—STATIC/DYNAMIC SIGN NOTES—

GENERAL NOTES

1. BARS, PLATES, AND SHAPES SHALL BE STRUCTURAL STEEL CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION: AASHTO M270 (ASTM A709) GRADE 36.
2. HIGH-STRENGTH STEEL BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE SPECIFICATIONS OF ASTM DESIGNATION: A 325. ALL OTHER BOLTS AND NUTS SHALL CONFORM TO THE SPECIFICATIONS OF ASTM DESIGNATION: A 307. WASHERS FOR ALL BOLTS SHALL MEET THE REQUIREMENTS FOR HARDENED STEEL WASHERS MANUFACTURED IN ACCORDANCE WITH ASTM F436 OR ASTM F959.
3. PIPE POSTS SHALL BE WELDED OR SEAMLESS STEEL PIPE FOR SIGN BRIDGES AND SEAMLESS STEEL PIPE FOR CANTILEVER SIGNS CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION: A 53, GRADE B. AT THE OPTION OF THE CONTRACTOR, POSTS MAY BE FABRICATED FROM STRUCTURAL STEEL CONFORMING TO THE SPECIFICATIONS OF ASTM DESIGNATION: AASHTO M270 (ASTM A709) GRADE 36. U-BOLTS AND ANCHOR BOLTS SHALL BE MADE FROM STEEL BAR CONFORMING TO AASHTO M 314-90 GRADE 55 STEEL WITH 55,000 PSI MIN. YIELD STRESS AND 75,000 PSI MIN. TENSILE STRENGTH.
4. SIGN STRUCTURES SHALL BE CONSTRUCTED TRUE TO DIMENSIONS, SHALL BE FREE FROM KINKS, TWISTS OR BENDS, AND SHALL BE UNIFORM IN APPEARANCE. THE COMPLETED SECTIONS SHALL BE ASSEMBLED IN THE SHOP AND SHALL BE CHECKED FOR STRAIGHTNESS, ALIGNMENT, AND DIMENSION. ANY VARIATIONS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER.
5. MAST ARMS SHALL BE TEMPORARILY SUPPORTED TO TAKE ALL LOAD OFF OF THE FIELD SPLICES WHILE BOLTS ARE BEING TIGHTENED IN ORDER TO FIRMLY SEAT THE FLANGE PLATES.
6. POSTS FOR TUBULAR SIGN STRUCTURES SHALL BE FORMED TO THE RADII SHOWN ON THE PLANS BY HEAT TREATMENT OR BY FABRICATION TO SUCH RADII BY METHODS WHICH WILL NOT CRIMP OR BUCKLE THE INTERIOR RADIUS OF THE PIPE BEND.
7. CLIPS, EYES, OR REMOVABLE BRACKETS SHALL BE AFFIXED TO ALL POSTS AND MAST ARMS, AS NECESSARY, TO SECURE THE SIGN DURING SHIPPING AND FOR LIFTING AND MOVING DURING ERECTION. THIS IS TO PREVENT DAMAGE TO THE FINISHED GALVANIZED OR PAINTED SURFACES. BRACKETS ON TUBULAR SIGN STRUCTURES SHALL BE REMOVED AFTER ERECTION. DETAILS OF SUCH DEVICES SHALL BE SHOWN ON THE SHOP DRAWINGS.
8. BOLTED CONNECTIONS SHALL CONFORM TO THE FOLLOWING PROVISIONS IN SECTION 509.28 OF THE STANDARD SPECIFICATIONS: (a),(b) (EXCEPT FOR THE DTI REQUIREMENTS) AND (e) THROUGH (h)1. ASSEMBLY OF HIGH-STRENGTH BOLTED CONNECTIONS FOR SIGN STRUCTURES MAY BE MADE WITH GALVANIZING OR PAINT ON THE CONTACT SURFACES.
9. BOLTS WITH DIAMETERS EXCEEDING BY UP TO ¼ INCH THE DIAMETER OF THE BOLTS SHOWN ON THE PLANS MAY BE USED, PROVIDED THAT REQUIRED CLEARANCES AND EDGE DISTANCES ARE NOT REDUCED BELOW THAT REQUIRED FOR THE LARGER BOLT.
10. FOR STATIC SIGNS, WALKWAYS SHALL ONLY BE LOCATED IN FRONT OF AND BETWEEN SIGN PANELS. DO NOT LOCATE WALKWAYS UNDER ANY OTHER PORTIONS OF SIGN STRUCTURE WHICH DO NOT HAVE SIGN PANELS. FOR DYNAMIC SIGNS, WALKWAYS SHALL LEAD UP TO THE CABINET ACCESS DOOR AND IN FRONT OF THE CABINET AS SPECIFIED ON THE SIGN X-SECTION SHEETS IN THE ROADWAY PLANS.
11. ALL SIGN STRUCTURES SHALL BE FABRICATED INTO THE LARGEST PRACTICAL SECTIONS PRIOR TO GALVANIZING. SPLICE LOCATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AND THE CONTRACTOR SHALL NOT COMMENCE FABRICATION UNTIL SUCH SPLICE LOCATIONS ARE APPROVED.
12. WELDING OF STEEL SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1. ALL AREAS TO BE WELDED SHALL BE GROUND TO BRIGHT METAL. NO BUTT WELD SPLICES WILL BE PERMITTED. ALL WELDING AND REQUIRED TESTING SHALL BE COMPLETE BEFORE ANY MATERIAL IS GALVANIZED. ALL CIRCUMFERENTIAL AND STIFFENER WELDS SHALL BE NON-DESTRUCTIVELY TESTED USING THE ENHANCED MAGNETIC PARTICLE METHOD IN ACCORDANCE WITH SUBSECTION 509.18(d). THE ACCEPTANCE CRITERIA ARE STATED IN TABLE 6.1 OF ANSI/AWS D1.1. ALL LONGITUDINAL PIPE SEAM WELDS WITHIN 6" OF FULL-PENETRATION CIRCUMFERENTIAL GROOVE WELDS SHALL BE FULL PENETRATION GROOVE WELDS AND SHALL BE INSPECTED AS SPECIFIED ABOVE. MAXIMUM WELD UNDERCUT SHALL BE 0.01".
13. ALL TUBE MEMBERS SHALL BE HOT-DIP GALVANIZED INSIDE AND OUTSIDE AFTER FABRICATION AS PER ASTM A123. WALKWAY GRATINGS, WALKWAY BRACKETS, GUTTERS, SAFETY RAILINGS, STEEL MOUNTINGS FOR LIGHT FIXTURES, AND ALL NUTS, BOLTS, AND WASHERS FOR SIGN STRUCTURES SHALL BE GALVANIZED AFTER FABRICATION AS PER ASTM A123 OR ASTM A153, AS APPROPRIATE, AND SHALL NOT BE PAINTED.
14. ALL CONCRETE SHALL BE CLASS BZ WITH AIR ENTRAINMENT; REINFORCING STEEL SHALL BE GRADE 60. CAISSON FOUNDATIONS SHALL REACH THE SEVEN DAY PREDICTED STRENGTH BEFORE SIGN STRUCTURES ARE ERECTED THEREON.
15. STRUCTURES SHALL BE GROUNDED IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODES.
16. SHEETS IN THE INDEX MARKED WITH A ■ PROVIDE INSTRUCTIONS TO DESIGNERS FOR THEIR USE IN THE PREPARATION OF THE SIGN X-SECTION SHEETS IN THE ROADWAY PLANS.
17. NPS = NOMINAL PIPE SIZE; O.D. = OUTSIDE DIAMETER.
18. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW IN ACCORDANCE WITH SUBSECTION 105.02 OF THE STANDARD SPECIFICATIONS.
19. INSTALL STRUCTURE IDENTIFICATION PANEL IN ACCORDANCE WITH M AND S STANDARD S-614-12 USING TWO ½" WIDE STAINLESS STEEL BANDS AND STAINLESS STEEL FLARED LEG BRACKETS WITH HEX HEAD BOLTS (BAND – IT D315 OR EQUIVALENT).
20. CAISSON AND SURVEY WORK SHALL BE PAID FOR IN ACCORDANCE WITH BID ITEMS 503 AND 625 RESPECTIVELY.

DESIGN DATA

SPECIFICATIONS:

DESIGN: "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (1994 AASHTO), (STATIC SIGNS ONLY)

"STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (2001 AASHTO), (DYNAMIC SIGNS ONLY)

"FATIGUE-RESISTANT DESIGN OF CANTILEVERED SIGNAL, SIGN AND LIGHT SUPPORTS", NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 412, 1998. (STATIC SIGNS ONLY)

SUBSECTION 17.4, SIGNS, IN THE STAFF BRIDGE BRANCH BRIDGE DESIGN MANUAL.

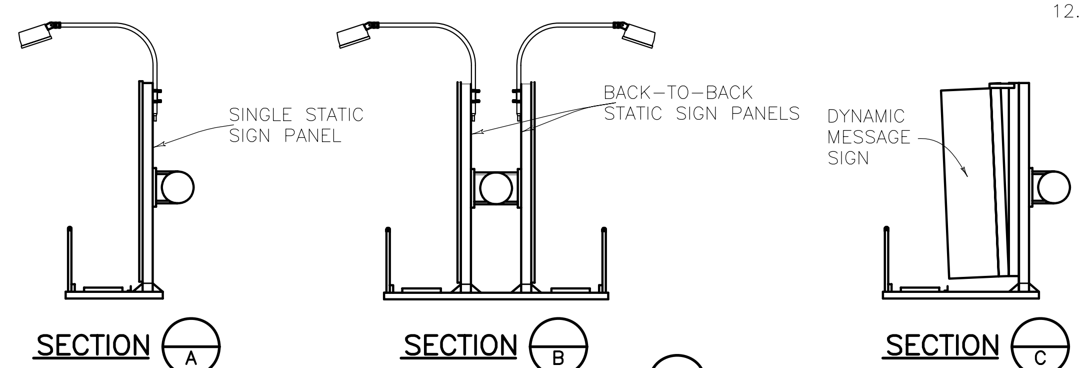
CONSTRUCTION: CDOT STANDARD SPECIFICATIONS, THESE STANDARD SHEETS AND THE PROJECT PLANS.

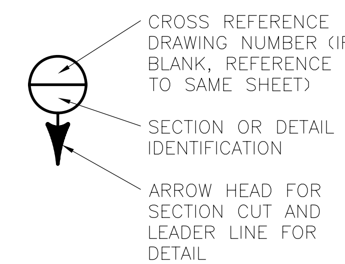
WIND LOADING: 80, 90 OR 100 MPH VELOCITY (STATIC SIGNS ONLY).
100 MPH VELOCITY (DYNAMIC SIGNS ONLY).

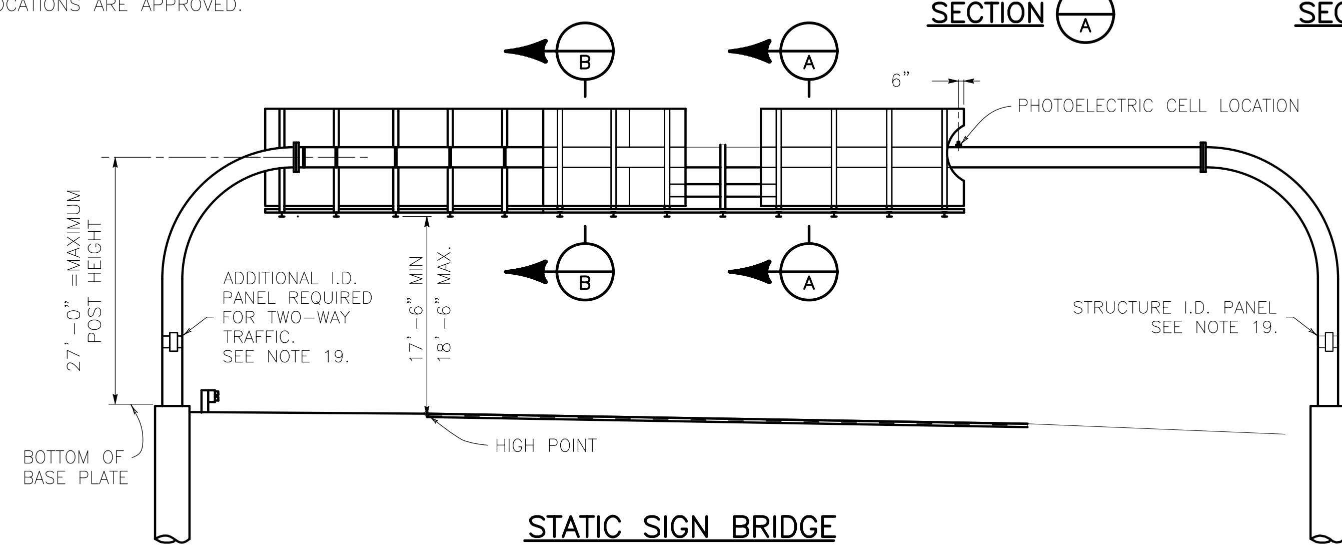
OVERHEAD SIGN X-SECTION SHEET(S) SHOULD SHOW:

1. SIGN STRUCTURE LOCATION (HIGHWAY, STATION AND DIRECTION)
2. LENGTH OF STRUCTURE SPAN
3. PANEL SIZE AND LOCATION ON STRUCTURE
4. POST HEIGHT(S) FROM TOP OF CAISSON TO ℄ ARM TUBE
5. CAISSON DIAMETER AND MINIMUM EMBEDMENT
6. TOP OF CAISSON ELEVATION
7. CAISSON PAY LENGTH
8. WALKWAY LOCATION
9. PHOTOELECTRIC CELL LOCATION IF REQUIRED
10. LANE LINE LOCATION(S) IF STRUCTURE IS OVER TRAFFIC
11. AS CONSTRUCTED BLOCK
12. DESIGN WIND SPEED.

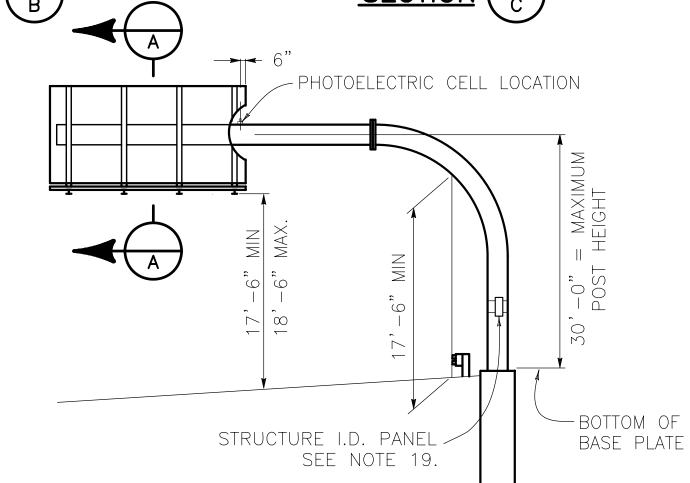
INDEX



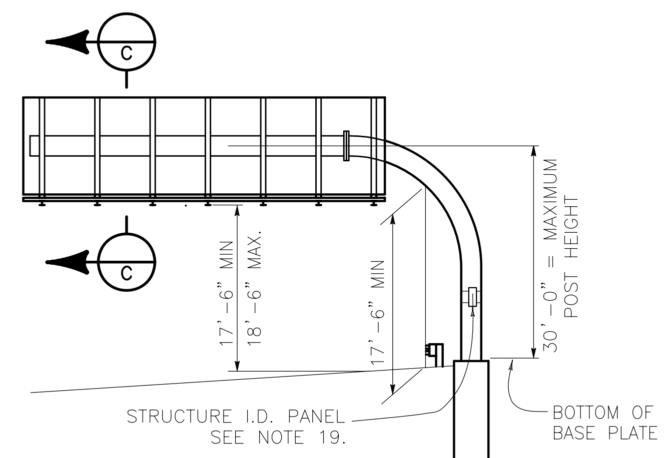




STATIC SIGN BRIDGE



STATIC CANTILEVER SIGN



DYNAMIC CANTILEVER SIGN
(VARIABLE MESSAGE SIGN)

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S614500114.dwg	
CAD Ver.: ACAD 2004	Scale: Not to Scale Units: English

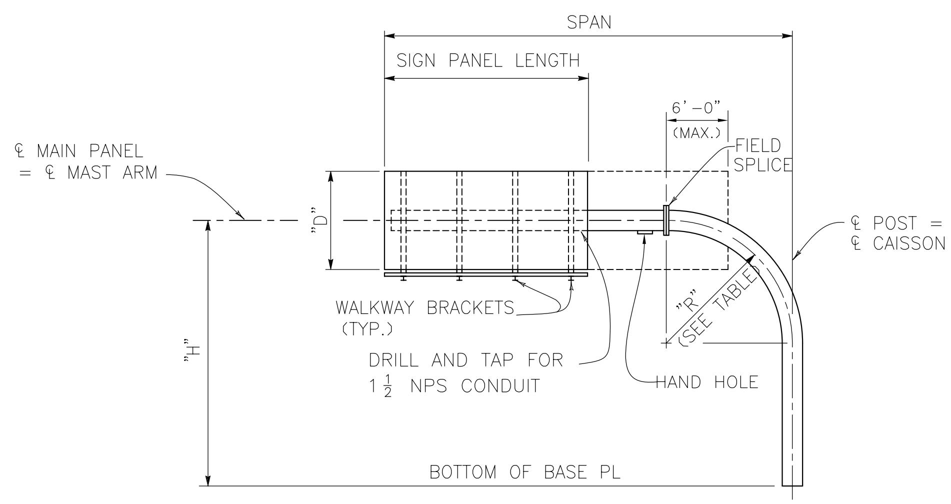
	Sheet Revisions	
	Date:	Comments
R-X		
R-X		
R-X		
R-X		

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

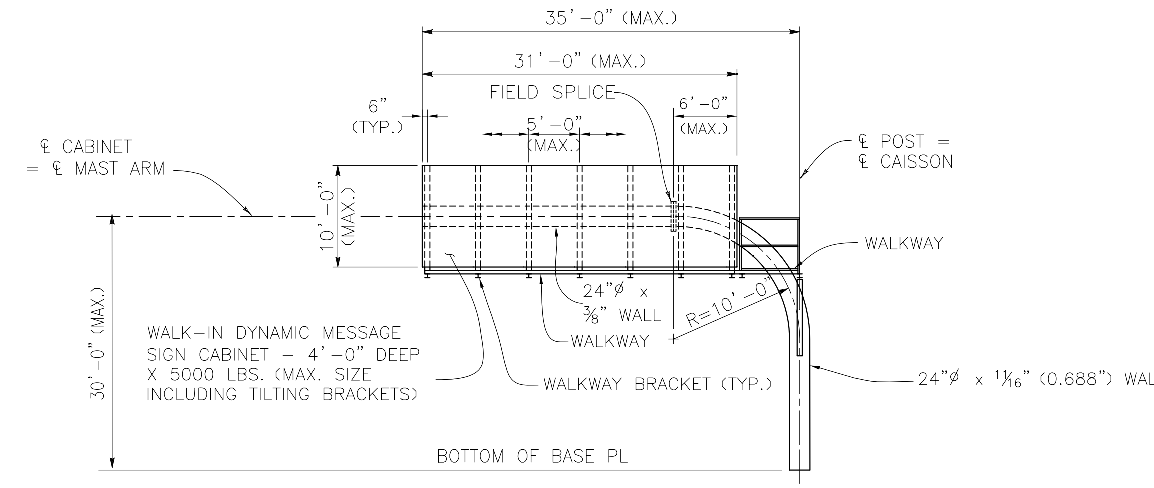
MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.
S-614-50



STATIC CANTILEVER



DYNAMIC CANTILEVER

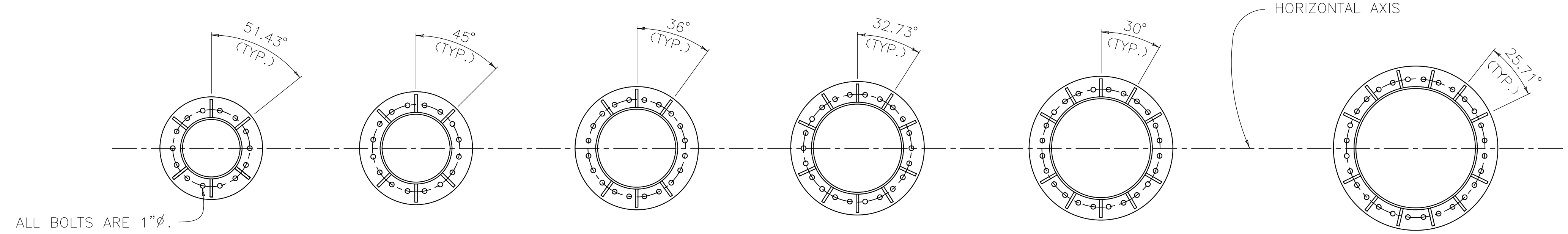
STATIC CANTILEVER NOTES

1. THE MAXIMUM SIGN PANEL OVERLAP ONTO ELBOW SHALL NOT EXCEED 6'-0" FROM THE FIELD SPLICE.
2. WHEN SEVERAL SIGN PANELS ARE TO BE INSTALLED WITH A SPACE BETWEEN THE PANELS, THE SPACE SHALL BE AS SMALL AS POSSIBLE AND 2'-0" MAXIMUM WITHOUT SAFETY CABLES.
3. ALL POSTS BETWEEN BASE PLATE AND FIELD SPLICE SHALL HAVE A TUBE WALL THICKNESS OF ½". ALL MAST ARMS SHALL HAVE A TUBE WALL THICKNESS OF ⅜".
4. DURING SIGN ERECTION, THE POST SHALL BE ALIGNED BY USING THE LEVELING NUTS TO MAKE THE SIGN PANEL LEVEL.
5. FIELD SPLICE DETAILS ARE FOR BOTH CANTILEVER SIGNS AND SIGN BRIDGES. SEE SHEET 6 FOR ADDITIONAL FIELD SPLICE INFORMATION.

DYNAMIC CANTILEVER NOTES

1. THE MAXIMUM CABINET OVERLAP ONTO ELBOW SHALL NOT EXCEED 6'-0" FROM THE FIELD SPLICE.
2. ALL POSTS BETWEEN BASE PLATE AND FIELD SPLICE SHALL HAVE A TUBE WALL THICKNESS OF 1¹⁄₁₆" (0.688"). ALL MAST ARMS SHALL HAVE A TUBE WALL THICKNESS OF ⅜".
3. DURING SIGN ERECTION, THE POST SHALL BE ALIGNED BY USING THE LEVELING NUTS TO MAKE THE SIGN PANEL LEVEL.
4. FIELD SPLICE DETAILS ARE FOR BOTH CANTILEVER SIGNS AND SIGN BRIDGES. SEE SHEET 6 FOR ADDITIONAL FIELD SPLICE INFORMATION.

PIPE POST	
PIPE OD (IN.)	"R" (FT.)
12.75	8
14	8
16	8
18	8
20	8
24	10



12.75" TUBE | 14" TUBE | 16" TUBE | 18" TUBE | 20" TUBE | 24" TUBE

FIELD SPLICE DETAILS

STIFFENERS SHALL BE LOCATED ON BOTH SIDES OF THE FIELD SPLICE.
CLIP WASHERS AS NEEDED TO AVOID INTERFERENCE WITH STIFFENER WELDS.

Computer File Information
Creation Date: 07-04-06 Initials: JSV
Last Modification Date: 07-04-06 Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/
Drawing File Name: S614500214.dwg
CAD Ver.: ACAD 2004 Scale: Not to Scale Units: English

R-X R-X R-X R-X

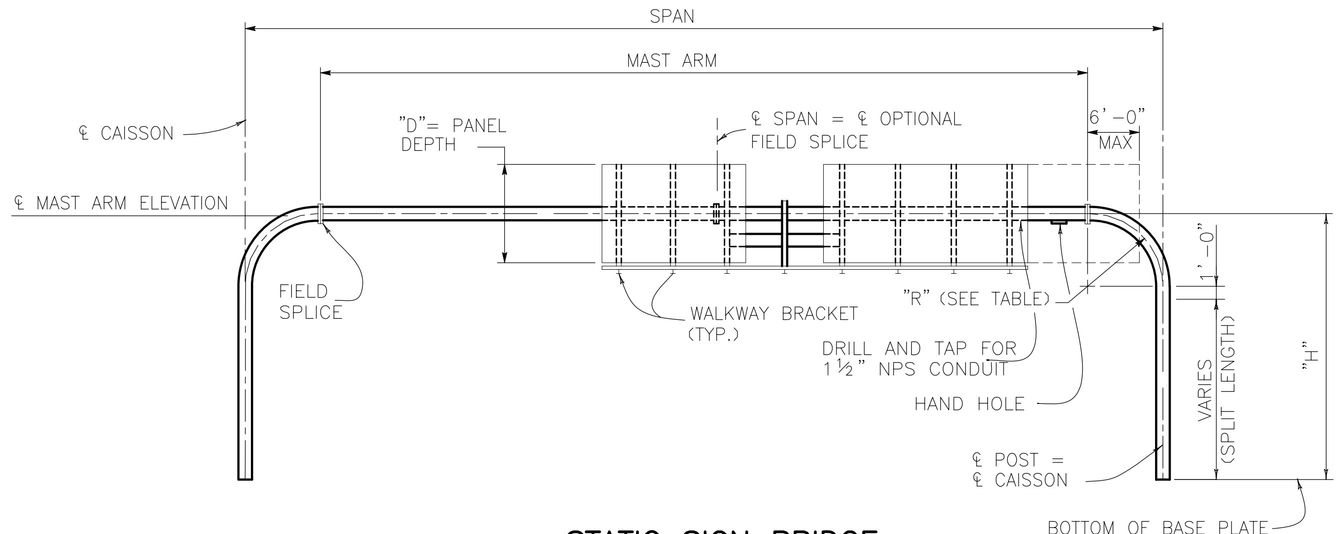
Sheet Revisions	
Date:	Comments

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.
S-614-50



STATIC SIGN BRIDGE

NOTES

1. THE MAXIMUM SIGN PANEL OVERLAP ONTO ELBOW SHALL NOT EXCEED 6'-0" FROM THE FIELD SPLICE.
2. WHEN SEVERAL SIGN PANELS ARE TO BE INSTALLED WITH A SPACE BETWEEN THE PANELS, THE SPACE SHALL BE AS SMALL AS POSSIBLE AND 2'-0" MAXIMUM WITHOUT SAFETY CABLES.
3. ALL POSTS BETWEEN BASE PLATE AND FIELD SPLICE SHALL HAVE A TUBE WALL THICKNESS OF ½". ALL MAST ARMS SHALL HAVE A TUBE WALL THICKNESS OF ⅜".
4. BEFORE ANY PORTION OF THE SIGN FRAMES ARE ASSEMBLED IN THEIR FINAL POSITIONS THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER BY PREASSEMBLY OR OTHER APPROVED METHODS THAT THE SPAN LENGTHS OF THE FRAMES IN THE NO LOAD CONDITION MATCH WITHIN ½" OF THE FIELD MEASURED SPAN LENGTHS BETWEEN FOUNDATIONS.
5. IF THE SIGN FRAMES ARE ERECTED AS ONE UNIT, THEY SHALL BE ADEQUATELY SUSPENDED TO AVOID DISTORTIONS OR CHANGES IN SPAN LENGTH BETWEEN BASE PLATES.
6. FOR MAST ARMS WITH LENGTHS BETWEEN 40'-0" AND 80'-0" A BOLTED FIELD SPLICE WILL BE PERMITTED AT ℄ OF THE ARM TO FACILITATE GALVANIZING AND HAULING OPERATIONS. FOR MAST ARMS WITH LENGTHS GREATER THAN 80'-0", TWO BOLTED FIELD SPLICES WILL BE PERMITTED AT THE ⅓ POINTS TO FACILITATE GALVANIZING AND HAULING OPERATIONS.
7. SEE SHEET 2 FOR FIELD SPLICE DETAILS.

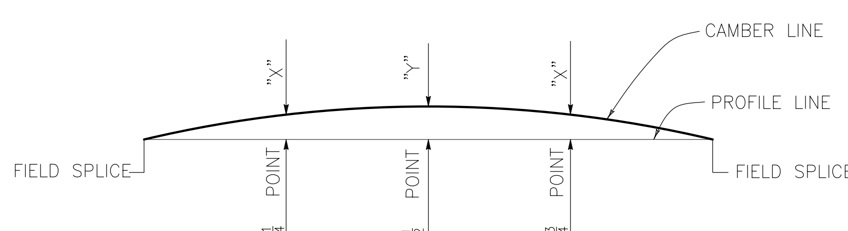
* PIPE POST

PIPE OD (IN.)	"R" (FT.)	CAMBER TYPE
12.75	8	Ⓐ
14	8	Ⓐ
16	8	Ⓑ
18	8	Ⓒ
20	10	Ⓒ
24	12	Ⓓ •

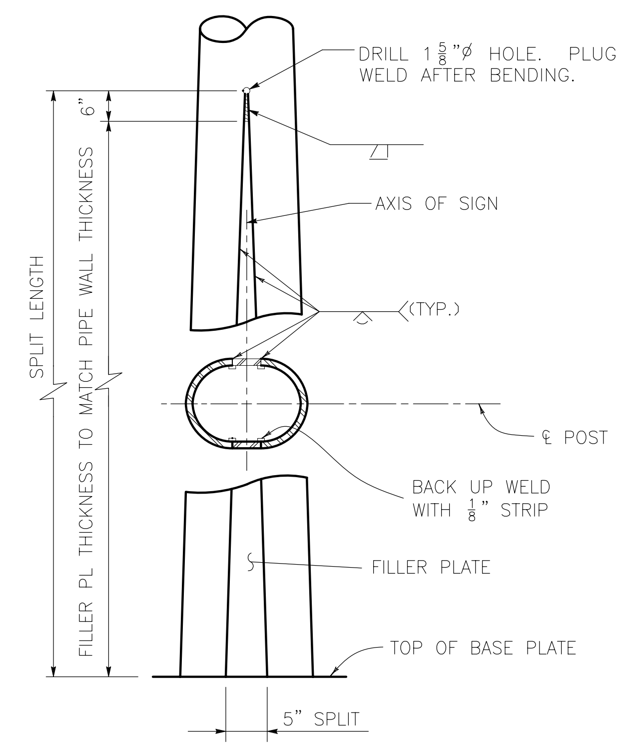
- • USE CAMBER TYPE E FOR 130'-140'.
- * MAST ARM DIAMETER SAME AS POST.
- ◯ INDICATES CAMBER TYPE, SEE TABLE.

CAMBER

TYPE	"X"	"Y"
Ⓐ	1½"	2"
Ⓑ	2¼"	3"
Ⓒ	2¾"	4"
Ⓓ	3½"	5"
Ⓔ	4½"	6"



CAMBER DIAGRAM



POST SPLIT DETAILS

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S614500314.dwg	
CAD Ver.: ACAD 2004	Scale: Not to Scale Units: English

R-X
R-X
R-X
R-X

Sheet Revisions	
Date:	Comments

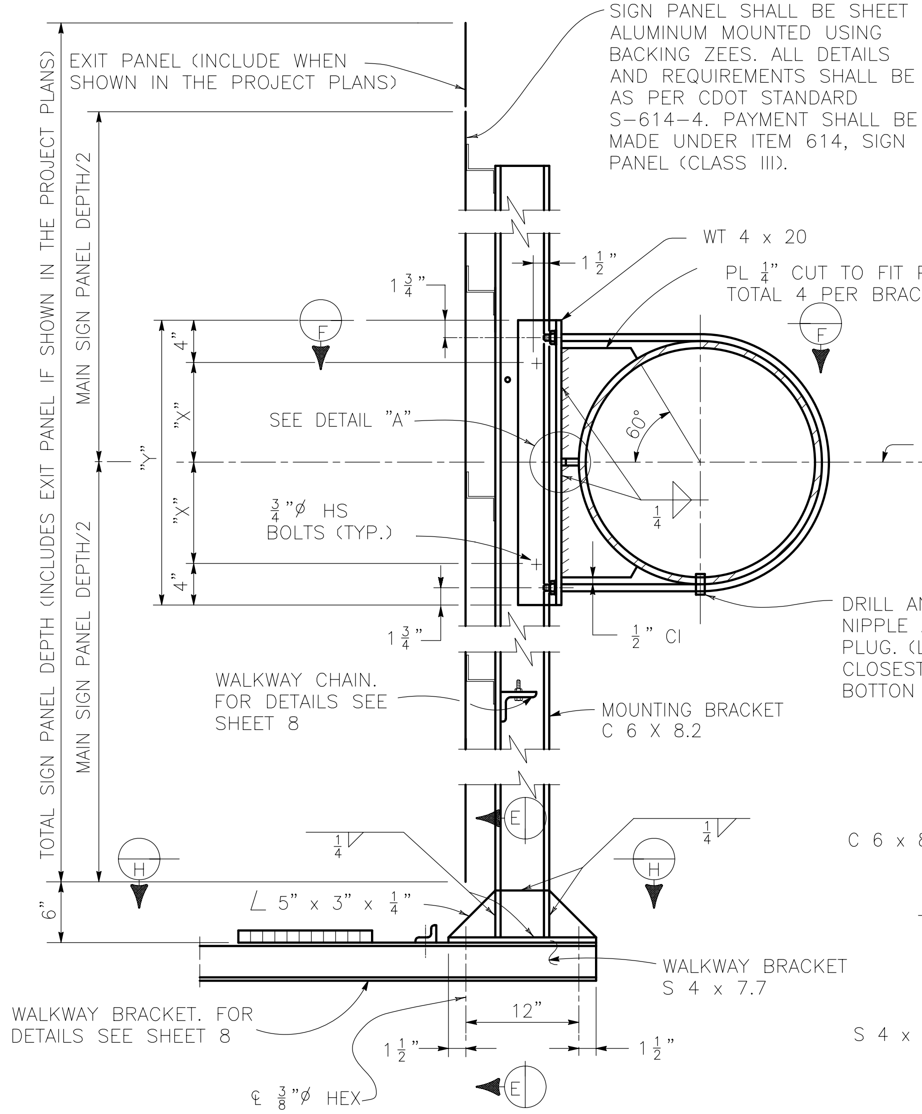
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

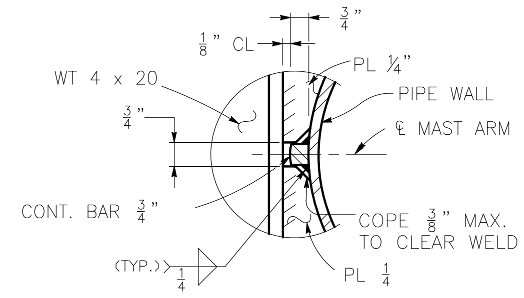
Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.
S-614-50

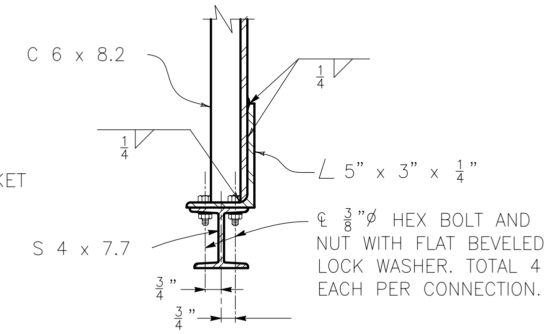
–STATIC SIGN MOUNTING BRACKETS–



SINGLE SIGN PANEL

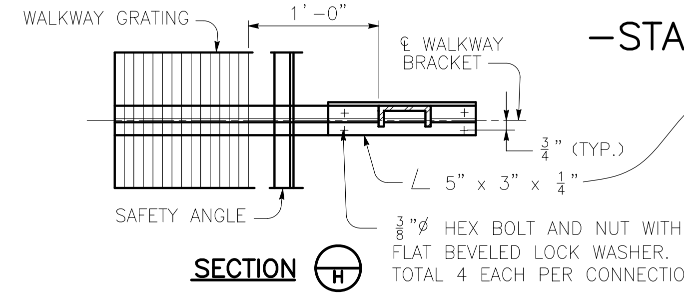


DETAIL A

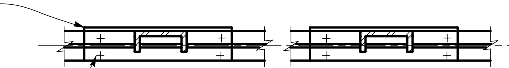


SECTION E

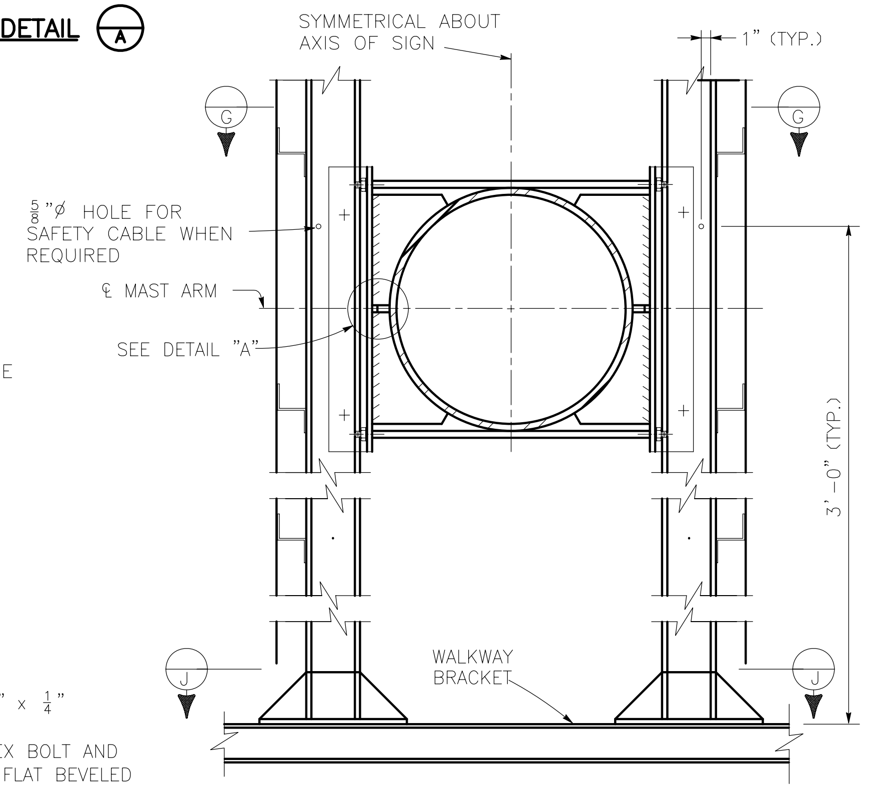
MOUNTING BRACKET ASSEMBLY DETAILS



SECTION H



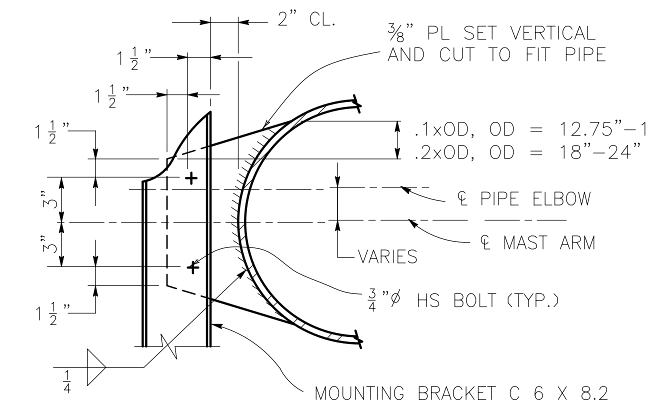
SECTION J



NOTES

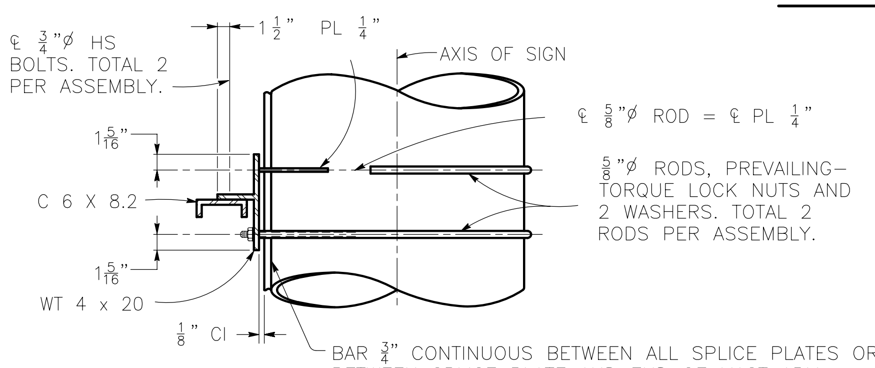
FOR DETAILS NOT SHOWN OR NOTED SEE "SINGLE SIGN PANEL". ASSEMBLY DETAILS SHOWN APPLY TO TANGENT PORTION OF PIPE ONLY. FOR MOUNTING BRACKET ON ELBOW SEE DETAIL "B".

BACK-TO-BACK SIGN PANELS

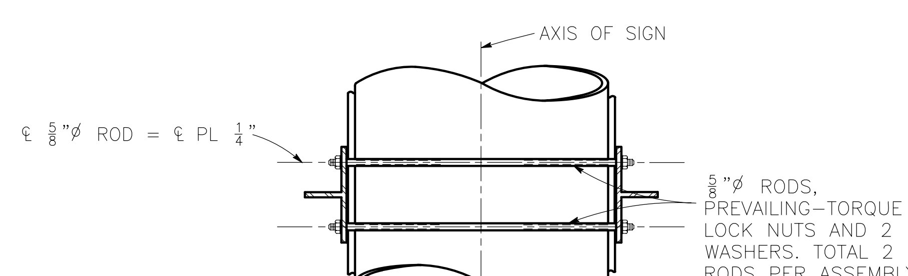


DETAIL B
MOUNTING BRACKET ON ELBOW

PIPE OUTSIDE DIAMETER (IN.)	DISTANCE "X" (IN.)	DISTANCE "Y" (IN.)
12.75	4 1/2	17
14	5	18
16	6	20
18	7	22
20	8	24
24	10	28



VIEW F



NOTE

FOR DETAILS NOT SHOWN OR NOTED SEE VIEW "F".

VIEW G

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S614500414.dwg	
CAD Ver.: ACAD 2004 Scale: Not to Scale	Units: English

R-X R-X R-X R-X

Sheet Revisions	
Date:	Comments

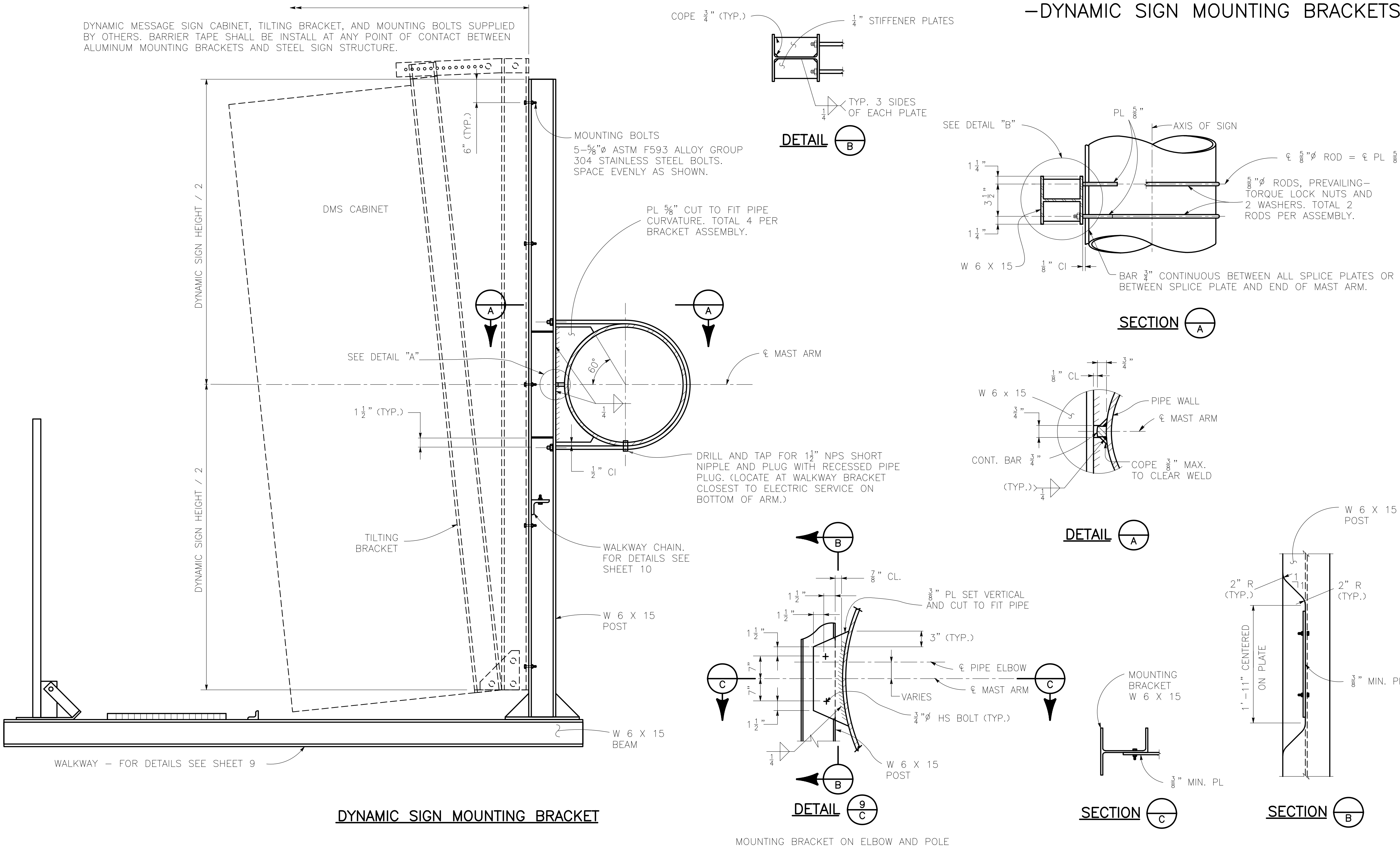
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.
S-614-50

-DYNAMIC SIGN MOUNTING BRACKETS-



Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S614500514.dwg	
CAD Ver.: ACAD 2004 Scale: Not to Scale	Units: English

R-X
R-X
R-X
R-X

Sheet Revisions	
Date:	Comments

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

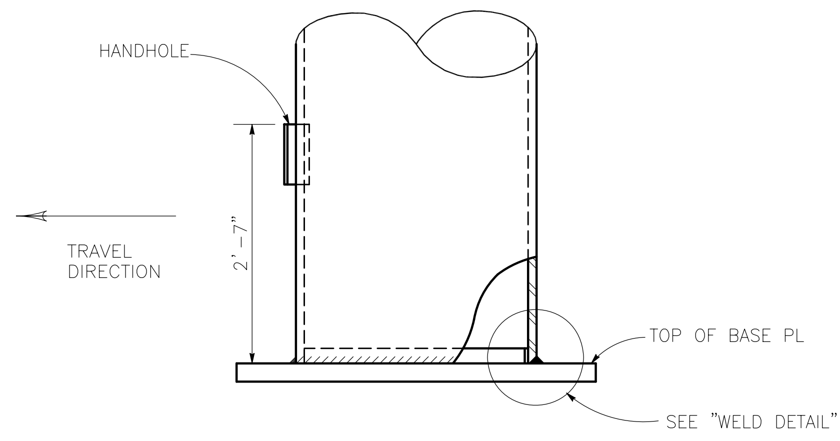
MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.

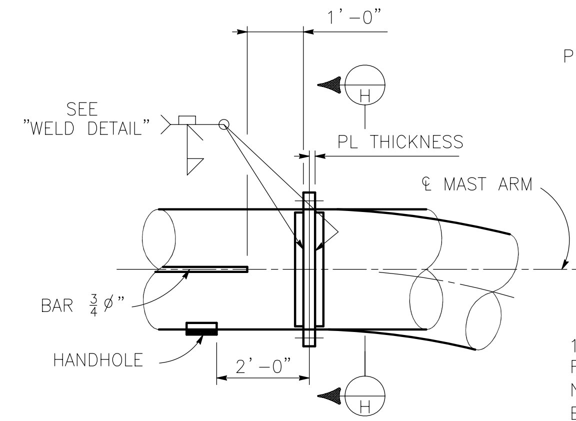
S-614-50

—MISCELLANEOUS MONOTUBE DETAILS—

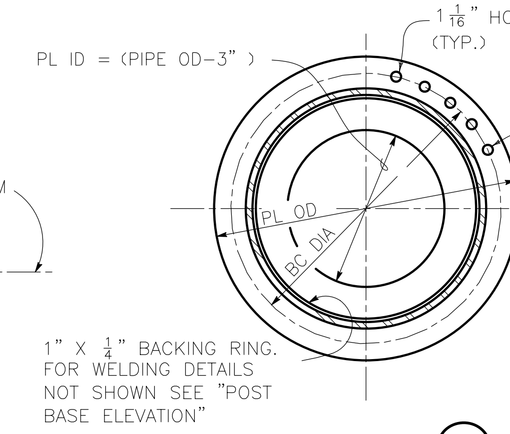


POST BASE ELEVATION

(FOR BASE PL DETAILS SEE "FOUNDATION DETAILS" SHEETS)



FIELD SPLICE

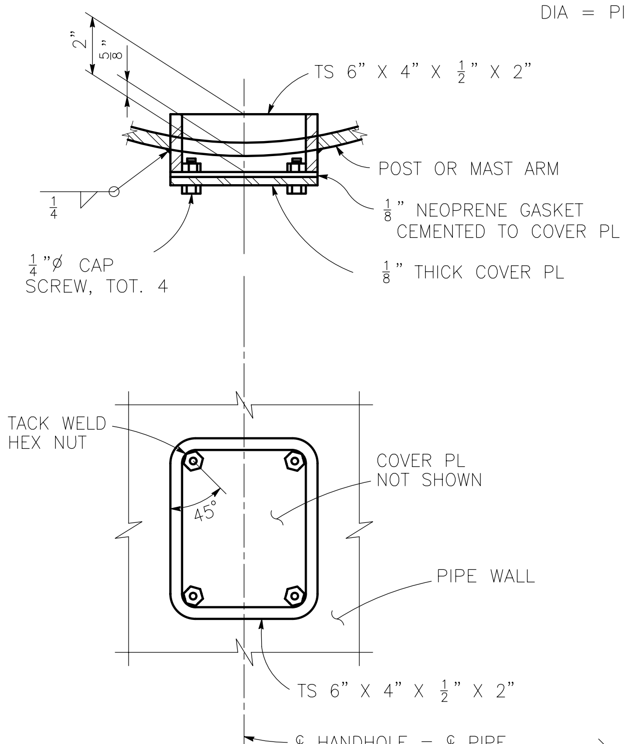


SECTION H

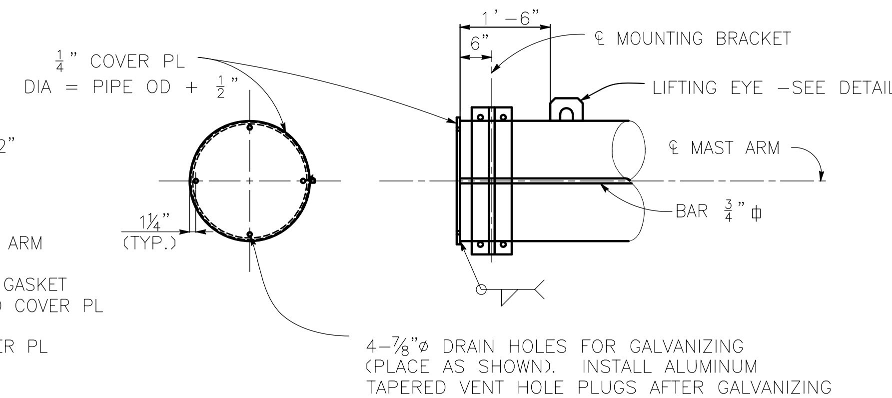
1" ASTM A-325 H.S. BOLTS (GALVANIZED) EQUALLY SPACED. THE LUBRICATED TIGHTENING TORQUE IS 395 FT.-LBS. FOR 1"Ø BOLTS. BOLTS SHALL BE SEQUENTIALLY TIGHTENED. ASSUMING 12 BOLTS AND A CLOCK FACE, THE TIGHTENING SEQUENCE WOULD BE 12, 6, 1, 7 ETC. THIS PROCESS SHALL BE CONTINUED UNTIL NO LOOSE BOLTS ARE FOUND AFTER ALL BOLTS HAVE BEEN INITIALLY TIGHTENED. SEE THE FIELD SPLICE TABLE FOR OTHER DETAILS

FIELD SPLICE

PIPE OUTSIDE DIAMETER (IN.)	PL THICKNESS (IN.)	BC DIAMETER (IN.)	PL OD (IN.)	# OF STIFF.	# OF BOLTS
12.75	1 ¼	16	21	6	14
14	1 ¼	17	22	6	16
16	1 ¼	21	24	6	20
18	1 ⅜	23	26	10	22
20	1 ⅜	25	28	10	24
24	1 ½	29	32	12	28

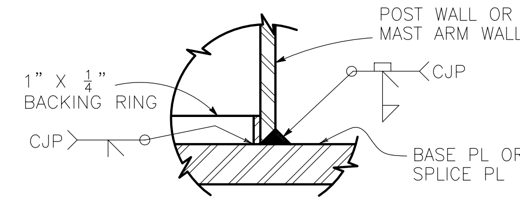


HANDHOLE AND COVER DETAILS

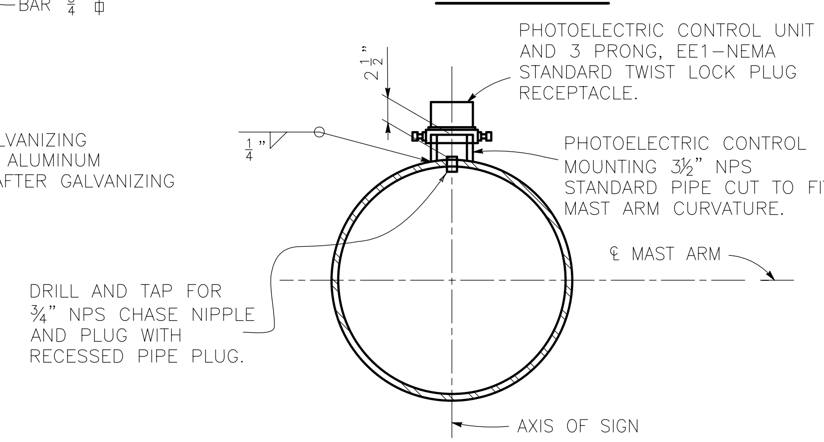


MAST ARM END DETAIL

(FOR CANTILEVER ARMS)

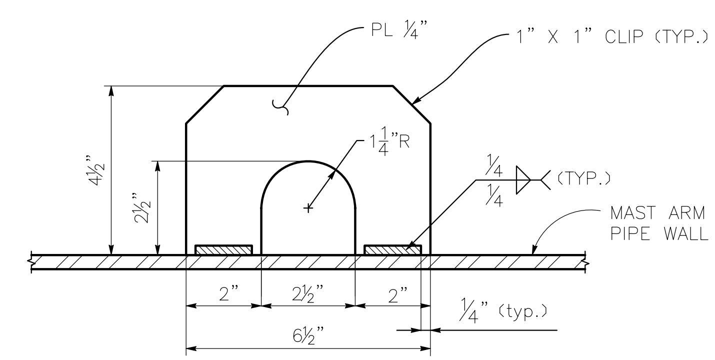


WELD DETAIL



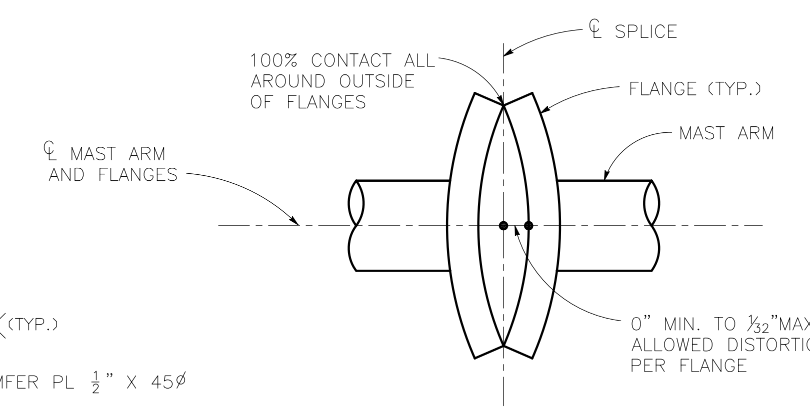
PHOTOELECTRIC CONTROL DETAILS

(SEE "LAYOUT" SHEET FOR LOCATION WHEN REQUIRED)

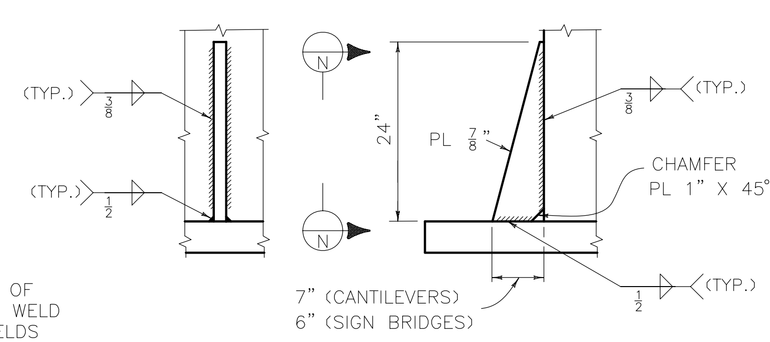


LIFTING EYE DETAIL

NOTE: STIFFENERS ARE TO BE PLACED AT THE BASE OF ALL POSTS AND ALL FIELD SPLICES. SEE SHEETS 2 AND 7 FOR THE LOCATION OF STIFFENERS. STIFFENERS ARE NOT SHOWN ELSEWHERE IN THESE SHEETS FOR CLARITY.



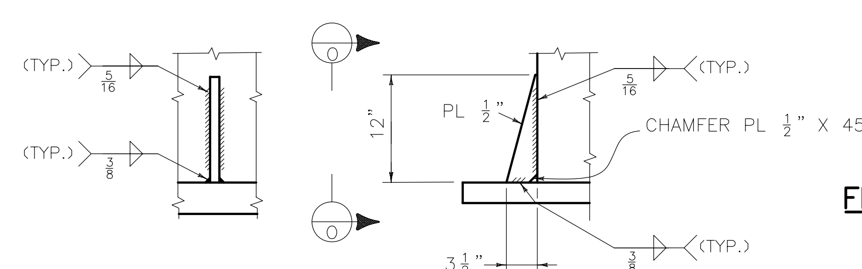
FLANGE DISTORTION TOLERANCE DIAGRAM



NOTE: TERMINATE WELD ½" SHORT OF THE TOP OF THE STIFFENER PLATE. AT THE OTHER 3 WELD TERMINATIONS ON THESE TWO TYPICAL WELDS STOP THE WELD ¼" SHORT OF THE END OF THE PLATE.

SECTION N STIFFENER DETAILS

(@ THE POLE BASE)



SECTION O STIFFENER DETAILS

(@ THE FIELD SPLICE)

NOTES

1. DESIGN BASED ON CAPACITY OF STANDARD PIPE.
2. NPS = NOMINAL PIPE SIZE. OD = OUTSIDE DIAMETER.

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S614500614.dwg	
CAD Ver.: ACAD 2004	Scale: Not to Scale Units: English

R-X R-X R-X R-X

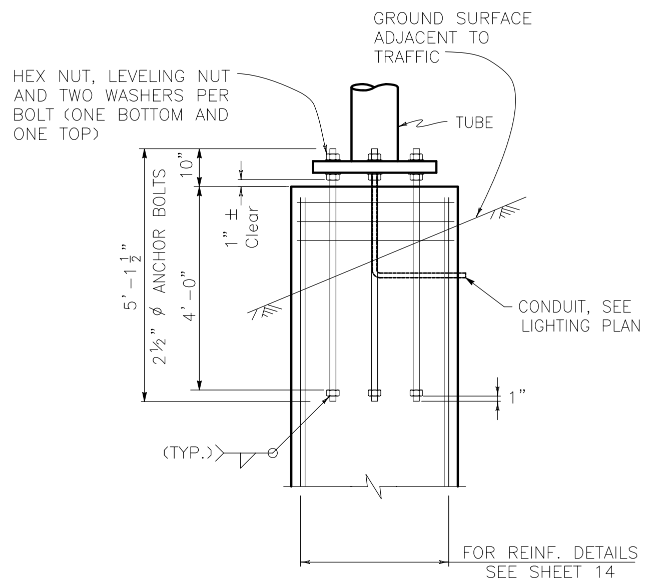
Sheet Revisions	
Date:	Comments

Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

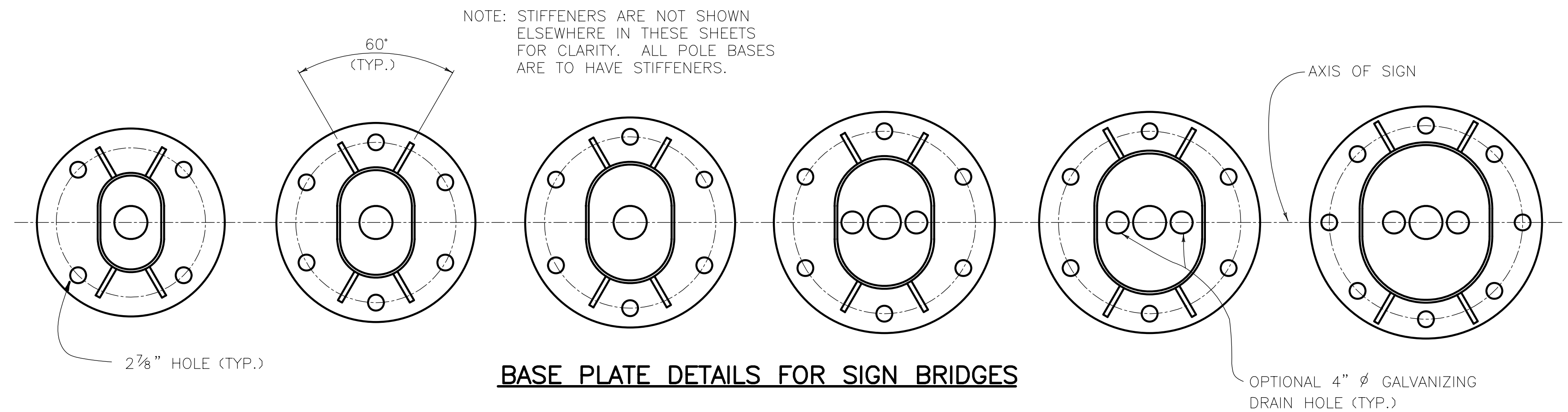
MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

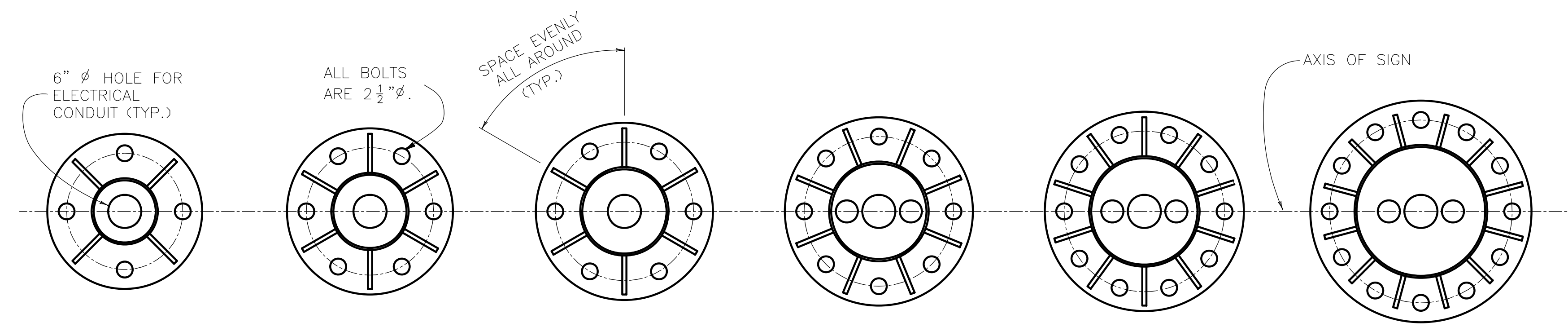
STANDARD PLAN NO.
S-614-50



ANCHOR BOLT DETAIL



BASE PLATE DETAILS FOR SIGN BRIDGES



BASE PLATE DETAILS FOR CANTILEVERS

12.75" TUBE 14" TUBE 16" TUBE 18" TUBE 20" TUBE 24" TUBE

CANTILEVERS

PIPE OD (IN.)	SPLIT (IN.)	BASE PL SIZE (DIAM. X THICK.) (IN.)	BOLT CIRCLE (IN.)	# OF ANCHOR BOLTS	# OF STIFF.
12.75	–	28" x 2.5"	21"	4	4
14	–	30" x 2.5"	23"	6	6
16	–	32" x 2.5"	25"	6	6
18	–	34" x 2.75"	27"	8	8
20	–	36" x 3.0"	29"	10	10
24	–	40" x 3.0"	33"	12	12

SIGN BRIDGES

PIPE OD (IN.)	SPLIT (IN.)	BASE PL SIZE (DIAM. X THICK.) (IN.)	BOLT CIRCLE (IN.)	# OF ANCHOR BOLTS	# OF STIFF.
12.75	5	34" x 2.5"	27"	4	4
14	5	36" x 2.5"	29"	6	4
16	5	38" x 2.5"	31"	6	4
18	5	40" x 2.75"	33"	6	4
20	5	40" x 3.0"	33"	6	4
24	5	42" x 3.0"	35"	8	4

NOTES

1. THREAD UPPER 10" AND GALVANIZE UPPER 1'-3" OF THE ANCHOR BOLTS.
2. ANCHOR BOLTS SHALL BE SET WITH A STEEL TEMPLATE UNTIL THE CONCRETE HAS CURED AT LEAST TWO DAYS.
3. THERE SHALL BE NO GROUT PAD INSTALLED ON TOP OF THE EXISTING FOUNDATIONS.
4. THE ANCHOR BOLTS SHALL BE TIGHTENED USING THE TURN-OF-NUT METHOD. THE BOLTS SHALL FIRST BE TIGHTENED TO SNUG TIGHT, WHICH IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN THE UPPER AND LOWER NUTS ARE IN FIRM CONTACT WITH THE BASE PLATE. WITH THE MAST ARM FREE TO DEFLECT, THE UPPER AND LOWER NUTS SHALL EACH THEN BE ROTATED AN ADDITIONAL 1/12 TURN (30° ± 5°) USING A SLUGGING WRENCH.

Computer File Information			Sheet Revisions	
Creation Date: 07-04-06	Initials: JSV		Date:	Comments
Last Modification Date: 07-04-06	Initials: RO	R-X		
Full Path:www.dot.state.co.us/DesignSupport/		R-X		
Drawing File Name: S614500714.dwg		R-X		
CAD Ver.: ACAD 2004	Scale: Not to Scale Units: English	R-X		

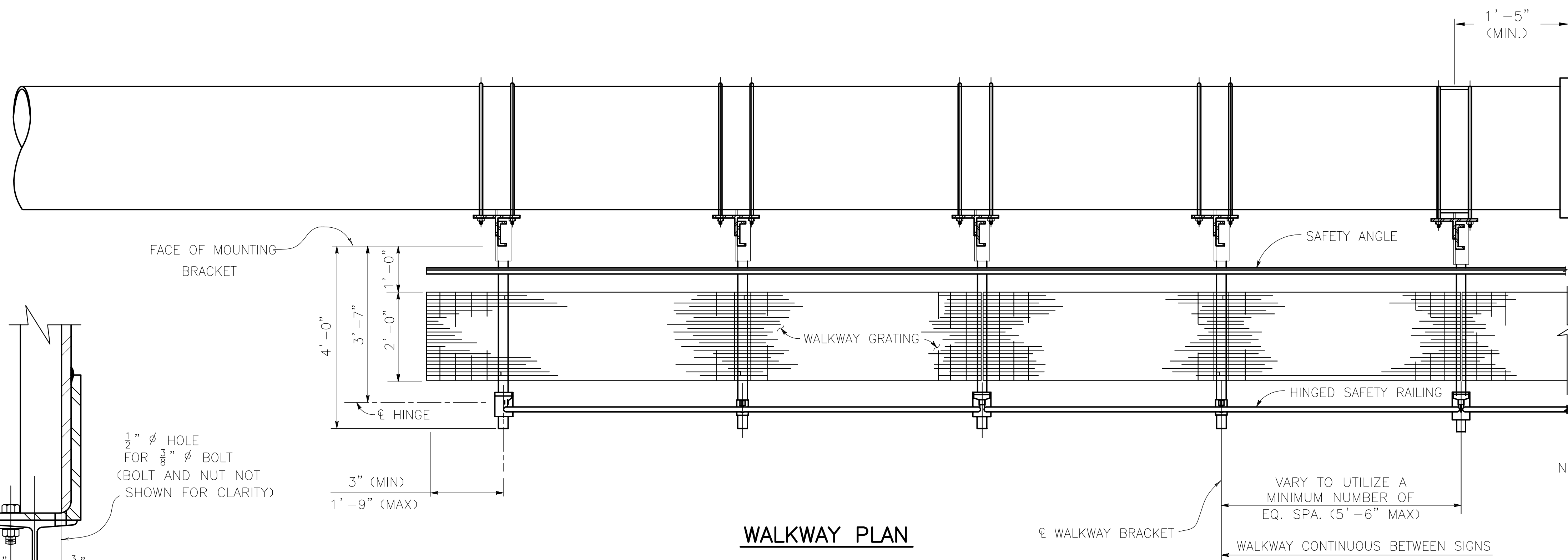
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

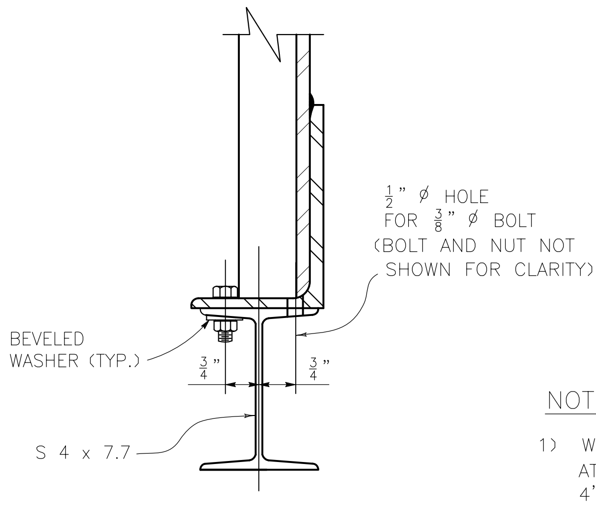
STANDARD PLAN NO.
S-614-50

—STATIC SIGN WALKWAY DETAILS—



NOTE: SIGN PANEL AND ZEE BRACKETS NOT SHOWN FOR CLARITY.

WALKWAY PLAN

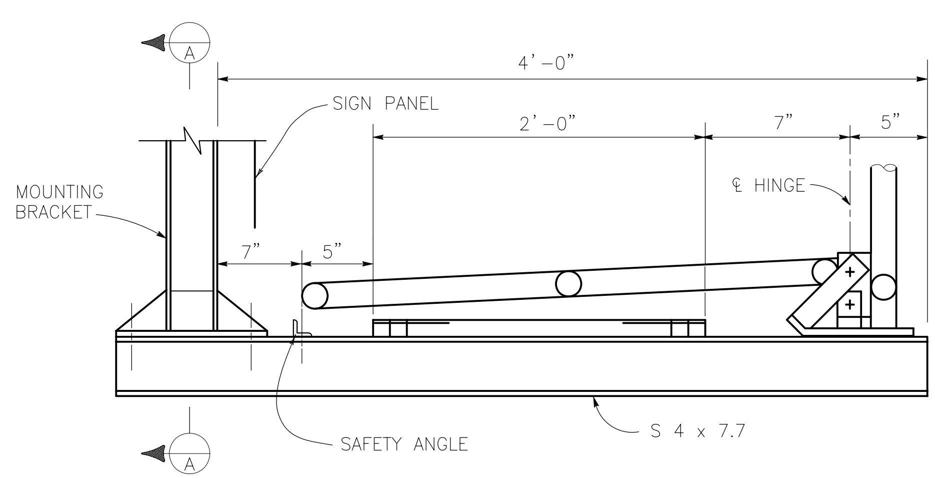


SECTION (A)

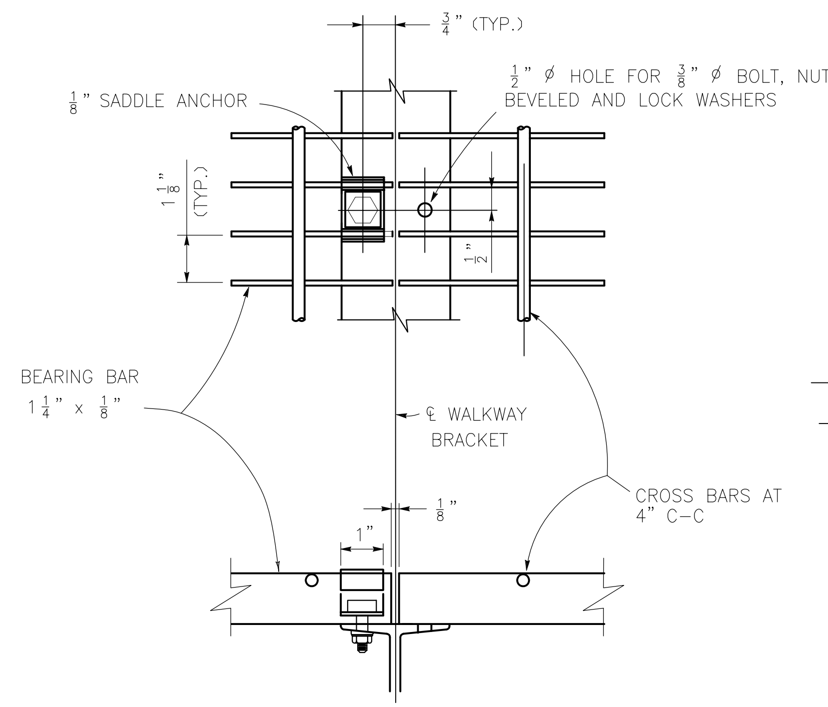
NOTES

1) WELDED TYPE GRATING SHALL HAVE 1 1/4" X 1/8" BEARING BARS AT 1 1/8" CENTERS WITH 1/4" DIAMETER (OR EQUAL) CROSS BARS AT 4" CENTERS. IF MECHANICAL LOCK GRATING IS USED, IT SHALL BE EQUAL IN STRENGTH TO THE WELDED TYPE. ALTERNATE HOLD-DOWN CLIPS MAY BE SUBMITTED FOR APPROVAL.

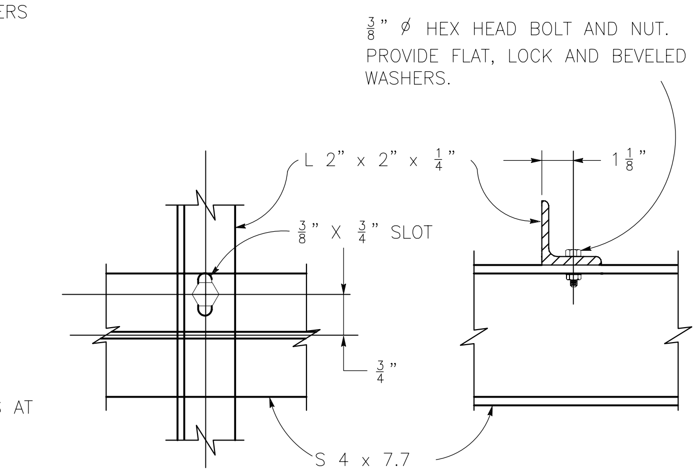
2) WALKWAY GRATING TO BE CONTINUOUS (NO SPLICES) OVER AS MANY WALKWAY BRACKETS AS PRACTICAL CONSISTENT WITH FABRICATION, EASE OF HANDLING AND ASSEMBLY.



TYPICAL WALKWAY SECTION



WALKWAY DETAILS



SAFETY ANGLE DETAILS

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S614500814.dwg	
CAD Ver.: ACAD 2004 Scale: Not to Scale	Units: English

R-X
R-X
R-X
R-X

Sheet Revisions	
Date:	Comments

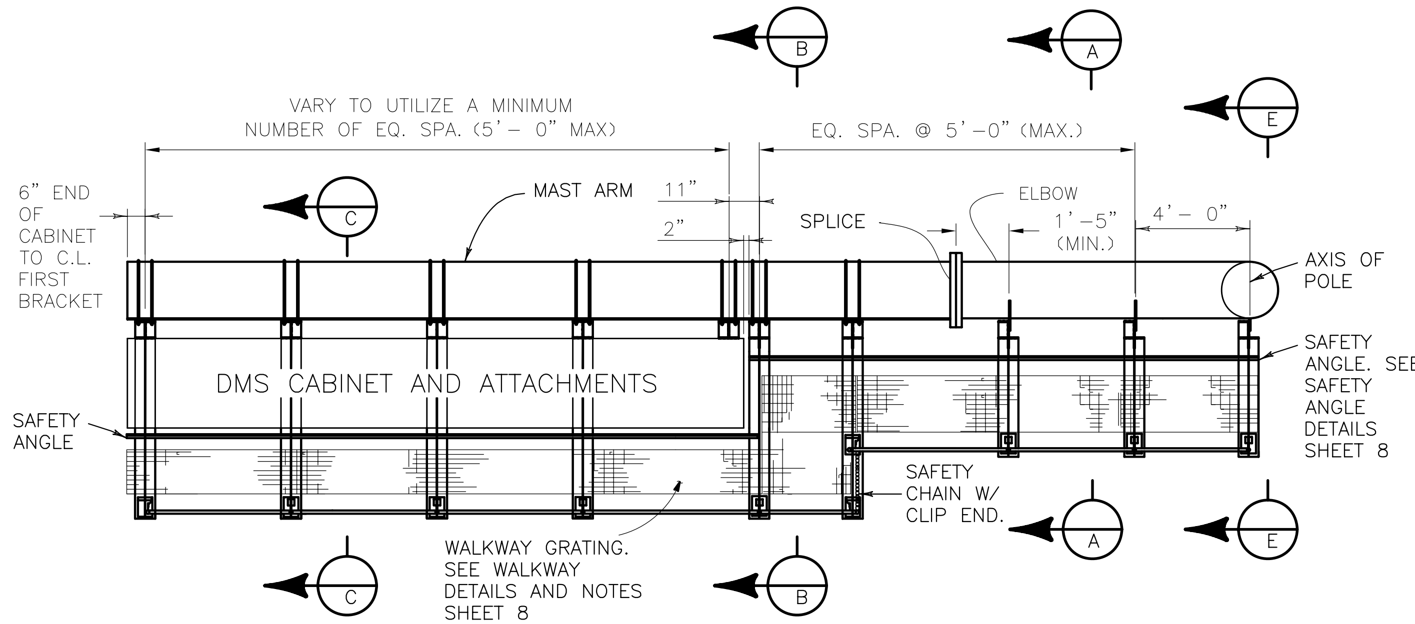
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

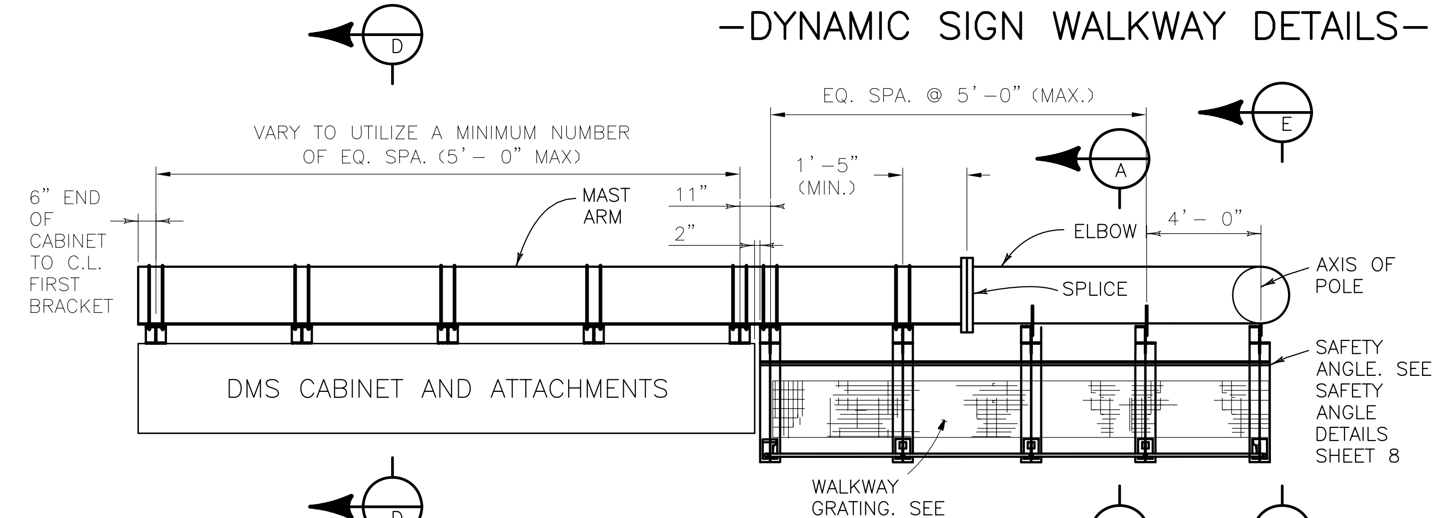
STANDARD PLAN NO.
S-614-50

—DYNAMIC SIGN WALKWAY DETAILS—



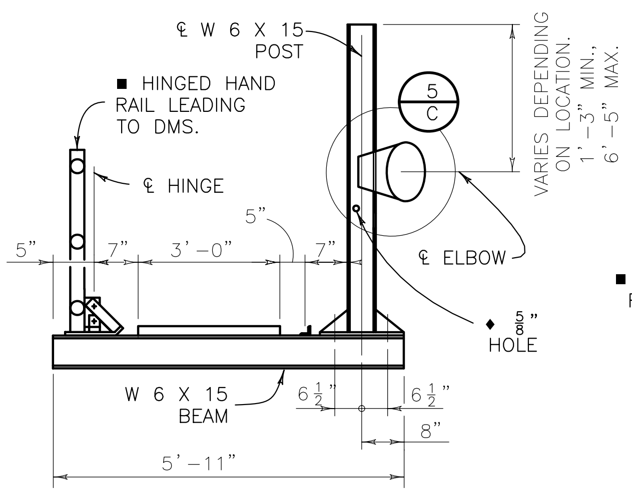
WALKWAY PLAN

WALKWAY LEADING TO AND IN FRONT OF CABINET

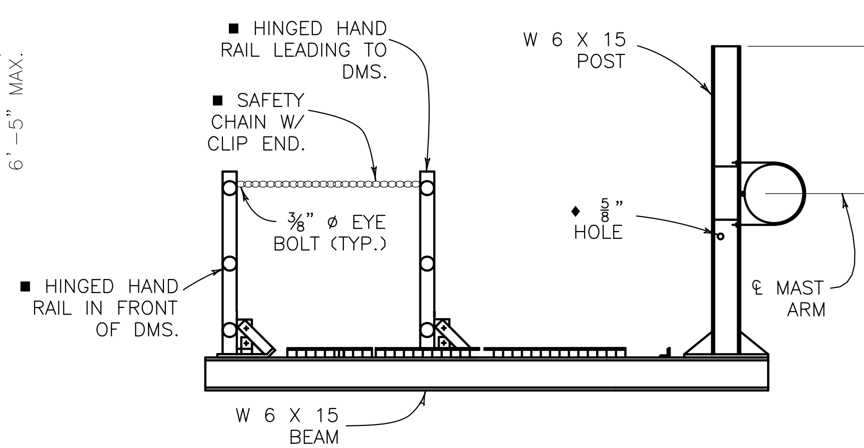


WALKWAY PLAN

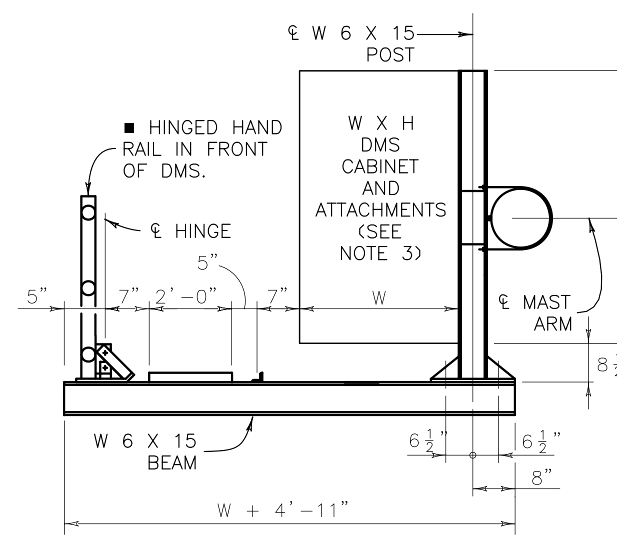
WALKWAY LEADING TO CABINET



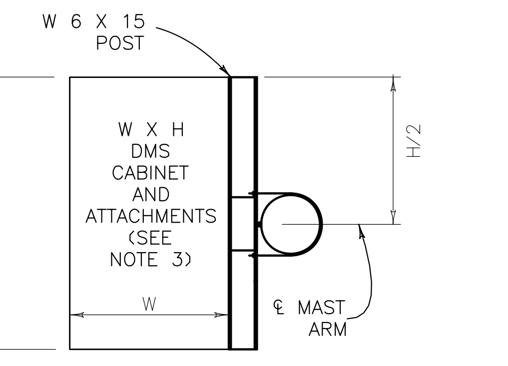
SECTION A



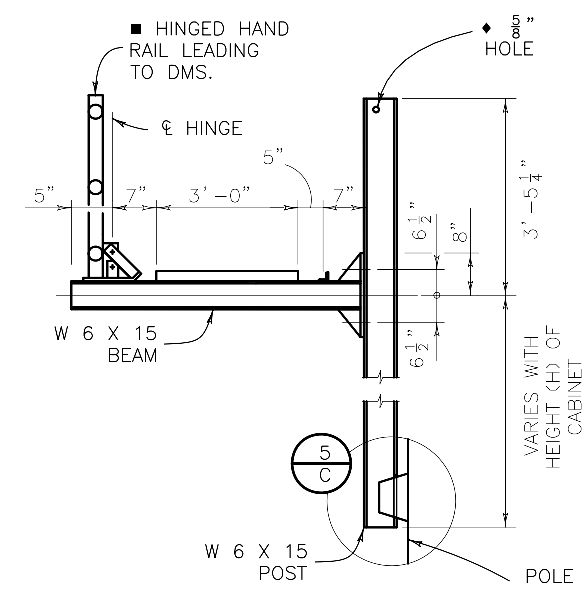
SECTION B



SECTION C



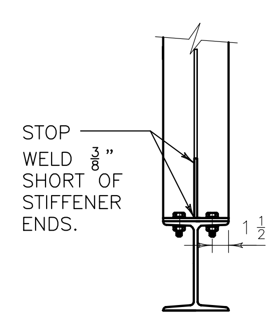
SECTION D

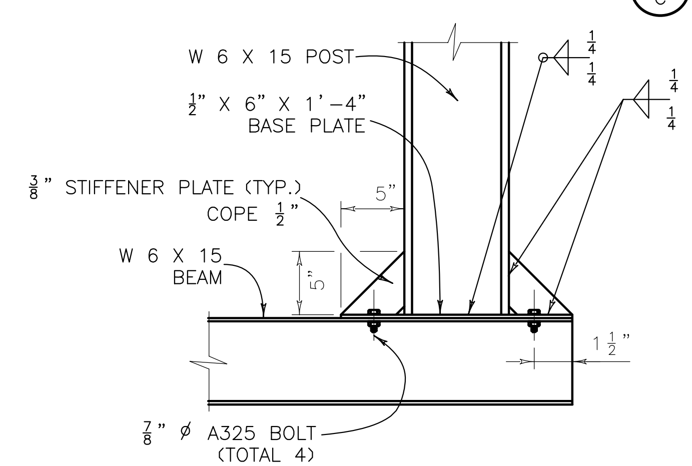


SECTION E

NOTES

1. ♦ 5/8"ø HOLE FOR SAFETY CABLE – 3'–0" ABOVE TOP OF WALKWAY, SEE SHEET 10 FOR ADDITIONAL DETAILS.
2. ■ SEE SHEET 10 FOR ADDITIONAL DETAILS.
3. EXACT SIZE OF DMS CABINET TO BE DETERMINED BY THE SUPPLIER AND SHOWN ON THE SHOP DRAWINGS. CABINET SHALL INCLUDE ALL BACKING BARS AND REQUIRED FASTENERS FOR ATTACHING TO THE POSTS SHOWN HEREON.
4. MAINTAIN UNIFORM SPACING WHERE POSSIBLE.
5. MAXIMUM SPACING SHALL NOT EXCEED 5'–0"
6. SEE SHEETS 5 AND 10 FOR ADDITIONAL DETAILS NOT SHOWN HEREON.





BEAM TO POST CONNECTION DETAIL

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S614500914.dwg	
CAD Ver.: ACAD 2004 Scale: Not to Scale	Units: English

R-X
R-X
R-X
R-X

Sheet Revisions	
Date:	Comments

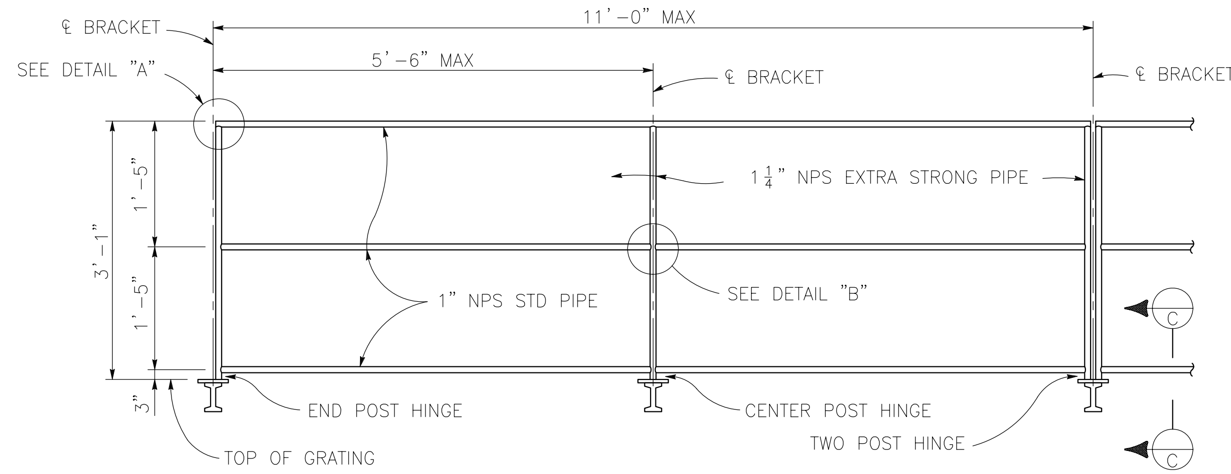
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
DEPARTMENT OF TRANSPORTATION
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

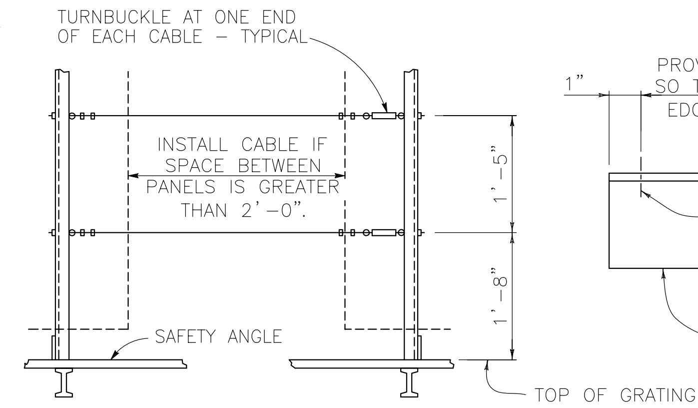
Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.
S-614-50

—MISCELLANEOUS WALKWAY DETAILS—

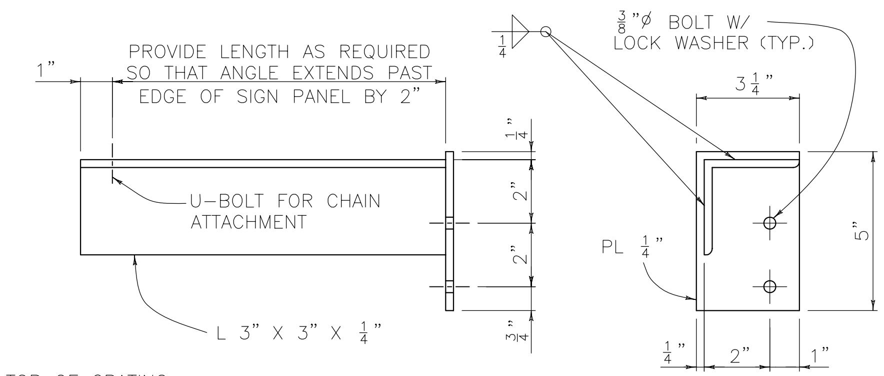


SAFETY RAILING ELEVATION

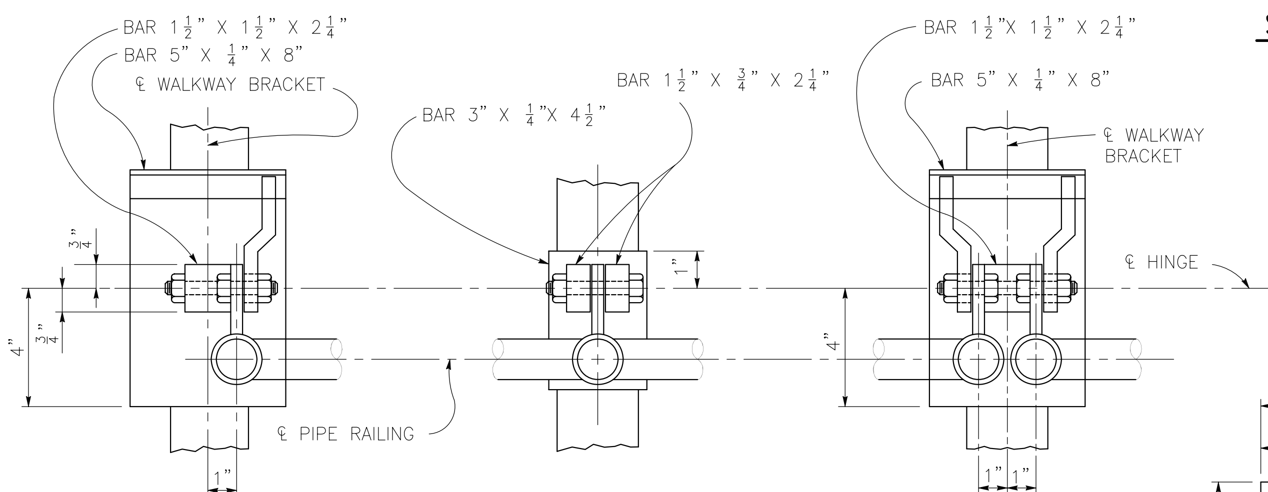


BETWEEN PANELS

SAFETY CABLE ELEVATION

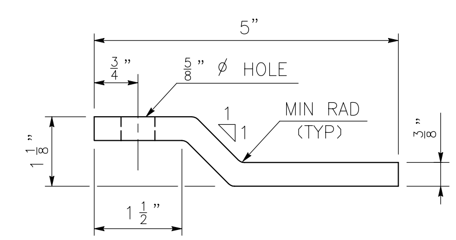


DETAIL C

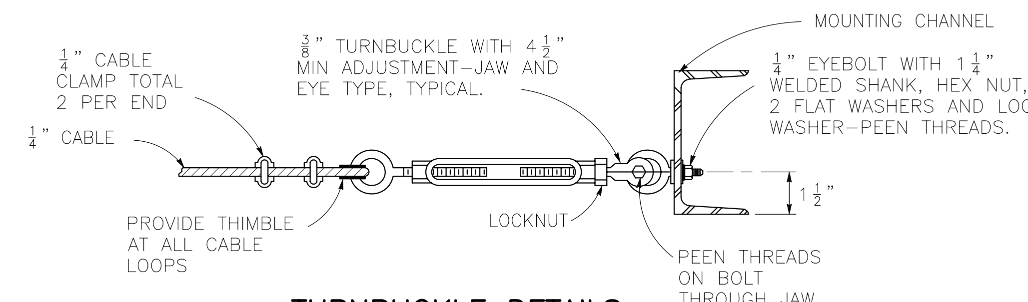


END POST **CENTER POST** **TWO POST**

HINGE – PLAN



PLAN – KICKER BAR



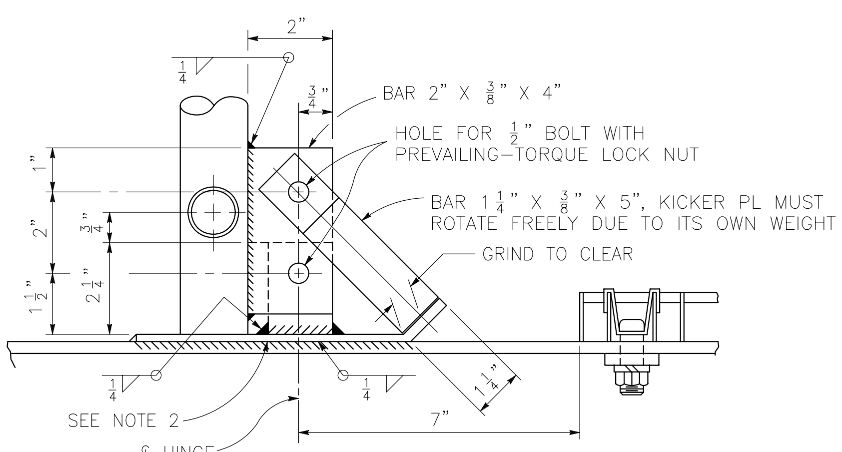
TURNBUCKLE DETAILS

NOTES

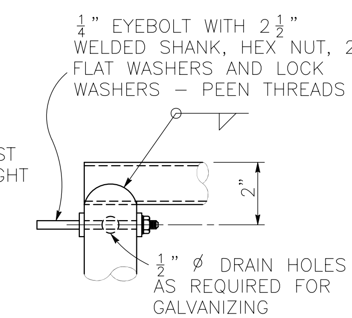
1. SPECIAL CARE SHALL BE TAKEN TO INSURE THAT THE COMPLETE HINGE AND LATCH ASSEMBLY WILL HOLD THE SAFETY RAILING IN A STEADY MANNER, FREE OF WOBBLE WHILE IN THE RAISED POSITION. MAXIMUM ALLOWABLE DISPLACEMENT FROM VERTICAL AT TOP OF RAILING WHEN LATCHED SHALL BE 1".

2. DETAILS FOR BOLTING HINGE BASE PLATE TO WALKWAY BRACKET MAY BE SUBMITTED FOR APPROVAL.

3. SAFETY CHAIN SHALL BE ¼" GALVANIZED STEEL COIL CHAIN, APPROXIMATELY 36 LINKS PER YARD. LENGTH SHALL BE MINIMUM WHICH ALLOWS LOCK–UP OF SAFETY RAILING.



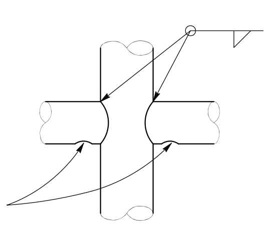
SECTION C



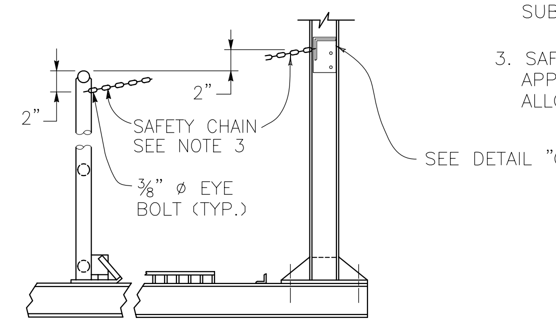
DETAIL A

NOTES

ALTERNATIVE VENTING METHODS MAY BE USED IF APPROVED BY THE ENGINEER.



DETAIL B



CHAIN ASSEMBLY

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S6145001014.dwg	
CAD Ver.: ACAD 2004 Scale: Not to Scale	Units: English

R-X R-X R-X R-X

Sheet Revisions	
Date:	Comments

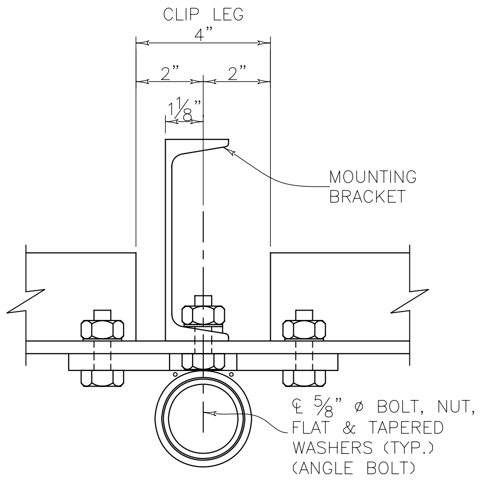
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

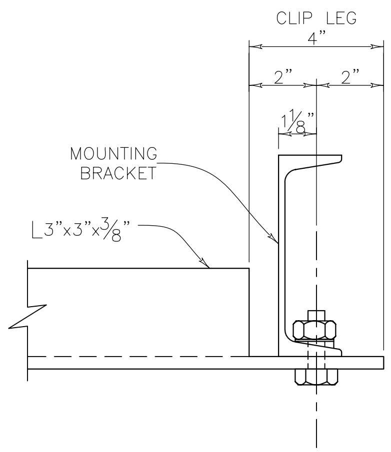
Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.
S-614-50

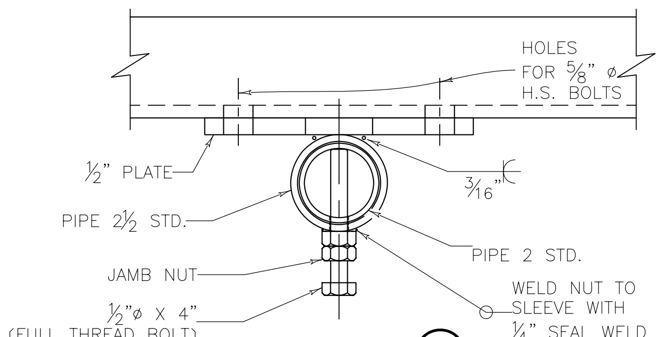
—STATIC SIGN LIGHTING DETAILS—



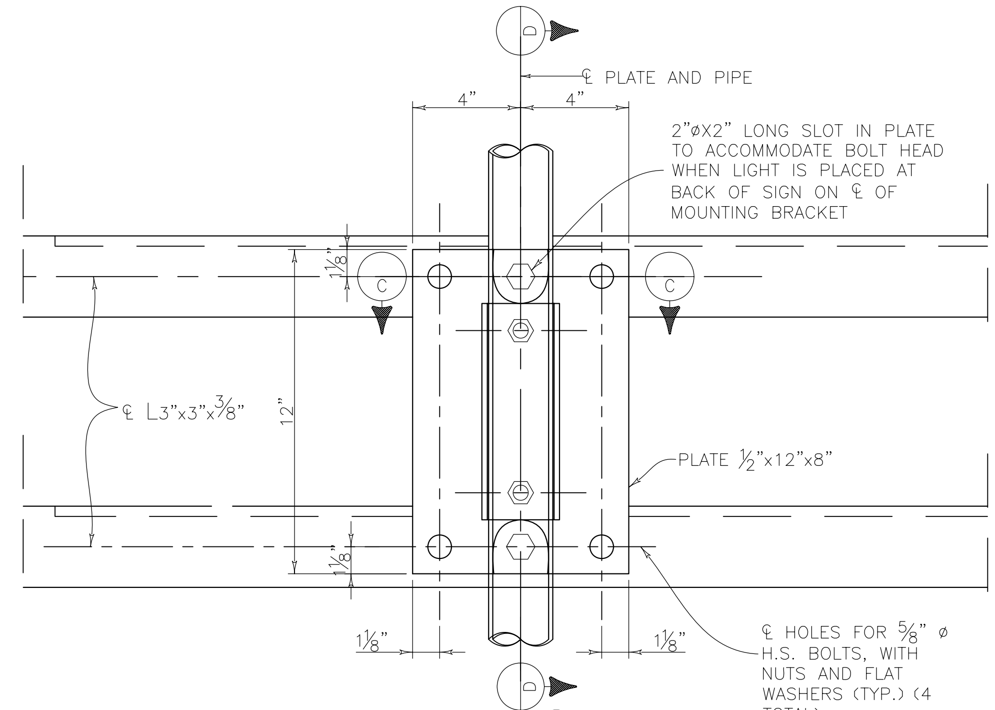
SECTION A



SECTION B



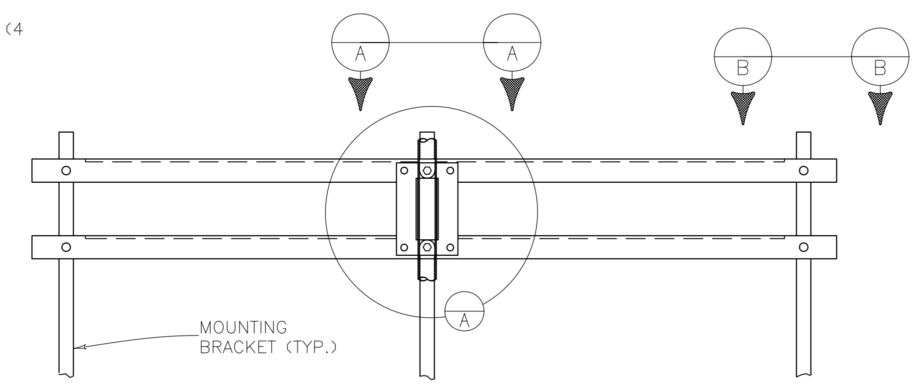
SECTION C



DETAIL A

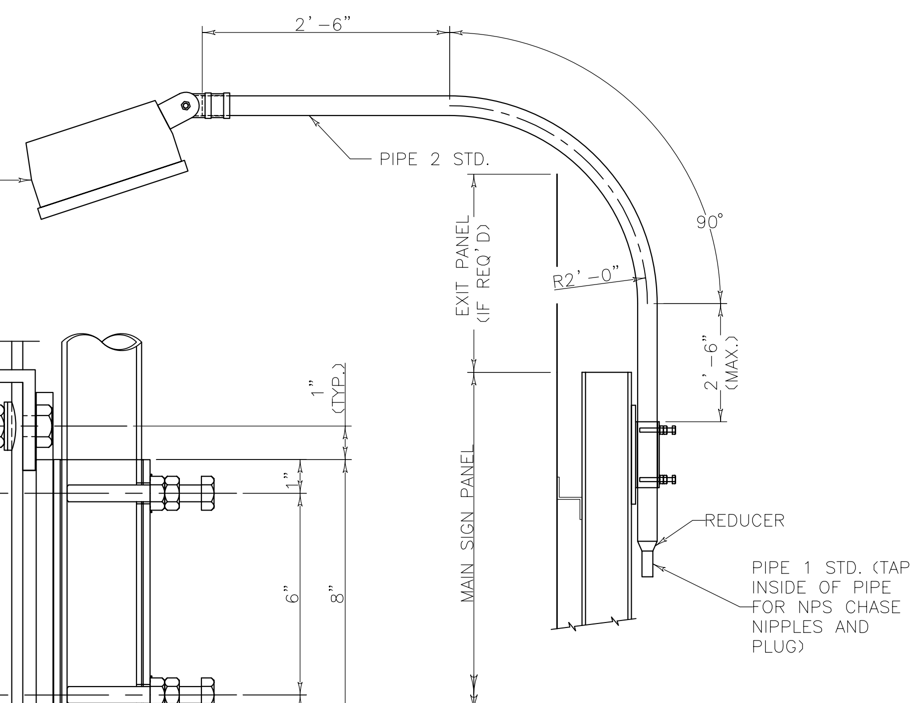
LIGHTING NOTES

1. FIXTURES SHALL BE WATERTIGHT, DUSTPROOF AND DESIGNED FOR EASE OF LAMP AND BALLAST REPLACEMENT.
2. WHEN LIGHTS ARE REQUIRED, LAMP SHALL BE OF HIGH PRESSURE SODIUM TYPE (85 WATT OR 250 WATT AS DIRECTED BY THE ENGINEER). LAMPS AND BALLAST SHALL BE DESIGNED TO OPERATE OVER AN AMBIENT TEMPERATURE RANGE OF −20° F TO +120° F.
3. BALLASTS SHALL BE OF THE MAGNETIC REGULATOR TYPE SPECIFICALLY MANUFACTURED FOR USE WITH HIGH PRESSURE SODIUM LAMPS, ANDSHALL OPERATE AT A MINIMUM OF 90% POWER FACTOR. OPERATION SHALL BE SUITABLE WITH A LINE VOLTAGE VARIATION OF ±10%.
4. THE TYPE, NUMBER AND SPACING OF FIXTURES SHALL BE PER MANUFACTURER'S SPECIFICATIONS TO MAINTAIN A MAXIMUM INITIAL ILLUMINATION OF THE SIGN FACE OF 30 FOOTCANDLES TO 60 FOOTCANDLES WITH A MAXIMUM UNIFORMITY RATIO (MAXIMUM ILLUMINATION / MINIMUM ILLUMINATON) OF 5:1.
5. FIXTURE AND MOUNTING DETAILS WILL BE SUBJECT TO APPROVAL BY THE ENGINEER.
6. DRILL AND TAP 1½" NPS CHASE NIPPLES AND PLUG WITH RECESSED PIPE PLUGS. PLACE PERPENDICULAR TO SIGN PANEL AXIS AND AWAY FROM APPROACHING TRAFFIC.

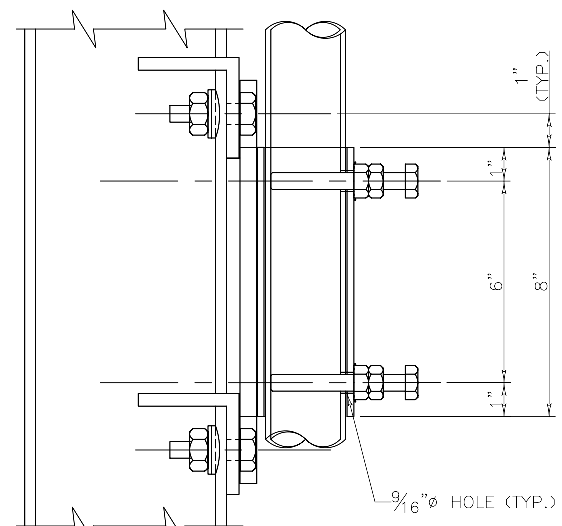


ELEVATION

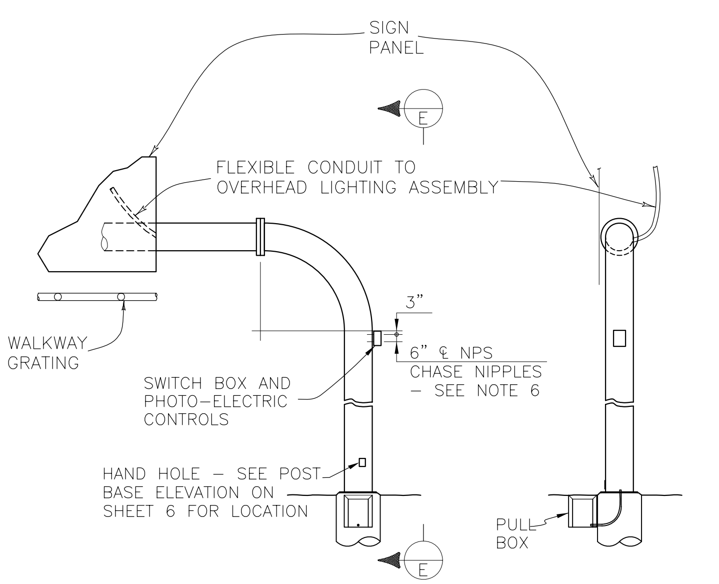
LIGHT CONNECTION PLACED AT BACK OF SIGN ON ℄ OF MOUNTING BRACKET



OVERHEAD LIGHTING ASSEMBLY

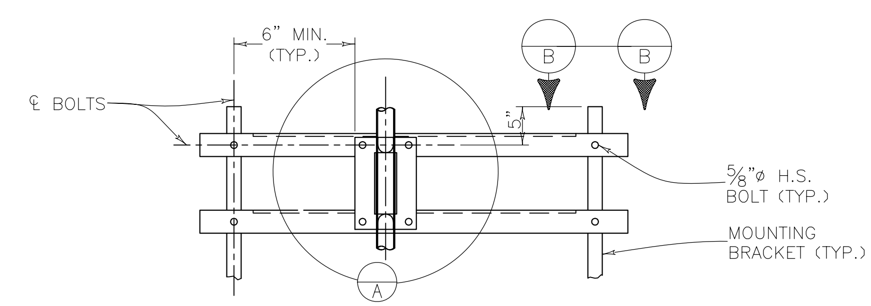


SECTION D



POLE

SECTION E



ELEVATION

LIGHT CONNECTION PLACED AT BACK OF SIGN BETWEEN MOUNTING BRACKETS

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S6145001114.dwg	
CAD Ver.: ACAD 2004 Scale: Not to Scale	Units: English

	Sheet Revisions	
	Date:	Comments
R-X		
R-X		
R-X		
R-X		

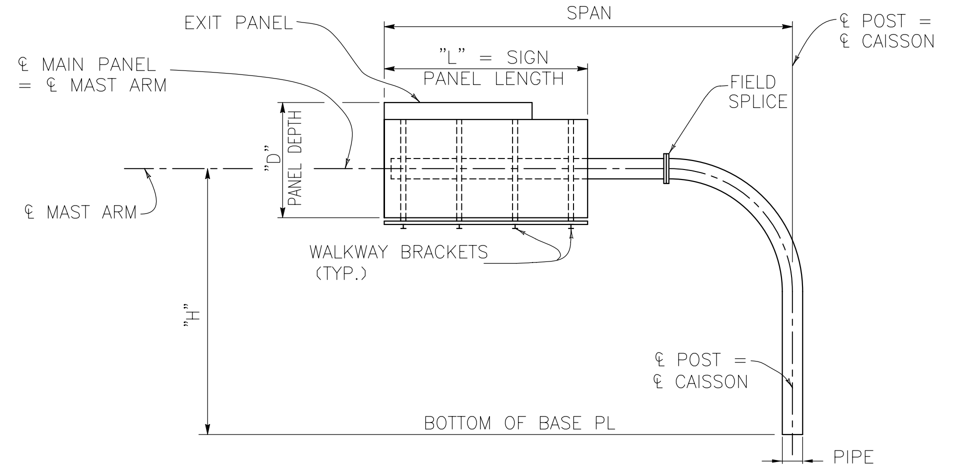
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.

S-614-50



TYPICAL VERTICAL POST CANTILEVER

PIPE SELECTION PROCEDURE FOR VERTICAL POST CANTILEVERS

A. COVERAGE PERCENTAGE = $\frac{\text{SIGN PANEL LENGTH}}{\text{SPAN}}$ FOR THE SPAN LENGTH USE THE SPAN FROM ONE OF THE CHARTS (25',35', ETC.), NOT THE ACTUAL SPAN.

B. PICK THE PIPE OUTSIDE DIAMETER (OD) FROM THE 0–50% OR THE 51–80% CHART. THE COVERAGE PERCENTAGE CHOSEN SHOULD BE HIGH ENOUGH TO INCLUDE ANY SIGN PANELS WHICH MAY POTENTIALLY BE PLACED ON THIS SIGN IN THE FUTURE.

C. TO DETERMINE "D" FOR THE SELECTION CHARTS ADD THE AREA OF THE EXIT PANEL, IF PRESENT, TO THE MAIN SIGN PANEL AREA. DIVIDE BY THE MAIN PANEL LENGTH TO OBTAIN "D".

D. IF NO TUBE IS SHOWN FOR A CERTAIN SPAN THIS INDICATES THAT THIS SPAN/SIGN PANEL/HEIGHT COMBINATION EXCEEDS THE LIMITS OF THIS STANDARD.

E. ON THE OVERHEAD SIGN X–SECTION SHEET INDICATE THE DIAMETER OF THE TUBE, THE HEIGHT "H" AND THE SPAN.

F. OBTAIN THE DESIGN WIND SPEED FROM THE OVERHEAD SIGN X–SECTION SHEETS IN THE ROADWAY PLANS.

–STATIC CANTILEVER SIGN PIPE SELECTION TABLES–

80 MPH WIND

UP TO 50% COVERAGE CHART

"D" (FT.) →	10'		12'		14'	
"H" (FT.) →	H≤25	25<H≤30	H≤25	25<H≤30	H≤25	25<H≤30
SPAN≤ (FT.) 20'	12.75	14	14	14	14	16
25	14	16	16	16	16	18
30	16	18	18	18	18	20
35	18	20	20	20	24	24
40	20	24	24	24	24	24
45	24	24	24	24		

51–80% COVERAGE CHART

"D" (FT.) →	10'		12'		14'	
"H" (FT.) →	H≤25	25<H≤30	H≤25	25<H≤30	H≤25	25<H≤30
SPAN≤ (FT.) 20'	16	16	16	18	18	20
25	18	18	18	20	20	24
30	20	20	20	24	24	24
35	24	24	24	24	24	
40	24	24				
45						

90 MPH WIND

UP TO 50% COVERAGE CHART

"D" (FT.) →	10'		12'		14'	
"H" (FT.) →	H≤25	25<H≤30	H≤25	25<H≤30	H≤25	25<H≤30
SPAN≤ (FT.) 20'	14	14	16	16	16	18
25	16	18	18	18	18	20
30	18	20	20	20	24	24
35	20	24	24	24	24	24
40	24	24	24			
45						

51–80% COVERAGE CHART

"D" (FT.) →	10'		12'		14'	
"H" (FT.) →	H≤25	25<H≤30	H≤25	25<H≤30	H≤25	25<H≤30
SPAN≤ (FT.) 20'	16	18	18	20	20	20
25	20	20	20	24	24	24
30	24	24	24	24	24	
35	24					
40						
45						

100 MPH WIND

UP TO 50% COVERAGE CHART

"D" (FT.) →	10'		12'		14'	
"H" (FT.) →	H≤25	25<H≤30	H≤25	25<H≤30	H≤25	25<H≤30
SPAN≤ (FT.) 20'	16	16	16	18	18	18
25	18	18	20	20	20	24
30	20	24	24	24	24	24
35	24	24	24			
40						

51–80% COVERAGE CHART

"D" (FT.) →	10'		12'		14'	
"H" (FT.) →	H≤25	25<H≤30	H≤25	25<H≤30	H≤25	25<H≤30
SPAN≤ (FT.) 20'	18	20	20	24	24	24
25	20	24	24	24	24	
30	24	24				
35						

PROCEDURE TO DETERMINE THE DESIGN WIND SPEED

80 MPH IS THE STANDARD DESIGN WIND SPEED FOR THE STATE OF COLORADO. THE STANDARD DESIGN WIND SPEED OF 80 MPH IS TO BE USED AT ALL LOCATIONS EXCEPT THE FOLLOWING:

1. USE THE 90 MPH WIND SPEED FOR LOCATIONS WITHIN 4 MILES OF EITHER SIDE OF THE BASE OF THE FOOTHILLS ALONG THE FRONT RANGE OF THE EASTERN SLOPE.

2. USE THE 100 MPH WIND SPEED FOR LOCATIONS IN BOULDER COUNTY.

IF THERE ARE QUESTIONS CONCERNING THE PROPER DESIGN WIND SPEED CONTACT THE STAFF BRIDGE BRANCH.

Computer File Information
Creation Date: 07-04-06 Initials: JSV
Last Modification Date: 07-04-06 Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/
Drawing File Name: S6145001214.dwg
CAD Ver.: ACAD 2004 Scale: Not to Scale Units: English

R-X R-X R-X R-X

Sheet Revisions
Date: Comments

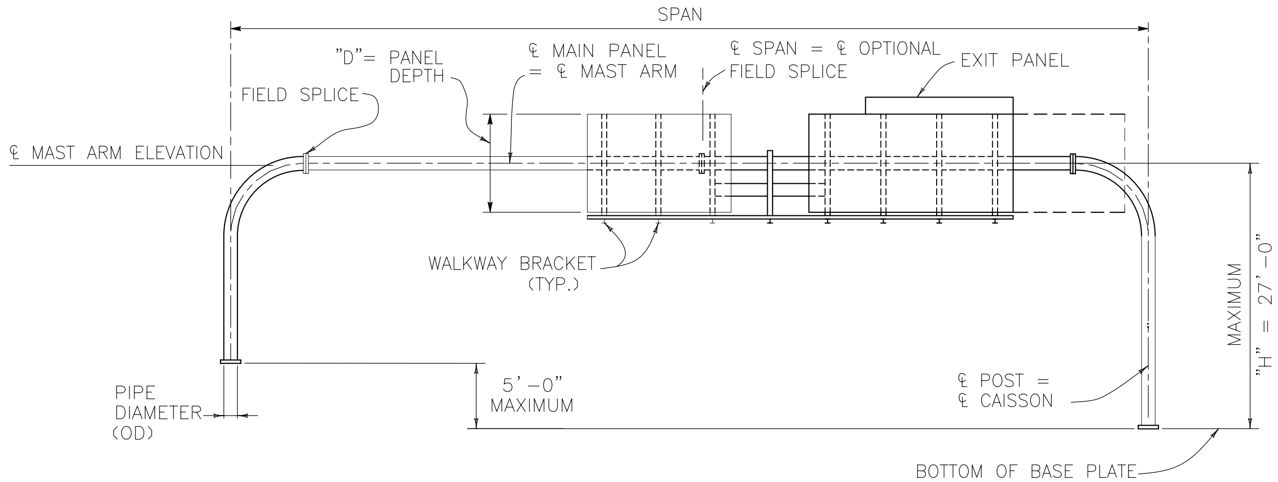
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.
S-614-50

—STATIC SIGN BRIDGE PIPE SELECTION TABLES—



TYPICAL VERTICAL POST SIGN BRIDGE

STRUCTURE SELECTION PROCEDURE FOR SIGN BRIDGES

A. DESIGN IS BASED ON A SIGN HEIGHT OF 15' WITH 50% OF THE SPAN LENGTH COVERED UP UNTIL THE CAPACITY OF THE LARGEST POLE SHOWN IS REACHED. BEYOND THIS POINT THE COVERAGE PERCENTAGE DECREASES.

B. THE MAXIMUM PRIMARY PANEL HEIGHT IS 14'. ADD THE AREA OF ALL EXIT PANELS TO THE AREA OF ALL PRIMARY PANELS TO CHECK AGAINST MAXIMUM SIGN PANEL AREA.

C. OBTAIN THE DESIGN WIND SPEED FROM THE OVERHEAD SIGN X-SECTION SHEETS IN THE ROADWAY PLANS.

D. PICK PIPE OD AND SPLIT SIZE FROM THE APPROPRIATE CHART. INCLUDE THE AREA OF ALL SIGN PANELS SHOWN IN THE OVERHEAD SIGN X-SECTION SHEETS WHICH MAY POTENTIALLY BE PLACED ON THE SIGN IN THE FUTURE.

E. IF NO POLE/ARM SIZE IS SHOWN FOR A CERTAIN SPAN THIS INDICATES THAT THIS SPAN/SIGN PANEL/HEIGHT COMBINATION EXCEEDS THE LIMITS OF THIS STANDARD.

F. THE OVERHEAD SIGN X-SECTION SHEETS INDICATE THE HEIGHT "H", THE SPAN AND THE SIGN PANEL SIZES.

80 MPH WIND

SPAN ≤	MAXIMUM SIGN PANEL AREA (SQ. FT.)	* PIPE POST	
		PIPE OD (IN.)	SPLIT (IN.)
50'	375	12.75	5
60'	450	14	5
70'	525	16	5
80'	600	18	5
90'	675	20	5
100'	750	20	5
110'	825	24	5
120'	900	24	5
130'	780	24	5
140'	700	24	5

*MAST ARM DIAMETER SAME AS POST.

90 MPH WIND

SPAN ≤	MAXIMUM SIGN PANEL AREA (SQ. FT.)	* PIPE POST	
		PIPE OD (IN.)	SPLIT (IN.)
50'	375	14	5
60'	450	16	5
70'	525	18	5
80'	600	20	5
90'	675	24	5
100'	750	24	5
110'	775	24	5
120'	650	24	5
130'	585	24	5
140'	525	24	5

*MAST ARM DIAMETER SAME AS POST.

100 MPH WIND

SPAN ≤	MAXIMUM SIGN PANEL AREA (SQ. FT.)	* PIPE POST	
		PIPE OD (IN.)	SPLIT (IN.)
50'	375	16	5
60'	450	18	5
70'	525	20	5
80'	600	24	5
90'	675	24	5
100'	660	24	5
110'	580	24	5
120'	500	24	5
130'	450	24	5
140'	400	24	5

*MAST ARM DIAMETER SAME AS POST.

PROCEDURE TO DETERMINE THE DESIGN WIND SPEED

80 MPH IS THE STANDARD DESIGN WIND SPEED FOR THE STATE OF COLORADO. THE STANDARD DESIGN WIND SPEED OF 80 MPH IS TO BE USED AT ALL LOCATIONS EXCEPT THE FOLLOWING:

1. USE THE 90 MPH WIND SPEED FOR LOCATIONS WITHIN 4 MILES OF EITHER SIDE OF THE BASE OF THE FOOTHILLS ALONG THE FRONT RANGE OF THE EASTERN SLOPE.
2. USE THE 100 MPH WIND SPEED FOR LOCATIONS IN BOULDER COUNTY.

IF THERE ARE QUESTIONS CONCERNING THE PROPER DESIGN WIND SPEED CONTACT THE STAFF BRIDGE BRANCH.

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S6145001314.dwg	
CAD Ver.: ACAD 2004 Scale: Not to Scale	Units: English

R-X R-X R-X R-X

Sheet Revisions	
Date:	Comments

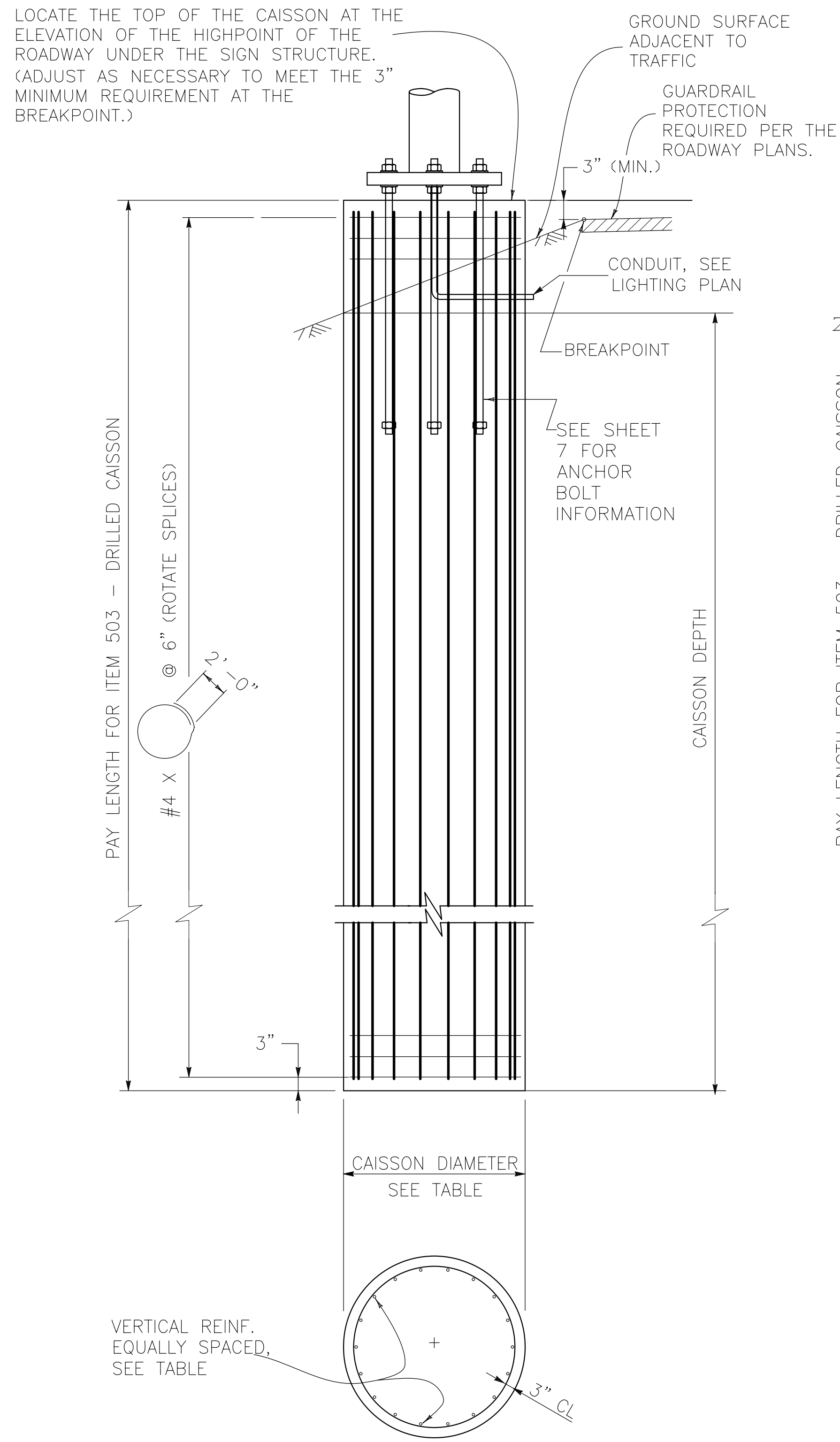
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
DEPARTMENT OF TRANSPORTATION
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

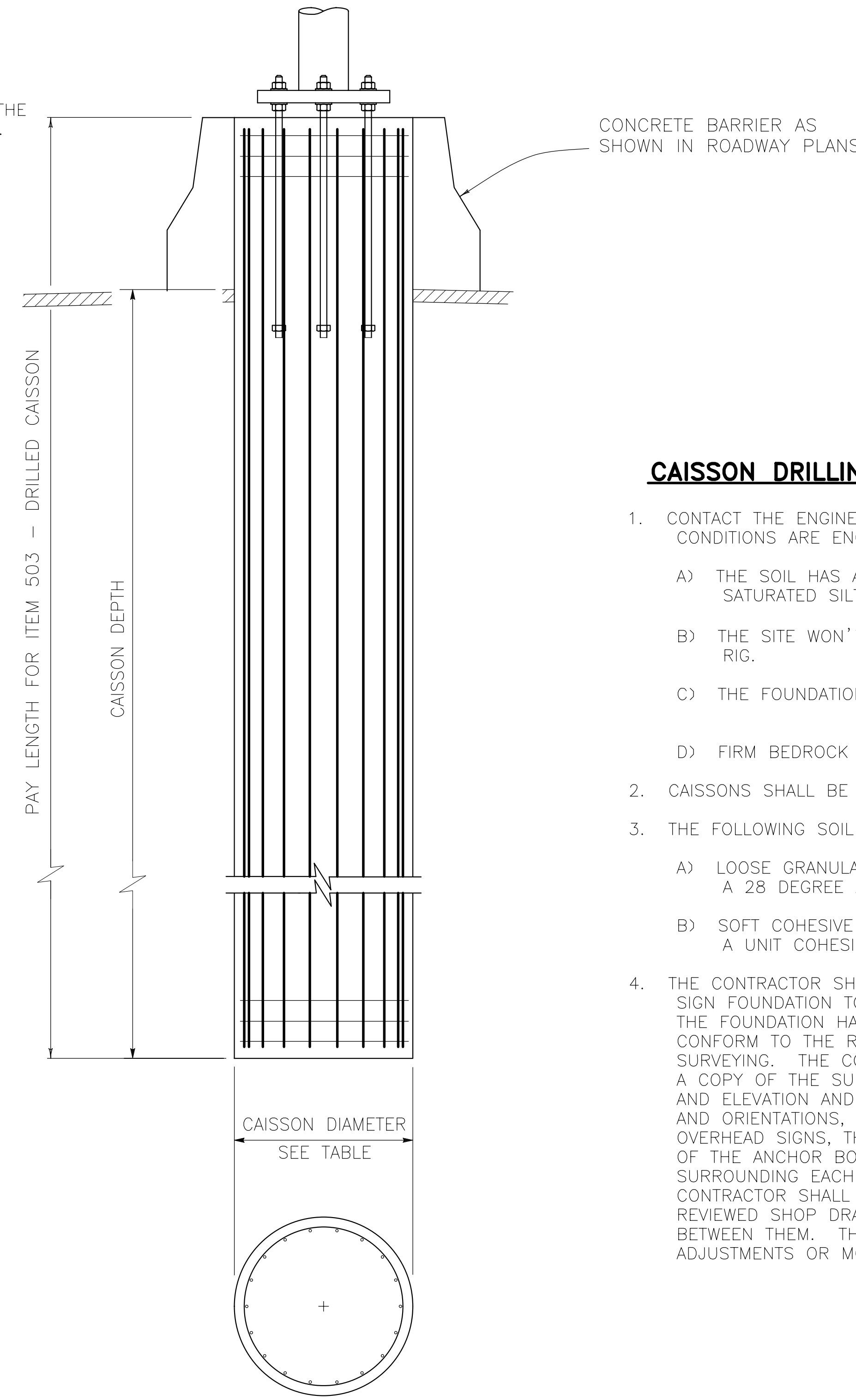
STANDARD PLAN NO.
S-614-50

—FOUNDATION DETAILS—



CAISSON FOUNDATION DETAILS

ROADSIDE SHOULDER INSTALLATION



CAISSON FOUNDATION DETAILS

MEDIAN RAIL INSTALLATION

(SEE ROADSIDE SHOULDER INSTALLATION FOR ADDITIONAL INFORMATION)

CAISSON DRILLING AND INSTALLATION NOTES

1. CONTACT THE ENGINEER IF ANY OF THE FOLLOWING SOIL CONDITIONS ARE ENCOUNTERED DURING DRILLING:

   A) THE SOIL HAS A HIGH ORGANIC CONTENT OR CONSISTS OF SATURATED SILT AND CLAY.

   B) THE SITE WON'T SUPPORT THE WEIGHT OF THE DRILLING RIG.

   C) THE FOUNDATION SOILS ARE NOT HOMOGENOUS.

   D) FIRM BEDROCK IS ENCOUNTERED.

2. CAISSONS SHALL BE PLACED AGAINST UNDISTURBED EARTH.

3. THE FOLLOWING SOIL PARAMETERS WERE USED FOR DESIGN:

   A) LOOSE GRANULAR SOIL WITH A UNIT WEIGHT OF 100 PCF AND A 28 DEGREE ANGLE OF INTERNAL FRICTION (PHI ANGLE).

   B) SOFT COHESIVE SOIL WITH A UNIT WEIGHT OF 100 PCF AND A UNIT COHESION OF 500 PSF.

4. THE CONTRACTOR SHALL PROVIDE A SURVEY OF EACH OVERHEAD SIGN FOUNDATION TO VERIFY PLACEMENT SOON AFTER WORK ON THE FOUNDATION HAS BEEN COMPLETED. THE SURVEY SHALL CONFORM TO THE REQUIREMENTS OF SECTION 625, CONSTRUCTION SURVEYING. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A COPY OF THE SURVEY NOTES DETAILING THE FOUNDATION LOCATION AND ELEVATION AND THE ANCHOR BOLT LOCATIONS, PROJECTIONS, AND ORIENTATIONS, AND IN THE CASE OF SIGN–BRIDGE TYPE OF OVERHEAD SIGNS, THE DISTANCE MEASURED BETWEEN THE CENTERLINE OF THE ANCHOR BOLT GROUPS. THE ELEVATION OF THE GROUND SURROUNDING EACH FOUNDATION SHALL ALSO BE PROVIDED. THE CONTRACTOR SHALL COMPARE THE SURVEY INFORMATION TO THE REVIEWED SHOP DRAWINGS AND RECONCILE ANY DIFFERENCES BETWEEN THEM. THE CONTRACTOR SHALL SUBMIT ALL PROPOSED ADJUSTMENTS OR MODIFICATIONS TO THE ENGINEER FOR APPROVAL.

BRIDGES

PIPE OUTSIDE DIAMETER (INCHES)	SPLIT (INCHES)	CAISSON DIAMETER (INCHES)	CAISSON DEPTH (FEET)	VERTICAL REINF
12.75	5	48	17	18 – #8
14	5	48	19	24 – #8
16	5	48	20	24 – #8
18	5	54	21	24 – #8
20	5	54	22	24 – #8
24	5	54	24	24 – #8

CANTILEVERS

PIPE OUTSIDE DIAMETER (INCHES)	SPLIT (INCHES)	CAISSON DIAMETER (INCHES)	CAISSON DEPTH (FEET)	VERTICAL REINF
12.75	–	36	13	13 – #8
14	–	42	15	18 – #8
16	–	42	16	18 – #8
18	–	42	17	18 – #8
20	–	48	18	24 – #8
24	–	48	20	24 – #8
■ 24	–	48	29	24 – #8

■ DYNAMIC CANTILEVER SIGN ONLY

Computer File Information	
Creation Date: 07-04-06	Initials: JSV
Last Modification Date: 07-04-06	Initials: RO
Full Path:www.dot.state.co.us/DesignSupport/	
Drawing File Name: S6145001414.dwg	
CAD Ver.: ACAD 2004 Scale: Not to Scale	Units: English

R-X R-X R-X R-X

Sheet Revisions	
Date:	Comments

Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9543
Fax: (303) 757-9820
DEPARTMENT OF TRANSPORTATION
Safety & Traffic Engineering Branch KCM

MONOTUBE OVERHEAD SIGNS

Issued By: Traffic Engineering Unit July 4, 2006

STANDARD PLAN NO.
S-614-50