

SECTION I - BARRIER

SHEET NO.	NAME
B-L (2010)	– BARRIER LEGEND
B-1	– GUARDRAIL APPLICATIONS (TYPES 1-31, 2-31, AND 3-31) (2010) - 1 PLAN VIEWS (2010) - 2 ELEVATION VIEWS AND SPLICE DETAIL (2010) - 3 SECTION VIEWS
B-2	– GRADING FOR GUARDRAIL END TREATMENTS (TYPES 1, 2, AND 3) (2013) - 1 GUARDRAIL END TREATMENT, TYPE 1 (2013) - 2 GUARDRAIL END TREATMENT, TYPE 2 (2010) - 3 GUARDRAIL END TREATMENT, TYPE 3
B-3	– GUARDRAIL OVER CULVERTS (TYPES 1-31, 2-31, AND 3-31) (2013) - 1 GUARDRAIL OVER CULVERTS, TYPE 1-31 (2013) - 2 GUARDRAIL OVER CULVERTS, TYPE 2-31 (2013) - 3 GUARDRAIL OVER CULVERTS, TYPE 3-31
B-4 (2012)	– END ANCHORAGE , TYPE 31
B-5	– GUARDRAIL TO BARRIER CONNECTION (TYPES 1-31, 2-31, AND EXIT TYPE 31) (2010) - 1 GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1-31 (2010) - 2 GUARDRAIL TO BARRIER CONNECTION, TYPE 1 HARDWARE (2010) - 3 GUARDRAIL TO BARRIER CONNECTION, BENT PLATE RUB RAIL (2012) - 4 GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 2-31 (2010) - 5 GUARDRAIL TO BARRIER CONNECTION, TYPE 2 HARDWARE (2010) - 6 GUARDRAIL TO BARRIER CONNECTION, EXIT TYPE 31
B-6	– BRIDGE RAIL RETROFIT (TYPES 1, 2, 3, AND 4) (2013) - 1 BRIDGE RAIL RETROFIT, ENTRANCE AND END APPLICATIONS (2010) - 2 BRIDGE RAIL RETROFIT, TYPES 1 AND 2 (2010) - 3 BRIDGE RAIL RETROFIT, TYPE 2 HARDWARE (2010) - 4 BRIDGE RAIL RETROFIT, TYPE 3 (2010) - 5 BRIDGE RAIL RETROFIT, TYPE 4
B-7 (2010)	– W-BEAM, TYPE 1-27 TO TYPE 1-31 TRANSITION SECTION
B-8	– RESERVED
B-9	– RESERVED
B-10	– RESERVED
B-11	– RESERVED
B-12	– RESERVED
B-13	– HARDWARE (2010) - 1 W-BEAM ELEVATION AND SECTION VIEWS (2010) - 2 W-BEAM STEEL POST AND OFFSET BLOCK (2010) - 3 W-BEAM TERMINAL CONNECTOR (2010) - 4 THRIE BEAM AND THRIE BEAM EXPANSION ELEMENT ELEVATION AND SECTION VIEWS (2010) - 5 THRIE BEAM STEEL POST AND OFFSET BLOCK (2010) - 6 ASYMMETRIC AND SYMMETRIC W-BEAM TO THRIE BEAM TRANSITION SECTION (2010) - 7 SHORT AND LONG WOOD BREAKAWAY POSTS, STEEL TUBE, SOIL PLATE, AND OFFSET BLOCKS (2012) - 8 SWAGED CABLE ASSEMBLAGE AND HARDWARE (2010) - 9 GUARDRAIL DELINEATOR AND W-BEAM BEARING PLATE (2010) - 10 GUARDRAIL MOUNTED RAIL
B-14	– CONCRETE SAFETY BARRIER (F SHAPE) (2012) - 1 32" (960) CONCRETE BARRIER, TYPICAL CAST-IN-PLACE OR SLIP-FORM ELEVATION AND SECTION VIEWS (2009) - 2 32" (960) CONCRETE BARRIER, TYPICAL PRE-CAST ELEVATION AND SECTION VIEWS (2009) - 3 42" (1050) CONCRETE BARRIER, TYPICAL CAST-IN-PLACE OR SLIP-FORM ELEVATION AND SECTION VIEWS (2009) - 4 SLOTTED PLATE CONNECTION DETAILS
B-15	– GUARDRAIL APPLICATIONS (TYPES 1-27, 2-27, AND 3-27) (2010) - 1 PLAN VIEWS (2010) - 2 ELEVATION VIEWS AND SPLICE DETAIL (2010) - 3 SECTION VIEWS



SHEET NO. NAME

SECTION I - BARRIER (CONT'D)

B-16 - GUARDRAIL OVER CULVERTS (TYPES 1-27, 2-27, AND 3-27)

(2013) - 1 GUARDRAIL OVER CULVERTS, TYPE 1-27

(2013) - 2 GUARDRAIL OVER CULVERTS, TYPE 2-27

(2013) - 3 GUARDRAIL OVER CULVERTS, TYPE 3-27

B-17 (2010) - GUARDRAIL END TREATMENT (TYPE 4-27)

B-18 (2010) - CURVED GUARDRAIL SECTION

B-19 (2012) - END ANCHORAGE (TYPE 27)

B-20 - BURIED END SECTION

(2010) - 1 BURIED END SECTION - SINGLE RAIL

(2010) - 2 BURIED END SECTION - DOUBLE RAIL

(2010) - 3 POST, CONCRETE BLOCK, AND RUBRAIL DETAILS

B-21 - GUARDRAIL TO BARRIER CONNECTION (TYPES 1-27, 2-27, AND EXIT TYPE 27)

(2010) - 1 GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1-27

(2010) - 2 GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 2-27

(2010) - 3 GUARDRAIL TO BARRIER CONNECTION, EXIT TYPE 27

SHEET NO. NAME

SECTION II - CURB & GUTTER

C-1 - P.C.C. CURB AND INTEGRAL P.C.C. CURB & GUTTER

(2013) - 1 P.C.C. CURB, TYPICAL CURB SECTION, AND TYPICAL TAPER SECTION AT NOSE OF MEDIANS

(2012) - 2 INTEGRAL P.C.C. CURB & GUTTER

C-2 - CURB RAMPS

(2013) - 1 TYPE 1

(2013) - 2 TYPE 2, 3, AND 4

(2013) - 3 TYPE 5

C-3 (2012) - ENTRANCES

C-4 (2012) - CURB OPENING DETAILS

C-5 (2011) - CURB OPENING WITH SIDEWALK DETAIL

SHEET NO. NAME

SECTION III - DRAINAGE

D-1 - 6:1 SAFETY END STRUCTURE

(2001) - 1 DETAIL VIEWS

(2001) - 2 SCHEDULES

D-2 - 10:1 SAFETY END STRUCTURE

(2001) - 1 DETAIL VIEWS

(2001) - 2 SCHEDULES

D-3 - SAFETY GRATES

(2005) - 1 SAFETY END STRUCTURE GRATE AND ASSEMBLY DETAIL

(2007) - 2 PERSONNEL SAFETY GRATE FOR PIPE INLET DETAIL

D-R (2012) - DRAINAGE INLET REFERENCE SHEET

D-4 (2009) - INLET BOX DETAILS

D-5 - DRAINAGE INLET DETAILS

(2010) - 1 DRAINAGE INLET ASSEMBLY

(2010) - 2 DRAINAGE INLET FRAME AND GRATES

(2012) - 3 DRAINAGE INLET TOP UNITS

(2010) - 4 DRAINAGE INLET COVER SLAB DETAILS

(2010) - 5 DOUBLE INLET COVER SLAB DETAILS

(2012) - 6 34" x 24" DRAINAGE INLET AND COVER SLAB DETAILS

(2010) - 7 34" x 18" DRAINAGE INLET DETAILS

(2010) - 8 DRAINAGE INLET TOP UNIT, TYPE S

(2010) - 9 DOGHOUSE INLET BOX



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INDEX OF SHEETS (2013)

SHEET 2 OF 5

SHEET NO. NAME

SECTION III - DRAINAGE (CONT'D)

D-6 - MAHOLE DETAILS

- (2009) - 1 BOX MANHOLE ASSEMBLY
- (2001) - 2 ROUND MANHOLE ASSEMBLY
- (2001) - 3 MANHOLE, TOP UNIT, FRAME AND COVER
- (2007) - 4 BOX MANHOLE COVER SLAB

D-7 - JUNCTION BOX DETAILS

- (2009) - 1 JUNCTION BOX ASSEMBLY
- (2007) - 2 JUNCTION BOX COVER SLAB

D-8 (2010) - PIPE BEDDING

D-9 (2008) - PERFORATED PIPE UNDERDRAIN

D-10 (2011) - PIPE PLUGGING DETAIL

SHEET NO. NAME

SECTION IV - EROSION

E-1 (2001) - INCREMENTAL STABILIZATION

E-2 (2006) - SILT FENCE

E-3 (2005) - DRAINAGE INLET SEDIMENT CONTROL

E-4 - RESERVED

E-5 (2006) - STONE CHECK DAM

E-6 (2005) - SEDIMENT TRAP

E-7 (2005) - SEDIMENT TRAP, USING DRAINAGE INLET AS OUTLET

E-8 - RISER PIPE ASSEMBLY FOR SEDIMENT TRAP

- (2006) - 1 ELEVATION

- (2006) - 2 TRASH HOOD DETAILS

E-9 (2005) - EROSION CONTROL BLANKET APPLICATIONS

E-10 (2005) - RIPRAP DITCH

E-11 (2005) - TEMPORARY SWALE

E-12 (2005) - PERIMETER DIKE/SWALE

E-13 (2005) - EARTH DIKE

E-14 (2005) - TEMPORARY SLOPE DRAIN

E-15 (2005) - STILLING WELL

E-16 (2005) - SUMP PIT, TYPES 1 AND 2

E-17 (2005) - DEWATERING BASIN

E-18 (2005) - GEOTEXTILE-LINED CHANNEL DIVERSION

E-19 (2005) - SANDBAG DIVERSION

E-20 (2005) - SANDBAG DIKE

E-21 (2005) - STABILIZED CONSTRUCTION ENTRANCE

E-22 (2012) - SKIMMER DEWATERING DEVICE

E-23 - TURBIDITY CURTAIN

- (2005) - 1 FLOATING TURBIDITY CURTAIN

- (2005) - 2 STAKED TURBIDITY CURTAIN

E-24 (2005) - PORTABLE SEDIMENT TANK

E-25 (2005) - TURF REINFORCEMENT MAT APPLICATIONS

E-26 (2006) - RIPRAP ENERGY DISSIPATOR DETAIL



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SHEET 3 OF 5

SECTION V - LANDSCAPING

SHEET NO.	NAME
L-1	– PLANTING DETAILS
(2006) - 1	ROADSIDE SHRUB PLANTING DETAIL
(2006) - 2	TREE PLANTING DETAIL
(2006) - 3	PERENNIAL/GROUND COVER PLANTING DETAIL

SECTION VI - MISCELLANEOUS

SHEET NO.	NAME
M-1 (2001)	– RIGHT-OF-WAY FENCE
M-2 (2011)	– RIGHT-OF-WAY MONUMENTATION
M-3 (2013)	– SHARED-USE PATH & SIDEWALK DETAILS
M-4 (2011)	– BIKE RACK LAYOUT DETAILS
M-5 (2004)	– WOOD RAIL FENCE
M-6 (2011)	– PATTERNED HOT-MIX OR CONCRETE & BRICK PAVER DETAILS
M-7 (2006)	– CHAIN LINK FENCE DETAILS
M-8 (2007)	– P.C.C. PARKING BUMPER
M-9	– BUS STOP PAD DETAILS
(2013) - 1	BUS STOP PAD DETAILS, TYPES 1, 2, & 3
(2013) - 2	BUS STOP PAD WITH SHELTER DETAILS, TYPES 1 & 2

SECTION VII - PAVEMENT

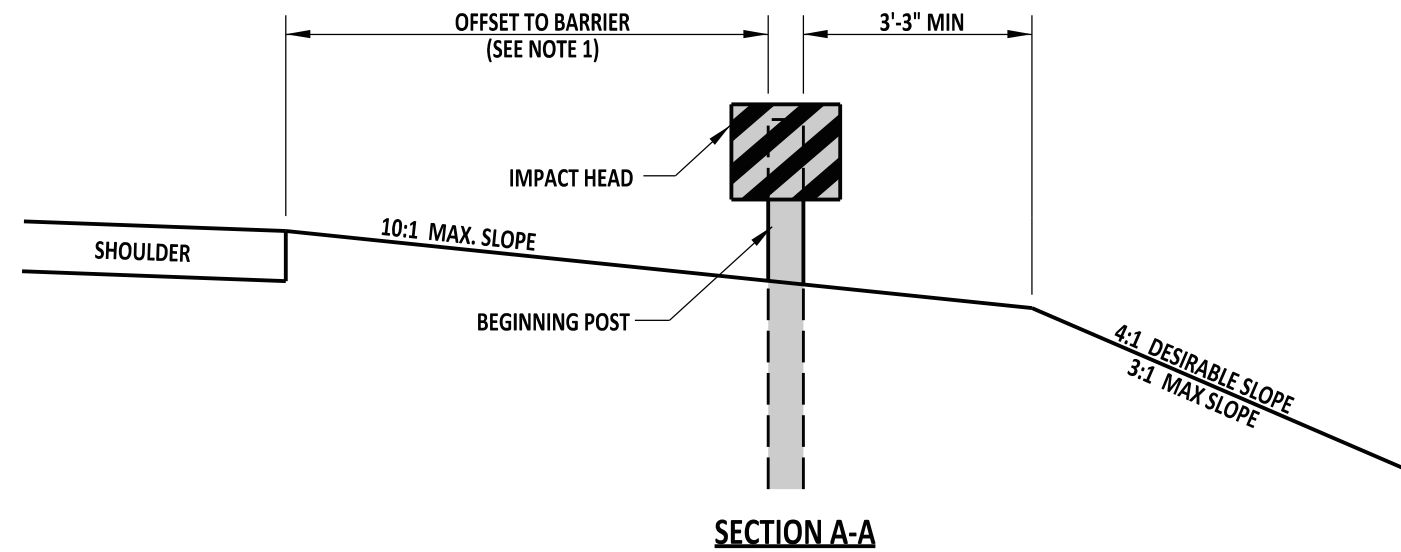
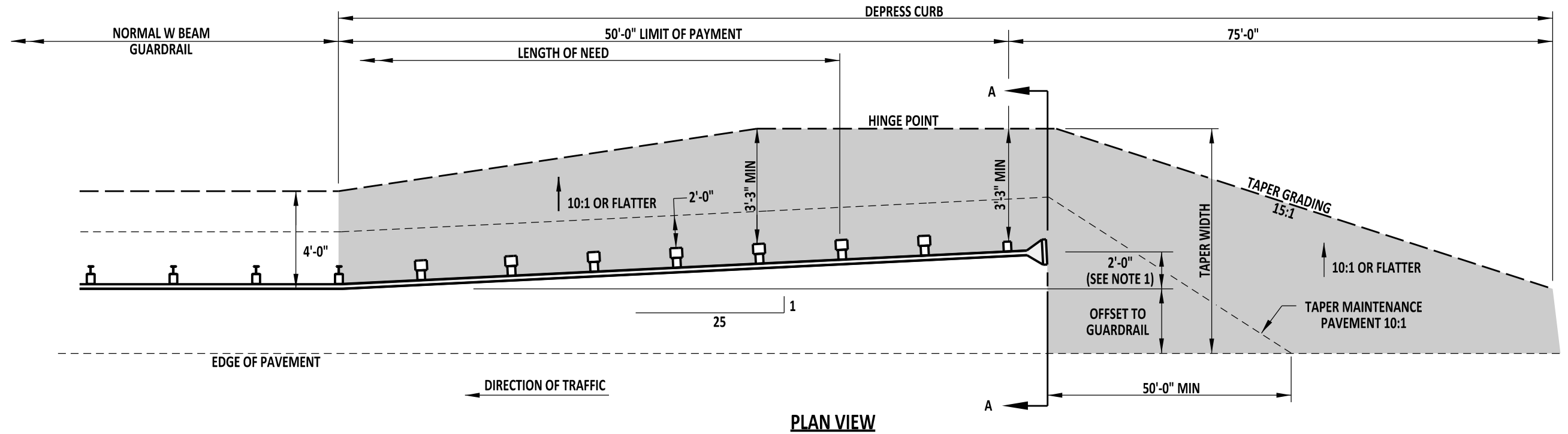
SHEET NO.	NAME
P-1	– P.C.C. PAVEMENT
(2001) - 1	SLAB PLAN (WITH DOWEL AND TIE LOCATIONS)
(2004) - 2	JOINT AND SEALANT DETAILS
(2001) - 3	W BOLT, HOOK BOLT, DOWEL AND TIE BAR DETAILS
(2001) - 4	DOWEL SUPPORT BASKET
(2001) - 5	DOWEL AND TIE BAR PLACEMENT TOLERANCES
P-2	– P.C.C. PAVEMENT PATCHING
(2008) - 1	FULL DEPTH PATCH, PLAN VIEW
(2008) - 2	FULL DEPTH PATCH, SECTION VIEWS
(2004) - 3	FULL DEPTH PATCH, SEALANT DETAILS, GROUT RETENTION DISK, AND DOWEL BAR
(2001) - 4	FULL DEPTH PATCH, DOWEL AND TIE BAR PLACEMENT TOLERANCES
(2001) - 5	PARTIAL DEPTH PATCH, PLAN AND SECTION VIEWS
P-3 (2012)	– BUTT JOINTS
P-4 (2013)	– PERMANENT CROSS-ROAD PATCH OVER PIPE TRENCH DETAIL



SECTION VIII - TRAFFIC

SHEET NO.	NAME
T-1	<div>- CONDUIT JUNCTION WELLS</div> <div>(2013) - 1 TYPE 1</div> <div>(2013) - 2 TYPE 4</div> <div>(2013) - 3 TYPE 5</div>
T-2 (2011)	<div>- JUNCTION WELL, GROUNDING & BONDING FOR STEEL FRAMES & LIDS</div>
T-3	<div>- CONDUIT JUNCTION WELLS</div> <div>(2013) - 1 TYPE 11</div> <div>(2012) - 2 TYPE 14</div> <div>(2012) - 3 TYPE 15</div>
T-4	<div>- CABINET BASES</div> <div>(2013) - 1 TYPES M & F</div> <div>(2013) - 2 TYPE "P & R"</div>
T-5	<div>- POLE BASES</div> <div>(2013) - 1 ROUND BASE & ROUND BASE WITH SQUARE FOUNDATION HEADER</div> <div>(2013) - 2 TYPICAL SECTION AND INSTALLATION (BASES 1, 2, 2A, 2B, 3, 3A, AND 3B)</div> <div>(2013) - 3 TYPICAL SECTION (BASES 6) AND POLE BASE DATA CHART</div> <div>(2013) - 4 TYPICAL SECTION (BASE 4A AND 4B) AND ANCHOR DETAIL</div>
T-6 (2011)	<div>- SPECIAL POLE BASE</div>
T-7 (2005)	<div>- SIGN FOUNDATION</div>
T-8	<div>- LOOP DETECTOR LEAD-IN WIRE INSTALLATION</div> <div>(2013) - 1 JUNCTION WELL BEHIND CURB OR CURB AND GUTTER WITH GRASS STRIP</div> <div>(2013) - 2 JUNCTION WELL BEHIND CURB OR CURB & GUTTER WITH SIDEWALK AND JUNCTION WELL DIRECTLY BEHIND CURB OR CURB & GUTTER</div> <div>(2013) - 3 JUNCTION WELL IN CONCRETE ISLAND</div> <div>(2013) - 4 JUNCTION WELL WITHOUT CURB OR CURB & GUTTER WITH SIDEWALK AND GRASS STRIPS AND JUNCTION WELL DIRECTLY ADJACENT TO PAVED SURFACE</div>
T-9	<div>- LOOP DETECTOR INSTALLATION</div> <div>(2013) - 1 LOOP DETECTOR SAWCUT TYPICAL, HOT MIX SURFACE TYPICAL SECTION, AND SPLICE KIT</div> <div>(2013) - 2 TYPICAL INTERSECTION LAYOUT</div> <div>(2013) - 3 PEDESTRIAN CROSSING TYPICAL LAYOUT</div>
T-10	<div>- **DETAIL REMOVED IN 2012 REVISION**</div>
T-11	<div>- MESSENGER WIRE ATTACHMENT</div> <div>(2005) - 1 INTERMEDIATE MESSENGER WIRE ATTACHMENT ON WOOD POLES</div> <div>(2005) - 2 ANGULAR INTERMEDIATE MESSENGER WIRE ATTACHMENT</div>
T-12	<div>- MESSENGER WIRE ATTACHMENT</div> <div>(2005) - 1 SPAN WIRE ATTACHMENT BETWEEN POLES</div> <div>(2005) - 2 DEAD END MESSENGER WIRE ATTACHMENT</div>
T-13 (2013)	<div>- CONDUIT JUNCTION WELL, TYPE 7</div>
T-14	<div>- EMERGENCY PREEMPTION RECIEVER</div> <div>(2006) - 1 UPRIGHT MOUNT</div> <div>(2005) - 2 INVERTED MOUNT</div>
T-15 (2013)	<div>- BREAKAWAY SIGN POST AND PIN ASSEMBLY DETAILS</div>
T-16 (2010)	<div>- WOOD BARRICADE DETAILS</div>
T-17 (2013)	<div>- ELECTRICAL SERVICE PEDESTAL - LIGHTING, SIGNAL & 'ITMS' COMPONENT INSTALLATIONS</div>





NOTES:

- 1). FLARE THE END TREATMENT AT 25:1 BEGINNING 50'-0" FROM THE END OF THE IMPACT HEAD, UNLESS THE CONSTRUCTION PLANS OR SPECIFICATIONS SPECIFY A SMALLER FLARE.
- 2). THIS DETAIL WAS SOLELY CREATED TO SHOW THE GRADING REQUIRED FOR THIS TYPE OF ATTENUATOR AND IS APPLICABLE REGARDLESS OF THE HEIGHT OF THE GUARDRAIL SYSTEM.
- 3). THE GUARDRAIL END TREATMENT ATTENUATOR SHALL BE INSTALLED AS PER THE MANUFACTURER'S AND THE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.
- 4). IF CURB IS PRESENT, DEPRESS THE CURB TO A MAXIMUM HEIGHT OF 2" WITHIN THE LIMITS OF THE END TREATMENT AND THROUGHOUT THE LENGTH OF THE TAPER GRADING.



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GRADING FOR GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1

STANDARD NO. B-2 (2013)

SHT. 1 OF 3

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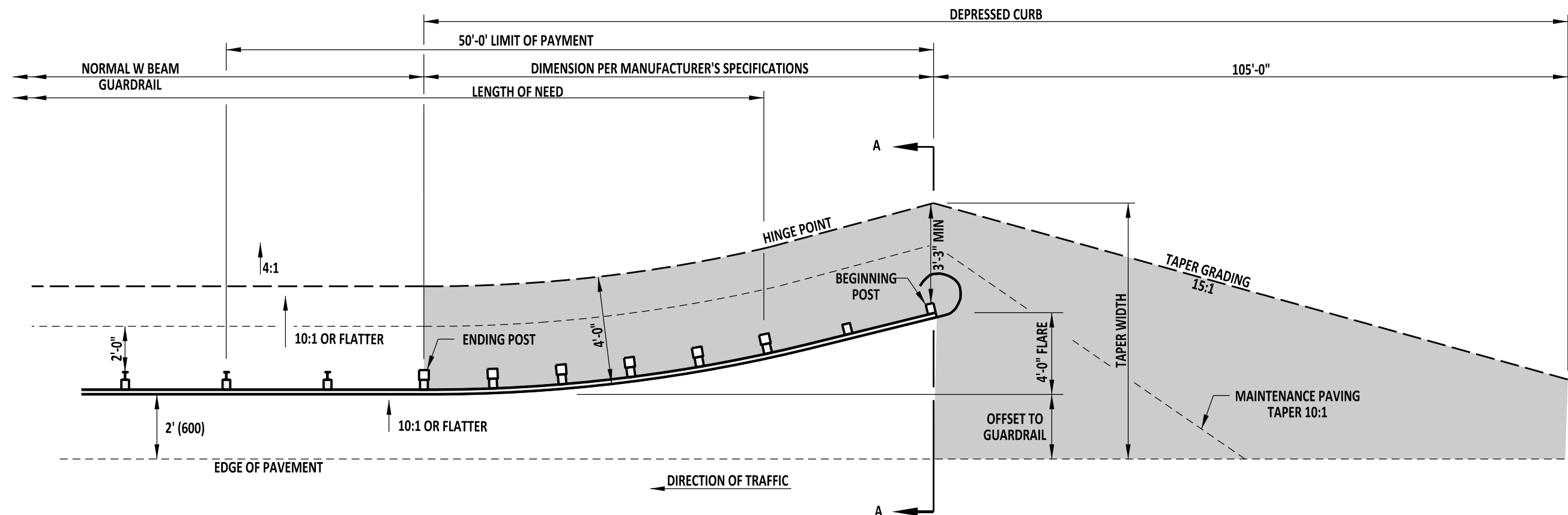
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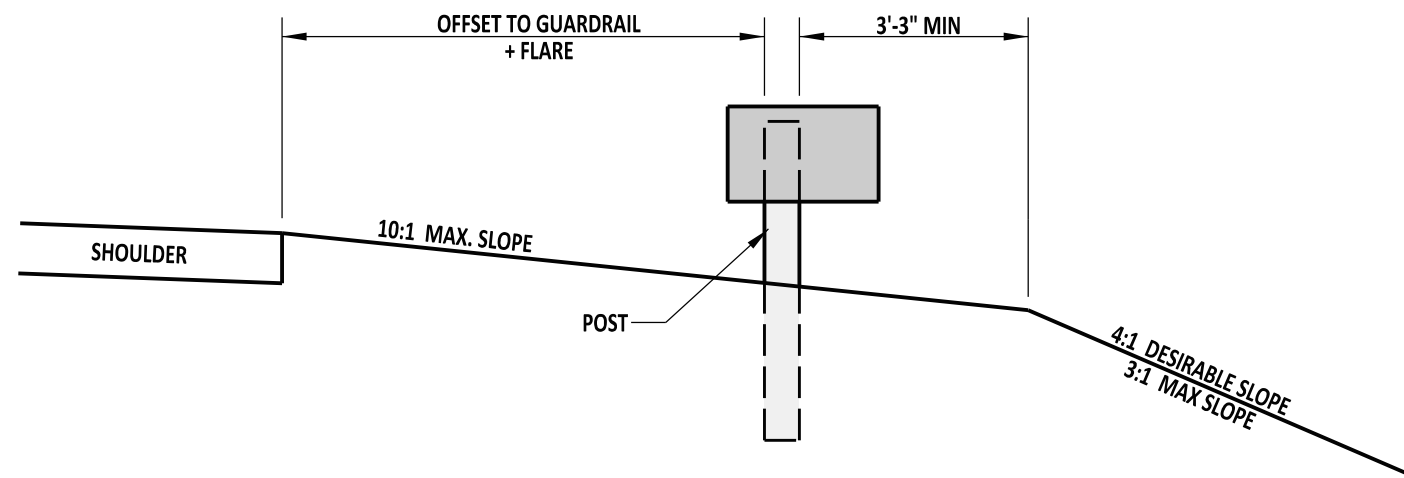
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PLAN VIEW

= NO OBSTRUCTIONS IN SHADED AREA



SECTION A-A

NOTES:

- 1). FLARE SHALL BE 4'-0" UNLESS THE CONSTRUCTION PLANS OR SPECIFICATIONS SPECIFY A SMALLER FLARE. FLARE MAY BE PARABOLIC OR STRAIGHT BASED ON MANUFACTURER'S SPECIFICATIONS.
- 2). THIS DETAIL WAS SOLELY CREATED TO SHOW THE GRADING REQUIRED FOR THIS TYPE OF ATTENUATOR AND IS APPLICABLE REGARDLESS OF THE HEIGHT OF THE GUARDRAIL SYSTEM.
- 3). THE GUARDRAIL END TREATMENT ATTENUATOR SHALL BE INSTALLED AS PER THE MANUFACTURER'S AND THE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.
- 4). IF CURB IS PRESENT, DEPRESS THE CURB TO A MAXIMUM HEIGHT OF 2" WITHIN THE LIMITS OF THE END TREATMENT AND THROUGHOUT THE LENGTH OF THE TAPER GRADING.



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GRADING FOR GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2

STANDARD NO. B-2 (2013)

SHT. 2 OF 3

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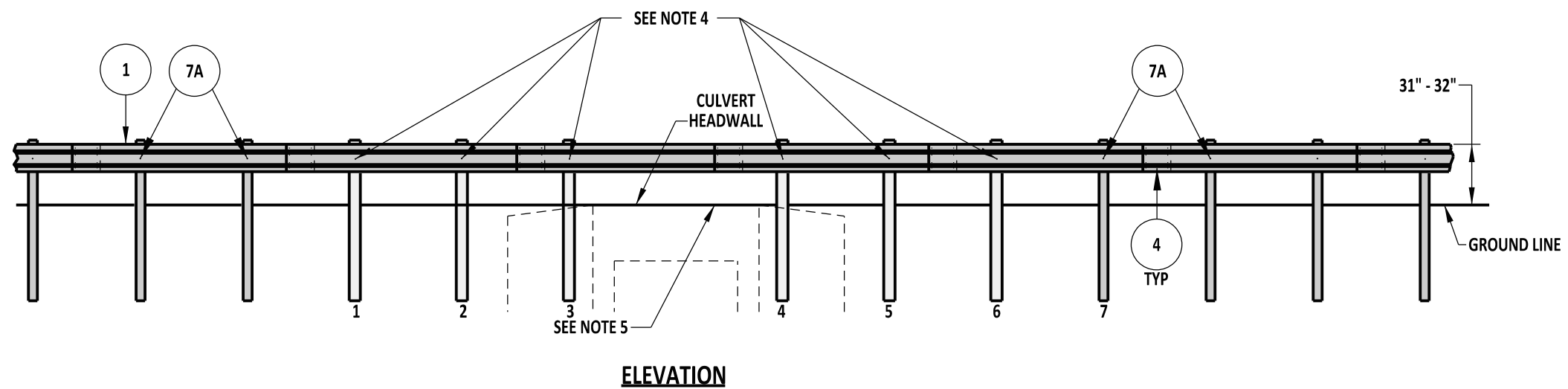
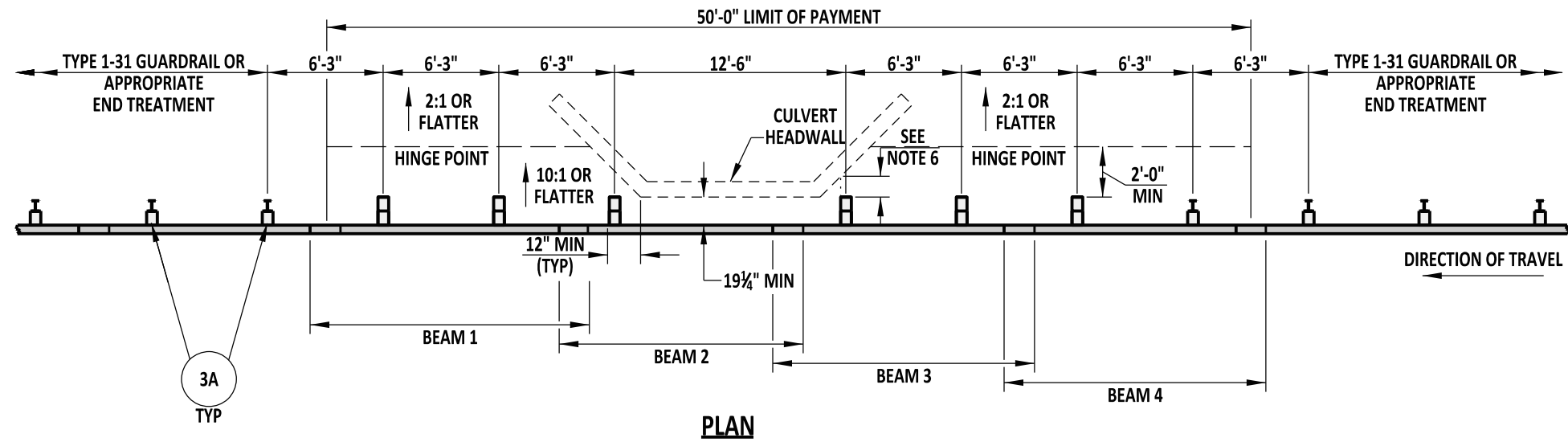
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**NOTES:**

- 1). ALL W-BEAMS ARE 13'-6½" IN LENGTH.
- 2). PLACE GUARDRAIL DELINEATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 3). POSTS 1 THROUGH 6 ARE TO BE TYPE 31 LONG, WOOD BREAKAWAY POSTS. POST 7 IS TO BE A W6x9 STEEL POST.
- 4). THE RAIL SHALL BE ATTACHED AT POSTS 1 THROUGH 6 WITH A ⅝" x 22" GUARDRAIL BOLT, STEEL WASHER, AND RECESS NUT.
- 5). CULVERT HEADWALL SHALL NOT EXTEND MORE THAN 2" ABOVE GRADE.
- 6). THERE SHALL BE A MINIMUM OF 8" FROM THE BACK OF POST TO THE CULVERT WINGWALLS.



DELAWARE
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GUARDRAIL OVER CULVERTS, TYPE 1-31

STANDARD NO.

B-3 (2013)

SHT. 1

OF 3

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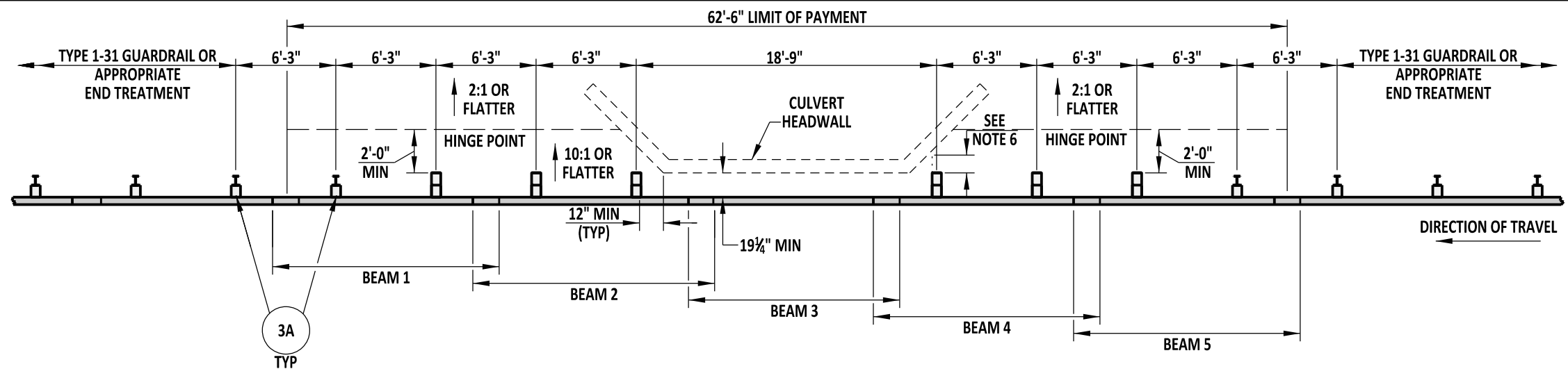
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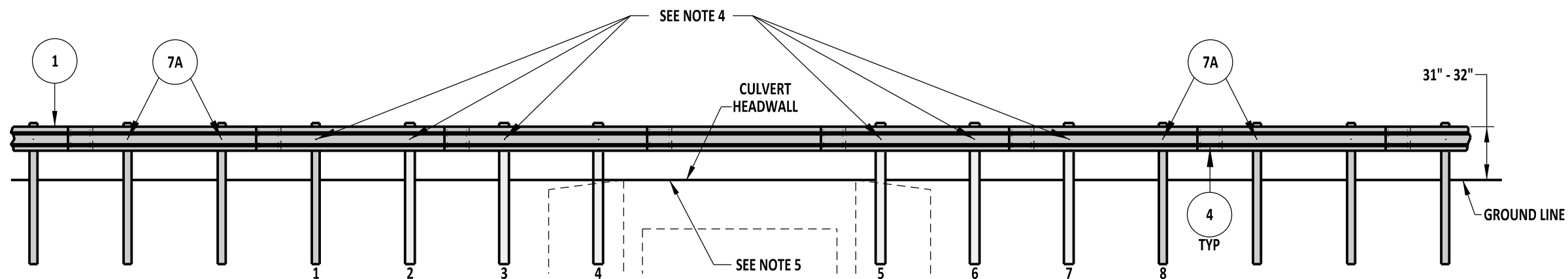
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PLAN



ELEVATION

NOTES:

- 1). ALL W-BEAMS ARE 13'-6½" IN LENGTH.
- 2). PLACE GUARDRAIL DELINEATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 3). POSTS 1 & 8 ARE TO BE W6x9 STEEL POSTS. POSTS 2 THROUGH 6 ARE TO BE TYPE 31 LONG, WOOD BREAKAWAY POSTS.
- 4). THE RAIL SHALL BE ATTACHED AT POSTS 2 THROUGH 7 WITH A ⅝" x 22" GUARDRAIL BOLT, STEEL WASHER, AND RECESS NUT.
- 5). CULVERT HEADWALL SHALL NOT EXTEND MORE THAN 2" ABOVE GRADE.
- 6). THERE SHALL BE A MINIMUM OF 8" FROM THE BACK OF POST TO THE CULVERT WINGWALL.



**DELAWARE
DEPARTMENT OF TRANSPORTATION**

GUARDRAIL OVER CULVERTS, TYPE 2-31

STANDARD NO.

B-3 (2013)

SHT. 2

OF 3

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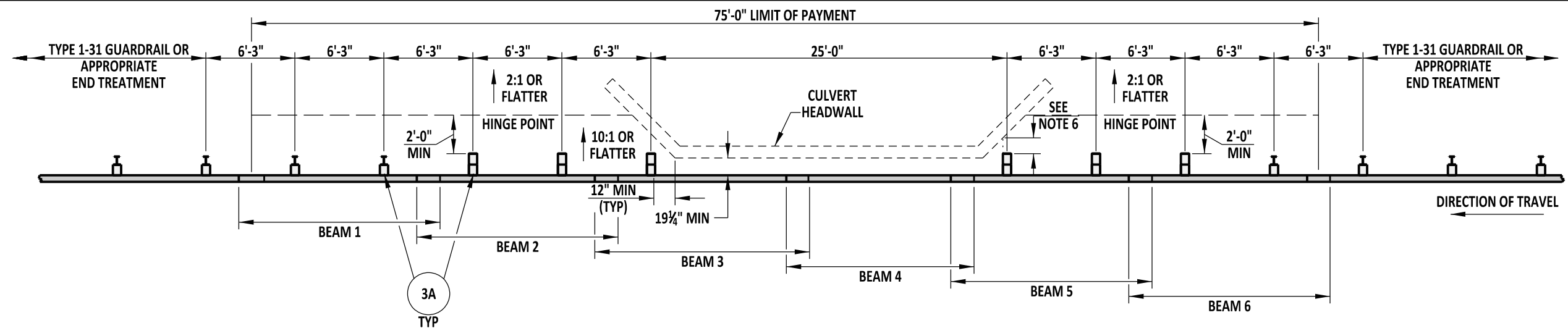
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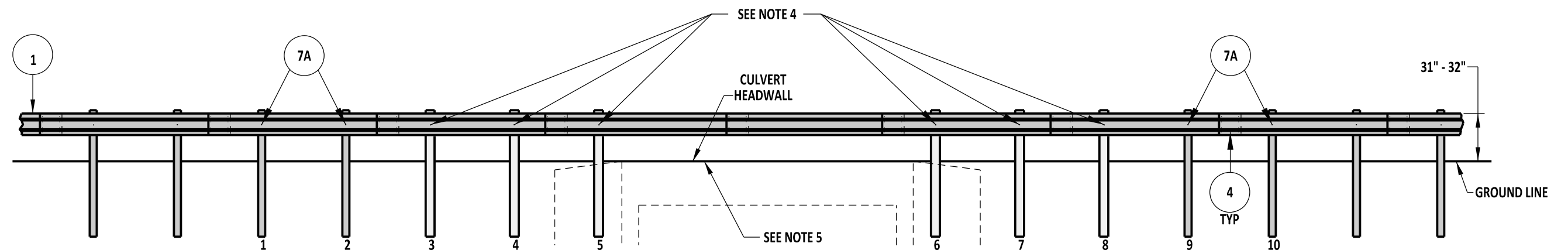
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PLAN



ELEVATION

- NOTES:**
- 1). ALL W-BEAMS ARE 13'-6½" IN LENGTH.
 - 2). PLACE GUARDRAIL DELINEATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
 - 3). POSTS 1, 2, 9, & 10 ARE TO BE W6x9 STEEL POSTS. POSTS 3 THROUGH 8 ARE TO BE TYPE 31 LONG, WOOD BREAKAWAY POSTS.
 - 4). THE RAIL SHALL BE ATTACHED AT POSTS 3 THROUGH 8 WITH A ⅝" x 22" GUARDRAIL BOLT, STEEL WASHER, AND RECESS NUT.
 - 5). CULVERT HEADWALL SHALL NOT EXTEND MORE THAN 2" ABOVE GRADE.
 - 6). THERE SHALL BE A MINIMUM OF 8" FROM THE BACK OF POST TO THE CULVERT WINGWALLS.



DELAWARE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL OVER CULVERTS, TYPE 3-31

STANDARD NO.

B-3 (2013)

SHT. 3

OF 3

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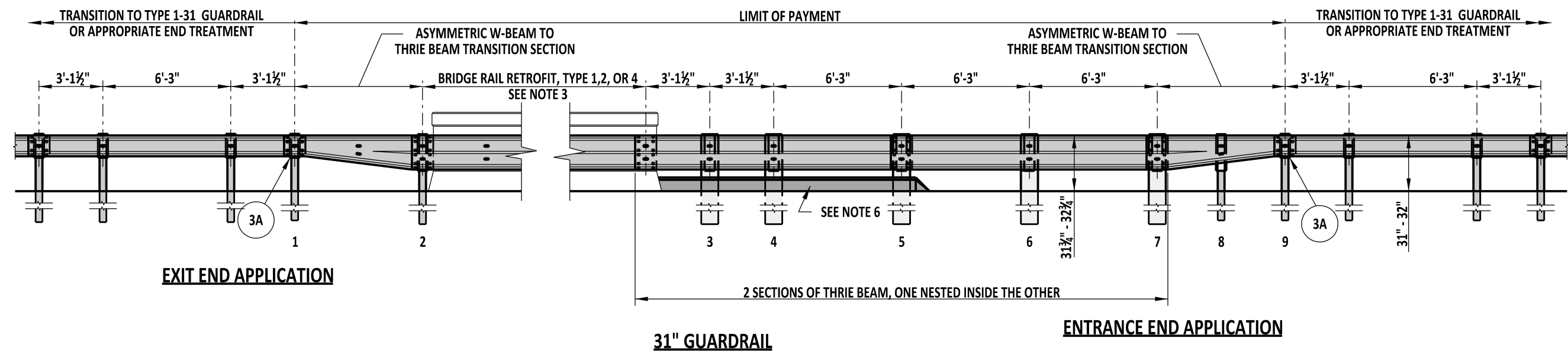
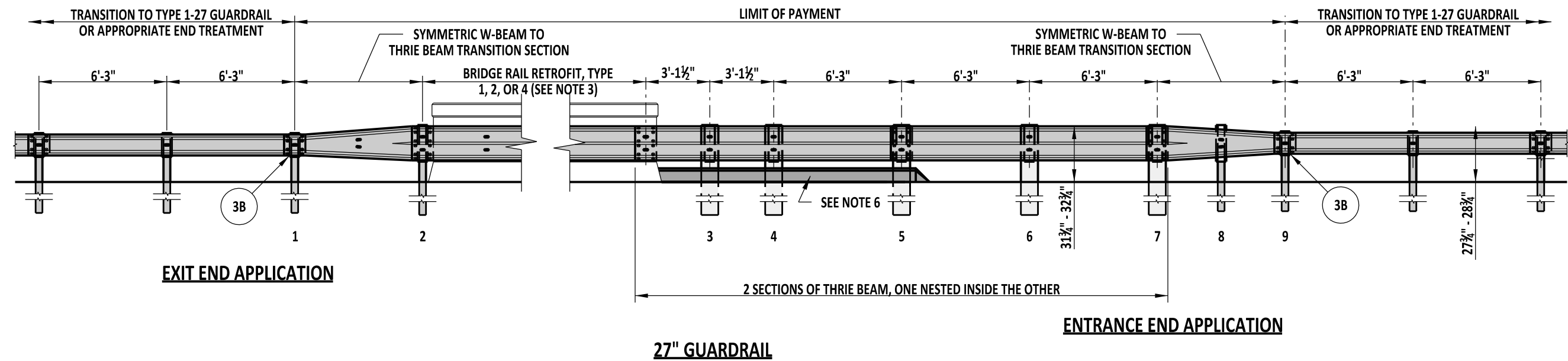
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NOTES:

- 1). POSTS 1, 2, 8, & 9 ARE W6 x 9, 6'-0" LONG, STEEL POSTS AND POSTS 3 THRU 7 ARE 10" x 10" x 6'-6" TIMBER POSTS.
- 2). POSTS 2 THRU 8 HAVE STANDARD THRIE BEAM OFFSET BLOCKS. POSTS 1 & 9 HAVE STANDARD W-BEAM OFFSET BLOCKS.
- 3). SEE DETAIL B-6, SHEETS 4 AND 5 FOR NOTES PERTAINING TO THE BRIDGE RAIL RETROFIT SECTIONS.

- 4). THE EXIT END APPLICATION SHALL BE USED ONLY ON DIVIDED HIGHWAYS. FOR ALL OTHER CONDITIONS, THE ENTRANCE END APPLICATION SHALL BE USED ON BOTH ENDS OF THE BRIDGE PARAPET.
- 5). USE APPROPRIATE EPOXY BOLT ANCHORS TO REDUCE THE CHANCE OF SPLITTING THE CONCRETE. PLACE STEEL WASHERS (FOR $\frac{5}{8}$ " BOLT) BETWEEN BOLT HEADS AND RUBRAIL.
- 6). PLACE P.C.C. CURB, TYPE 1-8, STARTING AT PARAPET WALL AND TERMINATING AFTER POST 5. TAPER CURB TO FLUSH AT A 1:1 RATIO.



DELAWARE
DEPARTMENT OF TRANSPORTATION

BRIDGE RAIL RETROFIT, ENTRANCE AND END APPLICATIONS

STANDARD NO. B-6 (2013)

SHT. 1 OF 5

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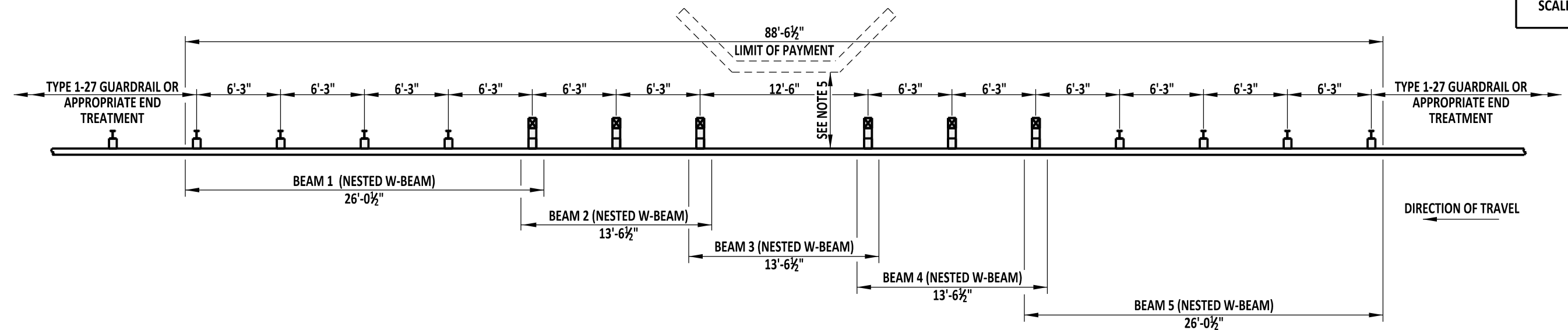
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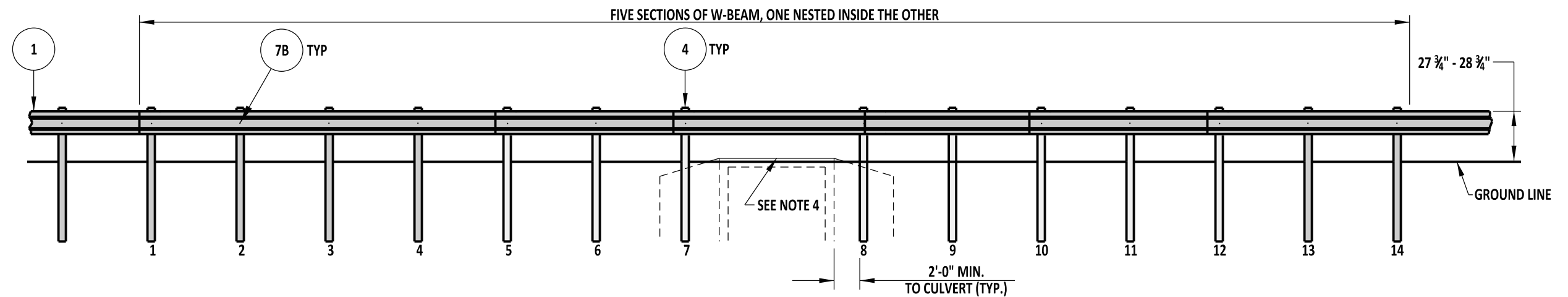
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PLAN



ELEVATION

NOTES:

- 1). PLACE GUARDRAIL DELINEATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 2). POSTS 1 THRU 4 AND 11 THRU 14 ARE TO BE W6X9 STEEL POSTS. POSTS 5 THRU 10 ARE TO BE 6"x8"x6'-0" BREAKAWAY WOOD POSTS WITH 2 WOOD BLOCKS AT EACH OF THESE 6 POSTS.
- 3). THE SPLICES AT POSTS 5, 7, 8, & 10 ARE TO USE 5/8" GUARDRAIL BOLT (L=26").
- 4). TOP OF HEADWALL SHALL NOT EXCEED 2" ABOVE FINISHED GRADE.
- 5). TOP OF HEADWALL OR TOP OF BANK SHALL NOT BE CLOSER THAN 5'-0" TO FACE OF GUARDRAIL.



DELAWARE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL OVER CULVERTS, TYPE 1-27

STANDARD NO.

B-16 (2013)

SHT. 1

OF 3

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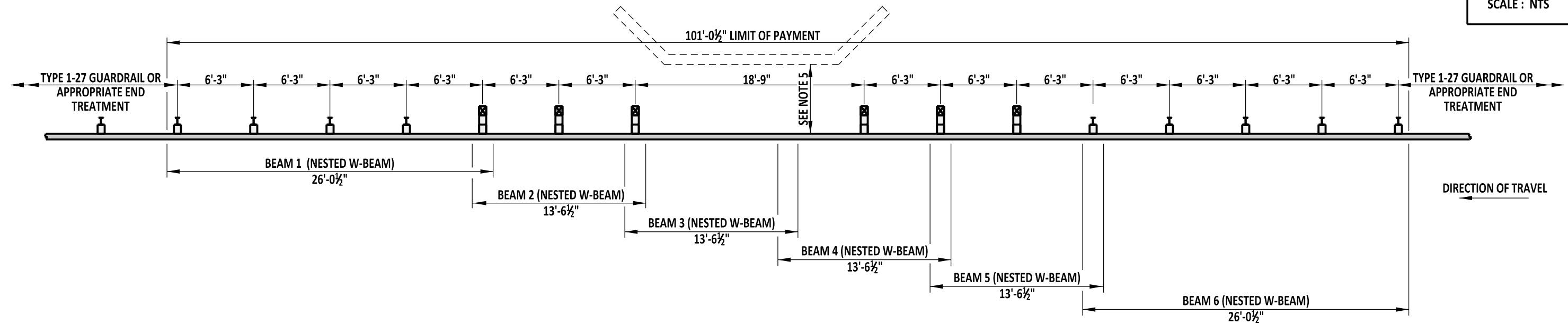
02/14/2014
DATE

RECOMMENDED

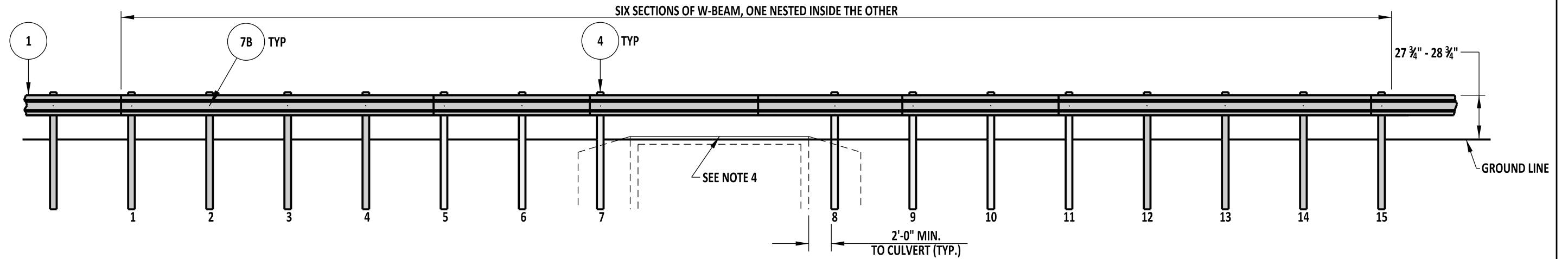
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01/14/2014
DATE

SCALE : NTS



PLAN



ELEVATION

NOTES:

- 1). PLACE GUARDRAIL DELINEATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 2). POSTS 1 THRU 4 AND 11 THRU 15 ARE TO BE W6X9 STEEL POSTS. POSTS 5 THRU 10 ARE TO BE 6"x8"x6'-0" BREAKAWAY WOOD POSTS WITH 2 WOOD BLOCKS AT EACH OF THESE 6 POSTS.
- 3). THE SPLICES AT POSTS 5, 7, & 9 ARE TO USE 5/8" GUARDRAIL BOLT (L=26").
- 4). TOP OF HEADWALL SHALL NOT EXCEED 2" ABOVE FINISHED GRADE.
- 5). TOP OF HEADWALL OR TOP OF BANK SHALL NOT BE CLOSER THAN 5'-0" TO FACE OF GUARDRAIL.



DELAWARE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL OVER CULVERTS, TYPE 2-27

STANDARD NO.

B-16 (2013)

SHT. 2

OF 3

APPROVED

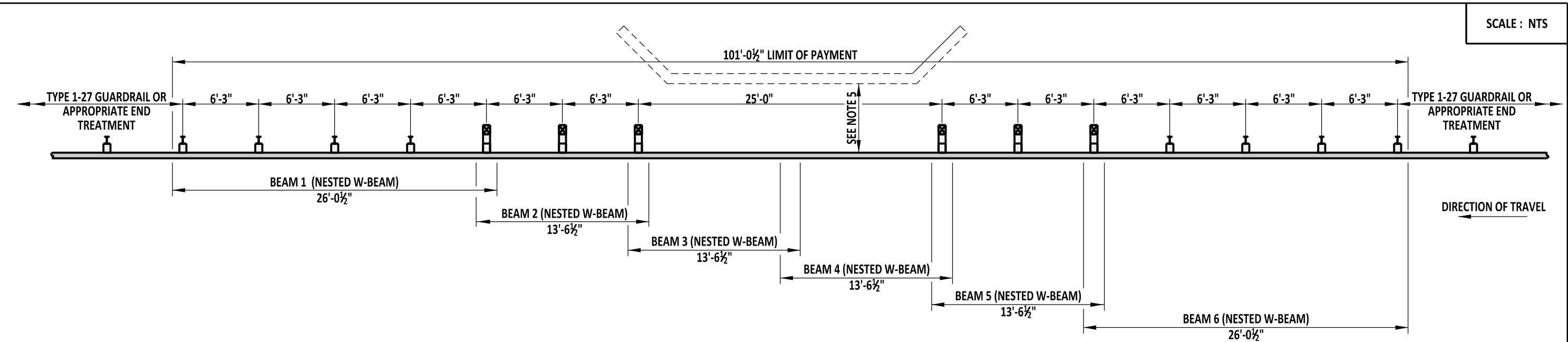
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02/14/2014
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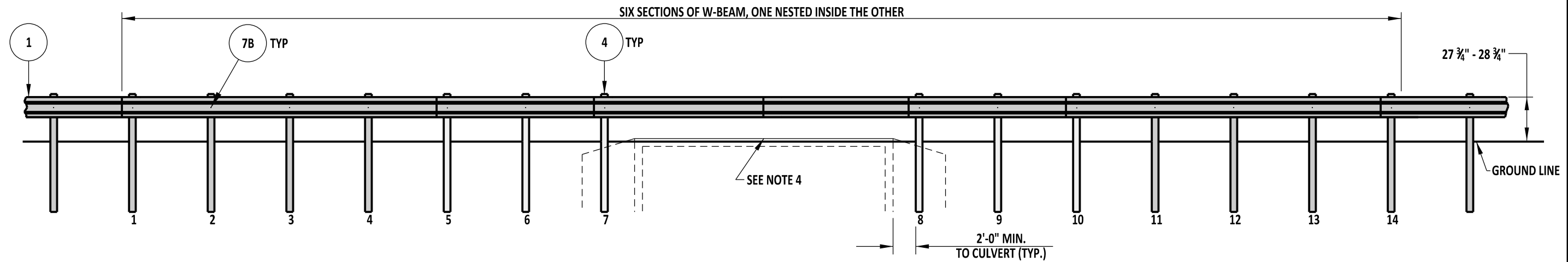
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01/14/2014
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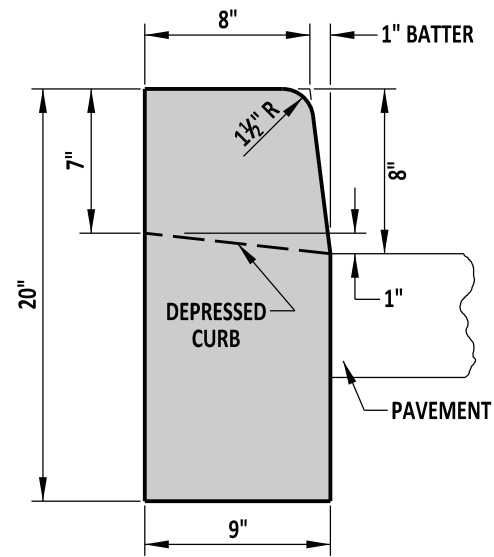
PLAN



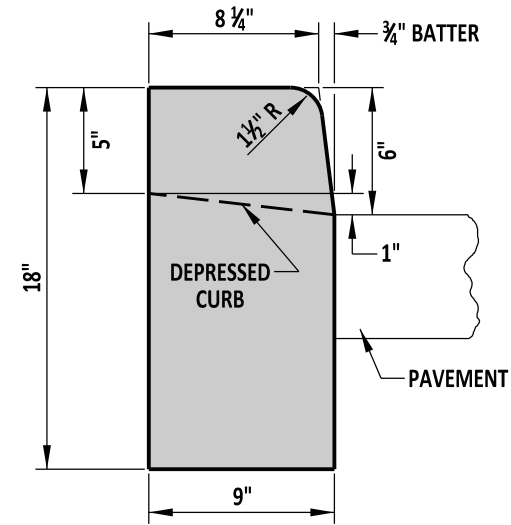
ELEVATION

- NOTES:
- 1). PLACE GUARDRAIL DELINEATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
 - 2). POSTS 1 THRU 4 AND 11 THRU 14 ARE TO BE W6X9 STEEL POSTS. POSTS 5 THRU 10 ARE TO BE 6"x8"x6'-0" BREAKAWAY WOOD POSTS WITH 2 WOOD BLOCKS AT EACH OF THESE 6 POSTS.
 - 3). THE SPLICES AT POSTS 5, 7, 8, & 10 ARE TO USE 5/8" GUARDRAIL BOLT (L=26").
 - 4). TOP OF HEADWALL SHALL NOT EXCEED 2" ABOVE FINISHED GRADE.
 - 5). TOP OF HEADWALL OR TOP OF BANK SHALL NOT BE CLOSER THAN 5'-0" TO FACE OF GUARDRAIL.

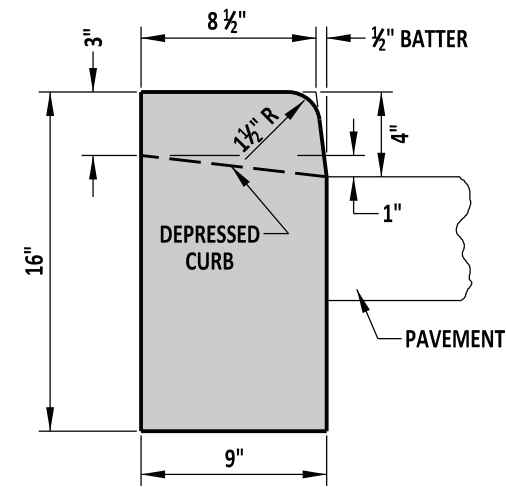
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	STANDARD NO.	B-16 (2013)	SHT.	3	OF	3	RECOMMENDED	SIGNATURE ON FILE	01/14/2014
						CHIEF ENGINEER	DATE		
						DESIGN ENGINEER	DATE		



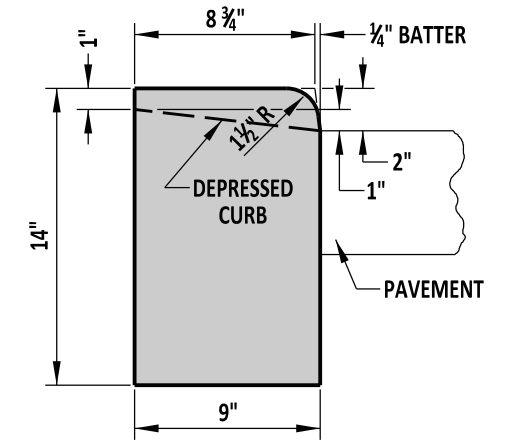
P.C.C. CURB
TYPE 1-8



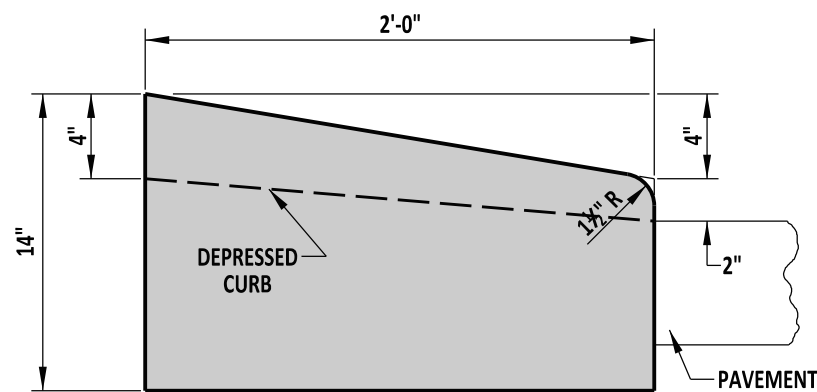
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TYPE 1-6



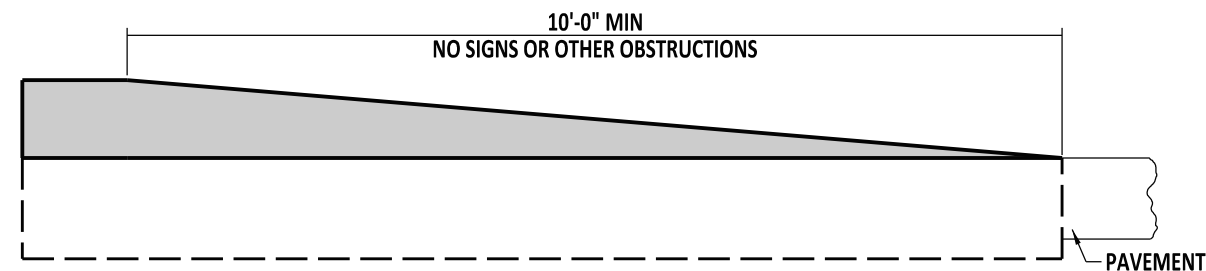
P.C.C. CURB
TYPE 1-4



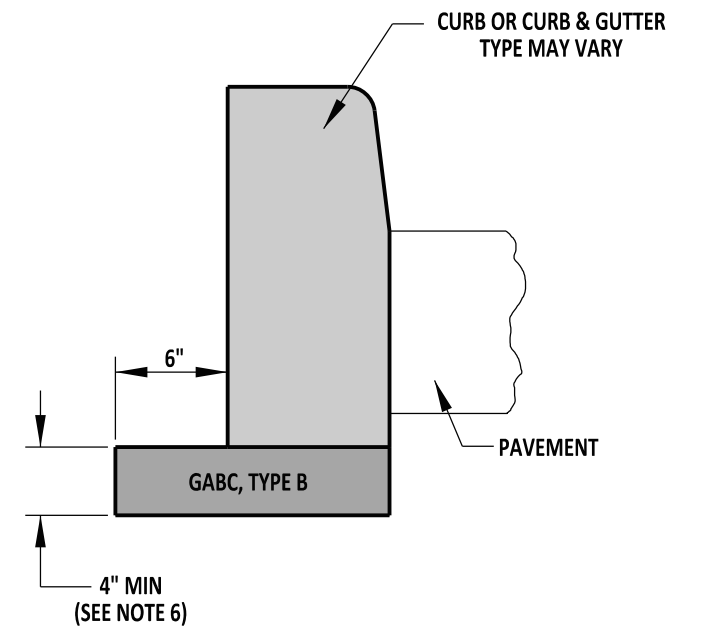
P.C.C. CURB
TYPE 1-2



P.C.C. CURB
TYPE 2



TYPICAL TAPER SECTION
AT NOSE OF MEDIANS
TYPE 1-8 CURB SHOWN



TYPICAL CURB SECTION

NOTES:

- 1). WHEN P.C.C. CURB OR INTEGRAL P.C.C. CURB AND GUTTER IS PLACED ADJACENT TO PORTLAND CEMENT CONCRETE PAVEMENT, CONSTRUCT THE JOINT AS PER THE LONGITUDINAL JOINT SEALANT DETAIL ON DETAIL P-2, SHEET 3 OF 5. USE APPROVED JOINT FILLER TO SEAL. WORK TO BE PAID UNDER RESPECTIVE CURB AND GUTTER ITEM.
- 2). DEPRESS CURB AT ENTRANCES AS DETAILED ON THIS SHEET.
- 3). DEPRESS CURB FLUSH WITH PAVEMENT AT CURB RAMPS. MAXIMUM SLOPE OF CURB AT CURB RAMPS IS 20:1 IN THE DIRECTION OF PEDESTRIAN TRAVEL. SEE DETAIL C-2, SHEET 1 OF 4.
- 4). DEPRESS CURB FLUSH WITH PAVEMENT OR ADJACENT AREA AT LEADING EDGE OF TRIANGULAR ISLANDS, TAPERING BACK TO FULL HEIGHT AT A SLOPE OF 4:1.
- 5). DEPRESS END OF CURB RUNS NOT PART OF AN ISLAND OR MEDIAN FLUSH WITH PAVEMENT OR ADJACENT AREA AT A SLOPE OF 12:1.
- 6). FOR SUBDIVISION APPLICATIONS, A MINIMUM OF 6" OF STONE IS REQUIRED.



DELAWARE
DEPARTMENT OF TRANSPORTATION

P.C.C. CURB
STANDARD NO. C-1 (2013)

SHT. 1 OF 2

APPROVED

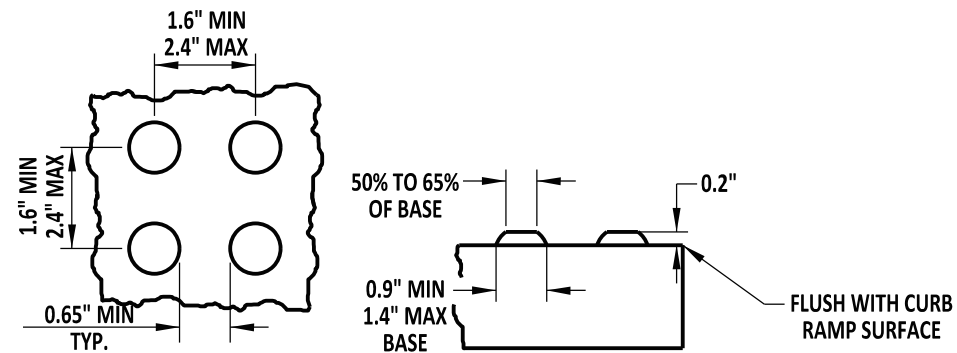
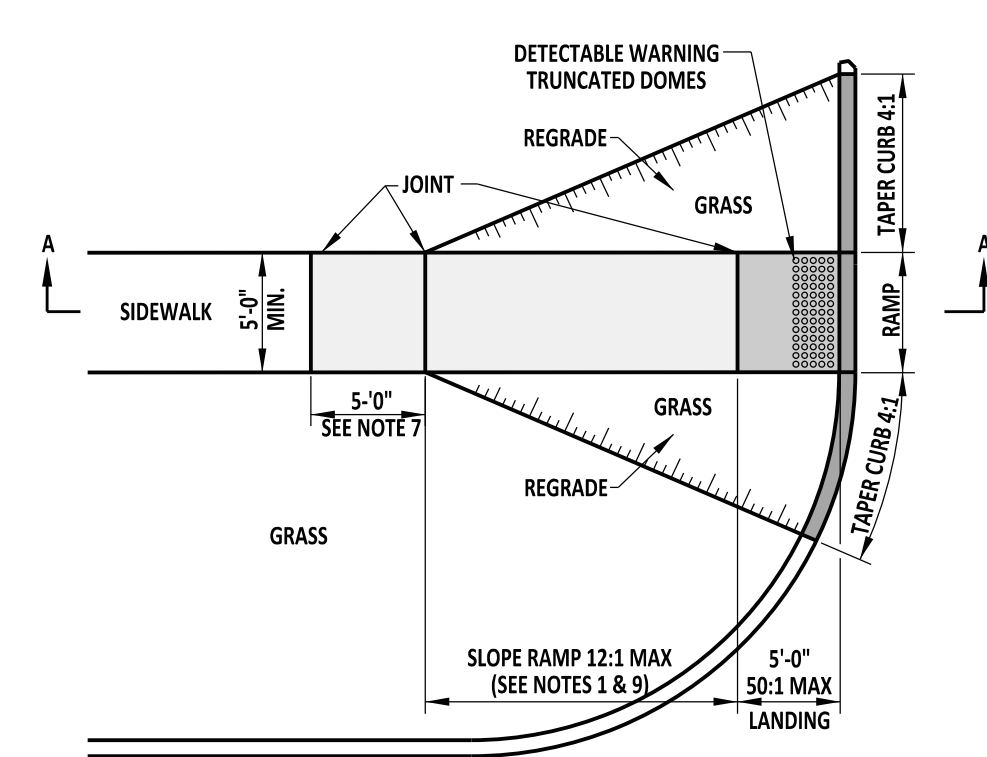
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02/14/2014
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DESIGN ENGINEER

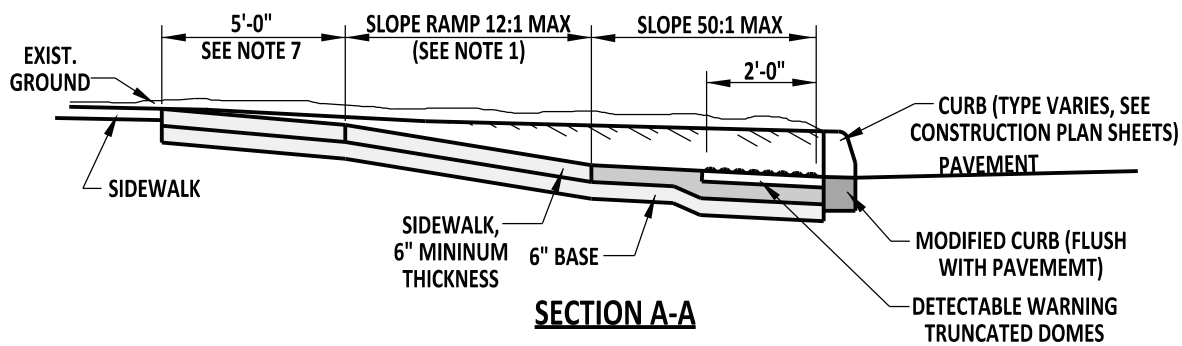
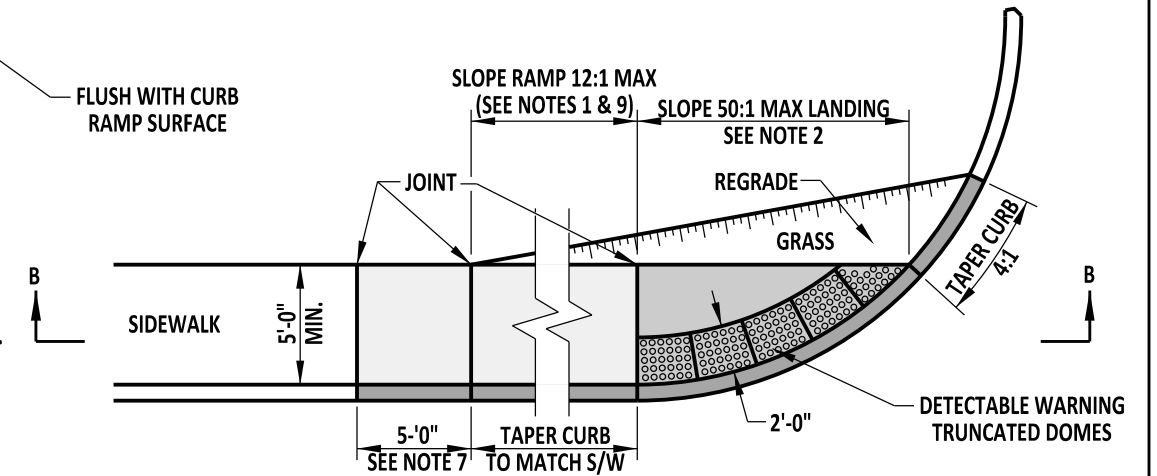
01/14/2014
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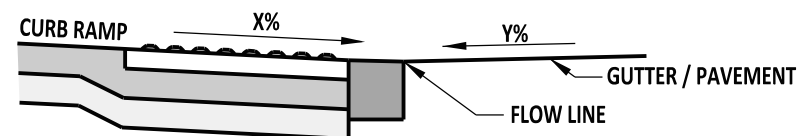
DETECTABLE WARNING TRUNCATED DOME DETAILS

NOTES:

- A). THE AREA OF DETECTABLE WARNING TRUNCATED DOMES SHALL BE 2'-0" LONG AND THE FULL WIDTH OF THE RAMP OR DEPRESSED CURB.
- B). SEE SPECIFICATION FOR ADDITIONAL INFORMATION.



SECTION A-A



MAXIMUM DIFFERENCE IN GRADE FOR ALL CURB RAMP TYPES

FOR EXAMPLE, IF THE CURB RAMP AND DEPRESSED CURB SLOPE AT THE FLOW LINE (X) IS 8.1% AND THE PAVEMENT SLOPE (Y) IS 4.0%, THEN TO DETERMINE THE DIFFERENCE IN GRADE, ADD X + Y TO GET 12.1%, WHICH IS GREATER THAN THE 11% PREFERRED BUT LESS THAN THE 13% MAXIMUM.

CURB RAMP, TYPE 1

NOTES:

- 1). FOR ALTERATIONS WITHOUT A GRASS STRIP OR WHERE THE EXISTING ROAD PROFILE IS STEEPER THAN 7% AND A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15'-0", THE RAMP LENGTH MAY BE LIMITED TO 15'-0" AT A CONSTANT SLOPE, AND ALLOWED TO EXCEED 12:1.
- 2). RAMP AND SIDEWALK CROSS SLOPE SHALL BE 50:1 (2%) MAXIMUM. FOR REHABILITATION WORK, THE RAMP CROSS SLOPE SHALL MATCH THE SLOPE OF THE ADJACENT ROADWAY.
- 3). A 6:1 GRADE IS REQUIRED FOR A MINIMUM OF 2'-0" IMMEDIATELY ADJACENT TO RAMP. IF THAT IS NOT FEASIBLE, THEN A CURB OR RETAINING WALL SHOULD BE USED TO ELIMINATE THE NEED FOR THE STEEP SLOPE.
- 4). THE MAXIMUM DIFFERENCE IN GRADE BETWEEN THE CURB RAMP OR MODIFIED CURB AT THE FLOW LINE AND THE PAVEMENT SHALL BE 13%, HOWEVER 11% IS PREFERRED. SEE DETAIL ON THIS SHEET.
- 5). LANDING AREA SHALL BE EXTENDED 18" MIN BEYOND THE PEDESTRIAN PUSH BUTTON FOR ALL CURB RAMP TYPES. WHEN NO PEDESTRIAN PUSH BUTTON EXISTS, THE 18" EXTENSION CAN BE OMITTED.
- 6). LANDING AREA SHALL BE DELINEATED WITH JOINTS.
- 7). FOR REHABILITATION WORK, PLACE TRANSITION SLAB TO TRANSITION FROM THE NEW RAMP TO THE EXISTING SIDEWALK WHEN THE EXISTING SIDEWALK HAS A NON-CONFORMING RUNNING SLOPE, CROSS SLOPE, OR WIDTH. ADJACENT CURB TAPER SHOULD MATCH THE SLOPE OF THE TRANSITION SLAB.
- 8). REFER TO THE DELAWARE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES FOR DETAILS REGARDING THE LOCATION OF PEDESTRIAN PUSH BUTTONS.
- 9). CONSTRUCTION JOINTS ARE REQUIRED ON RAMPS AT THE INTERVAL SPECIFIED IN NOTE 6 ON DETAIL M-3, SHEET 1 OF 1. HOWEVER, EXPANSION MATERIAL SHALL NOT BE USED IN THE RAMP SECTION.
- 10). PEDESTRIAN SIGNALS SHALL BE ACCESSIBLE WITH A LEVEL LANDING, WHOSE EDGE IS NO MORE THAN 10" FROM ALL PEDESTRIAN PUSH BUTTONS.



DELAWARE
DEPARTMENT OF TRANSPORTATION

CURB RAMP, TYPE 1 AND SECTIONS

STANDARD NO.

C-2 (2013)

SHT. 1

OF 3

APPROVED

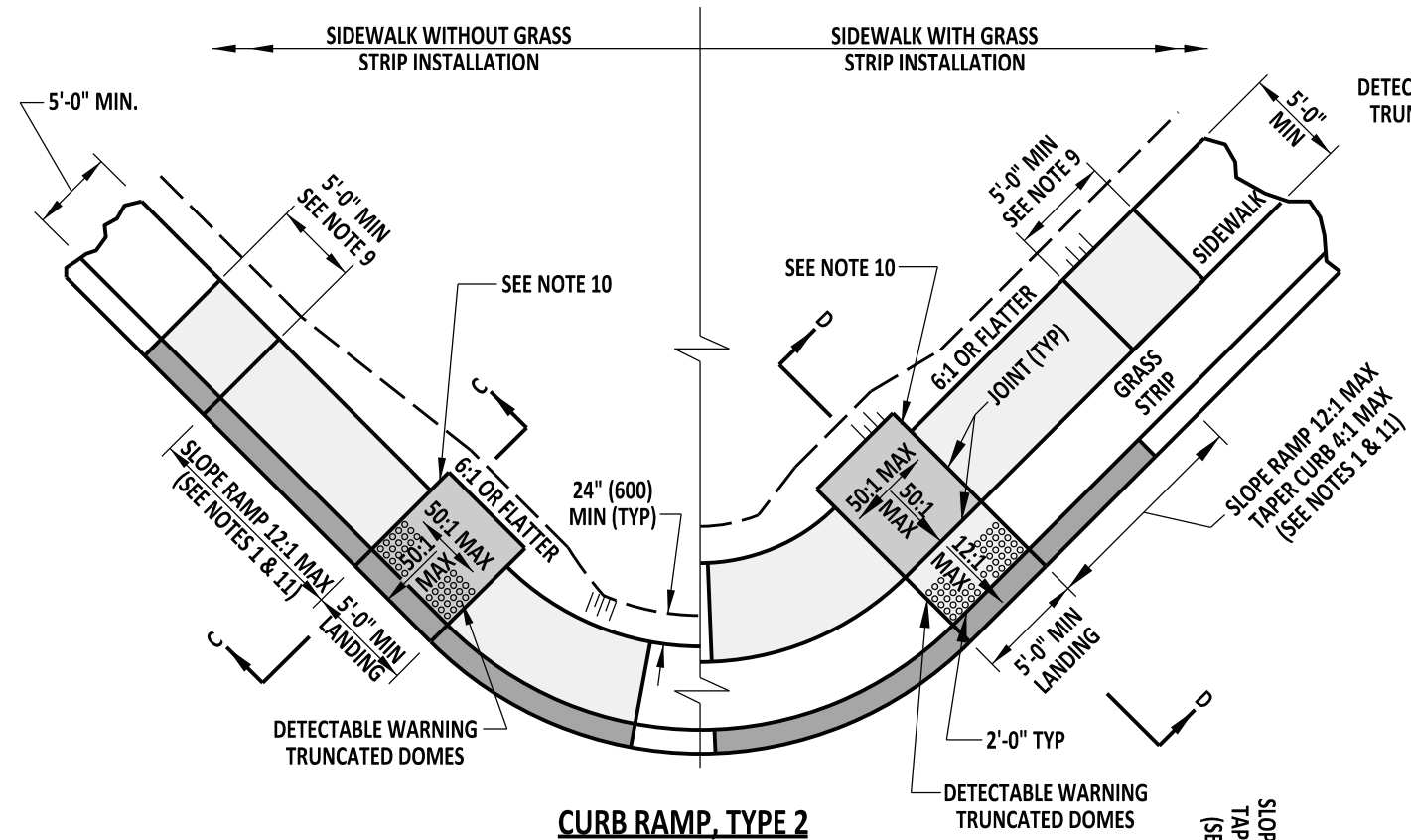
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02/14/2014
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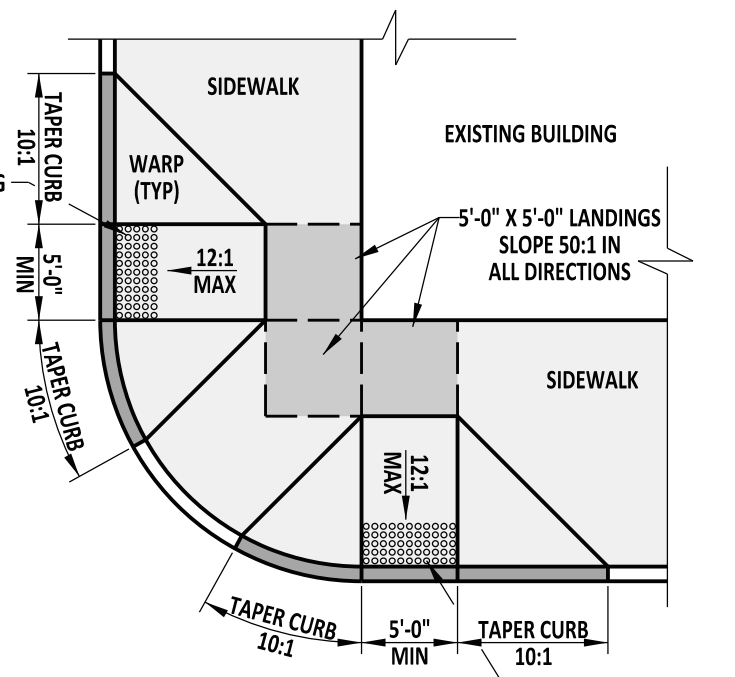
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01/14/2014
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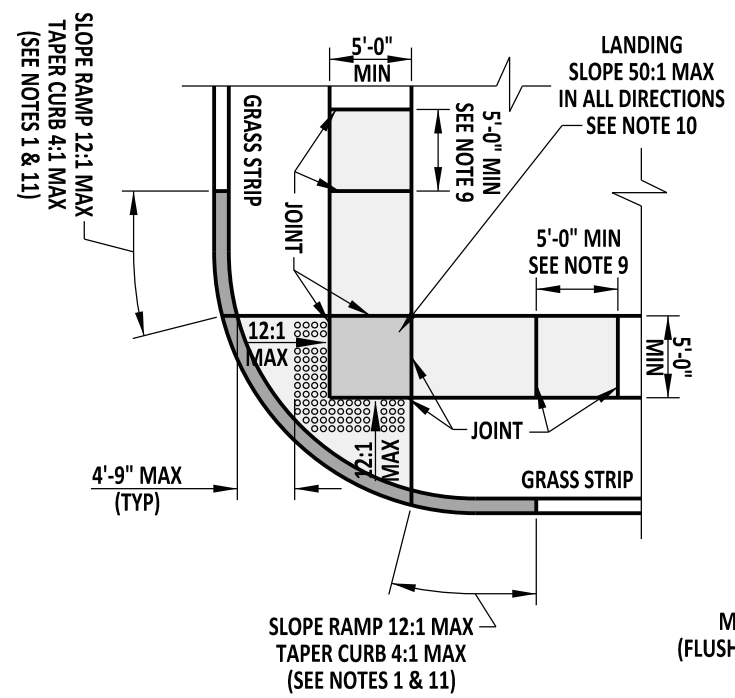


CURB RAMP, TYPE 2

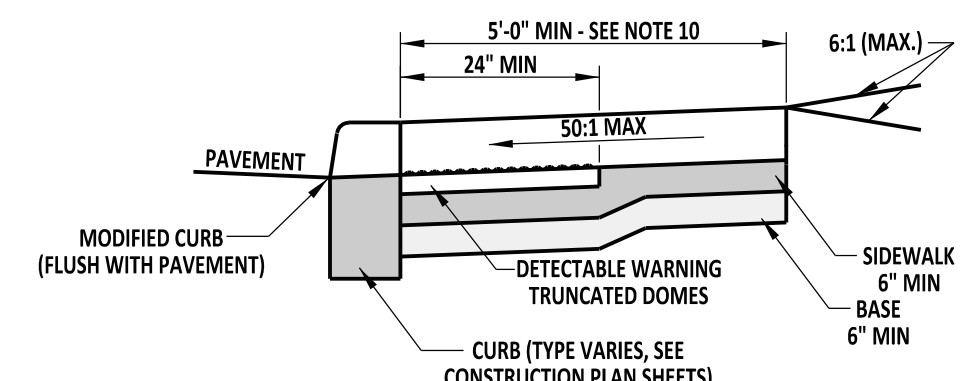


CURB RAMP, TYPE 4

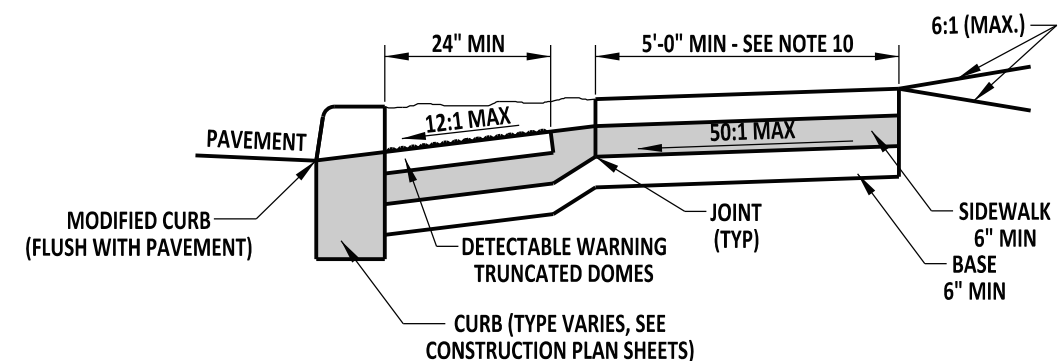
** - DASHED LINES DO NOT INDICATE JOINTS



CURB RAMP, TYPE 3




SECTION C-C

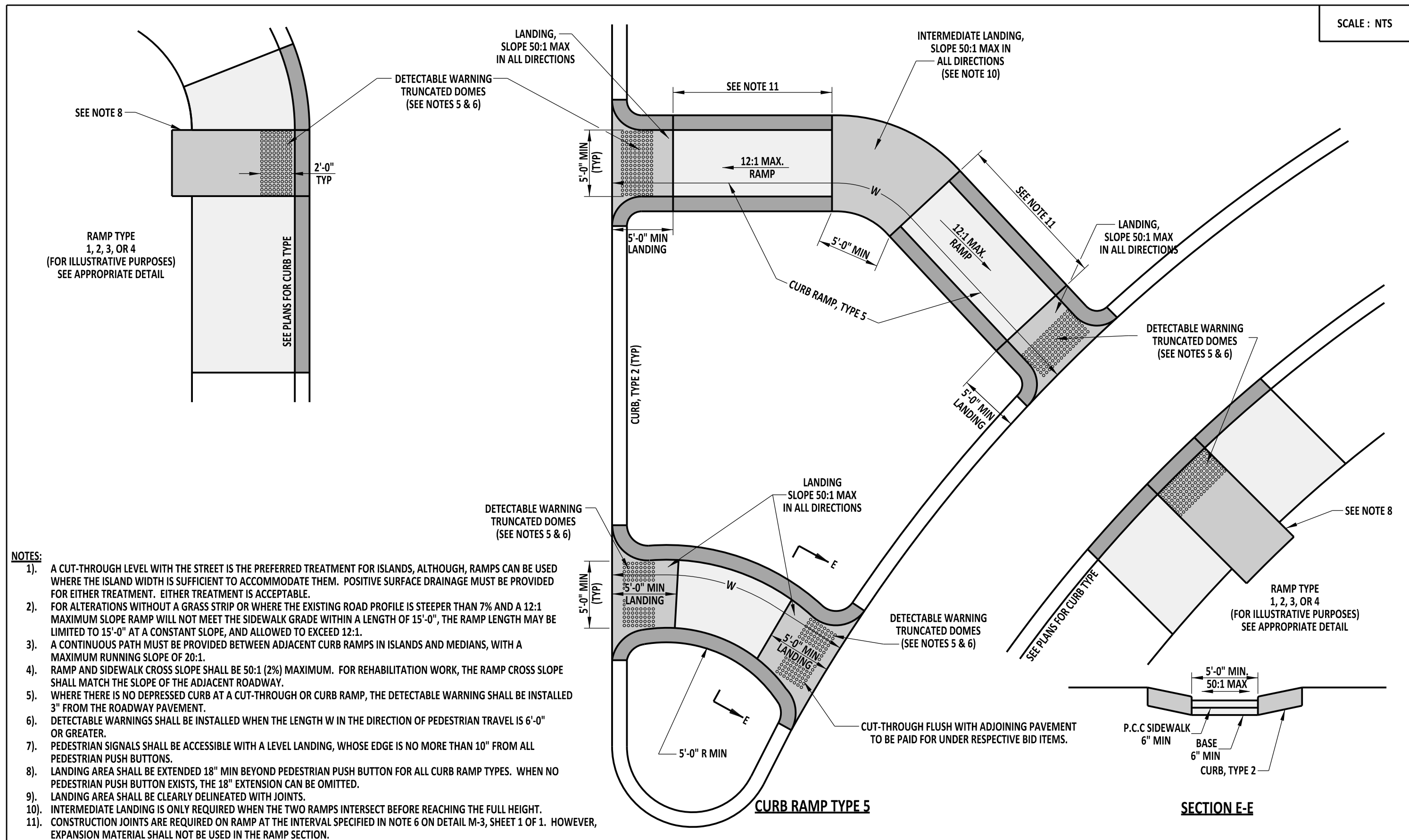



SECTION D-D

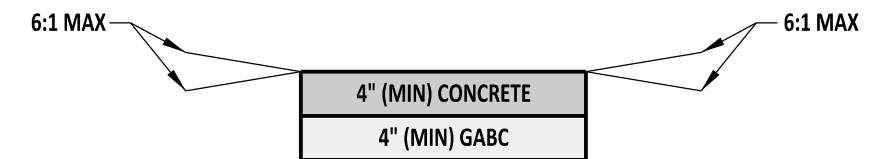
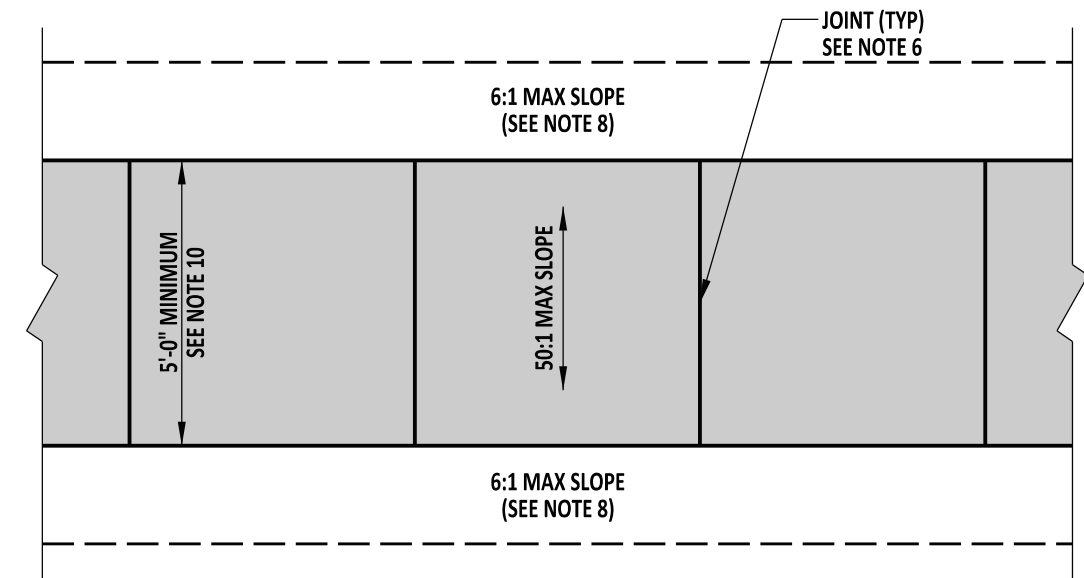
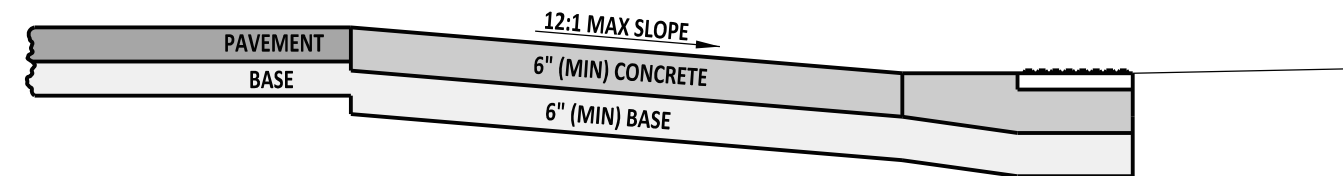
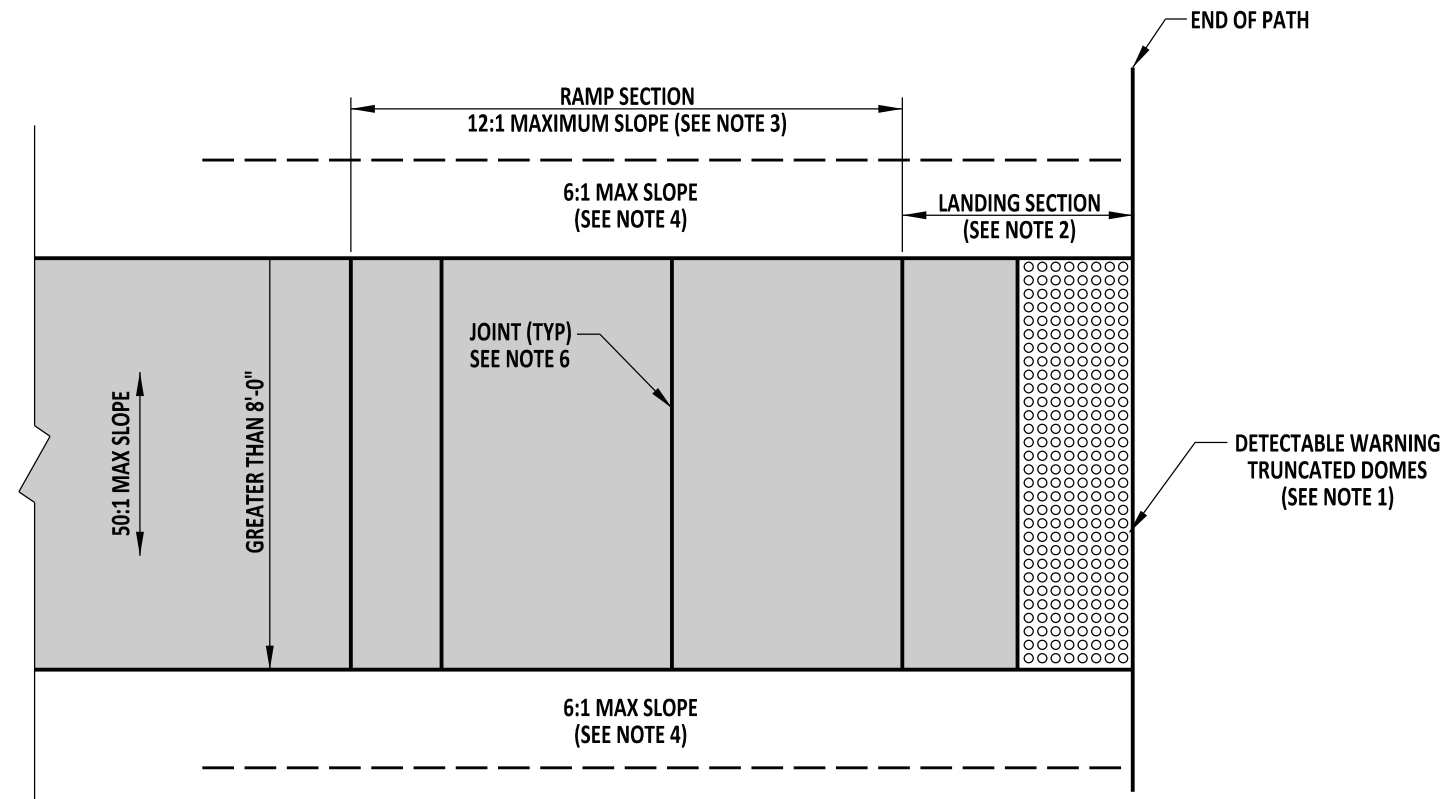
NOTES:

- 1). FOR ALTERATIONS WITHOUT A GRASS STRIP OR WHERE THE EXISTING ROAD PROFILE IS STEEPER THAN 7% AND A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15'-0", THE RAMP LENGTH MAY BE LIMITED TO 15'-0" AT A CONSTANT SLOPE, AND THE RAMP SLOPE ALLOWED TO EXCEED 12:1.
- 2). RAMP AND SIDEWALK CROSS SLOPE SHALL BE 50:1 (2%) MAXIMUM. FOR REHABILITATION WORK, THE RAMP CROSS SLOPE SHALL MATCH THE SLOPE OF THE ADJACENT ROADWAY.
- 3). IF GRADING WILL BE STEEPER THAN 6:1 ADJACENT TO THE CURB RAMP OR SIDEWALK, THEN A TYPE 1-8 CURB OR RETAINING WALL SHOULD BE USED TO ELIMINATE THE NEED FOR THE STEEP SLOPE.
- 4). ENTIRE DEPRESSED AREA OF CURB SHALL HAVE DETECTABLE WARNING TRUNCATED DOMES.
- 5). THE MAXIMUM DIFFERENCE IN GRADE BETWEEN THE SIDEWALK OR CURB AND THE PAVEMENT SHALL BE 13%, HOWEVER 11% IS PREFERRED. SEE STANDARD NO. C-2, SHEET 1 OF 3.
- 6). REFER TO DELAWARE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES FOR DETAILS REGARDING THE LOCATION OF PEDESTRIAN PUSH BUTTONS.
- 7). LANDING AREA SHALL BE DELINEATED WITH JOINTS.
- 8). THE EDGE OF THE LANDING SHALL BE A MAXIMUM OF 10'-0" FROM THE FACE OF THE CURB.
- 9). FOR REHABILITATION WORK, PLACE TRANSITION SLAB TO TRANSITION FROM THE NEW RAMP TO THE EXISTING SIDEWALK WHEN THE EXISTING SIDEWALK HAS A NON-CONFORMING RUNNING SLOPE, CROSS SLOPE, OR WIDTH. ADJACENT CURB SHOULD MATCH THE SLOPE OF THE TRANSITION SLAB.
- 10). LANDING AREAS SHALL BE EXTENDED 18" MIN BEYOND THE PEDESTRIAN PUSH BUTTON FOR ALL CURB RAMP TYPES. WHEN NO PEDESTRIAN PUSH BUTTON EXISTS, THE 18" EXTENSION CAN BE OMITTED.
- 11). CONSTRUCTION JOINTS ARE REQUIRED AT THE INTERVALS SPECIFIED IN NOTE 6 ON DETAIL M-3, SHEET 1 OF 1. HOWEVER, EXPANSION MATERIAL SHALL NOT BE USED IN THE RAMP SECTION.
- 12). PEDESTRIAN SIGNALS SHALL BE ACCESSIBLE WITH A LEVEL LANDING, WHOSE EDGE IS NO MORE THAN 10" FROM ALL PEDESTRIAN BUTTONS.

 DELAWARE DEPARTMENT OF TRANSPORTATION	CURB RAMPS, TYPES 2, 3, & 4			APPROVED	SIGNATURE ON FILE	02/14/2014
	STANDARD NO.	C-2 (2013)	SHT. 2 OF 3	RECOMMENDED	SIGNATURE ON FILE	01/14/2014



 DELAWARE DEPARTMENT OF TRANSPORTATION	CURB RAMP, TYPE 5 & SECTIONS				APPROVED	SIGNATURE ON FILE	02/14/2014	
	STANDARD NO.	C-2 (2013)	SHT.	3	OF	3	RECOMMENDED	SIGNATURE ON FILE



SHARED-USE PATH

NOTES:

- 1). IF THE SHARED-USE PATH ENDS AT A ROADWAY OR RAILROAD CROSSING, THEN DETECTABLE WARNING TRUNCATED DOMES 24" LONG AND THE FULL WIDTH OF THE PATH SHALL BE INSTALLED. SEE DETAIL C-2.
- 2). THE LANDING SECTION SHALL BE A MINIMUM OF 5'-0" IN LENGTH AND SHALL HAVE A MAXIMUM CROSS SLOPE AND RUNNING SLOPE OF 2%. THE ENTIRE LANDING SECTION MUST ALSO BE CONCRETE.
- 3). THE RAMP SECTION SHALL HAVE A MAXIMUM CROSS SLOPE OF 2% AND A MAXIMUM RUNNING SLOPE OF 12:1. HOWEVER, IF A 12:1 RUNNING SLOPE DOES NOT ALLOW THE RAMP TO MEET EXISTING GRADE WITHIN 15'-0", THE RUNNING SLOPE MAY EXCEED 12:1.
- 4). A 6:1 MAX SLOPE IS REQUIRED FOR 2'-0" ON BOTH SIDES OF THE SHARED-USE PATH. WHERE A 6:1 SLOPE CANNOT BE ACHIEVED, AN APPROVED HANDRAIL OR HEADWALL SHALL BE REQUIRED.
- 5). TOPSOIL, SEED, & MULCH ANY DISTURBED AREA ADJACENT TO THE SHARED-USE PATH UP TO A MAXIMUM OF 2'-0".
- 6). FOR SIDEWALKS AND CONCRETE SHARED-USE PATHS, CONSTRUCTION JOINTS SHALL BE PLACED EVERY 10'-0" AND EXPANSION MATERIAL EVERY 20'-0". HOWEVER, EXPANSION MATERIAL SHALL NOT BE USED IN THE RAMP SECTION.

SIDEWALK

- 7). SEE DETAIL C-2, SHEETS 1, 2 OR 3 FOR CURB RAMP TREATMENTS WHEN THE SIDEWALK INTERSECTS WITH A TRAVELWAY.
- 8). A 6:1 MAX SLOPE IS REQUIRED FOR 2'-0" ON BOTH SIDES OF THE SIDEWALK.
- 9). TOPSOIL, SEED, & MULCH ANY DISTURBED AREA ADJACENT TO THE SIDEWALK UP TO A MAXIMUM OF 2'-0".
- 10). ON REHABILITATION PROJECTS, WHEN EXISTING OBSTRUCTIONS (FIRE HYDRANT, UTILITY POLE, ETC...) ARE LOCATED IN THE SIDEWALK, THE SIDEWALK PATH SHALL NOT BE LESS THAN 32" WIDE AND THE OBSTRUCTION SHALL NOT EXTEND FOR MORE THEN 2'-0".



DELAWARE
DEPARTMENT OF TRANSPORTATION

SHARED-USE PATH & SIDEWALK DETAILS

STANDARD NO.

M-3 (2013)

SHT. 1

OF 1

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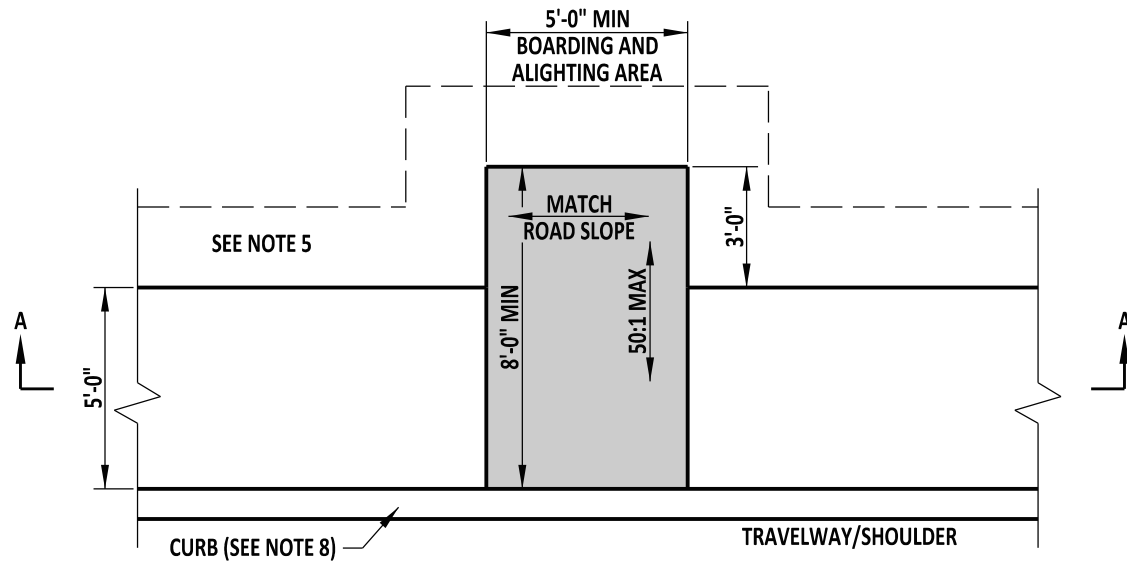
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CHIEF ENGINEER

02/14/2014
DATE

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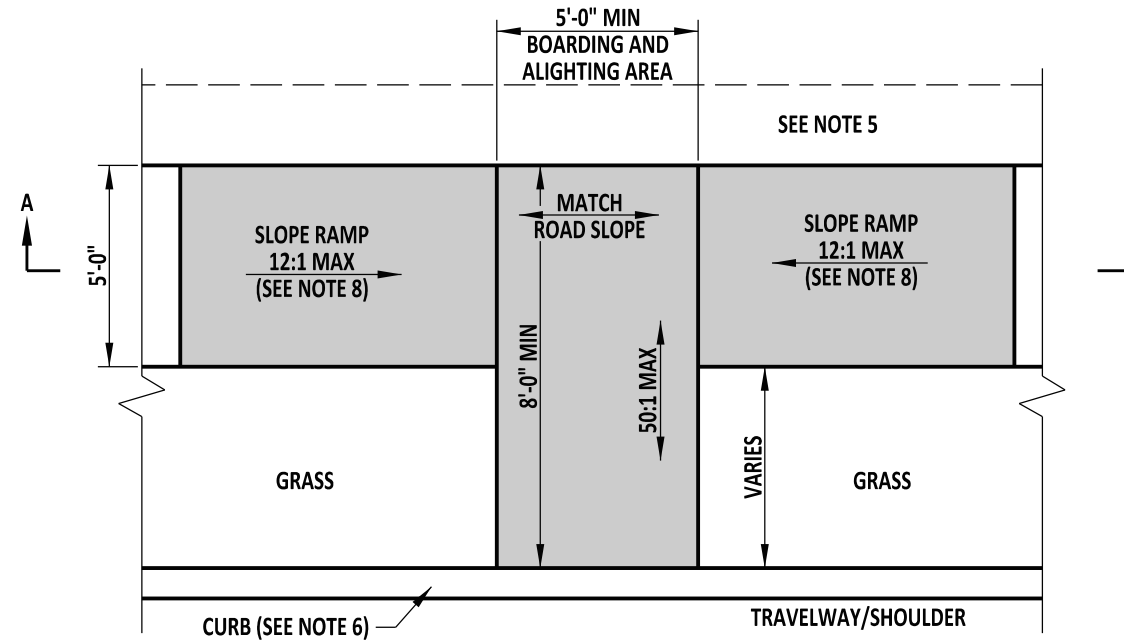
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01/14/2014
DATE



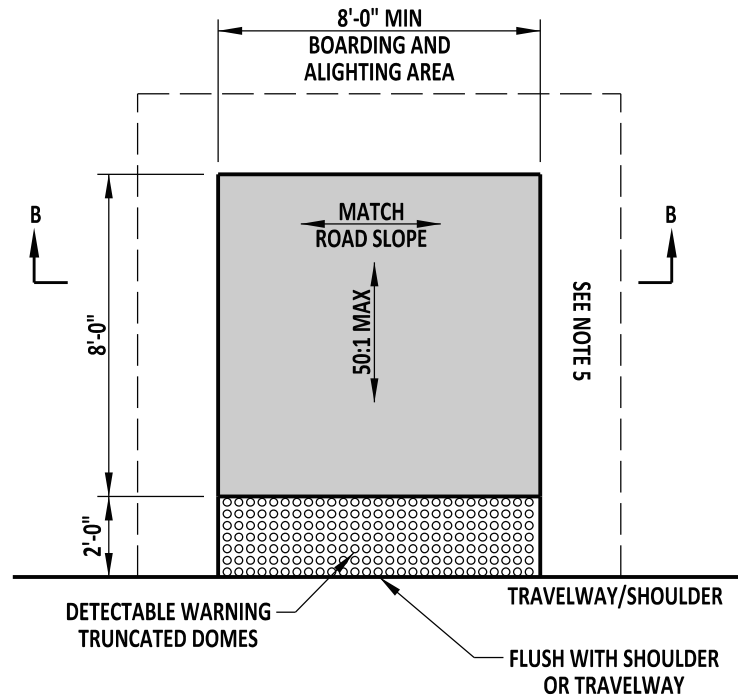
BUS STOP PAD, TYPE 1

* - TO BE USED WHEN THE PAD IS PLACED BEHIND CURB AND INCLUDES A SIDEWALK WITHOUT A GRASS STRIP



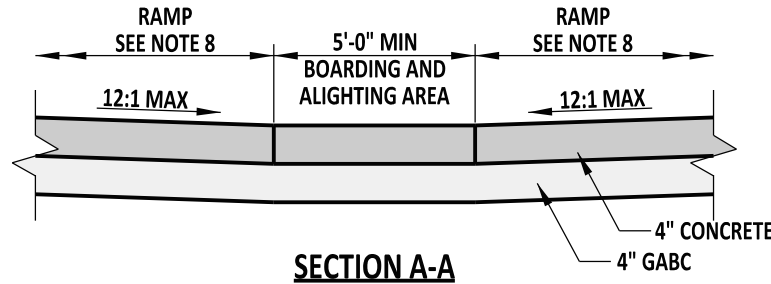
BUS STOP PAD, TYPE 2

* - TO BE USED WHEN THE PAD IS PLACED BEHIND CURB AND INCLUDES A SIDEWALK WITH A GRASS STRIP

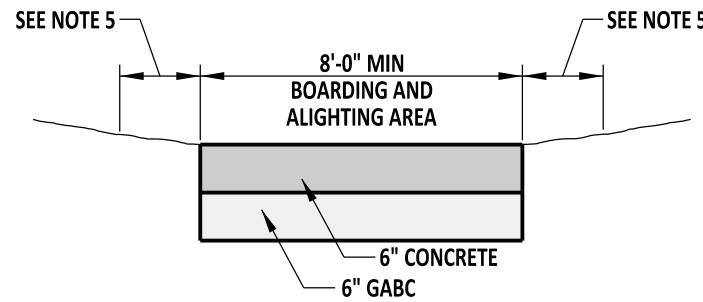


BUS STOP PAD, TYPE 3

* - TO BE USED WHEN THE PAD IS PLACED FLUSH WITH THE TRAVELWAY AND NO CURB OR SIDEWALK IS INCLUDED



SECTION A-A



SECTION B-B

NOTES:

- 1). BUS STOP PAD LOCATIONS MUST BE APPROVED BY BOTH DART AND DELDOT PRIOR TO ANY CONSTRUCTION.
- 2). REFERENCE THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR GENERAL INFORMATION ON PLACEMENT OF SIGNS.
- 3). SEE CONSTRUCTION PLAN SIGNING AND STRIPING SHEETS FOR SPECIFIC SIGN AND SIGN LOCATION DETAILS.
- 4). TYPICAL BUS STOP PADS MAY BE USED IN CONJUNCTION WITH BUS STOP SHELTER LOCATIONS IN THE EVENT OF LAND CONSTRAINTS AT THE SHELTER LOCATIONS. AN INTERCONNECTING PEDESTRIAN ACCESS PATH MUST EXIST THAT IS ACCESSIBLE TO BUS STOP ALIGHTING AREAS, SHELTERS, CURB RAMPS, CROSSWALKS, AND SIDEWALKS.
- 5). A 6:1 MAX SLOPE IS REQUIRED FOR 2'-0" ON ALL SIDES OF THE BUS STOP PAD AND APPROACHING SIDEWALK. WHERE THIS CANNOT BE ACHIEVED, AN APPROVED HANDRAIL OR CURB / HEADWALL IS REQUIRED.
- 6). CURB TYPE VARIES, SEE PLANS FOR CORRECT CURB TYPE.
- 7). SEE DETAIL M-3, SHEET 1 OF 1 FOR ADDITIONAL SIDEWALK DETAILS AND REQUIREMENTS.
- 8). RAMPS ARE ONLY REQUIRED WHEN THE VERTICAL HEIGHT OF THE APPROACHING SIDEWALK DIFFERS FROM THAT OF THE ADJACENT CURB AND THE BUS STOP PAD MUST BE RAISED OR LOWERED TO MATCH THE CURB HEIGHT.



DELAWARE
DEPARTMENT OF TRANSPORTATION

BUS STOP PAD DETAILS

STANDARD NO.

M-9 (2013)

SHT. 1

OF 2

APPROVED

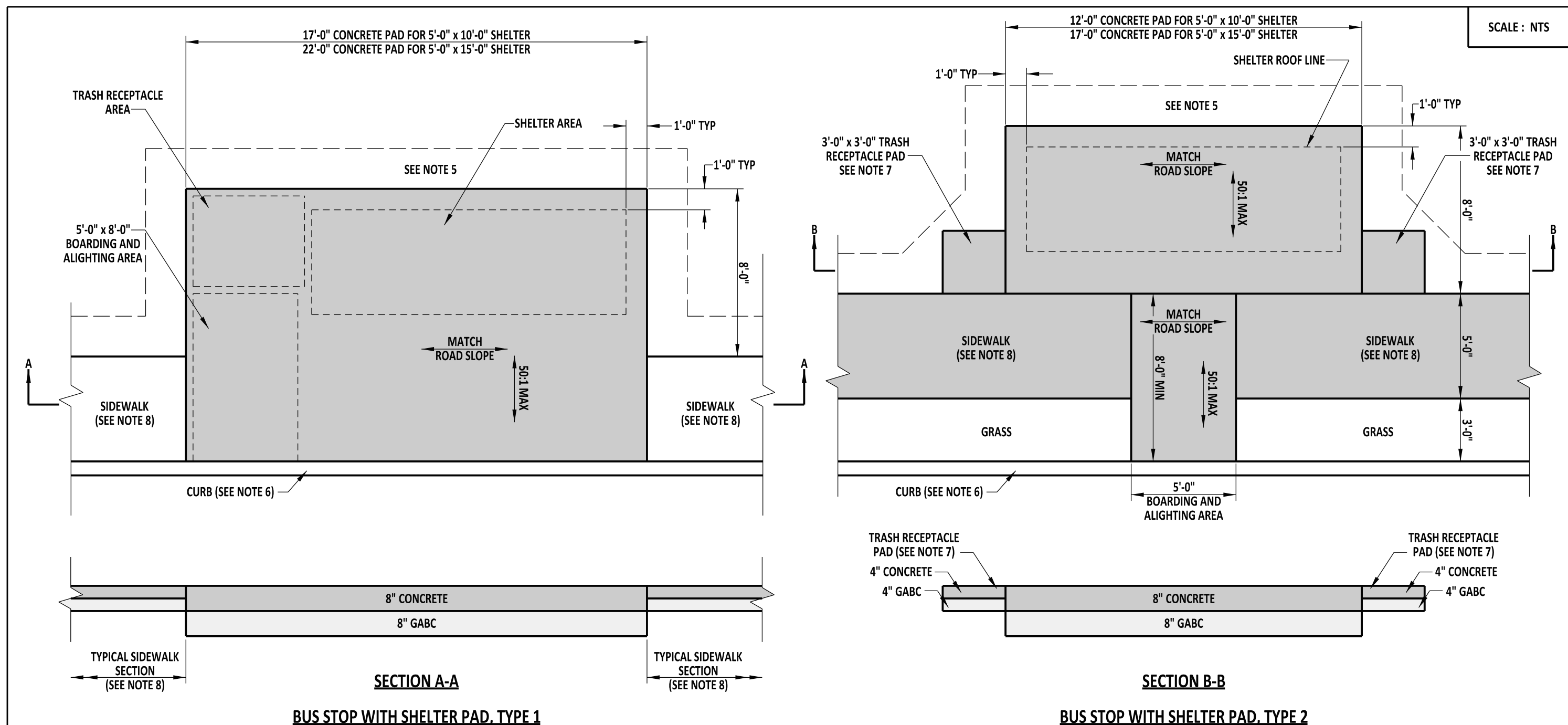
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02/14/2014
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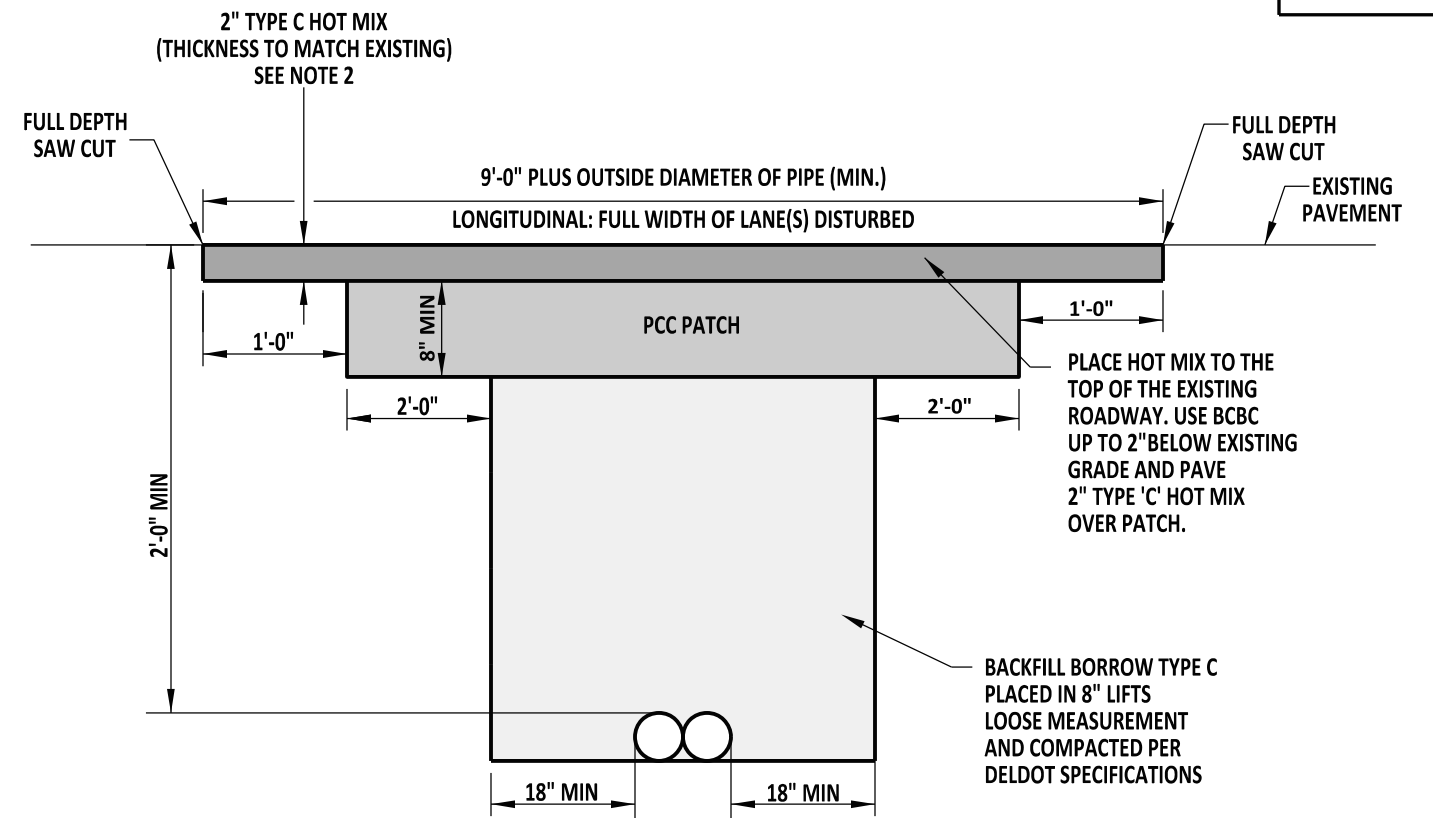
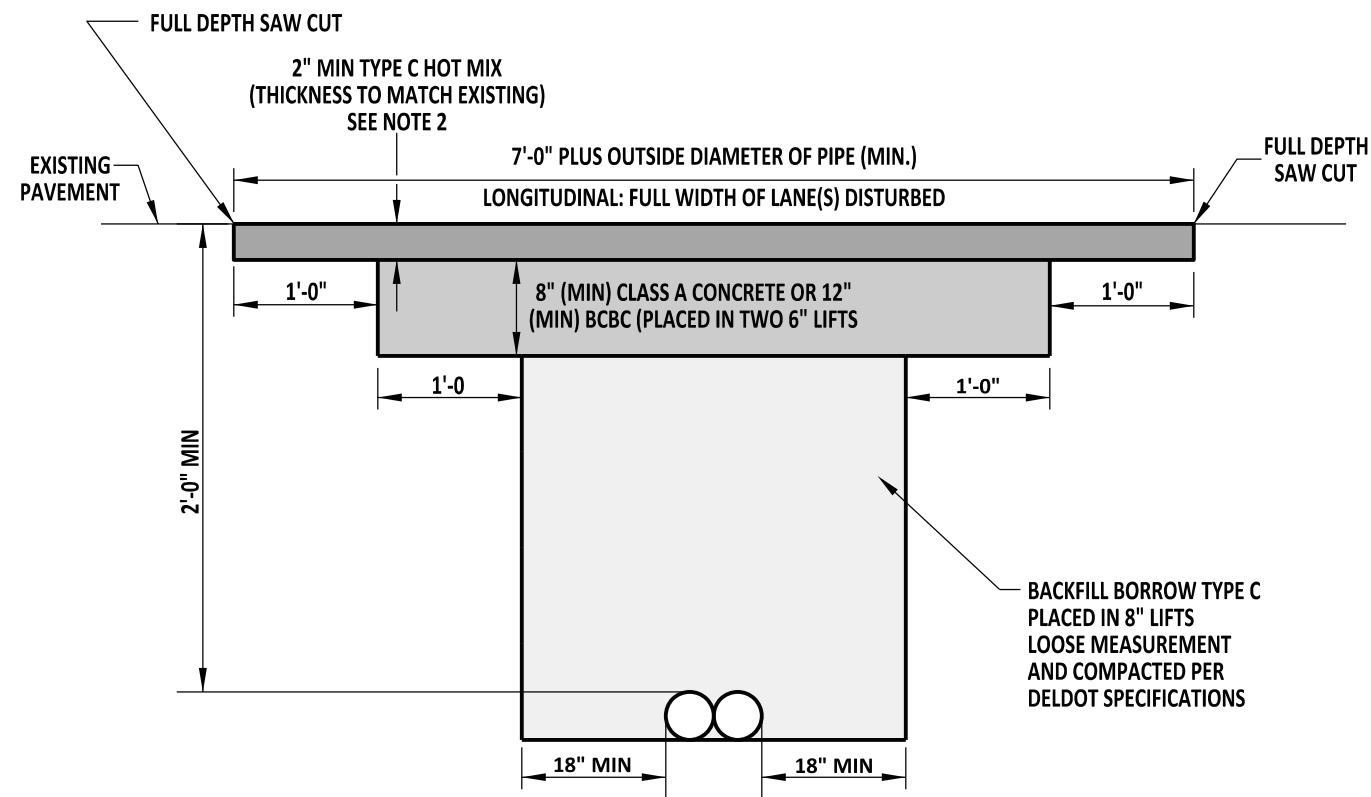
RECOMMENDED

SIGNATURE ON FILE
DESIGN ENGINEER

01/14/2014
DATE



 <div> <div>DELAWARE</div> <div>DEPARTMENT OF TRANSPORTATION</div> </div>	BUS STOP PAD WITH SHELTER DETAILS			APPROVED	SIGNATURE ON FILE	02/14/2014
	STANDARD NO.	M-9 (2013)	SHT. 2 OF 2	RECOMMENDED	SIGNATURE ON FILE	01/14/2014



PERMANENT CROSS-ROAD OR LONGITUDINAL PATCH DETAIL

PERMANENT CROSS-ROAD OR LONGITUDINAL PATCH DETAIL

* EXISTING CONCRETE PAVEMENT OVERLAYED WITH HOTMIX LOCATIONS

NOTES:

- 1). PATCH WIDTHS ARE MEASURED ALONG THE ROADWAY CENTERLINE AND SHALL BE THE FULL WIDTH OF THE LANE OR LANES DISTURBED.
- 2). THIS IS A MINIMUM PATCH. IF THE EXISTING ROADWAY HAS A HEAVIER CROSS SECTION THAN SHOWN HERE, IT WILL BE REPLACED WITH THAT CROSS SECTION, OR AS DIRECTED BY THE ENGINEER.
- 3). SEE DETAIL D-8, SHEET 1 FOR PIPE BEDDING DETAILS.



DELAWARE
DEPARTMENT OF TRANSPORTATION

PERMANENT CROSS-ROAD PATCH OVER PIPE TRENCH DETAIL

STANDARD NO. P-4 (2013)

SHT. 1 OF 1

APPROVED

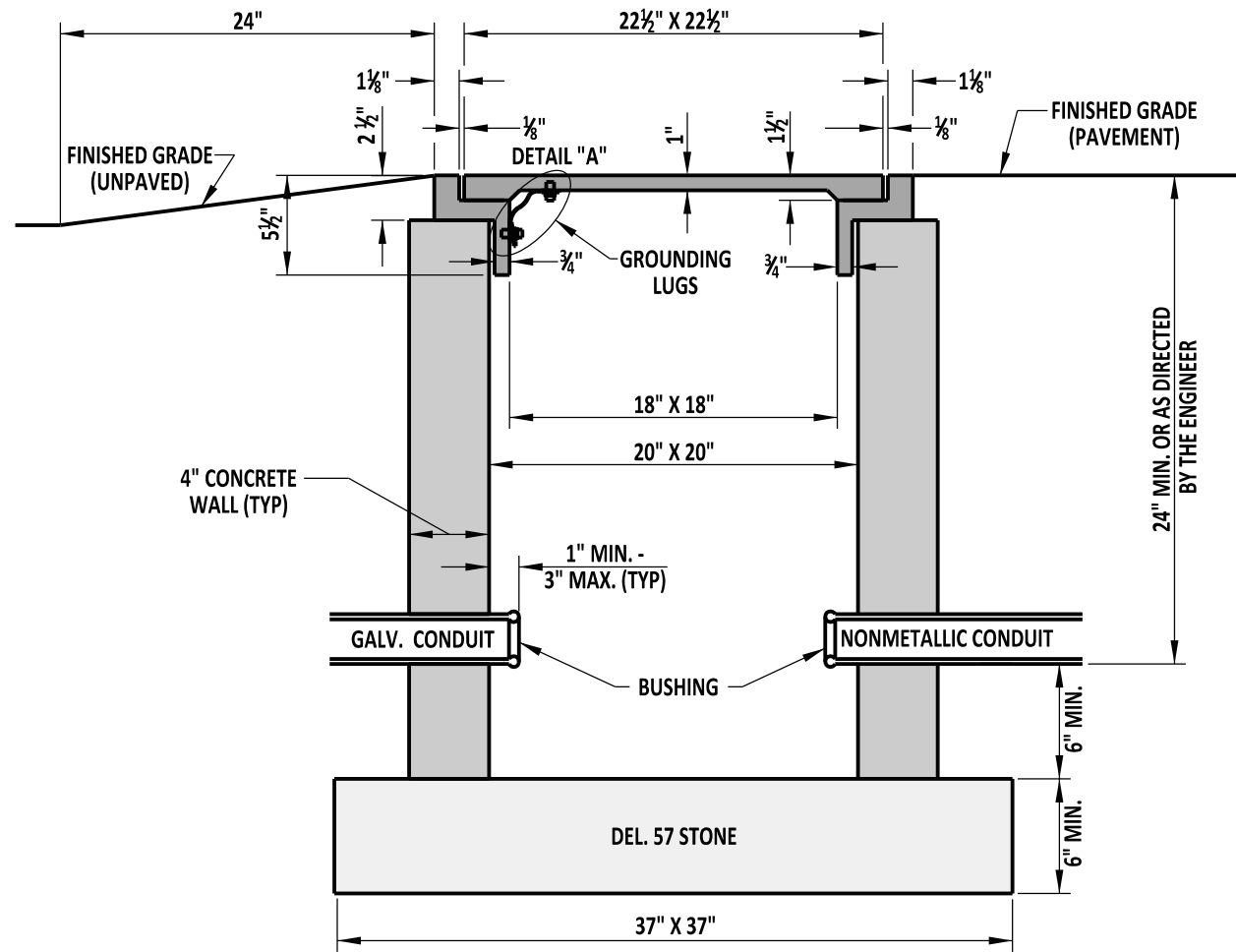
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02/14/2014
DATE

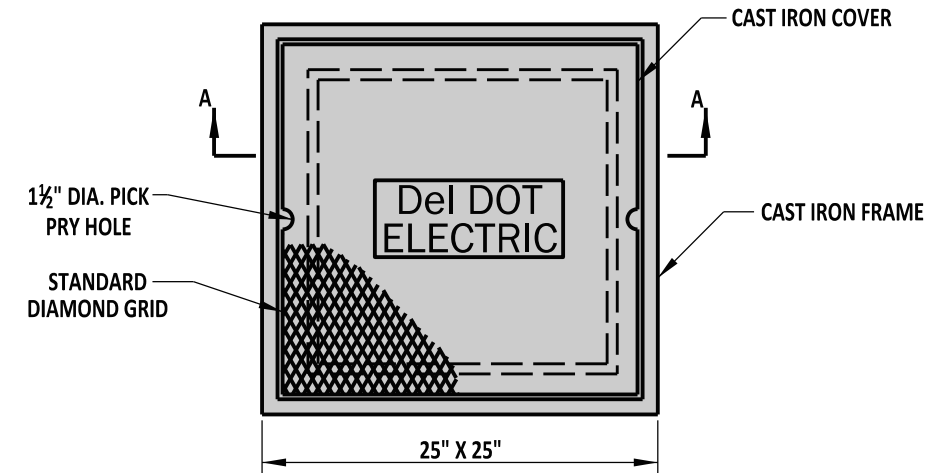
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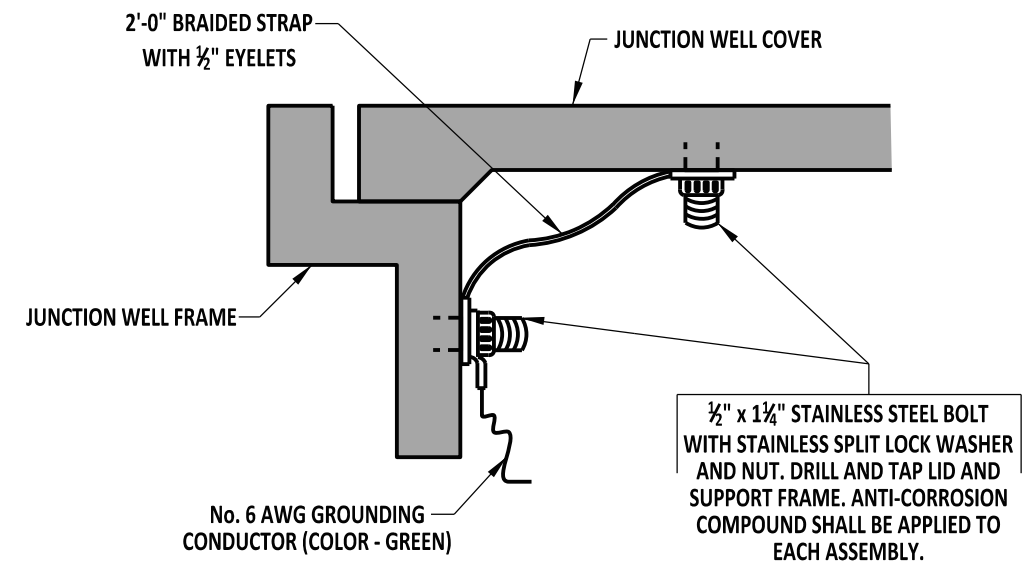
01/14/2014
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SECTION A-A



PLAN VIEW



DETAIL "A"

NOTES:

- 1). TYPE 1 CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.
- 2). CONDUIT JUNCTION WELLS SHALL NOT BE PLACED UNDER A TRAVELWAY.
- 3). ALL CONDUIT JUNCTION WELLS PLACED IN PAVED AREAS SHALL BE CONSTRUCTED FLUSH WITH THE FINISHED GRADE. ALL CONDUIT JUNCTION WELLS PLACED IN UNPAVED AREAS SHALL BE CONSTRUCTED ABOVE FINISHED GRADE AND GRADED TO DRAIN AWAY FROM THE WELL, AS DETAILED.
- 4). ALL CRACKS, GAPS, OR OPENINGS IN JUNCTION WELL WALL SHALL BE SEALED WITH CONCRETE.



DELAWARE
DEPARTMENT OF TRANSPORTATION

CONDUIT JUNCTION WELL, TYPE 1

STANDARD NO.

T-1 (2013)

SHT. 1

OF 3

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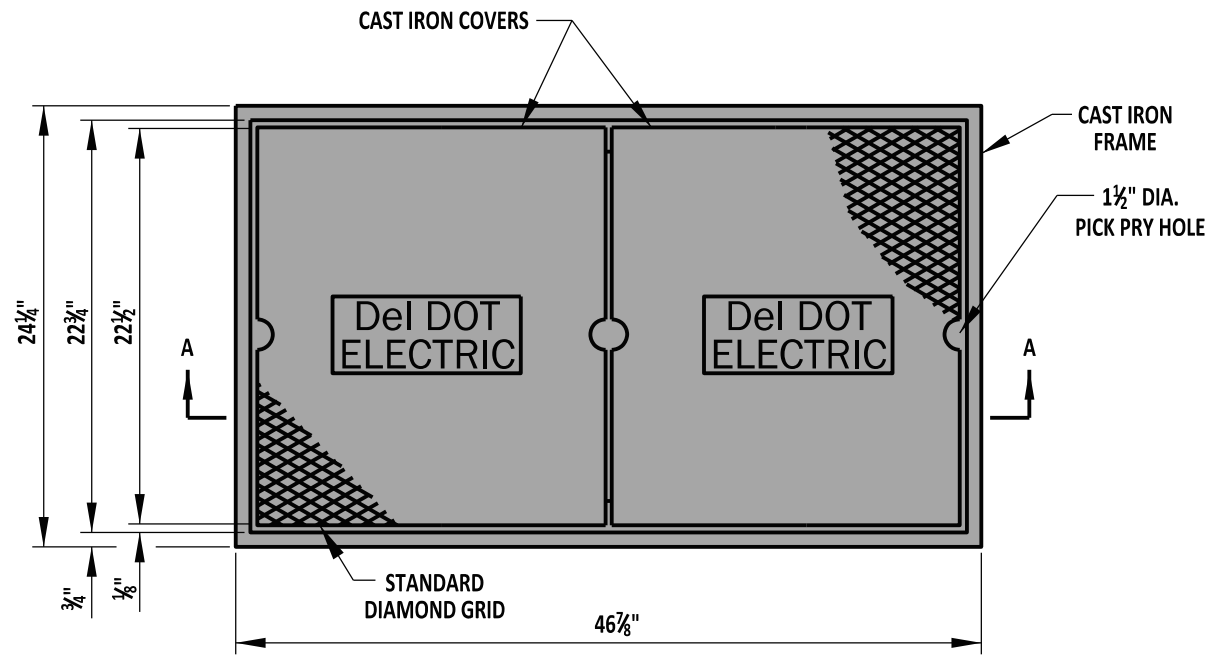
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02/14/2014
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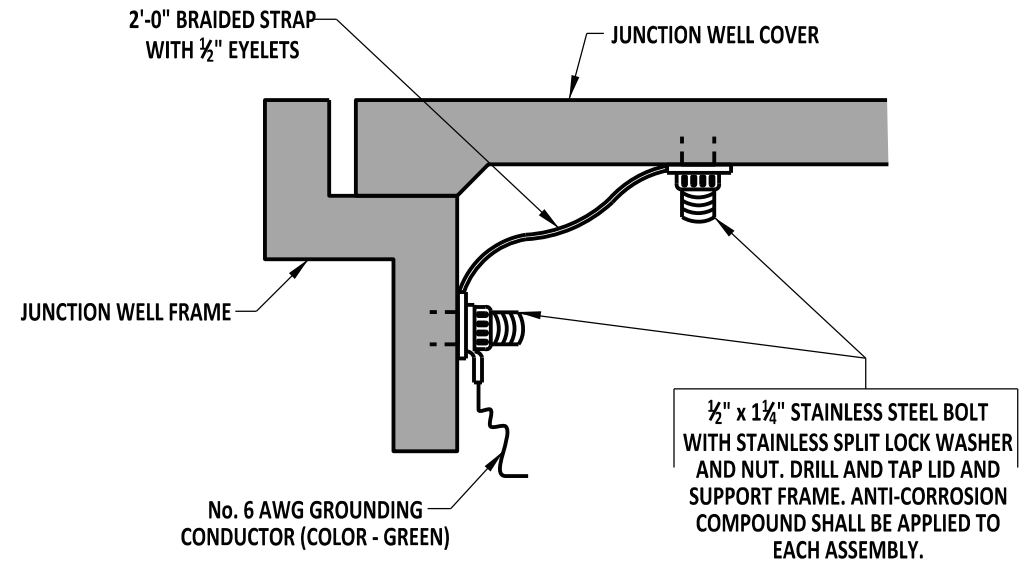
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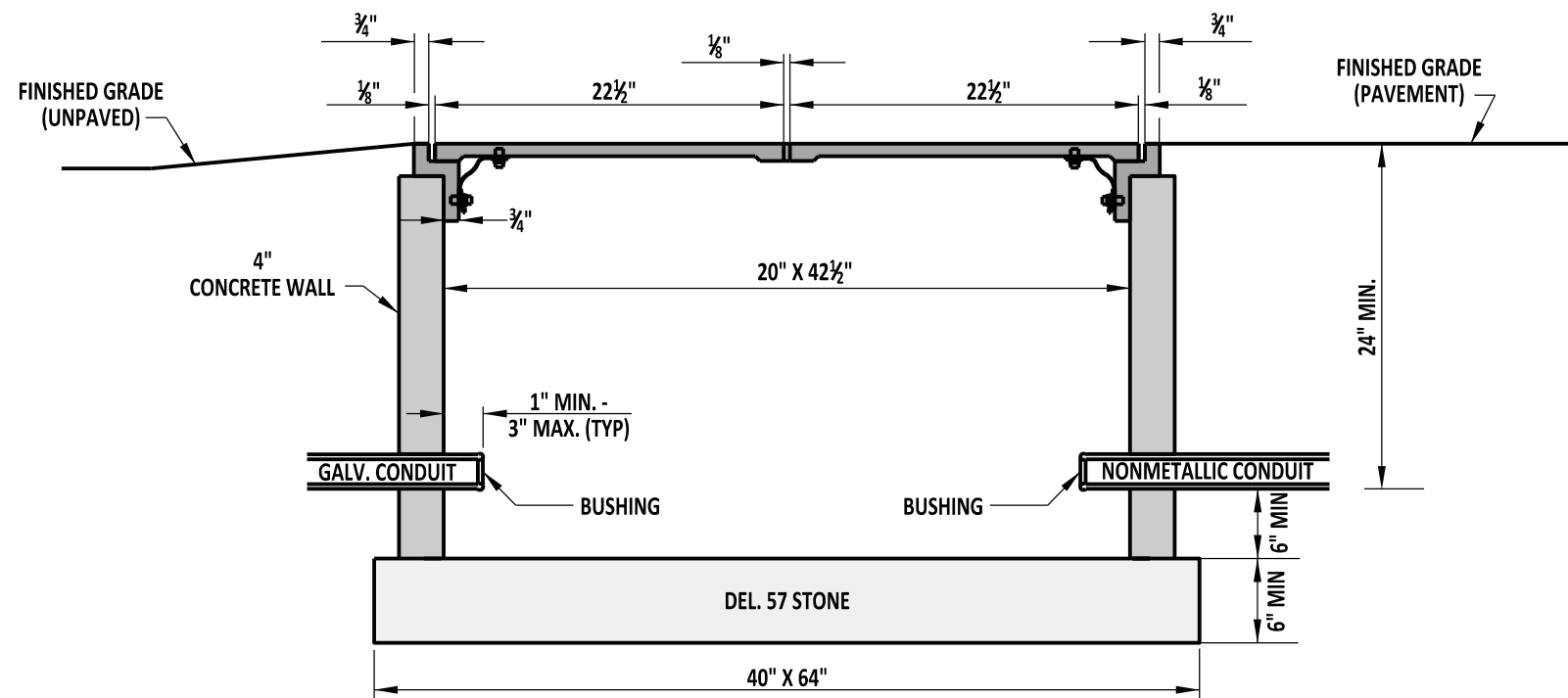
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PLAN VIEW



DETAIL "A"



SECTION A-A

NOTES:

- 1). TYPE 4 CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.
- 2). ALL CONDUIT JUNCTION WELLS PLACED IN PAVED AREAS SHALL BE CONSTRUCTED FLUSH WITH THE FINISHED GRADE. ALL CONDUIT JUNCTION WELLS PLACED IN UNPAVED AREAS SHALL BE CONSTRUCTED ABOVE FINISHED GRADE, AND GRADED TO DRAIN AWAY FROM THE WELL, AS DETAILED.
- 3). ALL CRACKS, GAPS, OR OPENINGS IN JUNCTION WELL WALL SHALL BE SEALED WITH CONCRETE.



DELAWARE
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CONDUIT JUNCTION WELL, TYPE 4

STANDARD NO.

T-1 (2013)

SHT. 2

OF 3

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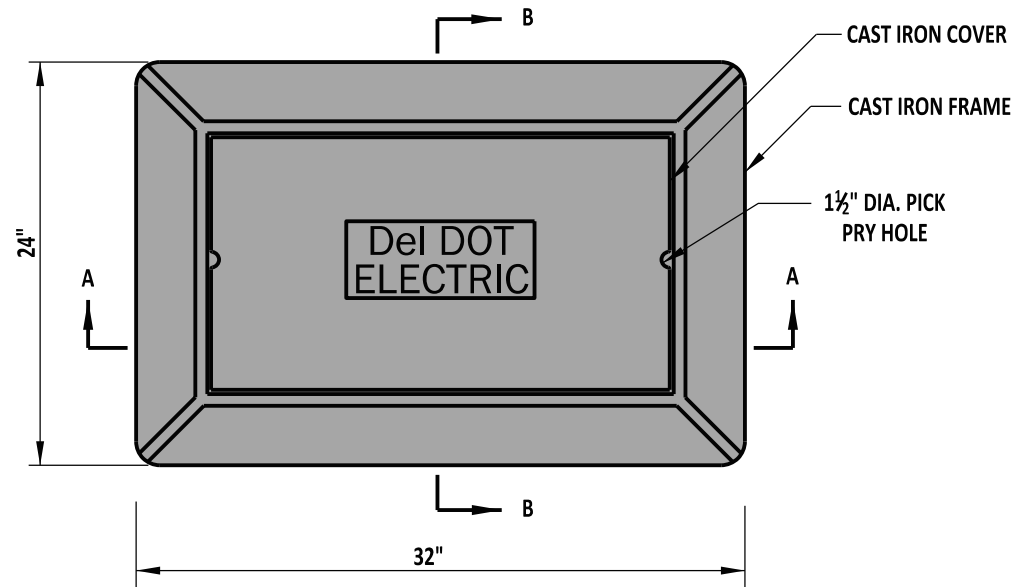
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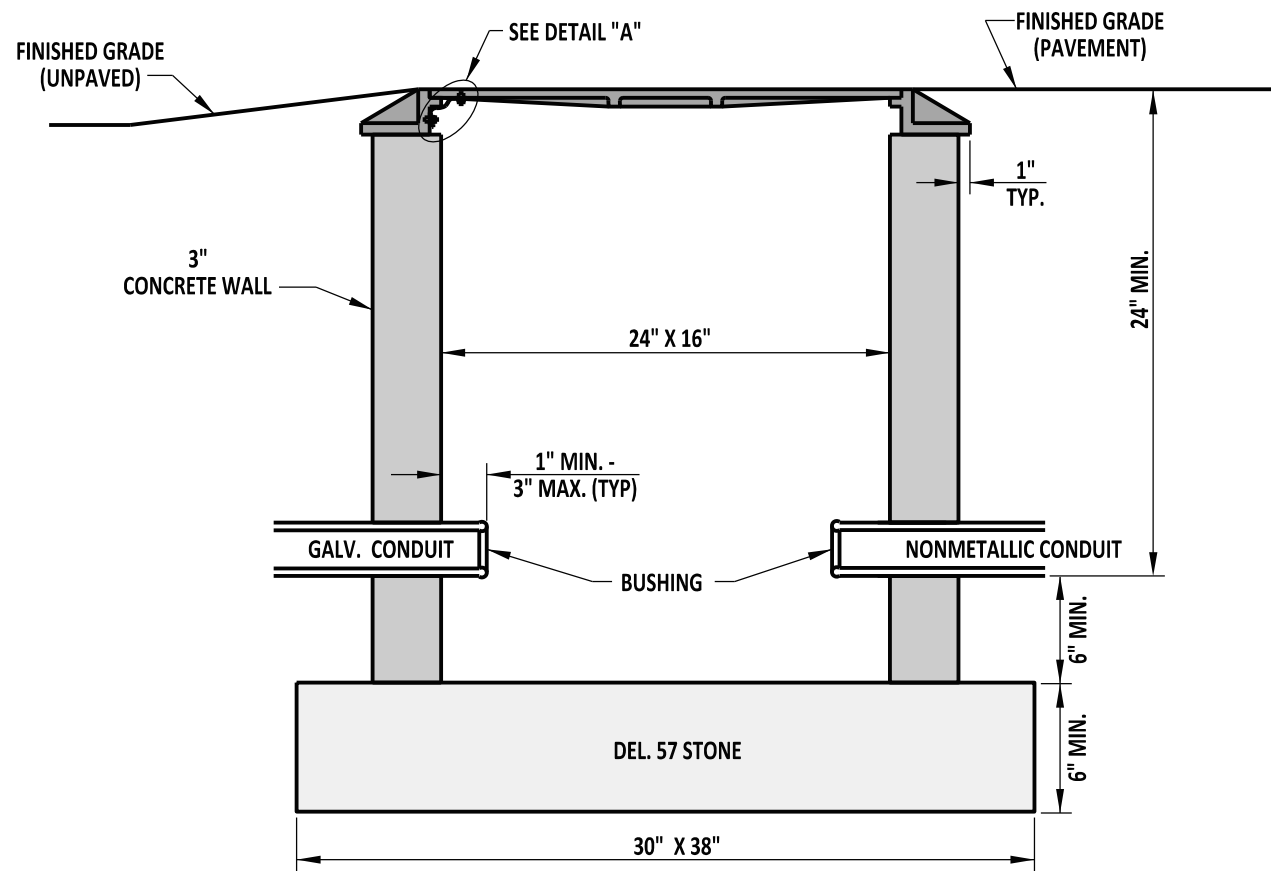
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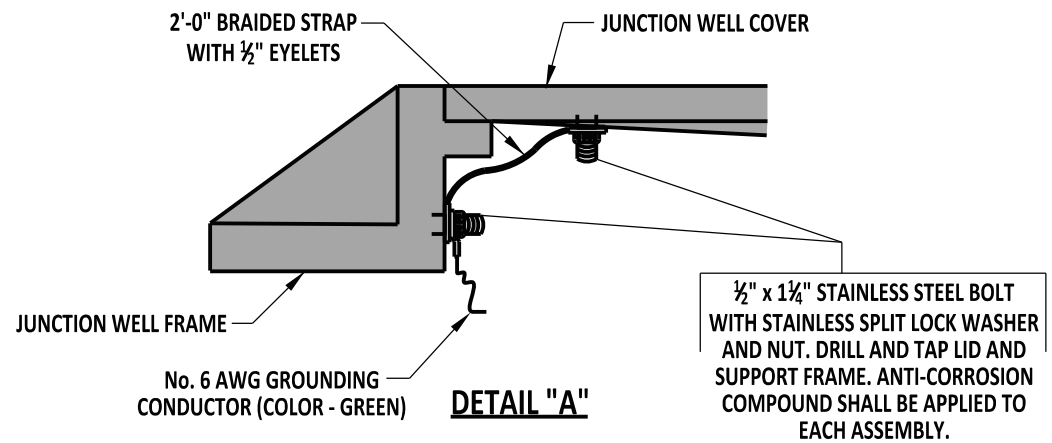
PLAN VIEW



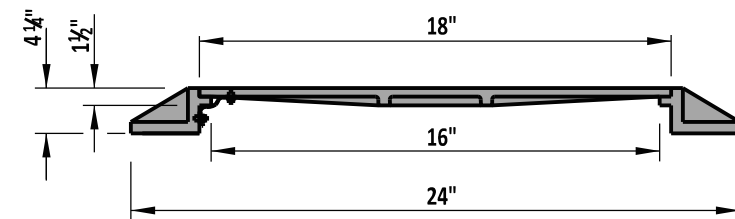
SECTION A-A

NOTES:

- 1). TYPE 5 CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.
- 2). ALL CONDUIT JUNCTION WELLS PLACED IN PAVED AREAS SHALL BE CONSTRUCTED FLUSH WITH THE FINISHED GRADE. ALL CONDUIT JUNCTION WELLS PLACED IN UNPAVED AREAS SHALL BE CONSTRUCTED ABOVE GRADE AND GRADED TO DRAIN AWAY FROM THE WELL, AS DETAILED.
- 3). ALL CRACKS, GAPS, OR OPENINGS IN JUNCTION WELL WALL SHALL BE SEALED WITH CONCRETE.



DETAIL "A"



SECTION B-B



**DELAWARE
DEPARTMENT OF TRANSPORTATION**

CONDUIT JUNCTION WELL, TYPE 5

STANDARD NO.

T-1 (2013)

SHT. 3

OF 3

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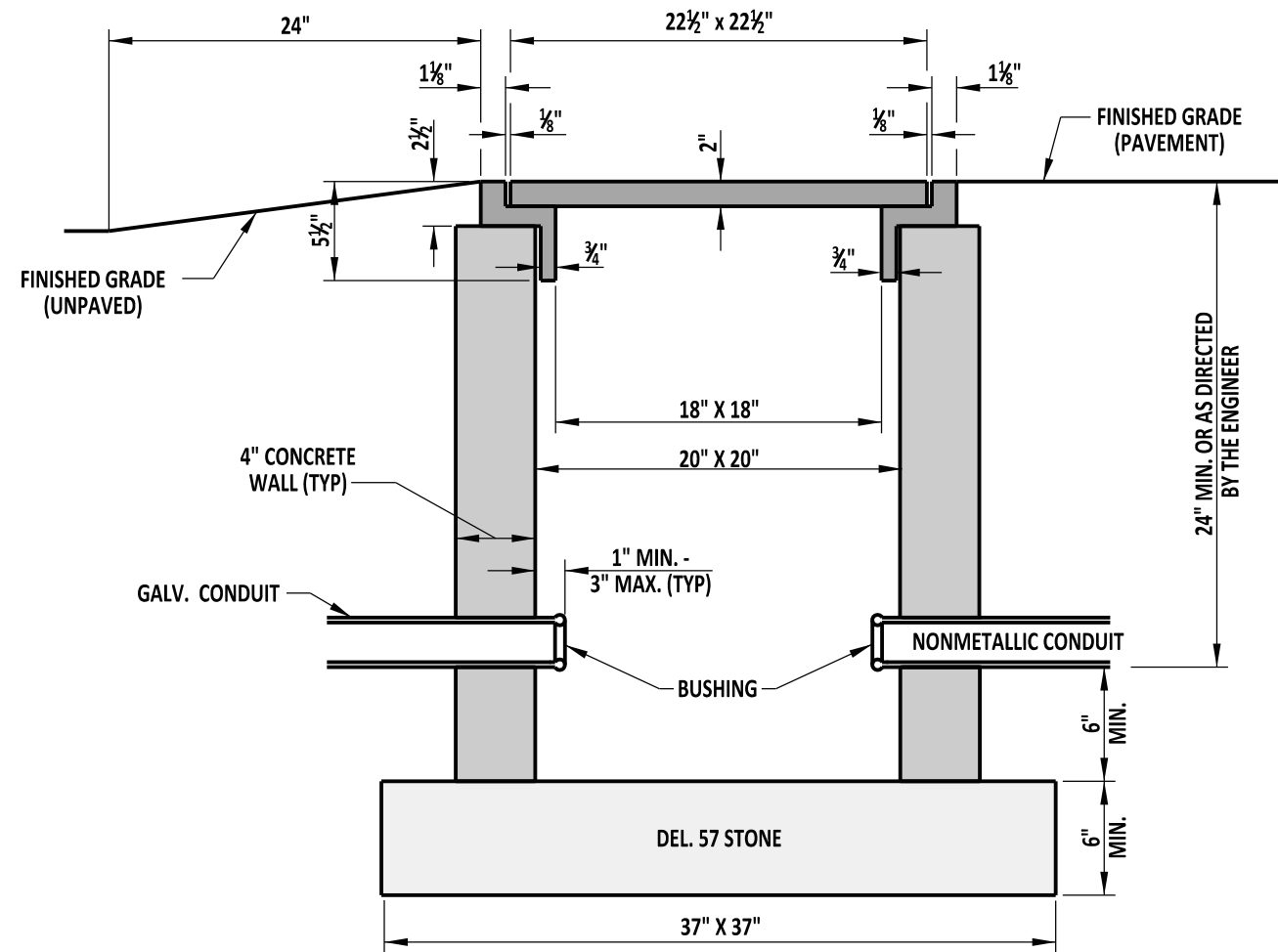
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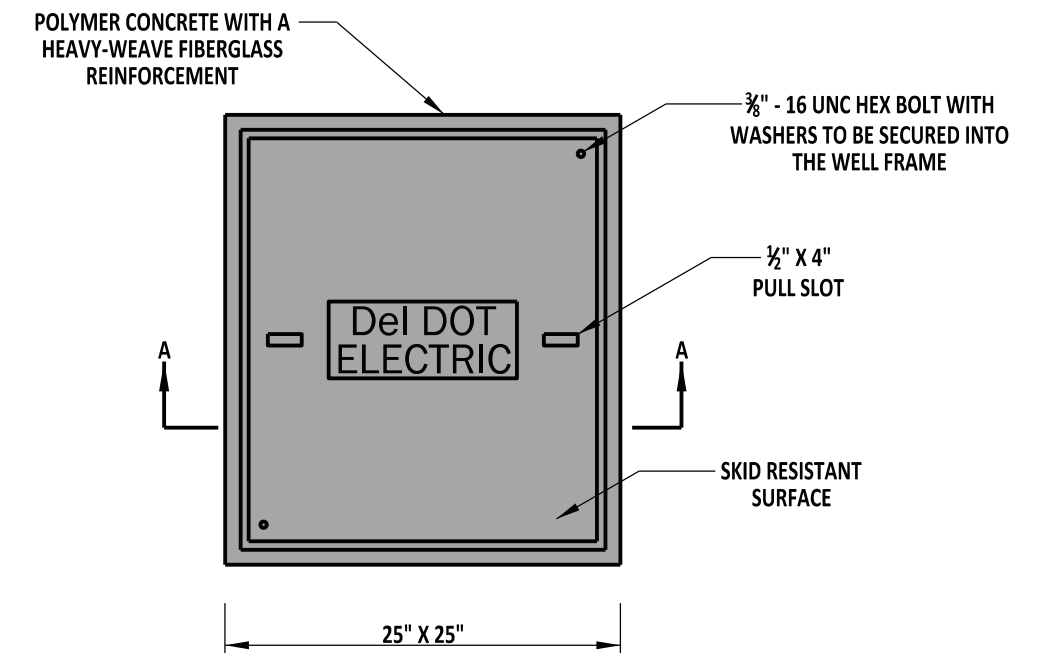
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SECTION A-A



PLAN VIEW

NOTES:

- 1). TYPE 11 CONDUIT JUNCTION WELL LID SHALL BE PRECAST POLYMER CONCRETE WITH A HEAVY-WEAVE FIBERGLASS FRAME. INSTALLED ON A PRECAST CONCRETE WELL.
- 2). TYPE 11 CONDUIT JUNCTION WELL BODY SHALL BE PRECAST CONCRETE. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.
- 3). ALL CONDUIT JUNCTION WELLS PLACED IN PAVED AREAS SHALL BE CONSTRUCTED FLUSH WITH THE FINISHED GRADE. ALL CONDUIT JUNCTION WELLS PLACED IN UNPAVED AREAS SHALL BE CONSTRUCTED ABOVE FINISHED GRADE AND GRADED TO DRAIN AWAY FROM THE WELL, AS DETAILED.
- 4). ALL CRACKS, GAPS, OR OPENING IN JUNCTION WELL WALL SHALL BE SEALED WITH CONCRETE.



DELAWARE
DEPARTMENT OF TRANSPORTATION

CONDUIT JUNCTION WELL, TYPE 11

STANDARD NO. T-3 (2013)

SHT. 1 OF 3

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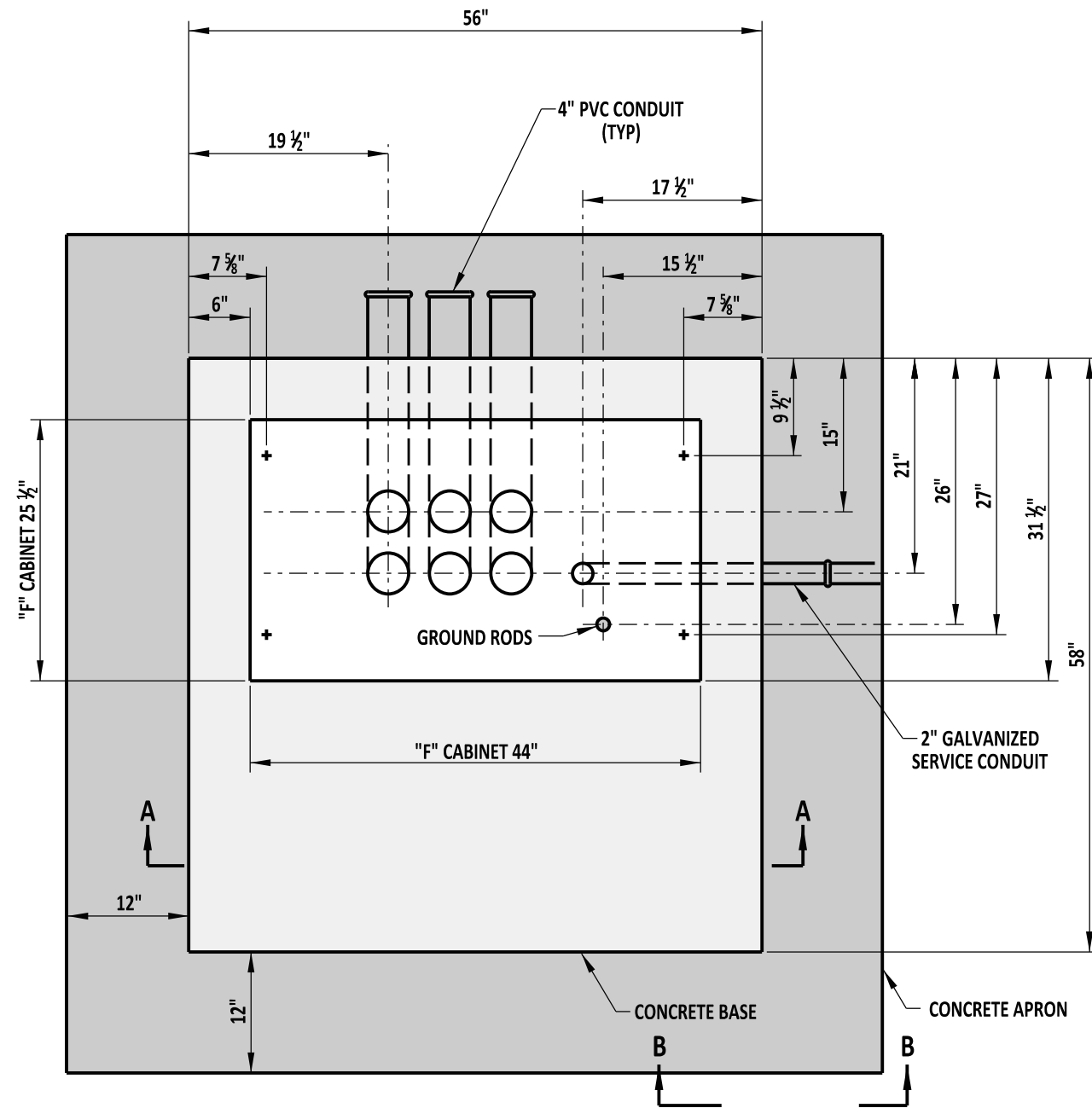
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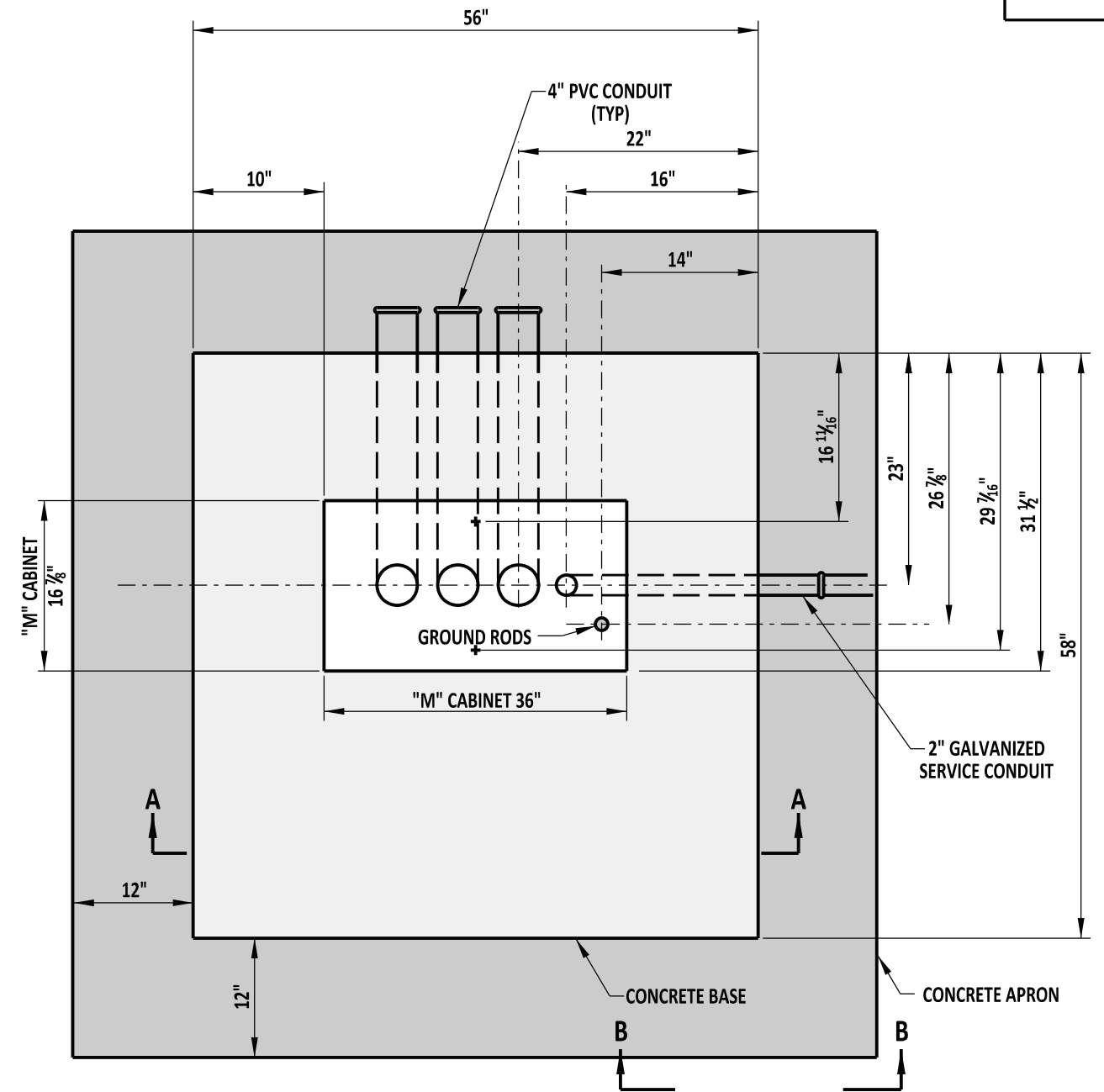
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**"F" CABINET
PLAN VIEW**



**"M" CABINET
PLAN VIEW**

NOTE:

- 1). CONCRETE APRON IS REQUIRED ONLY WHEN CABINET BASE IS INSTALLED IN UNPAVED AREAS OR AS DIRECTED ON PLAN.
- 2). CONDUITS SHALL BE EVENLY SPACED, WITH MINIMUM 2" WIDTH SPACING ESTABLISHED BETWEEN ALL CONDUITS.
- 3). FOR VIEW OF SECTION A-A AND SECTION B-B, SEE DETAIL T-4, SHEET 2 OF 2.



**DELAWARE
DEPARTMENT OF TRANSPORTATION**

CABINET BASES, TYPES M & F

STANDARD NO. T-4 (2013)

SHT. 1 OF 2

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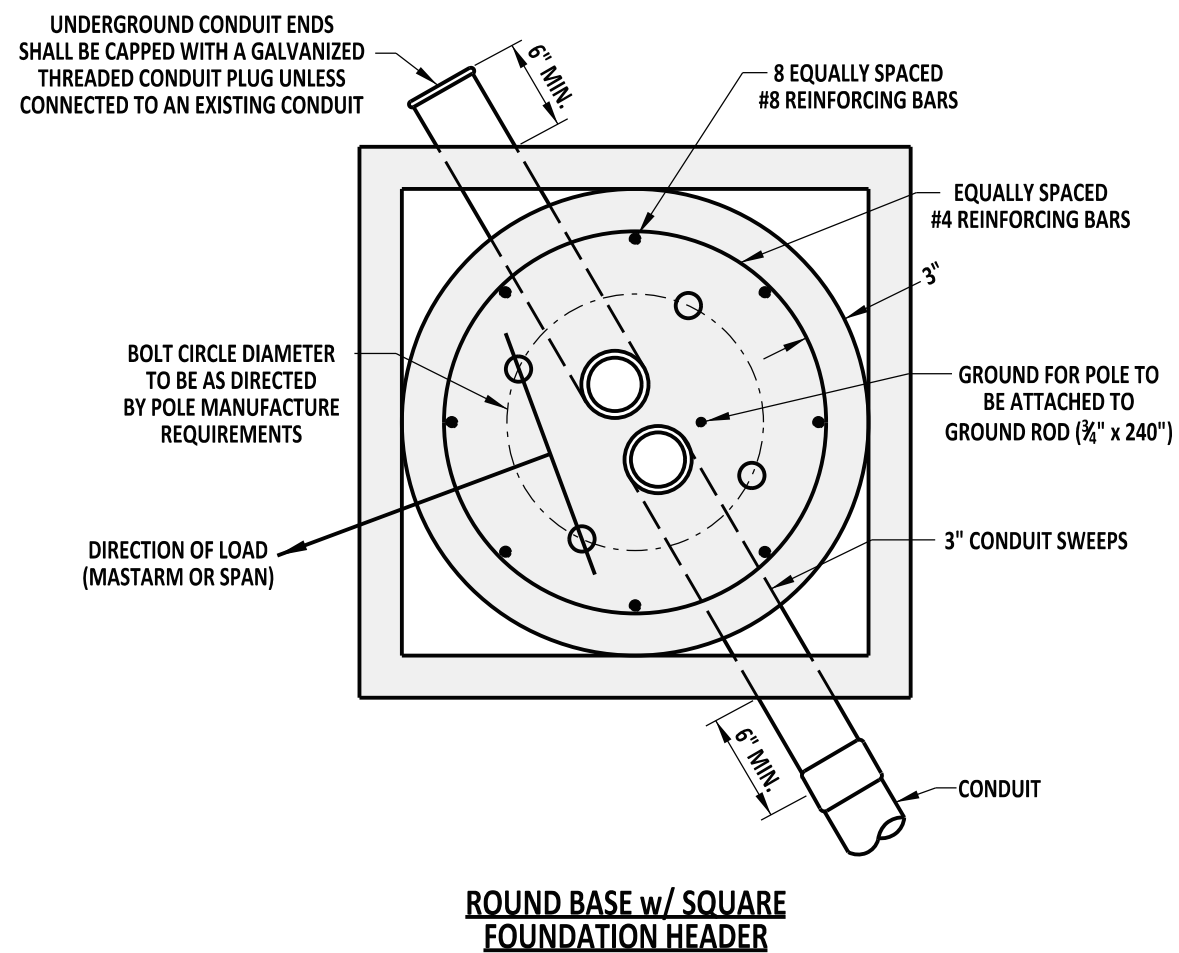
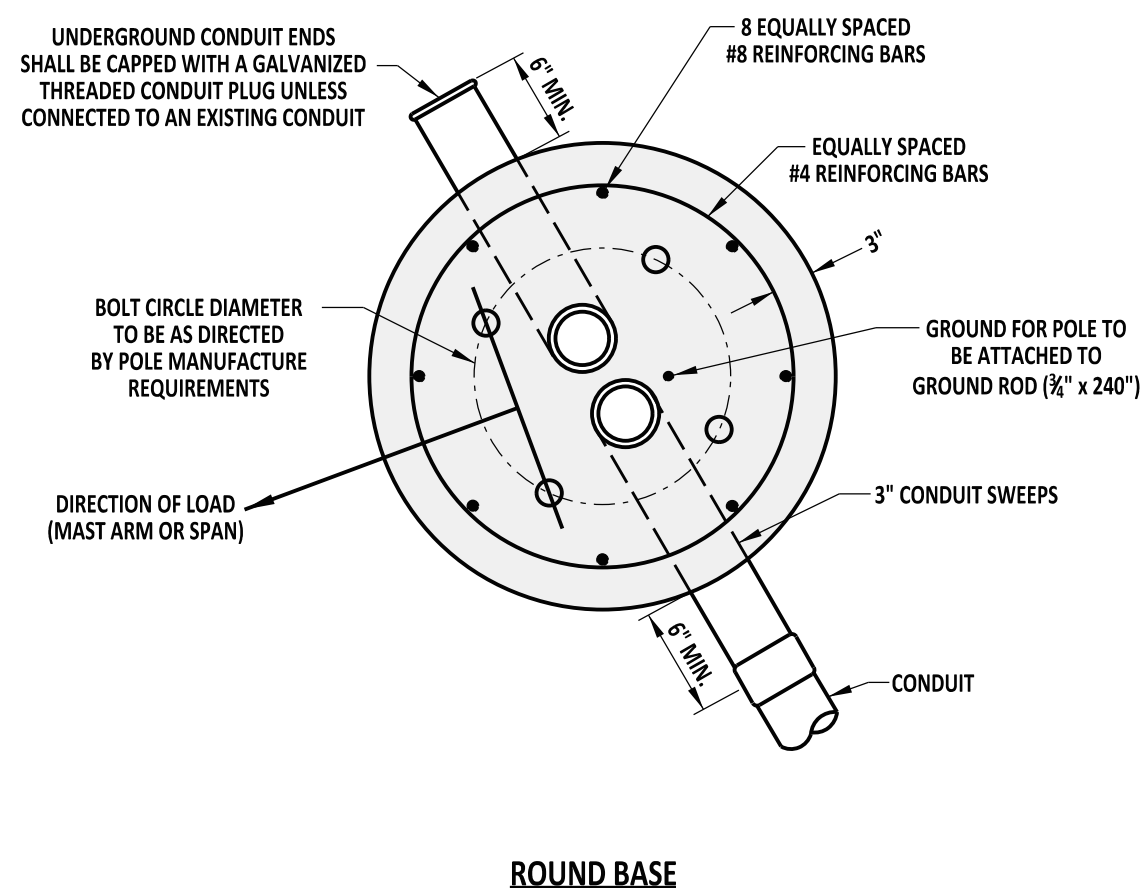
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NOTE: SQUARE FOUNDATION HEADER SHALL HAVE A 6" MINIMUM DEPTH.



DELAWARE
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POLE BASES

STANDARD NO. T-5 (2013)

SHT. 1 OF 4

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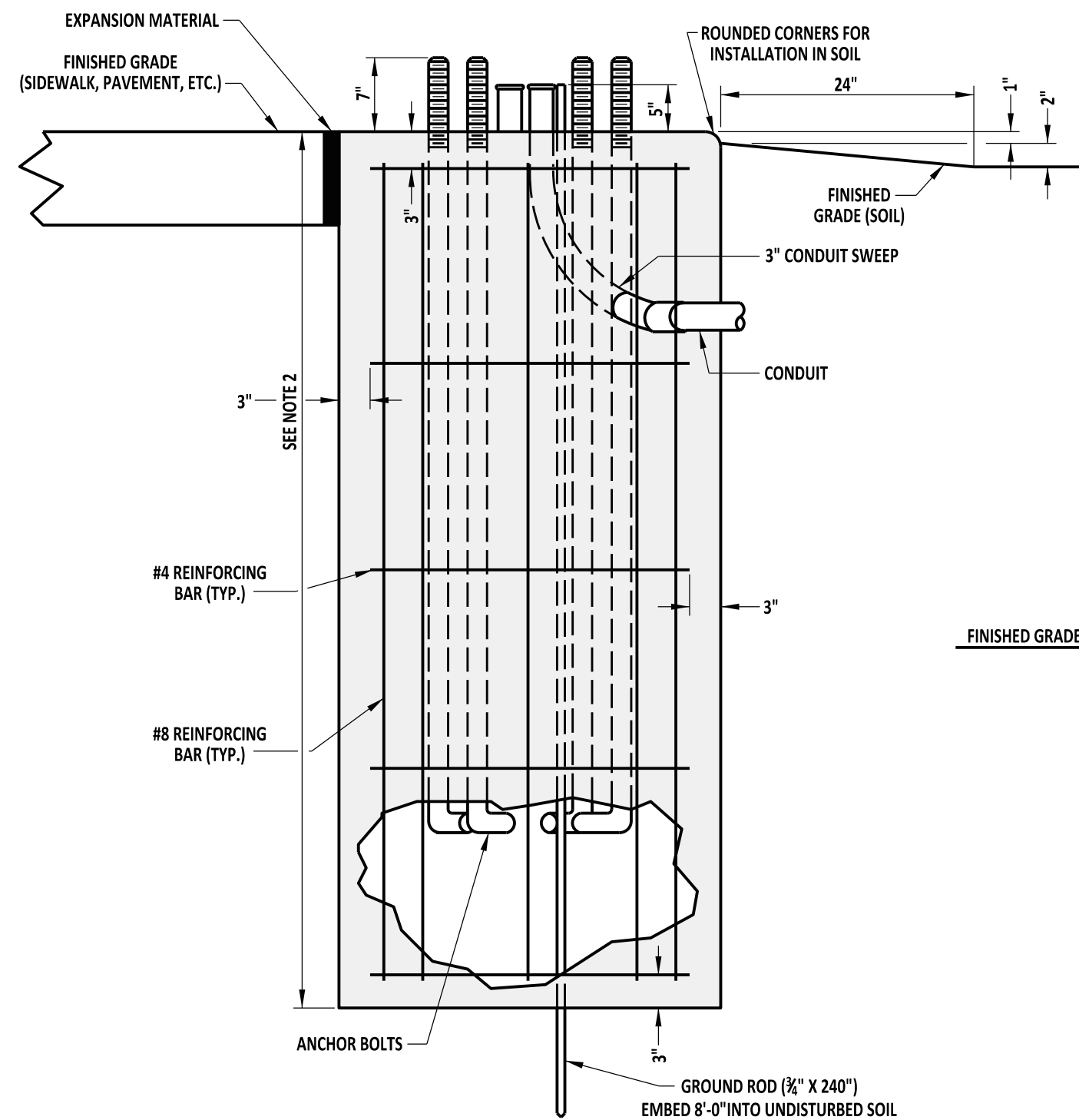
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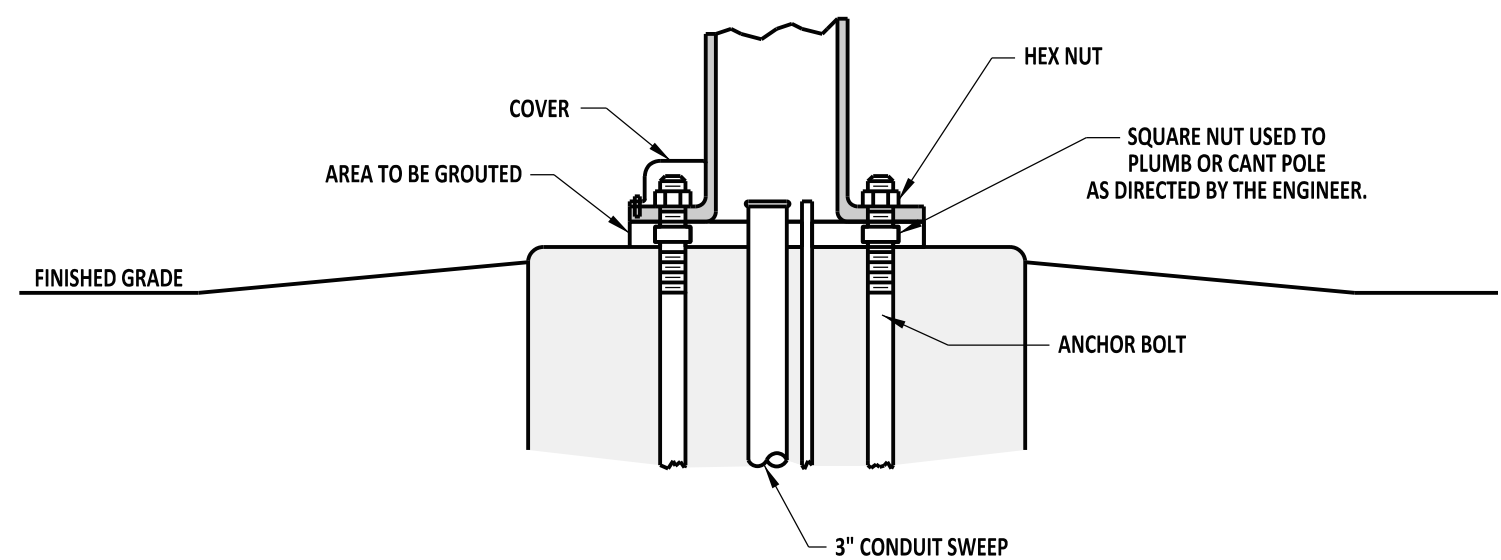
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TYPICAL SECTION (BASES 1,2,2A,2B,3,3A, AND 3B)



TYPICAL INSTALLATION (BASES 1,2,2A,2B,3,3A, AND 3B)

NOTES:

- 1.) PLACE 2 EACH 6" LONG x 1/2" DIA. P.V.C., SCHEDULE 40 (TYP) VENTS IN THE GROUT AS DIRECTED IN THE FIELD BY ENGINEER.
- 2.) SEE POLE BASE DATA CHART ON DETAIL T-5, SHEET 3 OF 4, FOR POLE BASE DIMENSIONS.
- 3.) ANCHOR BOLTS AND BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR UNLESS NOTED OTHERWISE.



DELAWARE
DEPARTMENT OF TRANSPORTATION

POLE BASES

STANDARD NO. T-5 (2013)

SHT. 2 OF 4

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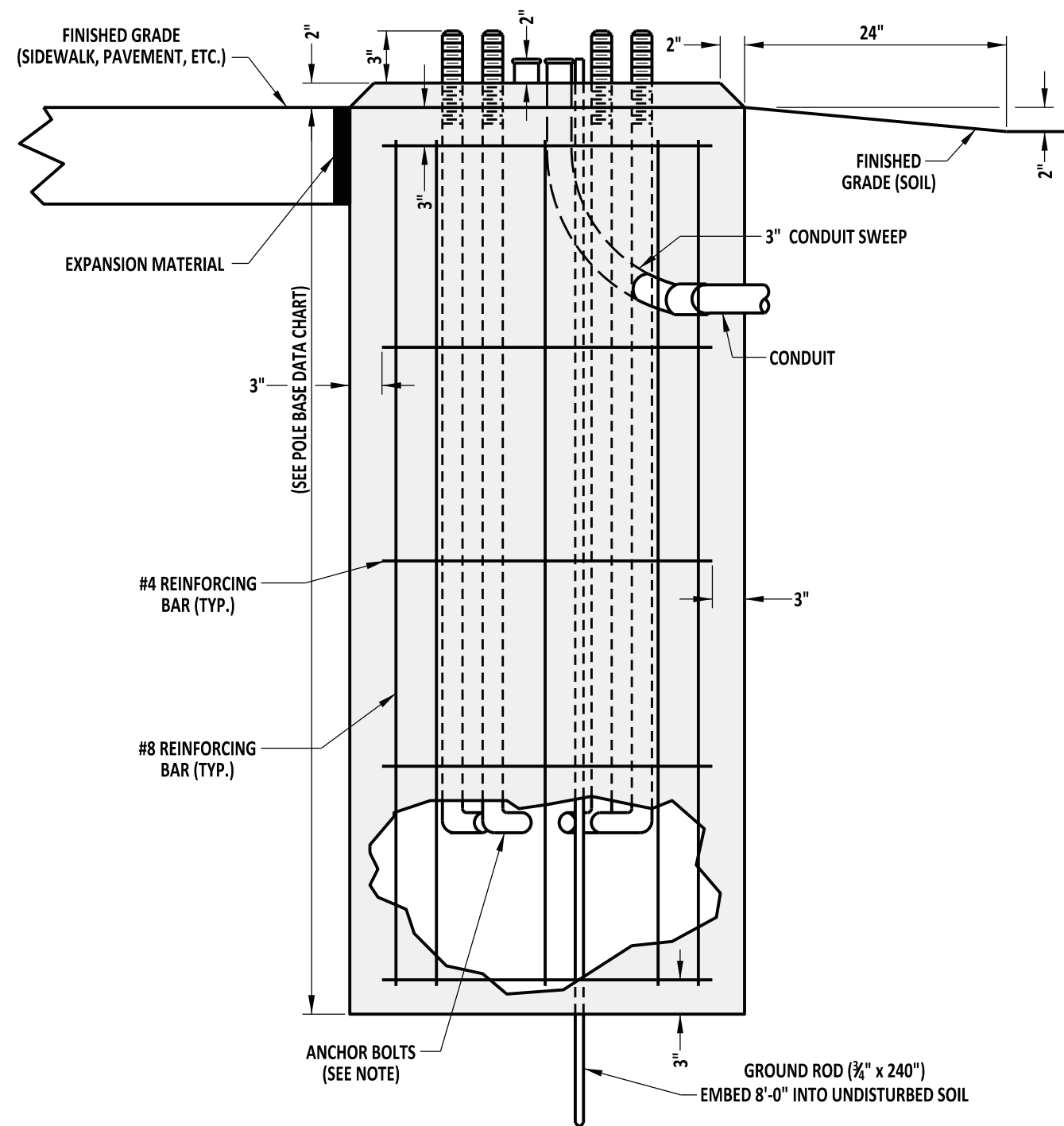
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TYPICAL SECTION (BASE 6)

POLE BASE DATA CHART					
POLE BASE TYPE #	DIAMETER	DEPTH	#4 HORIZONTAL REINFORCING BARS	#8 VERTICAL REINFORCING BARS	CONDUITS
1	36"	7'-0"	5	8	2 - 3"
2	36"	10'-0"	6	8	2 - 3"
2A	48"	8'-0"	5	8	2 - 3"
2B	60"	7'-0"	5	8	2 - 3"
3	48"	10'-0"	6	8	2 - 3"
3A	60"	9'-0"	6	8	2 - 3"
3B	72"	7'-0"	5	8	2 - 3"
4A & 4B	24"	2'-4"	NONE	NONE	2 - 2.5"
6	24"	6'-0"	4	8	2 - 3"

NOTE:
ANCHOR BOLTS AND BOLT PATTERN FOR TYPES 5, 6, & 7 POLE BASES TO BE PROVIDED BY THE MANUFACTURER.



DELAWARE
DEPARTMENT OF TRANSPORTATION

POLE BASES

STANDARD NO. T-5 (2013)

SHT. 3 OF 4

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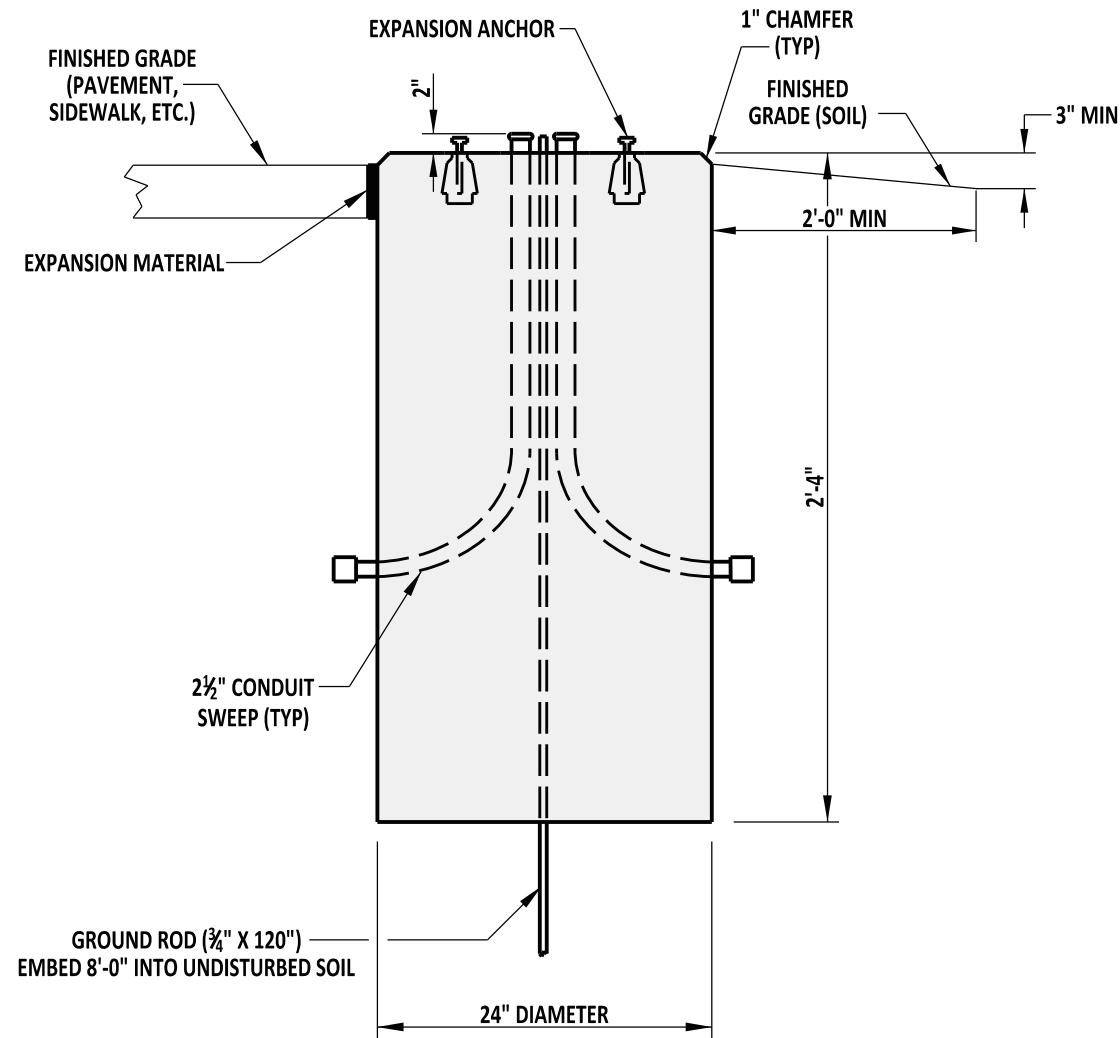
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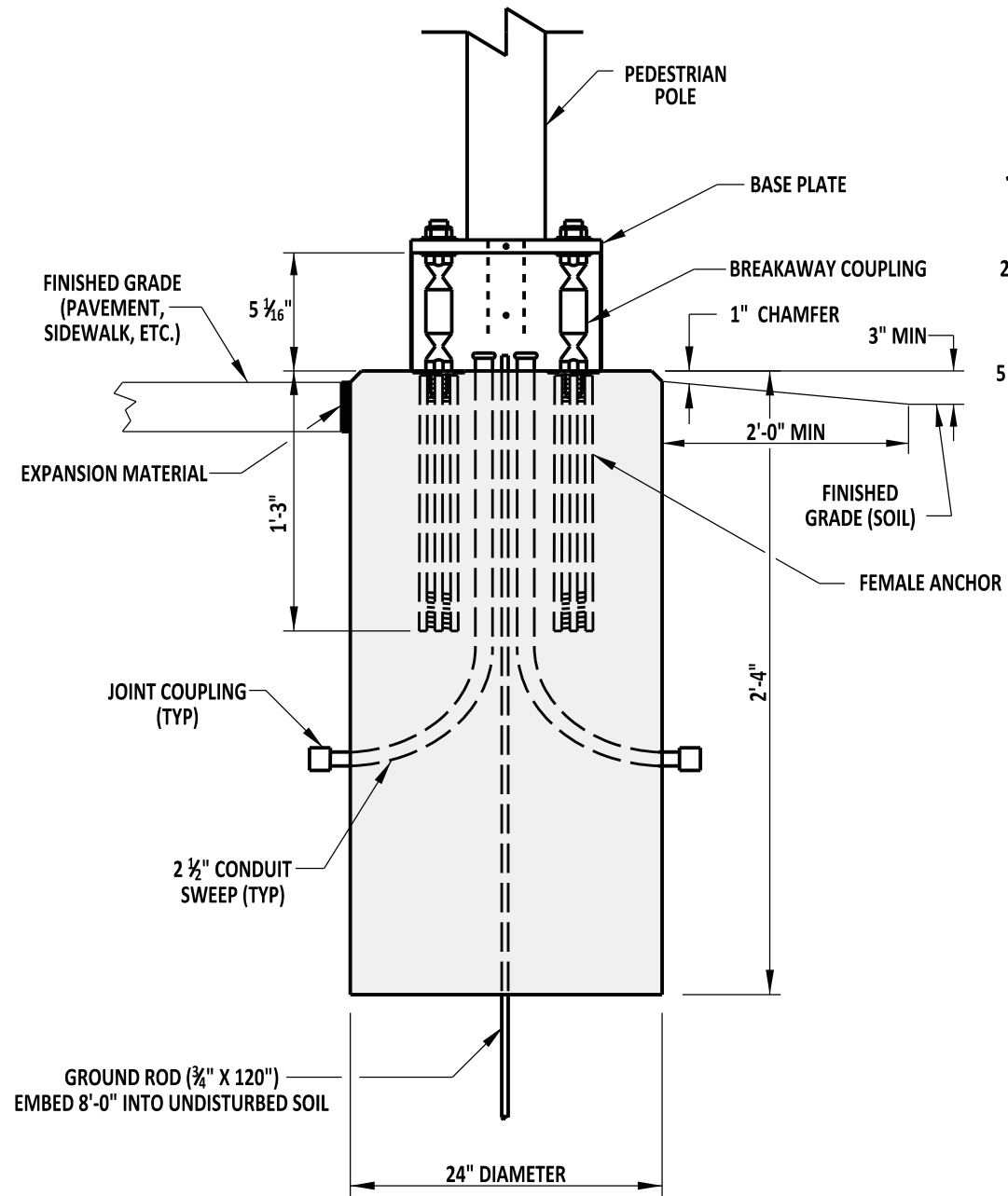
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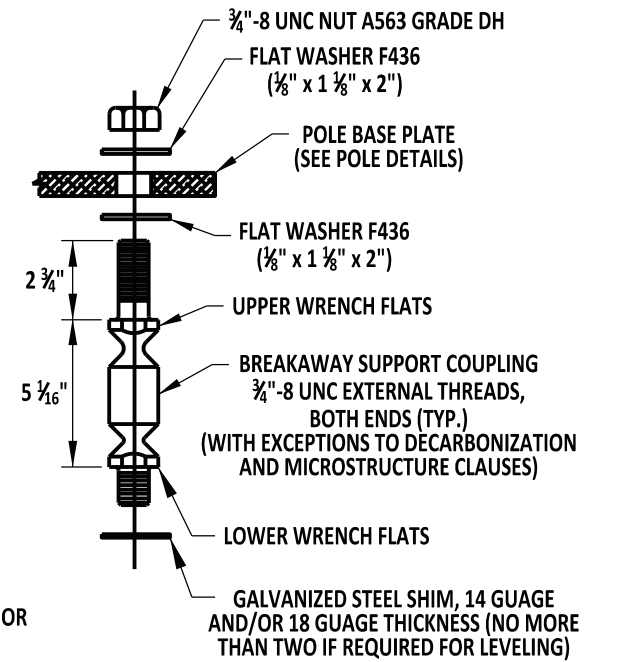
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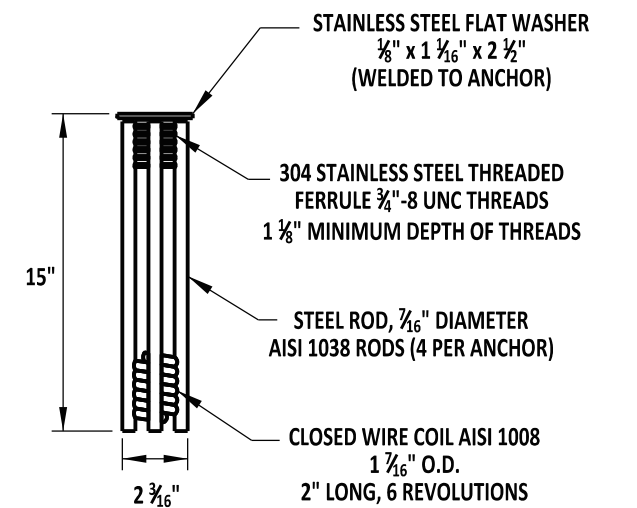
TYPICAL SECTION (BASE 4A)



TYPICAL SECTION (BASE 4B)



BREAKAWAY COUPLING DETAIL



ANCHOR DETAIL

NOTE:
BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.

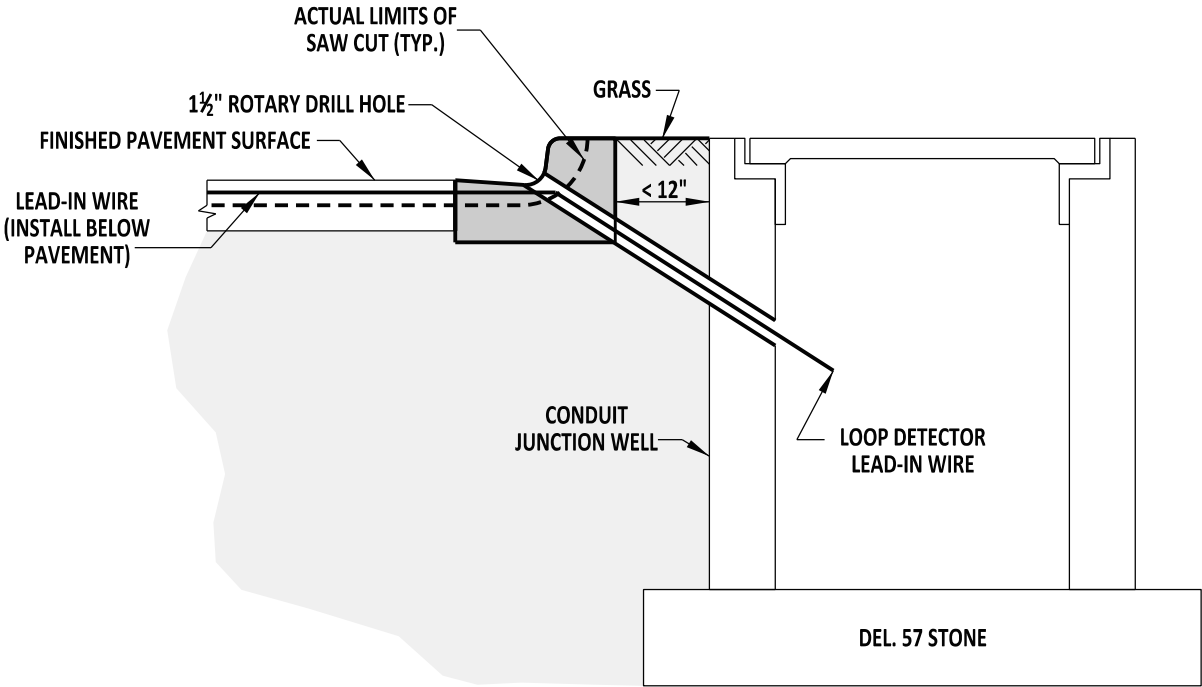
NOTE:
BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.



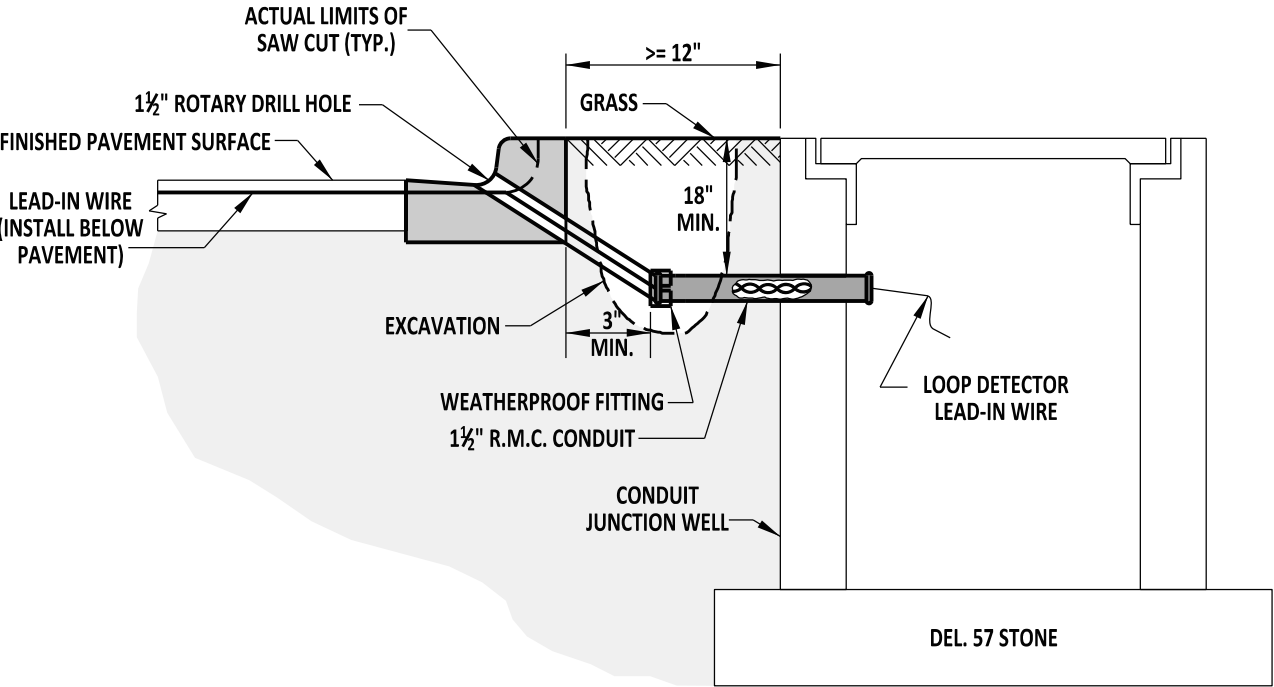
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DEPARTMENT OF TRANSPORTATION

POLE BASES			
STANDARD NO.	T-5 (2013)	SHT.	4 OF 4

APPROVED	SIGNATURE ON FILE	02/14/2014
	CHIEF ENGINEER	DATE
RECOMMENDED	SIGNATURE ON FILE	01/14/2014
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**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**



**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**

- NOTES:
1. ALL SAWCUTS SHALL BE A DEPTH OF 3 1/2" ON ALL SURFACES.
 2. CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
 3. ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
 4. CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3 1/2".
 5. CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.
 6. CONTRACTOR SHALL INSTALL DETECTABLE WARNING TAPE IN TRENCH FOR LEAD-IN CONDUIT.



DELAWARE
DEPARTMENT OF TRANSPORTATION

LOOP DETECTOR LEAD-IN WIRE INSTALLATION

STANDARD NO.

T-8 (2013)

SHT.

1

OF

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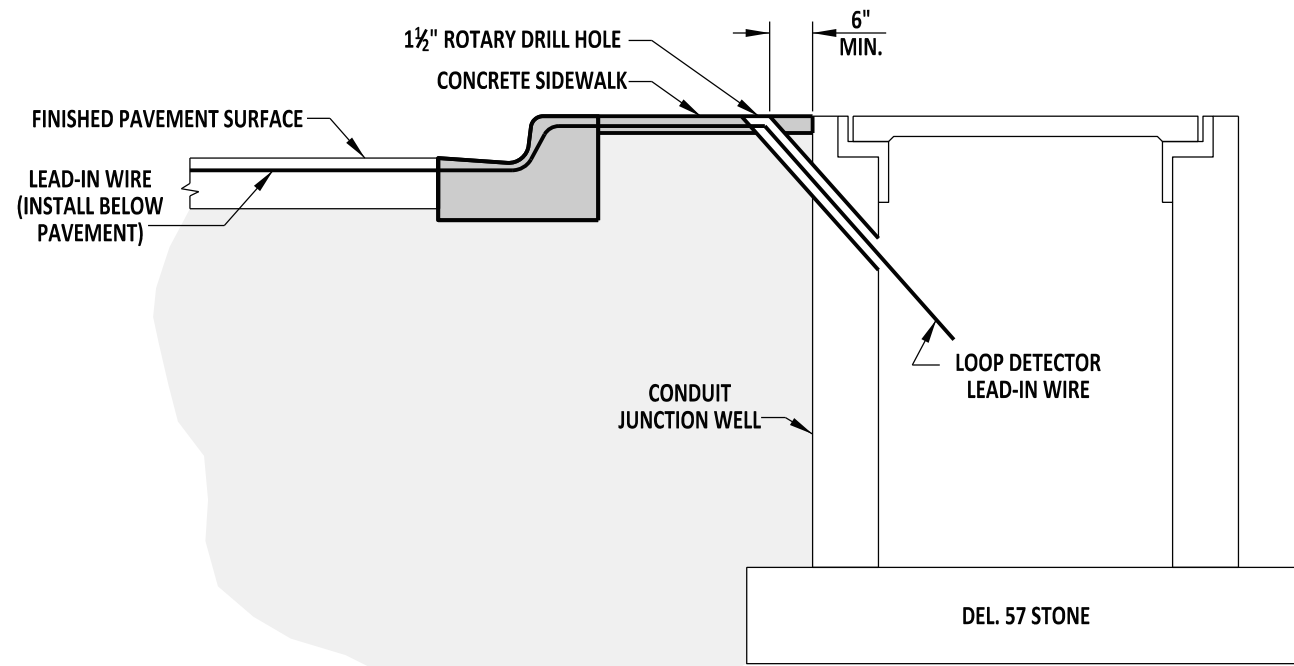
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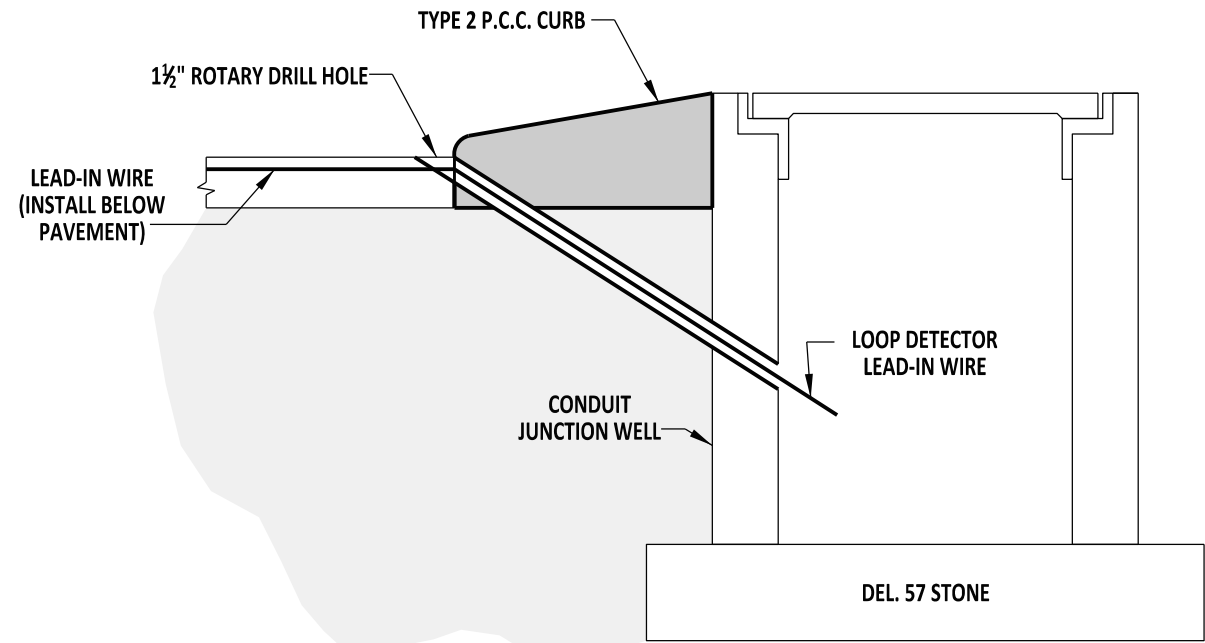
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**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**



**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**

NOTES:

- 1). ALL SAWCUTS SHALL BE A DEPTH OF 3 1/2" ON ALL SURFACES.
- 2). CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
- 3). ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
- 4). CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3 1/2".
- 5). CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.



**DELAWARE
DEPARTMENT OF TRANSPORTATION**

LOOP DETECTOR LEAD-IN WIRE INSTALLATION

STANDARD NO. T-8 (2013)

SHT. 2 OF 4

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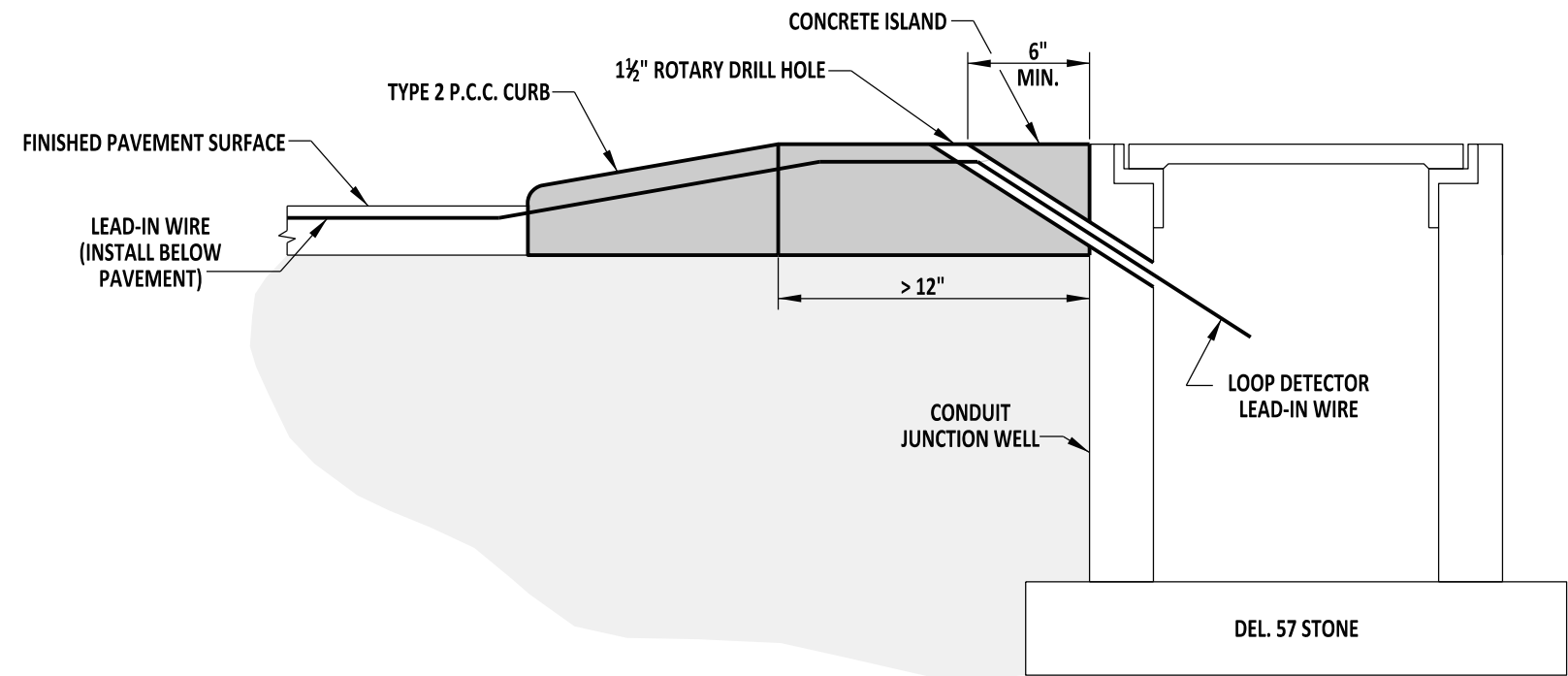
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**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**

NOTES:

- 1). ALL SAWCUTS SHALL BE A DEPTH OF 3½" ON ALL SURFACES.
- 2). CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
- 3). ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
- 4). CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3½".
- 5). CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.



DELAWARE
DEPARTMENT OF TRANSPORTATION

LOOP DETECTOR LEAD-IN WIRE INSTALLATION

STANDARD NO.

T-8 (2013)

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OF 4

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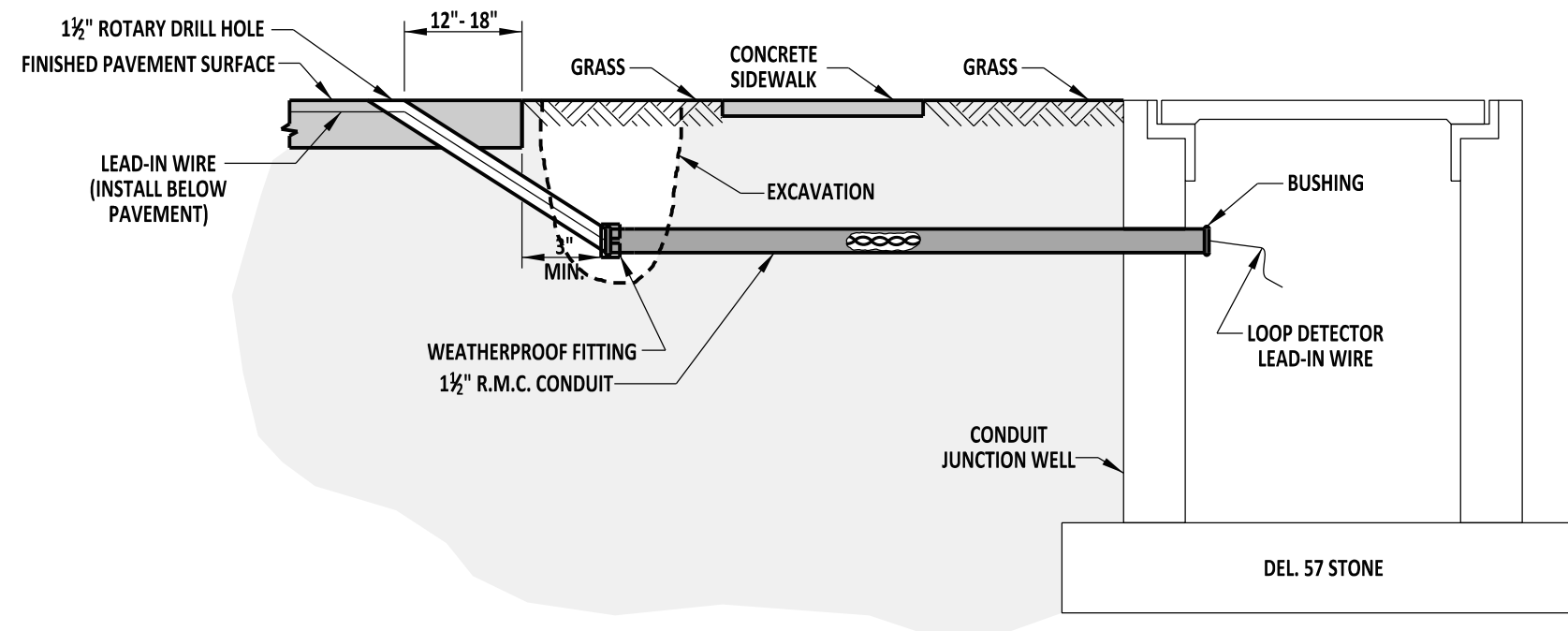
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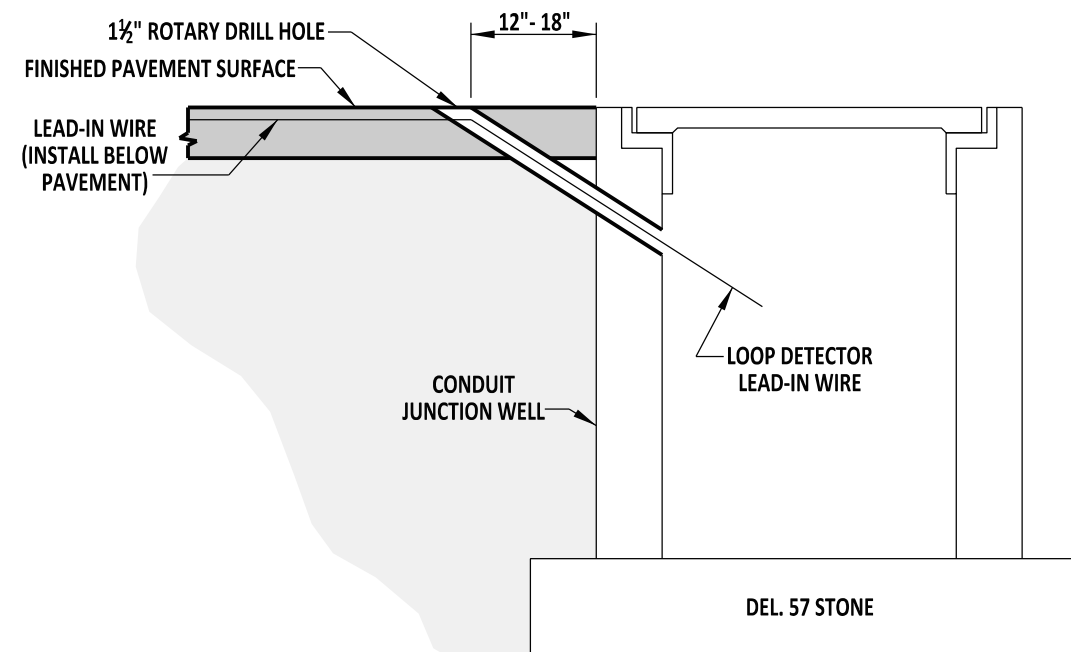
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**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**



**LOOP DETECTOR
LEAD-IN WIRE INSTALLATION**

NOTES:

- 1). ALL SAWCUTS SHALL BE A DEPTH OF 3 1/2" ON ALL SURFACES.
- 2). CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
- 3). ALL SAWCUTS SHALL BE SEALED WITH AN APPROVED LOOP DETECTOR SEALANT.
- 4). CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3 1/2".
- 5). CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.
- 6). CONTRACTOR SHALL INSTALL DETECTABLE WARNING TAPE IN TRENCH FOR LEAD-IN CONDUIT.



DELAWARE
DEPARTMENT OF TRANSPORTATION

LOOP DETECTOR LEAD-IN WIRE INSTALLATION

STANDARD NO. T-8 (2013)

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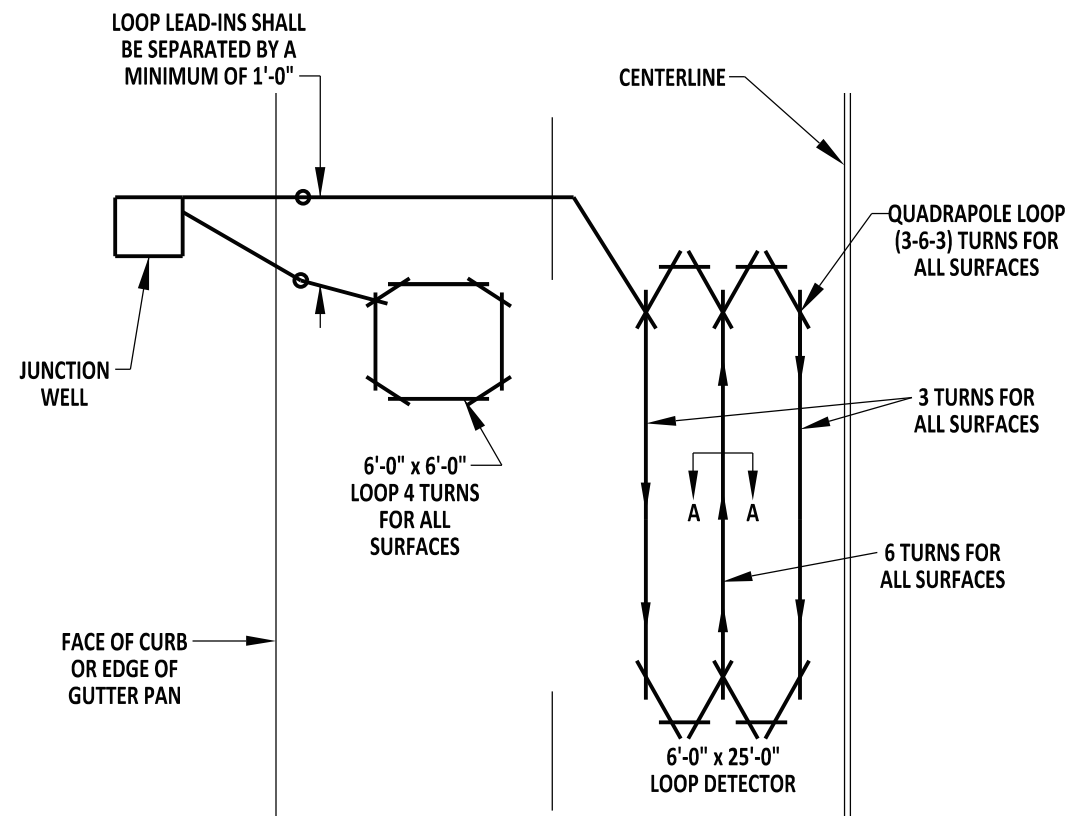
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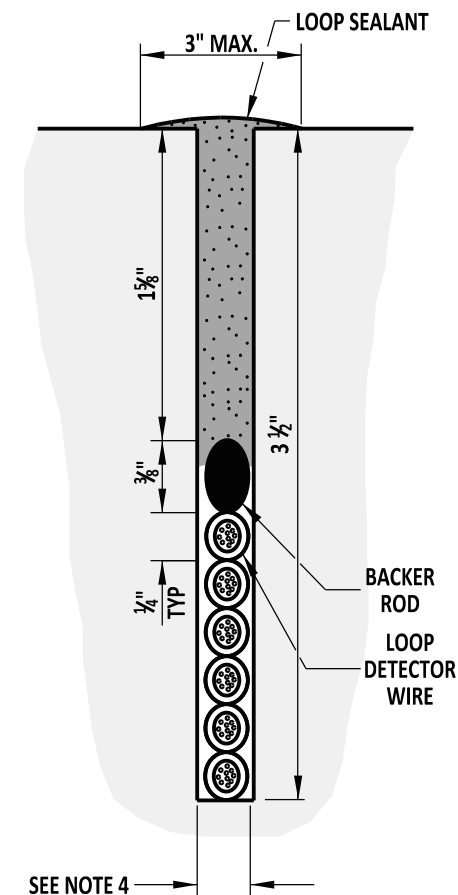
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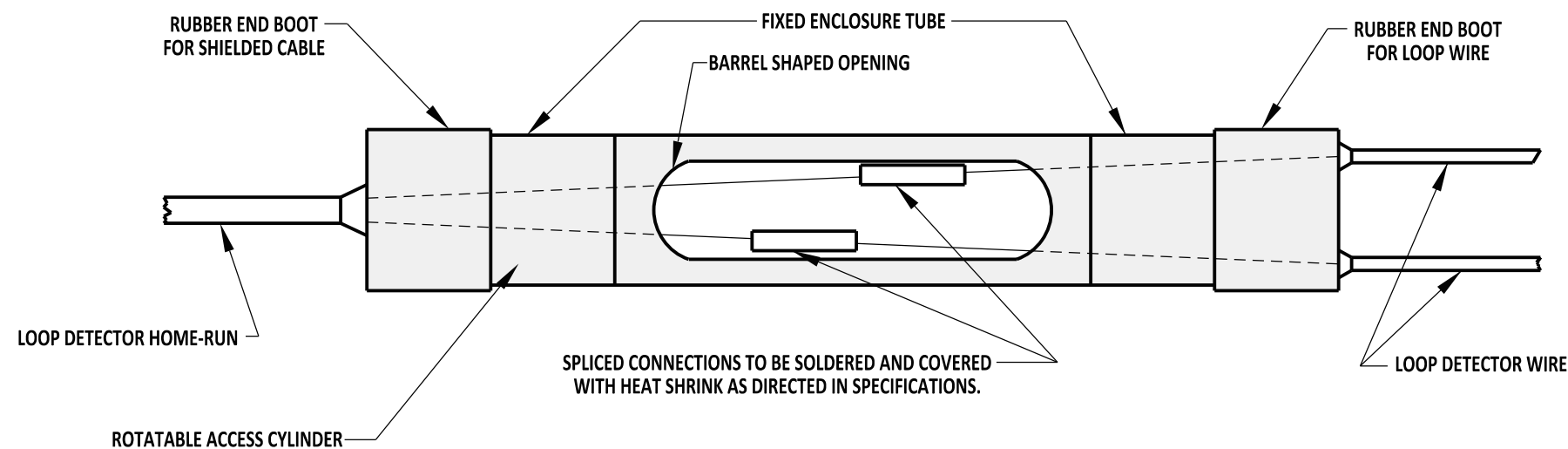
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LOOP DETECTOR SAWCUT TYPICAL
REFER TO DETAIL T-8, SHEETS 1 THROUGH 4 FOR LOOP DETECTOR LEAD-IN INSTALLATION REQUIREMENTS.



**SECTION A-A
HOT-MIX SURFACE**



NOTES:

- 1). WHEN A PROPOSED LOOP DETECTOR SAWCUT CROSSES A LATERAL ROADWAY JOINT OR OTHER OBSTRUCTION (VALVE COVER, MANHOLE, JUNCTION WELL, ETC.), LOOP DETECTOR INSTALLATION SHALL BE MODIFIED INTO TWO SEPARATE LOOP DETECTORS WHICH SHALL NOT TRAVERSE JOINTS OR OBSTRUCTION.
- 2). THE LOOPS SHALL BE PLACED IN THE CENTER OF THE LANE UNLESS NOTED OTHERWISE ON PLANS.
- 3). PRESENCE LOOP DETECTORS ARE TO BE PLACED 12" BEHIND THE EXISTING OR PROPOSED STOP LINE.
- 4). LOOP DETECTOR AND LEAD-IN SAWCUTS SHALL BE 5/8" WIDE.



**DELAWARE
DEPARTMENT OF TRANSPORTATION**

LOOP DETECTOR INSTALLATION & SPLICE KIT

STANDARD NO. T-9 (2013)

SHT. 1 OF 3

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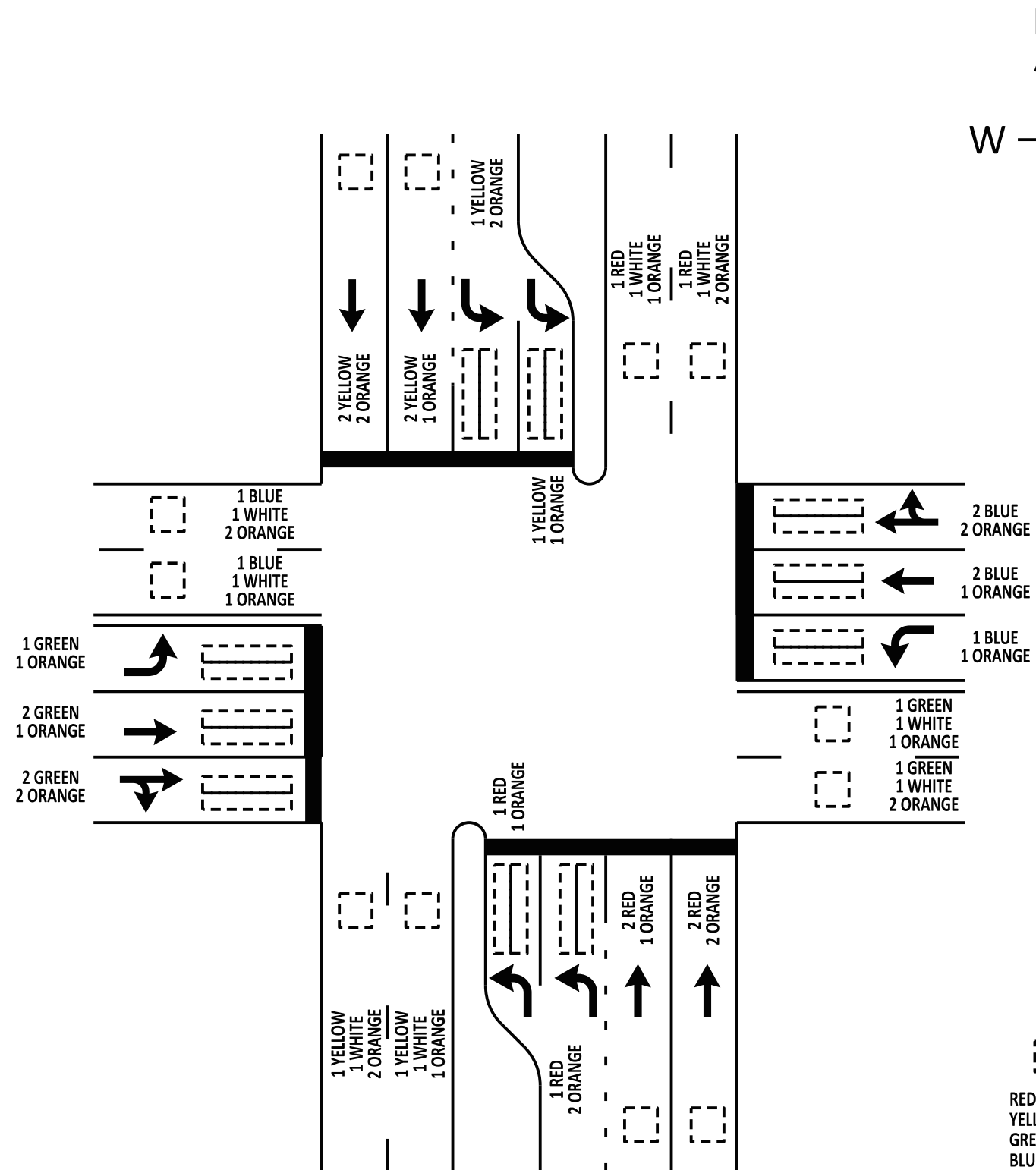
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NOTES

- 1). ORANGE BANDS SHALL DESIGNATE THE LANE ASSIGNMENT. ALL LANES SHALL BE DESIGNATED FROM LEFT TO RIGHT IN THE DIRECTION OF TRAVEL. EXAMPLE: FOR A DOUBLE LEFT TURN WITH 2 THRU LANES FOR NORTHBOUND, THE CABLES WILL BE IDENTIFIED AS 1-RED W/ 1-ORANGE (LT LANE 1) 1-RED W/ 2-ORANGE (LT LANE 2), 2-RED W/ 1-ORANGE (THRU LANE 1) AND 2-RED W/ 2-ORANGE (THRU LANE 2). THIS CODE IS THEN FOLLOWED FOR THE REMAINING APPROACHES TO THE INTERSECTION.
- 2). THE OPTICAL PRE-EMPTION DETECTOR "HOME RUN" CABLE(S) SHALL BE IDENTIFIED WITHIN THE CONTROL CABINET BY A VIOLET BAND PLUS A COLOR BAND, AS NOTED TO DENOTE THE DIRECTION OF THE DETECTOR.



DELAWARE
DEPARTMENT OF TRANSPORTATION

LOOP DETECTOR INSTALLATION & SPLICE KIT

STANDARD NO. T-9 (2013) SHT. 2 OF 3

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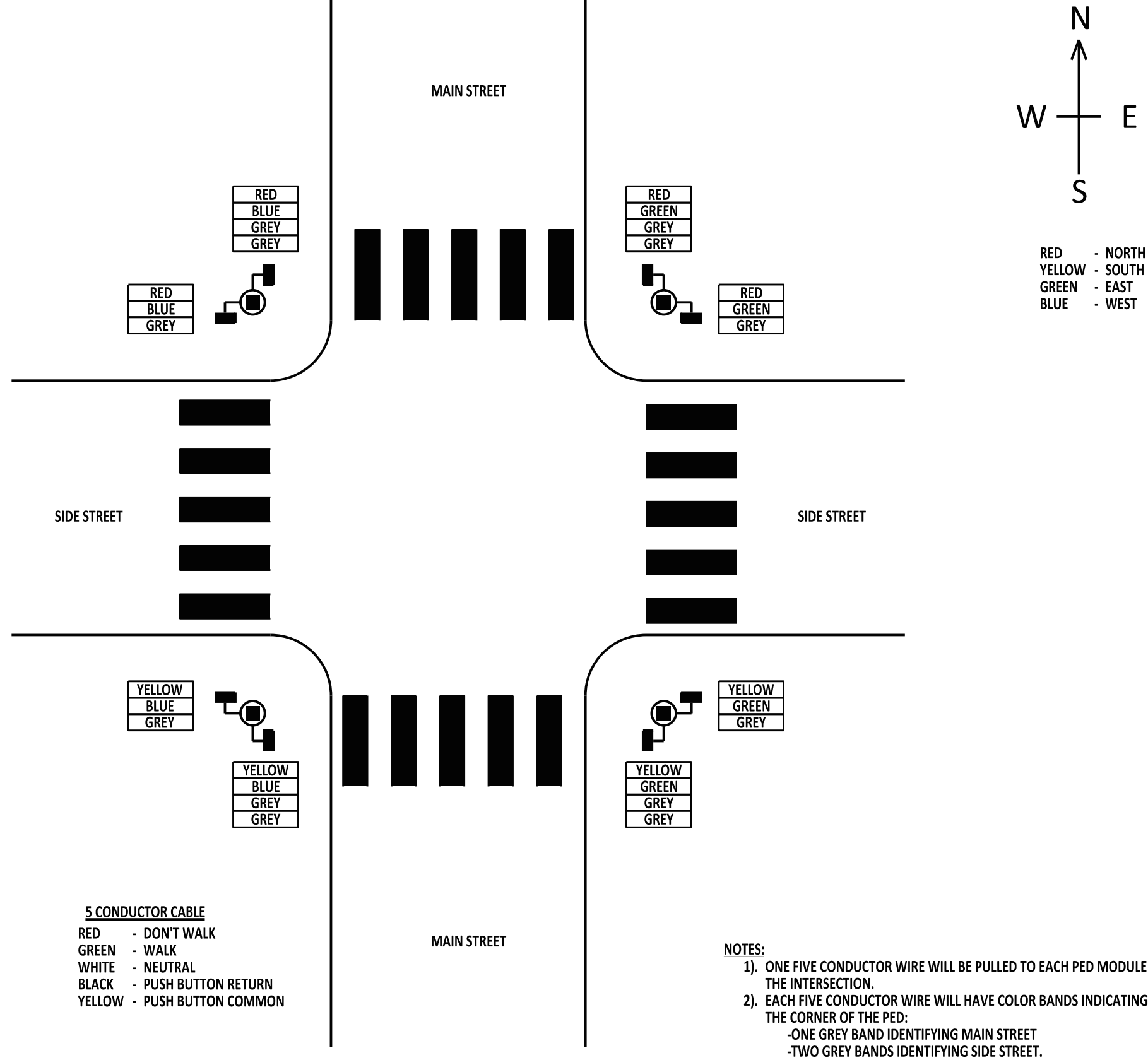
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DELAWARE
DEPARTMENT OF TRANSPORTATION

LOOP DETECTOR INSTALLATION & SPLICE KIT

STANDARD NO.

T-9 (2013)

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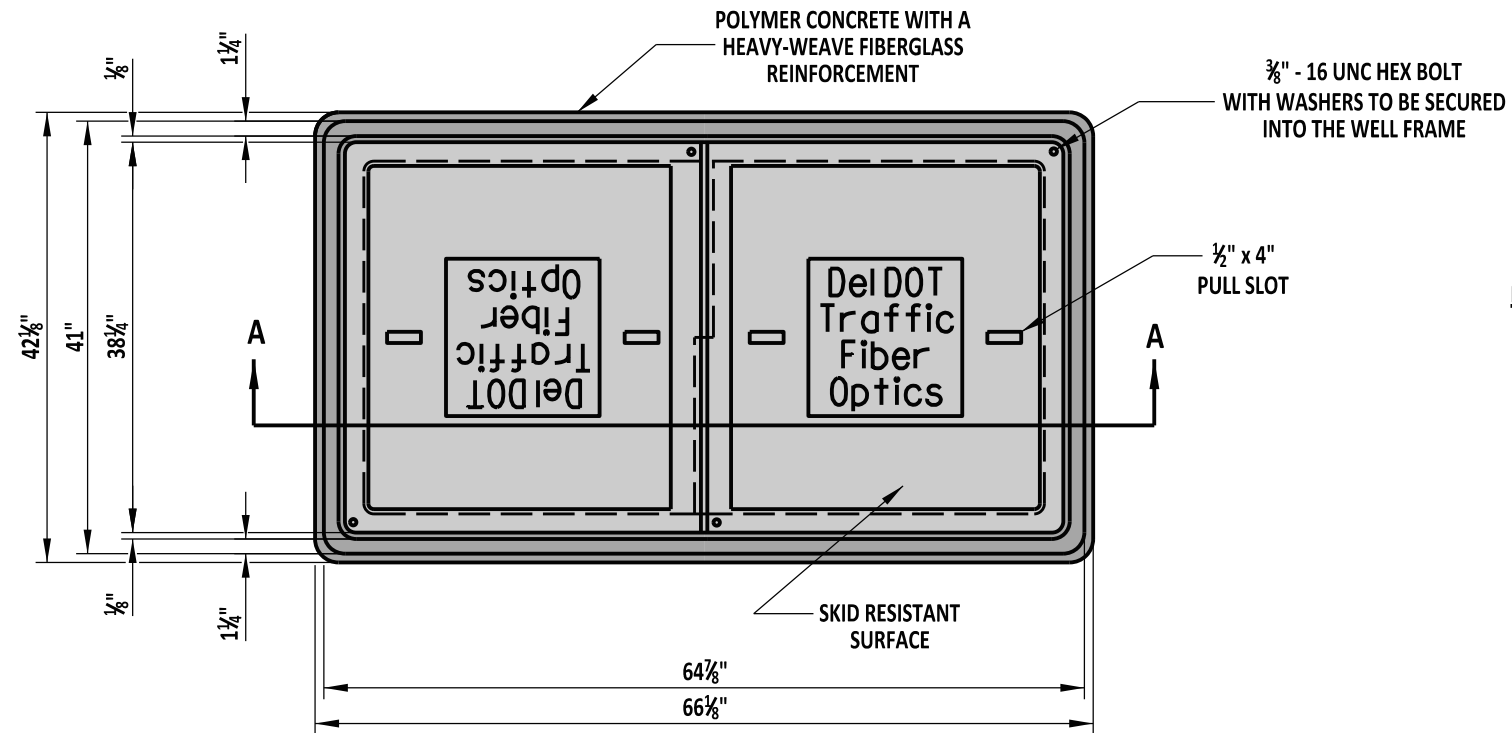
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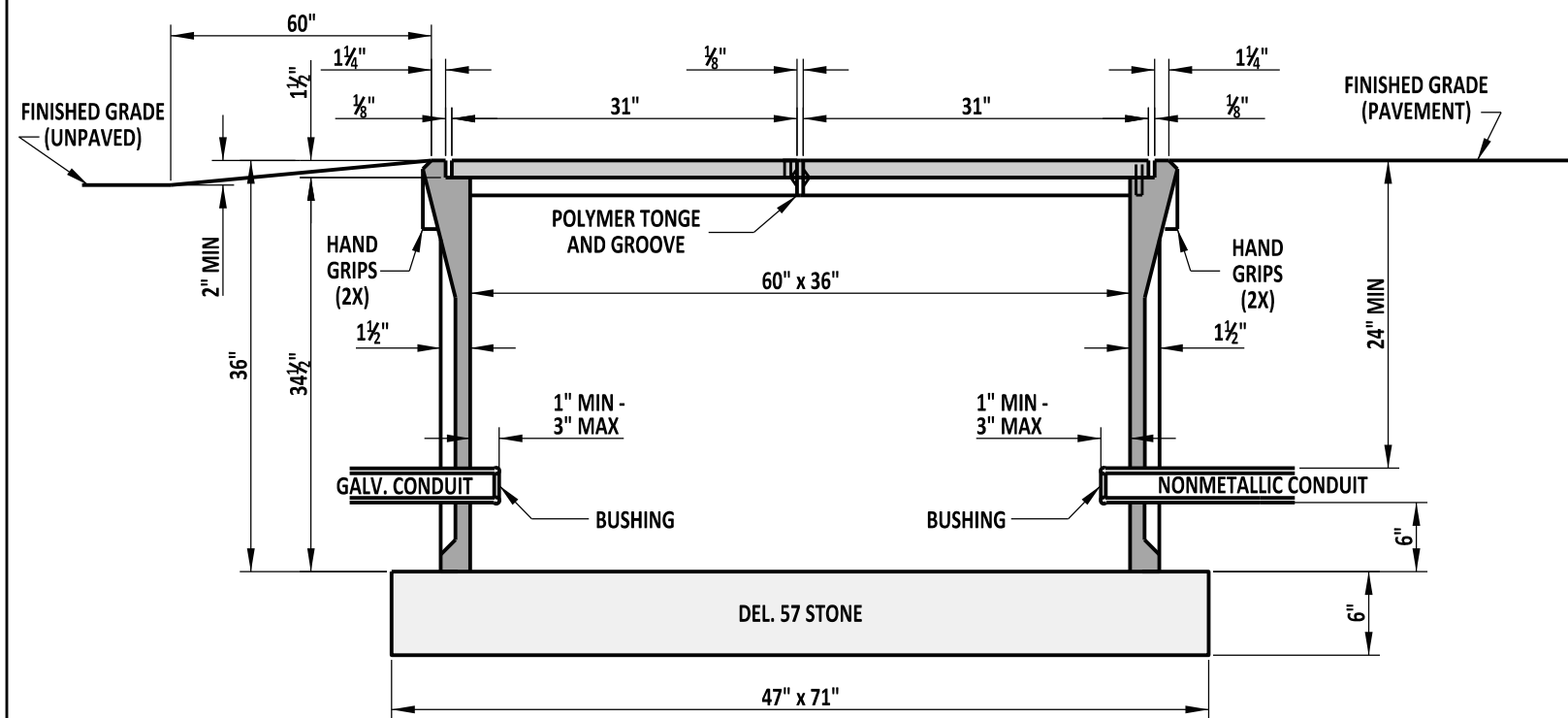
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PLAN VIEW

NOTES:

- 1). TYPE 7 CONDUIT JUNCTION WELL SHALL BE PRECAST POLYMER CONCRETE.
- 2). ALL CONDUIT JUNCTION WELLS CONSTRUCTED WITHIN PAVEMENT, SIDEWALKS, ETC. WILL BE CONSTRUCTED FLUSH WITH THE SURFACE OF THE SAME. INSTALLATION IN UNPAVED AREAS WILL BE CONSTRUCTED ABOVE GRADE AND GRADED TO DRAIN AWAY FROM THE CONDUIT JUNCTION WELL.
- 3). POLYMER CONCRETE COVERS SHALL BE THE HEAVY DUTY TYPE WITH A DESIGN LOAD OF 15,000 LBS OVER A 10" SQUARE.



SECTION A-A



DELAWARE
DEPARTMENT OF TRANSPORTATION

CONDUIT JUNCTION WELL, TYPE 7

STANDARD NO.

T-13 (2013)

SHT. 1

OF 1

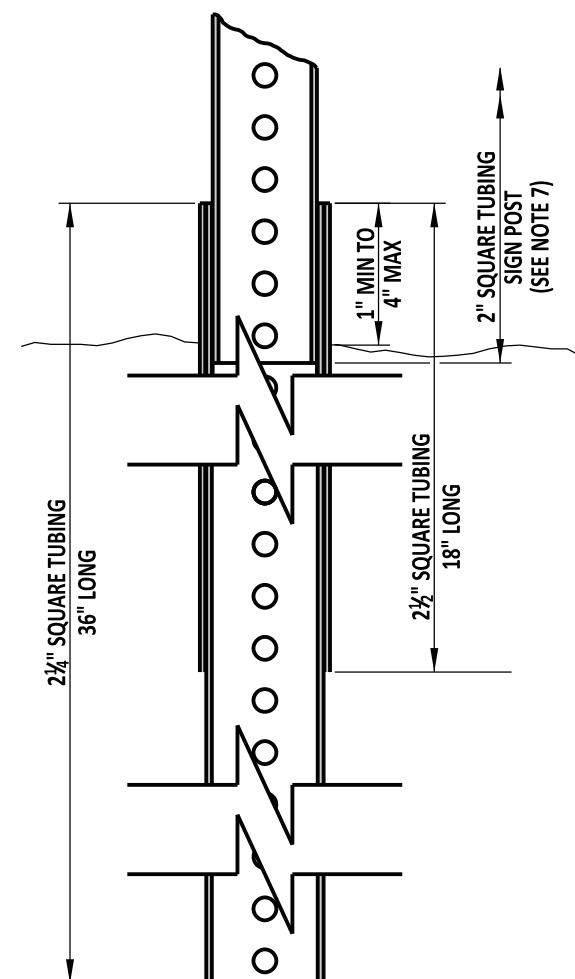
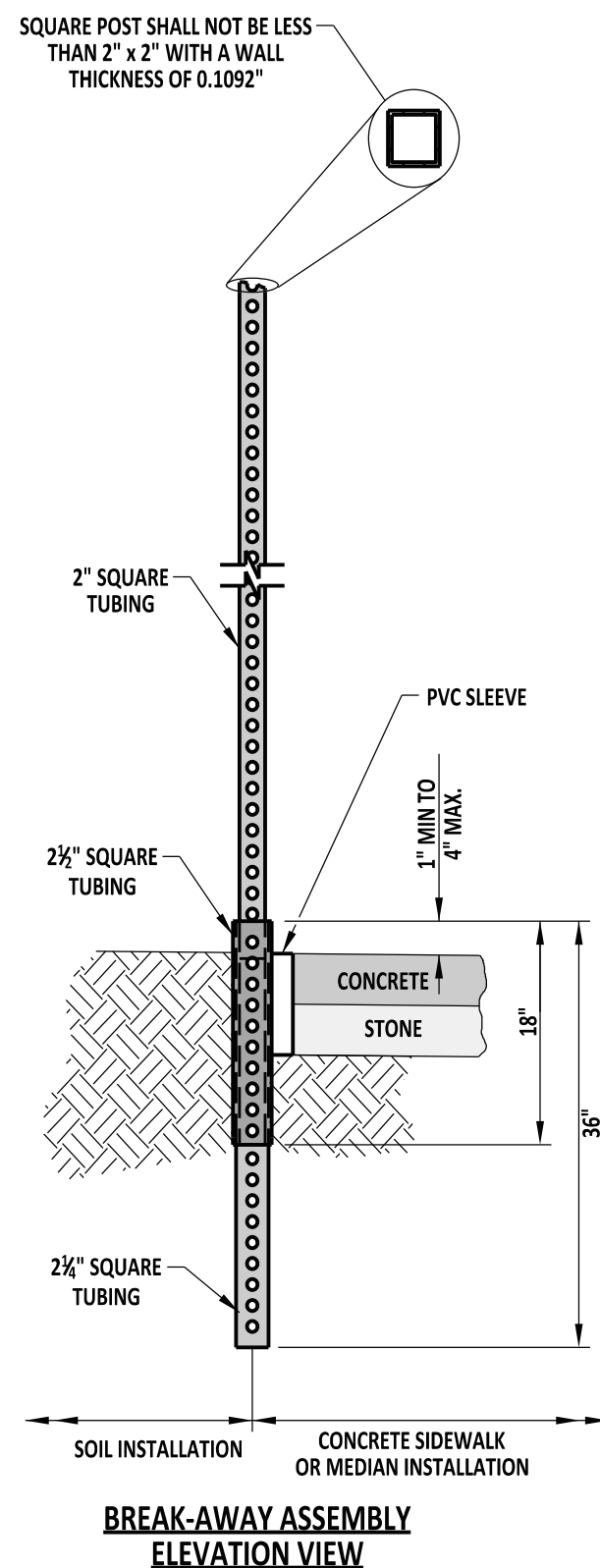
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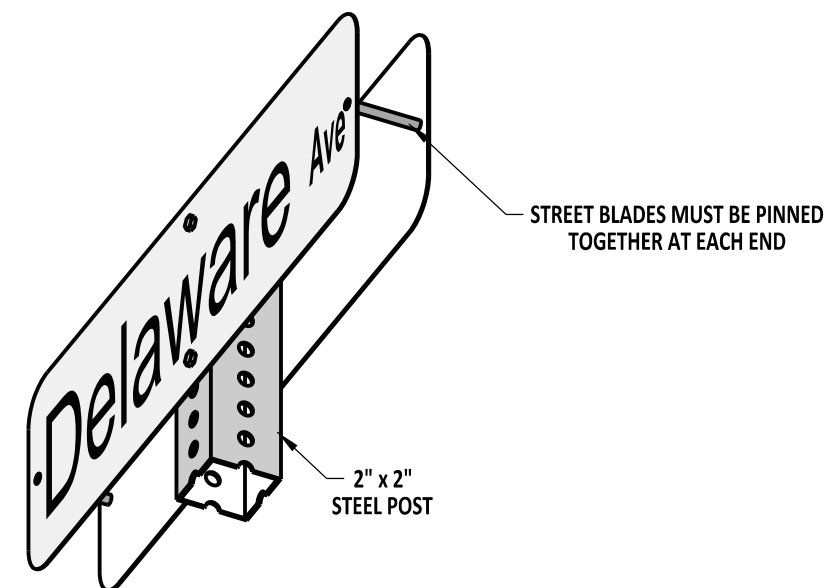
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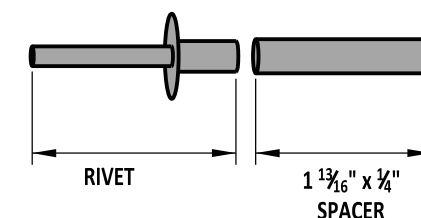
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BREAK-AWAY ASSEMBLY SECTION VIEW



TYPICAL ASSEMBLY



PIN ASSEMBLY

NOTE: THE PIN ASSEMBLY IS TO BE USED WITH THE INSTALLATION OF BACK TO BACK STREET BLADE SIGNS WITH 6" LETTERS.

- NOTES:
- 1). SQUARE TUBES ARE TO BE FORMED FROM GALVANIZED SHEET STRUCTURAL (PHYSICAL) QUALITY, ASTM A 446, GRADE A, COATING DESIGNATION G 90, REGULAR SPANGLE, OR HOT ROLLED CARBON SHEET STEEL STRUCTURAL (PHYSICAL) QUALITY, ASTM A 57, GRADE 33.
 - 2). NOMINAL OUTSIDE DIMENSIONS ARE AS FOLLOWS:
 - A). 2" x 2" +/- 0.008
 - B). 2¼" x 2¼" +/- 0.010
 - C). 2½" x 2½" +/- 0.010
 - 3). ALL FOUR SIDES ARE TO HAVE EVENLY SPACED 7/16" DIAMETER HOLES ON 1" CENTERS THE ENTIRE LENGTH OF THE TUBE.
 - 4). STANDARD CORNER RADIUS SHALL BE 5/32".
 - 5). THE FASTENERS TO BE SUPPLIED UNDER THIS SPECIFICATION SHALL BE 5/16", GRADE 5 UNC CORNER BOLTS WITH CADMIUM OR ZINC PLATING. INSTALLATION OF SIGNS SHALL BE WITH 3/8" x 2½" BOLT WITH LOCKNUT AND WASHER.
 - 6). THE CONTRACTOR SHALL PROVIDE AND INSTALL PVC SLEEVES (4" INSIDE DIAMETER MINIMUM, 6" INSIDE DIAMETER MAXIMUM) IN PROPOSED CONCRETE SIDEWALKS, ISLANDS, AND MEDIANS FOR FUTURE TRAFFIC SIGN POSTS AS DIRECTED BY THE ENGINEER. THE LOWER END OF THE SLEEVE SHALL BE SET ON TOP OF THE SOIL.
 - 7). THE SIGN POST SHALL EXTEND A MINIMUM OF 4" INTO THE 2½" SQUARE TUBING.



DELAWARE
DEPARTMENT OF TRANSPORTATION

BREAKWAY SIGN POST AND PIN ASSEMBLY DETAILS

STANDARD NO. T-15 (2013)

SHT. 1 OF 1

APPROVED

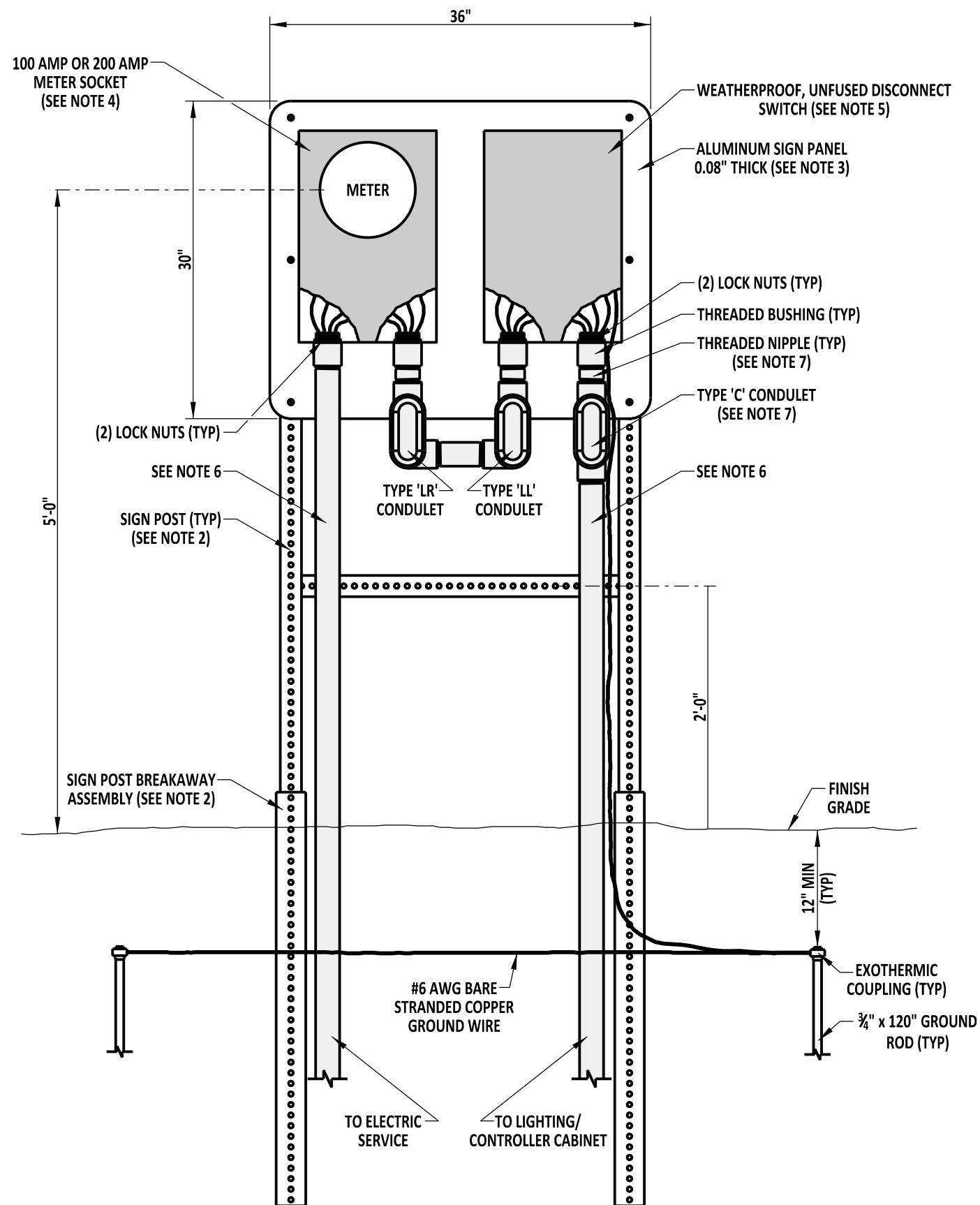
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- NOTES:**
- 1). INSTALLATION OF EQUIPMENT BETWEEN SERVICE PEDESTAL AND LIGHTING/CONTROLLER CABINET SHALL BE AS PER CONTRACT DRAWINGS/DETAILS.
 - 2). SEE DETAIL T-15, SHEET 1, FOR SIGN POST AND BREAKAWAY ASSEMBLY DETAILS.
 - 3). ATTACH ALUMINUM PANEL TO SIGN POSTS WITH (6) 5/16" x 2 1/2" LONG GRADE 5 BOLTS, FLAT WASHERS, AND NYLON LOCK NUTS, 3 ON EACH SIDE.
 - 4). MOUNT METER SOCKET TO ALUMINUM PANEL WITH (4) 5/16" x 3/4" STAINLESS STEEL BOLTS AND NYLON LOCK NUTS.
 - 5). MOUNT DISCONNECT SWITCH TO ALUMINUM PANEL WITH (4) 5/16" x 3/4" STAINLESS STEEL BOLTS AND NYLON LOCK NUTS.
 - 6). ALL CONDUIT, CONDULETS AND OTHER ASSOCIATED PIECES SHALL BE 2" GALVANIZED UNLESS SPECIFIED DIFFERENTLY ON THE PLANS OR BY LOCAL UTILITY COMPANY.
 - 7). FOR SIGNAL AND 'ITMS' COMPONENT INSTALLATIONS, TYPE 'C' CONDULET SHALL HOUSE INLINE FUSE KITS FOR EACH DEVICE POWERED.

 DELAWARE DEPARTMENT OF TRANSPORTATION	ELECTRICAL SERVICE PEDESTAL - LIGHTING, SIGNAL & 'ITMS' COMPONENT INSTALLATIONS				APPROVED	SIGNATURE ON FILE <small>CHIEF ENGINEER</small>	02/14/2014 <small>DATE</small>
	STANDARD NO.	T-17 (2013)	SHT.	1 OF 1	RECOMMENDED	SIGNATURE ON FILE <small>DESIGN ENGINEER</small>	01/14/2014 <small>DATE</small>