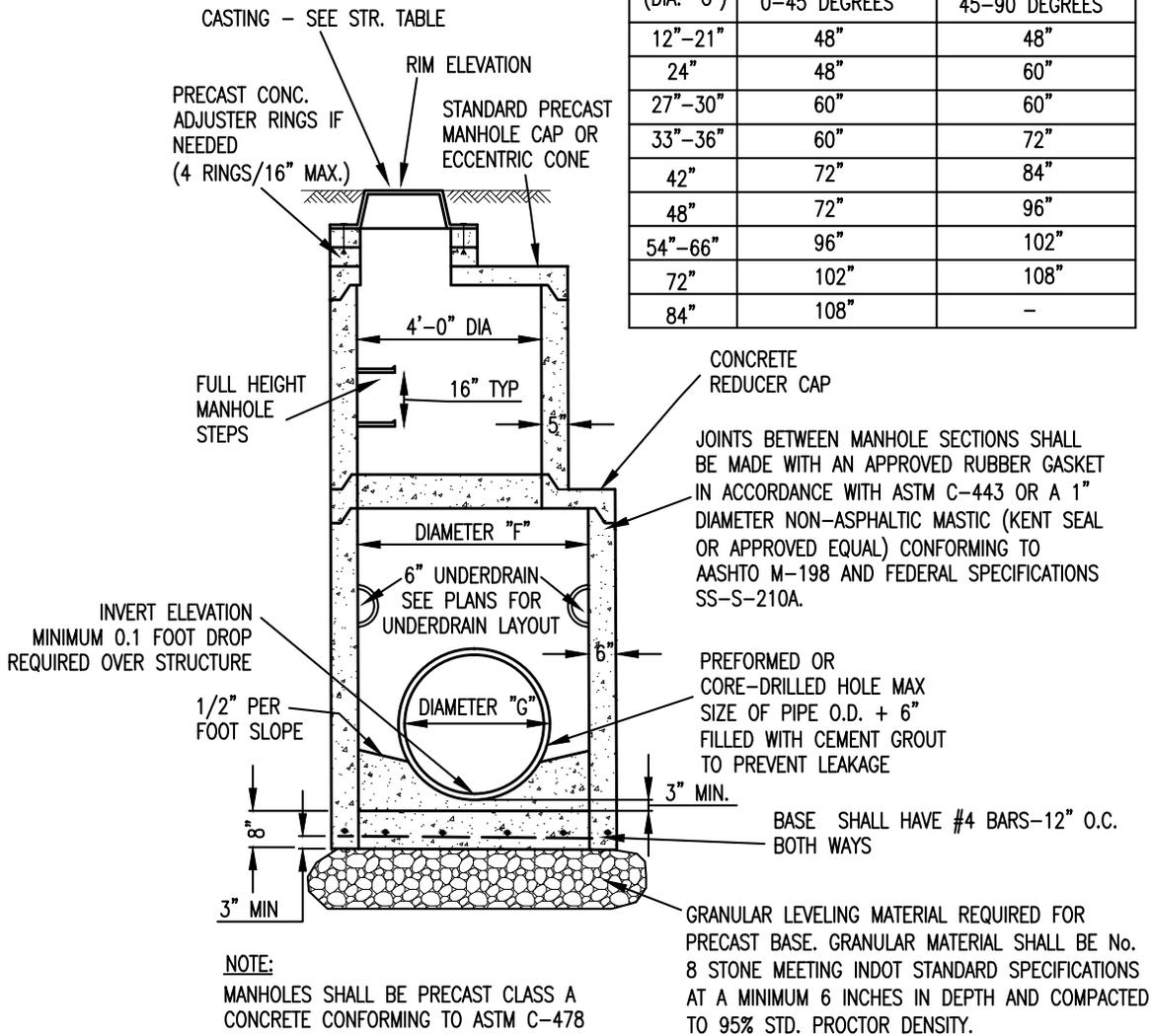


PIPE SIZE (DIA. "G")	MANHOLE (DIA. "F") PIPES ENTERING/ LEAVING AT 0-45 DEGREES	MANHOLE (DIA. "F") PIPES ENTERING/ LEAVING AT 45-90 DEGREES
12"-21"	48"	48"
24"	48"	60"
27"-30"	60"	60"
33"-36"	60"	72"
42"	72"	84"
48"	72"	96"
54"-66"	96"	102"
72"	102"	108"
84"	108"	-



NOTE: ALL STRUCTURE JOINTS SHALL BE SLICKED WITH NON-SHRINK GROUT.

NOT TO SCALE



**STANDARD PRECAST  
MANHOLE**

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TOWN OF ZIONSVILLE, INDIANA

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**STANDARD DETAIL**

PREPARED BY:

**BLN**  
BEAM-LONGEST-NEFF

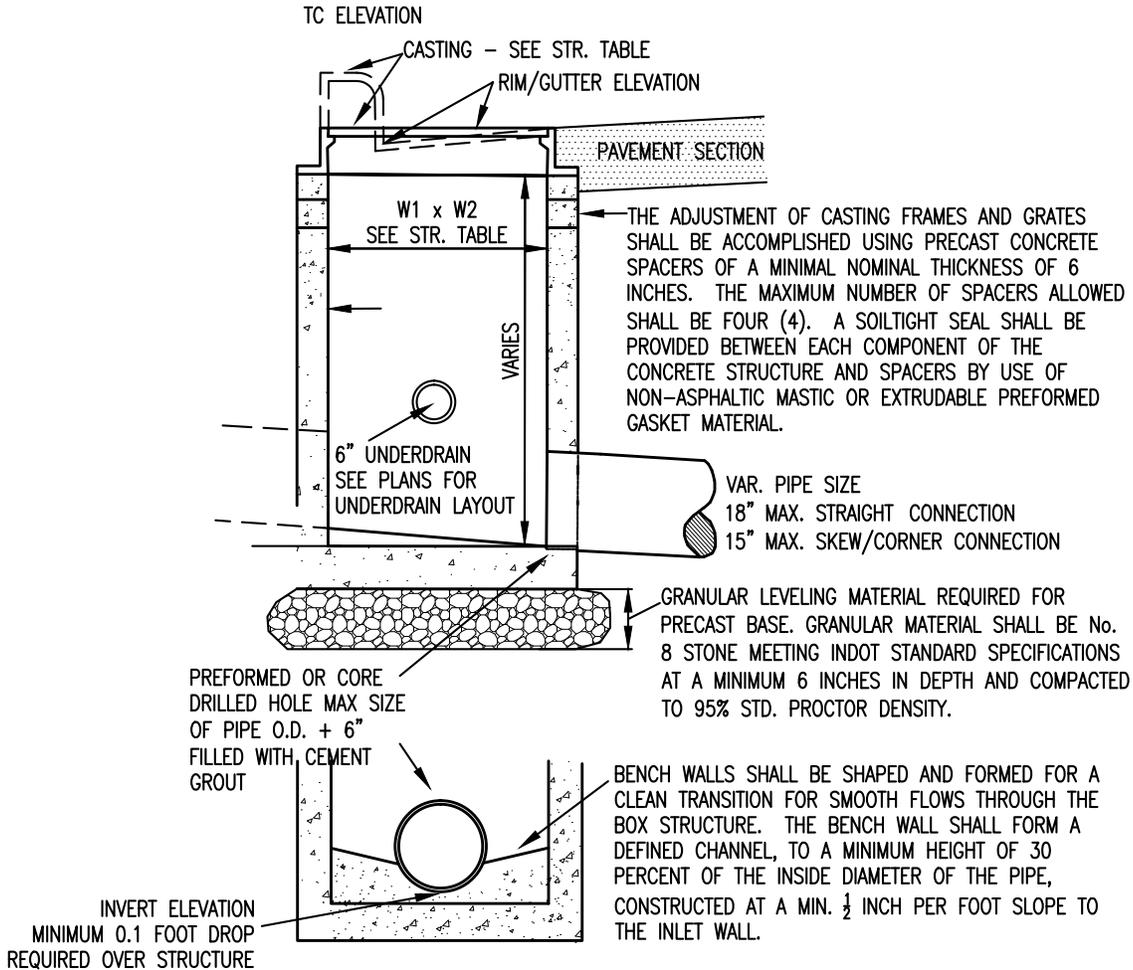
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FIGURE NO.

**ST-1**

**GENERAL NOTES:**

STORM BOX STRUCTURES SHALL BE PRECAST CONCRETE CLASS A WITH A 4000 PSI, 28 DAY COMPRESSIVE STRENGTH. THE STRUCTURE DESIGN SHALL BE IN FULL ACCORDANCE WITH ASTM C890



NOT TO SCALE

NOTE: ALL STRUCTURE JOINTS SHALL BE SLICKED WITH NON-SHRINK GROUT.



**STORM BOX STRUCTURE**

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TOWN OF ZIONSVILLE, INDIANA

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**STANDARD DETAIL**

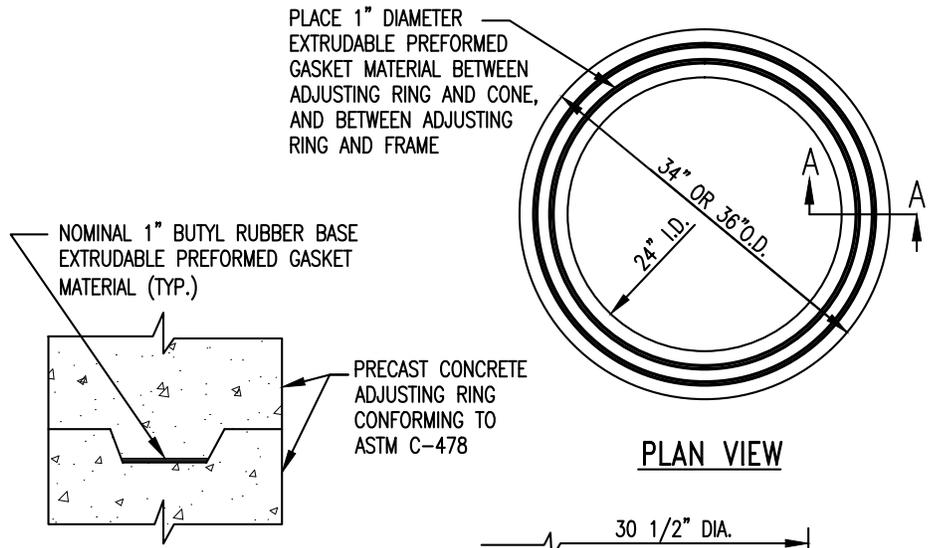
PREPARED BY:

**BLN**  
BEAM-LONGEST-NEFF

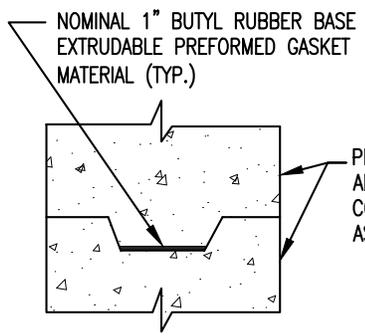
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FIGURE NO.

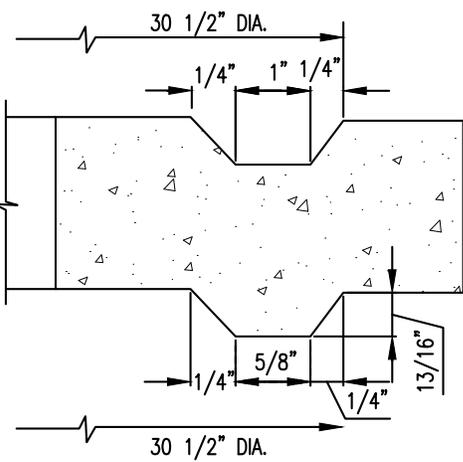
**ST-2**



**PLAN VIEW**



**GASKET DETAIL**



**SECTION "A-A"**

RISER RING THICKNESS  
4"-12" OUTSIDE DIA. 34"  
OR 36"

**GENERAL NOTES:**  
BUTYL RUBBER BASE GASKET MATERIAL SHALL CONFORM TO AASHTO M-198 AND FEDERAL SPECIFICATIONS SS-S-210A. THE EXTRUDABLE PREFORMED GASKET SHALL BE USED BETWEEN THE ADJUSTING RING AND CONE, AND BETWEEN THE ADJUSTING RING AND CASTING. THE GASKET MATERIAL SHALL BE AS MANUFACTURED BY HAMILTON KENT-SEAL OR APPROVED EQUAL

**FOR RECTANGULAR/BOX STRUCTURES:**  
PRECAST CONCRETE SPACERS OF A MINIMAL NOMINAL THICKNESS OF 6 INCHES. THE MAXIMUM NUMBER OF SPACERS ALLOWED SHALL BE FOUR (4). A SOILTIGHT SEAL SHALL BE PROVIDED BETWEEN EACH COMPONENT OF THE CONCRETE STRUCTURE AND SPACERS BY USE OF NON-ASPALTIC MASTIC OR EXTRUDABLE PREFORMED GASKET MATERIAL.

NOT TO SCALE

NOTE: ALL JOINTS SHALL BE SLICKED WITH NON-SHRINK GROUT.

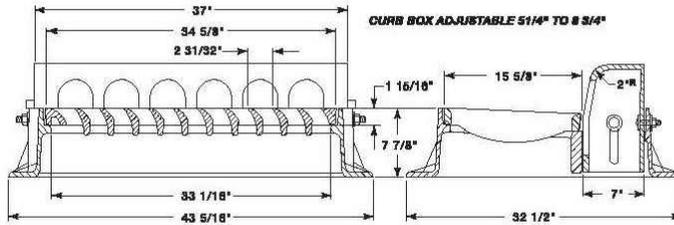


**SPACER RINGS/RISER RINGS**  
TOWN OF ZIONSVILLE, INDIANA  
**STANDARD DETAIL**

PREPARED BY:  
**BLN**  
BEAM-LONGEST-NEFF  
FIGURE NO.  
**ST-3**

**R-3287-10V**  
**Combination Inlet Frame, Grate, Curb Box**

Heavy Duty



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3287-10V	V	2.1	5.5

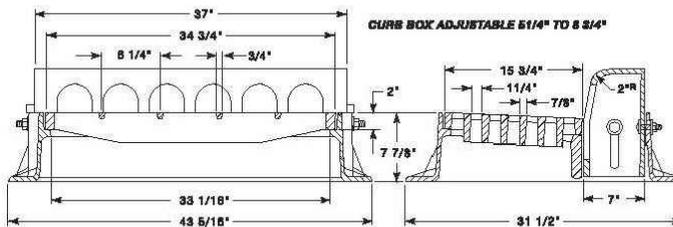
Available with 3" radius curb box.

MANUFACTURER	CATALOG NO.
NEENAH	R-3287, 10V
EAST JORDAN	7505M3

NOT TO SCALE

**R-3287-SB10**  
**Combination Inlet Frame, Grate, Curb Box**

Heavy Duty



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3287-SB10	S	1.5	5.5

MANUFACTURER	CATALOG NO.
NEENAH	R-3287, SB10
EAST JORDAN	7505

NOT TO SCALE



**STRAIGHT CURB INLET  
 CASTING TYPE 1**

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TOWN OF ZIONSVILLE, INDIANA

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**STANDARD DETAIL**

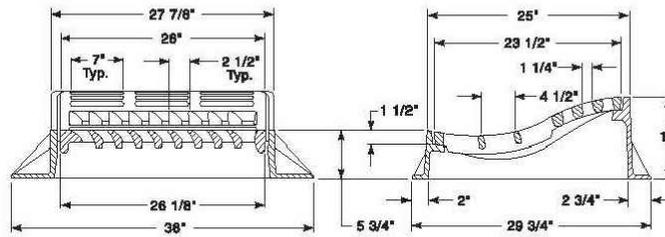
PREPARED BY:  
**BLN**  
 BEAM-LONGEST-NEFF

---

FIGURE NO.  
**ST-4**

**R-3501-TR**  
**Inlet for Roll Type Curb**

Heavy Duty



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3501-TR	L	1.4	4.6
R-3501-TL	L	1.4	4.6

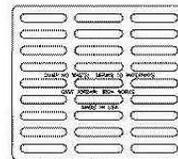
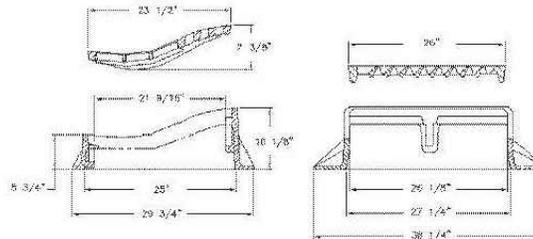
Illustrating R-3501-TR (flow right). If flow left required, order R-3501-TL.

**7495 CATCH BASIN CURB INLET**

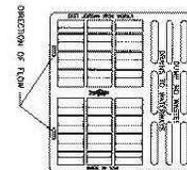


Heavy duty  
 With TYPE M1 right hand grate  
 (M2 left hand)  
 Approximate 250 sq. in. open area  
 "DUMP NO WASTE!" lettering and fish image

Options:  
 Safety bar — 5235  
 Round flange frame



TYPE M3 Grate  
 "DUMP NO WASTE!" lettering  
 Approx. 227 sq. in. open area



TYPE M4 Bidirectional Grate  
 "DUMP NO WASTE!" lettering  
 and fish image  
 Approx. 185 sq. in. open area

MANUFACTURER	CATALOG NO.
NEENAH	R-3501-TR/TL
EAST JORDAN	7495

NOT TO SCALE



**ROLLED CURB INLET CASTING**  
**TYPE 3**

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TOWN OF ZIONSVILLE, INDIANA

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**STANDARD DETAIL**

PREPARED BY:  
**BLN**  
 BEAM-LONGEST-NEFF

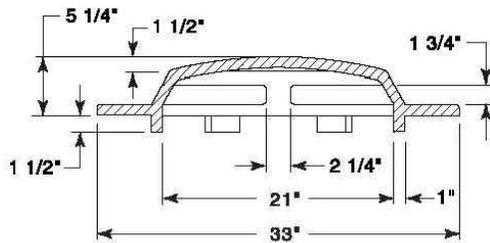
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FIGURE NO.  
**ST-5**

**R-4342**  
**Ditch Grate, Stool Type**

Light Duty

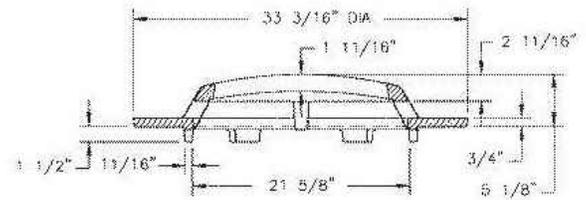
CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-4342	Beehive	2.0	6.0



**6489 BEEHIVE DITCH GRATE**



Heavy duty  
 Approximate 220 sq. in.  
 open area  
 "DUMP NO WASTE!"  
 lettering



MANUFACTURER	CATALOG NO.
NEENAH	R-4342
EAST JORDAN	6489

NOT TO SCALE



**DRAIN GRATE INLET CASTING**  
**TYPE 4**

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TOWN OF ZIONSVILLE, INDIANA

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**STANDARD DETAIL**

PREPARED BY:  
**BLN**  
 BEAM-LONGEST-NEFF

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FIGURE NO.  
**ST-6**

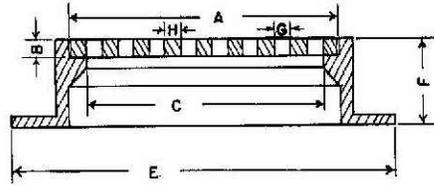
**R-3405 Series**

Catalog No.	A	B	C	E	F	G	H
R-3405	23 5/8 x 23 5/8	1 1/2	22 x 22	32 3/4 x 32 3/4	6	2 1/8 x 2 1/8	1

**Gutter Inlet Frame, Grate**

**Heavy Duty**

CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
R-3405	H	1.5	7.9



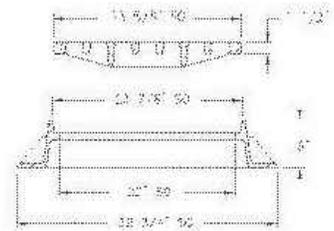
Illustrating R-3405

**5250 CATCH BASIN INLET**



Heavy duty  
 "DUMP NO WASTE!" lettering and fish image  
 Approximate 220 sq. in. open area  
 Stackable frame.

- Options:  
 8" height frame – 5235  
 4" height frame – V-5622  
 ADA grate – V-5622-80  
 Solid cover – V-6622



MANUFACTURER	CATALOG NO.
NEENAH	R-3405
EAST JORDAN	5250

NOT TO SCALE



**FLAT INLET CASTING TYPE 5**

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TOWN OF ZIONSVILLE, INDIANA

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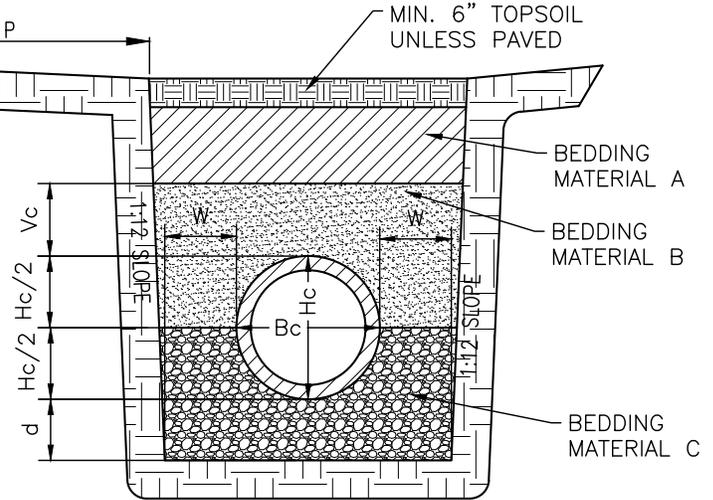
**STANDARD DETAIL**

PREPARED BY:  
**BLN**  
 BEAM-LONGEST-NEFF

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FIGURE NO.  
**ST-7**

EDGE OF PAVEMENT, CURB,  
GUTTER OR SIMILAR STRUCTURE



BEDDING MATERIAL DESIGNATION (P GREATER THAN 5')

	PVC, HDPE, PLASTIC PIPE	CMP, RCP, RIGID PIPE
MATERIAL A	NATIVE BACKFILL	NATIVE BACKFILL
MATERIAL B	#8 WASHED STONE	"B" BORROW
MATERIAL C	#8 WASHED STONE	#8 WASHED STONE

BEDDING MATERIAL DESIGNATION (P LESS THAN 5', BUT GREATER THAN 0')

	PVC, HDPE, PLASTIC PIPE	CMP, RCP, RIGID PIPE
MATERIAL A	#8 WASHED STONE	#8 WASHED STONE
MATERIAL B	#8 WASHED STONE	#8 WASHED STONE
MATERIAL C	#8 WASHED STONE	#8 WASHED STONE

BEDDING MATERIAL DESIGNATION (PIPE UNDER PAVEMENT OR DRIVEWAY)

	PVC, HDPE, PLASTIC PIPE	CMP, RCP, RIGID PIPE
MATERIAL A	PIPE NOT ALLOWED	#8 WASHED STONE
MATERIAL B	(EXCEPT HDPE - SEE	#8 WASHED STONE
MATERIAL C	NOTE 7)	#8 WASHED STONE

LEGEND

- P = DISTANCE FROM EDGE OF PAVEMENT  
Hc = OUTSIDE DIAMETER OR RISE  
Bc = OUTSIDE DIAMETER  
d = DEPTH OF BEDDING MATERIAL BELOW PIPE  
= 8" MIN. FOR FILL HEIGHT UP TO 16'  
= 12" MIN. FOR FILL HEIGHT OF 16' OR MORE  
Vc = 12" FOR Bc UP TO 18"  
= 18" FOR Bc > 18"  
W = 0.3 Bc OR 9", WHICHEVER IS GREATER

NOTES:

1. INDOT TYPE 1 PIPE REQUIRED FOR STORM SEWERS/CULVERTS UNDER PAVEMENT
2. INDOT TYPE 2 PIPE REQUIRED FOR STORM SEWERS/CULVERTS OUTSIDE OF PAVEMENT.
3. ALL BEDDING SHALL BE INSTALLED IN 6" TO 12" BALANCED LIFTS
4. FOR BACKFILL PURPOSES, PAVED SHOULDERS, CURBS, GUTTERS, AND SIDEWALKS ARE CONSIDERED PAVEMENT.
5. FLOWABLE BACKFILL SHALL BE ENCASED BY A MINIMUM OF 2 FEET OF COMPACTED EARTH BACKFILL
6. PLASTIC PIPES FABRICATED ON HYDROSTATIC DESIGN BASES RATED RESINS CONSIDERED RIGID FOR BACKFILL PURPOSES
7. ZIONSVILLE ALLOWS HDPE PIPE UNDER PAVEMENT AS LONG AS IT IS A MANDREL TESTED TO 7.5%

NOT TO SCALE



**BEDDING AND BACKFILL  
SECTION**

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TOWN OF ZIONSVILLE, INDIANA

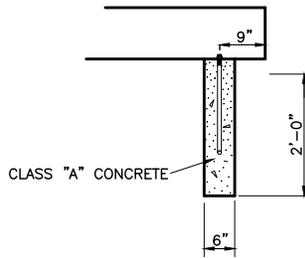
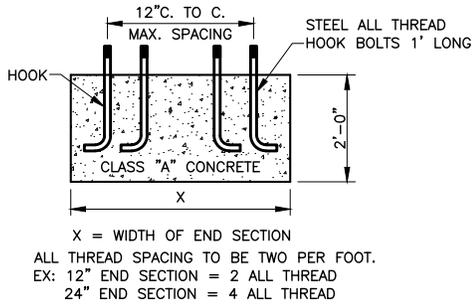
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**STANDARD DETAIL**

PREPARED BY:  
**BLN**  
BEAM-LONGEST-NEFF

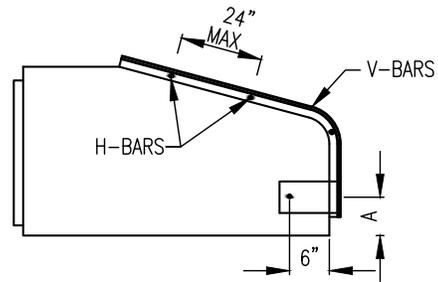
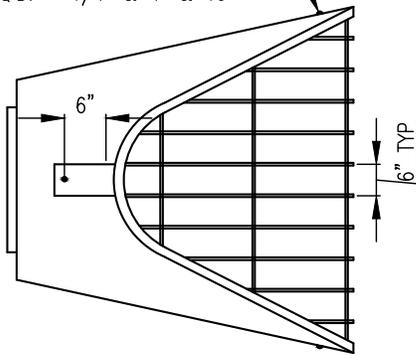
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FIGURE NO.  
**ST-8**



END SECTION ANCHOR

BOLT TO APRON 8" FROM EDGE  
OF CONCRETE 3 BOLT PLATES  
REQ'D. - 1/4" & 4" & 10"



NOTES:

1. BARS & PLATES ARE HOT-ROLLED STEEL.
2. BARS, PLATES, & PIPE ARE FINISHED WITH 2 COATS OF ALUMINUM PAINT.
3. BOLTS ARE GALVANIZED.

TRASH/DEBRIS GUARD DETAIL

NOT TO SCALE



**PRE CAST CONCRETE END SECTION**

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TOWN OF ZIONSVILLE, INDIANA

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**STANDARD DETAIL**

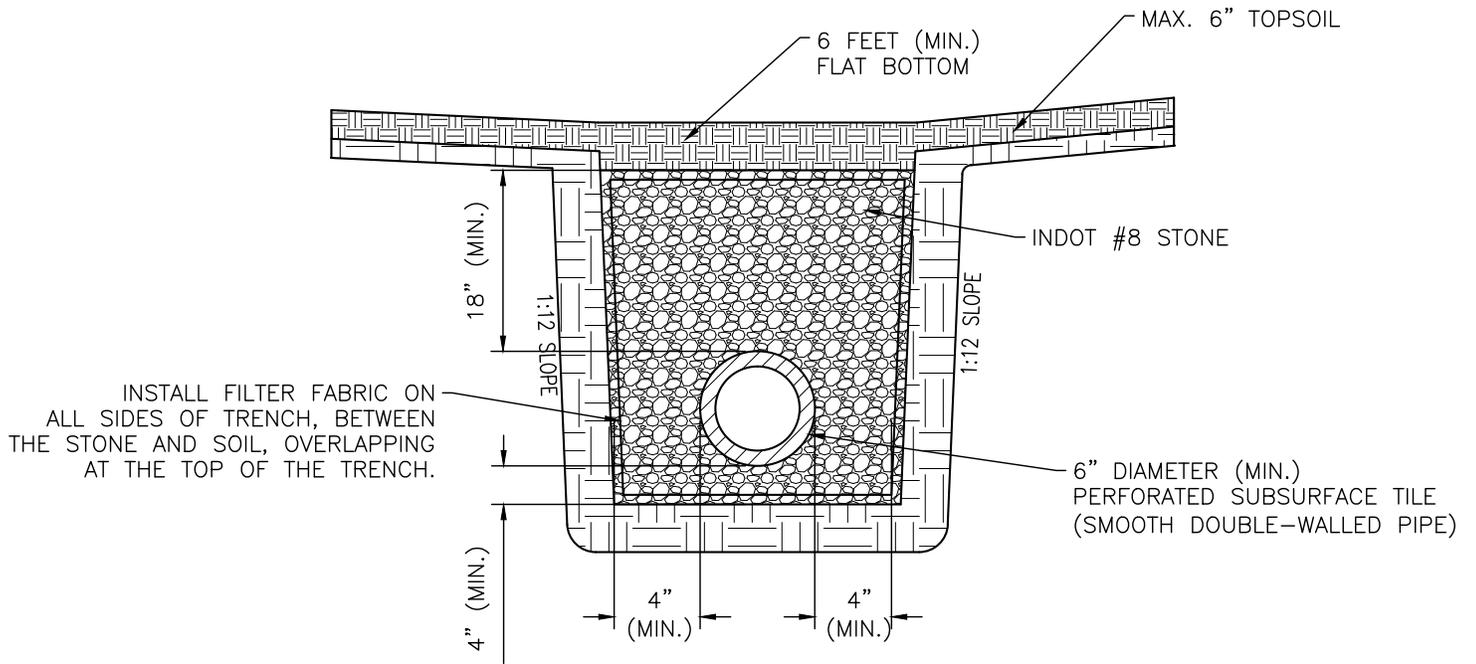
PREPARED BY:

**BLN**  
BEAM-LONGEST-NEFF

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FIGURE NO.

**ST-9**



NOT TO SCALE



**BEDDING AND BACKFILL  
SUB SURFACE DRAINS**

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TOWN OF ZIONSVILLE, INDIANA

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**STANDARD DETAIL**

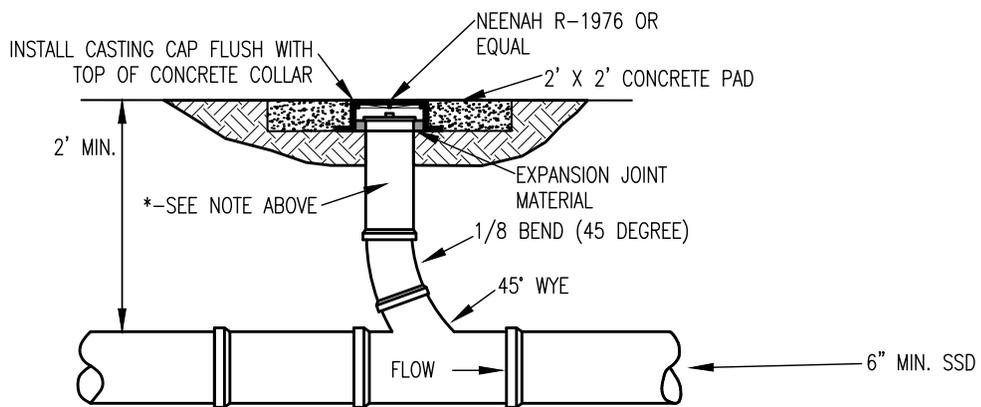
PREPARED BY:  
**BLN**  
BEAM·LONGEST·NEFF

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FIGURE NO.  
**ST-10**

\* NOTE:

- FOR SSD LATERALS, THE CLEANOUT PIPE AND FITTING MATERIAL SHALL BE HDPE N-12, WITH A MINIMUM PIPE SIZE OF 4 INCHES.



NOTE: BEDDING AND BACKFILL FOR SSD SHALL BE IN COMPLIANCE WITH THE APPROPRIATE STORM DETAILS AND SPECIFICATIONS.

NOT TO SCALE



**SUBSURFACE DRAIN  
CLEANOUT**

---

TOWN OF ZIONSVILLE, INDIANA

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**STANDARD DETAIL**

PREPARED BY:

**BLN**  
BEAM·LONGEST·NEFF

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FIGURE NO.

**ST-11**