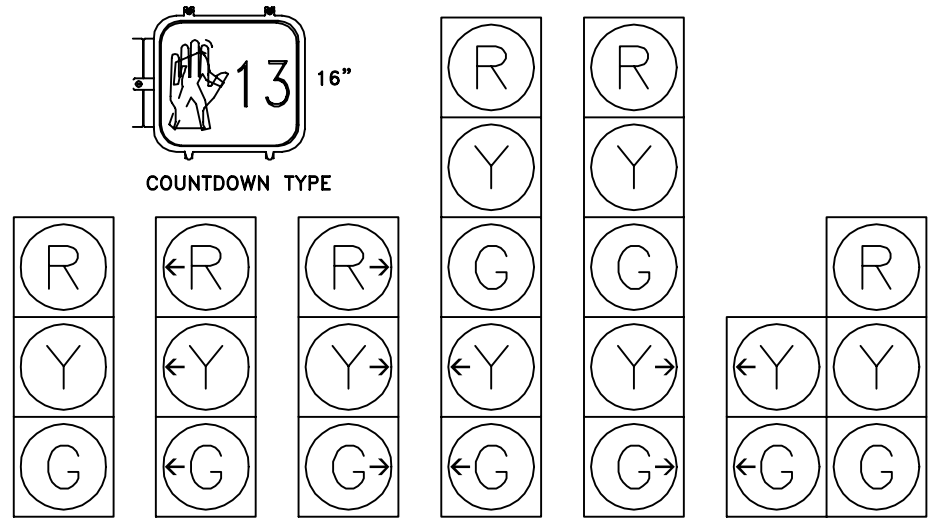
DETAIL OF MAST ARM MOUNTING
FOR IN-LINE SIGNAL HEAD
(3-SECTION OR 5-SECTION)



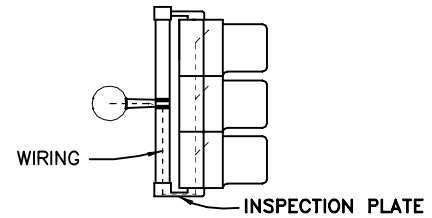
DETAIL OF MAST ARM MOUNTING
FOR SIDE-BY-SIDE SIGNAL HEAD
(5-SECTION)

NOTES

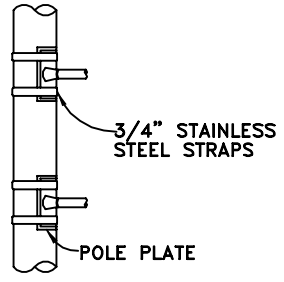
ALL VEHICLE SIGNAL HEADS SHALL BE POLYCARBONATE WITH 12" SECTIONS AND TUNNEL VISORS.
ALL VEHICLE AND PEDESTRIAN SIGNAL HEADS SHALL BE LED TYPE AND BLACK IN COLOR. PEDESTRIAN HEADS SHALL BE COUNTDOWN TYPE. PEDESTRIAN PUSHBUTTONS SHALL MEET ADA REQUIREMENTS.



PEDESTRIAN AND VEHICLE SIGNAL HEADS



WIRING DIAGRAM



TYPICAL SIDE OF POLE
SIGNAL MOUNTING

MOUNTING NOTES

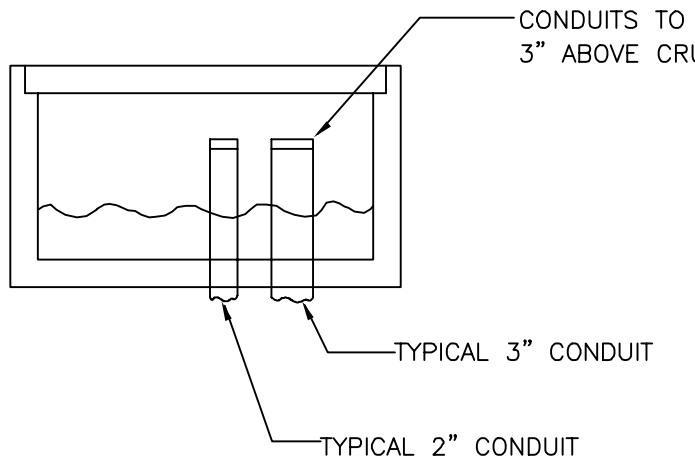
1. PIPE COUPLINGS FOR SIGNAL BRACKETS SHALL BE EITHER 1-1/2 OR 2 INCH. DEPENDING UPON THE SIGNAL HEAD TO BE INSTALLED. SIGNAL BRACKETS SHALL BE FURNISHED BY THE MANUFACTURER OF THE SIGNAL HEADS.
2. UNLESS OTHERWISE SPECIFIED, ALL TRAFFIC SIGNALS MOUNTED ABOVE THE ROADWAY SHALL HAVE A HEIGHT OF 17' TO 19' ABOVE THE PAVEMENT GRADE AT THE ROADWAY CENTER, ALL SIDE-OF-POLE MOUNTED TRAFFIC SIGNALS SHALL HAVE A HEIGHT OF 10' ABOVE GROUND LINE AND PEDESTRIAN SIGNALS SHALL HAVE A HEIGHT OF 8' ABOVE GROUND LINE AS MEASURED TO THE BOTTOM OF THE SIGNAL HEAD HOUSING OR BRACKET.
3. MAST ARM MOUNTED SIGNAL HEADS SHALL USE ASTRO-BRAC's OR SKY BRACK TYPE. ALL SIGNALS SHALL BE MOUNTED IN SUCH A MANNER AS TO BE EASILY REMOVED FROM THEIR SUPPORTING STRUCTURE.
4. GASKET SEALING COMPOUND SHALL BE USED IN ADDITION TO ANY LEAD WASHERS REQUIRED FOR CREATING A WATER-TIGHT CONNECTION BETWEEN THE SIGNAL HEAD AND MOUNTING BRACKET.
5. SIGNAL HEADS SHALL BE SECURELY AFFIXED BY USE OF A SERRATED COUPLING OR OTHER ACCESSORIES RECOMMENDED BY THE SIGNAL MANUFACTURER.
6. WIRING FROM INSIDE MAST ARM THROUGH A 1" FIELD DRILLED HOLE IN ARM SHALL BE BROUGHT THROUGH THE MOUNTING SUPPORT TUBE AND LOWER ARM (AS SHOWN). FIELD DRILLED HOLES SHALL HAVE RUBBER GROMMETS INSTALLED.

GENERAL WIRING NOTES

1. TRAFFIC SIGNAL CONDUIT SHALL NOT CARRY WIRING OF OTHER UTILITIES.
2. EXCEPT FOR LOOP DETECTOR LEADS, ALL SPLICES SHALL BE IN HAND HOLES AT POLE BASES AND NOT IN PULL BOXES.
3. PEDESTRIAN AND VEHICLE SIGNAL HEADS SHALL BE INDIVIDUALLY WIRED FROM THE POLE BASE TO THE SIGNAL HEAD.
4. CONTRACTOR SHALL PROVIDE 2 WIRING DIAGRAMS OF THE SIGNAL INSTALLATION TO THE COUNTY.
5. UNLESS ALLOWED BY THE ENGINEER, WIRE SHALL NOT OCCUPY MORE THAN 40% OF THE INSIDE AREA OF CONDUIT.

ADAMS COUNTY
COLORADO

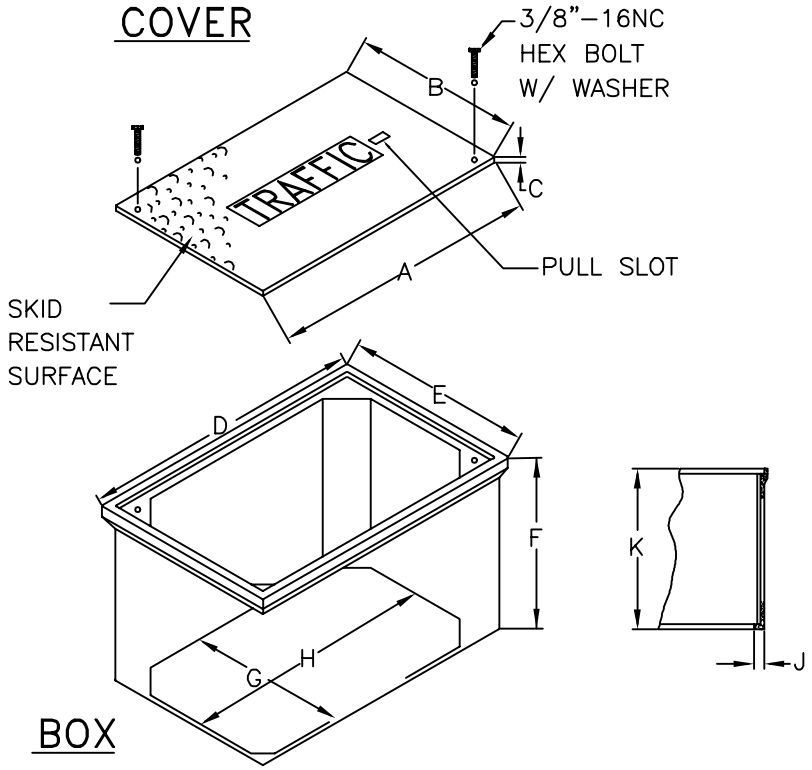
ADAMS COUNTY
STANDARD SIGNAL DETAILS
SIGNAL HEADS & MOUNTING
GENERAL WIRING NOTES
DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE
SHEET NO. 8 OF 18

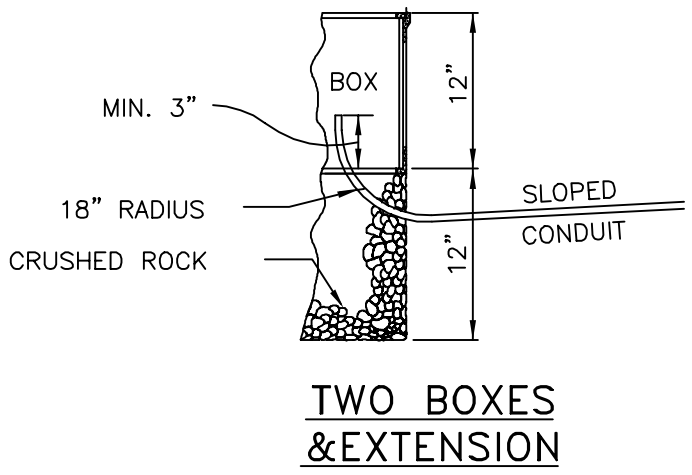


TYPICAL PULL BOX

PULLBOXES

PULL BOX USAGE	SIZE	PULL BOX LID MARKING
CABINET HOME RUN PULL BOX	30"x36"x18"	TRAFFIC
SIGNAL POLE PULL BOX	13"x24"x12"	TRAFFIC
WATER VALVE PULL BOX (SIDE OF ROAD)	12"x12"x12"	TRAFFIC
DETECTOR WATER VALVE	WATER VALVE	TRAFFIC
COMMUNICATIONS PULL BOX	30"x36"x18"	T/S COMMUNICATIONS
TELEPHONE DEMARCATION	12"x12"x12"	T/S COMMUNICATIONS
ELECTRICAL DEMARCATION	12"x12"x12"	ELECTRIC





TWO BOXES &EXTENSION

FIBERGLASS REINFORCED POLYMER CONCRETE DESIGNED FOR SERVICE LOAD (MINIMUM) OF 20,000 LBS. OVER A 10" SQUARE

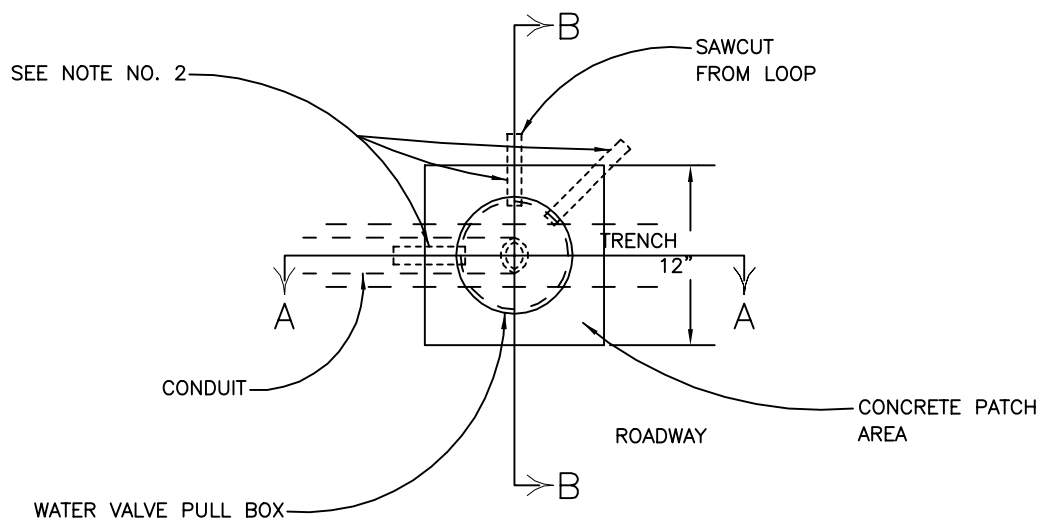
ADAMS COUNTY
COLORADO

ADAMS COUNTY
STANDARD SIGNAL DETAILS

PRECAST PULL BOX

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

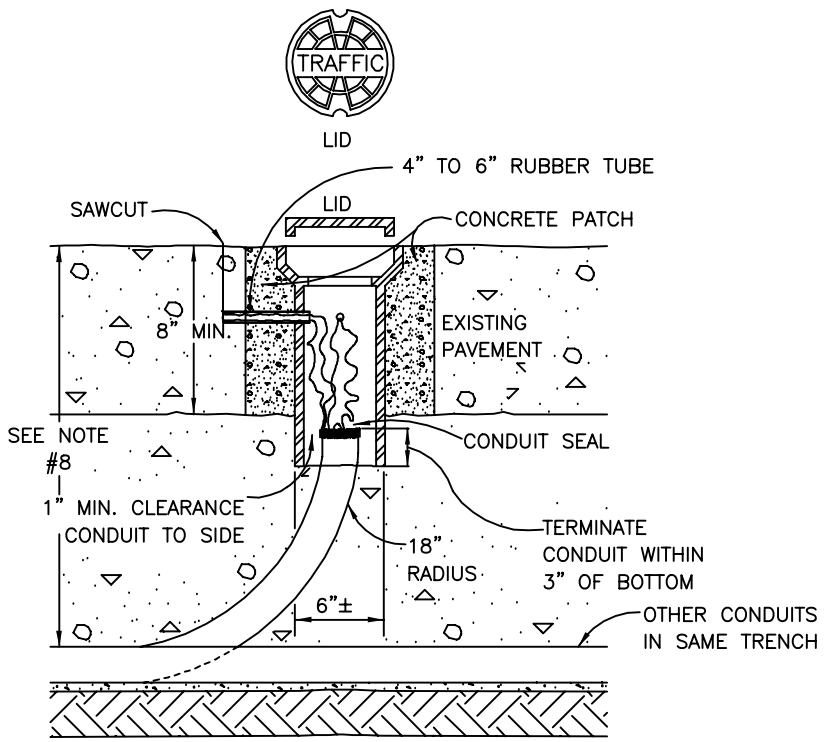
TRAFFIC WATER VALVE PULL BOX



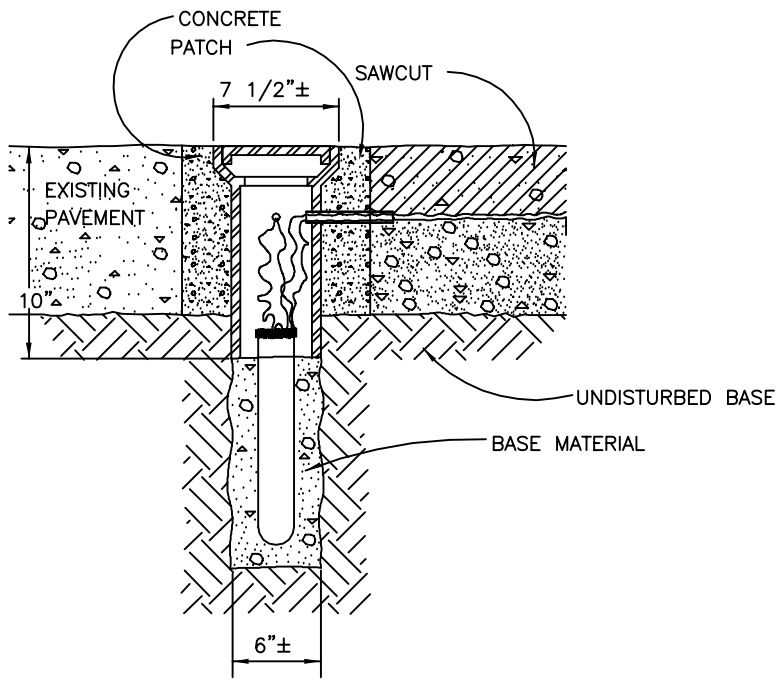
TOP VIEW

GENERAL NOTES

1. THE TRAFFIC WATER VALVE PULL BOX SHALL BE MADE OF ALUMINUM. THE PULL BOX SHALL HAVE CAPABILITY OF ACCEPTING RISER RINGS FOR FUTURE OVERLAYS. THE LID SHALL THE HAVE THE WORD "TRAFFIC" IMPRINTED ON IT.
2. PULL BOXES SHALL HAVE 3/4" TO 1" DIAMETER HOLES DRILLED OR TORCHED 3" FROM TOP TO ACCEPT A 4" TO 6" LONG RUBBER TUBE (3/4" GARDEN HOSE). THE NUMBER OF HOLES SHALL BE AS PER PLANS OR AS DIRECTED BY THE ENGINEER.
3. CARE SHALL BE TAKEN DURING BACKFILL COMPACTION TO PREVENT COLLAPSE OF THE TUBES.
4. 2' MINIMUM SLACK OF LOOP WIRES IS TO BE PROVIDED AND STORED IN THE PULL BOX.
5. PULL BOX LID IS TO BE SEALED WATER TIGHT BY CAULKING.
6. PULL BOX IS TO BE LOCATED IN AN AREA OF THE STREET NOT HEAVILY TRAVELED IF POSSIBLE AND CENTERED A MINIMUM OF 12" FROM CONCRETE GUTTER PAN.
7. ALL WORK LISTED ABOVE FOR INSTALLATION OF PULL BOXES SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE PRICE OF THE CONDUIT.
8. CONDUIT UNDER ROADWAY SHALL BE LOCATED AT A DEPTH OF NOT LESS THAN 30 INCHES.



SECTION A–A



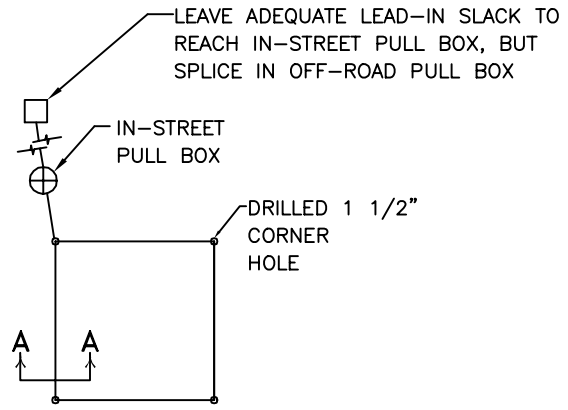
SECTION B–B

ADAMS COUNTY
COLORADO

ADAMS COUNTY
STANDARD SIGNAL DETAILS

TRAFFIC WATER VALVE PULL BOX

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

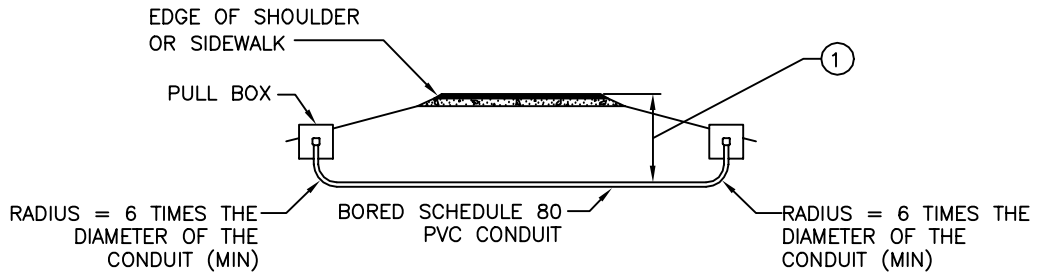


TYPICAL 6'x6' LOOP

SIZE OF LOOP	NO. OF TURNS
6'x6'	4
6'x8' TO 6'x20'	3
6'x22' TO 6'x40'+	2

NO. OF TURNS MAY BE ADJUSTED BY THE ENGINEER IN FIELD. WIRING CONNECTIONS TO BE FIELD DETERMINED.

LOOP TURNS

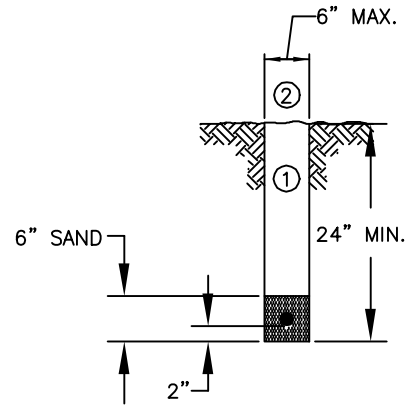


CONDUIT PLACEMENT UNDER PAVEMENT OR SIDEWALK

NOTES

	MINIMUM CONDUIT DEPTH:	UNDER PAVEMENT	UNDER SIDEWALK
(1)		30"	24"

ALL CONDUIT SHALL BE PVC SCHEDULE 80

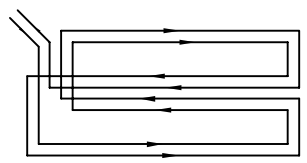


UNDER GRASS/GROUND TRENCHING DETAIL

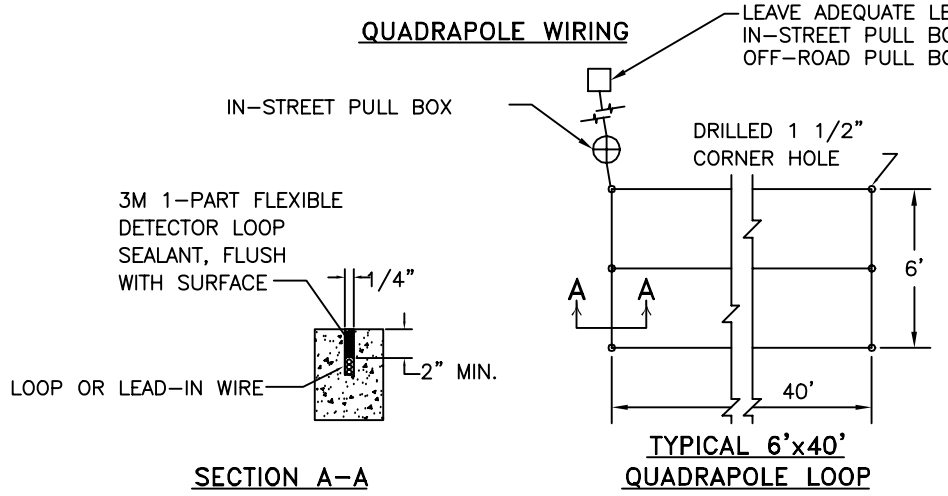
NOTES

(1) BACKFILL AND TAMP WITH NATIVE MATERIAL TO MATCH COMPACTION OF SURROUNDING GROUND.

(2) RESEED OR RESOD SURFACE AT DIRECTION OF THE ENGINEER



QUADRAPOLE WIRING



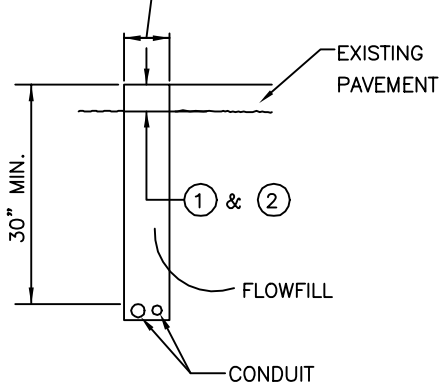
SECTION A–A

TYPICAL 6'x40' QUADRAPOLE LOOP

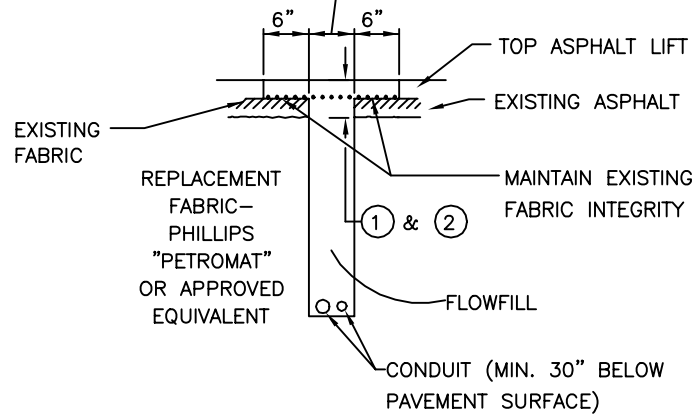
LOOP SAW CUT AND INSTALLATION

NOTES

1. IMMEDIATELY BEFORE LAYING THE LOOP CABLE, THOROUGHLY CLEAN AND DRY SAW CUT WITH HIGH PRESSURE COMPRESSED AIR.
2. LOOP WIRE IN ADJACENT LOOPS SHALL BE LAID UNIFORMLY IN EITHER A CLOCKWISE OR COUNTER–CLOCKWISE DIRECTION AND THE LOOP TAGGED TO INDICATE THE DIRECTION.
3. USE A BLUNT, NON–METALLIC INSTRUMENT TO PUSH WIRE INTO SLOT.
4. LOOP WIRE SHALL BE CONTINUOUS (NO SPLICES) FROM THE PULL BOX. SPLICES IN PULL BOX SHALL BE WATERPROOFED WITH 3M SPLICE KIT.
5. CONTINUITY TEST FOR EACH LOOP SHALL BE CONDUCTED 1) BEFORE ANY LOOP SEALER IS INSTALLED AND 2) AFTER LOOP SEALER IS INSTALLED AND LEAD–IN CABLE IS SPLICED AND TRAINED TO THE CONTROLLER. "RESISTANCE–TO–GROUND" AND "INDUCTANCE" SHALL BE MEASURED AND RECORDED FOR EACH TEST.



CONDUIT TRENCH DETAIL– WITHOUT PAVEMENT FABRIC



CONDUIT TRENCH DETAIL– WITH PAVEMENT FABRIC

NOTES

(1) ALL CONDUIT PLACED UNDER ROADWAY OR HARD PAVED SURFACES SHALL BE BORED UNLESS OTHERWISE APPROVED BY THE ENGINEER. ALL CONDUIT SHALL BE PVC SCHEDULE 80.

(2) FULL DEPTH HOT BITUMINOUS PAVEMENT (PATCHING) OR PORTLAND CEMENT CONCRETE PATCH. MATCH EXISTING PAVEMENT TYPE WITH 4" MIN. DEPTH

(3) FOR ASPHALT PATCH, 48 HOUR NOTICE TO THE ENGINEER REQUIRED PRIOR TO INSPECTION

ADAMS COUNTY
COLORADO

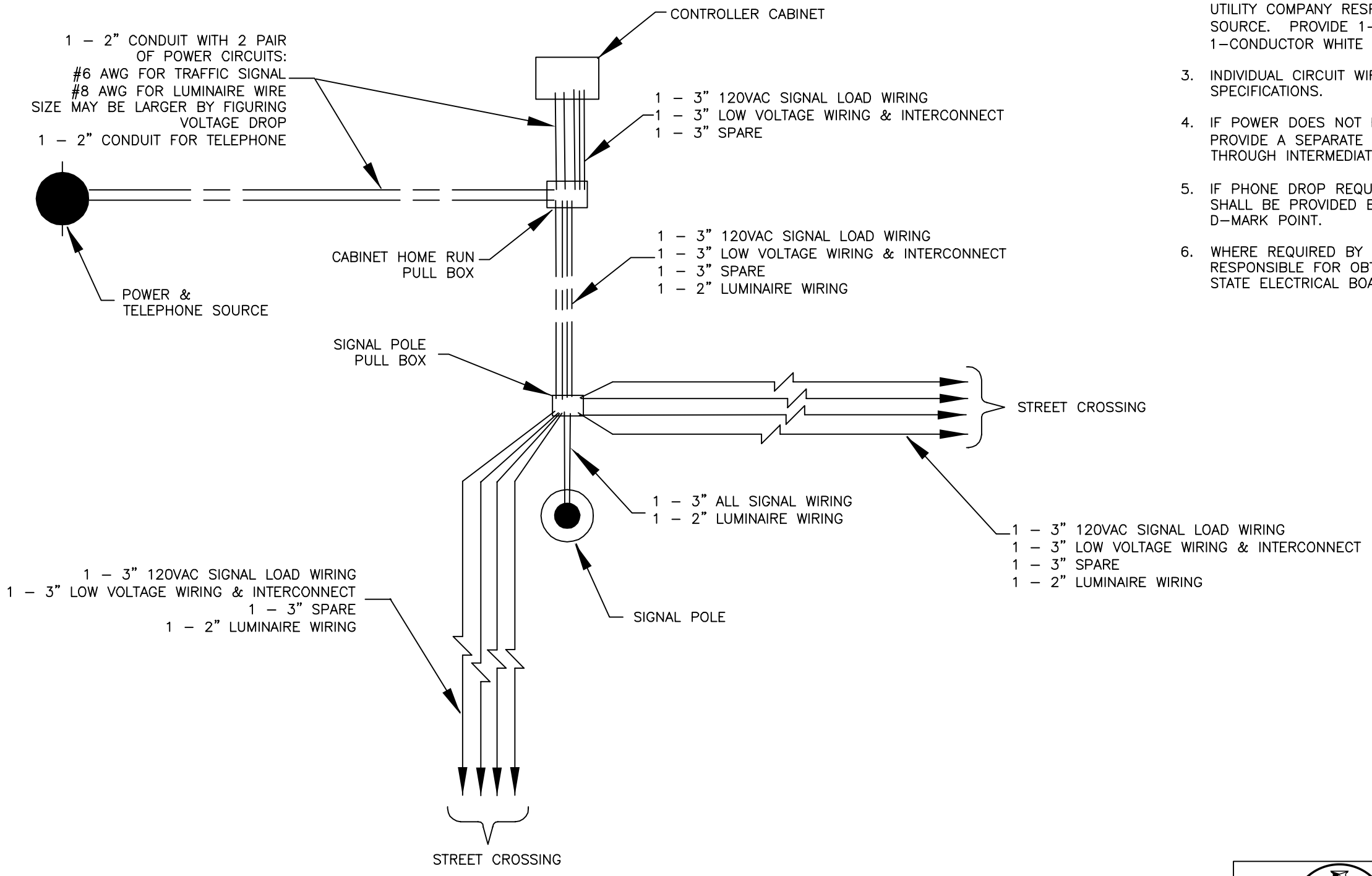
ADAMS COUNTY
STANDARD SIGNAL DETAILS

LOOP DETECTOR CONDUIT INSTALLATIONS

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

UNDERGROUND POWER SOURCE SCHEMATIC FOR SIGNALS WITH LUMINAIRES

NO SCALE



NOTES

1. LUMINAIRES TO BE FURNISHED AND INSTALLED BY UTILITY COMPANY. CONTRACTOR SHALL PROVIDE LUMINAIRE WIRING, LEAVING 3' OF COILED WIRE AT LUMINAIRE ARM END.
2. CONTRACTOR TO PROVIDE ALL WIRING UP TO POWER SOURCE. UTILITY COMPANY RESPONSIBLE FOR FINAL HOOK–UP AT POWER SOURCE. PROVIDE 1–CONDUCTOR BLACK (HOT) WIRE AND 1–CONDUCTOR WHITE (NEUTRAL) WIRE.
3. INDIVIDUAL CIRCUIT WIRING SHALL BE TAGGED PER STANDARD SPECIFICATIONS.
4. IF POWER DOES NOT FEED DIRECTLY INTO CONTROLLER PULL BOX, PROVIDE A SEPARATE 2" CONDUIT FROM POWER SOURCE, THROUGH INTERMEDIATE PULL BOXES, TO CONTROLLER PULL BOX.
5. IF PHONE DROP REQUIRED, A SEPARATE 2" (MINIMUM) CONDUIT SHALL BE PROVIDED BETWEEN CONTROLLER PULL BOX AND D–MARK POINT.
6. WHERE REQUIRED BY UTILITY COMPANY, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMIT AND INSPECTION FROM THE STATE ELECTRICAL BOARD.

ADAMS COUNTY
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ADAMS COUNTY
STANDARD SIGNAL DETAILS

UNDERGROUND POWER
SCHEMATIC SIGNALS

DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

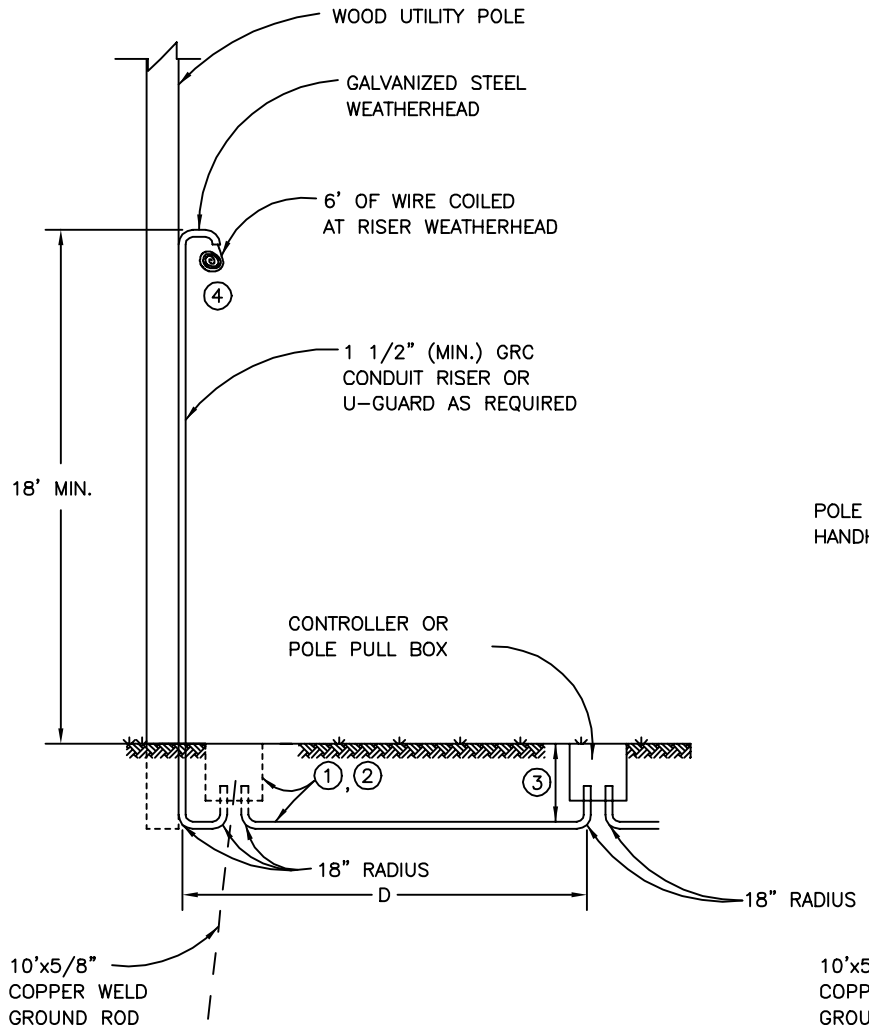
NOTES

① PROVIDE TYPE III PULL BOX/GROUND ROD AND 2" PVC CONDUIT ONLY IF D EXCEEDS 10'

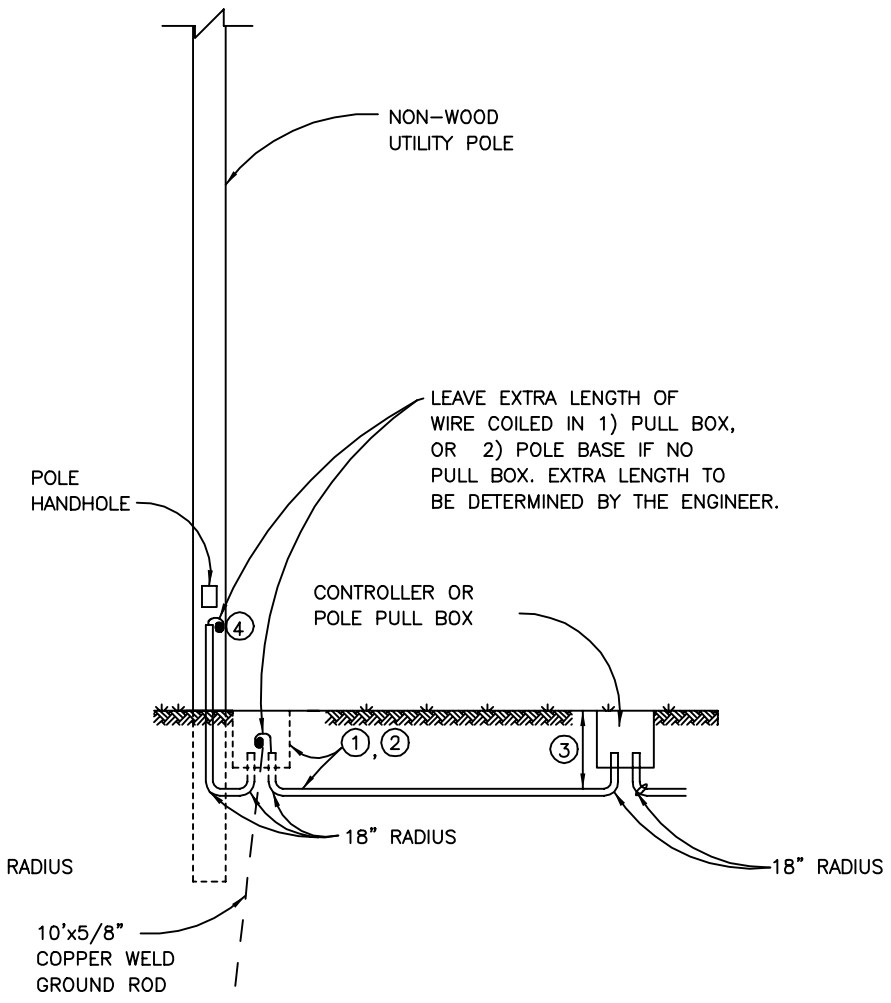
② PROVIDE 2" GRC CONDUIT WITHOUT PULL BOX/GROUND ROD IF D IS LESS THAN 10'

③ MINIMUM CONDUIT DEPTHS:
UNDER GROUND: 24"
UNDER PAVEMENT: 30"

④ WHERE REQUIRED BY UTILITY COMPANY, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMIT AND INSPECTION FROM THE STATE ELECTRICAL BOARD.

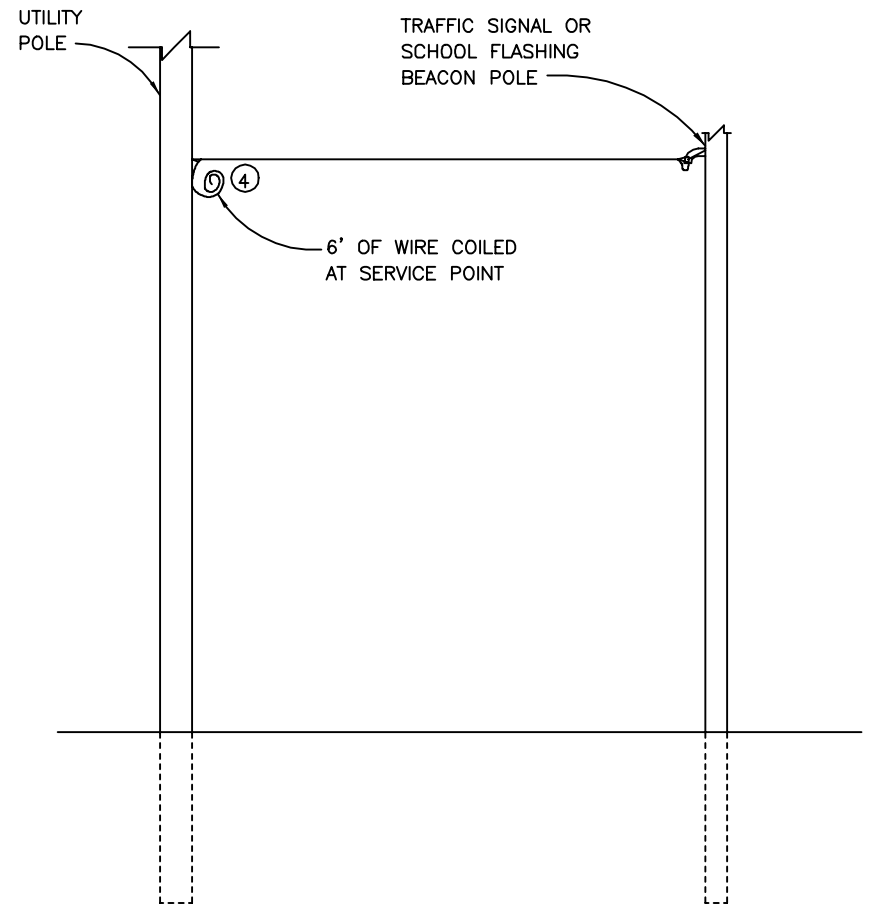


WITH WOOD UTILITY POLE



WITH NON-WOOD UTILITY POLE

TYPICAL UNDERGROUND POWER FEED FOR TRAFFIC SIGNALS AND SCHOOL FLASHING BEACON ASSEMBLIES



TYPICAL OVERHEAD POWER FEED FOR TRAFFIC SIGNAL AND SCHOOL FLASHING BEACON ASSEMBLIES

ADAMS COUNTY COLORADO

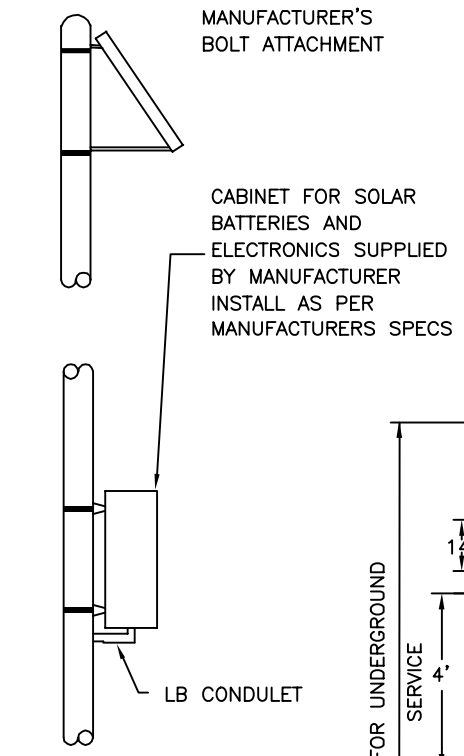
ADAMS COUNTY
STANDARD SIGNAL DETAILS

UNDERGROUND POWER FEED
OVERHEAD POWER FEED

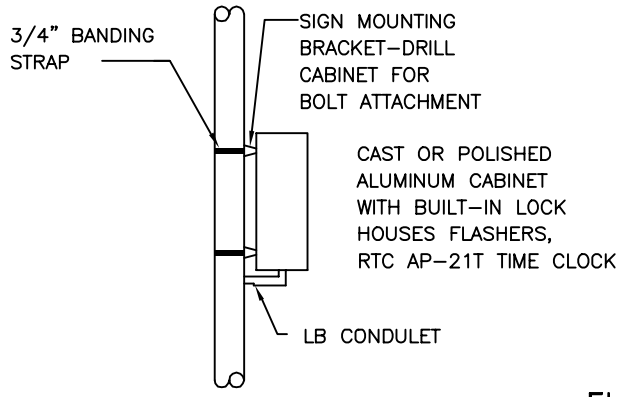
DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

SHEET NO. 13 OF 18

OPTIONAL SOLAR PANEL

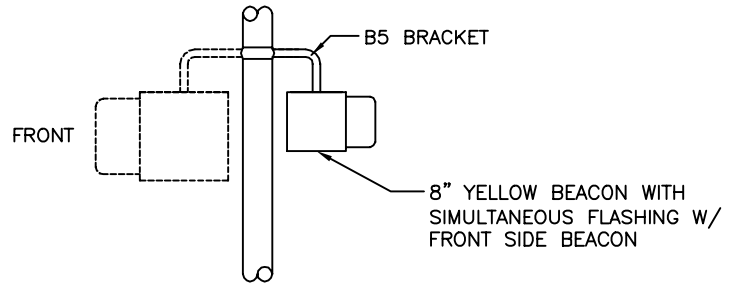


DETAIL "A"

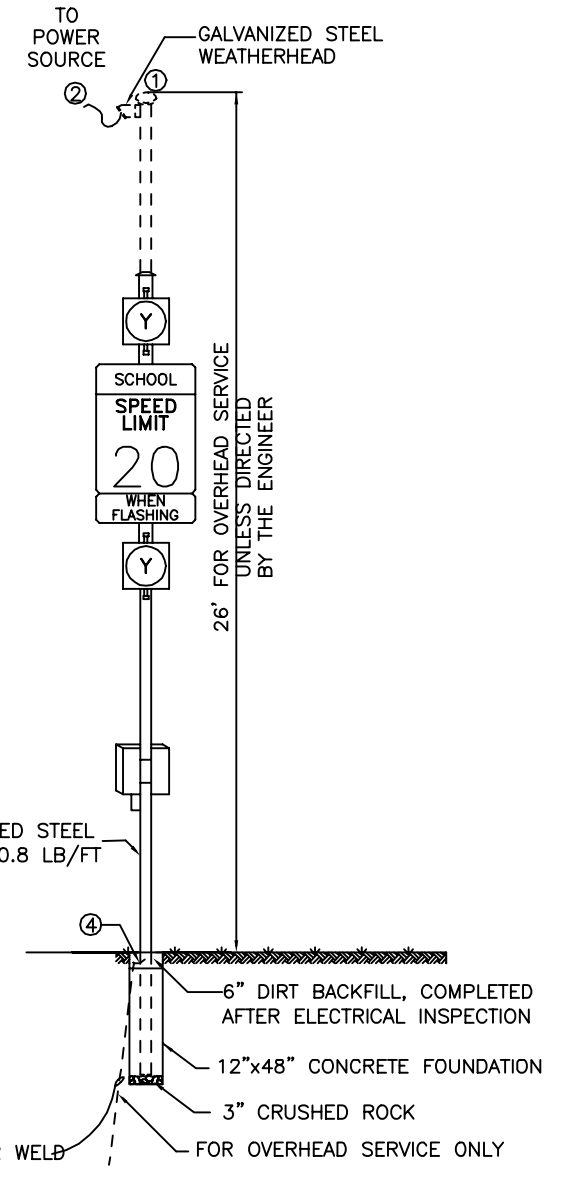


DETAIL "B"

OPPOSITE DIRECTION 8" FLASHER



OVERHEAD POWER SERVICE

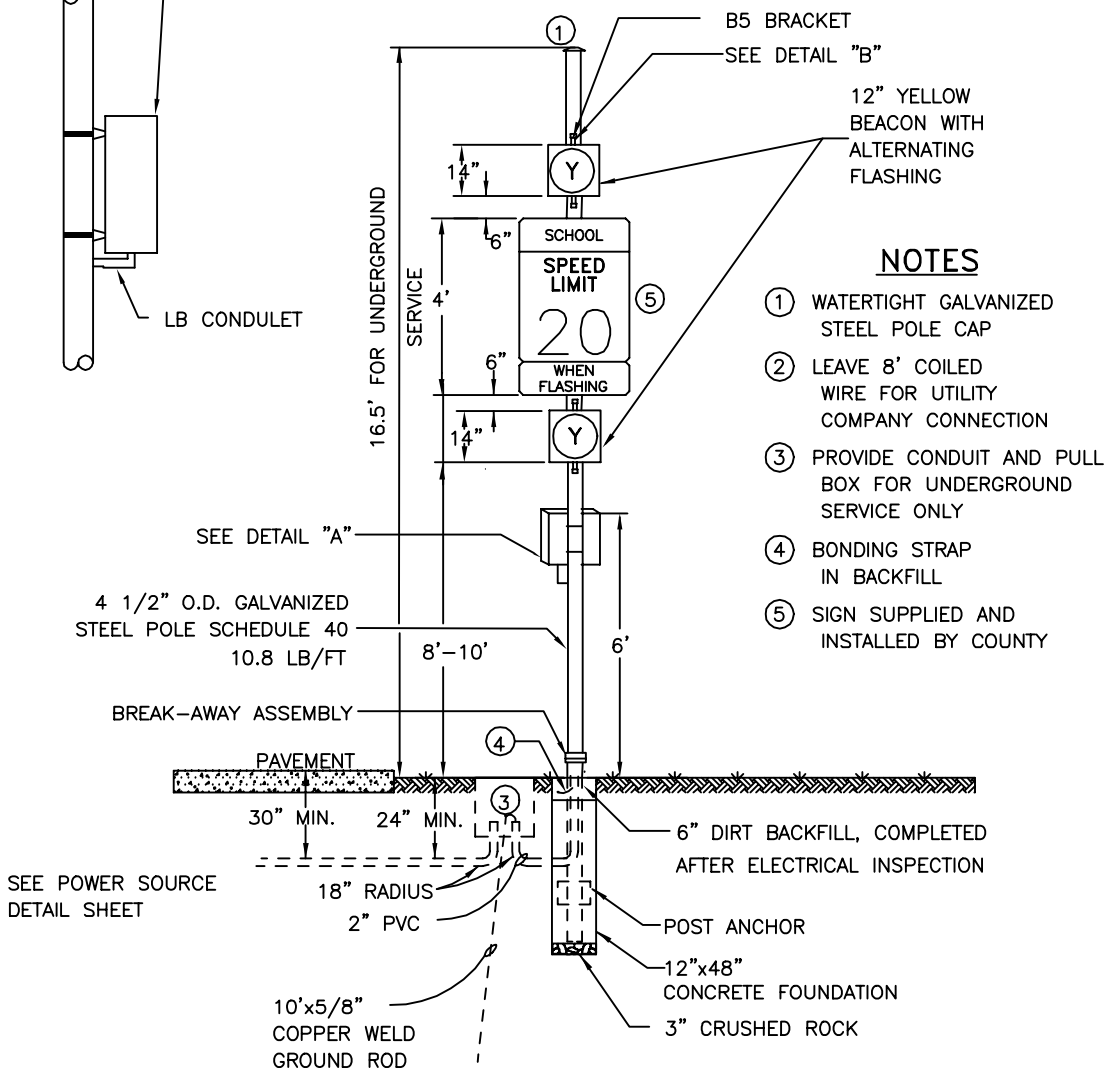


FLASHING BEACONS

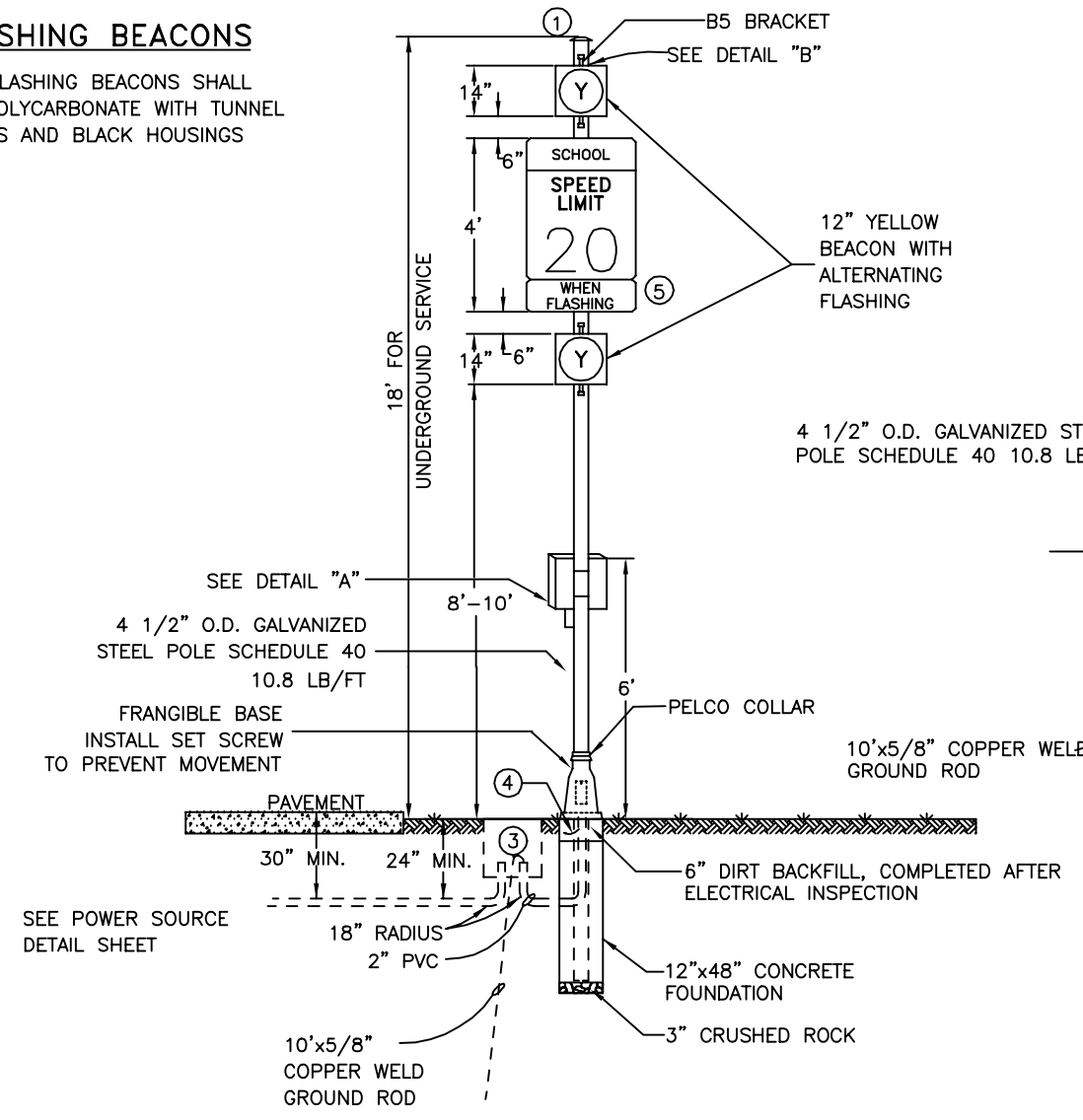
ALL FLASHING BEACONS SHALL BE POLYCARBONATE WITH TUNNEL VISORS AND BLACK HOUSINGS

NOTES

1. WATERTIGHT GALVANIZED STEEL POLE CAP
2. LEAVE 8' COILED WIRE FOR UTILITY COMPANY CONNECTION
3. PROVIDE CONDUIT AND PULL BOX FOR UNDERGROUND SERVICE ONLY
4. BONDING STRAP IN BACKFILL
5. SIGN SUPPLIED AND INSTALLED BY COUNTY



SCHOOL FLASHING BEACON ASSEMBLY SIDE OF ROAD, TYPE II



SCHOOL FLASHING BEACON ASSEMBLY SIDE OF ROAD, TYPE I

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STANDARD SIGNAL DETAILS

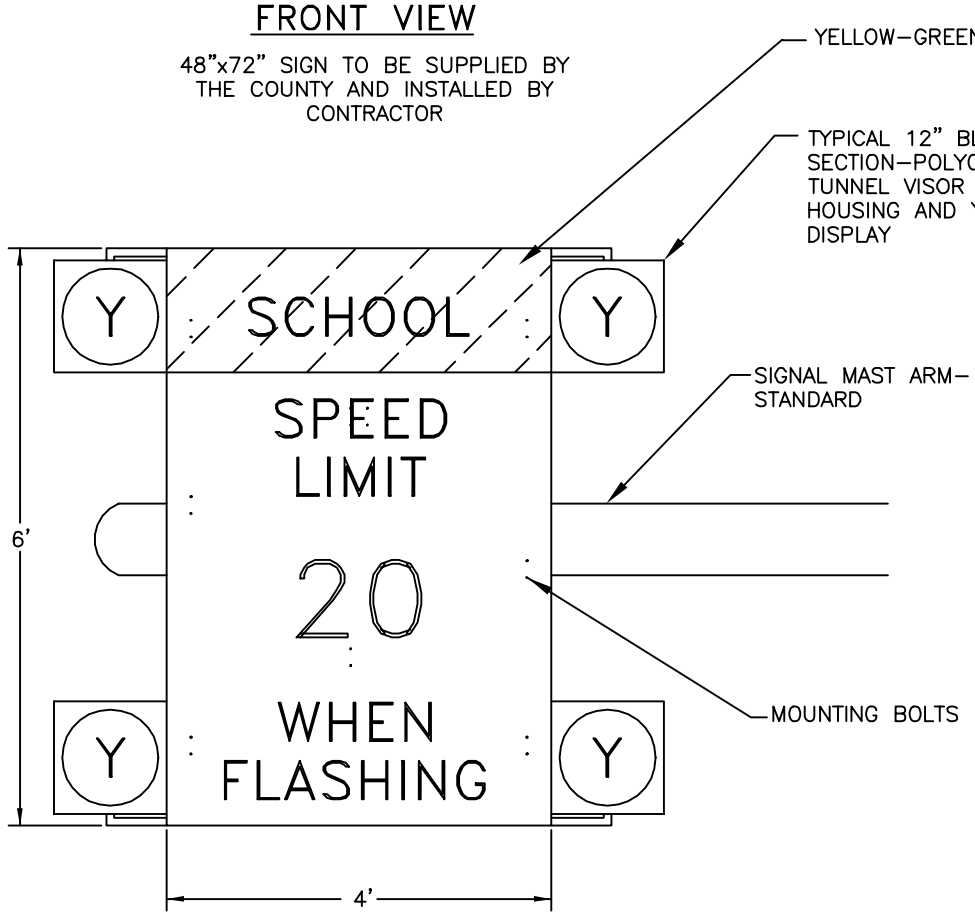
SCHOOL FLASHING BEACONS
SIDE OF ROAD

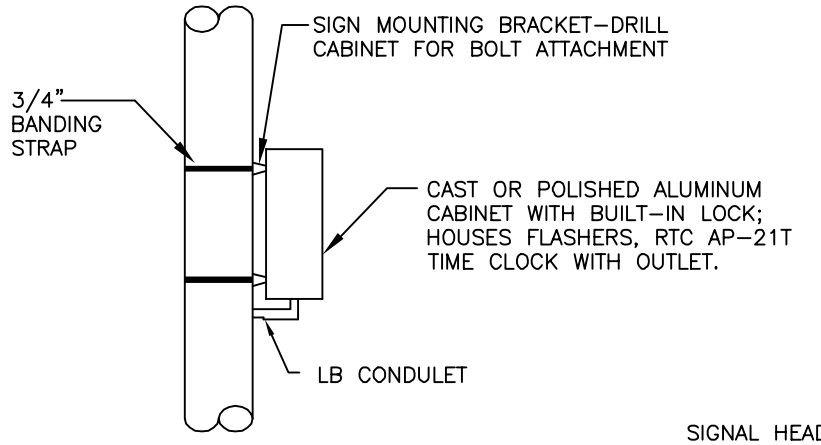
DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

SHEET NO. 14 OF 18

FRONT VIEW

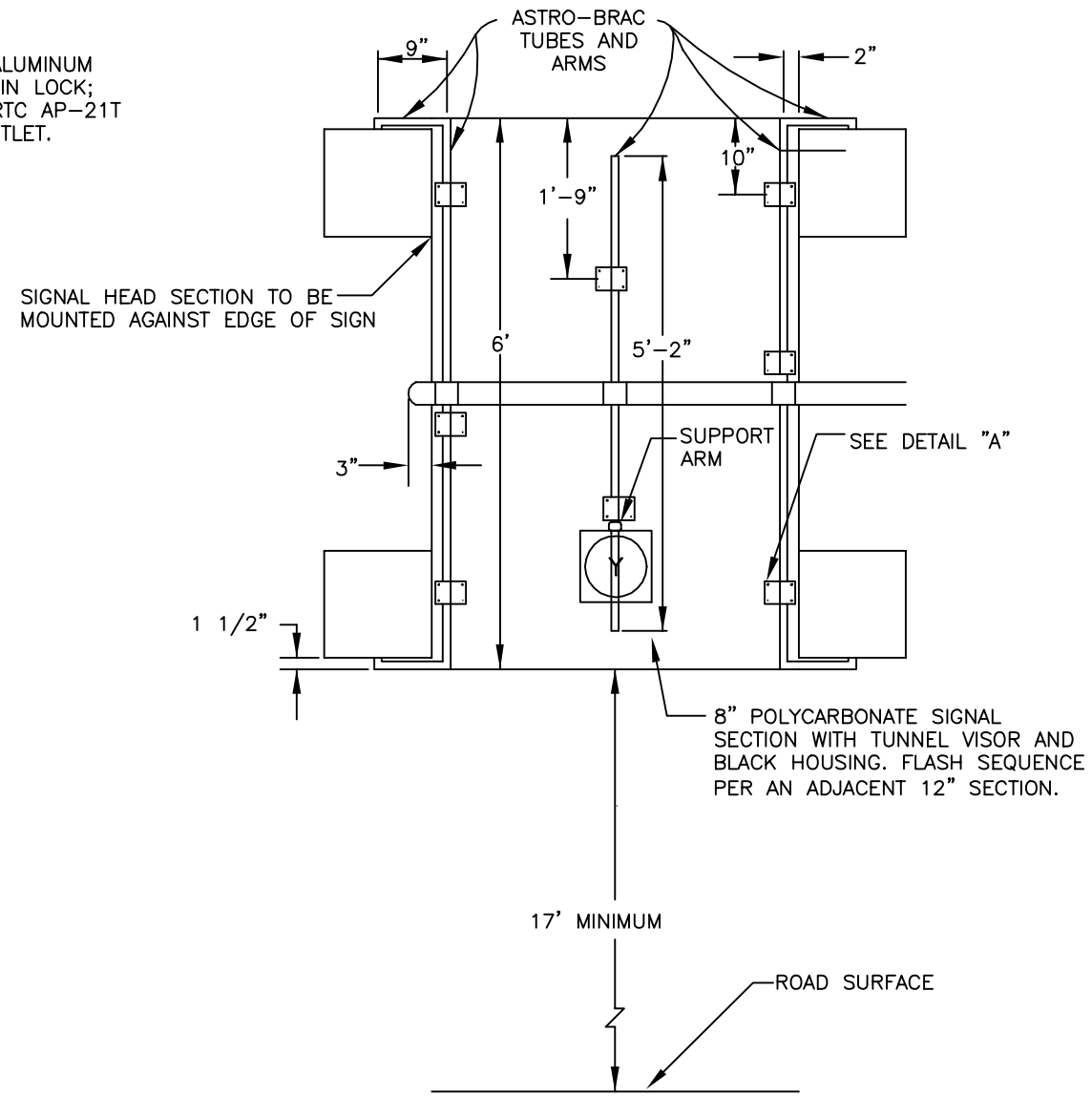
48"x72" SIGN TO BE SUPPLIED BY THE COUNTY AND INSTALLED BY CONTRACTOR

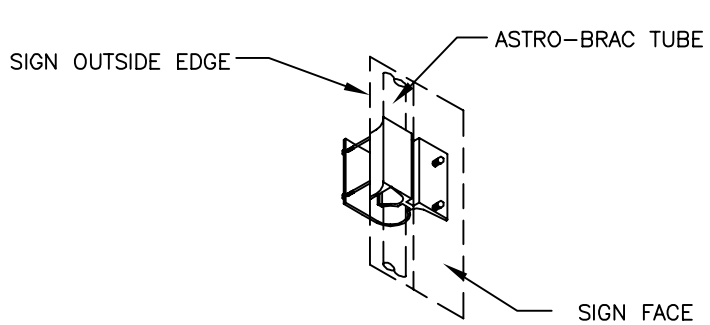




CABINET AND FLASHER DETAIL

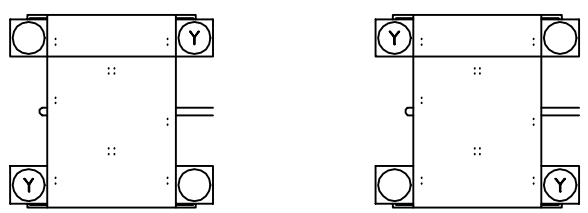
BACKVIEW





DETAIL "A" SIGN CLAMP

FLASHING SEQUENCE SHALL BE:



PLACEMENT NOTES:

1. ROADWAY WITH ONE THROUGH LANE: SIGN AND FLASHER ASSEMBLY CENTERED ON THROUGH LANE.
2. ROADWAY WITH TWO THROUGH LANES: SIGN AND FLASHER ASSEMBLY CENTERED ON LANE LINE BETWEEN THROUGH LANES.
3. ROADWAY WITH THREE THROUGH LANES: SIGN AND FLASHER ASSEMBLY CENTERED ON CENTER THROUGH LANE.

SCHOOL FLASHING BEACON ASSEMBLY–OVERHEAD

SEE ADAMS COUNTY SCHOOL FLASHER SIGNAL POLE AND FOUNDATION DETAILS FOR SIGNAL POLE, MAST ARM, AND FOUNDATION REQUIREMENTS.

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STANDARD SIGNAL DETAILS

SCHOOL FLASHING
BEACON–OVERHEAD

DATE: AUGUST 25, 2009
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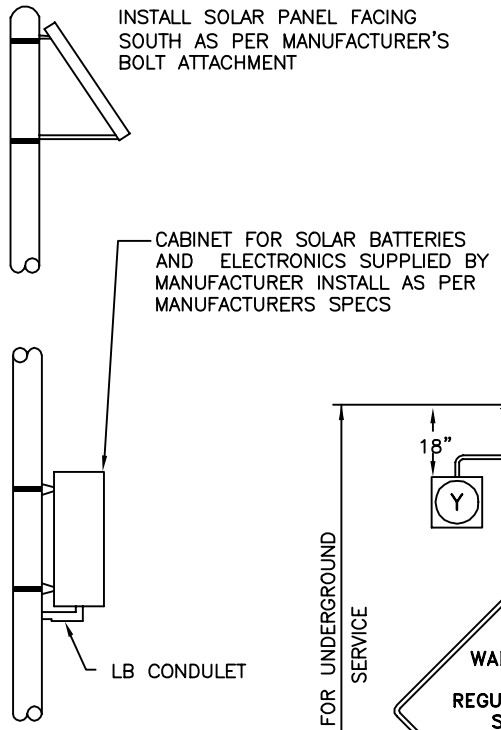
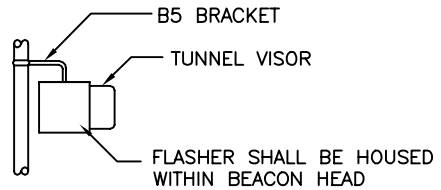
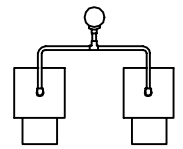
OPTIONAL SOLAR PANEL



BEACON SIDE VIEW



BEACON TOP VIEW



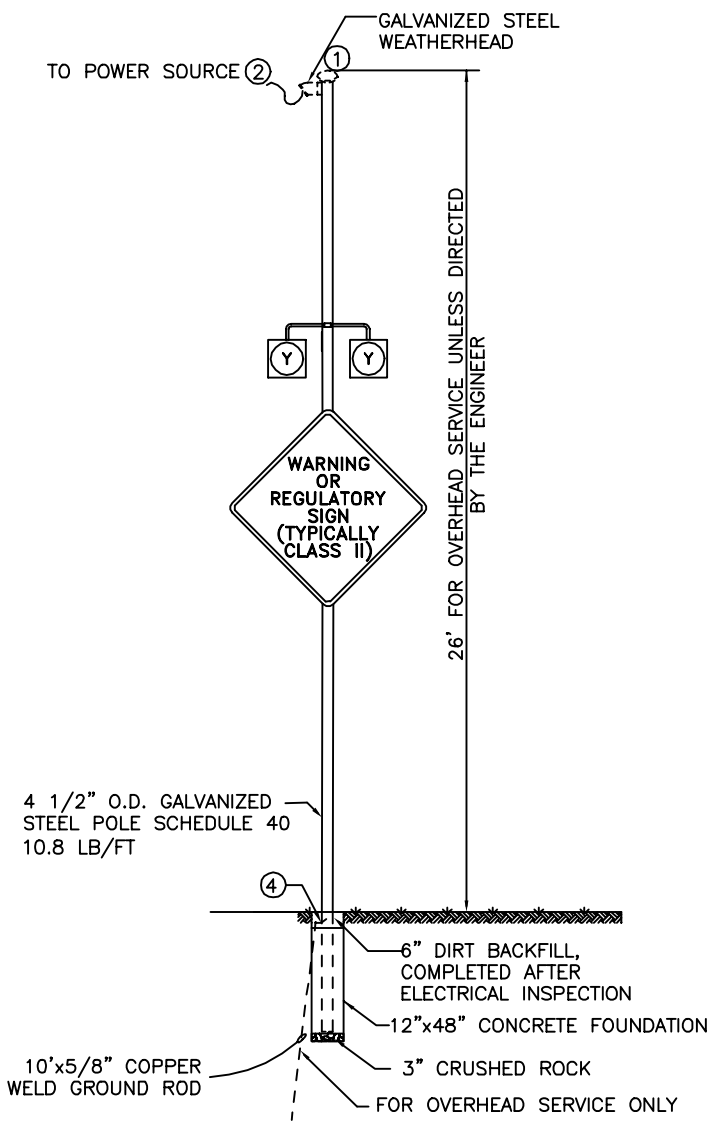
FLASHING BEACONS

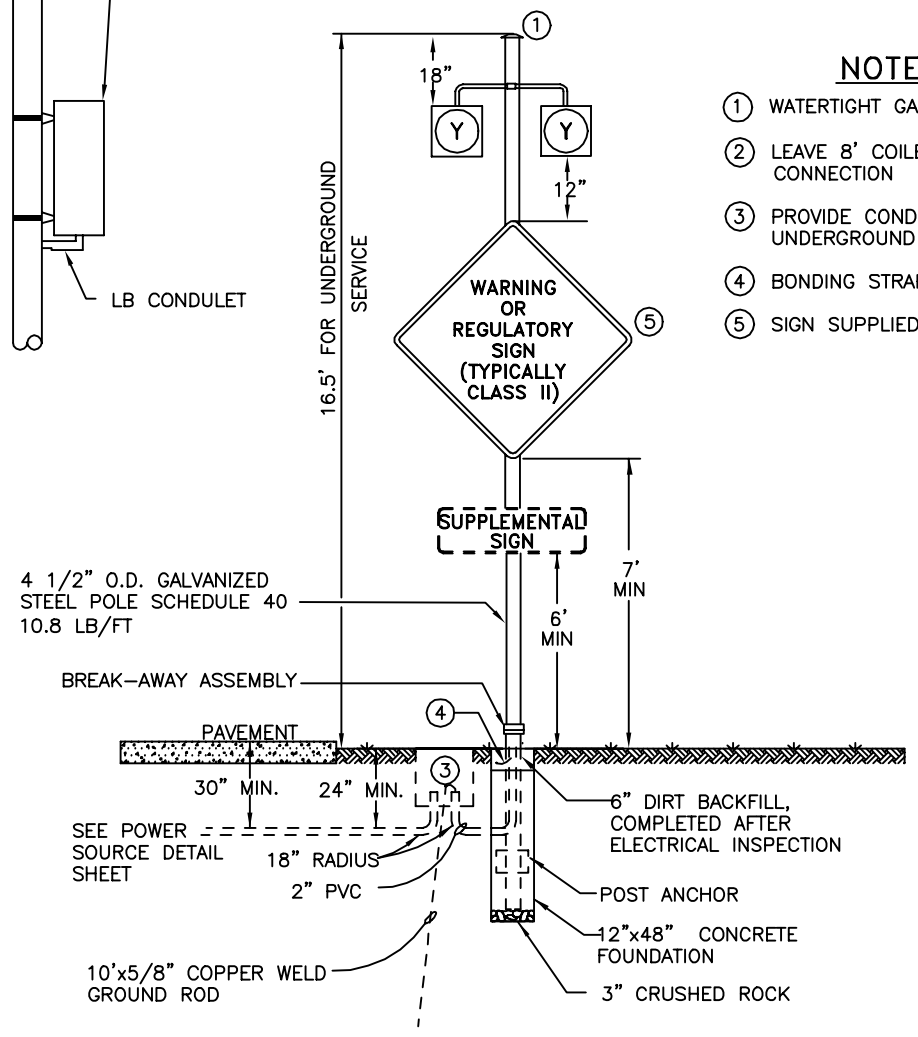
ALL FLASHING BEACONS SHALL BE 12" POLYCARBONATE WITH TUNNEL VISORS AND BLACK HOUSINGS AND YELLOW LED DISPLAYS

NOTES

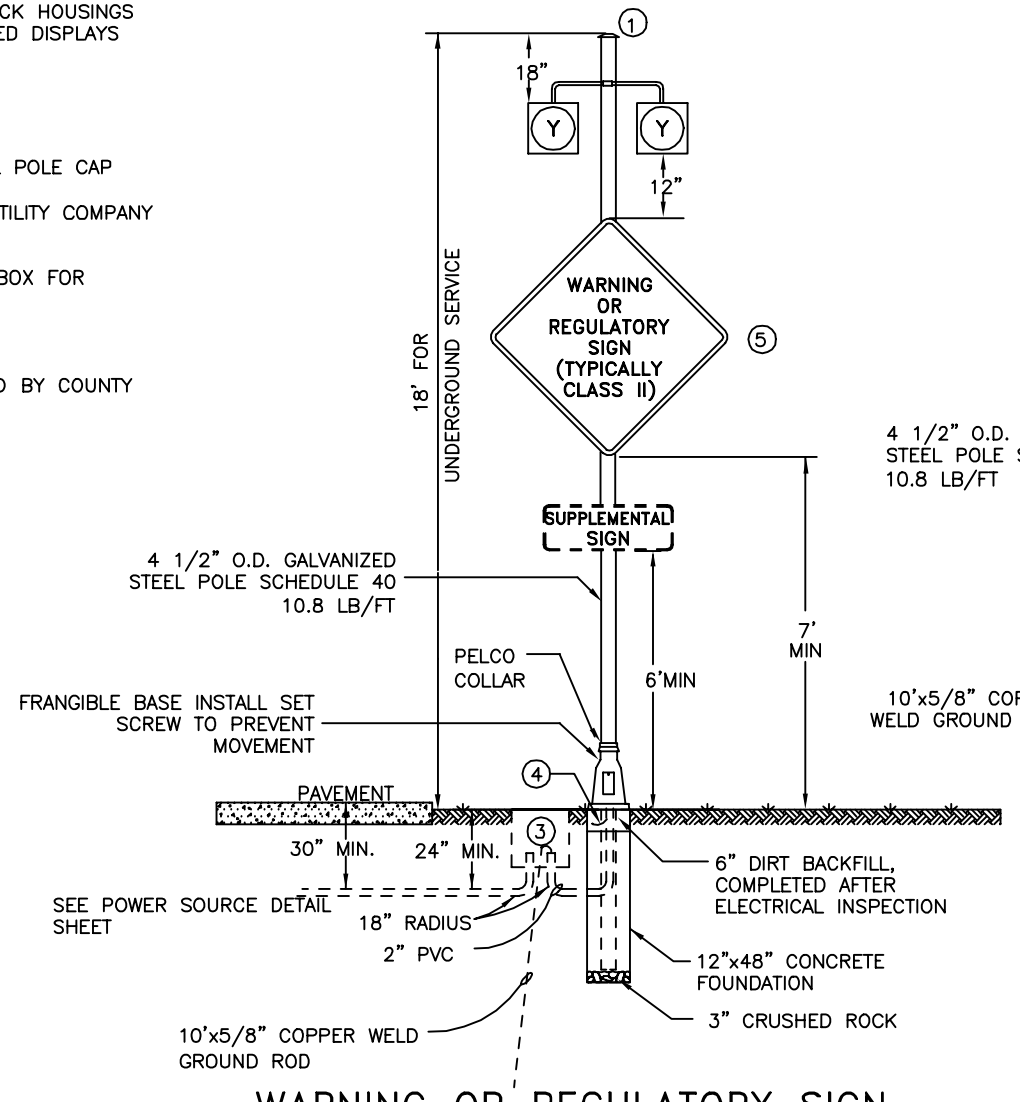
1. WATERTIGHT GALVANIZED STEEL POLE CAP
2. LEAVE 8' COILED WIRE FOR UTILITY COMPANY CONNECTION
3. PROVIDE CONDUIT AND PULL BOX FOR UNDERGROUND SERVICE ONLY
4. BONDING STRAP IN BACKFILL
5. SIGN SUPPLIED AND INSTALLED BY COUNTY

OVERHEAD POWER SERVICE





WARNING OR REGULATORY SIGN
FLASHING BEACON ASSEMBLY, TYPE II



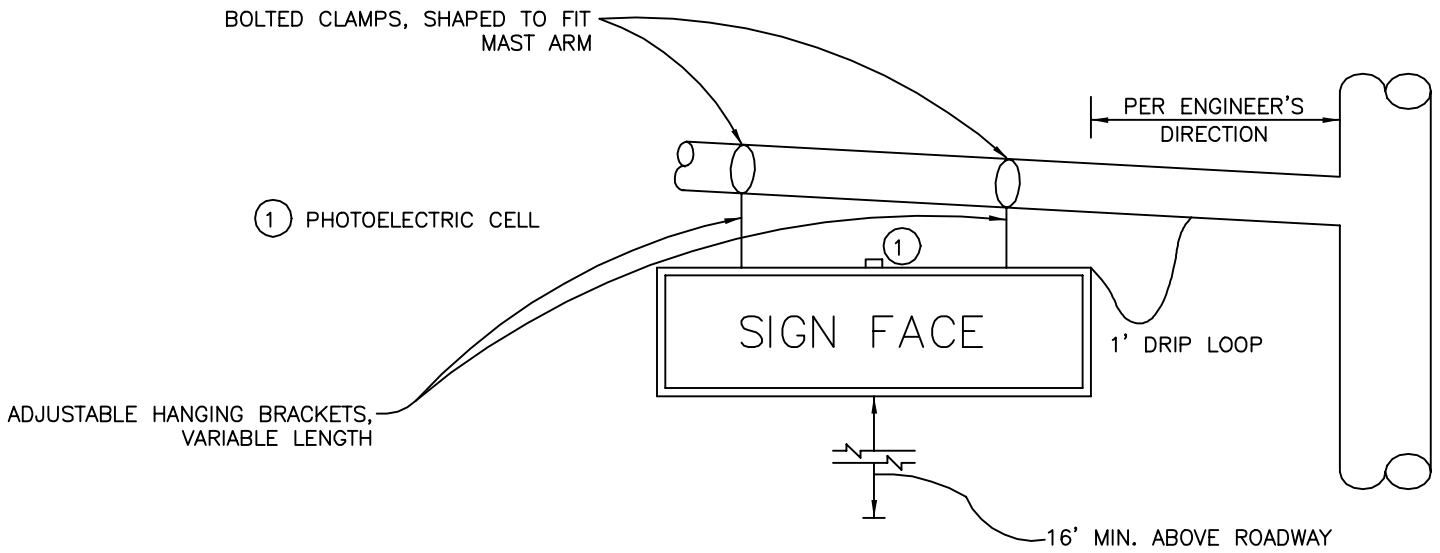
WARNING OR REGULATORY SIGN
FLASHING BEACON ASSEMBLY, TYPE I

ADAMS COUNTY
COLORADO

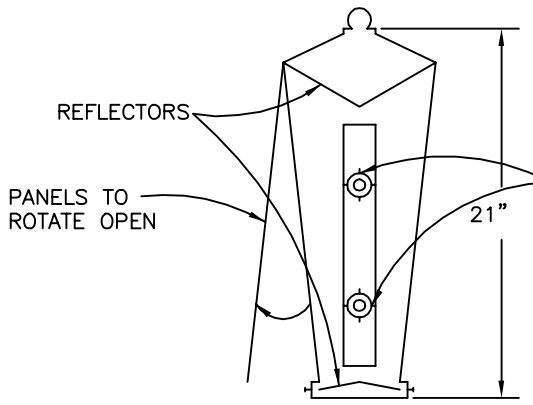
ADAMS COUNTY
STANDARD SIGNAL DETAILS

WARNING/REGULATORY
FLASHING BEACON

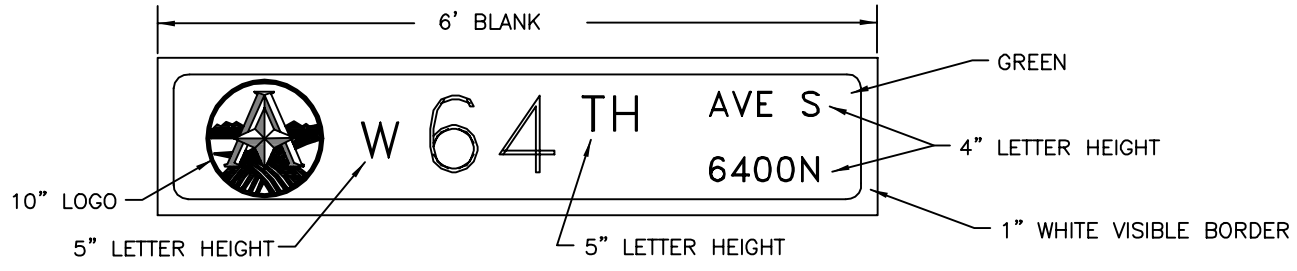
DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE

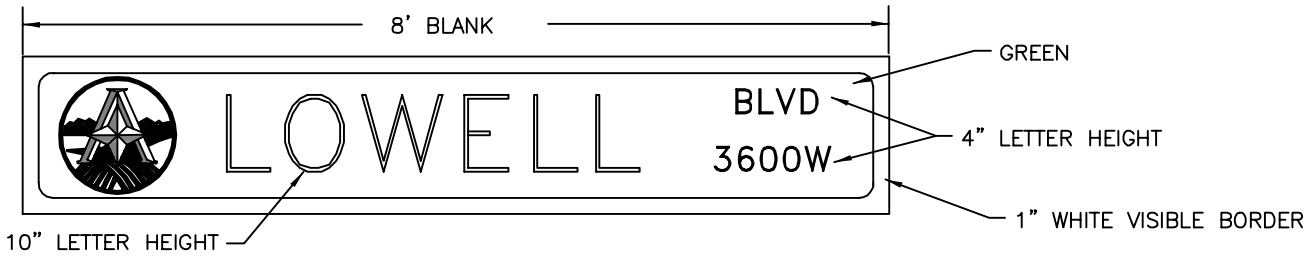


STANDARD MOUNT



SIDE VIEW





A. REPLACEMENT LENS WITH FRAME TO FIT EXISTING SIGN FIXTURES.

A1. BACKGROUND SHEETING SHALL BE 3–M BRAND DIAMOND GRADE REFLECTIVE SHEETING, SERIES 3990T TRANSLUCENT WHITE. GREEN TRANSPARENT OVERLAY FILM SHALL BE 3–M BRAND ELECTRO CUT SERIES 1177 GREEN. ADAMS COUNTY WILL PROVIDE TRANSPARENT COUNTY LOGO TO BE PLACED ON THE SIGN BY THE MANUFACTURER. PROTECTIVE OVERLAY CLEAR FILM SHALL BE 3–M BRAND SERIES 1150 CLEAR.

A2. REPLACEMENT LENSES SHALL BE FABRICATED COMPLETE WITH FRAME TO FIT EXISTING ILLUMINATED SIGN FIXTURES.

B. COMPLETE NEW ILLUMINATED STREET NAME SIGN FIXTURE AND LENSES.

B1. ILLUMINATED STREET NAME SIGN HOUSINGS SHALL BE CONSTRUCTED OF EXTRUDED ALUMINUM. ALL FERROUS HARDWARE PARTS SHALL BE GALVANIZED OR CADMIUM PLATED.

B2. THE REFLECTORS SHALL HAVE A MINIMUM REFLECTANCE OF 85%.

B3. BACKGROUND SHEETING SHALL BE 3–M BRAND DIAMOND GRADE REFLECTIVE SHEETING, SERIES 4090T TRANSLUCENT WHITE. GREEN TRANSPARENT OVERLAY FILM SHALL BE 3–M BRAND ELECTRO CUT SERIES 1177 GREEN. ADAMS COUNTY WILL PROVIDE TRANSPARENT COUNTY LOGO TO BE PLACED ON THE SIGN BY THE MANUFACTURER. SIGN PANELS SHALL BE PROTECTED BY OVERLAY CLEAR FILM AND SHALL BE 3–M BRAND SERIES 1150 CLEAR. THE SIGN COLORS SHALL NOT FADE WHEN EXPOSED TO AN ACCELERATED TEST OF ULTRAVIOLET LIGHT EQUIVALENT TO EIGHT YEARS OF OUTDOOR EXPOSURE.

B4. THE ENTIRE SURFACE OF THE SIGN PANEL SHALL BE EVENLY ILLUMINATED. THE AVERAGE OF BRIGHTNESS READING FOR THE LETTERS SHALL BE 150 FT.–LAMBERTS MINIMUM. THE LIGHT TRANSMISSION FACTOR OF THE SIGN PANEL SHALL PROVIDE A LETTER–TO–BACKGROUND BRIGHTNESS RATIO BETWEEN 10:1 AND 20:1.

B5. THE SIGN BALLASTS SHALL BE THE HIGH POWER FACTOR TYPE, RATED AT 100–125 V. AT 60 HZ., AND THERE SHALL BE A SEPARATE BALLAST FOR EACH FLUORESCENT LAMP. FUSES SHALL BE MINIATURE SLOW–BLOWING TYPE, WITH A SEPARATE FUSE PROVIDED FOR EACH BALLAST. FLUORESCENT LAMPS SHALL MEET ANSI STANDARD C78. ONE LAMPHOLDER FOR EACH LAMP SHALL BE THE SPRING–LOADED TYPE. THE ENTIRE SIGN AND ITS COMPONENTS SHALL BE OPERATING OVER A TEMPERATURE RANGE OF –30 DEGREE F. TO +160 DEGREE F.

B6. TERMINAL BLOCKS SHALL BE THE MOLDED, PHENOLIC, BARRIER TYPE RATED AT 15 AMP., 1000 V. AND SHALL HAVE WATERPROOF MARKING STRIPS. NO WIRING SPLICES WILL BE ALLOWED WITHIN THE SIGN WITHOUT THE PERMISSION OF THE ENGINEER.

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STANDARD SIGNAL DETAILS

ILLUMINATED STREET NAME SIGN

DATE: AUGUST 25, 2009
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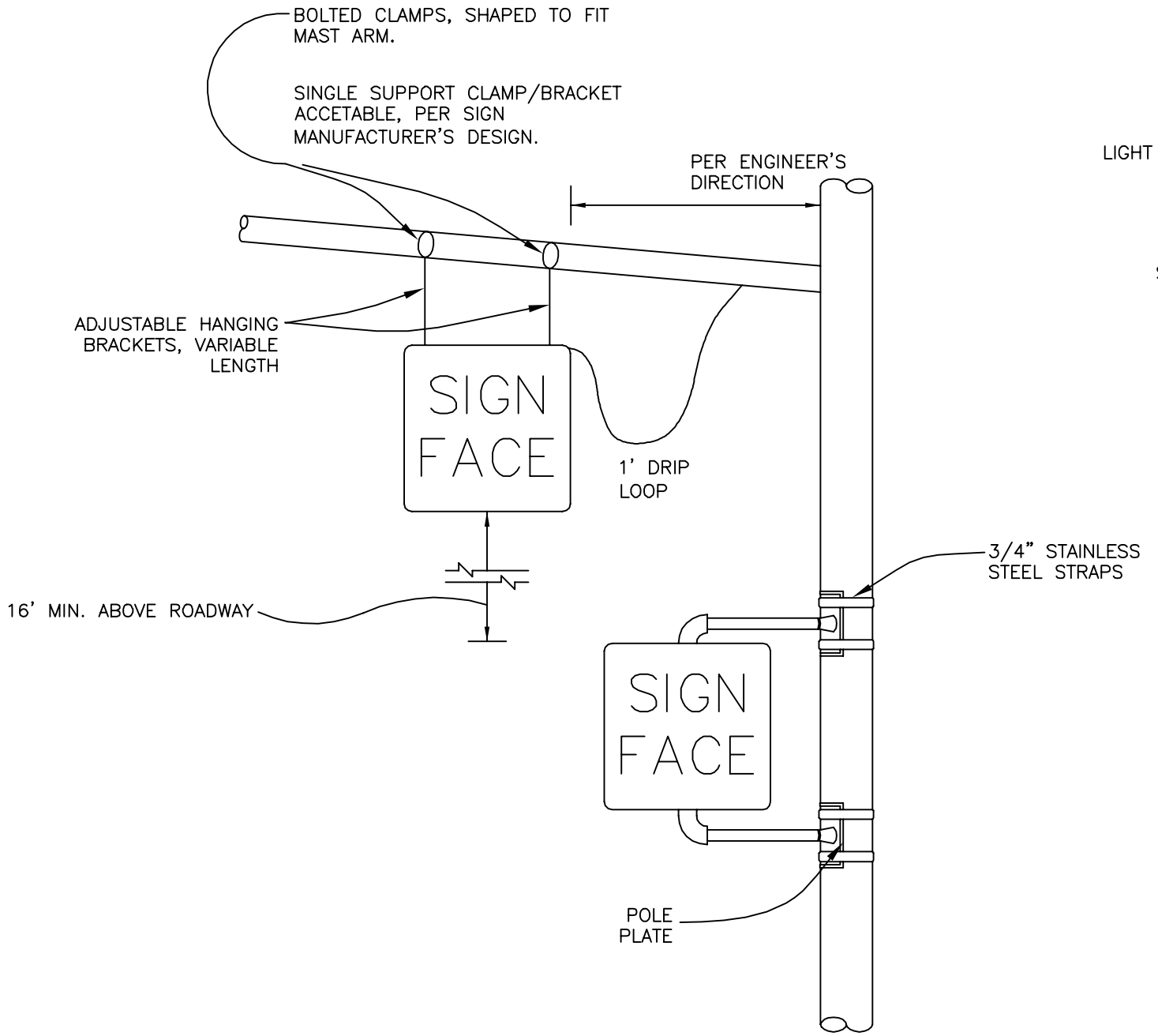
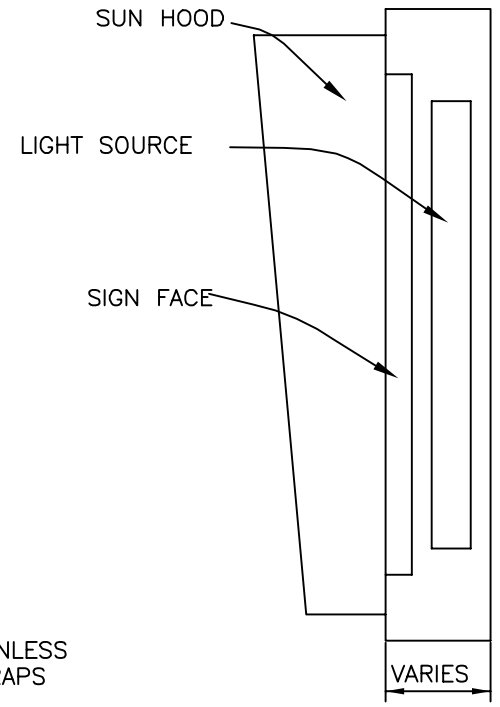


STANDARD MOUNTS



SIDE VIEW

NOTES

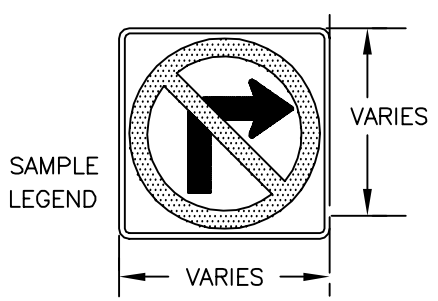
1. LIGHT SOURCE SHALL BE INCANDESCENT, FLUORESCENT OR FIBEROPTIC, PER DIRECTION OF THE ENGINEER. SIGN FACE SHALL BE COMPLETELY BLANKED OUT WHEN NOT ENERGIZED.
2. LIGHT SOURCE SHALL BE READILY ACCESSIBLE THROUGH HINGED DOORS OR SLIDING PANELS.
3. LIGHT SOURCE SHALL BE REDUNDANT SUCH THAT WITH FAILUREOF ONE BULB, BALLAST, ETC., SIGN ILLUMINATION SHALL BE SUFFICIENT.
4. HOUSING COLOR PER DIRECTION OF THE ENGINEER.

GENERAL NOTES

1. SIGN FIXTURE AND PANELS SHALL WITHSTAND 90 MPH WIND LOADING, WITH STRUCTURAL REQUIREMENTS MEETING AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS," LATEST EDITION.
2. HOUSING SHALL BE CONSTRUCTED OF ALUMINUM UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
3. NEOPRENE GASKETS SHALL BE INSTALLED BETWEEN THE SIGN PANEL AND FIXTURE HOUSING TO PREVENT WATER ENTRANCE. SCREENED WEEP HOLES SHALL BE PROVIDED ON HOUSING BOTTOM FOR DRAINAGE.

SIGN NOTES

1. SIGN MAY BE SINGLE-SIDED OR DOUBLE-SIDED PER ENGINEER'S DIRECTION.
2. SIGN COLOR, LEGEND AND SIZE PER ENGINEER'S DIRECTION.



TYPICAL SIGN LAYOUT

ADAMS COUNTY
COLORADO

ADAMS COUNTY
STANDARD SIGNAL DETAILS
BLANCK-OUT REGULATORY/ WARNING SIGN
DATE: AUGUST 25, 2009
SCALE: NOT TO SCALE
SHEET NO. 18 OF 18