

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
300.01	METHOD OF PIPE INSTALLATION - METHOD A	
310.02	PARALLEL PIPE END SECTION--PRECAST CONCRETE FOR 15" TO 24" PIPE	REQUIRED IN RIGHT OF WAY WITHIN THE ETJ
310.03	CROSS PIPE END SECTION--PRECAST CONCRETE FOR 18" TO 30" PIPE	REQUIRED IN RIGHT OF WAY WITHIN THE ETJ
310.10	DRIVEWAY PIPE CONSTRUCTION USING NO SPECIAL END SECTIONS	ONLY AT LOCATIONS APPROVED BY THE TOWN ENGINEER
815.03	PIPE UNDERDRAIN AND BLIND DRAIN	
816.03	GEOCOMPOSITE SHOULDER DRAIN	
838.01	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 15" THRU 48" PIPE 90° SKEW	NOTE 1
838.02	CONCRETE ENDWALL AND SLUICE GATE 15" THRU 36" PIPE--90° SKEW	NOTE 1
838.04	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS	NOTE 1
838.05	17"X13" THRU 71"X47" PIPE ARCH 90° SKEW	NOTE 1
838.06	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 15" THRU 48" PIPE	NOTE 1
838.07	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"X13" THRU 71"X47" ARCH PIPE	NOTE 1
838.08	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 40"X31" THRU 66"X51" PIPE ARCH 90° SKEW	NOTE 1
838.09	CONCRETE "L" ENDWALL FOR SINGLE PIPE CULVERTS 40"X32" THRU 66"X51" PIPE ARCH	NOTE 1
838.10	CONCRETE ENDWALL FOR OUTFALL 4", 6" OR 8" PIPE	NOTE 1
838.11	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 15" THRU 48" 90° SKEW	NOTE 1
838.14	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 17"X31" THRU 71"X47" 90° SKEW	NOTE 1
838.15	BRICK "L" ENDWALL FOR SINGLE PIPE CULVERTS 15" THRU 48" PIPE	NOTE 1
838.16	BRICK "L" ENDWALL FOR SINGLE PIPE CULVERTS 17"X13" THRU 71"X47" PIPE ARCH	NOTE 1
838.17	BRICK ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS 40"X31" THRU 66"X51" PIPE ARCH 90° SKEW	NOTE 1
838.18	BRICK ENDWALL FOR SINGLE PIPE CULVERTS 40"X31" THRU 66"X51" PIPE ARCH	NOTE 1
838.20	BRICK ENDWALL FOR OUTFALL 4", 6" AND 8" PIPE	NOTE 1
838.21	REINFORCED CONCRETE ENDWALL FOR SINGLE 54" PIPE 90° SKEW	NOTE 1 SEE PLDS 20.17 A&B FOR SPLASH PAD
838.22	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 54" PIPE 90° SKEW	NOTE 1 SEE PLDS 20.17 A&B FOR SPLASH PAD
838.27	REINFORCED CONCRETE ENDWALL FOR SINGLE 60" PIPE 90° SKEW	NOTE 1 SEE PLDS 20.17 A&B FOR SPLASH PAD
838.28	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 60" PIPE 90° SKEW	NOTE 1 SEE PLDS 20.17 A&B FOR SPLASH PAD
838.33	REINFORCED CONCRETE ENDWALL FOR SINGLE 66" PIPE 90° SKEW	NOTE 1 SEE PLDS 20.17 A&B FOR SPLASH PAD
838.34	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 66" PIPE 90° SKEW	NOTE 1 SEE PLDS 20.17 A&B FOR SPLASH PAD
838.39	REINFORCED CONCRETE ENDWALL FOR SINGLE 72" PIPE 90° SKEW	NOTE 1 SEE PLDS 20.17 A&B FOR SPLASH PAD
838.40	REINFORCED CONCRETE ENDWALL FOR DOUBLE & TRIPLE 72" PIPE 90° SKEW	NOTE 1 SEE PLDS 20.17 A&B FOR SPLASH PAD

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NOT TO SCALE

8/1/19	STD. NO.	REV.
20.00A		3

TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS

NCDOT STANDARDS
APPROVED FOR USE IN THE TOWN OF PINEVILLE



DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
838.45	NOTES FOR REINFORCED CONCRETE ENDWALL STANDARD DRAWINGS 838.21 THRU 838.40	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.51	REINFORCED BRICK ENDWALL FOR SINGLE 54" PIPE 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.52	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 54" PIPES 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.57	REINFORCED BRICK ENDWALL FOR SINGLE 60" PIPE 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.58	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 60" PIPES 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.63	REINFORCED BRICK ENDWALL FOR SINGLE 66" PIPE 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.64	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 66" PIPES 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.69	REINFORCED BRICK ENDWALL FOR SINGLE 72" PIPE 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.70	REINFORCED BRICK ENDWALL FOR DOUBLE & TRIPLE 72" PIPES 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.75	NOTES FOR REINFORCED BRICK ENDWALL STANDARD DRAWINGS 838.51 THRU 838.70	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
838.80	PRECAST CONCRETE ENDWALL FOR SINGLE 12" THRU 72" PIPE 90° SKEW	NOTE 1 SEE STD 20.17 A&B FOR SPLASH PAD
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES	
840.01	BRICK CATCH BASIN 15" THRU 54" PIPE	
840.02	CONCRETE CATCH BASIN 12" THRU 54" PIPE	
840.03	FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN	
840.04	CONCRETE OPEN THROAT CATCH BASIN 12" THRU 48" PIPE	
840.05	BRICK OPEN THROAT CATCH BASIN 15" THRU 48" PIPE	NOTE 1; OPENINGS PERMITTED IN 4 SIDES OUTSIDE OF STREET R/W MANHOLE RING AND COVER REQUIRED IN TOP SLAB SEE PLDS 20.05 A&B
840.14	CONCRETE DROP INLET 12" THRU 30" PIPE	NOTE 1
840.15	BRICK DROP INLET 12" THRU 30" PIPE	NOTE 1
840.16	DROP INLET FRAME AND GRATE FOR USE WITH STANDARD DRAWINGS 840.14 & 840.15	NOTE 1
840.17	CONCRETE GRATED DROP INLET TYPE "A" 12" THRU 72" PIPE	NOTE 1
840.18	CONCRETE GRATED DROP INLET TYPE "B" 12" THRU 36" PIPE	NOTE 1
840.19	CONCRETE GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	NOTE 1
840.20	FRAMES AND WIDE SLOT FLAT GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.22	FRAMES AND WIDE SLOT SAG GRATES	NOT FOR USE IN PEDESTRIAN AREAS
840.24	FRAMES AND NARROW SLOT SAG GRATES	
840.25	ANCHORAGE FOR FRAMES BRICK OR CONCRETE	
840.26	BRICK GRATED DROP INLET TYPE "A" 12" THRU 72" PIPE	
840.27	BRICK GRATED DROP INLET TYPE "B" 12" THRU 36" PIPE	
840.28	BRICK GRATED DROP INLET TYPE "D" 12" THRU 36" PIPE	
840.29	FRAMES AND NARROW SLOT FLAT GRATES	
840.30	DRIVEWAY DROP INLET	

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TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS

NCDOT STANDARDS
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STD. NO.	REV.
20.00B	3

DWG	SHEET TITLE	SPECIAL REQUIREMENTS AND NOTES
840.31	CONCRETE JUNCTION BOX (WITH OPTIONAL MANHOLE) 12" THRU 66" PIPE	NOTE 1; OPTIONAL MANHOLE IS REQUIRED
840.32	BRICK JUNCTION BOX 12" THRU 66" PIPE	NOTE 1; OPTIONAL MANHOLE IS REQUIRED
840.34	TRAFFIC BEARING JUNCTION BOX FOR USE WITH PIPES 42" AND UNDER	NOTE 1; OPTIONAL MANHOLE IS REQUIRED; AS MEASURED FROM BOTTOM OF TOP SLAB -- FOR JUNCTION BOX HEIGHT 0'-4'8" USE 8" THICK WALL, FROM 4'8" HEIGHT TO 10' HEIGHT, USE 12" THICK WALL. IF PROPOSED STRUCTURE EXCEEDS 12'-0" HEIGHT A SPECIAL DESIGN WILL BE REQUIRED
840.35	TRAFFIC BEARING DROP INLET FOR CAST IRON DOUBLE FRAME AND GRATES	
840.36	TRAFFIC BEARING DROP INLET FOR STEEL (840.37) DOUBLE FRAME AND GRATES	
840.37	STEEL GRATE AND FRAME	NOT FOR USE IN PEDESTRIAN AREAS
840.41	SPRING BOX CONCRETE OR BRICK	NOT FOR USE IN PEDESTRIAN AREAS
840.45	PRECAST DRAINAGE STRUCTURE (SOLID AND WAFFLE WALL)	WAFFLE WALL IS NOT PERMITTED IN ROADWAY, PLANTING STRIPS, OR MEDIANS. ALL OPENINGS SHALL BE PRE-CAST
840.46	TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE	
840.51	BRICK MANHOLE 12" 36" PIPE	
840.52	PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 42" PIPE	
840.53	PRECAST MANHOLE WITH MASONRY BASE 12" THRU 42" PIPE	
840.54	MANHOLE FRAME AND COVER	
840.60	DRAINAGE STRUCTURE STEPS	
840.71	CONCRETE PAVED DITCHES	
840.72	PIPE COLLAR	
850.01	CONCRETE PAVED DITCHES	
852.04	METHODS FOR PLACEMENT OF DROP INLETS IN GRASSED MEDIAN (USING 1'-6" CURB AND GUTTER)	
852.05	MEDIAN CURB FOR CATCH BASIN (FOR USE WITH 1'-6" CURB AND GUTTER)	
852.06	METHOD OF PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS	
876.01	RIP RAP IN CHANNELS	
876.03	DRAINAGE DITCHES WITH CLASS "A" RIP RAP	
876.04	DRAINAGE DITCHES WITH CLASS "B" RIP RAP	

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NOT TO SCALE



TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS

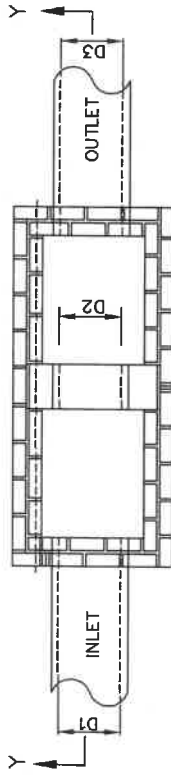
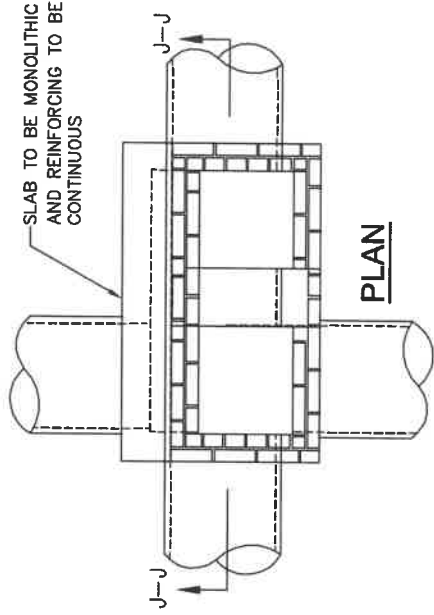
NCDOT STANDARDS
APPROVED FOR USE IN THE TOWN OF PINEVILLE

8/1/19

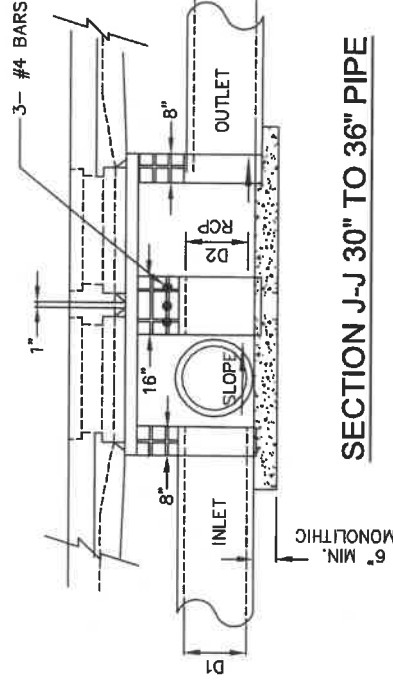
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20.00C	3

GENERAL NOTES:

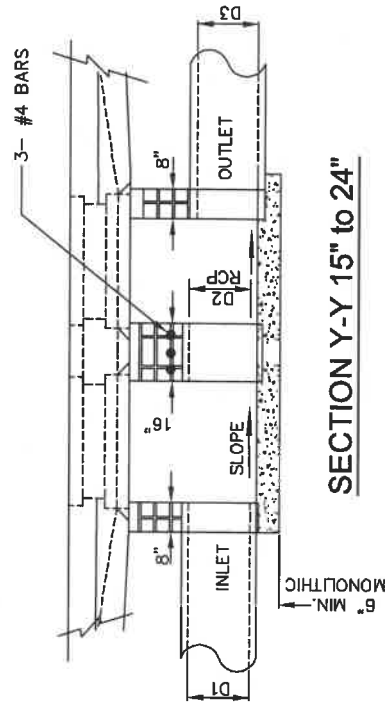
1. SEE NCDOT STANDARD 840.01 FOR DETAILS BASED ON PIPE SIZE PER CROSS SECTION.
2. CONSTRUCT TWO SINGLE BASINS PER NCDOT STANDARD WITH DOUBLE INTERIOR WALL.
3. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.
4. BASE SLAB SHALL BE MONOLITHIC.
5. SEE PLS #10.29 AND #10.30 FOR PLACEMENT OF CATCH BASIN.
6. PIPE SECTION D2 CONNECTING CATCH BASINS SHALL HAVE A MINIMUM DIAMETER SAME AS OF OUTLET PIPE D3.
7. ALL REINFORCING STEEL SHOWN ON NCDOT STANDARDS IS TO BE PROVIDED AS CONTINUOUS MEMBERS. (NO LAPS, USED AS A SINGLE CONTINUOUS BAR IN THE SLAB)
8. WEEP HOLES SHALL BE PLACED IN BACK WALL WITH FILTER FABRIC OR STONE ON BACK SIDE



PLAN



SECTION J-J 30" TO 36" PIPE



SECTION Y-Y 15" TO 24" PIPE

NOT TO SCALE



**TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS**

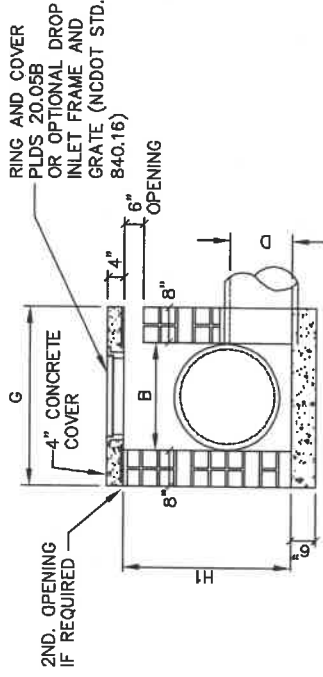
BRICK DOUBLE CATCH BASIN

15" THRU 36" PIPE

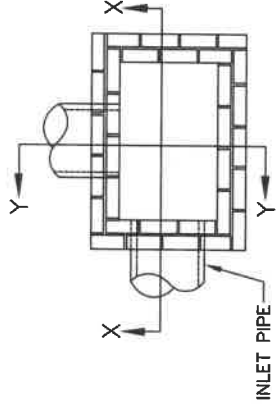
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20.03	

GENERAL NOTES:

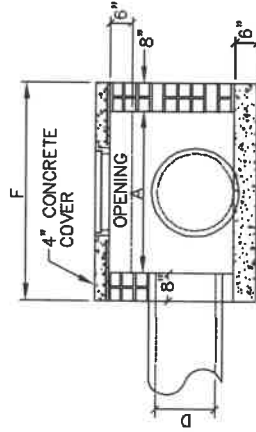
1. MORTAR JOINTS SHOULD BE BETWEEN 3/8" AND 5/8" THICK.
2. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.
3. THE 6" OPENING SHOWN MAY BE INCREASED TO 8" MAX. IF DEEMED TO BE NECESSARY BY THE ENGINEER.
4. ALL CATCH BASIN OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 1'-2" ON CENTERS. STEPS SHALL BE IN ACCORDANCE WITH NCDOT STD. 840.60.
5. CONCRETE BRICK MAY BE USED IN LIEU OF HARD COMMON CLAY BRICK.
6. JUMBO BRICK WILL BE PERMITTED.
7. FOR 8'-0" IN HEIGHT OR LESS USE 8" WALL, OVER 8'-0" IN HEIGHT USE 12" WALL TO 6'-0" FROM TOP OF WALL, AND 8" WALL FOR THE REMAINING 6'-0".
8. ALL EXPOSED JOINTS WILL BE CONCAVE TOOLED.
9. ALL PIPE IN STORM DRAIN STRUCTURE SHALL BE STRUCK EVEN WITH THE INSIDE WALL, GROUTED AND BRUSHED SMOOTH.
10. WEEP HOLES SHALL BE PLACED IN BACK WALL WITH FILTER FABRIC OR STONE ON BACK SIDE.
11. THIS CATCH BASIN IS NOT TO BE USED WITHIN STREET RIGHT OF WAY UNLESS OTHERWISE APPROVED BY TOWN ENGINEER.



SECTION Y-Y



PLAN



SECTION X-X

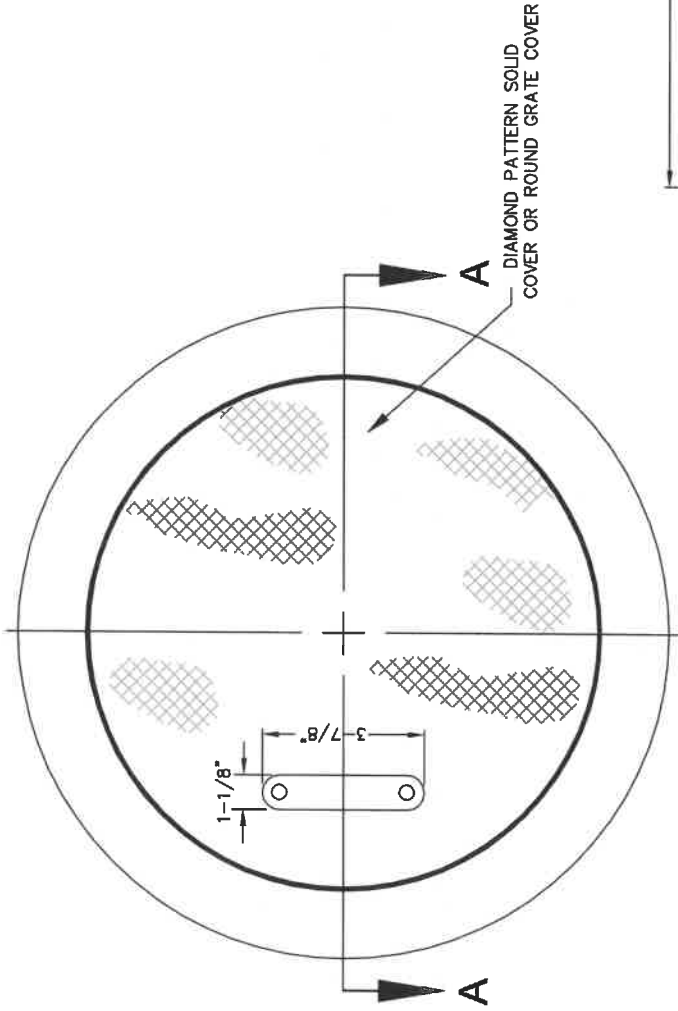
PIPE D	DIMENSIONS OF BOX AND PIPE		REINFORCING				COVER DIMENSION			
	SPAN A	WIDTH B	HEIGHT H1 (MIN.)	BARS - X NO.	LENGTH	BARS - Y NO.	LENGTH	TOTAL LBS.	F	G
15"	3'-6"	2'-3"	2'-7"	2	3'-4"	2	3'-4"	26	4'-10"	3'-7"
18"	4'-0"	2'-8"	2'-11"	2	3'-9"	2	3'-9"	33	5'-4"	4'-0"
24"	4'-0"	2'-8"	3'-5"	2	3'-9"	2	3'-9"	33	5'-4"	4'-0"
30"	4'-0"	3'-6"	3'-11"	2	4'-7"	2	4'-7"	37	5'-4"	4'-10"
36"	4'-0"	3'-6"	4'-6"	2	4'-7"	2	4'-7"	37	5'-4"	4'-10"
42"	4'-0"	3'-6"	4'-11"	2	4'-7"	2	4'-7"	37	5'-4"	4'-10"
48"	4'-6"	4'-0"	5'-5"	2	5'-1"	2	5'-7"	45	5'-10"	5'-4"



**TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS**

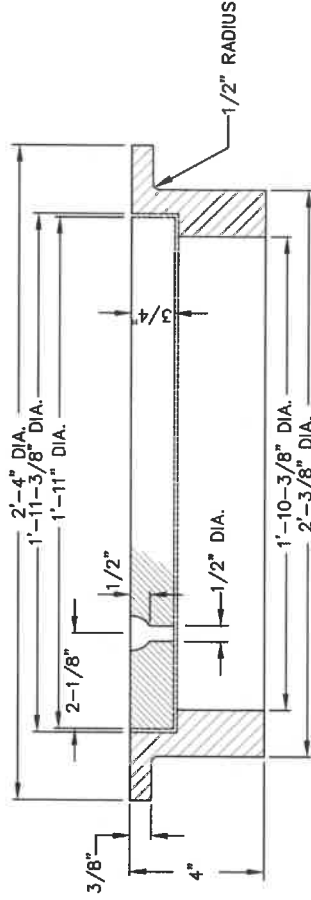
**SLAB TYPE CATCH BASIN
15" THRU 48" PIPE**

8/1/19
STD. NO. 20.05A
REV. 3



MINIMUM WEIGHT	
RING	96 LBS
COVER	86 LBS

PLAN VIEW



SECTION A-A

NOT TO SCALE

TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS



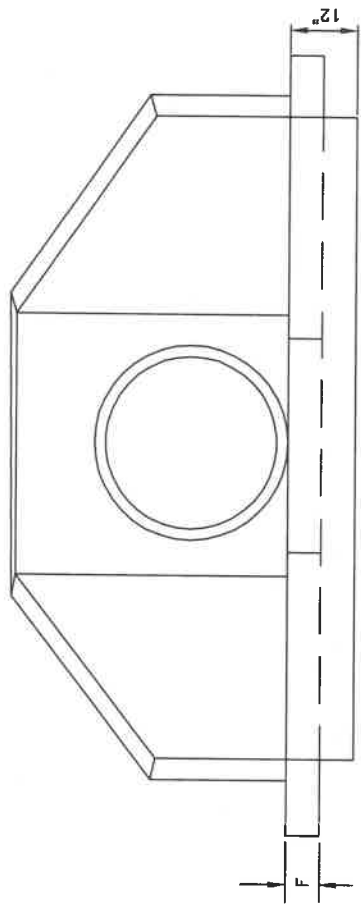
MANHOLE RING AND COVER FOR
SLAB TYPE CATCH BASIN

STD. NO.

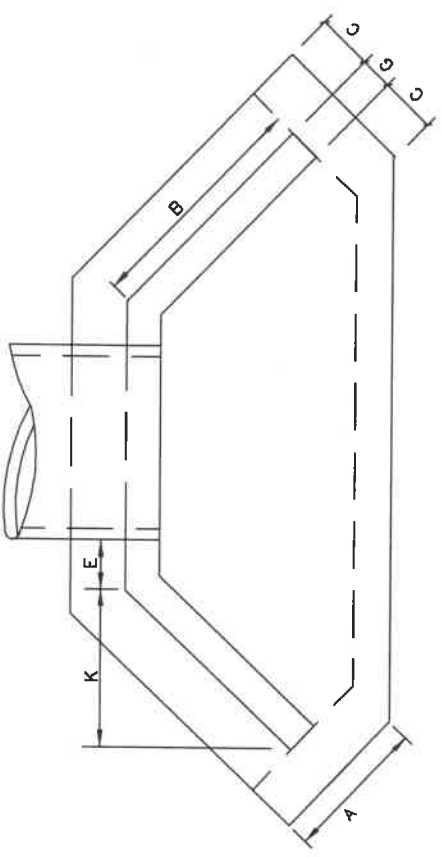
REV.

20.05B

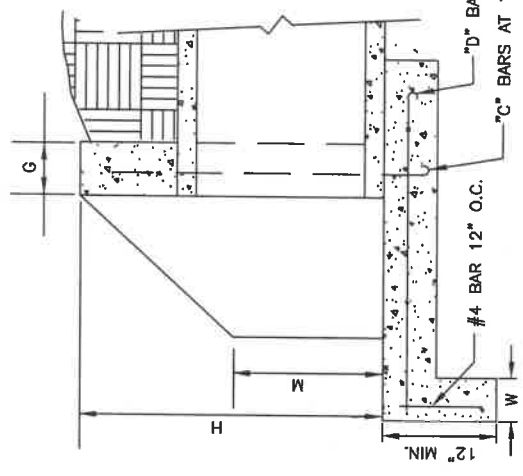
CONCRETE PIPE		DIMENSIONS												
WALL THK.	OUT DIA.	IN DIA.	H	A	B	C	E	F	G	W	K	M		
2 1/4"	19 1/2"	15"	27 1/2"	20"	24"	8"	7 1/2"	4"	4"	8"	17"	10"		
2 1/2"	23"	18"	31"	20"	24"	8"	9"	4"	4"	8"	17"	12"		
3"	30"	24"	38"	20"	30"	8"	12"	4"	4"	8"	21"	15"		
3 1/2"	37"	30"	45"	20"	44"	12"	15"	6"	8"	8"	31"	18"		
4"	44"	36"	52"	32"	44"	12"	18"	6"	8"	8"	31"	22"		
4 1/2"	51"	42"	59"	32"	48"	12"	21"	6"	8"	8"	34"	26"		
5"	58"	48"	66"	32"	48"	12"	24"	6"	8"	8"	34"	29"		
5 1/2"	65"	54"	73"	32"	54"	12"	27"	6"	8"	8"	36"	33"		
6"	72"	60"	80"	36"	56"	12"	30"	8"	12"	12"	46"	36"		
6 1/2"	79"	66"	87"	36"	72"	12"	33"	8"	12"	12"	51"	40"		
7"	86"	72"	94"	36"	78"	12"	36"	8"	12"	12"	56"	43"		



FRONT VIEW



TOP VIEW



SIDE VIEW

REINFORCING

"C" BAR DIA.	"C" BAR NO.	"D" BAR DIA.	"D" BAR NO.	LGT.
15"	4	2'-0"	4	1'-11"
18"	4	2'-3"	4	2'-2"
24"	4	2'-9"	4	2'-8"
30"	4	3'-3"	4	3'-2"
36"	4	3'-9"	4	3'-8"
42"	4	4'-3"	4	4'-2"
48"	4	4'-9"	4	4'-8"
54"	4	5'-3"	4	5'-2"
60"	4	5'-9"	4	5'-8"
66"	4	6'-3"	4	6'-2"
72"	4	6'-9"	4	6'-8"

NOT TO SCALE

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20.17A	

CONCRETE WINGWALL WITH SPLASH PAD

TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS



GENERAL NOTES:

1. ALL CORNERS TO BE CHAMFERED 1" IF CONCRETE.
2. THE CONTRACTOR WILL BE REQUIRED TO PLACE 2-#6 BARS "Y" IN THE TOP OF ALL ENDWALL FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL.
3. FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
4. WALL THICKNESS (T) SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT IS USED ONLY IN COMPUTING ENDWALL QUANTITIES.
5. IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, AND POURS BASE SEPARATELY, THE TOP OF BASE SHALL BE LEFT ROUGH.
6. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.

NOT TO SCALE



TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS

CONCRETE WINGWALL WITH SPLASH PAD NOTES

STD. NO.

REV.

20.17B

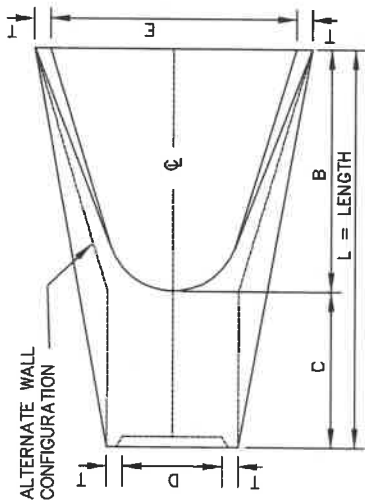
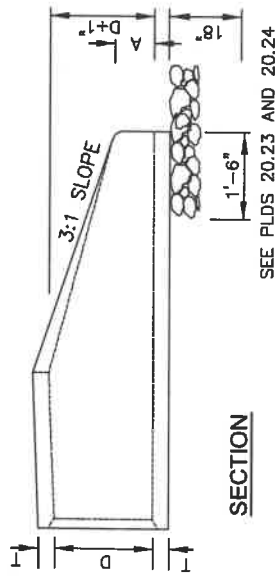


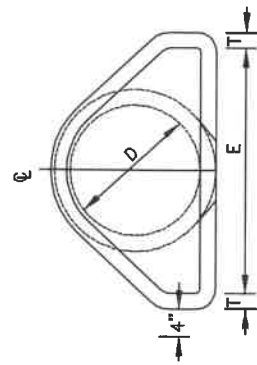
TABLE OF DIMENSIONS

D	T	A	B	C	E	L	WT.
12"	2-1/4"	4"	2'-0"	4'-1"	2'-0"	6'-1"	730
15"	2-1/4"	6"	2'-3"	3'-10"	2'-0"	6'-1"	730
18"	2-1/2"	9"	2'-3"	3'-10"	3'-0"	6'-1"	1190
24"	3"	10"	3'-8"	2'-6"	4'-0"	6'-2"	1770
30"	3-1/2"	1'-0"	4'-6"	1'-8"	5'-0"	6'-2"	2380
36"	4"	1'-3"	5'-3"	2'-11"	6'-0"	8'-2"	5320
42"	4-1/2"	1'-9"	5'-3"	2'-11"	6'-6"	8'-2"	5920
48"	5"	2'-0"	6'-0"	2'-2"	7'-0"	8'-2"	7470
54"	5-1/2"	2'-3"	5'-6"	2'-10"	7'-6"	8'-4"	8810
60"	6"	2'-6"	5'-0"	3'-3"	8'-0"	8'-3"	11180
66"	6-1/2"	3'-0"	6'-0"	2'-3"	8'-6"	8'-3"	12530
72"	7"	3'-0"	6'-6"	1'-9"	9'-0"	8'-3"	13980

PLAN



SECTION



END VIEW

GENERAL NOTES:

1. REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF REINFORCED CONCRETE PIPE OF LIKE DIAMETER PER AASHTO M170, TABLE 2, WALL B.
2. ALL CONCRETE TO BE 3600 P.S.I COMPRESSIVE STRENGTH.
3. PROVIDE TONGUE OR SPIGOT JOINT AT INLET END SECTION.
4. PROVIDE GROOVE OR BELL JOINT AT OUTLET END SECTION.
5. THE DIMENSIONS FOR END SECTIONS SHALL SUBSTANTIALLY AGREE WITH THE TABLE. MINOR VARIATIONS WILL BE PERMITTED BASED ON THE MANUFACTURER'S STANDARD FORMS AND TEMPLATES.
6. NOT TO BE USED IN NCDOT MAINTAINED RIGHT OF WAY.

NOT TO SCALE

TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS



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STD. NO.	REV.
20.22	3

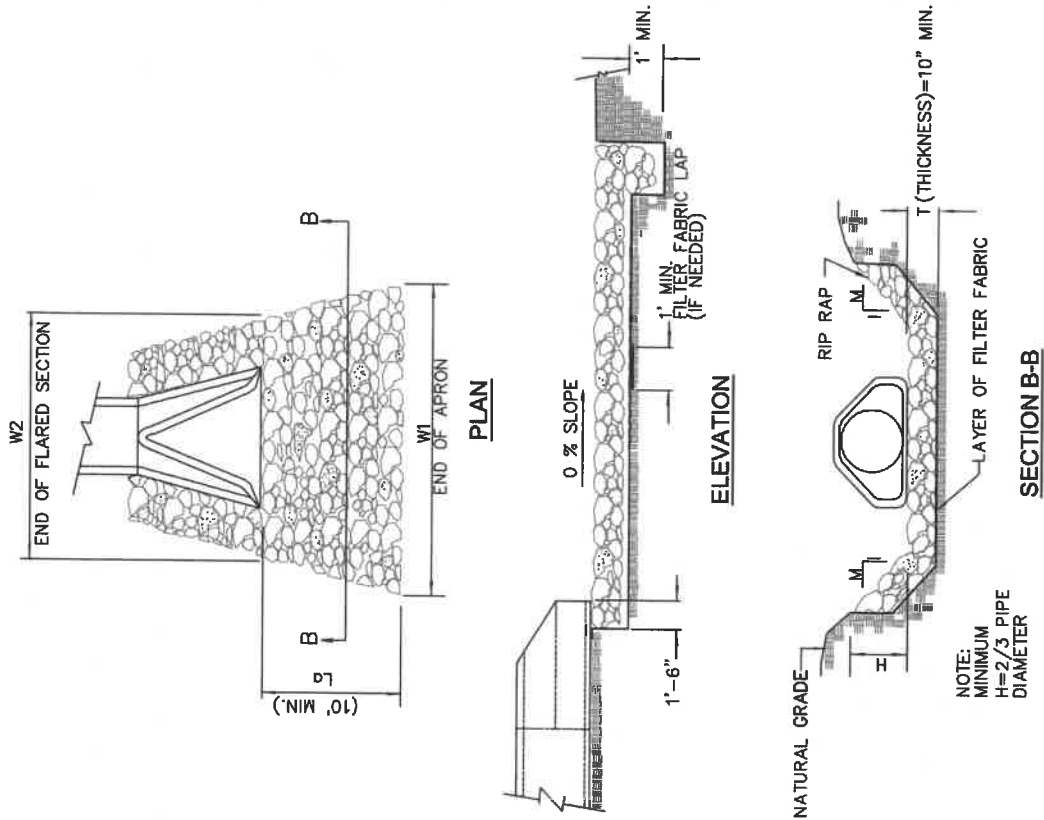
NOTES:

1. CLASS OR MEDIAN SIZE OF RIPRAP AND LENGTH, WIDTH AND DEPTH OF APRON TO BE DESIGNED BY THE ENGINEER.
2. REFER TO THE CHARLOTTE MECKLENBURG STORM WATER DESIGN MANUAL FOR RIPRAP APRON DESIGN STANDARDS.
3. RIPRAP SHOULD EXTEND UP BOTH SIDES OF THE APRON AND AROUND THE END OF THE PIPE OR CULVERT AT THE DISCHARGE OUTLET AT A MAXIMUM SLOPE OF 2:1 AND A HEIGHT NOT LESS THAN TWO THIRDS THE PIPE DIAMETER OR CULVERT HEIGHT.
4. THERE SHALL BE NO OVERFLOW FROM THE END OF THE APRON TO THE SURFACE OF THE RECEIVING CHANNEL. THE AREA TO BE PAVED OR RIPRAPPED SHALL BE UNDERCUT SO THAT THE INVERT OF THE APRON SHALL BE AT THE SAME GRADE (FLUSH) WITH THE SURFACE OF THE RECEIVING CHANNEL. THE APRON SHALL HAVE A CUTOFF OR TOE WALL AT THE DOWNSTREAM END.
5. THE WIDTH OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1
6. ALL SUBGRADE FOR STRUCTURE TO BE COMPACTED TO 95% OR GREATER.
7. THE PLACING OF FILL, EITHER LOOSE OR COMPACTED IN THE RECEIVING CHANNEL SHALL NOT BE ALLOWED.
8. NO BENDS OR CURVES IN THE HORIZONTAL ALIGNMENT OF THE APRON WILL BE PERMITTED.
9. FILTER FABRIC SHALL BE INSTALLED ON COMPACTED SUBGRADE PRIOR TO PLACEMENT OF RIP RAP.
10. ANY DISTURBED AREA FROM END OF APRON TO RECEIVING CHANNEL MUST BE STABILIZED.

USE USDA NOMOGRAPH FROM NC SEDIMENT AND EROSION CONTROL MANUAL FOR DESIGN DATA.

OUTLET	Ld	W1	W2	*T	H

* d50 (see fig 8.06 a&b "NC SEDIMENT AND EROSION CONTROL MANUAL")
 $d_{max} = 1.5 \times d50$
 $T = 1.5 \times d_{max}$
 $T(\text{min.}) = 10"$



SECTION B-B

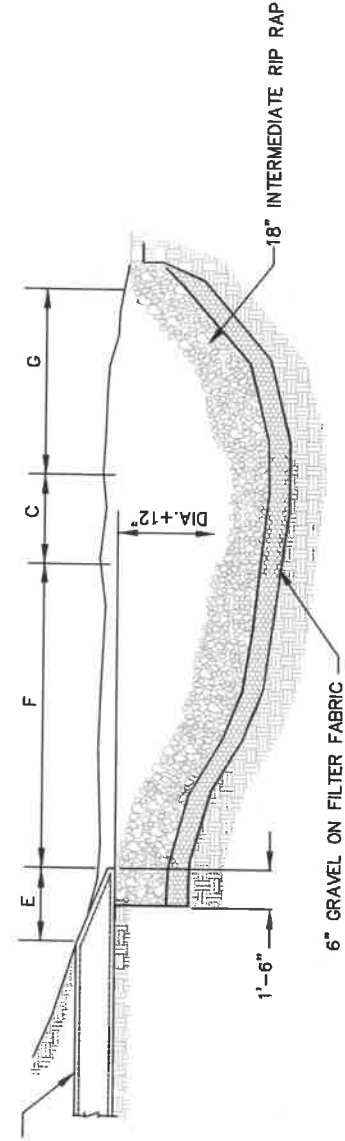
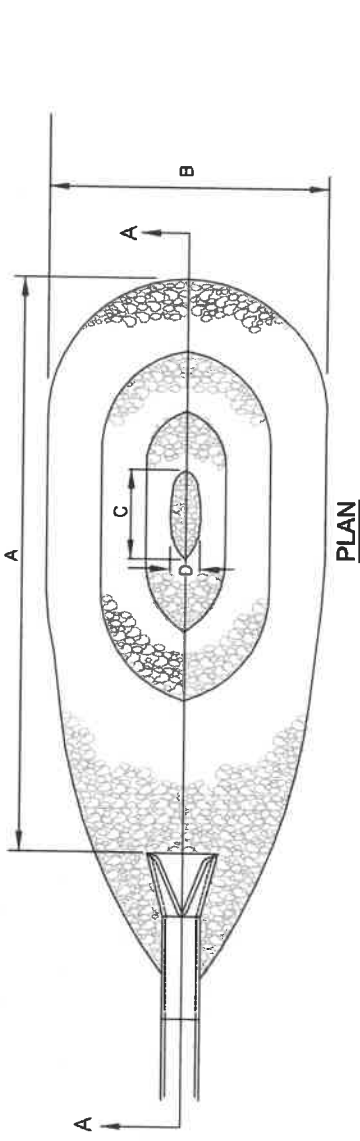
NOT TO SCALE

**RIPRAP APRON AT PIPE OUTFALLS
OTHER THAN AT CREEK BUFFERS**



**TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS**

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20.23	



PIPE SIZE	A	B	C	D	E	F	G	WT. RIP RAP IN TONS
15"	10'	7'	1 1/2'	1'	1'	4 1/2'	3'	6
18"	12'	8'	2'	1'	1'	5'	4'	8
21"	15'	9'	2 1/2'	1 1/2'	1'	7'	4 1/2'	12
24"	17'	10'	2 1/2'	1 1/2'	1'	8'	5 1/2'	15
30"	20'	13'	3'	2'	2'	9'	6'	22
36"	24'	16'	3 1/2'	2'	2'	9 1/2'	7'	33

GENERAL NOTES:
 1. THIS DETAIL IS TO ONLY BE USED WHEN OUTFALL HAS A CONTINUOUS FLOW OF WATER AND WITH PRIOR APPROVAL OF THE TOWN ENGINEER.

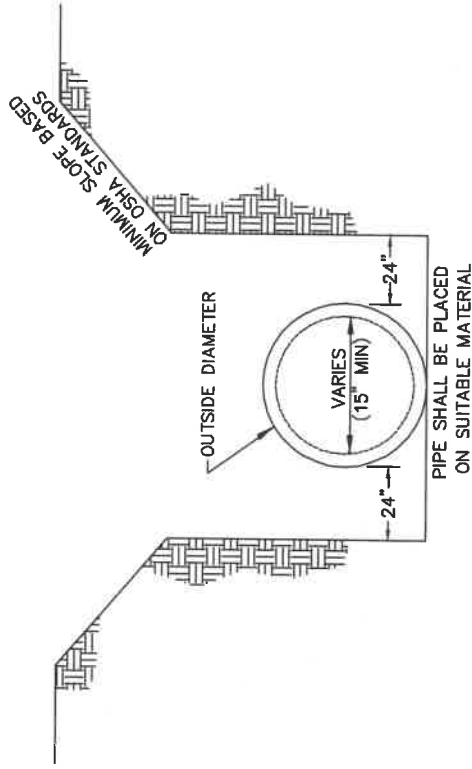
NOT TO SCALE



TOWN OF PINEVILLE
 LAND DEVELOPMENT
 STANDARDS

RIP RAP PLUNGE POOL

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20.24	



NOT TO SCALE

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20.25	

TRENCH DRAIN FOR STORM DRAIN

NOTES:

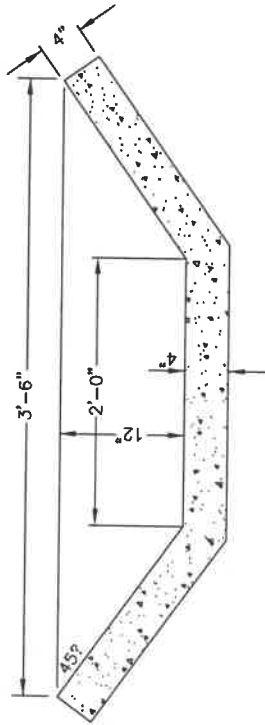
1. A MINIMUM OF 24" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR COMPACTION OF FILL MATERIAL. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER THE PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE PLACED IN LAYERS NOT TO EXCEED 6". UNDER NO CIRCUMSTANCES SHALL WATER BE PERMITTED TO RISE IN UNBACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED. COMPACTION REQUIREMENTS SHALL BE ATTAINED BY THE USE OF MECHANICAL TAMPS ONLY. EACH AND EVERY LAYER OF BACKFILL SHALL BE PLACED LOOSE AND THOROUGHLY COMPACTED INTO PLACE.
2. ALL BACKFILL MATERIAL SHALL HAVE AN IN PLACE COMPACTED DENSITY OF 95% STANDARD PROCTOR.
3. THE FINAL 2' BELOW FINISHED GRADE SHALL BE 100%.
4. ALL TRENCHING OPERATIONS SHALL MEET OSHA STANDARDS.
5. BACKFILL MATERIAL BENEATH ROADWAY SHALL BE SELECT BACKFILL MATERIAL.

TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS

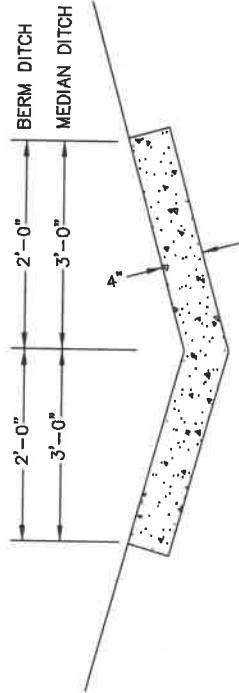


GENERAL NOTES:

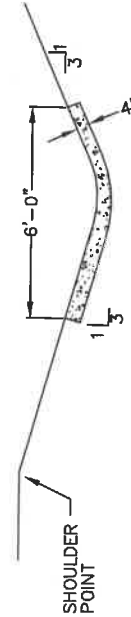
1. IN THE 4" CONCRETE PAVED DITCHES PLACE 1/2" EXPANSION JOINT AT 30 FT INTERVALS AND AT ALL OTHER POINTS WHERE PROPOSED DITCHES ABUT RIGID OBJECTS. PLACE GROOVED JOINTS 1" DEEP AT 10' INTERVALS BETWEEN EXPANSION JOINTS.
2. WIDTH AND SHAPE OF PROPOSED 4" CONCRETE PAVED DITCHES SHALL BE AS SHOWN OR AS DIRECTED BY THE ENGINEER.
3. ALL CONCRETE TO BE 3600 P.S.I. COMPRESSIVE STRENGTH.



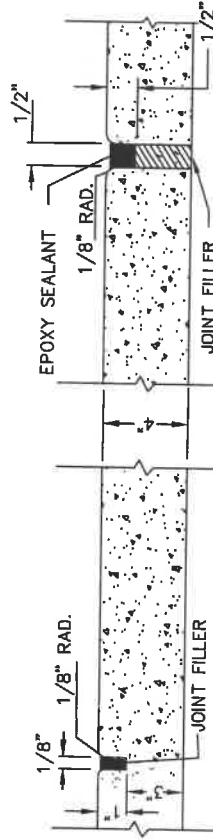
**SLOPE DRAIN, BASE DITCH OR BERM DRAINAGE
OUTLET DITCH**



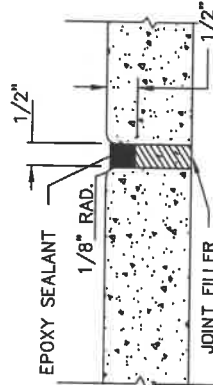
MEDIAN OR BERM DITCH



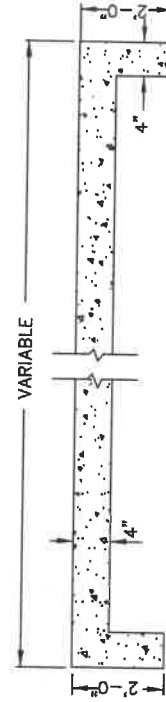
SIDE DITCH



SHOWING GROOVED JOINT



SHOWING EXPANSION JOINT



LONGITUDINAL SECTION OF PAVED DITCH

SHOWING 2'-0" CURTAIN WALL REQUIRED AT EACH END

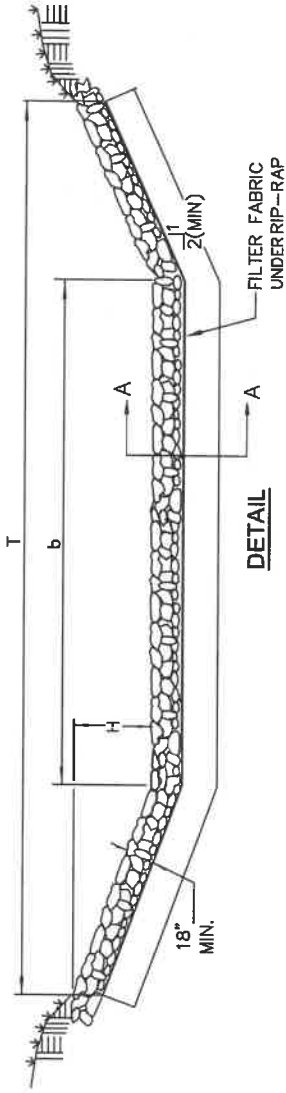
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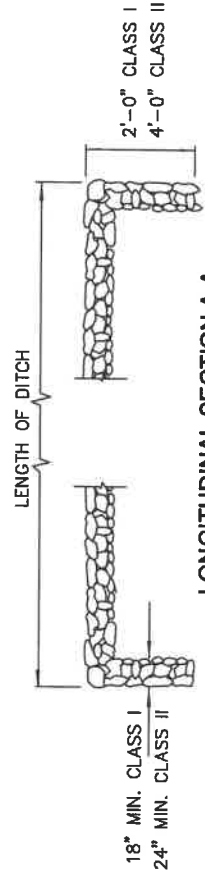
**TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS**

CONCRETE PAVED DITCHES

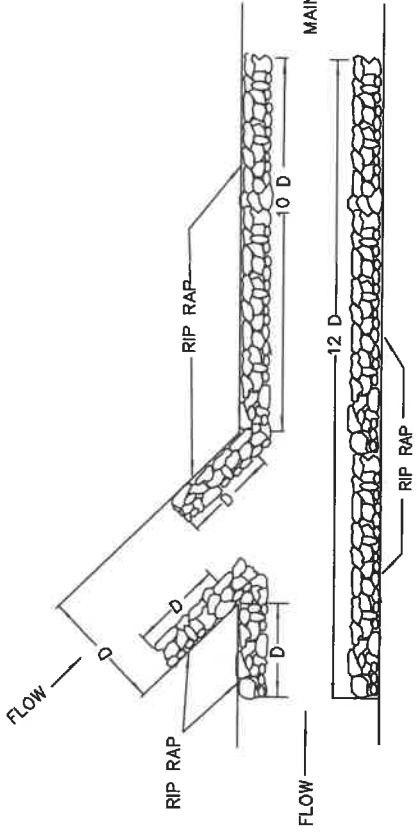
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DETAIL



LONGITUDINAL SECTION A-A



CHANNEL INTERSECTIONS

GENERAL NOTES:

1. IF BEDROCK IS ENCOUNTERED WITHIN THE LIMITS OF THE TOEWALL, BEGIN TOEWALL ON THE BEDROCK OR AS DIRECTED BY THE ENGINEER.
2. WHERE ONLY ONE SIDE REQUIRES RIP RAP CLASS I OR II, LIST STATION AND SIDE OF SAME.
3. CHANNEL AND RIP RAP SIZE TO BE DESIGNED BY THE ENGINEER.
4. DEPENDING ON SOIL CONDITIONS, WASHED STONE AND FILTER FABRIC MAY BE NECESSARY UNDER RIP RAP.
5. CHANNEL DEPTH "H" SHALL INCLUDE A MINIMUM 6" OF FREEBOARD.

NOTE: "D" EQUALS DIAMETER OF PIPE OR BOTTOM WIDTH OF CHANNEL.

NOT TO SCALE

TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS



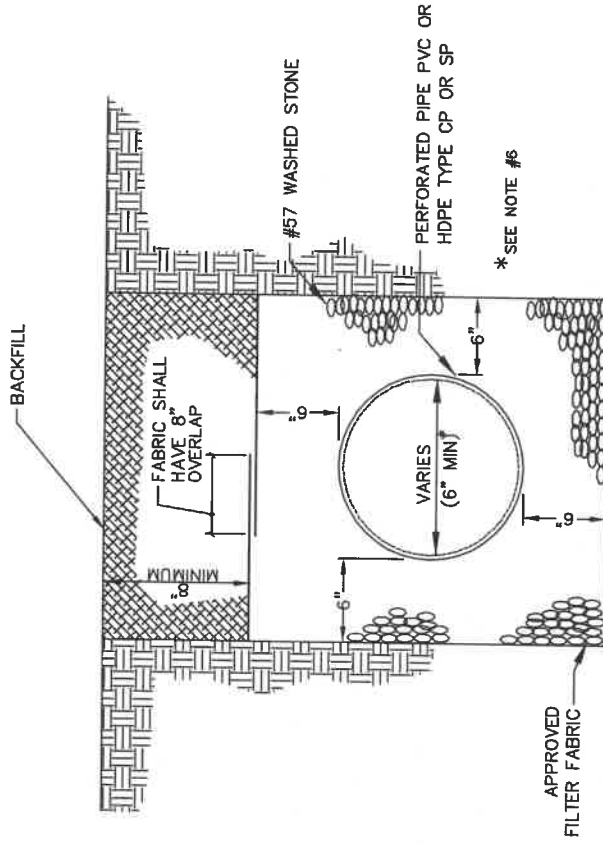
RIP RAP DITCHES

STD. NO. REV.

20.27

NOTES:

1. A MINIMUM OF 6" FROM OUTSIDE DIAMETER OF PIPE TO SIDE OF TRENCH MUST BE ALLOWED FOR WASHED STONE. THE METHOD OF COMPACTING BACKFILL MATERIAL IS SUBJECT TO APPROVAL BY THE TOWN ENGINEER. AN APPROVED FILTER FABRIC SHALL BE PLACED AROUND STONE AND OVERLAPPED 8" AT TOP WITHIN STREET RIGHT OF WAY.
2. SUBDRAIN IS TO BE A MINIMUM 6" DIAMETER PERFORATED PIPE; USE SCHEDULE 40 PVC PER ASTM D1785 OR HDPE PER AASHTO M252, TYPE CP (SINGLE-WALL, CORRUGATED) OR TYPE SP (DOUBLE-WALL, SMOOTH INTERIOR).
3. OUTLET PIPE FROM SUBDRAIN SHALL BE NON-PERFORATED UNDER PAVEMENT (INCLUDING SIDEWALKS AND DRIVEWAYS). SEE SITE PLAN FOR SLOPE OF SUBDRAIN AND TIE IN TO STORM DRAINAGE.
4. THE OUTLET PIPES SHALL BE SCHEDULE 40 (MIN.) PVC PER ASTM D2665 OR HDPE PER AASHTO M252, TYPE S (DOUBLE WALL, SMOOTH INTERIOR) UNDER ROADWAYS.
5. FILTER FABRIC SHALL BE AN APPROVED, TYPE 2 WATER PERMEABLE, SYNTHETIC FABRIC.
6. A MINIMUM 4" DIAMETER SUBDRAIN MAY BE USED IN PLANTING AREAS AS DESCRIBED IN THE PLDSM 4000 SERIES.
7. CLEAN-OUTS ARE RECOMMENDED AT ALL PIPE INTERSECTIONS AND AT A 100' MAXIMUM SEPARATION.
8. SUBDRAIN INVERTS AT CATCH BASINS SHOULD BE INSTALLED ABOVE THE BOTTOM TO AVOID SURCHARGE OF SUBDRAIN SYSTEM.
9. ALL SUBDRAINS WILL TIE INTO A STANDARD DRAINAGE STRUCTURE OR DAYLIGHT TO THE SURFACE WHERE APPROPRIATE.



SPECIAL NOTE:

PREFABRICATED DRAINAGE MAY BE USED WITH APPROVAL OF TOWN ENGINEER.

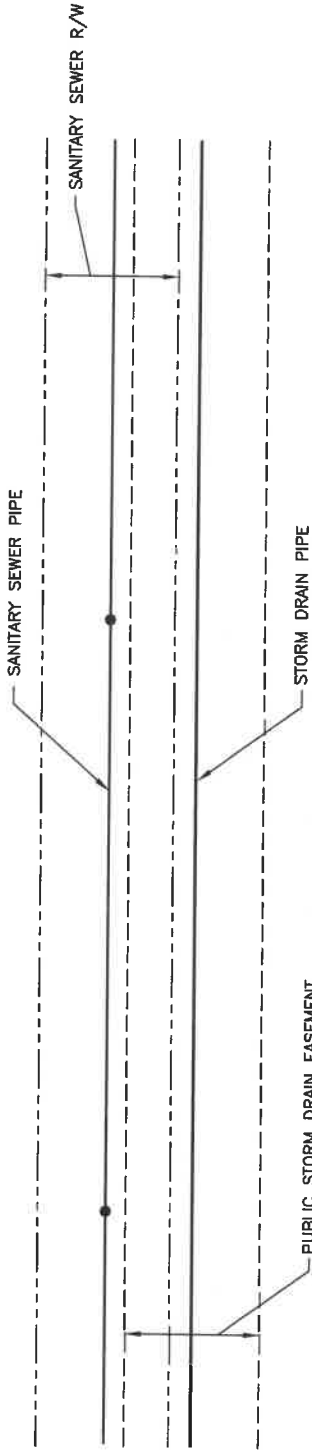
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TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS

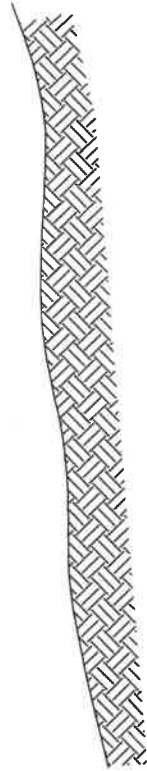
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20.28	3



THE SANITARY SEWER AND STORM DRAINAGE EASEMENTS MAY OVERLAP; HOWEVER THE PIPE AND ASSOCIATED STRUCTURES MUST NOT BE IN THE OTHER UTILITY'S RIGHT OF WAY. THE SANITARY SEWER EASEMENT WIDTHS SHALL BE AS OUTLINED IN AGENCY'S DESIGN MANUAL. THIS DETAIL DOES NOT APPLY TO STORM DRAINAGE UTILIZING OPEN CHANNEL FLOW.

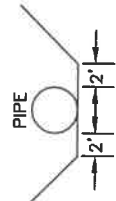
PLAN VIEW



PROFILE VIEW

THE VERTICAL SEPARATION GUIDELINE WILL BE USED UP TO THE POINT WHERE THE TWO RIGHTS OF WAY ADJOIN EACH OTHER.

THE SANITARY SEWER AND STORM DRAINAGE PIPES MUST BE NO CLOSER TOGETHER HORIZONTALLY THAN THE VERTICAL DISTANCE BETWEEN THE TOP OF THE HIGHER PIPE AND THE BOTTOM OF THE LOWER PIPE. A MAINTENANCE CREW MUST BE ABLE TO DIG DOWN TO THE LOWER PIPE SLOPING THE DITCH ON A 1:1 SLOPE UP FROM THE REQUIRED TRENCH BOTTOM WIDTH AND NOT EXPOSE THE HIGHER PIPE.



PROFILE VIEW

NOT TO SCALE



**TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS**

**OVERLAPPING STORM DRAINAGE/SANITARY
SEWER EASEMENTS**

STD. NO.	REV.
20.29	

GENERAL NOTES:

1. FOR STREAMS CARRYING 500 ACRES OR MORE OF SURFACE RUNOFF, THE EASEMENT REQUIREMENT IS TO BE THE WIDTH OF THE STREAM FROM TOP OF BANK TO TOP OF BANK, PLUS (+) 10' ON EACH SIDE OF STREAM. (40' MINIMUM WIDTH)
2. FOR OPEN CHANNELS THE MINIMUM EASEMENT MUST CONTAIN THE WIDTH OF THE STREAM FROM TOP OF BANK TO TOP BANK.
3. WIDER EASEMENT WIDTHS MAY BE REQUIRED FOR PIPE DEPTHS GREATER THAN TEN FEET.
4. PIPE SYSTEMS AND OPEN CHANNELS ON PRIVATE PROPERTY SHALL BE PLACED IN A PUBLIC STORM DRAINAGE EASEMENT.

EASEMENT REQUIREMENTS FOR OPEN STORM DRAINAGE CHANNELS

AREA IN ACREAGE	EASEMENT REQUIREMENT
0-45 AC.	20'
45-120 AC.	30'
120-500 AC.	40'
500 AC.+	SEE NOTE

EASEMENT REQUIREMENTS FOR STORM DRAIN PIPE

PIPE SIZE	EASEMENT REQUIREMENT
15"	15'
18"	15'
24"	15'
30"	20'
36"	20'
42"	25'
48"	25'
54"+	30' MIN (VARIES)

NOT TO SCALE



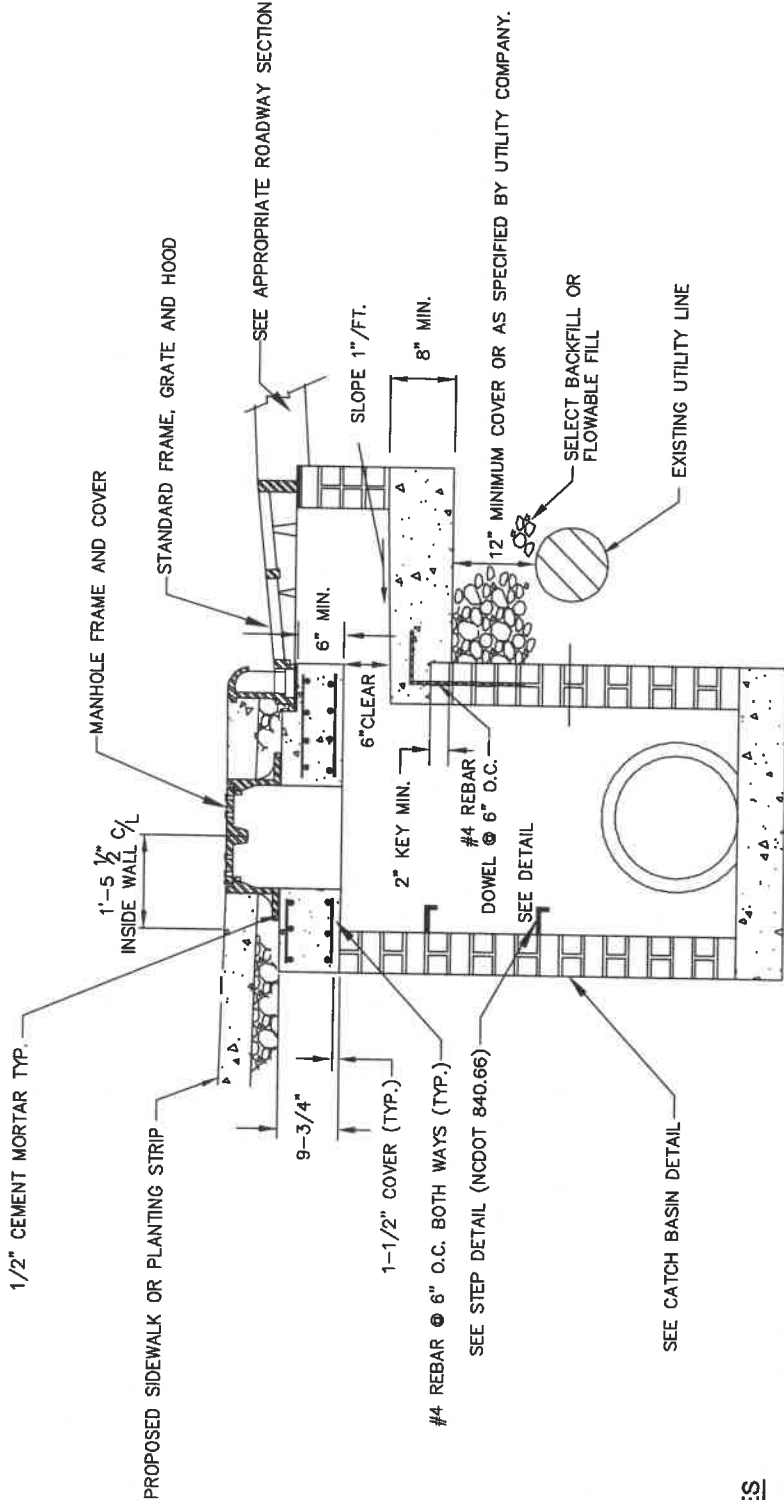
**TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS**

**MINIMUM DRAINAGE EASEMENT
REQUIREMENTS FOR STORM DRAIN
PIPES AND OPEN CHANNELS**

STD. NO.

REV.

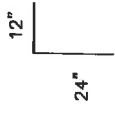
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NOTES

1. PRIOR APPROVAL FROM THE TOWN ENGINEER IS REQUIRED.
2. THIS STRUCTURE IS TO ONLY BE USED ON TOWN MAINTAINED STREETS AND NOT ON NCDOT STREETS WITHOUT THEIR PERMISSION.

OFFSET CATCH BASIN EXISTING UTILITY CONFLICT



DOWEL DETAIL

NOT TO SCALE



**TOWN OF PINEVILLE
LAND DEVELOPMENT
STANDARDS**

OFFSET CATCH BASIN

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