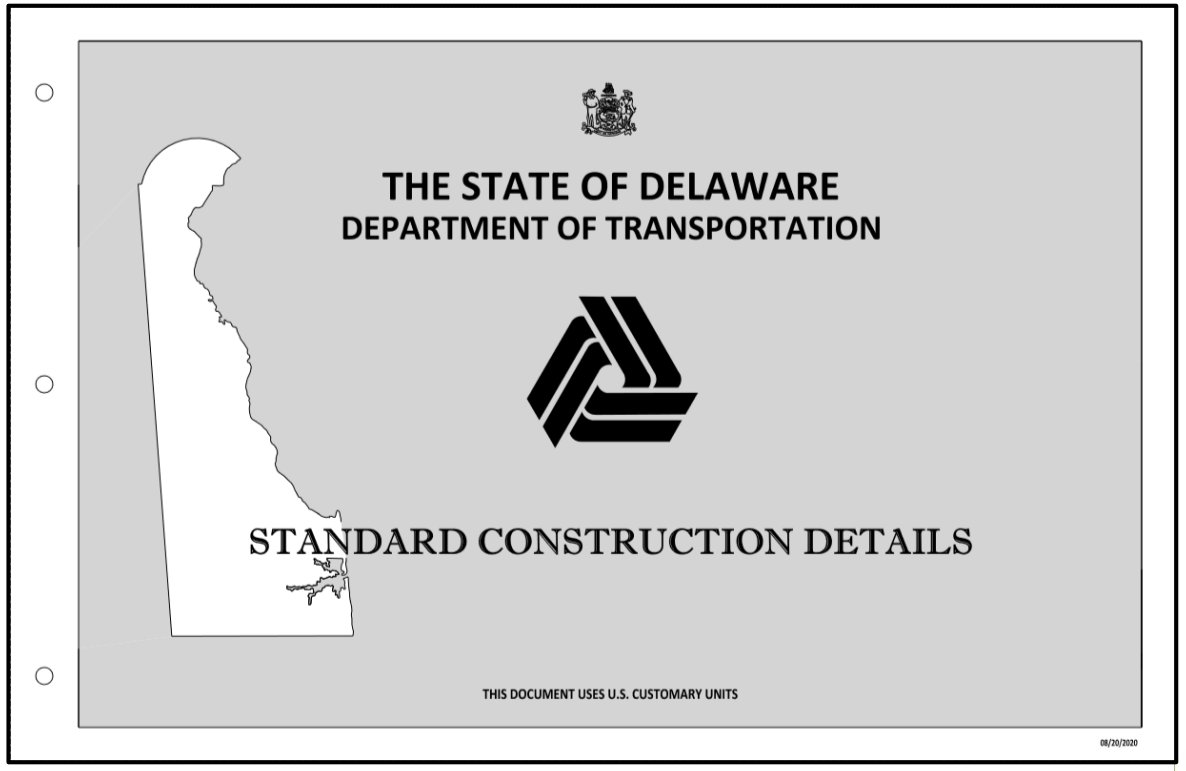
DelDOT
2020 Standard Details Changes: Sections II thru VIII

October 27, 2020

- **2020 Standard Details**
  - Deletions
  - Major changes
  - Additions



DelDOT

GPI

THE STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION

STANDARD CONSTRUCTION DETAILS

THIS DOCUMENT USES U.S. CUSTOMARY UNITS

08/20/2020

Section II: Curb and Gutter

Revised Standard Details

C-1 **PCC Curb, Integral PCC Curb and Gutter, PCC Roundabout and Guardrail Median Curb (NEW)**

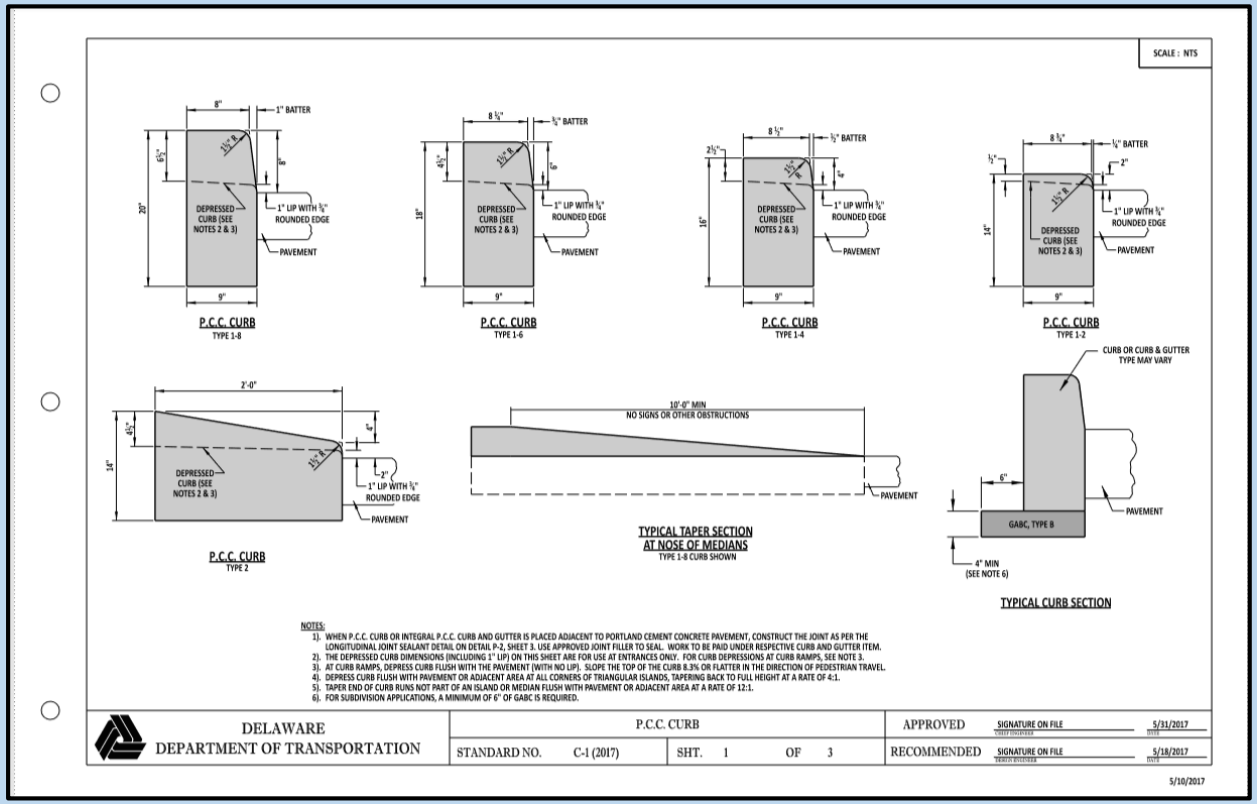
C-2 **Pedestrian Connection, Types 1 - 5**

C-3 **Entrances**

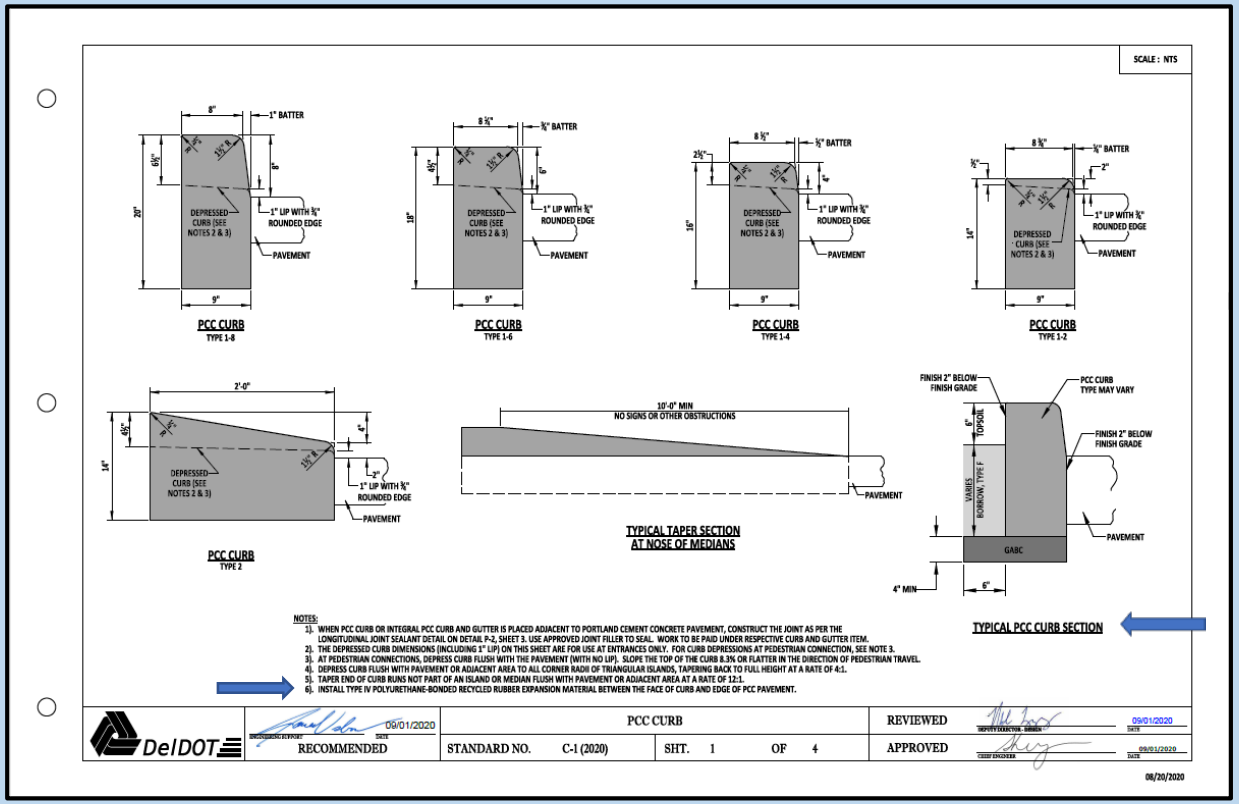
C-5 **Curb/Sidewalk Opening**

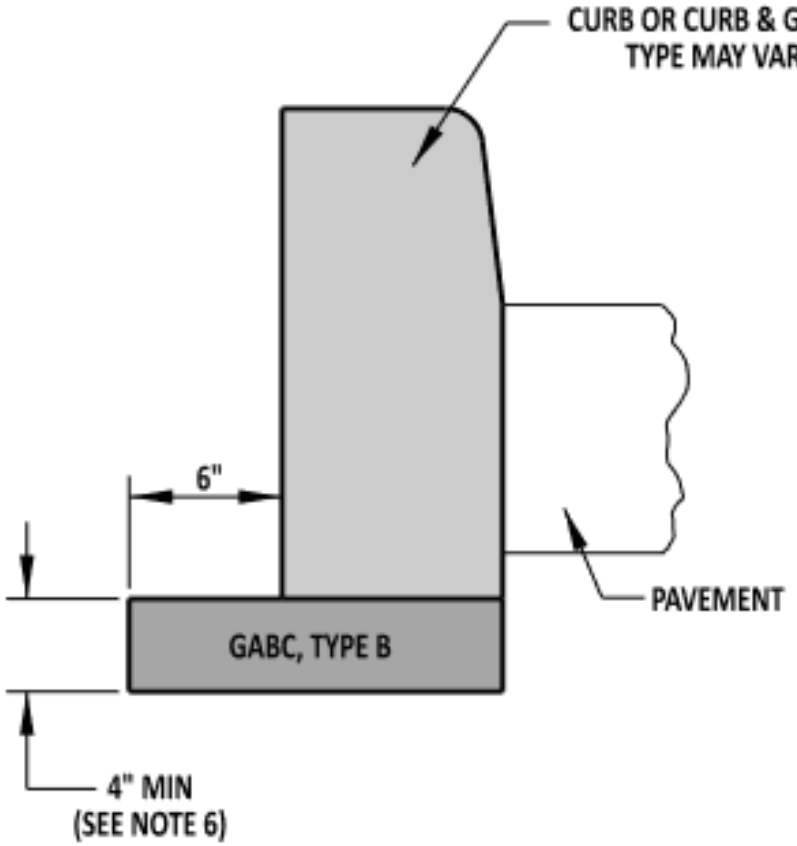
DETAIL C-1
Sheet 1

2017 PCC CURB



2020 PCC CURB

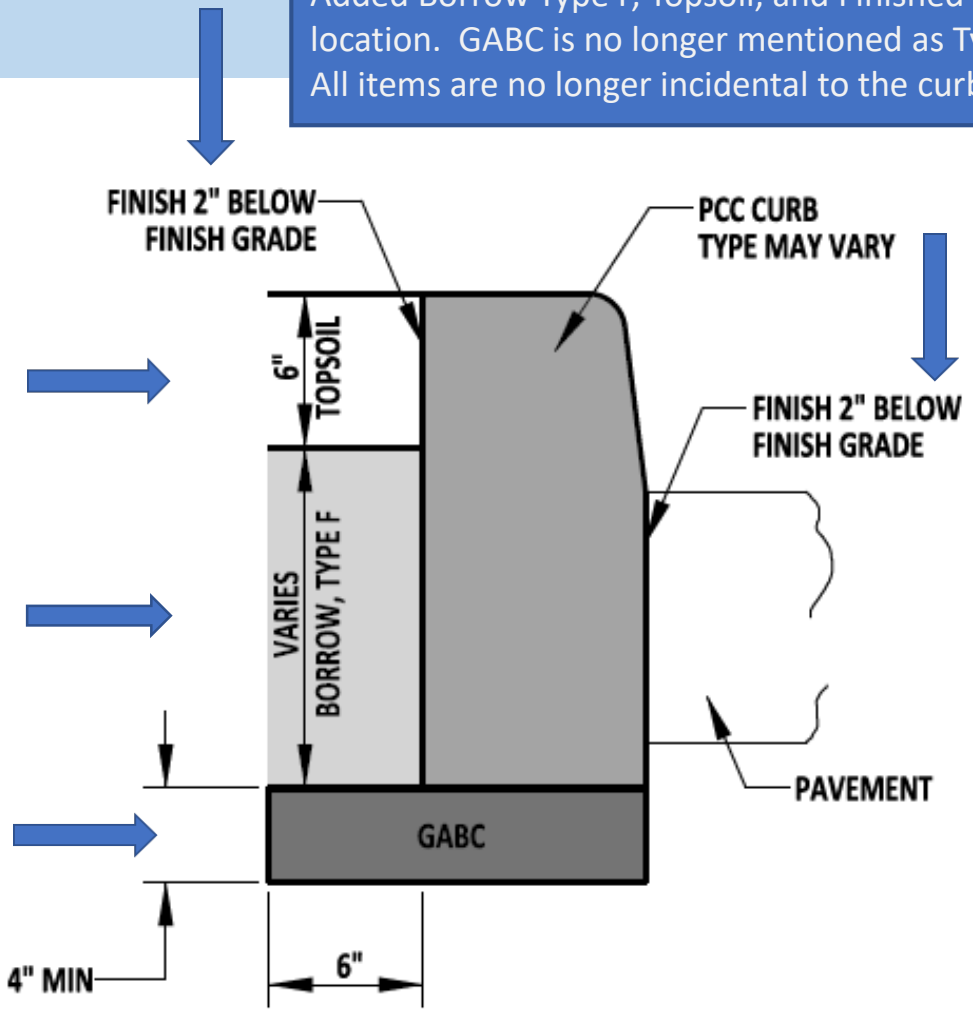




TYPICAL CURB SECTION

2017

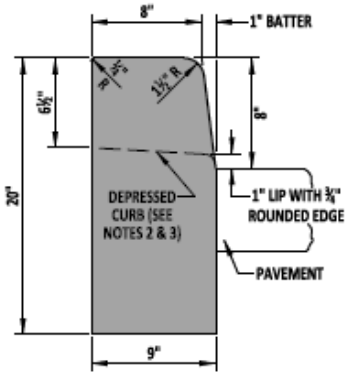
Added Borrow Type F, Topsoil, and Finished Grade location. GABC is no longer mentioned as Type B. All items are no longer incidental to the curb.



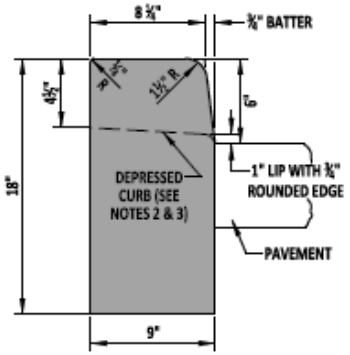
TYPICAL PCC CURB SECTION

2020

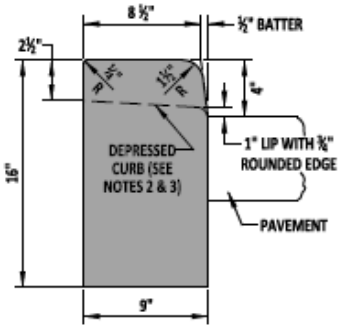
SCALE : NTS



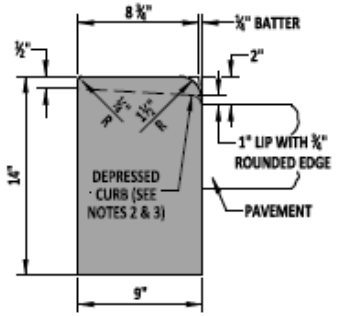
PCC CURB
TYPE 1-8



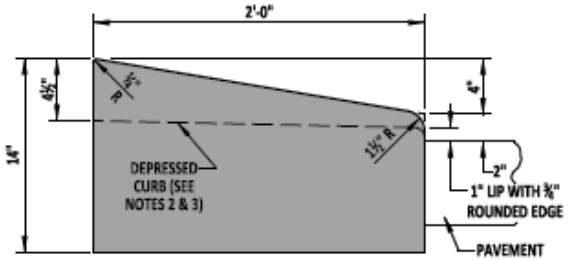
PCC CURB
TYPE 1-6



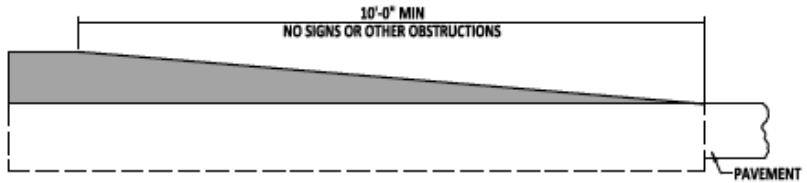
PCC CURB
TYPE 1-4



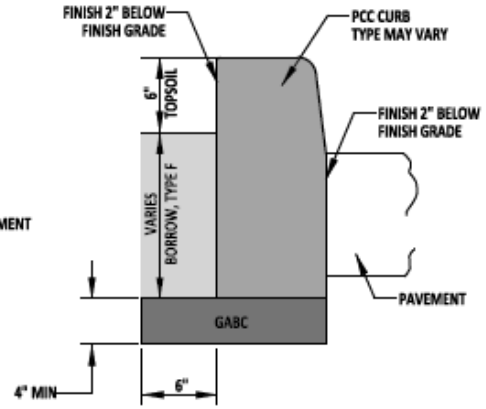
PCC CURB
TYPE 1-2



PCC CURB
TYPE 2



TYPICAL TAPER SECTION AT NOSE OF MEDIANS



TYPICAL PCC CURB SECTION

NOTES:

1). WHEN PCC CURB OR INTEGRAL PCC 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. USE APPROVED JOINT FILLER TO SEAL. WORK TO BE PAID UNDER RESPECTIVE CURB AND GUTTER ITEM.
2). THE DEPRESSED CURB DIMENSIONS (INCLUDING 1" LIP) ON THIS SHEET ARE FOR USE AT ENTRANCES ONLY. FOR CURB DEPRESSIONS AT PEDESTRIAN CONNECTION, SEE NOTE 3.
3). AT PEDESTRIAN CONNECTIONS, DEPRESS CURB FLUSH WITH THE PAVEMENT (WITH NO LIP). SLOPE THE TOP OF THE CURB 8.3% OR FLATTER IN THE DIRECTION OF PEDESTRIAN TRAVEL.
4). DEPRESS CURB FLUSH WITH PAVEMENT OR ADJACENT AREA TO ALL CORNER RADII OF TRIANGULAR ISLANDS, TAPERING BACK TO FULL HEIGHT AT A RATE OF 4:1.
5). TAPER END OF CURB RUNS NOT PART OF AN ISLAND OR MEDIAN FLUSH WITH PAVEMENT OR ADJACENT AREA AT A RATE OF 12:1.
6). INSTALL TYPE IV POLYURETHANE-BONDED RECYCLED RUBBER EXPANSION MATERIAL BETWEEN THE FACE OF CURB AND EDGE OF PCC PAVEMENT.

Changed

DelDOT

09/01/2020
ENGINEERING SUPPORT — DATE
RECOMMENDED

PCC CURB

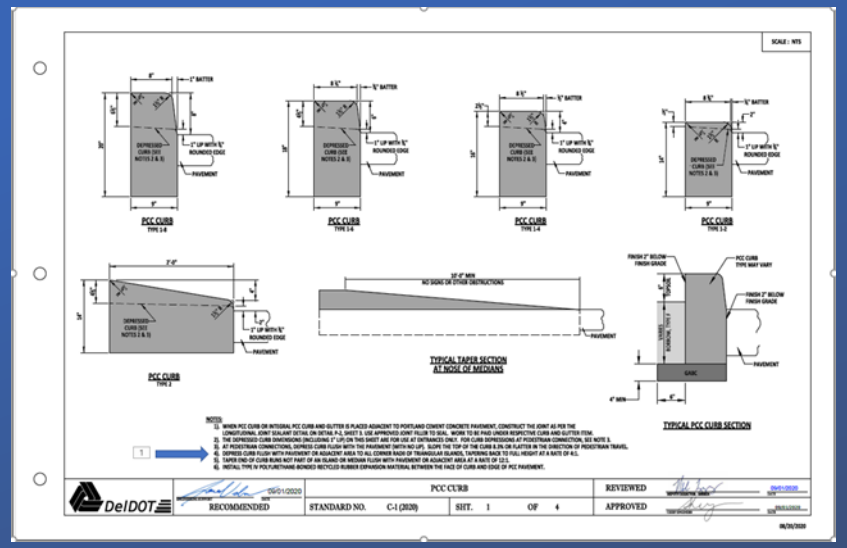
STANDARD NO. C-1 (2020) | SHT. 1 OF 4

REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

08/20/2020

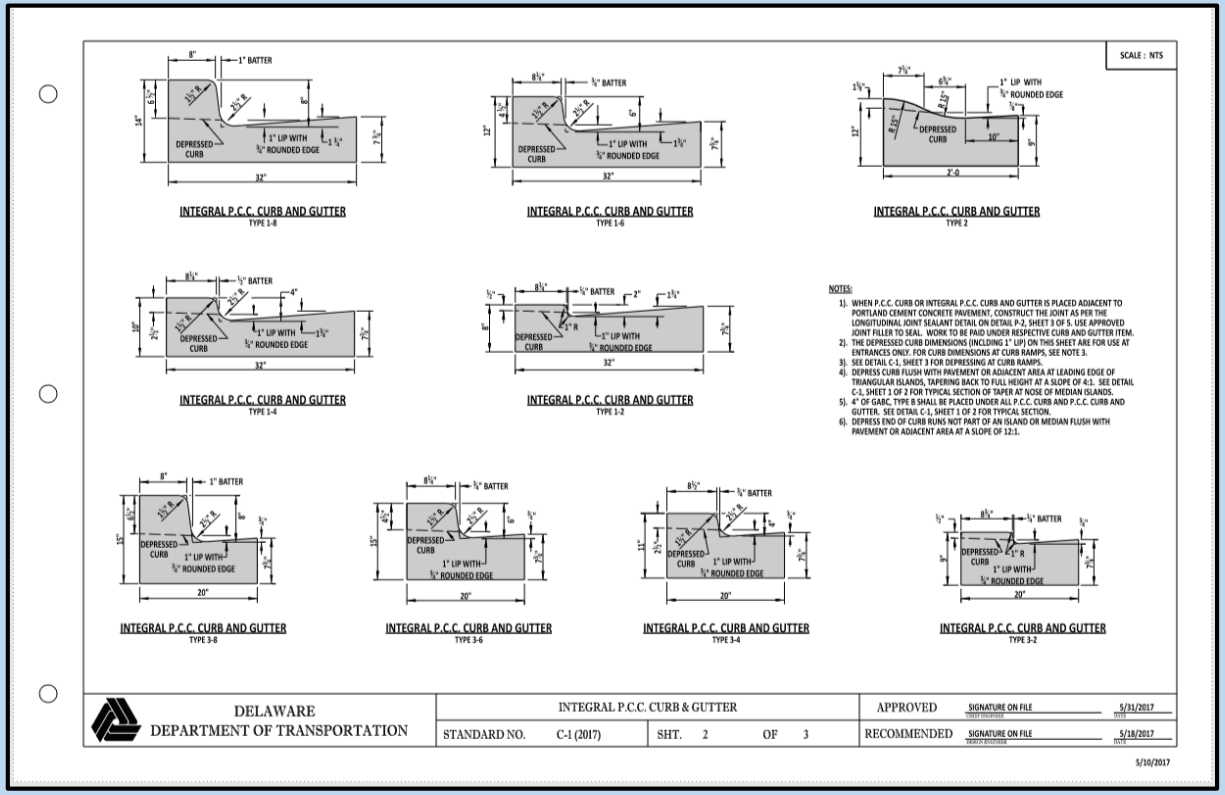
DETAIL C-1



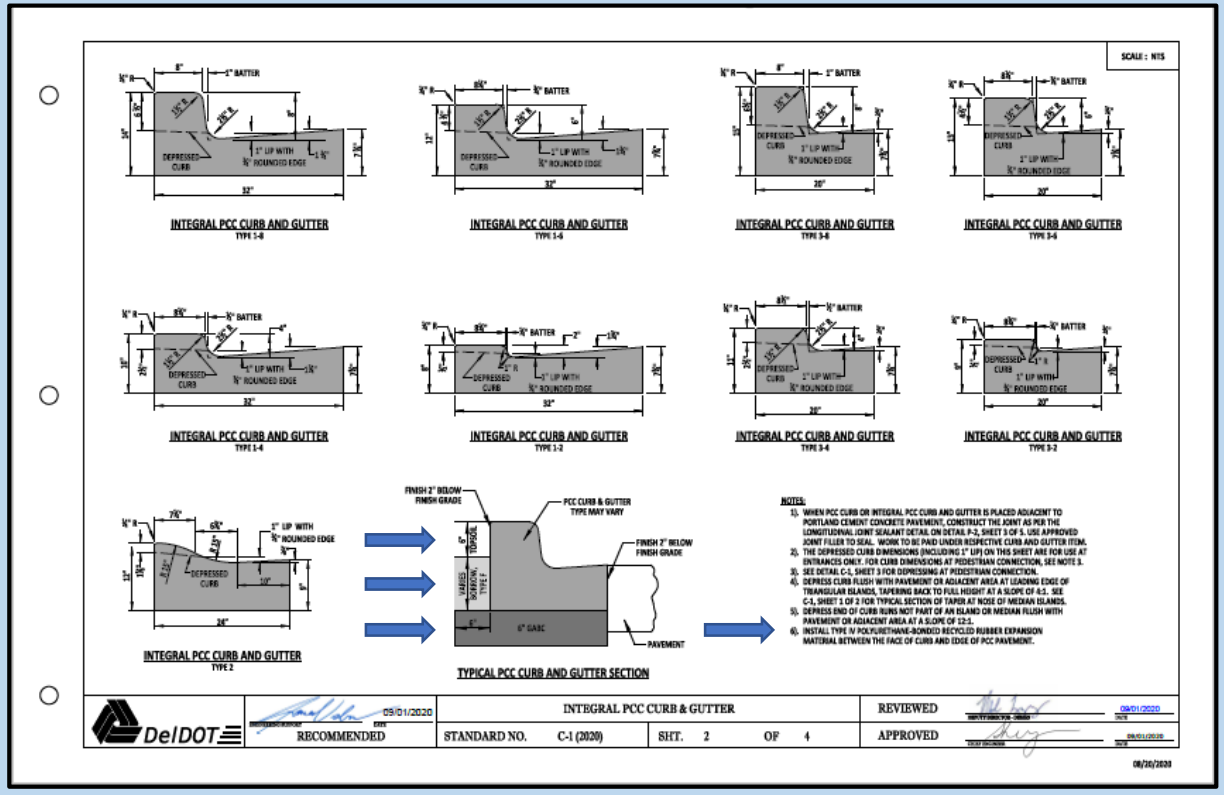
- NOTE 6 – INSTALL TYPE IV POLYURETHANE – BONDED RECYCLED RUBBER EXPANSION MATERIAL BETWEEN THE FACE OF CURB AND EDGE OF PCC PAVEMENT.

DETAIL C-1
Sheet 2

2017 INTEGRAL P.C.C. CURB & GUTTER



2020 INTEGRAL PCC CURB & GUTTER

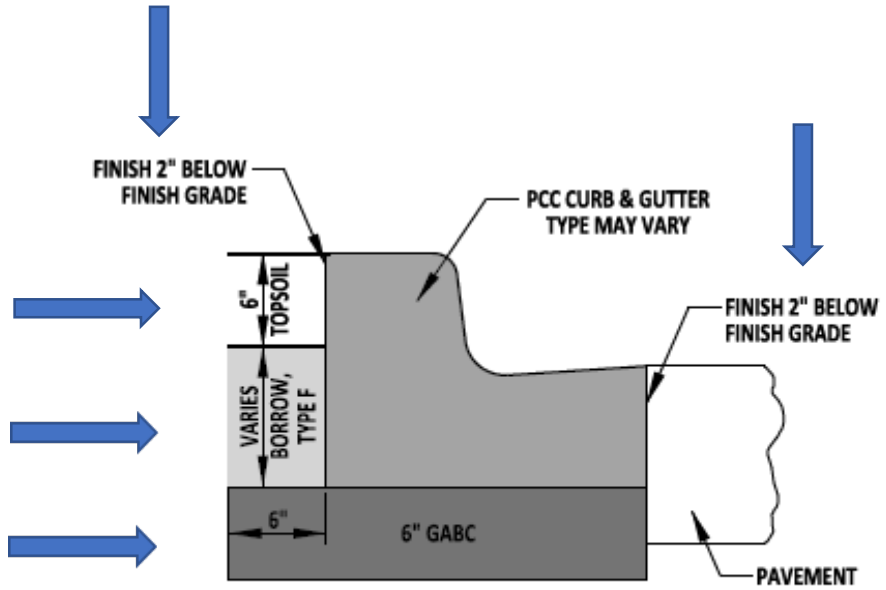


NOTES:

1). WHEN PCC CURB OR INTEGRAL PCC 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). THE DEPRESSED CURB DIMENSIONS (INCLUDING 1" LIP) ON THIS SHEET ARE FOR USE AT ENTRANCES ONLY. FOR CURB DIMENSIONS AT PEDESTRIAN CONNECTION, SEE NOTE 3.
3). SEE DETAIL C-1, SHEET 3 FOR DEPRESSING AT PEDESTRIAN CONNECTION.
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. SEE C-1, SHEET 1 OF 2 FOR TYPICAL SECTION OF TAPER AT NOSE OF MEDIAN ISLANDS.
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). INSTALL TYPE IV POLYURETHANE-BONDED RECYCLED RUBBER EXPANSION MATERIAL BETWEEN THE FACE OF CURB AND EDGE OF PCC PAVEMENT.

Note 6 – “INSTALL TYPE IV POLYURETHANE – BONDED RECYCLED RUBBER EXPANSION MATERIAL BETWEEN THE FACE OF CURB AND EDGE OF PCC PAVEMENT.”

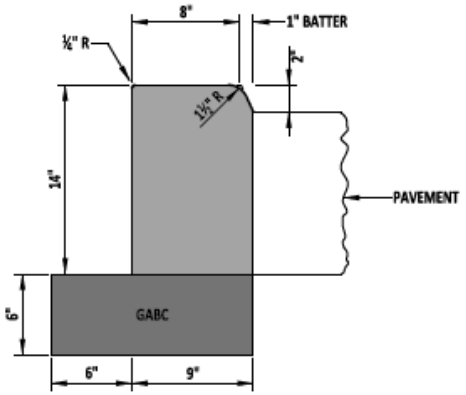
Added Borrow Type F, Topsoil, and Finished Grade location. GABC is no longer mentioned as Type B. All items are no longer incidental to the curb.



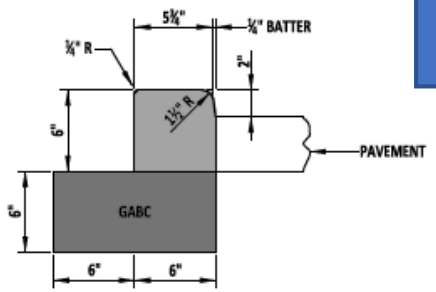
TYPICAL PCC CURB AND GUTTER SECTION

SCALE : NTS

New detail for PCC Roundabout Curb and a new curb detail for median guardrail application to allow for deflection.

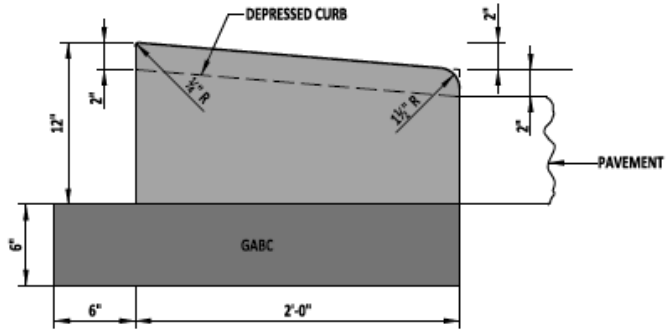


PCC CURB
TYPE 1-2 ROUNDABOUT



PCC CURB
TYPE 1-2 GUARDRAIL MEDIAN CURB
INSTALL JOINTS AT 5'.

NEW

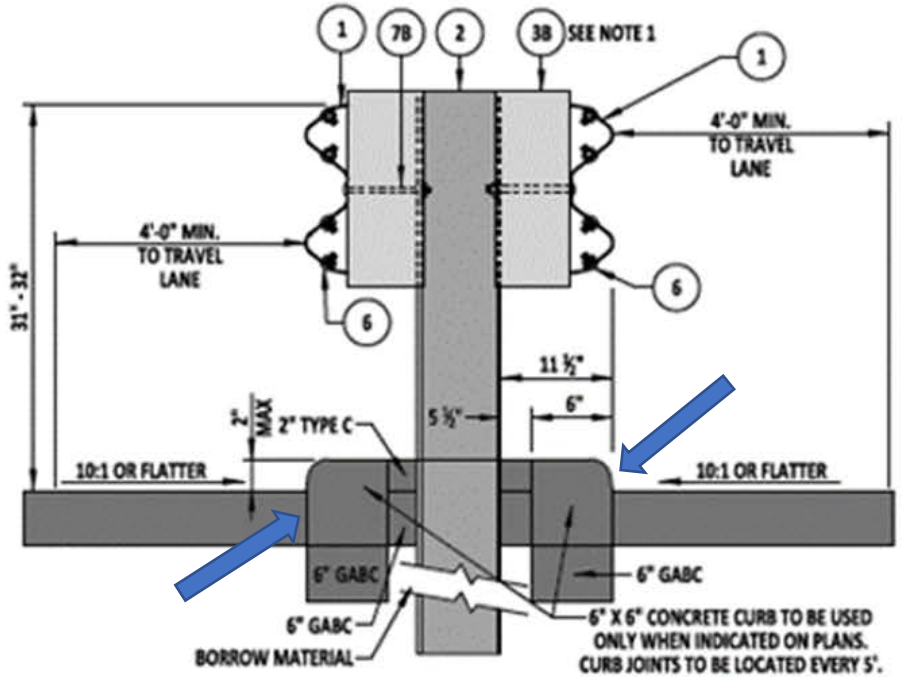


PCC CURB
TYPE 2 ROUNDABOUT

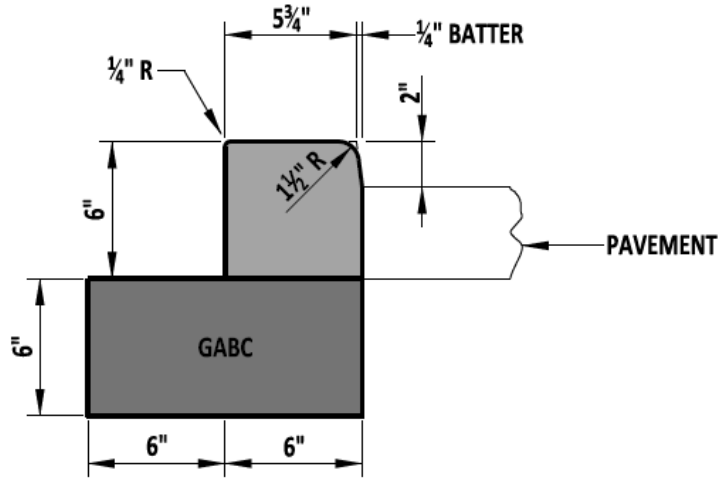
NOTE:
1). SEE TYPICAL PCC CURB SECTION DETAIL ON DETAIL C-1, SHEET 1 FOR PLACEMENT OF GABC UNDER CURB, UNLESS NOTED.

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	PCC ROUNDABOUT AND GUARDRAIL MEDIAN CURB STANDARD NO. C-1 (2020) SHT. 4 OF 4	REVIEWED 09/01/2020 DEPUTY DIRECTOR - DIRECTOR DATE APPROVED 09/01/2020 CHIEF ENGINEER DATE

08/20/2020

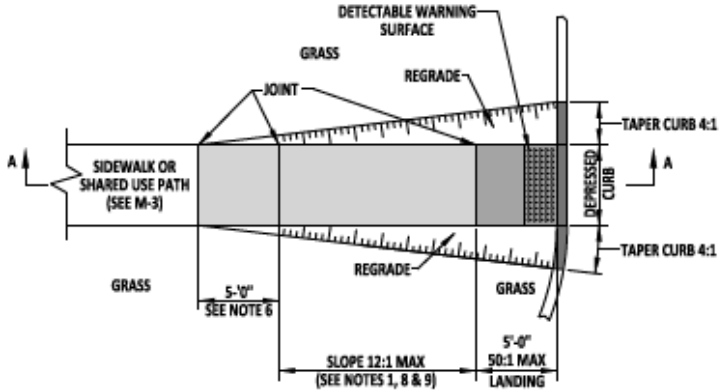


GUARDRAIL SECTION
MEDIAN APPLICATION

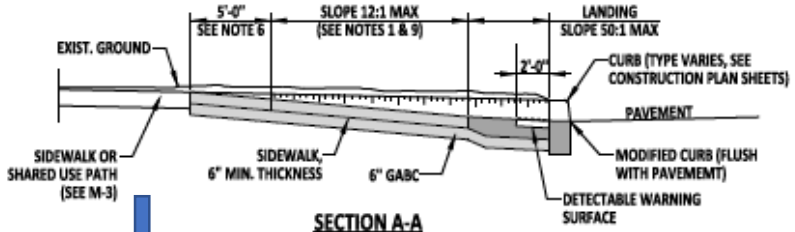


PCC CURB
TYPE 1-2 GUARDRAIL MEDIAN CURB
INSTALL JOINTS AT 5'.

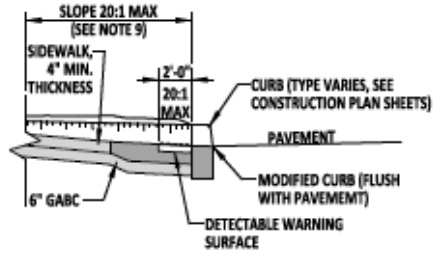
SCALE : NTS



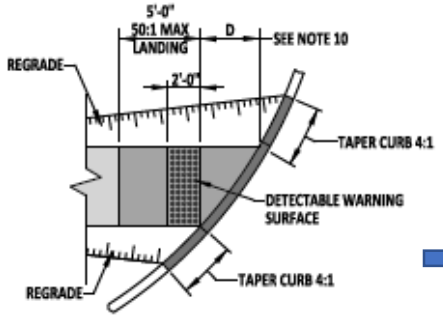
PLAN



SECTION A-A



SECTION A-A
BLENDED TRANSITION

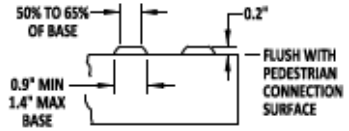


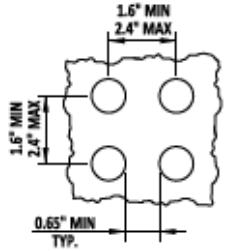
DETECTABLE WARNING SURFACE ON CURVE

NOTES:

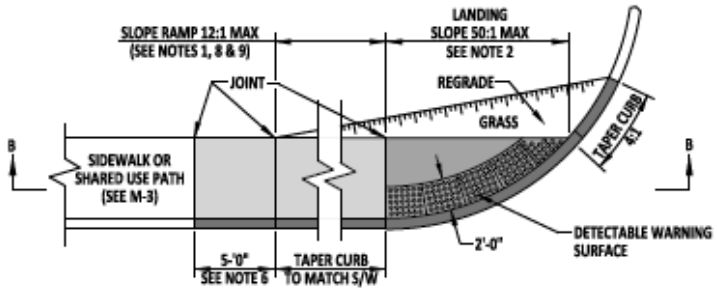
A). EXTEND THE DETECTABLE WARNING SYSTEM AT LEAST 2'-0" IN LENGTH, MEASURED IN THE DIRECTION OF TRAVEL, FROM THE BACK OF THE DEPRESSED CURB ALONG THE PEDESTRIAN CONNECTION SURFACE.

B). SEE SPECIFICATION FOR ADDITIONAL INFORMATION.

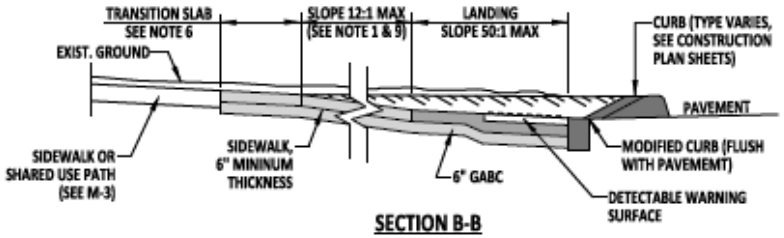




DETECTABLE WARNING SURFACE DETAILS



PLAN (ADJACENT TO CURB)



SECTION B-B

NOTES:

1). FOR ALTERATIONS WHERE THE MAXIMUM ALLOWABLE 12:1 RUNNING SLOPE WILL NOT MEET THE EXISTING SIDEWALK GRADE WITHIN A LENGTH OF 15'-0" BEYOND THE LANDING, THE SLOPED SEGMENT OF THE PEDESTRIAN CONNECTION MAY BE LIMITED TO 15'-0" AT A CONSTANT SLOPE, AND ALLOWED TO EXCEED THE 12:1 MAXIMUM SLOPE.

2). APPLY A 50:1 (2%) MAXIMUM CROSS SLOPE TO SIDEWALK, SHARED USE PATHS AND PEDESTRIAN CONNECTIONS. THE PEDESTRIAN CONNECTION CROSS SLOPE IS NOT TO EXCEED THE SLOPE OF THE ADJACENT ROADWAY IN ACCORDANCE WITH THE LATEST VERSION OF THE PEDESTRIAN ACCESSIBILITY STANDARDS.

3). A 6:1 GRADE IS REQUIRED FOR A MINIMUM OF 2'-0" ADJACENT TO THE PEDESTRIAN CONNECTION IN ACCORDANCE WITH M-3, SHEET 1.

4). THE MAXIMUM ALGEBRAIC DIFFERENCE IN GRADE BETWEEN THE PEDESTRIAN CONNECTION OR MODIFIED CURB FROM THE PEDESTRIAN CONNECTION TO THE PAVEMENT SHALL NOT EXCEED 13.3%, WITH A MAXIMUM OF 8.3% ON THE PEDESTRIAN CONNECTION AND A MAXIMUM OF 5% ON THE PAVEMENT IN THE DIRECTION OF TRAVEL. SEE DETAIL C-1, SHEET 3 OF 4.

5). DELINEATE THE LANDING AREA WITH JOINTS.

6). FOR 3-R REHABILITATION WORK, PLACE TRANSITION SLAB FROM THE NEW PEDESTRIAN CONNECTION TO THE EXISTING SIDEWALK WHEN THE EXISTING SIDEWALK HAS A NON-CONFORMING CROSS SLOPE OR WIDTH.

7). REFER TO THE DE MUTCD FOR DETAILS REGARDING THE LOCATION OF PEDESTRIAN PUSH BUTTONS.

8). LAYOUT JOINTS AND EXPANSION IN ACCORDANCE WITH M-3, SHEET 1 OF 1.

9). IF THE RUNNING SLOPE OF THE PEDESTRIAN CONNECTION IS 5% (20:1) OR LESS WITH NO REQUIRED TURNING MOVEMENTS, THE LANDING CAN BE OMITTED AS IT IS A BLENDED TRANSITION. DETECTABLE WARNING SURFACE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

10). FOR INSTALLATIONS ON A RADIUS AND WHEN DIMENSION D IS LESS THAN 5'-0", THE DETECTABLE WARNING SURFACE SHALL BE INSTALLED AT THE INTERSECTION OF THE BACK OF THE CURB AND THE BEGINNING OF THE FULL WIDTH OF THE PEDESTRIAN ACCESS ROUTE. THE DETECTABLE WARNING SURFACE SHALL BE INSTALLED PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL AND BE THE FULL WIDTH OF THE PEDESTRIAN ACCESS ROUTE.

11). WHERE THERE IS NO DEPRESSED CURB AT A CUT-THROUGH OF PEDESTRIAN CONNECTION, INSTALL THE DETECTABLE WARNING SURFACE A MINIMUM OF 8" FROM THE PAVEMENT EDGE. WHERE THERE IS DEPRESSED CURB, INSTALL THE DETECTABLE WARNING SURFACE DIRECTLY BEHIND THE FULL WIDTH OF THE DEPRESSED CURB.

PEDESTRIAN CONNECTION, TYPE 1

DelDOT

09/01/2020
ENGINEERING SUPPORT — DATE
RECOMMENDED

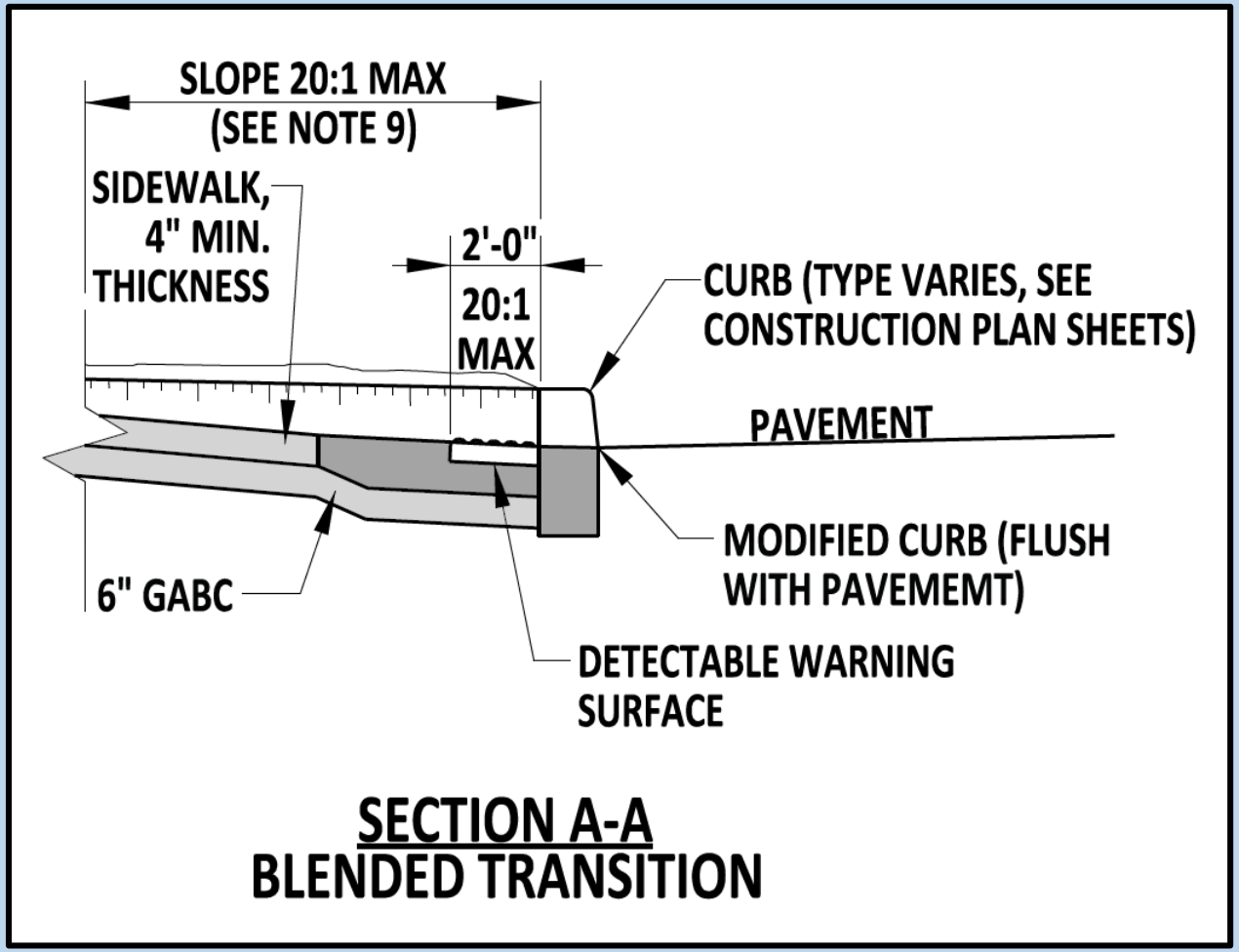
PEDESTRIAN CONNECTION, TYPE 1

STANDARD NO. C-2 (2020) | SHT. 1 OF 3

REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

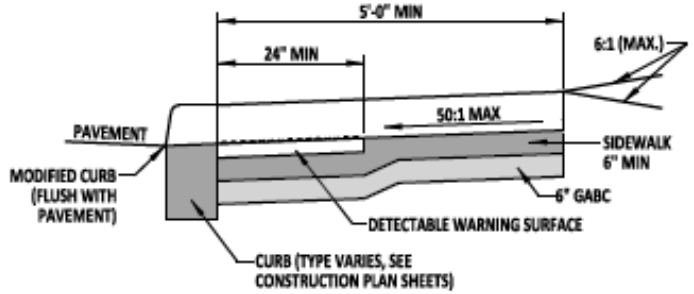
08/20/2020



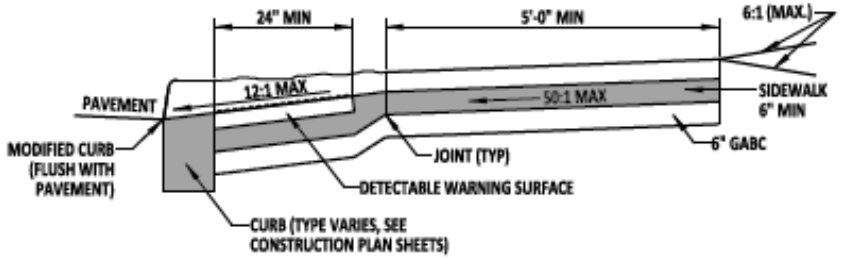
SECTION A-A
BLENDED TRANSITION

9). IF THE RUNNING SLOPE OF THE PEDESTRIAN CONNECTION IS 5% (20:1) OR LESS WITH NO REQUIRED TURNING MOVEMENTS, THE LANDING CAN BE OMITTED AS IT IS A BLENDED TRANSITION. DETECTABLE WARNING SURFACE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

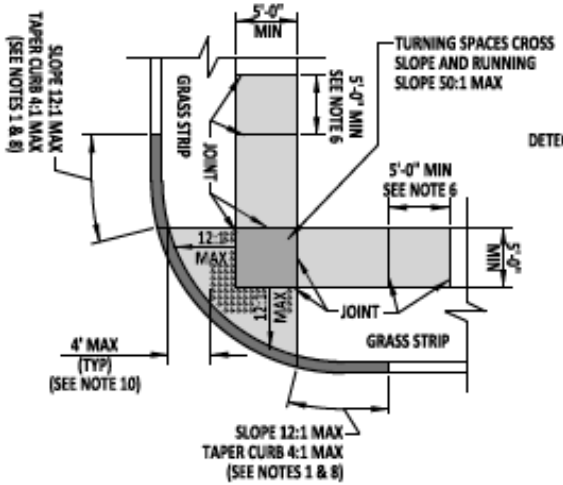
SCALE : NTS



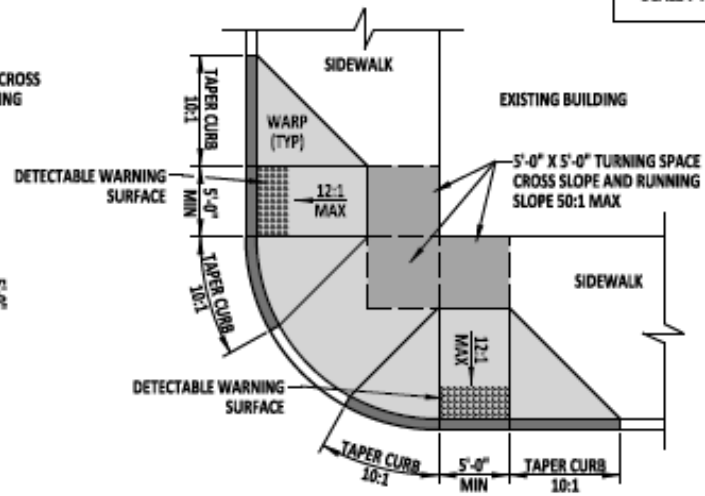
SECTION C-C



SECTION D-D

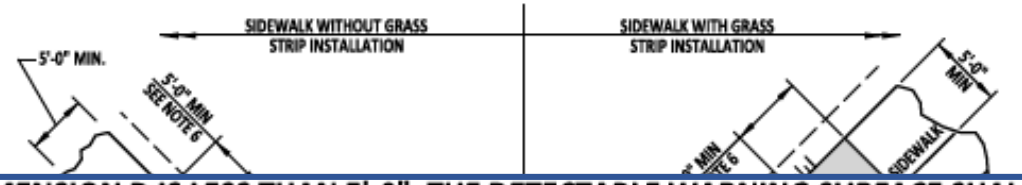


PEDESTRIAN CONNECTION, TYPE 3



PEDESTRIAN CONNECTION, TYPE 4

** - DASHED LINES DO NOT INDICATE JOINTS

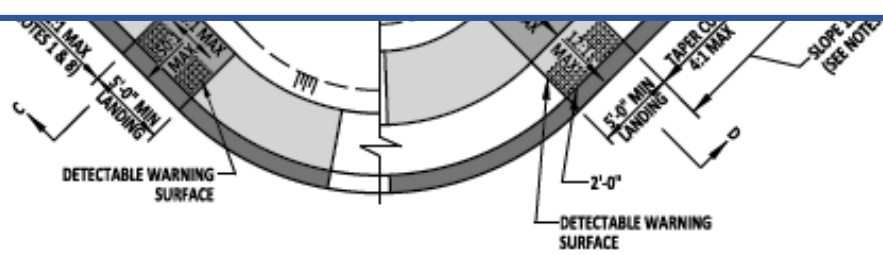


NOTES:

1). FOR ALTERATIONS WHERE TH
WITHIN A LENGTH OF 15'-0" E
TO 15'-0" AT A CONSTANT SL
2). APPLY A 50:1 (2%) MAXIMUM
PEDESTRIAN CONNECTION CR
THE LATEST VERSION OF THE
3). A 6:1 GRADE IS REQUIRED FO
SHEET 1.
4). THE MAXIMUM ALGEBRAIC D
THE PEDESTRIAN CONNECTIO
CONNECTION AND A MAXIMUM OF 5% ON THE PAVEMENT IN THE DIRECTION OF TRAVEL. SEE DETAIL C-1, SHEET 3 OF 4.
5). DELINEATE THE LANDING AREA WITH JOINTS.
6). FOR 3-R REHABILITATION WORK, PLACE TRANSITION SLAB FROM THE NEW PEDESTRIAN CONNECTION TO THE EXISTING SIDEWALK WHERE THE EXISTING SIDEWALK HAS A NON-CONFORMING CROSS SLOPE OR WIDTH.
7). REFER TO THE DE MUTCD FOR DETAILS REGARDING THE LOCATION OF PEDESTRIAN PUSH BUTTONS.
8). LAYOUT JOINTS AND EXPANSION IN ACCORDANCE WITH M-3, SHEET 1 OF 1.
9). WHERE THERE IS NO DEPRESSED CURB AT A CUT-THROUGH OR PEDESTRIAN CONNECTION, INSTALL THE DETECTABLE WARNING SURFACE A MINIMUM OF 8" FROM THE PAVEMENT EDGE. WHERE THERE IS DEPRESSED CURB, INSTALL THE DETECTABLE WARNING SURFACE DIRECTLY BEHIND THE FULL WIDTH OF THE DEPRESSED CURB.
10). FOR INSTALLATIONS ON A RADIUS AND WHEN DIMENSION D IS LESS THAN 5'-0", THE DETECTABLE WARNING SURFACE SHALL BE INSTALLED AT THE INTERSECTION OF THE BACK OF THE CURB AND THE BEGINNING OF THE FULL WIDTH OF THE PEDESTRIAN ACCESS ROUTE. THE DETECTABLE WARNING SURFACE SHALL BE INSTALLED PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL AND BE THE FULL WIDTH OF THE PEDESTRIAN ACCESS ROUTE.

Added

10). FOR INSTALLATIONS ON A RADIUS AND WHEN DIMENSION D IS LESS THAN 5'-0", THE DETECTABLE WARNING SURFACE SHALL BE INSTALLED AT THE INTERSECTION OF THE BACK OF THE CURB AND THE BEGINNING OF THE FULL WIDTH OF THE PEDESTRIAN ACCESS ROUTE. THE DETECTABLE WARNING SURFACE SHALL BE INSTALLED PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL AND BE THE FULL WIDTH OF THE PEDESTRIAN ACCESS ROUTE.



PEDESTRIAN CONNECTION, TYPE 2

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

PEDESTRIAN CONNECTION, TYPE 2, 3 AND 4

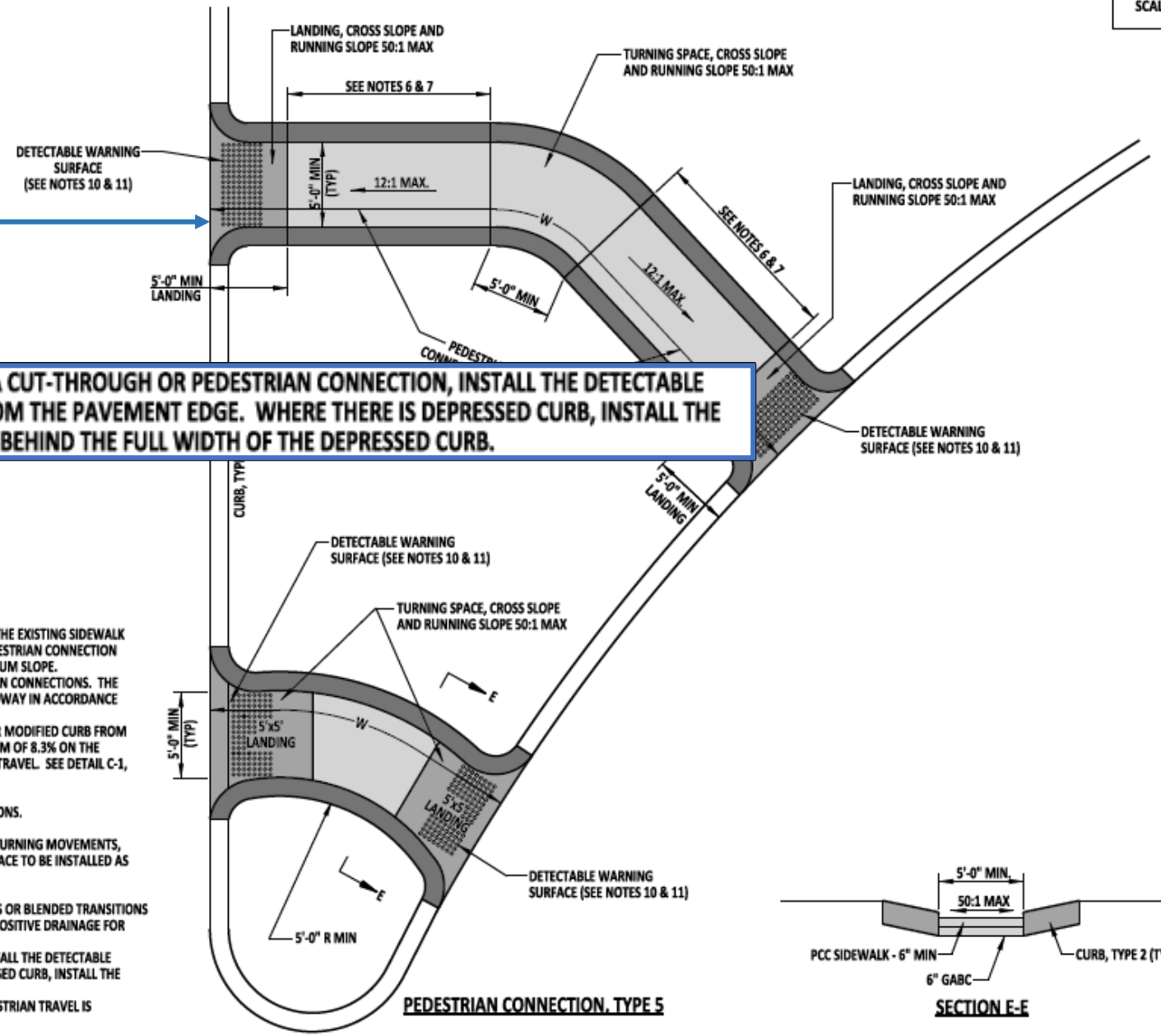
STANDARD NO. C-2 (2020) SHT. 2 OF 3

REVIEWED 09/01/2020
DEPUTY DIRECTOR - DESIGN DATE

APPROVED 09/01/2020
CHIEF ENGINEER DATE

Changed from 3” to 8”

SCALE : NTS



PEDESTRIAN CONNECTION, TYPE 5

SECTION E-E

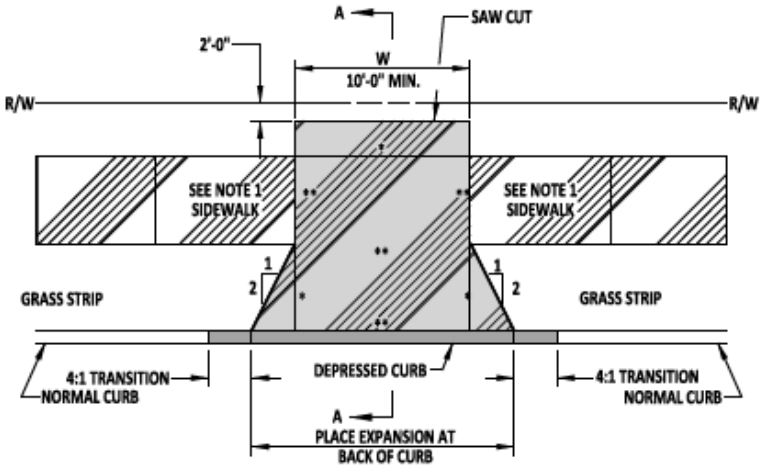
10). WHERE THERE IS NO DEPRESSED CURB AT A CUT-THROUGH OR PEDESTRIAN CONNECTION, INSTALL THE DETECTABLE WARNING SURFACE A MINIMUM OF 8" FROM THE PAVEMENT EDGE. WHERE THERE IS DEPRESSED CURB, INSTALL THE DETECTABLE WARNING SURFACE DIRECTLY BEHIND THE FULL WIDTH OF THE DEPRESSED CURB.

NOTES:

1). FOR ALTERATIONS WHERE THE MAXIMUM ALLOWABLE 12:1 RUNNING SLOPE WILL NOT MEET THE EXISTING SIDEWALK GRADE WITHIN A LENGTH OF 15'-0" BEYOND THE LANDING, THE SLOPED SEGMENT OF THE PEDESTRIAN CONNECTION MAY BE LIMITED TO 15'-0" AT A CONSTANT SLOPE, AND ALLOWED TO EXCEED THE 12:1 MAXIMUM SLOPE.
2). APPLY A 50:1 (2%) MAXIMUM CROSS SLOPE TO SIDEWALK, SHARED USE PATHS AND PEDESTRIAN CONNECTIONS. THE PEDESTRIAN CONNECTION CROSS SLOPE IS NOT TO EXCEED THE SLOPE OF THE ADJACENT ROADWAY IN ACCORDANCE WITH THE LATEST VERSION OF THE PEDESTRIAN ACCESSIBILITY STANDARDS.
3). THE MAXIMUM ALGEBRAIC DIFFERENCE IN GRADE BETWEEN THE PEDESTRIAN CONNECTION OR MODIFIED CURB FROM THE PEDESTRIAN CONNECTION TO THE PAVEMENT SHALL NOT EXCEED 13.3%, WITH A MAXIMUM OF 8.3% ON THE PEDESTRIAN CONNECTION AND A MAXIMUM OF 5% ON THE PAVEMENT IN THE DIRECTION OF TRAVEL. SEE DETAIL C-1, SHEET 3 OF 4.
4). DELINEATE THE LANDING AREA WITH JOINTS.
5). REFER TO THE DE MUTCD FOR DETAILS REGARDING THE LOCATION OF PEDESTRIAN PUSH BUTTONS.
6). LAYOUT JOINTS AND EXPANSION IN ACCORDANCE WITH M-3, SHEET 1 OF 1.
7). IF THE RUNNING SLOPE OF THE PEDESTRIAN CONNECTION IS 5% OR LESS WITH NO REQUIRED TURNING MOVEMENTS, THE LANDING CAN BE OMITTED AS IT IS A BLENDED TRANSITION. DETECTABLE WARNING SURFACE TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
8). IN ISLANDS AND MEDIANS, FOLLOW PAR REQUIREMENTS IN ACCORDANCE WITH THE PAS.
9). A CUT-THROUGH LEVEL WITH THE STREET IS THE PREFERRED TREATMENT FOR ISLANDS. RAMPS OR BLENDED TRANSITIONS CAN BE USED WHERE THE ISLAND IS OF SUFFICIENT SIZE TO ACCOMMODATE THEM. PROVIDE POSITIVE DRAINAGE FOR EITHER TREATMENT.
10). WHERE THERE IS NO DEPRESSED CURB AT A CUT-THROUGH OR PEDESTRIAN CONNECTION, INSTALL THE DETECTABLE WARNING SURFACE A MINIMUM OF 8" FROM THE PAVEMENT EDGE. WHERE THERE IS DEPRESSED CURB, INSTALL THE DETECTABLE WARNING SURFACE DIRECTLY BEHIND THE FULL WIDTH OF THE DEPRESSED CURB.
11). INSTALL A DETECTABLE WARNING SURFACE WHEN THE LENGTH 'W' IN THE DIRECTION OF PEDESTRIAN TRAVEL IS 6'-0" OR GREATER.

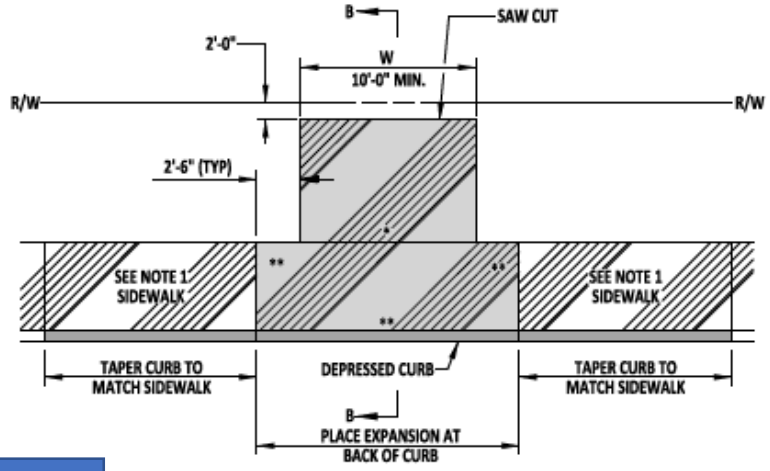
DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	PEDESTRIAN CONNECTION, TYPE 5	REVIEWED DEPUTY DIRECTOR - DBOOS	09/01/2020 DATE
		STANDARD NO. C-2 (2020) SHT. 3 OF 3	APPROVED CHIEF ENGINEER	09/01/2020 DATE

SCALE : NTS



ENTRANCE WITH SIDEWALK AND GRASS STRIP

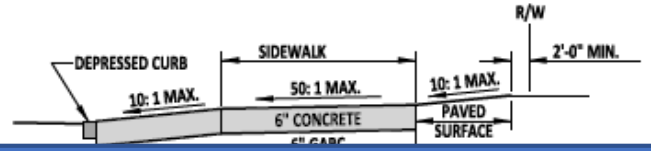
* - JOINT
** - EXPANSION MATERIAL



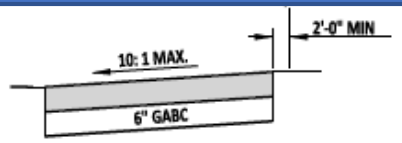
ENTRANCE WITH SIDEWALK AND NO GRASS STRIP

* - JOINT
** - EXPANSION MATERIAL

PCC Paid as Sidewalk



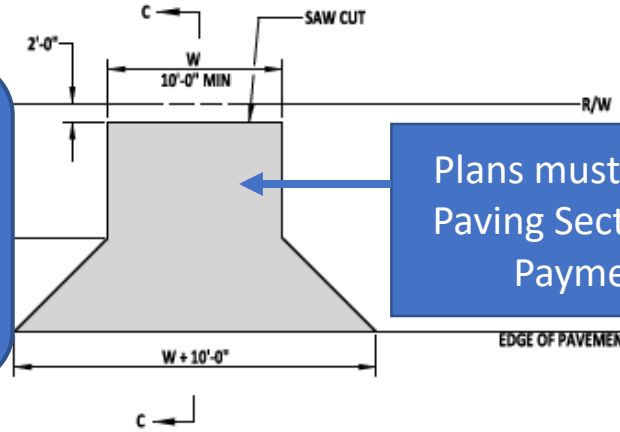
Note Added: "SIDEWALK RUNNING SLOPE OF 20:1 (5%) IS PREFERRED WITH ALLOWANCE TO FOLLOW THE ADJACENT ROAD GRADES. SIDEWALK GRADE EXCEEDING THE ADJACENT ROAD GRADES OR 5%, MUST THEN MAINTAIN A MAXIMUM ALLOWABLE 12:1 (8.3%) RUNNING SLOPE."



SECTION C-C

NOTE:

1). SIDEWALK RUNNING SLOPE OF 20:1 (5%) IS PREFERRED WITH ALLOWANCE TO FOLLOW THE ADJACENT ROAD GRADES. SIDEWALK GRADE EXCEEDING THE ADJACENT ROAD GRADES OR 5%, MUST THEN MAINTAIN A MAXIMUM ALLOWABLE 12:1 (8.3%) RUNNING SLOPE.



ENTRANCE WITHOUT SIDEWALK

Plans must include Paving Section and Payment.

- PCC SIDEWALK
- PCC 6"

DelDOT

ENGINEERING SUPPORT — DATE 09/01/2020
RECOMMENDED

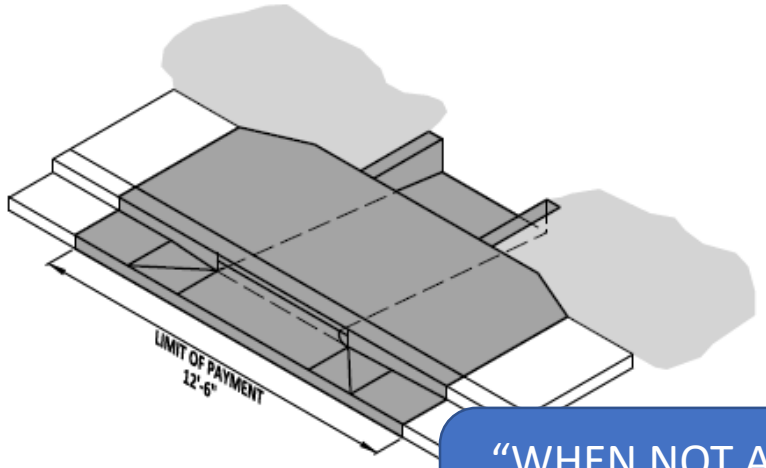
ENTRANCES

STANDARD NO. C-3 (2020) | SHT. 1 OF 1

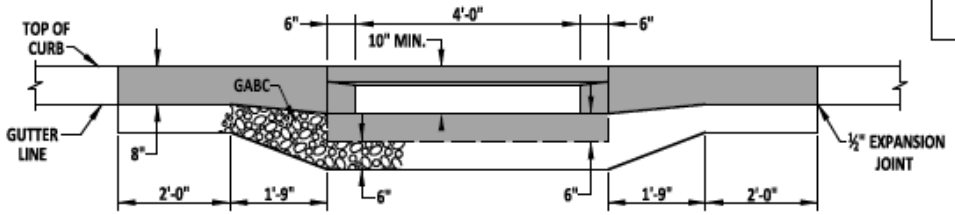
REVIEWED — DEPUTY DIRECTOR - DESIGN — DATE 09/01/2020

APPROVED — CHIEF ENGINEER — DATE 09/01/2020

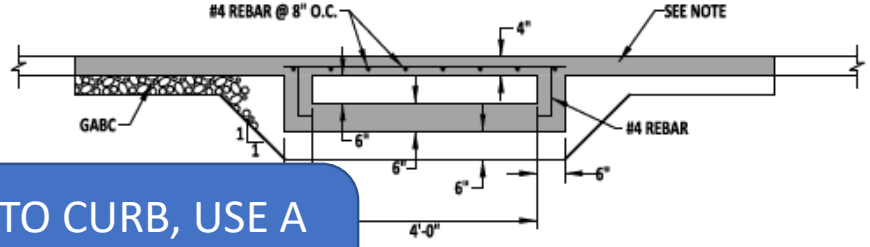
SCALE : NTS



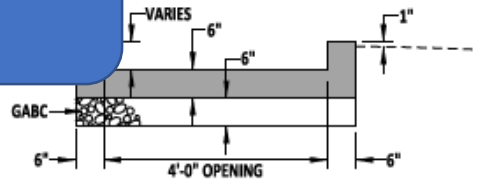
ISOMETRIC



SECTION A-A

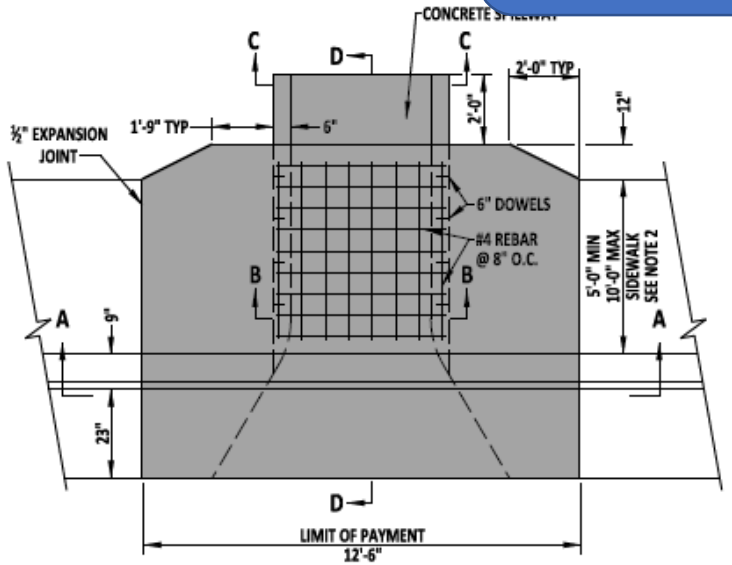


SECTION B-B

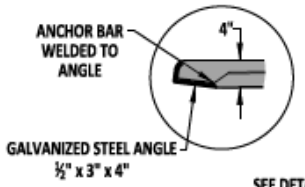


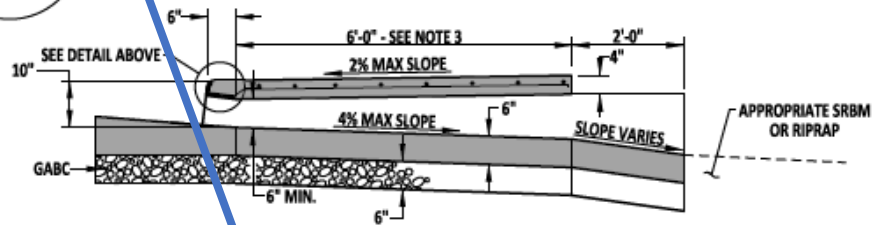
SECTION C-C

"WHEN NOT ADJACENT TO CURB, USE A SLAB WIDTH 12" WIDER THAN THE SIDEWALK ON BOTH SIDES."



PLAN





SECTION D-D

CURB / SIDEWALK OPENING

NOTES:

1). WHEN A GRASS STRIP IS PRESENT BETWEEN THE BACK OF CURB AND SIDEWALK, THE SIDEWALK PORTION OF THIS STRUCTURE MAY BE PRECAST. HOWEVER, WHEN THE SIDEWALK IS DIRECTLY BEHIND THE CURB, USE CAST-IN-PLACE CONSTRUCTION.
2). SIDEWALK WIDTHS LESS THAN SHOWN ON THIS SHEET REQUIRE DEPARTMENT APPROVAL. SEE PEDESTRIAN ACCESSIBILITY STANDARDS FOR MORE GUIDANCE.
3). OVER THE CONCRETE SPILLWAY, USE A SLAB WIDTH 12" WIDER THAN THE SIDEWALK WIDTH AND USE A 2'-0" CONCRETE APRON APPROACH. WHEN NOT ADJACENT TO CURB, USE A SLAB WIDTH 12" WIDER THAN THE SIDEWALK ON BOTH SIDES.

DelDOT

09/01/2020
ENGINEERING SUPPORT — DATE
RECOMMENDED

CURB / SIDEWALK OPENING

STANDARD NO. C-5 (2020) | SHT. 1 OF 1

REVIEWED
DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED
CHIEF ENGINEER — 09/01/2020 DATE

Section III: Drainage

Revised Standard Details

D-R Drainage Inlet Reference Sheet

D-4 Inlet Box

D-5 Drainage Inlet Assembly, Drainage Inlet Cover Slab, Doghouse Inlet Box

NEW

D-6 Box and Round Manhole Assembly, Manhole GR, TU, Fr, & Cover, Round Manhole Cover Slab

D-8 Pipe Bedding and Pipe Flared End Support

D-9 Perforated Pipe Underdrain

D-10 Pipe Plugging

Removed From Standard Details

D-7 Junction Box Detail – Without access presented an issue with pipe maintenance.

D-11 Safety Metal End Section – Removed to conform with removal of metal pipe from Section 601

SCALE : NTS

Removed 12”Pipe

INLET BOX SIZE		COVER SLAB SIZE (L X W)	DRAINAGE INLET TOP UNIT	INLET TOP UNIT REBAR LENGTH	INLET TOP UNIT LIMIT OF PAYMENT	INLET TOP UNIT BAR BENDING DIAGRAM	FRAME & GRATE (SEE DETAIL D-5, SHEET 2) SEE NOTE 6	MAXIMUM PIPE SIZE (SEE NOTE 1)		MAXIMUM HEIGHT (INVERT TO TOP OF GRATE)
L	W							L	W	
17⅝"	11⅜"	NO COVER SLAB	TYPE 5 (FRAME & GRATE COMBO)	N/A	N/A	N/A	TYPE 5 (FRAME & GRATE COMBO)	N/A	N/A	4'-0"
24"	24"	NO COVER SLAB	TYPE 6 (FRAME & GRATE COMBO)	N/A	N/A	N/A	TYPE 6 (FRAME & GRATE COMBO)	15"	15"	4'-0"
34"	18"	NO COVER SLAB (D-5, SHEET 7)	TYPES A, C, D, & E (D-5, SHEET 7)	79"	82"	S504 (D-5, SHEET 7)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	24"	N/A	4'-0"
34"	24"	NO COVER SLAB (D-5, SHEET 6)	TYPES A, B, C, D, E, & S (SEE NOTE 4)	79"	82"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	24"	15"	11'-4"
48"	30"	60" x 42" (D-5, SHEET 4)	TYPES A, B, C, D, E & S (SEE NOTE 5)	93"	96"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	36"	21"	11'-4"
48"	48"	60" x 60" (D-5, SHEET 4)	TYPES A, B, C, D, E & S (SEE NOTE 5)	93"	96"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	36"	36"	11'-4"
66"	30"	78" x 42" (D-4, SHEET 4)	TYPES A, B, C, D, E & S (SEE NOTE 5)	111"	114"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	48"	21"	11'-4"
66"	48"	78" x 60" (D-5, SHEET 4)	TYPES A, B, C, D, E & S (SEE NOTE 5)	111"	114"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	48"	36"	11'-4"
66"	66"	78" x 78" (D-5, SHEET 4)	TYPES A, B, C, D, E & S (SEE NOTE 5)	111"	114"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	48"	48"	11'-4"
72"	24"	84" x 36" (D-5, SHEET 5)	TYPES A, B, C, D, E & S (SEE NOTE 5)	117"	120"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	54"	15"	11'-4"
72"	48"	84" x 60" (D-5, SHEET 5)	TYPES A, B, C, D, E & S (SEE NOTE 5)	117"	120"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	54"	36"	11'-4"
72"	72"	84" x 84" (D-5, SHEET 5)	TYPES A, B, C, D, E & S (SEE NOTE 5)	117"	120"	S501 (SEE NOTE 5)	TYPES 1 THRU 4 AND 7 GRATE STANDARD DRAINAGE INLET FRAME	54"	54"	11'-4"

NOTES :

1). MAXIMUM PIPE SIZES ARE CALCULATED USING REINFORCED CONCRETE PIPE PERPENDICULAR TO THE BOX WALL. FOR OTHER PIPE SIZES, TYPES AND SKEW ANGLES OTHER THAN PERPENDICULAR, SEE CHART ON DELDOT DESIGN RESOURCE CENTER. THESE PIPE SIZES ARE NOT APPLICABLE FOR DOGHOUSE BOX INLET SHOWN ON DETAIL D-5, SHEET 9.
2). STEPS ARE REQUIRED ON ALL DRAINAGE INLETS WHOSE DEPTH IS 4'-0" OR GREATER.
3). SEE D-4 OR APPROPRIATE DETAIL SHEET FOR ADDITIONAL NOTES.
4). FOR A 34" X 24" DRAINAGE INLET, SEE D-5, SHEET 6 FOR INLET TOP UNIT TYPES A, B, C, D, & E. FOR INLET TOP UNIT TYPE S, SEE D-5, SHEET 8.
5). FOR MORE INFORMATION ON DRAINAGE INLET TOP UNIT TYPES A, B, C, D, & E SEE D-5, SHEET 3 AND FOR DRAINAGE INLET TOP UNIT, TYPE S, SEE D-5, SHEET 8.
6). ONLY USE THE TYPE 7 DRAINAGE INLET GRATE WHEN SPECIFIED ON THE PLANS OR WITH APPROVAL OF THE ENGINEER.

Removed Note 7

DelDOT

ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

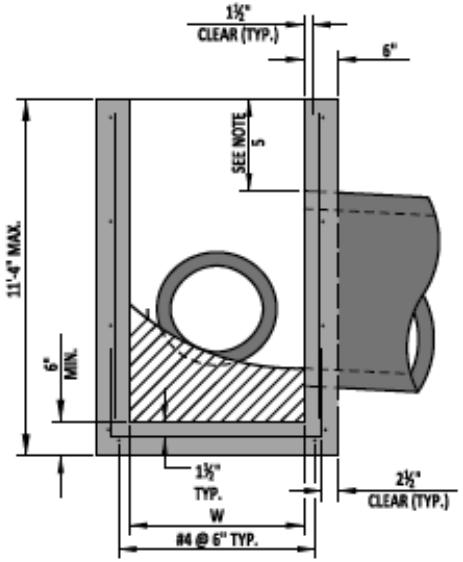
DRAINAGE INLET REFERENCE SHEET

STANDARD NO. D-R (2020) SHT. 1 OF 1

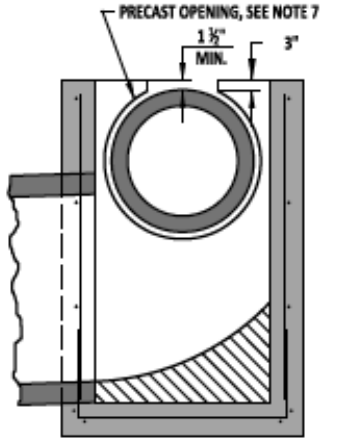
REVIEWED
DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED
CHIEF ENGINEER — 09/01/2020 DATE

SCALE : NTS



SECTION A-A



OPTIONAL PIPE OPENING DETAIL

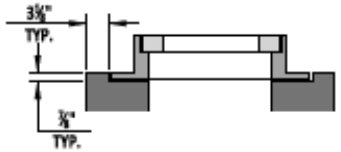
SEE NOTE 5

INLET BOX SCHEDULE			
L	W	FABRICATION TOLERANCE	
17⅝"	11⅝"	+1"	*
24"	24"	+1"	*
34"	18"	-1"	**
34"	24"	-1"	
48"	30"	+6"	
48"	48"	+6"	
66"	30"	+6"	
66"	48"	+6"	
66"	66"	+6"	
72"	24"	-1"	
72"	48"	-1"	
72"	72"	-1"	

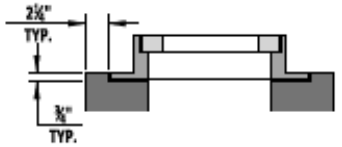
* - THESE SIZES ARE TO BE USED FOR LAWN INLETS AND ARE NOT INTENDED TO BE USED IN THE TRAVELWAY. THE MAX DEPTH FOR THESE INLETS IS 4'. SEE NOTE 8 FOR REINFORCEMENT.
** - MAX DEPTH IS 4' FOR THIS DRAINAGE INLET.

WALL REINFORCEMENT SCHEDULE		
INTERIOR WALL DIMENSION	AREA OF HORIZONTAL REINFORCEMENT PER FOOT	AREA OF VERTICAL REINFORCEMENT PER FOOT
	IN^2	IN^2
LESS THAN 4'	0.132	0.132
≥ 4'	0.163	0.132
≥ 4.5'	0.198	0.132
≥ 5'	0.239	0.132
≥ 5.5'	0.284	0.132

Changed to Definitive Measurements



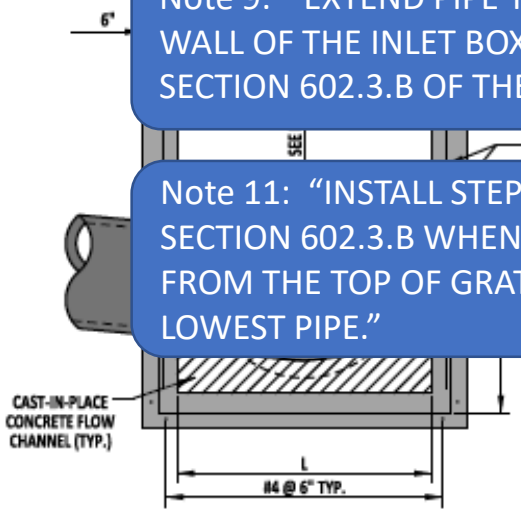
24" X 24" LAWN INLET BOX DETAIL



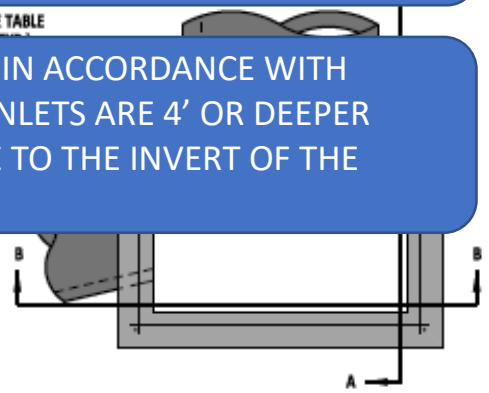
17 5/8" X 11 5/8" LAWN INLET BOX DETAIL

Note 9: "EXTEND PIPE TO BE FLUSH WITH THE INSIDE WALL OF THE INLET BOX IN ACCORDANCE WITH SECTION 602.3.B OF THE STANDARD SPECIFICATIONS."

Note 11: "INSTALL STEPS IN ACCORDANCE WITH SECTION 602.3.B WHEN INLETS ARE 4' OR DEEPER FROM THE TOP OF GRATE TO THE INVERT OF THE LOWEST PIPE."



SECTION B-B



TOP VIEW

NOTES:

1). PROVIDE PRECAST OR CAST-IN-PLACE INLET BOXES IN ACCORDANCE WITH SECTION 602 .
2). DO NOT INSTALL PIPES THROUGH ANY CORNER OF THE INLET BOX.
3). RISER SECTIONS MAY BE USED FOR DEEP INLET BOXES.
4). PIPES MAY BE INSTALLED NEAR OR THROUGH JOINTS FOR RISER SECTIONS.
5). WHEN THE COVER ABOVE THE PIPE IS LESS THAN 4" TO THE COVER SLAB OR TOP UNIT OPENING, THE PORTION OF BOX WALL ABOVE THE PIPE MAY BE REMOVED AS SHOWN IN THE OPTIONAL PIPE OPENING DETAIL. FORM AND FILL THE AREA ABOVE THE PIPE WITH HIGH-STRENGTH, NON-SHRINK GROUT MIXED WITH COARSE AGGREGATE IN A 1:1 RATIO BY WEIGHT.
6). ENSURE POSITIVE FLOW WHEN CONSTRUCTING THE FLOW CHANNEL.
7). WHEN INLET BOX IS PRECAST, PROVIDE A PIPE OPENING DIAMETER BETWEEN 3" AND 4" LARGER THAN OUTSIDE DIAMETER OF PIPE.
8). USE 4" X 4", W4 X W4 WELDED WIRE AS REINFORCEMENT FOR LAWN INLET BOXES.
9). EXTEND PIPE TO BE FLUSH WITH THE INSIDE WALL OF THE INLET BOX IN ACCORDANCE WITH SECTION 602.3.B OF THE STANDARD SPECIFICATIONS.
10). PIPE SHALL NOT ENCROACH ON ADJACENT WALL.
11). INSTALL STEPS IN ACCORDANCE WITH SECTION 602.3.B WHEN INLETS ARE 4' OR DEEPER FROM THE TOP OF GRATE TO THE INVERT OF THE LOWEST PIPE.

Added

Added

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

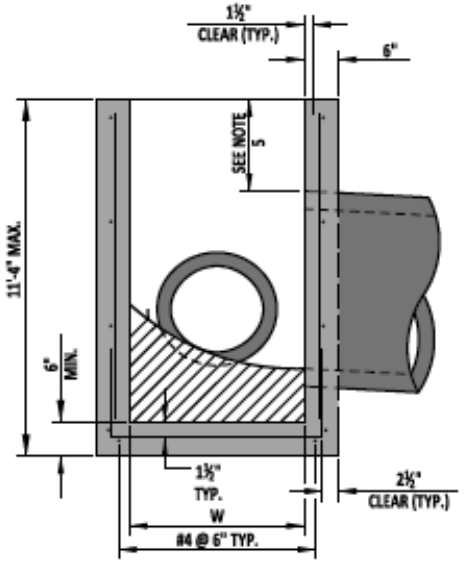
INLET BOX

STANDARD NO. D-4 (2020) SHT. 1 OF 1

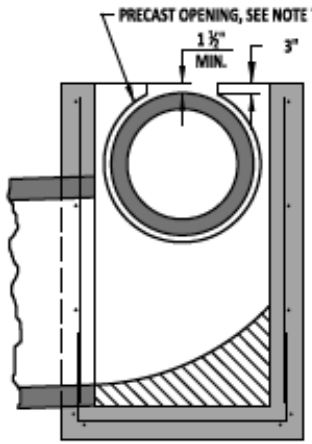
REVIEWED 09/01/2020
DEPUTY DIRECTOR - DESIGN DATE

APPROVED 09/01/2020
CHIEF ENGINEER DATE

SCALE : NTS



SECTION A-A



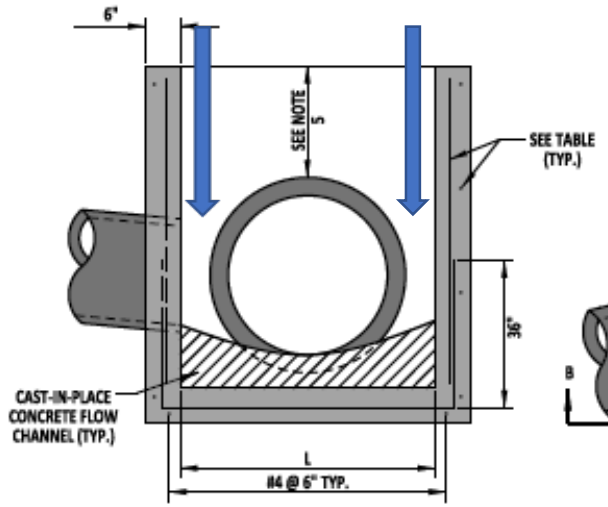
OPTIONAL PIPE OPENING DETAIL

INLET BOX SCHEDULE			
L	W	FABRICATION TOLERANCE	
17⅝"	11⅝"	+1"	*
24"	24"	+1"	*
34"	18"	-1"	**
34"	24"	-1"	
48"	30"	+6"	
48"	48"	+6"	
66"	30"	+6"	
66"	48"	+6"	
66"	66"	+6"	
72"	24"	-1"	
72"	48"	-1"	
72"	72"	-1"	

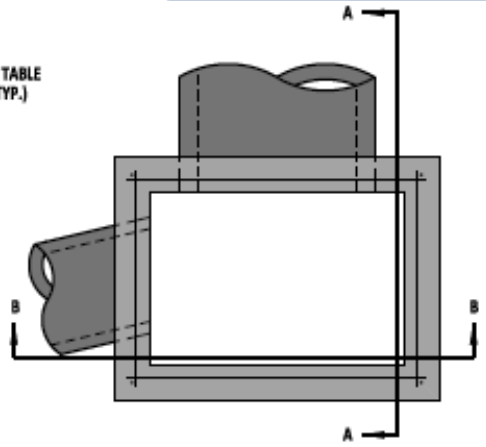
* - THESE SIZES ARE TO BE USED FOR LAWN INLETS AND ARE NOT INTENDED TO BE USED IN THE TRAVELWAY. THE MAX DEPTH FOR THESE INLETS IS 4'. SEE NOTE 8 FOR REINFORCEMENT.
** - MAX DEPTH IS 4' FOR THIS DRAINAGE INLET.

WALL REINFORCEMENT SCHEDULE		
INTERIOR WALL DIMENSION	AREA OF HORIZONTAL REINFORCEMENT PER FOOT	AREA OF VERTICAL REINFORCEMENT PER FOOT
	IN^2	IN^2
LESS THAN 4'	0.132	0.132
≥ 4'	0.163	0.132
≥ 4.5'	0.198	0.132
≥ 5'	0.239	0.132
≥ 5.5'	0.284	0.132

"10) PIPE SHALL NOT ENCROACH ON ADJACENT WALL."
(No Longer 1 ½" Minimum)

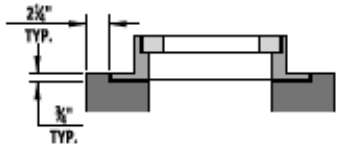


SECTION B-B



TOP VIEW

INLET BOX DETAIL



17 5/8" X 11 5/8"
LAWN INLET BOX DETAIL

Added

NOTES:

1). PROVIDE PRECAST OR CAST-IN-PLACE INLET BOXES IN ACCORDANCE WITH SECTION 602 .
2). DO NOT INSTALL PIPES THROUGH ANY CORNER OF THE INLET BOX.
3). RISER SECTIONS MAY BE USED FOR DEEP INLET BOXES.
4). PIPES MAY BE INSTALLED NEAR OR THROUGH JOINTS FOR RISER SECTIONS.
5). WHEN THE COVER ABOVE THE PIPE IS LESS THAN 4" TO THE COVER SLAB OR TOP UNIT OPENING, THE PORTION OF BOX WALL ABOVE THE PIPE MAY BE REMOVED AS SHOWN IN THE OPTIONAL PIPE OPENING DETAIL. FORM AND FILL THE AREA ABOVE THE PIPE WITH HIGH-STRENGTH, NON-SHRINK GROUT MIXED WITH COARSE AGGREGATE IN A 1:1 RATIO BY WEIGHT.
6). ENSURE POSITIVE FLOW WHEN CONSTRUCTING THE FLOW CHANNEL.
7). WHEN INLET BOX IS PRECAST, PROVIDE A PIPE OPENING DIAMETER BETWEEN 3" AND 4" LARGER THAN OUTSIDE DIAMETER OF PIPE.
8). USE 4" X 4", W4 X W4 WELDED WIRE AS REINFORCEMENT FOR LAWN INLET BOXES.
9). EXTEND PIPE TO BE FLUSH WITH THE INSIDE WALL OF THE INLET BOX IN ACCORDANCE WITH SECTION 602.3.B OF THE STANDARD SPECIFICATIONS.
10). PIPE SHALL NOT ENCROACH ON ADJACENT WALL.
11). INSTALL STEPS IN ACCORDANCE WITH SECTION 602.3.B WHEN INLETS ARE 4' OR DEEPER FROM THE TOP OF GRATE TO THE INVERT OF THE LOWEST PIPE.

DelDOT

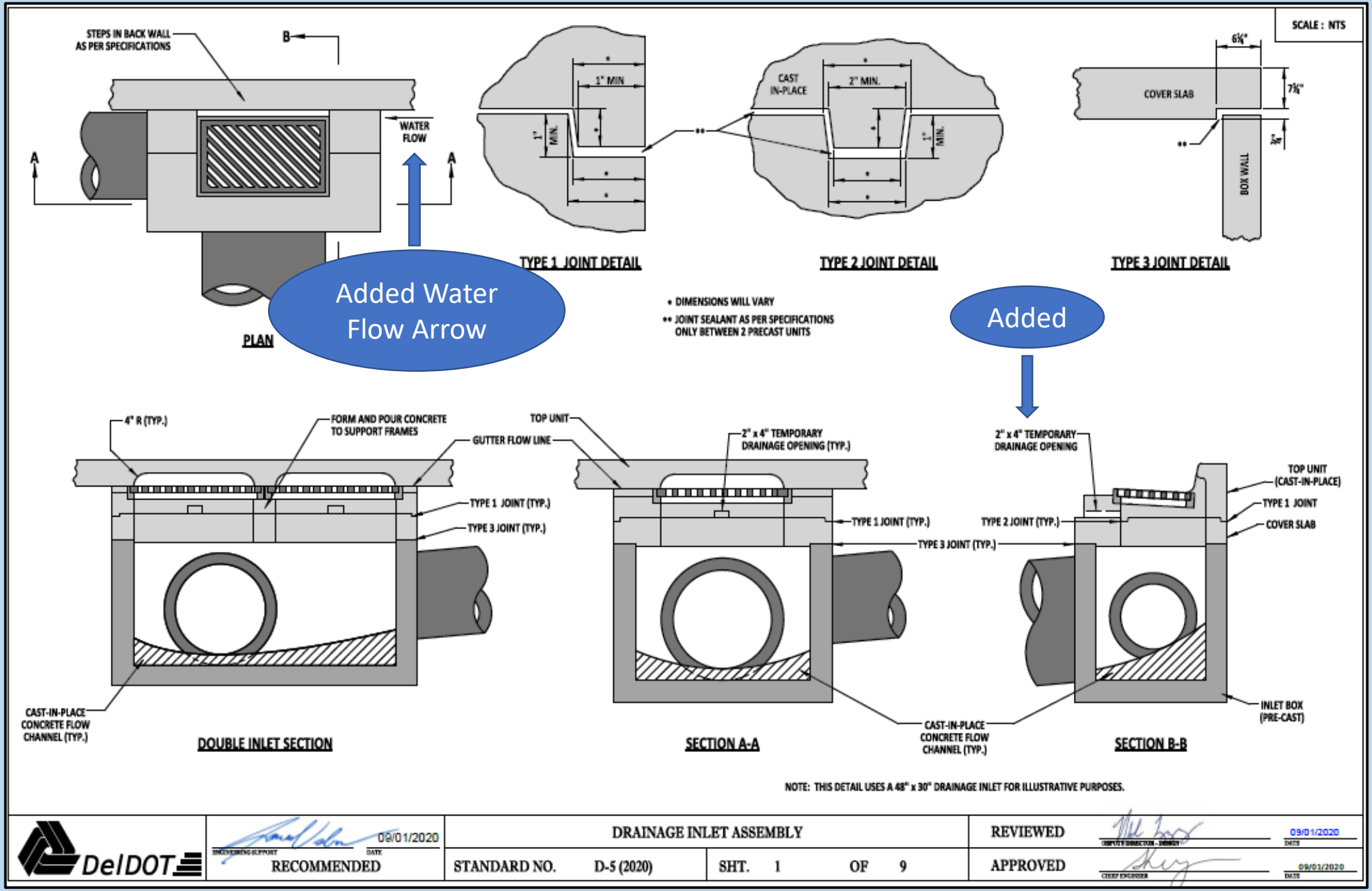
ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

INLET BOX

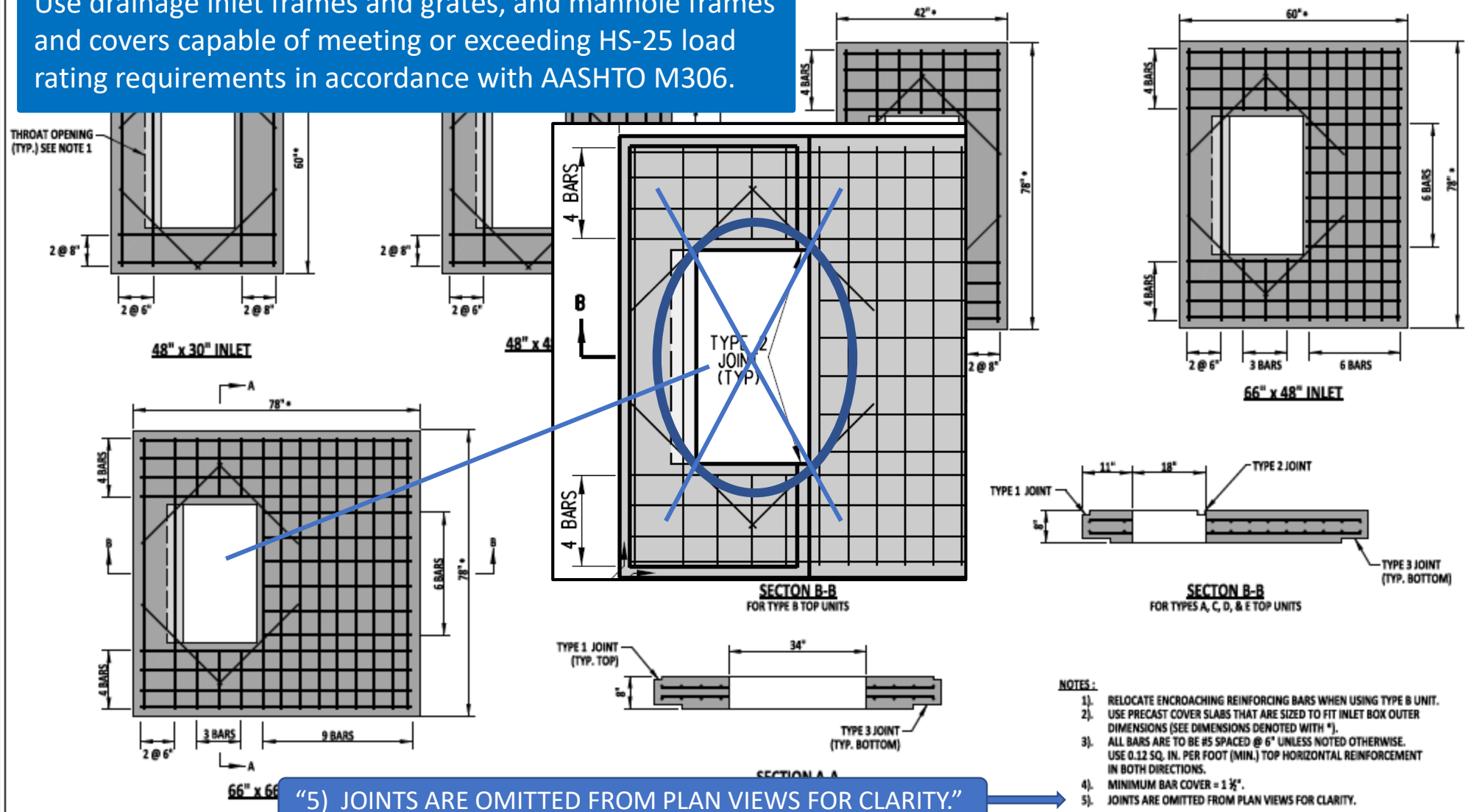
STANDARD NO. D-4 (2020) SHT. 1 OF 1

REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE


SCALE : NTS
STEPS IN BACK WALL AS PER SPECIFICATIONS
B
A
A
WATER FLOW
PLAN
Added Water Flow Arrow
1" MIN
1" MIN.
TYPE 1 JOINT DETAIL
CAST IN-PLACE
2" MIN.
1" MIN.
TYPE 2 JOINT DETAIL
6¼"
COVER SLAB
7¾"
¾"
BOX WALL
TYPE 3 JOINT DETAIL
* DIMENSIONS WILL VARY
** JOINT SEALANT AS PER SPECIFICATIONS ONLY BETWEEN 2 PRECAST UNITS
Added
4" R (TYP.)
FORM AND POUR CONCRETE TO SUPPORT FRAMES
GUTTER FLOW LINE
TYPE 1 JOINT (TYP.)
TYPE 3 JOINT (TYP.)
CAST-IN-PLACE CONCRETE FLOW CHANNEL (TYP.)
DOUBLE INLET SECTION
TOP UNIT
2" x 4" TEMPORARY DRAINAGE OPENING (TYP.)
TYPE 1 JOINT (TYP.)
TYPE 3 JOINT (TYP.)
CAST-IN-PLACE CONCRETE FLOW CHANNEL (TYP.)
SECTION A-A
2" x 4" TEMPORARY DRAINAGE OPENING
TOP UNIT (CAST-IN-PLACE)
TYPE 1 JOINT
COVER SLAB
TYPE 2 JOINT (TYP.)
INLET BOX (PRE-CAST)
SECTION B-B
NOTE: THIS DETAIL USES A 48" x 30" DRAINAGE INLET FOR ILLUSTRATIVE PURPOSES.
DelDOT
09/01/2020
ENGINEERING SUPPORT
DATE
RECOMMENDED
DRAINAGE INLET ASSEMBLY
STANDARD NO. D-5 (2020)
SHT. 1 OF 9
REVIEWED
09/01/2020
DEPUTY DIRECTOR - DESIGN
DATE
APPROVED
09/01/2020
CHIEF ENGINEER
DATE

Standard Specifications, 602.3.A.4 Drainage Structures.
Use drainage inlet frames and grates, and manhole frames and covers capable of meeting or exceeding HS-25 load rating requirements in accordance with AASHTO M306.



"5) JOINTS ARE OMITTED FROM PLAN VIEWS FOR CLARITY."

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

DRAINAGE INLET COVER SLAB

STANDARD NO. D-5 (2020) SHT. 4 OF 9

REVIEWED 09/01/2020
DEPUTY DIRECTOR - DESIGN DATE

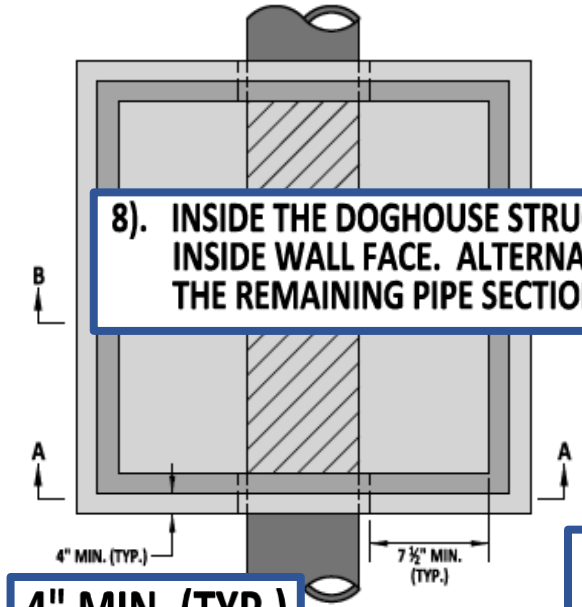
APPROVED 09/01/2020
CHIEF ENGINEER DATE

SCALE : NTS

NOTES:

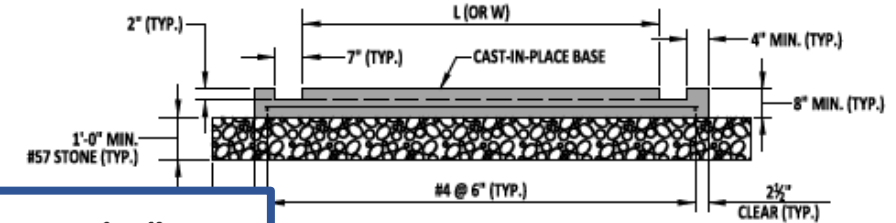
1). PRECAST THE DOGHOUSE INLET BOX AND CAST-IN-PLACE THE BASE UNLESS OTHERWISE SPECIFIED IN THE CONTRACT. SEE DETAIL D-4, SHEET 1 OF 1 FOR BOX DETAILS AND NOTES.
2). PROVIDE A MINIMUM COVER OF 1½" FOR ALL REINFORCEMENT, UNLESS NOTED OTHERWISE.
3). SUPPORT BOTH ENDS OF THE PIPE DURING THE CONSTRUCTION OF THE BASE.
4). SEE TABLE ON DETAIL D-4, SHEET 1 OF 1 FOR WALL REINFORCEMENT DETAILS.
5). FILL DOGHOUSE OPENING WITH HIGH STRENGTH, NON-SHRINK GROUT MIXED WITH COARSE AGGREGATE IN A 1:1 RATIO BY WEIGHT.
6). MAINTAIN A MINIMUM OF 12" FROM THE TOP OF THE DOGHOUSE OPENING TO THE TOP OF THE BOX.

8). INSIDE THE DOGHOUSE STRUCTURE, REMOVE THE EXISTING PIPE BY SAWCUTTING FLUSH WITH THE INSIDE WALL FACE. ALTERNATELY, REMOVE THE TOP HALF OF THE PIPE AND USE THE REMAINING PIPE SECTION AS THE BOTTOM OF THE FLOW CHANNEL, AS SHOWN IN SECTION B-B.



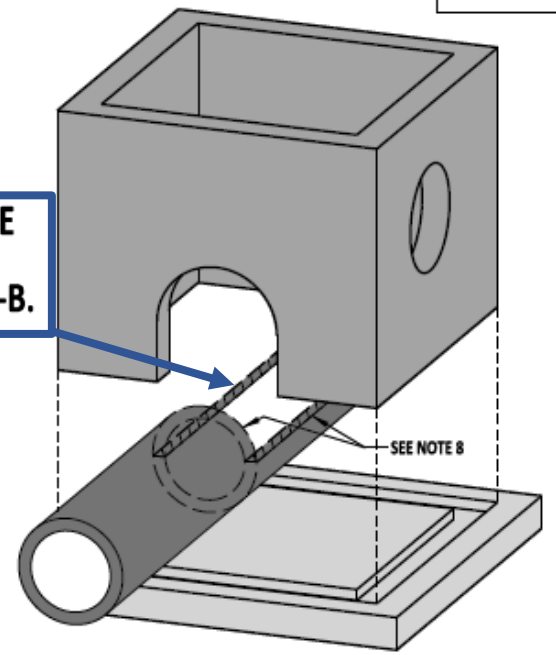
4" MIN. (TYP.)

PLAN VIEW

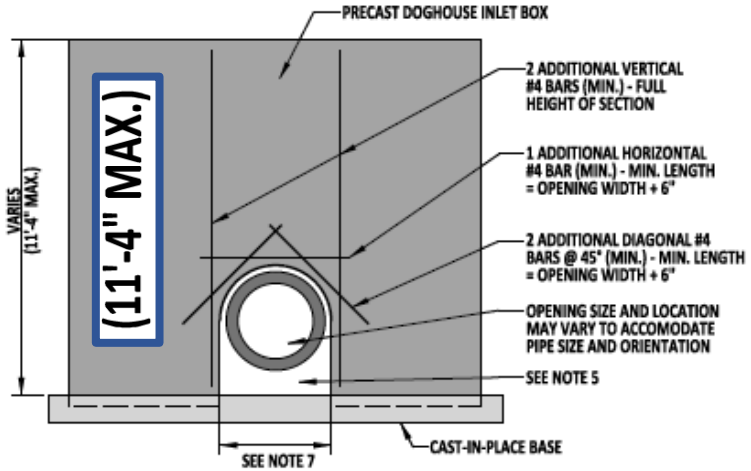


1'-0" MIN. #57 STONE (TYP.)

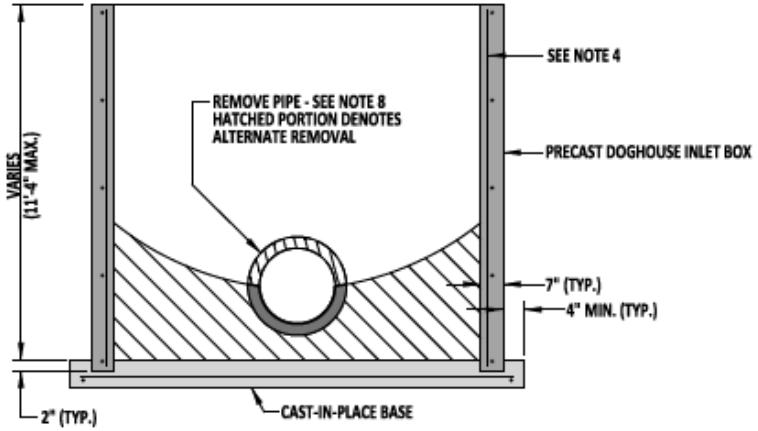
CAST-IN-PLACE BASE SECTION VIEW



ISOMETRIC VIEW



SECTION A-A



SECTION B-B

DelDOT

ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

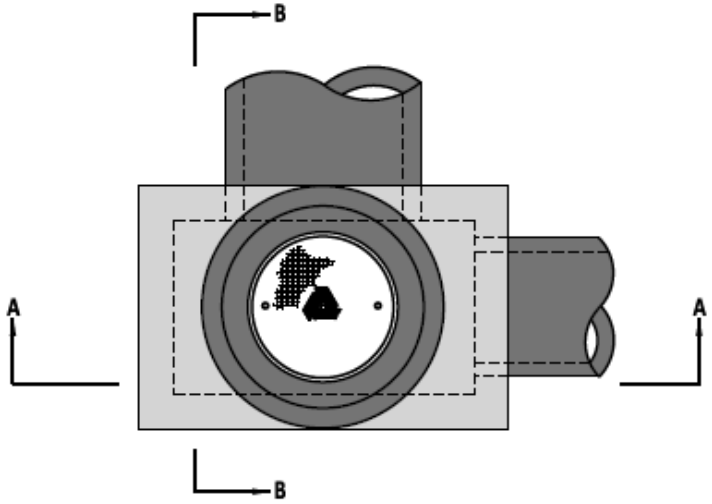
DOGHOUSE INLET BOX

STANDARD NO. D-5 (2020) | SHT. 9 OF 9

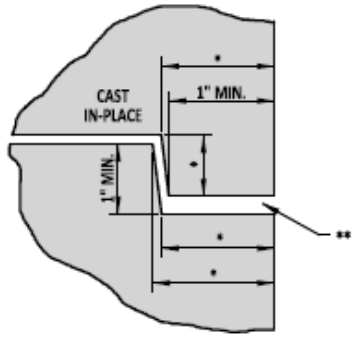
REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

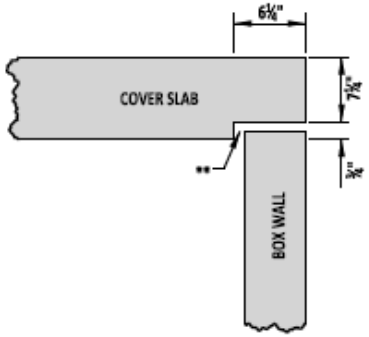
SCALE : NTS



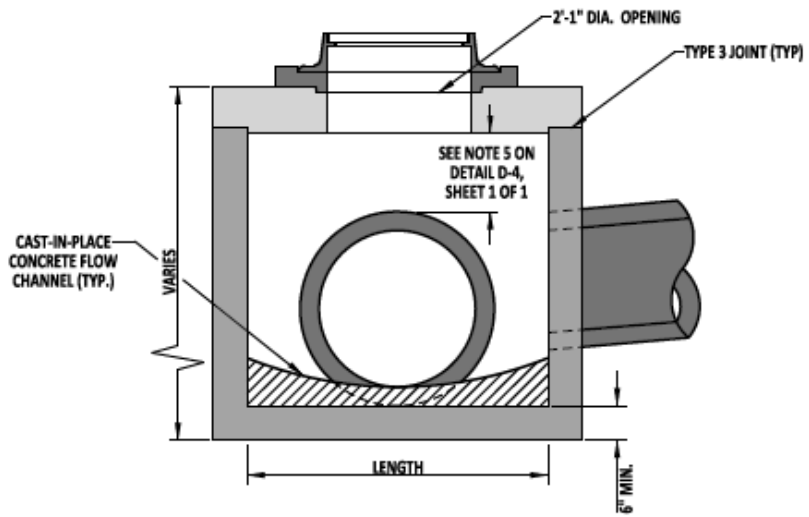
PLAN



TYPE 1 JOINT DETAIL

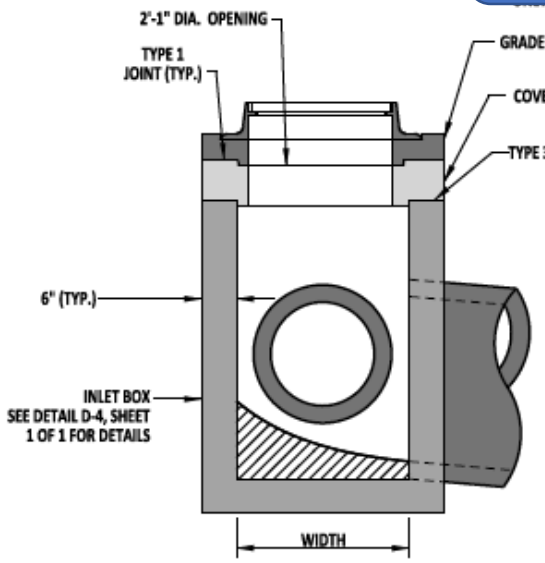


Changed TOP UNIT to GRADE RING



SECTION A-A

* - SEE OPTIONAL PIPE OPENING DETAIL ON STANDARD D-4, SHEET 1 OF 1.



SECTION B-B

NOTES:

1). REFER TO D-6, SHEET 3 OF 5, FOR GRADE RING DETAILS.
2). REFER TO D-6, SHEET 4 OF 5, FOR BOX MANHOLE COVER SLAB DETAILS.
3). INSTALL STEPS AS PER SECTION 602.3.B OF THE STANDARD SPECIFICATIONS.

BOX MANHOLE ASSEMBLY

DelDOT

Title Change → BOX MANHOLE ASSEMBLY

RECOMMENDED — ENGINEERING SUPPORT

STANDARD NO. D-6 (2020)

SHT. 1 OF 5

REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

SCALE : NTS

Min. Requirements

MINIMUM PRECAST ROUND MANHOLE REQUIREMENTS

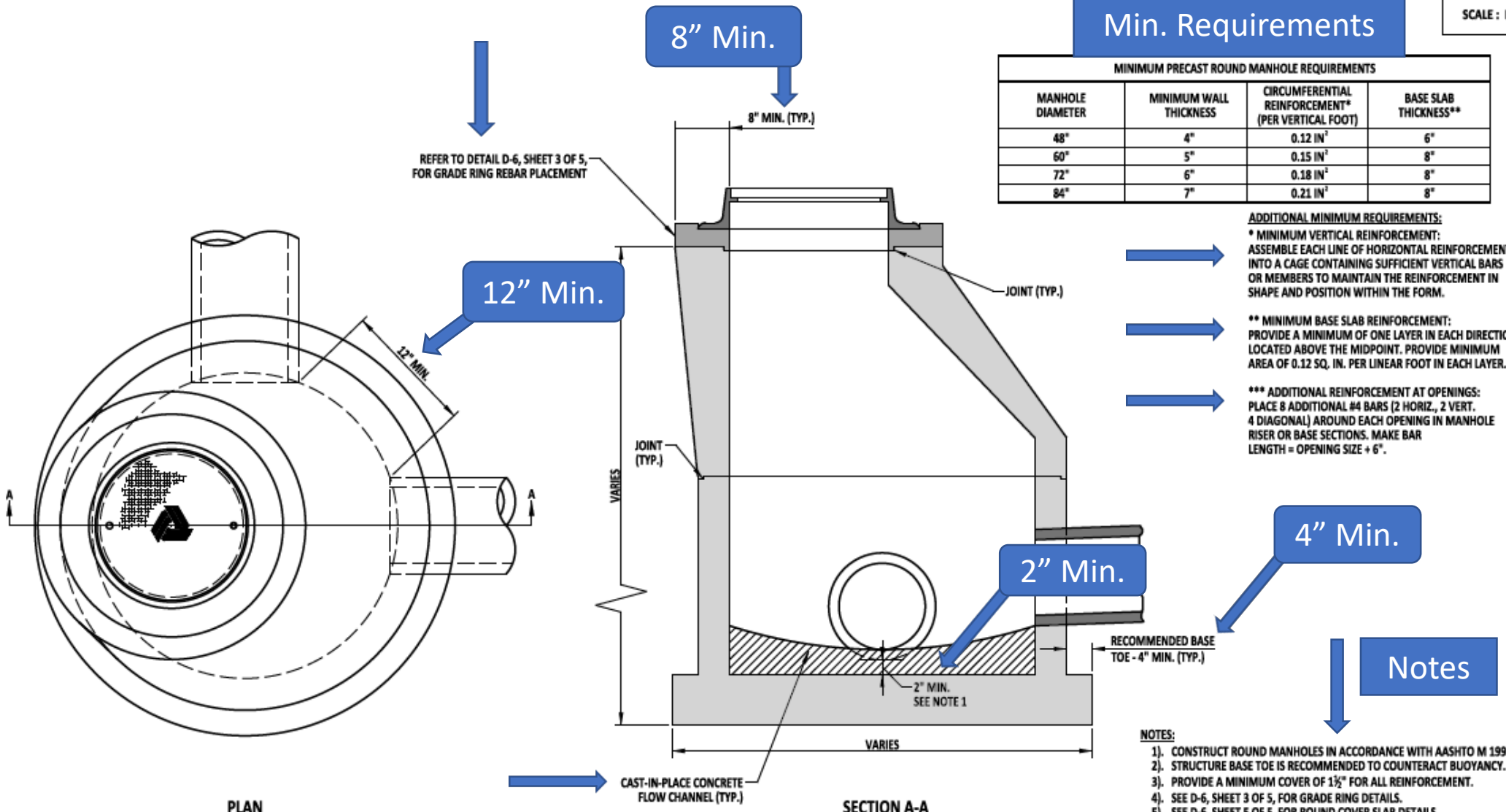
MANHOLE DIAMETER	MINIMUM WALL THICKNESS	CIRCUMFERENTIAL REINFORCEMENT* (PER VERTICAL FOOT)	BASE SLAB THICKNESS**
48"	4"	0.12 IN^2	6"
60"	5"	0.15 IN^2	8"
72"	6"	0.18 IN^2	8"
84"	7"	0.21 IN^2	8"

ADDITIONAL MINIMUM REQUIREMENTS:

* MINIMUM VERTICAL REINFORCEMENT: ASSEMBLE EACH LINE OF HORIZONTAL REINFORCEMENT INTO A CAGE CONTAINING SUFFICIENT VERTICAL BARS OR MEMBERS TO MAINTAIN THE REINFORCEMENT IN SHAPE AND POSITION WITHIN THE FORM.

** MINIMUM BASE SLAB REINFORCEMENT: PROVIDE A MINIMUM OF ONE LAYER IN EACH DIRECTION, LOCATED ABOVE THE MIDPOINT. PROVIDE MINIMUM AREA OF 0.12 SQ. IN. PER LINEAR FOOT IN EACH LAYER.

*** ADDITIONAL REINFORCEMENT AT OPENINGS: PLACE 8 ADDITIONAL #4 BARS (2 HORIZ., 2 VERT. 4 DIAGONAL) AROUND EACH OPENING IN MANHOLE RISER OR BASE SECTIONS. MAKE BAR LENGTH = OPENING SIZE + 6".



PLAN

SECTION A-A

ROUND MANHOLE ASSEMBLY

Notes

NOTES:

1). CONSTRUCT ROUND MANHOLES IN ACCORDANCE WITH AASHTO M 199.
2). STRUCTURE BASE TOE IS RECOMMENDED TO COUNTERACT BUOYANCY.
3). PROVIDE A MINIMUM COVER OF 1½" FOR ALL REINFORCEMENT.
4). SEE D-6, SHEET 3 OF 5, FOR GRADE RING DETAILS.
5). SEE D-6, SHEET 5 OF 5, FOR ROUND COVER SLAB DETAILS.
6). INSTALL PIPES FLUSH WITH MANHOLE WALL PER DELDOT STANDARD SPECIFICATIONS SECTION 602.3.
7). FABRICATOR IS RESPONSIBLE FOR LIFTING, HANDLING AND TRANSPORTATION STRESSES.
8). STEPS ARE REQUIRED FOR ALL MANHOLES 4'-0" DEPTH OR GREATER. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH AASHTO M 199.

DelDOT

ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

ROUND MANHOLE ASSEMBLY

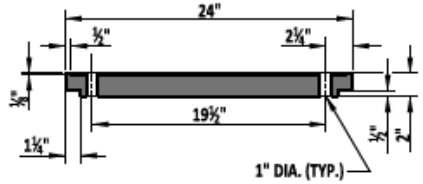
STANDARD NO. D-6 (2020) | SHT. 2 OF 5

REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

Added Notes for Clarification

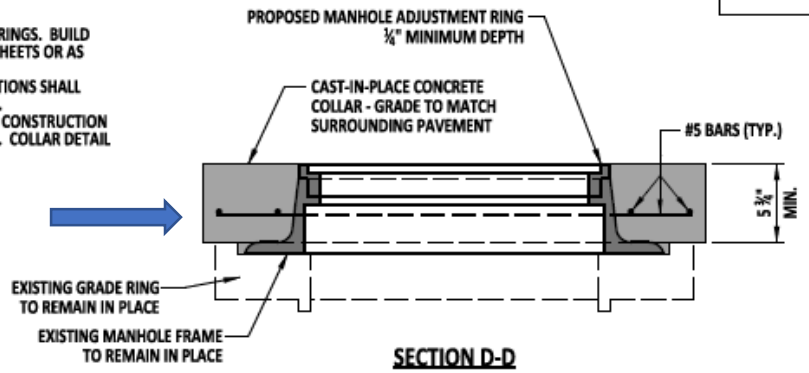
SCALE : NTS



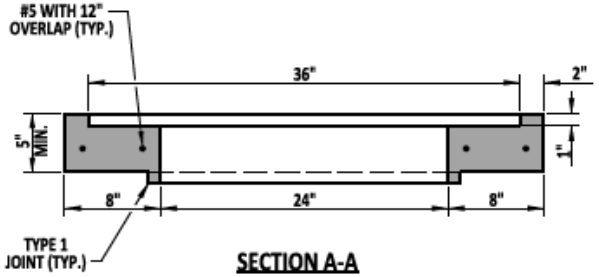
SECTION C-C

COVER

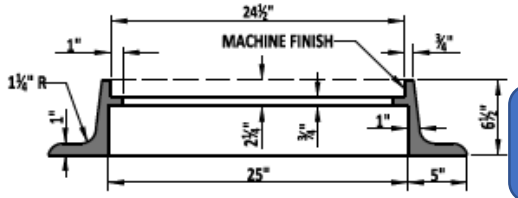
NOTES:
1). DETAILS SHOWN ARE FOR CAST-IN-PLACE GRADE RINGS. BUILD GRADE RINGS TO GRADE AS SPECIFIED ON PLAN SHEETS OR AS DIRECTED BY ENGINEER.
2). IF GRADE RINGS ARE PRECAST, DESIGN SPECIFICATIONS SHALL CONFORM TO AASHTO M-199, LATEST REVISIONS.
3). COLLAR DETAILS SHOWN ARE FOR CAST-IN-PLACE CONSTRUCTION AROUND MANHOLE ADJUSTMENTS AND REPAIRS. COLLAR DETAIL IS NOT INTENDED FOR NEW CONSTRUCTION
4). PROVIDE MINIMUM COVER OF 1½".



SECTION D-D

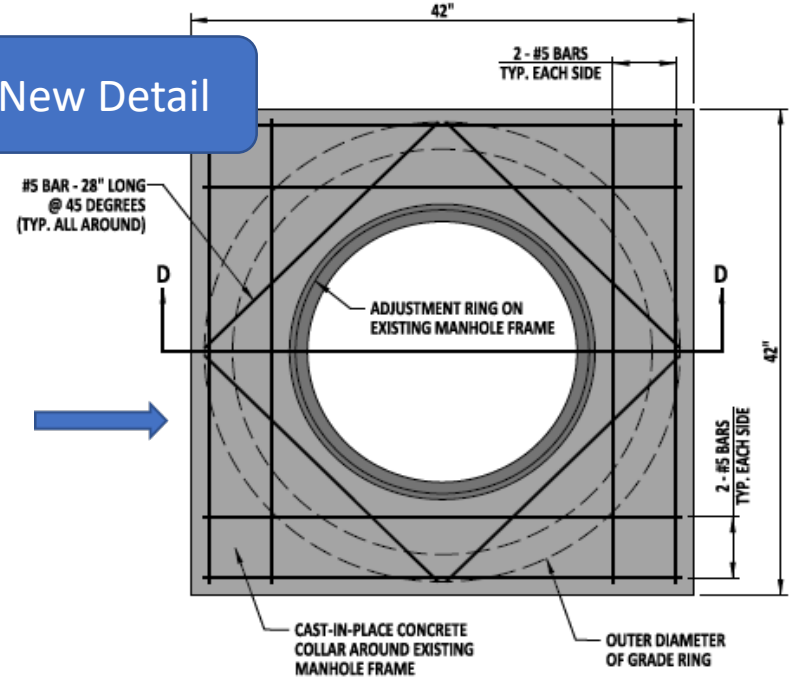


SECTION A-A



SECTION B-B

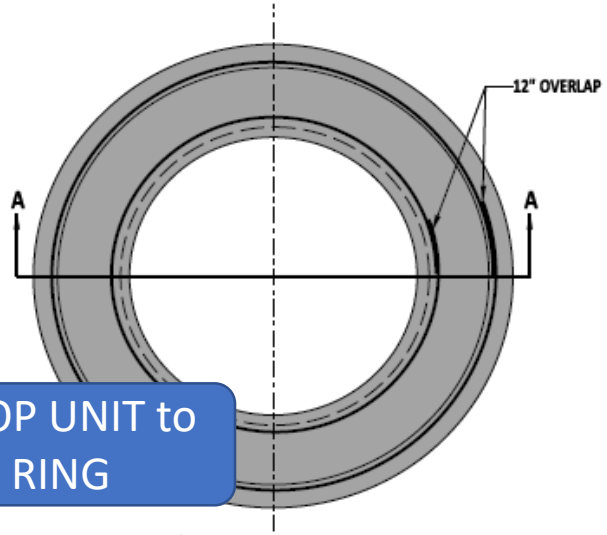
New Detail



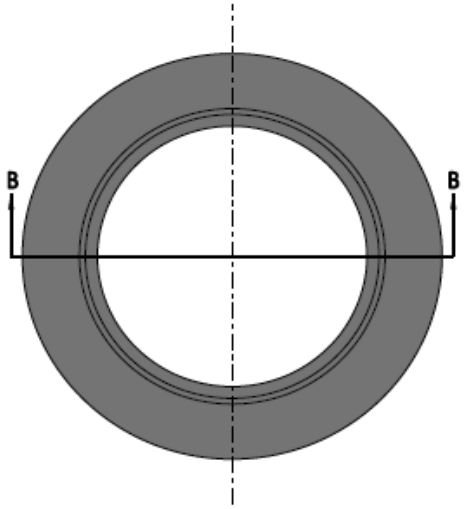
NOTES:
1). USE TOP UNIT WHERE BITUMINOUS PAVEMENT IS NOT AVAILABLE.
2). WHERE COLLAR EXTENDS BEYOND GRADE RING, PREPARE ADEQUATE SUB-BASE.

TOP UNIT

Changed TOP UNIT to GRADE RING



GRADE RING



FRAME

Title Change

DelDOT

MANHOLE GRADE RING, TOP UNIT, FRAME AND COVER

RECOMMENDED

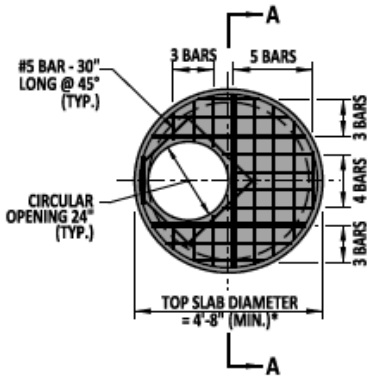
STANDARD NO. D-6 (2020)

SHT. 3 OF 5

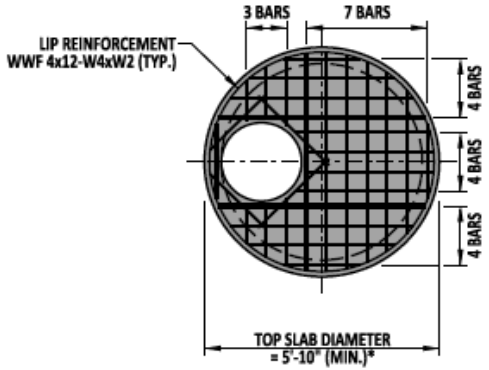
REVIEWED — DEPUTY DIRECTOR - DESIGN — DATE 09/01/2020

APPROVED — CHIEF ENGINEER — DATE 09/01/2020

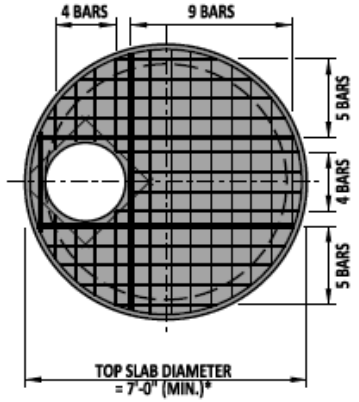
SCALE : NTS



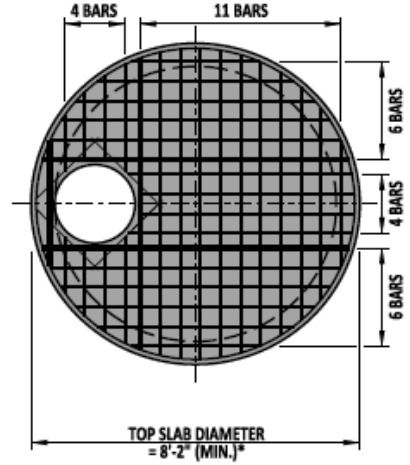
48" DIAMETER MANHOLE



60" DIAMETER MANHOLE



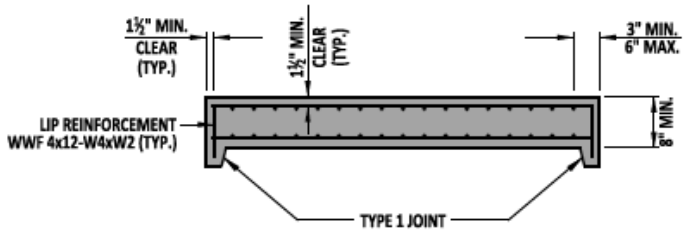
72" DIAMETER MANHOLE



84" DIAMETER MANHOLE

ROUND MANHOLE COVER SLAB DETAILS

NEW



SECTION A-A
(ADDITIONAL REINFORCEMENT NOT SHOWN)

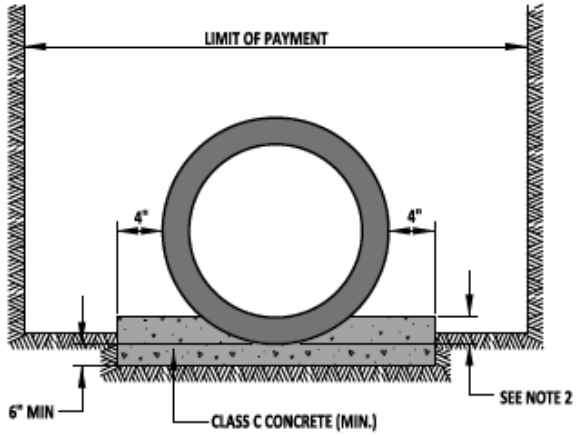
NOTES:

1). PRECAST COVER SLABS.
2). USE #5 BARS SPACED AT 6" UNLESS NOTED OTHERWISE.
3). PROVIDE A MINIMUM BAR COVER OF 1½".
4). COVER SLAB DESIGN SPECIFICATIONS SHALL MEET HL-93 LOADING AND CONFORM TO AASHTO M-199, LATEST REVISIONS.

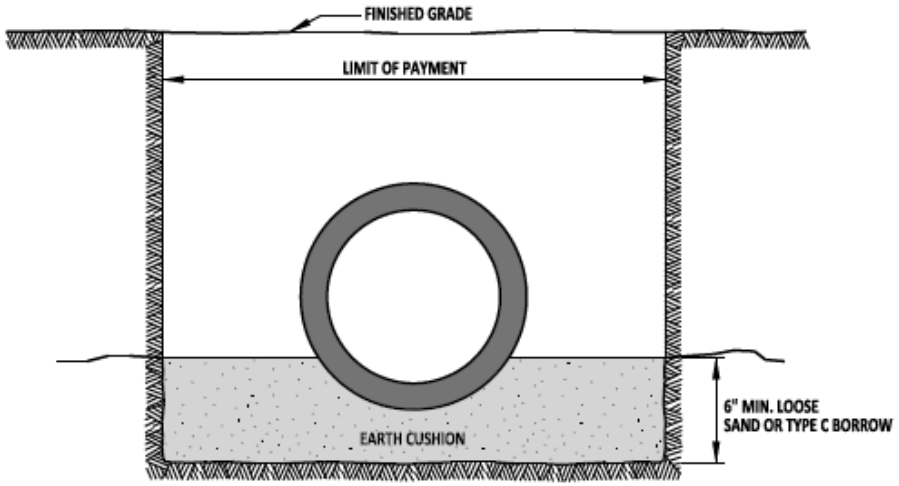
* DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF MANHOLE. SEE SHEET 3 OF 5 FOR MINIMUM WALL THICKNESS.

DelDOT	ENGINEERING SUPPORT 09/01/2020 DATE RECOMMENDED	ROUND MANHOLE COVER SLAB	REVIEWED DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE
		STANDARD NO. D-6 (2020) SHT. 5 OF 5	APPROVED CHIEF ENGINEER 09/01/2020 DATE

SCALE : NTS



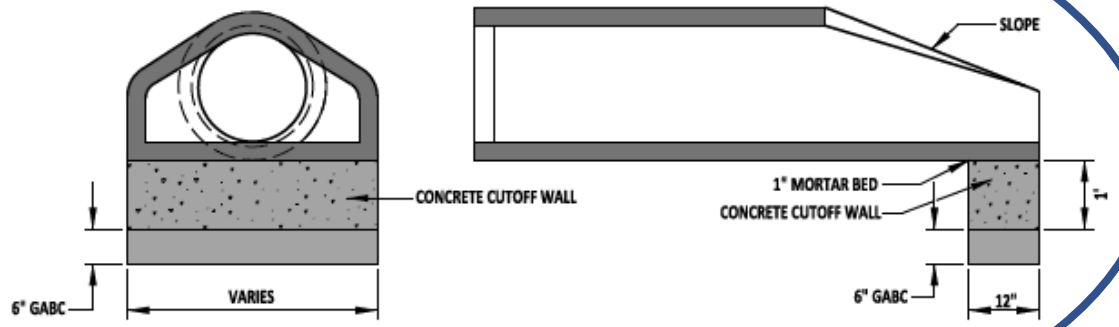
CLASS A PIPE BEDDING



CLASS C PIPE BEDDING

PIPE BEDDING

New



END SECTIONS FOR CONCRETE PIPE

Standard Specifications, 601.3.5 Flared End Section.

E. Place support footer in accordance with the Standard Construction Details.

Added Notes 3 & 4

NOTES:

1). USE CLASS C BEDDING UNLESS OTHERWISE INDICATED.
2). FOR CLASS A BEDDING, IMBED PIPE IN CONCRETE 6" FOR PIPES SMALLER THAN 24" I.D., 10" FOR PIPES 24" TO 60", AND FOR PIPES LARGER THAN 60" SEE PROJECT DETAILS.
3). USE IN SITU MATERIAL AS APPROVED BY THE ENGINEER OR AS PER MANUFACTURER REQUIREMENTS.
4). USE CLASS B CONCRETE FOR CONCRETE CUTOFF WALLS, PRECAST AS DIRECTED BY THE ENGINEER.

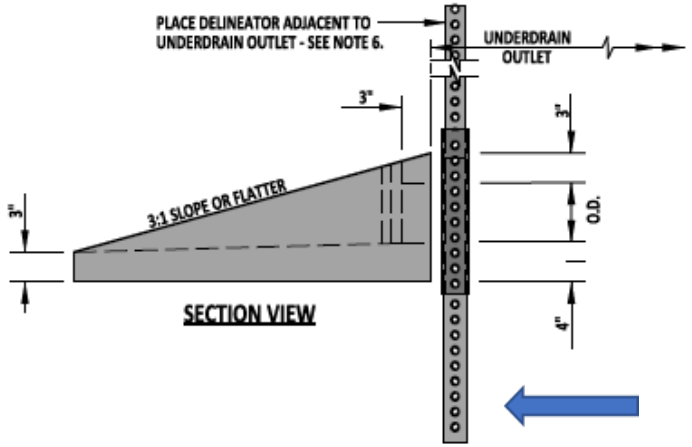
DelDOT

Title Change

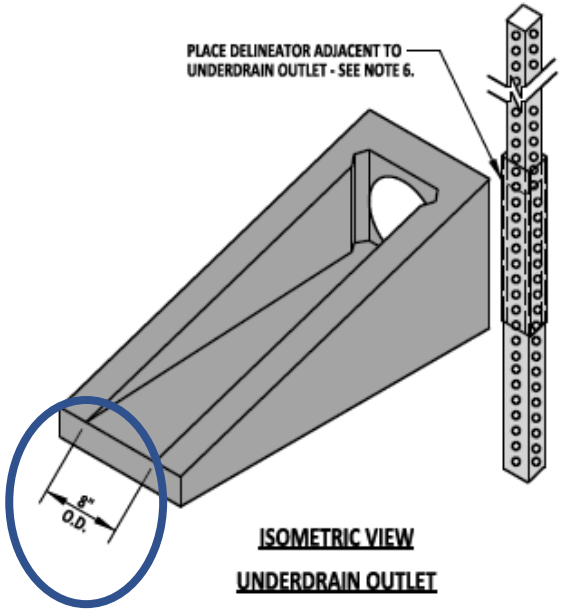
PIPE BEDDING AND PIPE FLARED END SUPPORT

RECOMMENDED	STANDARD NO. D-8 (2020)	SHT. 1 OF 1	REVIEWED DEPUTY DIRECTOR - DIVISION 09/01/2020 DATE
			APPROVED CHIEF ENGINEER 09/01/2020 DATE

SCALE : NTS



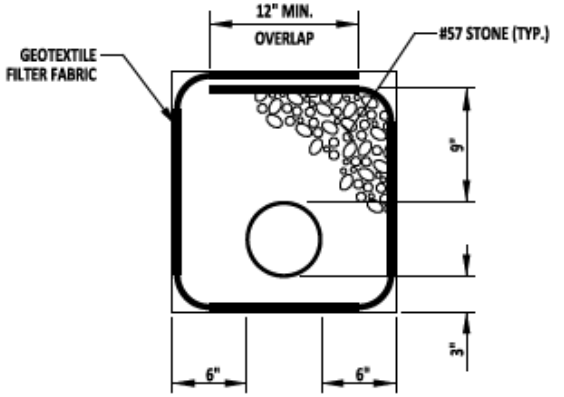
SECTION VIEW



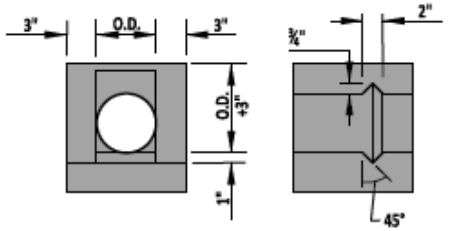
ISOMETRIC VIEW

UNDERDRAIN OUTLET

Delineator Location

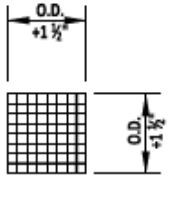


SECTION



FRONT VIEW TOP VIEW

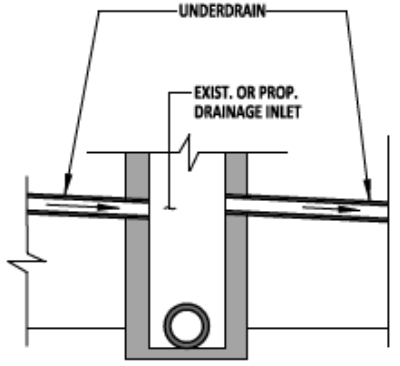
SLOTTED HEADWALL DETAIL



FRONT VIEW

RODENT SCREEN

Added Dimension



ELEVATION

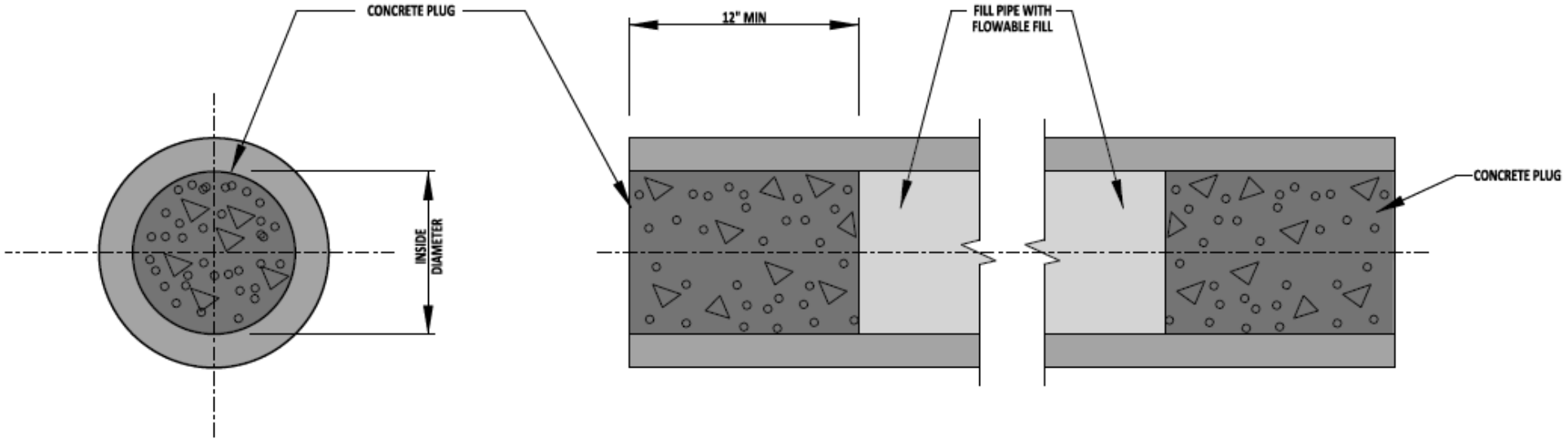
PERFORATED PIPE UNDERDRAIN

NOTES:

1). INSTALL PERFORATED PIPE UNDERDRAINS AT LOCATIONS SHOWN ON THE TYPICAL SECTIONS OF THE CONSTRUCTION PLANS.
2). PLACE GEOTEXTILE FILTER FABRIC ENTIRELY OVER THE TOP OF UNDERDRAIN TRENCH AND LAP AS SHOWN.
3). MATCH THE SLOPE OF UNDERDRAINS TO THE ROADWAY GRADE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4). TO DIRECT UNDERDRAIN PIPE INTO THE SIDE OF A DRAINAGE INLET OR TO POSITIVE OUTFALL GRADE, USE 45 DEGREE ELBOWS OR A STRAIGHT PIPE WITH A MINIMUM RADIUS OF 3'. AT THESE LOCATIONS, USE NON-PERFORATED PIPE WITH A SMOOTH INTERIOR.
5). INSTALL RODENT SCREEN TO SNUGLY FIT THE PROVIDED SLOT WITH THE SCREEN LIP FITTING TIGHT TO THE BOTTOM FLOW LINE.
6). INSTALL A DELINEATOR ADJACENT TO THE CONCRETE APRON OF THE UNDERDRAIN OUTFALL ON THE APPROACH SIDE OF TRAFFIC. INSTALL THE DELINEATOR ON A BREAKAWAY POST ASSEMBLY, EXTENDING 4' ABOVE GROUND ELEVATION, IN ACCORDANCE WITH STANDARD T-15 SHEET 1 OF 1. PERPENDICULAR TO THE TRAVEL LANE, INSTALL AN OM-2-2V BLUE REFLECTOR ON BOTH SIDES OF THE POST WITH HARDWARE COMPATIBLE WITH THE SIGN POST.
7). WHEN TWO LINES OF PIPE UNDERDRAIN DRAIN TO A LOW POINT, PROVIDE AN OUTLET FOR EACH PIPE.
8). DO NOT PLACE UNDERDRAIN PIPE UNDER GUARDRAIL IN ORDER TO AVOID PUNCTURING.

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	PERFORATED PIPE UNDERDRAIN	REVIEWED DEPUTY DIRECTOR - DBOOS	09/01/2020 DATE
		STANDARD NO. D-9 (2020) SHT. 1 OF 1	APPROVED CHIEF ENGINEER	09/01/2020 DATE

SCALE : NTS



SECTION

ELEVATION

NOTE:

FURNISH FLOWABLE FILL MATERIAL AND PLUG ABANDONED DRAINAGE PIPES WITH CONCRETE AS DIRECTED BY THE ENGINEER.

Changed Material to Flowable Fill

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	PIPE PLUGGING	REVIEWED DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE
		STANDARD NO. D-10 (2020) SHT. 1 OF 1	APPROVED CHIEF ENGINEER 09/01/2020 DATE

Section IV: Erosion

Revised Standard Details

E-1	**Concrete Washout**
E-2	**Silt Fence, Super Silt Fence**
E-3	**Sediment Trap**
E-4	**Inlet Sediment Control, Drainage Inlet**
E-5	**Inlet Sediment Control, Culvert Inlet**
E-6	**Portable Sediment Tank**
E-8	**Skimmer Dewatering Device**
E-9	**Check Dam**
E-10	**Temporary Slope Drain**
E-17	**Geotextile-Lined Channel Diversion**
E-19	**Stilling Well**
E-21	**Stone Outlet**

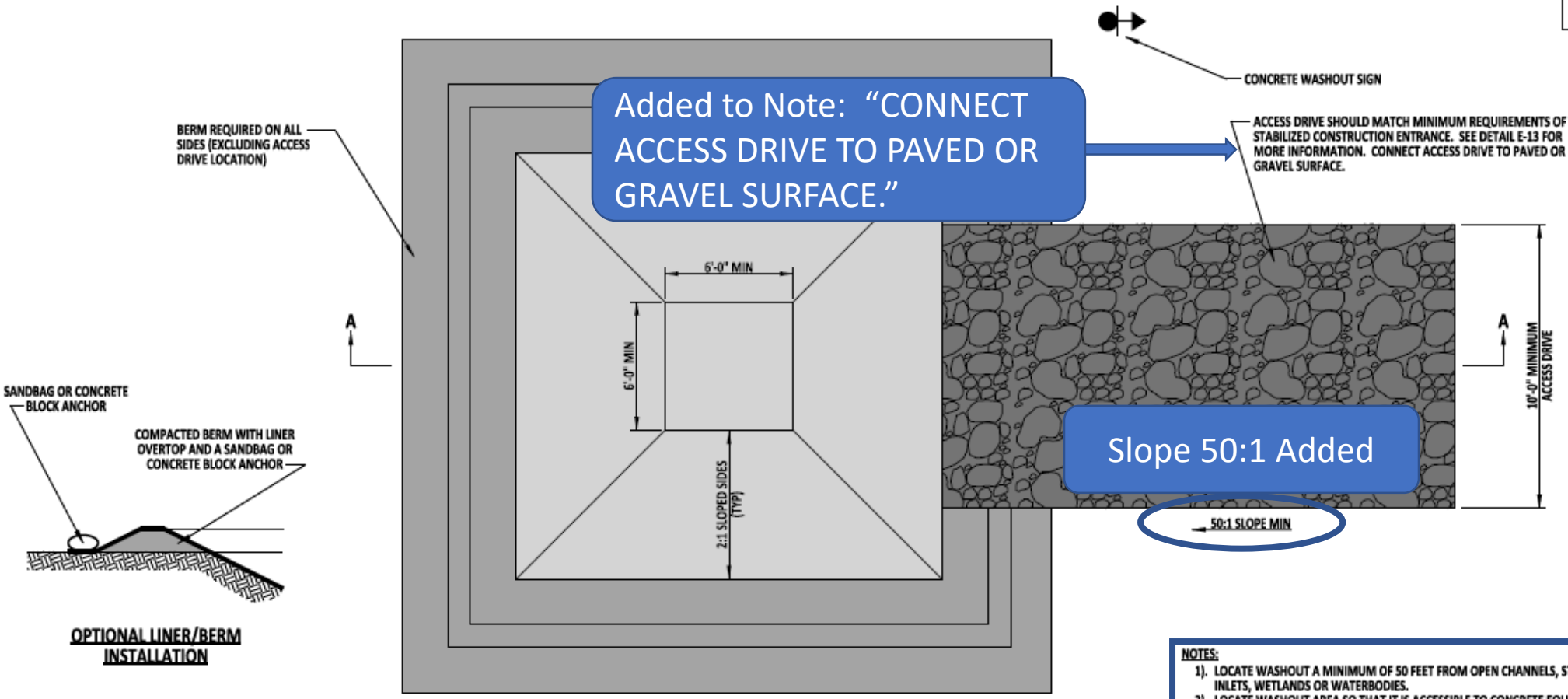
Removed From Standard Details

E-11 Incremental Stabilization – Contract plans and duration will determine stabilization requirement.

E-12 Erosion Control Blanket Applications – From APL. Installed per Manufacturer's recommendations.

E-13 Turf Reinforcement Mat Applications – From APL. Installed per Manufacturer's recommendations.

SCALE : NTS



NOTES:

1). LOCATE WASHOUT A MINIMUM OF 50 FEET FROM OPEN CHANNELS, STORMDRAIN INLETS, WETLANDS OR WATERBODIES.
2). LOCATE WASHOUT AREA SO THAT IT IS ACCESSIBLE TO CONCRETE EQUIPMENT (SERVICE WITH A MINIMUM 10 FOOT WIDE GRAVEL ACCESSWAY), BUT SO IT IS NOT IN A HIGHLY ACTIVE CONSTRUCTION AREA CAUSING ACCIDENTAL DAMAGE.
3). A PREFABRICATED CONCRETE WASHOUT UNIT MAY BE USED IN LIEU OF THE DESIGN SHOWN ON THIS DETAIL. THE DIMENSIONS ARE 4'-0" x 4'-0" x 1'-0" DEEP WITH A 4 MIL POLYETHYLENE PLASTIC LINER. FOLLOW THE DIMENSIONS IN THIS DETAIL FOR CONSTRUCTED CONCRETE WASHOUT AREAS.
4). THE LINER MUST BE FREE OF TEARS OR HOLES AND PLACED OVER SMOOTH SURFACES TO PREVENT PUNCTURING. FOR EXCAVATED WASHOUTS, ANCHOR THE LINER UNDERNEATH THE BERM OR OVERTOP WITH SANDBAGS OR CONCRETE BLOCKS TO HOLD IN PLACE, AS DIRECTED ON THIS DETAIL.
5). ALLOW WASHED OUT CONCRETE MIXTURE TO HARDEN THROUGH EVAPORATION OF THE WASTEWATER. ONCE THE FACILITY HAS REACHED 75% OF ITS CAPACITY, REMOVE THE HARDENED CONCRETE BY REUSING THE BROKEN AGGREGATE ON SITE, RECYCLING, OR DISPOSING OFFSITE. THE HARDENED MATERIAL CAN BE BURIED ON SITE WITH A MINIMUM OF 1'-0" OF CLEAN, COMPACTED FILL.
6). APPLY A NEW LINER BEFORE REUSING THE STATION FOR ADDITIONAL WASHOUTS AFTER MAINTENANCE HAS OCCURRED.
7). PROVIDE A SIGN DESIGNATING THE WASHOUT AREA, AND FOR LARGE CONSTRUCTION SITES, PROVIDE SIGNS THROUGHOUT DIRECTING TRAFFIC TO ITS LOCATION.

Notes edited in accordance with the DNREC Details

DelDOT

RECOMMENDED — ENGINEERING SUPPORT — 09/01/2020 DATE

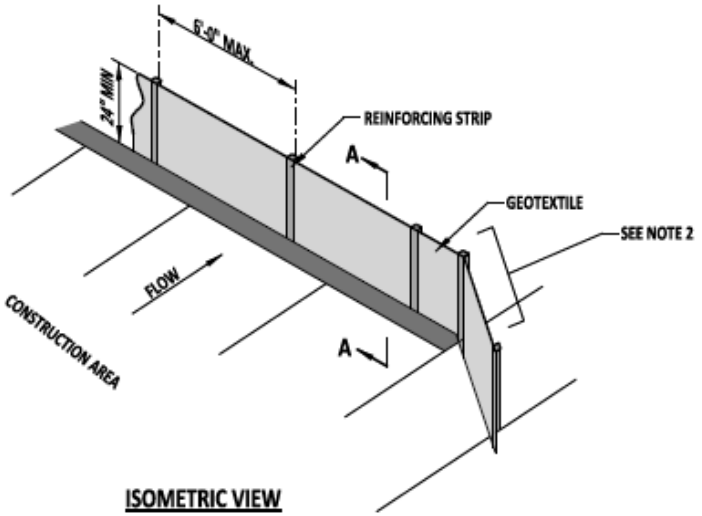
CONCRETE WASHOUT

STANDARD NO. E-1 (2020) SHT. 1 OF 1

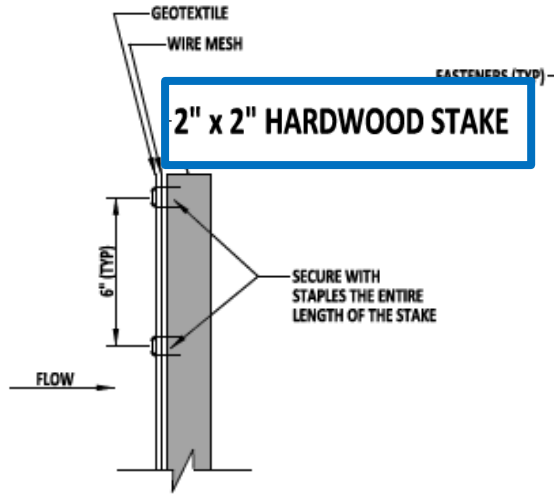
REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

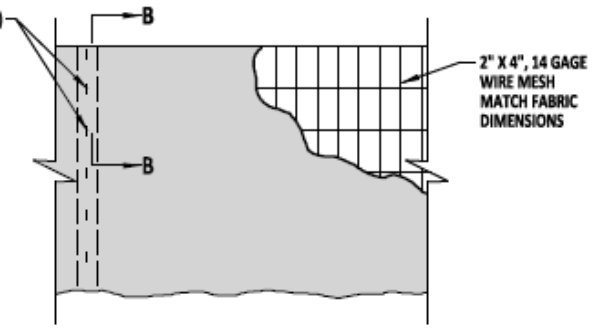
SCALE : NTS



ISOMETRIC VIEW

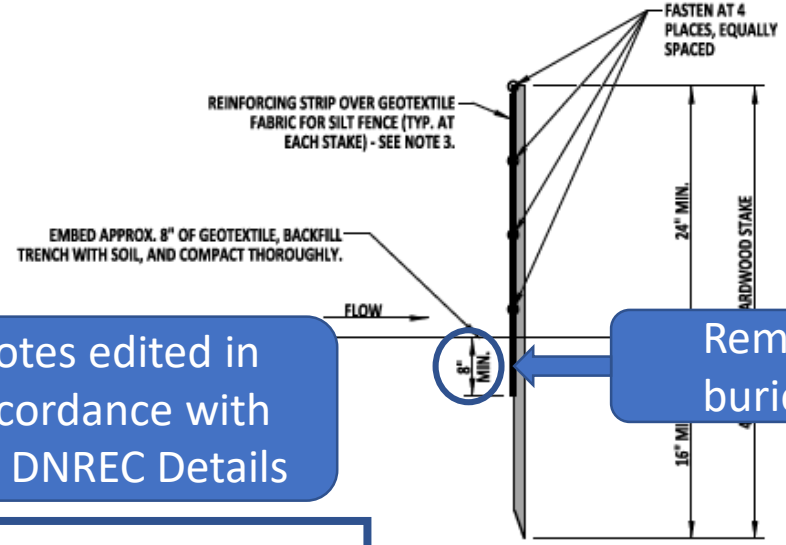


SECTION B-B



ELEVATION

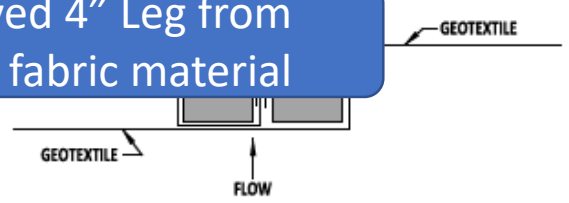
WIRE MESH DETAIL
(REINFORCED SILT FENCE ONLY)



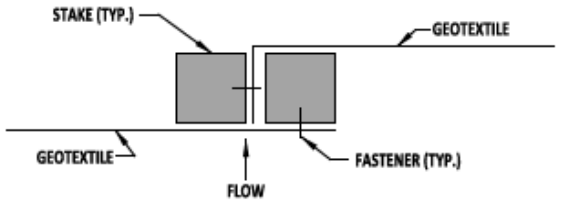
SECTION A-A

Notes edited in accordance with the DNREC Details

Removed 4” Leg from buried fabric material



SILT FENCE CONNECTON DETAIL



REINFORCED SILT FENCE CONNECTON DETAIL

NOTES:
1). THIS DEVICE IS INTENDED TO CONTROL SHEET FLOW ONLY AND IS NOT TO BE USED IN AREAS OF CONCENTRATED FLOW.
2). TURN ENDS OF SILT FENCE UPSLOPE TO CONTAIN RUNOFF.
3). REINFORCING STRIP IS TO BE ONE COMPLETE STRIP COVERING ALL GEOTEXTILE FABRIC AT POST.
4). FOR SILT FENCE CONSTRUCTION, JOIN TERMINAL ENDS AND ROLL ONE FULL REVOLUTION.

DelDOT

ENGINEERING SUPPORT 09/01/2020 DATE
RECOMMENDED

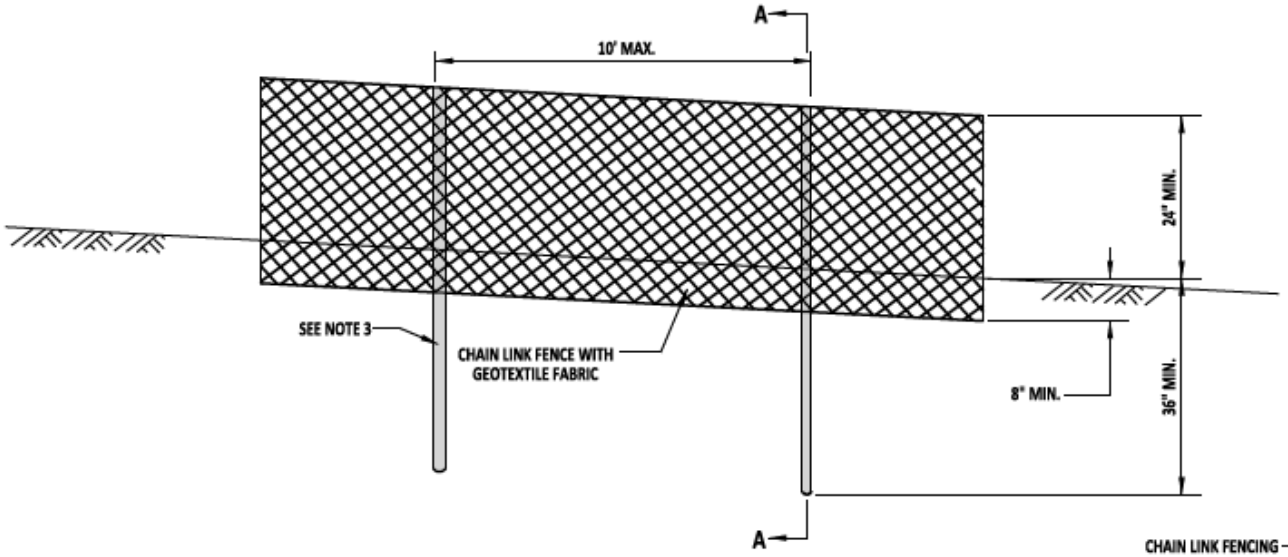
SILT FENCE

STANDARD NO. E-2 (2020) SHT. 1 OF 2

REVIEWED
DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

SCALE : NTS

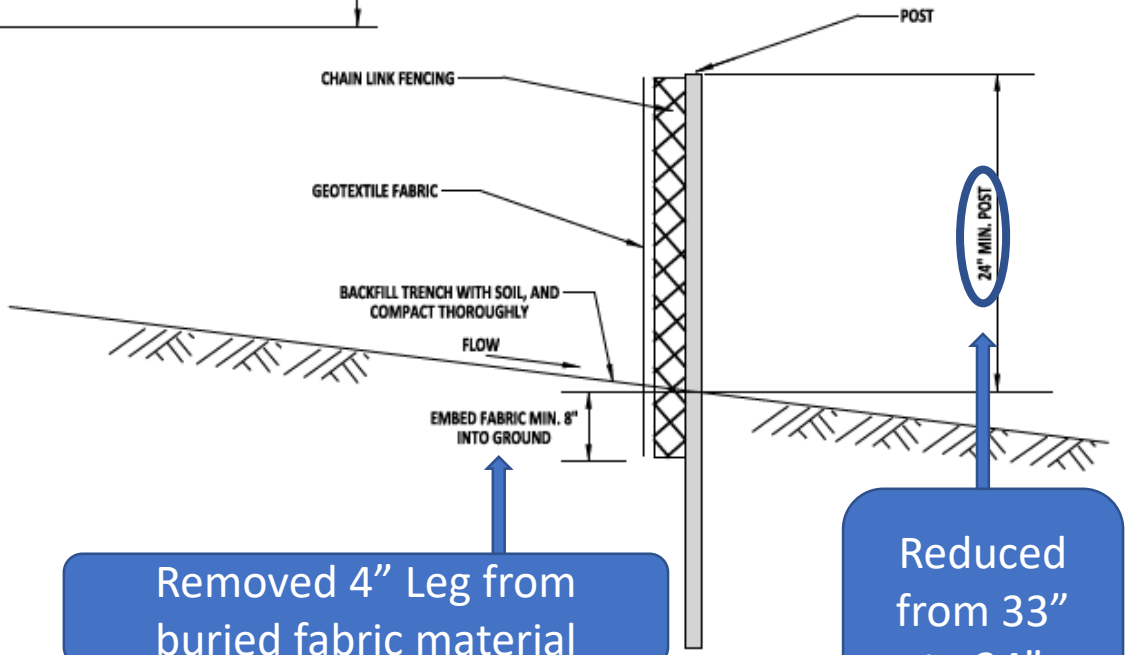


SUPER SILT FENCE CONSTRUCTION DETAIL

Notes edited in accordance with the DNREC Details

NOTES:

1). THIS DEVICE IS INTENDED TO CONTROL SHEET FLOW ONLY AND IS NOT TO BE USED IN AREAS OF CONCENTRATED FLOW.
2). TURN ENDS OF SILT FENCE UPSLOPE TO CONTAIN RUNOFF.
3). 2½" DIAMETER GALVANIZED OR ALUMINUM POSTS. POSTS DO NOT NEED TO BE SET IN CONCRETE.
4). FASTEN CHAIN LINK FENCE SECURELY TO FENCE POSTS WITH WIRE TIES.
5). FASTEN GEOTEXTILE FABRIC SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.



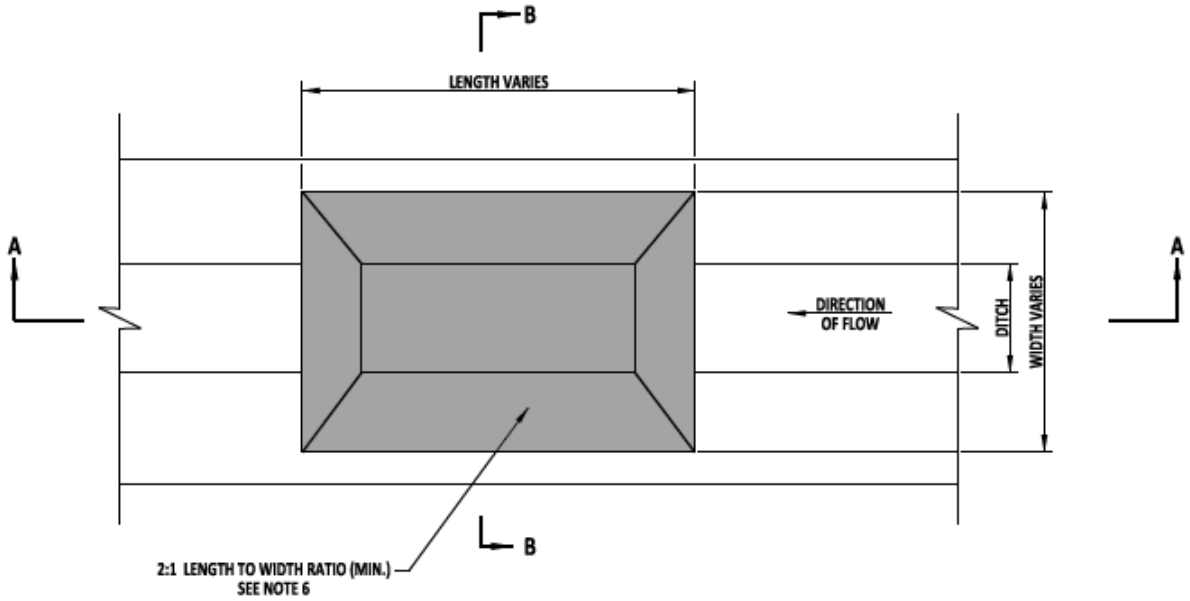
Removed 4" Leg from buried fabric material

Reduced from 33" to 24"

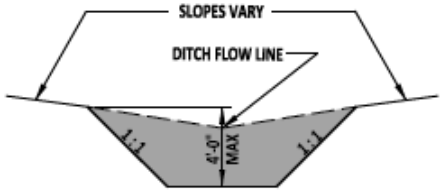
SECTION A-A

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	SUPER SILT FENCE	REVIEWED DEPUTY DIRECTOR - DROOS	09/01/2020 DATE
		STANDARD NO. E-2 (2020) SHT. 2 OF 2	APPROVED CHIEF ENGINEER	09/01/2020 DATE

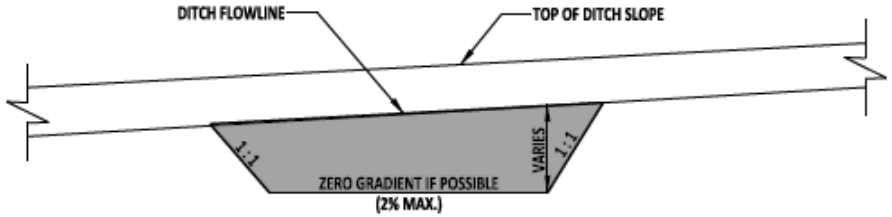
SCALE : NTS



PLAN



SECTION B-B



SECTION A-A

NOTES:

1). SEDIMENT TRAPS ARE INTENDED FOR USE IN EXISTING, PROPOSED, AND TEMPORARY DITCHES OF ALL TYPES WITH A MAXIMUM DRAINAGE AREA OF 5 ACRES, AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
2). STABILIZE SIDE SLOPES WITH TEMPORARY GRASS SEEDING AS PER SPECIFICATIONS.
3). AN OUTLET STRUCTURE IS REQUIRED AND IS NOTED ON THE PLANS.
4). ALL FILL SLOPES ARE TO HAVE A SLOPE OF 2:1.
5). THE SEDIMENT TRAP LENGTH TO WIDTH RATIO IS TO BE 2:1. SPECIAL DESIGNS ARE PERMITTED TO INCREASE THE FLOW TIME AFTER APPROVAL BY THE STORMWATER ENGINEER.

Added Note 7

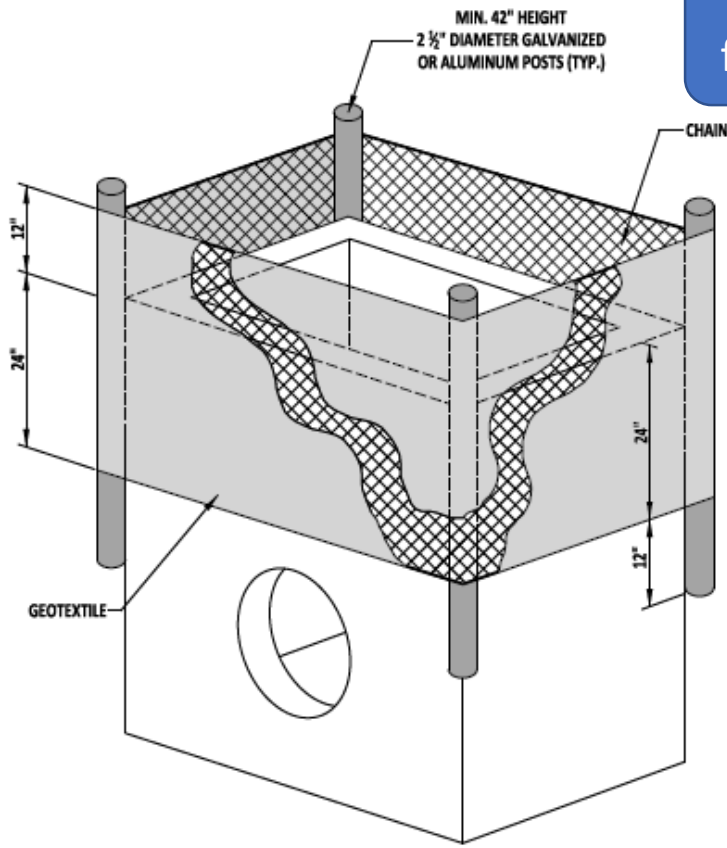
7). IF R4 RIPRAP IS UTILIZED ON THE DOWNSTREAM SIDE OF THE SEDIMENT TRAP, CHOKE THE R-4 RIPRAP WITH DELAWARE NO. 3 STONE ON THE FLOW FACE.

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	SEDIMENT TRAP	REVIEWED DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE
		STANDARD NO. E-3 (2020) SHT. 1 OF 1	APPROVED CHIEF ENGINEER 09/01/2020 DATE

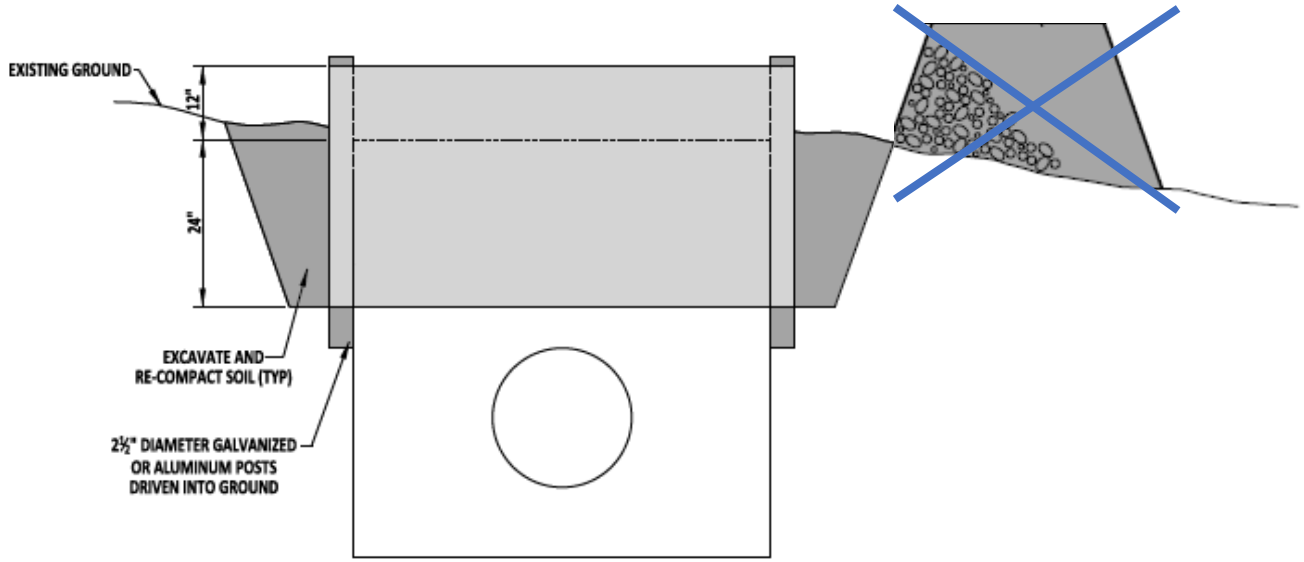
SCALE : NTS

Wood frame replaced with post and fence in accordance with DNREC Detail

Stone Check Dam Removed



ISOMETRIC VIEW



ELEVATION VIEW

Note added

NOTES:
1). COMPOST FILTER LOG IS PAID SEPARATELY FROM SEDIMENT CONTROL, DRAINAGE INLET.

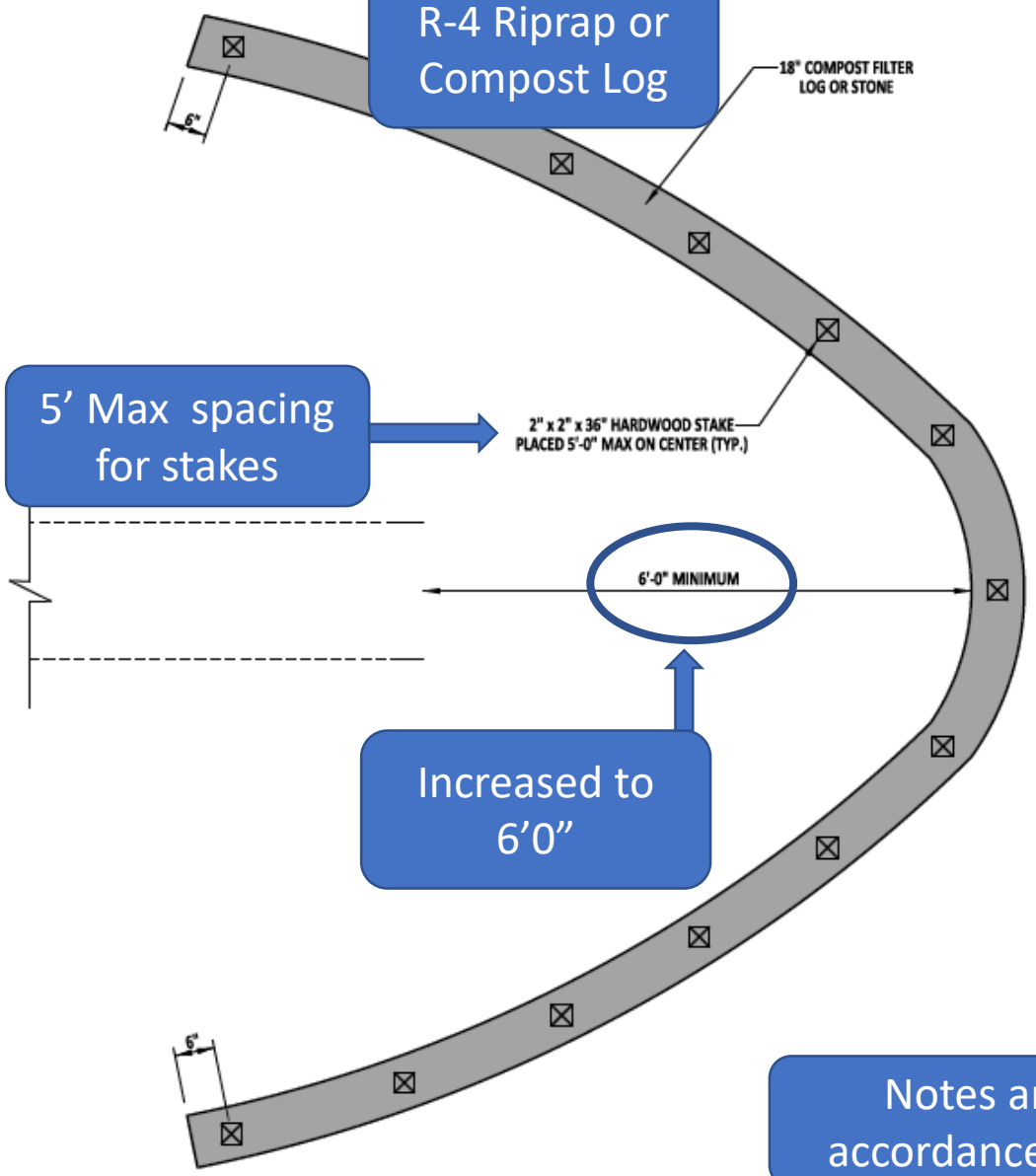
DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	INLET SEDIMENT CONTROL, DRAINAGE INLET	REVIEWED DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE
		STANDARD NO. E-4 (2020) SHT. 1 OF 1	APPROVED CHIEF ENGINEER 09/01/2020 DATE

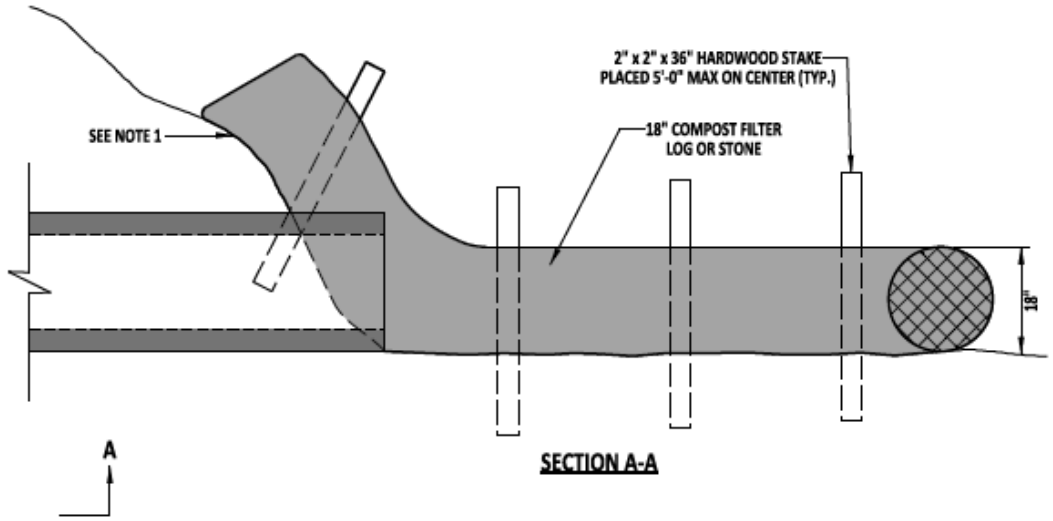
SCALE : NTS

R-4 Riprap or Compost Log

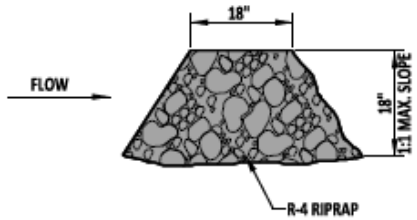
5’ Max spacing for stakes

Increased to 6’0”





SECTION A-A



18” Height added

SECTION VIEW - STONE OPTION

Notes and Details edited in accordance to the DNREC Details

NOTE:
1). EXTEND THE BOTTOM OF THE COMPOST FILTER LOG ABOVE THE TOP OF THE PIPE.
2). USE A MINIMUM OF 3 STAKES PER APPLICATION.
3). IF COMPOST FILTER LOGS CAN NOT BE INSTALLED PROPERLY OR FLOW CONDITIONS EXCEED THE CAPABILITIES OF THE COMPOST FILTER LOGS, THE STONE OPTION SHALL BE EMPLOYED.
4). PLACEMENT OF THE COMPOST LOG OR STONE BARRIER SHOULD BE IN A "HORSESHOE" SHAPE AND PROVIDE A MINIMUM OF 6 FEET OF CLEARANCE FROM THE CULVERT INLET.

DelDOT

ENGINEERING SUPPORT 09/01/2020 DATE
RECOMMENDED

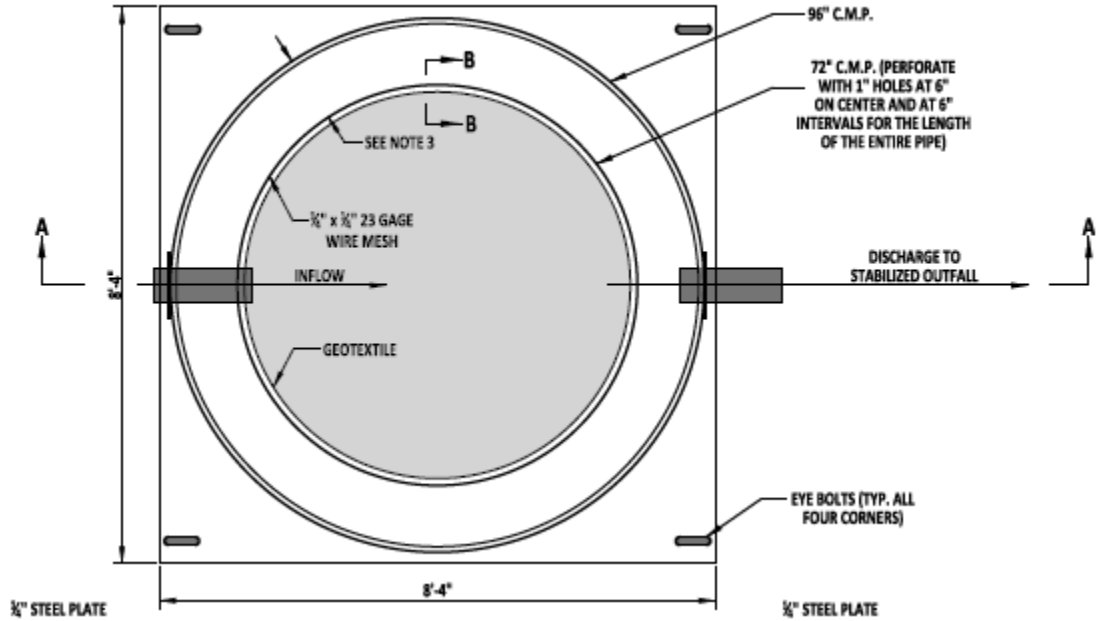
INLET SEDIMENT CONTROL, CULVERT INLET

STANDARD NO. E-5 (2020) SHT. 1 OF 1

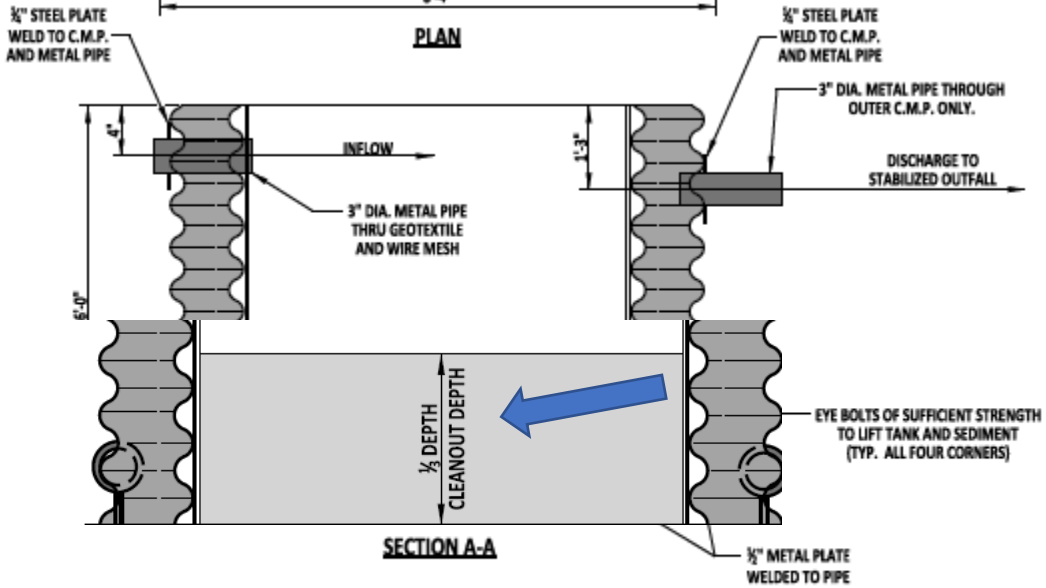
REVIEWED
DEPUTY DIRECTOR - DBOS 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

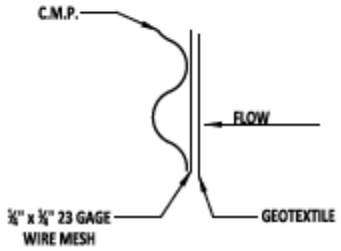
SCALE : NTS



PLAN



SECTION A-A



SECTION B-B

Depth of Cleanout changed from 24" to 1/3 depth

NOTES:

1). THE MAXIMUM PUMP DISCHARGE IN THIS TYPICAL PORTABLE SEDIMENT TANK IS 125 GALLONS PER MINUTE. REPLACE THE GEOTEXTILE WHEN THE PORTABLE SEDIMENT TANK CAN NO LONGER ALLOW THIS FLOW RATE, WHEN THERE IS A TEAR, OR WHEN DIRECTED BY THE ENGINEER.
2). SEVERAL UNCONNECTED OR CONNECTED IN PARALLEL PORTABLE SEDIMENT TANKS MAY BE USED WHEN A HIGHER FLOW RATE IS NEEDED TO DEWATER THE JOB.
3). PLACE 72" C.M.P. SO THAT IT IS CENTERED IN THE 96" C.M.P. AND THERE IS AN EQUAL AMOUNT OF SPACE BETWEEN THE TWO PIPES.

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

PORTABLE SEDIMENT TANK

STANDARD NO. E-6 (2020) SHT. 1 OF 1

REVIEWED
DEPUTY DIRECTOR - DESIGN
09/01/2020
DATE

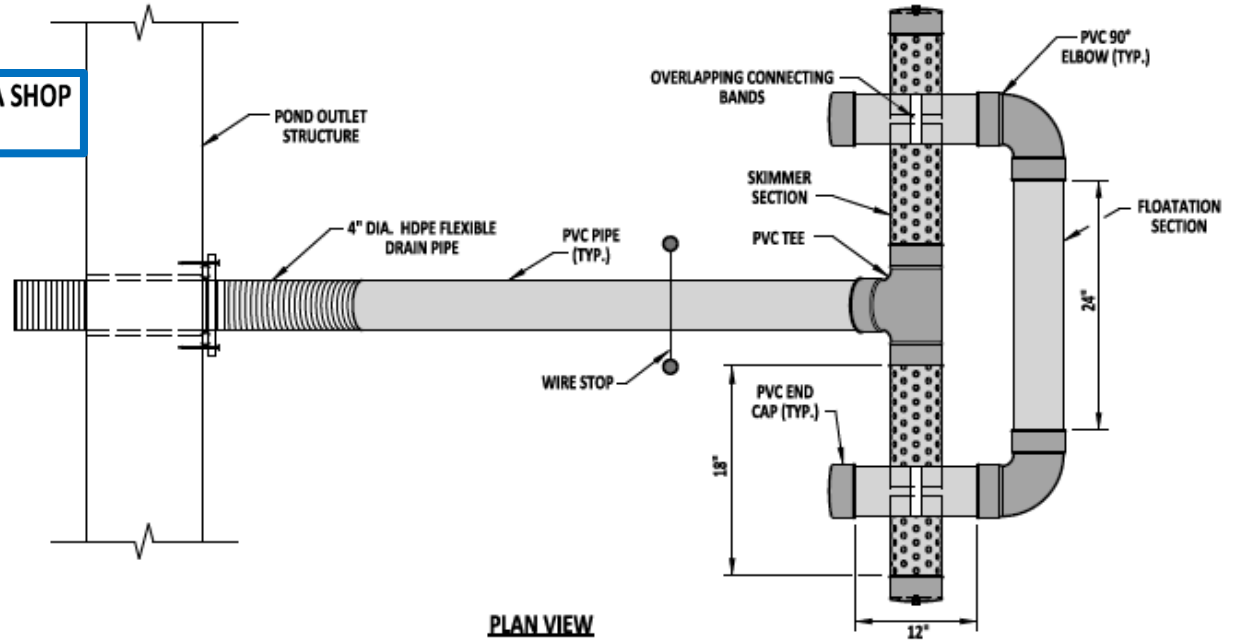
APPROVED
CHIEF ENGINEER
09/01/2020
DATE

NOTES:

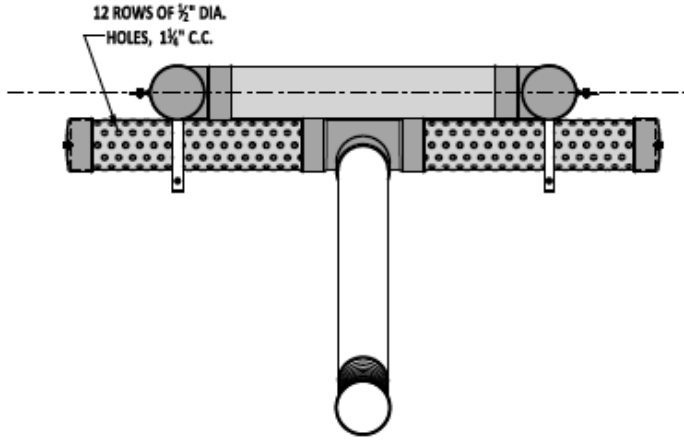
1). ALL PVC PIPES ARE 4" I.D., SCHEDULE 40.
2). SOLVENT WELD ALL JOINTS OF THE FLOTATION SECTION..
3). ATTACH A 4" HDPE FLEXIBLE DRAIN PIPE TO THE POND OUTLET STRUCTURE USING WATER TIGHT CONNECTIONS.
4). FOR ANY NON-TYPICAL SKIMMER OUTLET CONNECTION, SUBMIT A SHOP DRAWING FOR ENGINEER APPROVAL.

Added Note 4

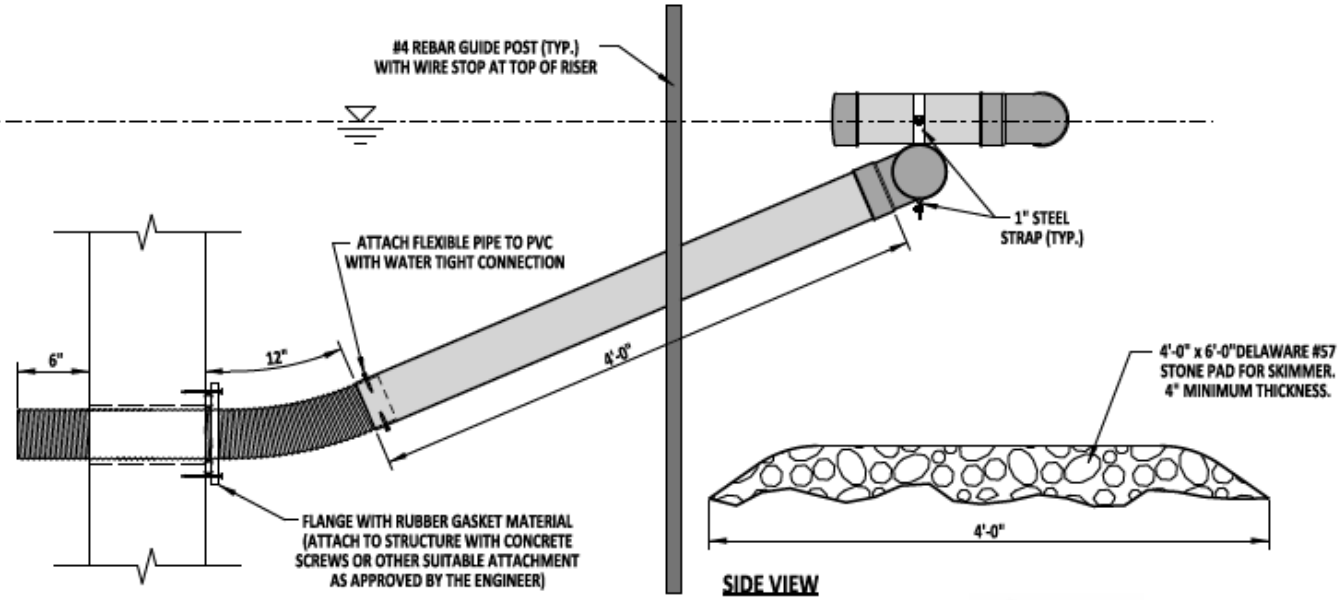
SCALE : NTS



PLAN VIEW



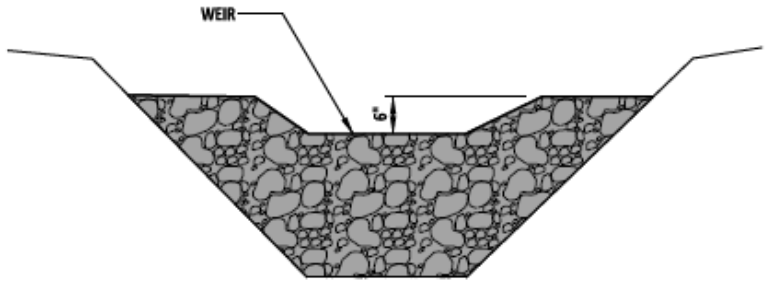
FRONT VIEW



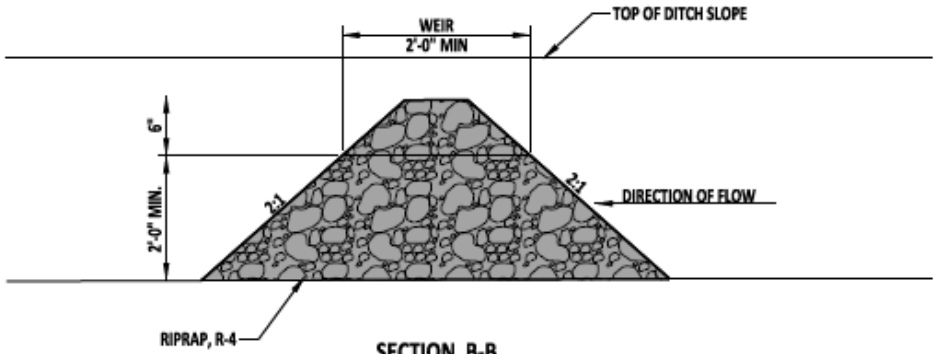
SIDE VIEW

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	SKIMMER DEWATERING DEVICE	REVIEWED DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE
		STANDARD NO. E-8 (2020) SHT. 1 OF 1	APPROVED CHIEF ENGINEER 09/01/2020 DATE

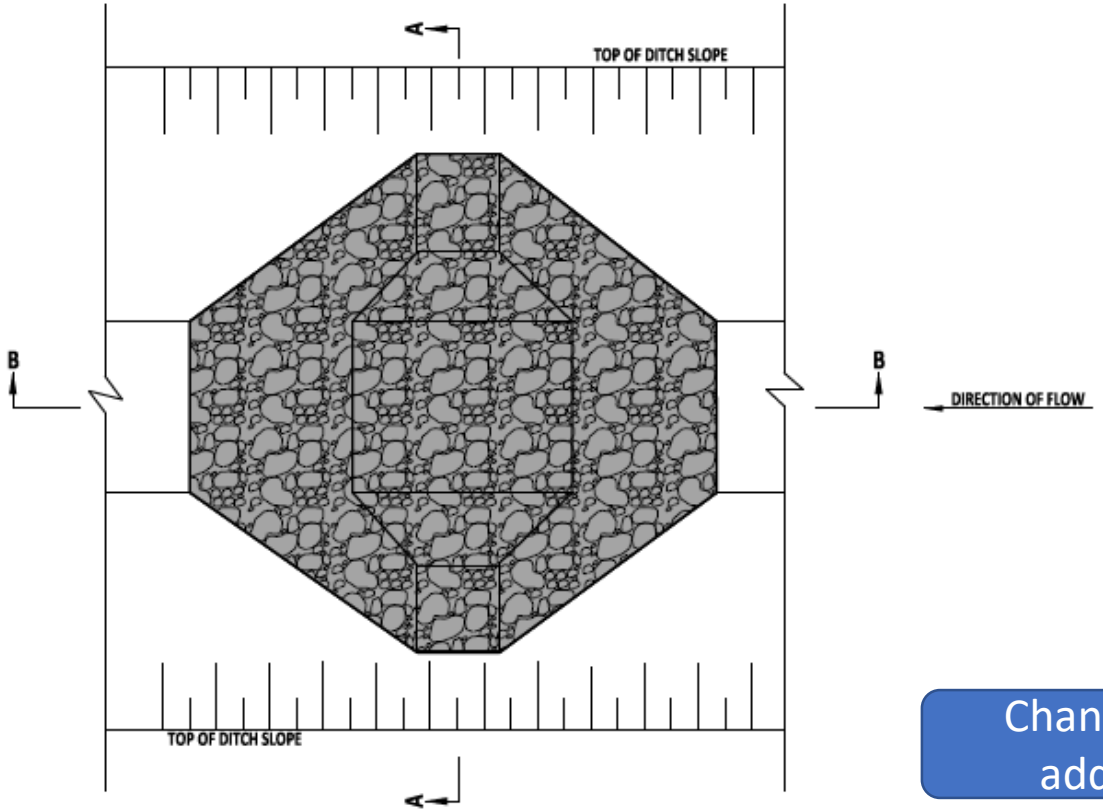
SCALE : NTS



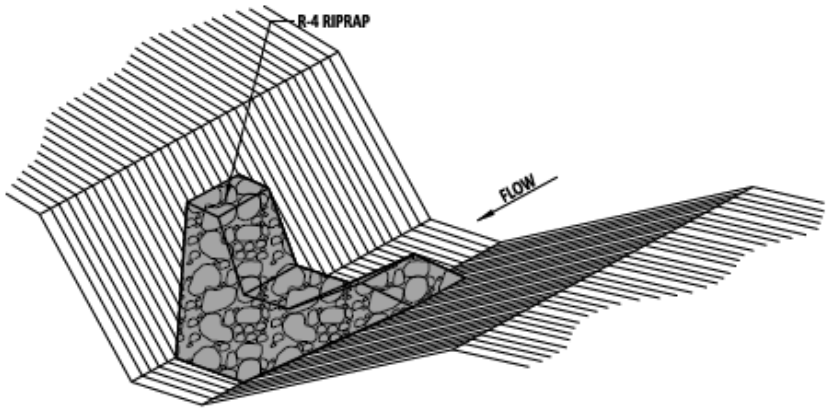
SECTION A-A



SECTION B-B



PLAN



ISOMETRIC VIEW

Changed Title and added Sheet 2

STONE CHECK DAM

NOTES:

1). THE MAXIMUM HEIGHT OF THE CHECK DAM IS 2'-0" AT THE CENTER OF THE WEIR.
2). CONSTRUCT CHECK DAM SO THAT THE CENTER OF THE DAM IS 6" LOWER THAN THE OUTER EDGES, FORMING A WEIR THAT WATER CAN FLOW ACROSS.
3). INSTALL GEOTEXTILE FABRIC UNDERNEATH RIPRAP ON PERMANENT CHECK DAMS ONLY.
4). SPACE DAMS SO THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE WIER OF THE DOWNSTREAM DAM. PLACE DAMS NO FURTHER THAN 200'-0" APART WHEN THE SLOPE IS LESS THAN 1%.

DelDOT

09/01/2020
ENGINEERING SUPPORT — DATE
RECOMMENDED

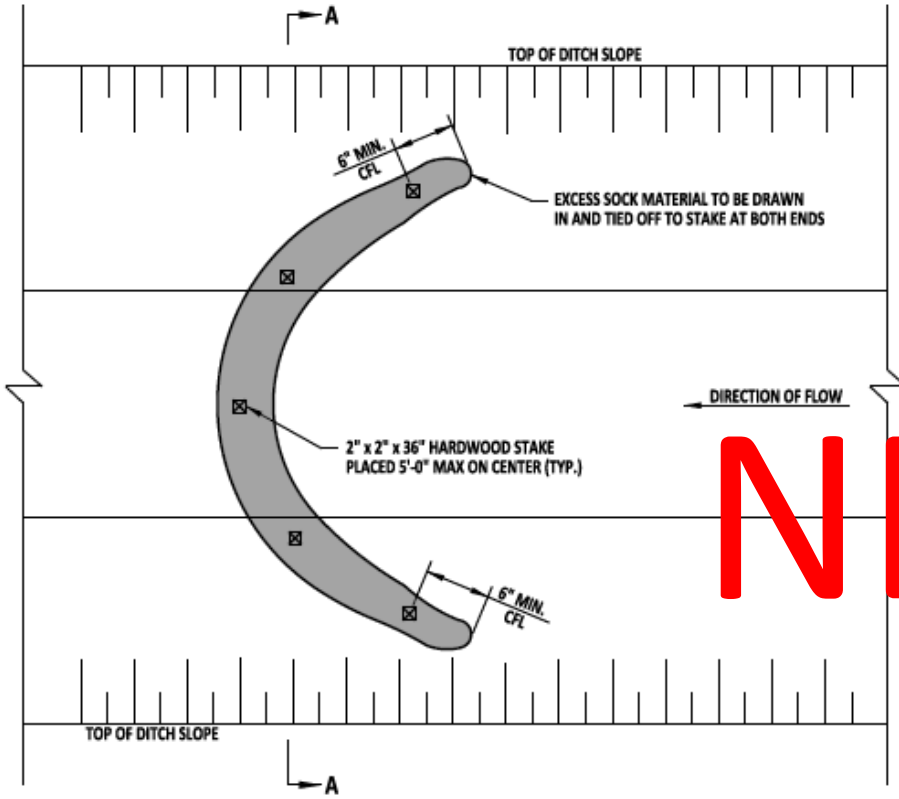
CHECK DAM

STANDARD NO. E-9 (2020) | SHT. 1 OF 2

REVIEWED
DEPUTY DIRECTOR - DBMS — 09/01/2020 DATE

APPROVED
CHIEF ENGINEER — 09/01/2020 DATE

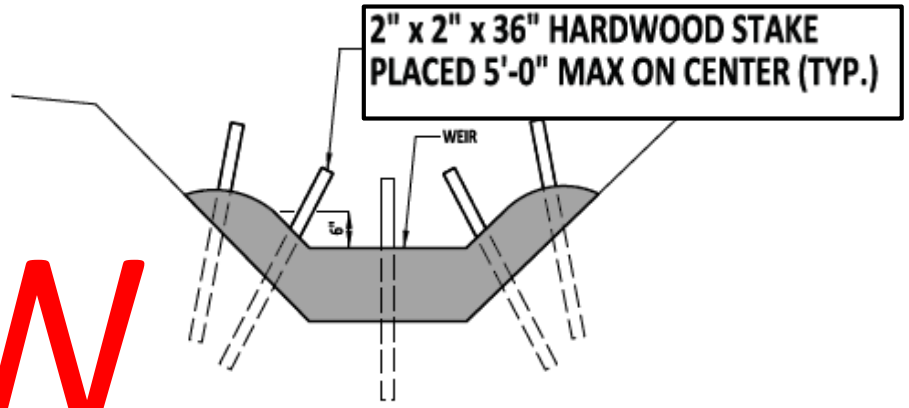
SCALE : NTS



PLAN

Note the Staking Requirements

NEW



SECTION A-A

NOTES:

1). THE MAXIMUM HEIGHT OF THE CHECK DAM IS 2'-0" AT THE CENTER OF THE WEIR.
2). CONSTRUCT CHECK DAM SO THAT THE CENTER OF THE DAM IS 6" LOWER THAN THE OUTER EDGES, FORMING A WEIR THAT WATER CAN FLOW ACROSS. THE ENDS OF THE COMPOST FILTER LOG SHALL WRAP UPSLOPE TO PREVENT END CUTTING.
3). SPACE DAMS SO THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE WIER OF THE DOWNSTREAM DAM. PLACE DAMS NO FURTHER THAN 200'-0" APART WHEN THE SLOPE IS LESS THAN 1%.

COMPOST FILTER LOG CHECK DAM

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

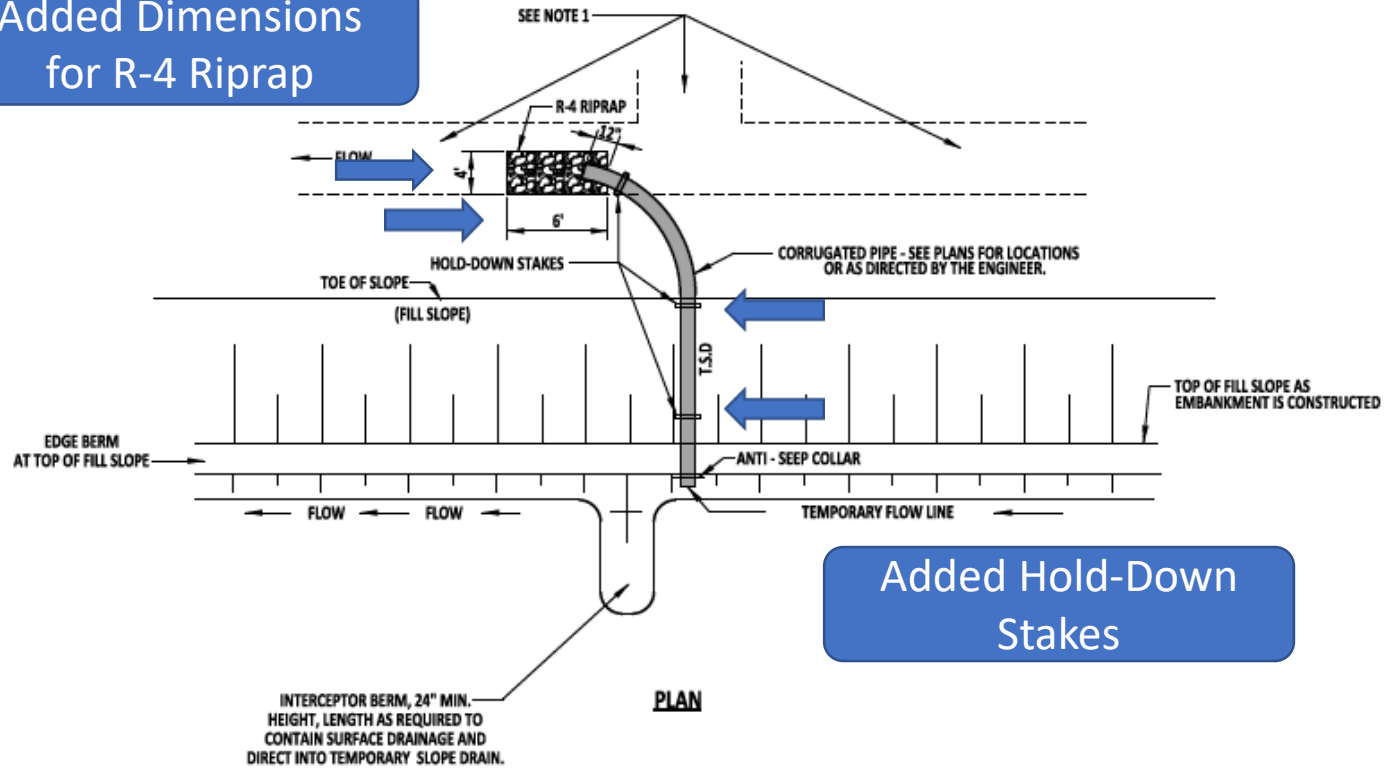
CHECK DAM

STANDARD NO. E-9 (2020) SHT. 2 OF 2

REVIEWED
DEPUTY DIRECTOR - DBOOS
09/01/2020
DATE

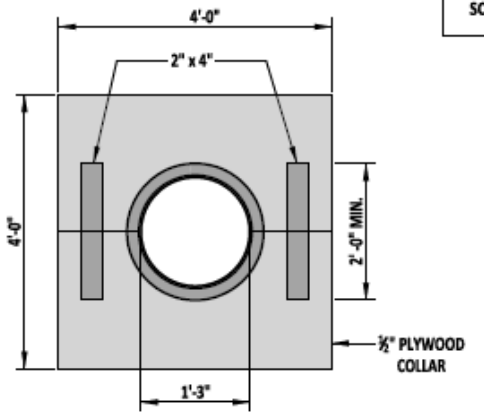
APPROVED
CHIEF ENGINEER
09/01/2020
DATE

Added Dimensions for R-4 Riprap

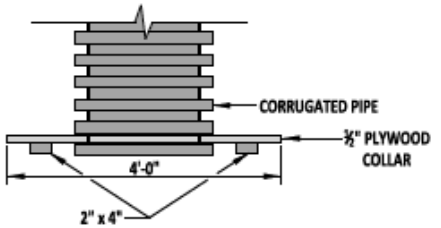


PLAN

Added Hold-Down Stakes



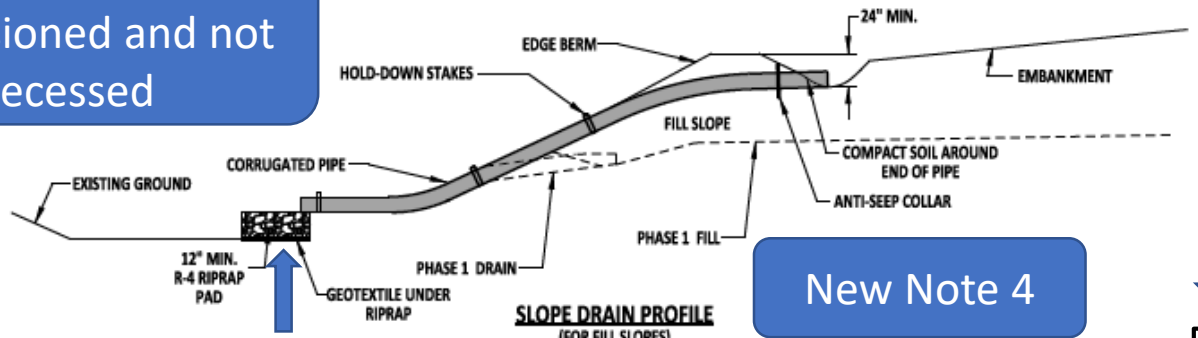
ELEVATION



PLAN

ANTI-SEEP COLLAR

Outfall Riprap Dimensioned and not Recessed



SLOPE DRAIN PROFILE
(FOR FILL SLOPES)

New Note 4

NOTES:
1). 15" PIPE FOR MAXIMUM DRAINAGE AREA OF ONE ACRE.
2). DISCHARGE ALL TEMPORARY SLOPE DRAINS ONTO A STABILIZED OUTFALL AND THEN INTO A SEDIMENT TRAPPING DEVICE.
3). USE TEMPORARY SLOPE DRAINS AT THE TOP OF FILL SLOPES AS EMBANKMENT IS CONSTRUCTED TO PREVENT EXCESSIVE EROSION UNTIL SHOULDERS ARE CONSTRUCTED AND THE SLOPES
4). FOR ALL TEMPORARY SLOPE DRAINS, USE A MINIMUM OF 3 HOLD DOWN STAKES SPACED EVENLY THROUGHOUT THE WHOLE LENGTH BEGINNING AT THE PIPE OUTLET INTO THE R-4 RIPRAP.

SCALE : NTS

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

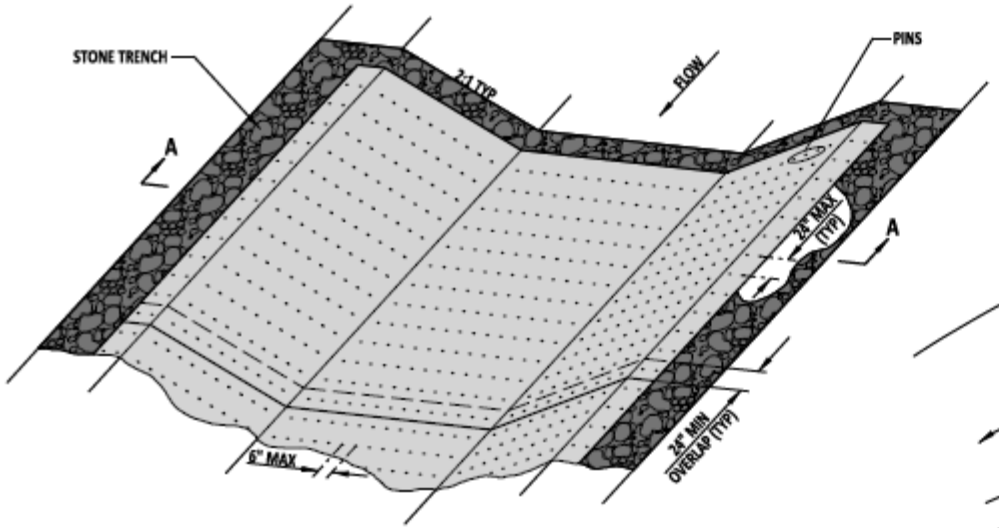
TEMPORARY SLOPE DRAIN

STANDARD NO. E-10 (2020) SHT. 1 OF 1

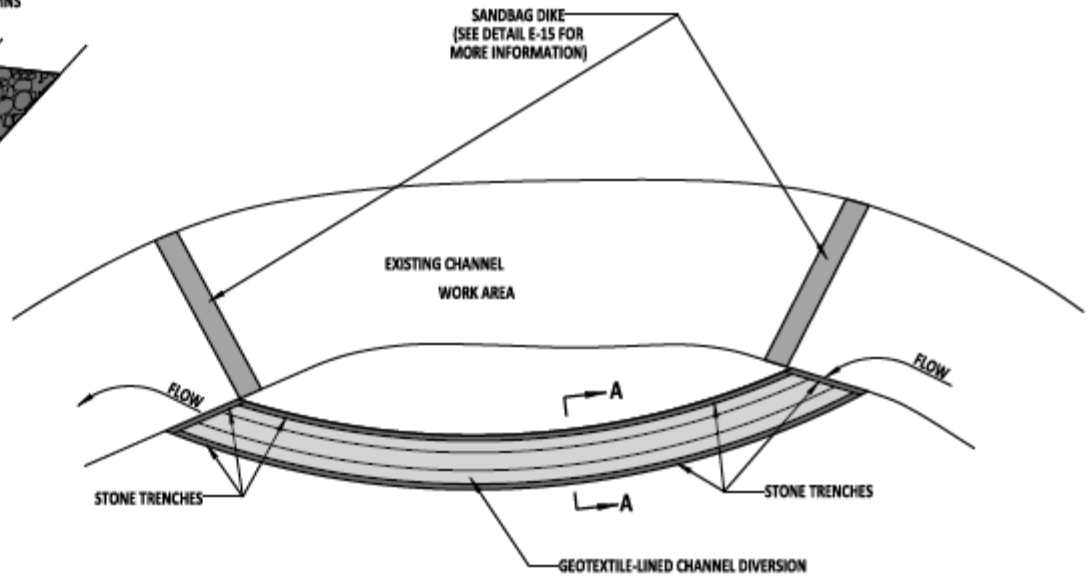
REVIEWED
DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

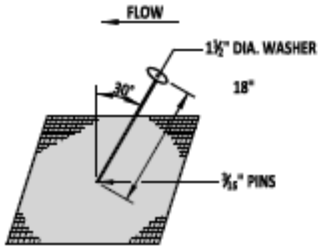
SCALE : NTS



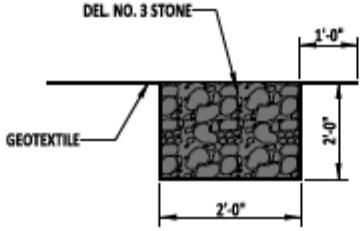
ISOMETRIC VIEW



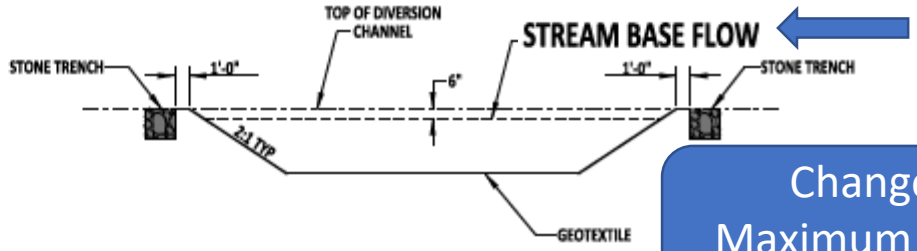
PLAN



FASTENING DETAIL



TRENCHING DETAIL



SECTION A-A

Changed from Maximum Capacity to Stream Base Flow

NOTE:
SEE PLANS FOR LOCATION, DIMENSIONS, GRADES, ETC.

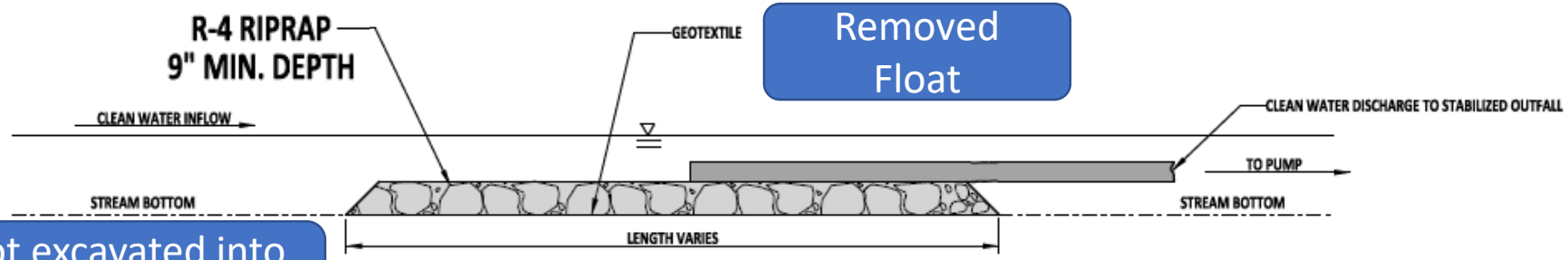
DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	GEOTEXTILE-LINED CHANNEL DIVERSION	REVIEWED	09/01/2020 DATE
		STANDARD NO. E-17 (2020) SHT. 1 OF 1	APPROVED	09/01/2020 DATE

SCALE : NTS

Added 9” Minimum depth of Riprap

Removed 6” Minimum Freeboard

Removed Float



Not excavated into Stream Bed

Added Note 2

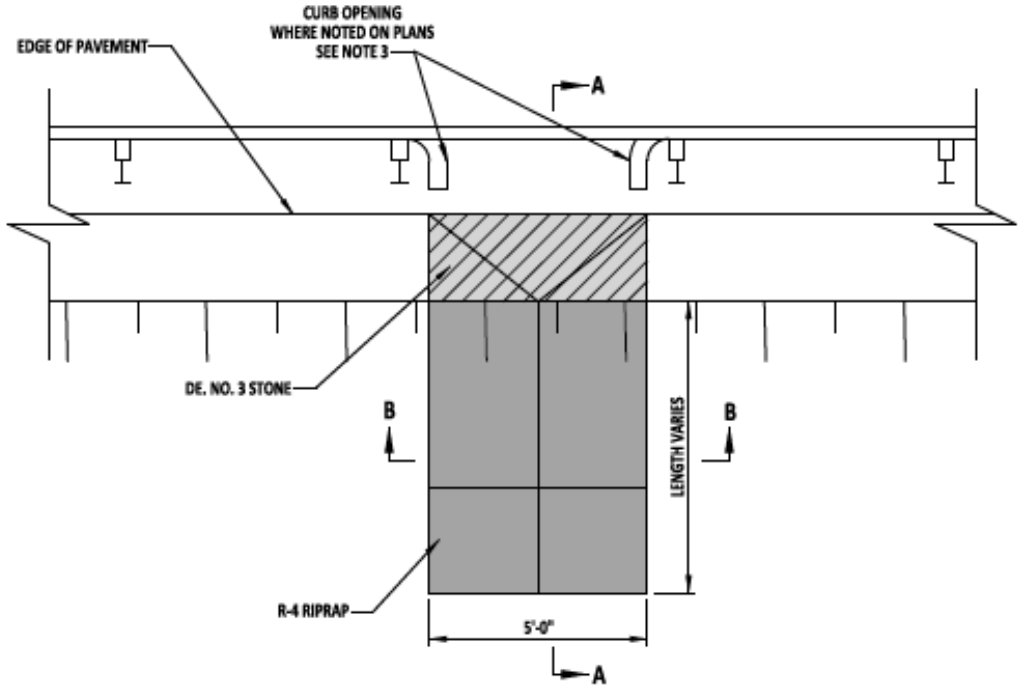
NOTE:

1). THE DIMENSIONS OF THE STILLING WELL ARE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER. THE MINIMUM

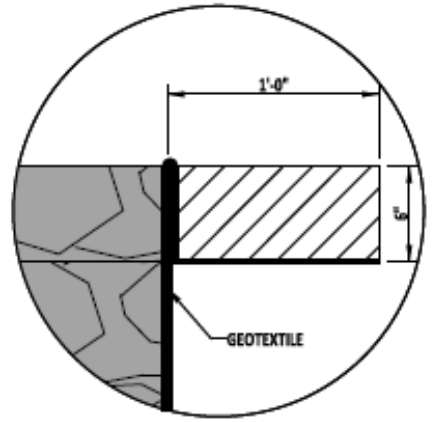
2). NO STREAMBED MATERIAL SHALL BE ALLOWED TO PASS THROUGH THE DEWATERING HOSE.

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	STILLING WELL	REVIEWED DEPUTY DIRECTOR - DBOS	09/01/2020 DATE
		STANDARD NO. E-19 (2020) SHT. 1 OF 1	APPROVED CHIEF ENGINEER	09/01/2020 DATE

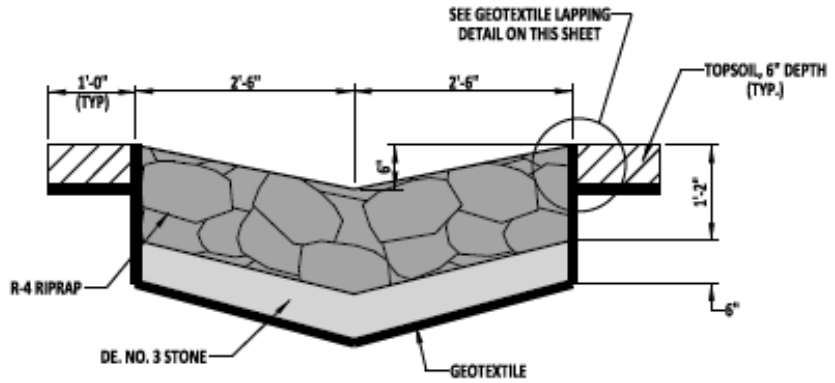
SCALE : NTS



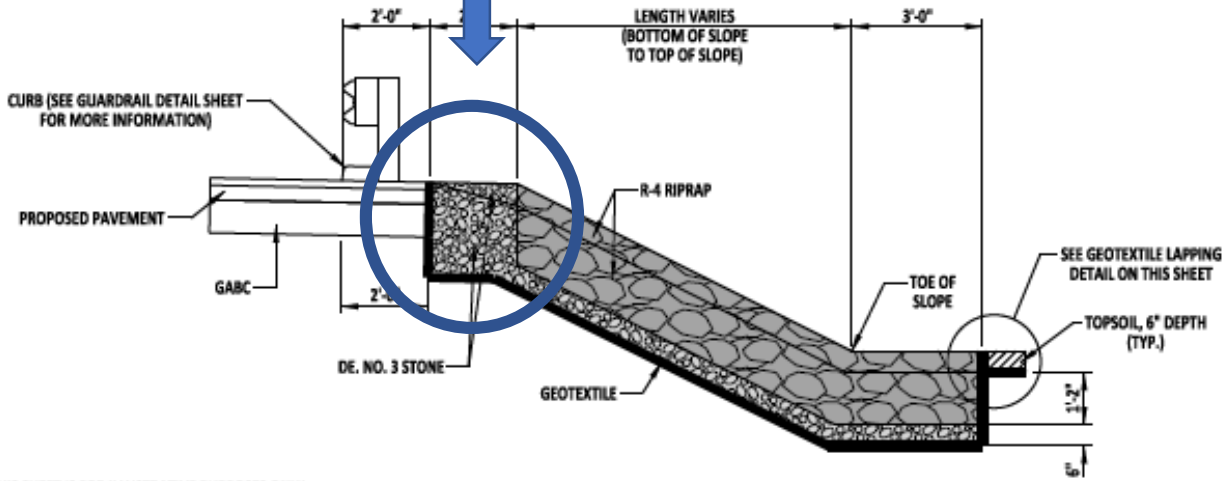
PLAN



GEOTEXTILE LAPPING DETAIL



Adjusted Geotextile Lapping not to go under the Roadway



SECTION A-A

NOTES:

1). GUARDRAIL DEPICTED ON THIS SHEET IS FOR ILLUSTRATIVE PURPOSES ONLY. REFER TO THE GUARDRAIL DETAILS FOR ACTUAL PLACEMENT. PLACEMENT OF SLOPE DRAIN MAY NEED TO BE ADJUSTED TO AVOID CONFLICT WITH GUARDRAIL POSTS.
2). PLACE CURB OPENING AT EACH SLOPE DRAIN LOCATION.
3). SEE DETAILS C-4 AND C-5 FOR MORE INFORMATION.

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

STONE OUTLET

STANDARD NO. E-21 (2020) SHT. 1 OF 1

REVIEWED
DEPUTY DIRECTOR - DESIGN
09/01/2020
DATE

APPROVED
CHIEF ENGINEER
09/01/2020
DATE

Section VI: Miscellaneous

Revised Standard Details

M-2 Right of Way Monumentation

M-3 Shared-Use Path & Sidewalk

M-5 Wood Rail Fence

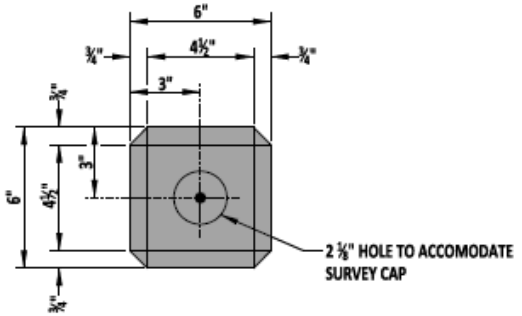
M-7 Chain Link Fence

M-9 Bus Stop Pad, Types 1,2, & 3, Bus Stop Pad with Shelter, Types 1 & 2

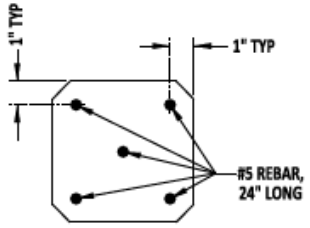
M-12 Driveway Transverse Slope Grading

M-13 Temporary Pedestrian Pathway ⟸ NEW

.



TOP



SECTION A-A

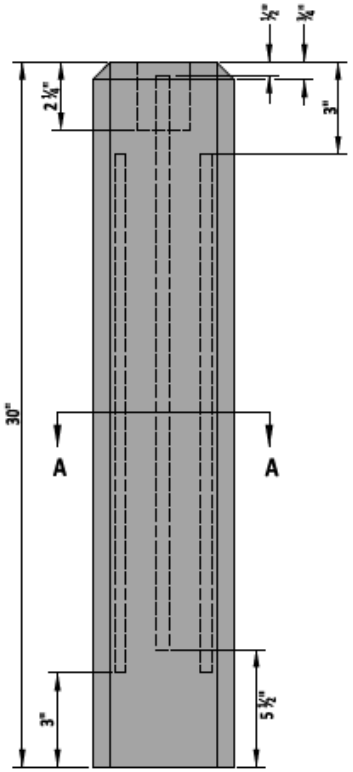
NOTES :

1). SUPPORT LONGITUDINAL STEEL IN PLACE BY CRADLES.
2). COUNTERSINK LETTERS ON CONCRETE MONUMENT IN TOP OF MARKER ¼".
3). USE FLEXIBLE DELINEATORS ONLY ON ROADS WITH A SPECIFIED DENIAL OF ACCESS OR CLASSIFIED AS MINOR ARTERIALS OR HIGHER. ON ALL OTHER ROAD CLASSIFICATIONS, PLACE A WOODEN STAKE WITH "ROW" HANDWRITTEN VERTICALLY IN 1" TALL LETTERS.
4). PLACE CAP ON CONCRETE MONUMENT SO THAT TOP OF CAP IS FLUSH WITH THE

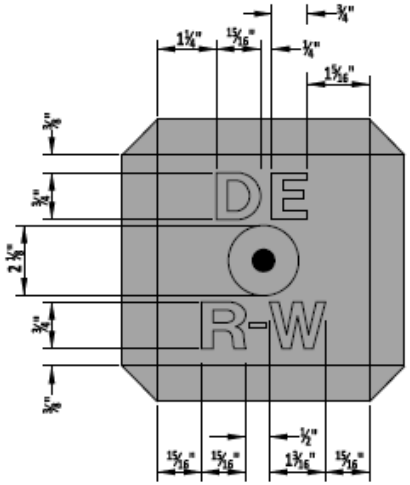
Revised Note

5). DO NOT CHAMFER THE CONCRETE MONUMENT WHEN PLACED WITHIN BITUMINOUS OR PCC.

SCALE : NTS



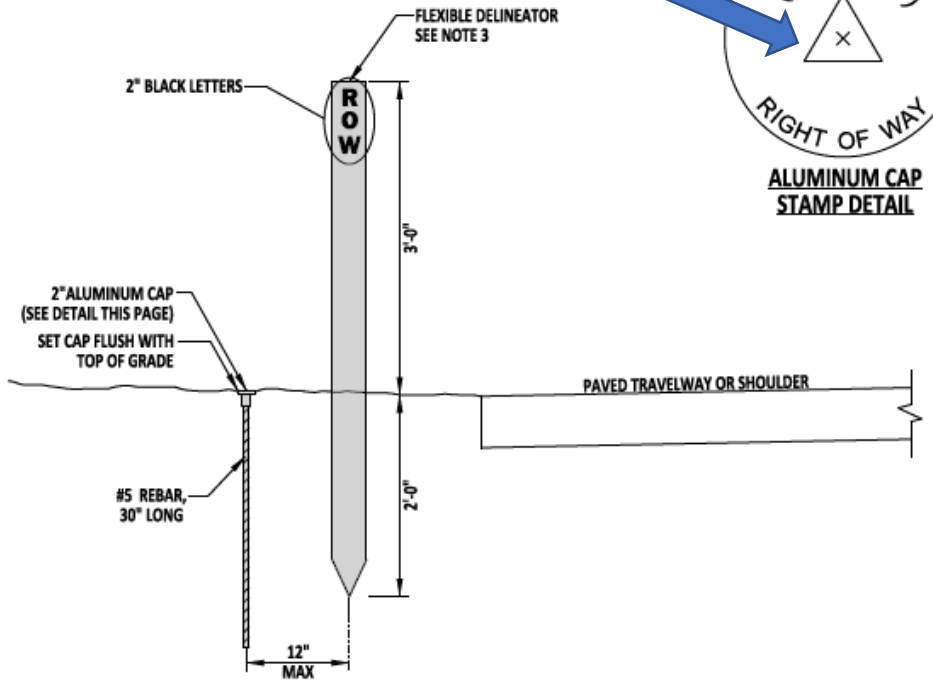
ELEVATION



TOP DETAIL

Added Triangle with "X"

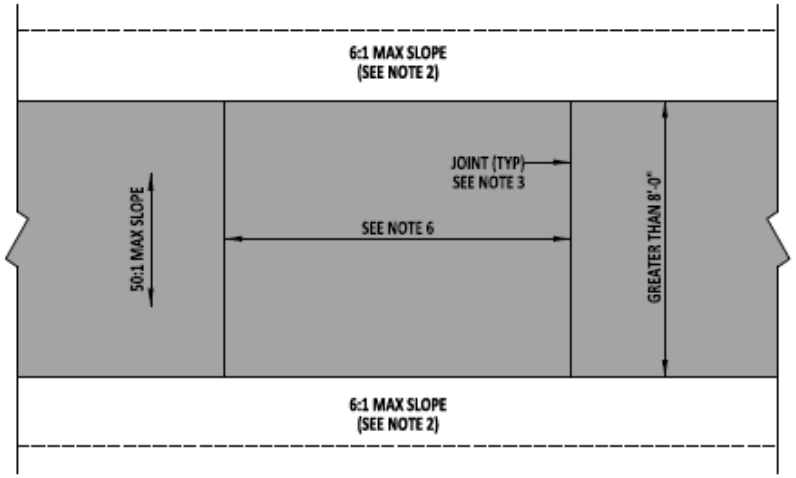
ALUMINUM CAP STAMP DETAIL



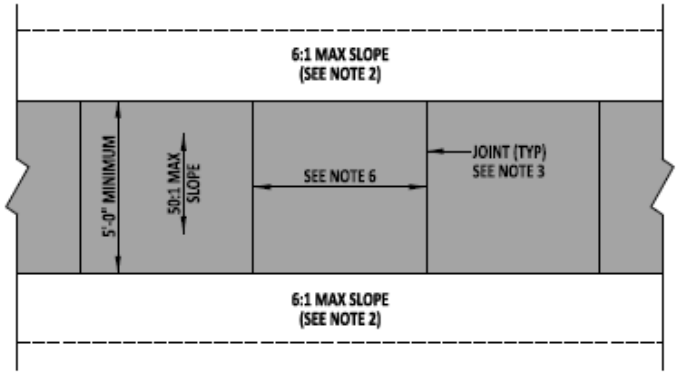
REBAR AND CAP WITH FLEXIBLE DELINEATOR DETAIL

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	RIGHT OF WAY MONUMENTATION		REVIEWED DEPUTY DIRECTOR - DESIGN	09/01/2020 DATE
		STANDARD NO. M-2 (2020)	SHT. 1 OF 1	APPROVED CHIEF ENGINEER	09/01/2020 DATE

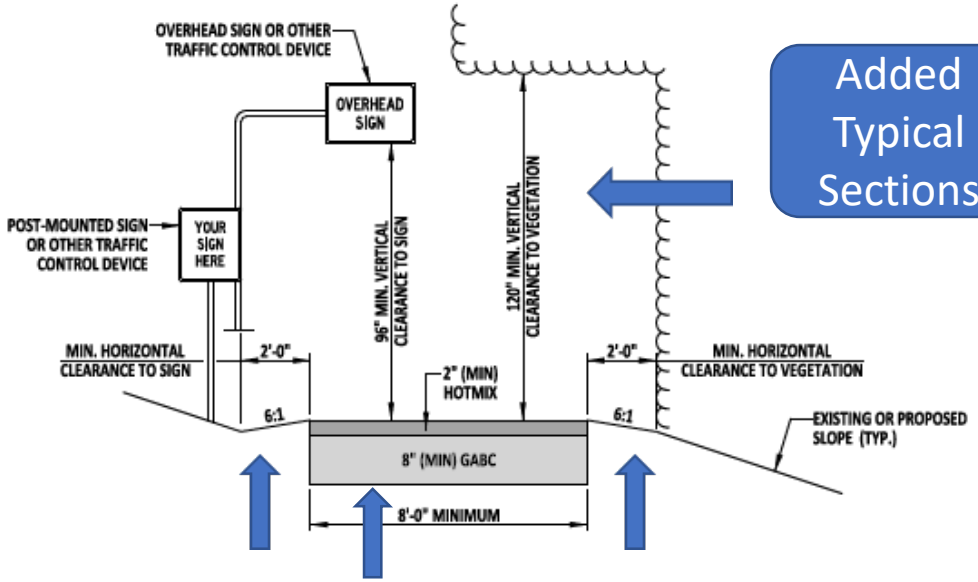
SCALE : NTS



SHARED-USE PATH PLAN

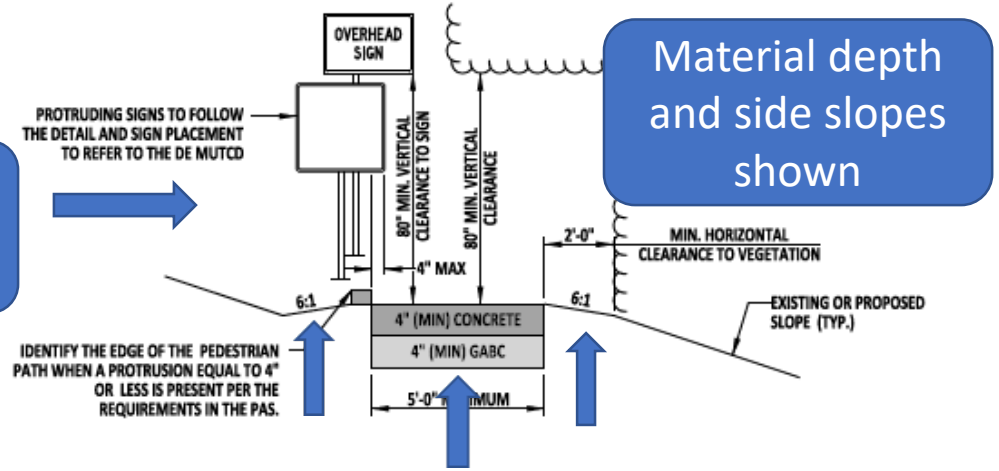


SIDEWALK PLAN



SHARED-USE PATH TYPICAL SECTION

Added Typical Sections



SIDEWALK TYPICAL SECTION

Material depth and side slopes shown

Revised Notes

NOTES:

1). IF THE SHARED-USE PATH OR SIDEWALK ENDS AT A TRAVELWAY OR RAILROAD CROSSING, INSTALL A PEDESTRIAN CONNECTION AT THE WIDTH OF THE PATH OR SIDEWALK (SEE C-2).
2). A 6:1 GRADE IS REQUIRED FOR A MINIMUM OF 2'-0" IMMEDIATELY ADJACENT TO THE SHARED USE PATH OR SIDEWALK.
3). FOR SIDEWALKS, PLACE CONSTRUCTION JOINTS EVERY 5' IN ACCORDANCE WITH SECTION 705.3. FOR CONCRETE SHARED-USE PATHS, PLACE CONSTRUCTION JOINTS EVERY 10'.
4). PLACE EXPANSION MATERIAL PLACEMENT IN ACCORDANCE WITH SECTION 701.3.
5). ON REHABILITATION PROJECTS, WHEN EXISTING OBSTRUCTIONS (FIRE HYDRANT, UTILITY POLE, ETC...) ARE LOCATED IN THE SIDEWALK, MAINTAIN A MINIMUM WIDTH OF 34" AND MAXIMUM LENGTH CONSTRICTION OF 24".
6). NOT TO EXCEED 5% OR ADJACENT ROAD GRADE.

DelDOT

ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

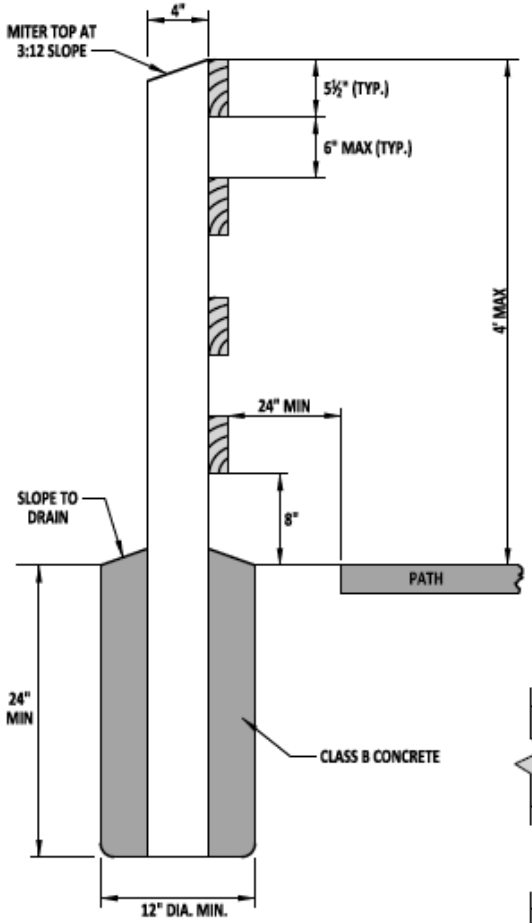
SHARED-USE PATH & SIDEWALK

STANDARD NO. M-3 (2020) | SHT. 1 OF 1

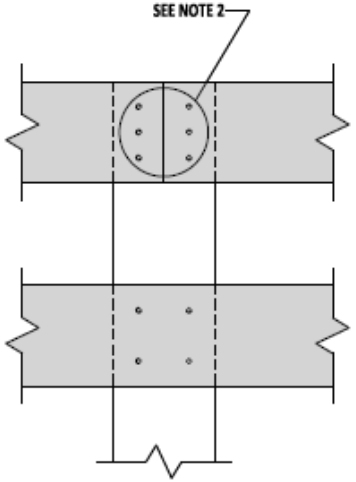
REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

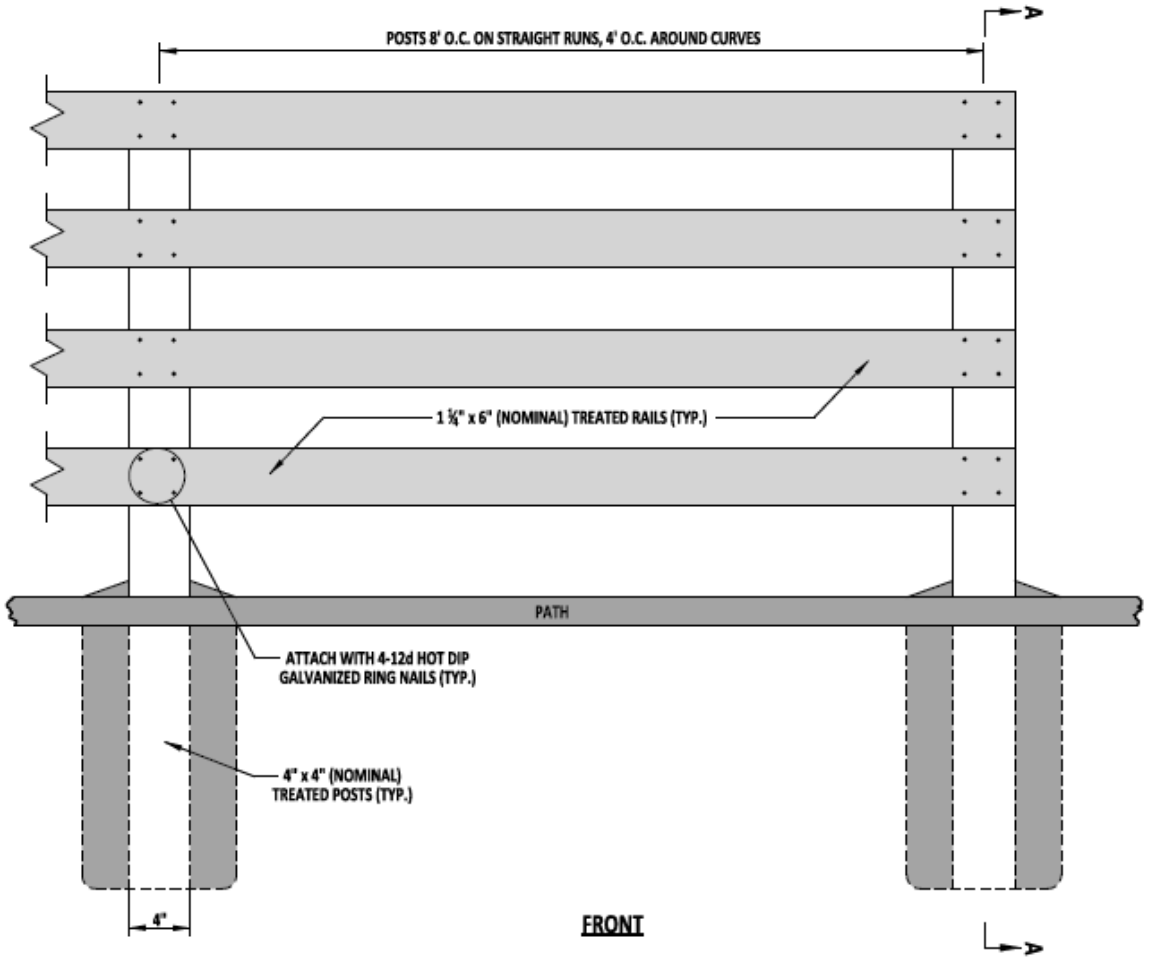
SCALE : NTS



SECTION A-A



TYPICAL JOINT DETAIL



FRONT

NOTES:

1). CENTER ALL RAIL JOINTS AT THE POSTS. DO NOT END TWO ADJACENT RAILS ON THE SAME POST.

Added Note

4). FENCE TO BE LOCATED OUTSIDE OF CLEAR ZONE OR ALONG LOW SPEED AREAS AS DIRECTED BY THE ENGINEER.

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

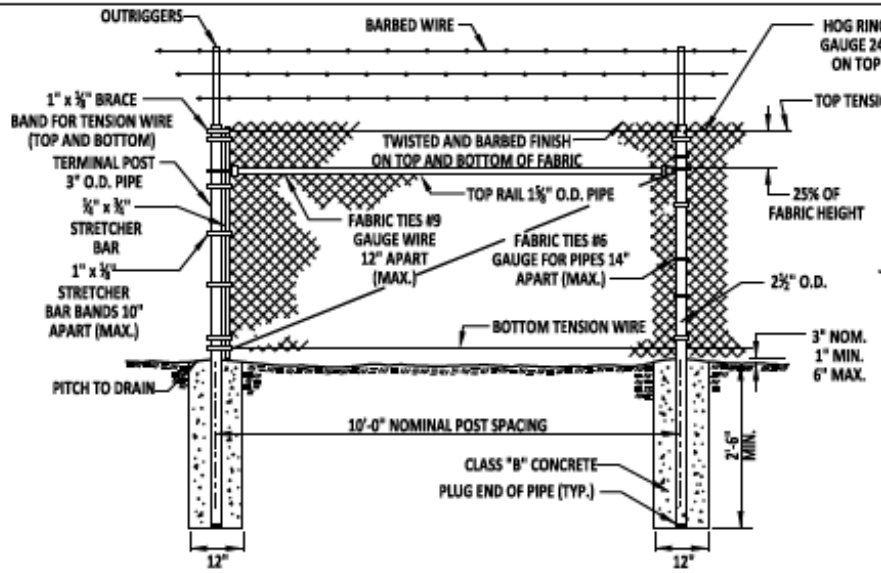
WOOD RAIL FENCE

STANDARD NO. M-5 (2020) SHT. 1 OF 1

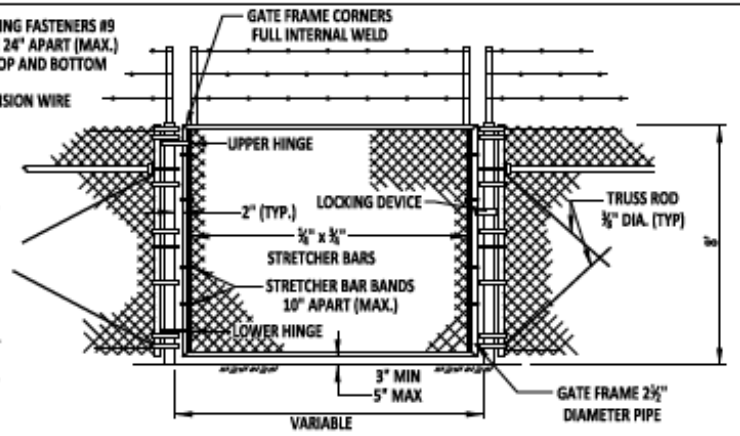
REVIEWED
DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

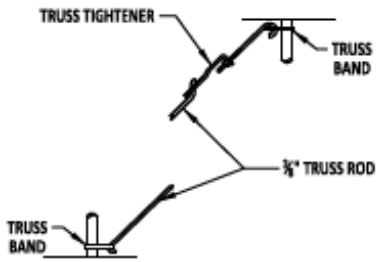
SCALE : NTS



CHAIN-LINK FENCE

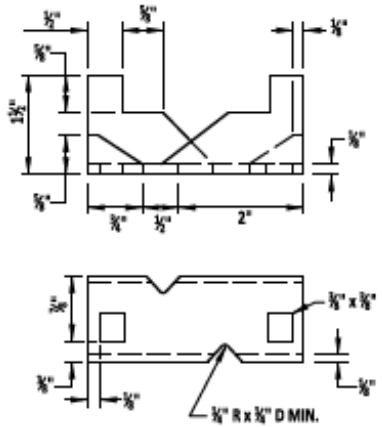


GATES, CHAIN-LINK FENCE

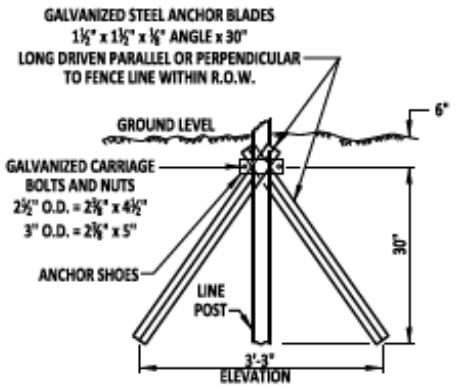


CHAIN-LINK FENCE ASSEMBLIES

TENSION WIRE CONNECTION AT ROUND INTERMEDIATE OR CORNER POST



ANCHOR SHOE



DRIVE ANCHOR SHOE ASSEMBLY
(SEE NOTE 4)

GENERAL NOTES

1). POSTS	TERMINAL, CORNER AND GATE POSTS	LINE POSTS	TOP OR BRACE RAIL
	3" O.D. PIPE	2½" O.D. PIPE	1⅝" O.D. PIPE
AASHTO TYPE AASHTO GRADE	I OR II 1 OR 2	I OR II 1 OR 2	I OR II 1 OR 2
MINIMUM LENGTH OF POST	10'-8"	10'-8"	N/A
ACTUAL OUTSIDE DIAMETER	2⅞"	2⅜"	1.660"
WALL THICKNESS	GRADE 1 = .203" GRADE 2 = .160"	GRADE 1 = .154" GRADE 2 = .120"	GRADE 1 = .140" GRADE 2 = .111"

2). THE DEPTH OF CONCRETE FOOTERS IN SOLID ROCK MAY BE REDUCED TO 12" BELOW THE TOP OF ROCK AND THE DIAMETER OF THE HOLE IN ROCK MAY BE REDUCED TO 6".
3). FURNISH BRACE BANDS AND STRETCHER BAR BANDS WITH $\frac{5}{16}$" DIA. CARRIAGE BOLTS AND ELASTIC STOP NUTS.
4). DRIVE ANCHOR SHOE ASSEMBLY ONLY TO BE USED IN WET AREAS AND WITH PRIOR APPROVAL OF THE ENGINEER.
5). TACK WELD OR BURR NUTS AND BOLTS TO PREVENT REMOVAL.
6). IF THERE ARE ANY OPENINGS IN THE FENCE LARGER THAN 96 SQ. IN. DUE TO UTILITIES OR GRADED TERRAIN, SECURE THE OPENINGS WITH A METAL GRILL THAT IS LOCKED OR PERMANENTLY WELDED.
7). VEGETATION AND PERMANENT STRUCTURES (SUCH AS BUILDINGS, LIGHT POLES, AND UTILITY POLES) SHALL BE AT LEAST 14' FROM THE FENCE. ANY EXCEPTIONS SHALL REQUIRE CONSTRUCTION OF TOP

8). INSTALL ALL FENCES OUTSIDE OF THE CLEAR ZONE.

Revised Notes, Added Note 8

DelDOT

ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

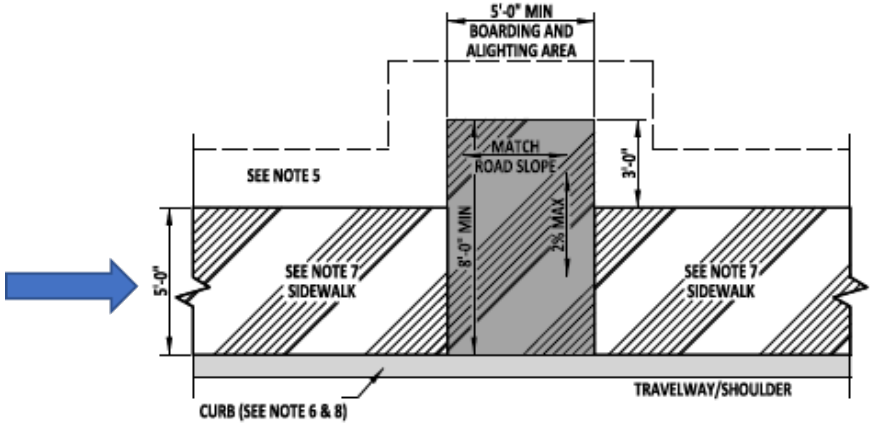
CHAIN LINK FENCE

STANDARD NO. M-7 (2020) SHT. 1 OF 1

REVIEWED — DEPUTY DIRECTOR - DOMOS — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

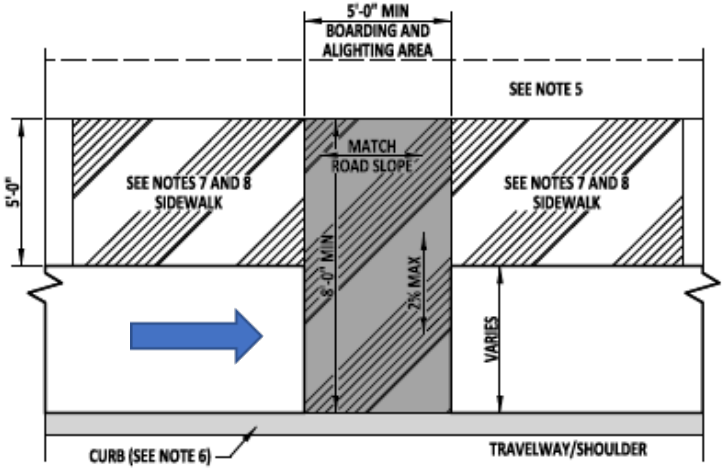
SCALE : NTS



Hatching Provided

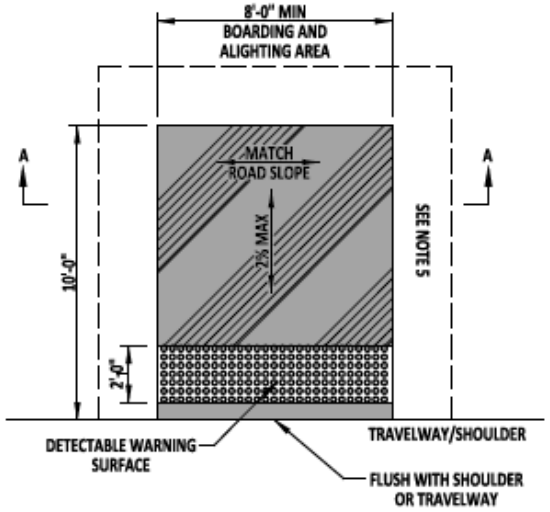
BUS STOP PAD, TYPE 1

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



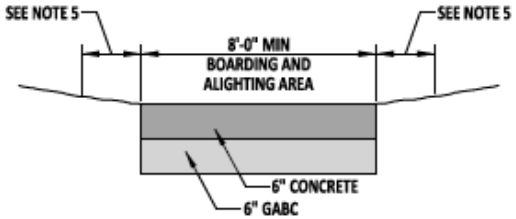
BUS STOP PAD, TYPE 2

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



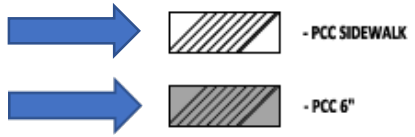
BUS STOP PAD , TYPE 3

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



SECTION A-A

Material Key



All notes match PAS Requirements

NOTES:

1). BUS STOP PAD LOCATIONS TO BE APPROVED BY BOTH DART AND DELDOT PRIOR TO ANY CONSTRUCTION.
2). REFERENCE THE DE MUTCD 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, PEDESTRIAN CONNECTIONS, CROSSWALKS, AND SIDEWALKS.
5). A 6:1 GRADE IS REQUIRED FOR A MINIMUM OF 2'-0" IMMEDIATELY ADJACENT TO THE BUS STOP PAD OR APPROACHING SIDEWALK.
6). SEE PLANS FOR CORRECT CURB TYPE. DO NOT DEPRESS CURB
7). SEE DETAIL M-3, SHEET 1 OF 1 FOR ADDITIONAL SIDEWALK DETAILS AND REQUIREMENTS.
8). THE MAXIMUM RUNNING SLOPE TO TRANSITION THE SIDEWALK TO MEET BUS STOP PAD ELEVATION IS 12:1 (8.3%), HOWEVER, 20:1 (5%) IS PREFERRED. RAMPS ARE ONLY REQUIRED WHEN THE VERTICAL HEIGHT OF THE APPROACHING SIDEWALK DIFFERS FROM THAT OF THE ADJACENT CURB.

DelDOT

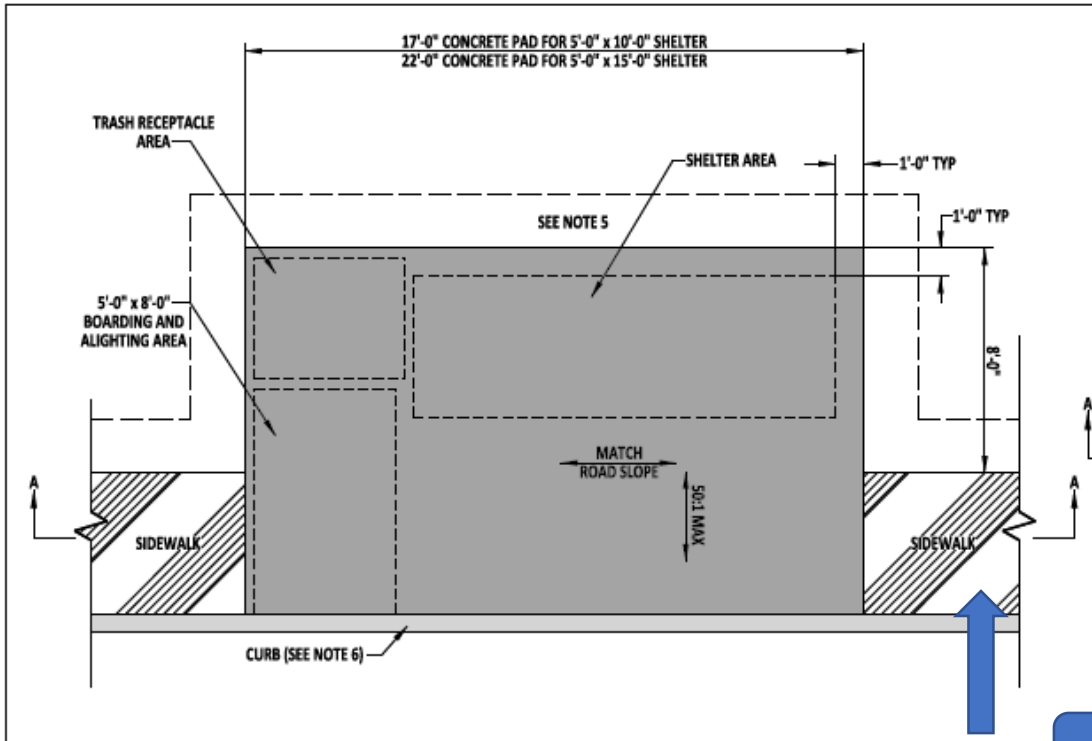
ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

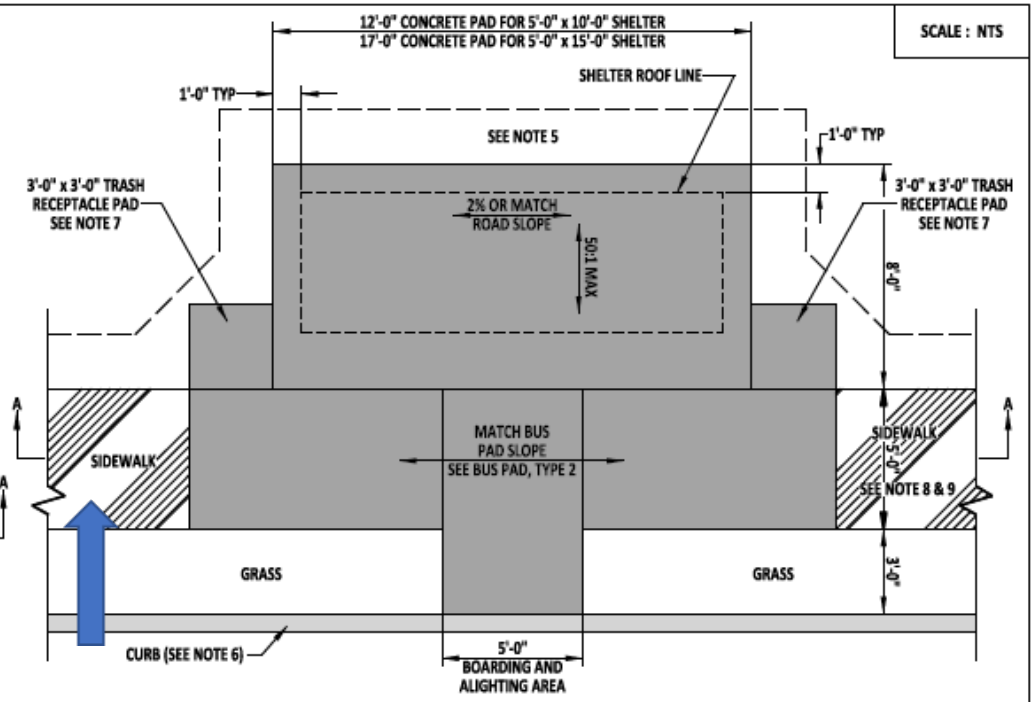
BUS STOP PAD, TYPES 1, 2 & 3

STANDARD NO. M-9 (2020) | SHT. 1 OF 2

REVIEWED — DEPUTY DIRECTOR - DIRECTOR — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE





BUS STOP WITH SHELTER PAD, TYPE 1

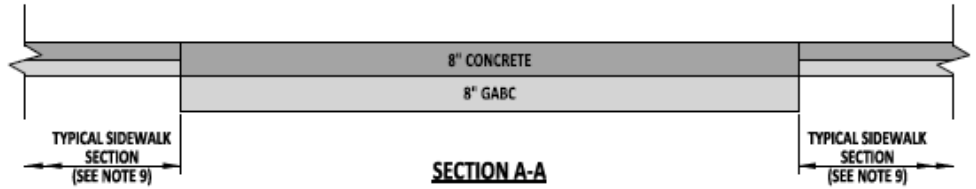
Hatching

BUS STOP WITH SHELTER PAD, TYPE 2

Notes match PAS Requirements

NOTES:

1). BUS STOP SHELTER PAD LOCATIONS TO BE APPROVED BY DART AND DELDOT PRIOR TO ANY CONSTRUCTION.
2). REFERENCE THE DE MUTCD FOR GENERAL INFORMATION ON PLACEMENT OF SIGNS.
3). SEE CONSTRUCTION PLANS SIGNING AND STRIPING SHEETS FOR SPECIFIC SIGN AND SIGN LOCATION DETAILS.
4). A 6:1 GRADE IS REQUIRED FOR A MINIMUM OF 2'-0" IMMEDIATELY ADJACENT TO THE BUS STOP PAD OR APPROACHING SIDEWALK.
5). SEE PLANS FOR CORRECT CURB TYPE. DO NOT DEPRESS CURB.
6). THE MAXIMUM RUNNING SLOPE TO TRANSITION THE SIDEWALK TO MEET BUS STOP PAD ELEVATION IS 12:1 (8.3%), HOWEVER, 20:1 (5%) IS PREFERRED. RAMPS ARE ONLY REQUIRED WHEN THE VERTICAL HEIGHT OF THE APPROACHING SIDEWALK DIFFERS FROM THAT OF THE ADJACENT CURB.
7). SEE DETAIL M-3, SHEET 1 OF 1 FOR ADDITIONAL SIDEWALK DETAILS AND REQUIREMENTS.
8). BUS STOP CONFIGURATIONS MAY VARY DUE TO TOPOGRAPHIC OBSTRUCTIONS OR GRADES. CONSULT DART OR DELDOT FOR OPTIONAL PAD DETAILS.
9). TRASH RECEPTACLE PAD CAN BE PLACED ON EITHER SIDE OF THE SHELTER PAD, AT THE DIRECTION OF THE ENGINEER IN THE FIELD.



SECTION A-A

Material Key

- PCC SIDEWALK
- PCC 8"

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

BUS STOP PAD WITH SHELTER, TYPES 1 & 2

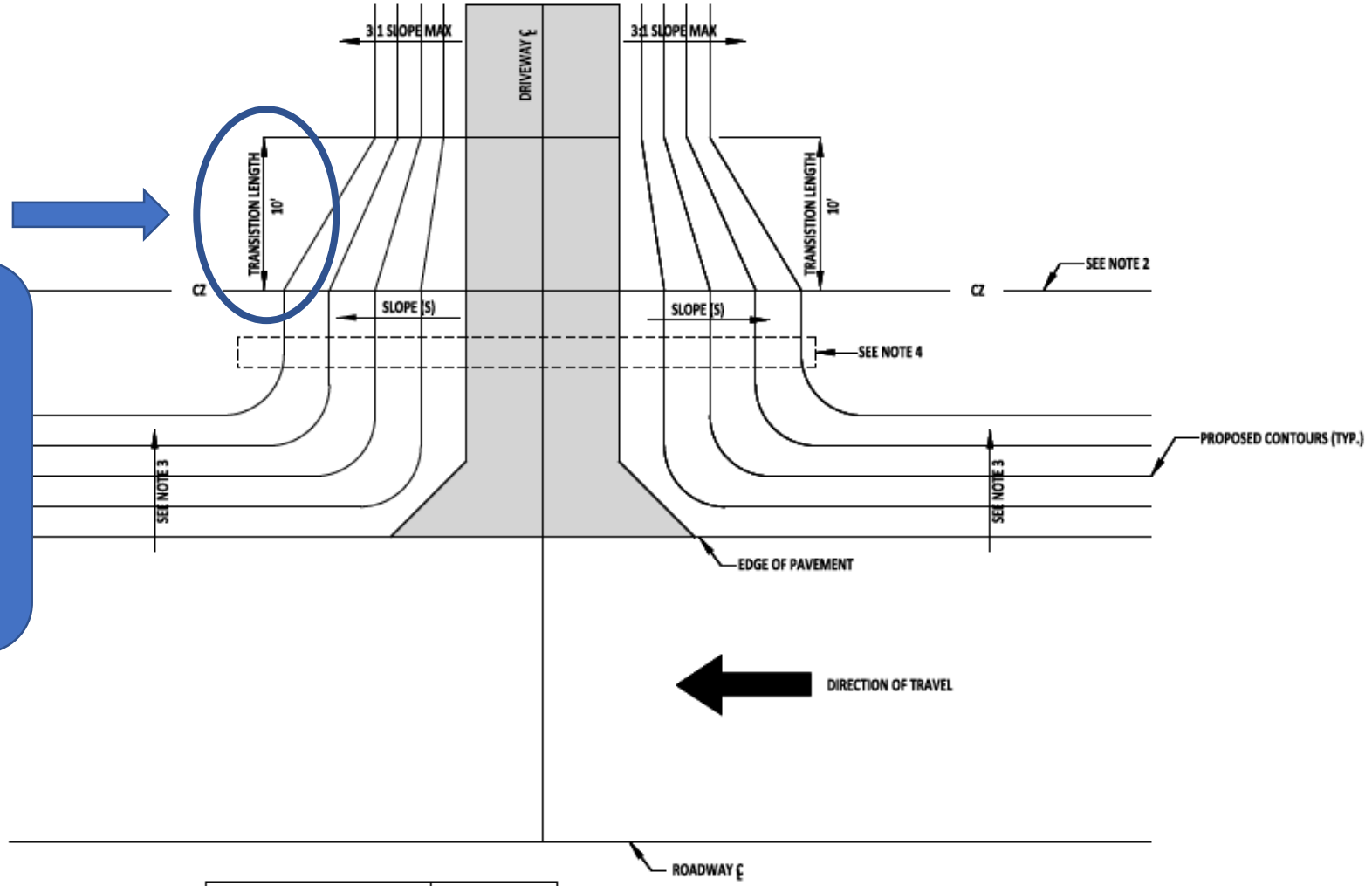
STANDARD NO. M-9 (2020) | SHT. 2 OF 2

REVIEWED
DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

Matched 10’ Transition and Slopes on the Departure as shown on the Approach

SCALE : NTS



DESIGN SPEED	S (H:V)
< 50 MPH	4:1
≥ 50 MPH	6:1

NOTES:
1). REFER TO PLANS AND STANDARD DETAIL C-3 FOR ENTRANCE CONSTRCTION.
2). REFER TO THE PLANS FOR LOCATION OF THE CLEAR ZONE.
3). REFER TO THE PLANS FOR THE DITCH SIDESLOPE GRADING REQUIREMENTS.
4). REFER TO THE PLANS FOR PIPE END TREATMENTS.

DelDOT

ENGINEERING SUPPORT — DATE 09/01/2020
RECOMMENDED

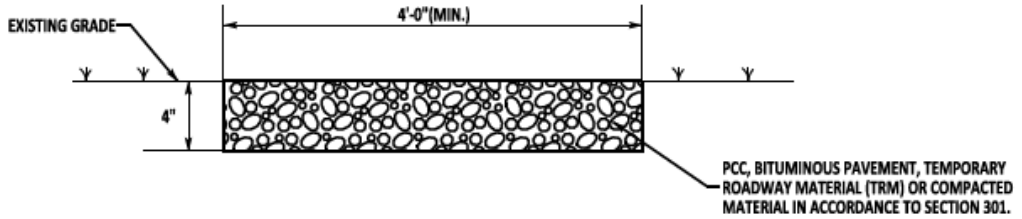
DRIVEWAY TRANSVERSE SLOPE GRADING

STANDARD NO. M-12 (2020) SHT. 1 OF 1

REVIEWED — DEPUTY DIRECTOR - DBMS — DATE 09/01/2020

APPROVED — CHIEF ENGINEER — DATE 09/01/2020

New Detail based on Section 301 of the Standard Specifications

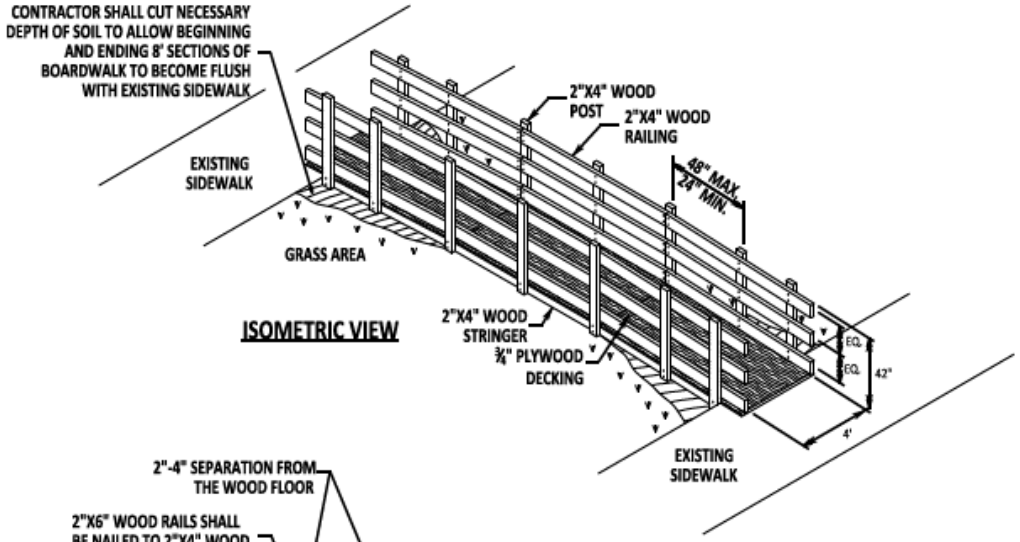


TEMPORARY PEDESTRIAN PATHWAY
N.T.S.

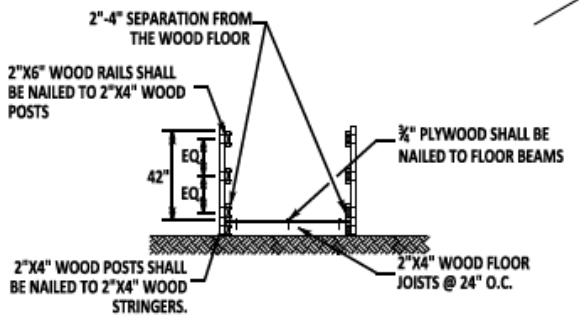
NEW

NOTES:
1. PROVIDE 4'-0" WIDE TEMPORARY PATHWAY, SUPPLY CONCRETE, HOTMIX, COLD PATCH OR MILLINGS TO A MINIMUM DEPTH OF 4", FLUSH WITH EXISTING GRADE.
2. MAINTAIN A UNIFORM MATERIAL THAT IS FIRM, STABLE, AND SLIP RESISTANT.
3. IN THE EVENT THAT THE WALKING SURFACE OF THE TEMPORARY SIDEWALK IS LOCATED MORE THAN 30" FROM GRADE AT ANY POINT ALONG THE PROPOSED PATH, PROVIDE TYPE 2 TEMPORARY SIDEWALK.
4. MAXIMUM ALLOWABLE RUNNING SLOPE NOT TO EXCEED 5%. MAXIMUM ALLOWABLE CROSS SLOPE NOT TO EXCEED 2% AND VERTICAL SURFACES NOT TO EXCEED 1/4". FURTHER GUIDANCE IN ACCORDANCE WITH THE LATEST VERSION OF THE PEDESTRIAN ACCESSIBILITY STANDARDS FOR FACILITIES IN THE PUBLIC RIGHT-OF-WAY.
5. ANY REQUIRED EXCAVATION TO CONSTRUCT THE PATHWAY IS INCIDENTAL TO ITEM 813503.
6. COST FOR SEEDING REQUIRED TO RESTORE THE AREA IS PAYABLE BY THE DEPARTMENT.

SCALE : NTS

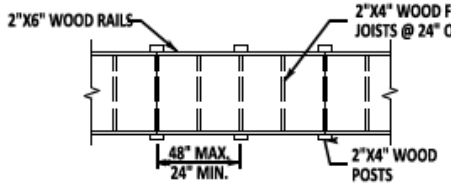


ISOMETRIC VIEW



SECTION VIEW

NOTES:
1. MAXIMUM ALLOWABLE RUNNING SLOPE NOT TO EXCEED 5%. MAXIMUM ALLOWABLE CROSS SLOPE NOT TO EXCEED 2% AND VERTICAL SURFACES NOT TO EXCEED 1/4". FURTHER GUIDANCE IN ACCORDANCE WITH THE LATEST VERSION OF THE PEDESTRIAN ACCESSIBILITY STANDARDS FOR FACILITIES IN THE PUBLIC RIGHT-OF-WAY.
2. MAINTAIN A UNIFORM MATERIAL THAT IS FIRM, STABLE, AND SLIP RESISTANT.



PLAN VIEW

TEMPORARY SIDEWALK DETAIL - TYPE 2
N.T.S.

DelDOT

ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

TEMPORARY PEDESTRIAN PATHWAY

STANDARD NO. M-13 (2020) | SHT. 1 OF 1

REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

Section VII: Pavement

Revised Standard Details

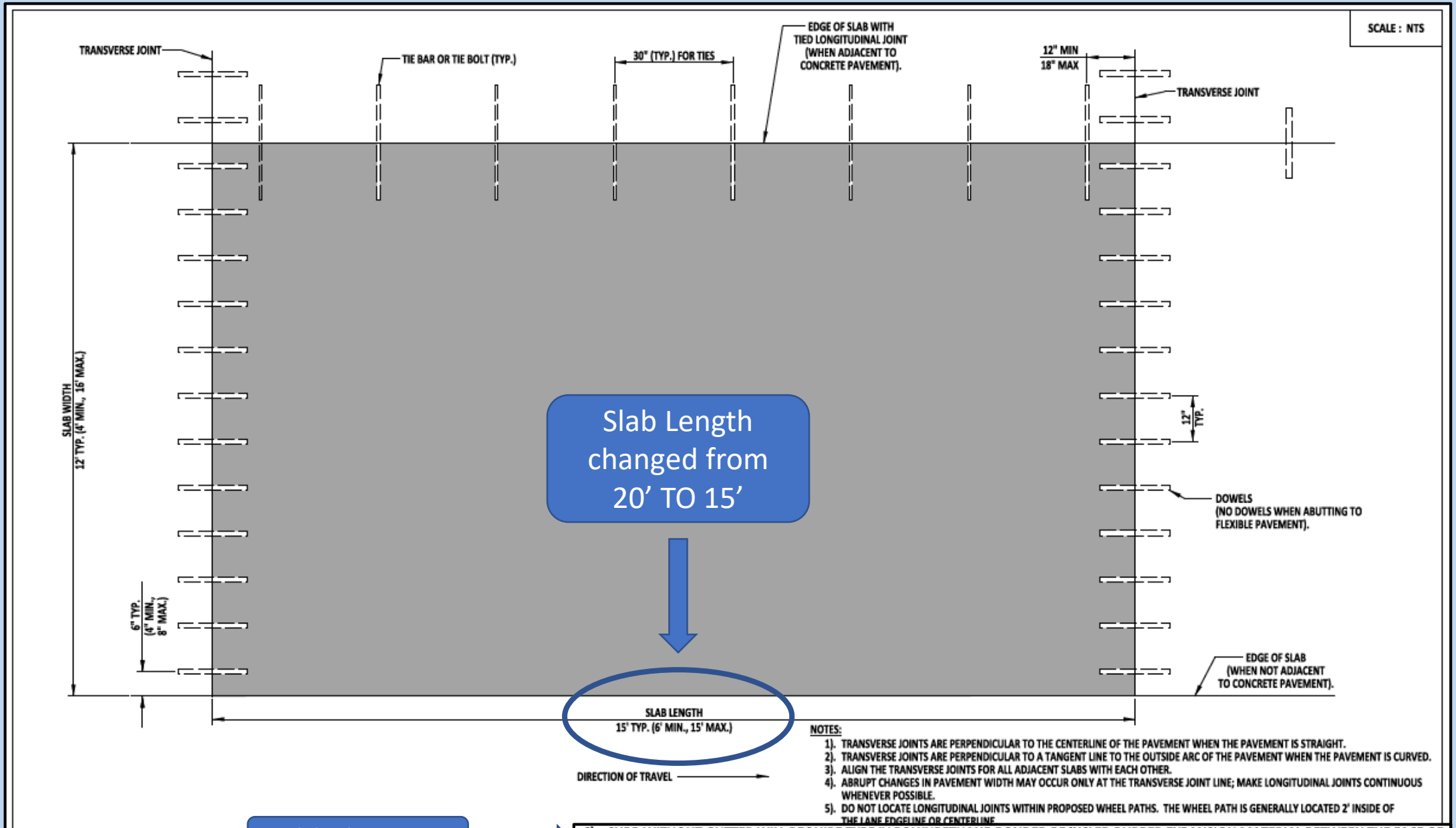
P-1 **Slab Plan (with Dowel and Tie Locations), Joint and Sealant**

P-2 **Full Depth Patch, Sealant, Grout Retention Disk, and Dowel Bars**

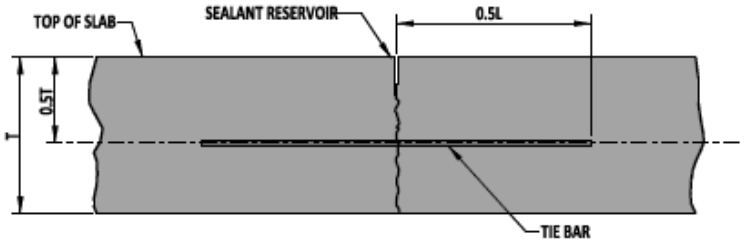
P-4 **Permanent Cross-Road Patch over Pipe Trench**

P-6 **Pavement Safety Edge**

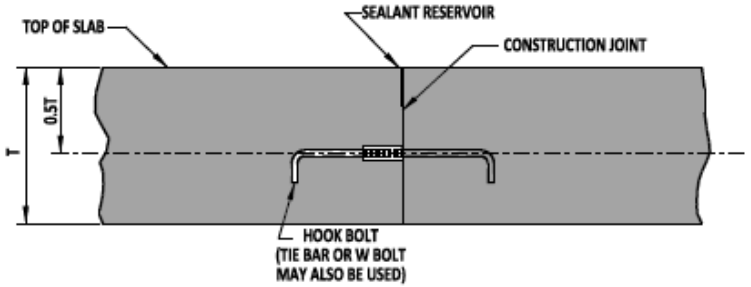
.


SCALE : NTS
TRANSVERSE JOINT
TIE BAR OR TIE BOLT (TYP.)
30" (TYP.) FOR TIES
EDGE OF SLAB WITH TIED LONGITUDINAL JOINT (WHEN ADJACENT TO CONCRETE PAVEMENT).
12" MIN 18" MAX
TRANSVERSE JOINT
SLAB WIDTH 12' TYP. (4' MIN., 16' MAX.)
12" TYP.
DOWELS (NO DOWELS WHEN ABUTTING TO FLEXIBLE PAVEMENT).
6" TYP. (4" MIN., 8" MAX.)
EDGE OF SLAB (WHEN NOT ADJACENT TO CONCRETE PAVEMENT).
SLAB LENGTH 15' TYP. (6' MIN., 15' MAX.)
DIRECTION OF TRAVEL
Slab Length changed from 20' TO 15'
NOTES:
1). TRANSVERSE JOINTS ARE PERPENDICULAR TO THE CENTERLINE OF THE PAVEMENT WHEN THE PAVEMENT IS STRAIGHT.
2). TRANSVERSE JOINTS ARE PERPENDICULAR TO A TANGENT LINE TO THE OUTSIDE ARC OF THE PAVEMENT WHEN THE PAVEMENT IS CURVED.
3). ALIGN THE TRANSVERSE JOINTS FOR ALL ADJACENT SLABS WITH EACH OTHER.
4). ABRUPT CHANGES IN PAVEMENT WIDTH MAY OCCUR ONLY AT THE TRANSVERSE JOINT LINE; MAKE LONGITUDINAL JOINTS CONTINUOUS WHENEVER POSSIBLE.
5). DO NOT LOCATE LONGITUDINAL JOINTS WITHIN PROPOSED WHEEL PATHS. THE WHEEL PATH IS GENERALLY LOCATED 2' INSIDE OF THE LANE EDGELINE OR CENTERLINE.
Added Note 6
6). CURB WITHOUT GUTTER WILL REQUIRE TYPE IV POLYURETHANE-BONDED RECYCLED RUBBER EXPANSION MATERIAL BETWEEN THE FACE OF CURB AND EDGE OF PCC PAVEMENT.
DelDOT
09/01/2020
ENGINEERING SUPPORT
DATE
RECOMMENDED
SLAB PLAN (WITH DOWEL AND TIE LOCATIONS)
STANDARD NO. P-1 (2020)
SHT. 1 OF 5.
REVIEWED
DEPUTY DIRECTOR - DIRECTOR
09/01/2020
DATE
APPROVED
CHIEF ENGINEER
09/01/2020
DATE

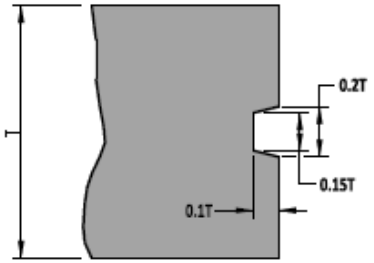
SCALE : NTS



LONGITUDINAL SAW-CUT JOINT DETAIL

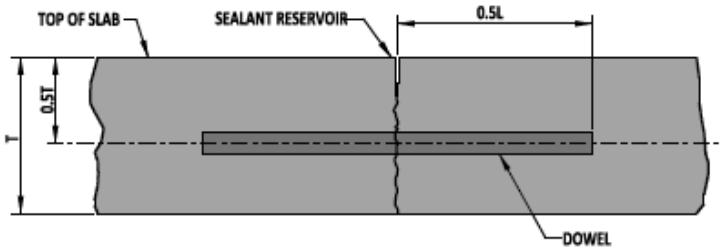


LONGITUDINAL CONSTRUCTION JOINT DETAIL

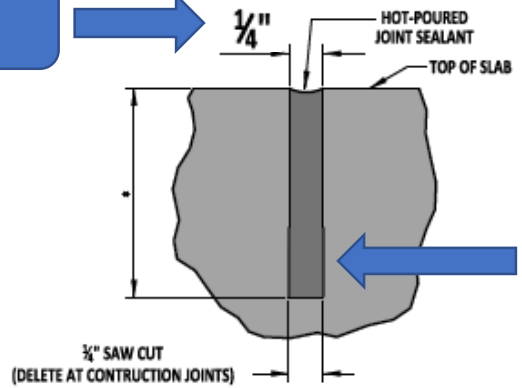


KEYWAY DETAIL
SEE NOTE 8

Added ¼" width



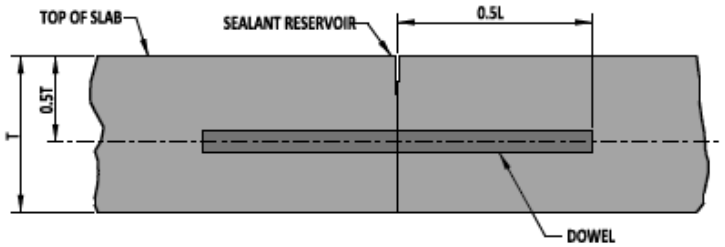
TRANSVERSE SAW-CUT JOINT DETAIL



Removed Backer Rod

SEALANT RESERVOIR DETAIL-
TRANSVERSE AND LONGITUDINAL JOINT

* - 0.3T (10" PCC PAVEMENT)
0.4T (12" PCC PAVEMENT)



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTES:

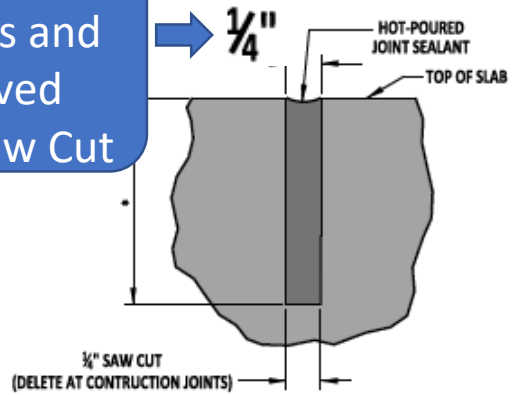
1). AS DIMENSIONED, THE WIDTH OF THE TRANSVERSE SEALANT RESERVOIR IS APPLICABLE WHEN THE TEMPERATURE OF THE PAVEMENT SURFACE IS BETWEEN 60°F AND 80°F. WHEN THE TEMPERATURE IS BELOW 60°F, CUT THE SEALANT RESERVOIR 1/16" WIDER. WHEN THE TEMPERATURE IS ABOVE 80°F, CUT THE SEALANT RESERVOIR 1/16" NARROWER.
2). "T" REFERS TO THE ACTUAL CONSTRUCTED SLAB THICKNESS.
3). THE TOLERANCE ON ALL JOINT SEALANT DETAIL DIMENSIONS IS PLUS 1/16" , MINUS 0".
4). CONSTRUCT THE TOP EDGES OF THE CONTACT SURFACES OF THE SEALANT MATERIAL ON BOTH SIDES OF THE JOINT RESERVOIR TO THE SAME ELEVATION.
5). PLACE TRANSVERSE JOINT MATERIAL BEFORE LONGITUDINAL JOINT MATERIAL; PLACE TRANSVERSE JOINT MATERIAL ACROSS THE FULL WIDTH OF ALL ADJACENT PCC PAVEMENT SLABS.
6). PLACE LONGITUDINAL JOINT MATERIAL WITHOUT GAPS WHENEVER INTERRUPTED BY THE TRANSVERSE JOINT MATERIAL.
7). TRANSVERSE JOINT SEAL TO BE RECESSED 3/16" TO 5/16" BELOW THE TOP OF THE SLAB.
8). USE KEYWAY WHEN HOOK BOLT, TIE BAR, OR W BOLT IS NOT USED.

JOINT AND SEALANT DETAILS

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	JOINT AND SEALANT	REVIEWED DEPUTY DIRECTOR - DESIGN	09/01/2020 DATE
		STANDARD NO. P-1 (2020) SHT. 2 OF 5	APPROVED CHIEF ENGINEER	09/01/2020 DATE

SCALE : NTS

¼” width for all Joints and removed Initial Saw Cut



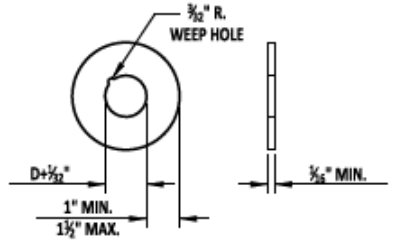
SEALANT RESERVOIR DETAIL-TRANSVERSE AND LONGITUDINAL JOINT

* - 0.3T (10" PCC PAVEMENT)
0.4T (12" PCC PAVEMENT)

Combined Transverse and Longitudinal Joint into one Detail

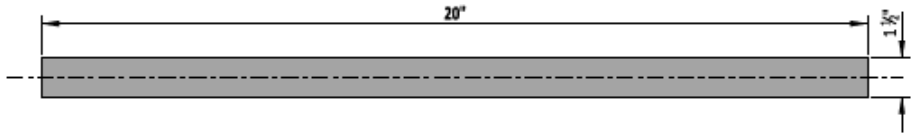
Added Dowel Bar Chart

DOWEL BAR CHART		
SLAB THICKNESS	DOWEL	
	D	L
10"	1¼"	18"
12"	1½"	20"



D - DOWEL DIAMETER (INCLUDING PROTECTING COATINGS, IF ANY.)

GROUT RETENTION DISK



DOWEL BAR

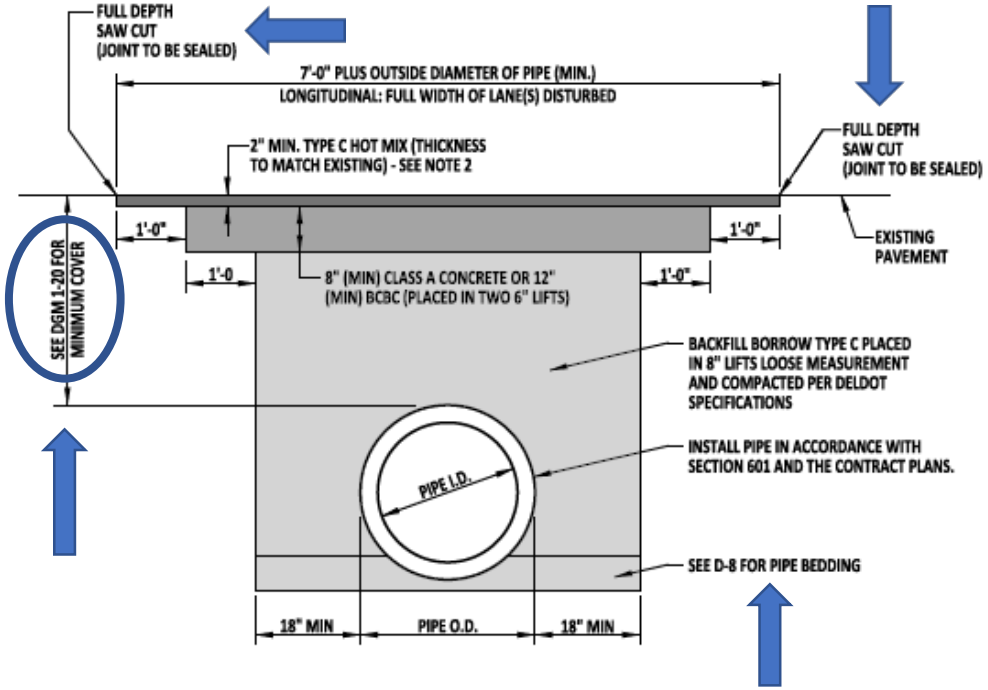
NOTES:

1). AS DIMENSIONED, THE WIDTH OF THE TRANSVERSE SEALANT RESERVOIR IS APPLICABLE WHEN THE TEMPERATURE OF THE PAVEMENT SURFACE IS BETWEEN 60°F AND 80°F. WHEN THE TEMPERATURE IS BELOW 60°F, CUT THE SEALANT RESERVOIR 1/16" WIDER. WHEN THE TEMPERATURE IS ABOVE 80°F, CUT THE SEALANT RESERVOIR 1/16" NARROWER.
2). "T" REFERS TO THE "AS BUILT" SLAB THICKNESS.
3). THE TOLERANCE ON ALL JOINT SEALANT DETAIL DIMENSIONS SHOWN WITHOUT A RANGE IS PLUS 1/16" , MINUS 0".
4). CONSTRUCT THE TOP EDGES OF THE CONTACT SURFACES OF THE SEALANT MATERIAL ON BOTH SIDES OF THE JOINT RESERVOIR TO THE SAME ELEVATION.

FULL DEPTH PATCH

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	FULL DEPTH PATCH, SEALANT, GROUT RETENTION DISK AND DOWEL BARS	REVIEWED DEPUTY DIRECTOR - DESIGN	09/01/2020 DATE
		STANDARD NO. P-2 (2020) SHT. 3 OF 5	APPROVED CHIEF ENGINEER	09/01/2020 DATE

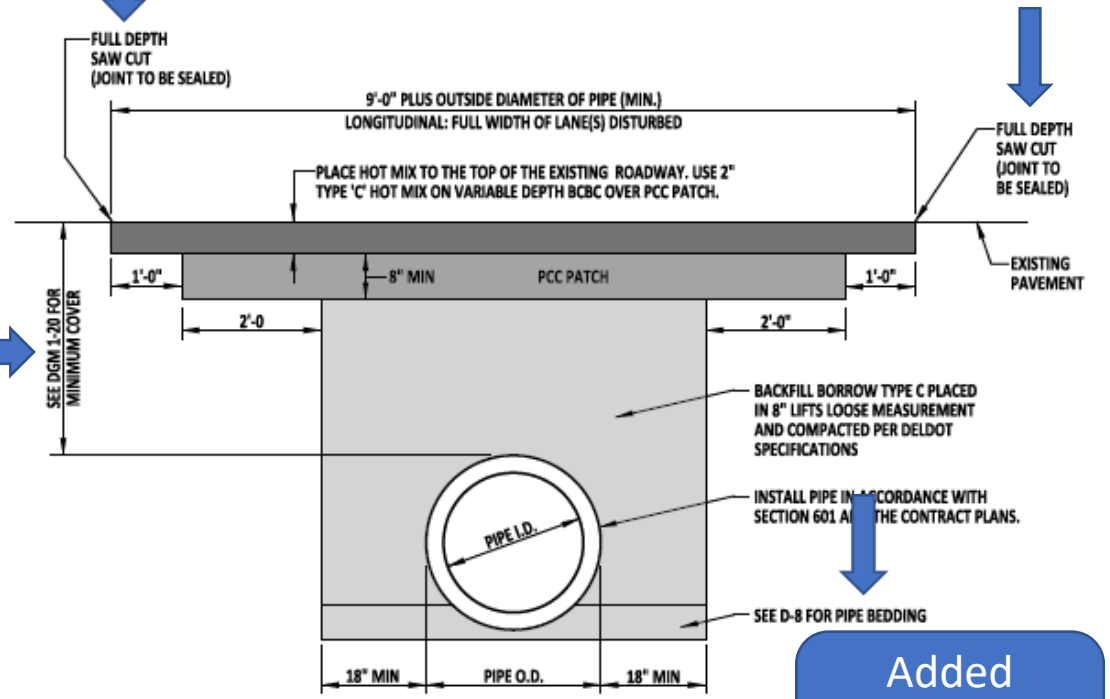
SCALE : NTS



PERMANENT CROSS-ROAD OR LONGITUDINAL PATCH DETAIL

Labeled Joints - Saw Cut and Seal

Referenced DGM 1-20 for Min. Cover



PERMANENT CROSS-ROAD OR LONGITUDINAL PATCH DETAIL
* EXISTING CONCRETE PAVEMENT OVERLAYED WITH HOTMIX LOCATIONS

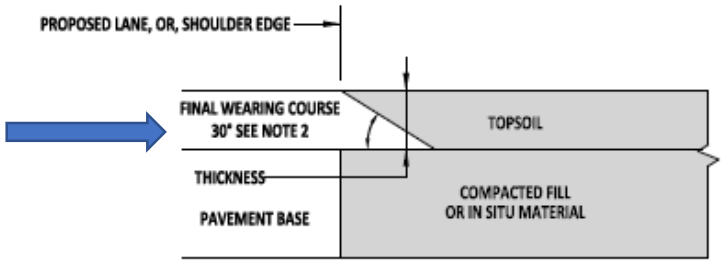
Added Bedding Below Pipe

NOTES:
1). PATCH WIDTHS ARE MEASURED ALONG THE ROADWAY CENTERLINE. CONSTRUCT PATCHES 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.

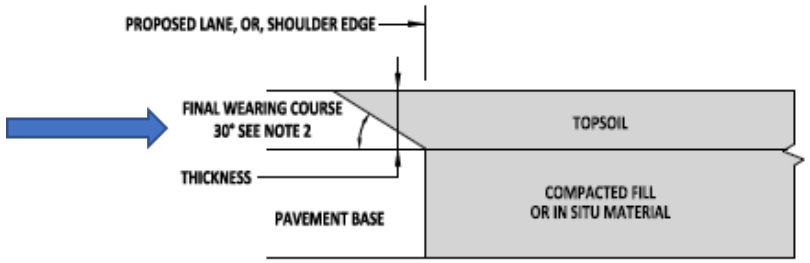
DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	PERMANENT CROSS-ROAD PATCH OVER PIPE TRENCH	REVIEWED 09/01/2020 DEPUTY DIRECTOR - DIMOS DATE
		STANDARD NO. P-4 (2020) SHT. 1 OF 1	APPROVED 09/01/2020 CHIEF ENGINEER DATE

SCALE : NTS

WHERE LANE WIDTH ≤11' OR SHOULDER WIDTH ≤5'



WHERE LANE WIDTH ≥11' OR SHOULDER WIDTH ≥5'



Added Final Wearing Course and reference to Note 2

THICKNESS OF SAFETY EDGE	
CONCRETE PAVEMENT	3"
BITUMINOUS CONCRETE PAVEMENT FINAL WEARING COURSE	> 1¼"

Added to Chart

NOTE:

1). LEVEL COMPACTED FILL OR IN-SITU MATERIAL WITH THE PAVEMENT BASE PRIOR TO FINAL BITUMINOUS CONCRETE PAVING LIFT.

2). ANGLE ALLOWANCE OF 26° MINIMUM TO 40° MAXIMUM.

Revised Note 1

Added Note 2

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

PAVEMENT SAFETY EDGE

STANDARD NO. P-6 (2020) SHT. 1 OF 1

REVIEWED 09/01/2020
DEPUTY DIRECTOR - DESIGN DATE

APPROVED 09/01/2020
CHIEF ENGINEER DATE

Section VIII: Traffic

Revised Standard Details

T-1 **Conduit Junction Well, Type 7** ⟸ NEW

T-4 **Cabinet Bases, Types M, K, & F and Types P & R**

T-5 **Pole Bases**

T-9 **Wiring Installation Typicals**

Removed From Standard Details

T-3 Conduit Junction Well, Type II – Junction well types 11, 14, and 15 were removed.

T-6 Special Pole Base – Special pole bases removed.

T-7 Sign Foundation – Detail currently in review, look for updates.

T-13 Conduit Junction Well, Type 7 – Conduit junction wells were relocated and edits made to Type 7.

Section VIII: Traffic

Added to Standard Details

T-12 Attachment Between Poles

T-16 Permanent Wood Barricade

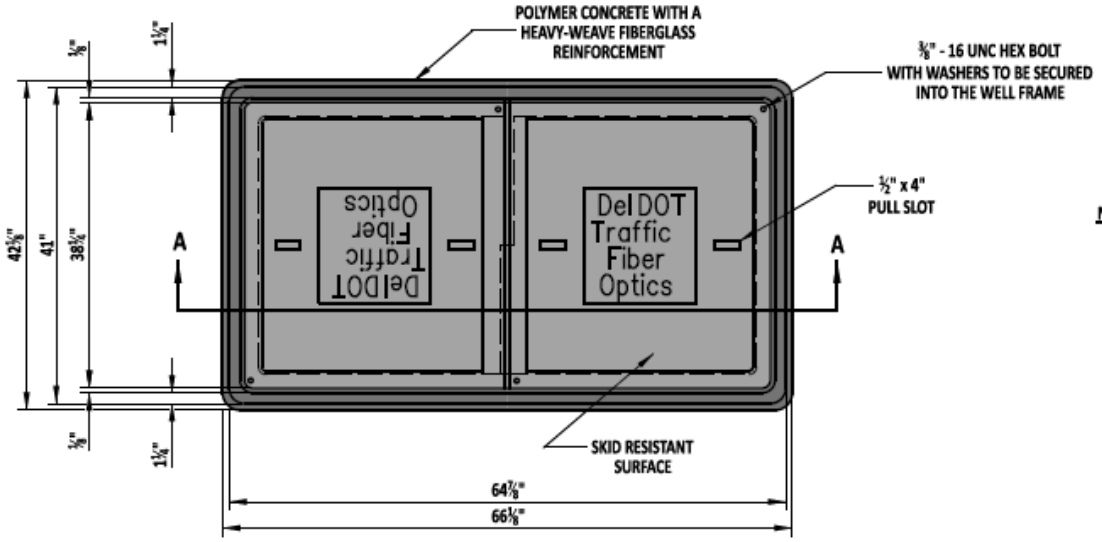
T-17 Electrical Service Pedestal – Signal & ITS Component Installations

- **– 100 Amp (3+ Devices)**
- **– 100 Amp (Condensed)**
- **– 100 Amp (Up to 2 Devices)**
- **– 200 Amp – Standard Lighting Component Installations**
- **– Lighting Component Installations (12 or Less Fixtures)**

T-18 Pedestrian Pushbutton Location – Assembly Location on Pole

T-18 Pedestrian Pushbutton Location – Sign Attachment

SCALE : NTS

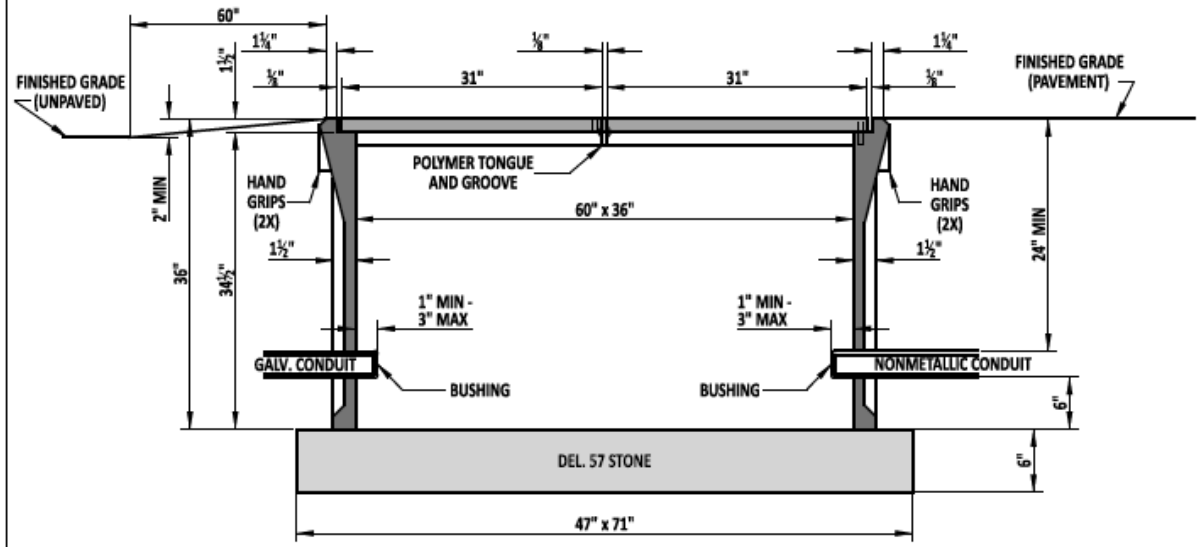


PLAN VIEW

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.
4). AREA AROUND THE JUNCTION WELL SHALL BE BACKFILLED WITH BORROW TYPE C MATERIAL TO THE REQUIRED ELEVATION IN ACCORDANCE WITH SECTION 207. EXCESS AND UNSUITABLE MATERIAL SHALL BE DISPOSED PER SECTION 106.8.

Note 4 added to all Conduit Junction Wells

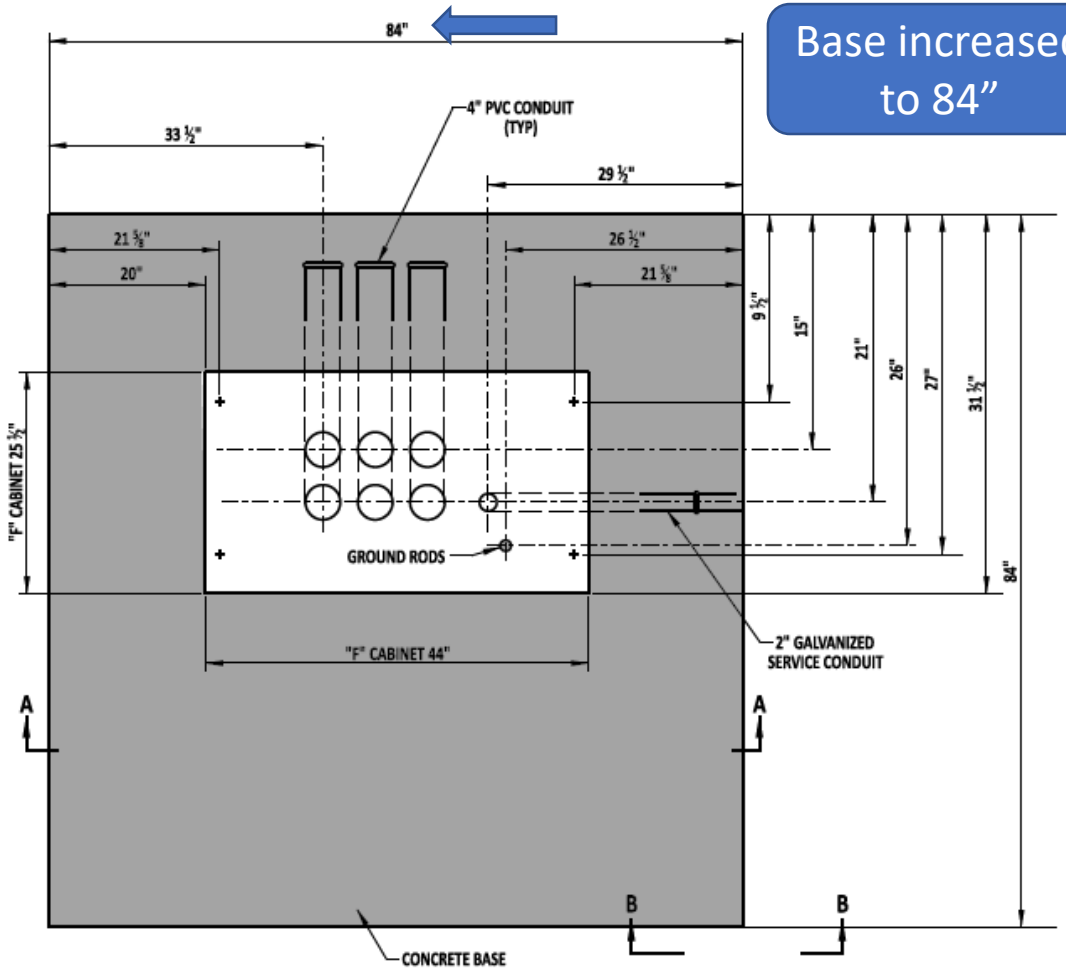


SECTION A-A

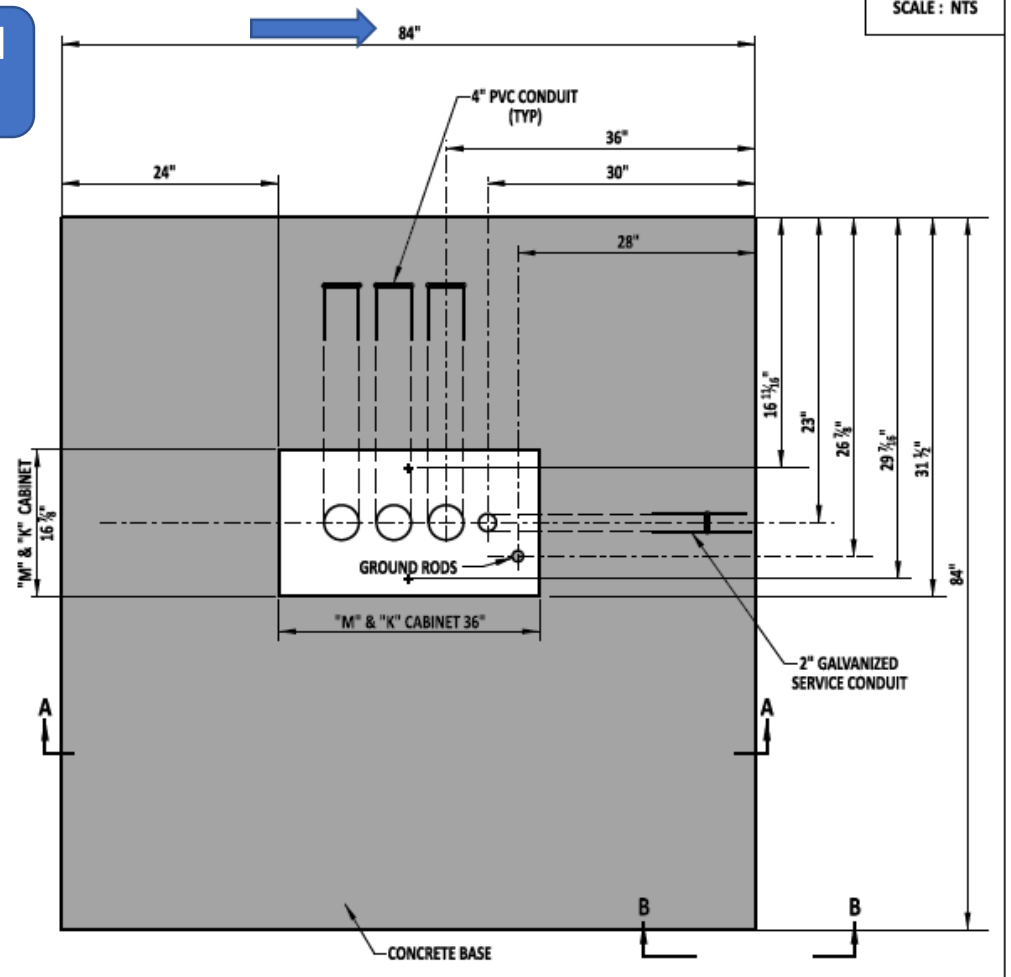
NEW

DelDOT	09/01/2020 ENGINEERING SUPPORT DATE RECOMMENDED	CONDUIT JUNCTION WELL, TYPE 7	REVIEWED DEPUTY DIRECTOR - DESIGN	09/01/2020 DATE
		STANDARD NO. T-1 (2020) SHT. 4 OF 4	APPROVED CHIEF ENGINEER	09/01/2020 DATE

Base increased to 84”



"F" CABINET PLAN VIEW



"M" & "K" CABINET PLAN VIEW

Notes have been revised

NOTE:
1). CONDUITS SHALL BE EVENLY SPACED, WITH MINIMUM 2" WIDTH SPACING ESTABLISHED BETWEEN ALL CONDUITS.
2). FOR VIEW OF SECTION A-A AND SECTION B-B, SEE DETAIL T-4, SHEET 2 OF 2.
3). IF FULL SIZE OF BASE CANNOT BE ESTABLISHED, A 56"X 58" BASE SHALL BE INSTALLED PER DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.

Added K Cabinet Base

DelDOT

ENGINEERING SUPPORT 09/01/2020 DATE
RECOMMENDED

CABINET BASES, TYPES M, K, & F

STANDARD NO. T-4 (2020) SHT. 1 OF 2

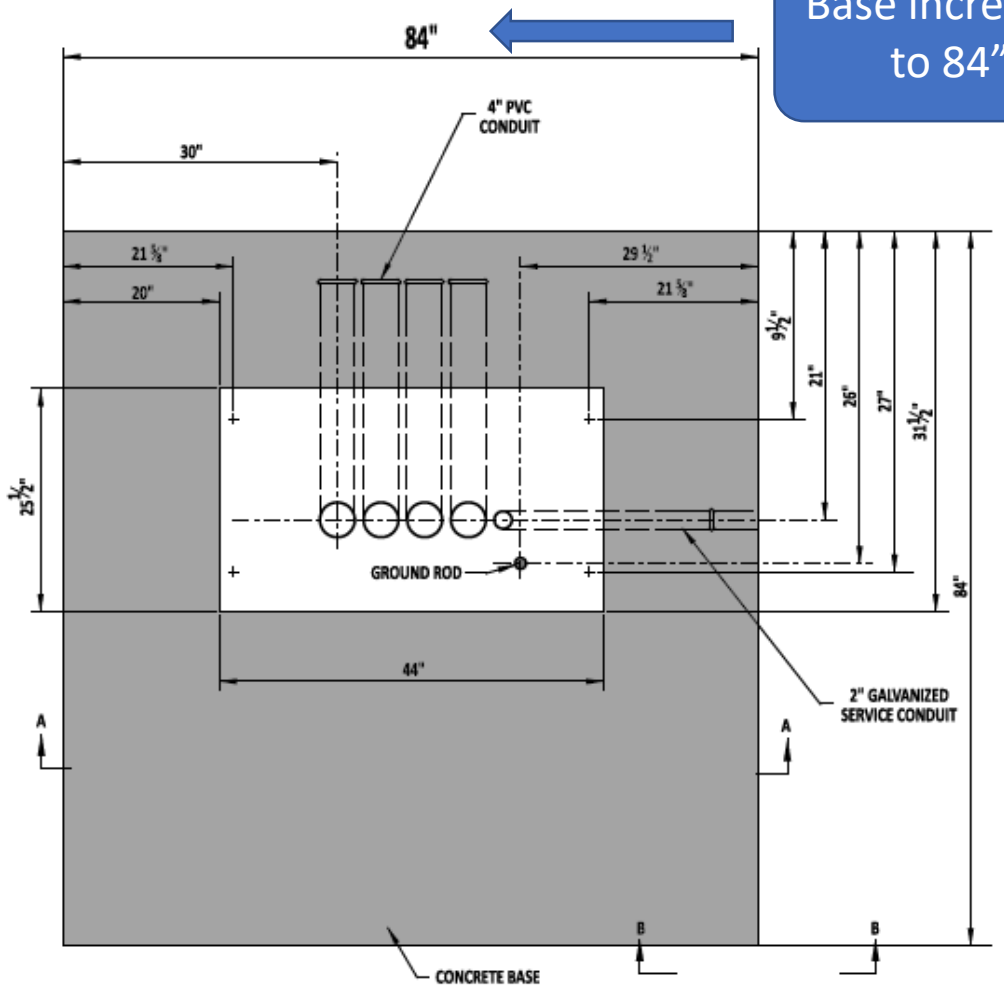
REVIEWED
DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

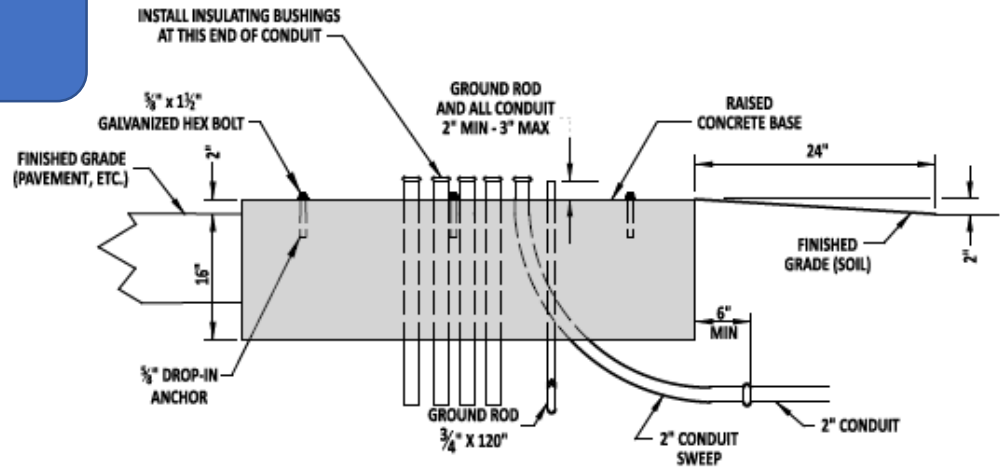
SCALE : NTS

SCALE : NTS

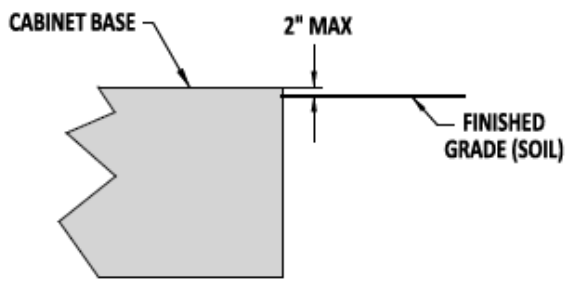
Base increased to 84”



"P & R" CABINET PLAN VIEW



SECTION A-A



SECTION B-B

Changed Section B-B
Removed Concrete Apron

NOTE:
1). CONDUITS SHALL BE EVENLY SPACED, WITH MINIMUM 2" WIDTH SPACING ESTABLISHED BETWEEN ALL CONDUITS.
2). IF FULL SIZE OF BASE CANNOT BE ESTABLISHED, A 56" X 58" BASE SHALL BE INSTALLED PER DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.

Revised Notes

DelDOT

ENGINEERING SUPPORT 09/01/2020 DATE
RECOMMENDED

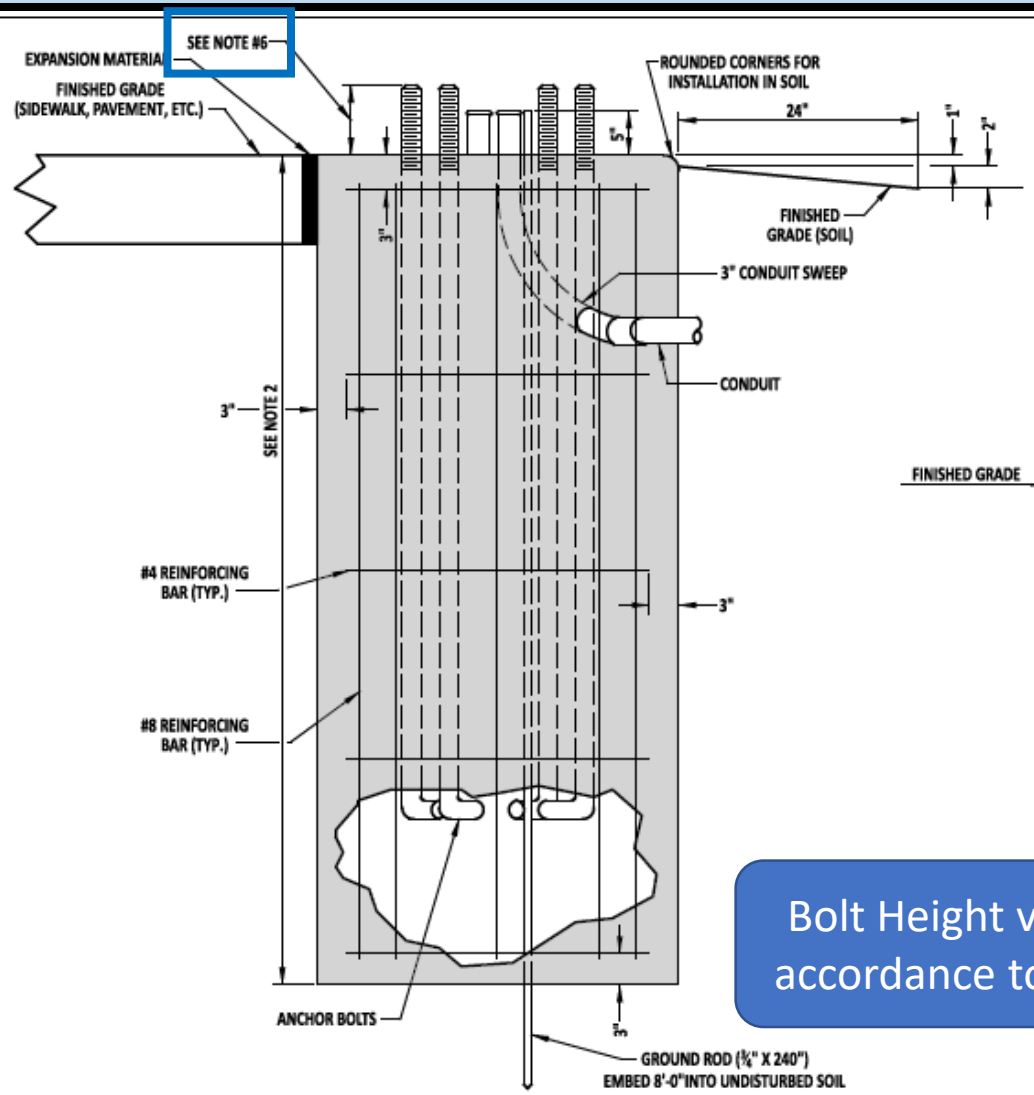
CABINET BASES, TYPES P & R

STANDARD NO. T-4 (2020) SHT. 2 OF 2

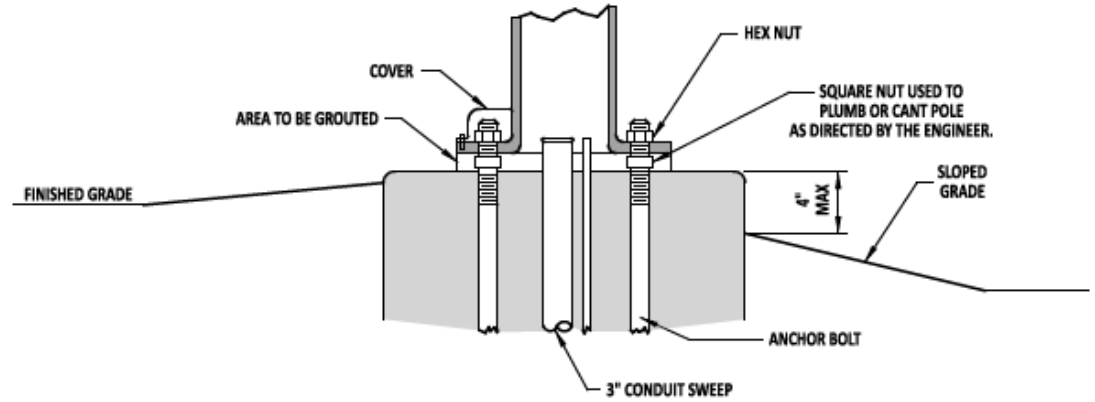
REVIEWED
DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

SCALE : NTS



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



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

Bolt Height varies in accordance to Note 6

NOTE:

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). STRAIN POLES AND MAST ARMS UP TO 60' SHALL USE 2¼" ANCHORS BOLTS, SUPPLIED BY THE DEPARTMENT.
4). MAST ARMS FROM 70-90' SHALL USE 2½" ANCHOR BOLTS, SUPPLIED BY THE DEPARTMENT.
5). ALL OTHER POLE BASES NOT LISTED SHALL ADHERE TO MANUFACTURER AND DEPARTMENT STANDARDS.

6). PER MANUFACTURER SPECIFICATIONS AND DETAILS, THE CONTRACTOR SHALL ENSURE THAT THE FOLLOWING LENGTH OF THREADS ARE EXPOSED PER EACH POLE TYPE:

- STRAIN: 10½"
- B (MAST): 9½"
- C (MAST): 11¼"
- CAMERA: 7"
- LIGHTING: 4½"

DelDOT

ENGINEERING SUPPORT 09/01/2020 DATE
RECOMMENDED

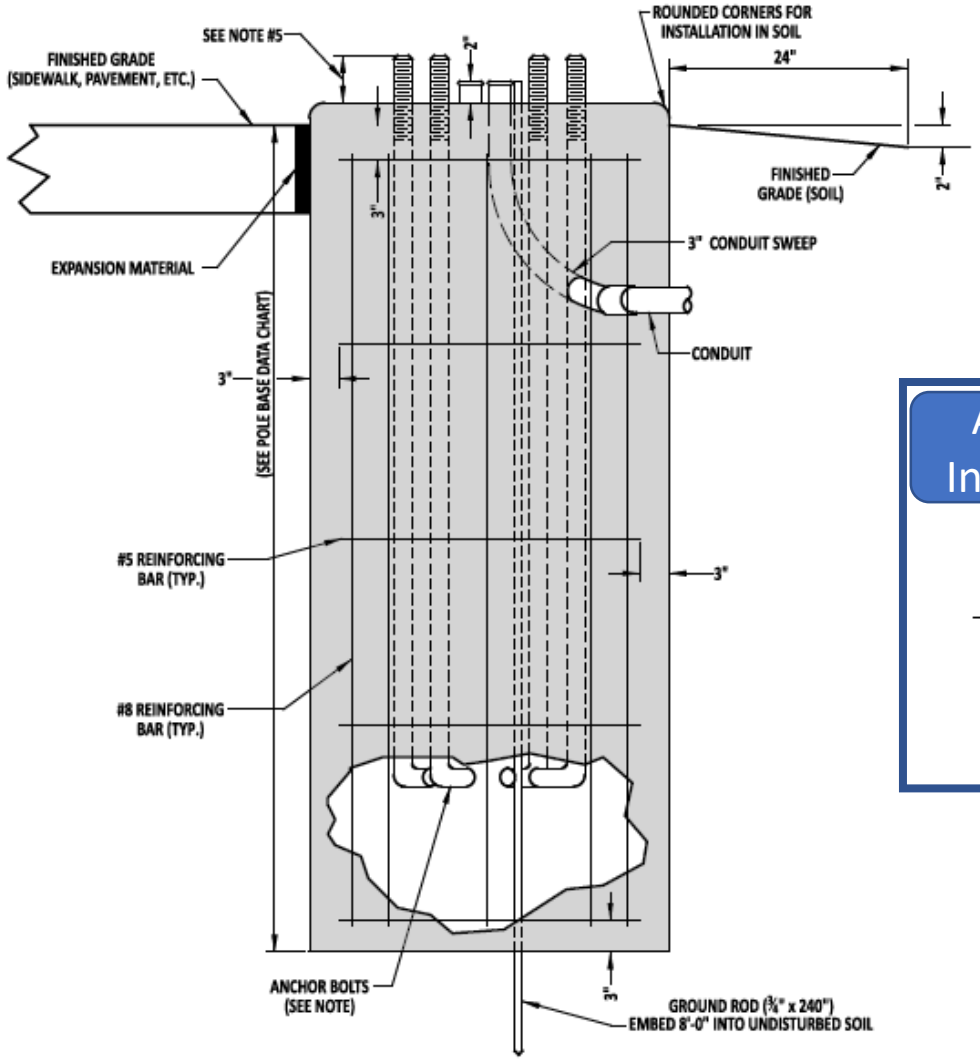
POLE BASES - TYPICAL SECTION AND INSTALLATION (BASES 1, 2, 2A, 2B, 3, 3A, AND 3B)

STANDARD NO. T-5 (2020) | SHT. 2 OF 4

REVIEWED
DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

SCALE : NTS

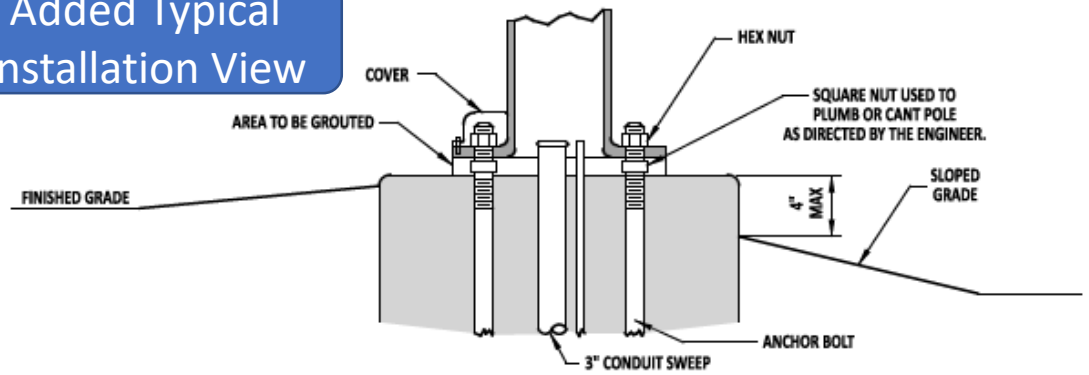


TYPICAL SECTION (BASE 6)

POLE BASE DATA CHART

POLE BASE TYPE #	DIAMETER	DEPTH	#5 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"	14	17	2 - 3"
3A	48"	12'-0"	17	17	2 - 3"
3B	48"	15'-0"	21	17	2 - 3"
3C	48"	20'-0"	27	17	2 - 3"
4A & 4B	24"	2'-4"	NONE	NONE	2 - 2.5"
6	24"	6'-0"	4	8	2 - 3"

Added Typical Installation View



TYPICAL INSTALLATION (BASE 6)

Added Notes

NOTE:

1). ANCHOR BOLTS AND BOLT PATTERN FOR TYPE 6 POLE BASES TO BE PROVIDED BY THE MANUFACTURER.
2). STRAIN POLES AND MAST ARMS UP TO 60' SHALL USE 2¼" ANCHORS BOLTS, SUPPLIED BY THE DEPARTMENT.
3). MAST ARMS FROM 70-90' SHALL USE 2½" ANCHOR BOLTS, SUPPLIED BY THE DEPARTMENT.
4). ALL OTHER POLE BASES NOT LISTED SHALL ADHERE TO MANUFACTURER AND DEPARTMENT STANDARDS.
5). PER MANUFACTURER SPECIFICATIONS AND DETAILS, THE CONTRACTOR SHALL ENSURE THAT THE FOLLOWING LENGTH OF THREADS ARE EXPOSED PER EACH POLE TYPE:

- STRAIN: 10½"
- B (MAST): 9½"
- C (MAST): 11¼"
- CAMERA: 7"
- LIGHTING: 4½"

6). MAXIMUM EXPOSED FOUNDATION DEPTH OF 4" AT FINISHED GRADE IN ANY ORIENTATION AROUND POLE BASE.

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

POLE BASES - TYPICAL SECTION (BASE 6) AND POLE BASE DATA CHART

STANDARD NO. T-5 (2020)

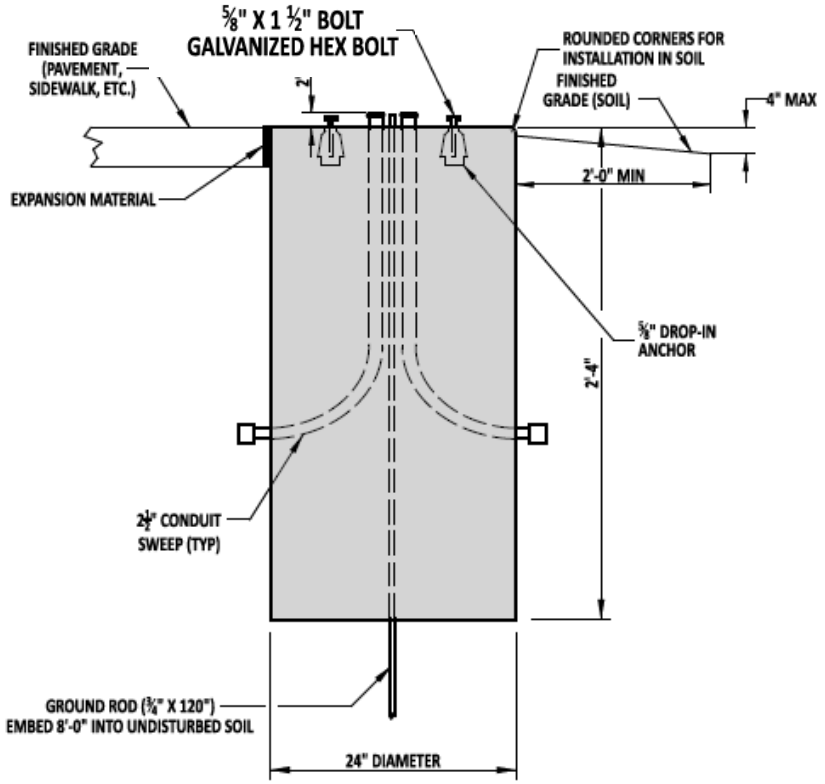
SHT. 3 OF 4

REVIEWED
DEPUTY DIRECTOR - DESIGN
09/01/2020
DATE

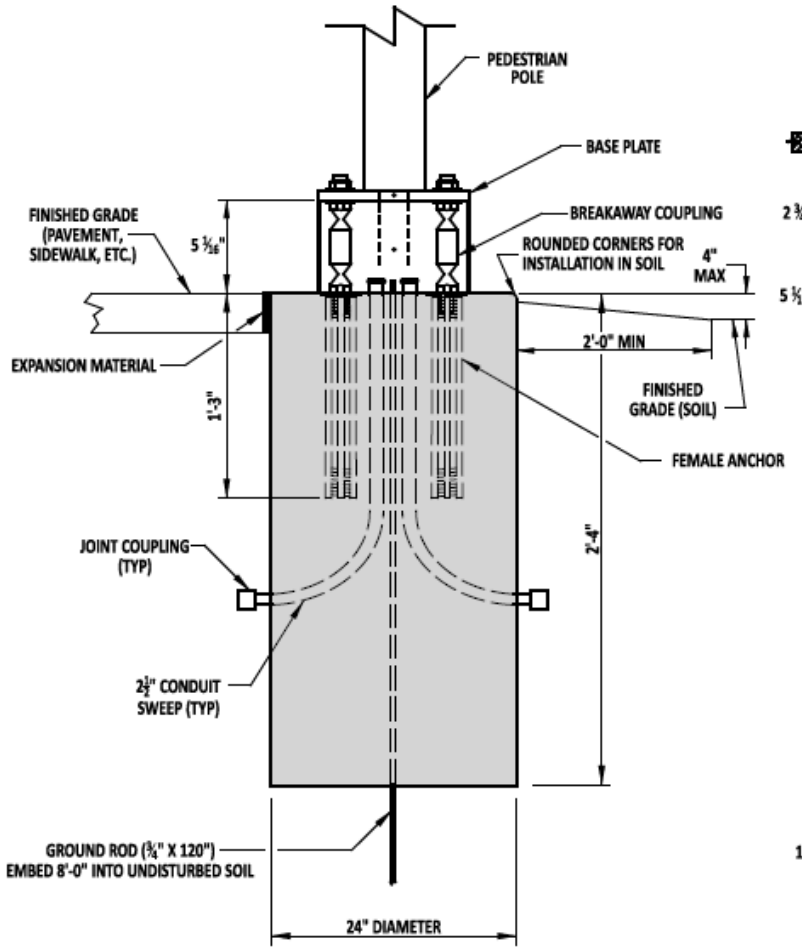
APPROVED
CHIEF ENGINEER
09/01/2020
DATE

SCALE : NTS

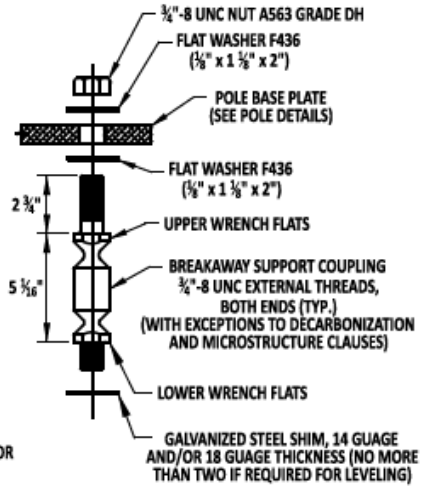
Updated Bolt Size



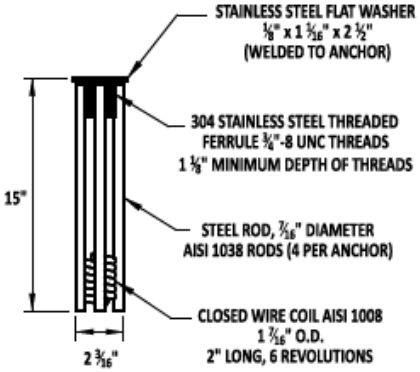
TYPICAL SECTION (BASE 4A)



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.

DelDOT

ENGINEERING SUPPORT — 09/01/2020 DATE
RECOMMENDED

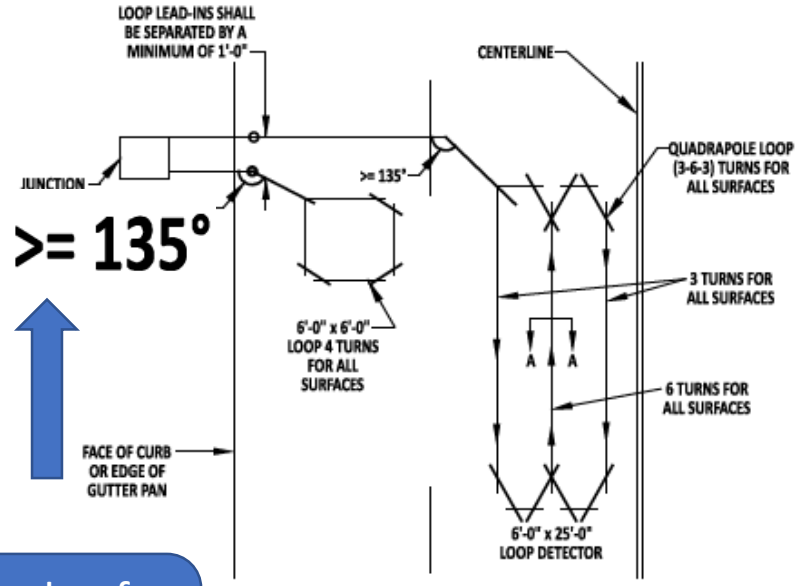
POLE BASES - TYPICAL SECTION (BASE 4A AND 4B) AND ANCHOR AND BREAKAWAY COUPLING

STANDARD NO. T-5 (2020) | SHT. 4 OF 4

REVIEWED — DEPUTY DIRECTOR - DESIGN — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

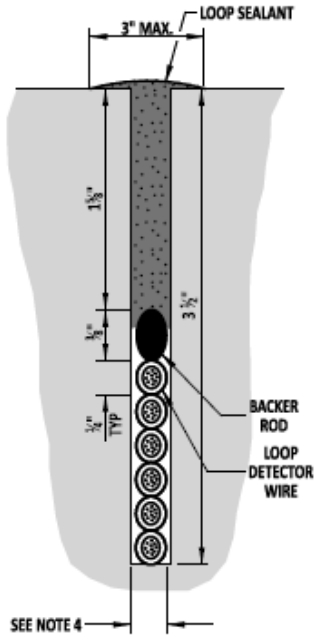
SCALE : NTS



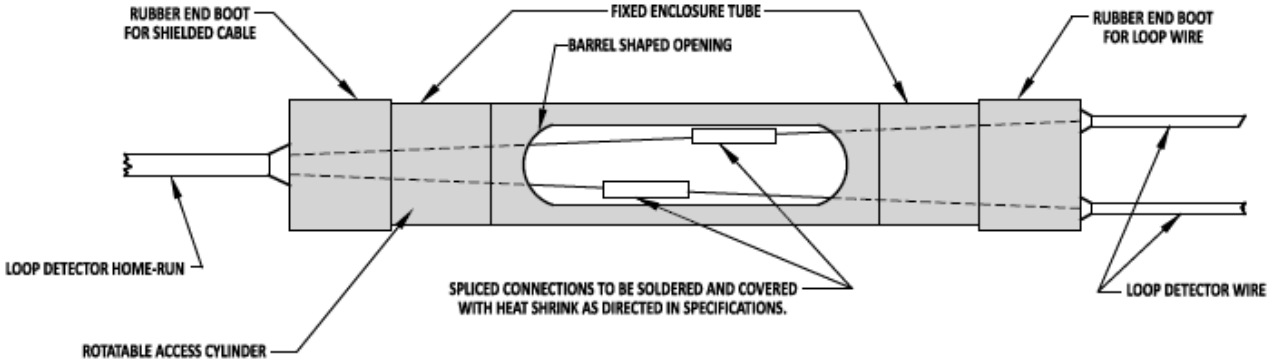
Angle of Saw Cut provided

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 ⅜" WIDE.
5). DURING MULTIPLE LOOP INSTALLATIONS, ALL LOOP LEAD-INS TO THE JUNCTION WELL SHALL OFFSET 12" FROM EACH OTHER.

Added Note 5

DelDOT

09/01/2020
ENGINEERING SUPPORT — DATE
RECOMMENDED

WIRING INSTALLATION TYPICALS - LOOP DETECTOR SAWCUT TYPICAL, HOT-MIX SURFACE TYPICAL SECTION, AND SPLICE KIT

STANDARD NO. T-9 (2020)

SHT. 1 OF 4

REVIEWED — DEPUTY DIRECTOR - DIVISION — 09/01/2020 DATE

APPROVED — CHIEF ENGINEER — 09/01/2020 DATE

SCALE : NTS

Lane Assignments have been adjusted for the West and EAST Bound Directions

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.

DelDOT

09/01/2020
ENGINEERING SUPPORT DATE
RECOMMENDED

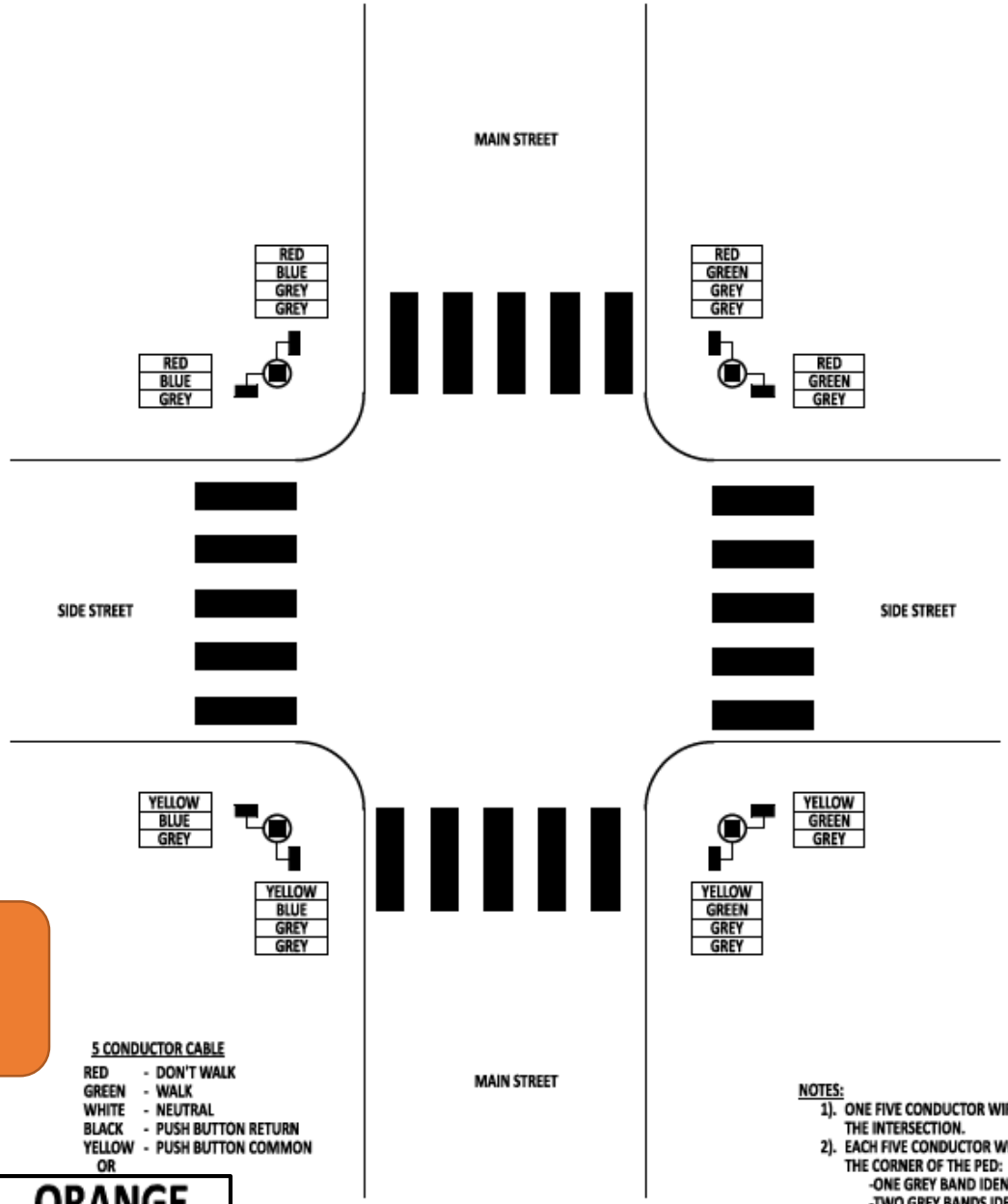
WIRING INSTALLATION TYPICALS - TYPICAL INTERSECTION LAYOUT

STANDARD NO. T-9 (2020) SHT. 2 OF 4

REVIEWED
DEPUTY DIRECTOR - DESIGN
09/01/2020
DATE

APPROVED
CHIEF ENGINEER
09/01/2020
DATE

SCALE : NTS



RED - NORTH
YELLOW - SOUTH
GREEN - EAST
BLUE - WEST

Added Conductor Cable Color

5 CONDUCTOR CABLE

RED - DON'T WALK
GREEN - WALK
WHITE - NEUTRAL
BLACK - PUSH BUTTON RETURN
YELLOW - PUSH BUTTON COMMON
OR
ORANGE

NOTES:

1). ONE FIVE CONDUCTOR WIRE WILL BE PULLED TO EACH PED MODULE OF THE INTERSECTION.
2). EACH FIVE CONDUCTOR WIRE WILL HAVE COLOR BANDS INDICATING THE CORNER OF THE PED:
-ONE GREY BAND IDENTIFYING MAIN STREET
-TWO GREY BANDS IDENTIFYING SIDE STREET.

DelDOT

ENGINEERING SUPPORT 09/01/2020 DATE
RECOMMENDED

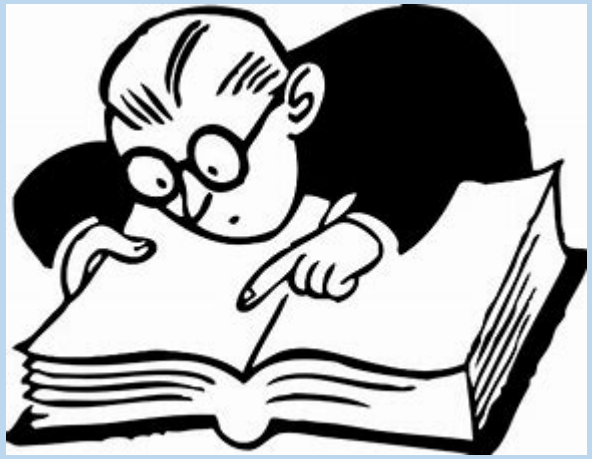
WIRING INSTALLATION TYPICALS -
PEDESTRIAN CROSSING TYPICAL LAYOUT

STANDARD NO. T-9 (2020) | SHT. 3 OF 4

REVIEWED
DEPUTY DIRECTOR - DESIGN 09/01/2020 DATE

APPROVED
CHIEF ENGINEER 09/01/2020 DATE

Too Much to Cover in One Presentation



KNOW THE STANDARD DETAILS!!

When questions arise, I can still hear my first boss…..

“What does the Spec say?”

“What does the Standard Detail show?”