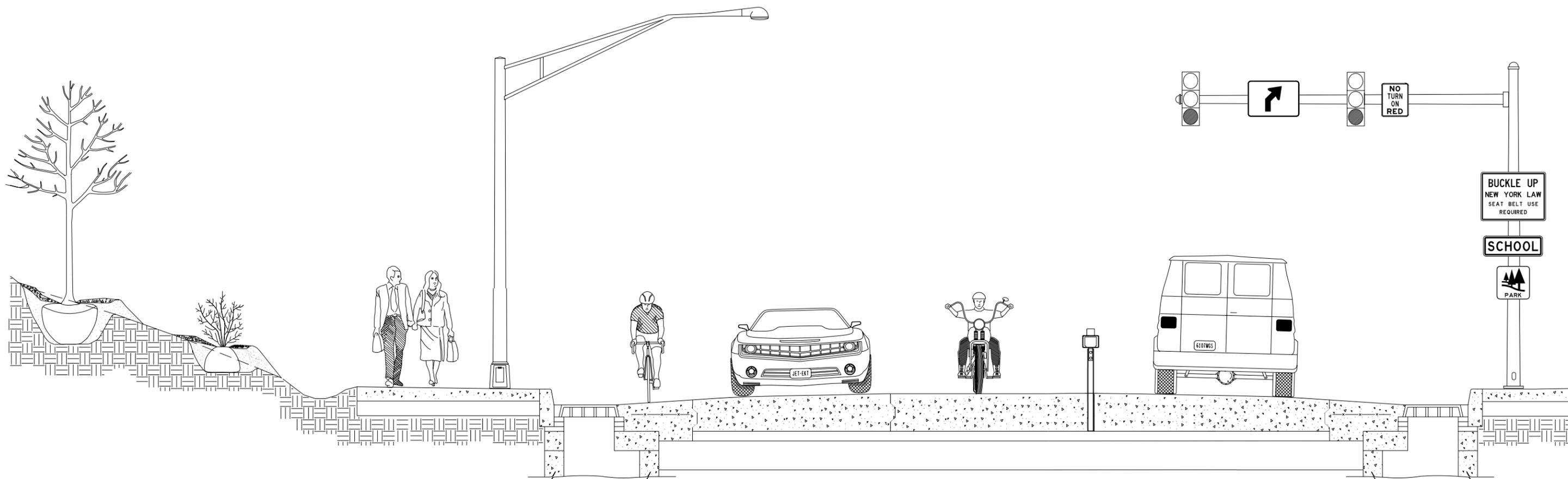


# NEW YORK STATE STANDARD SHEETS

( U.S. CUSTOMARY UNITS )



NEW YORK STATE DEPARTMENT OF TRANSPORTATION



ENGINEERING DIVISION, OFFICE OF DESIGN

DAVID A. PATERSON, GOVERNOR

ISSUED THROUGH JANUARY 06, 2011

STANLEY GEE, ACTING COMMISSIONER

SHEET NO.	SUBJECT	ISSUED BY	EFFECTIVE
203-01	CONSTRUCTION DETAILS UNSUITABLE MATERIAL EXCAVATION AND BACKFILL	EB 08-036	01/08/09
203-02	EARTHWORK TRANSITION AND BENCHING DETAILS	EB 08-036	01/08/09
203-03	INSTALLATION DETAILS FOR GRANULAR FILL-SLOPE PROTECTION	EB 08-036	01/08/09
203-04	INSTALLATION DETAILS FOR REINFORCED CONCRETE PIPES	EB 08-036	01/08/09
203-05	INSTALLATION DETAILS FOR CORRUGATED AND STRUCTURAL PLATE PIPE AND PIPE ARCHES	EB 08-036	01/08/09
204-01	CONTROLLED LOW STRENGTH MATERIAL (CLSM) INSTALLATION DETAILS FOR CIRCULAR AND ELLIPTICAL CORRUGATED METAL PIPES, STRUCTURAL PLATE PIPES AND PIPE-ARCHES, AND REINFORCED CONCRETE AND OTHER "RIGID" PIPES	EB 08-036	01/08/09
209-01	<b>LINEAR MEASURES</b>	<b>EB 09-036</b>	<b>09/02/10</b>
209-02	<b>CHECK DAMS (SHEET 1 OF 2)</b>	<b>EB 09-036</b>	<b>09/02/10</b>
209-02	<b>CHECK DAMS (SHEET 2 OF 2)</b>	<b>EB 09-036</b>	<b>09/02/10</b>
209-03	<b>DRAINAGE STRUCTURE INLET PROTECTION (SHEET 1 OF 2)</b>	<b>EB 09-036</b>	<b>09/02/10</b>
209-03	<b>DRAINAGE STRUCTURE INLET PROTECTION (SHEET 2 OF 2)</b>	<b>EB 09-036</b>	<b>09/02/10</b>
209-04	<b>PIPE INLET/OUTLET PROTECTION PIPE SLOPE DRAIN</b>	<b>EB 09-036</b>	<b>09/02/10</b>
209-05	<b>CONSTRUCTION ENTRANCES</b>	<b>EB 09-036</b>	<b>09/02/10</b>
209-06	<b>TURBIDITY CURTAIN</b>	<b>EB 09-036</b>	<b>09/02/10</b>
209-07	<b>SEDIMENT TRAPS</b>	<b>EB 09-036</b>	<b>09/02/10</b>
212-01	WIRE ROPE ROCK CATCHMENT FENCE (SHEET 1 OF 3)	EB 10-004	05/06/10
212-01	WIRE ROPE ROCK CATCHMENT FENCE (SHEET 2 OF 3)	EB 10-004	05/06/10
212-01	WIRE ROPE ROCK CATCHMENT FENCE (SHEET 3 OF 3)	EB 10-004	05/06/10
212-02	CHAIN LINK ROCK CATCHMENT FENCE (SHEET 1 OF 2)	EB 10-004	05/06/10
212-02	CHAIN LINK ROCK CATCHMENT FENCE (SHEET 2 OF 2)	EB 10-004	05/06/10
212-03	WIRE MESH SLOPE PROTECTION (SHEET 1 OF 2)	EB 10-004	05/06/10
212-03	WIRE MESH SLOPE PROTECTION (SHEET 2 OF 2)	EB 10-004	05/06/10
212-04	WIRE MESH DRAPE	EB 10-004	05/06/10
212-05	TEMPORARY ROCK CATCHMENT BARRIER (SHEET 1 OF 2)	EB 10-004	05/06/10
212-05	TEMPORARY ROCK CATCHMENT BARRIER (SHEET 2 OF 2)	EB 10-004	05/06/10
402-01	HOT MIX ASPHALT OVERLAY SPLICE (PAVEMENT TERMINATION DETAIL)	EB 08-036	01/08/09
502-01	METAL REINFORCEMENT FOR CONCRETE PAVEMENT	EB 08-036	01/08/09
502-02	TYPICAL PLAN, CROSS SECTION AND JOINT LAYOUT	EB 08-036	01/08/09
502-03	LONGITUDINAL JOINTS	EB 08-036	01/08/09
502-04	LONGITUDINAL JOINT TIES	EB 08-036	01/08/09
502-05	LONGITUDINAL JOINT SAWING AND SEALING	EB 08-036	01/08/09
502-06	TRANSVERSE JOINTS	EB 08-036	01/08/09
502-07	TRANSVERSE JOINT SAWING AND SEALING	EB 08-036	01/08/09
502-08	UTILITY ISOLATION AND JOINT LAYOUT GENERAL NOTES	EB 08-036	01/08/09
502-09	UTILITY ISOLATION GUIDELINES	EB 08-036	01/08/09
502-10	TELESCOPING MANHOLE CASTING LAYOUT	EB 08-036	01/08/09
502-11	NON-TELESCOPING MANHOLE CASTING LAYOUT	EB 08-036	01/08/09
502-12	SHALLOW STRUCTURE ISOLATION	EB 08-036	01/08/09
502-13	DRAINAGE STRUCTURE ISOLATION	EB 08-036	01/08/09
502-14	DRAINAGE STRUCTURE ISOLATION NEAR MANHOLE CASTINGS	EB 08-036	01/08/09
502-15	MULTIPLE UTILITIES ISOLATION	EB 08-036	01/08/09
603-01	REINFORCED CONCRETE PIPE END SECTIONS AND CONCRETE COLLARS	EB 08-036	01/08/09
603-02	ALUMINUM AND STEEL END SECTIONS FOR CORRUGATED PIPE AND PIPE-ARCH	EB 08-036	01/08/09
603-03	CATTLE PASS	EB 08-036	01/08/09
603-04	CUT-OFF WALLS FOR END SECTIONS	EB 08-036	01/08/09
603-05	CULVERT-END SAFETY GRATE	EB 08-036	01/08/09
604-01	PRE-CAST CONCRETE TRANSVERSE DRAINAGE INTERCEPTOR	EB 08-036	01/08/09
604-02	DRAINAGE STRUCTURE DETAILS (SHEET 1 OF 4)	EB 08-036	01/08/09
604-02	DRAINAGE STRUCTURE DETAILS (SHEET 2 OF 4)	EB 08-036	01/08/09
604-02	DRAINAGE STRUCTURE DETAILS (SHEET 3 OF 4)	EB 08-036	01/08/09
604-02	DRAINAGE STRUCTURE DETAILS (SHEET 4 OF 4)	EB 08-036	01/08/09
605-01	POROUS CONCRETE PIPE UNDERDRAIN	EB 08-036	01/08/09
606-01	CABLE GUIDE RAILING (SHEET 1 OF 3)	EB 08-036	01/08/09
606-01	CABLE GUIDE RAILING (SHEET 2 OF 3)	EB 08-036	01/08/09
606-01	CABLE GUIDE RAILING (SHEET 3 OF 3)	EB 08-036	01/08/09

SHEET NO.	SUBJECT	ISSUED BY	EFFECTIVE
606-02	CABLE MEDIAN BARRIER (SHEET 1 OF 3)	EB 08-036	01/08/09
606-02	CABLE MEDIAN BARRIER (SHEET 2 OF 3)	EB 08-036	01/08/09
606-02	CABLE MEDIAN BARRIER (SHEET 3 OF 3)	EB 08-036	01/08/09
606-04	BOX BEAM GUIDE RAIL (SHEET 1 OF 2)	EB 08-036	01/08/09
606-04	BOX BEAM GUIDE RAIL (SHEET 2 OF 2)	EB 09-003	05/06/10
606-05	BOX BEAM MEDIAN BARRIER	EB 08-036	01/08/09
606-06	BOX BEAM END ASSEMBLY TYPE III GRADING, PAYMENT, AND LAYOUT DETAILS	EB 08-036	01/08/09
606-07	W-BEAM (MOD.) GUIDE RAILING COMPONENTS (SHEET 1 OF 2)	EB 08-036	01/08/09
606-07	W-BEAM (MOD.) GUIDE RAILING COMPONENTS (SHEET 2 OF 2)	EB 08-036	01/08/09
606-08	WEAK POST W-BEAM MEDIAN BARRIER	EB 08-036	01/08/09
606-09	HEAVY POST BLOCKED-OUT CORRUGATED BEAM GUIDE RAILING WITH PLASTIC, SYNTHETIC, OR TIMBER BLOCK-OUTS (SHEET 1 OF 2)	EB 08-036	01/08/09
606-09	HEAVY POST BLOCKED-OUT CORRUGATED BEAM GUIDE RAILING WITH PLASTIC, SYNTHETIC, OR TIMBER BLOCK-OUTS (SHEET 2 OF 2)	EB 08-036	01/08/09
606-10	HEAVY POST BLOCKED-OUT CORRUGATED BEAM MEDIAN BARRIER WITH PLASTIC, SYNTHETIC, OR TIMBER BLOCK-OUTS	EB 08-036	01/08/09
606-11	GRADING DETAILS FOR NCHRP 350 HPBO TERMINALS	EB 08-036	01/08/09
606-13	SINGLE-SLOPE CONCRETE HALF SECTION BARRIER	EB 08-036	01/08/09
606-14	SINGLE-SLOPE CONCRETE MEDIAN BARRIER AND SINGLE-SLOPE CONCRETE WIDE BARRIER	EB 08-036	01/08/09
606-15	SINGLE-SLOPE CONCRETE BARRIER TERMINAL SECTION - RAMPED TERMINAL	EB 08-036	01/08/09
606-16	PIER PROTECTION	EB 08-036	01/08/09
606-19	TRANSITION: BOX - CABLE	EB 08-036	01/08/09
606-20	TRANSITION: BOX - W-BEAM (MOD.)	EB 08-036	01/08/09
606-21	TRANSITION: BOX - HPBO	EB 08-036	01/08/09
606-22	TRANSITION: BOX - SINGLE SLOPE (SHEET 1 OF 3)	EB 08-036	01/08/09
606-22	TRANSITION: BOX - SINGLE SLOPE (SHEET 2 OF 3)	EB 08-036	01/08/09
606-22	TRANSITION: BOX - SINGLE SLOPE (SHEET 3 OF 3)	EB 08-036	01/08/09
606-24	TRANSITION: BOX MEDIAN - CORRUGATED MEDIAN	EB 08-036	01/08/09
606-25	TRANSITION: BOX MEDIAN - SINGLE SLOPE MEDIAN (SHEET 1 OF 3)	EB 08-036	01/08/09
606-25	TRANSITION: BOX MEDIAN - SINGLE SLOPE MEDIAN (SHEET 2 OF 3)	EB 08-036	01/08/09
606-25	TRANSITION: BOX MEDIAN - SINGLE SLOPE MEDIAN (SHEET 3 OF 3)	EB 08-036	01/08/09
606-27	TRANSITION: W-BEAM (MOD.) - HPBO RAIL AND MEDIAN BARRIER	EB 08-036	01/08/09
606-28	TRANSITION: HPBO - SINGLE SLOPE HALF SECTION (SHEET 1 OF 3)	EB 08-036	01/08/09
606-28	TRANSITION: HPBO - SINGLE SLOPE HALF SECTION (SHEET 2 OF 3)	EB 08-036	01/08/09
606-28	TRANSITION: HPBO - SINGLE SLOPE HALF SECTION (SHEET 3 OF 3)	EB 08-036	01/08/09
606-29	TRANSITION: HPBO MEDIAN - CONCRETE WALL (SHEET 1 OF 2)	EB 08-036	01/08/09
606-29	TRANSITION: HPBO MEDIAN - CONCRETE WALL (SHEET 2 OF 2)	EB 08-036	01/08/09
606-30	TRANSITION: CONCRETE WALL - SINGLE SLOPE MEDIAN	EB 08-036	01/08/09
606-31	TRANSITION: WIDE - NORMAL WIDTH SINGLE SLOPE MEDIAN	EB 08-036	01/08/09
606-33	W-BEAM GUIDE RAILING (SHEET 1 OF 2) (MAINTENANCE SUPPORT)	EB 08-036	01/08/09
606-33	W-BEAM GUIDE RAILING (SHEET 2 OF 2) (MAINTENANCE SUPPORT)	EB 08-036	01/08/09
606-35	CONCRETE BARRIER (CAST-IN-PLACE) (MAINTENANCE SUPPORT)	EB 08-036	01/08/09
606-36	PRECAST CONCRETE BARRIER	EB 08-036	01/08/09
606-37	MACHINE FORMED CONCRETE BARRIER	EB 08-036	01/08/09
606-38	TRANSITION: BOX BEAM - W-BEAM (MAINTENANCE SUPPORT)	EB 08-036	01/08/09
606-40	TRANSITION: HPBO - JERSEY SHAPE (MAINTENANCE SUPPORT)	EB 08-036	01/08/09
606-41	TRANSITION: CONCRETE WALL - JERSEY MEDIAN (MAINTENANCE SUPPORT)	EB 08-036	01/08/09
606-42	TRANSITION: CONCRETE BARRIER BETWEEN STANDARD (NJ) AND SINGLE SLOPE CONCRETE SHAPES	EB 08-036	01/08/09

SHEET NO.	SUBJECT	ISSUED BY	EFFECTIVE
607-01	R.O.W. FENCING	EB 08-036	01/08/09
607-02	NOISE BARRIER - WALL DETAILS (HORIZONTAL SHEATHING)	EB 08-036	01/08/09
607-03	NOISE BARRIER - WALL DETAILS (VERTICAL SHEATHING)	EB 08-036	01/08/09
607-04	CHAIN LINK FENCE WITH TOP RAIL	EB 08-036	01/08/09
607-05	CHAIN LINK FENCE WITH TOP TENSION WIRE	EB 08-036	01/08/09
607-06	GATES AND CHAIN LINK FENCE ADJACENT TO GATES	EB 08-036	01/08/09
608-01	SIDEWALK CURB RAMP DETAILS (SHEET 1 OF 4)	EB 08-036	01/08/09
608-01	SIDEWALK CURB RAMP DETAILS (SHEET 2 OF 4)	EB 08-036	01/08/09
608-01	SIDEWALK CURB RAMP DETAILS (SHEET 3 OF 4)	EB 08-036	01/08/09
608-01	SIDEWALK CURB RAMP DETAILS (SHEET 4 OF 4)	EB 08-036	01/08/09
608-02	ACCESSIBLE PARKING FOR PERSONS WITH DISABILITIES DETAILS	EB 08-036	01/08/09
608-03	DRIVEWAY DESIGN GUIDELINES	EB 08-036	01/08/09
608-04	DRIVEWAY ENTRANCE DETAILS	EB 08-036	01/08/09
608-05	DRIVEWAY ENTRANCE LAYOUT	EB 08-036	01/08/09
608-06	DRIVEWAY OPENING LIMITS	EB 08-036	01/08/09
609-01	STONE CURB AND GRANITE CURB	EB 08-036	01/08/09
609-02	MISCELLANEOUS CURB DETAILS	EB 08-036	01/08/09
609-03	CONCRETE CURB, CURB AND GUTTER, AND HOT MIX ASPHALT CURB	EB 08-036	01/08/09
611-01	LANDSCAPE PLANTING DETAILS	EB 08-036	01/08/09
619-01	TEMPORARY CONCRETE BARRIER (SHEET 1 OF 2)	EB 08-036	01/08/09
619-01	TEMPORARY CONCRETE BARRIER (SHEET 2 OF 2)	EB 08-036	01/08/09
619-02	TYPE III CONSTRUCTION BARRICADES (SHEET 1 OF 2)	EB 08-036	01/08/09
619-02	TYPE III CONSTRUCTION BARRICADES (SHEET 1 OF 2)	EB 08-036	01/08/09
619-04	PORTABLE TEMPORARY WOODEN SIGN SUPPORT	EB 08-036	01/08/09
619-10	WORK ZONE TRAFFIC CONTROL GENERAL NOTES	EB 08-036	01/08/09
619-11	WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES	EB 08-036	01/08/09
619-12	SIGN TABLE (SHEET 1 OF 2)	EB 08-036	01/08/09
619-12	SIGN TABLE (SHEET 2 OF 2)	EB 08-036	01/08/09
619-20	SHOULDER CLOSURE 2-LANE 2-WAY ROADWAY	EB 08-036	01/08/09
619-21	SHOULDER CLOSURE 2-LANE 2-WAY ROADWAY MULTIPLE WORK LOCATIONS	EB 08-036	01/08/09
619-22	SHOULDER CLOSURE EXPRESSWAY / FREEWAY	EB 08-036	01/08/09
619-23	SHOULDER CLOSURE EXPRESSWAY / FREEWAY RAMP APPROACH	EB 08-036	01/08/09
619-24	PARTIAL EXIT RAMP CLOSURE EXPRESSWAY / FREEWAY	EB 08-036	01/08/09
619-30	SINGLE LANE CLOSURE MULTI LANE HIGHWAY	EB 08-036	01/08/09



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619-31	SINGLE LANE CLOSURE MULTI LANE DIVIDED HIGHWAY	EB 08-036	01/08/09
619-32	SINGLE LANE CLOSURE MULTI LANE HIGHWAY / EXPRESSWAY / FREEWAY	EB 08-036	01/08/09
619-33	SINGLE LANE CLOSURE NEAR ENTRANCE RAMP EXPRESSWAY / FREEWAY	EB 08-036	01/08/09
619-34	SINGLE LANE CLOSURE NEAR EXIT RAMP EXPRESSWAY / FREEWAY	EB 08-036	01/08/09
619-40	DOUBLE LANE CLOSURE EXPRESSWAY / FREEWAY	EB 08-036	01/08/09
619-41	DOUBLE INTERIOR LANE CLOSURE MULTI LANE HIGHWAY	EB 08-036	01/08/09
619-50	SIDEWALK DETOUR OR DIVERSION	EB 08-036	01/08/09
619-51	CROSSWALK CLOSURE AND PEDESTRIAN DETOUR	EB 08-036	01/08/09
619-60	FLAGGING OPERATION 2-LANE 2-WAY ROADWAY	EB 08-036	01/08/09
619-61	FLAGGING OPERATION 2-LANE 2-WAY ROADWAY INTERSECTION	EB 08-036	01/08/09
619-62	TEMPORARY TRAFFIC SIGNAL 2-LANE 2-WAY ROADWAY	EB 08-036	01/08/09
619-63	SINGLE LANE SHIFT 2-LANE 2-WAY ROADWAY WITH CENTER TURN LANE	EB 08-036	01/08/09
619-64	CENTER TURN LANE CLOSURE 2-LANE 2-WAY ROADWAY WITH CENTER TURN LANE	EB 08-036	01/08/09
619-65	MULTI LANE SHIFT EXPRESSWAY / FREEWAY	EB 08-036	01/08/09
619-66	ROAD CLOSURE WITH OFF SITE DETOUR 2-LANE 2-WAY ROADWAY	EB 08-036	01/08/09
624-01	CONCRETE GUTTER	EB 08-036	01/08/09
625-01	R.O.W. AND SURVEY MARKERS	EB 08-036	01/08/09
630-01	HIGHWAY BARRIER AND HIGHWAY-RAILROAD BARRICADE	EB 08-036	01/08/09
632-01	PRECAST MODULAR WALLS (SHEET 1 OF 2)	EB 08-036	01/08/09
	PRECAST MODULAR WALLS (SHEET 2 OF 2)	EB 08-036	01/08/09
645-01	STANDARD SIGN BLANK DETAILS (SHEET 1 OF 2)	EB 08-036	01/08/09
	STANDARD SIGN BLANK DETAILS (SHEET 2 OF 2)	EB 08-036	01/08/09
645-02	ROUTE MARKER ASSEMBLIES	EB 08-036	01/08/09
645-03	POSITIONING OF TRAFFIC SIGNS (SHEET 1 OF 2)	EB 08-036	01/08/09
	POSITIONING OF TRAFFIC SIGNS (SHEET 2 OF 2)	EB 08-036	01/08/09
645-05	TOURIST, BUSINESS, AND RAMP SERVICE SIGNS (SHEET 1 OF 2)	EB 08-036	01/08/09
	TOURIST, BUSINESS, AND RAMP SERVICE SIGNS (SHEET 2 OF 2)	EB 08-036	01/08/09
645-06	TOURIST ORIENTED BUSINESS SIGNS (SHEET 1 OF 2)	EB 08-036	01/08/09
	TOURIST ORIENTED BUSINESS SIGNS (SHEET 2 OF 2)	EB 08-036	01/08/09
645-07	SPECIFIC SERVICES SIGNS (SHEET 1 OF 2)	EB 08-036	01/08/09
	SPECIFIC SERVICES SIGNS (SHEET 2 OF 2)	EB 08-036	01/08/09
645-09	SIGN PANEL DETAILS FOR GUIDE, INFORMATION, AND OTHER SIGNS	EB 08-036	01/08/09
645-10	MULTIPLE POST SIGN INSTALLATION USING TYPE B SIGN POSTS	EB 08-036	01/08/09
645-11	BI-DIRECTIONAL BREAKAWAY BASE AND HINGE ASSEMBLY	EB 08-036	01/08/09
645-12	OMNI-DIRECTIONAL BREAKAWAY BASE AND HINGE ASSEMBLY	EB 08-036	01/08/09
645-14	POLE MOUNTED SIGNS	EB 08-045	05/07/09
646-01	DELINEATOR, REFERENCE MARKER AND SNOW PLOWING MARKER FABRICATION DETAILS	EB 08-036	01/08/09
646-02	DELINEATOR, REFERENCE MARKER AND SNOW PLOWING MARKER INSTALLATION DETAILS	EB 08-036	01/08/09
655-01	RECTANGULAR GRATES	EB 08-036	01/08/09
655-02	PARALLEL BAR FRAMES AND GRATES	EB 08-049	05/07/09
655-03	CAST MANHOLE FRAMES, GRATES AND COVERS	EB 08-049	05/07/09
655-04	RETICULINE GRATES	EB 08-036	01/08/09
655-05	CAST FRAMES AND CURB BOXES AND WELDED FRAMES	EB 08-049	05/07/09
655-06	PROOF LOADED CAST STEEL OR IRON MANHOLE FRAMES, GRATES AND COVERS	EB 08-036	01/08/09
655-07	WELDED FRAMES AND PROOF LOADED CAST STEEL OR IRON FRAMES AND CURB BOXES	EB 08-049	05/07/09
655-08	TELESCOPING MANHOLE CASTING AND RING	EB 08-036	01/08/09

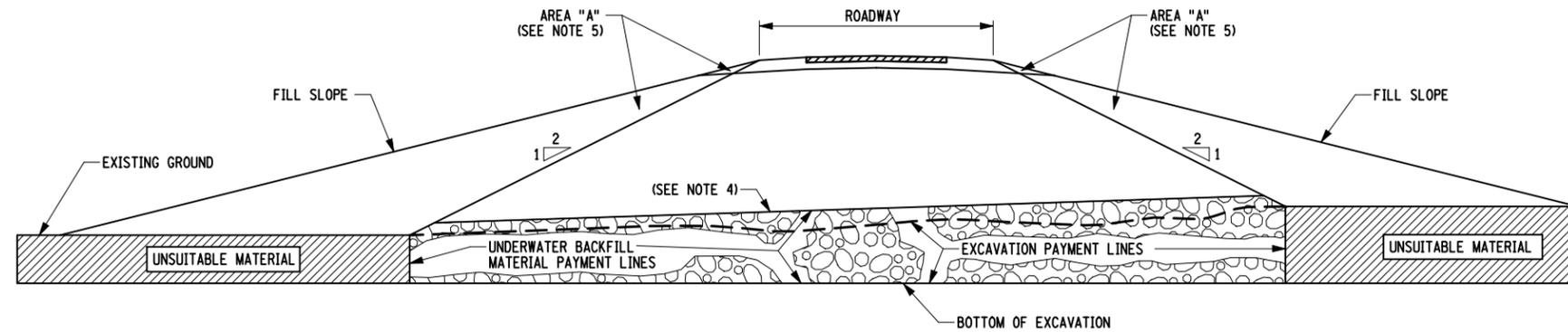
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<b>663-01</b>	<b>WATER MAIN PIPE INSTALLATION DETAILS</b>	<b>EB 08-036</b>	<b>01/08/09</b>
663-02	WATER MAIN HORIZONTAL THRUST RESTRAINT DETAILS	EB 08-036	01/08/09
663-03	WATER MAIN THRUST RESTRAINT DETAILS	EB 08-036	01/08/09
663-04	WATER MAIN UTILITY CROSSING RELOCATION DETAILS	EB 08-036	01/08/09
663-05	WATER MAIN HYDRANT AND VALVE DETAILS	EB 08-036	01/08/09
663-06	WATER MAIN HYDRANT FENDER DETAILS	EB 08-036	01/08/09
663-07	WATER MAIN SERVICE CONNECTION DETAILS	EB 08-036	01/08/09
<b>664-01</b>	<b>SANITARY SEWER MAIN PIPE INSTALLATION DETAILS</b>	<b>EB 10-011</b>	<b>01/06/11</b>
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670-02	LIGHT STANDARD DETAILS	EB 08-036	01/08/09
670-03	DAVIT ARM, WOOD POLE BRACKET ARM AND DEEP FOUNDATIONS	EB 08-036	01/08/09
680-01	TRAFFIC SIGNAL POLE FOUNDATIONS	EB 08-036	01/08/09
680-02	PRECAST STANDARD RECTANGULAR PULLBOXES, FRAMES AND COVERS	EB 08-036	01/08/09
680-03	STANDARD CIRCULAR PULLBOXES, FRAMES AND COVERS	EB 08-036	01/08/09
680-04	PULLBOX, CONDUIT AND GROUND ROD INSTALLATION DETAILS	EB 08-036	01/08/09
680-05	BASE - AND POLE - MOUNTED CABINET INSTALLATION DETAILS	EB 08-036	01/08/09
680-06	STANDARD TRAFFIC SIGNAL POLES (SHEET 1 OF 2)	EB 08-036	01/08/09
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680-07	SPAN WIRE MOUNTED TRAFFIC SIGNAL INSTALLATION DETAILS	EB 08-036	01/08/09
680-08	MAST ARM AND POLE MOUNTED TRAFFIC SIGNAL INSTALLATION DETAILS	EB 08-036	01/08/09
680-10	PEDESTRIAN SIGNALS AND FLASHING BEACON INSTALLATION DETAILS	EB 08-036	01/08/09
680-11	SIGNAL HEAD ASSEMBLY DETAILS	EB 08-036	01/08/09
680-12	SINGLE SPAN WIRE MOUNTED SIGN INSTALLATION DETAILS	EB 08-036	01/08/09
680-13	DUAL SPAN WIRE AND MAST ARM SIGN INSTALLATION DETAILS	EB 08-036	01/08/09
680-14	INDUCTANCE LOOP VEHICLE DETECTOR INSTALLATION DETAILS	EB 08-036	01/08/09
680-15	MAGNETIC VEHICLE DETECTOR INSTALLATION DETAILS	EB 08-036	01/08/09
680-16	WOOD POLE DETAILS	EB 08-036	01/08/09
<b>680-17</b>	<b>UTILITY CLEARANCES TOO TRAFFIC SIGNALS</b>	<b>EB 10-018</b>	<b>06/11/10</b>
685-01	PAVEMENT MARKING DETAILS (SHEET 1 OF 5)	EB 08-036	01/08/09
	PAVEMENT MARKING DETAILS (SHEET 2 OF 5)	EB 08-036	01/08/09
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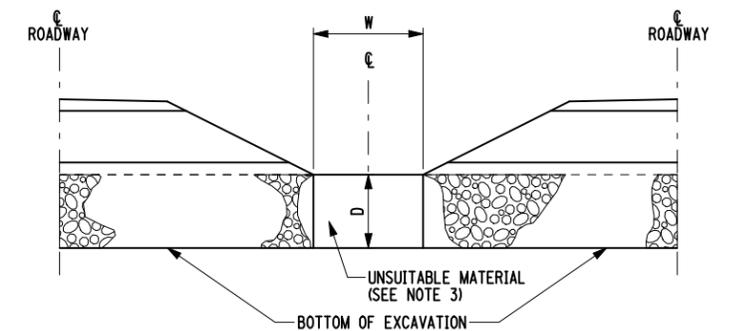
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TYPICAL TRANSVERSE SECTION

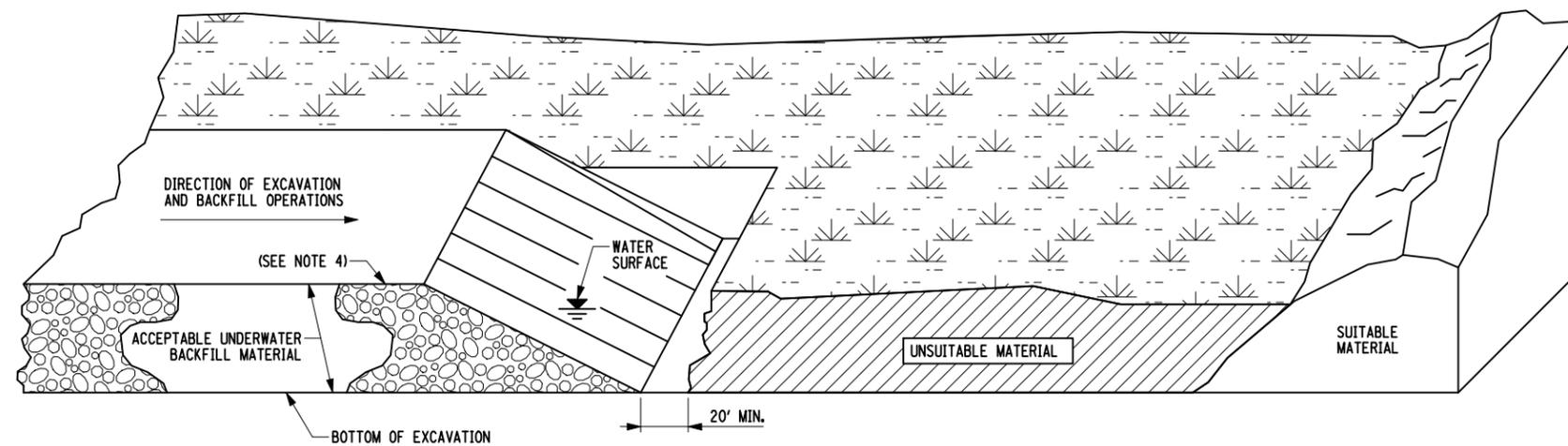
GENERAL NOTES:

1. THESE TYPICAL SECTIONS SHALL APPLY TO THE EXCAVATION OF ALL UNSUITABLE MATERIAL DEPOSITS THAT AVERAGE 10' OR LESS IN DEPTH AND AT NO LOCATION EXCEEDING 20' IN DEPTH.
2. ALL SLOUGHED MATERIAL SHALL BE REMOVED FROM WITHIN THE EXCAVATION PAYMENT LINES. THE COST OF SUCH REMOVAL SHALL BE INCLUDED IN THE PRICE BID FOR EXCAVATION.
3. WHERE THE REMOVAL OF UNSUITABLE MATERIAL IS REQUIRED IN ADJACENT AREAS AND THE ADJACENT LATERAL LIMITS OF EXCAVATION ARE EITHER CLOSER THAN THE DEPTH OF EXCAVATION, OR LESS THAN 10' APART, THE LATERAL LIMITS OF EXCAVATION AND BACKFILL SHALL BE EXTENDED TO INCLUDE THE MATERIAL BETWEEN THE ADJACENT EXCAVATIONS.
4. THE UPPER PAYMENT LINES FOR ACCEPTABLE UNDERWATER BACKFILL MATERIAL SHALL BE 2' ABOVE THE WATER LEVEL EXISTING IN THE EXCAVATION AT THE TIME OF BACKFILLING, UNLESS OTHERWISE SHOWN ON THE PLANS.
5. AREA "A" IS DEFINED AS THE AREA BETWEEN THE ONE ON TWO SLOPE, WHICH LOCATES THE LATERAL LIMITS OF THE EXCAVATION, AND THE FILL SLOPE. COMPACTION AND LIFT THICKNESS REQUIREMENTS OF SECTION 203 EXCAVATION AND EMBANKMENT SHALL NOT APPLY TO THE MATERIAL IN AREA "A".
6. LIMITS OF UNSUITABLE MATERIAL EXCAVATION AND BACKFILL SHALL BE EXTENDED 10' OUTSIDE THE PLAN DIMENSIONS OF ANY CULVERT OR STRUCTURE.



W - DISTANCE BETWEEN ADJACENT LATERAL LIMITS OF EXCAVATION  
 D - DEPTH OF UNSUITABLE MATERIAL REMOVAL

EXCAVATION LIMITS - ADJACENT ROADWAYS

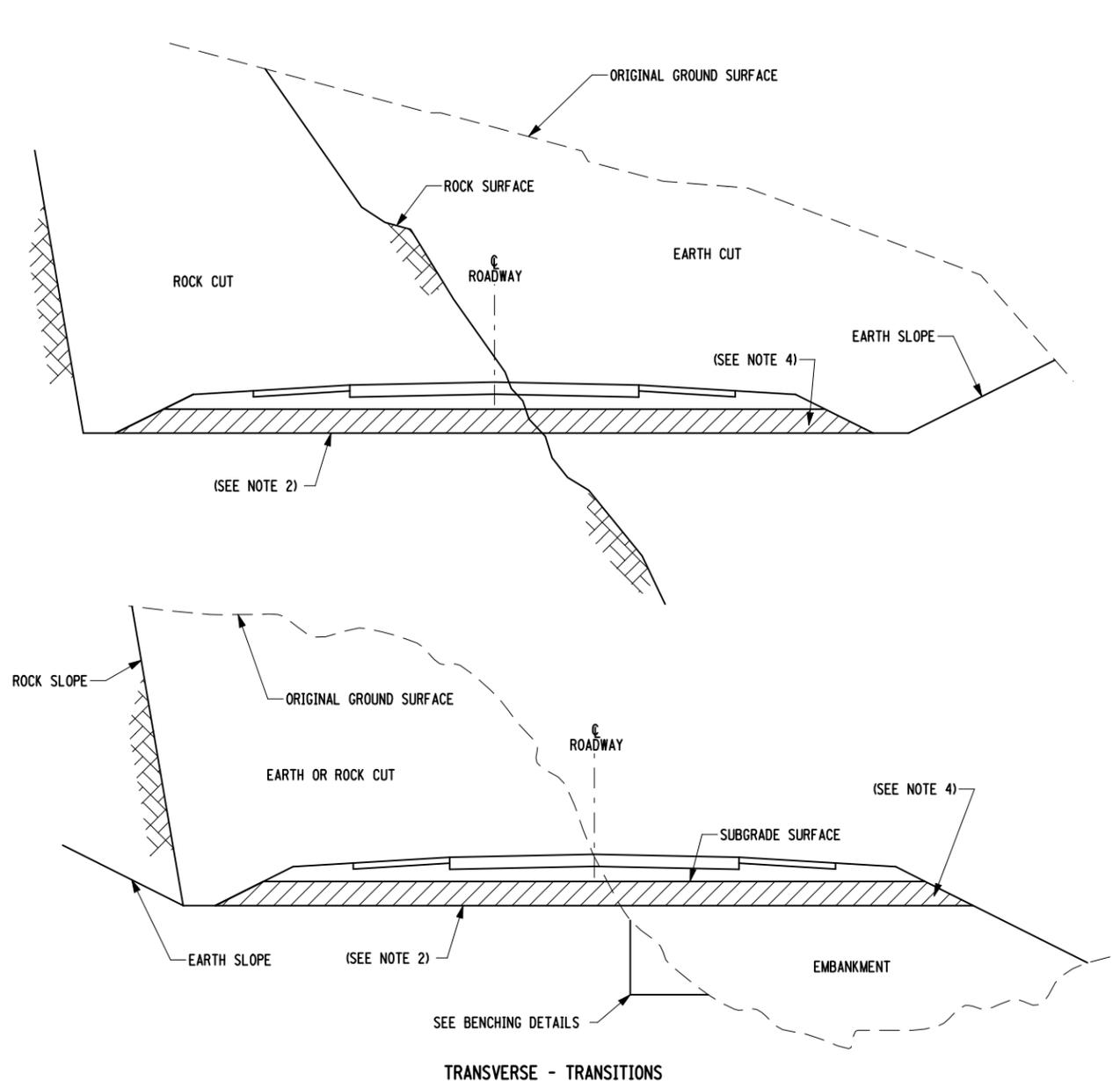


LONGITUDINAL SECTION  
 CONSTRUCTION PROCEDURE REQUIREMENTS

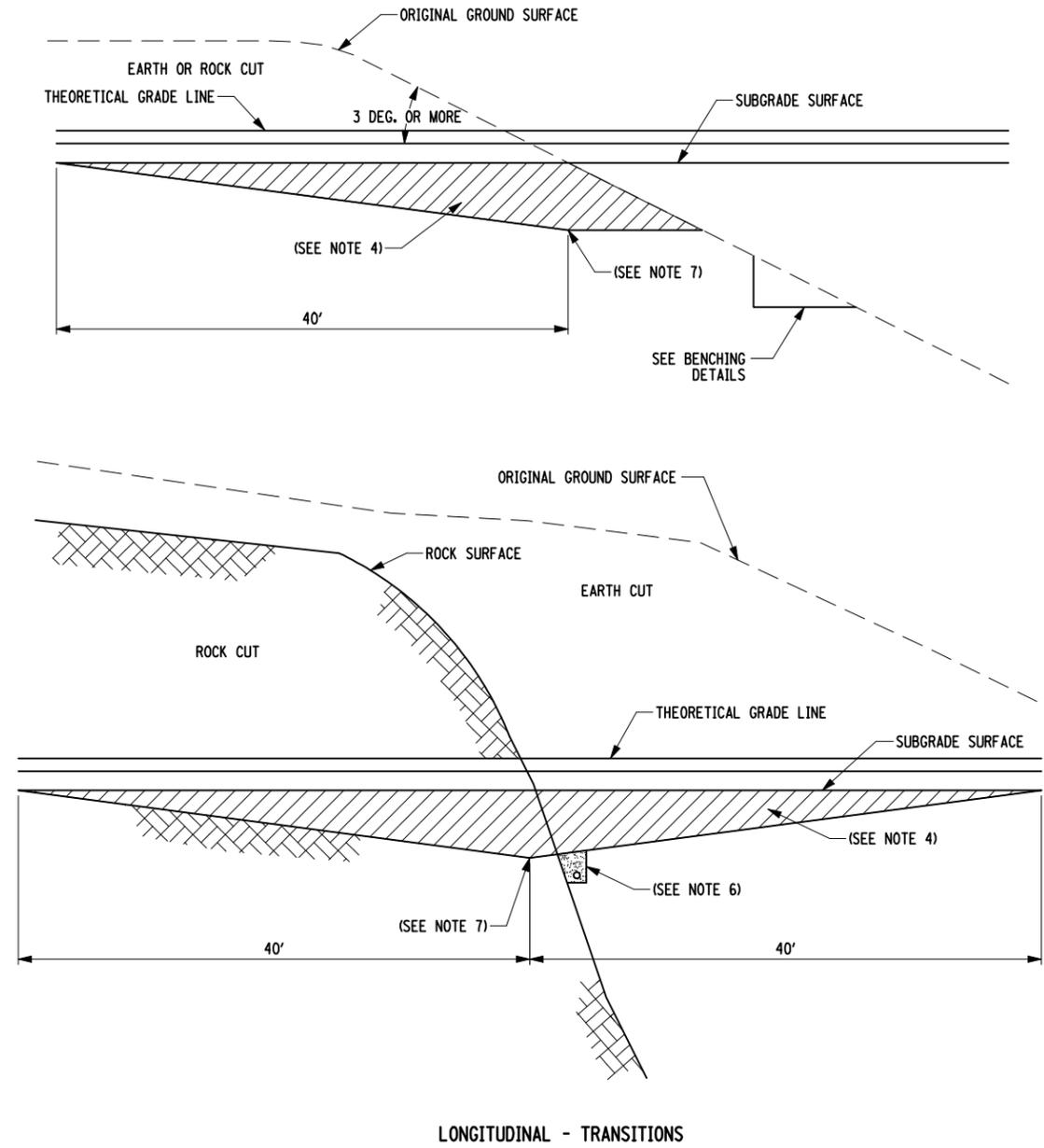
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
CONSTRUCTION DETAILS UNUSUITABLE MATERIAL EXCAVATION AND BACKFILL		
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036	
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	203-01	

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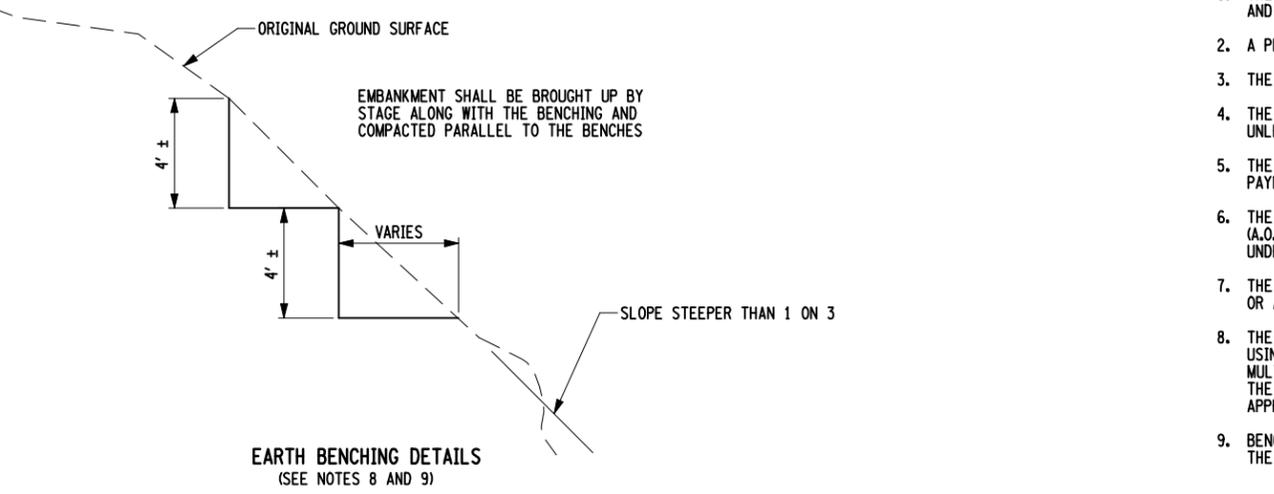
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 USER = jturley



TRANSVERSE - TRANSITIONS



LONGITUDINAL - TRANSITIONS



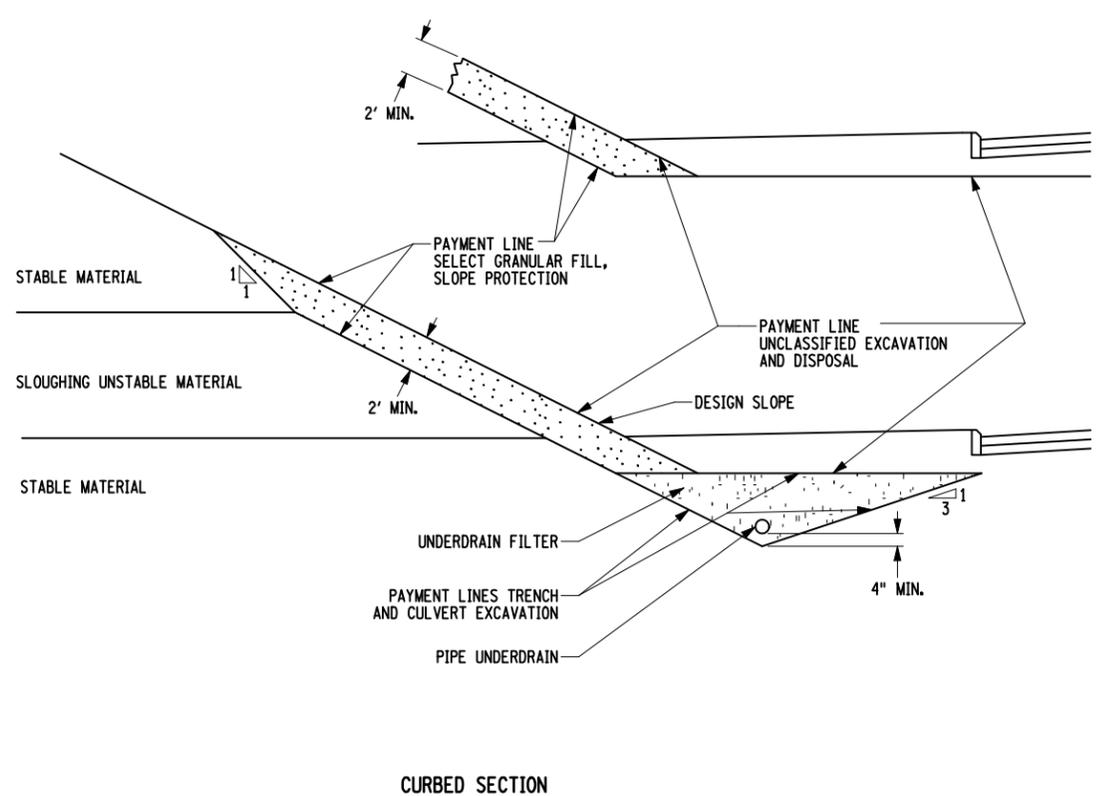
EARTH BENCHING DETAILS  
(SEE NOTES 8 AND 9)

GENERAL NOTES:

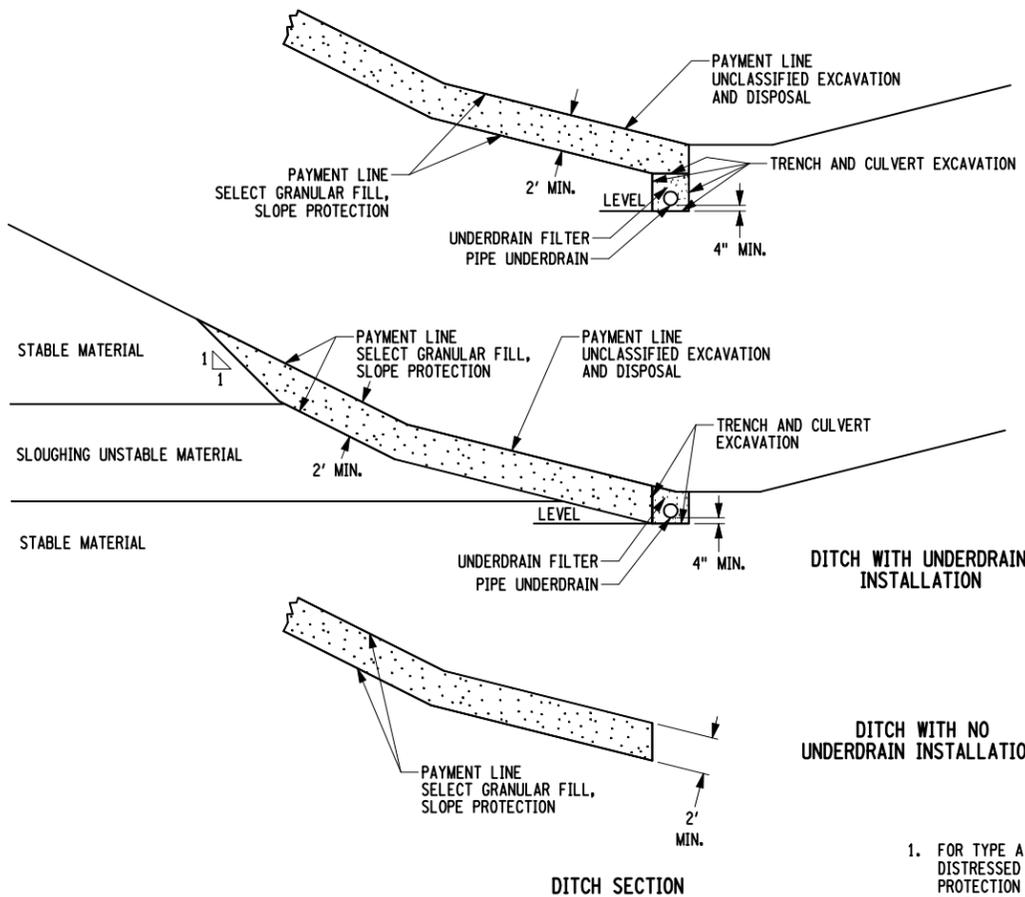
1. THE INTENT OF THE TRANSITIONS IS TO OBTAIN UNIFORM BEARING AND MATERIAL BOTH TRANSVERSELY AND LONGITUDINALLY.
2. A PLANE 4' BELOW THE PAVEMENT ELEVATION AT THE EDGES OF PAVEMENT.
3. THE HATCHED AREA DOES NOT NECESSARILY COINCIDE WITH THE SUBGRADE AREA.
4. THE TRANSITION AREAS SHALL BE BACKFILLED WITH THE SUBGRADE AREA MATERIAL UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE PROPOSAL.
5. THE LOWER LIMITS OF THE HATCHED AREAS IN CUT ARE THE LOWER PAYMENT LINES FOR EXCAVATION.
6. THE UNDERDRAIN INSTALLATION IS OPTIONAL AS ORDERED BY THE ENGINEER (A.O.B.E.). THE CONFIGURATION SHALL BE A.O.B.E. AND PAYMENT SHALL BE MADE UNDER THE APPROPRIATE PAY ITEMS.
7. THE DEPTH IS DETERMINED BY A LINE 4' BELOW THE EDGES OF PAVEMENT OR A LINE CONNECTING THE DITCH INVERTS, WHICHEVER IS HIGHER.
8. THE QUANTITY OF BENCHING TO BE PAID FOR SHALL BE DETERMINED BY USING A FIXED VOLUME OF 0.6 CUBIC YARDS PER LINEAR FOOT OF BENCH MULTIPLIED BY THE MEASURED LENGTH OF THE BENCH REGARDLESS OF THE WIDTH OF THE BENCH. PAYMENT SHALL BE MADE UNDER THE APPROPRIATE ITEM OR ITEMS FOR EXCAVATION AND BACKFILL.
9. BENCHES SHALL BE CONSTRUCTED AS DESIGNED EXCEPT AS MODIFIED BY THE ENGINEER WITH THE APPROVAL OF THE REGIONAL GEOTECHNICAL ENGINEER.

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
EARTHWORK TRANSITION AND BENCHING DETAILS		
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/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	203-02	

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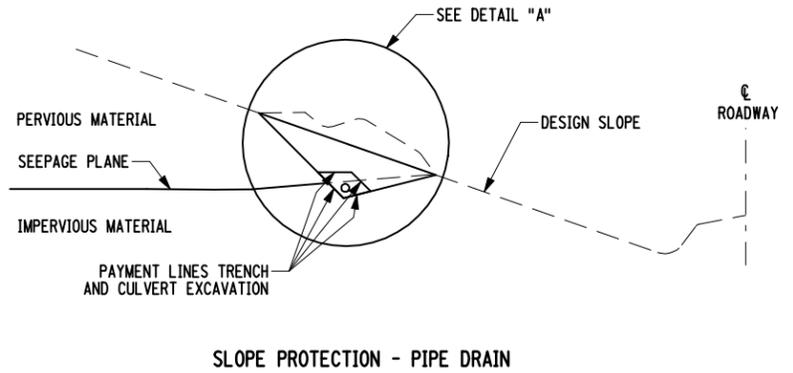


CURBED SECTION



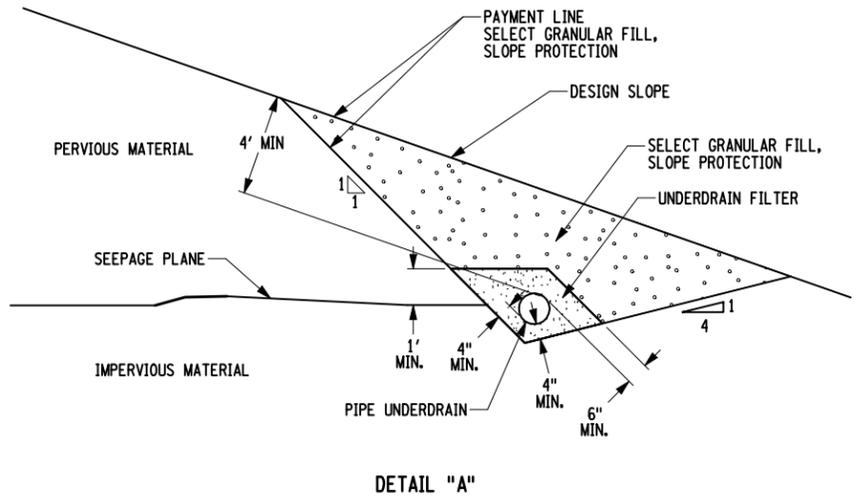
DITCH SECTION

SLOPE PROTECTION - BLANKET



SLOPE PROTECTION - PIPE DRAIN

1. THE PURPOSE OF SLOPE PROTECTION PIPE DRAIN IS TO CONVEY SUBSURFACE WATER FROM THE SLOPE IN A MANNER WHICH WILL NOT CAUSE DAMAGE TO THE SLOPE.
2. THE SLOPE PROTECTION PIPE DRAIN TREATMENT SHALL ONLY BE USED AS ORDERED BY THE ENGINEER (A.O.B.E.) BASED UPON WRITTEN RECOMMENDATION OF THE REGIONAL GEOTECHNICAL ENGINEER.
3. THE UNDERDRAIN PIPE MUST BE PLACED BELOW THE SEEPAGE PLANE, IN THE IMPERVIOUS MATERIAL. GENERALLY, THE LOCATION OF THE SEEPAGE PLANE CAN ONLY BE DETERMINED AT THE TIME OF CONSTRUCTION.
4. THE 1 ON 1 EXCAVATION SLOPE FOR THE SYSTEM MAY BE FLATTENED AS ORDERED BY THE ENGINEER (A.O.B.E.) AND AS DICTATED BY CONDITIONS AT THE TIME OF EXCAVATION. THE INDICATED DIMENSIONS ARE MINIMUM AND MAY BE INCREASED BY THE ENGINEER IN CHARGE.
5. THE PIPE UNDERDRAIN SHOULD HAVE A MINIMUM PITCH OF 2%. THE PIPE MUST BE DESIGNED TO ENSURE THAT THE INTERCEPTED WATER IS CARRIED TO A POSITIVE DRAINAGE SYSTEM.
6. TOPSOIL, IF REQUIRED, MAY BE PLACED ON THE FINISHED SLOPE. THE THICKNESS OF THE TOPSOIL SHALL NOT BE INCLUDED IN THE THICKNESS OF SLOPE PROTECTION PIPE DRAIN INSTALLATIONS.



DETAIL "A"

- GENERAL NOTES:
1. THE PLANS WILL SHOW THE LOCATIONS WHERE SELECT GRANULAR FILL, SLOPE PROTECTION - TYPE A IS REQUIRED. OTHER LOCATIONS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER-IN-CHARGE BASED UPON THE RECOMMENDATIONS OF THE REGIONAL GEOTECHNICAL ENGINEER AND PAYMENT WILL BE MADE UNDER SELECT GRANULAR FILL, SLOPE PROTECTION - TYPE B FOR THESE LOCATIONS.
  2. SELECT GRANULAR FILL, SLOPE PROTECTION INSTALLED AS PART OF A SLOPE PROTECTION PIPE DRAIN SHALL BE TYPE A IF THE LOCATION OF THE WORK IS SHOWN ON THE PLANS AND TYPE B IF NOT SHOWN ON PLANS.
  3. THE BLANKET TYPE OF SLOPE PROTECTION SHALL BE USED IN AREAS WHERE SLOUGHING OF SLOPES HAS OCCURRED BUT NO DEFINITE STRATA OF IMPERVIOUS MATERIAL CONTRIBUTING TO THE SLOUGHING CONDITION CAN BE LOCATED OR WHERE THE IMPERVIOUS STRATUM IS LOCATED SO LOW ON THE SLOPE THAT THE USE OF A PIPE DRAIN TYPE OF PROTECTION IS NOT PRACTICAL OR ECONOMIC.

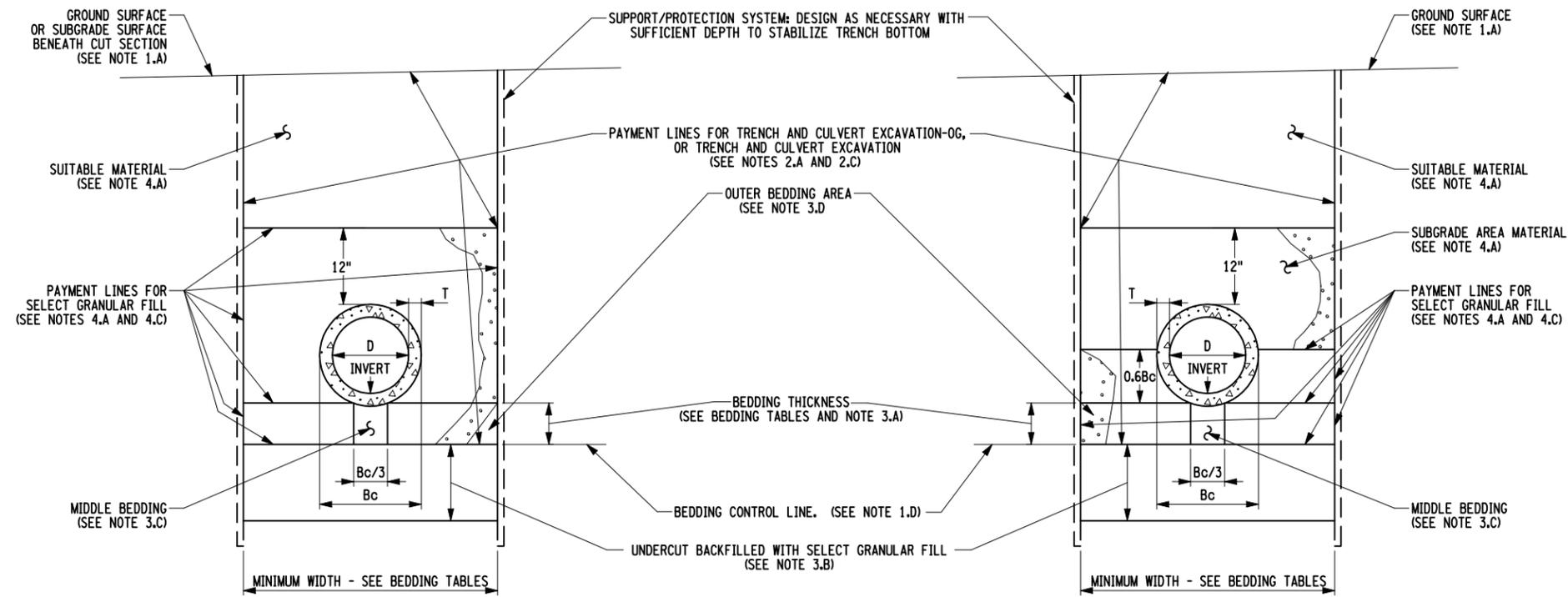
1. FOR TYPE A THE SLOPE PROTECTION BLANKET SHALL INCLUDE THE ENTIRE DISTRESSED AREA. FOR TYPE B THE EXTENT AND LOCATION OF THE SLOPE PROTECTION BLANKET TREATMENT WILL BE AS ORDERED BY THE ENGINEER BASED UPON THE RECOMMENDATIONS OF THE REGIONAL GEOTECHNICAL ENGINEER.
2. THE DIMENSIONS INDICATED ON THESE TYPICAL SECTIONS MAY BE INCREASED AT THE DISCRETION OF THE ENGINEER IN CHARGE.
3. PIPE UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE STANDARD CONSTRUCTION DETAIL SHEET. HOWEVER, WHERE POSSIBLE, THE PIPE UNDERDRAIN SHOULD BE KEPT AT LEAST 4' BELOW THE GROUND SURFACE TO PREVENT FREEZING. THE SLOPE PROTECTION MATERIAL SHALL BE IN DIRECT CONTACT WITH THE UNDERDRAIN FILTER.
4. UNDERDRAINS SHALL BE OMITTED WHEN ORDERED BY THE ENGINEER IN CHARGE BASED UPON THE RECOMMENDATION OF THE REGIONAL GEOTECHNICAL ENGINEER.

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 <b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>INSTALLATION DETAILS</b> <b>FOR</b> <b>GRANULAR FILL-SLOPE PROTECTION</b>	
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	203-03

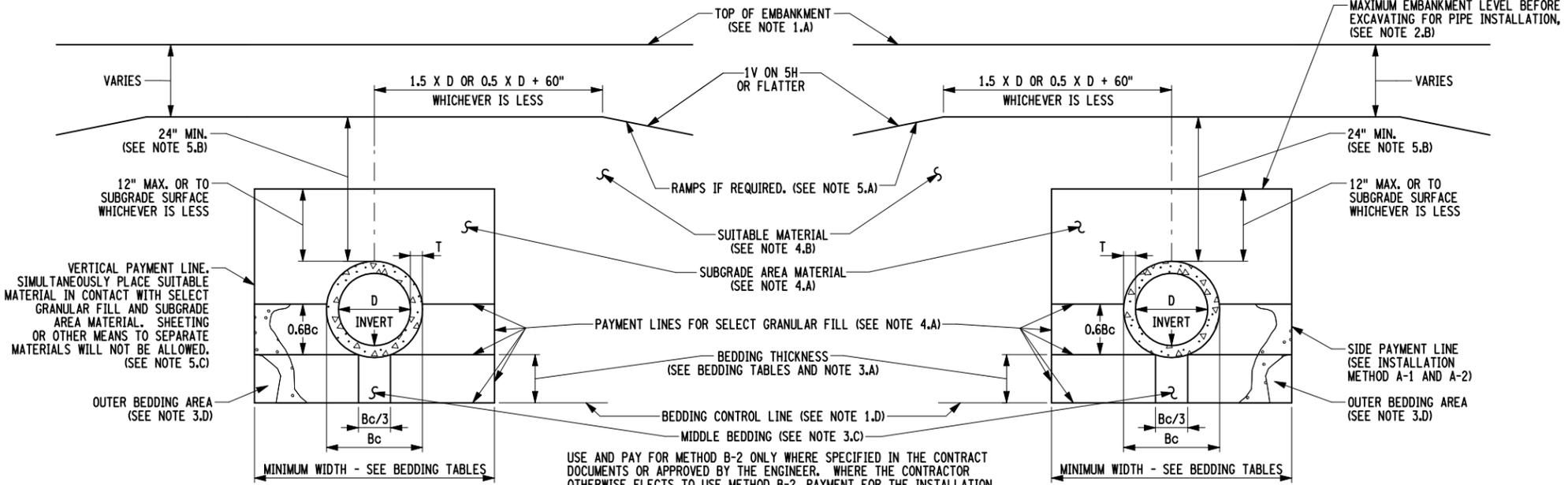
EFFECTIVE DATE: 01/08/09

- GENERAL NOTES
  - SEE CHAP. 8, APP. A, OF THE HIGHWAY DESIGN MANUAL FOR MAXIMUM ALLOWABLE HEIGHT OF COVER.
  - WHERE DESIGN INFORMATION INDICATES UNSUITABLE MATERIAL EXISTS AT OR BELOW THE INVERT ELEVATION, SPECIAL DESIGN FEATURES AND CONSTRUCTION TREATMENTS BASED ON SUBSURFACE EXPLORATIONS ARE NECESSARY.
  - WHERE UNSUITABLE MATERIAL, NOT ANTICIPATED DURING DESIGN, IS ENCOUNTERED AT OR BELOW INVERT ELEVATION, CONSULT WITH THE REGIONAL GEOTECHNICAL ENGINEER FOR TREATMENT RECOMMENDATIONS.
  - THE BEDDING CONTROL LINE (BCL) IS A HORIZONTAL LINE LOCATED BELOW THE INVERT WHICH REPRESENTS THE BOTTOM ELEVATION FOR BEDDING MATERIAL PLACEMENT AND THE TOP ELEVATION OF UNDERCUT BACKFILL WHERE REQUIRED. THE BCL IS ALSO USED FOR QUANTITY PAYMENT PURPOSES FOR "TRENCH AND CULVERT EXCAVATION" ITEMS, BEDDING MATERIAL PLACEMENT, AND UNDERCUT MATERIAL PLACEMENT. THE LOCATION OF THE BCL AND THE ACTUAL BEDDING THICKNESS VARY WITH PIPE SIZE AND WALL THICKNESS. SEE BEDDING THICKNESS TABLE.
- EXCAVATION NOTES
  - WHERE A GENERAL EXCAVATION OF UNSUITABLE OR UNSTABLE MATERIAL IS REQUIRED TO EXTEND BEYOND THE LATERAL AND DEPTH LIMITS INDICATED FOR METHOD A-1 OR A-2, THE EXCAVATION WITHIN THE LIMITS SHOWN WILL BE PAID AS "UNCLASSIFIED EXCAVATION AND DISPOSAL" AND THIS QUANTITY WILL BE DEDUCTED FROM THE RESPECTIVE CONTRACT QUANTITIES FOR "TRENCH AND CULVERT EXCAVATION-OG" OR "TRENCH AND CULVERT EXCAVATION". INSTALL THE CULVERT IN ACCORDANCE WITH DETAILS FOR METHOD B-1 OR B-2 AS SHOWN ON THE PLANS.
  - WHERE A STABLE WORKING PLATFORM MUST FIRST BE ESTABLISHED OVER A SUBMERGED OR UNSTABLE SURFACE, THE ENGINEER IN CHARGE MAY SPECIFY A LOWER EMBANKMENT LEVEL FOR INITIATING THE EXCAVATION FOR THE PIPE. IN THIS CASE, COMPLETE THE REMAINDER OF THE INSTALLATION ABOVE THE "WORKING PLATFORM" USING METHOD B-1.
  - FOR PIPE INSTALLED IN A ROCK TRENCH, SIDE PAYMENT LINES FOR TRENCH EXCAVATION ARE THE SAME AS SHOWN FOR INSTALLATION METHODS A-1 AND A-2. THE PAYMENT LINE FOR DEPTH OF EXCAVATION IS THE DEPTH NEEDED TO PLACE THE BEDDING MATERIAL AND THE UNDERCUT BACKFILL MATERIAL, SELECT GRANULAR FILL.
  - THE MINIMUM TRENCH WIDTH MAY BE ADJUSTED TO (Bc+6"), IF CONTROLLED LOW STRENGTH MATERIAL (CLSM) IS TO BE USED AS BACKFILL. SEE MINIMUM BEDDING WIDTH TABLE.
- BEDDING NOTES
  - USE THE BEDDING THICKNESS TABLE TO DETERMINE THE LOCATION OF THE BEDDING CONTROL LINE (BCL) AND THE MINIMUM BEDDING THICKNESS FOR THE GIVEN PIPE SIZE. COMPUTE THE ACTUAL BEDDING THICKNESS AS THE DISTANCE FROM INVERT TO BCL MINUS THE PIPE WALL THICKNESS.
  - TO ESTABLISH STABLE BEDDING CONDITIONS, AN UNDERCUT BACKFILLED WITH SELECT GRANULAR FILL MATERIAL MAY BE ORDERED BY THE ENGINEER IN CHARGE. THE MINIMUM DEPTH OF UNDERCUT AS MEASURED FROM THE BCL IS 12" AND THE MAXIMUM IS 24".
  - LOOSELY PLACE SELECT GRANULAR FILL IN MIDDLE BEDDING AREA (Bc/3). DO NOT COMPACT MIDDLE BEDDING AREA.
  - COMPACT THE OUTER BEDDING AREAS IN CONFORMANCE WITH THE REQUIREMENTS OF §203-3.15 OF NYSDOT STANDARD SPECIFICATIONS.
- BACKFILL NOTES
  - COMPACT IN CONFORMANCE WITH THE REQUIREMENTS OF STANDARD SPECIFICATIONS §203-3.15.
  - COMPACT IN CONFORMANCE WITH THE REQUIREMENTS OF STANDARD SPECIFICATIONS §203-3.12.
  - CONTROLLED LOW STRENGTH MATERIAL (CLSM) PLACED IN CONFORMANCE WITH THE REQUIREMENTS OF SECTION 204 OF THE STANDARD SPECIFICATIONS AND APPLICABLE CLSM STANDARD SHEET MAY BE USED IN METHODS A-1, A-2 OR B-2.
- CONSTRUCTION OPERATION NOTES
  - AT THE CONTRACTOR'S RISK, CONSTRUCTION EQUIPMENT MAY BE ALLOWED TO CROSS OVER A PIPE INSTALLATION USING RAMPS CONSTRUCTED AS SHOWN IN METHOD B-1 OR B-2 COMPACTED IN CONFORMANCE WITH THE REQUIREMENTS OF §203-3.12 OF NYSDOT STANDARD SPECIFICATIONS. ALL RAMPS WHICH CANNOT BE USED AS PART OF THE COMPLETED EMBANKMENT ARE INSTALLED AND REMOVED AT THE CONTRACTOR'S EXPENSE. ANY PIPE OR STRUCTURE DAMAGED OR DISTURBED BY THESE ACTIVITIES MUST BE REPLACED BY THE CONTRACTOR AT NO EXPENSE TO THE STATE.
  - SEE PROOF ROLLING RESTRICTIONS IN §203-3.13E OF NYSDOT STANDARD SPECIFICATIONS.
  - THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, MAY PLACE A TRAPEZOIDAL SECTION OF SELECT GRANULAR FILL AROUND THE PIPE IN LIEU OF SIMULTANEOUS PLACEMENT WITH SUITABLE MATERIAL. THE MINIMUM DIMENSIONS OF THE TRAPEZOID MUST ENCOMPASS THE PAYMENT LINES FOR THE SELECT GRANULAR FILL AND SUBGRADE AREA MATERIAL AS SHOWN ON INSTALLATION METHOD B-1. NO PAYMENT WILL BE MADE UNDER THIS OPTION FOR SELECT GRANULAR FILL PLACED OUTSIDE THE LIMITS OF INSTALLATION METHOD B-1.



**INSTALLATION METHOD A-1**  
TRENCH AREA BENEATH ROADWAYS,  
PAVEMENTS, AND SURFACE LOADS

**INSTALLATION METHOD A-2**  
TRENCH AREAS NOT SUBJECT TO SURFACE LOADS  
TRENCH AREAS NOT SENSITIVE TO SETTLEMENT

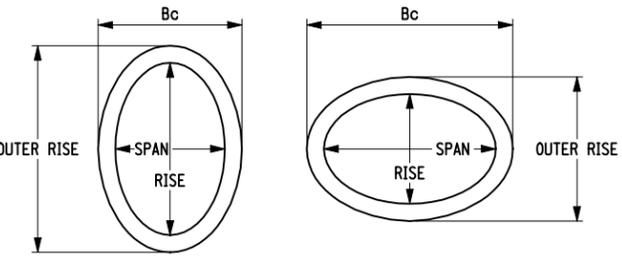


**INSTALLATION METHOD B-1**  
BEFORE EMBANKMENT

**INSTALLATION METHOD B-2**  
AFTER EMBANKMENT

FOUNDATION TYPE	PIPE DIAMETER OR SPAN (IN)	D ≤ 12"	12" < D ≤ 24"	24" < D ≤ 36"	36" < D ≤ 48"	48" < D ≤ 60"	60" < D ≤ 72"	72" < D ≤ 84"	84" < D ≤ 96"	96" < D ≤ 108"	108" < D ≤ 132"	132" < D ≤ 144"
SOIL	DISTANCE (IN) INVERT TO BCL	5"	6"	7"	8"	9"	11"	12"	13"	15"	18"	20"
	MINIMUM THICKNESS	3"	3"	3"	3"	3"	3"	4"	5"	5"	6"	7"
ROCK	DISTANCE (IN) INVERT TO BCL	8"	9"	10"	11"	12"	14"	16"	18"	20"	25"	27"
	MINIMUM THICKNESS	6"	6"	6"	6"	6"	6"	8"	10"	10"	13"	14"

TABLE VALUES ARE BASED ON WALL THICKNESS FOR CIRCULAR PIPE. FOR VERTICAL ELLIPTICAL PIPE, AN INCREASE OF ALL TABLE VALUES BY 1" IS REQUIRED. FOR HORIZONTAL ELLIPTICAL PIPE: A DEDUCTION OF 1" FROM TABLE VALUES IS ALLOWED FOR SPANS GREATER THAN 48" A DEDUCTION OF 2" FROM TABLE VALUES IS ALLOWED FOR SPANS GREATER THAN 108"



VE PIPE HE PIPE  
REFERENCE DIMENSIONS FOR ELLIPTICAL PIPE

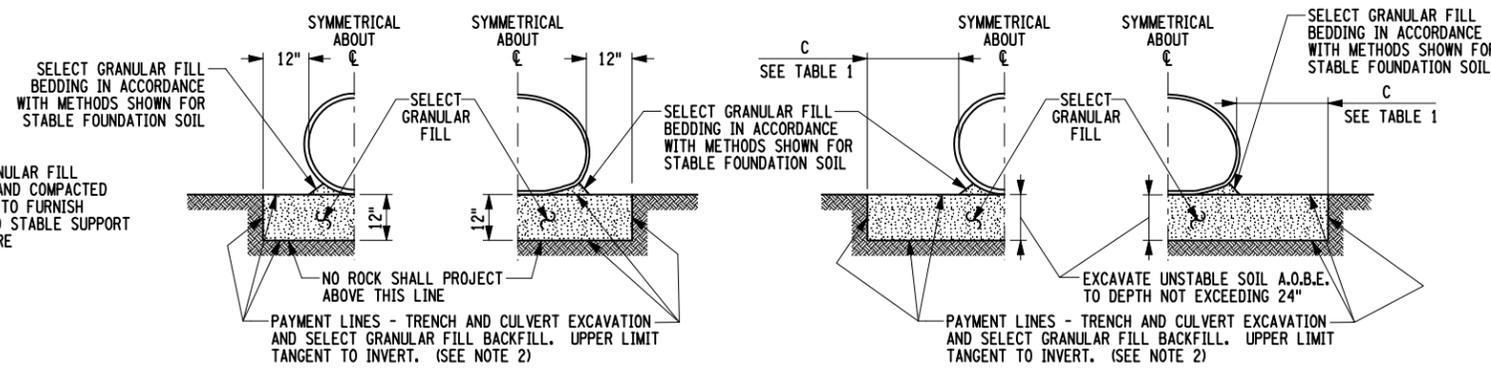
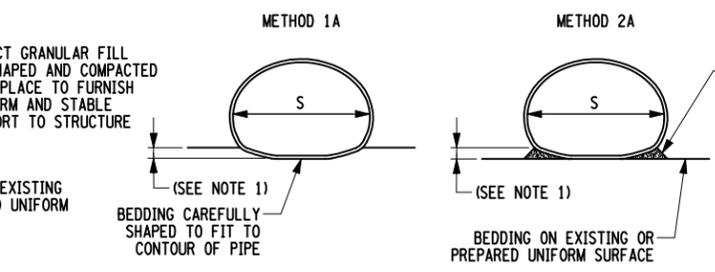
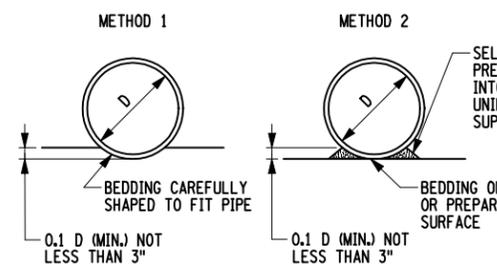
FOUNDATION TYPE	PIPE DIAMETER "D" OR SPAN (IN.)	WIDTH
SOIL	24" OR LESS	Bc + 2*D OR Bc + 2*SPAN
	GREATER THAN 24"	Bc + 48"
ROCK	ALL SIZES	Bc + 24"

Bc IS OUT-TO-OUT SPAN IN INCHES. (SEE NOTE 2.D)

EFFECTIVE DATE: 01/08/09

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
INSTALLATION DETAILS FOR REINFORCED CONCRETE PIPES	
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	203-04

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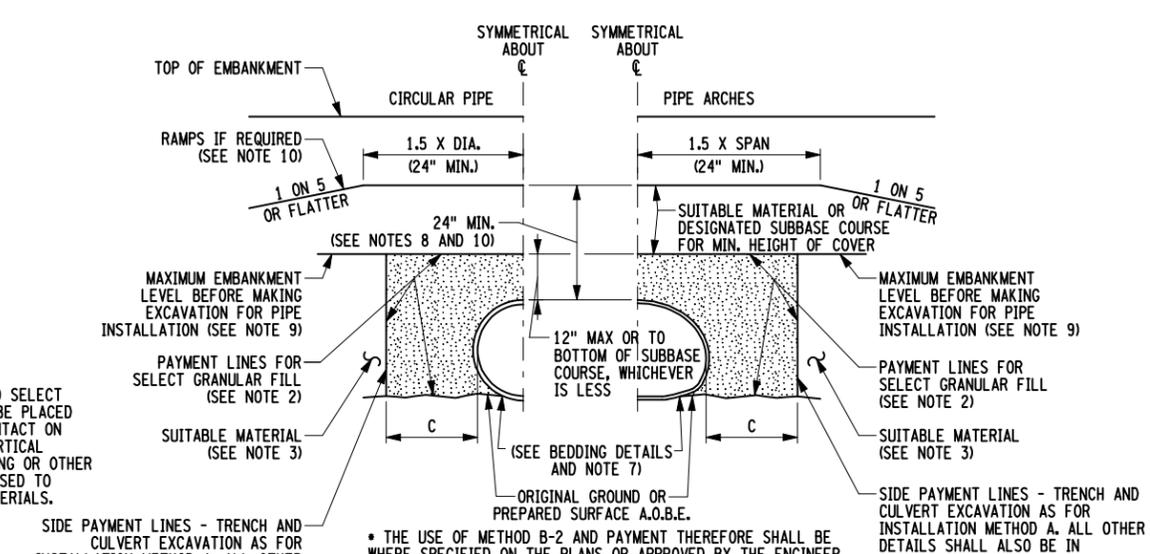
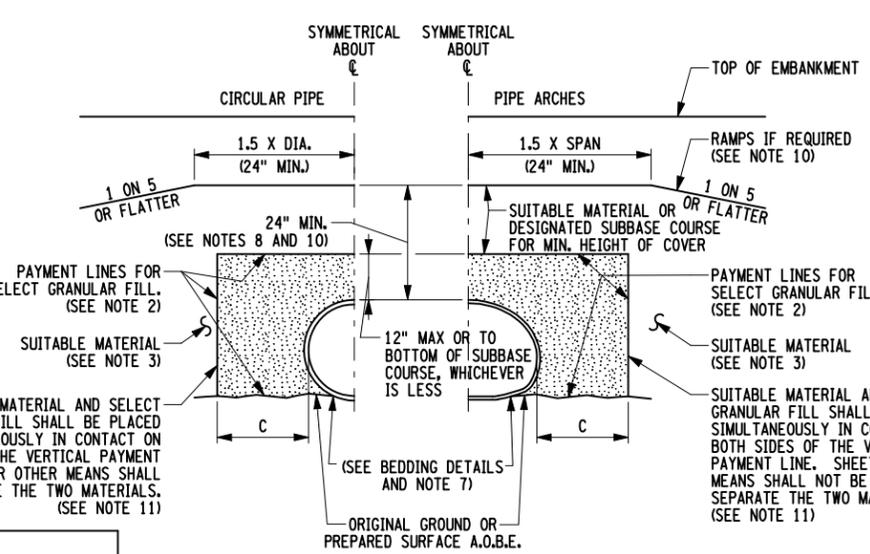
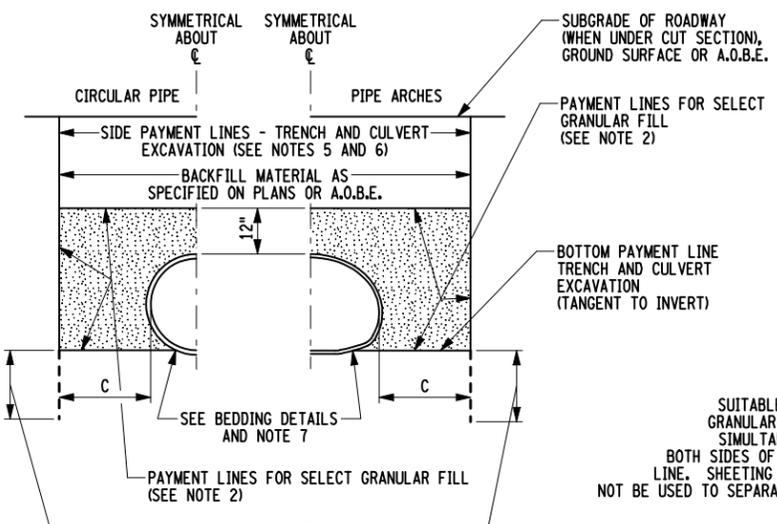


**STABLE FOUNDATION SOIL**

**BEDDING DETAILS**

**ROCK FOUNDATION**

**UNSTABLE FOUNDATION SOIL**

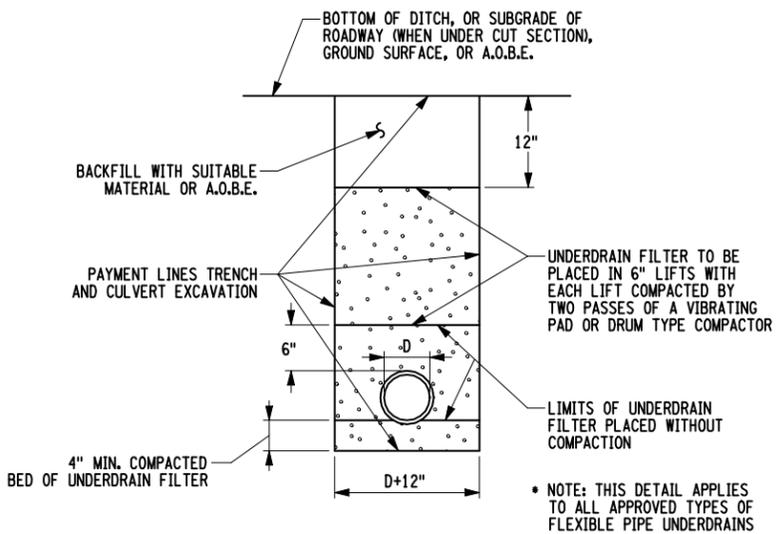


DIAMETER OR SPAN	"C"
UP THRU 24"	D - ROUND PIPE S - PIPE ARCHES
> 24" TO 144"	24"
> 144"	60"

**INSTALLATION METHODS**

**GENERAL NOTES:**

- THE MINIMUM DEPTH OF BEDDING SHALL BE 3" FOR CORRUGATED METAL PIPE-ARCHES. STRUCTURAL PLATE PIPE-ARCHES SHALL BE BEDDED FOR THE FULL WIDTH OF BOTTOM PLATES.
- COMPACTION REQUIREMENTS SHALL CONFORM TO §203-3.15, "FILL AND BACKFILL AT STRUCTURES, CULVERTS, PIPES, CONDUITS, AND DIRECT BURIAL CABLES".
- COMPACTION REQUIREMENTS SHALL CONFORM TO §203-3.12, "COMPACTION".
- TO BE USED WHERE IN THE OPINION OF THE ENGINEER THE FOUNDATION SOIL REQUIRES A LAYER OF GRANULAR MATERIAL TO FURNISH STABLE BEDDING CONDITIONS. THIS DETAIL DOES NOT APPLY WHERE UNSUITABLE MATERIAL EXISTS AT OR BELOW INVERT ELEVATION. SPECIAL DESIGN FEATURES AND CONSTRUCTION TREATMENT BASED ON SUBSURFACE EXPLORATIONS ARE NECESSARY IN LOCATIONS WHERE UNSUITABLE MATERIAL EXISTS. SEE NOTE 7.
- FOR A PIPE TO BE INSTALLED IN A ROCK TRENCH, THE PAYMENT LINES FOR EXCAVATION (SIDES OF TRENCH) SHALL BE THE SAME AS SHOWN FOR INSTALLATION METHOD A. THE PAYMENT LINE FOR DEPTH OF EXCAVATION AND SELECT GRANULAR FILL BEDDING SHALL BE AS SHOWN FOR "ROCK FOUNDATION BEDDING DETAILS".
- WHERE A GENERAL EXCAVATION OF UNSUITABLE OR UNSTABLE MATERIAL IS REQUIRED TO EXTEND BEYOND THE LATERAL AND DEPTH LIMITS INDICATED FOR METHOD A, THAT EXCAVATION WITHIN THE LIMITS SHOWN IN THE FOREMENTIONED DETAIL SHALL BE PAID FOR UNDER ITEM 203.02 RATHER THAN ITEM 206.02. THE CULVERT INSTALLATION SHALL THEN BE MADE IN ACCORDANCE WITH THE DETAILS FOR METHOD B-1 OR B-2 AS DIRECTED BY THE ENGINEER UNLESS OTHERWISE SHOWN ON THE PLANS.
- WHERE UNSUITABLE MATERIAL NOT ANTICIPATED IN DESIGN IS ENCOUNTERED AT OR BELOW INVERT ELEVATION, THE TREATMENT OF SUCH CONDITIONS SHALL BE A.O.B.E. BASED ON THE RESULTS OF SUBSURFACE EXPLORATIONS.
- SEE "PROOF ROLLING" RESTRICTIONS UNDER §203-3.13E, "PROOF ROLLING IN EMBANKMENT SECTIONS - EXCEPTIONS".
- A LOWER EMBANKMENT LEVEL MAY BE SPECIFIED BY THE ENGINEER FOR INITIATING THE EXCAVATION FOR THE PIPE WHERE A STABLE "WORKING PLATFORM" MUST FIRST BE ESTABLISHED OVER A SUBMERGED, UNSTABLE OR YIELDING SURFACE. IN THIS CASE THE REMAINDER OF THE INSTALLATION ABOVE THE "WORKING PLATFORM" SHALL BE IN CONFORMANCE WITH METHOD B-1.
- WHERE CONSTRUCTION EQUIPMENT IS TO BE ALLOWED TO CROSS OVER A PIPE INSTALLATION BEFORE PLACEMENT OF ADEQUATE PROTECTIVE COVER OF EMBANKMENT MATERIAL, RAMPS SHALL BE CONSTRUCTED AS SHOWN ABOVE AND COMPACTION UNDER §203-3.12, "COMPACTION". RAMPS WHICH CANNOT BE UTILIZED AS PART OF THE COMPLETED EMBANKMENT SHALL BE INSTALLED AND REMOVED AT THE CONTRACTOR'S EXPENSE. MOVEMENT OF CONSTRUCTION EQUIPMENT AND OTHER VEHICLES OVER ANY CULVERT PIPE SHALL BE DONE AT THE CONTRACTOR'S RISK. ANY STRUCTURE DAMAGED OR DISTURBED THEREBY SHALL BE REPLACED AT NO EXPENSE TO THE STATE, AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, MAY PLACE A TRAPEZOIDAL SECTION OF SELECT GRANULAR FILL AROUND THE PIPE IN LIEU OF SIMULTANEOUS PLACEMENT WITH SUITABLE MATERIAL. THE MINIMUM DIMENSIONS OF THE SELECT GRANULAR FILL TRAPEZOID SHALL BE SUCH AS TO ENCOMPASS THE PAYMENT LINES FOR THIS MATERIAL SHOWN ON INSTALLATION METHOD B-1. NO PAYMENT WILL BE MADE UNDER THIS OPTION FOR SELECT GRANULAR FILL PLACED OUTSIDE THE LIMITS OF INSTALLATION METHOD B-1.
- WHEN MODIFICATIONS OF THIS SHEET ARE USED IN THE PLANS, THE METHODS SHOWN HEREON SHALL ALSO APPLY TO THOSE MODIFICATIONS.
- FLARED METAL END SECTION TO BE USED AT OUTLET OF UNDERDRAIN WHERE SHOWN ON PLANS OR SPECIFIED BY THE ENGINEER.

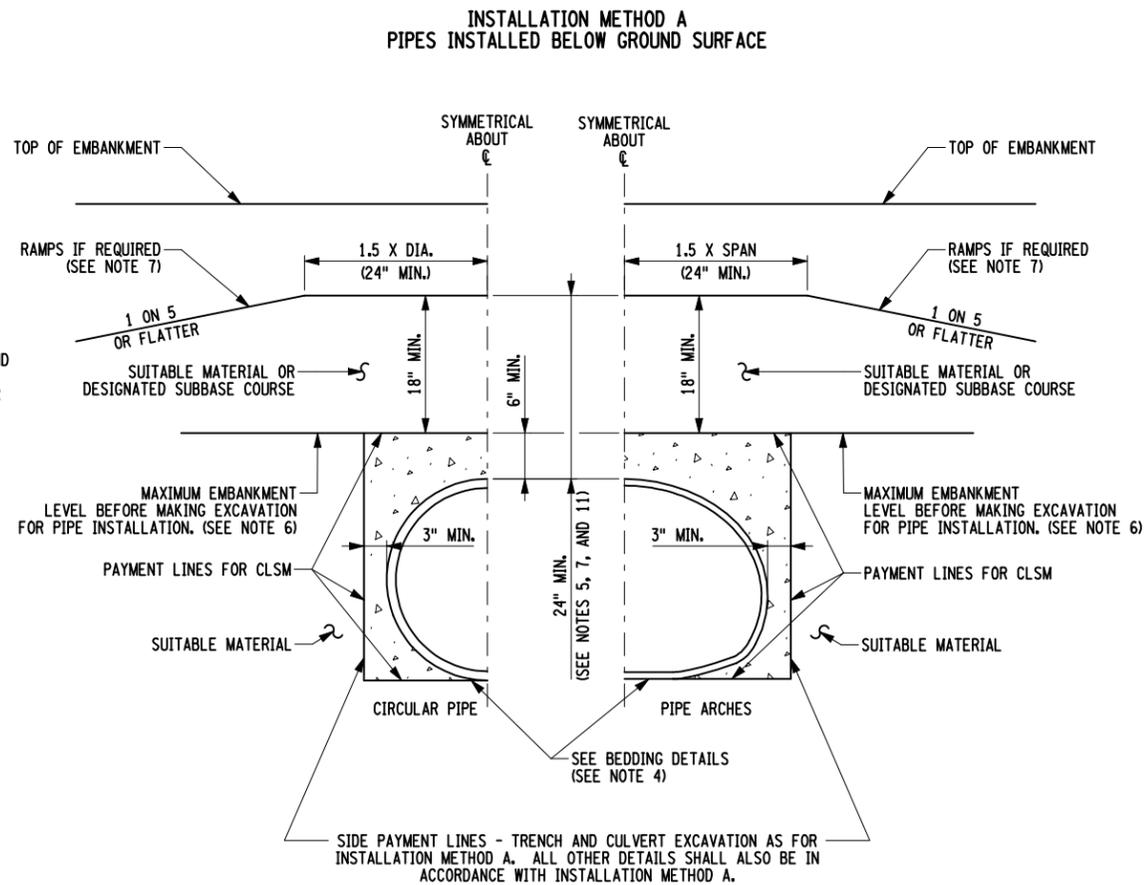
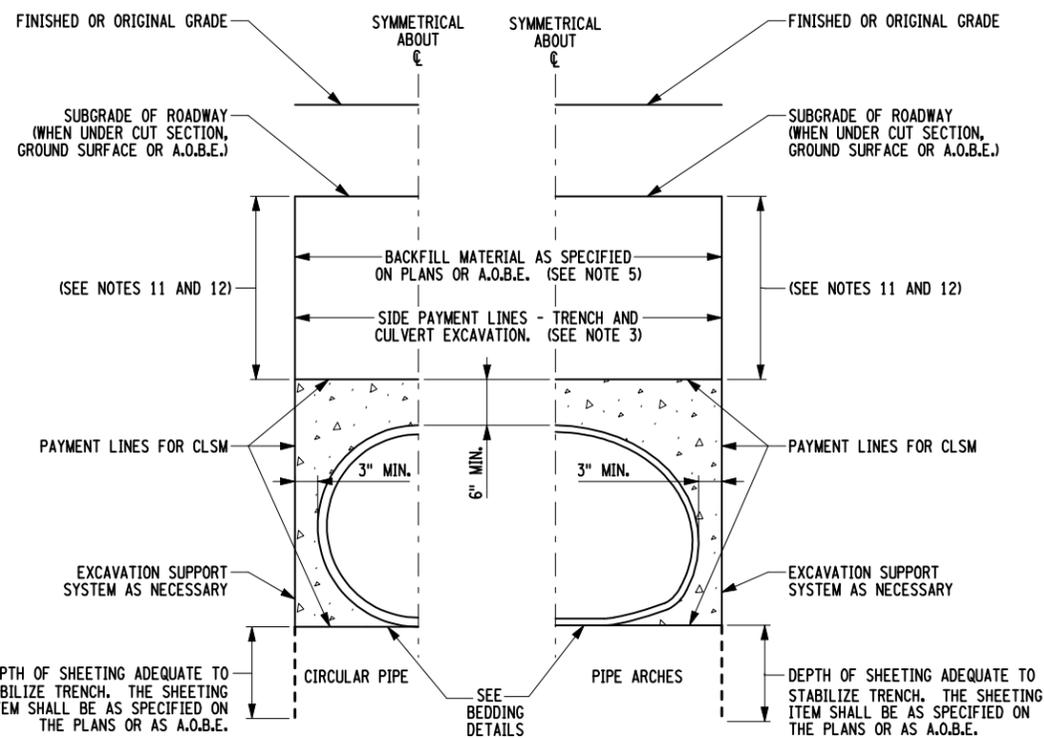
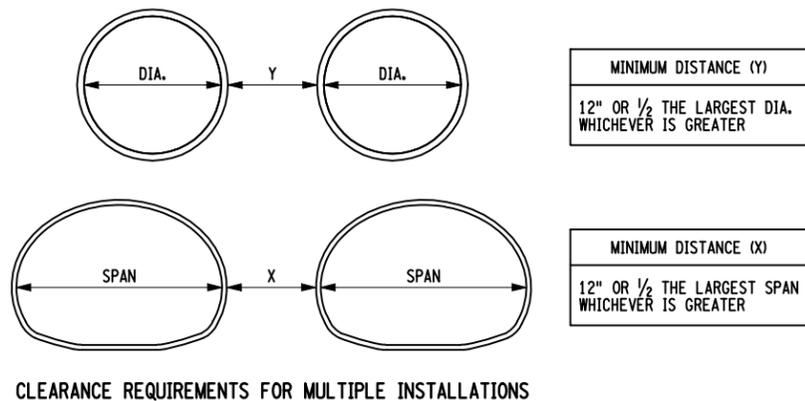
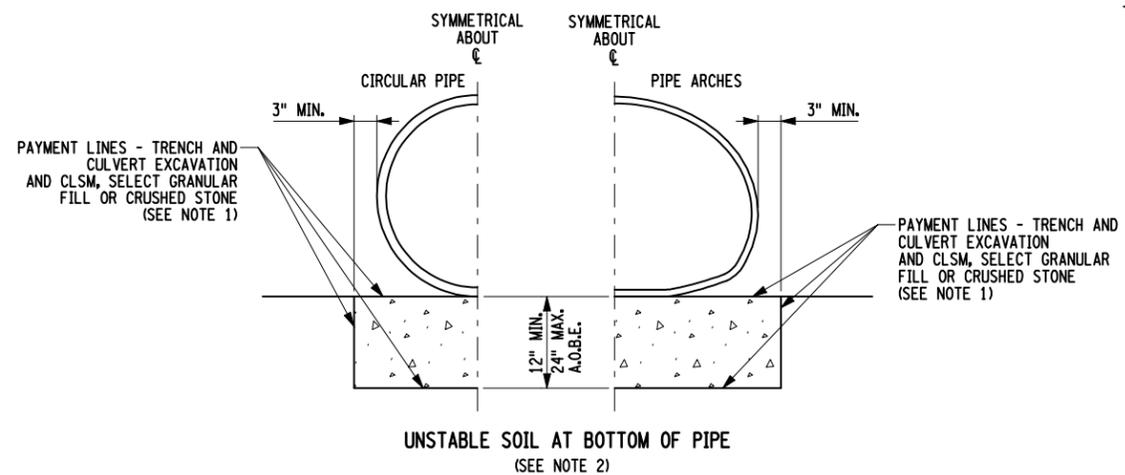
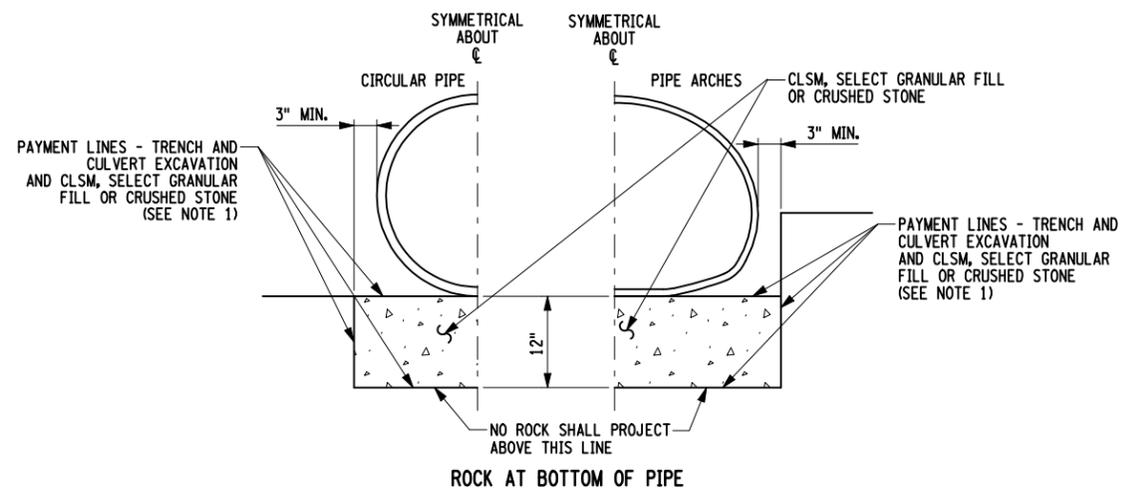
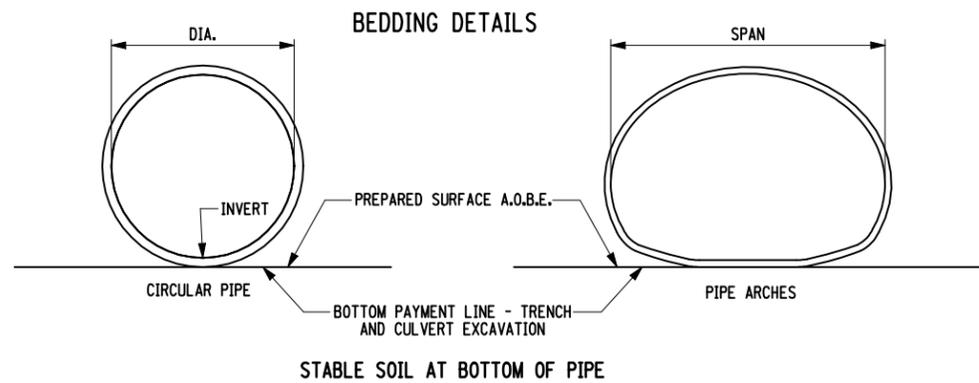


DIAMETER	MINIMUM DISTANCE (Y)	DIAMETER	MINIMUM DISTANCE (X)
UP TO 48"	24"	UP TO 72"	36"
> 48" TO 72"	36"	> 72" TO 95"	48"
> 72"	1/2 DIA.	> 95"	1/2 SPAN

**CLEARANCE REQUIREMENTS FOR MULTIPLE INSTALLATIONS**

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
INSTALLATION DETAILS FOR CORRUGATED AND STRUCTURAL PLATE PIPE AND PIPE ARCHES	
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	203-05

EFFECTIVE DATE: 01/08/09

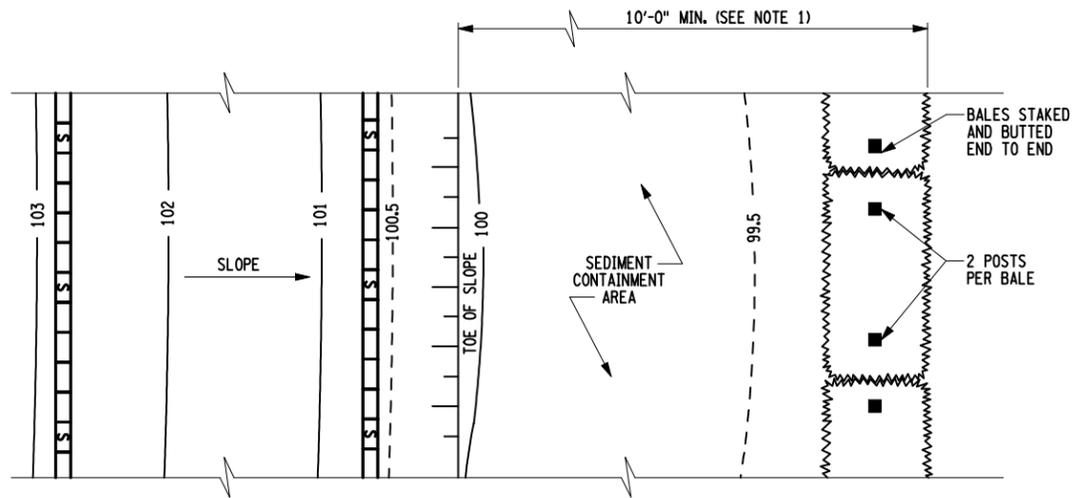


- NOTES:
1. COMPACTION REQUIREMENTS FOR SELECT GRANULAR FILL OR CRUSHED STONE SHALL CONFORM TO §203-3.12, "COMPACTION".
  2. TO BE USED A.O.B.E. WHERE THE FOUNDATION SOIL REQUIRES A LAYER OF MATERIAL TO FURNISH STABLE BEDDING CONDITIONS. THIS DETAIL DOES NOT APPLY WHERE UNSUITABLE MATERIALS EXIST AT OR BELOW INVERT ELEVATION. SPECIAL DESIGN FEATURES AND CONSTRUCTION TREATMENT BASED ON SUBSURFACE EXPLORATIONS ARE NECESSARY IN LOCATIONS WHERE UNSUITABLE MATERIAL EXIST.
  3. WHERE GENERAL EXCAVATION OF UNSUITABLE OR UNSTABLE MATERIAL IS REQUIRED TO EXTEND BEYOND THE LATERAL AND DEPTH LIMITS INDICATED FOR METHOD A, PAY FOR THE EXCAVATION WITHIN THE LIMITS SHOWN UNDER AN UNCLASSIFIED EXCAVATION ITEM OR IN ACCORDANCE WITH THE DETAILS FOR METHOD B AND A.O.B.E., UNLESS OTHERWISE SHOWN ON THE PLANS. DEDUCT THIS QUANTITY FROM SUBSEQUENT TRENCH AND CULVERT EXCAVATION QUANTITIES.
  4. WHERE UNSUITABLE MATERIAL, NOT ANTICIPATED IN DESIGN, IS ENCOUNTERED AT OR BELOW INVERT ELEVATION, THE TREATMENT OF SUCH CONDITIONS SHALL BE A.O.B.E. OR AS RECOMMENDED BY THE REGIONAL GEOTECHNICAL ENGINEER.
  5. SEE §203-3.13 SUBSECTION E, "PROOF ROLLING IN EMBANKMENT SECTIONS - EXCEPTIONS".
  6. WHERE A STABLE "WORKING PLATFORM" MUST FIRST BE ESTABLISHED, THE ENGINEER MAY SPECIFY A LOWER EMBANKMENT LEVEL FOR INITIATING THE EXCAVATION FOR THE PIPE.
  7. WHERE CONSTRUCTION EQUIPMENT IS TO BE ALLOWED TO CROSS OVER A PIPE INSTALLATION BEFORE PLACEMENT OF ADEQUATE PROTECTIVE COVER OF EMBANKMENT MATERIAL, RAMPS SHALL BE CONSTRUCTED AS SHOWN AND COMPACTED UNDER §203-3.12, "COMPACTION". RAMPS WHICH CANNOT BE UTILIZED AS PART OF THE COMPLETED EMBANKMENT SHALL BE INSTALLED AND REMOVED AT THE CONTRACTORS EXPENSE. MOVEMENT OF CONSTRUCTION EQUIPMENT AND OTHER VEHICLES OVER ANY CULVERT PIPE SHALL BE DONE AT THE CONTRACTORS RISK. ANY STRUCTURE DAMAGED OR DISTURBED THEREBY SHALL BE REPLACED AT NO EXPENSE TO THE STATE, A.O.B.E.
  8. WHEN MODIFICATIONS OF THIS SHEET ARE USED IN THE PLANS, THE METHODS SHOWN SHALL ALSO APPLY TO THOSE MODIFICATIONS.
  9. ESTIMATE OF QUANTITIES SHALL BE AS STATED IN §203-4.08 OR THE APPROPRIATE SPECIAL SPECIFICATIONS.
  10. FOR LIGHTWEIGHT PIPE INSTALLATIONS, IT MAY BE NECESSARY TO COUNTERACT THE BUOYANCY OF THE PIPE DURING THE CLSM PLACEMENT. METHODS SUCH AS PARTIALLY FILLING WATERTIGHT PIPES WITH WATER, OR USING ANCHOR STRAPS OR GRAVEL BAGS TO HOLD DOWN THE PIPES CAN BE USED TO PREVENT FLOATATION.
  11. WHERE THE DISTANCE BETWEEN THE TOP OF PIPE ELEVATION AND THE TOP OF SUBGRADE ELEVATION IS LESS THAN 2', CLSM SHALL BE USED FOR BACKFILL MATERIAL TO TOP OF SUBGRADE ELEVATION.
  12. WHEN THE TRENCH DEPTH IS LESS THAN 5' AND THE CLSM HAS SET, CONVENTIONAL BACKFILL AND COMPACTION OPERATIONS CAN CONTINUE.

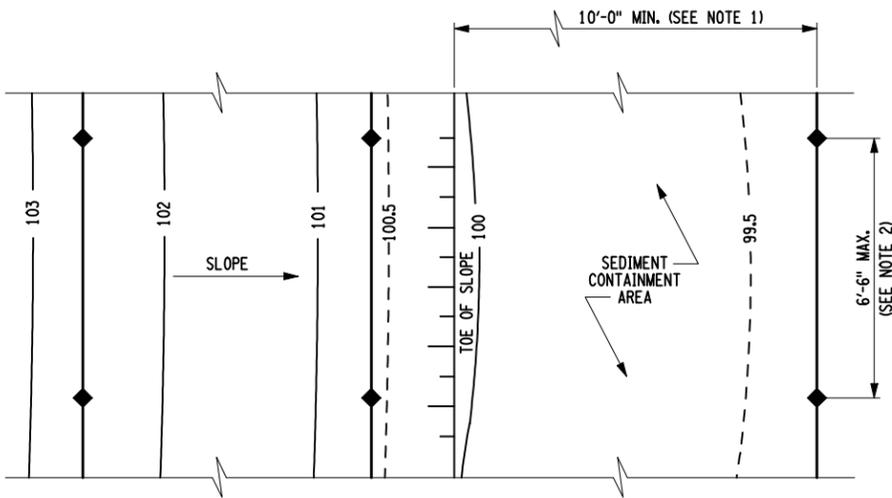
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
CONTROLLED LOW STRENGTH MATERIAL (CLSM) INSTALLATION DETAILS FOR CIRCULAR AND ELLIPTICAL CORRUGATED METAL PIPES, STRUCTURAL PLATE PIPES AND PIPE-ARCHES, AND REINFORCED CONCRETE AND OTHER "RIGID" PIPES	
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	204-01

EFFECTIVE DATE: 01/08/09

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USER = jturley



PLAN



PLAN

APPLICATION NOTES

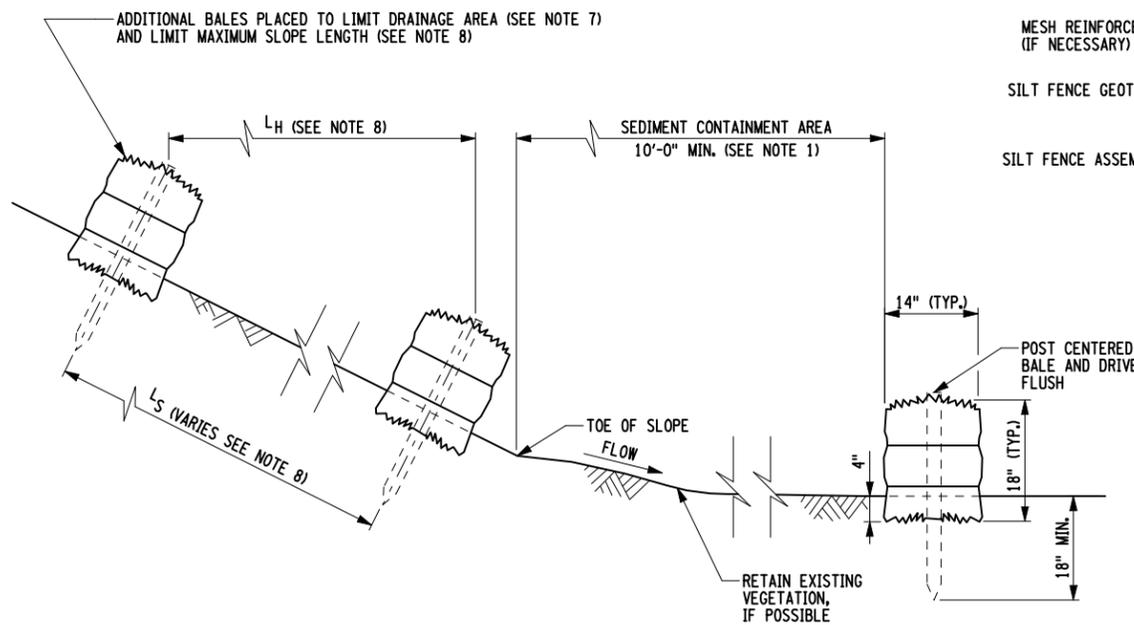
- A. THE PRIMARY PURPOSE OF A SILT FENCE OR STRAWBALE DIKE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.
- B. SILT FENCE OR STRAWBALE DIKE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). THEY MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.
- C. STRAWBALE DIKE OR SILT FENCE SHALL NOT BE USED IN OR ACROSS A FLOWING NATURAL CHANNEL, OR AREAS OF CONCENTRATED FLOW.

GENERAL NOTES

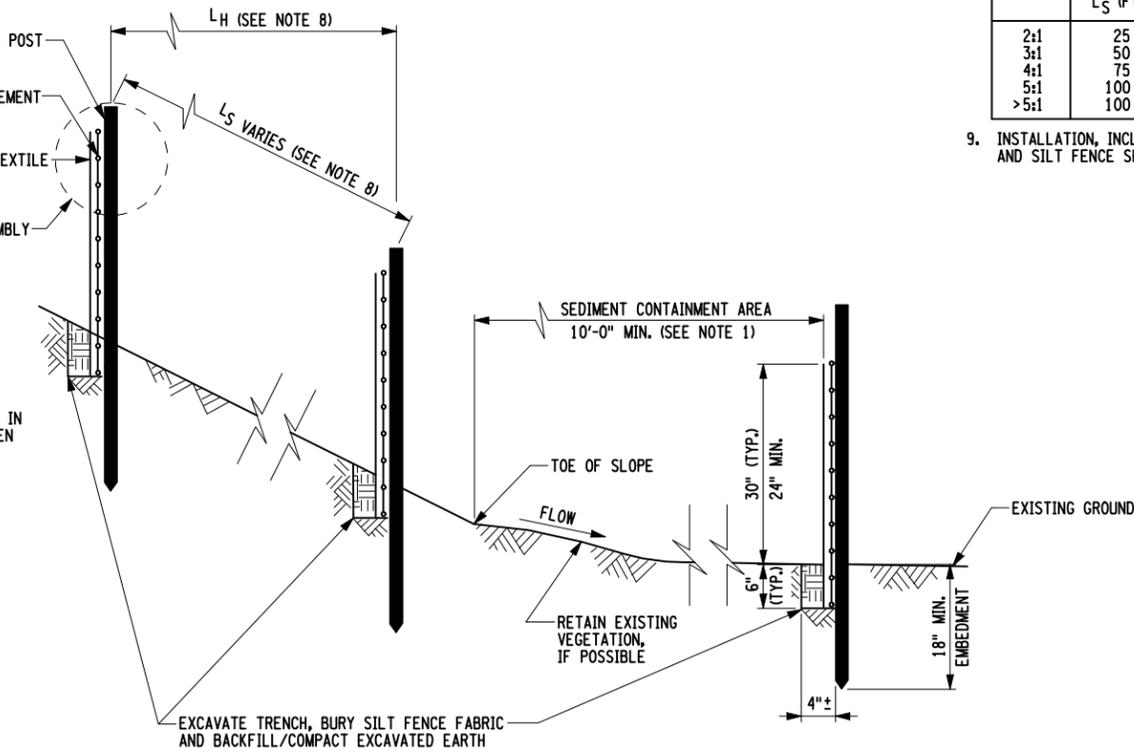
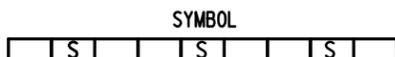
- 1. SILT FENCE OR STRAWBALE DIKE SHALL BE PLACED A MINIMUM OF 10'-0" FROM TOE OF SLOPE, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
- 2. POSTS MAY BE 1 1/4" X 1 1/4" (MIN.) HARDWOOD, 1 1/2" X 3/2" (MIN.) SOFTWOOD, OR 1.3 LB/FT (MIN.) STEEL. SPACING FOR THE PROVIDED SILT FENCE SHALL BE AS DESIGNATED ON THE DEPARTMENT APPROVED LIST FOR SILT FENCE.
- 3. BALES FOR DIKE SHALL BE INSTALLED WITH CUT ENDS VERTICAL, AND BALES BURIED A MINIMUM OF 4".
- 4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6" BELOW GROUND. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
- 5. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS OR AFTER EACH RAINFALL OF 1/2" OR MORE WITHIN A 24 HOUR PERIOD. MEASURES SHALL BE CLEANED AND REPAIRED AS REQUIRED.
- 6. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
- 7. DRAINAGE AREAS: MAXIMUM DRAINAGE AREA TRIBUTARY TO 100'-0" OF SILT FENCE SHALL BE 1/4 ACRE. MAXIMUM DRAINAGE AREA TRIBUTARY TO 100'-0" OF STRAWBALE DIKE SHALL BE 1/4 ACRE.
- 8. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS TO THESE MEASURES:

SILT FENCE / STRAWBALE DIKE		
SLOPE	SLOPE LENGTH L <sub>S</sub> (FT)	HORIZ LENGTH L <sub>H</sub> (FT)
2:1	25	22
3:1	50	47
4:1	75	73
5:1	100	98
>5:1	100	98

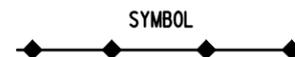
- 9. INSTALLATION, INCLUDING EXCAVATION, BACKFILL, AND COMPACTION OF STRAWBALE DIKES AND SILT FENCE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM.



SECTION STRAWBALE DIKE - TEMPORARY



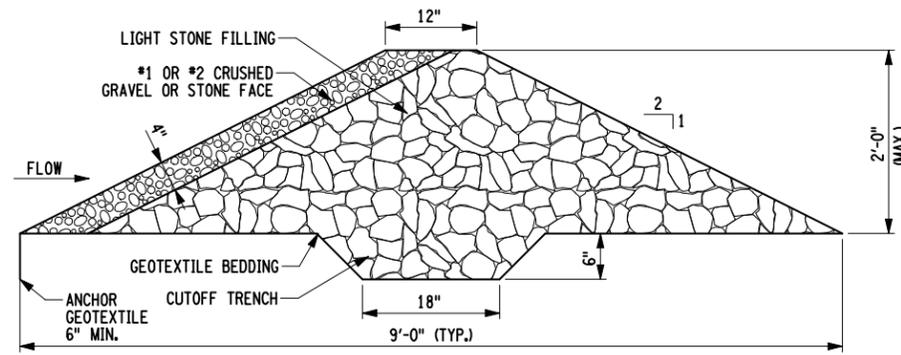
SECTION SILT FENCE - TEMPORARY



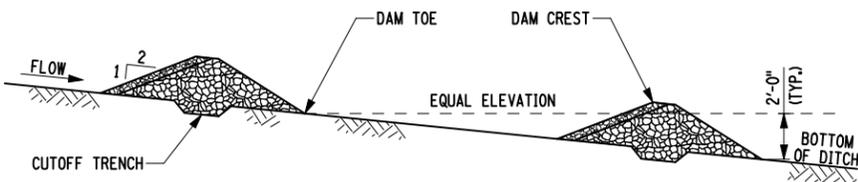
 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
U.S. CUSTOMARY STANDARD SHEET	
LINEAR MEASURES	
APPROVED FEBRUARY 09, 2010	ISSUED UNDER EB 09-036
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	209-01

EFFECTIVE DATE: 09/02/2010

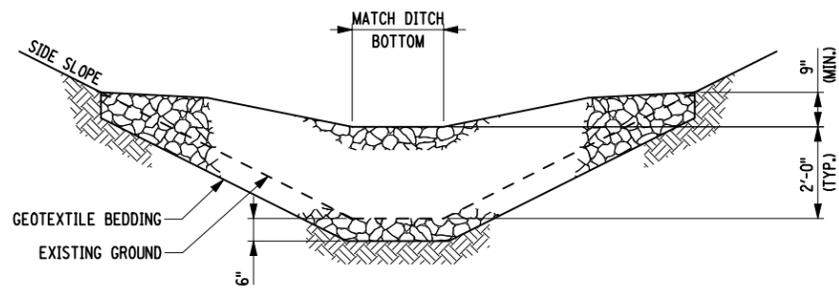
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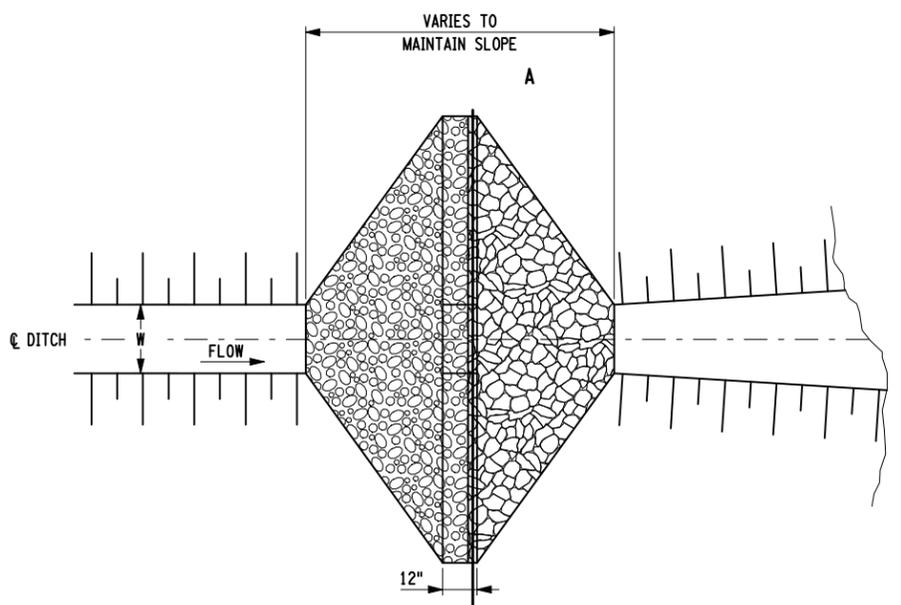
CROSS SECTION



PROFILE



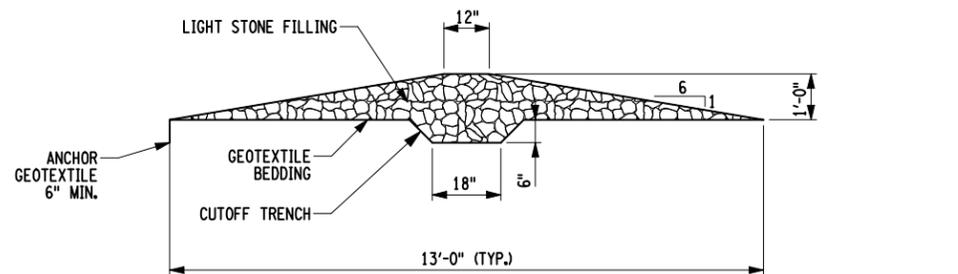
SECTION A-A



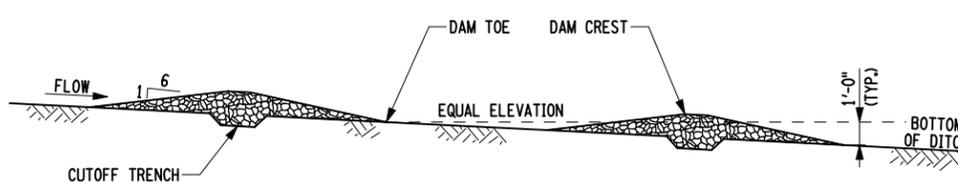
PLAN

CHECK DAM - TEMPORARY (STONE)

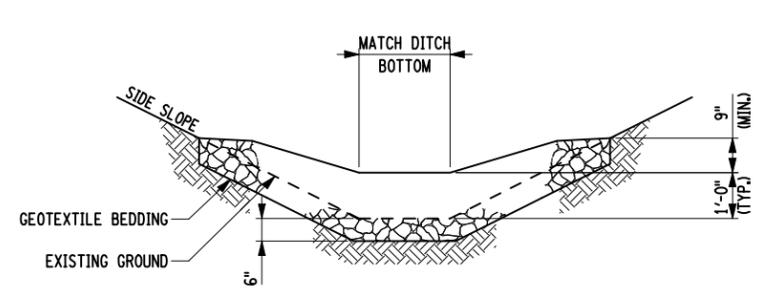
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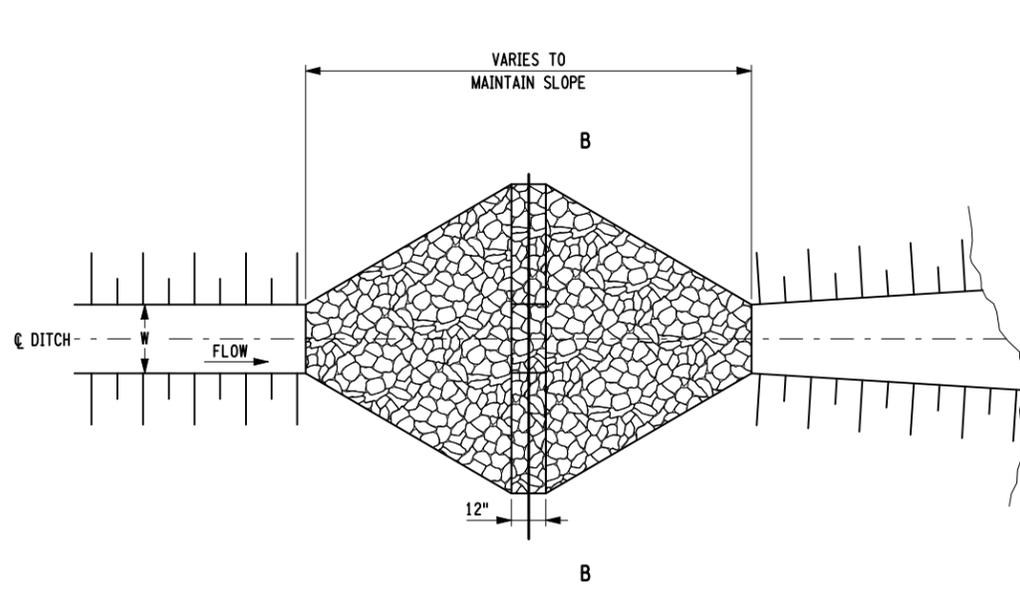
CROSS SECTION



PROFILE



SECTION B-B



PLAN

CHECK DAM - PERMANENT (STONE)

SYMBOL  
—PSTO—

APPLICATION NOTES:

- A. THE PRIMARY PURPOSE OF A CHECK DAM IS TO REDUCE EROSION IN A CHANNEL BY REDUCING FLOW VELOCITY IN THE CHANNEL.
- B. CHECK DAMS WILL CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE UPSTREAM SIDE OF THE CHECK DAM DUE TO DECREASED VELOCITY.
- C. CHECK DAMS ARE NOT INTENDED TO, AND WILL NOT FILTER SEDIMENT FROM TURBID WATER.
- D. SLOPES EXCEEDING 10% SHALL INCLUDE A CHANNEL PROTECTIVE LINING.
- E. PERMANENT STONE CHECK DAMS LOCATED WITHIN THE ESTABLISHED ROADWAY CLEAR ZONE SHALL BE IN CONFORMANCE WITH NYS DOT ROADSIDE DESIGN GUIDANCE.

GENERAL NOTES:

1. MAXIMUM DRAINAGE AREA CONTRIBUTING TO TEMPORARY STONE CHECK DAM SHALL BE 2 ACRES. MAXIMUM DRAINAGE AREA CONTRIBUTING TO PERMANENT STONE CHECK DAM SHALL BE 1 ACRE.
2. MEASURES SHALL BE INSPECTED EVERY (7) CALENDAR DAYS OR AFTER EACH RAINFALL OF 1/2" OR MORE WITHIN A 24 HOUR PERIOD. MEASURES SHALL BE CLEANED AND REPAIRED AS REQUIRED.
3. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
4. COARSE AGGREGATE FACING MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF SIZE DESIGNATION #1 OR #2 OF TABLE 703-4. STONE FILLING CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF LIGHT STONE FILLING.

STONE CHECK DAM PLACEMENT INTERVAL *		
DITCH SLOPE	TEMPORARY CHECK DAM	PERMANENT CHECK DAM
	PLACEMENT INTERVAL (BASED ON 2' HEIGHT)	PLACEMENT INTERVAL (BASED ON 1' HEIGHT)
1 1/2	200'	100'
2 1/2	100'	50'
3 1/2	67'	33'
4 1/2	50'	25'
5 1/2	40'	20'
6 1/2	33'	17'
8 1/2	25'	-
10 1/2	20'	-

\* I = H / S  
WHERE:  
I = CHECK DAM SPACING INTERVAL  
H = CHECK DAM HEIGHT  
S = CHANNEL SLOPE

TEMPORARY CHECK DAM VOLUMES	
DITCH SIDE SLOPE	VOLUME (CY)
1:2	1.4 CY ±
1:3	2.0 CY ±
1:4	2.5 CY ±
1:6	3.5 CY ±

PERMANENT CHECK DAM VOLUMES	
DITCH SIDE SLOPE	VOLUME (CY)
1:2	1.1 CY ±
1:3	1.5 CY ±
1:4	1.9 CY ±
1:6	2.6 CY ±

BASED ON V SHAPED DITCH SECTION FOR TRAPEZOIDAL DITCH, ADD 1 CUBIC YARD / YARD OF DITCH WIDTH

BASED ON V SHAPED DITCH SECTION FOR TRAPEZOIDAL DITCH, ADD 1 CUBIC YARD / YARD OF DITCH WIDTH

STONE CHECK DAM ITEM SUFFIXES	
SUFFIX (XX)	DITCH BOTTOM WIDTH
01	0.0' - 3.0'
02	> 3.0' - 6.0'
03	> 6.0' - 10.0'
04	> 10.0'

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

CHECK DAMS  
(SHEET 1 OF 2)

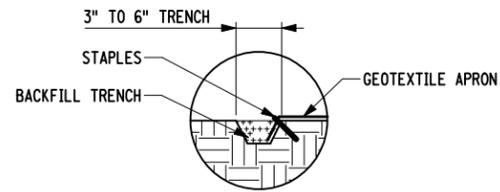
APPROVED FEBRUARY 09, 2010

/S/ RICHARD W. LEE, P.E.  
FOR THE DEPUTY CHIEF ENGINEER (DESIGN)

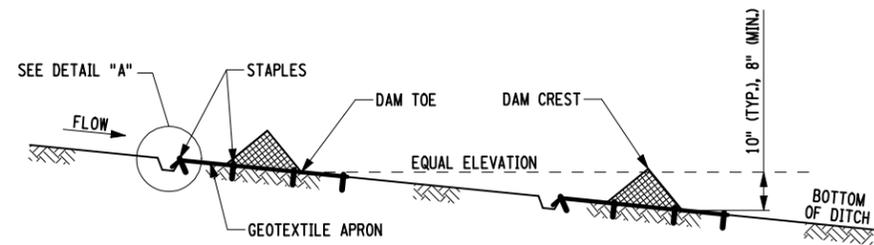
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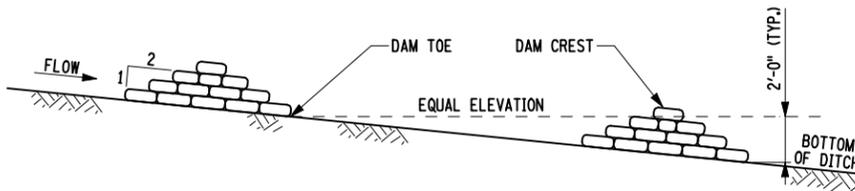
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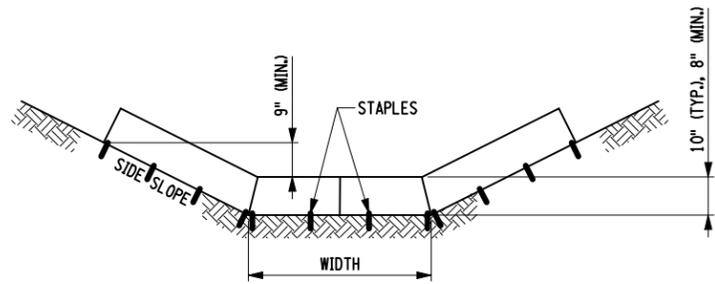
DETAIL "A"



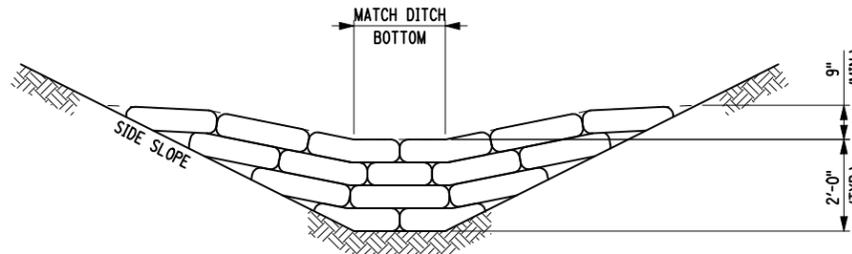
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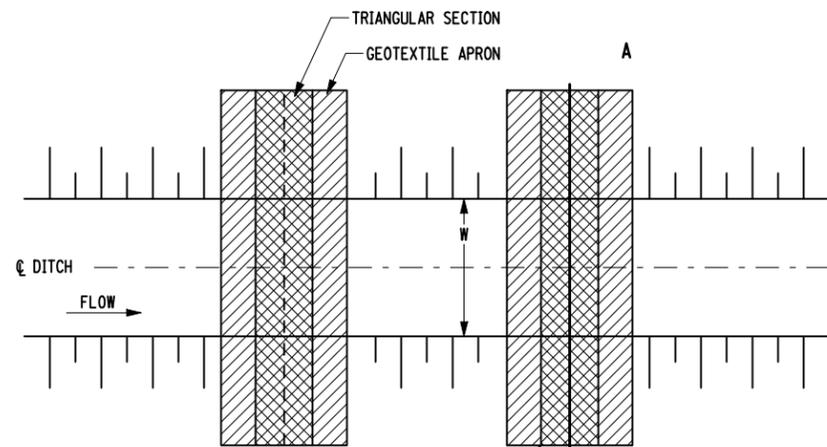
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SECTION A-A

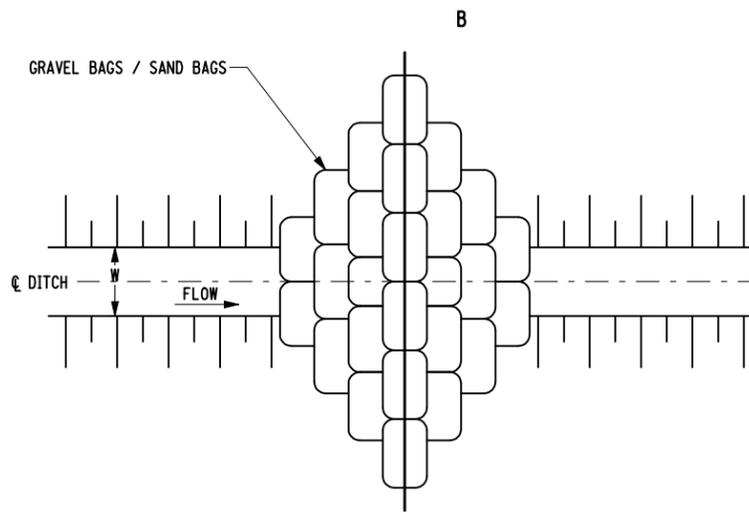


SECTION B-B



PLAN CHECK DAM - TEMPORARY (PREFABRICATED)

SYMBOL



PLAN CHECK DAM - TEMPORARY (GRAVEL BAG/SAND BAG)

SYMBOL



APPLICATION NOTES:

- A. THE PRIMARY PURPOSE OF A CHECK DAM IS TO REDUCE EROSION IN A CHANNEL BY REDUCING FLOW VELOCITY IN THE CHANNEL.
- B. CHECK DAMS WILL CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE CHECK DAM DUE TO DECREASED VELOCITY.
- C. CHECK DAMS ARE NOT INTENDED TO, AND WILL NOT FILTER SEDIMENT FROM TURBID WATER.
- D. PREFABRICATED CHECK DAMS ARE NOT TO BE USED ON SLOPES GREATER THAN 5%.
- E. GRAVEL BAGS / SAND BAGS SHALL BE FILLED WITH CLEAN STONE OR CLEAN SAND TO PREVENT RECEIVING WATERS FROM BECOMING TURBID.

GENERAL NOTES:

1. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL "A" OR AS RECOMMENDED BY THE MANUFACTURER'S LITERATURE. COST OF EXCAVATION FOR INSTALLATION SHALL BE INCLUDED IN PRICE BID FOR ITEM.
2. DRAINAGE AREAS: MAXIMUM DRAINAGE AREA TRIBUTARY TO PREFABRICATED CHECK DAM SHALL BE 1/2 ACRE. MAXIMUM DRAINAGE AREA TRIBUTARY TO GRAVEL BAG / SAND BAG CHECK DAM SHALL BE 2 ACRES.
3. GRAVEL BAGS / SAND BAGS SHALL BE INDIVIDUALLY TIED, DOUBLE BAGGED AND INVERSLY INSERTED. BAGS SHALL OVERLAP THE JOINTS BETWEEN THE BAGS IN THE LAYER BELOW.
4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS OR AFTER EACH RAINFALL OF 1/2" OR MORE, WITHIN A 24 HOUR PERIOD. MEASURES SHALL BE CLEANED AND REPAIRED AS REQUIRED.
5. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.

PREFABRICATED CHECK DAM PLACEMENT INTERVAL *	
DITCH SLOPE	PLACEMENT INTERVAL (BASED ON 10" HEIGHT)
1%	83'
2%	42'
3%	28'
4%	21'
5%	17'

GRAVEL BAG / SAND BAG CHECK DAM PLACEMENT INTERVAL *	
DITCH SLOPE	PLACEMENT INTERVAL (BASED ON 2' HEIGHT)
1%	200'
2%	100'
3%	67'
4%	50'
5%	40'
6%	33'
8%	25'
10%	20'

\* I = H / S

WHERE:  
 I = CHECK DAM SPACING INTERVAL  
 H = CHECK DAM HEIGHT  
 S = CHANNEL SLOPE

GRAVEL BAG / SAND BAG CHECK DAM ITEM SUFFIXES	
SUFFIX (XX)	DITCH BOTTOM WIDTH
01	0.0' - 3.0'
02	> 3.0' - 6.0'
03	> 6.0' - 10.0'
04	> 10.0'

GRAVEL BAG / SAND BAG CHECK DAM VOLUMES	
DITCH SIDE SLOPE	VOLUME (CY)
1:2	1.0 CY ±
1:3	1.5 CY ±
1:4	2.0 CY ±
1:6	3.0 CY ±

BASED ON V SHAPED DITCH SECTION FOR TRAPEZOIDAL DITCH, ADD 1 CUBIC YARD / YARD OF DITCH WIDTH

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STATE OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

CHECK DAMS  
 (SHEET 2 OF 2)

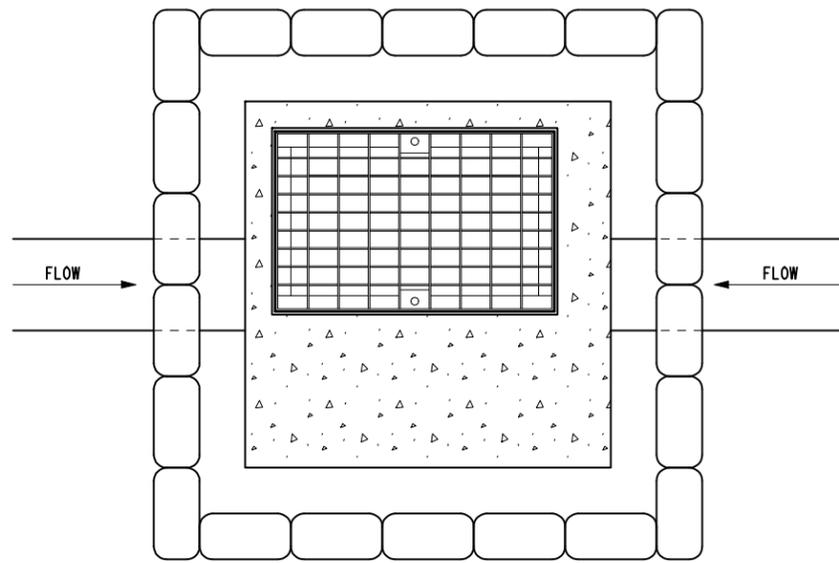
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/S/ RICHARD W. LEE, P.E.

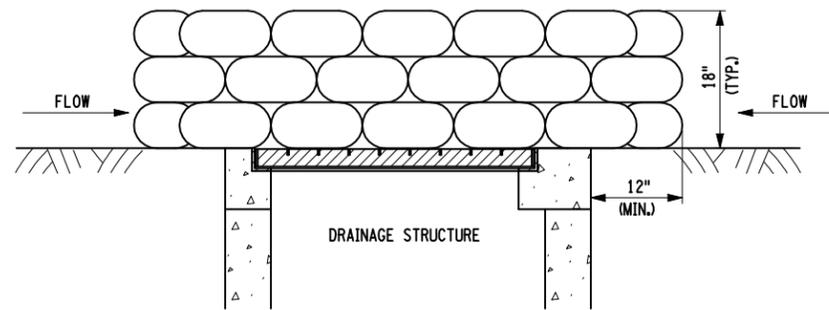
FOR THE DEPUTY CHIEF ENGINEER (DESIGN)

209-02

EFFECTIVE DATE: 09/02/2010



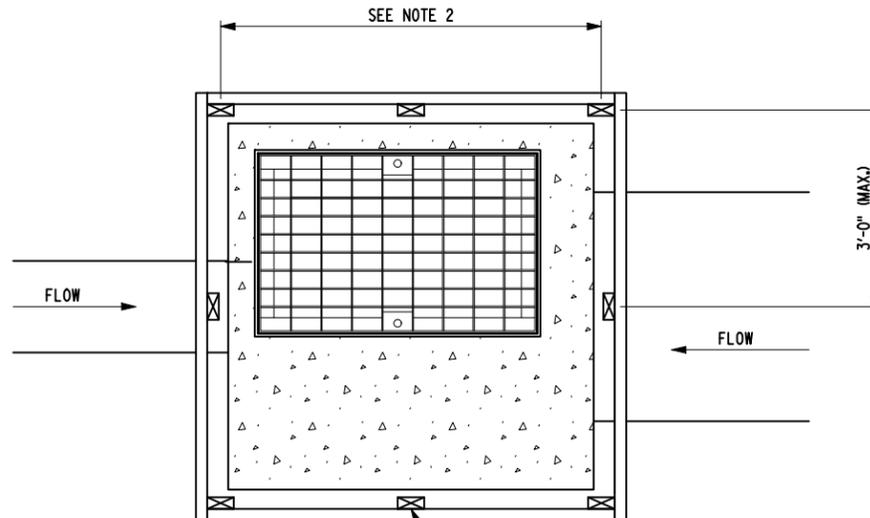
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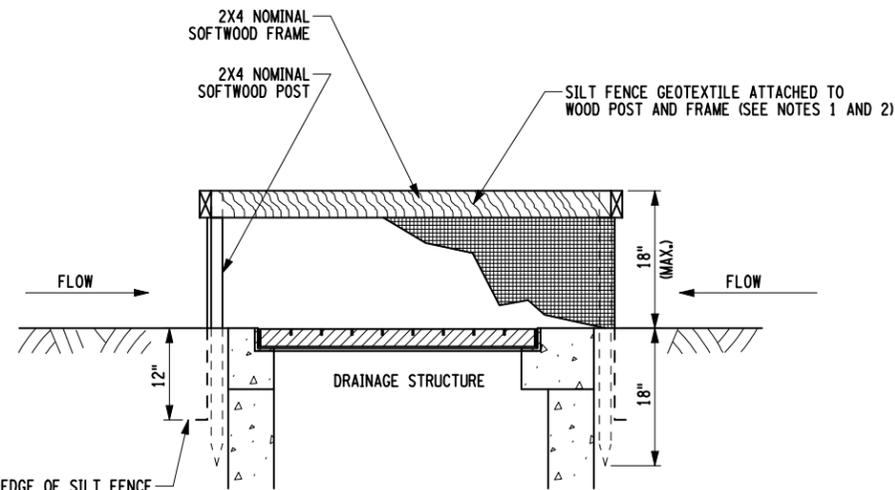
CROSS SECTION

DRAINAGE STRUCTURE INLET PROTECTION - TEMPORARY (GRAVEL BAG)

SYMBOL



PLAN



CROSS SECTION

DRAINAGE STRUCTURE INLET PROTECTION - TEMPORARY (SILT FENCE)

SYMBOL



APPLICATION NOTES:

- A. THE PRIMARY PURPOSE OF DRAINAGE STRUCTURE INLET PROTECTION IS TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM BY PONDING WATER WHICH ALLOWS SEDIMENT TO FALL OUT OF SUSPENSION.
- B. GRAVEL BAGS ARE FILLED WITH CLEAN STONE RATHER THAN SAND TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM IF BAGS ARE DAMAGED DURING USE.
- C. THE TOP OF THE INLET PROTECTION SHALL BE SET AT THE MAXIMUM DESIRED WATER LEVEL BASED ON FIELD LOCATION AND CONDITIONS.

NOTES:

1. APPROVED SILT FENCE GEOTEXTILES ARE LISTED ON THE DEPARTMENTS APPROVED LIST. SILT FENCE GEOTEXTILE SHALL BE A SINGLE CONTINUOUS PIECE TO ELIMINATE JOINTS. OVERLAP GEOTEXTILE TO ELIMINATE ANY OPENING.
2. SPACE SILT FENCE POSTS EVENLY AROUND INLET WITH A MAXIMUM SPACING OF 3'. DRIVE POSTS A MINIMUM OF 18" INTO GROUND. WIRE MESH MAY BE REQUIRED BEHIND GEOTEXTILE TO PROVIDE SUPPORT.
3. SILT FENCE GEOTEXTILE SHALL BE EMBEDDED 12" AND BACKFILLED. GEOTEXTILE SHALL BE SECURELY FASTENED TO POSTS AND FRAME.
4. GRAVEL BAGS SHALL BE INDIVIDUALLY TIED, DOUBLE BAGGED AND INVERSELY INSERTED. GRAVEL BAGS SHALL LAP THE JOINTS BETWEEN THE BAGS IN THE LAYER BELOW. COST OF EXCAVATION FOR INSTALLATION SHALL BE INCLUDED IN THE PRICE BID FOR ITEM.
5. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS, AFTER EACH RAINFALL OF 1/2" OR MORE WITHIN A 24 HOUR PERIOD, OR DAILY DURING PROLONGED RAINFALL. MEASURES SHALL BE CLEANED AND REPAIRED AS REQUIRED.
6. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT, SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
7. MAXIMUM DRAINAGE AREA FOR DRAINAGE STRUCTURE INLET PROTECTION IS ONE ACRE.

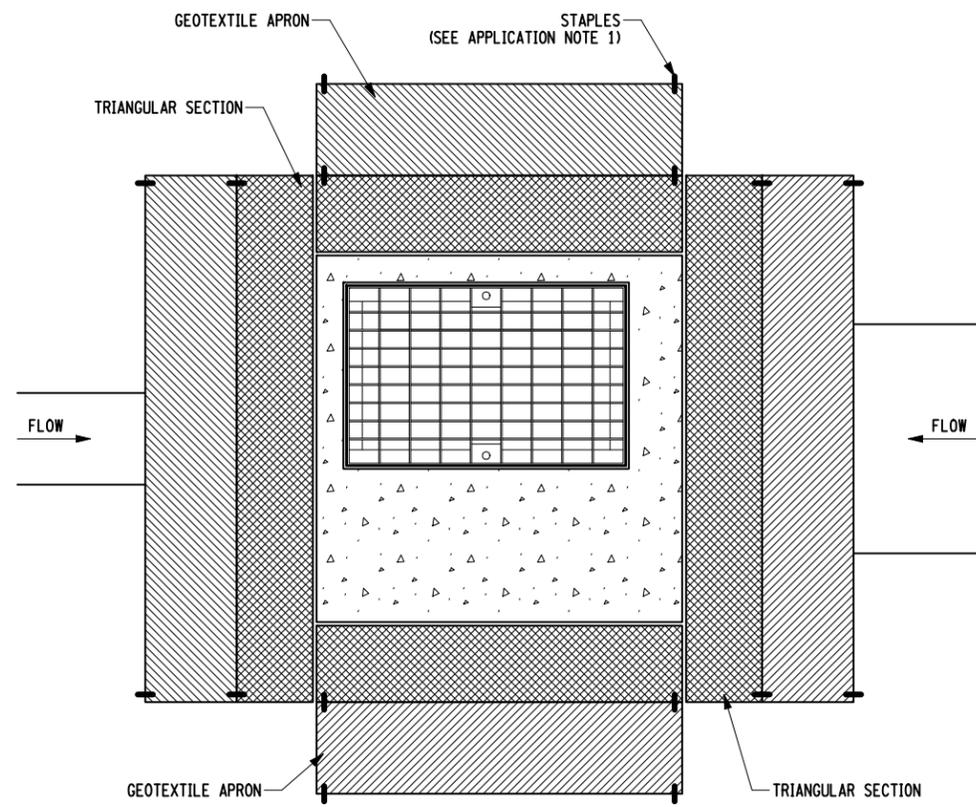
INLET PROTECTION PAYMENT QUANTITIES	
DRAINAGE STRUCTURE	SILT FENCE PROTECTION
A	17'
B	19'
C	21'
D	25'
E	19'
F	21'
G	23'
H	26'
I	21'
J	23'
K	25'
L	28'
M	25'
N	26'
O	28'
P	32'
Q	17'
R	18'
S	15'
T	17'
U	17'

\* BASED ON PLACEMENT AT EDGE OF TOP SLAB OR STRUCTURE

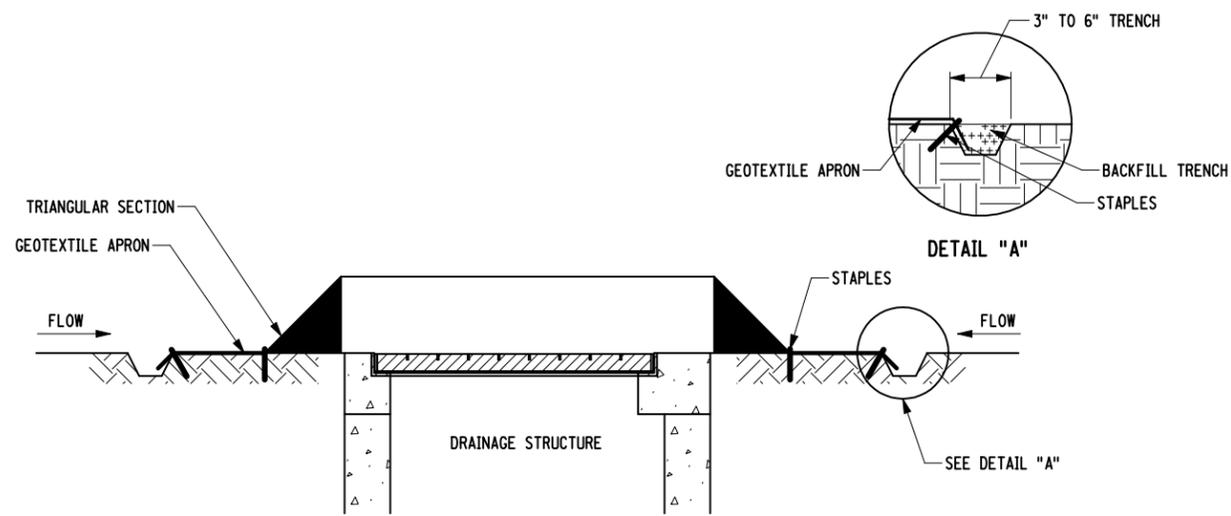
	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>DRAINAGE STRUCTURE INLET PROTECTION</b> <b>(SHEET 1 OF 2)</b>	
APPROVED FEBRUARY 09, 2010 /S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 09-036  <b>209-03</b>

EFFECTIVE DATE: 09/02/2010

FILE NAME = 209-0301.dgn  
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PLAN VIEW  
DRAINAGE STRUCTURE INLET PROTECTION - TEMPORARY  
(PREFABRICATED)



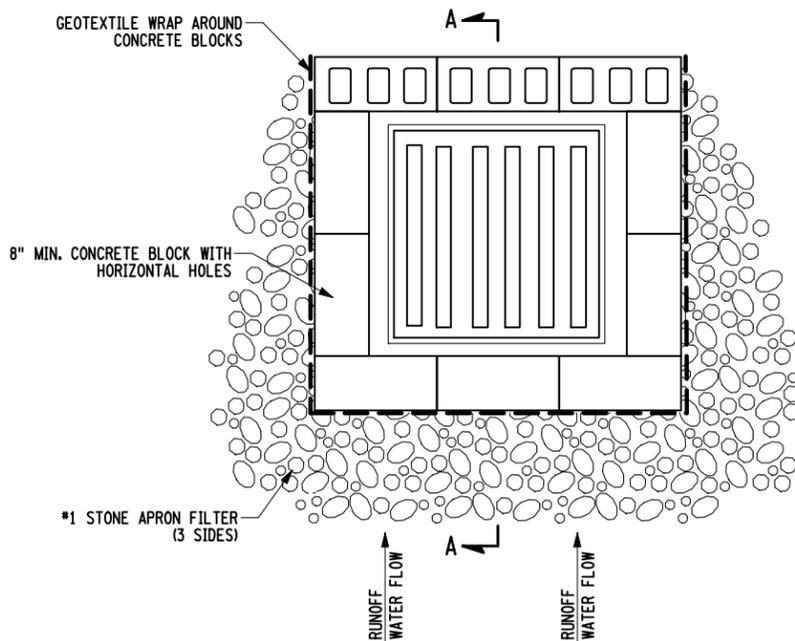
CROSS SECTION  
DRAINAGE STRUCTURE INLET PROTECTION - TEMPORARY  
(PREFABRICATED)

APPLICATION NOTES:

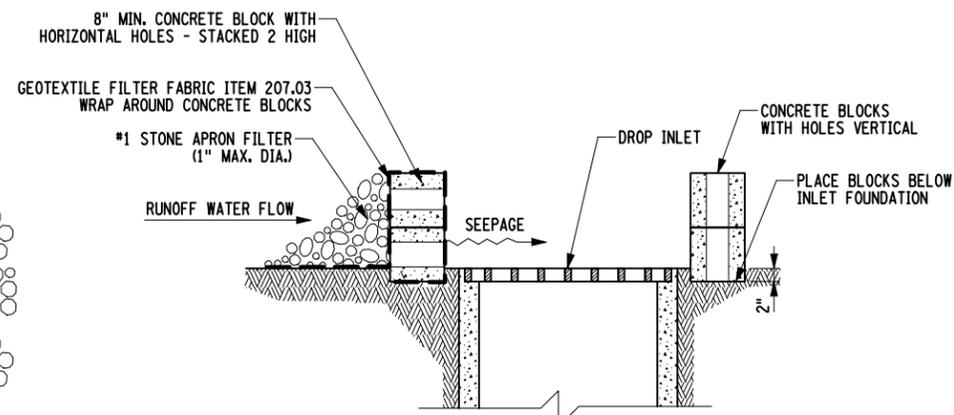
- A. THE PRIMARY PURPOSE OF DRAINAGE STRUCTURE INLET PROTECTION IS TO PREVENT SEDIMENT FROM ENTERING A DRAINAGE SYSTEM BY PONDING WATER WHICH ALLOWS SEDIMENT TO FALL OUT OF SUSPENSION.
- B. THE TOP OF THE INLET PROTECTION SHALL BE SET AT THE MAXIMUM DESIRED WATER LEVEL BASED ON FIELD LOCATION AND CONDITIONS.

NOTES:

1. SECURE THE ENDS OF THE APRON FOR THE PREFABRICATED DRAINAGE STRUCTURE INLET PROTECTION WITH STAPLES AS DETAILED IN THE PLAN VIEW OR AS RECOMMENDED BY THE MANUFACTURER'S LITERATURE.
2. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) DAYS, AFTER EACH RAINFALL OF 1/2" OR MORE WITHIN A 24 HOUR PERIOD, OR DAILY DURING PROLONGED RAINFALL. MEASURES SHALL BE CLEANED AND REPAIRED AS REQUIRED.
3. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
4. WEEP HOLES SHALL BE PROTECTED BY GEOTEXTILE AND STONE.
5. UPON STABILIZATION OF CONTRIBUTING AREA, WEEP HOLES SHALL BE SEALED AND GEOTEXTILE REMOVED.
6. MAINTENANCE SHALL INCLUDE REPAIR AND RE-BUILDING INLET PROTECTION AS NEEDED TO ENSURE THAT IT FUNCTIONS AS ORIGINALLY INTENDED.
7. INLET PROTECTION - EXCAVATED, FOR THIS PROJECT, SHALL BE INSTALLED AT DRAINAGE LOW POINTS AS SHOWN ON THE PLANS AND AS DETERMINED BY THE ENGINEER.



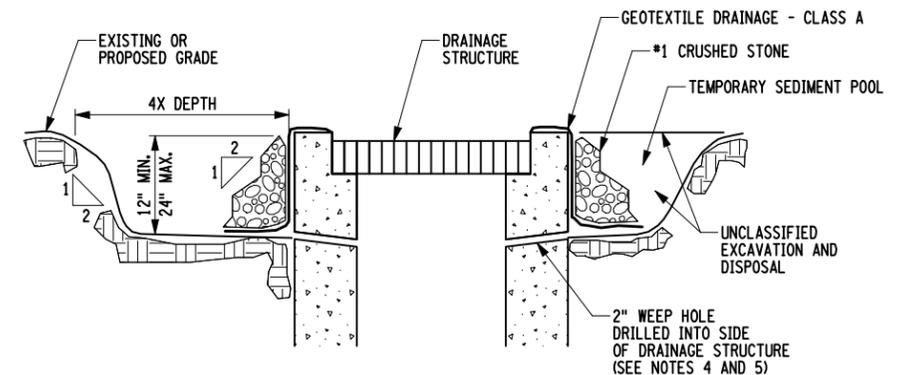
PLAN VIEW  
DROP INLET PROTECTION - CONCRETE BLOCK



NOTE: THIS METHOD OF INLET PROTECTION OR APPROVED EQUAL IS APPLICABLE WHEN HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

SECTION A-A

SYMBOL



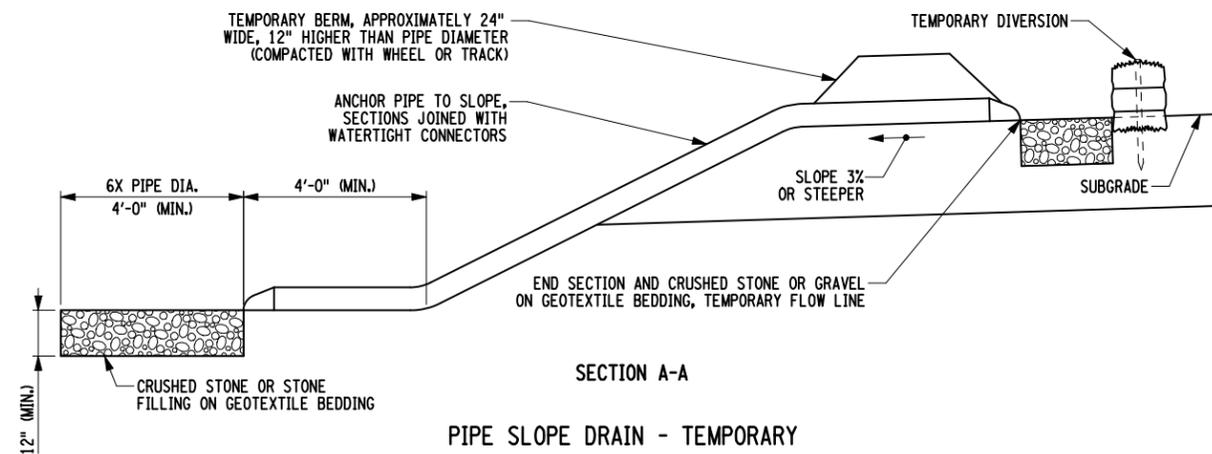
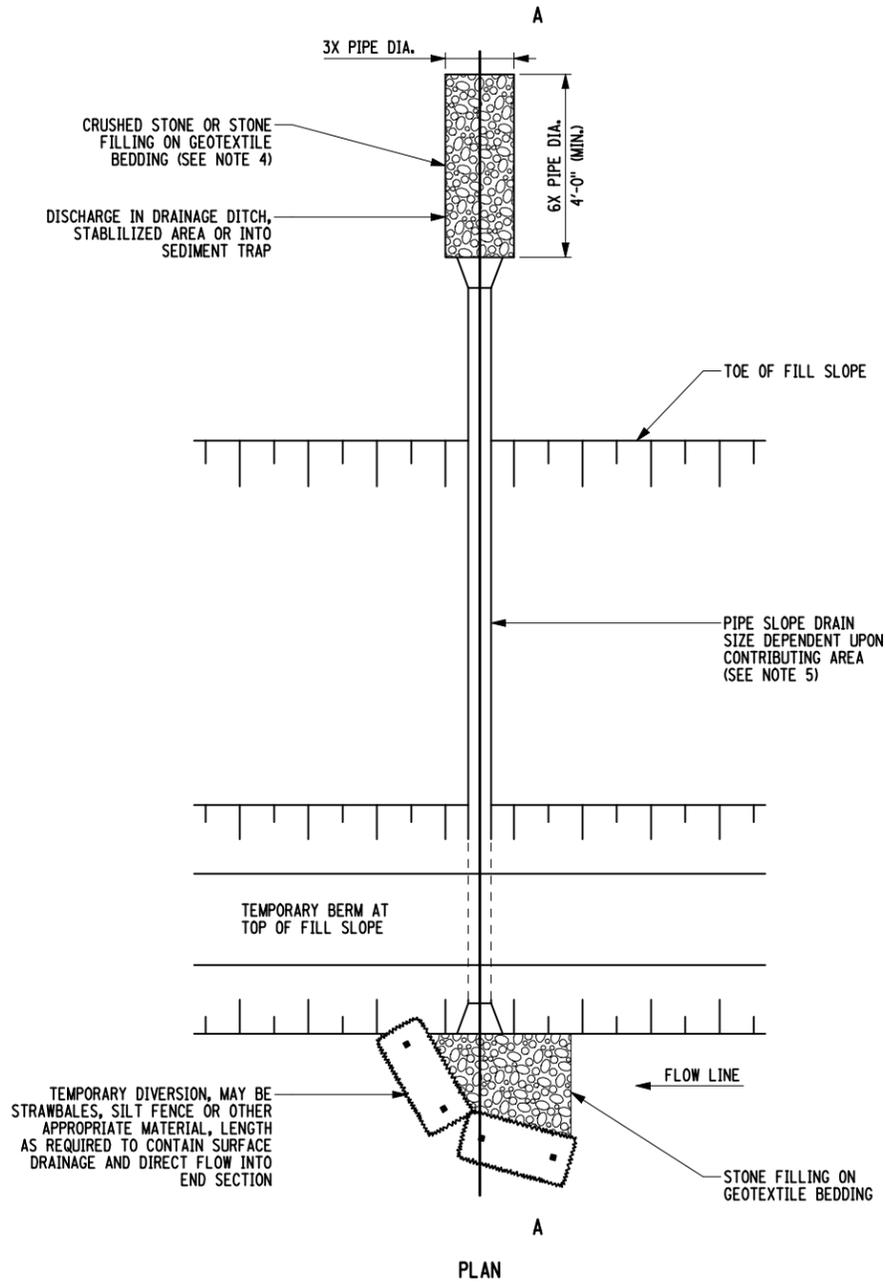
INLET PROTECTION - EXCAVATED

FILE NAME = 209-0302.dgn  
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USER = jturley

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
DRAINAGE STRUCTURE INLET PROTECTION (SHEET 2 OF 2)	
APPROVED FEBRUARY 09, 2010	ISSUED UNDER EB 09-036
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	209-03

EFFECTIVE DATE: 09/02/2010

FILE NAME = 209-04.dgn  
 DATE/TIME = 10-FEB-2010 09:03  
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SECTION A-A  
 PIPE SLOPE DRAIN - TEMPORARY

SYMBOL  
 ⇒ PSD ⇒

APPLICATION NOTES:

A. THE PURPOSE OF A PIPE SLOPE DRAIN IS TO PREVENT EROSION OF EMBANKMENT OR OTHER SIDE SLOPES BY TRANSPORTING CLEAN WATER THROUGH A PIPE FROM A HIGHER ELEVATION TO A LOWER ELEVATION.

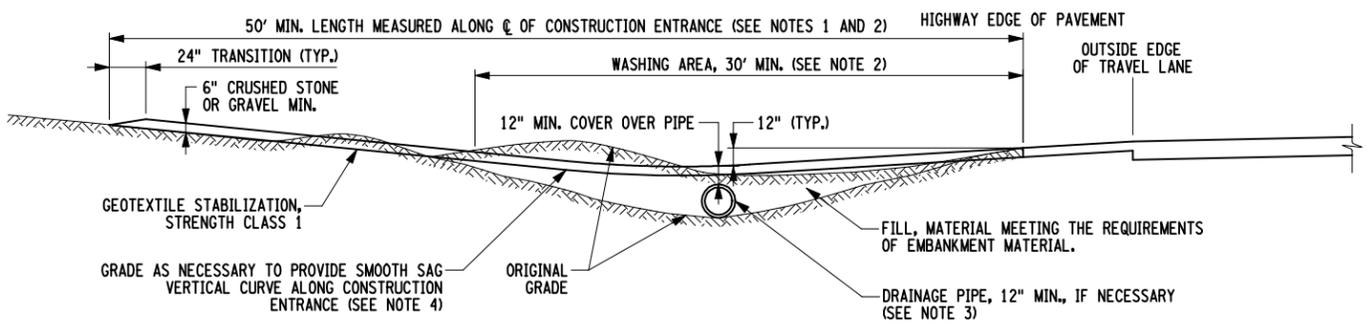
GENERAL NOTES:

1. APPROVED SILT FENCE GEOTEXTILES ARE LISTED ON THE DEPARTMENT'S APPROVED LIST.
2. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS OR AFTER EACH RAINFALL OF 1/2" OR MORE WITHIN A 24 HOUR PERIOD. MEASURES SHALL BE CLEANED AND REPAIRED AS REQUIRED.
3. PIPE MAY BE CORRUGATED PLASTIC PIPE OR CORRUGATED METAL PIPE (CMP) OR OTHER MATERIAL AT THE CONTRACTOR'S OPTION. THE PIPE SHALL HAVE WATERTIGHT CONNECTING BANDS OR FLANGE CONNECTIONS.
4. CRUSHED STONE OR STONE FILLING FOR THE PIPE SLOPE DRAIN SHALL MEET THE REQUIREMENTS OF LIGHT STONE FILLING ON FIGURE 620-1. GEOTEXTILE BEDDING SHALL MEET THE REQUIREMENTS OF §737-01 GEOTEXTILES.

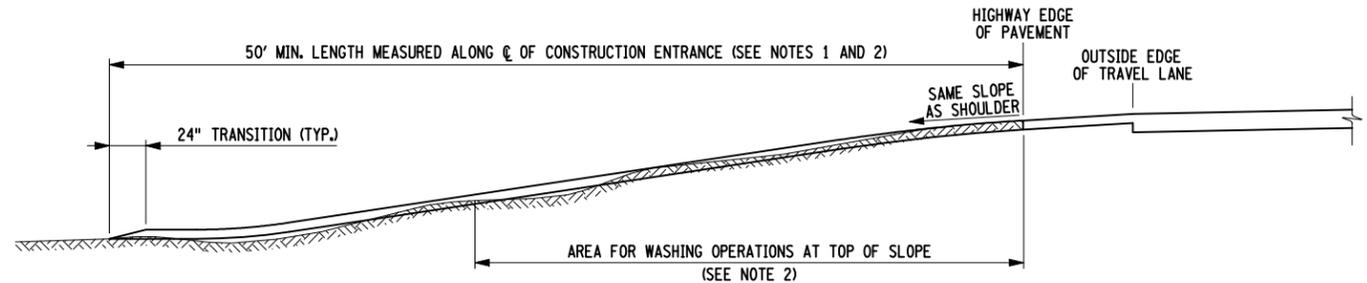
PIPE SLOPE DRAINS	MAX. DRAINAGE AREA (ACRE)
XX-01 6"	0.25
XX-02 8"	0.33
XX-03 12"	0.50
XX-04 15"	1.0
XX-05 18"	1.5
XX-06 24"	3.5
XX-07 30"	3.5

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
PIPE INLET/OUTLET PROTECTION PIPE SLOPE DRAIN		
APPROVED FEBRUARY 09, 2010 /S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 09-036	209-04

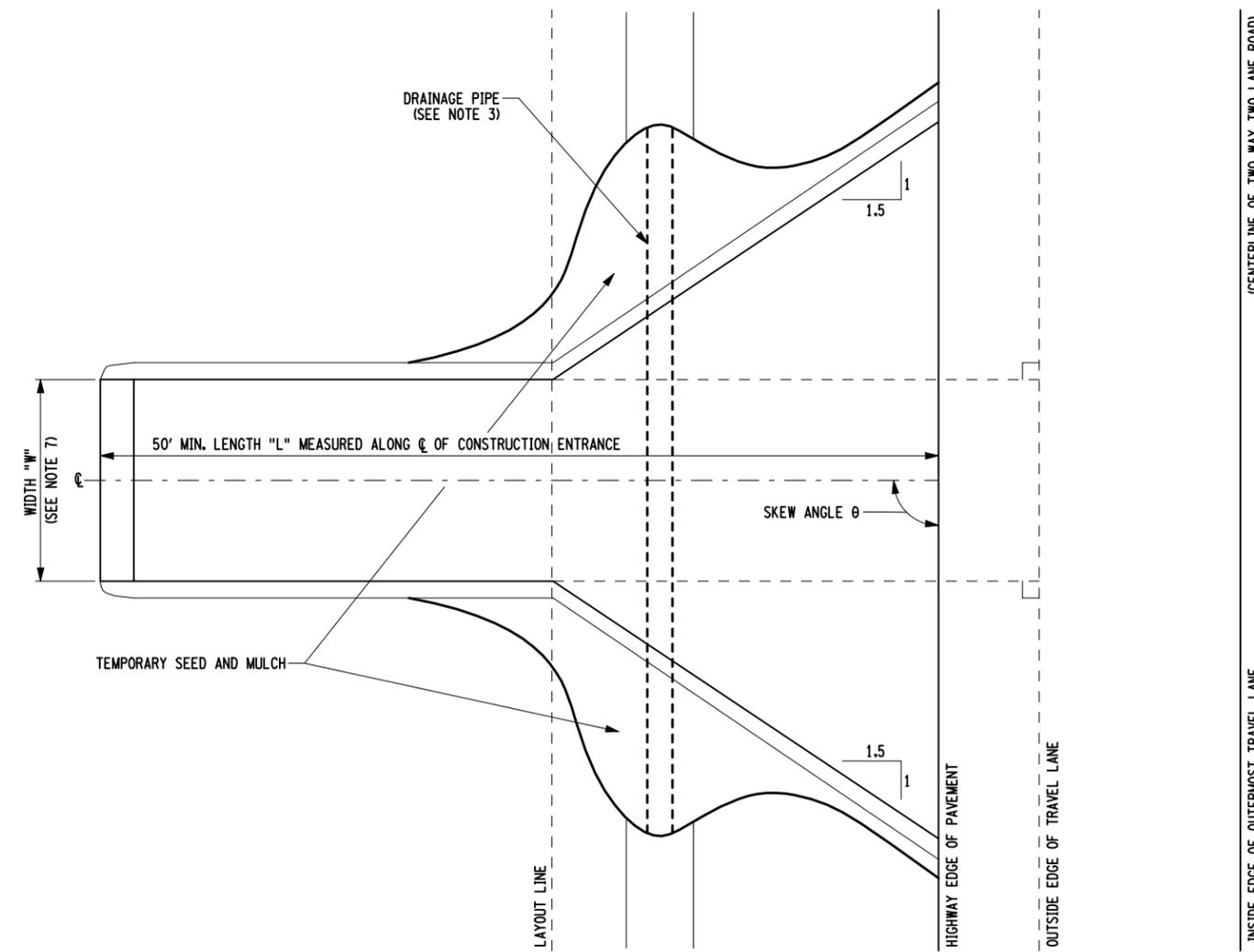
EFFECTIVE DATE: 09/02/2010



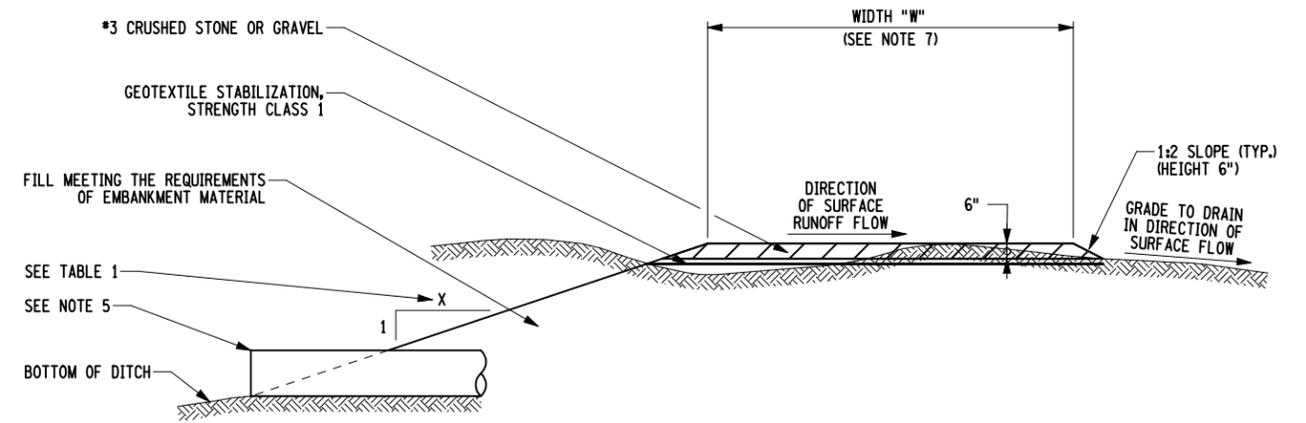
TYPICAL CONSTRUCTION ENTRANCE PROFILE  
(CUT AND DITCH SECTIONS)



TYPICAL CONSTRUCTION ENTRANCE PROFILE  
(FILL SECTIONS)



TYPICAL CONSTRUCTION ENTRANCE PLAN  
(CUT/DITCH AND FILL SECTIONS)



TYPICAL CONSTRUCTION ENTRANCE SECTION

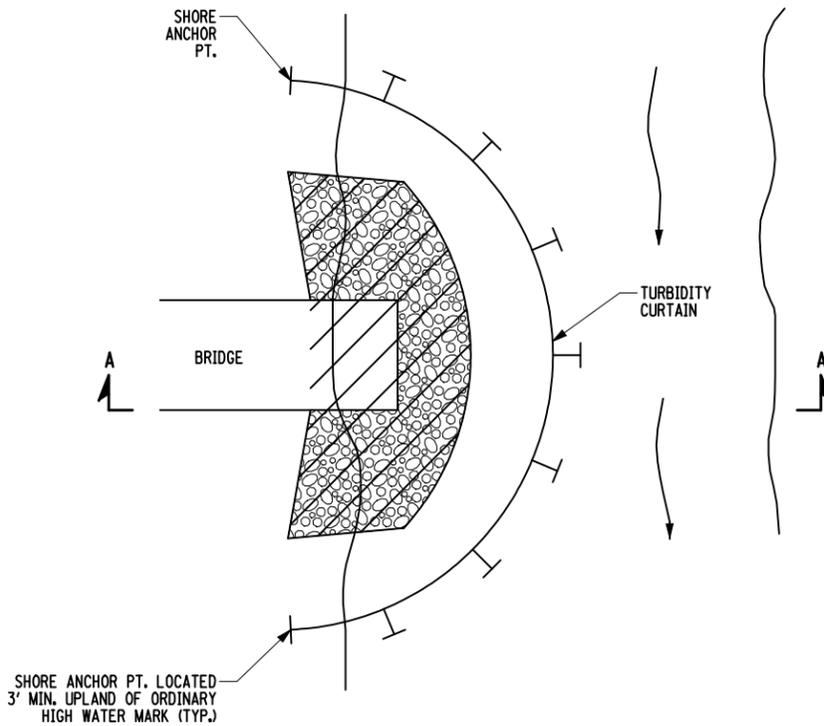
TABLE 1	
X	HIGHWAY SPEED CONDITION
2	ALL SPEEDS - PROTECTED BY BARRIER
3	< 50 MPH
6	≥ 50 MPH

- APPLICATION NOTES:
- THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY OR STREETS.
- NOTES:
- MODIFICATIONS MAY BE REQUIRED TO MATCH FIELD CONDITIONS.
  - A 30' WASH AREA SHALL BE PROVIDED, ADDITIONAL GRADING MAY BE REQUIRED TO PROVIDE WASHING AREAS.
  - PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS (12" MIN.). ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
  - THE CONTRACTOR SHALL GRADE TO PREPARE AND SMOOTH ORIGINAL GROUND FOR PLACEMENT OF 6" OF #3 CRUSHED STONE OR GRAVEL ENTRANCE MATERIAL UP TO THE EDGE OF PAVEMENT.
  - DRAINAGE PIPES OVER 20" DIA. THAT ARE NOT BEHIND ROADSIDE BARRIER SHALL INCLUDE SAFETY END SECTIONS OR GRATING TO ENSURE TRAVERSABILITY.
  - LAYOUT DRIVEWAY OPENING PER TAPER METHOD OF LAYOUT FOR A MINOR COMMERCIAL DRIVEWAY ON STANDARD SHEET TITLED "DRIVEWAY ENTRANCE LAYOUT".
  - DETERMINE DRIVEWAY WIDTH "W" FROM THE MINOR COMMERCIAL DRIVEWAY CLASSIFICATION OF TABLE 1 ON STANDARD SHEET TITLED "DRIVEWAY DESIGN GUIDELINES".
  - PERIODIC MAINTENANCE MAY BE REQUIRED AND COST OF THIS MAINTENANCE WILL BE INCLUDED IN THE UNIT PRICE BID.

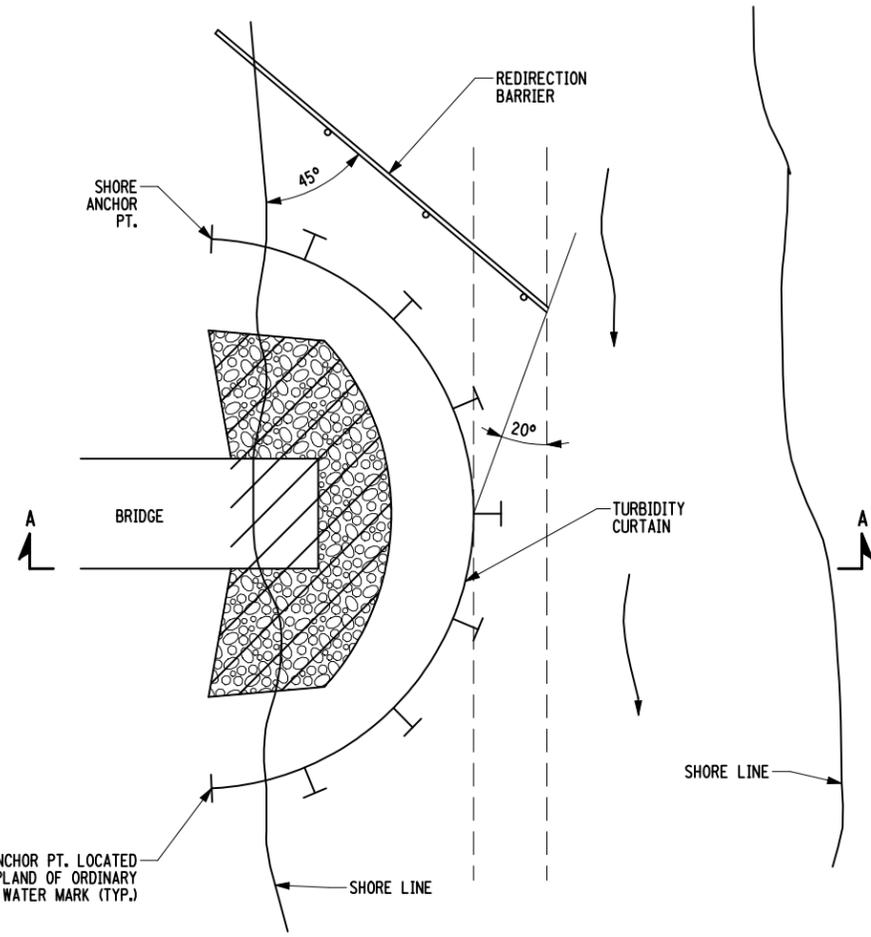
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USER = jturley

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
CONSTRUCTION ENTRANCES	
APPROVED FEBRUARY 09, 2010	ISSUED UNDER EB 09-036
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	
209-05	

EFFECTIVE DATE: 09/02/2010



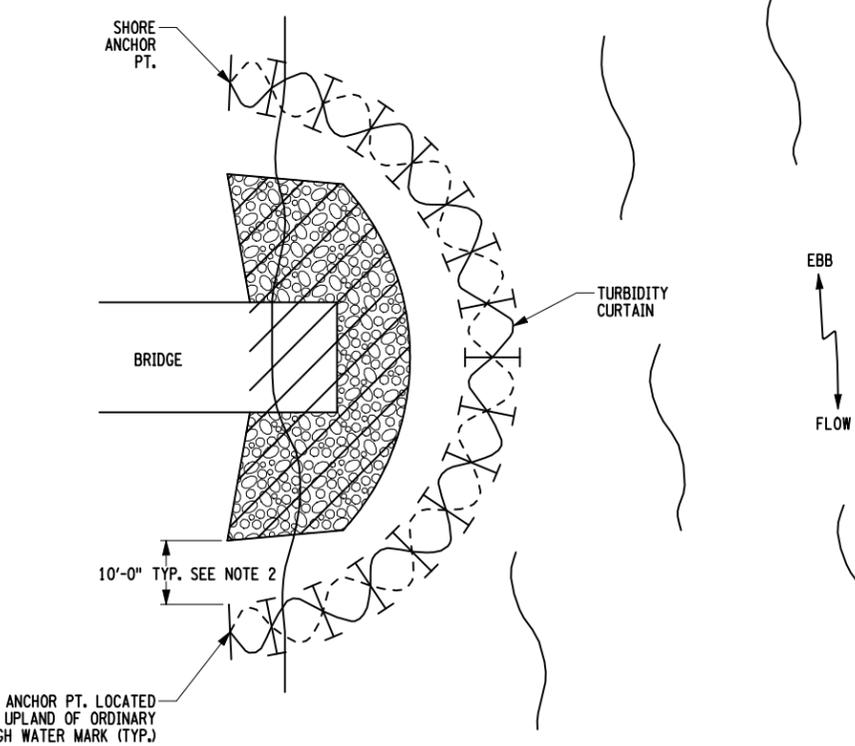
PONDS, LAKES AND STREAMS  
FLOW VELOCITY ≤ 5 FT/S



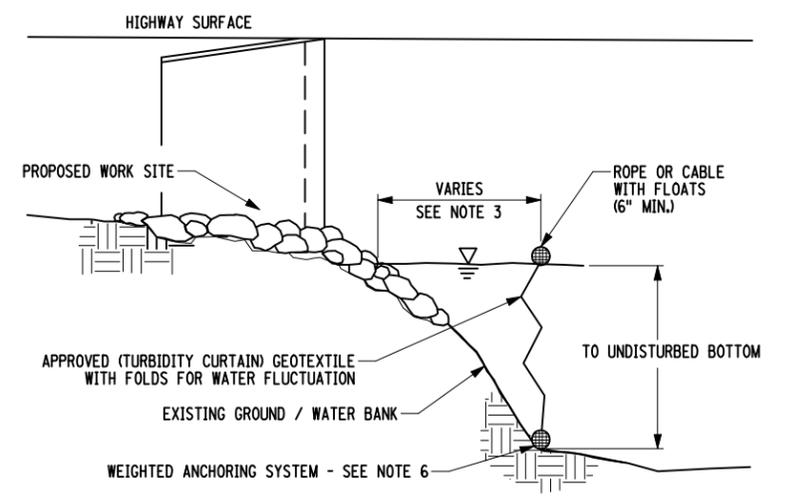
STREAMS, FLOW VELOCITY  
> 5 FT/S

- APPLICATION NOTES:
- THE PURPOSE OF A TURBIDITY CURTAIN IS TO SEPARATE WORK AREAS IN OR ADJACENT TO WATERWAYS, TO PREVENT TURBIDITY FROM ENTERING THE WATERWAY.
  - TURBIDITY CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY.
  - CONCENTRATED FLOW OUTLETS SUCH AS CULVERT OUTLETS, DITCHES, ETC. SHALL NOT BE LOCATED BEHIND TURBIDITY CURTAIN.

- GENERAL NOTES:
- THE DETAIL DEPICTS WORK AT A BRIDGE LOCATION, BUT TURBIDITY CURTAIN MAY BE APPLIED AT OTHER LOCATIONS.
  - TURBIDITY CURTAIN SHALL BE A MAXIMUM OF 100' LONG FOR EACH SECTION OF CURTAIN REQUIRED. END SECTIONS SHALL TERMINATE 10' BEYOND THE LIMIT OF DISTURBANCE.
  - THE TURBIDITY CURTAIN SHALL BE PLACED AS CLOSE TO THE WORK AS POSSIBLE WITHOUT INTERFERING WITH CONSTRUCTION OPERATIONS.
  - THE CONTRACTOR SHALL CONTINUALLY MONITOR THE INSTALLATION, TAKING INTO ACCOUNT WEATHER PATTERNS AND PREVAILING WIND DIRECTIONS THAT MAY AFFECT WATER LEVELS, VELOCITY AND MOVEMENT OF THE TURBIDITY CURTAIN.
  - THE TURBIDITY CURTAIN SHALL BE REMOVED BY PULLING TOWARD THE SHORE TO MINIMIZE ESCAPE OF SEDIMENTS INTO THE WATERWAY.
  - THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE THAT ALLOWS THE CURTAIN TO CONFORM TO THE CONTOUR OF THE BOTTOM ON THE WATERWAY.
  - FOR FLOW VELOCITIES > 5 FT/SEC, USE A REDIRECTION BARRIER SUCH THAT FLOW EXPANDING AT 20° FROM THE BARRIER WILL REACH THE CURTAIN AT A POINT WHERE THE CURTAIN IS ESSENTIALLY PARALLEL TO STREAM FLOW.
  - THE REDIRECTION BARRIER MAY CONSIST OF CONCRETE BARRIER, PLANKING OR OTHER MATERIAL SUCH THAT IT CAN BE QUICKLY REMOVED OR WASHED OUT IN THE EVENT OF HIGH FLOWS. IT SHOULD NOT BE SUCH THAT IT WILL REMAIN IN PLACE AND BE OVERTOPPED.



PLAN  
TIDAL WATERS  
AND/OR HEAVY WIND AND WAVE ACTION



SECTION A-A

- SYMBOL T/C
- WORK AREA
  - ANCHOR POINTS EVERY 100 FT. MAX.
  - BARRIER MOVEMENT DUE TO TIDAL CHANGE
  - STAKE OR ANCHOR EVERY 100 FT. MAX.

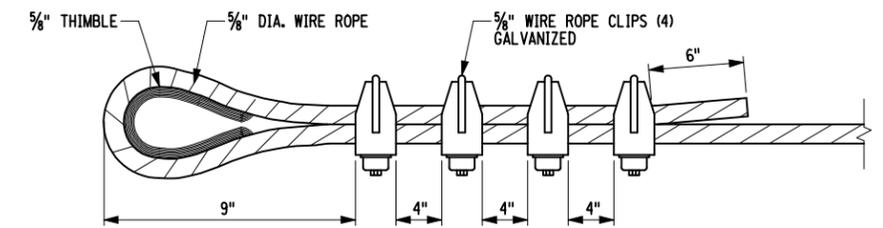
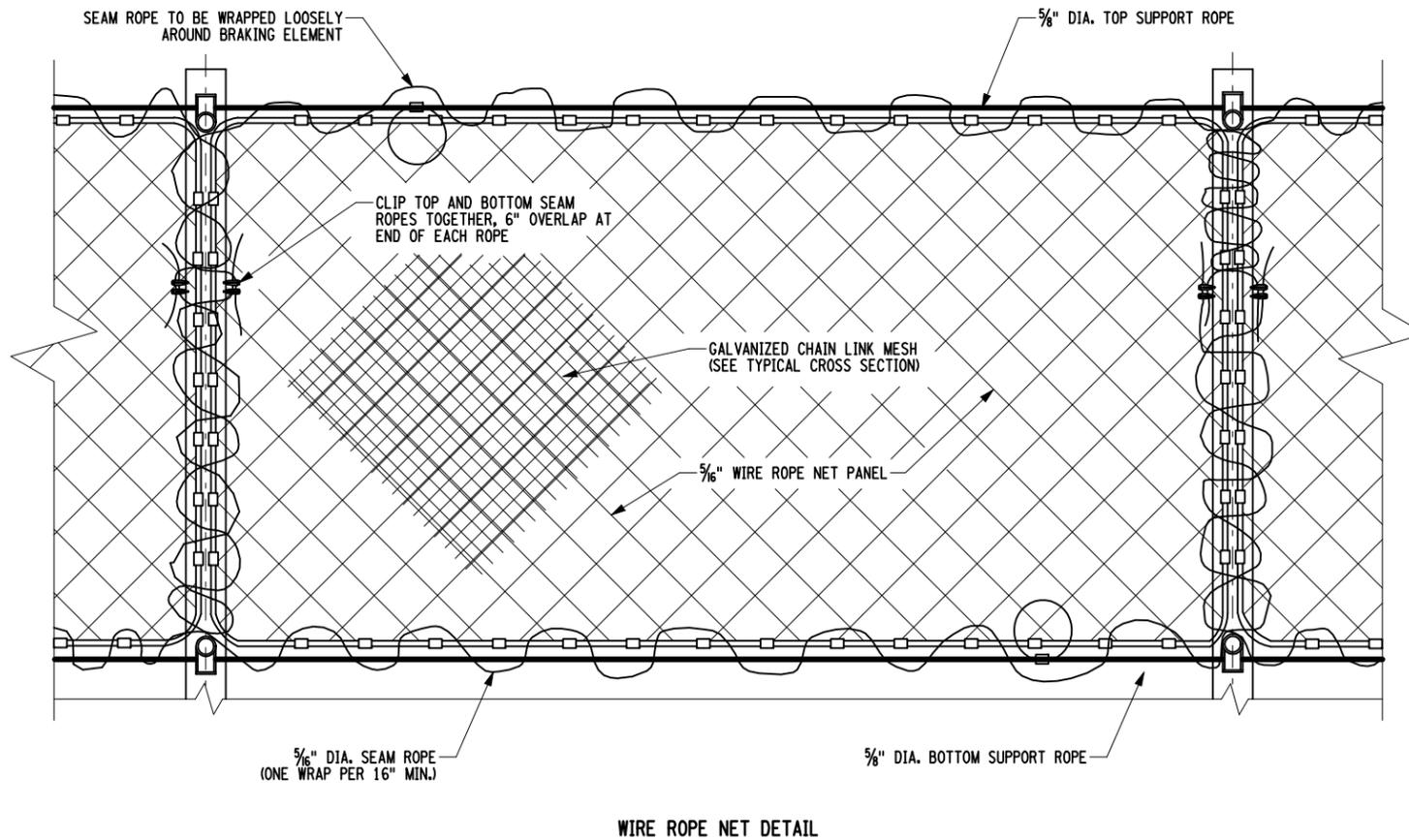
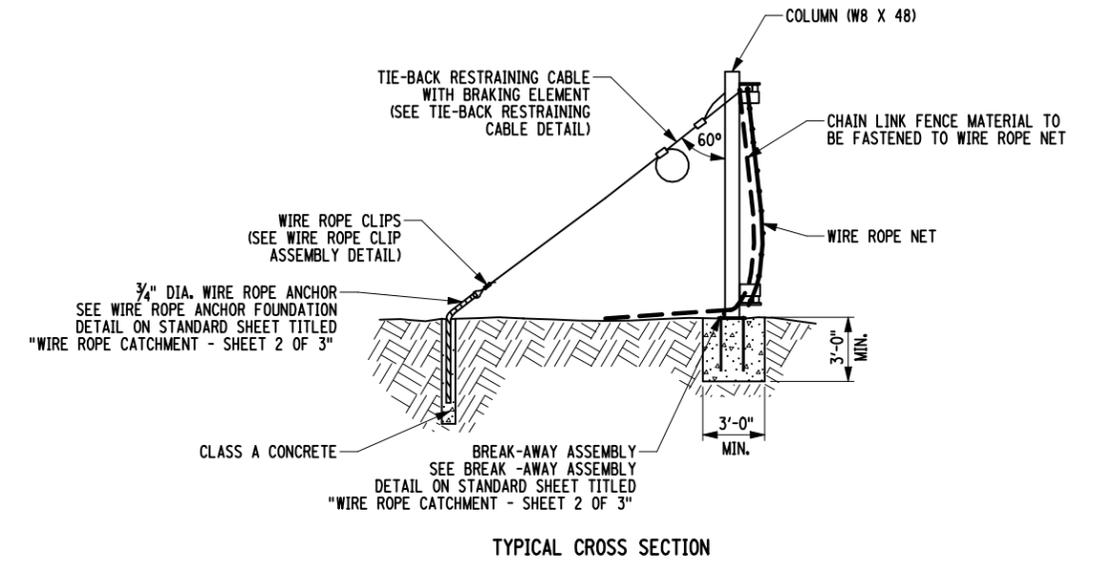
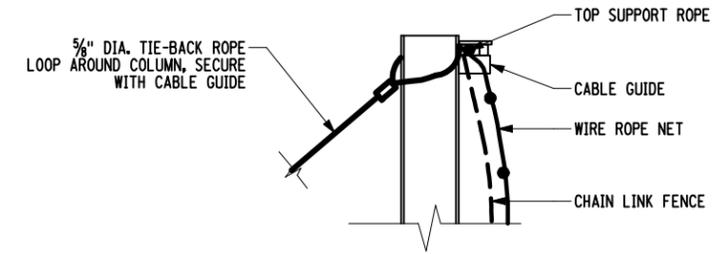
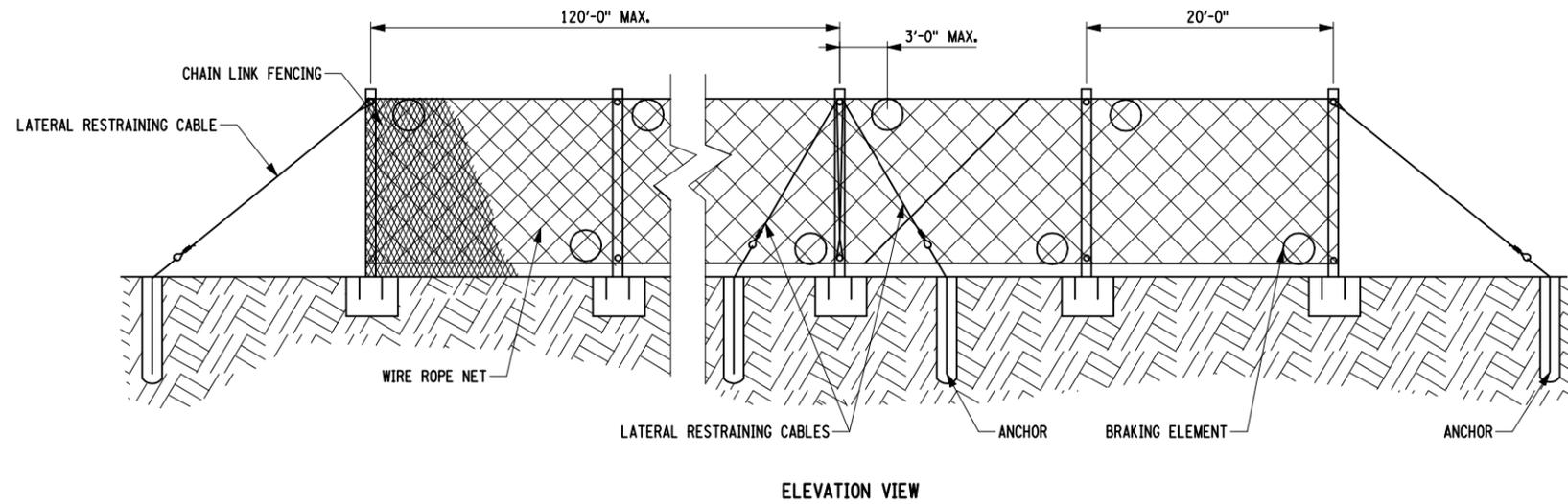
TYPICAL TURBIDITY CURTAIN LAYOUTS

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
TURBIDITY CURTAIN	
APPROVED FEBRUARY 09, 2010	ISSUED UNDER EB 09-036
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	209-06

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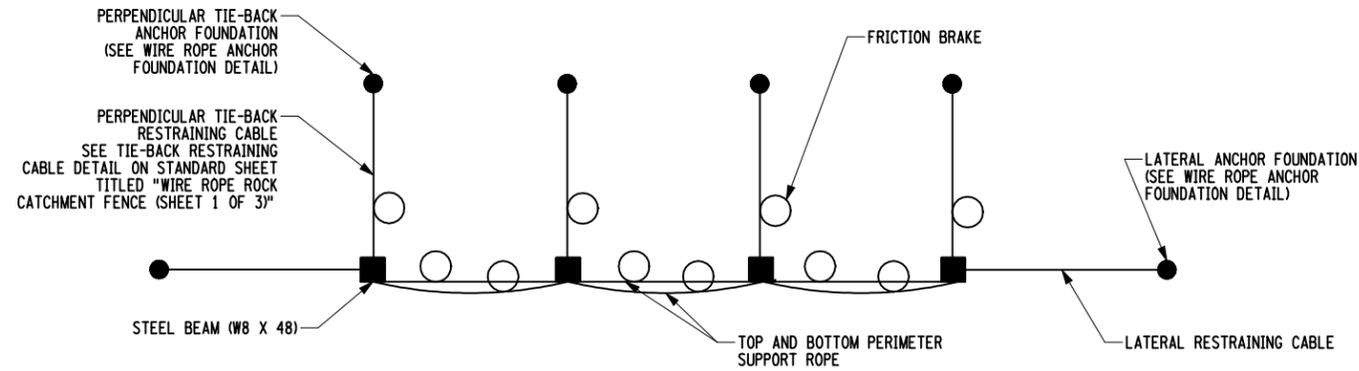
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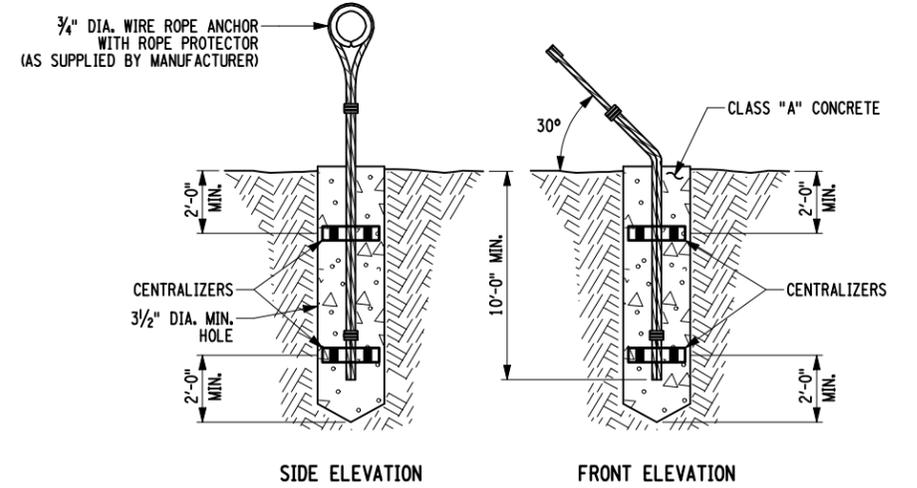


	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
<b>WIRE ROPE ROCK CATCHMENT FENCE (SHEET 1 OF 3)</b>		
APPROVED JANUARY 27, 2010	ISSUED UNDER EB 10-004	
/S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)		212-01

EFFECTIVE DATE: 05/06/2010



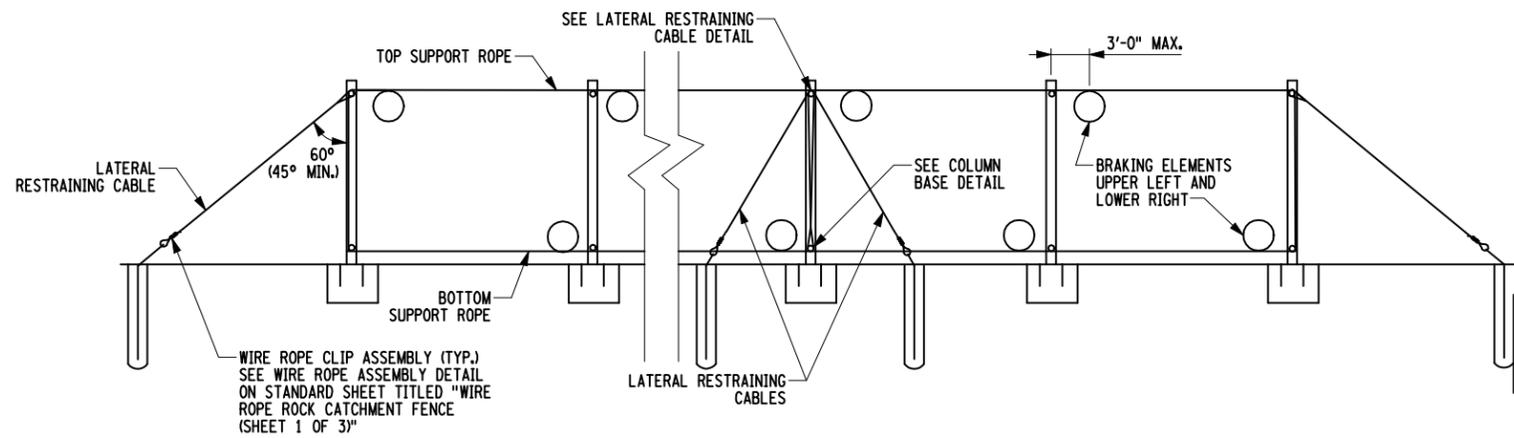
SUPPORT ROPE - PLAN VIEW



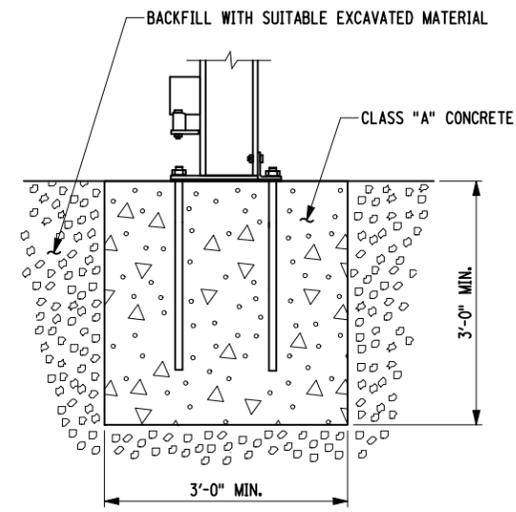
SIDE ELEVATION

FRONT ELEVATION

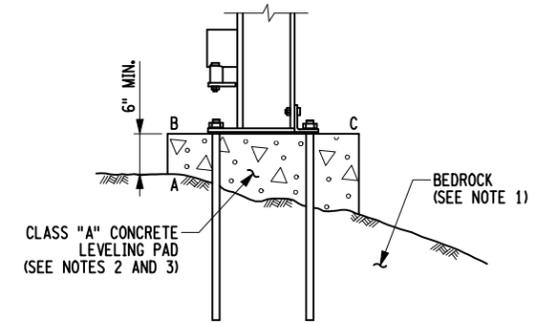
WIRE ROPE ANCHOR FOUNDATION DETAIL



SUPPORT ROPE - ELEVATION VIEW



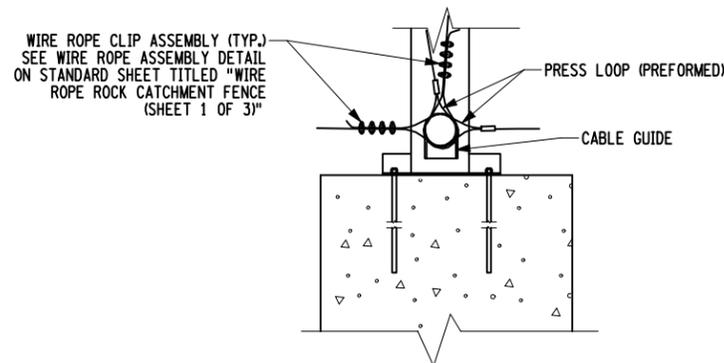
NON-BEDROCK FOUNDATION DETAIL



BEDROCK FOUNDATION DETAIL

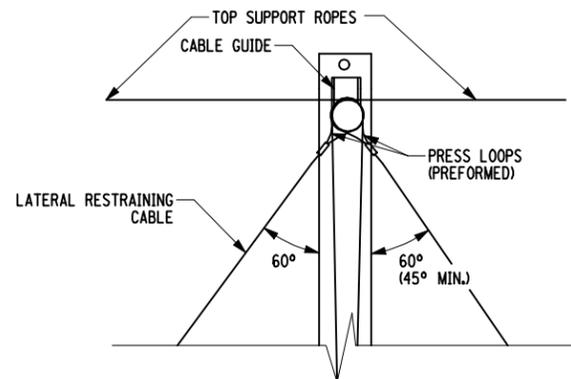
NOTES:

1. THE SUITABILITY OF THE BEDROCK AND BEDROCK SURFACE SHALL BE DETERMINED BY A DEPARTMENTAL ENGINEERING GEOLOGIST.
2. AN IRREGULAR ROCK SURFACE MAY REQUIRE A CONCRETE LEVELING PAD.
3. THICKNESS "AB" SHALL BE 6" MINIMUM. DISTANCE "BC" SHALL BE 3'-0" MINIMUM.

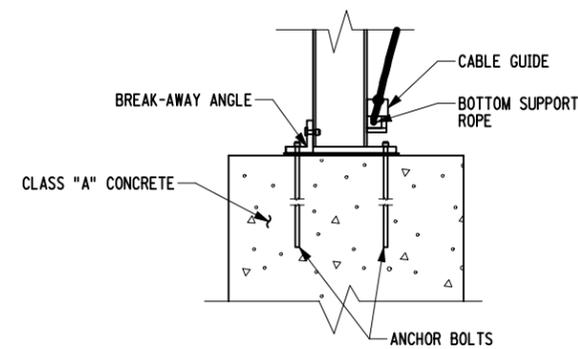


COLUMN BASE DETAIL

NOTE: SUPPORT ROPE WITH BRAKING ELEMENTS TO BE PRE ASSEMBLED BY MANUFACTURER

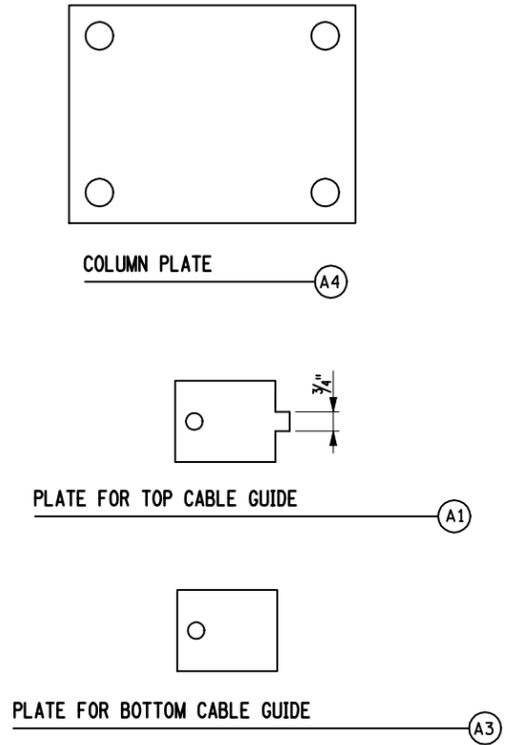
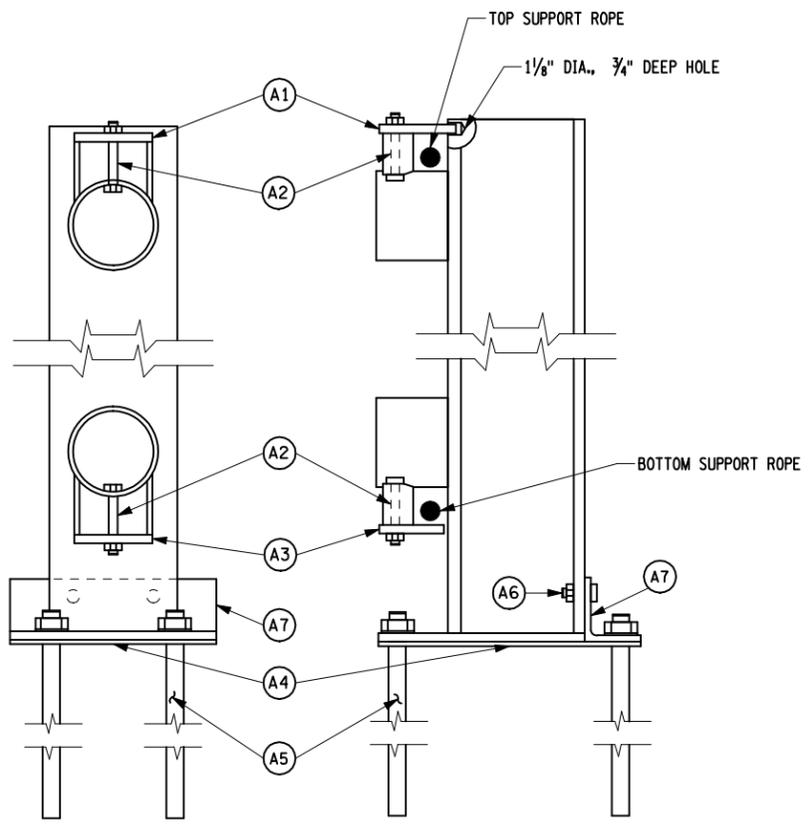
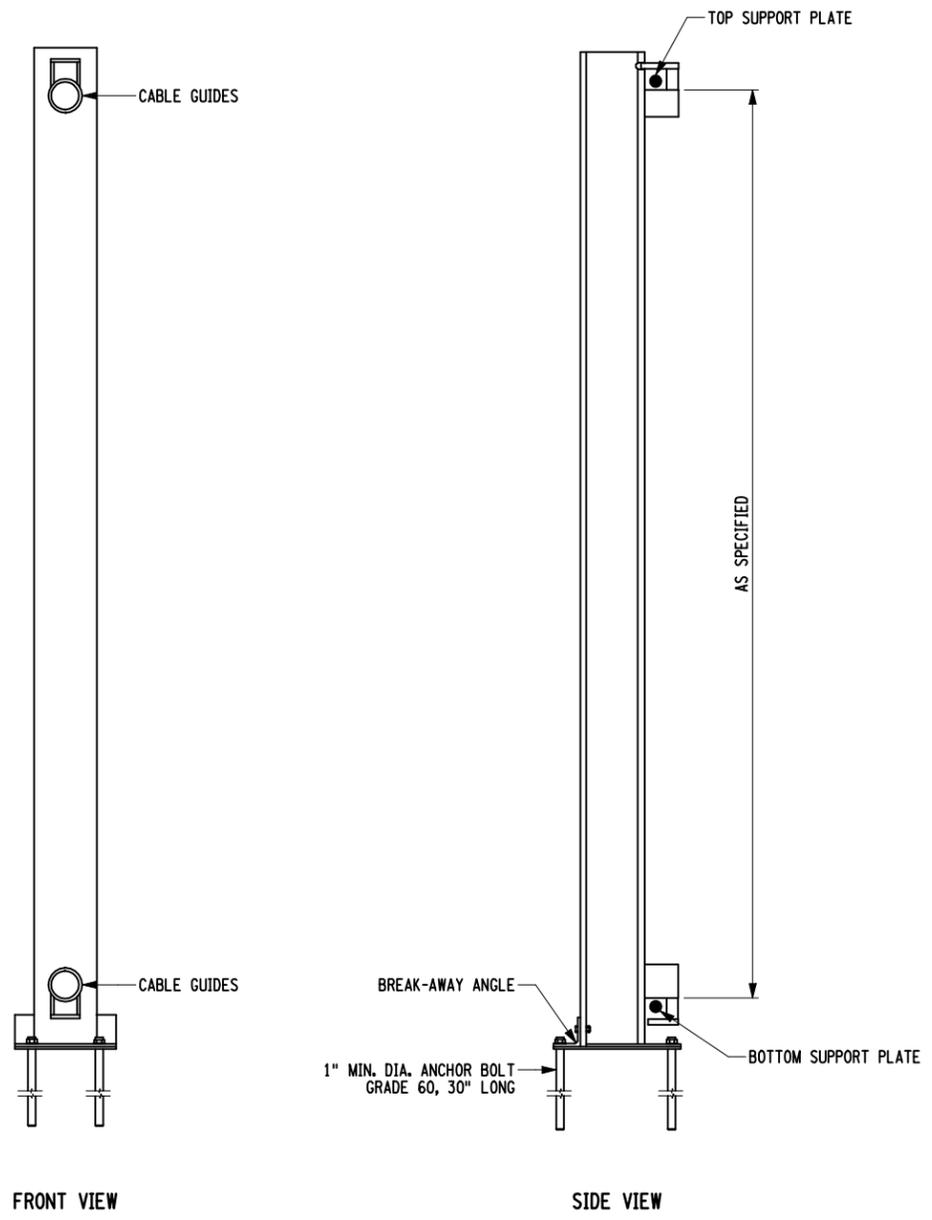


LATERAL RESTRAINING CABLE DETAIL



BREAK-AWAY ASSEMBLY DETAIL

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
	U.S. CUSTOMARY STANDARD SHEET	
<b>WIRE ROPE ROCK CATCHMENT FENCE</b> <b>(SHEET 2 OF 3)</b>		
APPROVED JANUARY 27, 2010 /S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)	ISSUED UNDER EB 10-004	212-01
EFFECTIVE DATE: 05/06/2010		



**STRUCTURAL COLUMN ASSEMBLY DETAIL**

ITEM	DESCRIPTION
A1	PLATE, 32/2 X 5" X 4/4 THICK
A2	BOLT, 8/8 DIA. WITH NUT AND WASHERS TO BE FITTED WHEN ASSEMBLED
A3	PLATE, 32/2 X 44/4 X 4/4 THICK
A4	COLUMN PLATE, 13" X 172/2 X 8/8 THICK
A5	ANCHOR BOLTS, 1" DIA. X 30" LONG WITH NUTS AND WASHERS
A6	BOLT, 4/4 DIA. X WITH NUTS (NO WASHERS)
A7	BREAKAWAY ANGLES, 3 1/2" X 3 1/2" X 1/2" THICK

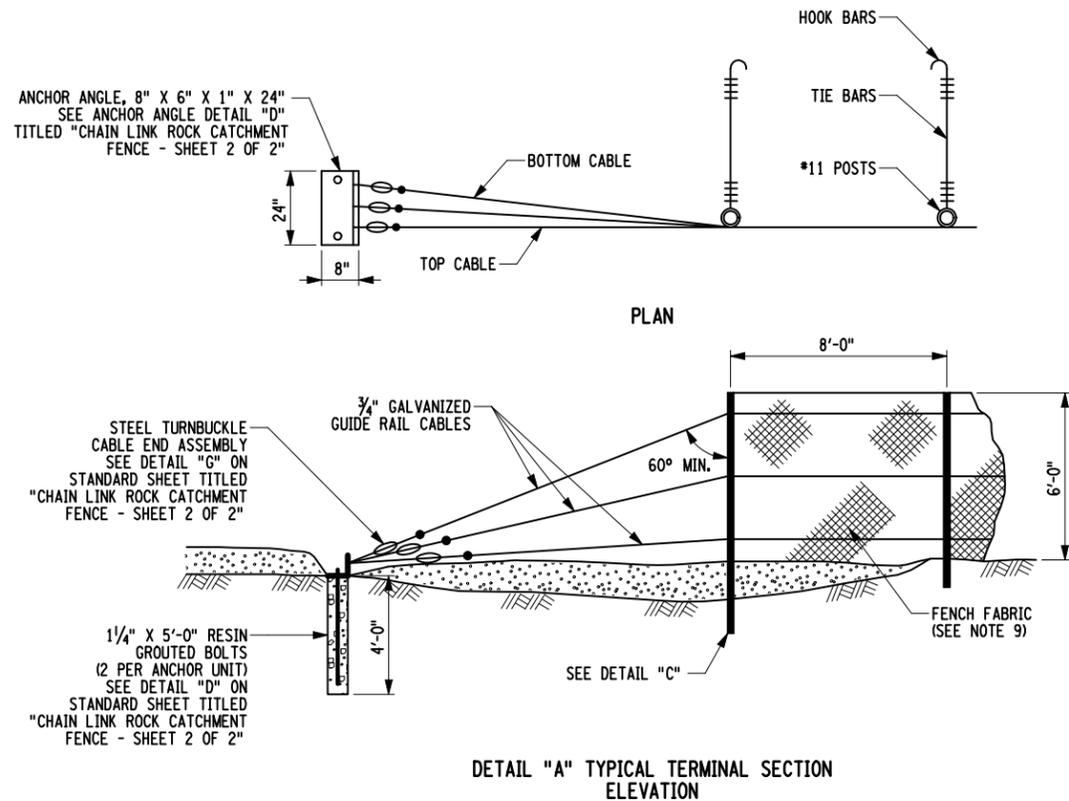
**STRUCTURAL COLUMNS**

NOTE 1. COLUMN AS SUPPLIED BY THE MANUFACTURER WILL NOT REQUIRE ANY WELDING FOR INSTALLATION IN THE FIELD.

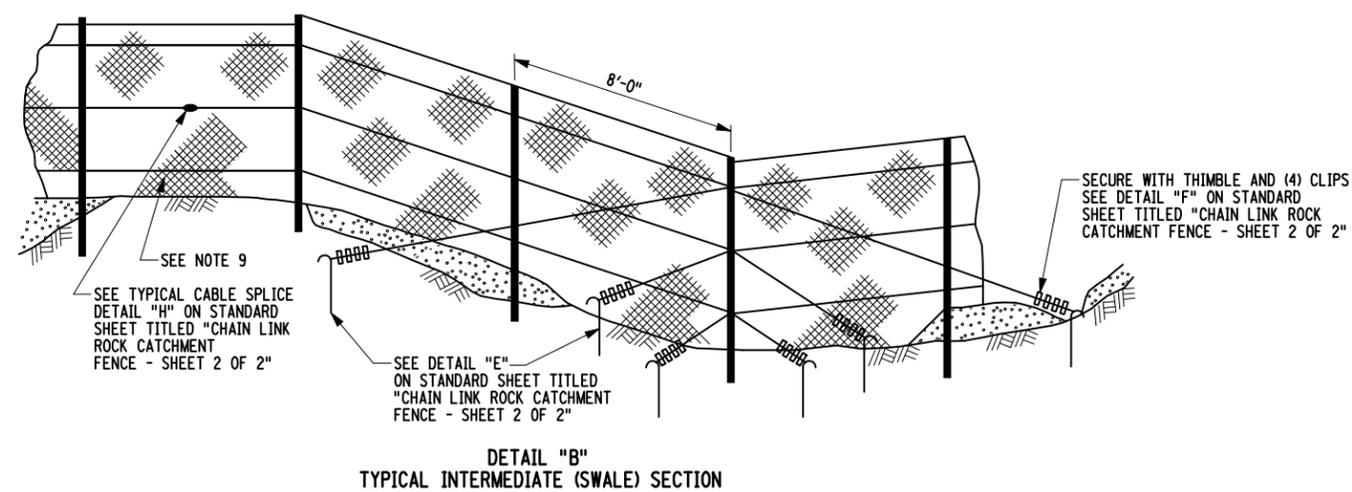
	<b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>	
	U.S. CUSTOMARY STANDARD SHEET	
<b>WIRE ROPE ROCK CATCHMENT FENCE (SHEET 3 OF 3)</b>		
APPROVED JANUARY 27, 2010 /S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)	ISSUED UNDER EB 10-004	212-01

EFFECTIVE DATE: 05/06/2010

FILE NAME = 212-0103.dgn  
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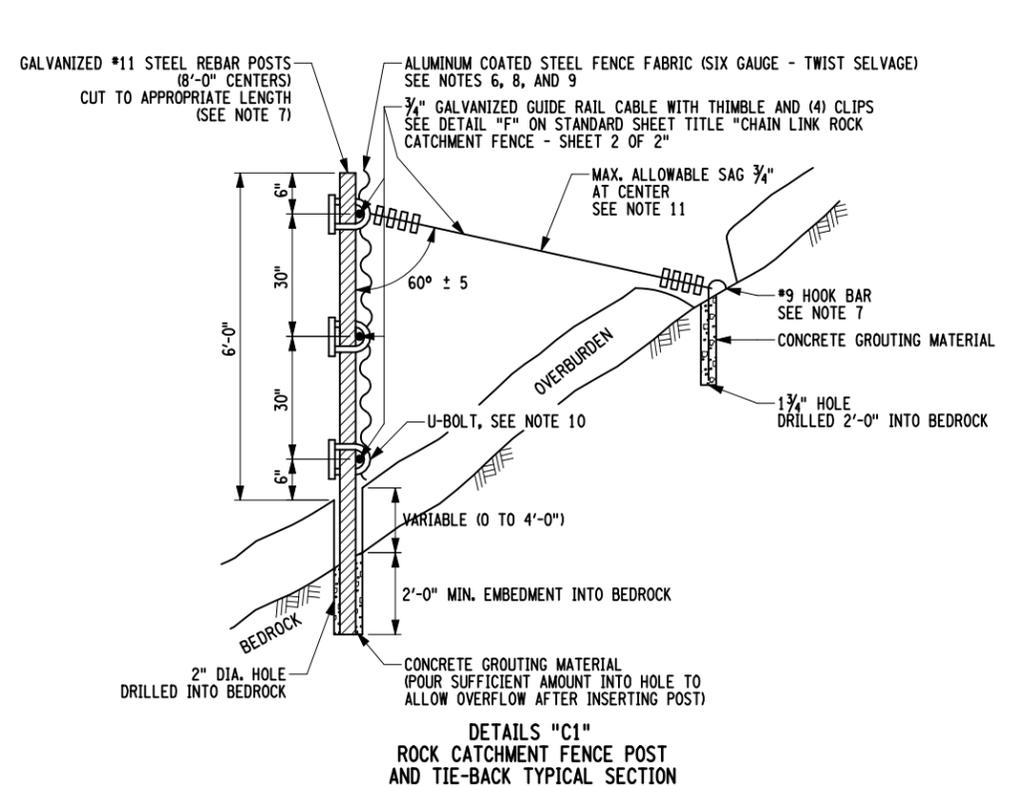
DETAIL "A" TYPICAL TERMINAL SECTION ELEVATION



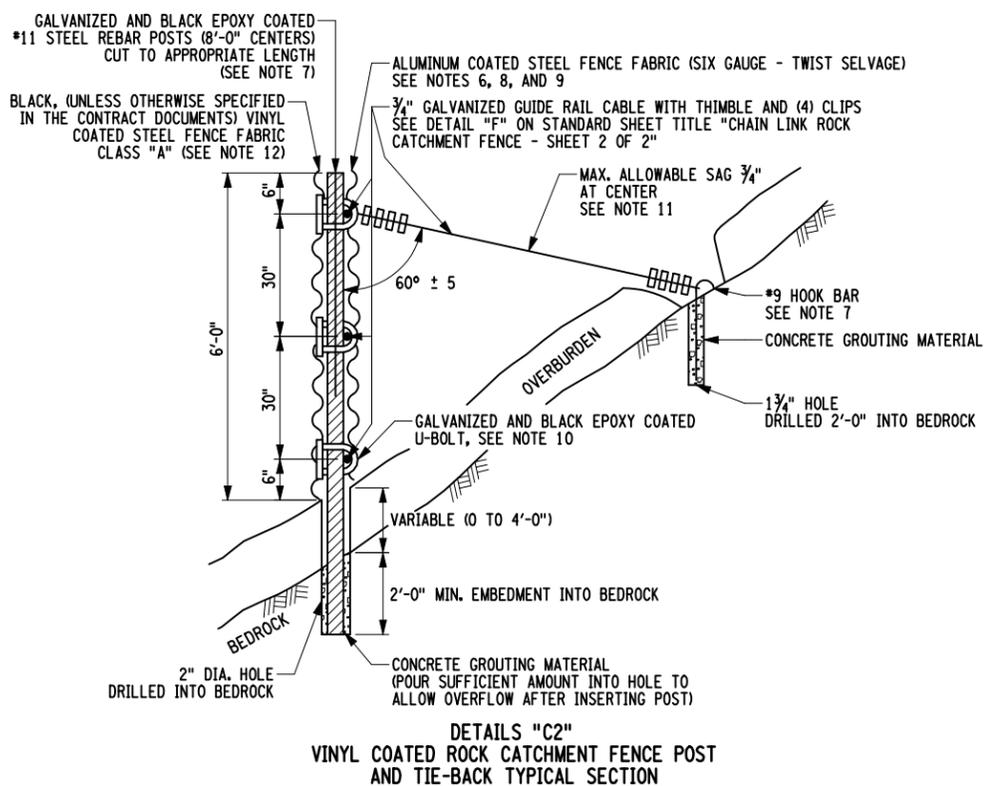
DETAIL "B" TYPICAL INTERMEDIATE (SWALE) SECTION

GENERAL NOTES:

1. 3/4" WIRE CABLE SHALL CONSIST OF THREE (3) STRANDS (SEVEN (7) WIRES PER STRAND) AND HAVE A MINIMUM TENSILE STRENGTH OF 25 KIPS.
2. CABLE CLIPS SHOULD BE FOR RIGHT OR LEFT LAY CABLE AS APPROPRIATE.
3. ALL CABLE ENDS AND SPLICES SHALL BE DESIGNED TO USE THE WEDGE SHOWN IN DETAIL "X" ON STANDARD SHEET TITLED "CHAIN LINK ROCK CATCHMENT FENCE - SHEET 2 OF 2". THE CABLE ENDS AND SPLICES SHALL BE HOT DIPPED GALVANIZED AS INDICATED IN SUBSECTION 719-01, MATERIAL REQUIREMENTS TYPE 1, OF THE NYS DOT STANDARD SPECIFICATIONS. THE WEDGE SHOWN IN DETAIL "X" ON STANDARD SHEET TITLED "CHAIN LINK ROCK CATCHMENT FENCE - SHEET 2 OF 2" SHALL NOT BE GALVANIZED.
4. STAGGER CABLE SPLICES A MINIMUM OF 20'-0" ON ADJACENT CABLES. SPACE CABLE SPLICES A MINIMUM OF 100'-0" ON THE SAME CABLE.
5. MATERIALS INDICATED AS "CAST STEEL" SHALL CONFORM TO SUBSECTION 715-02 OF THE STANDARD SPECIFICATIONS. MATERIALS INDICATED AS "MALLEABLE IRON" SHALL CONFORM TO SUBSECTION 715-09 OF THE NYS DOT STANDARD SPECIFICATIONS AND BE GRADE 32510, UNLESS SPECIFIED OTHERWISE.
6. ALUMINUM COATED STEEL FENCE FABRIC SHALL CONFORM TO REQUIREMENTS OF SUBSECTION 710-04 OF THE NYS DOT STANDARD SPECIFICATIONS.
7. \*11 STEEL REBAR POSTS AND \*9 HOOK BAR ANCHORS SHALL CONFORM TO REQUIREMENTS OF SUBSECTION 709-01 OF THE NYS DOT STANDARD SPECIFICATIONS.
8. FENCE FABRIC TO BE ATTACHED TO HORIZONTAL 3/4" CABLES WITH 12 GAUGE GALVANIZED WIRE TIES AT 1'-0" INTERVALS.
9. BOTTOM OF FENCE FABRIC SHALL BE IN CONTACT WITH THE GROUND SURFACE. ADD MATERIAL AS NECESSARY. ADDED MATERIAL TO BE ATTACHED WITH 12 GAUGE GALVANIZED WIRE TIES, 1'-0" C.C. AND OVERLAPPED A MINIMUM OF 4 CHAINLINK ROWS.
10. SECURE LONGITUDINAL CABLES TO \*11 POSTS WITH U-BOLTS. DRAW CABLE TAUT BEFORE TIGHTENING U-BOLTS.
11. TIE-BACK CABLE TO BE RUN UNDER UPPER CABLE, AROUND POST, OVER UPPER CABLE AND SECURED WITH 4 CABLE CLAMPS. TIE-BACK CABLE TO BE INSTALLED LAST AFTER LONGITUDINAL CABLES HAVE BEEN TIGHTENED AND FENCE FABRIC ATTACHED.
12. VINYL COATED STEEL FENCE FABRIC SHALL CONFORM TO REQUIREMENTS OF SUBSECTION 710-03 OF THE NYS DOT STANDARD SPECIFICATION. EXCEPT THE COLOR SHALL BE BLACK UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS. THE WIRE DIAMETER SHALL BE CLASS "A".



DETAILS "C1" ROCK CATCHMENT FENCE POST AND TIE-BACK TYPICAL SECTION

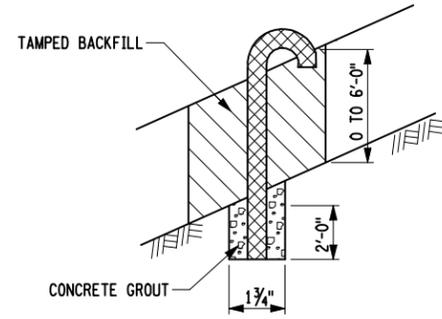
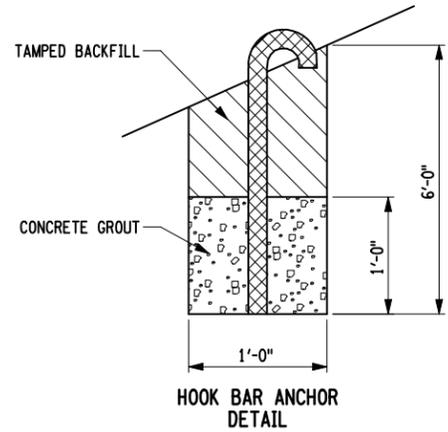


DETAILS "C2" VINYL COATED ROCK CATCHMENT FENCE POST AND TIE-BACK TYPICAL SECTION

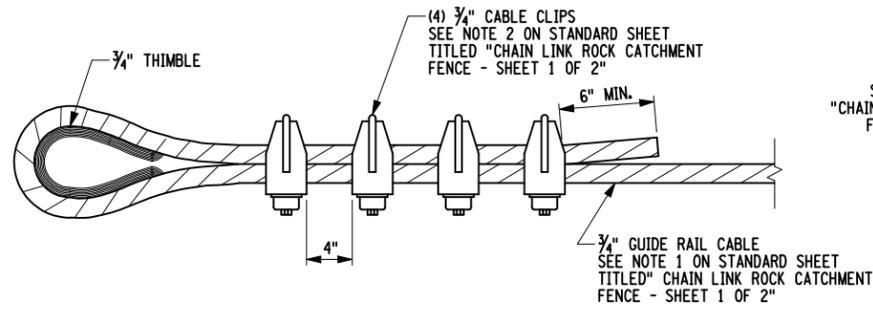
 <b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>CHAIN LINK ROCK CATCHMENT FENCE</b> <b>(SHEET 1 OF 2)</b>	
APPROVED JANUARY 27, 2010	ISSUED UNDER EB 10-004
/S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)	
212-02	

EFFECTIVE DATE: 05/06/2010

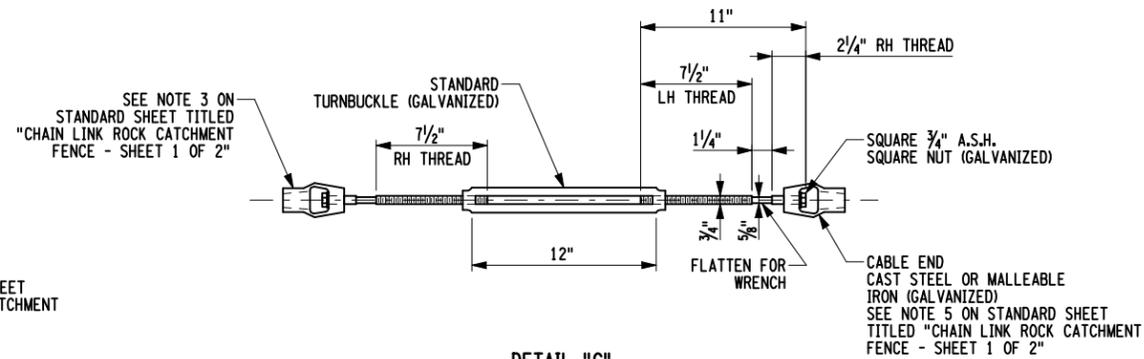
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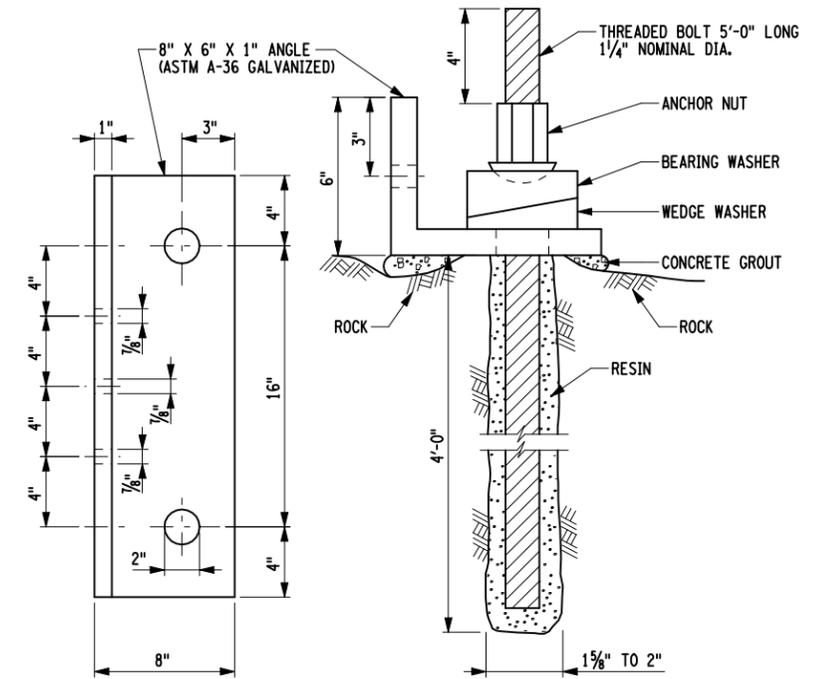
DETAIL "E"  
#9 HOOK BAR ANCHOR TYPICAL SECTIONS  
(VARYING OVERBURDEN DEPTHS)



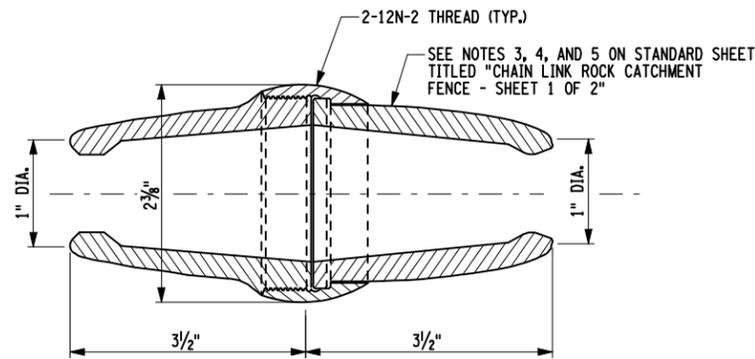
DETAIL "F"  
TYPICAL GUIDE RAIL CABLE LOOP  
CABLE CLIPS TO BE TIGHTENED TO 65 LBF-FT.



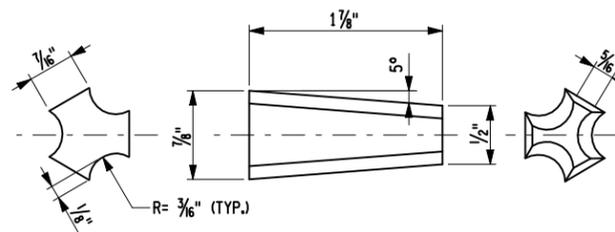
DETAIL "G"  
TYPICAL STEEL TURNBUCKLE CABLE END ASSEMBLY  
TO INCLUDE WEDGE  
(WEDGE SHOWN IN DETAIL "X")



DETAIL "D"  
TYPICAL ANCHOR ANGLE INSTALLATION



DETAIL "H"  
TYPICAL CABLE SPLICE  
TO INCLUDE TWO WEDGES  
(WEDGE SHOWN IN DETAIL "X")



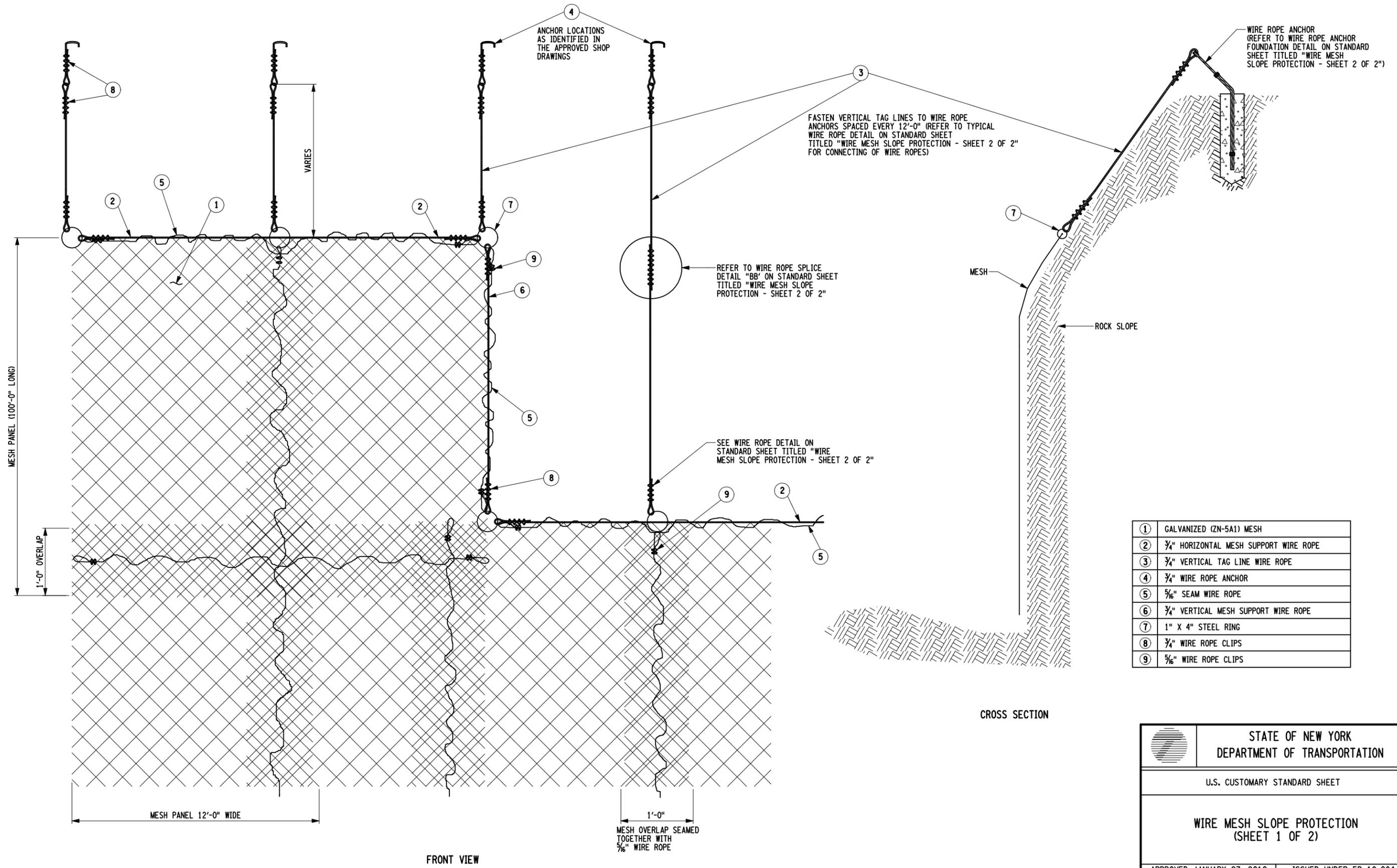
DETAIL "X"  
TYPICAL WEDGE FOR ALL  
CABLE SPLICES AND CABLE ENDS  
(DO NOT GALVANIZE)

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DATE/TIME = 01-FEB-2010 08:08  
USER = jturley

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
CHAIN LINK ROCK CATCHMENT FENCE (SHEET 2 OF 2)	
APPROVED JANUARY 27, 2010	ISSUED UNDER EB 10-004
/S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)	
212-02	

EFFECTIVE DATE: 05/06/2010

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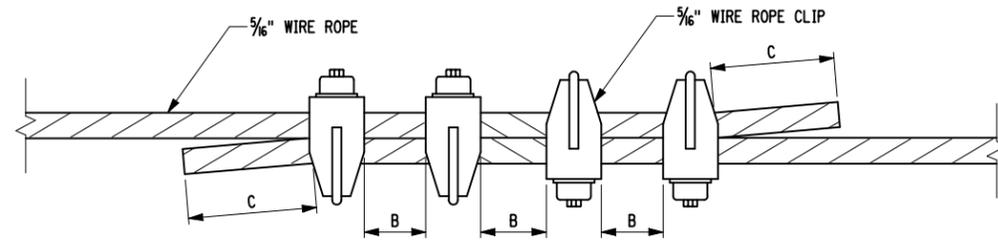
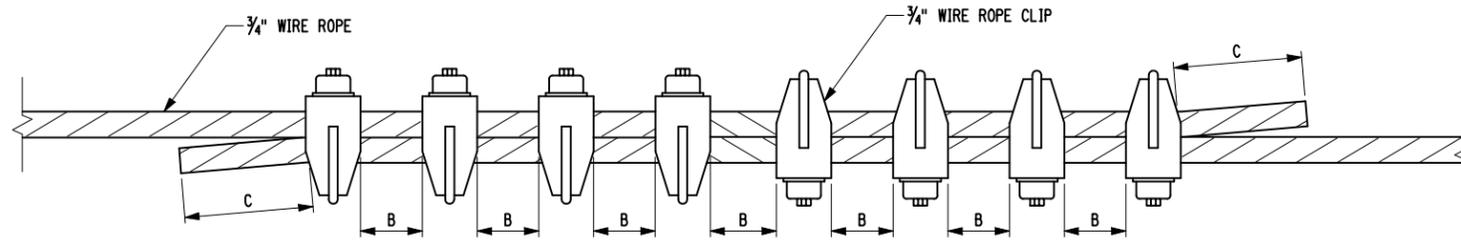


①	GALVANIZED (ZN-5A1) MESH
②	3/4" HORIZONTAL MESH SUPPORT WIRE ROPE
③	3/4" VERTICAL TAG LINE WIRE ROPE
④	3/4" WIRE ROPE ANCHOR
⑤	5/16" SEAM WIRE ROPE
⑥	3/4" VERTICAL MESH SUPPORT WIRE ROPE
⑦	1" X 4" STEEL RING
⑧	3/4" WIRE ROPE CLIPS
⑨	5/16" WIRE ROPE CLIPS

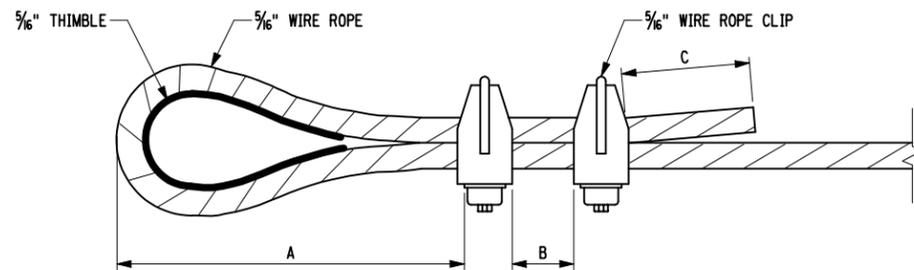
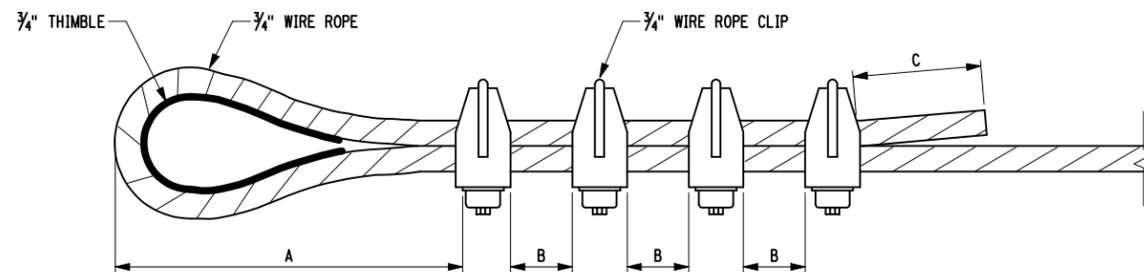
CROSS SECTION

FRONT VIEW

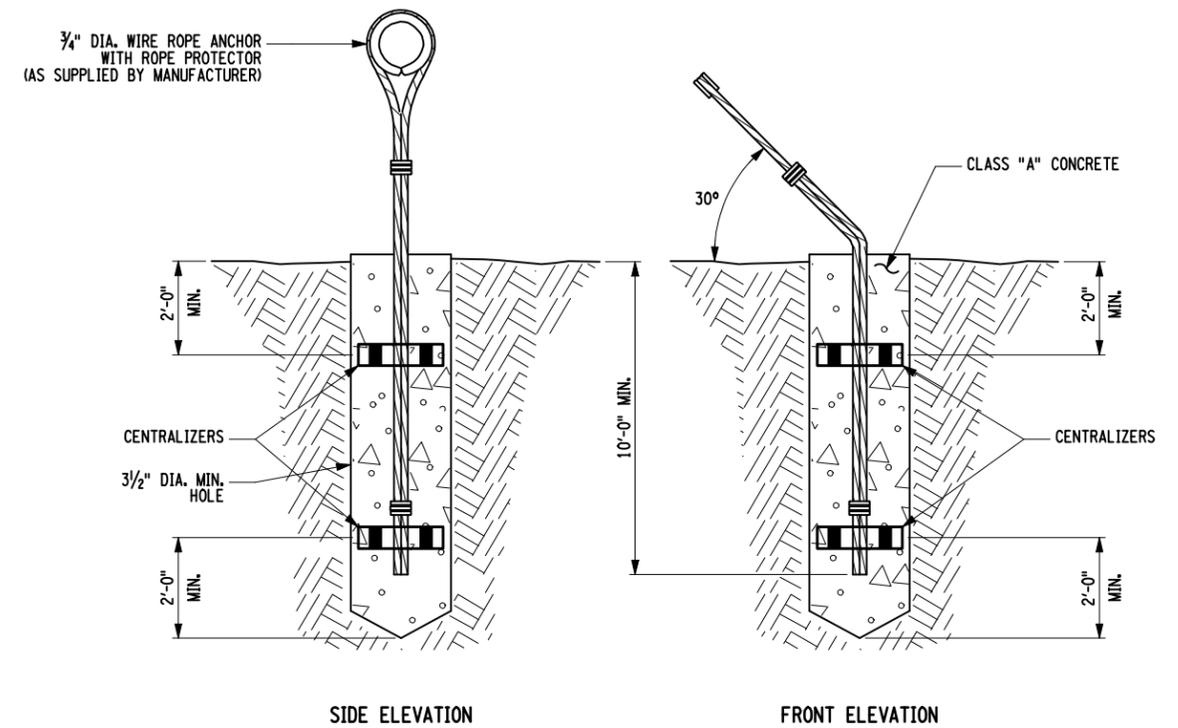
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
<b>WIRE MESH SLOPE PROTECTION</b> (SHEET 1 OF 2)		
APPROVED JANUARY 27, 2010 /S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)	ISSUED UNDER EB 10-004	212-03
EFFECTIVE DATE: 05/06/2010		



WIRE ROPE SPLICE DETAILS "BB"  
FOR 5/16" AND 3/4" WIRE ROPE AS NOTED



WIRE ROPE LOOP DETAIL  
FOR 5/16" AND 3/4" WIRE ROPE AS NOTED

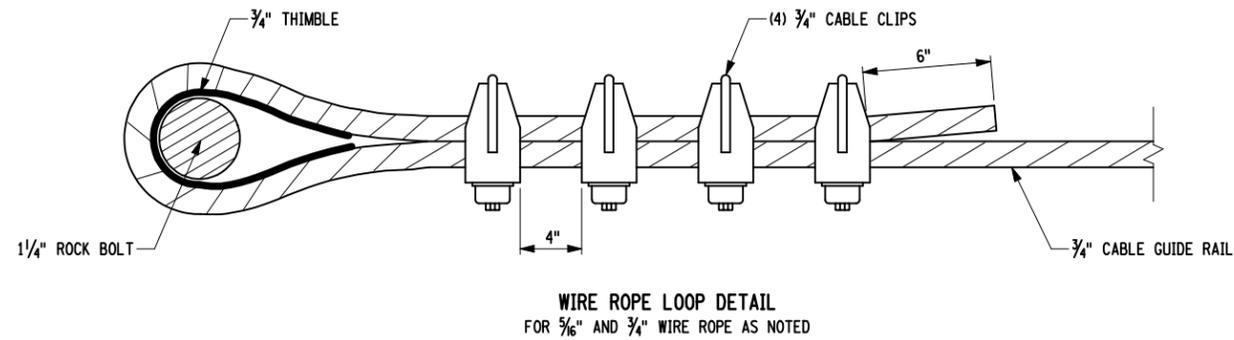
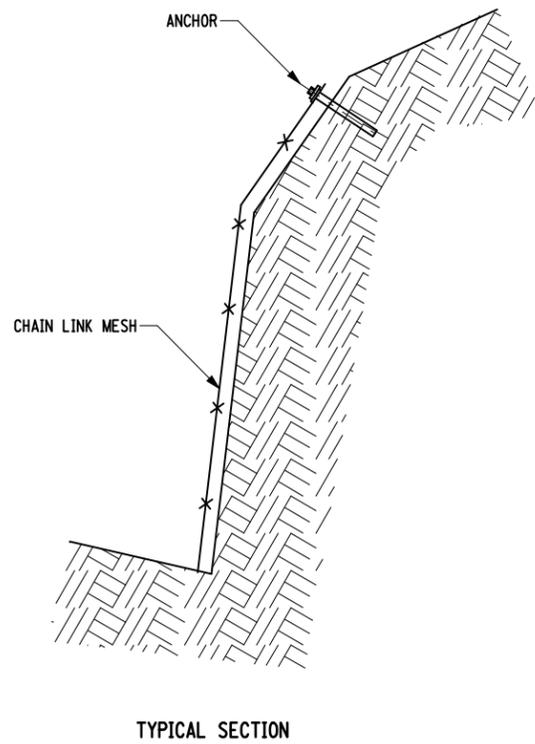
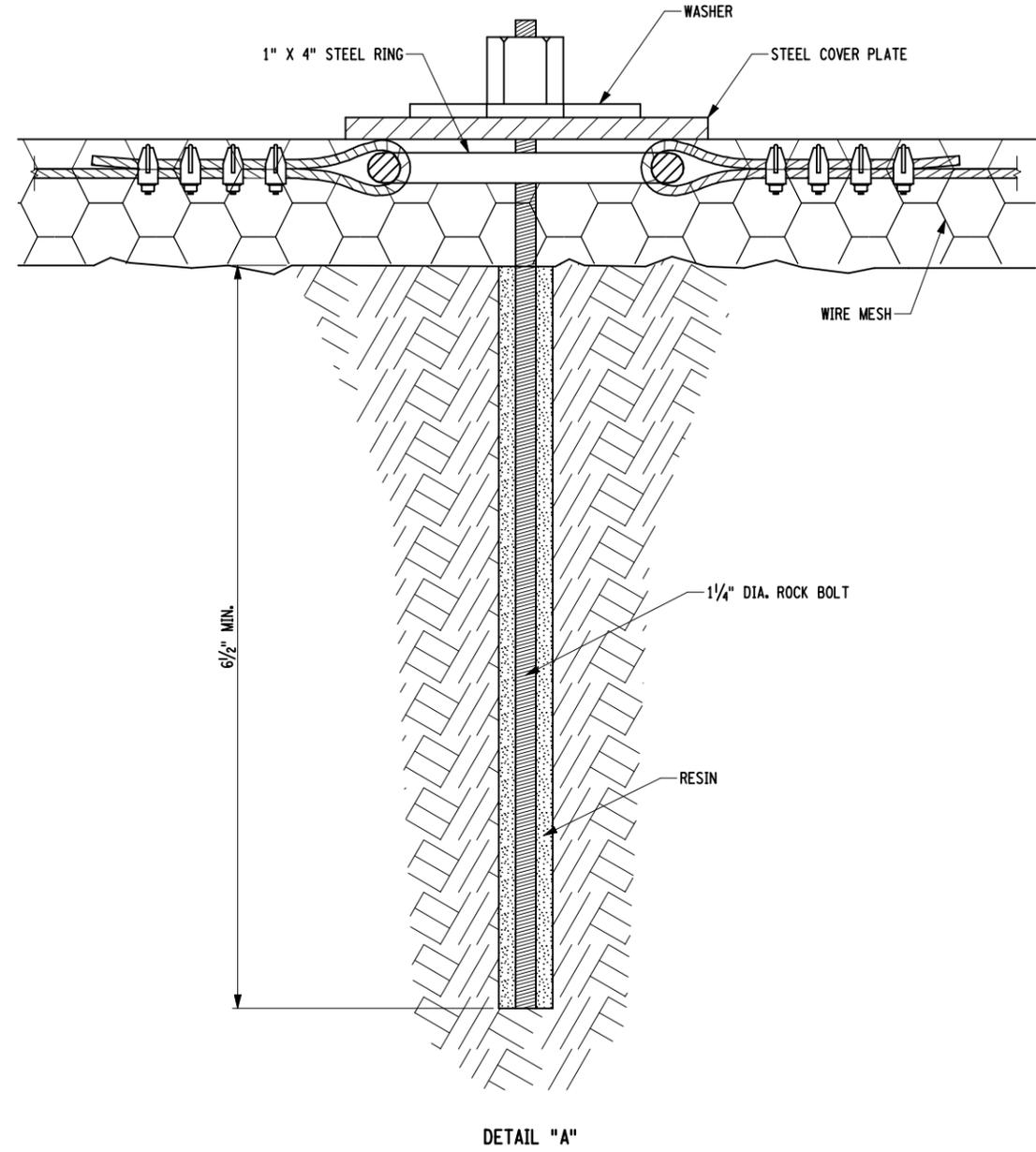
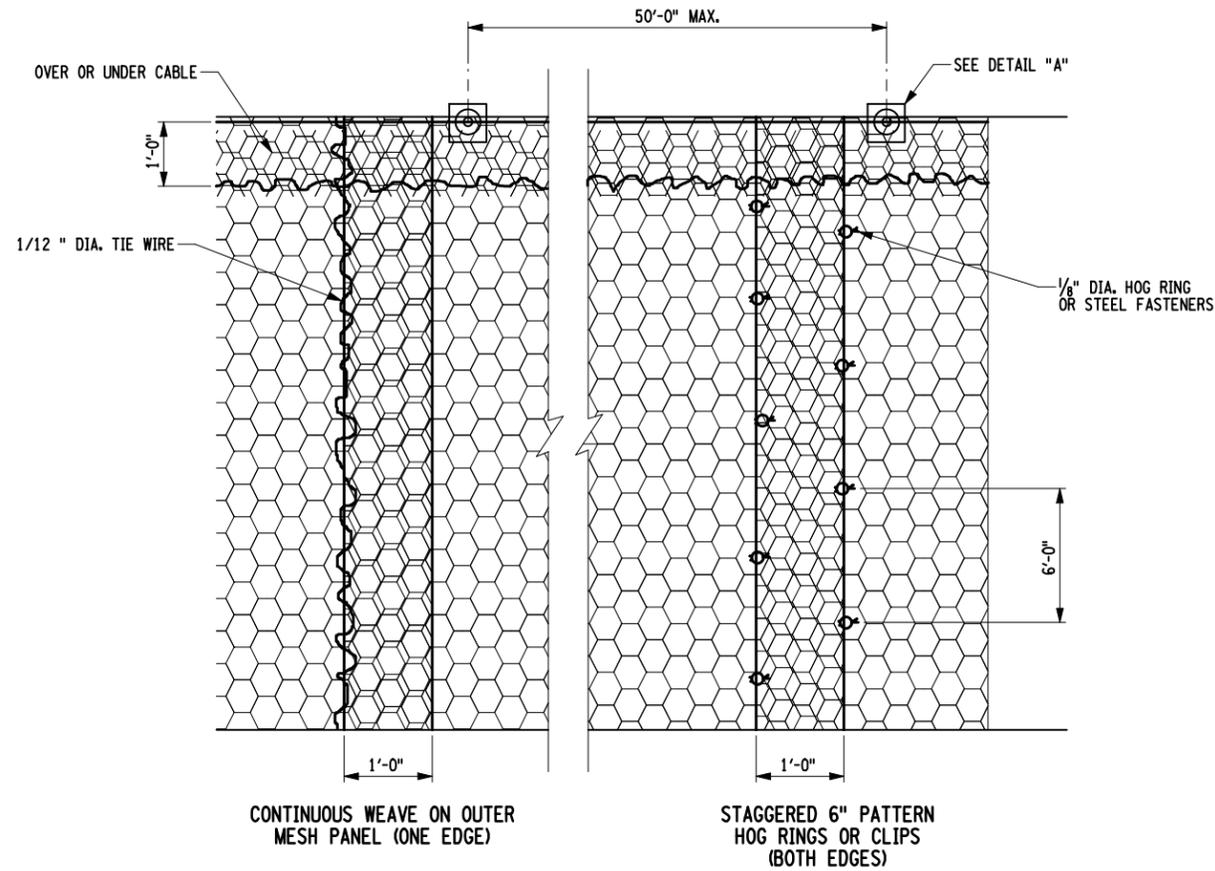


WIRE ROPE ANCHOR FOUNDATION DETAIL

DIMENSION	3/4" WIRE ROPE	5/16" WIRE ROPE
A	11"	6"
B	5"	3"
C	6"	6"

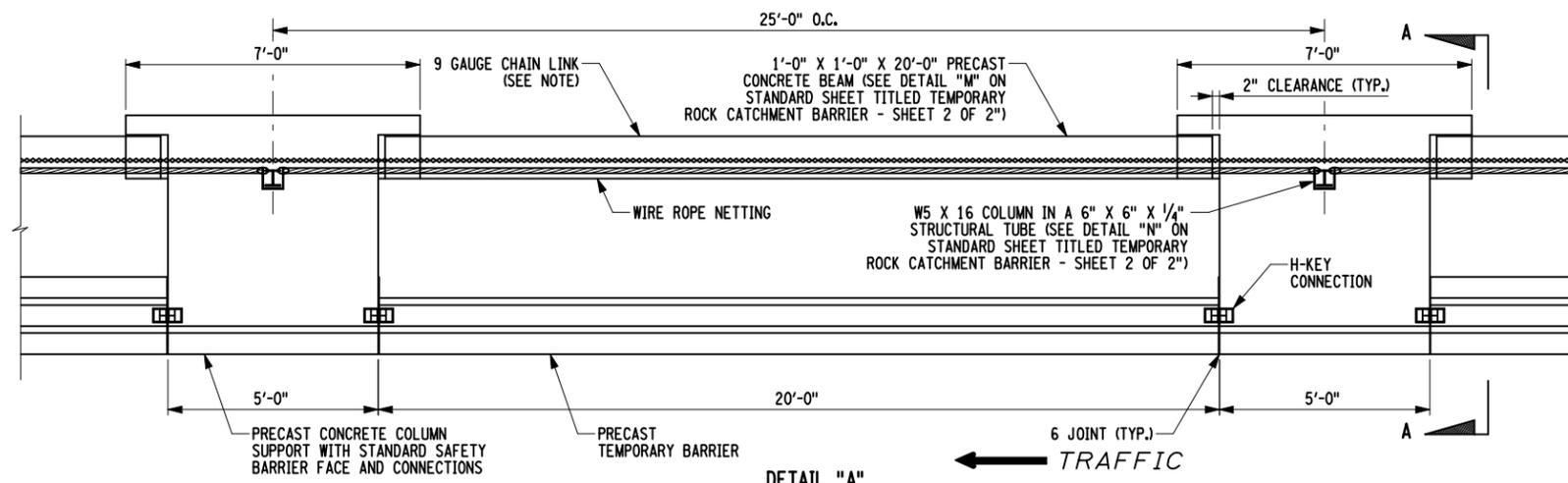
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
WIRE MESH SLOPE PROTECTION (SHEET 2 OF 2)		
APPROVED JANUARY 27, 2010	ISSUED UNDER EB 10-004	
/S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)	212-03	

EFFECTIVE DATE: 05/06/2010

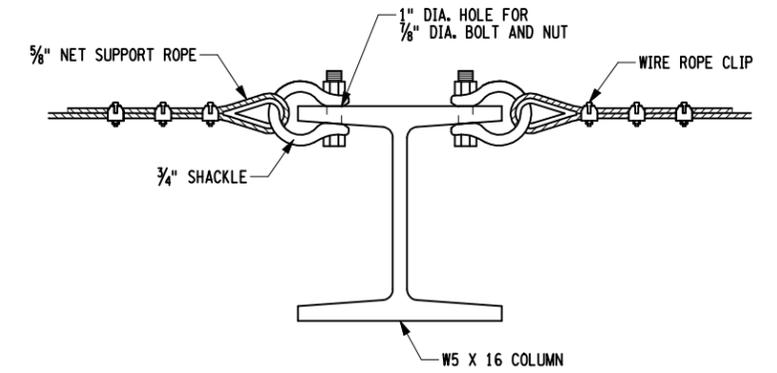


	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
WIRE MESH DRAPE		
APPROVED JANUARY 27, 2010	ISSUED UNDER EB 10-004	
/S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)		212-04

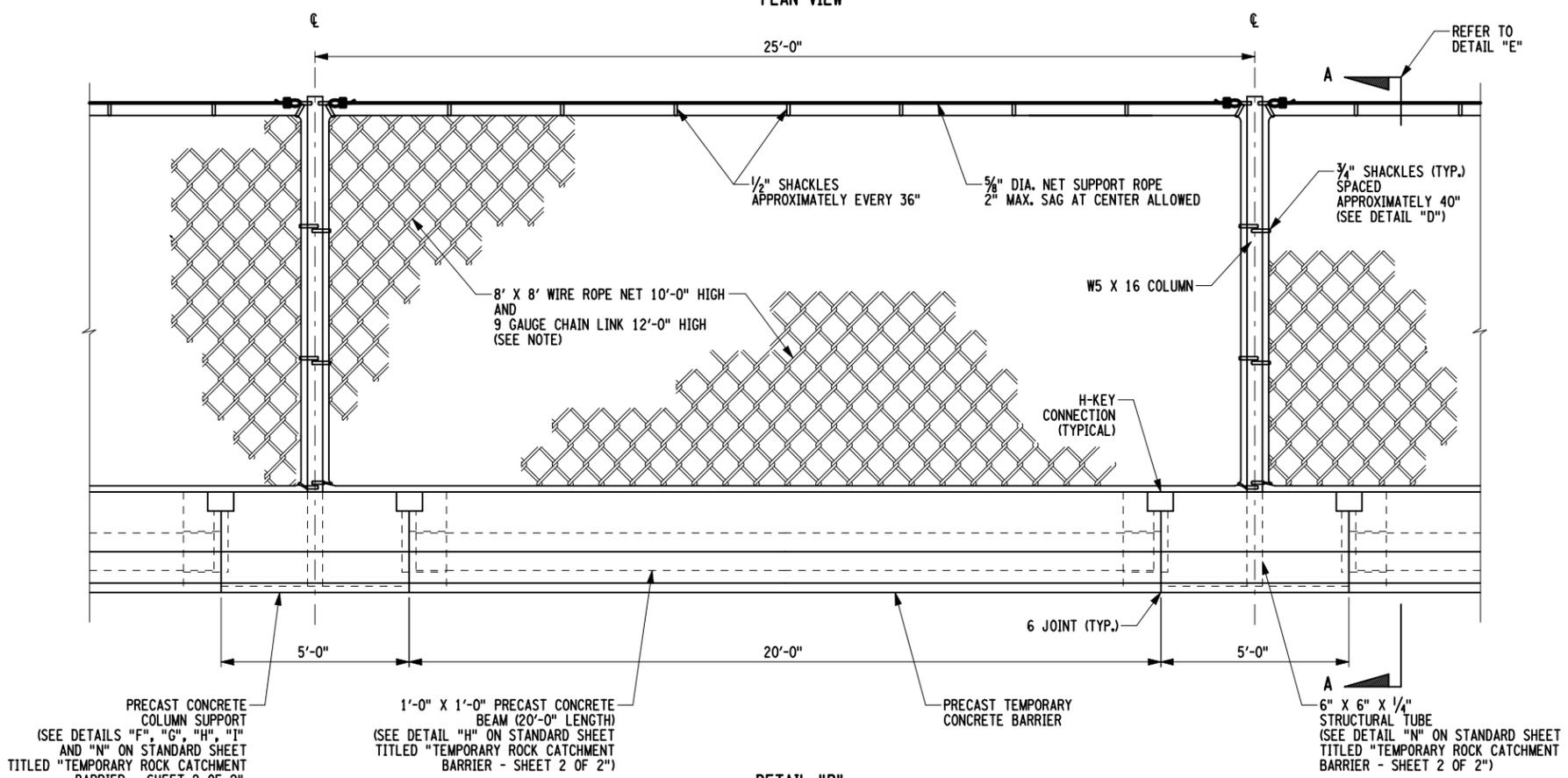
EFFECTIVE DATE: 05/06/2010



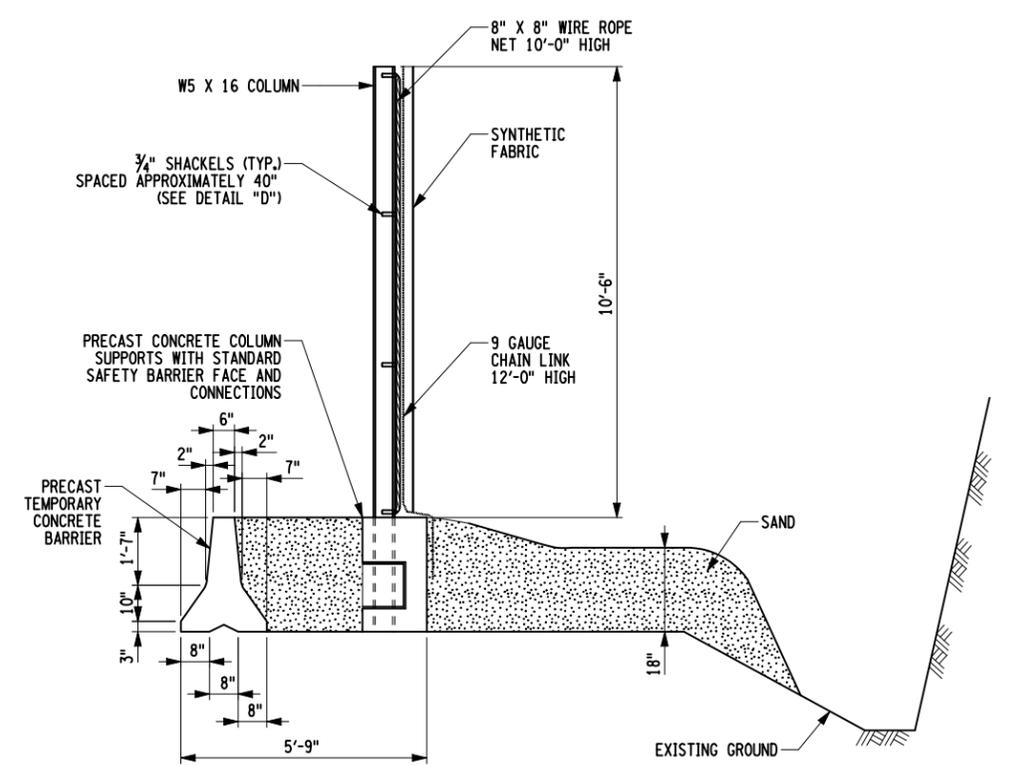
DETAIL "A"  
PLAN VIEW



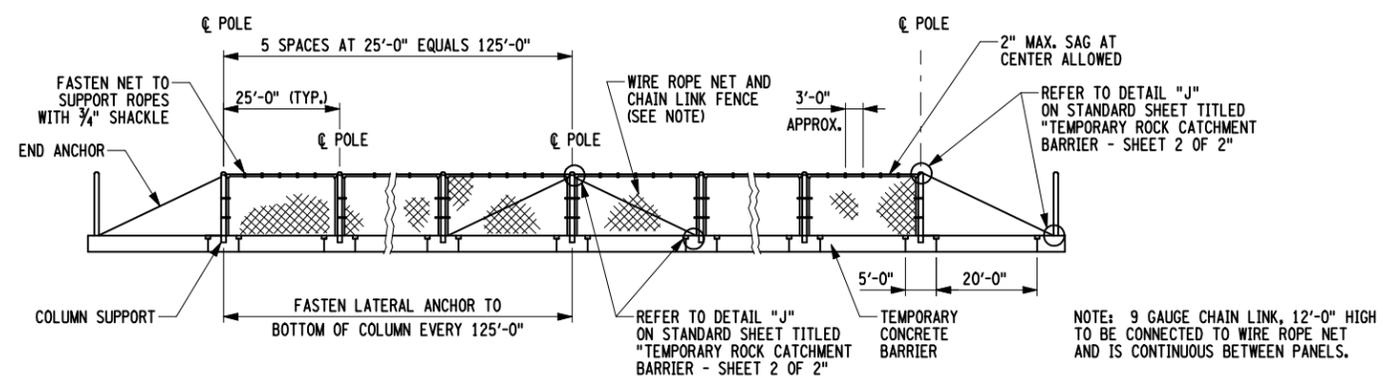
DETAIL "D"  
SHACKLE CONNECTION



DETAIL "B"  
FRONT VIEW



DETAIL "E"  
SECTION A-A



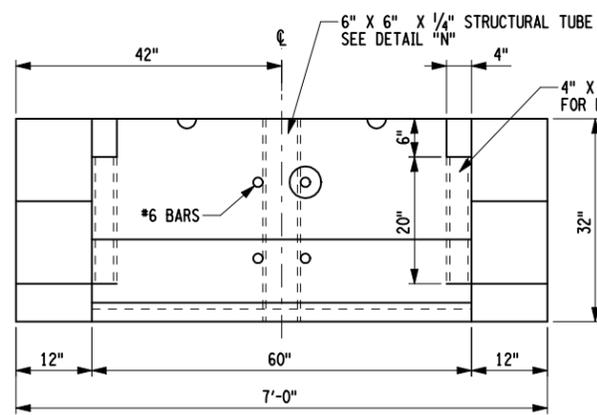
DETAIL "C"  
END AND INTERMEDIATE LATERAL ANCHORS

NOTE: 9 GAUGE CHAIN LINK, 12'-0" HIGH TO BE CONNECTED TO WIRE ROPE NET AND IS CONTINUOUS BETWEEN PANELS.

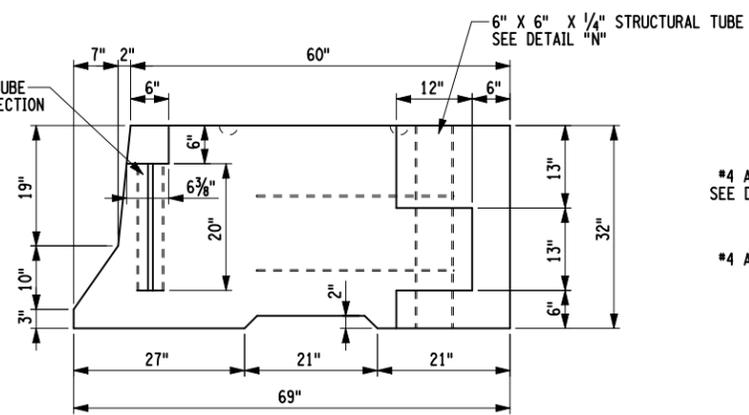
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
<b>TEMPORARY ROCK CATCHMENT BARRIER</b> (SHEET 1 OF 2)		
APPROVED JANUARY 27, 2010	ISSUED UNDER EB 10-004	
/S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)		212-05

EFFECTIVE DATE: 05/06/2010

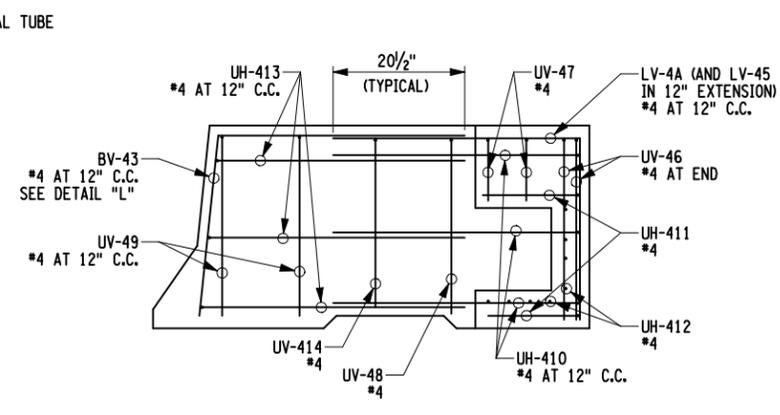
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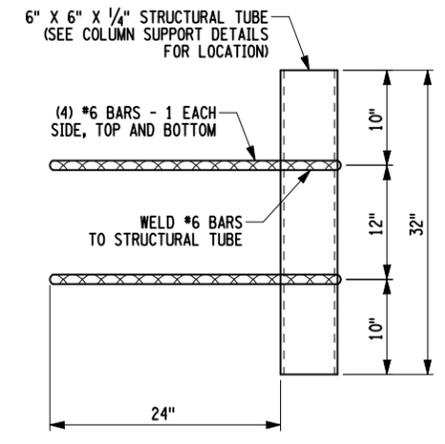
DETAIL "F"  
PRECAST CONCRETE COLUMN SUPPORT  
FRONT VIEW



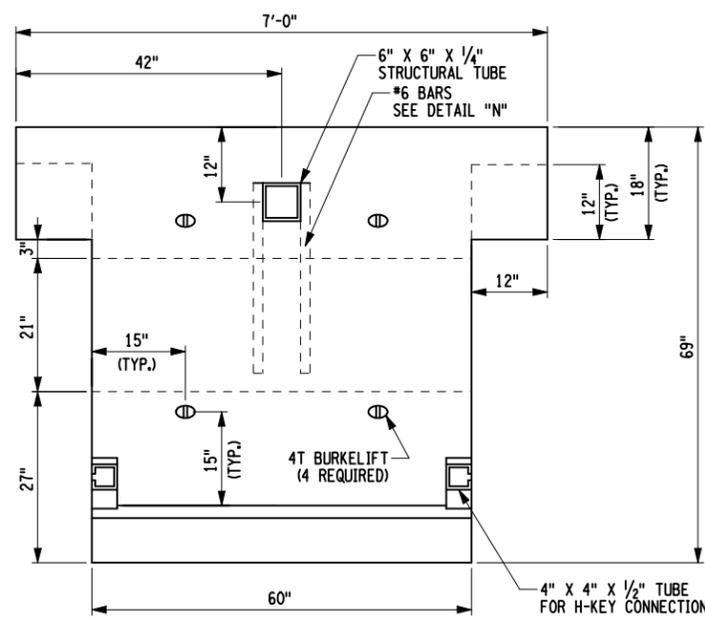
DETAIL "H"  
PRECAST CONCRETE COLUMN SUPPORT  
SIDE VIEW



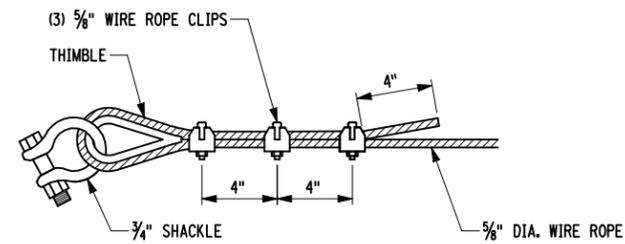
DETAIL "I"  
PRECAST CONCRETE COLUMN SUPPORT  
REINFORCEMENT DETAIL



DETAIL "N"  
STRUCTURAL TUBE

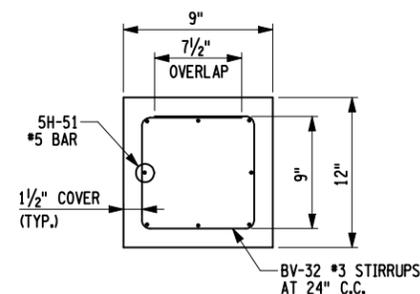


DETAIL "G"  
PRECAST CONCRETE COLUMN SUPPORT  
PLAN VIEW

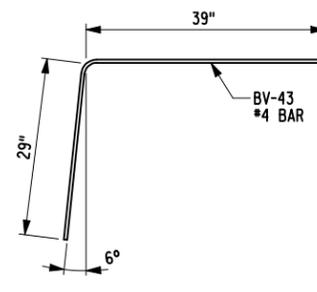


DETAIL "J"  
WIRE ROPE LOOP

NOTE: WIRE ROPE CLIPS TO BE  
TIGHTENED TO 3.5 LBF-FT

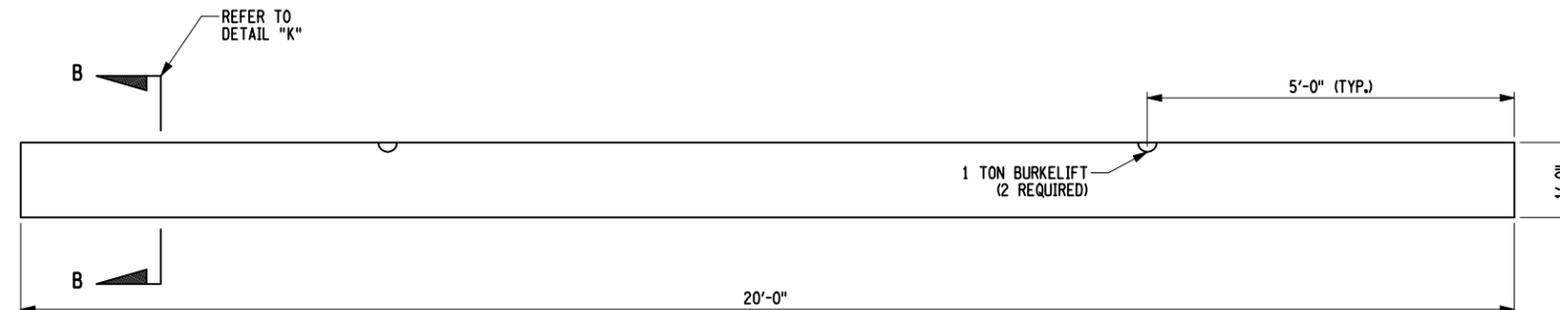


DETAIL "K"  
SECTION B-B



DETAIL "L"

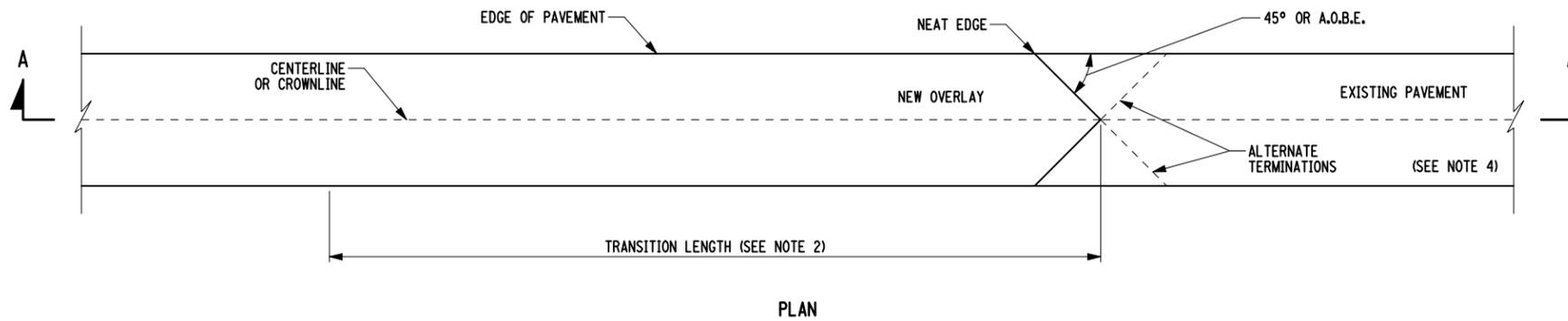
BAR LIST						
BAR MK. NO.	SIZE	TYPE	LENGTH	# REQ.	DIMENSIONS	LOCATION
SH-51	#5	STRAIGHT	233"	8		HORIZONTAL IN BEAM
BV-32	#3	STIRRUP	38"	11	SEE DETAIL "K"	VERTICAL STIRRUPS-B
BV-43	#4	BENT	67"	6	SEE DETAIL "L"	VERTICAL @ FACE
LV-44	#4	L-BAR	67"	6	29" x 39"	VERTICAL @ BACK
LV-45	#4	L-BAR	43"	2	29" x 15"	VERTICAL @ BACK
UV-46	#4	U-BAR	113"	2	29" x 81" x 29"	VERTICAL @ TOP
UV-47	#4	U-BAR	74"	2	9.5" x 81" x 9.5"	VERTICAL @ TOP
UV-48	#4	U-BAR	85"	1	27" x 57" x 39"	VERTICAL @ TOP
UV-49	#4	U-BAR	81"	2	29" x 49" x 29"	VERTICAL @ TOP
UH-410	#4	U-BAR	133"	3	39" x 57" x 39"	HORIZONTAL @ BACK
UH-411	#4	U-BAR	111"	2	16" x 81" x 16"	HORIZONTAL @ BACK
SH-412	#4	STRAIGHT	81"	8		AROUND NOTCH
UH-413	#4	U-BAR	125"	3	39" x 49" x 39"	HORIZONTAL @ FACE
UH-414	#4	U-BAR	77"	1	27" x 49" x 27"	VERTICAL @ TOP



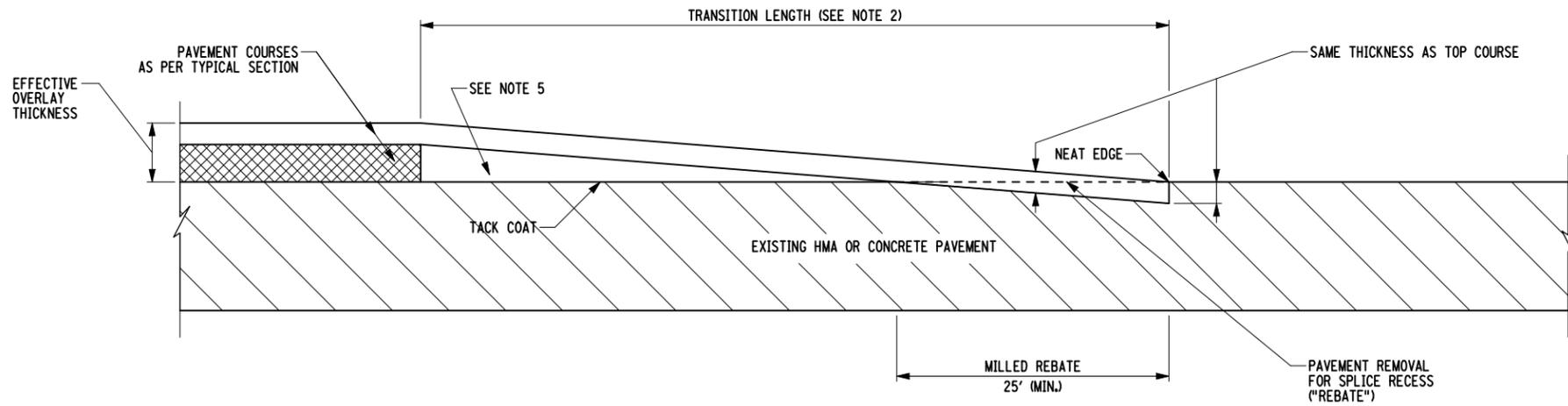
DETAIL "M"  
PRECAST CONCRETE BEAM

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
<b>TEMPORARY ROCK CATCHMENT BARRIER</b> (SHEET 2 OF 2)		
APPROVED JANUARY 27, 2010	ISSUED UNDER EB 10-004	
/S/ J.E. RONDINARO, P.E. FOR THE DEPUTY CHIEF ENGINEER (RESEARCH)		212-05

EFFECTIVE DATE: 05/06/2010



PLAN



SECTION A-A

HOT MIX ASPHALT OVERLAY SPLICE  
(PAVEMENT TERMINATION DETAIL)

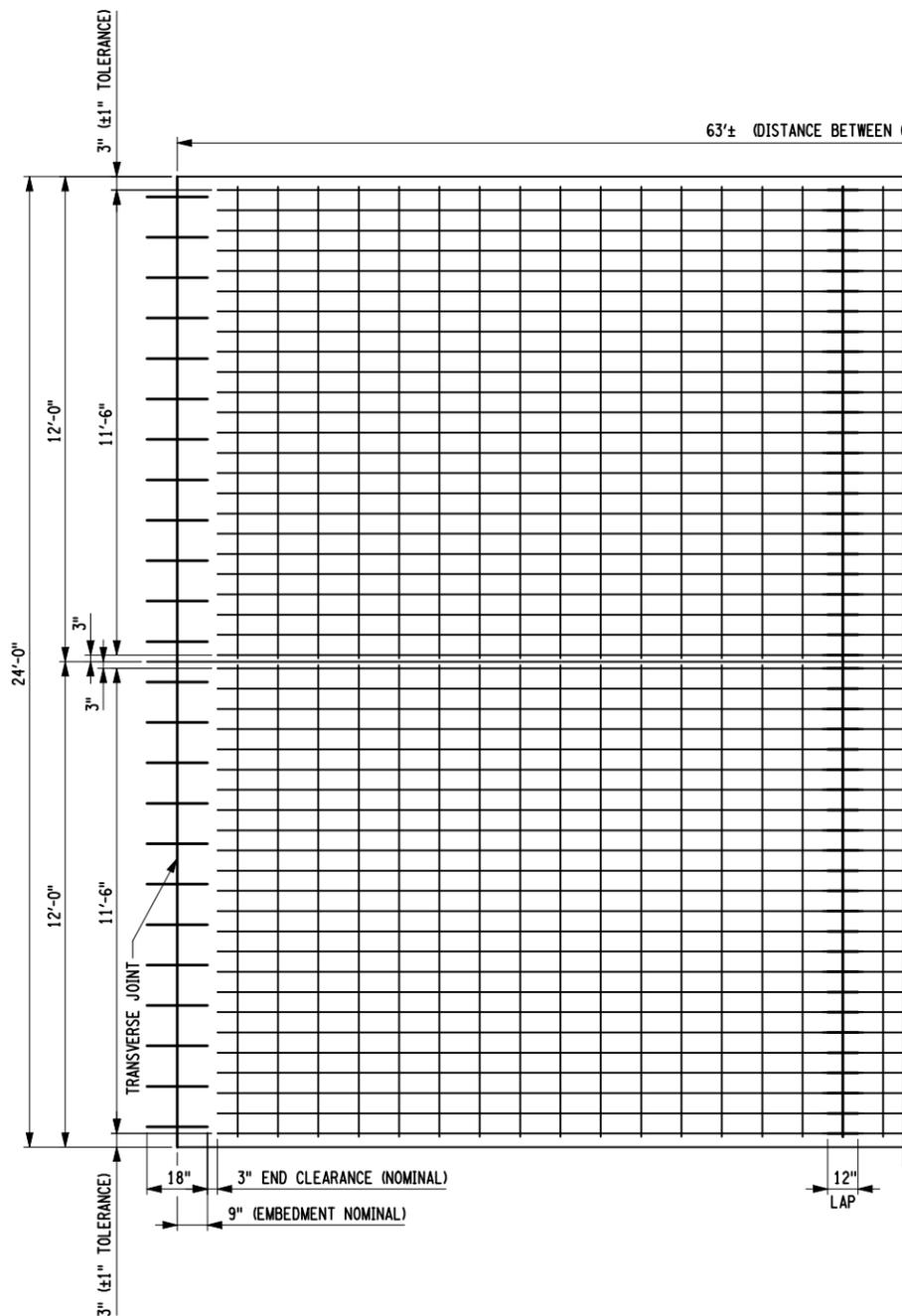
NOTES:

1. HOT MIX ASPHALT (HMA) OVERLAY SPLICES SHALL BE USED AT: ENDS OF HMA OVERLAY HIGHWAY SECTIONS, MAJOR INTERSECTIONS, AND OTHER LOCATIONS INDICATED IN THE PLANS.
  2. THE TRANSITION LENGTH IN FEET SHALL NOT BE LESS THAN THE VALUE OBTAINED BY MULTIPLYING THE EFFECTIVE OVERLAY THICKNESS IN INCHES (DIFFERENCE BETWEEN THE EXISTING AND THE OVERLAID ELEVATIONS) BY THE K VALUE FROM THE TABLE FOR THE POSTED SPEED OF THE HIGHWAY. THE MINIMUM TRANSITION LENGTH IS 30'.
- EXAMPLE: IF THE POSTED SPEED IS 55 MPH,  
EFFECTIVE OVERLAY THICKNESS = 2"  
THEN THE MINIMUM TRANSITION LENGTH  
= 2 INCHES x 30 FT/IN = 60 FEET
3. ALL SURFACES OF THE HMA OVERLAY SPLICE TRANSITION AREA SHALL BE CLEANED AND TACK-COATED PRIOR TO HMA PLACEMENT. THE COST OF MILLING REBATES, AND TACK COAT IN THE HMA OVERLAY SPLICE TRANSITION AREA SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEMS. COST OF LEAVING A NEAT EDGE SHALL BE INCLUDED IN THE MILLING ITEM.
  4. SAW CUTS SHALL BE MADE SO THAT SURFACE RUNOFF IS DIRECTED TO THE EDGE OF PAVEMENT.
  5. IN THE TRANSITION AREA, PAVEMENT COURSES OTHER THAN THE TOP COURSE SHALL BE FEATHERED OUT USING TOP COURSE OR OTHER APPROPRIATE MATERIAL. PAYMENT SHALL BE MADE UNDER THE APPROPRIATE ITEM.

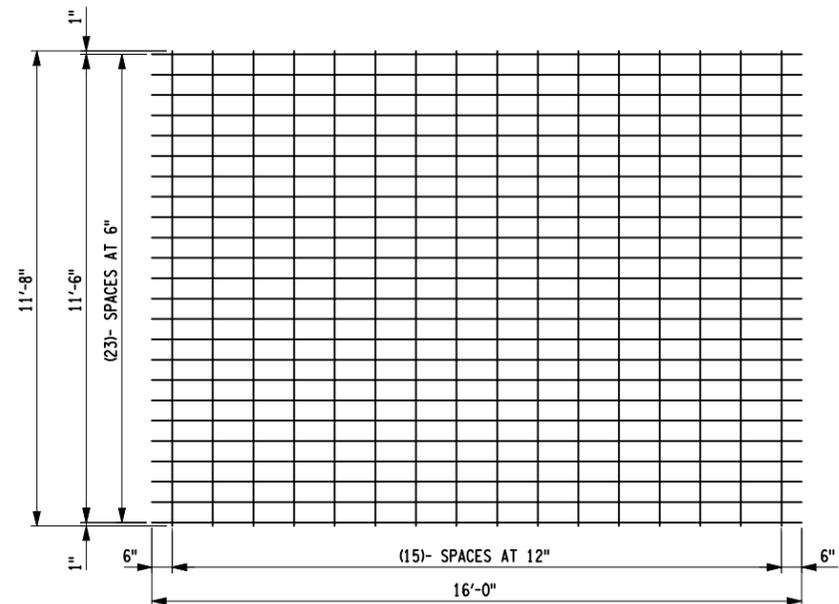
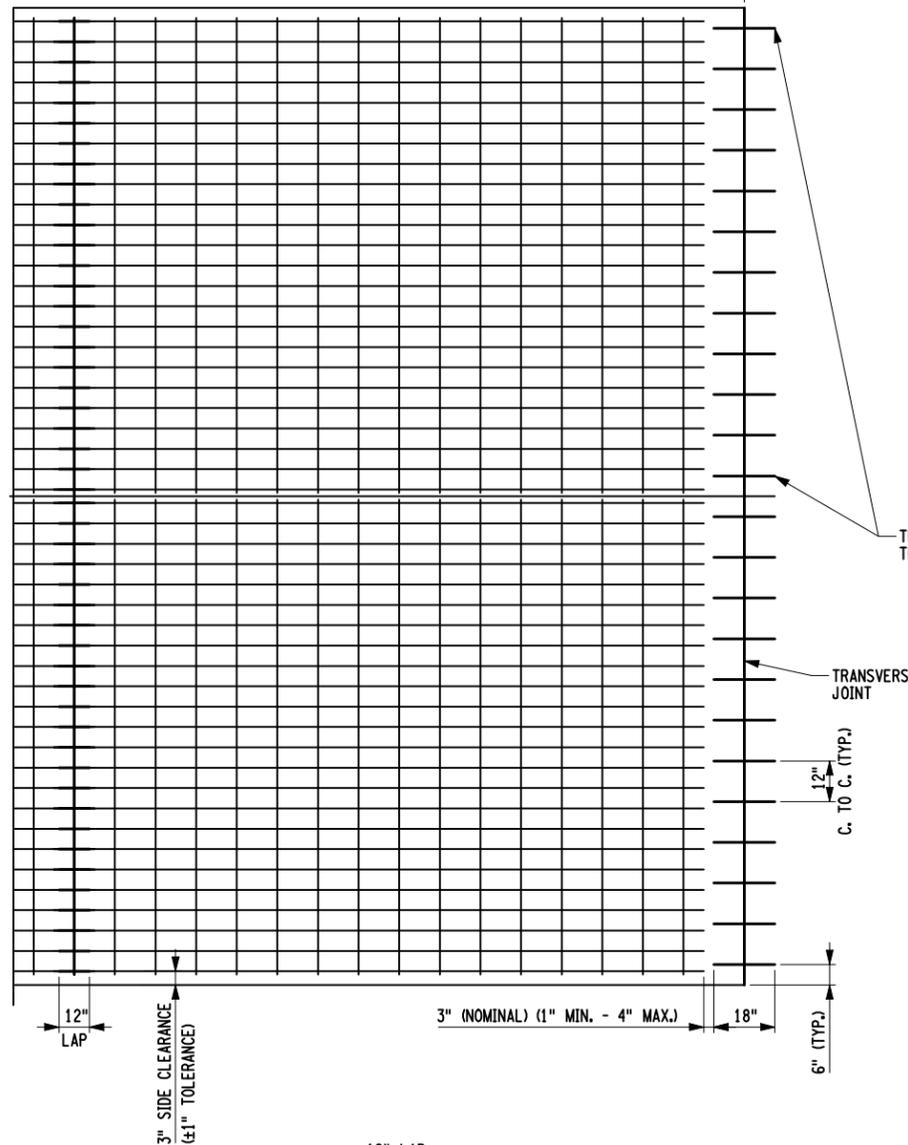
K VALUE TABLE FT/IN								
POSTED SPEED MPH	30	35	40	45	50	55	60	65
K	16.67	19.17	21.67	24.17	27.50	30.00	32.50	35.00

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
HOT MIX ASPHALT OVERLAY SPLICE (PAVEMENT TERMINATION DETAIL)		
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036	
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	402-01	

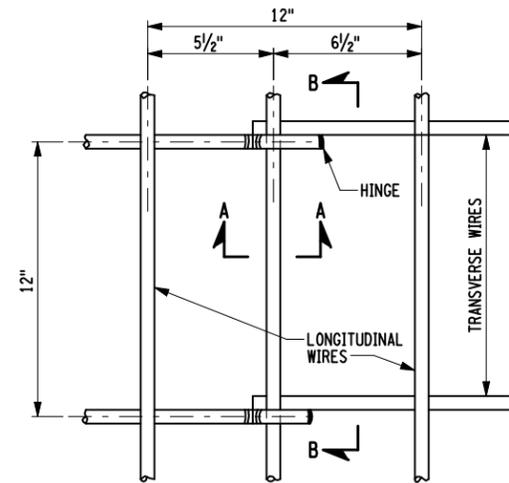
EFFECTIVE DATE: 01/08/09



63'± (DISTANCE BETWEEN CONTRACTION OR EXPANSION JOINTS)



TYPICAL SHEET OF FABRIC

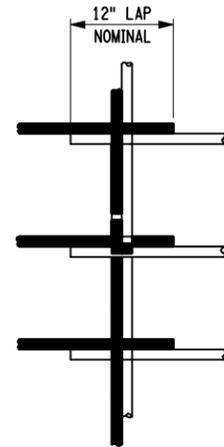


HINGE DETAILS

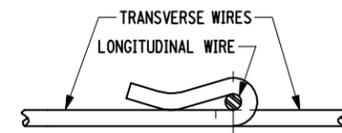
TABLE					
LONGITUDINAL MEMBER			TRANSVERSE MEMBER		
SIZE / GAUGE DESIGNATION	NOMINAL DIAMETER (IN.)	NOMINAL AREA (SQ. IN.)	SIZE / GAUGE DESIGNATION	NOMINAL DIAMETER (IN.)	NOMINAL AREA (SQ. IN.)
ASTM-A82 W8	0.319	0.080	ASTM-A82 W5	0.252	0.050

GENERAL NOTES:

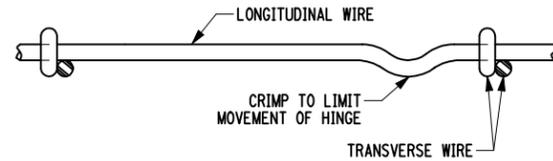
1. WELDED WIRE FABRIC SHALL BE SHEETS OF A NOMINAL 6" X 12" GRID PATTERN AND THE WIRES SHALL CONFORM TO THE SIZE AND GAUGE DESIGNATIONS IN THE TABLE.
2. SHEETS MAY BE HINGED AS SHOWN IN THE DETAIL. HINGED SHEET SHALL BE HINGED AT LEAST TWO LONGITUDINAL MEMBERS OFF CENTER, AND EACH ADJOINING SHEET SHALL BE REVERSED IN PLACING, IN ORDER THAT THE HINGES SHALL NOT OVERLAY EACH OTHER AT THE LAPS.
3. THE METAL REINFORCEMENT SHALL BE PLACED IN A MANNER APPROVED BY THE ENGINEER AT A NOMINAL DEPTH OF 4" BELOW THE SLAB SURFACE, THE MINIMUM ALLOWABLE DEPTH SHALL BE SUCH THAT 3" OF CONCRETE COVER IS PROVIDED. THE MAXIMUM ALLOWABLE DEPTH SHALL BE THE MID-POINT OF THE SLAB.
4. METAL REINFORCEMENT FURNISHED FOR CONCRETE PAVEMENT SLABS LESS THAN 10' IN WIDTH WILL BE PAID FOR UNDER AN APPROPRIATE ITEM.



LAP DETAIL



SECTION A-A

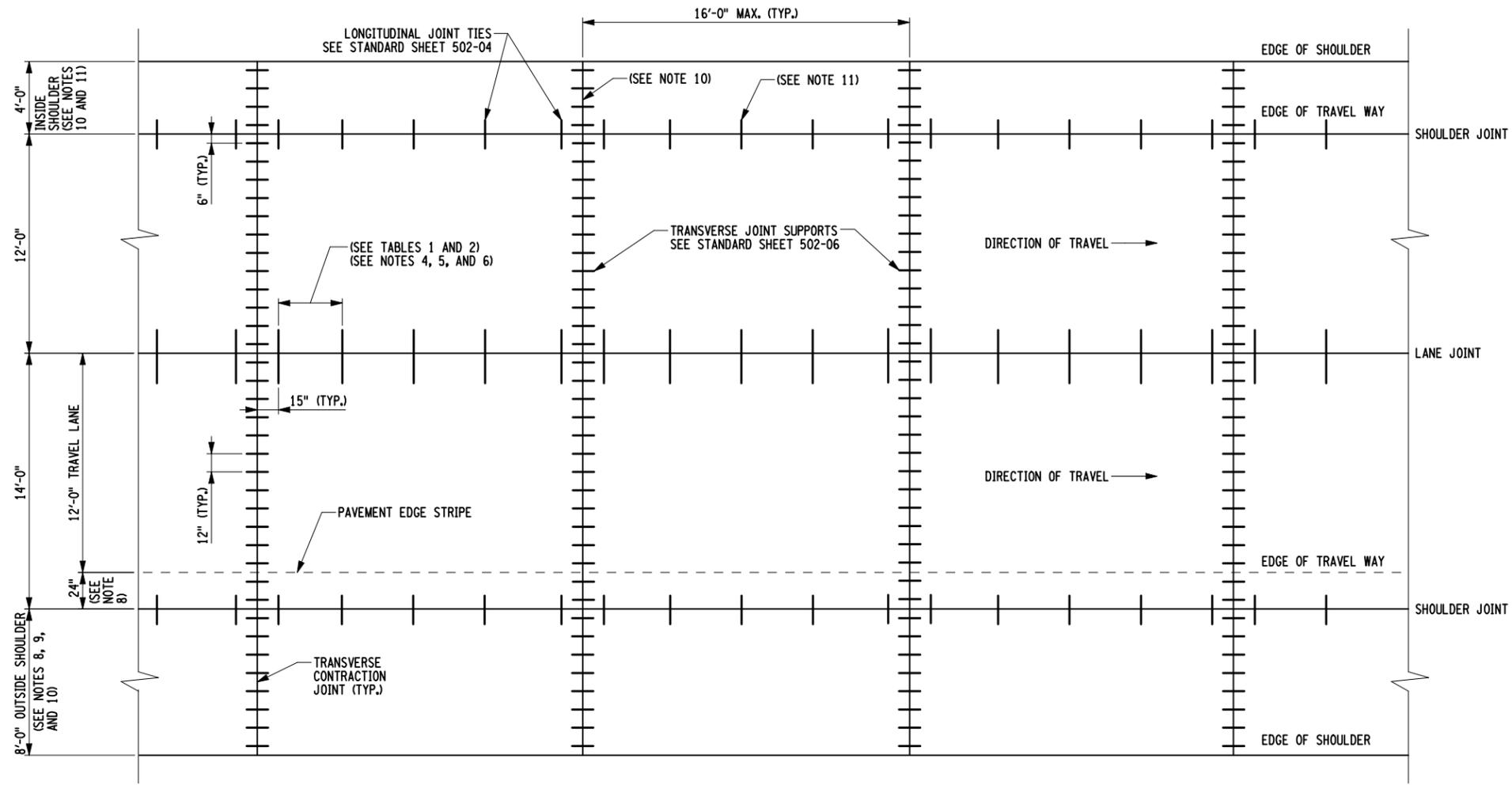


SECTION B-B

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>METAL REINFORCEMENT FOR CONCRETE PAVEMENT</b>	
APPROVED OCTOBER 15, 2008 /S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	ISSUED UNDER EB 08-036  <b>502-01</b>

EFFECTIVE DATE: 01/08/09

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**GENERAL NOTES:**

- PAVEMENT LAYER THICKNESSES PER CONTRACT DOCUMENTS.
- MAXIMUM SLAB LENGTH IS 16'-0". MINIMUM SLAB LENGTH IS 10'-0". USE SLAB LENGTHS WITHIN THIS RANGE TO SATISFY SITE CONDITIONS. REFER TO STANDARD SHEET 502-08, NOTE 3, FOR ADDITIONAL GUIDANCE ON SLAB GEOMETRY.
- LANE AND SHOULDER WIDTHS AND CROSS SLOPES SHOWN ARE TYPICAL. THESE MAY VARY PER CONTRACT DOCUMENTS. REFER TO STANDARD SHEET 502-08, NOTE 3, FOR ADDITIONAL GUIDANCE ON SLAB GEOMETRY.
- THE REQUIRED NUMBER OF LONGITUDINAL JOINT TIES PER SLAB IS BASED ON THE SLAB LENGTH AND THE MAXIMUM SPACING, SEE TABLES 1 AND 2.
- WHEN APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE SHORTER LONGITUDINAL JOINT TIES WITH A REDUCED MAXIMUM SPACING. THE CORRECTED MAXIMUM SPACING FOR THE SHORTER TIES IS CALCULATED AS FOLLOWS:

$$SC = (S) \times (LS/36) \quad \text{EQUATION (1)}$$

WHERE: SC = CORRECTED MAXIMUM TIE SPACING (IN.)  
S = MAXIMUM TIE SPACING FROM TABLES 1 AND 2 (IN.)  
LS = LENGTH OF SHORTER TIES (IN.)

MINIMUM TIE LENGTH IS 20". MAXIMUM TIE LENGTH IS 36". NO ADDITIONAL PAYMENT WILL BE MADE FOR THE ADDITIONAL NUMBER OF TIES.

- IN A FIXED FORM PAVING OPERATION, THE CONTRACTOR MAY DETERMINE THE REQUIRED MINIMUM NUMBER OF LONGITUDINAL JOINT TIES PER SLAB USING THE FOLLOWING:

$$N = \left\lceil \frac{(L-30)}{S} \right\rceil + 1 \quad \text{EQUATION (2)}$$

WHERE: N = NUMBER OF TIES PER SLAB (ROUNDED UP FOR DECIMAL VALUES GREATER THAN 0.2)  
L = SLAB LENGTH (IN.)  
S = MAXIMUM TIE BAR SPACING FROM TABLE 1 AND 2 (OR SC IF SHORTENED) (IN.)

INSERT THE REQUIRED MINIMUM NUMBER OF TIES PER SLAB INTO THE FORM HOLES SUCH THAT THE TIES ARE REASONABLY DISTRIBUTED WITHIN THE SLAB. MINIMUM TIE SPACING IS 12". MAXIMUM TIE SPACING IS FROM TABLES 1 AND 2.

- WHEN LONGITUDINAL JOINT TIES ARE PLACED ACROSS A JOINT CONTAINING A BREAK IN CROSS SLOPE, ENSURE THAT THE TIE ENDS HAVE 3" MINIMUM COVER. TIES MAY BE BENT TO ACHIEVE MINIMUM COVER OR SHORTENED TIES MAY BE USED (PER NOTE 5).
- CONSTRUCT THE LONGITUDINAL JOINT BETWEEN THE TRAVEL LANE AND THE OUTSIDE SHOULDER 24" OUTSIDE THE PAVEMENT EDGE STRIPE.
- REFER TO TABLE 2 FOR LONGITUDINAL JOINT TIE SPACING WHEN HOT MIX ASPHALT SHOULDERS ARE SPECIFIED. THE OUTSIDE SHOULDER MUST BE TIED PORTLAND CEMENT CONCRETE (PCC) IF THE 24" TRAVEL LANE WIDENING CAN NOT BE ACHIEVED DUE TO PROJECT CONSTRAINTS.
- CONSTRUCT TRANSVERSE JOINTS ACROSS TIED PORTLAND CEMENT CONCRETE (PCC) SHOULDERS. ALIGN TRANSVERSE JOINTS IN THE SHOULDER WITH TRANSVERSE JOINTS IN THE ADJACENT TRAVEL LANE.
- THE INSIDE LONGITUDINAL JOINT CAN BE OMITTED IF THE CONTRACTOR ELECTS TO PLACE THE SHOULDER AND ADJACENT TRAVEL LANE IN A SINGLE PLACEMENT. THE MAXIMUM PLACEMENT WIDTH IS 16'-0". REFER TO STANDARD SHEET 502-08, NOTE 3, FOR ADDITIONAL GUIDANCE ON SLAB GEOMETRY.

- CONSTRUCT ACCELERATION/DECELERATION LANES ABUTTING THE MAINLINE TO THE SAME STANDARD AS THE MAINLINE. SEPARATE DESIGNS BASED ON ANTICIPATED TRAFFIC VOLUMES MAY BE DEVELOPED FOR EACH RAMP AFTER DIVERGENCE FROM THE MAINLINE. PROVIDE REASONABLE TRANSITIONS TO DIFFERENT LAYER THICKNESSES AND PAVEMENT TYPES AS WELL AS CONSISTENT DRAINAGE BETWEEN THE DIFFERENT SECTIONS.

**TYPICAL PCC PAVEMENT PAVEMENT PLAN**

**TABLE 1 - LONGITUDINAL JOINT TIE SPACING TIED PORTLAND CEMENT CONCRETE (PCC) SHOULDERS**

SLAB THICKNESS (IN.)	MAXIMUM SPACING (IN.)							
	LANE JOINT (2 LANES)		LANE JOINT (3 AND 4 LANES)		CENTER JOINT (4 LANES)		SHOULDER JOINT	
	WARP JOINT	BUTT JOINT	WARP JOINT	BUTT JOINT	WARP JOINT	BUTT JOINT	WARP JOINT	BUTT JOINT
9"	47"	30"	37"	26"	31"	23"	47"	31"
10"	47"	30"	37"	26"	26"	21"	47"	31"
11"	47"	30"	31"	23"	23"	17"	47"	31"
12"	37"	26"	31"	23"	21"	17"	47"	31"
13"	37"	26"	26"	21"	21"	17"	47"	31"

\* WARP JOINTS AND BUTT JOINTS ARE DEPICTED ON STANDARD SHEET 502-03

**TABLE 2 - LONGITUDINAL JOINT TIE SPACING HOT MIX ASPHALT SHOULDERS**

SLAB THICKNESS (IN.)	MAXIMUM SPACING (IN.)					
	LANE JOINT (2 LANES)		LANE JOINT (3 AND 4 LANES)		CENTER JOINT (4 LANES)	
	WARP JOINT	BUTT JOINT	WARP JOINT	BUTT JOINT	WARP JOINT	BUTT JOINT
9"	47"	30"	47"	31"	37"	26"
10"	47"	30"	47"	31"	31"	23"
11"	47"	30"	47"	31"	27"	20"
12"	47"	30"	37"	26"	27"	20"
13"	47"	30"	37"	26"	23"	17"

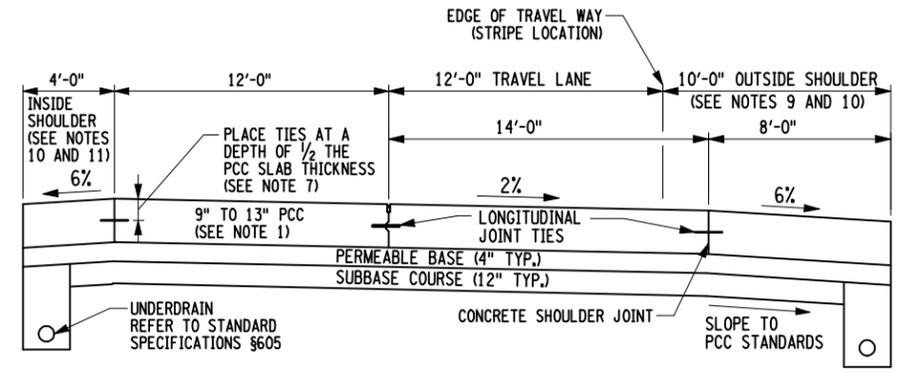
\* WARP JOINTS AND BUTT JOINTS ARE DEPICTED ON STANDARD SHEET 502-03

**TABLE 3 - JOINT REINFORCEMENT**

PROPERTY	LONGITUDINAL JOINT TIES	TRANSVERSE JOINT DOWELS
MATERIAL	GRADE 60 STEEL	GRADE 60 STEEL
SURFACE	DEFORMED	PLAIN (SMOOTH)
COATING	EPOXY COATED	EPOXY COATED
DIAMETER	3/4"	VARIES (SEE TABLE 4)
STANDARD LENGTH	36" FOR LANE JOINTS 20" FOR SHOULDER JOINTS	18" (TRAVEL LANES ONLY)
SPACING	(SEE TABLES 1 AND 2) (NOTES 4, 5, AND 6) (13" MIN. TO 47" MAX.)	12"
PLACEMENT LOCATION	CENTER ACROSS THE JOINT AND AT A DEPTH OF 1/2 THE SLAB THICKNESS	CENTER ACROSS THE JOINT AND AT A DEPTH OF 1/2 THE SLAB THICKNESS
STANDARD JOINT OFFSET	15" (TYP.) FROM TRANSVERSE JOINT	6" (TYP.) FROM LONGITUDINAL JOINT

**TABLE 4 - DOWEL BAR DIAMETER**

SLAB THICKNESS (IN.)	DOWEL DIAMETER (IN.)
9" - 10"	1 1/4"
11" - 13"	1 1/2"

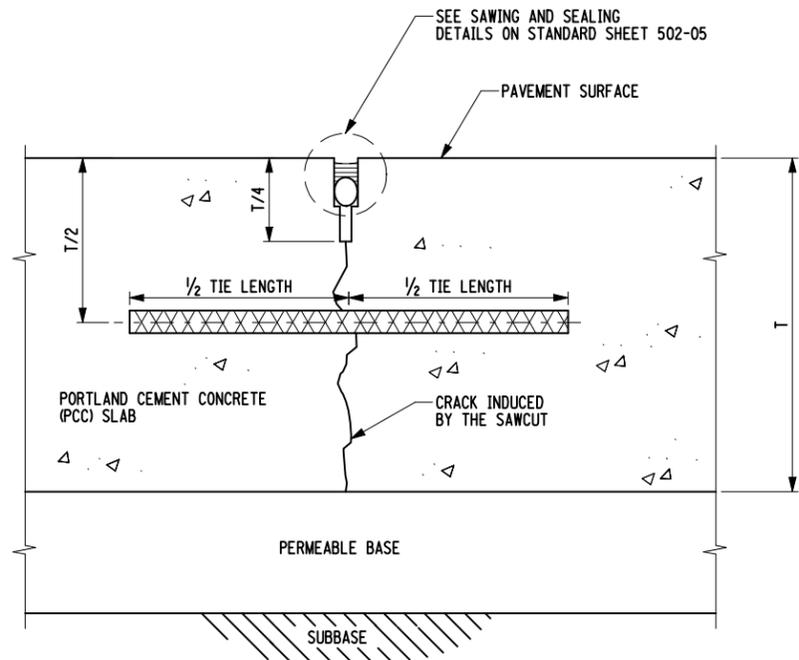


**TYPICAL PCC PAVEMENT CROSS SECTION (POINT OF VIEW IS IN DIRECTION OF TRAVEL)**

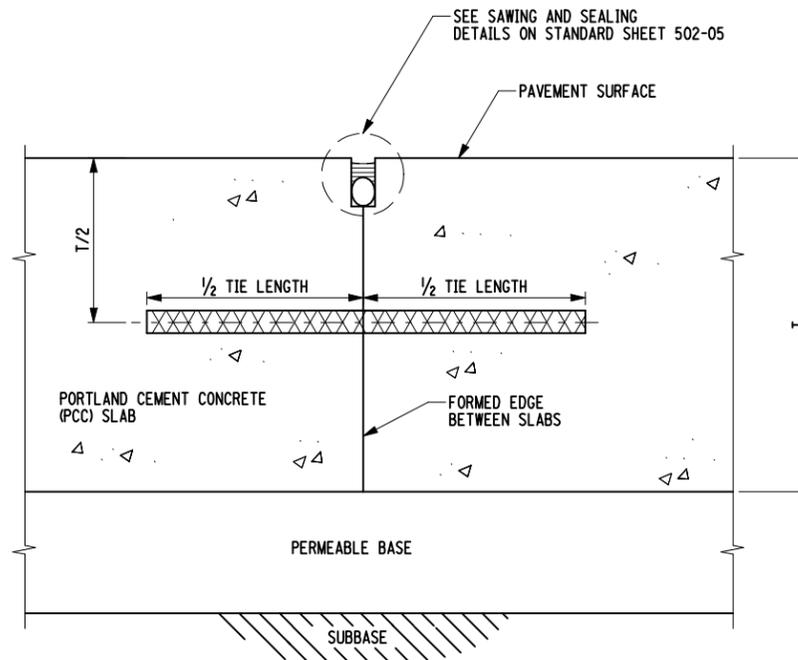
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U.S. CUSTOMARY STANDARD SHEET	
TYPICAL PLAN, CROSS SECTION AND JOINT LAYOUT	
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/s/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	502-02

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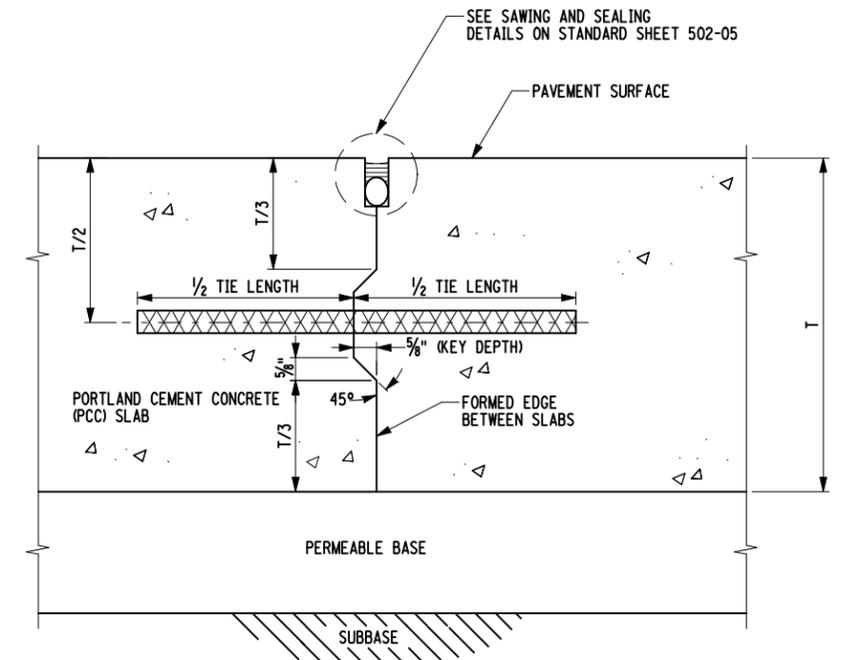
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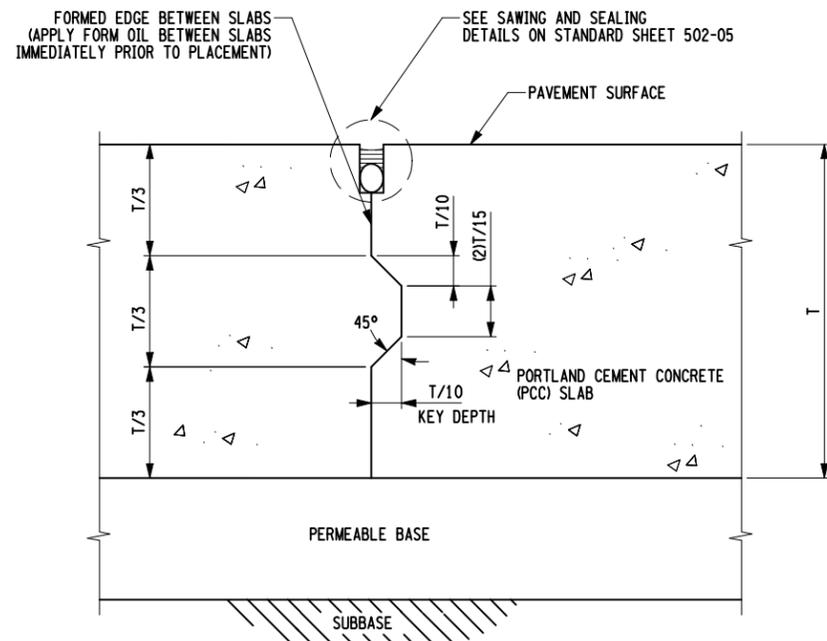
DETAIL "A"  
SAWED LONGITUDINAL JOINT  
BETWEEN LANES PLACED SIMULTANEOUSLY  
(WARP JOINT)



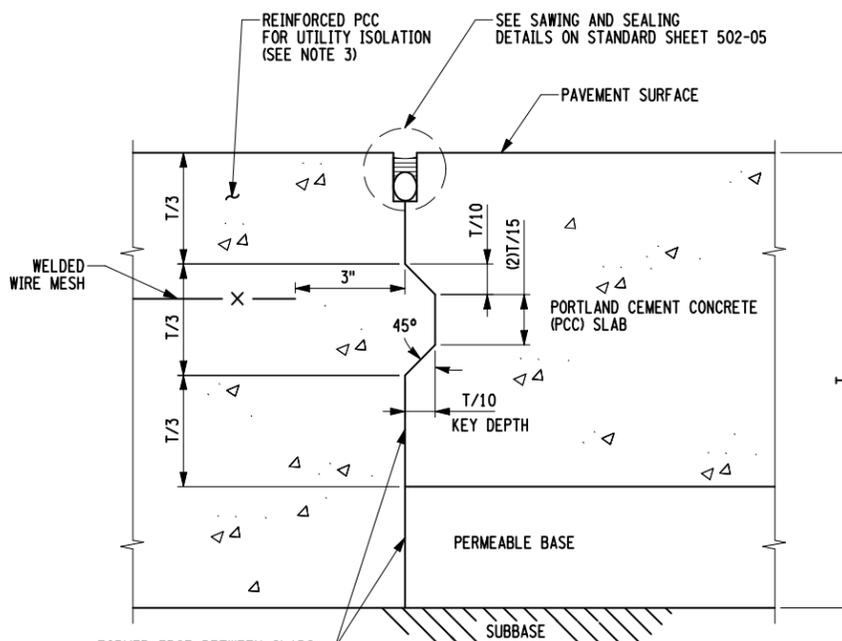
DETAIL "B"  
FORMED LONGITUDINAL JOINT  
BETWEEN LANES PLACED SEPARATELY  
(BUTT JOINT - SEE NOTE 2)



DETAIL "C"  
FORMED LONGITUDINAL JOINT  
BETWEEN LANES PLACED SEPARATELY  
(WARP JOINT)



DETAIL "D"  
UNTIED LONGITUDINAL JOINT  
(SHEAR KEY)



DETAIL "E"  
UNTIED LONGITUDINAL JOINT  
SHEAR KEY FOR UTILITY ISOLATION

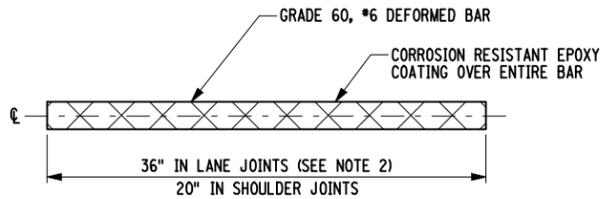
GENERAL NOTES:

1. PLACE THE FEMALE END OF THE KEYWAY FIRST.
2. BUTT JOINTS ARE ONLY USED BETWEEN LANES PLACED SEPARATELY. IN THIS CASE, THE CONTRACTOR MAY USE EITHER A BUTT JOINT OR A KEYED WARP JOINT. THE ENGINEER MAY REQUIRE THE CONTRACTOR TO CONSTRUCT A BUTT JOINT IF THE KEYWAY CONCRETE CAN NOT BE ADEQUATELY CONSOLIDATED IN THE ENGINEER'S OPINION. BUTT JOINTS MAY REQUIRE ADDITIONAL TIES. SEE TABLES 1 AND 2 ON STANDARD SHEET 502-02.
3. REFER TO STANDARD SHEETS 502-08 THROUGH 502-15 FOR MORE DETAILED INFORMATION REGARDING ISOLATION PAVEMENT.
4. A TIED SHEAR KEY HAS A STANDARD KEY DEPTH OF 5/8", WHILE AN UNTIED SHEAR KEY HAS A KEY DEPTH BASED ON THE PORTLAND CEMENT CONCRETE (PCC) SLAB THICKNESS.
5. SLAB THICKNESS (T) PER CONTRACT DOCUMENTS.

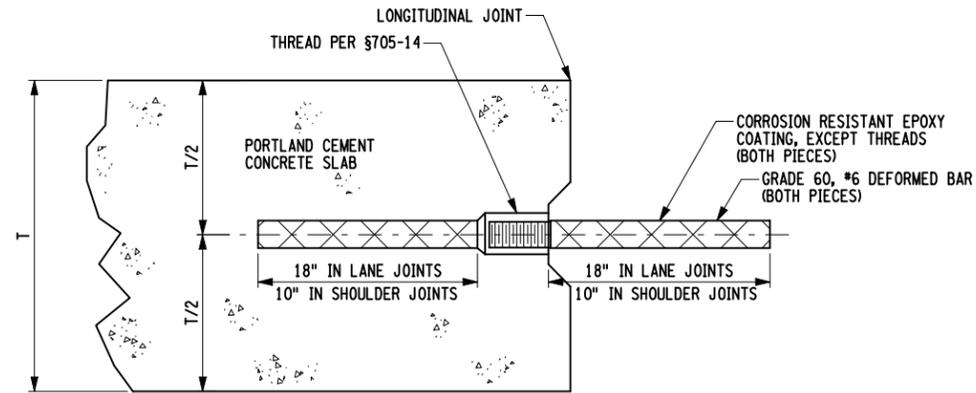
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LONGITUDINAL JOINTS		
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/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	502-03	

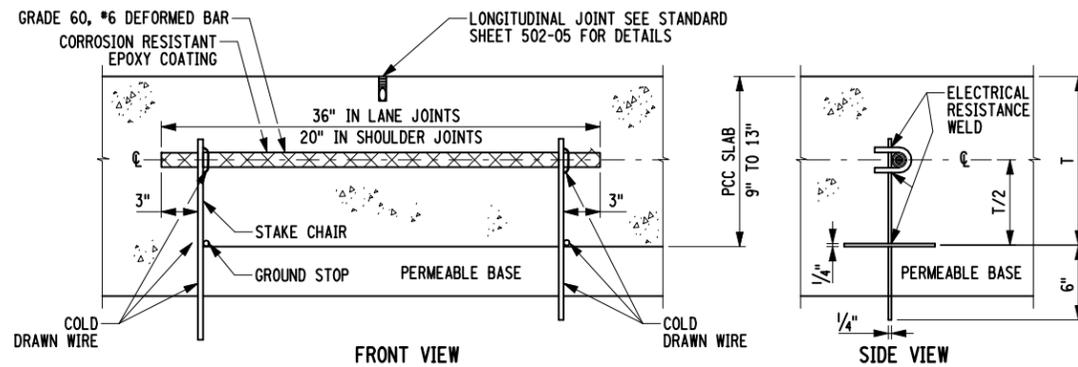
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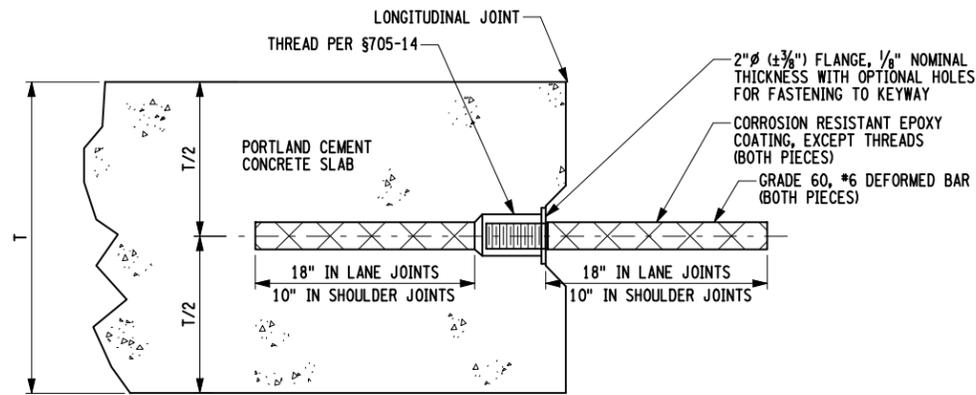
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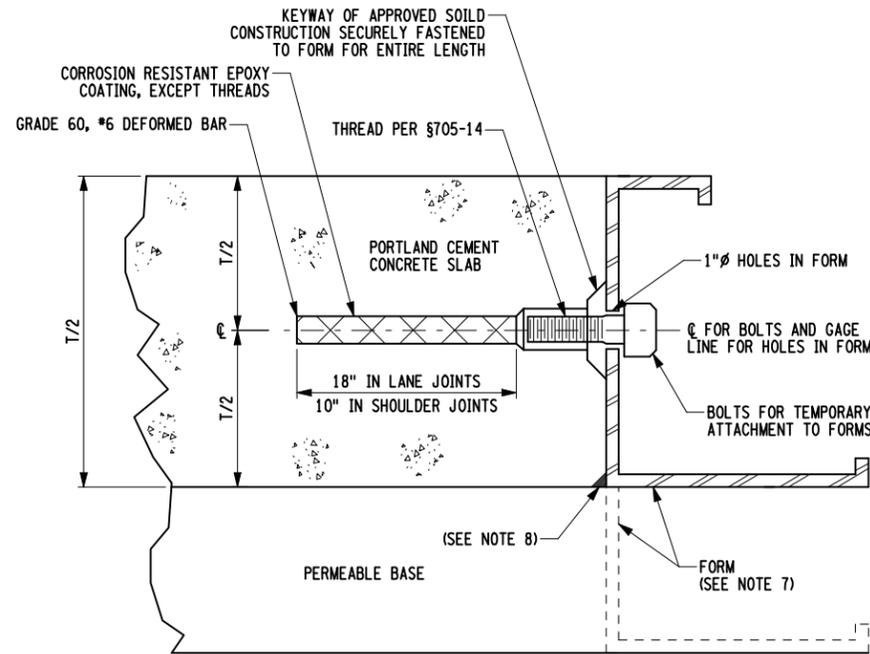
PUSH-IN-TYPE  
(SEE NOTE 6)



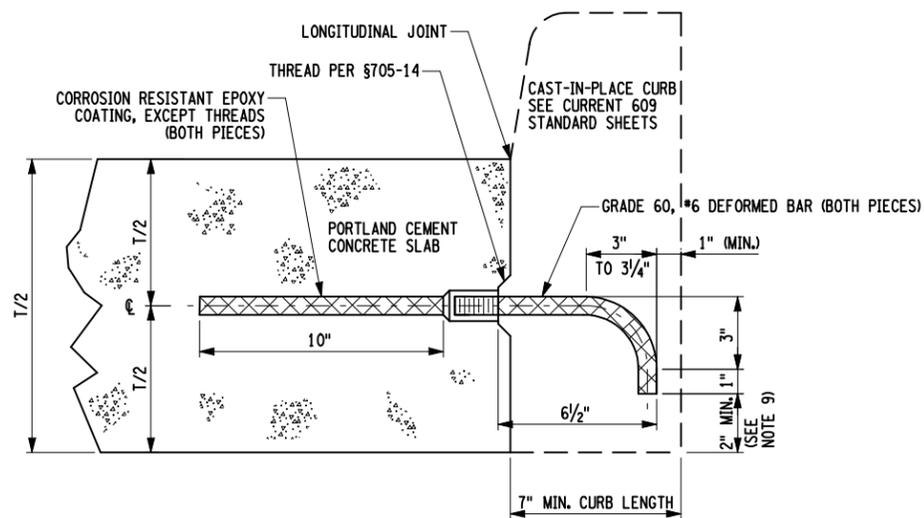
LONGITUDINAL JOINT TIE SUPPORTS  
(SEE NOTE 9)



PUSH-IN-TYPE WITH FLANGE  
(SEE NOTE 6)



FIXED FORM PAVING



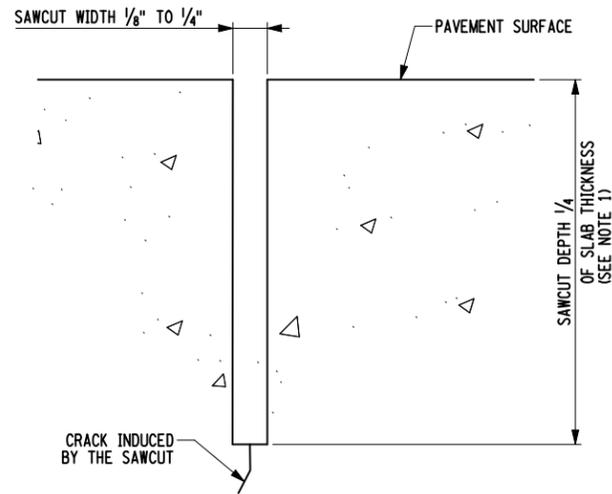
PUSH-IN-TYPE WITH HOOK (FOR CURB ONLY)  
(SEE NOTE 6)

GENERAL NOTES:

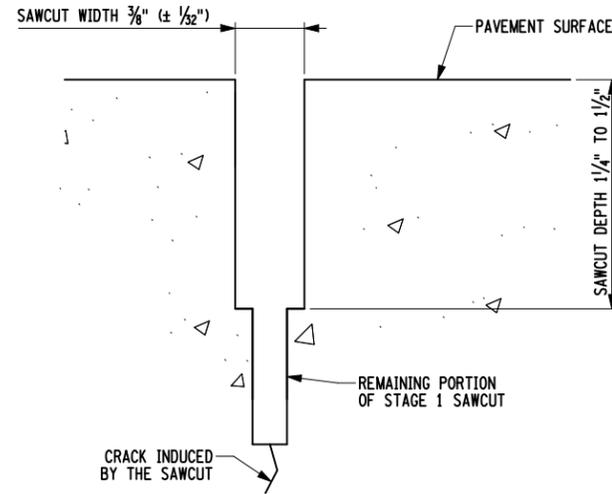
- LONGITUDINAL JOINT TIES MUST MEET THE REQUIREMENTS OF §705-14. ALL THREADED TIE ENDS MUST HAVE 1" MINIMUM OF THREADED LENGTH.
- LONGITUDINAL JOINT TIES IN LANE JOINTS (BETWEEN TRAVEL LANES) ARE TYPICALLY 36" LONG. TIES IN SHOULDER JOINTS (BETWEEN TRAVEL LANE AND SHOULDER) ARE TYPICALLY 20" LONG. PUSH-IN-TYPE TIES ARE MADE OF TWO PIECES TO ACHIEVE TOTAL LENGTH OF 36" OR 20".
- FOR APPROVED CORROSION RESISTANT COATINGS, REFER TO §705-14, LONGITUDINAL JOINT TIES, AND ITS ASSOCIATED APPROVED LIST. CUT ENDS OF TIES DO NOT NEED TO BE COATED.
- APPLY AN APPROVED CORROSION INHIBITIVE COATING TO THE MALE PORTION OF THE THREADED CONNECTIONS SUCH THAT AN UNBROKEN SEAL WITH THE EPOXY IS FORMED WHEN THE TWO PIECES ARE FIRMLY TIGHTENED. DO NOT DAMAGE THE EPOXY COATING WHEN TIGHTENING THE TWO PIECE TIES.
- ALTERNATE TIE ASSEMBLY AND ANCHORAGE METHODS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER.
- PUSH-IN-TYPE TIES FOR SLIP FORM PAVING REQUIRE A PLUG TO SEAL THE FEMALE THREADS AND KEEP THE CONNECTION CLEAN.
- IT IS THE CONTRACTOR'S OPTION TO PLACE FIXED FORMS EITHER ATOP THE PERMEABLE BASE COURSE OR PLACE THE PERMEABLE BASE COURSE WITHIN THE FORMS.
- WHEN FIXED FORM PAVING WITH THE PERMEABLE BASE COURSE WITHIN THE FORMS, APPLY A MASONRY CAULK BEAD TO THE TOP EDGE OF PERMEABLE BASE WHERE IT MEETS THE FORM TO PREVENT CEMENT PASTE INFILTRATION ALONG THE PERMEABLE BASE FACE. CAULK IS NOT NEEDED IF EDGE DRAIN IS PLACED INSIDE OF THE FORM. THERE ARE NO MATERIAL REQUIREMENTS FOR THE MASONRY CAULK.
- MAXIMUM SPACING BETWEEN HOOK BARS IS 47". INSTALL HOOK BARS SUCH THAT THE END OF THE HOOK BARS ARE VERTICALLY ALIGNED BELOW THE STRAIGHT PORTION OF BAR. IF THE 2" MINIMUM CLEARANCE TO THE BOTTOM OF THE CURB DICTATES, THE HOOK MAY BE ROTATED UP TO 45° TO THE SIDE.
- REFER TO STANDARD SHEET 502-02 FOR TYPICAL TIE LAYOUT INFORMATION.
- SLAB THICKNESS (T) PER CONTRACT DOCUMENTS.

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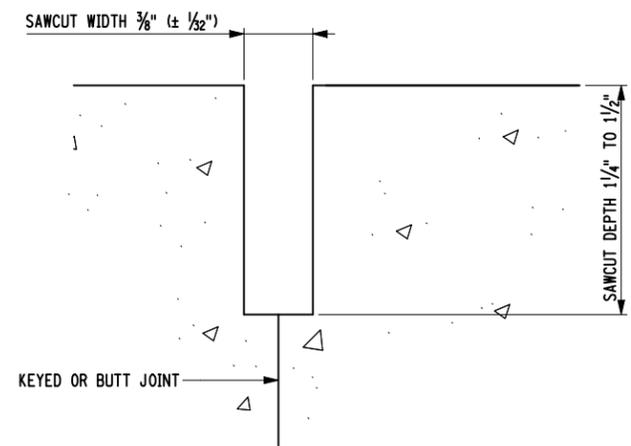
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LONGITUDINAL JOINT TIES		
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/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)		502-04
EFFECTIVE DATE: 01/08/09		



STAGE 1 SAWCUT



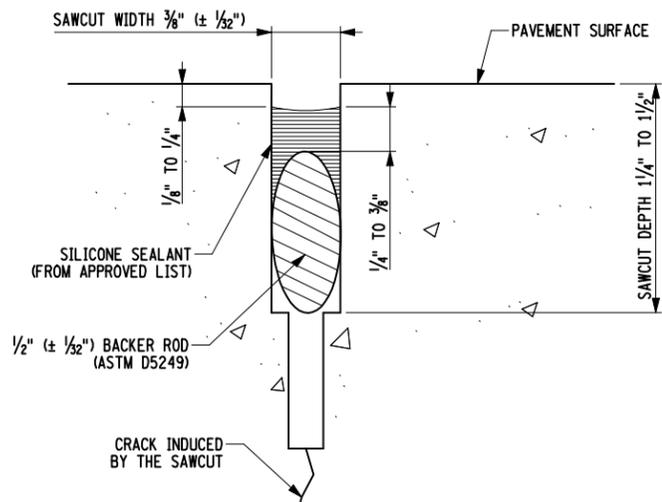
STAGE 2 SAWCUT



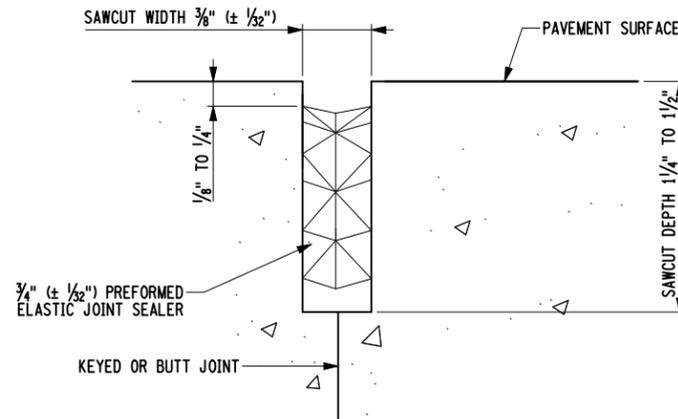
DETAIL "B"  
SAWCUT BETWEEN LANES PLACED SIMULTANEOUSLY

DETAIL "A"  
TWO STAGE SAWCUT BETWEEN LANES PLACED SIMULTANEOUSLY

LONGITUDINAL JOINT SAWCUTTING



DETAIL "C"  
SILICONE SEAL OPTION  
(SEE NOTE 3)



DETAIL "D"  
PREFORMED ELASTIC LONGITUDINAL JOINT SEALER OPTION (§705-10)  
(SEE NOTE 3)

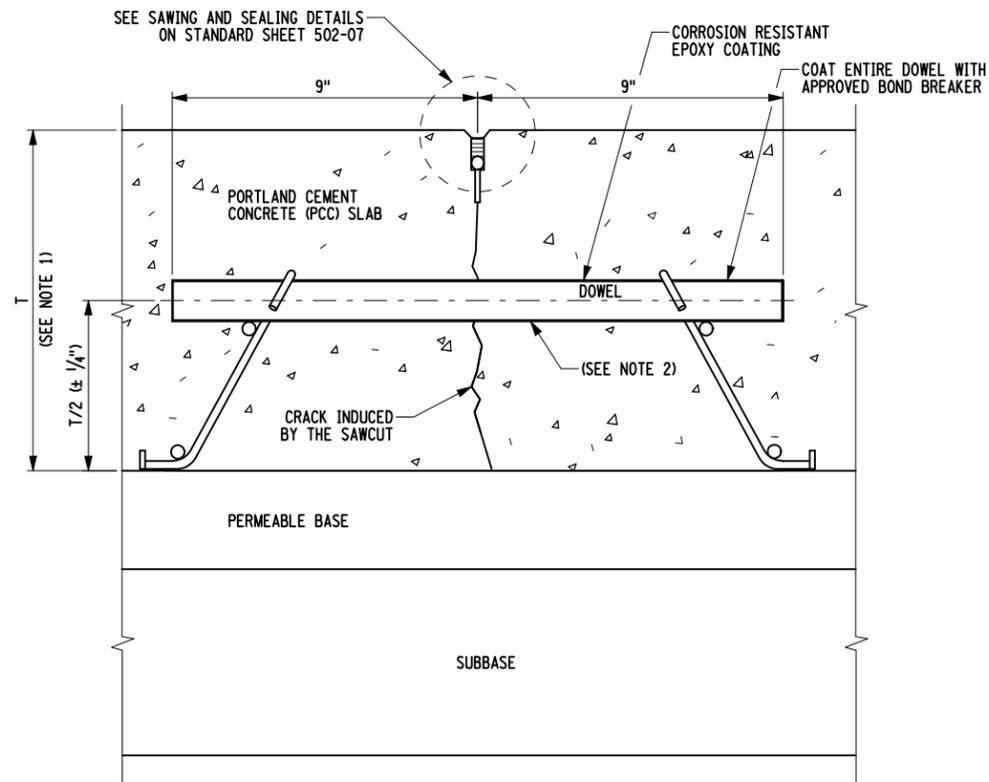
LONGITUDINAL JOINT SEALING

GENERAL NOTES:

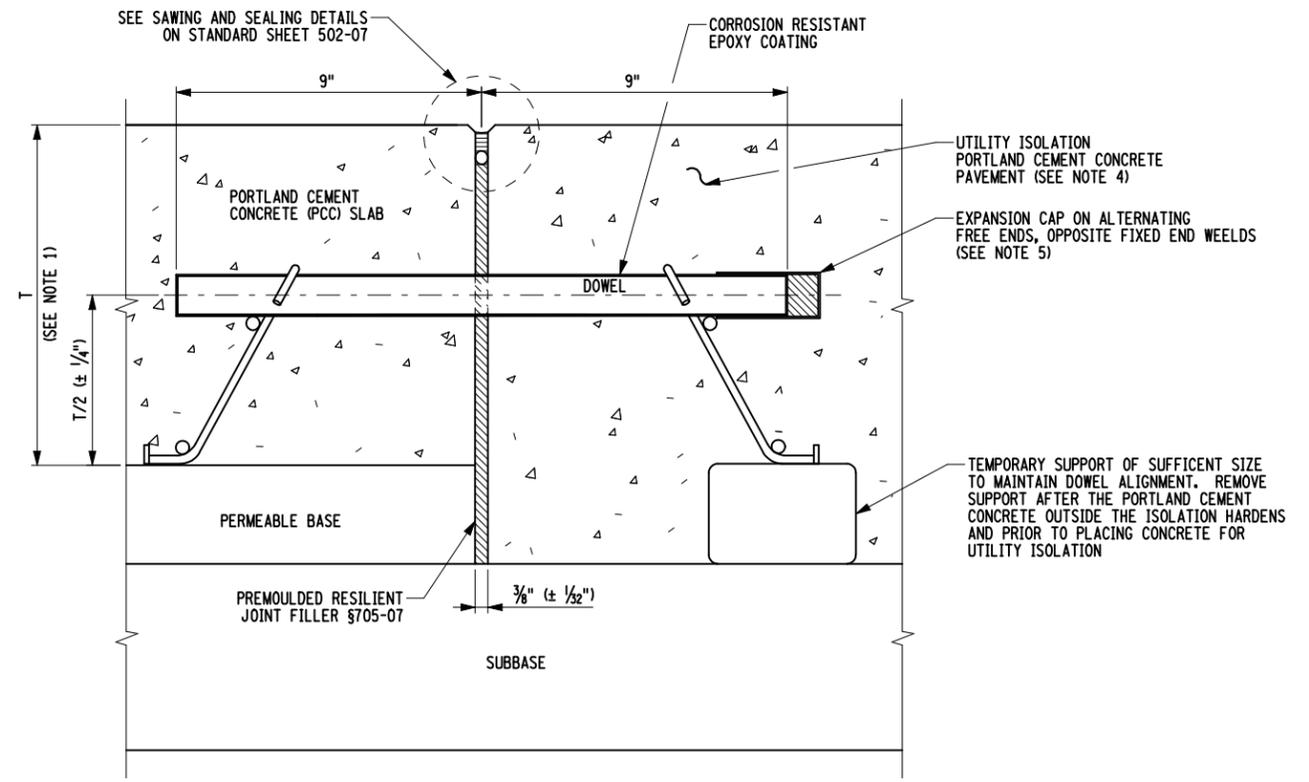
1. PAVEMENT SLAB THICKNESS PER CONTRACT DOCUMENTS.
2. STAGE 1 SAWCUTS ARE NOT REQUIRED BETWEEN LANES PLACED SEPARATELY.
3. USE OF SILICONE OR PREFORMED ELASTIC LONGITUDINAL JOINT SEALER IS THE CONTRACTOR'S OPTION UNLESS MATERIAL TYPE IS SPECIFIED IN THE CONTRACT DOCUMENTS.

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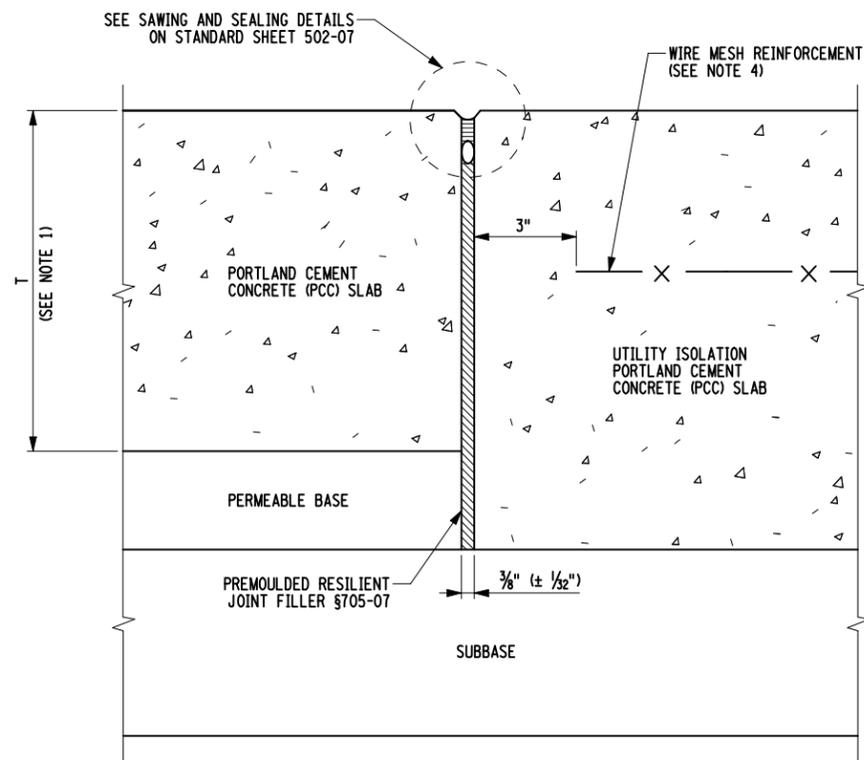
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LONGITUDINAL JOINT SAWING AND SEALING		
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DETAIL "A"  
CONTRACTION JOINT



DETAIL "B"  
EXPANSION JOINT  
(UTILITY ISOLATION CONDITION SHOWN)



DETAIL "C"  
ISOLATION JOINT  
(UTILITY ISOLATION CONDITION SHOWN)  
NOTE: AN ISOLATION JOINT CONTAINS NO LOAD TRANSFER DEVICE

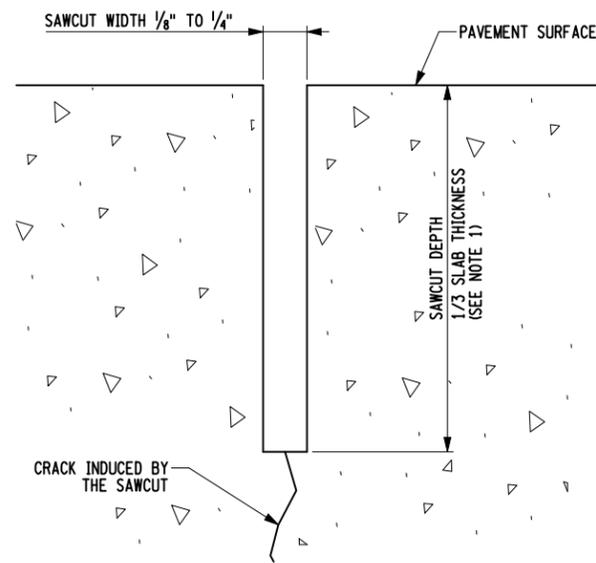
GENERAL NOTES:

1. SLAB THICKNESS (T) PER CONTRACT DOCUMENTS.
2. SEE STANDARD SHEET 502-02 FOR DOWEL DIAMETER AND PLACEMENT INFORMATION.
3. TRANSVERSE JOINT SUPPORTS MUST MEET REQUIREMENTS OF NYS DOT STANDARD SPECIFICATION §705-15.
4. UTILITY ISOLATION PORTLAND CEMENT CONCRETE (PCC) PAVEMENT IS EITHER WIRE MESH REINFORCED OR HEAVILY REINFORCED. SEE STANDARD SHEETS 502-08 THROUGH 502-15 FOR ADDITIONAL DETAILS.
5. DO NOT TAP EXPANSION CAPS ONTO DOWELS.
6. FOR APPROVED CORROSION RESISTANT COATINGS, REFER TO §705-15, TRANSVERSE JOINT SUPPORTS AND ITS APPROVED LIST. CUT ENDS OF DOWELS DO NOT NEED TO BE COATED.

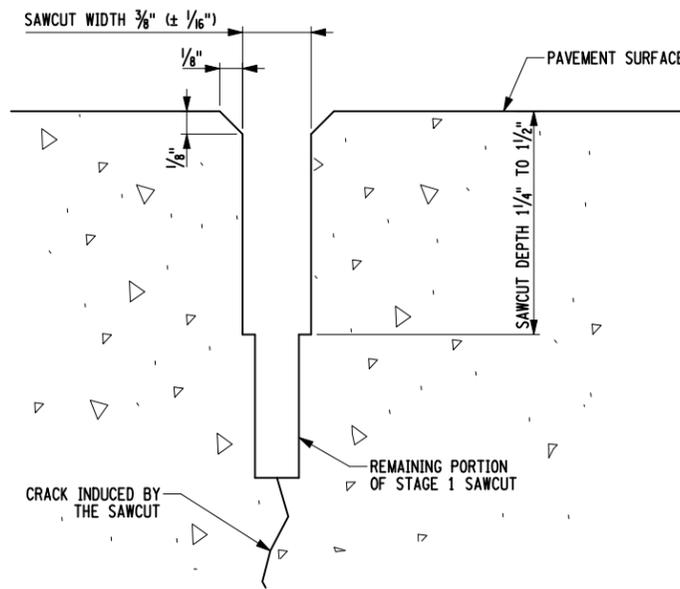
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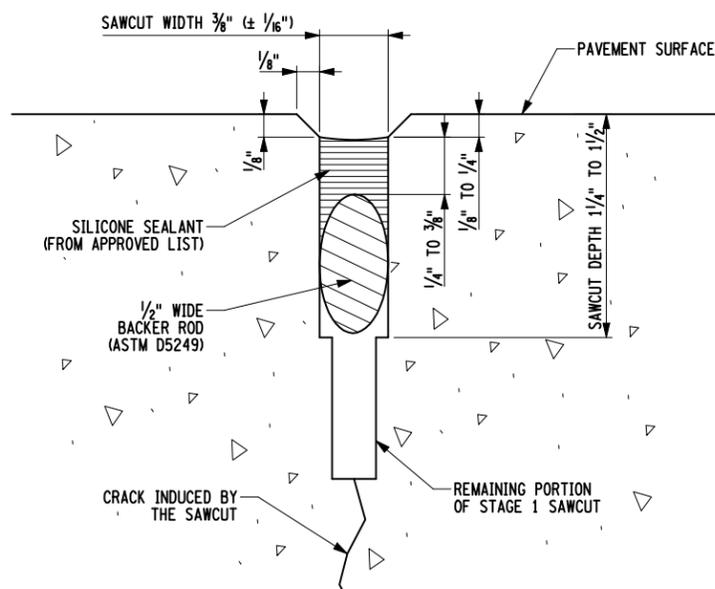
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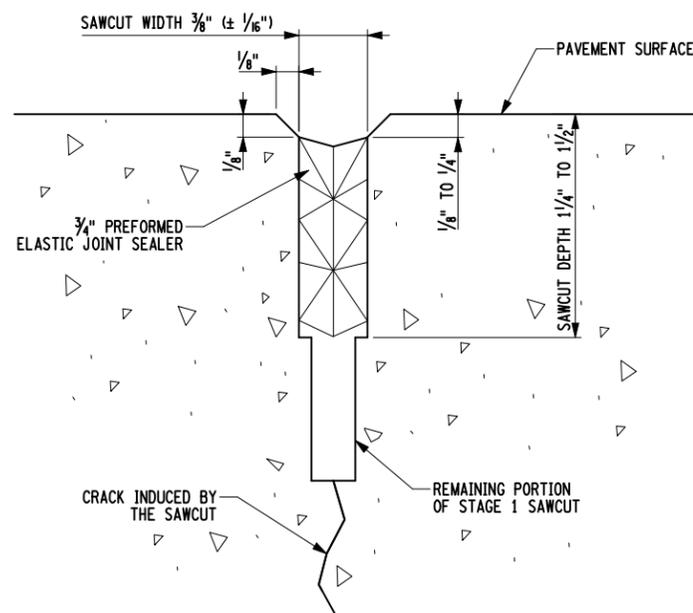
STAGE 1 SAWCUT



STAGE 2 SAWCUT

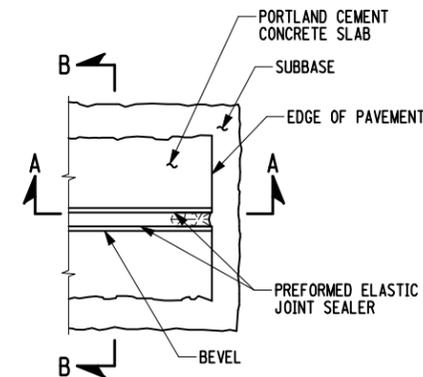


SILICONE SEAL OPTION  
(SEE NOTE 5)

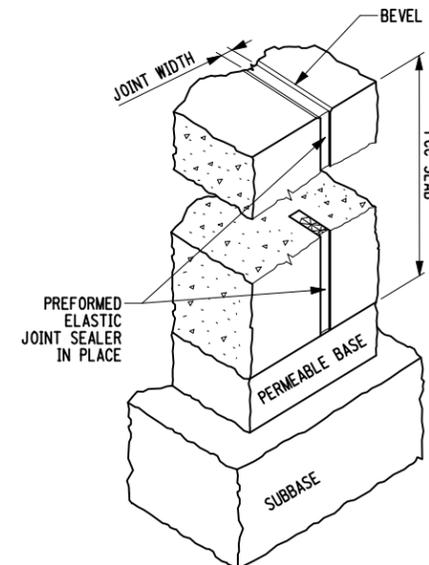


PREFORMED ELASTIC TRANSVERSE CONTRACTION  
AND EXPANSION JOINT SEALER OPTION (§705-12)  
(SEE NOTE 5)

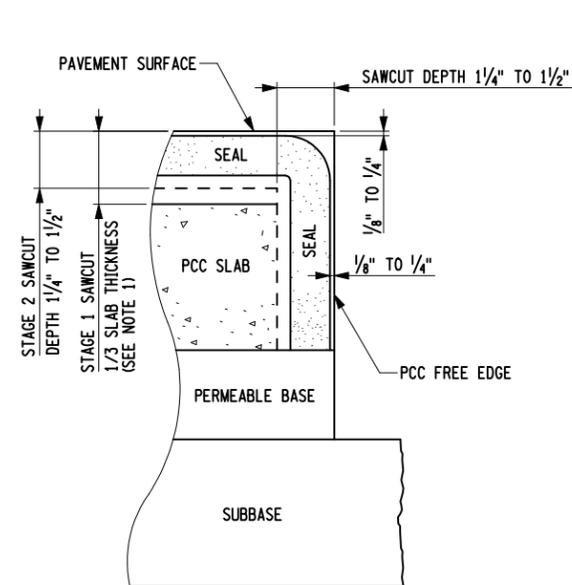
TRANSVERSE JOINT SEALING



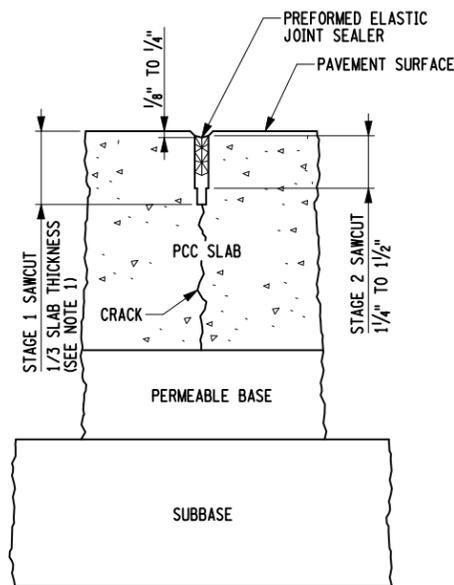
PLAN VIEW



ISOMETRIC VIEW



SECTION A-A



SECTION B-B

PREFORMED ELASTIC JOINT SEALER INSTALLATION AT EDGE OF PAVEMENT  
(SAWCUT THE JOINT DOWN THE SIDE OF THE SLAB)  
(SEE NOTE 6)

GENERAL NOTES:

1. SLAB THICKNESS PER CONTRACT DOCUMENTS.
2. EXPANSION, CONTRACTION, AND ISOLATION JOINTS DO NOT REQUIRE STAGE 1 SAWCUTS.
3. PERFORM STAGE 2 SAWCUTS WITH BEVEL ON CONSTRUCTION JOINTS. SEAL CONSTRUCTION JOINTS EXACTLY LIKE CONTRACTION JOINTS.
4. ROUT AND BEVEL EXPANSION AND ISOLATION JOINTS TO THE STAGE 2 SAWCUT DIMENSIONS. SEAL EXPANSION AND ISOLATION JOINTS EXACTLY LIKE CONTRACTION JOINTS.
5. USE OF SILICONE OR PREFORMED ELASTIC JOINT SEALER IS THE CONTRACTOR'S OPTION UNLESS MATERIAL TYPE IS SPECIFIED IN THE CONTRACT DOCUMENTS.
6. THE STAGE 2 SAWCUT DOWN THE SIDE OF THE SLAB IS ONLY REQUIRED FOR THE PREFORMED ELASTIC SEALER OPTION, NOT THE SILICONE SEAL OPTION.
7. CONSTRUCT TRANSVERSE JOINTS ACROSS TIED PORTLAND CEMENT CONCRETE (PCC) SHOULDERS. ALIGN TRANSVERSE JOINTS IN THE SHOULDER WITH TRANSVERSE JOINTS IN THE ADJACENT TRAVEL LANE.

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TRANSVERSE JOINT SAWING AND SEALING	
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/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	502-07

EFFECTIVE DATE: 01/08/09

UTILITY ISOLATION AND JOINT LAYOUT GENERAL NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE FINAL JOINT LAYOUT BASED ON THE ACTUAL LOCATIONS OF UTILITIES AND DRAINAGE STRUCTURES WITHIN THE PAVEMENT AND CONSTRUCTION STAGING. THE CONTRACTOR MUST SUBMIT A PROPOSED JOINT LAYOUT TO THE ENGINEER AT LEAST 10 DAYS BEFORE PAVING BEGINS. THE CONTRACTOR WILL REVISE THE PLAN UNTIL IT MEETS THE ENGINEER'S APPROVAL. PAVING SHALL NOT BEGIN UNTIL THE JOINT LAYOUT IS APPROVED BY THE ENGINEER.
2. JOINT LAYOUT METHODOLOGY
  - A. LOCATE LONGITUDINAL JOINTS.
  - B. LOCATE UTILITIES AND DRAINAGE STRUCTURES. WHENEVER POSSIBLE, POSITION UTILITIES AND DRAINAGE STRUCTURES (OTHER THAN CATCH BASINS) SUCH THAT 1.) THE STRUCTURES ARE BETWEEN WHEEL PATHS, AND 2.) THE STRUCTURES ARE LONGITUDINALLY SPACED TO ALLOW OPTIMAL ISOLATION TECHNIQUES (REFER TO STANDARD SHEET 502-14, DETAILS A, C, D, AND F).
  - C. SELECT A TELESCOPING CASTING OR THE MOST APPROPRIATE ISOLATION TECHNIQUE FOR EACH UTILITY, DRAINAGE STRUCTURE, AND/OR GROUP THEREOF AS DESCRIBED IN NOTE 5 AND THE 'TYPICAL UTILITY ISOLATION GUIDELINES' TABLE ON STANDARD SHEET 502-09.
  - D. LOCATE THE TRANSVERSE JOINTS AND UNTIED LONGITUDINAL (SHEAR KEY) JOINTS NEAR UTILITIES AND DRAINAGE STRUCTURES.
  - E. EQUALLY SPACE REMAINING TRANSVERSE JOINTS BETWEEN THOSE TRANSVERSE JOINTS PLACED IN CONJUNCTION WITH UTILITIES AND DRAINAGE STRUCTURES SUCH THAT THE DESIGN SLAB LENGTH IS ACHIEVED (12'-0" TO 16'-0" TYPICAL).
  - F. DESIGN AND LAYOUT THE LONGITUDINAL JOINT TIES AND TRANSVERSE JOINT SUPPORTS.
3. PCC SLAB ASPECT RATIO AND SLAB GEOMETRY
  - A. THE ASPECT RATIO (W/L) IS THE RATIO OF SLAB WIDTH (W) TO SLAB LENGTH (L). FOR SLABS ROUTINELY EXPOSED TO TRAFFIC, CONSTRUCT SLABS MEETING THE FOLLOWING GEOMETRIC CRITERIA:
    1.  $0.65 \leq W/L \leq 1.37$
    2.  $8'-0" \leq W \leq 16'-0"$
    3.  $10'-0" \leq L \leq 16'-0"$
  - B. TYPICAL TRAVEL LANES WITHOUT UTILITIES HAVE INNER AND OUTER SLAB WIDTHS OF 12'-0" AND 14'-0", RESPECTIVELY, WITH SLAB LENGTHS OF 16'-0". THIS RESULTS IN ASPECT RATIOS OF 0.75 AND 0.875. THUS, FOR SLABS WITHOUT UTILITIES, THE ASPECT RATIO APPROACHES MINIMUM VALUES. FOR SLABS WITH SINGLE UTILITIES OR DRAINAGE STRUCTURES, THE ASPECT RATIO APPROACHES MAXIMUM VALUES BECAUSE THESE SLABS HAVE REDUCED LENGTHS (REFER TO STANDARD SHEETS 502-10 THROUGH 502-14). THE GEOMETRIC CRITERIA IN NOTE 3A DO NOT APPLY TO HEAVILY REINFORCED SLABS DEPICTED ON STANDARD SHEET 502-15 OR TO CATCH BASIN ISOLATION SLABS DEPICTED ON STANDARD SHEETS 502-13 AND 502-14.
  - C. IF PROJECT CONSTRAINTS RESULT IN NARROWER TRAVEL LANES OR REDUCED SLAB LENGTHS FROM THOSE DEPICTED ON STANDARD SHEET 502-02, THE ASPECT RATIO REQUIREMENTS OF NOTE 3A MUST BE SATISFIED. IT IS HIGHLY PREFERABLE TO CONSTRUCT PCC SLABS SUCH THAT LONGITUDINAL JOINTS BETWEEN TRAVEL LANES ARE ALIGNED WITH PAVEMENT MARKINGS.
  - D. IF PROJECT CONSTRAINTS RESULT IN NARROWER PCC SHOULDERS THAN THOSE DEPICTED ON STANDARD SHEET 502-02, IT IS PREFERABLE TO CONSTRUCT THE SHOULDERS AND ADJACENT TRAVEL LANES SIMULTANEOUSLY, PROVIDED THE GEOMETRIC CRITERIA IN NOTE 3A ARE SATISFIED. NO LONGITUDINAL JOINT IS REQUIRED IN THIS CASE.
4. TRANSVERSE JOINT TYPE SELECTION
  - A. THERE ARE THREE BASIC TYPES OF TRANSVERSE JOINTS: CONTRACTION, CONSTRUCTION, AND EXPANSION. THESE JOINTS CONTROL CRACKING, ACCOMMODATE SLAB MOVEMENT, AND PROVIDE LOAD TRANSFER. IT IS ESSENTIAL TO PROPERLY COAT AND ALIGN DOWELS TO ALLOW FREE SLAB MOVEMENT. SEE STANDARD SHEETS 502-06 AND 502-07 FOR TRANSVERSE JOINT DETAILS.
  - B. GENERALLY, TRANSVERSE JOINTS EXTEND ACROSS THE FULL PAVEMENT WIDTH AND ARE ALIGNED PERPENDICULAR TO THE LONGITUDINAL JOINT. TRANSVERSE JOINT TYPE, LOCATION, AND/OR ALIGNMENT MAY CHANGE WHEN A TRANSVERSE JOINT INTERSECTS AN UNTIED LONGITUDINAL (SHEAR KEY) JOINT.
  - C. CONTRACTION JOINTS ARE BY FAR THE MOST COMMON TYPE OF TRANSVERSE JOINT. SPACE CONTRACTION JOINTS TO ACHIEVE 12'-0" TO 16'-0" SLAB LENGTHS.
  - D. CONSTRUCTION JOINTS ARE USED AT PAVING INTERRUPTIONS. THEY ARE AS WIDE AS THE CONCRETE PLACEMENT, TYPICALLY ONE OR TWO LANES, NOT NECESSARILY FULL WIDTH. ALIGN CONSTRUCTION JOINTS WITH ADJACENT TRANSVERSE JOINTS.
  - E. EXPANSION JOINTS SHOULD BE USED SPARINGLY. THEY ISOLATE AND PROTECT PAVEMENTS AND STRUCTURES FROM CONCRETE MOVEMENT AND VOLUME CHANGES. EXPANSION JOINTS ARE REQUIRED AT INTERSECTIONS AND ISOLATED UTILITIES EXPOSED TO TRAFFIC.
  - F. ISOLATION JOINTS ARE NOT CAPABLE OF TRANSFERRING LOADS BECAUSE THEY DO NOT CONTAIN LOAD TRANSFER DEVICES. THEREFORE, THEY ARE ONLY USED TO ISOLATE UTILITIES AND DRAINAGE STRUCTURES IN AREAS NOT ROUTINELY EXPOSED TO TRAFFIC.

5. UTILITY AND DRAINAGE STRUCTURE ISOLATION
  - A. FOLLOW THE 'TYPICAL UTILITY ISOLATION GUIDELINES' TABLE ON STANDARD SHEET 502-09 TO SELECT THE APPROPRIATE ISOLATION METHOD.
  - B. WHEREVER POSSIBLE, USE TELESCOPING MANHOLE CASTINGS TO INTEGRALLY CAST THE UTILITIES INTO THE PCC SLAB. REFER TO CONDITIONS (A), (B), (K), AND (L) ON STANDARD SHEET 502-09.
  - C. IF A TELESCOPING CASTING CAN NOT BE USED (SEE STANDARD SHEET 502-10, NOTE 2), USE A NON-TELESCOPING CASTING OR A SHALLOW UTILITY ISOLATION. REFER TO CONDITIONS (C), (E), (F), (H), AND (J) ON STANDARD SHEET 502-09.
  - D. IF THE MASONRY PORTION OF SHALLOW UTILITIES OR UTILITIES WITH NON-TELESCOPING CASTINGS FALLS WITHIN 1'-0" OF THE PROJECTED LONGITUDINAL JOINT, OFFSET THE LONGITUDINAL JOINT SUCH THAT A 1'-0" CLEARANCE IS ACHIEVED BETWEEN THE MASONRY AND THE LONGITUDINAL JOINT. THE WIDENED SLAB CONTAINING THE STRUCTURE AND THE NARROWED ADJACENT SLAB MUST BOTH MEET THE GEOMETRIC REQUIREMENTS IN NOTE 3A. IF THESE REQUIREMENTS CAN NOT BE MET, OMIT THE OFFSET LONGITUDINAL JOINT AND ISOLATE THE STRUCTURE IN A SINGLE PLACEMENT THAT IS TWO SLABS WIDE. THIS PLACEMENT MUST ALSO MEET THE GEOMETRIC REQUIREMENTS IN NOTE 3A. REFER TO CONDITIONS (D) AND (G) ON STANDARD SHEET 502-09.
  - E. WHEN MULTIPLE UTILITIES ARE LOCATED SUCH THAT INDIVIDUAL ISOLATION IS NOT POSSIBLE, ISOLATE THE ENTIRE GROUP OF UTILITIES IN A HEAVILY REINFORCED SLAB. REFER TO CONDITIONS (M) AND (N) ON STANDARD SHEET 502-09.
  - F. WHEN UTILITIES AND/OR DRAINAGE STRUCTURES IN ADJACENT LANES PRECLUDE AN OPTIMAL SOLUTION FOR EACH STRUCTURE, THE ISOLATION METHODS SHALL BE PRIORITIZED AS FOLLOWS:
    1. STRUCTURES IN THE TRAVEL LANE CARRYING THE GREATEST NUMBER OF TRUCKS
    2. STRUCTURES IN OTHER TRAVEL LANES
    3. STRUCTURES IN PARKING LANES, SHOULDERS, GORE AREAS, AND OTHER NON-TRAVELED AREAS
6. CONSTRUCTION SEQUENCE AT ISOLATED UTILITIES AND DRAINAGE STRUCTURES
  - A. FORM ISOLATION JOINT.
  - B. CONSTRUCT THE PAVEMENT OUTSIDE THE ISOLATION JOINT.
  - C. SAWCUT TRANSVERSE AND LONGITUDINAL JOINTS, FIRST STAGE.
  - D. REMOVE ISOLATION FORM AND TEMPORARY SUPPORT.
  - E. SAWCUT TRANSVERSE AND LONGITUDINAL JOINTS, SECOND STAGE.
  - F. PLACE REMOLDED RESILIENT JOINT FILLER AROUND THE INNER PERIPHERY OF THE ISOLATION.
  - G. PLACE CONCRETE WITH REINFORCEMENT INSIDE THE ISOLATION.
  - H. SAWCUT AND SEAL THE ISOLATION JOINT.
  - I. SEAL TRANSVERSE AND LONGITUDINAL JOINTS.

NOTE: STEPS (C.) AND (D.) ABOVE MAY BE REVERSED

LEGEND FOR PLAN VIEW DETAILS STANDARD SHEETS 502-09 THROUGH 502-15	
FEATURE	SYMBOL
TRANSVERSE CONTRACTION JOINT	
TRANSVERSE EXPANSION JOINT	
TRANSVERSE ISOLATION JOINT	
TIED LONGITUDINAL JOINT	
UNTIED LONGITUDINAL JOINT (SHEAR KEY)	
NON-TELESCOPING MANHOLE CASTING	
TELESCOPING MANHOLE CASTING	
SHALLOW UTILITY (TOP OF STRUCTURE IS IN PCC PAVEMENT)	
DRAINAGE STRUCTURE ISOLATION (NOT EXPOSED TO TRAFFIC)	
DRAINAGE STRUCTURE ISOLATION (EXPOSED TO TRAFFIC)	
WIRE MESH REINFORCED SLAB	
HEAVILY REINFORCED SLAB	
LONGITUDINAL JOINT TIE OR DEFORMED REINFORCING BAR	
TRANSVERSE JOINT DOWEL BAR	

JOINT DETAIL REFERENCE	
FEATURE	FOR DETAIL SEE STANDARD SHEET
TRANSVERSE CONTRACTION JOINT	502-06, DETAIL "A"
TRANSVERSE EXPANSION JOINT	502-06, DETAIL "B"
TRANSVERSE ISOLATION JOINT	502-06, DETAIL "C"
TIED LONGITUDINAL JOINT	502-03, DETAILS "A", "B", AND "C"
UNTIED LONGITUDINAL JOINT (SHEAR KEY)	502-03, DETAILS "D" AND "E"



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

UTILITY ISOLATION AND  
JOINT LAYOUT GENERAL NOTES

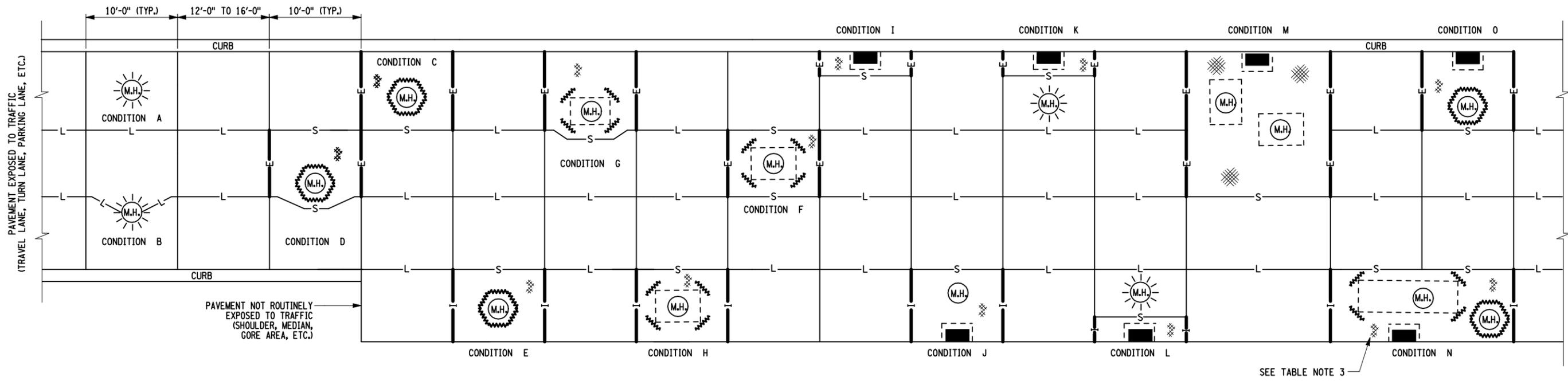
APPROVED OCTOBER 15, 2008

ISSUED UNDER EB 08-036

/S/ ROBERT L. SACK, P.E.  
DEPUTY CHIEF ENGINEER  
(TECHNICAL SERVICES)

502-08

EFFECTIVE DATE: 01/08/09



TYPICAL UTILITY ISOLATION PLAN

TYPICAL UTILITY ISOLATION GUIDELINES								
CONDITION	FEATURE	IS THE TOP OF THE MANHOLE STRUCTURE...			IS MANHOLE CASTING* WITHIN 12" OF A LONGITUDINAL JOINT? * SEE TABLE NOTES 1 AND 2	WILL THE FEATURE BE EXPOSED TO TRAFFIC	MANHOLE CASTING TYPE	FOR MORE DETAILED REFERENCE SEE STANDARD SHEET
		≥ 16" BELOW ROADWAY SURFACE	< 16" BELOW ROADWAY SURFACE, BUT NOT WITHIN PCC SLAB	WITHIN PCC SLAB (SHALLOW)				
CONDITION A	MANHOLE	YES	--	--	NO	YES OR NO	TELESCOPING	502-10, DETAIL "A"
CONDITION B	MANHOLE	YES	--	--	YES	YES OR NO	TELESCOPING	502-10, DETAILS "B" AND "C"
CONDITION C	MANHOLE	--	YES	--	NO	YES	NON-TELESCOPING	502-11, DETAIL "A"
CONDITION D	MANHOLE	--	YES	--	YES	YES	NON-TELESCOPING	502-11, DETAIL "B"
CONDITION E	MANHOLE	--	YES	--	YES OR NO	NO	NON-TELESCOPING	502-11, DETAIL "A" AND NOTE 8
CONDITION F	MANHOLE	--	--	YES	NO	YES	NON-TELESCOPING	502-12, DETAIL "A"
CONDITION G	MANHOLE	--	--	YES	YES	YES	NON-TELESCOPING	502-12, DETAIL "B"
CONDITION H	MANHOLE	--	--	YES	YES OR NO	NO	NON-TELESCOPING	502-12, DETAIL "A" AND NOTE 8
CONDITION I	DRAINAGE STRUCTURE					YES	--	502-13
CONDITION J	DRAINAGE STRUCTURE WITH NON-TELESCOPING MANHOLE IN PROXIMITY					NO	NON-TELESCOPING	502-14, DETAILS "D", "E", "F" AND NOTE 4
CONDITION K	DRAINAGE STRUCTURE WITH TELESCOPING MANHOLE IN PROXIMITY					YES	TELESCOPING	502-14, DETAILS "A", "B", AND "C"
CONDITION L	DRAINAGE STRUCTURE WITH TELESCOPING MANHOLE IN PROXIMITY					NO	TELESCOPING	502-14, DETAILS "A", "B", AND "C" AND NOTE 4
CONDITION M	MULTIPLE DRAINAGE STRUCTURES / MANHOLES IN PROXIMITY					YES	NON-TELESCOPING	502-15
CONDITION N	MULTIPLE DRAINAGE STRUCTURES / MANHOLES IN PROXIMITY					NO	NON-TELESCOPING	502-15 AND TABLE NOTE 3 BELOW
CONDITION O	DRAINAGE STRUCTURE WITH NON-TELESCOPING MANHOLE IN PROXIMITY					YES	NON-TELESCOPING	502-14, DETAILS "D", "E", AND "F"

TABLE NOTES: 1. WHEN THE PRECAST CONCRETE PAVERS OF A NON-TELESCOPING MANHOLE CASTING OR THE MASONRY PORTION OF A SHALLOW UTILITY IS WITHIN 12" OF A LONGITUDINAL JOINT, ISOLATE THE UTILITY AS SHOWN IN EITHER CONDITION D OR CONDITION G, RESPECTIVELY.  
 2. FOR SHALLOW UTILITIES, THE 12" OFFSET CRITERIA IS BASED ON THE DISTANCE BETWEEN THE LONGITUDINAL JOINT AND THE MASONRY PORTION OF THE STRUCTURE, NOT THE CASTING (OR PRECAST CONCRETE PAVERS).  
 3. PAVEMENT NOT ROUTINELY EXPOSED TO TRAFFIC IS NOT HEAVILY REINFORCED.

TELESCOPING MANHOLE SUBSTITUTIONS	
IF THE PROPER SIZE TELESCOPING MANHOLE CASTING IS NOT AVAILABLE USE A NON-TELESCOPING MANHOLE CASTING AND THE FOLLOWING ISOLATION METHOD:	
TELESCOPING MANHOLE CASTING RECOMMENDED FOR:	SUBSTITUTE NON-TELESCOPING MANHOLE CASTING AND USE ISOLATION METHOD:
CONDITION A	CONDITION C
CONDITION B	CONDITION D
CONDITION K	CONDITION O
CONDITION L	CONDITION J

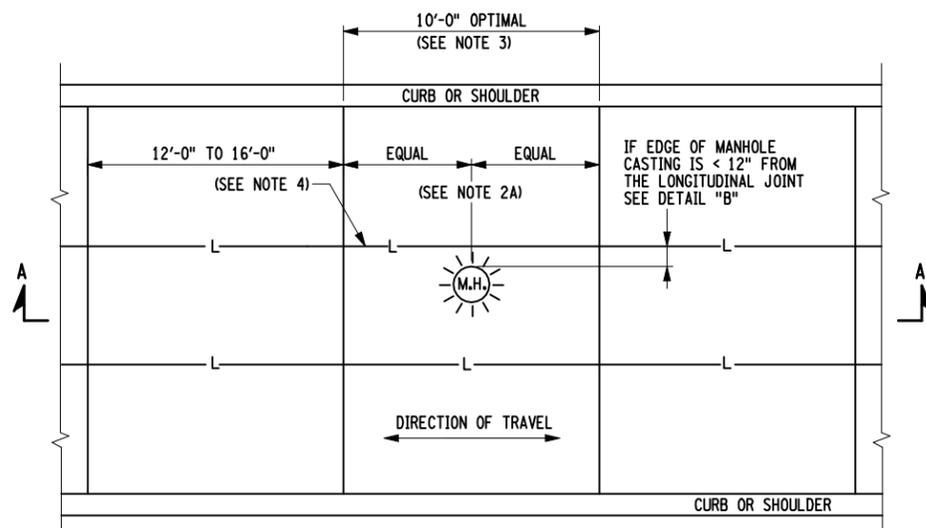
GENERAL NOTE:  
 1. SEE GENERAL NOTES AND LEGEND ON STANDARD SHEET 502-08.

SHEET NOTES:  
 - SEE LEGEND ON STANDARD SHEET 502-08 FOR PLAN VIEW DETAILS SYMBOLOLOGY.

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>UTILITY ISOLATION GUIDELINES</b>	
APPROVED OCTOBER 15, 2008 /S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	ISSUED UNDER EB 08-036  <b>502-09</b>

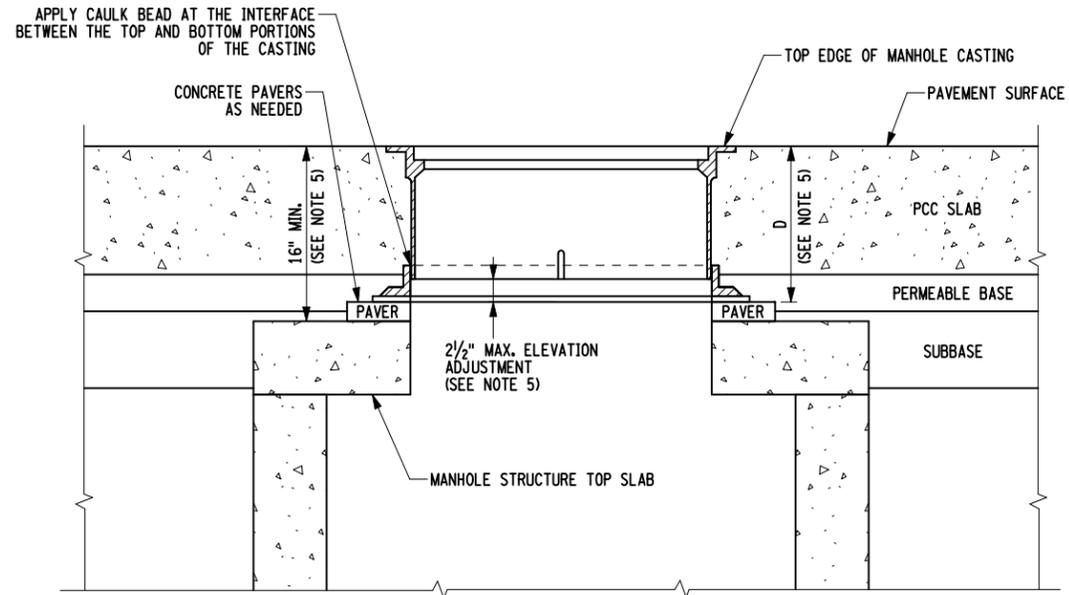
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DETAIL "A" - PLAN VIEW  
TYPICAL JOINT LAYOUT  
TELESCOPING MANHOLE CASTING

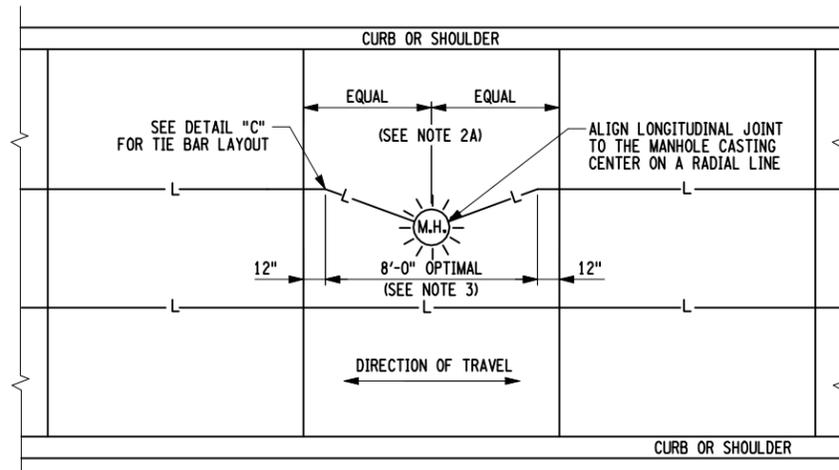
NOTE: VALID FOR EITHER EXPOSED OR NOT EXPOSED TO TRAFFIC CONDITIONS  
(CONDITION "A" ON STANDARD SHEET 502-09)



SECTION A-A  
TELESCOPING MANHOLE COVER  
(SEE NOTE 2)

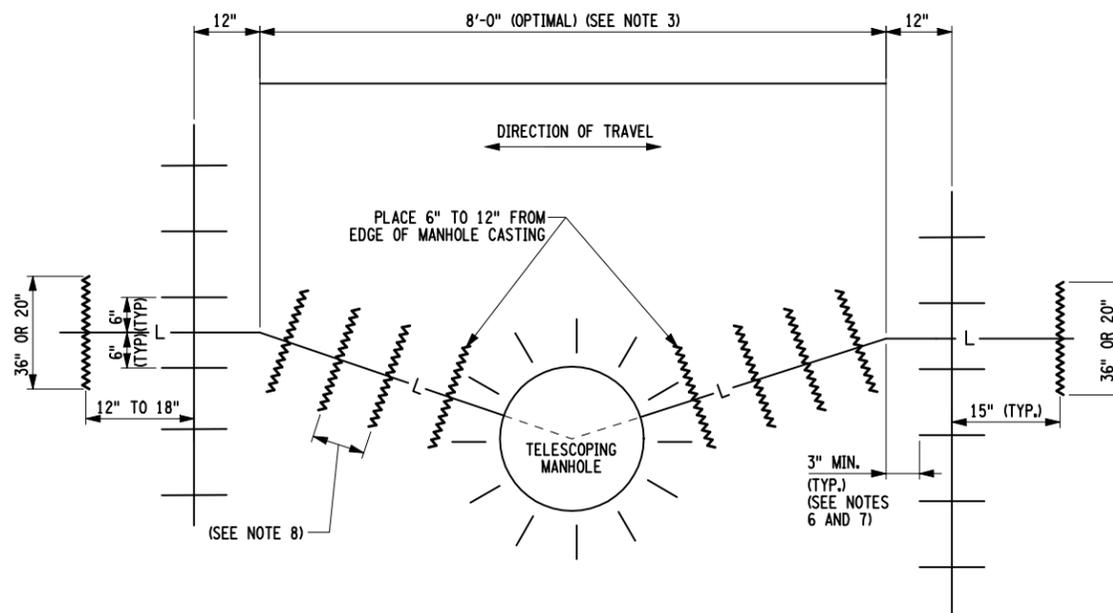
GENERAL NOTES:

- SEE GENERAL NOTES AND LEGEND ON STANDARD SHEET 502-08.
- THE USE OF TELESCOPING CASTINGS REQUIRE:
  - THE CASTING MUST BE CENTERED LONGITUDINALLY BETWEEN TRANSVERSE JOINTS ( $\pm 12"$ ).
  - THE ROOF OF THE UTILITY STRUCTURE MUST BE A MINIMUM OF 16" BELOW THE PAVEMENT SURFACE.
  - THE CASTING TYPE AND SIZE MUST BE AVAILABLE WITH THE TELESCOPING FEATURE. SEE CURRENT 655 STANDARD SHEETS.
- MAINTAIN 10'-0" SLAB LENGTHS. SLABS MAY BE LENGTHENED TO 16'-0" TO RESOLVE CONFLICTS WITH STRUCTURES IN ADJACENT LANES PROVIDED THE GEOMETRIC REQUIREMENTS IN STANDARD SHEET 502-08, NOTE 3A ARE SATISFIED. ADD A LAYER OF WIRE MESH IF THE SLAB(S) CONTAINING THE TELESCOPING CASTING EXCEEDS 13'-0" IN LENGTH. USE WELDED WIRE MESH, W4 4"x4". MAINTAIN A 3" CLEARANCE BETWEEN THE MESH AND ALL JOINTS, JOINT BARS, AND UTILITIES.
- IF THE MANHOLE CASTING INTERFERES WITH NORMAL LONGITUDINAL JOINT TIE SPACING, RELOCATE THE TIES OR BEND THE TIES WHEN APPROVED BY THE ENGINEER. THE SAME NUMBER OF TIES PER SLAB ARE REQUIRED AND THE DISTRIBUTION OF TIES TO EITHER SIDE OF THE CASTING SHOULD BE AS BALANCED AS POSSIBLE.
- THE "D" DIMENSION MUST BE BETWEEN 16" AND 18". WHEN "D" IS GREATER THAN 18", PRECAST CONCRETE PAVERS AND/OR ADJUSTMENT RINGS ARE REQUIRED. THE SLOT IN THE TELESCOPING MANHOLE CASTING PROVIDES 2 1/2" OF ELEVATION ADJUSTMENT TO MATCH THE PCC PAVEMENT FINISHED GRADE.
- MAINTAIN A 3" MINIMUM CLEARANCE BETWEEN THE LONGITUDINAL JOINT TIES AND THE TRANSVERSE JOINT SUPPORTS. TIES MAY BE BENT TO ACHIEVE THE CLEARANCE.
- IF THE SLAB DOES NOT REQUIRE TRANSVERSE JOINT SUPPORTS. TIES MAY BE BENT TO ACHIEVE THE CLEARANCE.
- COMPUTE THE NUMBER OF TIES USING EQUATION (2) ON STANDARD SHEET 502-02. EVENLY SPACE HALF THE REQUIRED TIES ON EACH SIDE OF THE MANHOLE. IF AN ODD NUMBER OF TIES IS REQUIRED, ELIMINATE ONE TIE AND EVENLY SPACE THE TIES ON EACH SIDE OF THE MANHOLE.



DETAIL "B" - PLAN VIEW  
TELESCOPING MANHOLE CASTING  
< 1'-0" FROM A LONGITUDINAL JOINT

NOTE: VALID FOR EITHER EXPOSED OR NOT EXPOSED TO TRAFFIC CONDITIONS  
(CONDITION "B" ON STANDARD SHEET 502-09)

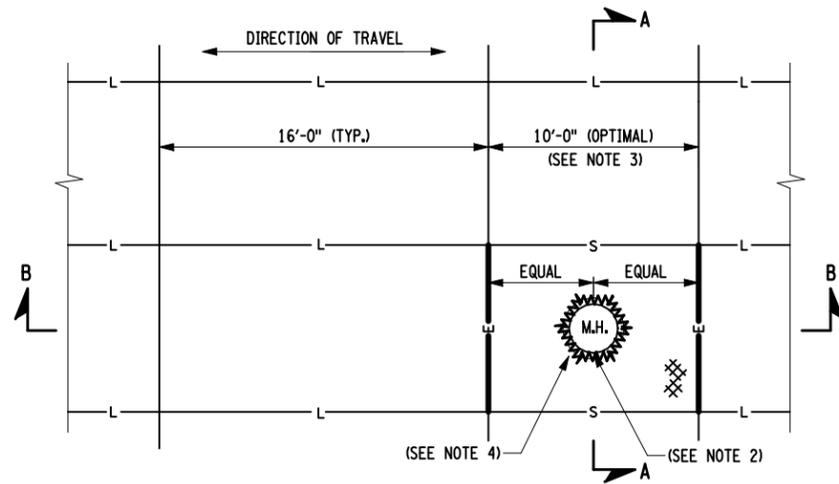


DETAIL "C" - PLAN VIEW  
JOINT AND TIE BAR LAYOUT  
FOR TELESCOPING MANHOLE CASTING  
< 1'-0" FROM A LONGITUDINAL JOINT

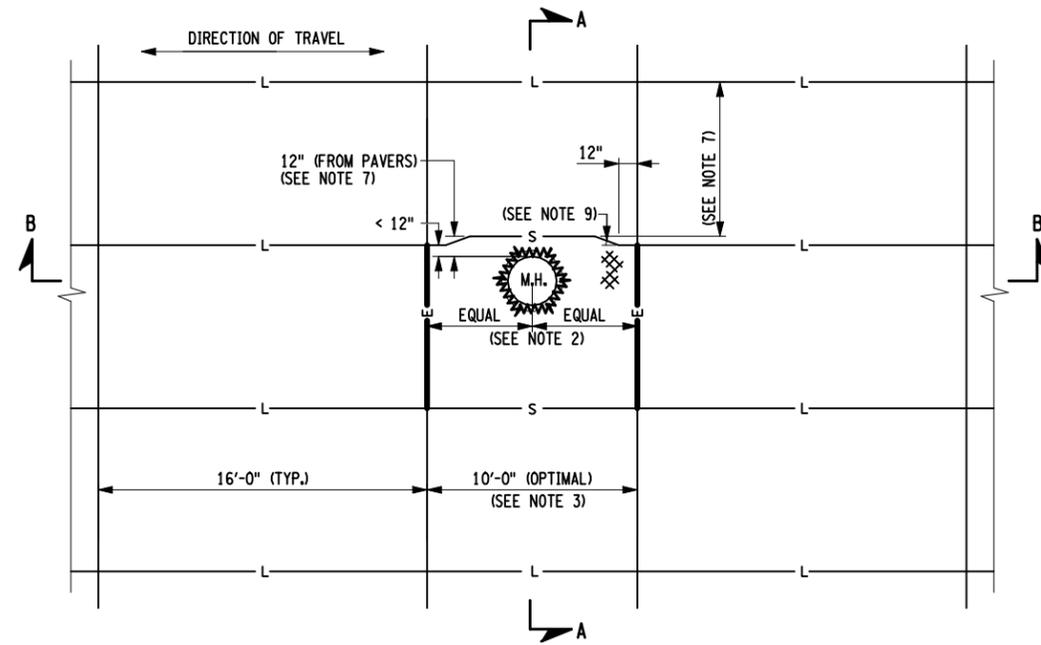
NOTE: VALID FOR EITHER EXPOSED OR NOT EXPOSED TO TRAFFIC CONDITIONS  
(CONDITION "B" ON STANDARD SHEET 502-09)

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>TELESCOPING MANHOLE CASTING LAYOUT</b>	
APPROVED OCTOBER 15, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	502-10

EFFECTIVE DATE: 01/08/09



**DETAIL "A" - PLAN VIEW**  
**NON-TELESCOPING MANHOLE CASTINGS**  
 EXPOSED TO TRAFFIC CONDITION SHOWN (SEE NOTE 8)  
 (CONDITION "C" AND "E" ON STANDARD SHEET 502-09)

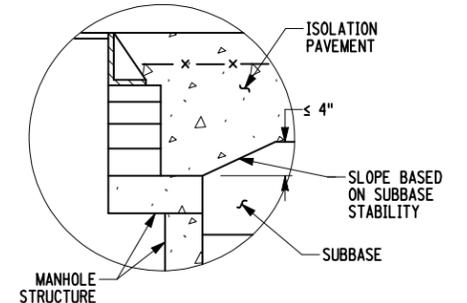


**DETAIL "B" - PLAN VIEW**  
**NON-TELESCOPING MANHOLE CASTING**  
 < 12" OFFSET FROM A LONGITUDINAL JOINT  
 EXPOSED TO TRAFFIC CONDITION SHOWN (SEE NOTE 8)  
 (CONDITION "D" ON STANDARD SHEET 502-09)

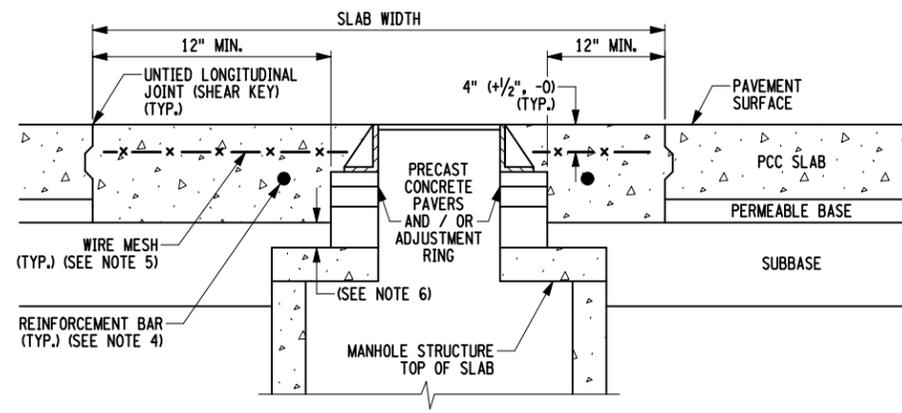
**GENERAL NOTES:**

- SEE GENERAL NOTES AND LEGEND ON STANDARD SHEET 502-08.
- CENTER THE MANHOLE CASTING LONGITUDINALLY BETWEEN THE TRANSVERSE JOINTS ( $\pm 12"$ ).
- MAINTAIN 10'-0" SLAB LENGTHS. SLABS MAY BE LENGTHENED TO 16'-0" TO RESOLVE CONFLICTS WITH STRUCTURES IN ADJACENT LANES PROVIDED THE GEOMETRIC REQUIREMENTS ON STANDARD SHEET 502-08, NOTE 3A ARE SATISFIED.
- USE #6, GRADE 60 STEEL, EPOXY COATED, DEFORMED BARS PLACED AT A DEPTH OF HALF THE ISOLATION SLAB THICKNESS FOR REINFORCEMENT. FOR RECTANGULAR STRUCTURES, PLACE A 3'-0" LONG BAR AT EACH CORNER. FOR ROUND STRUCTURES, ENCIRCLE THE STRUCTURE WITH 6 BARS, OVERLAPPED A MINIMUM OF 3". MAINTAIN A HORIZONTAL CLEARANCE OF 3" BETWEEN THE BARS AND THE JOINTS, JOINT BARS, AND UTILITIES. THE BARS MAY BE BENT TO ACHIEVE CLEARANCES.
- USE WELDED WIRE MESH, W4 4"X4". MAINTAIN A 3" CLEARANCE BETWEEN THE WIRE MESH AND ALL JOINTS, JOINT BARS, AND UTILITIES.
- IF THERE IS 4" OR LESS BETWEEN THE BOTTOM OF THE ISOLATION SLAB AND THE TOP OF THE MANHOLE STRUCTURE, OMIT THE SUBBASE AND PLACE CONCRETE TO THE STRUCTURE, SEE DETAIL "C".
- IF A UTILITY WITH A NON-TELESCOPING CASTING FALLS WITHIN 12" OF THE PROJECTED LONGITUDINAL JOINT, OFFSET THE LONGITUDINAL JOINT SUCH THAT A 12" CLEARANCE IS ACHIEVED BETWEEN THE MASONRY AND THE LONGITUDINAL JOINT. THE WIDENED SLAB CONTAINING THE STRUCTURE AND THE NARROWED ADJACENT SLAB MUST BOTH MEET THE GEOMETRIC REQUIREMENTS ON STANDARD SHEET 502-08, NOTE 3A. IF THESE REQUIREMENTS CANNOT BE MET, OMIT THE OFFSET LONGITUDINAL JOINT AND ISOLATE THE STRUCTURE IN A SINGLE PLACEMENT THAT IS TWO SLABS WIDE. THIS PLACEMENT MUST ALSO MEET THE GEOMETRIC REQUIREMENTS ON STANDARD SHEET 502-08, NOTE 3A.
- SUBSTITUTE ISOLATION JOINTS FOR EXPANSION JOINTS WHEN THE UTILITY OR DRAINAGE STRUCTURE TO BE ISOLATED IS NOT EXPOSED TO TRAFFIC, SUCH AS IN A SHOULDER, MEDIAN, OR GORE AREA.
- FORM AS FLAT AN ANGLE AS POSSIBLE, WHILE MAINTAINING A 12" CLEARANCE BETWEEN THE LONGITUDINAL JOINT AND THE MASONRY OR PRECAST CONCRETE PAVERS. MAXIMUM ANGLE IS 30 DEGREES.

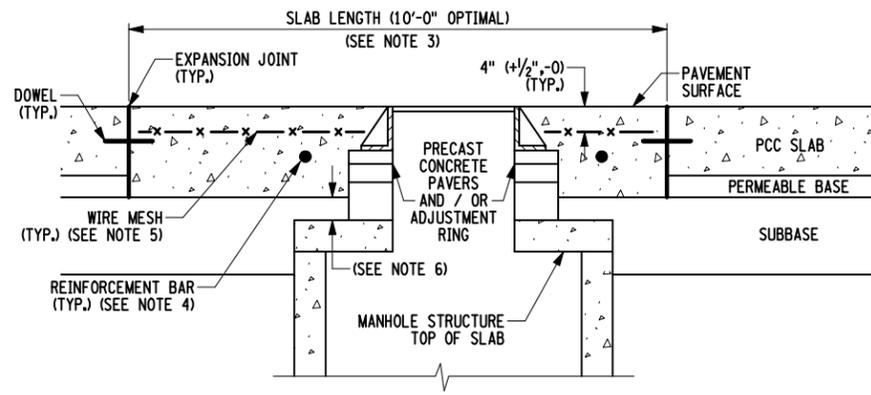
**NON-TELESCOPING MANHOLE CASTING**



**DETAIL "C"**  
**ISOLATION PAVEMENT**  
 WHEN  $\leq 4"$  SUBBASE DEPTH  
 ABOVE STRUCTURE



**SECTION A-A**

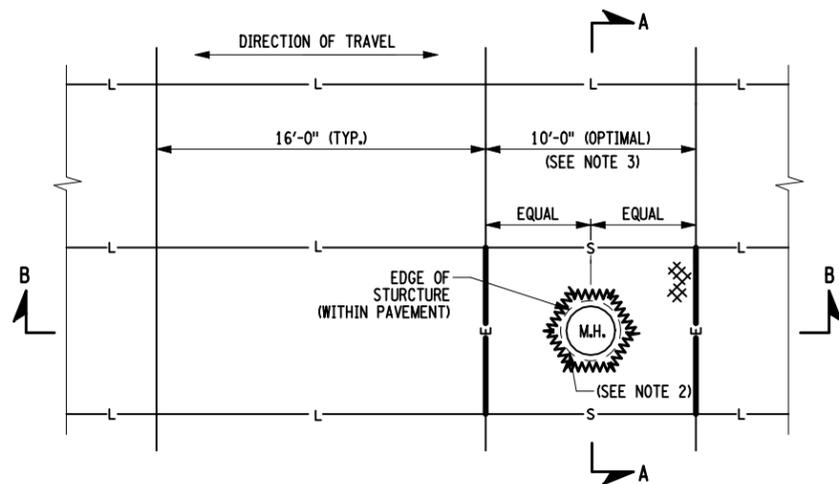


**SECTION B-B**

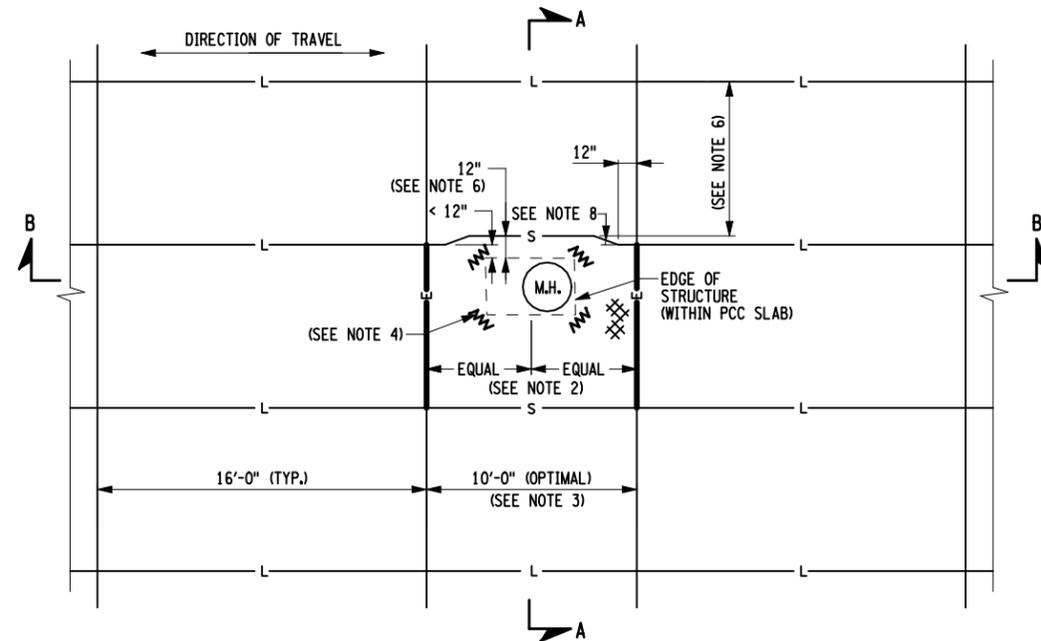
 <b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>NON-TELESCOPING MANHOLE CASTING LAYOUT</b>	
APPROVED OCTOBER 15, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	<b>502-11</b>

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DETAIL "A" PLAN VIEW  
SHALLOW STRUCTURE  
EXPOSED TO TRAFFIC CONDITIONS SHOWN (SEE NOTE 7)  
(CONDITION "F" AND "H" ON STANDARD SHEET 502-09)

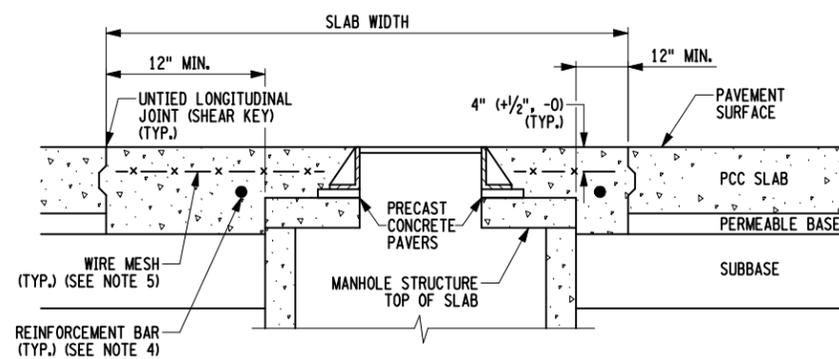


DETAIL "B" PLAN VIEW  
SHALLOW STRUCTURE  
< 12" FROM A LONGITUDINAL JOINT  
EXPOSED TO TRAFFIC CONDITIONS SHOWN (SEE NOTE 7)  
(CONDITION "G" ON STANDARD SHEET 502-09)

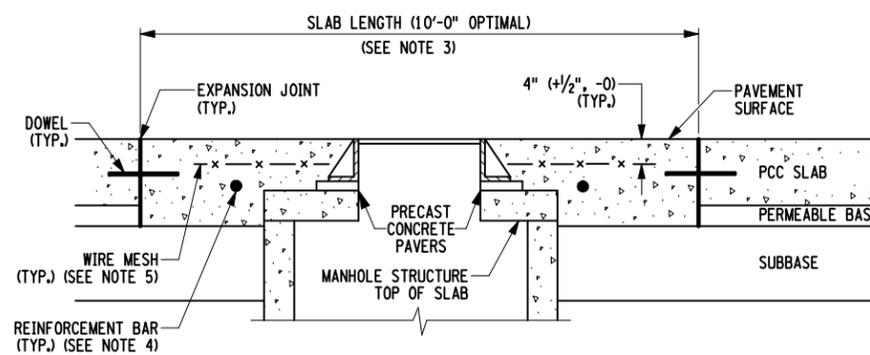
GENERAL NOTES:

- SEE GENERAL NOTES AND LEGEND ON STANDARD SHEET 502-08.
- CENTER THE MASONRY PORTION OF THE STRUCTURE (NOT THE CASTING) LONGITUDINALLY BETWEEN THE TRANSVERSE JOINTS.
- MAINTAIN 10'-0" SLAB LENGTHS. SLABS MAY BE LENGTHENED TO 16'-0" TO RESOLVE CONFLICTS WITH STRUCTURES IN ADJACENT LANES PROVIDED THE GEOMETRIC REQUIREMENTS ON STANDARD SHEET 502-08, NOTE 3A, IS SATISFIED.
- USE #6 GRADE 60 STEEL, EPOXY COATED, DEFORMED BARS PLACED AT A DEPTH OF HALF THE ISOLATION SLAB THICKNESS FOR REINFORCEMENT. FOR RECTANGULAR STRUCTURES, PLACE A 3'-0" LONG BAR AT EACH CORNER. FOR ROUND STRUCTURES, ENCIRCLE THE STRUCTURE WITH 6 BARS, OVERLAPPED A MINIMUM OF 3". MAINTAIN A HORIZONTAL CLEARANCE OF 3" BETWEEN THE BARS AND THE JOINTS, JOINT BARS, AND UTILITIES. THE BARS MAY BE BENT TO ACHIEVE CLEARANCES.
- USE WELDED WIRE MESH, W4 4"x4". MAINTAIN A 3" CLEARANCE BETWEEN THE WIRE MESH AND ALL JOINTS, JOINT BARS, AND UTILITIES.
- IF THE MASONRY PORTION OF A SHALLOW UTILITY FALLS WITHIN 12" OF THE PROJECTED LONGITUDINAL JOINT, OFFSET THE LONGITUDINAL JOINT SUCH THAT A 12" CLEARANCE IS ACHIEVED BETWEEN THE MASONRY AND THE LONGITUDINAL JOINT. THE WIDENED SLAB CONTAINING THE STRUCTURE AND THE NARROWED ADJACENT SLAB MUST BOTH MEET THE GEOMETRIC REQUIREMENTS ON STANDARD SHEET 502-08, NOTE 3A. IF THESE REQUIREMENTS CANNOT BE MET, OMIT THE OFFSET LONGITUDINAL JOINT AND ISOLATE THE STRUCTURE IN A SINGLE PLACEMENT THAT IS TWO SLABS WIDE. THIS PLACEMENT MUST ALSO MEET THE GEOMETRIC REQUIREMENTS ON STANDARD SHEET 502-08, NOTE 3A.
- SUBSTITUTE ISOLATION JOINTS FOR EXPANSION JOINTS WHEN THE UTILITY OR DRAINAGE STRUCTURE TO BE ISOLATED IS NOT EXPOSED TO TRAFFIC, SUCH AS IN A SHOULDER, MEDIAN, OR GORE AREA.
- FORM AS FLAT AN ANGLE AS POSSIBLE, WHILE MAINTAINING A 12" CLEARANCE BETWEEN THE LONGITUDINAL JOINT AND THE MASONRY OR PRECAST CONCRETE PAVERS. MAXIMUM ANGLE IS 30°.
- USE THESE DETAILS IF THE TOP OF THE STRUCTURE PROTRUDES INTO THE PCC SLAB. THESE DETAILS ARE VALID FOR EITHER ROUND OR RECTANGULAR MANHOLE STRUCTURES.

SHALLOW STRUCTURE



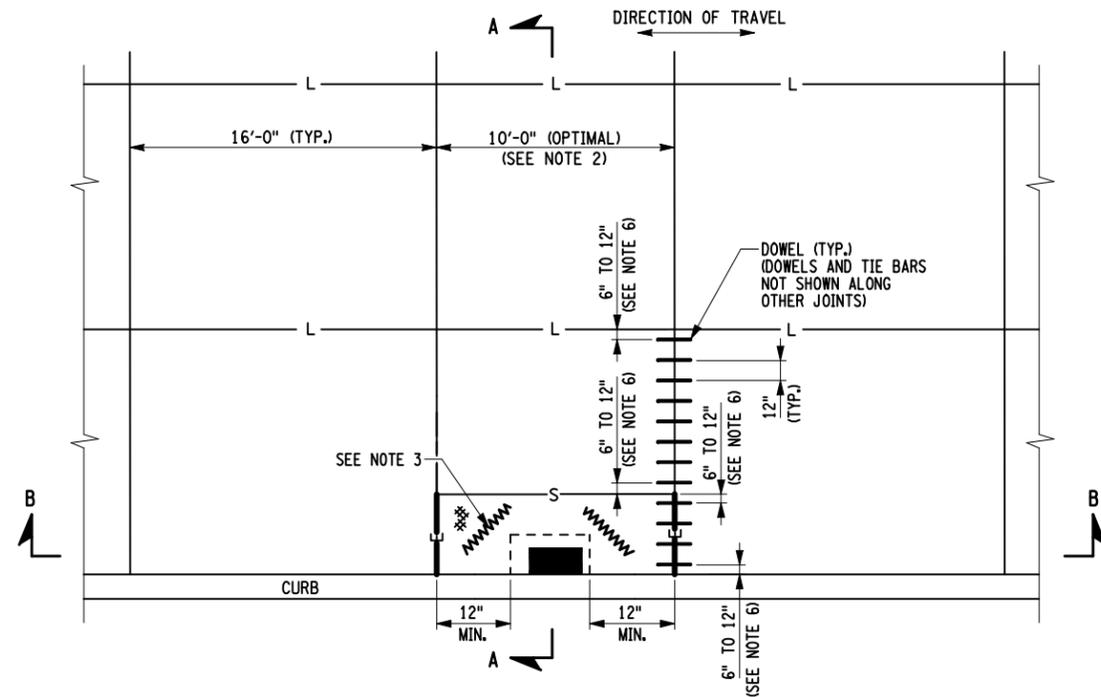
SECTION A-A



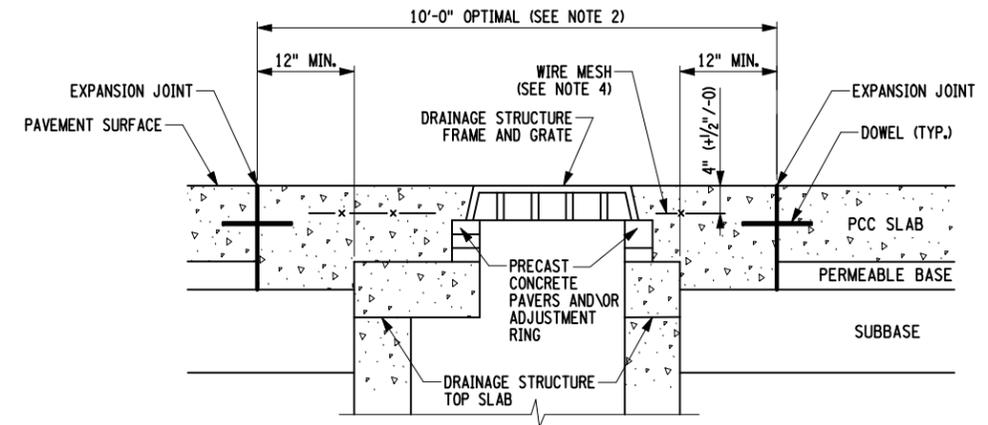
SECTION B-B

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
SHALLOW STRUCTURE ISOLATION		
APPROVED OCTOBER 15, 2008	ISSUED UNDER EB 08-036	
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)		502-12

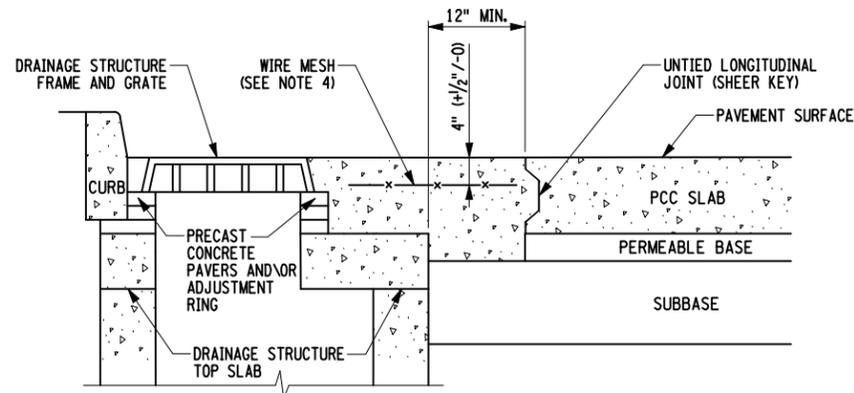
EFFECTIVE DATE: 01/08/09



DETAIL "A" - PLAN VIEW  
DRAINAGE STRUCTURE ISOLATION  
EXPOSED TO TRAFFIC CONDITIONS SHOWN (SEE NOTE 6)  
CONDITION "1" ON STANDARD SHEET 502-09



SECTION B-B



SECTION A-A

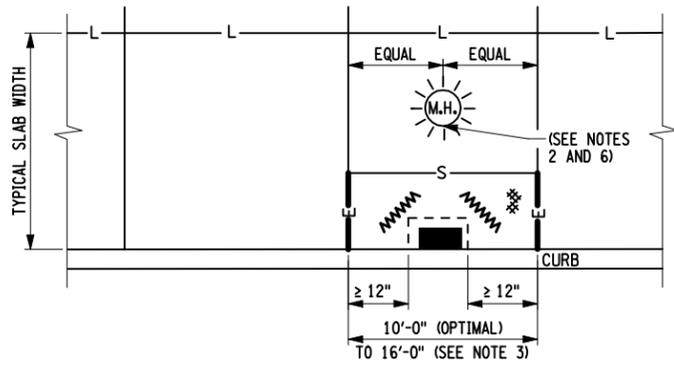
GENERAL NOTES:

1. SEE GENERAL NOTES AND LEGEND ON STANDARD SHEET 502-08.
2. MAINTAIN 10'-0" SLAB LENGTHS. SLABS MAY BE LENGTHENED TO 16'-0" TO RESOLVE CONFLICTS WITH STRUCTURES IN ADJACENT LANES, PROVIDED THE GEOMETRIC REQUIREMENTS ON STANDARD SHEET 502-08, NOTE 3A ARE SATISFIED. THE GEOMETRIC REQUIREMENTS OF STANDARD SHEET 502-08, NOTE 3A, DO NOT APPLY TO THE SLAB CONTAINING THE DRAINAGE STRUCTURE.
3. PLACE A 36" LONG, #6, GRADE 60 STEEL, EPOXY COATED, DEFORMED BAR AT BOTH CORNERS OF THE STRUCTURE AT A DEPTH OF HALF THE ISOLATION SLAB THICKNESS AS SHOWN IN DETAIL "A". MAINTAIN A MINIMUM 3" CLEARANCE BETWEEN THE BARS AND THE STRUCTURE, JOINTS, AND JOINT BARS. THE BARS MAY BE BENT TO ACHIEVE CLEARANCES.
4. USE WELDED WIRE MESH, W4 4"X4". MAINTAIN A 3" CLEARANCE BETWEEN THE WIRE MESH AND ALL JOINTS, JOINT BARS, AND UTILITIES.
5. IF THE DRAINAGE STRUCTURE WILL NOT BE ROUTINELY EXPOSED TO TRAFFIC (FOR EXAMPLE: SHOULDER, GORE AREA, OR MEDIAN), REPLACE THE TRANSVERSE EXPANSION JOINTS WITH ISOLATION JOINTS.
6. EVENLY SPACE THE END DOWELS BETWEEN THE LONGITUDINAL JOINTS. DO NOT SPAN AN UNTIED LONGITUDINAL JOINT WITH A TRANSVERSE JOINT SUPPORT. USE SEPARATE SUPPORTS ON EITHER SIDE OF THE UNTIED LONGITUDINAL JOINT.

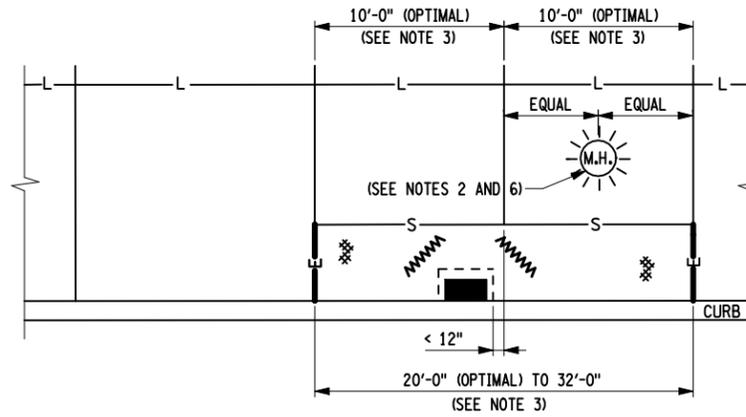
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 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
DRAINAGE STRUCTURE ISOLATION	
APPROVED OCTOBER 15, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	502-13

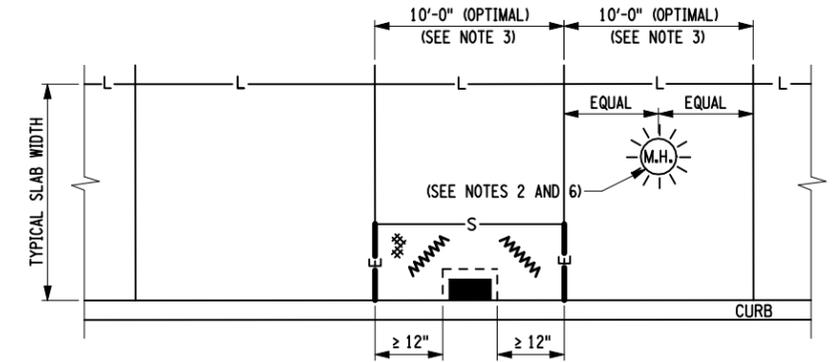
EFFECTIVE DATE: 01/08/09



DETAIL "A" - SINGLE SLAB ISOLATION  
(EXPOSED TO TRAFFIC CONDITION SHOWN - SEE NOTE 4)

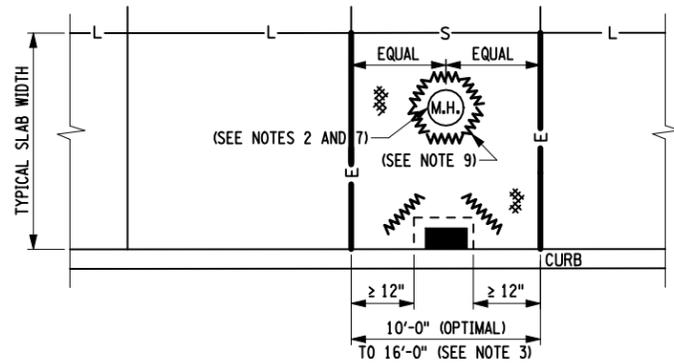


DETAIL "B" - TWO SLAB ISOLATION  
(EXPOSED TO TRAFFIC CONDITION SHOWN - SEE NOTE 4)

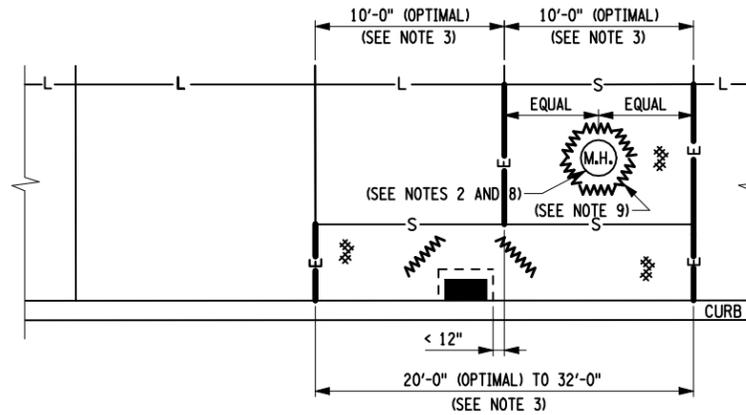


DETAIL "C" - OFFSET SINGLE SLAB ISOLATION  
(EXPOSED TO TRAFFIC CONDITION SHOWN - SEE NOTE 4)

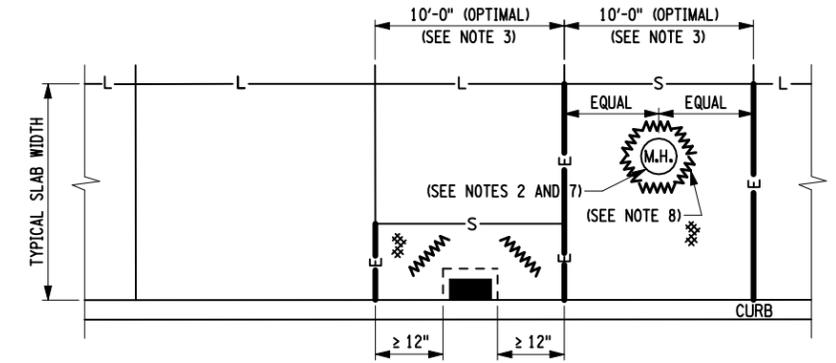
TELESCOPING MANHOLE CASTING (CONDITIONS "K" AND "L" ON STANDARD SHEET 502-09)



DETAIL "D" - SINGLE SLAB ISOLATION  
(EXPOSED TO TRAFFIC CONDITION SHOWN - SEE NOTE 4)



DETAIL "E" - TWO SLAB ISOLATION  
(EXPOSED TO TRAFFIC CONDITION SHOWN - SEE NOTE 4)



DETAIL "F" - OFFSET SINGLE SLAB ISOLATION  
(EXPOSED TO TRAFFIC CONDITION SHOWN - SEE NOTE 4)

NON-TELESCOPING MANHOLE CASTING (CONDITIONS "J" AND "O" ON STANDARD SHEET 502-09)

DETAIL SELECTION PROCESS:

FOR TELESCOPING MANHOLE CASTINGS, PROGRESS FROM DETAIL "A" THROUGH DETAIL "C" AS THE LONGITUDINAL DISTANCE BETWEEN THE MANHOLE CASTING AND THE DRAINAGE STRUCTURE INCREASES. FOR NON-TELESCOPING MANHOLE CASTINGS USE DETAILS "D" THROUGH "F". DETAILS "A" AND "C" ARE THE OPTIMAL ISOLATION TECHNIQUES FOR TELESCOPING MANHOLE CASTINGS NEAR DRAINAGE STRUCTURES. DETAILS "D" AND "F" ARE THE OPTIMAL ISOLATION TECHNIQUES FOR NON-TELESCOPING MANHOLE CASTINGS NEAR DRAINAGE STRUCTURES.

DETAILS "A" AND "D" - SINGLE SLAB ISOLATION:

USE THESE DETAILS WHEN THE TRANSVERSE JOINTS SURROUNDING THE MANHOLE BOTH FALL A MINIMUM OF 12" OUTSIDE THE MASONRY PORTION OF THE DRAINAGE STRUCTURE.

DETAILS "B" AND "E" - TWO SLAB ISOLATION:

USE THESE DETAILS WHEN EITHER OF THE TRANSVERSE JOINTS SURROUNDING THE MANHOLE FALLS WITHIN 12" OF THE MASONRY PORTION OF THE DRAINAGE STRUCTURE.

DETAILS "C" AND "F" - OFFSET SINGLE SLAB ISOLATION:

USE THESE DETAILS WHEN:

1. THE TRANSVERSE JOINT BETWEEN THE MANHOLE AND DRAINAGE STRUCTURE FALLS A MINIMUM OF 12" OUTSIDE THE MASONRY PORTION OF THE DRAINAGE STRUCTURE AND
2. THE NEXT TRANSVERSE JOINT FALLS A MINIMUM OF 12" OUTSIDE THE OTHER SIDE OF THE MASONRY PORTION OF THE DRAINAGE STRUCTURE WHILE ACHIEVING A 10' TO 16' SLAB LENGTH.

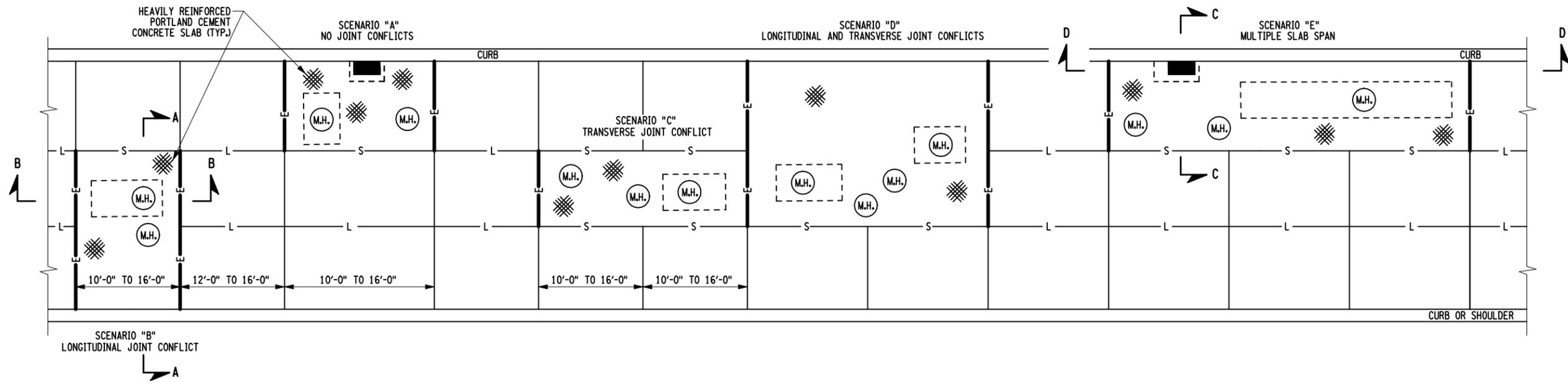
GENERAL NOTES:

1. SEE GENERAL NOTES AND LEGEND ON STANDARD SHEET 502-08.
2. CENTER THE MANHOLE CASTING LONGITUDINALLY BETWEEN TRANSVERSE JOINTS ( $\pm 12"$ ).
3. MAINTAIN 10' SLAB LENGTHS. SLABS MAY BE LENGTHENED TO 16' TO RESOLVE CONFLICTS WITH STRUCTURES IN ADJACENT LANES PROVIDED THE GEOMETRIC REQUIREMENTS IN STANDARD SHEET 502-08, NOTE 3A ARE SATISFIED. ADD A LAYER OF WIRE MESH IF THE SLAB(S) CONTAINING THE TELESCOPING CASTING EXCEEDS 13' IN LENGTH. USE WELDED WIRE MESH, W4 4"x4". MAINTAIN A 3" CLEARANCE BETWEEN THE MESH AND ALL JOINTS, JOINT BARS, AND UTILITIES. THE GEOMETRIC REQUIREMENTS OF STANDARD SHEET 502-08, NOTE 3A DO NOT APPLY TO THE SLAB CONTAINING THE DRAINAGE STRUCTURE.
4. SUBSTITUTE ISOLATION JOINTS FOR EXPANSION JOINTS IF THE UTILITY OR DRAINAGE STRUCTURE TO BE ISOLATED IS NOT EXPOSED TO TRAFFIC SUCH AS IN THE SHOULDER, MEDIAN, OR GORE AREA.
5. EVENLY SPACE THE END DOWELS BETWEEN THE LONGITUDINAL JOINTS. DO NOT SPAN AN UNTIED LONGITUDINAL JOINT WITH A TRANSVERSE JOINT SUPPORT. USE SEPARATE SUPPORTS ON EITHER SIDE OF THE UNTIED LONGITUDINAL JOINT.
6. IF A TELESCOPING MANHOLE CASTING FALLS WITHIN 12" OF A LONGITUDINAL JOINT, SKEW THE JOINT AS DEPICTED IN DETAILS "B" AND "C" ON STANDARD SHEET 502-10. IF THE SKEWED JOINT IS AN UNTIED LONGITUDINAL JOINT (SHEAR KEY), OMIT THE TIE BARS DEPICTED IN DETAIL "C" ON STANDARD SHEET 502-10.
7. IF THE MASONRY PORTION OF A NON-TELESCOPING MANHOLE FALLS WITHIN 12" OF THE UNTIED LONGITUDINAL JOINT (SHEAR KEY), OFFSET THE LONGITUDINAL JOINT AS DEPICTED IN DETAIL "B" ON STANDARD SHEET 502-11.
8. IF THE MASONRY PORTION OF A NON-TELESCOPING MANHOLE FALLS WITHIN 12" OF THE UNTIED LONGITUDINAL JOINT (SHEAR KEY), BETWEEN LANES, OFFSET THE LONGITUDINAL JOINT AS DEPICTED IN DETAIL "B" ON STANDARD SHEET 502-11. IF THE MASONRY PORTION OF A NON-TELESCOPING MANHOLE FALLS WITHIN 12" OF THE UNTIED LONGITUDINAL JOINT (SHEAR KEY) IN FRONT OF THE DRAINAGE STRUCTURE, ELIMINATE THAT JOINT AND ISOLATE BOTH STRUCTURES IN A HEAVILY REINFORCED SLAB AS DEPICTED ON STANDARD SHEET 502-15.
9. SEE STANDARD SHEETS 502-10, 502-11, AND 502-15 FOR TELESCOPING MANHOLE CASTING, NON-TELESCOPING MANHOLE CASTING, DRAINAGE STRUCTURE CROSS SECTIONS, AND REINFORCEMENT DETAILS, RESPECTIVELY.

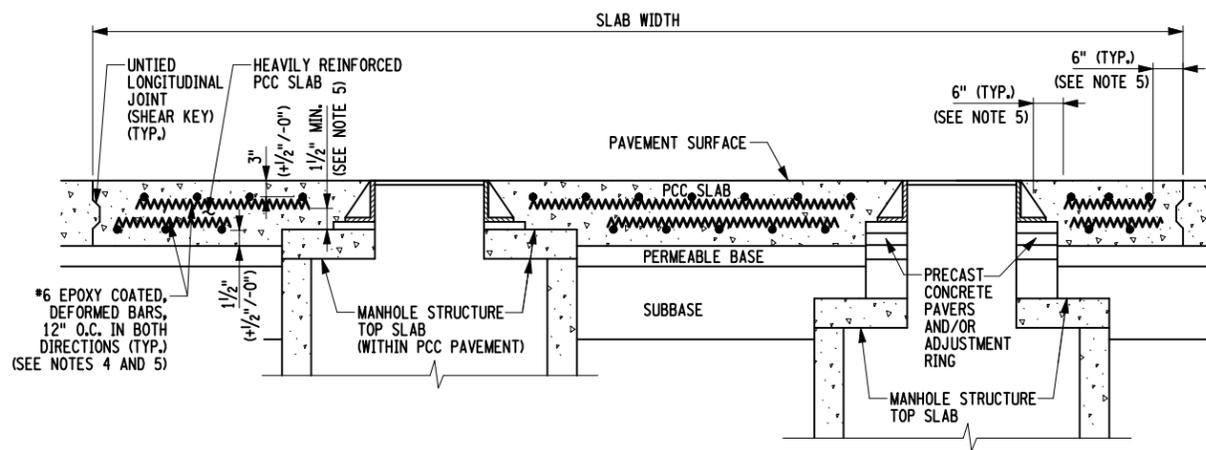
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 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
U.S. CUSTOMARY STANDARD SHEET	
DRAINAGE STRUCTURE ISOLATION NEAR MANHOLE CASTINGS	
APPROVED OCTOBER 15, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	502-14

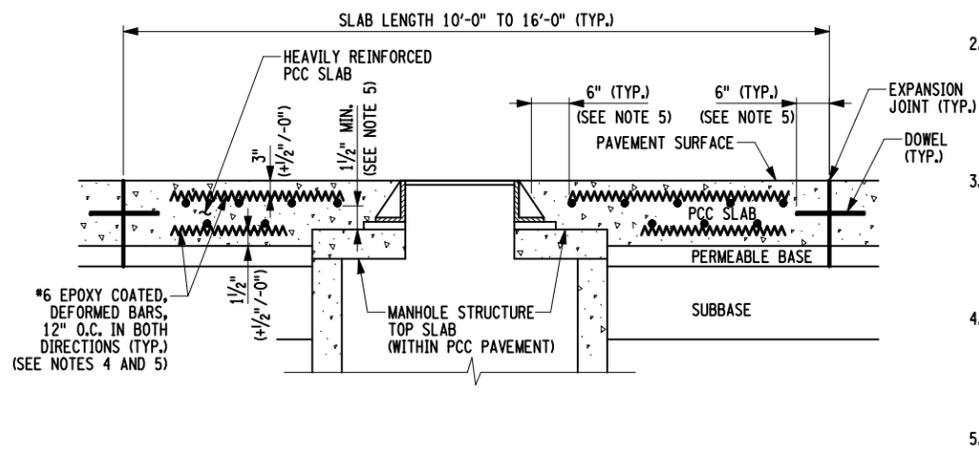
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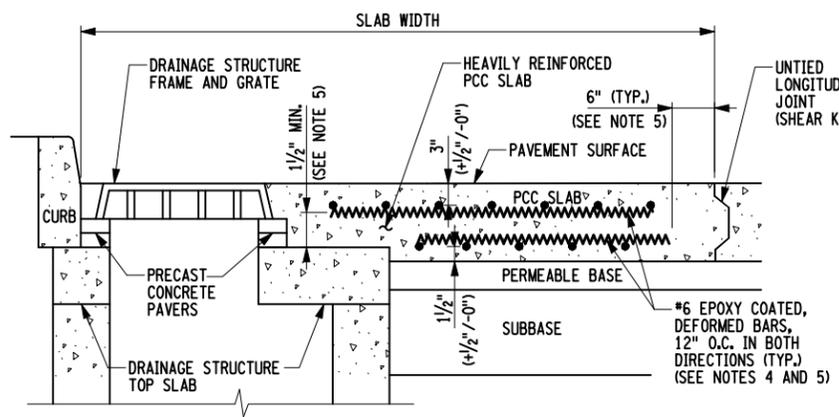
TYPICAL MULTIPLE UTILITIES ISOLATION  
PLAN VIEW



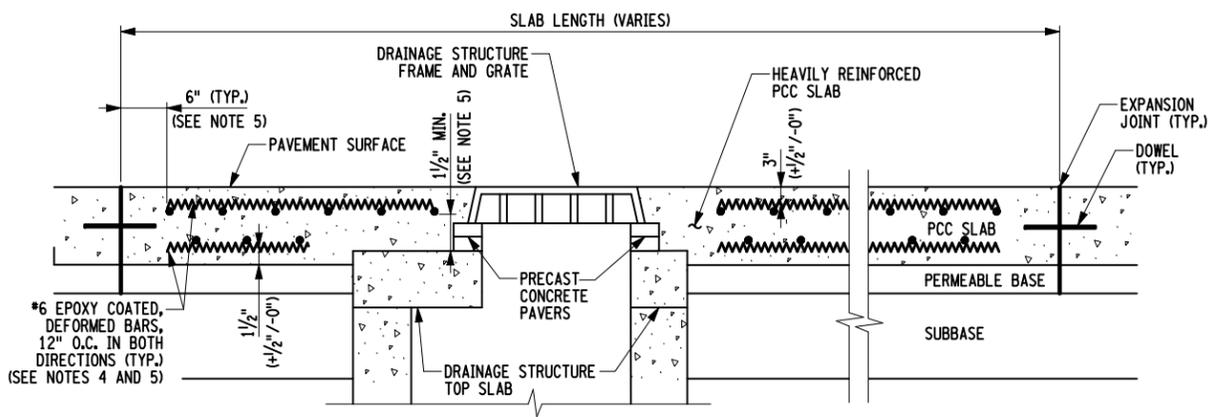
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

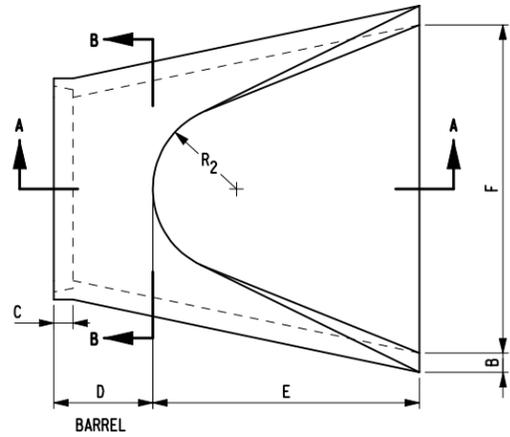
GENERAL NOTES:

- SEE GENERAL NOTES AND LEGEND ON STANDARD SHEET 502-08. THE GEOMETRIC REQUIREMENTS OF STANDARD SHEET 502-08, NOTE 3A, DO NOT APPLY TO HEAVILY REINFORCED SLABS.
- USE OF HEAVILY REINFORCED SLABS IN LANES EXPOSED TO TRAFFIC WHEN:
  - THE SLAB LENGTH REQUIRED TO ISOLATE A UTILITY (OR UTILITIES) IS GREATER THAN 16'-0" OR;
  - A SLAB LESS THAN 16'-0" LONG CONTAINS TWO OR MORE UTILITIES, EXCEPT FOR THE CONDITIONS DEPICTED ON STANDARD SHEET 502-14.
- CONSTRUCT HEAVILY REINFORCED SLABS SUCH THAT THE SLABS IN ADJACENT, UNREINFORCED LANES ARE BETWEEN 10'-0" TO 16'-0" LONG. ALIGN THE TRANSVERSE EXPANSION JOINTS THAT DEFINE THE HEAVILY REINFORCED SLAB WITH THE TRANSVERSE JOINTS IN THE ADJACENT LANE(S). TERMINATE TRANSVERSE JOINTS IN ADJACENT LANES AT THE UNTIED LONGITUDINAL (SHEAR KEY) JOINT IF THEY ARE LOCATED BETWEEN THE TRANSVERSE EXPANSION JOINTS DEFINING THE HEAVILY REINFORCED SLAB.
- IF A HEAVILY REINFORCED SLAB IS IN A LINE NOT ROUTINELY EXPOSED TO TRAFFIC, SUBSTITUTE TRANSVERSE ISOLATION JOINTS FOR TRANSVERSE EXPANSION JOINTS AND A SINGLE LAYER OF WIRE MESH REINFORCEMENT FOR THE REINFORCEMENT BARS. USE WELDED WIRE MESH, W4 4"X4" AND MAINTAIN A 3" CLEARANCE BETWEEN THE WIRE MESH AND ALL JOINTS, JOINT BARS, AND UTILITIES. PLACE THE WIRE MESH 4" FROM THE PAVEMENT SURFACE.
- MAINTAIN 6" CLEARANCE BETWEEN THE REINFORCEMENT BARS AND THE JOINTS, JOINT BARS, AND UTILITIES. MINIMUM VERTICAL CLEARANCE TO THE UTILITY STRUCTURES IS 1 1/2".
- THE DETAILS ARE VALID FOR EITHER ROUND OR RECTANGULAR UTILITY STRUCTURES.

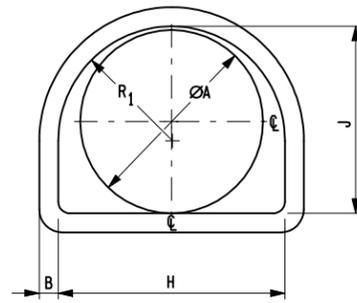
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 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
MULTIPLE UTILITIES ISOLATION	
APPROVED OCTOBER 15, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	502-15
EFFECTIVE DATE: 01/08/09	

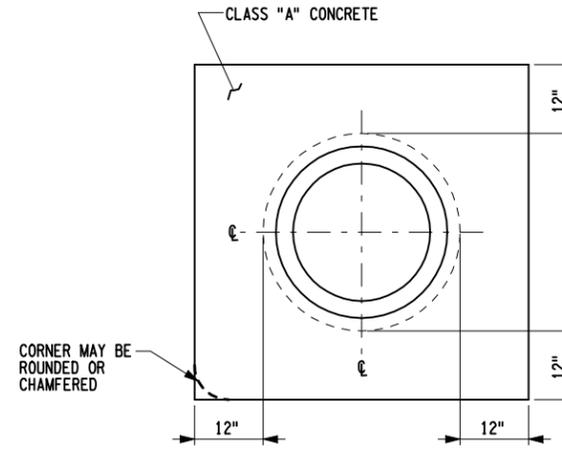
THE DETAILS BELOW MAY BE USED IN CONJUNCTION WITH STANDARD SPECIFICATION §603-3.02 SECTION-C LAYING BELL AND SPIGOT TYPE PIPE.



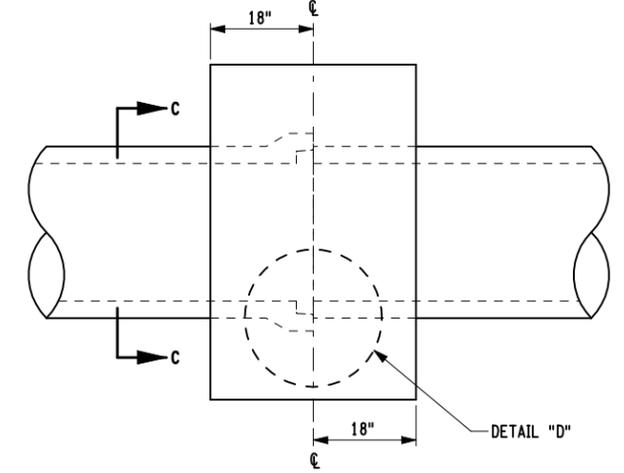
PLAN  
(SEE NOTE 5)



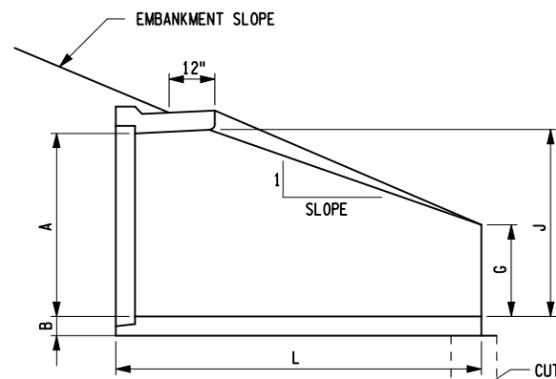
SECTION B-B



SECTION C-C

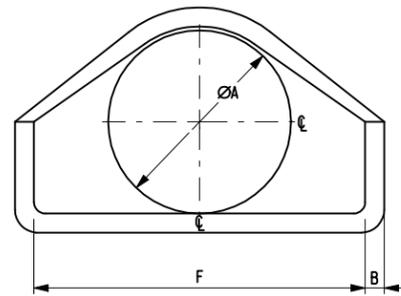


ELEVATION

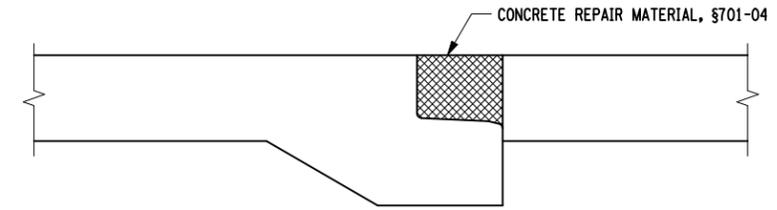


SECTION A-A

END SECTION



END VIEW



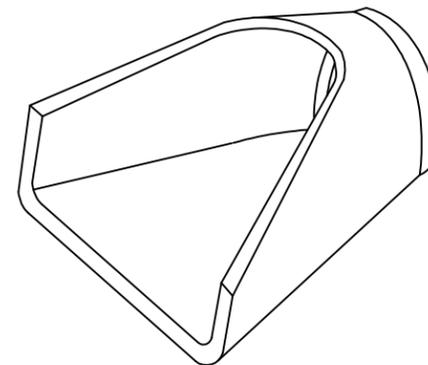
DETAIL "D"  
CONCRETE COLLAR

GENERAL NOTES:

1. THE GENERAL SPECIFICATION FOR REINFORCED CONCRETE PIPE, CLASS IV, SHALL APPLY EXCEPT AS MODIFIED BELOW.
2. REINFORCING TO BE AS SPECIFIED FOR REINFORCED CONCRETE PIPE, CLASS III. WHERE TWO CAGES OF REINFORCING ARE SPECIFIED IN CLASS III PIPE, IT SHALL APPLY TO THE BARREL OF THE END SECTION ONLY. REINFORCING FOR THE APRON SECTION SHALL BE ONE CAGE EQUAL TO THE INNER CAGE REQUIRED IN THE BARREL. AS AN ALTERNATE FOR REINFORCING FOR REINFORCED CONCRETE PIPE CLASS III, BAR REINFORCEMENT MAY BE SUPPLIED. THE BARS SHALL CONFORM TO THE REQUIREMENTS OF §709-01 BAR REINFORCEMENT FOR CEMENT CONCRETE AND SHALL BE SUPPLIED IN THE AMOUNT NEEDED TO MEET THE REQUIRED MAXIMUM REINFORCEMENT IN SQUARE INCHES PER LINEAR FEET OF PIPE BARREL.
3. JOINTS SHALL BE THE SAME AS REQUIRED FOR REINFORCED CONCRETE PIPE.
4. THE DIMENSIONS INDICATED IN THE TABLE ENTITLED "BASIC DIMENSIONS" ARE APPROXIMATE. REFER TO INDIVIDUAL PRODUCERS, APPROVED SHOP DRAWINGS FOR THE ACTUAL DIMENSIONS.
5. PLAN AND SECTION A-A INDICATES GROOVE TYPE JOINT ONLY. OTHER TYPES OF JOINTS (TONGUE, BELL, SPIGOT) SHALL BE FURNISHED AS REQUIRED.

BASIC DIMENSIONS													
A	B	C	D	E	F	G	H	J	SLOPE	R <sub>1</sub>	R <sub>2</sub>	RATIO $\frac{A_2}{A_1}$	L
12"	2"	SEE NOTE 3	48 $\frac{3}{8}$ "	24"	24"	4"	19 $\frac{5}{16}$ "	13"	2.7:1	10 $\frac{1}{8}$ "	9"	1.92	6'-0 $\frac{3}{8}$ "
15"	2 $\frac{3}{8}$ "		48 $\frac{3}{8}$ "	24"	29 $\frac{1}{2}$ "	8 $\frac{1}{2}$ "	28 $\frac{5}{8}$ "	16"	2.7:1	12 $\frac{3}{8}$ "	10 $\frac{1}{2}$ "	1.90	6'-0 $\frac{3}{8}$ "
18"	2 $\frac{1}{2}$ "		46"	27"	36"	9"	29"	19"	2.7:1	15 $\frac{1}{2}$ "	12"	1.88	6'-1"
21"	2 $\frac{3}{4}$ "		38 $\frac{3}{4}$ "	35"	42"	9"	29 $\frac{1}{2}$ "	22"	2.8:1	16 $\frac{1}{8}$ "	13"	2.37	6'-1 $\frac{1}{4}$ "
24"	3"		30"	43 $\frac{1}{2}$ "	48"	9 $\frac{1}{2}$ "	33 $\frac{3}{16}$ "	25"	2.8:1	16 $\frac{3}{16}$ "	14"	1.58	6'-1 $\frac{1}{2}$ "
27"	3 $\frac{1}{4}$ "		25 $\frac{1}{2}$ "	48"	54"	10 $\frac{1}{2}$ "	36"	28"	2.8:1	18 $\frac{1}{2}$ "	14 $\frac{1}{2}$ "	1.89	6'-1 $\frac{1}{2}$ "
30"	3 $\frac{1}{2}$ "		19 $\frac{3}{4}$ "	54"	60"	12"	37"	31"	2.8:1	18 $\frac{3}{8}$ "	15"	1.41	6'-1 $\frac{3}{4}$ "
33"	3 $\frac{3}{4}$ "		39 $\frac{3}{8}$ "	58 $\frac{1}{2}$ "	66"	13 $\frac{1}{2}$ "	43 $\frac{1}{4}$ "	34"	2.9:1	21 $\frac{1}{2}$ "	19 $\frac{1}{4}$ "	1.49	8'-1 $\frac{1}{8}$ "
36"	4"		34 $\frac{3}{4}$ "	63"	72"	15"	47 $\frac{3}{16}$ "	37"	2.9:1	24 $\frac{5}{16}$ "	20"	1.50	8'-1 $\frac{3}{4}$ "
42"	4 $\frac{1}{2}$ "		35"	63"	78"	21"	53 $\frac{7}{8}$ "	43"	2.9:1	27 $\frac{1}{2}$ "	22"	1.46	8'-2"
48"	5"	26"	72"	87"	24"	59 $\frac{1}{2}$ "	49"	2.9:1	30"	22"	1.40	8'-2"	

A1 = AREA OF NOMINAL DIAMETER  
A2 = AREA THRU SECTION B-B



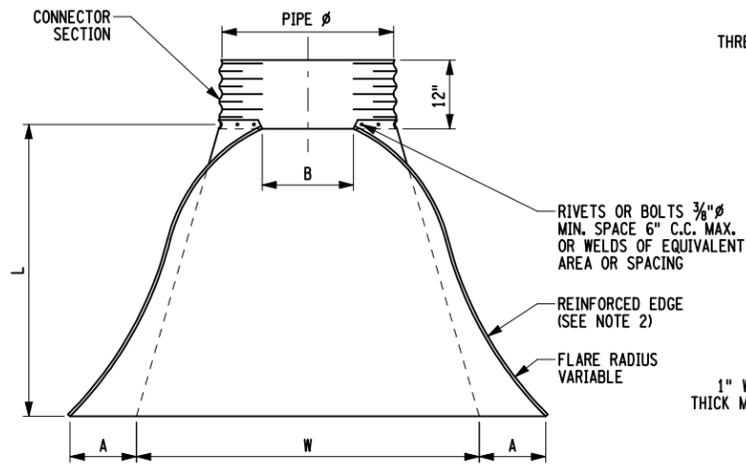
ISOMETRIC VIEW  
END SECTION

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
<b>REINFORCED CONCRETE PIPE END SECTIONS AND CONCRETE COLLARS</b>		
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036	
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)		603-01

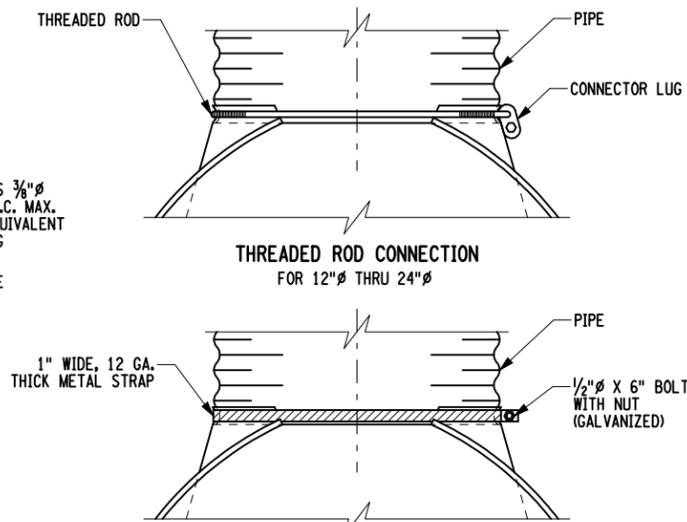
EFFECTIVE DATE: 01/08/09

CORRUGATED METAL PIPE										
PIPE DIA.	END SECTION GAUGE AND DIMENSIONS						APPROX. SLOPE	BODY PIECES (NOTE 4)	TOE PLATE EXTENSION	
	GAUGE	A 1"±	B 1"±	H 1"±	L 1 1/2"±	W 2"±			DEPTH	LENGTH 2"±
12"	16	6"	6"	6"	21"	24"	2-1/2	1 OR 2	8"	34"
15"	16	7"	8"	6"	26"	30"	2-1/2	1 OR 2	8"	40"
18"	16	8"	10"	6"	31"	36"	2-1/2	1 OR 2	8"	46"
21"	16	9"	12"	6"	36"	42"	2-1/2	1 OR 2	8"	52"
24"	16	10"	13"	6"	41"	48"	2-1/2	1 OR 2	8"	58"
30"	14	12"	16"	8"	51"	60"	2-1/2	1 OR 2	8"	70"
36"	14	14"	19"	9"	60"	72"	2-1/2	1 OR 2	8"	92"
42"	12	16"	22"	11"	69"	84"	2-1/2	1 OR 2	8"	104"
48"	12	18"	27"	12"	78"	90"	2-1/4	1, 2 OR 3	8"	110"
54"	12	18"	30"	12"	84"	102"	2	1, 2 OR 3	8"	122"
60"	12	18"	33"	12"	87"	114"	1-3/4	3	12"	134"
66"	12	18"	36"	12"	87"	120"	1-1/2	3	12"	140"
72"	12	18"	39"	12"	87"	126"	1-1/3	3	12"	146"
78"	12	18"	42"	12"	87"	132"	1-1/4	3	12"	152"
84"	12	18"	45"	12"	87"	138"	1-1/6	3	12"	158"
90"	12	24"	37"	12"	87"	144"	1-1/2	3	12"	164"
96"	12	25"	35"	12"	87"	150"	1-1/2	3	12"	170"

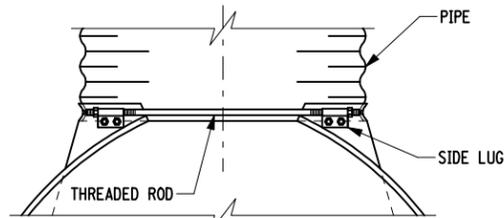
CORRUGATED METAL PIPE ARCH											
2 2/3" X 1 1/2" CORRUGATION	3" X 1" OR 5" X 1" CORRUGATION	END SECTION GAUGE AND DIMENSIONS					APPROX. SLOPE	BODY PIECES (NOTE 4)	TOE PLATE EXTENSION		
		SPAN AND RISE	SPAN AND RISE	GAUGE	A 1"±	B 1"±			H 1"±	L 1 1/2"±	W 2"±
17" X 13"		16	7"	9"	6"	19"	30"	2-1/2	1 OR 2	8"	40"
21" X 15"		16	7"	10"	6"	23"	36"	2-1/2	1 OR 2	8"	46"
24" X 18"		16	8"	12"	6"	28"	42"	2-1/2	1 OR 2	8"	52"
28" X 20"		16	9"	14"	6"	32"	48"	2-1/2	1 OR 2	8"	58"
35" X 24"		14	10"	16"	6"	39"	60"	2-1/2	1 OR 2	8"	70"
42" X 29"		14	12"	18"	8"	46"	75"	2-1/2	1 OR 2	8"	85"
49" X 33"		12	13"	21"	9"	53"	85"	2-1/2	1 OR 2	8"	105"
57" X 38"		12	18"	26"	12"	63"	90"	2-1/2	1, 2 OR 3	8"	110"
64" X 43"		12	18"	30"	12"	70"	102"	2-1/2	1, 2 OR 3	8"	122"
71" X 47"	60" X 46"	12	18"	33"	12"	77"	114"	2-1/4	3	8"	134"
77" X 52"	66" X 51"	12	18"	36"	12"	77"	126"	2	3	12"	146"
83" X 57"	73" X 55"	12	18"	39"	12"	77"	138"	2	3	12"	158"
	81" X 59"	12	18"	39"	12"	77"	148"	1-1/2	3	12"	168"
	87" X 63"	12	22"	38"	12"	77"	162"	1-1/2	3	12"	182"
	95" X 67"	12	22"	34"	12"	77"	174"	1-1/2	3	12"	194"
	103" X 71"	12	22"	38"	12"	77"	174"	1-1/2	3	12"	194"
	112" X 75"	12	24"	40"	12"	77"	174"	1-1/2	3	12"	194"



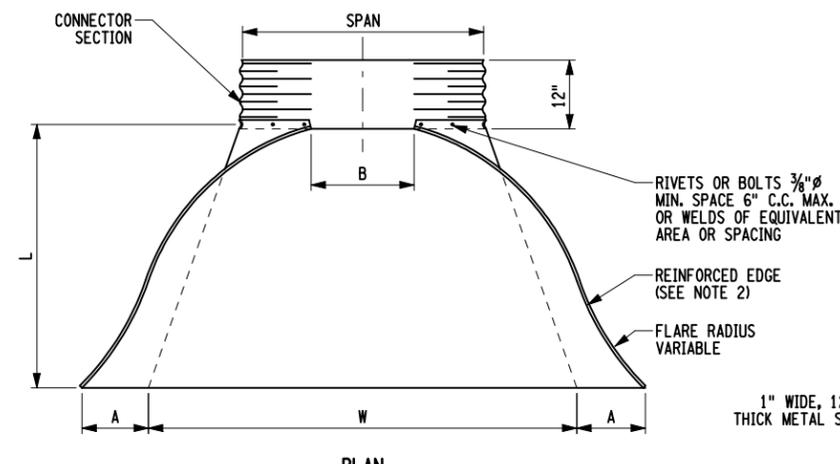
PLAN WITH CONNECTOR SECTION SHOWN FOR ALL SIZES THIS SHEET



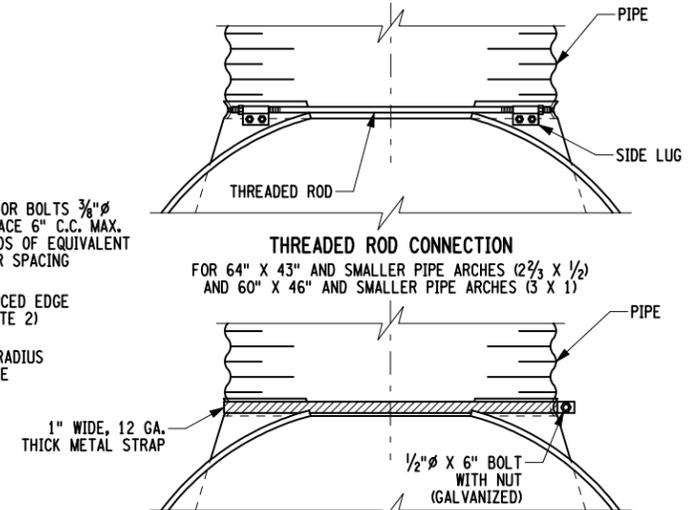
METAL STRAP CONNECTION FOR 12" Ø THRU 24" Ø (SEE NOTE 5)



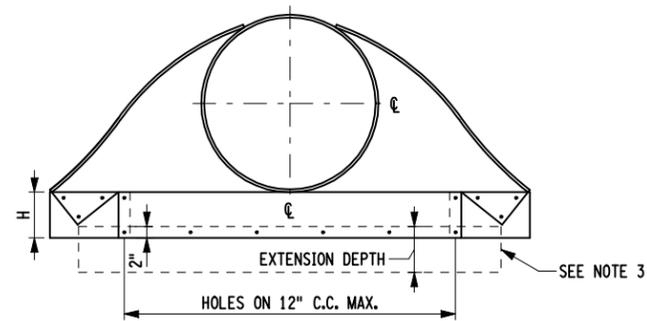
THREADED ROD CONNECTION FOR 54" Ø AND SMALLER



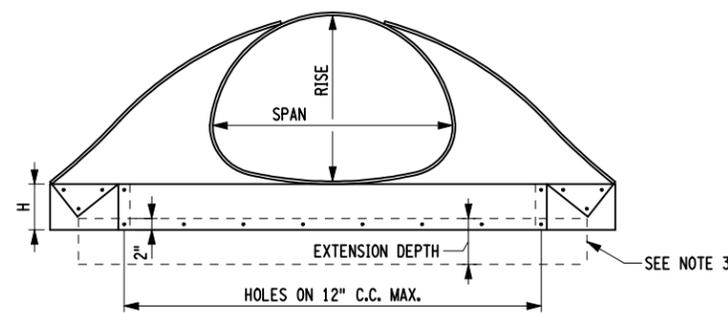
PLAN WITH CONNECTOR SECTION SHOWN FOR ALL SIZES THIS SHEET



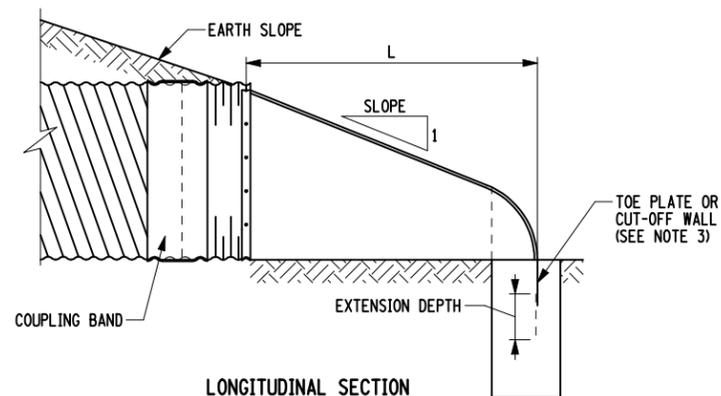
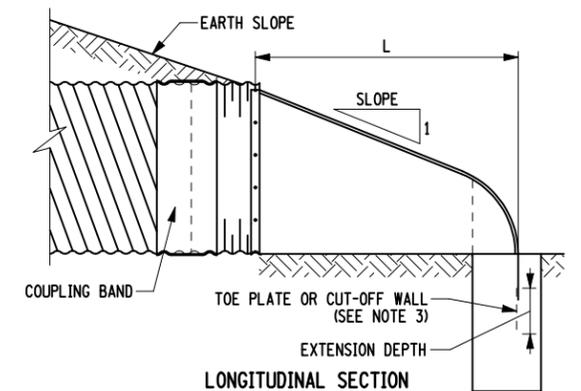
METAL STRAP CONNECTION FOR 28" X 20" ARCHES AND SMALLER (SEE NOTE 6)



ELEVATION



ELEVATION



LONGITUDINAL SECTION WITH CONNECTOR SECTION SHOWN FOR ALL SIZES THIS SHEET

NOTES:

- ALL PIPES AND PIPE ARCHES WHOSE DIMENSIONS ARE LARGER THAN THOSE LISTED BELOW SHALL HAVE 12 GA. SIDES AND 10 GA. CENTER PANELS: PIPES - 54", PIPE ARCHES - 64" X 43" (2 2/3 X 1 1/2), 60" X 46" (3 X 1 OR 5 X 1). PIPES AND PIPE ARCHES WHOSE DIMENSIONS ARE EQUAL TO OR SMALLER THAN THOSE LISTED ABOVE, WHICH ARE ALLOWED TO BE ASSEMBLED FROM 3 PIECES, SHALL HAVE 12 GA. SIDES AND 10 GA. CENTER PANELS.
- REINFORCED EDGES SHALL BE SUPPLEMENTED WITH STIFFENER ANGLES FOR THE FOLLOWING PIPES AND PIPE ARCHES: PIPES - 60" OR LARGER, PIPE ARCHES - 77" X 52" (2 2/3 X 1 1/2), 73" X 55" (3 X 1 OR 5 X 1), THE ANGLES SHALL BE THE SAME BASE METAL AS THE END SECTION AND SHALL BE 2" X 2" X 1/4" FOR 60" THRU 72" DIAMETERS AND 2 1/2" X 2 1/2" X 1/4" FOR 78" Ø AND LARGER. THE ANGLES SHALL BE ATTACHED BY 3/8" Ø GALVANIZED NUTS AND BOLTS. PIPE ARCHES EQUAL TO OR LARGER THAN 77" X 52" (2 2/3 X 1 1/2), 73" X 55" (3 X 1 OR 5 X 1) SHALL HAVE REINFORCEMENT PLACED UNDER THE CENTER PANEL SEAMS.
- A TOE PLATE EXTENSION SHALL BE SUPPLIED WHEN SPECIFIED IN DRAINAGE STRUCTURE TABLE. THE TOE PLATE EXTENSION SHALL BE THE SAME BASE METAL AS THE END SECTION AND SHALL BE FASTENED TO THE END SECTION WITH 3/8" Ø BOLTS. A CUT-OFF WALL SHALL BE POURED IF INDICATED IN THE CONTRACT DOCUMENTS. PAYMENT WILL BE MADE UNDER APPROPRIATE CONTRACT ITEMS. REFER TO STANDARD SHEET "CUT-OFF WALLS FOR END SECTIONS".
- FOR PIPES AND PIPE ARCHES WITH 3 PIECE BODIES, THE WIDTH OF THE CENTER PANEL SHALL BE GREATER THAN 20% OF THE PIPE PERIPHERY. MULTIPLE PANEL BODIES SHALL HAVE LAP SEAMS WHICH SHALL BE TIGHTLY JOINED BY 3/8" Ø GALVANIZED RIVETS OR BOLTS.
- THE CONTRACTOR SHALL HAVE THE OPTION OF SUPPLYING EITHER A THREADED ROD CONNECTION OR METAL STRAP CONNECTION.
- THE CONTRACTOR SHALL HAVE THE OPTION OF SUPPLYING EITHER A THREADED ROD CONNECTION OR A METAL STRAP CONNECTION FOR 17" X 13" THRU 28" X 20" PIPE ARCHES (2 2/3 X 1 1/2) ONLY.

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

ALUMINUM AND STEEL END SECTIONS  
FOR CORRUGATED PIPE AND PIPE ARCH

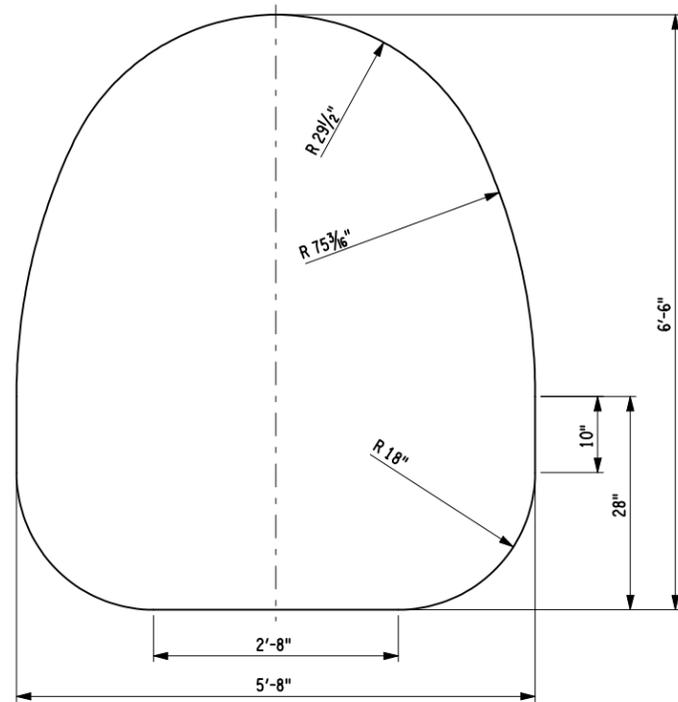
APPROVED OCTOBER 01, 2008

/S/ ROBERT L. SACK, P.E.  
DEPUTY CHIEF ENGINEER  
(TECHNICAL SERVICES)

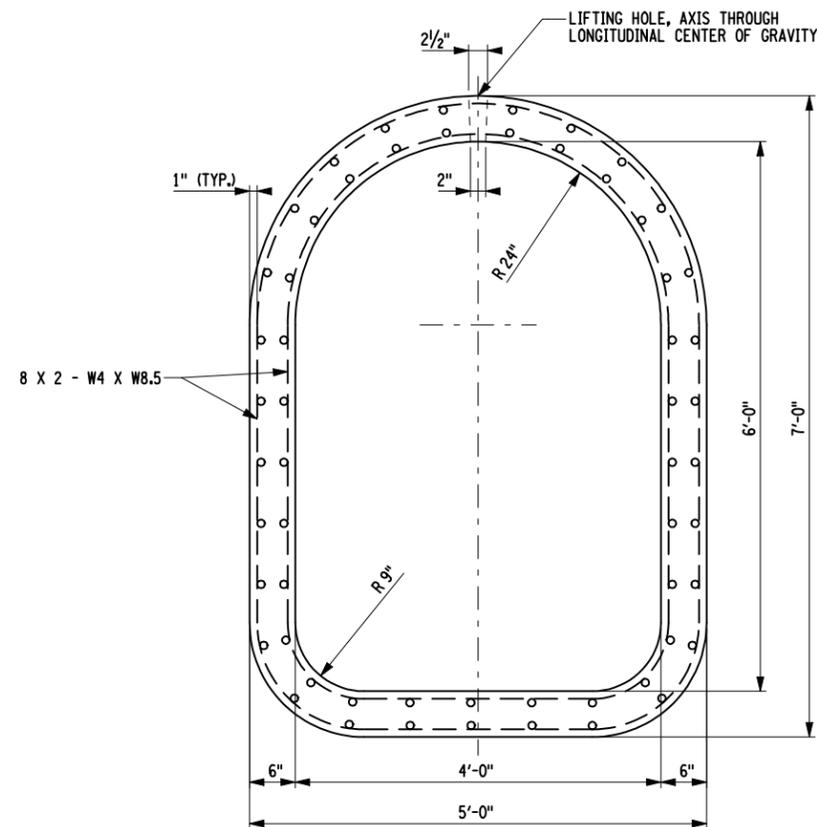
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603-02

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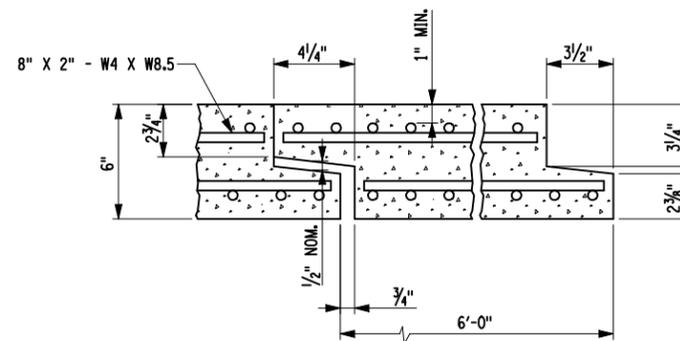
CORRUGATED STRUCTURAL STEEL  
PLATE UNDERPASS



CROSS SECTION

NOTES:

1. ALL DIMENSIONS ARE NOMINAL.
2. USE 12 GAUGE THICK PLATE FOR ALL MULTI-PLATE CATTLE UNDERPASSES UNDER FILLS OF LESS THAN 30'-0". FOR FILLS OVER 30'-0", A SPECIAL DESIGN SHALL BE USED.
3. INSTALLATION FOR MULTI-PLATE CATTLE UNDERPASSES SHALL CONFORM WITH THE INSTALLATION DETAILS FOR STRUCTURAL PLATE PIPE ARCHES ON STANDARD SHEET TITLED "INSTALLATION DETAILS FOR CORRUGATED AND STRUCTURAL PLATE PIPE AND PIPE ARCHES".

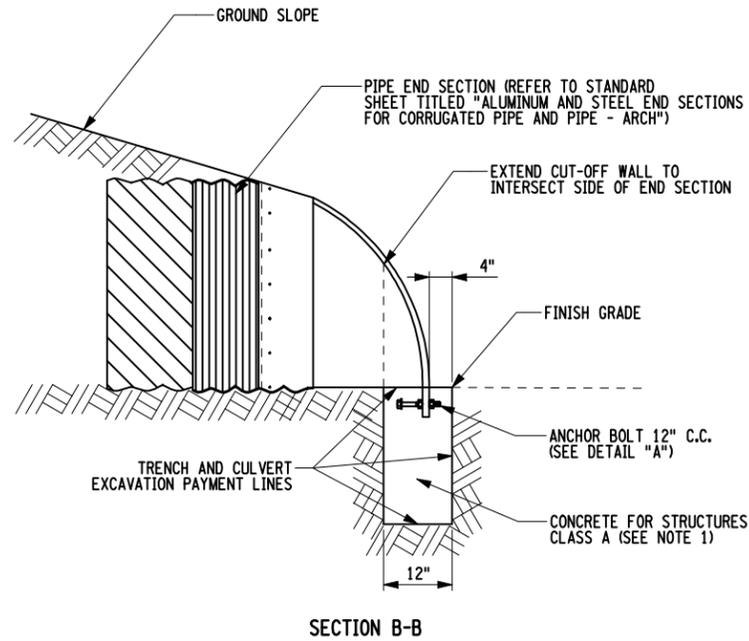
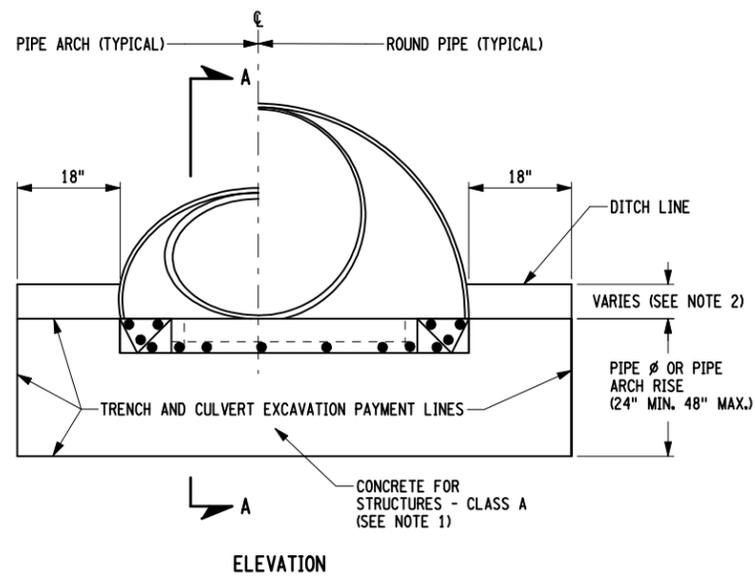


JOINT DETAIL

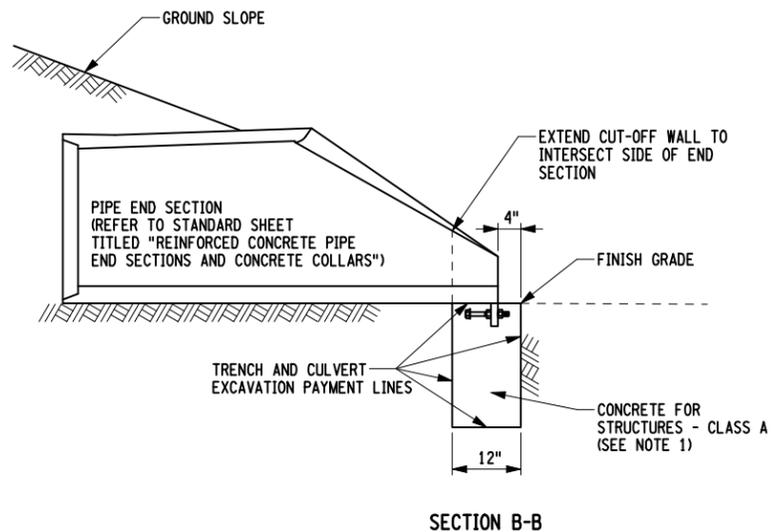
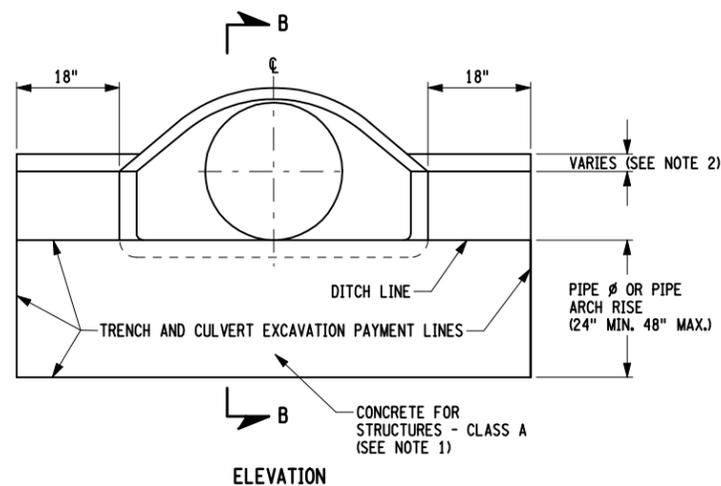
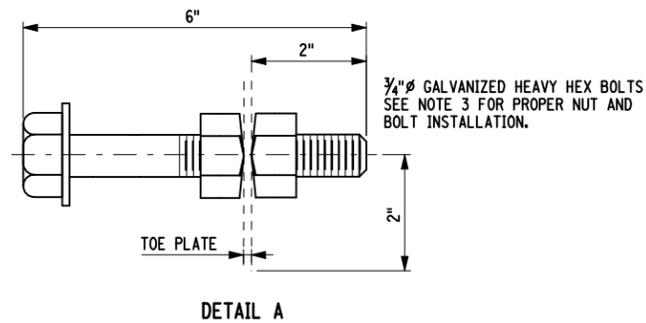
REINFORCED CONCRETE CATTLE PASS

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
CATTLE PASS		
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036	
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	603-03	

EFFECTIVE DATE: 01/08/09



CUT-OFF WALL  
CORRUGATED METAL PIPE AND PIPE ARCH END SECTIONS



CUT-OFF WALL  
REINFORCED CONCRETE PIPE END SECTIONS

PIPE DIAMETER (IN.)	CORRUGATED METAL PIPE		2 3/4" X 1/2" CORRUGATION		3" X 1" OR 5" X 1" CORRUGATION		CORRUGATED METAL PIPE ARCH	
	EXCAVATION PAYMENT VOLUME (yd <sup>3</sup> )	CONCRETE PAYMENT VOLUME (yd <sup>3</sup> )	SPAN (IN.)	RISE (IN.)	SPAN (IN.)	RISE (IN.)	EXCAVATION PAYMENT VOLUME (yd <sup>3</sup> )	CONCRETE PAYMENT VOLUME (yd <sup>3</sup> )
12	0.43	0.46	17	13			0.47	0.52
15	0.47	0.51	21	15			0.51	0.56
18	0.52	0.56	24	18			0.56	0.61
21	0.58	0.61	28	20			0.60	0.67
24	0.61	0.67	35	24			0.71	0.77
30	0.89	0.94	42	29			0.99	1.06
36	1.22	1.27	49	33			1.23	1.29
42	1.58	1.65	57	38			1.56	1.63
48	1.94	2.00	64	43	60	46	1.99	2.07
54	2.08	2.15	71	47	66	51	2.22	2.32
60	2.22	2.29	77	52	73	55	2.37	2.47
66	2.29	2.35	83	57	81	59	2.51	2.63
72	2.37	2.43			87	63	2.72	2.86
78	2.43	2.50			95	67	2.89	3.05
84	2.51	2.58			103	71	3.03	3.20
90	2.72	2.80			112	75	3.07	3.27
96	2.81	2.89						

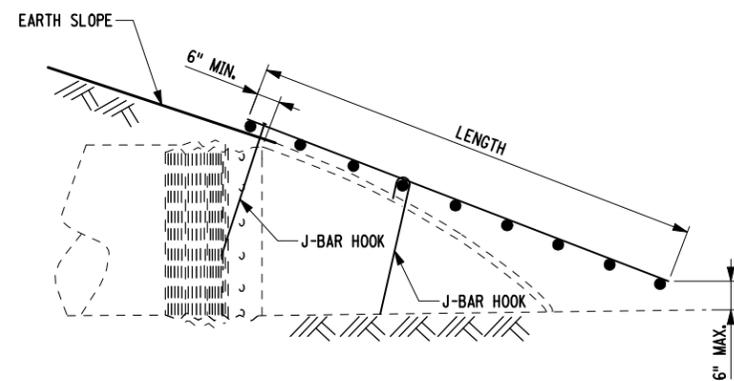
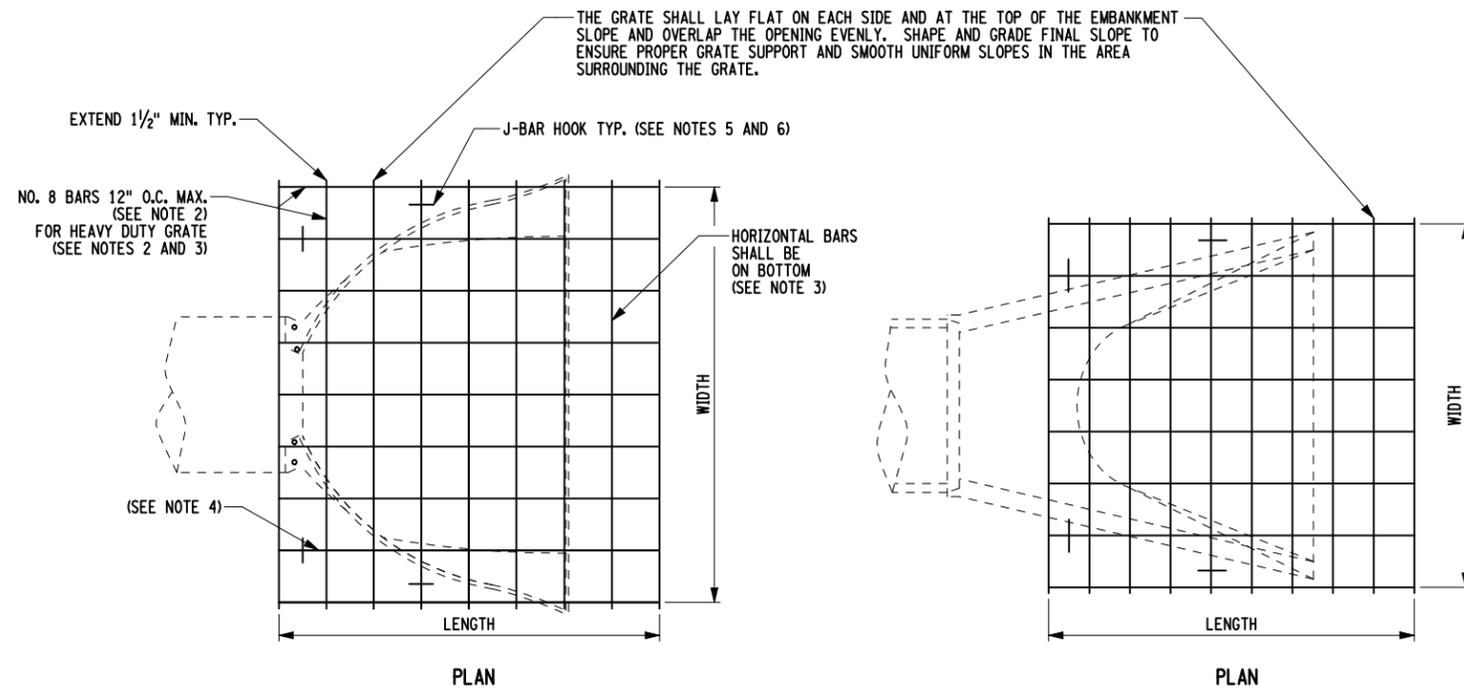
CONCRETE END SECTION DIAMETER (IN.)	EXCAVATION PAYMENT VOLUME (yd <sup>3</sup> )	CONCRETE PAYMENT VOLUME (yd <sup>3</sup> )
12	0.38	0.41
15	0.42	0.46
18	0.46	0.50
21	0.50	0.54
24	0.54	0.58
27	0.64	0.69
30	0.76	0.80
33	0.92	0.95
36	1.02	1.07
42	1.27	1.35
48	1.57	1.65

NOTES:

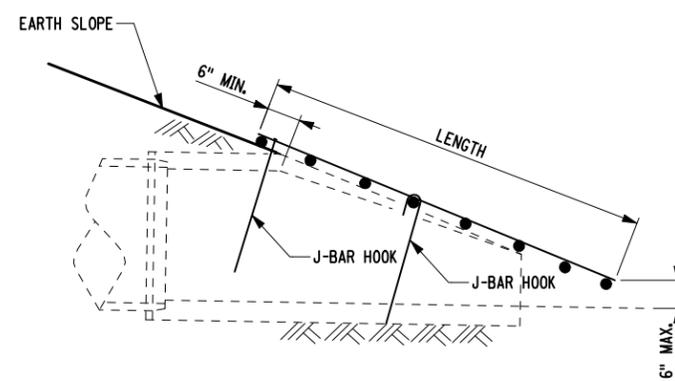
- CUT-OFF WALL SHALL BE CAST IN PLACE. THE PORTION OF THE CONCRETE CUT-OFF WALL BELOW THE FINAL GRADE LINE SHALL BE CAST AGAINST UNDISTURBED SOIL IF FEASIBLE. THE CONCRETE CUT-OFF WALL SHALL BE POURED AFTER THE END SECTION IS INSTALLED.
- VARIES BASED ON DIMENSIONS OF SPECIFIED END SECTION.
- ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF §707-20. THE NUTS AND BOLTS SHALL BE SO ASSEMBLED THAT IN THE FINAL ASSEMBLY, THE BOLT AND ONE OF THE NUTS IS EMBEDDED IN CONCRETE, THAT THE CHAMFERED FACES OF THE NUTS FACE EACH OTHER, AND SECURE THE TOE PLATE BETWEEN THEM.

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
CUT - OFF WALLS FOR END SECTIONS		
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036	
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	603-04	

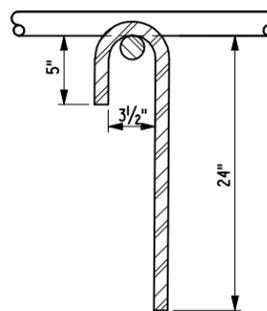
EFFECTIVE DATE: 01/08/09



SECTION  
METAL END SECTION SAFETY GRATE



SECTION  
REINFORCED CONCRETE END SECTION SAFETY GRATE



TYPICAL J-BAR HOOK

NOTES:

- CORRUGATED POLYETHYLENE PIPES UTILIZE METAL END SECTIONS WHICH ARE ONE STANDARD PIPE DIAMETER LARGER THAN CORRUGATED STEEL PIPE. THEREFORE, A SAFETY GRATE FOR A 36" DIA. CORRUGATED POLYETHYLENE PIPE WOULD HAVE DIMENSIONS OF 10'-0" X 7'-0".
- BARS SHALL BE GRADE 60, FULL LENGTH, WITH NO SPLICES OR BUTT WELDS. VERTICAL BARS SHALL BE ON TOP.
- THE HORIZONTAL BARS SHALL BE NO. 11 FOR THE HEAVY-DUTY GRATES.
- BARS SHALL BE WELDED AT EACH INTERSECTION WITH 4 TACK WELDS OR A DOUBLE FLARE BEVEL GROOVE WELD, AT THE CONTRACTOR'S OPTION. WELDING SHALL MEET THE REQUIREMENTS OF THE NYS STEEL CONSTRUCTION MANUAL, EXCEPT THAT RADIOGRAPHIC INSPECTION WILL NOT BE REQUIRED.
- J-BAR HOOKS SHALL BE NO. 6 BAR, OR NO. 4 GALVANIZED IN ACCORDANCE WITH §719-01.
- J-BAR HOOKS SHOWN INSTALLED PERPENDICULAR TO SLOPE. HOOKS MAY ALSO BE INSTALLED VERTICALLY. J-BAR SHALL BE WITH LONG LEGS ON THE DOWNHILL SIDE.
- PAYMENT AREA OF SAFETY GRATES FOR PIPE DIMENSIONS OTHER THAN THOSE LISTED IN THE TABLE WILL BE BASED ON THE PRODUCT OF THE OVERALL LENGTH AND WIDTH.

CULVERT-END SAFETY GRATE DIMENSIONS AND PAYMENT AREAS				
PIPE DIMENSION (IN.)	WIDTH (FT.)	LENGTH (FT.)	PAYMENT AREA (SQ. FT.)	
REINFORCED CONCRETE PIPE				
18	4	4	16	
24	5	6	30	
30	6	8	48	
36	7	9	63	
42	8	11	88	
48	9	12	108	
CORRUGATED METAL PIPE (CORR. HDPE PIPE)				
18	5	4	20	
24 (18)	6	5	30	
30 (24)	8	5	40	
36 (30)	9	6	54	
42 (36)	10	7	70	
48 (42)	11	8	88	
(48)	12	9	108	
CORRUGATED METAL PIPE ARCH				
2 2/3 x 1/2	3 X 1 OR 5 X 1			
35 X 24	---	7	4	28
42 X 29	---	9	5	45
49 X 33	---	10	6	60
57 X 38	---	11	7	77
64 X 43	60 X 46	12	7	84
71 X 47	---	13	8	104

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STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

CULVERT-END SAFETY GRATE

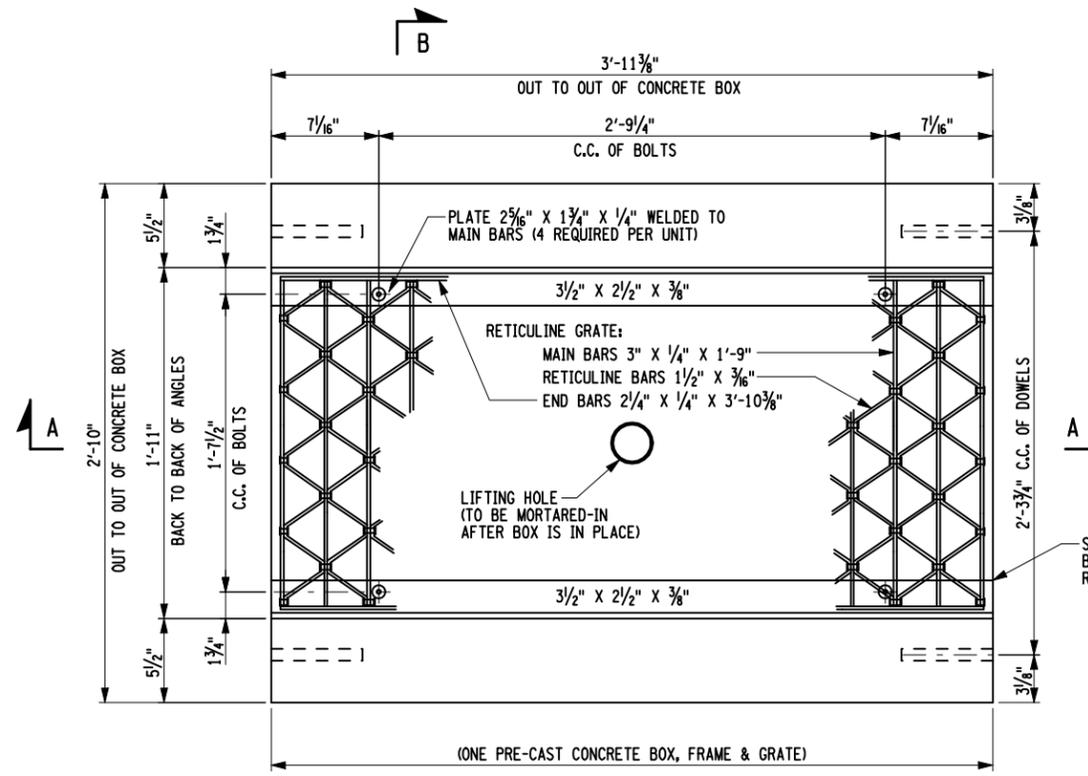
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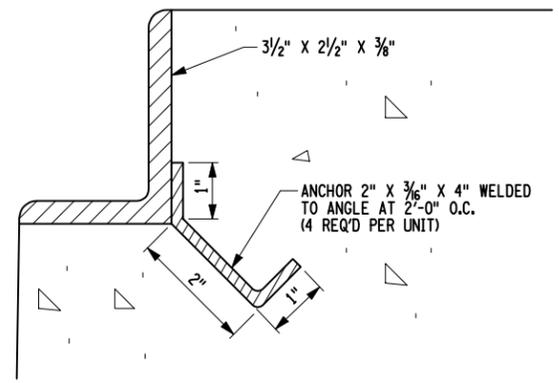
/S/ ROBERT L. SACK, P.E.  
DEPUTY CHIEF ENGINEER  
(TECHNICAL SERVICES)

603-05

EFFECTIVE DATE: 01/08/09

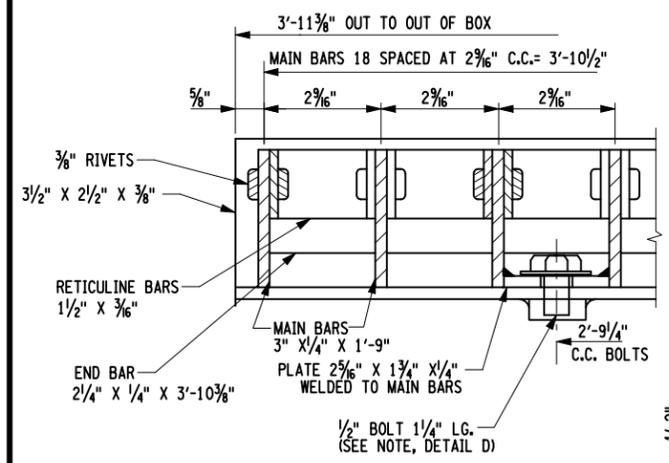


NOTE: GRATING AND ANGLE FRAME TO BE GALVANIZED IN CONFORMANCE WITH SUBSECTION 719-01 TYPE I OF THE STANDARD SPECIFICATION.

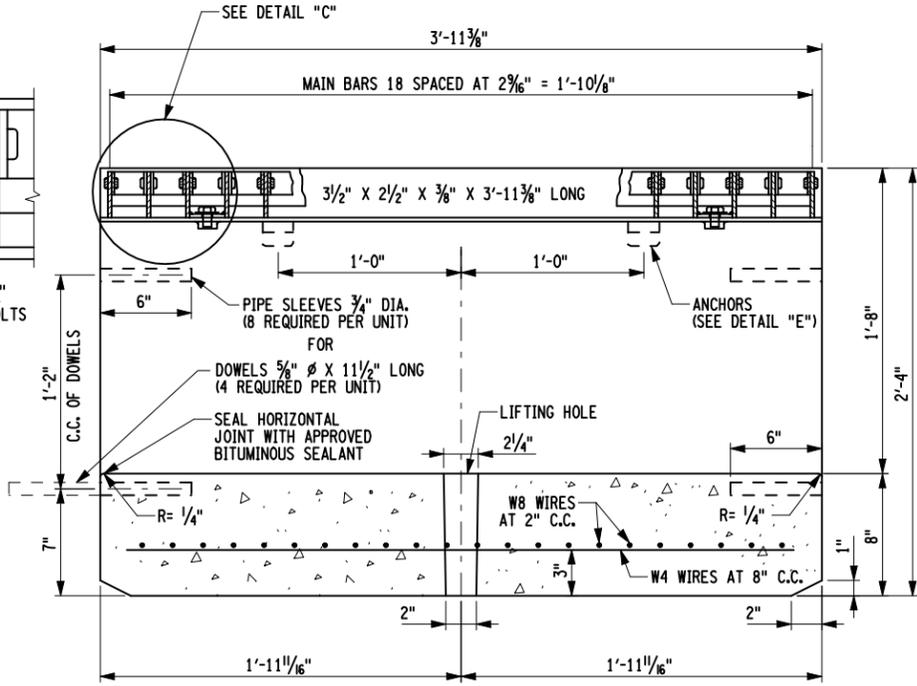


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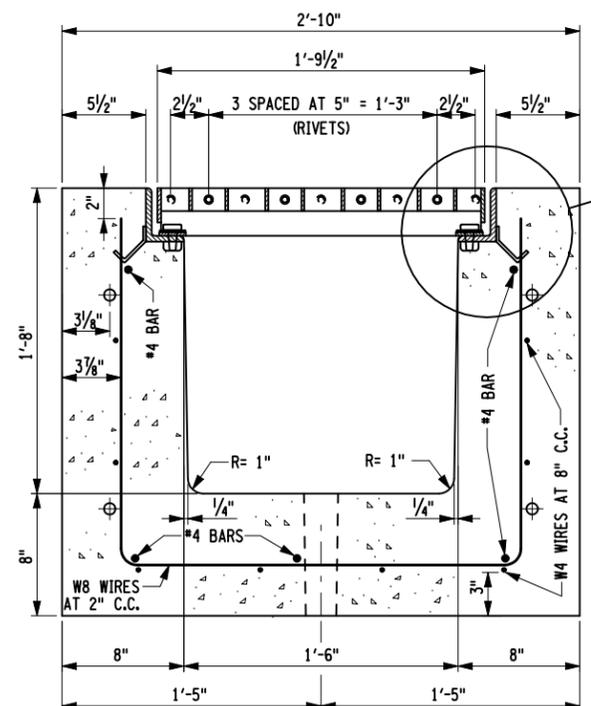
PLAN



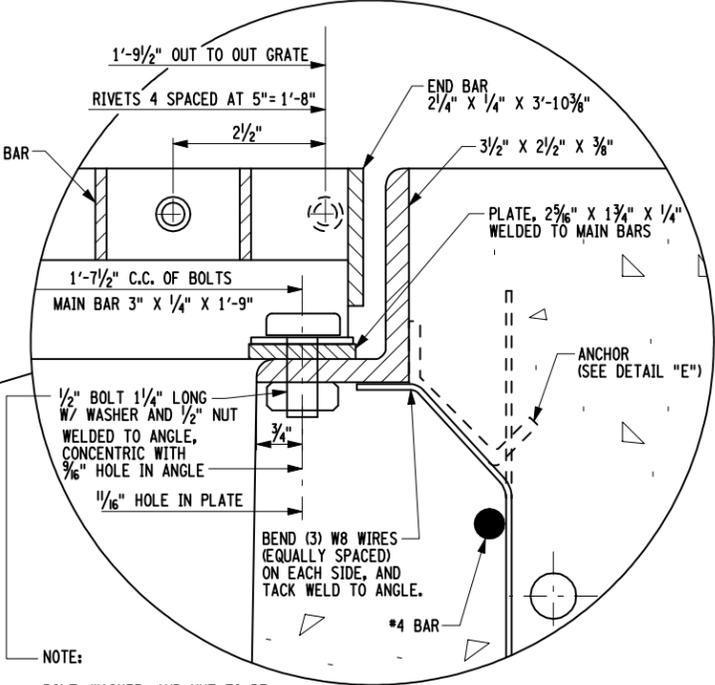
DETAIL "C"



SECTION A-A



SECTION B-B



DETAIL "D"

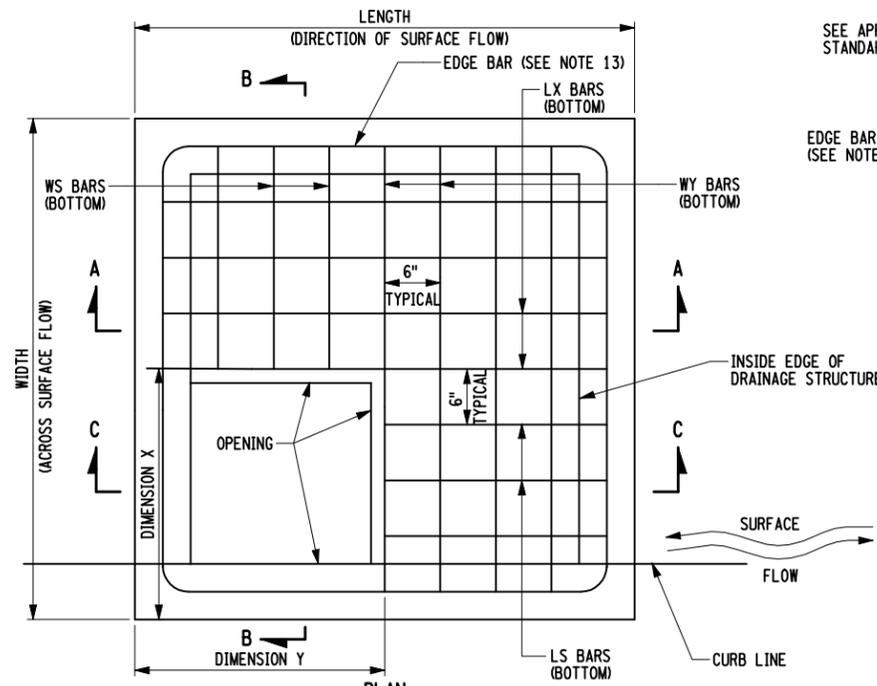
NOTE: BOLT, WASHER, AND NUT TO BE TYPE 316 STAINLESS STEEL OR MONEL METAL. IN WELDING MONEL METAL NUT TO ANGLE IT IS RECOMMENDED THAT NI ROD #55 BE USED.

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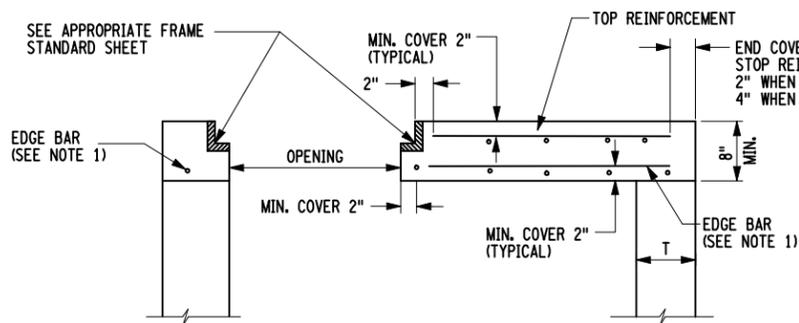
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
PRE-CAST CONCRETE TRANSVERSE DRAINAGE INTERCEPTOR	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	604-01

EFFECTIVE DATE: 01/08/09

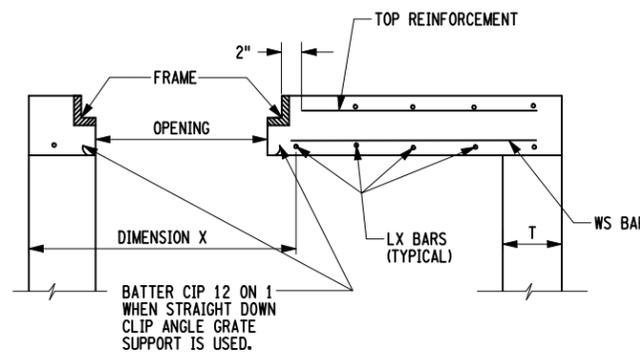




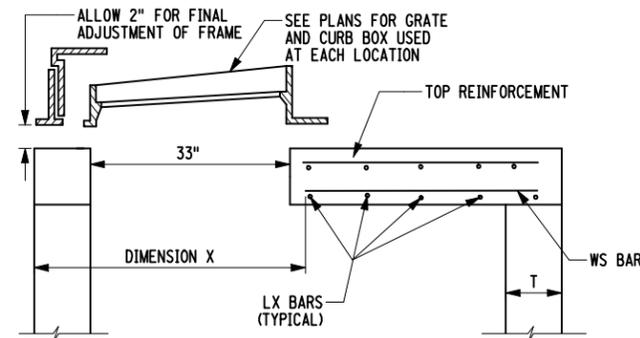
PLAN  
TOP SLAB BAR LAYOUT  
FOR WELDED, PARALLEL BAR  
AND CAST FRAMES  
SEE SHEET 3 OF 4 FOR BAR LIST AND TOP SLAB DIMENSIONS



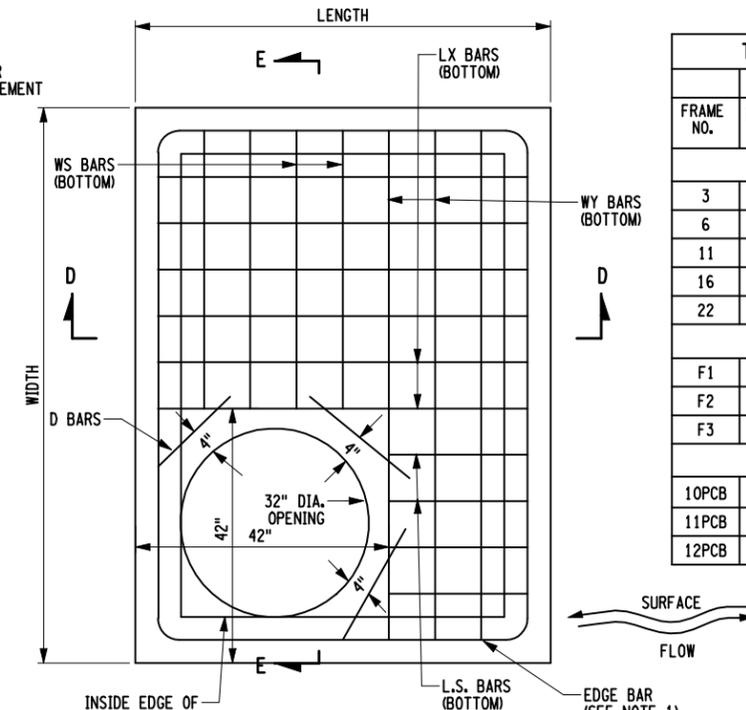
SECTION B-B  
TYPICAL FOR ALL TYPES OF FRAMES



SECTION B-B  
WELDED FRAME

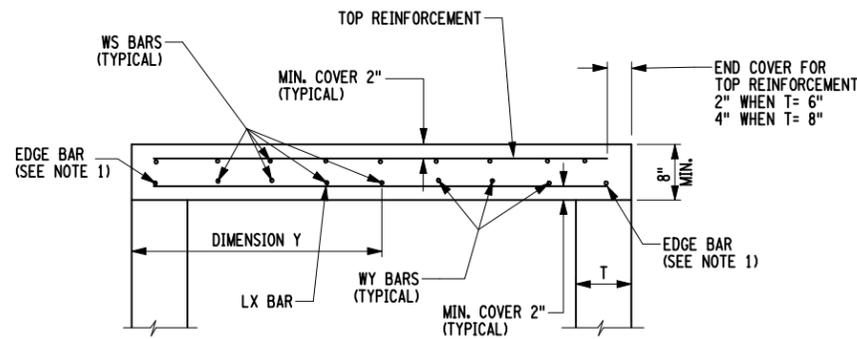


SECTION B-B  
CAST FRAME

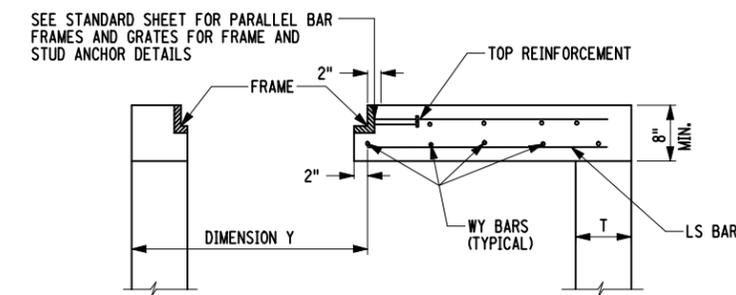


PLAN  
TOP SLAB BAR LAYOUT  
FOR ROUND MANHOLE COVER  
SEE SHEET 3 OF 4 FOR BAR LIST AND TOP SLAB DIMENSIONS.

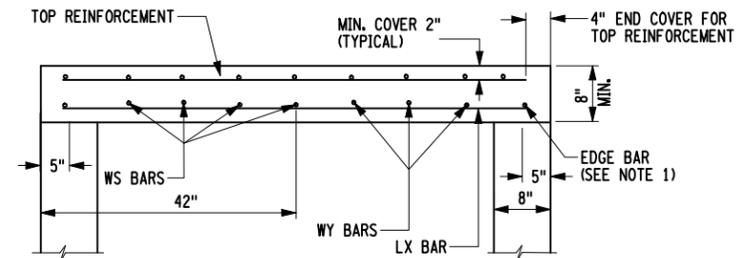
TABLE OF "X" AND "Y" DIMENSIONS				
FRAME NO.	6" THICK WALLS		8" THICK WALLS	
	DIMENSION X	DIMENSION Y	DIMENSION X	DIMENSION Y
WELDED FRAMES				
3	2'-3"	3'-4 1/2"	2'-5"	3'-6 1/2"
6	2'-5 1/2"	2'-6 1/2"	2'-7 1/2"	2'-8 1/2"
11	2'-8"	3'-4 1/2"	2'-10"	3'-6 1/2"
16	2'-10 1/2"	4'-2 1/2"	3'-0 1/2"	4'-4 1/2"
22	3'-6"	3'-9 1/2"	3'-8"	3'-11 1/2"
CAST IRON FRAMES				
F1	3'-5"	3'-0"	3'-7"	3'-2"
F2	3'-5"	3'-10"	3'-7"	4'-0"
F3	3'-5"	4'-8"	3'-7"	4'-10"
PARALLEL BAR FRAMES				
10PCB	2'-8"	3'-4 1/2"	2'-10"	3'-6 1/2"
11PCB	2'-10 1/2"	4'-2 1/2"	3'-0 1/2"	4'-4 1/2"
12PCB	3'-6"	3'-9 1/2"	3'-8"	3'-11 1/2"



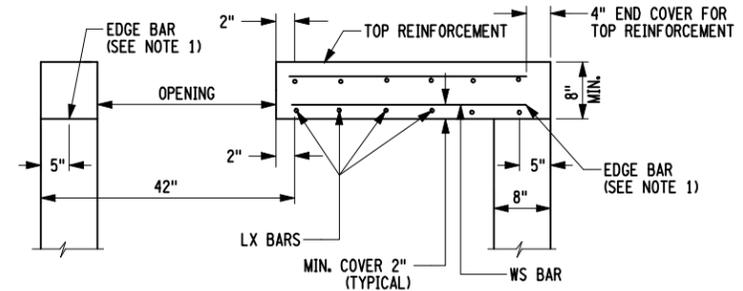
SECTION A-A  
TYPICAL FOR ALL TYPES OF FRAME



SECTION C-C  
PARALLEL BAR FRAME



SECTION D-D



SECTION E-E

OUTSIDE FRAME DIMENSIONS		
FRAME NO.	WIDTH	LENGTH
3	1'-11 15/16"	3'-1 1/2"
6	2'-2 7/16"	2'-3 1/2"
11	2'-4 15/16"	3'-1 1/2"
16	2'-7 7/16"	3'-11 1/2"
22	3'-2 15/16"	3'-6 1/2"
10PCB	2'-0 7/8"	3'-2 1/2"
11PCB	2'-3 3/8"	4'-0 1/2"
12PCB	2'-10 7/8"	3'-7 1/2"
F1	3'-3 1/4" MIN.	2'-11" MIN.
F2	3'-3 1/4" MIN.	3'-9 1/4" MIN.
F3	3'-3 1/4" MIN.	4'-7 1/4" MIN.

NOTES:

1. THE E BARS (EDGE BARS) ARE PLACED 3" FROM THE OUTSIDE EDGE FOR TOP SLABS ON 6" WALLS, AND 5" FROM THE OUTSIDE EDGE FOR 8" WALLS.
2. THE LX BARS ARE LOCATED USING THE X DIMENSION AND THE WY ARE LOCATED USING THE Y DIMENSIONS. ALL W AND L BARS SHALL BE EVENLY SPACED AT APPROXIMATELY 6" SO THAT THE DISTANCE BETWEEN THE LAST W OR L BAR AND THE ADJACENT EDGE BAR SHALL NOT EXCEED 10".
3. TOP SLABS FOR TYPE A, B, C, D, E, F, G, I, J, K AND M DRAINAGE STRUCTURES ARE REINFORCED WITH #6 BARS ON THE BOTTOM, AND 6X6, W4 X W4 FABRIC ON THE TOP.
4. TOP SLABS FOR TYPE H, L, N, O, AND P DRAINAGE STRUCTURES ARE REINFORCED WITH #7 BARS AND 6X6, W5 X W5 FABRIC. THE CONTRACTOR HAS THE OPTION OF USING #6 BARS AND A BAR SPACING OF 5" WHEN THIS OPTION IS USED. THE MAXIMUM DISTANCE BETWEEN THE LAST W OR L BAR AND THE EDGE BAR SHALL NOT EXCEED 8 3/4".

EFFECTIVE DATE: 01/08/09

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
DRAINAGE STRUCTURE DETAILS (SHEET 2 OF 4)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	604-02

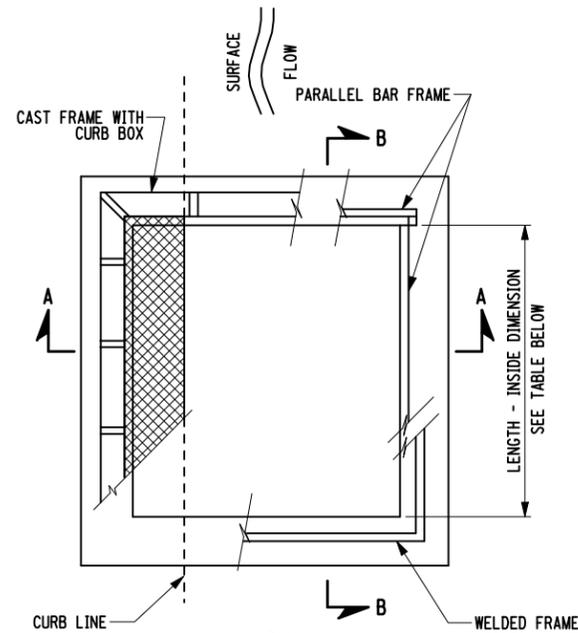
BOTTOM REINFORCEMENT													
TOP SLAB WITH WELDED FRAME													
STR. TYPE	FRAME NO.	NO. OF BARS	DESIG-NATION	DESIG-NATION									
A	3			3	6LX1	5	6WS2	1	6WY1	4	6E1		
B	3			5	6LX1	5	6WS11	1	6WY3	2	6E3	2	6E1
B	11			4	6LX1	5	6WS7	1	6WY3	2	6E3	2	6E1
C	3			7	6LX1	5	6WS19	1	6WY5	2	6E5	2	6E1
C	11			6	6LX1	5	6WS15	1	6WY5	2	6E5	2	6E1
D	3			10	6LX1	5	6WS27	1	6WY7	2	6E7	2	6E1
D	11			9	6LX1	5	6WS23	1	6WY7	2	6E7	2	6E1
E	3	3	6LS4	3	6LX3	5	6WS2	3	6WY1	2	6E1	2	6E3
F	3	3	6LS4	5	6LX3	5	6WS11	3	6WY3	4	6E3		
F	6	3	6LS12	4	6LX3	3	6WS9	4	6WY3	4	6E3		
F	11	3	6LS4	4	6LX3	5	6WS7	3	6WY3	4	6E3		
G	3	3	6LS4	7	6LX3	5	6WS19	3	6WY5	2	6E5	2	6E3
G	6	3	6LS2	6	6LX3	3	6WS17	4	6WY5	2	6E5	2	6E3
G	11	3	6LS4	6	6LX3	5	6WS15	3	6WY5	2	6E5	2	6E3
H	3	3	7LS4	10	7LX3	5	7WS27	3	7WY7	2	7E7	2	7E3
H	6	3	7LS12	10	7LX3	3	7WS25	4	7WY7	2	7E7	2	7E3
H	11	3	7LS4	9	7LX3	5	7WS23	3	7WY7	2	7E7	2	7E3
I	3	3	6LS14	3	6LX5	5	6WS2	5	6WY1	2	6E1	2	6E5
J	3	3	6LS14	5	6LX5	5	6WS11	5	6WY3	2	6E3	2	6E5
J	6	3	6LS19	4	6LX5	3	6WS9	6	6WY3	2	6E3	2	6E5
J	11	3	6LS14	4	6LX5	5	6WS7	5	6WY3	2	6E3	2	6E5
J	16	4	6LS5	4	6LX5	7	6WS5	3	6WY3	2	6E3	2	6E5
K	3	3	6LS14	7	6LX5	5	6WS19	5	6WY5	4	6E5		
K	6	3	6LS19	6	6LX5	3	6WS17	6	6WY5	4	6E5		
K	11	3	6LS14	6	6LX5	5	6WS15	5	6WY5	4	6E5		
K	16	4	6LS5	6	6LX5	7	6WS13	3	6WY5	4	6E5		
K	22	5	6LS9	4	6LX5	6	6WS8	4	6WY5	4	6E5		
L	3	3	7LS14	10	7LX5	5	7WS27	5	7WY7	2	7E7	2	7E5
L	6	3	7LS19	10	7LX5	3	7WS25	6	7WY7	2	7E7	2	7E5
L	11	3	7LS14	9	7LX5	5	7WS23	5	7WY7	2	7E7	2	7E5
L	16	4	7LS5	9	7LX5	7	7WS21	3	7WY7	2	7E7	2	7E5
L	22	5	7LS9	8	7LX5	6	7WS19	4	7WY7	2	7E7	2	7E5
M	3	3	6LS25	3	6LX7	5	6WS2	8	6WY1	2	6E1	2	6E7
N	3	3	7LS25	5	7LX7	5	7WS8	8	7WY3	2	7E3	2	7E7
N	6	3	7LS30	4	7LX7	3	7WS6	10	7WY3	2	7E3	2	7E7
N	11	3	7LS25	3	7LX7	5	7WS4	8	7WY3	2	7E3	2	7E7
N	16	4	7LS19	4	7LX7	7	7WS3	6	7WY3	2	7E3	2	7E7
O	3	3	7LS25	7	7LX7	5	7WS16	8	7WY5	2	7E5	2	7E7
O	6	3	7LS30	7	7LX7	3	7WS14	10	7WY5	2	7E5	2	7E7
O	11	3	7LS25	6	7LX7	5	7WS12	8	7WY5	2	7E5	2	7E7
O	16	4	7LS19	6	7LX7	7	7WS10	6	7WY5	2	7E5	2	7E7
O	22	5	7LS22	4	7LX7	6	7WS5	7	7WY5	2	7E5	2	7E7
P	3	3	7LS25	10	7LX7	5	7WS27	8	7WY7	4	7E7		
P	6	3	7LS30	10	7LX7	3	7WS25	10	7WY7	4	7E7		
P	11	3	7LS25	9	7LX7	5	7WS23	8	7WY7	4	7E7		
P	16	4	7LS19	9	7LX7	7	7WS21	6	7WY7	4	7E7		
P	22	5	7LS22	8	7LX7	6	7WS19	7	7WY7	4	7E7		

BOTTOM REINFORCEMENT													
TOP SLAB WITH PARALLEL BAR FRAME													
STR. TYPE	FRAME NO.	NO. OF BARS	DESIG-NATION	DESIG-NATION									
F	11PCB			4	6LX3	7	6WS5	1	6WY3	4	6E3		
G	11PCB			6	6LX3	7	6WS13	1	6WY5	2	6E5	2	6E3
H	11PCB			9	7LX3	7	7WS21	1	7WY7	2	7E7	2	7E3
I	12PCB	6	6LS9	1	6LX5			4	6WY1	2	6E1	2	6E5
J	10PCB	4	6LS14	4	6LX5	5	6WS7	5	6WY3	2	6E3	2	6E5
K	10PCB	4	6LS14	6	6LX5	5	6WS15	5	6WY5	4	6E5		
K	12PCB	6	6LS9	5	6LX5	6	6WS8	4	6WY5	4	6E5		
L	10PCB	4	7LS14	10	7LX5	5	7WS23	5	7WY7	2	7E7	2	7E5
L	12PCB	6	7LS9	8	7LX5	6	7WS19	4	7WY7	2	7E7	2	7E5
M	12PCB	6	7LS22	1	7LX7			7	6WY1	2	6E1	2	7E7
N	10PCB	4	7LS25	4	7LX7	5	7WS4	8	7WY3	2	7E3	2	7E7
N	11PCB	4	7LS19	4	7LX7	7	7WS3	6	7WY3	2	7E3	2	7E7
O	10PCB	4	7LS25	6	7LX7	5	7WS12	8	7WY5	2	7E5	2	7E7
O	11PCB	4	7LS19	6	7LX7	7	7WS10	6	7WY5	2	7E5	2	7E7
O	12PCB	6	7LS22	5	7LX7	6	7WS5	7	7WY5	2	7E5	2	7E7
P	10PCB	4	7LS25	10	7LX7	5	7WS23	8	7WY7	4	7E7		
P	11PCB	5	7LS19	9	7LX7	7	7WS21	6	7WY7	4	7E7		
P	12PCB	4	7LS22	8	7LX7	6	7WS19	7	7WY7	4	7E7		

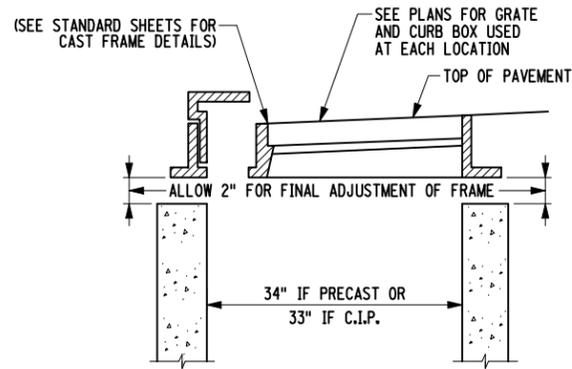
BOTTOM REINFORCEMENT													
TOP SLAB WITH CAST FRAME													
STR. TYPE	FRAME NO.	NO. OF BARS	DESIG-NATION	DESIG-NATION									
F	F1	5	6LS7	3	6LX3	4	6WS2	4	6WY3	4	6E3		
F	F3			3	6LX3	8	6WS2		4	6E3			
G	F1	5	6LS7	5	6LX3	4	6WS9	4	6WY5	2	6E5	2	6E3
G	F3			5	6LX3	8	6WS9		2	6E5	2	6E3	
H	F1	5	7LS7	8	7LX3	4	7WS19	4	7WY7	2	7E7	2	7E3
J	F1	5	6LS16	3	6LX5	4	6WS1	5	6WY3	2	6E3	2	6E5
J	F2	5	6LS8	3	6LX5	6	6WS1	4	6WY3	2	6E3	2	6E5
K	F1	5	6LS16	5	6LX5	4	6WS9	5	6WY5	4	6E5		
K	F2	5	6LS8	5	6LX5	6	6WS9	4	6WY5	4	6E5		
L	F1	5	7LS16	8	7LX5	4	7WS19	5	7WY7	2	7E7	2	7E5
L	F2	5	7LS8	8	7LX5	6	7WS19	4	7WY7	2	7E7	2	7E5
N	F1	5	7LS27	3	7LX7	4	7WS2	9	7WY3	2	7E3	2	7E7
N	F2	5	7LS21	3	7LX7	6	7WS2	7	7WY3	2	7E3	2	7E7
N	F3	5	7LS16	3	7LX7	8	7WS2	6	7WY3	2	7E3	2	7E7
O	F1	5	7LS27	5	7LX7	4	7WS6	9	7WY5	2	7E5	2	7E7
O	F2	5	7LS21	5	7LX7	6	7WS6	7	7WY5	2	7E5	2	7E7
O	F3	5	7LS16	5	7LX7	8	7WS6	6	7WY5	2	7E5	2	7E7
P	F1	5	7LS27	8	7LX7	4	7WS19	9	7WY7	4	7E7		
P	F2	5	7LS21	8	7LX7	6	7WS19	7	7WY7	4	7E7		
P	F3	5	7LS16	8	7LX7	8	7WS19	6	7WY7	4	7E7		

BAR LIST											
DESIGNATION	LENGTH	SIZE	DESCRIPTION	DESIGNATION	LENGTH	SIZE	DESCRIPTION				
6LS4	1'-6"	#6	SHORT L BAR	7LS4	1'-6"	#7	SHORT L BAR				
6LS5	1'-7"	#6	SHORT L BAR	7LS5	1'-7"	#7	SHORT L BAR				
6LS7	1'-9"	#6	SHORT L BAR	7LS7	1'-9"	#7	SHORT L BAR				
6LS8	1'-11"	#6	SHORT L BAR	7LS8	1'-11"	#7	SHORT L BAR				
6LS9	2'-0"	#6	SHORT L BAR	7LS9	2'-0"	#7	SHORT L BAR				
6LS12	2'-3"	#6	SHORT L BAR	7LS12	2'-3"	#7	SHORT L BAR				
6LS14	2'-5"	#6	SHORT L BAR	7LS14	2'-5"	#7	SHORT L BAR				
6LS16	2'-9"	#6	SHORT L BAR	7LS16	2'-9"	#7	SHORT L BAR				
6LS19	3'-3"	#6	SHORT L BAR	7LS19	3'-3"	#7	SHORT L BAR				
6LS25	4'-0"	#6	SHORT L BAR	7LS21	3'-7"	#7	SHORT L BAR				
6LX1	3'-6"	#6	LONG L BAR	7LS22	3'-8"	#7	SHORT L BAR				
6LX3	4'-6"	#6	LONG L BAR	7LS25	4'-1"	#7	SHORT L BAR				
6LX5	5'-6"	#6	LONG L BAR	7LS27	4'-5"	#7	SHORT L BAR				
6LX7	7'-2"	#6	LONG L BAR	7LS30	4'-11"	#7	SHORT L BAR				
6WS1	1'-4"	#6	SHORT W BAR	7LX3	4'-6"	#7	LONG L BAR				
6WS2	1'-6"	#6	SHORT W BAR	7LX5	6'-5"	#7	LONG L BAR				
6WS5	1'-11"	#6	SHORT W BAR	7LX7	7'-2"	#7	LONG L BAR				
6WS7	2'-2"	#6	SHORT W BAR	7WS2	1'-5"	#7	SHORT W BAR				
6WS8	2'-3"	#6	SHORT W BAR	7WS3	1'-11"	#7	SHORT W BAR				
6WS9	2'-4"	#6	SHORT W BAR	7WS4	2'-1"	#7	SHORT W BAR				
6WS10	2'-5"	#6	SHORT W BAR	7WS5	2'-3"	#7	SHORT W BAR				
6WS11	2'-7"	#6	SHORT W BAR	7WS6	2'-4"	#7	SHORT W BAR				
6WS13	2'-11"	#6	SHORT W BAR	7WS7	2'-5"	#7	SHORT W BAR				
6WS15	3'-2"	#6	SHORT W BAR	7WS8	2'-7"	#7	SHORT W BAR				
6WS17	3'-4"	#6	SHORT W BAR	7WS10	2'-11"	#7	SHORT W BAR				
6WS19	3'-7"	#6	SHORT W BAR	7WS12	3'-2"	#7	SHORT W BAR				
6WS21	4'-1"	#6	SHORT W BAR	7WS14	3'-4"	#7	SHORT W BAR				
6WS23	4'-10"	#6	SHORT W BAR	7WS16	3'-6"	#7	SHORT W BAR				
6WS27	5'-3"	#6	SHORT W BAR	7WS19	4'-0"	#7	SHORT W BAR				
6WY1	3'-6"	#6	LONG W BAR	7WS20	4'-1"	#7	SHORT W BAR				
6WY3	4'-6"	#6	LONG W BAR	7WS21	4'-7"	#7	SHORT W BAR				
6WY5	5'-6"	#6	LONG W BAR	7WS23	4'-10"	#7	SHORT W BAR				
6WY7	7'-2"	#6	LONG W BAR	7WS25	5'-0"	#7	SHORT W BAR				
6D1	1'-6"	#6	DIAGONAL BAR	7WS27	5'-3"	#7	SHORT W BAR				
6E1	3'-3 3/8"	#6	EDGE BAR	7WY3	4'-6"	#7	LONG W BAR				
6E3	4'-3 3/8"	#6	EDGE BAR	7WY5	5'-6"	#7	LONG W BAR				
6E5	5'-3 3/8"	#6	EDGE BAR	7WY7	7'-2"	#7	LONG W BAR				
6E7	6'-4 3/8"	#6	EDGE BAR	7E3	4'-3"	#7	EDGE BAR				
				7E5	5'-3"	#7	EDGE BAR				
				7E7	6'-11"	#7	EDGE BAR				

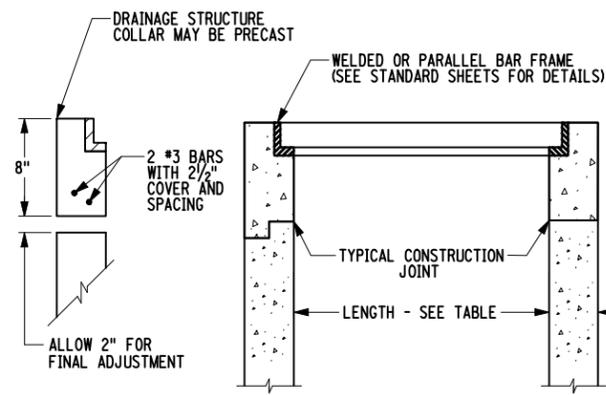
BOTTOM REINFORCEMENT												
TOP SLAB WITH ROUND CAST MANHOLE FRAME												
STR. TYPE	NO. OF BARS	DESIG-NATION	DESIG-NATION									
A			1	6LX1		1	6WY1	3	6D1	4		



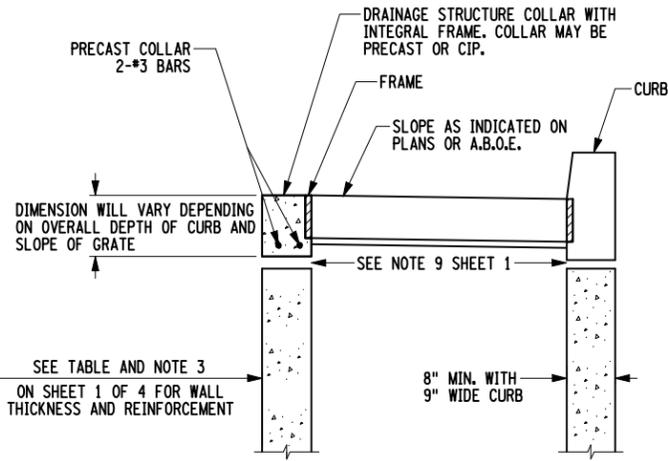
RECTANGULAR DRAINAGE STRUCTURE TYPE Q, R, S, T, AND U



SECTION A-A RECTANGULAR DRAINAGE STRUCTURE TYPE Q AND R



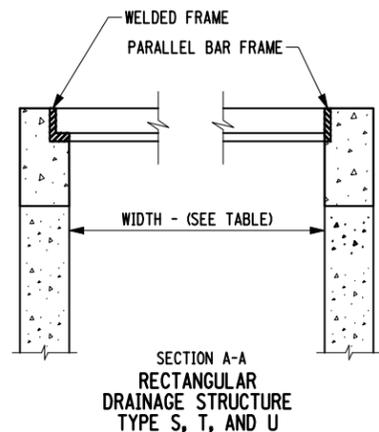
SECTION B-B RECTANGULAR DRAINAGE STRUCTURE TYPE S, T, AND U



SECTION A-A RECTANGULAR DRAINAGE STRUCTURE WITH COLLAR AND CURB TYPE S, T, AND U ONLY PARALLEL BAR FRAME AND GRATE ALLOWED WITH THIS DETAIL

RECTANGULAR DRAINAGE STRUCTURE						
(TYPES Q THRU U)			INSIDE DIMENSIONS			
ITEM	TYPE	FRAME	WIDTH	LENGTH	WIDTH	LENGTH
604.301772	Q	F2*	34	36	33	36 1/2
604.301873	R	F3*	34	46	33	46 1/2
604.301911	S	11	24	32	24	32 1/2
604.301990	S	10PCB	24	32	24	32 1/2
604.302016	T	16	26	42	26 1/2	42 1/2
604.302091	T	11PCB	26	42	26 1/2	42 1/2
604.302122	U	22	34	38	34	37 1/2
604.302192	U	12PCB	34	38	34	37 1/2

\* SEE CONTRACT DOCUMENTS FOR GRATE AND CURB BOX TYPE  
 \*\* PRECAST TYPES S, T, AND U REQUIRE THE FRAME TO BE CAST INTO A SEPARATE COLLAR. THE FRAME COLLAR SHALL HAVE INSIDE DIMENSIONS AS SHOWN FOR "CAST-IN-PLACE" IN THIS TABLE, OUTSIDE DIMENSIONS TO MATCH THE PRECAST RISER, AND BE 8" HIGH MIN.

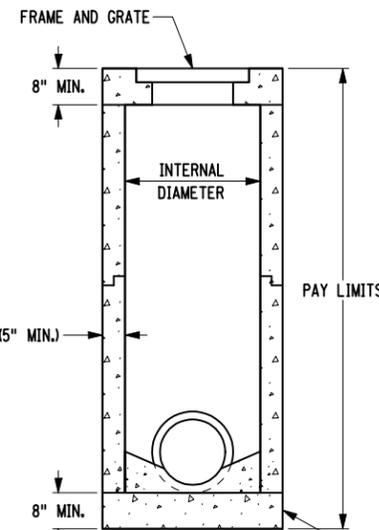
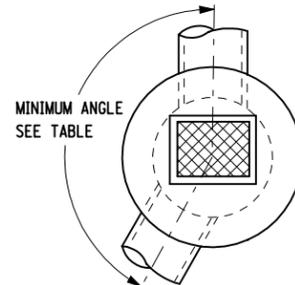


SECTION A-A RECTANGULAR DRAINAGE STRUCTURE TYPE S, T, AND U

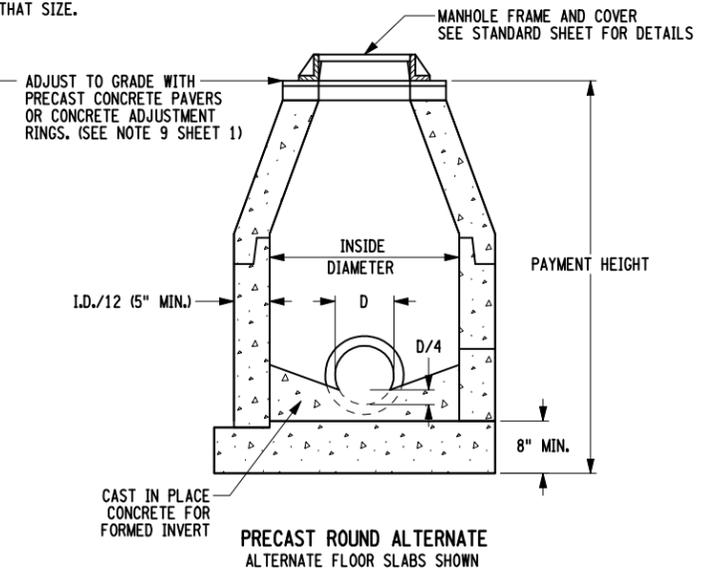
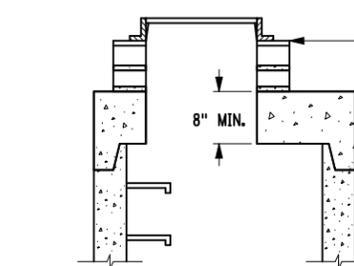
SELECTION TABLES FOR ALTERNATE ROUND DRAINAGE STRUCTURES						
CONCRETE OR POLYETHYLENE PIPES		STRUCTURE INTERNAL DIAMETER				
RCP H.E. RISE X SPAN	ROUND INTERNAL DIAMETER	48"	60"	72"	84"	96"
		MINIMUM ANGLE BETWEEN PIPE ENTRIES (NOTE 5)				
	12"	84	63	50	41	35
	15"	94	70	56	46	39
	18"	104	78	62	51	43
	21"	115	85	68	56	48
	24"	127	93	74	61	52
	27"	141	102	81	67	57
	30"	157	111	87	72	61
19" X 30"		157	112	88	73	62
	34"		121	95	78	66
22" X 34"			125	97	80	68
	36"		133	102	84	71
24" X 38"			140	106	87	74
27" X 42"			156	115	94	79
29" X 45"			164	119	96	81
	42"		130	104	87	
	48"		140	110	92	
32" X 49"			145	113	94	
34" X 53"			166	123	101	
	54"		175	126	104	
	60"			147	117	

NOTES:

1. THE DIAMETER OF THE ALTERNATE ROUND UNIT SHALL NOT BE LESS THAN THE LARGER DIMENSION OF THE SPECIFIED RECTANGULAR UNIT IT REPLACES. IT SHALL ALSO BE LARGE ENOUGH TO HAVE THE SPECIFIED GRATE FIT WITHIN THE INSIDE DIAMETER OF THE ROUND ALTERNATE.
2. THE ABOVE VALUES ARE BASED ON THE CENTERLINE OF ALL PIPES INTERSECTING AT THE CENTER OF THE ROUND ALTERNATE.
3. THE ANGLE BETWEEN ADJACENT PIPE ENTRIES SHALL NOT BE LESS THAN THE MINIMUM SHOWN IN THE TABLE ABOVE. WHEN THE ADJACENT PIPES HAVE DIFFERENT SIZES, THE MINIMUM ANGLE SHALL BE THE VALUE FOR THE LARGER OF THE TWO PIPES.
4. THE SUM OF THE MINIMUM ANGLES BETWEEN PIPES AT THE SAME LEVEL SHALL NOT BE MORE THAN 360 DEGREES. THEY SHALL BE REGARDED AS BEING AT THE SAME LEVEL IF THEIR RISES OVERLAP.
5. A BLANK (NO ENTRY) IN TABLE INDICATES THAT THE STRUCTURE IS TOO SMALL FOR PIPE OF THAT SIZE.



PRECAST ROUND ALTERNATE ROUND ALTERNATE MAY BE USED WHEN ALLOWED BY THE SPECIFICATIONS OR WHEN INDICATED ON PLANS



PRECAST ROUND MANHOLES			
ITEM	TYPE	CIRCUMFERENTIAL STEEL - SQUARE INCHES PER VERTICAL FOOT	INSIDE DIAMETER
604.4098	48	0.12	48
604.4060	60	0.15	60
604.4072	72	0.18	72
604.4084	84	0.21	84
604.4096	96	0.24	96

ROUND ALTERNATIVES MAY HAVE MONOLITHICALLY CAST, INTEGRAL, OR SEPARATE FLOOR SLABS. (SEE SHEET 1 OF 4)

SELECTION TABLES FOR ALTERNATE ROUND DRAINAGE STRUCTURES						
METAL PIPES		STRUCTURE INTERNAL DIAMETER				
CMP ARCH SPAN AND RISE	ROUND INTERNAL DIAMETER	48"	60"	72"	84"	96"
		MINIMUM ANGLE BETWEEN PIPE ENTRIES (NOTE 5)				
	12"	68	54	45	38	34
	15"	76	60	50	43	37
17" X 13"		82	64	53	45	40
	18"	85	67	55	47	41
		91	71	59	50	43
21" X 15"	21"	94	73	60	51	45
24" X 18"	24"	103	80	66	56	49
28" X 20"		116	89	73	62	54
	30"	124	94	76	65	56
35" X 24"		145	106	86	72	63
	36"	152	110	88	74	64
42" X 29"	42"		128	101	84	72
	48"		153	115	95	81
49" X 33"			158	117	96	82
	54"			132	106	90
57" X 38"				141	112	94
60" X 46"				150	117	98
	60"			154	119	100
64" X 43"					129	107
	66"				134	110
71" X 47"					151	120
	72"				155	122

STATE OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

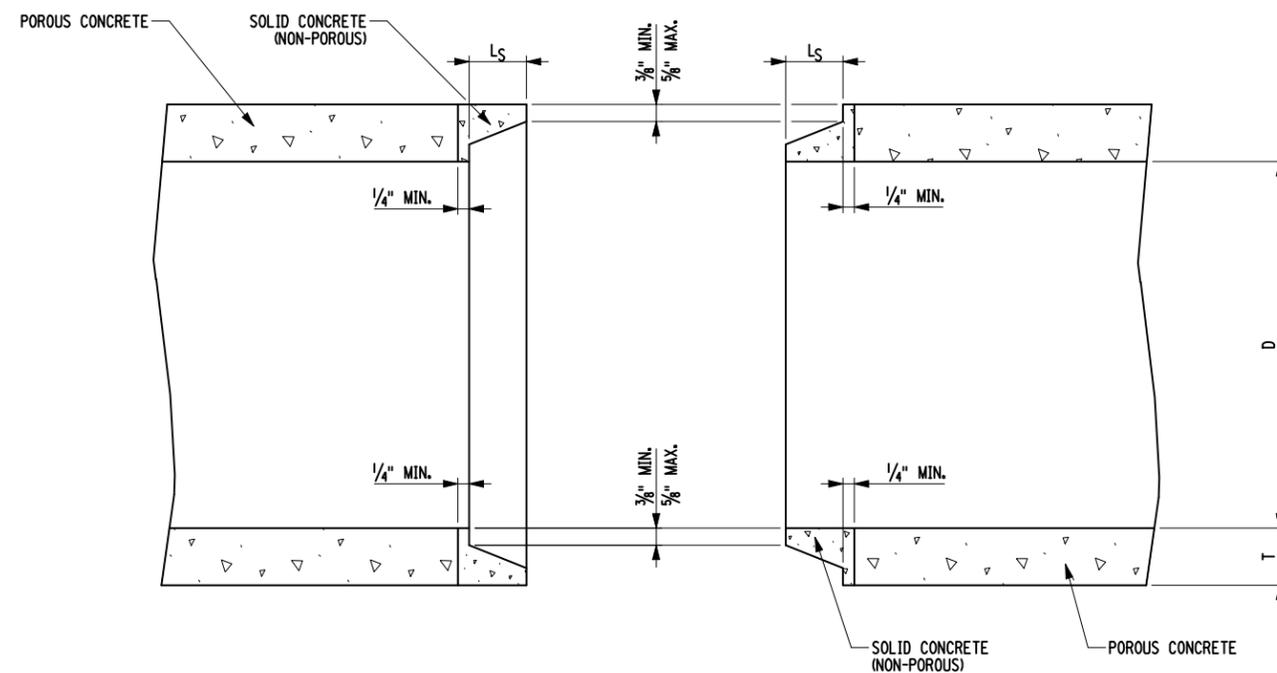
DRAINAGE STRUCTURE DETAILS  
 (SHEET 4 OF 4)

APPROVED SEPTEMBER 19, 2008 ISSUED UNDER EB 08-036

/S/ DANIEL D'ANGELO, P.E.  
 DEPUTY CHIEF ENGINEER  
 (DESIGN)

604-02

EFFECTIVE DATE: 01/08/09



**TABLE 1 - PHYSICAL AND DIMENSIONAL REQUIREMENTS OF POROUS CONCRETE PIPE**

INTERNAL DESIGNATED DIAMETER, D	MINIMUM WALL THICKNESS, T	MINIMUM LAYING LENGTH	MINIMUM SOCKET DEPTH, L <sub>S</sub>	MINIMUM STRENGTH THREE-EDGE BEARING (LBS. PER FT. OF LAYING LENGTH)
4"	1"	24"	1"	1000
6"	1"	24"	1"	1100
8"	1 1/4"	24"	1 1/4"	1300
10"	1 3/8"	24"	1 3/8"	1400
12"	1 1/2"	24"	1 1/2"	1500
15"	1 3/4"	24"	1 3/4"	1750
18"	2"	24"	2"	2000
21"	2 1/4"	24"	2 1/4"	2200
24"	2 1/2"	24"	2 1/2"	2400

**TABLE 2 - PHYSICAL AND DIMENSIONAL REQUIREMENTS OF EXTRA STRENGTH POROUS CONCRETE PIPE**

INTERNAL DESIGNATED DIAMETER, D	MINIMUM WALL THICKNESS, T	MINIMUM LAYING LENGTH	MINIMUM SOCKET DEPTH, L <sub>S</sub>	MINIMUM STRENGTH THREE-EDGE BEARING (LBS. PER FT. OF LAYING LENGTH)
6"	1 1/4"	24"	1 1/4"	2200
8"	1 1/2"	24"	1 1/2"	2600
10"	1 5/8"	24"	1 5/8"	2800
12"	2"	24"	2"	3000
15"	2 1/4"	24"	2 1/4"	3750
18"	2 1/2"	24"	2 1/2"	3750

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STATE OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

POROUS CONCRETE  
 PIPE UNDERDRAIN

APPROVED OCTOBER 01, 2008

/S/ ROBERT L. SACK, P.E.  
 DEPUTY CHIEF ENGINEER  
 (TECHNICAL SERVICES)

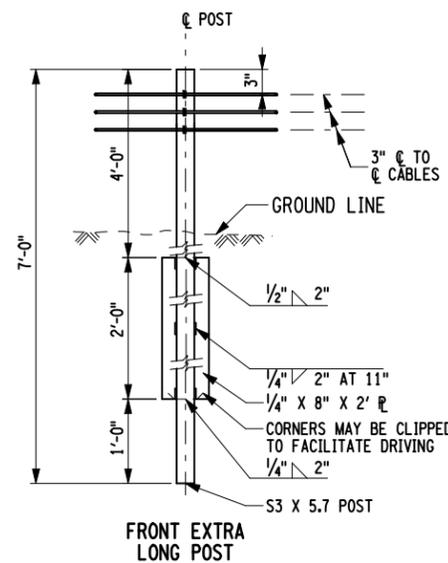
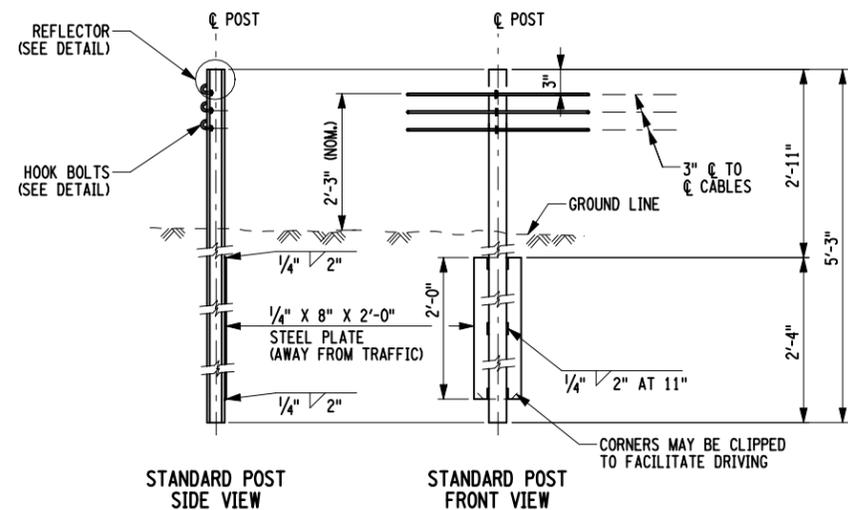
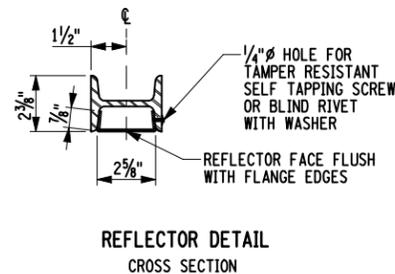
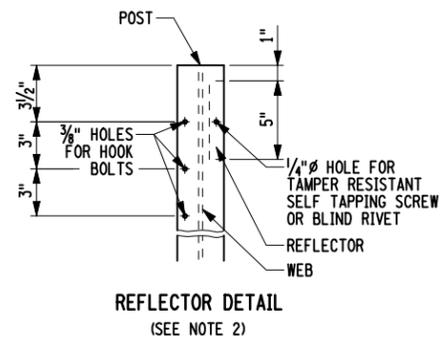
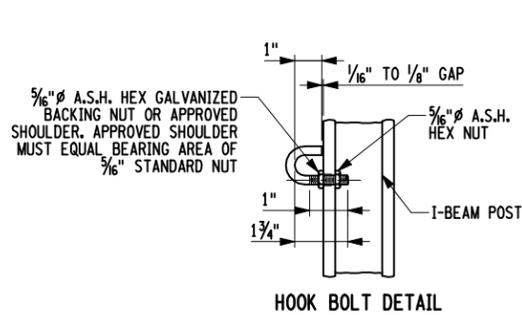
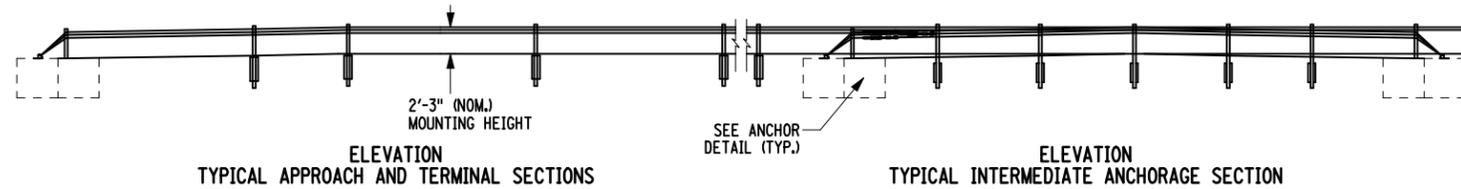
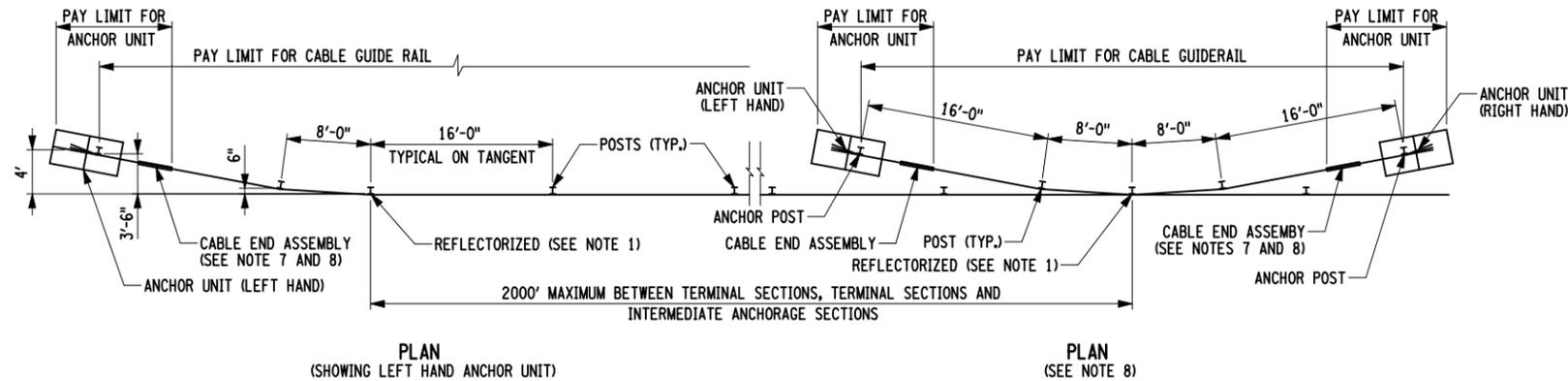
ISSUED UNDER EB 08-036

605-01

EFFECTIVE DATE: 01/08/09

TABLE "A"	
RADIUS OF $\odot$ CURVATURE	MAX. POST SPACING
$\geq 715'$	16'
$\geq 440'$ AND $\leq 715'$	12'

DO NOT INSTALL CABLE GUIDE RAILING ON CURVES WITH A  $\odot$  RADIUS OF  $< 440'$



TYPICAL POST DETAILS NOTE: FOR OPTIONAL UNIVERSAL POST DETAILS SEE BOX BEAM GUIDE RAIL STANDARD SHEETS.

GENERAL NOTES:

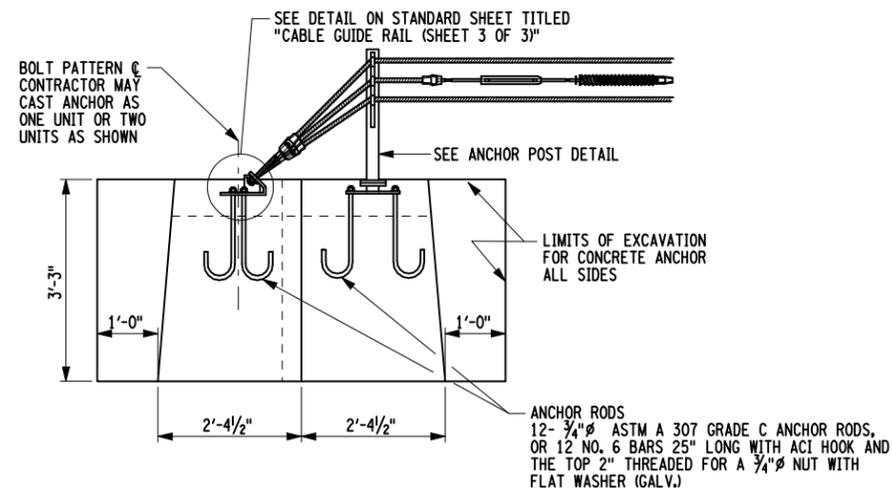
- ALL POSTS SHALL BE S3 X 5.7 ROLLED STEEL SECTION. THE ANCHOR POST STUB SHALL BE S3 X 7.5. WHERE THE RAIL IS PARALLEL TO THE EDGE OF THE PAVEMENT, EVERY SIXTH (6TH) POST STARTING WITH THE FIRST SHALL BE REFLECTORIZED. DO NOT REFLECTORIZED POSTS IN THE INTERMEDIATE ANCHORAGE SECTION, TYPICAL APPROACH AND TERMINAL SECTION, OR WHEN USED AS A MEDIAN BARRIER.
  - REFLECTORS SHALL BE ALUMINUM ALLOY  $1/16"$  THICK WITH REFLECTIVE SHEETING. THE REFLECTIVE SHEETING SHALL BE WHITE WHEN INSTALLED ON THE RIGHT SIDE OF TRAFFIC AND FLUORESCENT YELLOW WHEN ON THE LEFT.
  - $3/4"$  ROUND WIRE CABLE SHALL CONSIST OF THREE STRANDS (7 WIRES PER STRAND) AND HAVE A MINIMUM TENSILE STRENGTH OF 25,000 LB-F.
  - CABLE ENDS SHALL BE FABRICATED FROM MALLEABLE IRON ( $\$715-09$ ) OR CAST STEEL ( $\$715-02$ ). THE CABLE SPlice AND WEDGE SHALL BE FABRICATED FROM MALLEABLE IRON OR ASTM A536 DUCTILE IRON GRADE 65-45-12.
  - ALL CABLE ENDS AND SPLICES SHALL BE DESIGNED TO USE THE WEDGE SHOWN IN DETAIL "X" STANDARD SHEET 606-01 AND SHALL DEVELOP THE FULL STRENGTH OF THE  $3/4"$  ROUND CABLE (25000 LBS.). THE CABLES, ENDS, AND SPLICES SHALL BE HOT DIPPED GALVANIZED AS INDICATED IN MATERIAL SPECIFICATION FOR CABLE GUIDE RAIL. THE WEDGE SHOWN IN DETAIL "X" STANDARD SHEET 606-01 SHALL NOT BE GALVANIZED.
  - STAGGER CABLE SPLICES. PROVIDE A MINIMUM OF 20' BETWEEN ANY PAIR. PROVIDE A MINIMUM OF 100' BETWEEN CABLE SPLICES ON THE SAME CABLE.
  - ALTERNATE DESIGNS FOR THE STEEL TURNBUCKLE CABLE END ASSEMBLY OR SPRING CABLE END ASSEMBLY SHALL BE SUBMITTED FOR APPROVAL.
  - FOR ARRANGEMENT OF SPRING CABLE END ASSEMBLIES (COMPENSATING DEVICE) AND TURNBUCKLE CABLE END ASSEMBLIES, THE FOLLOWING CRITERIA SHALL APPLY:
    - LENGTH OF CABLE RUNS UP TO 1000' - USE COMPENSATING DEVICE (DETAIL B) ON ONE END, AND TURNBUCKLE (DETAIL A) ON THE OTHER END OF EACH INDIVIDUAL CABLE.
    - LENGTH OF CABLE RUNS 1000' TO 2000' - USE COMPENSATING DEVICE (DETAIL B) ON THE ENDS OF EACH INDIVIDUAL CABLE.
    - LENGTH OF CABLE RUNS OVER 2000' - START A NEW STRETCH BY INTERLACING AT LAST PARALLEL POST (SEE TYPICAL INTERMEDIATE ANCHORAGE DETAILS).
- PRIOR TO FINAL ACCEPTANCE BY THE STATE, THE FOLLOWING VALUES SHALL BE USED TO TIGHTEN THE TURNBUCKLES, DEPENDING ON THE TEMPERATURE AT THE TIME OF ADJUSTMENT.

TEMPERATURE (DEGREES FARENHEIT)													
120	109	99	89	79	69	59	49	39	29	19	9	-1	-11
TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO	TO
110	100	90	80	70	60	50	40	30	20	10	0	-10	-20
SPRING COMPRESSION FROM UNLOADED POSITION IN EACH SPRING - MEASURED IN INCHES													
1	1/4	1/2	3/4	2	2/4	2/2	2/3	3	3/4	3/2	3/4	4	4/2

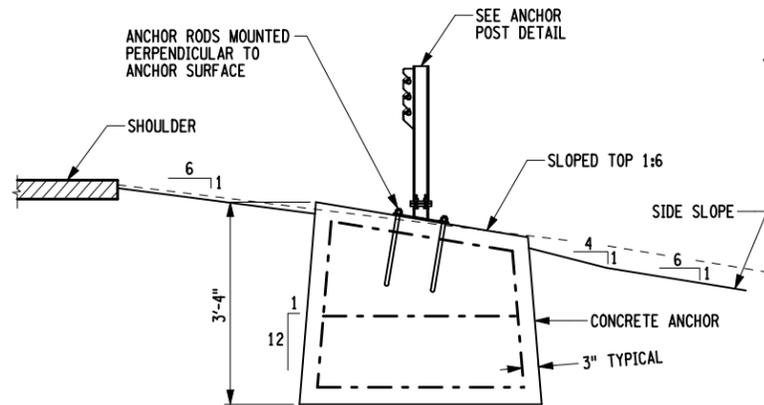
- THE CONCRETE ANCHOR SHALL BE SET INTO THE EXCAVATION AS DETAILED. THE BOTTOM OF THE ANCHOR SHALL HAVE A FULL AND EVEN BEARING ON THE SURFACE UNDER IT SO THAT IF THE CONTRACTOR ELECTS TO PLACE THE ANCHOR IN TWO SECTIONS, THERE WILL BE LITTLE OR NO DIFFERENTIAL SETTLEMENT. IF THE CONTRACTOR ELECTS TO PLACE THE ANCHOR IN TWO SECTIONS, THE TOPS OF BOTH SECTIONS SHALL BE BACK FILLED IN ACCORDANCE WITH THE REQUIREMENTS OF  $\$203-3.15$  "FILL AND BACK FILL AT STRUCTURES, CULVERTS, PIPES, CONDUITS, AND DIRECT BURIAL CABLES".
- DO NOT INSTALL CABLE GUIDE RAILING ON CURVES WITH A CENTERLINE RADIUS OF LESS THAN 440'.
- CURBS GREATER THAN 3" HIGH ARE NOT TO BE RETAINED OR PLACED IF DESIGN, POSTED, OR OPERATING SPEED EXCEEDS 35MPH. RAIL MOUNTING HEIGHT IS TO BE MEASURED FROM PAVEMENT IF OFFSET BETWEEN PAVEMENT AND CURB IS  $\leq 9"$  AND FROM GROUND BENEATH RAIL IF OFFSET  $> 9"$ .
- LIFTING DEVICES, IF EMBEDDED IN CONCRETE, SHALL BE RATED BY THEIR MANUFACTURER AS HAVING A "SAFE WORKING LOAD" OF FOUR TONS (4 TONS) FOR THE ONE PIECE ANCHOR AND TWO TONS (2 TONS) EACH FOR EACH OF THE HALVES OF THE TWO PIECE ANCHOR UNIT.
- AT ALL LOCATIONS WHERE THE CABLE IS CONNECTED TO A CABLE SOCKET WITH A WEDGE TYPE CONNECTION, ONE WIRE OF THE WIRE ROPE SHALL BE CRIMPED OVER THE BASE OF THE WEDGE TO HOLD IT FIRMLY IN PLACE.

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
CABLE GUIDE RAILING (SHEET 1 OF 3)	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	606-01

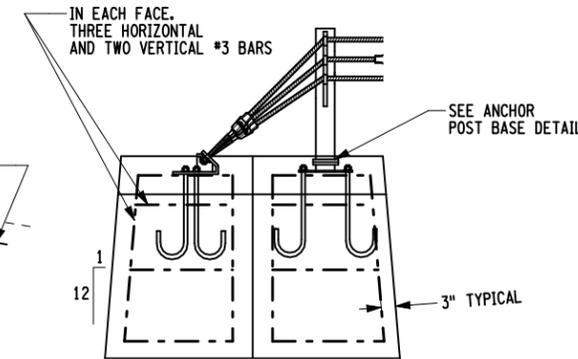
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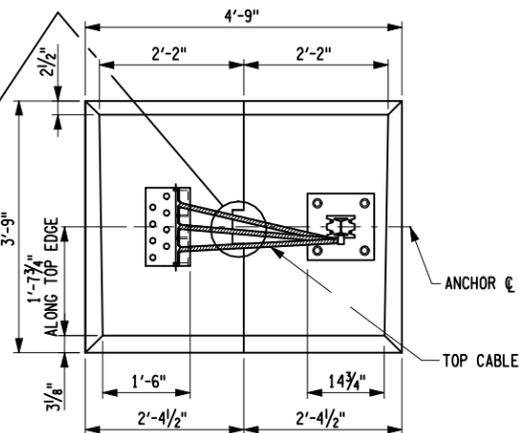
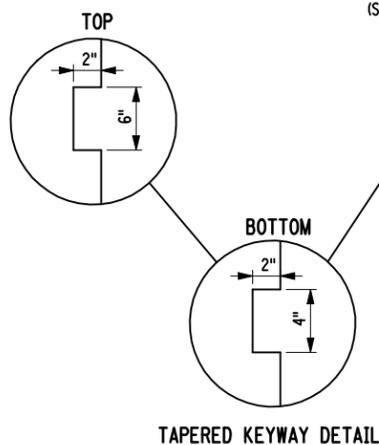
ANCHOR UNIT DETAIL  
LEFT HAND VIEW  
(REINFORCEMENT NOT SHOWN)  
(SEE NOTE 9)



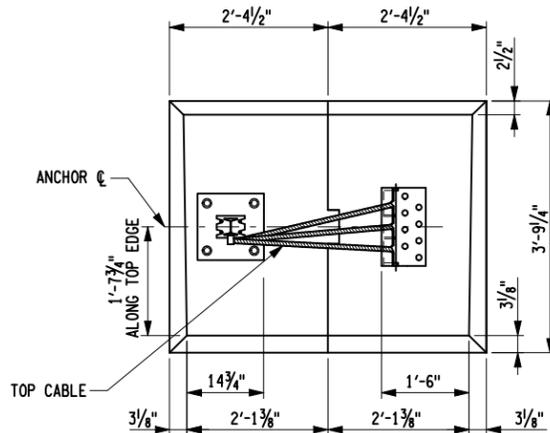
ANCHOR UNIT AND RE-BAR  
INSTALLATION DETAIL



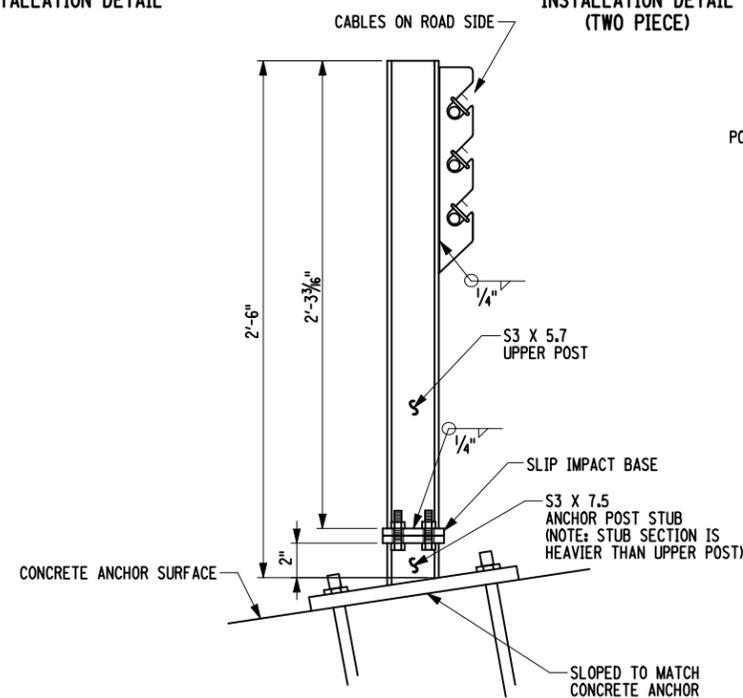
ANCHOR UNIT AND RE-BAR  
INSTALLATION DETAIL  
(TWO PIECE)



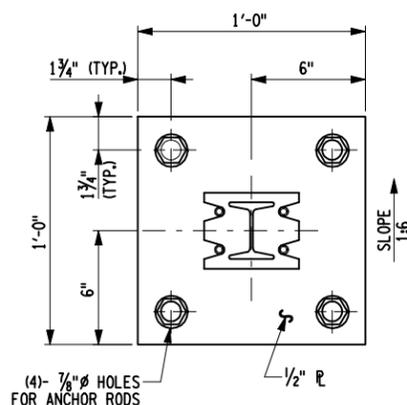
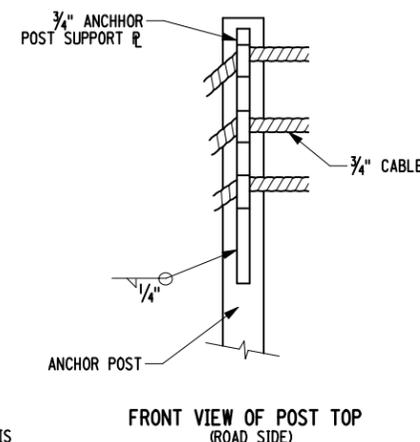
ANCHOR UNIT DETAIL  
TOP VIEW - LEFT HAND  
(REINFORCEMENT NOT SHOWN)



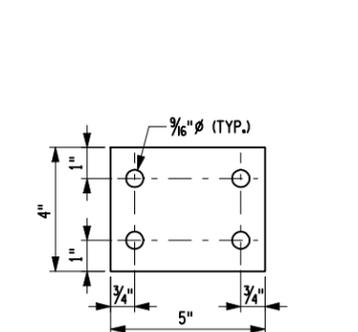
ANCHOR UNIT DETAIL  
TOP VIEW - RIGHT HAND  
(REINFORCEMENT NOT SHOWN)



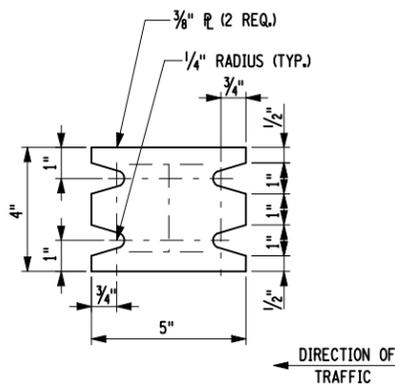
ANCHOR POST BASE



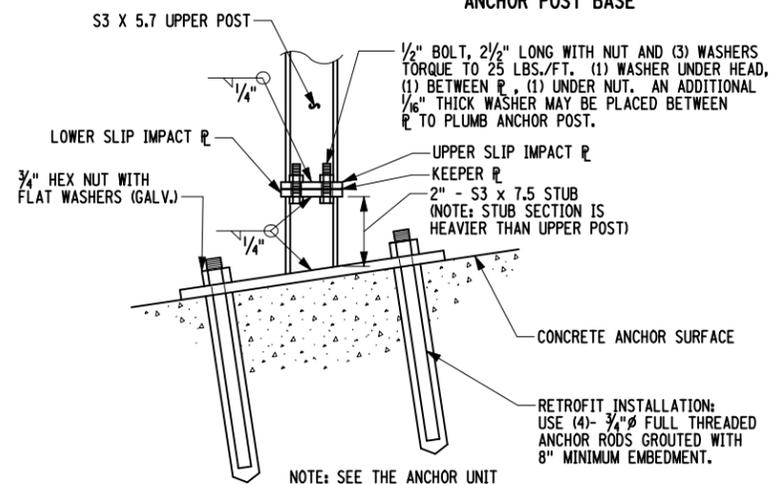
ANCHOR POST BASE DETAIL  
PLAN VIEW



KEEPER PLATE  
28 GAUGE GALVANIZED STEEL, PAINTED ORANGE



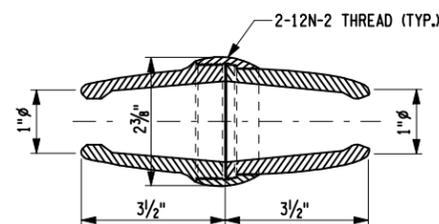
SLIP IMPACT BASE  
(KEEPER PLATE NOT SHOWN)



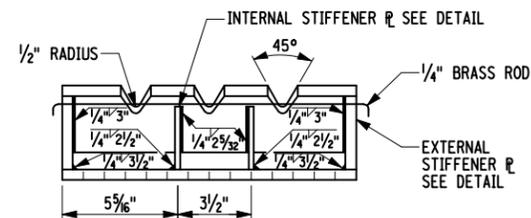
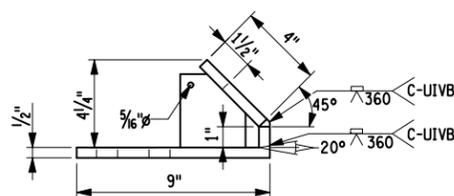
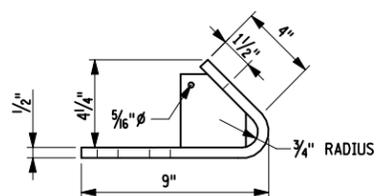
ANCHOR POST BASE DETAIL

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
	U.S. CUSTOMARY STANDARD SHEET
	CABLE GUIDE RAILING (SHEET 2 OF 3)
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
S/S RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	606-01

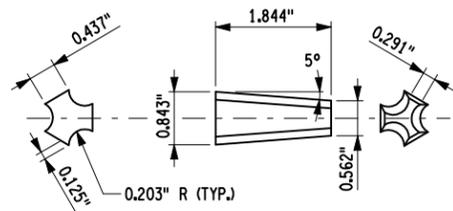
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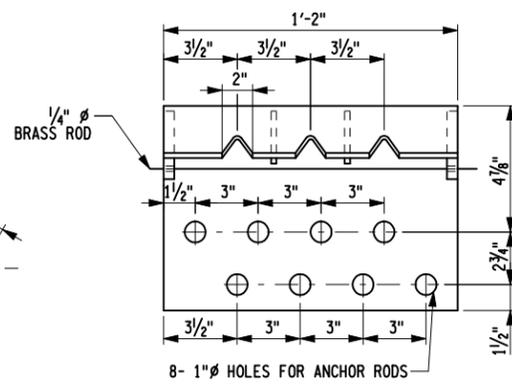
**CABLE SPLICE DETAIL**  
(SEE NOTES 4, 5 AND 6)



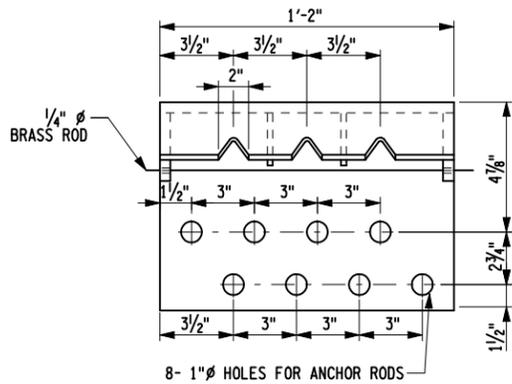
**ANCHOR ANGLE DETAILS**



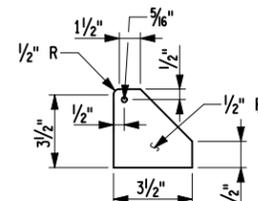
**DETAIL "X"**  
TYPICAL WEDGE FOR ALL  
CABLE SPLICES AND CABLE ENDS  
(DO NOT GALVANIZE)



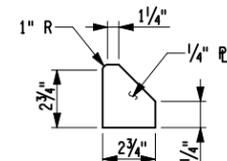
**BENT PLATE  
ANCHOR ANGLE DETAILS**



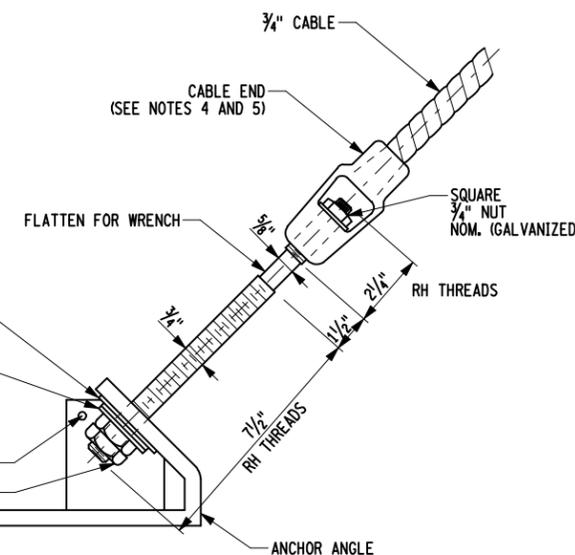
**WELDED PLATE  
ANCHOR ANGLE DETAILS**



**EXTERNAL STIFFENER  
ANCHOR ANGLE DETAILS**



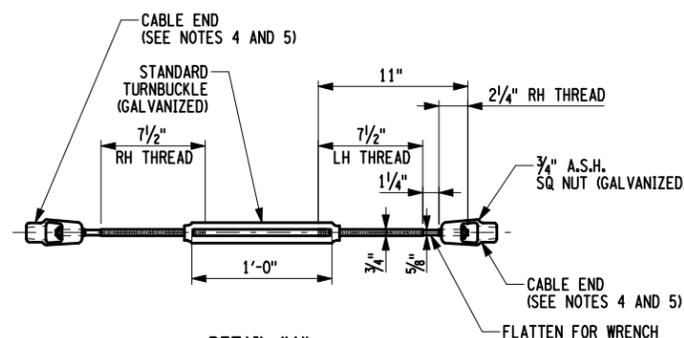
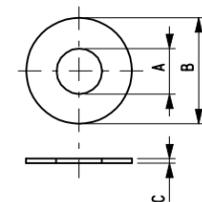
**INTERNAL STIFFENER  
ANCHOR ANGLE DETAILS**



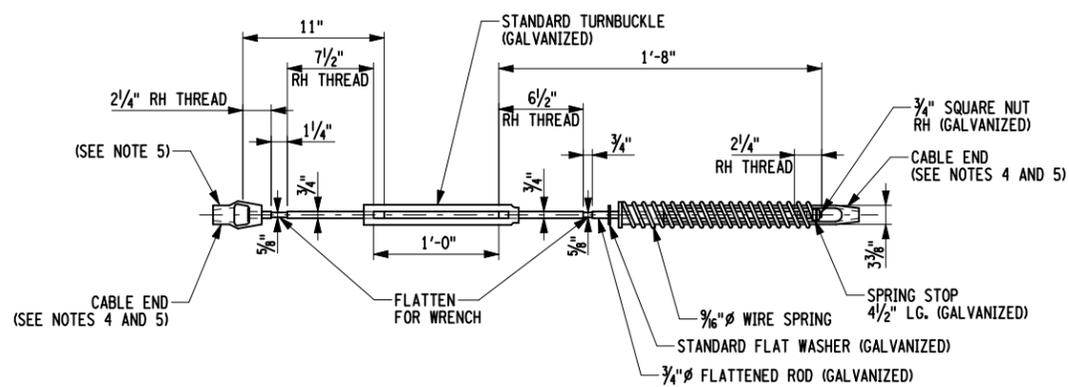
**CABLE END ASSEMBLY TO  
ANCHOR ANGLE DETAILS**

WASHER	WASHER SERIES	INSIDE DIAMETER "A"			OUTSIDE DIAMETER "B"			THICKNESS "C"		
		BASIC	TOLERANCE PLUS	TOLERANCE MINUS	BASIC	TOLERANCE PLUS	TOLERANCE MINUS	BASIC	MAX.	MIN.
3/4"	REGULAR	0.812	0.030	0.007	1.469	0.030	0.007	0.134	0.160	0.108
	WIDE	0.812	0.030	0.007	2.000	0.030	0.007	0.165	0.192	0.136
1/2"	NARROW	0.531	0.015	0.005	1.062	0.030	0.007	0.095	0.121	0.074

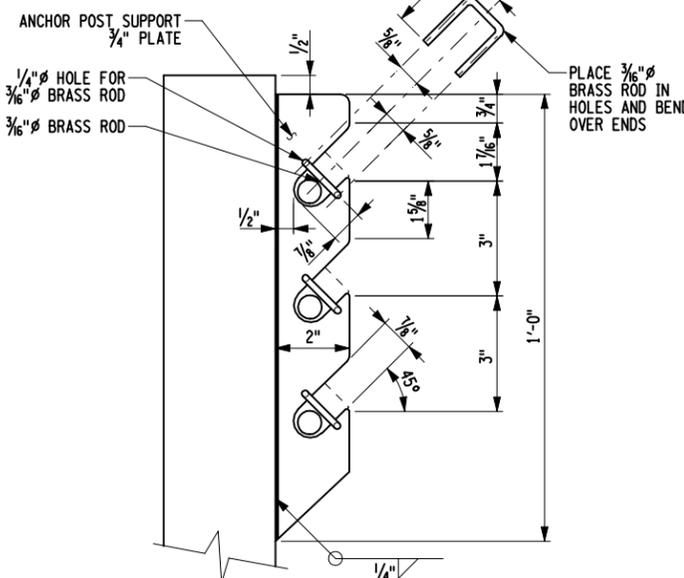
**WASHER TABLE AND WASHER DETAIL**



**DETAIL "A"**  
STEEL TURNBUCKLE CABLE END ASSEMBLY  
(SEE NOTE 8)



**DETAIL "B"**  
SPRING CABLE END ASSEMBLY  
(COMPENSATING DEVICE)  
(SEE NOTE 8)

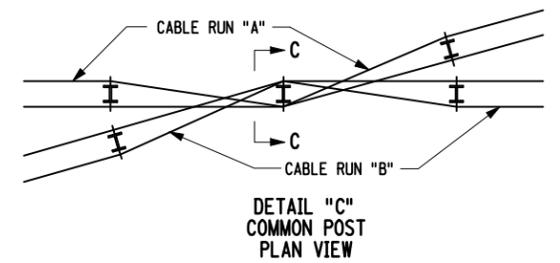
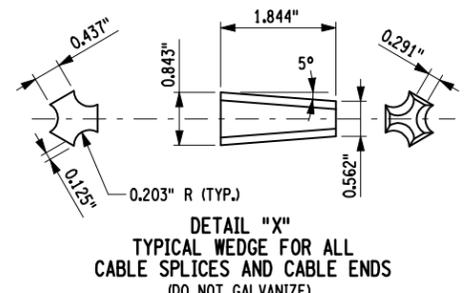
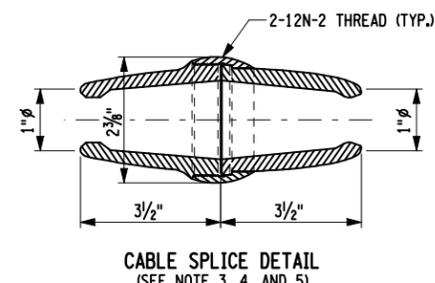
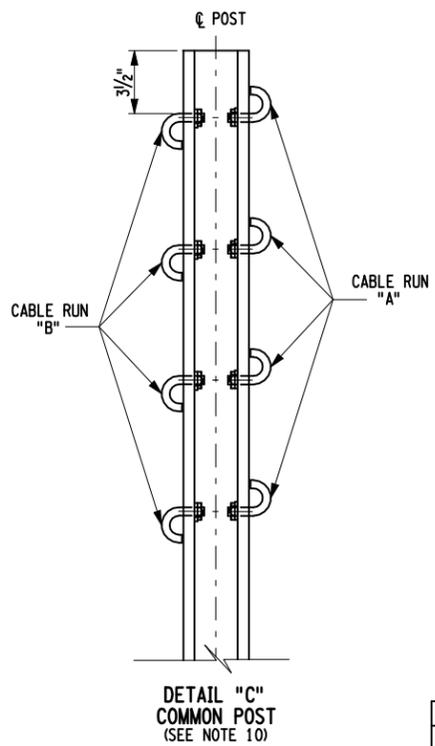
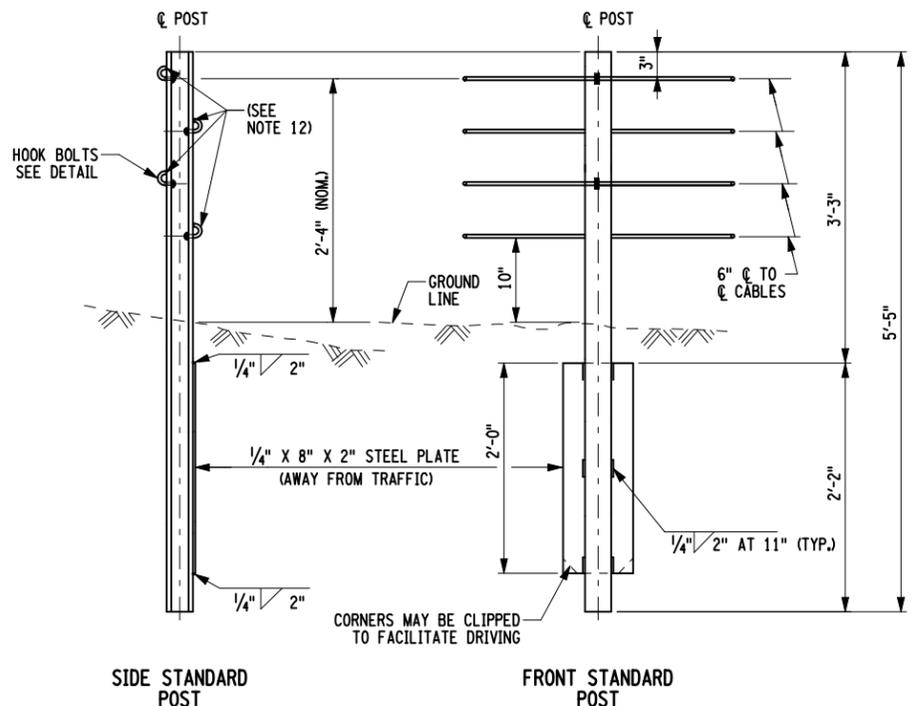
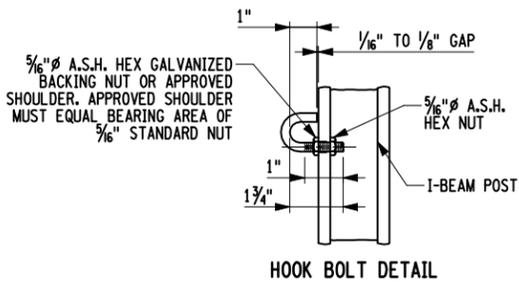


**SIDE VIEW OF ANCHOR POST TOP**

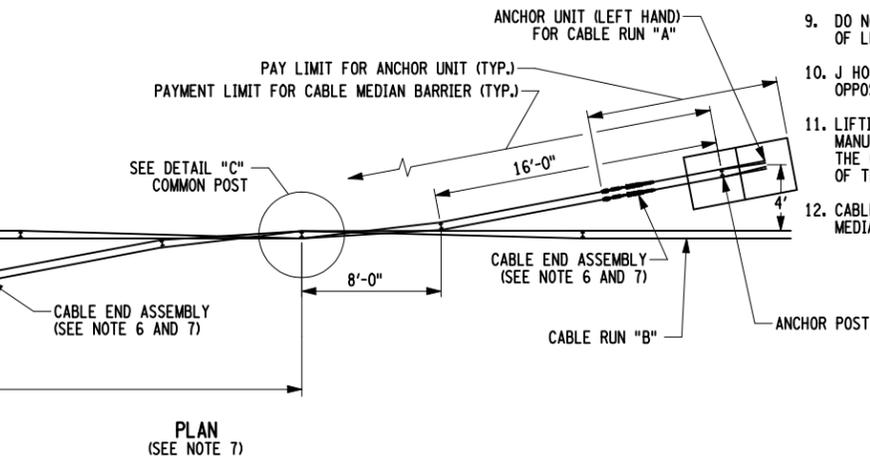
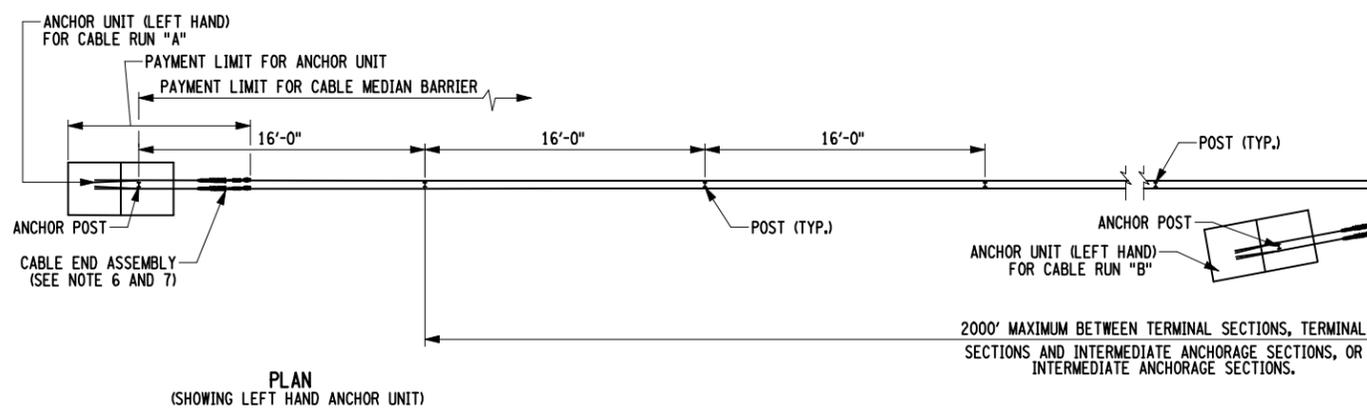
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
<b>CABLE GUIDE RAILING</b> (SHEET 3 OF 3)		
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025	
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)		606-01

EFFECTIVE DATE: 01/07/10

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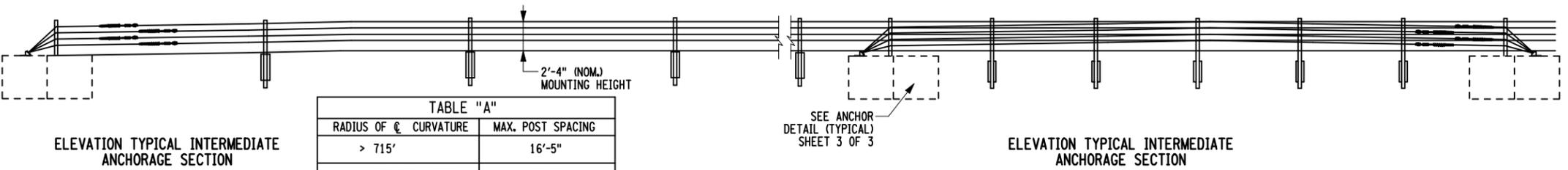


TEMPERATURE (DEGREES FAHRENHEIT)													
120 TO 110	109 TO 100	99 TO 90	89 TO 80	79 TO 70	69 TO 60	59 TO 50	49 TO 40	39 TO 30	29 TO 20	19 TO 10	9 TO 0	-1 TO -10	-11 TO -20
SPRING COMPRESSION FROM UNLOADED POSITION IN EACH SPRING - MEASURED IN INCHES													
1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	4 1/4



- GENERAL NOTES:
- ALL POSTS SHALL BE S3 X 5.7 ROLLED STEEL SECTIONS. THE ANCHOR POST STUB SHALL BE S3 X 7.5.
  - 3/4" Ø WIRE CABLE SHALL CONSIST OF THREE STRANDS (7 WIRES PER STRAND) AND HAVE A MINIMUM TENSILE STRENGTH OF 25,000 POUNDS PER FOOT.
  - CABLE ENDS SHALL BE FABRICATED FROM MALLEABLE IRON (S715-09) OR CAST STEEL (S715-02). THE CABLE SPLICE AND WEDGE SHALL BE FABRICATED FROM MALLEABLE IRON OR ASTM A536 DUCTILE IRON GRADE 65-45-12.
  - ALL CABLE ENDS AND SPLICES SHALL BE DESIGNED TO USE THE WEDGE SHOWN IN DETAIL "X" AND SHALL DEVELOP THE FULL STRENGTH OF THE 3/4" ROUND CABLE 25,000 POUNDS PER FOOT. THE CABLE ENDS AND SPLICES SHALL BE HOT DIPPED GALVANIZED AS INDICATED IN MATERIAL SPECIFICATION FOR CABLE GUIDE RAIL. THE WEDGE SHOWN IN DETAIL "X" SHALL NOT BE GALVANIZED.
  - STAGGER CABLE SPLICES. PROVIDE A MINIMUM OF (20') BETWEEN ANY PAIR. PROVIDE A MINIMUM OF (100') BETWEEN CABLE SPLICES ON THE SAME CABLE.
  - ALTERNATE DESIGNS FOR A STEEL TURNBUCKLE CABLE END ASSEMBLY OR SPRING CABLE END ASSEMBLY SHALL BE SUBMITTED FOR APPROVAL.
  - FOR ARRANGEMENT OF SPRING CABLE END ASSEMBLIES (COMPENSATING DEVICES) AND TURNBUCKLE CABLE END ASSEMBLIES, THE FOLLOWING CRITERIA SHALL APPLY:
    - LENGTH OF CABLE RUN
      - TO 1000' - USE COMPENSATING DEVICE (DETAIL B) ON ONE END, AND TURNBUCKLE (DETAIL A) ON THE OTHER END OF EACH INDIVIDUAL CABLE.
      - OVER 1000' TO 2000' - USE COMPENSATING DEVICE (DETAIL B) ON EACH END OF EACH INDIVIDUAL CABLE.
      - OVER 2000' - START NEW STRETCH BY INTERLACING AT LAST PARALLEL POST (SEE TYPICAL INTERMEDIATE ANCHORAGE DETAILS).
- PRIOR TO FINAL ACCEPTANCE BY THE STATE, THE FOLLOWING VALUES SHALL BE USED TO TIGHTEN THE TURNBUCKLES, DEPENDING ON THE TEMPERATURE AT THE TIME OF THE ADJUSTMENT.

- THE CONCRETE ANCHOR SHALL BE SET INTO THE EXCAVATION AS DETAILED. THE BOTTOM OF THE ANCHOR SHALL HAVE A FULL AND EVEN BEARING ON THE SURFACE UNDER IT SO THAT IF THE CONTRACTOR ELECTS TO PLACE THE ANCHOR IN TWO SECTIONS, THERE WILL BE LITTLE OR NO DIFFERENTIAL SETTLEMENT. IF THE CONTRACTOR ELECTS TO PLACE THE ANCHOR IN TWO SECTIONS, THE TOPS OF BOTH SECTIONS SHALL BE ON THE SAME PLANE. AFTER THE ANCHOR IS IN PLACE, THE EXCAVATION SHALL BE BACKFILLED IN ACCORDANCE WITH THE REQUIREMENTS OF §203-3.15 "FILL AND BACKFILL AT STRUCTURES, CULVERTS, PIPES, CONDUITS, AND DIRECT BURIAL CABLES".
- DO NOT INSTALL CABLE GUIDE RAILING ON CURVES WITH A CENTERLINE RADIUS OF LESS THAN 440'.
- J HOOKS ON COMMON POST SHALL TURN UP ON ONE SIDE AND DOWN ON THE OPPOSITE SIDE TO AVOID CABLES RUBBING.
- LIFTING DEVICES, IF EMBEDDED IN CONCRETE, SHALL BE RATED BY THEIR MANUFACTURER AS HAVING A "SAFE WORKING LOAD" OF FOUR TON (4 TONS) FOR THE ONE PIECE ANCHOR AND TWO TONS (2 TONS) EACH FOR EACH OF THE HALVES OF THE TWO PIECE ANCHOR UNIT.
- CABLE SYSTEM SHALL BE INSTALLED WITH THE BOTTOM CABLE FACING THE MEDIAN DITCH OR LOW SPOT. REMAINING THREE CABLES SHALL BE STAGGERED.



RADIUS OF Ø CURVATURE	MAX. POST SPACING
> 715'	16'-5"
≥ 440' AND ≤ 715'	12'-3"

DO NOT INSTALL CABLE GUIDE RAILING ON CURVES WITH A Ø RADIUS OF < 440'

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

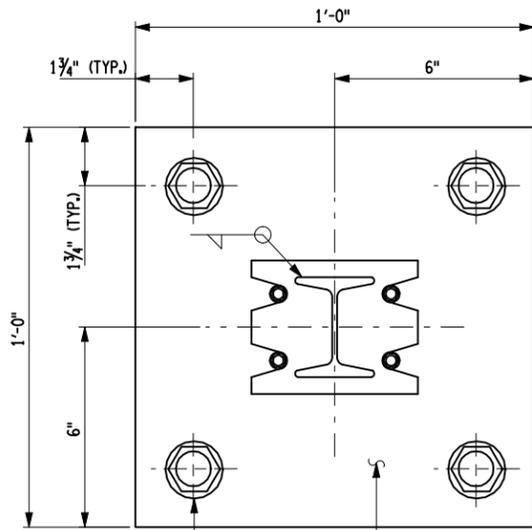
CABLE MEDIAN BARRIER  
(SHEET 1 OF 3)

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/S/ RICHARD W. LEE, P.E.  
FOR THE DEPUTY CHIEF ENGINEER (DESIGN)

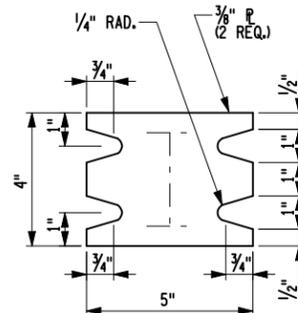
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606-02

EFFECTIVE DATE: 01/07/10

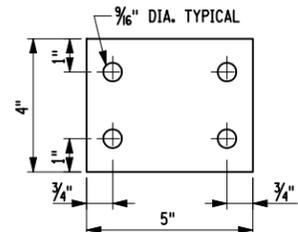
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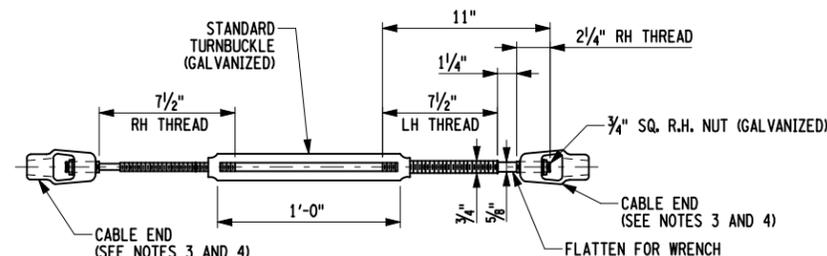
ANCHOR POST BASE DETAIL  
PLAN VIEW



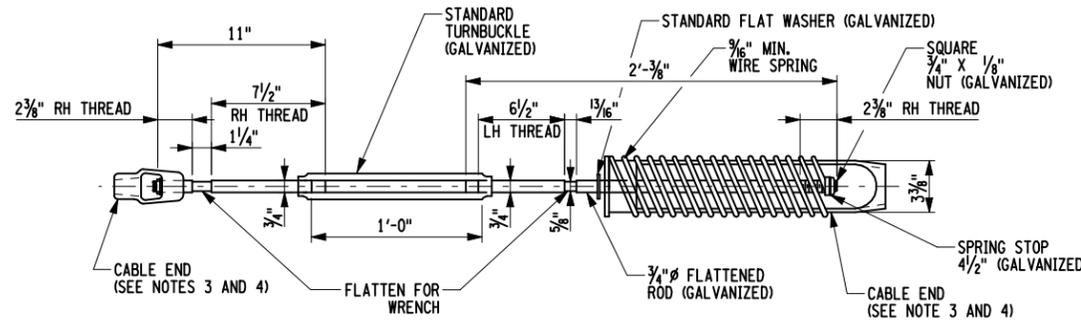
SLIP IMPACT BASE  
(KEEPER PLATE NOT SHOWN)



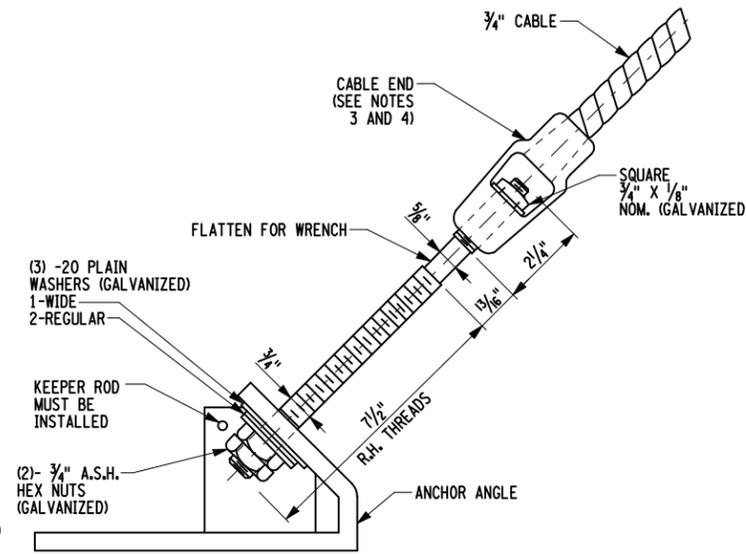
KEEPER PLATE  
28 GAUGE GALVANIZED STEEL, PAINTED ORANGE



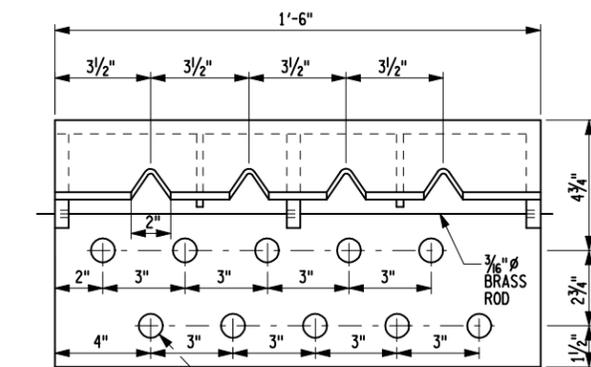
STEEL TURNBUCKLE CABLE END ASSEMBLY  
DETAIL "A"  
(SEE NOTE 7)



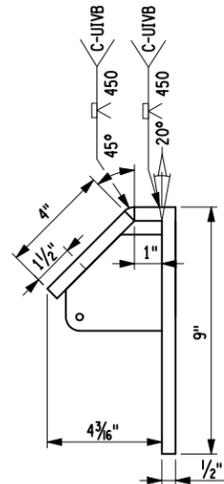
SPRING CABLE END ASSEMBLY  
(COMPENSATING DEVICE)  
DETAIL "B"



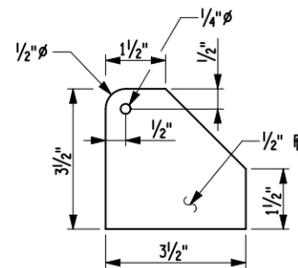
CABLE END ASSEMBLY  
TO ANCHOR ANGLE DETAIL



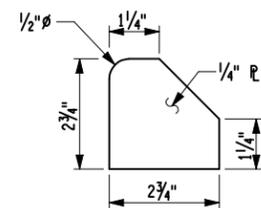
WELDED PLATE DETAIL



WELDED PLATE  
EXTERNAL STIFFENER  
(SEE DETAIL)



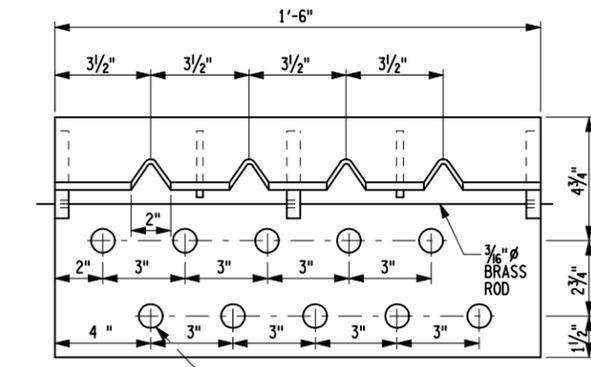
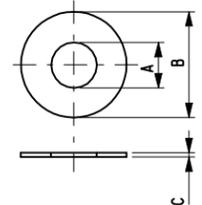
EXTERNAL AND CENTRAL  
STIFFENER R



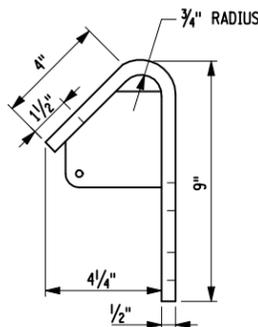
INTERNAL STIFFENER R

WASHER	WASHER SERIES	INSIDE DIAMETER "A"			OUTSIDE DIAMETER "B"			THICKNESS "C"		
		BASIC	TOLERANCE		BASIC	TOLERANCE		BASIC	MAX.	MIN.
			PLUS	MINUS		PLUS	MINUS			
3/4"	REGULAR	0.812"	0.030"	0.007"	1.469"	0.030"	0.007"	0.134"	0.160"	0.108"
	WIDE	0.812"	0.030"	0.007"	2.000"	0.030"	0.007"	0.165"	0.192"	0.136"
1/2"	NARROW	0.531"	0.015"	0.005"	1.062"	0.030"	0.007"	0.095"	0.121"	0.074"

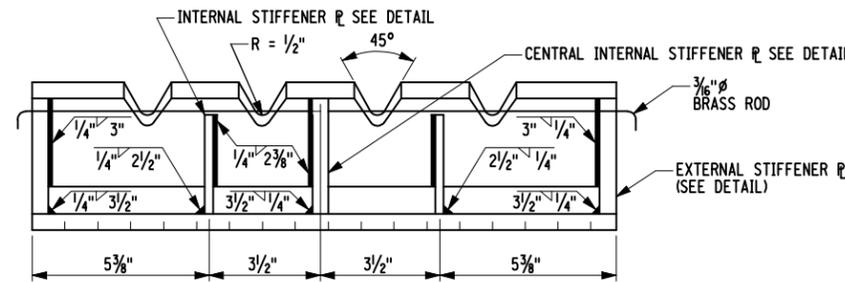
WASHER TABLE AND WASHER DETAIL



BENT PLATE DETAIL



BENT PLATE  
EXTERNAL STIFFENER  
(SEE DETAIL)

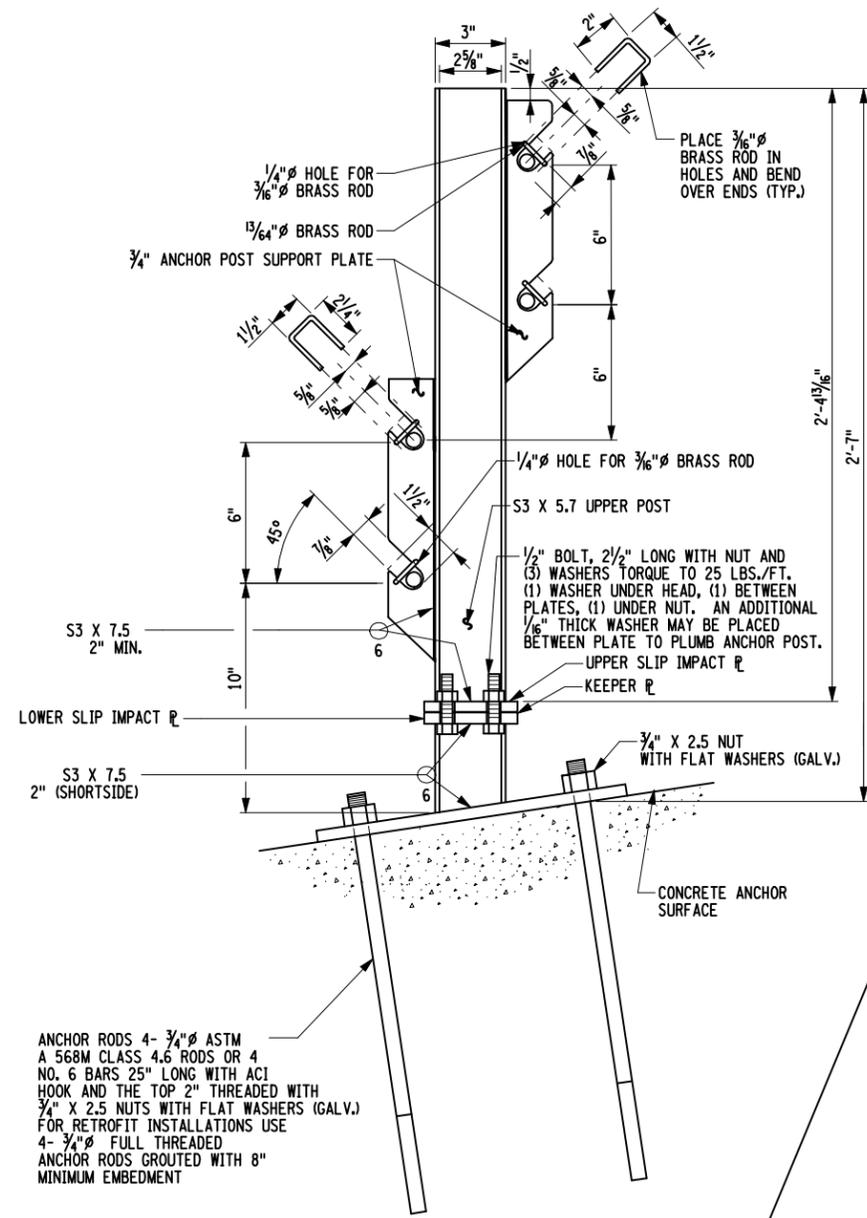


ANCHOR ANGLE DETAILS  
NOTE: ALTERNATE METHODS OF FABRICATING  
ANCHOR ANGLES SHALL BE SUBMITTED FOR APPROVAL

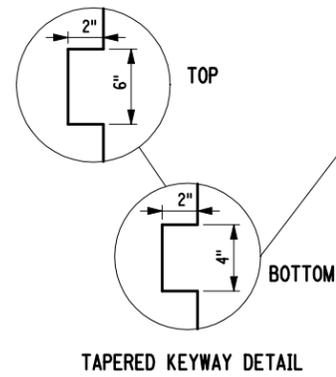
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
CABLE MEDIAN BARRIER (SHEET 2 OF 3)	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	606-02

EFFECTIVE DATE: 01/07/10

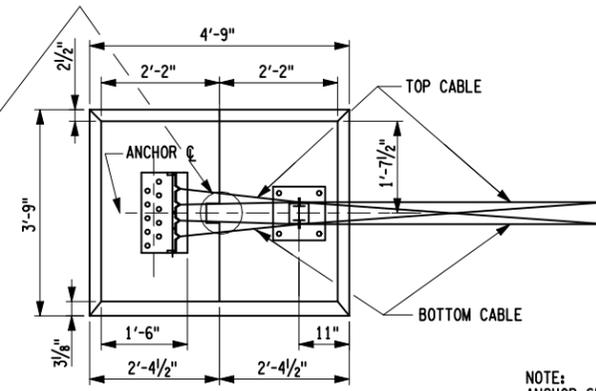
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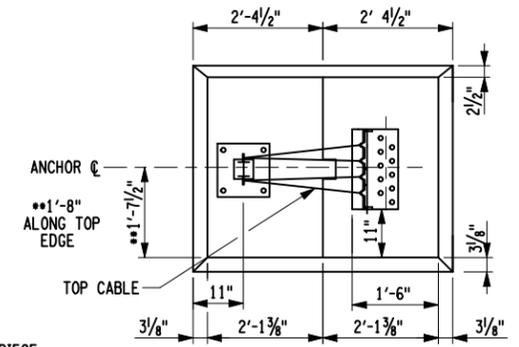
ANCHOR POST DETAIL



TAPERED KEYWAY DETAIL

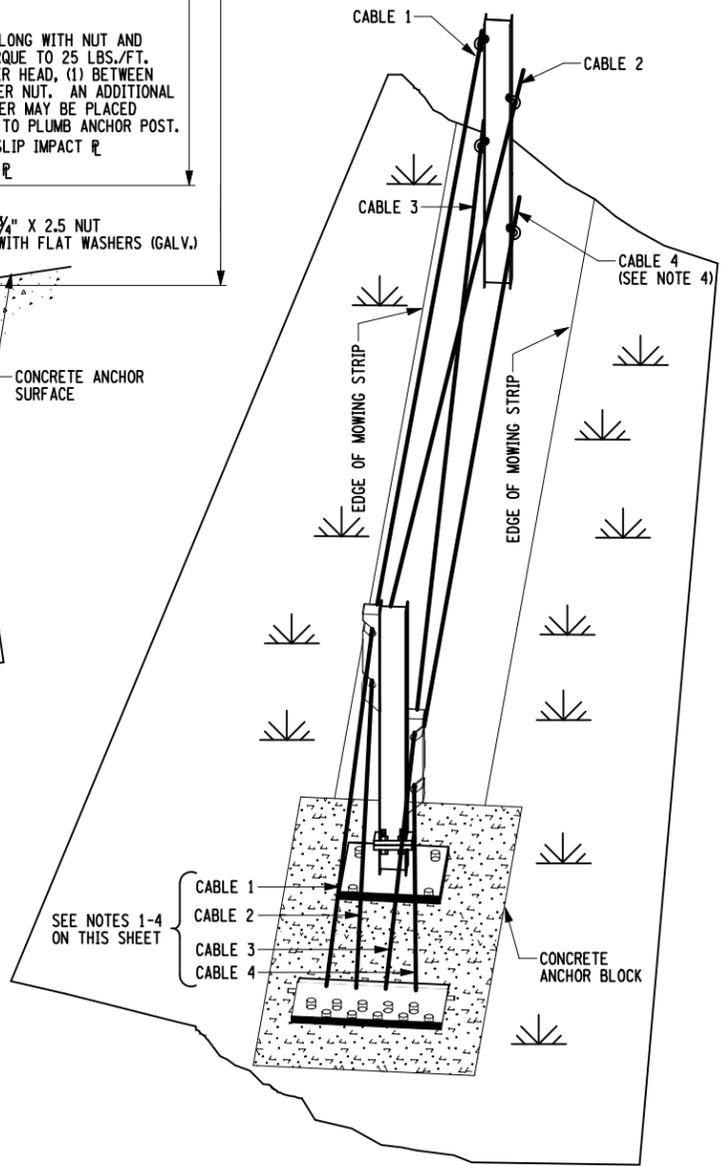


ANCHOR UNIT DETAIL TOP VIEW - LEFT HAND (REINFORCEMENT NOT SHOWN)

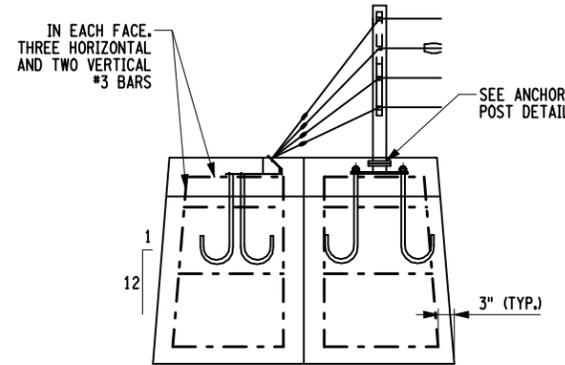


ANCHOR UNIT DETAIL TOP VIEW - RIGHT HAND (REINFORCEMENT NOT SHOWN)

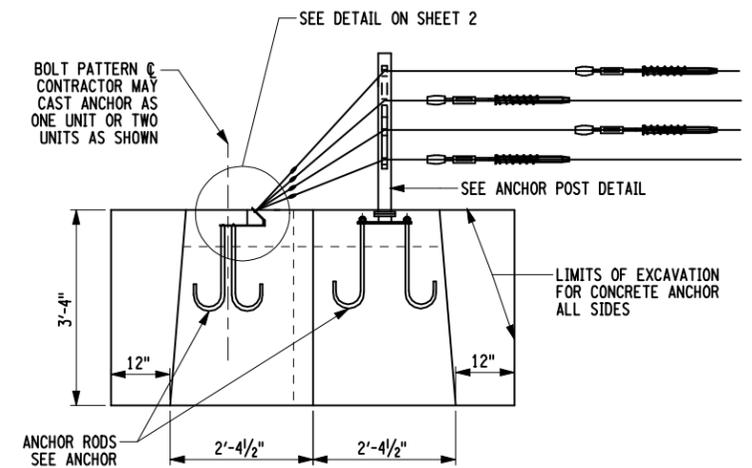
NOTE: ANCHOR SHALL BE ONE OR TWO PIECE. DIMENSIONS OF TWO PIECE ANCHOR ARE SHOWN ON DRAWING. DIMENSIONS OF ONE PIECE ANCHOR ARE 4'-11" LONG BY 3'-0" WIDE BY 3'-3 3/8" HIGH.



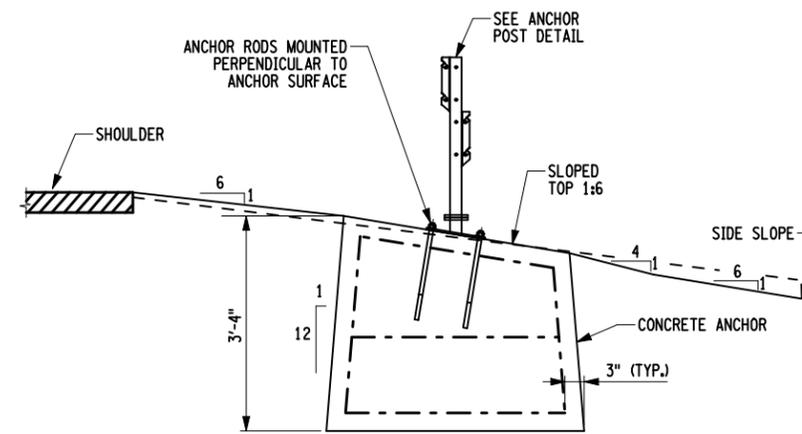
ISOMETRIC VIEW (HIGH SIDE OF MEDIAN ON LEFT)



ANCHOR UNIT AND RE-BAR INSTALLATION DETAIL (TWO PIECE)



ANCHOR UNIT DETAIL LEFT HAND VIEW (REINFORCEMENT NOT SHOWN) (SEE NOTE 8)



ANCHOR UNIT AND RE-BAR INSTALLATION DETAIL

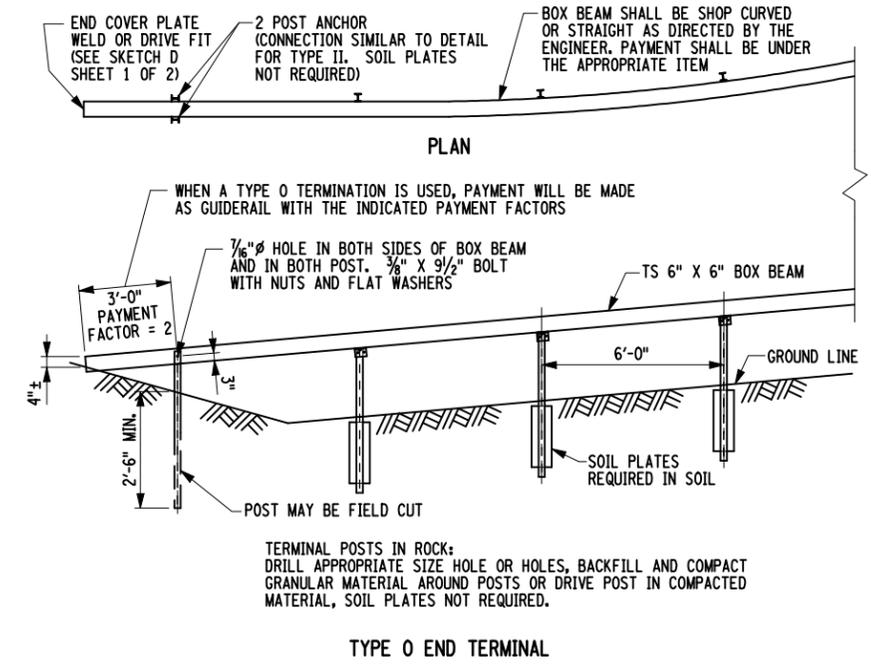
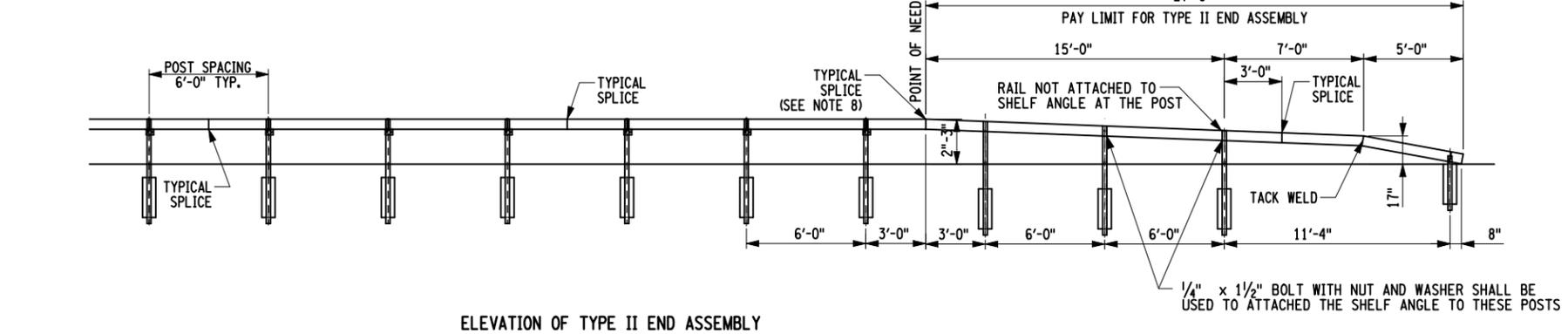
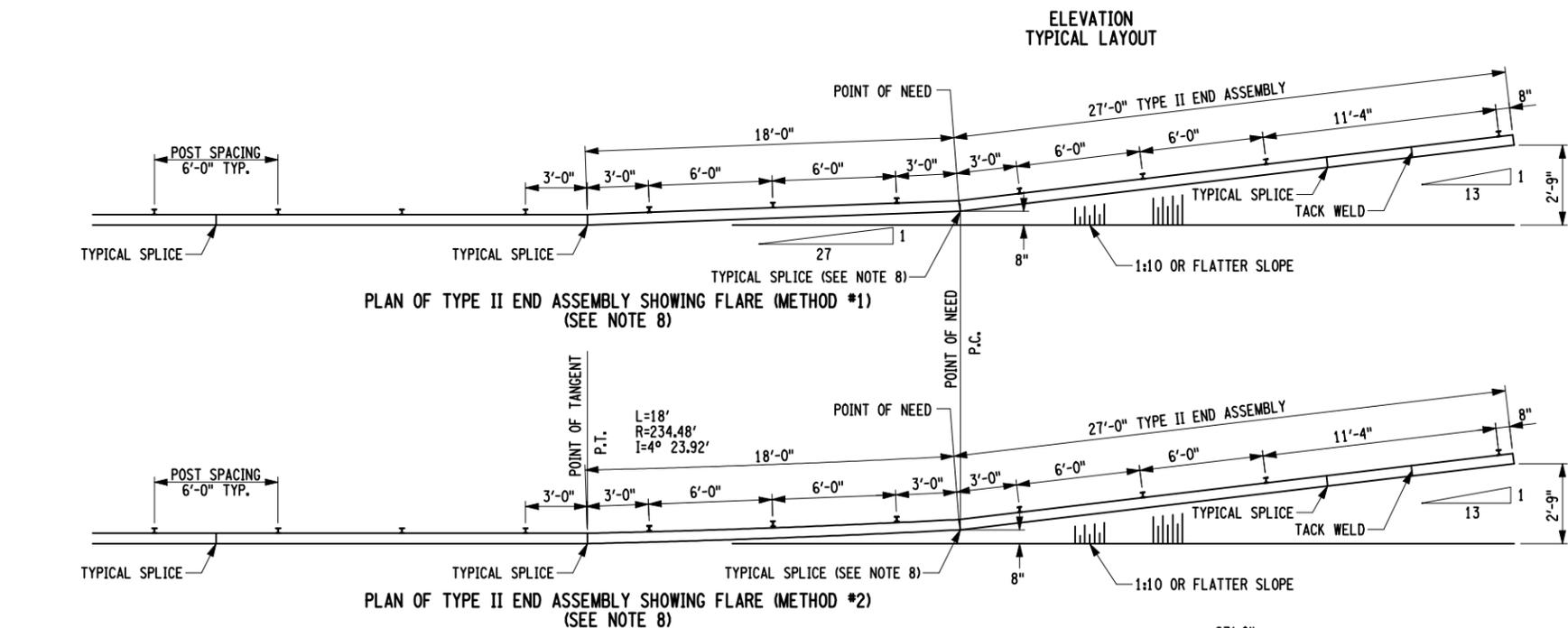
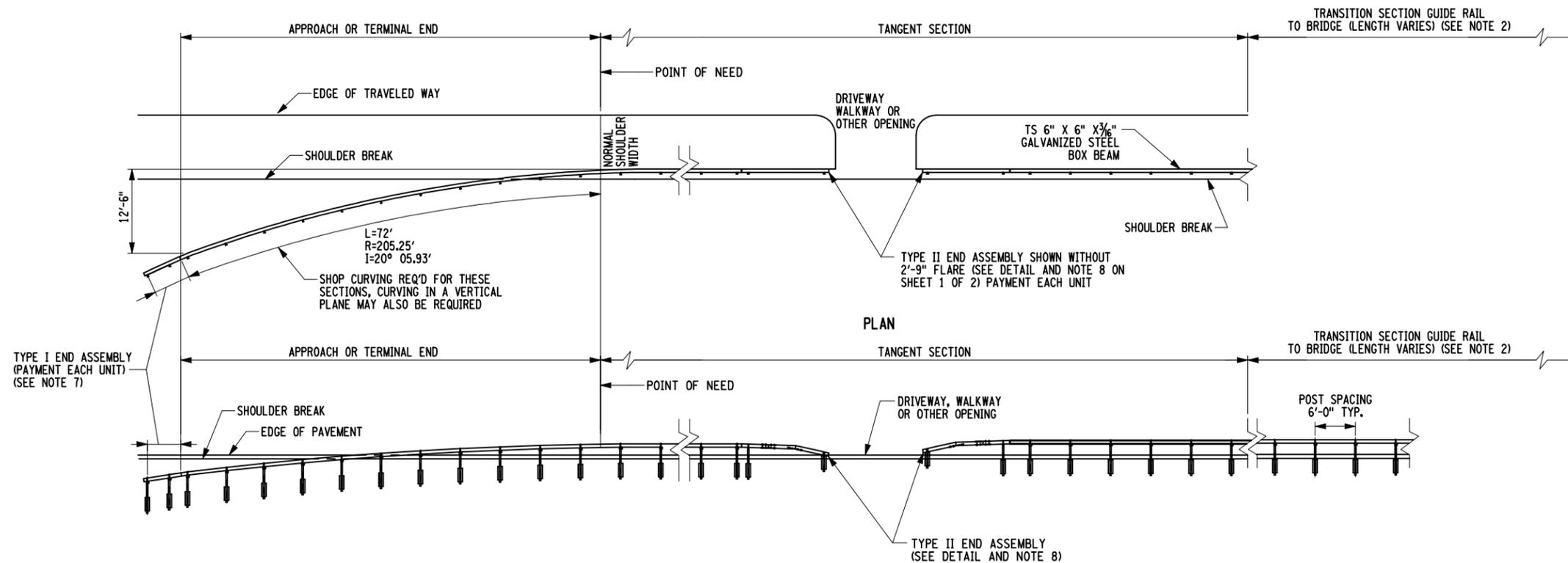
- NOTES:
1. CABLE 1 IS LOCATED ON THE HIGH SIDE OF THE MEDIAN.
  2. CABLE 2 BEGINS ON THE SAME SIDE OF THE POST AS CABLE 1 AND PROCEEDS TO WEAVE TO THE OPPOSITE SIDE OF THE NEXT POST.
  3. CABLE 3 BEGINS ON THE SAME SIDE OF THE POST AS CABLE 4 AND PROCEEDS TO WEAVE TO THE OPPOSITE SIDE OF THE NEXT POST.
  4. CABLE 4 IS LOCATED ON THE LOW SIDE OF THE MEDIAN.

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>CABLE MEDIAN BARRIER (SHEET 3 OF 3)</p>	
<p>APPROVED OCTOBER 05, 2009 /S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)</p>	<p>ISSUED UNDER EB 09-025  606-02</p>

EFFECTIVE DATE: 01/07/10

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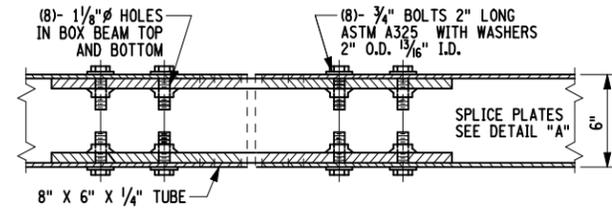
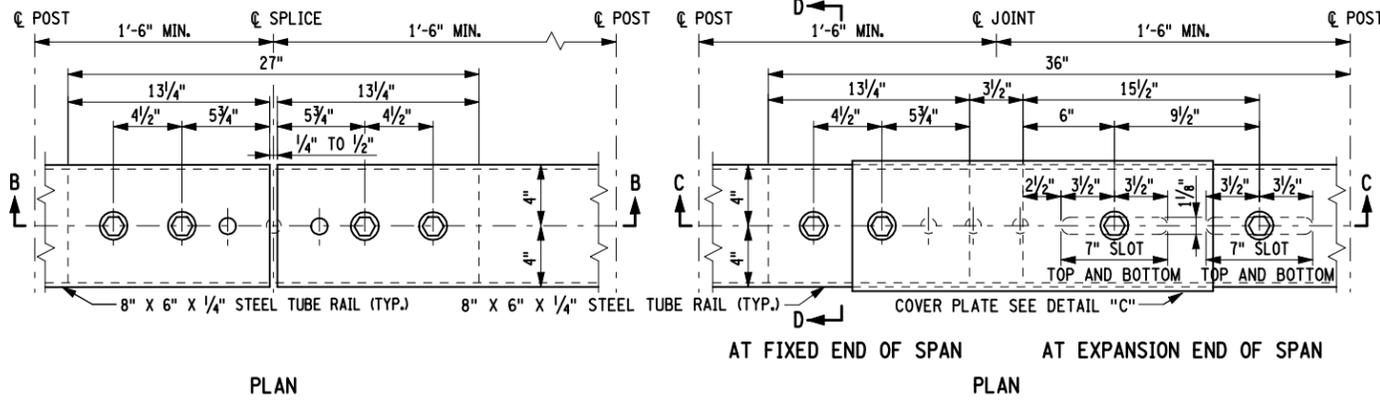


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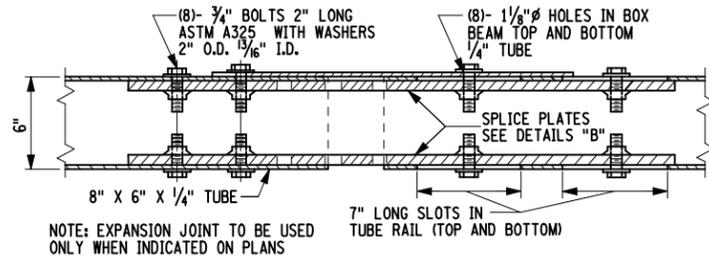
 <b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>BOX BEAM GUIDE RAIL (SHEET 2 OF 2)</b>	
APPROVED OCTOBER 14, 2009	ISSUED UNDER EB 09-003
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	
606-04	

EFFECTIVE DATE: 05/06/10

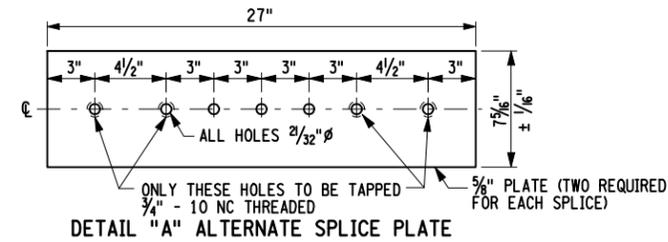
NOTE: WELD OR GALVANIZED PROTRUSIONS NOT PERMITTED ON TOP OR BOTTOM INSIDE WALLS IN SPLICE AREA.



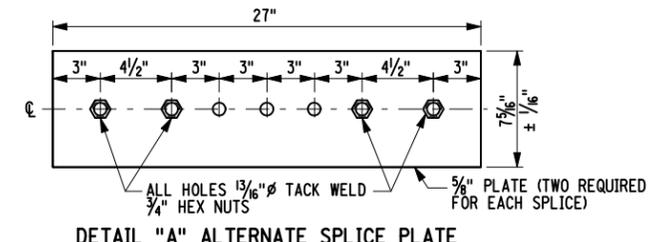
SECTION B-B  
TYPICAL RAIL SPLICE DETAIL



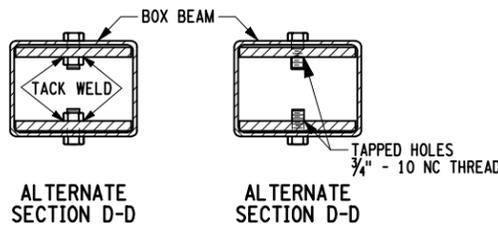
SECTION C-C  
TYPICAL EXPANSION JOINT DETAIL



DETAIL "A" ALTERNATE SPLICE PLATE

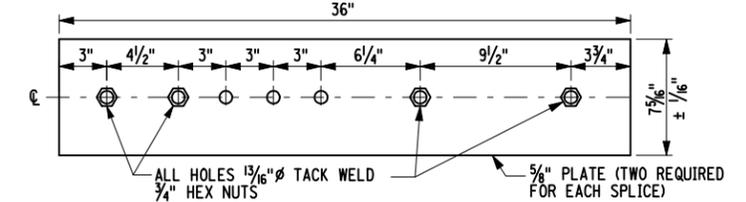


DETAIL "A" ALTERNATE SPLICE PLATE

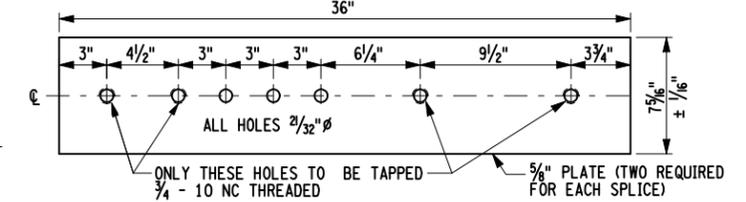


ALTERNATE SECTION D-D

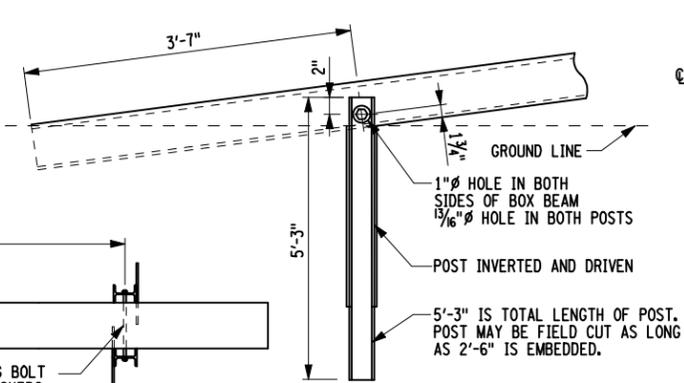
ALTERNATE SECTION D-D



DETAIL "B" ALTERNATE SPLICE PLATE FOR EXPANSION JOINT

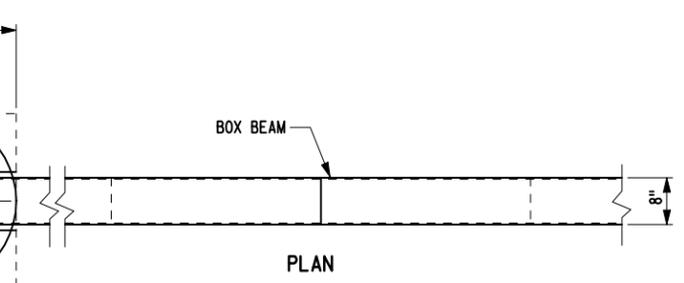


DETAIL "B" ALTERNATE SPLICE PLATE FOR EXPANSION JOINT



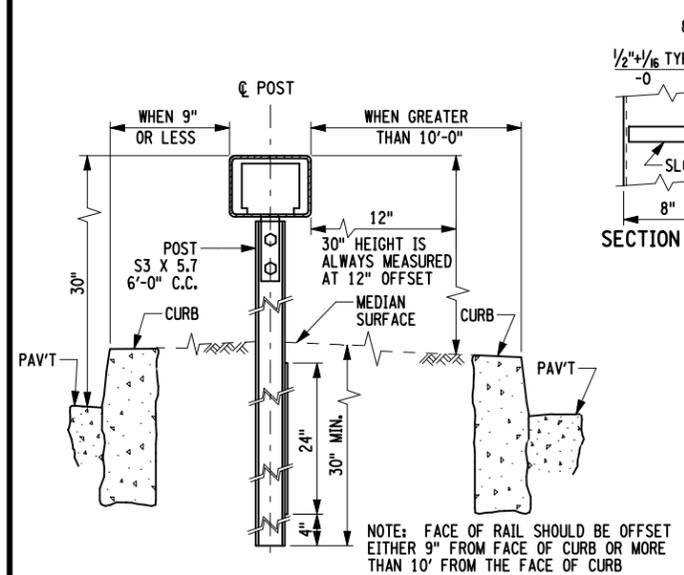
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TYPICAL END TREATMENT - TYPE B  
WIDE MEDIANS

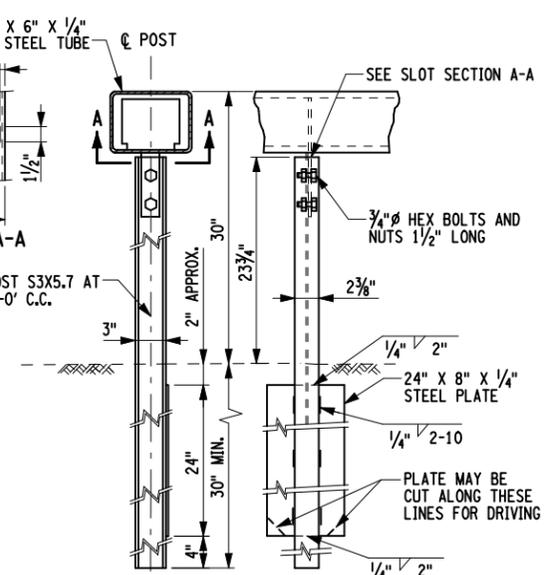


PLAN

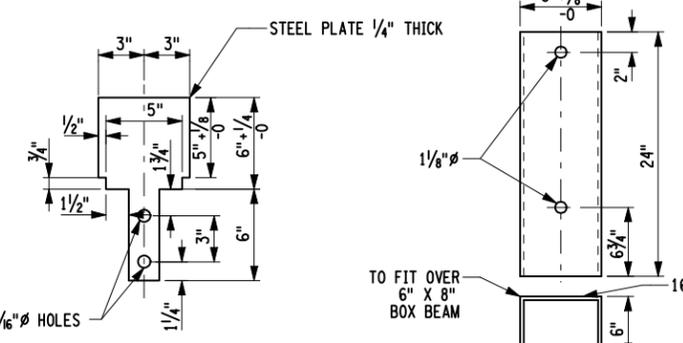
ELEVATION  
TYPICAL END TREATMENT - TYPE A  
NARROW MEDIANS



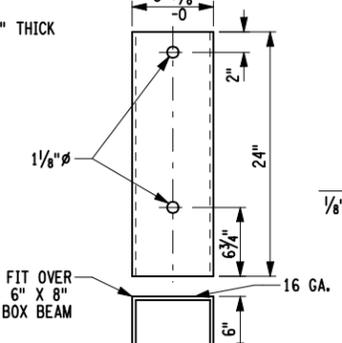
TYPICAL SECTION ON RAISED MEDIANS



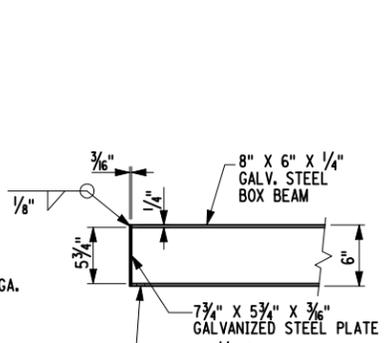
TYPICAL SECTION FOR FLUSH MEDIAN



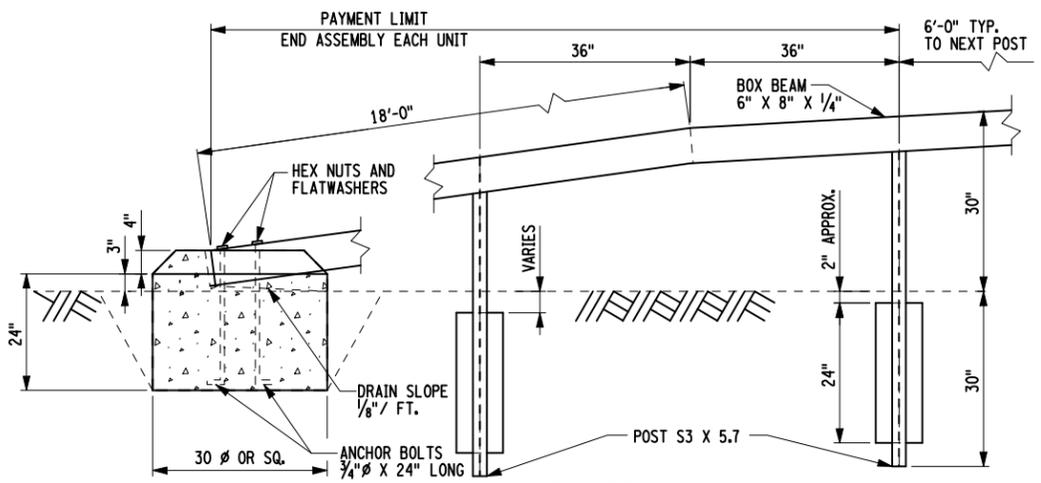
RAIL SUPPORT PLATE



DETAIL "C"  
COVER PLATE



BOX BEAM  
END TREATMENT

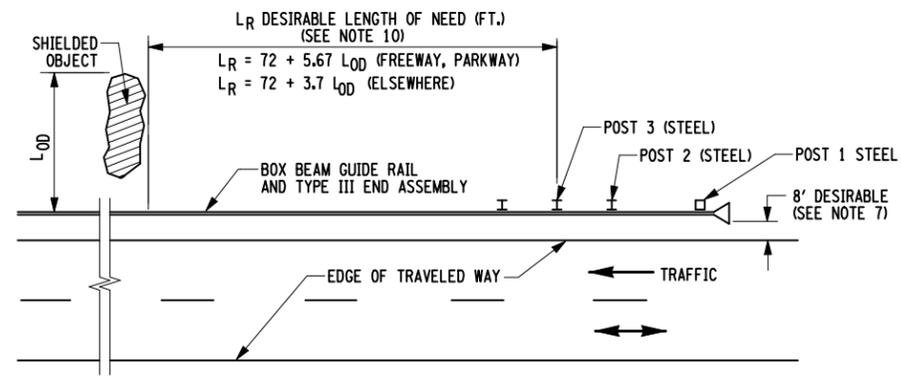


EFFECTIVE DATE: 01/08/09

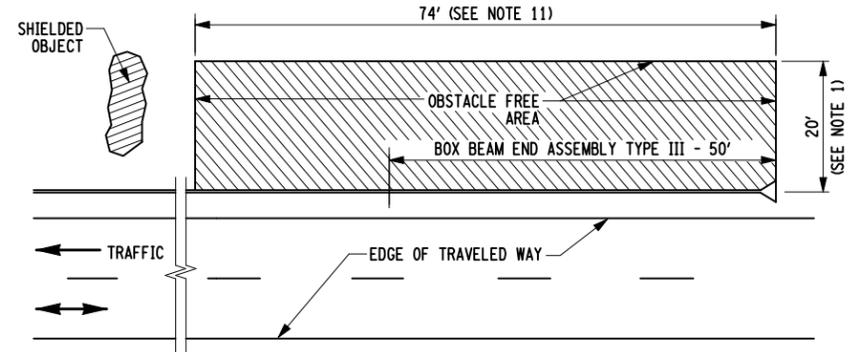
- NOTES:
1. MINIMUM LENGTH OF RAIL TUBE TO BE 18'-0".
  2. SEE CONTRACT PLANS FOR LAYOUT DETAILS OF BOX BEAM MEDIAN BARRIERS.
  3. SEE SPECIFICATIONS FOR BOX BEAM MEDIAN BARRIER FOR MATERIAL REQUIREMENTS AND CONSTRUCTION DETAILS.
  4. CURVED MEDIAN BARRIER - CURVED MEDIAN BARRIER ERECTED WITH A RADIUS OF 1525'-0" OR LESS SHALL BE SHOP WORKED TO THE REQUIRED CURVATURE. PAYMENT FOR SUCH CURVED LENGTHS WILL BE MADE UNDER THE APPROPRIATE ITEM.
  5. THE CONTRACTOR SHALL HAVE THE OPTION IF USING EITHER THE SPLICE PLATES WITH THE 3/4"-10 HEX NUTS WELDED TO THEM, OR THE SPLICE PLATES WITH THE BOLT HOLES DRILLED AND TAPPED AS SHOWN IN DETAILS "A" AND DETAIL "B" ALTERNATIVES ABOVE.
  6. CURBS GREATER THAN 3" HIGH ARE NOT TO BE RETAINED OR PLACED OVER 9" AND LESS THAN 120" IN FRONT OF GUIDERAIL OR MEDIAN BARRIER SYSTEMS WHEN THE DESIGN, POSTED, OR OPERATING SPEED IS IN EXCESS OF 50 MPH. THE OFFSET SHALL BE MEASURED FROM THE FACE OF CURB TO THE FACE OF RAIL. THE RAIL MOUNTING HEIGHT OF ALL GUIDERAIL OR MEDIAN BARRIER PLACED BEHIND CURB (REGARDLESS OF CURB HEIGHT OR SPEED) SHALL BE MEASURED FROM PAVEMENT SURFACE WHEN THE OFFSET IS 12" OR LESS AND TO THE GROUND SURFACE UNDER THE FACE OF THE RAIL WHEN THE OFFSET IS GREATER THAN 12".

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
BOX BEAM MEDIAN BARRIER	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-05

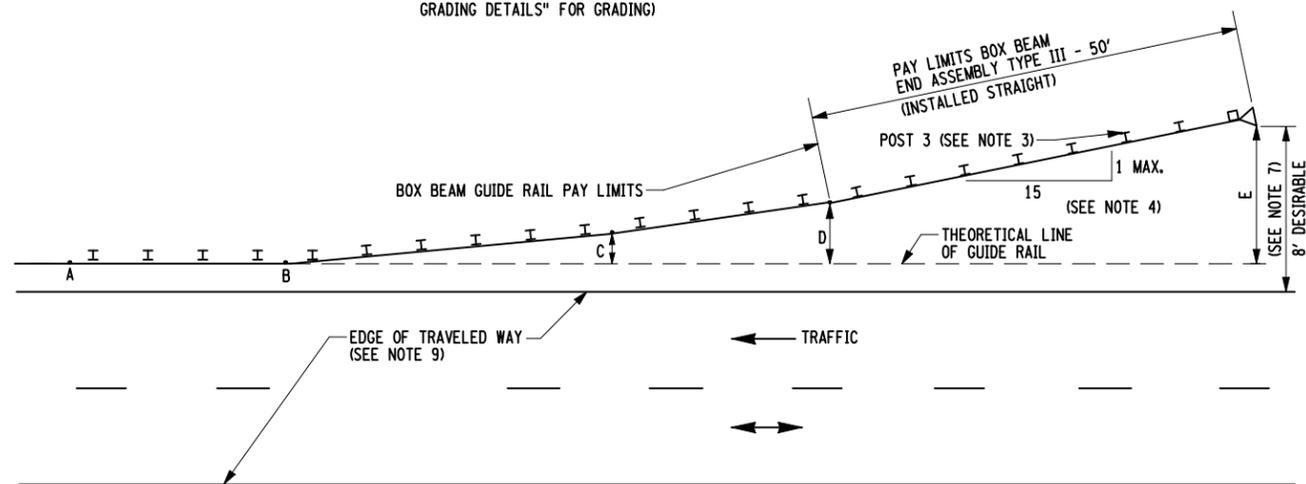
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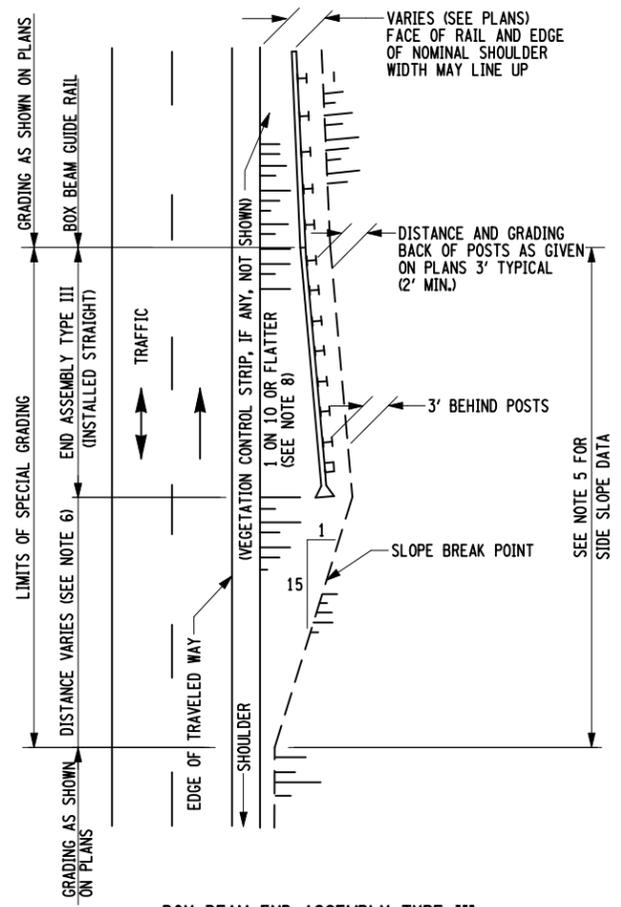
**BOX BEAM END ASSEMBLY TYPE III  
DESIRABLE LENGTH OF NEED DETAIL**  
(SHOWN STRAIGHT, BUT MAY BE FLARED)  
(SEE "BOX BEAM END ASSEMBLY TYPE III  
GRADING DETAILS" FOR GRADING)



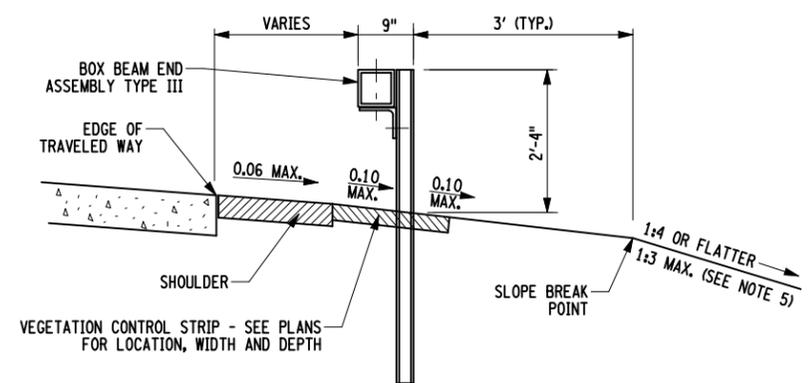
**BOX BEAM END ASSEMBLY TYPE III  
OBSTACLE FREE AREA DETAIL**  
(SHOWN STRAIGHT, BUT MAY BE FLARED)  
(SEE "BOX BEAM END ASSEMBLY TYPE III  
GRADING DETAILS" FOR GRADING)



**METHOD FOR INTRODUCING FLARE**  
(SHOWN HERE WITH ANGLES AT JOINTS B, C, AND D.  
VEGETATION CONTROL STRIP, IF ANY, AND SHOULDER NOT SHOWN)  
(SEE "BOX BEAM END ASSEMBLY TYPE III  
GRADING DETAILS" FOR GRADING)



**BOX BEAM END ASSEMBLY TYPE III  
GRADING DETAILS**  
(DETAIL APPLIES TO BOTH FLARED  
AND TANGENT INSTALLATIONS)



**SECTION THROUGH SPECIAL  
GRADING AREA**

- NOTES:
- MAY BE REDUCED TO WIDTH OF DESIGN CLEAR ZONE.
  - BOX BEAM END ASSEMBLY TYPE III SHALL BE FABRICATED IN ACCORDANCE WITH §710-24 BOX BEAM END ASSEMBLY TYPE III. MATERIALS DETAILS ARE REQUIRED.
  - REDIRECTION BEGINS AT THIS POST (NO. 3). BOX BEAM END ASSEMBLY TYPE III "GATES" FROM NOSE ASSEMBLY TO POST 3, WHICH MEANS VEHICLES HITTING TYPE III END ASSEMBLY UPSTREAM OF POST 3 PENETRATE THE TERMINAL. POST 3 IS THE BEGINNING OF LENGTH OF NEED.
  - BOX BEAM END ASSEMBLY TYPE III SHALL BE INSTALLED WITHOUT CURVATURE OR BEND. MAX FLARE RATE IS 1 ON 15 (3° - 50'). FLARE TO BE DEVELOPED AT JOINTS DOWNSTREAM OF THE TYPE III END ASSEMBLY. SEE TABLE 1 FOR DIMENSIONS.
  - EMBANKMENT OR FORESLOPES WITHIN SPECIAL GRADING LIMITS SHOULD BE PREFERABLY 1 ON 4 OR FLATTER, MAXIMUM 1 ON 3.
  - THIS DISTANCE VARIES. LENGTH TO BE 15, OR MORE, TIMES THE DIFFERENCE IN EMBANKMENT WIDTHS AT A TYPICAL POINT WELL UPSTREAM OF THE END ASSEMBLY AND THE EMBANKMENT WIDTH AT THE NOSE ASSEMBLY.
  - 8' OR GREATER OFFSET DESIRABLE BETWEEN EDGE OF TRAVELED WAY AND THE SIDE OF THE TYPE III END ASSEMBLY MEASURED AT NOSE ASSEMBLY.
  - GRADING TO BE 1:10 OR FLATTER FROM EDGE OF SHOULDER TO SLOPE BREAK POINT.
  - SHOULDER PAVEMENT AND VEGETATION CONTROL STRIP, IF ANY, NOT SHOWN.
  - LENGTH OF NEED DOES NOT NEED TO EXCEED 360' ON FACILITIES WITH OPERATING SPEED ≥ 55 MPH OR 260' WHEN OPERATING SPEED IS ≥ 45 MPH BUT < 55 MPH.
  - WITH PERMISSION OF THE ENGINEER, THIS LENGTH MAY BE REDUCED TO 50' IF NECESSITATED BY R.O.W. OR ENVIRONMENTAL CONSIDERATIONS.
  - FLARE ACHIEVED AT THE JOINTS- APPROXIMATELY 1° PER JOINT. SEE TABLE 1 BELOW FOR OFFSETS TO THE JOINTS FROM THE THEORETICAL LINE OF GUIDE RAIL FOR COMMON RAIL LENGTHS.

**TABLE 1  
OFFSETS FROM THE THEORETICAL LINE OF  
RAIL TO VARIOUS JOINTS  
AND END PLATE FOR COMMON LENGTHS**

RAIL LENGTHS	JOINTS				END PLATE DISTANCE E
	A	B	C	D	
18'-0"	----	----	----	0	4"
	----	----	0	3 1/2"	1'-5 1/2"
	0	3 1/2"	11"	1'-9 1/2"	2'-10 1/2"
	0	3 1/2"	11"	1'-9 1/2"	4'-7"
24'-0"	----	----	----	0	4"
	----	----	0	4 3/4"	1'-6 1/2"
	0	4 3/4"	1'-2 1/2"	2'-4 3/4"	3'-2"
	0	4 3/4"	1'-2 1/2"	2'-4 3/4"	5'-2 1/2"
30'-0"	----	----	----	0	4"
	----	----	0	6"	1'-7 1/2"
	0	6"	1'-6"	3'	3'-5 3/4"
	0	6"	1'-6"	3'	5'-9 1/2"
36'-0"	----	----	----	0	4"
	----	----	0	7"	1'-9"
	0	7"	1'-9 1/2"	3'-1 1/2"	3'-9 1/2"
	0	7"	1'-9 1/2"	3'-1 1/2"	6'-4 3/4"

---- INDICATES NO FLARE INTRODUCED AT THIS JOINT AND NO OFFSET.  
0 INDICATES ANGLE AT JOINT BUT NO OFFSET FROM THE THEORETICAL LINE OF GUIDE RAIL.  
X" INDICATES THERE IS BOTH AN ANGLE AT THE JOINT AND THE JOINT IS OFFSET FROM THE THEORETICAL LINE OF GUIDE RAIL 33'

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**BOX BEAM END ASSEMBLY TYPE III  
GRADING, PAYMENT,  
AND LAYOUT DETAILS**

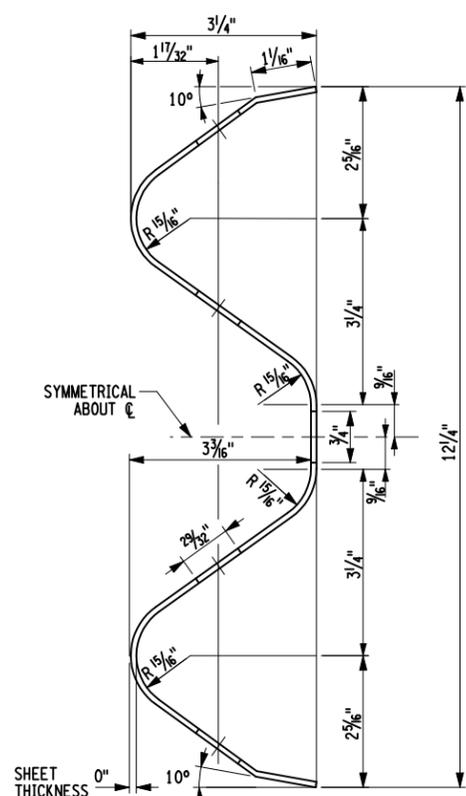
APPROVED OCTOBER 05, 2009 ISSUED UNDER EB 09-025

/S/ RICHARD W. LEE, P.E.  
FOR THE DEPUTY CHIEF ENGINEER  
(DESIGN)

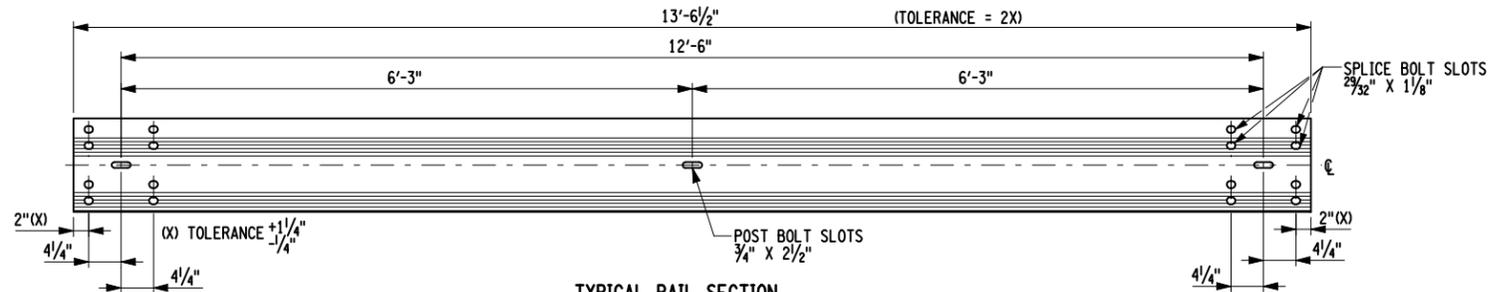
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EFFECTIVE DATE: 01/07/10

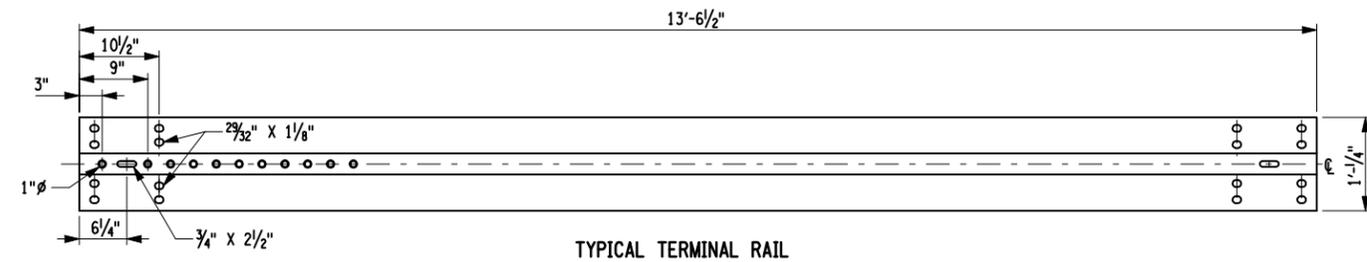
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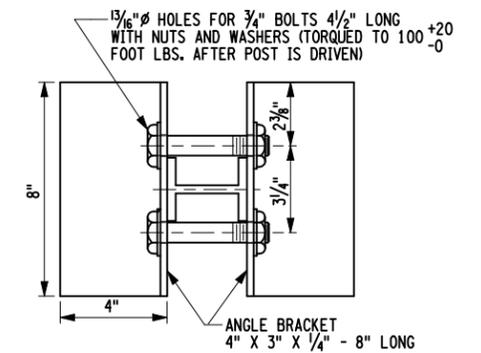
RAIL ELEMENT DETAIL



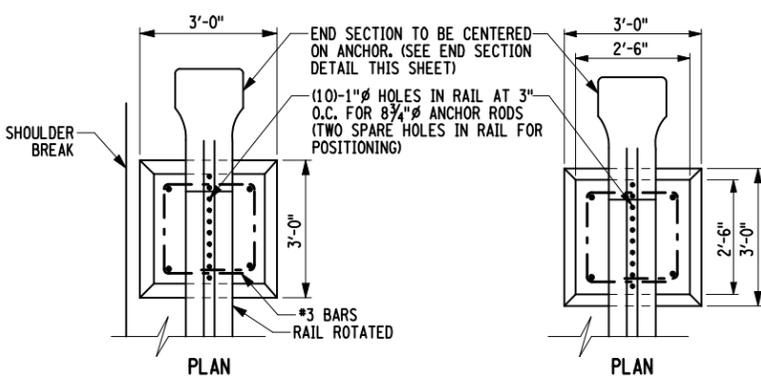
TYPICAL RAIL SECTION



TYPICAL TERMINAL RAIL

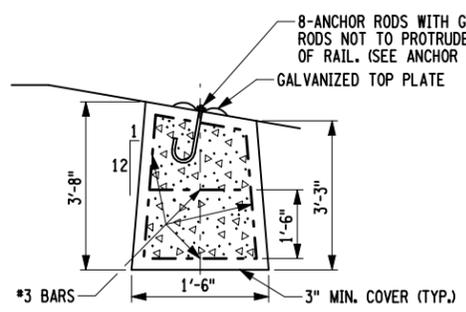


END POST SUPPORT DETAIL (WITH END POST SHOWN)

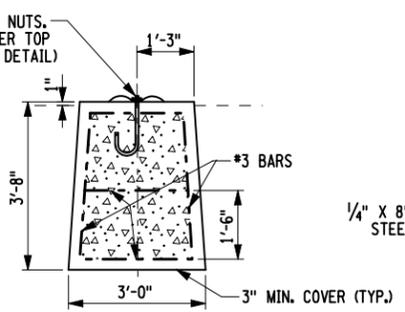


PLAN

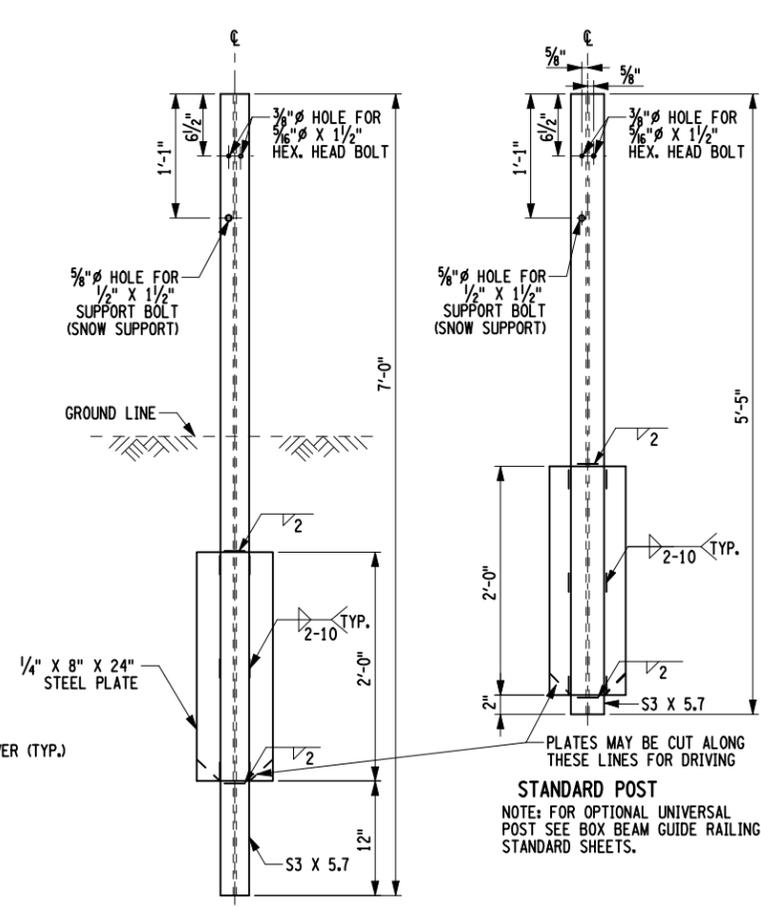
PLAN



ELEVATION INCLINED TOP FACE CONCRETE ANCHOR

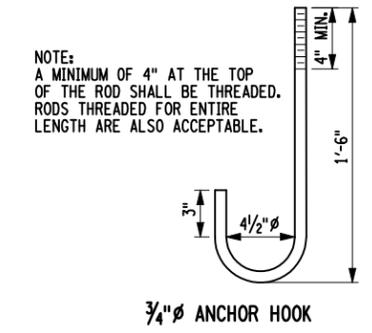


ELEVATION SQUARE TOP FACE CONCRETE ANCHOR

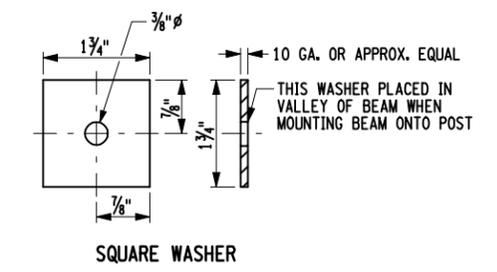


EXTRA LONG POST

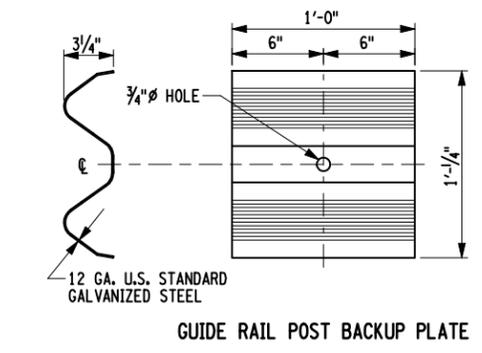
STANDARD POST  
NOTE: FOR OPTIONAL UNIVERSAL POST SEE BOX BEAM GUIDE RAILING STANDARD SHEETS.



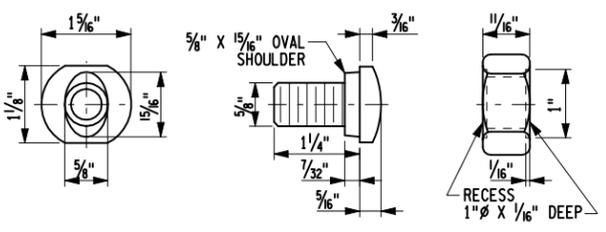
3/4" ANCHOR HOOK



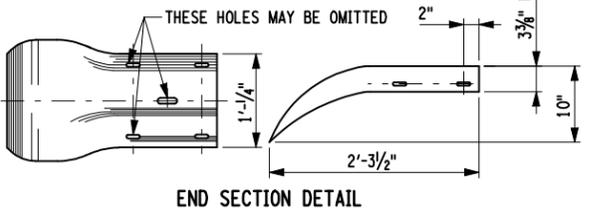
SQUARE WASHER



GUIDE RAIL POST BACKUP PLATE



BEAM SPLICE HARDWARE



END SECTION DETAIL

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STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
W-BEAM (MOD.) GUIDE RAILING COMPONENTS (SHEET 1 OF 2)	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	606-07
EFFECTIVE DATE: 01/07/10	

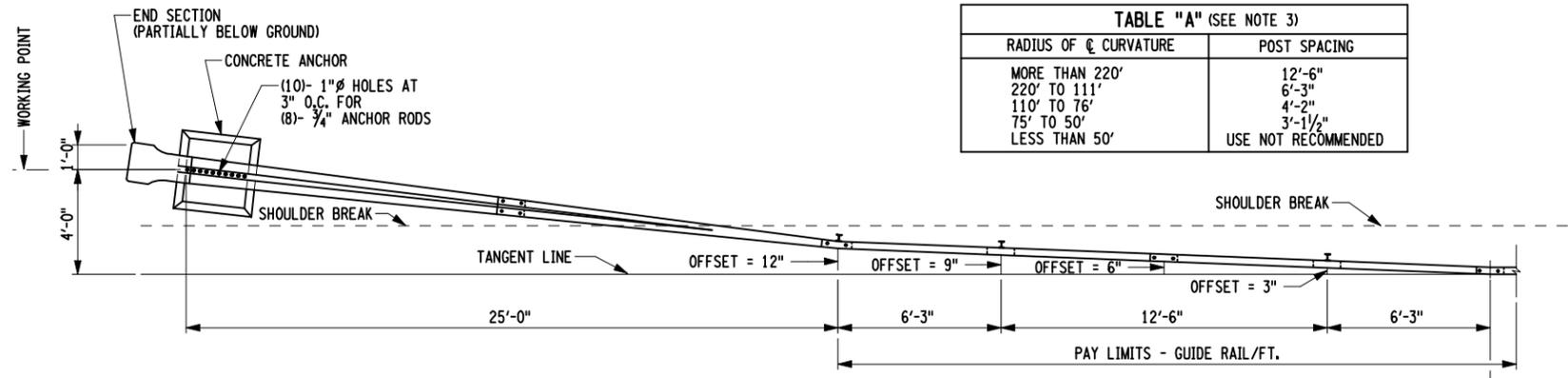
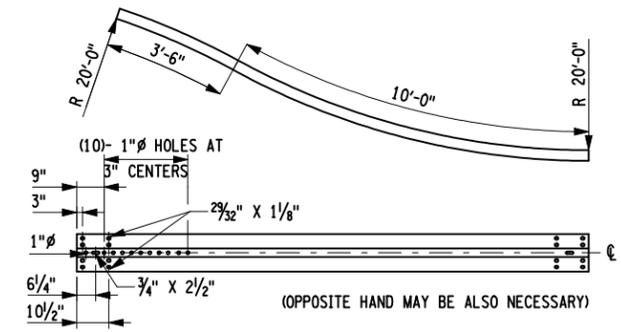
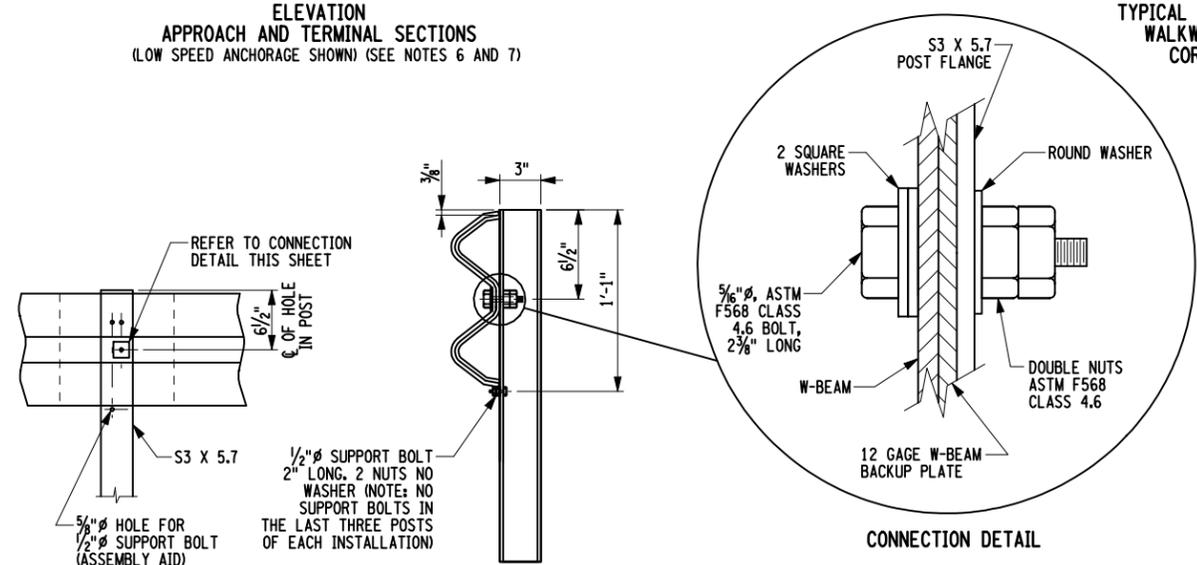
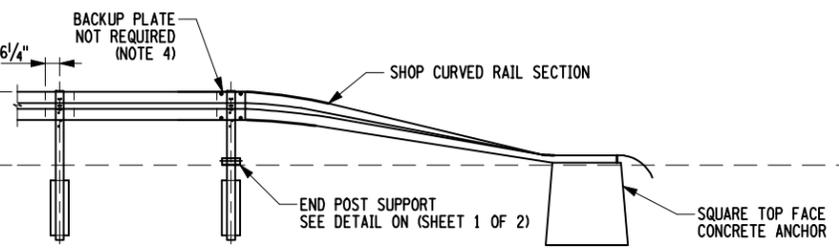
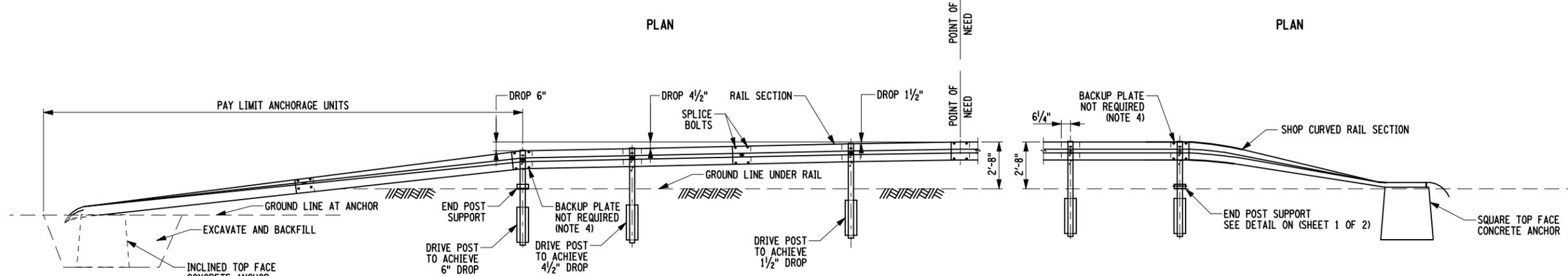
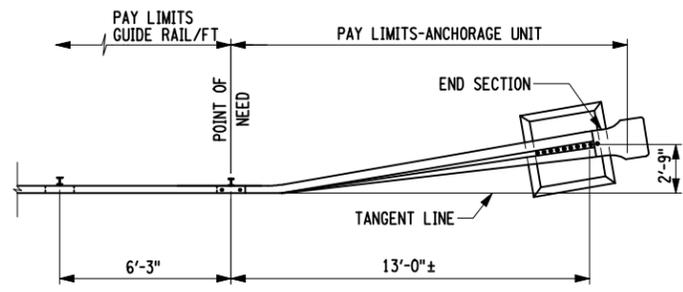
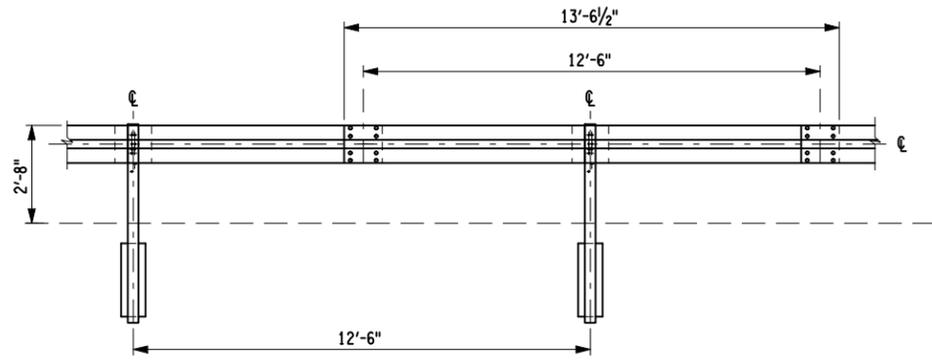
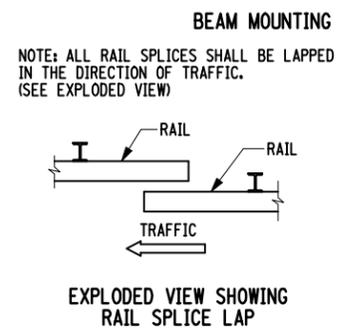
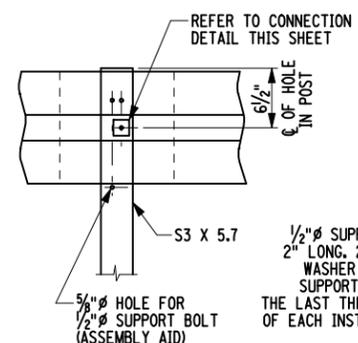


TABLE "A" (SEE NOTE 3)	
RADIUS OF CURVATURE	POST SPACING
MORE THAN 220'	12'-6"
220' TO 111'	6'-3"
110' TO 76'	4'-2"
75' TO 50'	3'-1 1/2"
LESS THAN 50'	USE NOT RECOMMENDED



- NOTES:
- BEAMS TO BE ERECTED ON A RADIUS OF 150' OR LESS SHALL BE SHOP WORKED TO THE REQUIRED CURVATURE, AND PAYMENT FOR SUCH CURVED LENGTH WILL BE MADE UNDER THE APPROPRIATE ITEM. SEE SHOP CURVED RAIL.
  - THE RAIL MOUNTING HEIGHT OF ALL GUIDE RAIL PLACED BEHIND CURB REGARDLESS OF CURB HEIGHT OR SPEED SHALL BE MEASURED FROM THE PAVEMENT SURFACE WHEN THE OFFSET IS 12" OR LESS AND TO THE GROUND SURFACE UNDER THE FACE OF THE RAIL WHEN THE OFFSET IS GREATER THAN 12".
  - ADDITIONAL POSTS REQUIRED TO REDUCE DEFLECTION DISTANCE OR BECAUSE OF HORIZONTAL CURVATURE SHALL NOT BE ATTACHED TO THE RAIL ELEMENT. PAYMENT FOR ADDITIONAL POSTS WILL BE MADE IN ACCORDANCE WITH THE PAYMENT FACTORS FOR REDUCED POST SPACING FOR CORRUGATED BEAM IN TABLE 606-2 IN SECTION 606-5.01 OF THE STANDARD SPECIFICATIONS.
  - BACKUP PLATES ARE NOT REQUIRED AT END POST CONNECTIONS.
  - ANCHORAGE UNITS SHALL BE PAID UNDER APPROPRIATE ITEM "ANCHORAGE UNITS FOR CORRUGATED BEAM GUIDE RAIL" UNDER SECTION 606-GUIDE RAIL.
  - THE ANCHORAGE UNITS DEPICTED HEREIN ARE PERMITTED AT APPROACH ENDS WELL INSIDE THE CLEAR ZONE ONLY WHEN OFF-PEAK 85TH PERCENTILE SPEEDS ARE 30 MPH OR LESS IN RURAL AREAS AND 40 MPH OR LESS IN URBAN AREAS. OUTSIDE THE CLEAR ZONE, THEY ARE PERMITTED IN ALL APPLICATIONS.
  - FOR APPROACH AND TERMINAL SECTIONS IN TL3 APPLICATIONS, EITHER GROUND IN BACKSLOPE "FULL HEIGHT" WITHOUT USING A TURNED DOWN END OR TRANSITION TO A PARALLEL TYPE END TERMINAL AS FOLLOWS:
    - TRANSITION TO HEAVY POST BLOCKED-OUT CORRUGATED BEAM - SEE DETAILS ON STANDARD SHEET TITLED "TRANSITION W - BEAM MOD. - HPBO RAIL AND MEDIAN BARRIER".
    - RUN HEAVY POST BLOCKED-OUT CORRUGATED BEAM FOR 8 SPACINGS AT 6'-3".
    - TERMINATE USING A PARALLEL TYPE END TERMINAL - SEE GRADING DETAILS ON STANDARD SHEET TITLED "GRADING DETAILS FOR NCHRP 350 HPBO TERMINALS".



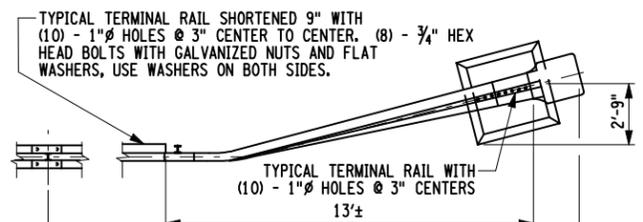
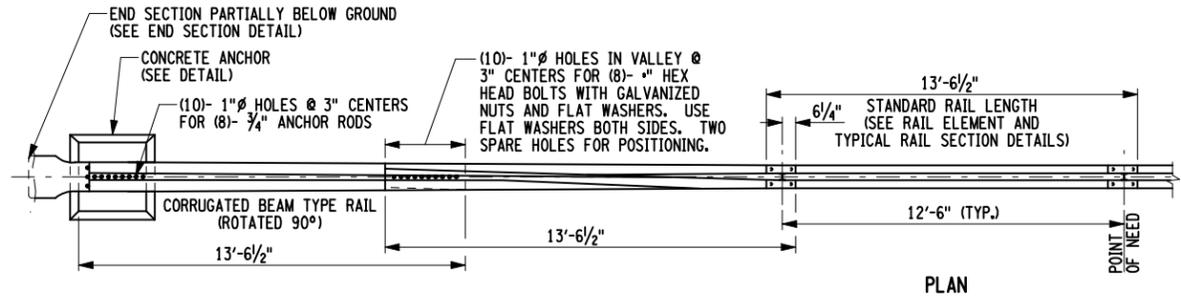
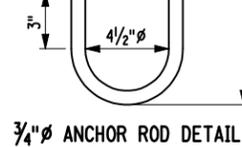
NOTE: OTHER RADII CONFIGURATIONS WHICH CAN BE DEMONSTRATED TO PROVIDE THE INSTALLATION SHOWN IN TYPICAL DRIVEWAY AND OPENING SECTION MAY BE APPROVED.

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
W-BEAM (MOD.) GUIDE RAILING COMPONENTS (SHEET 2 OF 2)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-07

EFFECTIVE DATE: 01/08/09

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NOTE:  
A MINIMUM OF 4" AT THE TOP OF THE ROD SHALL BE THREADED. RODS THREADED FOR ENTIRE LENGTH ARE ALSO ACCEPTABLE.



NOTE:  
CURBS GREATER THAN 3" HIGH ARE NOT TO BE RETAINED OR PLACED OVER 9" OR LESS THAN 12" IN FRONT OF GUIDE RAIL OR MEDIAN SYSTEMS WHEN THE DESIGN, POSTED, OR OPERATING SPEED IS IN THE EXCESS OF 50 MPH. THE OFFSET SHALL BE MEASURED FROM THE FACE OF CURB TO THE FACE OF RAIL. THE RAIL MOUNTING HEIGHT OF ALL GUIDE RAIL OR MEDIAN BARRIER PLACED BEHIND CURB (REGARDLESS OF CURB HEIGHT OR SPEED) SHALL BE MEASURED FROM THE PAVEMENT SURFACE WHEN THE OFFSET IS 9" OR LESS AND TO THE GROUND SURFACE UNDER THE FACE OF RAIL WHEN THE OFFSET IS GREATER THAN 12".

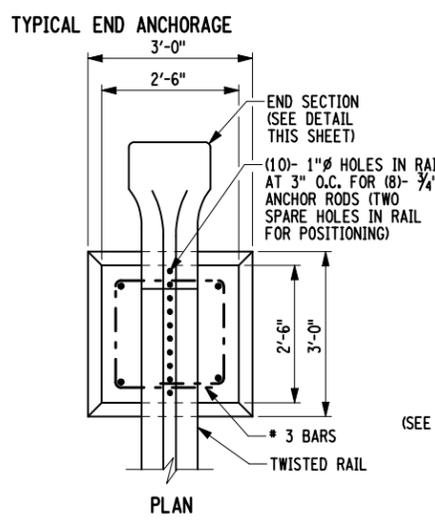
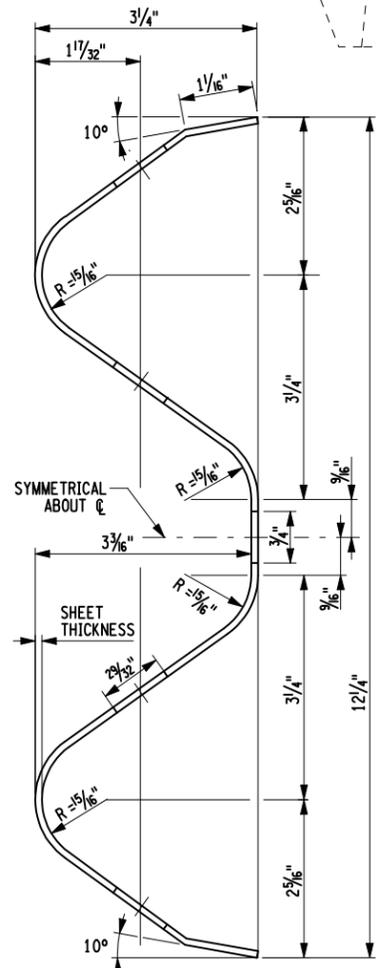
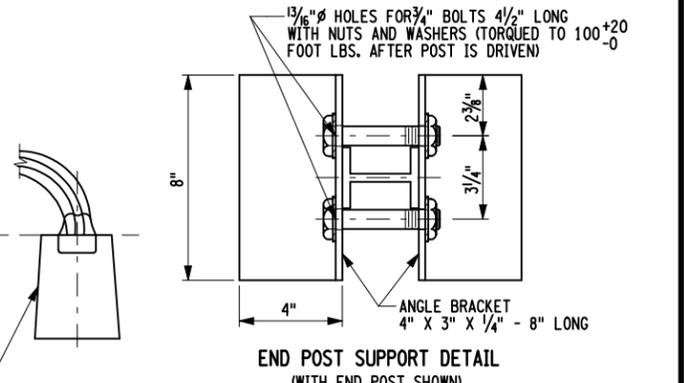
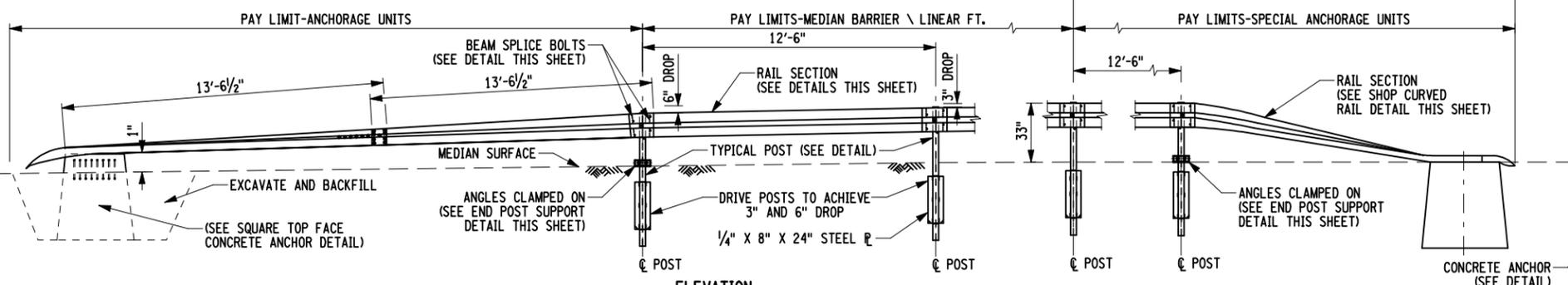
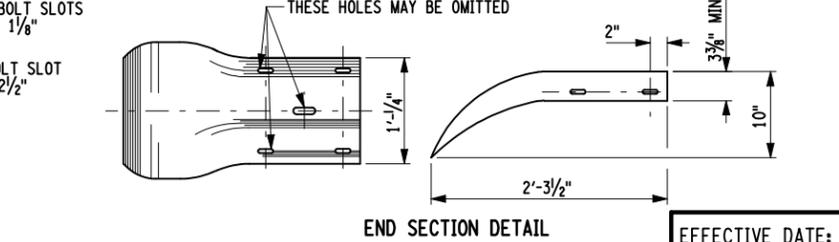
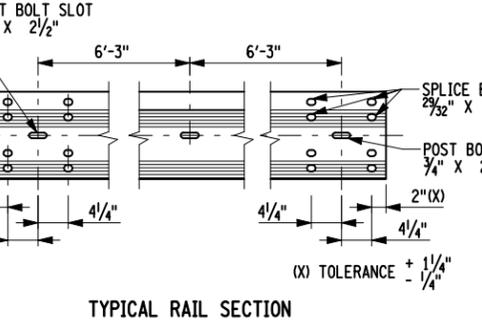
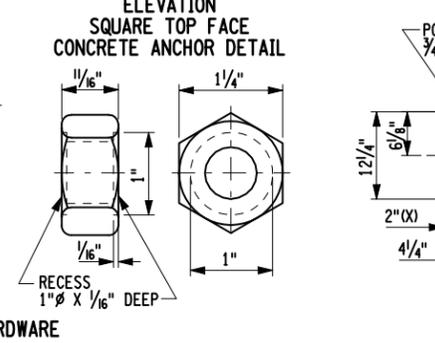
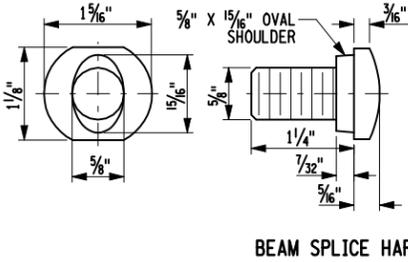
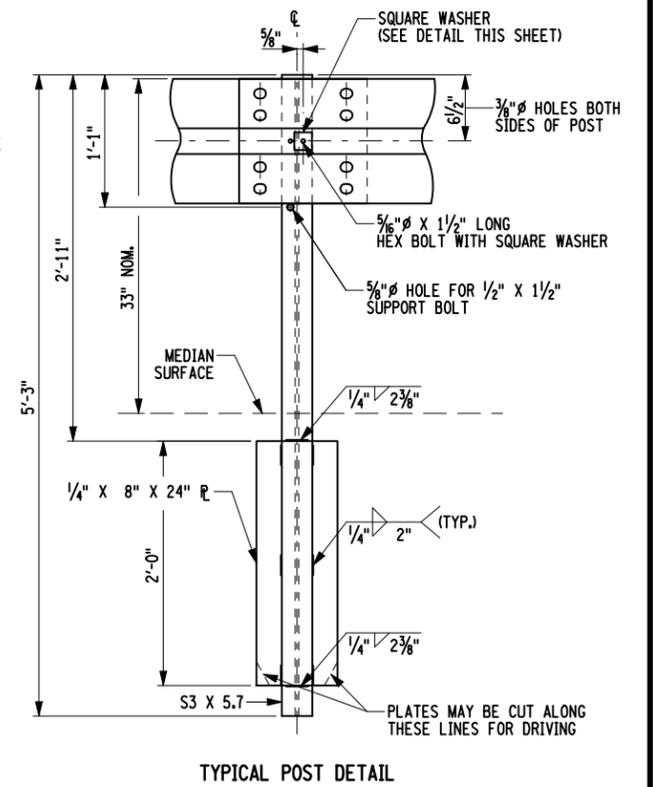
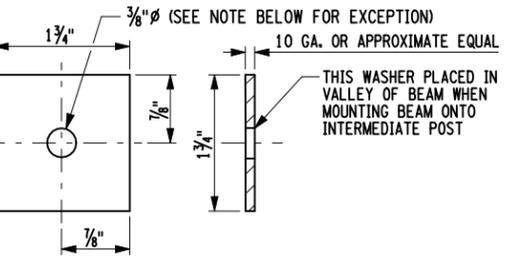
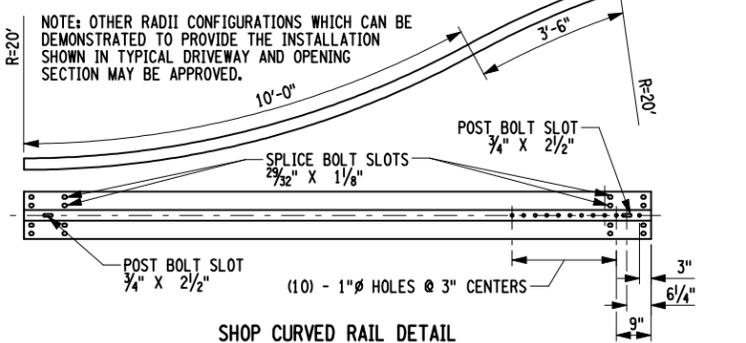
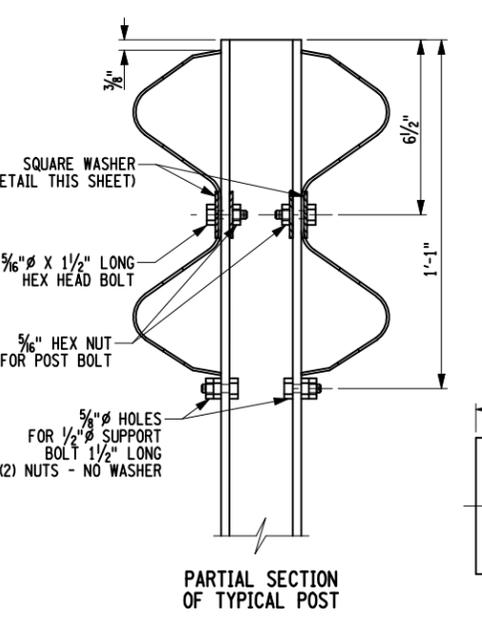
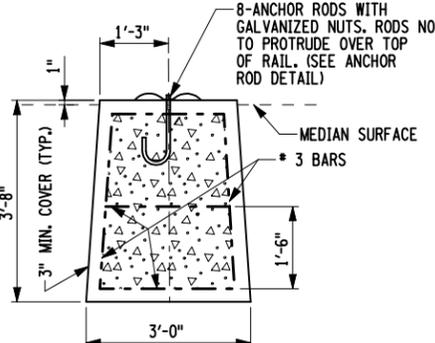


TABLE "A"

RADIUS OF CURVATURE	POST SPACING
MORE THAN 220'	12'-6"
220' TO 111'	6'-3"
110' TO 76'	4'-2"
75' TO 50'	3'-1 1/2"
LESS THAN 50'	USE NOT RECOMMENDED

TABLE NOTES:  
1. BEAMS TO BE ERECTED ON A RADIUS OF 150' OR LESS SHALL BE SHOP WORKED TO THE REQUIRED CURVATURE, AND PAYMENT FOR SUCH CURVED LENGTHS WILL BE MADE UNDER THE APPROPRIATE ITEM.  
2. ADDITIONAL POSTS REQUIRED TO REDUCE DEFLECTION DISTANCE OR BECAUSE OF HORIZONTAL CURVATURE SHALL NOT BE ATTACHED TO THE RAIL ELEMENT. PAYMENT FOR THE ADDITIONAL POSTS WILL BE MADE IN ACCORDANCE WITH THE "PAYMENT FACTOR FOR REDUCED POST SPACING" IN TABLE 606-02 IN SECTION 606-5.01 OF THE STANDARD SPECIFICATIONS.



NOTE: RAIL SPLICES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC  
EXPLODED VIEW SHOWING RAIL SPLICE LAP

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

**WEAK POST W-BEAM MEDIAN BARRIER**

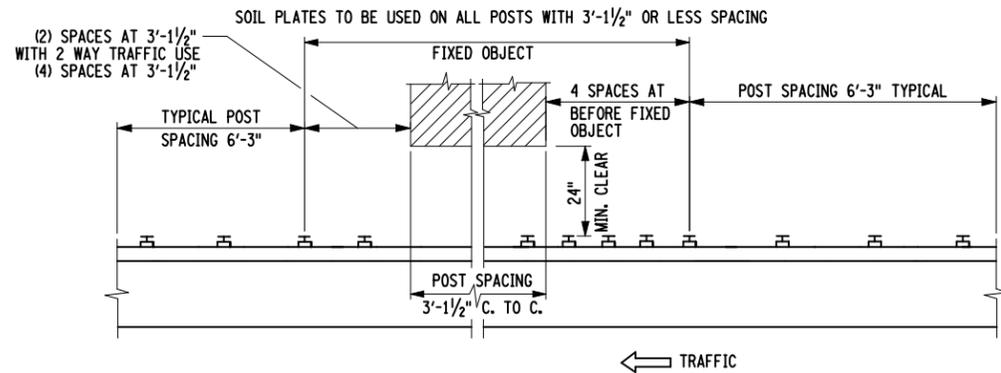
APPROVED SEPTEMBER 19, 2008 ISSUED UNDER EB 08-036

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER (DESIGN)

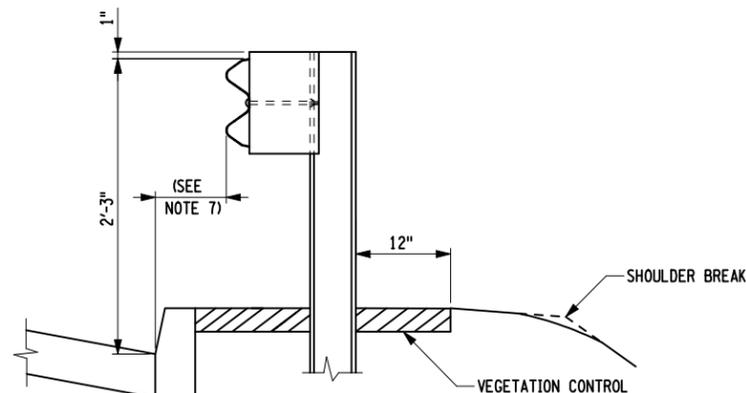
606-08

EFFECTIVE DATE: 01/08/09

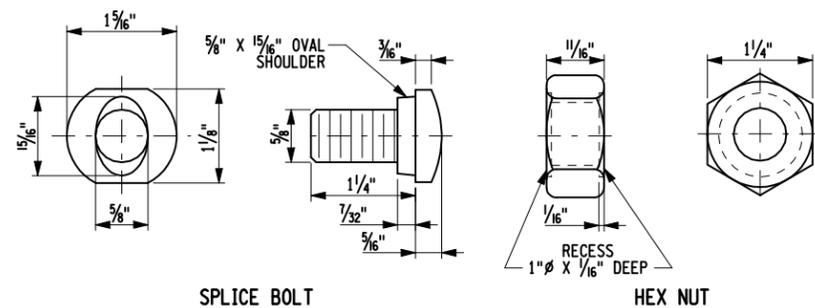
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GUIDE RAIL PAST FIXED OBJECTS



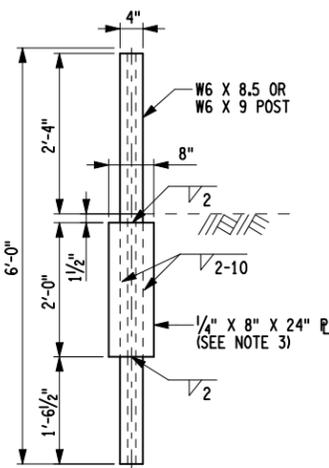
RAIL HEIGHT DETERMINATION NEXT TO CURB



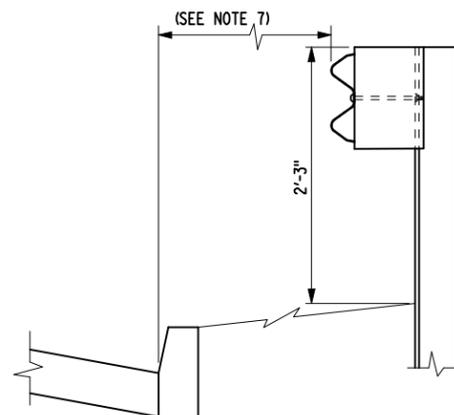
SPLICE BOLT

HEX NUT

BEAM SPLICE HARDWARE

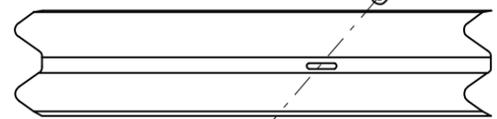


STANDARD POST (SHOWN WITH SOIL PLATE)

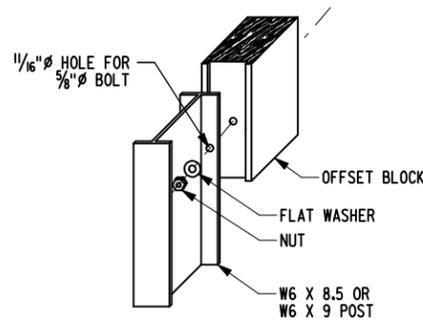


RAIL HEIGHT DETERMINATION WHEN SET BACK FROM CURB

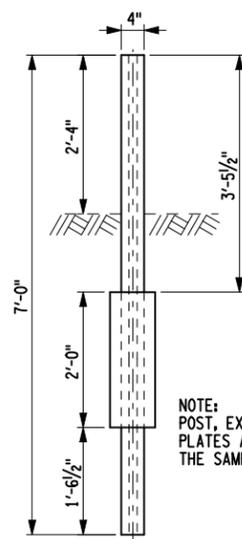
GUIDE RAIL BOLT, ASTM A-307 GRADE A, NUT ASTM A-563 GRADE A, WASHER ASTM F-436, BOLT 5/8"  $\phi$  - 10" LONG, THREADED OVER 4" MIN. WITH NUT AND FLAT WASHER. DIMENSIONS OF WASHER SHALL CONFORM TO ANSI B18.22.1 TYPE A PLAIN



GUIDE RAIL POST ASSEMBLY DETAIL

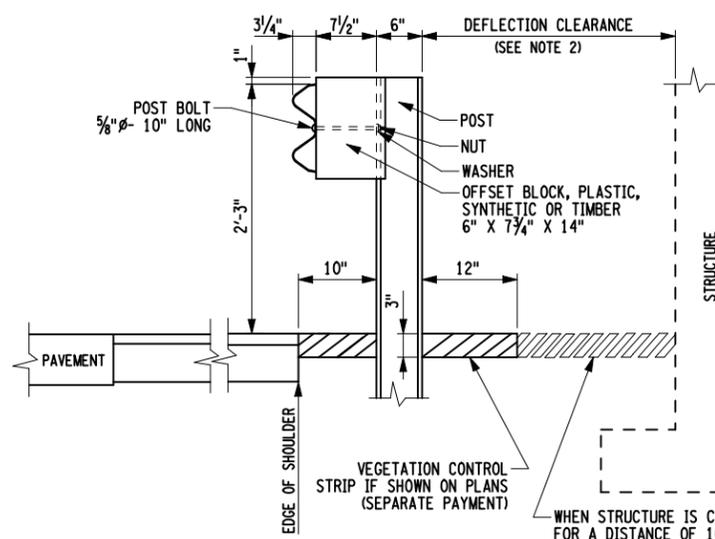


TOP VIEW OF OFFSET BLOCK



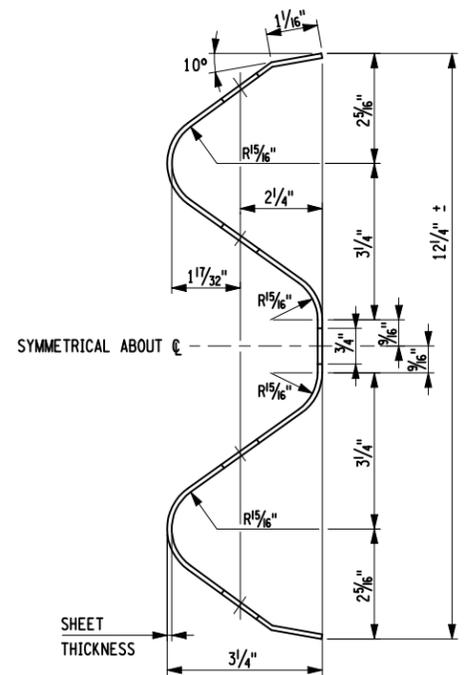
EXTRA LONG POST SHOWN WITH SOIL PLATE

NOTE: POST, EXCEPT FOR LENGTH, PLATES AND WELDS SHALL BE THE SAME AS STANDARD POST



TYPICAL SECTION FOR CORRUGATED BLOCKED-OUT GUIDE RAIL SHOWN PAST FIXED OBJECT (WITHOUT CURB)

DEFLECTION CLEARANCE (SEE NOTE 2)



RAIL ELEMENT

NOTES:

- ALL RUNS OF GUIDE RAIL ARE TO BE ANCHORED AT BOTH ENDS.
- THE POST SPACING FOR REDUCED DEFLECTION SHALL BE AS FOLLOWS:
 

DEFLECTION CLEARANCE	POST SPACING
2'-0" MIN. - 4'-0" MAX.	3'-1 1/2"
OVER 4'-0"	6'-3"
- STEEL SOIL PLATES SHALL BE USED IN AREAS OF 3'-1 1/2" POST SPACING.
- IF THERE IS INSUFFICIENT DEPTH BETWEEN THE SURFACE OF THE GROUND AT THE GUIDE RAIL AND A CONCRETE FOOTING, ONE OF THE FOLLOWING METHODS SHALL BE EMPLOYED DEPENDING ON AVAILABLE DEPTHS:
  - 2'-3" TO 4'-8" - SHORTEN THE POST TO REQUIRED DEPTH BY CUTTING THE BOTTOM OFF THE POST.
  - 1'-6" TO 2'-3" - SHORTEN THE POST TO THE REQUIRED DEPTH BY CUTTING THE BOTTOM OFF THE POST AND PLACE THE POST IN A 1"  $\phi$  CONCRETE ENCASUREMENT EXTENDING FROM THE TOP OF THE FOOTING TO THE GROUND SURFACE.
  - LESS THAN 1'-6" - EXCAVATE TO THE FOOTING, SHORTEN THE POST TO THE REQUIRED LENGTH BY CUTTING OFF THE LOWER END AND WELD THE 1 1/2" X 9" BASE PLATE SHOWN IN THE DETAIL TITLED "BASE PLATE DETAIL" ON THE CURRENT EDITION OF THE STANDARD SHEET TITLED "HEAVY POST BLOCKED-OUT CORRUGATED BEAM MEDIAN BARRIER" TO THE FOOTING USING A METHOD APPROVED BY THE ENGINEER.
- ONLY 12 GAGE RAIL SHALL BE USED UNLESS OTHERWISE SHOWN ON THE PLANS.
- DIMENSIONS OF THE TIMBER BLOCK OUTS ARE NOMINAL. DIMENSIONS OF PLASTIC AND SYNTHETIC BLOCKOUTS ARE AS SHOWN ON MANUFACTURER'S DRAWINGS.
- THE OFFSET OF THE GUIDE RAIL OR MEDIAN BARRIER SHALL BE MEASURED FROM FACE OF CURB TO FACE OF RAIL. THE RAIL MOUNTING HEIGHT OF ALL GUIDE RAIL OR MEDIAN BARRIER PLACED BEHIND THE CURB (REGARDLESS OF CURB HEIGHT OR SPEED) SHALL BE MEASURED FROM THE PAVEMENT WHEN THE OFFSET IS 1'-0" OR LESS AND TO THE GROUND SURFACE UNDER THE FACE OF THE RAIL WHEN THE OFFSET IS GREATER THAN 1'-0". OFFSETS BETWEEN 1'-0" AND 10'-0" SHOULD BE AVOIDED.
- BEAMS TO BE ERECTED ON A RADIUS OF 150'-0" OR LESS SHALL BE SHOP WORKED TO THE REQUIRED CURVATURE. PAYMENT WILL BE MADE UNDER THE APPROPRIATE ITEM.

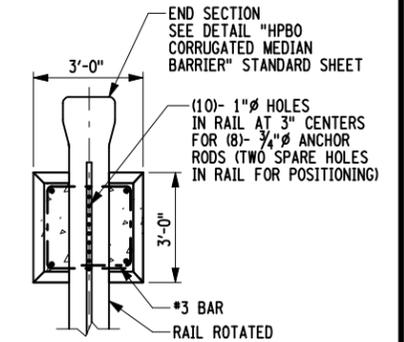
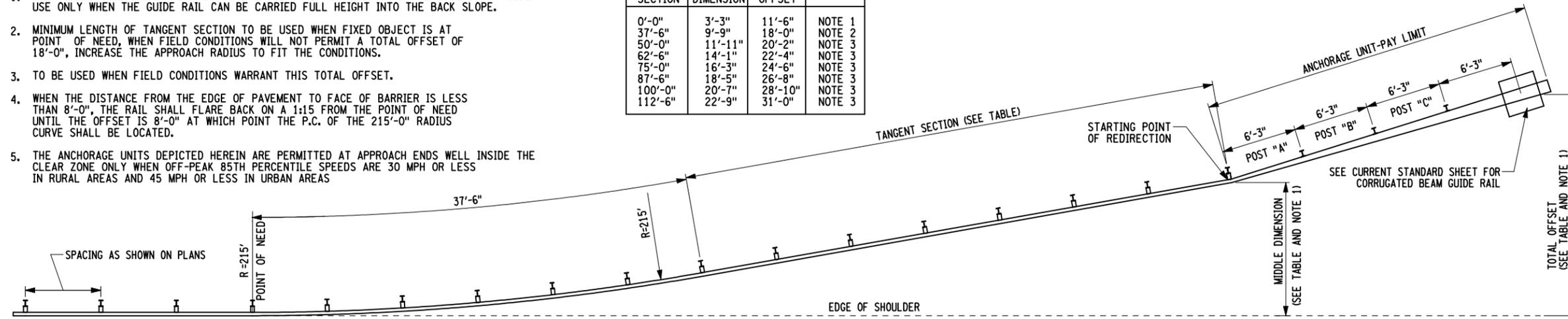
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
HEAVY POST BLOCKED-OUT CORRUGATED BEAM GUIDE RAILING WITH PLASTIC, SYNTHETIC, OR TIMBER BLOCK-OUTS (SHEET 1 OF 2)	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	606-09

EFFECTIVE DATE: 01/07/10

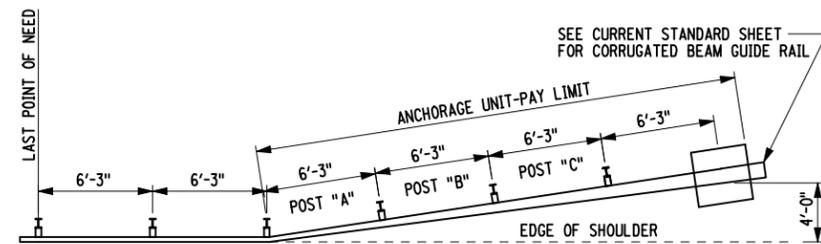
NOTES:

1. THE MIDDLE DIMENSIONS AND THE TOTAL OFFSET ARE MEASURED FROM THE EDGE OF SHOULDER. USE ONLY WHEN THE GUIDE RAIL CAN BE CARRIED FULL HEIGHT INTO THE BACK SLOPE.
2. MINIMUM LENGTH OF TANGENT SECTION TO BE USED WHEN FIXED OBJECT IS AT POINT OF NEED, WHEN FIELD CONDITIONS WILL NOT PERMIT A TOTAL OFFSET OF 18'-0", INCREASE THE APPROACH RADIUS TO FIT THE CONDITIONS.
3. TO BE USED WHEN FIELD CONDITIONS WARRANT THIS TOTAL OFFSET.
4. WHEN THE DISTANCE FROM THE EDGE OF PAVEMENT TO FACE OF BARRIER IS LESS THAN 8'-0", THE RAIL SHALL FLARE BACK ON A 1:15 FROM THE POINT OF NEED UNTIL THE OFFSET IS 8'-0" AT WHICH POINT THE P.C. OF THE 215'-0" RADIUS CURVE SHALL BE LOCATED.
5. THE ANCHORAGE UNITS DEPICTED HEREIN ARE PERMITTED AT APPROACH ENDS WELL INSIDE THE CLEAR ZONE ONLY WHEN OFF-PEAK 85TH PERCENTILE SPEEDS ARE 30 MPH OR LESS IN RURAL AREAS AND 45 MPH OR LESS IN URBAN AREAS

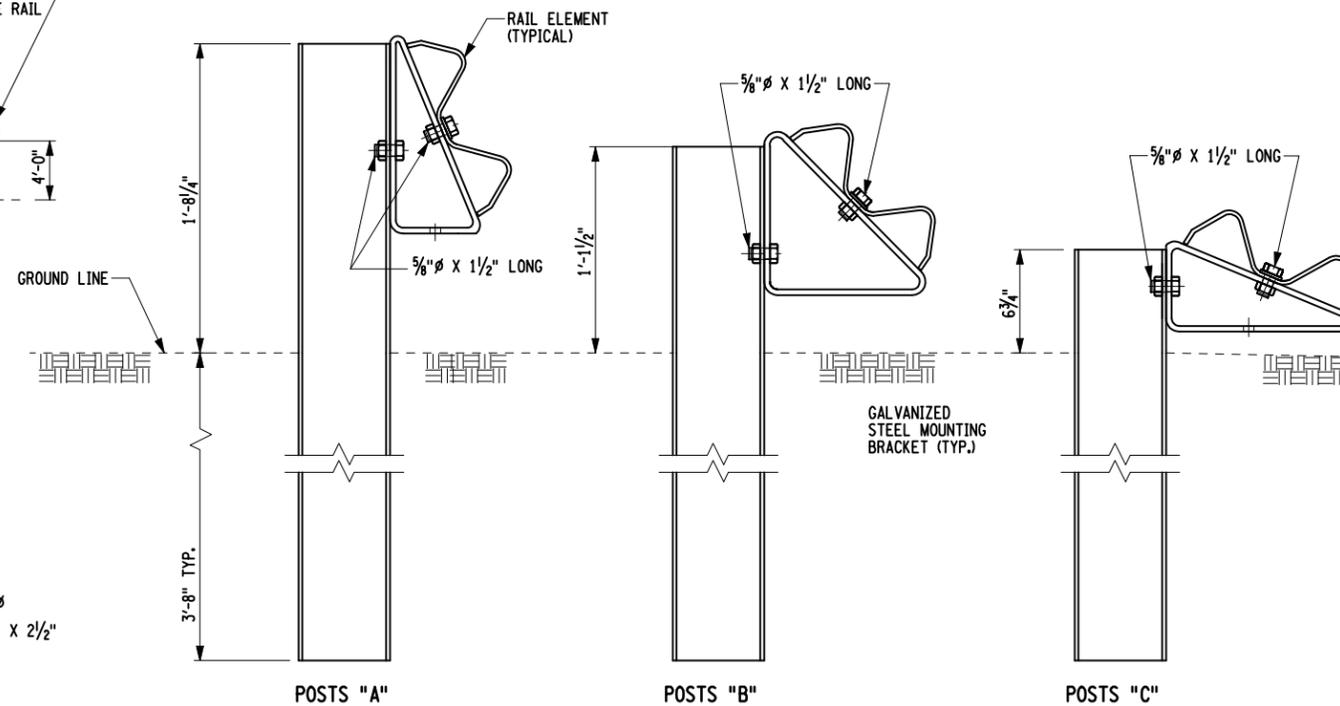
TANGENT SECTION	MIDDLE DIMENSION	TOTAL OFFSET	REMARKS
0'-0"	3'-3"	11'-6"	NOTE 1
37'-6"	9'-9"	18'-0"	NOTE 2
50'-0"	11'-11"	20'-2"	NOTE 3
62'-6"	14'-1"	22'-4"	NOTE 3
75'-0"	16'-3"	24'-6"	NOTE 3
87'-6"	18'-5"	26'-8"	NOTE 3
100'-0"	20'-7"	28'-10"	NOTE 3
112'-6"	22'-9"	31'-0"	NOTE 3



TYPICAL APPROACH END HEAVY POST BLOCKED-OUT GUIDE RAIL



TYPICAL DEPARTURE END HEAVY POST BLOCKED-OUT GUIDE RAIL (ONE WAY TRAFFIC ONLY)

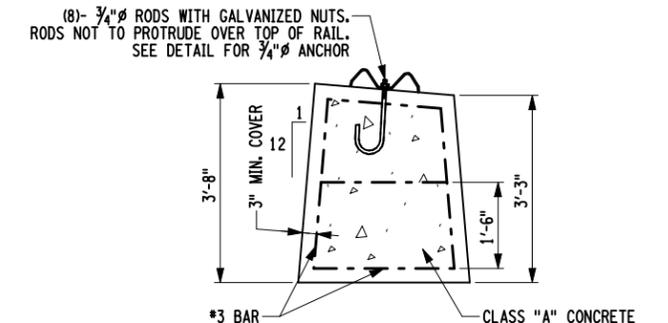


POSTS "A"

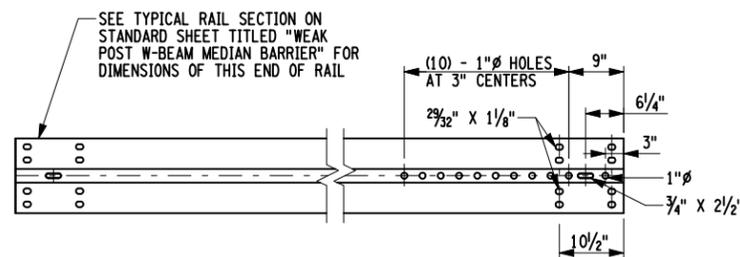
POSTS "B"

POSTS "C"

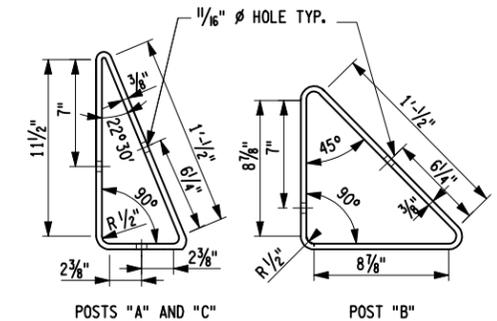
POST ASSEMBLY



ELEVATION CONCRETE ANCHOR



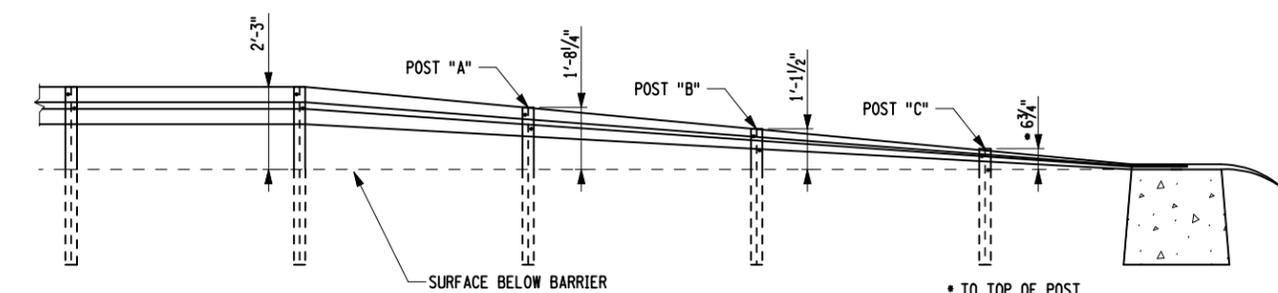
TYPICAL TERMINAL RAIL



POSTS "A" AND "C"

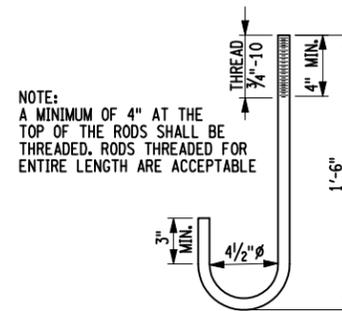
POST "B"

MOUNTING BRACKETS 4" WIDE TYPICAL



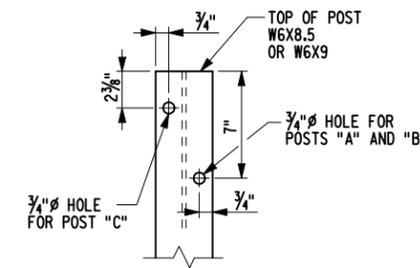
ELEVATION ANCHORAGE UNIT

\* TO TOP OF POST MAY BE FIELD ADJUSTED TO PROVIDE A SMOOTH TRANSITION



NOTE: A MINIMUM OF 4" AT THE TOP OF THE RODS SHALL BE THREADED. RODS THREADED FOR ENTIRE LENGTH ARE ACCEPTABLE

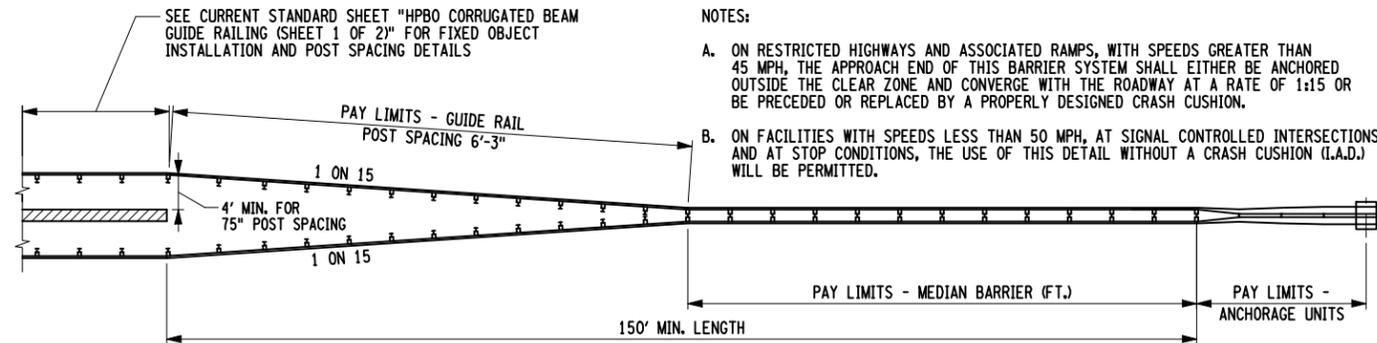
3/4" ANCHOR ROD DETAIL ASTM A 307 GRADE "C"



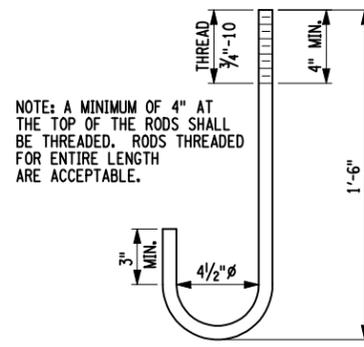
POST HOLE LOCATIONS POSTS "A", "B", AND "C"

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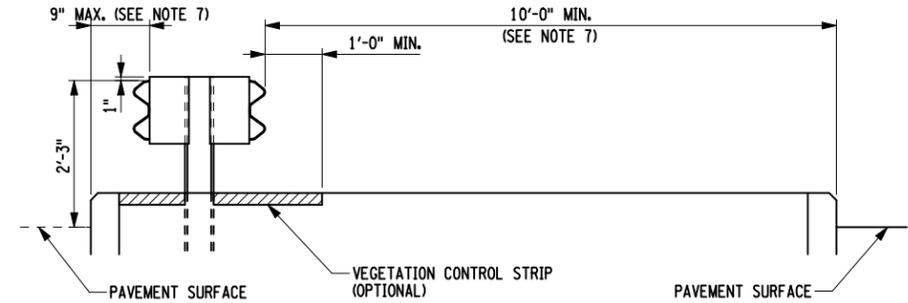
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
HEAVY POST BLOCKED-OUT CORRUGATED BEAM GUIDE RAILING WITH PLASTIC, SYNTHETIC, OR TIMBER BLOCK-OUTS (SHEET 2 OF 2)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-09
EFFECTIVE DATE: 01/08/09	



TYPICAL MEDIAN BARRIER INSTALLATION AT FIXED OBJECTS

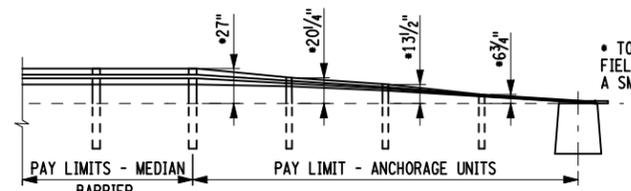


3/4"  $\phi$  ANCHOR ROD DETAIL  
ASTM A 307 GRADE "C"

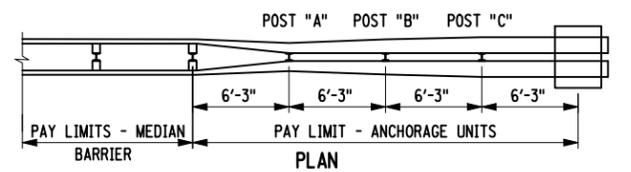


NOTES:

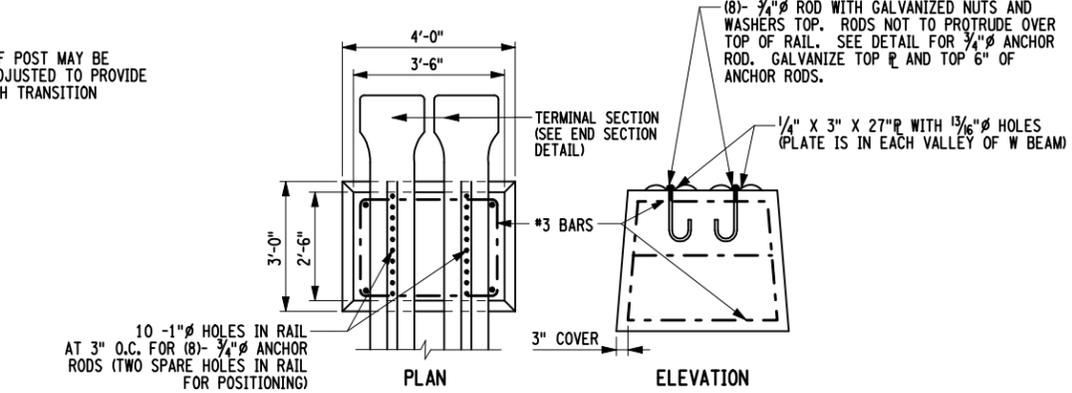
- ALL RUNS OF MEDIAN BARRIER ARE TO BE ANCHORED AT BOTH ENDS.
- IF THERE IS INSUFFICIENT DEPTH BETWEEN THE SURFACE OF THE GROUND AT A MEDIAN BARRIER, AND A CONCRETE FOOTING, ONE OF THE FOLLOWING METHODS SHALL BE EMPLOYED, DEPENDING ON THE AVAILABLE DEPTHS.
  - 27 1/2" TO 43 1/2": SHORTEN THE POST TO THE REQUIRED DEPTH BY CUTTING THE BOTTOM OFF THE POST.
  - 18" TO 27 1/2": SHORTEN THE POST TO THE REQUIRED DEPTH BY CUTTING THE BOTTOM OFF THE POST AND PLACE THE POST IN A 12" DIAMETER CONCRETE ENCASEMENT EXTENDING FROM THE TOP OF THE FOOTING TO THE GROUND SURFACE.
  - LESS THAN 18": EXCAVATE TO THE FOOTING, SHORTEN THE POST BY CUTTING OFF THE LOWER END AND WELDING THE 15 1/2" X 9 1/2" BASE PLATE SHOWN IN THE "BASE PLATE DETAIL" TO THE BOTTOM AND BOLT THE POST TO THE FOOTING USING A METHOD APPROVED BY THE ENGINEER.
- FOR DETAILS ON RAIL ELEMENT AND SPLICE HARDWARE, SEE DETAILS "B", "F", AND "G" ON THE CURRENT STANDARD SHEET FOR CORRUGATED BEAM TYPE GUIDE RAILING. ONLY 12 GAGE RAIL SHALL BE USED UNLESS OTHERWISE SHOWN ON THE PLANS.
- DIMENSIONS OF TIMBER BLOCK-OUTS ARE NOMINAL. DIMENSIONS OF PLASTIC AND SYNTHETIC BLOCK-OUTS ARE AS SHOWN.
- BEAMS TO BE ERECTED ON A RADIUS OF 148' OR LESS SHALL BE SHOP WORKED TO THE REQUIRED CURVATURE, AND PAYMENT FOR SUCH CURVED LENGTHS WILL BE MADE UNDER THE APPROPRIATE ITEM.
- 5/8" GUIDE RAIL BOLT 10" LONG, 4" THREADING WITH NUT AND FLATWASHER, BOLT ASTM A 307 GRADE A, NUT ASTM A563, WASHER ASTM F844, DIMENSIONS OF WASHER SHALL CONFORM TO ANSI B18.22.1 TYPE A PLAIN.
- THE OFFSET OF THE GUIDERAIL OR MEDIAN BARRIER SHALL BE MEASURED FROM FACE OF CURB TO FACE OF RAIL. THE RAIL MOUNTING HEIGHT OF ALL GUIDERAIL OR MEDIAN BARRIER PLACED BEHIND THE CURB (REGARDLESS OF CURB HEIGHT OR SPEED) SHALL BE MEASURED FROM THE PAVEMENT SURFACE WHEN THE OFFSET IS 12" OR LESS AND TO THE GROUND SURFACE UNDER THE FACE OF THE RAIL WHEN THE OFFSET IS GREATER. CURB OFFSETS BETWEEN 1' AND 10' SHOULD BE AVOIDED.



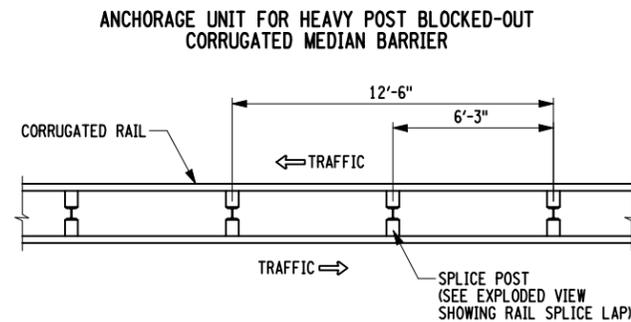
ELEVATION



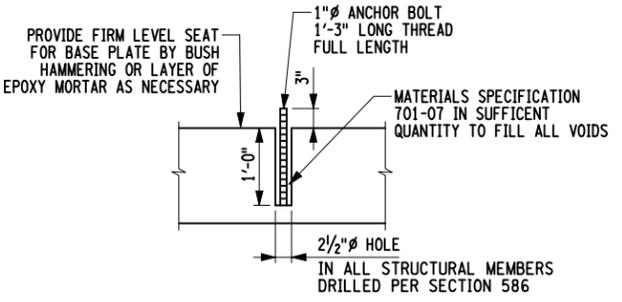
PLAN



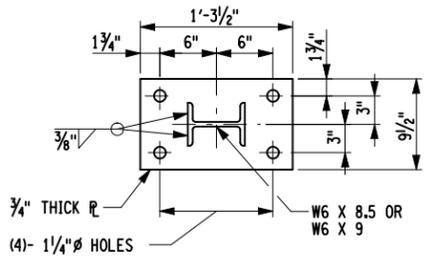
MEDIAN BARRIER CONCRETE ANCHOR



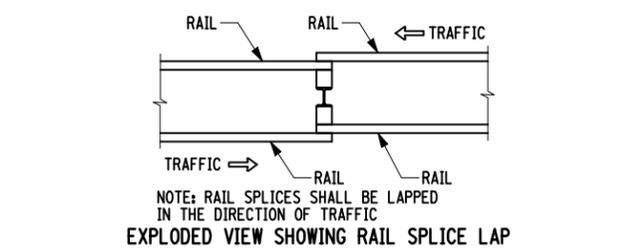
TYPICAL PLAN FOR MEDIAN BARRIER



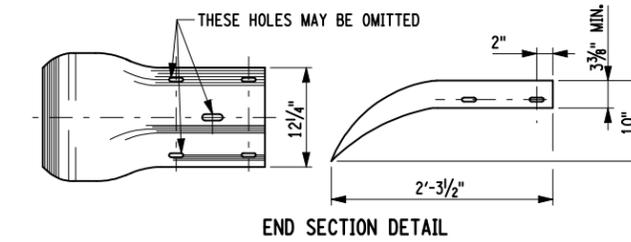
ANCHOR BOLT INSTALLATION  
FOR USE ON PORTLAND CEMENT CONCRETE  
MEDIANS AND STRUCTURES



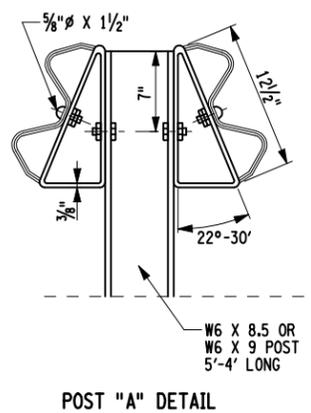
BASE PLATE DETAIL  
FOR USE ON PORTLAND CEMENT CONCRETE  
MEDIANS AND STRUCTURES



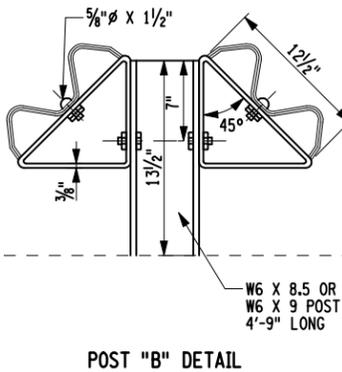
EXPLODED VIEW SHOWING RAIL SPLICE LAP



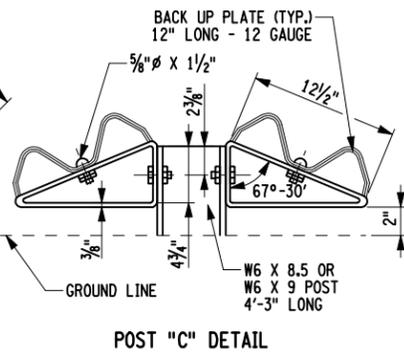
END SECTION DETAIL



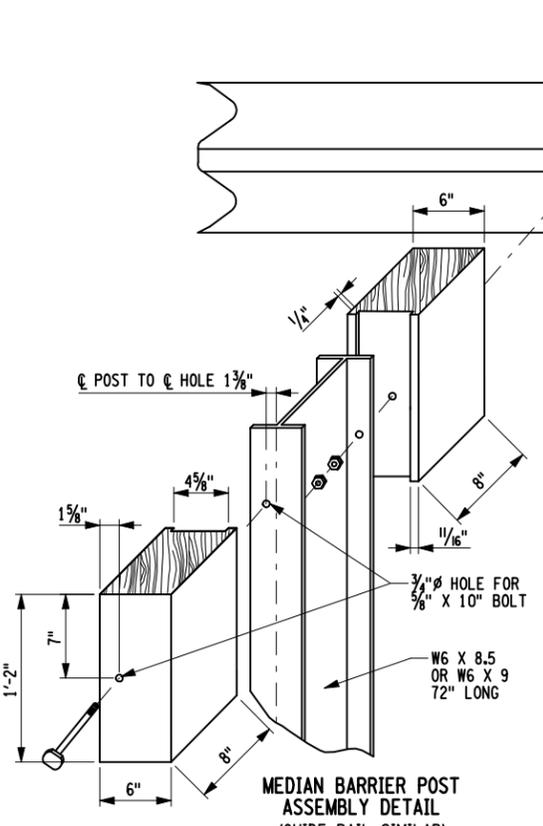
POST "A" DETAIL



POST "B" DETAIL



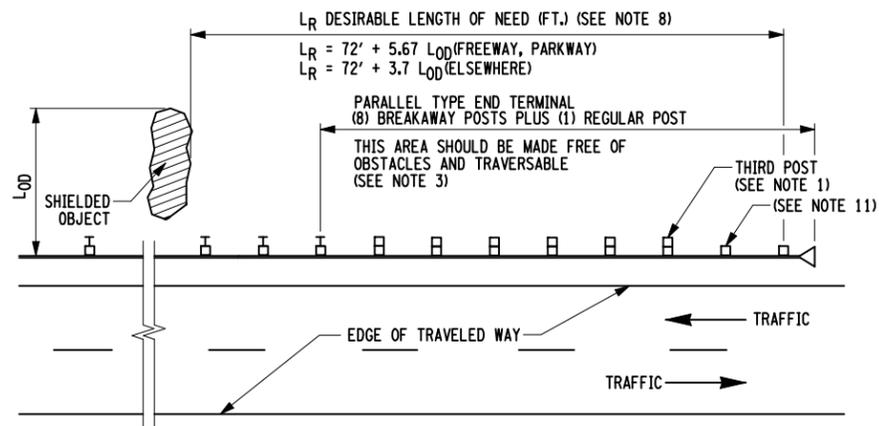
POST "C" DETAIL



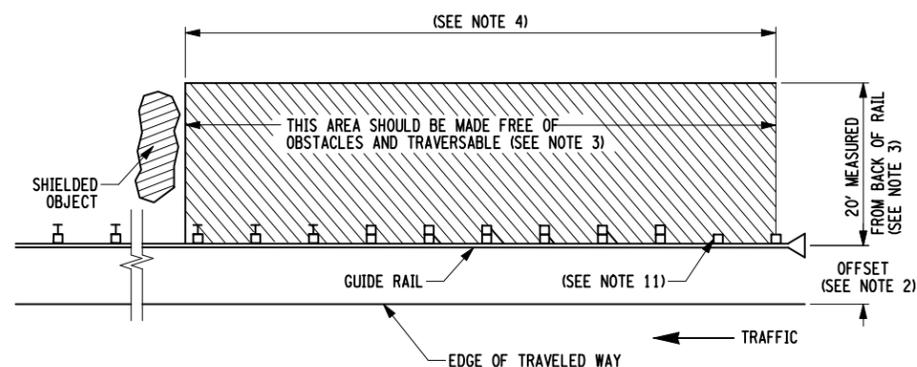
MEDIAN BARRIER POST  
ASSEMBLY DETAIL  
(GUIDE RAIL SIMILAR)

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
HEAVY POST BLOCKED-OUT CORRUGATED BEAM MEDIAN BARRIER WITH PLASTIC, SYNTHETIC, OR TIMBER BLOCK-OUTS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-10
EFFECTIVE DATE: 01/08/09	

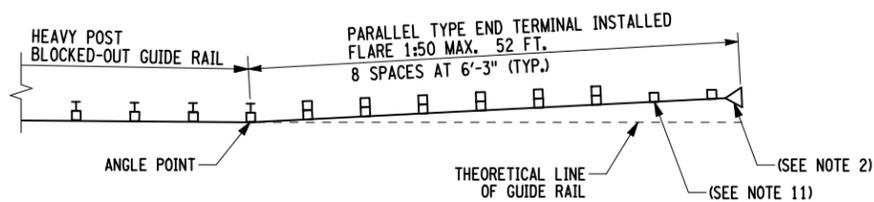
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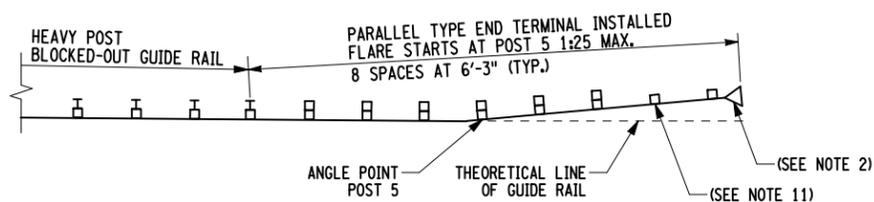
DETAIL 1 - RECOMMENDED MINIMUM DISTANCE TO SHIELDED OBJECT



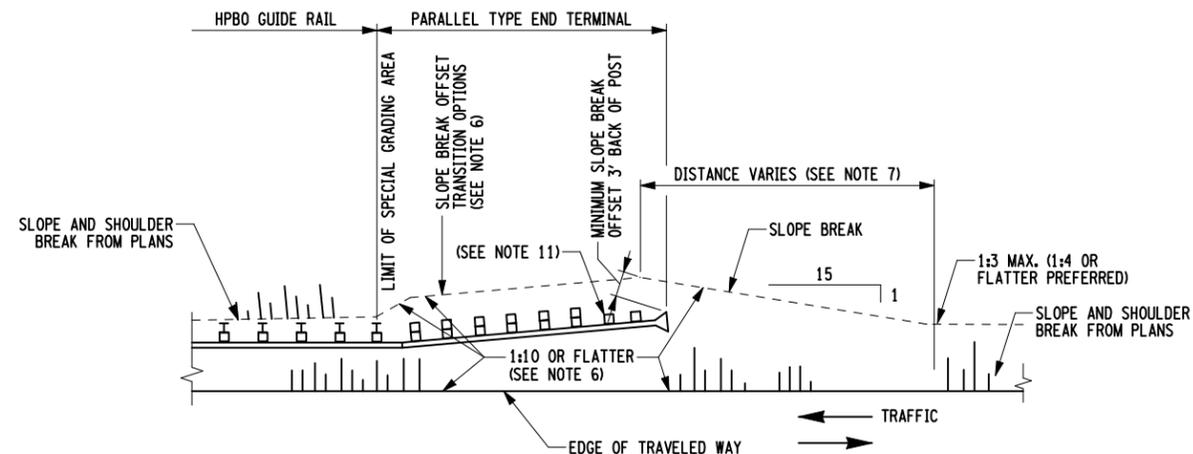
DETAIL 2 - RECOMMENDED MINIMUM DISTANCE TO SHIELDED OBJECT



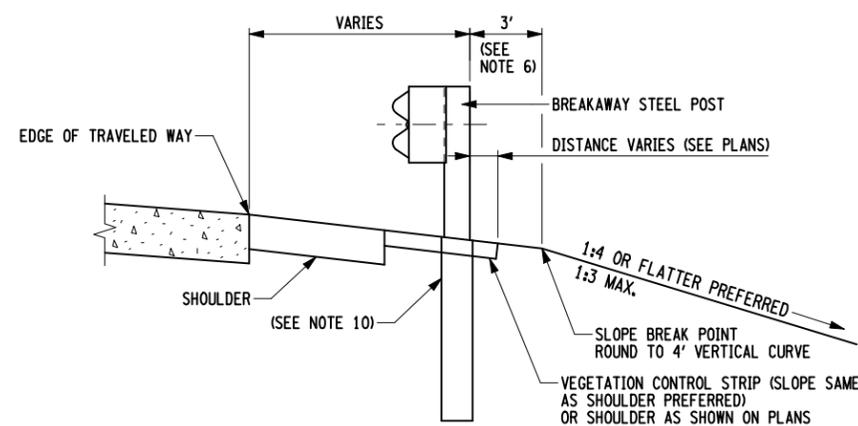
DETAIL 3 - OPTION 1 - 1:50 FLARE



DETAIL 3 - OPTION 2 - 1:25 FLARE AT POST 5



DETAIL 4 - GRADING DETAILS  
VEGETATION CONTROL STRIP AND SHOULDER NOT SHOWN



DETAIL 5 - SECTION THROUGH SPECIAL GRADING AREA

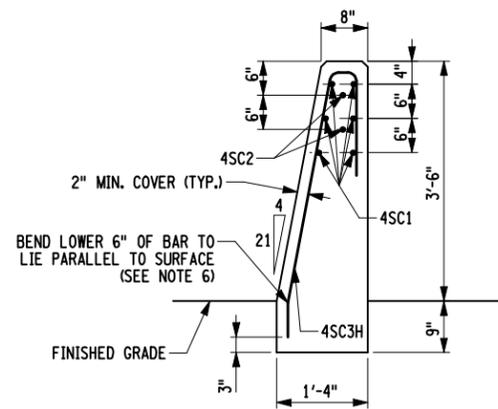
NOTES:

1. PARALLEL TYPE END TERMINAL TYPICALLY REDIRECTS STARTING WITH THE THIRD POST FROM THE FREE END.
2. OFFSET AS SHOWN OR DIRECTED BY ENGINEER. FOR MAINTENANCE PURPOSES, IT IS RECOMMENDED THAT THERE BE A MINIMUM OFFSET OF 10' FROM THE EDGE OF TRAVELED WAY TO THE FIRST POST.
3. IF TOTAL CLEARANCE IS NOT POSSIBLE, THIS AREA SHOULD BE CLEARED TO THE EXTENT THAT IT BECOMES SIMILAR TO UNSHIELDED ROADSIDE AREAS UPSTREAM OF THE END TERMINAL.
4. IF CONDITIONS REQUIRE, RECOMMENDED MINIMUM DISTANCE TO SHIELDED OBJECT MAY BE REDUCED TO THE HIGHER OF EITHER 65' OR  $(1.5 + 3.7 L_{0D})$  FT.
5. SEE APPROVED MANUFACTURERS DRAWINGS FOR DETAILS OF PARALLEL TYPE END TERMINALS.
6. SLOPES BETWEEN EDGE OF PAVEMENT AND SLOPE BREAK SHALL BE 1:10 OR FLATTER. SLOPE BREAK SHALL BE 3' BEHIND POSTS 1 THRU 8. IF DIRECTED BY THE ENGINEER, THE SLOPE BREAK MAY BE TRANSITIONED TO THE NORMAL SLOPE BREAK OFFSET BETWEEN POSTS 5 AND 9.
7. THIS DISTANCE VARIES. LENGTH TO BE 15 OR MORE TIMES THE DIFFERENCE IN EMBANKMENT WIDTHS AT A TYPICAL POINT UPSTREAM OF THE PARALLEL TYPE END TERMINAL AND THE EMBANKMENT WIDTH AT THE FIRST POST.
8. LENGTH OF NEED MAY BE ADJUSTED, AS APPROVED BY ENGINEER, TO SUIT FIELD CONDITION, (SEE DETAIL 2).
9. FOR NON-BYPASSABLE OBJECTS AND HAZARDS OF WIDE LATERAL EXTENT WHERE CLEAR AREA IS 30' OR WIDER, LENGTH OF NEED SHOULD BE 360' ON FACILITIES WHERE OPERATING SPEED IS  $\geq 55$  MPH; 260' WHERE OPERATING SPEED IS  $\geq 45$  MPH BUT  $< 55$  MPH; 160' IF OPERATING SPEED IS  $< 45$  MPH.
10. SEE MANUFACTURER'S DRAWINGS FOR DETAILS. POSTS SHALL BE STEEL BREAKAWAY POSTS, AS INDICATED IN CONTRACT DOCUMENTS.
11. THE 2ND POST DOES NOT HAVE A BLOCK-OUT EXCEPT THE ET2000 END TERMINAL.

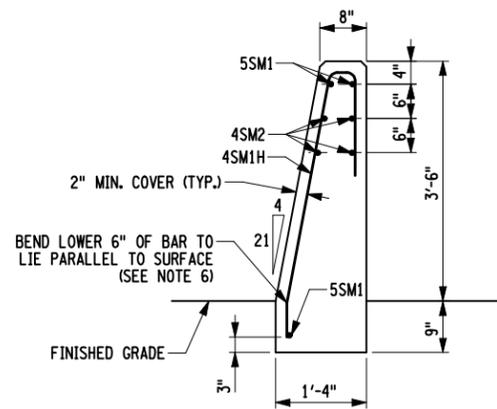
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 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>GRADING DETAILS FOR NCHRP 350 HPBO TERMINALS</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-11

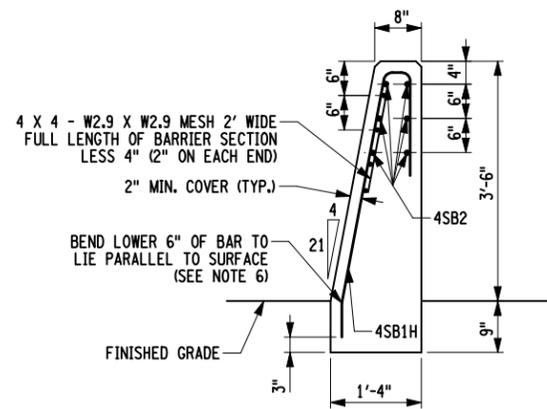
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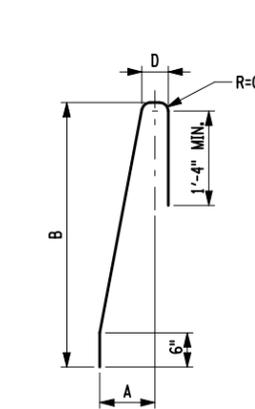
SECTION SHOWING MACHINE FORMED SINGLE-SLOPE CONCRETE HALF SECTION BARRIER (SHOWN AT EXPANSION JOINT)



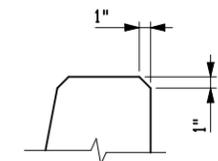
SECTION SHOWING PRECAST SINGLE-SLOPE CONCRETE HALF SECTION BARRIER (SHOWN AT EXPANSION JOINT)



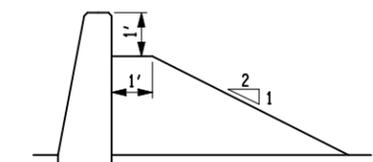
SECTION SHOWING CAST-IN-PLACE SINGLE-SLOPE CONCRETE HALF SECTION BARRIER (SHOWN AT EXPANSION JOINT)



TYPICAL STIRRUP (MACHINE FORMED, PRECAST, AND CAST-IN-PLACE BARRIERS)

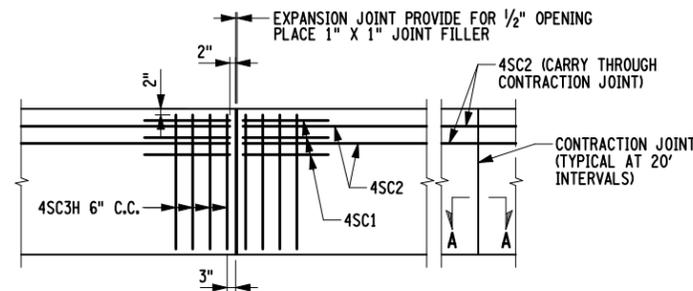


TYPICAL CHAMFER DETAIL (ALL BARRIERS)

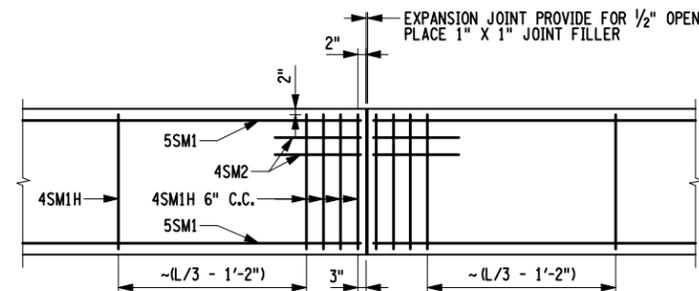


NOTE: EARTH BACKUP SHALL CONSIST OF FULLY COMPACTED SUITABLE MATERIALS HAVING NO PARTICLES GREATER THAN 1/2" INCLUDED

SINGLE-SLOPE CONCRETE HALF SECTION BARRIER WITH EARTH BACKUP (SEE NOTES 2 AND 3)

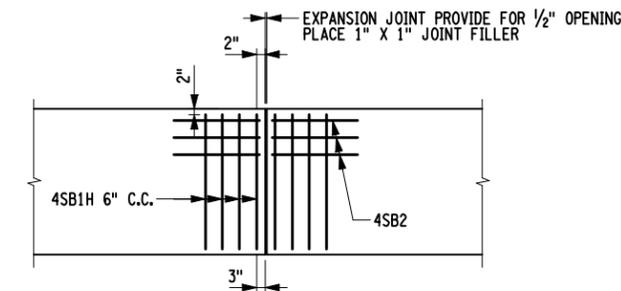


EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR MACHINE FORMED SINGLE-SLOPE CONCRETE HALF SECTION BARRIER

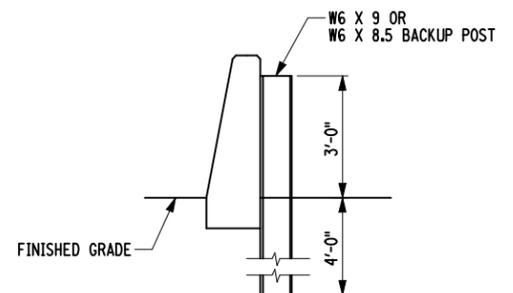


EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR PRECAST SINGLE-SLOPE CONCRETE HALF SECTION BARRIER

NOTE: THE NOMINAL LENGTH OF PRECAST SECTIONS IS 20' BUT MAY BE MODIFIED TO A MINIMUM OF 10' AND A MAXIMUM OF 24' TO FIT CONDITIONS. UNLESS THE MODIFIED BARRIER IS DETAILED BY THE DEPARTMENT, THE CONTRACTOR SHALL PREPARE AND SUBMIT LAYOUT DRAWINGS TO THE ENGINEER FOR APPROVAL.



EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR CAST-IN-PLACE SINGLE-SLOPE CONCRETE HALF SECTION BARRIER (MESH NOT SHOWN)



SINGLE-SLOPE CONCRETE HALF SECTION BARRIER WITH BACKUP POST (SEE NOTES 2 AND 3)

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4SC1	#4	4	2'-6"	STRAIGHT	—	—	—	—	LONGITUDINAL - 6 ON EACH SIDE OF THE EXPANSION JOINT
4SC2	#4	4	—	STRINGER	—	—	—	—	CONTINUOUS FROM EXPANSION JOINT TO EXPANSION JOINT
4SC3H	#4	4	5'-6"	STIRRUP	10"	3'-10"	1 1/2"	4"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT
4S4	#4	4	4'-10"	STIRRUP	*	*	*	*	2 ON EACH SIDE OF EXPANSION JOINT
6S4	#6	2	4'-10"	STIRRUP	*	*	*	*	1 ON EACH SIDE OF EXPANSION JOINT

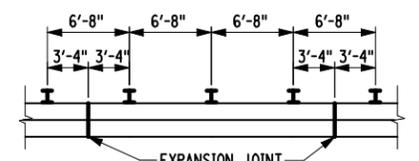
\* SEE DETAIL OF S4 BAR AND NOTE 8

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4SM1H	#4	4	5'-6"	STIRRUP	10"	3'-10"	1 1/2"	4"	4 AT EACH END OF BARRIER UNIT 2 STIRRUPS TO APPROXIMATELY DIVIDE REMAINING SPACE INTO 3 EQUAL PARTS
5SM1	#5	3	L-6"	STRINGER	—	—	—	—	LONGITUDINAL - 1 IN BOTTOM, 2 IN TOP
4SM2	#4	4	2'-6"	STRAIGHT	—	—	—	—	4 AT EACH END OF THE BARRIER UNIT
4S4	#4	4	4'-10"	STIRRUP	*	*	*	*	2 ON EACH SIDE OF EXPANSION JOINT
6S4	#4	2	4'-10"	STIRRUP	*	*	*	*	1 ON EACH SIDE OF EXPANSION JOINT

\* SEE DETAIL OF S4 BAR AND NOTE 8  
L = NOMINAL LENGTH OF SECTION IN INCHES

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4SB1H	#4	4	5'-6"	STIRRUP	10"	3'-10"	1 1/2"	4"	AT EACH END OF BARRIER UNIT
4SB2	#4	4	2'-6"	STRAIGHT	—	—	—	—	AT EACH END OF BARRIER UNIT
4S4	#4	4	4'-10"	STIRRUP	*	*	*	*	2 EACH SIDE OF EXPANSION JOINT
6S4	#6	2	4'-10"	STIRRUP	*	*	*	*	1 EACH SIDE OF EXPANSION JOINT

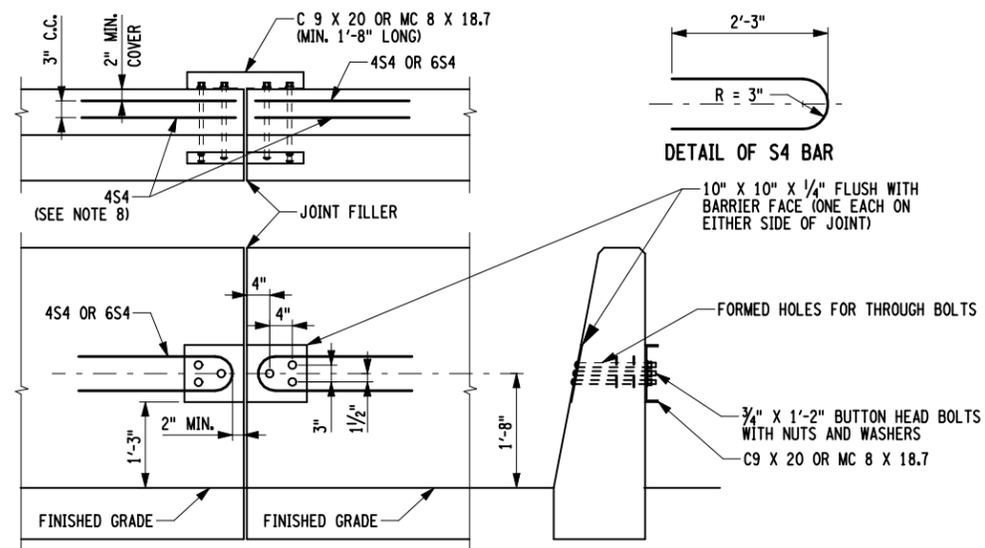
\* SEE DETAIL OF S4 BAR AND NOTE 8



TYPICAL BACKUP POST LAYOUT

NOTES:

- CONTINUITY CONNECTIONS SHALL BE USED AT ALL JOINTS IN PRECAST AND CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER. MACHINE FORMED SINGLE SLOPE CONCRETE HALF SECTION BARRIER REQUIRES THE USE OF CONTINUITY CONNECTIONS ONLY AT THE EXPANSION JOINTS. ALL HARDWARE IN CONTINUITY CONNECTIONS SHALL BE GALVANIZED.
- PRECAST AND CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER SHALL BE BACKED UP WITH EARTH OR BACK UP POSTS FOR ITS ENTIRE LENGTH AS SHOWN IN BACKUP POST LAYOUT.
- MACHINE FORMED SINGLE SLOPE CONCRETE HALF SECTION BARRIER SHALL BE BACKED UP WITH EARTH OR BACK UP POSTS AT EVERY EXPANSION JOINT AND AT THE END OF EACH RUN OF BARRIER. WHEN EARTH BACK UP IS USED, IT SHALL BE PLACED 20' EITHER SIDE OF EXPANSION JOINT AND FOR THE FIRST AND LAST 20' OF THE BARRIER EXCLUDING ANY END SECTIONS. WHEN BACK UP POSTS ARE USED, 3 POSTS SHALL BE PLACED ON EITHER SIDE OF THE EXPANSION JOINT IN THE PATTERN SHOWN IN THE BACK UP POST LAYOUT AND THE BEGINNING AND END OF EACH BARRIER RUN. THE POSTS AT THE ENDS OF BARRIER RUNS SHALL BE PLACED AT 6'-8" CENTER COMMENCING AND ENDING 3'-4" FROM THE END OF THE BARRIER OR THE JOINT BETWEEN THE BARRIER AND ANY END SECTIONS.
- WHEN SINGLE SLOPE CONCRETE HALF SECTION BARRIER IS TERMINATED AT APPROACH END, A FULL SECTION RAMPED TERMINAL OR A CRASH ATTENUATOR SHOULD BE USED AS SPECIFIED.
- 2" MINIMUM COVER FOR ALL REINFORCEMENT.
- THESE BENDS MAY BE ELIMINATED, PROVIDED 2" MINIMUM COVER IS MAINTAINED.
- SURFACES SHALL BE SMOOTH.
- IF 6S4 BARS ARE USED, THEN THE 4S4 BARS NEED NOT BE USED.

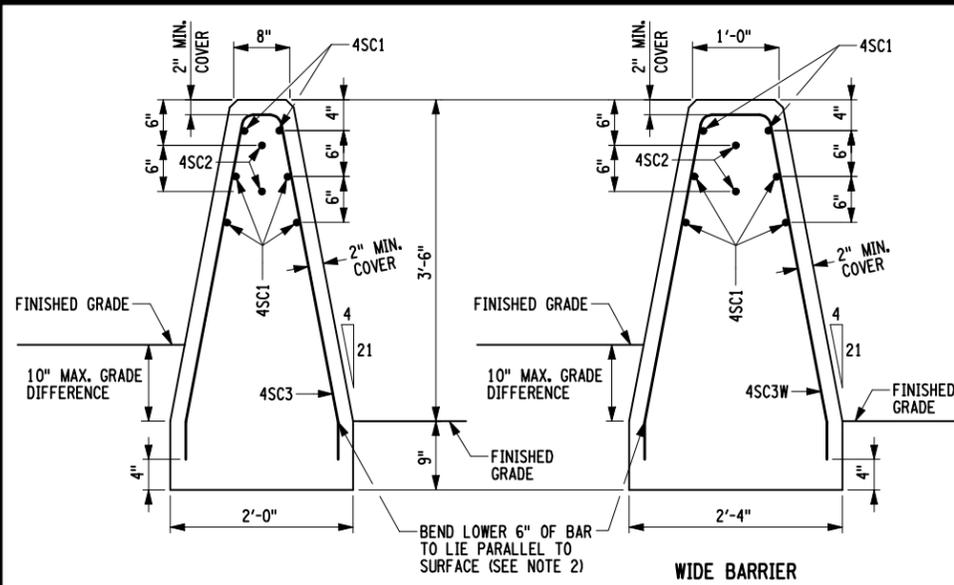


CONTINUITY CONNECTION FOR HALF SECTION SINGLE-SLOPE BARRIER (SEE NOTE 1)

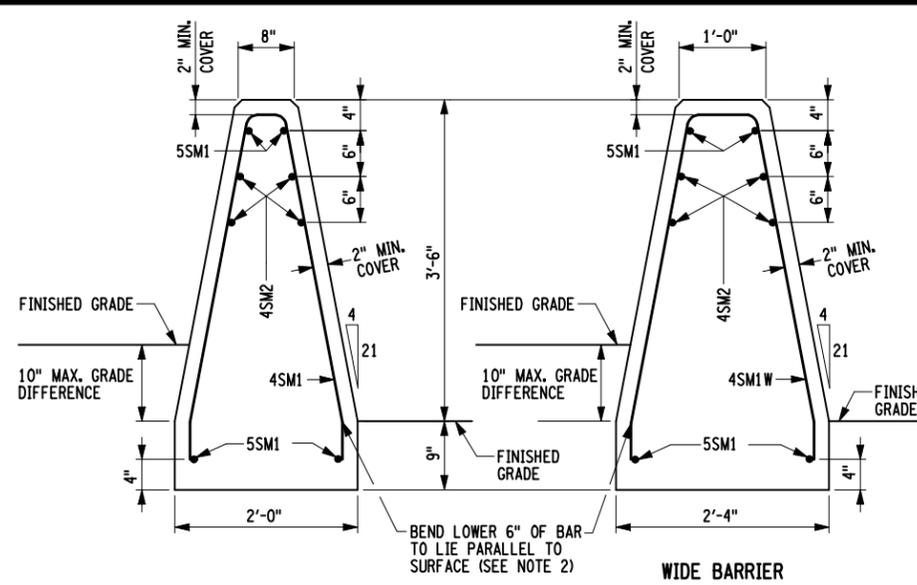
DETAIL OF S4 BAR

<p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>SINGLE - SLOPE CONCRETE HALF SECTION BARRIER</p>	
<p>APPROVED SEPTEMBER 19, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)</p>	<p>606-13</p>

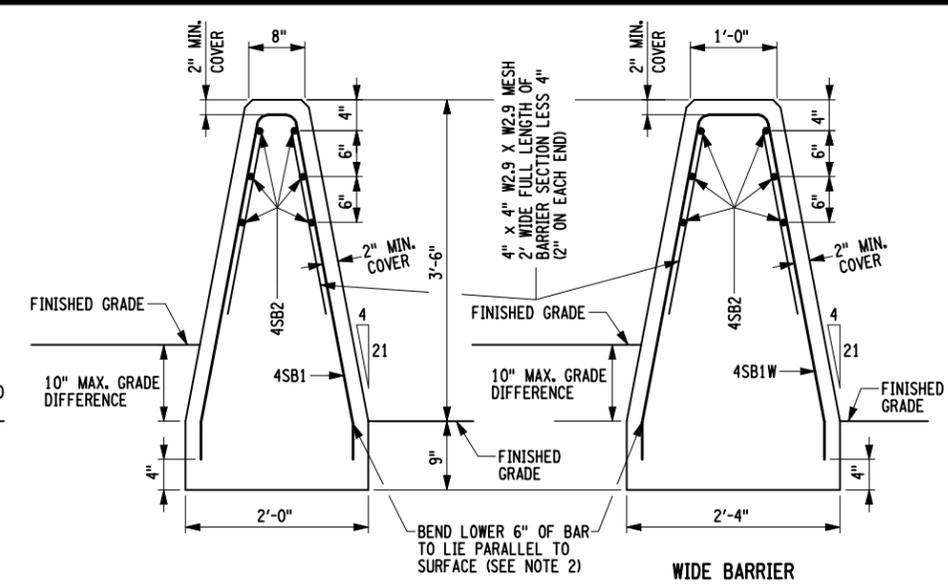
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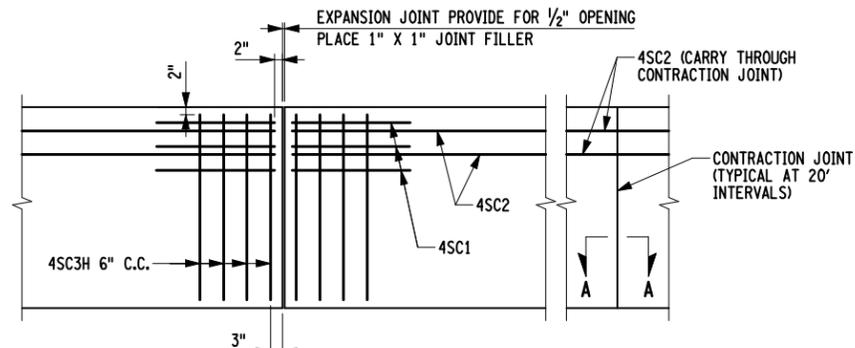
SECTION SHOWING MACHINE FORMED SINGLE-SLOPE CONCRETE MEDIAN BARRIER (SHOWN AT EXPANSION JOINT)



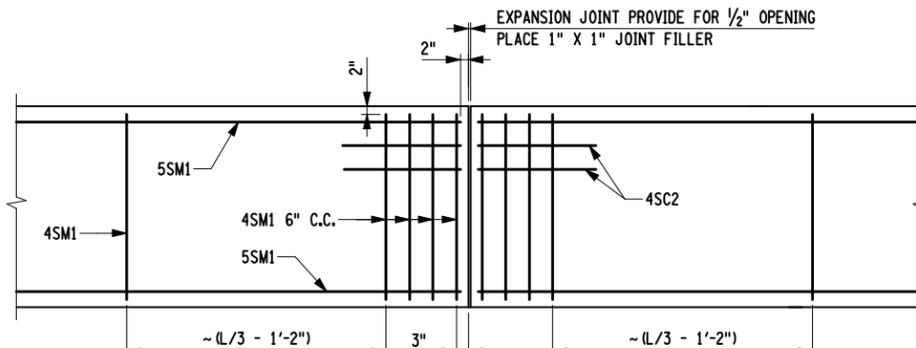
SECTION SHOWING PRECAST SINGLE-SLOPE CONCRETE MEDIAN BARRIER (SHOWN AT EXPANSION JOINT)



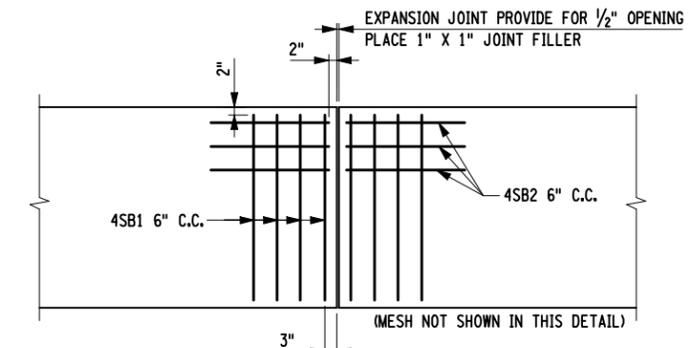
SECTION SHOWING CAST-IN-PLACE SINGLE-SLOPE CONCRETE MEDIAN BARRIER (SHOWN AT EXPANSION JOINT)



EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR MACHINE FORMED SINGLE-SLOPE CONCRETE HALF SECTION BARRIER



EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR PRECAST SINGLE-SLOPE CONCRETE MEDIAN BARRIER



EXPANSION JOINT DETAIL SHOWING REINFORCING BARS FOR CAST-IN-PLACE SINGLE-SLOPE CONCRETE MEDIAN BARRIER

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4SC1	#4	4	2'-6"	STRAIGHT	—	—	—	—	LONGITUDINAL - 6 ON EACH SIDE OF THE EXPANSION JOINT
4SC2	#4	4	—	STRINGER	—	—	—	—	CONTINUOUS FROM EXPANSION JOINT TO EXPANSION JOINT
4SC3	#4	4	8'-0"	STIRRUP	10"	3'-10"	1 1/2"	4"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT
4SC3W	#4	4	8'-4"	STIRRUP	12"	3'-10"	1 1/2"	8"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT

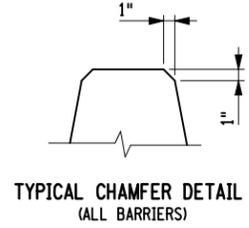
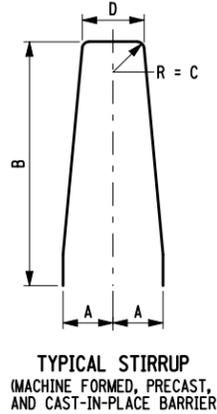
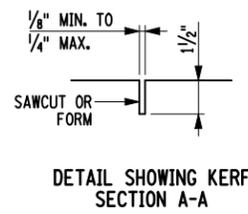
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4SM1	#4	4	8'-0"	STIRRUP	10"	3'-10"	1 1/2"	4"	4 AT EACH END OF BARRIER UNIT. 2 STIRRUPS TO APPROXIMATELY DIVIDE REMAINING SPACE INTO THREE EQUAL PARTS
4SM1W	#4	4	8'-4"	STIRRUP	12"	3'-10"	1 1/2"	8"	4 AT EACH END OF BARRIER UNIT. 2 STIRRUPS TO APPROXIMATELY DIVIDE REMAINING SPACE INTO THREE EQUAL PARTS
4SM2	#4	6	2'-6"	STRAIGHT	—	—	—	—	4 AT EACH END OF BARRIER UNIT
5SM1	#5	6	L-4"	STRINGER	—	—	—	—	LONGITUDINAL - 2 IN BOTTOM - 2 IN TOP

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4SB1	#4	4	8'-0"	STIRRUP	10"	3'-10"	1 1/2"	4"	4 AT EACH END OF BARRIER UNIT
4SB1W	#4	4	8'-0"	STIRRUP	12"	3'-10"	1 1/2"	8"	4 AT EACH END OF BARRIER UNIT
4SB2	#4	4	2'-6"	STRAIGHT	—	—	—	—	4 AT EACH END OF BARRIER UNIT

NOTE: AS AN OPTION TO THE REINFORCEMENT SHOWN FOR THE CAST-IN-PLACE BARRIER THE CONTRACTOR MAY USE THE REINFORCEMENT SHOWN FOR PRECAST BARRIER.

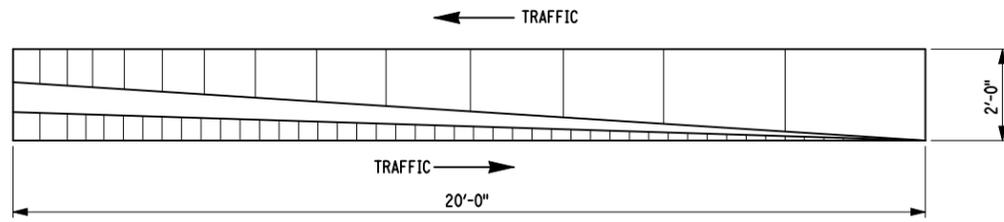
L = NOMINAL LENGTH OF SECTION IN INCHES  
 THE NOMINAL LENGTH OF PRECAST SECTIONS IS 20' BUT MAY BE MODIFIED TO A MINIMUM OF 10' AND A MAXIMUM OF 24' TO FIT CONDITIONS. UNLESS THE MODIFIED BARRIER IS DETAILED BY THE DEPARTMENT, THE CONTRACTOR SHALL PREPARE AND SUBMIT LAYOUT DRAWINGS TO THE ENGINEER FOR APPROVAL.

- NOTES:
- 2" MINIMUM COVER FOR ALL REINFORCEMENT.
  - THESE BENDS MAY BE ELIMINATED PROVIDED 2" MINIMUM COVER IS MAINTAINED.
  - SURFACES SHALL BE SMOOTH.



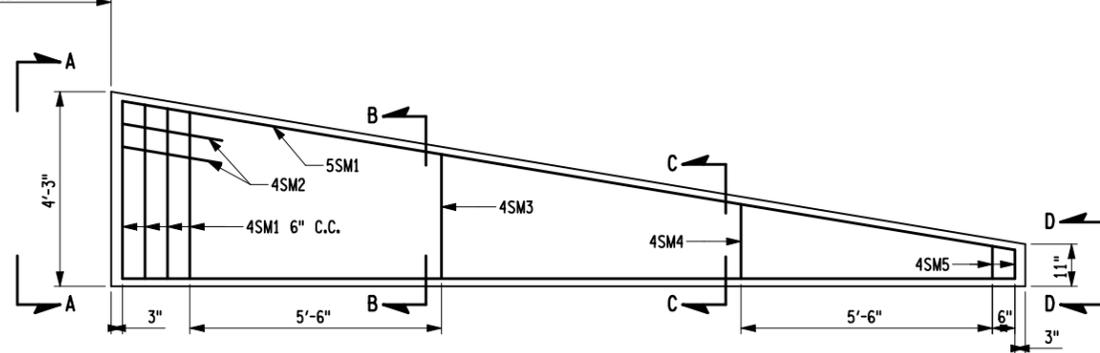
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STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
SINGLE-SLOPE CONCRETE MEDIAN BARRIER AND SINGLE-SLOPE CONCRETE WIDE BARRIER	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-14
EFFECTIVE DATE: 01/08/09	



PLAN VIEW

APPROACH END OF FULL SECTION BARRIER OR TRANSITION BETWEEN WIDE AND NORMAL WIDTH BARRIER

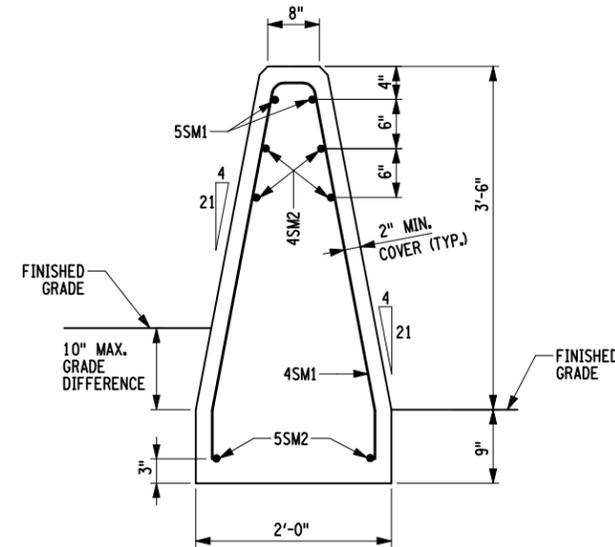


ELEVATION

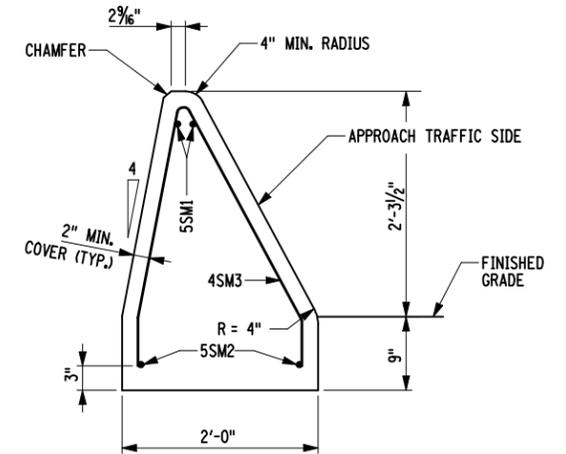
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	E	LOCATION
4SM1	#4	4	VARIES FROM 7'-6" TO 8'-0"	STIRRUP	10"	VARIES FROM 3'-6" TO 3'-9 1/2"	1 1/2"	2"	—	4 @ 6" CENTERS AT THE FULL SECTION END OF TERMINAL
4SM2	#4	4	2'-6"	STRAIGHT	—	—	—	—	—	4 @ FULL SECTION END OF TERMINAL
4SM3	#4	4	5'-6 1/2"	STIRRUP	—	31"	1 1/2"	5 5/8"	20"	1 @ 5'-6" FROM LAST 4SM1 STIRRUP
4SM4	#4	4	3'-10"	STIRRUP	—	18"	1 1/2"	1 3/4"	20"	1 @ 5'-6" FROM FIRST 4SM1 STIRRUP
4SM5	#4	4	2'-7"	STIRRUP	10"	5"	1 1/2"	—	—	2 @ 6" CENTER AT TAIL END OF BARRIER
5SM1	#5	5	20'-0"	STRAIGHT	—	—	—	—	—	LONGITUDINAL - 2 AT TOP
5SM2	#5	5	19'-8"	STRAIGHT	—	—	—	—	—	LONGITUDINAL - 2 AT BOTTOM

NOTES:

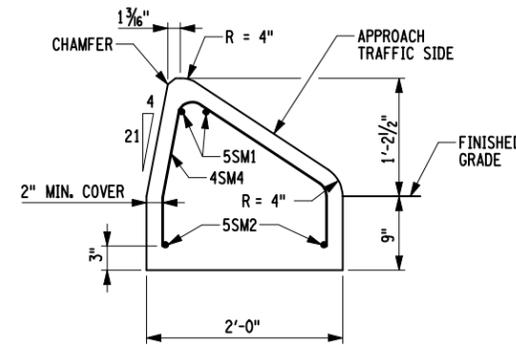
- 2" MIN. COVER ON ALL REINFORCEMENTS.
- STIRRUPS SHOULD LIE AS CLOSE AND PARALLEL TO FACE OF BARRIER AS POSSIBLE.
- THESE BENDS MAY BE ELIMINATED PROVIDED 2" MIN. COVER IS MAINTAINED.
- SURFACES SHALL BE SMOOTH.
- PROVIDE FOR 1/2" EXPANSION AT JOINT WITH MEDIAN (NORMAL WIDTH), TRANSITION BETWEEN WIDE AND NORMAL WIDTH OR HALF SECTION BARRIER. PLACE 1" X 1" JOINT FILLER.



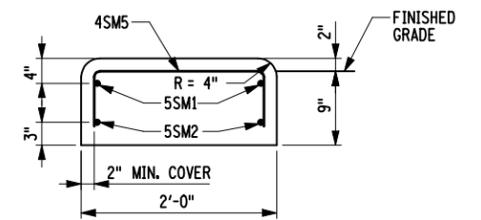
SECTION A-A



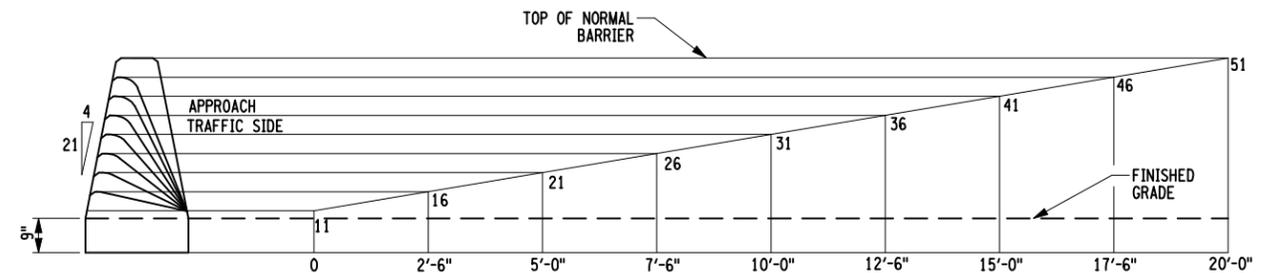
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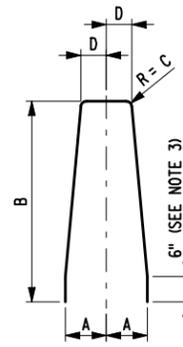
SECTION C-C



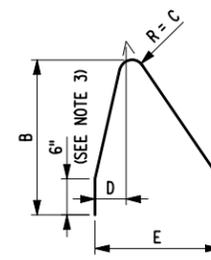
SECTION D-D



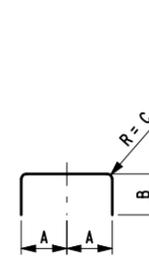
SINGLE SLOPE CONCRETE BARRIER TERMINAL DETAIL  
USE OPPOSITE HAND WHEN BARRIER IS PLACED TO THE RIGHT OF TRAFFIC FLOW



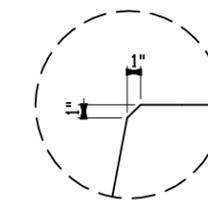
STIRRUP 4SM1



STIRRUP 4SM3, 4SM4



4SM5



TYPICAL CHAMFER DETAIL (ALL SECTIONS)



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

SINGLE-SLOPE CONCRETE BARRIER  
TERMINAL SECTION - RAMPED TERMINAL

APPROVED SEPTEMBER 19, 2008

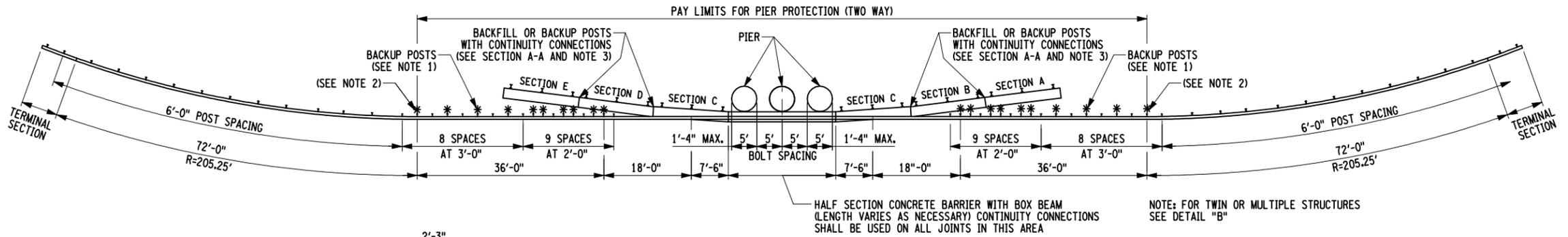
/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

ISSUED UNDER EB 08-036

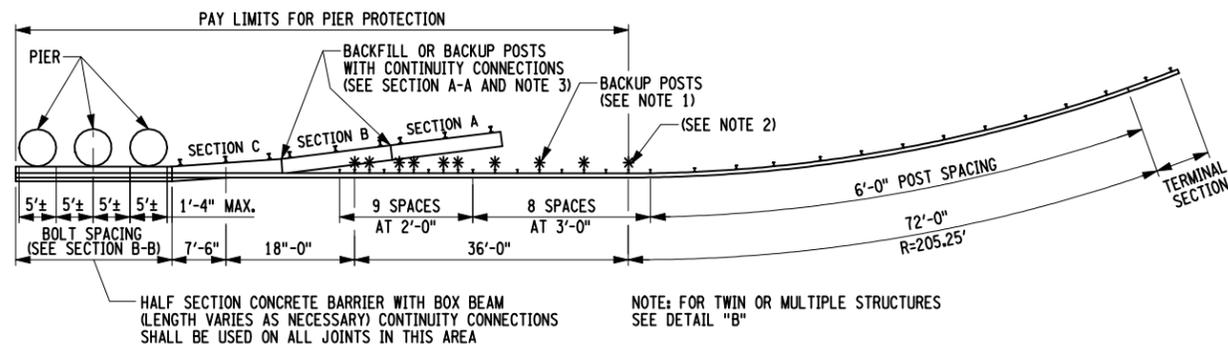
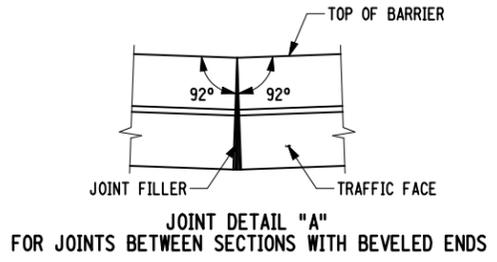
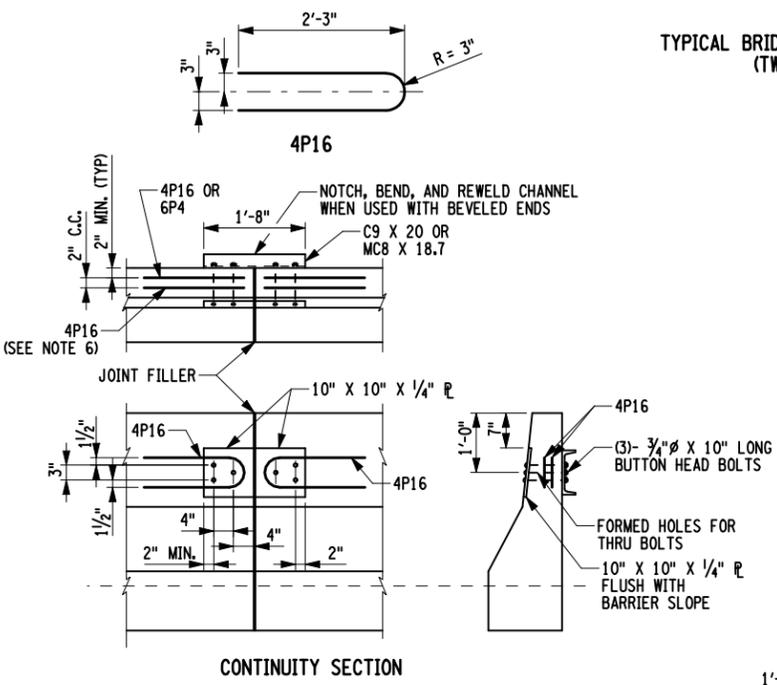
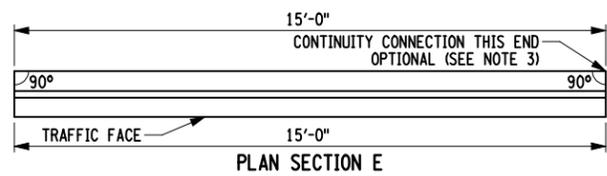
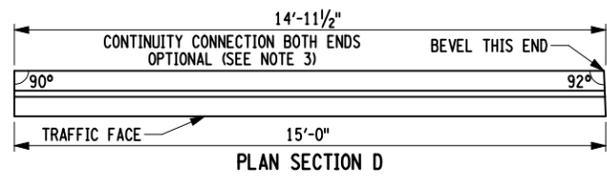
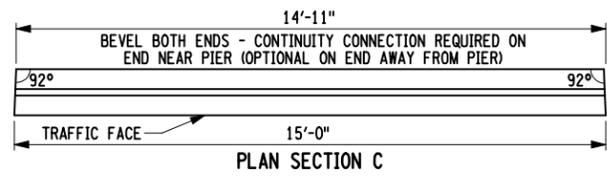
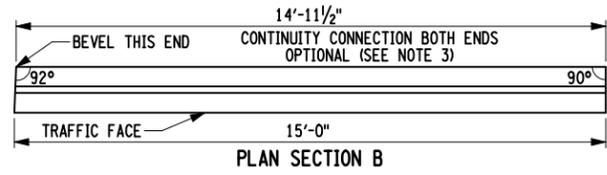
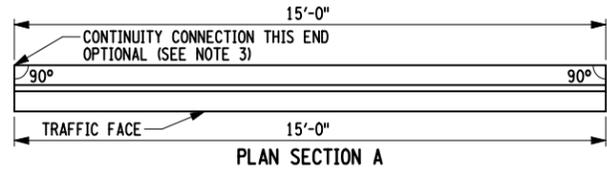
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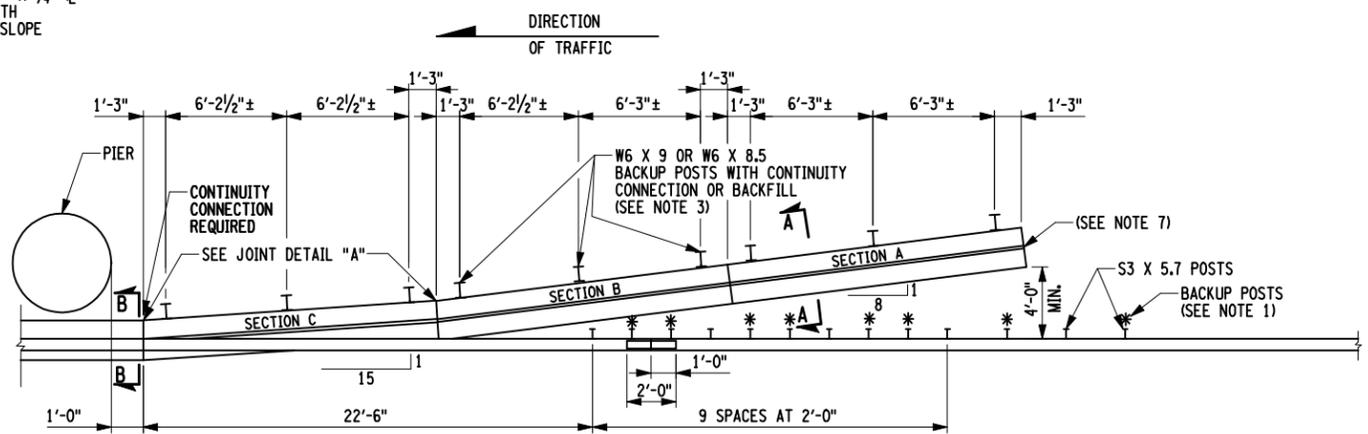
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TYPICAL BRIDGE-PIER PROTECTION PLAN (TWO WAY TRAFFIC)

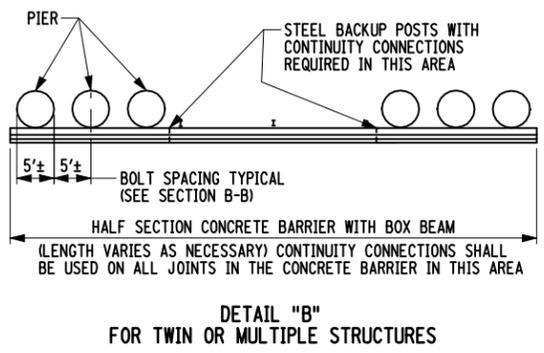
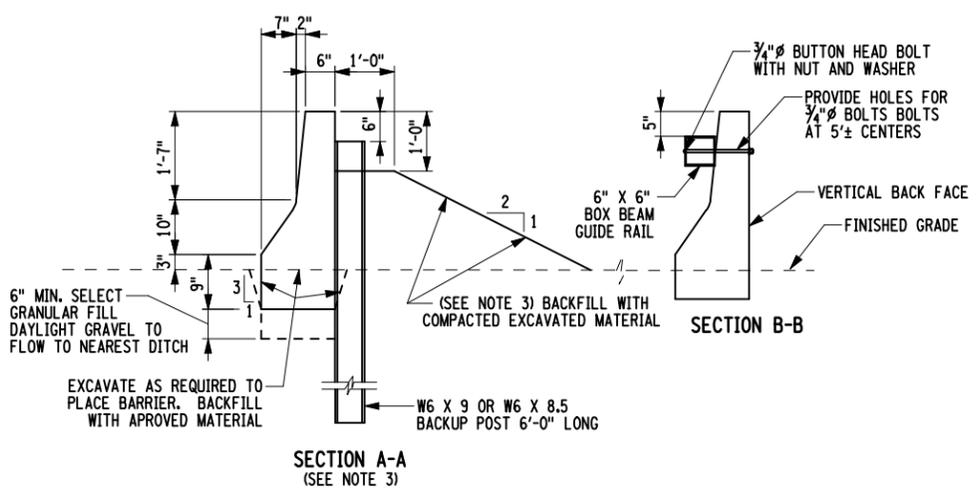


TYPICAL BRIDGE-PIER PROTECTION PLAN (ONE WAY TRAFFIC)



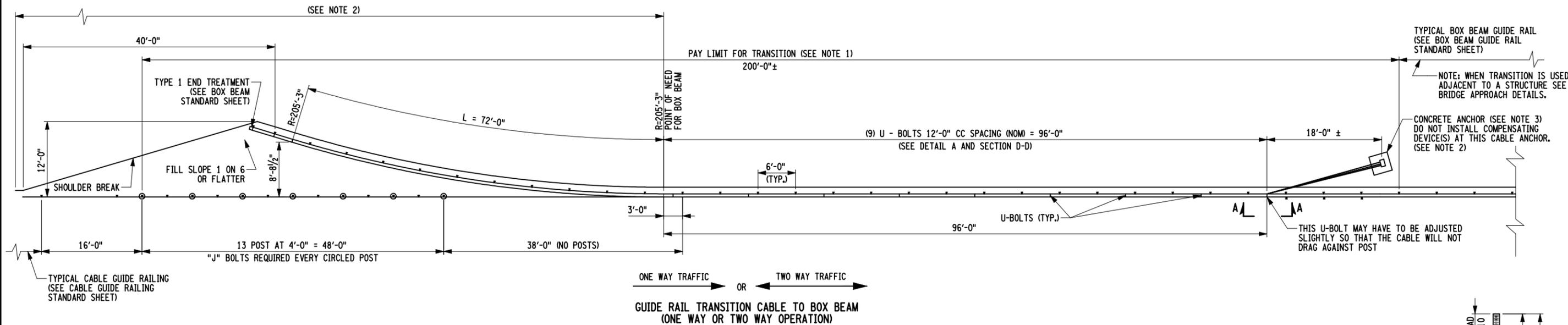
DETAIL PLAN FOR APPROACH END AND ONE WAY

- NOTES:
- THESE POSTS ARE BACKUP POSTS AND WILL NOT REQUIRE THE USE OF THE 5" X 3 1/2" X 3/8" SHELF ANGLE OR THE 3/8" X 7 1/2" LONG BOLT. THE COST OF THE BACKUP POSTS SHALL BE INCLUDED IN THE PRICE BID FOR PIER PROTECTION ITEMS.
  - WHEN GUIDE RAIL IS REQUIRED, ATTACH OR TRANSITION TO HIGHWAY RAIL AT THIS POINT.
  - THE CONCRETE HALF SECTION SHALL BE BACKED UP WITH EITHER FULLY COMPACTED EXCAVATED MATERIAL OR STEEL BACKUP POSTS, EXCEPT WHEN ONLY ONE METHOD IS SPECIFIED IN THE CONTRACT DOCUMENTS. UNLESS SPECIFIED OTHERWISE, CONTINUITY CONNECTIONS SHALL BE REQUIRED WITH STEEL BACKUP POSTS ONLY. THE COST OF BACKUP FOR CONCRETE HALF SECTIONS, REGARDLESS OF THE METHOD USED, SHALL BE INCLUDED IN THE PRICE BID FOR THE PIER PROTECTION ITEMS.
  - HALF SECTION BARRIER UNITS SHALL BE REINFORCED AS SHOWN ON THE CURRENT STANDARD SHEET FOR PRECAST CONCRETE MEDIAN BARRIER, ADJUST 6P1 BAR LENGTH ACCORDINGLY.
  - SEE CURRENT STANDARD SHEETS FOR DETAILS OF PRECAST CONCRETE MEDIAN BARRIER AND BOX BEAM GUIDE RAIL.
  - THIS BAR IS NOT REQUIRED WHEN 6P4 IS USED ON THE BACKSIDE.
  - INCLUDE TAPERED END SECTION WHERE A BACK SLOPE IS PRESENT THAT COULD REDIRECT A VEHICLE THAT PASSES BEHIND TERMINAL BACK TO END OF HALF SECTIONS.

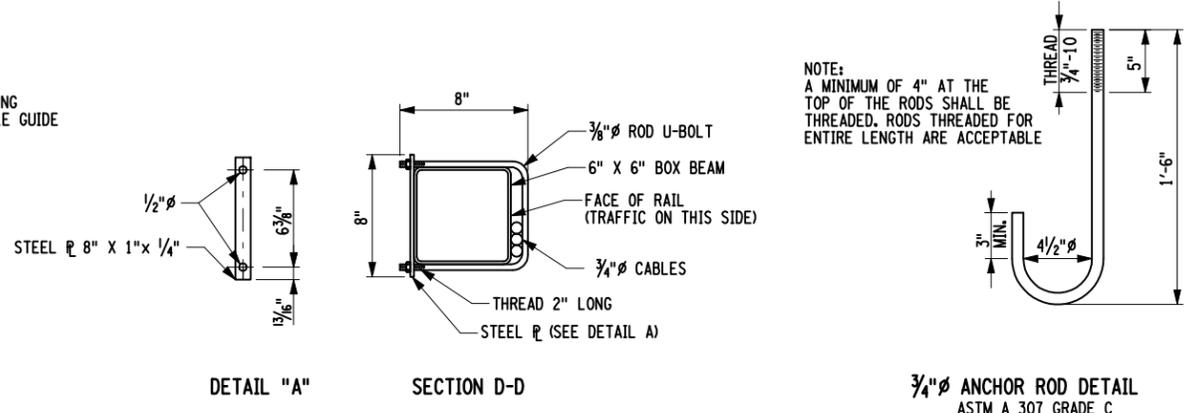
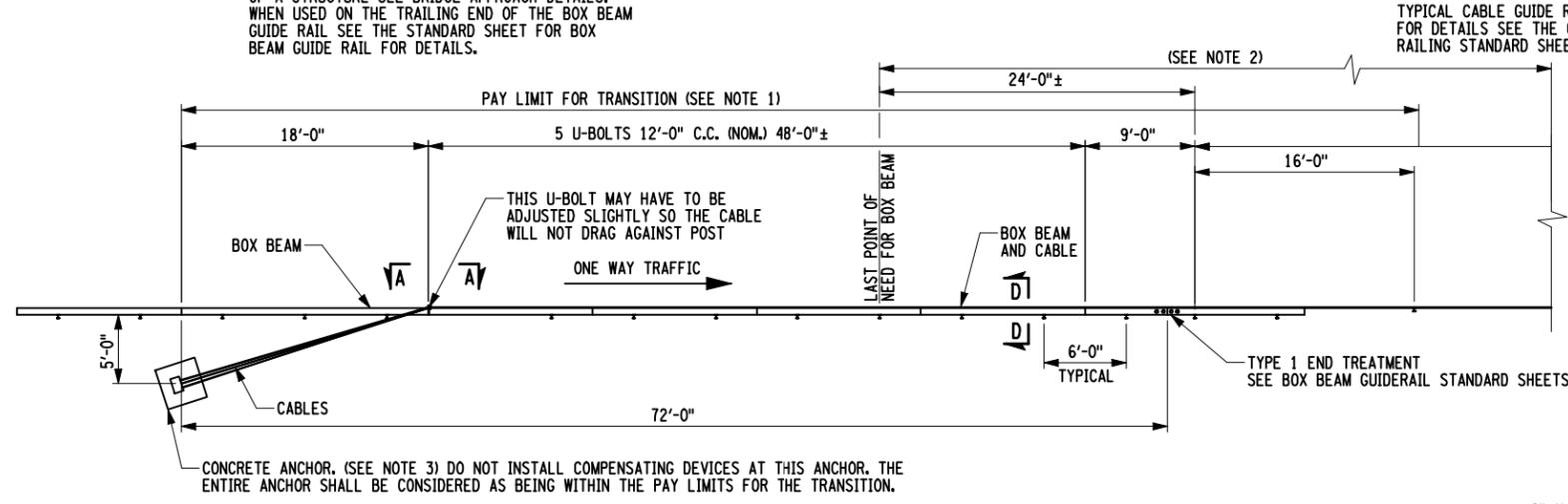


DETAIL "B" FOR TWIN OR MULTIPLE STRUCTURES

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
PIER PROTECTION	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-16
EFFECTIVE DATE: 01/08/09	

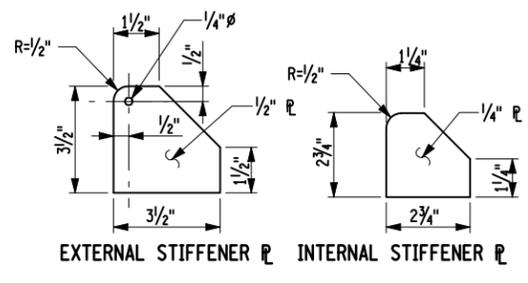
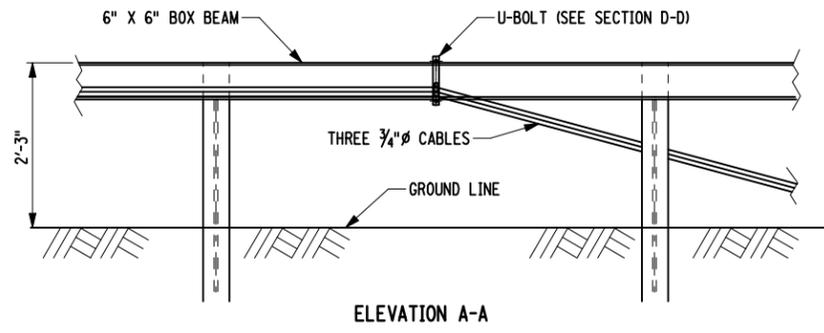
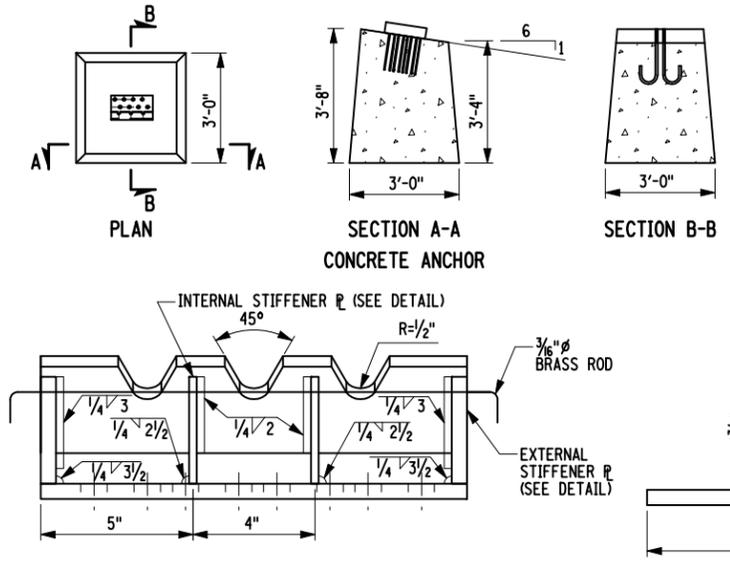
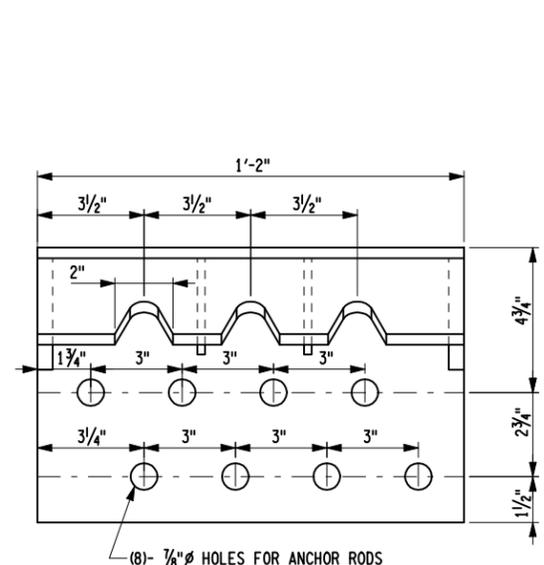


NOTE: WHEN TRANSITION IS USED AT THE TRAILING END OF A STRUCTURE SEE BRIDGE APPROACH DETAILS. WHEN USED ON THE TRAILING END OF THE BOX BEAM GUIDE RAIL SEE THE STANDARD SHEET FOR BOX BEAM GUIDE RAIL FOR DETAILS.



- NOTES:
1. ALL WORK AND MATERIALS WITHIN THE PAY LIMITS FOR TRANSITIONS WILL BE PAID FOR UNDER THE GUIDE RAIL TRANSITIONS.
  2. DISTANCE MEASURED BETWEEN POINT OF NEED FOR BOX BEAM AND APPROACH TERMINAL OR INTERMEDIATE ANCHORAGE SECTION SHALL NOT EXCEED 1000'.
  3. COMPENSATING DEVICES SHALL NOT BE INSTALLED AT THE CABLE ANCHORS INCLUDED IN THE TRANSITION AREA. THEY SHALL BE INSTALLED AT THE CABLES ANCHORS LOCATED IN THE APPROACH, TERMINAL OR INTERMEDIATE ANCHORAGE SECTION. (NOT DETAILED ON THIS SHEET - SEE STANDARD SHEET TITLED "CABLE GUIDE RAILING")
  4. TIGHTEN NUTS UNTIL THEY ARE SNUG, THEN COMPRESS LOCK WASHER BY GIVING NUT HALF TURN.
  5. WHEN CABLE GUIDE RAIL IS USED TO FROM A CONTINUOUS GUIDE RAIL SYSTEM BETWEEN TWO SEPARATE BOX BEAM GUIDE RAIL INSTALLATIONS, SEPARATED AT THEIR POINTS OF NEED BY 1000' TO 2000', AN INTERMEDIATE ANCHORAGE SECTION, CONSTRUCTED AS SHOWN ON THE STANDARD SHEET TITLED "CABLE GUIDE RAILING" SHALL BE REQUIRED. WHEN THE DISTANCE BETWEEN THE POINTS OF NEED EXCEEDS 2000', ADDITIONAL INTERMEDIATE ANCHORAGE SECTIONS SHALL BE REQUIRED, AS INDICATED ON THE ABOVE REFERENCED STANDARD SHEET.

GUIDE RAIL TRANSITION CABLE TO BOX BEAM (ONE WAY ONLY)



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USER = jturley

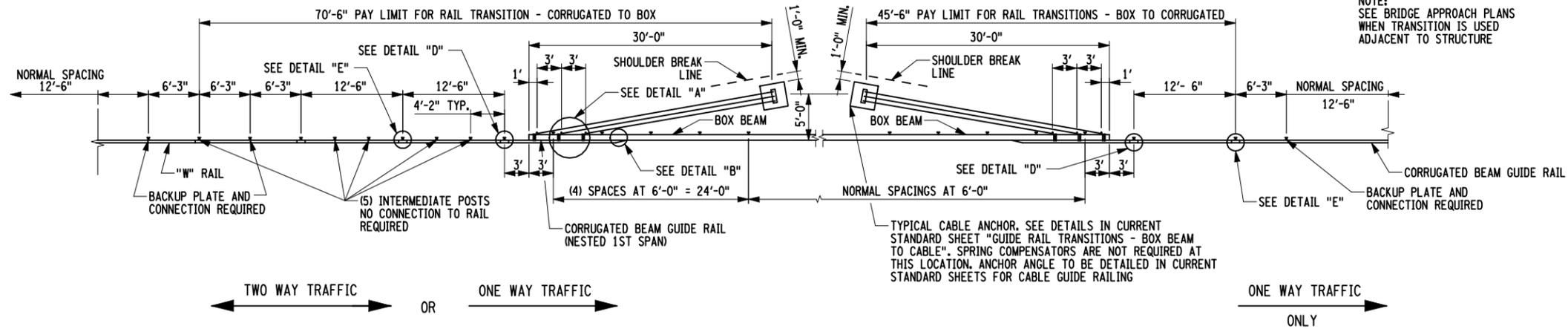
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
TRANSITION: BOX - CABLE	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-19

EFFECTIVE DATE: 01/08/09

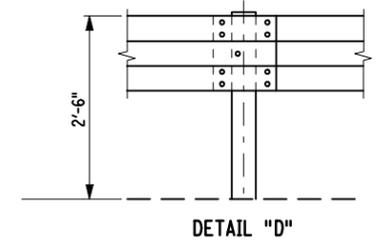
(CORRUGATED BEAM TYPE GUIDE RAILING TO BOX BEAM GUIDE RAIL TRANSITION, FOR TWO-WAY TRAFFIC OR ONE-WAY TRAFFIC APPROACHING HAZARD, STRUCTURE, OR OTHER FIXED OBJECT)

(BOX BEAM GUIDE RAIL TO CORRUGATED BEAM TYPE GUIDE RAILING TRANSITION FOR ONE WAY TRAFFIC LEAVING HAZARD, STRUCTURE OR OTHER OBJECT)

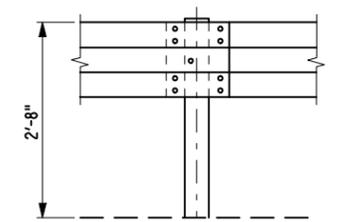
NOTE:  
SEE BRIDGE APPROACH PLANS  
WHEN TRANSITION IS USED  
ADJACENT TO STRUCTURE



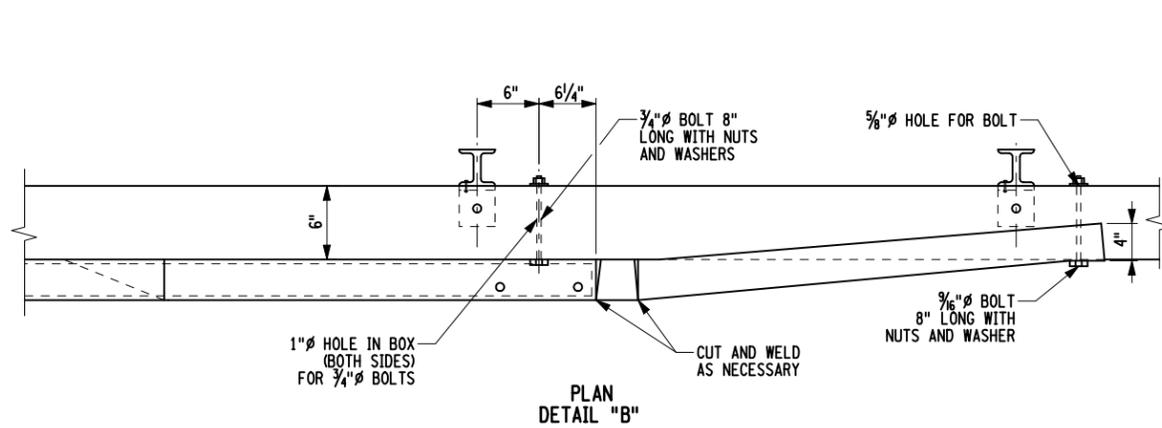
PLAN



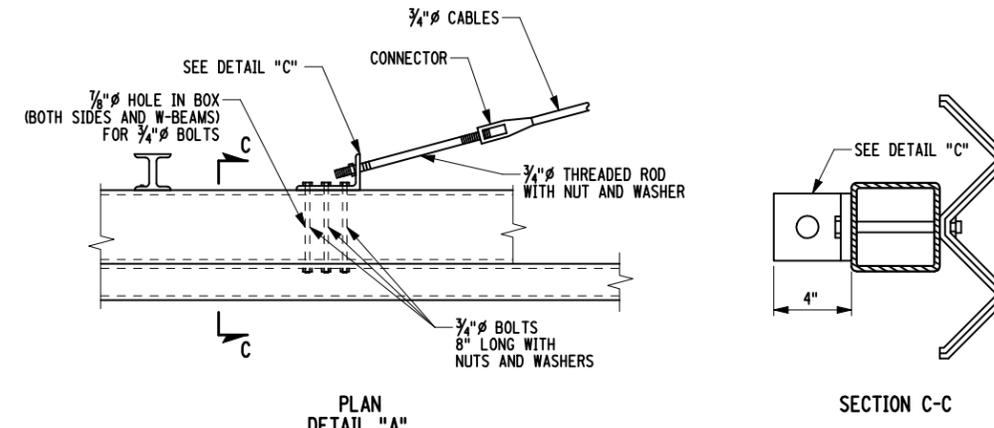
DETAIL "D"



DETAIL "E"  
(FULL HEIGHT POST)

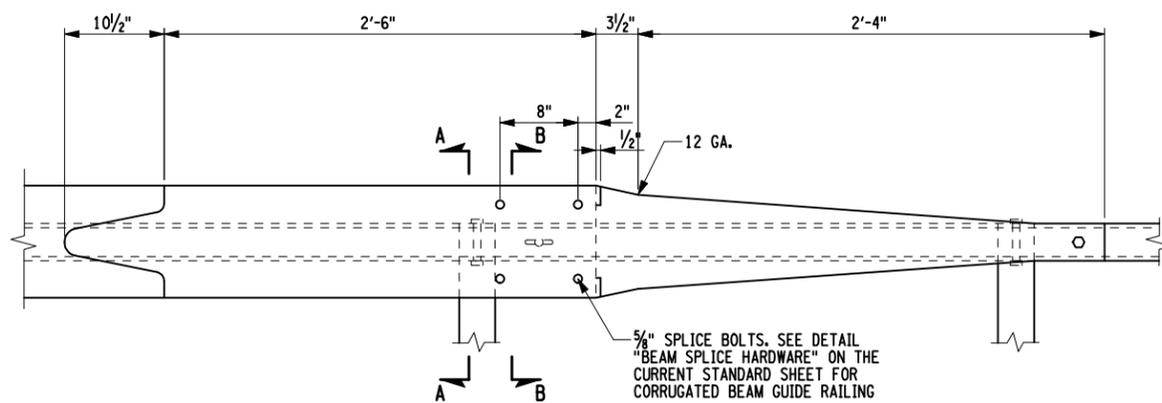


PLAN  
DETAIL "B"

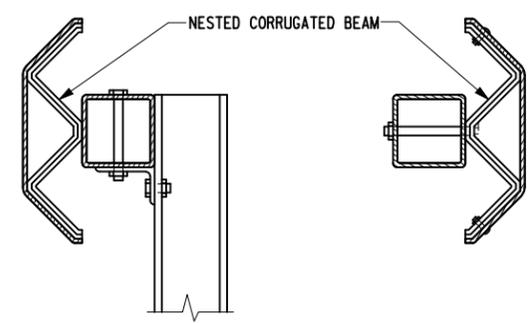


PLAN  
DETAIL "A"

SECTION C-C

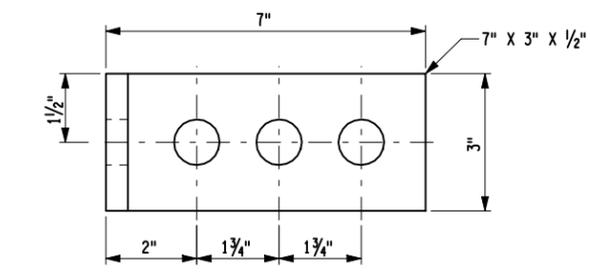


ELEVATION  
DETAIL "B"

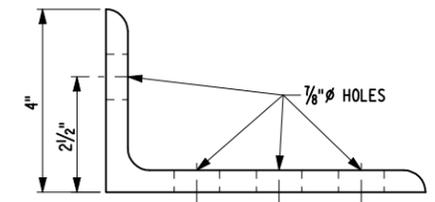


SECTION A-A

SECTION B-B



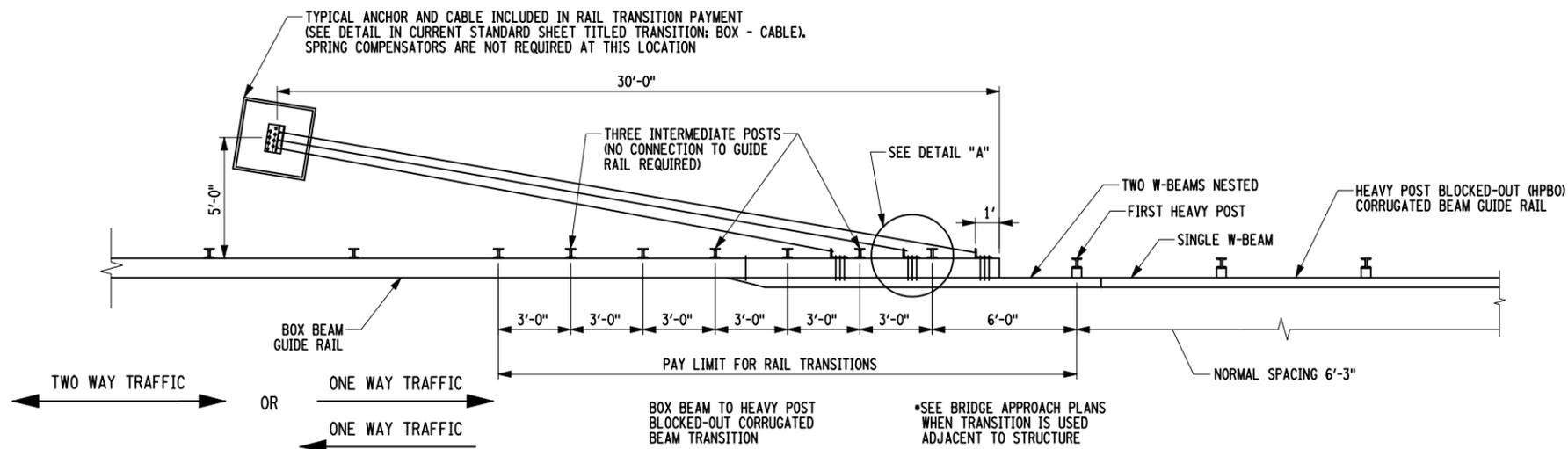
DETAIL "C"



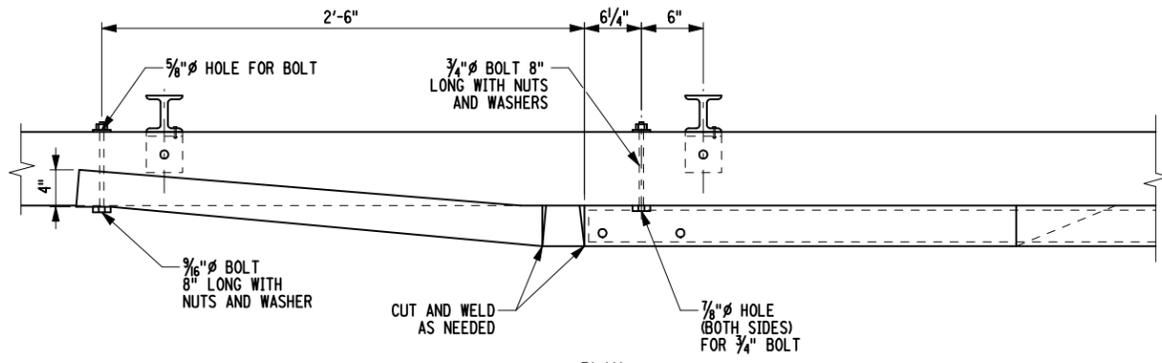
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	U.S. CUSTOMARY STANDARD SHEET	
TRANSITION: BOX - W-BEAM (MOD.)		
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036	
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)		606-20

EFFECTIVE DATE: 01/08/09

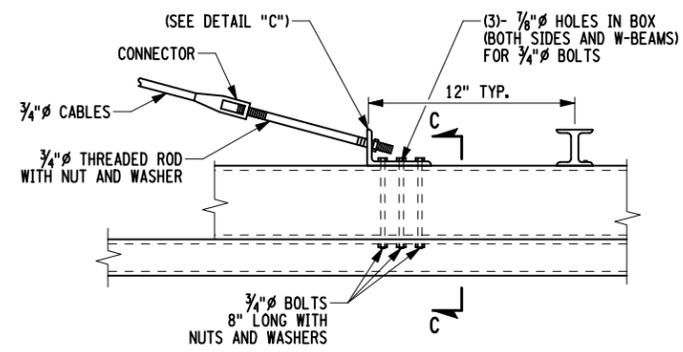
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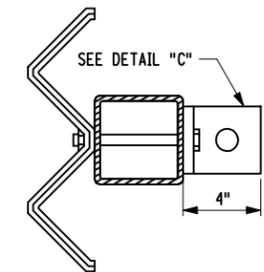
PLAN



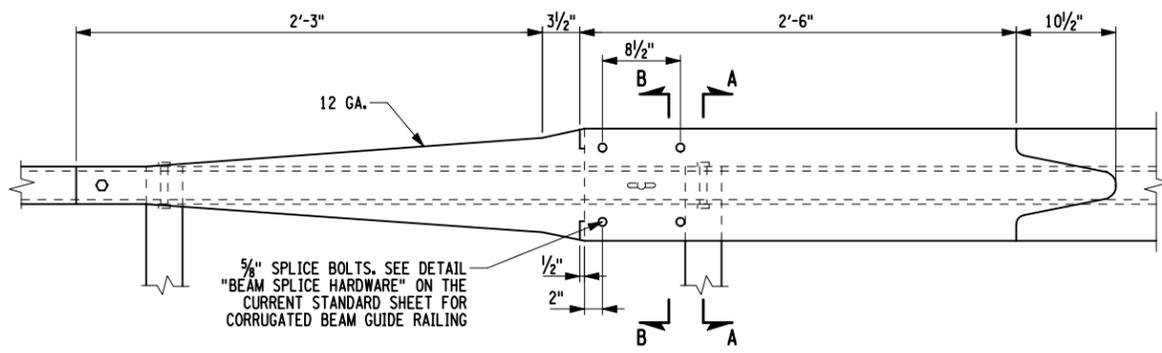
PLAN DETAIL "B"



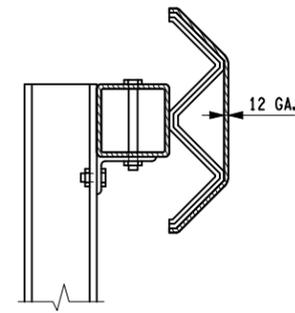
PLAN DETAIL "A"



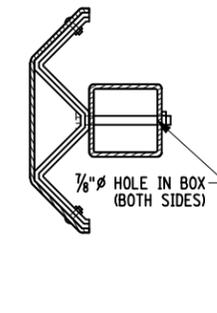
SECTION C-C



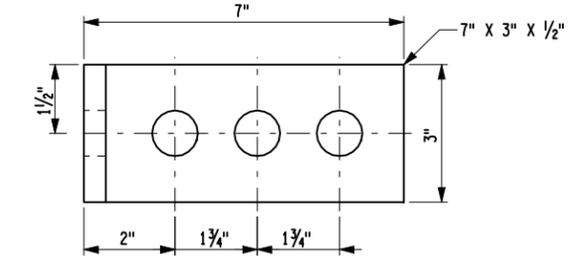
ELEVATION DETAIL "B"



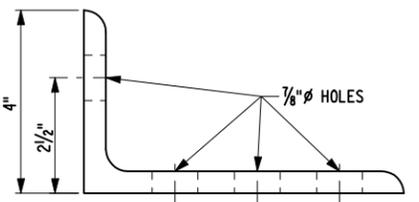
SECTION A-A



SECTION B-B



DETAIL "C"



NOTES:  
ALL WORK WITHIN PAY LIMITS FOR RAIL TRANSITION WILL BE PAID FOR UNDER THE RAIL TRANSITION ITEMS.

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

TRANSITION: BOX - HPBO

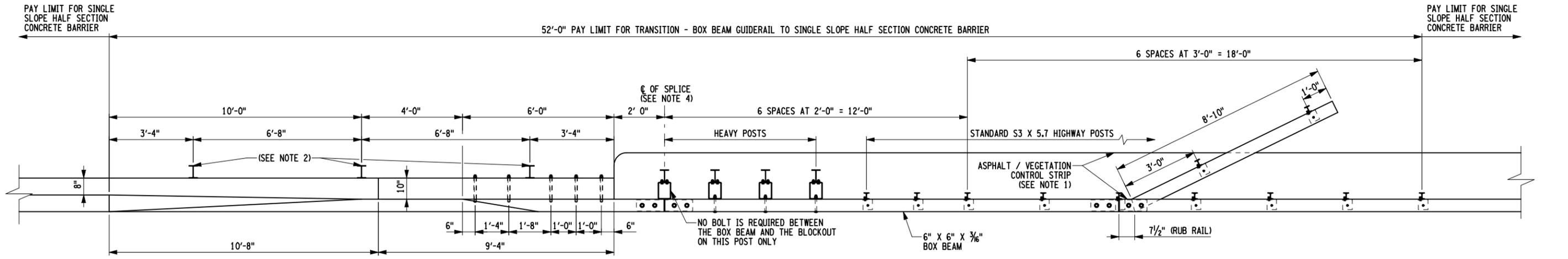
APPROVED SEPTEMBER 19, 2008 ISSUED UNDER EB 08-036

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

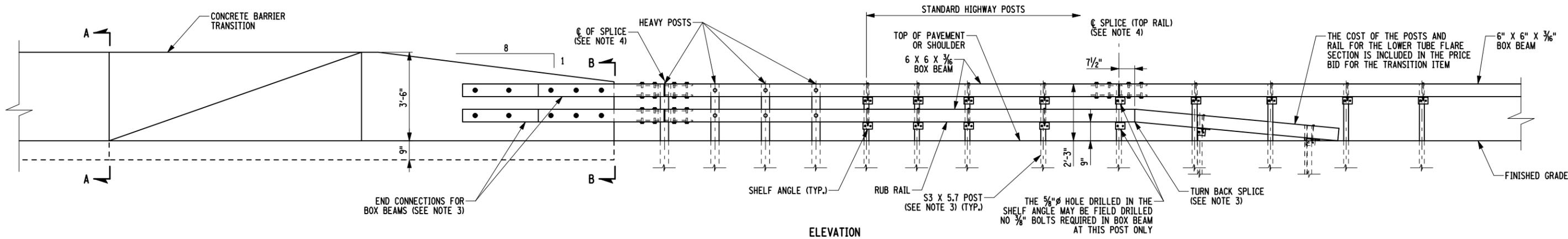
606-21

EFFECTIVE DATE: 01/08/09

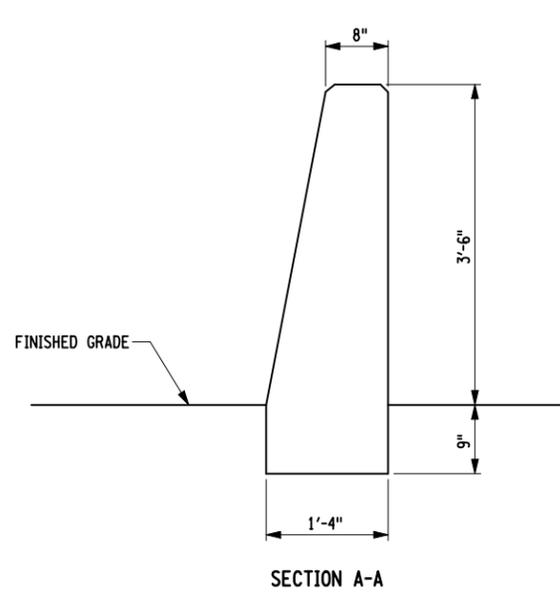
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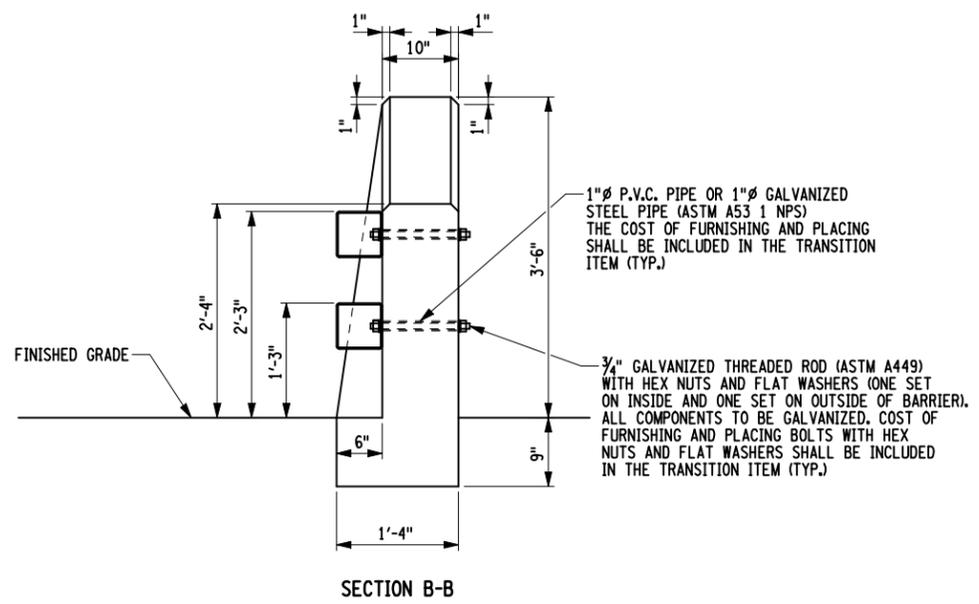
PLAN  
(SEE NOTE 5)



ELEVATION  
(SEE NOTE 5)



SECTION A-A



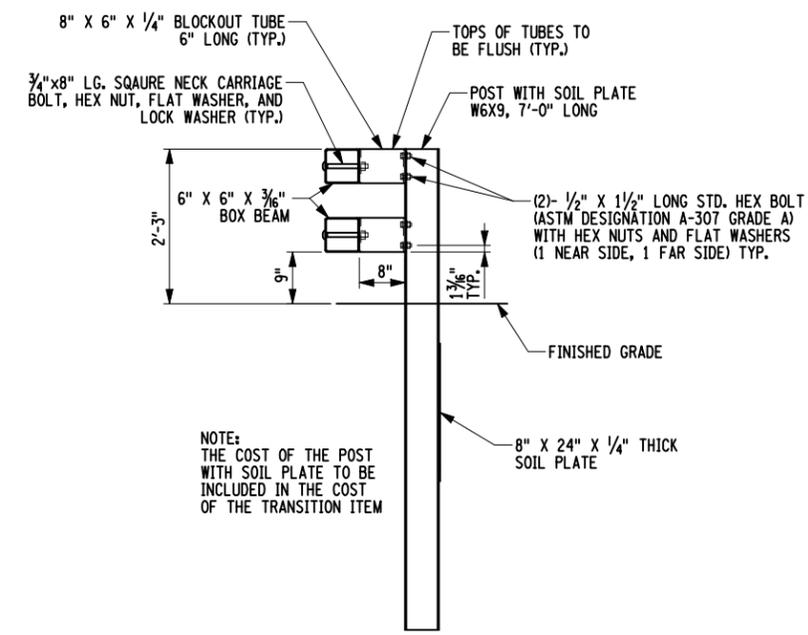
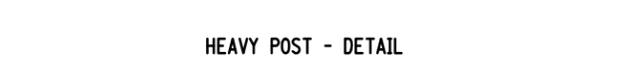
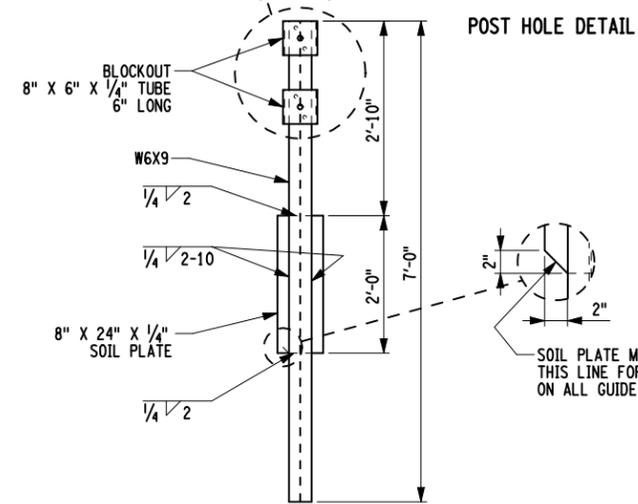
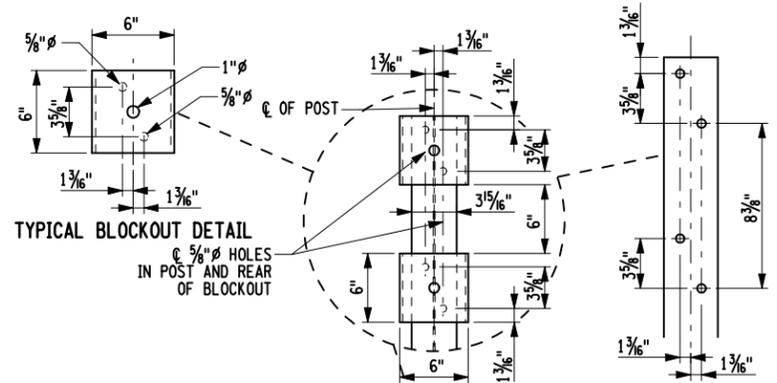
SECTION B-B

- NOTES:
1. THE VEGETATION CONTROL STRIP, WHEN SPECIFIED, SHOULD BE A MINIMUM OF 3" THICK. THE MATERIAL AND THICKNESS OF EACH LIFT SHOULD MATCH THAT IN THE ADJOINING STABILIZED SHOULDER ITEM. PAYMENT SHALL BE MADE UNDER SEPARATE ITEMS.
  2. THE CONCRETE TRANSITION PIECE SHALL BE BACKED UP WITH EARTH OR BACKUP POSTS. SEE DETAILS ON STANDARD SHEET TITLED "TRANSITION BOX - SINGLE SLOPE - SHEET 3 OF 3".
  3. FOR DETAILS SEE STANDARD SHEET TITLED "TRANSITION BOX - SINGLE SLOPE - SHEET 2 OF 3".
  4. SEE SPLICE DETAILS ON THE STANDARD SHEET TITLED "BOX BEAM GUIDE RAIL".
  5. THE DETAIL SHOWN IS FOR USE UNDER THE PAY ITEM FOR BOX BEAM GUIDE RAIL TRANSITION TO SINGLE SLOPE HALF SECTION CONCRETE BARRIER - ONE OR TWO WAY OPERATION. BY ELIMINATING THE RUB RAIL, THIS DETAIL CAN BE USED UNDER THE PAY ITEM FOR SINGLE SLOPE HALF SECTION CONCRETE BARRIER TRANSITION TO BOX BEAM GUIDE RAIL (ONE WAY - TRAILING END OF BARRIER).

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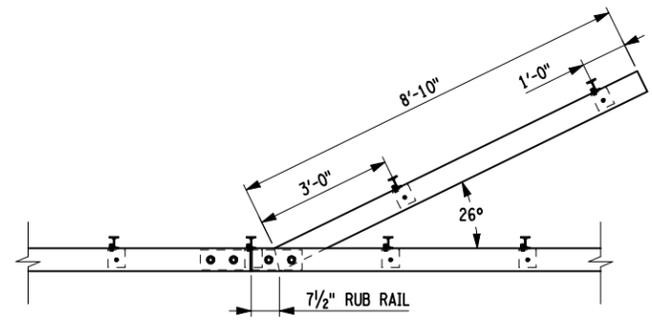
 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>TRANSITION: BOX - SINGLE SLOPE</b> (SHEET 1 OF 3)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-22

EFFECTIVE DATE: 01/08/09

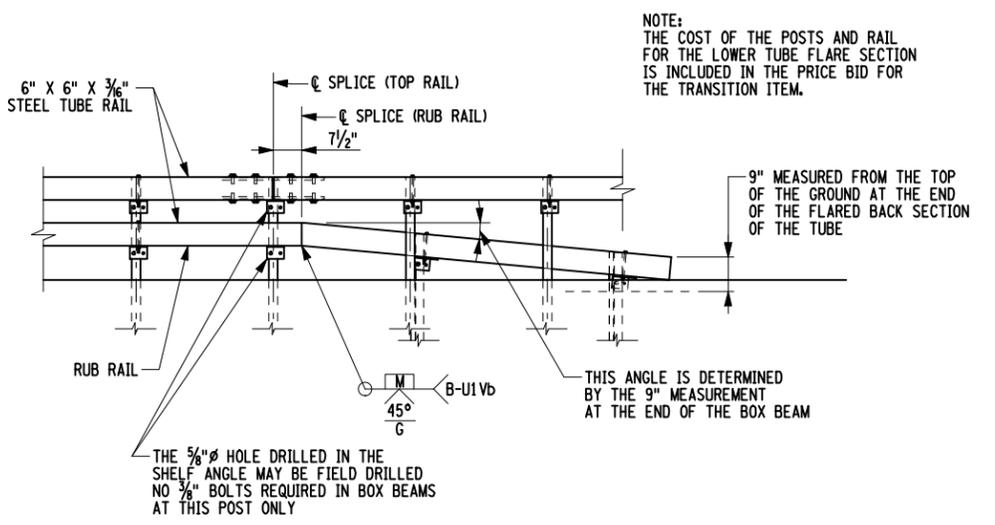


NOTE:  
THE COST OF THE POST WITH SOIL PLATE TO BE INCLUDED IN THE COST OF THE TRANSITION ITEM

ELEVATION - HEAVY POST

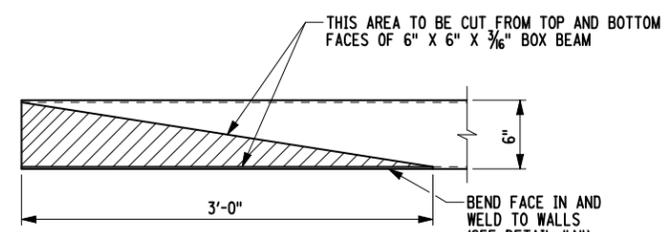


PLAN - RUB RAIL TURNBACK

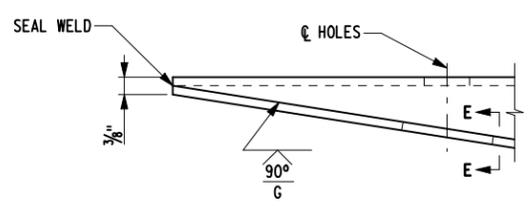


NOTE:  
THE COST OF THE POSTS AND RAIL FOR THE LOWER TUBE FLARE SECTION IS INCLUDED IN THE PRICE BID FOR THE TRANSITION ITEM.

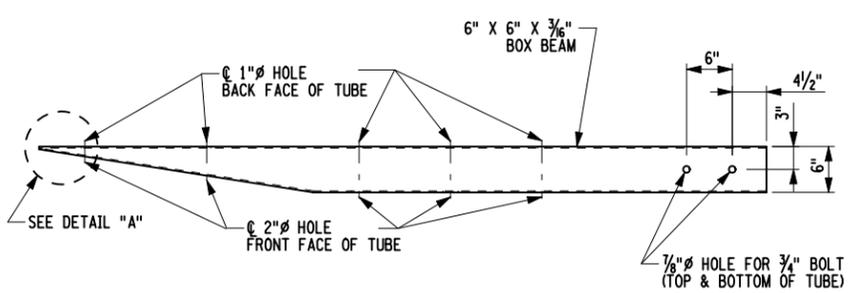
ELEVATION - RUB RAIL TURNBACK



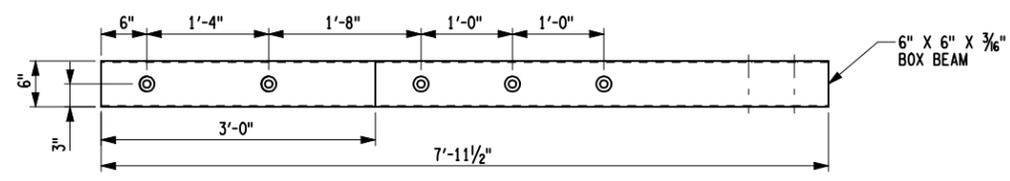
CUT DETAIL - END CONNECTION



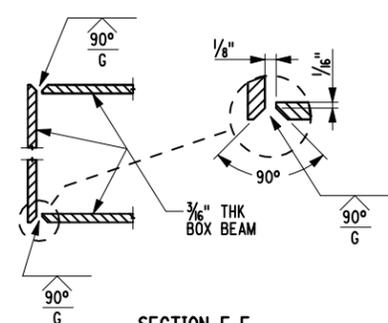
DETAIL "A"



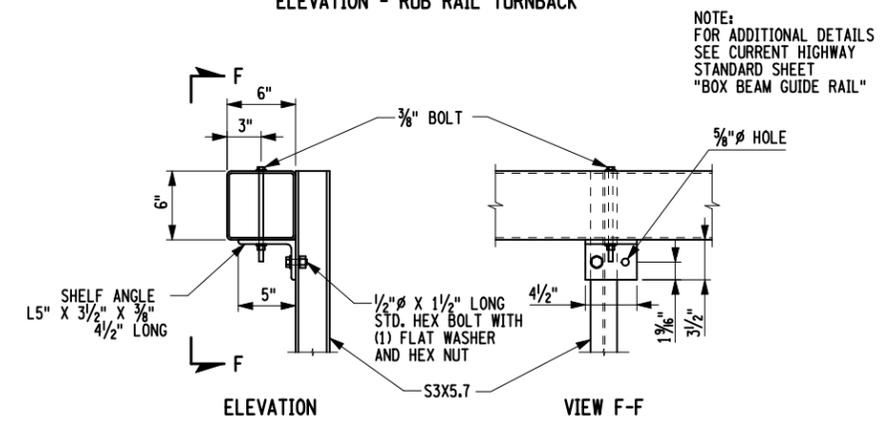
PLAN - END CONNECTION FOR BOX BEAM GUIDE RAIL



ELEVATION - END CONNECTION FOR BOX BEAM GUIDE RAIL



SECTION E-E



ELEVATION

VIEW F-F

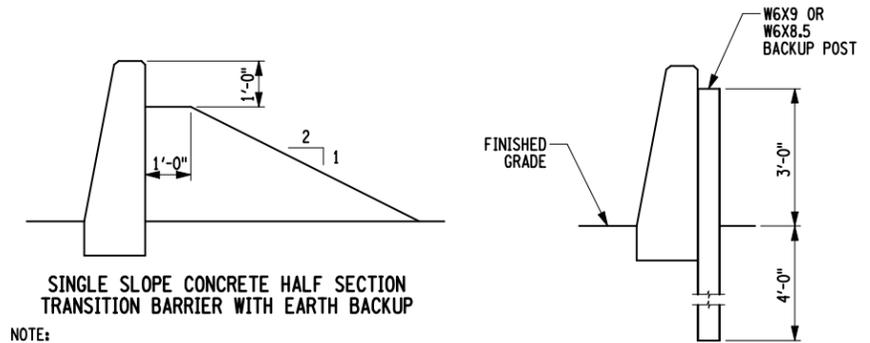
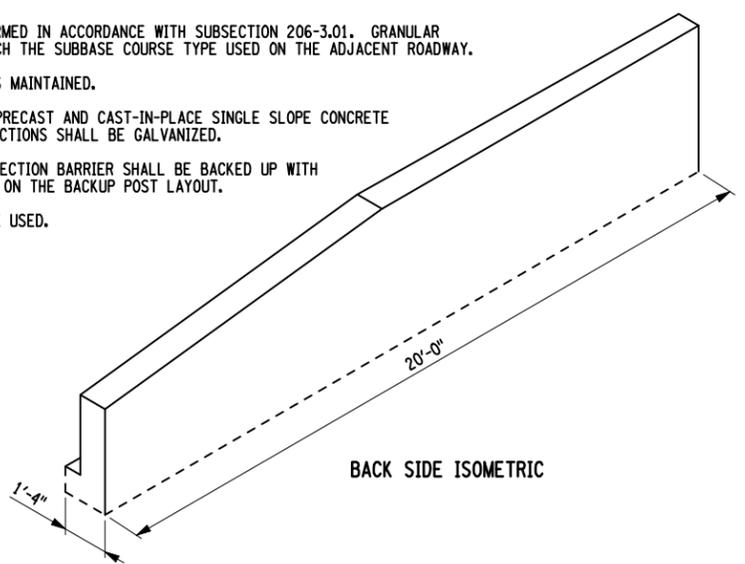
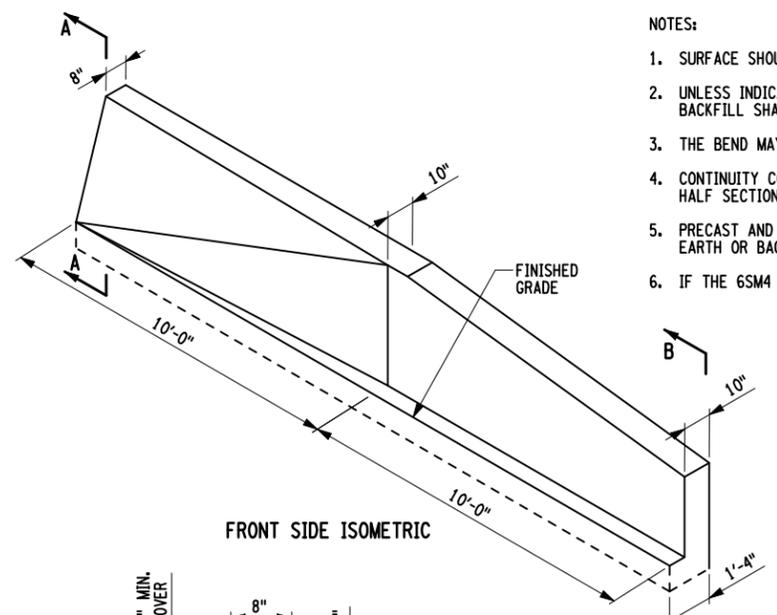
TYPICAL RAIL TO POST CONNECTION

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USER = jturley

 <b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>TRANSITION: BOX - SINGLE SLOPE (SHEET 2 OF 3)</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-22
EFFECTIVE DATE: 01/08/09	

NOTES:

1. SURFACE SHOULD BE SMOOTH.
2. UNLESS INDICATED OTHERWISE, EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 206-3.01. GRANULAR BACKFILL SHALL CONFORM WITH SECTION 304 AND SHALL MATCH THE SUBBASE COURSE TYPE USED ON THE ADJACENT ROADWAY.
3. THE BEND MAY BE ELIMINATED PROVIDED 2" MINIMUM COVER IS MAINTAINED.
4. CONTINUITY CONNECTIONS SHALL BE USED AT ALL JOINTS IN PRECAST AND CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIERS. ALL HARDWARE IN CONTINUITY CONNECTIONS SHALL BE GALVANIZED.
5. PRECAST AND CAST-IN-PLACE SINGLE SLOPE CONCRETE HALF SECTION BARRIER SHALL BE BACKED UP WITH EARTH OR BACK UP POSTS FOR ITS ENTIRE LENGTH AS SHOWN ON THE BACKUP POST LAYOUT.
6. IF THE 6SM4 BAR IS USED, THEN THE 4SM4 BAR NEED NOT BE USED.



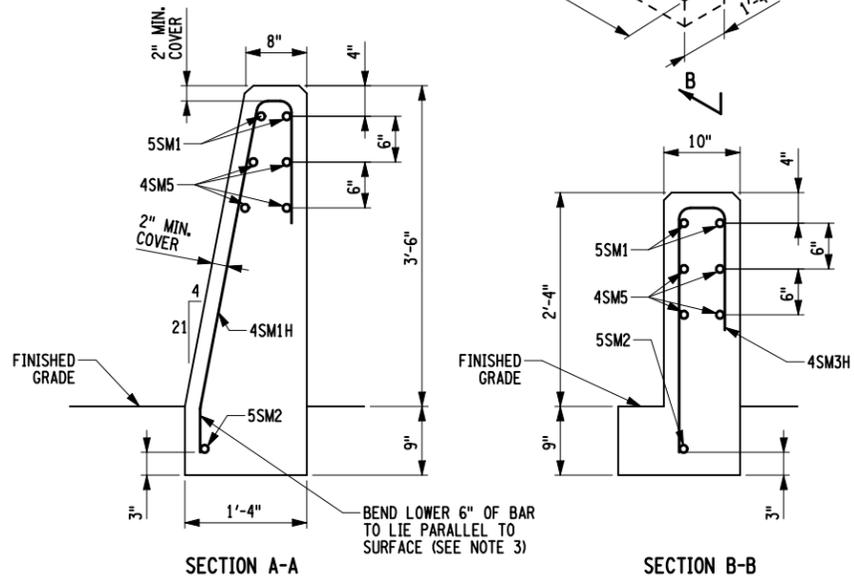
NOTE:  
EARTH BACKUP SHALL CONSIST OF FULLY COMPACTED SUITABLE MATERIAL CONFORMING TO SUBSECTION 203-1.08 HAVING NO PARTICLES GREATER THAN 1/2" AND COMPACTED IN ACCORDANCE WITH SUBSECTION 203-3.12. EARTH BACKUP SHALL EXTEND FULL HEIGHT FROM THE POINT WHERE SECTION A-A IS DRAWN TO A POINT 6'-6" FROM WHERE SECTION B-B IS DRAWN.

FRONT SIDE ISOMETRIC

BACK SIDE ISOMETRIC

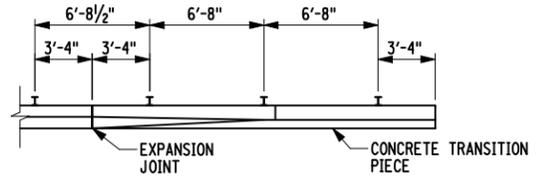
SINGLE SLOPE CONCRETE HALF SECTION TRANSITION BARRIER WITH EARTH BACKUP

SINGLE SLOPE CONCRETE HALF SECTION TRANSITION BARRIER WITH BACKUP POST (SEE NOTES)

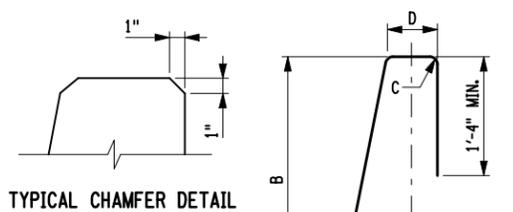


BAR LIST											
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1H	4	4	5'-6"	STIRRUP	10"	3'-10"	1 1/2"	4"	6"	—	AT CONCRETE BARRIER END
4SM2H	4	1	5'-7 1/2"	STIRRUP	5"	3'-10"	1 1/2"	5"	3'-1/2"	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM3H	4	4	4'-6" TO 4'-8"	STIRRUP	6"	2'-8" TO 2'-10"	1 1/2"	1'-4"	—	—	AT BOX BEAM END
4SM4	4	2	4'-10"	STIRRUP	*	*	*	*	—	—	2 AT EXPANSION JOINT END
4SM5	4	8	2'-6"	STRAIGHT	—	—	—	—	—	—	4 AT EACH END
4SM6H	4	1	5'-4 3/4"	STIRRUP	6"	3'-6 3/4"	1 1/2"	1'-4"	—	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
5SM1	5	2	19'-9"	STRINGER	—	10'-6"	—	—	1'-2"	9'-2"	LONGITUDINAL 2 IN TOP
5SM2	5	1	19'-9"	STRINGER	—	9'-2"	—	—	9'-2"	6"	LONGITUDINAL 1 IN BOTTOM
6SM4	6	1	4'-10"	STIRRUP	*	*	*	*	—	—	AT EXPANSION JOINT END

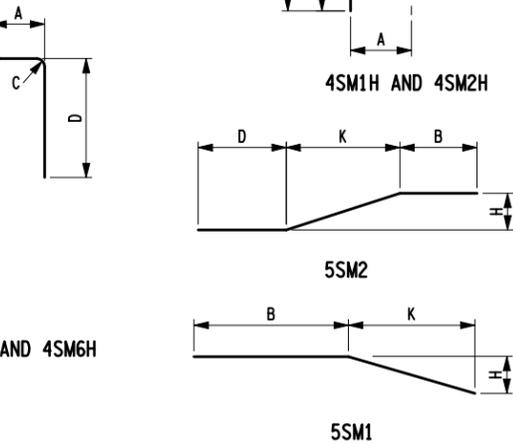
\* SEE DETAIL OF SM4 BAR. BARS ARE TO BE EPOXY COATED



TYPICAL BACKUP POST LAYOUT



TYPICAL CHAMFER DETAIL



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

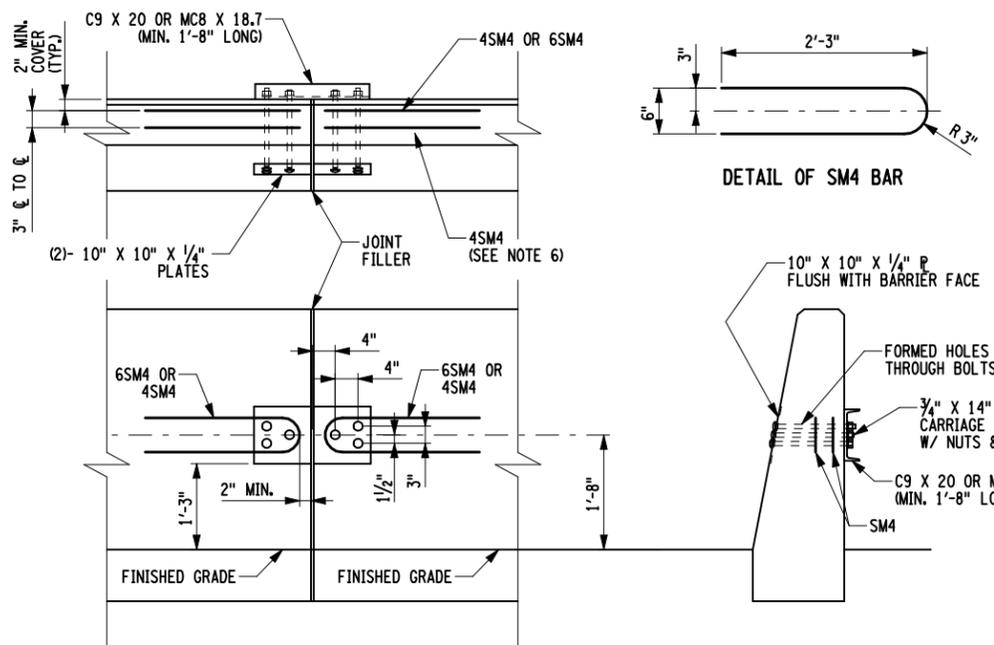
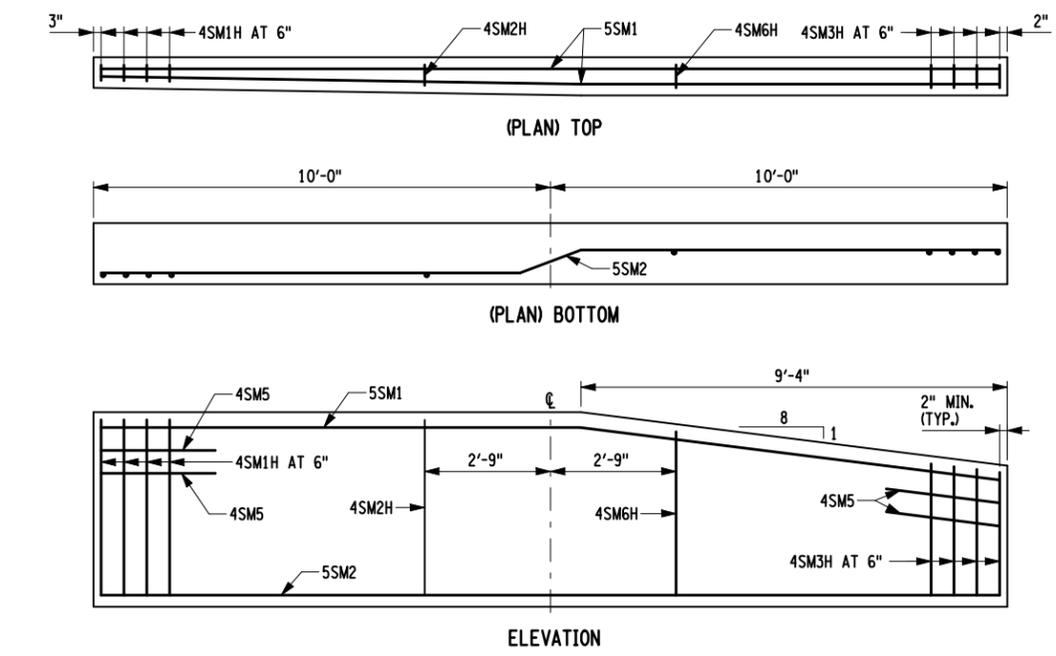
TRANSITION: BOX - SINGLE SLOPE  
(SHEET 3 OF 3)

APPROVED SEPTEMBER 19, 2008 ISSUED UNDER EB 08-036

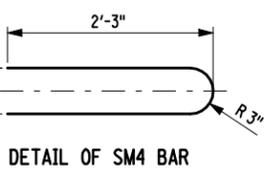
S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

EFFECTIVE DATE: 01/08/09

606-22

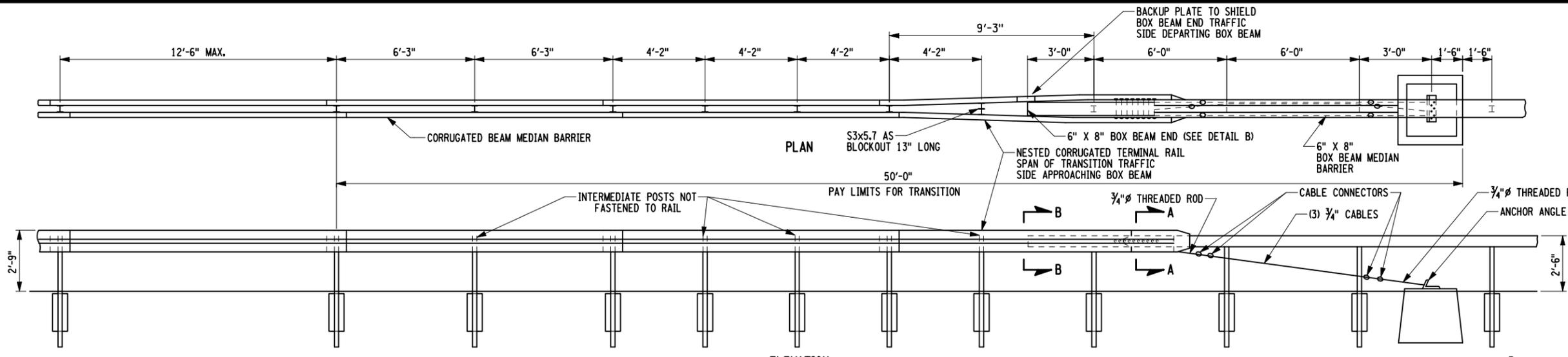


CONTINUITY CONNECTION FOR HALF SECTION SINGLE SLOPE BARRIER (SEE NOTE 4)

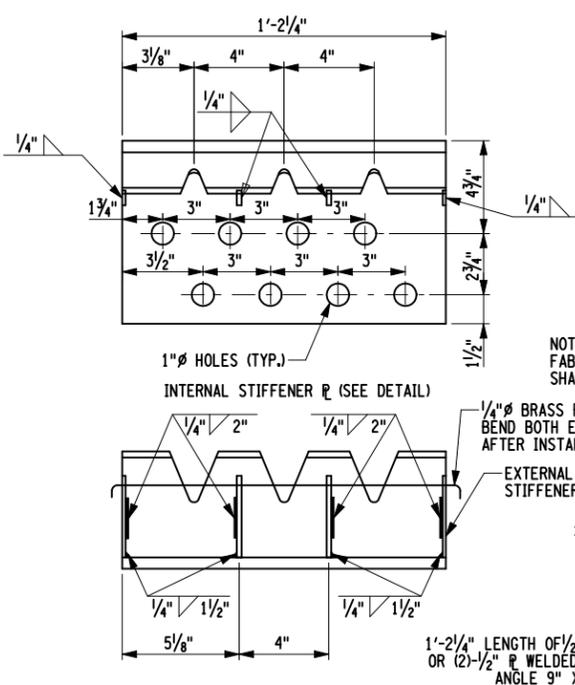


DETAIL OF SM4 BAR

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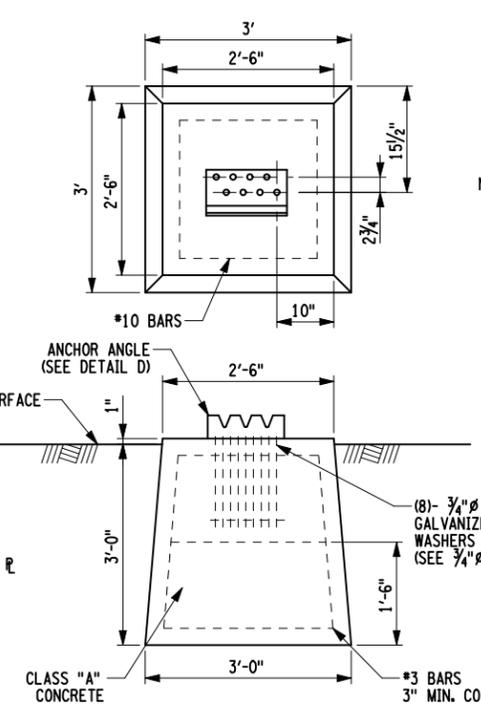


NOTE: FOR POST DETAILS, SEE THE CURRENT STANDARD SHEETS FOR MEDIAN BARRIERS ALL WORK WITHIN THE PAY LIMITS FOR TRANSITION WILL BE PAID FOR UNDER THE MEDIAN BARRIER TRANSITION ITEM.

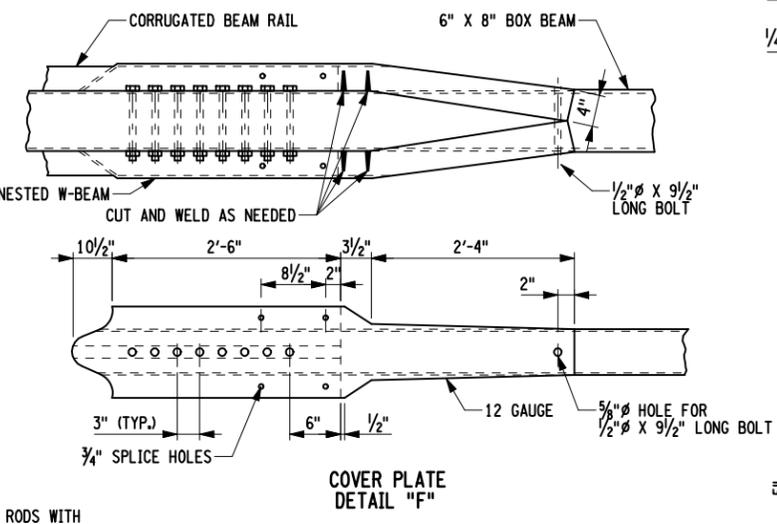


NOTE: ALTERNATE METHODS OF FABRICATING ANCHOR ANGLES SHALL BE SUBMITTED FOR APPROVAL

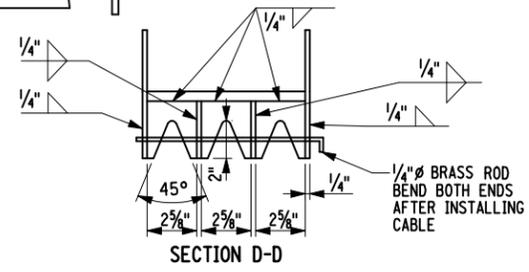
DETAIL "D"



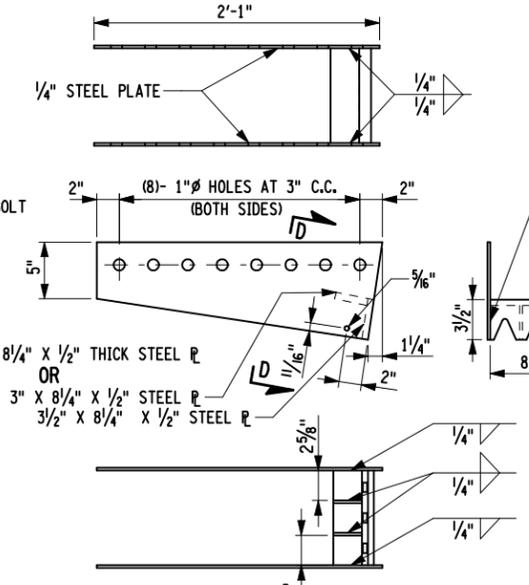
DETAIL "E"



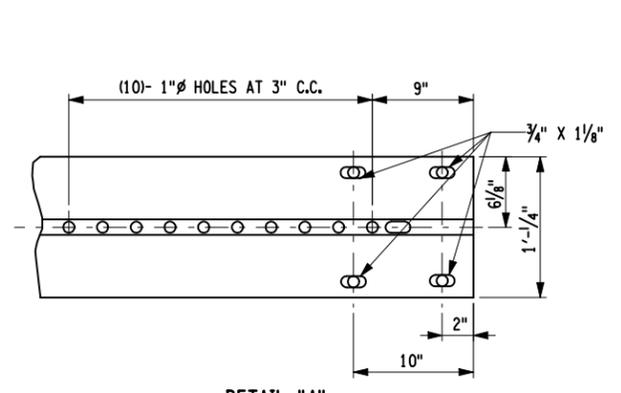
COVER PLATE DETAIL "F"



SECTION D-D

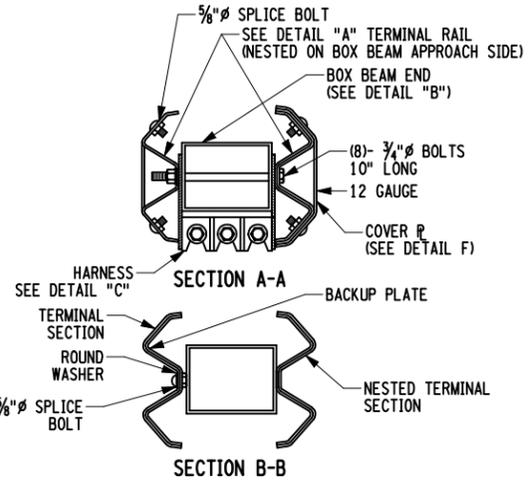


DETAIL "C"



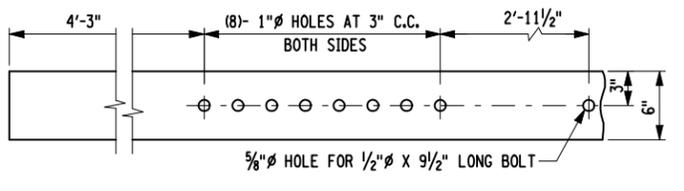
DETAIL "A"

NOTE: SEE TYPICAL TERMINAL RAIL DETAIL ON THE CURRENT STANDARD SHEET FOR CORRUGATED BEAM GUIDE RAIL

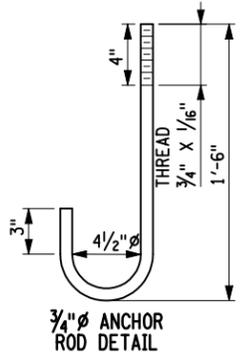


SECTION A-A

SECTION B-B



DETAIL "B"

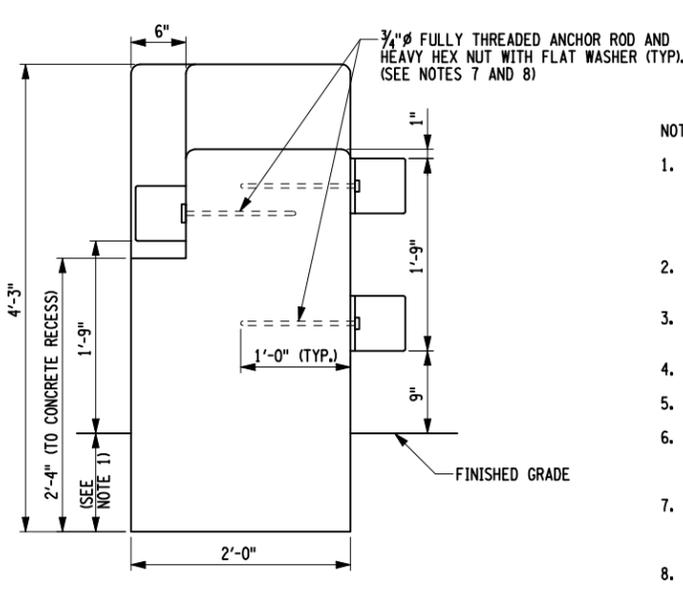
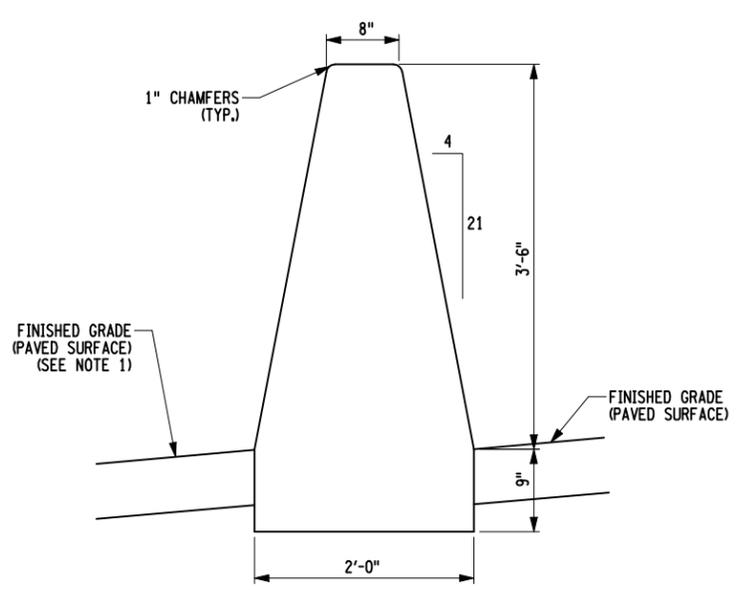
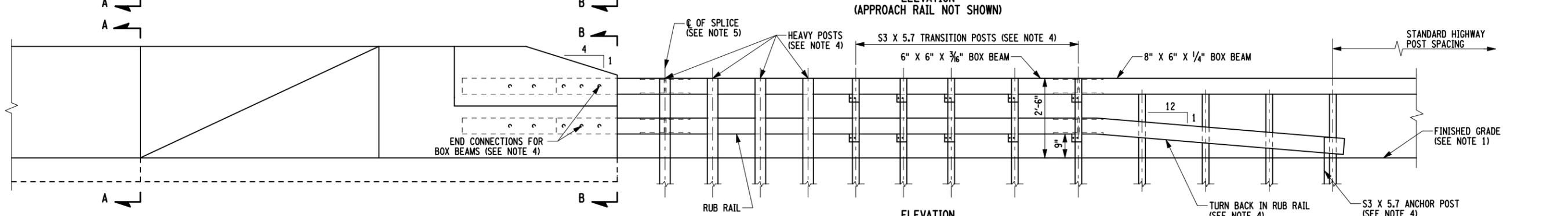
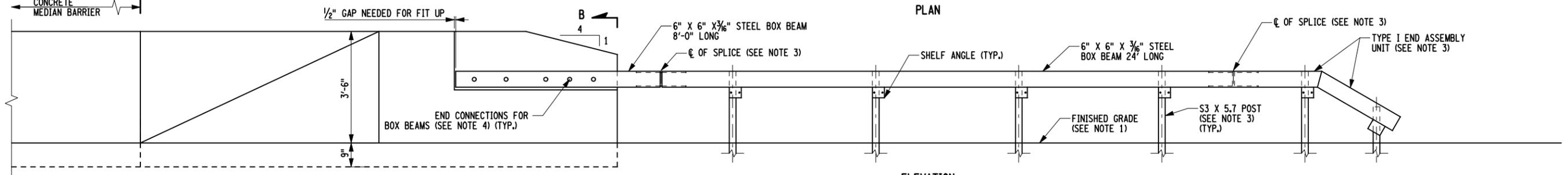
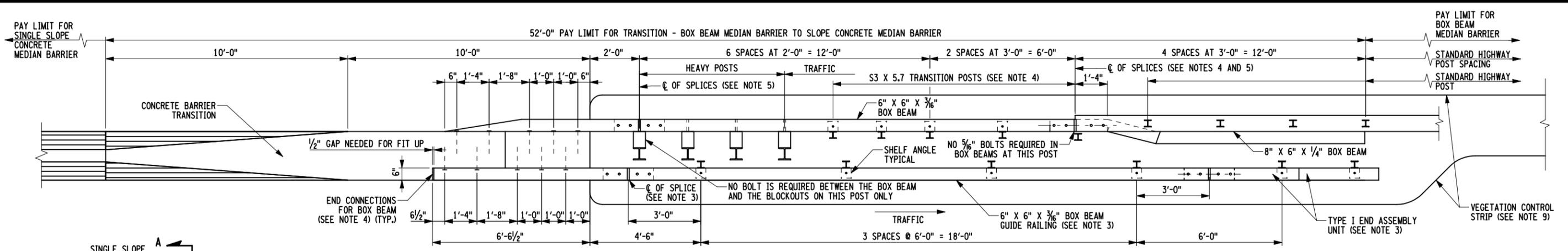


3/4\"/>

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STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
TRANSITION: BOX MEDIAN - CORRUGATED MEDIAN	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-24

EFFECTIVE DATE: 01/08/09

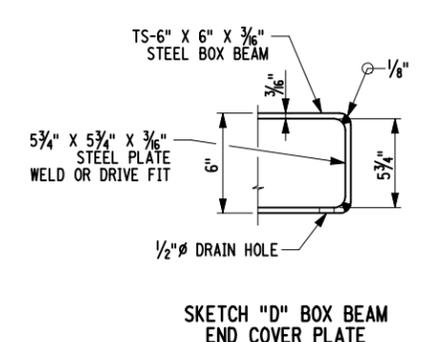
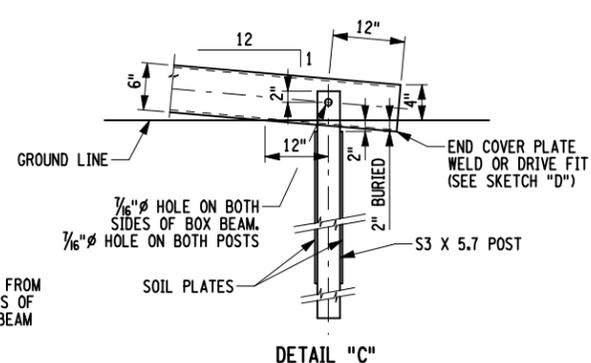
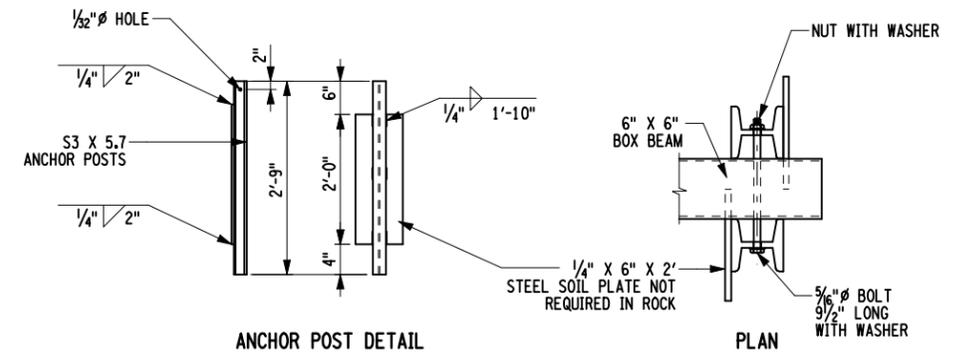
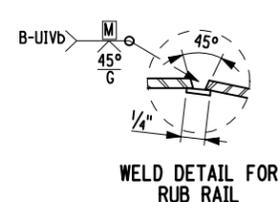
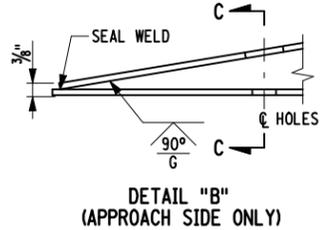
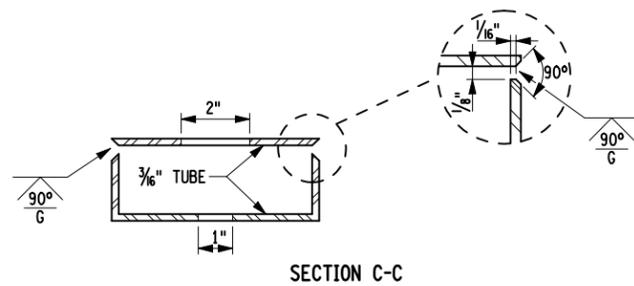
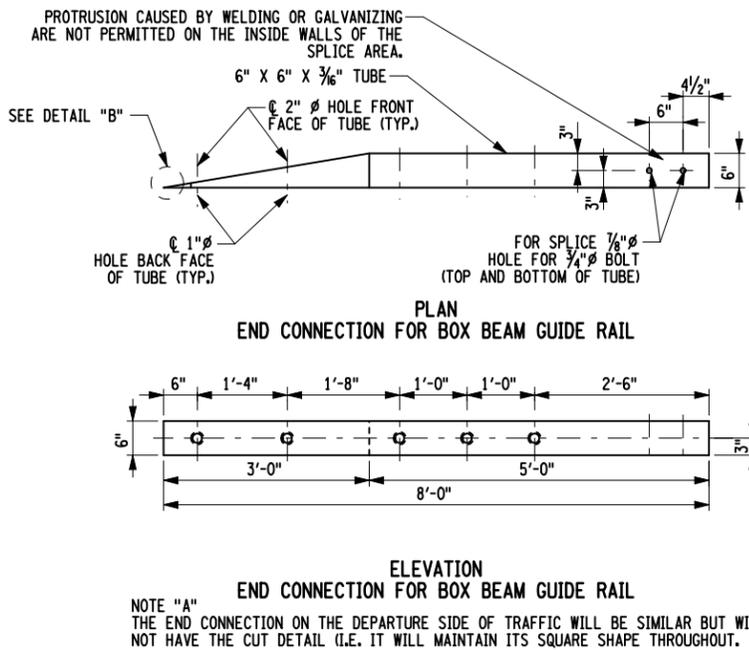
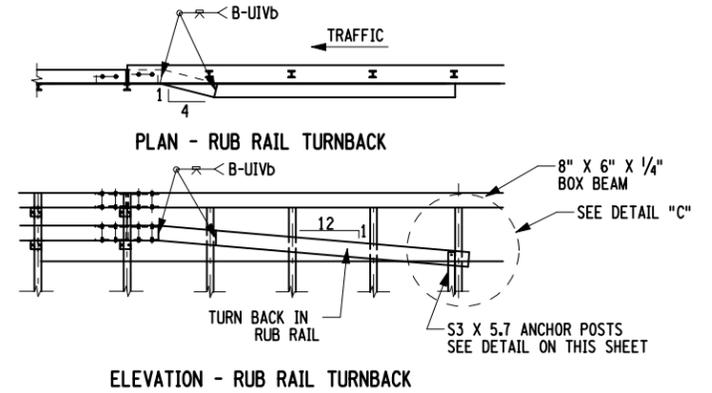
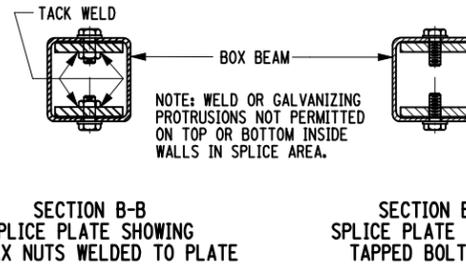
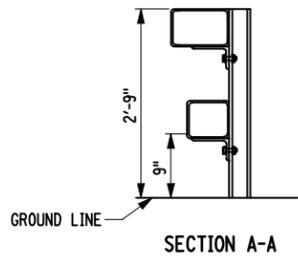
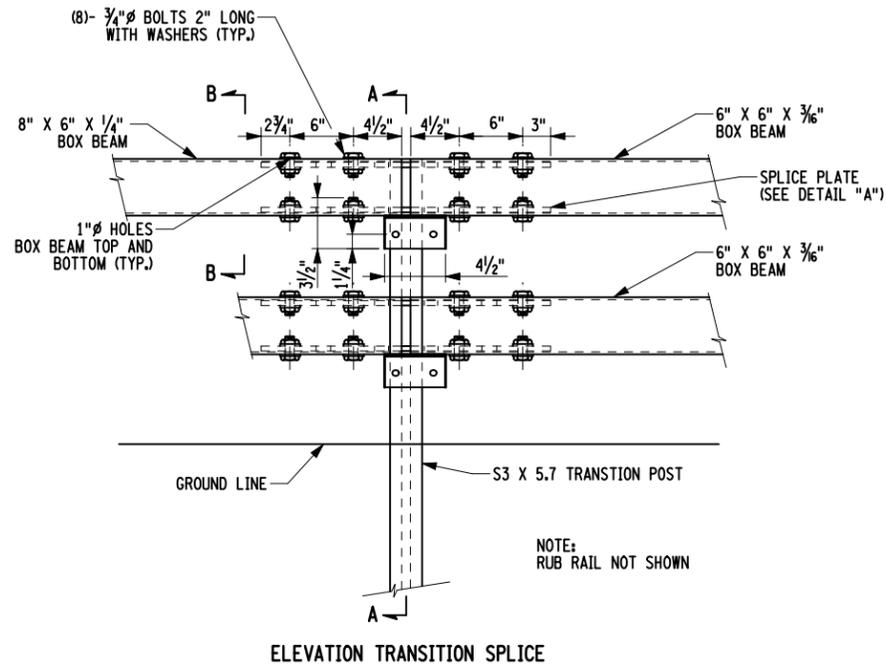
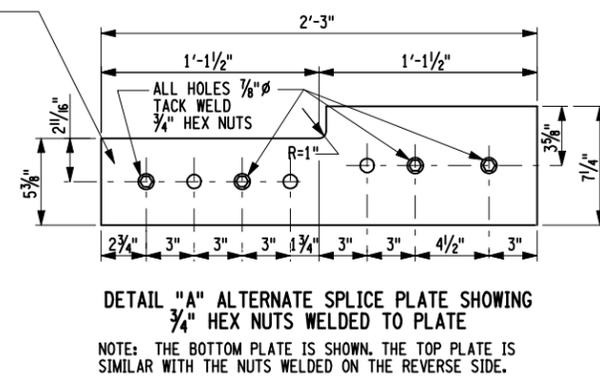
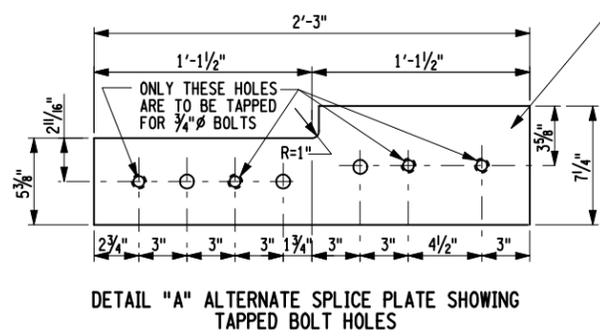
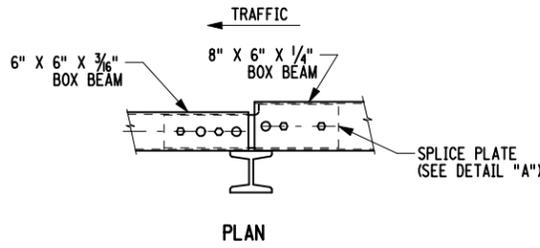


- NOTES:
1. THE DIMENSIONS SHOWN ARE FROM TOP OF FINISHED GRADE TO BOTTOM OF RAIL. IN THE TRANSITION AREA GRADES MUST MATCH FROM SIDE TO SIDE. ELSEWHERE THE FINISHED GRADE CAN DIFFER BY UP TO 10" FROM ONE SIDE OF THE CONCRETE BARRIER TO THE OTHER.
  2. ALL POSTS, RAIL AND HARDWARE INCLUDED ON THE DEPARTURE SIDE ARE TO BE INCLUDED IN THE PRICE BID FOR THE TRANSITION ITEM.
  3. DETAILS AND NOTES FOR THE BOX BEAM GUIDE RAIL AND TYPE I END ASSEMBLY UNIT (INCLUDING SPLICES) CAN BE FOUND ON THE BOX BEAM GUIDE RAIL STANDARD SHEET.
  4. FOR DETAILS SEE SHEET 3 OF 3.
  5. SEE SPLICE DETAILS ON THE BOX BEAM GUIDE RAIL STANDARD SHEETS.
  6. FOR MATERIAL REQUIREMENTS AND CONSTRUCTION DETAILS FOR RAILING IN THE TRANSITION ZONE. SEE SPECIFICATIONS FOR GUIDE RAILING/BOX BEAM MEDIAN BARRIER IN SECTION 606.
  7. DRILLING & GROUTING OF THREADED ANCHOR RODS IS TO BE INCLUDED IN THE PRICE BID FOR THE TRANSITION ITEM. SEE SPECIFICATIONS FOR DRILLING AND GROUTING IN §586 OF THE N.Y.S. STANDARD SPECIFICATIONS.
  8. MINIMUM EMBEDMENT OF ANCHOR RODS SHALL BE 1' AND A MINIMUM EDGE DISTANCE OF 3" SHALL BE MAINTAINED.
  9. THE VEGETATION CONTROL STRIP, WHEN SPECIFIED, SHOULD BE A MINIMUM OF 3" THICK. IF THERE IS AN ADJOINING STABILIZED SHOULDER, THE MATERIAL AND THICKNESS SHOULD MATCH THAT IN THE ADJOINING STABILIZED SHOULDER ITEM, PAYMENT SHALL BE MADE UNDER SEPARATE ITEMS.

 <b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>TRANSITION: BOX MEDIAN - SINGLE SLOPE MEDIAN (SHEET 1 OF 3)</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-25

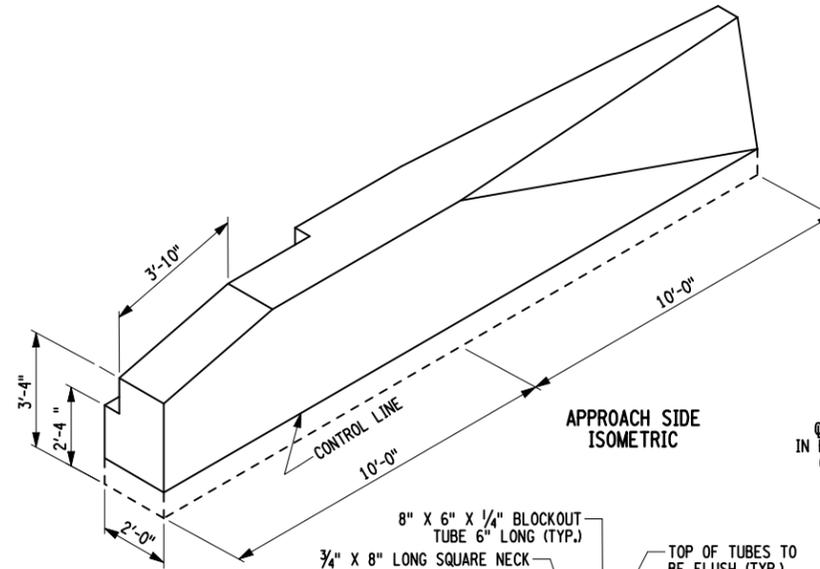
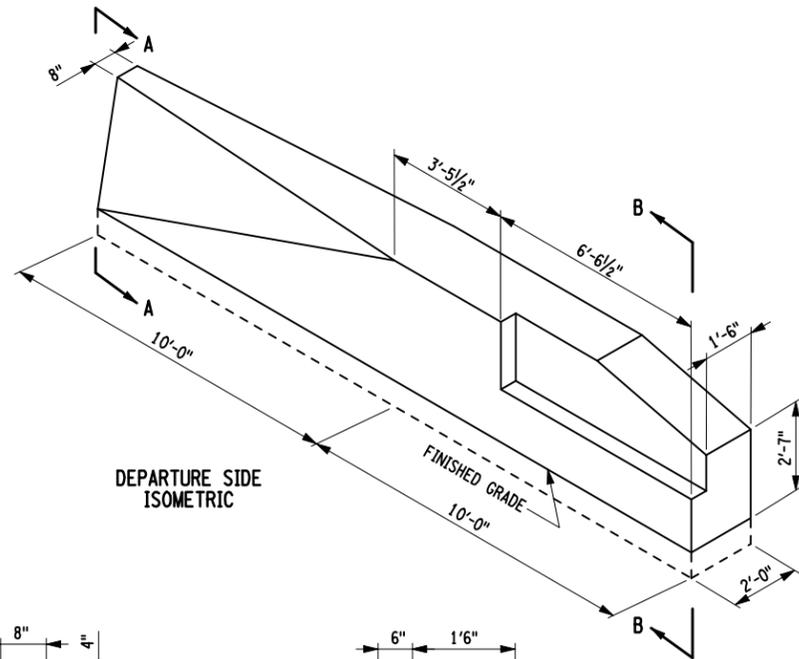
EFFECTIVE DATE: 01/08/09

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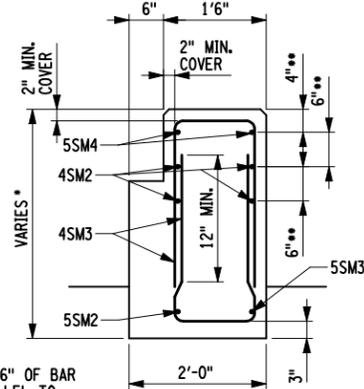
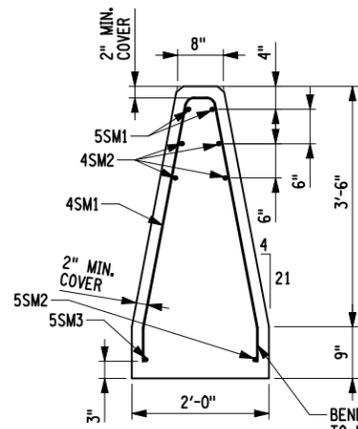


 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>TRANSITION: BOX MEDIAN - SINGLE SLOPE MEDIAN (SHEET 2 OF 3)</p>	
<p>APPROVED SEPTEMBER 19, 2008</p> <p>/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)</p>	<p>ISSUED UNDER EB 08-036</p> <p>606-25</p>
<p>EFFECTIVE DATE: 01/08/09</p>	

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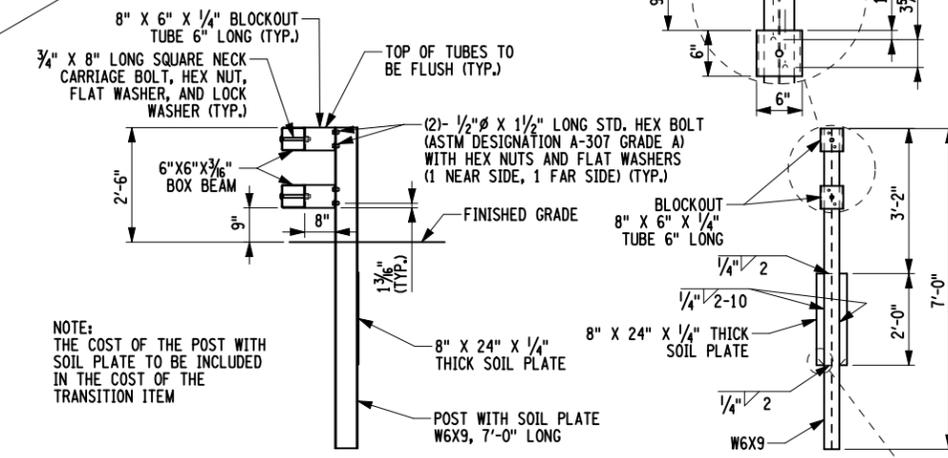
- NOTES:
1. SURFACE SHALL BE SMOOTH.
  2. MATERIALS SHALL CONFORM TO §606-2.14. TRANSITIONS CONSTRUCTED OF, OR WITH CONCRETE.
  3. CONSTRUCTION SHALL CONFORM TO §606-3.19. TRANSITIONS CONSTRUCTED OF, OR WITH CONCRETE.
  4. UNLESS INDICATED OTHERWISE, EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH §206-3.01. GRANULAR BACKFILL SHALL CONFORM WITH §304 AND SHOULD MATCH THE SUBBASE COURSE TYPE USED ON THE ADJACENT ROADWAY.
  5. THE BEND MAY BE ELIMINATED PROVIDED 2" MIN. COVER IS MAINTAINED.



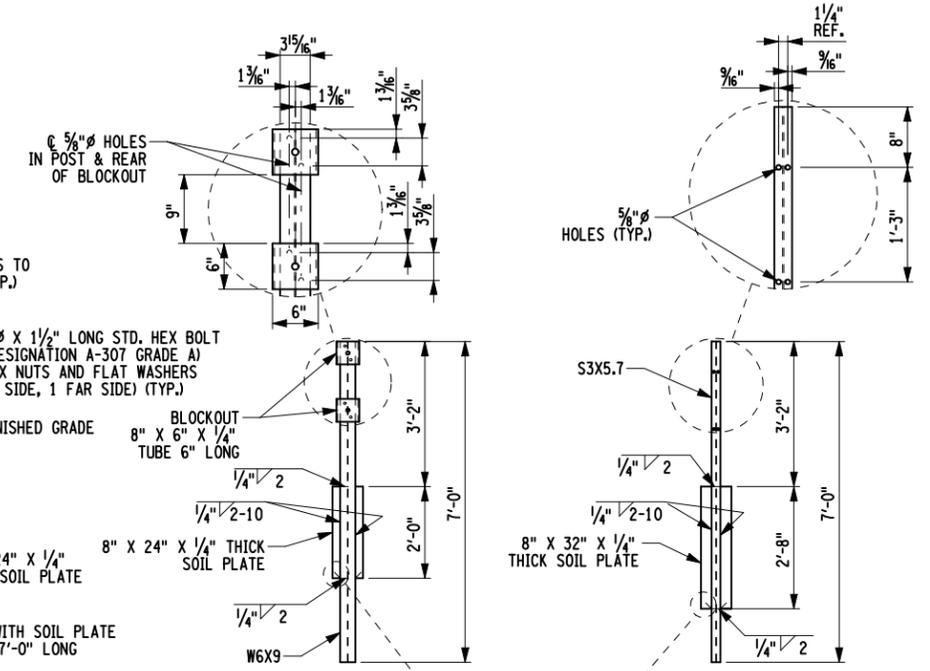
- NOTE:
- AT THE BARRIER END, THE TOP WILL BE LOCATED 1" ABOVE THE TOP OF THE RAIL TUBE ON THE APPROACH SIDE
  - BARS CAN BE ADJUSTED VERTICALLY TO AVOID BEING HIT BY THE DRILLED HOLES FOR ANCHOR BOLTS

SECTION A-A

SECTION B-B



HEAVY POST ELEVATION

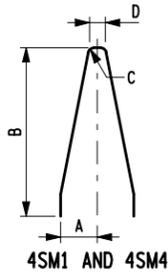


HEAVY POST DETAIL

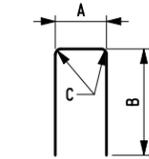
- TRANSITION POST DETAIL
- FOR CONNECTION OF RAIL TO POST SEE THE BOX BEAM GUIDE RAIL STANDARD SHEET

BAR LIST											
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1	4	4	VARIES	STIRRUP	10"	3'-10"	1 1/2"	4 3/8" TO 6 3/4"	-	-	AT CONCRETE BARRIER END
4SM2	4	8	2'-6"	STRAIGHT	-	-	-	-	-	-	4 AT EACH END OF BARRIER
4SM3	4	8	5'-6"	STIRRUP	1'-2"	2'-2"	1 1/2"	-	-	-	AT BOX BEAM END
4SM4	4	1	8'-11"	STIRRUP	10"	3'-10"	1 1/2"	1'-3"	-	-	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM5	4	1	9'-4"	STIRRUP	1'-8"	3'-10"	1 1/2"	-	-	-	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
5SM1	5	2	13'-2"	STRINGER	-	9'-10"	-	-	8"	3'- 3 1/2"	LONGITUDINAL 2 IN TOP
5SM2	5	1	19'-9"	STRINGER	-	1'-10"	-	16'-4"	6"	1'-6"	LONGITUDINAL 1 IN BOTTOM
5SM3	5	1	19'-8"	STRAIGHT	-	-	-	-	-	-	LONGITUDINAL 1 IN BOTTOM
5SM4	5	2	8'-9"	STRINGER	-	4'-11 1/2"	-	-	11"	3'-8"	LONGITUDINAL 2 IN TOP

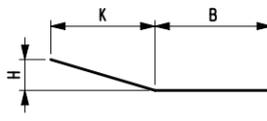
NOTE: BARS ARE TO BE EPOXY COATED



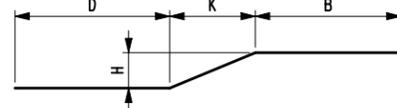
4SM1 AND 4SM4



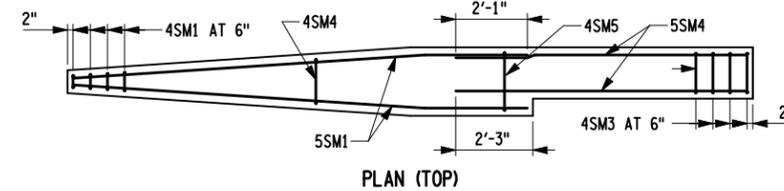
4SM3 AND 4SM5



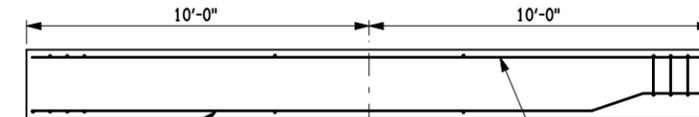
5SM1 AND 5SM4



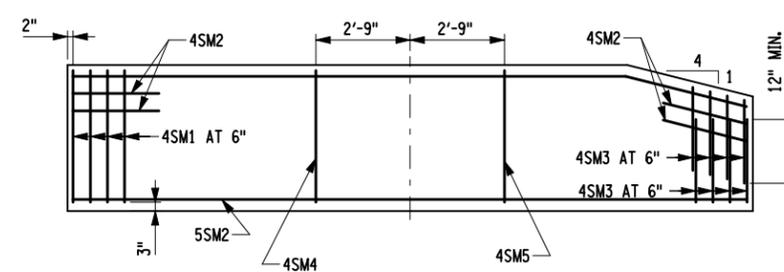
5SM2



PLAN (TOP)



PLAN (BOTTOM)



ELEVATION

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

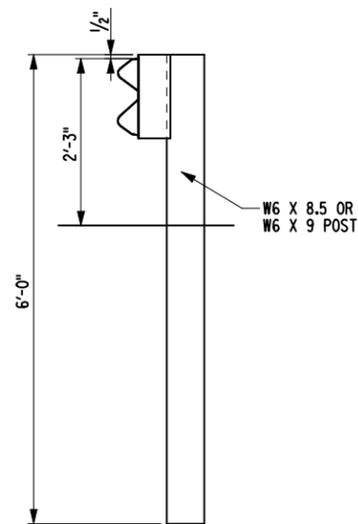
TRANSITION:  
BOX MEDIAN - SINGLE SLOPE MEDIAN  
(SHEET 3 OF 3)

APPROVED SEPTEMBER 19, 2008 ISSUED UNDER EB 08-036

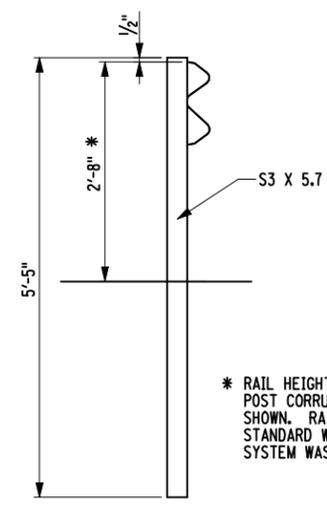
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DEPUTY CHIEF ENGINEER  
(DESIGN)

EFFECTIVE DATE: 01/08/09

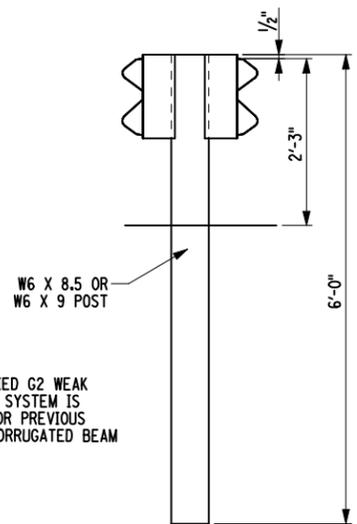
606-25



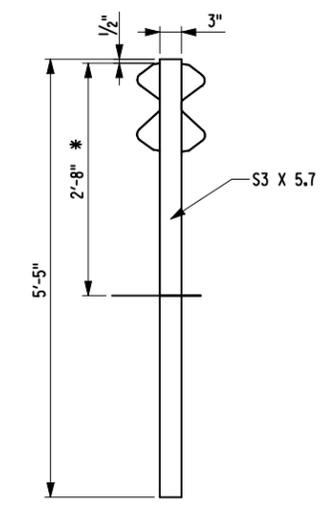
SECTION A-A



SECTION B-B



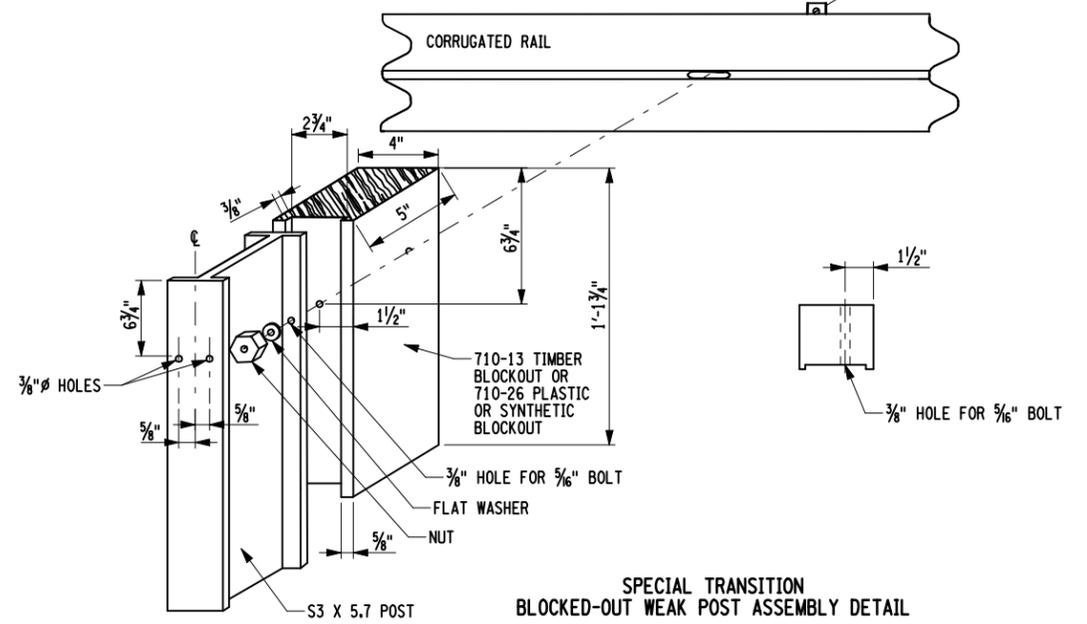
SECTION C-C



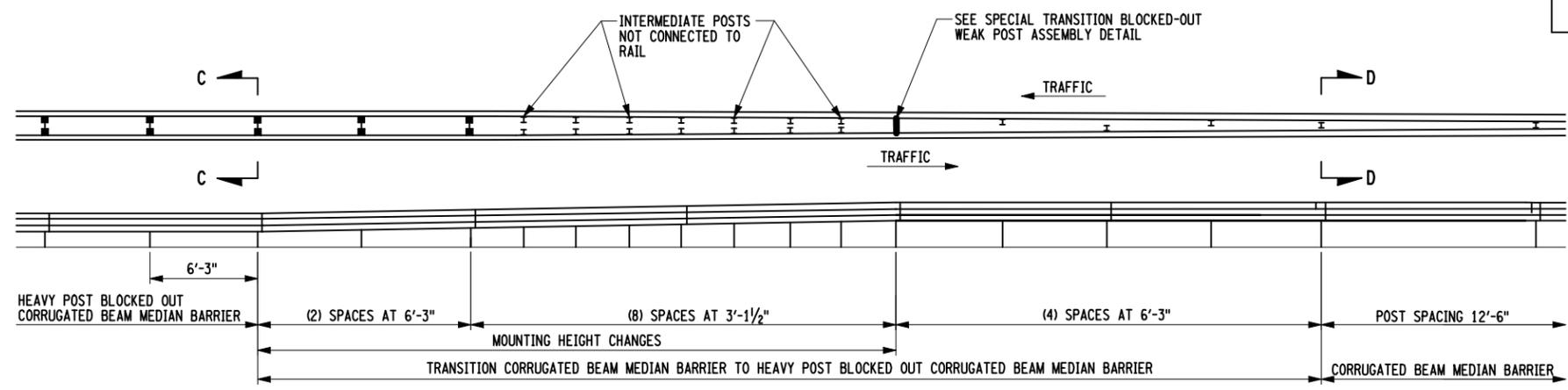
SECTION D-D

\* RAIL HEIGHT FOR MODIFIED G2 WEAK POST CORRUGATED BEAM SYSTEM IS SHOWN. RAIL HEIGHT FOR PREVIOUS STANDARD WEAK POST CORRUGATED BEAM SYSTEM WAS 2'-6".

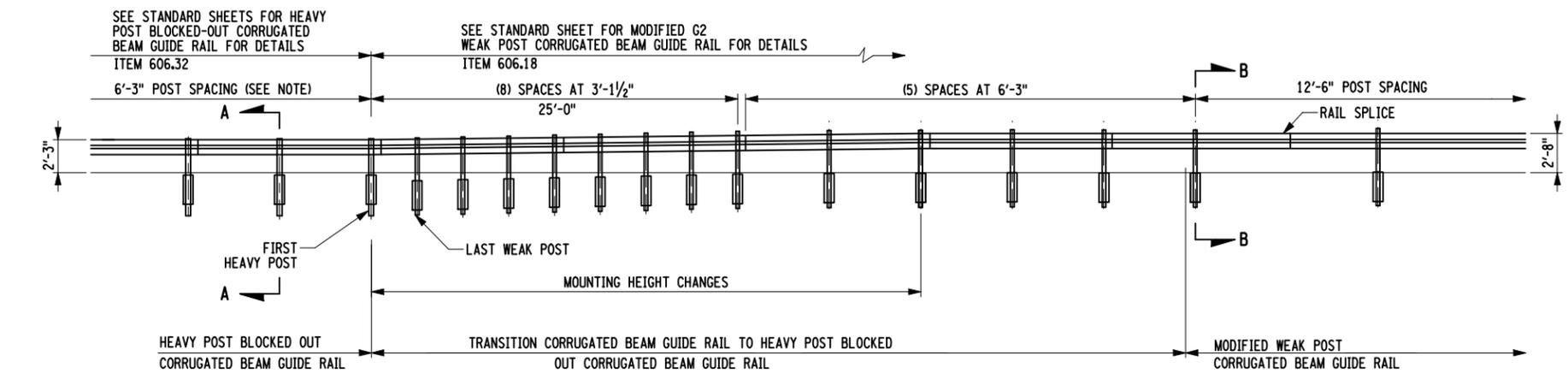
GUIDE RAIL BOLT, SQUARE WASHER ASTM A 307 GRADE A NUT ASTM A563, WASHER ASTM F844, BOLT 3/8" Ø 7" LONG, THREADED OVER 4" MIN. WITH NUT AND FLAT WASHER SHALL CONFORM TO ANSI 818.22 M TYPE A PLAIN.



SPECIAL TRANSITION BLOCKED-OUT WEAK POST ASSEMBLY DETAIL



MEDIAN BARRIER TRANSITION  
CORRUGATED BEAM MEDIAN BARRIER TO HEAVY POST BLOCKED-OUT  
CORRUGATED BEAM MEDIAN BARRIER



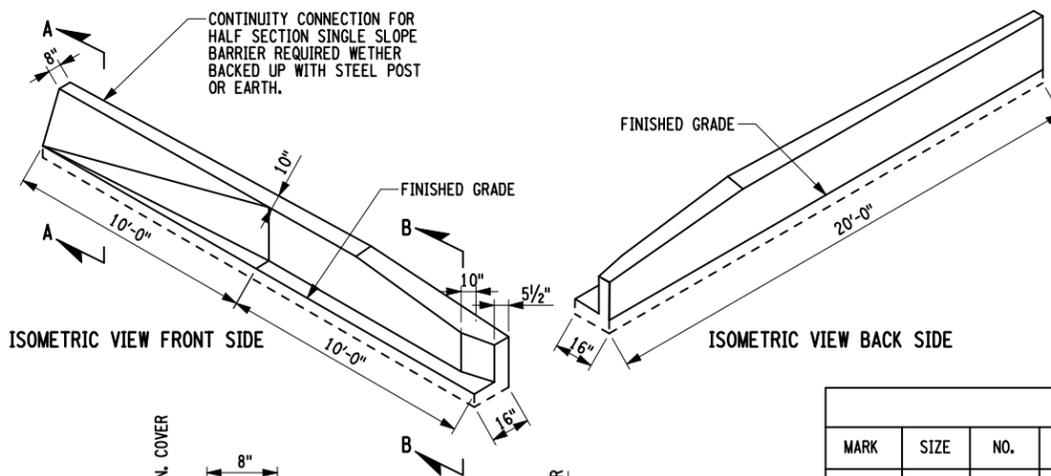
GUIDE RAIL TRANSITION  
CORRUGATED BEAM GUIDE RAILING TO HEAVY POST BLOCKED-OUT  
CORRUGATED BEAM GUIDE RAIL

- LEGEND:
- BLOCKED HEAVY POST
  - ⊥ WEAK POST (S3 X 5.7)
  - ▬ SPECIAL TRANSITION BLOCK-OUT (WEAK POST)

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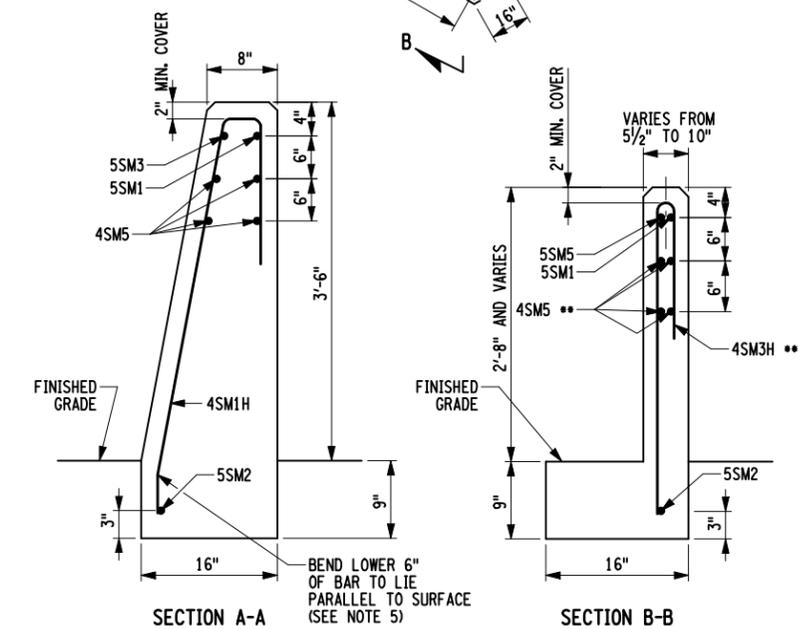
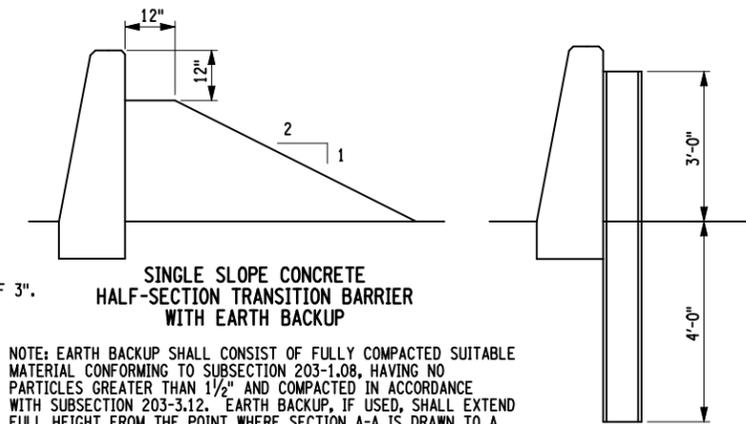
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
	U.S. CUSTOMARY STANDARD SHEET
<b>TRANSITION: W-BEAM (MOD.) - HPBO GUIDE RAIL AND MEDIAN BARRIER</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-27

EFFECTIVE DATE: 01/08/09



GENERAL NOTES:

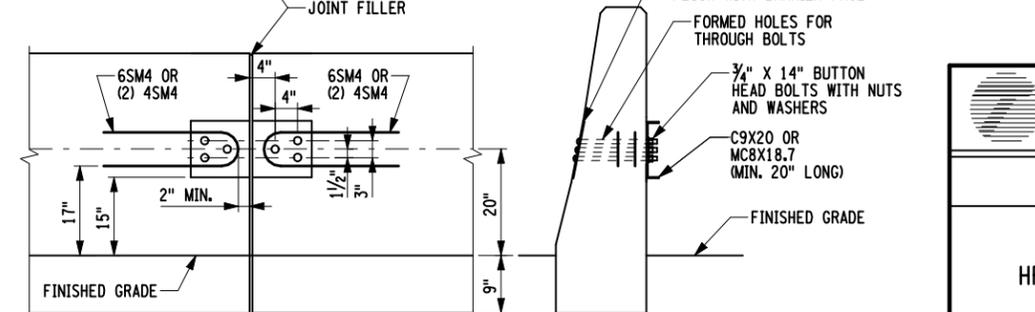
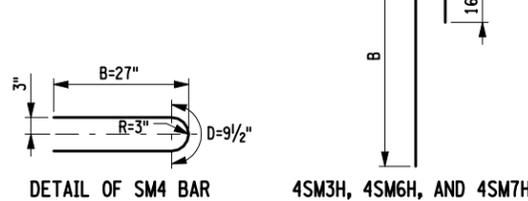
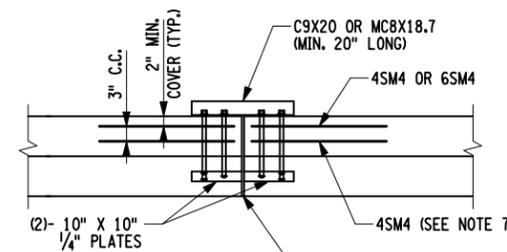
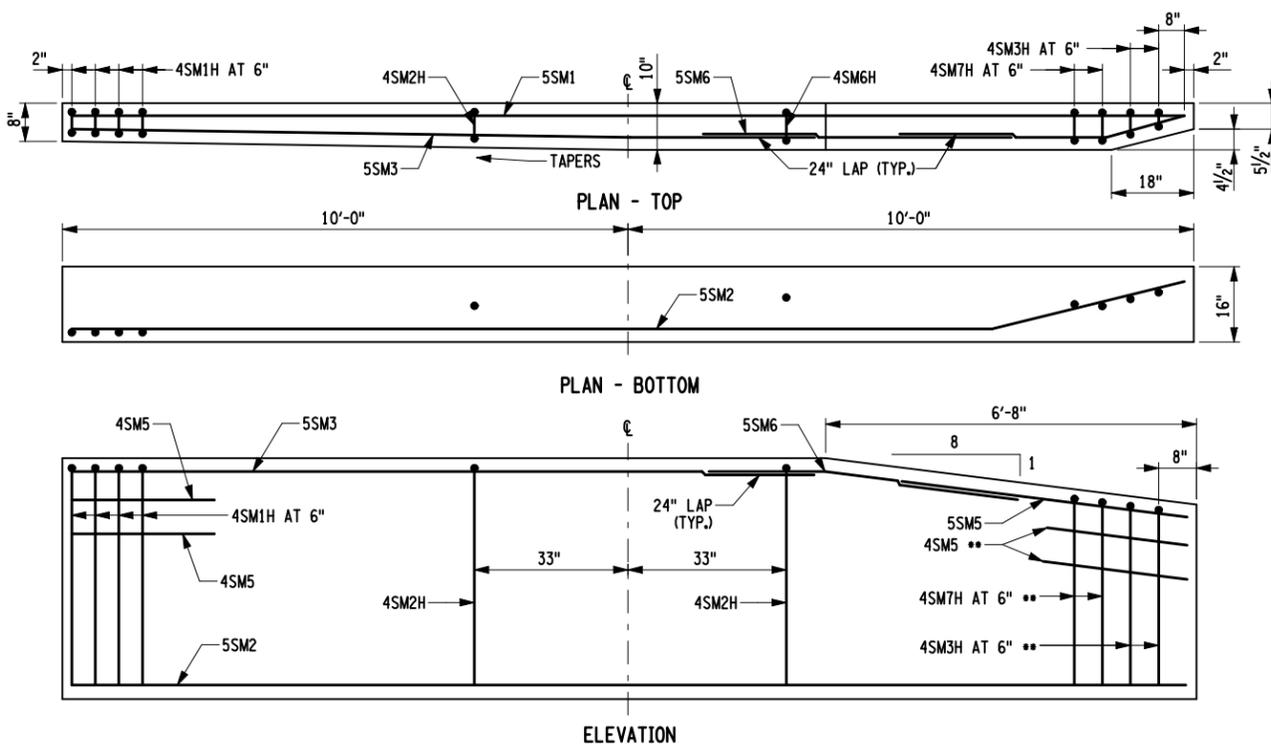
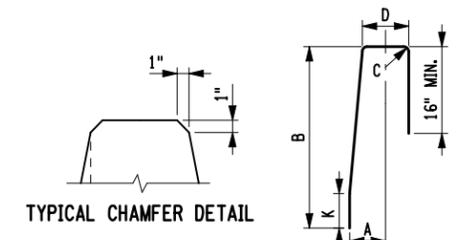
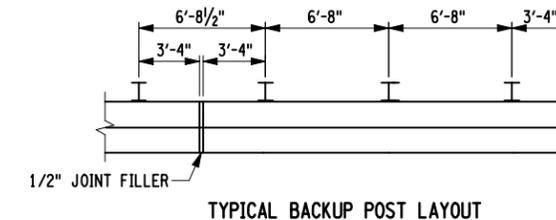
1. VERTICAL AND SLOPING CONCRETE SURFACE SHALL BE SMOOTH.
2. MATERIALS SHALL CONFORM TO SUBSECTION 606-2.14, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
3. CONSTRUCTION SHALL CONFORM TO SUBSECTION 606-3.19, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
4. UNLESS INDICATED OTHERWISE, EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 206-3.01. GRANULAR BACK FILL SHALL CONFORM WITH SECTION 304 AND SHALL MATCH SUBBASE COURSE TYPE USED ON THE ADJACENT ROADWAY.
5. THE BEND MAY BE ELIMINATED PROVIDED 2" MIN. COVER IS MAINTAINED.
6. CONTINUITY CONNECTION SHALL BE GALVANIZED.
7. IF THE 6SM4 BAR IS USED, NEITHER 4SM4 BAR NEED BE USED.
8. FOR RAILING LAYOUT AND DETAILS, SEE STANDARD SHEET TITLED "TRANSITION HPBO - SINGLE SLOPE HALF SECTION - SHEET 2 OF 3".
9. CONCRETE TRANSITION PIECE SHALL BE BACKED UP WITH EARTH OR BACK-UP POSTS FOR ITS ENTIRE LENGTH.



BAR LIST											
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1H	4	4	68"	STIRRUP	10"	46"	1 1/2"	4"	—	6"	AT CONCRETE BARRIER END
4SM2H	4	1	68"	STIRRUP	5"	46"	1 1/2"	5 1/2"	—	3 1/2"	AT 33" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM3H	4	2	VARIES FROM 56" TO 58"	STIRRUP	VARIES FROM 3 1/2" TO 5"	VARIES FROM 37" TO 38"	1 1/2"	—	—	—	AT CORRUGATED RAIL END
4SM4	4	4	57 1/2"	STIRRUP	—	27"	3"	9 1/2"	—	—	2 AT EXPANSION JOINT SIDE
4SM5	4	8	30"	STRAIGHT	—	—	—	—	—	—	4 AT EACH END
4SM6H	4	1	68"	STIRRUP	6"	46"	1 1/2"	—	—	—	AT 33" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM7H	4	2	VARIES FROM 60" TO 61"	STIRRUP	6"	VARIES FROM 38 1/2" TO 39"	1 1/2"	—	—	—	AT CORRUGATED RAIL END
5SM1	5	1	236 1/2"	STRINGER	—	158"	—	—	10"	78"	LONGITUDINAL 1 IN TOP
5SM2	5	1	237"	STRINGER	—	192"	—	—	11"	44"	LONGITUDINAL 1 IN BOTTOM
5SM3	5	1	157"	STRINGER	—	—	—	118"	1/2"	39"	LONGITUDINAL 1 IN TOP
5SM5	5	1	62"	STRINGER	—	—	—	44 1/2"	4"	17"	LONGITUDINAL 1 IN TOP
5SM6	5	1	68"	STRINGER	—	26"	—	—	5"	41"	LONGITUDINAL 1 IN TOP
6SM4	6	2	57 1/2"	STIRRUP	6"	27"	3"	9 1/2"	—	—	SEE DETAIL OF SM4 BAR

\*\* LOCATE 4SM5, 4SM3H AND 4SM7H BARS TO AVOID THE 1" Ø PVC OR GALVANIZED STEEL PIPE.

NOTE: ALL BARS ARE TO BE EPOXY COATED



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

TRANSITION:  
HPBO - SINGLE SLOPE HALF SECTION  
(SHEET 1 OF 3)

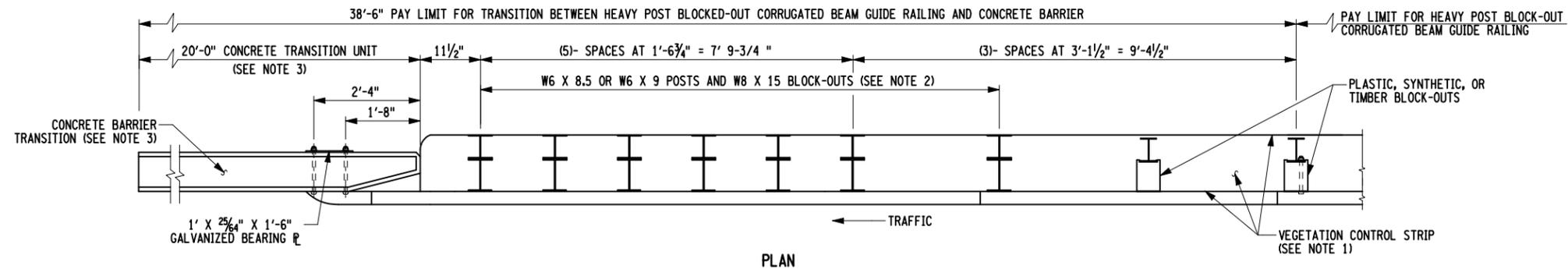
APPROVED SEPTEMBER 19, 2008 ISSUED UNDER EB 08-036

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

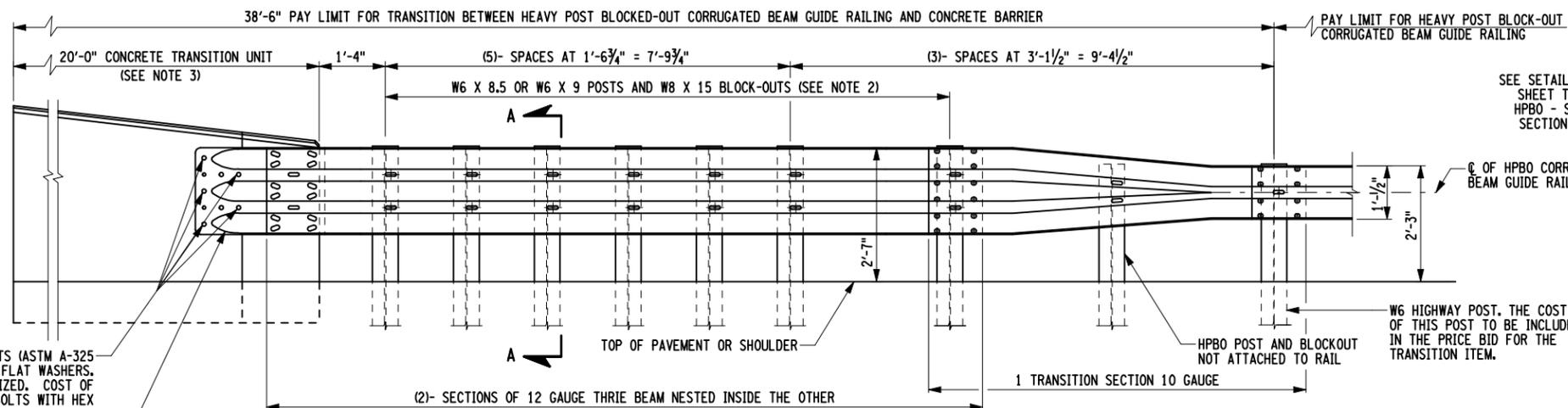
606-28

EFFECTIVE DATE: 01/08/09

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PLAN

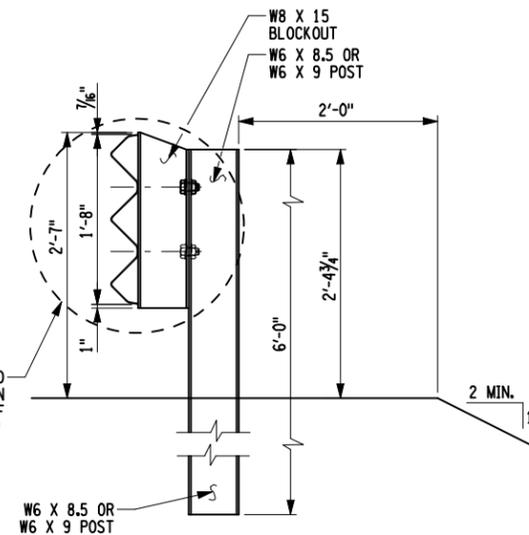


ELEVATION  
HPBO CORRUGATED BEAM GUIDE RAILING  
TRANSITION TO CONCRETE BARRIER

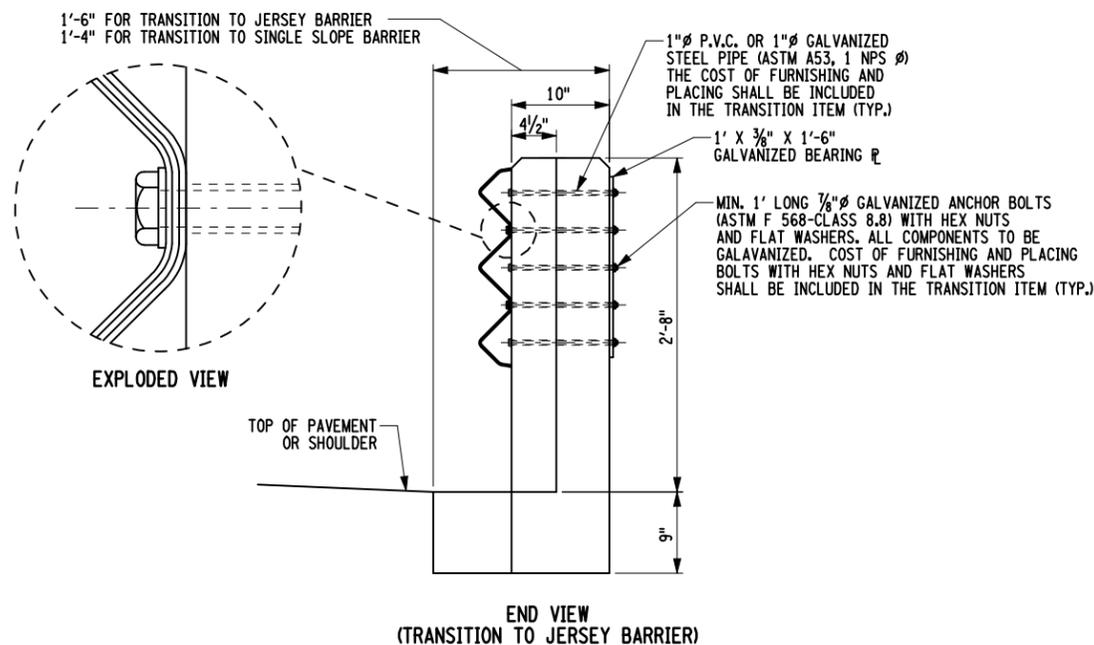
(5) - 7/8" GALVANIZED ANCHOR BOLTS (ASTM A-325 TYPE 1 OR 3) WITH HEX NUTS AND FLAT WASHERS. ALL COMPONENTS TO BE GALVANIZED. COST OF FURNISHING AND PLACING BOLTS WITH HEX NUTS AND FLAT WASHERS SHALL BE INCLUDED IN THE TRANSITION ITEM (TYP.)

THRIE BEAM TERMINAL CONNECTOR (10 GAUGE)

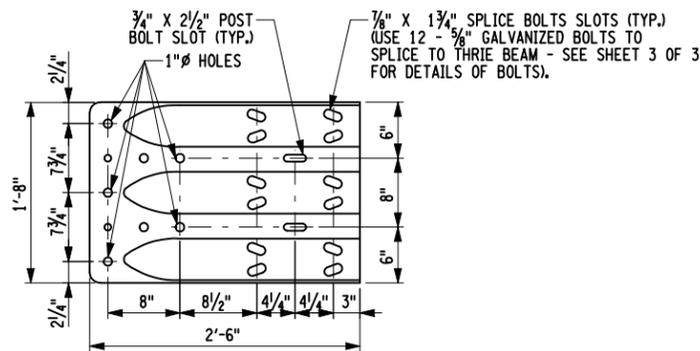
SEE DETAIL "B" ON STANDARD SHEET TITLED "TRANSITION HPBO - SINGLE SLOPE HALF SECTION - SHEET 3 OF 3"



SECTION A-A  
POST ELEVATION



END VIEW  
(TRANSITION TO JERSEY BARRIER)



THRIE BEAM TERMINAL  
CONNECTOR

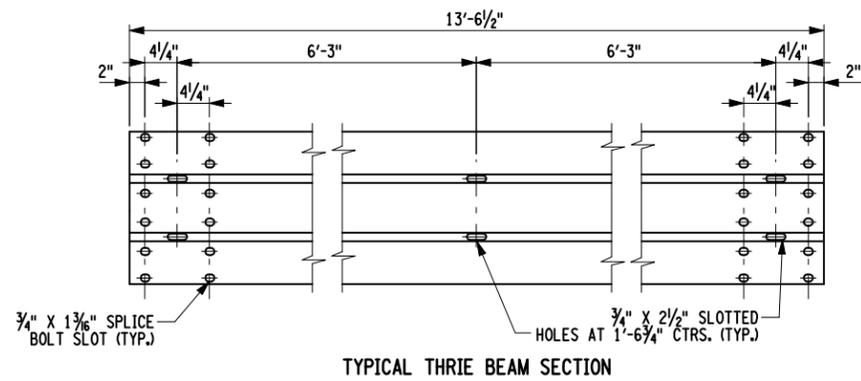
NOTES:

1. THE VEGETATION CONTROL STRIP, WHEN SPECIFIED, SHOULD BE A MINIMUM OF 3" THICK. THE MATERIAL AND THICKNESS OF EACH LIFT SHOULD MATCH THAT IN THE ADJOINING SHOULDER ITEM. PAYMENT SHALL BE MADE UNDER SEPARATE ITEMS.
2. FOR ADDITIONAL DETAILS, SEE STANDARD SHEET TITLED "TRANSITION HPBO - SINGLE SLOPE HALF SECTION - SHEET 3 OF 3".
3. THRIE BEAM TRANSITIONS TO SINGLE SLOPE BARRIER. SEE STANDARD SHEET TITLED "TRANSITION HPBO - SINGLE SLOPE HALF SECTION - SHEET 3 OF 3" FOR DETAILS.

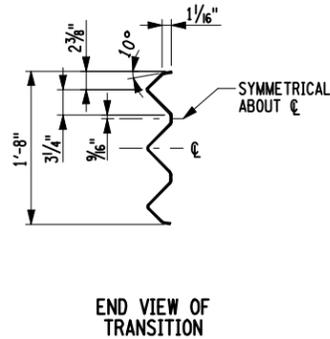
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STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
TRANSITION: HPBO - SINGLE SLOPE HALF SECTION (SHEET 2 OF 3)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-28

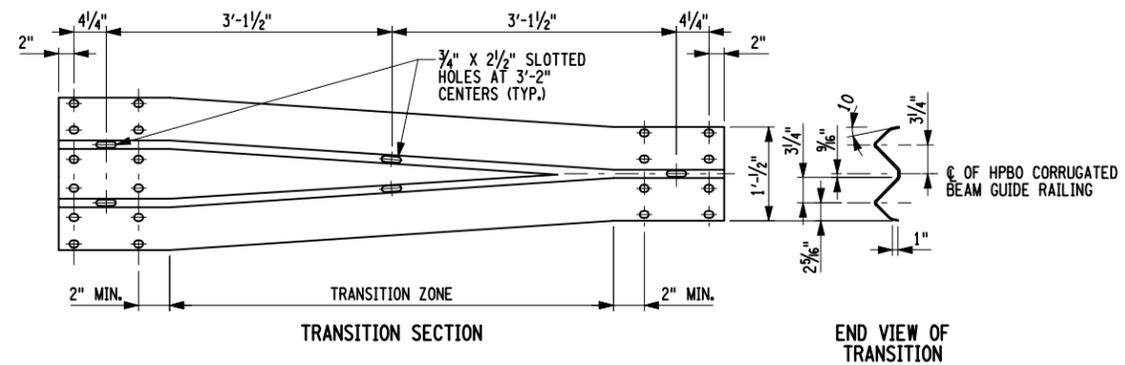
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TYPICAL THRIE BEAM SECTION

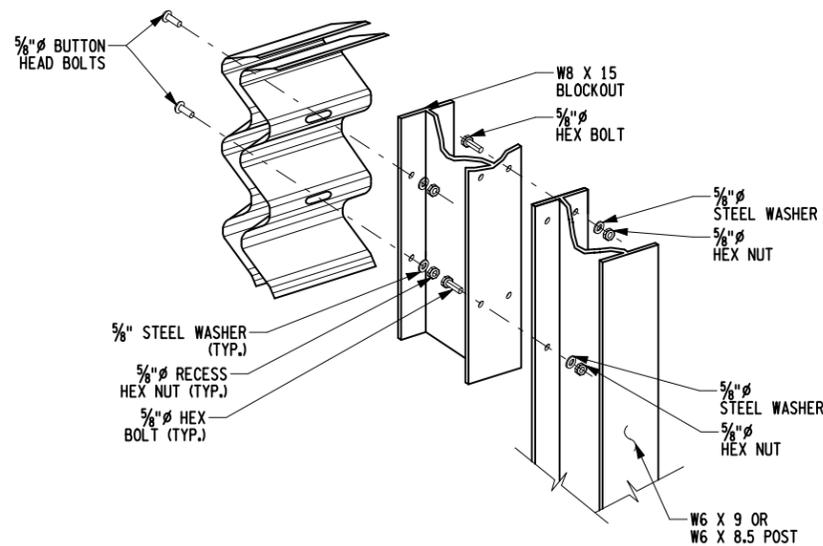


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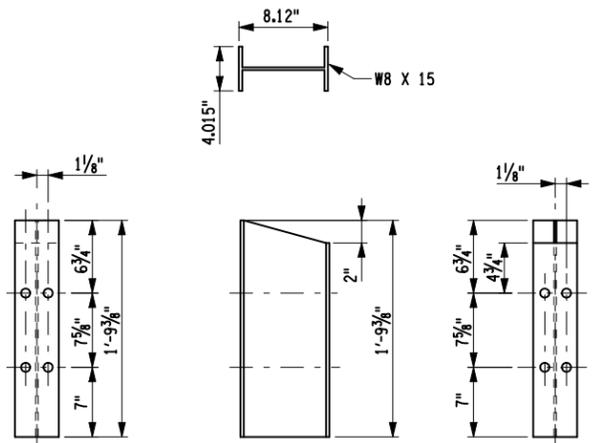


TRANSITION SECTION

END VIEW OF TRANSITION



THRIE BEAM ASSEMBLY

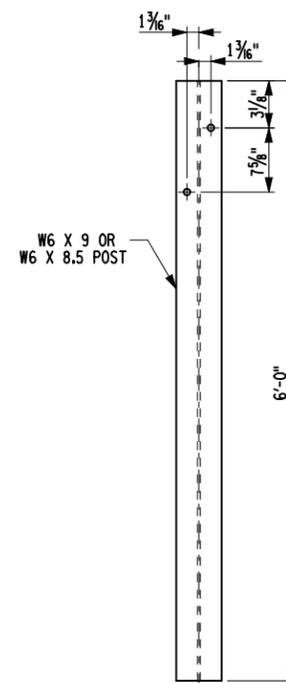


FRONT VIEW

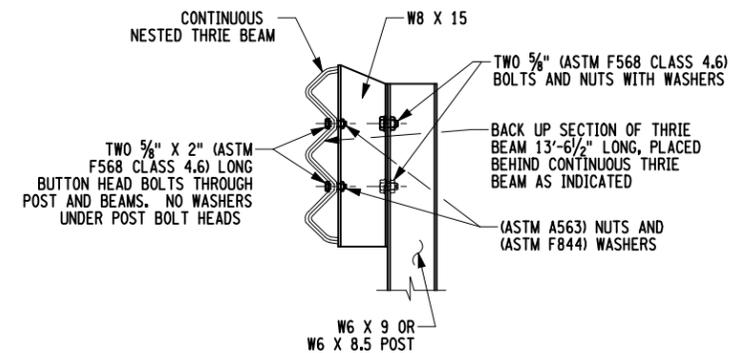
SIDE VIEW

REAR VIEW

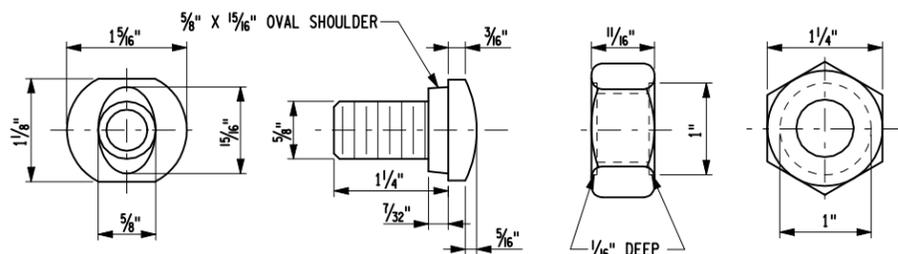
THRIE BEAM BLOCKOUTS DETAIL



POST DETAIL



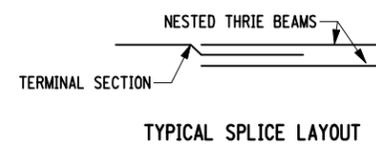
DETAIL "B"



SPlice BOLT  
ASTM F568 CLASS 4.6

DETAIL "A"  
BEAM SPLICE HARDWARE  
(EXCLUDING BLOCKOUT CONNECTIONS)

HEX NUT ASTM A563M  
GRADE A OR BETTER

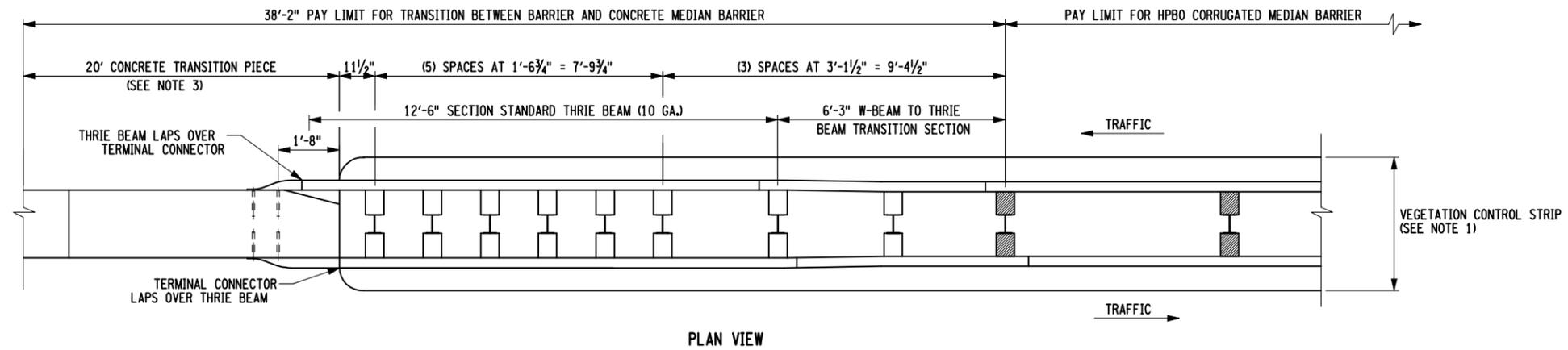


TYPICAL SPLICE LAYOUT

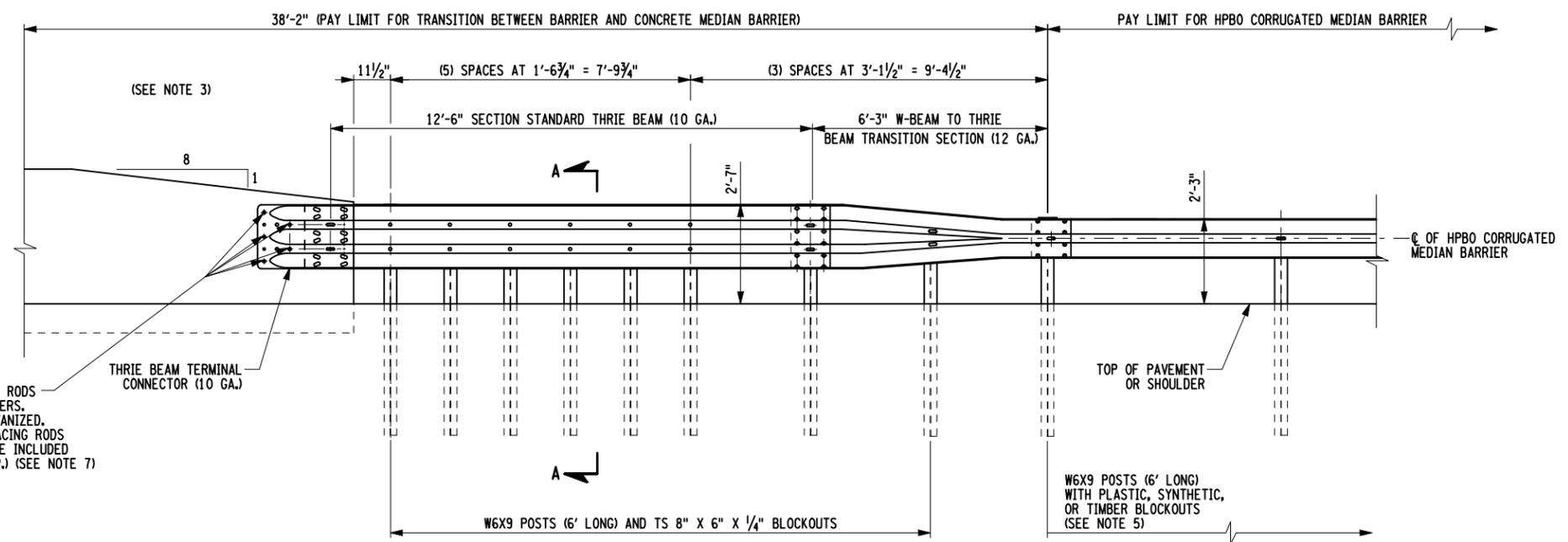
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
TRANSITION: HPBO - SINGLE SLOPE HALF SECTION (SHEET 3 OF 3)		
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025	
S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	606-28	

EFFECTIVE DATE: 01/07/10

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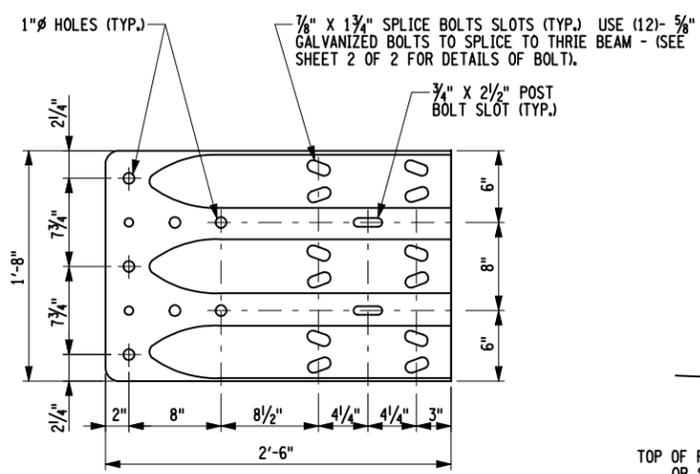


PLAN VIEW

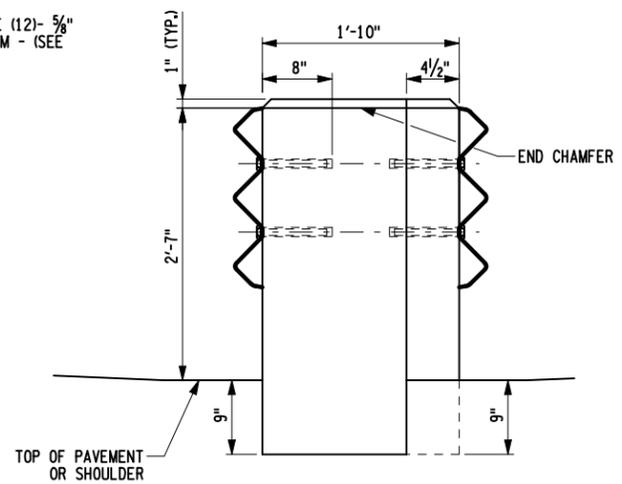


ELEVATION VIEW

(5) - 7/8" GALVANIZED ANCHOR RODS (ASTM A449) WITH FLAT WASHERS. ALL COMPONENTS TO BE GALVANIZED. COST OF FURNISHING AND PLACING RODS WITH FLAT WASHERS SHALL BE INCLUDED IN THE TRANSITION ITEM (TYP.) (SEE NOTE 7)



THRIE BEAM TERMINAL CONNECTOR



END VIEW (CONCRETE TRANSITION PIECE)

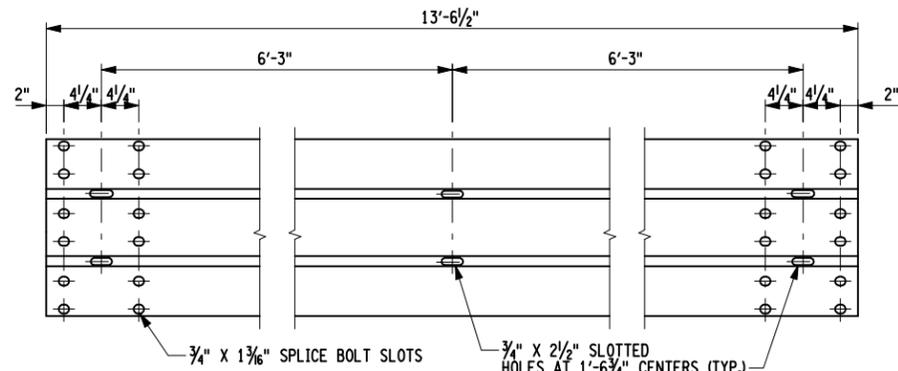
NOTES:

1. THE VEGETATION CONTROL STRIP, WHEN SPECIFIED, SHOULD BE A MINIMUM OF 3" THICK. THE MATERIAL AND THICKNESS OF EACH LIFT SHOULD MATCH THAT IN THE ADJOINING STABILIZED SHOULDER ITEM. PAYMENT SHALL BE MADE UNDER SEPARATE ITEMS.
2. FOR ADDITIONAL DETAILS, SEE SHEET 2 OF 2.
3. THE THRIE BEAM TRANSITIONS TO THE JERSEY MEDIAN BARRIER OR TO THE SINGLE SLOPE MEDIAN BARRIER. SEE EITHER, THE TRANSITION: CONCRETE WALL - SINGLE SLOPE MEDIAN, OR TRANSITION: CONCRETE WALL - JERSEY MEDIAN (MAINTENANCE SUPPORT) STANDARD SHEETS.
4. FOR SECTION A-A, SEE TRANSITION: HPBO MEDIAN - CONCRETE WALL STANDARD SHEET (SHEET 2 OF 2).
5. FOR DETAILS, SEE STANDARD SHEET TITLED HPBO CORRUGATED BEAM MEDIAN BARRIER.
6. FOR MATERIAL REQUIREMENTS AND CONSTRUCTION DETAILS FOR RAILING IN THE TRANSITION ZONE, SEE SPECIFICATIONS FOR GUIDE RAILING/BOX BEAM MEDIAN BARRIER IN SECTION 606.
7. DRILLING AND GROUTING OF THREADED ANCHOR RODS IS TO BE INCLUDED IN THE PRICE BID FOR THE TRANSITION ITEM. SEE SPECIFICATIONS FOR DRILLING AND GROUTING IN SECTION 586 OF THE N.Y.S. STANDARD SPECIFICATIONS. MINIMUM EMBEDMENT OF ANCHOR RODS SHALL BE 8" AND A MINIMUM EDGE DISTANCE OF 3" SHALL BE MAINTAINED.
8. ALL STEEL THAT IS SPECIFIED TO BE GALVANIZED SHALL BE GALVANIZED IN ACCORDANCE WITH N.Y.S. STANDARD SPECIFICATIONS. ALL AREAS WHERE THE ZINC COATING IS DAMAGED DURING INSTALLATION INCLUDING FIELD DRILLING HOLES, SHALL BE REPAIRED.

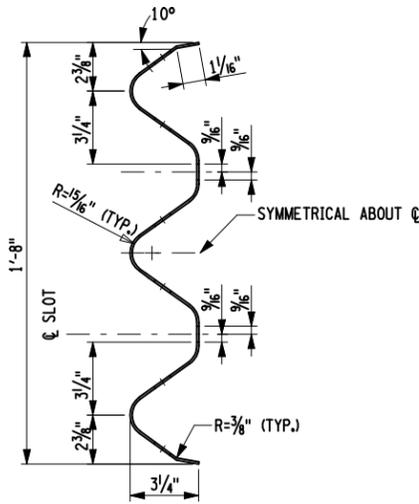
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 <b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>TRANSITION: HPBO MEDIAN - CONCRETE WALL (SHEET 1 OF 2)</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-29

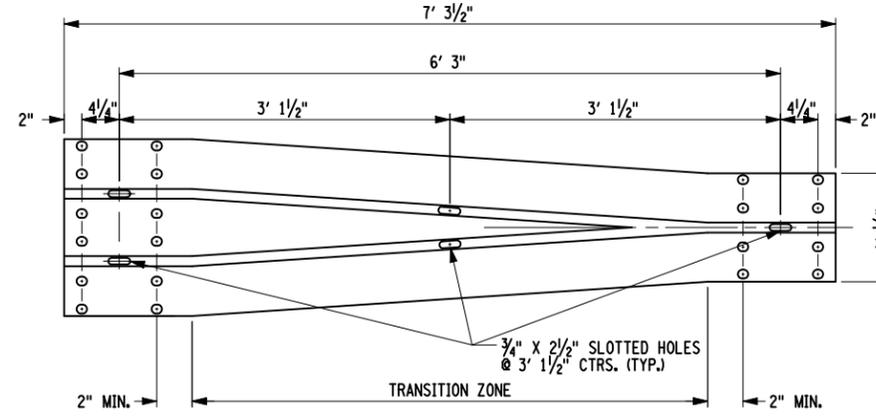
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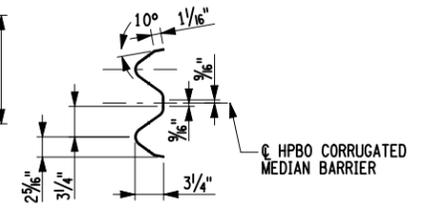
TYPICAL THRIE BEAM SECTION



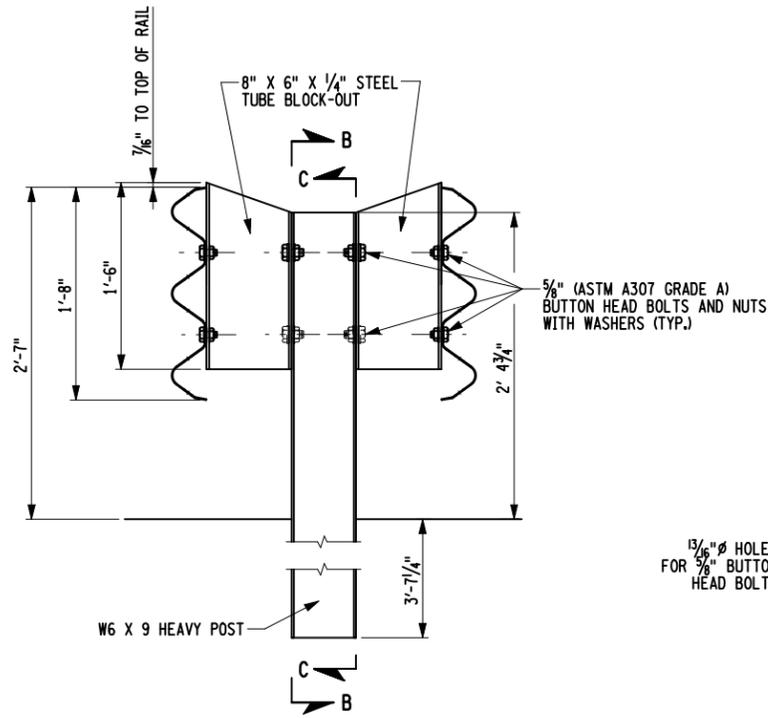
END VIEW OF TRANSITION



TRANSITION SECTION

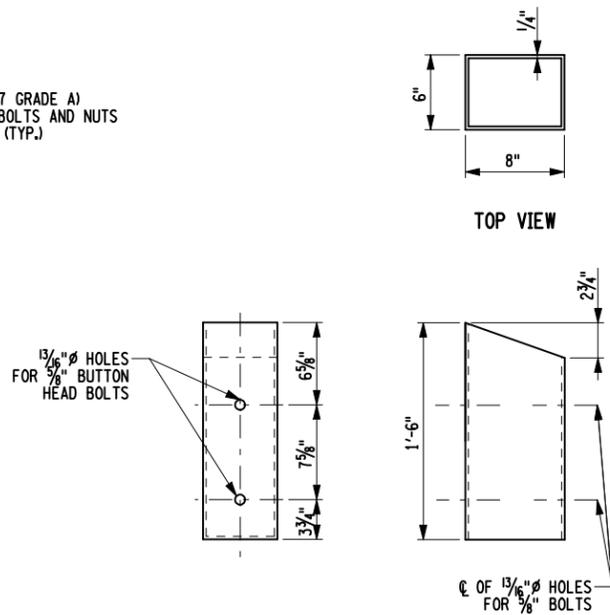


END VIEW OF TRANSITION



SECTION A-A POST ELEVATION

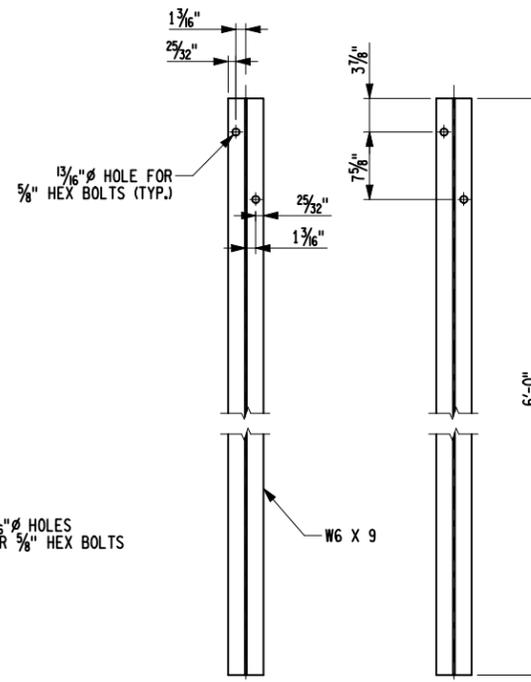
NOTE:  
FOR LOCATION OF SECTION A-A SEE STANDARD SHEET  
TITLED "TRANSITION: HPBO MEDIAN - CONCRETE WALL (SHEET 1 OF 2)"



FRONT VIEW

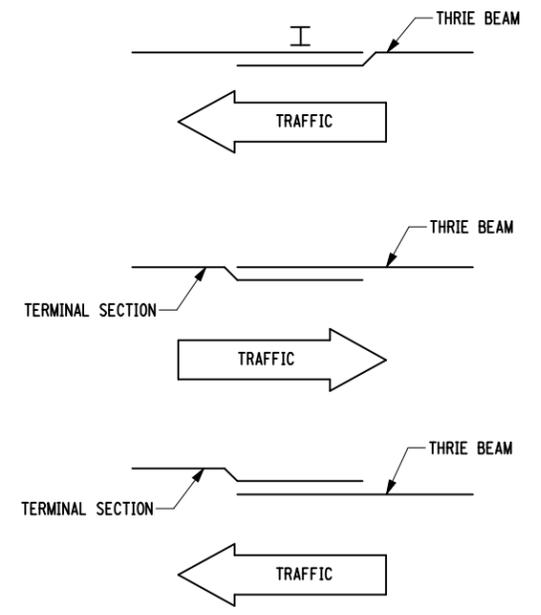
SIDE VIEW

BACK VIEW

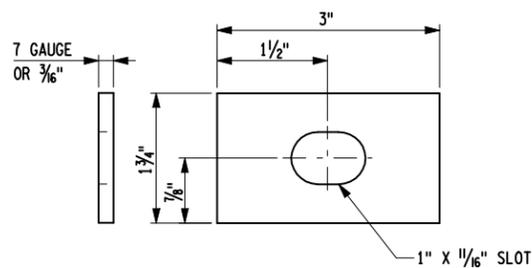


SECTION B-B

SECTION C-C

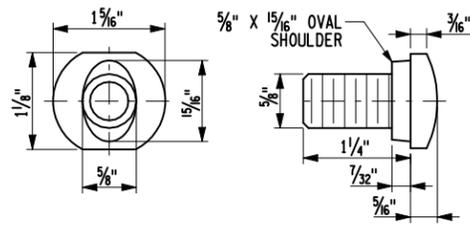


TYPICAL SPLICE LAYOUTS

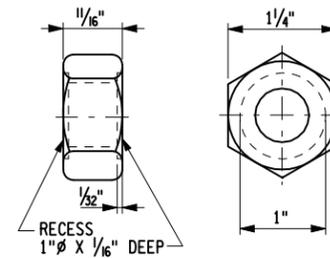


RECTANGULAR GUIDE RAIL PLATE WASHER

NOTE: THE RECTANGULAR WASHERS SHALL BE USED AT THRIE BEAM AND TRANSITION SECTION POSTS (BETWEEN BUTTON HEAD BOLT AND BEAM)



SPLICE BOLT ASTM A307 GRADE A

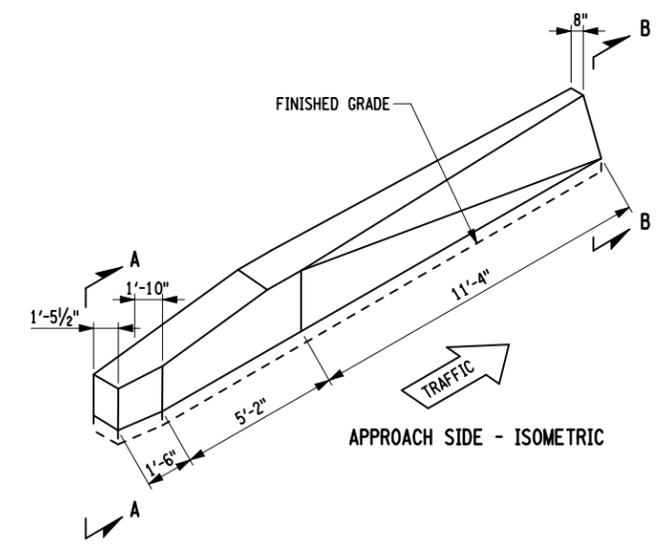
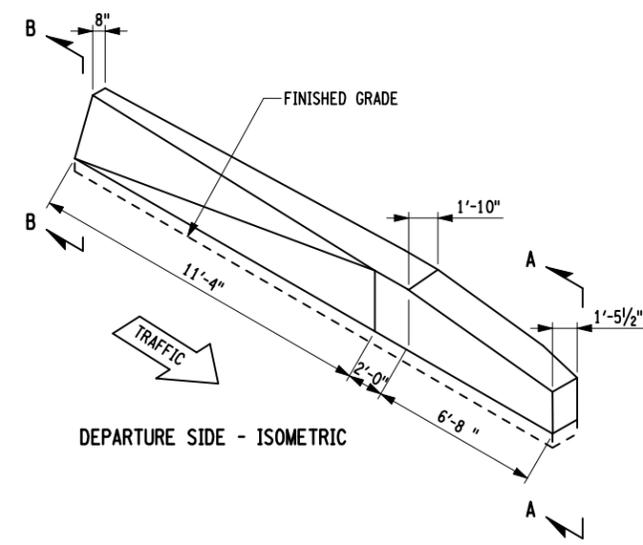
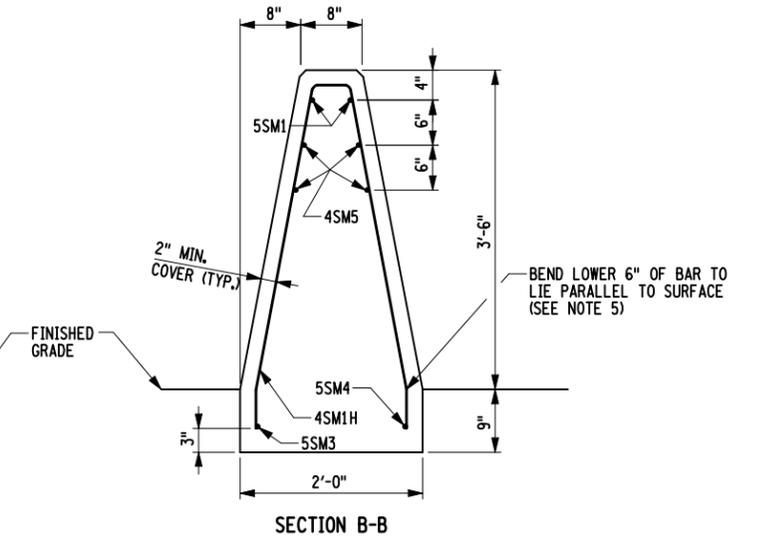
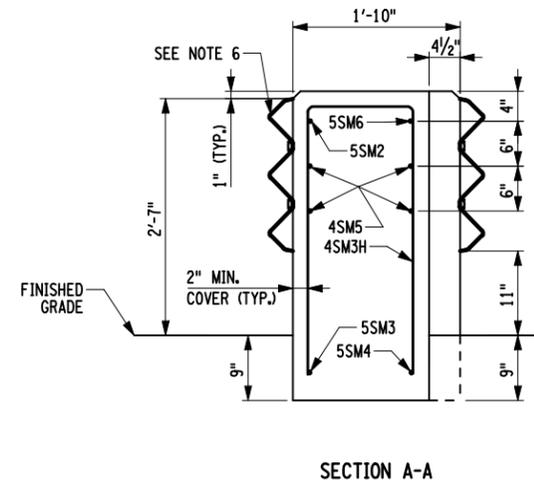
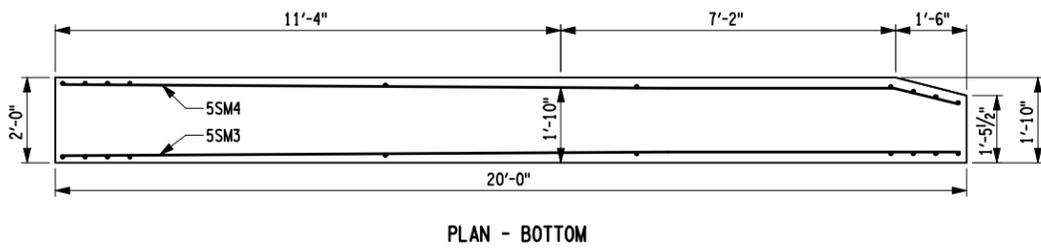
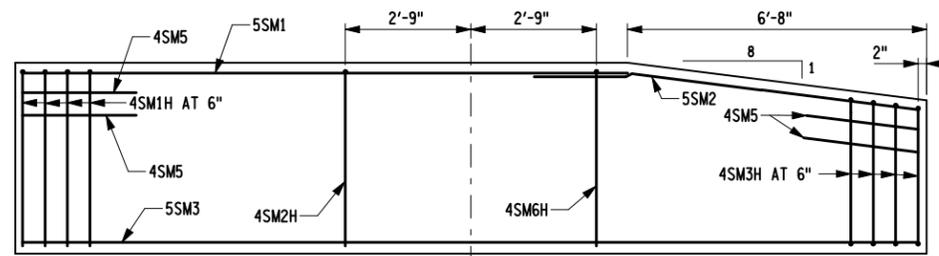
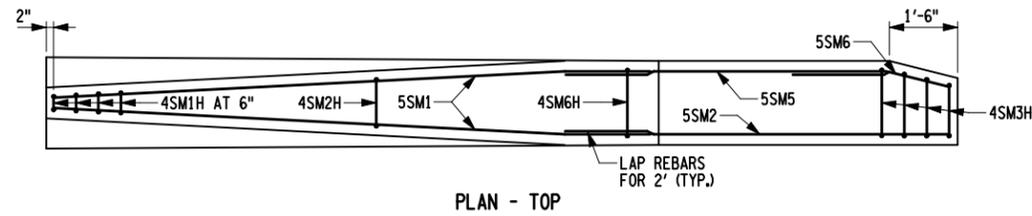
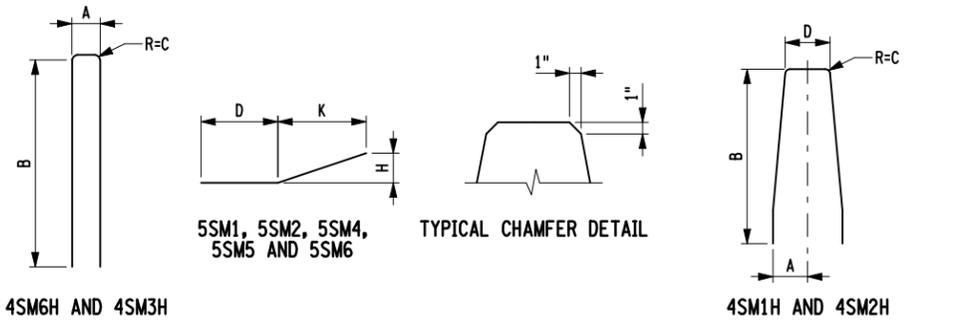


DETAIL "A"  
BEAM SPLICE HARDWARE  
(EXCLUDING BLOCKOUT CONNECTION)

HEX NUT ASTM A563 GRADE A OR BETTER

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STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
TRANSITION: HPBO MEDIAN - CONCRETE WALL (SHEET 2 OF 2)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-29
EFFECTIVE DATE: 01/08/09	



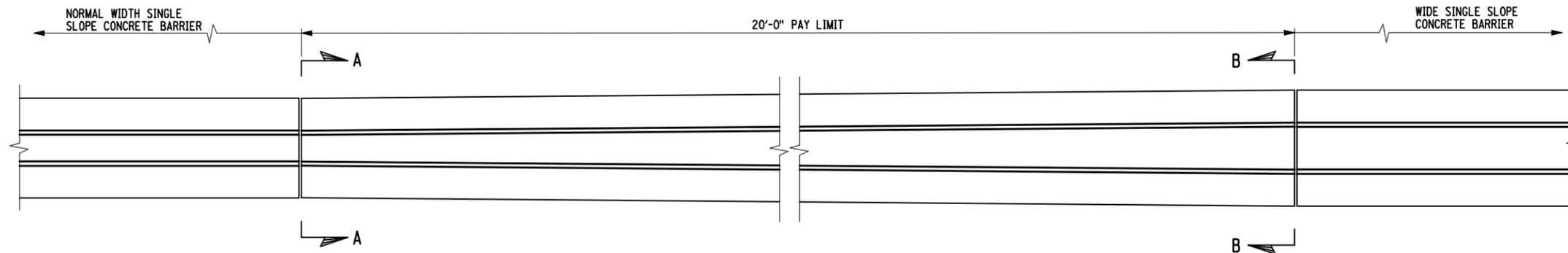
- NOTES:
1. SURFACE SHALL BE SMOOTH.
  2. MATERIALS SHALL CONFORM TO §606-2.14, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
  3. CONSTRUCTION SHALL CONFORM TO §606-3.19, TRANSITION CONSTRUCTED OF, OR WITH, CONCRETE.
  4. UNLESS INDICATED OTHERWISE: EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH §206-3.01; GRANULAR BACKFILL SHALL CONFORM WITH SECTION 304 AND SHALL MATCH THE SUBBASE COURSE TYPE USED ON THE ADJACENT ROADWAY.
  5. THE BEND MAY BE ELIMINATED PROVIDED 2" MIN. COVER IS MAINTAINED.
  6. FOR CORRUGATED MEDIAN BARRIER TRANSITION DETAILS, SEE STANDARD SHEETS TITLED TRANSITION: HPBO MEDIAN - CONCRETE WALL.

BAR LIST											
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1H	#4	4	VARIES FROM 8'-0" TO 8'-1 3/4"	STIRRUP	10"	3'-10"	1 1/2"	VARIES FROM 4" TO 5 3/4"	—	—	AT CONCRETE BARRIER END
4SM2H	#4	1	8'-7"	STIRRUP	9/2"	3'-10"	1 1/2"	1'-1"	—	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM3H	#4	4	VARIES FROM 7'-1/2" TO 7'-8 1/2"	STIRRUP	VARIES FROM 1'-2" TO 1'-6"	VARIES FROM 3'-0" TO 3'-2"	1 1/2"	—	—	—	AT CORRUGATED RAIL END
4SM5	#4	8	2'-8"	STRAIGHT	—	—	—	—	—	—	4 AT EACH END
4SM6H	#4	1	9'-1/2"	STIRRUP	1'-6"	3'-10"	1 1/2"	—	—	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
5SM1	#5	2	13'-2"	STRINGER	—	—	—	11'-2"	3/4"	2'-0"	LONGITUDINAL 2 IN TOP
5SM2	#5	1	8'-6"	STRINGER	—	—	—	6'-6"	3"	2'-0"	LONGITUDINAL 1 IN TOP
5SM3	#5	1	19'-8"	STRAIGHT	—	—	—	—	—	—	LONGITUDINAL 1 IN BOTTOM
5SM4	#5	1	19'-8 1/2"	STRINGER	—	—	—	18'-3"	4 1/2"	1'-5"	LONGITUDINAL 1 IN BOTTOM
5SM5	#5	1	7'-0"	STRINGER	—	—	—	5'-0"	3"	2'-0"	LONGITUDINAL 1 IN TOP
5SM6	#5	1	3'-6"	STRINGER	—	—	—	2'-0"	4 1/2"	1'-5"	LONGITUDINAL 1 IN TOP

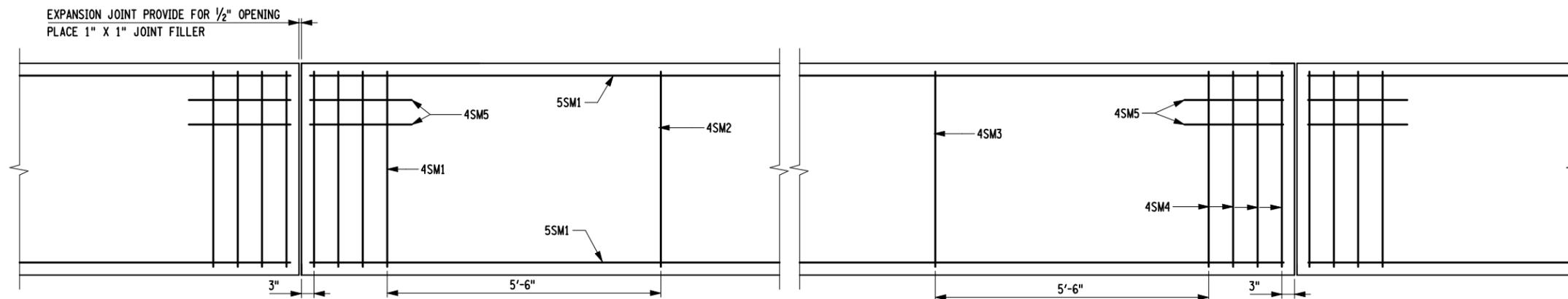
EFFECTIVE DATE: 01/08/09

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>TRANSITION:</b> <b>CONCRETE WALL - SINGLE SLOPE MEDIAN</b>	
APPROVED SEPTEMBER 19, 2008 /S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 08-036  <b>606-30</b>

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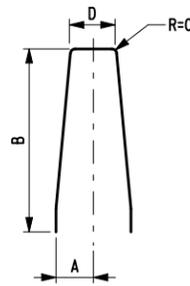
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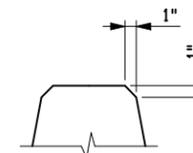
ELEVATION

BAR LIST

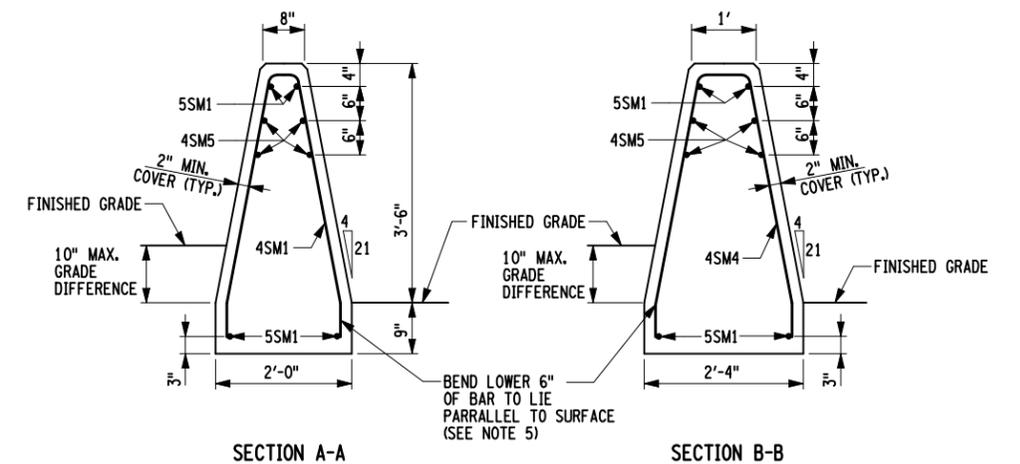
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4SM1	#4	4	8'-0"	STIRRUP	10"	3'-10"	1 1/2"	4"	4 AT 6" CENTERS AT NARROW END OF BARRIER UNIT
4SM2	#4	1	8'-1 1/2"	STIRRUP	10 1/2"	3'-10"	1 1/2"	5 1/4"	5'-6" FROM NEAREST 4SM1 BAR
4SM3	#4	1	8'-3"	STIRRUP	11 1/4"	3'-10"	1 1/2"	6 1/2"	5'-6" FROM NEAREST 4SM1 BAR
4SM4	#4	4	8'-4"	STIRRUP	1'-0"	3'-10"	1 1/2"	8"	4 AT 6" CENTERS AT WIDE END OF BARRIER UNIT
4SM5	#4	8	2'-6"	STRAIGHT	---	---	---	---	4 ON BOTH ENDS OF BARRIER
5SM1	#5	4	19'-7 1/2"	STRINGER	---	---	---	---	LONGITUDINAL 2 IN BOTTOM - 2 IN TOP



TYPICAL STIRRUP



TYPICAL CHAMFER DETAIL



SECTION A-A

SECTION B-B

NOTES:

1. SURFACES SHALL BE SMOOTH.
2. MATERIALS SHALL CONFORM TO §606-2.14, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
3. CONSTRUCTION SHALL CONFORM TO §606-3.19, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
4. UNLESS INDICATED OTHERWISE, EXCAVATION SHALL BE PREFORMED IN ACCORDANCE WITH §206-3.01. GRANULAR BACKFILL SHALL CONFORM WITH SECTION 304 AND SHOULD MATCH THE SUBBASE COURSE TYPE USED ON THE ADJACENT ROADWAY.
5. BENDING OF BOTTOM OF STIRRUPS SHOWN IN SECTION A-A AND B-B IS NOT NECESSARY, PROVIDED 2" COVER REQUIREMENTS ARE SATISFIED.



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

TRANSITION:  
WIDE - NORMAL WIDTH SINGLE SLOPE MEDIAN

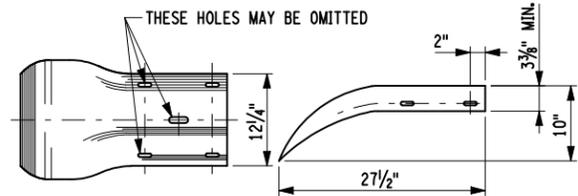
APPROVED SEPTEMBER 19, 2008

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

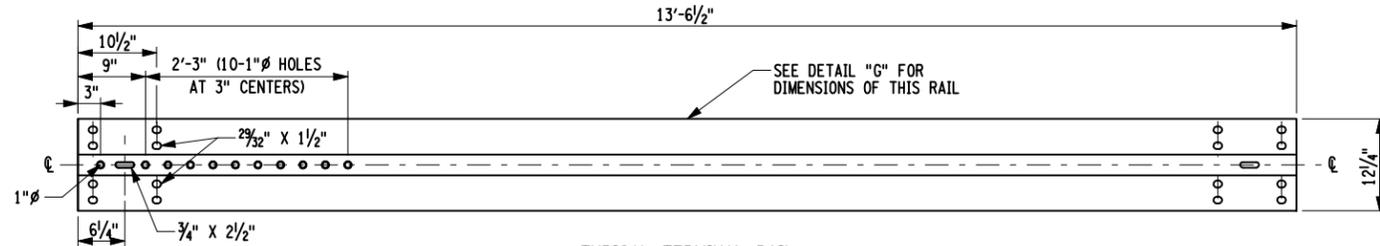
ISSUED UNDER EB 08-036

606-31

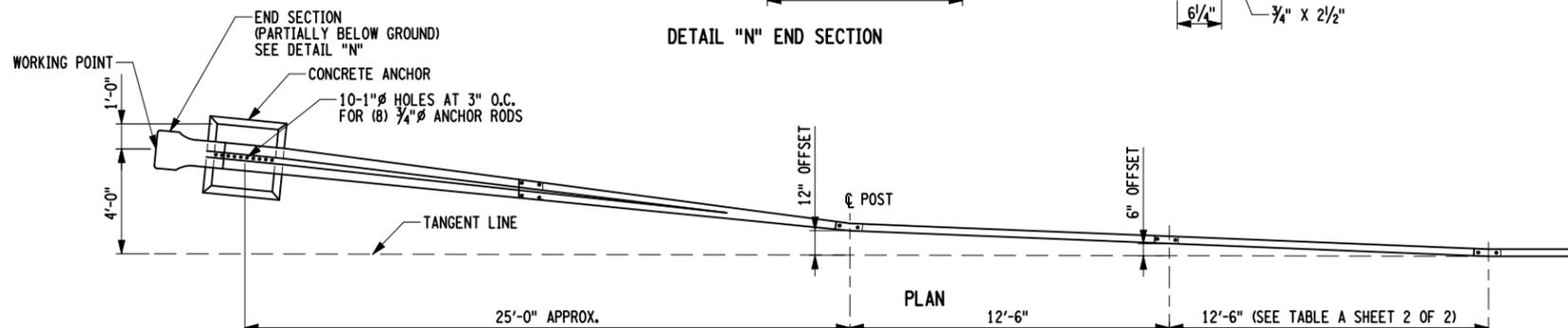
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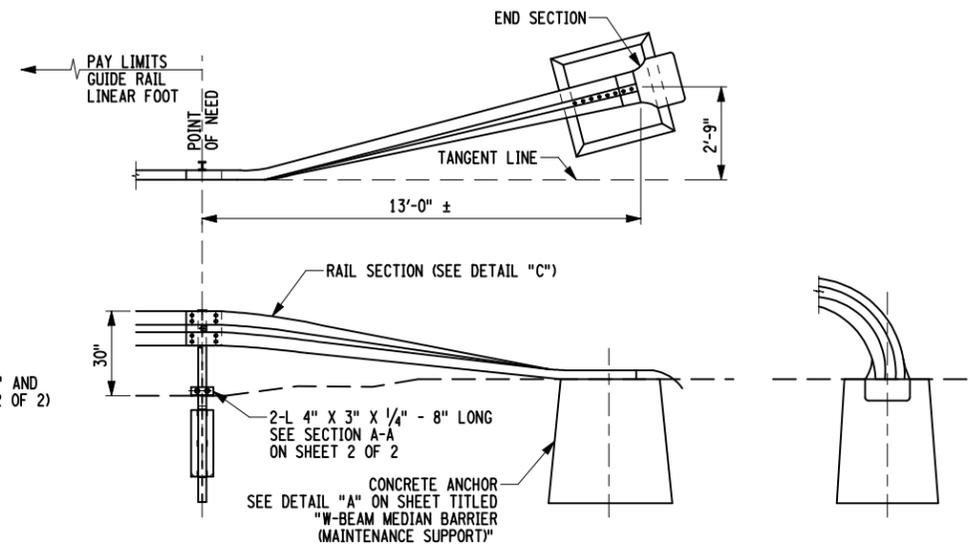
DETAIL "N" END SECTION



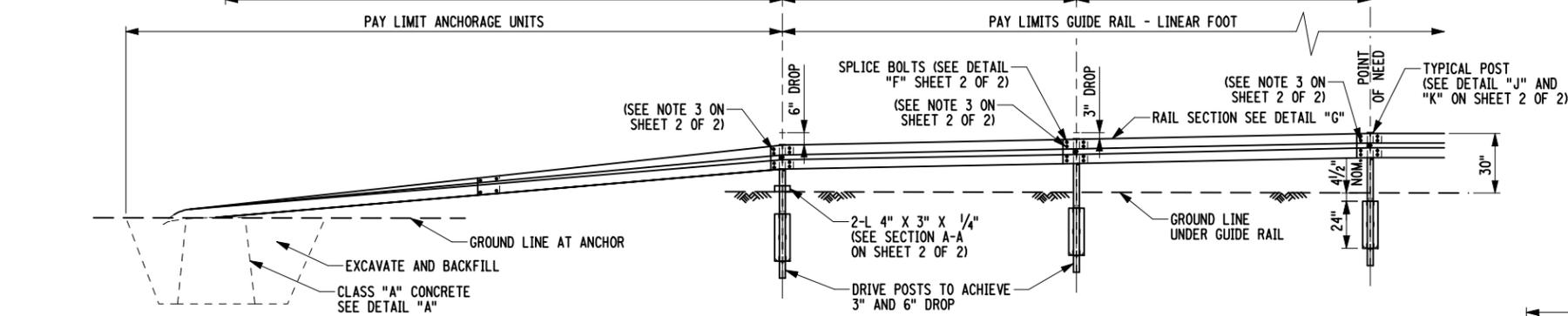
TYPICAL TERMINAL RAIL



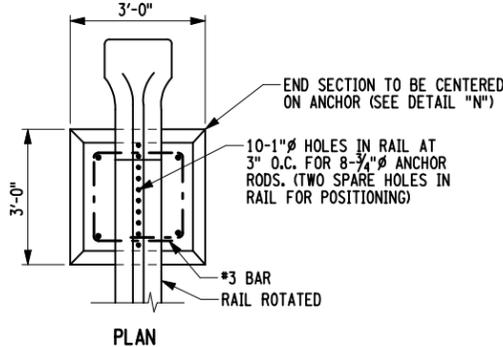
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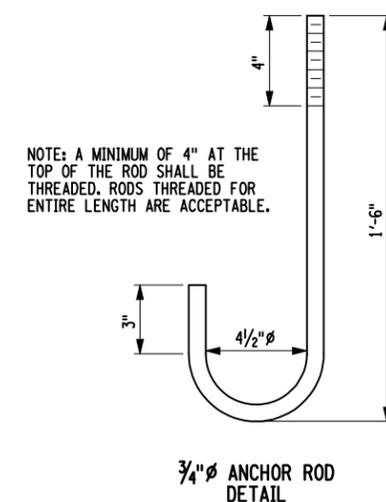
TYPICAL END TREATMENT FOR DRIVEWAYS WALKWAYS AND OTHER OPENINGS IN CORRUGATED BEAM GUIDE RAILING



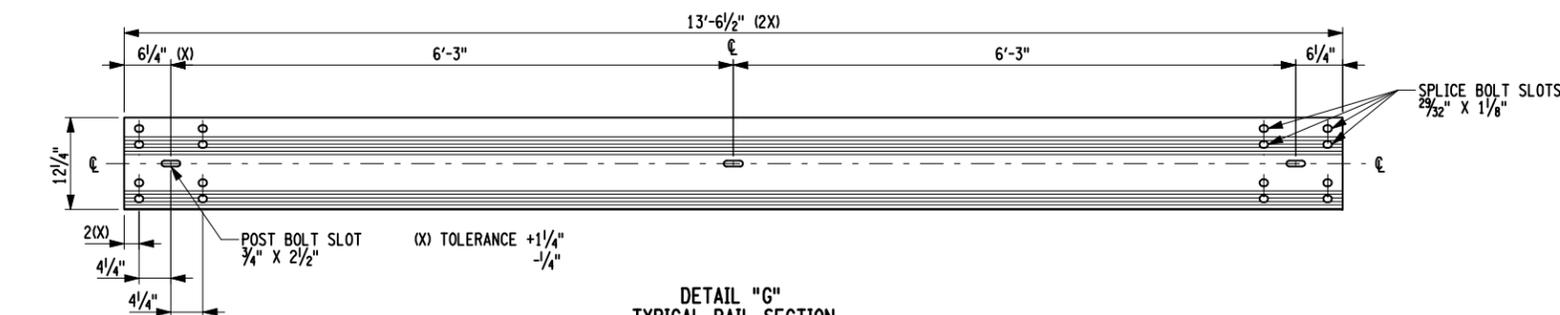
ELEVATION TYPICAL APPROACH AND TERMINAL SECTIONS



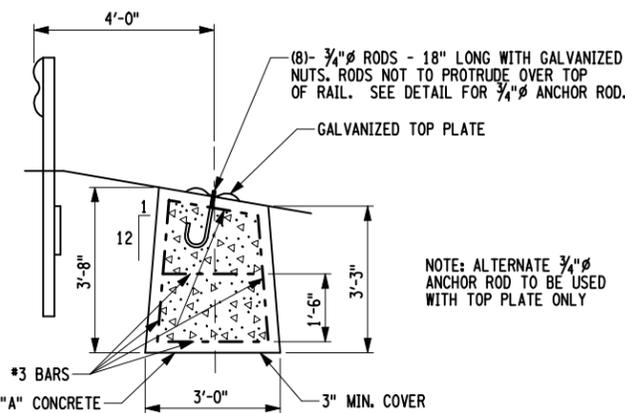
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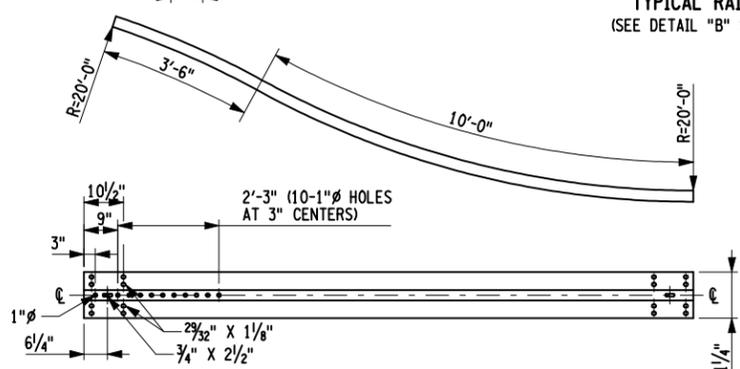
3/4" ANCHOR ROD DETAIL



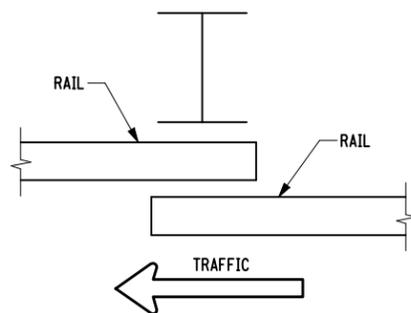
DETAIL "G" TYPICAL RAIL SECTION (SEE DETAIL "B" SHEET 2 OF 2)



ELEVATION DETAIL "A" CONCRETE ANCHOR



DETAIL "C" SHOP CURVED RAIL (OPPOSITE HAND MAY ALSO BE NECESSARY)



EXPLODED VIEW SHOWING RAIL SPLICE LAP DETAIL "O"

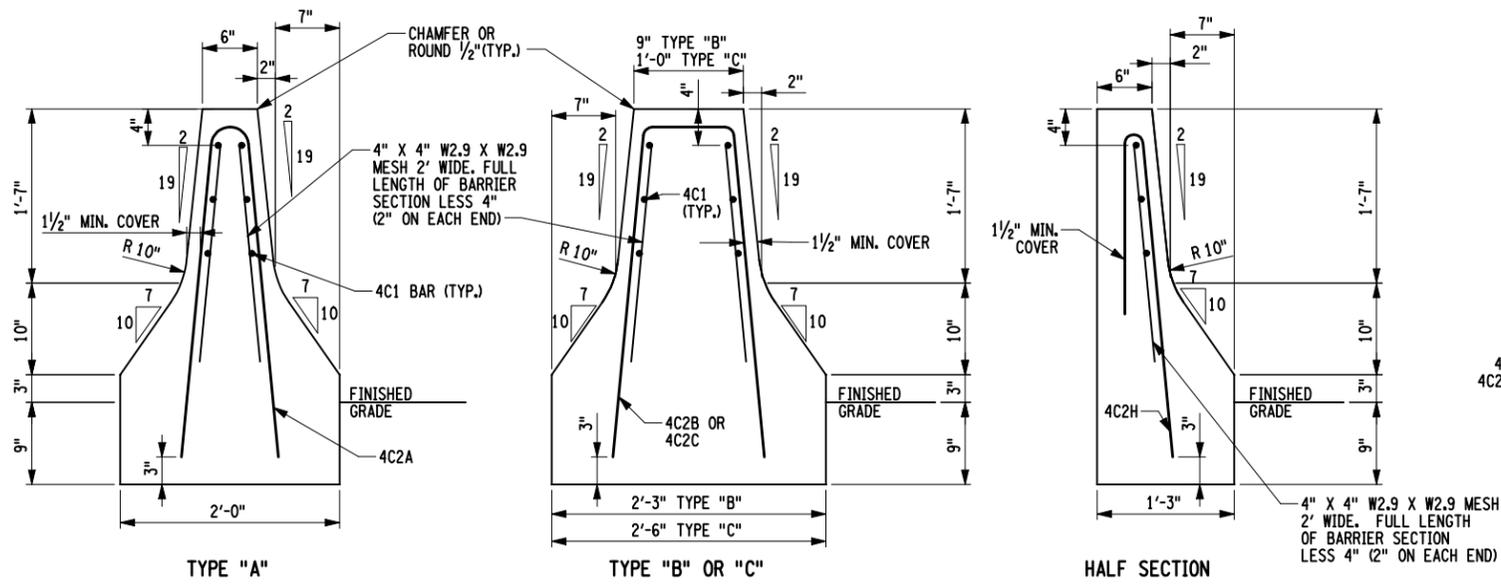
OTHER RADII CONFIGURATIONS WHICH CAN BE DEMONSTRATED TO PROVIDE THE INSTALLATION SHOWN IN TYPICAL DRIVEWAY AND OPENING SECTION MAY BE APPROVED.

EFFECTIVE DATE: 01/08/09

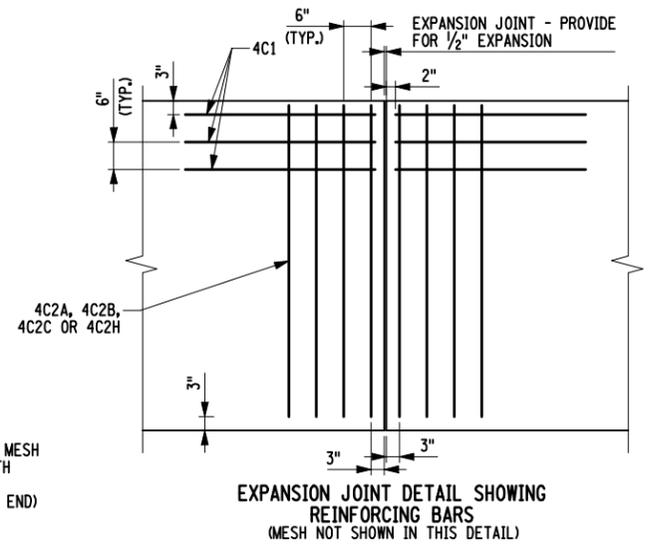
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STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
W-BEAM GUIDE RAILING (SHEET 1 OF 2) (MAINTENANCE SUPPORT)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-33

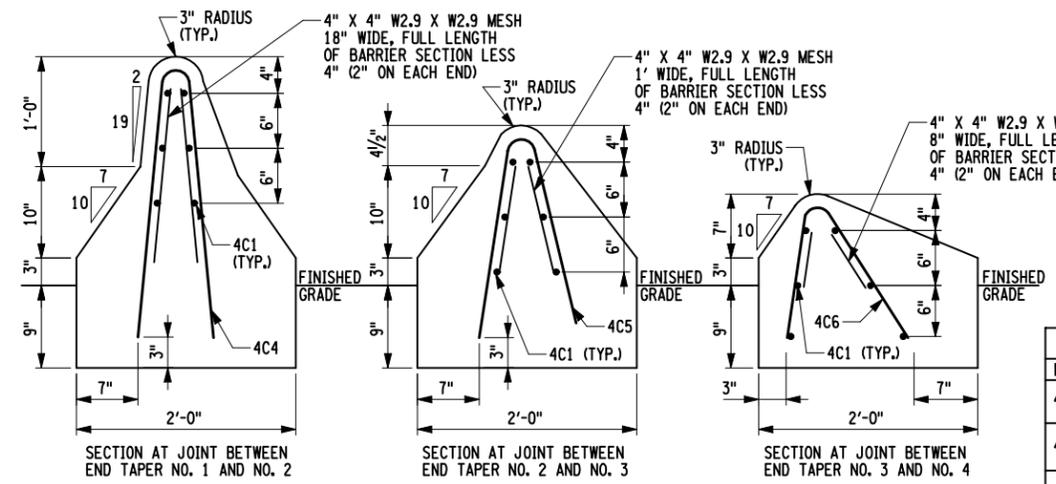




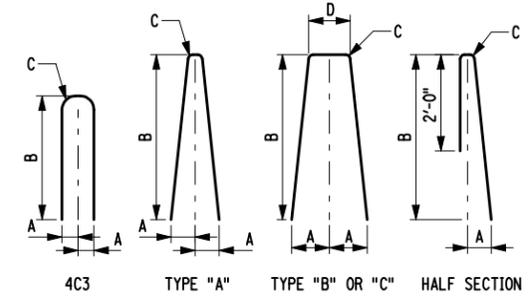
NOTE: THE 19:2 AND 10:7 SLOPES ARE TYPICAL FOR ALL JERSEY CONCRETE BARRIERS AND SHALL NOT BE CHANGED EXCEPT AT END TAPERS AND TRANSITIONS. THE BREAK BETWEEN THE 19:2 AND 10:7 SLOPES SHALL ALWAYS BE 1'-1" ABOVE THE FINISHED GRADE EXCEPT IN TRANSITIONS.



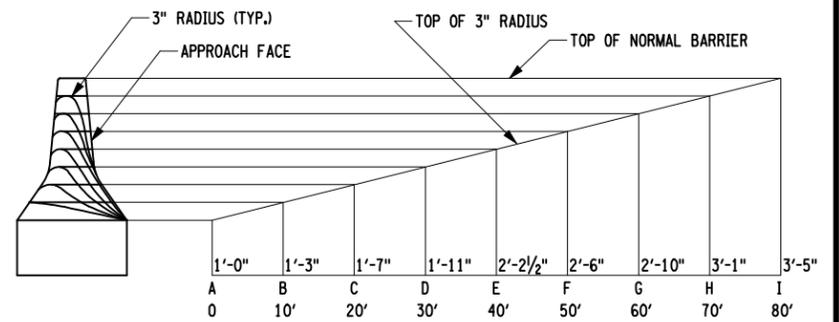
- NOTES:
- THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
  - ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE PLANS.
  - FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED IN THE PLANS.
  - HALF SECTION BARRIERS SHALL BE BACKED UP WITH W6 X 9 BACKUP POSTS PLACED AT 6'-8" CENTERS OR EARTH BACKFILL PLACED IN LAYERS NOT TO EXCEED 6" AND COMPACTED TO THE SATISFACTION OF THE ENGINEER, EXCEPT WHEN THE METHOD OF BACKING UP THE BARRIER IS SPECIFIED IN THE CONTRACT DOCUMENTS. UNLESS SPECIFIED OTHERWISE, CONTINUITY CONNECTIONS SHALL BE REQUIRED ONLY WHEN STEEL BACKUP POSTS ARE USED.
  - THE END TAPER IS COMPOSED OF FOUR 20' SECTIONS REINFORCED AS FOLLOWS: SECTION 1, WHERE IT JOINS WITH THE BARRIER, IS REINFORCED ACCORDING TO THE DETAIL FOR TITLED TYPE "A". THE REINFORCEMENT FOR THE END TAPER AT THE JOINTS BETWEEN SECTION 1 AND 2, SECTIONS 2 AND 3 AND SECTIONS 3 AND 4 IS SHOWN IN THE CROSS SECTIONS OF THE END TAPER. ONLY TYPE "A" END TAPERS ARE SHOWN AND, IF END TAPERS FOR TYPE "B", "C", OR "HALF SECTION" BARRIERS ARE REQUIRED, THE REINFORCEMENT WILL HAVE TO BE DETAILED ON THE PLANS.
  - ON HALF-SECTION BARRIER UNIT, ANGLE THE STIRRUP, MARK 4C2H, SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
  - ON HIGH-SPEED HIGHWAYS AND ASSOCIATED RAMP (DESIGN OR OPERATING SPEED, 50 MPH, WHICHEVER IS LESS). THE APPROACH END OF THE CONCRETE BARRIER SHALL BE TERMINATED WITH AN END TAPER PLACED OUTSIDE THE CLEAR ZONE. THE BARRIER SHALL CONVERGE WITH THE ROADWAY WITH A FLARE RATE OF 1:15. IF IT IS NOT POSSIBLE TO TERMINATE THE BARRIER OUTSIDE THE CLEAR ZONE, THE END OF THE BARRIER SHALL BE SHIELDED WITH A PROPERLY DESIGNED CRASH CUSHION. THE CRASH CUSHION WILL BE PAID FOR SEPARATELY.
  - ON REDUCED SPEED FACILITIES, (OPERATING AND DESIGN SPEED < 50 MPH), AT SIGNAL CONTROLLED INTERSECTIONS, AND AT STOP CONDITIONS, THE CONCRETE MEDIAN BARRIER MAY BE TERMINATED WITH A TAPERED END SECTION.
  - CAST IN PLACE BARRIER SHALL HAVE A SMOOTH FINISH AND THE CONTRACTOR SHALL STEEL TROWEL ANY SURFACE AS DIRECTED BY THE ENGINEER.



CROSS SECTIONS OF END TAPER SHOWING TYPE "A" (SHOWN IN MEDIAN. USE OPPOSITE HAND WHEN PLACED TO THE RIGHT OF TRAFFIC)

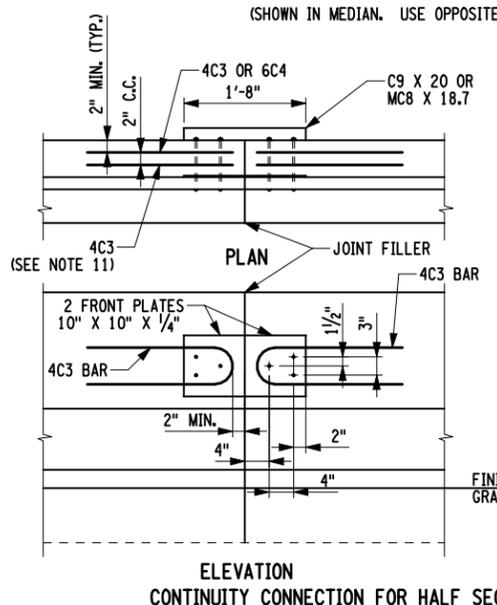


BAR LIST									
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4C1	4	12	2'	STRINGER					LONGITUDINAL 6 AT EACH END EXCEPT FOR THE HALF SECTION BARRIER WHICH HAS 3 AT EACH END
4C2A	4	8	6'-1"	STIRRUP	5/4"	3'	1 1/2"		STIRRUP - 4 IN EACH END OF THE TYPE "A" BARRIER - 4 IN END TAPER NO. 1
4C2B	4	8	6'-3 1/2"	STIRRUP	6 1/2"	3'	1 1/2"	5"	STIRRUP - 4 IN EACH END OF THE TYPE "B" BARRIER
4C2C	4	8	6'-6 1/2"	STIRRUP	8"	3'	1 1/2"	8"	STIRRUP - 4 IN EACH END OF THE TYPE "C" BARRIER
4C2H	4	8	4'	STIRRUP	5/4"	3'	1"		STIRRUP - 4 IN EACH END OF THE HALF SECTION BARRIER
4C3	4	4	4'-10"	STIRRUP	3"	2'-3"	3"		STIRRUP FOR CONTINUITY CONNECTION
4C4	4	8	5'	STIRRUP	4 1/2"	2'-5"	1 1/2"		4 IN END TAPER NO. 1 AND 4 IN END TAPER NO. 2
4C5	4	8	3'-10"	STIRRUP	5"	1'-10"	1 1/2"		4 IN END TAPER NO. 2 AND 4 IN END TAPER NO. 3
4C6	4	8	2'-11"	STIRRUP	7"	1'-3"	1 1/2"		4 IN END TAPER NO. 3 AND 4 IN END TAPER NO. 4

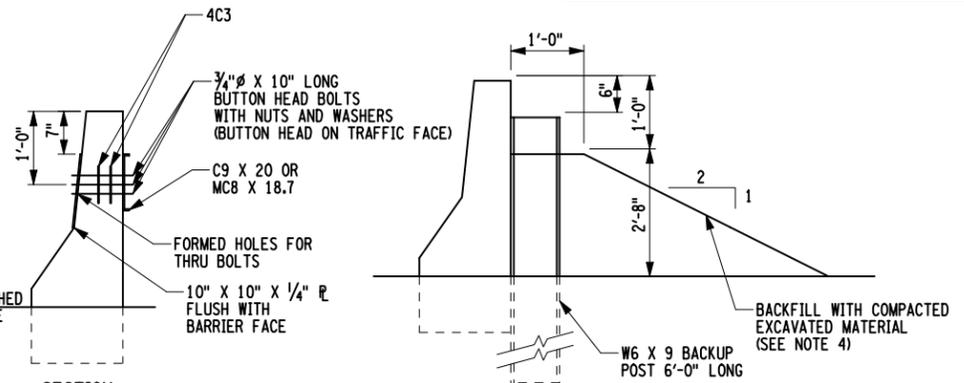


DETAIL SHOWING END TAPER

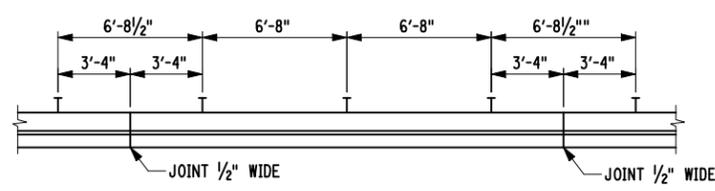
NOTE: UNLESS SPECIFIED OTHERWISE, THE CONTRACTOR SHALL HAVE THE OPTION OF SUPPLYING THE TYPE "A" END TAPER SHOWN ON THIS STANDARD SHEET REGARDLESS OF THE TYPE OF BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED WITH TYPE "B" OR "C" BARRIERS, A 20' TRANSITION PIECE SHALL BE PLACED BETWEEN THE TYPE "A" END TAPER AND THE BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED WITH THE HALF SECTION BARRIER, EARTH BACKFILL SHALL BE PLACED BEHIND END TAPER SECTION X AND THE FIRST SECTION OF THE BARRIER. THE BACKFILL SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF NOTE 4.



ELEVATION CONTINUITY CONNECTION FOR HALF SECTION BARRIER



DETAILS FOR HALF SECTION BACK-UP OPTIONS (SEE NOTE 4)

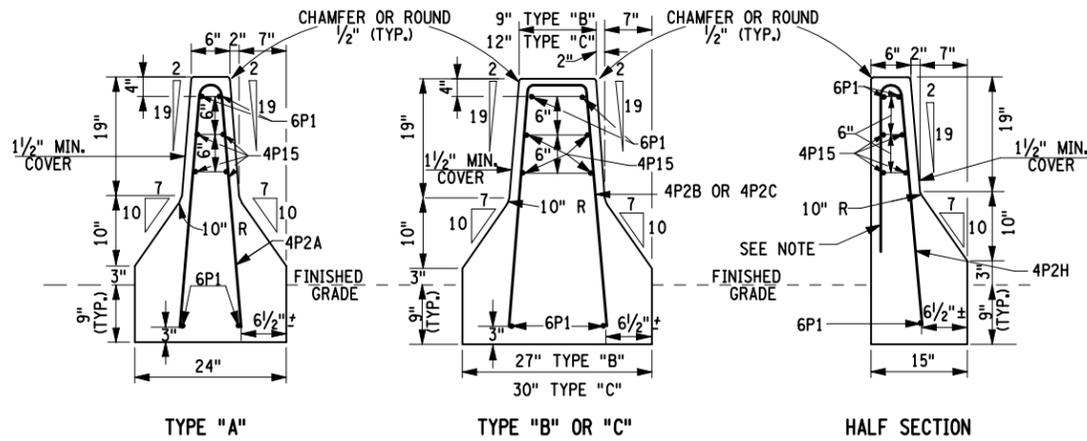


BACKUP POST LAYOUT

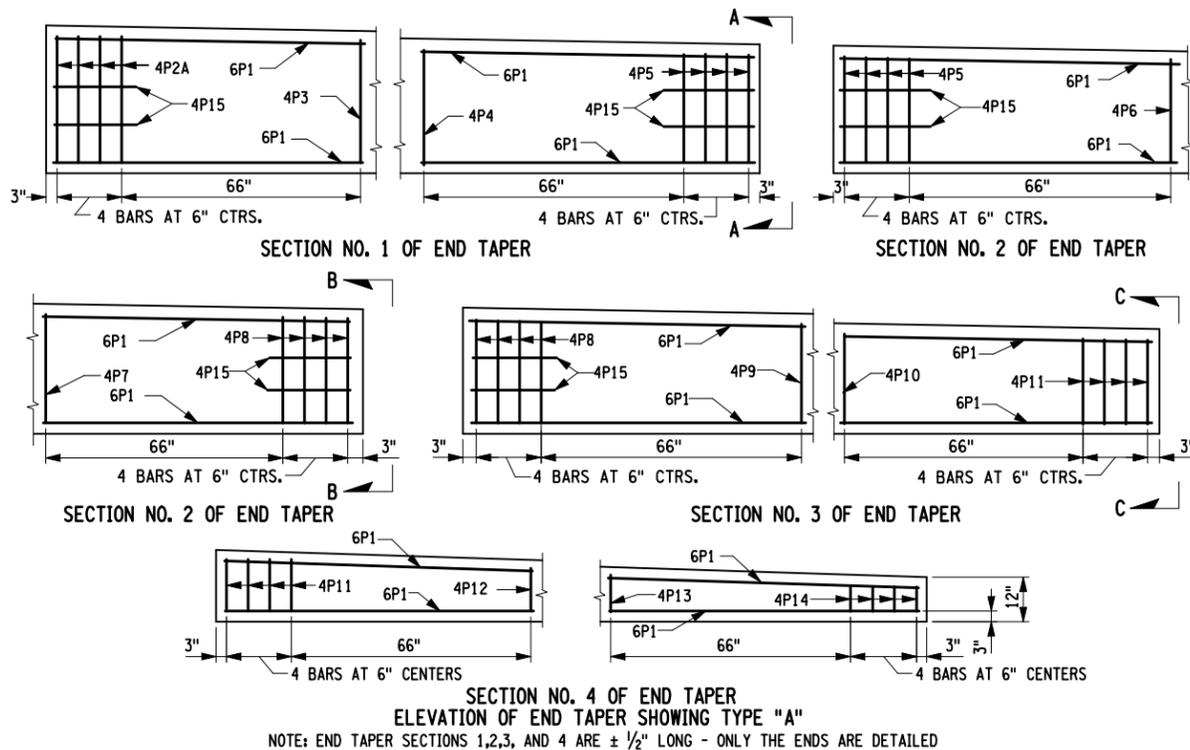
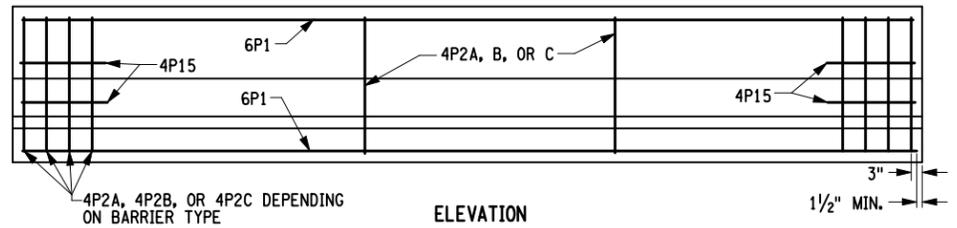
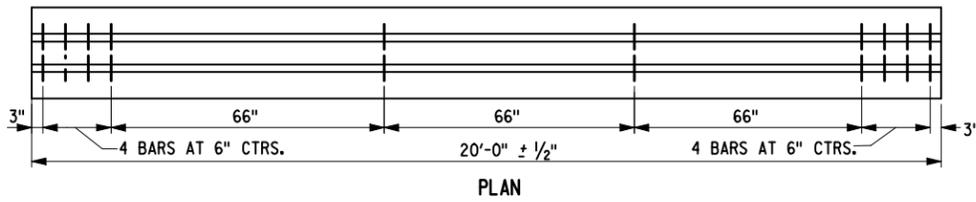
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<p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
U.S. CUSTOMARY STANDARD SHEET	
<p>CONCRETE BARRIER (CAST-IN-PLACE) (MAINTENANCE SUPPORT)</p>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-35

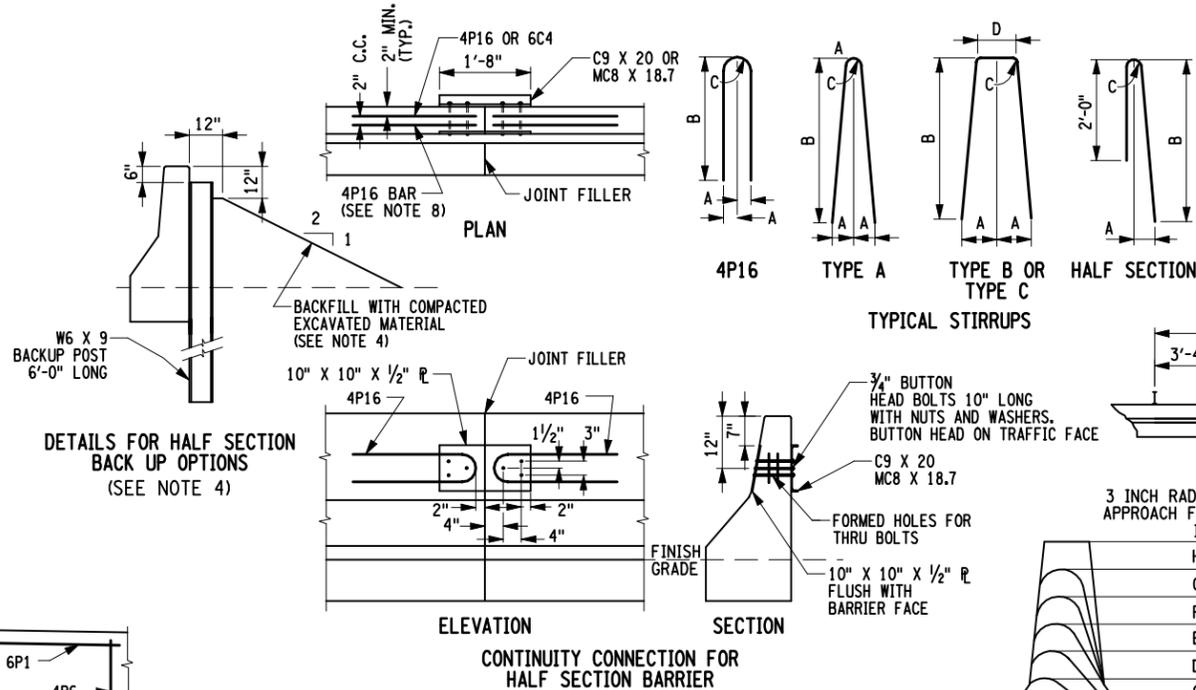


NOTE:  
THE 2:19 AND 7:10 SLOPES ARE TYPICAL FOR ALL CONCRETE BARRIERS AND SHALL NOT BE CHANGED EXCEPT AT END TAPERS AND TRANSITIONS, THE BREAK BETWEEN THE 2:19 AND 7:10 SLOPES SHALL ALWAYS BE 13 INCHES ABOVE THE FINISHED GRADE, EXCEPT IN TRANSITIONS.

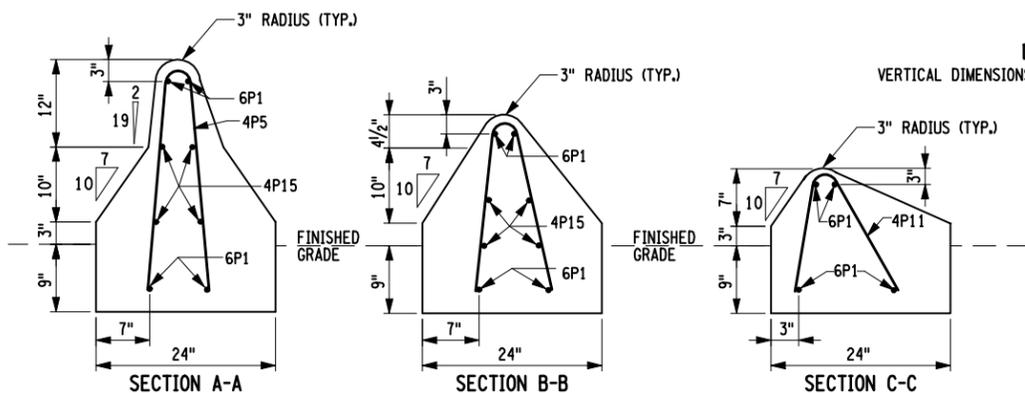
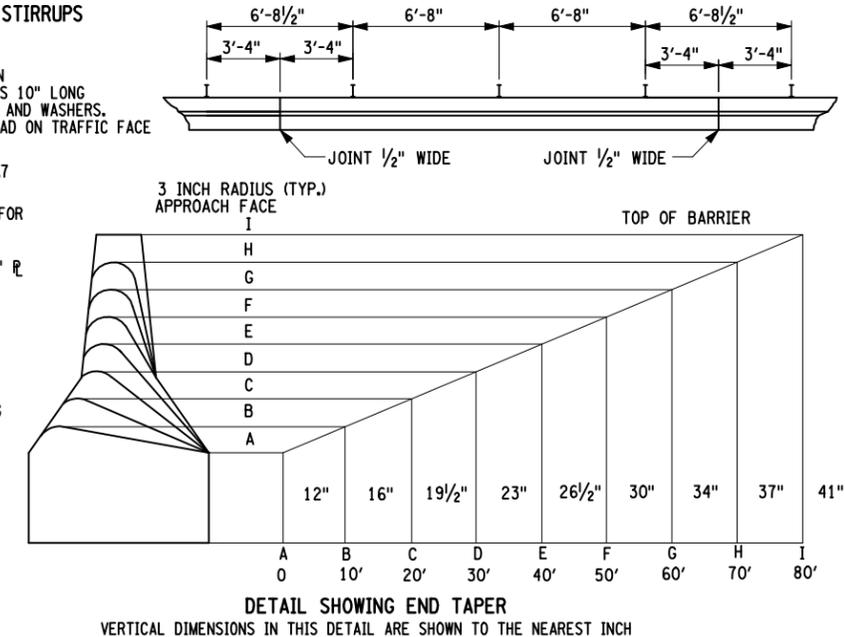


NOTE: END TAPER SECTIONS 1,2,3, AND 4 ARE ± 1/2" LONG - ONLY THE ENDS ARE DETAILED

BAR LIST										
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION	
6P1	6	4*	19'-8"	STRINGER						LONGITUDINAL -2 BOTTOM (EXCEPT HALF SECTION) *HALF SECTION -1 BOTTOM -2 TOP
4P2A	4	10**	73"	STIRRUP	5 1/2"	36"	1 1/2"			STIRRUP -TYPE A UNIT * * 4 IN END TAPER NO.1
4P2B	4	10	75 1/2"	STIRRUP	7"	36"	1 1/2"	5"		STIRRUP -TYPE B UNIT
4P2C	4	10	78"	STIRRUP	8 1/2"	36"	1 1/2"	8"		STIRRUP -TYPE C UNIT
4P2H	4	10	61"	STIRRUP	5 1/2"	36"	1"			STIRRUP - HALF SECTION
4P3	4	1	69"	STIRRUP	5"	34"	1 1/2"			STIRRUP IN END TAPER SECTION NO.1
4P4	4	1	66"	STIRRUP	5"	32"	1 1/2"			STIRRUP IN END TAPER SECTION NO.1
4P5	4	8	60"	STIRRUP	5"	29"	1 1/2"			STIRRUP IN END TAPER SECTION NO.1 AND NO.2 (4 IN EACH PIECE)
4P6	4	1	56"	STIRRUP	5"	27"	1 1/2"			STIRRUP IN END TAPER SECTION NO.2
4P7	4	1	51"	STIRRUP	5"	25"	1 1/2"			STIRRUP IN END TAPER SECTION NO.2
4P8	4	8	45"	STIRRUP	5"	22"	1 1/2"			STIRRUP IN END TAPER SECTION NO.2 AND NO.3 (4 IN EACH PIECE)
4P9	4	1	40"	STIRRUP	5"	19"	1 1/2"			STIRRUP IN END TAPER SECTION NO.3
4P10	4	1	37"	STIRRUP	6"	17"	1 1/2"			STIRRUP IN END TAPER SECTION NO.3
4P11	4	8	34"	STIRRUP	7"	15"	1 1/2"			STIRRUP IN END TAPER SECTION NO.3 AND NO.4 (4 IN EACH PIECE)
4P12	4	1	30"	STIRRUP	8"	12"	1 1/2"			STIRRUP IN END TAPER SECTION NO.4
4P13	4	1	28"	STIRRUP	9"	10"	1 1/2"			STIRRUP IN END TAPER SECTION NO.4
4P14	4	4	34"	STIRRUP	10"	8"	1 1/2"	20"		STIRRUP IN END TAPER SECTION NO.4
4P15	4	8	24"	STRAIGHT						LONGITUDINAL 4 AT EACH END EXCEPT, END SECTION NO. 3 WHICH HAS 4 AT END ABUTTING END TAPER SECTION NO. 2 AND NONE AT THE OTHER END, END TAPER SECTION NO. 4 WHICH HAS NONE, AND HALF SECTION WHICH HAS 2 AT EACH END.
4P16	4	4	57"	STIRRUP	3"	2'-3"	3"			STIRRUP FOR CONTINUITY CONNECTION, 2 AT EACH END WITH CONTINUITY CONNECTION.



NOTE: UNLESS SPECIFIED OTHERWISE, THE CONTRACTOR SHALL HAVE THE OPTION OF SUPPLYING THE TYPE "A" END TAPER SHOWN ON THIS STANDARD SHEET REGARDLESS OF THE TYPE OF BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED ON THE TYPE "B" OR "C" BARRIERS A 20 FOOT TRANSITION PIECE SHALL BE PLACED BETWEEN THE TYPE "A" END TAPER AND THE BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED WITH THE HALF SECTION BARRIER EARTH BACKFILL SHALL BE PLACED BEHIND END TAPER SECTION #1 AND THE FIRST SECTION OF THE BARRIER. THE BACKFILL SHALL BE PLACED IN ACCORDANCE WITH REQUIREMENTS OF NOTE 4.

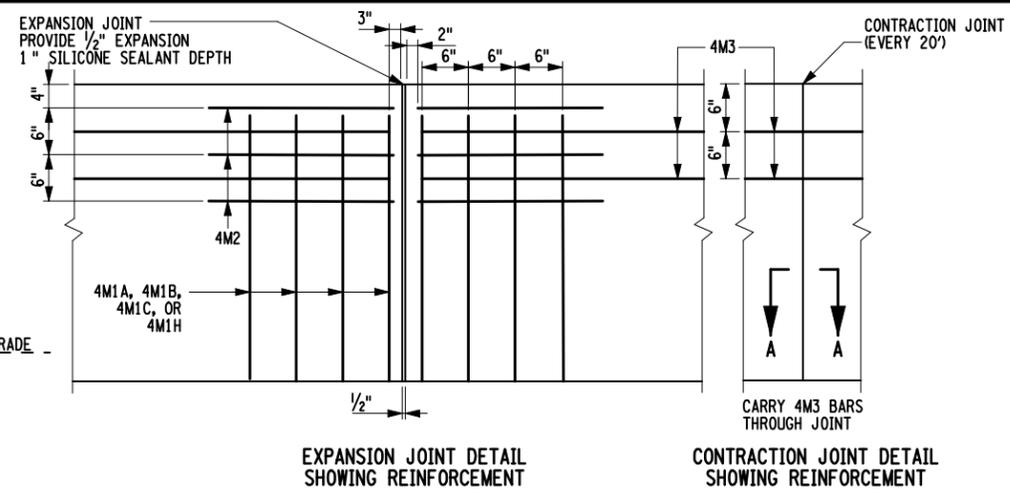
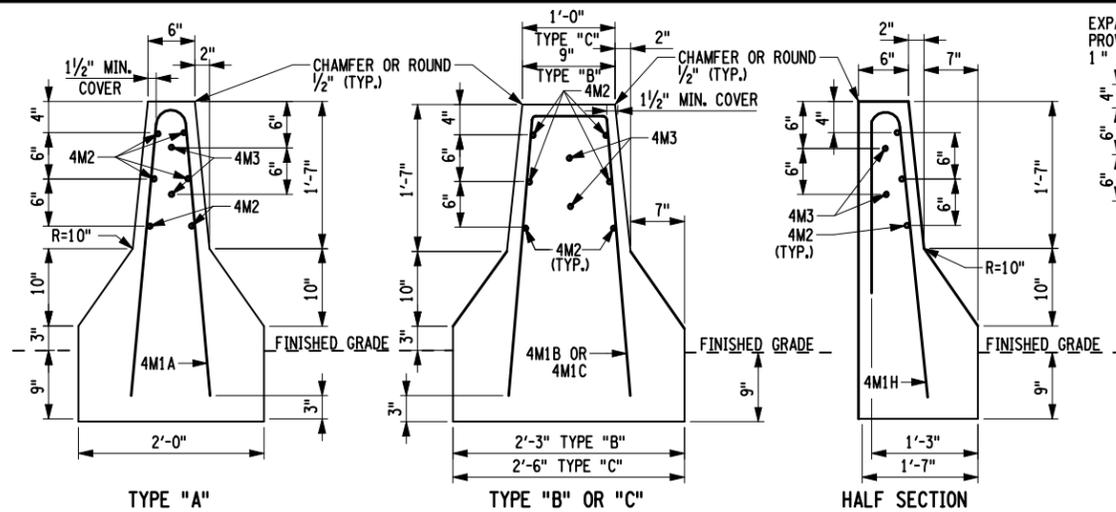


NOTE: BARRIER IS SHOWN IN MEDIAN. USE OPPOSITE HAND WHEN BARRIER IS PLACED TO THE RIGHT OF TRAFFIC.

- NOTES:
- THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
  - ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE PLANS.
  - FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED ON THE PLANS.
  - HALF-SECTION BARRIERS SHALL BE BACKED UP WITH W6 X 9 POSTS AT 80" CENTERS OR EARTH BACKFILL PLACED IN LAYERS NOT TO EXCEED 6" AND COMPACTED TO THE SATISFACTION OF THE ENGINEER, EXCEPT WHEN THE METHOD FOR BACKING UP THE BARRIER IS SPECIFIED IN THE CONTRACT DOCUMENTS. UNLESS SPECIFIED OTHERWISE, CONTINUITY CONNECTIONS SHALL BE REQUIRED ONLY WHEN STEEL BACKUP POSTS ARE USED.
  - ON HALF-SECTION BARRIER UNIT, BEND THE STIRRUP MARK 4P2H SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
  - ON HIGH SPEED HIGHWAYS AND ASSOCIATED RAMPS (DESIGN OR OPERATING SPEED ≥ 50 MPH) THE APPROACH END OF THE CONCRETE MEDIAN BARRIER SHALL BE TERMINATED WITH AN END TAPER PLACED OUTSIDE THE CLEAR ZONE. THE BARRIER SHALL CONVERGE WITH THE ROADWAY WITH A FLARE RATE OF 1:15. IF IT IS NOT POSSIBLE TO TERMINATE THE BARRIER OUTSIDE THE CLEAR ZONE, THE END OF THE BARRIER SHALL BE SHIELDED WITH A PROPERLY DESIGNED CRASH CUSHION. THE CRASH CUSHION SHALL BE PAID FOR SEPARATELY.
  - ON REDUCED SPEED FACILITIES, (OPERATING AND DESIGN SPEED < 50 MPH), AT SIGNAL CONTROLLED INTERSECTIONS, AND AT STOP CONDITIONS, THE CONCRETE MEDIAN BARRIER MAY BE TERMINATED WITH A TAPERED END SECTION.
  - THIS BAR IS NOT REQUIRED WHEN 6C4 BAR IS USED ON THE BACKSIDE.

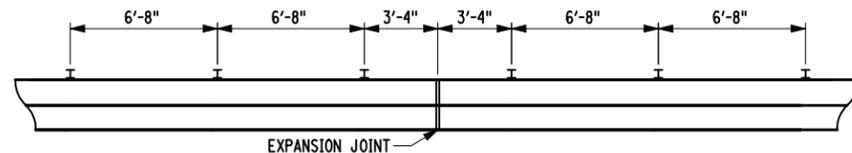
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
PRECAST CONCRETE BARRIER	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-36

EFFECTIVE DATE: 01/08/09



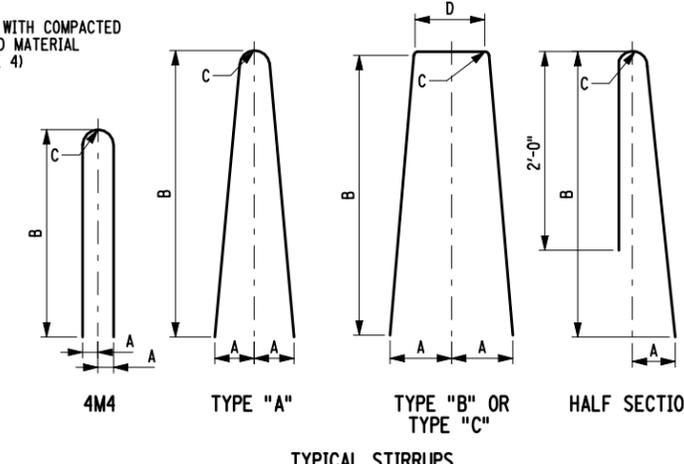
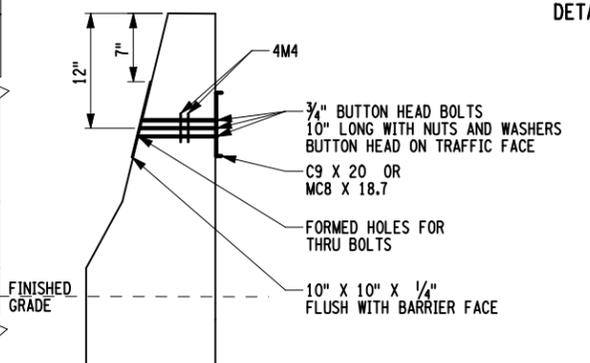
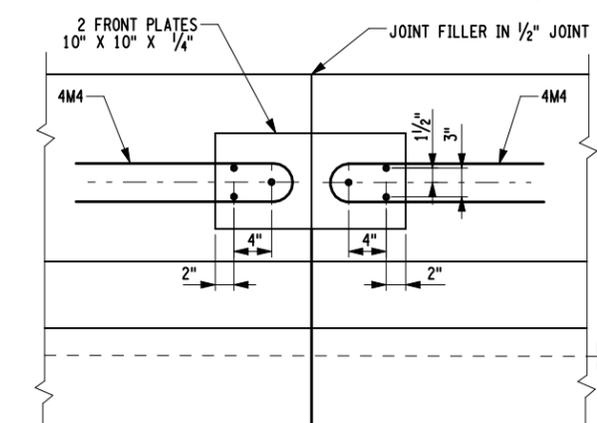
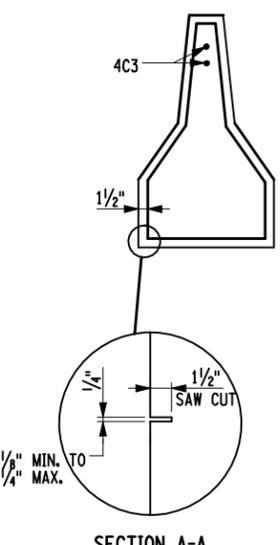
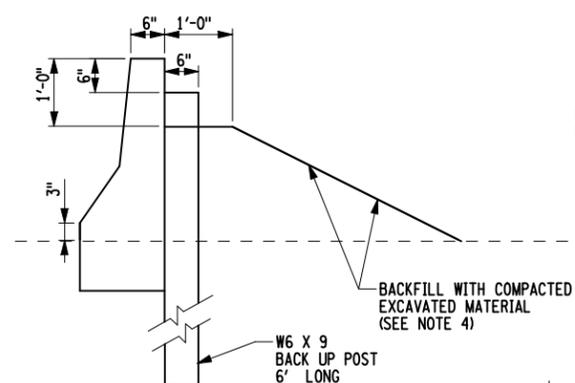
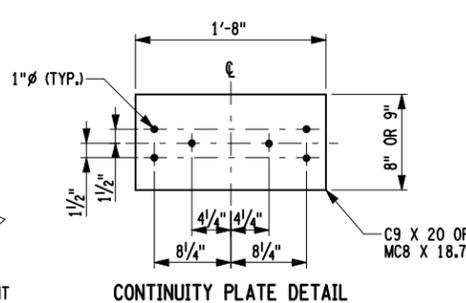
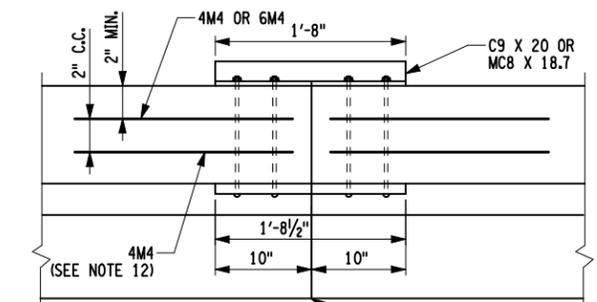
- NOTES:
- THE 9" EMBEDMENT IS TYPICAL FOR NEW AND RECONSTRUCTED MEDIANS.
  - ANY VARIATION OF THE 9" (TYPICAL) EMBEDMENT WILL BE DETAILED ON THE PLANS.
  - FREE STANDING HALF-SECTION BARRIERS ON STRUCTURES, AND SPECIAL SECTIONS WILL BE DETAILED ON THE PLANS.
  - HALF SECTION BARRIERS SHALL BE BACKED UP ON EITHER SIDE OF AN EXPANSION JOINT OR THE BEGINNING OF A RUN WITH W6 X 9 BACKUP POSTS PLACED AT 80" CENTERS OR EARTH BACKFILL PLACED IN LAYERS NOT TO EXCEED 6" AND COMPACTED TO THE SATISFACTION OF THE ENGINEER, EXCEPT WHEN THE METHOD OF BACKING UP THE BARRIER IS SPECIFIED IN THE CONTRACT DOCUMENTS, UNLESS SPECIFIED OTHERWISE, CONTINUITY CONNECTIONS SHALL BE REQUIRED AT EXPANSION JOINTS IN HALF-SECTION BARRIER ONLY WHEN STEEL BACKUP POSTS ARE USED.
  - REINFORCEMENT IS REQUIRED IN END TAPERS. MARK 4M1 A, B, C, OR H BARS, DEPENDING ON THE BARRIER TYPE, AND MARK 4M2 ARE REQUIRED ONLY ON THE END ADJACENT TO THE FULL SECTION.
  - ON HALF SECTION BARRIER UNIT, BEND THE STIRRUP MARK 4M1H SO THAT IT WILL LIE PARALLEL TO BOTH FACES OF THE BARRIER.
  - THE BARRIER SHALL CONVERGE WITH THE ROADWAY WITH A FLARE RATE OF 1:15. IF IT IS NOT POSSIBLE TO TERMINATE THE BARRIER OUTSIDE THE CLEAR ZONE, THE END OF THE BARRIER SHALL BE SHIELDED WITH CUSHION WHICH SHALL BE PAID FOR SEPARATELY.
  - ON REDUCED SPEED FACILITIES, (OPERATING AND DESIGN SPEED < 50 MPH), AT SIGNAL CONTROLLED INTERSECTIONS, AND AT STOP CONDITIONS, THE CONCRETE MEDIAN BARRIER MAY BE TERMINATED WITH A TAPERED END SECTION.
  - THE TAPERED END SECTION SHALL BE EITHER CAST-IN-PLACE OR PRECAST AND SHALL CONFORM TO THE DETAILS FOR TAPERED END SECTIONS ON THE STANDARD SHEET TITLED "CONCRETE BARRIER (CAST-IN-PLACE)" OR "PRECAST CONCRETE BARRIER".
  - MACHINE FORMED BARRIERS SHALL HAVE A SMOOTH FINISH AND THE CONTRACTOR SHALL STEEL TROWEL ANY SURFACE AS DIRECTED BY THE ENGINEER.
  - WHEN CONCRETE BARRIER IS PLACED ADJACENT TO PORTLAND CEMENT CONCRETE PAVEMENT OR SHOULDERS, THE BARRIER SHALL BE SEPARATED FROM THE CONCRETE AS FOLLOWS: REMOLDED RESILIENT JOINT FILLER CONFORMING TO THE REQUIREMENTS OF §705-07 SHALL BE PLACED IN THE JOINT BETWEEN THE BARRIER AND THE CONCRETE PAVEMENT OR SHOULDER. THE REMOLDED JOINT FILLER SHALL BE 1/2" WIDE AND EXTEND TO THE BOTTOM OF THE CONCRETE PAVEMENT OR SHOULDER. A RECESS OF APPROXIMATELY 1" SHALL BE PROVIDED AT THE TOP OF THE JOINT FOR INSTALLATION OF A BACKER ROD AND JOINT SEALANT; THE JOINT SEALANT SHALL BE A SILICONE SEALANT APPEARING ON THE DEPARTMENT'S APPROVED LIST AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
  - THIS BAR IS NOT REQUIRED WHEN 6M4 IS USED ON THE BACK SIDE.
  - WHERE TAPERED END SECTIONS ARE SPECIFIED, THE CONTRACTOR SHALL HAVE THE OPTION OF SUPPLYING PRECAST CONCRETE END SECTIONS OR CAST-IN-PLACE FOR THE END TAPER. THE TYPE "A" END TAPER MAY BE USED WITH ANY TYPE BARRIER UNLESS SPECIFIED OTHERWISE. WHEN THE TYPE "A" END TAPER IS USED WITH TYPE "B" OR TYPE "C" BARRIERS, A 20' TRANSITION PIECE SHALL BE PLACED BETWEEN THE TYPE "A" END TAPER AND THE BARRIER SPECIFIED. WHEN THE TYPE "A" END TAPER IS USED WITH THE HALF SECTION BARRIER, EARTH BACKFILL SHALL BE PLACED BEHIND THE END SECTION NO. 1 OF THE END TAPER AND THE FIRST SECTION OF THE BARRIER. THE BACKFILL SHALL BE PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF NOTE 4.

NOTE: THE 19:2 AND 10:7 ARE TYPICAL FOR ALL CONCRETE BARRIERS AND SHALL NOT BE CHANGED EXCEPT AT END TAPERS AND TRANSITIONS. THE BREAK BETWEEN THE 19:2 AND THE 10:7 SLOPES SHALL ALWAYS BE 13" ABOVE THE FINISHED GRADE EXCEPT IN TRANSITIONS.



BAR LIST								LOCATION	
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	
4M1A	4	8	6'-1"	STIRRUP	5 1/2"	3'-0"	1 1/2"	—	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT ON THE TYPE "A" BARRIER.
4M1B	4	8	6'-3 1/2"	STIRRUP	6 1/2"	3'-0"	1 1/2"	5"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT ON THE TYPE "B" BARRIER.
4M1C	4	8	6'-6 1/2"	STIRRUP	8"	3'-0"	1 1/2"	8"	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT ON THE TYPE "C" BARRIER.
4M1H	4	8	4'-0"	STIRRUP	5"	3'-0"	1"	—	STIRRUP - 4 ON EACH SIDE OF THE EXPANSION JOINT ON THE HALF SECTION BARRIER.
4M2	4	12	2'-0"	STRINGER	—	—	—	—	LONGITUDINAL - 6 ON EACH SIDE OF THE EXPANSION JOINT EXCEPT FOR THE HALF SECTION BARRIER WHICH HAS 3 ON EACH SIDE OF THE EXPANSION JOINT.
4M3	4	2	—	STRINGER	—	—	—	—	CONTINUOUS FROM EXPANSION JOINT TO EXPANSION JOINT.
4M4	4	4	4'-10"	STIRRUP	3"	2'-3"	3"	—	STIRRUP FOR CONTINUITY CONNECTION.

BACKUP POST LAYOUT AT HALF SECTION EXPANSION JOINT



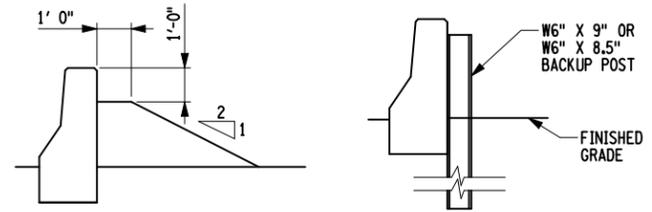
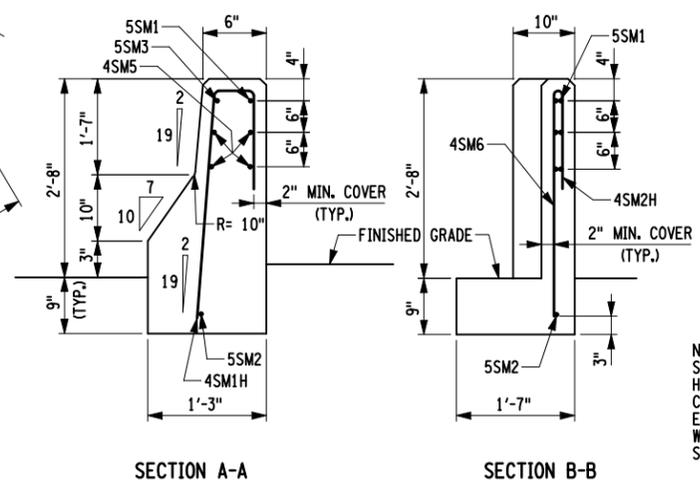
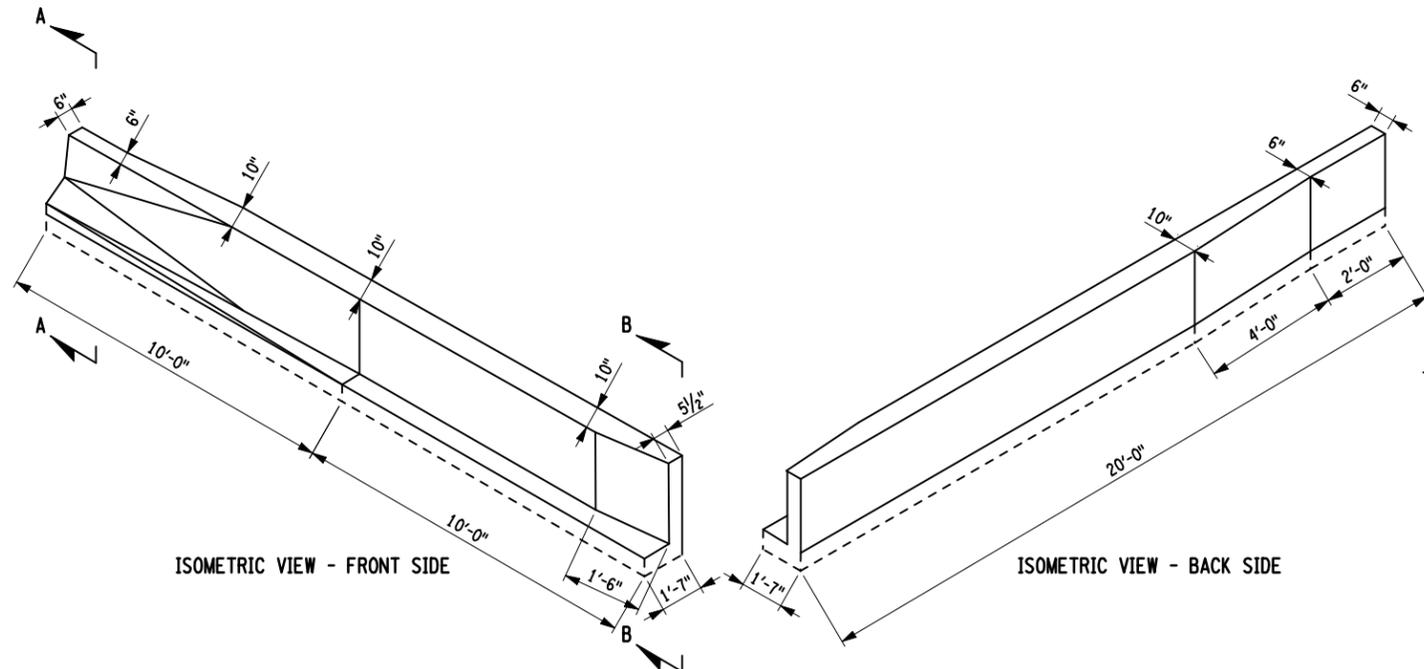
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CONTINUITY CONNECTION FOR HALF SECTION BARRIER (FOR USE AT EXPANSION JOINTS IN HALF SECTION CONCRETE BARRIER)

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
MACHINE FORMED CONCRETE BARRIER	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/s/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-37

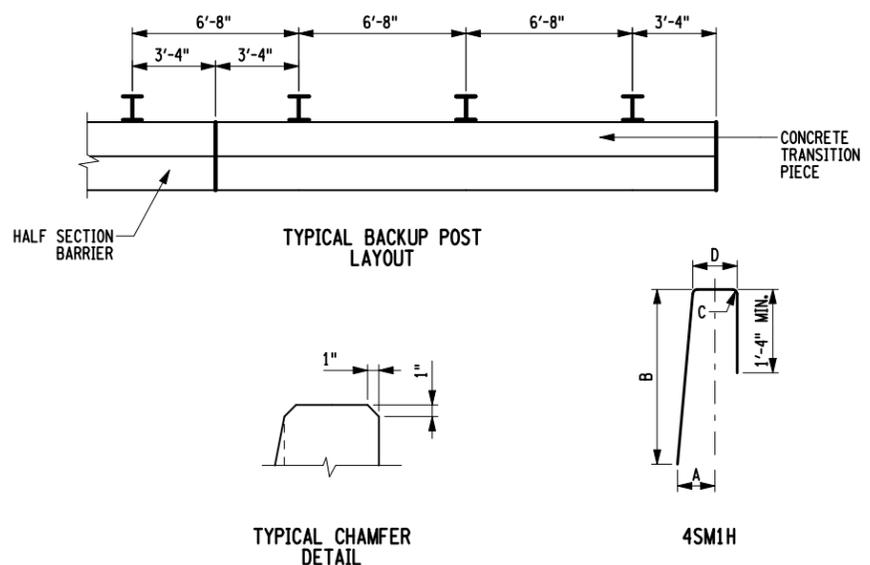
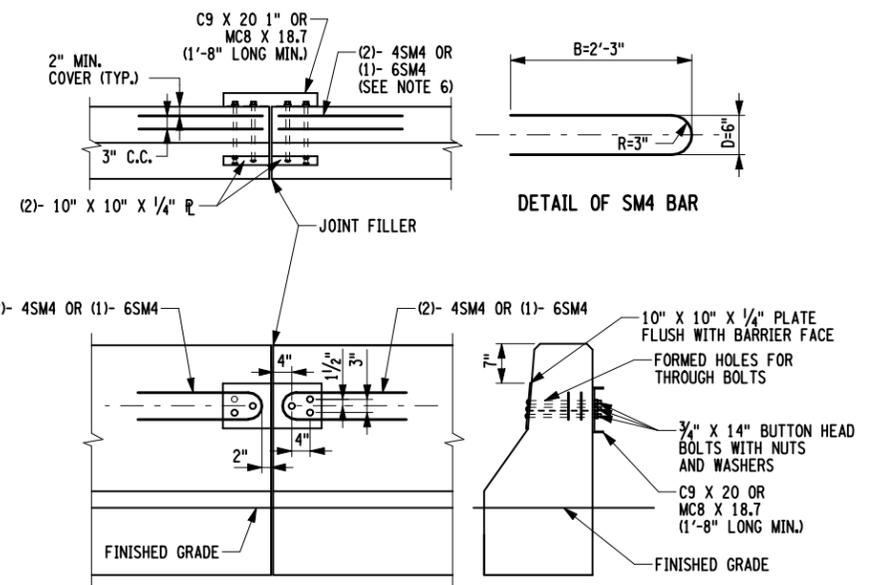
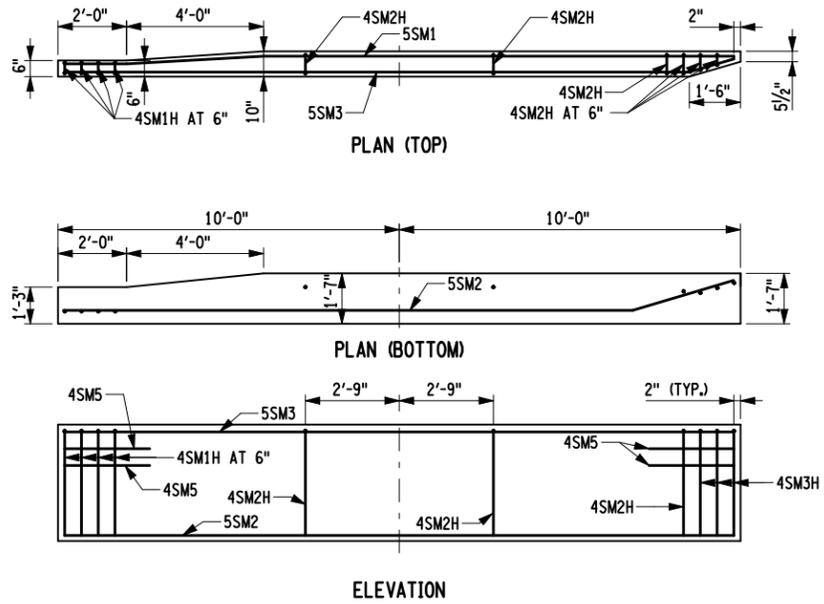
EFFECTIVE DATE: 01/08/09





**CONCRETE HALF SECTION TRANSITION BARRIER WITH EARTH BACKUP**  
**CONCRETE HALF SECTION TRANSITION BARRIER WITH BACKUP POST**

NOTE: EARTH BACKUP SHALL CONSIST OF FULLY COMPACTED SUITABLE MATERIAL CONFORMING TO SUBSECTION 203-1.08 HAVING NO PARTICLES GREATER THAN 1/2" AND COMPACTED IN ACCORDANCE WITH SUBSECTION 203-3.12. EARTH BACKUP SHALL EXTEND FULL HEIGHT FROM THE POINT WHERE SECTION A-A IS DRAWN TO A POINT 6' 5" FROM WHERE SECTION B-B IS DRAWN.

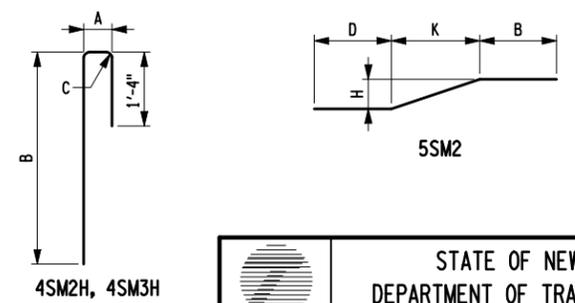


- NOTES:
- VERTICAL AND SLOPING CONCRETE SURFACE SHALL BE SMOOTH.
  - MATERIALS SHALL CONFORM TO SUBSECTION 606-2.14, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
  - CONSTRUCTION SHALL CONFORM TO SUBSECTION 606-3.19, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
  - UNLESS INDICATED OTHERWISE: EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 206-3.01. GRANULAR BACKFILL SHALL CONFORM WITH SECTION 304 AND SHALL MATCH THE SUBBASE COURSE TYPE USED ON THE ADJACENT ROADWAY.
  - CONTINUITY CONNECTION SHALL BE GALVANIZED.
  - IF THE 6SM4 BAR IS USED, THEN 4SM4 BARS NEED NOT BE USED.
  - FOR RAILING LAYOUT AND DETAILS SEE STANDARD SHEETS TITLED "TRANSITION HPBO - SINGLE SLOPE HALF SECTION".
  - CONCRETE TRANSITION PIECE SHALL BE BACKED UP WITH EARTH OR BACK-UP POSTS FOR ITS ENTIRE LENGTH.

BAR LIST											
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1H	4	4	4'-6"	STIRRUP	5 1/4"	3'-0"	1 1/2"	3"	—	—	AT CONCRETE BARRIER END
4SM2H	4	3	4'-9"	STIRRUP	6"	3'-0"	1 1/2"	—	—	—	AT CORRUGATED RAIL END AND AT 2'-9" FROM MIDPOINT
4SM3H	4	3	VARIES 4'-6" - 4'-9"	STIRRUP	VARIES 2 1/2" - 6"	3'-0"	1"	—	—	—	3 AT CORRUGATED RAIL END
4SM4	4	2 *	4'-9"	STIRRUP	—	2'-3"	3"	6"	—	—	2 AT EXPANSION JOINT SIDE
4SM5	4	8	2'-0"	STRAIGHT	—	—	—	—	—	—	4 AT EACH END
5SM1	5	1	19'-8"	STRINGER	—	13'-9"	—	1'-11"	4"	4'-0"	LONGITUDINAL 1 IN TOP
5SM2	5	1	19'-8 1/2"	STRINGER	—	—	—	17'-7"	4 1/4"	2'-1"	LONGITUDINAL 1 IN BOTTOM
5SM3	5	1	19'-8"	STRINGER	—	—	—	18'-4"	4"	1'-4"	LONGITUDINAL 1 IN TOP
6SM4	6	1 *	4'-9"	STIRRUP	—	2'-3"	3"	6"	—	—	SEE DETAIL OF SM4 BAR

\* SEE NOTE 6

NOTE: ALL BARS ARE TO BE EPOXY COATED



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STATE OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

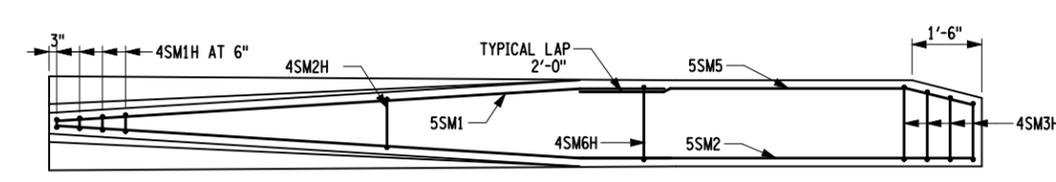
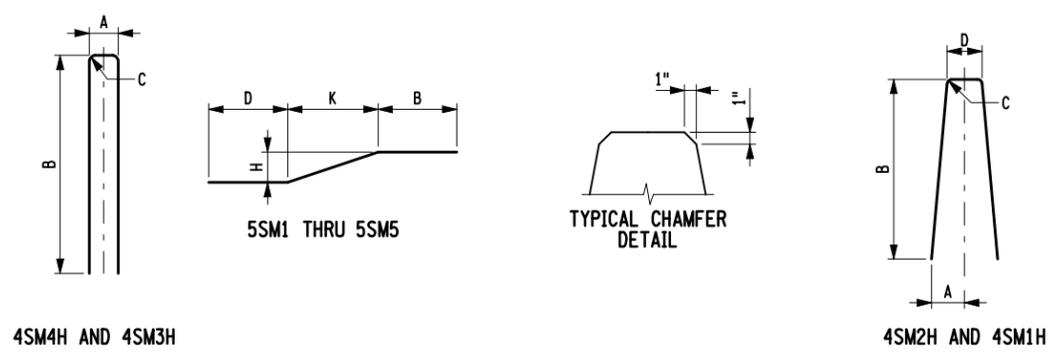
TRANSITION: HPBO - JERSEY SHAPE  
 (MAINTENANCE SUPPORT)

APPROVED SEPTEMBER 19, 2008 ISSUED UNDER EB 08-036

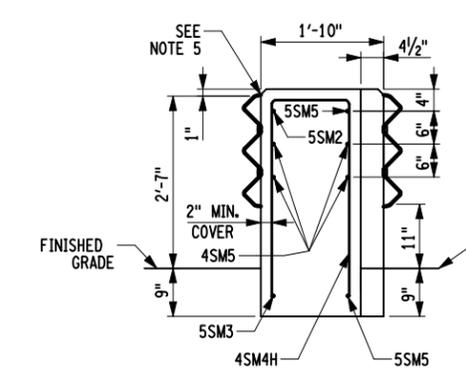
/S/ DANIEL D'ANGELO, P.E.  
 DEPUTY CHIEF ENGINEER  
 (DESIGN)

EFFECTIVE DATE: 01/08/09

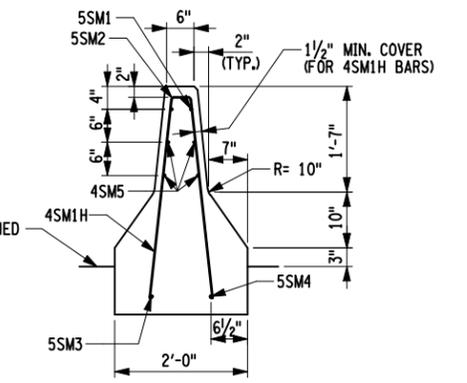
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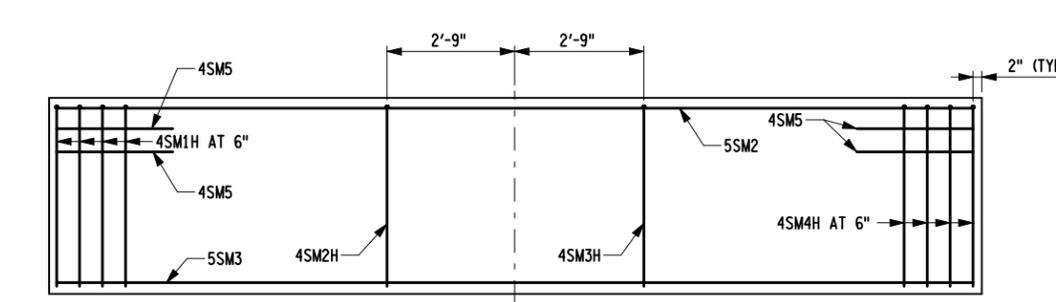
PLAN (TOP)



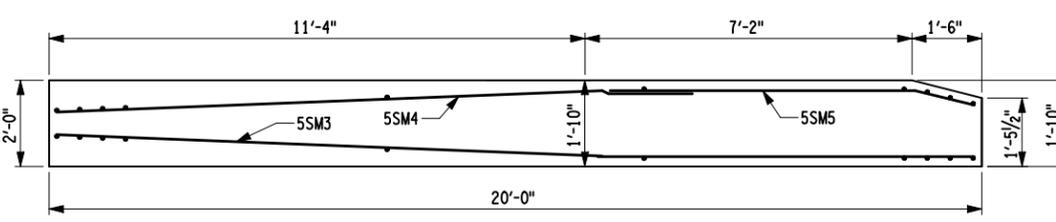
SECTION A-A



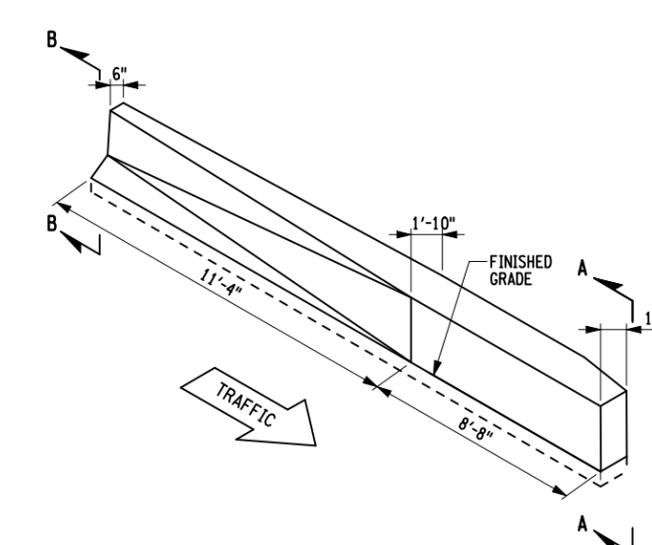
SECTION B-B



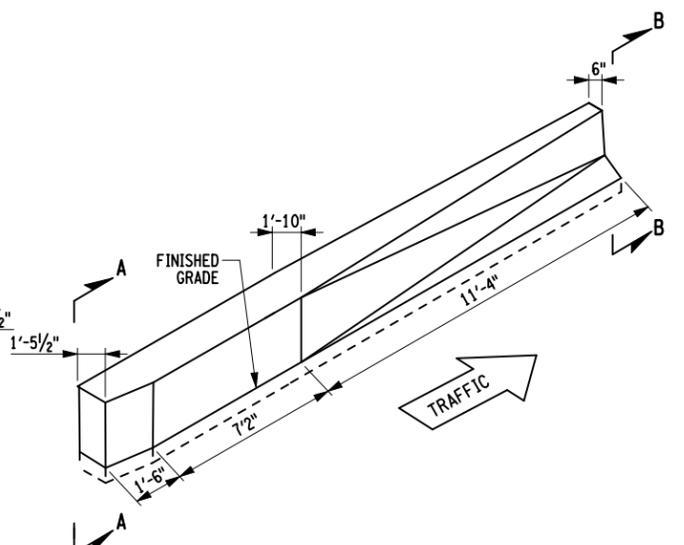
REINFORCEMENT ELEVATION



PLAN (BOTTOM)



DEPARTURE SIDE ISOMETRIC



APPROACH SIDE ISOMETRIC

NOTES:

1. SURFACE SHALL BE SMOOTH.
2. MATERIALS SHALL CONFORM TO §606-2.14, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
3. CONSTRUCTION SHALL CONFORM TO §606-3.19, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
4. UNLESS INDICATED OTHERWISE, EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH §206-3.01. GRANULAR BACKFILL SHALL CONFORM WITH SECTION 304 AND SHALL MATCH THE SUBBASE COURSE TYPE USED ON THE ADJACENT ROADWAY.
5. FOR CORRUGATED MEDIAN BARRIER TRANSITION DETAILS SEE STANDARD SHEET TITLED TRANSITION: HPB0 MEDIAN - CONCRETE WALL. (2 SHEETS).

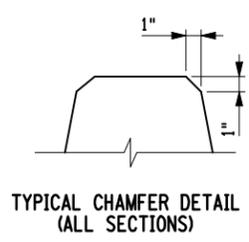
BAR LIST

MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	H	K	LOCATION
4SM1H	4	4	VARIABLES FROM 6'-1" - 6'-3"	STIRRUP	VARIABLES FROM 5" - 5 1/2"	3'-0"	1 1/2"	VARIABLES FROM 3" - 4"	—	—	AT CONCRETE BARRIER END
4SM2H	4	1	7'-0"	STIRRUP	7 1/2"	3'-0"	1 1/2"	1'-1/2"	—	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM3H	4	1	7'-5"	STIRRUP	1'-6"	3'-0"	1 1/2"	—	—	—	AT 2'-9" FROM THE MIDPOINT OF THE BARRIER UNIT
4SM4H	4	4	VARIABLES FROM 7'-0" - 7'-5"	STIRRUP	VARIABLES FROM 1'-1" - 1'-6"	3'-0"	1 1/2"	—	—	—	AT CORRUGATED RAIL END
4SM5	4	8	2'-6"	STRAIGHT	—	—	—	—	—	—	4 AT EACH END
5SM1	5	1	13'-2"	STRINGER	—	—	—	11'-2"	1 1/4"	2'-0"	LONGITUDINAL 1 IN TOP
5SM2	5	1	19'-9"	STRINGER	—	—	—	11'-2"	6"	8'-6"	LONGITUDINAL 1 IN TOP
5SM3	5	1	19'-8"	STRINGER	—	—	—	11'-2"	3"	8'-6"	LONGITUDINAL 1 IN BOTTOM
5SM4	5	1	13'-2"	STRINGER	—	11'-2"	—	—	3/4"	2'-0"	LONGITUDINAL 1 IN BOTTOM
5SM5	5	1	8'-6"	STRINGER	—	—	—	7'-2"	4"	1'-4"	LONGITUDINAL 1 IN TOP 1 IN BOTTOM

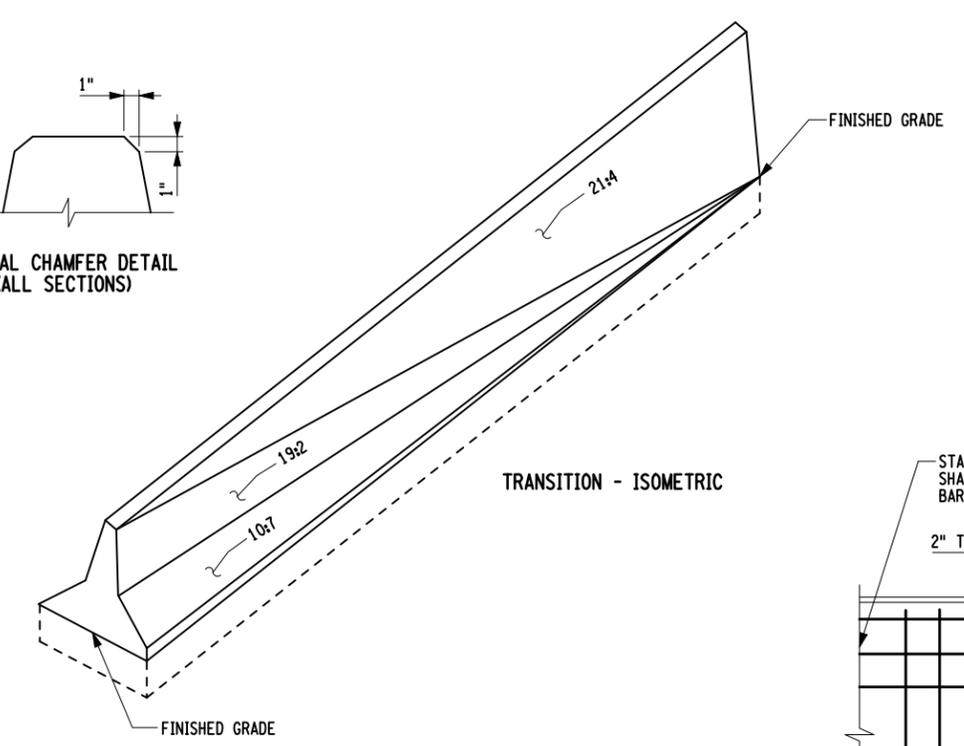
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	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
U.S. CUSTOMARY STANDARD SHEET	
<b>TRANSITION: CONCRETE WALL - JERSEY MEDIAN</b> <b>(MAINTENANCE SUPPORT)</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	606-41

EFFECTIVE DATE: 01/08/09



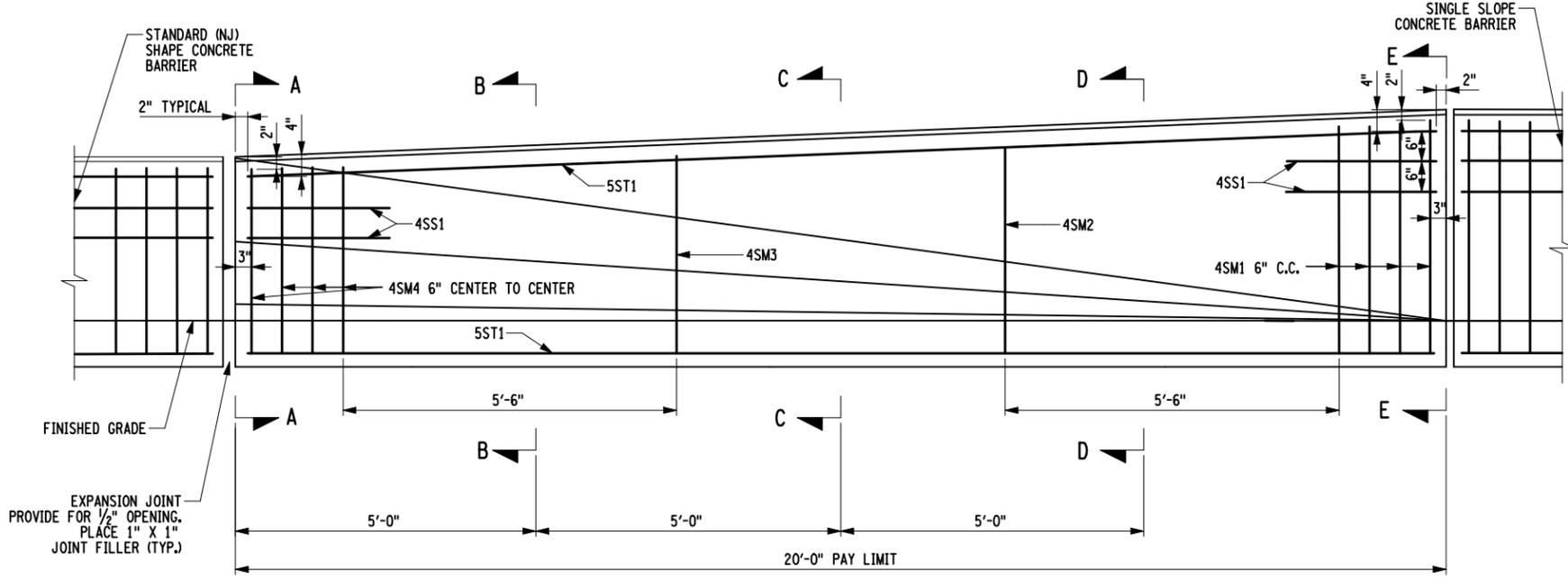
TYPICAL CHAMFER DETAIL (ALL SECTIONS)



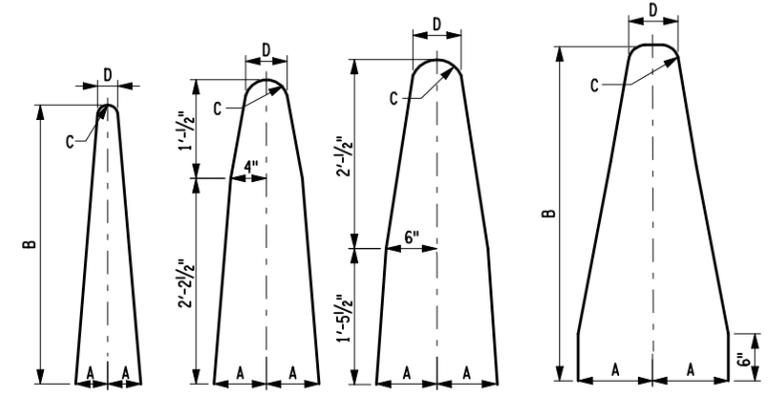
TRANSITION - ISOMETRIC

BAR LIST									
MARK	SIZE	NO.	LENGTH	USE	A	B	C	D	LOCATION
4SM1	#4	4	VARIES 7'-9 1/2" TO 7'-11"	STIRRUP	10"	VARIES 3'-9" TO 3'-10"	1 1/2"	4"	4 AT 6" CENTERS AT END ADJACENT TO THE SINGLE SLOPE BARRIER
4SM2	#4	1	7'-2"	STIRRUP	8 1/2"	3'-6"	1 1/2"	3 1/2"	5'-5 1/2" FROM 4SM1 BARS
4SM3	#4	1	6'-8 1/2"	STIRRUP	7"	3'-3 1/2"	1 1/2"	3"	5'-5 1/2" FROM 4SM4 BARS
4SM4	#4	4	VARIES 6'-2 1/2" TO 6'-4"	STIRRUP	5 1/2"	VARIES 3'-0" TO 3'-1"	1 1/2"	3"	4 AT 6" CENTERS AT END ADJACENT TO THE JERSEY BARRIER
4SS1	#4	8	2'-6"	STRAIGHT	—	—	—	—	4 AT EACH END OF TRANSITION
5ST1	#5	4	19'-8"	STRINGER	—	—	—	—	LONGITUDINAL 2 IN TOP - 2 IN BOTTOM

BARS ARE TO BE EPOXY COATED GRADE 420



ELEVATION VIEW



STIRRUP 4SM4

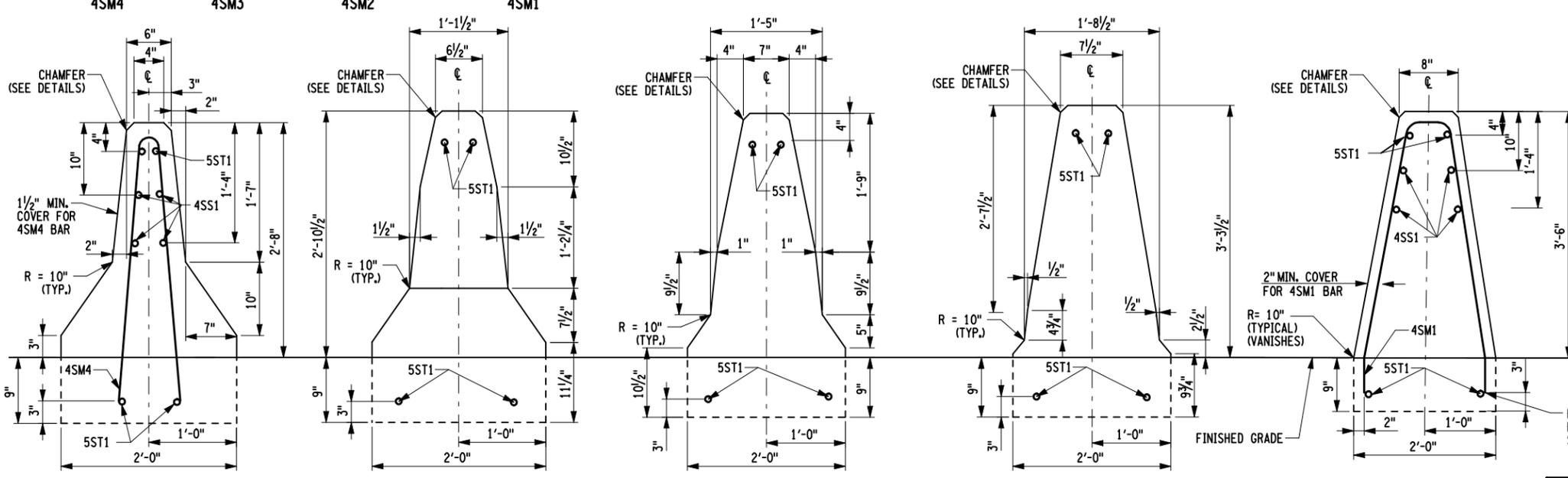
STIRRUP 4SM3

STIRRUP 4SM2

STIRRUP 4SM1

NOTES:

1. SURFACES SHALL BE SMOOTH.
2. MATERIALS SHALL CONFORM TO §606-2.14, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
3. CONSTRUCTION SHALL CONFORM TO §606-3.19, TRANSITIONS CONSTRUCTED OF, OR WITH, CONCRETE.
4. UNLESS INDICATED OTHERWISE: EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH §206-3.01. GRANULAR BACKFILL SHALL CONFORM WITH §304 AND SHOULD MATCH THE SUBBASE COURSE TYPE USED ON THE ADJACENT ROADWAY.
5. BENDING OF BOTTOM OF STIRRUPS SHOWN IN SECTION E-E IS NOT NECESSARY, PROVIDED COVER REQUIREMENTS ARE SATISFIED.



SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

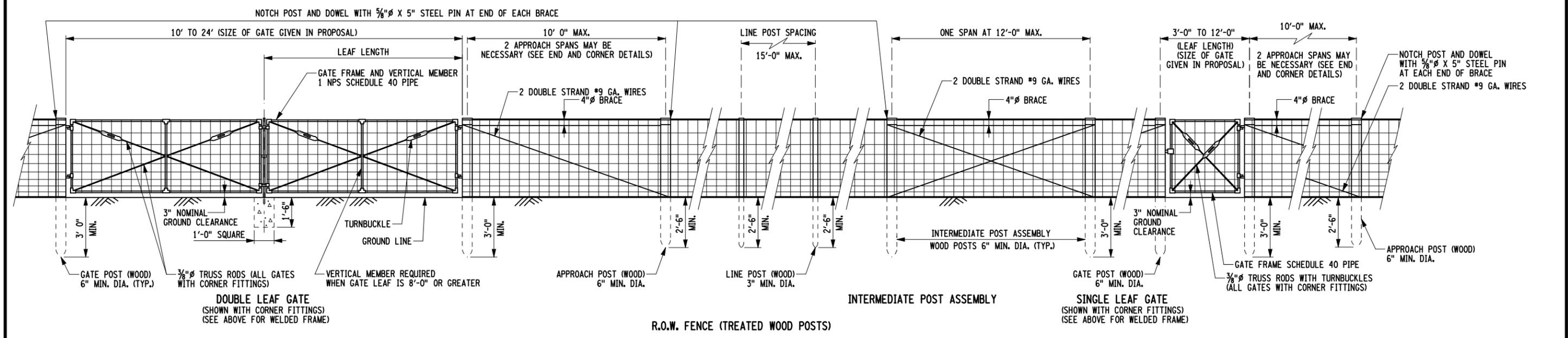
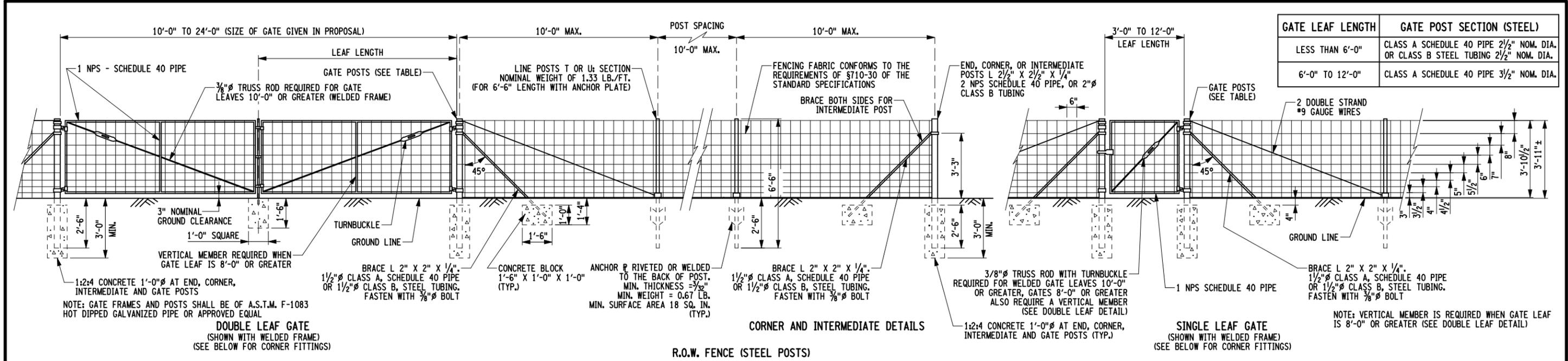
SECTION E-E

EFFECTIVE DATE: 01/08/09

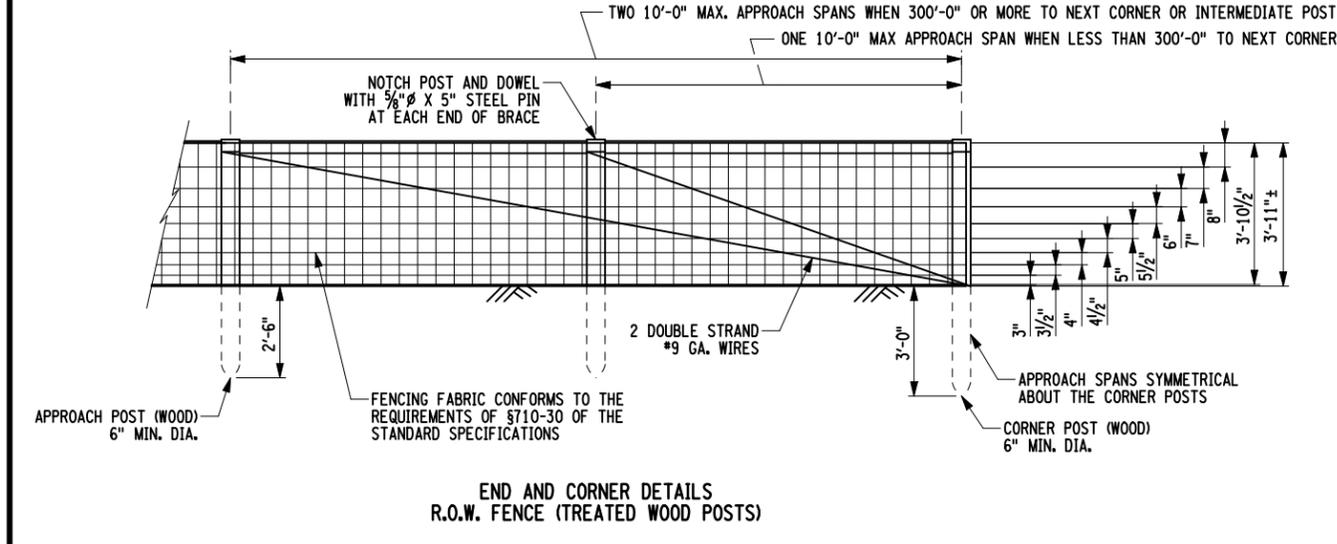
 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>TRANSITION: CONCRETE BARRIER BETWEEN STANDARD (NJ) AND SINGLE SLOPE CONCRETE SHAPES</p>	
<p>APPROVED SEPTEMBER 19, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)</p>	<p>606-42</p>

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 DATE/TIME = 20-NOV-2008 14:05  
 USER = jturley

FILE NAME = IP\_PWP-d0109553\607-01.dgn  
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 USER = jturley

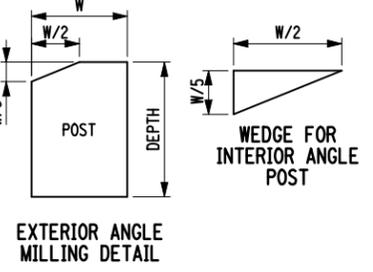
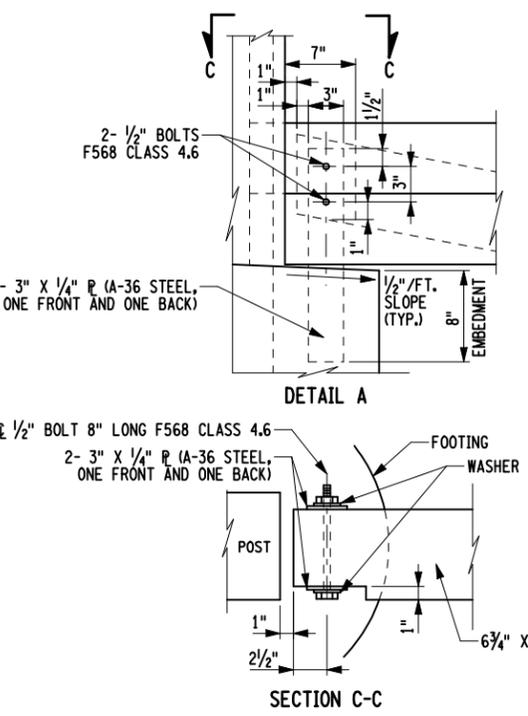
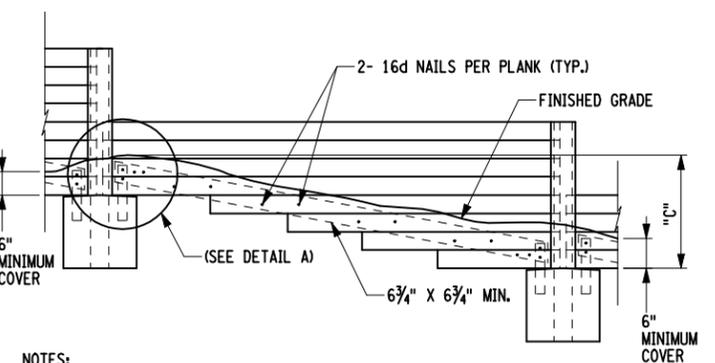
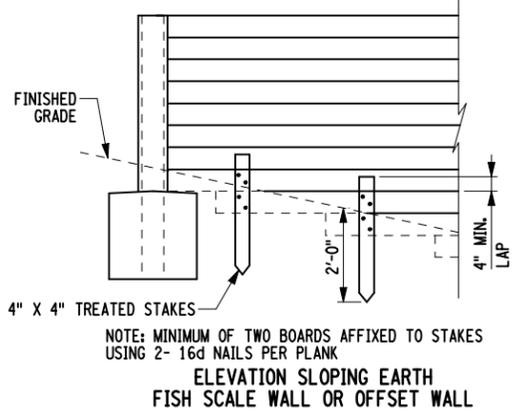
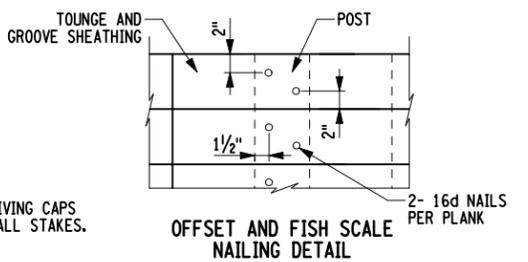
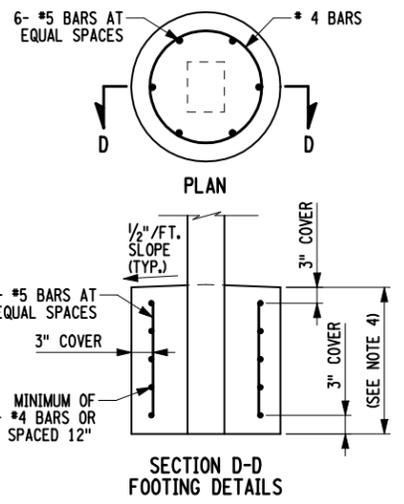
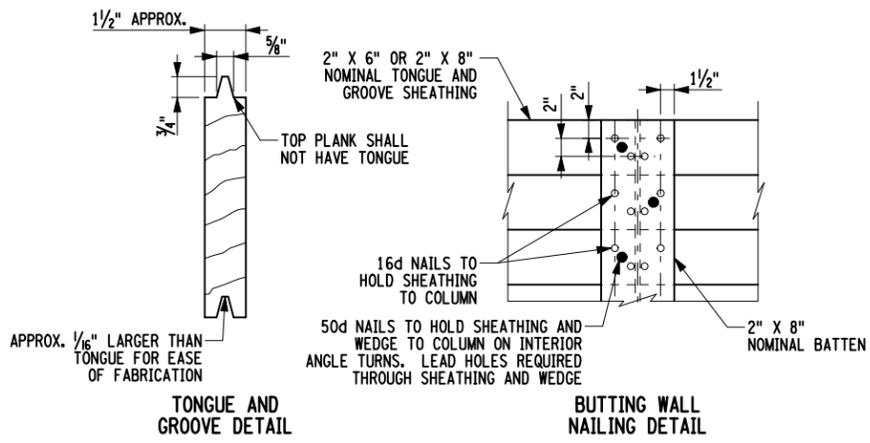
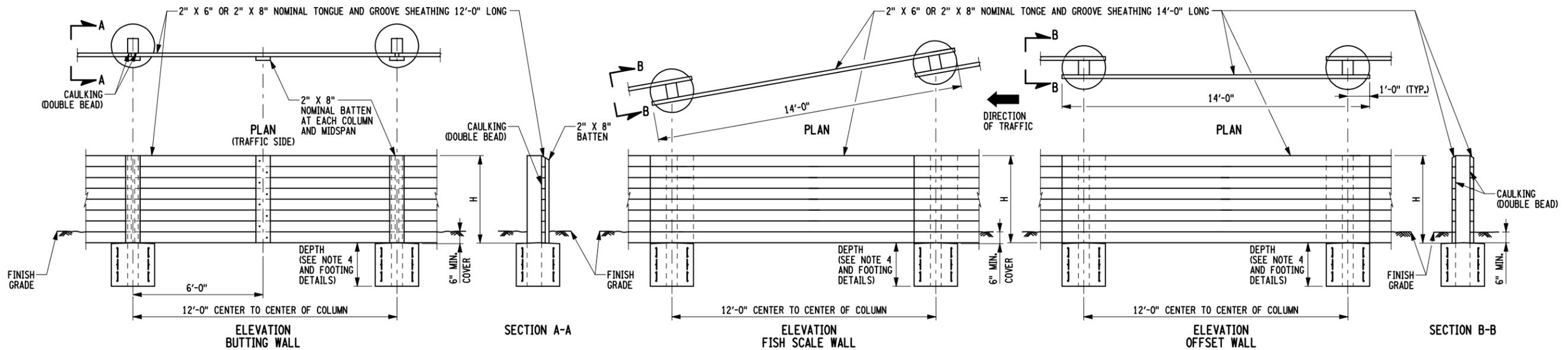


- NOTES:
- R.O.W. FENCING SHALL MEET THE REQUIREMENTS OF §607 AND §710-30, RIGHT OF WAY FENCING, OF THE STANDARD SPECIFICATIONS.
  - POSTS, INCLUDING ENCASEMENTS, SHALL BE SO SET INSIDE THE R.O.W. LINE SO THAT THE FENCING PLACED ON THE R.O.W. LINE SIDE OF POSTS WILL BE AS NEARLY ON THE R.O.W. LINE AS IS POSSIBLE. WHERE PERMITTED BY THE ENGINEER, THE FABRIC MAY BE PLACED ON THE OPPOSITE SIDE IN ORDER FOR FABRIC TO BE PULLED TIGHT AGAINST THE POST.
  - POSTS IN ROCK - WHERE SUBSTANTIAL ROCK IS ENCOUNTERED, A HOLE ONE (1) INCH LARGER IN DIAMETER THAN THE POST, AND OF 12" MINIMUM DEPTH FOR LINE POSTS AND 18" MINIMUM DEPTH FOR END, CORNER, INTERMEDIATE OR GATE POSTS, SHALL BE MADE. AFTER INSERTING STEEL POSTS, THE HOLES SHALL BE BACKFILLED WITH 1:2 MORTAR CONSISTING OF ONE PART PORTLAND CEMENT AND TWO PARTS FINE AGGREGATES MIXED TO A PLASTIC CONSISTENCY SHOWING NO SIGNS OF FREE WATER. HAND MIXING AND CONSOLIDATION OF THE MORTAR IS PERMITTED. WOOD POSTS IN ROCK HOLES SHALL BE BACKFILLED WITH WELL TEMPERED SAND.
  - INTERMEDIATE POST ASSEMBLIES SHALL BE PLACED AT A MAXIMUM OF 400 FT. IN CONTINUOUS RUNS OF RIGHT OF WAY FENCING AND AT SHARP BREAKS IN VERTICAL GRADE.
  - STEEL CORNER POST ASSEMBLIES (STEEL SYSTEMS) OR WOOD CORNER POSTS WITH APPROACH SPANS (WOOD SYSTEMS) SHALL BE USED AT EVERY CHANGE IN HORIZONTAL ALIGNMENT EQUAL OR GREATER THAN 15°.
  - UNLESS OTHERWISE SHOWN OR DIRECTED BY THE ENGINEER, CONCRETE SHALL BE LEFT 4" BELOW FINAL GRADE TO AVOID FROST HEAVING.



 <b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>R.O.W. FENCING</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	607-01

EFFECTIVE DATE: 01/08/09



"H" HEIGHT	MINIMUM COLUMN DIMENSIONS	
	POSTS AND TIMBERS	GLULAM POSTS
4'-0"	6" X 8"	6 3/4" X 6"
6'-0"	8" X 8"	6 3/4" X 6"
8'-0"	8" X 10"	6 3/4" X 6 3/4"
10'-0"	8" X 12"	6 3/4" X 8 3/4"
12'-0"	12" X 12"	6 3/4" X 10 1/2"
14'-0"	12" X 14"	6 3/4" X 12"
16'-0"	12" X 16"	6 3/4" X 13 1/2"
18'-0"	12" X 18"	6 3/4" X 15"
20'-0"	12" X 20"	6 3/4" X 17 1/4"

\* TOP SIZE FOR 2'-0" FOOTING

NOTE: ANGLE POSTS SHALL BE A MINIMUM OF 2" GREATER IN DEPTH THAN REQUIRED IN TABLE FOR EXTERIOR ANGLE TURNS.

- GENERAL NOTES:
- ALL STRUCTURAL STEEL MEMBERS, HARDWARE, AND FASTENERS EXCEPT NAILS SHALL BE GALVANIZED. NAILS SHALL BE CEMENT OR RESIN COATED. THE PORTIONS OF GALVANIZED STRUCTURAL MEMBERS EXPOSED TO VIEW SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIFICATIONS.
  - PRESERVATIVE TREATMENT OF LUMBER, TIMBERS, AND STRUCTURAL GLUED LAMINATED MEMBERS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
  - SAFETY, FIRE MAINTENANCE, OR DRAINAGE OPENINGS SHALL BE AS SHOWN ON THE PLANS.
  - FOOTINGS EMBEDMENT DEPTHS FOR SELECTED FOOTING DIAMETERS WILL BE SHOWN ELSEWHERE IN THE CONTRACT DOCUMENTS.
  - SAWED TIMBER AND DIMENSION LUMBER ARE NOMINAL. GLUE LAM DIMENSIONS ARE ACTUAL.
  - TOPS OF POSTS AND SHEETING SHALL BE SLOPED TO SHED WATER.
  - AT POSTS WHERE THE NOISE WALL CHANGES HEIGHT, USE THE GREATER HEIGHT TO SELECT THE POST SIZE.

- NOTES:
- ON SLOPING TERRAIN THE CONTRACTOR HAS THE OPTION OF USING THIS METHOD OR PLACING THE FOOTINGS AT THE SAME LEVEL WITH GROUND COVER VARYING FROM 6" MIN. TO "C".
  - STAKES MAY BE USED ON SLOPING EARTH BUTTING WALL. SEE SLOPING EARTH FISH SCALE WALL ELEVATION FOR STAKING DETAILS.

ELEVATION SLOPING EARTH BUTTING WALL

SECTION C-C

EFFECTIVE DATE: 01/08/09

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

**NOISE BARRIER - WALL DETAILS  
(HORIZONTAL SHEATHING)**

APPROVED SEPTEMBER 19, 2008      ISSUED UNDER EB 08-036

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

607-02

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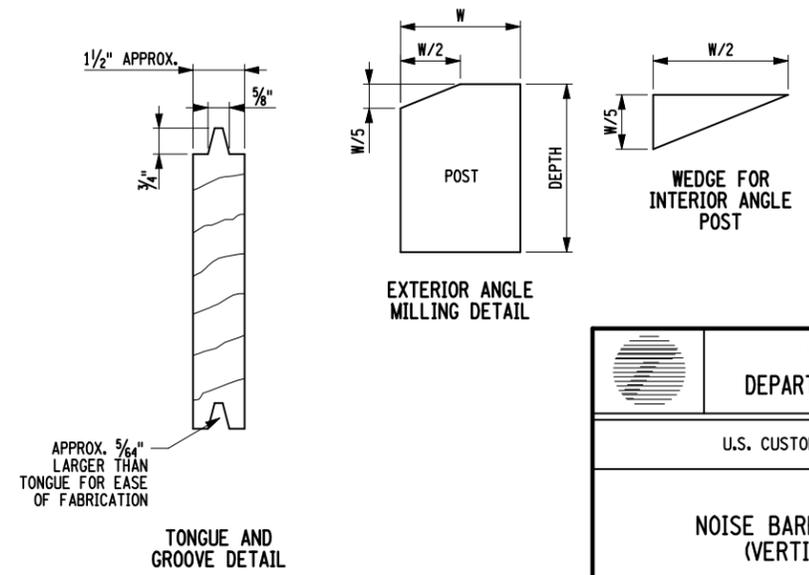
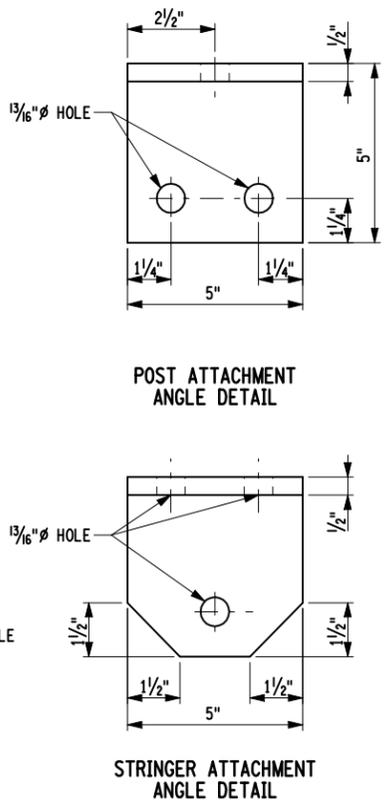
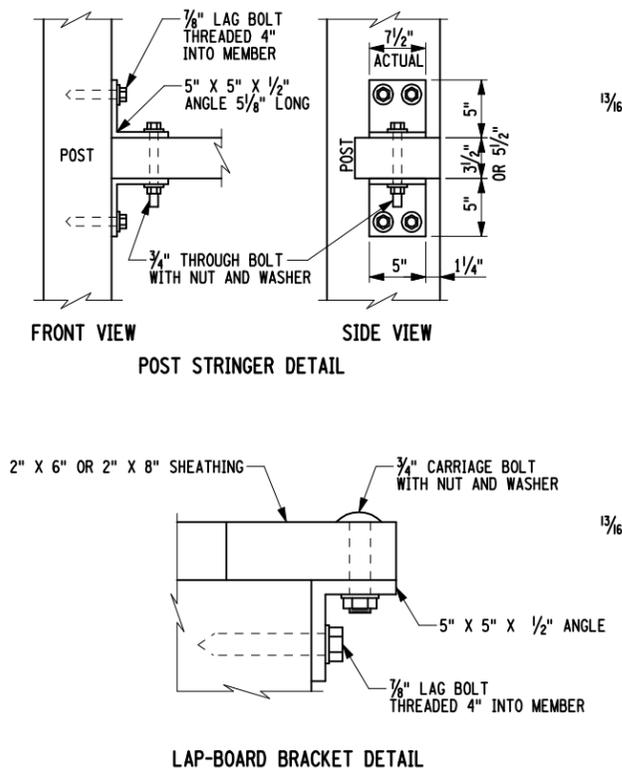
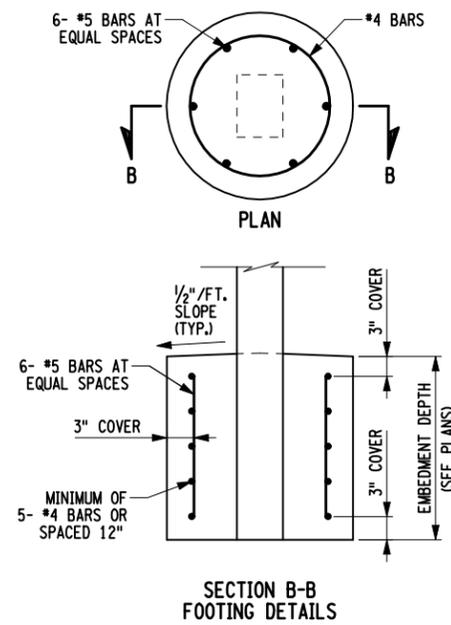
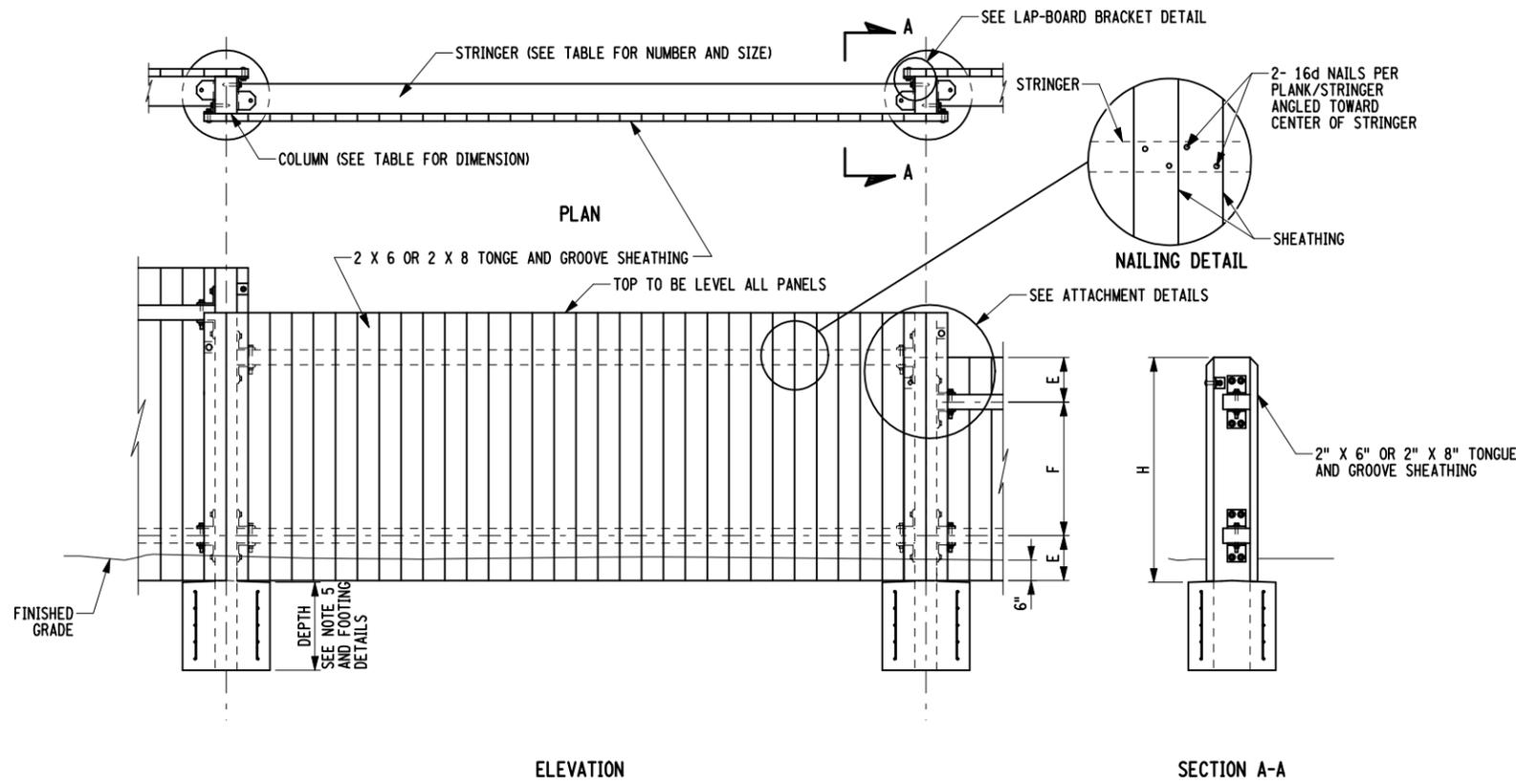
TABLE OF COLUMN AND STRINGER DATA

HEIGHT OF WALL	COLUMN		STRINGER			
	TIMBER (NOMINAL SIZE)	GLUE LAM	STRINGER (NOMINAL SIZE)	STRINGER NO.	F MAX. SPACING	E MAX. SPACING
5'-0"	6" X 10"	6 3/4" X 6 3/4"	4" X 8"	2	3'-0"	1'-0"
6'-0"	6" X 10"	6 3/4" X 6 3/4"	4" X 8"	2	4'-0"	1'-0"
7'-0"	6" X 12"	6 3/4" X 6 3/4"	4" X 8"	2	5'-0"	1'-0"
8'-0"	• 6" X 12"	6 3/4" X 8 1/4"	4" X 8"	2	6'-0"	1'-0"
9'-0"	6" X 14"	6 3/4" X 9"	4" X 8"	2	6'-0"	1'-6"
10'-0"	6" X 16"	6 3/4" X 9 3/4"	6" X 8"	2	6'-0"	2'-0"
11'-0"	6" X 16"	6 3/4" X 10 1/2"	6" X 8"	2	7'-0"	2'-0"
12'-0"	8" X 16"	6 3/4" X 12"	6" X 8"	2	8'-0"	2'-0"
13'-0"	8" X 16"	6 3/4" X 12 3/4"	6" X 8"	3	4'-6"	2'-0"
14'-0"	8" X 18"	• 6 3/4" X 13 1/2"	6" X 8"	3	5'-0"	2'-0"
15'-0"	8" X 20"	6 3/4" X 15"	6" X 8"	3	5'-6"	2'-0"
16'-0"	8" X 20"	6 3/4" X 15 3/4"	6" X 8"	3	6'-0"	2'-0"
17'-0"	10" X 20"	6 3/4" X 16 1/2"	6" X 8"	3	6'-6"	2'-0"
18'-0"	10" X 20"	8 3/4" X 15 3/4"	6" X 8"	3	7'-0"	2'-0"
19'-0"	10" X 22"	8 3/4" X 16 1/2"	6" X 8"	3	7'-6"	2'-0"
20'-0"	10" X 22"	8 3/4" X 17 1/4"	6" X 8"	3	8'-0"	2'-0"

NOTE: ANGLE POSTS SHALL BE 2" MIN. GREATER IN DEPTH THAN REQUIRED IN TABLE FOR EXTERIOR ANGLE TURNS. \* LAST SECTION ALLOWED FOR 2' d FOOTING

GENERAL NOTES:

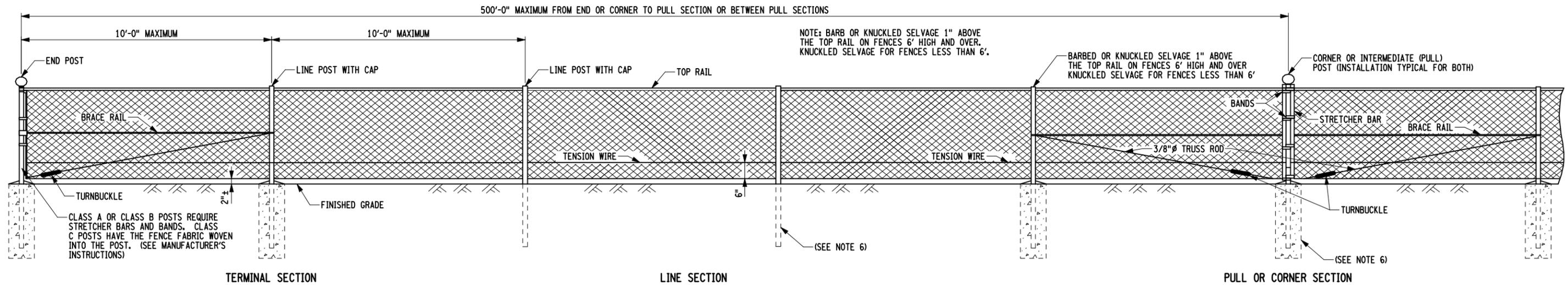
- SAWED TIMBER AND DIMENSION LUMBER SIZES ARE NOMINAL. GLUE LAMINATE ARE ACTUAL.
- SAFETY, FIRE MAINTENANCE, OR DRAINAGE OPENINGS SHALL BE AS SHOWN ON THE PLANS.
- ALL STRUCTURAL STEEL MEMBERS, HARDWARE, AND FASTENERS EXCEPT NAILS SHALL BE GALVANIZED. NAILS SHALL BE CEMENT OR RESIN COATED. THE PORTIONS OF GALVANIZED STRUCTURAL EXPOSED TO VIEW SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIFICATIONS.
- PRESERVATIVE TREATMENT OF LUMBER, TIMBERS, AND STRUCTURAL GLUED LAMINATED MEMBERS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- FOOTING EMBEDMENT DEPTH FOR SELECTED DIAMETERS WILL BE SHOWN ELSEWHERE IN THE CONTRACT DOCUMENTS. AT POSTS WHERE THE NOISE WALL CHANGES HEIGHT, USE THE GREATER HEIGHT TO SELECT THE POST SIZE.
- TOPS OF POSTS AND SHEATHING SHALL BE SLOPED TO SHED WATER.



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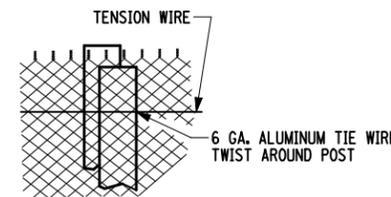
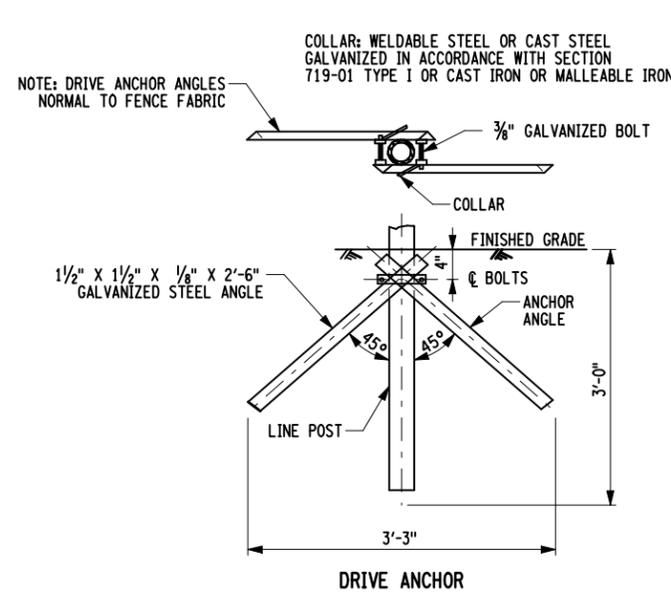
<b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>
U.S. CUSTOMARY STANDARD SHEET
<b>NOISE BARRIER - WALL DETAILS (VERTICAL SHEATHING)</b>
APPROVED SEPTEMBER 19, 2008      ISSUED UNDER EB 08-036 /S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)
<b>607-03</b>

EFFECTIVE DATE: 01/08/09

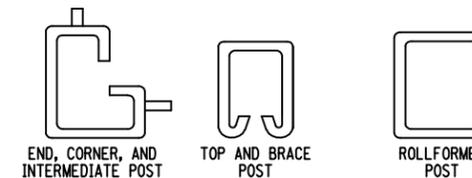


USE	SECTION	STEEL				ALUMINUM			
		NPS DESIGNATOR	ROLLFORMED AND H POSTS	O.D.	WEIGHT LBS/FT	NPS DESIGNATOR	ROLLFORMED AND H POSTS	O.D.	WEIGHT LBS/FT
END, CORNER AND INTERMEDIATE POSTS FOR FENCES 6' AND UNDER	CLASS A SCHEDULE 40 PIPE	2		2 3/8"	3.65	2		2 3/8"	1.26
	CLASS B STEEL TUBING	2		2 3/8"	3.12				
	CLASS C ROLLFORMED		3 1/2" X 3 1/2"		5.10				
END, CORNER AND INTERMEDIATE POSTS FOR FENCES OVER 6'	CLASS A SCHEDULE 40 PIPE	2 1/2		2 7/8"	5.79	2 1/2		2 7/8"	2.00
	CLASS B STEEL TUBING	2 1/2		2 7/8"	4.64				
	CLASS C ROLLFORMED		3 1/2" X 3 1/2"		5.10				
BRACE RAILS FOR FENCES UNDER 6'	CLASS A SCHEDULE 40 PIPE					1/4		1 1/16"	0.79
	CLASS B STEEL TUBING	1/4		1 1/16"	2.27	1/4		1 1/16"	0.79
	CLASS C ROLLFORMED		1 5/8" X 1 1/4"		1.35				
BRACE RAILS FOR FENCES 6' AND OVER	CLASS A SCHEDULE 40 PIPE	1/4		1 1/16"	2.27	1/4		1 1/16"	0.79
	CLASS B STEEL TUBING	1/4		1 1/16"	1.84				
	CLASS C ROLLFORMED		1 5/8" X 1 1/4"		1.35				
TOP RAIL	CLASS A SCHEDULE 40 PIPE	1/4		1 1/16"	2.27	1/4		1 1/16"	0.79
	CLASS B STEEL TUBING	1/4		1 1/16"	1.84				
	CLASS C ROLLFORMED		1 5/8" X 1 1/4"		1.35				
LINE POSTS FOR FENCES 6' AND UNDER	CLASS A SCHEDULE 40 PIPE	1/2		1 7/8"	2.72	1/2		1 7/8"	0.94
	CLASS B STEEL TUBING	1/2		1 7/8"	2.28				
	CLASS C ROLLFORMED		1 7/8" X 1 5/8"		2.40				
	H POSTS		2 1/4" X 1 3/4"		3.43		1 7/8" X 1 9/16"		0.90
	H POSTS						2 1/4" X 2"		1.22
LINE POSTS FOR FENCES GREATER THAN 6' AND EQUAL TO OR LESS THAN 8'	CLASS A SCHEDULE 40 PIPE	2		2 3/8"	3.65	2		2 3/8"	1.26
	CLASS B STEEL TUBING	2		2 3/8"	3.12				
	CLASS C ROLLFORMED		1 7/8" X 1 5/8"		2.40				
	H POSTS		2 1/4" X 1 3/4"		3.43		1 7/8" X 1 9/16"		0.90
LINE POSTS FOR FENCES GREATER THAN 8' AND EQUAL TO OR LESS THAN 10'	CLASS A SCHEDULE 40 PIPE	2		2 3/8"	3.65	2		2 3/8"	1.26
	CLASS B STEEL TUBING	2		2 3/8"	3.12				
	CLASS C ROLLFORMED		2 1/4" X 1 3/4"		2.78				
	H POSTS		2 1/4" X 1 3/4"		3.43		2 1/4" X 2"		1.22
	H POSTS						2 1/4" X 2"		1.22
LINE POSTS FOR FENCES OVER 10'	CLASS A SCHEDULE 40 PIPE	2 1/2		2 7/8"	5.79	2 1/2		2 7/8"	2.00
	CLASS B STEEL TUBING	2 1/2		2 7/8"	4.64				
	H POSTS		2 1/4" X 1 3/4"		3.43		2 1/4" X 2"		1.22

• DO NOT USE 3 1/2" X 3 1/2" ROLLFORMED POST ON FENCES OVER 8'



SUGGESTED METHOD OF TYING TENSION WIRE TO LINE POST



CLASS "C" ROLLFORMED SECTIONS (SEE POST AND RAIL SCHEDULE FOR DIMENSIONS)

NOTES:

- POSTS, INCLUDING ENCASUREMENT, SHALL BE SET INSIDE THE R.O.W. LINE SO THAT FENCING PLACED ON THE R.O.W. SIDE OF POSTS WILL BE AS NEARLY ON THE R.O.W. LINE AS POSSIBLE. WHEN DIRECTED BY THE ENGINEER, THE FABRIC SHALL BE PLACED ON THE OPPOSITE SIDE OF THE POSTS SO THAT THE FABRIC CAN BE PULLED TIGHT AGAINST THE POST.
- POSTS IN ROCK - WHERE SUBSTANTIAL ROCK IS ENCOUNTERED A HOLE 1" LARGER IN DIAMETER THAN THE POST, AND OF 12" MIN. DEPTH FOR LINE POSTS, AND 18" MIN. DEPTH FOR ALL OTHER POSTS SHALL BE MADE. AFTER INSERTING THE POSTS, THE HOLES SHALL BE BACKFILLED WITH A HANDMIXED 1:2 MORTAR CONSISTING OF ONE PART PORTLAND CEMENT TWO PARTS FINE AGGREGATE MIXED TO A PLASTIC CONSISTENCY SHOWING NO SIGNS OF FREE WATER. THE HAND MIXING AND CONSOLIDATION OF THE MORTAR SHALL BE PERFORMED IN A MANNER APPROVED BY THE ENGINEER.
- CORNER POSTS SHALL BE USED AT SHARP BREAKS IN VERTICAL GRADE, AND CHANGES IN HORIZONTAL ALIGNMENT OF 15° AND OVER. PULL POSTS SHALL BE USED EVERY 500' ON STRAIGHT RUNS OF CHAINLINK FENCE OR AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL SUBMIT THE DETAILS FOR THE CHAIN LINK FENCE IT PLANS TO ERECT TO THE ENGINEER. NO FENCE SHALL BE ERECTED PRIOR TO THE APPROVAL OF THE VARIOUS DETAILS.
- STEEL PIPES AND SHAPES SHALL WEIGH AT LEAST 95% OF THE WEIGHT SPECIFIED ON THIS SHEET. THEY MAY EXCEED THE SPECIFIED WEIGHT.
- THE CONTRACTOR SHALL HAVE THE OPTION OF SETTING THE LINE POSTS IN 10"Ø BY 3' DEEP CONCRETE BASES WITH THE POSTS EMBEDDED 2'-5" OR USING METHODS OF DRIVING AND ANCHORING SPECIFIED BY THE MANUFACTURER EXCEPT THAT THE LINE POSTS WITH TRUSS RODS ATTACHED AND ALL END, CORNER AND INTERMEDIATE POSTS SHALL BE SET IN CONCRETE BASES. THE CONCRETE BASES SHALL BE A MINIMUM OF 10"Ø BY 3' DEEP WITH THE POST EMBEDDED 2'-6" FOR FENCES 6' HIGH OR LESS AND 12"Ø BY 3'-6" DEEP WITH THE POST EMBEDDED 3' FOR FENCES OVER 6' HIGH. FOR GATE POSTS SEE THE CURRENT STANDARD SHEET TITLED "GATES AND CHAINLINK FENCE ADJACENT TO GATES".
- CHAINLINK FENCE WITH TOP RAIL SHALL NOT BE USED WITHIN 29'-6" OF TRAVELED WAY.

ACCESSORY	STEEL	ALUMINUM
FABRIC TIES FOR TOP AND BRACE	6 GA. ALUMINUM WIRE AT 24" C.C. MAX.	3/16" Ø ALUMINUM WIRE AT 24" C.C. MAX.
FABRIC TIES FOR LINE POSTS	6 GA. ALUMINUM WIRE AT 14" C.C. MAX.	3/16" Ø ALUMINUM WIRE AT 14" MAX. OR 1/2" X .06" CLIPS AT 14" MAX.
FABRIC TIES FOR TENSION WIRE	11 GA. ALUMINUM WIRE AT 12" O.C.	3/16" Ø ALUMINUM WIRE AT 12"
BOTTOM TENSION WIRE	7 GA. GALVANIZED STEEL	3/16" Ø ALUMINUM WIRE

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

**CHAINLINK FENCE  
WITH TOP RAIL**

APPROVED SEPTEMBER 19, 2008      ISSUED UNDER EB 08-036

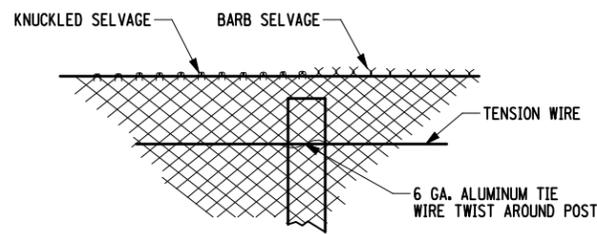
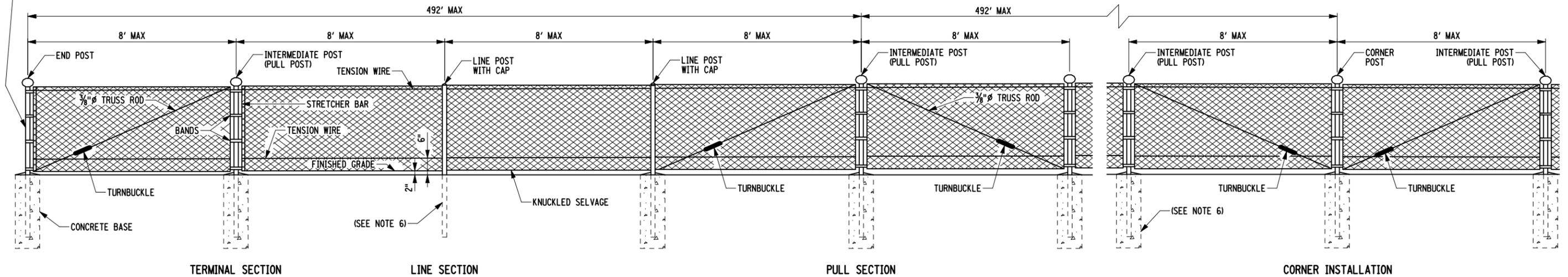
/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER (DESIGN)

607-04

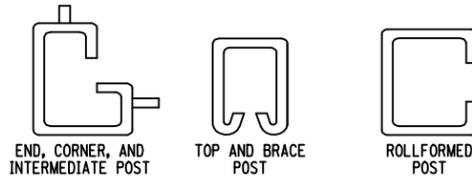
EFFECTIVE DATE: 01/08/09

CLASS A OR CLASS B POSTS REQUIRE STRETCHER BARS AND BANDS  
CLASS C POSTS HAVE THE FENCE FABRIC WOVEN INTO THE POST  
(SEE MANUFACTURER'S INSTRUCTION)

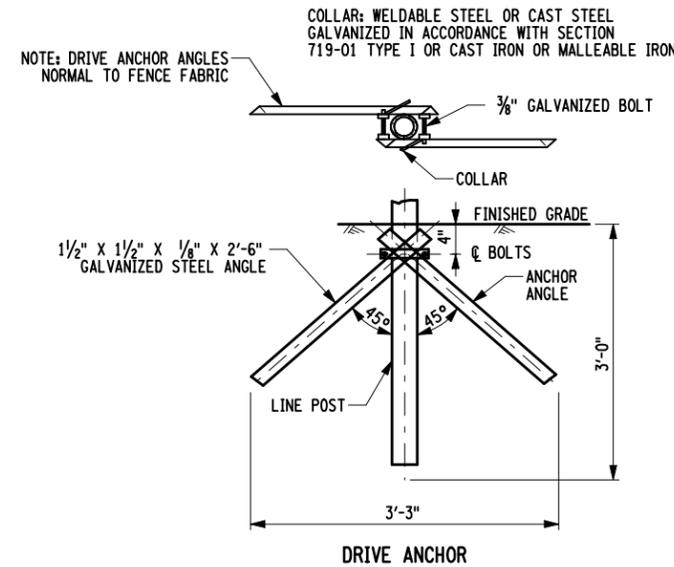
NOTE: BARB SELVAGE 1" ABOVE TOP OF LINE POSTS ON FENCES 6' HIGH AND OVER. KNUCKLED SELVAGE FOR FENCES LESS THAN 6'



SUGGESTED METHOD OF TYING TENSION WIRE TO LINE POST



CLASS "C" ROLLFORMED SECTIONS  
(SEE POST AND RAIL SCHEDULE FOR DIMENSIONS)



NOTES:

1. POSTS, INCLUDING ENCASEMENT, SHALL BE SET INSIDE THE R.O.W. LINE SO THAT FENCING PLACED UPON THE R.O.W. SIDE OF POSTS WILL BE AS NEARLY ON THE R.O.W. LINE AS IS POSSIBLE. WHEN DIRECTED BY THE ENGINEER, THE FABRIC SHALL BE PLACED ON THE OPPOSITE SIDE IN ORDER FOR FABRIC TO BE PULLED TIGHT AGAINST THE POST.
2. POST IN ROCK, WHERE SUBSTANTIAL ROCK IS ENCOUNTERED, A HOLE 1" LARGER IN DIAMETER THAN THE POST, AND OF 12" MIN. DEPTH FOR LINE POSTS, AND 1'-6" MINIMUM DEPTH FOR CORNER, END, AND INTERMEDIATE POSTS SHALL BE MADE. AFTER INSERTING THE POSTS, THE HOLES SHALL BE BACK FILLED WITH A HAND MIXED 1:2 MORTAR CONSISTING OF ONE PART PORTLAND CEMENT TO TWO PARTS FINE AGGREGATE MIXED TO A PLASTIC CONSISTENCY SHOWING NO SIGNS OF FREE WATER. THE HAND MIXING AND CONSOLIDATION OF THE MORTAR SHALL BE PERFORMED IN A MANNER APPROVED BY AN ENGINEER.
3. CORNER POSTS SHALL BE USED AT BREAKS IN VERTICAL GRADE, AND CHANGES IN HORIZONTAL ALIGNMENT OF 15° AND OVER. PULL POSTS SHALL BE USED EVERY 492' ON RUNS OF CHAIN LINK FENCE OR AS DIRECTED BY THE ENGINEER.
4. DETAIL DRAWING FOR CHAIN LINK FENCE THAT THE CONTRACTOR PLANS TO ERECT SHALL BE SUBMITTED TO THE ENGINEER. NO FENCE SHALL BE ERECTED PRIOR TO THE APPROVAL OF THE VARIES DETAILS.
5. STEEL PIPE AND STEEL SHAPES INDICATED ON THIS SHEET SHALL NOT BE LIGHTER IN WEIGHT THAN 95% OF THAT SPECIFIED. THEY MAY EXCEED THE REQUIRED WEIGHT.
6. THE CONTRACTOR SHALL HAVE THE OPTION OF SETTING THE LINE POSTS IN 10" Ø BY 3' DEEP CONCRETE BASES WITH THE POST EMBEDDED 2'-6" OR USING METHODS OF DRIVING AND ANCHORING SPECIFIED BY THE MANUFACTURER. HOWEVER, LINE POSTS WITH TRUSS RODS ATTACHED AND ALL END, CORNER AND INTERMEDIATE POSTS SHALL BE SET IN CONCRETE BASES. THESE CONCRETE BASES SHALL BE A MINIMUM OF 10" Ø BY 3'-0" DEEP WITH THE POST EMBEDDED 2'-6" FOR FENCES 6' HIGH OR LESS AND 12" Ø BY 3'-6" DEEP WITH THE POST EMBEDDED 3' FOR FENCES OVER 6' HIGH. FOR GATE POSTS SEE THE CURRENT STANDARD SHEET TITLED "GATES AND CHAINLINK FENCE ADJACENT TO GATE".
7. TOP TENSION WIRE SHALL BE FASTENED TO EACH POST IN A MANNER APPROVED BY THE ENGINEER.

USE	SECTION	STEEL				ALUMINUM			
		NPS DESIGNATOR	ROLLFORMED AND H POSTS	O.D.	WEIGHT LBS/FT	NPS DESIGNATOR	ROLLFORMED AND H POSTS	O.D.	WEIGHT LBS/FT
		END, CORNER AND INTERMEDIATE POSTS FOR FENCES 6' AND UNDER	CLASS A SCHEDULE 40 PIPE	2		2 3/8"	3.65	2	
	CLASS B STEEL TUBING	2		2 3/8"	3.12				
	CLASS C ROLLFORMED		3 1/2" X 3 1/2"		5.10				
END, CORNER AND INTERMEDIATE POSTS FOR FENCES OVER 6'	CLASS A SCHEDULE 40 PIPE	2 1/2		2 7/8"	5.79	2 1/2		2 7/8"	2.00
	CLASS B STEEL TUBING	2 1/2		2 7/8"	4.64				
	CLASS C ROLLFORMED		3 1/2" X 3 1/2"		5.10				
LINE POSTS FOR FENCES 6' AND UNDER	CLASS A SCHEDULE 40 PIPE	1 1/2		1 7/8"	2.72	1 1/2		1 7/8"	0.94
	CLASS B STEEL TUBING	1 1/2		1 7/8"	2.28				
	CLASS C ROLLFORMED		1 7/8" X 1 5/8"		2.40				
	H POSTS		2 1/4" X 1 3/4"		3.43		1 7/8" X 1 1/16"		0.90
	H POSTS						2 1/4" X 2"		1.22
LINE POSTS FOR FENCES GREATER THAN 6' AND EQUAL TO OR LESS THAN 8'	CLASS A SCHEDULE 40 PIPE	2		2 3/8"	3.65	2		2 3/8"	1.26
	CLASS B STEEL TUBING	2		2 3/8"	3.12				
	CLASS C ROLLFORMED		1 7/8" X 1 5/8"		2.40				
	H POSTS		2 1/4" X 1 3/4"		3.43		1 7/8" X 1 1/16"		0.90
	H POSTS						2 1/4" X 2"		1.22
LINE POSTS FOR FENCES GREATER THAN 8' AND EQUAL TO OR LESS THAN 10'	CLASS A SCHEDULE 40 PIPE	2		2 3/8"	3.65	2		2 3/8"	1.26
	CLASS B STEEL TUBING	2		2 3/8"	3.12				
	CLASS C ROLLFORMED		2 1/4" X 1 3/4"		2.78				
	H POSTS		2 1/4" X 1 3/4"		3.43		2 1/4" X 2"		1.22
LINE POSTS FOR FENCES OVER 10'	CLASS A SCHEDULE 40 PIPE	2 1/2		2 7/8"	5.79	2 1/2		2 7/8"	2.00
	CLASS B STEEL TUBING	2 1/2		2 7/8"	4.64				
	H POSTS		2 1/4" X 1 3/4"		3.43		2 1/4" X 2"		1.22

\* DO NOT USE 3 1/2" X 3 1/2" ROLLFORMED POST ON FENCES OVER 8'

ACCESSORY	STEEL	ALUMINUM
FABRIC TIES FOR LINE POSTS	6 GA. ALUMINUM WIRE AT 14" O.C. MAX.	3/4" Ø ALUMINUM WIRE AT 14" C.C. MAX OR 1/2" X 1/16" CLIPS AT 14" C.C. MAX.
FABRIC TIES FOR TENSION WIRE	11 GA. ALUMINUM WIRE 12" O.C. MAX.	1/8" Ø ALUMINUM WIRE AT 12" C.C. MAX.
TOP & BOTTOM TENSION WIRE	7 GA. GALVANIZED STEEL	3/16" Ø ALUMINUM WIRE

STATE OF NEW YORK  
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U.S. CUSTOMARY STANDARD SHEET

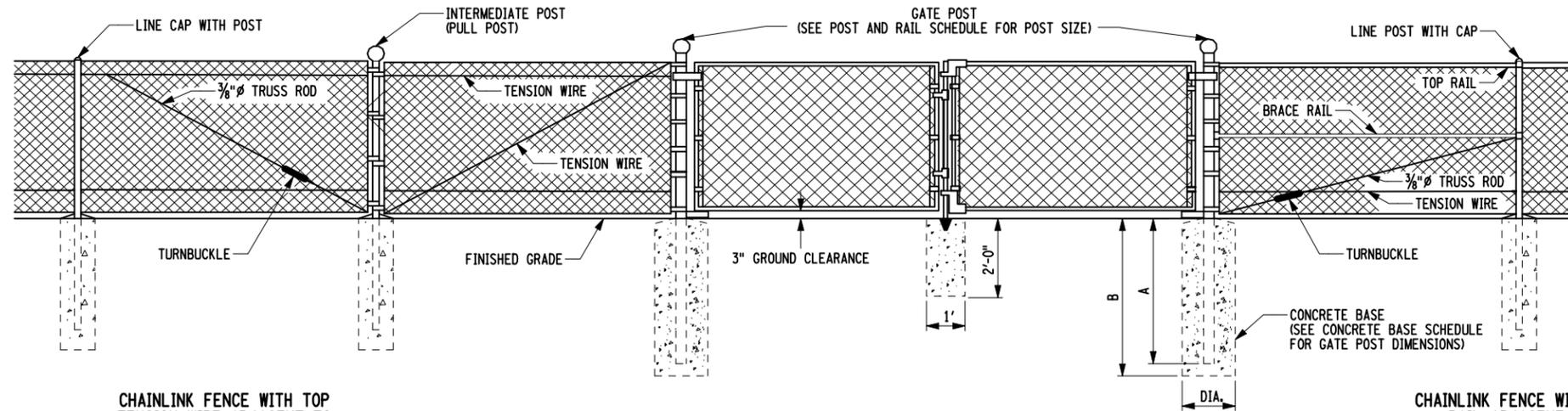
**CHAINLINK FENCE  
WITH TOP TENSION WIRE**

APPROVED SEPTEMBER 19, 2008      ISSUED UNDER EB 08-036

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER (DESIGN)

607-05

EFFECTIVE DATE: 01/08/09



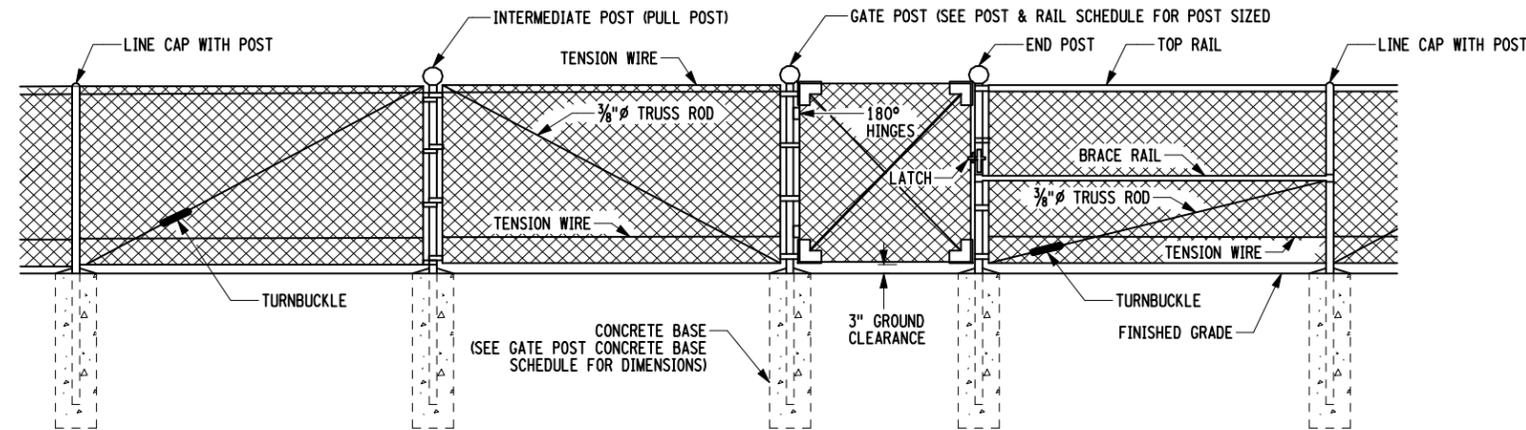
CHAINLINK FENCE WITH TOP TENSION WIRE ADJACENT TO DOUBLE LEAF GATE

DOUBLE LEAF GATE (SHOWN WITH WELDED FRAME)

CHAINLINK FENCE WITH TOP RAIL ADJACENT TO DOUBLE LEAF GATE

NOTES:

- GATES POSTS IN ROCK. WHERE SUBSTANTIAL ROCK IS ENCOUNTERED A HOLE 1" LARGER THAN THE GATE POST AND A MINIMUM DEPTH OF 1'-6" FOR SINGLE LEAF GATES UP TO 12' SPAN AND DOUBLE LEAF GATES UP TO 36' SPAN, AND 2' IN DEPTH FOR DOUBLE LEAF GATES 40' SPAN TO 44' SPAN SHALL BE MADE. AFTER INSERTING THE POSTS, THE HOLES SHALL BE BACKFILLED WITH A HANDMIXED 1:2 MORTAR CONSISTING OF ONE PART PORTLAND CEMENT AND TWO PARTS FINE AGGREGATE MIXED TO A PLASTIC CONSISTENCY SHOWING NO SIGN OF FREE WATER. THE HANDMIXING AND CONSOLIDATION OF THE MORTAR SHALL BE PREFORMED IN A MANNER APPROVED BY THE ENGINEER.
- THE CONTRACTOR SHALL SUBMIT THE DETAILS FOR GATES AND CHAINLINK FENCE ADJACENT TO THEM TO THE ENGINEER. NO FENCE OR GATES SHALL BE ERECTED PRIOR TO THE APPROVAL OF THE VARIOUS DETAILS.
- STEEL PIPES AND SHAPES SHALL WEIGH AT LEAST 95% OF THE WEIGHT SPECIFIED ON THIS SHEET. THEY MAY EXCEED THE SPECIFIED WEIGHT.



CHAINLINK FENCE WITH TOP TENSION WIRE ADJACENT TO SINGLE LEAF GATE

SINGLE LEAF GATE (SHOWN WITH CORNER FITTINGS)

CHAINLINK FENCE WITH TOP RAIL ADJACENT TO SINGLE LEAF GATE

POST AND RAIL SCHEDULE								
USE	SECTION	STEEL				ALUMINUM		
		NPS DESIGNATOR	ROLLFORMED	O.D. SIZE	WEIGHT LBS/FT	NPS DESIGNATOR	O.D. NOM.	WEIGHT LBS/FT
GATE POSTS FOR SINGLE LEAF GATES LESS THAN 6' SPAN	SCHEDULE 40 PIPE	2 1/2		2 7/8"	5.79			
	CLASS B, STEEL	2 1/2		2 7/8"	4.64	3 1/2	4"	3.15
	ROLLFORMED		3 1/2 X 3 1/2		5.10			
GATE POSTS FOR SINGLE LEAF GATES LESS THAN 6' - 12' SPAN	SCHEDULE 40 PIPE	3 1/2		4"	9.11	3 1/2	4"	3.15
	ROLLFORMED		3 1/2 X 3 1/2		5.10			
GATE POSTS FOR DOUBLE LEAF GATES, 10' - 24' SPAN	SCHEDULE 40 PIPE	3 1/2		4"	9.11	3 1/2	4"	3.15
	ROLLFORMED		3 1/2 X 3 1/2		5.10			
GATES POSTS FOR DOUBLE LEAF GATES, 28' - 36' SPAN	SCHEDULE 40 PIPE	6		6 5/8"	18.97	6	6 5/8"	6.56
GATE POSTS FOR DOUBLE LEAF GATES, 40' - 44' SPAN	SCHEDULE 40 PIPE	8		8 5/8"	28.55	8	8 5/8"	9.88
GATE FRAME FOR GATES 8' IN WIDTH OR LESS	SCHEDULE 40 PIPE	1 1/2		1 7/8"	2.72	1 1/2	1 7/8"	0.94
GATE FRAME FOR GATES GREATER THAN 8' IN WIDTH	SCHEDULE 40 PIPE	2		2 3/8"	3.65	2	2 3/8"	1.264

GATE POST CONCRETE BASE SCHEDULE			
USE	DIA.	A	B
GATE POST FOR SINGLE LEAF GATES UP TO 12' SPAN	14"	3'-0"	3'-6"
GATE POST FOR DOUBLE LEAF GATES UP TO 24' SPAN	14"	3'-0"	3'-6"
GATE POST FOR DOUBLE LEAF GATES 28' - 36' SPAN	24"	3'-0"	3'-6"
GATES POSTS FOR DOUBLE LEAF GATES 40' - 44'	24"	3'-6"	3'-8"

(SEE NOTE 1)

\*FROM ANSI - H35.2(M)



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GATES AND CHAINLINK FENCE  
ADJACENT TO GATES

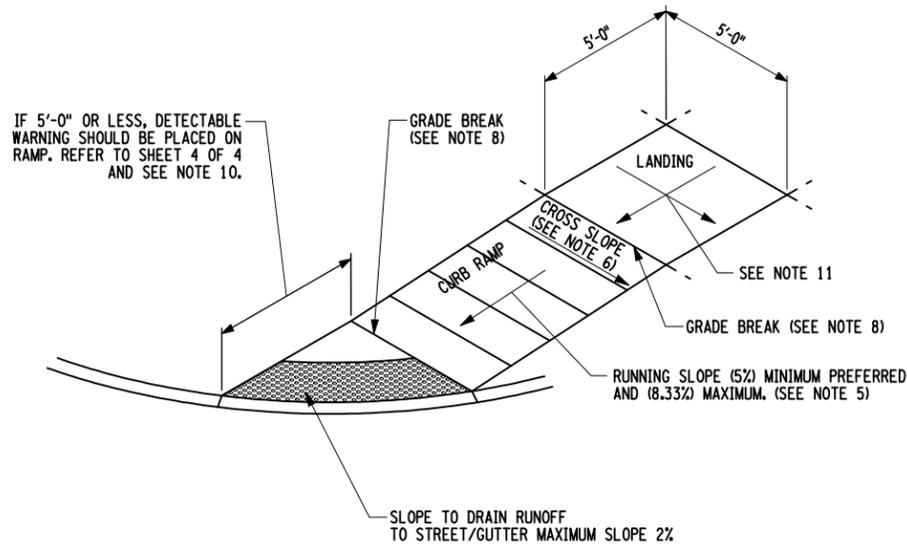
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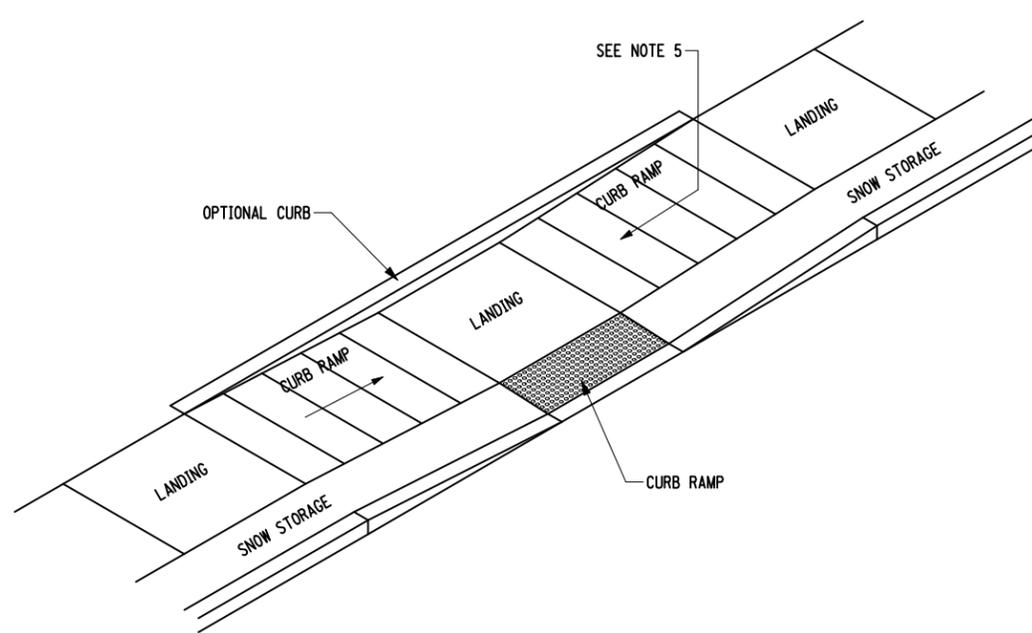
/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

607-06

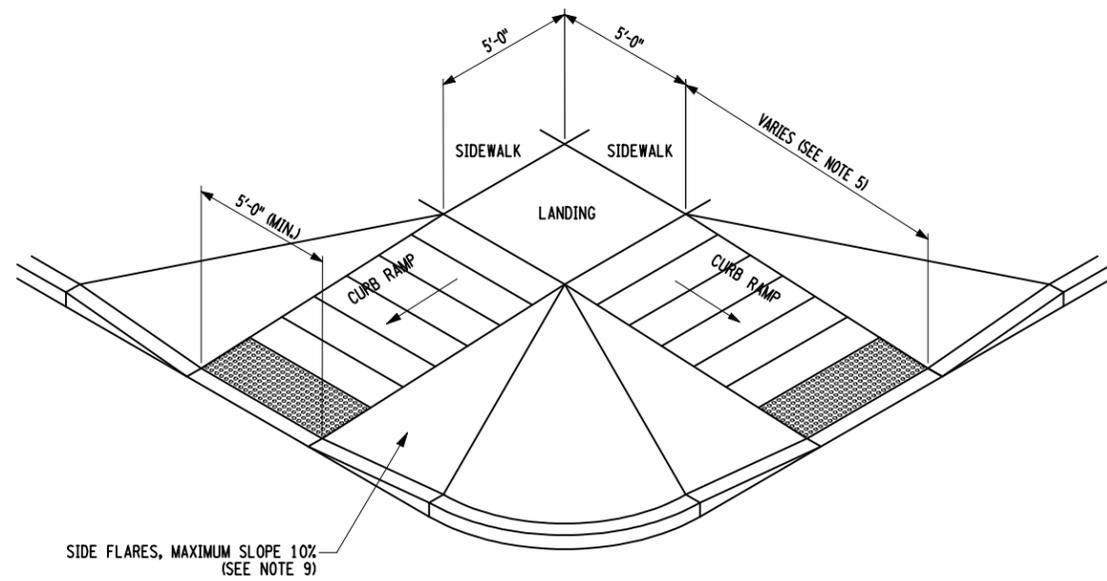
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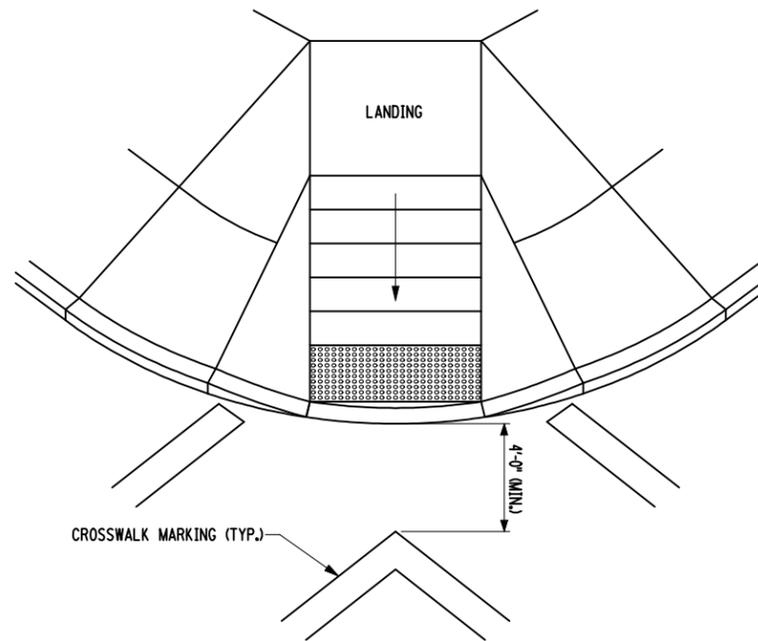
CURB RAMP WITHOUT SIDE FLARES  
TYPICAL DIMENSIONING



MID-BLOCK CROSSING CURB RAMP  
TYPICAL DIMENSIONING



CURB RAMP WITH SIDE FLARES  
TYPICAL DIMENSIONING



DIAGONAL SIDEWALK CURB RAMP

GENERAL NOTES:

1. THE DIMENSIONS AND SLOPES PRESENTED IN THE DETAILS ARE THE MINIMUM NECESSARY TO COMPLY WITH THE ADA AND DOT STANDARDS. ANY DEVIATION LESS THAN THE MINIMUM WIDTH OR GREATER THAN THE MAXIMUM SLOPE FROM THESE STANDARDS MUST BE DOCUMENTED WITH THE STANDARDS BEING MET TO THE GREATEST EXTENT PRACTICABLE AND CONSISTENT WITH THE MOST CURRENT ADAAG.

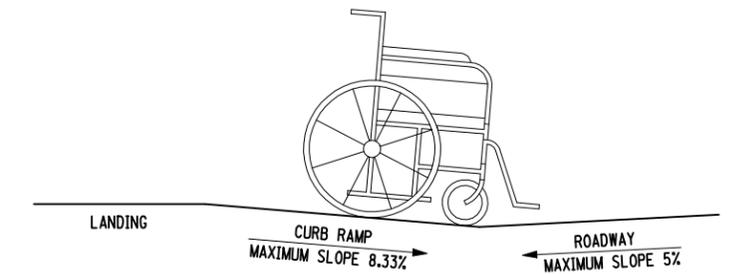
2. CURB RAMPS, LANDINGS AND BLENDED TRANSITIONS MAY REQUIRE THE USE OF DETECTABLE WARNINGS. DETECTABLE WARNINGS ON THIS SHEET ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE DETECTABLE WARNING DETAILS ON SHEET 4 OF 4 FOR DETAILS ON PLACEMENT, ORIENTATION & DIMENSIONS. REFER TO CHAPTER 18 OF THE HIGHWAY DESIGN MANUAL FOR MORE INFORMATION.

CURB RAMP NOTES:

3. THE MINIMUM WIDTH FOR SIDEWALK CURB RAMPS IS 5'-0".
4. THE RUNNING SLOPE OF A CURB RAMP SHALL BE 1:20 (5%) MINIMUM (PREFERRED) AND 1:12 (8.33%) MAXIMUM.
5. WHERE THE SLOPE OF THE ROADWAY EXCEEDS 8.33% THE CURB RAMP LENGTH IS THE LENGTH NECESSARY TO MEET THE EXISTING SIDEWALK. IT IS NOT NECESSARY THAT THE RAMP LENGTH EXCEED 15'-0".
6. THE CROSS SLOPE OF CURB RAMPS SHOULD BE AS FLAT AS POSSIBLE, NOT TO EXCEED 1:50 (2%). THE CROSS SLOPE AT MIDBLOCK CROSSINGS MAY BE WARPED TO MEET STREET OR HIGHWAY GRADE.
7. THE VERTICAL ALIGNMENT OF A CURB RAMP, EXCLUDING THE FLARES, SHALL BE PLANAR. GRADE BREAKS SHALL BE FLUSH AND PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN.
8. RAMP TRANSITIONS BETWEEN WALKS, LANDINGS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT VERTICAL CHANGES (1/4" MAX).
9. WHERE A PEDESTRIAN CIRCULATION PATH CROSSES THE CURB RAMP, FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED PARALLEL TO THE CURB LINE, SHALL BE PROVIDED.

LANDING NOTES:

10. LANDINGS SHALL HAVE A MINIMUM CLEAR DIMENSION OF A 5'-0" BY 5'-0" EXCEPT AT THE BOTTOM OF RAMPS TYPE 1 & 2 ON SHEET 2 OF 4.
11. THE RUNNING AND CROSS SLOPES ON LANDINGS AT INTERSECTIONS IS 1:50 (2%) MAXIMUM. THE RUNNING AND CROSS SLOPES AT MIDBLOCK CROSSINGS MAY BE WARPED TO MEET STREET OR HIGHWAY GRADE.



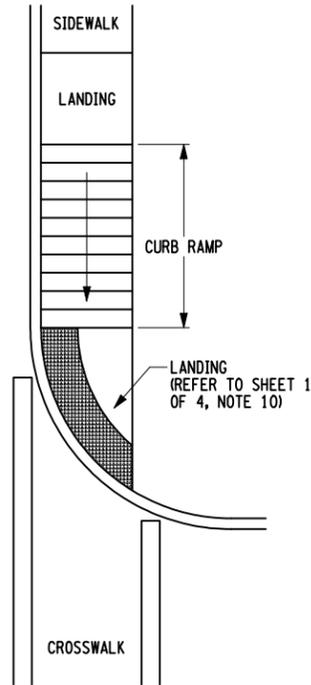
NOTE: THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE FOOT OF A CURB RAMP, LANDING, OR BLENDED TRANSITION SHALL BE 5% MAXIMUM

COUNTER SLOPE CONDITIONS

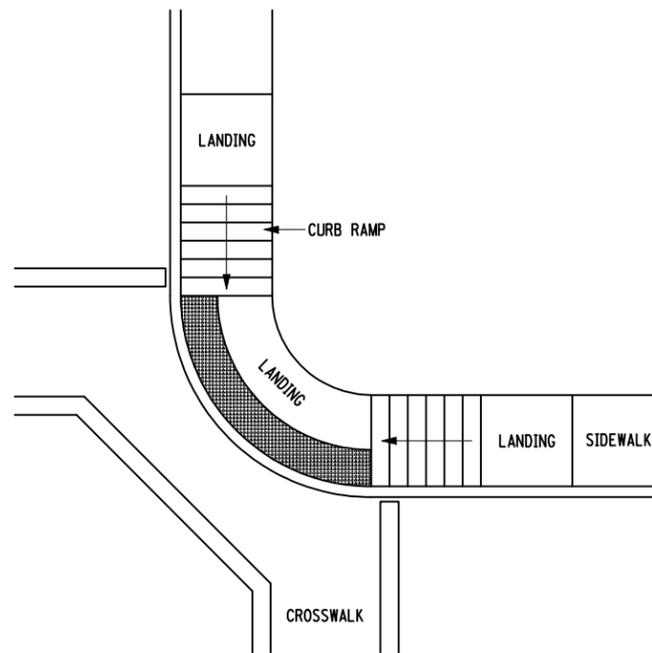
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U.S. CUSTOMARY STANDARD SHEET	
<b>SIDEWALK CURB RAMP DETAILS</b> (SHEET 1 OF 4)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	608-01

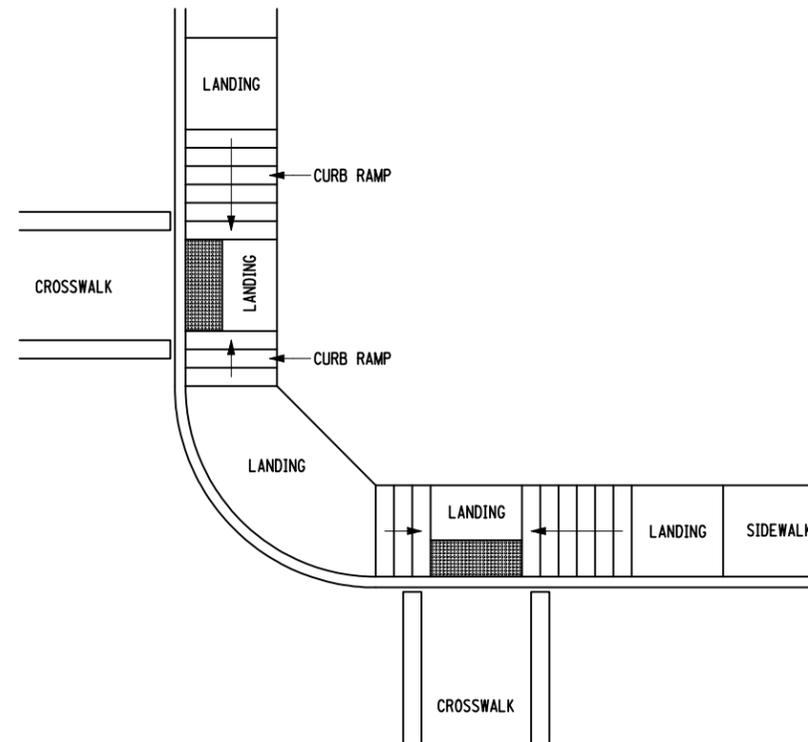
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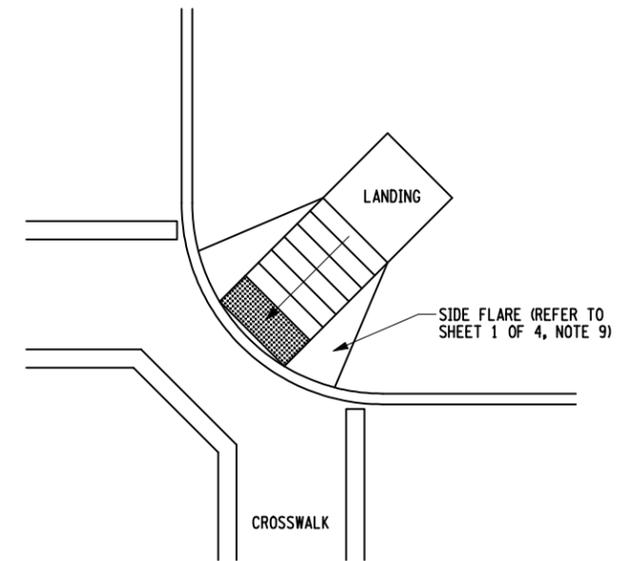
CURB RAMP CONFIGURATION: TYPE 2



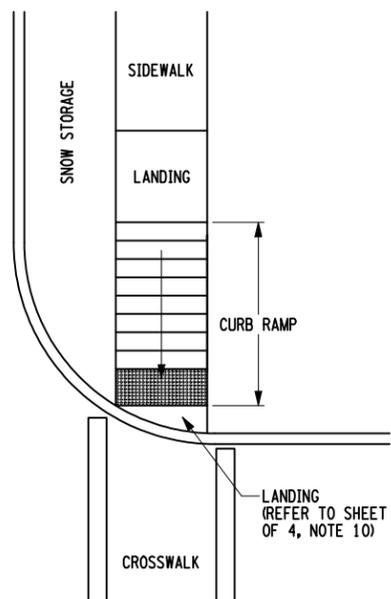
CURB RAMP CONFIGURATION: TYPE 4



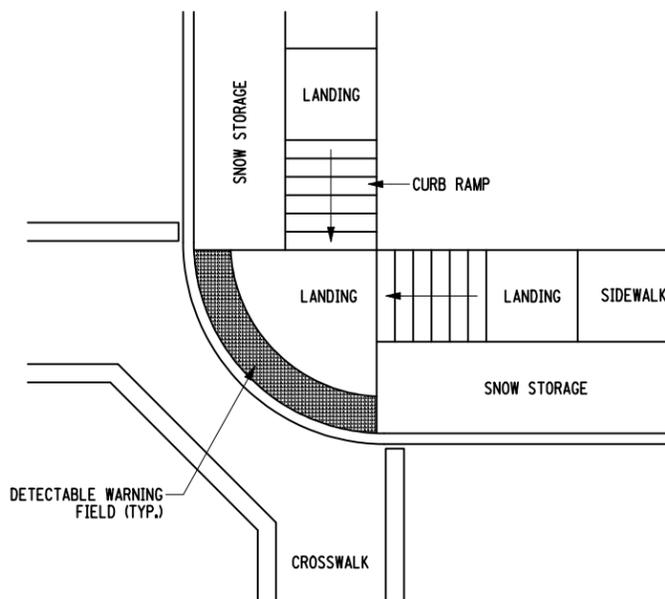
CURB RAMP CONFIGURATION: TYPE 6



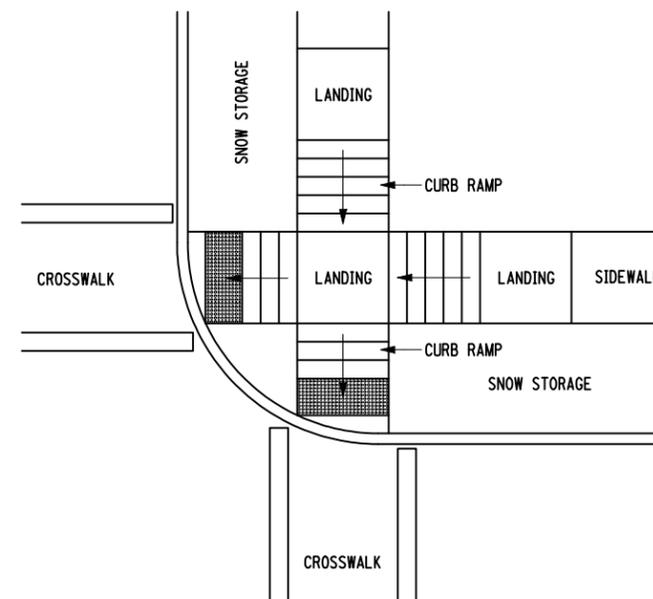
CURB RAMP CONFIGURATION: TYPE 8  
REFER TO SHEET 3 OF 4 (NOTE 6)  
NOT RECOMMENDED



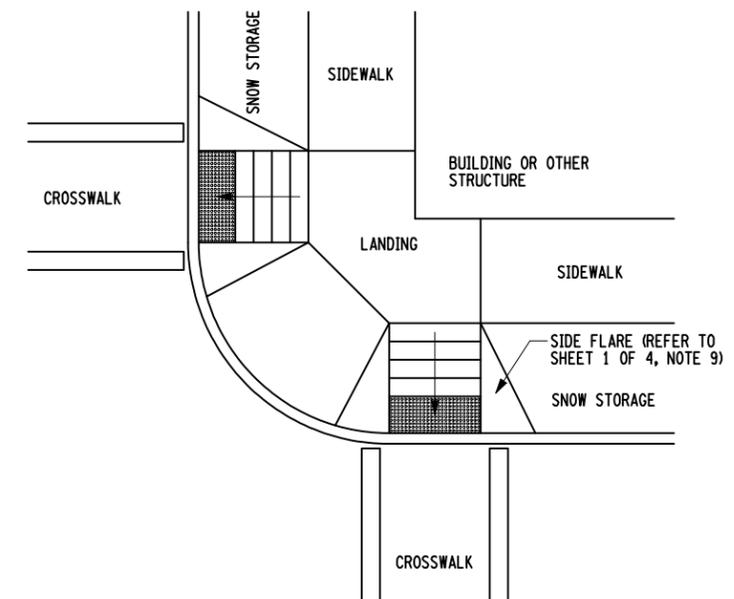
CURB RAMP CONFIGURATION: TYPE 1



CURB RAMP CONFIGURATION: TYPE 3



CURB RAMP CONFIGURATION: TYPE 5



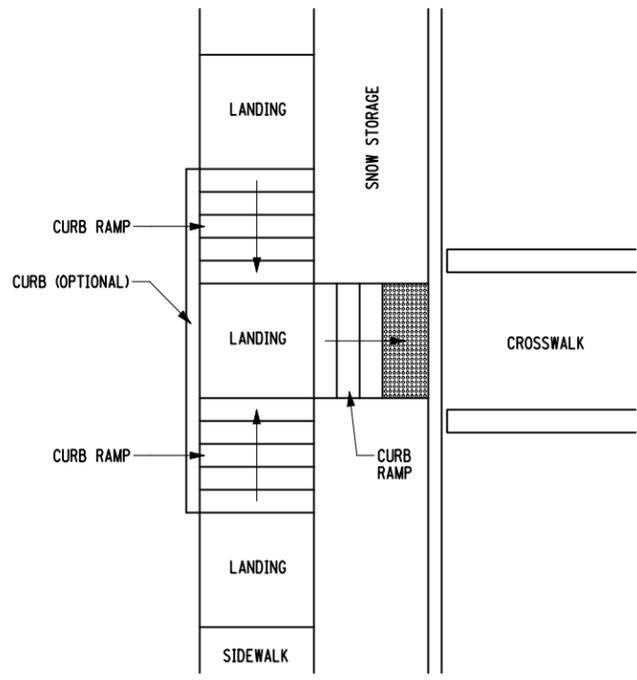
CURB RAMP CONFIGURATION: TYPE 7

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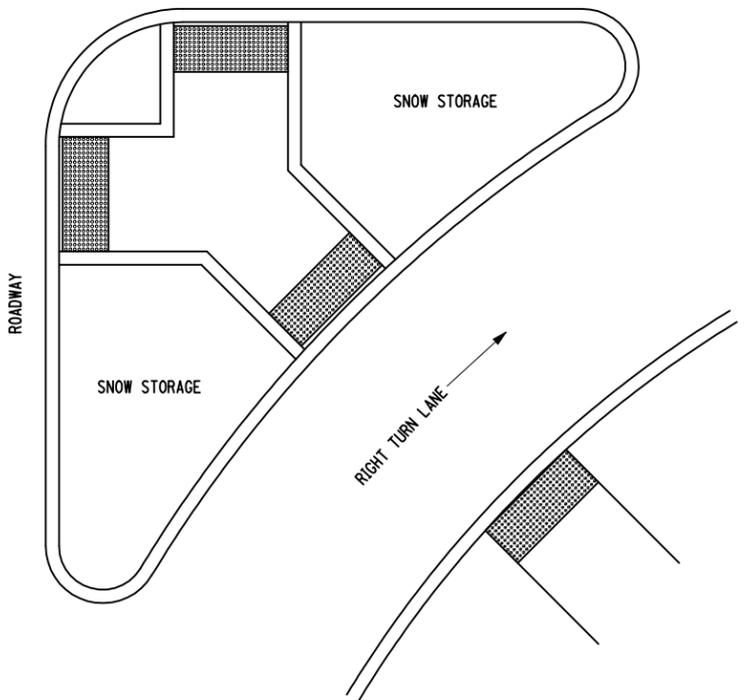
NOTE: REFER TO SHEET 4 OF 4, FOR  
DETECTABLE WARNING DIMENSIONS  
AND PLACEMENT ORIENTATION.

EFFECTIVE DATE: 01/08/09

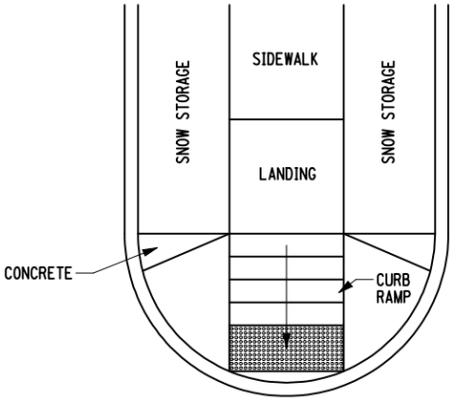
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SIDEWALK CURB RAMP DETAILS (SHEET 2 OF 4)		
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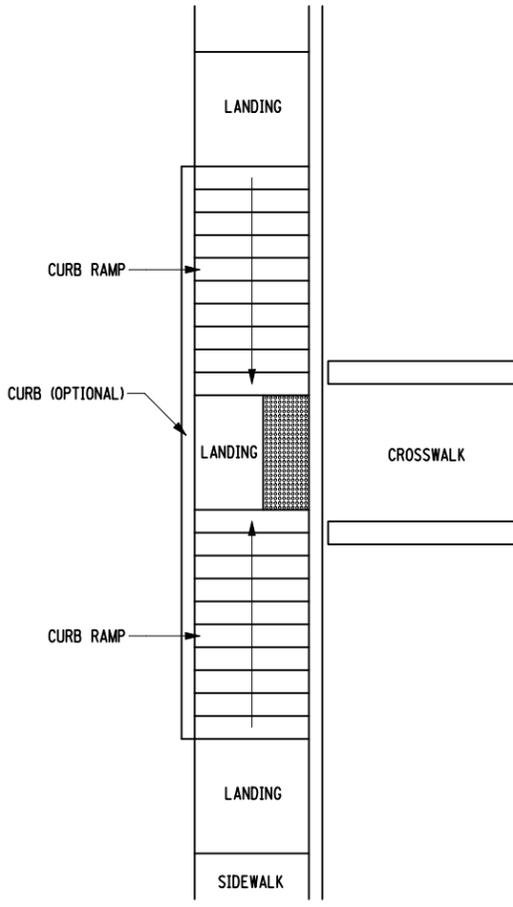
CURB RAMP CONFIGURATION: TYPE 10  
MID BLOCK CROSSING



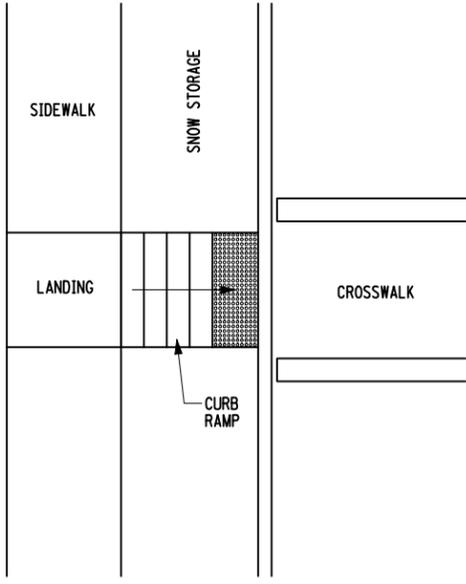
CURB RAMP CONFIGURATION: TYPE 12  
RIGHT TURN ISLAND CUT THROUGH



CURB RAMP CONFIGURATION: TYPE 13  
ACCESS ISLAND CURB RAMP



CURB RAMP CONFIGURATION: TYPE 9  
MID BLOCK CROSSING



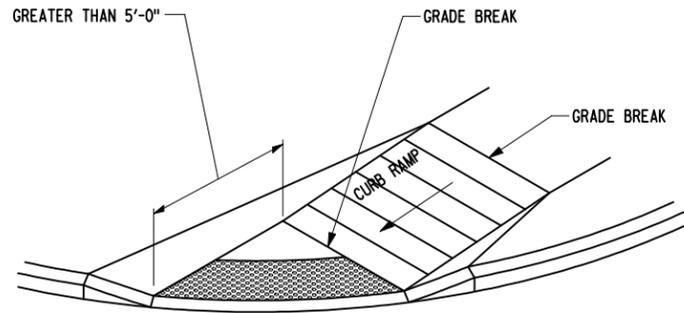
CURB RAMP CONFIGURATION: TYPE 11

- NOTES:
- FOR DIMENSIONS & GEOMETRIC VALUES REFER TO SHEET 1 OF 4.
  - THE CONFIGURATIONS SHOWN GENERICALLY REPRESENT THE MOST COMMON SITUATIONS ENCOUNTERED ON NYS DOT PROJECTS. THEY ARE INTENDED TO PRESENT CURB RAMP DESIGN CONCEPTS. SITE CONDITIONS AT INDIVIDUAL LOCATIONS REQUIRE SPECIFIC DESIGNS. CURB RAMP DESIGNS MUST BE CONSISTENT WITH THE PROVISIONS OF SHEETS 1, 2, AND 3 OF 4. REFER TO REGIONAL LANDSCAPE ARCHITECT FOR ADDITIONAL DESIGN GUIDANCE.
  - COORDINATE TRAFFIC CONTROL DEVICES, UTILITY LOCATIONS, SIGNS, STREET FURNITURE AND DRAINAGE TO ENSURE A CONTINUOUS PEDESTRIAN ACCESS ROUTE AT ALL CURB RAMP LOCATIONS. GUIDANCE FOR CROSSWALK MARKINGS AND TRAFFIC CONTROL DEVICES IS PROVIDED IN THE MUTCD.
  - DETECTABLE WARNINGS SHOWN ON THIS SHEET ARE FOR ILLUSTRATION ONLY. FOR SPECIFIC PLACEMENT ORIENTATIONS AND DIMENSIONS REFER TO SHEET 4 OF 4. SEE NOTE 10.
  - THE CROSS SLOPE OF RAMPS AND/OR LANDINGS AT MID BLOCK CROSSINGS MAY BE WARPED TO MEET STREET OR HIGHWAY GRADE.
  - USE TYPE 8 ONLY WHERE OTHER RAMPS ARE UNUSABLE. SINGLE DIAGONAL OR DEPRESSED CORNER CURB RAMPS SERVING TWO STREET CROSSING DIRECTIONS SHOULD BE AVOIDED IN NEW CONSTRUCTION AND SHOULD ONLY BE CONSIDERED WHERE CONDITIONS REQUIRE THEIR USE.
  - GRATES SHALL NOT BE LOCATED ON CURB RAMPS, BLENDED TRANSITIONS OR LANDINGS. ACCESS COVERS OF SIMILAR SURFACES SHALL COMPLY WITH APPLICABLE SURFACE REQUIREMENTS.
  - UTILITIES, SIGNS, AND OTHER FIXED OBJECTS MAY NOT BE PLACED ON A CURB, OR IN A MANNER THAT INTERFERES WITH THE USE OF THE CURB RAMP.
  - THE SURFACE OF ALL CURB RAMPS SHALL BE STABLE, FIRM AND SLIP RESISTANT. A COARSE BROOM FINISH RUNNING PERPENDICULAR TO THE SLOPE IS RECOMMENDED ON CONCRETE RAMP SURFACES, EXCLUSIVE OF THE DETECTABLE WARNING FIELDS.
  - THERE SHALL BE A LANDING AT THE TOP OF EACH PERPENDICULAR CURB RAMP AND A LANDING AT THE BOTTOM OF RAMPS TYPE 1 & 2 ON SHEET 2 OF 4.
  - LANDINGS MAY OVERLAP WITH ADJACENT LANDINGS OR A SINGLE LANDING MAY SERVE MULTIPLE CURB RAMPS.
  - LANDINGS MAY OVERLAP WITH THE CLEAR GROUND SPACE REQUIRED AT PEDESTRIAN SIGNAL PUSH BUTTONS.

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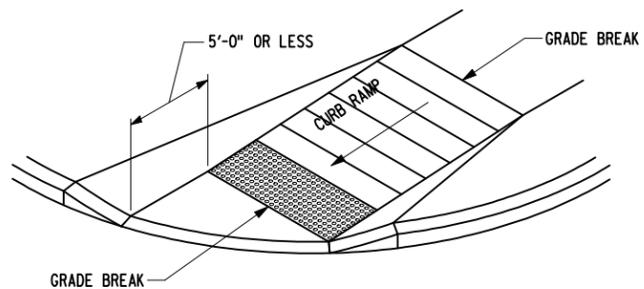
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	U.S. CUSTOMARY STANDARD SHEET	
SIDEWALK CURB RAMP DETAILS (SHEET 3 OF 4)		
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036	
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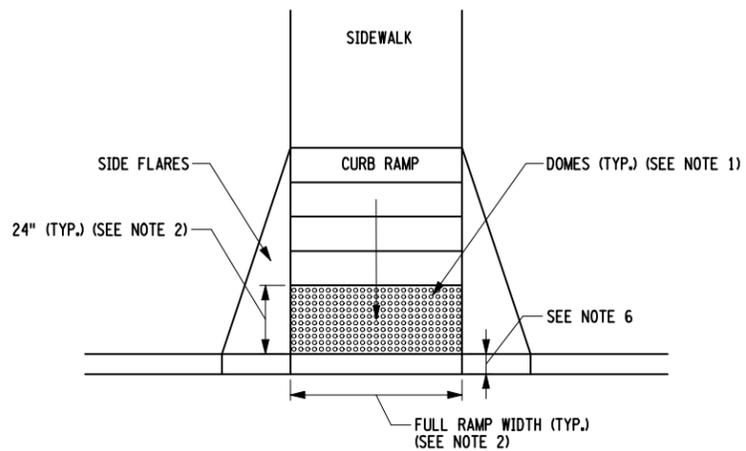
**DETECTABLE WARNING PLACEMENT DETAIL 1**

NOTE: IF THE DISTANCE FROM THE GRADE BREAK IS GREATER THAN OR EQUAL TO 5'-0", DETECTABLE WARNINGS SHOULD BE PLACED ALONG THE RADIUS OF THE CURVE AS SHOWN IN THE ABOVE DETAIL.

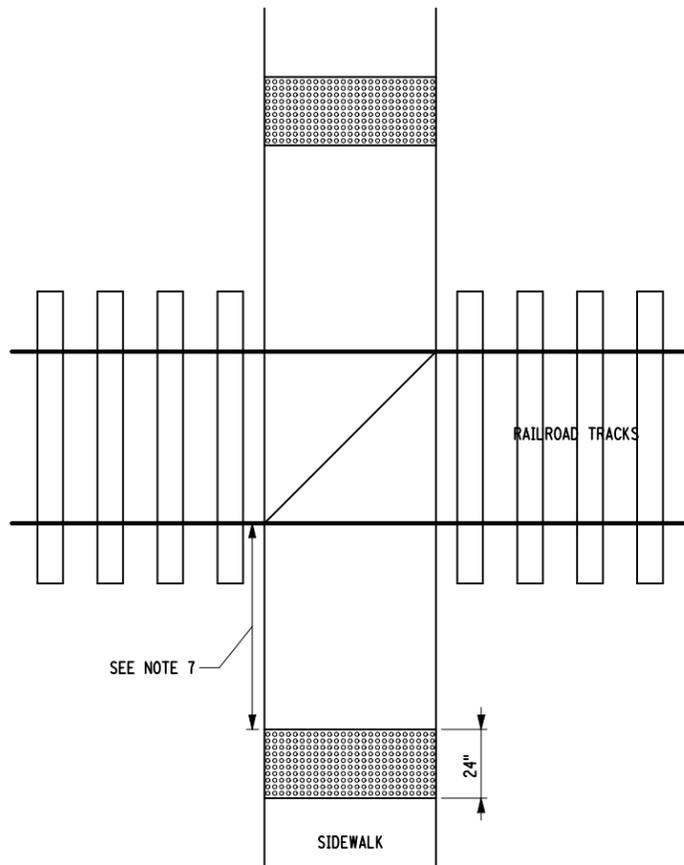


**DETECTABLE WARNING PLACEMENT DETAIL 2**

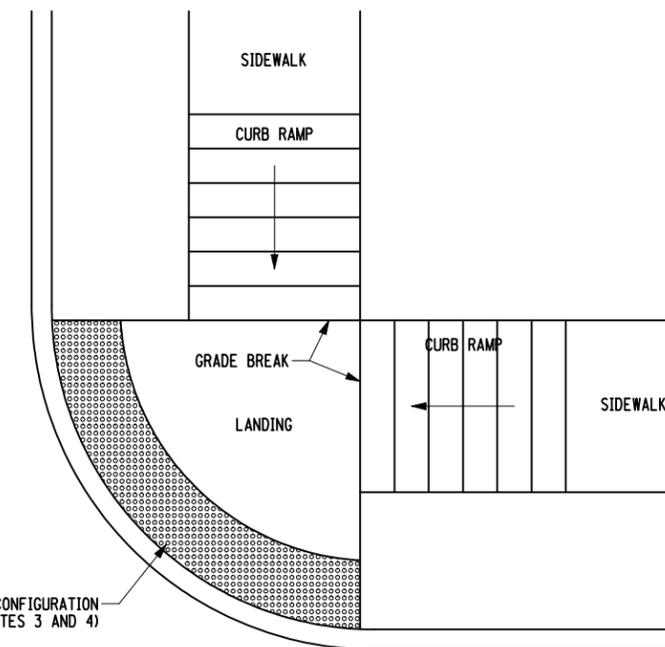
NOTE: IF THE DISTANCE FROM THE GRADE BREAK IS LESS THAN OR EQUAL TO 5'-0", DETECTABLE WARNINGS SHOULD BE PLACED ON THE CURB RAMP ALONG THE BOTTOM GRADE BREAK WITH ONE CORNER 5" TO 9" FROM THE FRONT OF THE CURB OR EDGE OF THE ROADWAY.



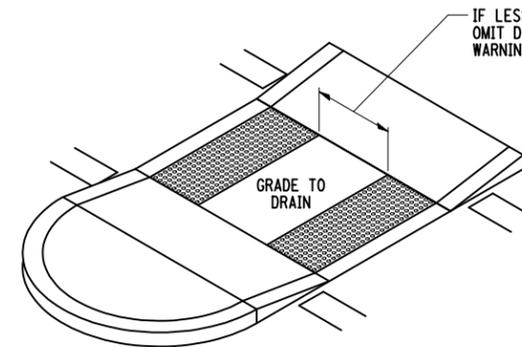
**DETECTABLE WARNING AT CURB RAMP**



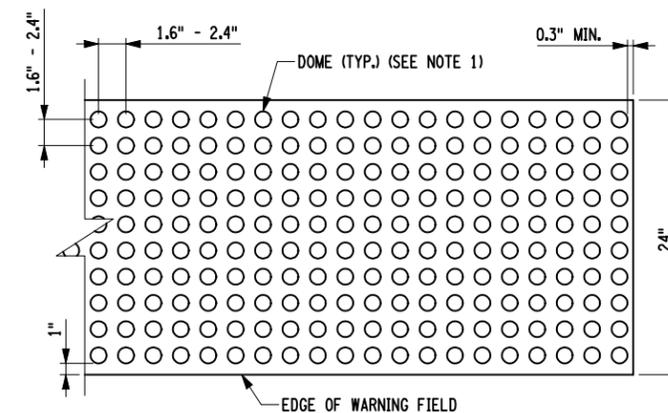
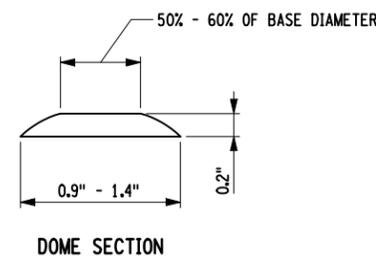
**DETECTABLE WARNINGS AT RAILROAD CROSSING**



**CURB RAMP / BLENDED TRANSITION CONFIGURATION: TYPES 3 AND 4**



**DETECTABLE WARNINGS AT MEDIAN ISLANDS  
NON-ELEVATED CROSSING**



**DOMES SPACING**

**NOTES:**

1. THE DETAILS PROVIDED ARE NOT DRAWN TO SCALE. THE QUANTITY OF DOMES DEPICTED ON THE DETECTABLE WARNING UNIT (THE DOMES AND THE ENTIRE 24" LEVEL SURFACE) IS FOR ILLUSTRATION ONLY.

**DETECTABLE WARNING UNIT DIMENSIONS:**

2. THE SIZE OF THE DETECTABLE WARNING FIELD SHALL BE 24" IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE, EXCLUSIVE OF SIDE FLARES.

**DOMES ALIGNMENT:**

3. THE ROWS OF DOMES SHALL BE ALIGNED TO BE PERPENDICULAR OR RADIAL TO THE GRADE BREAK BETWEEN THE RAMP LANDING OR CURB RAMP AND THE STREET.

4. WHERE DOMES ARE ARRAYED RADIALLY THEY MAY DIFFER IN DOME DIAMETER AND CENTER-TO-CENTER SPACING WITHIN THE RANGES SPECIFIED ON THIS SHEET.

**COLOR REQUIREMENTS:**

5. THE DETECTABLE WARNING FIELD SHALL BE THE COLOR SPECIFIED IN THE CONTRACT DOCUMENTS OR MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.

**DETECTABLE WARNINGS LOCATIONS:**

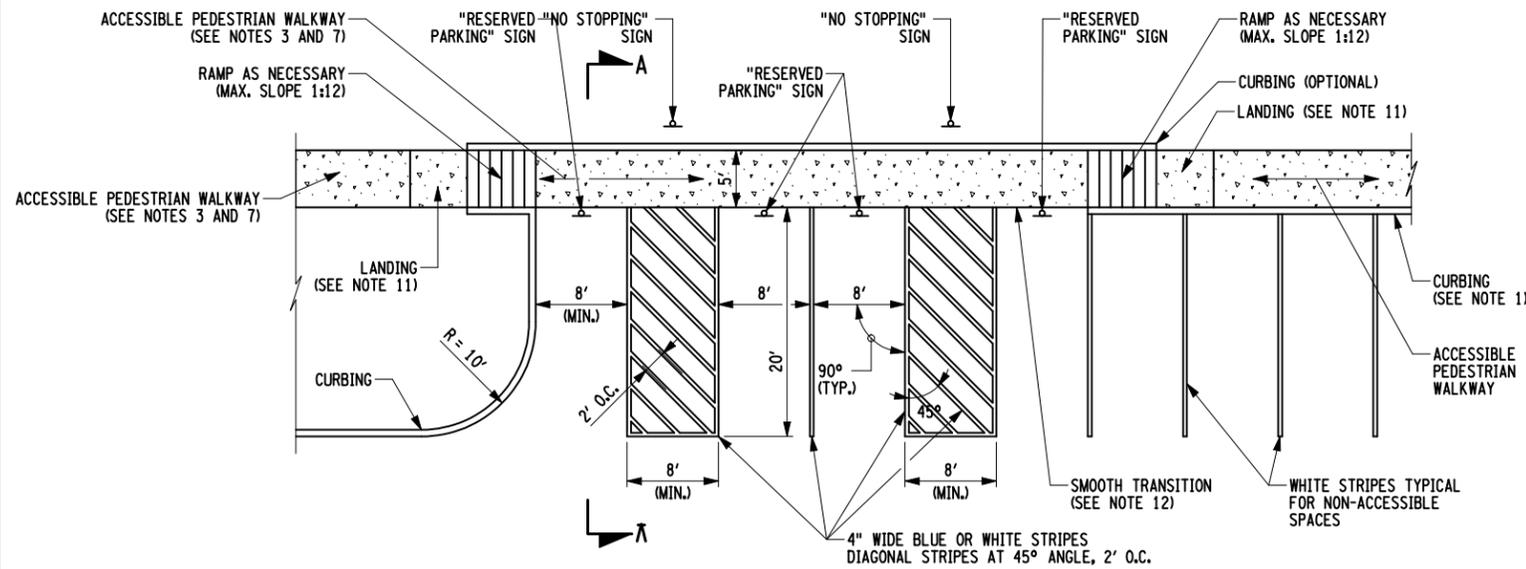
6. DETECTABLE WARNINGS SHALL BE LOCATED SO THAT THE EDGE OR CORNER OF THE WARNING FIELD NEAREST TO THE ROADWAY IS 5" TO 9" FROM THE FRONT OF THE CURB OR THE ROADWAY EDGE (12" WHERE TRAVERSABLE CURB IS USED).

7. THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO A RAILROAD CROSSING SHALL BE 6'-0" MINIMUM AND 15'-0" MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL.

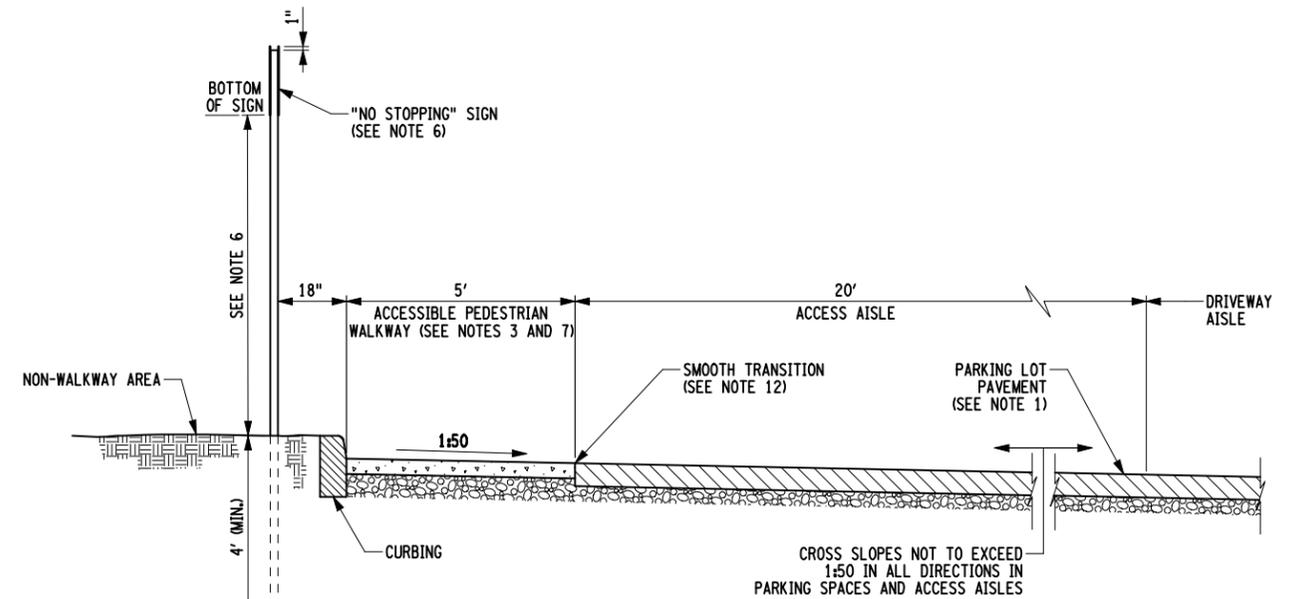
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USER = jturley

 <p><b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b></p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p><b>SIDEWALK CURB RAMP DETAILS (SHEET 4 OF 4)</b></p>	
<p>APPROVED SEPTEMBER 19, 2008</p> <p>/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)</p>	<p>ISSUED UNDER EB 08-036</p> <p><b>608-01</b></p>

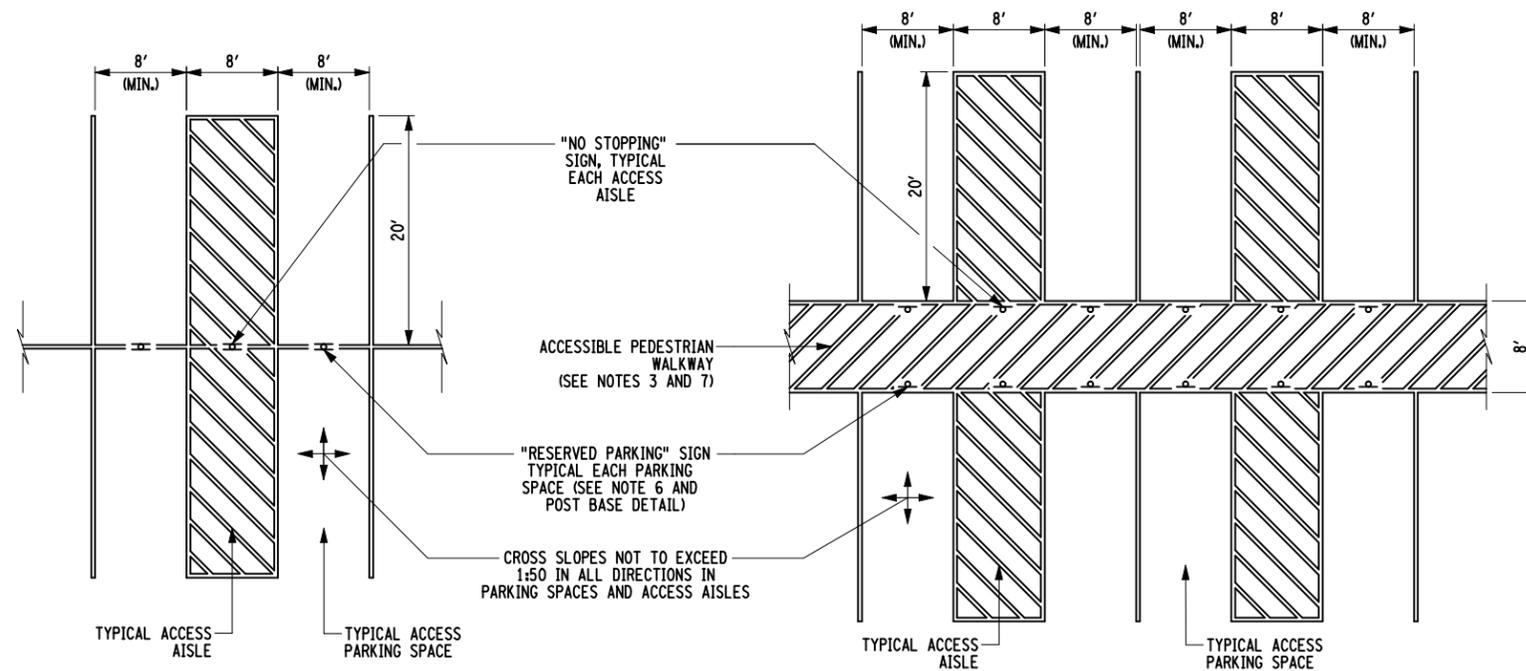
EFFECTIVE DATE: 01/08/09



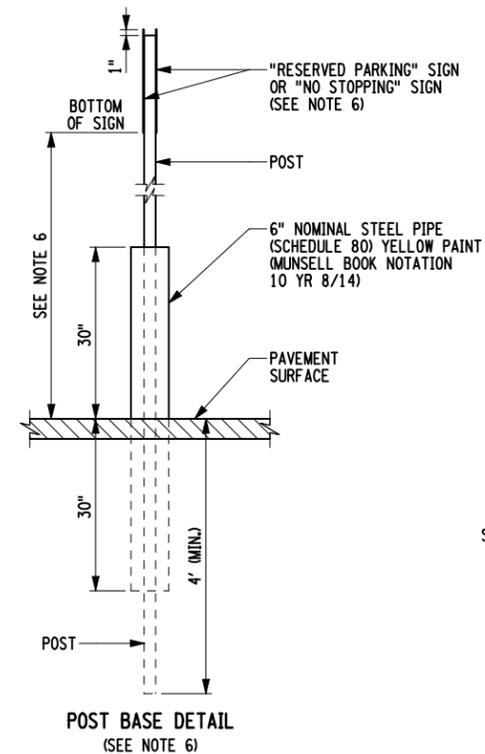
TYPICAL ACCESSIBLE PARKING LAYOUT



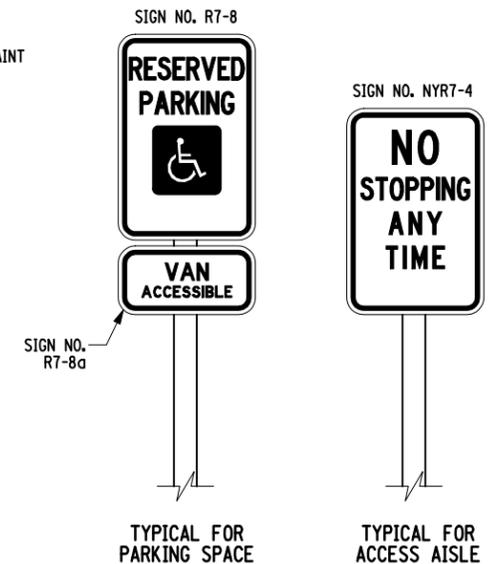
TYPICAL SECTION (SECTION A-A)



TYPICAL ACCESSIBLE PARKING LAYOUTS



POST BASE DETAIL (SEE NOTE 6)



TYPICAL FOR PARKING SPACE

TYPICAL FOR ACCESS AISLE

NOTES:

- THIS SHEET IS INTENDED TO DEPICT THE DIMENSIONAL REQUIREMENTS OF TYPICAL ACCESSIBLE PARKING SPACES, THE SIDEWALK, CURBING, AND PAVEMENT MATERIALS SHALL BE AS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS.
- MINIMUM NUMBER OF ACCESSIBLE SPACES:

TOTAL SPACES IN LOT	MINIMUM NUMBER OF ACCESSIBLE SPACES
1 TO 25	1
25 TO 50	2
51 TO 75	3
76 TO 100	4
101 TO 150	5
151 TO 200	6
201 TO 300	7
301 TO 400	8
401 TO 500	9
501 TO 1000	2% OF TOTAL
- LOCATION - PARKING SPACES FOR USE BY PERSONS WITH DISABILITIES SHALL BE IN THE SPACES CLOSEST TO THE NEAREST ACCESSIBLE BUILDING OR FACILITY ENTRANCE ON AN ACCESSIBLE ROUTE.
- DIMENSIONS - ACCESSIBLE PARKING SPACES SHALL BE AT LEAST 8' (MIN.) WIDE AND SHALL HAVE AN ADJACENT ACCESS AISLE 8' WIDE MEASURED PERPENDICULAR TO THE STALL STRIPE TO ACCOMMODATE VANS WITH LIFTS.
- COMMON ACCESS AISLES FOR 90° PARKING - TWO ACCESSIBLE PARKING SPACES MAY SHARE A COMMON ACCESS AISLE. FOR ACUTE ANGLED PARKING, SUCH AS 60° PARKING, OR WHERE ONE WAY DRIVEWAY AISLES WOULD PREVENT VANS WITH PASSENGER SIDE LIFTS FROM BACKING INTO ACCESSIBLE SPACES, AN ACCESSIBLE ACCESS AISLE MUST BE PROVIDED FOR EACH ACCESSIBLE PARKING SPACE. WIDTH OF ACCESS AISLES AND PARKING SPACES ARE MEASURED PERPENDICULAR TO THE STRIPING.
- SIGNING - EACH ACCESSIBLE PARKING SPACE SHALL BE MARKED BY PERMANENTLY INSTALLED ABOVE GROUND SIGNS WHICH DISPLAY THE INTERNATIONAL SYMBOL OF ACCESS. EACH ACCESS AISLE SHALL BE MARKED BY PERMANENTLY INSTALLED ABOVE GROUND SIGNS INDICATING THAT STOPPING IS NOT PERMITTED IN THE AISLE. SIGNS SHALL NOT BLOCK THE ACCESSIBLE CLEAR WIDTH OF ADJACENT WALKWAYS. SIGNS LOCATED WHERE THEY MAY BE HIT BY VEHICLES BEING PARKED SHALL BE INSTALLED AS SHOWN IN THE POST BASE DETAIL. THE BOTTOMS OF THE SIGNS LOCATED ON POSTS INSTALLED IN PAVED AREAS SHALL BE AT LEAST 7' ABOVE THE WALKWAY SURFACE. THE BOTTOMS OF SIGNS LOCATED IN UNPAVED AREAS SHALL BE 7' ABOVE THE ADJACENT PAVEMENT SURFACE.
- SURFACE SLOPES - SLOPES AT ACCESSIBLE PARKING SPACES, ACCESS AISLES, AND ADJOINING WALKWAYS SHALL NOT EXCEED 1:50 IN ANY DIRECTION.
- OVERHEAD CLEARANCE - VEHICLE ACCESS ROUTES TO AND FROM ACCESSIBLE PARKING SPACES, INCLUDING IN GARAGES AND OPEN PARKING STRUCTURES, SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 9'-6".
- PAVEMENT MARKING COLORS - REQUIRED ACCESSIBLE PARKING SPACE AND ACCESS AISLE STRIPING AND OTHER OPTIONAL PAVEMENT MARKINGS, SUCH AS THE INTERNATIONAL ACCESS SYMBOL, SHALL BE PAINTED WHITE OR BLUE.
- REFER TO STANDARD SHEETS TITLED "SIDEWALK CURB RAMP DETAILS" FOR CURB RAMP THAT MAY BE APPROPRIATE FOR CERTAIN SITE CONDITIONS.
- LEVEL LANDINGS MUST BE PROVIDED AT THE TOP AND BOTTOM OF ALL RAMPS. LANDINGS SHALL BE 4' (MIN.) IN THE DIRECTION OF TRAVEL. SLOPES ON LANDINGS SHALL NOT BE STEEPER THAN 1:50 IN ANY DIRECTION.
- A SMOOTH, FLUSH TRANSITION MUST BE PROVIDED BETWEEN ALL PEDESTRIAN WALKWAYS AND THE ACCESSIBLE PARKING SPACES AND AISLES.

EXCEPTION: PARKING AREAS ON THE PREMISES OF, OR IMMEDIATELY ADJACENT TO, MEDICAL SERVICES FACILITIES PROVIDING TREATMENT FOR MOBILITY IMPAIRED PERSONS AND OTHER SIMILAR LOCATIONS MAY REQUIRE A GREATER NUMBER OF ACCESSIBLE PARKING SPACES THAN INDICATED ABOVE. REFER TO THE APPLICABLE ACCESSIBILITY STANDARD.

EFFECTIVE DATE: 01/08/09

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>ACCESSIBLE PARKING FOR PERSONS WITH DISABILITIES DETAILS</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	608-02

DEFINITION OF TERMS:

DRIVEWAY - EVERY ENTRANCE OR EXIT USED BY VEHICULAR TRAFFIC TO AND FROM LANDS OR BUILDINGS ABUTTING A STATE HIGHWAY.

RESIDENTIAL DRIVEWAY - A DRIVEWAY SERVING FOUR OR FEWER PRIVATE HOMES OR AN APARTMENT BUILDING FOR FOUR OR FEWER FAMILY UNITS.

COMMERCIAL DRIVEWAY - A DRIVEWAY SERVING A COMMERCIAL ESTABLISHMENT, INDUSTRY, GOVERNMENTAL OR EDUCATIONAL INSTITUTION, PRIVATE UTILITY, HOSPITAL, CHURCH, APARTMENT BUILDING, OR OTHER COMPARABLE TRAFFIC GENERATOR.

MAJOR COMMERCIAL DRIVEWAY - ANY COMMERCIAL DRIVEWAY WHERE THE ACTUAL OR ANTICIPATED TRAFFIC VOLUME ON A TYPICAL DAY IS EITHER: (1) 100 OR MORE ONE-WAY TRIPS DURING THE PEAK HOUR FOR EITHER THE ADJACENT ROADWAY OR THE DEVELOPMENT, OR (2) 50 OR MORE ONE-WAY TRIPS DURING THE 8TH HIGHEST HOUR OF ANNUAL DRIVEWAY ACTIVITY.

MINOR COMMERCIAL DRIVEWAY - ANY COMMERCIAL DRIVEWAY WHERE THE ACTUAL OR ANTICIPATED TRAFFIC VOLUMES ON A TYPICAL DAY ARE LESS THAN THE VALUES STIPULATED FOR A MAJOR COMMERCIAL DRIVEWAY.

FIELD ENTRANCE - A DRIVEWAY SERVING A FARMYARD, CULTIVATED OR UNCULTIVATED FIELD, TIMBERLAND, OR UNDEVELOPED LAND NOT USED FOR INDUSTRIAL, COMMERCIAL, OR RESIDENTIAL PURPOSES.

URBAN / RURAL - THE ENGINEER WILL DETERMINE THE AREA CHARACTER BASED ON NYS DOT HIGHWAY DESIGN MANUAL CHAPTER 2, SECTION 2.4.

MINIMUM PAVING LIMIT ("MPL") - THE MINIMUM DISTANCE FROM THE OUTSIDE EDGE OF TRAVEL LANE THAT THE DRIVEWAY MUST BE PAVED AS MEASURED ALONG THE CENTERLINE OF THE DRIVEWAY (INCLUDES THE SHOULDER WIDTH).

PAVEMENT LENGTH ("PL") - THE DISTANCE FROM THE HIGHWAY EDGE OF PAVEMENT TO THE END OF PROPOSED DRIVEWAY PAVEMENT AS MEASURED ALONG THE CENTERLINE OF THE DRIVEWAY (NOTE THAT "PL" IS MEASURED FROM DIFFERENT POINTS THAN "MPL").

TRANSITION LENGTH ("TL") - THE DISTANCE ALONG THE CENTERLINE OF DRIVEWAY BEYOND THE DRIVEWAY PAVEMENT LENGTH ("PL") TO THE END OF PROPOSED DRIVEWAY WORK (USUALLY FOR GRADING, DRIVEWAY ENTRANCE LAYOUT, OR TRANSITION REASONS). THE TRANSITION LENGTH ONLY APPLIES TO NON-PAVEMENT DRIVEWAYS (EXAMPLE: DIRT, GRASS, GRAVEL, OR STONE DRIVEWAYS).

DRIVEWAY OFFSET - THE DISTANCE FROM THE INSIDE EDGE OF THE OUTERMOST TRAVEL LANE (OR TURNING LANE) TO THE HIGHWAY EDGE OF PAVEMENT (EQUALS OUTERMOST TRAVEL LANE + PAVED SHOULDER OR CURB OFFSET).

HIGHWAY EDGE OF PAVEMENT - THE OUTSIDE EDGE OF THE PAVED HIGHWAY SURFACE, INCLUDING ANY PAVED SHOULDER, BIKE LANE, PARKING LANE, OR CURB OFFSET.

GENERAL NOTES FOR DRIVEWAY STANDARD SHEETS:

GENERAL:

A. THE DRIVEWAY STANDARD SHEETS APPLY TO FIELD ENTRANCES, RESIDENTIAL DRIVEWAYS AND MINOR COMMERCIAL DRIVEWAYS. FIELD ENTRANCES AND RESIDENTIAL DRIVEWAYS ACCOMMODATE AN AASHTO PASSENGER CAR DESIGN VEHICLE. MINOR COMMERCIAL DRIVEWAYS ACCOMMODATE AN AASHTO SINGLE UNIT TRUCK DESIGN VEHICLE.

B. WORK PERFORMED OFF THE RIGHT-OF-WAY REQUIRES A DRIVEWAY RELEASE TO BE ACQUIRED BY THE ENGINEER.

C. SEE THE DRIVEWAY TABLE IN THE CONTRACT PLANS FOR SPECIFIC DRIVEWAY LOCATIONS, WIDTHS ("W"), CORNER ANGLES, LENGTHS ("L"), MATERIAL, AND ENTRANCE TYPE.

WIDTH / LENGTH:

D. IF THERE ARE CONSTRAINTS THAT PREVENT THE CONSTRUCTION OF THE DRIVEWAY OPENING AS PER EITHER OF THE LAYOUT METHODS, THE ENGINEER MAY SPECIFY A SMALL CORNER CURB RADIUS OF 2' (OR "1/2 BULLNOSE" CURB ALONG LOW SPEED HIGHWAYS), PROVIDED THE DRIVEWAY OPENING MEETS THE WIDTH ON STANDARD SHEET "DRIVEWAY OPENING LIMITS".

E. FOR RESIDENTIAL DRIVEWAYS, THE MINIMUM PAVING LIMIT SHALL BE 10' FROM THE OUTSIDE EDGE OF TRAVEL LANE OR 2' BEHIND ANY SIDEWALK, IF PRESENT, WHICHEVER IS GREATER. FOR MINOR COMMERCIAL DRIVEWAYS, THE MINIMUM PAVING LIMIT SHALL EXTEND TO THE RIGHT-OF-WAY LINE OR 2' BEHIND ANY SIDEWALK, IF PRESENT, OR 10 FT. FROM THE OUTSIDE EDGE OF TRAVEL LANE, WHICHEVER IS GREATER. THE PAVING LIMIT MAY EXTEND BEYOND THE MINIMUM PAVING LIMIT FOR NEW DRIVEWAYS AND TO TRANSITION TO EXISTING PAVED DRIVEWAYS. THE PAVING LIMIT WILL BE NOTED IN THE DRIVEWAY TABLE OF THE CONTRACT PLANS.

F. FOR GRADING AND CONSTRUCTION REQUIREMENTS OF TRANSITIONS FROM PLACED ASPHALT CONCRETE TO EXISTING ASPHALT CONCRETE DRIVEWAYS, REFER TO THE "TIE-IN TO EXISTING DRIVEWAYS" DETAIL AND TABLE 3 - "DRIVEWAY MATERIALS AND THICKNESS".

G. FOR PORTLAND CEMENT CONCRETE DRIVEWAYS, REFER TO THE 502 SERIES N.Y.S. STANDARD SHEETS FOR METAL REINFORCEMENT, JOINT TIES, SAWING AND SEALING, ETC.

SITE CONDITIONS (SIDEWALK / CURB):

H. ANY SIDEWALK WHICH CROSSES A DRIVEWAY SHALL HAVE A MINIMUM THICKNESS OF 6" AND INCLUDE WIRE FABRIC REINFORCEMENT WITH 3" OF TOP COVER.

I. TO PREVENT DRIVEWAY GRADES FROM EXCEEDING THE VALUES IN TABLE 2 - "MAXIMUM SLOPE", IT MAY BE NECESSARY TO DEPRESS THE SIDEWALK ACROSS THE DRIVEWAY. SIDEWALK RAMPS SHALL HAVE THE LEAST SLOPE POSSIBLE, NOT TO EXCEED A LONGITUDINAL SLOPE OF 1:12 OR A CROSS SLOPE OF 2%. WHERE THE HIGHWAY GRADE MAKES A 1:12 SLOPE IMPRACTICAL, THE RAMP LENGTH MAY BE RESTRICTED TO 15'.

J. FOR TYPE 1 AND TYPE 2 DRIVEWAY ENTRANCES, IF THERE IS ABUTTING SIDEWALK AND THE OFFSET BETWEEN THE SIDEWALK AND THE BACK OF CURB IS LESS THAN 2', USE THE TYPE 4 SIDEWALK RAMP ON THE "SIDEWALK CURB RAMP DETAILS" STANDARD SHEETS.

K. WHERE DRAINAGE IS CARRIED ALONG THE CURB, CONSTRUCT THE DRIVEWAY WITH A SHORT UPGRADE TO PREVENT RUNOFF FROM PONDING AT THE DRIVEWAY ENTRANCE (FLAT DRIVEWAY) OR RUNNING DOWN THE DRIVEWAY (DOWNHILL DRIVEWAY SLOPE). IF CONDITIONS MAKE THE ADDITION OF A SHORT UPGRADE IMPRACTICAL, CURB REVEAL ALONG THE DRIVEWAY OPENING MAY BE SPECIFIED BY THE ENGINEER. TYPICALLY, CURB REVEAL WILL NOT BE CONSTRUCTED IN RURAL AREAS. IF CURB REVEAL IS SPECIFIED FOR A SPECIFIC DRIVEWAY, IT WILL BE NOTED IN THE DRIVEWAY TABLE OF THE CONTRACT PLANS IN THE 'COMMENTS' COLUMN.

ENTRANCE TYPE:

L. THE ENGINEER MAY INTERCHANGE TYPE 1, TYPE 3 AND TYPE 4 RESIDENTIAL DRIVEWAYS TO BETTER MATCH THE EXISTING ENTRANCE TYPES ALONG THE HIGHWAY CORRIDOR WHILE CONSIDERING AVAILABLE SPACE, CONSTRUCTABILITY, SAFETY, AND FUNCTIONALITY. THE DRIVEWAY TYPE WILL COMPLY WITH TABLE 4 - "DRIVEWAY ENTRANCE TYPE SELECTION" ON THE "DRIVEWAY ENTRANCE DETAILS" STANDARD SHEET.

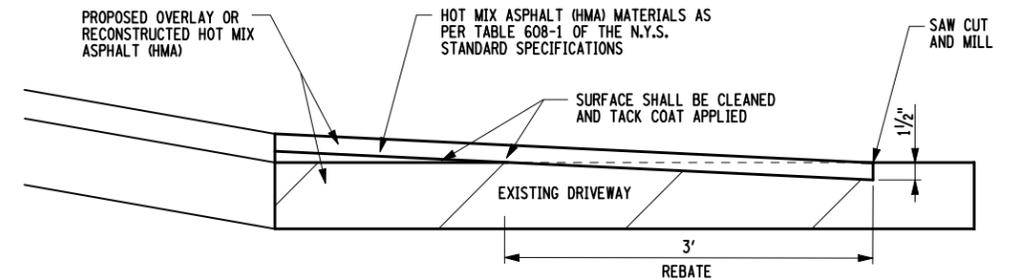
M. FOR DRIVEWAYS WITH VARYING WIDTHS AND/OR CURVED ALIGNMENTS, DETERMINE THE DRIVEWAY WIDTH AND CORNER ANGLE 16'-4" FROM THE EDGE OF TRAVEL LANE.

N. FOR A ONE-WAY DRIVEWAY ENTRANCE OR EXIT, THE DRIVEWAY ENTRANCE WIDENING IS ONLY NECESSARY ON ONE SIDE OF THE DRIVEWAY TO ACCOMMODATE THE ONE PARTICULAR TURNING MOVEMENT. ONE-WAY DRIVEWAYS WILL BE IDENTIFIED ON THE DRIVEWAY TABLE OF THE CONTRACT PLANS UNDER 'COMMENTS'. FOR CURBED HIGHWAYS, A SMALL CORNER CURB RADIUS OF 2' (OR "1/2 BULLNOSE" CURB ALONG LOW SPEED HIGHWAYS) SHALL BE CONSTRUCTED TO ELIMINATE A SHARP CORNER BEND IN THE CURBLINE (THIS IS SAFER FOR SNOWPLOW OPERATIONS).

MATERIAL:

O. FOR DRIVEWAY MATERIAL REQUIREMENTS, USE TABLE 3 - "DRIVEWAY MATERIALS AND THICKNESS".

P. FOR FIELD ENTRANCES, THE MATERIAL WITHIN THE PAVEMENT LENGTH ("PL") CAN CONSIST OF GRAVEL OR STONE AND THEY MAY BE CONNECTED TO THE EDGE OF THE HIGHWAY SHOULDER WITHOUT REMOVING ANY OF THE EXISTING SHOULDER MATERIAL.



TIE-IN TO EXISTING DRIVEWAYS FOR HOT MIX ASPHALT (HMA)

TABLE 1  
RECOMMENDED DRIVEWAY WIDTH "W"

DRIVEWAY CLASSIFICATION	STANDARD WIDTH (FT.)	PERMISSIBLE RANGE OF WIDTHS (FT.)
RESIDENTIAL LESS THAN 50 FT. IN LENGTH	12	9 TO 12
RESIDENTIAL GREATER THAN 50 FT. IN LENGTH	12	9 TO 12
MINOR COMMERCIAL SHARED TWO-WAY DRIVEWAY	24	22 TO 30
MINOR COMMERCIAL DIVIDED OR ONE-WAY DRIVEWAY	16	12 TO 24
MINOR COMMERCIAL MULTI-LANE DRIVEWAY	12 FT. LANES	N/A

TABLE 2  
MAXIMUM SLOPE

ROADWAY CLASSIFICATION	COMMERCIAL DRIVEWAY	RESIDENTIAL DRIVEWAY
RURAL	10%	12%
URBAN	6%	8%

TABLE 3  
DRIVEWAY MATERIALS AND THICKNESS

PROPOSED OR EXISTING DRIVE	WITHIN DRIVEWAY PAVEMENT LENGTH ("PL")			WITHIN TRANSITION LENGTH ("TL")		
	MATERIAL	THICKNESS FOR RESIDENTIAL (IN.)	THICKNESS FOR MINOR COMMERCIAL (IN.)	MATERIAL	THICKNESS FOR RESIDENTIAL (IN.)	THICKNESS FOR MINOR COMMERCIAL (IN.)
DIRT, GRASS, OR GRAVEL	HMA SW/D/BP	3	4	SUBBASE COURSE, EXCAVATE AS NECESSARY	6	9
	SUBBASE COURSE	6	8			
STONE	HMA SW/D/BP	3	4	STONE, EXCAVATE AS NECESSARY	8	11
	SUBBASE COURSE	6	8			
HMA (RESURFACING)	HMA SW/D/BP	1 1/2	1 1/2	NOT APPLICABLE - ALL WORK ON AN EXISTING PAVED DRIVEWAY IS WITHIN THE DRIVEWAY PAVEMENT LENGTH		
	TRUING AND LEVELING COURSE	AS NECESSARY	AS NECESSARY			
HMA (RECONSTRUCTION)	HMA SW/D/BP	3	4	NOT APPLICABLE - ALL WORK ON AN EXISTING PAVED DRIVEWAY IS WITHIN THE DRIVEWAY PAVEMENT LENGTH		
	SUBBASE COURSE	6	8			
PORTLAND CEMENT CONCRETE	PORTLAND CEMENT CONCRETE SW/D	6	6	NOT APPLICABLE - ALL WORK ON AN EXISTING PAVED DRIVEWAY IS WITHIN THE DRIVEWAY PAVEMENT LENGTH		
	SUBBASE COURSE	6	8			

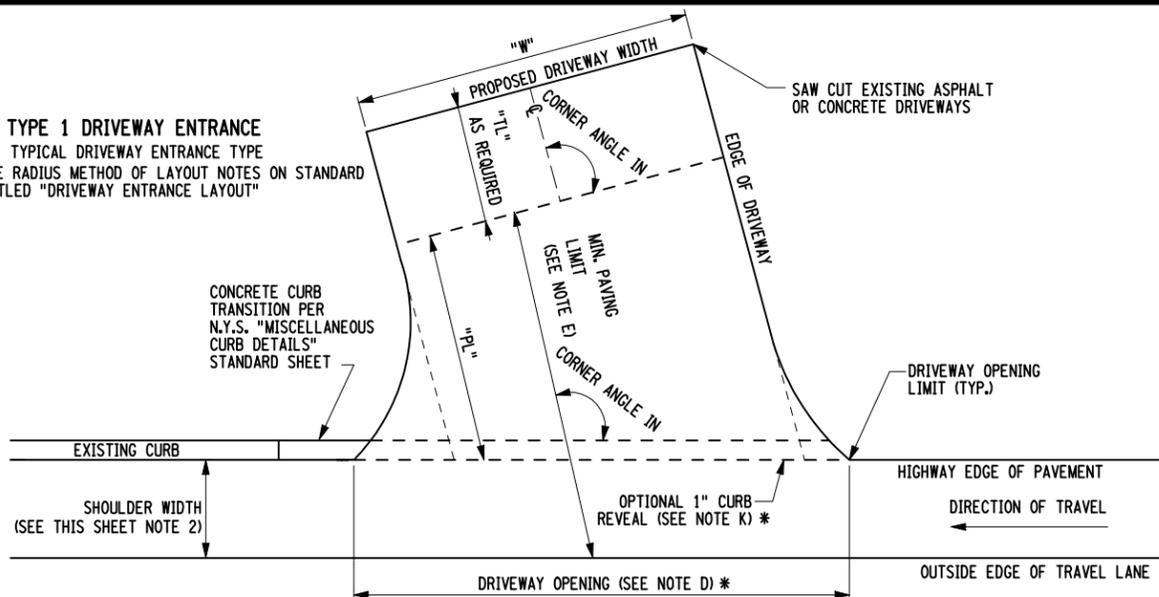
NOTE: HMA SW/D/BP = HOT MIX ASPHALT SIDEWALKS, DRIVEWAYS, AND BICYCLE PATHS  
PORTLAND CEMENT CONC. SW/D = PORTLAND CEMENT CONCRETE SIDEWALKS AND DRIVEWAYS

EFFECTIVE DATE: 01/08/09

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
DRIVEWAY DESIGN GUIDELINES		
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036	
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	608-03	

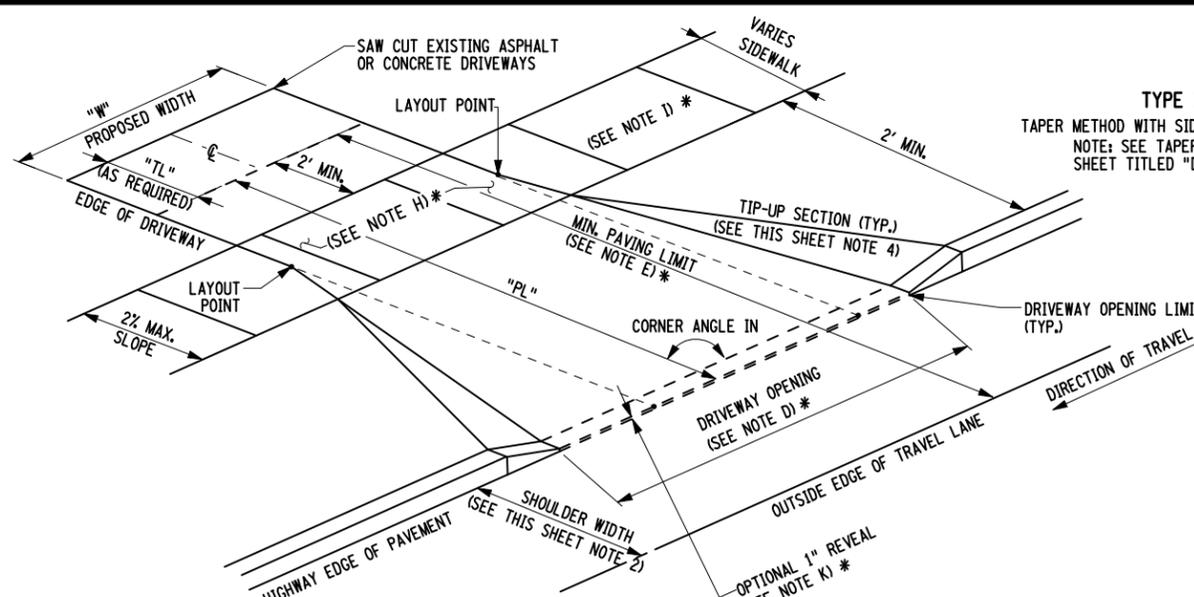
**TYPE 1 DRIVEWAY ENTRANCE**

TYPICAL DRIVEWAY ENTRANCE TYPE  
NOTE: SEE RADIUS METHOD OF LAYOUT NOTES ON STANDARD SHEET TITLED "DRIVEWAY ENTRANCE LAYOUT"



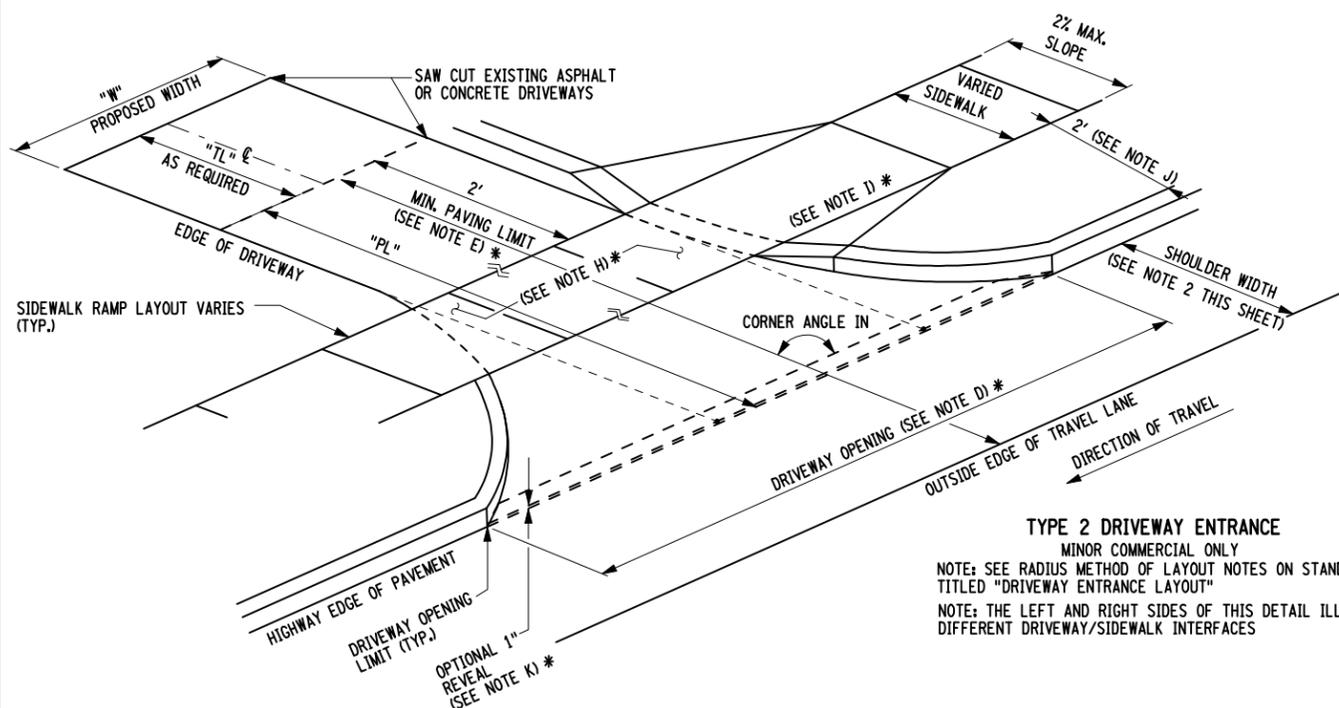
**TYPE 3 DRIVEWAY ENTRANCE**

TAPER METHOD WITH SIDEWALK AWAY FROM CURB OR NO SIDEWALK  
NOTE: SEE TAPER METHOD OF LAYOUT NOTES ON STANDARD SHEET TITLED "DRIVEWAY ENTRANCE LAYOUT"



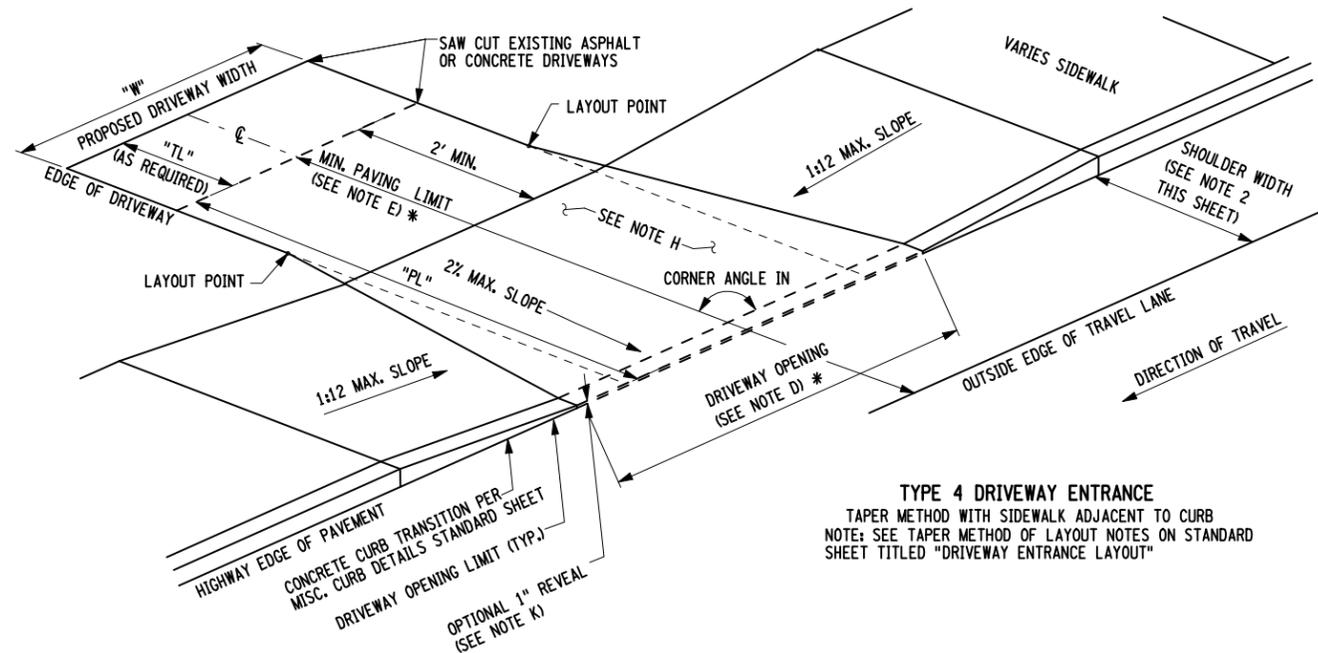
**TYPE 2 DRIVEWAY ENTRANCE**

MINOR COMMERCIAL ONLY  
NOTE: SEE RADIUS METHOD OF LAYOUT NOTES ON STANDARD SHEET TITLED "DRIVEWAY ENTRANCE LAYOUT"  
NOTE: THE LEFT AND RIGHT SIDES OF THIS DETAIL ILLUSTRATE DIFFERENT DRIVEWAY/SIDEWALK INTERFACES



**TYPE 4 DRIVEWAY ENTRANCE**

TAPER METHOD WITH SIDEWALK ADJACENT TO CURB  
NOTE: SEE TAPER METHOD OF LAYOUT NOTES ON STANDARD SHEET TITLED "DRIVEWAY ENTRANCE LAYOUT"



**TABLE 4  
DRIVEWAY ENTRANCE TYPE SELECTION**

DRIVEWAY ENTRANCE TYPE	ENTRANCE WIDENING METHOD	CONDITIONS FOR USE						RECOMMENDED USE
		DRIVEWAY CLASSIFICATION (NOTE 5)	CORNER ANGLE	TRAVEL LANE AND SHOULDER WIDTH	CURB	SIDEWALK	HIGHWAY DESIGN SPEED	
TYPE 1	RADIUS	RESIDENTIAL OR MINOR COMMERCIAL	60° TO 120°	ANY	USE ONLY WITH CURB	USE WITH OR WITHOUT SIDEWALK	ANY SPEED	RECOMMENDED FOR ALL LOCATIONS (EXCEPT FOR MINOR COMMERCIAL WITH CURB)
TYPE 2	RADIUS	MINOR COMMERCIAL ONLY	60° TO 120°	ANY	USE ONLY WITH CURB	USE WITH OR WITHOUT SIDEWALK	ANY SPEED	RECOMMENDED ONLY FOR MINOR COMMERCIAL WITH CURB
TYPE 3	TAPER	MINOR COMMERCIAL ONLY	80° TO 100°	16' OR GREATER (NOTE 6)	USE ONLY WITH CURB (NOTE 7)	USE ONLY WITH SIDEWALK OFFSET A MIN. OF 2' FROM THE EDGE OF PAVEMENT OR WITHOUT SIDEWALK	ONLY LOW SPEED (45 MPH OR LESS)	ALTERNATIVE ENTRANCE TYPE (TYPICALLY FOR URBAN AREA USE)
TYPE 4	TAPER	RESIDENTIAL OR MINOR COMMERCIAL	80° TO 100°	16' OR GREATER (NOTE 6)	USE ONLY WITH CURB (NOTE 7)	USE ONLY WITH SIDEWALK LESS THAN 2' FROM OR ADJACENT TO THE EDGE OF PAVEMENT	ONLY LOW SPEED (45 MPH OR LESS)	ALTERNATIVE ENTRANCE TYPE (TYPICALLY FOR URBAN AREA USE)

**NOTES :**

- REFER TO STANDARD SHEET TITLED "DRIVEWAY DESIGN GUIDELINES" FOR GENERAL NOTES, NOTES REFERENCED BY A LETTER, AND DEFINITIONS OF TERMS.
  - "SHOULDER WIDTH" REFERS TO THE PAVED SHOULDER WIDTH. THE SHOULDER WIDTH MAY BE DESIGNATED AS A PARKING LANE, BIKE LANE, CURB OFFSET, OR OTHER PAVED AREA.
  - THE DETAILS SHOW THE PAVEMENT LENGTH ("PL") EXTENDING TO THE MINIMUM PAVING LIMIT ("MPL"). HOWEVER, THE "PL" CAN EXTEND BEYOND THE ("MPL") AS SPECIFIED ON THE DRIVEWAY TABLE IN THE CONTRACT DOCUMENTS.
  - A DRIVEWAY TIP-UP SECTION SHOULD EXTEND TO A LOGICAL TERMINI (EXAMPLE: SIDEWALK EDGE, WHERE THE DRIVEWAY GRADE MATCHES EXISTING GROUND, OR LAYOUT POINT). FOR REFERENCE, A REASONABLE LENGTH FOR TAPERING THE TIP-UP SECTION BACK TO THE EDGE OF DRIVEWAY IS 3 TO 4 TIMES THE LENGTH OF CURB DROP. THE TIP-UP SECTION IS NOT PART OF THE DRIVEWAY OPENING WIDTH. REFER TO NYSOOT STANDARD SHEET TITLED "MISCELLANEOUS CURB DETAILS" FOR THE CURB TRANSITION.
  - THE TABLE ONLY APPLIES TO RESIDENTIAL AND MINOR COMMERCIAL DRIVEWAYS. FOR OTHER DRIVEWAY CLASSIFICATIONS (MAJOR, COMMERCIAL, FIELD ENTRANCE, ETC.), REFER TO THE NYS "POLICY AND STANDARDS FOR THE DESIGN OF ENTRANCE WAYS TO STATE HIGHWAYS" MANUAL.
  - FOR DRIVEWAYS WITH A DRIVEWAY OFFSET LESS THAN 16', THE TAPER METHOD IS NOT GENERALLY RECOMMENDED, UNLESS IT CAN BE FIELD VERIFIED THAT THE DRIVEWAY ENTRANCE WIDTH WILL ACCOMMODATE THE VEHICLES THAT USE THE DRIVEWAY ON A REGULAR BASIS.
  - TYPE 3 AND TYPE 4 DRIVEWAY ENTRANCES CAN BE USED WITHOUT CURB IF A TAPER STYLE ENTRANCE BETTER MATCHES THE HIGHWAY CORRIDOR AESTHETICS OR SPECIFIC SITE CONDITIONS THAN A RADIUS STYLE ENTRANCE.
- \* 8. NOTES A THROUGH P LOCATED ON STANDARD SHEET TITLED "DRIVEWAY DESIGN GUIDELINES".

EFFECTIVE DATE: 01/08/09

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
	U.S. CUSTOMARY STANDARD SHEET
<b>DRIVEWAY ENTRANCE DETAILS</b>	
APPROVED SEPTEMBER 19, 2008 /S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 08-036 608-04

**DRIVEWAY OPENING LAYOUT:**

THERE ARE TWO RECOMMENDED DRIVEWAY OPENING WIDENING METHODS: (1.) THE RADIUS METHOD, WHICH UTILIZES A CIRCULAR ARC TO WIDEN THE DRIVEWAY, AND (2.) THE TAPER METHOD, WHICH UTILIZES A STRAIGHT TAPER WIDENING OUT AT AN ESTABLISHED FLARE RATE.

THE RADIUS METHOD IS THE TYPICAL METHOD, ALTHOUGH THE TAPER METHOD IS A REASONABLE ALTERNATIVE FOR URBAN AREAS AND OTHER AREAS WHERE IT MIGHT BETTER MATCH THE HIGHWAY CORRIDOR AESTHETICS AND FUNCTIONALITY. SEE TABLE 4 - "DRIVEWAY ENTRANCE TYPE SELECTION" ON STANDARD SHEET 608-04 "DRIVEWAY ENTRANCE DETAILS" FOR ADDITIONAL VARIABLES CONCERNING THE SELECTION OF A DRIVEWAY OPENING WIDENING METHOD.

**RADIUS METHOD OF LAYOUT:**

- STEP 1. LOCATE AN OFFSET LINE 11' PARALLEL FROM THE INSIDE EDGE OF THE OUTERMOST TRAVEL LANE.
- STEP 2. SCRIBE A LINE PARALLEL TO THE OFFSET LINE, OFFSET "R" METERS (SEE TABLE 5).
- STEP 3. SCRIBE A LINE PARALLEL TO THE EDGE OF DRIVEWAY (NEAR SIDE), OFFSET "R" FEET.
- STEP 4. FIND THE CENTER POINT OF THE CORNER RADIUS ARC, WHICH IS LOCATED AT THE INTERSECTION OF THE LINES FROM STEPS 2 AND 3.
- STEP 5. FROM THE CENTER POINT, SCRIBE AN ARC WITH RADIUS "R", WHICH IS TANGENT TO BOTH THE OFFSET LINE AND THE EDGE OF DRIVEWAY. THE ARC SHOULD INTERSECT THE LINES AT THE DISTANCES "X" LISTED IN TABLE 6. DISTANCES IN TABLE 6 ARE AS MEASURED FROM THE INTERSECTION POINT OF THE OFFSET LINE (NOT THE EDGE OF TRAVEL LANE) AND THE PROJECTED EDGE OF DRIVEWAY TO EITHER OF THE ARC TANGENT POINTS (SAME DISTANCE ALONG THE OFFSET LINE OR ALONG THE PROJECTED EDGE OF DRIVEWAY).
- STEP 6. FIND THE DRIVEWAY OPENING LIMIT POINT WHICH IS WHERE THE ARC INTERSECTS THE HIGHWAY EDGE OF PAVEMENT.
- STEP 7. REPEAT STEPS 1 - 6 FOR THE OTHER SIDE OF THE DRIVEWAY OPENING.

**FIELD LAYOUT NOTES :**

FOR THE RADIUS METHOD OF LAYOUT, IF OBSTRUCTIONS HINDER THE ABILITY TO SCRIBE THE CORNER ANGLE ARC FROM THE CENTER POINT, LOCATE POINTS ALONG THE ARC BY USING "X" VALUES FROM TABLES 8 THROUGH 10 ON STANDARD SHEET 608-06 "DRIVEWAY OPENING LIMITS" AT VARIOUS DRIVEWAY OFFSETS ("Y" IS MEASURED FROM THE PROJECTED EDGE OF DRIVEWAY TO THE ARC).

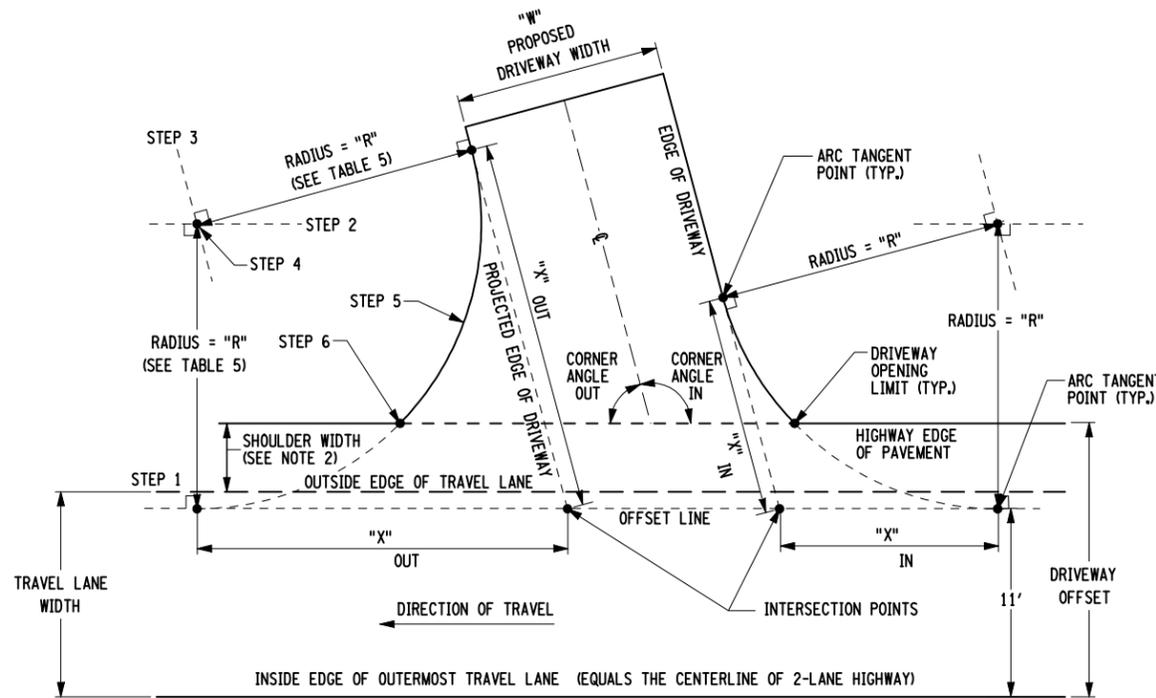
**TAPER METHOD OF LAYOUT:**

TAPER METHOD OF LAYOUT IS NOT RECOMMENDED FOR DRIVEWAYS WITH CORNER ANGLES LESS THAN 80° OR GREATER THAN 100°, NOR IS IT RECOMMENDED FOR DRIVEWAYS WITH A DRIVEWAY OFFSET (OUTER TRAVEL LANE + PAVED SHOULDER) LESS THAN 16', UNLESS IT CAN BE FIELD VERIFIED THAT THE DRIVEWAY ENTRANCE WIDTH WILL ACCOMMODATE THE VEHICLES THAT USE THE DRIVEWAY ON A REGULAR BASIS.

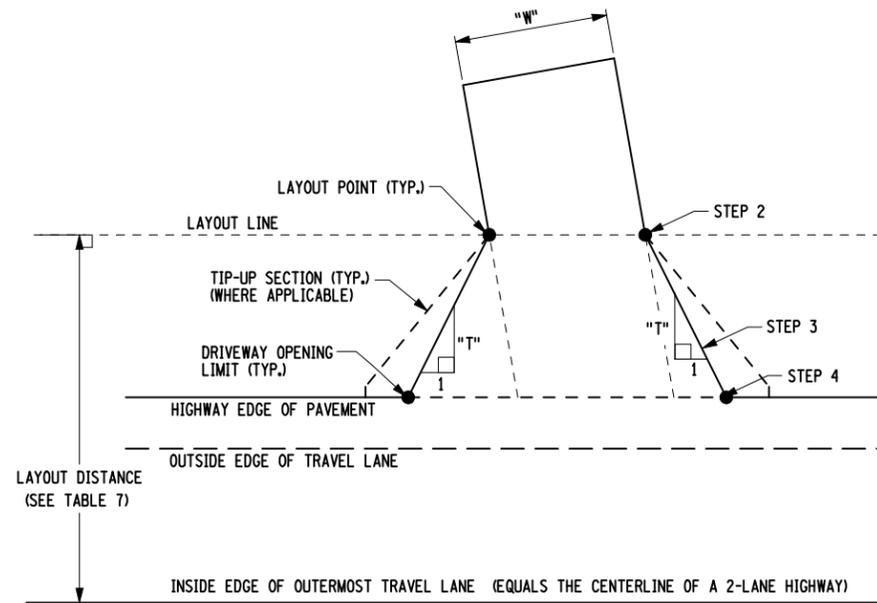
- STEP 1. SCRIBE A LINE (LAYOUT LINE) OFFSET THE APPROPRIATE 'LAYOUT DISTANCE' (SEE TABLE 7) FROM THE INSIDE EDGE OF THE OUTERMOST TRAVEL LANE.
- STEP 2. LOCATE THE TAPER LAYOUT POINT, WHICH IS AT THE INTERSECTION OF THE EDGE OF DRIVEWAY AND THE LAYOUT LINE.
- STEP 3. SCRIBE A 1:T' (SEE TABLE 7) TAPER FROM THE LAYOUT POINT TO THE EDGE OF PAVEMENT (WITH 'T' BEING PERPENDICULAR TO THE EDGE OF TRAVEL LANE).
- STEP 4. FIND THE DRIVEWAY OPENING LIMIT POINT WHICH IS WHERE THE TAPER INTERSECTS THE EDGE OF PAVEMENT.
- STEP 5. REPEAT STEPS 1 - 4 FOR THE OTHER SIDE OF THE DRIVEWAY OPENING.

**ALTERNATE TAPER METHOD OF LAYOUT:**

FOLLOW THE STEPS AS PER THE OTHER TAPER LAYOUT METHOD, EXCEPT FOR STEPS 3 AND 4. LOCATE THE DRIVEWAY OPENING LIMIT BY USING THE APPROPRIATE "Y" VALUE FROM EITHER TABLE 11 OR 12 ON STANDARD SHEET 608-06 "DRIVEWAY OPENING LIMITS". "Y" IS THE DISTANCE BETWEEN THE DRIVEWAY OPENING LIMIT AND THE INTERSECTION POINT OF THE PROJECTED EDGE OF DRIVEWAY AND THE EDGE OF PAVEMENT.



**RADIUS LAYOUT**  
VALID FOR RESIDENTIAL OR MINOR COMMERCIAL DRIVEWAYS  
(FOR THE VALUES OF "R" AND "X" SEE TABLES 5 AND 6, RESPECTIVELY)



**TAPER LAYOUT**  
VALID FOR RESIDENTIAL OR MINOR COMMERCIAL DRIVEWAYS  
(FOR THE VALUE OF "T" SEE TABLE 7)

DRIVEWAY CLASSIFICATION	"R"
RESIDENTIAL "W" ≤ 13'	16'
RESIDENTIAL "W" > 13'	13'
MINOR COMMERCIAL (ALL WIDTHS)	33'

CORNER ANGLE (SEE NOTE 3)	"X" FT. (SEE NOTE 4)		
	RESIDENTIAL DRIVEWAY ≤ 13' WIDE (R=16')	RESIDENTIAL DRIVEWAY > 13' WIDE (R=13')	MINOR COMMERCIAL DRIVEWAY (R=33')
60°	28.5	23.0	56.8
65°	25.9	20.7	51.5
70°	23.6	18.7	46.9
75°	21.3	17.1	43.0
80°	19.7	15.7	39.4
85°	18.0	14.4	35.8
90°	16.4	13.1	32.8
95°	15.1	12.1	30.2
100°	13.8	11.2	27.6
105°	12.8	10.2	25.3
110°	11.5	9.2	23.0
115°	10.5	8.5	21.0
120°	9.5	7.5	19.0

DRIVEWAY CLASSIFICATION	TAPER (1:T')	LAYOUT DISTANCE (SEE NOTE 5)
RESIDENTIAL	1:2	28'
MINOR COMMERCIAL	1:1½	41'

**NOTES:**

1. REFER TO STANDARD SHEET TITLED "DRIVEWAY DESIGN GUIDELINES" FOR GENERAL NOTES.
2. THE SHOULDER WIDTH REFERS TO THE PAVED SHOULDER WIDTH. THE SHOULDER WIDTH MAY BE DESIGNATED AS A PARKING LANE, BIKE LANE, CURB OFFSET, OR OTHER PAVED AREA.
3. IN TABLE 6, DIMENSIONS AND ANGLES MAY BE INTERPOLATED FOR VALUES OTHER THAN THOSE SHOWN IN THE TABLE.
4. IN TABLE 6, "X" REFERS TO EITHER "X"<sub>IN</sub> OR "X"<sub>OUT</sub>. THE CORNER ANGLE FOR X<sub>IN</sub> + X<sub>OUT</sub> MUST EQUAL 180°.
5. IN TABLE 7, LAYOUT DISTANCE IS MEASURED FROM THE INSIDE EDGE OF OUTERMOST TRAVEL LANE. FOR A TYPICAL 12' WIDE TRAVEL LANE THIS IS EQUIVALENT TO AN OFFSET FROM THE OUTSIDE EDGE OF TRAVEL LANE OF 16' FOR RESIDENTIAL DRIVEWAYS OR 30' FOR MINOR COMMERCIAL DRIVEWAYS.

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>DRIVEWAY ENTRANCE LAYOUT</b>	
APPROVED SEPTEMBER 19, 2008 /S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 08-036  608-05

EFFECTIVE DATE: 01/08/09

**TABLE 8  
DRIVEWAY OPENING "Y" (FT.) VALUES FOR RADIUS METHOD  
RESIDENTIAL DRIVEWAYS ≤ 13' WIDE (R=16')**

CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' (0')	13' (1')	14' (2')	15' (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
60°	22.3	19.7	17.4	15.7	14.1	12.5	11.2	9.8	8.9	7.9	6.9
65°	19.7	17.1	15.1	13.5	11.8	10.5	9.2	8.2	7.2	6.2	5.2
70°	17.7	15.1	13.1	11.5	10.2	8.9	7.9	6.6	5.9	4.9	4.3
75°	15.7	13.1	11.5	9.8	8.5	7.2	6.2	5.2	4.6	3.9	3.3
80°	14.1	11.5	9.8	8.5	7.2	5.9	5.2	4.3	3.6	3.0	2.3
85°	12.5	10.2	8.5	6.9	5.9	4.9	3.9	3.3	2.6	2.0	1.6
90°	10.8	8.9	7.2	5.9	4.9	3.9	3.3	2.6	2.0	1.6	1.0
95°	9.5	7.5	5.9	4.9	3.9	3.0	2.3	2.0	1.3	1.0	0.7
100°	8.5	6.6	4.9	3.9	3.0	2.3	1.6	1.3	1.0	0.7	0.3
105°	7.2	5.6	4.3	3.0	2.3	1.6	1.3	0.7	0.7	0.3	0.0
110°	6.6	4.6	3.3	2.3	1.6	1.0	0.7	0.3	0.3	0.0	0.0
115°	5.6	3.6	2.6	1.6	1.0	0.7	0.3	0.3	0.0	0.0	0.0
120°	4.6	3.0	2.0	1.3	0.7	0.3	0.0	0.0	0.0	0.0	0.0

**TABLE 9  
DRIVEWAY OPENING "Y" (FT.) VALUES FOR RADIUS METHOD  
RESIDENTIAL DRIVEWAYS > 13' WIDE (R=16')**

CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' (0')	13' (1')	14' (2')	15' (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
60°	17.4	14.8	12.8	11.2	9.8	8.5	7.2	6.2	5.2	4.6	3.6
65°	15.4	12.8	11.2	9.5	8.2	6.9	5.9	4.9	4.3	3.3	2.6
70°	13.5	11.2	9.5	8.2	6.9	5.9	4.9	3.9	3.3	2.6	2.0
75°	12.1	9.8	8.2	6.9	5.6	4.6	3.9	3.0	2.3	2.0	1.3
80°	10.8	8.5	6.9	5.9	4.6	3.6	3.0	2.3	2.0	1.3	1.0
85°	9.2	7.2	5.9	4.6	3.6	3.0	2.3	1.6	1.3	1.0	0.7
90°	8.2	6.2	4.9	3.9	3.0	2.3	1.6	1.3	1.0	0.7	0.3
95°	7.2	5.2	4.3	3.3	2.3	1.6	1.3	0.7	0.3	0.3	0.0
100°	6.2	4.6	3.3	2.3	1.6	1.3	0.7	0.3	0.3	0.0	0.0
105°	5.6	3.9	2.6	2.0	1.3	0.7	0.3	0.3	0.0	0.0	0.0
110°	4.6	3.3	2.0	1.3	1.0	0.3	0.3	0.0	0.0	0.0	0.0
115°	3.9	2.6	1.6	1.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0
120°	3.3	2.0	1.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0

**TABLE 10  
DRIVEWAY OPENING "Y" (FT.) VALUES FOR RADIUS METHOD  
MINOR COMMERCIAL DRIVEWAYS (R=33')**

CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' (0')	13' (1')	14' (2')	15' (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
60°	48.2	44.6	41.7	39.0	36.7	34.8	32.8	31.2	29.5	27.9	26.2
65°	43.3	39.4	36.7	34.1	32.2	30.2	28.2	26.6	24.9	23.6	22.3
70°	38.7	35.1	32.2	29.9	27.9	25.9	24.3	22.6	21.3	20.0	18.7
75°	34.8	31.2	28.5	26.2	24.3	22.6	21.0	19.4	18.0	16.7	15.7
80°	31.2	27.6	24.9	23.0	21.0	19.4	17.7	16.4	15.1	14.1	12.8
85°	27.9	24.6	22.0	20.0	18.0	16.7	15.1	13.8	12.8	11.5	10.5
90°	24.9	21.7	19.4	17.4	15.7	14.1	12.8	11.5	10.5	9.5	8.5
95°	22.3	19.0	16.7	14.8	13.5	11.8	10.5	9.5	8.5	7.5	6.9
100°	19.7	16.7	14.4	12.8	11.2	9.8	8.9	7.5	6.6	5.9	5.2
105°	17.7	14.8	12.5	10.8	9.2	8.2	6.9	5.9	5.2	4.6	3.9
110°	15.4	12.5	10.5	8.9	7.5	6.6	5.6	4.6	3.9	3.3	2.6
115°	13.5	10.8	8.9	7.2	5.9	4.9	4.3	3.3	2.6	2.3	1.6
120°	11.5	8.9	7.2	5.6	4.6	3.6	3.0	2.3	1.6	1.3	1.0

**TABLE 11  
DRIVEWAY OPENING "Y" (FT.) VALUES FOR TAPER METHOD  
RESIDENTIAL DRIVEWAYS**

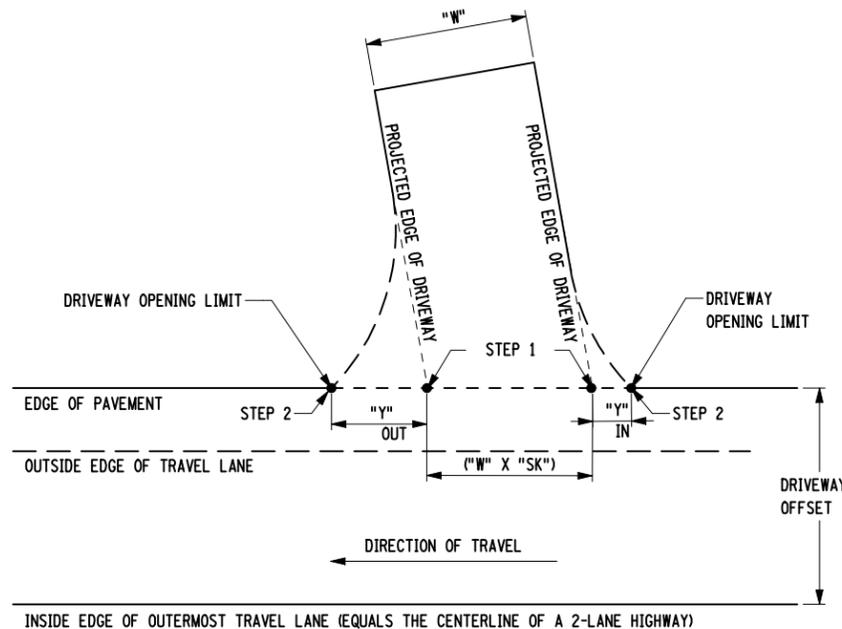
CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' (0')	13' (1')	14' (2')	15' (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
80°	11.2	10.5	9.8	9.2	8.5	7.9	7.2	6.6	5.9	5.2	4.6
85°	9.8	9.2	8.5	7.9	7.5	6.9	6.2	5.6	5.2	4.6	3.9
90°	8.2	7.9	7.2	6.9	6.2	5.9	5.2	4.9	4.3	3.9	3.3
95°	6.9	6.6	6.2	5.6	5.2	4.9	4.3	3.9	3.6	3.3	3.0
100°	5.6	5.2	4.9	4.6	4.3	3.9	3.6	3.3	3.0	2.6	2.3

\* (SEE NOTE 4)

**TABLE 12  
DRIVEWAY OPENING "Y" (FT.) VALUES FOR TAPER METHOD  
MINOR COMMERCIAL DRIVEWAYS**

CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' (0')	13' (1')	14' (2')	15' (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
80°	24.9	24.3	23.3	22.6	21.7	21.0	20.0	19.4	18.4	17.4	16.7
85°	22.3	21.7	21.0	20.0	19.4	18.7	18.0	17.1	16.4	15.7	15.1
90°	19.7	19.0	18.4	17.7	17.1	16.4	15.7	15.1	14.4	13.8	13.1
95°	17.4	16.7	16.1	15.4	15.1	14.4	13.8	13.1	12.8	12.1	11.5
100°	14.8	14.1	13.8	13.1	12.8	12.1	11.8	11.2	10.8	10.2	9.8

\* (SEE NOTE 4)



**PRELIMINARY DRIVEWAY OPENING LAYOUT**  
ALTHOUGH THE DETAIL ONLY SHOWS A RADIUS ENTRANCE TYPE, THE DETAIL APPLIES TO BOTH RADIUS AND TAPER METHODS OF LAYOUT (FOR THE VALUES OF "Y" SEE TABLES 8 THROUGH 12). (FOR THE VALUE OF "SK" SEE TABLE 13)

NOTES :

- TABLES 8 THROUGH 13 ARE FOR PRELIMINARY CURBLINE LAYOUT OF THE DRIVEWAY OPENING WIDTHS. USE THE LAYOUT METHOD DESCRIBED ON STANDARD SHEET 608-06 "DRIVEWAY ENTRANCE LAYOUT" FOR FINAL DRIVEWAY LAYOUT (ALTHOUGH THE DRIVEWAY OPENING LIMITS SHOULD MATCH BETWEEN THE PRELIMINARY AND FINAL LAYOUT TECHNIQUES.)
- REFER TO STANDARD SHEET 608-04 "DRIVEWAY DESIGN GUIDELINES" FOR GENERAL NOTES, NOTES REFERENCED BY A LETTER, AND DEFINITION OF TERMS
- THE DRIVEWAY OPENING WIDTH VARIES DEPENDING ON THE DRIVEWAY ENTRANCE WIDENING METHOD USED (RADIUS OR TAPER). THE TAPER METHOD GENERALLY WILL PROVIDE A MORE NARROW DRIVEWAY OPENING WIDTH.
- FOR DRIVEWAYS WITH A DRIVEWAY OFFSET LESS THAN 16', THE TAPER METHOD IS NOT GENERALLY RECOMMENDED, UNLESS IT CAN BE FIELD VERIFIED THAT THE DRIVEWAY ENTRANCE WIDTH WILL ACCOMMODATE THE VEHICLES THAT USE THE DRIVEWAY ON A REGULAR BASIS.
- DIMENSIONS AND ANGLES MAY BE INTERPOLATED FOR VALUES OTHER THAN THOSE SHOWN IN THE TABLES.
- "Y" REFERS TO EITHER "Y" IN OR "Y" OUT

**TABLE 13  
DRIVEWAY OPENING WIDTH CALCULATION**

DRIVEWAY OPENING WIDTH = "Y" IN + ("W" X "SK") + "Y" OUT

CORNER ANGLE	60°/120°	65°/115°	70°/110°	75°/105°	80°/100°	85°/95°	90°
SKUEW FACTOR "SK"	1.16	1.10	1.07	1.04	1.02	1.01	1.00

TABLE NOTE:  
IF THE DRIVEWAY IS A ONE-WAY ENTRANCE OR EXIT, THEN "Y"(OUT) OR "Y"(IN) RESPECTIVELY, IS NOT INCLUDED IN THE EQUATION. ALTHOUGH FOR CURBED HIGHWAYS, ADDITIONAL DRIVEWAY OPENING WIDTH SHOULD BE ADDED TO ALLOW FOR A SMALL CORNER CURB RADIUS, TO ELIMINATE A SHARP CORNER BEND IN THE CURBLINE. (THIS IS SAFER FOR SNOWPLOW OPERATIONS).

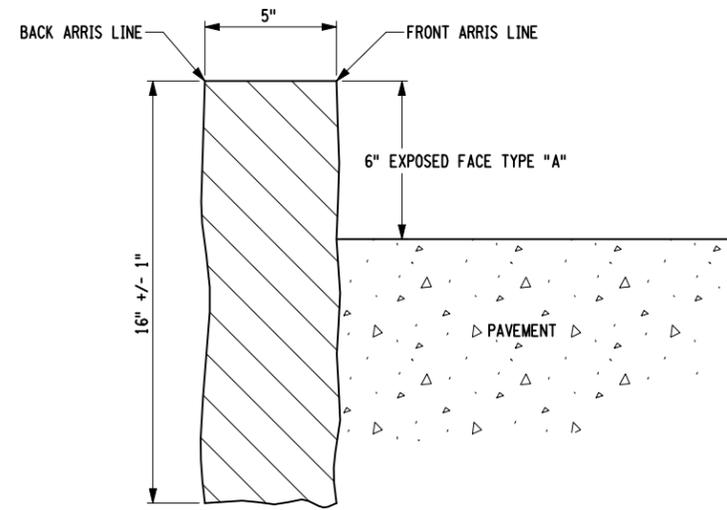
SAMPLE CALCULATION:  
A 10' WIDE RESIDENTIAL DRIVEWAY CONNECTING WITH A CORNER ANGLE OF 70° (THEREFORE RADIUS METHOD REQUIRED) TO A HIGHWAY WITH A 12' WIDE TRAVEL LANE AND 4' PAVED SHOULDER (=16' DRIVEWAY OFFSET) WOULD REQUIRE A DRIVEWAY OPENING WIDTH = "Y" IN + ("W" X "SK") + "Y" OUT  
= 10.2 + (10X1.07) + 1.6 = 22.5'

FIELD LAYOUT :

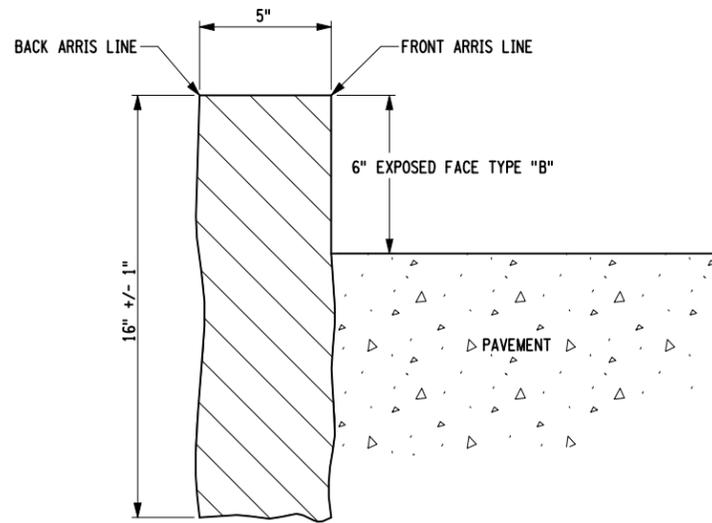
- STEP 1: LOCATE THE INTERSECTION POINTS OF THE PROJECTED EDGES OF DRIVEWAY AND THE EDGE OF PAVEMENT.
- STEP 2: ALONG THE EDGE OF PAVEMENT, MEASURE OUT FROM THE INTERSECTION POINTS AT DISTANCES "Y" IN AND "Y" OUT RESPECTIVELY TO LOCATE THE DRIVEWAY OPENING LIMITS.

	<b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>
U.S. CUSTOMARY STANDARD SHEET	
<b>DRIVEWAY OPENING LIMITS</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	<b>608-06</b>

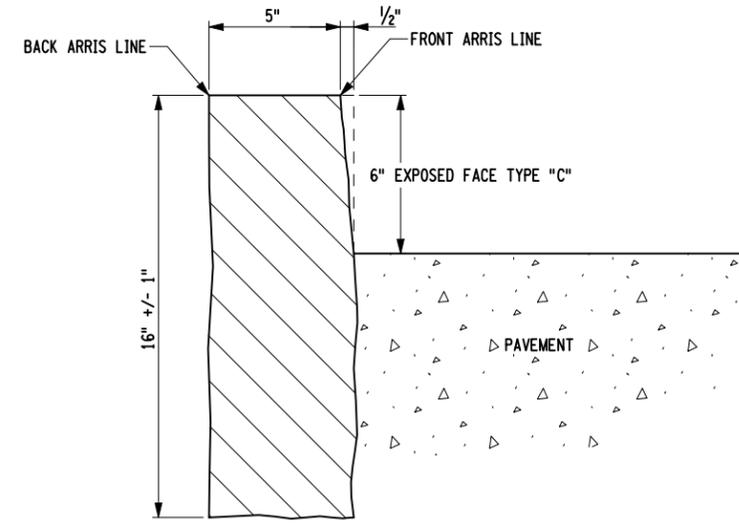
EFFECTIVE DATE: 01/08/09



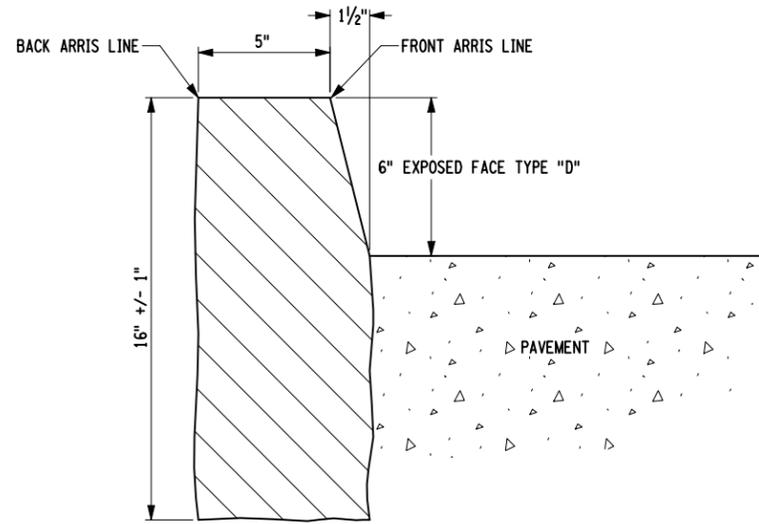
**TYPE "A" CURB**  
 SAWED, HAMMERED OR THERMAL  
 FINISH TOP, QUARRY SPLIT FACE



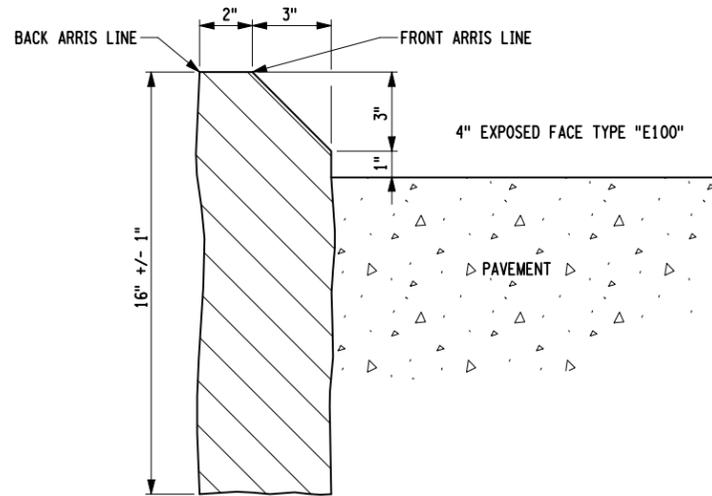
**TYPE "B" CURB**  
 SAWED, HAMMERED OR THERMAL  
 FINISH TOP AND FACE



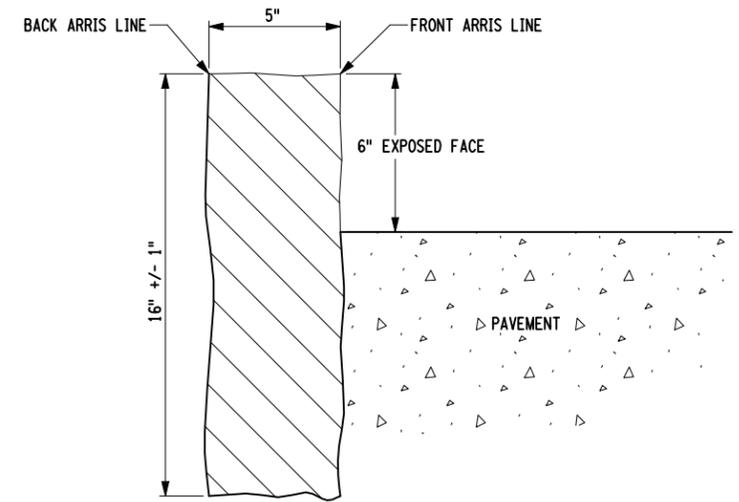
**TYPE "C" CURB**  
 SAWED, HAMMERED OR THERMAL FINISH TOP,  
 QUARRY SPLIT, SAWED, HAMMERED OR THERMAL FINISH FACE



**TYPE "D" CURB**  
 SAWED, HAMMERED OR THERMAL  
 FINISH TOP AND FACE



**TYPE "E100" CURB**  
 SAWED, HAMMERED OR THERMAL  
 FINISH TOP AND FACE

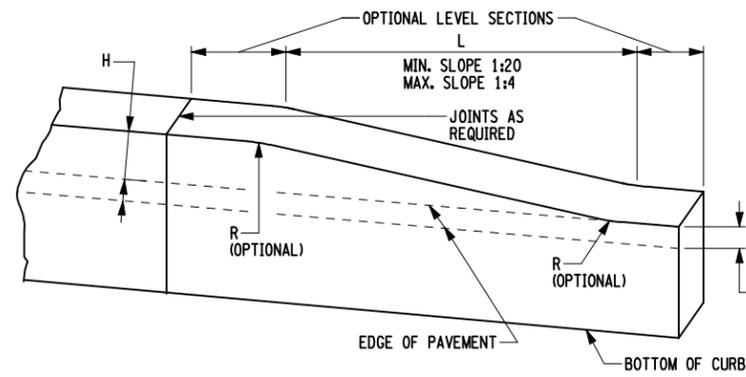


**ECONOMY CURB**  
 QUARRY SPLIT TOP AND FACE

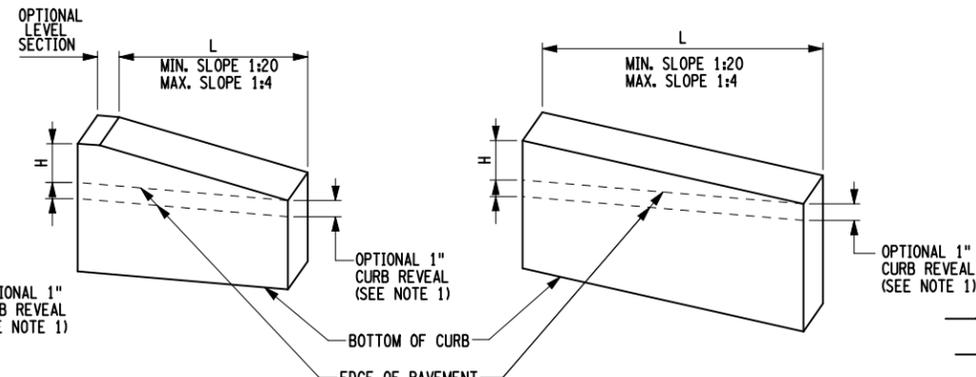
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	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
STONE CURB AND GRANITE CURB		
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036	
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)		609-01

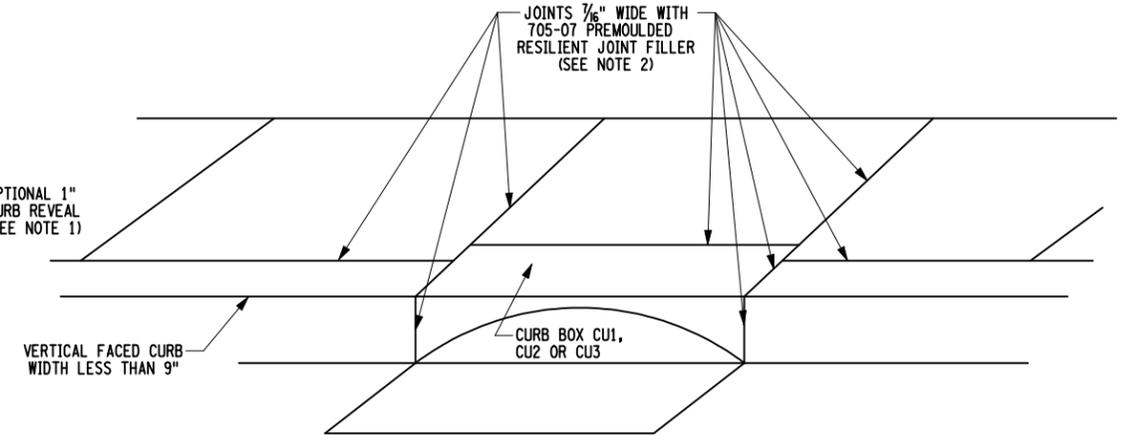
EFFECTIVE DATE: 01/08/09



CAST-IN-PLACE CONCRETE CURB TRANSITIONS  
(SEE NOTE 1)



PRECAST CONCRETE, STONE, AND GRANITE CURB TRANSITIONS  
(SEE NOTE 1)



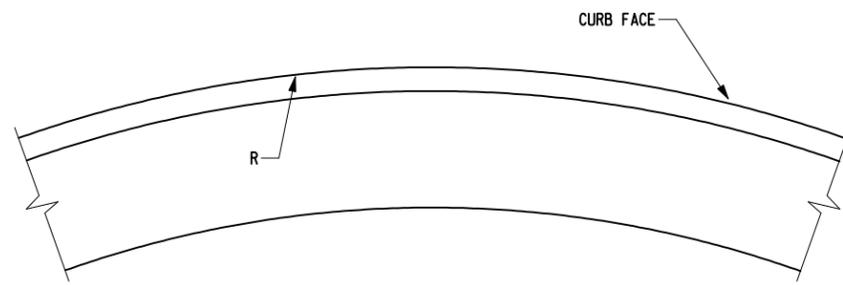
CURB AND CURB BOX ADJACENT TO CONCRETE SIDEWALK  
(NOT ON STRUCTURES)

CURB TRANSITION LENGTHS (L)			
H \ SLOPE	1:4	1:12	1:20
4"	16"	48"	80"
6"	24"	72"	120"

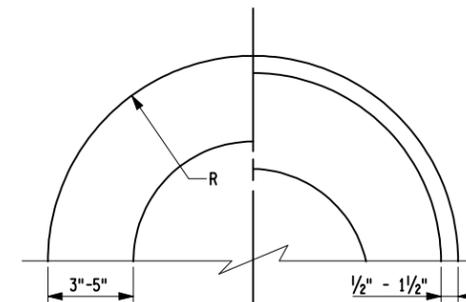
CURB TRANSITION LENGTHS (L) WITH CURB REVEAL			
H \ SLOPE	1:4	1:12	1:20
4"	12"	36"	60"
6"	20"	60"	100"

STANDARD PRECAST CURB RADII IN INCHES
12" BULLNOSE *
18" BULLNOSE *
24" BULLNOSE *
30" BULLNOSE
60"
72" *
120"
180"
240"
300"
360"
420" *
480"
540" *
600"
720"
840"
960"
1080"

\* NOT ALL PRECASTERS MANUFACTURE THESE RADII



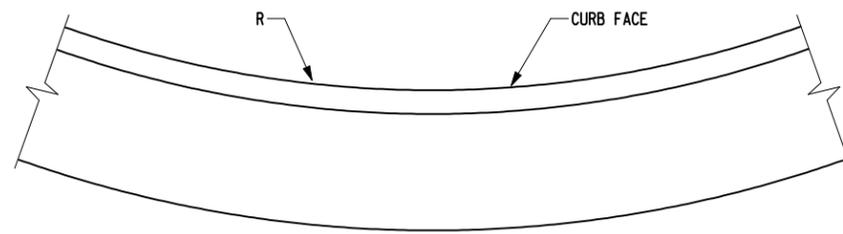
CURVED CURB (CONVEX)



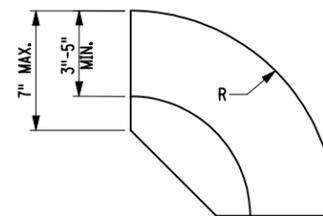
BULLNOSE

MOUNTABLE CURB

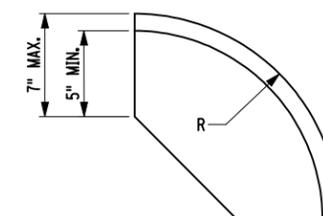
VERTICAL FACED CURB



CURVED CURB (CONCAVE)



1/2 BULLNOSE MOUNTABLE CURB



1/2 BULLNOSE VERTICAL FACED CURB

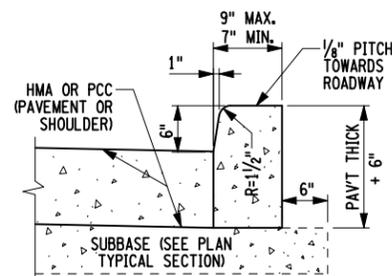
NOTES:

- USE 1" REVEAL AND CONTINUE CURB ACROSS DRIVEWAY ENTRANCES ONLY IF SHOWN NOT TO BE OPTIONAL ON DRIVEWAY DETAILS SPECIFIED IN CONTRACT DOCUMENTS, OR DIRECTED BY THE ENGINEER.
- TERMINATE CURB, CURB AND GUTTER AND ASPHALT CURB BY TRANSITIONING ON A MAXIMUM SLOPE OF 1:12 TO PAVEMENT SURFACE, EXCEPT WHEN BEHIND GUIDE RAIL.
- EXTEND JOINT FILLER 6" MINIMUM BEHIND CURB ON BOTH SIDES OF CURB BOX. 705-07 NOT NEEDED WHEN VERTICAL FACED CURB WIDTH EQUAL TO WIDTH OF CURB BOX.

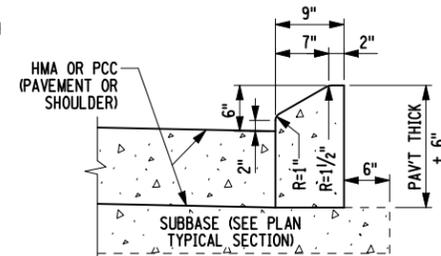
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USER = jturley

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
MISCELLANEOUS CURB DETAILS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	609-02

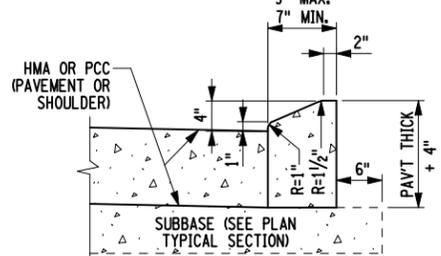
EFFECTIVE DATE: 01/08/09



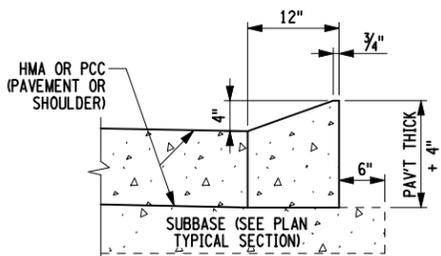
**TYPE VF150**  
(VERTICAL FACED CURB WITHOUT CURB ANCHOR)  
(SEE NOTE 4)



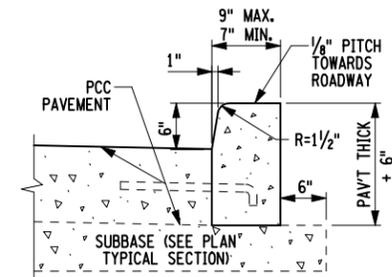
**TYPE M150**  
(MOUNTABLE CURB WITHOUT CURB ANCHOR)  
(SEE NOTE 5)



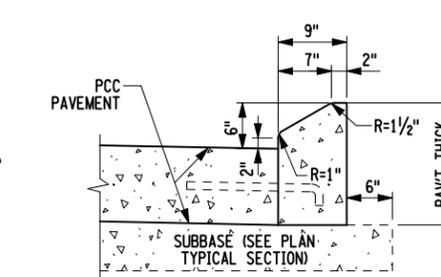
**TYPE M100**  
(MOUNTABLE CURB WITHOUT CURB ANCHOR)



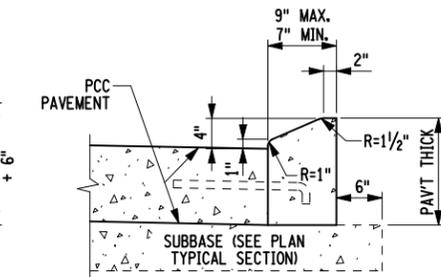
**TYPE T100**  
(TRAVERSABLE CURB)



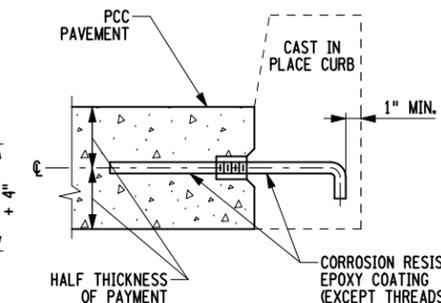
**TYPE VF150A**  
(VERTICAL FACED CURB WITH CURB ANCHOR)  
(SEE CURB ANCHOR DETAILS)  
(SEE NOTE 4)



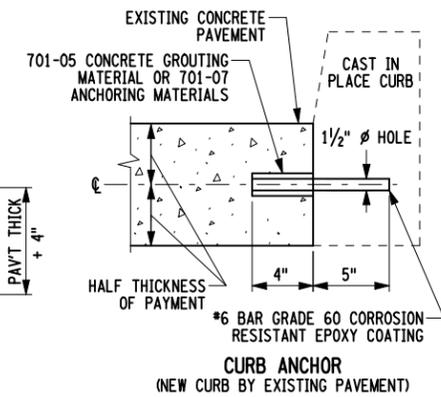
**TYPE M150A**  
(VERTICAL FACED CURB WITH CURB ANCHOR)  
(SEE CURB ANCHOR DETAILS)  
(SEE NOTE 5)



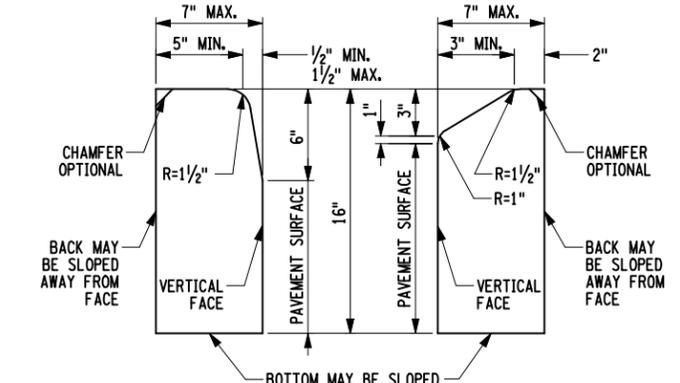
**TYPE M100A**  
(MOUNTABLE CURB WITH CURB ANCHOR)  
(SEE CURB ANCHOR DETAILS)



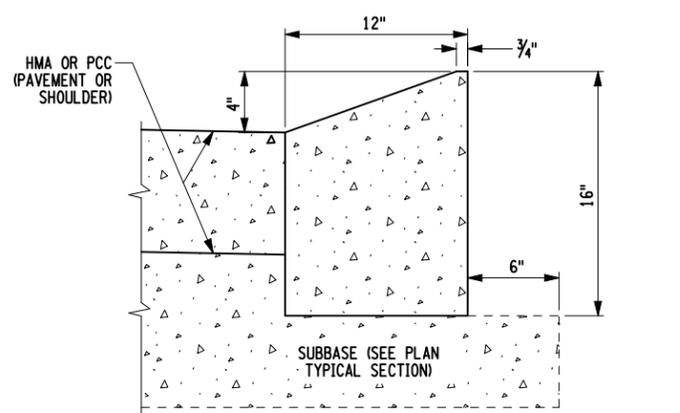
**CURB ANCHOR**  
(NEW CONSTRUCTION)  
(SEE NOTE 2)



**CURB ANCHOR**  
(NEW CURB BY EXISTING PAVEMENT)

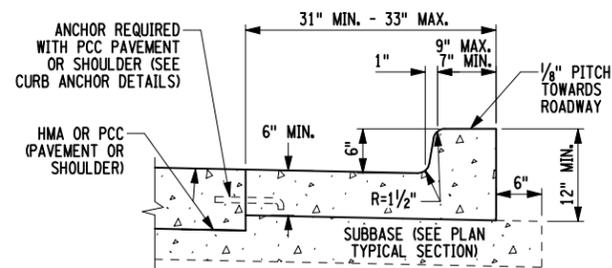


**TYPE PVF150**  
(VERTICAL FACED CURB) **TYPE PM100**  
(MOUNTABLE CURB)  
**PRECAST CONCRETE CURB**

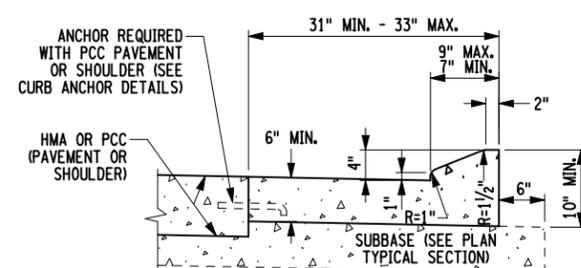


**TYPE PT100**  
(TRAVERSABLE CURB)  
**PRECAST CONCRETE CURB**

**CAST-IN-PLACE CONCRETE CURB**

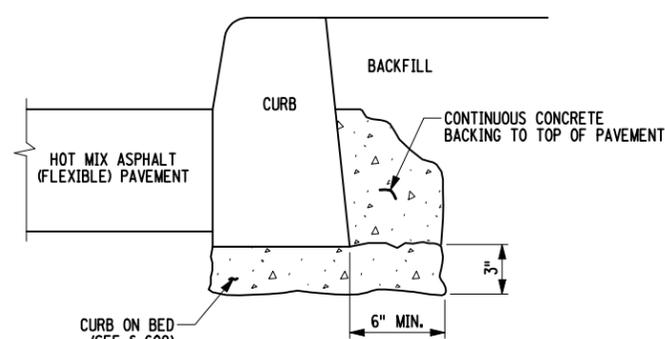


**TYPE VF150G**  
(VERTICAL FACED CURB AND GUTTER)

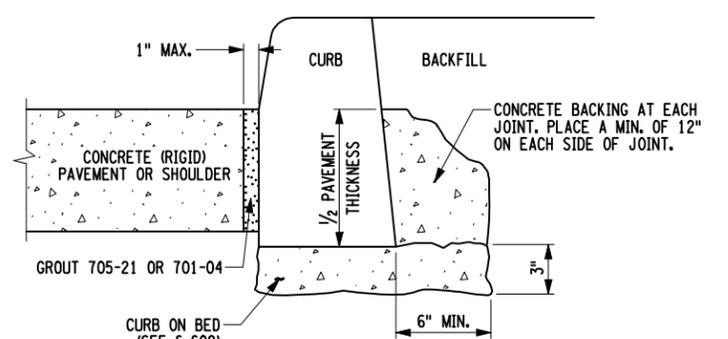


**TYPE M100G**  
(MOUNTABLE CURB AND GUTTER)

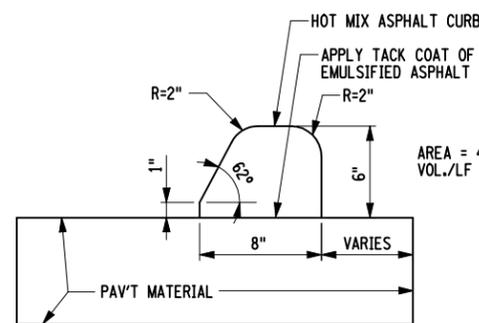
**CAST-IN-PLACE CONCRETE CURB AND GUTTER**



**PRECAST CONCRETE, STONE, AND GRANITE CURB WITH FLEXIBLE PAVEMENT BEDDING AND BACKFILL**

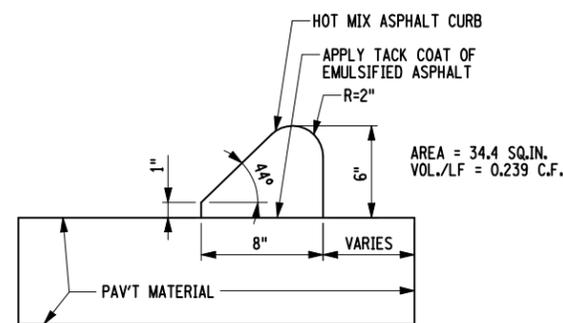


**PRECAST CONCRETE, STONE, AND GRANITE CURB WITH RIGID PAVEMENT BEDDING AND BACKFILL**



**VERTICAL FACED TYPE**

**HOT MIX ASPHALT CURB**



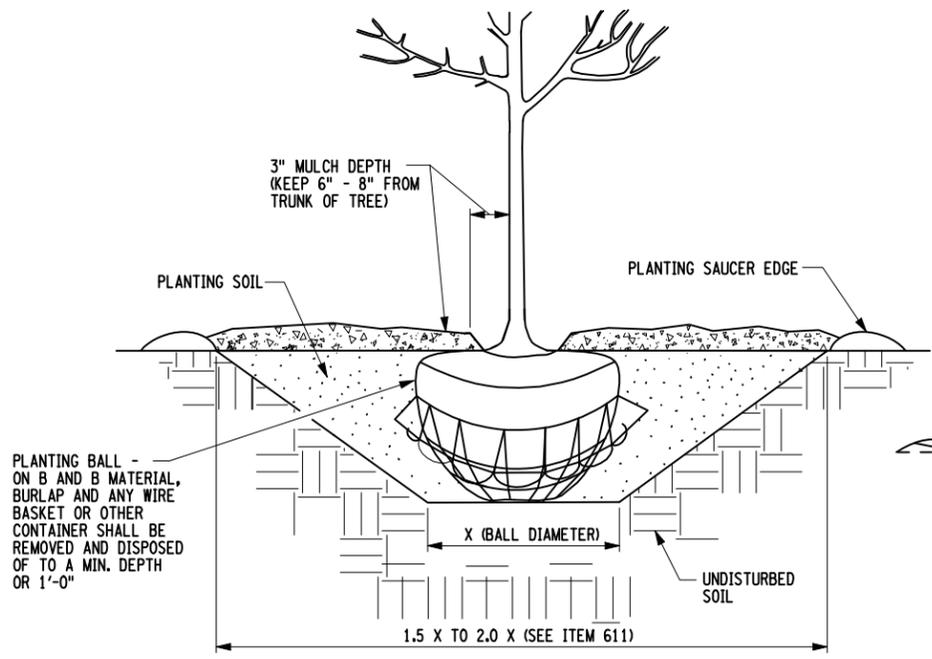
**MOUNTABLE TYPE**

**NOTES:**

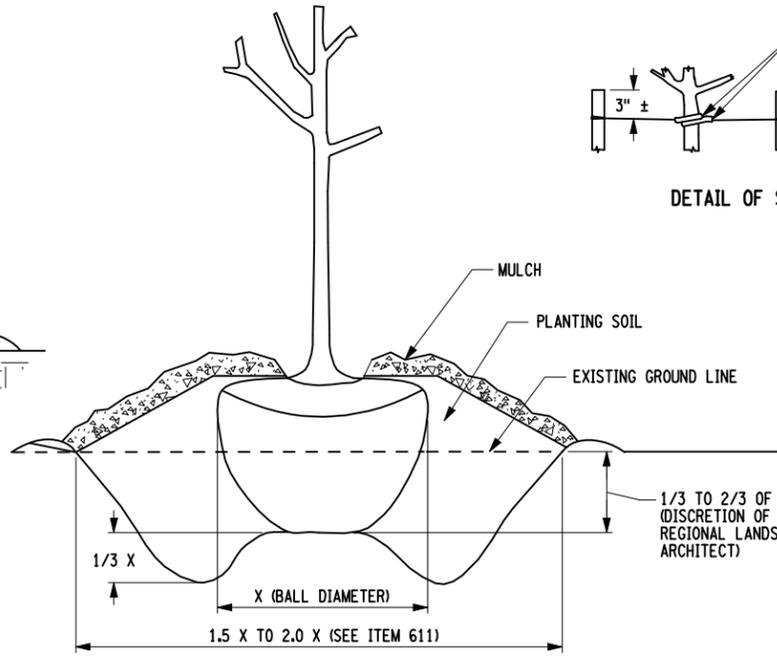
- USE CURB AND CURB AND GUTTER MEETING THE MATERIAL AND CONSTRUCTION REQUIREMENTS OF SECTION 609 OF THE STANDARD SPECIFICATIONS.
- CURB ANCHOR (NEW CONSTRUCTION). THIS DETAIL SHOWS PLACEMENT OF CURB ANCHORS. PUSH-IN TYPE ANCHORS MAY BE USED (SHOWN ON THE STANDARD SHEET FOR LONGITUDINAL TIES).
- CURB TYPES M150A, VF150A AND M100A REQUIRE CURB ANCHOR. CURB AND GUTTER TYPES VF150G AND M100G REQUIRE ANCHORS WHEN PLACED ADJACENT TO CONCRETE PAVEMENT OR SHOULDER.
- WHEN VERTICAL FACED CURB LESS THAN 9" WIDE IS USED WITH CURB BOXES CU1, CU2, AND CU3 AND CONCRETE SIDEWALK IS PLACED ADJACENT TO THIS CURB, SEE STANDARD SHEET MISCELLANEOUS CURB DETAILS FOR CURB BOX JOINTS.
- USE WITH CURB BOXES, CM1, CM2, AND CM3.

EFFECTIVE DATE: 01/08/09

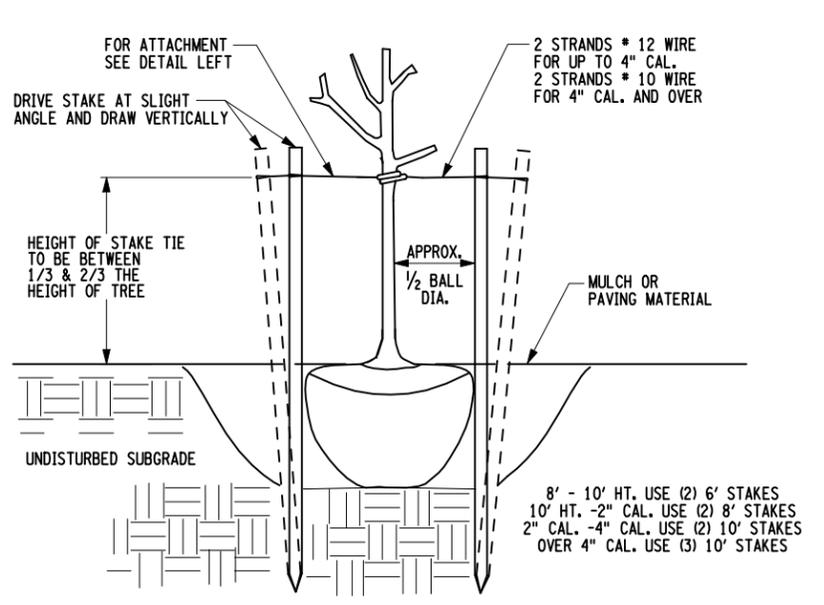
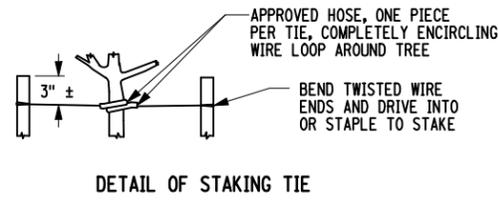
	<p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>
	<p>U.S. CUSTOMARY STANDARD SHEET</p>
<p>CONCRETE CURB, CURB AND GUTTER, AND HOT MIX ASPHALT CURB</p>	
<p>APPROVED SEPTEMBER 19, 2008 /S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)</p>	<p>ISSUED UNDER EB 08-036 609-03</p>



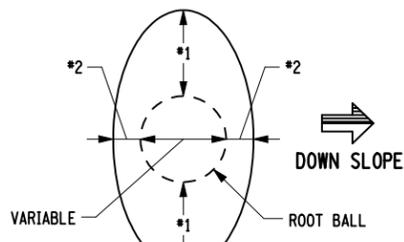
GENERAL TREE PLANTING



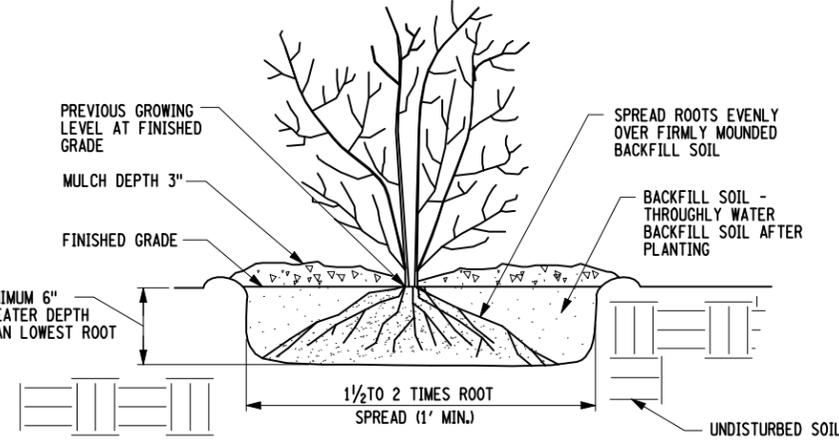
TREE PLANTING IN WET / HEAVY SOILS



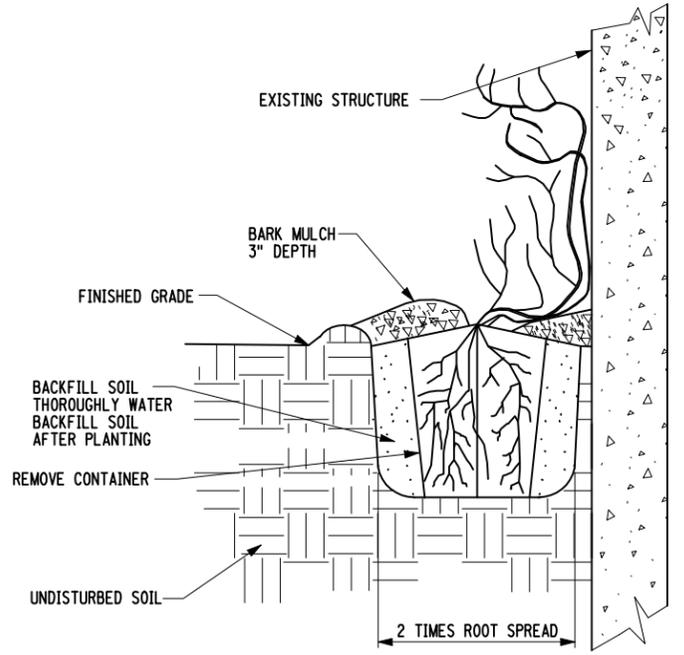
STAKING TREES (WHEN SPECIFIED)



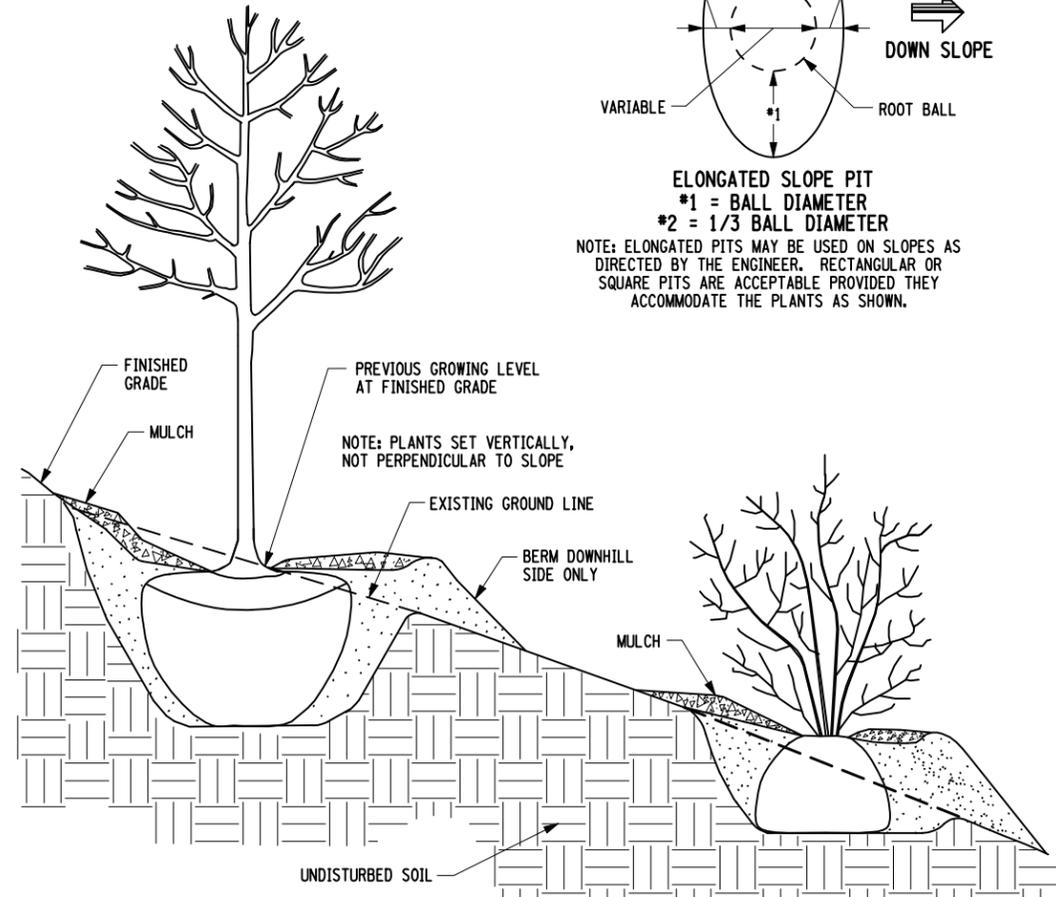
**ELONGATED SLOPE PIT**  
 #1 = BALL DIAMETER  
 #2 = 1/3 BALL DIAMETER  
 NOTE: ELONGATED PITS MAY BE USED ON SLOPES AS DIRECTED BY THE ENGINEER. RECTANGULAR OR SQUARE PITS ARE ACCEPTABLE PROVIDED THEY ACCOMMODATE THE PLANTS AS SHOWN.



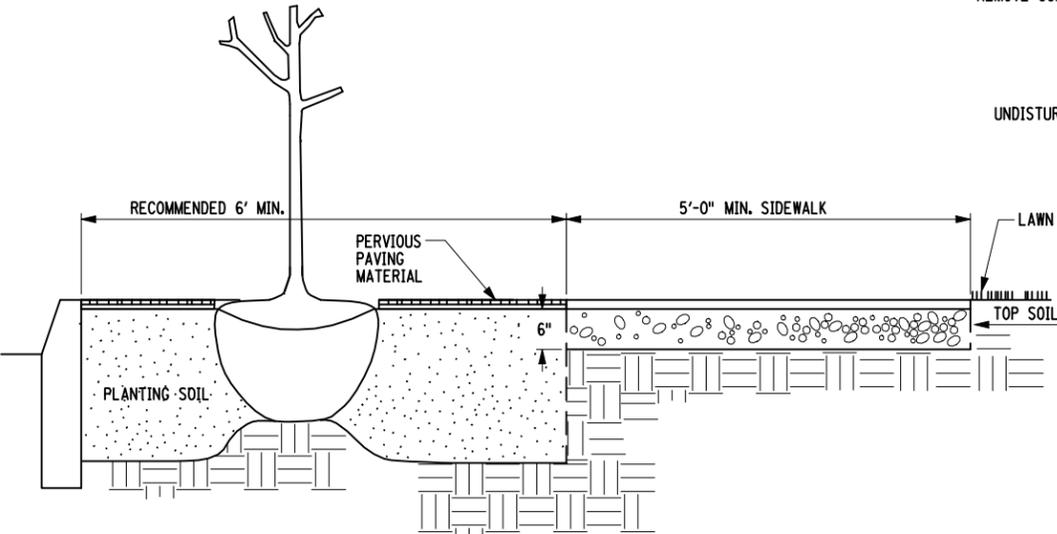
BARE ROOT SHRUB PLANTING



VINE PLANTING DETAIL



PLANT PLACEMENT (ALL PLANT MATERIAL)

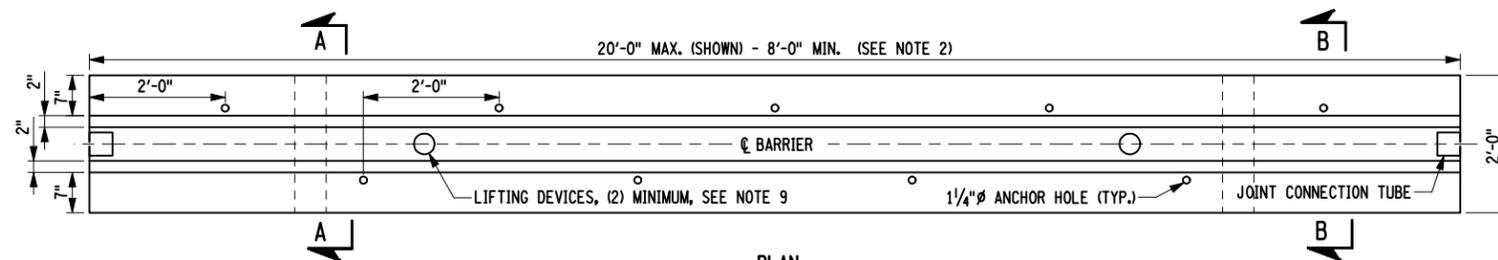


URBAN TREE PLANTING

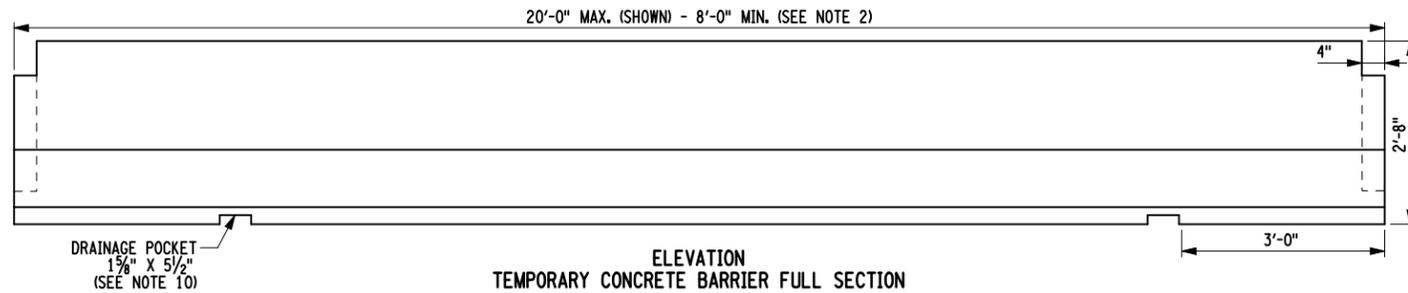
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	U.S. CUSTOMARY STANDARD SHEET
	LANDSCAPE PLANTING DETAILS
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	611-01

EFFECTIVE DATE: 01/08/09

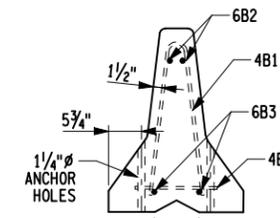
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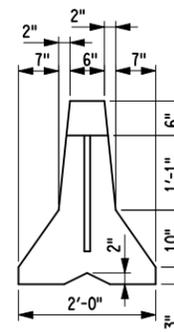
PLAN



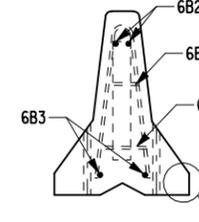
ELEVATION  
TEMPORARY CONCRETE BARRIER FULL SECTION



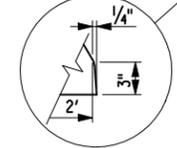
SECTION A-A



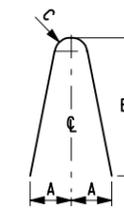
END VIEW



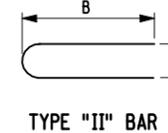
SECTION B-B



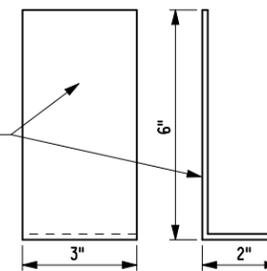
OPTIONAL BATTERED BOTTOM  
CORNER DETAIL



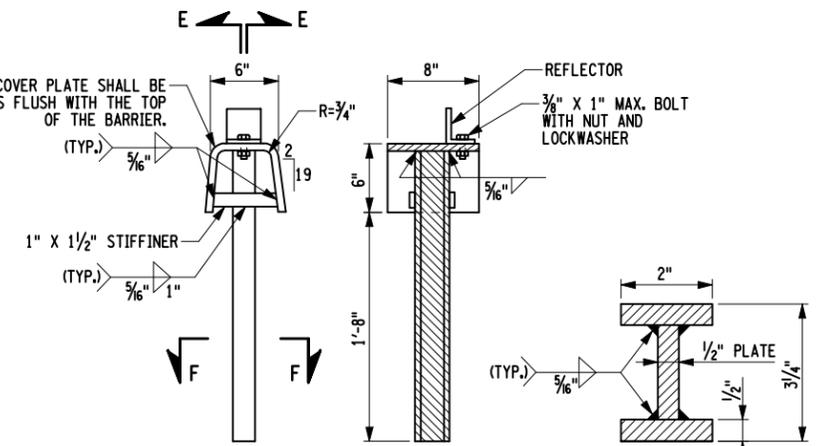
TYPE "I" BAR



TYPE "II" BAR



REFLECTOR

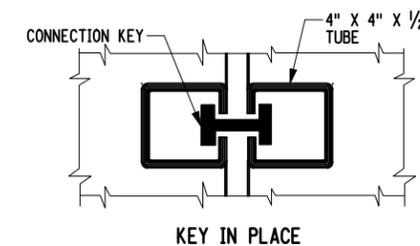


END VIEW

SECTION E-E

SECTION F-F

CONNECTION KEY

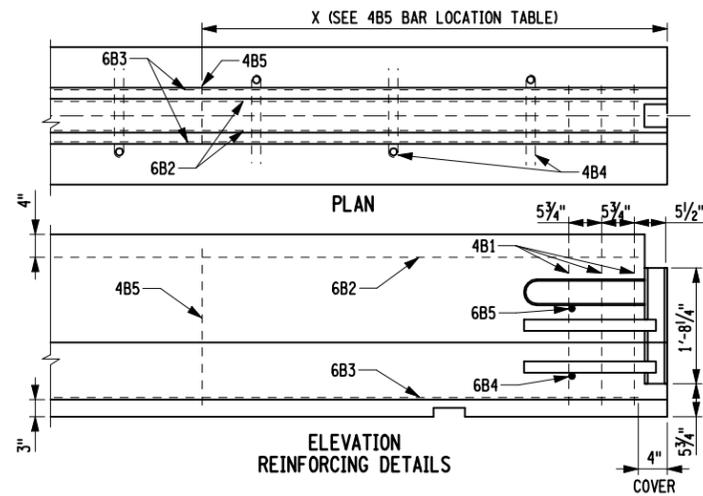


KEY IN PLACE

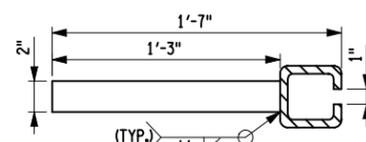
FULL SECTION BAR LIST								
MARK	SIZE	NUMBER PER SECTION	LENGTH	TYPE	A	B	C	LOCATION
4B1	4	6	4'-11"	I	5"	28"	1"	STIRRUPS
4B4	4	SEE TABLE	3'-1"	II	4"	15 1/2"		ANCHOR RECESS HOOPS
4B5	4	1 PER RECESS	4'-11"	I	5"	28"	1"	STIRRUPS
6B2	6	2	SEE NOTE 7	STR.				LONGITUDINAL (TOP)
6B3	6	2	SEE NOTE 7	STR.				LONGITUDINAL (BOTTOM)
6B4	6	2	1'-2"	STR.				TRANSVERSE (BOTTOM)
6B5	6	2	6"	STR.				TRANSVERSE (TOP)

4B5 BAR LOCATION TABLE		
NOMINAL LENGTH OF BARRIER UNIT	X	NO. EACH SECTION
20'	6'-11"	2
18'	6'-5"	2
16'	5'-11"	2
14'	7'	1
12'	6'	1
10'	5'	1
8'	N/A	0

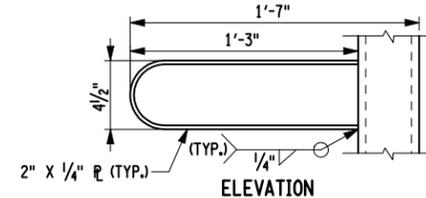
"X" DISTANCE FROM END OF BARRIER TO 4B5 BAR



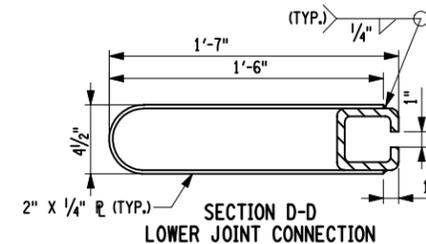
ELEVATION  
REINFORCING DETAILS



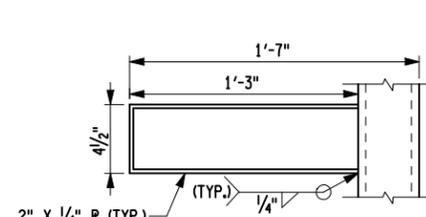
SECTION C-C



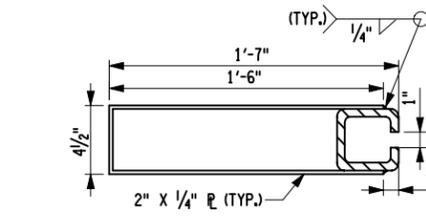
ELEVATION



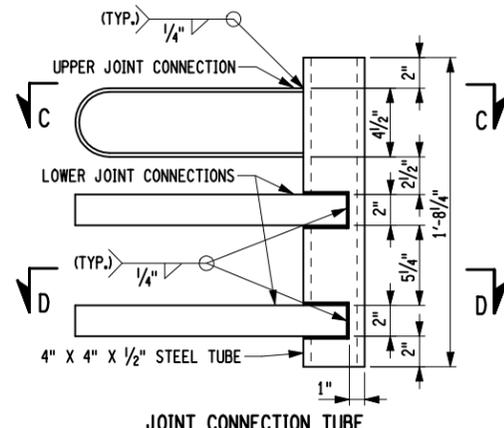
SECTION D-D  
LOWER JOINT CONNECTION



ELEVATION  
UPPER JOINT CONNECTION (ALTERNATE)



SECTION D-D  
LOWER JOINT CONNECTION (ALTERNATE)

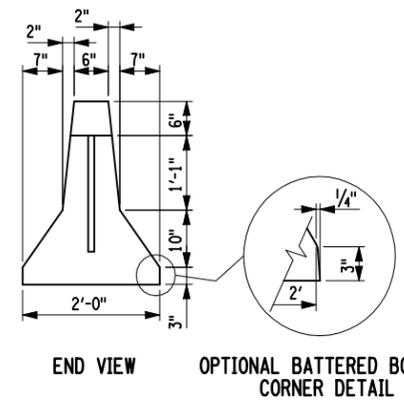
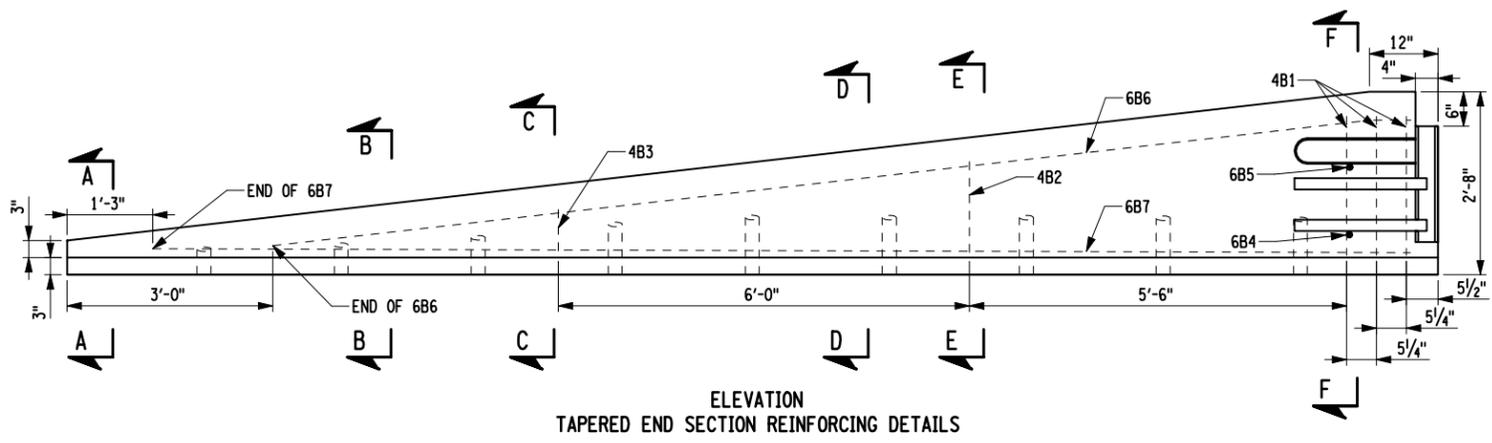
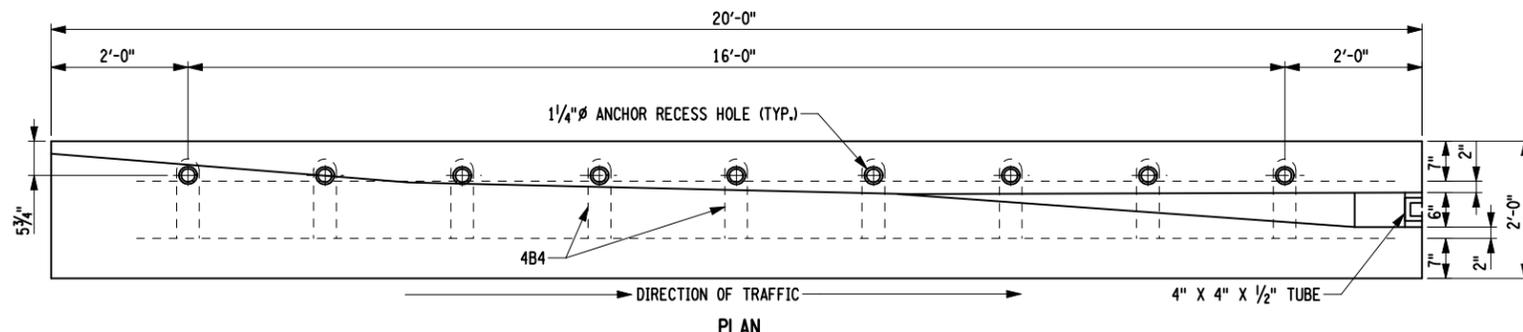


JOINT CONNECTION TUBE

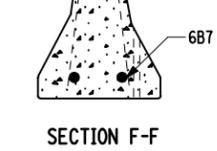
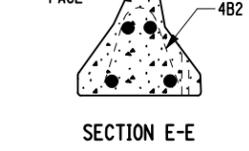
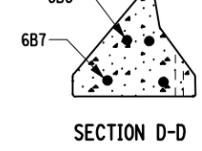
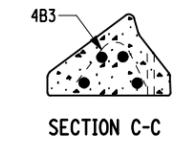
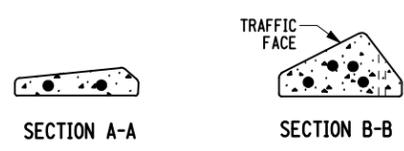
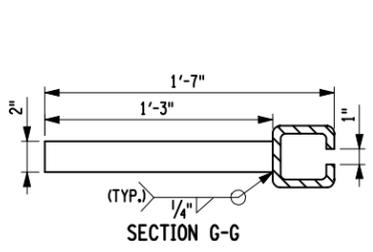
NOTES:

- TEMPORARY CONCRETE BARRIER SHALL BE PRECAST IN ACCORDANCE WITH THE REQUIREMENTS OF §704-05 PRECAST CONCRETE BARRIER.
- TEMPORARY CONCRETE BARRIER SHALL BE PRECAST UNITS OF ONE OF THE FOLLOWING NOMINAL LENGTHS 8', 10', 12', 14', 16', 18', 20'.
- STEEL PLATE REINFORCEMENT SHALL BE ASTM A36M, A572M, GRADE 345 STEEL, TUBE REINFORCEMENT SHALL BE ASTM A500, GRADE B OR C, AND REINFORCING BARS SHALL BE A615, GRADE 420. EPOXY BARS ARE NOT REQUIRED.
- ALL WELDING SHALL BE PERFORMED BY A WELDER QUALIFIED IN ACCORDANCE WITH SECTION 8 OF THE NYS STEEL CONSTRUCTION MANUAL.
- SURFACES TO BE WELDED SHALL BE FREE OF SLAG, RUST, MOISTURE, GREASE OR ANY OTHER MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES.
- WELDING SHALL BE SHIELDED METAL ARC WELDING USING PROPERLY DRIED 5/32" E7018 ELECTRODES CONFORMING TO THE REQUIREMENTS OF SECTION 7 OF THE NYS STEEL CONSTRUCTION MANUAL.
- THE NUMBER AND PLACEMENT OF THE 4B4 AND 4B5 BARS WILL VARY WITH THE LENGTH OF THE BARRIER SEGMENT.
- CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1/2" (MIN.) UNLESS OTHERWISE SPECIFIED.
- A MINIMUM OF (2) TWO RECESSED LIFTING DEVICES, EACH WITH THE CAPACITY TO LIFT A MASS OF 6 TONS (MINIMUM), SHALL BE INSTALLED ON EACH SEGMENT. SEGMENT MASS IS APPROXIMATELY 400 LBS/FT.
- ONE DRAINAGE POCKET SHALL BE INCLUDED IN THE CENTER OF 8'-0" AND 10'-0" SEGMENTS, TWO DRAINAGE POCKETS IN ALL OTHER SEGMENTS.
- CONNECTION KEY COVER PLATE SHALL BE INSTALLED FLUSH WITH THE BARRIER TOP.
- 1" Ø ASTM A36M ANCHOR PINS SHALL BE PLACED IN FOUR ANCHOR HOLES OF EACH SEGMENT TO BE PINNED.
- BASED ON SEGMENT LENGTH AND MAXIMUM JOINT ROTATION, TEMPORARY CONCRETE BARRIER CAN ONLY BE INSTALLED TO THE FOLLOWING MINIMUM RADII: 8' - 92', 10' - 115', 12' - 138', 14' - 161', 16' - 184', 18' - 207', 20' - 230'.

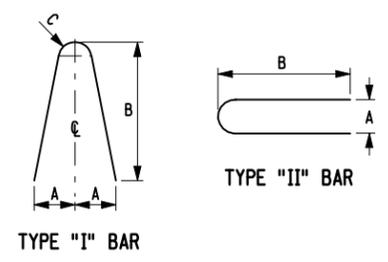
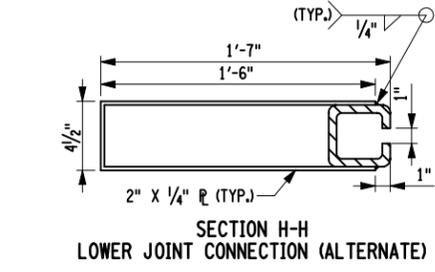
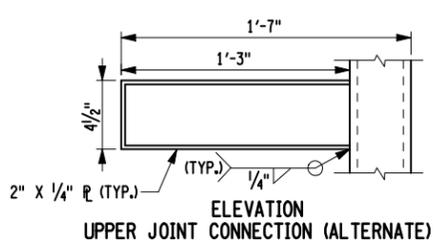
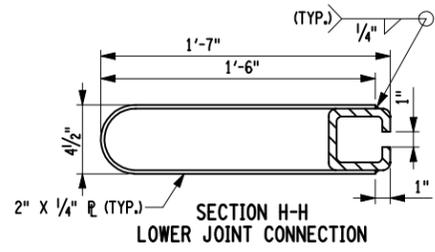
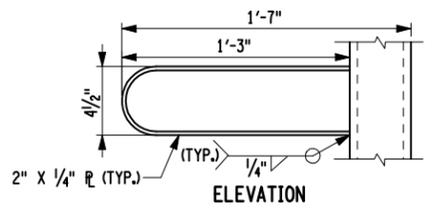
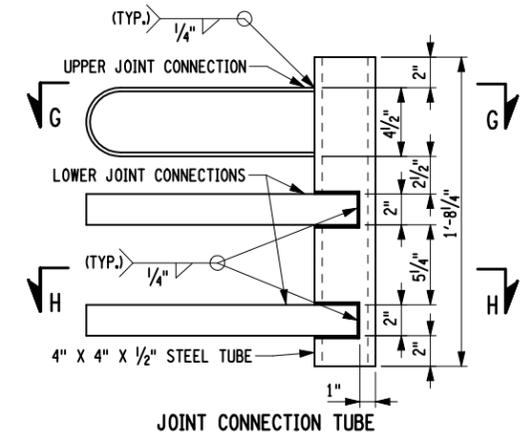
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
TEMPORARY CONCRETE BARRIER (SHEET 1 OF 2)	
APPROVED SEPTEMBER 30, 2009	ISSUED UNDER EB 09-025
/S/ J. F. TYNAN, P.E. DEPUTY CHIEF ENGINEER (CONSTRUCTION)	619-01



- NOTES:
- TEMPORARY CONCRETE BARRIER SHALL BE PRECAST IN ACCORDANCE WITH THE REQUIREMENTS OF §704-05, PRECAST CONCRETE BARRIER.
  - STEEL PLATE SHALL BE ASTM A36M, A572M, GRADE 345, TUBE STEEL SHALL BE ASTM A500 GRADE B OR C, AND REINFORCING BARS SHALL BE A615 GRADE 420.
  - ALL WELDING SHALL BE PERFORMED BY A QUALIFIED WELDER IN ACCORDANCE WITH SECTION 8 OF THE NYS STEEL CONSTRUCTION MANUAL.
  - SURFACES TO BE WELDED SHALL BE FREE OF SLAG, RUST, MOISTURE, GREASE OR ANY OTHER MATERIAL THAT WILL PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES.
  - WELDING SHALL BE SHIELDED METAL ARC WELDING USING PROPERLY DRIED 5/32"Ø E7018 ELECTRODES CONFORMING TO THE REQUIREMENTS OF SECTION 7 OF THE NYS STEEL CONSTRUCTION MANUAL.
  - CONCRETE CLEAR COVER FOR REINFORCING BARS SHALL BE 1/2" (MIN.) EXCEPT WHERE OTHERWISE SPECIFIED.
  - A MINIMUM OF (2) TWO RECESSED LIFTING DEVICES, WITH THE CAPACITY TO LIFT A MASS OF 6 TONS (MINIMUM) SHALL BE INSTALLED ON EACH SEGMENT.
  - 1"Ø ASTM A36M ANCHOR PINS SHALL BE PLACED IN FOUR RECESSES OF EACH SEGMENT TO BE PINNED.
  - CONNECTION KEY COVER PLATE SHALL BE INSTALLED FLUSH WITH THE BARRIER TOP.
  - THE DETAILS SHOWN FOR THE END SECTIONS ON THIS SHEET ARE FOR APPROACH ENDS WHICH ARE TO BE LOCATED TO THE LEFT OF THE TRAFFIC FLOW ON ONE-WAY OPERATIONS OR BETWEEN OPPOSING FLOWS OF TRAFFIC ON TWO-WAY OPERATIONS. WHEN AN APPROACH END IS TO BE LOCATED TO THE RIGHT OF THE TRAFFIC FLOW, THE END SEGMENT SHALL BE CONSTRUCTED SO THAT IT IS OPPOSITE-HAND (REVERSED IN ALL CONFIGURATIONS, ANCHOR HOLE LOCATIONS AND REINFORCEMENT).
  - ALL CORNERS ON THE TOP OF THE SEGMENT SHALL BE ROUNDED TO A 1" RADIUS. THE SEGMENT SHALL HAVE A SMOOTH TRANSITION TO A 6" END-OF-SECTION HEIGHT. ALL END SECTIONS SHALL BE PINNED UNLESS OTHERWISE NOTED.



TRANSITION SECTIONS



TAPERED END SECTION BAR LIST								
MARK	SIZE	NUMBER PER SECTION	LENGTH	TYPE	A	B	C	LOCATION
4B1	13	3	4'-11"	I	5"	28"	1"	STIRRUPS
4B2	13	1	3'-3"	I	5"	18"	1"	STIRRUPS
4B3	13	1	1'-8"	I	5"	8"	1"	STIRRUPS
4B4	13	9	3'-1"	II	4"	15 1/2"		HOOPS
6B4	19	1	1'-2"	STR.				
6B5	19	1	6"	STR.				
6B6	19	2	16'-7"	STR.				TRANSVERSE (TOP)
6B7	19	2	18'-2"	STR.				TRANSVERSE (BOTTOM)

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

TEMPORARY CONCRETE BARRIER  
(SHEET 2 OF 2)

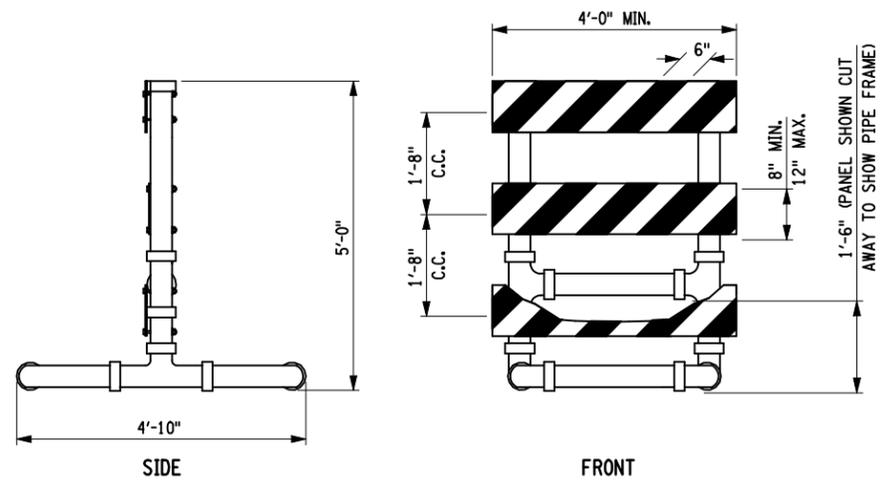
APPROVED SEPTEMBER 30, 2009 ISSUED UNDER EB 09-025

/S/ J. F. TYNAN, P.E.  
DEPUTY CHIEF ENGINEER  
(CONSTRUCTION)

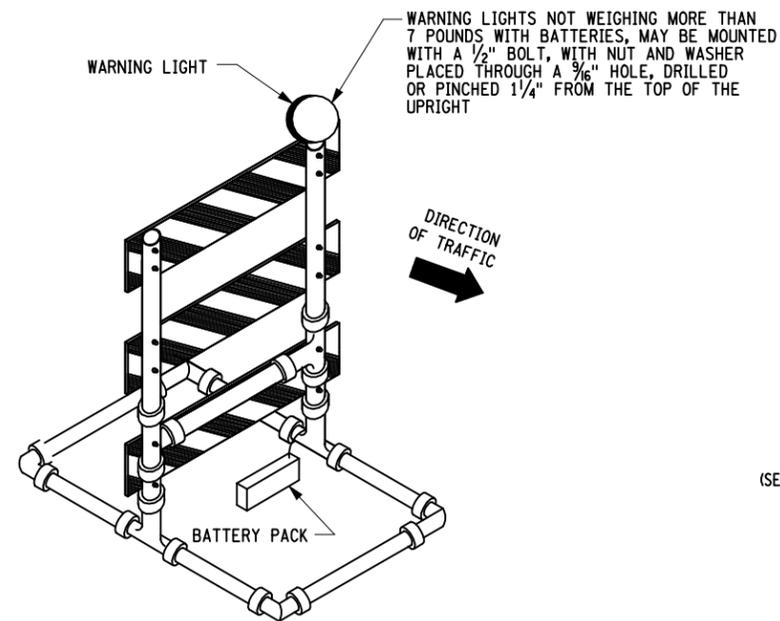
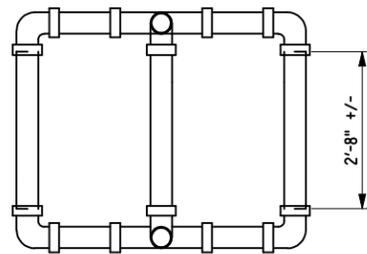
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619-01

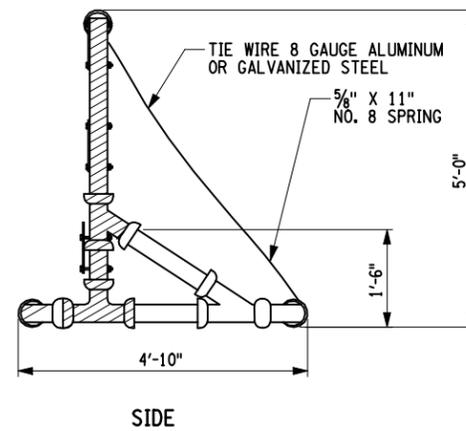
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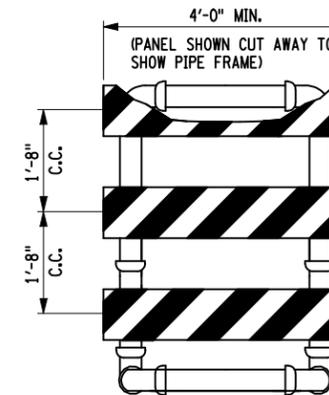
TYPE III CONSTRUCTION BARRICADE ALTERNATE "A"



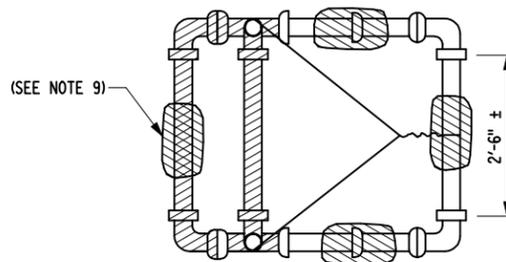
DETAILS FOR FASTENING LIGHTS ON TOP OF BARRICADE



SIDE



FRONT



TYPE III CONSTRUCTION BARRICADE ALTERNATE "B"

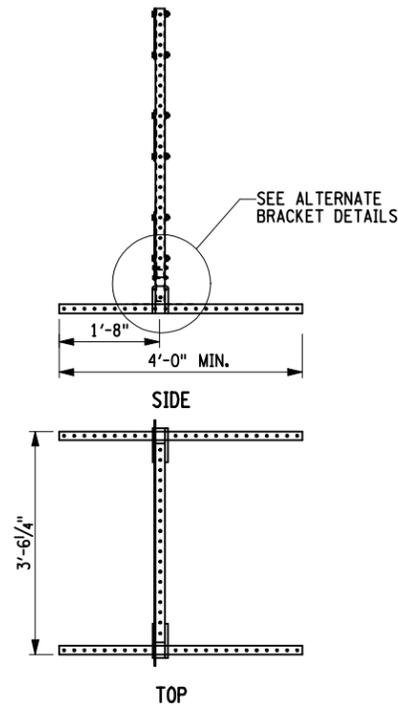
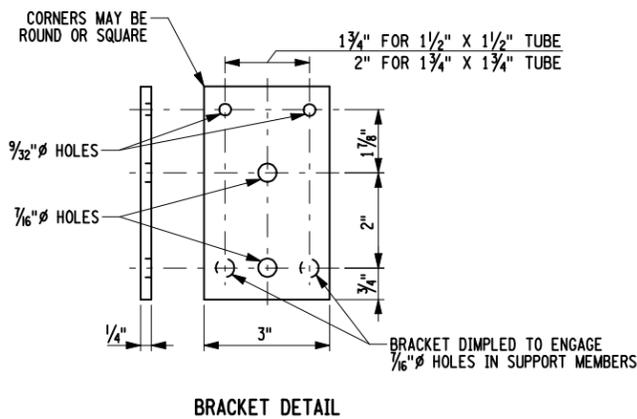
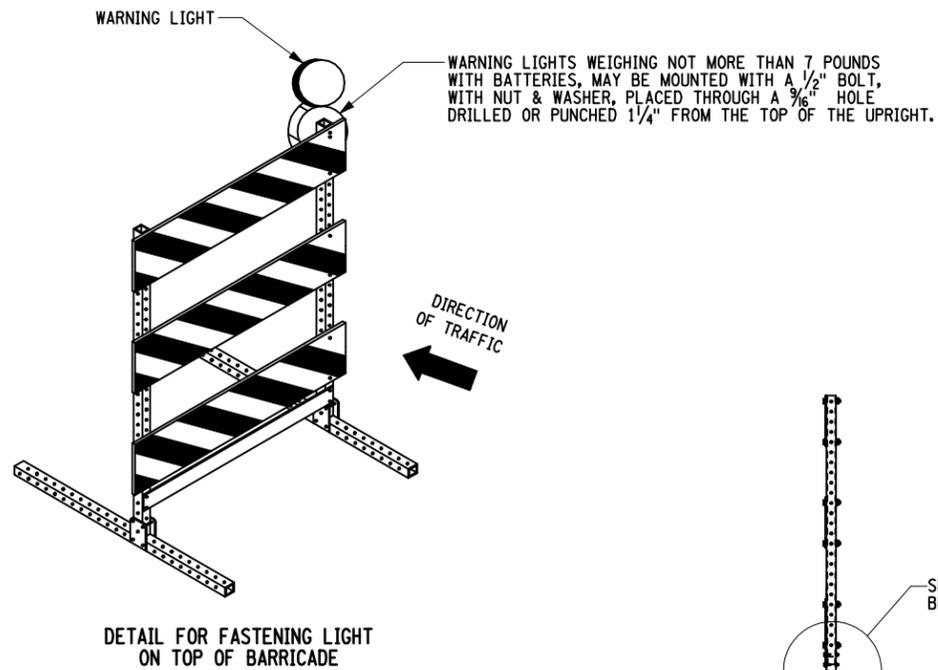
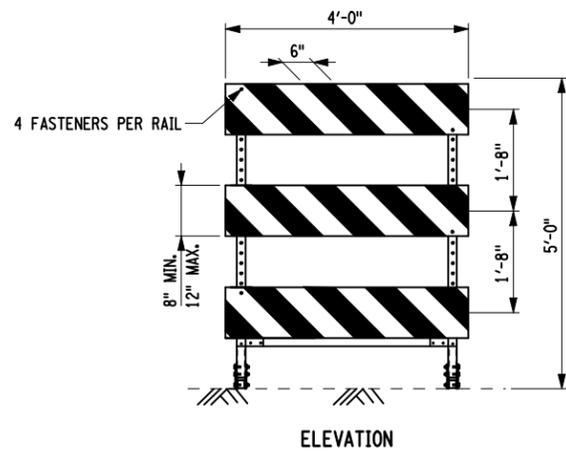
NOTES:

1. THE DETAILS AND MATERIALS FOR TYPE III CONSTRUCTION BARRICADES ARE NCHRP 350 APPROVED. IF THE CONTRACTOR ELECTS TO USE AN ALTERNATE DESIGN OR MATERIALS, THE ALTERNATIVE SHALL BE NCHRP 350 APPROVED.
2. THE ALTERNATES SHOWN ON THIS SHEET ARE EQUALLY ACCEPTABLE AND THE CONTRACTOR MAY USE ANY ONE OR A MIXTURE OF TYPES.
3. PANELS SHALL HAVE 6" WIDE REFLECTORIZED ORANGE AND WHITE DIAGONAL STRIPES OF TYPE I OR TYPE III SHEETING SLOPING AT AN ANGLE OF 45°, IN ACCORDANCE WITH §729-08. THE STRIPES SHALL SLOPE DOWNWARD TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS.
4. BALLAST MAY BE PLACED ON THE BASE MEMBERS OF THE BARRICADE. BALLAST SHALL NOT EXTEND INTO THE ACCESSIBLE PASSAGE WIDTH OF 5' WHERE BARRICADES ARE USED TO CHANNELIZE PEDESTRIANS.
5. PANELS FOR BARRICADES MAY BE WOOD, PLASTIC, OR ALUMINUM. PIPE FOR BARRICADES SHALL USE SDR SIZES 21 TO 32.5.
6. WHEN THE BATTERY AND LIGHT WEIGH MORE THAN 7 LBS, THE BATTERY SHALL BE MOUNTED ON THE BOTTOM OF THE BARRICADE.
7. ALL PIPES SHALL BE WHITE. WHITE FITTINGS ARE PREFERRED, BLACK MAY BE USED. ALL JOINTS IN ALTERNATE "A" SHALL BE GLUED WITH A SOLVENT CEMENT COMPATIBLE WITH THE P.V.C. PIPE.
8. ALL JOINTS IN ALTERNATE "B" SHALL BE FREE TO SEPARATE UPON VEHICLE IMPACT. SHADED PIPES AND FITTINGS SHALL BE TIED TOGETHER WITH A MINIMUM 3/8" DIA. NYLON, OR EQUIVALENT ROPE THREADED INTO THE PIPE AND FITTING INTERIOR.
9. IF BARRICADES ARE USED TO TEMPORARILY CHANNELIZE PEDESTRIANS, THERE SHALL BE A CONTINUOUS DETECTABLE BOTTOM AND TOP RAILS WITH NO GAP BETWEEN INDIVIDUAL BARRICADES TO BE DETECTABLE TO BLIND OR VISUALLY IMPAIRED USERS OF LONG CANES. THE BOTTOM OF THE BOTTOM RAIL SHALL BE NO HIGHER THAN 6" ABOVE THE GROUND AND THE TOP OF THE TOP RAIL SHALL BE NO LOWER THAN 3' ABOVE THE GROUND.

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 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
TYPE III CONSTRUCTION BARRICADES (SHEET 1 OF 2)	
APPROVED OCTOBER 06, 2008	ISSUED UNDER EB 08-036
/S/ J. F. TYNAN, P.E. DEPUTY CHIEF ENGINEER (CONSTRUCTION)	619-02

EFFECTIVE DATE: 01/08/09

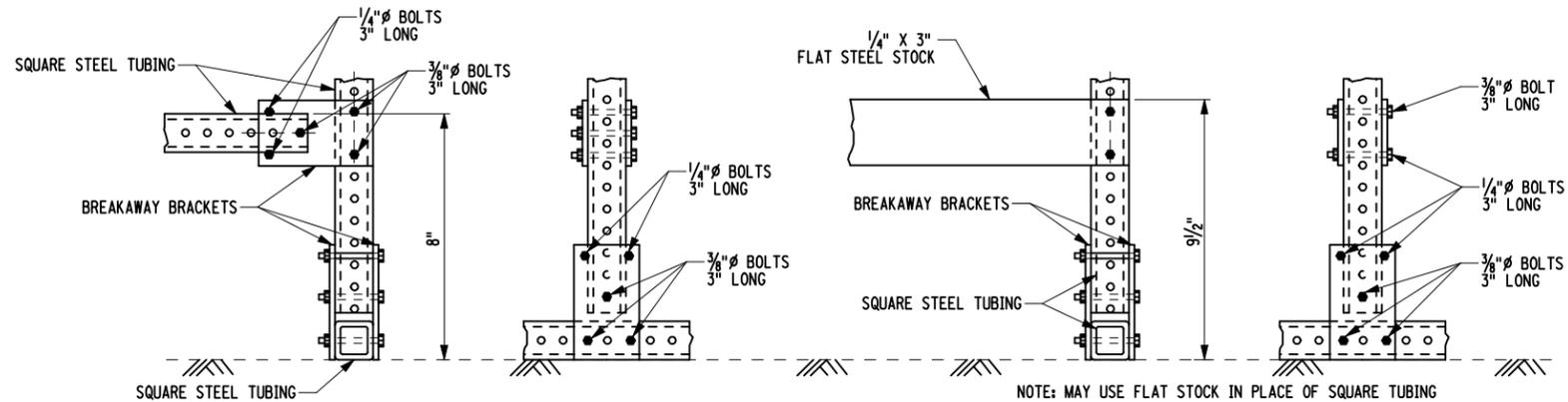


NOTES:

- THE DETAILS AND MATERIALS FOR TYPE III CONSTRUCTION BARRICADES ARE NCHRP 350 APPROVED. IF THE CONTRACTOR ELECTS TO USE AN ALTERNATE DESIGN OR MATERIALS, THE ALTERNATIVE SHALL BE NCHRP 350 APPROVED.
- THE ALTERNATES SHOWN ON THIS SHEET ARE EQUALLY ACCEPTABLE AND THE CONTRACTOR MAY USE ANY ONE OR A MIXTURE OF TYPES.
- PANELS SHALL HAVE 6" WIDE REFLECTORIZED ORANGE AND WHITE DIAGONAL STRIPES OF TYPE I OR TYPE III SHEETING SLOPING AT AN ANGLE OF 45°, IN ACCORDANCE WITH §729-08. THE STRIPES SHALL SLOPE DOWNWARD TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS.
- BALLAST MAY BE PLACED ON THE BASE MEMBERS OF THE BARRICADE. BALLAST SHALL NOT EXTEND INTO THE ACCESSIBLE PASSAGE WIDTH OF 5' WHERE BARRICADES ARE USED TO CHANNELIZE PEDESTRIANS.
- PANELS FOR BARRICADES MAY BE WOOD, PLASTIC, OR ALUMINUM.
- WHEN THE BATTERY AND LIGHT WEIGH MORE THAN 7 LBS, THE BATTERY SHALL BE MOUNTED AT THE BOTTOM OF THE BARRICADE.
- ALTERNATE "M" BARRICADES SHALL BE EXTENDED WITH INTERNAL SPLICE MEMBERS. THE INTERNAL SPLICE MEMBERS SHALL BE ONE 1 FOOT LENGTHS OF SQUARE STEEL TUBING INSERTED 6" INTO EACH UPRIGHT. THE EXTENSION SHALL THEN BE PLACED OVER THE TOP OF THE INTERNAL SPLICE MEMBER. THE EXTENSION AND INTERNAL SPLICE MEMBER SHALL BE HELD IN PLACE WITH 3/8" BOLTS WITH NUTS AND WASHERS PLACED 4"(±1") ABOVE AND BELOW THE JOINT FORMED BY THE EXTENSION. THE INTERNAL SPLICE MEMBERS SHALL BE ONE OF THE FOLLOWING SIZES DEPENDING UPON THE TUBING USED TO FABRICATE THE BARRICADE. GAUGES FOR SQUARE TUBES SHALL BE UNITED STATES STANDARD GAUGE.

BARRICADE MEMBERS	INTERNAL SPLICE MEMBERS
12 GAUGE 1 3/4" X 1 3/4"	12 GAUGE 1 1/2" X 1 1/2"
14 GAUGE 1 3/4" X 1 3/4"	14 GAUGE 1 1/2" X 1 1/2"
12 GAUGE 1 1/2" X 1 1/2"	12 GAUGE 1 1/4" X 1 1/4"

- IF BARRICADES ARE USE TO TEMPORALLY CHANNELIZE PEDESTRIANS, THERE SHALL BE CONTINUOUS DETECTABLE BOTTOM AND TOP RAILS WITH NO GAP BETWEEN INDIVIDUAL BARRICADES, TO BE DETECTABLE TO BLIND OR VISUALLY IMPAIRED USERS OF LONG CANES. THE BOTTOM OF THE BOTTOM RAIL SHALL BE NO LOWER THAN 6" ABOVE THE GROUND SURFACE. THE TOP OF THE TOP RAIL SHALL BE NO LOWER THAN 3' ABOVE THE GROUND SURFACE.



NOTE: SQUARE STEEL TUBING SHALL MEET ONE OF THE FOLLOWING MATERIAL REQUIREMENTS:

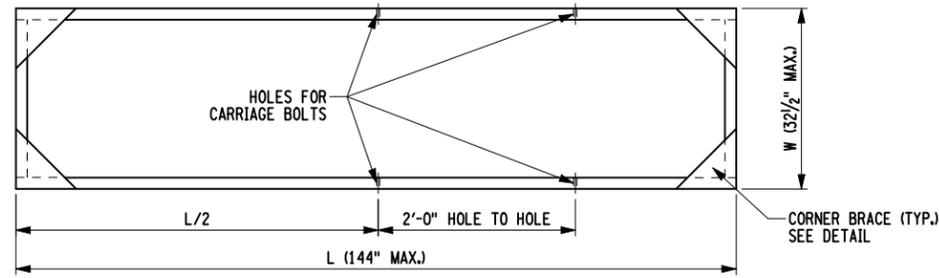
- 12 GAUGE 1 3/4" X 1 3/4", ASTM A653
- 12 GAUGE 1 1/2" X 1 1/2", ASTM A653
- 14 GAUGE 1 3/4" X 1 3/4", ASTM A1011

ALL BOLTS ARE A325 OR EQUIVALENT BOLTS

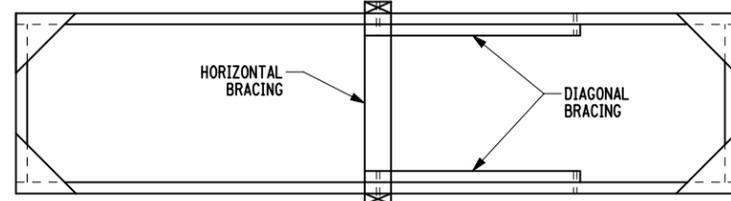
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 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>TYPE III CONSTRUCTION BARRICADES</b> (SHEET 2 OF 2)	
APPROVED OCTOBER 06, 2008	ISSUED UNDER EB 08-036
/S/ J. F. TYNAN, P.E. DEPUTY CHIEF ENGINEER (CONSTRUCTION)	619-02

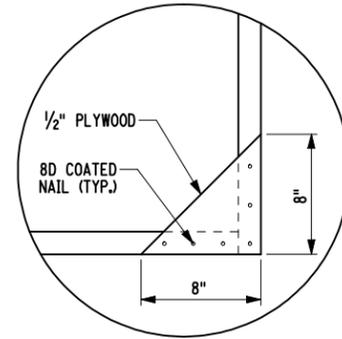
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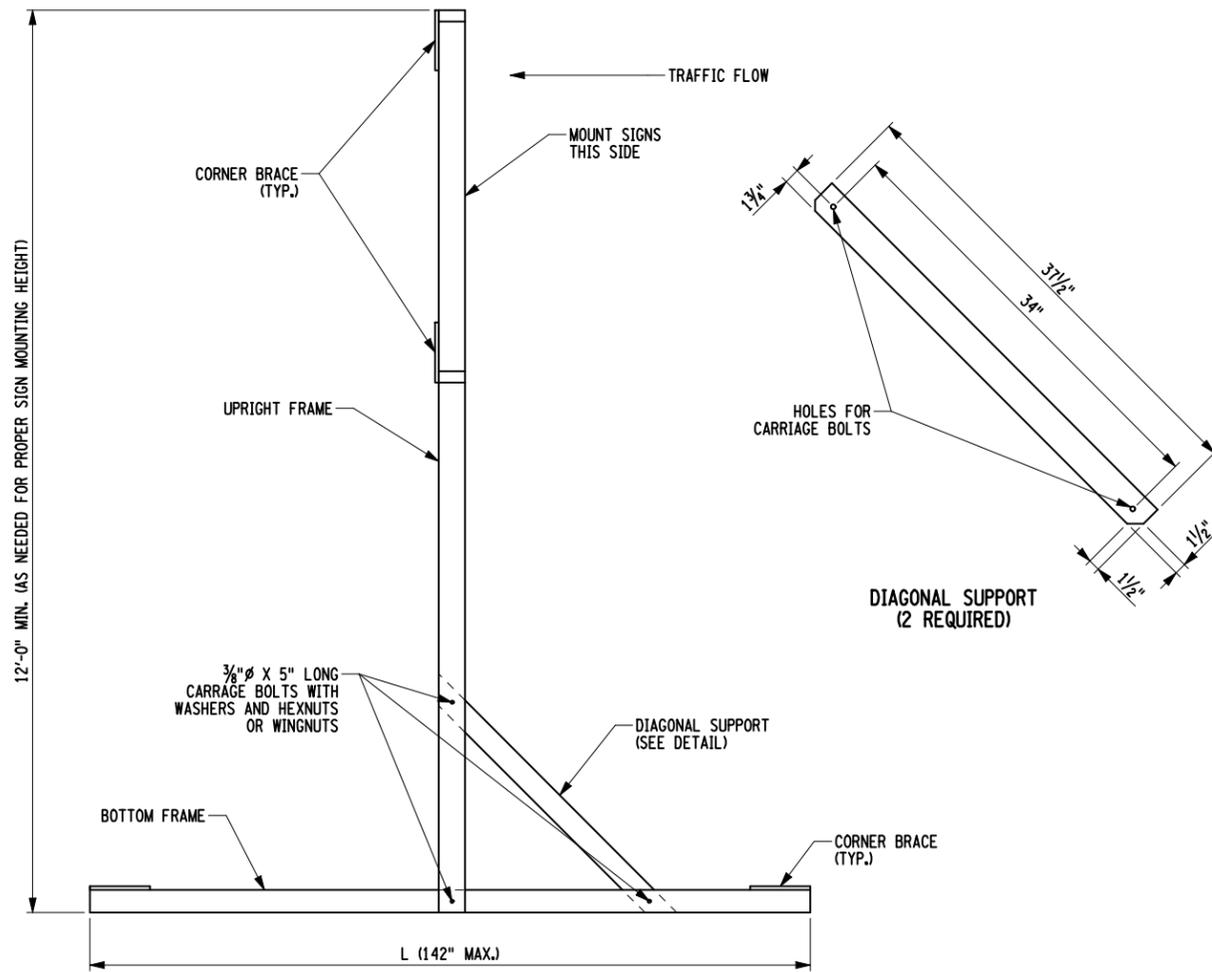
BOTTOM FRAME  
TOP VIEW



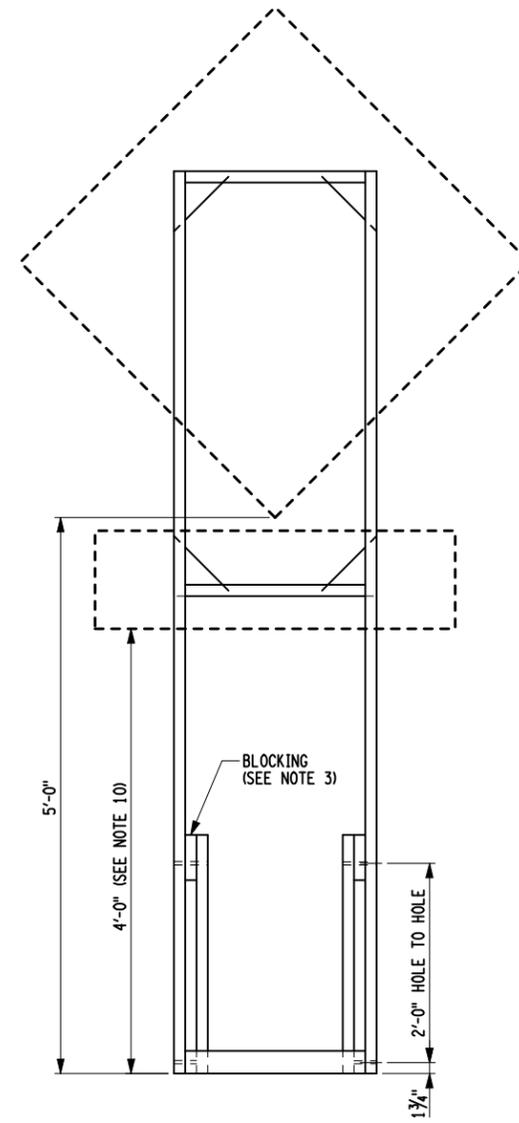
TEMPORARY WOODEN SIGN STAND  
TOP VIEW



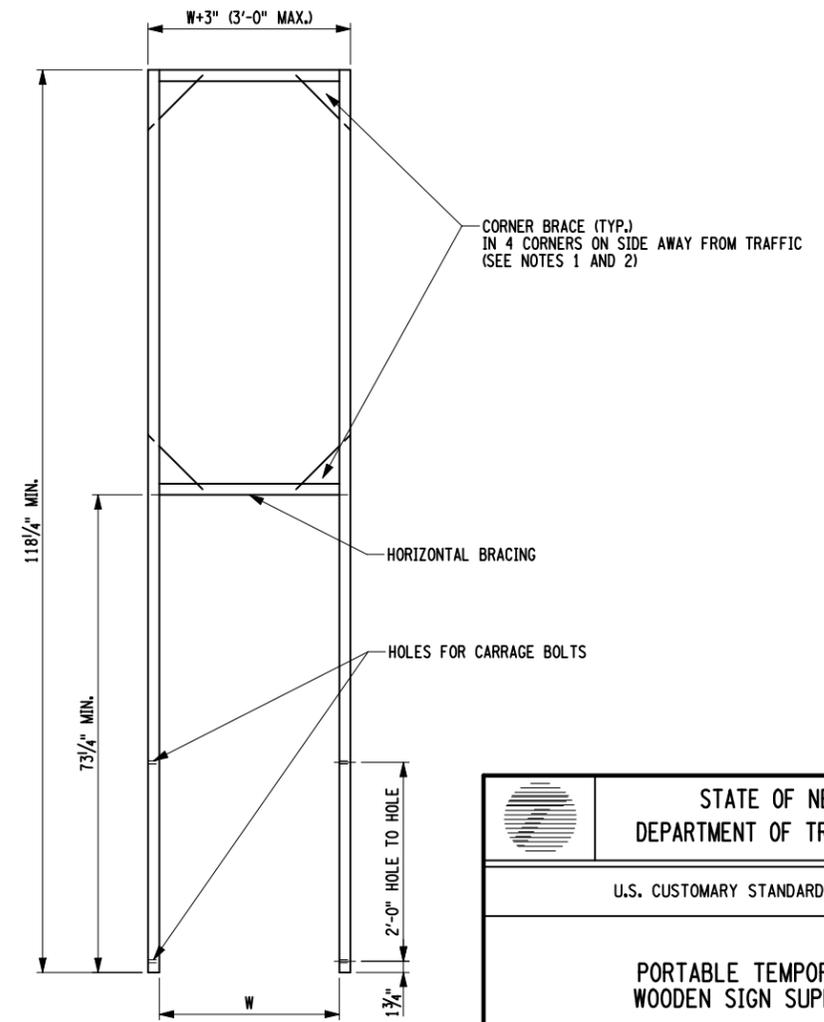
CORNER BRACE DETAIL  
(TO BE USED ON UPRIGHT AND BOTTOM FRAMES)



TEMPORARY WOODEN SIGN STAND  
SIDE VIEW



TEMPORARY WOODEN SIGN STAND  
FRONT VIEW



UPRIGHT FRAME  
FRONT VIEW

NOTES:

1. ALL LUMBER SHALL BE 2 X 4 DIMENSIONAL LUMBER. CONNECT FRAME MEMBERS WITH 2 EACH 12D COATED NAILS.
2. ALL HOLES SHALL BE DRILLED IN CENTERLINE OF FRAME MEMBERS AND DIAGONAL BRACES.
3. 6" BLOCK SPACER MAY BE USED BETWEEN DIAGONAL BRACE AND VERTICAL SUPPORT.
4. CONNECT FRAME CORNER BRACES TO FRAME MEMBERS WITH 6 EACH - 8D COATED NAILS. (3 NAILS INTO EACH FRAME MEMBER).
5. UPRIGHT FRAME MOUNTS ON THE OUTSIDE OF THE BOTTOM FRAME.
6. PAINT SIGN SUPPORT WITH 2 COATS OF WHITE PAINT.
7. DIAGONAL SUPPORTS MOUNT INSIDE BOTH UPRIGHT AND BOTTOM FRAMES. ALL UPRIGHT DIAGONAL BRACING SHALL BE SLOPED SUCH THAT BRACING COLLAPSES DOWNWARD UPON IMPACT BY A VEHICLE.
8. A SINGLE LAYER OF BALLAST PLACED ON THE BOTTOM FRAME MAY BE USED TO PREVENT SIGNS FROM TIPPING OVER FROM WIND AND VEHICLE GUSTS.
9. NO HORIZONTAL BRACING ALLOWED BETWEEN 2' AND 5' ON UPRIGHT VERTICALS, MEASURED FROM THE BOTTOM OF THE SKID BASE.
10. 5' MINIMUM SIGN MOUNTING HEIGHT, MEASURED FROM THE BOTTOM OF THE SKID BASE TO THE BOTTOM OF THE SIGN. VERTICAL SUPPORTS SHALL BE TALL ENOUGH TO ALLOW FOR HIGHER MOUNTING HEIGHTS FOR THOSE LOCATIONS REQUIRED BY THE MUTCD (I.E. SIDEWALKS, ROADSIDE PARKING AND EMBANKMENTS).
11. CONNECTIONS ALLOW FOR THE FOLDING, TRANSPORT AND STORAGE OF THE SUPPORT. WHEN FOLDED IN THE DOWN POSITION WITHIN THE CLEAR ZONE, THE MAXIMUM ASSEMBLY HEIGHT SHALL NOT EXCEED 4'. SIMILAR NON-FOLDING SUPPORTS SHALL BE STORED OUTSIDE THE CLEAR ZONE OR BEHIND A BARRIER.
12. L = LENGTH OF BOTTOM FRAME.  
W = WIDTH OF BOTTOM FRAME.

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 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>PORTABLE TEMPORARY WOODEN SIGN SUPPORT</p>	
<p>APPROVED OCTOBER 06, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ J. F. TYNAN, P.E. DEPUTY CHIEF ENGINEER (CONSTRUCTION)</p>	
<p>619-04</p>	

EFFECTIVE DATE: 01/08/09

GENERAL NOTES

1. THE TYPICAL DETAILS DEPICTED ON THE STANDARD SHEETS AND IN THE MUTCD, REFLECT THE MINIMUM REQUIREMENTS.
2. THE CONTRACTOR MUST SUBMIT TO THE ENGINEER, IN WRITING, PROPOSED REVISIONS TO THE TRAFFIC CONTROL PLAN FOR REVIEW AND APPROVAL BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE FIVE (5) WORK DAYS PRIOR TO THE PLANNED IMPLEMENTATION OF SUCH PROPOSED REVISIONS, EXCEPT FOR CHANGES THAT ALTER THE SCOPE OF THE TRAFFIC CONTROL PLAN. SUCH CHANGES IN SCOPE MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE THIRTY (30) WORKING DAYS PRIOR TO IMPLEMENTATION OF SUCH REVISIONS.
3. THE CONTRACTOR SHALL PROVIDE THE ENGINEER, IN WRITING, WITH THE NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF STAFF WHO ARE AUTHORIZED TO SECURE LABOR, MATERIALS, AND EQUIPMENT FOR EMERGENCY REPAIRS OUTSIDE NORMAL WORKING HOURS. THE ENGINEER WILL PROVIDE THE SUBMITTED INFORMATION TO REGIONAL MANAGEMENT, THE NEW YORK STATE POLICE, THE RESIDENT ENGINEER, AND THE LOCAL POLICE.

ACTIVITY AREA

1. THE CONTRACTOR SHALL MAINTAIN A MINIMUM 500' LONGITUDINAL DISTANCE BETWEEN CONSTRUCTION OPERATIONS ON ALTERNATE SIDES OF THE ROADWAY, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. WHEN TWO OR MORE AREAS ARE ADJACENT, OVERLAP, OR ARE IN CLOSE PROXIMITY, THE CONTRACTOR SHALL ENSURE THERE ARE NO CONFLICTING SIGNS AND THAT LANE CONTINUITY IS MAINTAINED THROUGHOUT ALL WORK AREAS.

SIGNS

1. THE LOCATIONS OF THE SIGNS SHOWN ON THE WORK ZONE TRAFFIC CONTROL PLANS AND DETAILS MAY BE ADJUSTED BASED ON SIGHT DISTANCE AND OTHER CONSIDERATIONS. THE FINAL LOCATIONS OF SIGNS ARE SUBJECT TO APPROVAL OF THE ENGINEER.
2. ANY EXISTING SIGNS, INCLUDING OVERHEAD SIGNS, WHICH CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL SIGN LAYOUT SHALL BE COVERED, REMOVED, STORED OR RESET, AS APPROVED BY THE ENGINEER. ALL APPROPRIATE EXISTING SIGNS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND/OR LOCATION UNLESS OTHERWISE REPLACED IN THIS CONTRACT.
3. SIGNS AT OR NEAR INTERSECTIONS SHALL BE PLACED SO THAT THEY DO NOT OBSTRUCT A MOTORIST'S LINE OF SIGHT.
4. ALL WARNING AND REGULATORY SIGNS SHALL BE POSTED ON BOTH SIDES OF MULTI-LANE DIVIDED HIGHWAYS, MULTI-LANE RAMPS, AND ONE-WAY STREETS. IN CASES WHERE LANE RESTRICTIONS REDUCE THE TRAVEL LANE TO ONE LANE, SIGNS SHALL BE POSTED ON THE RIGHT SIDE OF THE ACTIVE TRAVEL LANE, UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.
5. SIGNS MOUNTED ON THE MEDIAN OF DIVIDED HIGHWAYS WHERE MEDIAN BARRIER IS IN PLACE MAY BE MOUNTED ON THE BARRIER WITH A SADDLE TYPE BRACKET. LAYING THE SIGN DOWN IN A HORIZONTAL POSITION IS NOT PERMITTED.
6. THE DIMENSIONS OF WORK ZONE TRAFFIC CONTROL SIGNS ARE DESCRIBED IN THE MUTCD. ANY CHANGES TO THE DIMENSIONS SHALL BE APPROVED BY THE REGIONAL DIRECTOR OR BY HIS/HER DESIGNEE.
7. NYR9-12 MAY BE USED IN PLACE OF NYR9-11.

CHANNELIZING DEVICES

1. WHERE POSSIBLE ALL CHANNELIZING AND GUIDING DEVICES ARE TO BE PLACED SO AS TO PROVIDE A MINIMUM 2' LATERAL CLEARANCE TO THE TRAVELED WAY.

PUBLIC ACCESS

1. PROPERTY OWNERS WHOSE DRIVEWAYS WILL BE MADE INACCESSIBLE SHALL BE NOTIFIED BY THE CONTRACTOR AT LEAST 24 HOURS PRIOR TO RESTRICTING USE OF THE DRIVEWAY. FOR MULTIPLE ACCESS PROPERTIES, AT LEAST ONE DRIVEWAY SHALL BE OPEN AT ALL TIMES. ACCESS SHALL BE RESTORED TO ALL DRIVEWAYS AS SOON AS POSSIBLE.
2. SUITABLE RAMPS SHALL BE INSTALLED TO MAINTAIN SMOOTH TRANSITIONS FROM RESIDENTIAL AND COMMERCIAL DRIVEWAYS TO AND FROM THE WORK AREA.

LANE CLOSURES

1. THE CONTRACTOR SHALL LOCATE LANE CLOSURES TO PROVIDE OPTIMUM VISIBILITY, I.E. BEFORE CURVES AND CRESTS, TO THE EXTENT CONDITIONS PERMIT.
2. THE ENGINEER MAY REQUIRE THAT ALL LANES BE RE-OPENED AT ANY TIME IF THE ROUTE IS NEEDED FOR EMERGENCY PURPOSES. THIS COULD INCLUDE INCIDENTS AT LOCATIONS OUTSIDE THE CONTRACT LIMITS.

LANE WIDTHS

1. UNLESS AUTHORIZED BY THE ENGINEER, THE MINIMUM LANE WIDTHS FOR WORK ZONE TRAVEL LANES SHALL BE AS FOLLOWS: FREEWAYS AND/OR EXPRESSWAYS IS 11'. THE MINIMUM LANE WIDTH FOR ALL OTHER TYPES OF ROADWAYS IS 10'.
2. THE CONTRACTOR SHALL PROVIDE A WRITTEN NOTICE TO THE ENGINEER, A MINIMUM OF 21 CALENDAR DAYS IN ADVANCE OF PERFORMING ANY WORK THAT RESULTS IN THE REDUCED WIDTH OF AN EXISTING ROADWAY, SO THAT THE ENGINEER MAY NOTIFY THE REGIONAL PERMIT ENGINEER IN A TIMELY MANNER.

BARRIER/SHADOW VEHICLES

1. BARRIER AND SHADOW VEHICLES SHALL BE REQUIRED AS PER STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
2. NO WORK ACTIVITY, EQUIPMENT, VEHICLES AND/OR MATERIALS SHALL BE LOCATED BETWEEN THE BARRIER OR SHADOW VEHICLE AND THE ACTIVE WORK AREA (ROLL AHEAD DISTANCE).
3. THE CONTRACTOR MAY BE REQUIRED TO PROVIDE A BARRIER VEHICLE IN CONJUNCTION WITH POLICE PRESENCE IN THE WORK ZONE, TO BE INCLUDED IN THE UNIT BID PRICE FOR BASIC WORK ZONE TRAFFIC CONTROL.



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL  
GENERAL NOTES

APPROVED SEPTEMBER 18, 2008

ISSUED UNDER EB 08-036

/S/ DAVID J. CLEMENTS, P.E.  
DIRECTOR, OFFICE OF  
TRAFFIC SAFETY AND MOBILITY

619-10

EFFECTIVE DATE: 01/08/09

**TABLE NY1-A  
BARRIER VEHICLE USE REQUIREMENTS  
(LONG TERM, INTERMEDIATE TERM, AND SHORT TERM STATIONARY CLOSURES)**

CLOSURE TYPE	EXPOSURE CONDITION <sup>1</sup>	USE REQUIREMENTS <sup>4,5</sup>			
		FREEWAY	NON-FREEWAY (PRECONSTRUCTION POSTED SPEED LIMIT)		
			≥ 45 MPH	35-40 MPH	≤ 30 MPH
LANE CLOSURE	WORKERS ON FOOT OR IN VEHICLES EXPOSED TO TRAFFIC	REQUIRED <sup>3</sup>	REQUIRED <sup>3</sup>	REQUIRED <sup>3</sup>	OPTIONAL <sup>2</sup>
	NON-TRAVERSABLE HAZARD (IE. EQUIPMENT, MATERIALS, EXCAVATION) ONLY NO WORKERS EXPOSED	REQUIRED <sup>3</sup>	REQUIRED <sup>3</sup>	OPTIONAL <sup>2</sup>	OPTIONAL <sup>2</sup>
SHOULDER CLOSURE	WORKERS ON FOOT OR IN VEHICLES EXPOSED TO TRAFFIC	REQUIRED <sup>3</sup>	REQUIRED <sup>3</sup>	OPTIONAL <sup>2</sup>	OPTIONAL <sup>2</sup>
	NON-TRAVERSABLE HAZARD (IE. EQUIPMENT, MATERIALS, EXCAVATION) ONLY NO WORKERS EXPOSED	REQUIRED <sup>3</sup>	OPTIONAL <sup>2</sup>	OPTIONAL <sup>2</sup>	OPTIONAL <sup>2</sup>

- THE EXPOSURE CONDITIONS DESCRIBED IN TABLE NY1-A ASSUMES THERE IS NO POSITIVE PROTECTION (TEMPORARY TRAFFIC BARRIER) PRESENT. WHERE WORKERS OR HAZARDS ARE PROTECTED BY A TEMPORARY TRAFFIC BARRIER, BARRIER VEHICLES ARE NOT REQUIRED.
- WHERE THE REQUIREMENT IS "OPTIONAL", EITHER A BARRIER VEHICLE OR THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE 6C-2) SHALL BE PROVIDED.
- REQUIREMENTS SHALL INCLUDE PROVIDING A SEPARATE BARRIER VEHICLE FOR EACH CLOSED LANE AND EACH CLOSED PAVED SHOULDER 8' OR GREATER IN WIDTH. IF THE WORK SPACE MOVES WITHIN THE STATIONARY CLOSURE, THE BARRIER VEHICLE SHALL BE REPOSITIONED ACCORDINGLY. BARRIER VEHICLES PROTECTING NON-TRAVERSABLE HAZARDS SHALL REMAIN IN PLACE DURING BOTH WORKING AND NON-WORKING HOURS UNTIL THE HAZARD NO LONGER EXISTS. EXCEPTIONS TO THESE REQUIREMENTS MAY BE MADE, AS APPROVED BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE WHERE BARRIER VEHICLE PLACEMENT WOULD BE INEFFECTIVE OR WOULD INTERFERE WITH THE SAFE OPERATION OF TRAFFIC.
- BARRIER VEHICLES ARE NOT REQUIRED FOR MILLING AND/OR PAVING OPERATIONS, BUT THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE 6C-2) SHALL BE PROVIDED.
- BARRIER VEHICLES ARE NOT REQUIRED FOR FLAGGING OPERATIONS, BUT THE STANDARD LONGITUDINAL BUFFER SPACE (TABLE 6C-2) SHALL BE PROVIDED.

**TABLE NY1-B  
SHADOW VEHICLE USE REQUIREMENTS  
(MOBILE CLOSURES)**

CLOSURE TYPE	EXPOSURE CONDITION	USE REQUIREMENTS			
		FREEWAY	NON-FREEWAY (PRECONSTRUCTION POSTED SPEED LIMIT)		
			≥ 45 MPH	35-40 MPH	≤ 30 MPH
LANE CLOSURE	WHEN ANY WORKER, VEHICLE, OR OTHER HAZARD IS EXPOSED TO TRAFFIC	REQUIRED <sup>2,4</sup>	REQUIRED <sup>2,4</sup>	REQUIRED <sup>2,4</sup>	REQUIRED <sup>2,4</sup>
SHOULDER CLOSURE	WHEN ANY WORKER, VEHICLE, OR OTHER HAZARD IS EXPOSED TO TRAFFIC	REQUIRED <sup>2,4</sup>	REQUIRED <sup>2,4</sup>	REQUIRED <sup>2,4</sup>	REQUIRED <sup>2,4</sup>

- A MOBILE CLOSURE SHALL BE USED FOR ANY WORK ACTIVITY THAT MOVES CONTINUOUSLY OR INTERMITTENTLY ALONG THE TRAVELED WAY OR SHOULDER SLOWER THAN THE PREVAILING SPEED OF TRAFFIC. CHANNELIZING DEVICES ARE NOT USED FOR MOBILE CLOSURES.
- SHADOW VEHICLES SHALL BE EQUIPPED WITH AN APPROVED REAR MOUNTED ATTENUATOR (TRUCK MOUNTED OR TRAILER MOUNTED) FOR THE FOLLOWING MOBILE CLOSURES: LANE CLOSURES ON FREEWAYS, LANE CLOSURES ON NON-FREEWAY ROADWAYS HAVING A PRE-CONSTRUCTION POSTED SPEED LIMIT OF 35 MPH OR MORE, SHOULDER CLOSURES ON FREEWAYS, AND SHOULDER CLOSURES ON NON-FREEWAY ROADWAYS HAVING A PRE-CONSTRUCTION SPEED LIMIT OF 45 MPH OR MORE.
- FOR MOBILE LANE CLOSURES ON NON-FREEWAY ROADWAYS HAVING A PRE-CONSTRUCTION POSTED SPEED LIMIT OF 30 MPH OR LESS AND MOBILE SHOULDER CLOSURES ON NON-FREEWAY ROADWAYS HAVING A PRE-CONSTRUCTION SPEED LIMIT OF 40 MPH OR LESS, SHADOW VEHICLES ARE NOT REQUIRED TO BE EQUIPPED WITH A REAR MOUNTED ATTENUATOR.
- A SHADOW VEHICLE IS USED TO PROTECT EXPOSED WORKERS (ON FOOT OR IN A VEHICLE) AND SHALL BE REQUIRED FOR ALL MOBILE CLOSURES. SHADOW VEHICLE REQUIREMENTS SHALL INCLUDE PROVIDING A SEPARATE SHADOW VEHICLE FOR EACH CLOSED LANE AND EACH CLOSED PAVED SHOULDER 8' OR GREATER IN WIDTH. ADDITIONAL SHADOW VEHICLES MAY BE REQUIRED TO PROMOTE THE SAFE OPERATION OF TRAFFIC AND THE INCREASED PROTECTION OF EXPOSED WORKERS, AS DIRECTED BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE.

**TABLE 6H-4 FORMULAS FOR DETERMINING TAPER LENGTHS**

SPEED LIMIT (S) (MPH)	TAPER LENGTH (L) (FT.)
(40 MPH) OR LESS	$L = WS^2 / 60$
(45 MPH) OR MORE	$L = WS$

L = TAPER LENGTH  
W = WIDTH OF OFFSET (FT.)  
S = PRECONSTRUCTION POSTED SPEED LIMIT (MPH)

**STANDARD TAPER LENGTHS**

LATERAL SHIFT OF TRAFFIC FLOW PATH	TEMPORARY TRAFFIC CONTROL ZONE POSTED SPEED LIMIT									
	(25 MPH)	(30 MPH)	(35 MPH)	(40 MPH)	(45 MPH)	(50 MPH)	(55 MPH)	(60 MPH)	(65 MPH)	(70 MPH)
4	45	60	85	110	180	200	220	240	260	280
5	55	75	105	135	225	250	275	300	325	350
6	65	90	125	160	270	300	330	360	390	420
7	75	105	145	190	315	350	385	420	455	490
8	85	120	165	215	360	400	440	480	520	560
9	95	135	185	240	405	450	495	540	585	630
10	105	150	205	270	450	500	550	600	650	700
11	115	165	225	295	495	550	605	660	715	770
12	125	180	245	320	540	600	660	720	780	840

**TABLE 6C-2  
LONGITUDINAL BUFFER SPACE**

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	DISTANCE
25	155 FT.
30	200 FT.
35	250 FT.
40	305 FT.
45	360 FT.
50	425 FT.
55	495 FT.
60	570 FT.
65	645 FT.

**TABLE NY2-A  
PLACEMENT DISTANCE FOR BARRIER VEHICLES**

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	PLACEMENT DISTANCE (FT.) BARRIER VEHICLES*			
	(18000 LBS.)		(24000 LBS.)	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
> 55	100 FT.	200 FT.	100 FT.	200 FT.
45 - 55	100 FT.	200 FT.	85 FT.	165 FT.
< 45	85 FT.	165 FT.	50 FT.	100 FT.

\* AS DEFINED IN NYS DOT STANDARD SPECIFICATION 619:

BARRIER VEHICLE - VEHICLE USED FOR STATIONARY SHOULDER CLOSURES, LANE CLOSURES, AND OTHER STATIONARY WORK ZONES.

MINIMUM DISTANCE SHOWN REFLECTS THE ACTUAL ROLL AHEAD DISTANCE FROM MANUFACTURER.

**TABLE NY2-B  
PLACEMENT DISTANCE FOR SHADOW VEHICLES**

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	PLACEMENT DISTANCE (FT.) SHADOW VEHICLES**			
	(18000 LBS.)		(24000 LBS.)	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
> 55	230 FT.	330 FT.	180 FT.	280 FT.
45 - 55	180 FT.	280 FT.	150 FT.	250 FT.
< 45	100 FT.	200 FT.	100 FT.	200 FT.

\* AS DEFINED IN NYS DOT STANDARD SPECIFICATION 619:

SHADOW VEHICLE - VEHICLE USED FOR MOBILE OR SHORT DURATION WORK OPERATIONS.

MINIMUM DISTANCE SHOWN REFLECTS THE ACTUAL ROLL AHEAD DISTANCE FROM MANUFACTURER.

**TABLE 6C-3  
TAPER LENGTH FOR TEMPORARY  
TRAFFIC CONTROL ZONES**

TYPE OF TAPER	TAPER LENGTH (L)
MERGING TAPER	L
SHIFTING TAPER	L/2
SHOULDER TAPER	L/3
ONE-LANE, TWO-WAY TRAFFIC TAPER	100 FT. MAXIMUM
DOWNSTREAM TAPER	100 FT. PER LANE

**TABLE 619-4  
FLARE RATES FOR POSITIVE BARRIER**

TYPE OF POSITIVE BARRIER	POSTED SPEED LIMIT				
	30 MPH	40 MPH	50 MPH	55 MPH	65 MPH
TEMPORARY CONCRETE BARRIER	8:1	11:1	14:1	16:1	20:1
BOX BEAM OR HEAVY POST CORRUGATED BEAM	7:1	9:1	11:1	12:1	15:1

**TABLE NY6H-3  
ADVANCE WARNING SIGN SPACING**

ROAD TYPE	DISTANCE BETWEEN SIGNS			SIGN LEGEND	
	A (FT.)	B (FT.)	C (FT.)	XX	YY
URBAN (≤ 30 MPH*)	100	100	100	AHEAD	AHEAD
URBAN (35-40 MPH*)	200	200	200	AHEAD	AHEAD
URBAN (≥ 45 MPH*)	350	350	350	1000 FT.	AHEAD
RURAL	500	500	500	1500 FT.	1000 FT.
EXPRESSWAY / FREEWAY	1000	1500	2640	1 MILE	1/2 MILE

\* PRECONSTRUCTION POSTED SPEED LIMIT

URBAN: (MEETS MORE THAN 1 OF THE FOLLOWING CRITERIA) SIDEWALKS, BICYCLE USAGE, CURBING, CLOSED DRAINAGE SYSTEMS, DRIVEWAY DENSITIES GREATER THAN 24 DRIVEWAYS PER MILE, MINOR COMMERCIAL DRIVEWAY DENSITIES OF 10 DRIVEWAYS PER MILE OR GREATER, MAJOR COMMERCIAL DRIVEWAYS, NUMEROUS RIGHT OF WAY CONSTRAINTS, HIGH DENSITY OF CROSS STREETS, 85TH PERCENTILE SPEEDS OF 45 MPH OR LESS.

RURAL: ANY AREA NOT EXHIBITING MORE THAN ONE OF THE ABOVE CHARACTERISTICS.

EXPRESSWAY: DIVIDED HIGHWAYS FOR TRAFFIC WITH FULL OR PARTIAL CONTROL OF ACCESS AND GENERALLY WITH GRADE SEPARATIONS AT MAJOR CROSSROADS.

FREEWAYS/INTERSTATE: LOCAL OR INTER REGIONAL HIGH-SPEED, DIVIDED, HIGH-VOLUME FACILITIES WITH FULL OR PARTIAL CONTROL OF ACCESS.

**WORK DURATION DEFINITIONS**

LONG-TERM STATIONARY IS WORK THAT OCCUPIES A LOCATION MORE THAN 3 CONSECUTIVE DAYS.

INTERMEDIATE-TERM STATIONARY IS WORK THAT OCCUPIES A LOCATION MORE THAN ONE DAYLIGHT PERIOD UP TO 3 CONSECUTIVE DAYS, OR NIGHTTIME WORK LASTING MORE THAN 1 HOUR.

SHORT-TERM STATIONARY IS DAYTIME WORK THAT OCCUPIES A LOCATION FOR MORE THAN 1 HOUR WITHIN A SINGLE DAYLIGHT PERIOD.

SHORT DURATION IS WORK THAT OCCUPIES A LOCATION UP TO 1 HOUR.

MOBILE IS WORK THAT MOVES INTERMITTENTLY OR CONTINUOUSLY.

**WORK ZONE TRAFFIC CONTROL LEGEND**

SYMBOL	DESCRIPTION
	ARROW PANEL
	ARROW PANEL, CAUTION MODE
	ARROW PANEL TRAILER OR SUPPORT
	CHANGEABLE MESSAGE SIGN (PVMS)
	CHANNELIZING DEVICE
	CRASH CUSHION/TEMPORARY IMPACT ATTENUATOR
	DIRECTION OF TEMPORARY TRAFFIC DETOUR
	DIRECTION OF TRAFFIC
	FLAGGER
	FLAG TREE
	LUMINAIRE
	PAVEMENT MARKINGS THAT SHALL BE REMOVED FOR A LONG TERM PROJECT
	SIGN, TEMPORARY
	TEMPORARY BARRIER
	TEMPORARY BARRIER WITH WARNING LIGHTS
	TRAFFIC OR PEDESTRIAN SIGNAL
	TYPE III BARRICADE
	WARNING LIGHTS
	WORK SPACE
	WORK VEHICLE
	WORK VEHICLE WITH TRUCK MOUNTED ATTENUATOR



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL  
LEGENDS AND NOTES

APPROVED SEPTEMBER 18, 2008

ISSUED UNDER EB 08-036

/S/ DAVID J. CLEMENTS, P.E.  
DIRECTOR, OFFICE OF  
TRAFFIC SAFETY AND MOBILITY

619-11

EFFECTIVE DATE: 01/08/09

WORK ZONE TRAFFIC CONTROL SIGN TABLE

SIGN	M.U.T.C.D. CODE	COLOR CODE	CONVENTIONAL ROAD*	EXPRESSWAY	FREEWAY
	E5-1a	C	-----	72"X60"	72"X60"
	G20-1	A	36"X18"	48"X24"	48"X24"
	G20-2	A	36"X18"	48"X24"	48"X24"
	M1-4	B	1 OR 2 DIGIT (24"X24") 3 DIGIT (30"X24")	30"X24"	30"X24"
	M3-1	B	24"X12" OR 30"X15" MATCH TO M1-4 SIGN WIDTH	30"X15"	30"X15"
	M3-2				
	M3-3				
	M3-4				
	M4-8				
	M4-8a	A	24"X18" OR (36"X18") MATCH TO M1-4 SIGN WIDTH	30"X18"	30"X18"
	M4-9	A	30"X24"	48"X36"	48"X36"
	M4-9L	A	30"X24"	48"X36"	48"X36"
	M4-9R	A	30"X24"	48"X36"	48"X36"
	M4-9a	A	30"X24"	30"X24"	30"X24"
	M4-9b	A	30"X24"	30"X24"	30"X24"
	M4-9c	A	30"X24"	30"X24"	30"X24"
	M4-10L	A	48"X18"	48"X18"	48"X18"
	M4-10R				
	M5-1	B	21"X15"	27"X21"	27"X21"
	M6-1				
	M6-2				
	M6-3				
	M6-4				
	NYM3-1	B	24"X24"	36"X36"	36"X36"
	NYM3-2	B	30"X24"	45"X36"	45"X36"
	NYM3-3	B	30"X24"	45"X36"	45"X36"
	NYR9-11	B	24"X42"	48"X84"	48"X84"
	NYR9-12	B	24"X36"	36"X54"	48"X72"

WORK ZONE TRAFFIC CONTROL SIGN TABLE

SIGN	M.U.T.C.D. CODE	COLOR CODE	CONVENTIONAL ROAD*	EXPRESSWAY	FREEWAY
	NYW4-5	A	36"X36"	48"X48"	48"X48"
	NYW4-14	A	36"X36"	48"X48"	48"X48"
	NYW4-15	A	36"X36"	48"X48"	48"X48"
	NYW4-17	A	36"X36"	48"X48"	48"X48"
	NYW8-30	A	48"X24"	48"X24"	48"X24"
	NYW8-31	A	48"X24"	48"X24"	48"X24"
	NYW8-32	A	48"X24"	48"X24"	48"X24"
	NYW8-33	A	48"X24"	48"X24"	48"X24"
	NYW8-34	A	48"X24"	48"X24"	48"X24"
	NYW8-44	A	36"X36"	48"X48"	48"X48"
	NYW8-45	A	24"X8"	36"X12"	48"X16"
	R1-1	D	30"X30"	36"X36"	48"X48"
	R1-2	E	36"X36"X36"	48"X48"X48"	60"X60"X60"
	R2-1	B	24"X30"	36"X48"	48"X60"
	R4-1	B	24"X30"	36"X48"	48"X60"
	R4-7	B	24"X30"	36"X48"	48"X60"
	R4-8	B	24"X30"	36"X48"	48"X60"
	R4-9	B	24"X30"	36"X48"	48"X60"
	R5-1	E	30"X30"	36"X36"	48"X48"
	R9-8	B	36"X18"	36"X18"	-----
	R9-9	B	24"X12"	24"X12"	-----
	R9-10	B	24"X12"	24"X12"	-----

WORK ZONE TRAFFIC CONTROL SIGN TABLE

SIGN	M.U.T.C.D. CODE	COLOR CODE	CONVENTIONAL ROAD*	EXPRESSWAY	FREEWAY
	R9-11	B	24"X12"	24"X12"	-----
	R9-11a	B	24"X12"	24"X12"	-----
	R10-6	B	24"X36"	24"X36"	-----
	R11-2	B	48"X30"	48"X30"	48"X30"
	R11-3a	B	60"X30"	60"X30"	60"X30"
	W1-4L	A	30"X30"	36"X36"	48"X48"
	W1-4R	A	30"X30"	36"X36"	48"X48"
	W1-4bL	A	36"X36"	48"X48"	48"X48"
	W1-4bR	A	36"X36"	48"X48"	48"X48"
	W1-4cL	A	36"X36"	48"X48"	48"X48"
	W1-4cR	A	36"X36"	48"X48"	48"X48"
	W1-6L	A	48"X24"	48"X24"	48"X24"
	W1-6R	A			
	W1-8L	A	36"X48"	36"X48"	36"X48"
	W1-8R	A			
	W3-1	A <sup>5</sup>	36"X36"	48"X48"	48"X48"
	W3-2	A <sup>5</sup>	36"X36"	48"X48"	48"X48"
	W3-3	A <sup>5</sup>	36"X36"	48"X48"	48"X48"

ROADWAY DEFINITIONS:

CONVENTIONAL ROAD - A STREET OR HIGHWAY OTHER THAN A FREEWAY, OR EXPRESSWAY.

EXPRESSWAY - A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.

FREEWAY - A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.

COLOR CODE LEGEND

CODE	DESCRIPTION
A	BLACK LEGEND AND BORDER ON A ORANGE BACKGROUND
B	BLACK LEGEND AND BORDER ON A WHITE BACKGROUND
C	WHITE LEGEND AND BORDER ON A GREEN BACKGROUND
D	WHITE LEGEND AND BORDER ON A RED BACKGROUND
E	RED LEGEND AND BORDER ON A WHITE BACKGROUND
F	BLACK LEGEND AND BORDER ON A FLORESCENT YELLOW GREEN BACKGROUND

NOTES:

- FOR MULTI-LANE UNDIVIDED CONVENTIONAL ROADWAYS USE EXPRESSWAY SIGN SIZES.
- DIMENSIONS ARE SHOWN IN INCHES AND ARE SHOWN AS WIDTH X HEIGHT.
- THESE TABLES ARE FOR REFERENCE PURPOSES ONLY. FOR ADDITIONAL SIGNAGE NOT SHOWN ON THESE TABLES REFER TO THE M.U.T.C.D.
- WHEN USED IN CONJUNCTION WITH A PEDESTRIAN CROSSING SIGN (W11-2) COLOR CODE F IS TO BE USED.
- MULTICOLORED SYMBOL IMPOSED ON BLACK ON ORANGE SIGN.



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

SIGN TABLE  
(SHEET 1 OF 2)

APPROVED SEPTEMBER 15, 2009

ISSUED UNDER EB 09-025

/S/ DAVID J. CLEMENTS, P.E.  
DIRECTOR, OFFICE OF  
TRAFFIC SAFETY AND MOBILITY

619-12

EFFECTIVE DATE: 01/07/10

FILE NAME = IP\_PWP-0109553\619-1202.dgn  
 DATE/TIME = 20-NOV-2008 14:06  
 USER = jturley

WORK ZONE TRAFFIC CONTROL SIGN TABLE					
SIGN	M.U.T.C.D. CODE	COLOR CODE	CONVENTIONAL ROAD*	EXPRESSWAY	FREEWAY
	W3-4	A	36"X36"	48"X48"	48"X48"
	W3-5	A <sup>5</sup>	36"X36"	48"X48"	48"X48"
	W4-1L	A	36"X36"	48"X48"	48"X48"
	W4-1R	A	36"X36"	48"X48"	48"X48"
	W4-2L	A	36"X36"	48"X48"	48"X48"
	W4-2R	A	36"X36"	48"X48"	48"X48"
	W5-4	A	36"X36"	48"X48"	48"X48"
	W6-3	A	30"X30"	48"X48"	48"X48"
	W7-3a	A	24"X18"	24"X18"	24"X18"
	W8-1	A	30"X30"	36"X36"	48"X48"
	W8-4	A	30"X30"	36"X36"	48"X48"
	W8-7	A	30"X30"	36"X36"	48"X48"
	W8-8	A	30"X30"	36"X36"	48"X48"
	W8-9	A	30"X30"	36"X36"	48"X48"
	W11-2	F	30"X30"	30"X30"	-----

WORK ZONE TRAFFIC CONTROL SIGN TABLE					
SIGN	M.U.T.C.D. CODE	COLOR CODE	CONVENTIONAL ROAD*	EXPRESSWAY	FREEWAY
	W13-1	A	24"X24"	24"X24"	24"X24"
	W13-4	A	36"X36"	36"X36"	36"X36"
	W16-4	A <sup>4</sup>	30"X24"	30"X24"	30"X24"
	W16-5pL	A	24"X18"	24"X18"	24"X18"
	W16-5pR	A	24"X18"	24"X18"	24"X18"
	W16-7pL	A <sup>4</sup>	24"X12"	30"X18"	30"X18"
	W16-7pR	A <sup>4</sup>	24"X12"	30"X18"	30"X18"
	W16-9p	A <sup>4</sup>	24"X12"	30"X18"	30"X18"
	W20-1	A	36"X36"	48"X48"	48"X48"
	W20-2	A	36"X36"	48"X48"	48"X48"
	W20-3	A	36"X36"	48"X48"	48"X48"
	W20-4	A	36"X36"	48"X48"	48"X48"
	W20-5	A	36"X36"	48"X48"	48"X48"
	W20-5a	A	36"X36"	48"X48"	48"X48"
	W20-7a	A	36"X36"	48"X48"	48"X48"
	W21-1a	A	36"X36"	48"X48"	48"X48"

WORK ZONE TRAFFIC CONTROL SIGN TABLE					
SIGN	M.U.T.C.D. CODE	COLOR CODE	CONVENTIONAL ROAD*	EXPRESSWAY	FREEWAY
	W21-5	A	30"X30"	48"X48"	48"X48"
	W21-5aL	A	30"X30"	48"X48"	48"X48"
	W21-5aR	A	30"X30"	48"X48"	48"X48"
	W22-2	A	42"X36"	42"X36"	42"X36"
	W22-3	A	42"X36"	42"X36"	42"X36"
	W24-1L	A	36"X36"	48"X48"	48"X48"
	W24-1R	A	36"X36"	48"X48"	48"X48"
	W24-1aL	A	36"X36"	48"X48"	48"X48"
	W24-1aR	A	36"X36"	48"X48"	48"X48"
	W24-1bL	A	36"X36"	48"X48"	48"X48"
	W24-1bR	A	36"X36"	48"X48"	48"X48"
	W21-5bL	A	36"X36"	48"X48"	48"X48"
	W21-5bR	A	36"X36"	48"X48"	48"X48"
	W22-1	A	48"X48"	48"X48"	48"X48"

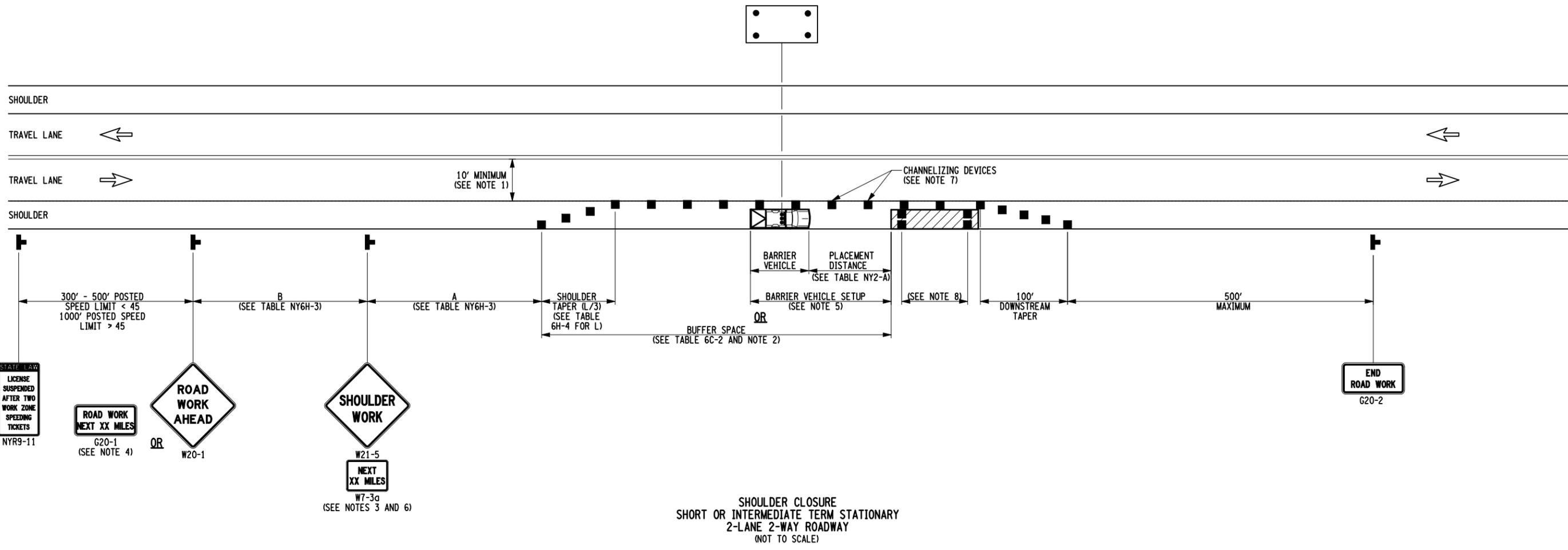
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COLOR CODE LEGEND	
CODE	DESCRIPTION
A	BLACK LEGEND AND BORDER ON A ORANGE BACKGROUND
B	BLACK LEGEND AND BORDER ON A WHITE BACKGROUND
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E	RED LEGEND AND BORDER ON A WHITE BACKGROUND
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- NOTES:
- FOR MULTI-LANE UNDIVIDED CONVENTIONAL ROADWAYS USE EXPRESSWAY SIGN SIZES.
  - DIMENSIONS ARE SHOWN IN INCHES AND ARE SHOWN AS WIDTH X HEIGHT.
  - THESE TABLES ARE FOR REFERENCE PURPOSES ONLY. FOR ADDITIONAL SIGNAGE NOT SHOWN ON THESE TABLES REFER TO THE M.U.T.C.D.
  - WHEN USED IN CONJUNCTION WITH A PEDESTRIAN CROSSING SIGN (W11-2) COLOR CODE F IS TO BE USED.
  - MULTICOLORED SYMBOL IMPOSED ON BLACK ON ORANGE SIGN.

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
U.S. CUSTOMARY STANDARD SHEET	
SIGN TABLE (SHEET 2 OF 2)	
APPROVED SEPTEMBER 18, 2008	ISSUED UNDER EB 08-036
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	619-12

EFFECTIVE DATE: 01/08/09



SHOULDER CLOSURE  
SHORT OR INTERMEDIATE TERM STATIONARY  
2-LANE 2-WAY ROADWAY  
(NOT TO SCALE)

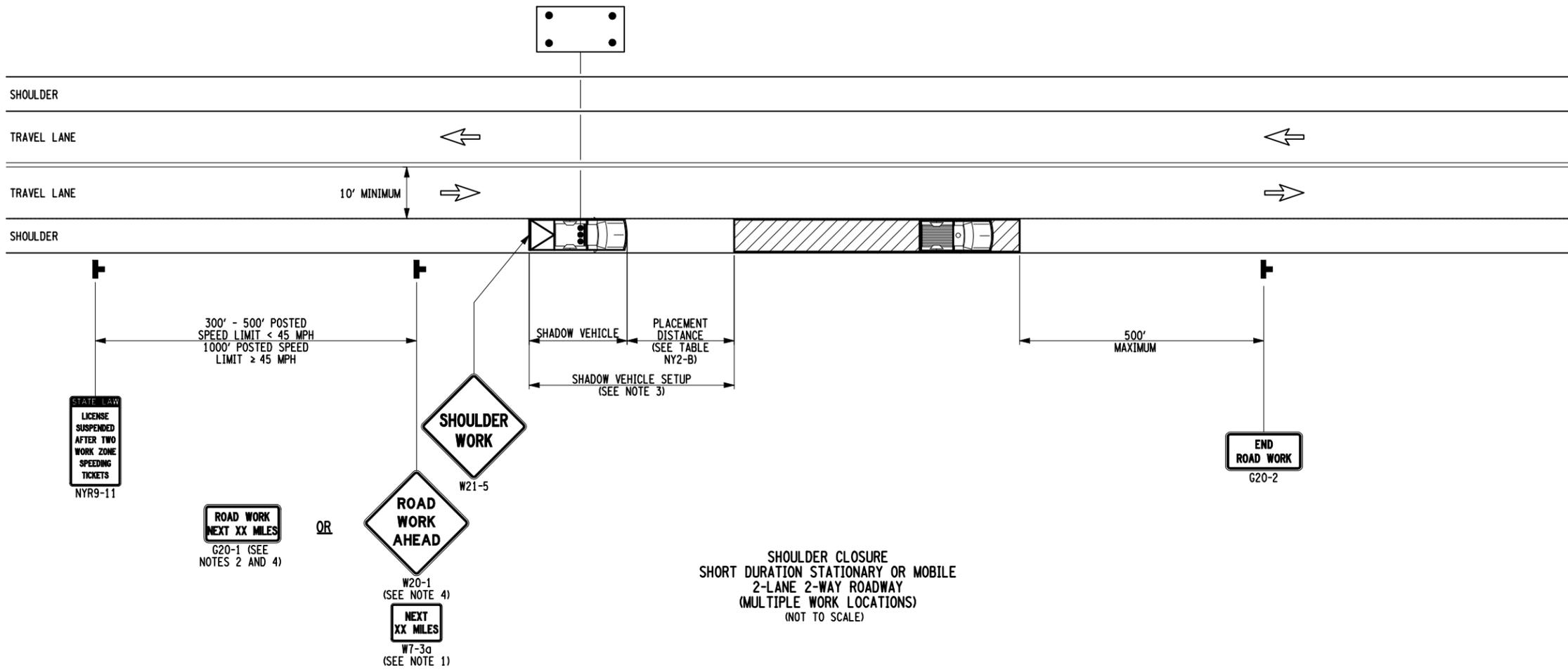
- NOTES:
1. WHEN THE MINIMUM LANE WIDTH OF 10' CANNOT BE MAINTAINED DUE TO A SHOULDER CLOSURE, USE THE DETAIL FOR SHORT OR INTERMEDIATE TERM STATIONARY FLAGGING OPERATION.
  2. NO WORK ACTIVITY OR STORAGE OF EQUIPMENT, VEHICLES, OR MATERIAL SHOULD OCCUR WITHIN A BUFFER SPACE.
  3. WHEN THE DISTANCE BETWEEN THE ADVANCE WARNING SIGNS AND WORK IS 2 MILES TO 5 MILES, A SUPPLEMENTAL DISTANCE PLAQUE (W7-3a) SHOULD BE USED WITH THE SHOULDER WORK SIGN (W21-5).
  4. THE ROAD WORK NEXT XX MILES SIGN (G20-1) MAY BE USED INSTEAD OF THE ROAD WORK AHEAD SIGN (W20-1) IF WORK LOCATIONS OCCUR OVER A DISTANCE OF MORE THAN 2 MILES.
  5. FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
  6. IN THOSE SITUATIONS WHERE MULTIPLE WORK LOCATIONS EXIST WITHIN A LIMITED DISTANCE MAKE IT PRACTICAL TO PLACE STATIONARY SIGNS, THE DISTANCE BETWEEN THE ADVANCE WARNING SIGN AND WORK SHALL NOT EXCEED 5 MILES.
  7. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
  8. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

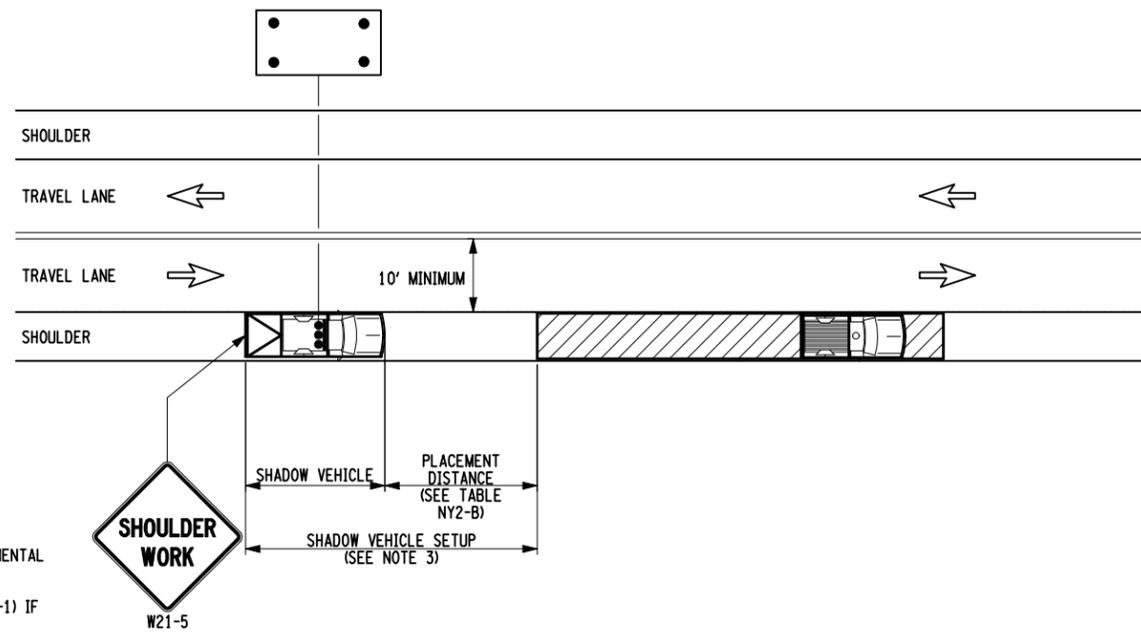
	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>SHOULDER CLOSURE</b> <b>2-LANE 2-WAY ROADWAY</b>	
APPROVED SEPTEMBER 15, 2009 /S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	ISSUED UNDER EB 09-025  <b>619-20</b>

EFFECTIVE DATE: 01/07/10

FILE NAME = 619-20\_010710.dgn  
DATE/TIME = 09-OCT-2009 10:46  
USER = jturley



SHOULDER CLOSURE  
SHORT DURATION STATIONARY OR MOBILE  
2-LANE 2-WAY ROADWAY  
(MULTIPLE WORK LOCATIONS)  
(NOT TO SCALE)



SHOULDER CLOSURE  
MOBILE OPERATION  
2-LANE 2-WAY ROADWAY  
(NOT TO SCALE)

NOTES:

1. WHEN THE DISTANCE BETWEEN THE ADVANCE WARNING SIGNS AND WORK IS 2 MILES TO 5 MILES, A SUPPLEMENTAL DISTANCE PLAQUE (W7-3a) SHOULD BE USED WITH THE ROAD WORK AHEAD SIGN (W20-1).
2. THE ROAD WORK NEXT XX MILES SIGN (G20-1) MAY BE USED INSTEAD OF THE ROAD WORK AHEAD SIGN (W20-1) IF WORK LOCATIONS OCCUR OVER A DISTANCE OF MORE THAN 2 MILES.
3. FOR SHADOW VEHICLE USE REQUIREMENTS SEE TABLES NY1-B AND NY2-B ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
4. IN THOSE SITUATIONS WHERE MULTIPLE WORK LOCATIONS EXIST WITHIN A LIMITED DISTANCE MAKE IT PRACTICAL TO PLACE STATIONARY SIGNS, THE DISTANCE BETWEEN THE ADVANCE WARNING SIGN AND WORK SHALL NOT EXCEED 5 MILES.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

SHOULDER CLOSURE  
2-LANE 2-WAY ROADWAY  
MULTIPLE WORK LOCATIONS

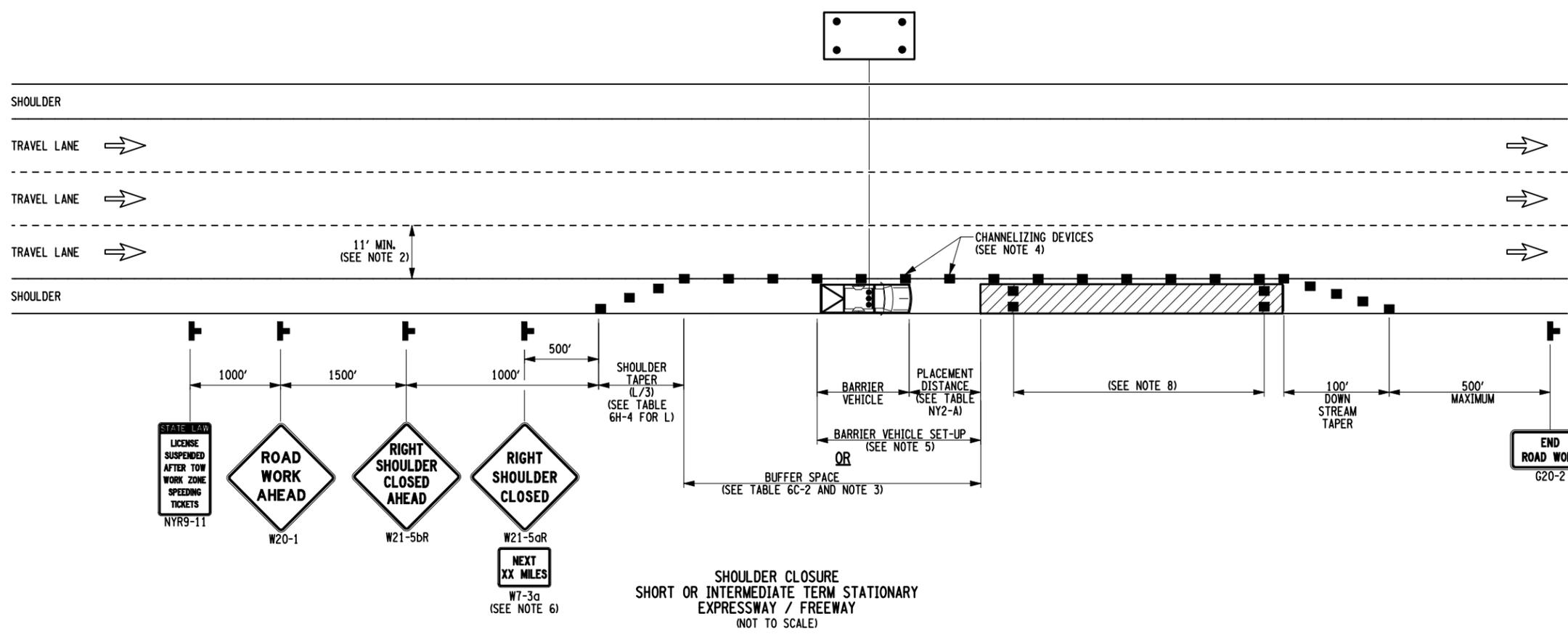
APPROVED SEPTEMBER 15, 2009

/S/ DAVID J. CLEMENTS, P.E.  
DIRECTOR, OFFICE OF  
TRAFFIC SAFETY AND MOBILITY

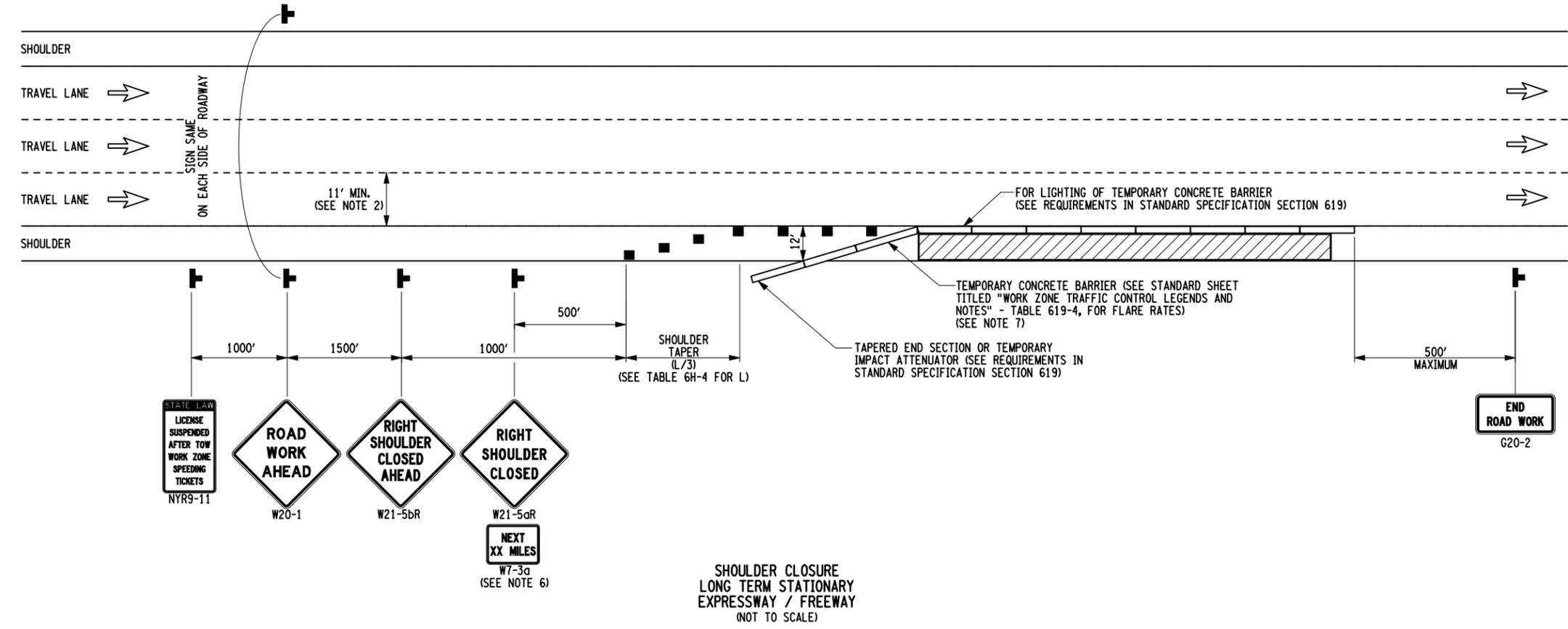
ISSUED UNDER EB 09-025

619-21

EFFECTIVE DATE: 01/07/10



SHOULDER CLOSURE  
SHORT OR INTERMEDIATE TERM STATIONARY  
EXPRESSWAY / FREEWAY  
(NOT TO SCALE)



SHOULDER CLOSURE  
LONG TERM STATIONARY  
EXPRESSWAY / FREEWAY  
(NOT TO SCALE)

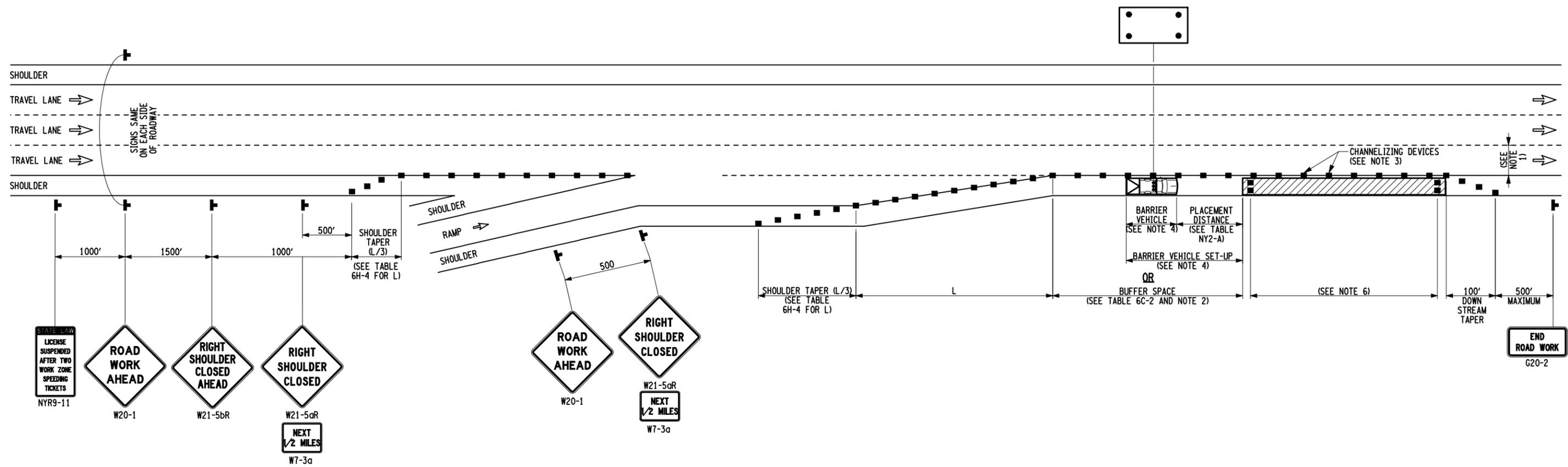
- NOTES:
- LEFT SHOULDER CLOSURES ARE SYMMETRICAL. SUBSTITUTE LEFT SHOULDER CLOSED AHEAD SIGN (W21-5bL) AND LEFT SHOULDER CLOSED SIGN (21-5aL) FOR RIGHT SHOULDER CLOSED SIGNS (W21-5bR AND W21-5aR).
  - WHEN THE MINIMUM LANE WIDTH OF 11' CANNOT BE MAINTAINED DUE TO A SHOULDER CLOSURE, USE THE DETAILS FOR SHORT, INTERMEDIATE, OR LONG TERM, STATIONARY SINGLE LANE CLOSURES.
  - NO WORK ACTIVITY OR STORAGE OF EQUIPMENT, VEHICLES, OR MATERIAL SHOULD OCCUR WITHIN A BUFFER SPACE.
  - CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
  - FOR SHADOW VEHICLE USE REQUIREMENTS SEE TABLES NY1-B AND NY2-B ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
  - THE "NEXT X MILE" SUPPLEMENTAL SIGN (W7-3a) IS REQUIRED WHEN THE SHOULDER IS CLOSED FOR A DISTANCE GREATER THAN 2 MILES.
  - THE TEMPORARY CONCRETE BARRIER SHALL NOT BE PLACED ALONG THE MERGING TAPER. THE SHOULDER SHALL BE CLOSED USING CHANNELIZING DEVICES.
  - TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>SHOULDER CLOSURE EXPRESSWAY / FREEWAY</p>	
<p>APPROVED SEPTEMBER 18, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY</p>	<p>619-22</p>

EFFECTIVE DATE: 01/08/09

FILE NAME = IP\_PWP:\0109553\619-22.dgn  
DATE/TIME = 20-NOV-2008 14:06  
USER = jturley



**SHOULDER CLOSURE**  
 SHORT OR INTERMEDIATE TERM STATIONARY  
 EXPRESSWAY / FREEWAY / WITH APPROACH RAMP  
 (NOT TO SCALE)

**NOTES:**

- WHEN THE MINIMUM LANE WIDTH OF 11' CANNOT BE MAINTAINED DUE TO A SHOULDER CLOSURE, USE THE DETAIL FOR SHORT OR INTERMEDIATE TERM, STATIONARY SINGLE LANE CLOSURE NEAR ENTRANCE RAMP.
- NO WORK ACTIVITY OR STORAGE OF EQUIPMENT, VEHICLES, OR MATERIAL SHOULD OCCUR WITHIN A BUFFER SPACE.
- CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
- FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
- THE "NEXT X MILE" SUPPLEMENTAL SIGN (W7-3a) IS REQUIRED WHEN THE SHOULDER IS CLOSED FOR A DISTANCE GREATER THAN 2 MILES.
- TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.



STATE OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

**SHOULDER CLOSURE**  
**EXPRESSWAY / FREEWAY RAMP APPROACH**

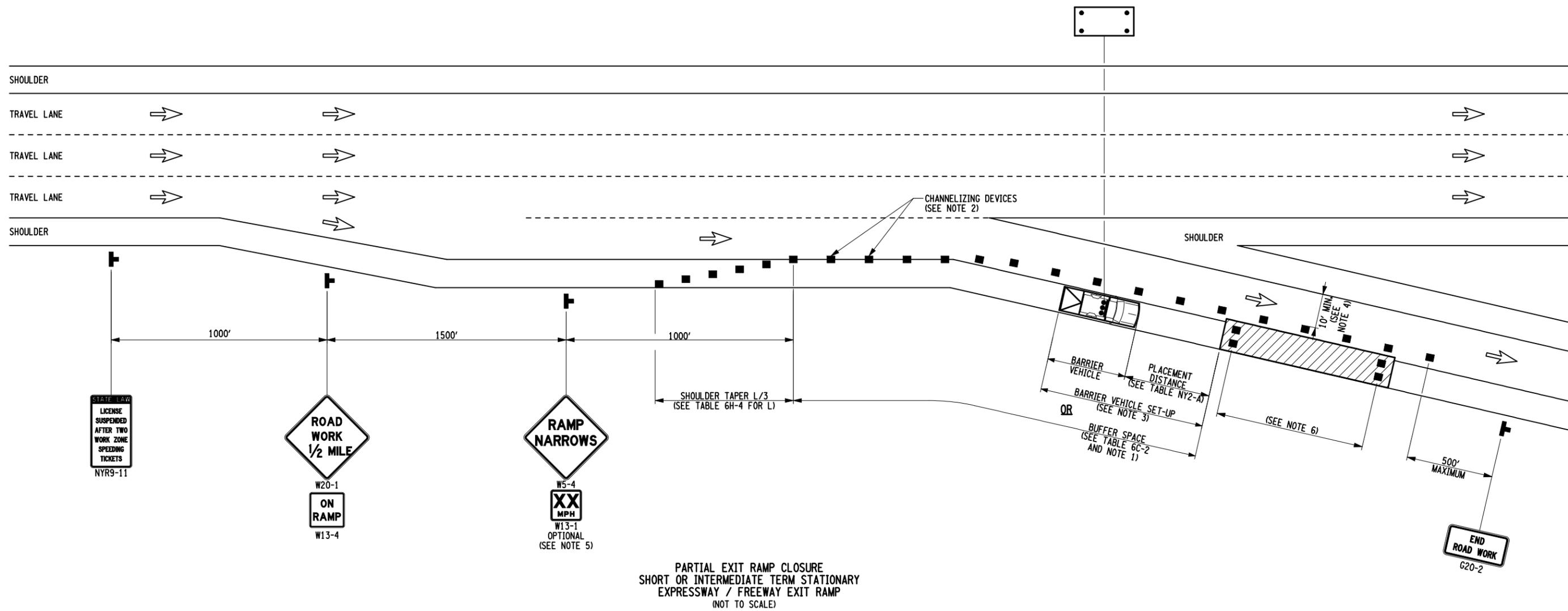
APPROVED SEPTEMBER 18, 2008

ISSUED UNDER EB 08-036

/S/ DAVID J. CLEMENTS, P.E.  
 DIRECTOR, OFFICE OF  
 TRAFFIC SAFETY AND MOBILITY

619-23

EFFECTIVE DATE: 01/08/09



PARTIAL EXIT RAMP CLOSURE  
 SHORT OR INTERMEDIATE TERM STATIONARY  
 EXPRESSWAY / FREEWAY EXIT RAMP  
 (NOT TO SCALE)

NOTES:

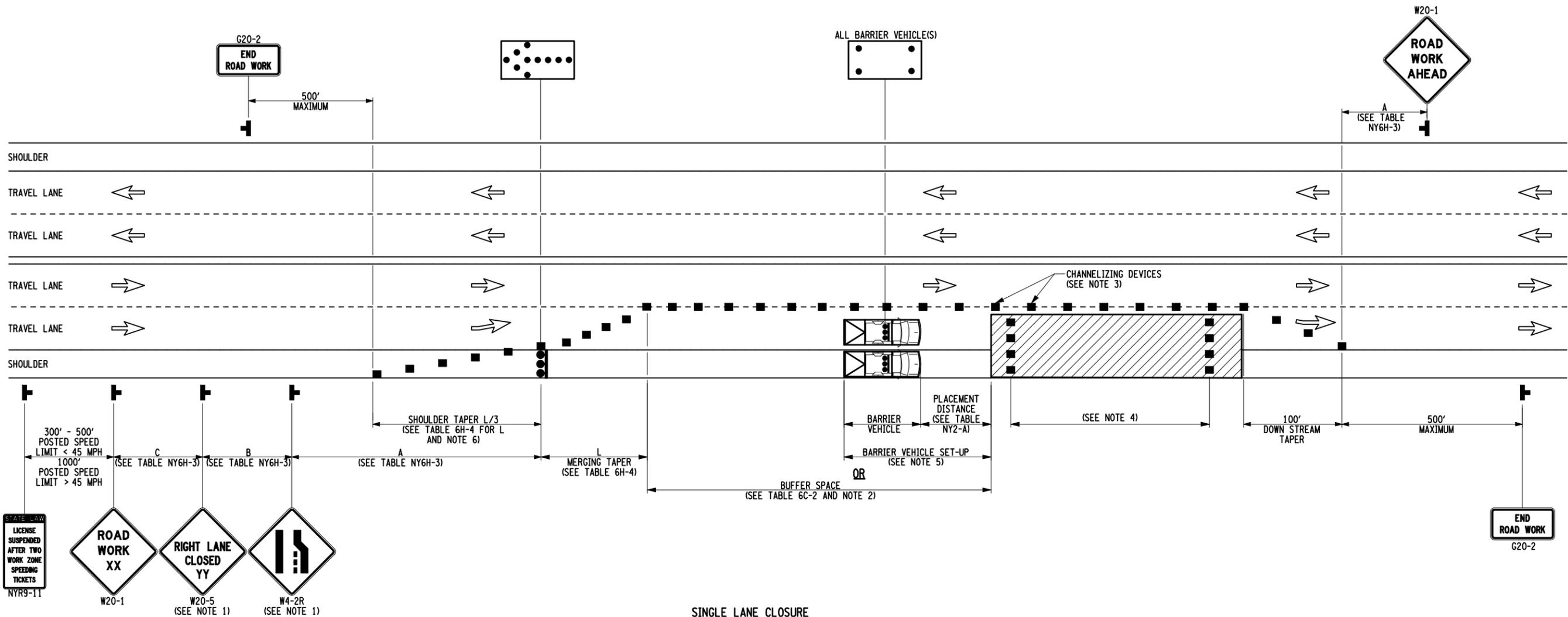
1. NO WORK ACTIVITY OR STORAGE OF EQUIPMENT, VEHICLES, OR MATERIAL SHOULD OCCUR WITHIN A BUFFER SPACE.
2. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT TO EXCEED 40' IN THE ACTIVE WORK SPACE.
3. FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
4. TRUCK OFF-TRACKING SHOULD BE CONSIDERED WHEN DETERMINING WHETHER THE MINIMAL LANE WIDTH OF 10' IS ADEQUATE.
5. THE ENGINEER MAY REQUIRE THE USE OF AN ADVISORY SPEED PLAQUE (W13-1) TO SUPPLEMENT A WARNING SIGN. THE PLAQUE WILL BE USED TO INDICATE AN ADVISORY SPEED FOR THE WORK ZONE CONDITION. (IE, NARROW LANES, BUMPS, POOR ROADWAY SURFACE, LOW OR NO SHOULDER, DROP-OFFS, GEOMETRIC CONSTRAINTS, AND/OR POOR SIGHT CONDITIONS).
6. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
U.S. CUSTOMARY STANDARD SHEET	
<b>PARTIAL EXIT RAMP CLOSURE</b> <b>EXPRESSWAY / FREEWAY</b>	
APPROVED SEPTEMBER 15, 2009 /S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	ISSUED UNDER EB 09-025  <b>619-24</b>

EFFECTIVE DATE: 01/07/10

FILE NAME = 619-24\_010710.dgn  
 DATE/TIME = 09-OCT-2009 10:46  
 USER = jturley



**SINGLE LANE CLOSURE  
SHORT OR INTERMEDIATE TERM STATIONARY  
MULTI LANE HIGHWAY (UNDIVIDED)  
(NOT TO SCALE)**

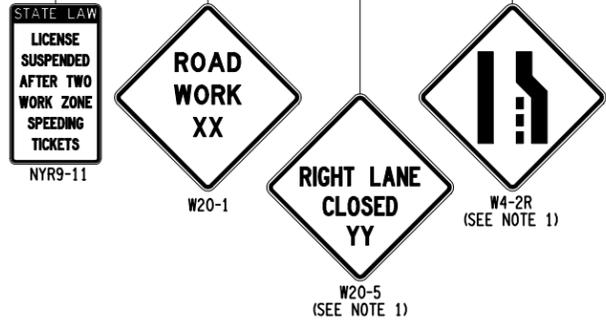
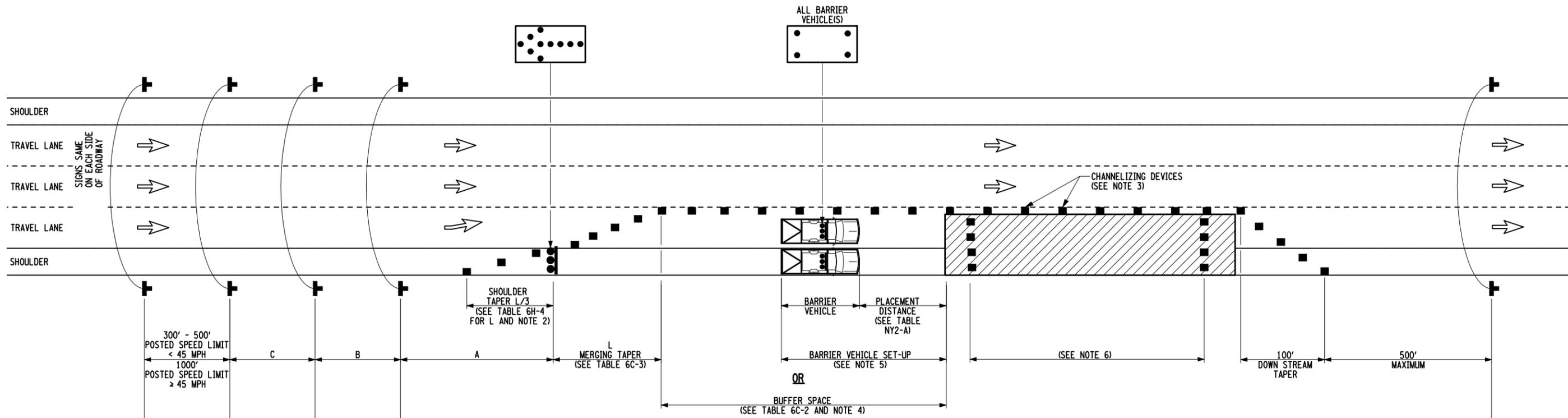
- NOTES:
- LEFT LANE CLOSURES ARE SYMMETRICAL TO RIGHT LANE CLOSURES. SUBSTITUTE LEFT LANE CLOSED SIGN (W20-5) AND THE CORRESPONDING LANE ENDS SIGN (W4-2L).
  - NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
  - CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
  - TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
  - FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
  - WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

	<b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>
U.S. CUSTOMARY STANDARD SHEET	
<b>SINGLE LANE CLOSURE MULTI LANE HIGHWAY</b>	
APPROVED SEPTEMBER 18, 2008	ISSUED UNDER EB 08-036
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	<b>619-30</b>

EFFECTIVE DATE: 01/08/09

FILE NAME = IP\_PWP-06109553\619-30.dgn  
DATE/TIME = 20-NOV-2008 14:06  
USER = jturley



SINGLE LANE CLOSURE  
 SHORT OR INTERMEDIATE TERM STATIONARY  
 MULTI LANE HIGHWAY (DIVIDED) / EXPRESSWAY / FREEWAY  
 (NOT TO SCALE)

NOTES:

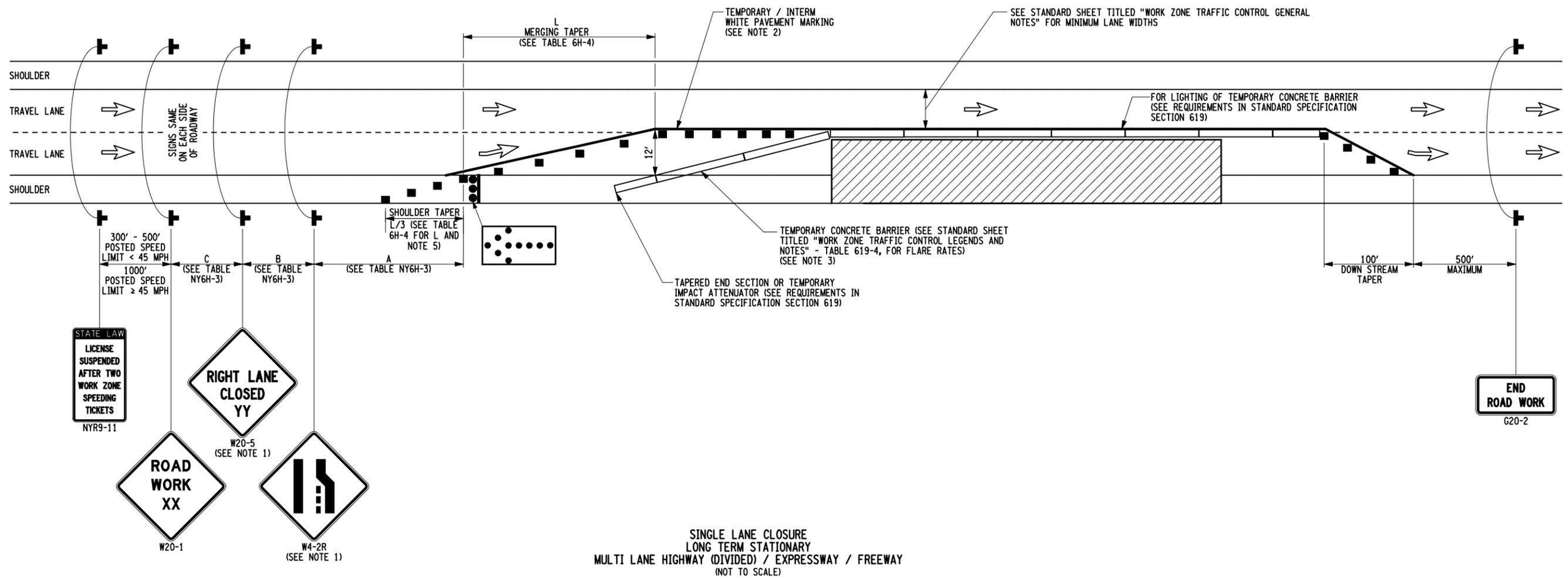
- LEFT LANE CLOSURES ARE SYMMETRICAL TO RIGHT LANE CLOSURES. SUBSTITUTE LEFT LANE CLOSED SIGN (W20-5) AND THE CORRESPONDING LANE ENDS SIGN (W4-2L).
- WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.
- CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
- NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
- FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
- TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>SINGLE LANE CLOSURE MULTI LANE DIVIDED HIGHWAY</p>	
<p>APPROVED SEPTEMBER 18, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY</p>	<p>619-31</p>

EFFECTIVE DATE: 01/08/09

FILE NAME = IP\_PWP-0109553\619-31.dgn  
 DATE/TIME = 20-NOV-2008 14:06  
 USER = jturley



NOTES:

- LEFT LANE CLOSURES ARE SYMMETRICAL TO RIGHT LANE CLOSURES. SUBSTITUTE LEFT LANE CLOSED SIGN (W20-5) AND THE CORRESPONDING LANE ENDS SIGN (W4-2L).
- FOR LONG DURATION LANE CLOSURES, TEMPORARY / INTERM PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
- THE TEMPORARY CONCRETE BARRIER SHALL NOT BE PLACED ALONG THE MERGING TAPER. THE LANE SHALL BE CLOSED USING CHANNELIZING DEVICES AND PAVEMENT MARKINGS.
- IF WORK ACTIVITY PERMITS, A MOVABLE BARRIER MAY BE USED AND RELOCATED TO THE SHOULDER DURING NON WORK PERIODS OR AS PEAK PERIOD VEHICULAR TRAFFIC CONDITIONS EXIST. WHEN MOVABLE BARRIER IS USED, THE TEMPORARY WHITE PAVEMENT MARKINGS SHALL NOT BE USED. DURING THE PERIOD WHEN THE RIGHT LANE IS OPENED, THE SIGN LEGENDS AND CHANNELIZATION SHALL BE CHANGED TO INDICATE THAT ONLY THE SHOULDER IS CLOSED AS SHOWN ON THE LONG TERM SHOULDER CLOSURE DETAIL. IN ADDITION, THE ARROW PANEL SHALL BE PLACED AT THE END OF THE SHOULDER TAPER AND SHALL DISPLAY IN THE CAUTION MODE.
- WHEN PAVED SHOULDER HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

SINGLE LANE CLOSURE  
MULTI LANE HIGHWAY / EXPRESSWAY / FREEWAY

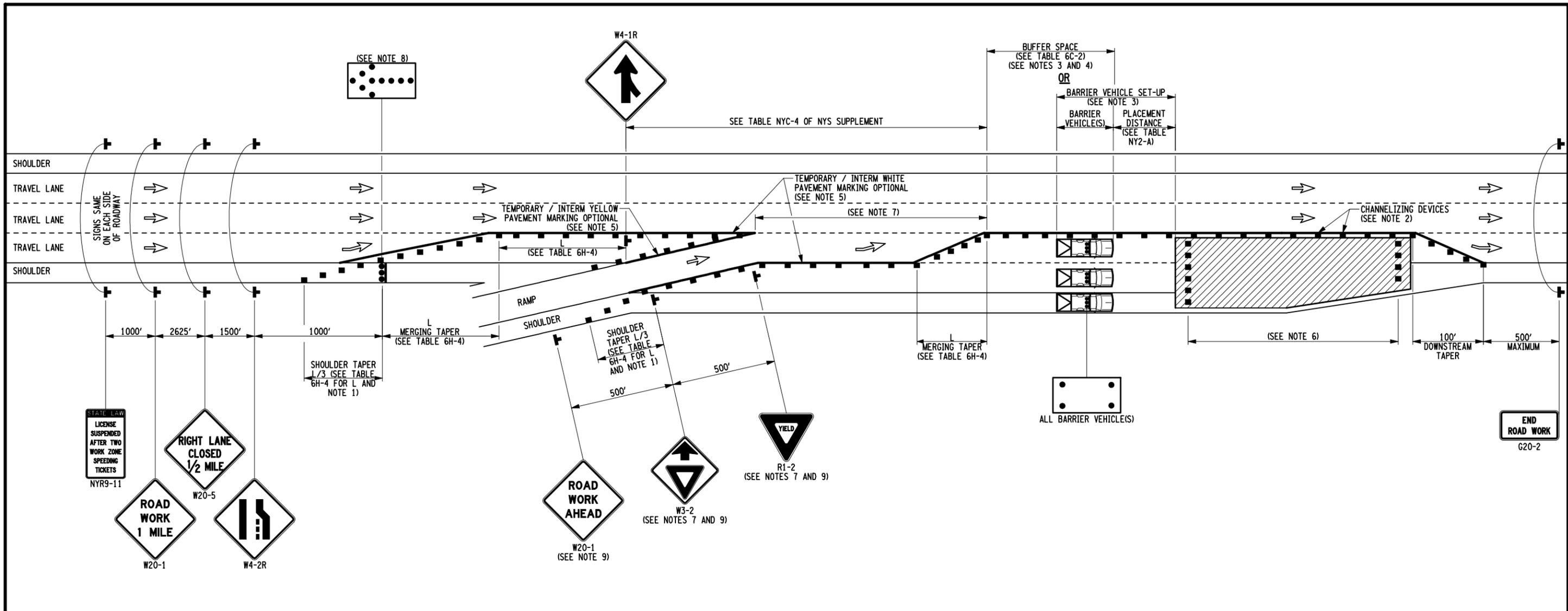
APPROVED SEPTEMBER 18, 2008

ISSUED UNDER EB 08-036

/S/ DAVID J. CLEMENTS, P.E.  
DIRECTOR, OFFICE OF  
TRAFFIC SAFETY AND MOBILITY

619-32

EFFECTIVE DATE: 01/08/09



**SINGLE LANE CLOSURE  
NEAR ENTRANCE RAMP  
SHORT, INTERMEDIATE, OR LONG TERM STATIONARY  
EXPRESSWAY / FREEWAY  
(NOT TO SCALE)**

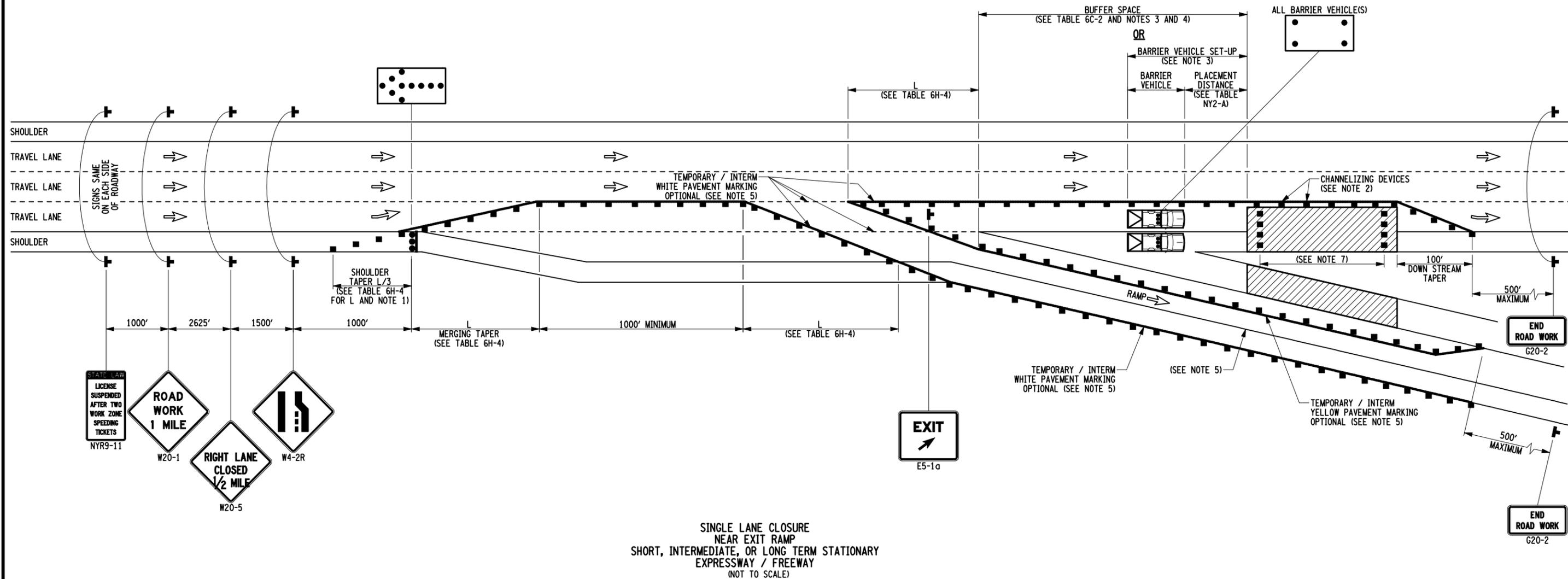
- NOTES:
1. WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.
  2. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
  3. FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
  4. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
  5. FOR LONG DURATION LANE CLOSURES, TEMPORARY / INTERIM PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE TO THE CONTRACT DOCUMENTS. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
  6. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
  7. CONTRACTOR SHALL PROVIDE ADEQUATE ACCELERATION DISTANCE FOR YIELD CONDITION AS PER THE CONTRACT PLANS.
  8. MAINLINE MERGING TAPER WITH THE ARROW PANEL AT ITS STARTING POINT SHALL BE LOCATED SUFFICIENTLY IN ADVANCE SO THAT THE ARROW PANEL IS NOT VISIBLE TO DRIVERS ON THE ENTRANCE RAMP, AND SO THAT THE MAINLINE MERGING TRAFFIC FROM THE LANE CLOSURE HAS THE OPPORTUNITY TO STABILIZE BEFORE ENCOUNTERING THE VEHICULAR TRAFFIC MERGING FROM THE RAMP.
  9. IF THE RAMP CURVES SHARPLY TO THE RIGHT, WARNING SIGNS WITH ADVISORY SPEED PLAQUES LOCATED IN ADVANCE OF THE ENTRANCE TERMINAL SHALL BE PLACED IN PAIRS (ONE ON EACH SIDE OF THE RAMP).

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

	<b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>
U.S. CUSTOMARY STANDARD SHEET	
<b>SINGLE LANE CLOSURE NEAR ENTRANCE RAMP EXPRESSWAY / FREEWAY</b>	
APPROVED SEPTEMBER 15, 2009	ISSUED UNDER EB 09-025
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	<b>619-33</b>

EFFECTIVE DATE: 01/07/10

FILE NAME = 619-33\_010710.dgn  
DATE/TIME = 09-OCT-2009 10:46  
USER = jturley



**SINGLE LANE CLOSURE  
NEAR EXIT RAMP  
SHORT, INTERMEDIATE, OR LONG TERM STATIONARY  
EXPRESSWAY / FREEWAY  
(NOT TO SCALE)**

**NOTES:**

1. WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.
2. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
3. FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
4. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
5. FOR LONG DURATION LANE CLOSURES, TEMPORARY / INTERIM PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE TO THE CONTRACT DOCUMENTS. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
6. IF WORK ACTIVITY PERMITS, A MOVABLE BARRIER MAY BE USED AND RELOCATED TO THE SHOULDER.
7. DURING NON WORK PERIODS OR AS PEAK PERIOD VEHICULAR TRAFFIC CONDITIONS EXIST, WHEN MOVABLE BARRIER IS USED, THE TEMPORARY / INTERIM WHITE PAVEMENT MARKINGS SHALL NOT BE USED. DURING THE PERIOD WHEN THE RIGHT LANE IS OPENED, THE SIGN LEGENDS AND CHANNELIZATION SHALL BE CHANGED TO INDICATE THAT ONLY THE SHOULDER IS CLOSED AS SHOWN IN THE DETAIL "SHOULDER CLOSURE - LONG TERM STATIONARY - EXPRESSWAY / FREEWAY" ON THE STANDARD SHEET TITLED "SHOULDER CLOSURE EXPRESSWAY - FREEWAY". IN ADDITION, THE ARROW PANEL SHALL BE PLACED AT THE END OF THE SHOULDER TAPER AND SHALL DISPLAY IN THE CAUTION MODE.
8. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.



**STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION**

U.S. CUSTOMARY STANDARD SHEET

**SINGLE LANE CLOSURE NEAR EXIT RAMP  
EXPRESSWAY / FREEWAY**

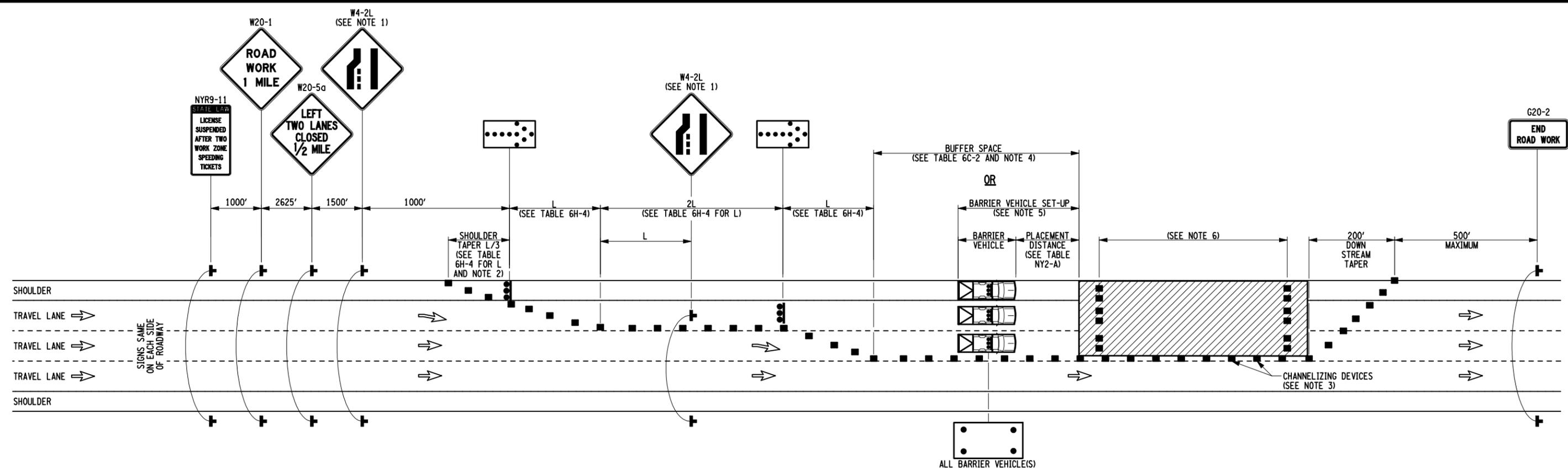
APPROVED SEPTEMBER 15, 2009

/S/ DAVID J. CLEMENTS, P.E.  
DIRECTOR, OFFICE OF  
TRAFFIC SAFETY AND MOBILITY

ISSUED UNDER EB 09-025

619-34

EFFECTIVE DATE: 01/07/10



DOUBLE LANE CLOSURE  
 SHORT OR INTERMEDIATE TERM STATIONARY  
 FREEWAY / EXPRESSWAY  
 (NOT TO SCALE)

NOTES:

- RIGHT LANE CLOSURES ARE SYMMETRICAL TO LEFT LANE CLOSURES. SUBSTITUTE RIGHT TWO LANES CLOSED 1/2 MILE SIGN (W20-5a) AND THE CORRESPONDING LANE ENDS SIGN (W4-2R).
- WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.
- CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
- NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
- FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
- TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

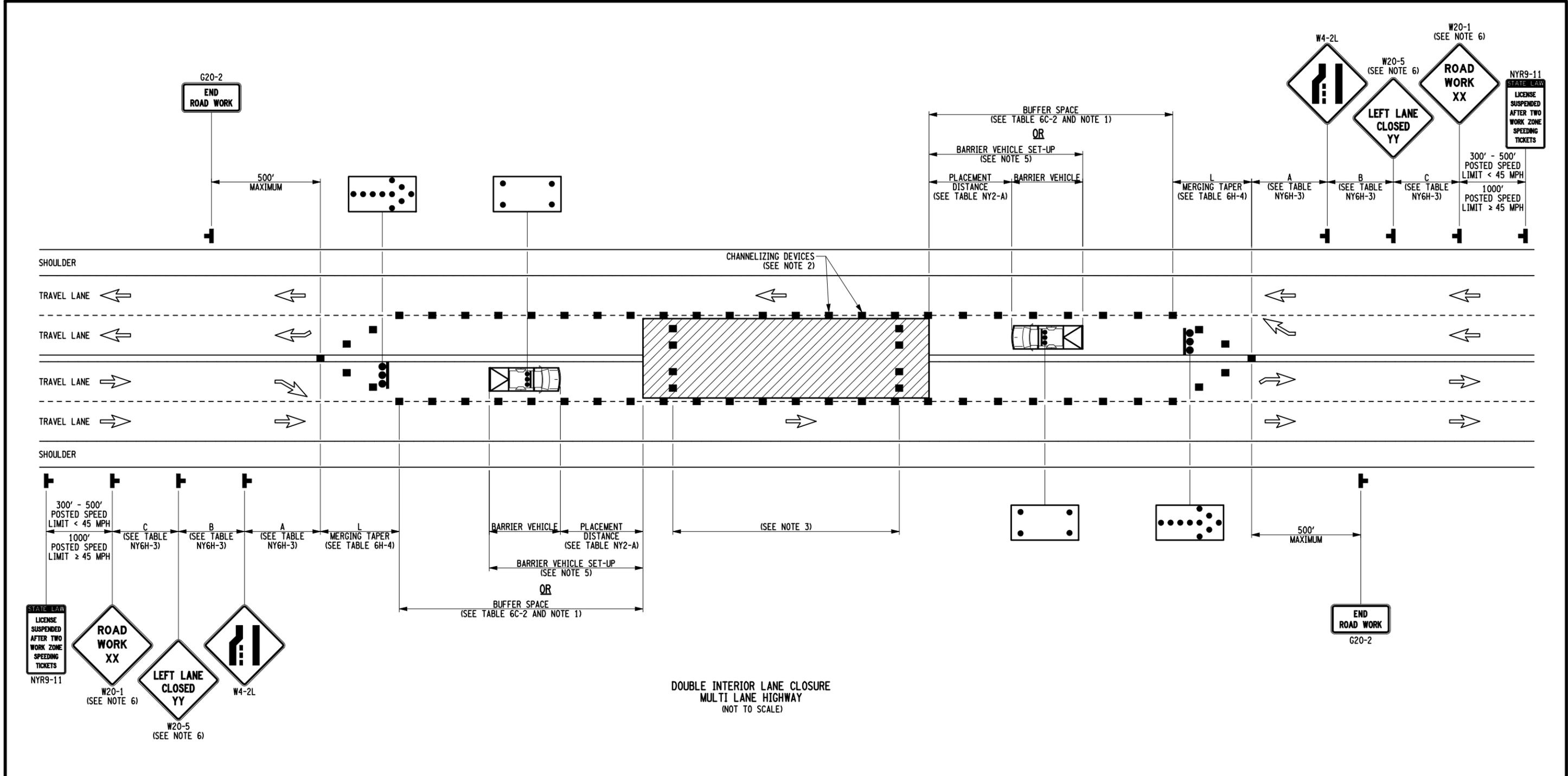
NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>DOUBLE LANE CLOSURE</b> <b>EXPRESSWAY / FREEWAY</b>	
APPROVED SEPTEMBER 18, 2008	ISSUED UNDER EB 08-036
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	<b>619-40</b>

EFFECTIVE DATE: 01/08/09

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 DATE/TIME = 20-NOV-2008 14:06  
 USER = jturley

FILE NAME = IP\_PWP-0109553\619-41.dgn  
 DATE/TIME = 20-NOV-2008 14:06  
 USER = jturley



DOUBLE INTERIOR LANE CLOSURE  
 MULTI LANE HIGHWAY  
 (NOT TO SCALE)

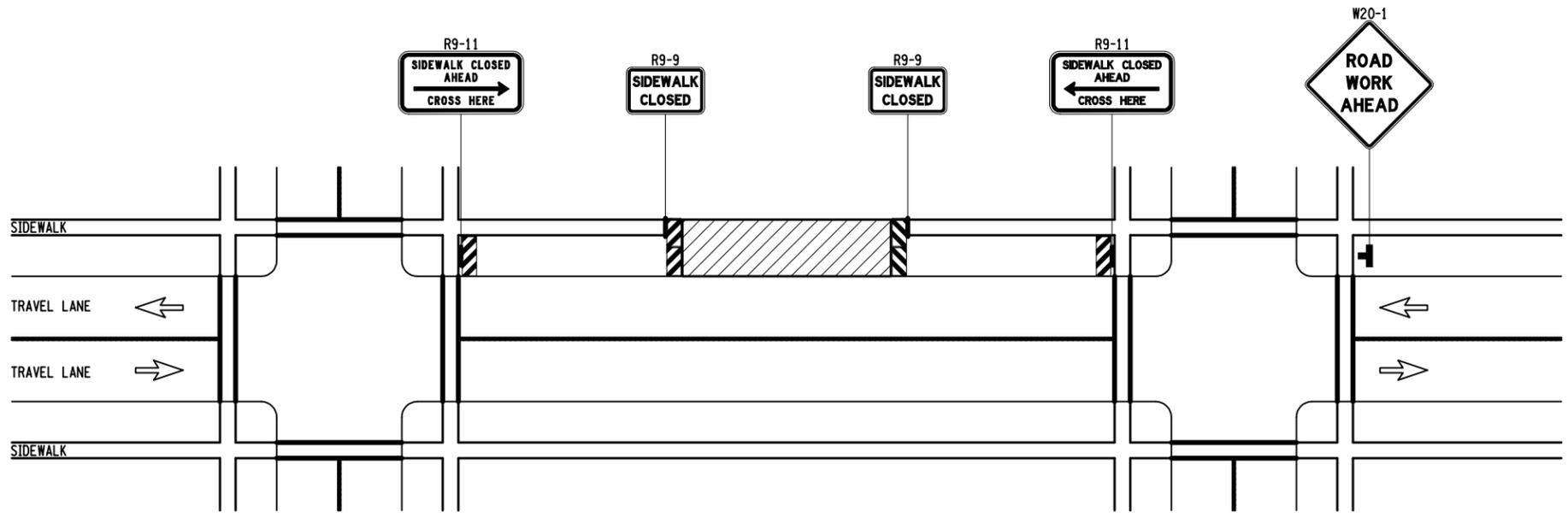
NOTES:

1. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
2. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
3. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
4. FOR LONG DURATION LANE CLOSURES, TEMPORARY PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE TO THE CONTRACT DOCUMENTS. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
5. FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
6. FOR LOW SPEED, LOW VOLUME URBAN STREETS, THE LEFT LANE CLOSED XXX FT. SIGN (W20-5) CAN BE OMITTED AND THE ROAD WORK AHEAD SIGN (W20-1) RELOCATED TO THAT LOCATION.

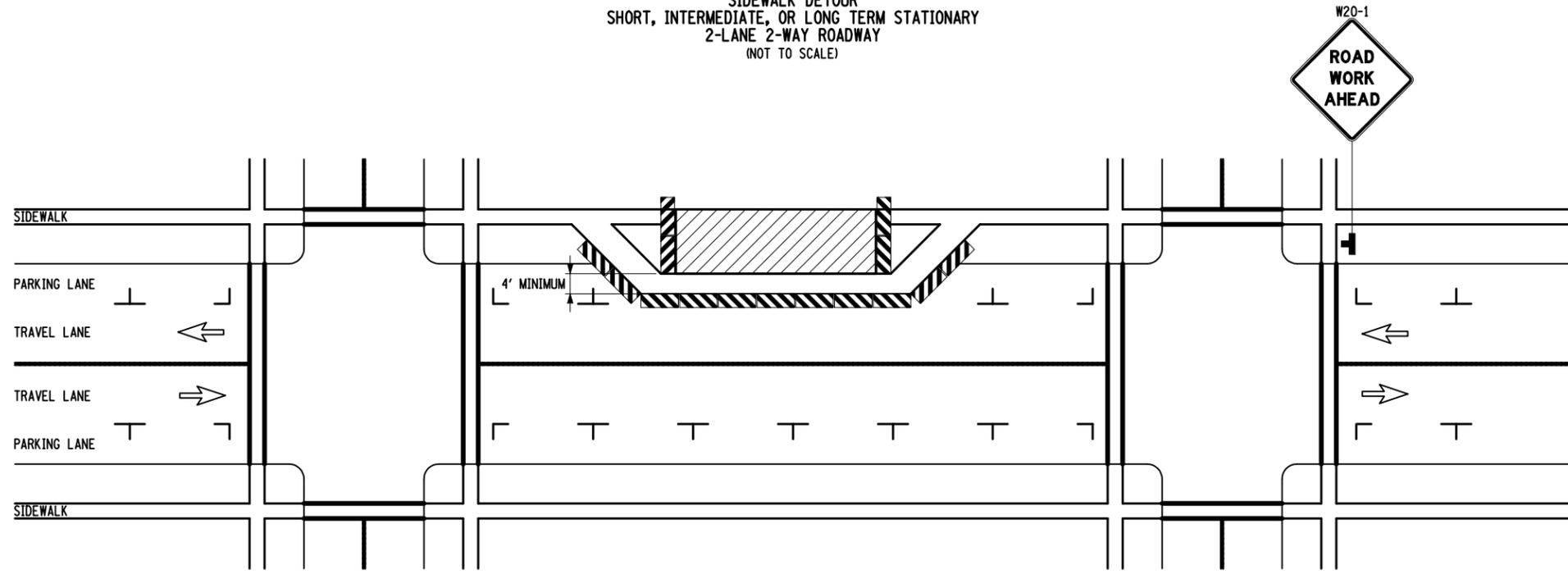
NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

 <b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>DOUBLE INTERIOR LANE CLOSURE</b> <b>MULTI LANE HIGHWAY</b>	
APPROVED SEPTEMBER 18, 2008	ISSUED UNDER EB 08-036
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	619-41

EFFECTIVE DATE: 01/08/09



SIDEWALK DETOUR  
SHORT, INTERMEDIATE, OR LONG TERM STATIONARY  
2-LANE 2-WAY ROADWAY  
(NOT TO SCALE)



SIDEWALK DIVERSION  
SHORT, INTERMEDIATE, OR LONG TERM STATIONARY  
2-LANE 2-WAY ROADWAY  
(NOT TO SCALE)

NOTES:

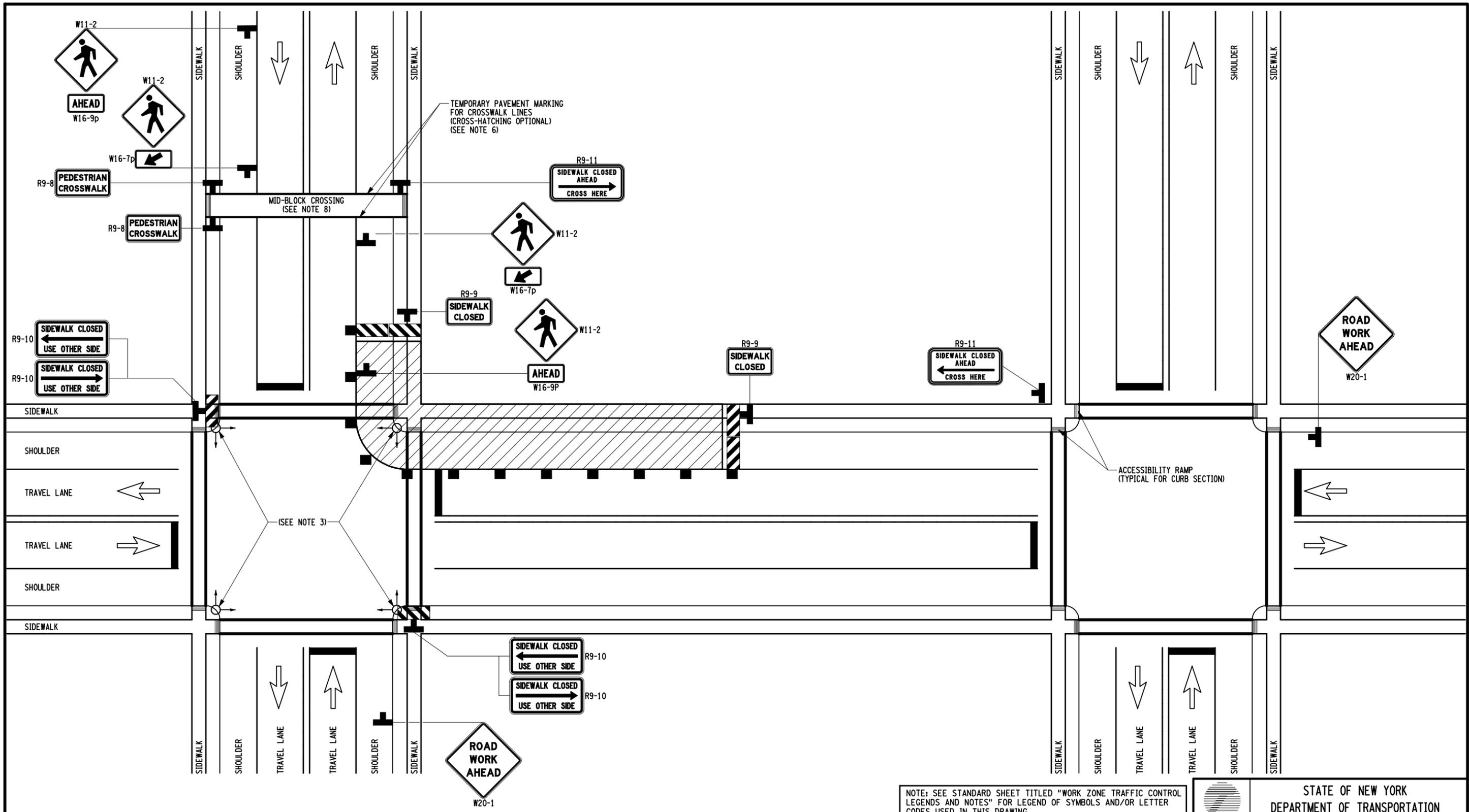
1. WHEN CROSSWALKS OR OTHER PEDESTRIAN FACILITIES ARE CLOSED OR RELOCATED, TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING FACILITY.
2. WHERE HIGH SPEEDS ARE ANTICIPATED, A TEMPORARY TRAFFIC BARRIER AND TEMPORARY IMPACT ATTENUATOR SHOULD BE USED TO SEPARATE THE TEMPORARY SIDEWALKS FROM VEHICULAR TRAFFIC.
3. ONLY THE WORK ZONE TRAFFIC CONTROL DEVICES RELATED TO PEDESTRIANS ARE SHOWN. OTHER DEVICES, SUCH AS LANE CLOSURE SIGNING OR ROAD NARROWS SIGNS (W5-4), MAY BE USED TO CONTROL VEHICULAR TRAFFIC.
4. FOR NIGHTTIME CLOSURES, FLASHING WARNING LIGHTS SHALL BE USED ON BARRICADES SUPPORTING SIGNS AND CLOSING SIDEWALKS.
5. SIGNS SUCH AS KEEP RIGHT (LEFT) SHALL BE PLACED ALONG A TEMPORARY SIDEWALK, WHERE APPLICABLE AND ACCORDING TO AMERICAN WITH DISABILITIES STANDARDS, TO GUIDE OR DIRECT PEDESTRIANS.
6. TYPE II BARRICADES MAY BE SUBSTITUTED FOR TYPE III BARRICADES AS PER 619 STANDARD SPECIFICATIONS.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
SIDEWALK DETOUR OR DIVERSION		
APPROVED SEPTEMBER 15, 2009	ISSUED UNDER EB 09-025	
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY		619-50

EFFECTIVE DATE: 01/07/10

FILE NAME = 619-50\_010710.dgn  
DATE/TIME = 09-OCT-2009 10:46  
USER = jturley



ROAD WORK AHEAD  
W20-1

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

CROSSWALK CLOSURE AND PEDESTRIAN DETOUR  
SHORT, INTERMEDIATE, OR LONG TERM STATIONARY  
CROSSWALK CLOSURE ON 2-LANE 2-WAY ROADWAY  
(NOT TO SCALE)

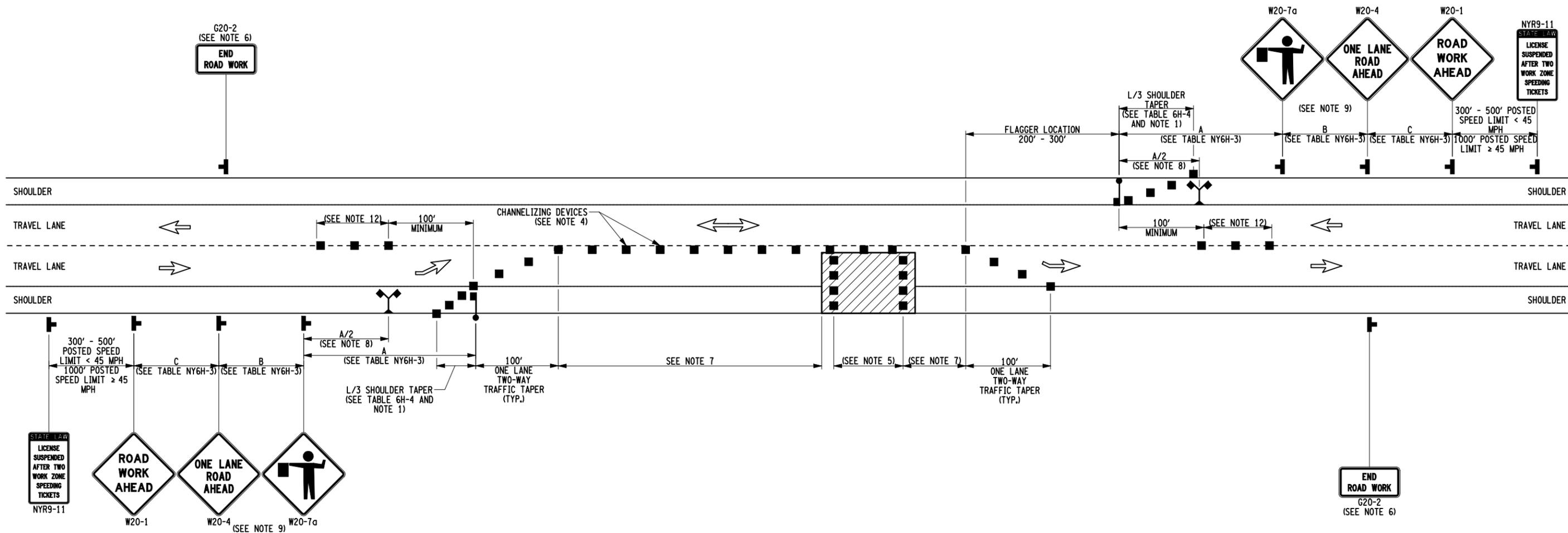
NOTES:

- WHEN CROSSWALKS OR OTHER PEDESTRIAN FACILITIES ARE CLOSED OR RELOCATED, TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING FACILITY.
- CURB PARKING SHALL BE PROHIBITED FOR AT LEAST 50' IN ADVANCE OF THE MID-BLOCK CROSSWALK.
- PEDESTRIAN TRAFFIC SIGNAL DISPLAYS CONTROLLING CLOSED CROSSWALKS SHOULD BE COVERED OR DEACTIVATED.
- ONLY THE WORK ZONE TRAFFIC CONTROL DEVICES RELATED TO PEDESTRIANS ARE SHOWN. OTHER DEVICES, SUCH AS LANE CLOSURE SIGNING OR ROAD NARROWS SIGNS (W5-4), MAY BE USED TO CONTROL VEHICULAR TRAFFIC.
- FOR NIGHTTIME CLOSURES, FLASHING WARNING LIGHTS SHALL BE USED ON BARRICADES SUPPORTING SIGNS AND CLOSING SIDEWALKS.
- FOR LONG-TERM STATIONARY WORK, THE DOUBLE YELLOW CENTERLINE AND/OR LANE LINES SHOULD BE REMOVED BETWEEN THE TEMPORARY CROSSWALK LINES.
- AREA SHALL BE RECONSTRUCTED TO BE ACCESSIBLE TO PEDESTRIANS.
- ALL MID-BLOCK CROSSINGS REQUIRE THE APPROVAL OF THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE.
- TYPE II BARRICADES MAY BE SUBSTITUTED FOR TYPE III BARRICADES AS PER 619 STANDARD SPECIFICATIONS.

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>CROSSWALK CLOSURE AND PEDESTRIAN DETOUR</p>	
<p>APPROVED SEPTEMBER 18, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY</p>	<p>619-51</p>

EFFECTIVE DATE: 01/08/09

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USER = jturley



**FLAGGING OPERATION**  
**SHORT OR INTERMEDIATE TERM STATIONARY**  
**LANE CLOSURE ON 2-LANE 2-WAY ROADWAY**  
 (NOT TO SCALE)

**NOTES:**

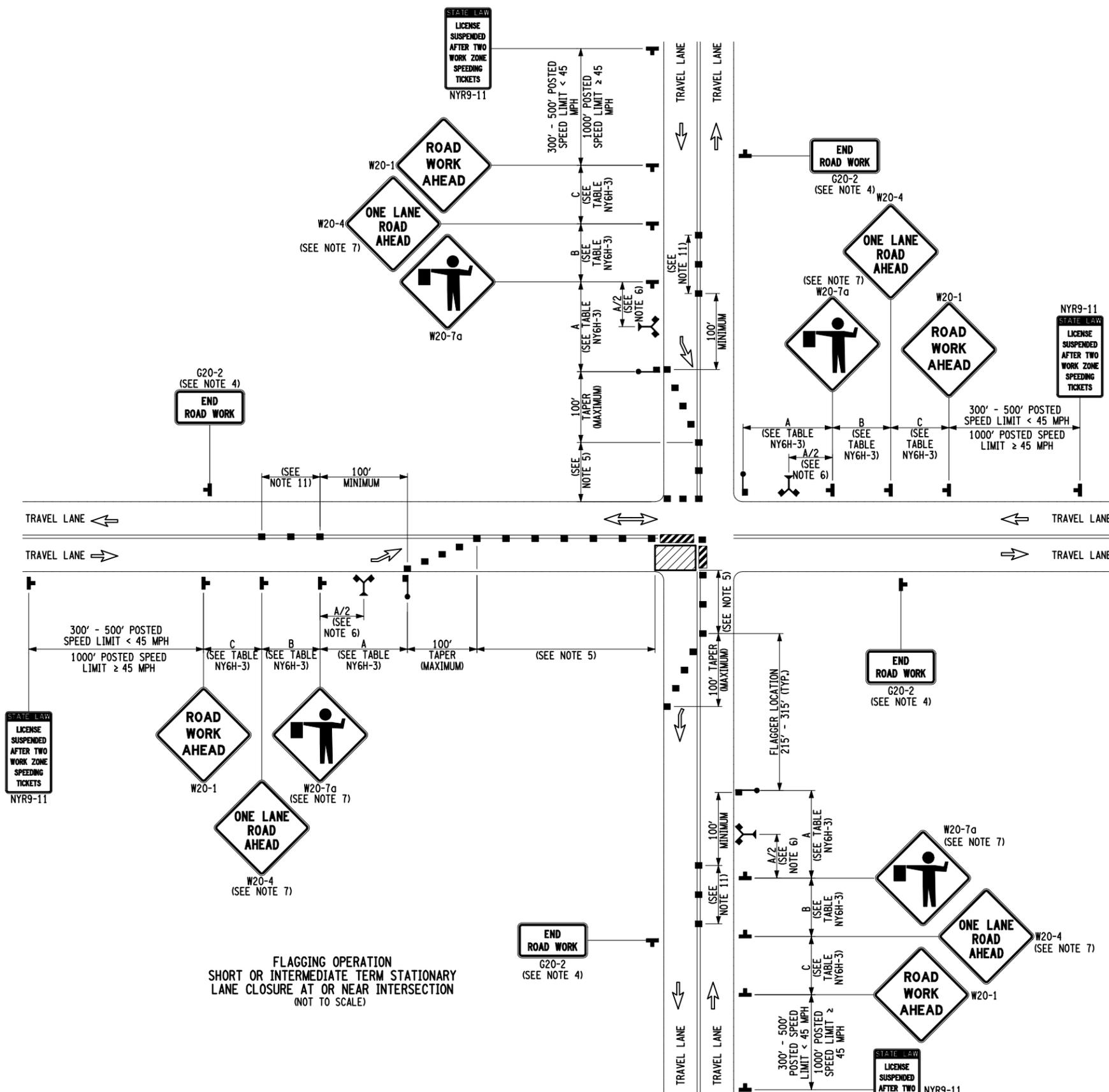
1. WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK AREA AND DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVEL WAY.
2. WHEN A SIDE ROAD OR DRIVEWAY INTERSECTS THE ROADWAY WITHIN A WORK ZONE TRAFFIC CONTROL AREA, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES AND/OR FLAGGERS SHALL BE PLACED AS NEEDED. ADDITIONAL FLAGGERS SHALL BE LOCATED AT ALL INTERSECTIONS AND COMMERCIAL DRIVEWAYS LOCATED WITHIN OR NEAR THE ACTIVE WORK SPACE.
3. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
4. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
5. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
6. THE END ROAD WORK SIGN (G20-2) SHALL BE PLACED A MAXIMUM OF 500' PAST THE END OF THE WORK SPACE.
7. WHERE DIRECTED BY THE ENGINEER, A BUFFER SPACE SHALL BE PROVIDED IN ORDER TO LOCATE THE ONE-LANE, TWO-WAY TRAFFIC TAPER PRIOR TO ANY HORIZONTAL OR VERTICAL CURVE, IN ORDER TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE FLAGGERS AND/OR A QUEUE OF STOPPED VEHICLES.
8. THE FLAG TREE SHALL BE LOCATED ON THE SHOULDER, AT APPROXIMATELY 1/2 THE DISTANCE BETWEEN THE FLAGGER SIGN (W20-7a) AND THE FLAGGER.
9. FLAGGER SIGN (W20-7a) AND ONE LANE ROAD AHEAD SIGN (W20-4) SHALL BE REMOVED, COVERED OR TURNED AWAY FROM ROAD USERS WHEN FLAGGING OPERATIONS ARE NOT OCCURRING.
10. FLAGGER AND FLAG TREE SHALL BE ILLUMINATED TO LEVEL II ILLUMINATION DURING NIGHT TIME OPERATIONS.
11. ALL FLAGGERS SHALL USE 24" (MIN.) OCTAGON SHAPED STOP/SLOW PADDLES HAVING 6' STAFF.
12. CENTERLINE CHANNELIZING DEVICES ARE OPTIONAL AND MAY BE ELIMINATED WHERE SPACE CONSTRAINTS EXIST.

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
	U.S. CUSTOMARY STANDARD SHEET	
<b>FLAGGING OPERATION</b> <b>2-LANE 2-WAY ROADWAY</b>		
APPROVED SEPTEMBER 15, 2009 /S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	ISSUED UNDER EB 09-025  619-60	EFFECTIVE DATE: 01/07/10

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 DATE/TIME = 20-NOV-2008 14:07  
 USER = jturley



FLAGGING OPERATION  
 SHORT OR INTERMEDIATE TERM STATIONARY  
 LANE CLOSURE AT OR NEAR INTERSECTION  
 (NOT TO SCALE)

NOTES:

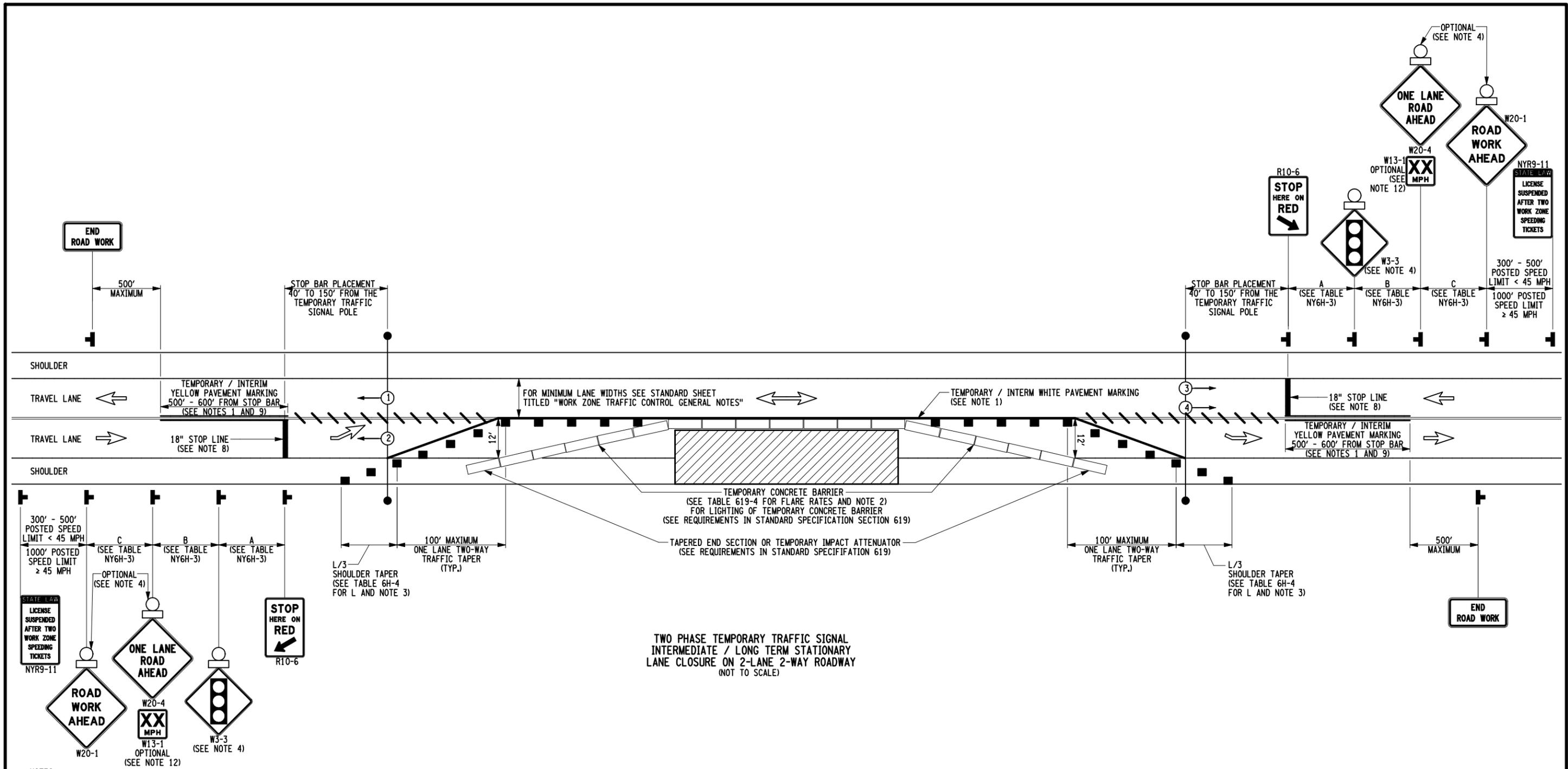
1. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE TURNED OFF FOR ANY FLAGGING OPERATIONS, UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.
2. WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK AREA AND DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVEL WAY.
3. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
4. THE END ROAD WORK SIGN (G20-2) SHALL BE PLACED A MAXIMUM OF 500' PAST THE END OF THE WORK SPACE.
5. WHERE DIRECTED BY THE ENGINEER, A BUFFER SPACE SHALL BE PROVIDED IN ORDER TO LOCATE THE ONE-LANE, TWO-WAY TRAFFIC TAPER PRIOR TO ANY HORIZONTAL OR VERTICAL CURVE, IN ORDER TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE FLAGGERS AND/OR A QUEUE OF STOPPED VEHICLES.
6. THE FLAG TREE SHALL BE LOCATED ON THE SHOULDER, AT APPROXIMATELY 1/2 THE DISTANCE BETWEEN THE FLAGGER SIGN (W20-7a) AND THE FLAGGER.
7. FLAGGER SIGN (W20-7a) AND ONE LANE ROAD AHEAD SIGN (W20-4) SHALL BE REMOVED, COVERED OR TURNED AWAY FROM ROAD USERS WHEN FLAGGING OPERATIONS ARE NOT OCCURRING.
8. FLAGGER AND FLAG TREE SHALL BE ILLUMINATED TO LEVEL II ILLUMINATION DURING NIGHT TIME OPERATIONS.
9. ALL FLAGGERS SHALL USE 24" (MIN.) OCTAGON SHAPED STOP/SLOW PADDLES HAVING 6' STAFF.
10. ADDITIONAL FLAGGERS SHALL BE LOCATED AT ALL INTERSECTIONS AND COMMERCIAL DRIVEWAYS LOCATED WITHIN OR NEAR THE ACTIVE WORK AREA.
11. CENTERLINE CHANNELIZING DEVICES ARE OPTIONAL AND MAY BE ELIMINATED WHERE SPACE CONSTRAINTS EXIST.
12. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
13. FOR PEDESTRIAN DETOUR ACCOMMODATIONS REFER TO THE STANDARD SHEETS TITLED "SIDEWALK DETOUR OR DIVERSION" AND "CROSSWALK CLOSURE AND PEDESTRIAN DETOUR".

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>FLAGGING OPERATION</b> <b>2-LANE 2-WAY ROADWAY INTERSECTION</b>	
APPROVED SEPTEMBER 18, 2008	ISSUED UNDER EB 08-036
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	
619-61	

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 USER = jturley



**TWO PHASE TEMPORARY TRAFFIC SIGNAL  
 INTERMEDIATE / LONG TERM STATIONARY  
 LANE CLOSURE ON 2-LANE 2-WAY ROADWAY  
 (NOT TO SCALE)**

- NOTES:
- FOR LONG DURATION LANE CLOSURES, TEMPORARY / INTERIM PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE TO THE CONTRACT DOCUMENTS. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
  - THE TEMPORARY CONCRETE BARRIER SHALL NOT BE PLACED ALONG THE MERGING TAPER. THE LANE SHALL BE CLOSED USING CHANNELIZING DEVICES AND PAVEMENT MARKINGS.
  - WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.
  - FLASHING WARNING LIGHTS ARE REQUIRED ON THE W3-3 SIGNAL AHEAD SIGN. FLASHING WARNING LIGHTS ARE AN OPTION ON THE ROAD WORK AHEAD SIGN (W20-1) AND ONE LANE ROAD AHEAD SIGNS (W20-4) AND MAY BE USED TO INCREASE TARGET VALUE AND VISIBILITY, AS DETERMINED BY THE ENGINEER.
  - REFER TO MUTCD FOR ADDITIONAL TRAFFIC SIGNAL REQUIREMENTS.
  - DETECTORS SHALL BE INSTALLED ON ALL APPROACH LANES AND ALL PHASES SHALL BE ACTUATED. DURATION OF RED CLEARANCE INTERVALS SHALL BE ADEQUATE TO CLEAR THE ONE-LANE SECTION OF CONFLICTING TRAFFIC.
  - THE TRAFFIC SIGNAL CYCLE SHALL REST IN RED. WHEN THE SIGNAL IS CHANGED TO THE FLASHING MODE, EITHER MANUALLY OR AUTOMATICALLY, RED SIGNAL INDICATIONS SHALL BE FLASHED TO ALL APPROACHES.

- STOP LINES SHALL BE INSTALLED WITH TEMPORARY TRAFFIC SIGNALS FOR INTERMEDIATE AND LONG-TERM CLOSURES. EXISTING, CONFLICTING PAVEMENT MARKINGS AND RAISED PAVEMENT MARKINGS, BETWEEN THE ACTIVITY AREA AND THE STOP LINE, SHALL BE REMOVED. AFTER THE TEMPORARY TRAFFIC SIGNAL IS REMOVED, THE STOP LINES AND ALL TEMPORARY PAVEMENT MARKINGS SHALL BE REMOVED AND PERMANENT PAVEMENT MARKINGS RESTORED.
- WHERE NO-PASSING LINES ARE NOT ALREADY IN PLACE, THEY SHALL BE ADDED FOR A DISTANCE OF 500'-600' FROM THE STOP BAR. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
- ADJUSTMENTS IN THE LOCATION OF ADVANCED WARNING SIGNS SHOULD BE MADE TO ACCOMMODATE THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE ROADWAY, RECOGNIZING THAT THE DISTANCES SHOWN FOR SIGN SPACING ARE MINIMUMS. ADJUSTMENTS IN THE HEIGHT OF THE SIGNAL HEADS SHALL BE MADE AS NEEDED TO CONFORM TO THE VERTICAL ALIGNMENT.
- THE SUPPORTS FOR TEMPORARY TRAFFIC CONTROL SIGNALS SHALL NOT ENCROACH INTO THE MINIMUM REQUIRED WIDTH OF A "PEDESTRIAN ACCESS ROUTE" OF 4' OR AN "ALTERNATE CIRCULATION PATH" OF 3'.
- THE ENGINEER MAY REQUIRE THE USE OF AN ADVISORY SPEED PLAQUE (W13-1) TO SUPPLEMENT A WARNING SIGN. THE PLAQUE WILL BE USED TO INDICATE AN ADVISORY SPEED FOR THE WORK ZONE CONDITION. (IE. NARROW LANES, BUMPS, POOR ROADWAY SURFACE, LOW OR NO SHOULDER, DROP-OFFS, GEOMETRIC CONSTRAINTS, AND/OR POOR SIGHT CONDITIONS).

NOTE: TEMPORARY SIGNAL TIMING SHALL BE DETERMINED BY THE REGIONAL TRAFFIC OFFICE

**OPERATIONAL SCHEDULE  
 FOR TEMPORARY TRAFFIC SIGNALS**

PHASE	FACE	1	2	3	4
1	CLEARANCE	G	G	R	R
	ALL RED	R	R	R	R
2	CLEARANCE	R	R	Y	Y
	ALL RED	R	R	R	R
EMERGENCY FLASH		FR	FR	FR	FR

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

EFFECTIVE DATE: 01/08/09

STATE OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

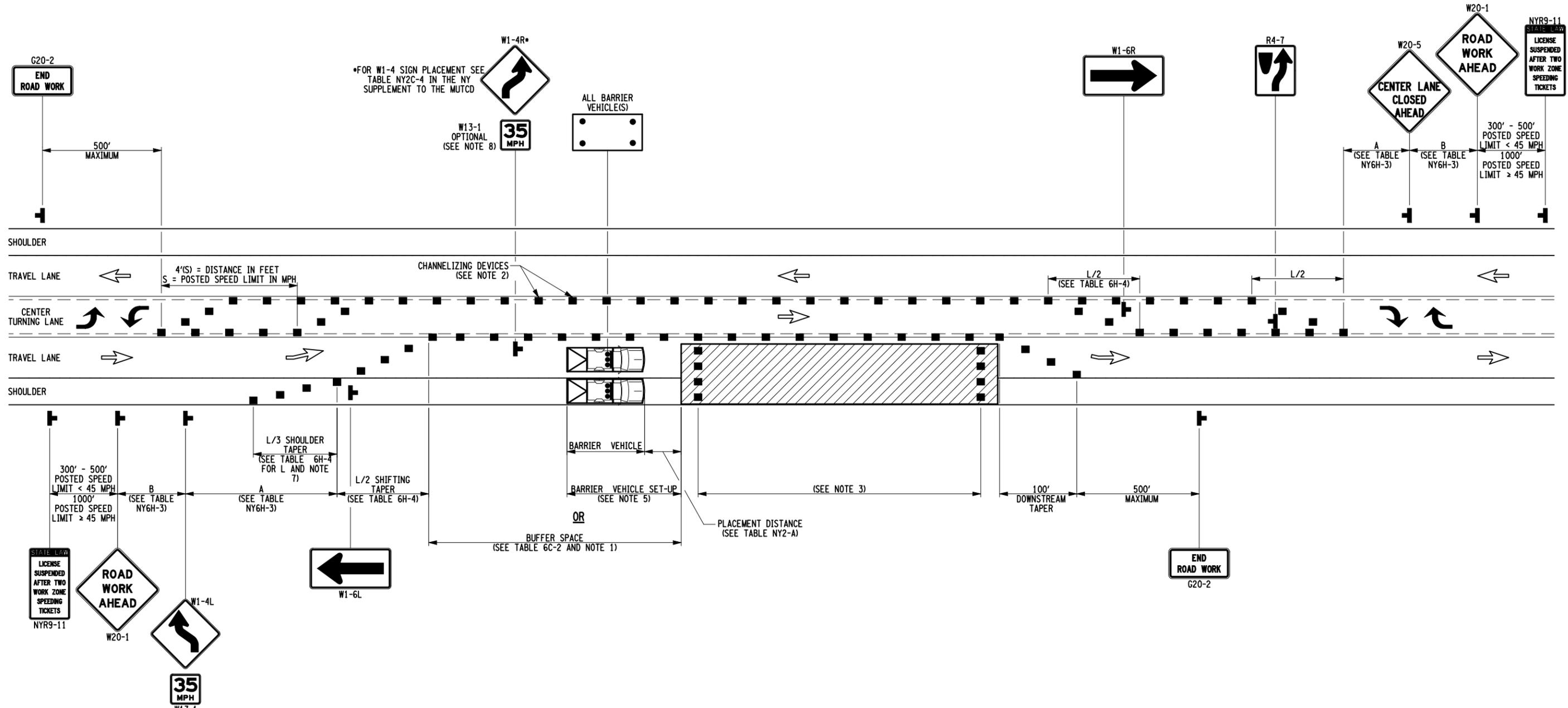
**TEMPORARY TRAFFIC SIGNAL  
 2-LANE 2-WAY ROADWAY**

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/S/ DAVID J. CLEMENTS, P.E.  
 DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY

619-62

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**SINGLE LANE SHIFT  
 SHORT OR INTERMEDIATE TERM STATIONARY  
 2-LANE 2-WAY ROADWAY WITH CENTER TURN LANE  
 (NOT TO SCALE)**

**NOTES:**

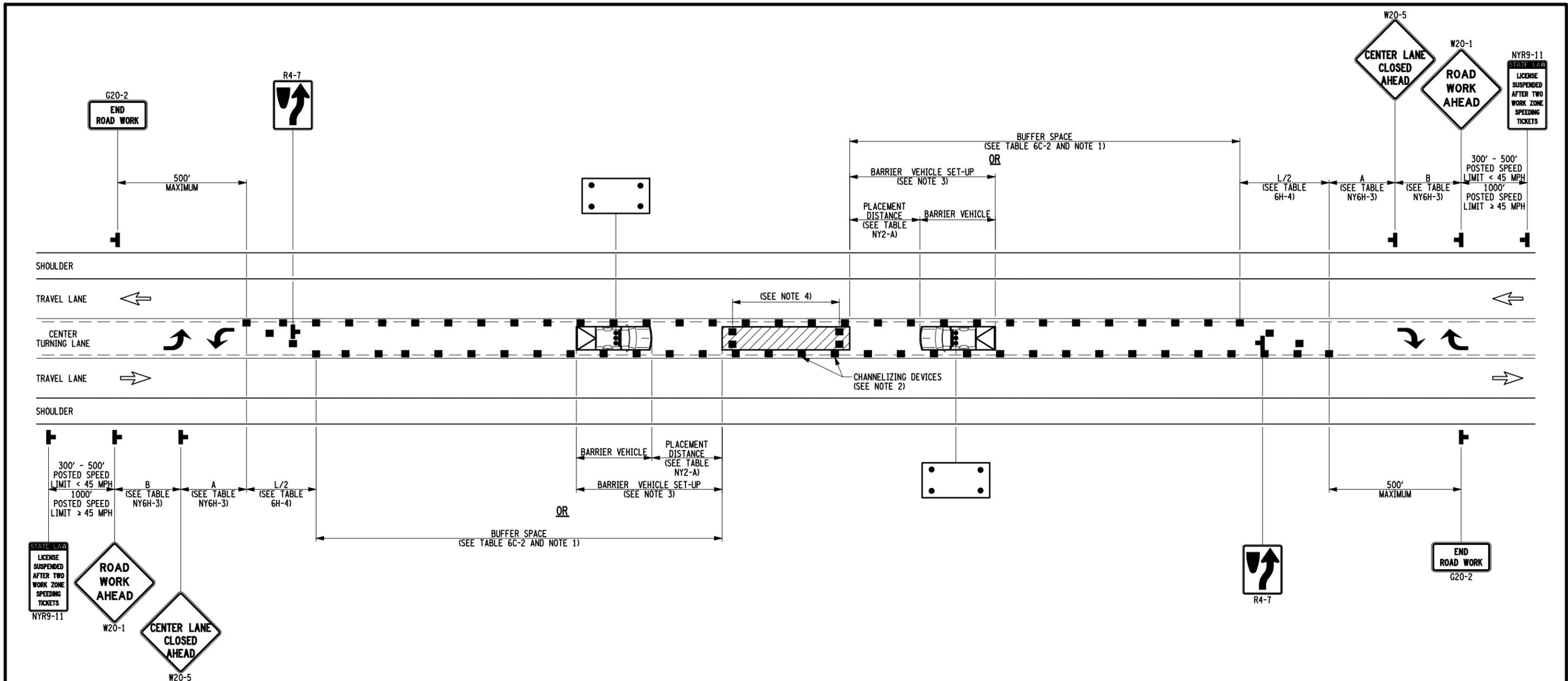
- NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
- CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
- TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
- FOR LONG DURATION LANE CLOSURES, TEMPORARY PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE TO THE CONTRACT DOCUMENTS. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
- FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
- WHERE THE SHIFTED SECTION IS LONGER THAN 600', ONE SET OF REVERSE CURVE SIGNS SHOULD BE USED TO SHOW THE INITIAL SHIFT AND A SECOND SET SHOULD BE USED TO SHOW THE RETURN TO THE NORMAL ALIGNMENT. IF THE TANGENT DISTANCE ALONG THE TEMPORARY DIVERSION IS LESS THAN 600', THE DOUBLE REVERSE CURVE SIGN (W24-1L) SHOULD BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN (W1-4L) AND THE SECOND REVERSE CURVE SIGN (W1-4L) SHOULD BE OMITTED.
- WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND TO DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVELED WAY.
- THE ENGINEER MAY REQUIRE THE USE OF AN ADVISORY SPEED PLAQUE (W13-1) TO SUPPLEMENT A WARNING SIGN. THE PLAQUE WILL BE USED TO INDICATE AN ADVISORY SPEED FOR THE WORK ZONE CONDITION. (IE. NARROW LANES, BUMPS, POOR ROADWAY SURFACE, LOW OR NO SHOULDER, DROP-OFFS, GEOMETRIC CONSTRAINTS, AND/OR POOR SIGHT CONDITIONS).

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>SINGLE LANE SHIFT 2-LANE 2-WAY ROADWAY WITH CENTER TURN LANE</p>	
APPROVED SEPTEMBER 18, 2008	ISSUED UNDER EB 08-036
<p>/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY</p>	
<p>619-63</p>	

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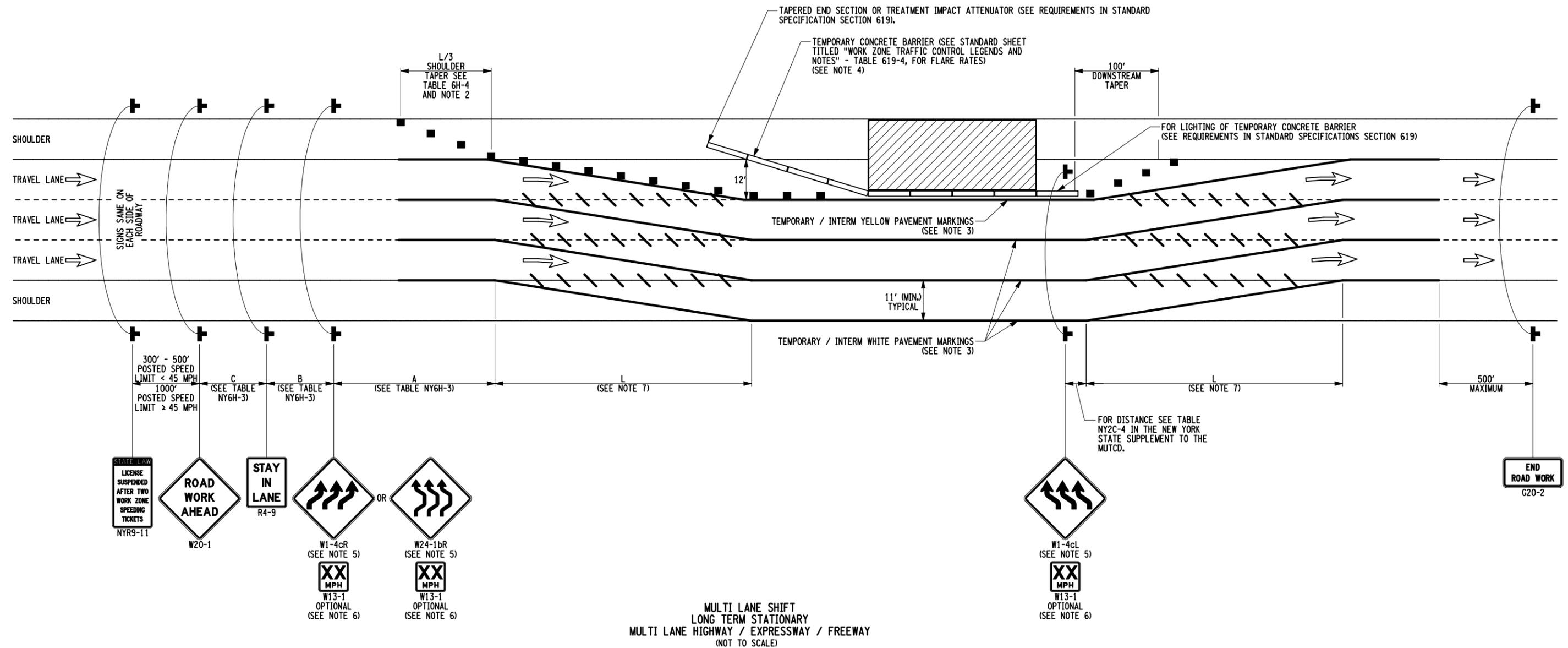
**CENTER TURN LANE CLOSURE  
 SHORT OR INTERMEDIATE TERM STATIONARY  
 2-LANE 2-WAY WITH CENTER TURN LANE  
 (NOT TO SCALE)**

NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

- NOTES:
1. NO WORK ACTIVITY OR STORAGE OF EQUIPMENT, VEHICLES, OR MATERIAL SHOULD OCCUR WITHIN A BUFFER SPACE.
  2. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
  3. FOR BARRIER VEHICLE USE REQUIREMENTS SEE TABLES NY1-A AND NY2-A ON THE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES".
  4. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.

 <p><b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b></p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p><b>CENTER TURN LANE CLOSURE 2-LANE 2-WAY ROADWAY WITH CENTER TURN LANE</b></p>	
<p>APPROVED SEPTEMBER 18, 2008</p> <p>/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY</p>	<p>ISSUED UNDER EB 08-036</p> <p><b>619-64</b></p>

EFFECTIVE DATE: 01/08/09



- NOTES:
- RIGHT LANE SHIFTS ARE SYMMETRICAL TO LEFT LANE SHIFTS. SUBSTITUTE REVERSE CURVE SIGN (W1-4cL OR W24-1bL) AND THE CORRESPONDING REVERSE CURVE SIGN (W1-4cR) FOR LEFT LANE SHIFTS.
  - WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK AREA AND DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVEL WAY.
  - FOR LONG DURATION LANE SHIFTS, TEMPORARY / INTERIM PAVEMENT MARKINGS SHALL BE USED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY EXISTING PAVEMENT MARKINGS THAT ARE CONFLICTING OR MISLEADING SHALL BE REMOVED OR COVERED.
  - THE TEMPORARY CONCRETE BARRIER SHALL NOT BE PLACED ALONG THE MERGING TAPER. THE LANE SHALL BE CLOSED USING CHANNELIZING DEVICES AND PAVEMENT MARKINGS.
  - WHERE THE SHIFTED SECTION IS LONGER THAN 600', ONE SET OF REVERSE CURVE SIGNS SHOULD BE USED TO SHOW THE INITIAL SHIFT AND A SECOND SET SHOULD BE USED TO SHOW THE RETURN TO THE NORMAL ALIGNMENT. IF THE TANGENT DISTANCE ALONG THE TEMPORARY DIVERSION IS LESS THAN 600', THE DOUBLE REVERSE CURVE SIGN (W24-1bR OR W24-1bL) SHOULD BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN AND THE SECOND REVERSE CURVE SIGN SHOULD BE OMITTED.
  - THE ENGINEER MAY REQUIRE THE USE OF AN ADVISORY SPEED PLAQUE (W13-1) TO SUPPLEMENT A WARNING SIGN. THE PLAQUE WILL BE USED TO INDICATE AN ADVISORY SPEED FOR THE WORK ZONE CONDITION. (E. NARROW LANES, BUMPS, POOR ROADWAY SURFACE, LOW OR NO SHOULDER, DROP-OFFS, GEOMETRIC CONSTRAINTS, AND/OR POOR SIGHT CONDITIONS).
  - IF CONSTRAINTS EXIST AND L CANNOT BE ACHIEVED, A REDUCTION IN THE TAPER TO L/2 MAY BE USED WITH THE APPROVAL OF THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE.

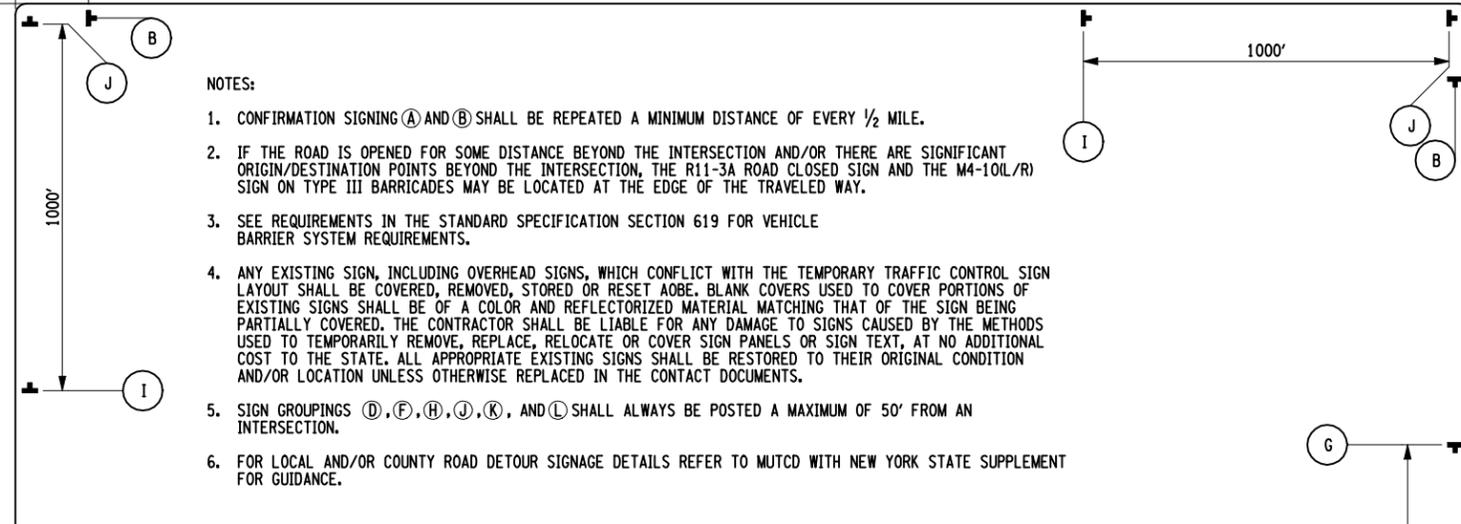
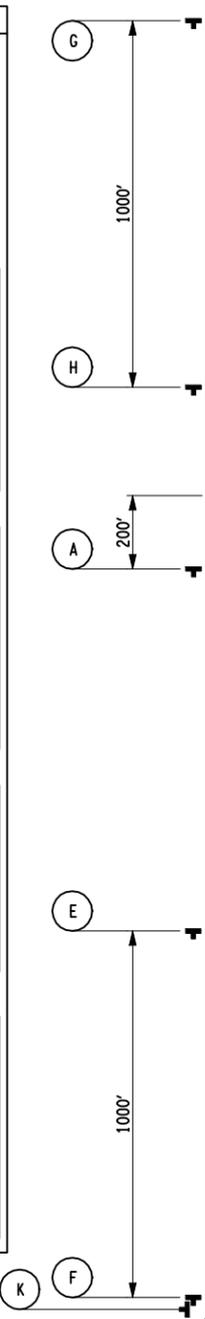
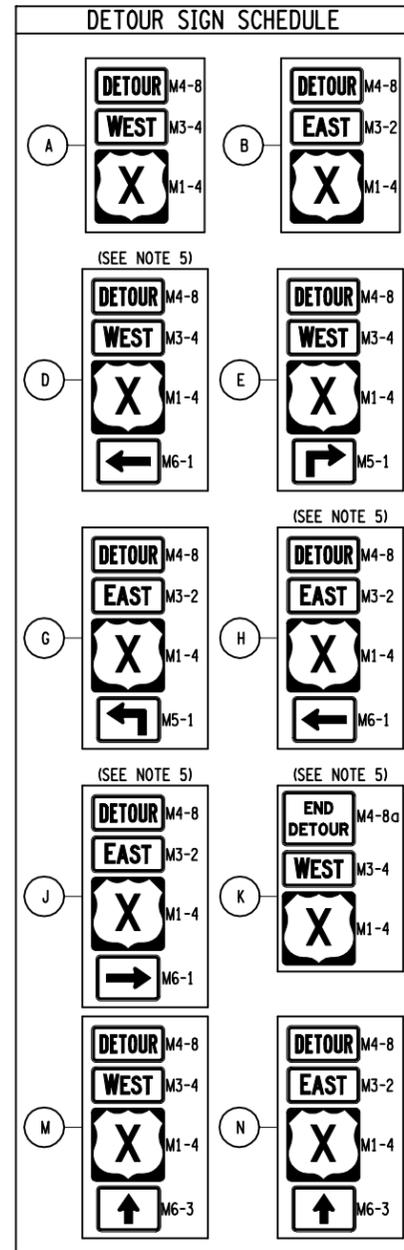
NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>MULTI LANE SHIFT EXPRESSWAY / FREEWAY</p>	
APPROVED SEPTEMBER 18, 2008	ISSUED UNDER EB 08-036
<p>/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY</p>	
<p>619-65</p>	

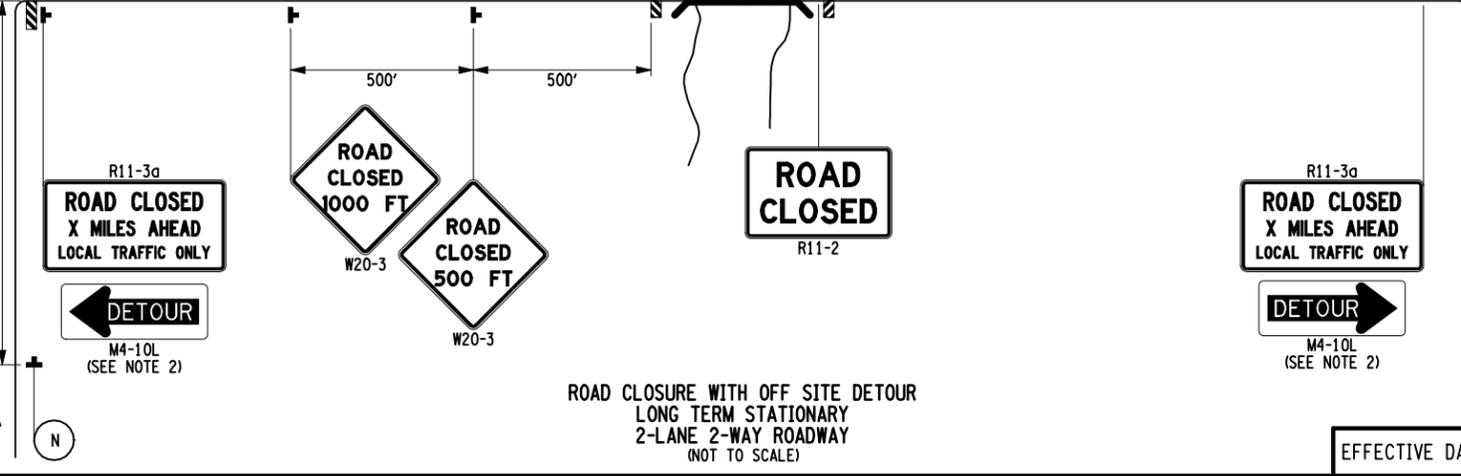
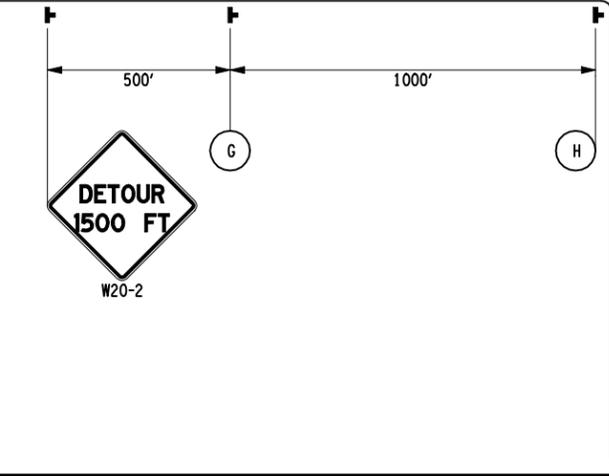
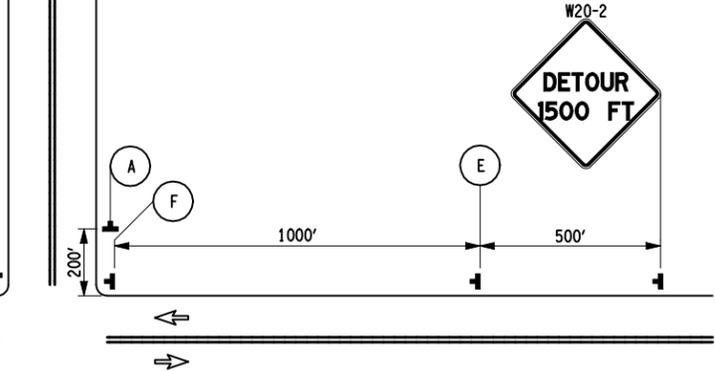
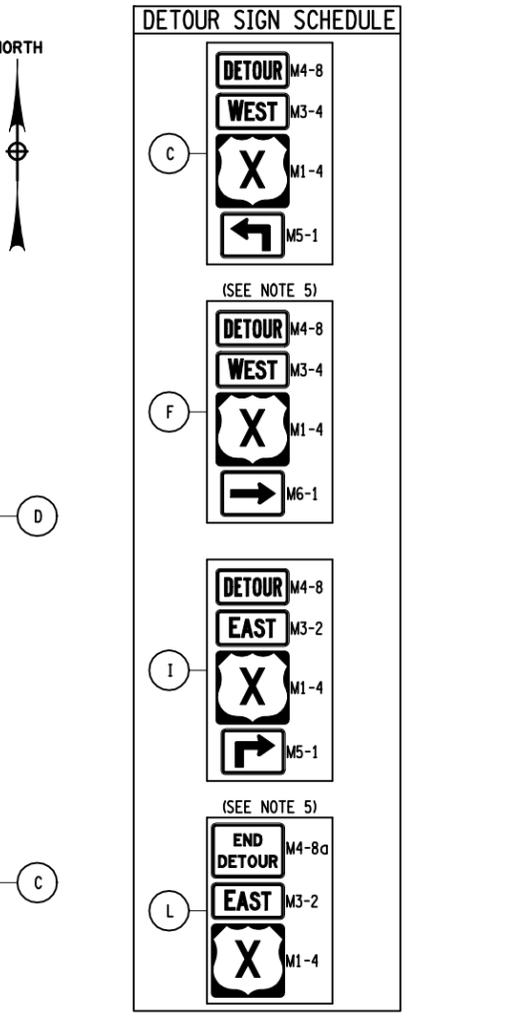
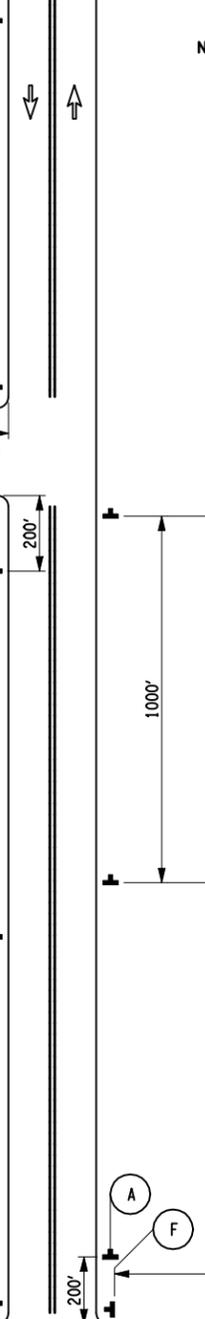
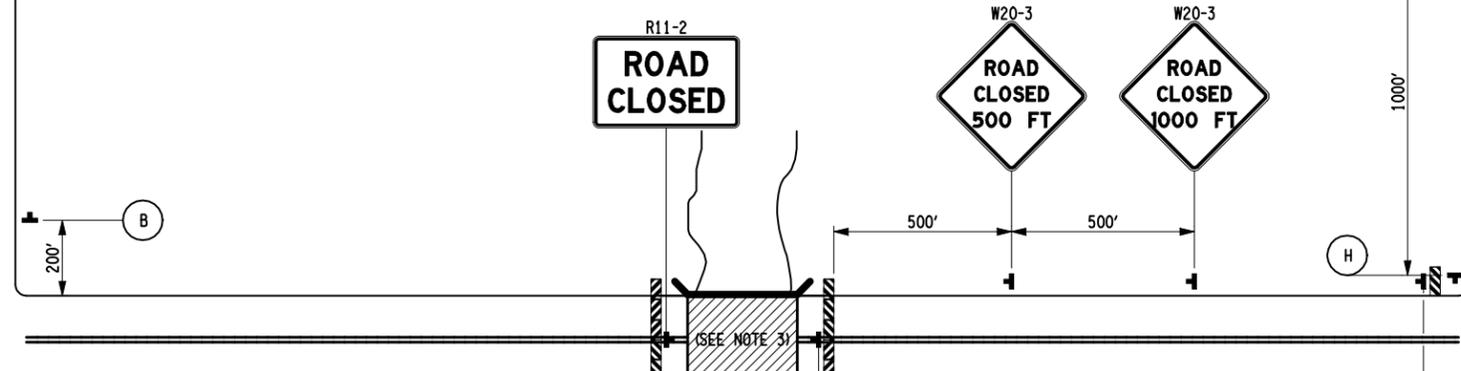
EFFECTIVE DATE: 01/08/09

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- NOTES:
1. CONFIRMATION SIGNING (A) AND (B) SHALL BE REPEATED A MINIMUM DISTANCE OF EVERY 1/2 MILE.
  2. IF THE ROAD IS OPENED FOR SOME DISTANCE BEYOND THE INTERSECTION AND/OR THERE ARE SIGNIFICANT ORIGIN/DESTINATION POINTS BEYOND THE INTERSECTION, THE R11-3A ROAD CLOSED SIGN AND THE M4-10L/R SIGN ON TYPE III BARRICADES MAY BE LOCATED AT THE EDGE OF THE TRAVELED WAY.
  3. SEE REQUIREMENTS IN THE STANDARD SPECIFICATION SECTION 619 FOR VEHICLE BARRIER SYSTEM REQUIREMENTS.
  4. ANY EXISTING SIGN, INCLUDING OVERHEAD SIGNS, WHICH CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL SIGN LAYOUT SHALL BE COVERED, REMOVED, STORED OR RESET ABOVE. BLANK COVERS USED TO COVER PORTIONS OF EXISTING SIGNS SHALL BE OF A COLOR AND REFLECTORIZED MATERIAL MATCHING THAT OF THE SIGN BEING PARTIALLY COVERED. THE CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE TO SIGNS CAUSED BY THE METHODS USED TO TEMPORARILY REMOVE, REPLACE, RELOCATE OR COVER SIGN PANELS OR SIGN TEXT, AT NO ADDITIONAL COST TO THE STATE. ALL APPROPRIATE EXISTING SIGNS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND/OR LOCATION UNLESS OTHERWISE REPLACED IN THE CONTACT DOCUMENTS.
  5. SIGN GROUPINGS (D), (F), (H), (J), (K), AND (L) SHALL ALWAYS BE POSTED A MAXIMUM OF 50' FROM AN INTERSECTION.
  6. FOR LOCAL AND/OR COUNTY ROAD DETOUR SIGNAGE DETAILS REFER TO MUTCD WITH NEW YORK STATE SUPPLEMENT FOR GUIDANCE.



NOTE: SEE STANDARD SHEET TITLED "WORK ZONE TRAFFIC CONTROL LEGENDS AND NOTES" FOR LEGEND OF SYMBOLS AND/OR LETTER CODES USED IN THIS DRAWING.

STATE OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

ROAD CLOSURE WITH OFF SITE DETOUR  
 2-LANE 2-WAY ROADWAY

APPROVED SEPTEMBER 18, 2008 ISSUED UNDER EB 08-036

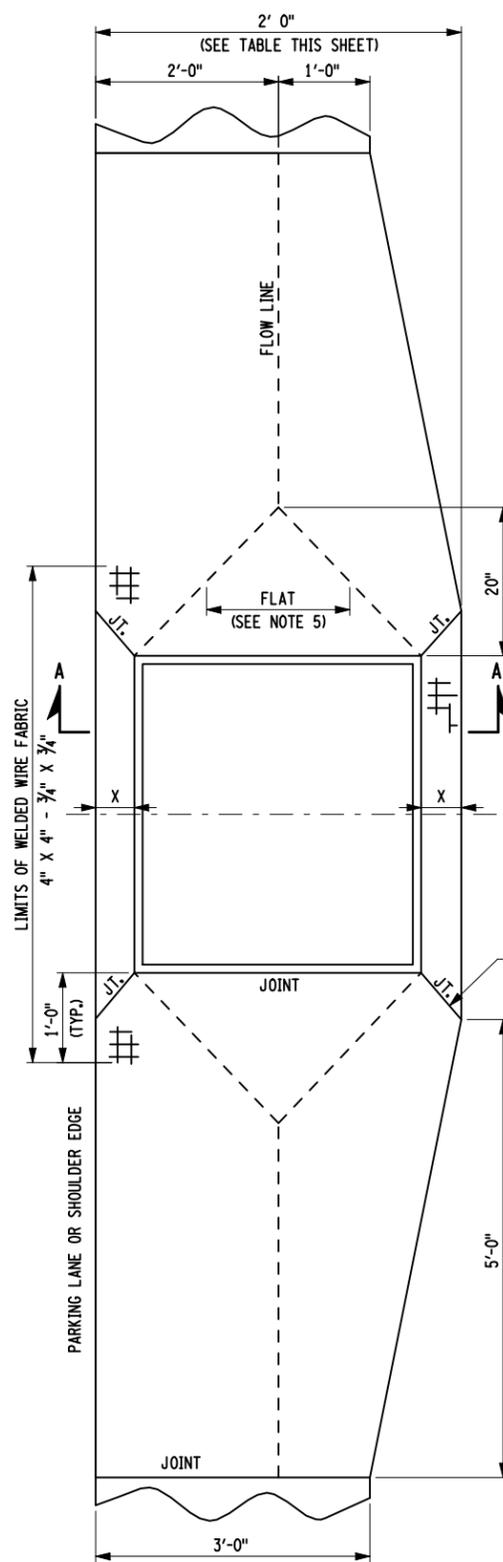
/S/ DAVID J. CLEMENTS, P.E.  
 DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY

619-66

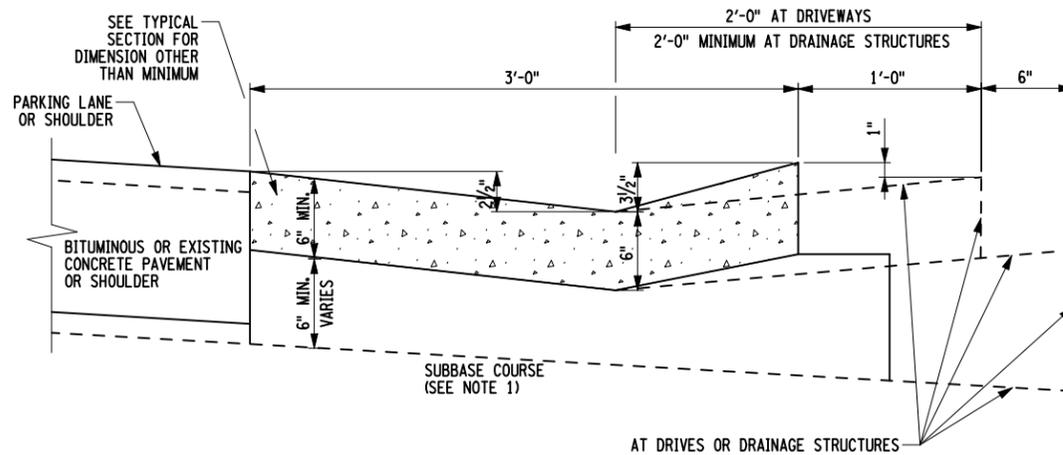
EFFECTIVE DATE: 01/08/09

ROAD CLOSURE WITH OFF SITE DETOUR  
 LONG TERM STATIONARY  
 2-LANE 2-WAY ROADWAY  
 (NOT TO SCALE)

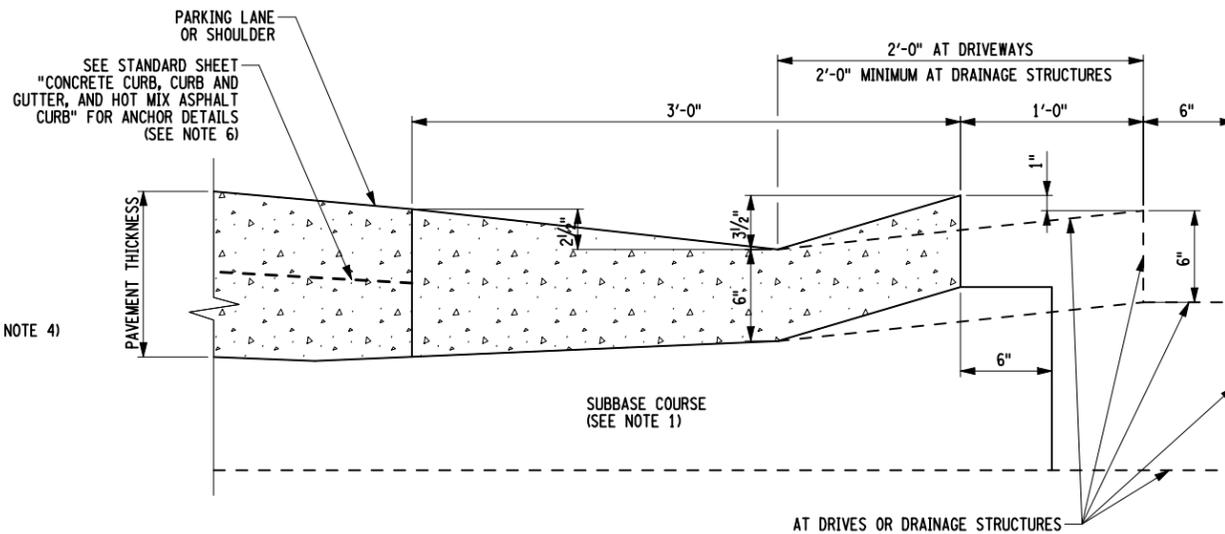
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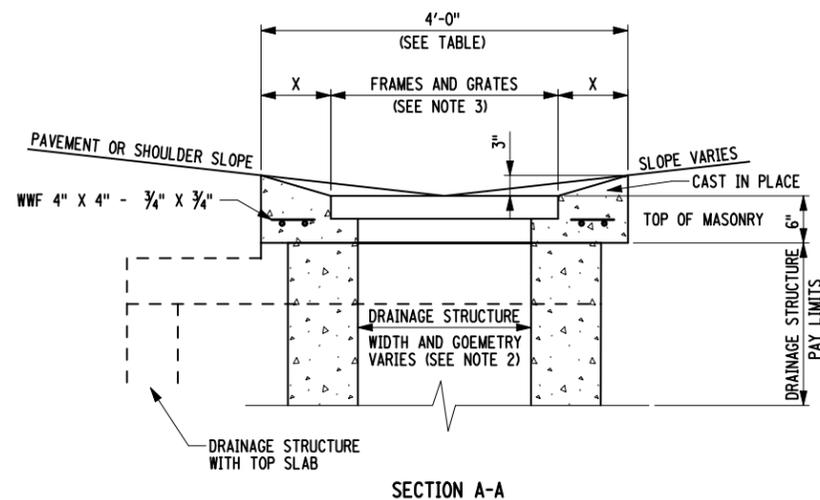
GUTTER TREATMENT AT DRAINAGE STRUCTURES



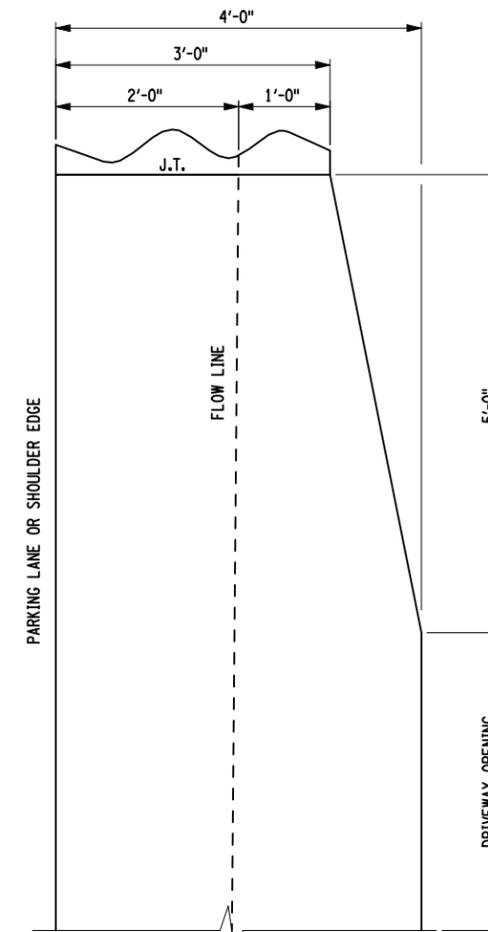
TYPE "BB"  
 ADJACENT TO NEW OR EXISTING BITUMINOUS  
 OR EXISTING PCC PAVEMENT



TYPE "BC"  
 ADJACENT TO NEW PCC PAVEMENT



SECTION A-A



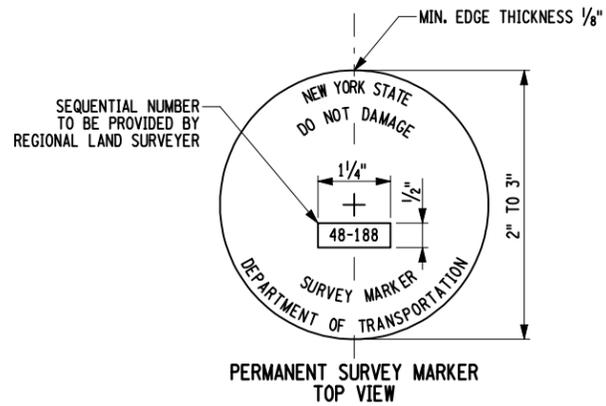
GUTTER TREATMENT AT DRIVEWAY

- NOTES:
- SEE TYPICAL SECTIONS IN THE CONTRACT PLANS FOR SUBBASE COURSE MATERIAL.
  - REFER TO THE DRAINAGE STRUCTURE STANDARD SHEETS FOR DRAINAGE STRUCTURE SIZES AND DIMENSIONS.
  - THE FRAME IS TO BE CAST INTO THE CONCRETE GUTTER SLAB DO NOT CAST THE FRAME INTO THE DRAINAGE STRUCTURE WALLS OR TOP SLAB. GRATES SHALL BE INSTALLED SO THAT THE LENGTH OF GRATE IS PARALLEL TO THE SURFACE FLOW. SEE THE APPROPRIATE STANDARD SHEETS FOR DIMENSIONS OF FRAMES AND GRATES.
  - JOINTS LOCATED AT THE CORNERS OF THE FRAME SHALL BE SCORED AND TOOLED ONLY. THE MINIMUM DEPTH OF THE SCORED SHEET SHALL BE 1'-1/2".
  - SLOPE OF THE TRIANGULAR AREA BOTH UPSTREAM AND DOWNSTREAM OF THE DRAINAGE STRUCTURE GRATE SHALL MATCH THE ROADWAY CENTERLINE PROFILE.
  - ANCHORS SHALL NOT BE USED ALONG THE LONGITUDINAL JOINT BETWEEN NEW PCC PAVEMENT AND THE CONCRETE GUTTER IN THE AREA OF A DRAINAGE STRUCTURE. THIS WILL BE A VARIABLE DISTANCE DEPENDING ON THE SIZE OF THE DRAINAGE STRUCTURE FRAME. THE DISTANCE SHALL SPAN FROM A POINT 1'-8" PRIOR TO THE DRAINAGE STRUCTURE TO A POINT 1'-8" BEYOND THE DRAINAGE STRUCTURE.

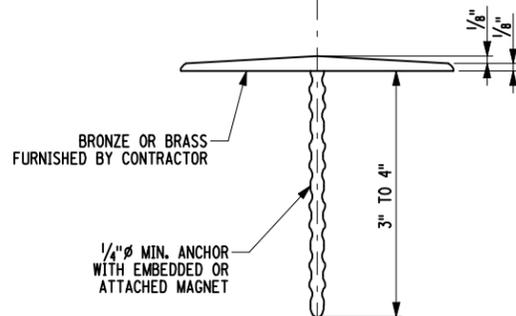
FRAME NO.	TOTAL GUTTER WIDTH AT DRAINAGE STRUCTURE	DIMENSION X
3	48"	12"
6	48"	11"
11	48"	10"
16	49 1/2"	10"
22	57"	10"
10 PCB	48"	11"
11 PCB	48"	10"
12 PCB	53"	10"

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>CONCRETE GUTTER</b>	
APPROVED SEPTEMBER 19, 2008 /S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 08-036  624-01

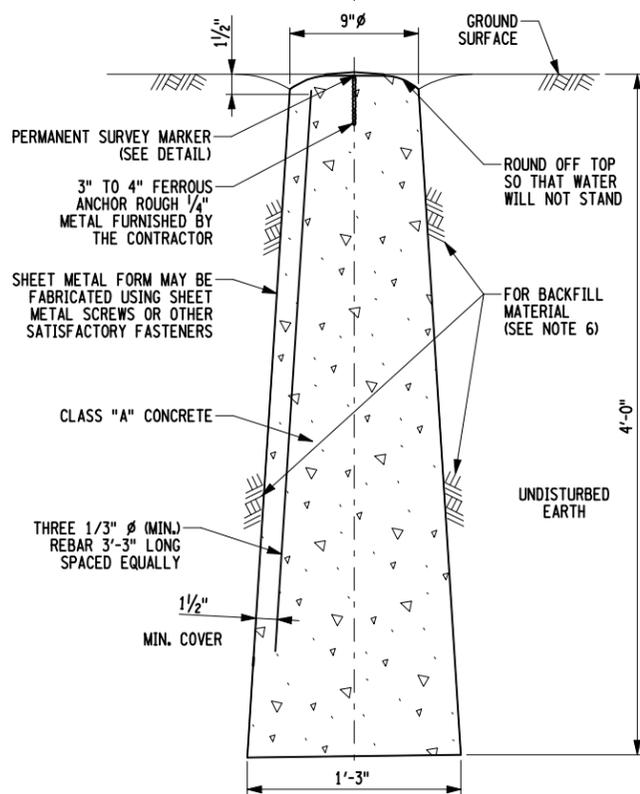
EFFECTIVE DATE: 01/08/09



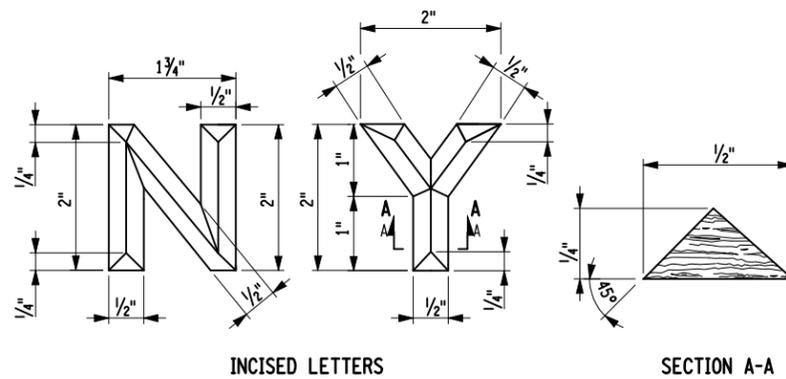
PERMANENT SURVEY MARKER TOP VIEW



PERMANENT SURVEY MARKER ELEVATION DETAIL

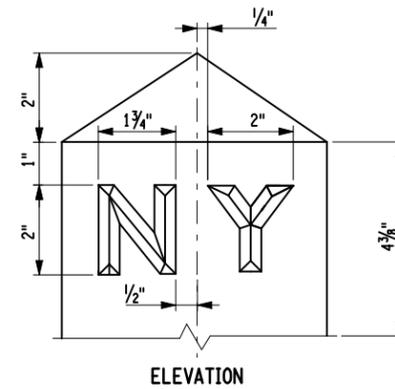


PERMANENT SURVEY MARKER INSTALLATION DETAIL  
CAST IN PLACE PERMANENT SURVEY MARKER

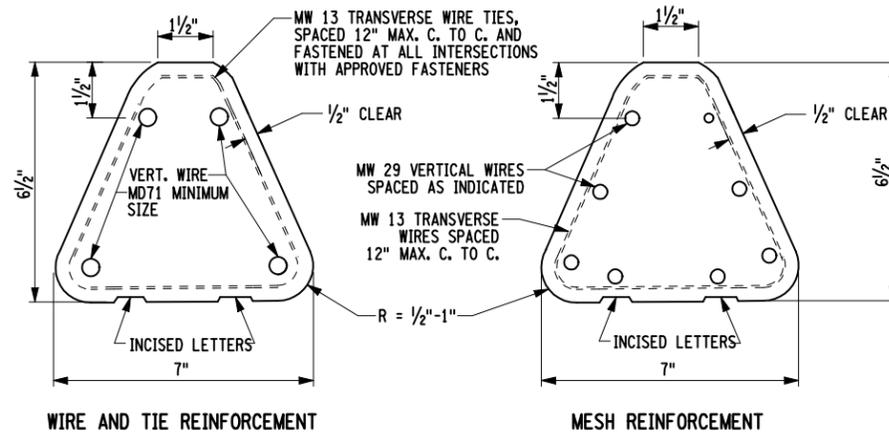


INCISED LETTERS

SECTION A-A



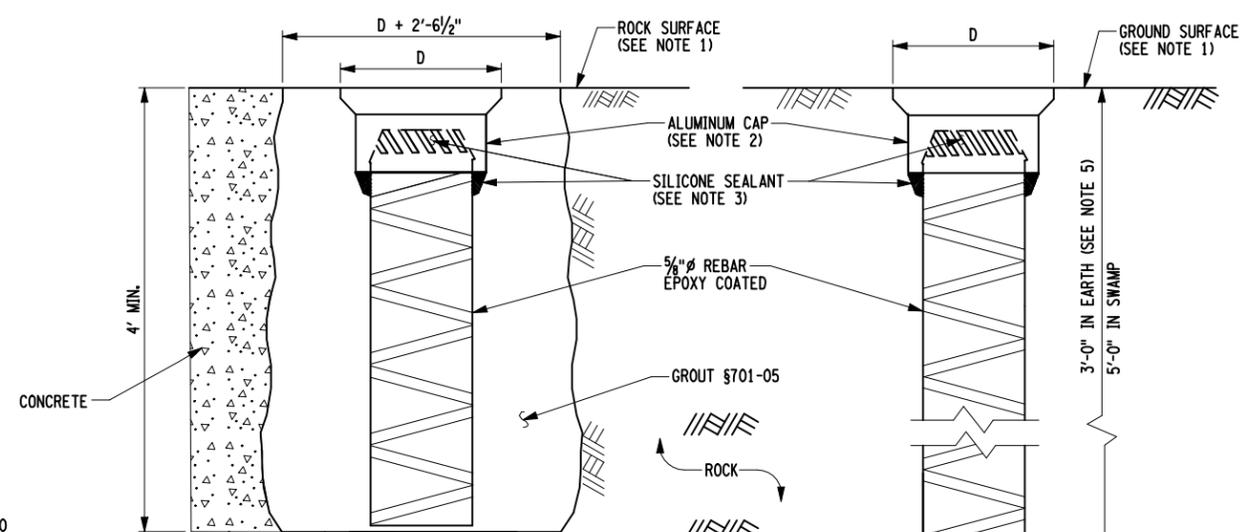
ELEVATION



WIRE AND TIE REINFORCEMENT

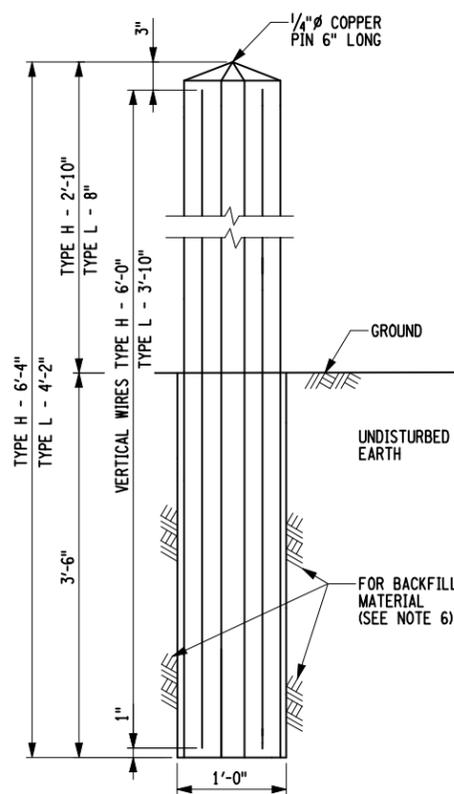
MESH REINFORCEMENT

SECTIONAL PLANS

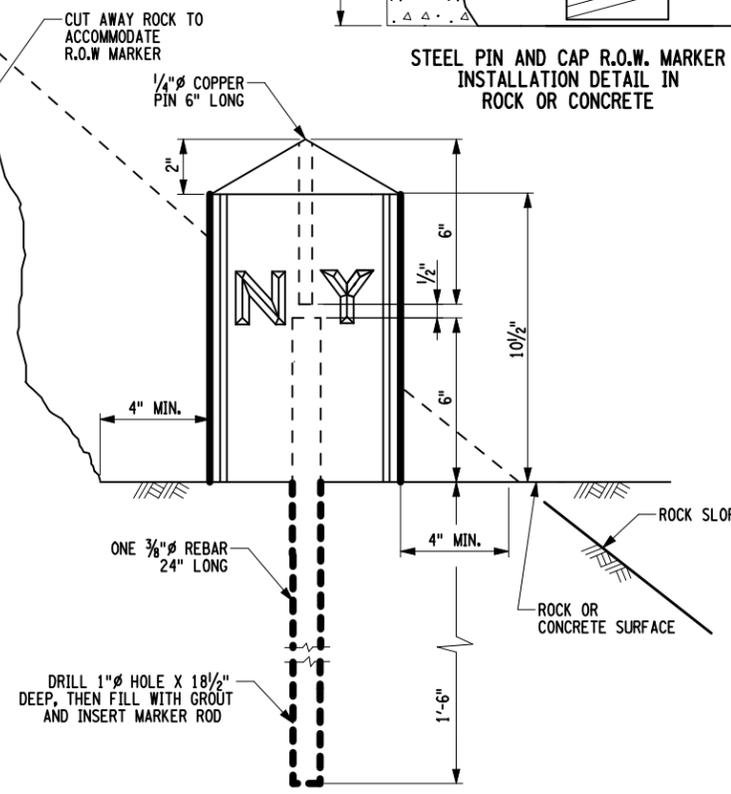


STEEL PIN AND CAP R.O.W. MARKER INSTALLATION DETAIL IN ROCK OR CONCRETE

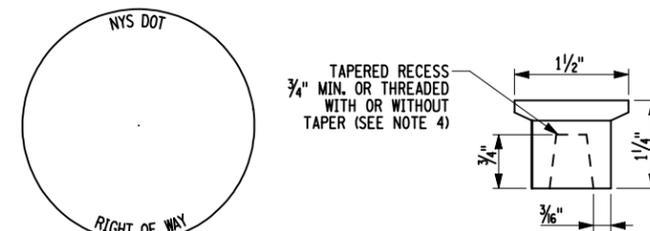
STEEL PIN AND CAP R.O.W. MARKER INSTALLATION DETAIL IN EARTH OR SWAMP



CONCRETE RIGHT-OF-WAY MARKER INSTALLATION DETAIL



CONCRETE RIGHT-OF-WAY MARKER IN ROCK OR CONCRETE

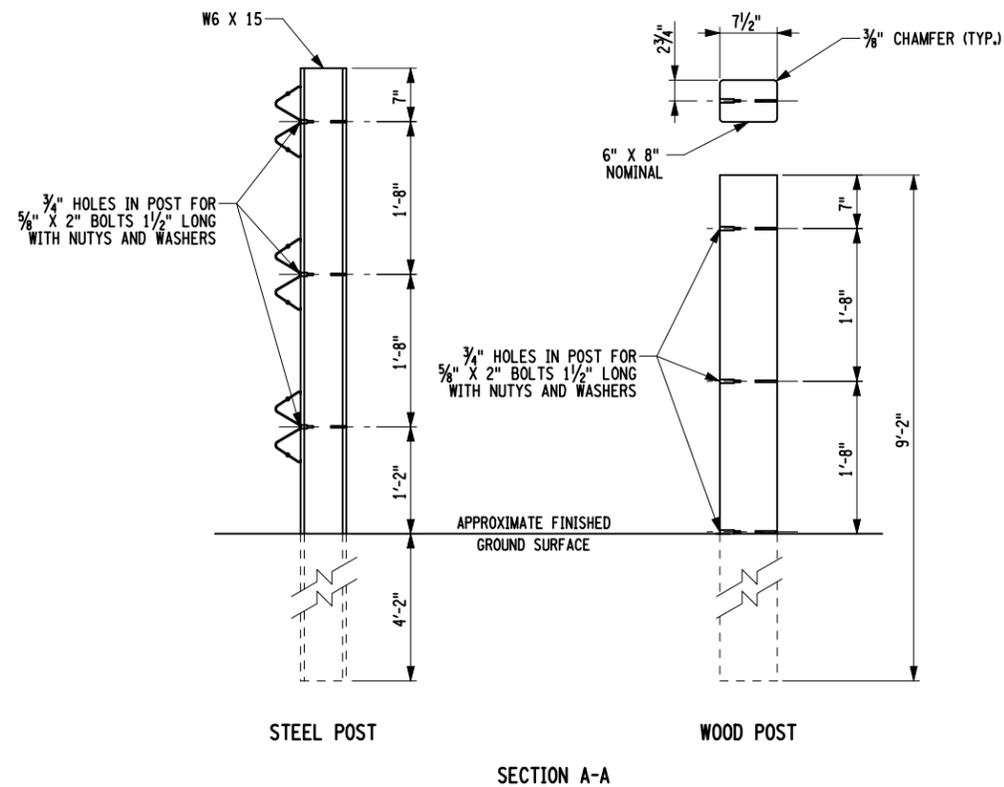
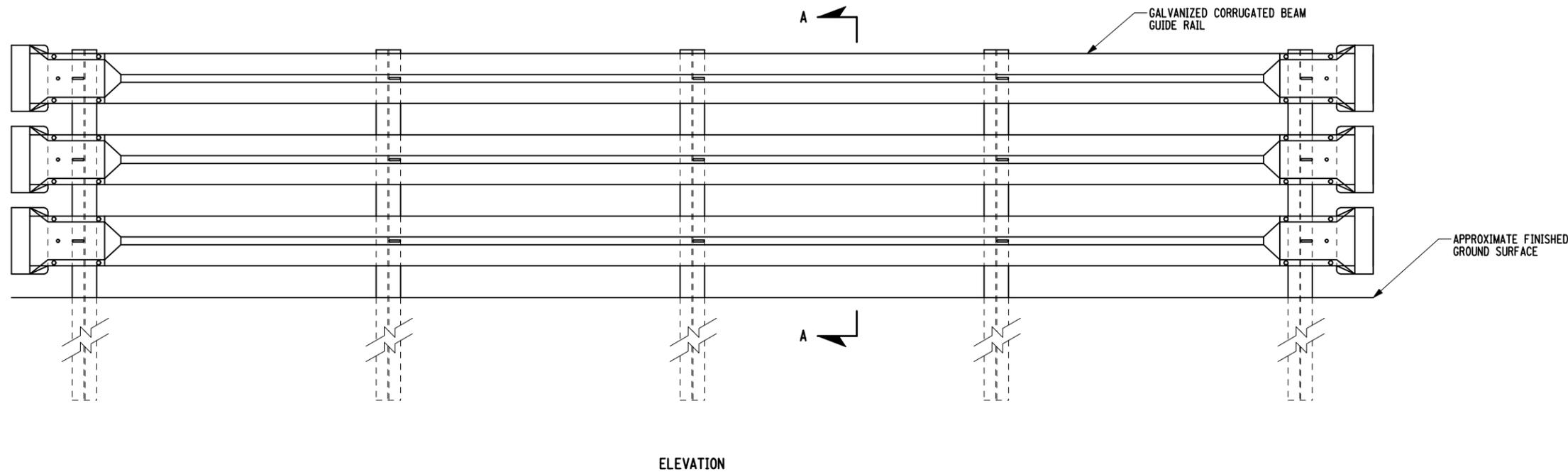
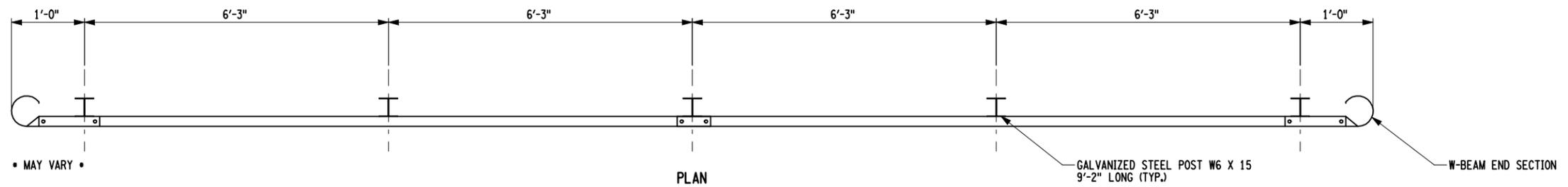


STEEL PIN AND CAP R.O.W. MARKER

NOTES:

- CAP SET FLUSH TO SURFACE.
- SURFACE OF ALUMINUM CAP TO BE IN CONTACT WITH CONCRETE. GROUT SHALL BE THOROUGHLY COATED WITH ZINC CHROMATE PRIMER, 708-04.
- REBAR SHALL BE DRIVEN WITH A DRIVING CAP ACCEPTABLE TO THE EIC AND DESIGNED TO PREVENT "MUSHROOMING" OF THE TOP OF THE REBAR DURING DRIVING. SILICONE SEALANT IS NOT REQUIRED IF THE R.O.W. MARKER CAP IS FITTED WITH A PREFORMED PLASTIC INSERT.
- SHAPE OF THE MARKER CAP IS APPROXIMATE. OTHER SHAPES WILL BE ACCEPTED IF THEY CONFORM TO THE MINIMUM WEIGHT AND DIMENSIONS GIVEN IN THE MARKER CAP DETAIL. THE MARKER CAP SHALL FIT TIGHTLY TO THE REBAR. MARKER CAPS WHICH MAY BE REMOVED FROM THE REBAR WITH MINIMUM OR MODERATE EFFORT WILL NOT BE ACCEPTED.
- LENGTH OF REBAR MAY BE REDUCED A.O.B.E. IF AN OBSTRUCTION WHICH CANNOT BE PENETRATED IS ENCOUNTERED. HOWEVER, THE LENGTH OF THE SHANK WILL NOT BE LESS THAN 2'-0" IN HARD, DENSE, OR STONY SOIL. REBAR TO BE EPOXY COATED.
- AFTER THE CONCRETE RIGHT OF WAY MARKER OR PERMANENT SURVEY MARKER IS IN PLACE, THE EXCAVATION SHALL BE BACKFILLED IN ACCORDANCE WITH THE REQUIREMENTS OF STANDARD SPECIFICATIONS SECTION 203-3.15 "FILL AND BACKFILL AT STRUCTURES, CULVERTS, PIPES, CONDUITS, AND DIRECT BURIAL CABLES".

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
R.O.W. AND SURVEY MARKERS	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	625-01

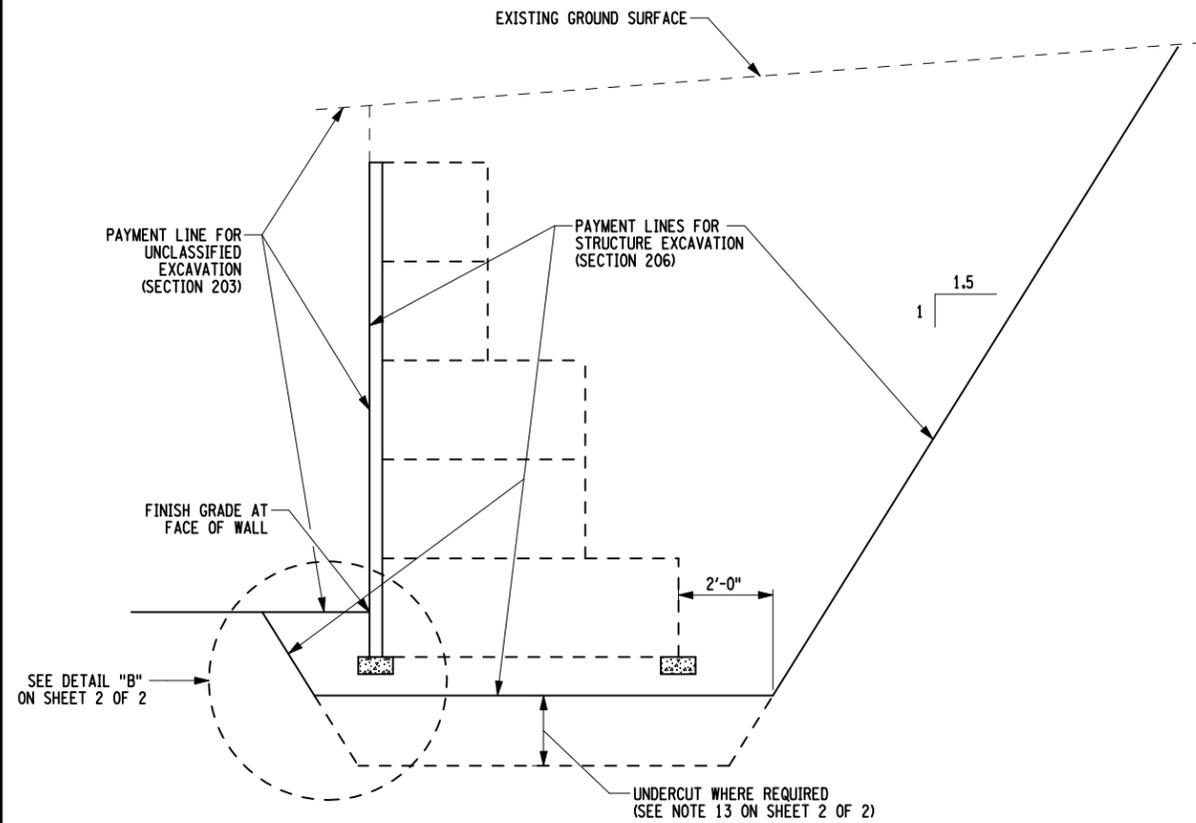


NOTES:

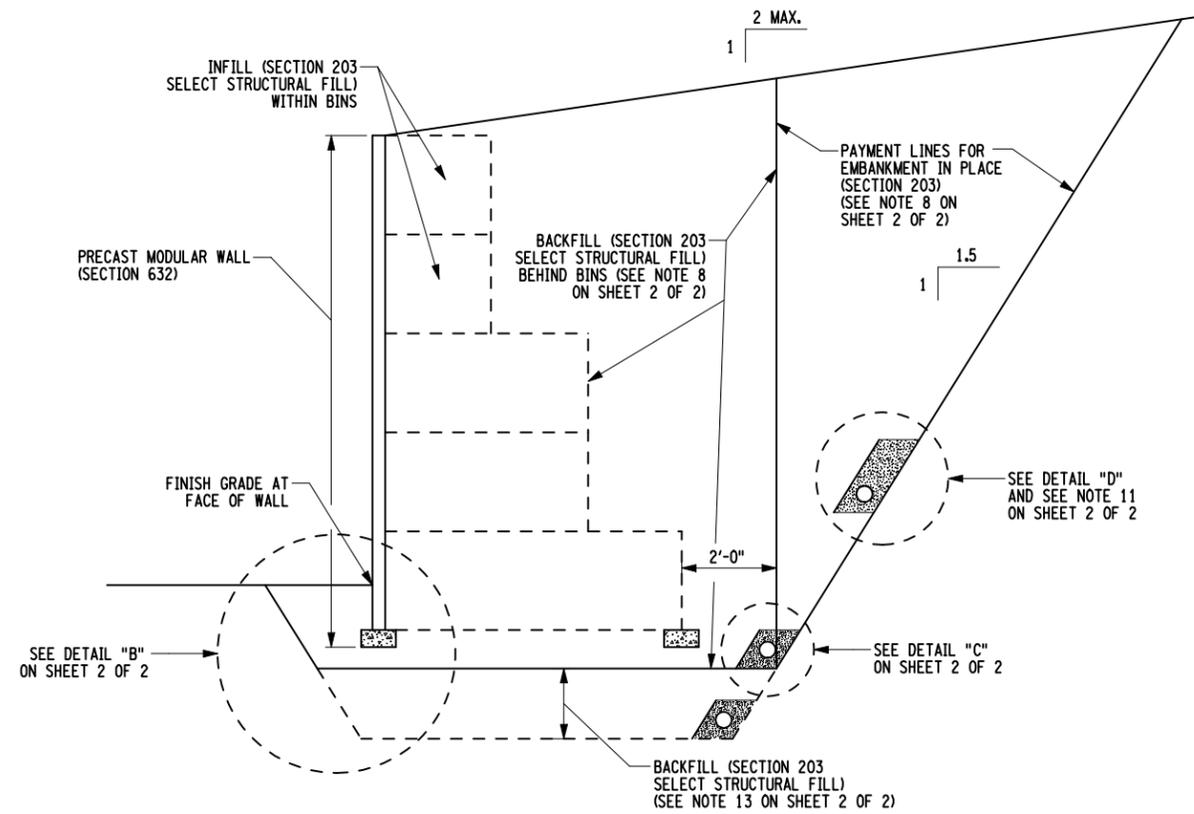
1. THESE DETAILS APPLY FOR HIGHWAY BARRICADES OR HIGHWAY - RAILROAD BARRICADES.
2. SIGNS, WHEN SPECIFIED, SHALL BE ERECTED ON SEPARATE SUPPORTS AND PAID FOR UNDER APPROPRIATE SIGN ITEMS. REFLECTING TYPE WARNING SIGNS CONFORMING TO THE NATIONAL MUTCD AND THE NEW YORK STATE SUPPLEMENT ARE REQUIRED.
3. ALTERNATE RED AND WHITE REFLECTIVE SHEETING STRIPES SHALL BE PROVIDED. THE STRIPES SHALL BE APPLIED IN THE PATTERN SHOWN FOR THE ROAD CLOSED BARRICADE IN THE NATIONAL MUTCD AND THE NEW YORK STATE SUPPLEMENT. THE SHEETING SHALL BE APPLIED TO A FLAT ALUMINUM SUBSTRATE AFFIXED TO THE RAILS IN A MANNER APPROVED BY THE ENGINEER.
4. POSTS SHALL BE EITHER STEEL OR WOOD AS SPECIFIED IN THE CONTRACT DOCUMENTS. STEEL POSTS SHALL BE W6 X 15. WOOD POSTS SHALL BE PRIMED WITH A WOOD STAIN SPECIFICALLY FORMULATED FOR THIS APPLICATION. SURFACE PREPARATION SHALL BE DONE IN ACCORDANCE WITH THE STAIN MANUFACTURER'S RECOMMENDATIONS.

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
	U.S. CUSTOMARY STANDARD SHEET
HIGHWAY BARRICADE AND HIGHWAY - RAILROAD BARRICADE	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	630-01

EFFECTIVE DATE: 01/08/09

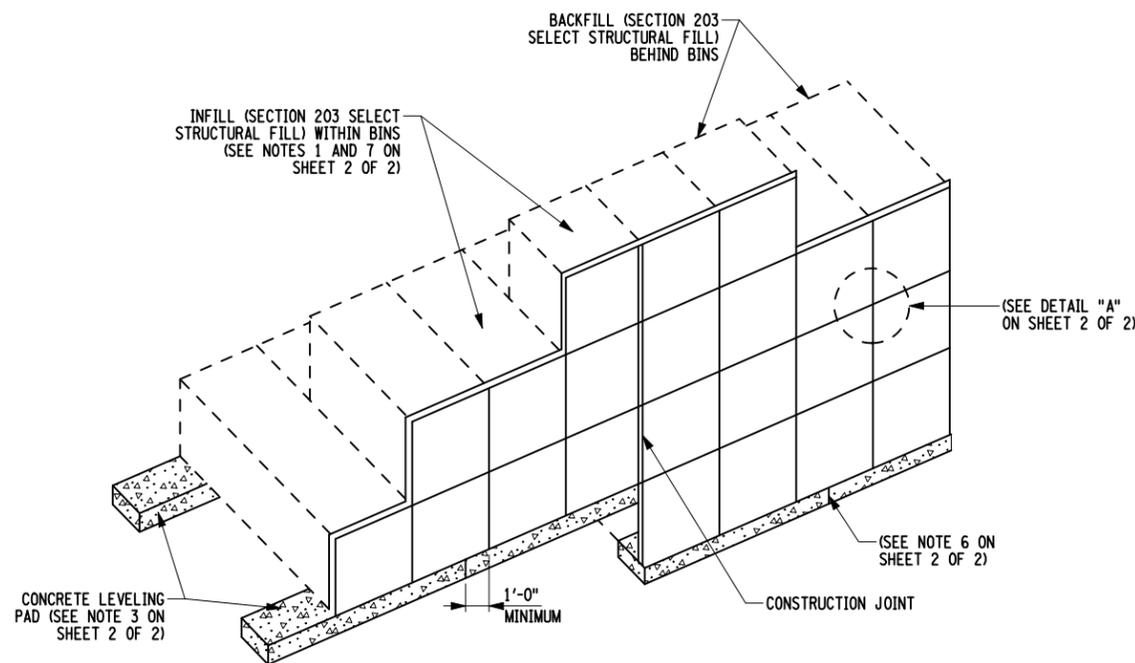


EXCAVATION PHASE

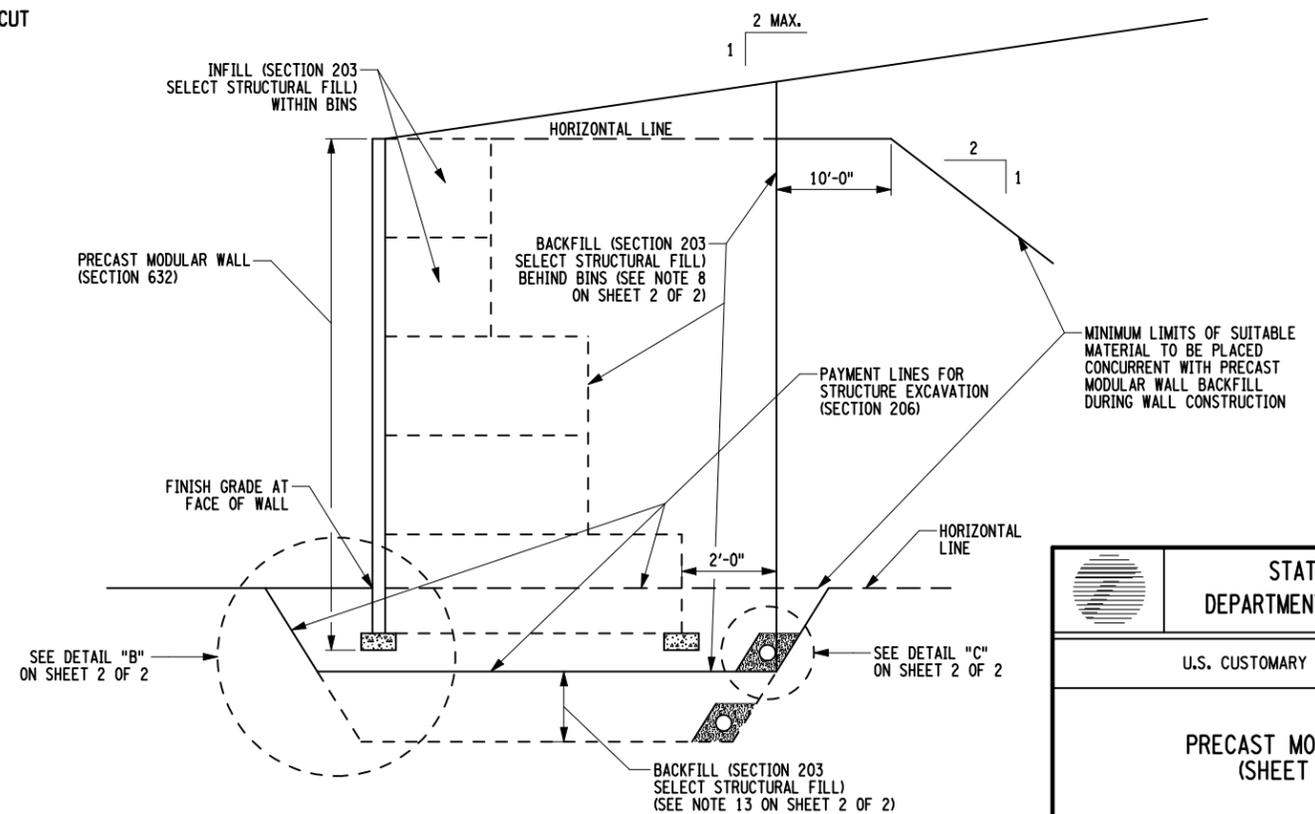


BACKFILL PHASE

WALL SECTION IN CUT



ISOMETRIC VIEW

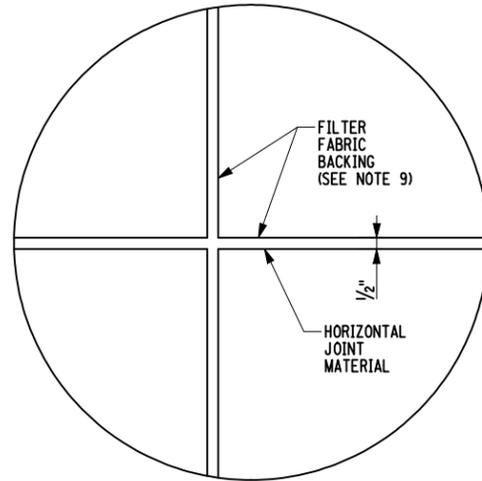


WALL SECTION IN FILL

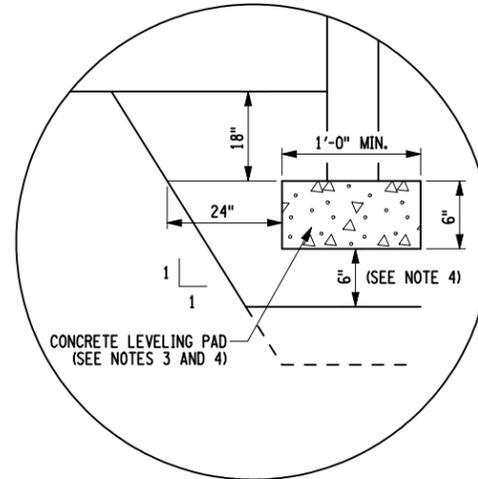
	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
	U.S. CUSTOMARY STANDARD SHEET	
<b>PRECAST MODULAR WALLS</b> (SHEET 1 OF 2)		
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036	
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)		<b>632-01</b>

EFFECTIVE DATE: 01/08/09

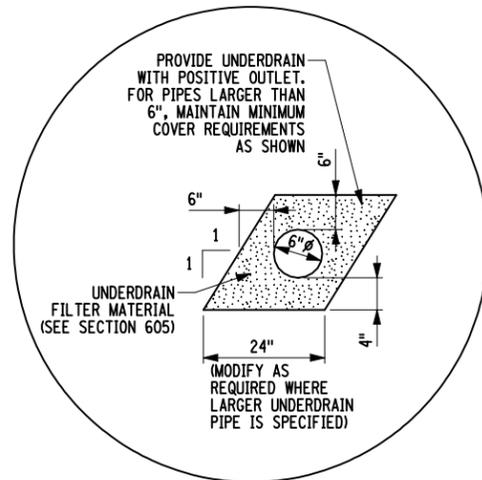
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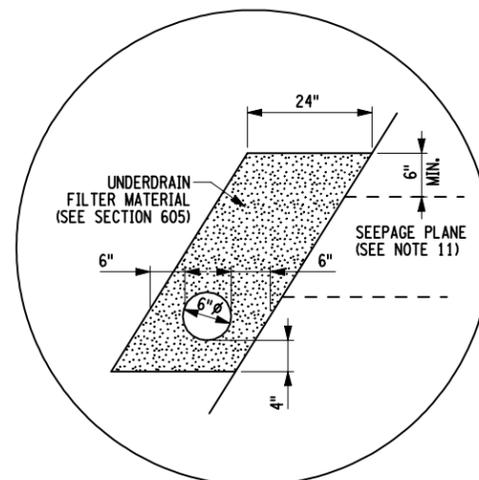
JOINT DETAIL "A"



LEVELING PAD DETAIL "B"



SUBSURFACE DRAINAGE SYSTEM DETAIL "C"



DETAIL "D"

NOTES:

1. THE CUBIC GEOMETRY DEPICTED REPRESENTS THE THEORETICAL DIMENSIONS OF THE PRECAST MODULAR BIN AND NOT NECESSARILY THE SHAPE OF THE PRECAST MODULAR UNIT.
2. A VERTICAL JOINT PATTERN IS DEPICTED FOR ILLUSTRATIVE PURPOSES. CERTAIN PRECAST MODULAR WALLS MAY REQUIRE A BRICK JOINT PATTERN DEPENDING ON THE WALL ASSEMBLY REQUIREMENTS.
3. A PRECAST OR CAST-IN-PLACE CONCRETE LEVELING PAD SHALL BE PLACED BENEATH THE FRONT (AND REAR, IF REQUIRED BY MANUFACTURER) OF THE FIRST COURSE OF WALL UNITS IN A MANNER ACCEPTABLE TO THE ENGINEER AND AT THE LOCATION SHOWN IN THE CONTRACT DOCUMENTS. THE LEVELING PAD SHALL BE PROPERLY PLACED TO ASSURE A LEVEL FIRST COURSE OF WALL UNITS.
4. CONCRETE LEVELING PAD INSTALLATION:
  - A. PRECAST: THE CONTRACTOR MAY SUBSTITUTE CUSHION SAND MEETING THE REQUIREMENTS OF SUBSECTION 703-06 IN LIEU OF SELECT STRUCTURAL FILL DIRECTLY BENEATH THE LEVELING PAD TO FACILITATE PLACEMENT OF PAD. THE THICKNESS OF THE CUSHION SAND SHALL NOT EXCEED 6". PAYMENT FOR THIS CUSHION SAND SHALL BE MADE UNDER THE SELECT STRUCTURAL FILL ITEM.
  - B. CAST-IN-PLACE: THE CONTRACTOR MAY ELIMINATE THE 6" UNDERCUT AND CAST THE PAD DIRECTLY ON THE EXCAVATED WALL FOUNDATION AREA.
5. THE USE OF SHIMS WILL NOT BE ALLOWED TO CORRECT FOR IMPROPER OR INCORRECT PLACEMENT OF LEVELING PAD AND/OR POOR CONSTRUCTION PRACTICES. SHIMS WILL BE ALLOWED TO CORRECT FOR MINOR FABRICATION IRREGULARITIES.
6. FOR A PRECAST CONCRETE LEVELING PAD, A 1/2" TO 3/4" JOINT SHALL BE PROVIDED AT ALL VERTICAL WALL CONSTRUCTION JOINTS, OR AT THE MAXIMUM INTERVALS OF 20', WHICHEVER IS LESS.
7. PLACEMENT OF THE MATERIAL WITHIN THE PRECAST CONCRETE WALL UNITS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
  - A. THE ELEVATION OF THE BACKFILL BEHIND THE WALL SHALL NOT EXCEED THE ELEVATION OF THE INFILL MATERIAL PLACED WITHIN THE WALL UNITS.
  - B. AT NO TIME SHALL THE DIFFERENCE IN ELEVATION BETWEEN THE INFILL AND BACKFILL OF THE WALL EXCEED 4'.
  - C. PLACEMENT OF INFILL IN THE WALL AND BACKFILL BEHIND THE WALL SHALL CLOSELY FOLLOW ERECTION OF SUCCESSIVE COURSES OF UNITS.
  - D. IN COMPUTING THE VOLUME OF WALL UNIT INFILL, A DEDUCTION WILL BE MADE FOR THE VOLUME OF PRECAST CONCRETE UNITS IN ACCORDANCE WITH THE APPROVED LIST DRAWINGS.
8. COMPACTION REQUIREMENTS FOR INFILL AND BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH SUBSECTION 203-3.15 FILL AND BACKFILL AT STRUCTURES, CULVERTS, PIPES, CONDUITS AND DIRECT BURIAL CABLES.
9. INSTALLATION OF UNITS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
  - A. ALL UNITS ABOVE THE FIRST COURSE SHALL INTERLOCK WITH THE LOWER COURSE.
  - B. THE VERTICAL JOINT OPENING SHALL BE BETWEEN 1/4" AND 1/2".
  - C. THE VERTICAL JOINT OPENING SHALL BE ACCOUNTED FOR IN DETERMINING THE TOTAL LENGTH OF WALL.
10. ALL PRECAST MODULAR WALLS SHALL, AT ALL STAGES OF THEIR CONSTRUCTION, BE TRUE TO LINE AND GRADE. ANY DEVIATION FROM LINE AND GRADE WHICH IN THE JUDGEMENT OF THE ENGINEER IS EITHER DANGEROUS TO THE STABILITY OR DETRACTS FROM THE APPEARANCE OF THE WALL SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE.
 

TOLERANCES SHALL NOT EXCEED THE FOLLOWING:

  - A. 3/4" DEVIATION VERTICALLY (PLUMBNESS) WHEN MEASURED ALONG A 10' STRAIGHTEDGE.
  - B. 3/4" DEVIATION HORIZONTALLY (ALIGNMENT) WHEN MEASURED ALONG A 10' STRAIGHTEDGE.
  - C. 1/2" DEVIATION VERTICALLY OVERALL (PLUMBNESS FROM TOP TO BOTTOM) PER 10' OF WALL HEIGHT.
  - D. THE LEVELING PAD SURFACE SHALL NOT VARY FROM LEVEL MORE THAN 1/4" PER 10'.
11. SEEPAGE ZONES INTERCEPTING THE EXCAVATION SLOPE OR THE WALL FOUNDATION AREA SHALL BE POSITIVELY DRAINED BY PROVIDING ADDITIONAL UNDERDRAIN AND UNDERDRAIN FILTER MATERIAL AT THE SEEPAGE ZONE.
12. FOR INSTALLATIONS WHERE THE WATER LEVEL WILL BE PERMANENTLY ABOVE THE FINISHED GRADE AT WALL FACE, THE NORMAL UNDERDRAIN SECTION SHALL BE RAISED TO A POINT 2' ABOVE HIGH WATER OR AS ORDERED BY THE ENGINEER.
13. A MAXIMUM 2' UNDERCUT MAY BE ORDERED BY THE ENGINEER WHERE NECESSARY TO PROVIDE STABLE BEDDING CONDITIONS. UNDERCUTTING SHALL BE PAID FOR UNDER SECTION 206.
  - A. IF UNDERCUTTING IS ORDERED, THE LIFT THICKNESS AND COMPACTION REQUIREMENTS FOR SELECT STRUCTURAL FILL SHALL BE AS ORDERED BY THE ENGINEER.
  - B. THE REGIONAL GEOTECHNICAL ENGINEER SHALL BE CONSULTED IF IT APPEARS THAT UNDERCUTTING BEYOND THE 2' MAXIMUM DEPTH MAY BE NEEDED, SPECIAL CONSTRUCTION PROCEDURES AND DETAILS WILL BE SHOWN IN THE CONTRACT DOCUMENTS WHEN WALLS ARE TO BE LOCATED IN AREAS WHERE UNSUITABLE MATERIAL EXISTS.

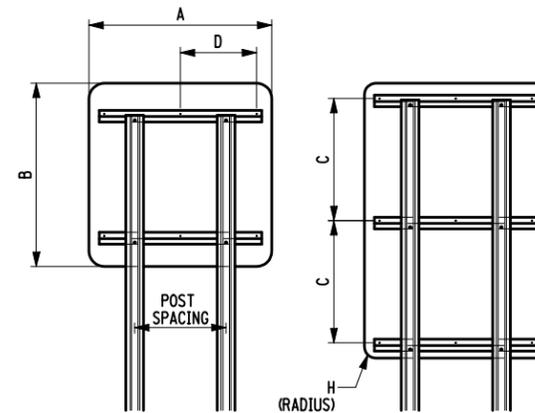
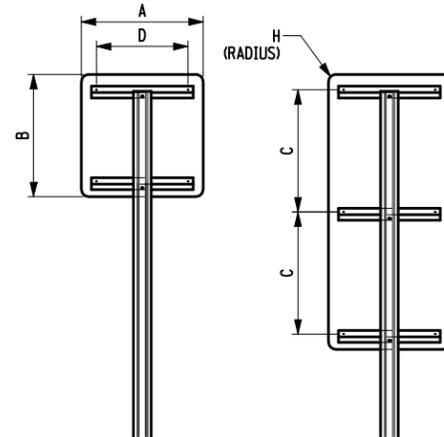
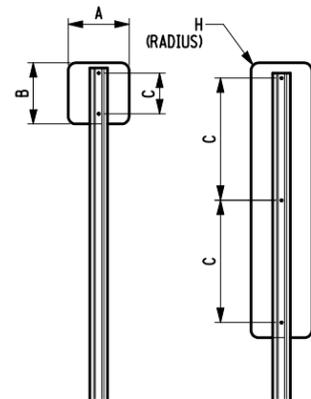
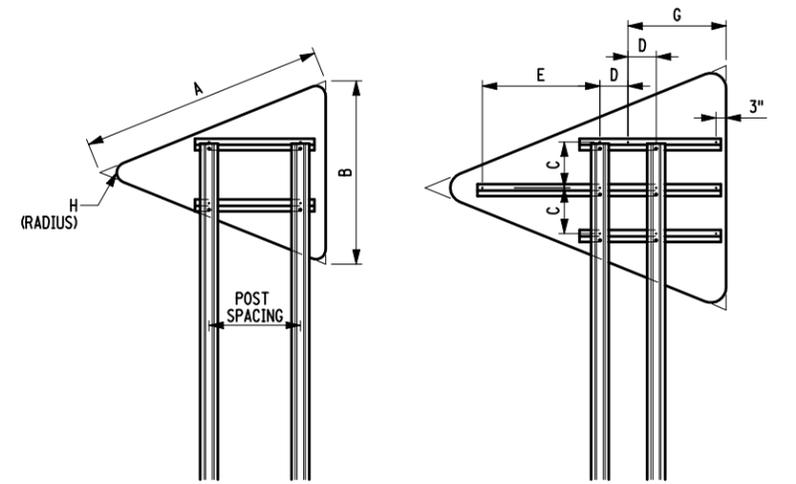
 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
PRECAST MODULAR WALLS (SHEET 2 OF 2)	
APPROVED OCTOBER 01, 2008	ISSUED UNDER EB 08-036
/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)	632-01

A	B	C	H	AREA (SQ. FT.)	SEE NOTE
12"	12"	8"	1/2"	1.0	
18"	18"	12"	1/2"	2.3	
12"	6"	4"	1/2"	0.5	
12"	8"	4"	1/2"	0.7	
12"	9"	4"	1/2"	0.8	
18"	6"	4"	1/2"	0.8	
18"	12"	6"	1/2"	1.5	
6"	12"	6"	1/2"	0.5	
8"	16"	10"	1/2"	0.9	
9"	12"	6"	1/2"	0.8	
12"	18"	12"	1/2"	1.5	
12"	24"	18"	1/2"	2.0	
12"	30"	24"	1/2"	2.5	
12"	36"	14"	1/2"	3.0	2
12"	48"	18"	1/2"	4.0	2
12"	54"	24"	1/2"	4.5	2
12"	60"	24"	1/2"	5.0	2
18"	24"	18"	1/2"	3.0	
18"	30"	24"	1/2"	3.8	
18"	36"	14"	1/2"	4.5	2
18"	48"	18"	1/2"	6.0	2
18"	54"	24"	1/2"	6.8	2
18"	60"	24"	1/2"	7.5	2

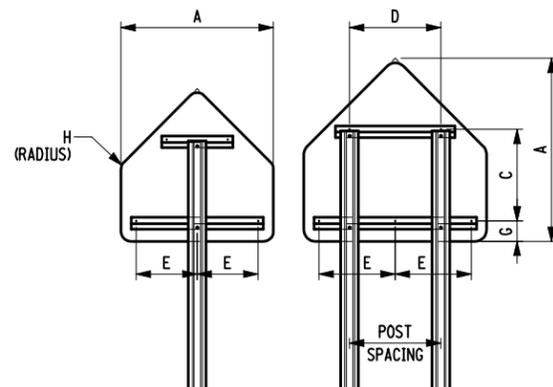
A	B	C	D	H	AREA (SQ. FT.)	SEE NOTE
21"	21"	15"	15"	1/2"	3.1	
24"	24"	18"	18"	1/2"	4.0	
30"	30"	24"	24"	1/2"	6.3	
20"	18"	12"	15"	1/2"	2.5	
21"	15"	9"	15"	1/2"	2.2	
24"	6"	3"	18"	1/2"	1.0	
24"	8"	4"	18"	1/2"	1.3	
24"	12"	6"	18"	1/2"	2.0	
24"	15"	9"	18"	1/2"	2.5	
24"	18"	12"	18"	1/2"	3.0	
30"	10"	6"	24"	1/2"	2.1	
30"	15"	9"	24"	1/2"	3.1	
30"	18"	12"	24"	1/2"	3.8	
30"	21"	15"	24"	1/2"	4.4	
30"	24"	18"	24"	1/2"	5.0	
24"	30"	22"	18"	1/2"	5.0	
24"	36"	24"	18"	1/2"	6.0	
30"	36"	24"	24"	1/2"	7.5	
24"	54"	24"	18"	1/2"	9.0	2
30"	42"	18"	24"	1/2"	8.8	2

A	B	C	D	H	POST SPACING	AREA (SQ. FT.)	SEE NOTE
36"	12"	6"	15"	1/2"	18"	3.0	
36"	18"	12"	15"	1/2"	18"	4.5	
36"	20"	12"	15"	1/2"	18"	5.0	
36"	24"	18"	15"	1/2"	18"	6.0	
36"	30"	24"	15"	1/2"	18"	7.5	
36"	36"	24"	15"	3"	18"	9.0	
42"	21"	12"	18"	1/2"	18"	6.1	
42"	26"	18"	18"	1 1/8"	18"	7.6	
42"	30"	24"	18"	1 1/8"	18"	8.8	
45"	36"	24"	19 1/2"	2 1/4"	24"	11.3	
48"	18"	12"	21"	1/2"	24"	6.0	
48"	24"	18"	21"	1 1/8"	24"	8.0	
48"	30"	24"	21"	2 1/4"	24"	10.0	
48"	36"	24"	21"	2 1/4"	24"	12.0	
54"	18"	12"	24"	1 1/8"	24"	6.8	
60"	24"	18"	27"	1/2"	30"	10.0	
60"	30"	24"	27"	2 1/4"	30"	12.5	
36"	48"	18"	15"	2 1/4"	18"	12.0	2
36"	54"	24"	15"	2 1/4"	18"	13.5	2
36"	60"	24"	15"	2 1/4"	18"	15.0	2
42"	60"	24"	18"	3"	24"	17.5	2
48"	60"	24"	21"	3"	24"	20.0	2
42"	42"	18"	21"	3"	24"	12.3	2
48"	48"	18"	21"	3"	24"	16.0	2
60"	48"	18"	27"	3"	30"	20.0	2
64"	42"	18"	27"	3"	30"	18.7	2

A	B	C	D	E	G	H	POST SPACING	AREA (SQ. FT.)	PAYMENT AREA (SQ. FT.)
40"	30"	10"				1 1/8"	9"	3.8	7.1
48"	36"	12"				2"	12"	5.5	10.3
64"	48"	11"	6"	18"	17"	3"	12"	9.7	18.1



A	C	D	E	G	H	POST SPACING	AREA (SQ. FT.)	PAYMENT AREA (SQ. FT.)
30"	16"	12"	12"	4"	1 1/8"		4.6	6.3
36"	18"	18"	15"	4"	2 1/4"	18"	6.6	9.0
48"	24"	24"	21"	6"	3"	24"	11.6	16.0



NOTES:

- SIGN BLANKS SHALL BE 10 GAUGE THICK ALUMINUM. FIBERGLASS REINFORCED PLASTIC MAY BE USED FOR SIGN PANELS UP TO 48" X 48".
- THESE PANELS USE THE "C" DIMENSION TWICE FOR EITHER MOUNTING HOLES OR HORIZONTAL Z BARS.
- THE "PAYMENT AREA", WHICH INCLUDES FABRICATION WASTAGE, SHALL BE USED ONLY FOR DETERMINING PAYMENT FOR NON-RECTANGULAR SIGN BLANKS.
- INTERMEDIATE SIZE SIGN BLANKS THAT ARE NOT SHOWN, SHALL BE FABRICATED SIMILAR TO THE CLOSEST SHOWN SIZE.
- SIGN PANELS WIDER THAN SHOWN SHALL BE FABRICATED AS SHOWN ON THE CURRENT "LARGE GUIDE SIGNS" STANDARD SHEET.
- ADDITIONAL SIGN BLANK DIMENSIONS ARE GIVEN IN "STANDARD HIGHWAY SIGNS", FEDERAL HIGHWAY ADMINISTRATION.
- THE HORIZONTAL Z BAR LENGTH SHALL BE A MINIMUM OF 1" LONGER THAN THE CENTER TO CENTER DISTANCE BETWEEN EXTREME MOUNTING HOLES. WHERE POSTS ARE LOCATED AT THE END OF HORIZONTAL Z BAR, THE HORIZONTAL Z BAR SHALL EXTEND BEYOND THE SIDE OF THE POST A MINIMUM OF ONE 1/2" AND A MAXIMUM OF 2".
- ALUMINUM Z BARS WEIGHING ONE POUND PER FOOT AND MEASURING Z 2 3/8" X 1 1/4" X 3/16" MAY BE PREPUNCHED WITH 3/16" HOLES AT 1" CENTERS ALONG THE ENTIRE LENGTH.
- POST AND HORIZONTAL Z BAR ARRANGEMENTS ARE SHOWN FOR COMMON BLANKS. THESE ARRANGEMENTS MAY BE ADJUSTED AS NECESSARY WHERE A NUMBER OF SIGN BLANKS ARE GROUPED IN SIGN ASSEMBLIES OR WHERE ADDITIONAL POSTS ARE REQUIRED DUE TO POST CAPACITY LIMITATIONS.
- MATERIALS ARE PER SUBSECTIONS:  
730-01 ALUMINUM SIGN PANELS  
730-22 STIFFENERS, OVERHEAD BRACKETS AND MISCELLANEOUS HARDWARE  
730-23 FIBERGLASS REINFORCED PLASTIC SIGN PANELS
- WHERE 730-05.02 REFLECTIVE SHEETING (CLASS B) OR TYPE IX IS REQUIRED, NYLON OR PLASTIC WASHERS SHALL BE INSTALLED BETWEEN FASTENER BOLT HEADS (OR NUTS) AND THE REFLECTIVE SHEETING ON THE SIGN FACE.
- POSTS AND POST FOOTINGS SHALL BE INSTALLED AS SPECIFIED ON THE APPROPRIATE STANDARD SHEETS OR AS PER MANUFACTURERS INSTRUCTIONS.
- THE TOP HOLES SHOWN ON THE HORIZONTAL Z BARS ARE FOR THE PANEL TO HORIZONTAL Z BAR CONNECTIONS. THE BOTTOM HOLES ON THE HORIZONTAL Z BARS ARE FOR THE HORIZONTAL Z BAR TO SIGN POST CONNECTIONS. THE HOLES SHOWN ON PANELS WITHOUT HORIZONTAL Z BARS ARE FOR PANEL TO POST CONNECTIONS.



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

SIGN BLANK DETAILS  
(SHEET 1 OF 2)

APPROVED OCTOBER 05, 2009

/S/ RICHARD W. LEE, P.E.  
FOR THE DEPUTY CHIEF ENGINEER  
(DESIGN)

ISSUED UNDER EB 09-025

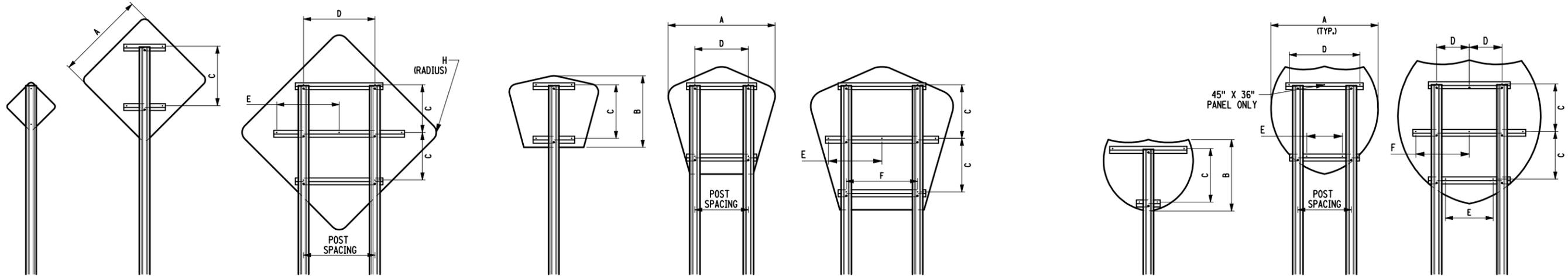
645-01

EFFECTIVE DATE: 01/07/10

A	C	D	E	H	POST SPACING	AREA (SQ. FT.)
24"	12"			1"		1.0
30"	18"			1"		2.3
24"	16"	12"		1½"		4.0
30"	20"	15"		1⅞"		6.3
36"	12"	18"	15"	2½"	18"	9.0
48"	16"	24"	21"	3"	24"	16.0

A	B	C	D	E	F	POST SPACING	AREA (SQ. FT.)	PAYMENT AREA (SQ. FT.)
24"	24"	18"	12"				3.0	4.0
30"	24"	18"	12"				4.0	5.0
36"	36"	24"	18"			18"	6.8	9.0
45"	36"	24"	18"			18"	9.1	11.3
48"	48"	18"	18"	18"	12"	24"	12.1	16.0
60"	48"	18"	18"	24"	12"	24"	16.2	20.0

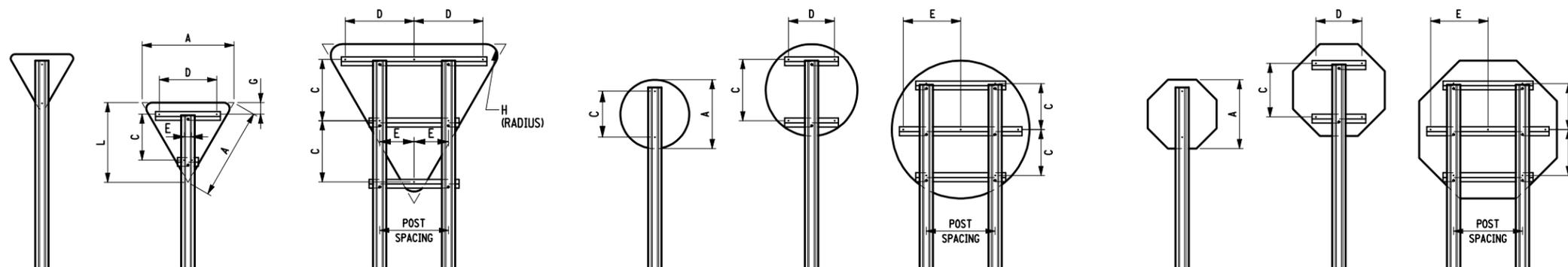
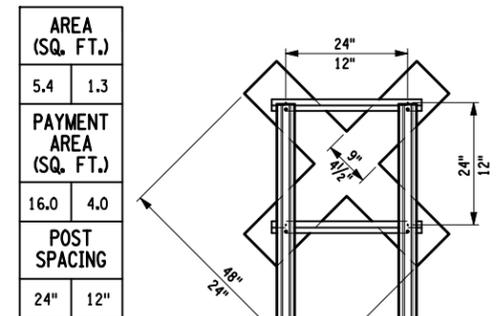
A	B	C	D	E	F	POST SPACING	AREA (SQ. FT.)	PAYMENT AREA (SQ. FT.)
24"	24"	18"	18"	6"			3.2	4.0
30"	24"	18"	24"	12"			3.8	5.0
36"	36"	24"	24"	12"		18"	7.0	9.0
45"	36"	24"	18"	18"		18"	8.8	11.3
48"	48"	16"	10"	16"	19"	24"	12.4	16.0
60"	48"	16"	10"	16"	25"	24"	15.5	20.0



A	L	C	D	E	G	H	POST SPACING	AREA (SQ. FT.)	PAYMENT AREA (SQ. FT.)
18"	15"	12"				1½"		1.0	1.9
24"	21"	12"	15"	2"	3"	1½"		1.8	3.5
30"	27"	14"	18"	4"	4"	1½"		2.7	5.7
36"	31"	18"	24"	4"	4"	2"		3.9	7.8
48"	41.5	16"	18"	9"	4"	3"	18"	7.0	13.9
60"	52	21"	24"	12"	4"	4"	24"	10.9	21.7

A	C	D	E	POST SPACING	AREA (SQ. FT.)	PAYMENT AREA (SQ. FT.)
15"	9"				1.3	1.6
18"	12"				1.8	2.3
24"	16"	12"			3.1	4.0
30"	20"	15"			4.9	6.3
36"	12"	18"	15"	18"	7.1	9.0
48"	16"	24"	21"	24"	12.6	16.0

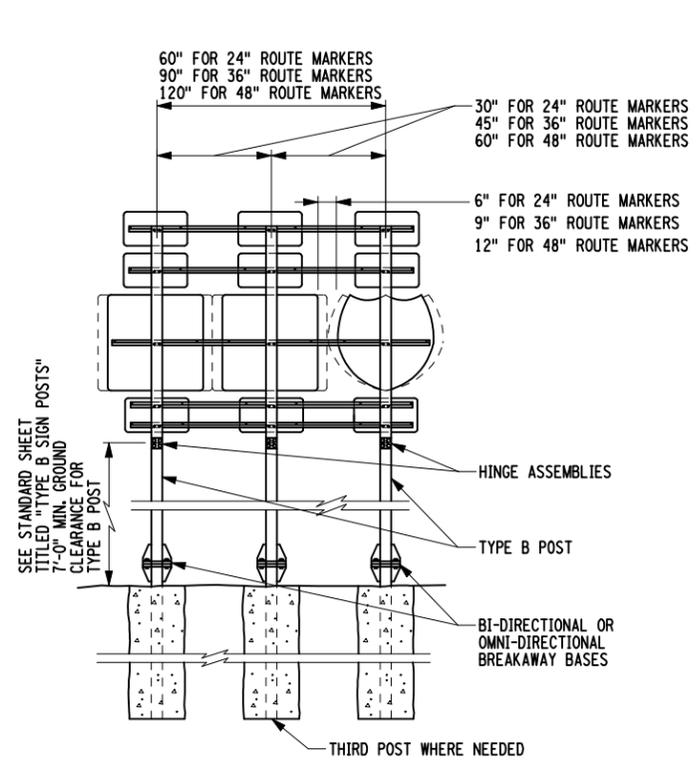
A	C	D	E	POST SPACING	AREA (SQ. FT.)	PAYMENT AREA (SQ. FT.)
18"	12"				1.8	2.3
24"	14"	12"			3.1	4.0
30"	18"	15"			5.0	6.3
36"	12"	18"	15"	18"	7.0	9.0
48"	16"	24"	21"	24"	12.5	16.0



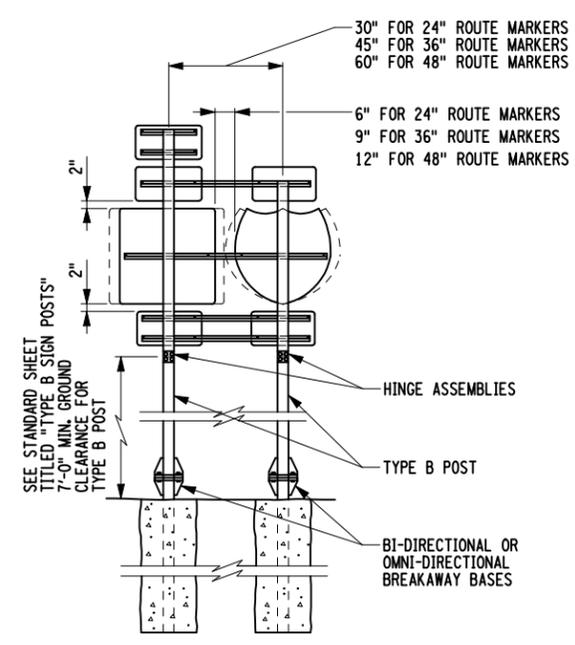
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	U.S. CUSTOMARY STANDARD SHEET	
SIGN BLANK DETAILS (SHEET 2 OF 2)		
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025	
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)		645-01

EFFECTIVE DATE: 01/07/10

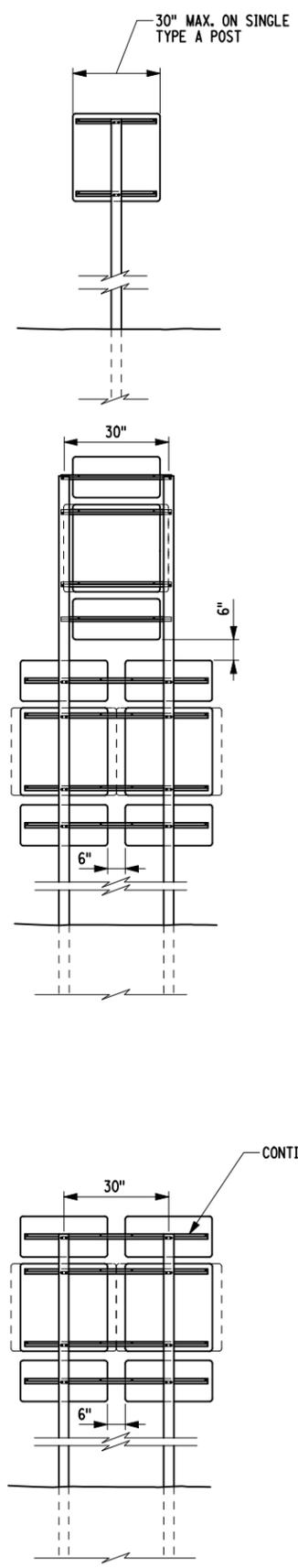
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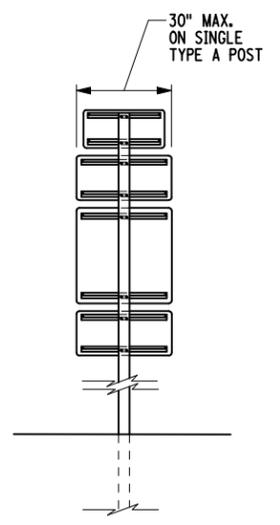
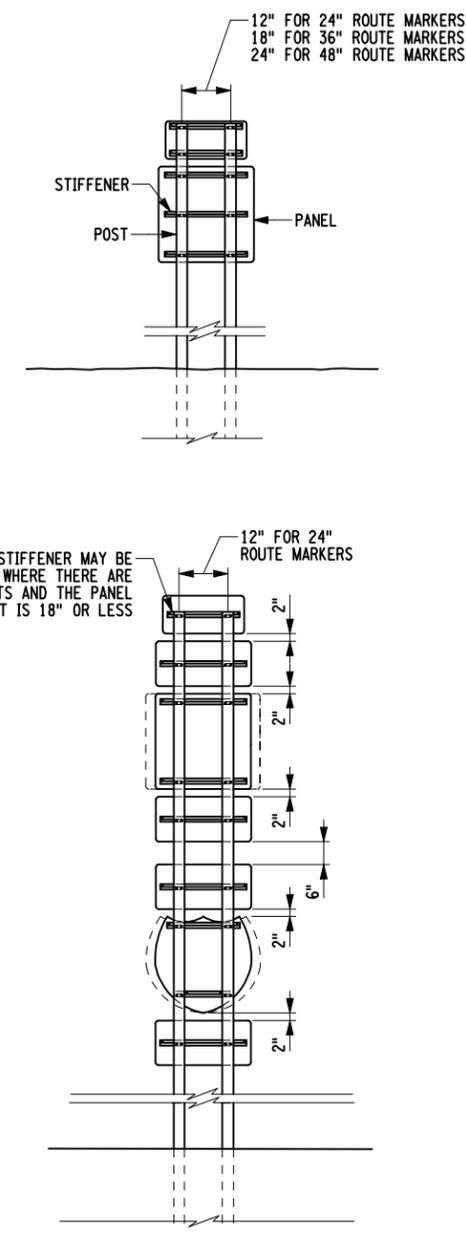
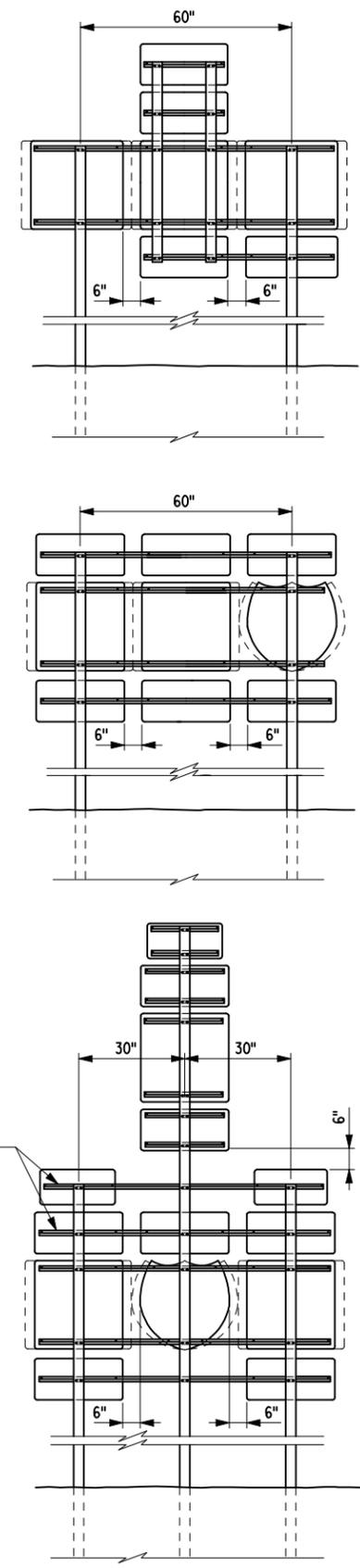
NOTE: VERTICAL SPACING BETWEEN ROUTE MARKER GROUPS SHALL BE THE SAME AS HORIZONTAL SPACING.



TYPICAL ROUTE MARKER ASSEMBLIES ON TYPE B POSTS



TYPICAL ROUTE MARKER ASSEMBLIES ON TYPE A POSTS



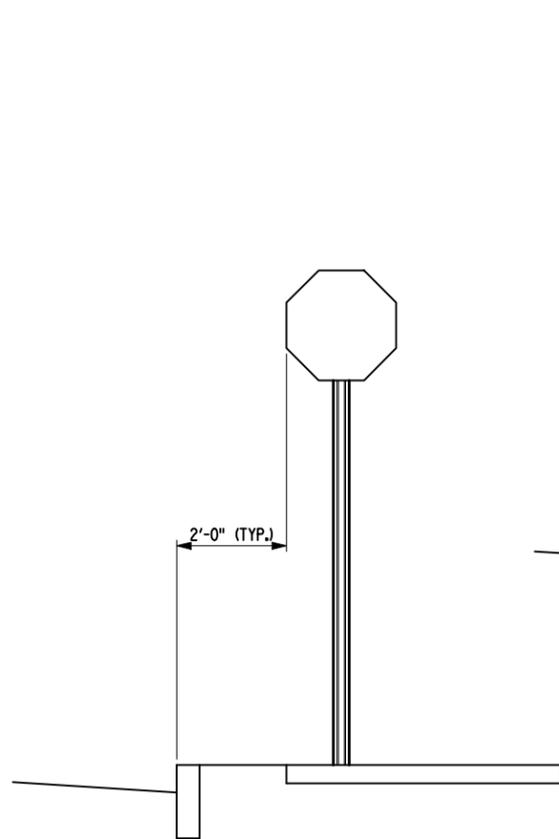
- NOTES:
1. THESE DETAILS ARE TYPICAL ONLY AND ARE TO BE USED BY THE CONTRACTOR AS GUIDES IN INSTALLING THE SIGN ARRANGEMENT SHOWN ON THE PLANS.
  2. THE VERTICAL AND HORIZONTAL SPACING BETWEEN GROUPS SHALL BE MAINTAINED AS SHOWN. A GROUP IS THOSE PANELS AND SUPPLEMENTARY PANELS ASSOCIATED WITH A ROUTE.
  3. THE STANDARD POSTS FOR 24" SERIES ROUTE MARKERS ARE TYPE A POSTS. TYPE B OR TYPE A HIGH-CAPACITY POSTS SHALL BE USED WHERE SIGN ASSEMBLY AREA AND MOUNTING HEIGHT EXCEED THE CAPACITY OF TYPE A POSTS.
  4. THE STANDARD POSTS FOR 36" AND 48" SERIES ROUTE MARKERS ARE TYPE B OR TYPE A HIGH-CAPACITY POSTS. TYPE A POSTS MAY BE USED SUBJECT TO THE SIGN AREA AND MOUNTING HEIGHT LIMITATIONS OF THE POSTS.
  5. POST SIZE SHALL BE BASED ON THE SIGN AREA AND MOUNTING HEIGHT TABLES ON THE APPROPRIATE POST STANDARD SHEET OR APPROVED MATERIALS DETAILS. POST INSTALLATION DETAILS SHALL BE AS SHOWN ON THE APPROPRIATE POST STANDARD SHEET OR APPROVED MATERIALS DETAILS.
  6. PANEL DIMENSIONS, STIFFENER DIMENSIONS, PANEL TO STIFFENER CONNECTION DETAILS AND SPACING SHALL BE AS SHOWN ON THE STANDARD SHEET TITLED "SIGN BLANK DETAILS". WHERE GROUPS ARE MOUNTED SIDE BY SIDE, THE STIFFENER SHALL BE CONTINUOUS.
  7. NOTES ON STANDARD SHEET TITLED "SIGN BLANK DETAILS" ALSO APPLY.

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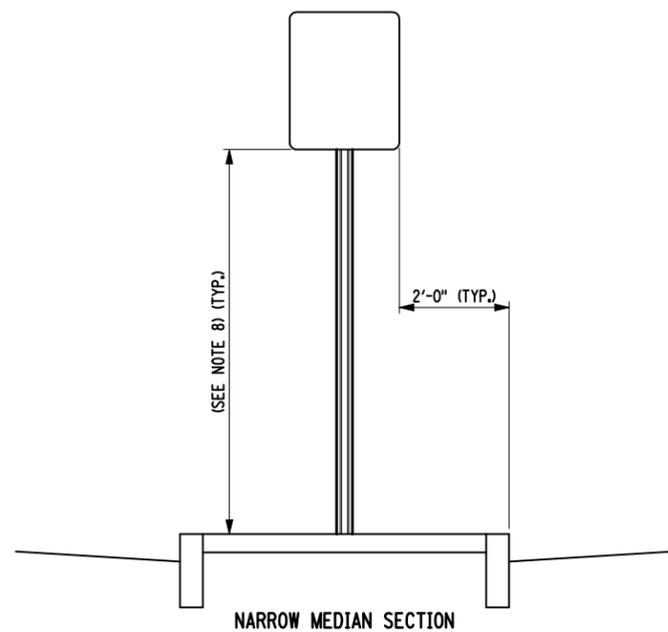
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	U.S. CUSTOMARY STANDARD SHEET	
ROUTE MARKER ASSEMBLIES		
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025	
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	645-02	

EFFECTIVE DATE: 01/07/10

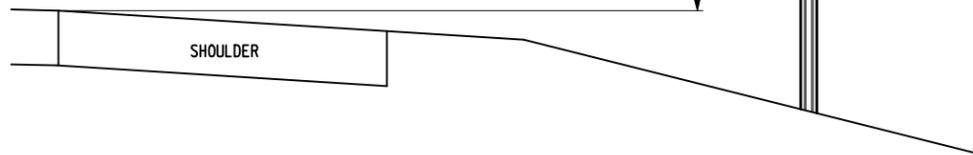
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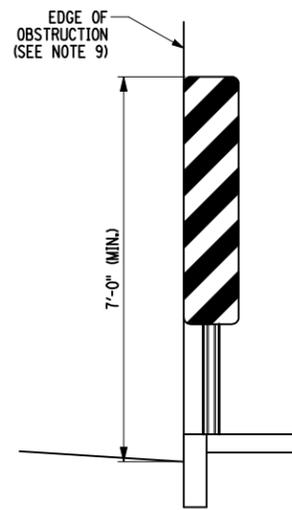
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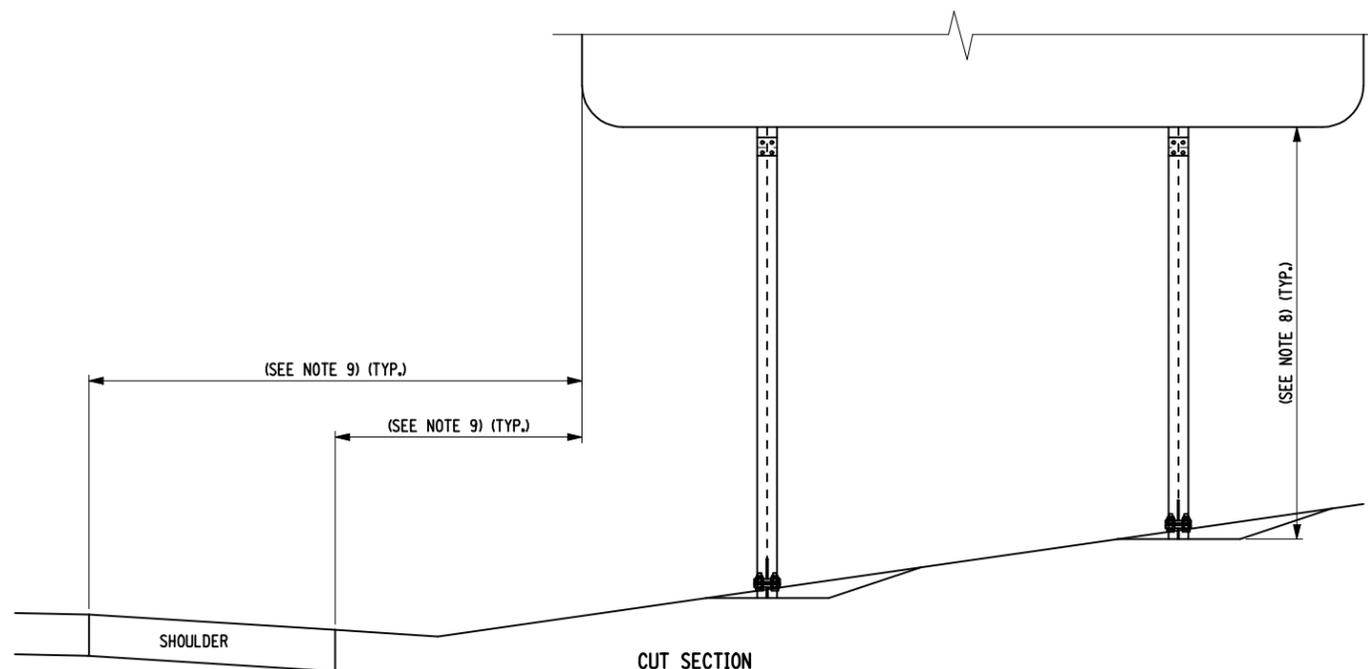
NARROW MEDIAN SECTION



FILL SECTION (WITH SUPPLEMENTARY PANEL)



TYPE B OBJECT MARKER POSITIONING

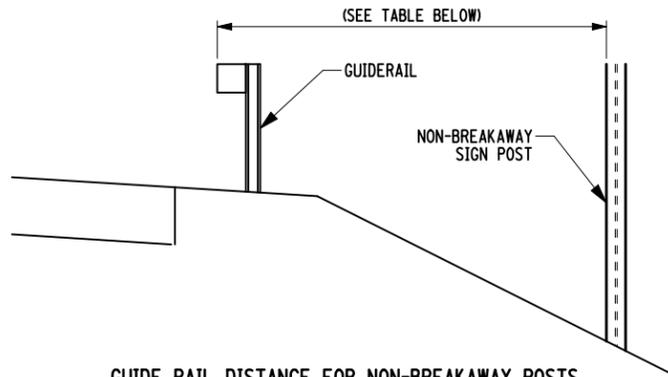


CUT SECTION

- NOTES:
1. THESE DETAILS ARE TYPICAL ONLY AND ARE TO BE USED BY THE CONTRACTOR AS GUIDES IN INSTALLING THE SIGN ARRANGEMENTS SHOWN ON THE PLANS.
  2. THE POST TYPE (TYPE A WITH OR WITHOUT SOIL PLATES OR EXTRA EMBEDMENT, HIGH CAPACITY TYPE A OR TYPE B) AND SIZE SHALL BE BASED ON THE SIGN AREA AND MOUNTING HEIGHT AS FOUND ON THE CURRENT MATERIALS DETAILS OR STANDARD SHEETS.
  3. POSTS SHALL BE ERECTED AS SHOWN ON THE CURRENT MATERIALS DETAILS OR STANDARD SHEETS. POSTS SHOULD NOT BE ERECTED IN OR STRADDLING THE DITCH LINE.
  4. HORIZONTAL Z BAR DIMENSIONS AND SPACING SHALL BE AS SHOWN ON THE CURRENT "SIGN BLANK DETAILS" STANDARD SHEETS. PANEL TO HORIZONTAL Z BAR CONNECTION DETAILS SHALL BE AS SHOWN ON THE CURRENT "SIGN PANEL DETAILS FOR INFO, GUIDE, AND OTHER SIGNS" STANDARD SHEET.
  5. SIGN ASSEMBLIES HAVING SIGN PANELS MOUNTED SIDE-BY-SIDE SHALL HAVE CONTINUOUS HORIZONTAL Z BARS.
  6. SIGNS WIDER THAN 30" SHALL USE TWO OR MORE POSTS.
  7. THE VERTICAL SPACING BETWEEN PANELS SHALL BE AS SHOWN (2" MAX.).
  8. THE VERTICAL DISTANCE TO THE BOTTOM OF THE SIGN SHALL BE DETERMINED AS FOLLOWS:
    - A. CLEARANCE - 7' FROM THE GROUND TO THE BOTTOM OF THE SIGN.
    - B. HEIGHT (ABOVE NEAR EDGE OF TRAVEL LANE OR ABOVE TOP OF CURB)
      - 7' (6' WITH SUPPLEMENTARY PANEL) ON CONVENTIONAL HIGHWAYS AND EXPRESSWAYS WHERE PARKED VEHICLES OR PEDESTRIAN ARE PRESENT.
      - 5' (4' WITH SUPPLEMENTARY PANEL) ON CONVENTIONAL HIGHWAYS AND EXPRESSWAYS WHERE NO PARKED VEHICLES OR PEDESTRIANS ARE PRESENT.
      - 7' (5' WITH LATERAL CLEARANCE GREATER THAN 30' ON FREEWAYS FOR GUIDE SIGNS. (WHERE FEASIBLE, A 30' MINIMUM LATERAL CLEARANCE IS REQUIRED FOR LARGE GUIDE SIGNS).
      - 7' ON FREEWAYS FOR REGULATORY, WARNING AND SMALL GUIDE SIGNS.
      - 5' (4' WITH SUPPLEMENTARY PANEL) ON RAMP. (DIRECT CONNECT ROADWAYS SHALL BE CONSIDERED TO BE FREEWAYS, NOT RAMP).
      - 4' MINIMUM ON BICYCLE PATHS. (5' MAX)
    - C. WHERE THERE ARE PHYSICAL LIMITATIONS OR VISIBILITY CONSIDERATIONS, THE SIGNS SHALL BE LOCATED AS ORDERED BY THE ENGINEER-IN-CHARGE.
  9. THE LATERAL CLEARANCE TO THE EDGE OF THE SIGN SHALL BE DETERMINED AS FOLLOWS:
    - A. SHOULDER WIDTH OF LESS THAN 6', 12' MINIMUM FROM THE EDGE OF TRAVEL LANE.
    - B. SHOULDER WIDTH OF 6' OR GREATER, 6' MINIMUM FROM THE EDGE OF SHOULDER.
    - C. CURBED SECTIONS, 2' TYP. FROM THE FACE OF CURB.
    - D. BICYCLE PATHS, 3' MINIMUM FROM THE EDGE OF PATH (6' MAX).
    - E. TYPE B OBJECT MARKERS SHOULD BE PLACED WITH THE NEAR EDGE OF THE MARKER IN LINE WITH THE EDGE OF THE OBSTRUCTION CLOSEST TO TRAFFIC.
    - F. WHERE THERE ARE PHYSICAL LIMITATIONS OR VISIBILITY CONSIDERATIONS, THE SIGNS SHALL BE LOCATED AS ORDERED BY THE ENGINEER-IN-CHARGE.
    - G. SEE STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS (SHEET 2 OF 2)" WHEN GUIDE RAIL IS PRESENT.

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>POSITIONING OF TRAFFIC SIGNS</b> (SHEET 1 OF 2)	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	645-03

EFFECTIVE DATE: 01/07/10

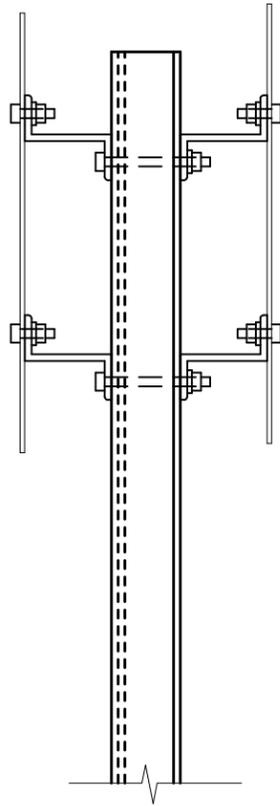


GUIDE RAIL DISTANCE FOR NON-BREAKAWAY POSTS

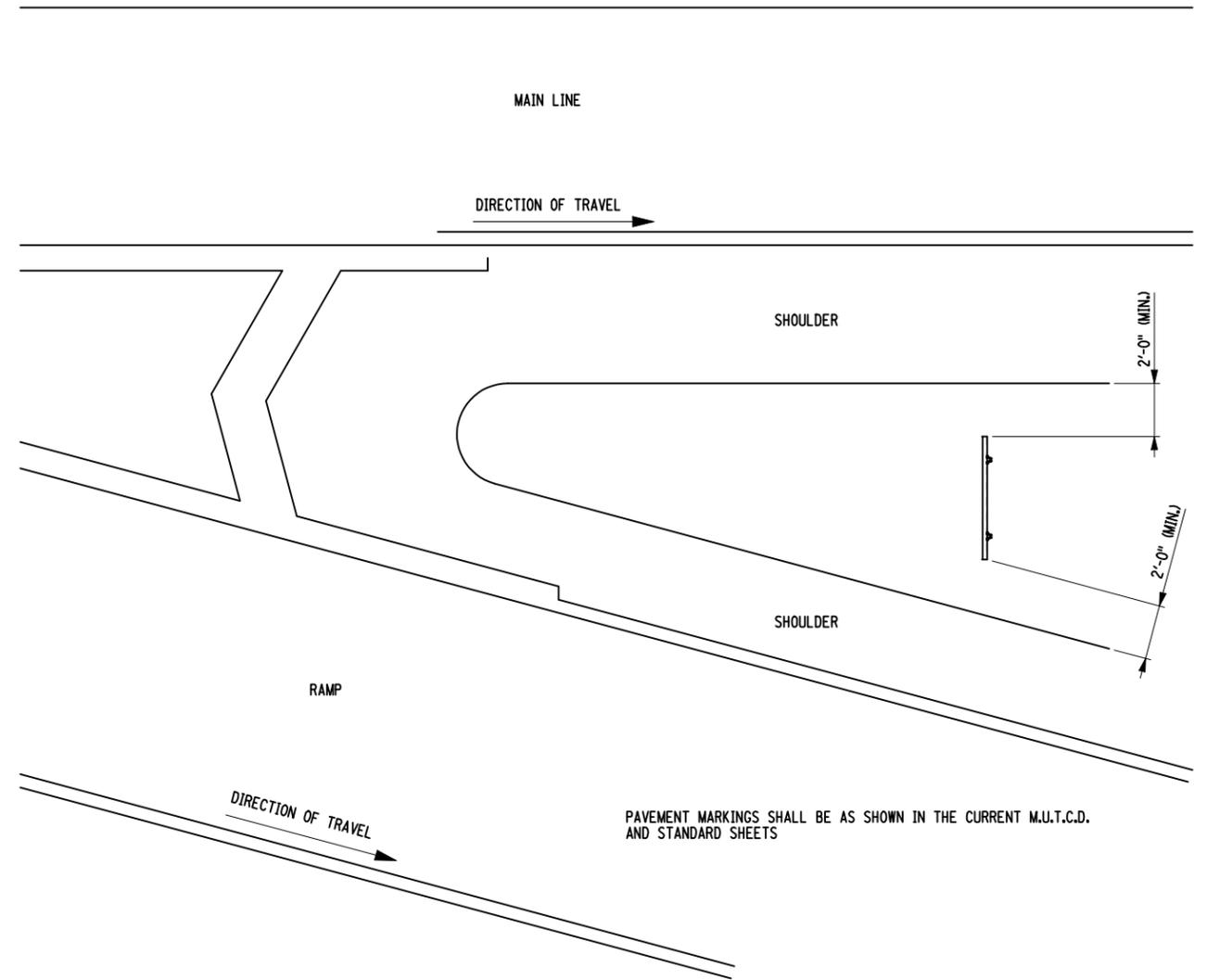
GUIDE RAIL TYPE / POST SPACING	MINIMUM DISTANCE
CABLE (POST 16'-0" O.C.)	12'-0"
CABLE (POST 12'-0" O.C.)	11'-0"
CABLE (POST 8'-0" O.C.)	9'-0"
CORRUGATED BEAM (POST 12'-6" O.C.)	9'-0"
CABLE (POST 4'-0" O.C.)	8'-0"
CORRUGATED BEAM (POST 6'-3" O.C.)	7'-0"
CORRUGATED BEAM (POST 4'-2" O.C.)	6'-0"
6" X 6" BOX BEAM (POST 6'-0" O.C.)	6'-0"
HEAVY POST BLOCKED OUT CORRUGATED (POST 6'-3" O.C.)	5'-6"
6" X 6" BOX BEAM (POST 3'-0" O.C.)	5'-0"
HEAVY POST BLOCKED OUT CORRUGATED (POST 3'-1/2" O.C.)	3'-6"

NOTE: IN ADDITION TO MEETING THE OFFSET REQUIREMENTS ON STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS (SHEET 1 OF 2)" THE POST SHALL BE OFFSET FROM THE FACE OF THE GUIDE RAIL BY THE AMOUNT SHOWN IN THE TABLE ABOVE.

NOTE: ALL BACK TO BACK SIGNS SHALL BE MOUNTED AS SHOWN, INCLUDING STREET NAME SIGNS.

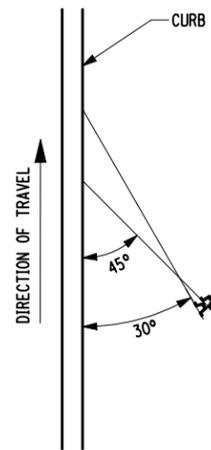


BACK TO BACK SIGN POSITIONING

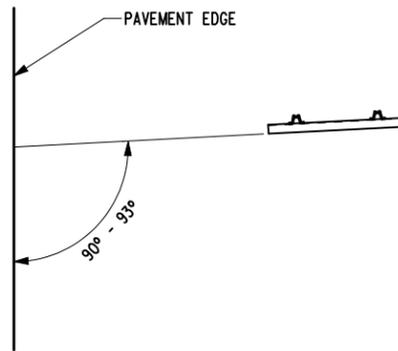


PAVEMENT MARKINGS SHALL BE AS SHOWN IN THE CURRENT M.U.T.C.D. AND STANDARD SHEETS

GORE EXIT SIGN POSITIONING



PARKING SIGN POSITIONING



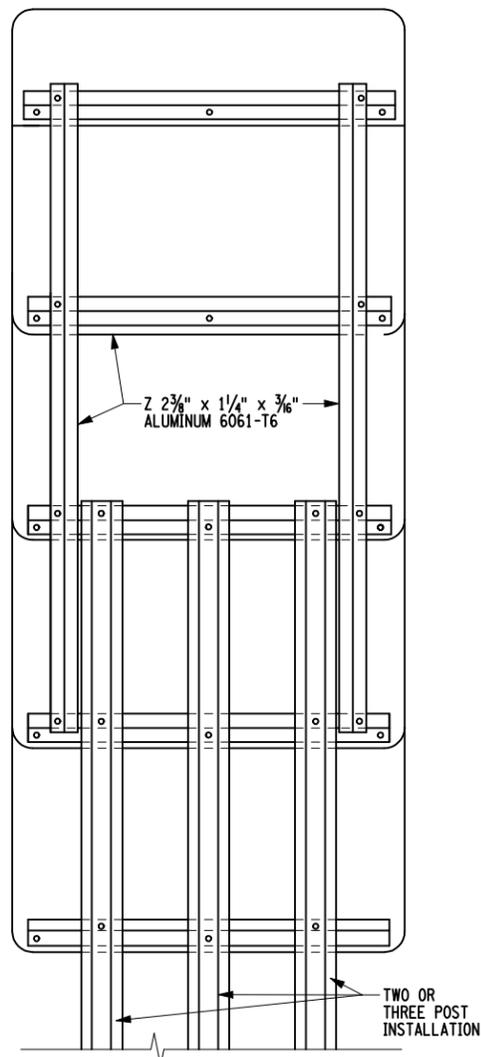
STANDARD SIGN POSITIONING

FOR LATERAL CLEARANCE < 30'  
FOR > 30', SHOULD BE < 90°

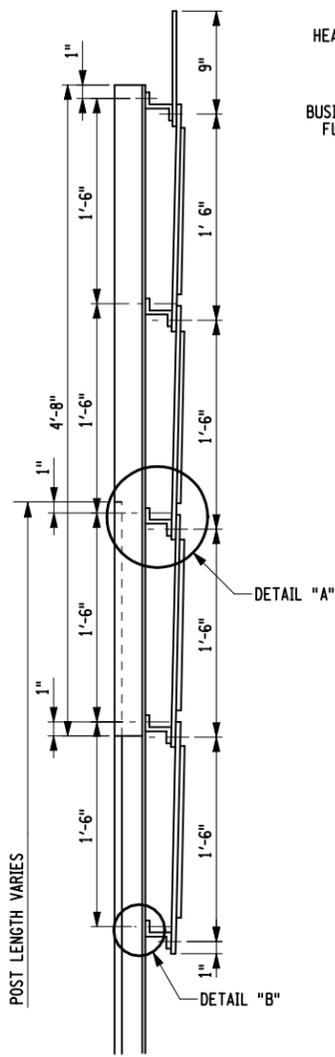
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	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
POSITIONING OF TRAFFIC SIGNS (SHEET 2 OF 2)		
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025	
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)		645-03

EFFECTIVE DATE: 01/07/10

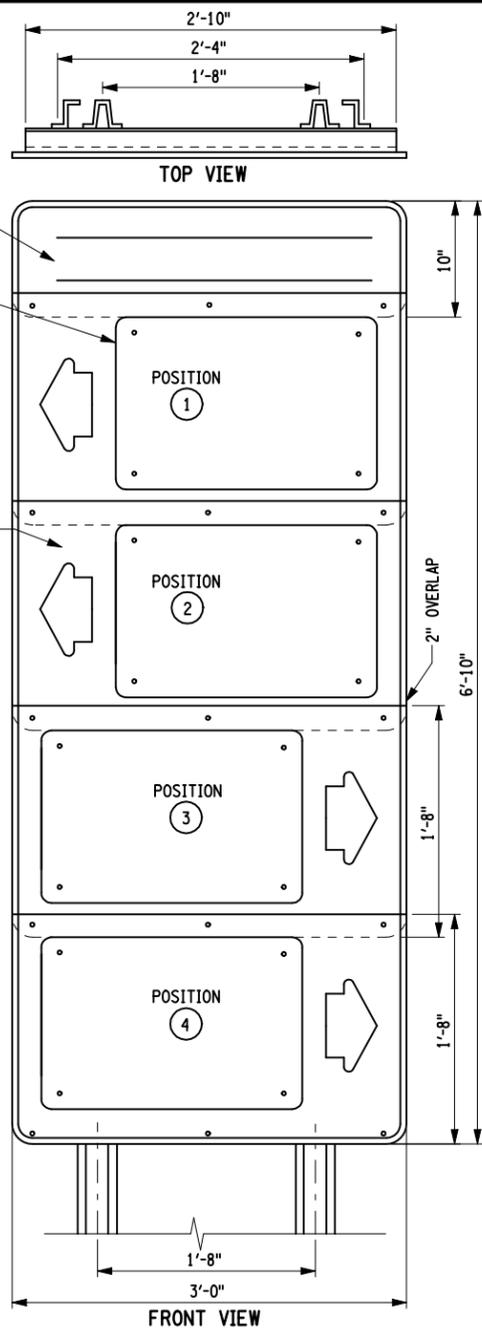


BACK VIEW

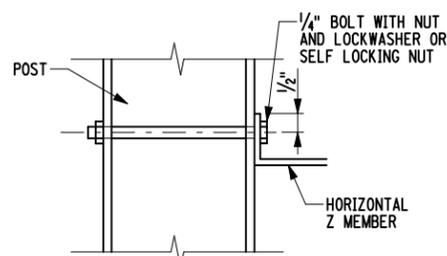


POST LENGTH VARIES

SIDE VIEW

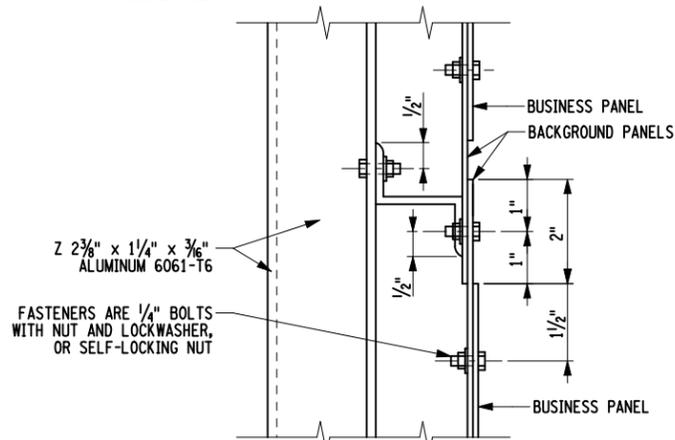


FRONT VIEW

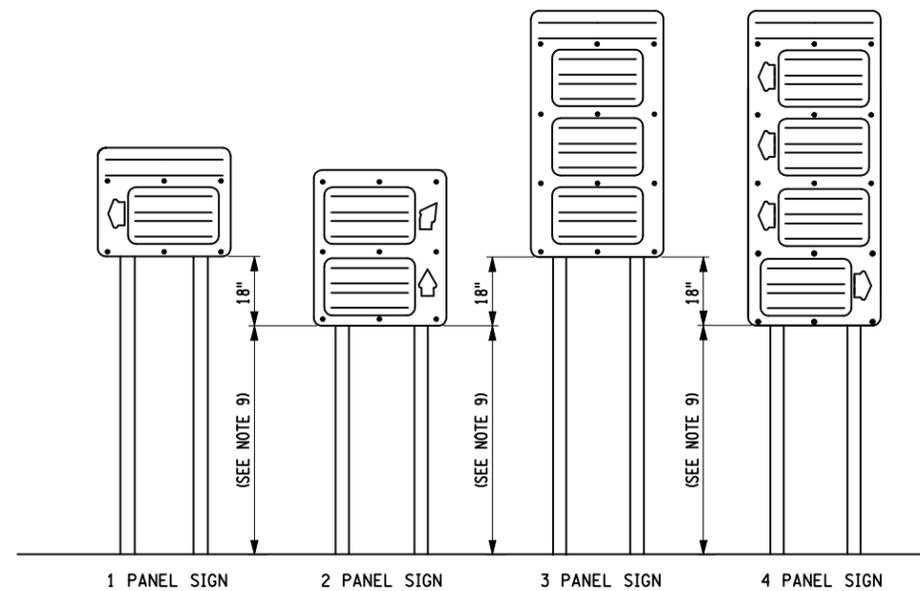


NOTE: SINGLE POST INSTALLATIONS SHALL USE TWO 3/8" Ø BOLTS TO CONNECT HORIZONTAL Z MEMBERS TO POST.

DETAIL "B"  
ATTACHMENT TO POST



DETAIL "A"  
ATTACHMENT OF PANELS AND Z BARS



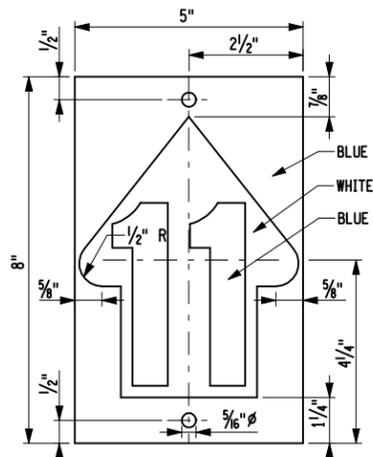
TYPICAL STANDARD  
INSTALLATION

NOTES:

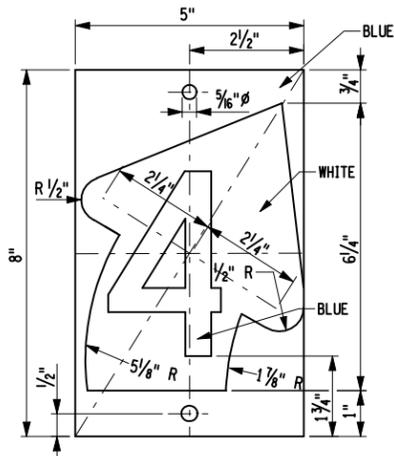
1. THIS SIGN ASSEMBLY MAY CONTAIN FROM ONE TO FOUR BUSINESS PANELS. THE NUMBER OF PANELS IS VARIED BY THE USE OF DETACHABLE BACKGROUND AND HEADING PANELS AND DIFFERENT MOUNTING ARRANGEMENTS. THE SIGN IS DESIGNED SO THAT PANELS MAY BE ADDED OR DELETED AT A LATER TIME.
2. DIFFERENT HEADING AND BACKGROUND PANELS ARE USED DEPENDING UPON THE PURPOSE OF THE SIGN ASSEMBLY. THE HEADING AND BACKGROUND PANEL ARRANGEMENT USED SHALL BE SHOWN ON THE PLANS.
3. BUSINESS PANELS ARE FURNISHED TO THE DEPARTMENT BY THE BUSINESS.
4. BUSINESS PANELS WILL BE FURNISHED TO THE CONTRACTOR FOR INSTALLATION AS SHOWN ON THE PLANS. IN THE EVENT A BUSINESS PANEL IS NOT AVAILABLE FOR INSTALLATION, THE CONTRACTOR SHALL COVER THE BACKGROUND PANEL WITH OPAQUE MATERIAL.
5. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO ARRANGE WITH THE ENGINEER FOR DELIVERY OF THE BUSINESS PANELS TO THE CONTRACTOR TO MEET THE CONTRACT SCHEDULE.
6. INSTRUCTIONS FOR MOUNTING DIFFERENT NUMBERS OF BACKGROUND PANELS ARE AS FOLLOWS:
  - A. ONE PANEL - MOUNT AT POSITION 3 USING HORIZONTAL BARS TO GROUND MOUNTED POST AS SHOWN. HEADING PANEL AS SHOWN ON THE PLANS.
  - B. TWO PANELS - MOUNT AT POSITIONS 3 AND 4 USING HORIZONTAL BARS TO GROUND MOUNTED POST AS SHOWN. HEADING PANEL AS SHOWN ON THE PLANS.
  - C. THREE PANELS - MOUNT AT POSITIONS 1, 2, AND 3. MOUNT PANEL "3" DIRECTLY TO GROUND MOUNTED POST USING HORIZONTAL BARS. ATTACH VERTICAL BARS TO HORIZONTAL BARS USED TO ATTACH PANEL "3" TO POSTS. MOUNT HEADING PANEL & PANELS "1" & "2" TO VERTICAL BARS AS SHOWN. HEADING PANEL AS SHOWN ON THE PLANS.
  - D. FOUR PANELS - MOUNT AS SHOWN WITH PANELS "3" AND "4" ATTACHED TO THE GROUND MOUNTED POST WITH HORIZONTAL BARS AND PANELS "1" AND "2" ATTACHED TO THE VERTICAL BARS AS SHOWN. HEADING PANEL AS SHOWN ON THE PLANS.
7. BACKGROUND PANELS MAY BE ADDED TO OR DELETED FROM THE SIGN ASSEMBLY AS REQUIRED. THESE ADDITIONS OR DELETIONS SHOULD BE IN ACCORDANCE WITH THE CONFIGURATIONS GIVEN IN NOTE 6. VERTICAL BARS FOR SUPPORTING PANELS "1" AND "2" SHALL NOT BE ATTACHED UNLESS THREE OR MORE PANELS ARE TO BE INSTALLED.
8. BUSINESS PANELS SHALL BE FASTENED DIRECTLY TO THE BACKGROUND PANEL SHOWING THE APPROPRIATE ARROWHEAD ON DIRECTIONAL PANELS.
9. SIGN MOUNTING HEIGHT HEIGHT IS THE VERTICAL DISTANCE BETWEEN THE NEAREST EDGE OF PAVEMENT AND THE BOTTOM OF SIGN.
  - A. HEIGHT OF 2 AND 4 PANEL SIGNS: SEE TABLE A ON STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS".
  - B. HEIGHT OF 1 AND 3 PANEL SIGNS SHALL BE 18" GREATER THAN SPECIFIED IN "A".
  - C. MINIMUM CLEARANCE TO GROUND IS 7'.
10. SIGN LATERAL PLACEMENT: SEE TABLE B ON STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS".
11. POSTS AND POST FOOTINGS SHALL BE INSTALLED AS SPECIFIED ON THE APPROPRIATE STANDARD SHEET FOR TRAFFIC SIGN POSTS. OR CURRENT, MATERIALS DETAILS.
12. ALL FASTENERS SHALL BE STAINLESS STEEL OR ALUMINUM.
13. SIGN PANEL DIMENSIONS UP TO 2% LARGER THAN SHOWN ON THIS DRAWING ARE ALSO ACCEPTABLE.
14. HORIZONTAL Z BARS SHALL BE INSTALLED AS SHOWN.

EFFECTIVE DATE: 01/07/10

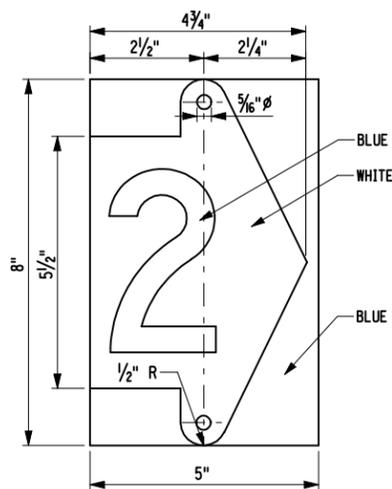
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
TOURIST, BUSINESS, AND RAMP SERVICE SIGNS (SHEET 1 OF 2)		
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025	
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)		
		645-05



VERTICAL ARROW PANEL DETAIL\*

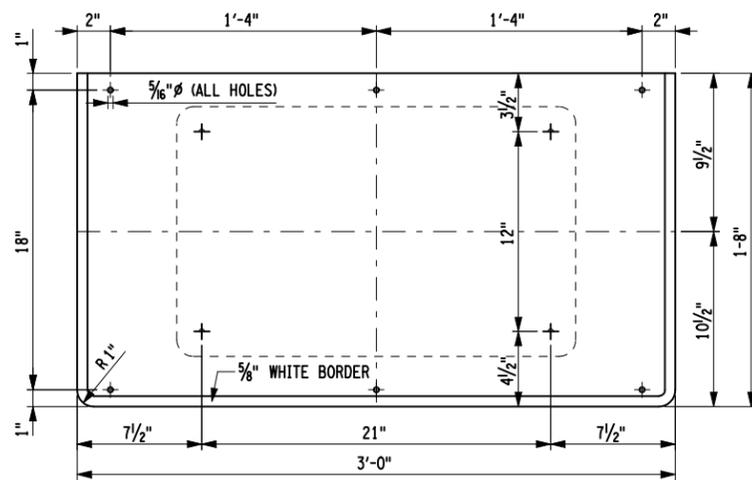


HALF RIGHT ARROW PANEL DETAIL  
(REVERSE FOR HALF LEFT)\*

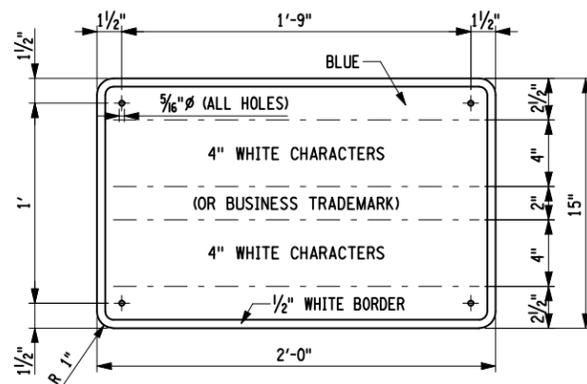


ARROW DETAIL\*

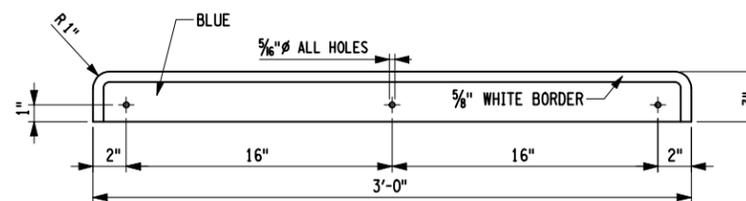
\* NUMERALS SHALL BE 4" SERIES "C" - MODIFIED, IF NECESSARY, TO FIT WITHIN ARROW.



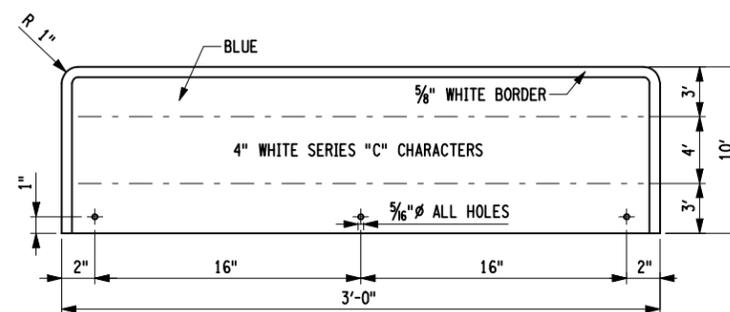
BACKGROUND PANEL (WITHOUT DIRECTIONAL ARROWS)



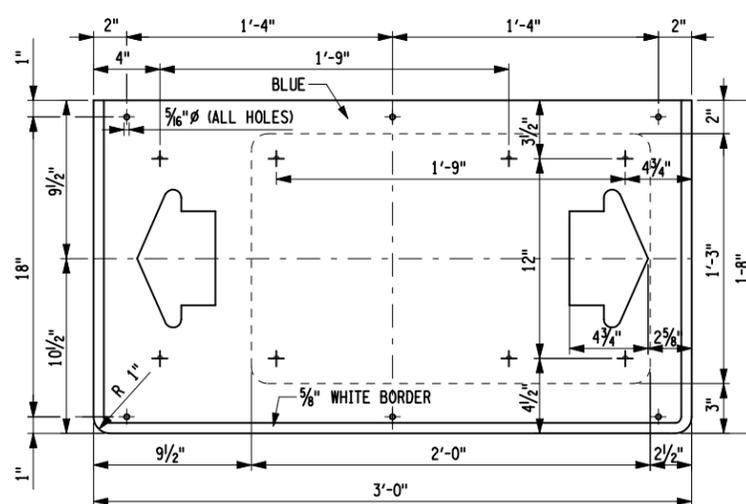
BUSINESS PANEL



HEADING PANEL WITHOUT LEGEND



HEADING PANEL WITH LEGEND



BACKGROUND PANEL (WITH DIRECTIONAL ARROWS)  
(SEE NOTE 2G)

NOTES:

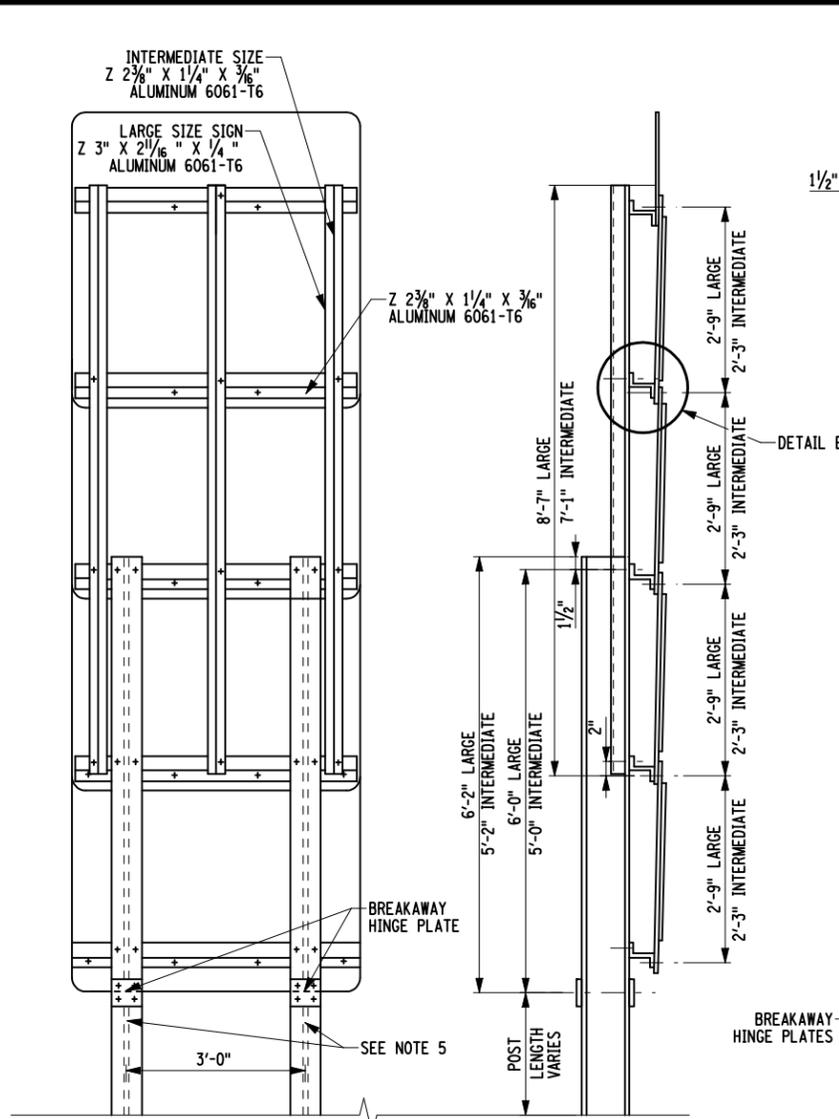
1. BUSINESS PANEL
  - A. BUSINESS PANELS WILL BE FURNISHED TO THE DEPARTMENT BY THE BUSINESS CONCERNED.
  - B. THE DEPARTMENT WILL SUPPLY THE PANELS TO THE CONTRACTOR FOR INSTALLATION. IN THE EVENT A PANEL IS NOT AVAILABLE FOR INSTALLATION, THE CONTRACTOR SHALL COVER THE BACKGROUND PANEL WITH OPAQUE MATERIAL.
  - C. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE WITH THE ENGINEER FOR THE DELIVERY OF THE BUSINESS PANELS TO THE CONTRACTOR IN ORDER TO MEET THE CONTRACT SCHEDULE.
  - D. PANEL SHALL BE FABRICATED FROM 10 GAUGE ALUMINUM ALLOY.
2. BACKGROUND PANELS
  - A. BACKGROUND PANELS ARE EITHER WITH OR WITHOUT DIRECTIONAL ARROWS.
  - B. PANELS SHALL BE FULLY REFLECTIVE. REFLECTIVE SHEETING FOR BACKGROUND AND CHARACTERS SHALL BE TYPE 1 CLASS "A" AS SPECIFIED IN "NYSOT STANDARD SPECIFICATIONS - CONSTRUCTION AND MATERIALS."
  - C. PANELS MAY BE FABRICATED USING BLUE REFLECTIVE SHEETING AND DIRECTLY APPLIED WHITE BORDER AND ARROWS OR BY USING THE SILK SCREENING PROCESS.
  - D. ON NON-DIRECTIONAL BACKGROUND PANELS, THE BUSINESS PANEL SHALL BE CENTERED AS SHOWN.
  - E. ON DIRECTIONAL BACKGROUND PANELS, THE BUSINESS PANEL SHALL BE ATTACHED EITHER ON THE LEFT OR THE RIGHT TO SHOW THE APPROPRIATE DIRECTIONAL ARROW SPECIFIED ON THE PLANS.
  - F. MILEAGE NUMERALS MAY BE EITHER DIRECTLY APPLIED REFLECTIVE SHEETING OR SILK SCREENED.
  - G. THE DIRECTIONAL PANEL AS SHOWN CONTAINS TWO ARROWHEADS WITH THE BUSINESS PANEL INTENDED TO COVER THE UNUSED ARROWHEAD. THE CONTRACTOR MAY ALSO ELECT TO FABRICATE THE PANEL WITH ONLY ONE ARROWHEAD OF THE TYPE SHOWN ON THE PLANS OR USE DETACHABLE ARROW PANELS.
  - H. THE HALF RIGHT/LEFT AND VERTICAL ARROW PANELS, WHEN USED, SHALL BE ATTACHED OVER OR IN PLACE OF STANDARD ARROW.
3. HEADING PANEL
  - A. PANELS ARE FABRICATED EITHER WITH OR WITHOUT LEGEND.
  - B. PANELS WITH LEGEND SHALL BE FABRICATED WITH THE LEGEND AS SHOWN ON THE PLANS.
  - C. PANELS SHALL BE FULLY REFLECTIVE. REFLECTIVE SHEETING FOR BACKGROUND AND CHARACTERS SHALL BE TYPE 1 CLASS "A"
  - D. PANELS MAY BE FABRICATED USING BLUE REFLECTIVE SHEETING AND DIRECTLY APPLIED WHITE BORDER AND CHARACTERS OR BY THE SILK SCREENING PROCESS.
  - E. PANELS SHALL BE FABRICATED FROM 10 GAUGE ALUMINUM ALLOY.
4. HOLES FOR JOINING BACKGROUND AND HEADING PANELS TOGETHER AND ATTACHING TO HORIZONTAL BARS SHALL BE MADE IN THE SHOP. HOLES FOR ATTACHING BUSINESS AND ARROW PANELS MAY BE MADE IN THE FIELD.
  - ⊕ HOLES TO BE DRILLED IN THE SHOP
  - ⊕ HOLES THAT MAY BE DRILLED IN THE FIELD
5. SIGN PANEL DIMENSIONS UP TO 2% LARGER THAN SHOWN ON THIS DRAWING ARE ALSO ACCEPTABLE.

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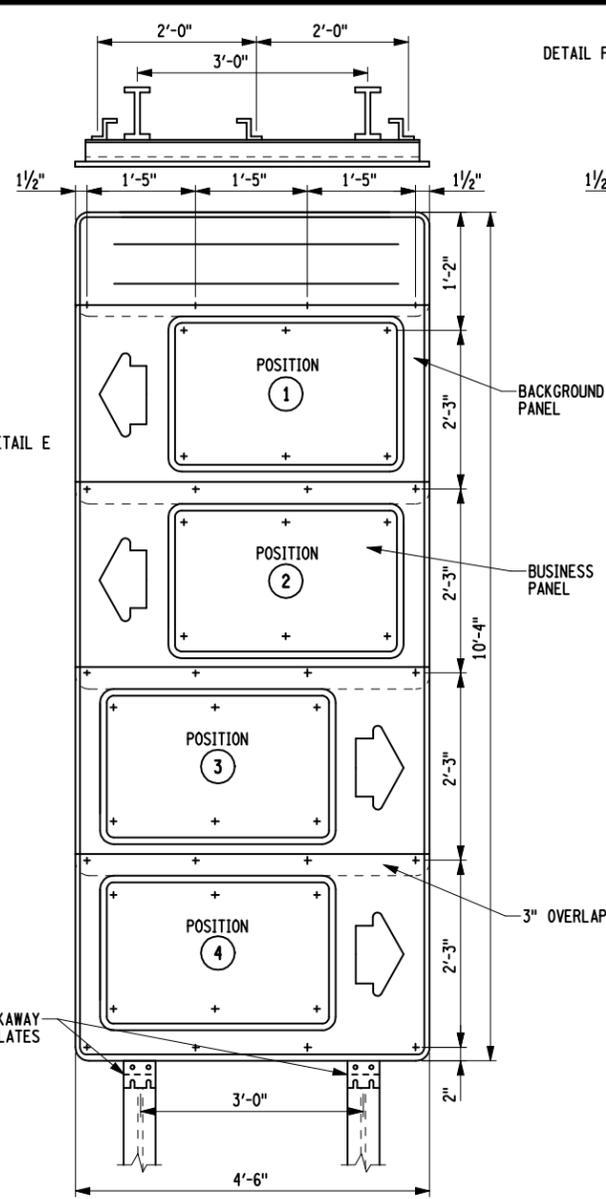
 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
U.S. CUSTOMARY STANDARD SHEET	
<p>TOURIST, BUSINESS, AND RAMP SERVICE SIGNS (SHEET 2 OF 2)</p>	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	645-05

EFFECTIVE DATE: 01/07/10

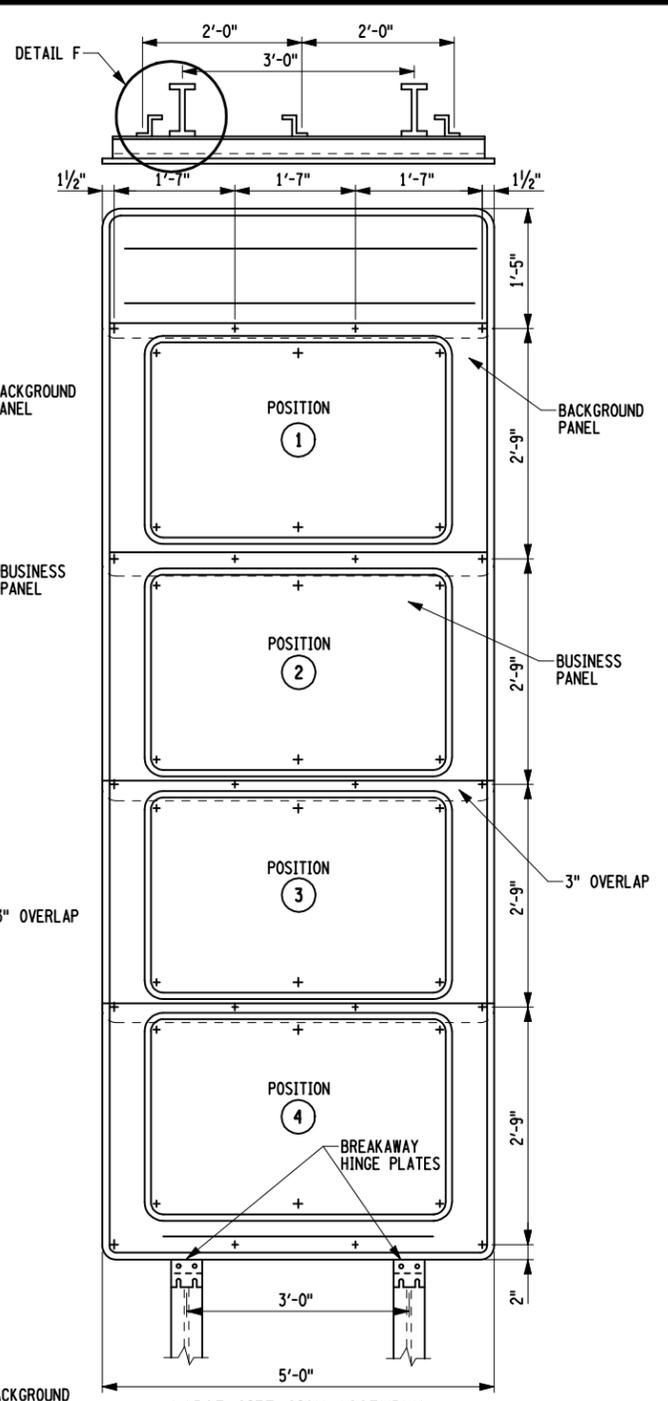
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BACK AND SIDE VIEW SHOWING ASSEMBLY DETAILS FOR BOTH INTERMEDIATE AND LARGE SIZE SIGNS

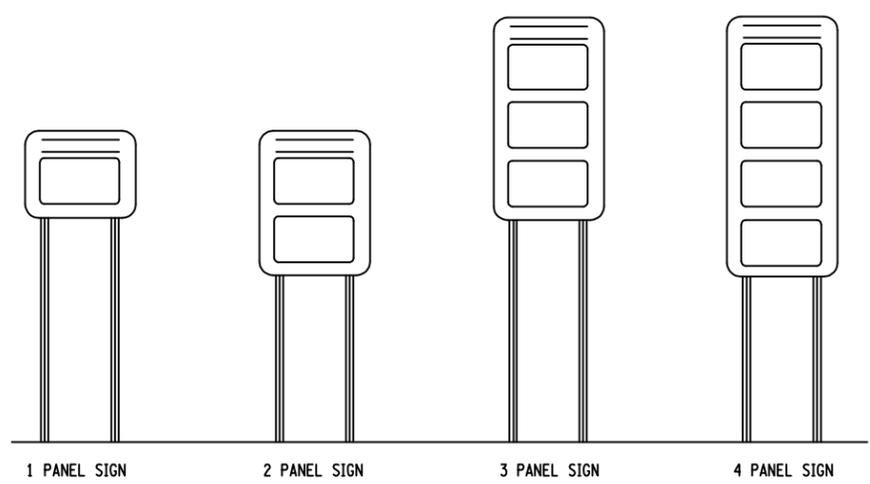


INTERMEDIATE SIZE SIGN ASSEMBLY

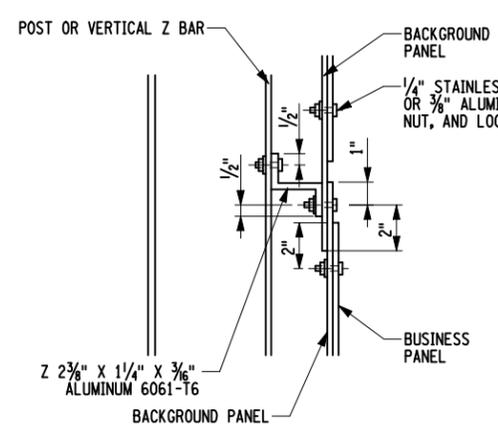


LARGE SIZE SIGN ASSEMBLY

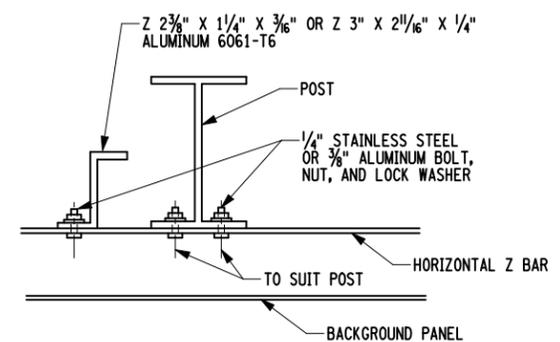
- NOTES:
- THESE SIGN ASSEMBLIES CONTAIN FROM ONE TO FOUR BACKGROUND PANELS AND A HEADING PANEL AS SPECIFIED ON THE PLANS.
  - BUSINESS PANELS ARE ARRANGED AS SPECIFIED ON THE PLANS.
  - INSTRUCTIONS FOR MOUNTING DIFFERENT NUMBERS OF BACKGROUND PANELS ARE AS FOLLOWS:
    - ONE PANEL - MOUNT AT POSITION 3 USING HORIZONTAL BARS TO THE POSTS AS SHOWN. MOUNTING HEIGHT AS IN NOTE 6. HEADING PANEL AS SHOWN ON THE PLANS.
    - TWO PANELS - MOUNT AT POSITIONS 3 AND 4 USING HORIZONTAL BARS TO THE POSTS AS SHOWN. MOUNTING HEIGHT AS IN NOTE 6. HEADING PANEL AS SHOWN ON THE PLANS.
    - THREE PANELS - MOUNT AT POSITIONS 1, 2 AND 3. MOUNT PANEL 3 TO THE POSTS USING HORIZONTAL BARS. ATTACH VERTICAL BARS TO THE HORIZONTAL BARS ATTACHING PANEL 3 TO THE POSTS. MOUNT HEADING PANEL AND PANELS 1 AND 2 TO THE VERTICAL BARS USING HORIZONTAL BARS. MOUNTING HEIGHT OF PANEL 3 AS IN NOTE 6.
    - FOUR PANELS - MOUNT AS SHOWN WITH PANELS 3 AND 4 ATTACHED TO THE POSTS AND 1 AND 2 ATTACHED TO THE VERTICAL BARS.
  - BACKGROUND PANELS MAY BE ADDED TO OR DELETED FROM THE SIGN ASSEMBLY AS REQUIRED, THESE ADDITIONS AND DELETIONS SHOULD BE IN ACCORDANCE WITH THE CONFIGURATIONS GIVEN IN NOTE 3. VERTICAL BARS FOR SUPPORTING PANELS 1 AND 2 SHALL NOT BE ATTACHED UNLESS 3 OR MORE PANELS ARE INSTALLED.
  - POSTS SHALL BE BREAKAWAY, EXCEPT THAT THOSE LOCATED BEYOND THE DEFLECTION DISTANCE OF ANY ADJACENT GUIDE RAIL NEED NOT HAVE BREAKAWAY BASES. POST SIZE SHALL BE BASED ON A FOUR PANEL SIGN ASSEMBLY. POSTS, BREAKAWAY BASES AND FOOTINGS SHALL BE AS SPECIFIED ON THE STANDARD SHEET ON TYPICAL GUIDE SIGNS. OR CURRENT MATERIALS DETAIL.
  - SIGN MOUNTING HEIGHT:
    - HEIGHT OF 2 AND 4 PANEL SIGNS SHALL BE IN ACCORDANCE WITH STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS".
    - HEIGHT OF 1 AND 3 PANEL SIGNS SHALL BE 2'-3" HIGHER FOR INTERMEDIATE SIZE SIGNS AND 2'-9" HIGHER FOR LARGE SIZE SIGNS THAN SPECIFIED IN "A".
    - TWO AND FOUR PANEL SIGN ASSEMBLIES SHALL HAVE A MINIMUM 6'-0" CLEARANCE BETWEEN THE GROUND AND THE LOWEST PART OF THE SIGN. ONE AND THREE PANEL SIGN ASSEMBLIES SHALL HAVE A MINIMUM GROUND CLEARANCE OF 8'-3" FOR INTERMEDIATE SIZE SIGNS, AND 8'-9" FOR LARGE SIZE SIGNS. IN THE EVENT THAT THE SIGN IS LOCATED ON A BACK SLOPE SUFFICIENT IN HEIGHT AND DISTANCE ABOVE THE PAVEMENT THAT VEHICLE IMPACT IS UNLIKELY, THE GROUND CLEARANCE MAY BE REDUCED AS DIRECTED BY THE ENGINEER.
  - SIGN LATERAL PLACEMENT:
    - WHERE FEASIBLE, THE NEAR EDGE OF THE SIGN SHALL BE IN ACCORDANCE WITH STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS".
    - IN URBAN DISTRICTS WHERE THERE ARE CURBS AND SIDEWALKS, THE DISTANCE FROM THE FACE OF THE CURB MAY BE REDUCED TO 1'-0" MINIMUM.
    - WHERE SIGNS ARE INSTALLED IN A SERIES THEY SHALL BE INSTALLED AT THE SAME LATERAL CLEARANCE WHERE FEASIBLE.
    - SIGN PANEL DIMENSIONS UP TO 2% LARGER THAN SHOWN ON THIS DRAWING ARE ALSO ACCEPTABLE.
  - HORIZONTAL Z BARS SHALL BE INSTALLED AS SHOWN.



TYPICAL STANDARD INSTALLATIONS



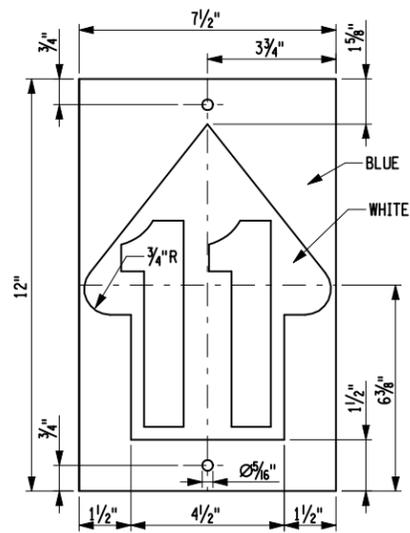
DETAIL E



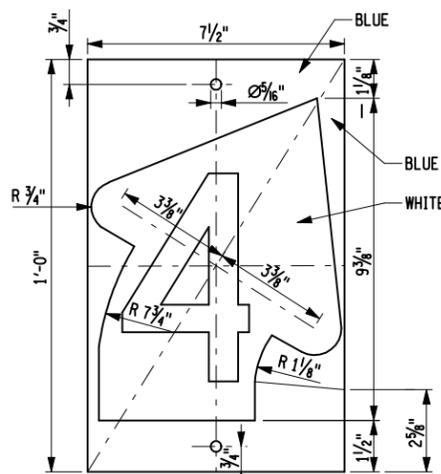
DETAIL F

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>TOURIST ORIENTED BUSINESS SIGNS</b> (SHEET 1 OF 2)	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	645-06

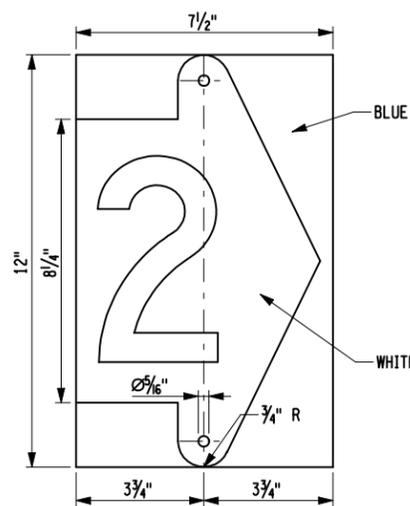
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VERTICAL ARROW PANEL DETAIL\*



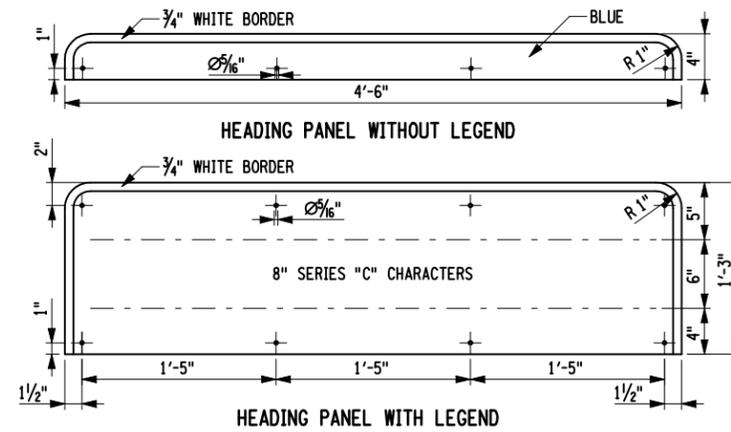
HALF RIGHT ARROW PANEL DETAIL (REVERSE FOR HALF LEFT)\*



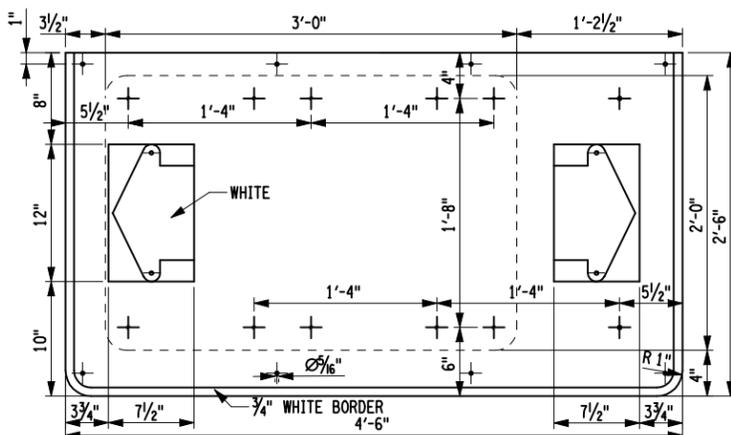
ARROW DETAIL\*

\*NUMERALS SHALL BE 6" SERIES "C" - MODIFIED, IF NECESSARY, TO FIT WITHIN ARROW.

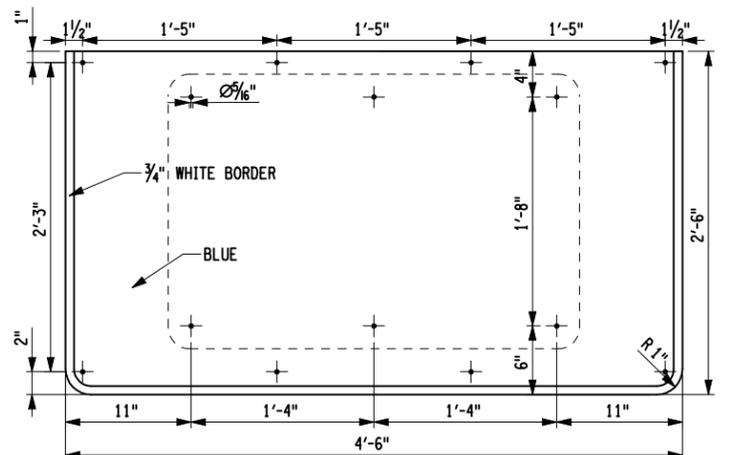
INTERMEDIATE SIZE



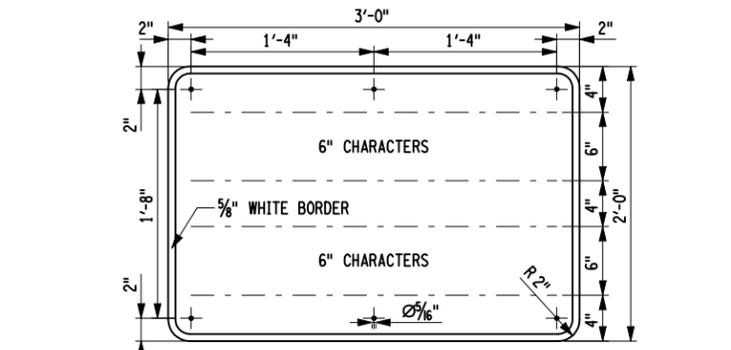
HEADING PANEL WITHOUT LEGEND



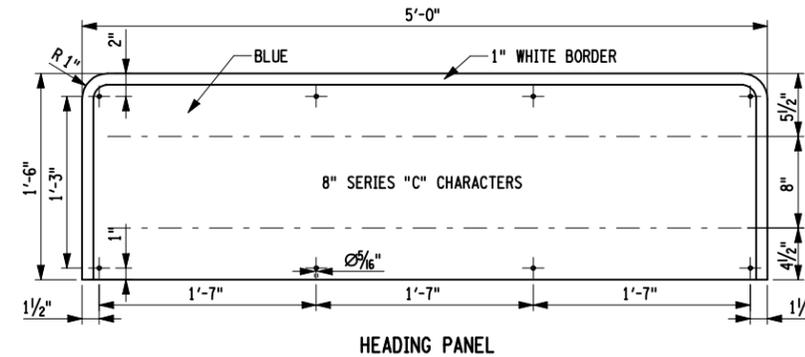
HEADING PANEL WITH LEGEND



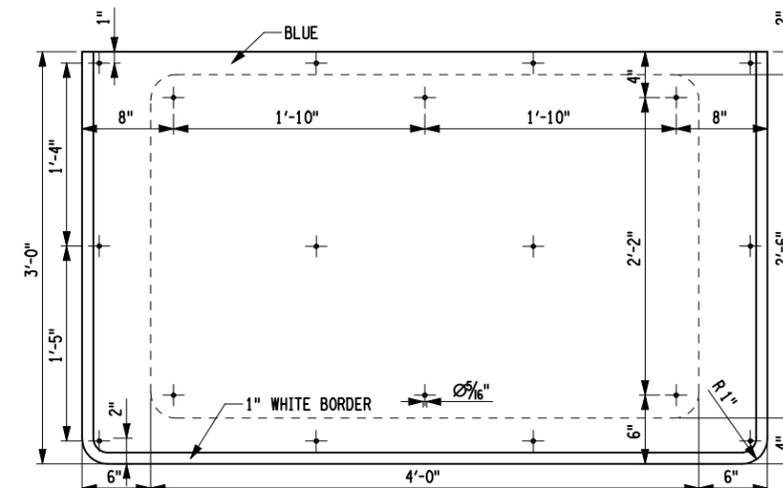
BACKGROUND PANEL (WITH DIRECTIONAL ARROWS)



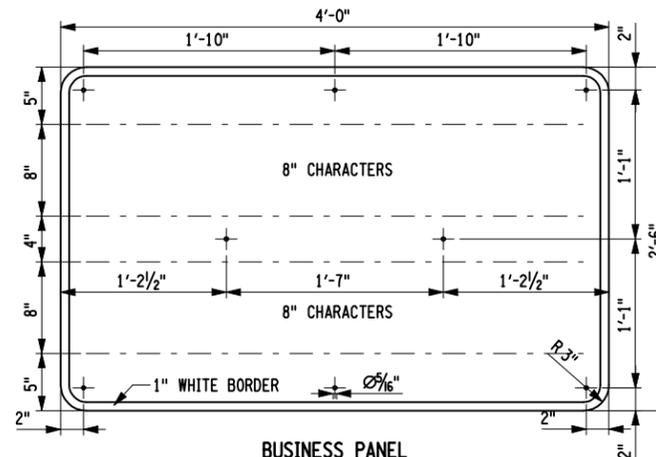
BACKGROUND PANEL (WITHOUT DIRECTIONAL ARROWS)



HEADING PANEL



BACKGROUND PANEL

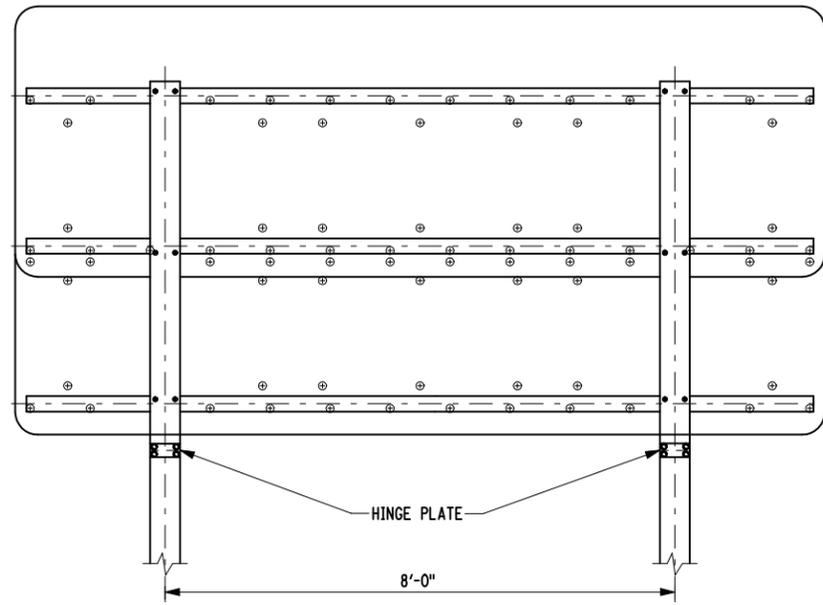


BUSINESS PANEL LARGE SIZE

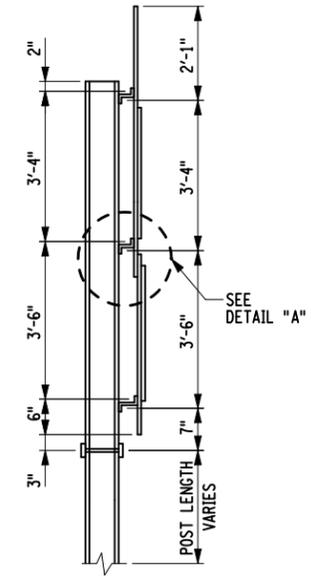
NOTES:

- THIS STANDARD SHEET CONTAINS PANEL FABRICATION DETAILS FOR TOURIST ORIENTED BUSINESS SIGNS. THE PANELS REQUIRED WILL BE SPECIFIED ON THE PLANS.
- BUSINESS PANELS:
  - BUSINESS PANELS WILL BE FURNISHED TO THE DEPARTMENT BY THE BUSINESS CONCERNED.
  - THE DEPARTMENT WILL SUPPLY THE PANELS TO THE CONTRACTOR FOR INSTALLATION. IN THE EVENT A PANEL IS NOT AVAILABLE FOR INSTALLATION, THE CONTRACTOR SHALL COVER THE BACKGROUND PANEL WITH OPAQUE MATERIAL.
  - THE CONTRACTOR SHALL ARRANGE WITH THE ENGINEER FOR DELIVERY OF THE BUSINESS PANELS TO THE CONTRACTOR TO MEET THE CONTRACT SCHEDULE.
- BACKGROUND AND HEADING PANELS:
  - PANELS SHALL BE FULLY REFLECTIVE. REFLECTIVE SHEETING FOR BACKGROUND AND CHARACTERS SHALL BE TYPE 1 CLASS "A" AS SPECIFIED IN §730-05.
  - ON DIRECTIONAL BACKGROUND PANELS, THE BUSINESS PANEL SHALL BE ATTACHED EITHER ON THE LEFT OR THE RIGHT TO SHOW THE APPROPRIATE DIRECTIONAL ARROW.
  - THE DIRECTIONAL PANEL AS SHOWN CONTAINS TWO ARROWHEADS WITH THE BUSINESS PANEL INTENDED TO COVER THE UNUSED ARROWHEAD. THE CONTRACTOR MAY ALSO ELECT TO FABRICATE THE PANEL WITH ONLY ONE ARROWHEAD OF THE TYPE SHOWN ON THE PLANS OR USE THE DETACHABLE ARROWS.
  - ARROW HEADS MAY BE EITHER DIRECTLY APPLIED REFLECTIVE SHEETING, SILK SCREENED OR ON DETACHABLE PANELS.
  - MILEAGE NUMERALS MAY BE EITHER DIRECTLY APPLIED REFLECTIVE SHEETING OR SILK SCREENED.
- SIGN PANEL DIMENSIONS UP TO 2% LARGER THAN SHOWN ON THIS DRAWING ARE ALSO ACCEPTABLE.
- PANELS SHOULD BE FABRICATED IN ACCORDANCE WITH §645-2.02.

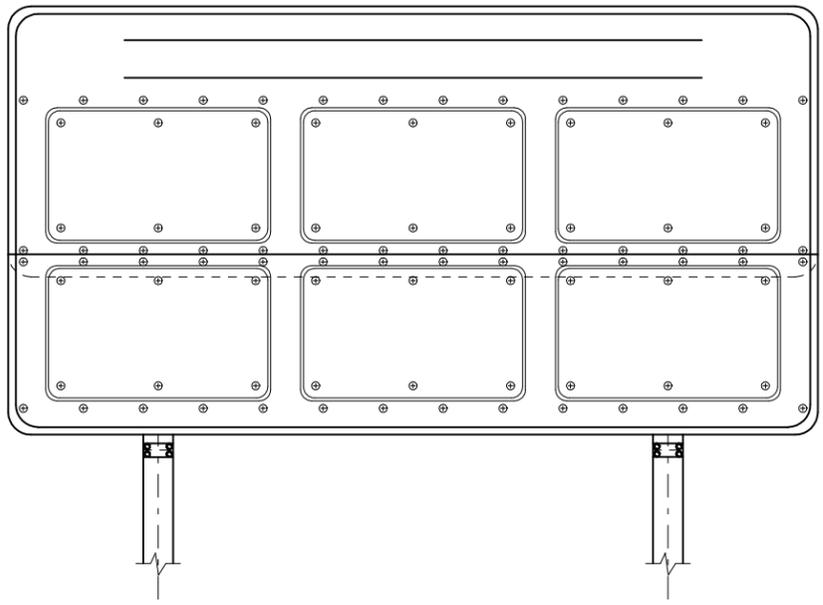
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	U.S. CUSTOMARY STANDARD SHEET	
	TOURIST ORIENTED BUSINESS SIGNS (SHEET 2 OF 2)	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025	
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	645-06	
EFFECTIVE DATE: 01/07/10		



BACK VIEW

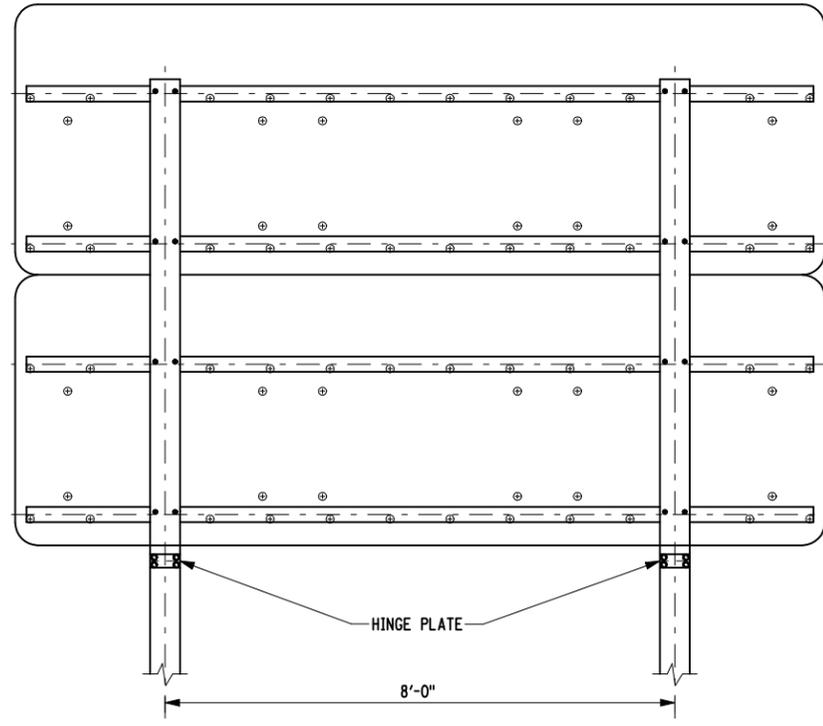


SIDE VIEW

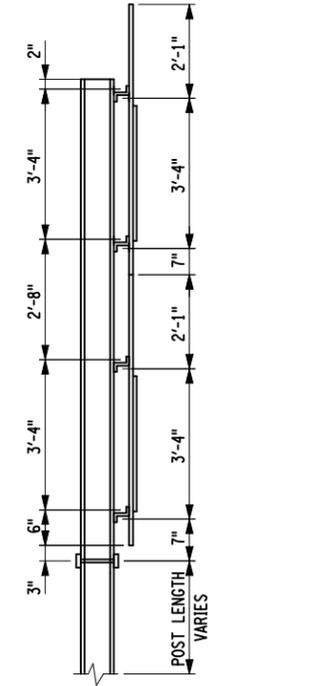


FRONT VIEW

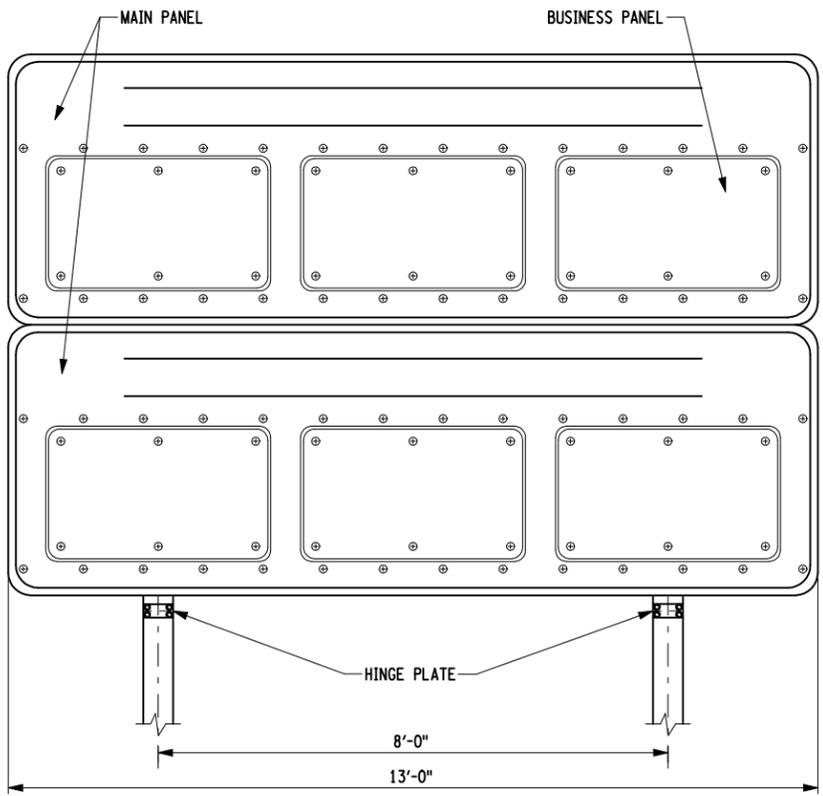
SINGLE - EXIT SIGN ASSEMBLY



BACK VIEW

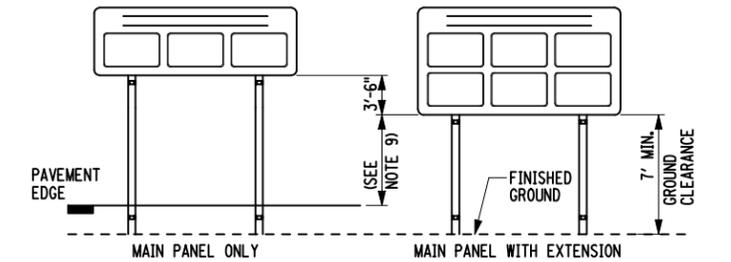


SIDE VIEW

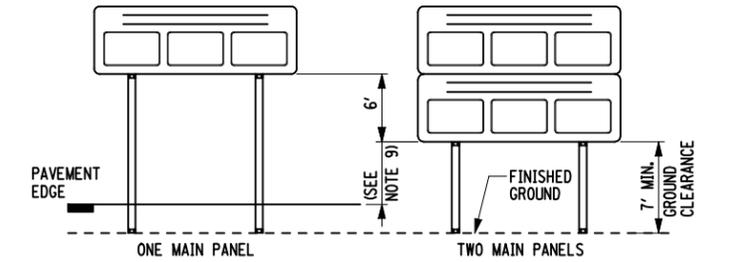


FRONT VIEW

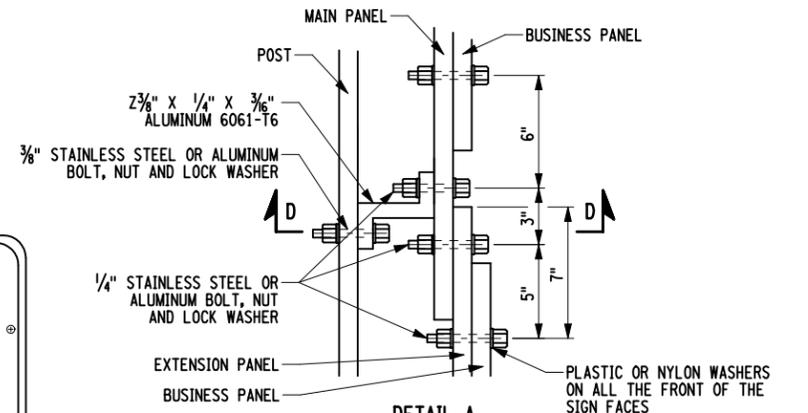
CLOSELY - SPACED EXIT SIGN ASSEMBLY



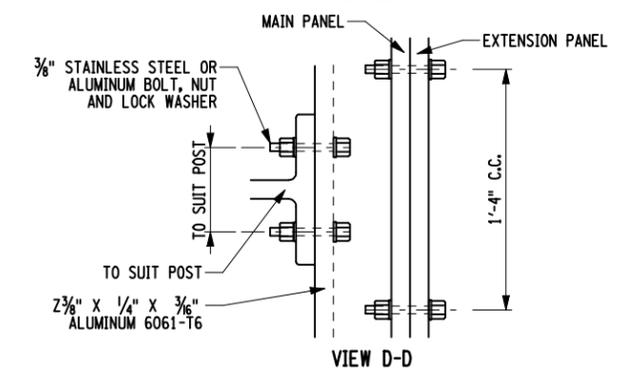
SPECIFIC SERVICE SIGN  
SINGLE EXIT SIGNS - TYPICAL SIGN MOUNTING HEIGHT



SPECIFIC SERVICE SIGN  
CLOSELY - SPACED EXIT SIGNS



DETAIL A



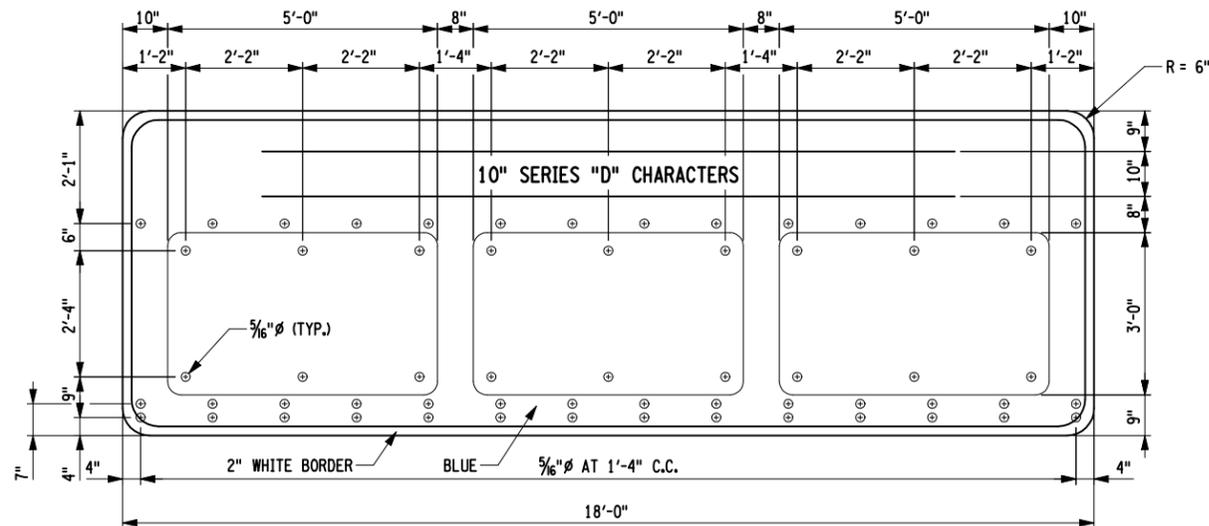
VIEW D-D

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>SPECIFIC SERVICES SIGNS (SHEET 1 OF 2)</p>	
<p>APPROVED OCTOBER 05, 2009</p>	<p>ISSUED UNDER EB 09-025</p>
<p>/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)</p>	
<p>645-07</p>	

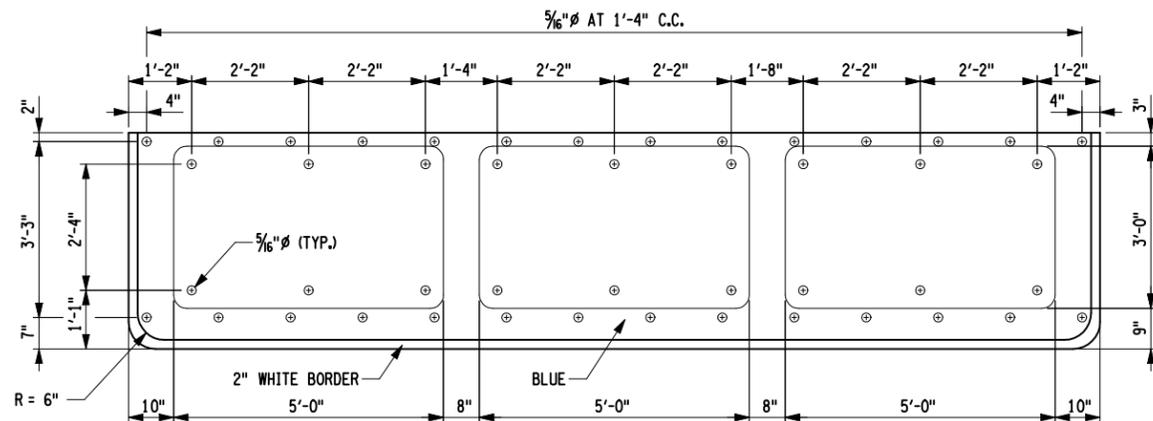
NOTE: FOR NOTES SEE STANDARD SHEET  
TITLED "SPECIFIC SERVICES SIGNS (SHEET 2 OF 2)"

EFFECTIVE DATE: 01/07/10

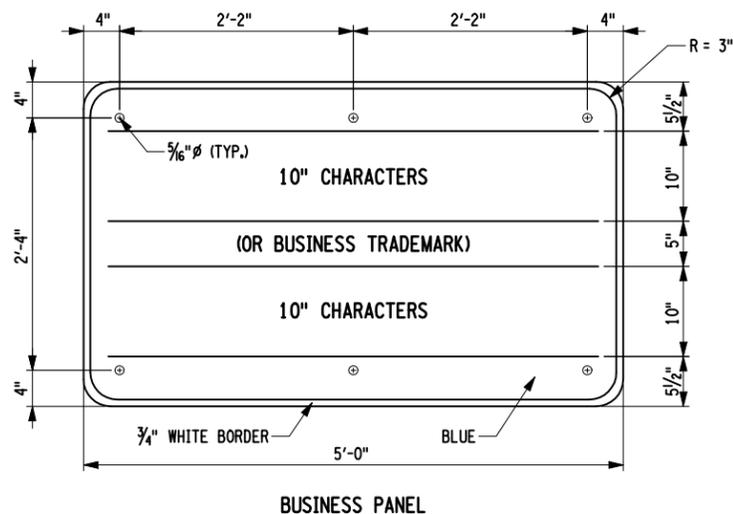
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 USER = jturley



GAS, FOOD, LODGING, CAMPING, AND ATTRACTIONS MAIN PANEL



GAS, FOOD, LODGING, CAMPING AND ATTRACTIONS EXTENSION PANEL



BUSINESS PANEL

NOTES:

1. SPECIFIC SERVICES SIGNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS ON THESE STANDARD SHEETS (SHEET 1 OF 2 AND SHEET 2 OF 2), AND THE DETAILS ON THE APPROPRIATE STANDARD SHEETS FOR GUIDE SIGNS AND BREAKAWAY SIGN POSTS.
2. BUSINESS PANELS:
  - A. THESE PANELS SHALL BE FURNISHED TO THE DEPARTMENT BY THE BUSINESS CONCERNED.
  - B. THE DEPARTMENT WILL SUPPLY THE PANELS TO THE CONTRACTOR FOR INSTALLATION. PANELS SHALL BE INSTALLED IN THE POSITIONS SPECIFIED ON THE PLANS.
  - C. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ARRANGE WITH THE ENGINEER FOR THE DELIVERY OF THE BUSINESS PANELS TO THE CONTRACTOR TO MEET CONTRACT SCHEDULE.
3. MAIN AND EXTENSION PANELS:
  - A. MAIN PANELS MAY BE USED ALONE, WITH ANOTHER PANEL, OR WITH AN EXTENSION PANEL. EXTENSION PANELS ARE USED TO EFFECTIVELY DOUBLE THE SIZE OF THE SIGN. THEY MAY BE INSTALLED DURING CONSTRUCTION, OR AT A LATER DATE. THEY ALSO MAY BE REMOVED AT A LATER DATE IF IT BECOMES NECESSARY TO REDUCE THE SIZE OF THE SIGN.
  - B. PANELS SHALL BE FULLY REFLECTIVE. REFLECTIVE SHEETING FOR BACKGROUND AND CHARACTERS SHALL BE CLASS "A" AS SPECIFIED IN "NYS DOT STANDARD SPECIFICATIONS - CONSTRUCTION AND MATERIALS". CHARACTERS AND BORDER SHALL BE TYPE IV.
4. A COMBINATION OF MAIN, EXTENSION AND BUSINESS PANELS SHALL BE USED TO CONSTRUCT THE SIGNS SPECIFIED ON THE PLANS.
5. SINGLE PANEL SIGNS SHALL BE MOUNTED AS SHOWN SO THAT ADDITIONAL PANELS MAY BE INSTALLED LATER.
6. POST SIZE SHALL BE BASED ON MAXIMUM SIZE SIGN ASSEMBLIES USING A MAIN AND EXTENSION PANEL OR TWO MAIN PANELS. POSTS, BREAKAWAY BASES, AND FOOTINGS SHALL BE AS SPECIFIED ON STANDARD SHEET TITLED "MULTIPLE POST SIGN INSTALLATION USING TYPE B SIGN POSTS".
7. IF THE PANELS ARE FABRICATED WITH BATTENS, THE BATTENS SHALL BE LOCATED SO AS NOT TO COVER THE BUSINESS PANEL MOUNTING HOLES.
8. IF THE PANELS ARE FABRICATED WITH BATTENS, THE BATTENS SHALL EXTEND NO CLOSER THAN 7" FROM THE TOP OF THE EXTENSION PANEL, SO AS NOT TO OCCUPY THE AREA WHERE THE MAIN AND EXTENSION PANELS OVERLAP.
9. SIGN MOUNTING HEIGHT:
  - A. HEIGHT ABOVE PAVEMENT EDGE:
    1. SIGNS CONSISTING OF TWO PANELS (EITHER TWO MAIN PANELS, OR A MAIN PANEL AND AN EXTENSION PANEL) SHALL BE MOUNTED IN ACCORDANCE WITH STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS".
    2. MAIN PANELS, WHEN INSTALLED ALONE AT SINGLE EXIT INTERCHANGES, SHALL BE MOUNTED AT LEAST 3'-6" ABOVE THE HEIGHT DESCRIBED IN NOTE 9.A.1. ABOVE.
    3. MAIN PANELS, WHEN INSTALLED ALONE AT CLOSELY-SPACED EXIT INTERCHANGES, SHALL BE MOUNTED AT LEAST 6' ABOVE THE HEIGHT DESCRIBED IN NOTE 9.A.1. ABOVE.
  - B. GROUND CLEARANCE:
    1. TWO PANEL SIGNS SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 7' BETWEEN THE GROUND AND THE LOWEST PART OF THE SIGN.
    2. ONE-PANEL SIGNS AT SINGLE EXIT INTERCHANGES SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 10'-6" BETWEEN THE GROUND AND THE LOWEST PART OF THE SIGN.
    3. MAIN PANEL SIGNS, WHEN INSTALLED ALONE AT CLOSELY-SPACED EXIT INTERCHANGES, SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 13' BETWEEN THE GROUND AND THE LOWEST PART OF THE SIGN.
    4. IF A SIGN IS LOCATED ON A BACK SLOPE, HIGH ENOUGH AND / OR FAR ENOUGH AWAY FROM THE PAVEMENT TO MAKE IMPACT UNLIKELY, THE GROUND CLEARANCE MAY BE REDUCED, AS DIRECTED BY THE ENGINEER.
10. SIGN LATERAL PLACEMENT:
  - A. THE DISTANCE BETWEEN THE OUTSIDE PAVEMENT EDGE AND THE NEAR EDGE OF THE SIGN SHALL BE IN ACCORDANCE WITH STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS".
  - B. WHERE FEASIBLE, SIGNS IN A SERIES SHOULD HAVE THE SAME LATERAL PLACEMENT.
  - C. NON-BREAKAWAY POSTS BEHIND GUIDE RAIL SHALL HAVE MINIMUM CLEARANCE AS SPECIFIED ON STANDARD SHEET TITLED "POSITIONING OF TRAFFIC SIGNS".
11. SIGN PANELS WITH DIMENSIONS UP TO 2% LARGER THAN SHOWN ON THIS DRAWING ARE ALSO ACCEPTABLE.

FILE NAME = IP\_PWP-d0109553\645-0702.dgn  
 DATE/TIME = 06-NOV-2008 15:05  
 DATE/TIME = 06-NOV-2008 15:05  
 USER = jturley

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
U.S. CUSTOMARY STANDARD SHEET	
SPECIFIC SERVICES SIGNS (SHEET 2 OF 2)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/s/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	645-07

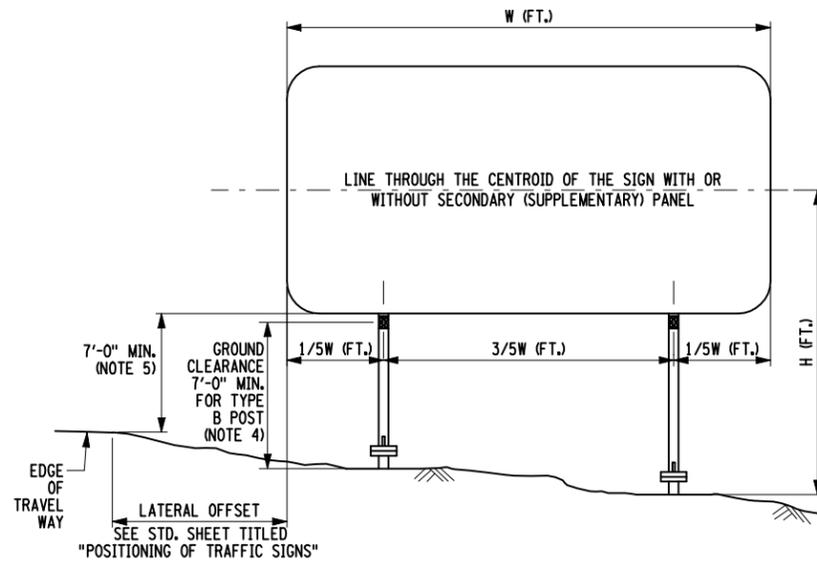
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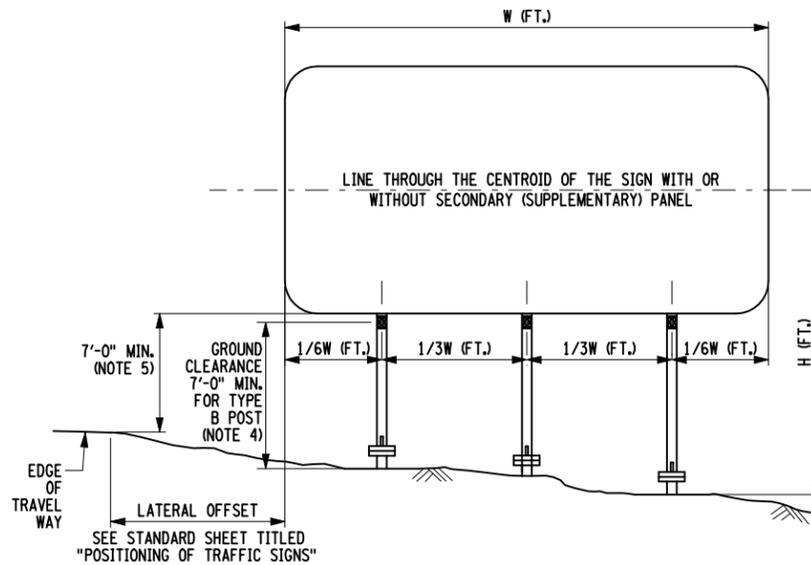
NOTES:

- SEE APPROPRIATE STANDARD SHEETS FOR SIGN PANEL, POST, AND BREAKAWAY FABRICATION DETAILS.
- POST SELECTION PROCEDURE:
  - DETERMINE TOTAL SIGN AREA (A) OF ALL PANELS IN THE SIGN ASSEMBLY AND THE DISTANCE (D) FROM THE CENTROID OF THE PRIMARY PANEL TO THE HINGE CENTER.
  - DETERMINE HEIGHT (H) WHICH IS THE DISTANCE FROM THE TOP OF THE FOOTING TO THE CENTROID OF THE PRIMARY PANEL.
  - ENTER THE TABLES USING SIGN AREA (A) AND HEIGHT (H) TO MAKE A PRELIMINARY SELECTION OF NUMBER OF POSTS AND POST SELECTION.
  - USING SIGN WIDTH (W) AND THE NUMBER OF POSTS DETERMINED IN STEP C, DETERMINE IF THE POST SPACING (1/3W OR 3/5W AS APPROPRIATE) MEETS THE 7'-0" WHEEL PATH CRITERIA. IF NOT, SELECT ANOTHER COMBINATION OF POST SECTION AND NUMBER OF POSTS.
  - USING SIGN AREA (A), THE DISTANCE FROM THE CENTROID TO THE HINGE CENTER (D) AND THE APPROPRIATE WIND LOAD (P), COMPUTE THE HINGE MOMENT (HM) AS SHOWN:  

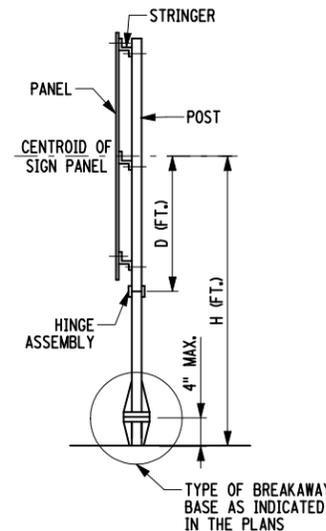
$$HM (FT-LB) = A (SQ FT) \times D (FT) \times P (Pa) / 1000$$
- POSTS FOR SIGN ASSEMBLIES WITH MORE THAN THREE POSTS MAY BE DETERMINED BY EXTRAPOLATION FROM THE TABLES AS LONG AS THE HINGE MOMENT AND THE 7'-0" WHEEL PATH CRITERIA ARE MET.
- THE MINIMUM GROUND CLEARANCE SHOWN SHALL BE MAINTAINED WHEN A SECONDARY (SUPPLEMENTARY) PANEL IS INSTALLED BELOW THE PRIMARY PANEL.
- WHEN A SECONDARY (SUPPLEMENTARY) PANEL IS INSTALLED BELOW THE PRIMARY PANEL, THE HEIGHT OF THE PRIMARY PANEL SHALL BE 8'-0" MIN. ABOVE THE EDGE OF TRAVELED WAY, AND ANY SECONDARY (SUPPLEMENTARY) PANEL SHALL BE 5'-0" MIN. ABOVE THE EDGE OF TRAVELED WAY (7'-0" MIN. GROUND CLEARANCE STILL APPLIES).
- WHERE LARGE GUIDE SIGNS (TYPICALLY > 6 SQ. YARDS) ON TYPE B POSTS ARE TO BE INSTALLED IN CUT SECTIONS, THE GUIDE SIGNS SHALL BE INSTALLED AS FAR AS FEASIBLE UP THE BACKSLOPE, WITHOUT SACRIFICING VISIBILITY. POSTS SHALL NOT BE IN OR STRADDLE THE DITCH LINE.
- WHERE FEASIBLE ON FREEWAYS AND EXPRESSWAYS, A 30'-0" MIN. LATERAL OFFSET FROM THE EDGE OF TRAVELED WAY IS REQUIRED FOR LARGE GUIDE SIGNS (TYPICALLY > 6 SQ. YARDS) ON TYPE B POSTS.



TWO POST INSTALLATION



THREE POST INSTALLATION



TYPICAL SIDE VIEW

MAXIMUM NUMBER OF POSTS ALLOWED WITHIN A 7'-0" WHEEL PATH **		
POST CODE	POST SECTION	NUMBER OF POSTS
01	S3 X 5.7	2
02	W6 X 9	2
03	W6 X 12	2
04	W8 X 15	2
05	W10 X 19	1
06	W10 X 22	1
07	W12 X 26	1
08	W14 X 34	1

\*\* NOT APPLICABLE BEHIND GUIDE RAIL

WIND ZONE	WIND LOAD P (Pa)	
	H (FT)	
	15'-0" & UNDER	OVER 15'-0"
70 MPH	20.4	25.4
80 MPH	26.6	33.2

SIGN AREA FOR TWO POST SIGNS																				
POST CODE	POST SECTION	HINGE MOMENT (FT. KIPS)	70 MPH WIND ZONE HEIGHT "H" (FT.)								80 MPH WIND ZONE HEIGHT "H" (FT.)									
			8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"
01	S3 X 5.7	5.0	50	40	32	27	18	14	11	9	7	39	31	25	22	14	10	8	6	4
02	W6 X 9	15.7	169	135	108	79	49	39	31	24	20	130	105	84	62	37	29	23	19	15
03	W6 X 12	23.6	220	176	146	125	82	65	52	42	35	170	136	113	96	61	48	38	31	26
04	W8 X 15	31.8	357	286	239	183	113	89	71	59	49	277	221	185	142	86	67	54	45	36
05	W10 X 19	40.1	568	456	380	291	181	143	115	94	79	440	353	295	225	135	106	87	73	59
06	W10 X 22	55.5	701	562	469	402	284	232	187	154	129	544	436	363	311	213	174	141	116	97
07	W12 X 26	87.2	1005	807	674	578	410	332	268	222	186	779	625	522	447	308	249	201	167	140
08	W14 X 34	109.7	1457	1173	980	841	596	521	421	348	293	1130	908	759	652	449	391	317	262	220

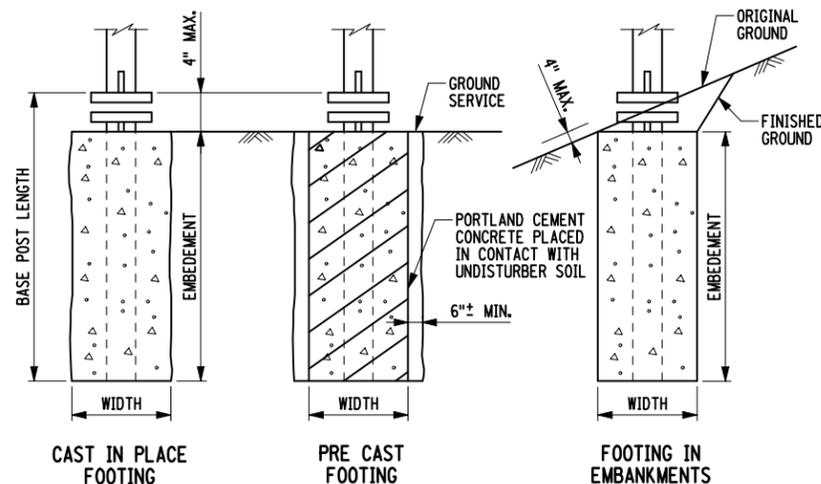
\* SHALL BE INSTALLED BEHIND GUIDE RAIL AND WITHOUT THE HINGE ASSEMBLY WHEN MOUNTING HEIGHT (H) IS 20'-0" OR GREATER. SUCH INSTALLATION SHALL BE LOCATED BEYOND THE GUIDE RAIL DEFLECTION DISTANCE SHOWN ON STANDARD SHEET 645-03 AND HAVE SATISFACTORY LONGITUDINAL OFFSET FROM THE END OF THE GUIDE RAIL.

FOOTINGS				
POST CODE	POST SECTION	BASE POST LENGTH (FT)	FOOTING (FT)	
			WIDTH	EMBEDEMENT
01	S3 X 5.7	4'-4"	1'-0"	4'-0"
02	W6 X 9	5'-4"	1'-6"	5'-0"
03	W6 X 12	5'-4"	2'-0"	5'-0"
04	W8 X 15	5'-4"	2'-6"	5'-0"
05	W10 X 19	6'-4"	2'-6"	6'-0"
06	W10 X 22	6'-4"	3'-0"	6'-0"
07	W12 X 26	7'-4"	3'-0"	7'-0"
08	W14 X 34	9'-4"	3'-0"	9'-0"

CIRCULAR FOOTINGS MAY BE PLACED INTO ROCK. THE EMBEDMENT SHOWN IN THE TABLE WILL CONTROL, BUT MAY BE REDUCED TO THE DEPTH NECESSARY FOR THE FOOTING TO PENETRATE ITS DIAMETER INTO ROCK. HOWEVER, THE MINIMUM EMBEDMENT INTO EXPOSED ROCK OR ROCK WITH A SHALLOW EARTH OVERBURDEN IS THE FOOTING DIA. PLUS 2'-0". ANY NECESSARY DRILLING OF THE ROCK MUST BE DONE FROM THE EXISTING EARTH SURFACE THROUGH THE AUGERED HOLE, WHICH SHOULD BE FORMED DURING THE DRILLING OPERATION. THE FORM MUST BE REMOVED PRIOR TO PLACING THE CONCRETE.

SIGN AREA FOR THREE POST SIGNS																				
POST CODE	POST SECTION	HINGE MOMENT (FT. KIPS)	70 MPH WIND ZONE HEIGHT "H" (FT.)								80 MPH WIND ZONE HEIGHT "H" (FT.)									
			8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"
01	S3 X 5.7	7.5	75	59	49	40	29	21	16	13	10	59	47	37	32	21	16	13	10	8
02	W6 X 9	23.5	253	202	164	120	73	57	46	37	31	196	156	126	92	55	44	34	27	22
03	W6 X 12	35.4	330	264	220	188	124	97	78	63	53	255	205	170	144	93	73	59	48	40
04	W8 X 15	47.7	537	430	359	275	171	135	109	88	73	415	332	277	213	128	100	81	66	55
05	W10 X 19	60.2	853	684	571	438	272	214	172	142	118	662	530	442	338	204	161	130	107	89
06	W10 X 22	83.2	1052	844	704	603	428	347	282	232	194	815	653	545	468	321	262	211	174	145
07	W12 X 26	130.9	1508	1211	1012	867	615	498	403	332	279	1169	938	783	672	463	374	302	250	209
08	W14 X 34	164.6	2187	1759	1470	1261	896	782	634	523	439	1696	1364	1139	977	672	587	475	393	330

\* SHALL BE INSTALLED BEHIND GUIDE RAIL AND WITHOUT THE HINGE ASSEMBLY WHEN MOUNTING HEIGHT (H) IS 20'-0" OR GREATER. SUCH INSTALLATION SHALL BE LOCATED BEYOND THE GUIDE RAIL DEFLECTION DISTANCE SHOWN ON STANDARD SHEET 645-03 AND HAVE SATISFACTORY LONGITUDINAL OFFSET FROM THE END OF THE GUIDE RAIL.



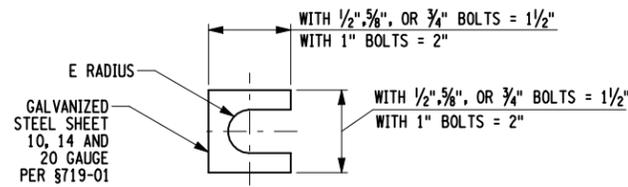
CAST IN PLACE FOOTING

PRE CAST FOOTING

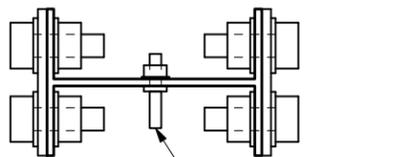
FOOTING IN EMBANKMENTS

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
	U.S. CUSTOMARY STANDARD SHEET
MULTIPLE POST SIGN INSTALLATION USING TYPE B SIGN POSTS	
APPROVED OCTOBER 05, 2009 /S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 09-025 645-10

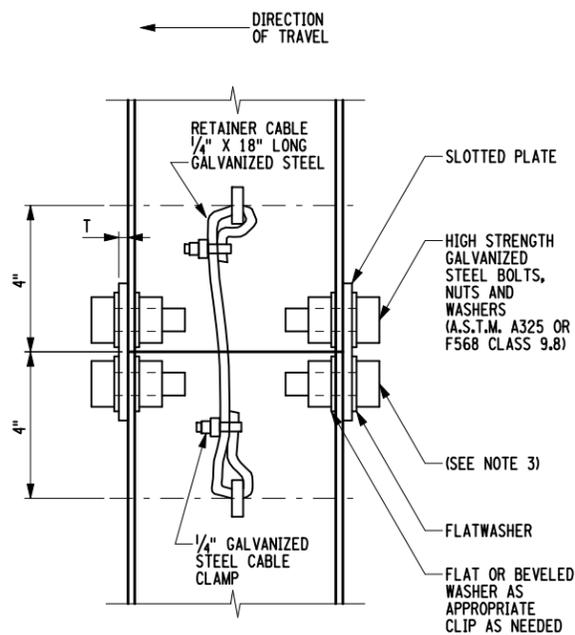
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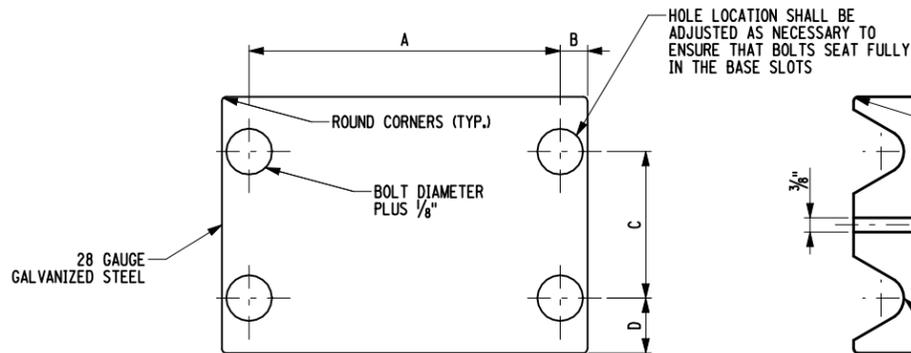
SHIM DETAIL



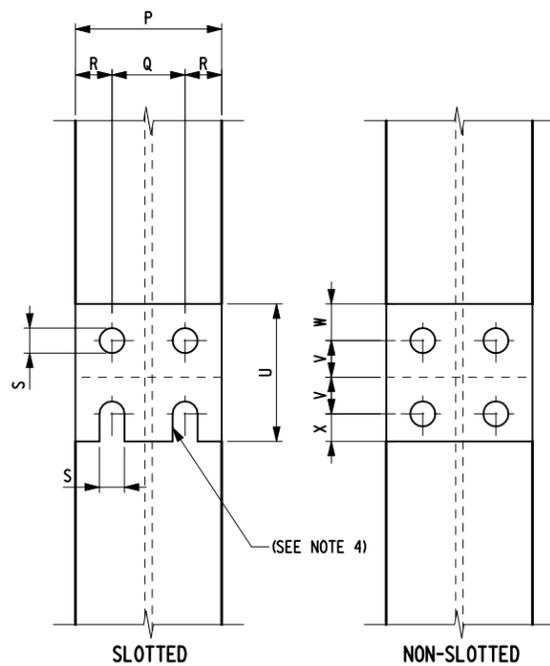
HINGE TOP VIEW



HINGE SIDE VIEW



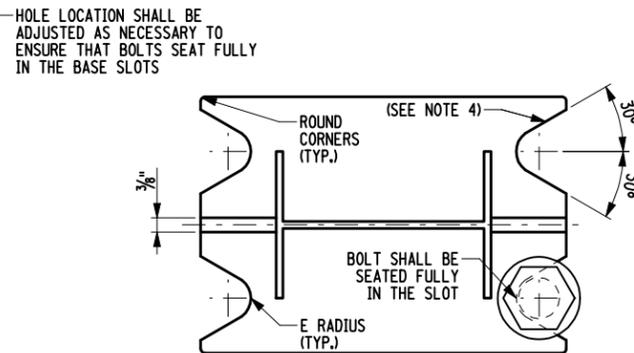
BOLT KEEPER PLATE DETAIL



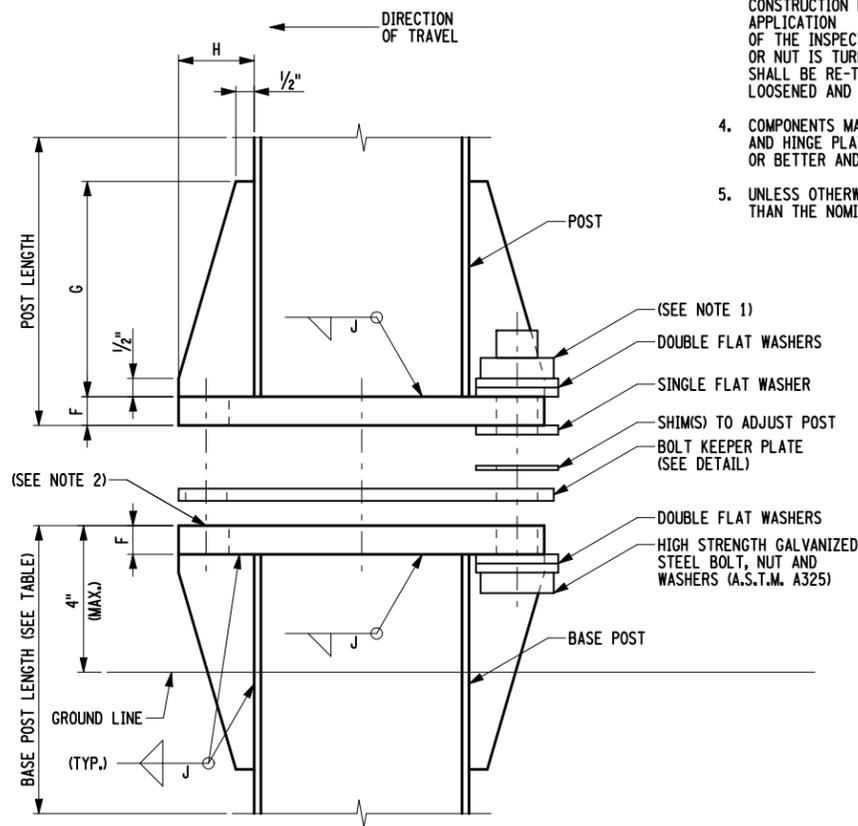
SLOTTED

NON-SLOTTED

HINGE FRONT VIEW



BASE TOP VIEW



BASE SIDE VIEW

NOTES:

- ASSEMBLE POST AND BASE WITH BOLT, WASHERS, SHIMS AND BOLT KEEPER PLATE. TIGHTEN BOLTS IN ROTATION AND IN STAGES TO THE TORQUE IN THE TABLE. TIGHTEN ONE HALF TURN AND RE-TIGHTEN TO THE TORQUE IN THE TABLE. PEEN THREADS.
- SLIP PLANES AT THE SLOTTED END OF HINGE PLATES BETWEEN POST AND PLATES AND UNDER WASHERS SHALL BE FLAT AND SMOOTH AFTER GALVANIZING. LIGHTLY ROUGHEN BY WIRE BRUSHING, PRIOR TO ASSEMBLY. REMOVE ANY OIL OR GREASE.
- ASSEMBLE POST, HINGE PLATES, BOLTS AND WASHERS. TIGHTEN BOLTS TO THE SNUG TORQUE GIVEN IN THE TABLE. MARK THE BOLT HEAD OR NUT AND THE ADJACENT POST SURFACE, THEN TURN THE FASTENER AN ADDITIONAL 1/2 TURN (+0°-30°) FROM THE MARK. EITHER THE BOLT HEAD OR THE NUT MAY BE TURNED BY THE WRENCH. HOWEVER, DURING THE TIGHTENING OF THE FASTENER, ROTATION OF THE PART NOT TURNED BY THE WRENCH SHALL BE PREVENTED. ON THE DAY OF THE INSTALLATION, THE HINGE BOLTS SHALL BE CHECKED BY THE CONTRACTOR IN THE PRESENCE OF THE ENGINEER. THE CONTRACTOR SHALL USE A TORQUE WRENCH CALIBRATED TO THE SATISFACTION OF THE ENGINEER. EACH BOLT SHALL BE CHECKED FOR TIGHTNESS IN ACCORDANCE WITH THE INSPECTION TORQUE STATED IN THE NEW YORK STATE STEEL CONSTRUCTION MANUAL. IF NO BOLT NO BOLT HEAD OR NUT IS TURNED BY THE APPLICATION OF THE INSPECTION TORQUE, THE CONNECTION IS ACCEPTABLE. IF ANY BOLT HEAD OR NUT IS TURNED BY THE APPLICATION OF THE INSPECTION TORQUE, THE FASTENER SHALL BE RE-TIGHTENED AND RE-INSPECTED. BOLTS, NUTS, AND WASHERS THAT ARE LOOSENED AND RE-TIGHTENED MORE THAN ONCE SHALL BE REPLACED WITH NEW BOLTS.
- COMPONENTS MAY BE FLAME CUT. HOWEVER, THE SIDES OF THE SLOTS IN THE BASE PLATES AND HINGE PLATES SHALL BE SMOOTHED TO THE EQUIVALENT OF A SAW CUT FINISH OR BETTER AND ROUGH CORNERS SHALL BE GROUND.
- UNLESS OTHERWISE SHOWN, HOLES SHALL NOT BE MORE THAN 1/16" LARGER IN DIAMETER THAN THE NOMINAL DIAMETER OF THE FASTENER.

IMPACT CONDITIONS	HINGE PLATE	
	SLOTTED	NON-SLOTTED
BOTH DIRECTIONS	BOTH SIDES	NONE
ONE DIRECTION	APPROACH SIDE	TRAILING SIDE
SHIELDED	NONE	BOTH SIDES

POST CODE	POST SECTION	HINGE ASSEMBLY DIMENSIONS									BOLT	
		P	Q	R	S	T	U	V	W	X	DIAMETER	TORQUE FOOT POUNDS
01	S3 X 5.7	2 5/8"	1 1/2"	3/8"	3/16"	1/4"	3 1/2"	1"	1"	1/2"	1/2"	30
02	W6 X 9	4"	2"	1"	1/16"	3/8"	3 3/4"	1"	1"	5/8"	5/8"	65
03	W6 X 12	4"	2"	1"	7/8"	1/2"	3 3/4"	1"	1"	3/4"	3/4"	110
04	W8 X 15	4"	2"	1"	7/8"	1/2"	3 3/4"	1"	1"	3/4"	3/4"	110
05	W10 X 19	4"	2"	1"	7/8"	1/2"	3 3/4"	1"	1"	3/4"	3/4"	110
06	W10 X 22	5 3/4"	2 3/4"	1 1/2"	1 5/16"	1/2"	5 3/8"	1 1/2"	1 1/2"	7/8"	7/8"	130
07	W12 X 26	6 1/2"	3 1/2"	1 1/2"	1 3/16"	1/2"	5 3/16"	1 1/2"	1 1/2"	1"	1 1/8"	150
08	W14 X 34	6 3/4"	3 1/2"	1 5/8"	1 1/4"	1/2"	5 3/16"	1 1/2"	1 1/2"	1 1/8"	1 1/4"	200

POST CODE	POST SECTION	BASE ASSEMBLY DIMENSIONS									BOLT	
		A	B	C	D	E	F	G	H	J	DIAMETER	TORQUE FOOT POUNDS
01	S3 X 5.7	4 3/4"	5/8"	3"	1"	9/32"	1/2"	5"	1 1/2"	5/16"	1/2"	11
02	W6 X 9	8 1/2"	3/4"	4"	1 1/2"	1 1/32"	3/4"	6"	2"	5/16"	5/8"	28
03	W6 X 12	8 1/2"	3/4"	4"	1 1/2"	1 1/32"	3/4"	6"	2"	5/16"	5/8"	28
04	W8 X 15	11"	7/8"	4"	1 1/2"	1 1/32"	3/4"	6"	2 1/2"	5/16"	5/8"	28
05	W10 X 19	13"	7/8"	4"	1 1/2"	1 1/32"	1"	6"	2 1/2"	7/16"	5/8"	28
06	W10 X 22	13"	1"	4 1/2"	1 1/2"	1 3/32"	1"	6"	2 1/2"	7/16"	3/4"	46
07	W12 X 26	15"	1"	4 1/2"	1 1/2"	1 3/32"	1"	6"	2 1/2"	7/16"	3/4"	46
08	W14 X 34	17"	1"	4 1/2"	1 1/2"	1 7/32"	1"	6"	2 1/2"	7/16"	1"	61

EFFECTIVE DATE: 01/07/10

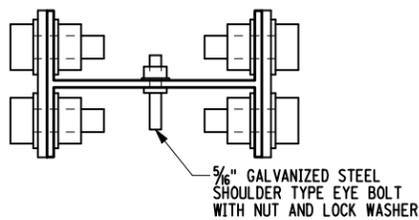
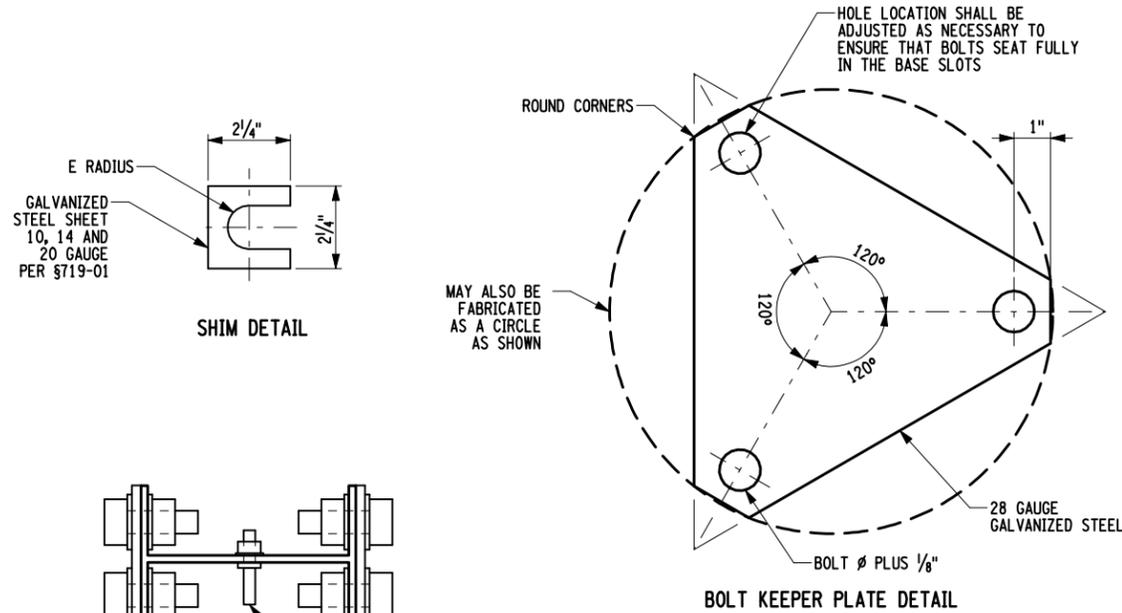
STATE OF NEW YORK  
 DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

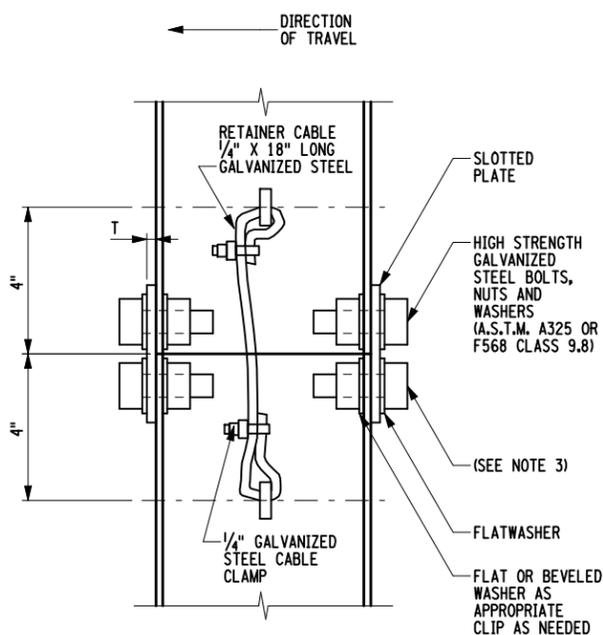
BI-DIRECTIONAL BREAKAWAY BASE AND HINGE ASSEMBLY

APPROVED OCTOBER 05, 2009 ISSUED UNDER EB 09-025  
 /S/ RICHARD W. LEE, P.E.  
 FOR THE DEPUTY CHIEF ENGINEER (DESIGN)

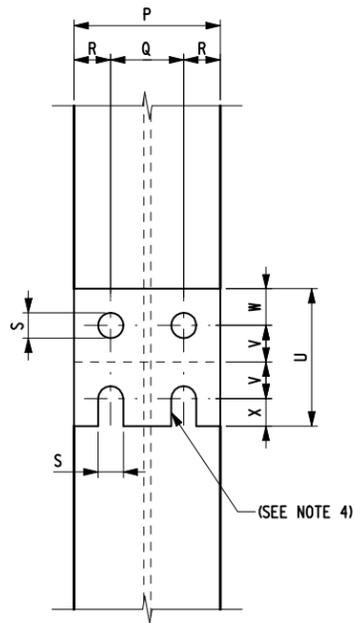
645-11



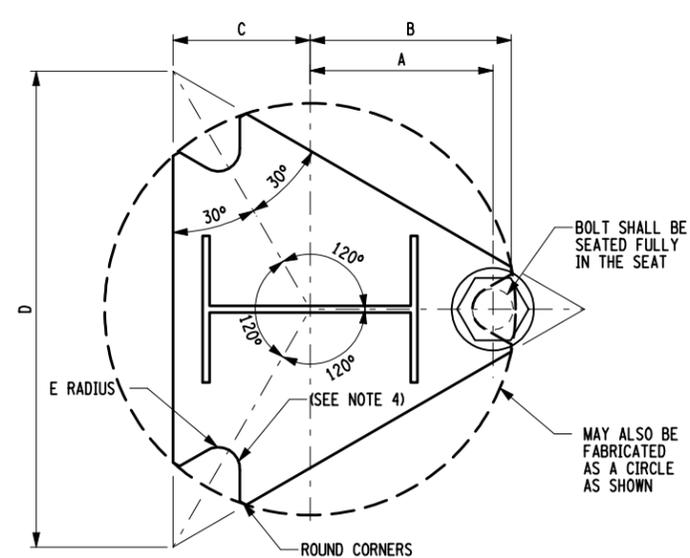
HINGE TOP VIEW



HINGE SIDE VIEW

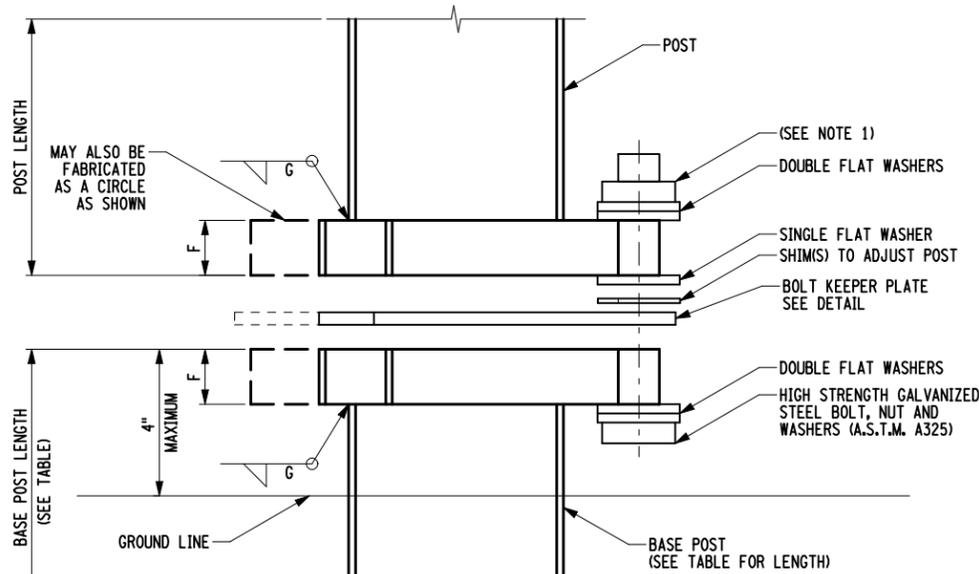


HINGE FRONT VIEW



BASE TOP VIEW

DIRECTION OF TRAVEL



BASE SIDE VIEW

NOTES:

1. ASSEMBLE POST AND BASE WITH BOLT, WASHERS, SHIMS AND BOLT KEEPER PLATE. TIGHTEN BOLTS IN ROTATION AND IN STAGES TO THE TORQUE IN THE TABLE. LOOSEN ONE HALF TURN AND RE-TIGHTEN TO THE TORQUE IN THE TABLE. PEEN THREADS.
2. SLIP PLANES AT THE SLOTTED END OF HINGE PLATES BETWEEN POST AND PLATES AND UNDER WASHERS SHALL BE FLAT AND SMOOTH AFTER GALVANIZING. LIGHTLY ROUGHEN BY WIRE BRUSHING, PRIOR TO ASSEMBLY. REMOVE ANY OIL OR GREASE.
3. ASSEMBLE POST, HINGE PLATES, BOLTS AND WASHERS. TIGHTEN BOLTS TO THE SNUG TORQUE GIVEN IN THE TABLE. MARK THE BOLT HEAD OR NUT AND THE ADJACENT POST SURFACE. THEN TURN THE FASTENER AN ADDITIONAL 1/2 TURN (+0°-30°) FROM THE MARK. EITHER THE BOLT HEAD OR THE NUT MAY BE TURNED BY THE WRENCH. HOWEVER, DURING THE TIGHTENING OF THE FASTENER, ROTATION OF THE PART NOT TURNED BY THE WRENCH SHALL BE PREVENTED. ON THE DAY OF THE INSTALLATION, THE HINGE BOLTS SHALL BE CHECKED BY THE CONTRACTOR IN THE PRESENCE OF THE ENGINEER. THE CONTRACTOR SHALL USE A TORQUE WRENCH CALIBRATED TO THE SATISFACTION OF THE ENGINEER. EACH BOLT SHALL BE CHECKED FOR TIGHTNESS IN ACCORDANCE WITH THE INSPECTION TORQUE STATED IN THE NEW YORK STATE STEEL CONSTRUCTION MANUAL. IF NO BOLT HEAD OR NUT IS TURNED BY THE APPLICATION OF THE INSPECTION TORQUE, THE CONNECTION IS ACCEPTABLE. IF ANY BOLT HEAD OR NUT IS TURNED BY THE APPLICATION OF THE INSPECTION TORQUE, THE FASTENER SHALL BE RE-TIGHTENED AND RE-INSPECTED. BOLTS, NUTS, AND WASHERS THAT ARE LOOSENED AND RE-TIGHTENED MORE THAN ONCE SHALL BE REPLACED WITH NEW BOLTS.
4. COMPONENTS MAY BE FLAME CUT. HOWEVER, THE SIDES OF THE SLOTS IN THE BASE PLATES AND HINGE PLATES SHALL BE SMOOTHED TO THE EQUIVALENT OF A SAW CUT FINISH OR BETTER AND ROUGH CORNERS SHALL BE GROUND.
5. UNLESS OTHERWISE SHOWN, HOLES SHALL NOT BE MORE THAN 1/16" LARGER IN DIAMETER THAN THE NOMINAL DIAMETER OF THE FASTENER.

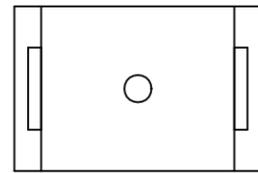
POST CODE	HINGE ASSEMBLY DIMENSIONS										BOLT	
	P	Q	R	S	T	U	V	W	X	DIAMETER	TORQUE FOOT POUNDS	
01	2 3/8"	1 1/2"	3/8"	9/16"	1/4"	3 1/2"	1"	1"	1/2"	1/2"	30	
02	4"	2"	1"	11/16"	3/8"	3 3/4"	1"	1"	7/8"	5/8"	65	
03	4"	2"	1"	7/8"	3/8"	3 3/4"	1"	1"	7/8"	3/4"	110	

POST CODE	POST SECTION	BASE ASSEMBLY DIMENSIONS							BOLT		BASE POST LENGTH
		A	B	C	D	E	F	G	DIAMETER	TORQUE FOOT POUNDS	
01	S3 X 5.7	4"	4 1/2"	3 3/16"	11"	1/2"	1 1/4"	5/16"	7/8"	85	4'-0"
02	W6 X 9	5"	5 1/2"	3 3/4"	13"	9/16"	1 1/2"	5/16"	1 1/8"	95	4'-6"
03	W6 X 12	5"	5 1/2"	3 3/4"	13"	9/16"	1 1/2"	5/16"	1 1/8"	95	5'-0"

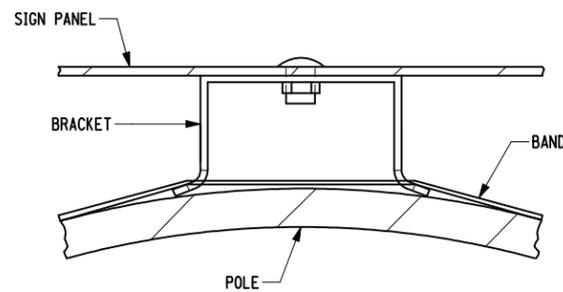
EFFECTIVE DATE: 01/07/10

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>OMNI-DIRECTIONAL BREAKAWAY BASE          AND HINGE ASSEMBLY</b>	
APPROVED OCTOBER 05, 2009	ISSUED UNDER EB 09-025
/S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	645-12

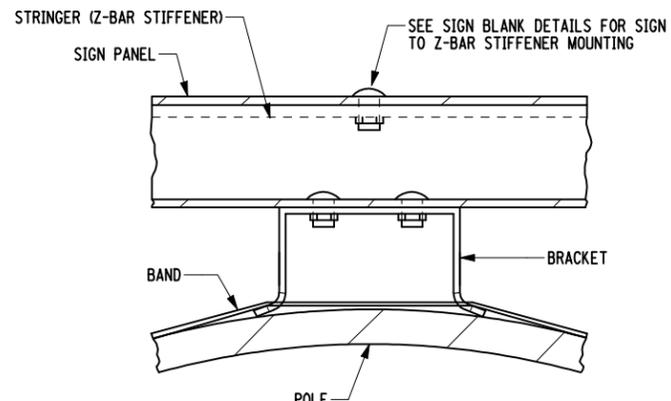
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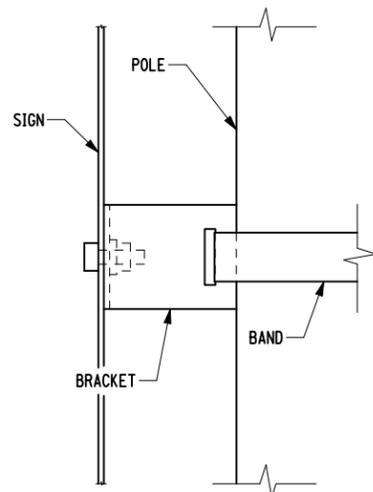
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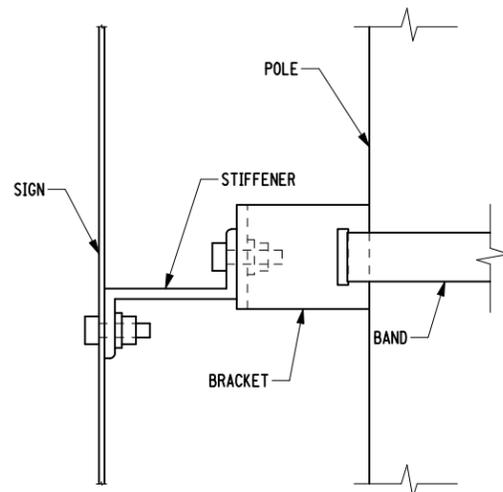
TOP VIEW  
FOR PANELS ≤ 18 IN. WIDE



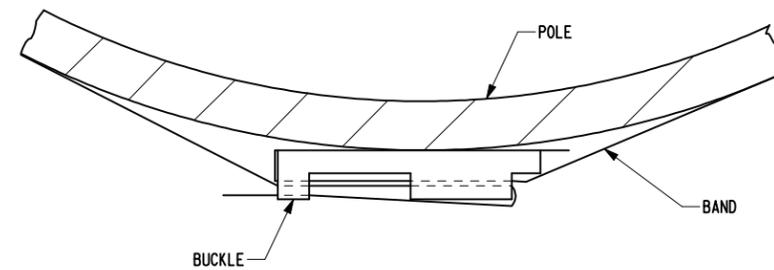
TOP VIEW  
FOR PANELS > THAN 18 IN. WIDE



SIDE VIEW  
FOR PANELS ≤ 18 IN. WIDE



SIDE VIEW  
FOR PANELS > THAN 18 IN. WIDE



TYPICAL POLE (BAND)  
MOUNTING HARDWARE

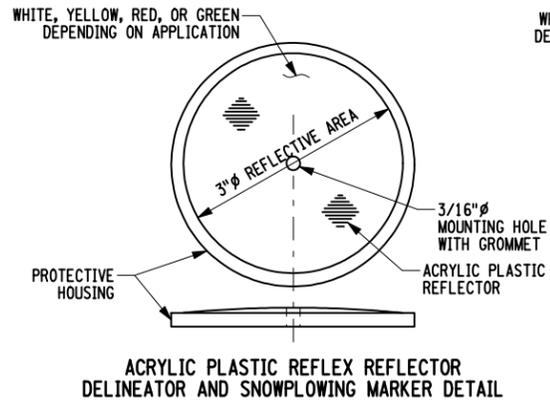
NOTES:

1. SIGNS SHALL BE CONSTRUCTED AS SHOWN ON THE APPROPRIATE STANDARD SHEETS AND MANUFACTURER'S DRAWINGS.
2. PANELS AND STIFFENER DIMENSIONS, SPACING AND PANEL TO STIFFENER CONNECTION DETAILS SHALL BE AS SHOWN ON THE "SIGN BLANK DETAILS" STANDARD SHEET.
3. SIGN ASSEMBLIES HAVING SIGN PANELS MOUNTED SIDE-BY-SIDE SHALL HAVE CONTINUOUS HORIZONTAL Z-BARS.
4. BRACKETS SHALL BE MOUNTED WITH THE SAME POST CONNECTION VERTICAL SPACING AS SHOWN ON THE "SIGN BLANK DETAILS" STANDARD SHEET.
5. A SINGLE SIGN PANEL SHALL NOT BE GREATER THAN 48" WIDE AND SHALL NOT BE GREATER THAN 60" IN HEIGHT.
6. A SIGN PANEL ASSEMBLY SHALL NOT BE WIDER THAN 48".

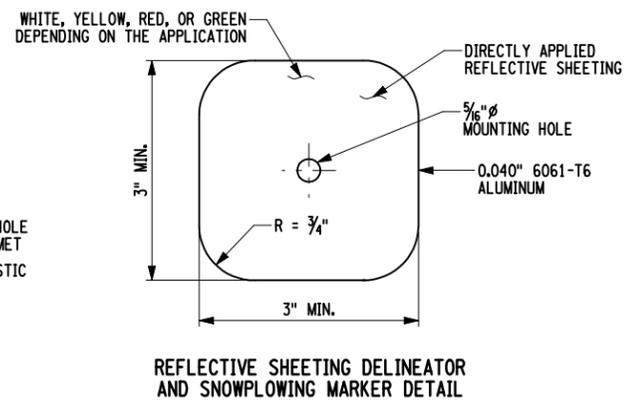
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	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
POLE-MOUNTED SIGNS		
APPROVED NOVEMBER 25, 2008	ISSUED UNDER EB 08-045	
/S/ DANIEL D'ANGELO P.E. DEPUTY CHIEF ENGINEER (DESIGN)	645-14	

EFFECTIVE DATE: 05/07/2009



ACRYLIC PLASTIC REFLEX REFLECTOR  
DELINEATOR AND SNOWPLOWING MARKER DETAIL

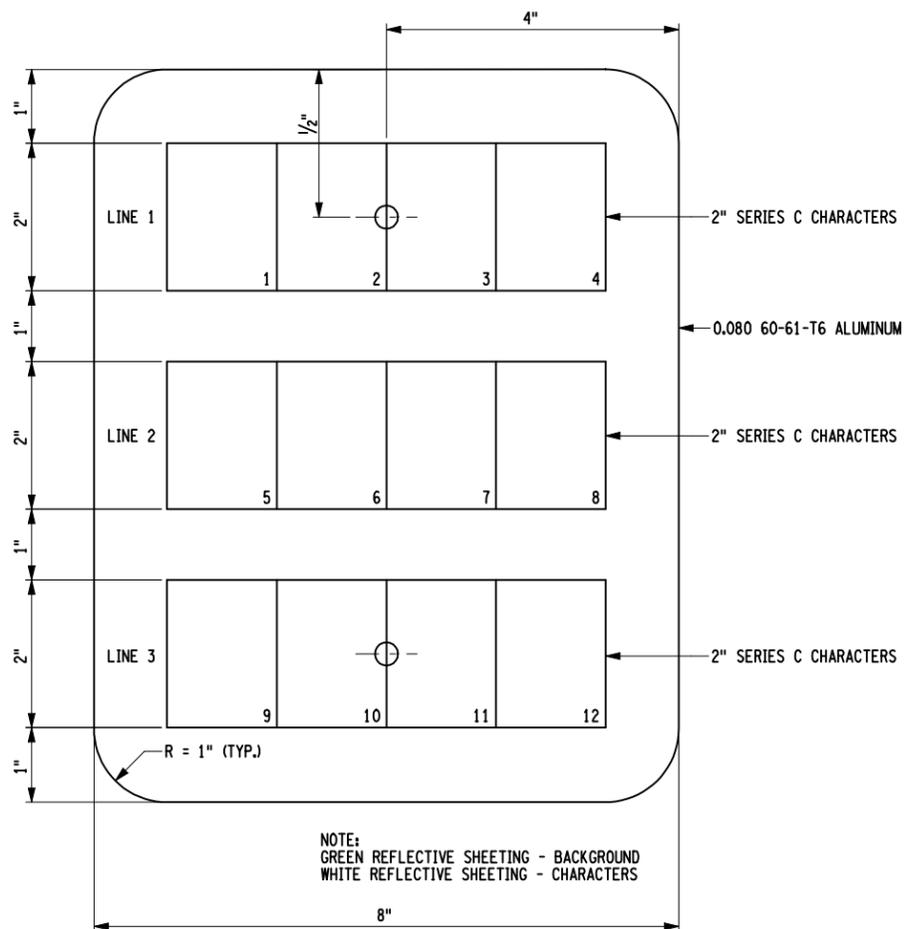


REFLECTIVE SHEETING DELINEATOR  
AND SNOWPLOWING MARKER DETAIL

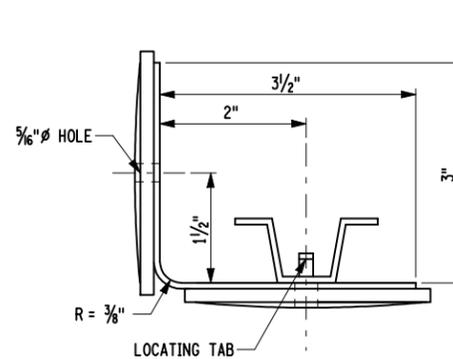
REFERENCE MARKER PANEL LEGEND COMPONENTS FOR STATE HIGHWAYS \*

- POSITIONS 1-3 TOURING ROUTE NUMBER RANGING FROM 1 TO 3 DIGITS. RIGHT JUSTIFIED STARTING IN POSITION 3. TOURING ROUTE ALPHABETIC SUFFIX OR BLANK IF THERE IS NO SUFFIX.
- POSITION 4 TOURING ROUTE ALPHABETIC SUFFIX OR BLANK IF THERE IS NO SUFFIX.
- POSITION 5 THE N.Y.S. DEPARTMENT OF TRANSPORTATION REGION IN WHICH THAT PORTION OF THE ROUTE IS LOCATED.
- POSITION 6 COUNTY OF THE REGION IN WHICH THAT PORTION OF THE ROUTE IS LOCATED.
- POSITION 7-8 COUNTY ORDER NUMBER OF THE ROUTE WHICH IS THE NUMBER OF COUNTIES TRAVERSED FROM ITS WESTERN OR SOUTHERN TERMINUS.
- POSITION 9 CONTROL SEGMENT NUMBER OF THE ROUTE WHICH LOCATES THE SPECIFIC PORTION OF THE ROUTE WITHIN THE COUNTRY.
- POSITION 10-12 SEQUENCING NUMBER INDICATION THE APPROXIMATE DISTANCE TO THE NEAREST 0.10 MILE FROM THE BEGINNING OF THE CONTROL SEGMENT.

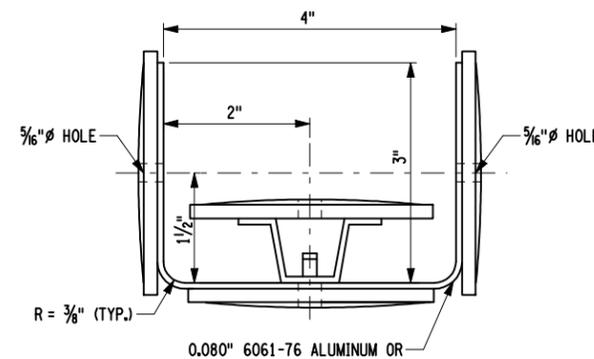
\* SEE "REFERENCE MARKER MANUAL" FOR LEGEND COMPONENTS IN OTHER SITUATIONS



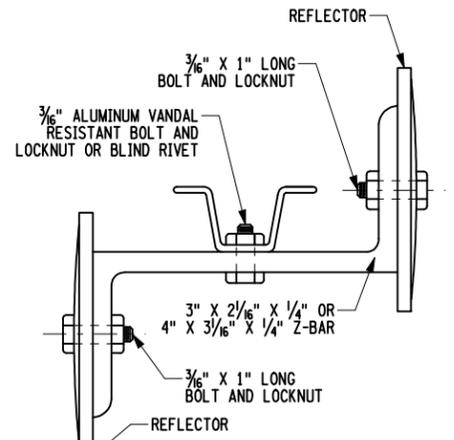
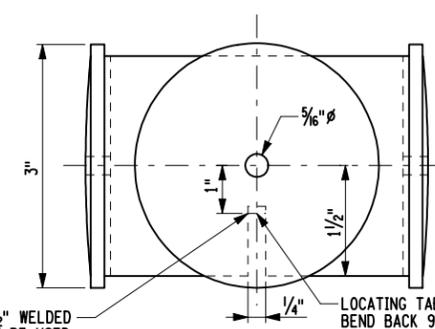
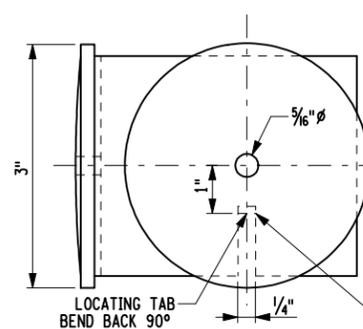
REFERENCE MARKER DETAIL



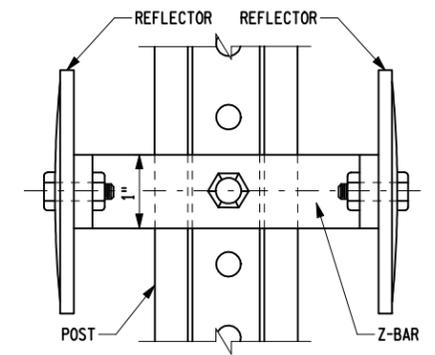
2-WAY BRACKET



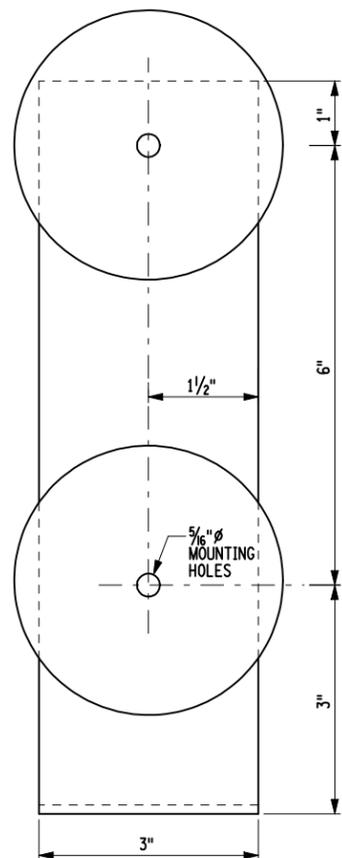
3 OR 4-WAY BRACKET



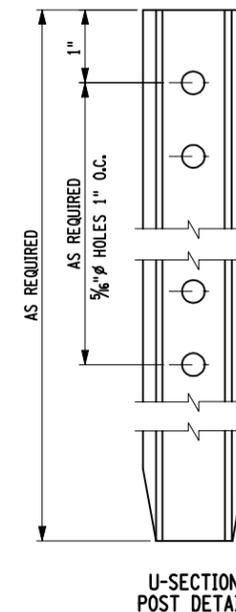
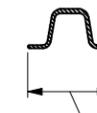
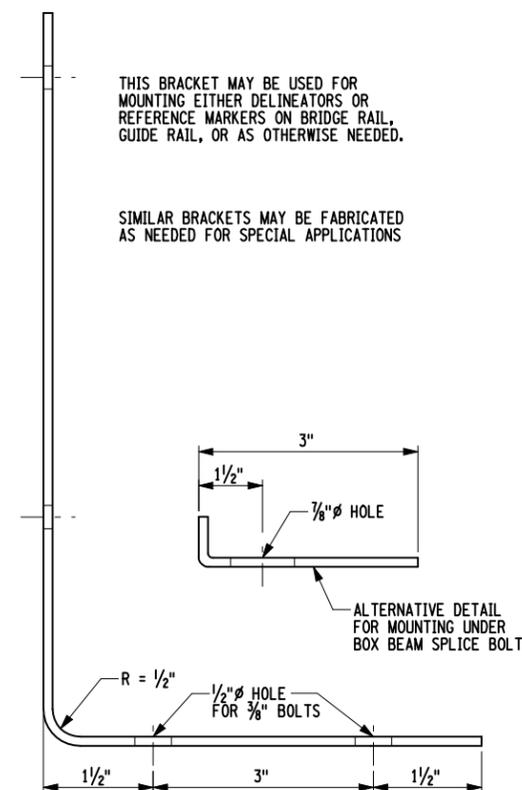
TOP VIEW



FRONT VIEW  
ALTERNATE 3 OR 4 WAY  
BRACKET



RAIL AND STRUCTURE BRACKET



U-SECTION  
POST DETAIL

NOTE DETAILS FOR MOUNTING:

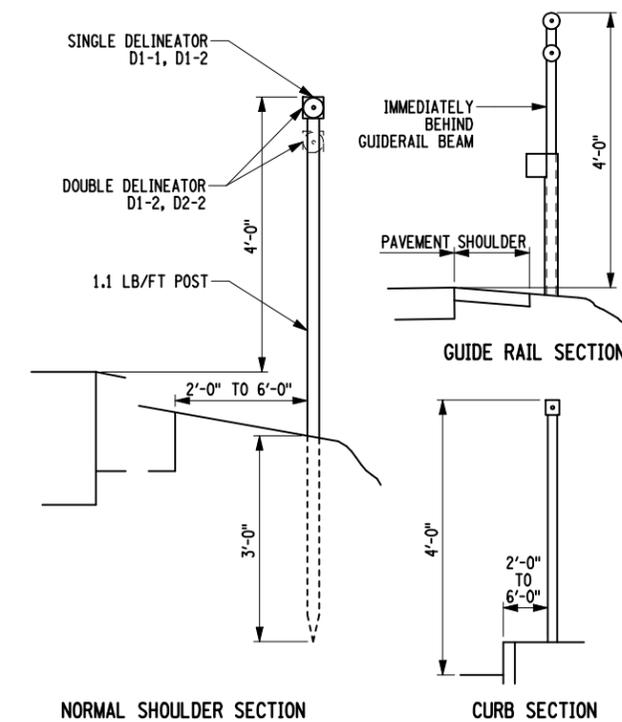
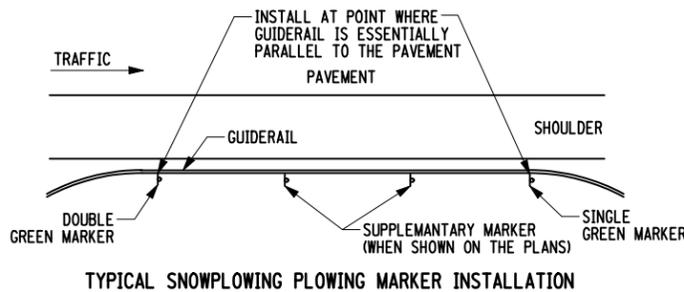
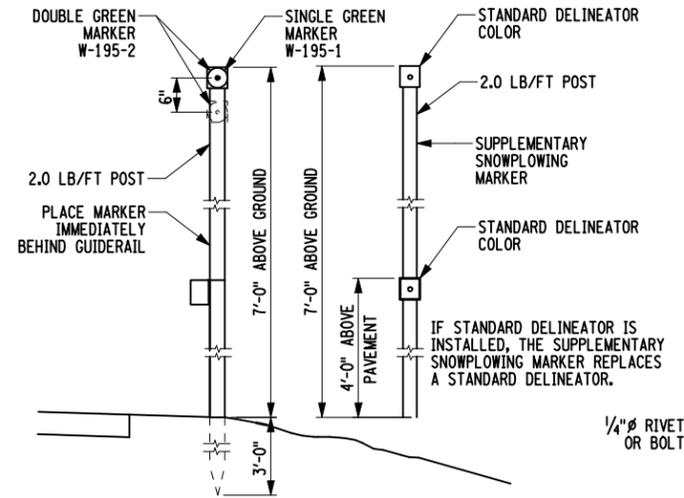
1. DELINEATORS ON THE FRONT OR BACK OF THE POST ARE SHOWN ON STANDARD SHEET TITLED "DELINEATOR REFERENCE MARKER AND SNOWPLOWING MARKER INSTALLATION DETAILS". THEY NEED NOT BE MOUNTED AT THE SAME HEIGHT AS THE REFLECTIVE UNITS SHOWN.
2. MILE MARKERS SHALL BE SPACED 0.10 MILES APART ACCORDING TO PROJECT STATIONING. THE LAST DIGITS OF THE LEGEND SHALL BE IN 0.10 MILE INCREMENTS TO MAINTAIN THE INTEGRITY OF ACCIDENT LOCATION DATA.

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>DELINEATOR, REFERENCE MARKER AND SNOWPLOWING MARKER FABRICATION DETAILS</p>	
<p>APPROVED OCTOBER 01, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ ROBERT L. SACK, P.E. DEPUTY CHIEF ENGINEER (TECHNICAL SERVICES)</p>	<p>646-01</p>

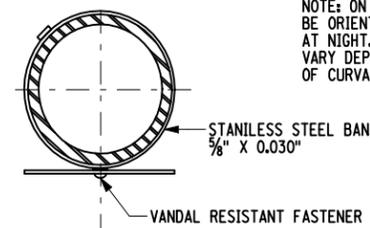
EFFECTIVE DATE: 01/08/09

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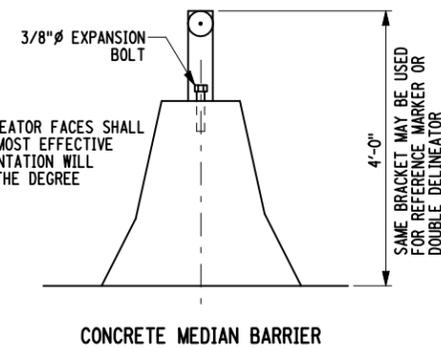
- DELINEATORS, REFERENCE MARKERS AND SNOWPLOWING MARKERS SHALL BE ATTACHED TO POSTS AND BRACKETS USING 4/4 VANDAL RESISTANT FASTENERS SUCH AS LOCK BOLTS, PULL THROUGH OR DRIVE BLIND RIVETS, OR OTHER FASTENER, AS APPROVED BY THE ENGINEER. ACRYLIC PLASTIC DELINEATORS MAY USE SMALLER DIAMETER FASTENERS AS NECESSARY TO FIT THE MOUNT HOLE.
- BRACKETS SHALL BE ATTACHED TO BRIDGE RAIL, GUIDE RAIL, MEDIAN BARRIERS AND OTHER STRUCTURES USING M10 BOLTS, BLIND LOCK BOLTS, SELF-TAPPING SCREWS, EXPANDING ANCHOR BOLTS, PULL THROUGH OR DRIVE BLIND RIVETS OR OTHER FASTENERS AS APPROVED BY THE ENGINEER.
- ALLOWABLE FASTENER MATERIALS:  
STAINLESS STEEL PER §715-16, GALVANIZED STEEL PER ASTM F568 CLASS 4.6 OR 8.8, OR A325 ALUMINUM BOLTS, LOCK BOLTS, NUTS - 2024-T4, 6061-T6 WASHERS, FLAT - ALCLAD 2024-T4, WASHERS, SPRINGLOCK - 7075-T6 BLIND RIVETS - 2017-F, 2117-F, 5056-F, ALLOYS 2024-T4, 2017-F, 2117-F AND 5056-F SHALL BE ALCLAD OR FINISHED WITH TYPE 205 FINISH IN ACCORDANCE WITH §719-02.
- ALTERNATIVE DELINEATOR BRACKET DESIGNS MAY BE USED AS APPROVED BY THE ENGINEER.  
DELINEATORS AND SNOWPLOWING MARKERS:
- THE NUMBER OF DELINEATOR FACES, COLOR, WHETHER SINGLE OR DOUBLE, LOCATION AND SPACING WILL BE AS SHOWN ON THE PLANS.
- DELINEATORS SHALL BE PLACED 2'-0" TO 6'-0" OUTSIDE THE USABLE SHOULDER OR AS ORDERED BY THE ENGINEER. WHERE THERE IS A CHANGE IN SHOULDER WIDTH, THE TRANSITIONS IN DELINEATOR PLACEMENT SHALL BE GRADUAL.
- DELINEATORS ON THE LEFT ARE INSTALLED IN THE SAME MANNER AS ON THE RIGHT.
- WHERE GUIDE RAIL IS INSTALLED, DELINEATORS SHALL BE INSTALLED IMMEDIATELY BEHIND THE GUIDE RAIL. THE TRANSITION IN LATERAL OFFSET SHALL BE MADE GRADUALLY.  
REFERENCE MARKERS:
- WHERE ROADSIDE DELINEATORS ARE INSTALLED, REFERENCE MARKERS MAY BE PLACED IN LINE WITH THE DELINEATORS OR IMMEDIATELY BEHIND THE GUIDE RAIL.
- REFERENCE MARKERS WITHIN 50'-0" LONGITUDINALLY OF EXISTING DELINEATOR POSTS SHOULD BE MOUNTED ON THE EXISTING POST BELOW THE DELINEATOR.
- ON ROADWAYS WHERE ROADSIDE DELINEATORS ARE NOT INSTALLED, REFERENCE MARKERS SHOULD BE INSTALLED 5'-0" BEYOND THE SHOULDER OR 5'-0" UP THE BACKSLOPE AS SPACE PERMITS OR AS ORDERED BY THE ENGINEER.
- ON ROADWAYS OTHER THAN EXPRESSWAYS, WHEN REFERENCE MARKERS ARE WITHIN 50'-0" LONGITUDINALLY OF EXISTING SIGNS, LIGHTS, SIGNAL POLES OR OTHER DEVICES, THE REFERENCE MARKER SHOULD BE MOUNTED ON THE EXISTING POST. REFERENCE MARKERS ARE NOT TO BE MOUNTED ON UTILITY COMPANY POLES, PRIVATE OR TEMPORARY SIGNS, OR OTHER PRIVATE POSTS.  
POST ERECTION:
- POSTS SHALL BE ERECTED SO THAT THE DELINEATORS AND OR MARKERS WILL BE AT THE ELEVATION AND ALIGNMENT CALLED FOR, BE TRUE TO LINE AND GRADE, AND BE TRULY VERTICAL.
- POSTS MAY BE EITHER DRIVEN OR SET. IF DRIVEN BY EITHER HAND OR MECHANICAL DEVICES THEY SHALL BE PLUMB AND STRAIGHT ABOVE THE GROUND. AFTER DRIVING, THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS SECTIONAL DIMENSIONS AS THE BODY OF THE POST. AND NO BATTERED HEADS WILL BE PERMITTED.
- A SUITABLE DRIVING CAP SHALL BE USED FOR DRIVING POSTS.
- POSTS BENT OR OTHERWISE DAMAGED TO THE EXTENT THAT, IN THE OPINION OF THE ENGINEER, THEY ARE UNFIT FOR USE IN THE FINISHED WORK SHALL BE REMOVED FROM THE SITE AND REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S OWN EXPENSE.
- IF THE POSTS ARE SET, THE POST HOLES SHALL BE DUG TO THE CORRECT DEPTH. THE POST SHALL BE SET VERTICALLY TO THE FULL DEPTH, AT THE REQUIRED SPACING AND ACCURATELY ALIGNED BOTH VERTICALLY AND HORIZONTALLY. POST HOLES SHALL BE BACKFILLED WITH SUITABLE MATERIAL THOROUGHLY COMPACTED, CARE BEING TAKEN TO PRESERVE THE ALIGNMENT OF THE POST.
- WHEN SOUND ROCK IS ENCOUNTERED, POSTS SHALL BE FOUNDED A MINIMUM OF 1'-0" INTO SOLID ROCK.
- WHEN POSTS ARE INSTALLED IN PAVED, SODDED AREAS, SIDEWALKS, ETC. THE AREA SHALL BE RESTORED IN KIND.
- DESIGN AND PLACEMENT OF DELINEATORS WILL BE ACCORDING TO THE NYS M.U.T.C.D.
- FOR INSTALLATION ON BARRIERS GREATER THAN 4'-0" HIGH, DELINEATORS SHALL BE MOUNTED ON THE INSIDE FACE OF THE BARRIER.



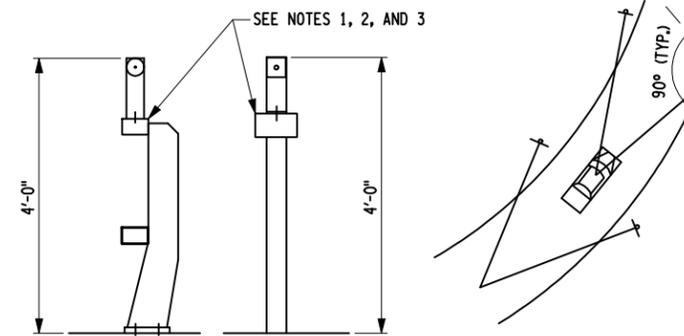
TYPICAL DELINEATOR INSTALLATIONS



BAND MOUNT

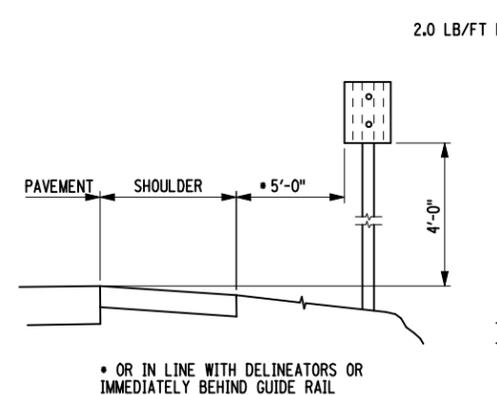


CONCRETE MEDIAN BARRIER

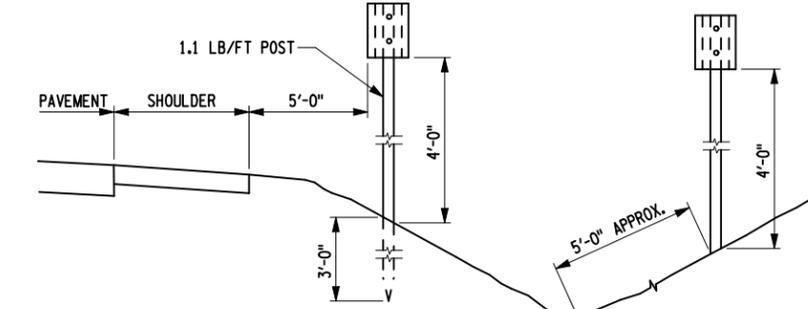


BRIDGE RAIL  
BOX BEAM  
MEDIAN BARRIER

TYPICAL MOUNTING DETAILS



URBAN SECTION

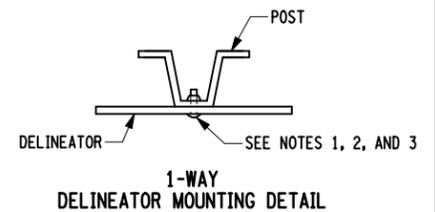


NORMAL SECTION

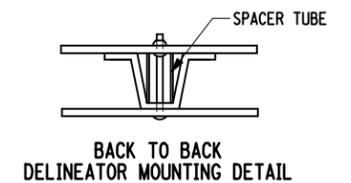
BACKSLOPE SECTION

TYPICAL REFERENCE MARKER INSTALLATIONS

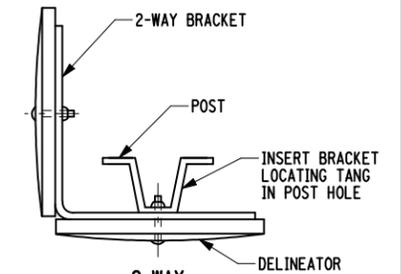
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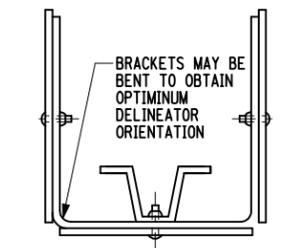
1-WAY  
DELINEATOR MOUNTING DETAIL



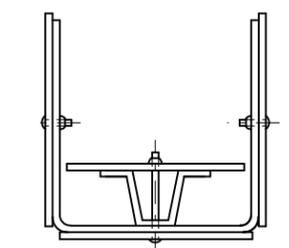
BACK TO BACK  
DELINEATOR MOUNTING DETAIL



2-WAY  
DELINEATOR MOUNTING DETAIL



3-WAY  
DELINEATOR MOUNTING DETAIL

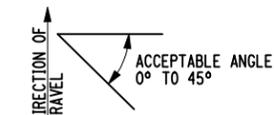


4-WAY  
DELINEATOR MOUNTING DETAIL

DELINEATOR ORIENTATION  
ON CURVES

MOUNTING WITH DELINEATORS

ORIENTATION WHEN MOUNTED  
ON BACKSLOPES



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

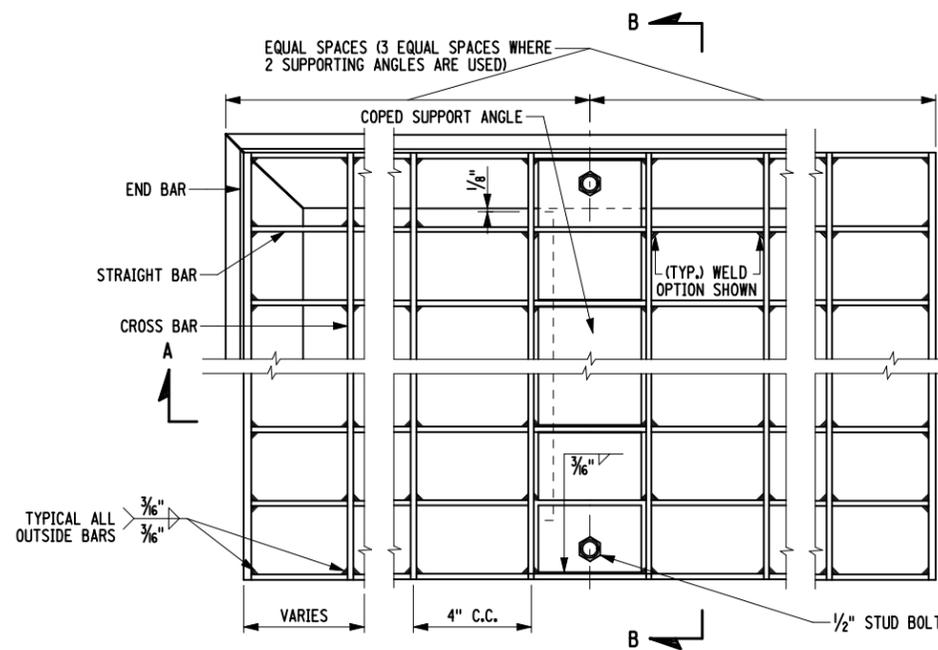
DELINEATOR, REFERENCE MARKER  
AND SNOWPLOWING MARKER  
INSTALLATION DETAILS

APPROVED OCTOBER 01, 2008

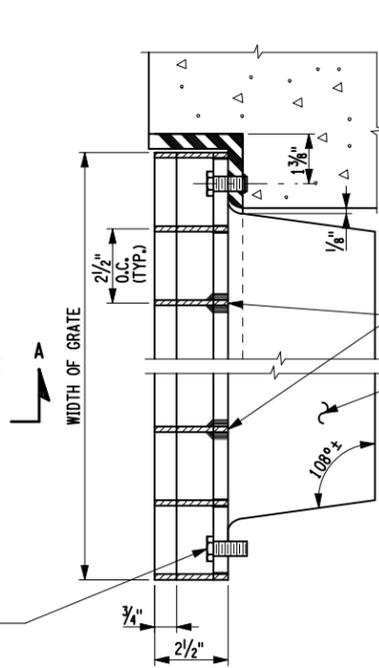
/S/ ROBERT L. SACK, P.E.  
DEPUTY CHIEF ENGINEER  
(TECHNICAL SERVICES)

ISSUED UNDER EB 08-036

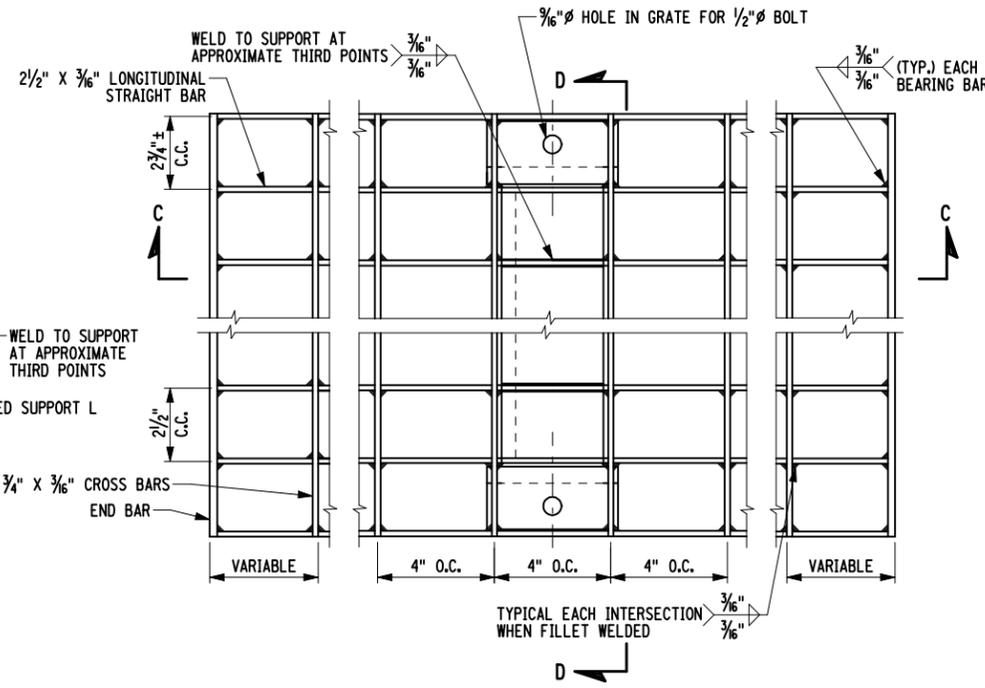
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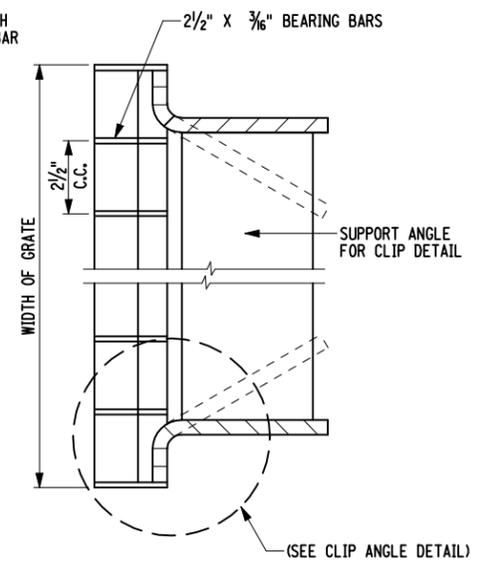
RECTANGULAR GRATE WITH COPEd SUPPORT ANGLES (TYPICAL) (PART OF FRAME SHOWN)



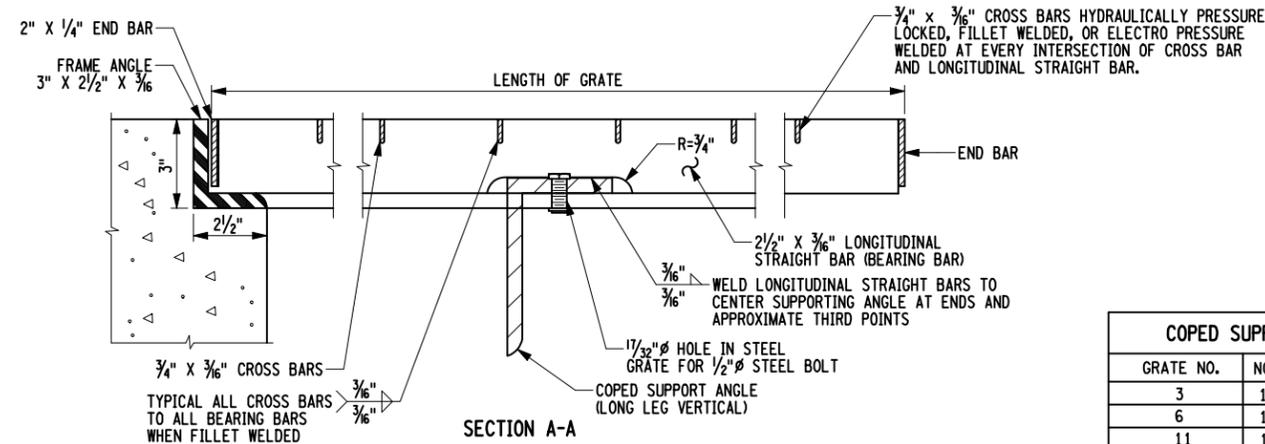
SECTION B-B



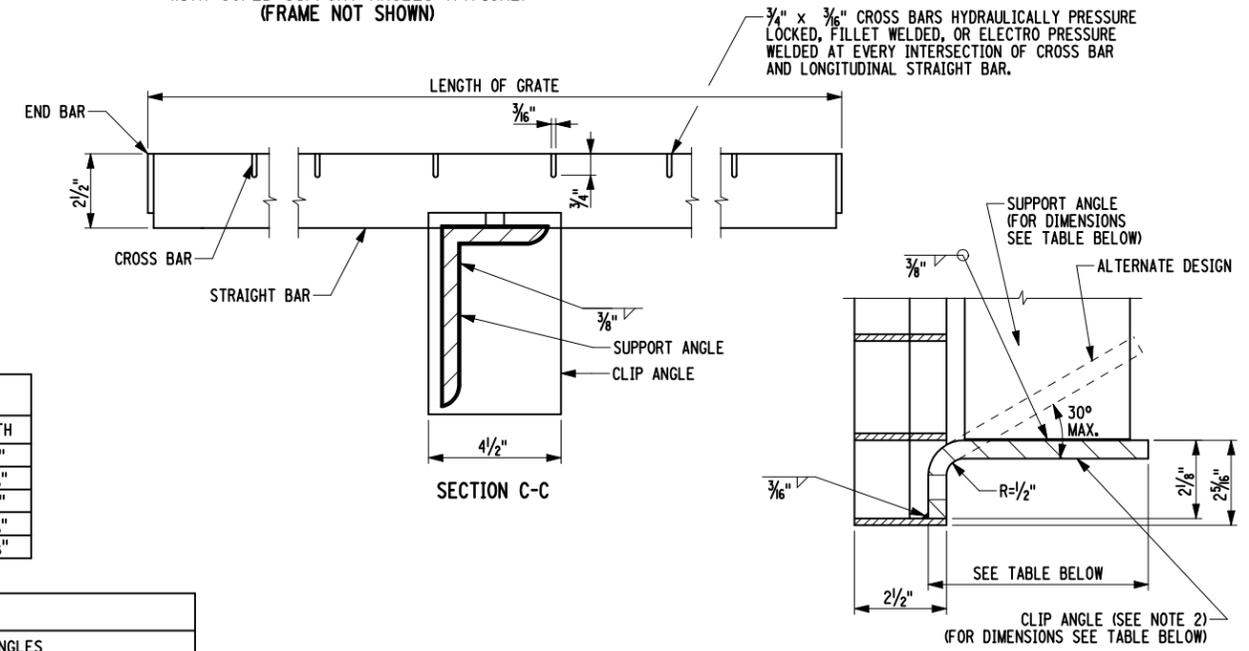
RECTANGULAR GRATE WITH COPEd SUPPORT ANGLES (TYPICAL) (FRAME NOT SHOWN)



SECTION C-C



SECTION A-A



SECTION C-C

CLIP ANGLE DETAIL

COPEd SUPPORT ANGLE DIMENSIONS				
GRATE NO.	NO.	SIZE	LENGTH	
3	1		22 5/16"	
6	1	6" X 3 1/2" X 1/2"	24 3/16"	
11	1	6" X 3 1/2" X 1/2"	27 3/16"	
16	2	6" X 4" X 1/2"	29 3/16"	
22	1	8" X 4" X 1/2"	37 3/16"	

SUPPORT AND CLIP ANGLE DIMENSIONS						
GRATE NO.	SUPPORT ANGLES			CLIP ANGLES		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
3	1		18"	2	6" X 2 1/8" X 1/2"	4 1/2"
6	1	6" X 3 1/2" X 1/2"	20 1/2"	2	7" X 2 1/8" X 1/2"	4 1/2"
11	1	6" X 3 1/2" X 1/2"	23"	2	7" X 2 1/8" X 1/2"	4 1/2"
16	2	6" X 4" X 1/2"	25 1/2"	4	7" X 2 1/8" X 1/2"	4 1/2"
22	1	8" X 4" X 1/2"	33"	2	9" X 2 1/8" X 1/2"	4 1/2"

GRATE DIMENSIONS AND MASSES							
GRATE NO.	OUTSIDE DIMENSIONS WIDTH X LENGTH	LONGITUDINAL STRAIGHT BARS 2 1/2" X 3/16"		CROSS BARS 3/4" X 3/16"		(2) 2" X 1/4"	APPROXIMATE MASS (LBS.)
		NO.	LENGTH	NO.	LENGTH		
3	22 5/16" X 36 1/2"	10	36"	8	22 5/16"	22 5/16"	86
6	25 3/16" X 26 1/2"	11	26"	6	25 3/16"	25 3/16"	79 3/8
11	27 3/16" X 36 1/2"	12	36"	8	27 3/16"	27 3/16"	108
16	30 3/16" X 46 1/2"	13	46"	11	30 3/16"	30 3/16"	176 3/8
22	37 1/16" X 41 1/2"	16	41"	10	37 1/16"	37 1/16"	172

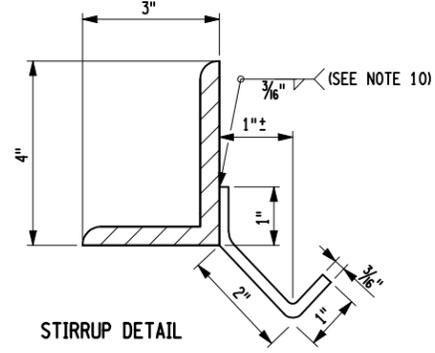
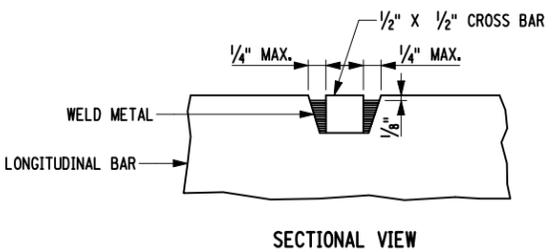
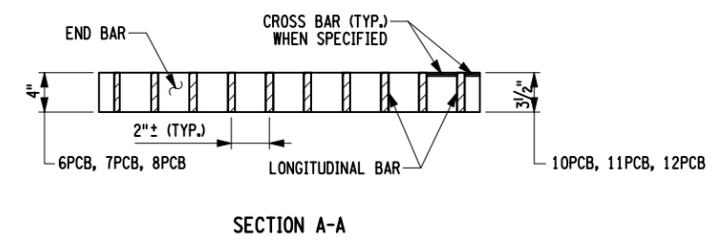
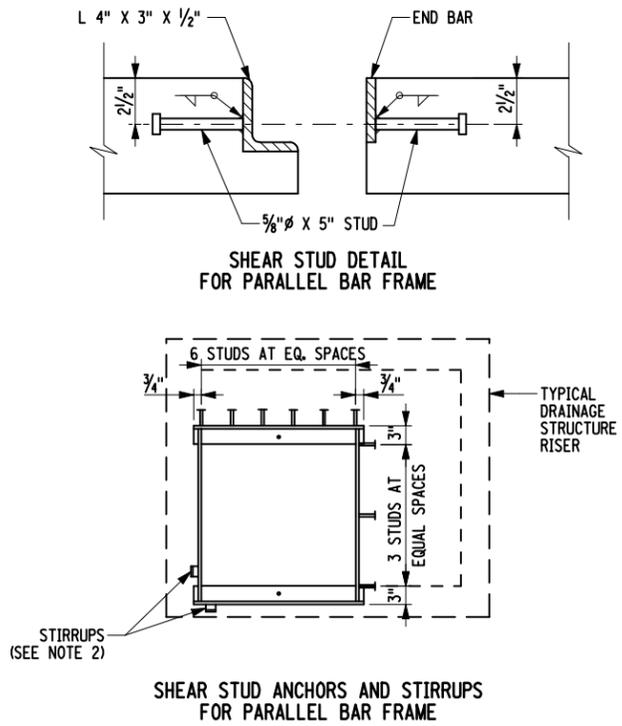
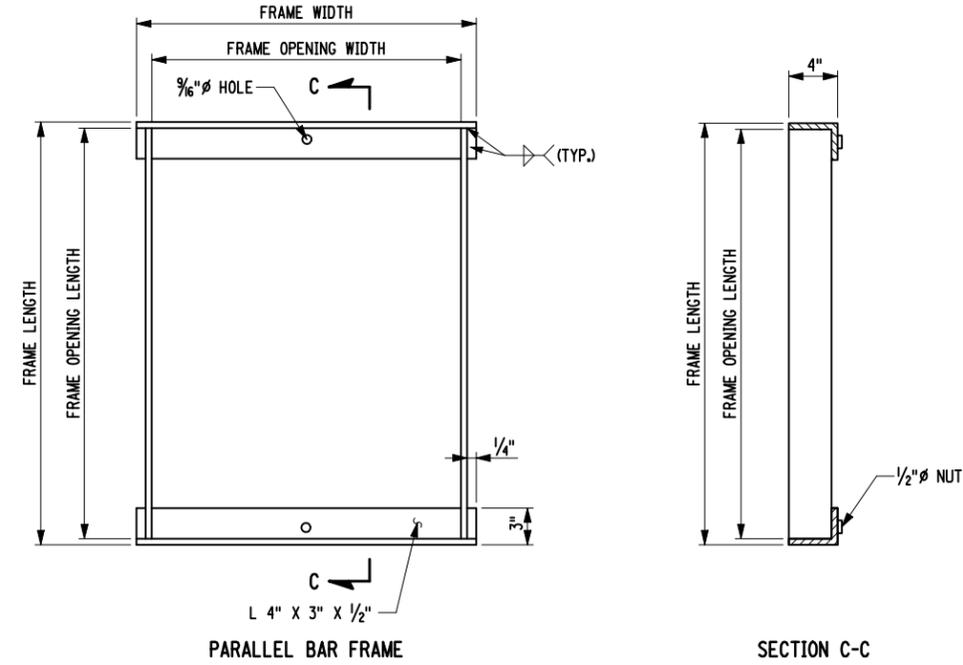
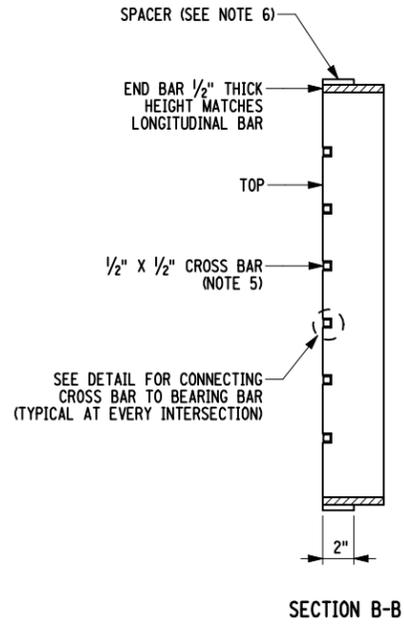
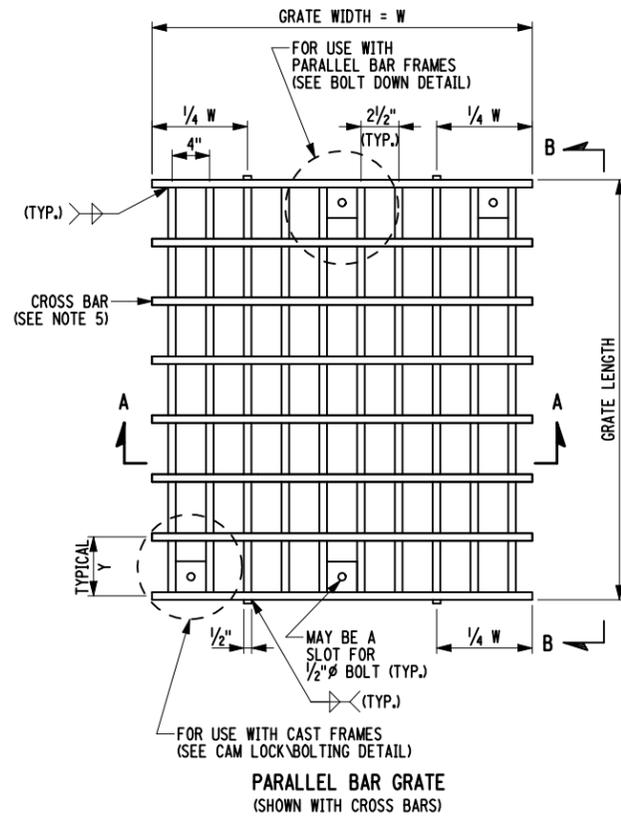
NOTES:

- GRATES ARE DESIGNED FOR 71 KN WHEEL LOAD (MS 18 LOADING).
- CLIP ANGLES MAY BE CUT FROM STANDARD ASTM A6 ANGLES OR FORMED FROM A 42/2 X 2/2 BAR. THE ALTERNATE CLIP ANGLE SHALL BE FORMED FROM A 42/2 X 2/2 BAR ONLY.
- GRATE SHALL BE GROUND TO FIT FILLETS IN FRAME ANGLES.
- WELDS ON OUTSIDE OF GRATE SHALL BE GROUND SMOOTH.
- WELDS AND AREAS ADJACENT TO WELDS SHALL BE SAND OR SHOT BLASTED BEFORE GALVANIZING IN ORDER TO REMOVE ALL SCALE, RUST, SLAG AND SPLATTER, ETC.
- GRATES SHALL BE HOT-DIP GALVANIZED AFTER ALL FABRICATION, GRINDING, TAPPING AND CLEANING HAVE BEEN COMPLETED.
- GRATE SHALL BE BOLTED TO WELDED FRAME WITH TWO BOLTS, ONE ON EACH SIDE. BOLTS SHALL BE CORROSION RESISTANT: MONEL METAL OR TYPE 316 STAINLESS STEEL.

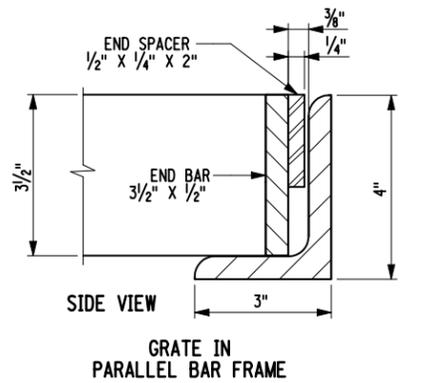
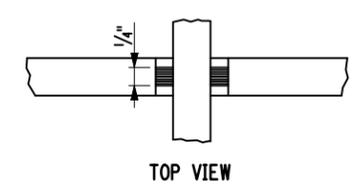
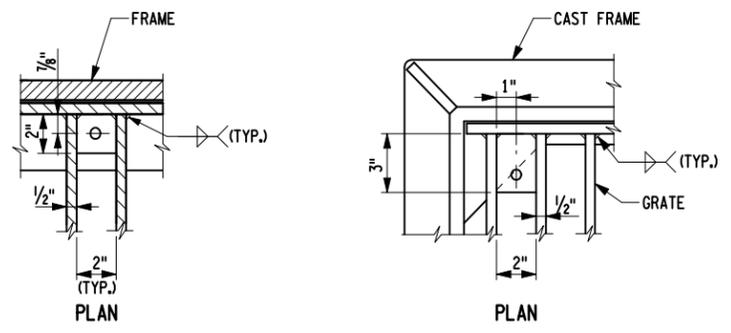
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EFFECTIVE DATE: 01/08/09

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
RECTANGULAR GRATES	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	655-01



- NOTES:
1. WELDS ON INSIDE OF FRAME AND OUTSIDE OF GRATE SHALL BE GROUND SMOOTH.
  2. THE SIDES OF PARALLEL BAR FRAMES WHICH ARE DIRECTLY OVER A STRUCTURE WALL SHALL HAVE ONE STIRRUP OR STUD WELDED TO THE FRAME AT EACH END NEAR THE CORNERS, SIDES OF PARALLEL BAR FRAMES WHICH ARE NOT DIRECTLY OVER WALLS SHALL HAVE SHEAR STUD ANCHORS AS SHOWN.
  3. FRAMES AND GRATES SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH SECTION 719-01 AFTER ALL CUTTING, WELDING, BONDING, AND CLEANING.
  4. GRATES ARE DESIGNED FOR 16 KIPS WHEEL LOAD (HS 20 LOADING).
  5. WHEN PARALLEL BAR GRATES WITH CROSS BARS ARE SPECIFIED ON THE CONTRACT PLANS, NO OTHER OPTIONS ARE PERMITTED EXCEPT AS SHOWN, TOP SURFACES OF BEARING BARS AND CROSS BARS SHALL BE FLUSH.
  6. END SPACERS SHALL NOT BE USED WITH CAST FRAMES.
  7. WHEN A PARALLEL BAR GRATE IS USED WITH THE CAST FRAME, SECURE WITH TWO CAM LOCKING DEVICES OR BOLTS ON DIAGONALLY OPPOSITE CORNERS OF THE GRATE.
  8. GRATE SHALL BE BOLTED TO PARALLEL BAR FRAME (SEE BOLT-DOWN DETAIL) WITH TWO BOLTS, ONE ON EACH END, BOLTS SHALL BE CORROSION RESISTANT, MONEL METAL OR TYPE 316 STAINLESS STEEL.
  9. LONGITUDINAL BARS FOR 10PCB, 11 PCB, AND 12PCB, GRATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A529 GRADE345.
  10. MAY LEAVE A GAP OF 1/2" ON BOTTOM TO PREVENT BLOWOUT DURING GALVANIZING.



DETAIL FOR CONNECTION CROSS BAR TO LONGITUDINAL BAR

FRAME TABLE		
FRAME NUMBER	OUTSIDE WIDTH X LENGTH	OPENING WIDTH X LENGTH
F1	39 1/4" MIN. X 35 1/4" MIN.	25 1/2" X 28"
F2	39 1/4" MIN. X 45 1/4" MIN.	25 1/2" X 38"
F3	39 1/4" MIN. X 55 1/4" MIN.	25 1/2" X 48"
10PCB	25 3/8" X 38 1/2"	23 3/8" X 37 1/2"
11PCB	27 7/8" X 48 1/2"	26 3/8" X 47 1/2"
12PCB	35 3/8" X 43 1/2"	33 3/8" X 42 1/2"

GRATE TABLE						
GRATE NUMBER	OUTSIDE WIDTH X LENGTH	X	MAXIMUM Y	LONGITUDINAL BARS		APPROX. MASS LBS.
				NO.	SIZE	
6PCB	25" X 27 1/2"	1"	4"	10	4" X 1/2"	180
7PCB	25" X 37 1/2"	1"	4 1/4"	10	4" X 1/2"	240
8PCB	25" X 47 1/4"	1"	4"	10	4" X 1/2"	300
10PCB	23 1/2" X 36 3/4"	1/4"	4 1/4"	10	3 1/2" X 1/2"	200 (SEE NOTE 9)
11PCB	26" X 46 3/4"	1/4"	4"	11	3 1/2" X 1/2"	280 (SEE NOTE 9)
12PCB	33 1/2" X 41 3/4"	1/4"	4"	14	3 1/2" X 1/2"	320 (SEE NOTE 9)

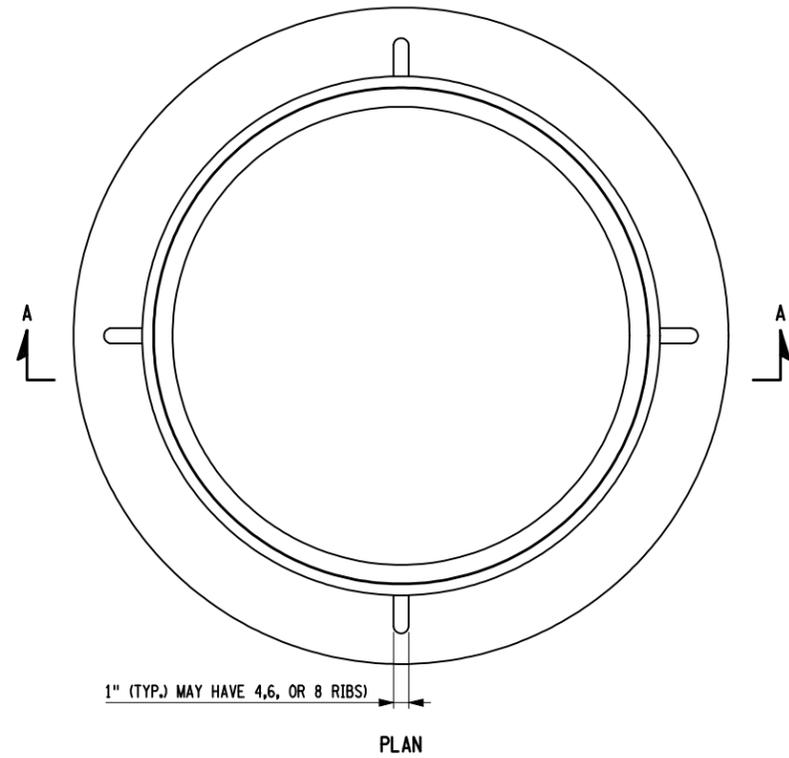
NOTE: PLACE ON LONGITUDINAL C OF GRATE, ONE ON EACH END (SEE NOTE 8)  
BOLT DOWN DETAIL FOR PARALLEL BAR GRATES IN PARALLEL BAR FRAMES

NOTE: PLACE CAM LOCK BOLT ON DIAGONALLY OPPOSITE CORNERS OF GRATE (SEE NOTE 7)  
CAM LOCK BOLTING DETAIL FOR PARALLEL BAR GRATES IN CAST FRAMES

EFFECTIVE DATE: 05/07/09

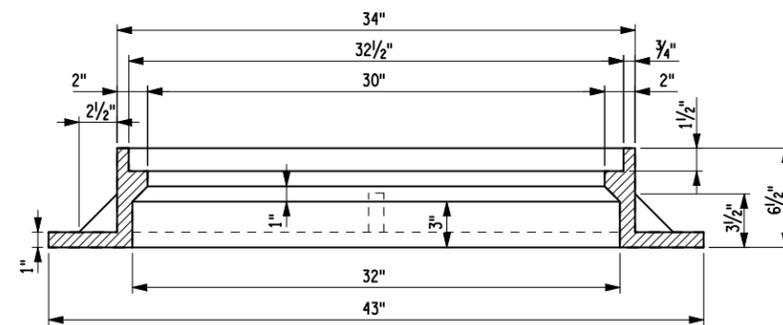
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
PARALLEL BAR FRAMES AND GRATES	
APPROVED DECEMBER 19, 2008	ISSUED UNDER EB 08-049
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	655-02

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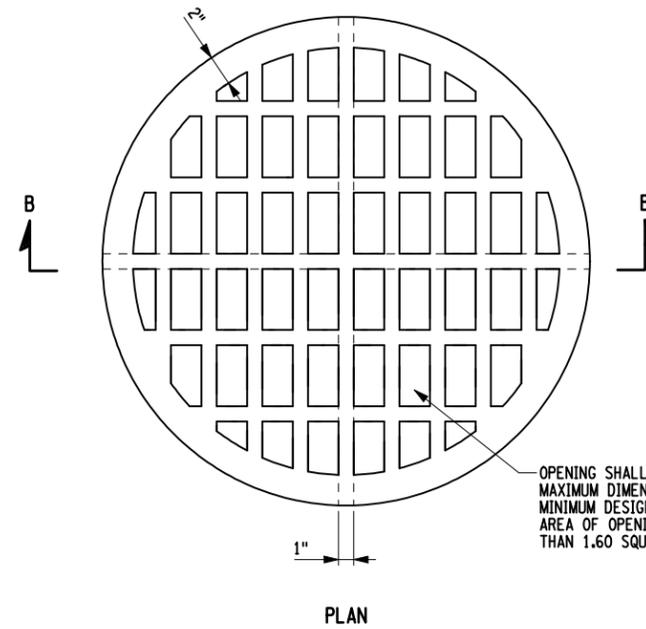


1" (TYP.) MAY HAVE 4, 6, OR 8 RIBS

PLAN

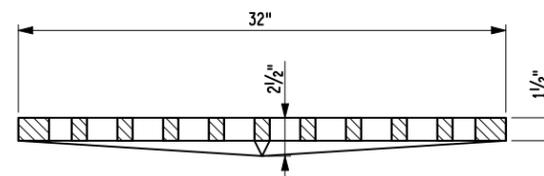


SECTION A-A  
MANHOLE COVER  
APPROXIMATE MASS 350 LBS.

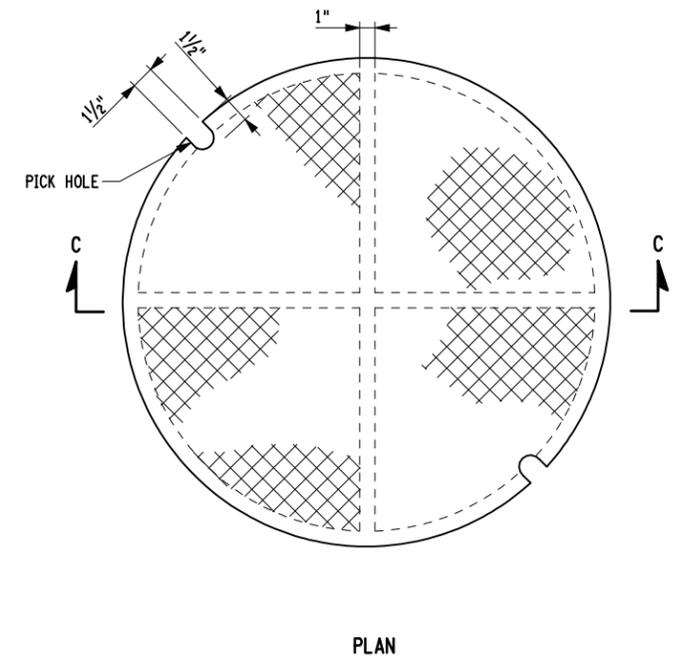


OPENING SHALL BE RECTANGULAR WITH MAXIMUM DIMENSION OF 4 1/2" AND MINIMUM DESIGN OF 1". TOTAL AREA OF OPENINGS SHALL BE NO LESS THAN 1.60 SQUARE FEET.

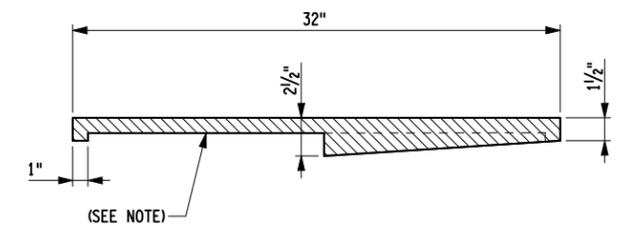
PLAN



SECTION B-B  
MANHOLE COVER  
APPROXIMATE MASS 230 LBS.



PLAN



(SEE NOTE)

SECTION C-C  
MANHOLE COVER  
APPROXIMATE MASS 240 LBS.

NOTE: MANHOLE COVERS MAY BE DESIGNED WITH OR WITHOUT RIBS AND SHALL RESIST THE 16 KIP(F) WHEEL LOAD OF AASHTO H20 LOADING

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STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

CAST MANHOLE  
FRAMES, GRATES AND COVERS

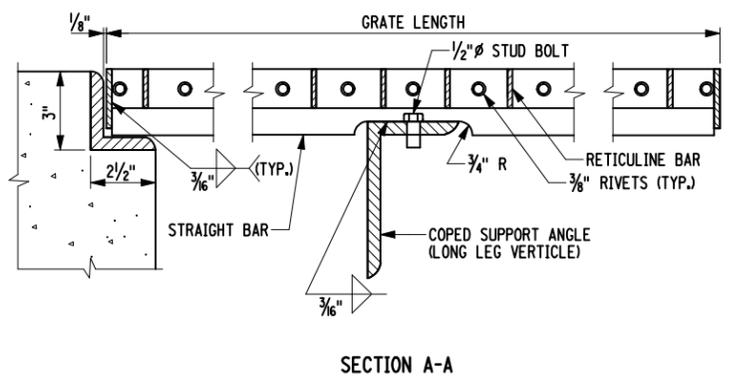
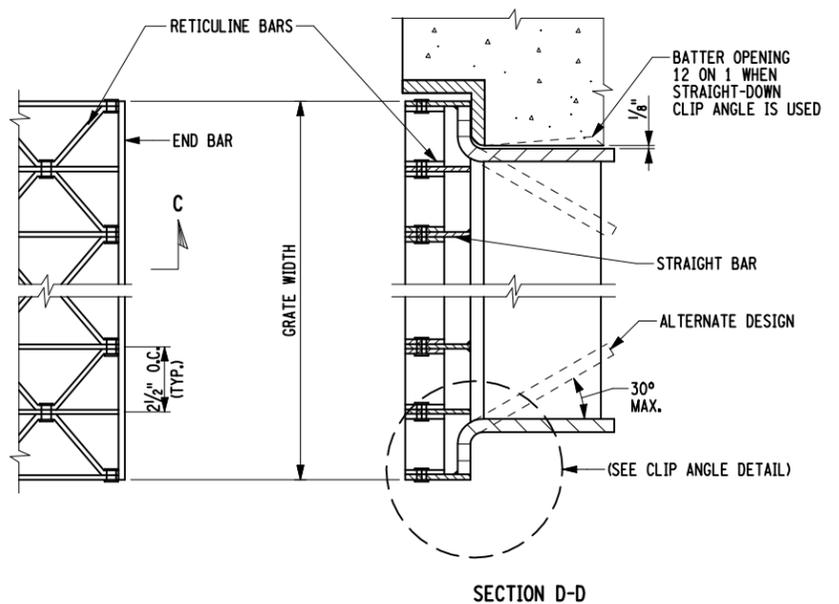
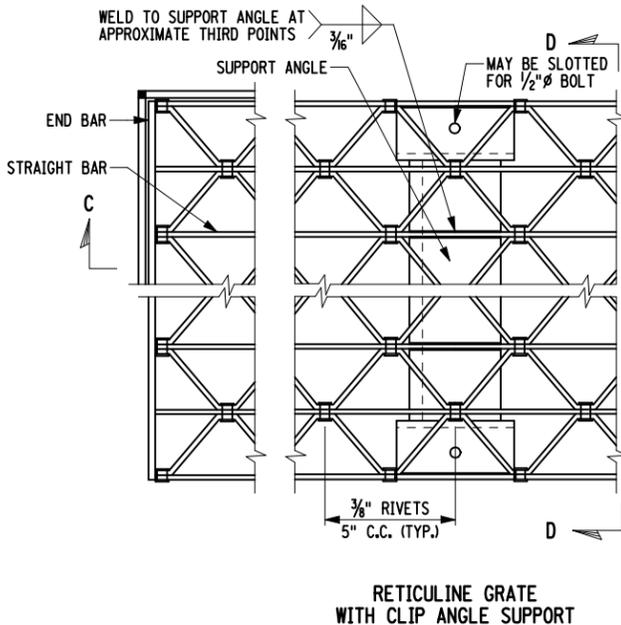
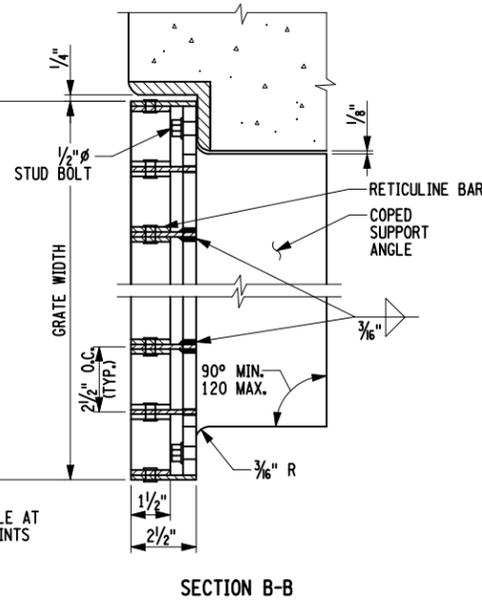
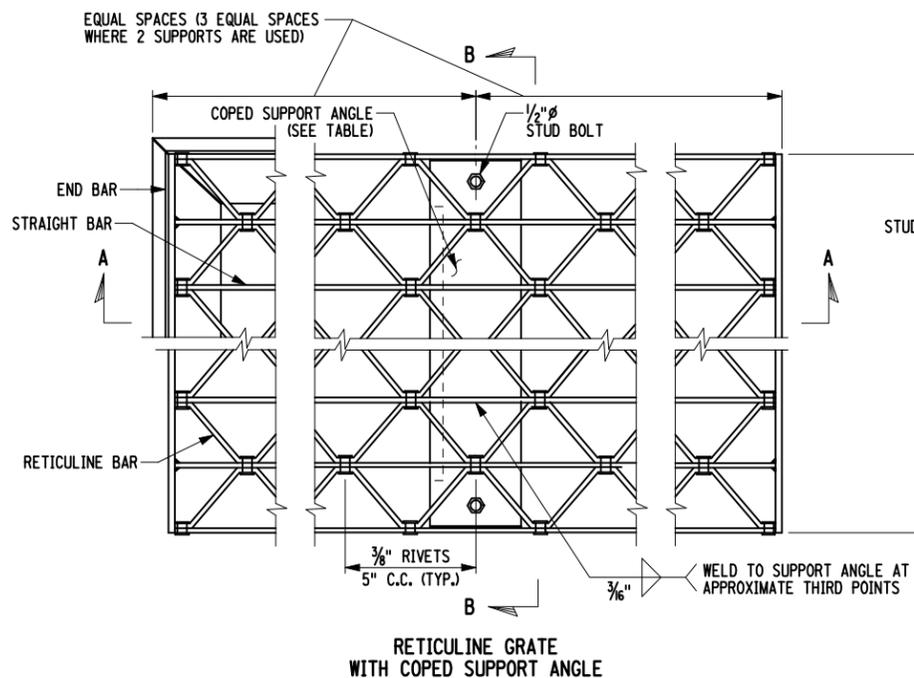
APPROVED DECEMBER 19, 2008

ISSUED UNDER EB 08-049

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

655-03

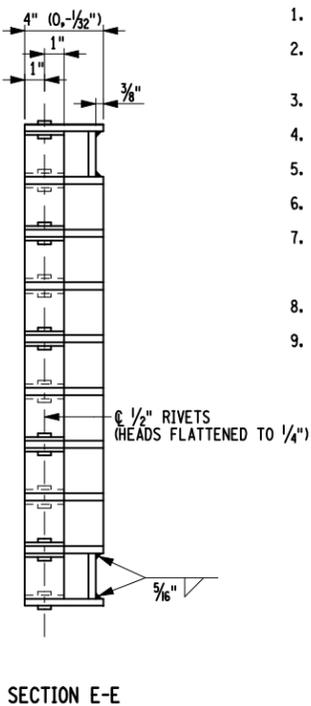
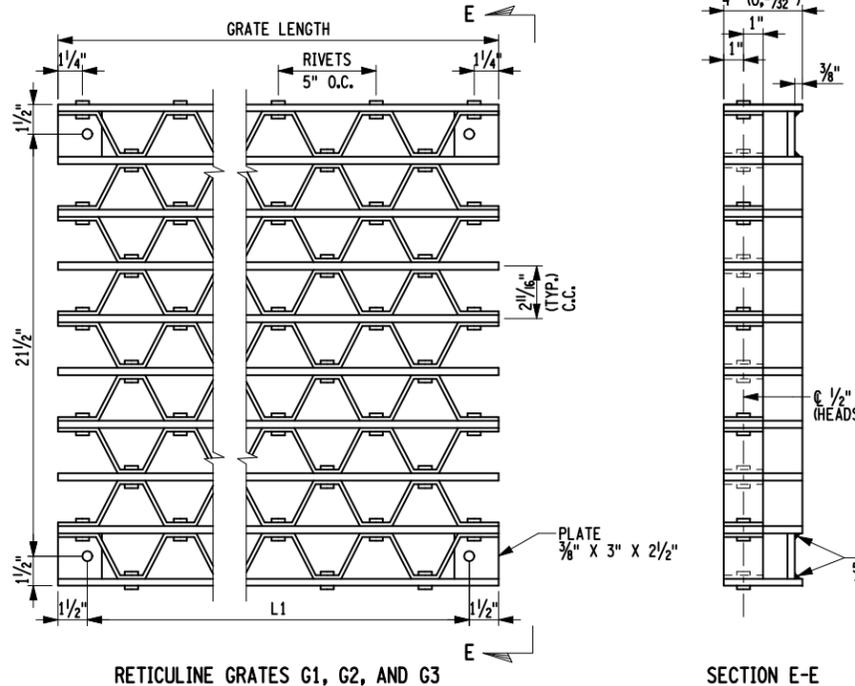
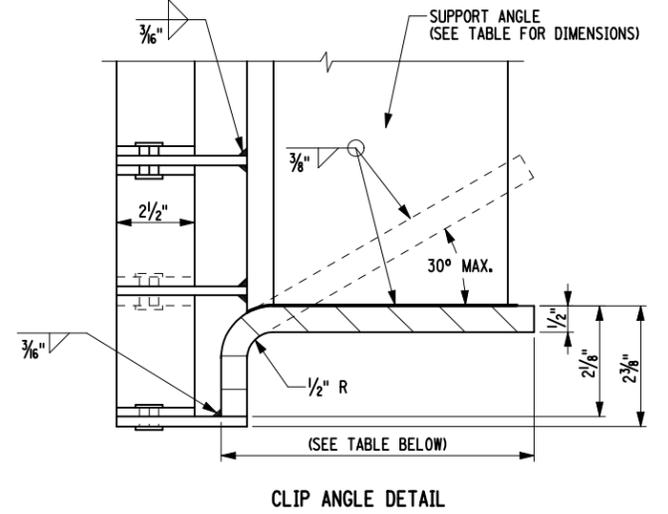
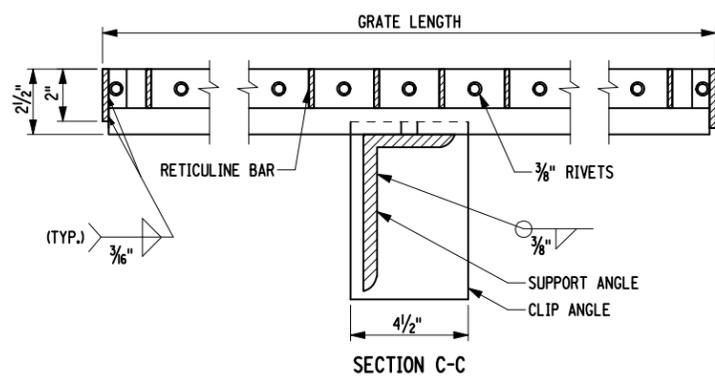
EFFECTIVE DATE: 05/07/09



GRATE NO.	NO.	SIZE	LENGTH
3	1	5" X 3 1/2" X 1/2"	22 5/16"
6	1	6" X 3 1/2" X 1/2"	24 5/16"
11	1	6" X 3 1/2" X 1/2"	27 5/16"
16	2	6" X 4" X 1/2"	29 5/16"
22	1	8" X 4" X 1/2"	37 5/16"

NOTES:

- GRATES ARE DESIGNED FOR 16 KIP WHEEL LOAD (HS 20 LOADING).
- CLIP ANGLES SHALL BE CUT FROM STANDARD ASTM A6 ANGLES OR FORMED FROM A 4 1/2" X 1/2" BAR. THE ALTERNATE DESIGN SHALL BE FORMED FROM A 4 1/2" X 1/2" BAR.
- GRATE SHALL BE GROUND TO FIT FIT FILLETS IN FRAME ANGLES OR CASTINGS.
- WELDS ON OUTSIDE OF GRATE SHALL BE GROUND SMOOTH.
- WELDS AND ADJACENT AREAS SHALL BE SAND OR SHOT BLASTED BEFORE GALVANIZING IN ORDER TO REMOVE ALL SCALE, RUST, SLAG AND SPLATTER, ETC.
- GRATES SHALL BE HOT-DIP GALVANIZED AFTER ALL FABRICATION, GRINDING, TAPPING AND CLEANING HAVE BEEN COMPLETED.
- GRATE SHALL BE BOLTED TO WELDED FRAME WITH TWO BOLTS AND WASHERS, ONE ON EACH SIDE. GRATE SHALL BE BOLTED TO CAST FRAME WITH FOUR 3/4" X 2 1/2" LONG BOLTS AND WASHERS, ONE IN EACH CORNER. BOLTS AND WASHERS SHALL BE CORROSION RESISTANT (MONEL METAL OR TYPE 316 STAINLESS STEEL) AND FURNISHED BY THE FRAME MANUFACTURER.
- PAYMENT AREAS ARE ON STANDARD SHEET - "WELDED FRAMES AND PROOF LOADED CAST STEEL OR IRON FRAMES, CURB BOXES".
- LONGITUDINAL BARS FOR G1, G2, AND G3 SHALL CONFORM TO THE REQUIREMENTS OF ASTM A529 GRADE 50.



GRATE NO.	OUTSIDE WIDTH X LENGTH	LONGITUDINAL STRAIGHT BARS 2 1/2" X 3/16"		RETICULINE BARS 1 1/2" X 3/16"		END BARS (2) 2" X 1/4"	APPROX. MASS LB.
		NO.	LENGTH	NO.	LENGTH	LENGTH	
3	22 1/16" X 36 1/2"	10	36"	9	51 3/4"	22 1/16"	118
6	25 3/16" X 26 1/2"	11	26"	10	37 1/4"	25 3/16"	107
11	27 1/16" X 36 1/2"	12	36"	11	51 3/4"	27 1/16"	147
16	30 3/16" X 46 1/2"	13	46"	12	66 1/4"	30 3/16"	233
22	37 1/16" X 41 1/2"	16	41"	15	59"	37 1/16"	231
GRATE	WIDTH X LENGTH	4" X 3/8"		2" X 3/16"		L1	MASS
G1	24 1/2" X 27 1/2"	10	27 1/2"	9	38 3/4"	24 1/2"	165 NOTE 9
G2	24 1/2" X 37 1/2"	10	37 1/2"	9	53 1/4"	34 1/2"	224 NOTE 9
G3	24 1/2" X 47 1/2"	10	47 1/2"	9	67 3/4"	44 1/2"	282 NOTE 9

GRATE NO.	SUPPORT ANGLES			CLIP ANGLES		
	NO.	SIZE	LENGTH	NO.	SIZE	LENGTH
3	1	5" X 3 1/2" X 1/2"	18"	2	6" X 2" X 1/2"	4 1/2"
6	1	6" X 3 1/2" X 1/2"	20 1/2"	2	7" X 2" X 1/2"	4 1/2"
11	1	6" X 3 1/2" X 1/2"	23"	2	7" X 2" X 1/2"	4 1/2"
16	2	6" X 4" X 1/2"	25 1/2"	4	7" X 2" X 1/2"	4 1/2"
22	1	8" X 4" X 1/2"	33"	2	9" X 2" X 1/2"	4 1/2"

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

RETICULINE GRATES

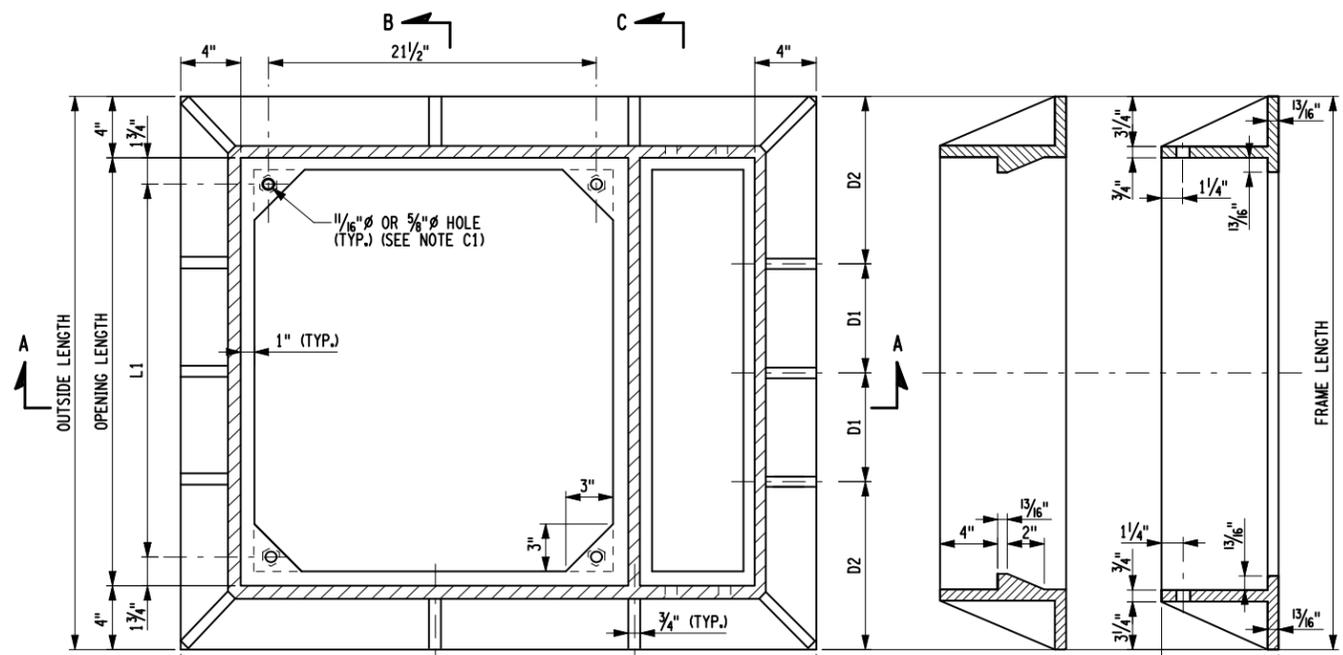
APPROVED OCTOBER 05, 2009 ISSUED UNDER EB 09-025

S/ RICHARD W. LEE, P.E.  
FOR THE DEPUTY CHIEF ENGINEER (DESIGN)

655-04

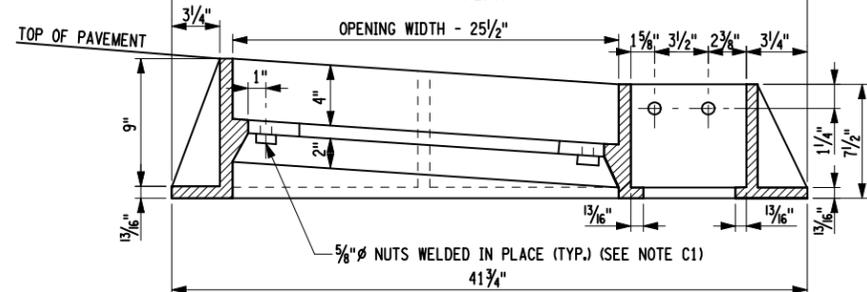
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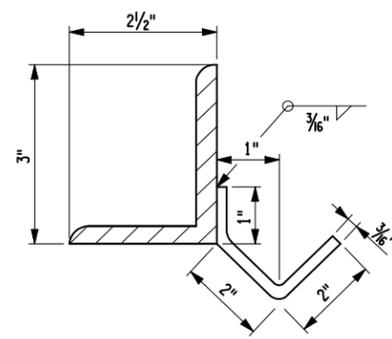
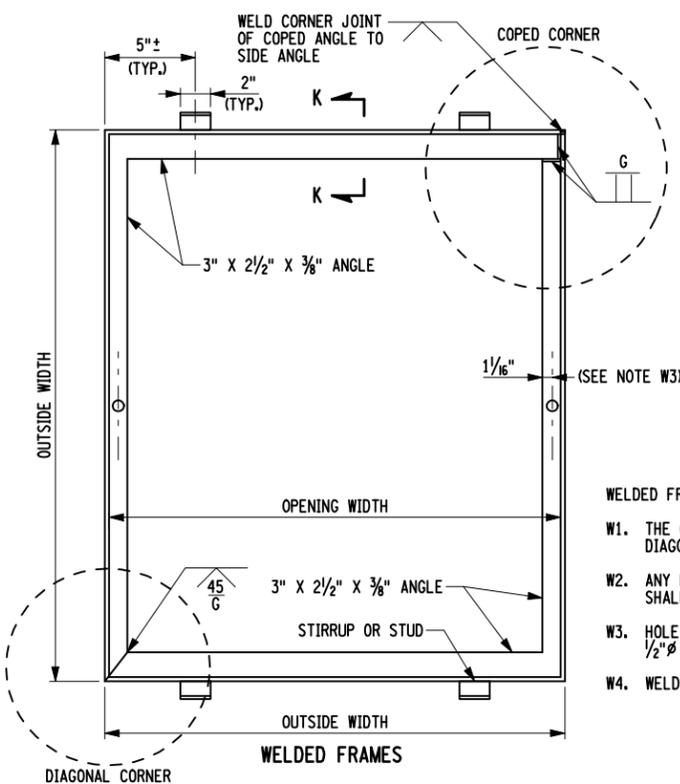


SECTION B-B

SECTION C-C



SECTION A-A  
CAST FRAMES F1, F2, AND F3



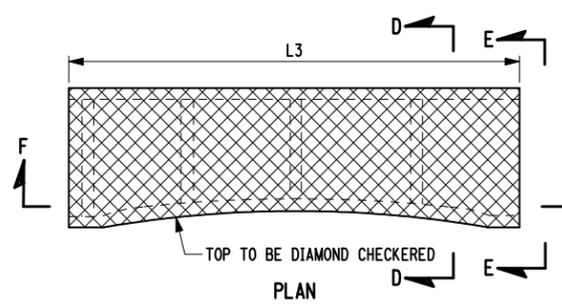
STIRRUP DETAIL K-K

WELDED FRAME NOTES:

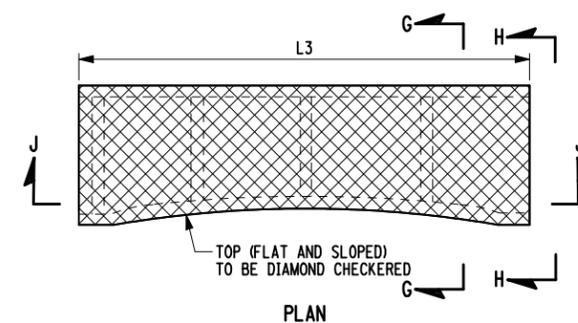
- W1. THE CONTRACTOR SHALL HAVE THE OPTION OF FURNISHING FRAMES WITH EITHER COPED OR DIAGONAL CORNERS.
- W2. ANY PROTRUSIONS ON THE BEARING SURFACE OF THE FRAME CAUSED BY WELDING OR GALVANIZING SHALL BE GROUND DOWN TO FORM A SMOOTH SURFACE FOR THE GRATE TO BEAR UPON.
- W3. HOLE FOR 1/2" STUD BOLT TO BE TAPPED OVERSIZE PRIOR TO GALVANIZING OR SHALL BE 5/16" DIA WITH 1/2" NUT WELDED UNDERNEATH.
- W4. WELDS AND ADJACENT AREAS SHALL BE SAND OR SHOT BLASTED BEFORE GALVANIZING.

CAST FRAME NOTES:

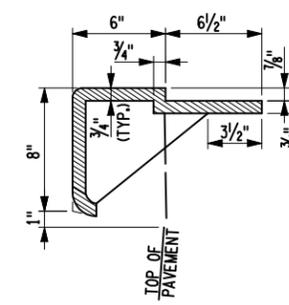
- C1. THE MANUFACTURER HAS THE OPTION OF WELDING A NUT TO THE FRAME UNDER THE LEDGE ON EACH CORNER, CONCENTRIC WITH THE 3/4" HOLE IN THE LEDGE, OR DRILLING AND TAPPING HOLES FOR 5/8" BOLTS. THE NUTS SHALL BE CORROSION RESISTANT, MONEL METAL OR TYPE 316 STAINLESS STEEL.
- C2. GRATE SHALL BE BOLTED TO THE FRAME USING FOUR BOLTS WITH WASHERS, 5/8" DIA X 2 1/2" LONG FURNISHED BY THE FRAME MANUFACTURER. THE BOLTS SHALL BE CORROSION RESISTANT, MONEL METAL OR TYPE 316 STAINLESS STEEL.
- C3. AN NI-ROD TYPE 55 IS RECOMMENDED FOR USE IN WELDING MONEL METAL NUTS TO THE FRAME.
- C4. THE CURB BOX SHALL BE BOLTED TO THE FRAME. THE MANUFACTURER SHALL HAVE THE OPTION OF DRILLING AND TAPPING HOLES FOR 3/4" BOLTS OR DRILLING HOLES FOR 5/8" BOLTS WITH NUTS AND WASHERS. FOUR MONEL METAL OR TYPE 316 STAINLESS STEEL STUD BOLTS SHALL BE FURNISHED BY THE CURB BOX MANUFACTURER.



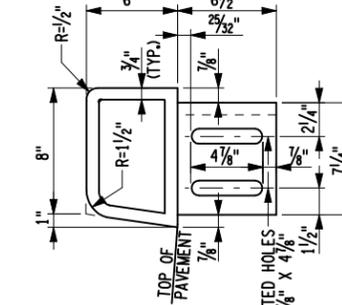
ELEVATION F-F  
CAST CURB BOXES (UNMOUNTABLE) CU1, CU2, AND CU3



ELEVATION J-J  
CAST CURB BOXES (MOUNTABLE) CM1, CM2, AND CM3



SECTION D-D

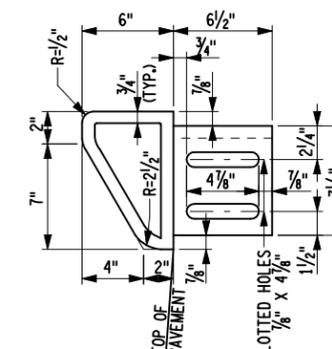


ELEVATION E-E

TABLE OF DIMENSIONS

FRAME OR BOX NO.	L1	L2	L3	D1	D2	D3	R1
1	24 1/2"	27 5/8"	29 1/2"	7"	11"	6 3/16"	37 1/4"
2	34 1/2"	37 5/8"	39 1/2"	9 1/2"	13 1/2"	8 5/16"	79 1/4"
3	44 1/2"	47 5/8"	49 1/2"	12"	16"	11 1/16"	138"

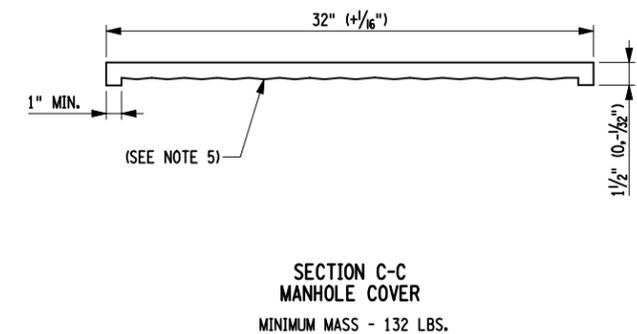
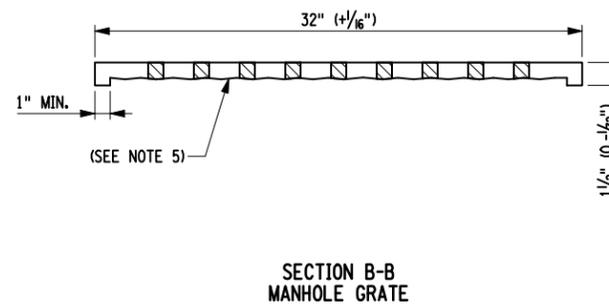
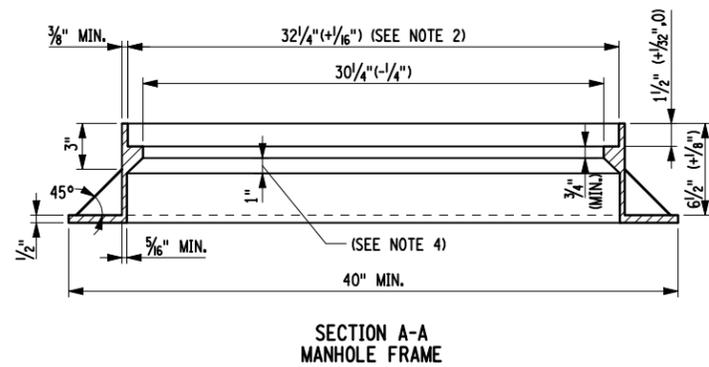
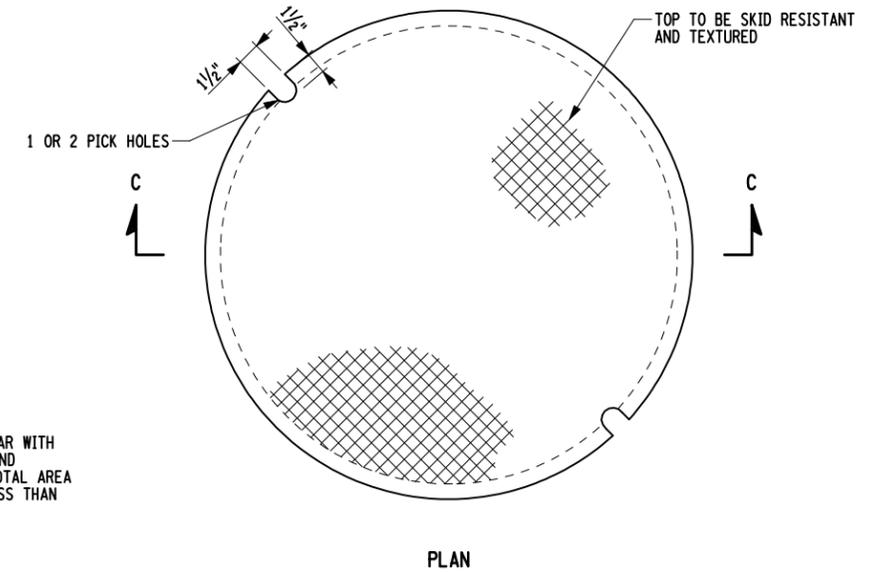
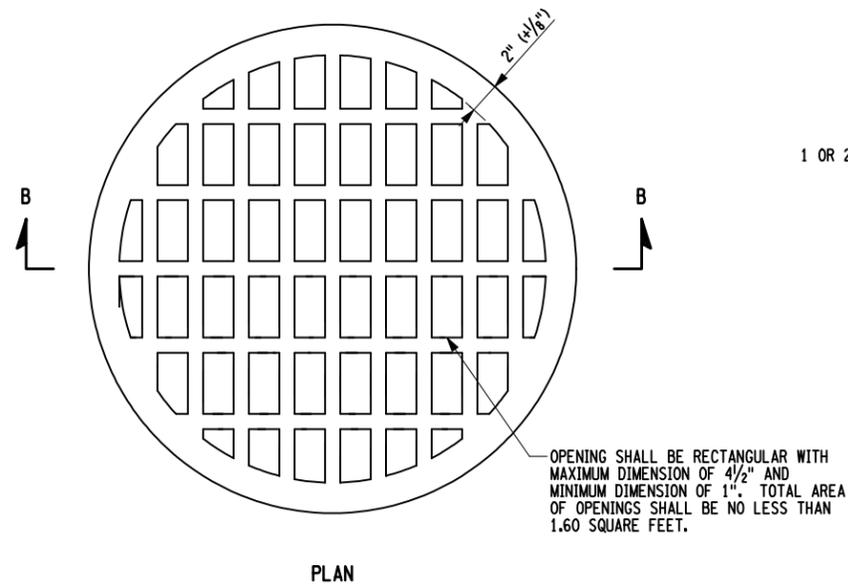
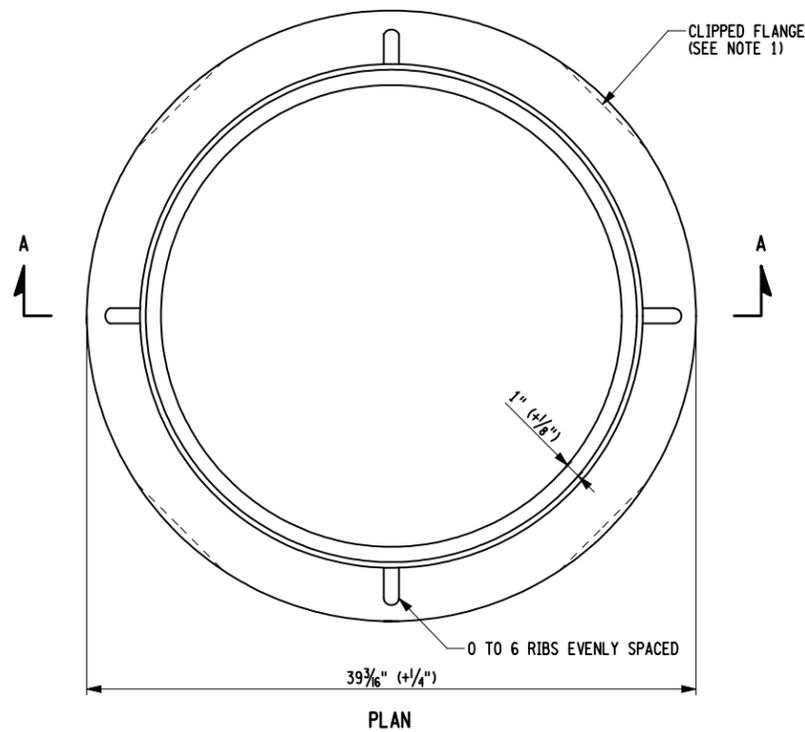
SECTION G-G



ELEVATION H-H

FRAME DIMENSIONS AND MASSES

FRAME NO.	OUTSIDE WIDTH X LENGTH	OPENING WIDTH X LENGTH	APPROXIMATE MASS (LBS)
3	23 5/16" X 37 1/2"	23 3/16" X 36 3/4"	66
6	26 1/16" X 27 1/2"	25 1/16" X 26 3/4"	55
11	28 5/16" X 37 1/2"	28 3/16" X 36 3/4"	70
16	31 1/16" X 47 1/2"	30 1/16" X 46 3/4"	86
22	38 5/16" X 42 1/2"	38 3/16" X 41 3/4"	88
F1	41 3/4" X 36"	25 1/2" X 28"	432
F2	41 3/4" X 46"	25 1/2" X 38"	505
F3	41 3/4" X 56"	25 1/2" X 48"	575



NOTES:

1. FRAMES MAY BE DESIGNATED WITH TWO OR FOUR OPPOSITE CLIPPED FLANGES.
2. GAP BETWEEN COVER/GRATE AND FRAME TO BE NO MORE THAN 1/8" ALL AROUND.
3. PATTERN DRAFTS SHALL BE NO GREATER THAN 5 DEGREES. THE PATTERN DRAFTS SHALL ONLY INCREASE THE SECTION THICKNESS FROM THE STATED MINIMUMS.
4. MAY BE A 45 DEGREE BEVEL OR 3/4" RADIUS.
5. TOP SURFACE OF COVER/GRATE SHALL BE FLAT. BOTTOM SURFACE MAY OR MAY NOT BE FLAT. MINIMUM SECTION THICKNESS SHALL BE 1/2".



STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

PROOF LOADED CAST STEEL  
OR IRON MANHOLE FRAMES,  
GRATES AND COVERS

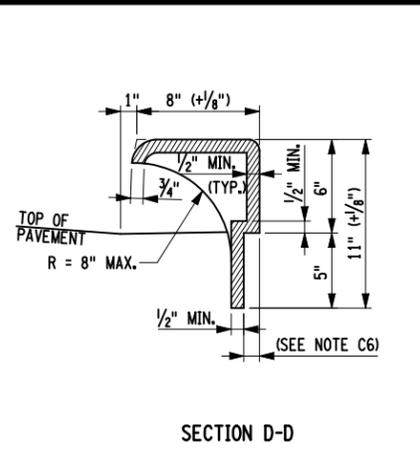
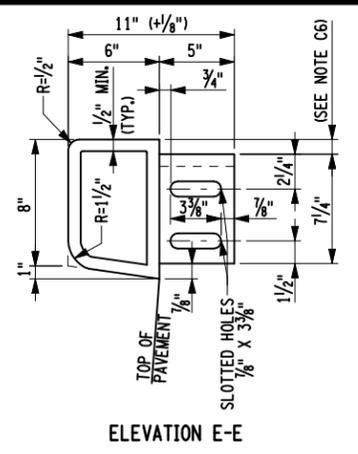
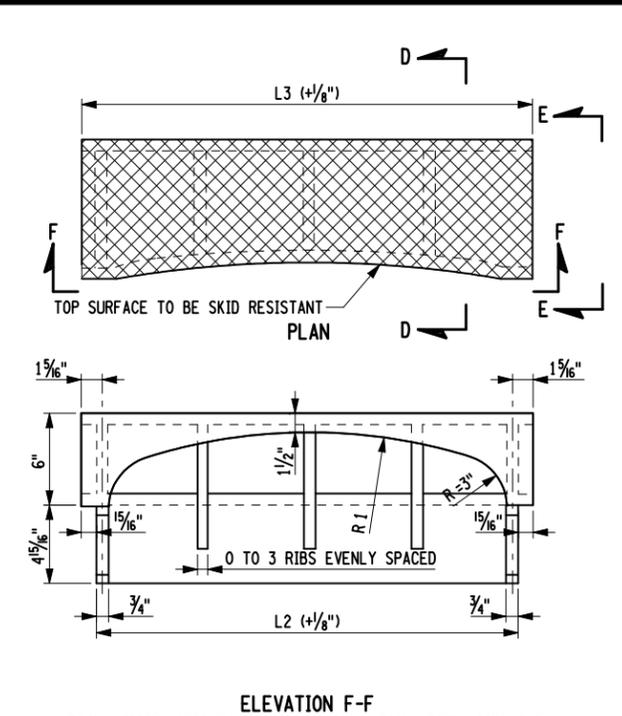
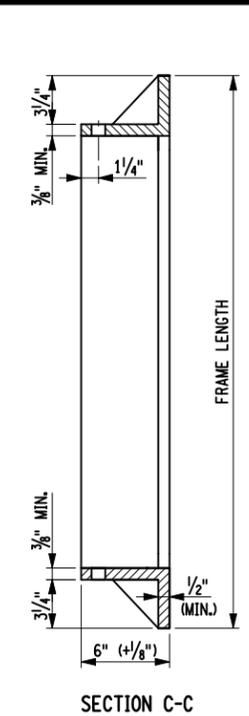
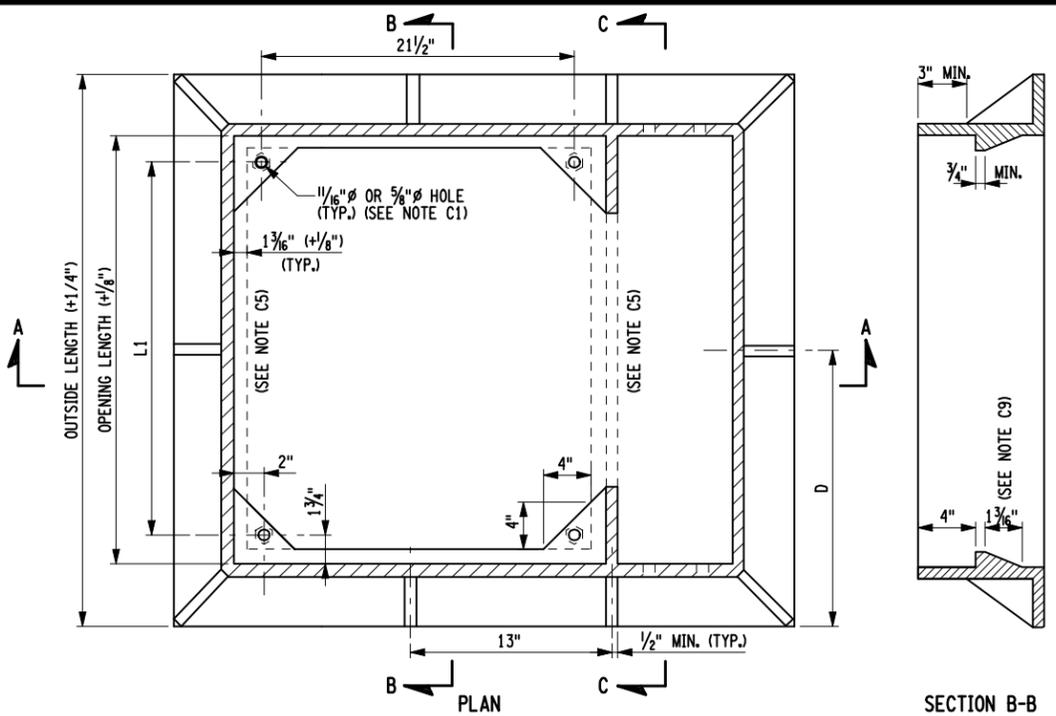
APPROVED SEPTEMBER 19, 2008

ISSUED UNDER EB 08-036

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

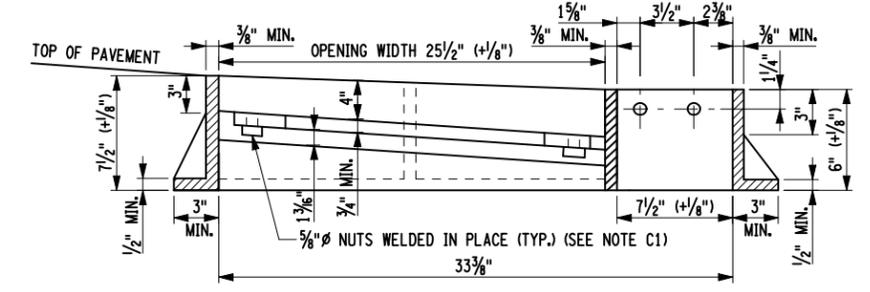
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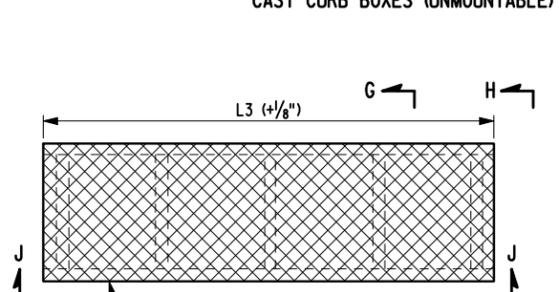


**TABLE OF DIMENSIONS**

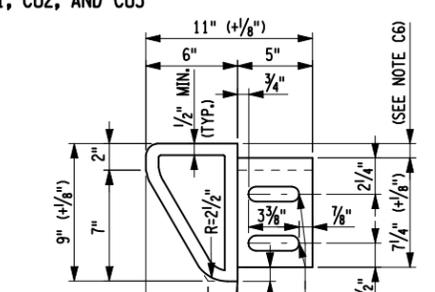
FRAME OR BOX NO.	L1	L2	L3	D	R1
1	24 1/2"	27 1/2"	29 1/2"	18"	37 1/4"
2	34 1/2"	37 9/16"	39 1/2"	23"	79 1/4"
3	44 1/2"	47 9/16"	49 1/2"	28"	138"



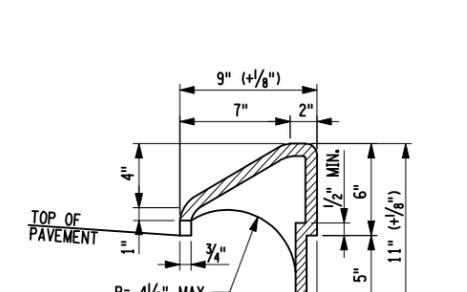
SECTION A-A (OPTIONAL SEATS NOT SHOWN)  
CAST FRAMES F1, F2, AND F3



ELEVATION J-J  
CAST CURB BOXES (MOUNTABLE) CM1, CM2, AND CM3



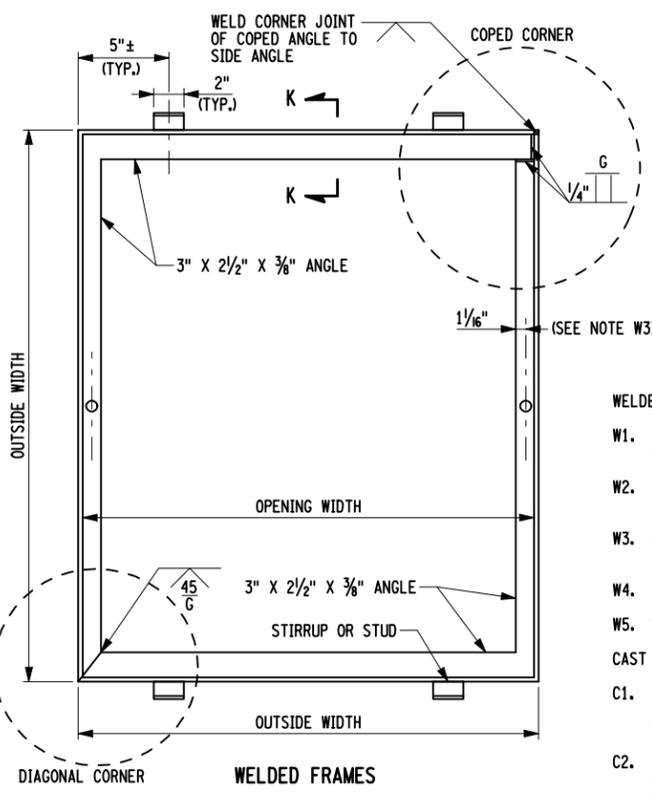
ELEVATION H-H



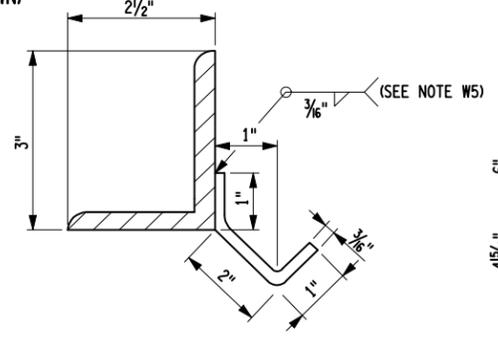
SECTION G-G

**FRAME DIMENSIONS AND MASSES**

FRAME NO.	OUTSIDE WIDTH X LENGTH	OPENING WIDTH X LENGTH	APPROX. MASS LBS.
3	24" X 37 1/2"	23 3/4" X 36 1/4"	66
6	26 1/2" X 27 1/2"	25 21/32" X 26 4/64"	55
11	29" X 32 1/2"	28 3/4" X 36 1/64"	70.5
16	31 1/2" X 47 1/2"	30 43/64" X 46 4/64"	86
22	39" X 42 1/2"	38 5/32" X 41 1/64"	88
F1	39 1/4" X 36"	25 1/2" X 28"	432
F2	39 1/4" X 46"	25 1/2" X 38"	505
F3	39 1/4" X 56"	25 1/2" X 48"	575



WELDED FRAMES



STIRRUP DETAIL K-K

**WELDED FRAME NOTES:**

- THE CONTRACTOR SHALL HAVE THE OPTION OF FURNISHING FRAMES WITH EITHER COPED OR DIAGONAL CORNERS.
- ANY PROTRUSIONS ON THE BEARING SURFACE OF THE FRAME CAUSED BY WELDING OR GALVANIZING SHALL BE GROUND DOWN TO FORM A SMOOTH SURFACE FOR THE GRATE TO BEAR UPON.
- HOLE FOR 1/2" STUD BOLT TO BE TAPPED OVERSIZE PRIOR TO GALVANIZING OR SHALL BE 3/16" WITH 1/2" NUT WELDED UNDERNEATH.
- WELDS AND ADJACENT AREAS SHALL BE SAND OR SHOT BLASTED BEFORE GALVANIZING.
- MAY LEAVE A GAP OF 1/2" ON BOTTOM TO PREVENT BLOWOUT DURING GALVANIZING.

**CAST FRAME NOTES:**

- THE MANUFACTURER HAS THE OPTION OF WELDING A NUT TO THE FRAME UNDER THE LEDGE ON EACH CORNER, CONCENTRIC WITH THE 3/4" HOLE IN THE LEDGE, OR DRILLING AND TAPPING HOLES FOR 3/8" BOLTS. THE NUTS SHALL BE CORROSION RESISTANT, MONEL METAL OR TYPE 316 STAINLESS STEEL.
- GRATE SHALL BE BOLTED TO THE FRAME USING FOUR BOLTS WITH WASHERS, 5/8" X 2 1/2" LONG FURNISHED BY THE FRAME MANUFACTURER. THE BOLTS SHALL BE CORROSION RESISTANT, MONEL METAL OR TYPE 316 STAINLESS STEEL.

**CAST FRAME NOTES CONTINUED:**

- AN NI-ROD TYPE 55 IS RECOMMENDED FOR USE IN WELDING METAL NUTS TO THE FRAME.
- THE CURB BOX SHALL BE BOLTED TO THE FRAME. THE MANUFACTURER SHALL HAVE THE OPTION OF DRILLING AND TAPPING HOLES FOR 3/4" BOLTS OR DRILLING HOLES FOR 5/8" BOLTS WITH NUTS AND WASHERS. FOUR MONEL METAL OR TYPE 316 STAINLESS STEEL STUD BOLTS SHALL BE FURNISHED BY THE CURB BOX MANUFACTURER.
- FRAMES MAY BE MANUFACTURED WITH OR WITHOUT MIDBAR SUPPORT AND FRONT AND BACK SEATS.
- LIP DIMENSIONS SHALL BE FRAME WALL THICKNESS (+1/8"). SLIGHT VARIATIONS IN NATURE OF LIP IS PERMISSABLE.
- CORRESPONDING SECTION THICKNESS OF FRAMES F1, F2, AND F3 SHALL BE SAME UNLESS LOAD TESTED, CORRESPONDING SECTION THICKNESS AND NUMBER OF STIFFENERS OF ALL CURB BOXES (CUS AND CWS) SHALL BE SAME UNLESS LOAD TESTED.
- PATTERN DRAFTS SHALL BE NO GREATER THAN 5 DEGREES. THE PATTERN DRAFTS WOULD ONLY INCREASE THE SECTION THICKNESS FROM THE STATED MINIMUMS.
- MAY BE A 45 DEGREE BEVEL OR 3/4" RADIUS.

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EFFECTIVE DATE: 05/07/09

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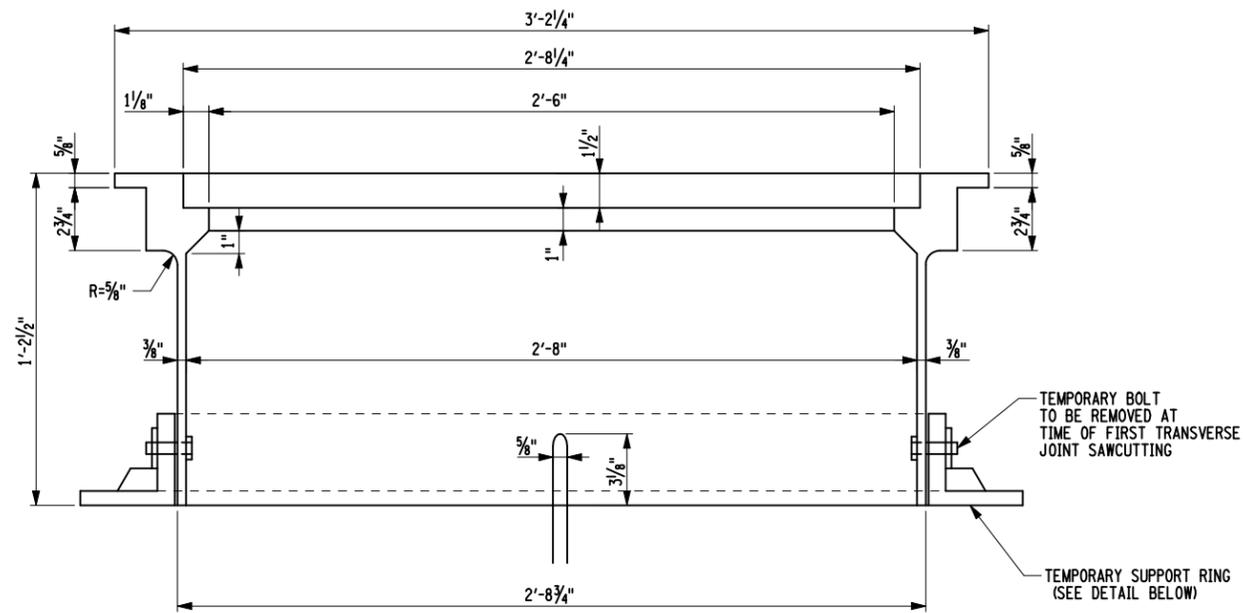
U.S. CUSTOMARY STANDARD SHEET

**WELDED FRAMES AND PROOF  
LOADED CAST STEEL OR  
IRON FRAMES AND CURB BOXES**

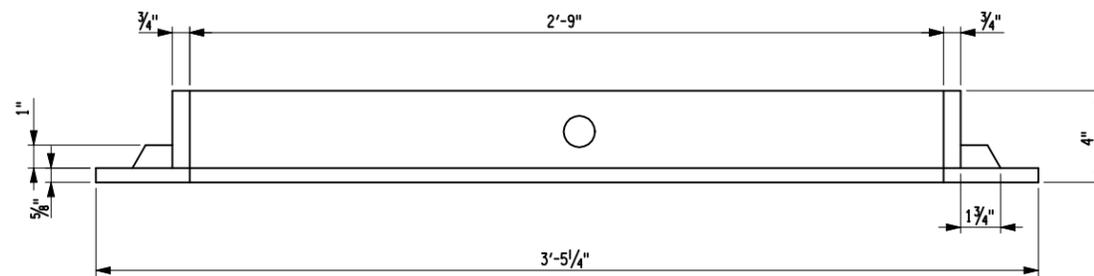
APPROVED DECEMBER 19, 2008      ISSUED UNDER EB 08-049

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER (DESIGN)

655-07



TELESCOPING MANHOLE CASTING



TEMPORARY SUPPORT RING

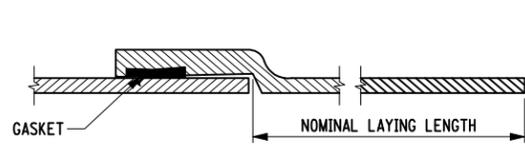
GENERAL NOTES:

1. TELESCOPING CASTINGS MUST MEET THE REQUIREMENTS OF § 655, FRAMES AND GRATES.
2. USE STANDARD COVERS FROM THE CURRENT 655 STANDARD SHEETS.
3. THE USE OF TELESCOPING CASTINGS REQUIRE:
  - A. THE CASTING MUST BE CENTERED LONGITUDINALLY BETWEEN TRANSVERSE JOINTS (± 12").
  - B. THE ROOF OF THE UTILITY STRUCTURE MUST BE AVAILABLE WITH THE TELESCOPING FEATURE. SEE THE CURRENT 655 STANDARD SHEETS.
4. REFER TO THE CURRENT 502 STANDARD SHEETS FOR TELESCOPING CASTING PLACEMENT DETAILS.

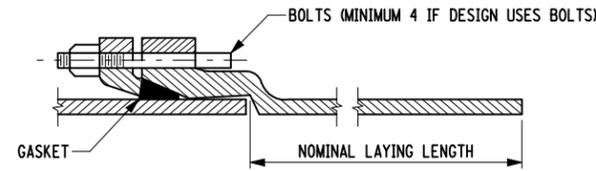
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	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
TELESCOPING MANHOLE CASTING AND RING		
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036	
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)		655-08

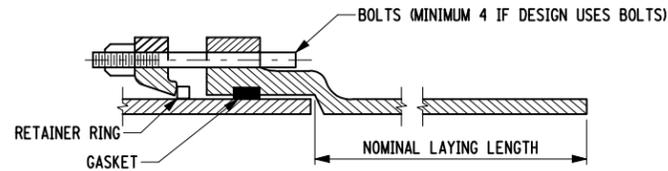
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**PUSH-ON JOINT FOR DUCTILE IRON PIPE AND FITTINGS**  
NOTE: WILL VARY WITH SIZE AND MANUFACTURER

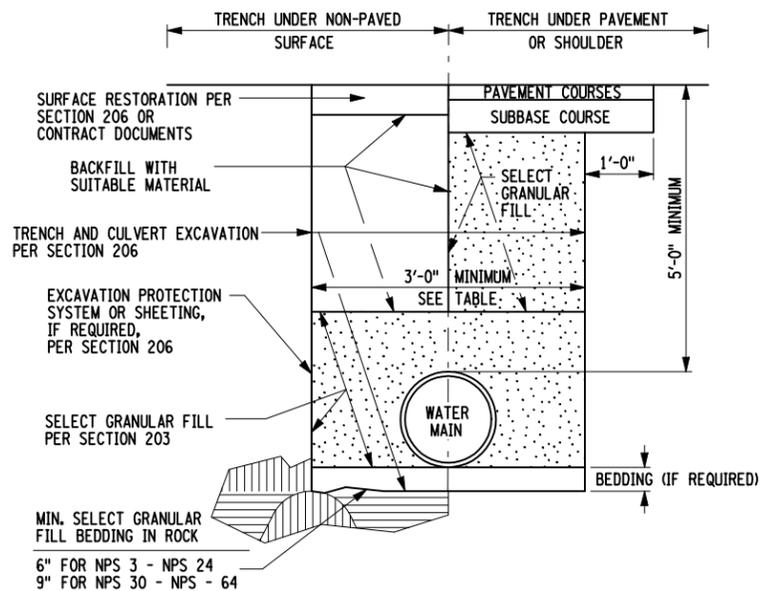


**MECHANICAL JOINT (NON-RESTRAINED) FOR DUCTILE IRON PIPE AND FITTINGS**  
NOTE: WILL VARY WITH SIZE AND MANUFACTURER

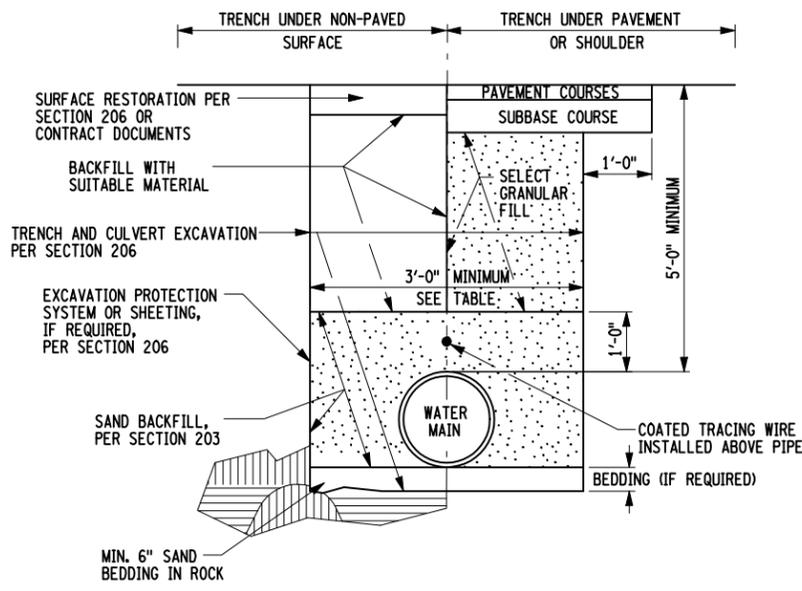


**RESTRAINED MECHANICAL JOINT FOR DUCTILE IRON PIPE AND FITTINGS**  
NOTE: WILL VARY WITH SIZE AND MANUFACTURER

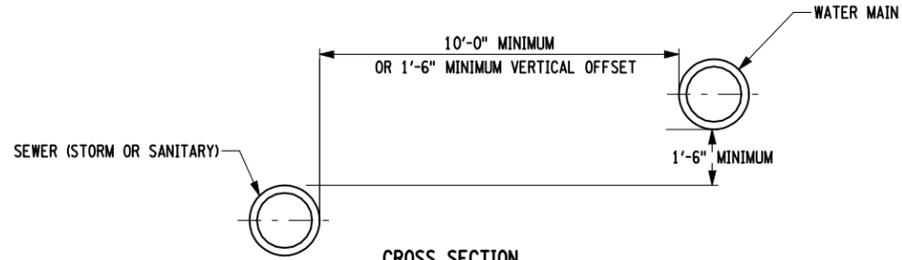
MECHANICAL JOINT BOLT TORQUE		
NPS SIZE	BOLT SIZE	TORQUE (LBF/FT)
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4-24	3/4"	75-90
30-36	1"	100-120
42-48	1 1/4"	120-150



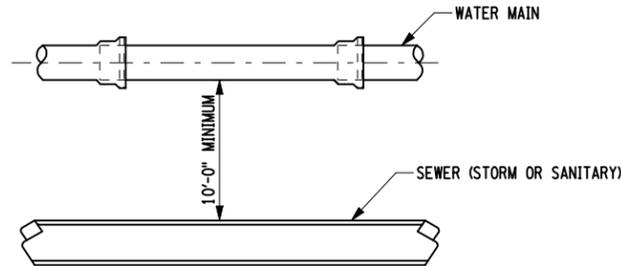
**NEW OR RELOCATED DUCTILE IRON OR STEEL WATER MAIN TRENCH DETAIL**



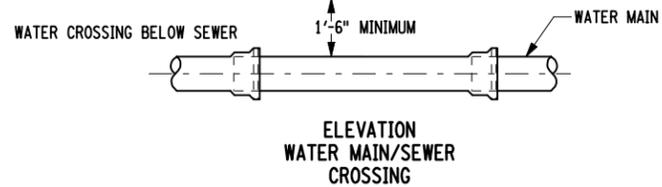
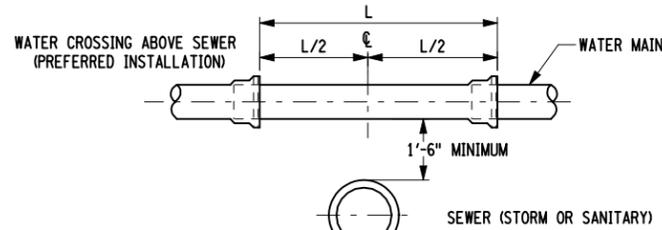
**NEW OR RELOCATED PLASTIC WATER MAIN TRENCH DETAIL**



**CROSS SECTION**



**PLAN WATER MAIN/SEWER PARALLEL INSTALLATION**



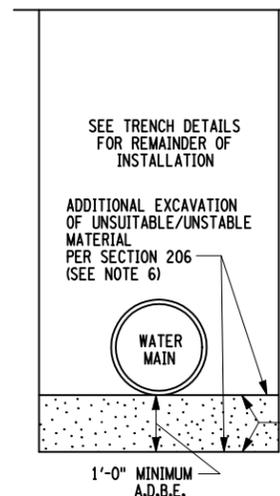
**ELEVATION WATER MAIN/SEWER CROSSING**

**NOTES:**

- SEE SPECIAL NOTES ENTITLED "OWNER REQUIREMENTS FOR WATER MAINS AND APPURTENANCES" FOR INFORMATION ON ADDITIONAL REQUIREMENTS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATIONS OF EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ELEVATIONS OF EXISTING UTILITIES TO ENSURE ADEQUATE CLEARANCE FOR THE WATER LINE EXISTS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER (IN WRITING) OF CONFLICTING ELEVATIONS, ALLOWING THE ENGINEER ADEQUATE TIME TO REVISE GRADES WITHOUT NECESSITATING REMOVAL AND RECONSTRUCTION OF WORK ALREADY COMPLETED BY THE CONTRACTOR.
- DETAILS SHOWN ON THIS SHEET ARE BASED UPON TYPE 4 LAYING CONDITION DESCRIBED IN AWWA STANDARD C600. SELECT GRANULAR FILL AND SAND BACKFILL ARE ASSUMED TO HAVE A FRICTION ANGLE OF 30° AND A UNIT WEIGHT OF 90 LBS./CUBIC FEET.
- THE TOP PAYMENT LINE FOR TRENCH EXCAVATION SHALL BE PER SECTION 206.
- BEDDING BELOW THE PIPE INVERT SHALL BE REQUIRED ONLY WHEN NOTED IN THE OWNER REQUIREMENTS OR WHEN ROCK OR UNSUITABLE OR UNSUITABLE CONDITIONS ARE ENCOUNTERED.
- IF UNSUITABLE OR UNSUITABLE SOIL CONDITIONS ARE ENCOUNTERED NEAR THE INVERT ELEVATION, A MINIMUM OF 1' AND A MAXIMUM OF 2' OF MATERIAL SHALL BE EXCAVATED A.D.B.E. AND REPLACED WITH SELECT GRANULAR FILL. ADDITIONAL PAYMENT WILL BE MADE FOR MATERIAL PLACED TO TREAT UNSUITABLE OR UNSUITABLE CONDITIONS.
- NEW WATER MAINS INSTALLED PARALLEL TO STORM AND/OR SANITARY SEWER CONDUITS SHALL HAVE A MINIMUM OF 10' HORIZONTAL SEPERATION (MEASURED EDGE OF PIPE TO EDGE OF PIPE) WHENEVER POSSIBLE. WHEN 10' HORIZONTAL SEPERATION CANNOT BE MAINTAINED A VERTICAL SEPERATION OF AT LEAST 1'-6" BETWEEN BOTTOM OF WATER MAIN AND TOP OF SEWER PIPE SHALL BE MAINTAINED. IF NEITHER SEPERATION CAN BE MAINTAINED, THE WATER AND SEWER SHALL BE CONSTRUCTED AS SHOWN ON THE CONTRACT PLANS AND APPROVED BY THE APPROPRIATE HEALTH AGENCY.
- BACKFILL SHALL BE INSTALLED AND COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS OF §203-3.15.
- UPON COMPLETION OF ALL WATER SUPPLY RELATED CONSTRUCTION, INCLUDING BACKFILL, HYDROSTATIC TESTING SHALL BE PERFORMED IN ACCORDANCE WITH AWWA STANDARD C600 WITH THE MAINS THOROUGHLY FLUSHED PRIOR TO TESTING. UNLESS OTHERWISE NOTED, THE SYSTEM SHALL BE SUBJECTED TO A PRESSURE/LEAKAGE TEST WITH WATER UNDER A MINIMUM HYDROSTATIC PRESSURE OF 150 PSI FOR A MINIMUM OF TWO (2) HOURS.
- UPON COMPLETION OF ALL WATER SUPPLY RELATED CONSTRUCTION, ALL MAINS, VALVES, HYDRANTS, AND OTHER APPURTENANCES BUILT UNDER THIS CONTRACT SHALL BE DISINFECTED, FLUSHED, AND TESTED FOR BACTERIOLOGICAL QUALITY IN ACCORDANCE WITH AWWA STANDARD C651. THE TABLET METHOD SHALL NOT BE USED FOR CHLORINATION OF SOLVENT WELDED PLASTIC OR SCREWED-JOINT STEEL PIPE DUE TO THE DANGER OF FIRE OR EXPLOSION FROM THE REACTION OF JOINT COMPOUNDS WITH CALCIUM HYPOCHLORITE.

NPS SIZE	MAXIMUM JOINT DEFLECTION		
	PUSH-ON JOINTS	MJ JOINTS	
	18' DI	20' DI	18/20 FT.
3	5°	5°	8°
4	5°	5°	8°
6	5°	5°	7°
8	5°	5°	5°
10	5°	5°	5°
12	5°	5°	5°
14	3°	3°	3.5°
16	3°	3°	3.5°
18	3°	3°	3°
20	3°	3°	3°
24	3°	3°	2°
30	3°	3°	N/A
36	3°	3°	N/A
42	3°	3°	N/A
48	N/A	3°	N/A
54	N/A	3°	N/A
60	N/A	3°	N/A
64	N/A	3°	N/A

EXCAVATION PAYMENT WIDTHS	
NPS SIZE	TRENCH WIDTH
3	3'-0"
4	3'-0"
6	3'-0"
8	3'-0"
10	3'-0"
12	3'-0"
14	3'-6"
16	3'-6"
18	3'-6"
20	4'-0"
24	4'-0"
30	4'-6"
36	5'-0"
42	5'-6"
48	6'-0"
54	6'-6"
60	7'-0"
64	7'-6"



**WATER MAIN INSTALLATION IN UNSTABLE OR UNSUITABLE SOIL CONDITIONS**

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

**WATER MAIN PIPE INSTALLATION DETAILS**

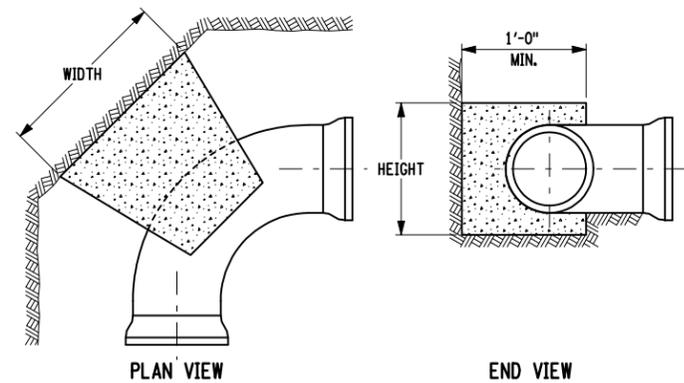
APPROVED MAY 05, 2010

/S/ RICHARD W. LEE, P.E.  
DEPUTY CHIEF ENGINEER (DESIGN)

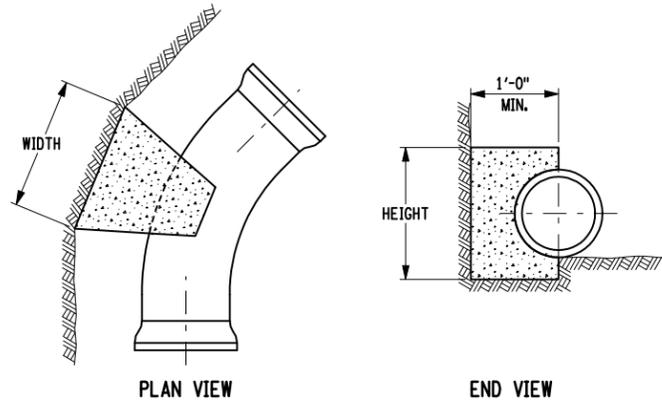
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663-01

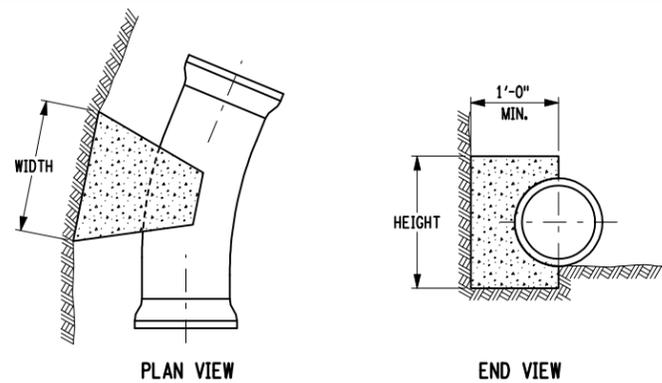
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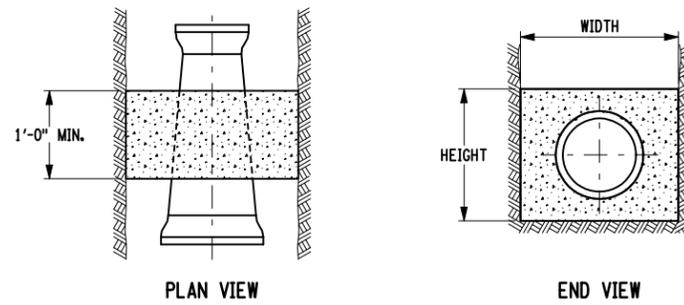
90° BEND THRUST BLOCK DIMENSIONING					
PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)	PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)
4 NPS	2'-3"	1'-3"	14 NPS	7'-3"	3'-6"
6 NPS	3'-3"	1'-9"	16 NPS	8'-3"	4'-0"
8 NPS	4'-3"	2'-3"	18 NPS	9'-3"	4'-6"
10 NPS	5'-3"	2'-6"	20 NPS	10'-6"	5'-0"
12 NPS	6'-0"	3'-3"	24 NPS	12'-6"	6'-0"



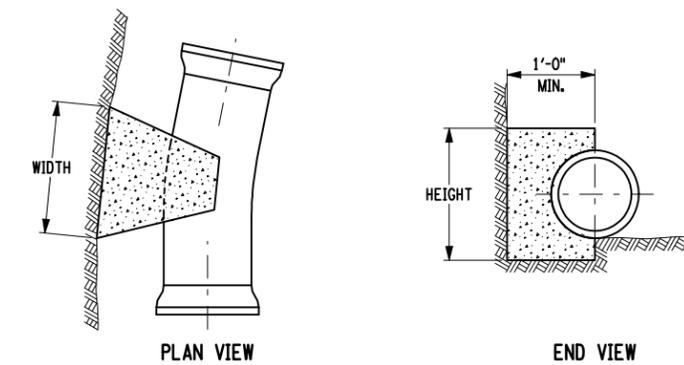
45° BEND THRUST BLOCK DIMENSIONING					
PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)	PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)
4 NPS	2'-0"	0'-9"	14 NPS	5'-3"	2'-6"
6 NPS	2'-6"	1'-3"	16 NPS	5'-6"	3'-3"
8 NPS	3'-3"	1'-9"	18 NPS	7'-3"	3'-3"
10 NPS	4'-0"	2'-0"	20 NPS	7'-3"	4'-0"
12 NPS	4'-6"	2'-3"	24 NPS	8'-9"	4'-6"



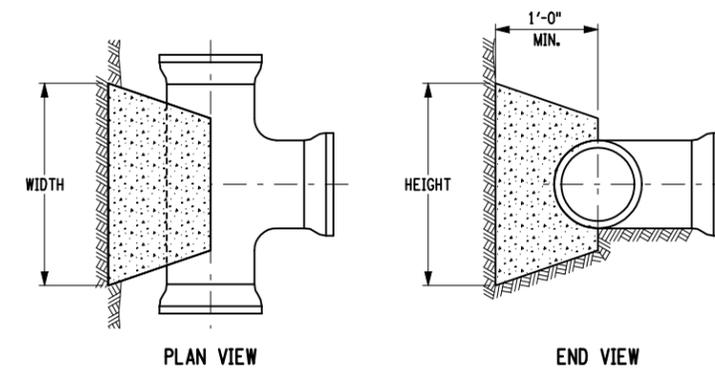
22½° BEND THRUST BLOCK DIMENSIONING					
PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)	PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)
4 NPS	1'-3"	0'-9"	14 NPS	3'-6"	2'-0"
6 NPS	2'-0"	0'-9"	16 NPS	4'-6"	2'-3"
8 NPS	2'-3"	1'-3"	18 NPS	5'-0"	2'-6"
10 NPS	3'-0"	1'-3"	20 NPS	5'-0"	3'-0"
12 NPS	3'-3"	1'-9"	24 NPS	6'-3"	3'-3"



REDUCER THRUST BLOCK DIMENSIONING					
SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)	SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)
6x4 NPS	1'-6"	1'-6"	16x8 NPS	4'-6"	4'-6"
8x4 NPS	2'-3"	2'-3"	16x10 NPS	4'-0"	4'-0"
8x6 NPS	1'-9"	1'-9"	16x12 NPS	3'-6"	3'-6"
10x6 NPS	2'-6"	2'-6"	20x12 NPS	5'-0"	5'-0"
10x8 NPS	2'-0"	2'-0"	20x16 NPS	4'-0"	4'-0"
12x6 NPS	3'-3"	3'-3"	24x12 NPS	6'-6"	6'-6"
12x8 NPS	3'-0"	3'-0"	24x16 NPS	5'-9"	5'-9"
12x10 NPS	2'-3"	2'-3"	24x20 NPS	4'-6"	4'-6"



1¼° BEND THRUST BLOCK DIMENSIONING					
PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)	PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)
4 NPS	1'-0"	0'-6"	14 NPS	3'-0"	1'-3"
6 NPS	1'-3"	0'-9"	16 NPS	3'-3"	1'-9"
8 NPS	1'-9"	0'-9"	18 NPS	3'-6"	1'-9"
10 NPS	2'-0"	1'-0"	20 NPS	3'-6"	2'-0"
12 NPS	2'-3"	1'-3"	24 NPS	4'-6"	2'-3"



TEE/DEAD END THRUST BLOCK DIMENSIONING					
PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)	PIPE SIZE	WIDTH (FT-IN)	HEIGHT (FT-IN)
4 NPS	2'-0"	1'-0"	14 NPS	5'-6"	3'-3"
6 NPS	3'-0"	1'-3"	16 NPS	6'-6"	3'-6"
8 NPS	3'-3"	2'-0"	18 NPS	7'-6"	4'-0"
10 NPS	4'-3"	2'-3"	20 NPS	8'-6"	4'-3"
12 NPS	5'-3"	2'-6"	24 NPS	10'-3"	5'-3"

**NOTES:**

- SEE SPECIAL NOTES ENTITLED "OWNER REQUIREMENTS FOR WATER MAINS AND APPURTENANCES" FOR ADDITIONAL INFORMATION ON THRUST RESTRAINT REQUIREMENTS.
- THRUST RESTRAINT USING THRUST BLOCKS AND TIE RODS ARE SHOWN ON THESE SHEETS. RESTRAINED JOINTS AND RETAINER GLANDS ARE ALSO ACCEPTABLE METHODS. THE THRUST RESTRAINT METHOD SHALL BE AS REQUIRED BY THE SYSTEM OWNER.
- IF THE OWNER OF THE WATER SYSTEM REQUIRES A METHOD THAT RESTRAINS INDIVIDUAL JOINTS, EACH JOINT THAT FALLS WITHIN THE MINIMUM RESTRAINED LENGTH, MEASURED FROM THE CENTER OF THE FITTING, AS SHOWN ON THESE SHEETS SHALL BE RESTRAINED, AND SHALL WITHSTAND THE MAXIMUM PRESSURE APPLIED TO THE SYSTEM.
- CLASS A CONCRETE SHALL NOT BE PLACED UNDER WATER. THE CONTRACTOR SHALL DEWATER THE EXCAVATION OR PLACE TYPE G CONCRETE USING APPROPRIATE UNDERWATER PLACEMENT TECHNIQUES.
- CONCRETE FOR THRUST BLOCKS SHALL NOT BE ALLOWED TO COVER OR INTERFERE WITH JOINT OR RESTRAINT HARDWARE. PLASTIC SHEETING OR BUILDING FELT MAY BE PLACED OVER PIPE OR FITTINGS TO PREVENT CONCRETE FROM ADHERING TO SURFACES. CONCRETE FOR THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL.
- FOR BENDS, BEARING AREA SHALL BE PARALLEL TO THE EDGE OF THE FITTING AT THE FITTING MIDPOINT.
- FOR TEES, BEARING AREA SHALL BE PERPENDICULAR TO THE BRANCH (SINGLE LEG) AXIS.
- FOR REDUCERS, BEARING AREA SHALL BE PERPENDICULAR TO THE FITTING AXIS. THE MINIMUM THICKNESS ALONG THE FITTING AXIS SHALL BE 1'-0" OR THE LENGTH BETWEEN THE BELLS, WHICHEVER IS SMALLER.
- THRUST RESTRAINTS FOR SIZES OVER 24 NPS OR FOR FITTINGS NOT SHOWN ON THESE SHEETS WILL BE DESIGNED ON A CASE BY CASE BASIS, AND WILL BE SHOWN IN THE CONTRACT DOCUMENTS.
- THRUST BLOCK SIZES AND MINIMUM RESTRAINED LENGTHS SHOWN ON THESE SHEETS ARE BASED UPON THE FOLLOWING STANDARD CONDITIONS:  
 1.5 - SAFETY FACTOR  
 5'-0" - DEPTH OF COVER  
 200 PSI - WATER SYSTEM TEST PRESSURE  
 14 PSI - SOIL BEARING CAPACITY  
 90 LB/CF - SOIL UNIT WEIGHT
- TO DETERMINE REQUIRED SIZES FOR DIFFERENT CONDITIONS, MULTIPLY THE DIMENSION BY A FACTOR OF THE SPECIFIC VALUE DIVIDED BY THE STANDARD VALUE.

**EXAMPLE:**

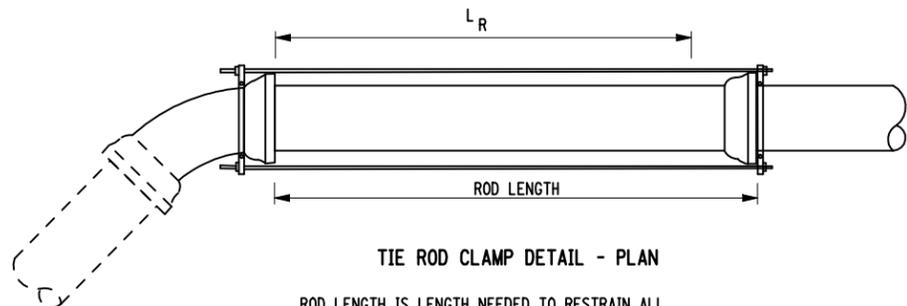
FOR 12 NPS 45° BEND WITH 100 PSI TEST PRESSURE:

AREA REQUIRED = (4'-6" x 2'-3") x (100 PSI / 200 PSI) = 5.06 SF  
 WIDTH = 3'-6"  
 HEIGHT = 1'-6"

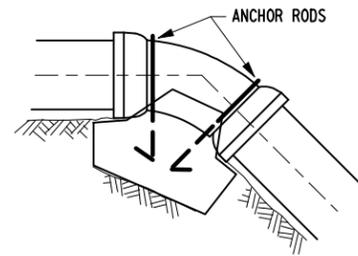
MINIMUM RESTRAINED LENGTH OF PIPE (FT-IN) L <sub>R</sub>										
FITTING	4 NPS	6 NPS	8 NPS	10 NPS	12 NPS	14 NPS	16 NPS	18 NPS	20 NPS	24 NPS
11¼° BEND	1'-3"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-3"
22½° BEND	1'-3"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-6"
45° BEND	3'-0"	4'-0"	5'-3"	6'-3"	7'-6"	8'-6"	9'-6"	10'-6"	11'-6"	13'-6"
90° BEND	7'-0"	9'-9"	12'-6"	15'-6"	18'-0"	20'-0"	23'-0"	25'-6"	28'-0"	32'-6"
DEAD END	8'-6"	12'-6"	16'-0"	19'-3"	23'-0"	26'-0"	29'-6"	33'-0"	36'-0"	42'-0"

\* DIMENSIONS ARE IN FT-IN FORMAT.  
 \* FOR POLYETHYLENE WRAPPED PIPE, MULTIPLY VALUES IN TABLE BY 1.45

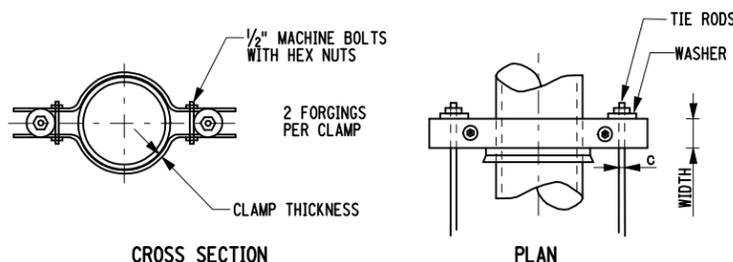
 <b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>WATER MAIN HORIZONTAL THRUST RESTRAINT DETAILS</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	663-02



TIE ROD CLAMP DETAIL - PLAN  
ROD LENGTH IS LENGTH NEEDED TO RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINED LENGTH L<sub>R</sub>



VERTICAL BEND GRAVITY BLOCK - ELEVATION



TIE ROD CLAMP DETAIL

PIPE SIZE	ROD SIZE		CLAMP SIZE	
	RECOMENDED DIA.	MIN. AREA (IN <sup>2</sup> )	THICKNESS	WIDTH
4 NPS	2 - 1 <sup>1</sup> / <sub>16</sub> "	3/4	1/2"	1"
6 NPS	2 - 1 <sup>3</sup> / <sub>16</sub> "	3/4	1/2"	1"
8 NPS	2 - 1"	1 1/4	1/2"	1"
10 NPS	2 - 1 1/8"	1 1/8	1/2"	1"
12 NPS	2 - 1 3/8"	2	1/2"	1"
14 NPS	2 - 1 5/8"	2	1/2"	1"
16 NPS	4 - 1 3/8"	5 7/8	SEE NOTE 10	
18 NPS	4 - 1 5/8"	5 7/8	SEE NOTE 10	
20 NPS	4 - 1 7/8"	10 1/4	SEE NOTE 10	
24 NPS	4 - 2"	10 1/4	SEE NOTE 10	

FITTING	PIPE SIZE									
	4 NPS	6 NPS	8 NPS	10 NPS	12 NPS	14 NPS	16 NPS	18 NPS	20 NPS	24 NPS
11 1/4°	4"	11 13/16"	1'-7 11/16"	2'-3 3/16"	3'-3 3/8"	4'-3 3/16"	5'-7"	6'-10 11/16"	8'-6 3/8"	12'-1 11/16"
22 1/2°	11 13/16"	1'-7 11/16"	2'-11 7/16"	4'-7 1/8"	6'-3"	8'-6 3/8"	11'-1 7/8"	13'-9 3/8"	17'-3/4"	24'-3 11/32"
45°	1'-7 11/16"	3'-3 3/8"	5'-10 7/8"	8'-10 5/16"	12'-5 5/8"	16'-8 13/16"	21'-7 27/32"	27'-2 3/4"	33'-5 5/16"	47'-6 7/8"
90°	2'-11 7/16"	6'-3"	10'-9 5/16"	16'-4 27/32"	22'-11 37/64"	30'-10 7/4"	40'-5 5/16"	50'-2 3/8"	61'-8 5/32"	88'-3 1/16"

PIPE SIZE	RODS	MIN. EMBEDMENT LENGTH
4 NPS	1 - #10 (3)	6"
6 NPS	1 - #10 (3)	6"
8 NPS	2 - #13 (4)	6"
10 NPS	2 - #13 (4)	6"
12 NPS	2 - #16 (5)	7"
14 NPS	2 - #19 (6)	8"
16 NPS	2 - #19 (6)	8"
18 NPS	2 - #22 (7)	10"
20 NPS	2 - #25 (8)	11"
24 NPS	2 - #29 (9)	12"

NUMBERS IN PARENTHESES ARE BAR SIZES MARKED IN EIGHTHS OF INCHES

FOR VERTICAL DOWNWARD BENDS:  

$$L_R = \frac{S.F. \times P \times \text{AREA} \times \tan(1/2 \text{ BEND ANGLE})}{F_F}$$

FOR VERTICAL UPWARD BENDS:  

$$L_R = \frac{S.F. \times P \times \text{AREA} \times \tan(1/2 \text{ BEND ANGLE})}{F_F + 1/2 R}$$

SOURCE: DUCTILE IRON PIPE RESEARCH ASSOCIATION

MINIMUM RESTRAINED LENGTH OF PIPE (L <sub>R</sub> )										
	4 NPS	6 NPS	8 NPS	10 NPS	12 NPS	14 NPS	16 NPS	18 NPS	20 NPS	24 NPS
VERTICAL UPWARD BENDS										
11 1/4°	1'-3 5/8"	2'-0"	2'-7 3/16"	3'-0"	3'-7 3/16"	3'-10 13/16"	4'-7 3/16"	4'-10 13/16"	5'-7 3/16"	6'-2 3/8"
22 1/2°	1'-3 5/8"	2'-0"	2'-7 3/16"	3'-0"	3'-7 3/16"	3'-10 13/16"	4'-7 3/16"	4'-10 13/16"	5'-7 3/16"	6'-2 3/8"
45°	3'-0"	3'-8 5/16"	5'-3"	6'-3"	7'-6"	8'-6"	9'-6"	10'-6"	11'-6"	13'-4 7/8"
90°	6'-10 13/16"	9'-9 5/8"	12'-6"	15'-4 13/16"	18'-0"	20'-4 13/16"	23'-0"	25'-7 3/16"	27'-10 7/8"	32'-6"
VERTICAL DOWNWARD BENDS										
11 1/4°	3'-3 5/8"	4'-10 13/16"	6'-2 3/8"	7'-6"	9'-2 3/8"	10'-6"	11'-9 5/8"	12'-9 5/8"	14'-1 3/16"	16'-8 3/8"
22 1/2°	6'-10 13/16"	9'-9 5/8"	12'-9 5/8"	15'-4 13/16"	18'-4 13/16"	21'-0"	23'-7 3/16"	26'-2 3/8"	28'-6"	33'-9 5/8"
45°	14'-4 13/16"	20'-3 5/8"	26'-7 3/16"	32'-1 3/16"	38'-0"	43'-7 3/16"	48'-11"	54'-4 13/16"	59'-8 3/8"	69'-10 5/8"
90°	34'-9 5/8"	49'-2 3/8"	64'-0"	77'-8 3/8"	91'-6"	105'-0"	118'-4 7/8"	131'-2 3/8"	144'-0"	169'-0"

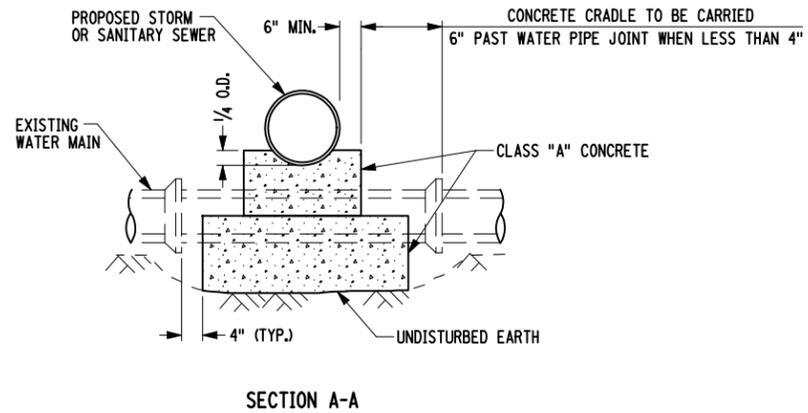
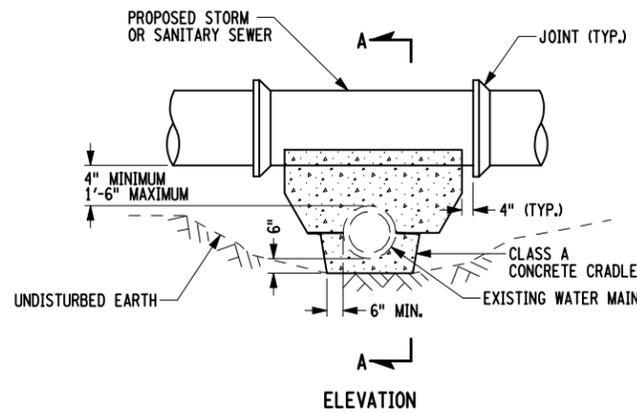
NOTE: FOR POLYETHYLENE WRAPPED PIPE, MULTIPLY VALUES IN TABLE BY 1.45

- NOTES:
- SEE SPECIAL NOTES ENTITLED "OWNER REQUIREMENTS FOR WATER MAINS AND APPURTENANCES" FOR ADDITIONAL INFORMATION ON THRUST RESTRAINT REQUIREMENTS.
  - THRUST RESTRAINT USING THRUST BLOCKS AND TIE RODS ARE SHOWN ON THESE SHEETS. RESTRAINED JOINTS AND RETAINER GLANDS ARE ALSO ACCEPTABLE METHODS. THE THRUST RESTRAINT METHODS SHALL BE AS REQUIRED BY THE SYSTEM OWNER.
  - IF THE OWNER OR THE WATER SYSTEM ALLOWS A METHOD THAT RESTRAINS INDIVIDUAL JOINTS, EACH JOINT THAT FALLS WITHIN THE MINIMUM RESTRAINED LENGTH, MEASURED FROM THE CENTER OF THE FITTING, AS SHOWN ON THESE SHEETS SHALL BE RESTRAINED, AND SHALL WITHSTAND THE MAXIMUM PRESSURE APPLIED TO THE SYSTEM.
  - CLASS A CONCRETE SHALL NOT BE PLACED UNDERWATER. THE CONTRACTOR SHALL DE WATER THE EXCAVATION OR PLACE TYPE "G" CONCRETE USING APPROPRIATE UNDERWATER PLACEMENT TECHNIQUES.
  - CONCRETE FOR THRUST BLOCKS SHALL NOT BE ALLOWED TO COVER OR INTERFERE WITH JOINT OR RESTRAINT HARDWARE. PLASTIC SHEETING OR BUILDING FELT MAY BE PLACED OVER PIPE OR FITTINGS TO PREVENT CONCRETE FROM ADHERING TO SURFACES.
  - THRUST BLOCK ANCHOR RODS SHALL MEET THE REQUIREMENTS OF §709-03 OF THE STANDARD SPECIFICATIONS. ALL EMBEDDED RODS SHALL HAVE STANDARD ACI HOOKS ON EACH END, AND SHALL HAVE A MINIMUM OF 3" CONCRETE COVER IN ALL DIRECTIONS.
  - TIE RODS AND CONNECTOR HARDWARE SHALL MEET THE REQUIREMENTS OF THE FOLLOWING:  
 BLACK - ASTM A307 GRADE 2  
 GALVANIZED - ASTM A449 GRADE 5  
 STAINLESS - ASTM A325 TYPE 3
  - A MINIMUM OF TWO TIE RODS SHALL BE USED FOR EACH INSTALLATION. THE RECOMMENDED SIZES OF TIE RODS ARE FOR TWO OR FOUR TIE ROD SYSTEMS. THE NUMBER AND SIZE OF TIE RODS USED MAY DIFFER AS LONG AS THE MIN. REQUIRED AREA IS PROVIDED, AND THE METHOD IS APPROVED BY THE ENGINEER.
  - THRUST RESTRAINT FOR SIZES OVER 24 NPS AND/OR FOR OTHER FITTINGS NOT SHOWN ON THESE SHEETS WILL BE AS SHOWN IN THE CONTRACT DOCUMENTS.
  - THRUST BLOCK SIZES AND MINIMUM RESTRAINED LENGTHS SHOWN ON THESE SHEETS ARE BASED UPON THE FOLLOWING STANDARD CONDITIONS:  
 1.5 SAFETY FACTOR  
 5 FT DEPTH OF COVER  
 200 PSI WATER SYSTEM TEST PRESSURE  
 14 PSI SOIL BEARING CAPACITY  
 90 LBS/FT<sup>3</sup> SOIL UNIT WEIGHT
  - TO DETERMINE REQUIRED SIZES FOR DIFFERENT CONDITIONS, MULTIPLY THE DIMENSION BY A FACTOR OF THE SPECIFIC VALUE DIVIDED BY THE STANDARD VALUE.  
  
 EXAMPLE: FOR 12 NPS 45° BEND WITH 100 PSI TEST PRESSURE:  
 AREA REQUIRED=4'-7" X 2'-3" X (100/200) = 5.29 SQUARE FEET  
 WIDTH = 3'-3"  
 HEIGHT = 1'-7"

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 USER = jturley

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>WATER MAIN          THRUST RESTRAINT DETAILS</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	663-03

EFFECTIVE DATE: 01/08/09

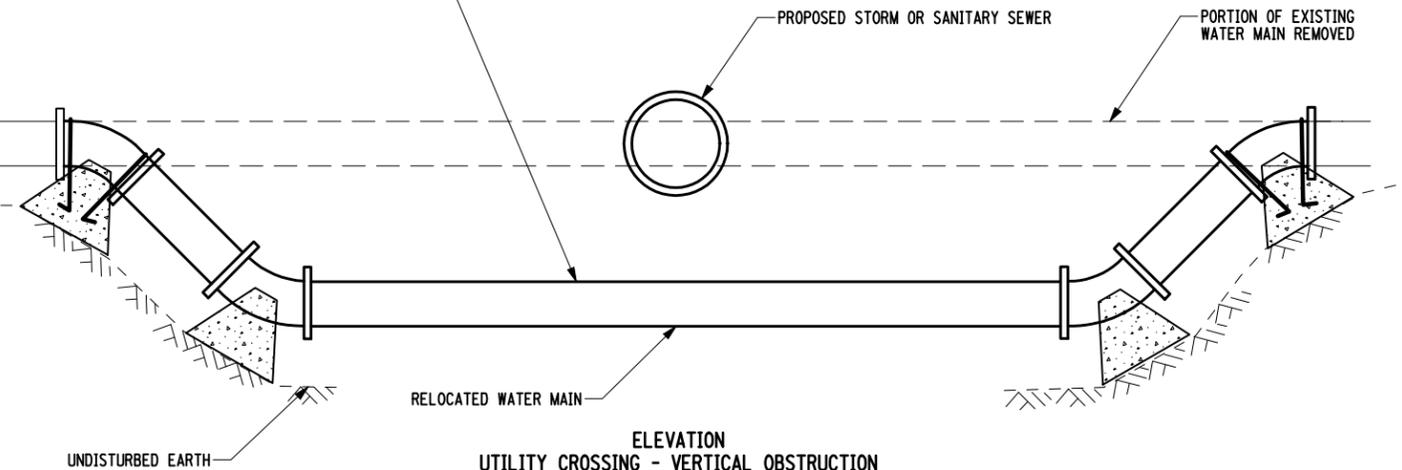


**UTILITY CROSSING - VERTICAL OBSTRUCTION  
LACKING REQUIRED VERTICAL OFFSET**  
PROPOSED STORM SEWER CROSSING WATER MAIN WITH 4" - 18" OF VERTICAL SEPARATION

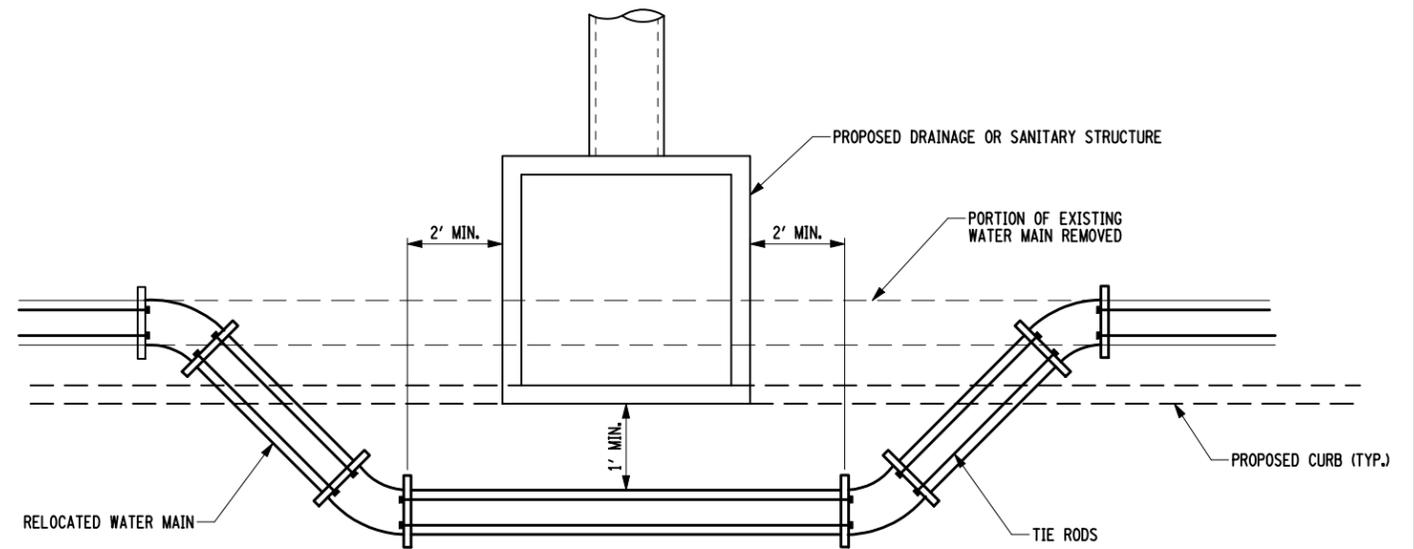
**NOTES:**

1. SEE SPECIAL NOTES ENTITLED "OWNER REQUIREMENTS FOR WATER MAINS AND APPURTENANCES" FOR INFORMATION ON ADDITIONAL THRUST RESTRAINT REQUIREMENTS.
2. WATER MAIN RELOCATION WORK MAY BE REQUIRED WHERE PROPOSED STORM DRAINS CROSS AN EXISTING WATER MAIN. THE CONTRACTOR SHALL ESTABLISH THE DEPTH OF THE WATER MAIN AT ALL CROSSING POINTS. THE ENGINEER WILL THEN VERIFY THE EXTENT OF THE WATER MAIN RELOCATION WORK REQUIRED.
3. UNLESS OTHERWISE NOTED IN THE OWNER REQUIREMENTS, A SINGLE METHOD OF THRUST RESTRAINT SHALL BE PROVIDED AT EACH FITTING THAT CREATES A THRUST IN ACCORDANCE WITH PRESSURE PIPE THRUST RESTRAINT DETAILS.
4. THE OFFSET OF A WATER MAIN TO AVOID AN OBSTRUCTION SHALL BE ACCOMPLISHED USING A MINIMUM NUMBER AND WEIGHT OF FITTINGS.
5. ENCASEMENT OF A WATER MAIN IN A CONCRETE CRADLE DUE TO PROXIMITY OF A STORM SEWER WILL BE INSTALLED IN ACCORDANCE WITH SECTION 501, WITH THE EXCEPTION THAT BATCHING REQUIREMENTS SHALL NOT APPLY.

NOTE: PIPE SHALL BE A FULL LENGTH PIPE CENTERED UNDER THE CROSSING UTILITY, OR THE MAXIMUM LENGTH POSSIBLE UNDER EXISTING CONDITIONS.



**ELEVATION  
UTILITY CROSSING - VERTICAL OBSTRUCTION  
WITH REQUIRED VERTICAL OFFSET**  
NOTE: THRUST BLOCKS SHOWN, THRUST RESTRAINT MAY BE PROVIDED BY ANY SINGLE METHOD IN ACCORDANCE WITH WATER MAIN THRUST RESTRAINT DETAILS

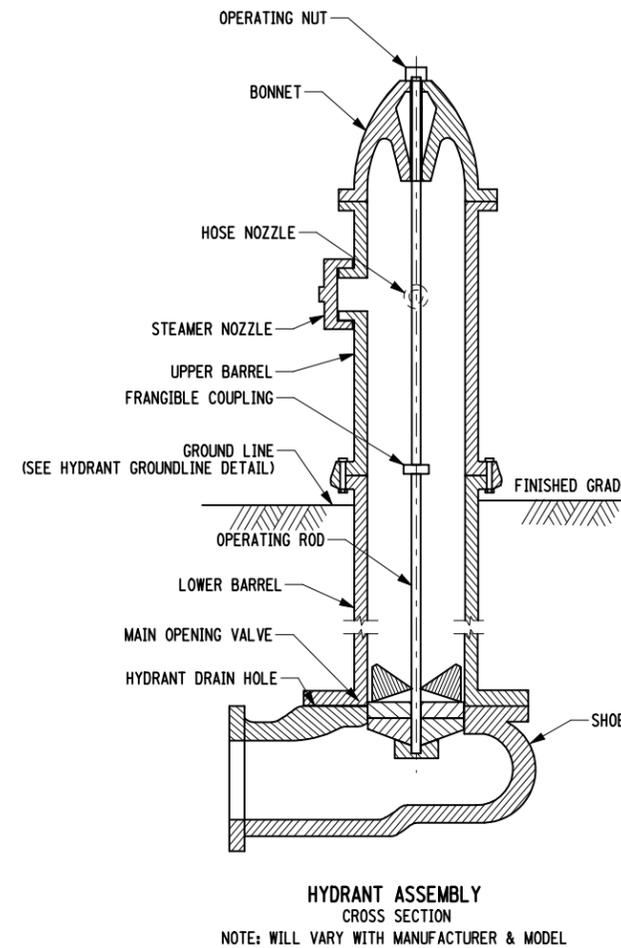
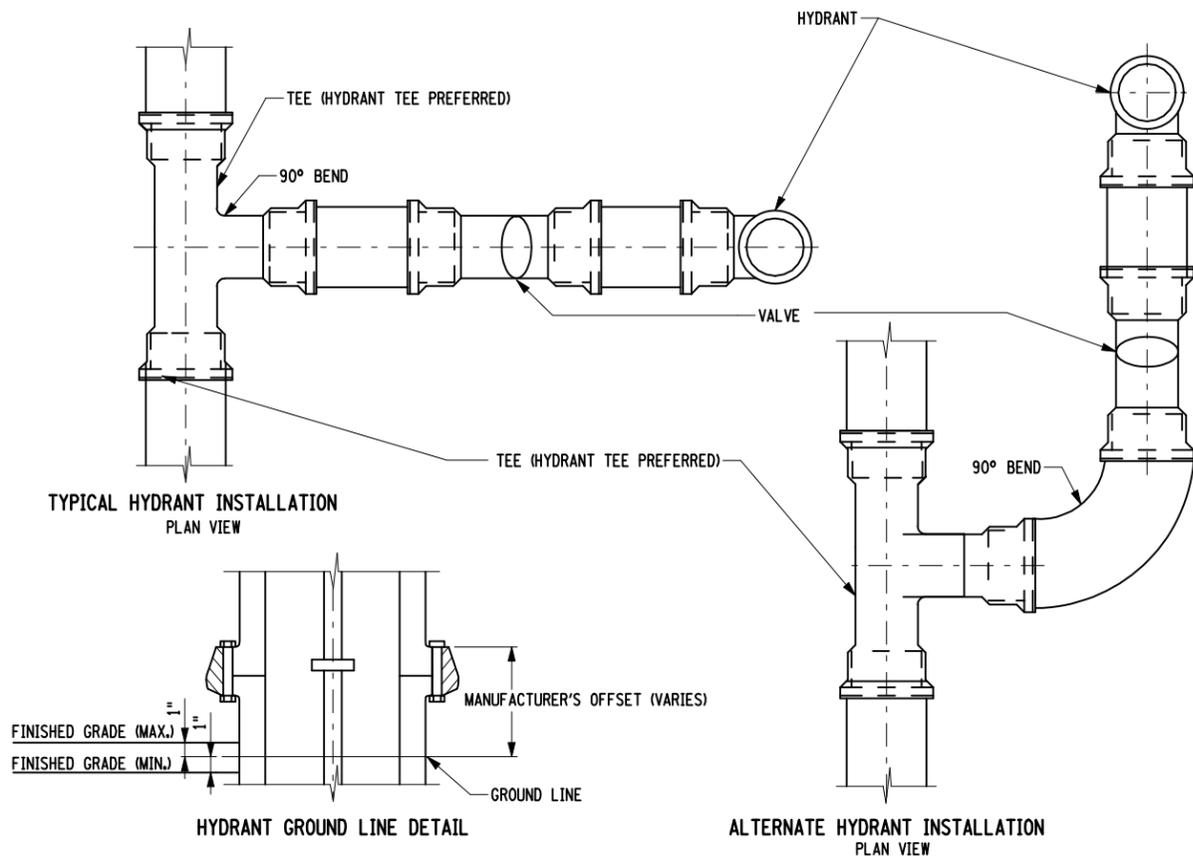


**PLAN VIEW  
UTILITY CROSSING - HORIZONTAL OBSTRUCTION**  
NOTE: TIE RODS SHOWN, THRUST RESTRAINT MAY BE PROVIDED BY ANY SINGLE METHOD IN ACCORDANCE WITH WATER MAIN THRUST RESTRAINT DETAILS

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DATE/TIME = 20-NOV-2008 14:08  
USER = jturley

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
WATER MAIN UTILITY CROSSING RELOCATION DETAILS		
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036	
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	663-04	

EFFECTIVE DATE: 01/08/09

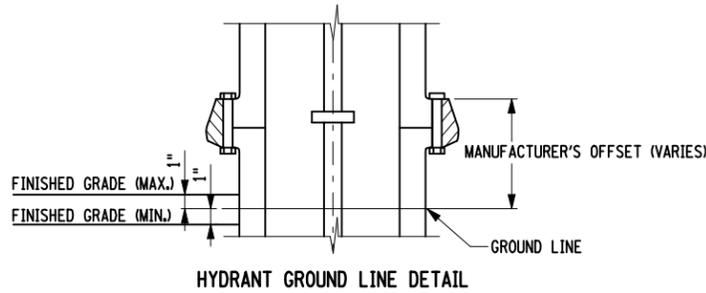


- NOTES:
- SEE SPECIAL NOTES ENTITLED "OWNER REQUIREMENTS FOR WATER AND APPURTENANCES" FOR INFORMATION ON ADDITIONAL REQUIREMENTS.
  - ALL NEW HYDRANTS SHALL BE DRY-BARREL. TRAFFIC MODELS IN ACCORDANCE WITH AWWA STANDARD C502 UNLESS SPECIFICALLY REQUIRED OTHERWISE BY THE OWNER REQUIREMENTS. THE GROUND LINE MARKED ON THE HYDRANT, OR IDENTIFIED BY THE MANUFACTURERS USING AN OFFSET FROM A KNOWN POINT ON THE HYDRANT, SHALL BE WITHIN 1" ABOVE OR BELOW FINISHED GRADE. THE HYDRANT SHALL BE INSTALLED SO THAT NO PORTION OF THE LOWER BARREL (THAT PORTION REMAINING IF THE UPPER BARREL IS BROKEN OFF) EXTENDS MORE THAN 4" ABOVE FINISHED GRADE, MEASURED OVER 5'-0" HORIZONTAL SPAN.
  - WHEN THE HYDRANT CANNOT BE PLACED IN THE DESIRED LOCATION USING THE TYPICAL HYDRANT INSTALLATION DUE TO CLOSE PROXIMITY TO THE MAIN, THE ALTERNATE HYDRANT LOCATION LAYOUT MAY BE USED.
  - MULTIPLE BARREL EXTENSIONS ARE NOT PERMITTED UNLESS THE DESIRED GRADE CANNOT BE REACHED WITH A SINGLE EXTENSIONS. IF A SMALLER EXTENSIONS IS ALREADY IN PLACE ON AN EXISTING HYDRANT, IT SHALL BE REMOVED AND REPLACE WITH A SINGLE LONGER ONE. THE REMOVED EXTENSIONS SHALL BECOME THE PROPERTY OF THE OWNER.
  - BACKFILL AROUND THE TOP OF THE LOWER BARREL SHALL BE COMPACTED TO A MINIMUM DENSITY OF 90% PROCTOR IN ACCORDANCE WITH STANDARD §203-3.15 OR A 2' X 2' IN CONCRETE COLLAR SHALL BE CAST AROUND THE BARREL IN ORDER TO PREVENT MOVEMENT OF THE SHOE - IF THE HYDRANT IS STUCK.
  - LATERALS FOR HYDRANTS USING ANCHOR PIPES SHALL BE SINGLE PIECE, UNLESS MORE THAN A FULL LENGTH OF ANCHOR PIPE IS REQUIRED. LATERALS FOR HYDRANTS USING THRUST RESTRAINT PROVIDED BY MEANS OTHER THAN AN ANCHOR PIPE SHALL BE SINGLE PIECE, UNLESS MORE THAN A FULL LENGTH (18'-0") OF PIPE IS REQUIRED.
  - NEW WATER MAINS INSTALLED PARALLEL TO STORM AND/OR SANITARY SEWER CONDUITS SHALL HAVE A MINIMUM OF 10'-0" HORIZONTAL SEPARATION (MEASURED EDGE OF PIPE TO EDGE OF PIPE) WHENEVER POSSIBLE. WHEN 10'-0" HORIZONTAL SEPARATION CANNOT BE MAINTAINED, A VERTICAL SEPARATION OF AT LEAST 1'-6" BETWEEN BOTTOM OF WATER MAIN AND TOP OF SEWER PIPE SHALL BE MAINTAINED. IF NEITHER HORIZONTAL OR VERTICAL SEPARATION CAN BE MAINTAINED, THE WATER AND THE SEWER SHALL BE CONSTRUCTED AS SHOWN ON THE CONTRACT PLANS AND APPROVED BY THE APPROPRIATE HEALTH AGENCY.
  - THE RELOCATION OF AN EXISTING HYDRANT SHALL INCLUDE THE INSTALLATION LENGTH OF ANCHOR PIPE UP TO 6'-6" LONG, INSTALLED AT ANY POINT BETWEEN THE MAIN AND THE HYDRANT.
  - THRUST RESTRAINTS SHALL BE PROVIDED AS FOR A DEAD END AND AS REQUIRED BY THE OWNERS REQUIREMENTS.
  - THE HYDRANT DRAIN HOLE SHALL BE KEPT UNOBSTRUCTED, CARE SHALL BE USED TO KEEP THRUST RESTRAINTS FROM BLOCKING DRAIN HOLE. IF THE HYDRANT DRAIN IS LOCATED WITHIN 10'-0" OF A SANITARY SEWER OR STORM DRAIN, OR IF GROUNDWATER IS FOUND WITHIN 6'-6" OF FINISHED GRADE, THE HYDRANT DRAINS SHALL BE PLUGGED.
  - HYDRANT DRAINAGE MATERIAL SHALL BE #1 OR #2 STONE PER STANDARD §703-02.
  - MATERIALS REMOVED UNDER REMOVE EXISTING HYDRANT SHALL REMAIN THE PROPERTY OF THE SYSTEM OWNER. THE CONTRACTOR SHALL NOTIFY THE OWNER A MINIMUM OF 48 HOURS PRIOR TO REMOVAL TO COORDINATE PICK-UP, OR SHALL STORE THE MATERIALS FOR PICK-UP ON-SITE A.O.B.E.
  - MATERIALS REMOVED UNDER REMOVE AND DISPOSE OF EXISTING HYDRANT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROMPTLY REMOVED FROM THE WORK SITE A.O.B.E.

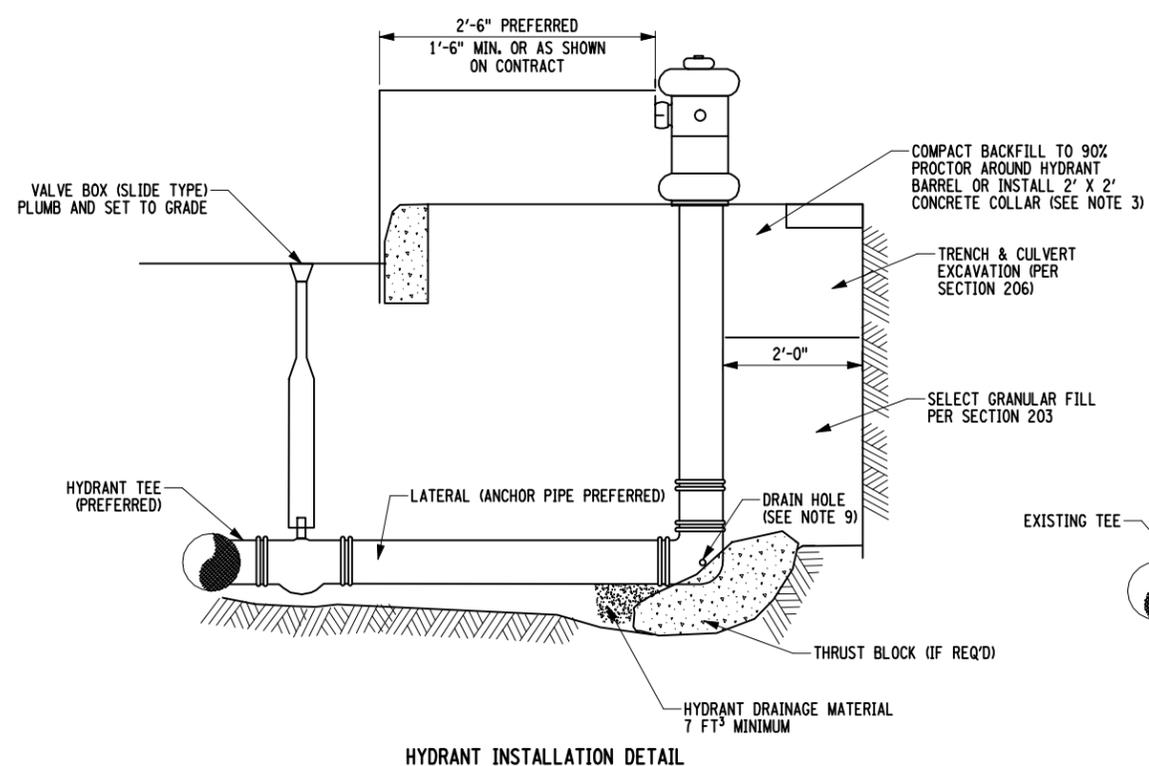
TYPICAL HYDRANT INSTALLATION  
PLAN VIEW

ALTERNATE HYDRANT INSTALLATION  
PLAN VIEW

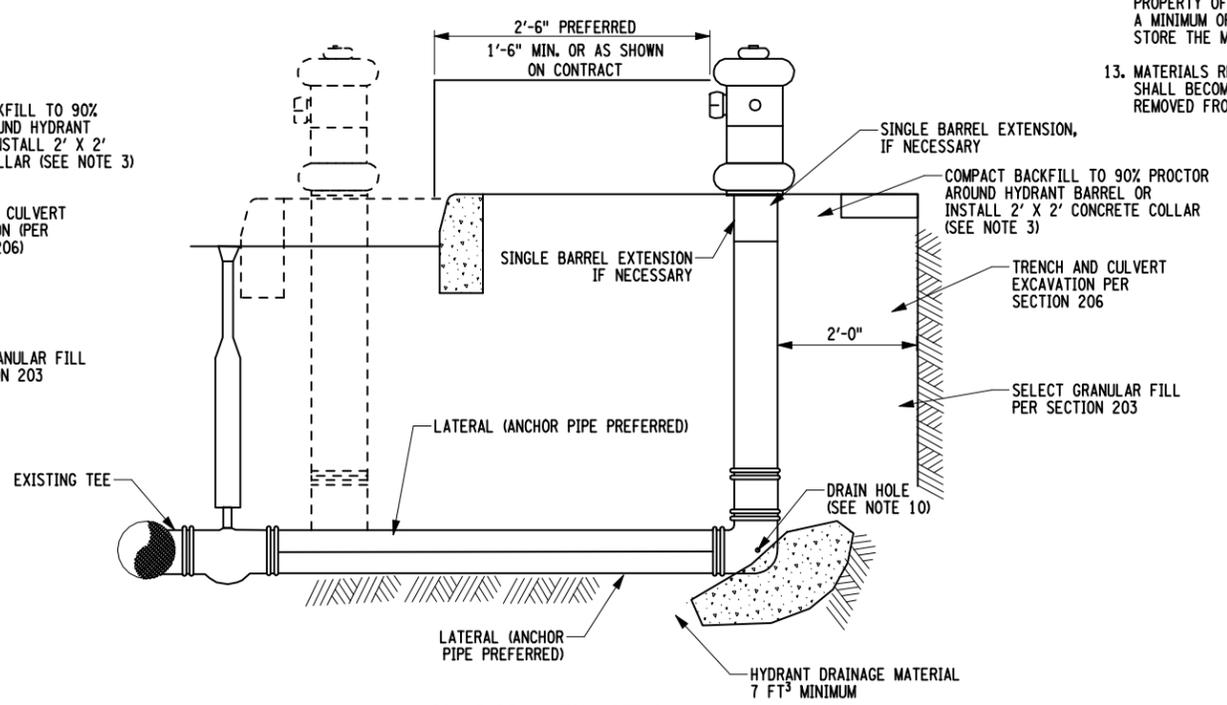
HYDRANT ASSEMBLY  
CROSS SECTION  
NOTE: WILL VARY WITH MANUFACTURER & MODEL



HYDRANT GROUND LINE DETAIL



HYDRANT INSTALLATION DETAIL

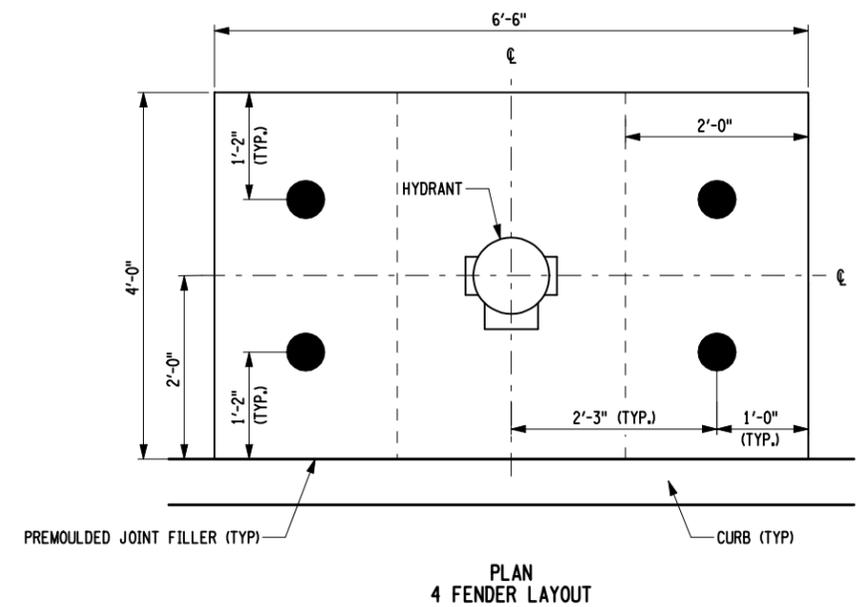
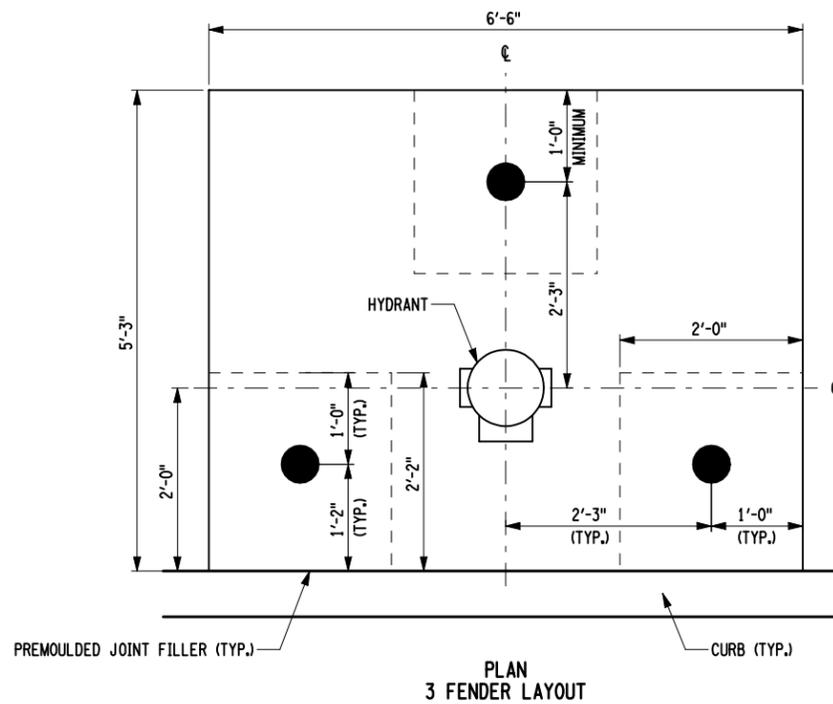
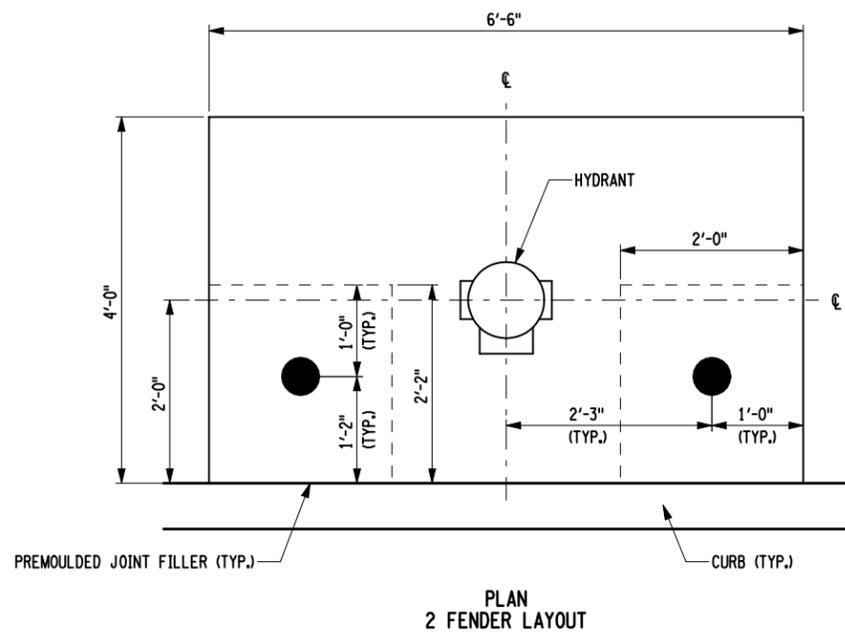


HYDRANT RELOCATION DETAIL  
NOTE: IF IT BECOMES NECESSARY TO MOVE THE EXISTING VALVE, THAT WORK SHALL BE DONE UNDER RELOCATE VALVE AND VALVE BOX

 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>WATER MAIN HYDRANT AND VALVE DETAILS</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	663-05

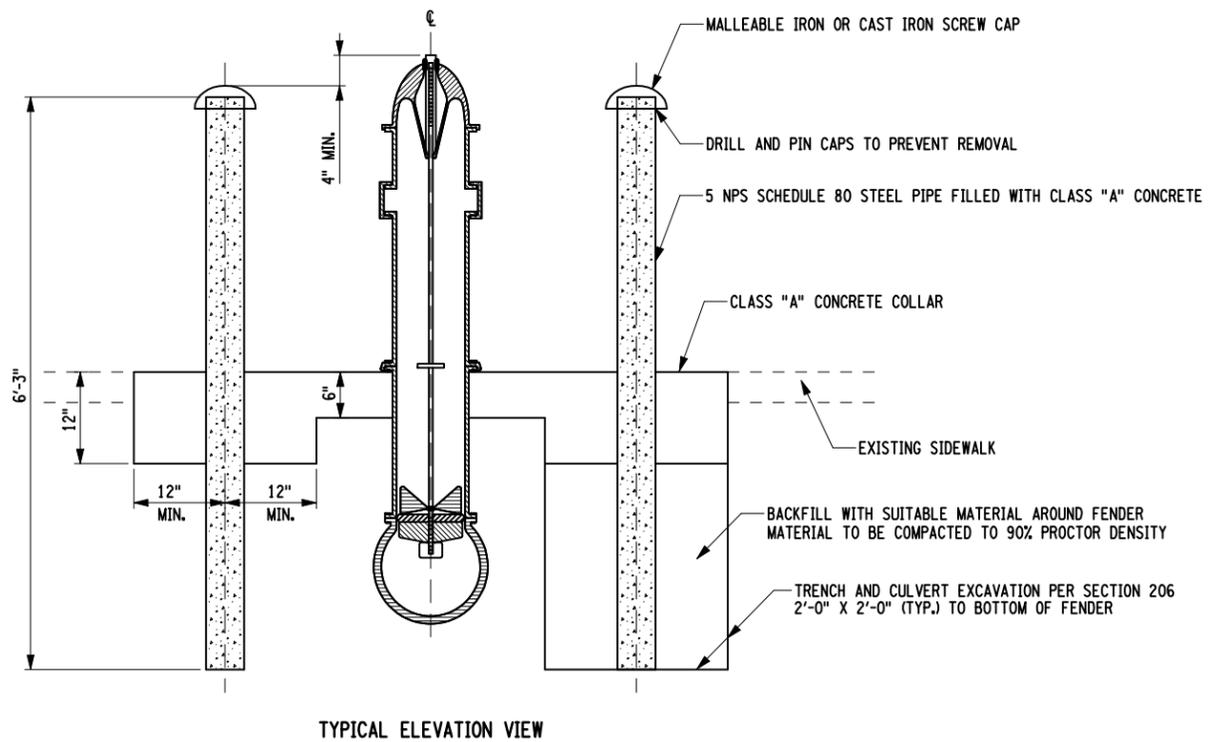
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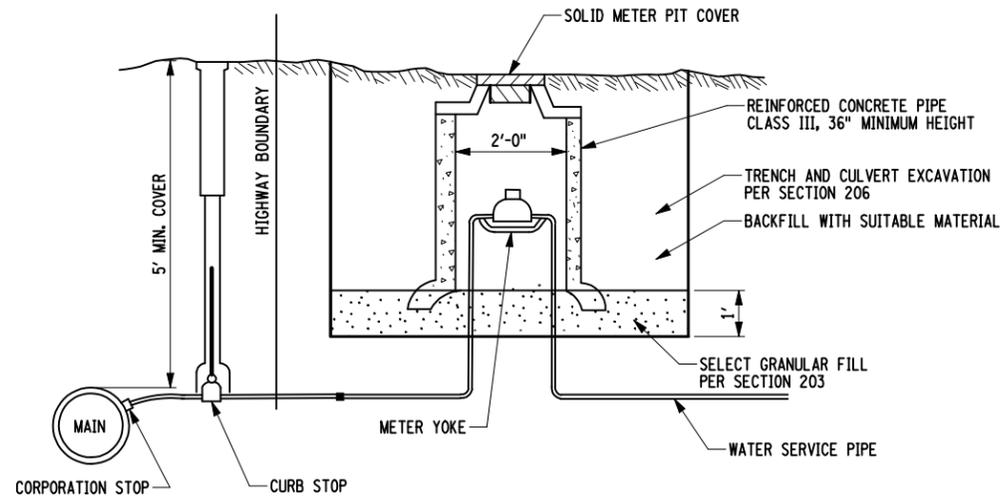
- SEE SPECIAL NOTES ENTITLED "OWNER REQUIREMENTS FOR WATER MAINS AND APPURTENANCES" FOR INFORMATION ON ADDITIONAL REQUIREMENTS.
- A HYDRANT FENDER SHALL BE CONSTRUCTED OF A 6'-3" LONG 5 NPS SCHEDULE 80 STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53. FENDERS SHALL BE FILLED WITH CLASS A CONCRETE MEETING THE REQUIREMENTS OF SECTION 501.
- FENDER CAPS SHALL BE FABRICATED OF MALLEABLE IRON OR CAST IRON. CAPS SHALL BE DRILLED AND PINNED IN ORDER TO PREVENT REMOVAL.
- FENDERS SHALL BE CLEANED AND COATED ON THE OUTSIDE WITH ONE COAT OF PRIMER MEETING THE REQUIREMENTS OF SECTION 708. THE PORTION OF FENDERS ABOVE THE GROUND SHALL BE PAINTED WITH ALUMINUM PAINT MEETING THE REQUIREMENTS OF §708-08 AND THE PORTION BELOW THE GROUND SHALL BE COVERED WITH AN ASPHALT COATING TO PREVENT CORROSION.
- PAYMENT WILL BE BASED UPON THE NUMBER OF INDIVIDUAL FENDERS INSTALLED.  
EXAMPLE: THE PAYMENT QUANTITY FOR A THREE FENDER LAYOUT WILL BE 3 EACH.
- COLLAR DIMENSIONS SHOWN ARE TYPICAL. DIMENSIONS MAY VARY TO MEET CONDITIONS IN THE FIELD.
- PREMOULDED JOINT FILLER SHALL MEET THE REQUIREMENTS OF §705-07.



	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>WATER MAIN</b> <b>HYDRANT FENDER DETAILS</b>	
APPROVED SEPTEMBER 19, 2008 /S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 08-036  663-06

EFFECTIVE DATE: 01/08/09

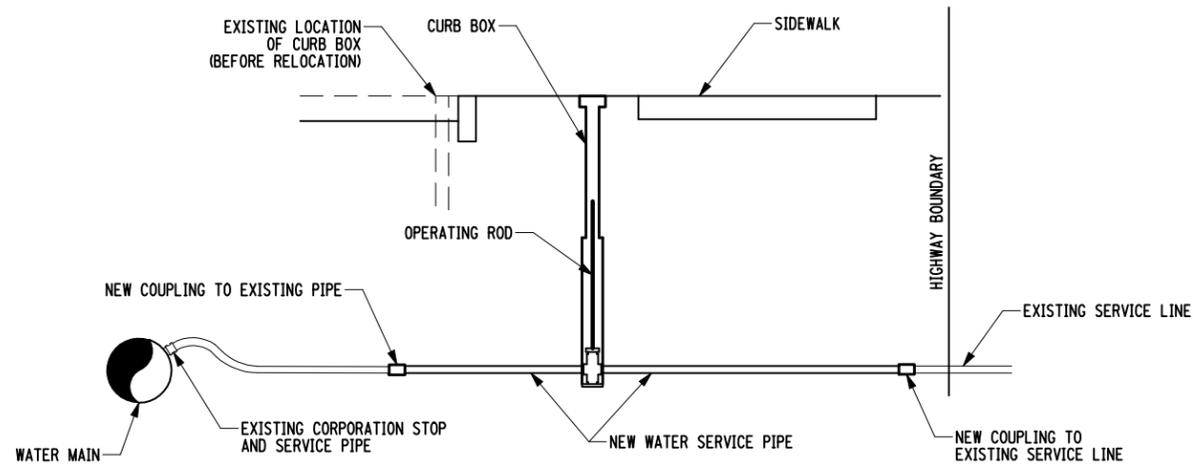
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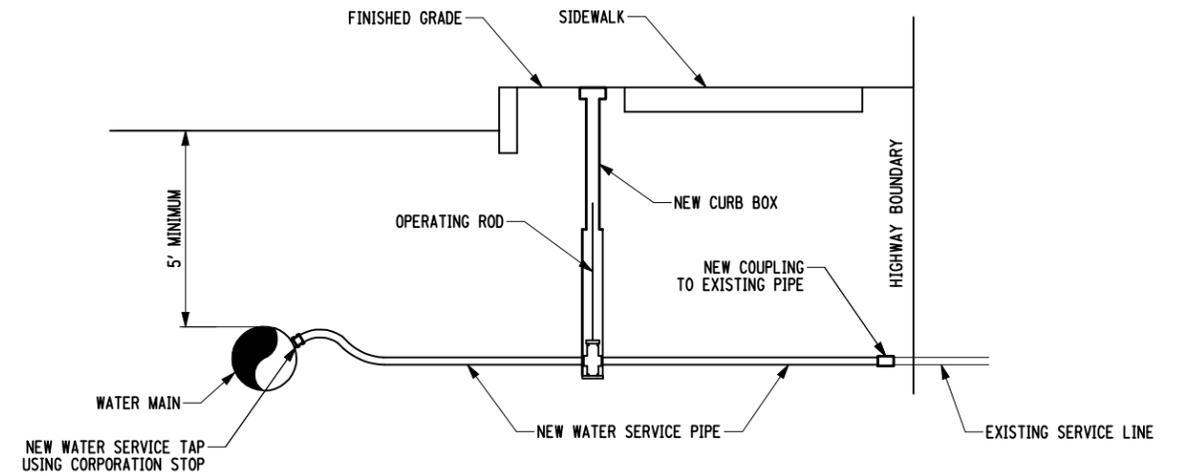
METER PIT - TYPE "B"  
CROSS SECTION

NOTES:

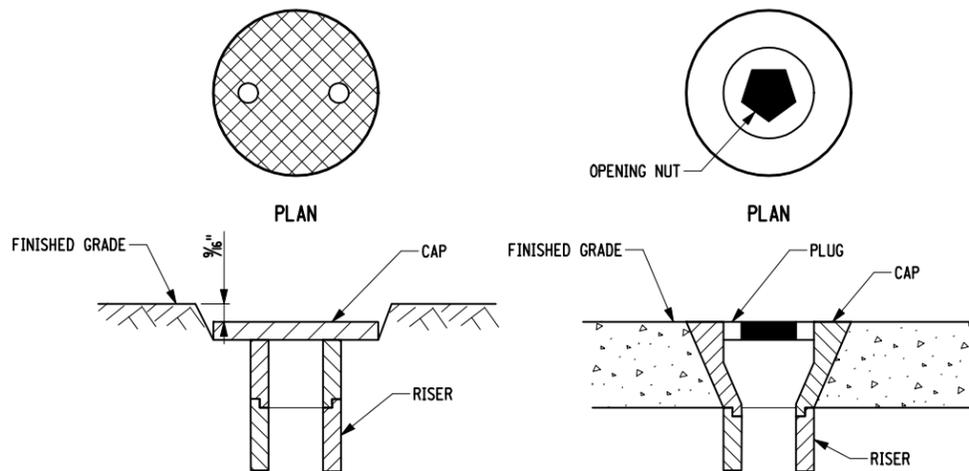
1. WATER SERVICE TAPS ON A NEW OR EXISTING MAIN SHALL BE PLACED AT THE 2 O'CLOCK OR 10 O'CLOCK POSITION AND SHALL BE PLACED A MINIMUM OF 1FT APART ALONG THE LENGTH OF THE MAIN. NO TAPS SHALL BE PLACED WITHIN 2FT OF THE END OF A PIPE.
2. UNLESS OTHERWISE NOTED IN THE OWNER REQUIREMENTS, ALL NEW SERVICE LINES SHALL BE TYPE K COPPER IN ACCORDANCE WITH §722-06.
3. ALL FITTINGS, INCLUDING CORPORATION STOP, CURB STOP, COUPLINGS, ELBOWS, ETC SHALL BE BRASS, IN ACCORDANCE WITH §722-06 AND OWNER REQUIREMENTS.
4. CURB STOP AND CURB BOX SHALL BE PLACED WITHIN THE HIGHWAY RIGHT OF WAY AND WITHIN THE SNOW STORAGE AREA WHENEVER POSSIBLE, OR AS SHOWN ON THE CONTRACT PLANS AND IN THE OWNER REQUIREMENTS.
5. RELOCATED CURB STOP AND BOX SHALL INCLUDE NEW WATER SERVICE PIPE TO THE HIGHWAY BOUNDARY OR AS SHOWN ON THE CONTRACT PLANS AND IN THE OWNER REQUIREMENTS.
6. THE CURB BOX CAP SHALL BE OF THE PLUG TYPE WHEN PLACED IN A PAVED SURFACE, AND THE TWO HOLE TYPE WHEN PLACED IN A GRASSED OR LANDSCAPED AREA.
7. WHEN PLACED IN GRASS, THE TOP OF CURB BOX SHALL BE SET  $\frac{1}{8}$  INCH BELOW FINISHED GRADE.
8. UNLESS OTHERWISE NOTED IN THE OWNER REQUIREMENTS, METERS WILL BE SUPPLIED BY THE OWNER AT NO COST TO THE CONTRACTOR OR TO THE STATE. PIPING IS SCHEMATIC, PIPING SHALL BE INSTALLED AS REQUIRED FOR THE INDIVIDUAL INSTALLATION.



CURB STOP AND CURB BOX DETAIL



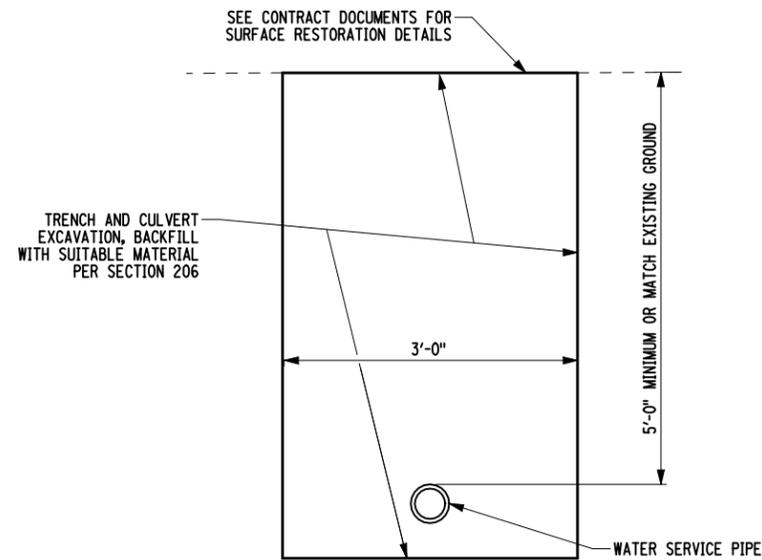
WATER SERVICE CONNECTION DETAIL



TWO-HOLE TYPE - CROSS SECTION  
USED IN GRASSED OR LANDSCAPED AREAS

PLUG TYPE - CROSS SECTION  
USED IN SIDEWALKS OR PAVED AREAS

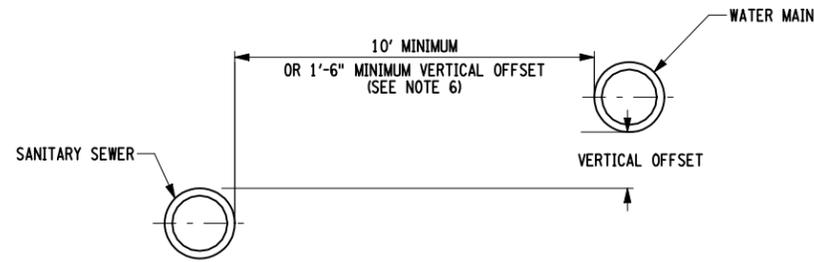
CURB BOX CAPS



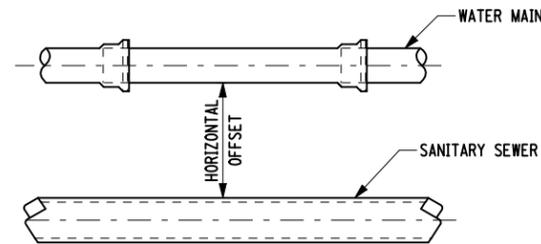
WATER SERVICE TRENCH DETAIL

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>WATER MAIN</b> <b>SERVICE CONNECTION DETAIL</b>	
APPROVED SEPTEMBER 19, 2008 /S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 08-036  663-07

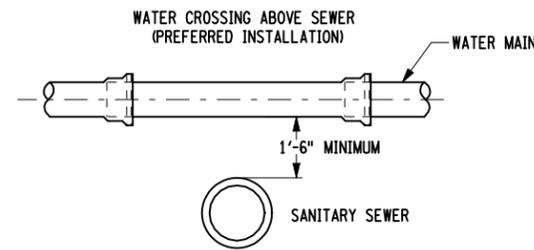
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CROSS SECTION  
SANITARY SEWER MAIN / WATER MAIN  
PARALLEL INSTALLATION



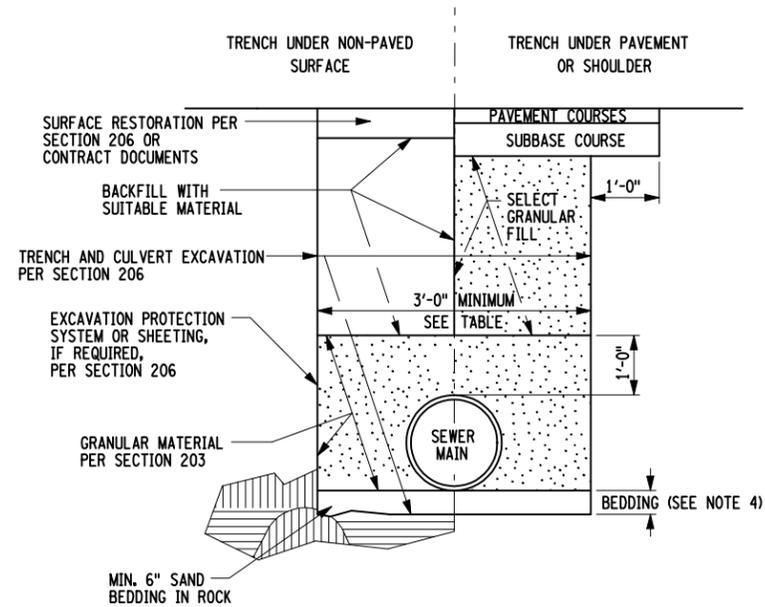
PLAN  
SANITARY SEWER MAIN / WATER MAIN  
PARALLEL INSTALLATION



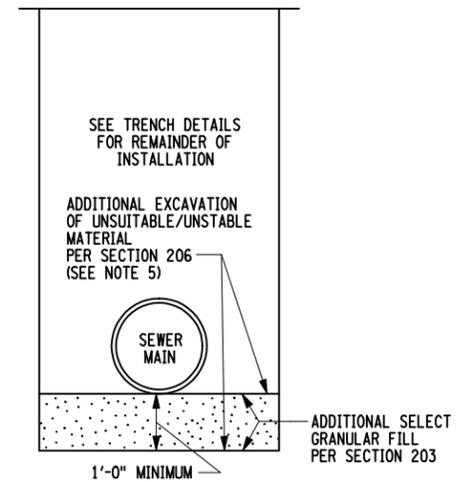
SANITARY SEWER MAIN / WATER MAIN  
CROSSING

NOTES:

- SEE SPECIAL NOTES ENTITLED "OWNER REQUIREMENTS FOR SEWER MAINS AND APPURTENANCES" FOR INFORMATION ON ADDITIONAL REQUIREMENTS. REQUIREMENTS ARE CONSISTANT WITH "10 STATE STANDARDS" AS PUBLISHED BY HEALTH EDUCATION SERVICES.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATIONS OF EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ELEVATIONS OF EXISTING UTILITIES TO ENSURE ADEQUATE CLEARANCE FOR THE SEWER LINE EXISTS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER (IN WRITING) OF CONFLICTING ELEVATIONS, ALLOWING THE ENGINEER ADEQUATE TIME TO REVISE GRADES WITHOUT NECESSITATING REMOVAL AND RECONSTRUCTION OF WORK ALREADY COMPLETED BY THE CONTRACTOR.
- THE TOP PAYMENT LINE FOR TRENCH EXCAVATION SHALL BE PER SECTION 206.
- BEDDING BELOW THE PIPE INVERT SHALL BE REQUIRED ONLY WHEN NOTED IN THE OWNER REQUIREMENTS OR WHEN ROCK OR UNSTABLE OR UNSUITABLE CONDITIONS ARE ENCOUNTERED.
- IF UNSTABLE OR UNSUITABLE SOIL CONDITIONS ARE ENCOUNTERED NEAR THE INVERT ELEVATION, A MINIMUM OF 1' AND A MAXIMUM OF 2' OF MATERIAL SHALL BE EXCAVATED AND REPLACED WITH SELECT GRANULAR FILL. ADDITIONAL PAYMENT WILL BE MADE FOR MATERIAL PLACED TO TREAT UNSTABLE OR UNSUITABLE CONDITIONS.
- NEW SANITARY SEWER MAINS INSTALLED PARALLEL TO WATER MAINS SHALL HAVE A MINIMUM OF 10' HORIZONTAL SEPARATION (MEASURED EDGE OF PIPE TO EDGE OF PIPE OR EDGE OF STRUCTURE) WHENEVER POSSIBLE. WHEN 10' HORIZONTAL SEPARATION CANNOT BE MAINTAINED A VERTICAL SEPARATION OF AT LEAST 1'-6" BETWEEN BOTTOM OF WATER MAIN AND TOP OF SANITARY SEWER PIPE SHALL BE MAINTAINED. IF NEITHER SEPARATION CAN BE MAINTAINED, THE SANITARY SEWER MAIN AND WATER PIPE SHALL BE CONSTRUCTED AS SHOWN ON THE CONTRACT DOCUMENTS AS APPROVED BY THE APPROPRIATE HEALTH AGENCY.
- BACKFILL SHALL BE INSTALLED AND COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 203.



NEW OR RELOCATED  
PLASTIC SANITARY SEWER MAIN  
TRENCH DETAIL

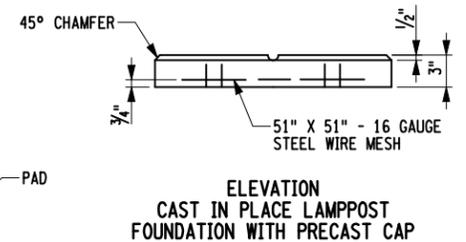
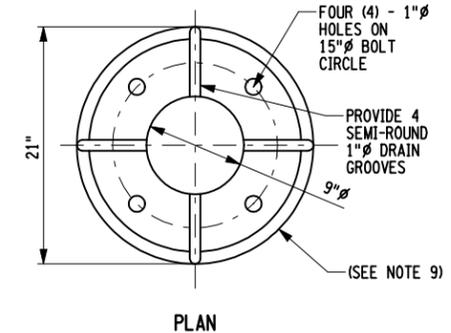
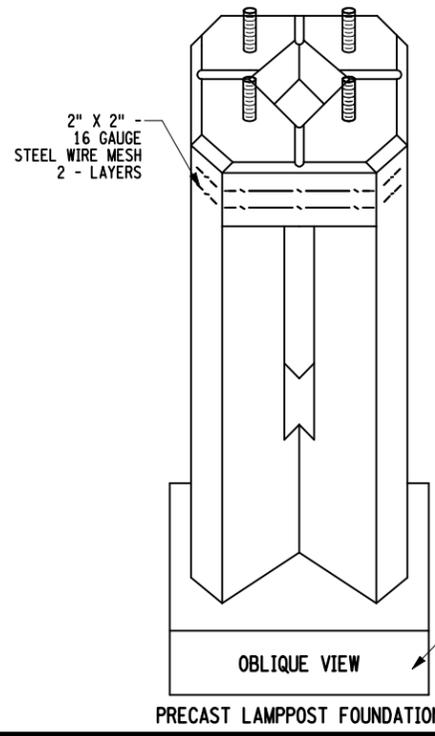
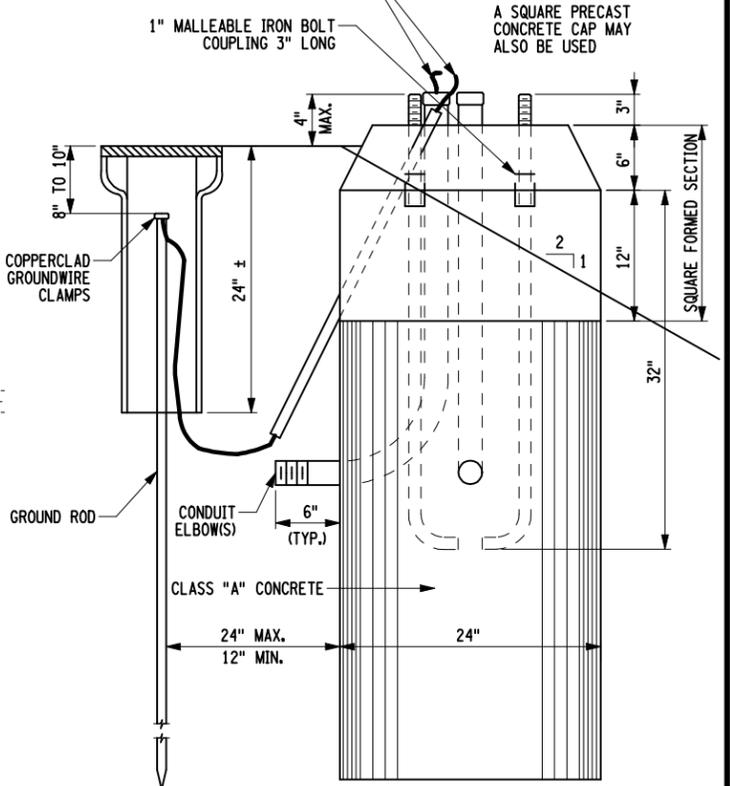
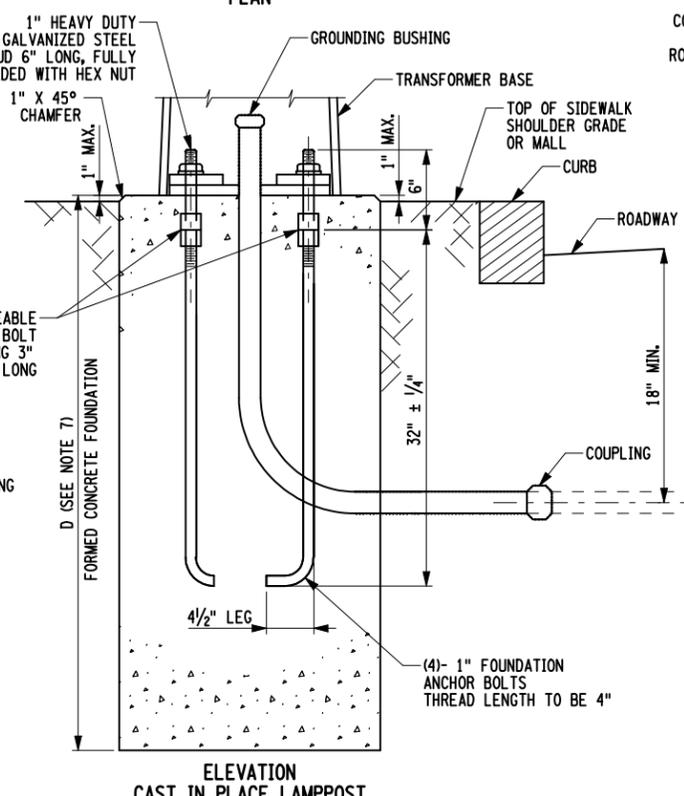
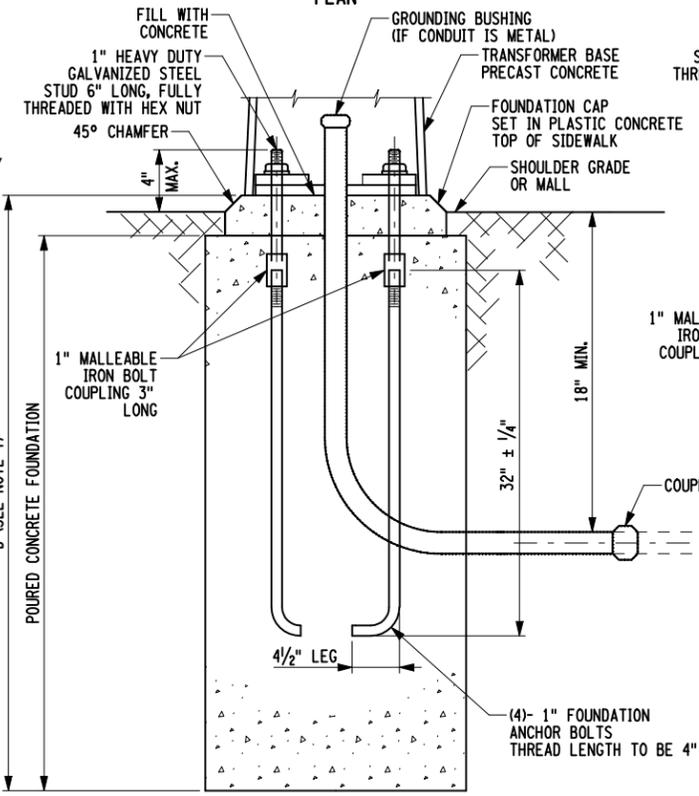
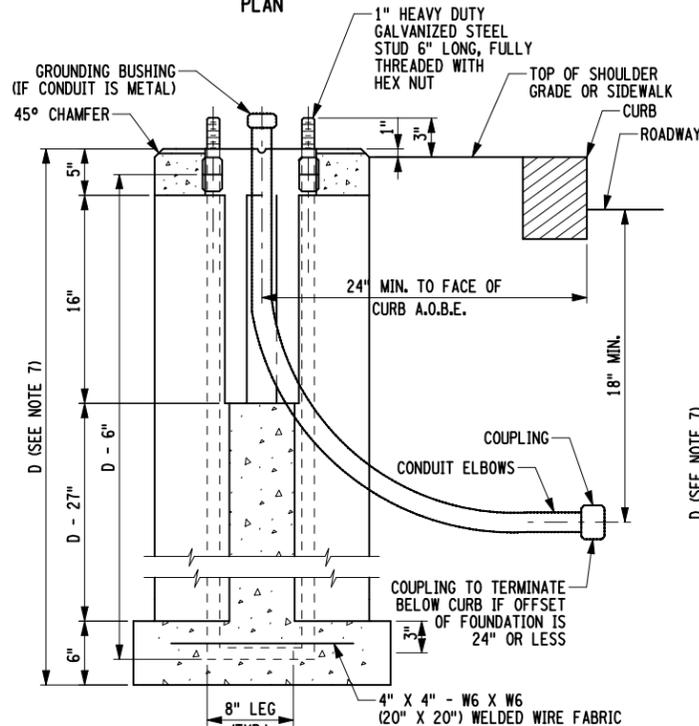
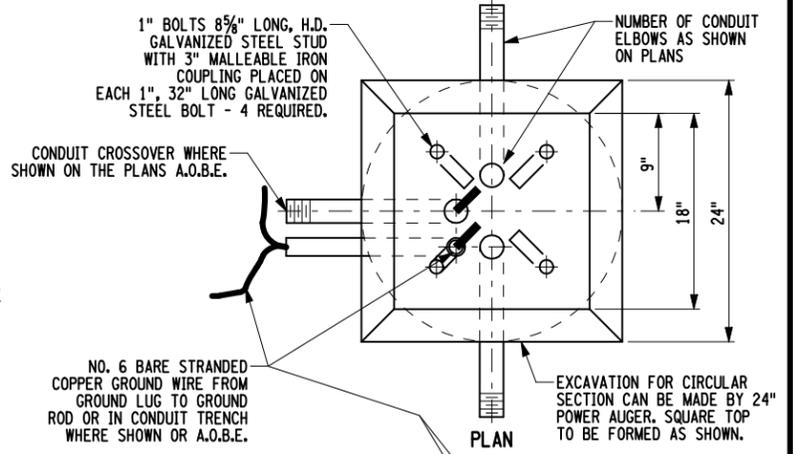
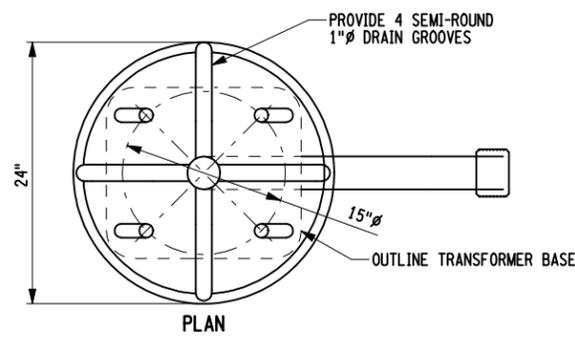
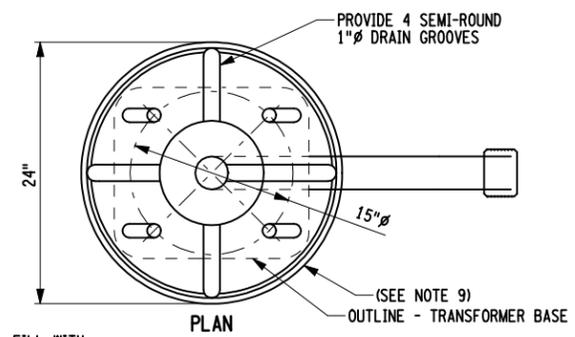
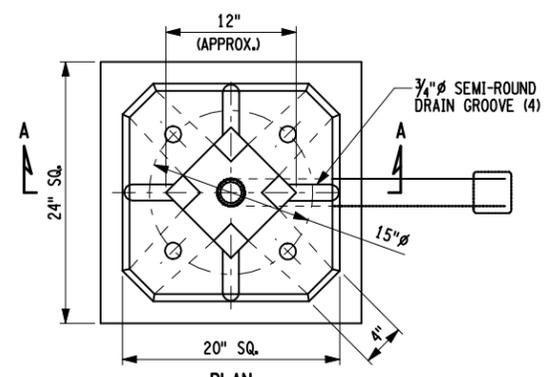


SANITARY SEWER MAIN INSTALLATION IN  
UNSTABLE OR UNSUITABLE SOIL CONDITIONS

EXCAVATION PAYMENT WIDTHS	
NPS SIZE	TRENCH WIDTH
3	3'-0"
4	3'-0"
6	3'-0"
8	3'-0"
10	3'-0"
12	3'-0"
14	3'-6"
16	3'-6"
18	3'-6"
20	4'-0"
24	4'-0"
30	4'-6"
36	5'-0"
42	5'-6"
48	6'-0"
54	6'-6"
60	7'-0"
64	7'-6"

	<b>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</b>	
	U.S. CUSTOMARY STANDARD SHEET	
<b>SANITARY SEWER MAIN PIPE INSTALLATION DETAILS</b>		
APPROVED MAY 5, 2010 /S/ RICHARD W. LEE, P.E. FOR THE DEPUTY CHIEF ENGINEER (DESIGN)	ISSUED UNDER EB 10-011	<b>664-01</b>

EFFECTIVE DATE: 01/06/11



**NOTES:**

1. THE PRECAST LAMPOST FOUNDATION DETAIL IS A RECOMMENDED DESIGN. OTHER DESIGNS FOR PRECAST LAMPOST FOUNDATIONS MEETING THE FOLLOWING CRITERIA WILL ALSO BE CONSIDERED UPON SUBMITTAL OF SHOP DRAWINGS AND CALCULATIONS. MOMENT TO RESIST:
  - 30' POLE - 11,065 LB. \ FT.
  - 40' POLE - 16,965 LB. \ FT.
  - 50' POLE - 29,505 LB. \ FT.
2. TORQUE TO RESIST : 1035 LB. \ FT. - MINIMUM COVER REINFORCEMENT: 2"
3. INSTEAD OF THE LEG AT THE BOTTOM OF EACH ANCHOR BOLT, THE CONTRACTOR MAY USE 3 FLAT WASHERS SANDWICHED BETWEEN TWO HEAVY HEX NUTS TO DEVELOP THE FULL STRENGTH OF THE ANCHOR BOLTS.
4. THE FOUNDATION SHALL MEET THE REQUIREMENTS OF § 723-45 OF THE STANDARD SPECIFICATIONS AND SHALL BE CONSTRUCTED BY A MONOLITHIC PLACEMENT OF CONCRETE, EXCEPT FOR THE PRECAST CAP OR SQUARE FORMED SECTION.
5. THE FOUNDATION SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS OF § 670-3.04 OF THE STANDARD SPECIFICATIONS.
6. THE CONTRACTOR SHALL CAP CONDUIT ELBOWS WHERE CONDUIT IS INSTALLED BY OTHERS. GROUNDING BUSHING SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR INSTALLING LAMPOST.

POLE HEIGHT	CONCRETE FOUNDATION DEPTH "D"			
	GROUND SLOPE	GROUND WATER BELOW BOTTOM OF FOUNDATION	GROUND WATER MORE THAN 2'-0" BELOW SURFACE	GROUND WATER LESS THAN 2'-0" BELOW SURFACE
≤ 30'	≤ 1:4	5'	6'	7'
≥ 30'	> 1:4	6'	7'	8'
31' TO 50'	≤ 1:4	6'	7'	8'
31' TO 50'	> 1:4	7'-6"	8'-6"	8'-6"

\* APPLIES TO SUBMERGED CONDITIONS ONLY, NOT TO SLOPE SUBJECT SEEPAGE. THE REGIONAL SOILS ENGINEER SHOULD BE CONSULTED TO PROVIDE AN ESTIMATE OF THE ANTICIPATED GROUNDWATER ELEVATION AND TO IDENTIFY AREAS WHICH MAY CONTAIN ORGANIC DEPOSITS, SOFT CLAY, OR RANDOM FILLS.

**NOTES CONTINUED:**

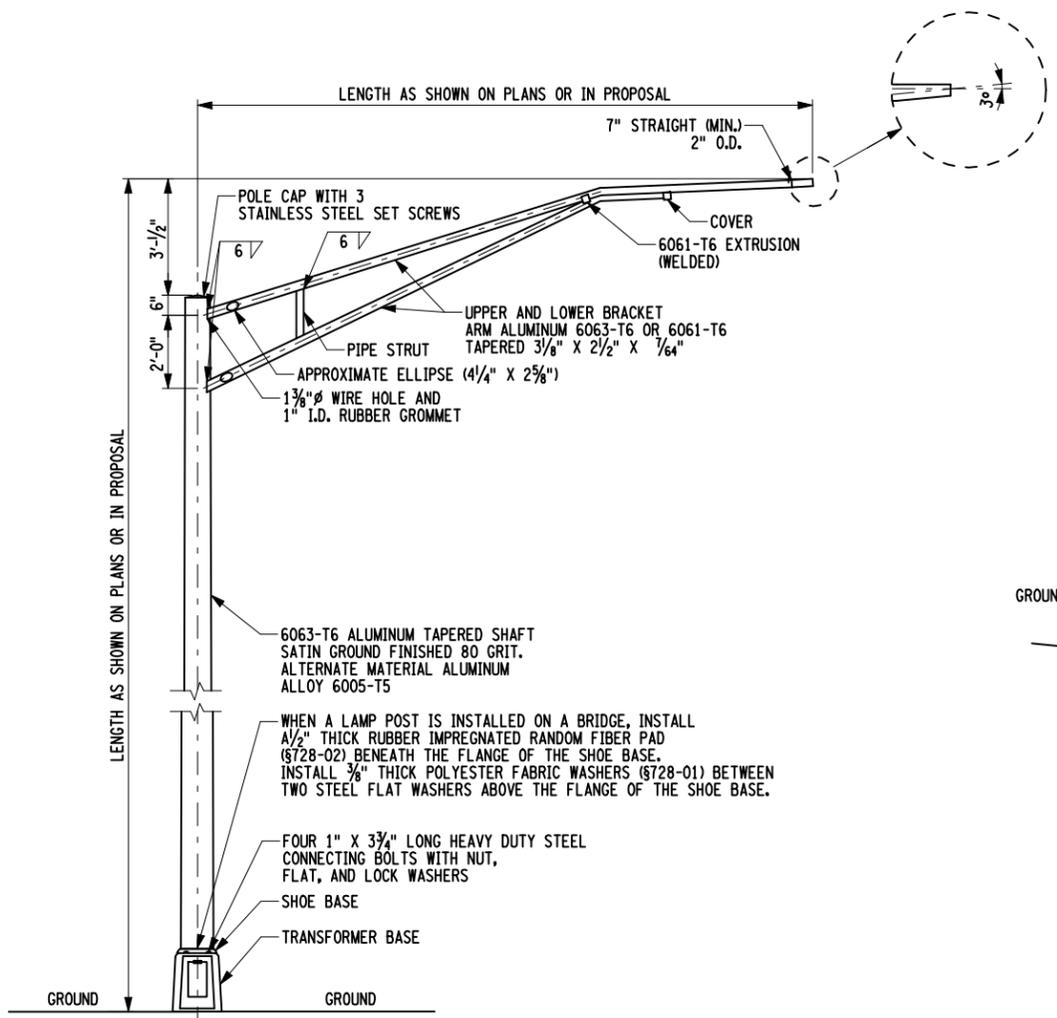
8. ALL LAMPOSTS SHALL BE GROUNDED EITHER THROUGH THE METAL CONDUIT, BURIED GROUNDWIRE IN TRENCH, OR VERTICAL GROUNDROD. SEE STANDARD SHEET TITLED "PULLBOX CONDUIT AND GROUND ROD INSTALLATION DETAILS" FOR ADDITIONAL GROUNDING NOTES AND DETAILS.
9. IF TOP OF FOUNDATION IS FORMED SQUARE, THE PRECAST CAP SHALL BE SQUARE.
10. PAYMENT FOR EXCAVATION, LABOR, PIPE TILE, FRAME AND COVER IS TO BE INCLUDED AS PART OF THE FOUNDATION.

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
LAMPPOST FOUNDATIONS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	670-01

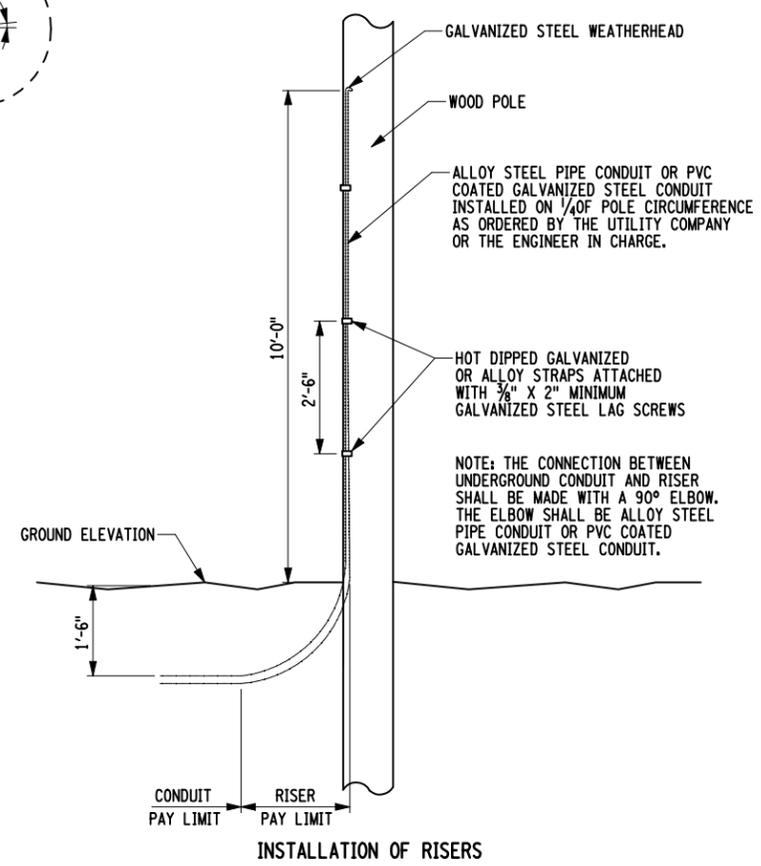
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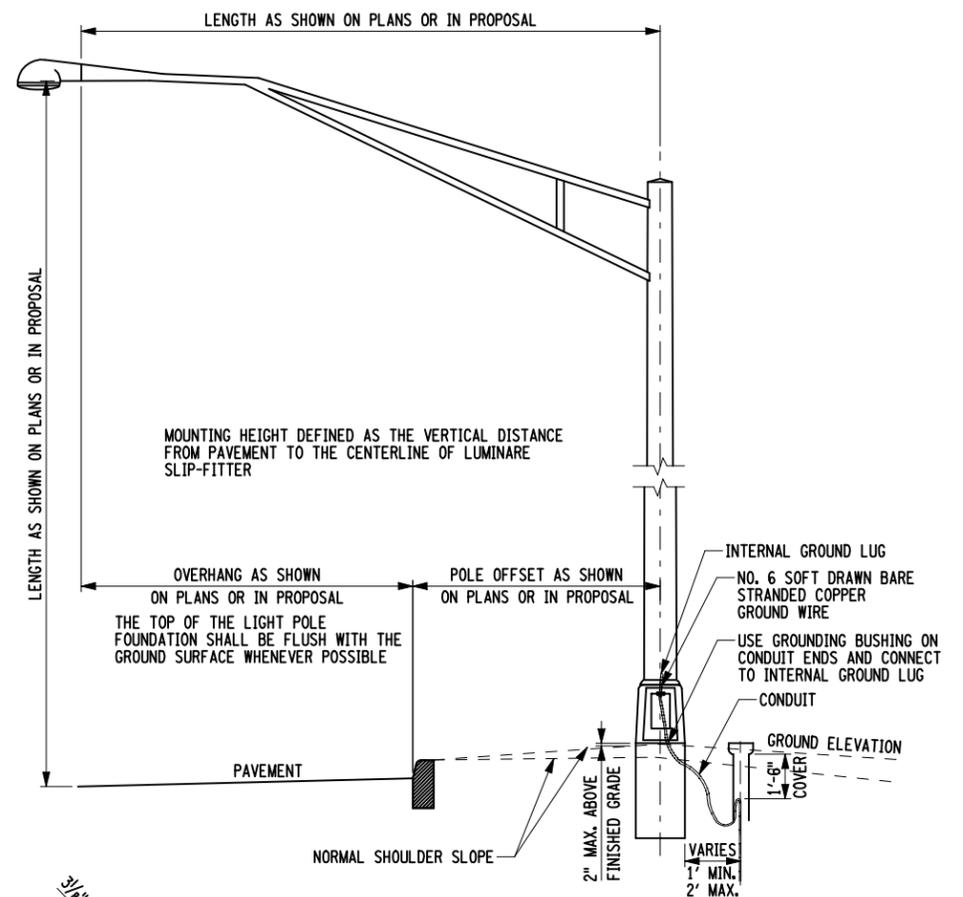
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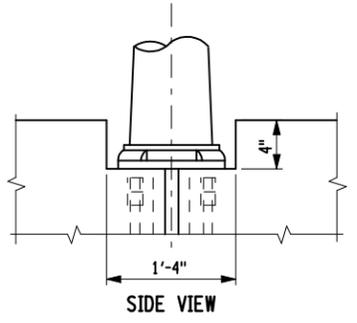
LAMP POST AND TYPE I ARM DETAIL  
ALUMINUM LIGHTING STANDARD



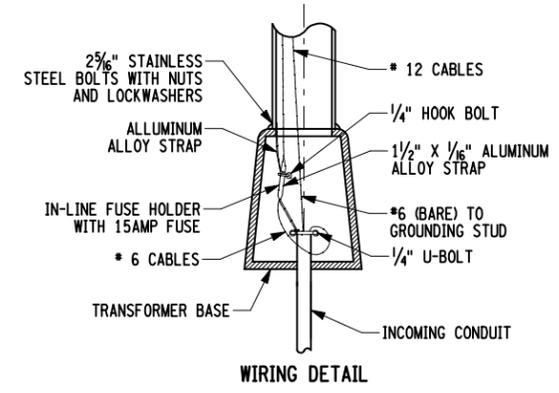
INSTALLATION OF RISERS



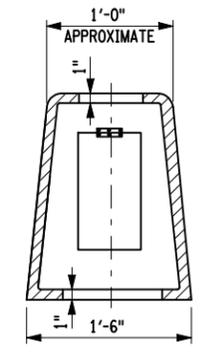
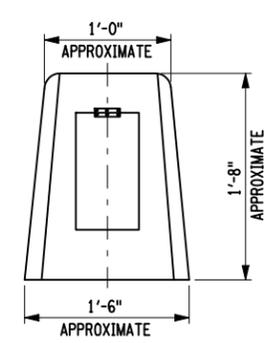
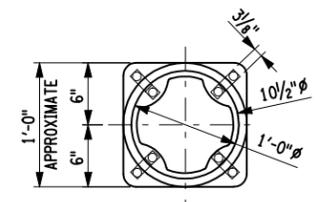
LAMP POST AND TYPE II ARM DETAIL



SIDE VIEW

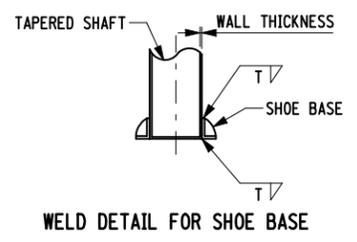


WIRING DETAIL

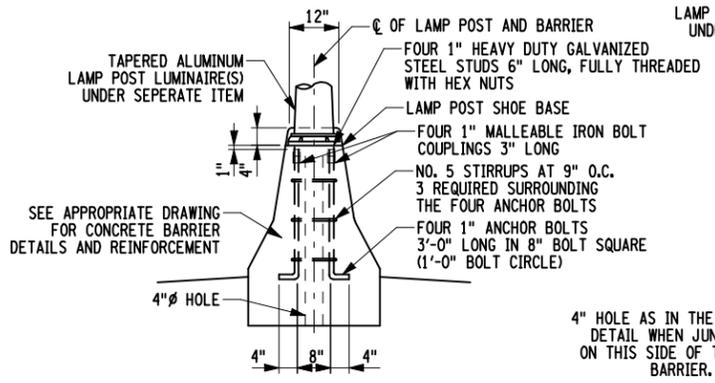


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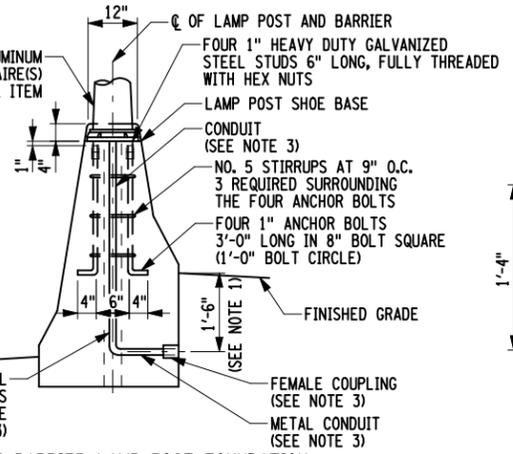
1. TRANSFORMER BASE SHALL BE DESIGNED TO BE ATTACHED TO 1" ANCHOR BOLTS ON A 1'-2" TO 1'-4" DIAMETER BOLT CIRCLE.
2. THE DOOR SHALL BE LOCATED IN THE APPROXIMATE CENTER OF THE SIDE WALL AND SECURED IN PLACE BY MEANS OF STAINLESS STEEL HINGE WITH FAST PIN AT TOP AND BOTTOM AND A STAINLESS STEEL SOCKET SCREW LOCKING MECHANISM.
3. IF THE FEMALE COUPLING WILL NOT BE ENCASED IN CONCRETE AT A DEPTH OF 1'-6" BELOW THE PAVEMENT, USE A 4" HOLE AS IN THE SYMMETRICAL DETAIL.
4. ANCHOR BOLTS AND STUDS SHALL MEET THE REQUIREMENTS OF S723-60. THE ADDITIONAL REINFORCEMENT (STIRRUPS) SHALL BE EPOXY COATED BAR REINFORCEMENT FOR STRUCTURES S709-04.



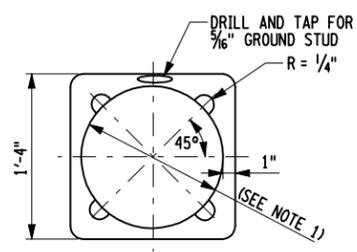
WELD DETAIL FOR SHOE BASE



CONCRETE BARRIER LAMP POST FOUNDATION

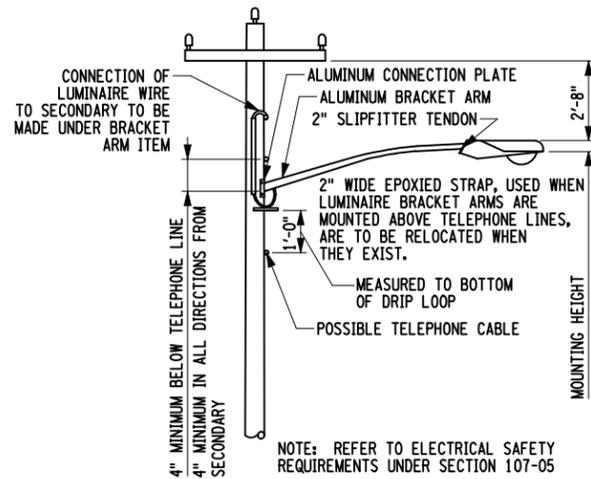


CONCRETE BARRIER LAMP POST FOUNDATION (UNSYMMETRICAL)

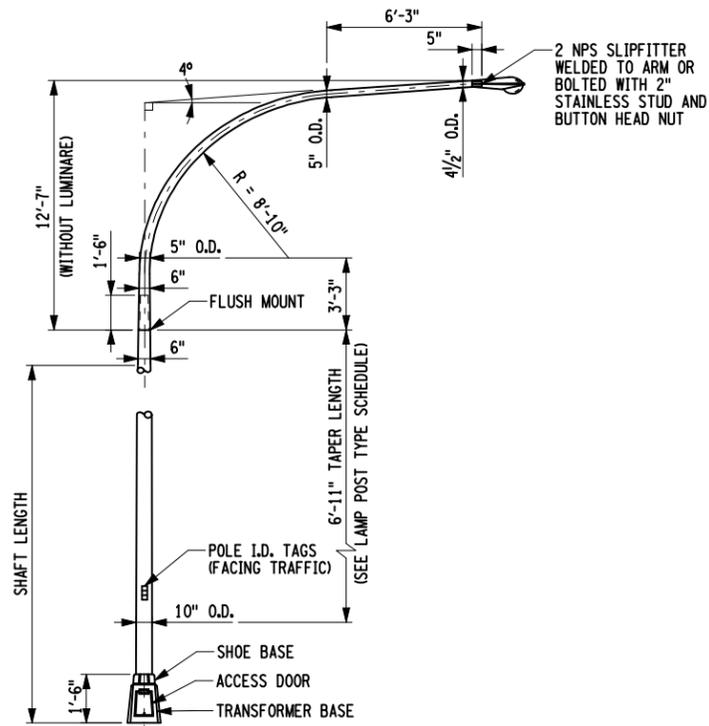
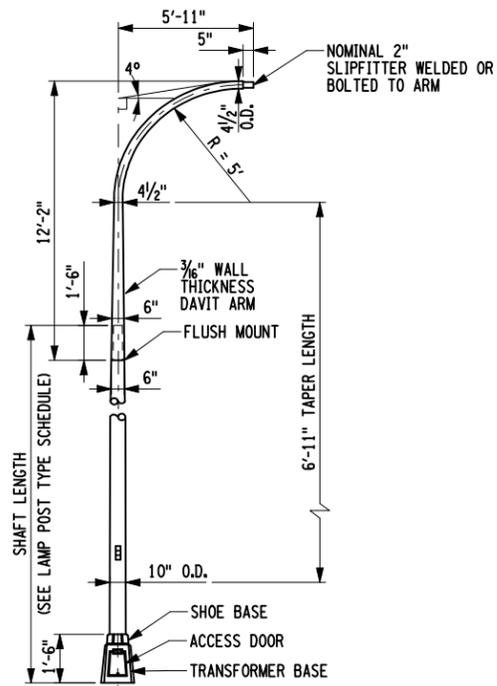


TRANSFORMER BASE DETAIL (SEE APPROVED LIST)

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
LIGHT STANDARD DETAILS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	670-02
EFFECTIVE DATE: 01/08/09	



WOOD POLE MOUNTED BRACKET ARM



FOUNDATION TYPE	POLE HEIGHT	GROUND SLOPE
F1	39'-0" TO 49'-0"	FLAT
F2	39'-0" TO 49'-0"	< 1 VERTICAL ON 3 HORIZONTAL
F3	39'-0" TO 49'-0"	1:3 TO 1:2

1. LIGHT POLE FOUNDATIONS SHALL NOT BE PLACED IN SLOPES STEEPER THAN 1:2.  
2. THE GEOTECHNICAL ENGINEERING BUREAU SHOULD BE CONSULTED WHEN:

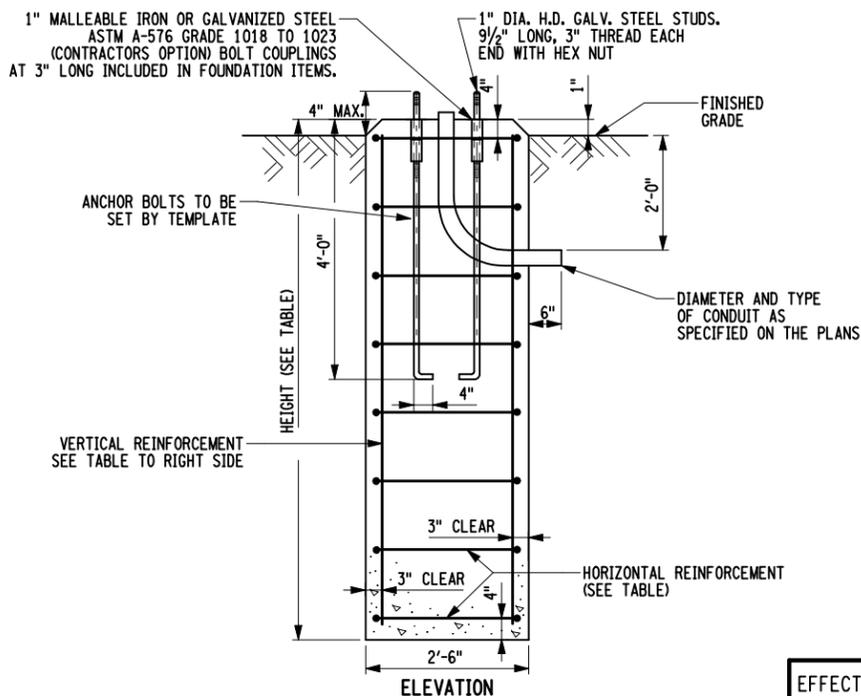
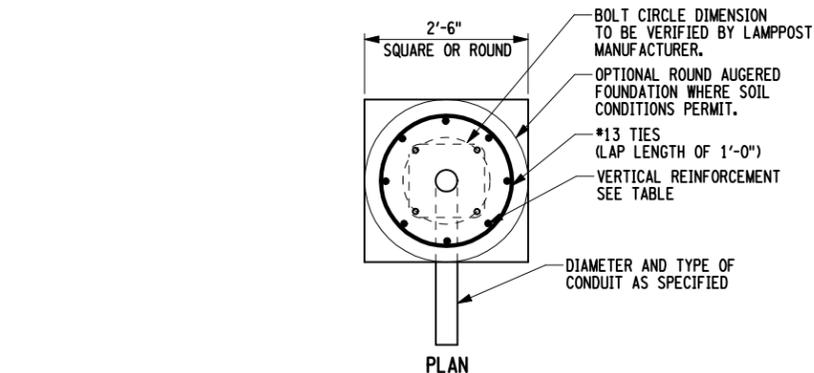
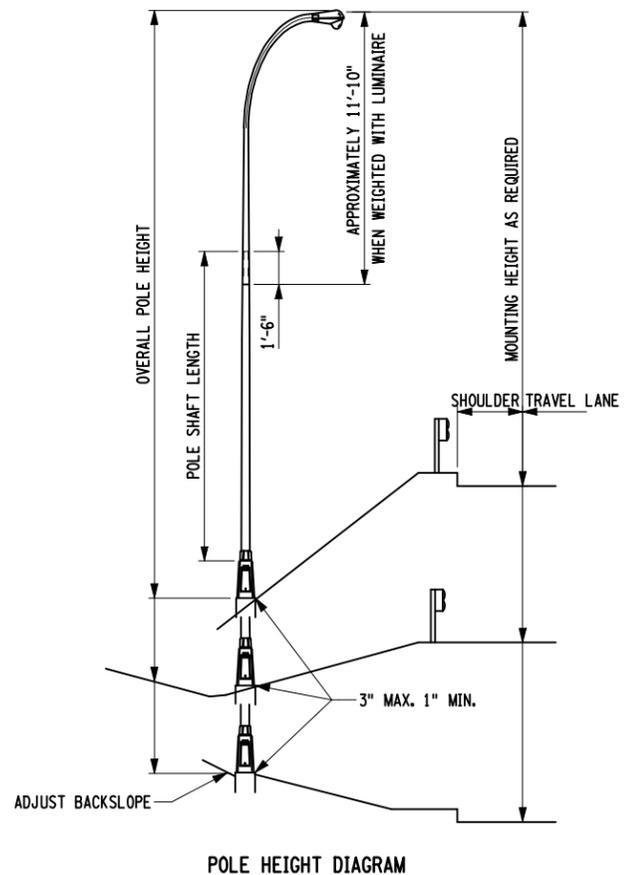
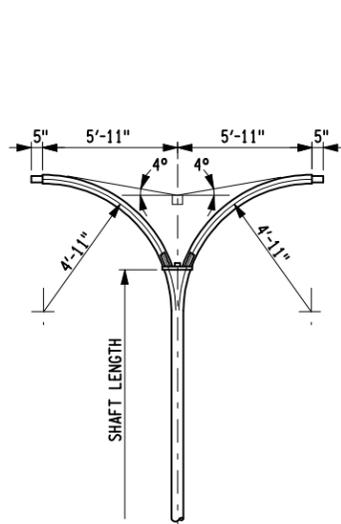
- A. THE FOUNDATION IS TO BE PLACED IN SOFT CLAY OR ORGANIC DEPOSIT.
- B. ROCK IS ENCOUNTERED WITHIN FOUNDATION EMBEDMENT.
- C. THE GROUNDWATER ELEVATION IS WITHIN THE MINIMUM EMBEDMENT.
- D. THE TOTAL OVERTURNING MOMENT IS GREATER THAN 26552 LBS-FT.

FOUNDATION TYPE	HEIGHT	REINFORCEMENT	
		HORIZONTAL	VERTICAL
F1	5'-11"	6-#13 BARS	8-#16 BARS
F2	8'-0"	8-#13 BARS	8-#19 BARS
F3	10'-0"	9-#13 BARS	8-#19 BARS

NOTE: SPACING BETWEEN HORIZONTAL REINFORCEMENTS SHALL BE EQUAL WITH A MINIMUM VALUE OF 1'-0"

NOTES:

- TRANSFORMER BASES ARE NOT REQUIRED BEHIND GUIDE RAIL FOR FRANGIBILITY PURPOSES UNLESS LOCATED WITHIN THE DEFLECTION DISTANCES, BUT MAY BE SPECIFIED FOR EASE OF ACCESS FOR SPLICING.
- THE OUTER SLEEVE MEMBER AT A FLUSH JOINT SHALL BE FURNISHED WITH THE PREDRILLED 3/4" THRU HOLES 90 DEGREES APART AS INDICATED. THE INNER MEMBER SHALL BE DRILLED IN THE FIELD AFTER THE POLE SHAFT IS INSTALLED AND THE DAVIT ARM IS ALIGNED.
- ON ROADWAYS AND ACCELERATION/DECELERATION LANES THE POLE ARMS SHALL ALWAYS BE ALIGNED PERPENDICULAR TO THE EDGE OF THE TRAVELED WAY.
- FOUNDATION EXCAVATIONS ARE TO BE FILLED WITH CONCRETE THE DAY THEY ARE DUG TO AVOID HOLES LEFT OVERNIGHT, OR SAFETY FENCE MUST BE USED AT NO COST TO THE STATE. IF FORMS ARE REQUIRED, OR CONDITIONS REQUIRE THE USE OF PERMANENT SHEETING, THE COST SHALL BE INCLUDED IN THE PRICE BID FOR THE FOUNDATION ITEM.



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STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

DAVIT ARM, WOOD POLE BRACKET ARM  
AND DEEP FOUNDATIONS

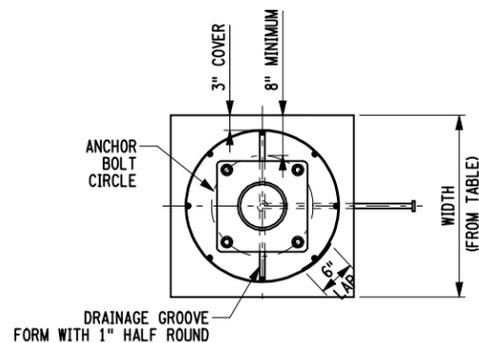
APPROVED SEPTEMBER 19, 2008

/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

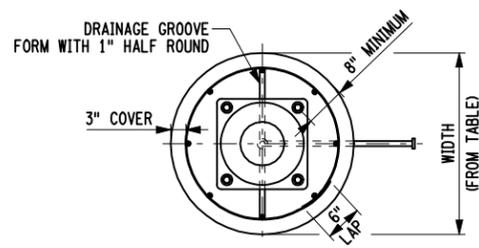
ISSUED UNDER EB 08-036

670-03

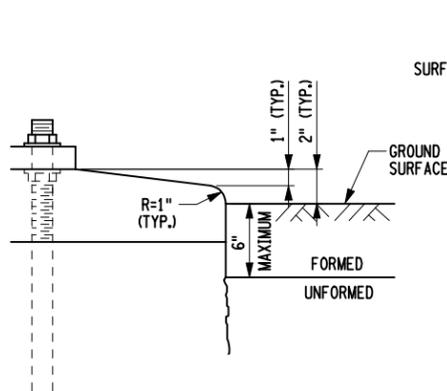
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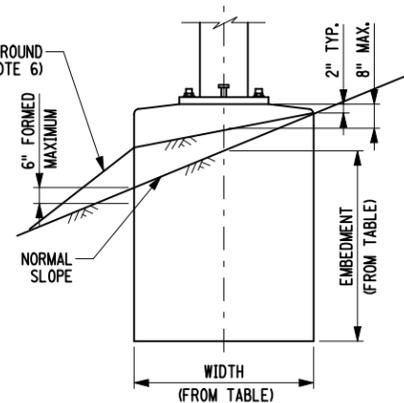
TOP VIEW SQUARE FOOTING



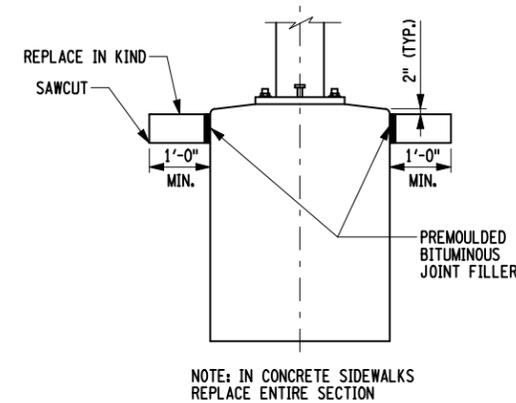
TOP VIEW CIRCULAR FOOTING



DETAIL "A"



FOOTINGS IN EMBANKMENTS

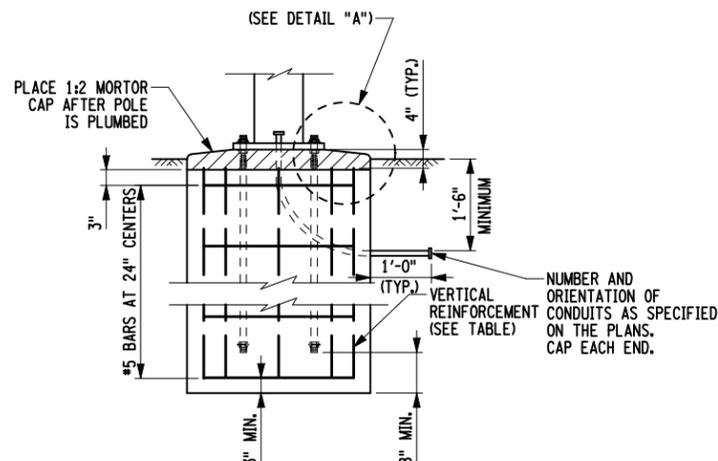


NOTE: IN CONCRETE SIDEWALKS REPLACE ENTIRE SECTION  
FOOTINGS IN SIDEWALKS

GENERAL NOTES:

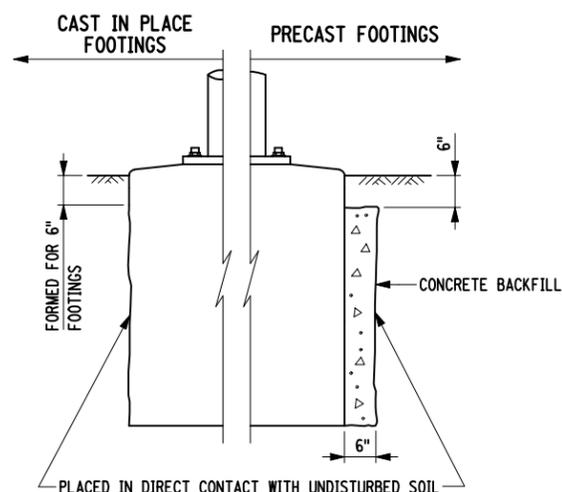
- FOOTING CAPACITY IN FOOT-KIPS WILL BE SPECIFIED ON THE PLANS. FOOTING WIDTH AND EMBEDMENT SHALL BE DETERMINED FROM THE TABLE BY THE CONTRACTOR AND APPROVED BY THE ENGINEER BEFORE INSTALLATION.
- FOOTINGS FOR PEDESTRIAN SIGNALS AND FLASHING BEACON SIGN ASSEMBLIES SHALL BE J-2 FROM THE TABLE AND MAY BE EITHER CIRCULAR OR SQUARE.
- FOOTING EMBEDMENT SHALL BE AS SPECIFIED IN THE FOOTING EMBANKMENTS DETAIL.
- FOOTINGS FOR SPAN WIRE POLES MAY BE EITHER CIRCULAR OR SQUARE.
- FOOTINGS FOR MAST ARM HOLES WITH MAST ARMS 20' OR LESS IN LENGTH MAY BE EITHER CIRCULAR OR SQUARE. FOOTINGS FOR POLES WITH ARMS GREATER THAN 20' IN LENGTH SHALL BE SQUARE.
- ADJUST THE FINISHED GROUND SURFACE IN THE VICINITY OF THE FOOTING AS NECESSARY SO THAT NO FILL SPILLS ON THE TOP OF THE FOOTING AND SO THAT MAXIMUM DISTANCE FROM THE TOP OF FOOTING TO THE FINISHED GROUND AT THE CENTERLINE DOES NOT EXCEED 8".
- PAYMENT QUANTITY FOR POLE EXCAVATION AND CONCRETE FOUNDATION IS THE NUMBER OF CUBIC YARDS OF CONCRETE CONTAINED WITHIN THE FOOTING WIDTH AND EMBEDMENT LENGTH AS SPECIFIED IN THE TABLE. NO ADJUSTMENTS WILL BE MADE WHEN THE CONTRACTOR ELECTS TO INSTALL A SQUARE FOOTING. WHEN A SQUARE FOOTING IS REQUIRED, THE QUANTITY IN THE TABLE WILL BE MULTIPLIED BY A FACTOR OF 1.3.
- WHEN A FOOTING IS USED WITH A BREAKAWAY TYPE OF POLE BASE THE MAXIMUM DISTANCE FROM THE SURROUNDING SURFACE TO THE TOP OF ANCHOR BOLTS SHALL BE 4".
- THE GEOTECHNICAL ENGINEERING BUREAU AND THE STRUCTURES DIVISION SHOULD BE CONSULTED UNDER THE FOLLOWING CIRCUMSTANCES:
  - FOOTING IS PLACED IN SOFT CLAY OR ORGANIC DEPOSITS.
  - MOMENT AT THE TOP OF EARTH IS HIGHER THAN THE MOMENTS PROVIDED IN THE TABLES.

CODE NO.	MOMENT IN FT.-KIP AT TOP OF EARTH	J (2'-6" FOOTING WIDTH)				K (3'-0" FOOTING WIDTH)				L (3'-6" FOOTING WIDTH)				M (4'-0" FOOTING WIDTH)			
		CU. YDS.	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BARS		CU. YDS.	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BARS		CU. YDS.	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BARS		CU. YDS.	MINIMUM EMBEDMENT IN EARTH	VERTICAL REINFORCEMENT BARS	
				NUMBER	TYPE												
1	40 AND UNDER	1.1	6'-0"	8	#5	1.4	5'-3"	8	#5	1.9	5'-4"	8	#5	2.4	5'-0"	8	#5
2	50	1.2	6'-6"	8	#5	1.6	5'-9"	8	#5	2.1	5'-10"	12	#5	2.6	5'-6"	8	#5
3	60	1.3	7'-0"	14	#5	1.8	6'-6"	12	#5	2.4	6'-6"	12	#5	2.8	6'-0"	12	#5
4	70	1.4	7'-6"	14	#5	1.8	6'-9"	12	#5	2.4	6'-9"	12	#5	2.8	6'-0"	12	#5
5	80	1.5	8'-0"	14	#5	1.9	7'-3"	16	#5	2.5	6'-9"	12	#5	3.1	6'-6"	12	#5
6	90	1.6	8'-6"	14	#6	2.1	7'-9"	16	#5	2.6	7'-3"	16	#5	3.2	6'-9"	12	#5
7	100	1.7	9'-0"	14	#6	2.2	8'-3"	16	#5	2.7	7'-6"	16	#5	3.3	7'-0"	16	#5
8	120	1.9	10'-0"	14	#6	2.5	9'-3"	16	#5	3.0	8'-3"	16	#5	3.7	7'-9"	16	#5
9	140	2.0	11'-0"	14	#7	2.7	10'-0"	16	#6	3.3	9'-3"	16	#5	4.0	8'-6"	16	#5
10	160					2.9	10'-9"	16	#6	3.5	9'-9"	16	#6	4.2	9'-0"	16	#5
11	180					3.1	11'-6"	16	#7	3.8	10'-6"	16	#6	4.6	9'-3"	16	#5
12	200					3.3	12'-3"	16	#7	4.1	11'-3"	16	#6	4.8	10'-3"	16	#6
13	220					3.4	12'-9"	16	#7	4.2	11'-9"	16	#7	5.1	10'-9"	16	#6
14	250					3.6	13'-9"	16	#8	4.6	12'-10"	16	#7	5.5	11'-9"	16	#7
15	275					3.9	14'-9"	16	#8	4.9	13'-6"	16	#8	5.9	12'-6"	16	#7
16	300													6.1	13'-0"	16	#8
17	350													6.7	14'-4"	16	#8
18	400													7.2	15'-6"	16	#10
19	450													7.8	16'-9"	19	#10
20	500													8.4	18'-0"	21	#10

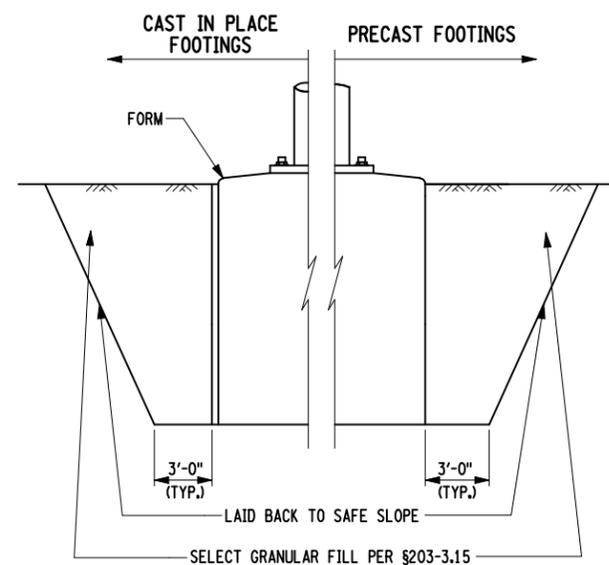


ELEVATION

NOTE: ANCHOR BOLTS SHOWN ARE TYPICAL ONLY. (SEE STANDARD TRAFFIC SIGNAL POLES STANDARD SHEETS) AND SHOP DRAWINGS FOR ADDITIONAL DETAILS.



AUGERED OR DUG FOOTING

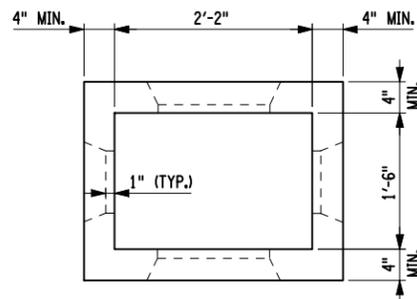


EXCAVATED FOOTING WITH SELECT GRANULAR BACKFILL

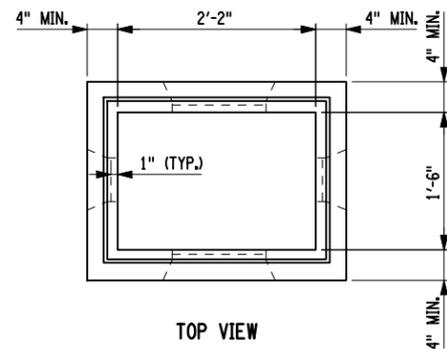
METHODS FOR PLACING FOOTINGS

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
U.S. CUSTOMARY STANDARD SHEET	
TRAFFIC SIGNAL POLE FOUNDATIONS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-01

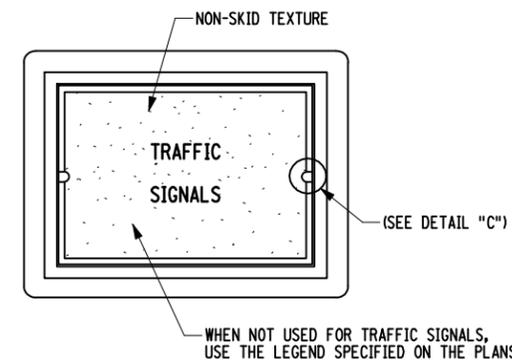
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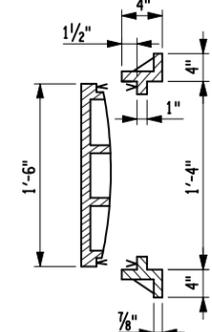
FRONT VIEW



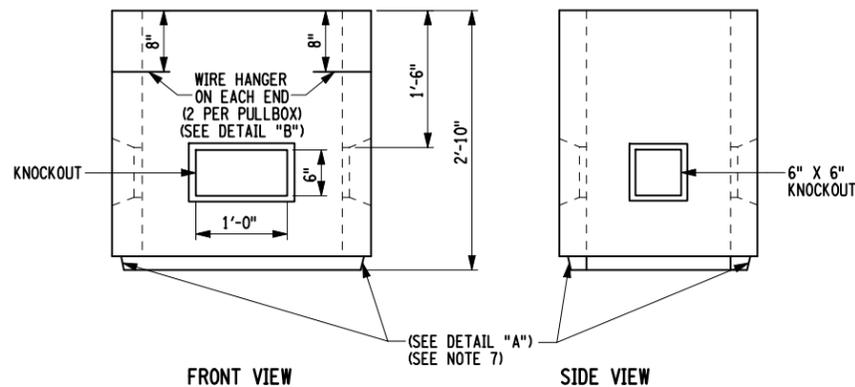
TOP VIEW



TOP VIEW

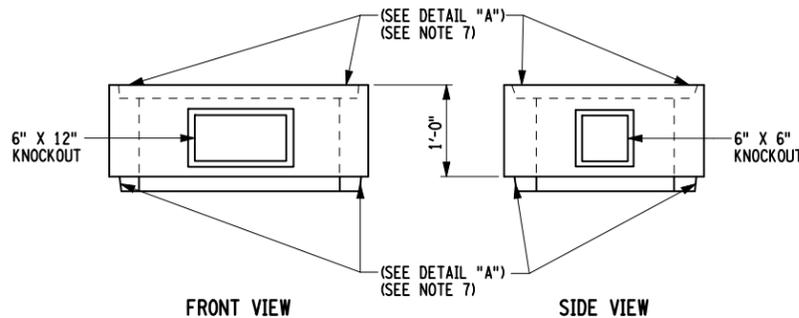


SIDE VIEW



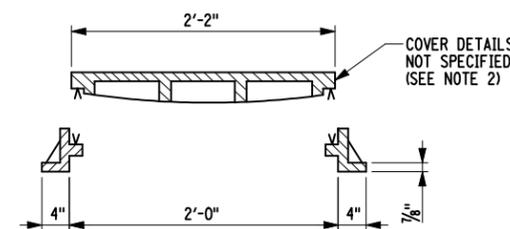
FRONT VIEW

SIDE VIEW



FRONT VIEW

SIDE VIEW



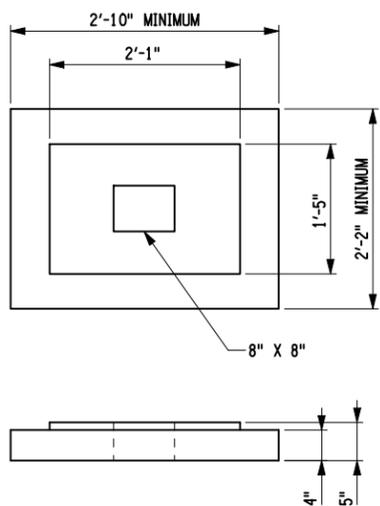
CAST IRON FRAME AND COVER FOR RECTANGULAR PULLBOX  
APPROXIMATE WEIGHT 300 LBS.

REINFORCED CONCRETE RECTANGULAR PULLBOX  
MINIMUM VERTICAL AND HORIZONTAL REINFORCEMENT .12 SQ. IN. / FT. (SEE NOTE 9)  
INSIDE VOLUME 8.2 CUBIC FEET WITHOUT EXTENSION

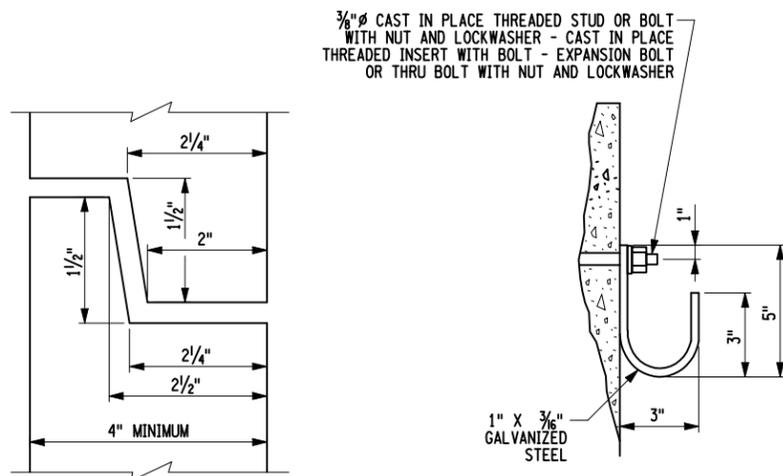
EXTENSION FOR RECTANGULAR PULLBOX  
MINIMUM VERTICAL AND HORIZONTAL REINFORCEMENT .12 SQ. IN. / FT. (SEE NOTE 9)  
VOLUME EXTENSION 2.9 CUBIC FEET

NOTES:

- STANDARD KNOCKOUT LOCATIONS ARE SHOWN FOR EACH PULLBOX. THE CONTRACTOR MAY ALSO ELECT TO FURNISH PULLBOXES WITH ONLY THE NUMBER AND SIZE CONDUIT OPENINGS THAT ARE REQUIRED FOR THAT PARTICULAR INSTALLATION.
- FRAMES AND COVERS SHALL BE HEAVY DUTY TO SUPPORT AN H-2 WHEEL LOADING.
- A NON-SKID TEXTURE SHALL BE CAST INTO THE TOP SURFACE OF THE COVER.
- PULLBOX BASES ARE REQUIRED ONLY FOR PULLBOXES PLACED IN THE PAVEMENT OR SHOULDER AND AS INDICATED ON THE PLANS. BASES, WHEN REQUIRED, MAY BE CAST INTEGRAL WITH THE PULLBOX.
- A ROUGH FINISH IS ACCEPTABLE FOR PULLBOX KNOCKOUTS.
- THE CONTRACTOR MAY ELECT TO FURNISH PULLBOXES PRECAST TO GREATER DEPTH, IN 1" INCREMENTS INSTEAD OF USING EXTENSIONS.
- WHERE PULLBOXES ARE INTENDED FOR USE WITHOUT EXTENSIONS, THE JOINT SHOWN IN DETAIL "A" MAY BE OMITTED.
- SEE STANDARD SHEET "PULLBOX, CONDUIT, AND GROUND ROD INSTALLATION DETAILS".
- STEEL REINFORCEMENT SHALL BE PLACED WITHIN THE CENTER THIRD OF THE WALL, EXCEPT KNOCKOUTS. MINIMUM COVER SHALL BE 1".

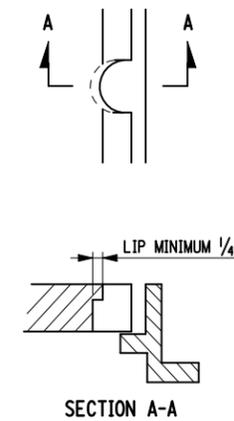


RECTANGULAR PULLBOX BASE  
MINIMUM VERTICAL AND HORIZONTAL REINFORCEMENT .12 SQ. IN. / FT. (SEE NOTE 9)



JOINT DETAIL  
DETAIL "A"

WIRE HANGER  
DETAIL "B"

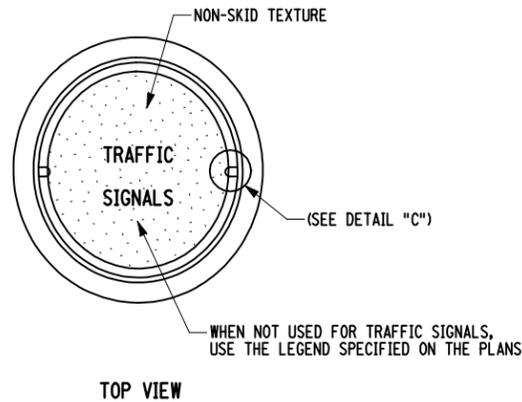


SECTION A-A

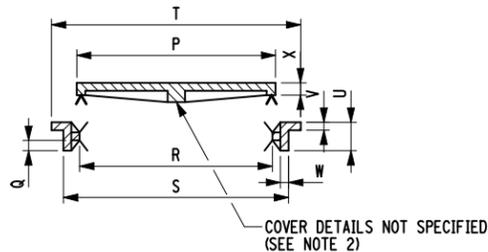
LIFTING NOTCH  
DETAIL "C"  
(OR EQUAL AS APPROVED BY THE ENGINEER)

 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>PRECAST STANDARD RECTANGULAR PULLBOXES, FRAMES AND COVERS</p>	
<p>APPROVED SEPTEMBER 19, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)</p>	<p>680-02</p>

EFFECTIVE DATE: 01/08/09



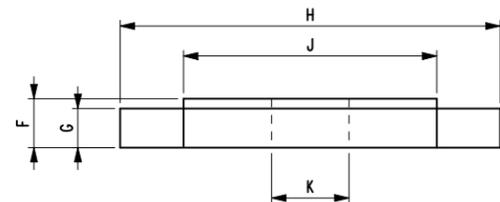
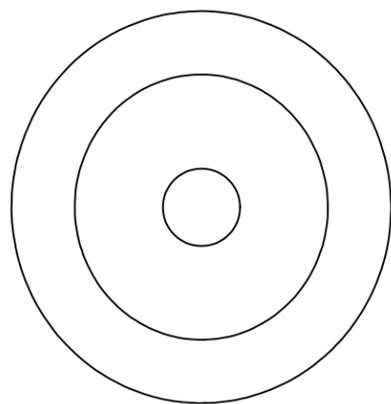
TOP VIEW



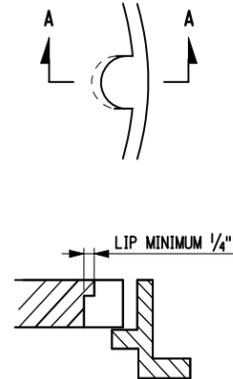
CAST IRON FRAME AND COVER FOR CIRCULAR PULLBOXES

NOTE: FRAME SHALL BE REVERSIBLE SO THAT IT CAN BE INSTALLED WITH FLANGE EITHER UP OR DOWN

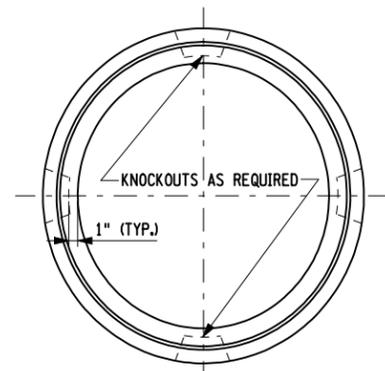
PULLBOX SIZE	DIMENSIONS									APPROXIMATE WEIGHT LBS.
	P	Q	R	S	T	U	V	W	X	
15"	13"	1 1/2"	1 1/4"	1 1/2"	20"	4"	5/8"	5/8"	1 1/2"	80
18"	16"	1 1/2"	1 1/4"	1 1/2"	23"	4"	5/8"	5/8"	1 1/2"	115
24"	22"	1 1/2"	2 1/4"	2 3/2"	30"	4"	5/8"	5/8"	1 1/2"	195
30"	28"	1 1/2"	2 6/4"	2 9/2"	37"	4"	5/8"	5/8"	1 1/2"	270



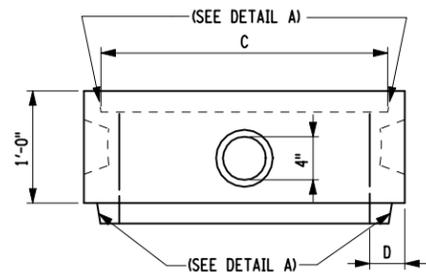
PULLBOX SIZE	DIMENSIONS				
	F	G	H	J	K
15"	3"	2"	C+2D	14 1/2"	8"
18"	3"	2"	C+2D	17 1/2"	8"
24"	5"	4"	C+2D	23 1/2"	8"
30"	5"	4"	C+2D	29 1/2"	8"



SECTION A-A LIFTING NOTCH DETAIL "C"

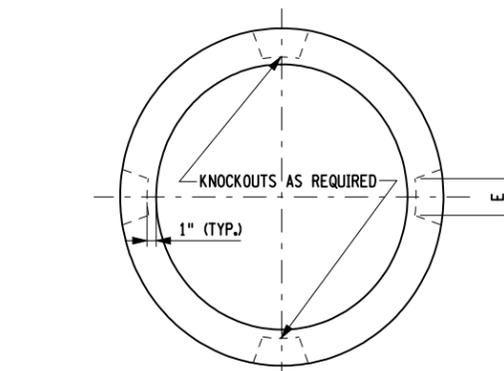


TOP VIEW

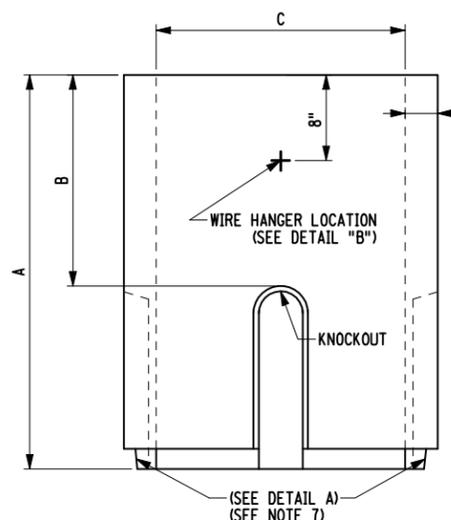


PRECAST EXTENSION FOR CIRCULAR PULLBOXES (SEE CIRCULAR REINFORCED CONCRETE PULLBOX DIMENSION TABLE FOR REINFORCEMENT DIMENSIONS)

SIZE	VOLUME
15"	1.2 CU. FT.
18"	1.8 CU. FT.
24"	3.1 CU. FT.
30"	4.9 CU. FT.



TOP VIEW



PRECAST CIRCULAR REINFORCED CONCRETE PULLBOX

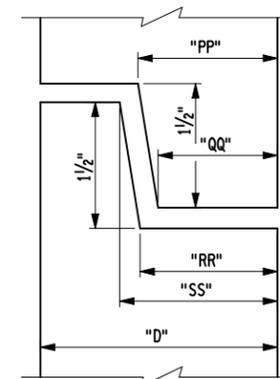
INTERNAL VOLUME CU. FT. WITHOUT EXTENSION	PULLBOX SIZE	DIMENSION					MINIMUM CIRCULAR REINFORCEMENT*	MINIMUM VERTICAL REINFORCEMENT*	NUMBER OF KNOCKOUTS**	NUMBER OF WIRE HANGERS
		A	B	C	D	E				
3.7	15"	36"	20"	15"	2 1/4" MIN.	4"	0.12" SQ. FT.	0.058" SQ. FT.	4	1
5.3	18"	36"	20"	18"	2 1/2" MIN.	4"	0.12" SQ. FT.	0.058" SQ. FT.	4	1
9.4	24"	36"	20"	24"	3" MIN.	4"	0.12" SQ. FT.	0.058" SQ. FT.	6	2
14.7	30"	36"	20"	30"	3 1/2" MIN.	4"	0.12" SQ. FT.	0.058" SQ. FT.	6	2

\*SEE NOTE 11

\*\*SEE NOTE 9

NOTES:

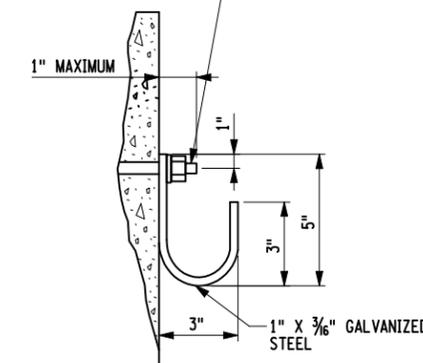
- STANDARD KNOCKOUT LOCATIONS ARE SHOWN FOR EACH PULLBOX. THE CONTRACTOR MAY ALSO ELECT TO FURNISH PULLBOXES WITH ONLY THE NUMBER AND SIZE CONDUIT OPENINGS THAT ARE REQUIRED FOR THAT PARTICULAR INSTALLATION.
- FRAMES AND COVERS SHALL BE HEAVY DUTY TO SUPPORT AN HS-20 WHEEL LOADING.
- A NON-SKID TEXTURE SHALL BE CAST INTO THE TOP SURFACE OF THE COVER.
- PULLBOX BASES ARE REQUIRED ONLY FOR PULLBOXES PLACED IN THE PAVEMENT OR SHOULDER AND AS INDICATED ON THE PLANS. BASES, PLANS, WHEN REQUIRED, MAY BE CAST INTEGRAL WITH THE PULLBOX.
- A ROUGH FINISH IS ACCEPTABLE FOR PULLBOX KNOCKOUTS.
- THE CONTRACTOR MAY ELECT TO FURNISH PULLBOXES PRECAST TO GREATER DEPTH, IN 1' INCREMENTS, INSTEAD OF USING EXTENSIONS.
- WHERE PULLBOXES ARE INTENDED FOR USE WITHOUT EXTENSIONS, THE JOINT SHOWN IN DETAIL "A" MAY BE OMITTED.
- THE FRAME AND COVER FOR CIRCULAR PULLBOXES SHALL BE USED FOR REINFORCED CONCRETE OR OTHER CIRCULAR PULLBOXES.
- KNOCKOUTS TO BE EQUALLY SPACED ABOUT CIRCUMFERENCE OF PULLBOX.
- SEE THE STANDARD SHEET FOR PULLBOX, CONDUIT AND GROUND ROD INSTALLATION DETAILS, OR THE PLANS FOR INSTALLATION DETAILS.
- STEEL REINFORCEMENT SHALL BE PLACED WITHIN THE CENTER THIRD OF THE WALL. MINIMUM COVER SHALL BE 3/4".



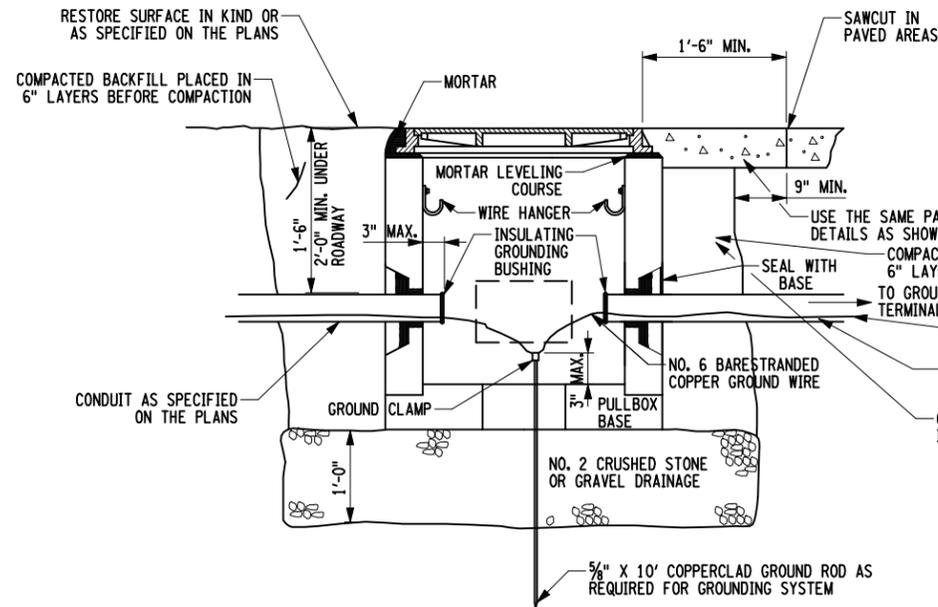
JOINT DETAIL DETAIL "A"

PULLBOX SIZE	DIMENSIONS			
	PP	QQ	RR	SS
15"	1 1/4"	1"	1 1/4"	1 1/2"
18"	1 1/4"	1"	1 1/4"	1 1/2"
24"	1 3/4"	1 1/2"	1 3/4"	2"
30"	2 1/4"	2"	2 1/4"	2 1/2"

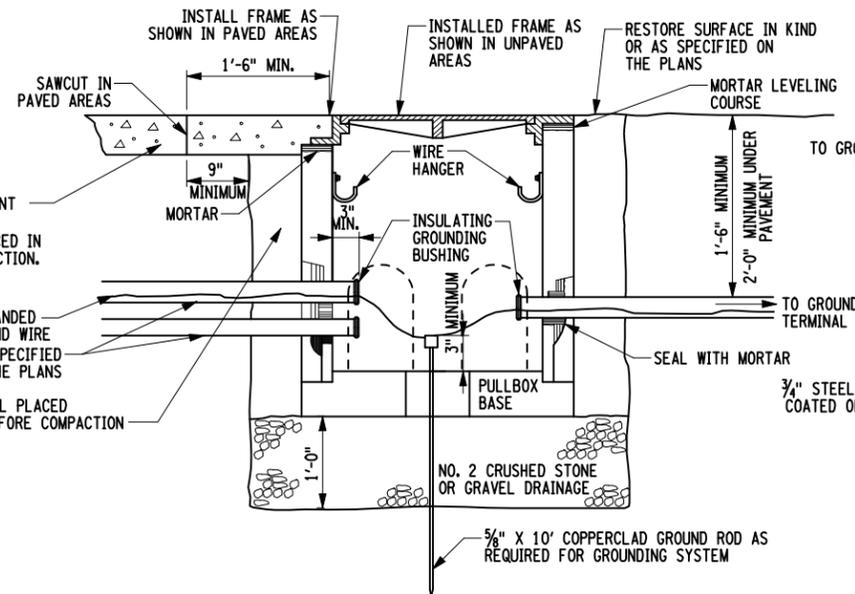
3/8" Ø CAST IN PLACE THREADED STUD OR BOLT WITH NUT AND LOCKWASHER - CAST IN PLACE THREADED INSERT WITH BOLT - EXPANSION BOLT OR THRU BOLT WITH NUT AND LOCKWASHER



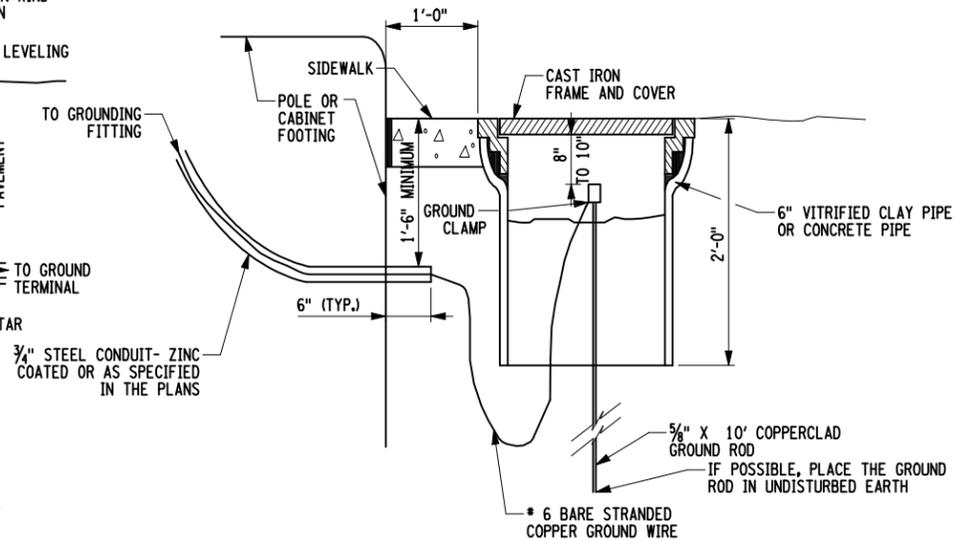
WIRE HANGER DETAIL "B"



RECTANGULAR PULLBOX INSTALLATION

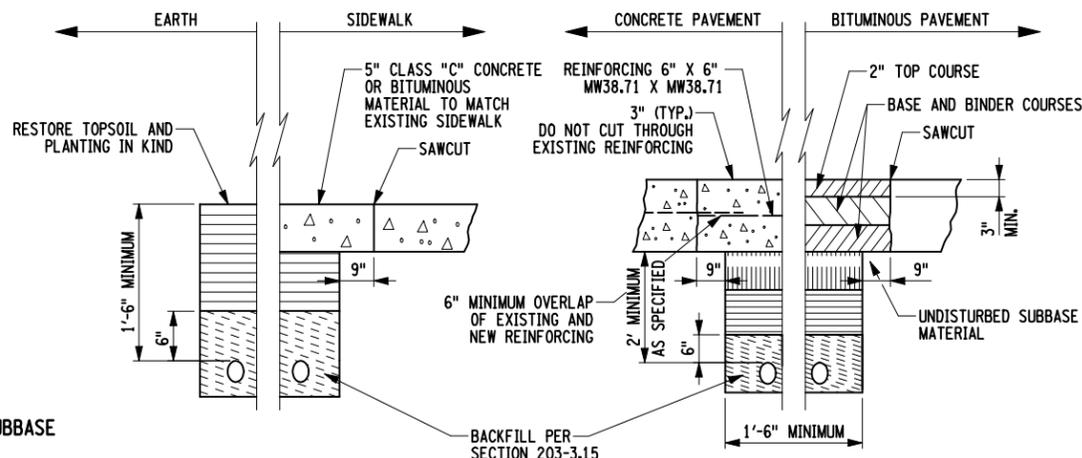


CIRCULAR PULLBOX INSTALLATION

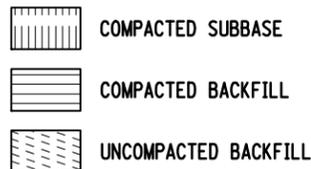


GROUNDROD INSTALLATION

NOTE: PAYMENT FOR EXCAVATION LABOR, PIPE, TILE, FRAME, AND COVER IS TO BE INCLUDED AS PART OF THE GROUND SYSTEM

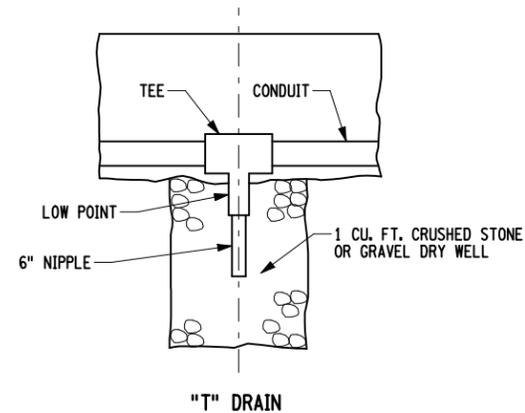


CONDUIT EXCAVATION, BACKFILL AND PAVEMENT REPLACEMENT

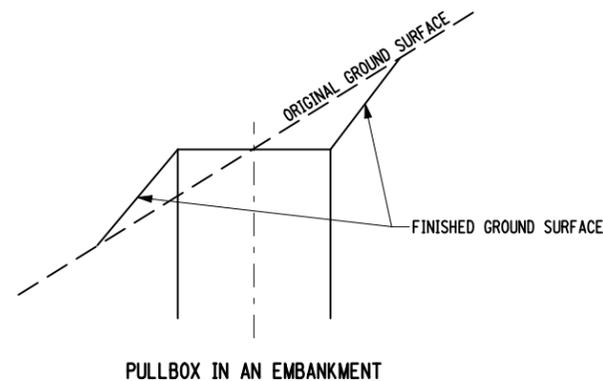


NOTES:

1. CONCRETE SHALL BE EITHER CLASS C OR CLASS F, CLASS F SHALL BE USED WHEN EARLY OPENING TO TRAFFIC IS REQUIRED.
2. REPLACEMENT PAVEMENT STRUCTURE SHALL BE SIMILAR TO EXISTING PAVEMENT.
3. THE TYPES OF BITUMINOUS MATERIALS USED SHALL MATCH THE EXISTING MATERIALS IN TOP BINDER AND BASE COURSES (I.E. REPLACE DENSE BASE, OPEN BASE WITH OPEN BASE, ETC.)



"T" DRAIN



PULLBOX IN AN EMBANKMENT

GENERAL NOTES:

PULLBOX:

1. BASES ARE REQUIRED ONLY WHEN THE PULLBOX IS PLACED IN THE PAVEMENT OR SHOULDER.
2. PULLBOXES MAY BE CAST-IN-PLACE IF THE FOLLOWING CONDITIONS ARE MET:
  - A. SAME INTERIOR SIZE AS PRECAST PULLBOX.
  - B. MINIMUM WALL THICKNESS OR 6".
  - C. CONCRETE PER 680-2.02
  - D. REINFORCING NOT REQUIRED.
  - E. BASES MAY BE CAST INTEGRAL.
  - F. WIRE HANGERS PER PRECAST PULLBOXES.
  - G. CONDUIT OPENINGS AS REQUIRED BY THE PLANS.
  - H. MINIMUM DEPTH THE SAME AS PRECAST PULLBOX.
  - I. AT LEAST THE TOP 6" OF THE EXTERIOR SHALL BE FORMED.

3. WIRING OTHER THAN GROUND WIRES, SHALL BE SECURED TO THE WIRE HANGER AND HELD CLEAR OF THE BOTTOM OF THE PULLBOX.
4. PULLBOX EXTENSIONS MAY BE USED TO INCREASE PULLBOX DEPTH AS REQUIRED, EXTENSIONS SHALL BE ADDED AT THE BOTTOM.

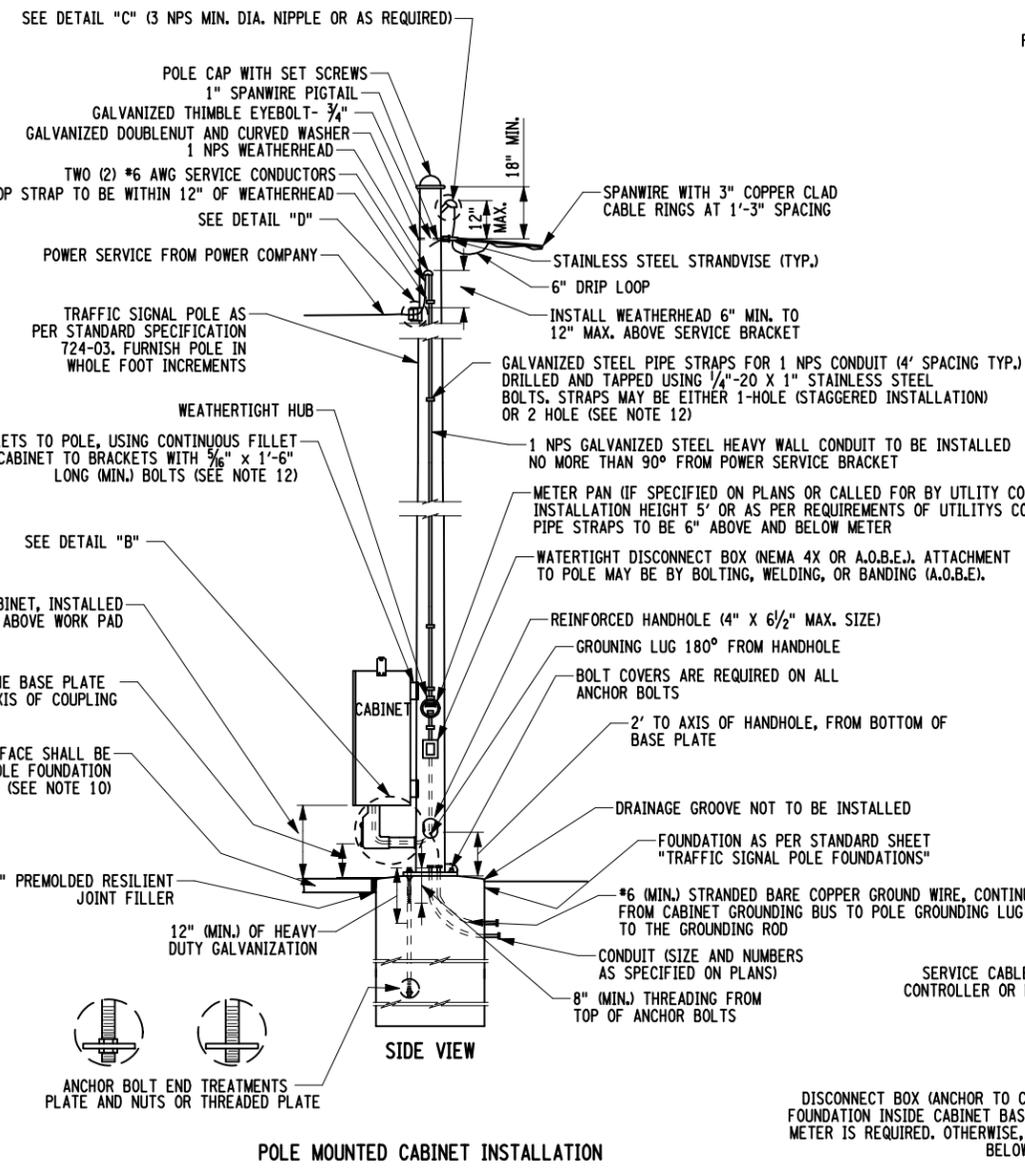
GROUNDING:

1. THE NORMAL GROUND ROD LOCATION IS NEAREST TO THE POLE OR CABINET, USE THE GROUND ROD INSTALLATION SHOWN AT THE UPPER RIGHT.
2. METALLIC CONDUIT RUNS MAY BE BONDED TOGETHER TO SUPPLEMENT THE GROUND ROD PER SPECIFICATION.
3. SECTIONAL GROUND RODS WITH COUPLINGS SHALL NOT BE USED TO INCREASE ROD LENGTH.
4. THE GROUND ROD INSTALLATION SHOWN AT THE UPPER RIGHT SHALL BE PLACED IN THE PAVEMENT AND SHOULDERS.

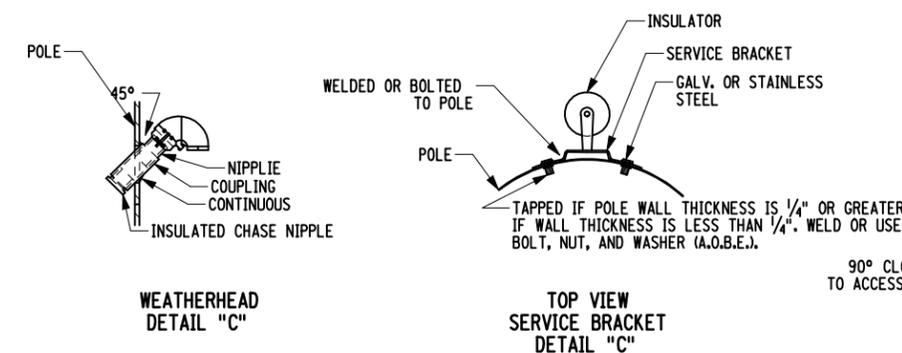
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STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
PULLBOX, CONDUIT AND GROUND ROD INSTALLATION DETAILS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-04

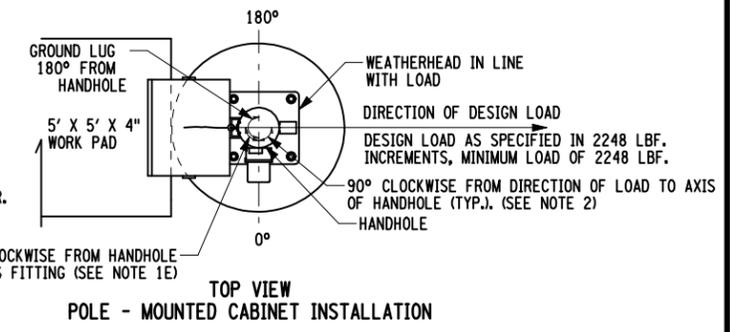
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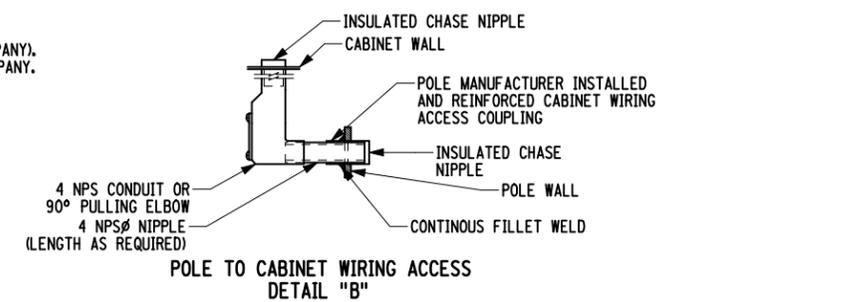
POLE MOUNTED CABINET INSTALLATION



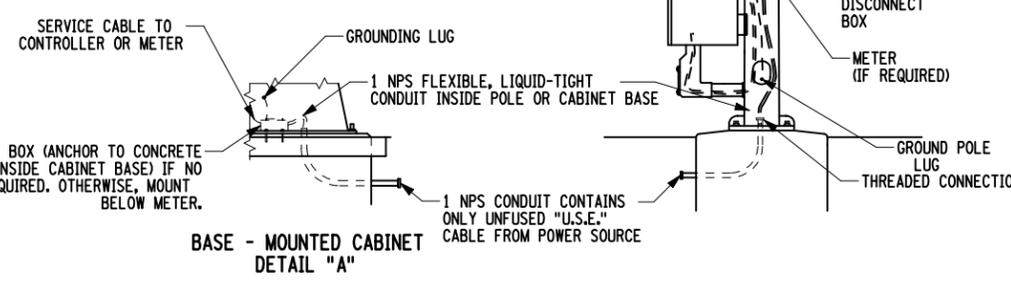
WEATHERHEAD DETAIL "C" TOP VIEW SERVICE BRACKET DETAIL "C"



TOP VIEW POLE - MOUNTED CABINET INSTALLATION

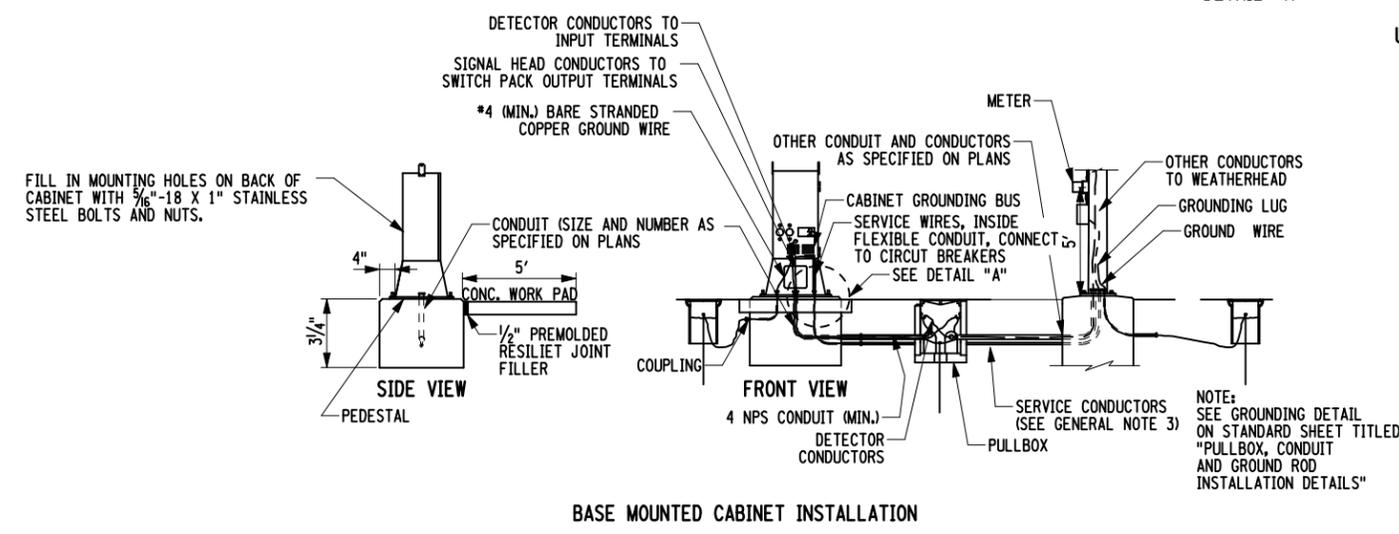


POLE TO CABINET WIRING ACCESS DETAIL "B"



BASE - MOUNTED CABINET DETAIL "A"

UNDERGROUND SERVICE



BASE MOUNTED CABINET INSTALLATION

- INSTALLATION NOTES:
- POLE FITTINGS SHALL MEET THE FOLLOWING REQUIREMENTS:
    - HOLE DIAMETER LESS THAN 1/2 THE POLE DIAMETER.
    - COUPLINGS SHALL BE HEAVY WALL GALVANIZED PIPE COUPLINGS (A120).
    - HOLES SHALL BE SMOOTHLY FINISHED TO CLOSELY FIT AROUND ITS ENTIRE CIRCUMFERENCE.
    - COUPLINGS SHALL BE WELDED AROUND ITS ENTIRE CIRCUMFERENCE WITH A FILLET WELD SIZE EQUAL TO THE POLE WALL THICKNESS (5/16" MINIMAL).
    - THE AXIS OF THE CABINET WIRING ACCESS SHALL BE LOCATED 90° CLOCKWISE (TOP VIEW) TO THE AXIS OF THE POLE'S HANDHOLE AND 12" FROM THE BOTTOM OF BASE PLATE. IT SHALL BE INSTALLED AND REINFORCED BY THE POLE MANUFACTURER ACCORDING TO SECTION 724-03 OF THE STANDARD SPECIFICATIONS.
    - ALL WELDS SHALL BE FIELD GALVANIZED.
  - FOR THOSE POLES ON WHICH A TRAFFIC SIGNAL CABINET WILL BE MOUNTED, THE CONTRACTOR SHALL ORIENT THE POLE TO ALIGN THE SIGNAL CABINET WIRING ACCESS HOLE AS SPECIFIED ON THE PLANS. IF NO ORIENTATION IS SPECIFIED ON THE PLANS, THE CONTRACTOR SHALL LOCATE THE SIGNAL CABINET AND CABINET WIRING ACCESS HOLE 180° FROM THE SPAN WIRE OR LOAD ATTACHMENT TO THE POLE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND PROVIDE THE INTENDED POLE ORIENTATION THREE BUSINESS DAYS IN ADVANCE OF DOING ANY POLE FOUNDATION WORK.
  - SERVICE CONDUCTORS SHALL NOT BE LOCATED IN PULLBOXES WITH OTHER CONDUCTORS.
  - THE NORMAL CONDUIT FOR SERVICE CONDUCTOR SHALL BE 1 NPS. GALVANIZED STEEL HEAVY WALL CONDUIT.
  - EXPOSED ENDS OF CONDUIT OR FITTINGS SHALL HAVE INSULATING GROUNDING, BUSHING, AND EQUIVALENT.
  - IF A METER IS REQUIRED FOR A POLE MOUNTED CABINET, THE METER SHALL BE INSTALLED ON THE POLE.
  - THE METER BASE SHALL BE ATTACHED TO THE POLE IN A MANNER SIMILAR TO THAT SHOWN FOR THE POLE MOUNTED CABINET, OR AS REQUIRED BY THE UTILITY COMPANY.
  - LOCATE BRACKETS AND ATTACHING BOLTS TO CLEAR EQUIPMENT WITHIN CABINET.
  - MOUNTING BRACKET DETAIL MAY VARY DEPENDING UPON CABINET MANUFACTURER.
  - IN UNPAVED AREAS A 5' X 5' X 4" CONCRETE WORK PAD SHALL BE INSTALLED IN FRONT OF CABINET DOOR AND SHALL ABUT THE POLE FOUNDATION
  - PAYMENT FOR THE CONCRETE WORK PAD, NECESSARY FILL AND GRADING, SHALL BE INCLUDED IN PRICE BID FOR THE INSTALLATION OF THE MICROCOMPUTER CABINET.
  - ALL STAINLESS STEEL BOLTS, NUTS, AND WASHERS SHALL BE NON-MAGNETIC.

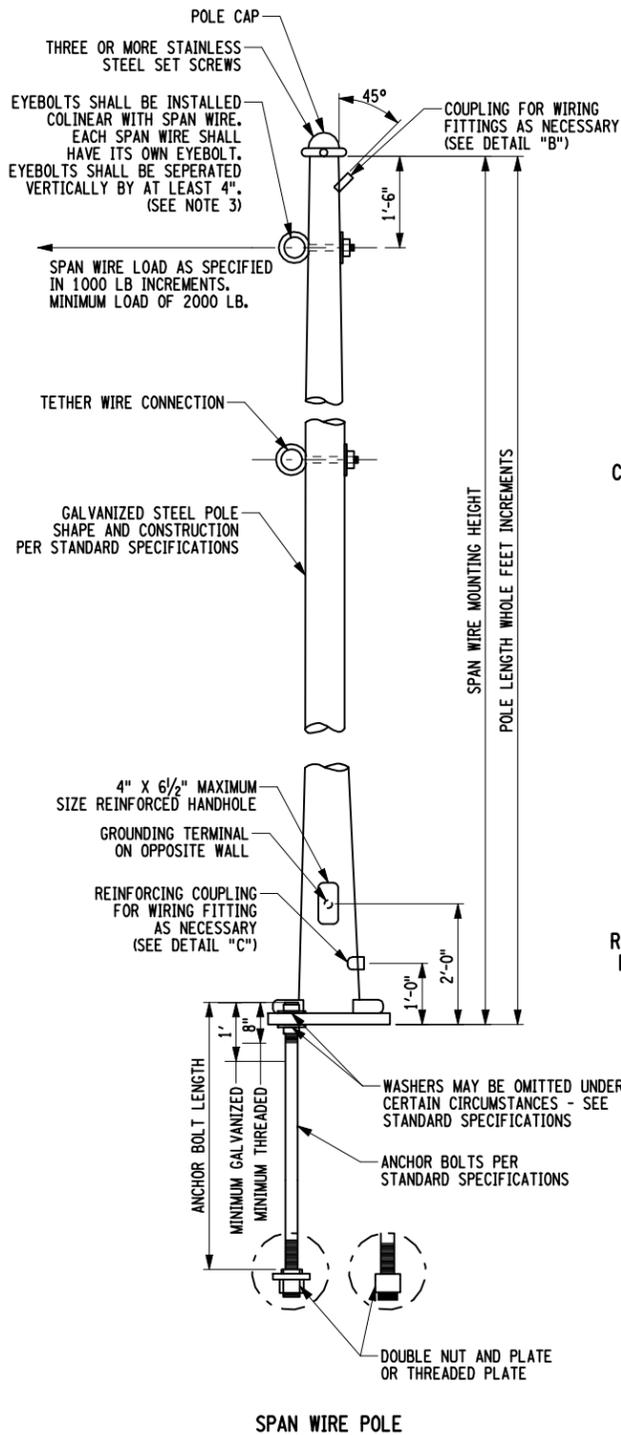
BASE - MOUNTED CABINET NOTES:

- FOOTING DIMENSIONS AND ANCHOR BOLT LOCATIONS AS DETERMINED BY THE PEDESTAL BASE. A 4" MINIMUM CLEARANCE IS REQUIRED FROM THE OUTSIDE EDGE OF THE FOOTING TO THE CENTER OF ANCHOR BOLTS.
- ANCHOR BOLTS AND MOUNTING HARDWARE AS REQUIRED BY THE CABINET.
- NUMBER, SIZE, AND LOCATION OF CONDUIT AS REQUIRED BY THE PLANS.
- FOOTING SHALL BE FORMED TO AT LEAST 6" BELOW THE GROUND SURFACE.
- FOOTINGS MAY EITHER BE CAST IN PLACE OR PRECAST UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- IN UNPAVED AREAS A 5' X 5' X 4" CONCRETE WORK PAD SHALL BE PLACED IN FRONT OF THE CABINET DOOR.
- CONDUIT ENCASED IN FOOTING SHALL EXTEND OUTSIDE THE FOOTING ENOUGH TO ALLOW CONNECTION OF THE NEXT CONDUIT SECTION.
- A MINIMUM OF FOUR 5/16" - 18 X 2" X 1'-6" LONG STAINLESS STEEL BOLTS SHALL BE USED TO ATTACH THE CABINET TO THE PEDESTAL BASE (SEE INSTALLATION NOTE 12).
- THE CONTRACTOR SHALL RESTORE ALL SURFACES SURROUNDING THE BASE OF GROUND MOUNTED CONTROLLER TO THE SATISFACTION OF THE ENGINEER.

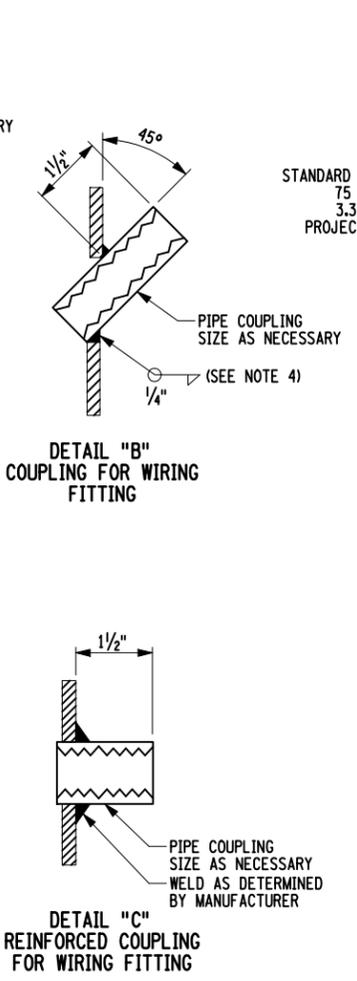
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 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
<p>U.S. CUSTOMARY STANDARD SHEET</p>	
<p>BASE - AND POLE - MOUNTED CABINET INSTALLATION DETAILS</p>	
<p>APPROVED SEPTEMBER 19, 2008</p>	<p>ISSUED UNDER EB 08-036</p>
<p>/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)</p>	<p>680-05</p>

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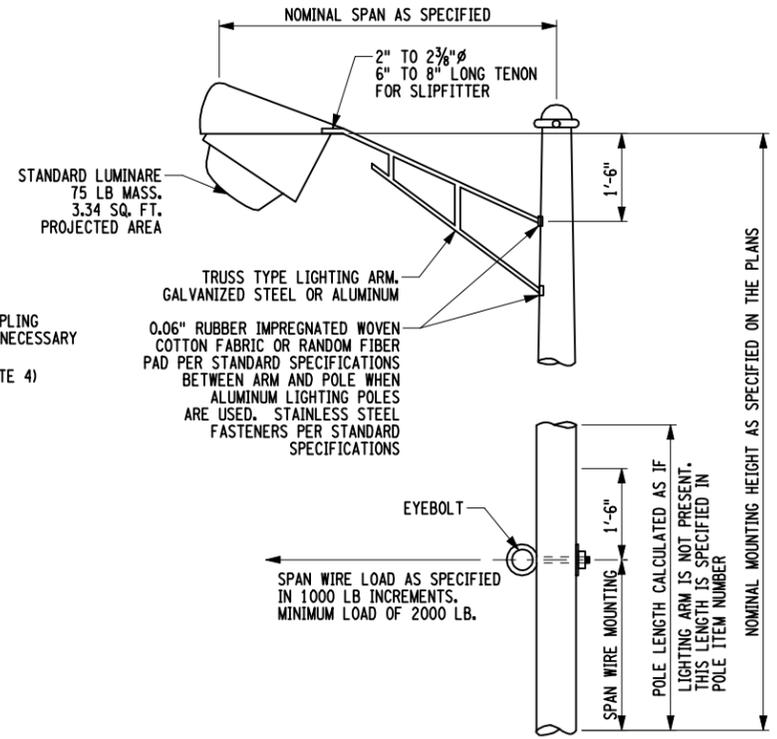


SPAN WIRE POLE

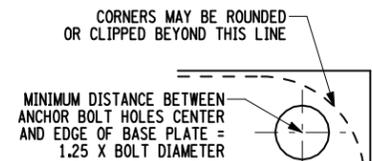


DETAIL "B" COUPLING FOR WIRING FITTING

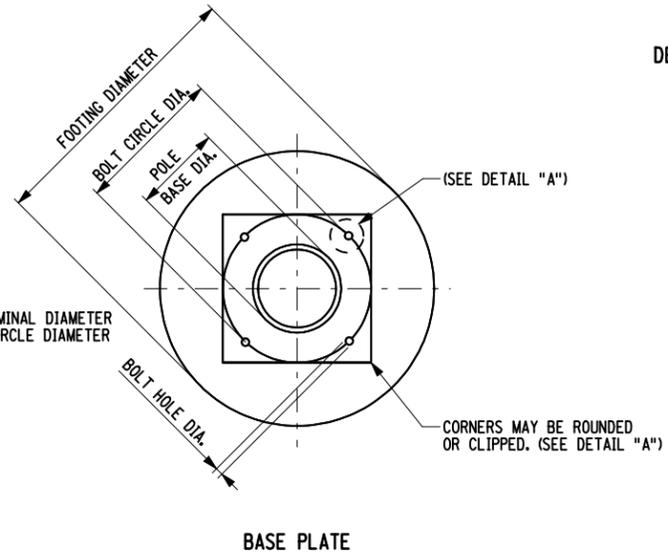
DETAIL "C" REINFORCED COUPLING FOR WIRING FITTING



SPAN WIRE POLE WITH LUMINAIRE

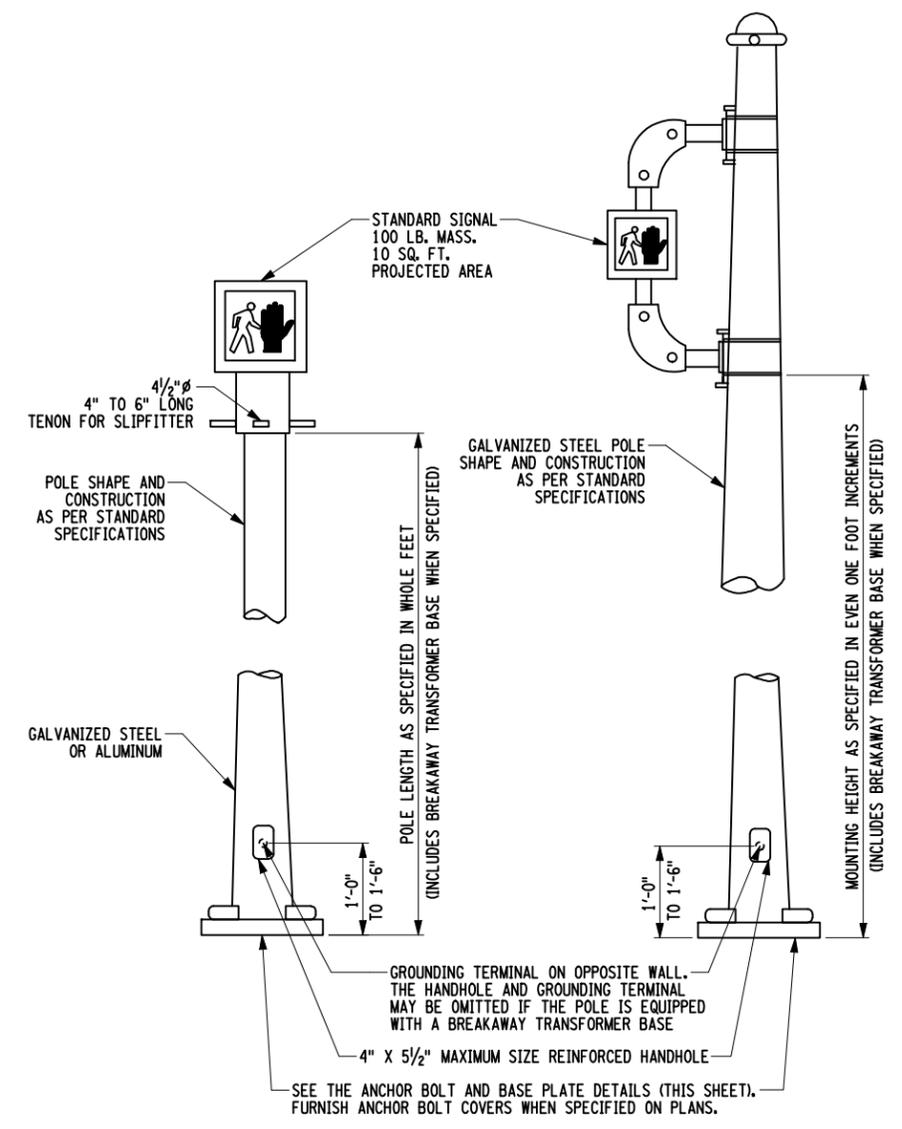


DETAIL "A"



BASE PLATE

NOTE: THE FOOTING NOMINAL DIAMETER SHALL EXCEED BOLT CIRCLE DIAMETER BY AT LEAST 1'-4"



POST TOP MOUNT POLE

BRACKET MOUNT POLE

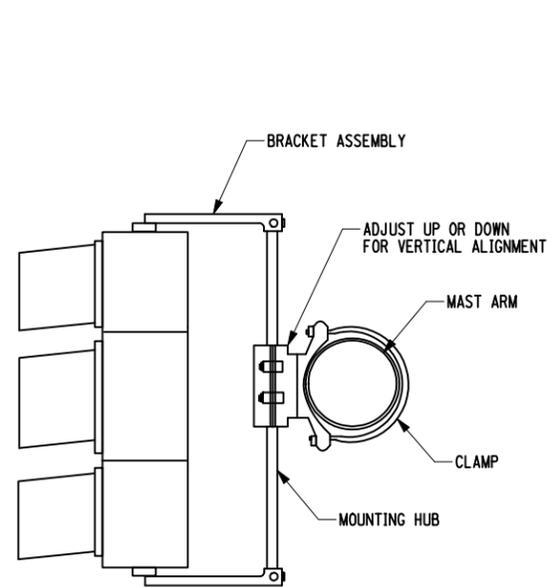
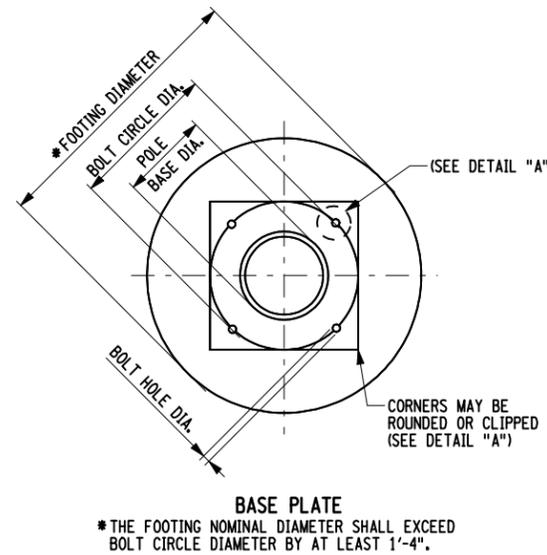
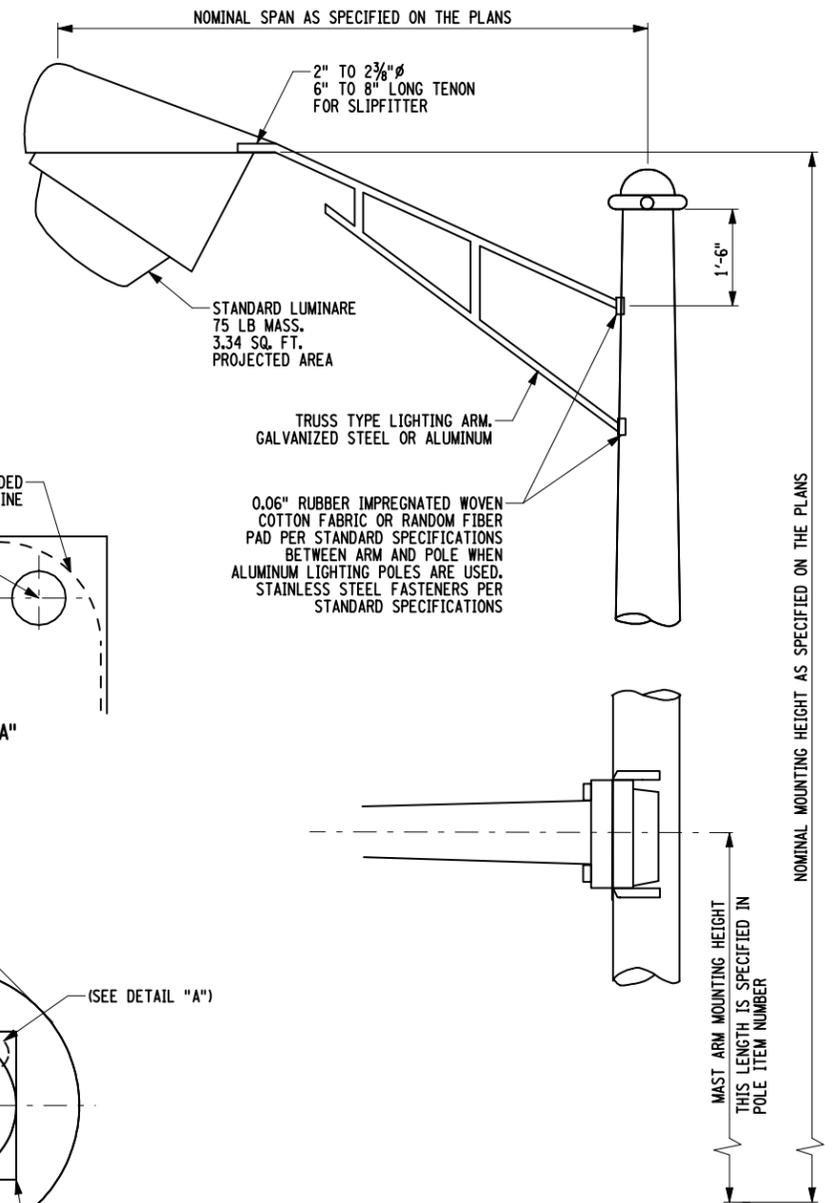
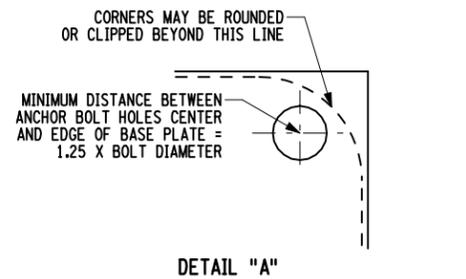
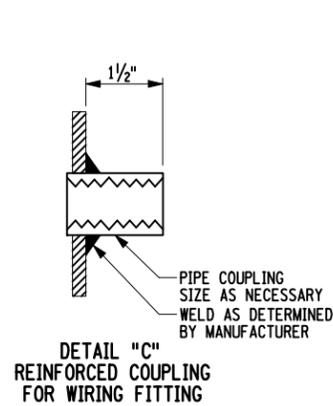
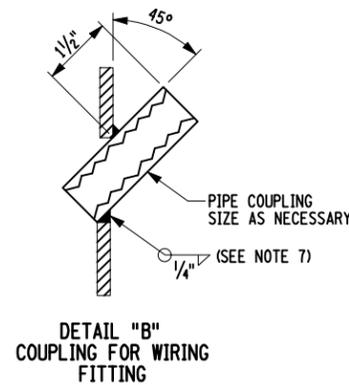
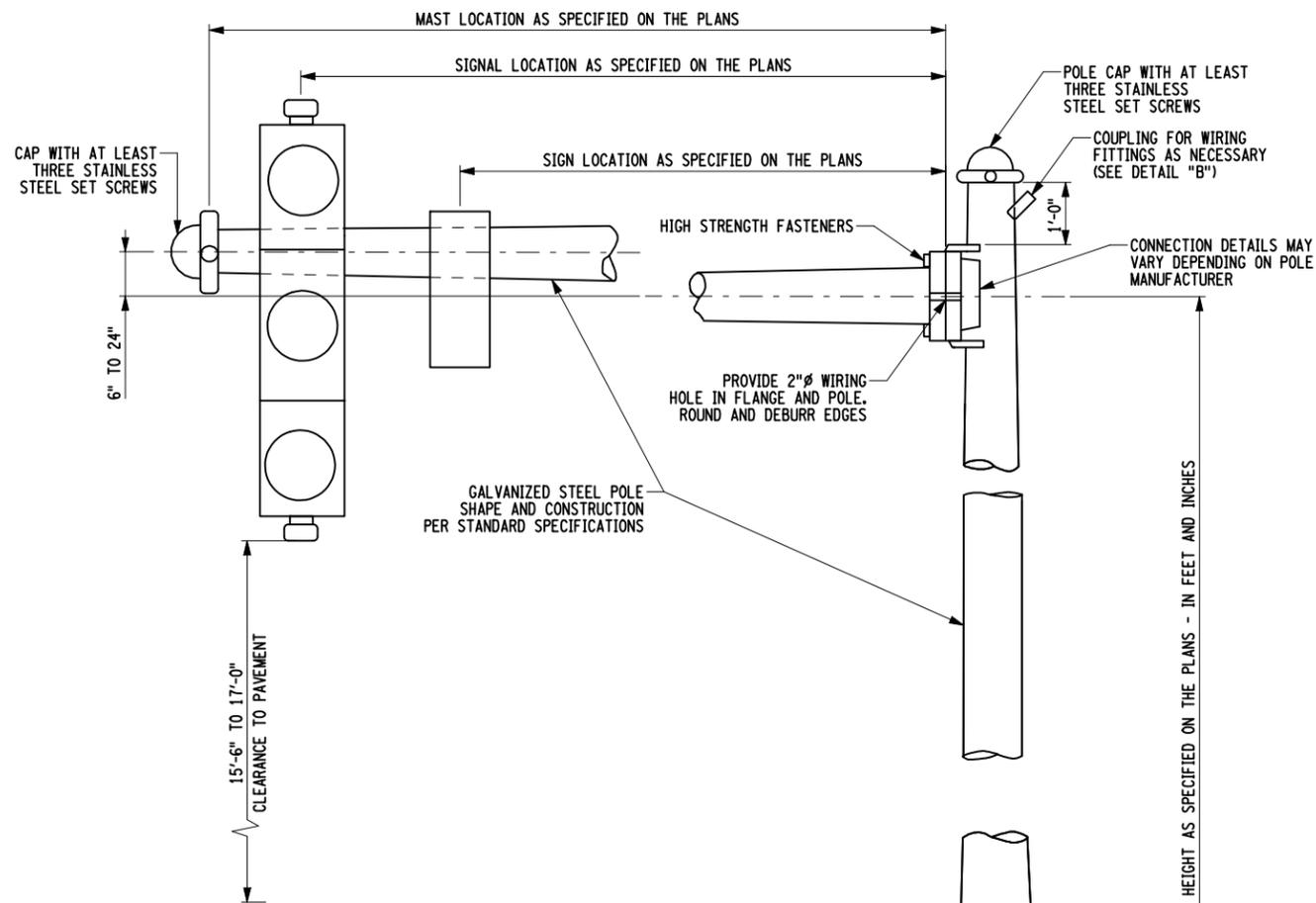
NOTES:

1. POST TOP MOUNT AND BRACKET MOUNT POLES SHALL BE DESIGNED FOR THE LOAD CONFIGURATION SPECIFIED ABOVE UNLESS ANOTHER LOAD CONFIGURATION IS SPECIFIED ON THE PLANS.
2. BRACKET MOUNT POLE MAY ALSO BE USED FOR FLASHING BEACON SIGN ASSEMBLIES. THE SIGN AND BEACON CONFIGURATION SHALL BE AS SPECIFIED ON THE PLANS AND THE APPROPRIATE STANDARD SHEET.
3. CIRCUMFERENTIAL POLE CLAMPS, AS AN ALTERNATE TO GALVANIZED THIMBLE EYE BOLTS, MAY BE USED TO CONNECT SPAN WIRE(S) TO THE TOPS OF POLYGONAL SHAPED SIGNAL POLES. HOWEVER, ONLY GALVANIZED THIMBLE EYE BOLTS SHALL BE USED FOR CONNECTING SPAN WIRE(S) TO ROUND SIGNAL POLES. IN EITHER CASE, THE DESIGN LOAD OF THE CONNECTING HARDWARE SHALL BE CERTIFIED TO BE NO MORE THAN 70 PERCENT OF ITS YIELD STRENGTH.
4. ALL AROUND SINGLE "U" GROOVE FILLET WELD.

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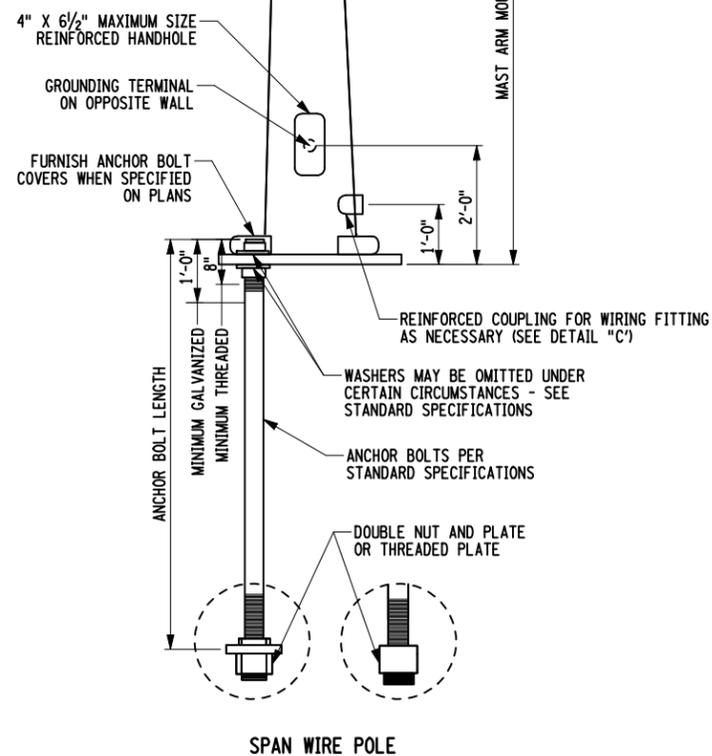
 <p>STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION</p>	
U.S. CUSTOMARY STANDARD SHEET	
<p>STANDARD TRAFFIC SIGNAL POLES (SHEET 1 OF 2)</p>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-06

EFFECTIVE DATE: 01/08/09



NOTE: USE APPROPRIATE BRACKET ASSEMBLY FOR FIVE SECTION OR MULTI-FACE SIGNALS

SIDE VIEW OF TYPICAL SIGNAL HEAD MOUNTING BRACKET



SPAN WIRE POLE

NOTES:

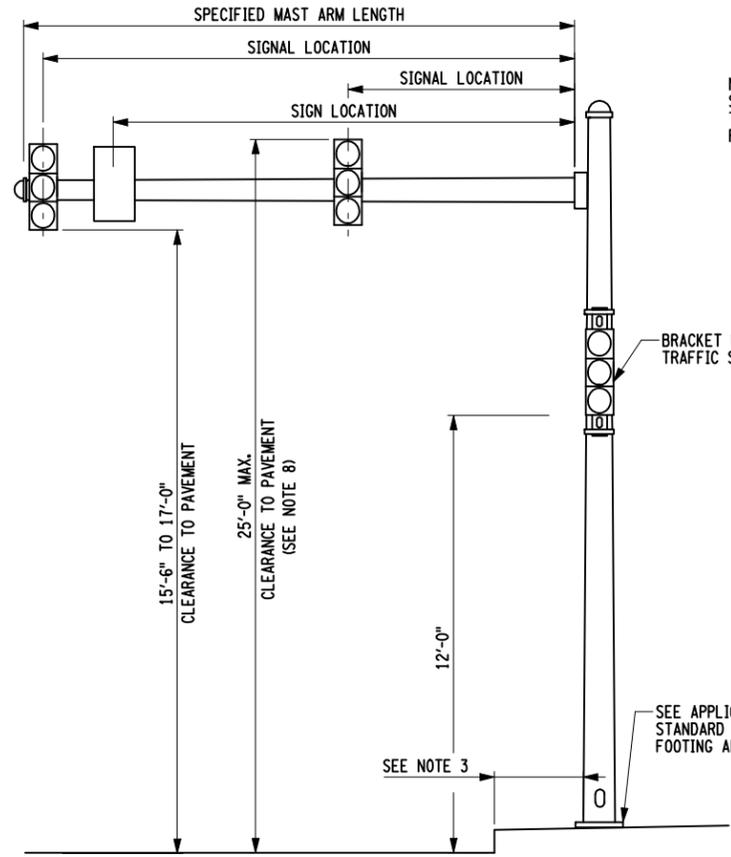
1. NUMBER OF SIGNALS AND SIGNS AS SPECIFIED ON THE PLANS.
2. ALL SIGNAL AND SIGN LOCATIONS WILL BE SPECIFIED ON THE PLANS AS THE DISTANCE FROM THE CENTER OF THE SIGNAL OR SIGN TO THE FLANGE END OF THE MAST ARM.
3. SIGNAL AND SIGN WEIGHT AND PROJECTED AREA AS SPECIFIED ON THE PLANS.
4. THE MAST ARM SHALL BE DESIGNED FOR TYPE OF SIGNAL HEAD MOUNTING BRACKET SHOWN.
5. FOR FOOTING DETAIL - SEE THE TRAFFIC SIGNAL POLE FOUNDATION STANDARD SHEET.
6. FOR DETAILS A,B,C, AND BASE PLATE - SEE STANDARD TRAFFIC SIGNAL POLES (SHEET 1 OF 2) STANDARD SHEET.
7. ALL AROUND SINGLE "U" GROOVE FILLET WELD.

EFFECTIVE DATE: 01/08/09

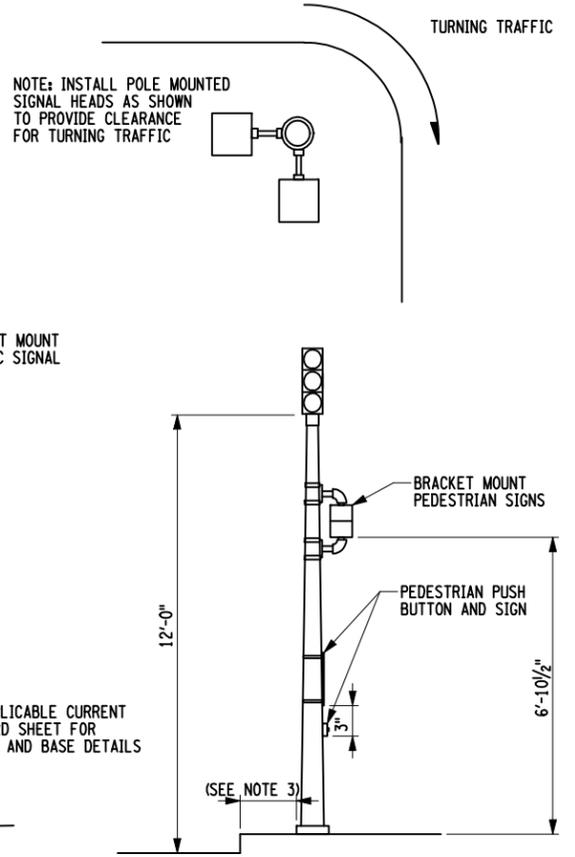
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
STANDARD TRAFFIC SIGNAL POLES (SHEET 2 OF 2)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-06

FILE NAME = IP\_PWP-0109553\680-0602.dgn  
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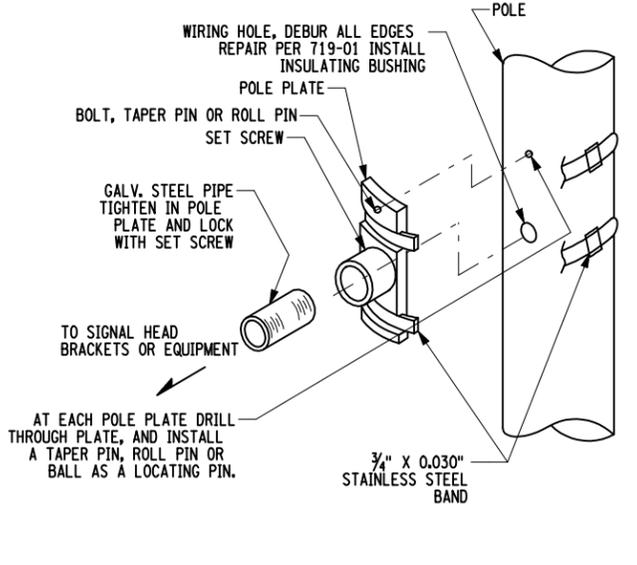




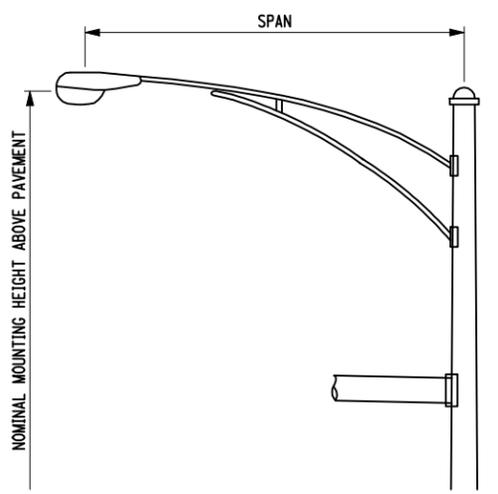
MAST ARM TRAFFIC SIGNAL INSTALLATION



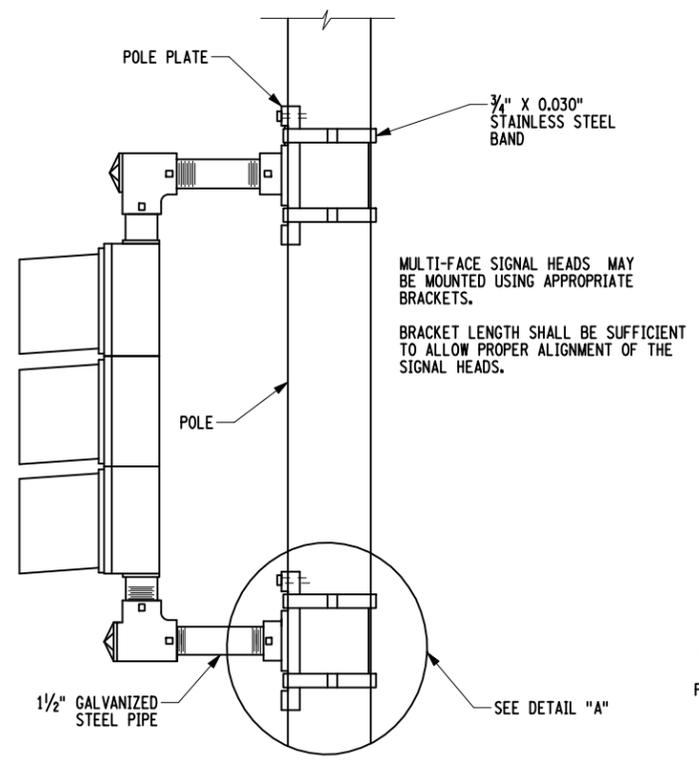
POST TOP MOUNT TRAFFIC SIGNAL



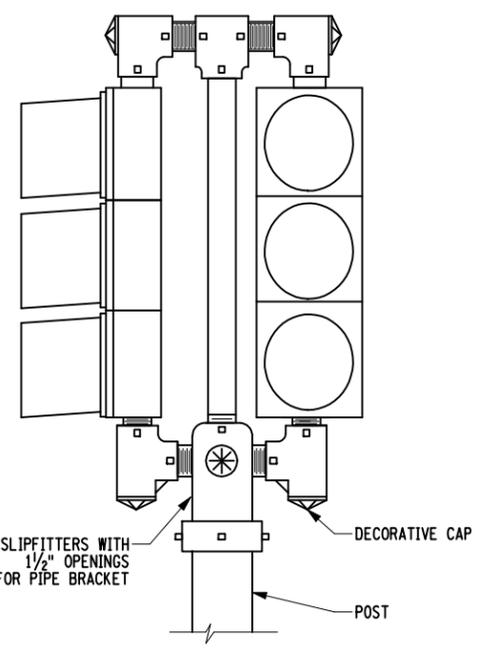
POLE PLATE MOUNTING DETAIL "A"



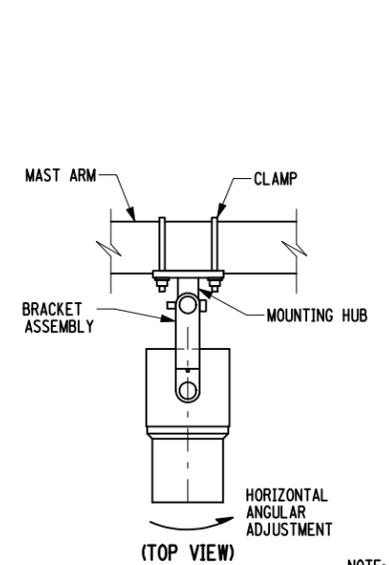
MAST ARM POLE WITH TRUSS TYPE LIGHTING ARM



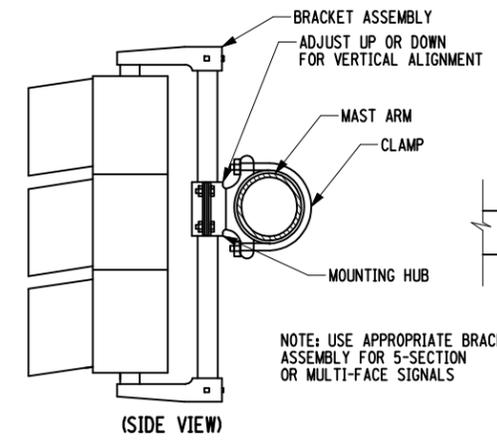
VERTICAL POLE BRACKET MOUNT



POST TOP MOUNT (SEE NOTE 9)

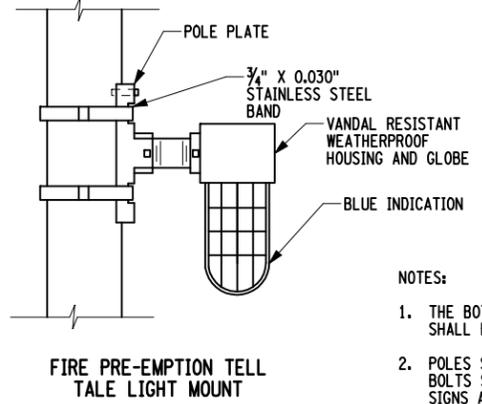


(TOP VIEW)

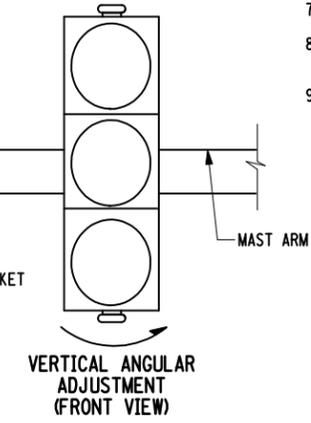


(SIDE VIEW)

MAST ARM MOUNTING (SEE NOTE 4)



FIRE PRE-EMPTION TELL TALE LIGHT MOUNT



VERTICAL ANGULAR ADJUSTMENT (FRONT VIEW)

NOTES:

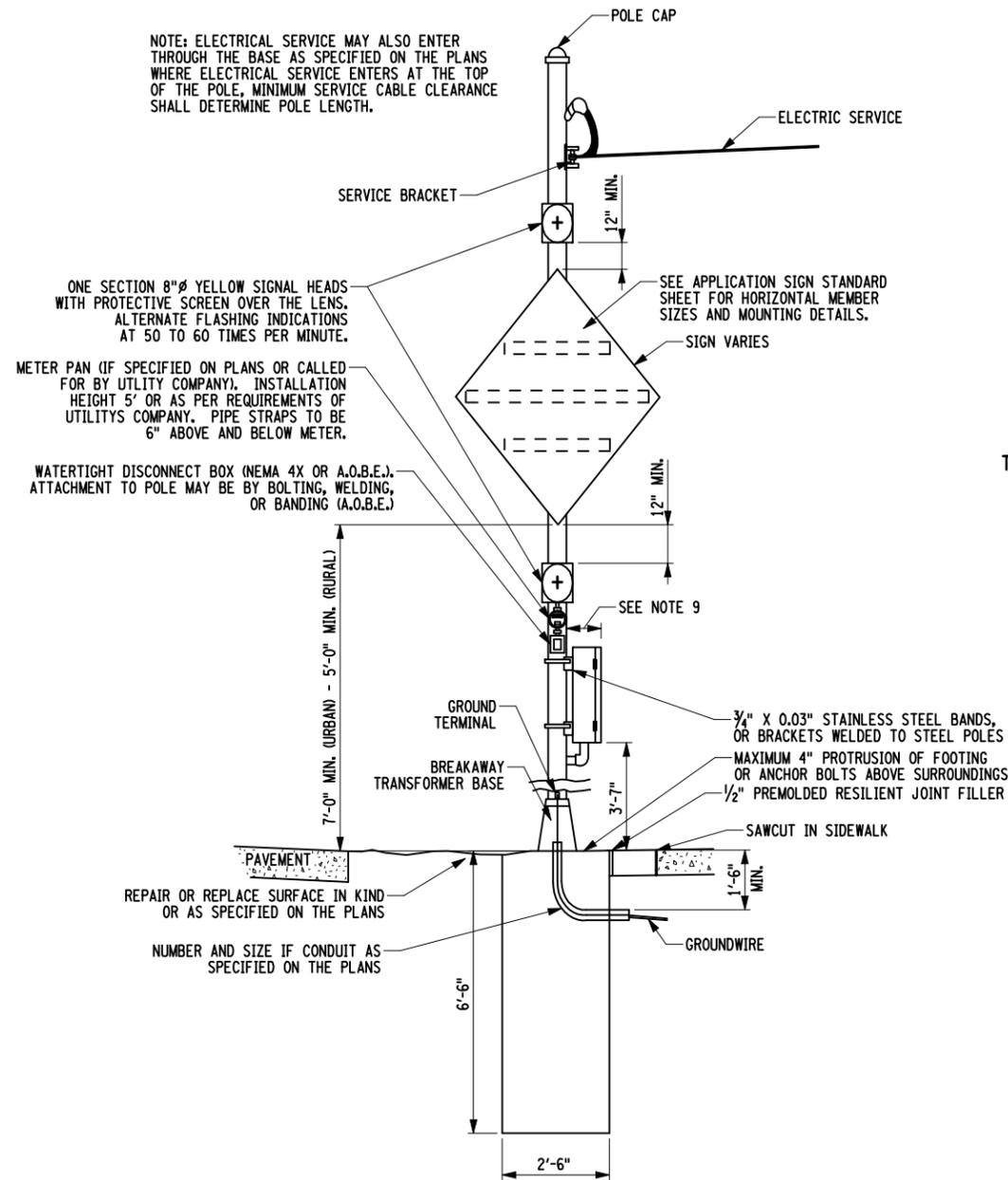
1. THE BOTTOM OF SIGNAL HEADS ON MAST ARMS ON EACH APPROACH SHALL BE ALIGNED.
2. POLES SHALL BE ADJUSTED BY USE OF THE NUTS ON THE ANCHOR BOLTS SO THAT THEY ARE VERTICAL WHEN ALL SIGNAL HEADS AND SIGNS ARE INSTALLED.
3. POLES SHALL BE LOCATED NO CLOSER TO THE ROADWAY OR CURB THAN THE LINE OF FIXED OBJECTS IN THE IMMEDIATE AREA AND IN NO CASE LESS THAN 24" FROM THE ROADWAY OR CURB.
4. ALTERNATIVE SIMILAR MAST ARM MOUNTING BRACKET DESIGNS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
5. APPROVED BREAKAWAY TRANSFORMER BASES SHALL BE INSTALLED WITH POST TOP SIGNAL POLES WHEN SPECIFIED IN THE CONTRACT DOCUMENTS.
6. SEE THE STANDARD SHEETS FOR TRAFFIC SIGNAL POLES AND POLE SHOP DRAWINGS FOR SPECIFIC POLE DETAILS.
7. EXACT SIGNAL AND SIGN LOCATIONS WILL BE SHOWN ON THE PLANS.
8. THE MAXIMUM DISTANCE FROM THE PAVEMENT TO THE TOP OF SIGNAL HOUSING SHALL BE 25'.
9. REINFORCING PLATES SHALL BE REQUIRED FOR ALL POLYCARBONATE TRAFFIC SIGNAL HEAD ASSEMBLIES WITH THREE OR MORE SECTIONS. REINFORCING PLATES SHALL BE INSTALLED ON TOP SECTION OF POST TOP MOUNTED TRAFFIC SIGNAL HEADS.

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>MAST ARM AND POLE MOUNTED TRAFFIC SIGNAL INSTALLATION DETAILS</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-08

EFFECTIVE DATE: 01/08/09

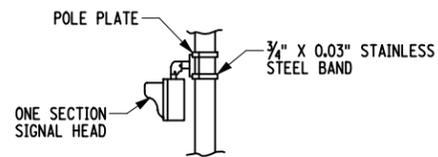
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DATE/TIME = 20-NOV-2008 14:09  
USER = jturley

NOTE: ELECTRICAL SERVICE MAY ALSO ENTER THROUGH THE BASE AS SPECIFIED ON THE PLANS WHERE ELECTRICAL SERVICE ENTERS AT THE TOP OF THE POLE, MINIMUM SERVICE CABLE CLEARANCE SHALL DETERMINE POLE LENGTH.

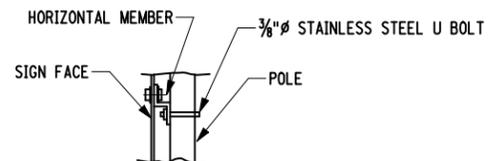


FLASHING BEACON SIGN ASSEMBLY

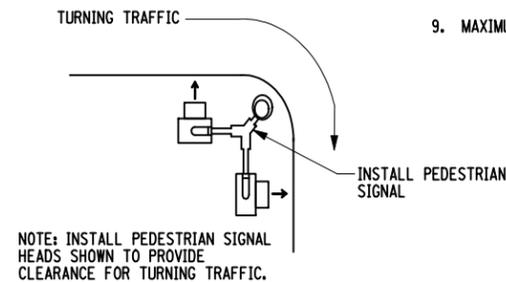
NOTE: UNLESS LOCATED BEHIND GUIDE RAIL THIS SIGN ASSEMBLY SHALL BE EQUIPPED WITH AN APPROVED BREAKAWAY TRANSFORMER BASE SUITABLE FOR USE WITH THE SIGN AND POST ASSEMBLY WEIGHT. FOR REINFORCEMENT, SEE STANDARD SHEET FOR TRAFFIC SIGNAL POLE FOUNDATIONS, CODE J-2.



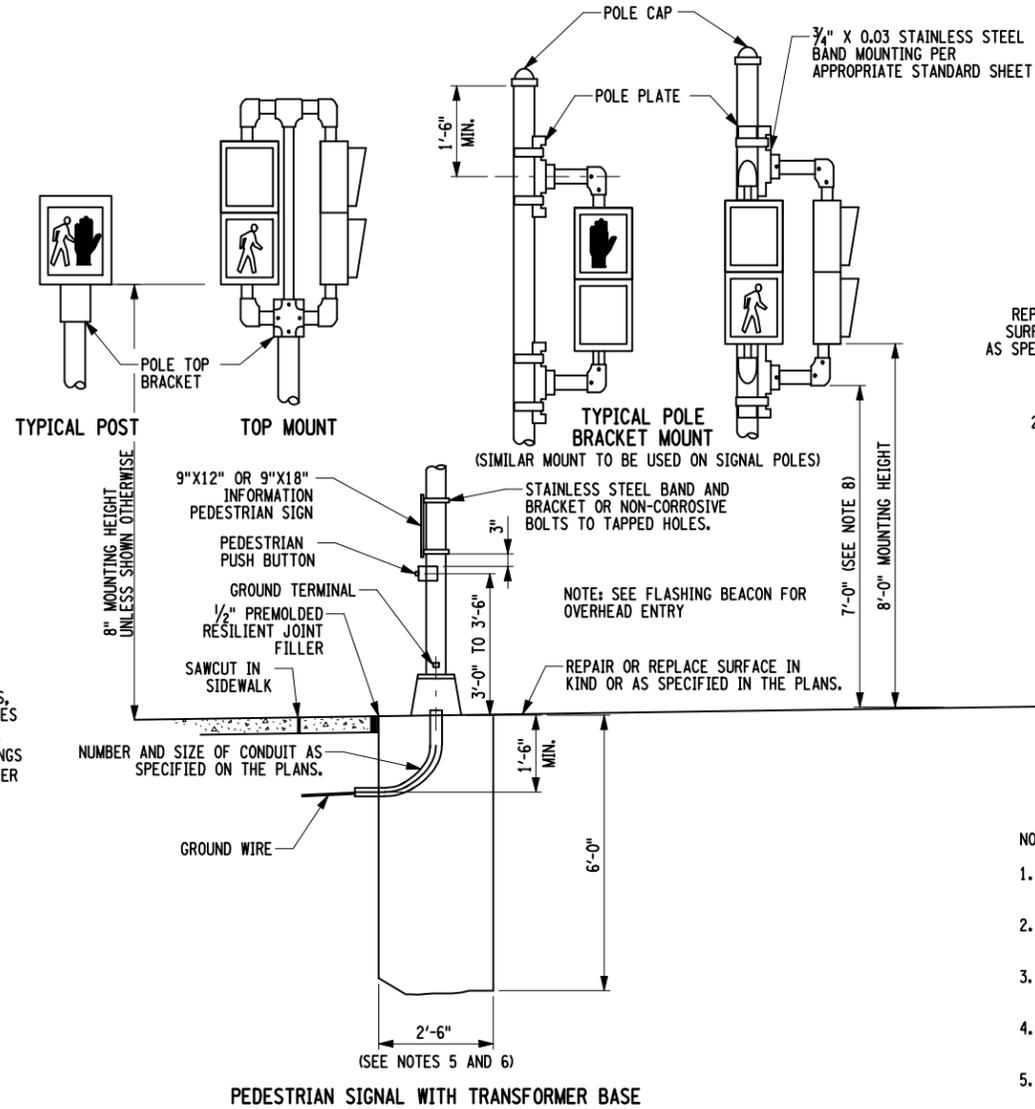
BEACON MOUNTING



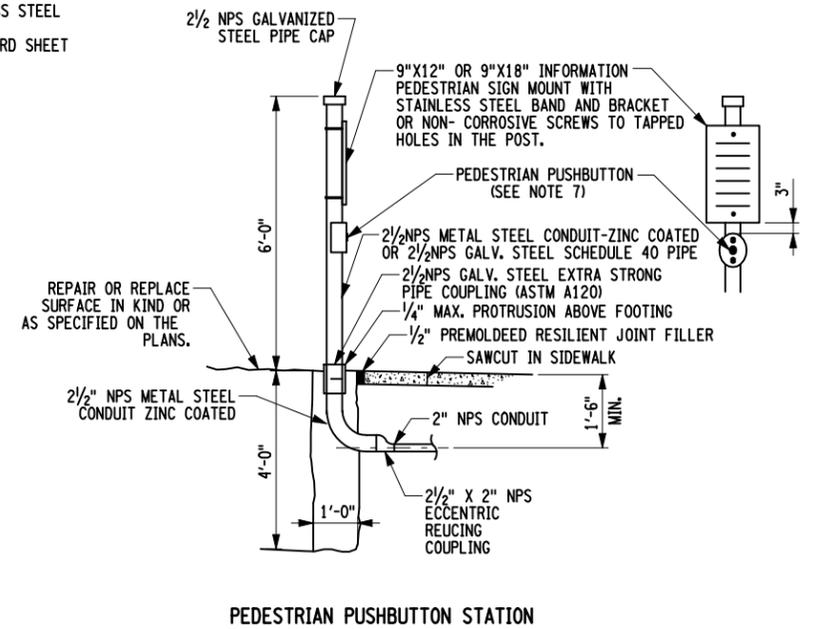
SIGN MOUNT



NOTE: INSTALL PEDESTRIAN SIGNAL HEADS SHOWN TO PROVIDE CLEARANCE FOR TURNING TRAFFIC.



PEDESTRIAN SIGNAL WITH TRANSFORMER BASE



PEDESTRIAN PUSHBUTTON STATION

NOTES:

1. FOR SPECIFIC FOOTING DETAILS SEE STANDARD SHEET TITLED "TRAFFIC SIGNAL POLE FOUNDATIONS".
2. FOR SPECIFIC GROUNDING DETAILS SEE STANDARD SHEET TITLED "PULLBOX, CONDUIT AND GROUND ROD INSTALLATION DETAILS".
3. FOR SPECIFIC POLE DETAILS SEE THE STANDARD SHEETS TITLED "STANDARD TRAFFIC SIGNAL POLES - SHEET 1 OF 2" AND "STANDARD TRAFFIC SIGNAL POLES - SHEET 2 OF 2".
4. APPROVED BREAKAWAY TRANSFORMER BASES SHALL BE INSTALLED WITH PEDESTRIAN SIGNAL POLES WHEN SPECIFIED IN THE CONTRACT DOCUMENTS.
5. THE FOUNDATION FOR THE PEDESTRIAN SIGNAL SHALL BE 18" WIDE, AND MAY BE UNREINFORCED, IF A TRANSFORMER BASE IS NOT USED.
6. WHEN A TRANSFORMER BASE IS REQUIRED, THE FOUNDATION WIDTH SHALL BE 30" WIDE AND REINFORCED AS PER FOUNDATION CODE J-1 ON STANDARD SHEET TITLED "TRAFFIC SIGNAL POLE FOUNDATIONS".
7. PUSH BUTTON SHALL BE MOUNTED ON A POST OR SIGNAL POLE BETWEEN 3'-0" AND 3'-6" ABOVE AN ACCESSIBLE SURFACE AND SHALL FACE AN ACCESSIBLE APPROACH OR BE WITHIN 10" OF AN ADJACENT ACCESSIBLE SURFACE. THE ACCESSIBLE SURFACE SHALL BE A LEVEL ALL-WEATHER SURFACE.
8. VERTICAL CLEARANCE SHALL BE 6'-10" ABOVE ADJACENT WALKING SURFACES.
9. MAXIMUM ALLOWABLE ENCROACHMENT INTO ADJACENT SIDEWALK IS 12".

STATE OF NEW YORK  
DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY STANDARD SHEET

PEDESTRIAN SIGNALS AND FLASHING  
BEACON INSTALLATION DETAILS

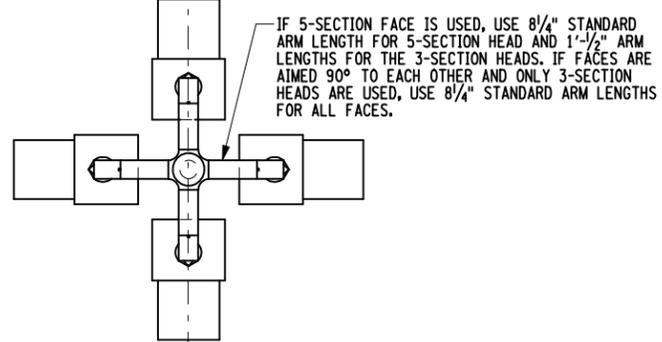
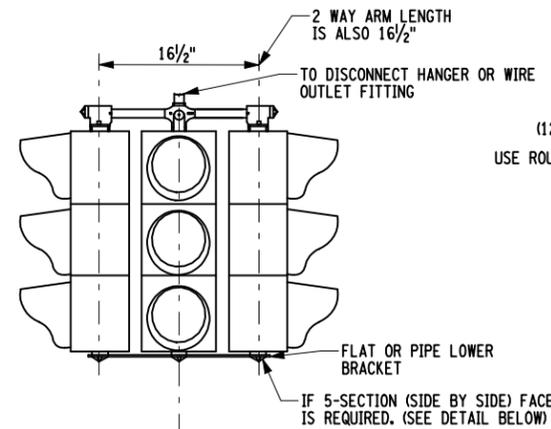
APPROVED SEPTEMBER 19, 2008

ISSUED UNDER EB 08-036

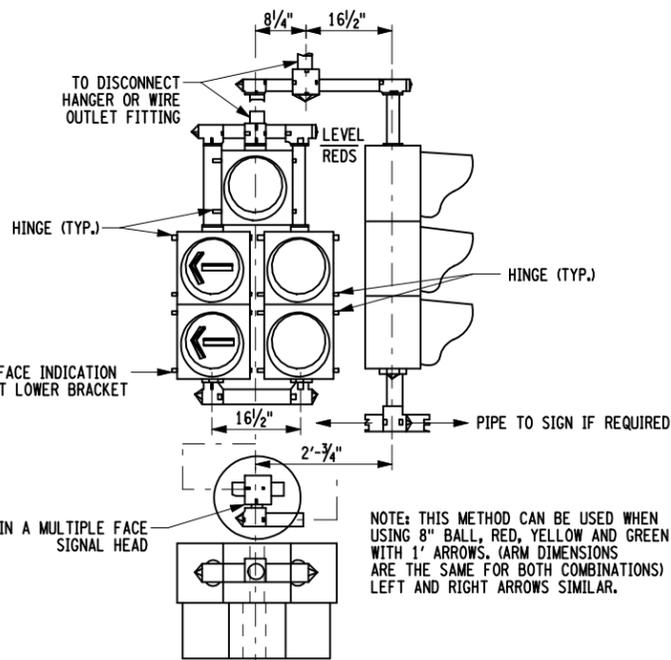
/S/ DANIEL D'ANGELO, P.E.  
DEPUTY CHIEF ENGINEER  
(DESIGN)

680-10

EFFECTIVE DATE: 01/08/09

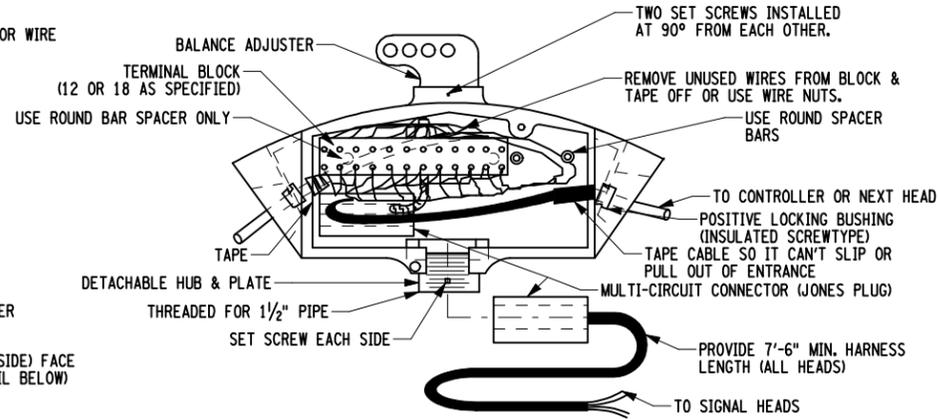


4 WAY 3-SECTION SIGNAL HEAD

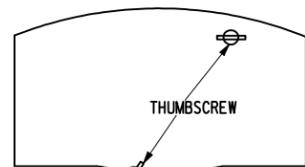


5-SECTION SIGNAL FACE

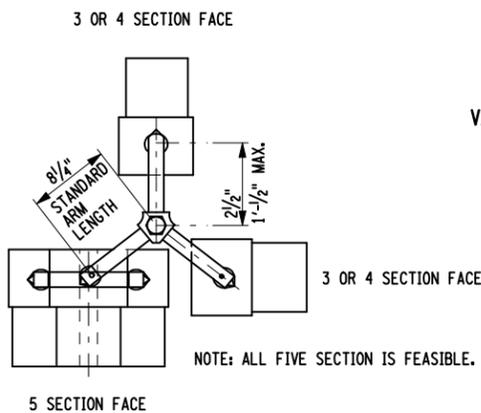
NOTE: THIS METHOD CAN BE USED WHEN USING 8" BALL, RED, YELLOW AND GREEN WITH 1" ARROWS. (ARM DIMENSIONS ARE THE SAME FOR BOTH COMBINATIONS) LEFT AND RIGHT ARROWS SIMILAR.



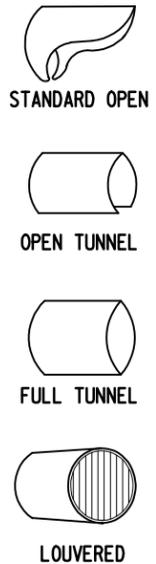
DISCONNECT HANGAR



COVER PLATE



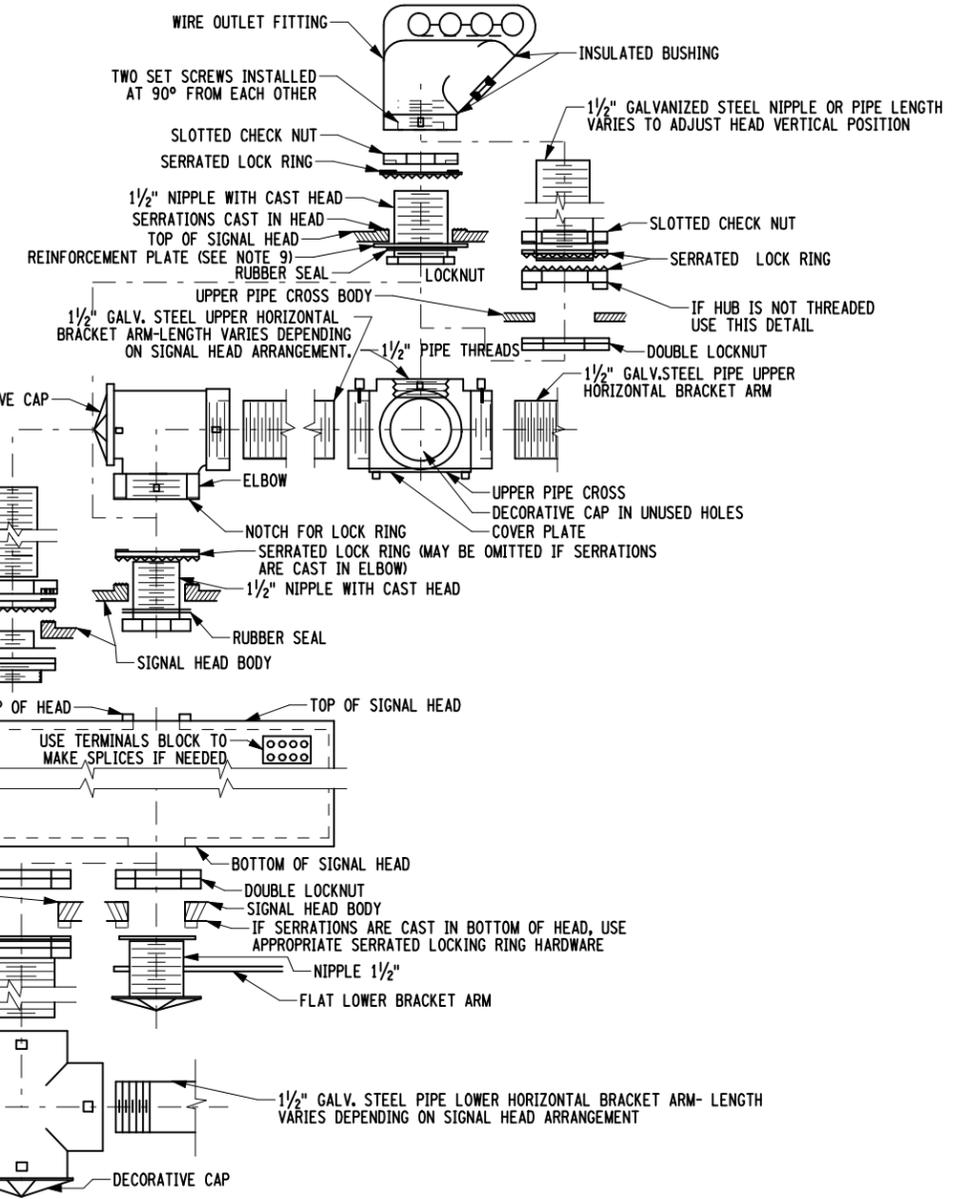
3 WAY 3,4, OR 5-SECTION SIGNAL HEAD



VISOR TYPES

NOTES:

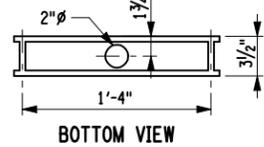
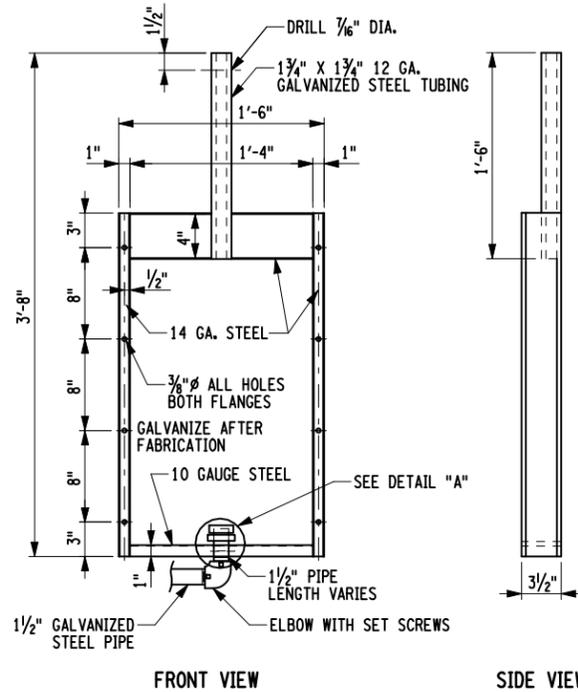
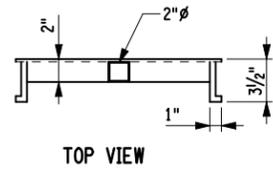
1. DETAILS SHOWN ARE TYPICAL ONLY AND NOT INTENDED TO INDICATE THE PRODUCTS OF ANY SPECIFIC MANUFACTURER.
2. SIGNAL HEAD ARRANGEMENTS ARE SHOWN FOR EXAMPLE ONLY. NUMBER OF DIRECTIONS, THE HEAD FACES, NUMBER OF SECTION, SIZE OF FACES, SIGNAL INDICATIONS, AND ARRANGEMENT OF FACES WILL BE SPECIFIED ON THE PLANS.
3. SIGNAL HEADS ARE TO BE NORMALLY FURNISHED WITH A CONVENTIONAL WIRE OUTLET BODY. DISCONNECT HANGARS, IF REQUIRED, WILL BE SPECIFIED ON THE PLANS.
4. ELBOWS, PIPE CROSSES, WIRE OUTLET, AND OTHER FITTINGS SHALL BE EQUIPPED WITH SET SCREWS.
5. UNUSED HOLES SHALL BE CAPPED.
6. SIGNAL HEADS SHALL BE ASSEMBLED TO BALANCE AND HANG VERTICALLY.
7. THREADS ON FITTINGS ARE NATIONAL PIPE STRAIGHT THREADS.
8. STANDARD OPEN VISOR SHALL BE INSTALLED UNLESS SPECIFIED OTHERWISE ON THE PLANS.
9. ALL POLYCARBONATE SIGNAL HEADS WITH THREE OR MORE SECTIONS REQUIRE A REINFORCEMENT PLATE UNLESS CONNECTED TO A FIXED OBJECT (POLE/MAST ARM) BY A BRACKET WITH TWO SEPARATE CONNECTION POINTS (TOP AND BOTTOM).



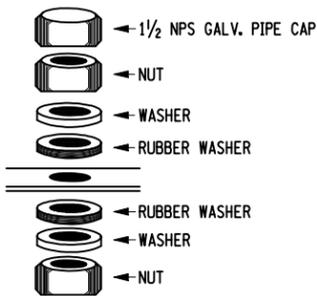
SIGNAL HEAD ASSEMBLY DETAILS

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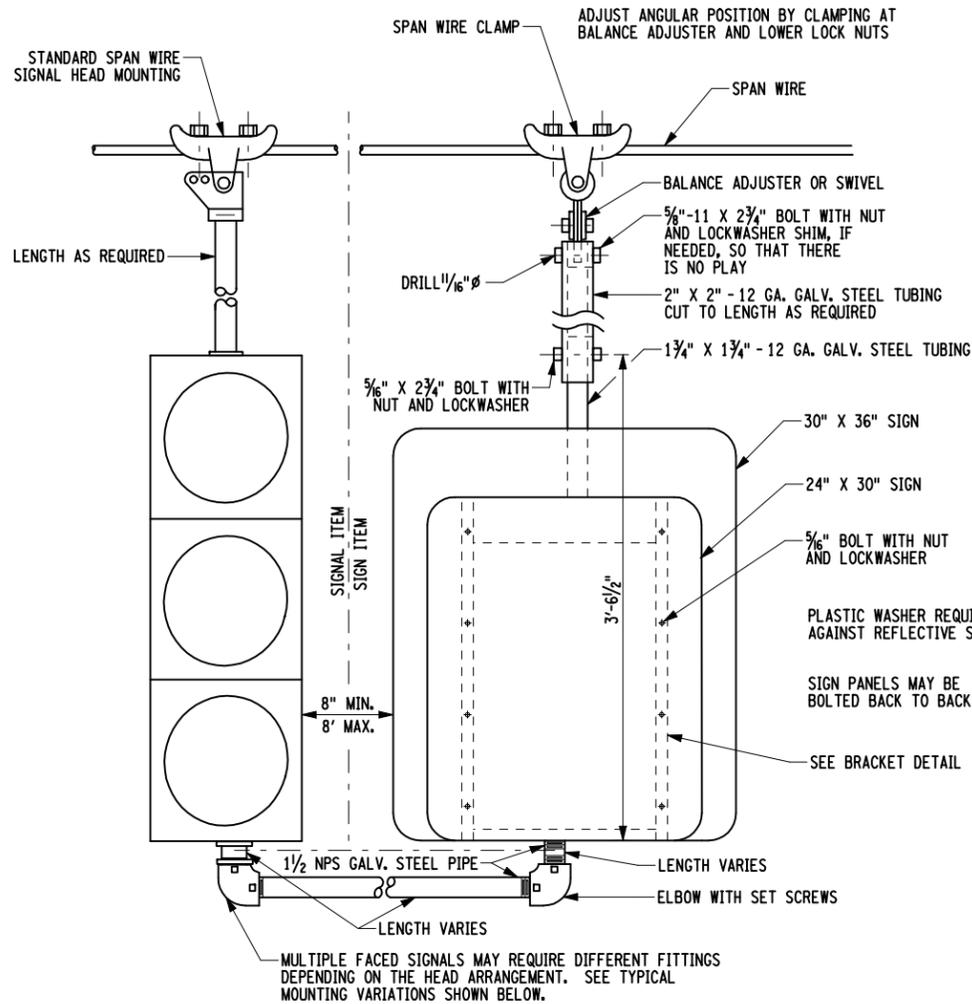
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
SIGNAL HEAD ASSEMBLY DETAILS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-11
EFFECTIVE DATE: 01/08/09	



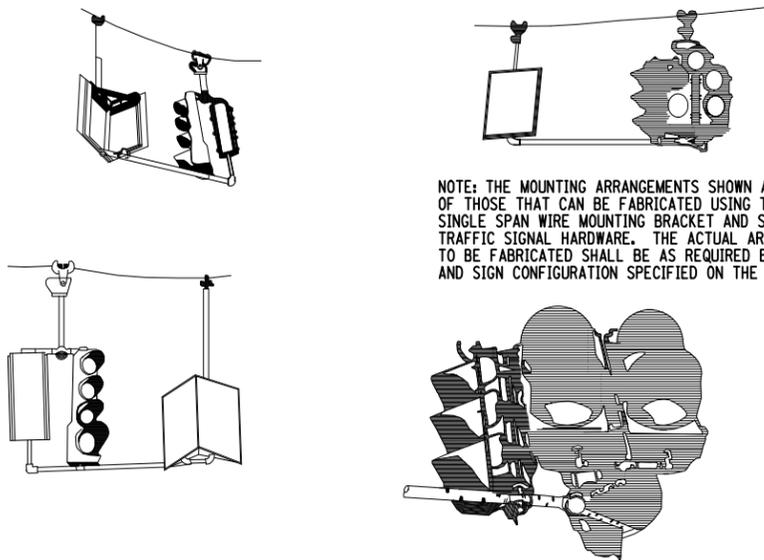
SIGN MOUNT BRACKET DETAIL



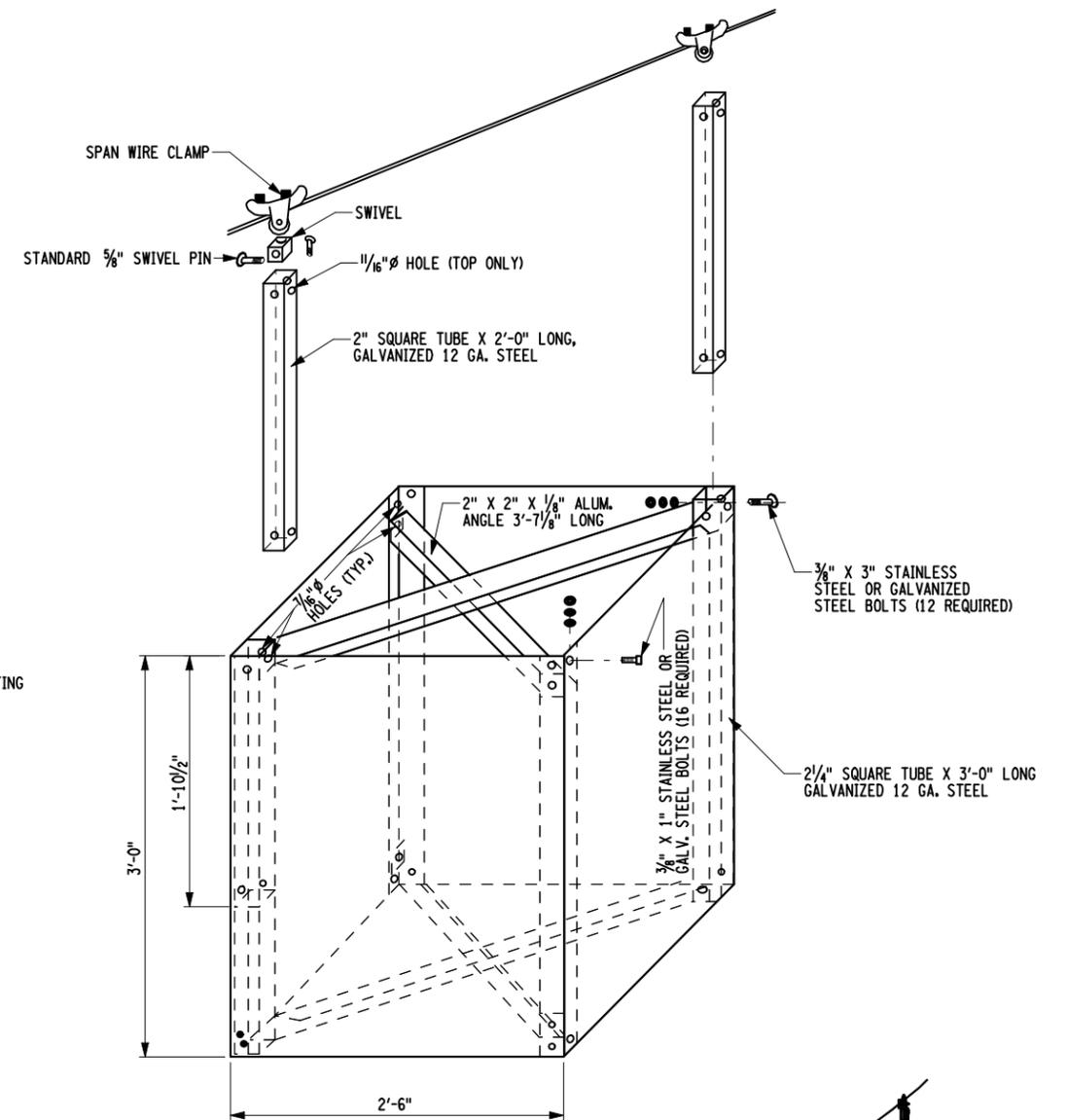
DETAIL "A"



SINGLE SPAN WIRE SIGN MOUNT - TYPE A



TYPICAL MOUNTING ARRANGEMENTS



NOTE: THIS SIGN STRUCTURE IS TO BE USED WHEN ALL FOUR LEFT TURN LANES CONVERGE AT OR NEAR SAME POINT, OR WHERE A FOUR WAY SIGN IS REQUIRED. IT MAY BE MODIFIED AS NECESSARY TO ACCOMMODATE DIFFERENT SIZES OF SIGNS.

FOUR WAY SIGN MOUNT - TYPE B

- NOTES:
1. ALL ELBOWS, TEES, PIPE CROSSES, ETC. ARE TRAFFIC SIGNAL FITTINGS EQUIPPED WITH SET SCREWS.
  2. ALL THREADS ARE NATIONAL PIPE STRAIGHT THREAD.
  3. ALL FITTINGS, PIPES, NIPPLES, AND FASTENERS SHALL BE NON-CORROSIVE.

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
SINGLE SPAN WIRE MOUNTED SIGN INSTALLATION DETAILS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-12

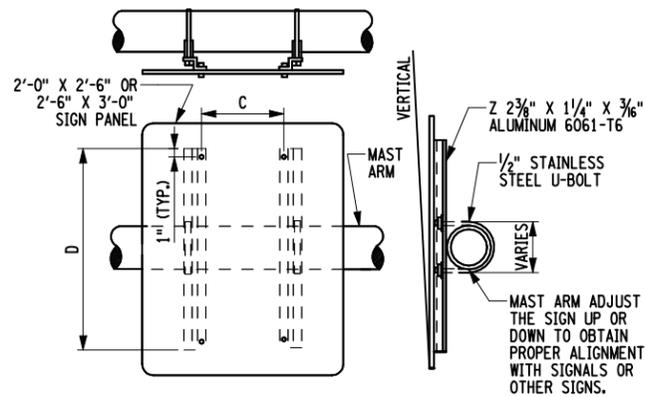
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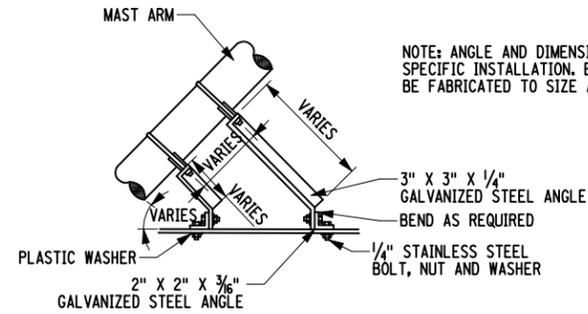
NOTES:

- BURR THE THREADS ON ALL OVERHEAD BOLTS AFTER TIGHTENING TO PREVENT LOOSENING.
- ANY DAMAGE TO GALVANIZED SURFACES RESULTING FROM INSTALLATION SHALL BE FIELD GALVANIZED AS PER §719-01.
- SIGN PANEL DIMENSIONS 2% LARGER THAN SHOWN WILL ALSO BE ACCEPTABLE.

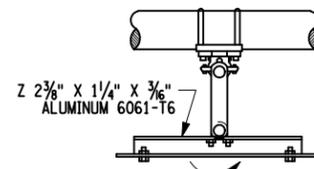
MOUNT TYPE E AND F		
PANEL SIZE	SPACING "C"	LENGTH "D"
2'-0" X 2'-6"	1'-6"	2'-0"
2'-6" X 3'-0"	2'-0"	2'-6"



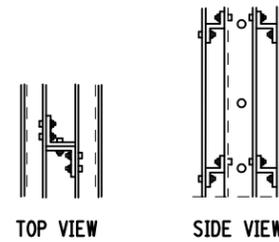
MAST ARM SIGN MOUNT - TYPE E



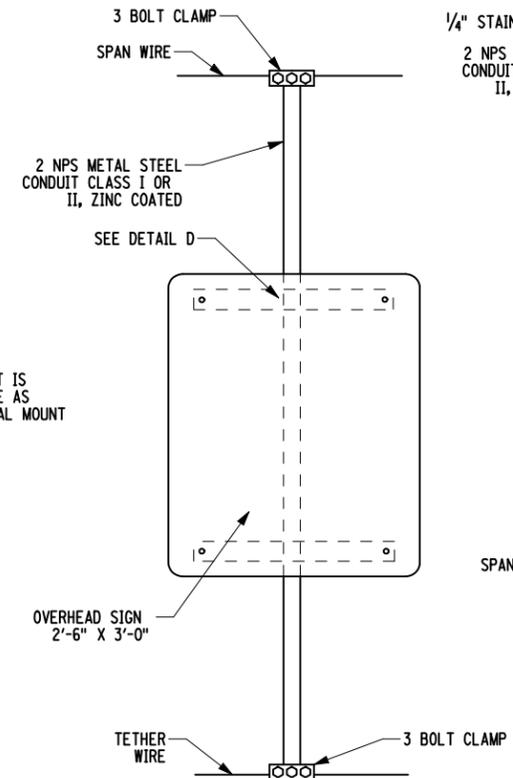
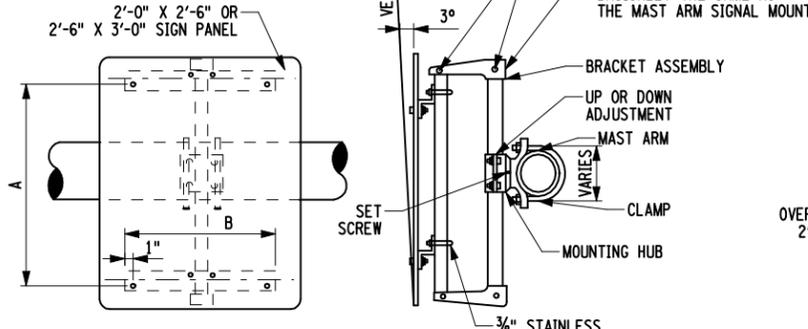
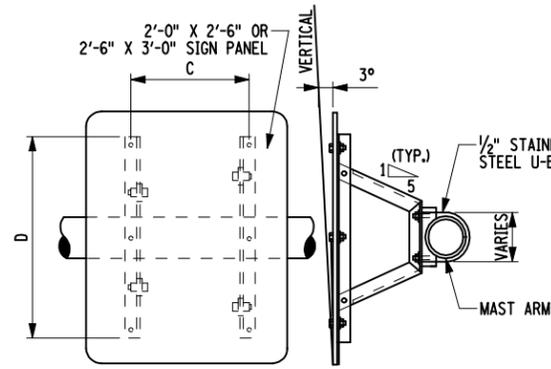
MAST ARM SIGN MOUNT - TYPE F



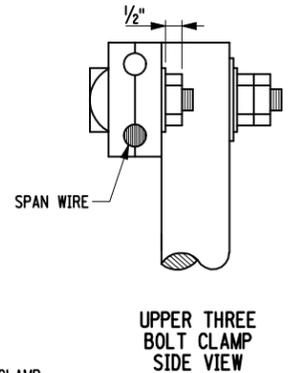
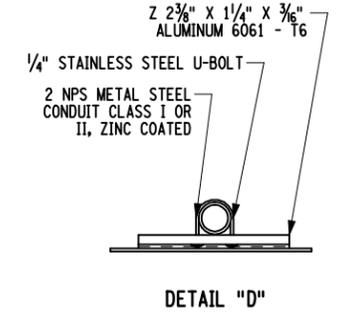
MAST ARM SIGN MOUNT - TYPE G



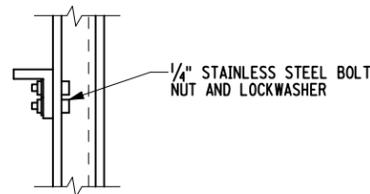
BACK TO BACK MOUNTING



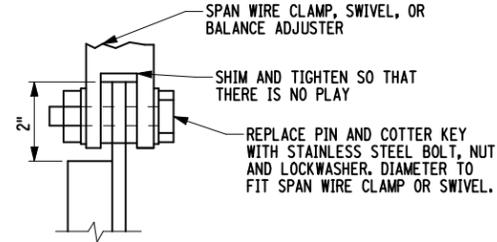
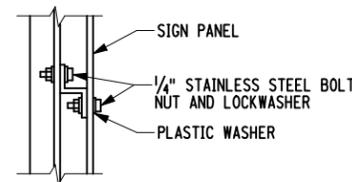
SIGN MOUNTING DETAIL USING THREE BOLT CLAMP



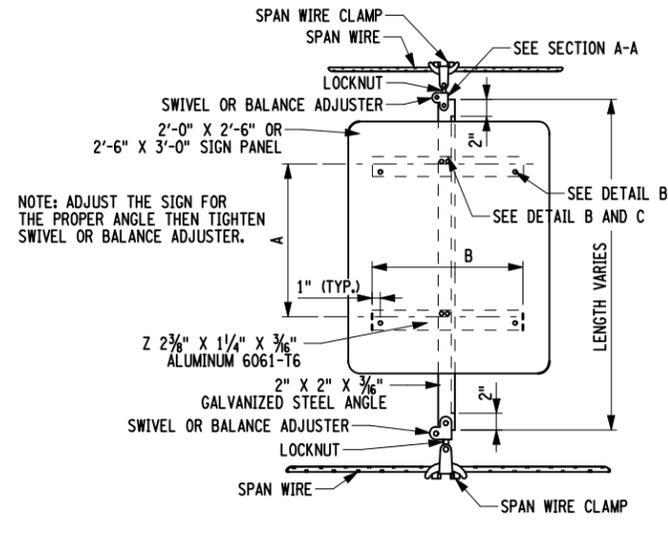
DETAIL "C" (TOP VIEW)



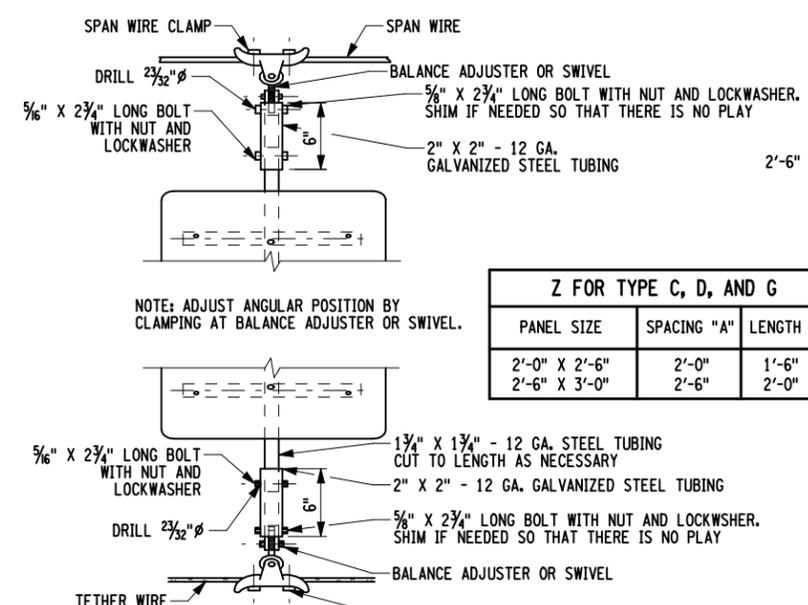
DETAIL "B" (SIDE VIEW)



SECTION A-A

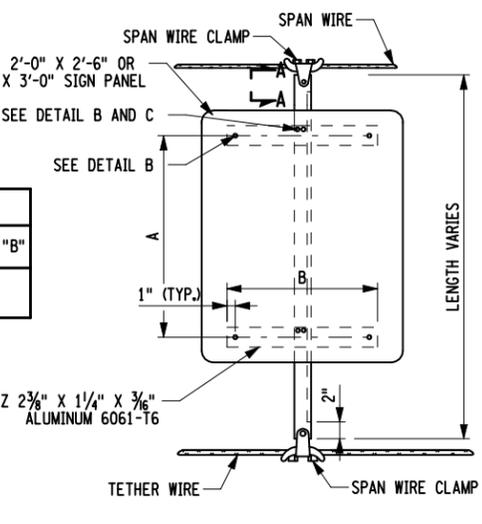


DUAL SPAN WIRE MOUNT - TYPE D

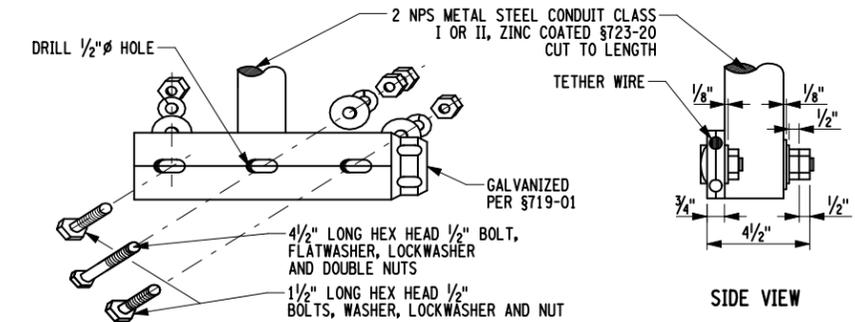


ALTERNATE DESIGN FOR TYPE C AND D SIGN MOUNTS

Z FOR TYPE C, D, AND G		
PANEL SIZE	SPACING "A"	LENGTH "B"
2'-0" X 2'-6"	2'-0"	1'-6"
2'-6" X 3'-0"	2'-6"	2'-0"



DUAL SPAN WIRE MOUNT - TYPE C

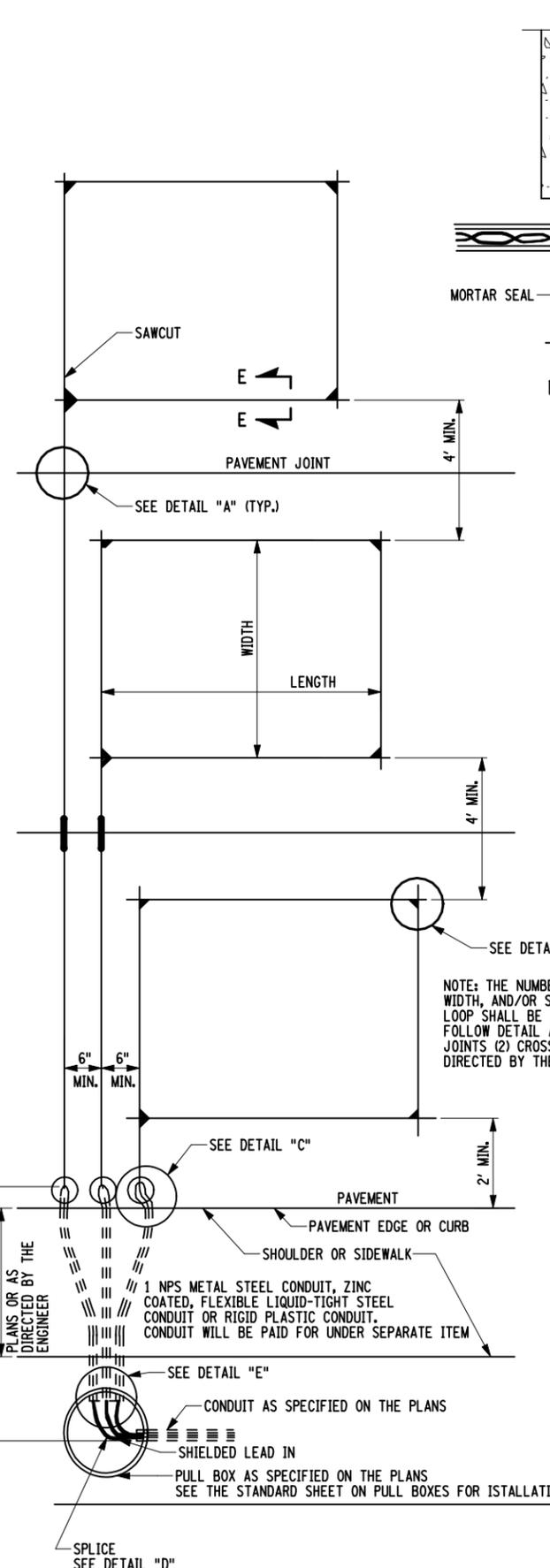


LOWER THREE BOLT CLAMP DETAIL DUAL SPAN WIRE SIGN MOUNT - TYPE H

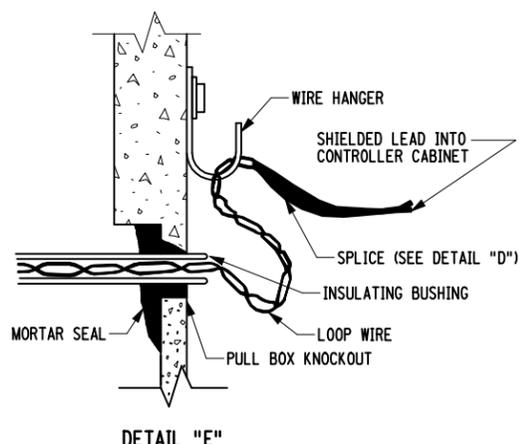
STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
DUAL SPAN WIRE AND MAST ARM SIGN INSTALLATION DETAILS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-13

EFFECTIVE DATE: 01/08/09

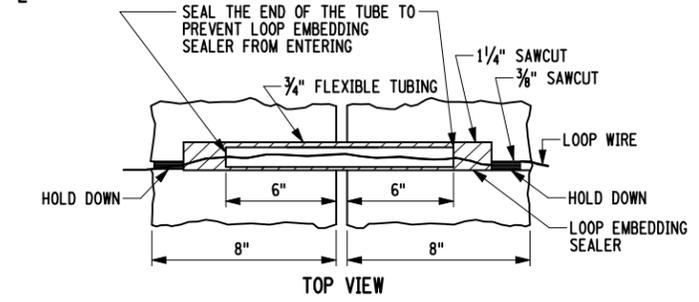
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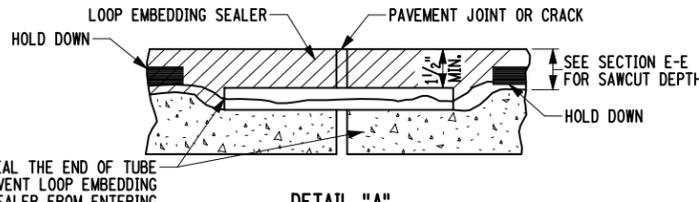
LOOP INSTALLATION DETAILS



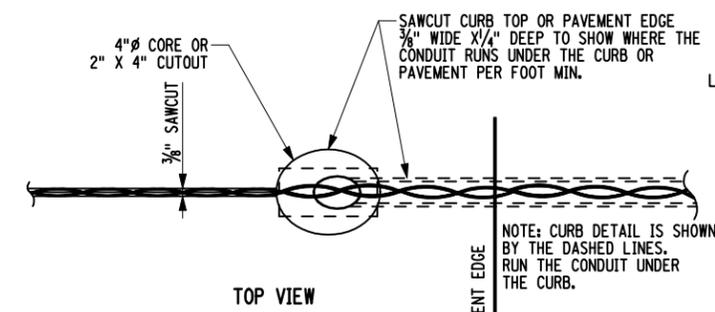
DETAIL "E"



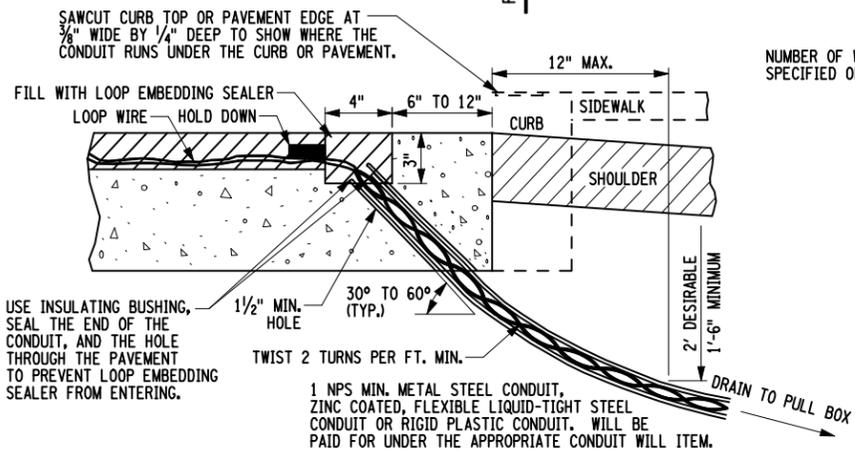
TOP VIEW



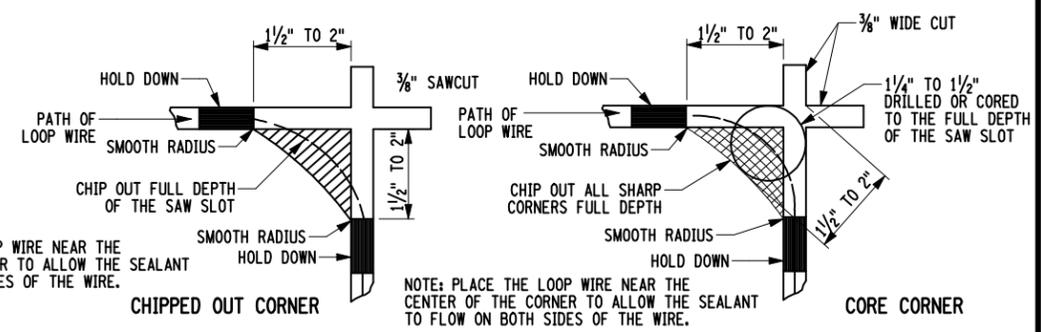
DETAIL "A" SIDE VIEW - CROSSING PAVEMENT JOINTS OR CRACKS



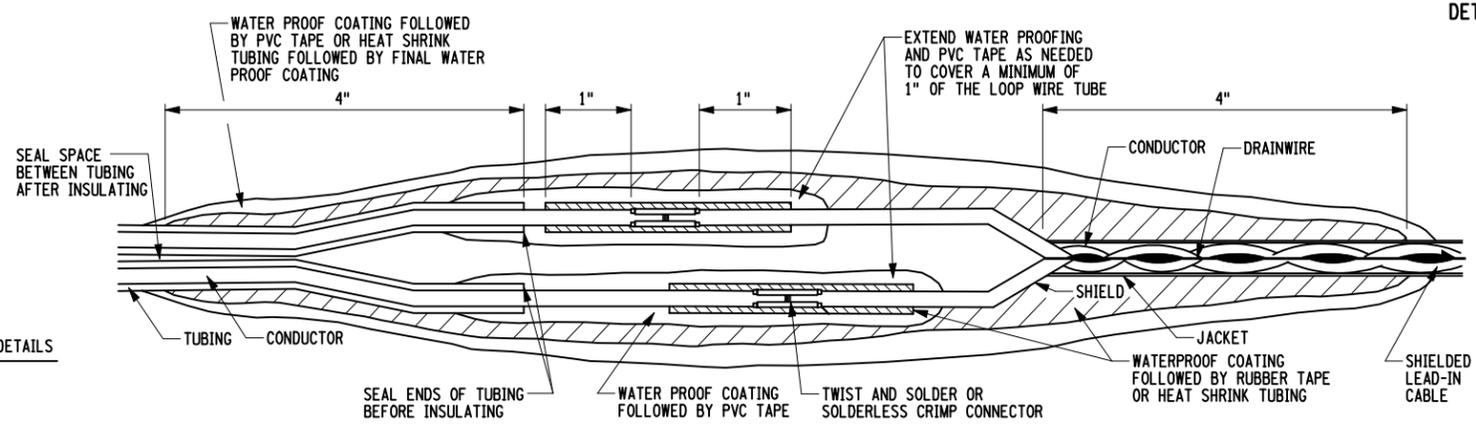
TOP VIEW



DETAIL "C" SIDE VIEW - LOOP LEAD IN AT PAVEMENT EDGE



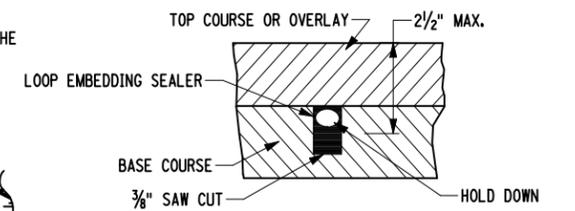
DETAIL "B" - CORNER DETAILS



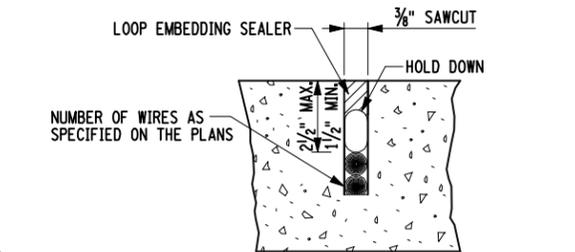
DETAIL "D" (SPlice DETAIL)

NOTE: SEE STANDARD SPECIFICATIONS FOR FURTHER DETAILS

NOTE: IF TOP COURSE IS MORE THAN 1 3/4" IN DEPTH THE SAWCUT SHALL BE MADE AFTER THE TOP COURSE IS PLACED.



SAWCUT CROSS SECTION IN ASPHALT WHERE AN OVERLAY IS BEING PLACED



SAWCUT CROSS SECTION IN CONCRETE OR ASPHALT SECTION E-E

NOTE: USE SHORT (1") PIECE OF FLEXIBLE NEOPRENE RUBBER OR PLASTIC TUBING OR ROUND FOAM SEALER STRIPS AT 2'-0" CTRS. TO HOLD LOOP WIRES IN PLACE UNTIL SEALER SETS. DO NOT USE SHARP OBJECTS TO HOLD WIRES DOWN.

1 NPS MIN. METAL STEEL CONDUIT, ZINC COATED, FLEXIBLE LIQUID-TIGHT STEEL CONDUIT OR RIGID PLASTIC CONDUIT, WILL BE PAID FOR UNDER THE APPROPRIATE CONDUIT WILL ITEM.

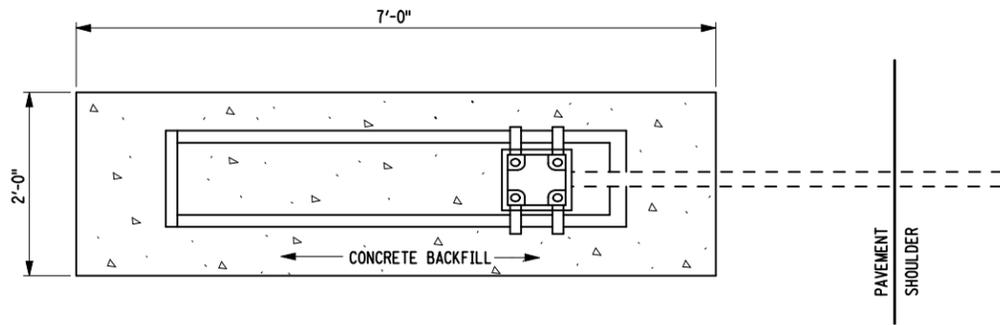
PAYMENT FOR CONDUIT INSTALLATION UNDER CONDUIT EXCAVATION AND BACKFILL AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER

1 NPS METAL STEEL CONDUIT, ZINC COATED, FLEXIBLE LIQUID-TIGHT STEEL CONDUIT OR RIGID PLASTIC CONDUIT, CONDUIT WILL BE PAID FOR UNDER SEPARATE ITEM

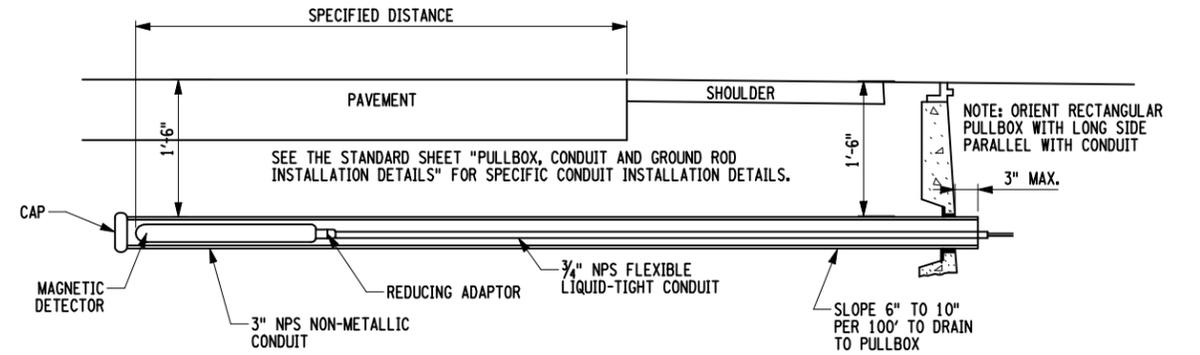
CONDUIT AS SPECIFIED ON THE PLANS  
SHIELDED LEAD IN  
PULL BOX AS SPECIFIED ON THE PLANS SEE THE STANDARD SHEET ON PULL BOXES FOR INSTALLATION DETAILS  
SPLICE SEE DETAIL "D"

FILE NAME = IP\_PWP-0109553\680-14.dgn  
DATE/TIME = 20-NOV-2008 14:09  
USER = jturley

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
INDUCTANCE LOOP VEHICLE DETECTOR INSTALLATION DETAILS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-14
EFFECTIVE DATE: 01/08/09	

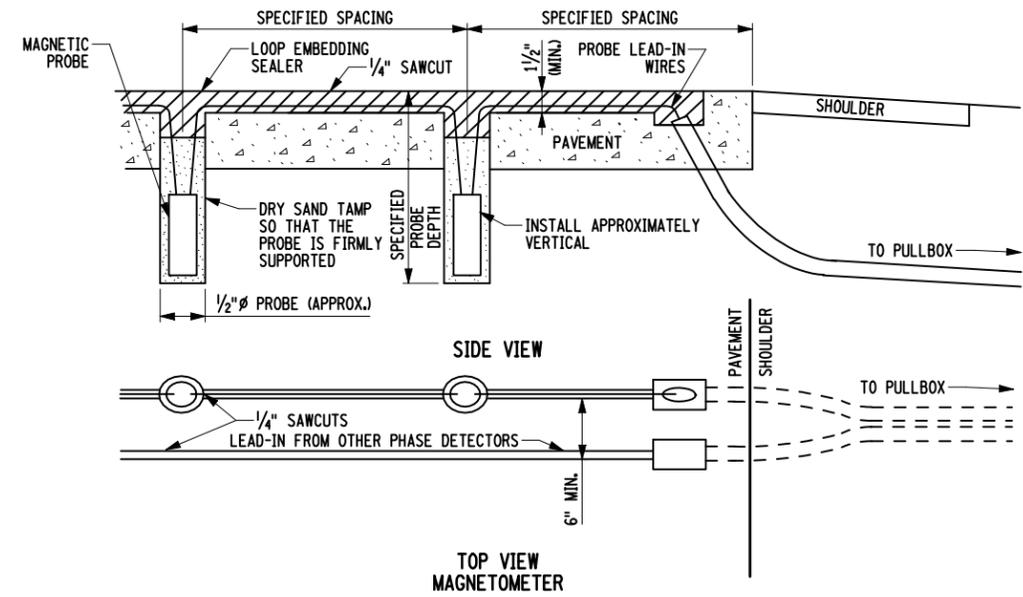


TOP VIEW

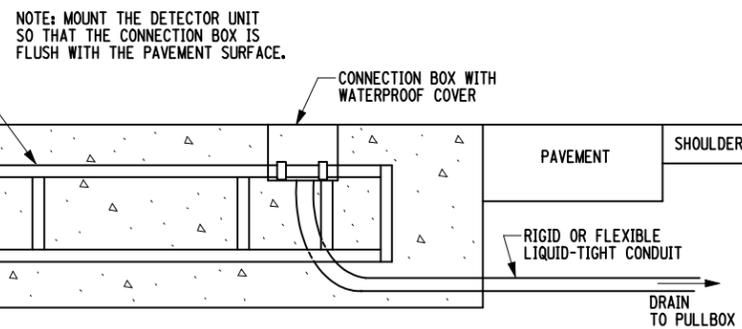


MAGNETIC DETECTOR

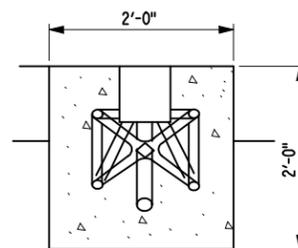
NOTE: SEE THE STANDARD SHEET "INDUCTANCE LOOP VEHICLE DETECTOR INSTALLATION DETAILS" FOR SPECIFIC DETAILS TO BE FOLLOWED INSTALLING WIRES IN PAVEMENT SAW CUTS AND LEAD IN METHODS AT THE PAVEMENT EDGES.



TOP VIEW  
MAGNETOMETER



SIDE VIEW  
DIRECTIONAL MAGNETIC DETECTOR

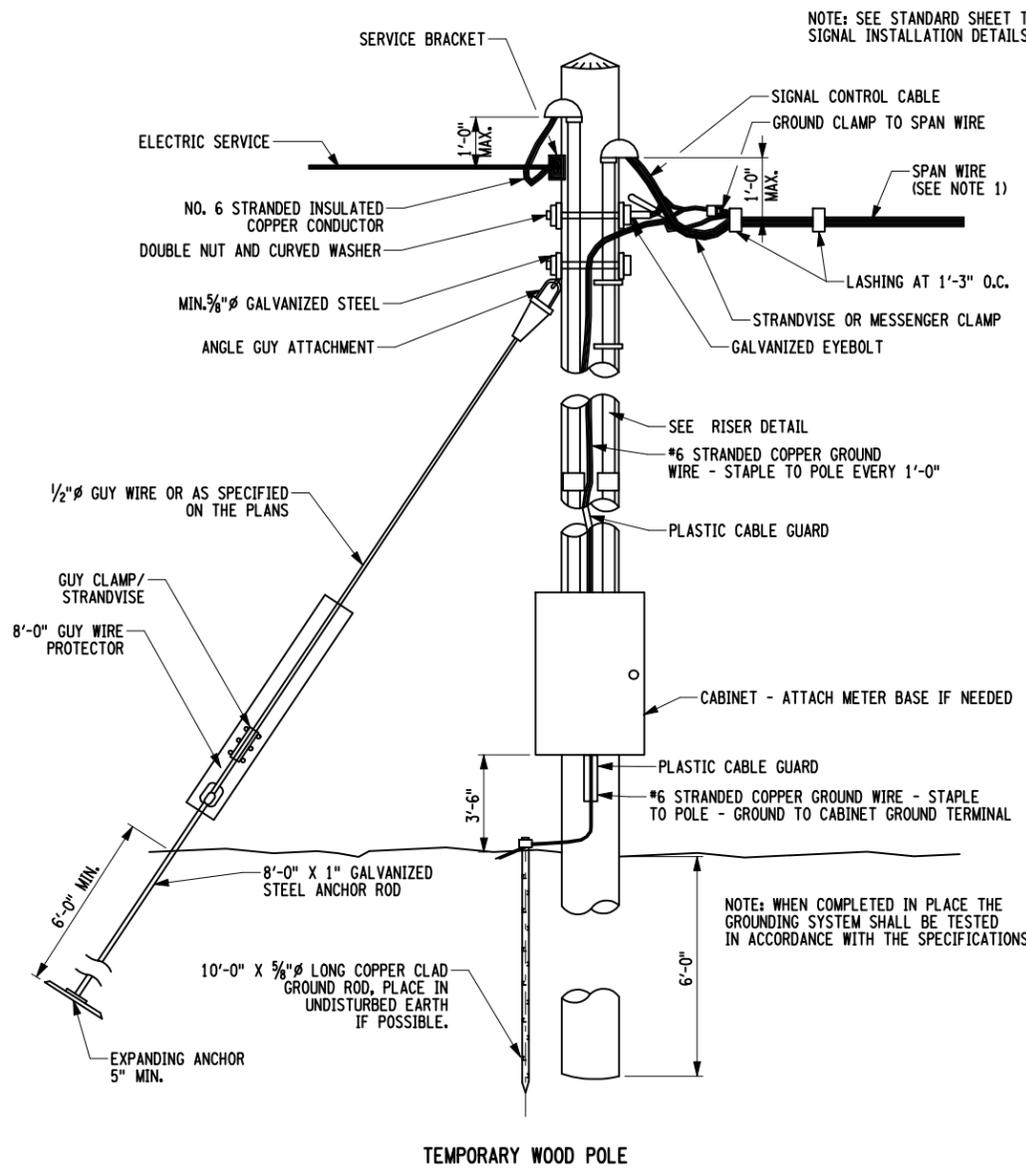


END VIEW

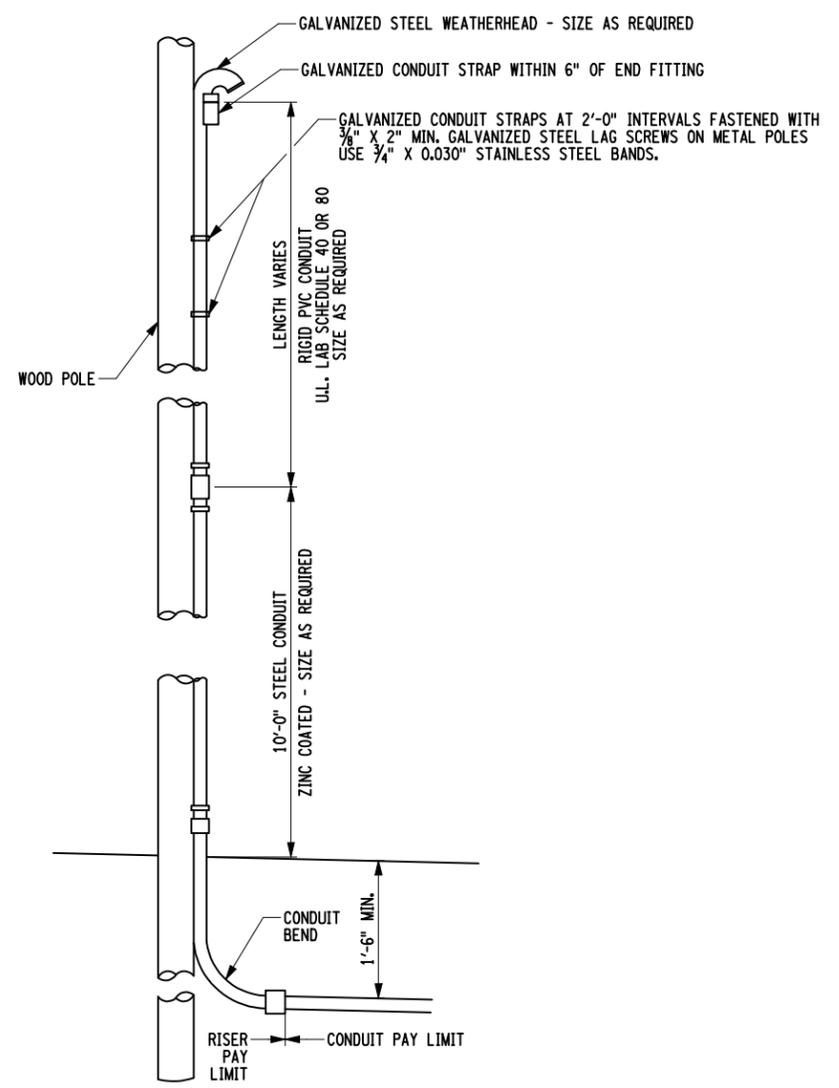
	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
	U.S. CUSTOMARY STANDARD SHEET
<b>MAGNETIC VEHICLE DETECTOR          INSTALLATION DETAILS</b>	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-15

EFFECTIVE DATE: 01/08/09

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 DATE/TIME = 20-NOV-2008 14:09  
 USER = jturley

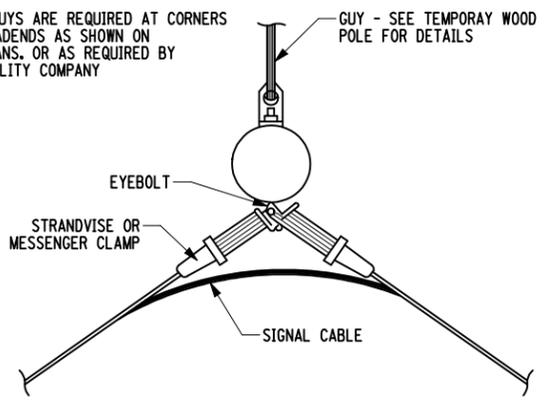


TEMPORARY WOOD POLE

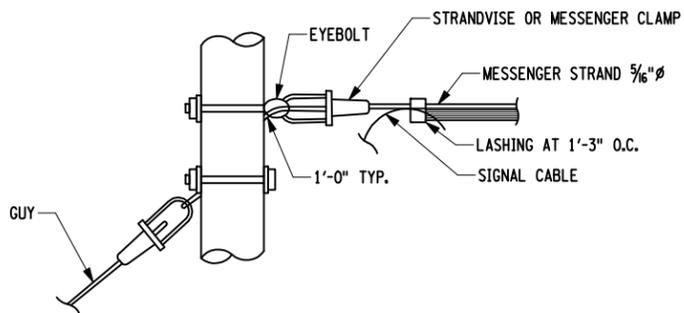


RISER INSTALLATION

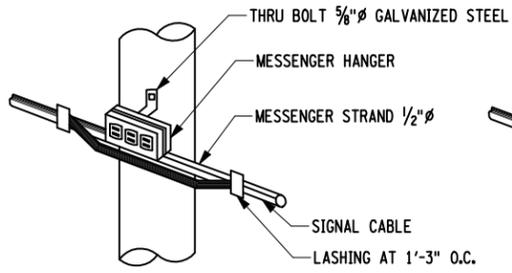
NOTE: GUYS ARE REQUIRED AT CORNERS AND DEADENDS AS SHOWN ON THE PLANS, OR AS REQUIRED BY THE UTILITY COMPANY



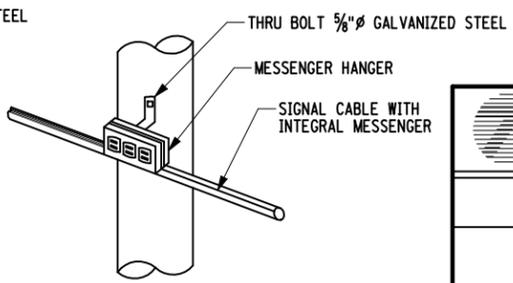
TYPICAL CORNER POLE



TYPICAL DEADEND POLE

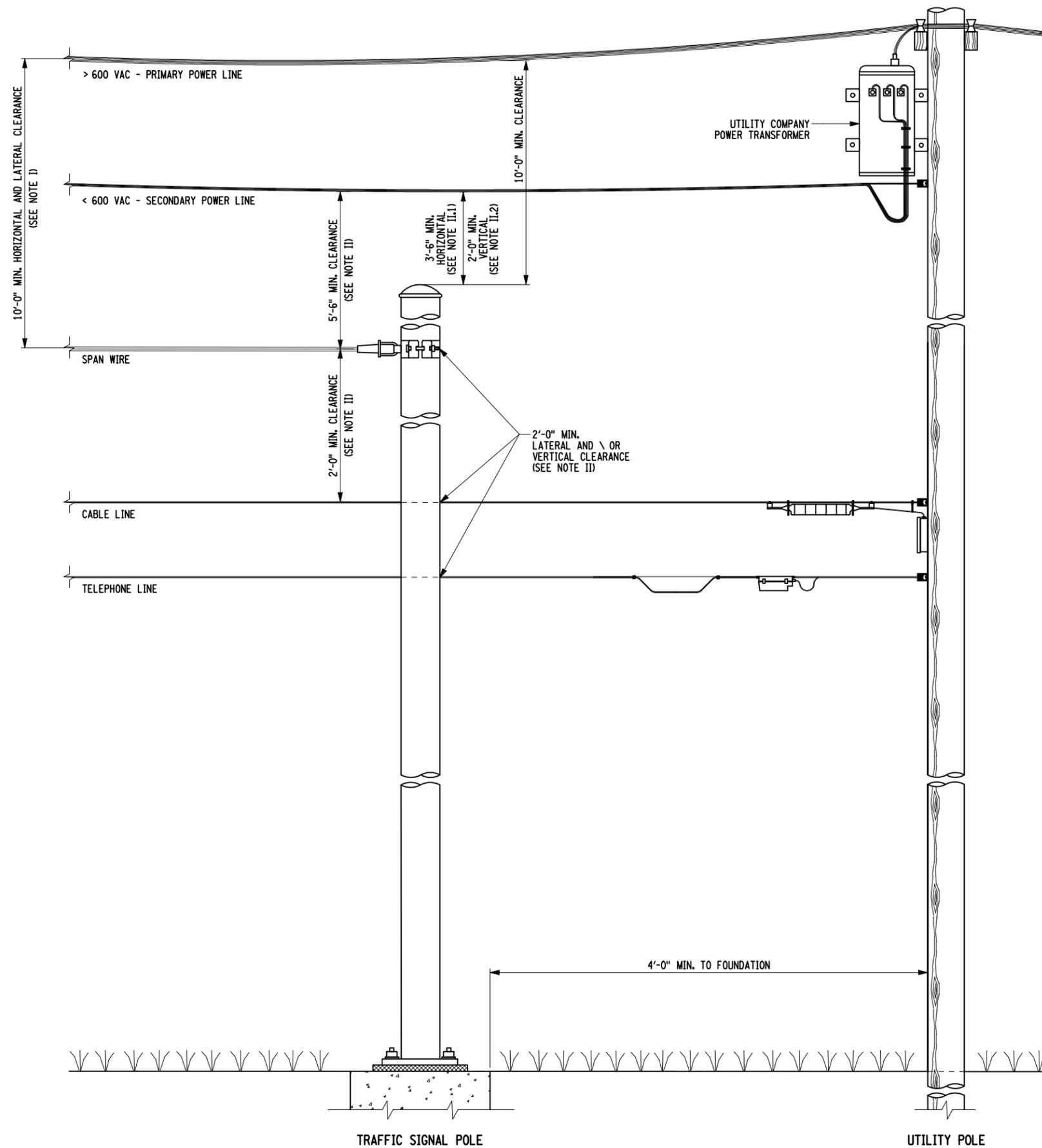


TYPICAL TANGENT POLE ATTACHMENT



TYPICAL TANGENT POLE ATTACHMENT FOR SIGNAL CABLE WITH INTEGRAL MESSENGER

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
WOOD POLE DETAILS	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DANIEL D'ANGELO, P.E. DEPUTY CHIEF ENGINEER (DESIGN)	680-16
EFFECTIVE DATE: 01/08/09	



NOTES:

- I. THE LABOR LAW CODE RULE 57 SECTION 202-H HIGH VOLTAGE PROXIMITY ACT ESTABLISHES THE MINIMUM CLEARANCE BETWEEN ELECTRICAL CONDUCTORS, PERSONNEL, EQUIPMENT, AND MATERIALS.
- II. FOR VERTICAL AND HORIZONTAL CLEARANCE BETWEEN WIRES, CONDUCTORS AS DETERMINED BY THE NATIONAL ELECTRICAL SAFETY CODE SECTION 234.B AS DESCRIBED BELOW:

CLEARANCES OF WIRES, CONDUCTORS, AND CABLES FROM OTHER SUPPORTING STRUCTURES- WIRES, CONDUCTORS, OR CABLES OF ONE LINE PASSING NEAR A LIGHTING SUPPORT, TRAFFIC SIGNAL SUPPORT, OR A SUPPORTING STRUCTURE OF A SECOND LINE, WITHOUT BEING ATTACHED THERETO, SHALL HAVE CLEARANCE FROM ANY PART OF A STRUCTURE NOT LESS THAN THE FOLLOWING:

1. HORIZONTAL CLEARANCES:

- A. A HORIZONTAL CLEARANCE, WITHOUT WIND, OF 5'-0" FOR VOLTAGES UP TO 50 KV.

EXCEPTION: FOR EFFECTIVELY GROUNDED GUYS AND MESSENGERS, INSULATED COMMUNICATIONS CONDUCTORS AND CABLES, NEUTRALS MEETING RULE 230E1, AND CABLES OF 300 V OR LESS TO GROUND MEETING THE REQUIREMENTS OF RULE 230C1, RULE 230C2, OR RULE 230C3, THE HORIZONTAL CLEARANCE MAY BE REDUCED TO 3'-0".

- B. WHEN THE FOLLOWING CONDUCTORS AND CABLES ARE DISPLACED FROM REST UNDER WIND CONDITIONS OF RULE 234A2, HORIZONTAL CLEARANCES FROM SUCH CONDUCTORS OR CABLES TO OTHER SUPPORTING STRUCTURES SHALL BE NOT LESS THAN THOSE SHOWN BELOW:

CONDUCTOR OR CABLE	HORIZONTAL CLEARANCE REQUIRED WHEN DISPLACED BY WIND (FT.)
OPEN SUPPLY CONDUCTORS, 0 TO 750 V	3.5
230C2 CABLE, ABOVE 750 V	3.5
230C3 CABLE, ABOVE 750 V	3.5
OPEN SUPPLY CONDUCTORS, OVER 750 V TO 22 KV	4.5

2. VERTICAL CLEARANCES:

A VERTICAL CLEARANCE OF 4'-6" FOR VOLTAGES BELOW 22 KV AND VERTICAL CLEARANCE 5'-6" FOR VOLTAGES BETWEEN 22 KV AND 50 KV. EXCEPTIONS: 1 AND 2 SHALL NOT BE APPLIED CUMULATIVELY.

EXCEPTION 1: FOR EFFECTIVELY GROUNDED GUYS AND MESSENGERS, INSULATED COMMUNICATION CONDUCTORS AND CABLES, AND NEUTRALS MEETING RULE 230E1 AND FOR CABLES OF 300 V OR LESS TO GROUND MEETING THE REQUIREMENTS OF RULE 230C1, 230C2, OR 230C3, THE VERTICAL CLEARANCE MAY BE REDUCED TO 2'-0".

EXCEPTION 2: THE VERTICAL CLEARANCES MAY BE REDUCED TO 2'-0" IF BOTH THE FOLLOWING CONDITIONS ARE MET:

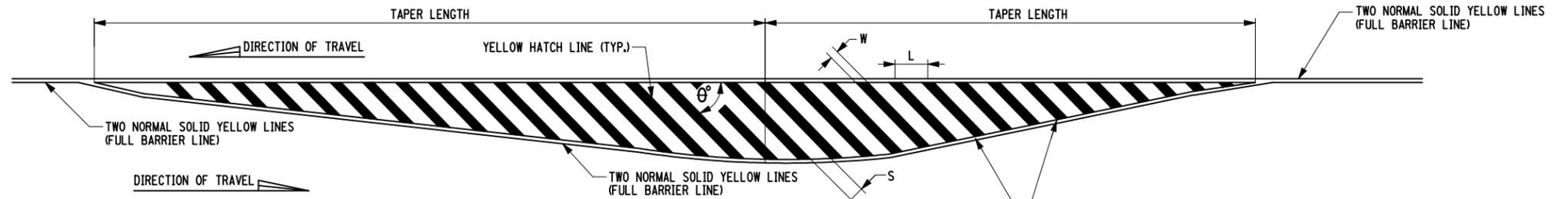
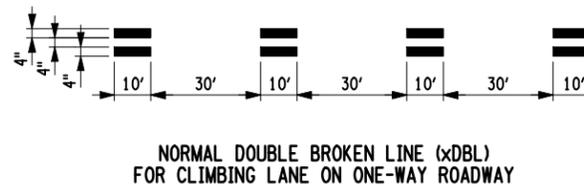
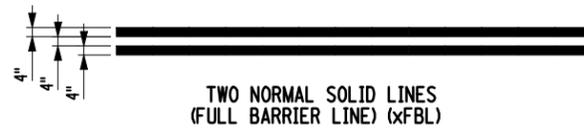
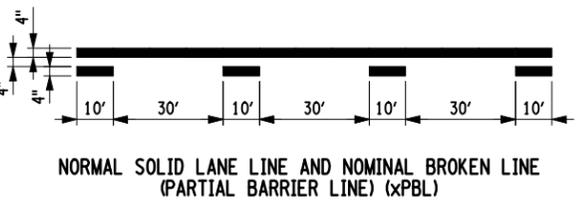
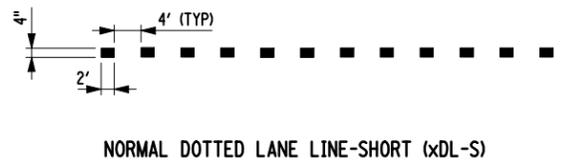
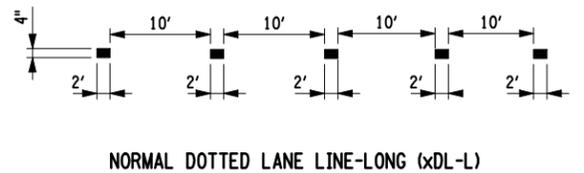
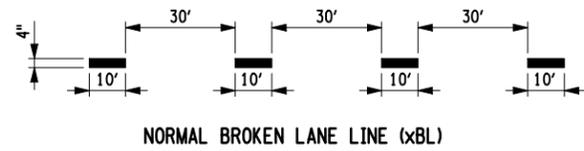
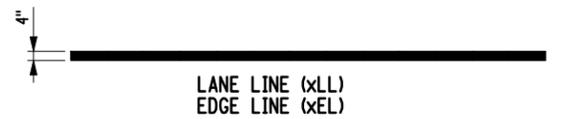
- A. THE WIRES, CONDUCTORS, OR CABLES ABOVE THE SUPPORTING STRUCTURE OF ANOTHER LINE BELOW ARE OPERATED AND MAINTAINED BY THE SAME UTILITY.
- B. EMPLOYEES DO NOT WORK ABOVE THE TOP OF THE SUPPORTING STRUCTURE UNLESS:
  1. THE UPPER CIRCUIT IS DE-ENERGIZED OR TEMPORARILY INSULATED OR REPOSITIONED, OR
  2. OTHER EQUIVALENT MEASURES ARE TAKEN.

FILE NAME = 680-17.dgn  
DATE/TIME = 14-JUN-2010 14:51  
USER = jturley

	STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
	U.S. CUSTOMARY STANDARD SHEET	
UTILITY CLEARANCES TO TRAFFIC SIGNALS		
APPROVED JUNE 11, 2010	ISSUED UNDER EB 10-018	
/S/ RICHARD W. LEE FOR THE DEPUTY CHIEF ENGINEER (DESIGN)		680-17

EFFECTIVE DATE: 06/11/2010

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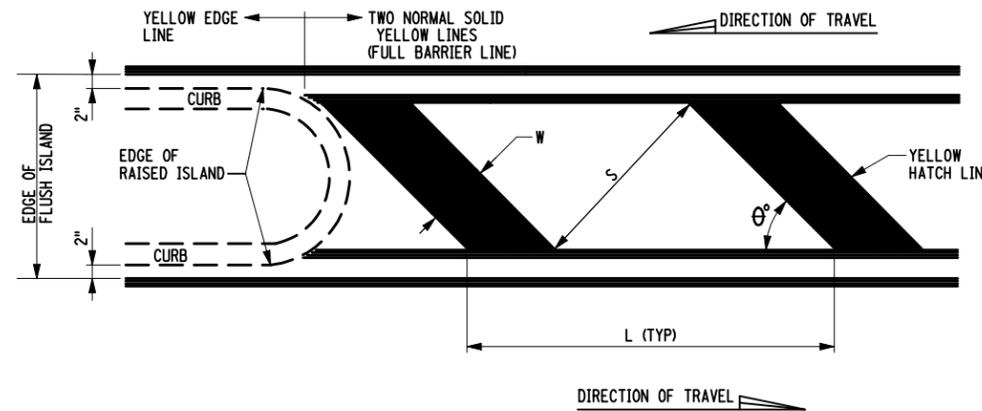


HATCH LINE DIMENSIONS				
TYPE	W	θ°	S	L
A	8"	15°	2'	10'
B	1'-0"	20°	3'	12'
C	2'-0"	45°	6'	11'

NOTE: TYPE SHALL BE AS PER PLAN. DEFAULT VALUE IS TYPE C UNLESS OTHERWISE SHOWN.

HATCHED ISLAND DETAIL  
 SHOWN FOR RADIUS TAPER  
 STRAIGHT TAPER STRIPING SIMILAR

SEE PLAN FOR CURVATURE OR TAPER



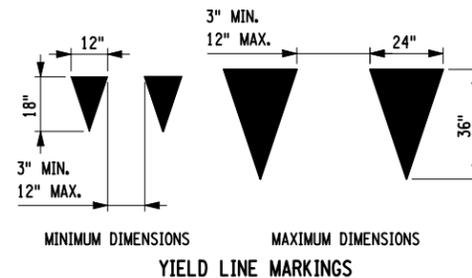
TYPICAL HATCH LINE DETAIL AT FLUSH OR RAISED ISLANDS AND AT MEDIAN AREAS

HATCH LINE	"X" VALUE
CHANNELIZING LINE	1'
TYPE A (xHL-A)	8"
TYPE B (xHL-B)	1'
TYPE C (xHL-C)	2'*
CROSS BAR (xCB)	2'
CLEARANCE LINE (xCL)	2'
STOP LINE	
TYPE A (xSL-A)	1'-6"*
TYPE B (xSL-B)	2'

(SEE NOTE L1)

\* - DEFAULT VALUE UNLESS OTHERWISE SHOWN ON THE PLANS.

SUPPLEMENTAL LINES



GENERAL PAVEMENT MARKING NOTES:

- ALL PAVEMENT MARKINGS SHALL BE PLACED IN ACCORDANCE WITH THE NATIONAL MUTCD AND NYS SUPPLEMENT.
- EDGE LINES SHALL BE YELLOW ON THE LEFT SIDE AND WHITE ON THE RIGHT SIDE IN THE DIRECTION OF TRAVEL UNLESS OTHERWISE SHOWN ON THE PLANS. IF THE CURB OFFSET IS LESS THAN 2'-0", NO EDGE LINE SHALL BE APPLIED ADJACENT TO CURBS UNLESS OTHERWISE SHOWN ON THE PLANS. EDGE LINES SHALL BE PROVIDED AT THE CURB ADJACENT TO RAISED ISLANDS (SEE TYPICAL ISLAND DETAIL).
- WHERE MARKINGS NORMALLY FOLLOW A PAVEMENT JOINT, SINGLE LINE MARKINGS SHALL BE PLACED ALONG ONE SIDE OF THE JOINT. DOUBLE LINE MARKINGS SHALL STRADDLE THE JOINT. LANE LINES ON ROADWAYS WHICH ARE MORE THAN TWO LANES WIDE AND HAVE LONGITUDINAL JOINTS BETWEEN ADJACENT LANES, SHALL BE PLACED ON THE SIDE OF THE JOINT WHICH WILL OBTAIN OPTIMUM LANE WIDTHS. THE SINGLE CENTER LINE OF A TWO-LANE PAVEMENT HAVING A CENTER LONGITUDINAL JOINT MAY BE PLACED ON EITHER SIDE OF THE JOINT.

AT THE JUNCTION OF SINGLE AND DOUBLE LINE MARKINGS WHICH FOLLOW A PAVEMENT JOINT, THE SINGLE LINE SHALL BE AN EXTENSION OF EITHER OF THE DOUBLE LINES AND NOT THE SPACE BETWEEN THEM. AT THE JUNCTION OF SINGLE AND DOUBLE LINE MARKINGS WHICH DO NOT FOLLOW A PAVEMENT JOINT, THE SINGLE LINE MAY BE ALIGNED WITH THE CENTER OF THE DOUBLE LINE MARKING OR WITH EITHER LINE OF THE DOUBLE LINE.

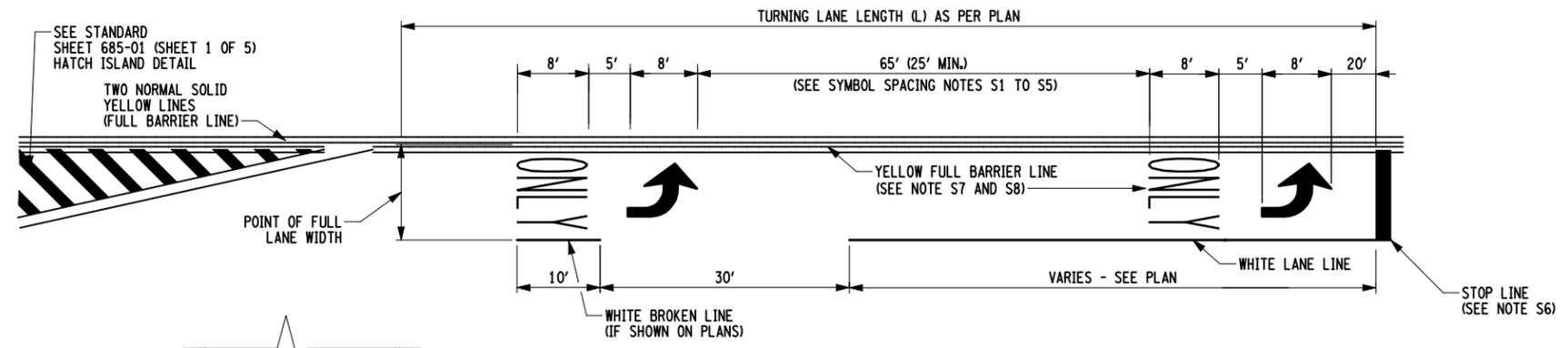
- ALL DIMENSIONS AND THE PLACEMENT OF ARROWS, SYMBOLS, AND TEXT SHOWN ARE TYPICAL AND SHALL APPLY UNLESS OTHERWISE INDICATED IN THE CONTRACT DOCUMENTS.
- THE REGIONAL TRAFFIC ENGINEER WILL REVIEW AND APPROVE ANY CHANGES TO THE PAVEMENT MARKING PLANS PRIOR TO FINAL INSTALLATION, CHANGES SHALL BE SUBMITTED TWO WEEKS PRIOR TO INSTALLATION.

PAVEMENT MARKING LINE NOTES:

- PAVEMENT MARKING LINE STRIPING WIDTHS SHALL BE INCREASED TO 6" FOR ALL INTERSTATE AND LIMITED ACCESS EXPRESSWAYS. THIS SHALL INCLUDE RAMPS.
- PAVEMENT MARKING LINE CODES MAY BE SHOWN ON THE PLANS. COLOR DESIGNATIONS:  
 W=WHITE Y=YELLOW

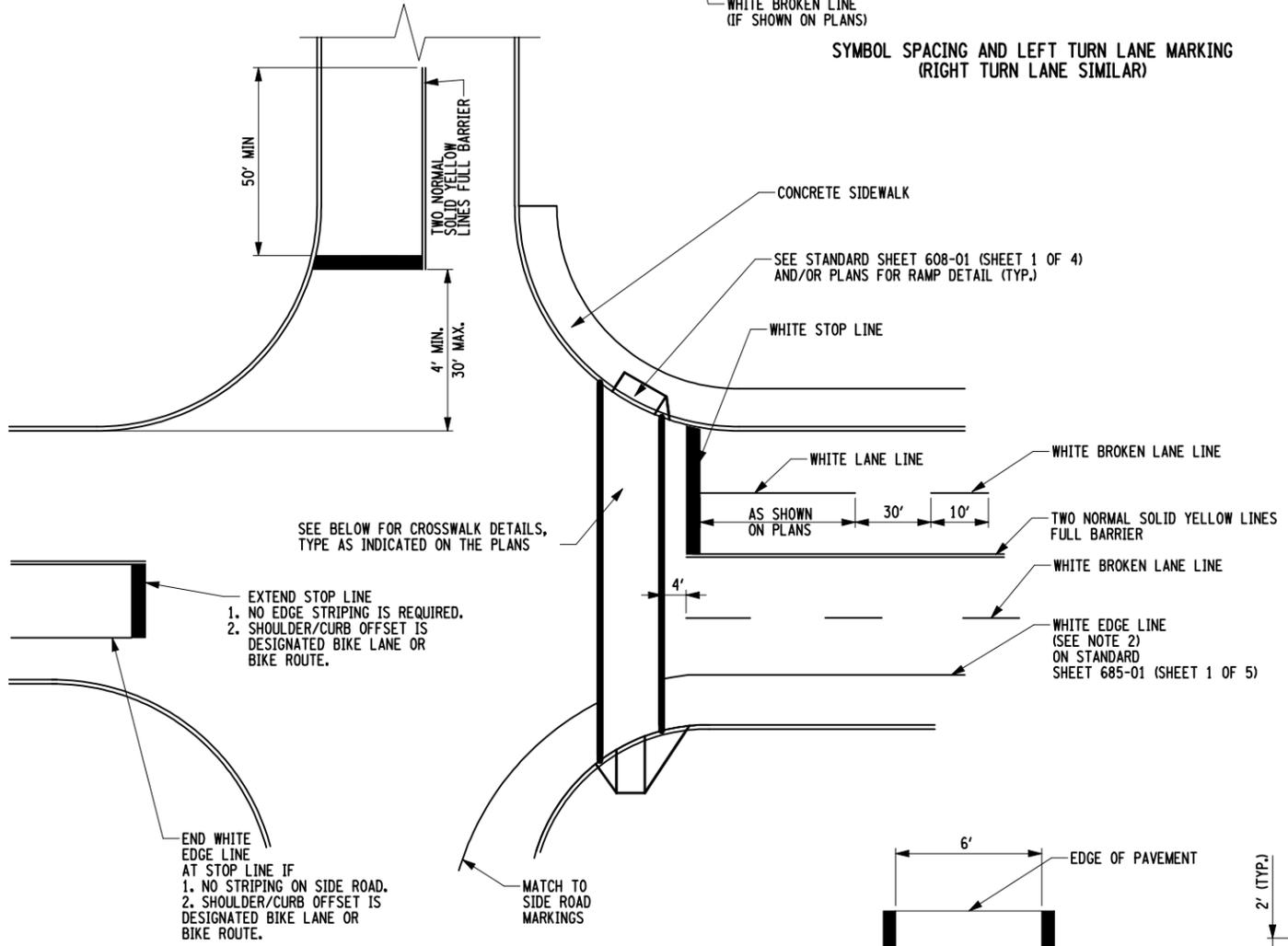
 STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION	
U.S. CUSTOMARY STANDARD SHEET	
<b>PAVEMENT MARKING DETAILS</b> (SHEET 1 OF 5)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	685-01

EFFECTIVE DATE: 01/08/09

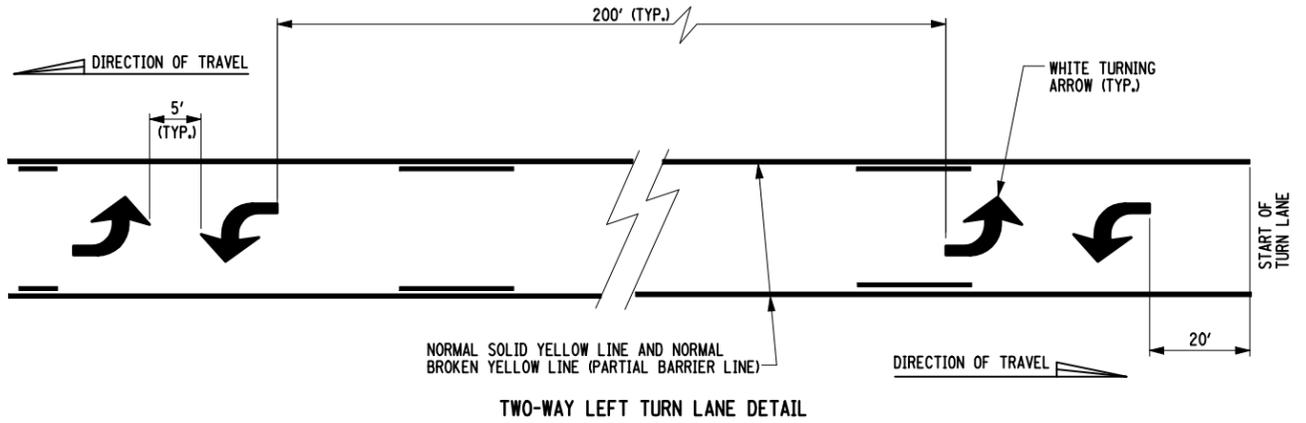


SYMBOL SPACING AND LEFT TURN LANE MARKING (RIGHT TURN LANE SIMILAR)

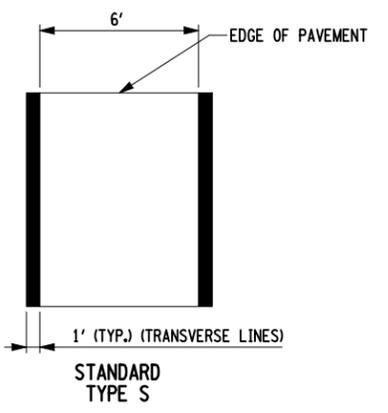
- SYMBOL SPACING NOTES:
- IF TURNING LANE LENGTH (L) IS LESS THAN 90' ONLY ONE SET OF MARKINGS SHALL BE PLACED 20' FROM THE STOP LINE.
  - IF (L) IS BETWEEN 90' AND 130', TWO SETS OF MARKINGS SHALL BE PLACED AT SPACING SHOWN ON THE DETAIL EXCEPT THE 65' SPACING MAY BE REDUCED TO 25' MINIMUM.
  - IF (L) IS BETWEEN 130' AND 250', TWO SETS OF MARKINGS SHALL BE PLACED AT SPACING SHOWN IN THE DETAIL.
  - IF (L) IS BETWEEN 250' AND 500', THREE SETS OF MARKINGS SHALL BE PLACED. THE FIRST TWO SETS OF MARKINGS SHALL BE PLACED AT SPACING SHOWN IN THE DETAIL, WITH THE THIRD SET LOCATED 32'-10" FROM END OF BAY (POINT OF FULL LANE WIDTH).
  - IF (L) IS GREATER THAN 500', REFER TO THE PLAN OR REGIONAL TRAFFIC ENGINEERING AND SAFETY GROUP FOR GUIDANCE.
  - AT AN UNCONTROLLED APPROACH (NO SIGNAL, STOP OR YIELD SIGN), DELETE THE STOP BAR.
  - IF INTERSECTION LANE USE SIGNS (EXAMPLE R3-24) ARE NOT PROVIDED FOR ON THIS APPROACH "ONLY" SHALL BE DELETED. SPACING BETWEEN ARROWS SHALL BE 75' (40' MINIMUM).
  - ARROW AND "ONLY" TO BE CENTERED IN LANE.



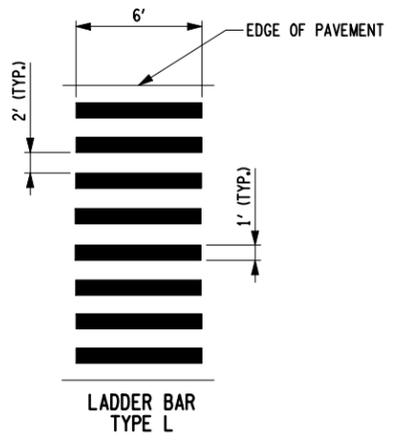
TYPICAL INTERSECTION MARKINGS



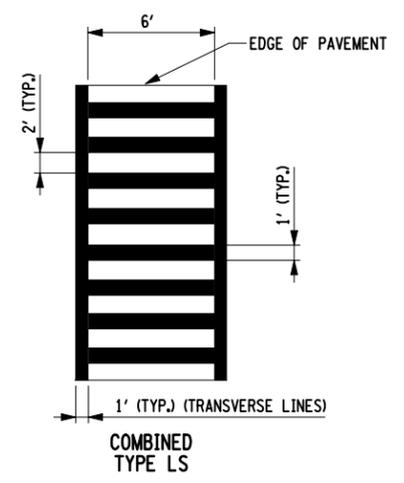
TWO-WAY LEFT TURN LANE DETAIL



STANDARD TYPE S



LADDER BAR TYPE L



COMBINED TYPE LS

TYPICAL CROSSWALK DETAILS  
 NOTE:  
 1. ALL CROSSWALK MARKINGS SHALL BE WHITE.

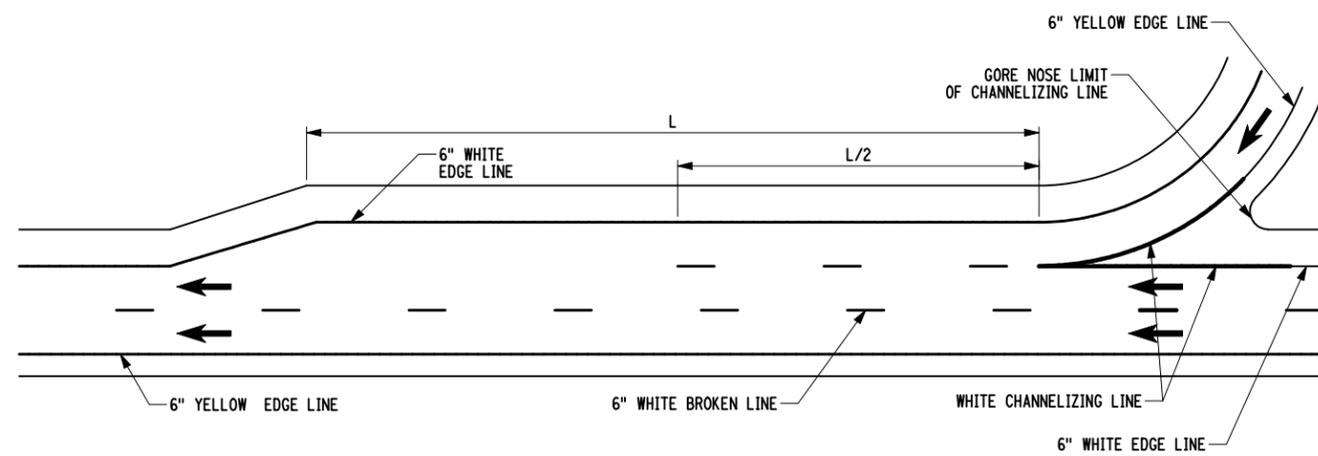
- SEE STANDARD SHEET 685-01 (SHEET 1 OF 5) FOR LINE LAYOUT AND DIMENSIONS (EXCEPT AS NOTED).
- REFER TO STANDARD SHEET 685-01 (SHEET 1 OF 5) FOR GENERAL NOTES.

	<b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>
	U.S. CUSTOMARY STANDARD SHEET
<b>PAVEMENT MARKING DETAILS</b> (SHEET 2 OF 5)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	<b>685-01</b>

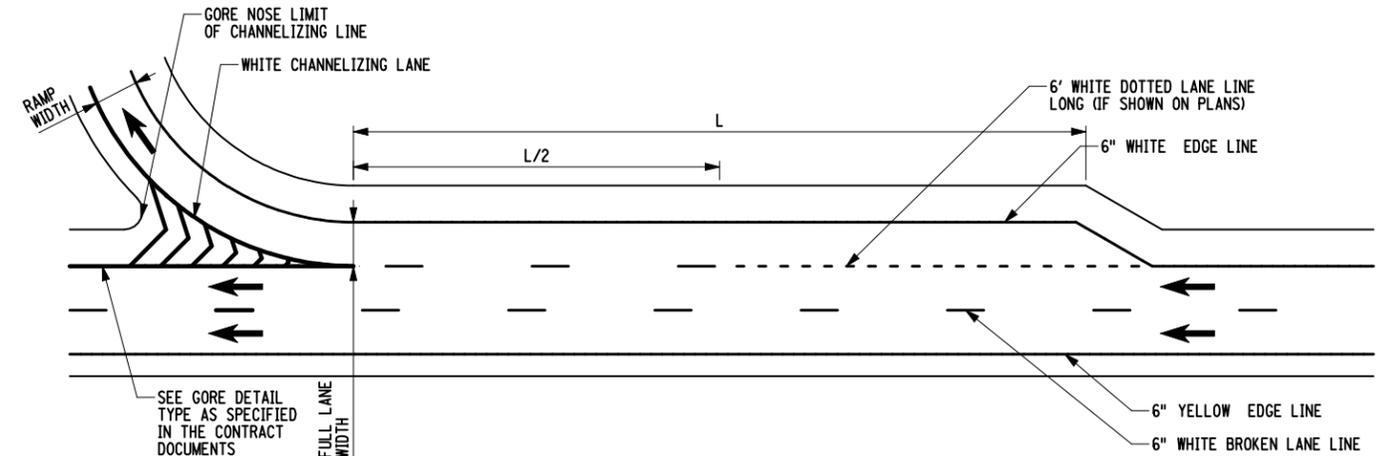
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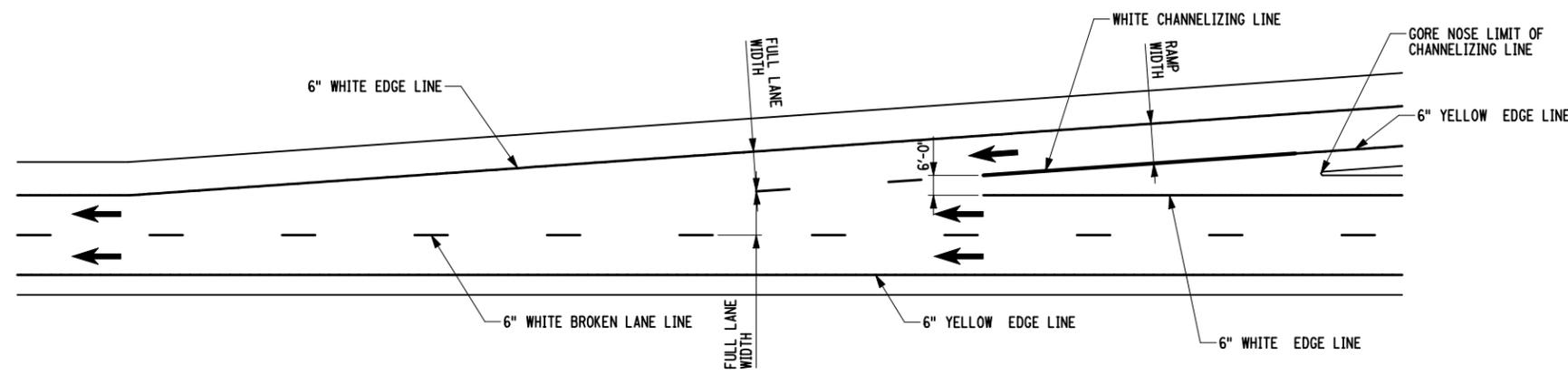
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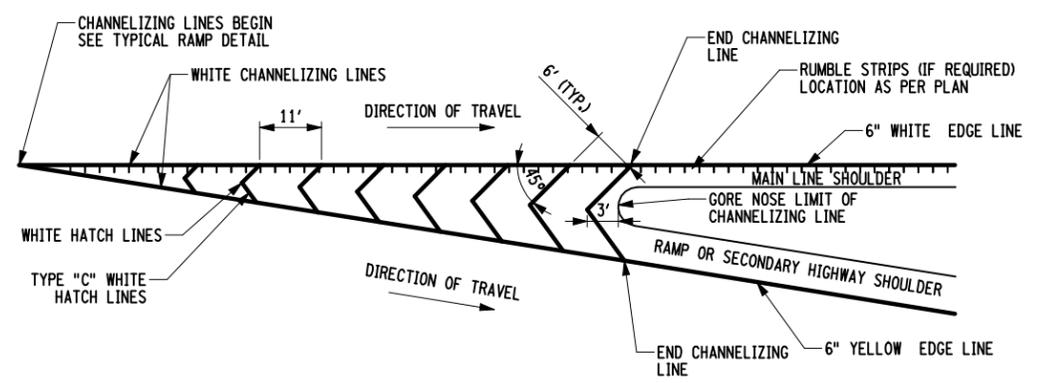
PARALLEL ACCELERATION LANE



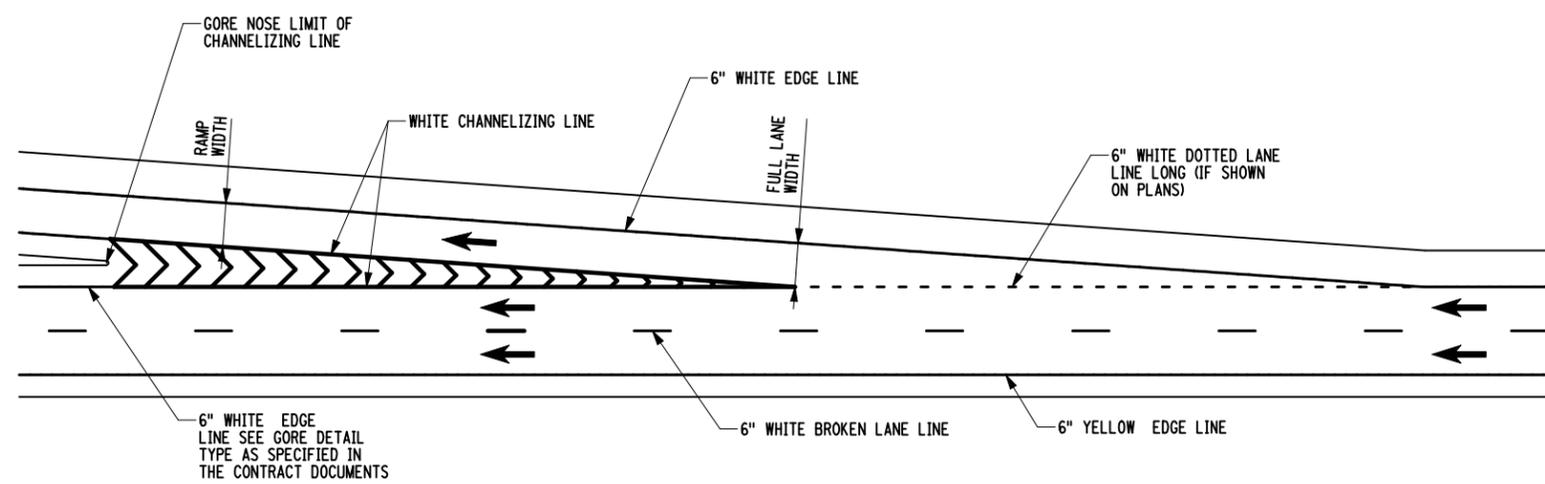
PARALLEL DECELERATION LANE



TAPERED ACCELERATION LANE  
 TYPICAL RAMP DETAILS  
 (2 LANE MAINLINE SHOWN - MULTI LANE SIMILAR)



MAJOR EXIT / DIVERGE  
 (CHEVRON)  
 TYPICAL HATCH LINE AT GORE

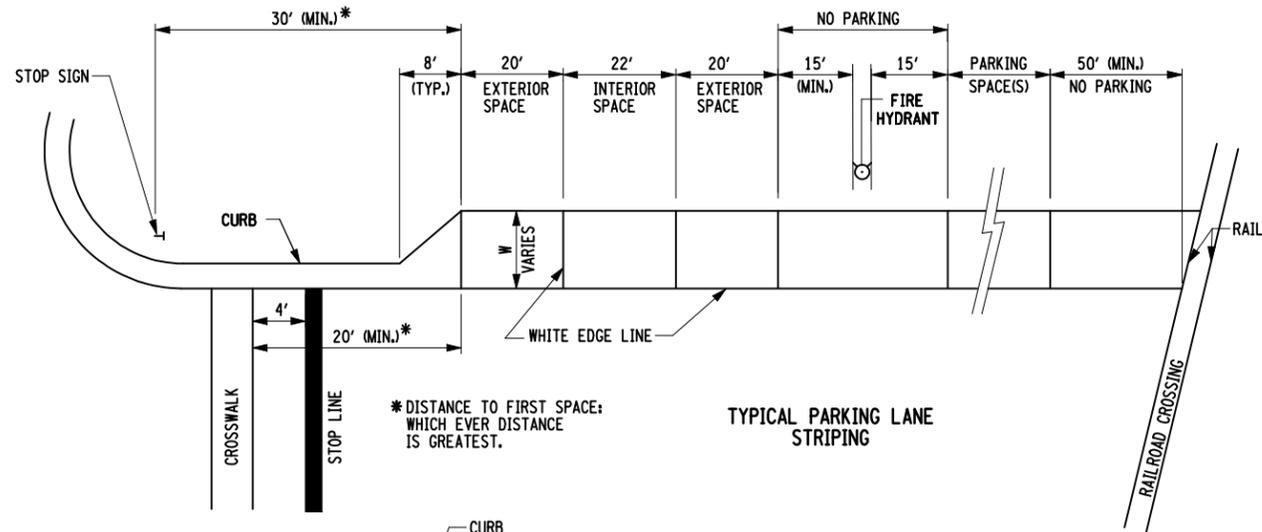


TAPERED DECELERATION LANE  
 TYPICAL RAMP DETAILS  
 (2 LANE MAINLINE SHOWN - MULTI LANE SIMILAR)

1. SEE STANDARD SHEET 685-01 (SHEET 1 OF 5) FOR LINE LAYOUT AND DIMENSIONS. (EXCEPT AS NOTED)
2. REFER TO STANDARD SHEET 685-01 (SHEET 1 OF 5) FOR GENERAL NOTES.

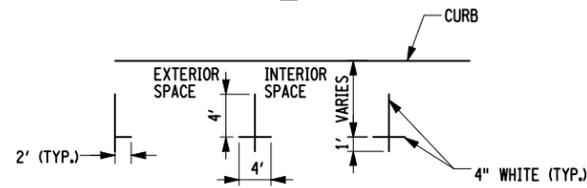
 <b>STATE OF NEW YORK</b> <b>DEPARTMENT OF TRANSPORTATION</b>	
U.S. CUSTOMARY STANDARD SHEET	
<b>PAVEMENT MARKING DETAILS</b> (SHEET 3 OF 5)	
APPROVED SEPTEMBER 19, 2008	ISSUED UNDER EB 08-036
/S/ DAVID J. CLEMENTS, P.E. DIRECTOR, OFFICE OF TRAFFIC SAFETY AND MOBILITY	685-01

EFFECTIVE DATE: 01/08/09

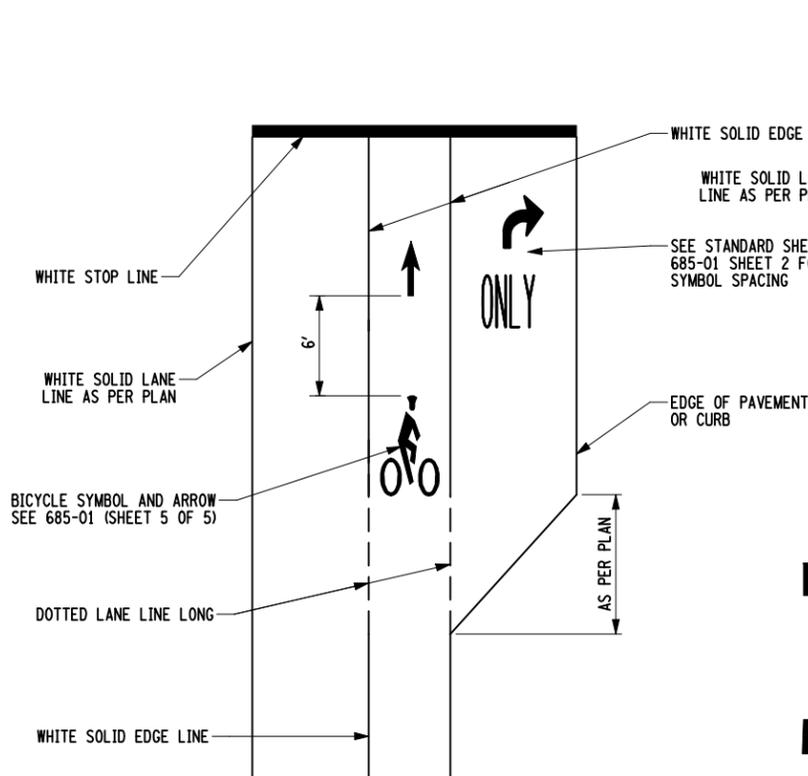


\* DISTANCE TO FIRST SPACE: WHICH EVER DISTANCE IS GREATEST.

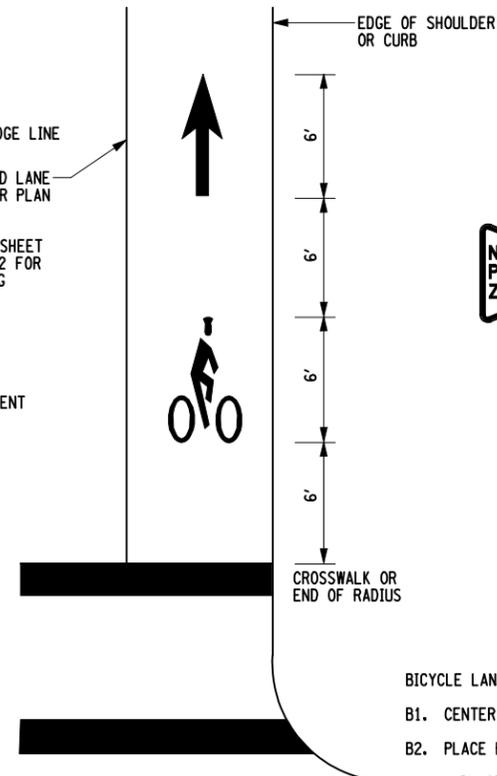
TYPICAL PARKING LANE STRIPING



ALTERNATE MARKINGS (NO EDGE LINE)



BICYCLE LANE MARKING ADJACENT TO RIGHT TURN LANE



BICYCLE LANE MARKING

BICYCLE LANE MARKING NOTES:

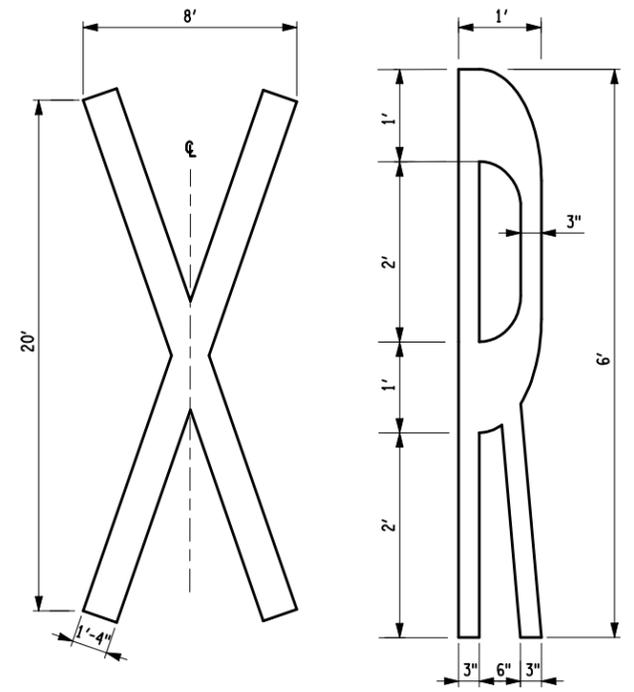
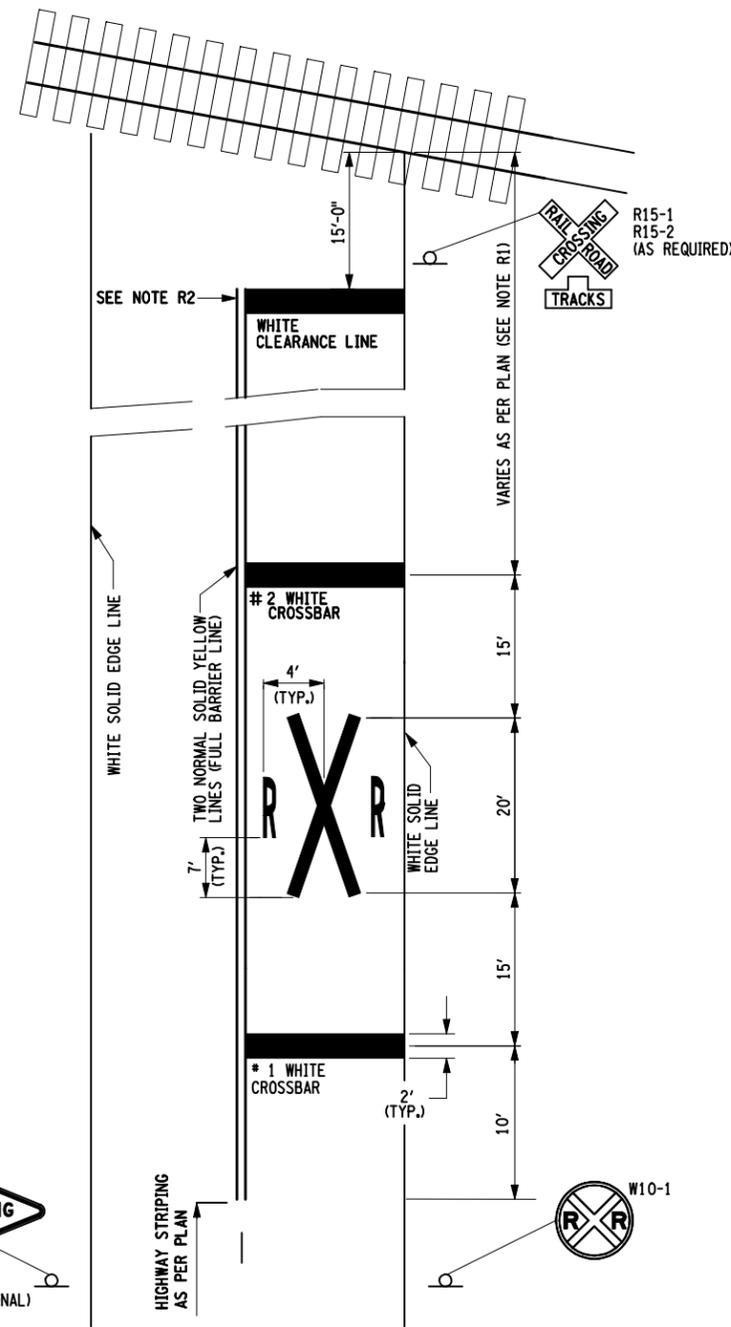
- B1. CENTER SYMBOL IN BICYCLE LANE OR SHOULDER.
- B2. PLACE BICYCLE LANE ARROW AND SYMBOL AFTER MAJOR OR SIGNALIZED INTERSECTIONS.
  - PLACE BICYCLE SYMBOL ONLY AT 1320' SPACING ALONG BICYCLE LANE OR AS INDICATED IN THE CONTRACT DOCUMENTS.
  - PLACE BICYCLE LANE ARROW AND SYMBOL 200' BEFORE ANY MAJOR OR SIGNALIZED INTERSECTIONS.
- B3. MARKINGS AS PER THE DIRECTIONS OF THE REGIONAL TRAFFIC GROUP OR AS PER PLAN. SIGNS SHALL BE USED WITH THE BICYCLE LANE.



RAILROAD GRADE CROSSING MARKINGS AND LAYOUT PLAN

RAILROAD GRADE CROSSING MARKINGS AND LAYOUT PLAN NOTES:

1. SEE STANDARD SHEET 685-01 (SHEET 1 OF 5) FOR LINE LAYOUT AND DIMENSIONS. (EXCEPT AS NOTED)
2. REFER TO STANDARD SHEET 685-01 (SHEET 1 OF 5) FOR GENERAL NOTES.



RAILROAD GRADE CROSSING

RAILROAD GRADE CROSSING NOTES:

R1. TABLE R1:

POSTED OR 85TH-PERCENTILE SPEED	ADVANCE PLACEMENT DISTANCE FOR STOP CONDITION (NOTE 1)
UP TO 35 MPH	(SEE NOTE 2)
40 MPH	130'
45 MPH	180'
50 MPH	260'
55 MPH	330'
60 MPH	410'
65 MPH	475'
70 MPH	560'

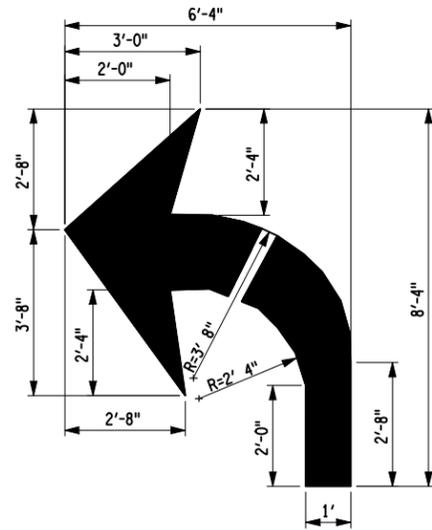
NOTE 1: DISTANCES ARE FOR A SIGN LEGIBILITY DISTANCE OF 250'.

NOTE 2: THE PLACEMENT LOCATION IS DEPENDANT ON SITE CONDITIONS AND OTHER SIGNING TO PROVIDE AN ADEQUATE ADVANCE WARNING FOR THE DRIVER.

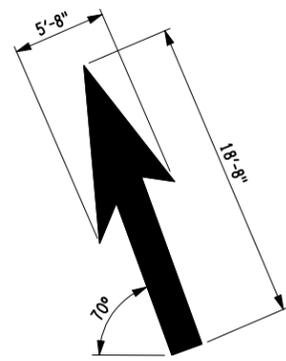
- R2. WHERE THERE IS NO RAILROAD CROSSING GATE, THE CLEARANCE LINE SHOULD BE PERPENDICULAR TO THE ROADWAY, AND 15' FROM THE NEAREST RAIL AT ITS CLOSEST POINT. WHERE THERE IS A GATE, THE CLEARANCE LINE SHOULD BE PARALLEL TO THE GATE, IN ITS LOWERED POSITION, AND EITHER 15' FROM THE NEAREST RAIL OR 8' FROM THE GATE, WHICHEVER PLACES THE LINE FURTHER FROM THE CROSSING.
- R3. ON A MULTI-LANE APPROACH, THE CLEARANCE LINE AND CROSSBARS SHOULD EXTEND ACROSS ALL LANES, AND A "RXR" SYMBOL SHOULD BE PLACED IN EACH LANE.

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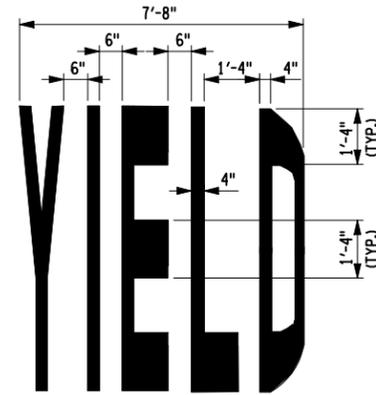
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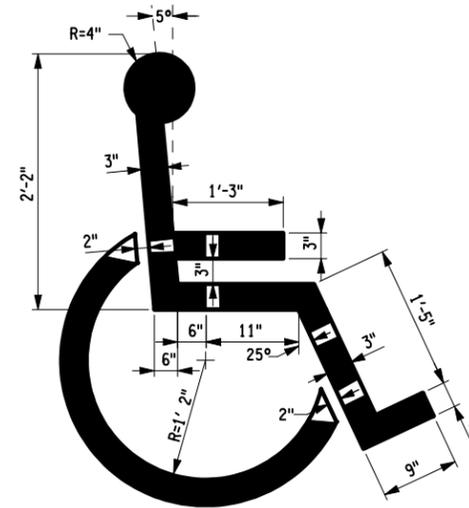
TURNING ARROW



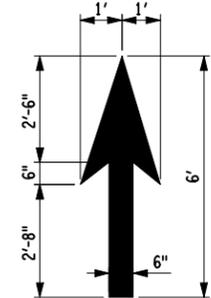
MERGE ARROW



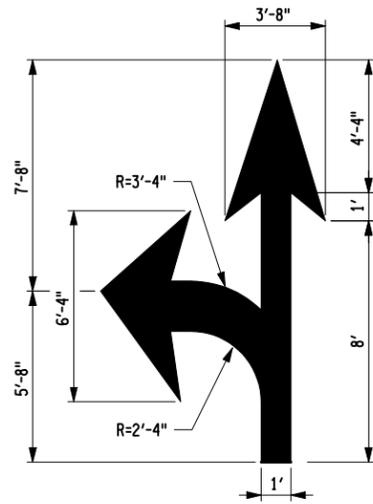
"YIELD" LETTERS  
SEE NOTE



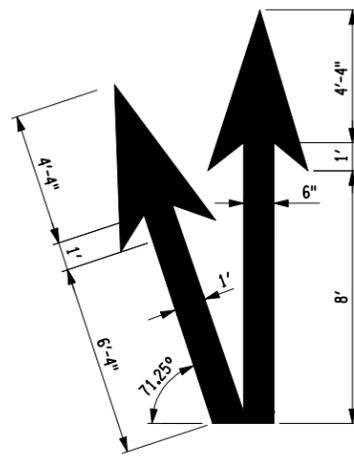
HANDICAPPED SYMBOL



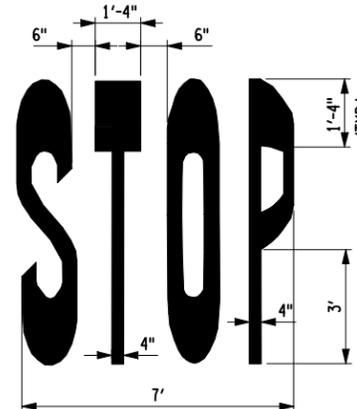
BICYCLE ARROW



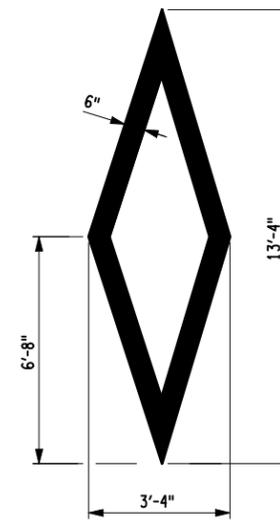
TURNING/STRAIGHT ARROW  
FOR SHARED LANE



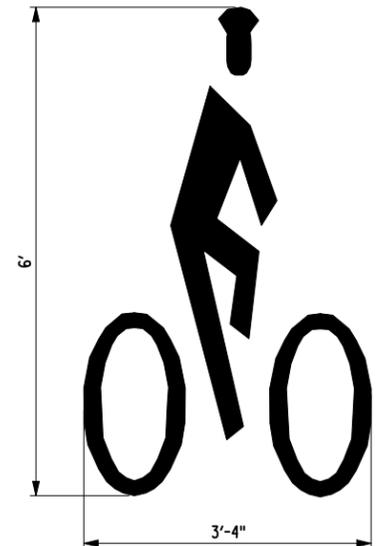
DIVERGE ARROW



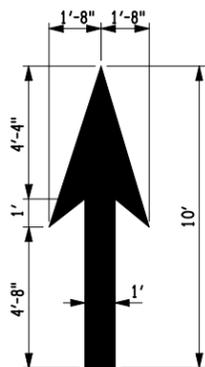
"STOP" LETTERS  
SEE NOTE



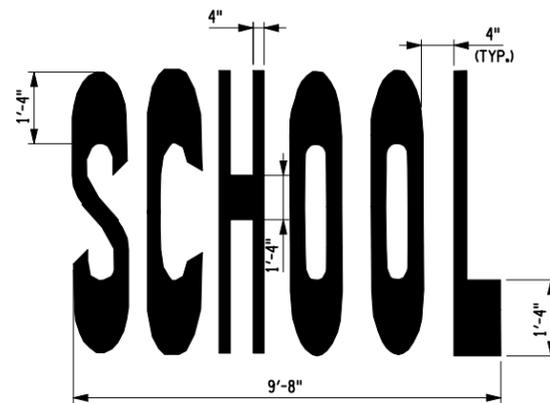
PREFERENTIAL LANE SYMBOL



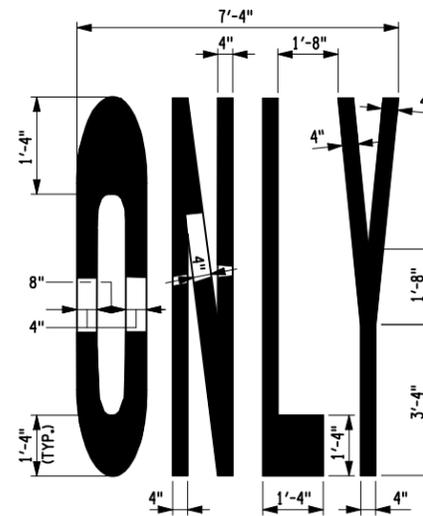
BICYCLE SYMBOL



STRAIGHT ARROW



"SCHOOL" LETTERS  
SEE NOTE



"ONLY" LETTERS  
SEE NOTE

NOTES:  
UNLESS OTHERWISE SHOWN:  
LETTER HEIGHT = 8'-4"  
LETTER WIDTH = 1'-4"  
SPACING = 8"  
(USE EQUAL SPACING BETWEEN LETTERS AND CENTER ENTIRE SYMBOL IN LANE)

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