

NOTES

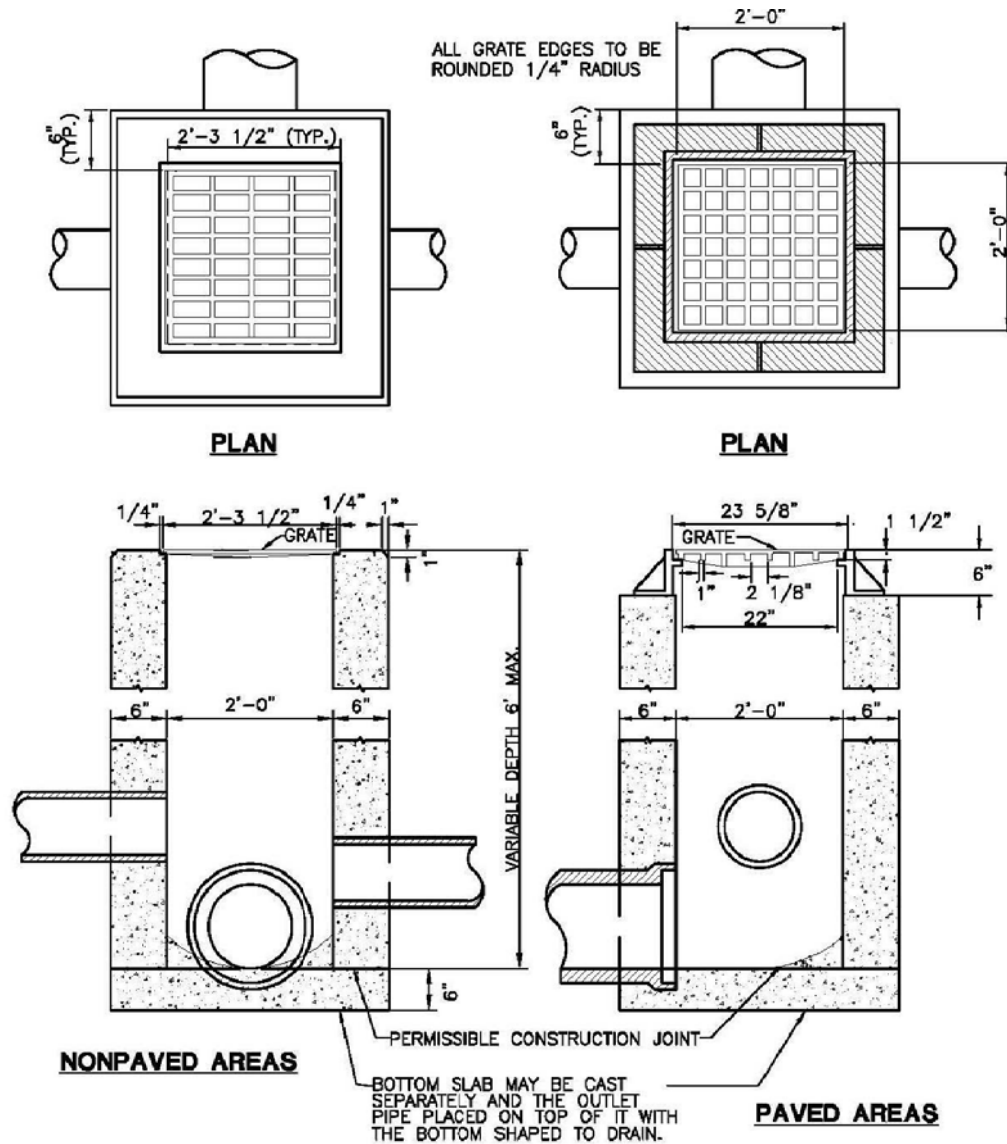
- A.** CASTING SHALL BE EAST JORDAN 7030 OR NEENAH R-3246 OR EQUIVALENT.
- B.** FOR TYPE 2 COMBINATION CURB AND GUTTER THE BACK SHALL BE EAST JORDAN TYPE T4 OR NEENAH (3" RADIUS) (R-3246-I).
- C.** FOR TYPE 1 COMBINATION ROLL CURB AND GUTTER THE BACK SHALL BE EAST JORDAN TYPE T2 OR NEENAH (MOUNTABLE CURB) (R-3246-E).
- D.** CATCH BASIN IN DRIVE APPROACHES TO BE AVOIDED, IF POSSIBLE. THE BACKS SHALL BE EAST JORDAN TYPE T3 OR NEENAH (R-3246-1 WITH CURB PLATE).
- E.** STANDARD GRATE SHALL BE EAST JORDAN TYPE M2, NEENAH TYPE C, OR EQUIVALENT. ALL BAR EDGES TO BE ROUNDED 1/8" RADIUS.
- F.** CONCRETE, CAST-IN-PLACE, TO BE CLASS C. PRECAST CONSTRUCTION PERMITTED AND CONCRETE SHALL MEET THE REQUIREMENTS OF 706.13 WITH 6±2% AIR VOID CONTENT IN THE HARDENED CONCRETE. KNOCKOUTS ARE REQUIRED IN PRECAST CONSTRUCTION. PRECAST WALLS SHALL HAVE A SUFFICIENT AMOUNT OF REINFORCEMENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE.
- G.** CARE SHALL BE TAKEN WHEN CONNECTING TO AN EXISTING CATCH BASIN TO KEEP OPENING AS MINIMAL AS POSSIBLE. IF POSSIBLE, SAW CUT OR USE ROTARY HAMMER FOR OPENING TO MINIMIZE DAMAGE TO CATCH BASIN. PIPE TO INTRUDE INTO CATCH BASIN 1" ONLY AND PIPE MUST BE CUT PARALLEL TO CATCH BASIN. USE NONSHRINK GROUT AROUND PIPE TO SEAL BETWEEN PIPE AND CATCH BASIN.
- H.** DROP FLOW LINE 1/2" WITHIN BLOCK OUT OF COMBINED CURB AND GUTTER WHILE KEEPING LIP OF GUTTER CONSISTENT WITH TOP OF CURB.
- I.** ALL GRATES SHALL BE CONSIDERED "BICYCLE SAFE".



TYPE 1 CATCH BASIN

REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014
PAGE NO.
600-1



NOTES

A. LOCATION AND ELEVATIONS WHEN GIVEN ON THE PLANS IS TOP CENTER OF THE GRATE. WHEN SIDE OPENINGS ARE PROVIDED, ELEVATION SHALL BE THE FLOW LINE OF THE SIDE INLET.

B. GRATE FOR NONPAVED AREAS SHALL BE EAST JORDAN IRON WORKS 5110 TYPE M3 OR NEENAH CATALOG NO. R-4859-C OR EQUIVALENT.

C. GRATE ELEVATION TO BE PLACED 4" TO 6" BELOW NORMAL DITCH RETURNING TO NORMAL 10' EACH SIDE OF BASIN.

D. PRECAST CONSTRUCTION IS REQUIRED, UNLESS OTHERWISE APPROVED, AND CONCRETE SHALL MEET THE REQUIREMENTS OF 706.13 WITH 6±2% AIR VOID CONTENT IN THE HARDENED CONCRETE. KNOCKOUTS SHALL BE PROVIDED IN PRECAST CONSTRUCTION. PRECAST WALLS SHALL HAVE A SUFFICIENT AMOUNT OF REINFORCEMENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE.

E. CATCH BASINS NOT PERMITTED IN PAVEMENT AREAS UNLESS USING A FRAME AND GRATE EQUIVALENT TO NEENAH CATALOG NO. R-3405 OR EAST JORDAN IRON WORKS NO. 5250.

F. FOR PIPES OVER 18" REFER TO ODOT CATCH BASIN 2-3 AND 2-4. FOR SIDE INLETS REFER TO ODOT CATCH BASIN 2-2-A.

G. CARE SHALL BE TAKEN WHEN CONNECTING TO AN EXISTING CATCH BASIN TO KEEP OPENING AS MINIMAL AS POSSIBLE. IF POSSIBLE, SAW CUT OR USE ROTARY HAMMER FOR OPENING TO MINIMIZE DAMAGE TO CATCH BASIN. PIPE TO INTRUDE INTO CATCH BASIN 1" ONLY AND PIPE MUST BE CUT PARALLEL TO CATCH BASIN. USE NONSHRINK GROUT AROUND PIPE TO SEAL BETWEEN PIPE AND CATCH BASIN.

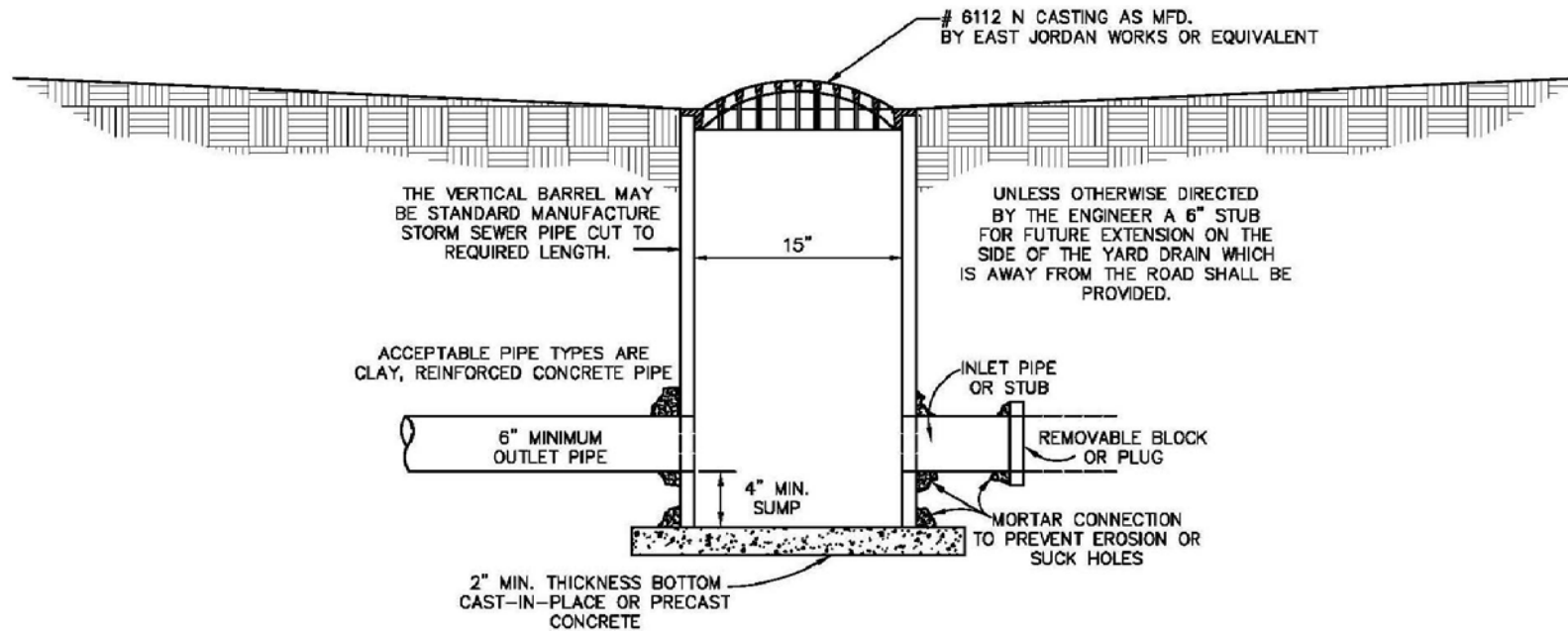


TYPE 2-2-B CATCH BASIN

REVISIONS:
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DATE
APPROVED:
APRIL 2014
PAGE NO.

600-2

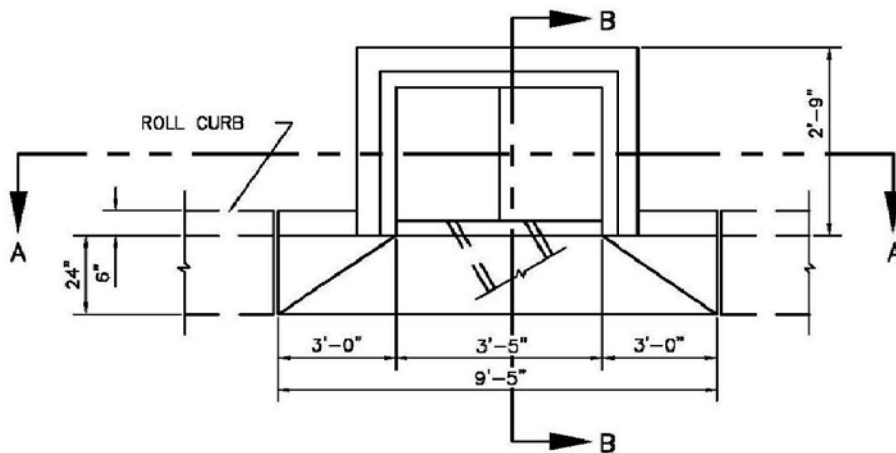


YARD DRAIN

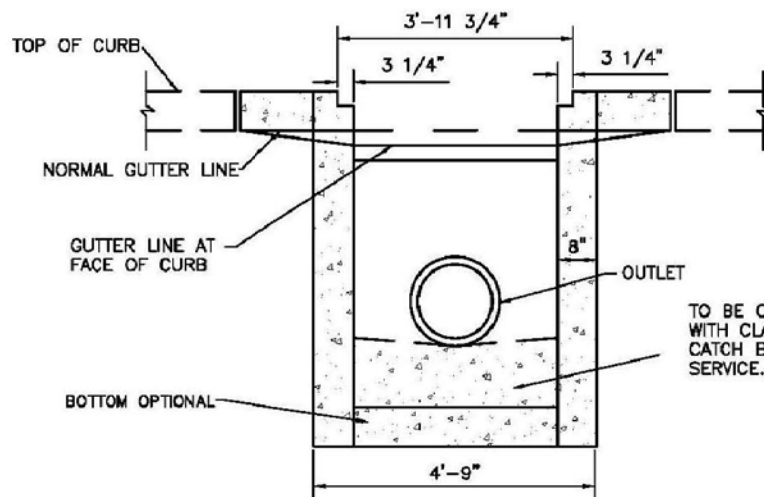
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DATE
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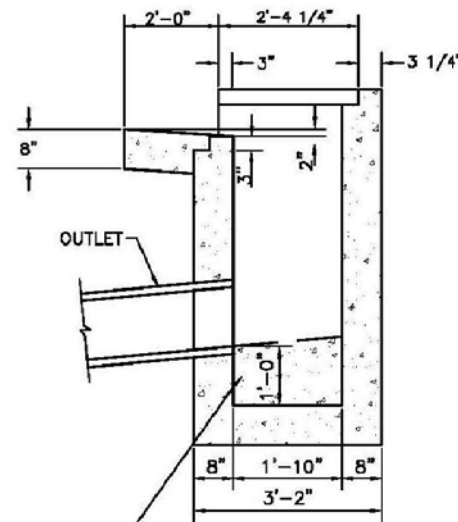
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600-3



**PLAN
(WITH FRAME AND LID REMOVED)**



SECTION A-A



SECTION B-B

NOTES:

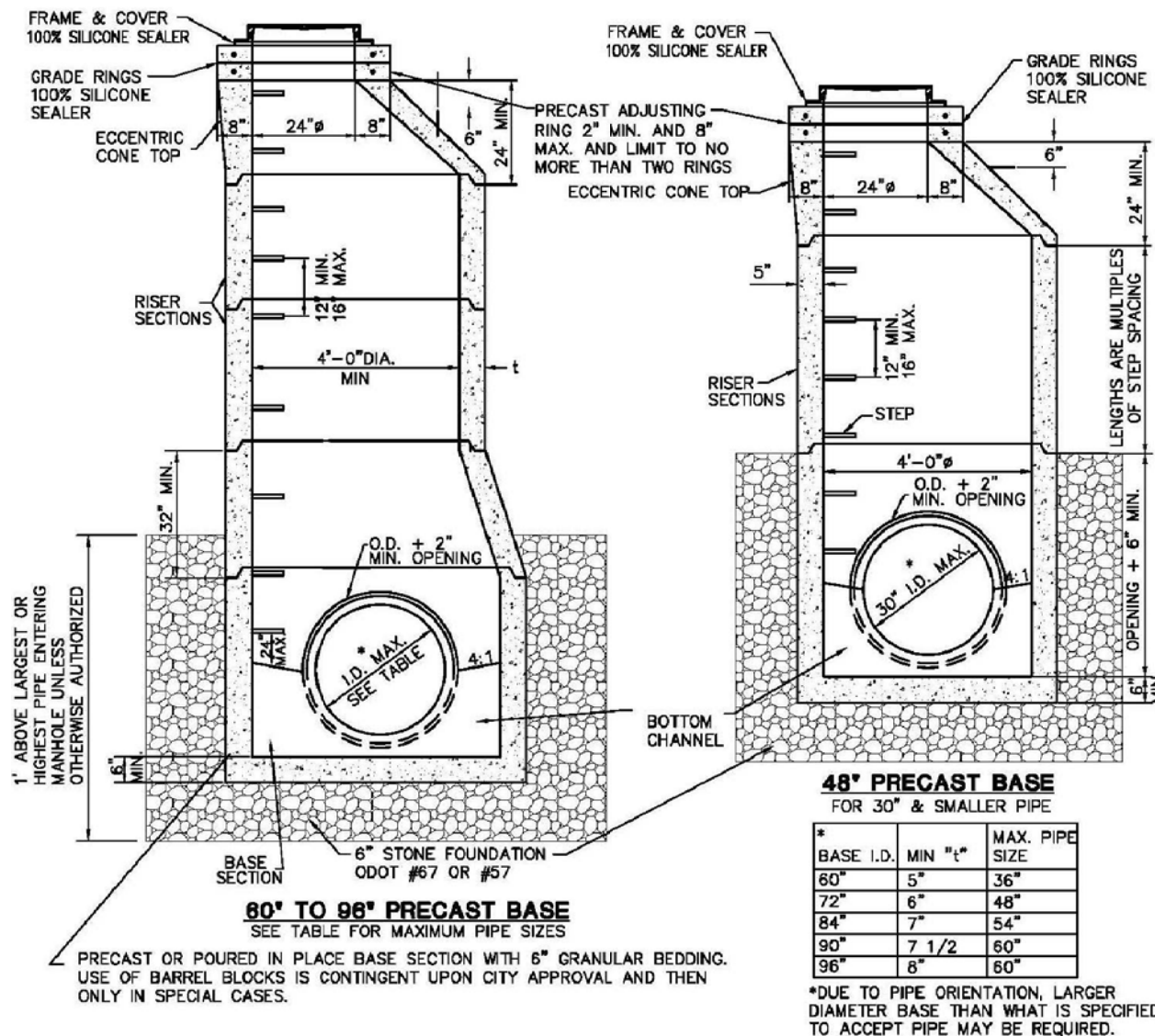
- A.** CURBS ALONG APRON TO HAVE VERTICAL FACE AND BE MONOLITHIC WITH APRON.
- B.** FRAME AND LID SHALL BE NEENAH CATALOG No. R-3312-A OR EQUIVALENT.
- C.** CATCH BASIN MAY BE PRECAST UNIT OR POURED IN PLACE.
- D.** PRECAST UNITS SHALL HAVE MINIMUM WALL THICKNESS OF 5".
- E.** PRECAST UNITS SHALL BE DURA-CRETE CB-915-A OR AN APPROVED EQUAL.
- F.** ALL CATCH BASINS SHALL BE PLACED ON A 6" APPROVED AGGREGATE BASE WITH PRECAST BOTTOM.
- G.** BOTTOM TO BE CONTOURED TO PROVIDE POSITIVE DRAINAGE. THE SLOPE TO BE DETERMINED BY THE ENGINEER.
- H.** THE FRONT EDGE OF CATCH BASIN LID FRAME TO BE FLUSH WITH THE EDGE OF ROLL CURB AND FLUSH WITH FACE OF BARRIER CURB.



TYPE A CATCH BASIN "IN KIND" FOR REPAIR/MAINTENANCE ONLY AS DIRECTED BY VILLAGE

REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014
PAGE NO.
600-4



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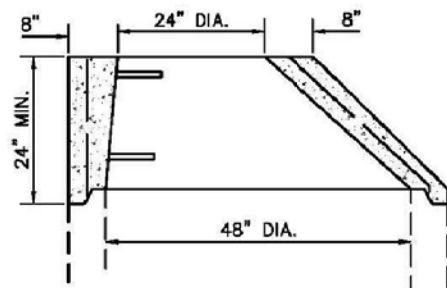
- STORM MANHOLE FRAME AND APPROVED VENTED LID SHALL BE EQUAL OF NEENAH NO. R-1767 OR EAST JORDAN IRON WORKS NO. 1600. "STORM SEWER" LETTERING TO CASTING.
- TOP AND TRANSITION (OR REDUCER) SECTIONS MAY BE EITHER ECCENTRIC CONE OR FLAT SLAB.
- OPENINGS IN RISER SECTIONS FOR 18" AND SMALLER INLET PIPES MAY BE PREFABRICATED OR CUT IN THE FIELD PROVIDED THE SIDES OF THE PIPE AT THE SPRING LINE DO NOT PROJECT INTO THE MANHOLE.
- MATERIALS FOR BASES AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENT SHALL COMPLY WITH ODOT REQUIREMENT OF 706.13 (ASTM C-478).
- LOCATE THE CENTERLINE OF MANHOLE CONES OVER THE CENTERLINE OF THE MAIN SEWER WHENEVER POSSIBLE.
- FOR PIPE SIZES LARGER THAN 60", REFER TO ODOT TYPE 4 TO 5 MANHOLE.
- NO LATERALS MAY PROTRUDE INTO THE INTERNAL MANHOLE.
- MAXIMUM SPACING SHALL BE 400'.
- WHEN CONNECTING TO AN EXISTING STORM MANHOLE CARE SHALL BE TAKEN TO KEEP OPENING AS MINIMAL AS POSSIBLE. IF POSSIBLE, SAW CUT OR USE ROTARY HAMMER FOR OPENING TO MINIMIZE DAMAGE TO STORM MANHOLE AND PIPE MUST BE CUT PARALLEL TO STORM MANHOLE. USE NONSHRINK GROUT AROUND PIPE TO SEAL BETWEEN PIPE AND STORM MANHOLE.
- JOINTS BETWEEN SECTIONS TO BE EITHER MORTAR OR BITUMINOUS PIPE JOINT FILLER (ODOT 706.10)



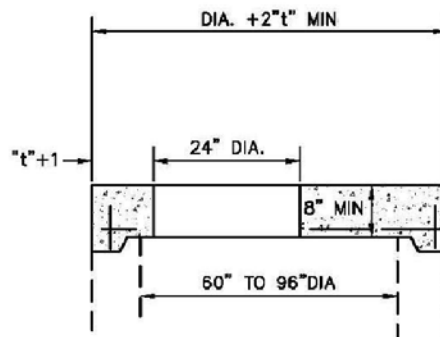
TYPE 3 STORM MANHOLE

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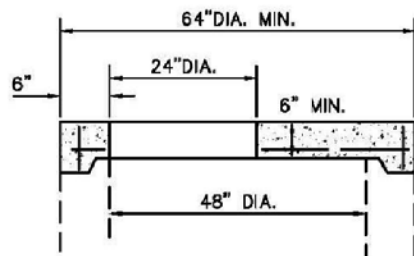
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APPROVED:
APRIL 2014
PAGE NO.
600-5



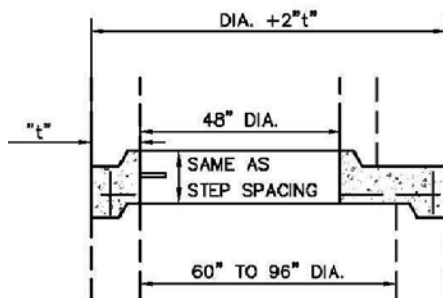
ECCENTRIC CONE TOP



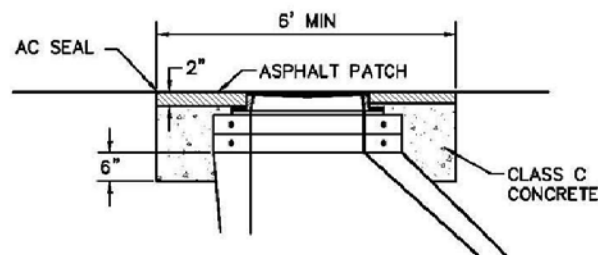
FLAT SLAB TOP



FLAT SLAB TOP



FLAT SLAB TRANSITION

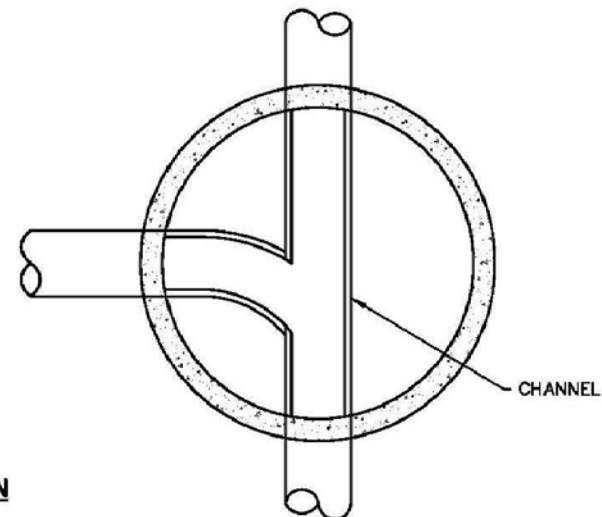


MANHOLE REPAIR CASTING CONSTRUCTION

NOTES:

1. PRECAST CONCRETE ADJUSTING RINGS- ENCASE WITH CONCRETE 6" DOWN FROM BARREL TOP AND UP TO WITHIN 2" OF SURFACE AND EXTENSIONS.
2. SET MANHOLE, PRECAST CONCRETE ADJUSTING RINGS AND CASTING THEN PAVE OVER MANHOLE. THEN DIG OUT, ENCASE COLLARS AND CASTING AS PER DETAIL WITH CONCRETE TO WITHIN 2" OF SURFACE. THE MANHOLE WILL HAVE A PATCHED RADIUS OF (2") ASPHALT.

BASE I.D.	MIN "t"	MAX. PIPE SIZE
60"	5"	36"
72"	6"	48"
84"	7"	54"
90"	7 1/2"	60"
96"	8"	60"



SECTIONAL PLAN

NOTE

ALL INVERTS TO BE CHanneled FOR OPTIMUM FLOW.

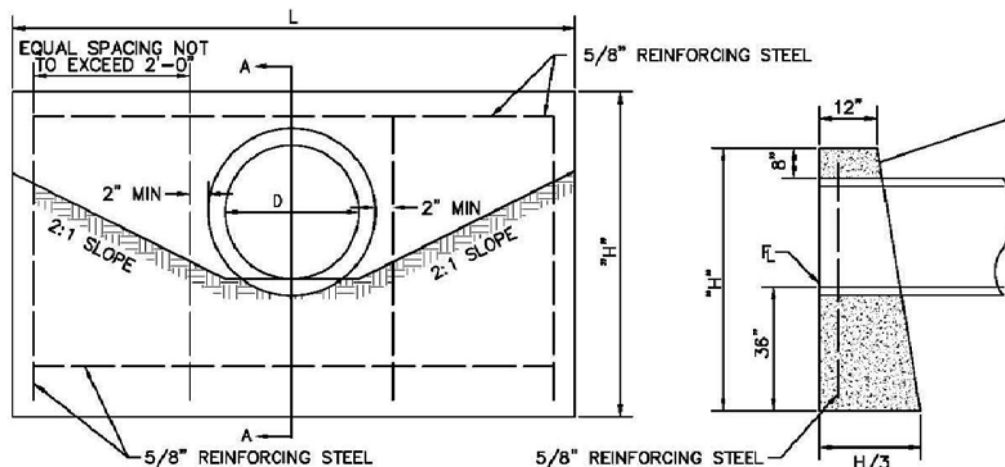


TYPE 3 STORM MANHOLE DETAILS

REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014
PAGE NO.

600-6



ELEVATION

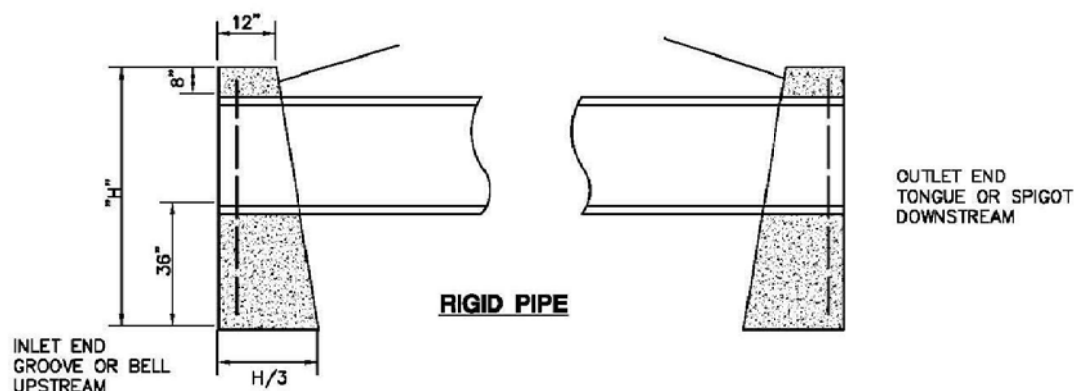
SECTION A-A

NOTES

- A.** THESE FULL HEIGHT HEADWALLS ARE FOR NONSKEWED CULVERTS HAVING A DIAMETER OR RISE OF 36" OR LESS.
- B.** CONCRETE SHALL BE ODOT CLASS C. REINFORCED STEEL BARS SHALL BE 5/8" ROUND.
- C.** DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. IT WILL BE NECESSARY TO DETERMINE DIMENSIONS FOR THE HW-1 HEADWALL REQUIRED FOR REINFORCED ELLIPTICAL CONCRETE PIPE OR CORRUGATED METAL PIPE ARCHES IN ACCORDANCE WITH THE EQUATIONS LISTED ON THIS DRAWING.
- D.** CHAMFER ALL EXPOSED CORNERS 3/4".
- E.** WHERE THE SOIL BORINGS INDICATE A BEARING CAPACITY OF LESS THAN 2600 LBS. PER SQUARE FOOT, IT WILL BE NECESSARY TO INCREASE THE WIDTH OF THE BASE.
- F.** MINIMUM COVER FOR REINFORCING STEEL SHALL BE 2".
- G.** FOR PIPES HAVING A DIAMETER OR RISE OVER 36", REFERENCE ODOT HW-3 HEADWALLS FOR FULL HEIGHT HEADWALL.
- H.** FOR SKEWED CULVERTS HAVING A DIAMETER OR RISE OF 36" OR LESS, REFERENCE ODOT HW-2 HEADWALLS.
- I.** HEADWALLS MAY BE PRECAST CONCRETE CONSTRUCTED TO THE ABOVE REQUIREMENTS. GROUT AROUND PIPE AFTER INSTALLATION.

DIMENSIONS			QUANTITIES ONE HEADWALL	
DIAMETER	HEIGHT	LENGTH	CONCRETE C.Y.	REINFORCING STEEL LBS.
15"	5'-2"	7'-0"	1.7	41
18"	5'-5"	8'-4"	2.2	57
21"	5'-8"	9'-8"	2.8	62
24"	5'-11"	11'-0"	3.3	69
30"	6'-5"	13'-8"	4.7	92
36"	7'-0"	16'-4"	6.5	105

L CIRCULAR SECTIONS = $5D + 4T$
 L ELLIPTICAL OR PIPE-ARCH = $4R + 4T + S$
 H CIRCULAR SECTIONS = $D + T + 44"$
 H ELLIPTICAL OR PIPE-ARCH = $R + T + 44"$
 D = DIAMETER OF PIPE
 R = RISE OF PIPE
 S = SPAN OF PIPE
 T = THICKNESS OF BARREL
 L = LENGTH OF HEADWALL
 H = HEIGHT OF HEADWALL



RIGID PIPE

OUTLET END
TONGUE OR SPIGOT
DOWNSTREAM



FULL-HEIGHT HEADWALL

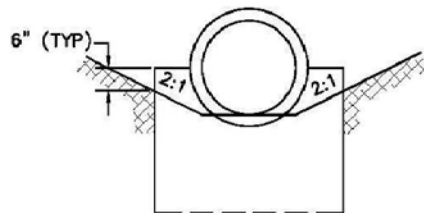
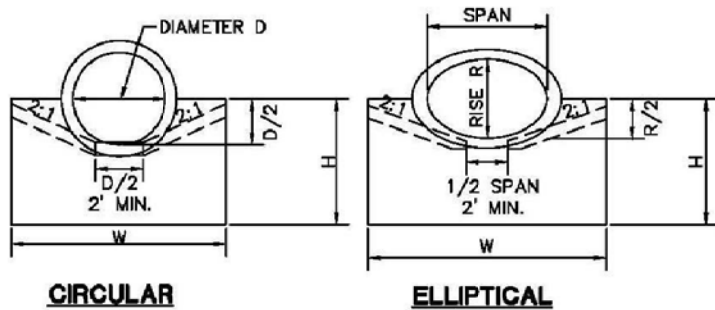
REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014
PAGE NO.

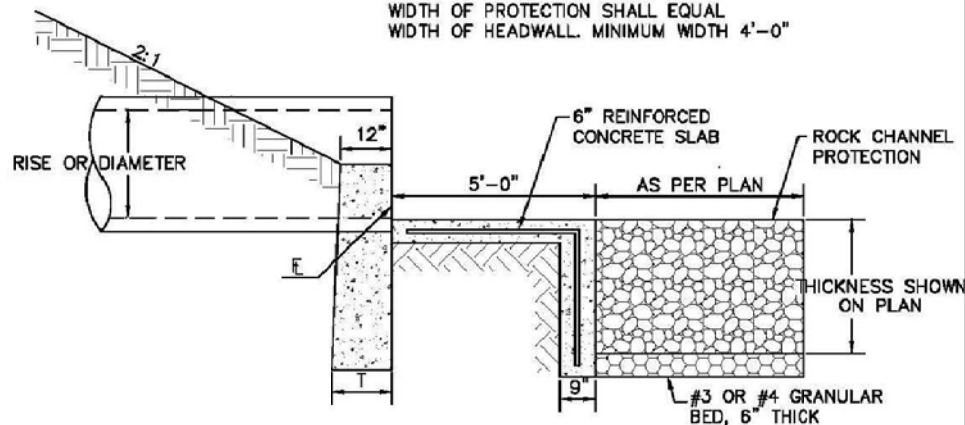
600-7

NOTES

- CONCRETE FOR HEADWALLS SHALL BE ODOT CLASS C. CONCRETE QUANTITIES ARE BASED ON HEADWALLS ONLY.
- HEADWALLS MAY BE PRECAST CONCRETE CONSTRUCTED TO THE ABOVE REQUIREMENTS. GROUT AROUND PIPE AFTER INSTALLATION.
- LAST 20'± OF PIPE BEFORE HEADWALL SHALL BE REINFORCED CONCRETE PIPE. SEE CONCRETE ENCASEMENT DETAIL, 600-9 FOR PIPE TRANSITION.
- A CONCRETE SLAB IS REQUIRED FOR PIPES WITH A DIAMETER OF 18" AND ABOVE.
- FOR THE PLACEMENT OF ROCK CHANNEL PROTECTION SEE ODOT "LOCATION AND DESIGN MANUAL, VOLUME 2, DRAINAGE DESIGN" TABLE 1107-1 FOR THE TYPE, THICKNESS AND LENGTH.

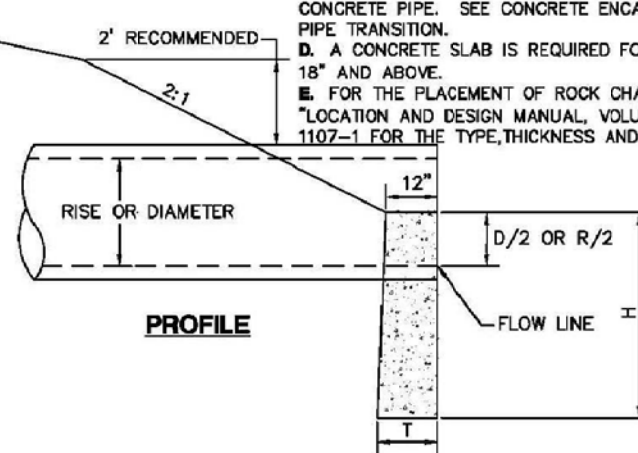


WIDTH OF PROTECTION SHALL EQUAL
WIDTH OF HEADWALL. MINIMUM WIDTH 4'-0"



OUTLET CHANNEL PROTECTION DETAIL

(CUTOFF WALL DEPTH 2'-6" MINIMUM IS VARIABLE TO MATCH REQUIRED THICKNESS OF ROCK.)



HEADWALL FOR CONCRETE PIPE

CIRCULAR					CONC. C.Y.	ELLIPTICAL					CONC. C.Y.
D	W	H	T			SPAN	RISE	W	H	T	
12"	2'-0"	3'-0"	12"	.20		23"	14"	3'-0"	3'-2"	12"	.29
15"	2'-6"	3'-2"	12"	.25		30"	19"	3'-7"	3'-4"	12"	.35
18"	3'-0"	3'-3"	12"	.31		34"	22"	3'-11"	3'-5"	12"	.38
21"	3'-6"	3'-4"	12"	.37		38"	24"	4'-6"	3'-6"	12"	.44
24"	4'-0"	3'-6"	12"	.43		42"	27"	4'-8"	3'-7"	12"	.45
27"	4'-6"	3'-8"	12"	.49		45"	29"	5'-2"	3'-8"	12"	.49
30"	5'-0"	3'-9"	12"	.56		49"	32"	5'-5"	3'-10"	12"	.52
33"	5'-6"	3'-10"	12"	.62		53"	34"	5'-11"	4'-0"	14"	.66
36"	6'-0"	4'-0"	12"	.69		60"	38"	6'-10"	4'-2"	14"	.82
39"	6'-6"	4'-2"	12"	.77		68"	43"	8'-0"	4'-4"	16"	1.01
42"	7'-0"	4'-3"	12"	.84		76"	48"	9'-2"	5'-0"	16"	1.34
48"	8'-0"	4'-6"	14"	1.09		83"	53"	10'-4"	5'-2"	18"	1.65
54"	9'-3"	4'-9"	14"	1.32		91"	58"	11'-6"	5'-5"	18"	1.97
60"	10'-6"	5'-6"	16"	1.93		98"	63"	12'-7"	5'-7"	20"	2.38
66"	11'-9"	5'-9"	18"	2.42		106"	68"	13'-9"	5'-10"	20"	2.69
72"	13'-0"	6'-0"	18"	2.77		113"	72"	14'-9"	6'-0"	22"	3.14
78"	14'-3"	6'-3"	20"	3.37		121"	77"	15'-11"	6'-3"	22"	3.49
84"	15'-6"	6'-6"	22"	4.05		128"	82"	17'-0"	6'-5"	24"	4.04

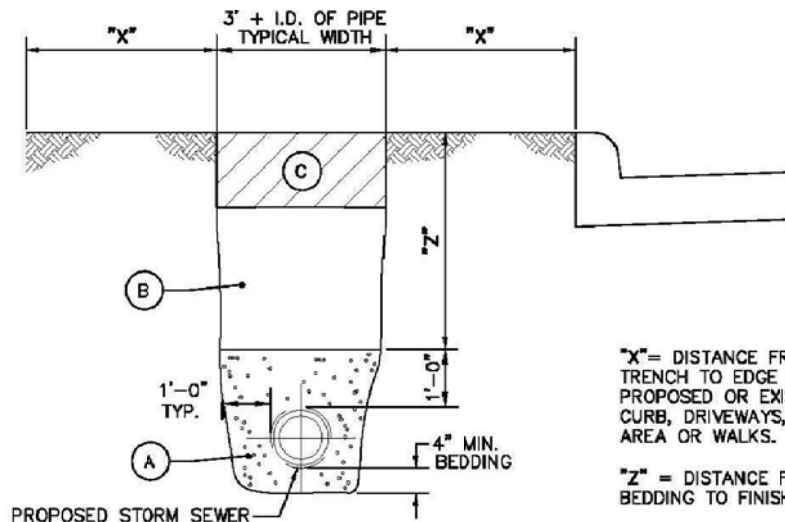


HALF-HEIGHT HEADWALL

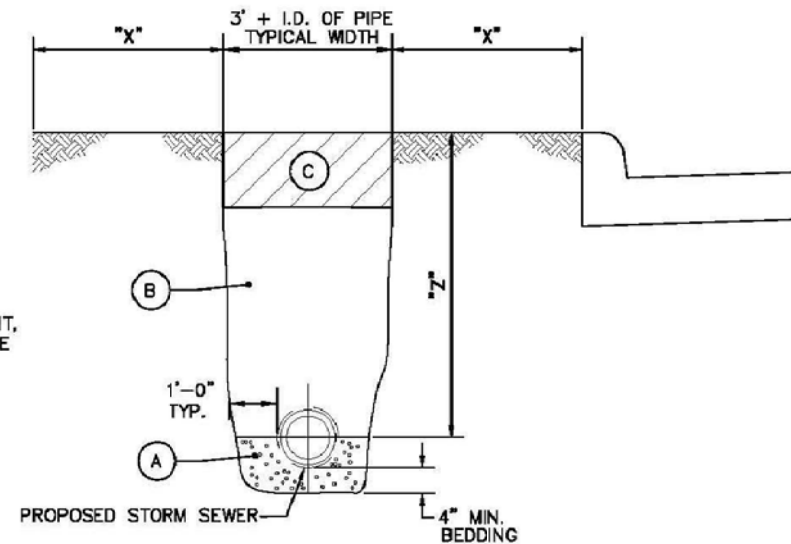
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XX/XX/XXXX

DATE
APPROVED:
APRIL 2014
PAGE NO.

600-8



STORM SEWER TRENCH DETAIL
(NON-RIGID PIPE)



STORM SEWER TRENCH DETAIL
(RIGID PIPE) RCP OR DUCTILE

TRENCH DETAIL NOTES

A. GRANULAR BEDDING SHALL BE CRUSHED STONE OR GRAVEL, ODOT 603 TYPE 3 (#57 OR #67), OR OTHER APPROVED EQUIVALENT.

B. ALL TRENCHES WHERE "X" IS GREATER THAN "Z" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS CAN BE COMPACTED EXISTING NATIVE MATERIAL IN 12" MAXIMUM LIFTS OR AS APPROVED BY THE VILLAGE. NO MATERIAL SHALL BE USED FOR BACK FILLING THAT CONTAINS STONE, ROCKS, ETC., GREATER THAN 4" DIAMETER.

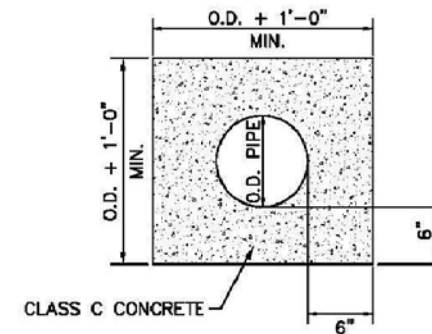
ALL TRENCHES WHERE "Z" IS GREATER THAN "X" FROM PROPOSED OR EXISTING PAVEMENT, CURB, DRIVEWAYS, ALLEYS, STONE AREA OR WALKS SHALL BE COMPACTED WITH GRANULAR BACKFILL MATERIAL ODOT 603 TYPE 1 OR TYPE 2, IN 6" MAXIMUM LIFTS OR LOW STRENGTH MORTAR BACKFILL ODOT ITEM 613 TYPE 1 UNTIL THE TOP OF THE COMPACTED GRANULAR BACKFILL OR LOW STRENGTH MORTAR BACKFILL IS HIGH ENOUGH WHERE "X" IS GREATER THAN "Z".

A DENSITY TEST ON GRANULAR BACKFILL OF 98% OF ASTM D698 STANDARD PROCTOR CURVE MAY BE REQUIRED TO BE PERFORMED BY A COMMERCIAL TESTING LAB SATISFACTORY TO THE VILLAGE.

C. OFF-PAVEMENT AREAS SHALL BE PROVIDED WITH A MINIMUM OF 6" OF TOPSOIL OVER THE COMPACTED MATERIAL AND THEN SEEDED AND MULCHED PER ODOT ITEM 659.

IN-PAVEMENT AREAS SHALL FOLLOW TYPICAL PAVEMENT RESTORATION DETAILS SHOWN ON PAGE 300-19.

D. THE OPEN ENDS OF ALL PIPES SHALL BE PLUGGED TO THE APPROVAL OF THE VILLAGE BEFORE LEAVING THE WORK FOR THE NIGHT.



CONCRETE ENCASEMENT DETAIL



STORM SEWER TRENCH DETAILS

REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014
PAGE NO.
600-9

NOTES

A. NO WORK SHALL BE APPROVED OR ACCEPTED BY THE VILLAGE UNLESS 2 WORKING DAYS NOTICE OF COMMENCING WORK IS GIVEN TO THE VILLAGE.

B. ALL TEMPORARY PAVEMENT AND SIDEWALK SHALL BE MAINTAINED BY THE CONTRACTOR OR THE DEVELOPER AT HIS OWN EXPENSE IN A SUITABLE AND SAFE CONDITION FOR TRAFFIC UNTIL PERMANENT REPLACEMENT IS MADE OR THE PROJECT IS FINALLY ACCEPTED BY THE VILLAGE.

C. ALL STORM SEWER CONSTRUCTION SHALL ADHERE TO ODOT SPECIFICATIONS LATEST REVISION OR WITH THE VILLAGE STORM SEWER SPECIFICATIONS, WHICHEVER IS APPLICABLE AND MORE RESTRICTIVE.

D. MASTIC MATERIAL IS REQUIRED ON ALL NON O-RING STORM SEWER AND MANHOLES, UNLESS OTHERWISE APPROVED.

E. WHEN A CASTING IS REMOVED IT REMAINS VILLAGE PROPERTY AND TO BE DELIVERED TO THE VILLAGE SERVICE CENTER, UNLESS OTHERWISE APPROVED.

F. ANY DETAILS OR NOTES NOT DIRECTLY ADDRESSED IN THESE ENGINEERING STANDARDS SHALL BE COORDINATED WITH THE VILLAGE ENGINEERING DEPARTMENT.

G. ALL STORM SEWER SHALL BE INSTALLED USING A PIPE LASER, INSIDE THE PIPE IF POSSIBLE, FOR GRADE AND ALIGNMENT.

UTILITY STAKING

A. OFFSET AND GRADE AT EACH MANHOLE, CATCH BASIN, AND OTHER STRUCTURES. OFFSET AND GRADE 50' AND 100' OUT FROM EACH MANHOLE UNLESS OTHERWISE APPROVED.

PIPE

A. ALL STORM SEWER PIPE SHALL HAVE A MINIMUM DIAMETER OF 12", UNLESS OTHERWISE APPROVED.

B. TYPES OF PIPE PERMITTED

OUTSIDE THE RIGHT-OF-WAY AND UP TO 30" DIAMETER

REINFORCED CONCRETE PIPE
REINFORCED CONCRETE ELLIPTICAL PIPE
CORRUGATED POLYETHYLENE SMOOTH-LINED PIPE
POLYVINYL CHLORIDE PLASTIC PIPE (NON-PERFORATED)
POLYVINYL CHLORIDE CORRUGATED SMOOTH-INTERIOR PIPE
POLYVINYL CHLORIDE PROFILE WALL PIPE
POLYVINYL CHLORIDE SOLID WALL PIPE

ODOT MATERIALS NUMBER

706.02
706.04
707.33
707.41
707.42
707.43
707.45

WITHIN THE RIGHT-OF-WAY OR OVER 30" DIAMETER

REINFORCED CONCRETE PIPE
REINFORCED CONCRETE ELLIPTICAL PIPE

ODOT MATERIALS NUMBER

706.02
706.04

EXISTING TILE HOOKUPS

A. THE DRAINAGE TILE CURRENTLY CONNECTED TO THE EXISTING STORM SEWER SHALL BE CONNECTED TO THE PROPOSED STORM SEWER. ANY DRAINAGE TILE DAMAGED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR TO A CONDITION EQUAL TO OR BETTER THAN ITS ORIGINAL CONDITION. ANYTHING REMOVED, REPLACED, AND/OR CONNECTED TO THE STORM SEWER SHALL BE NOTED ON THE AS-BUILT DRAWINGS AND SHALL BE INSPECTED BY THE INSPECTOR BEFORE THEY ARE COVERED.

B. ALL FIELD OR STORM DRAINS WHICH ARE ENCOUNTERED DURING CONSTRUCTION SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS OR PLUGGED AS APPROVED AND DIRECTED BY THE VILLAGE.



MISCELLANEOUS STORM NOTES

REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014
PAGE NO.

600-11

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE VILLAGE OF JOHNSTOWN, REPRESENTATIVES OF THE VILLAGE OF JOHNSTOWN AND THE CONTRACTOR SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE VILLAGE OF JOHNSTOWN.

ALL NEW INLETS AND PIPING CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE VILLAGE OF JOHNSTOWN.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE VILLAGE.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 604 INLET ITEMS.

FIELD TILE:

ALL FIELD TILE BROKEN DURING EXCAVATION SHALL BE REPLACED TO ORIGINAL CONDITION OR CONNECTED TO EITHER THE CURB SUBDRAIN OR TO THE STORM SEWER SYSTEM AS DIRECTED BY THE ENGINEER. THE COST OF THIS WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

RESIDENTIAL DRAINAGE CONNECTIONS

EXISTING ROOF DRAINS, FOOTER DRAINS, OR YARD DRAINS, DISTURBED BY THE WORK, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS BY CONNECTING A PIPE INTO THE 4" PIPE UNDERDRAIN OR INTO A DRAINAGE STRUCTURE. THE LOCATION AND GRADE OF THE NEW PIPE REQUIRED TO REPLACE OR EXTEND THE EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER.

STORM SEWER

ALL STORM SEWER MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE CURRENT RULES AND REGULATIONS OF THE VILLAGE OF JOHNSTOWN AND COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS 2002, ITEM 901. ACCEPTABLE STORM SEWER MATERIALS INCLUDE: RCP (706.02); HDPE (720); PVC (720). ALL DRIVE PIPES AND CULVERTS SHALL BE CONSTRUCTED WITH REINFORCED CONCRETE PIPE (RCP, 706.02). ALL DRAINAGE STRUCTURES SHALL MEET CITY OF COLUMBUS STANDARD DRAWINGS OR, WHERE SPECIFIED, ODOT STANDARD DRAWINGS. COST OF BEDDING SHALL BE INCLUDED IN THE PRICE BID FOR STORM PIPE.

TESTING FOR STORM SEWERS:

1. MANDREL TEST: THE CONTRACTOR SHALL MANDREL TEST ALL STORM SEWER PIPE FOR DEFLECTION A MINIMUM OF 30 DAYS AFTER INSTALLATION. PIPE DEFLECTION SHALL NOT EXCEED 5%.

TESTING FOR STORM STRUCTURES:

1. DAMAGE: MANHOLES SHALL BE VISUALLY INSPECTED FOR DAMAGE PRIOR TO INSTALLATION WITH THE LIFT HOLES FILLED WITH NON-SHRINKING MORTAR.

STRUCTURES

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY STRUCTURE CONSTRUCTION AND TOP OF CASTING ELEVATION. EACH STRUCTURE SHALL BE CONSTRUCTED WITH A MAXIMUM FOUR-INCHES (4") OF BRICK WORK UNDER THE CASTING. STRUCTURE TOPS SHALL BE BUILT OR SUBSEQUENTLY ADJUSTED TO MEET SURFACE GRADES ESTABLISHED FOR THE PROJECT. CASTINGS (LIDS) SHALL BE STAMPED "STORM." THE COST OF THIS WORK IS TO BE INCLUDED IN THE PRICE BID FOR ITEM 604.

CHANNELING:

ALL STORM STRUCTURES SHALL BE CHanneled AS DIRECTED BY THE ENGINEER AND HAVE BICYCLE SAFE GRATES.

GUTTER TESTING:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING THE GRADES OF THE GUTTERS WITH WATER, PRIOR TO FINAL ACCEPTANCE OF THE STREETS. THE COST SHALL BE INCLUDED IN THE PRICE BID FOR CURB AND GUTTER.

BEDDING AND BACKFILL

ALL PIPE SHALL BE LAID AS PER THE MANUFACTURER'S SPECIFICATION AND CONFORM TO ITEM 901. THE VILLAGE REQUIRES TYPE 1 BEDDING AS SPECIFIED IN CITY OF COLUMBUS STANDARD DRAWINGS. FOR ALL STORM LINES, BEDDING SHALL CONSIST OF #57 AGGREGATE. BACKFILL OVER BEDDING SHALL BE FREE OF ROCKS, ORGANIC REFUSE OF OTHER OBJECTIONABLE MATERIAL. ALL SEWERS UNDER PAVEMENT SHALL BE BACKFILLED WITH COMPACTED GRANULAR MATERIAL, AS PER ITEM 912 FROM THE BOTTOM OF THE TRENCH TO THE SUBGRADE AND SHALL BE INSTALLED IN ACCORDANCE WITH ITEM 912. COST OF BEDDING AND BACKFILL SHALL BE INCLUDED IN THE PRICE BID FOR STORM SEWER LINE.



MISCELLANEOUS STORM NOTES

REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014

PAGE NO.
600-11(2)

NOTES

A. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROVIDED FOR ALL CONSTRUCTION PROJECTS HAVING SIGNIFICANT GRADING. THE CONTROLS ARE PROVIDED DURING CONSTRUCTION TO PREVENT SOIL ERODED FROM THE CONSTRUCTION AREA FROM ENTERING ADJACENT WATERWAYS AND PROPERTIES.

B. CONSTRUCTION ITEMS INCLUDE SEDIMENT BASINS, SEDIMENT DAMS, DIVERSION DIKES AND/OR DITCHES AND STRAW BALES OR OTHER FILTER DIKES SHOWN ON ODOT STANDARD DRAWING MC-11. OTHER MISCELLANEOUS EROSION CONTROL MEASURES INCLUDE REPAIR SEEDING AND MULCHING, COMMERCIAL FERTILIZER, WATER AND MOWING AND ROCK CHANNEL PROTECTION, COVERED IN ODOT SPECIFICATION ITEMS 659 AND 601.

C. THE SIZE OF THE ENTIRE DRAINAGE AREA CONTRIBUTING FLOW IS USED TO DETERMINE THE MOST EFFECTIVE EROSION CONTROL METHOD. IN MANY CASES, THE MAJOR PORTION OF THE CONTRIBUTING AREA WILL BE BEYOND THE PROJECT LIMITS, AND FOR THOSE CASES IT WILL BE NECESSARY TO CONTROL THE FLOW FROM OUTSIDE BEFORE IT REACHES THE AREA DISTURBED BY PROJECT CONSTRUCTION. FLOW FROM THE AREA DISTURBED BY CONSTRUCTION SHALL BE TREATED PRIOR TO COMBINING IT WITH OFF-PAVEMENT DRAINAGE.

D. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROVIDED FOR ALL SUBDIVISIONS AND INDIVIDUAL SITES UNLESS OTHERWISE APPROVED. THE CONTROL MEASURES ARE TO BE PROVIDED DURING CONSTRUCTION TO PREVENT EROSION FROM ENTERING ADJACENT WATERWAYS AND PROPERTIES.

E. THERE SHALL BE ONLY ONE CONSTRUCTION ENTRANCE OFF THE SITE, ENTRANCE TO BE CONSTRUCTED OF 8" OF #2 STONE, 75' LONG BY 20' WIDE. CONTRACTOR TO KEEP MUD OFF EXISTING STREETS, NO EQUIPMENT TO BE PARKED ON EXISTING STREETS. MORE THAN ONE ENTRANCE MUST BE APPROVED BY THE VILLAGE.

PLAN SUBMITTAL

A. ALL SITE PLANS SHALL INCLUDE APPROPRIATE EROSION AND SEDIMENT CONTROL DEVICES AND SHALL BE SUBMITTED TO THE VILLAGE FOR APPROVAL PRIOR TO COMMENCEMENT OF ANY WORK UNLESS OTHERWISE APPROVED. ALL PROJECTS WHICH DISTURB 5 ACRES OR MORE MUST HAVE OEPA EROSION CONTROL APPROVALS.

CONSTRUCTION

A. ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSPECTED AND APPROVED BY THE VILLAGE UNLESS OTHERWISE APPROVED.

STORM WATER PERMITS

A. ON ALL PROJECTS WHICH DISTURB AT LEAST 1 ACRE OF SOIL, A NPDES PERMIT IS REQUIRED FROM OEPA AND A COPY OF THE PERMIT MUST BE ON FILE AT THE VILLAGE BEFORE CONSTRUCTION BEGINS.

B. EROSION CONTROL SUBMITTALS SHALL BE AS PER THE CURRENT STORM WATER MANAGEMENT ORDINANCE.

CONTROL MEASURES

A. DISTURB ONLY THE AREAS NEEDED FOR CONSTRUCTION.

B. REMOVE ONLY THOSE TREES, SHRUBS, AND GRASSES THAT MUST BE REMOVED FOR CONSTRUCTION; PROTECT THE REST TO PRESERVE THEIR ASTHETIC AND EROSION-CONTROL VALUES.

C. INSTALL SEDIMENT BASINS AND DIVERSION DIKES BEFORE DISTURBING THE LAND THAT DRAINS INTO THEM.

D. INSTALL EROSION AND SEDIMENT CONTROL PRACTICES AS INDICATED IN THE PLAN. THE PRACTICES ARE TO BE MAINTAINED IN EFFECTIVE WORKING CONDITION DURING CONSTRUCTION AND UNTIL THE DRAINAGE AREAS HAVE BEEN PERMANENTLY STABILIZED.

E. TEMPORARILY STABILIZE EACH SEGMENT, GRADED OR OTHERWISE DISTURBED LAND, INCLUDING THE SEDIMENT-CONTROL DEVICES NOT OTHERWISE STABILIZED, BY SEEDING AND MULCHING OR BY MULCHING ALONE. AS CONSTRUCTION IS COMPLETED, PERMANENTLY STABILIZE EACH SEGMENT WITH PERENNIAL VEGETATION AND STRUCTURAL MEASURES.

F. LEVEL DIVERSION DIKES, SEDIMENT BASINS, AND SILT TRAPS AFTER AREAS THAT DRAIN INTO THEM ARE STABILIZED. ESTABLISH PERMANENT VEGETATION ON THESE AREAS. SEDIMENT BASINS THAT ARE TO BE RETAINED FOR STORM WATER DETENTION MAY BE SEEDED TO PERMANENT VEGETATION AFTER THEY ARE BUILT.

G. DISCHARGE WATER FROM OUTLET STRUCTURES AT NON-EROSIVE VELOCITIES.

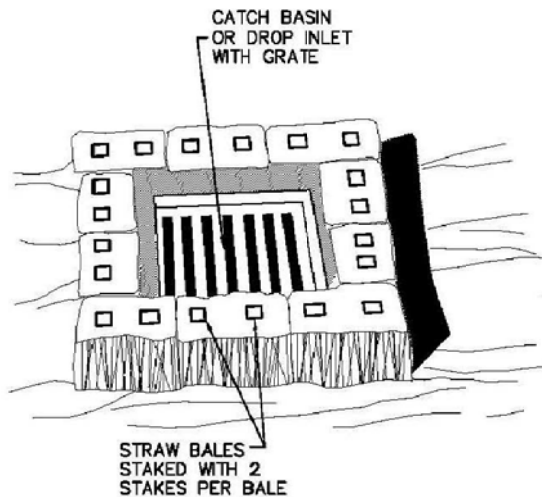


EROSION CONTROL NOTES

REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014

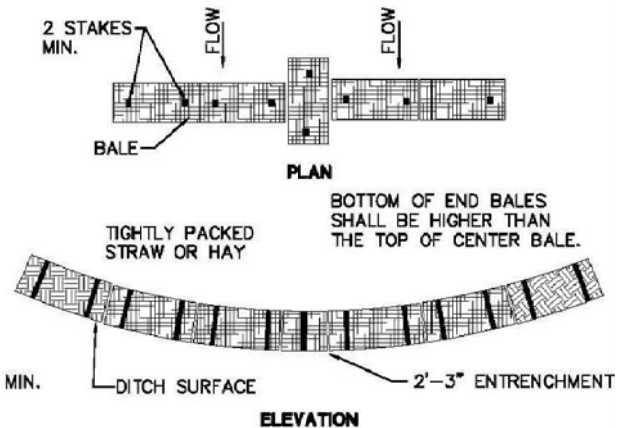
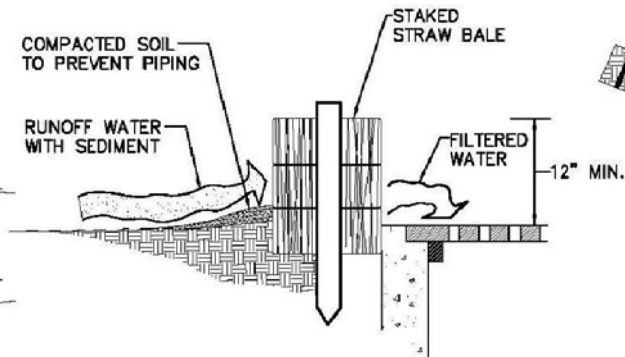
PAGE NO.
600-12



BALE INLET FILTER

NOTES

A. THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5%) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 CFS) ARE TYPICAL.



BALE DITCH CHECK

NOTES

A. PLACEMENT OF BALES SHALL BE TIGHTLY PLACED, ADJACENTLY, AND ENTRENCHED 2" AND 3" BEFORE STAKING AND A SMALL AMOUNT OF LOOSE SOIL SHALL BE LIGHTLY COMPACTED ALONG THE UPSTREAM EDGE OF THE BALES OR SEE ODOT STANDARD CONSTRUCTION DRAWING MC-11.

B. EACH BALE SHALL BE FIRMLY STAKED WITH A MINIMUM OF 2 STAKES AT LEAST 3' IN LENGTH. STAKE SHALL BE WOODEN 2" X 2", REINFORCING BARS OR FENCE POST, AS APPROVED BY THE VILLAGE.

C. LOOSE STRAW OR HAY SHALL BE SCATTERED FOR A DISTANCE OF 10' ON THE UPSTREAM SIDE OF EACH DITCH CHECK, AND SHALL BE WEDGED BETWEEN AND UNDER STAKED BALES.



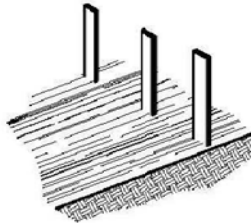
STRAW OR HAY BALES TEMPORARY EROSION CONTROL

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XX/XX/XXXX

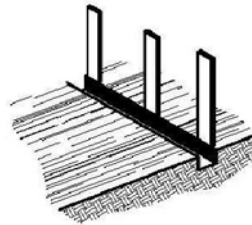
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APPROVED:
APRIL 2014

PAGE NO.
600-13

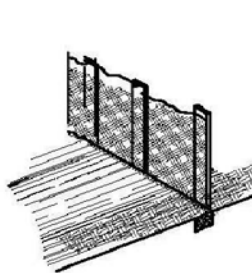
A. SET STAKES NO MORE THAN 3' APART AND DRIVE THEM INTO THE GROUND AT LEAST 8".



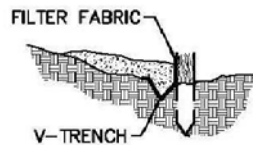
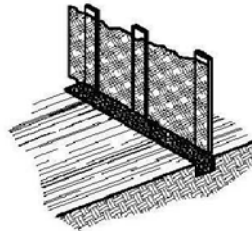
B. EXCAVATE A 4" x 4" TRENCH UP SLOPE ALONG THE LINE OF STAKES.



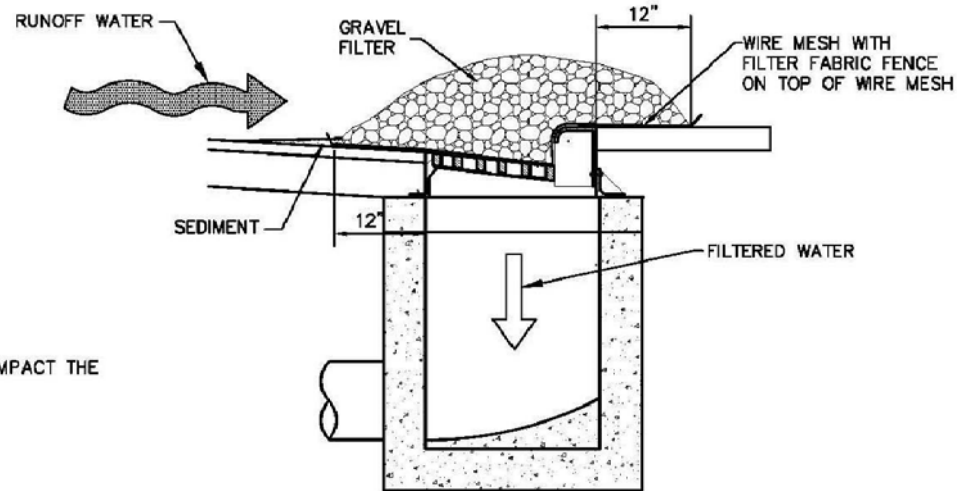
C. STAPLE FILTER MATERIAL ON UP SLOPE SIDE OF STAKES AND EXTEND IT INTO THE TRENCH. WHEN JOINTS ARE NECESSARY, OVERLAP MATERIAL BETWEEN 2 STAKES AND FASTEN SECURELY.



D. BACKFILL AND COMPACT THE EXCAVATED SOIL.



SILT FENCE



GRAVEL CURB INLET SEDIMENT FILTER

(AS REQUIRED BY THE VILLAGE)

GRAVEL CURB INLET SEDIMENT FILTER NOTES

- HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENINGS SHALL BE PLACED OVER THE CURB INLET OPENING SO THAT AT LEAST 12 INCHES OF WIRE EXTENDS ACROSS THE INLET COVER AND AT LEAST 12 INCHES OF WIRE EXTENDS ACROSS THE CONCRETE GUTTER FROM THE INLET OPENING, AS ILLUSTRATED.
- STONE SHALL BE PILED AGAINST THE WIRE SO AS TO ANCHOR IT AGAINST THE GUTTER AND INLET COVER AND TO COVER THE INLET OPENING COMPLETELY. ODOT NO. 1 COARSE AGGREGATE SHALL BE USED.
- IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER PERFORMS ITS FUNCTION, THE STONE MUST BE PULLED AWAY FROM THE CATCH BASIN, CLEANED AND REPLACED.

EROSION CONTROL:

EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH OHIO'S STANDARDS FOR STORMWATER MANAGEMENT LAND DEVELOPMENT AND URBAN STREAM PROTECTION MANUAL - RAINWATER AND LAND DEVELOPMENT. ALL EROSION AND SEDIMENT CONTROL PRACTICES ARE SUBJECT TO FIELD MODIFICATION AT THE DISCRETION OF THE VILLAGE OF JOHNSTOWN AND/OR THE OHIO EPA.



TEMPORARY EROSION CONTROL

REVISIONS:
XX/XX/XXXX

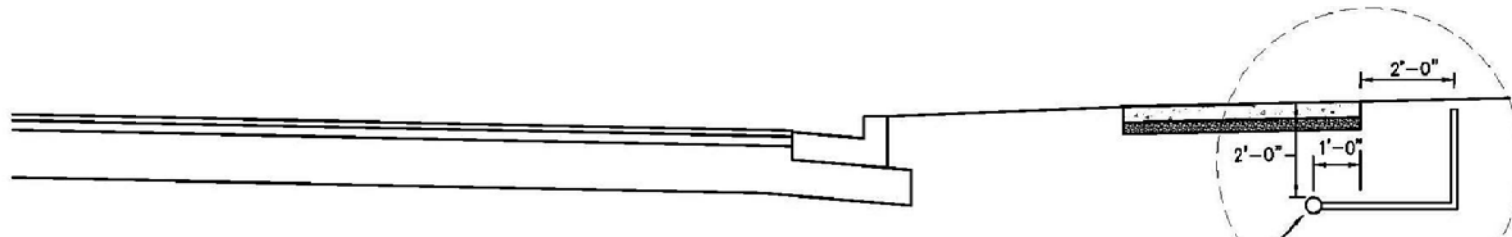
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APPROVED:
APRIL 2014
PAGE NO.
600-14



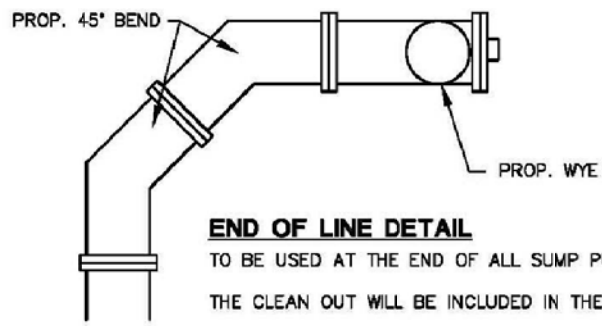
CONCRETE REPAIRS OR PATCHES ARE UNACCEPTABLE.



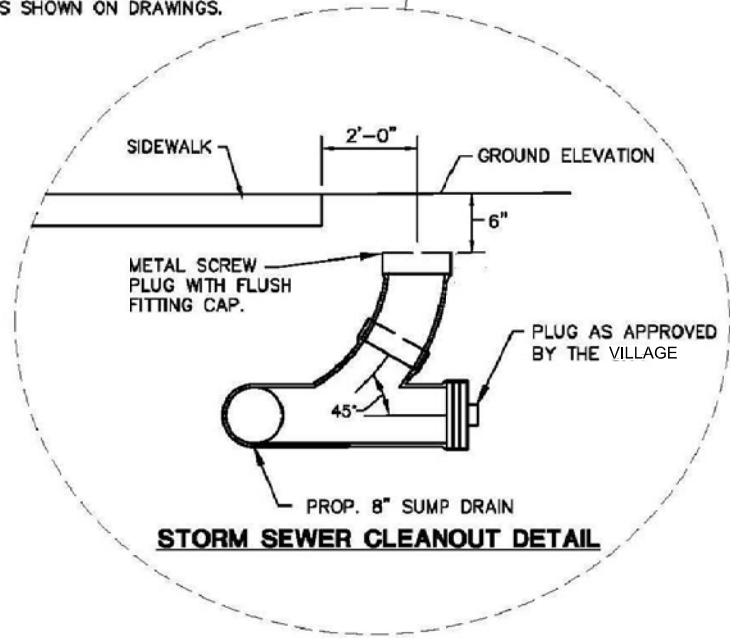
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APPROVED:
APRIL 2014
PAGE NO.
600-15



8" SDR 35 OR 8" POLYETHYLENE SMOOTH INTERIOR (SDR 35 OR SCH 40) WITH 8"x4" TEE (INSERTA TEES WILL BE PERMITTED) AT EACH DOWN SPOUT, MIN. 2 PER LOT AND CONNECTED TO CATCH BASIN AND CLEANOUT LOCATIONS AS SHOWN ON DRAWINGS.



END OF LINE DETAIL
TO BE USED AT THE END OF ALL SUMP PUMP DRAINS.
THE CLEAN OUT WILL BE INCLUDED IN THE COST OF THE 8" PIPE.



STORM SEWER CLEANOUT DETAIL



STORM LATERAL DETAIL

REVISIONS:
XX/XX/XXXX

DATE
APPROVED:
APRIL 2014
PAGE NO.
600-16