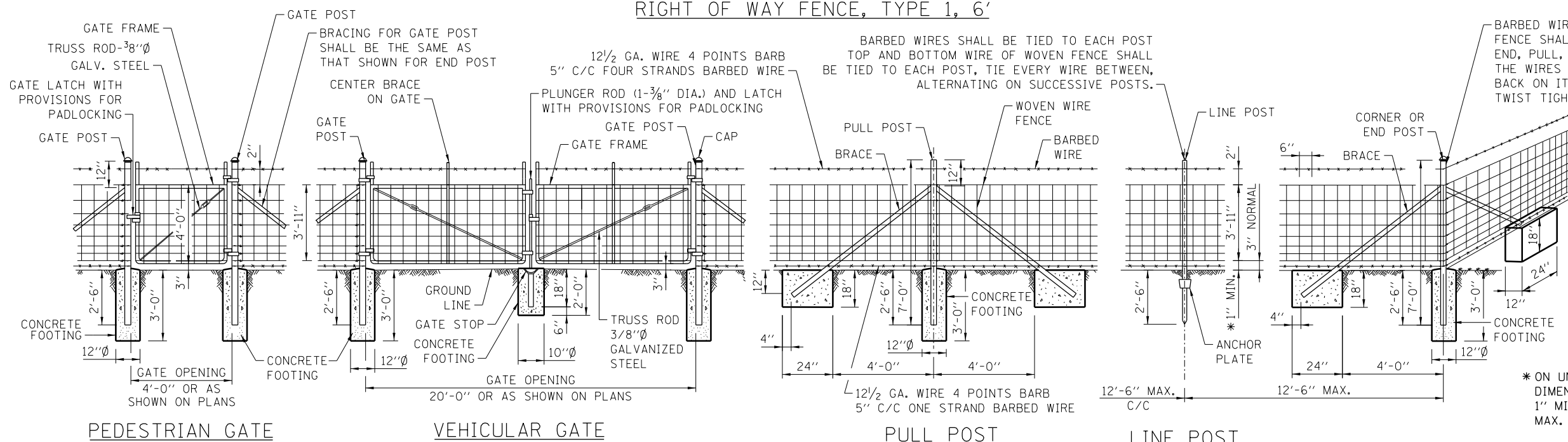
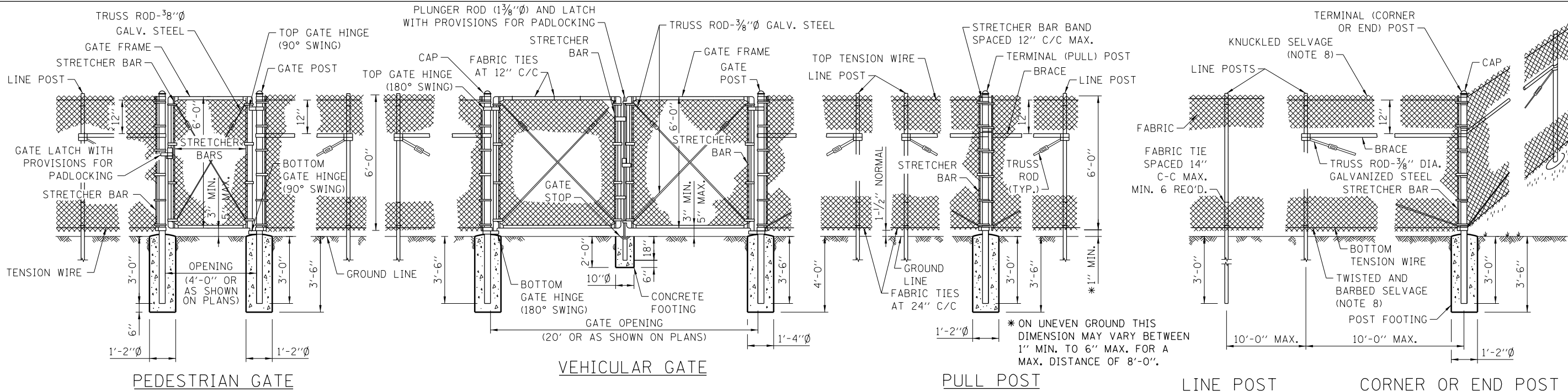


## Tollway Standard Drawing Revisions

Section D Roadway Appurtenances		
Standard	Modification Summary	Effective: 03/11/15
<b>All</b>	Revised detail descriptions to match Tollway Coded Pay Items	
	Updated drawings to follow IDOT highway standard levels	
<b>D2</b>	<b>Symbols and Patterns</b>	
	<b>Survey and Roadway Items</b>	
	Added Butterfly Sign Structure symbol	
	<b>Erosion &amp; Sediment Control, Landscaping Items (Added from Section K)</b>	
	Added Filter Fabric Inlet protection, Cover Type	
	Added Filter Fabric Inlet protection, Basket Type	
	Added Drainage Divide	
	Added Drainage Dike	
	Added Flotation Boom	
	Added Silt Fence	
	Added Synthetic Porous Runoff Control Structure	
	Added Urethane Foam Geotextile, Temporary Ditch Check	
	Added Tree Protection	
<b>D6</b>	<b>Pavement Marking and Shoulder Rumble Strip Details</b>	
Sheet 1	Revised lane marking for lane reduction transition marking to 6" Dotted line, white	
	Moved shoulder rumble strip details to new sheet 3	
Sheet 1 & 2	Added lane reduction arrow to lane reduction markings to lane termination	
Sheet 2	Added lane reduction arrow to lane reduction markings to lane entrance ramps	
Sheet 2	Changed 6" dotted line to 6" solid line past the theoretical gore for Entrance-Two Lane Ramp	
Sheet 3	Added concrete shoulder rumble strip details	
Sheet 3	Added ramp pavement markings	

 New Sheet

 Retired Standard



### GENERAL NOTES

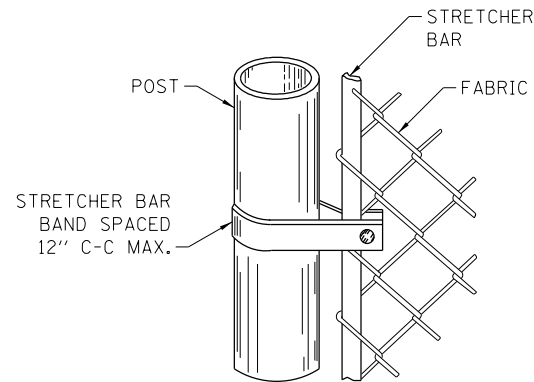
- ON STRAIGHT RUNS OF FENCE, PULL POSTS SHALL BE USED AT 500' CENTERS FOR TYPE 1 AND 330' CENTERS FOR TYPE 2.
- WHERE R.O.W. FENCE FOLLOWS R.O.W. LINE IT SHALL BE INSTALLED PARALLEL TO AND 6" INSIDE THE R.O.W. LINE ON TOLLWAY PROPERTY.
- LINE POSTS AND BRACES SHALL BE ON TOLLWAY SIDE OF FENCE FABRIC.
- WHEN THE TENSION OF THE FENCE TENDS TO PULL THE POSTS FROM THE GROUND, THE LINE POSTS SHALL BE ANCHORED WITH ANCHORAGE SPECIFIED FOR CORNER POSTS.
- AT LOCATION WHERE THE PROPOSED FENCE IS TO BE CONNECTED TO AN EXISTING POST, THE REQUIRED CONNECTIONS AND BRACING INCLUDING ALL NECESSARY HARDWARE SHALL BE CONSIDERED INCIDENTAL TO THE FENCE OF THE TYPE SPECIFIED.
- WHEN THE FENCE LINE HAS A CHANGE IN DIRECTION OF 10° OR MORE, A CORNER POST SHALL BE PLACED AT THE POINT OF CHANGE. WHERE THE ANGLE OF CHANGE IS LESS THAN 10° A PULL POST SHALL BE USED.
- WHERE GRADE LINE HAS A CHANGE IN SLOPE OF 10° OR MORE, A CORNER POST WITH BRACING AS REQUIRED SHALL BE PLACED. WHERE ANGLE IS LESS THAN 10° LINE POST MAY BE USED.
- WHERE RIGHT-OF-WAY FENCE, TYPE 1 IS USED, THE FABRIC SHALL BE KNUCKLED SELVAGE ON TOP AND TWISTED AND BARBED SELVAGE ON BOTTOM.
- PLACEMENT OF BRACED END POSTS OR CORNER POSTS WITHIN THE CLEAR ZONE SHALL BE AVOIDED.

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

DATE	REVISIONS
7-01-2009	R.O.W. FENCE TYPES 1 AND 2
11-01-2012	FENCE DETAILS
3-31-2014	REVISED NOTES
3-11-2015	REVISED ROLLED FORM SECTIONS
	REVISED NOTES

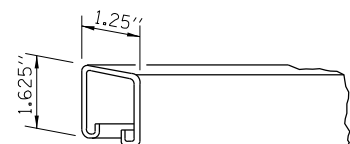
RIGHT OF WAY FENCE

STANDARD D1-04

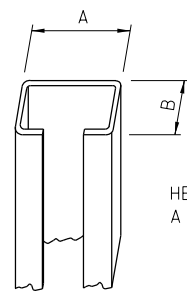


STRETCHER BARS SHALL BE GALVANIZED FLAT STEEL BAR NOT LESS THAN  $\frac{1}{4}'' \times \frac{3}{4}''$  AND THE STRETCHER BAR BANDS SHALL BE GALVANIZED FLAT STEEL BAR NOT LESS THAN  $\frac{1}{8}'' \times 1''$  WITH A  $\frac{3}{8}''$  GALVANIZED CARRIAGE BOLT.

### METHOD OF FASTENING STRETCHER BAR TO POST

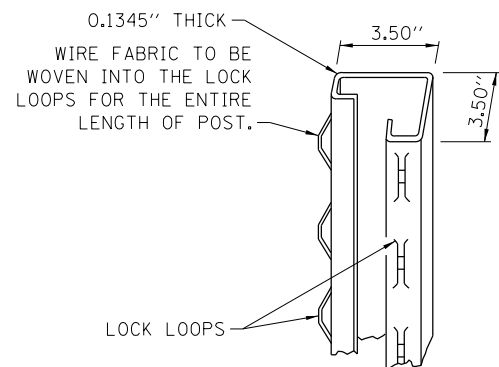


BRACE SECTION  
1.25 LBS/LF



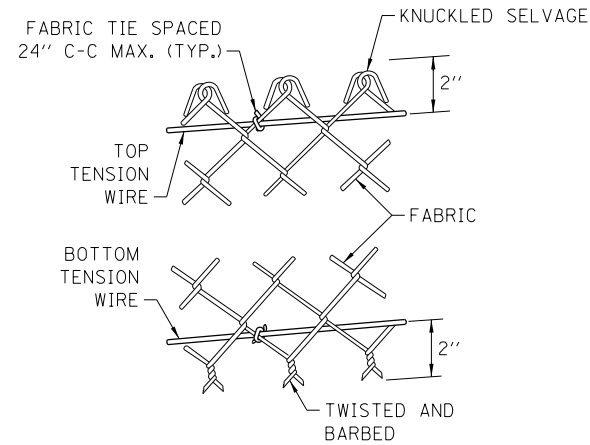
HEAVY "C" - 2.70 LBS/LF  
A x B = 2.250" x 1.625"

### LINE POST "C" SECTION

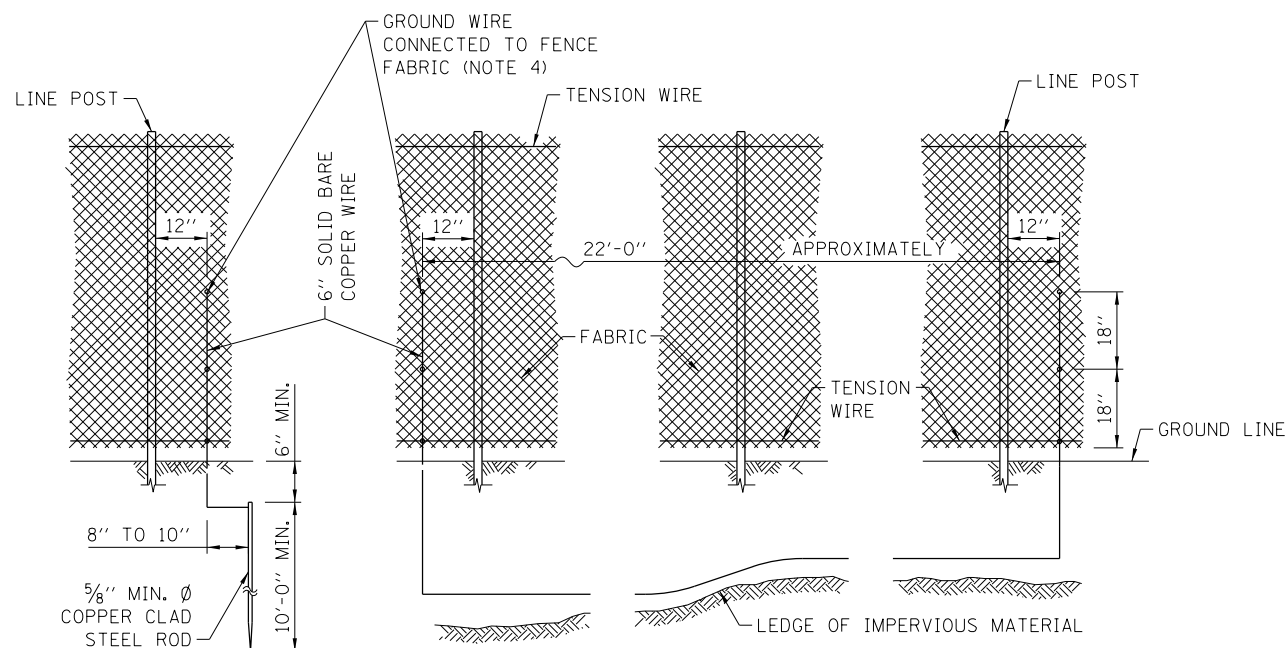


TERMINAL POST SECTION  
5.10 LBS/LF

### DETAILS OF ROLL FORMED SECTIONS



### METHOD OF TYING FABRIC TO TENSION WIRES



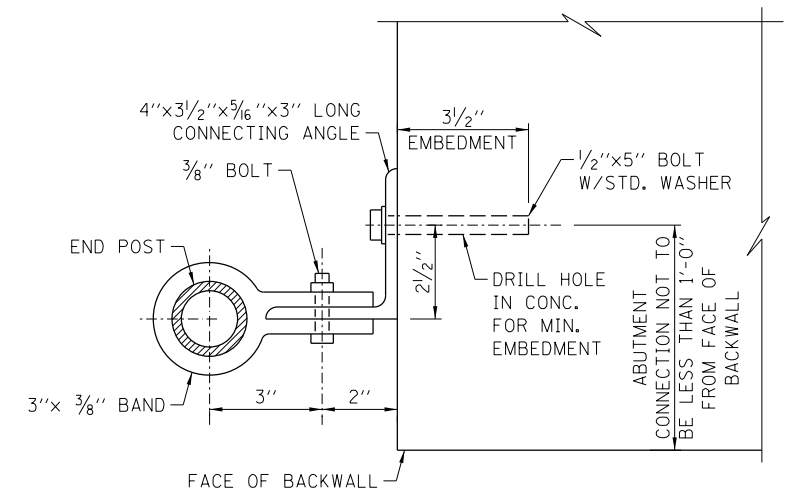
### STANDARD GROUND

### COUNTERPOISE GROUND (ALTERNATE)

### NOTES FOR STANDARD AND COUNTERPOISE GROUND:

1. THE INTERVALS FOR GROUNDING CONTINUOUS FENCING SHALL NOT EXCEED 500 FEET IN URBAN AREAS AND 1000 FEET IN RURAL AREAS. FENCE ADJACENT TO A GATE SHALL BE GROUNDED A MAXIMUM DISTANCE 100 FEET EACH SIDE OF THE GATE.
2. FENCE CROSSING UNDER A POWER LINE SHALL BE GROUNDED, ONCE DIRECTLY UNDER THE CROSSING AND ONE ON EACH SIDE AT 25 TO 50 FEET AWAY. FENCE LOCATED DIRECTLY UNDER A TELEPHONE WIRE OR CABLE CROSSING SHALL HAVE A SINGLE GROUND.
3. COUNTERPOISE GROUNDS SHALL BE USED AT LOCATIONS WHERE GROUND RODS CAN NOT BE DRIVEN DUE TO IMPERVIOUS EARTH MATERIALS.
4. THE GROUND WIRES SHALL BE CONNECTED TO FENCE FABRIC AND GROUND ROD BY STAINLESS STEEL BOLTS AND WASHERS. THE LOWER CONNECTION OF THE GROUND WIRE SHALL BE MADE TO THE BOTTOM TENSION WIRE.

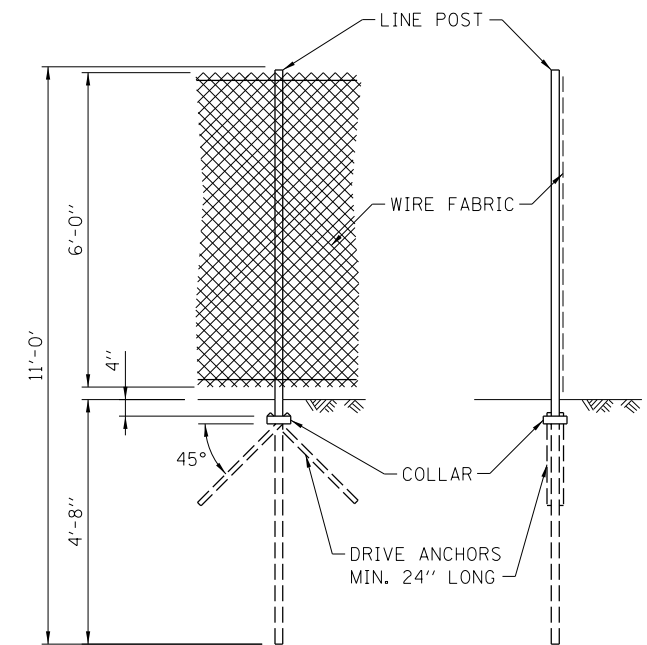
### ELECTRICAL GROUNDING DETAILS



### ABUTMENT CONNECTION DETAIL

### NOTES FOR ABUTMENT CONNECTION:

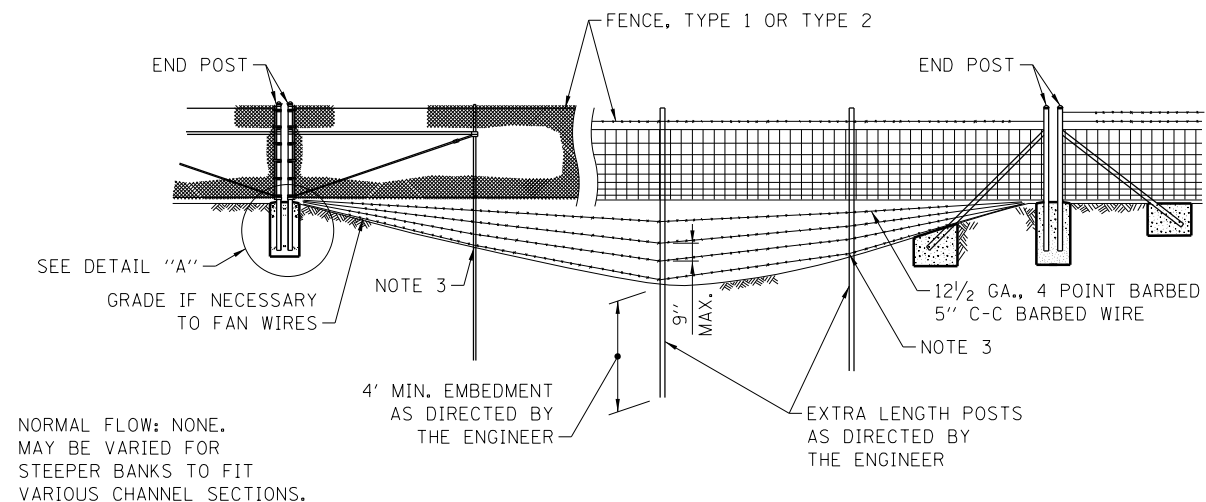
1. WHEN ROLL FORMED SECTION IS USED IN LIEU OF PIPE AS END POST, THE POST SHALL BE BOLTED DIRECTLY TO THE ABUTMENT WALL WITH  $\frac{1}{2}'' \times 5''$  BOLTS WITH STANDARD WASHERS MEETING THE APPROVAL OF THE ENGINEER.



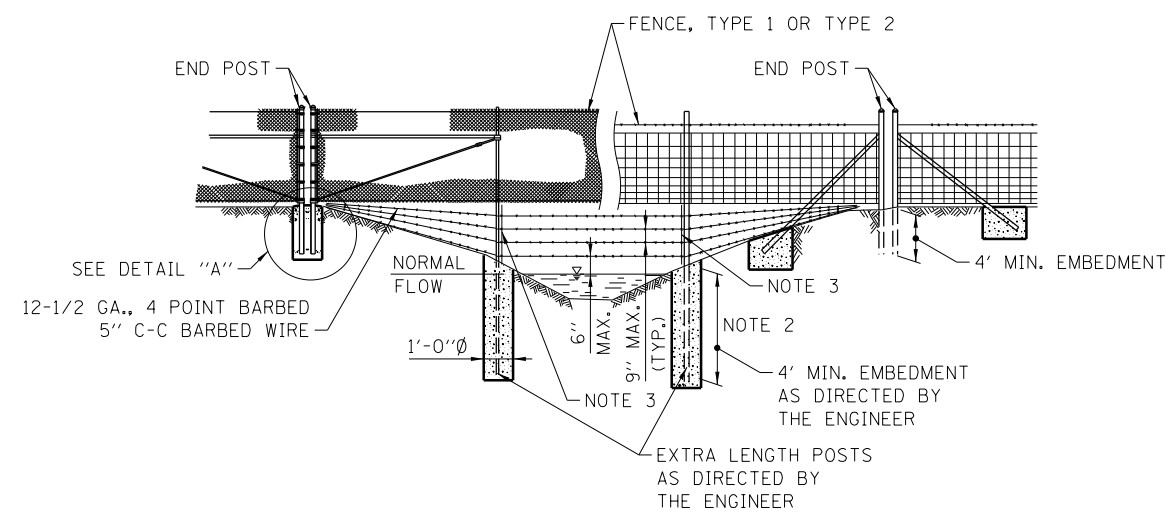
### ALTERNATE DRIVEN LINE POST ANCHORAGE WITH OR WITHOUT DRIVE ANCHORS

### NOTE FOR FENCE POST:

ALTERNATE DRIVEN LINE POST ANCHORAGE IS OPTIONAL. DRIVEN LINE POST ANCHORAGE WITHOUT DRIVE ANCHORS MAY BE USED IN AVERAGE TO GOOD SOIL CONDITIONS. WHEN SOIL IS WEAKER ( $Q_u < 1.25$  TONS/ SQ. FT.) AND STABILITY OF THE POST IS QUESTIONABLE, DRIVE ANCHORS SHALL BE USED. TYPES, SHAPES, DIMENSIONS AND COATING REQUIREMENTS OF DRIVE ANCHORS (ANCHOR BLADES AND COLLARS) FOR DIFFERENT TYPE OF POSTS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.



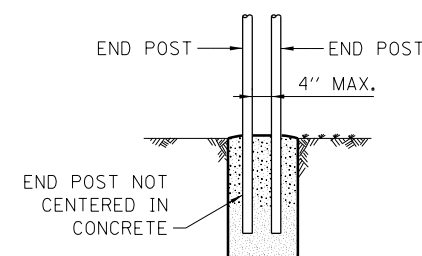
STREAM CROSSING, TYPE 1



STREAM CROSSING, TYPE 2

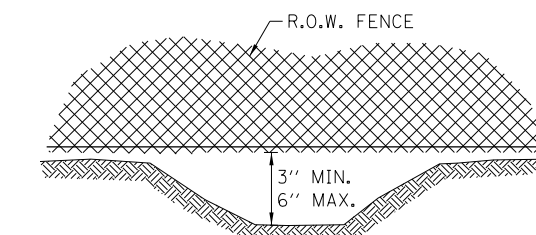
NOTES FOR STREAM CROSSING TYPE 1 AND TYPE 2:

1. THESE INSTALLATION CONDITIONS ARE TYPICAL AND ARE NOT TO BE CONSTRUED AS REPRESENTATIVE OF ALL CONDITIONS WHICH WILL BE ENCOUNTERED CONSTRUCTION WILL BE VARIED AS REQUIRED OR DIRECTED TO MEET FIELD CONDITIONS.
2. FOR STREAM CROSSING OF THE TYPE REQUIRED THE BOTTOM BARBED WIRE SHALL BE ANCHORED TO CONCRETE FOOTING OR TO HOLES DRILLED IN POSTS, AND INTERMEDIATE WIRES SHALL BE TIED TO THE BOTTOM WIRE AND TO POSTS IN AN EVENLY SPACED FASHION TO PREVENT SLIPPAGE.
3. CONCRETE AND FITTINGS FOR ALL TYPES OF FENCE SHALL BE AS DETAILED FOR SIMILAR CONDITIONS PER STANDARD DRAWING.

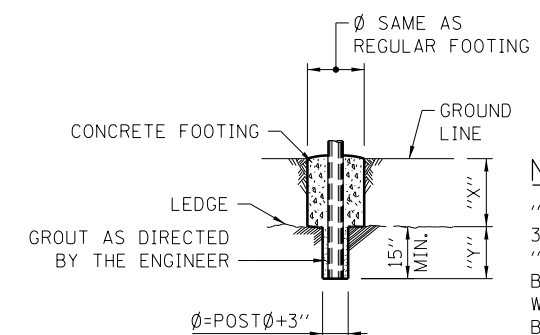


DETAIL A

THE FENCE FABRIC SHALL BE REPLACED BY BARBED WIRE STRANDS AT 12\"/>



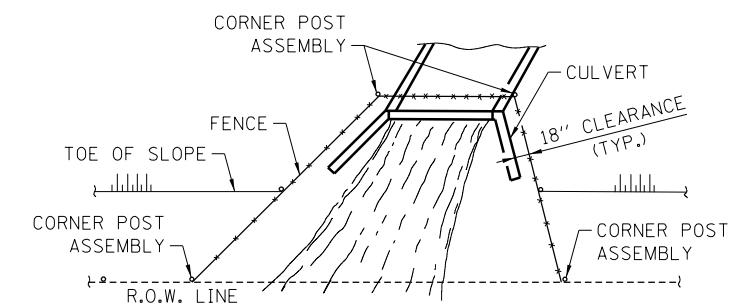
FENCE INSTALLATION OVER DITCH



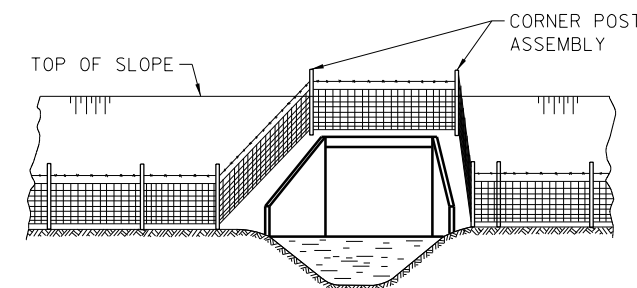
FOOTING FOR POST WHEN ROCK LEDGE IS ENCOUNTERED

NOTE:

"X" + "Y" SHALL NOT EXCEED 30" WHEN "X" IS 0" TO 15" "Y" = 15", AND THE POST SHALL BE SHORTENED AS REQUIRED. WHEN "X" EXCEEDS 15" "Y" SHALL BE DECREASED ACCORDINGLY.



PLAN AT HEADWALL



ELEVATION

NOTES FOR INSTALLATION AROUND HEADWALL:

1. THIS TYPE OF INSTALLATION IS TO BE USED ONLY WHEN SPECIFICALLY CALLED FOR IN THE CONTRACT PLANS.
2. WHEN THE WIDTH OF THE CULVERT MAKES NECESSARY TO ANCHOR A POST TO THE TOP OF THE CULVERT, A CAST IRON SHOE OR OTHER DEVICE APPROVED BY THE ENGINEER SHALL BE USED. THE COST OF ANCHORING THE POST SHALL BE INCIDENTAL TO THE TYPE OF FENCE REQUIRED.

INSTALLATION AROUND HEADWALL

SURVEY AND ROADWAY ITEMS

EXISTING	PROPOSED	
		CONSTRUCTION JOINT W/DOWEL BARS
		BENCHMARK
		CANTILEVER SIGN STRUCTURE
		BUTTERFLY SIGN STRUCTURE
		DOUBLE COLUMN GROUND MOUNTED SIGN
		SINGLE COLUMN GROUND MOUNTED SIGN
		SPAN TYPE SIGN STRUCTURE
		TRIPLE COLUMN GROUND MOUNTED SIGN
		RUMBLE STRIP

DRAINAGE AND UTILITY ITEMS; ROADWAY LIGHTING AND SIGNS

EXISTING	PROPOSED	
		BOX CULVERT WITH HEADWALL
		CABLE IN DUCT W/O GROUND
		LOW POINT
		OVERHEAD ELECTRICAL
		OVERHEAD TELEPHONE
		PIPE CULVERT
		LAKE OR POND
		QUARRY
		STREAM
		SWAMP
		CABLE OR CONDUIT TAG
		ELECTRICAL MANHOLE
		LIGHT-DUTY BOX
		ROADWAY LUMINAIRE
		STEEL TOWER
		TELEPHONE MANHOLE
		UNDERPASS LUMINAIRE
		WATER POINT
		WATERMAIN VALVE VAULT
		WATER WELL
		WOOD POLE

EROSION & SEDIMENT CONTROL, LANDSCAPING ITEMS

EXISTING	PROPOSED		EXISTING	PROPOSED	
		CLEARING & GRADING LIMITS (LIMITS OF CONSTRUCTION)			EROSION CONTROL BLANKET
		DIVERSION DIKE			OVER SEEDING CLASS B1
		DRAINAGE DIVIDE			OVER SEEDING CLASS B2
		DRAINAGE PATH			SEEDING CLASS A1
		SEDIMENT BASIN AGGREGATE BERM			SEEDING CLASS A2
		CULVERT INLET PROTECTION-STONE			SEEDING CLASS A3
		CULVERT INLET PROTECTION-FENCE			SEEDING CLASS A4
		DEWATERING BASIN			SEEDING CLASS A5
		FILTER FABRIC INLET PROTECTION, BASKET TYPE			SEEDING CLASS A6
		FILTER FABRIC INLET PROTECTION, COVER TYPE			SEEDING CLASS D1
		FLOTATION BOOM			SODDING (SALT TOLERANT)
		INITIAL CONSTRUCTION ITEM			TEMPORARY GROUND COVER
		RECTANGULAR INLET PROTECTION			TURF REINFORCEMENT MAT
		TEMPORARY ROCK CHECK DAM			
		TEMPORARY DITCH CHECK ROLLED EXCELSIOR LOG			
		SYNTHETIC POROUS RUNOFF CONTROL STRUCTURE			
		TEMPORARY DITCH CHECK URETHANE FOAM GEOTEXTILE			
		SEDIMENT BASIN			
		SILT FENCE			
		SUPER SILT FENCE			
		STABILIZED CONSTRUCTION ENTRANCE			
		STONE OUTLET STRUCTURE SEDIMENT TRAP			
		STREAM DIVERSION			
		TEMPORARY PIPE SLOPE DRAIN			
		TEMPORARY RIPRAP			
		TEMPORARY SWALE			
		TREES AND STUMP			
		TREE PROTECTION			
		TEMPORARY STREAM CROSSING			



SYMBOLS AND PATTERNS

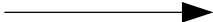




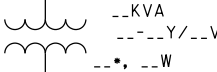

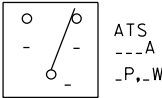
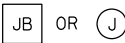
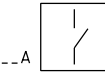
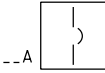

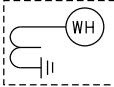
STANDARD D2-03










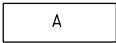





DATE	REVISIONS
07-01-09	REVISED SYMBOL & PATTERNS
11-01-12	ADDED NEW SYMBOLS
3-11-2015	ADDED NEW SYMBOL

APPROVED.....  
CHIEF ENGINEER

DATE 7-1-2009





























ELECTRICAL AND MECHANICAL ITEMS

	HOME RUN TO PANEL AS NOTED
	INDICATES CIRCUIT TURNING DOWN
	INDICATES CIRCUIT TURNING UP
	GROUND ROD
	GROUNDING TRIAD
	TRANSFORMER
	MOTOR
	AUTOMATIC TRANSFER SWITCH (ATS)
	JUNCTION BOX
	DISCONNECT SWITCH
	CIRCUIT BREAKER
	MANUAL TRANSFER SWITCH
	SELF CONTAINED UTILITY METERING

	STANDBY GENERATOR
	PANEL CIRCUIT BREAKER
	MECHANICALLY HELD LIGHTING COIL
	CONTROL RELAY COIL
	SINGLE-POLE SWITCH
	DUPLEX RECEPTACLE
	4P, 4W, WEATHERPROOF RECEPTACLE WITH SPRING DOOR, BACK BOX, & ANGLE ADAPTER
	4P, 4W, WEATHERPROOF RECEPTACLE WITH SPRING DOOR & BACK BOX
	DUPLEX RECEPTACLE WITH GROUND FAULT PROTECTION
	CONTROL BUILDING LIGHTING 1' X 4' INDUSTRIAL FLUORESCENT FIXTURE, PORCELAIN REFLECTOR, ELECTRONIC BALLAST.
	COMPACT WALL-MOUNTED LOW WATTAGE HPS FIXTURE WITH WIRE GUARD & SINGLE FACTORY INSTALLED FUSE
	EMERGENCY LIGHT UNIT WITH 2-6 VOLT, 12 WATT SEALED BEAM HALOGEN LAMPS WITH WALL MOUNTING BRACKET
	LANE LIGHTING - HEAVY DUTY ALUMINUM HOUSING WITH ENCLOSED REFLECTOR & TEMPERED GLASS LENS W/AUTO REGULATOR BALLAST. ASYMMETRIC PATTERN
	WIRE
	CONDUIT

EXISTING

PROPOSED

		COMPRESSED AIR (A)
		ACID RESISTANT WASTE OR DRAIN
		ACID RESISTANT VENT
		STORM SEWER (DOWNSPOUT)
		GAS LINE
		HOT GAS BYPASS LINE (HG)
		HEATING HOT WATER RETURN (HHWR)
		HEATING HOT WATER SUPPLY (HHWS)
		DRY COMPRESSED AIR (IA-INSTRUMENT AIR)
		PROCESS WATER ("P" WATER) LINE
		PROTECTED WATER OR PLANT WATER (PW)
		REFRIGERANT DISCHARGE LINE (RD)
		REFRIGERANT SUCTION LINE (RS)
		VENT LINE (V)

NOTE:

ALL SYMBOLS AND PATTERNS ON THIS DRAWING ARE PROPOSED UNLESS OTHERWISE NOTED.

SHEET 2 OF 3



SYMBOLS AND PATTERNS

STANDARD D2-03

  
APPROVED..... CHIEF ENGINEER ..... DATE .. 7-1-2009 ..

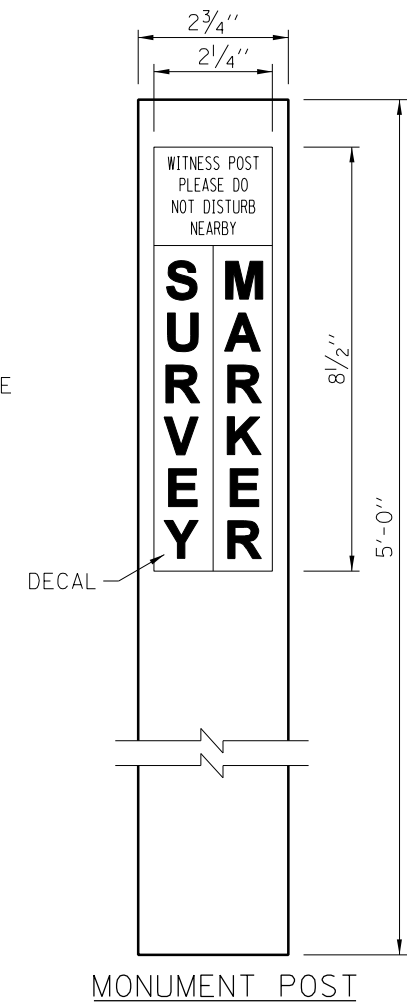
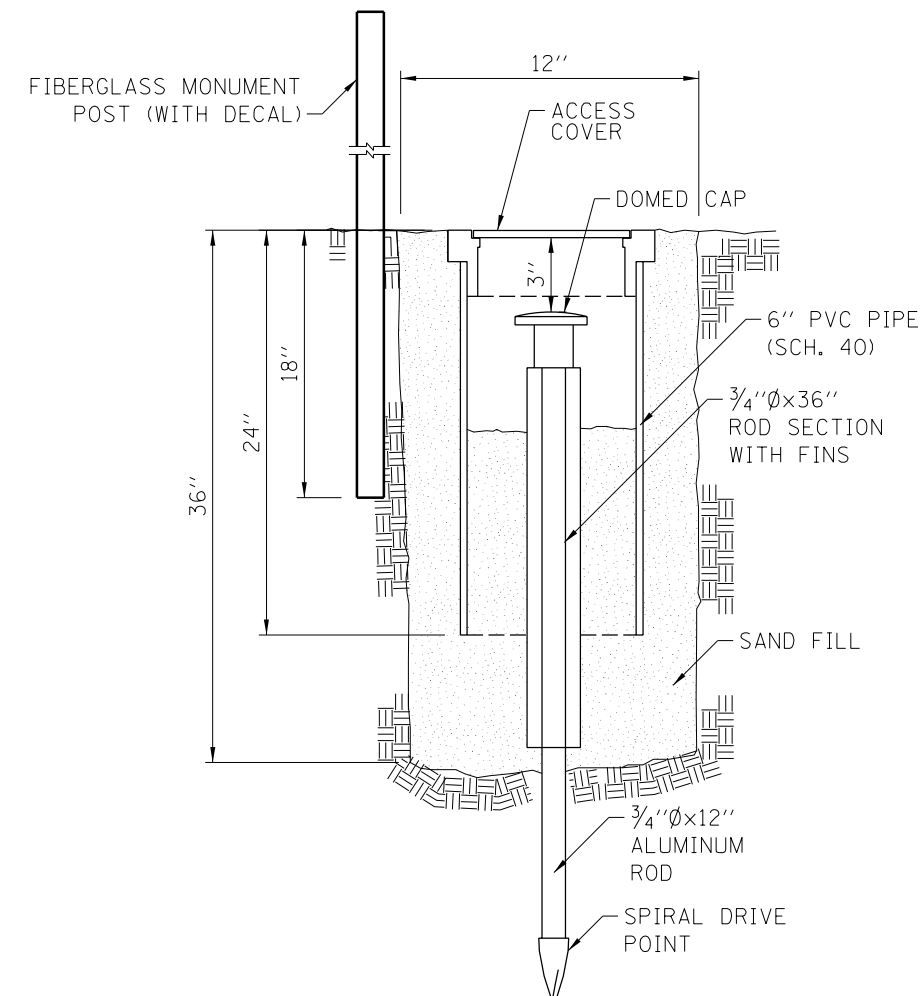
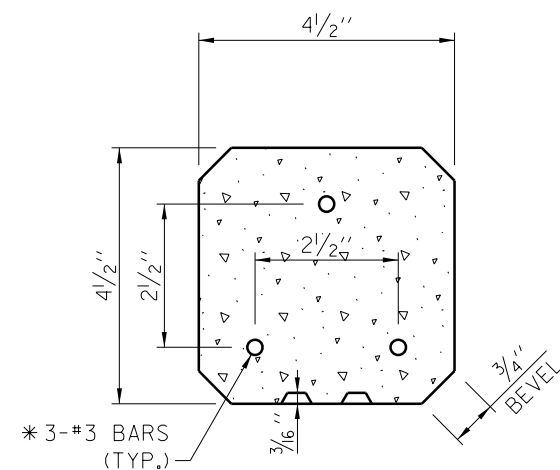
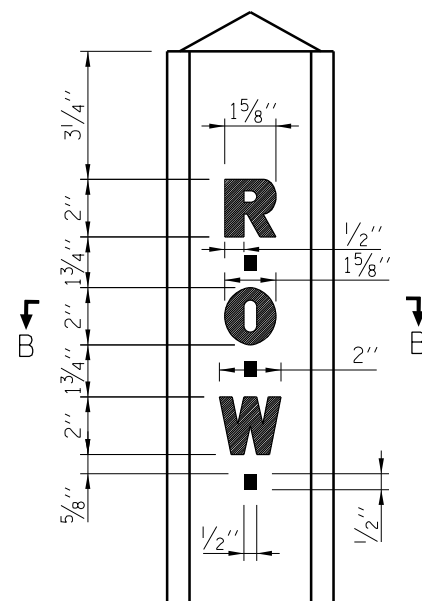
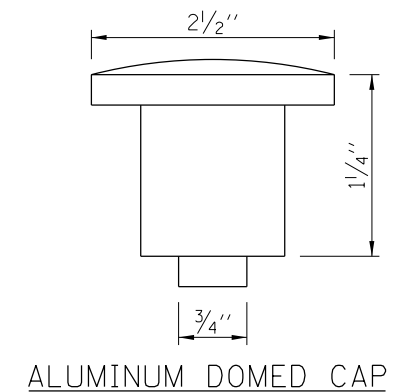
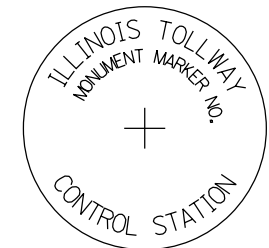
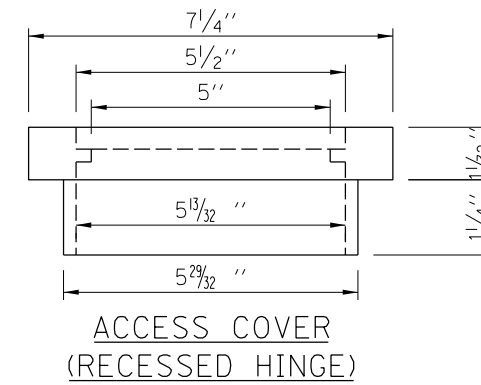
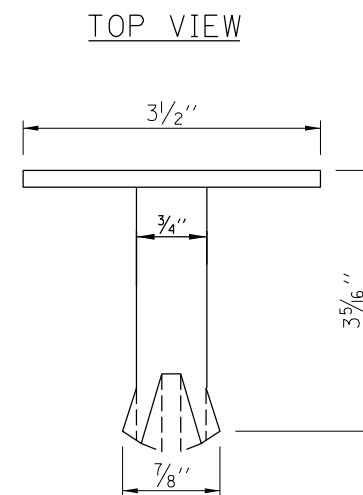
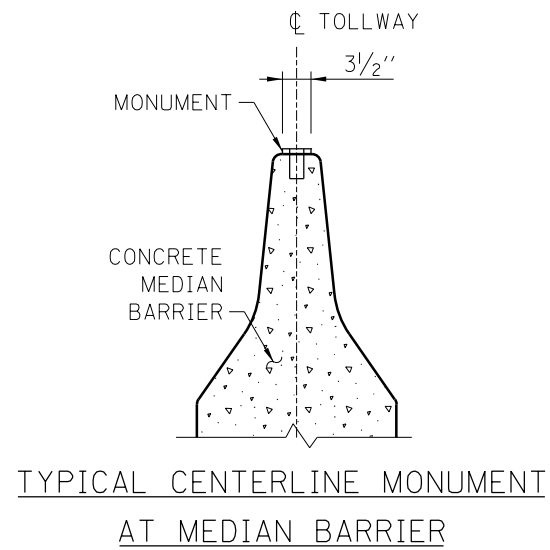
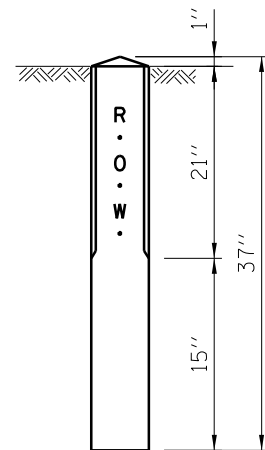
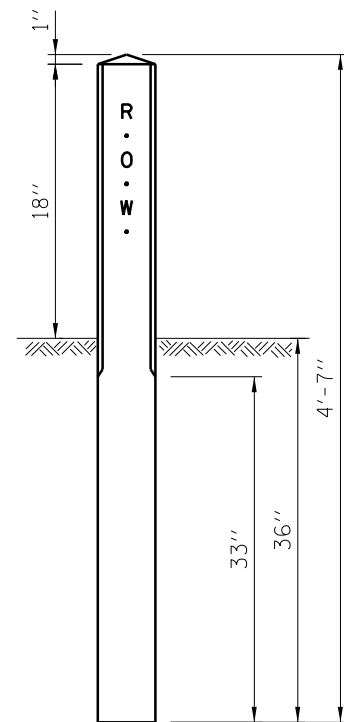
ELECTRICAL AND MECHANICAL ITEMS

	OR		QUANTITY AND DIRECTION OF THE AIR FLOW		OR		SPLITTER DAMPER		GLOBE VALVE
	OR		DUCT SIZE (FIRST FIGURE SIZE OF SHOWN, SECOND FIGURE SIZE OF SIDE NOT SHOWN.)				PLUG VALVE WITH MEMORY STOP (BALANCING)		BUTTERFLY VALVE
							PLUG VALVE		CHECK VALVE
			SUPPLY DUCT SECTION				SOLENOID VALVE		ANGLE GATE VALVE
	OR		RETURN OR EXHAUST DUCT SECTION				TEMPERATURE CONTROL VALVE		CONCENTRIC REDUCER
	OR		DUCT DROPS IN THE DIRECTION OF FLOW				THREE-WAY TEMPERATURE CONTROL VALVE DIAPHRAGM		ECCENTRIC REDUCER
	OR		DUCT RISES IN THE DIRECTION OF FLOW				THREE-WAY TEMPERATURE CONTROL VALVE TOP VIEW		ORIFICE FLANGE
	OR		TURNING VANES				PRESSURE REDUCING VALVE (NOS. = INITIAL AND FINAL PRESSURE - PSIG)		CROSSOVER
	OR		8" THROAT DIAMETER CEILING DIFFUSER; AIR FLOW -- 100 CFM				AIR PRESSURE REDUCING STATION (NO. CORRESPONDS WITH AIR PRESSURE REDUCER SCHEDULE)		EXPANSION JOINT (SLIP TYPE)
	OR		BALANCING OR VOLUME DAMPER				SAFETY VALVE (NOS. = PRESSURE SETTING - PSIG)		EXPANSION JOINT (BELLOWS TYPE)
	OR		MOTOR OPERATED DAMPER				FLOAT OPERATED VALVE		AIR ELIMINATOR (AIR VENT)
			FLEXIBLE DUCT				QUICK COUPLING (QC)		PIPE CAP
			FIRE DAMPER				HORIZONTAL UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)		STRAIGHT CROSS
			SOUND ATTENUATOR				VERTICAL UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)		90° ELBOW
			ZONE DAMPER				CABINET TYPE UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)		90° ELBOW TURNED DOWN
			FLEXIBLE CONNECTION AT FAN OR EQUIPMENT				THERMOSTAT OR ROOM TEMPERATURE SENSOR		90° ELBOW TURNED UP
			EXTRACTOR				GATE VALVE		SIDE OUTLET ELBOW TURNED DOWN
							FLOW SWITCH		SIDE OUTLET ELBOW TURNED UP
							VENTURI FLOW METER AND FLOW TO BE INDICATED		LATERAL
							CONNECTION BETWEEN NEW AND EXISTING		TEE
									TEE OUTLET UP
									TEE OUTLET DOWN
									UNION
									STRAINER
									PIPE ANCHOR
									THERMOMETER (NOS. = RANGE IN DEGREES FAHRENHEIT)
									PRESSURE, VACUUM OR COMPOUND GAUGE

NOTE:  
ALL SYMBOLS AND PATTERNS ON THIS DRAWING  
ARE PROPOSED UNLESS OTHERWISE NOTED.

APPROVED.....  
CHIEF ENGINEER

DATE 7-1-2009



RIGHT OF WAY MARKER

PERMANENT SURVEY MONUMENT

PERMANENT SURVEY MONUMENT (SPECIAL)

APPROVED: Paul Kovacs DATE 1-1-2007  
CHIEF ENGINEER

<i>DATE</i>	<i>REVISIONS</i>
07-01-10	NEW MONUMENT AND BARRIER MARKERS



PERMANENT SURVEY  
MONUMENTS AND  
RIGHT-OF-WAY MARKERS

---

STANDARD D3-01



PERMANENT DELINEATION SPACING					
		MAINLINE		RAMP	
		TANGENT	CURVE	TANGENT	CURVE
*	GUARDRAIL	100'	100'	100'	TABLE A
*	CONCRETE BARRIER (DOUBLE FACE)	100'	100'	100'	TABLE A
*	CONCRETE BARRIER (SINGLE FACE)	100'	100'	100'	TABLE A
	SHOULDER NARROWING	3 @ 15'	3 @ 15'	3 @ 15'	3 @ 15'
	BRIDGE APPROACHES	3 @ 15'	3 @ 15'	3 @ 15'	3 @ 15'
*	BRIDGE PARAPET	50'	50'	50'	50'
*	NOISE ABATEMENT WALL (CRASH WORTHY)	100'	100'	100'	TABLE A
	POST MOUNTED DELINEATOR	200'	200'	200'	TABLE A
	POST MOUNTED DELINEATOR (RAMP TAPERS AND TANGENTS)	100'	100'	NA	NA
	TEMPORARY DELINEATION SPACING				
		TANGENT	REVERSE CURVE	SHIFT	TAPER
	TEMPORARY CONCRETE BARRIER	50'	25'	25'	25'
* WHEN ADJACENT SHOULDER IS USED AS A TRAVELED LANE, USE SPACING REQUIREMENTS AS SHOWN FOR TEMPORARY DELINEATION.					

TABLE A	
DELINEATION SPACING ON RAMP-CURVES	
RADIUS OF CURVE (FT.)	SPACING ALONG CURVE (FT.)
LESS THAN 1050	50
1050-1299	100
1300-1999	125
2000-2999	150
3000-3999	175
MORE THAN 3999	200

GENERAL NOTES:

EMERGENCY TURNAROUNDS DELINEATION-THE FOLLOWING DELINEATION SHOULD BE INSTALLED ON THE LEFT SIDE OF THE PAVEMENT APPROACHING EMERGENCY TURNAROUNDS.

- A. ONE-HALF OF A MILE IN ADVANCE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFECTOR UNIT OVER THREE AMBER REFLECTOR UNITS.
- B. ONE-FOURTH OF A MILE IN ADVANCE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFLECTOR UNIT OVER TWO AMBER REFLECTOR UNITS.
- C. AT A POINT NEAR THE INTERSECTION OF THE EDGE OF THE LEFT SHOULDER AND NEAR EDGE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFLECTOR UNIT OVER ONE AMBER REFLECTOR UNIT.

NOTES FOR ROADWAY DELINEATORS, POST MOUNTED INSTALLATION:

1.

A. MAINLINE-SINGLE WHITE REFECTOR UNITS SHALL BE PLACED CONTINUOUSLY ON THE RIGHT AND SINGLE AMBER REFLECTOR UNITS SHALL BE PLACED ON THE LEFT ON MAIN LINE SECTIONS WITHOUT BARRIER WALL.

B. RAMPS-SINGLE REFLECTOR UNITS SHALL BE PLACED ON THE OUTSIDE OF ALL CURVED SECTIONS OF RAMPS, SINGLE WHITE SHALL BE PLACED ON THE RIGHT SIDE AND AMBER ON THE LEFT SIDE. THE DELINEATORS SHALL BE OVERLAPPED FOR A SHORT DISTANCE TO CLEARLY INDICATE WHERE DELINEATION ON ONE SIDE OF THE RAMP ENDS AND DELINEATION ON THE OTHER SIDE APPEARS.

C. DOUBLE WHITE REFLECTOR UNITS SHALL BE PLACED ON THE RIGHT AT ALL ACCELERATION AND DECELERATION LANES.
2. DELINEATORS SHALL BE MOUNTED ON SUPPORTS SUCH THAT THE TOP OF REFLECTORS IS FOUR FEET ABOVE THE ROADWAY EDGE AND TWO FEET OUTSIDE THE OUTER EDGE OF THE PAVED SHOULDER OR TWO FEET MINIMUM AND SIX FEET MAXIMUM OUTSIDE THE BACKS OF CURBS OR GUTTERS.
3. IN ALL CASES, THE COLOR OF THE REFLECTORS SHALL BE THE SAME AS THE ADJACENT EDGE LINE EXCEPT AS SPECIFIED IN GENERAL NOTES.
4. POST MOUNTED DELINEATORS SHALL BE PLACED CONTINUOUSLY AS NOTED ABOVE IN CONJUNCTION WITH GUARDRAIL INSTALLED.

NOTES FOR GUARDRAIL AND CONCRETE BARRIER DELINEATOR:

1. REFLECTOR MARKERS TYPE B AND TYPE C SHALL HAVE REFLECTIVE SURFACE ON ONE SIDE ONLY.

Paul Kovacs

APPROVED.....

CHIEF ENGINEER

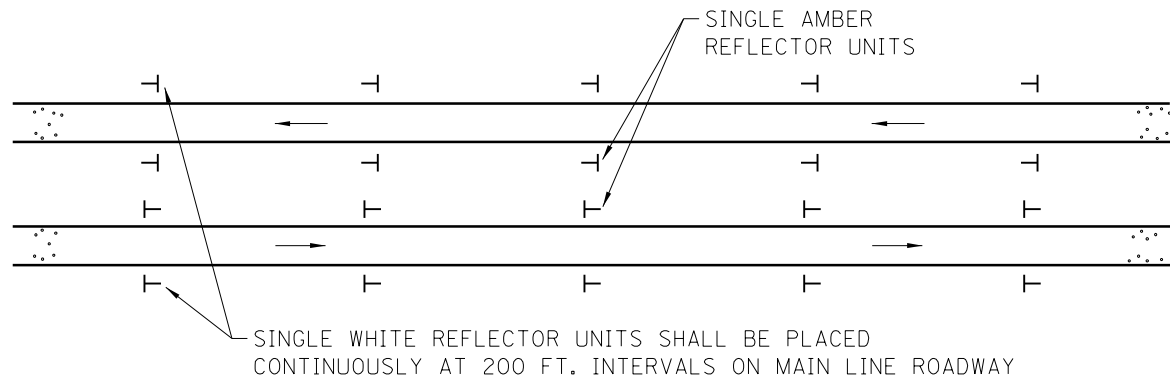
DATE 7-1-2009

DATE	REVISIONS
07-01-09	CHANGED BARRIER TO F-SHAPE CONFIG.
	ADDED SECTION C-C NEW BARRIER DELINEATORS
02-07-12	REVISED REFLECTOR MARKER TYPE C DIMENSION
11-01-12	REVISED NOTES, TABLE AND DELINEATION
	SPACING
3-11-2015	REVISED NOTES

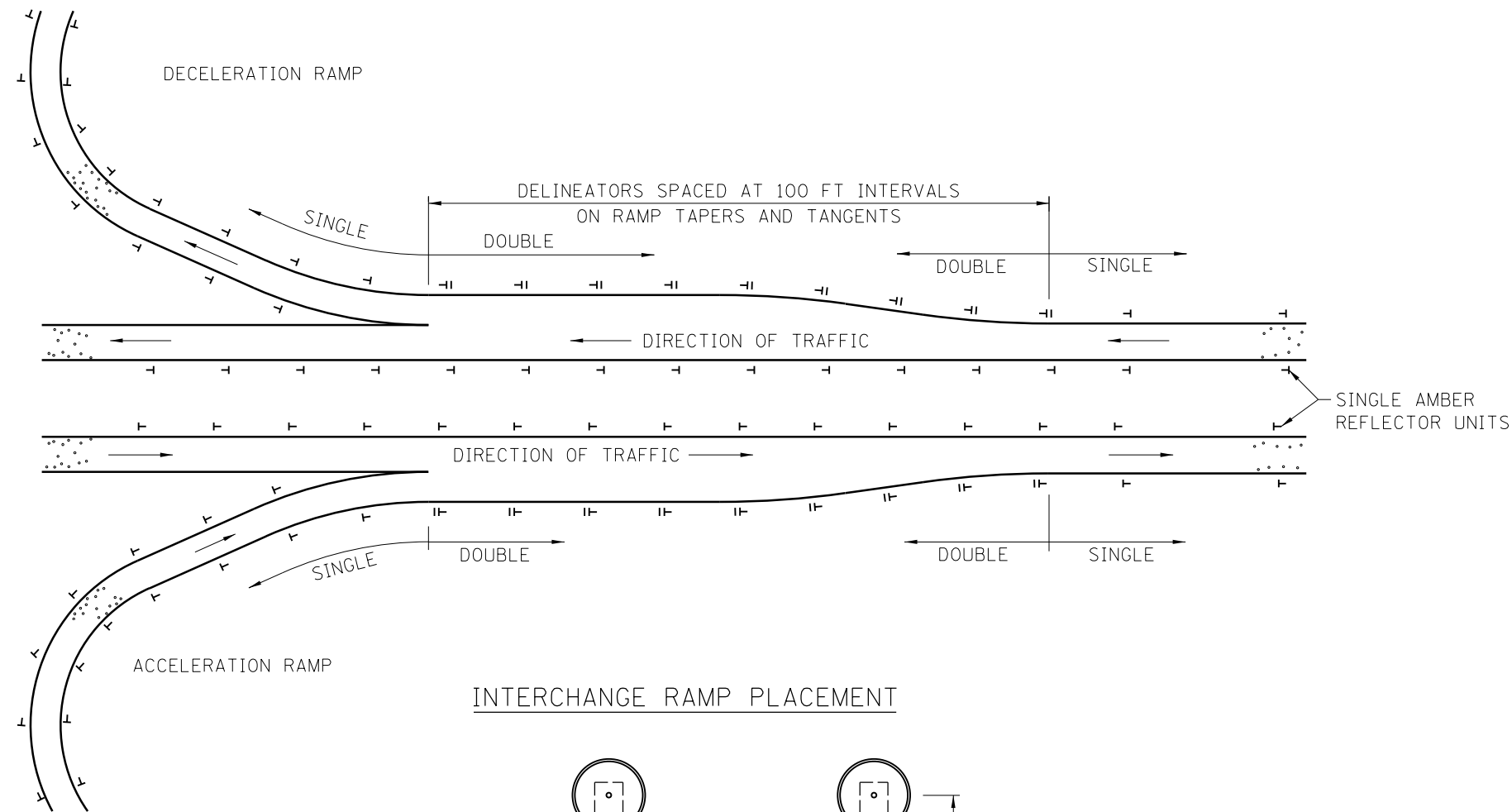


DELINEATORS

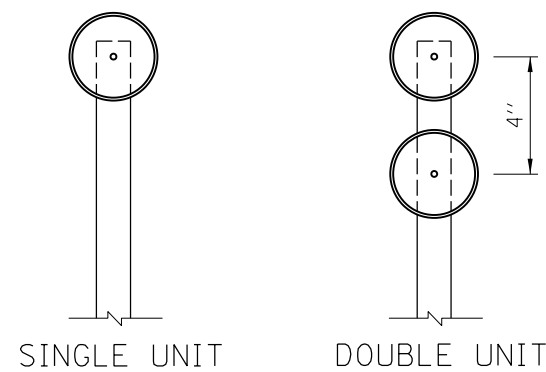
STANDARD D4-04



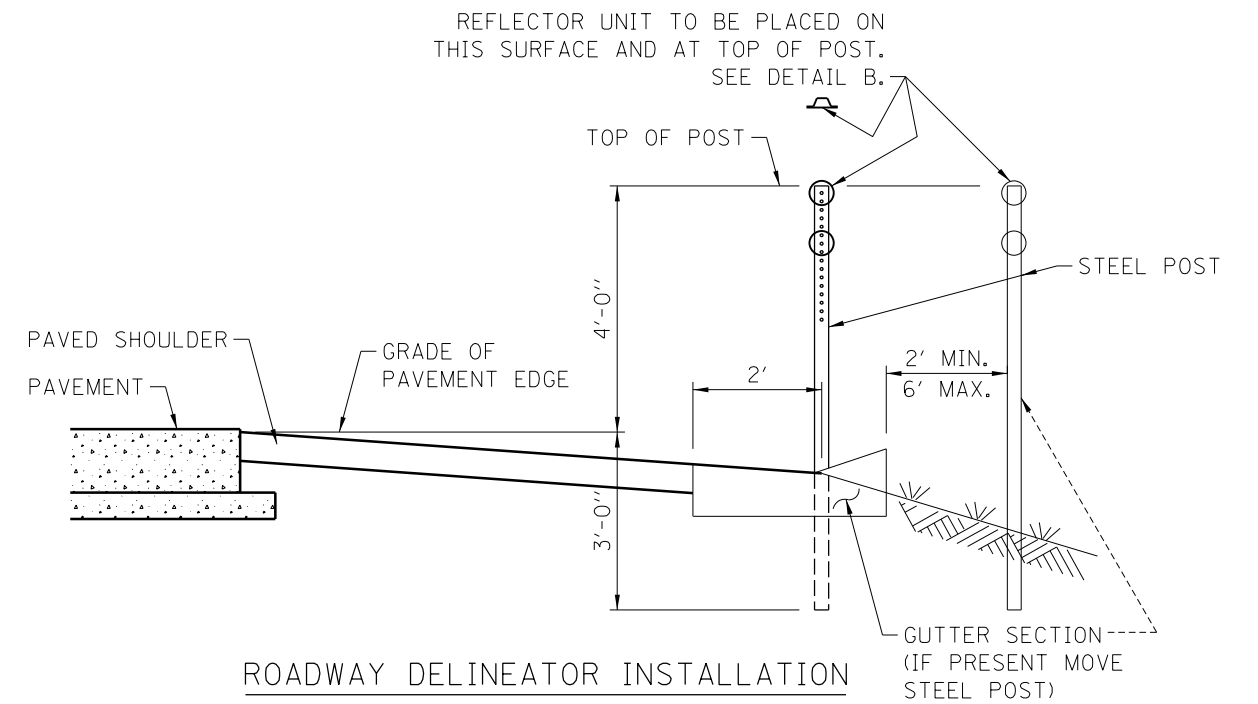
TANGENT PLACEMENT



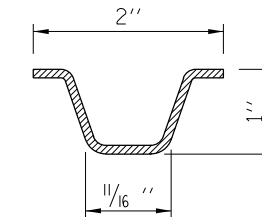
INTERCHANGE RAMP PLACEMENT



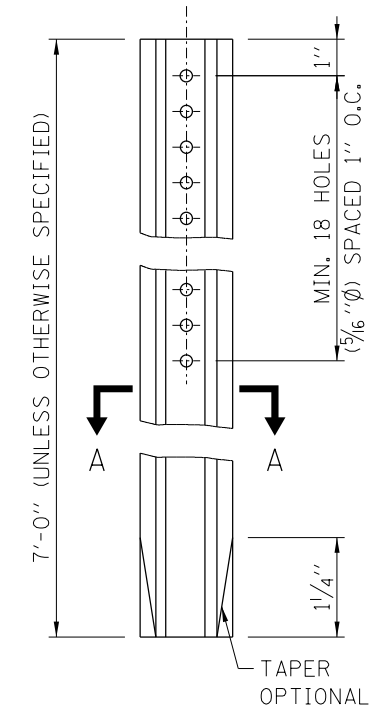
TYPICAL DELINEATORS



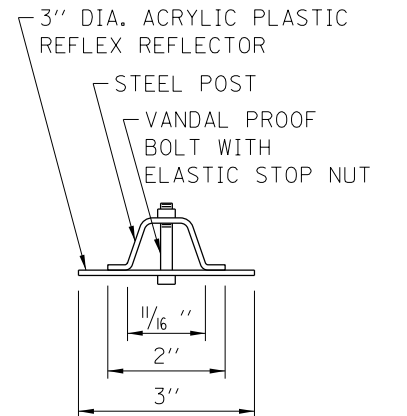
ROADWAY DELINEATOR INSTALLATION



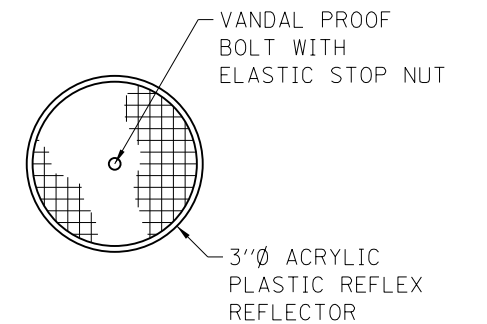
SECTION A-A  
STEEL- 1.12 LBS/FT.



STEEL POST



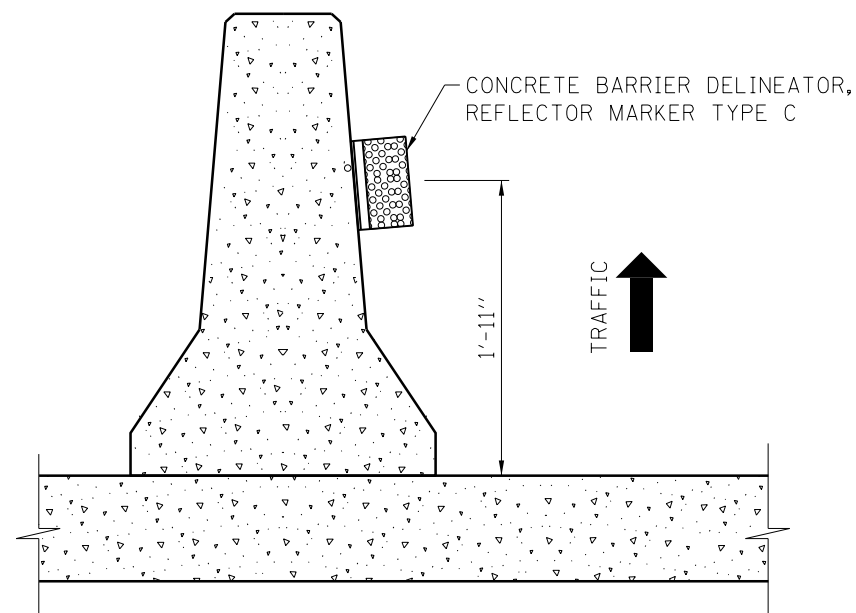
DETAIL B



DELINEATORS

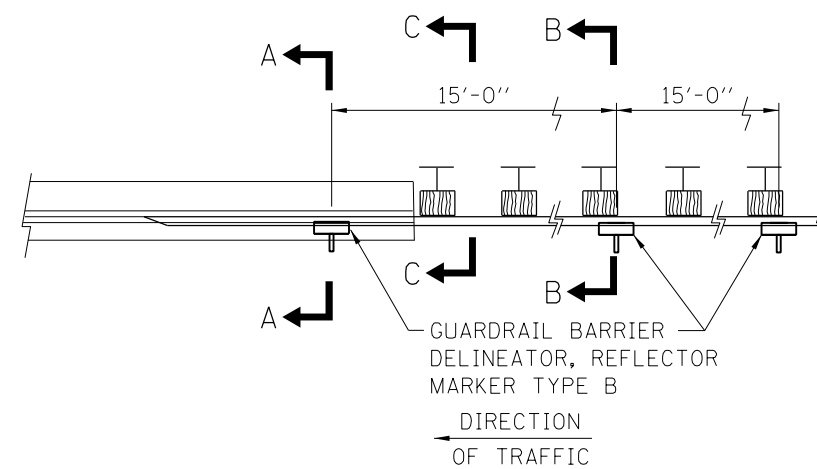
**NOTE:**  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED: *Paul Kovacs* CHIEF ENGINEER DATE: 7-1-2009



CROSS-SECTION

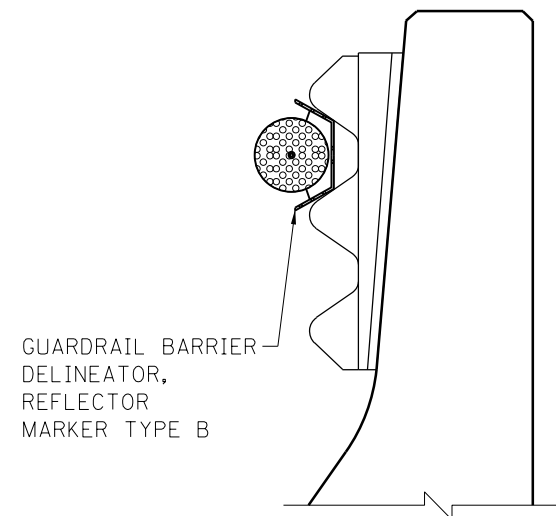
TEMPORARY CONCRETE BARRIER



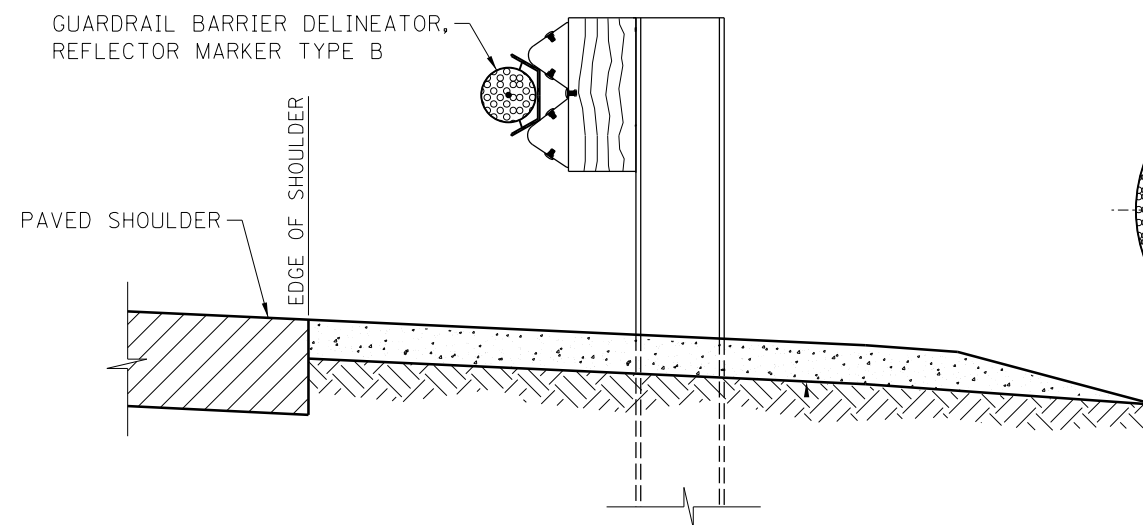
PLAN

DELINEATOR INSTALLATION ON GUARDRAIL  
AT BRIDGE APPROACHES

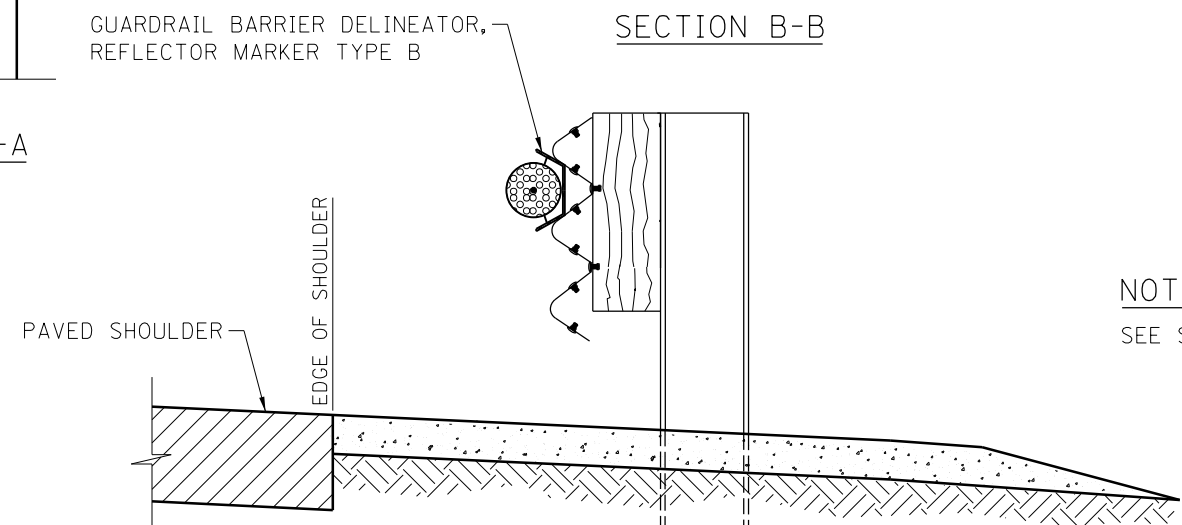
ALSO SEE SHEET 1 IN THIS SERIES  
FOR ADDITIONAL INFORMATION



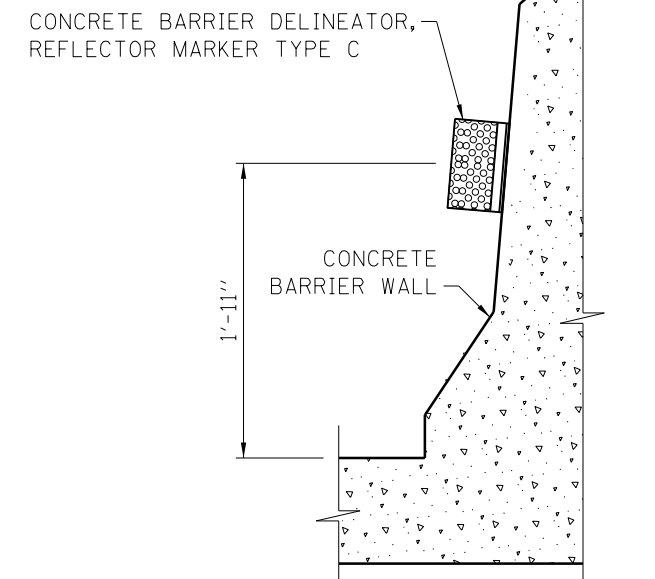
SECTION A-A



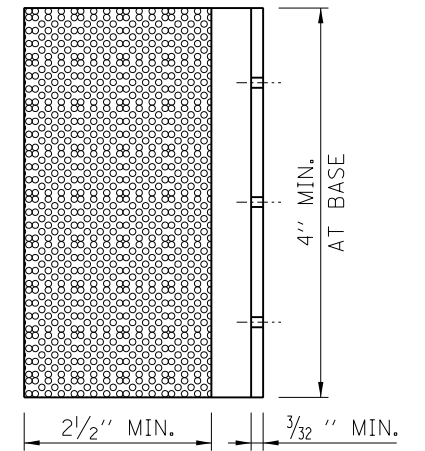
SECTION B-B



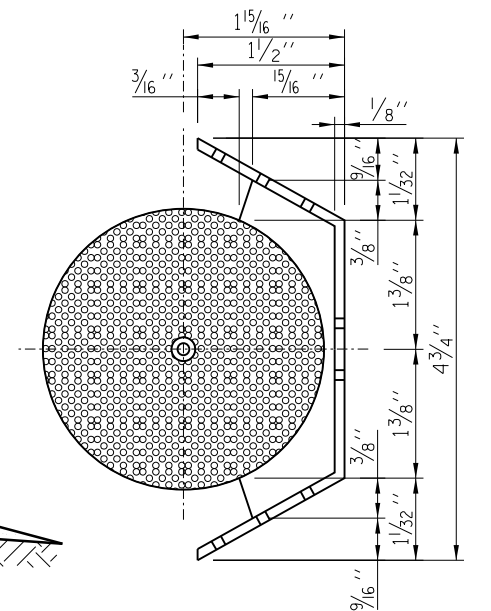
SECTION C-C



BARRIER OR PARAPET  
DELINEATOR INSTALLATION



DELINEATOR  
(REFLECTOR MARKER TYPE C)



DELINEATOR  
(REFLECTOR MARKER TYPE B)

NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

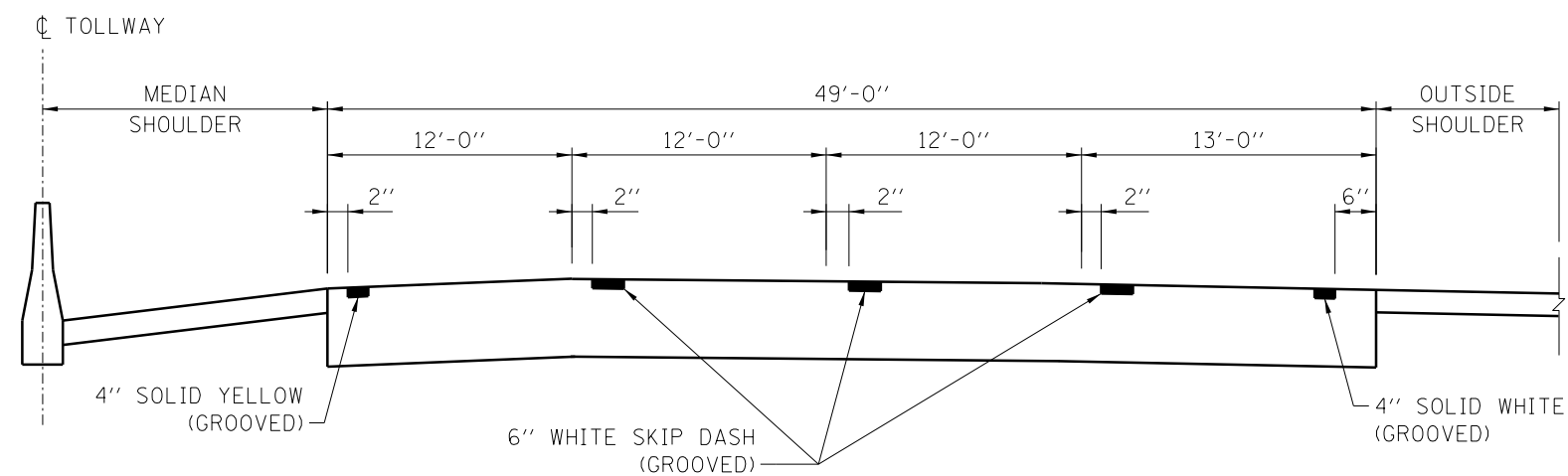
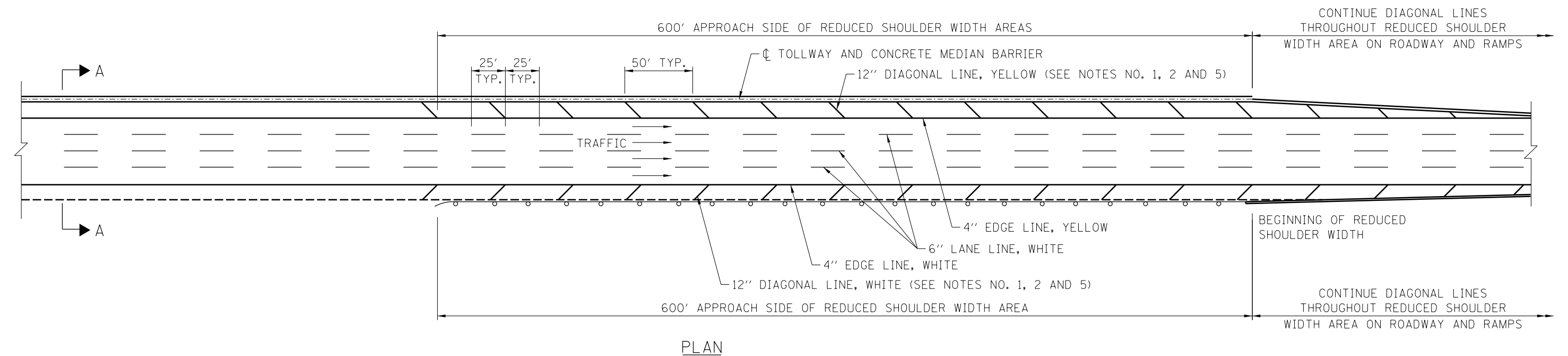
SHEET 3 OF 3



DELINEATORS

STANDARD D4-04

APPROVED *Paul Kovacs* DATE 7-1-2009  
CHIEF ENGINEER



# ROADWAY AND SHOULDER STRIPING - NEW CONSTRUCTION

## GENERAL NOTES:

1. DIAGONAL SHOULDER STRIPING REQUIRED WHERE ASPHALT SHOULDER WIDTH IS LESS THAN STANDARD.
2. ROADWAY MARKING MATERIALS TO BE USED ON FINISHED CONCRETE SURFACE AND ASPHALT SURFACE SHALL BE AS SHOWN ON THE PLANS.
3. WHERE THE GUARDRAIL ENCROACHES ON THE SHOULDER THE DIAGONAL MARKINGS SHALL EXTEND AS CLOSE TO THE FACE OF THE RAIL AS POSSIBLE.
4. ALL LANE LINES AND EDGE LINES SHALL BE GROOVED, ON ROADWAY SURFACES.
5. DIAGONAL STRIPING SHALL BE SURFACE APPLIED.
6. GORE STRIPING (CHEVRON) SHALL BE SURFACED APPLIED.
7. ALL LANE LINES AND EDGE LINES SHALL BE SURFACE APPLIED ON BRIDGES.

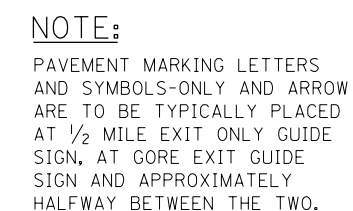
  
 APPROVED ..... CHIEF ENGINEER ..... DATE 7-1-2009

DATE	REVISIONS
07-01-09	ADDED LINE GROOVING NOTES
02-07-12	REVISED NOTES
11-01-12	REVISED EDGELINE OFFSET, REVISED NOTES
03-31-14	REVISED NOTES



PERMANENT PAVEMENT MARKINGS

STANDARD D5-05

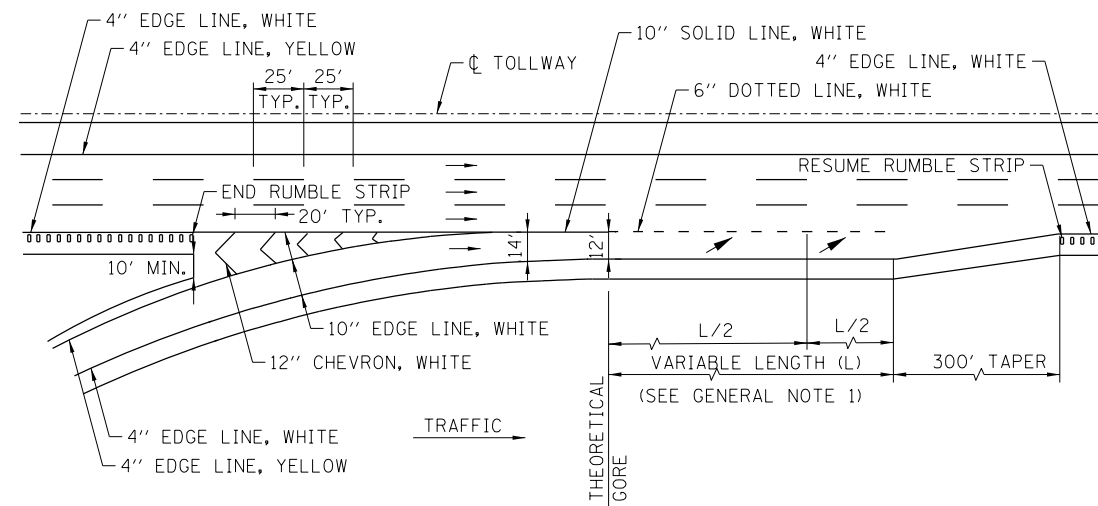


APPROVED: Paul Kovacs DATE 7-1-2009  
CHIEF ENGINEER

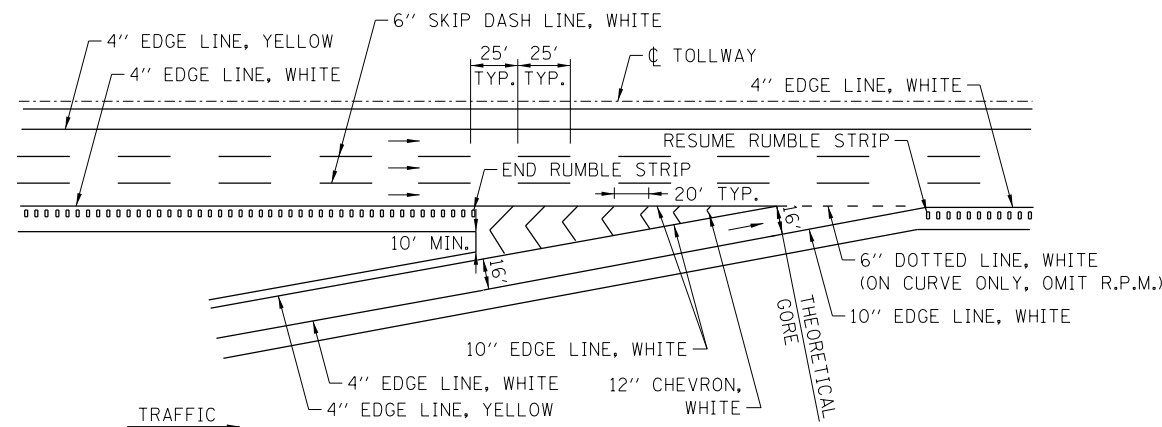
DATE	REVISIONS
07-01-09	ADDED LINE GROOVING NOTES
11-01-12	REVISED NOTES AND ADDED DOTTED LINE
03-01-13	REVISED SINGLE LANE LOOP RAMP DETAILS
03-31-14	ADDED LANE REDUCTION MARKINGS
3-11-2015	REVISED DETAILS, ADDED LANE-REDUCTION ARROWS AND SHEET 3



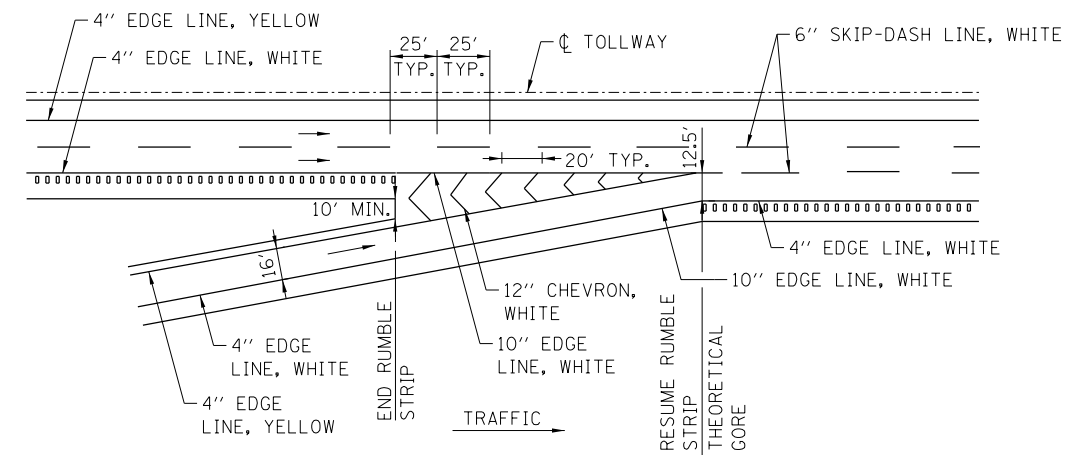
# PAVEMENT MARKING AND SHOULDER RUMBLE STRIP DETAILS



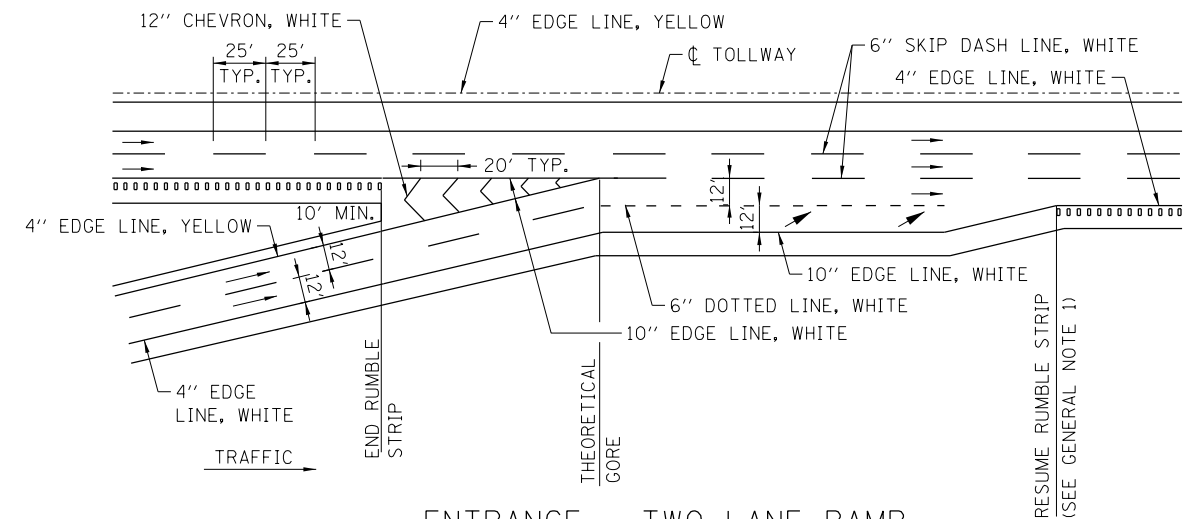
ENTRANCE - SINGLE LANE LOOP RAMP - PARALLEL TYPE



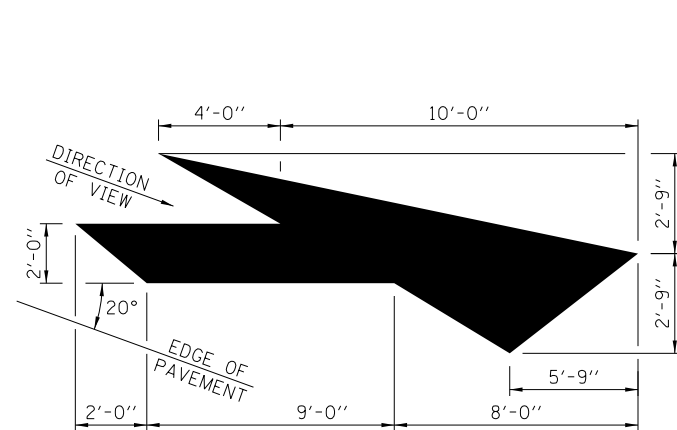
ENTRANCE - SINGLE LANE RAMP - TAPER TYPE



ENTRANCE - SINGLE LANE RAMP WITH ADDED MAINLINE LANE

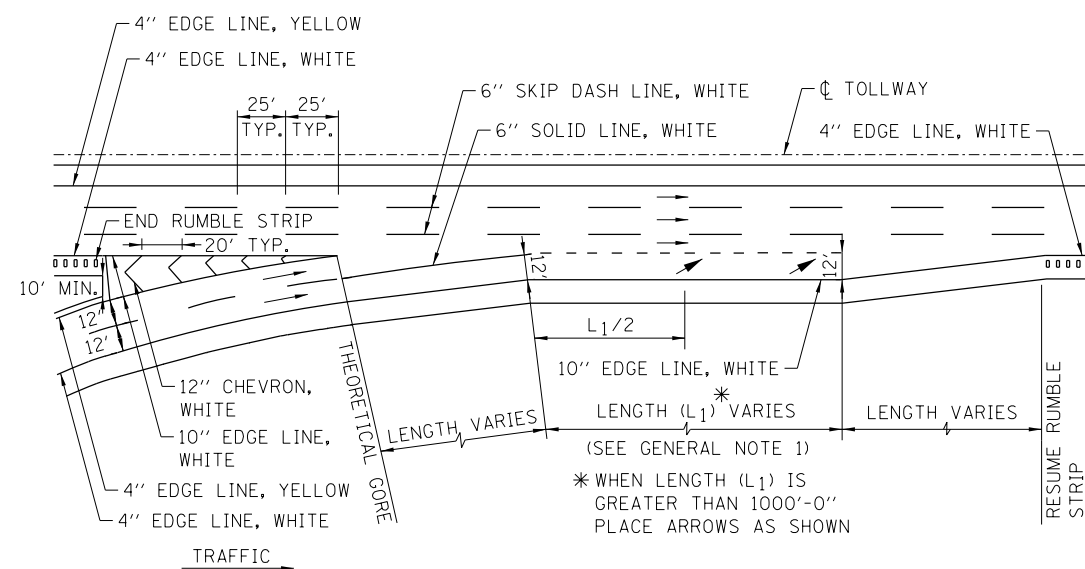


ENTRANCE - TWO LANE RAMP WITH ADDED MAINLINE LANE

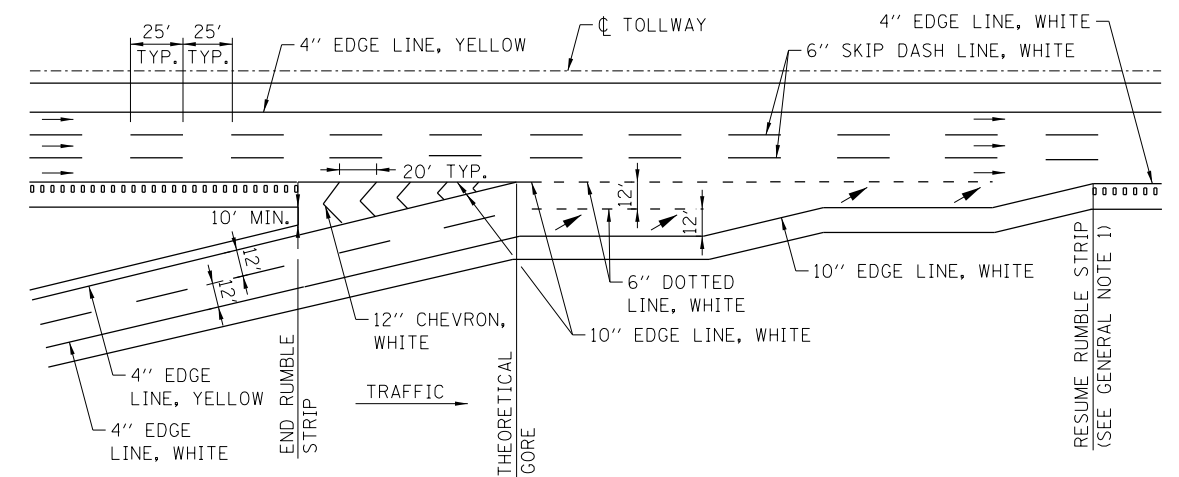


LANE-REDUCTION ARROW

RIGHT LANE-REDUCTION ARROW SHOWN.  
USE MIRROR IMAGE FOR LEFT LANE.

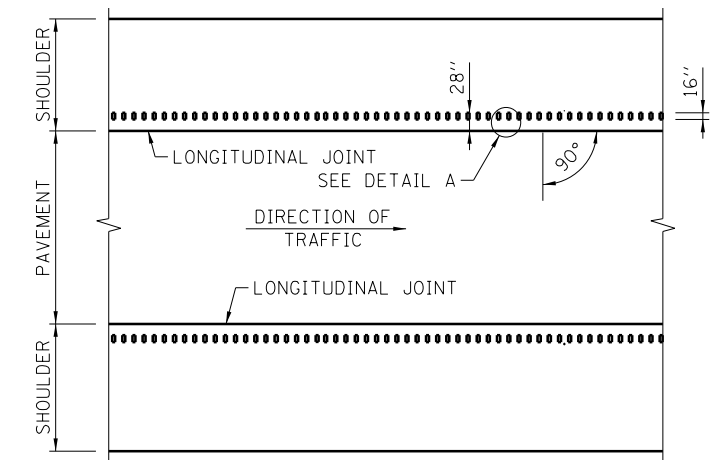
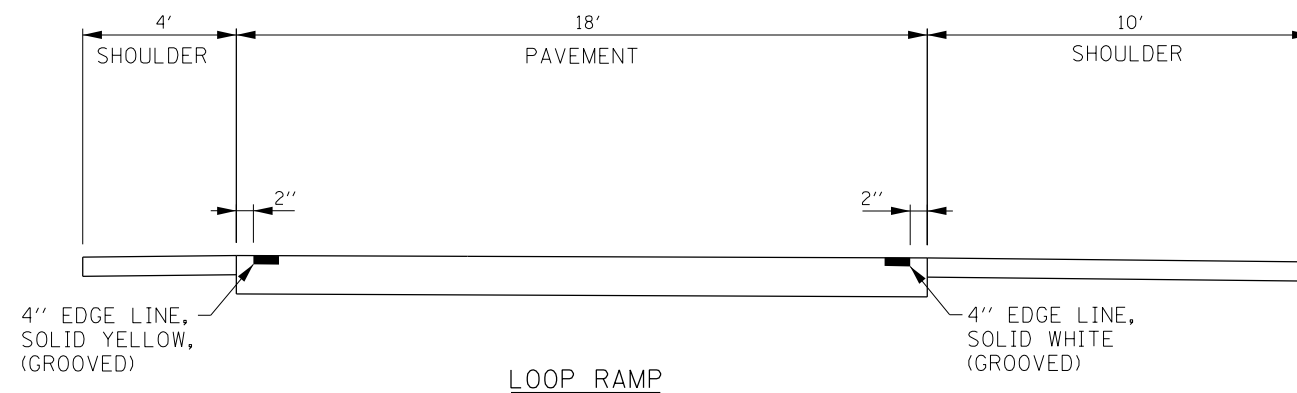
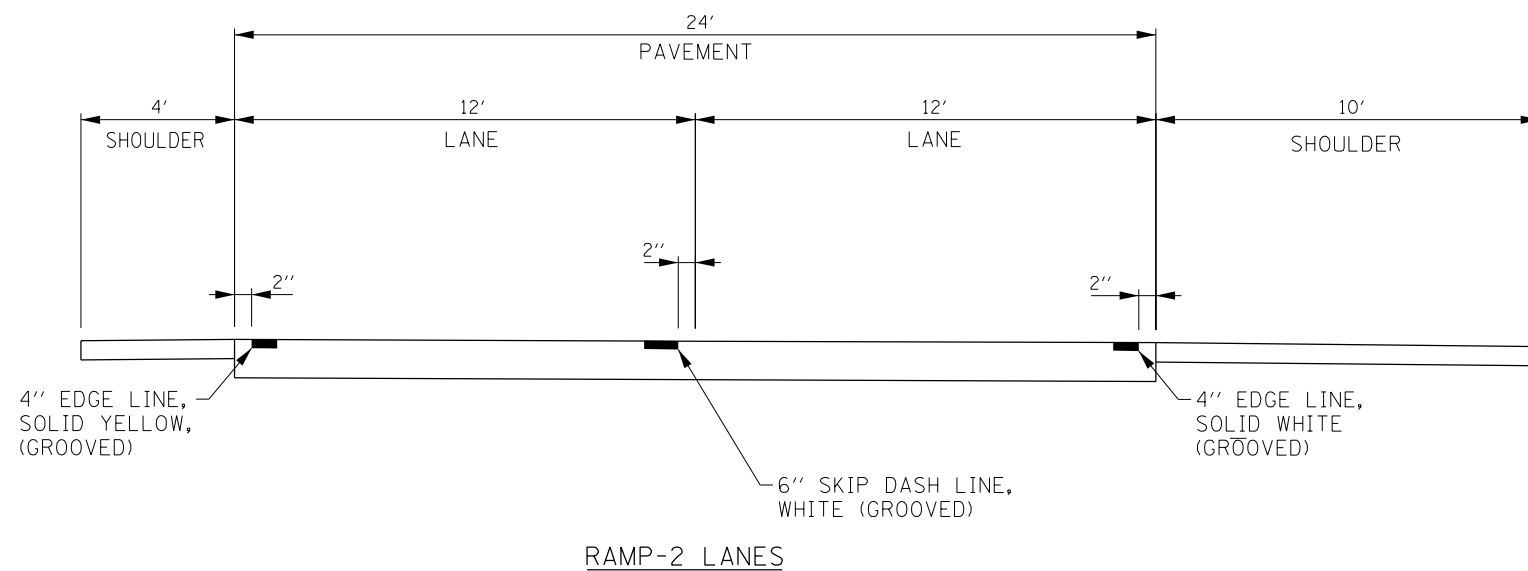
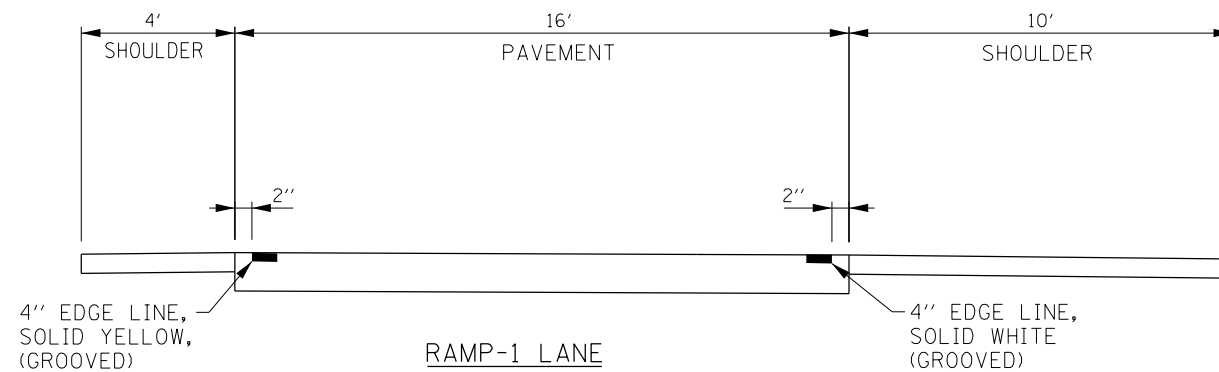


ENTRANCE - TWO LANE RAMP

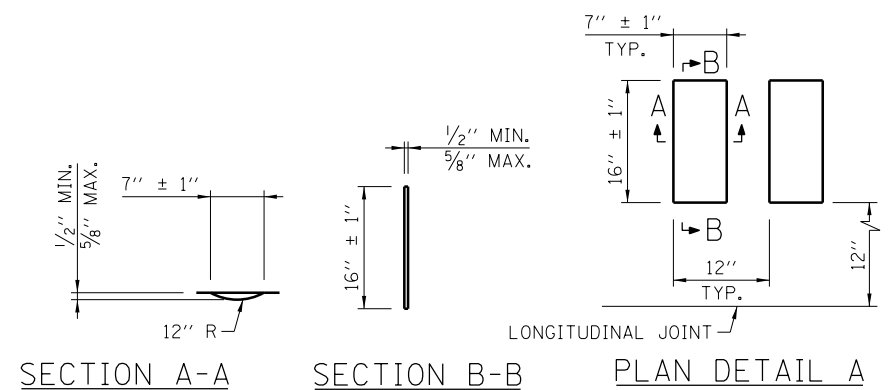


ENTRANCE - TWO LANE PARALLEL RAMP

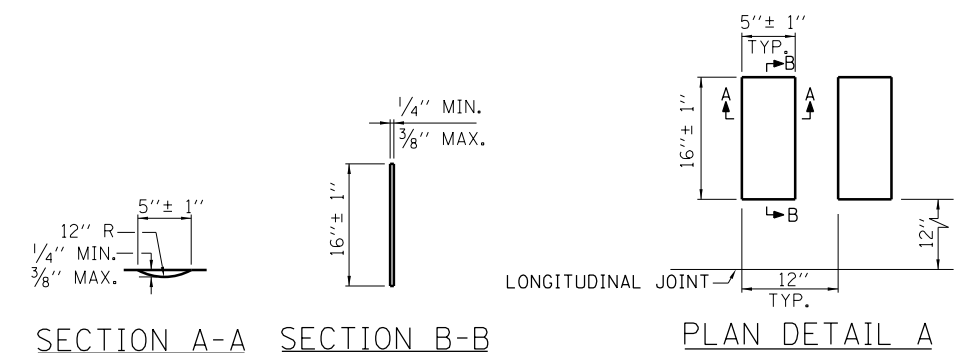




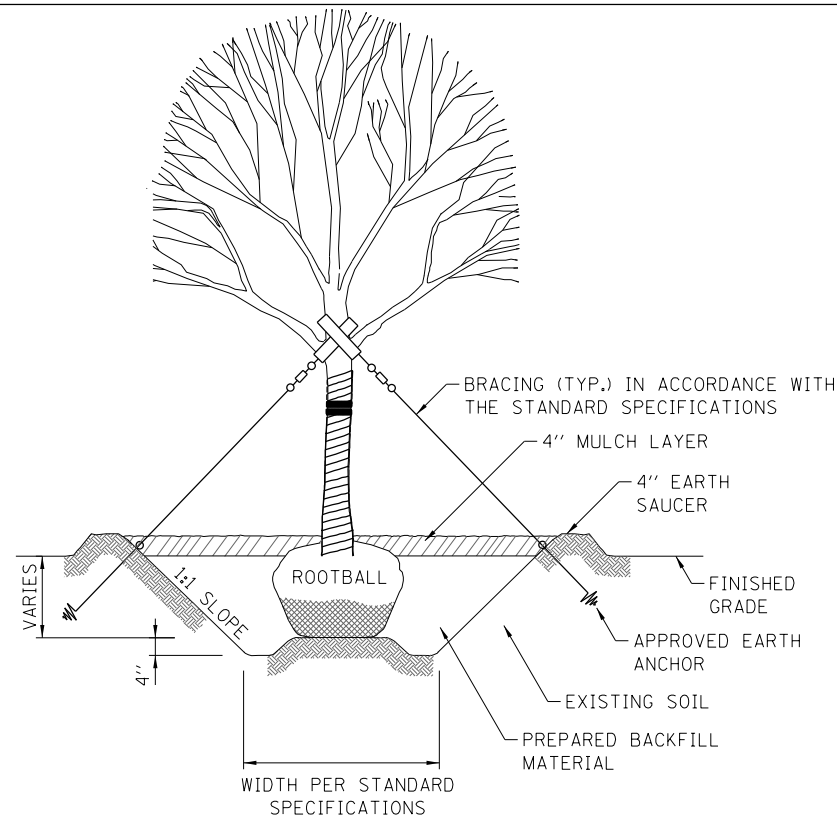
TYPICAL PLAN VIEW  
MAINLINE



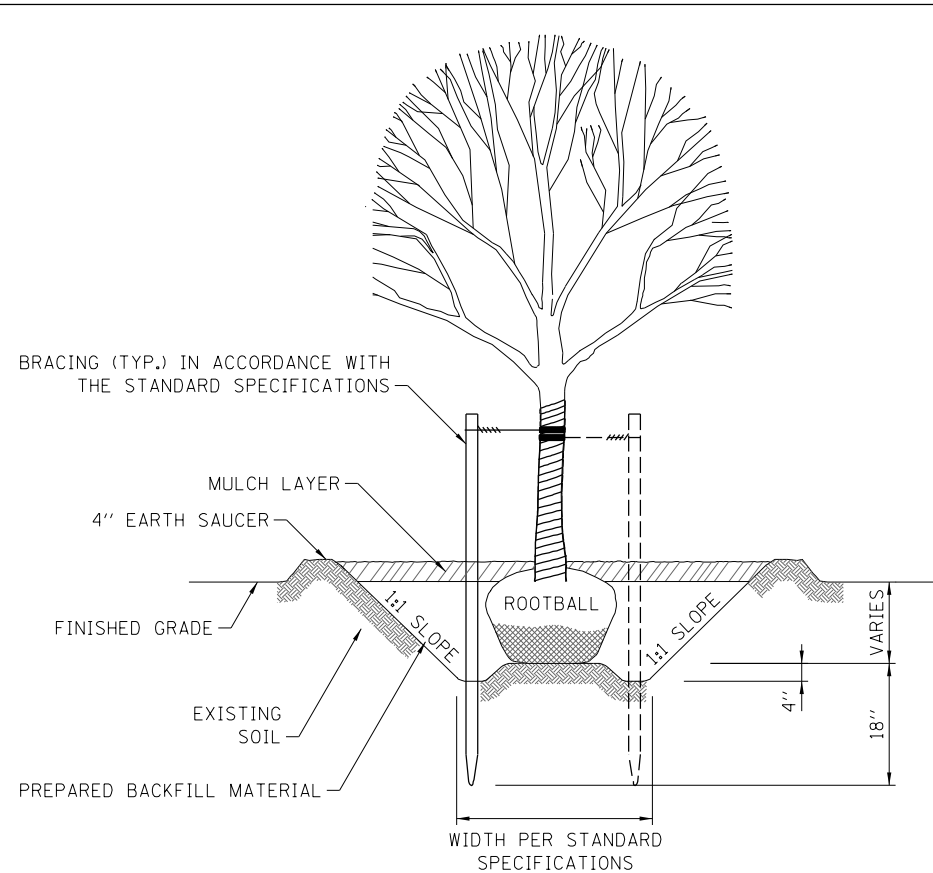
ASPHALT SHOULDER  
RUMBLE STRIP DETAILS



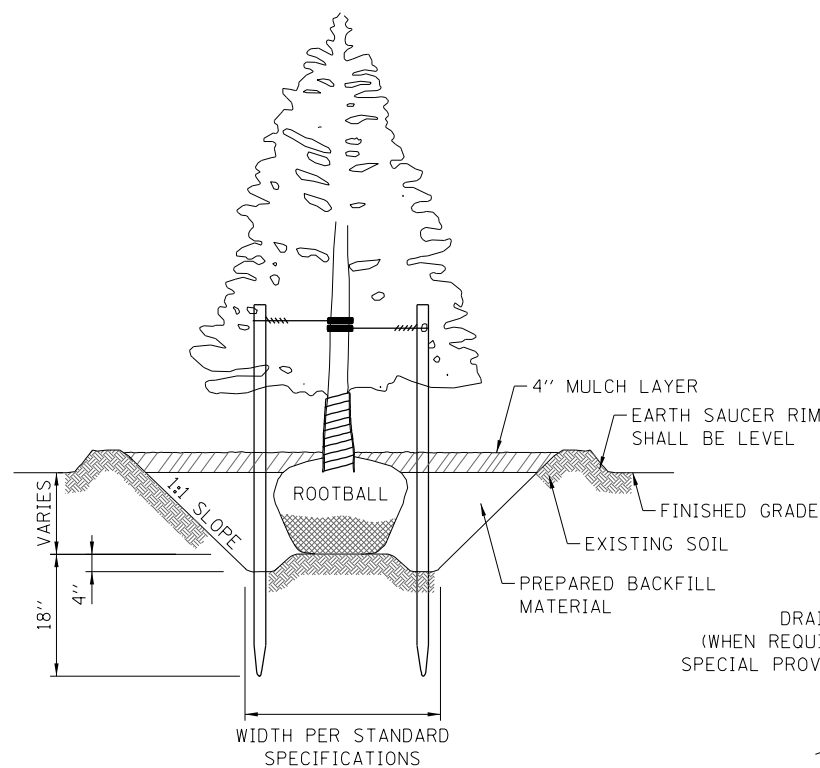
CONCRETE SHOULDER  
RUMBLE STRIP DETAILS



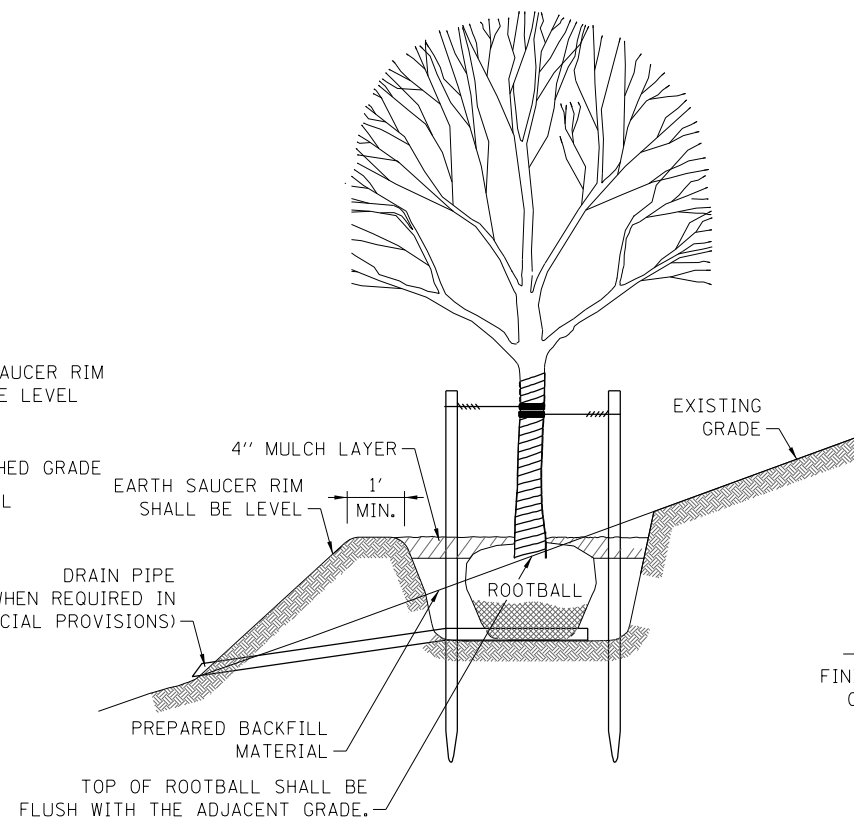
DECIDUOUS TREE PLANTING DETAIL  
(4 1/2" CALIPER AND LARGER)



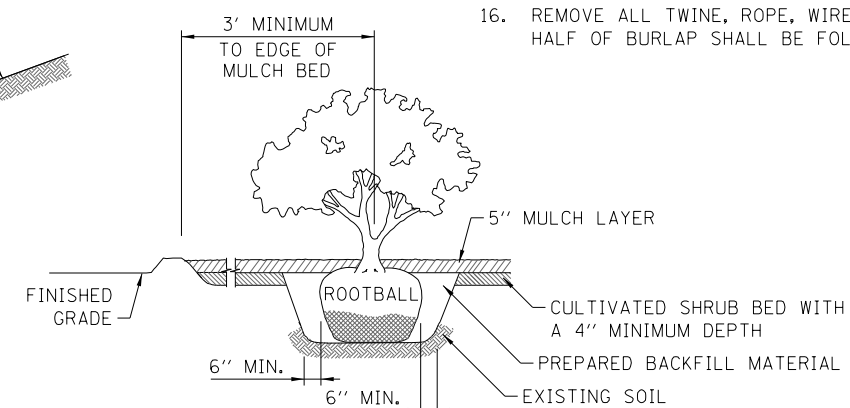
DECIDUOUS TREE PLANTING DETAIL  
GREATER THAN 4 FT HEIGHT AND LESS THAN 4 1/2" CALIPER)



EVERGREEN TREE PLANTING DETAIL



STEEP SLOPE PLANTING DETAIL

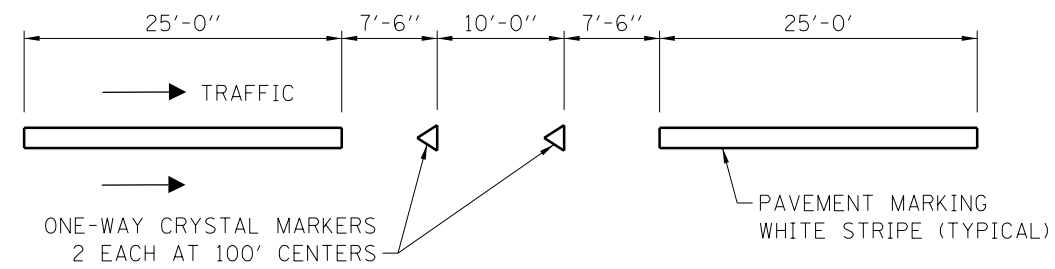


SHRUB PLANTING DETAIL

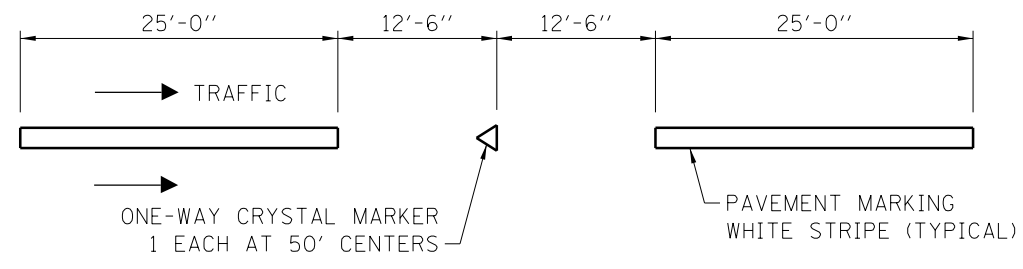
## PLANTING NOTES:

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UNDERGROUND UTILITIES, FIBER OPTICS, STORM SEWERS AND DRAINAGE STRUCTURES IN THE FIELD PRIOR TO THE EXCAVATION OF ANY PLANT PITS OR PLANTING BEDS. LOCATIONS OF TREE AND SHRUB PLANTINGS SHALL BE ADJUSTED TO AVOID DAMAGING ANY UNDERGROUND FEATURES.
2. THE PLANT LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATELY ONLY. THE EXACT LOCATIONS SHALL BE ADJUSTED AS REQUIRED IN THE FIELD BY THE ENGINEER. TREE LOCATIONS SHALL NOT BE MOVED CLOSER TO PAVEMENT EDGES THAN SHOWN ON THE PLANS OR A MINIMUM OF FIFTY (50) FEET.
3. TREES SHALL BE SPACED A MINIMUM OF FIVE (5) FEET FROM FENCES.
4. TREE AND SHRUB PLANTINGS SHALL NOT BLOCK ACCESS TO GATES IN FENCES.
5. TREES PLANTED IN TURF AREAS SHALL BE SPACED A MINIMUM OF TEN (10) FEET FROM THE EDGE OF A SHRUB BED.
6. TREES SHALL BE SPACED A MINIMUM OF TEN (10) FEET FROM NOISEWALLS OR OTHER STRUCTURES.
7. DITCHES SHALL BE KEPT CLEAR OF PLANTINGS. THE MINIMUM VERTICAL DISTANCE BETWEEN DITCH BOTTOMS AND PLANTS SHALL BE THREE (3) FEET.
8. IF DURING EXCAVATION, A PLANT HOLE OR PLANTING BED SHOWS POOR DRAINAGE, STANDING WATER OR AN IMPERVIOUS STRATUM OF SOIL, THE CONTRACTOR SHALL CEASE EXCAVATION AND SHALL NOTIFY THE ENGINEER. THE PLANT(S) SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER AND THE HOLE(S) OR BED SHALL BE FILLED IN AND RESTORED TO MATCH THE CONDITION AND VEGETATION OF THE ADJACENT AREA.
9. IMPROPERLY PRUNED PLANTINGS WILL BE REJECTED AND REPLACEMENTS WILL IMMEDIATELY BE MADE BY THE CONTRACTOR.
10. THE SIDES OF ALL PLANT PITS SHALL BE LOOSENEED TO DISJOIN ANY GLAZING WHICH MAY OCCUR DURING THE DIGGING OPERATION.
11. TREE WRAPPING SHALL EXTEND TO THE LOWEST MAJOR BRANCH.
12. TOP OF ROOTBALL SHALL BE APPROXIMATELY 2 INCHES ABOVE ADJACENT FINISHED GRADE.
13. SHRUB PLANTINGS:
  - A. UNLESS NOTED OTHERWISE, ALL SHRUBS SHALL BE PLANTED IN MULCHED BEDS. THE EDGE OF THE MULCH BED SHALL EXTEND A MINIMUM OF THREE (3) FEET BEYOND THE CENTERS OF THE PERIPHERAL PLANTS IN THE BED.
  - B. THE EDGE OF A MULCH BED FOR SHRUB PLANTINGS ADJACENT TO A WALL, FENCE, GUARDRAIL OR OTHER FIXED OBJECT SHALL EXTEND TO THE OBJECT. THE PERIPHERAL PLANTS IN THE BED SHALL NOT BE PLANTED WITHIN FIVE (5) FEET OF THE OBJECT.
  - C. WHEN A TREE IS LOCATED IN A SHRUB BED, THE MINIMUM DISTANCE BETWEEN THE TREE AND THE ADJACENT SHRUBS SHALL BE SIX (6) FEET.
14. THE CONTRACTOR SHALL RESTORE ALL AREAS, OBJECTS AND VEGETATION DISTURBED BY THE LANDSCAPE OPERATIONS TO ORIGINAL CONDITIONS.
15. STAKES, GUYWIRES AND ALL TREE SUPPORTS SHALL BE REMOVED AFTER ONE YEAR OR AS DIRECTED BY THE LANDSCAPE ARCHITECT.
16. REMOVE ALL TWINE, ROPE, WIRE AND BURLAP FROM TOP HALF OF ROOTBALL. THE LOWER HALF OF BURLAP SHALL BE FOLDED TOWARD THE BOTTOM OF THE ROOTBALL.

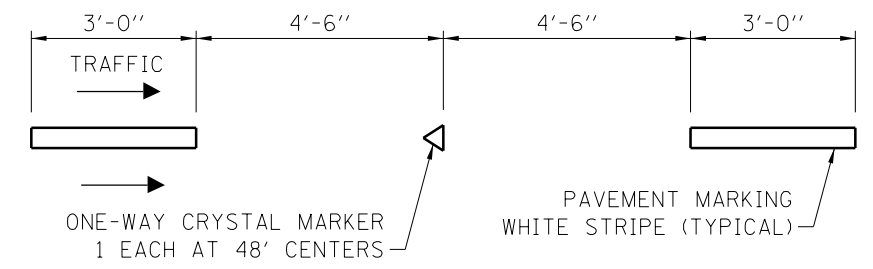




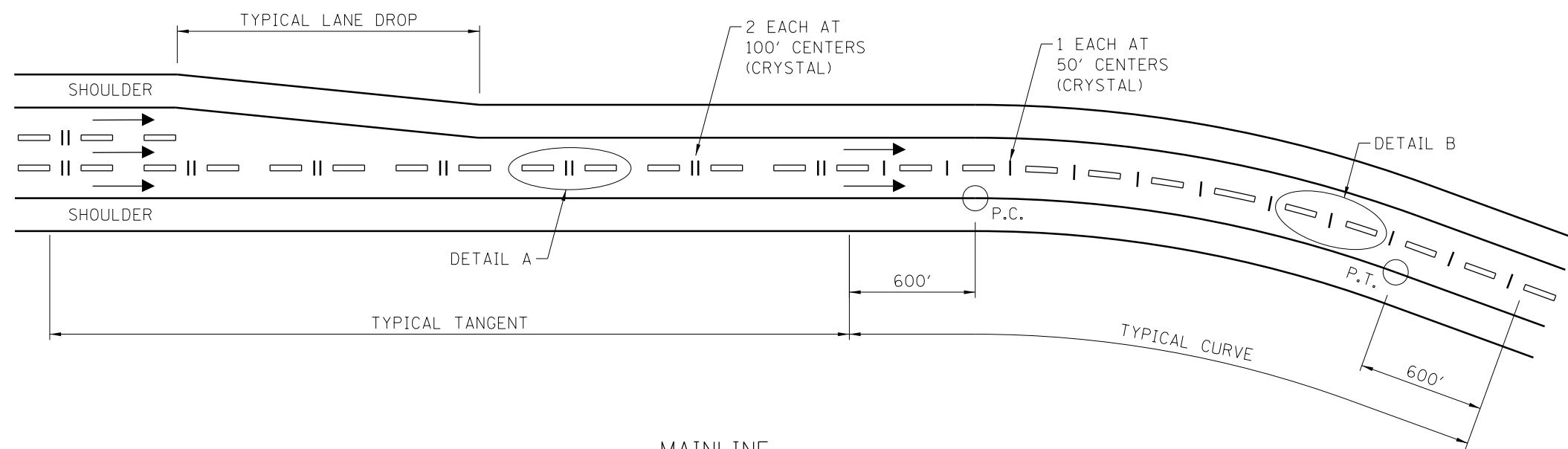
DETAIL A



DETAIL B



DETAIL C



MAINLINE

# RAISED PAVEMENT LANE MARKER DETAILS

## NOTES:


- FOR COLLECTOR DISTRIBUTOR, PLACE ONE-WAY CRYSTAL MARKER, 2 EACH AT 100' CENTERS. USE DETAIL A.
- FOR MULTI LANE DIRECTIONAL RAMPS, PLACE ONE-WAY CRYSTAL MARKER, 1 EACH AT 50' CENTERS. USE DETAIL B.
- FOR AUXILIARY LANES, PLACE ONE-WAY CRYSTAL MARKER, 1 EACH AT 48' CENTERS. USE DETAIL C.

DATE	REVISIONS
11-01-12	REVISED DETAIL C



RAISED PAVEMENT  
LANE MARKER

STANDARD D8-01

  
 APPROVED ..... CHIEF ENGINEER ..... DATE 7-1-2009