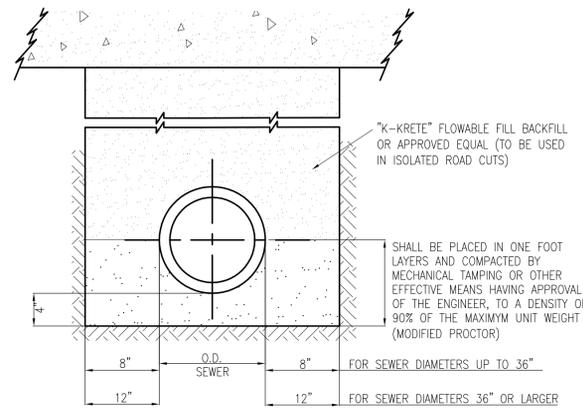


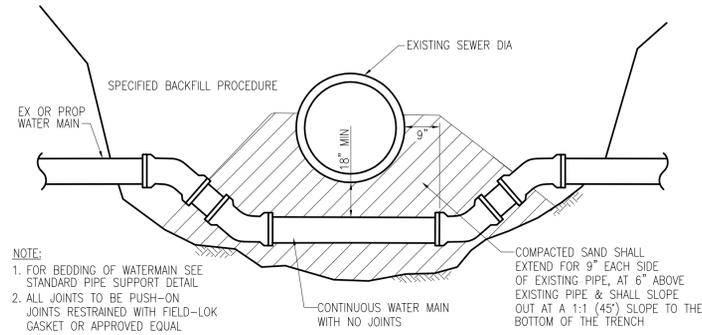
STANDARD BEDDING AND TRENCH BACKFILL DETAIL FOR WATER MAIN

NOTE: IF THE EXISTING SUBGRADE SOILS MEET THE REQUIREMENTS FOR MDOT GRANULAR MATERIAL CLASS II (MINIMUM 4" THICK), THEN THE WATER MAIN MAY BE LAID DIRECTLY ON THE COMPACTED NATIVE SUBGRADE SOILS.

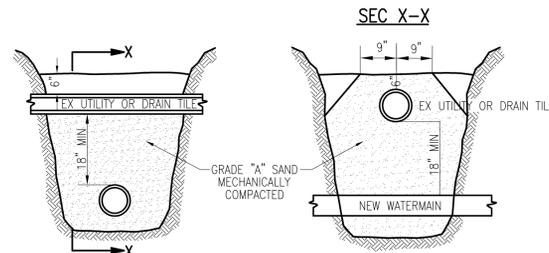


SEWER TRENCH "C"

NOTE: PVC PIPE: MIN. TRENCH WIDTH = 1.5 X O.D.+12" (FOR ALL INSTALLATION DEPTHS). HDPE PIPE: PER MANUFACTURER'S RECOMMENDATIONS.



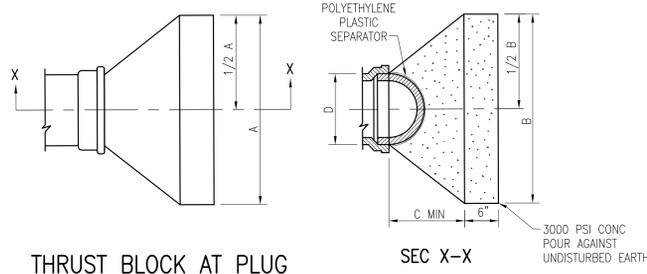
WATER MAIN LOWERING



STANDARD PIPE SUPPORT

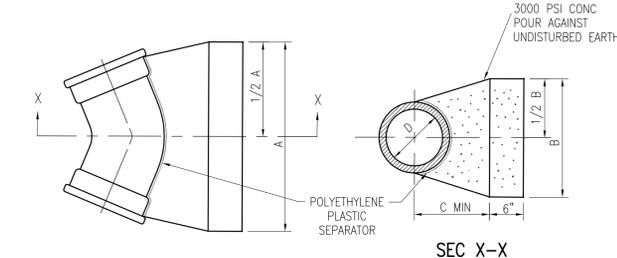
NOTE: 1. WHERE CONCRETE ENCASEMENT IS SPECIFIED FOR NEW UTILITY A 6" MINIMUM LAYER OF MECHANICALLY COMPACTED SAND SHALL BE MAINTAINED BETWEEN EX UTILITY & TOP OF CONCRETE ENCASEMENT 2. COMPACTED SAND SHALL EXTEND FOR 9" EACH SIDE OF EXISTING PIPE, AT 6" ABOVE EXISTING PIPE & SHALL SLOPE OUT AT A 1:1 (45 degree) SLOPE TO THE BOTTOM OF THE TRENCH

DIA OF WATER MAIN	THRUST BLOCK		
	A	B	C
6"	18"	18"	9"
8"	2'0"	2'0"	12"
12"	3'0"	3'0"	15"
16"	4'0"	4'0"	18"
20"	6'0"	4'0"	21"
24"	7'0"	5'0"	2'0"



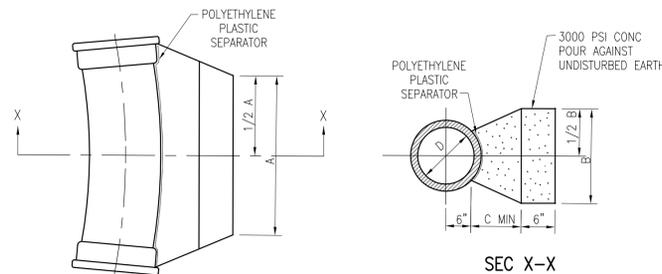
THRUST BLOCK AT PLUG

DIA OF WATER MAIN	THRUST BLOCK		
	A	B	C
8"	2'0"	18"	15"
12"	3'3"	2'0"	18"
16"	4'0"	3'0"	21"



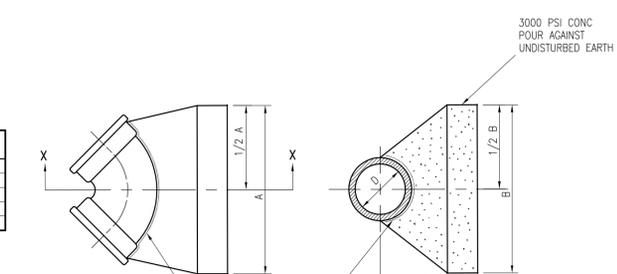
THRUST BLOCK AT 45 degree BEND

DIA OF WATER MAIN	THRUST BLOCK		
	A	B	C
16"	2'0"	18"	12"
20"	2'6"	2'0"	15"
24"	2'6"	2'6"	18"

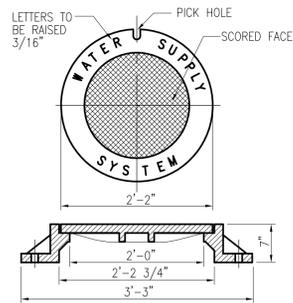


THRUST BLOCK AT 11 1/4 degree BEND

DIA OF WATER MAIN	THRUST BLOCK		
	A	B	C
8"	2'0"	18"	9"
8"	2'9"	2'0"	12"
12"	4'0"	3'0"	15"
16"	5'6"	4'0"	18"

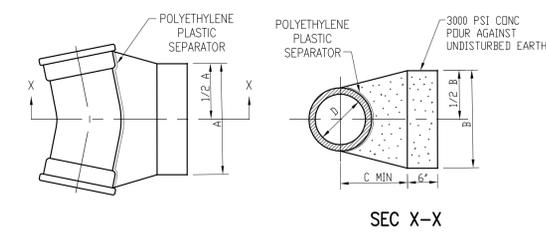


THRUST BLOCK AT 90 degree BEND



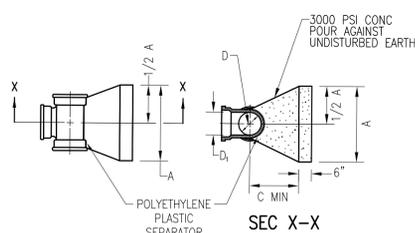
STANDARD FRAME & COVER E.J.I.W. #1040

DIA OF WATER MAIN	THRUST BLOCK		
	A	B	C
12"	2'0"	2'1"	18"
16"	3'0"	2'0"	21"
20"	3'9"	2'6"	2'0"



THRUST BLOCK AT 22 1/2 degree BEND

DIA OF TEE	THRUST BLOCK		
	A	B	C
8"	8"	2'0"	21"
12"	8"	2'0"	21"
16"	8"	2'0"	21"
12"	12"	3'0"	2'0"
16"	12"	3'0"	2'0"
20"	12"	3'0"	2'0"
24"	12"	3'0"	2'0"
16"	16"	4'0"	2'3"
20"	16"	4'0"	2'3"
24"	16"	4'0"	2'3"



THRUST BLOCK AT TEE



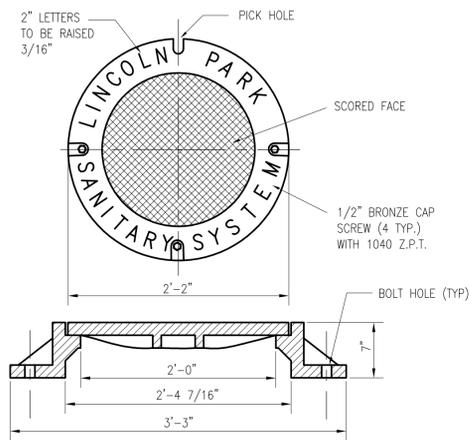
DATE	05/07/08	REVISIONS	
ENGINEER	JAR	DATE	
PROJ MGR	JAR	DATE	
SECTION	SEWER	TOWN	RANGE
CITY	CITY OF LINCOLN PARK	COUNTY	WAYNE
SCALE	H: NTS	V: NTS	SCALE
HORIZONTAL		VERT DATUM	
JOB #			

STANDARD WATER MAIN DETAILS
CITY OF LINCOLN PARK
WAYNE COUNTY, MICHIGAN

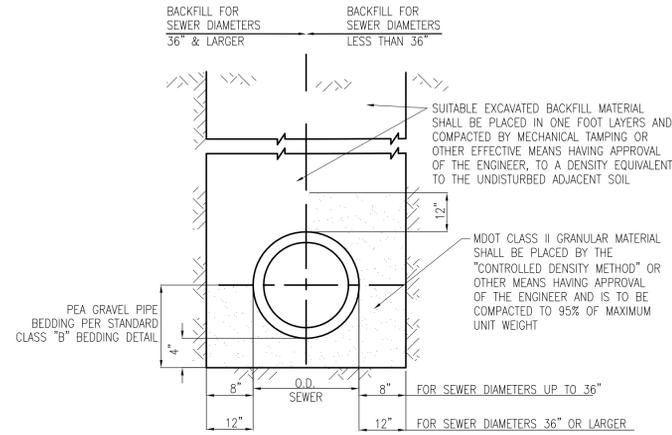
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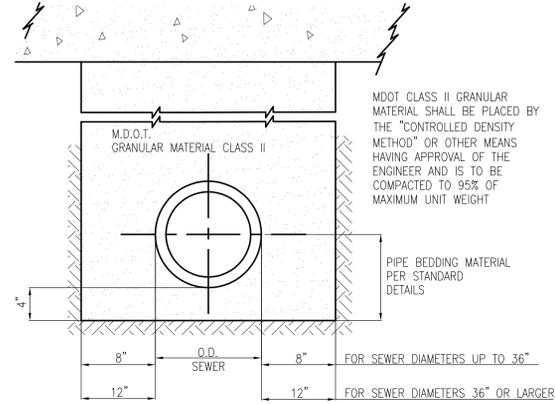


STANDARD FRAME & COVER
E.J.I.W. #1040 ZPT OR APPROVED EQUAL



SEWER TRENCH "A"

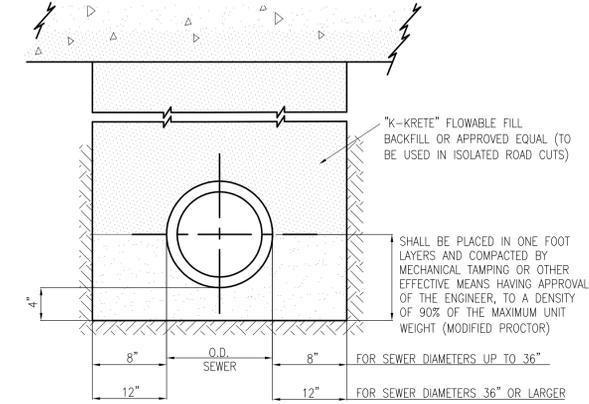
NOTE:
PVC PIPE: MIN. TRENCH WIDTH = 1.5 X O.D.+12"
(FOR ALL INSTALLATION DEPTHS)
HDPE PIPE: PER MANUFACTURER'S RECOMMENDATIONS



SEWER TRENCH "B"

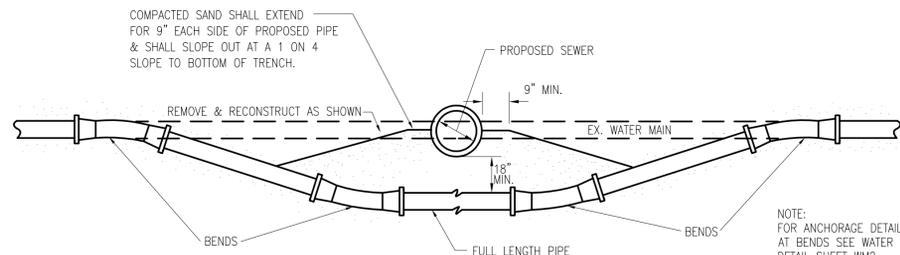
NOTE:
PVC PIPE: MIN. TRENCH WIDTH = 1.5 X O.D.+12"
(FOR ALL INSTALLATION DEPTHS).
HDPE PIPE: PER MANUFACTURER'S RECOMMENDATIONS.

MAX. WIDTH OF TRENCH 12" ABOVE TOP OF PIPE
6" THRU 12" PIPE 30" WIDE
15" THRU 36" PIPE - OD+16"
42" THRU 60" PIPE - OD+20"
OVER 60" PIPE OUTSIDE DIA. OF PIPE+24"
MIN. WIDTH OF TRENCH 12" ABOVE THE TOP OF THE PIPE SHALL BE 6" ON EACH SIDE OF PIPE.

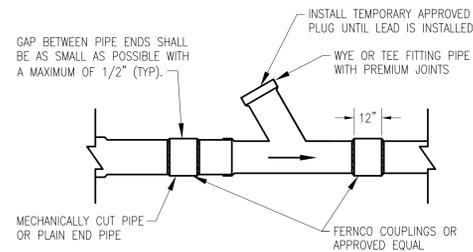


SEWER TRENCH "C"

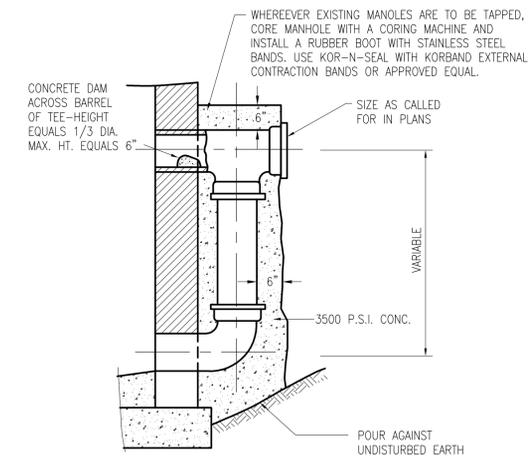
NOTE:
PVC PIPE: MIN. TRENCH WIDTH = 1.5 X O.D.+12"
(FOR ALL INSTALLATION DEPTHS)
HDPE PIPE: PER MANUFACTURER'S RECOMMENDATIONS



RELOCATION OF WATER MAIN
SANITARY OR STORM



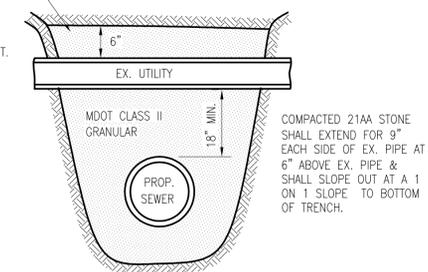
METHOD A
WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS
(TO BE USED FOR PIPES UP TO 18" MAX. DIAMETER)



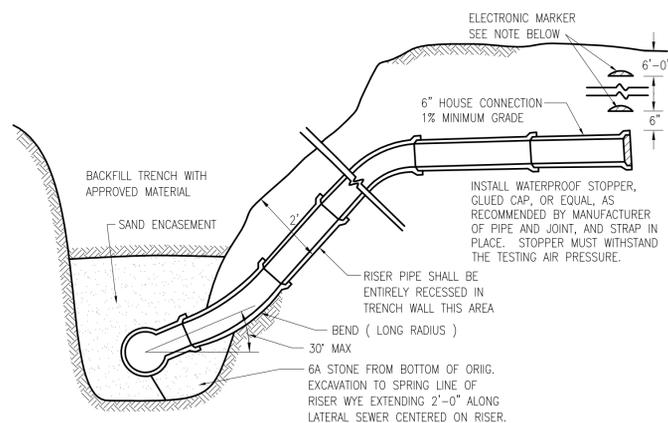
EXTERNAL DROP CONNECTION

DIA. OF SEWER	DIA. OF DROP CONNECTION
8" & 10"	8"
12", 15" & 18"	12"
21", 24" & 30"	18"
36" & 42"	24"

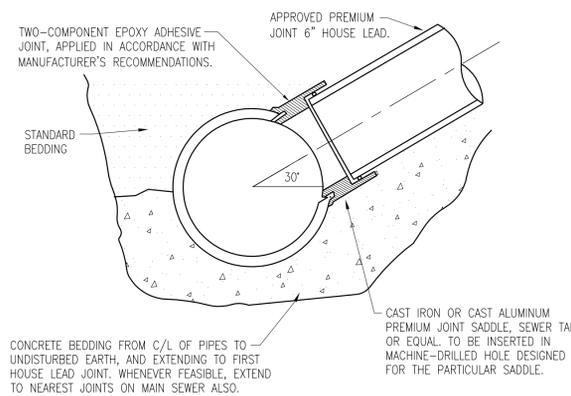
NOTE:
FOR NEW UTILITY A 6" MIN. LAYER OF MECHANICALLY COMPACTED 21AA STONE SHALL BE MAINTAINED BETWEEN EX. UTILITY AND TOP OF CONC. ENCASEMENT.



STANDARD PIPE SUPPORT
SANITARY OR STORM

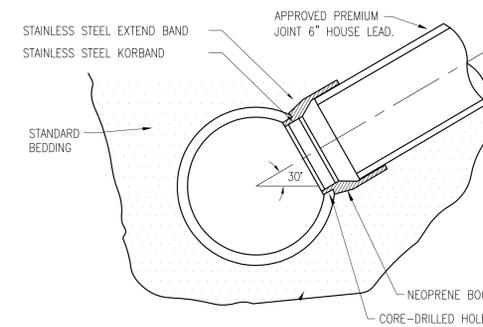


RISER DETAIL



METHOD B

KOR-N-TEE TAP OR APPROVED EQUAL FOR CONCRETE OR CLAY PIPE
NOTE: METHOD USED TO INSTALL LEAD IN EXISTING SEWER SHALL BE DETERMINED BY THE CITY OF LINCOLN PARK.



METHOD C

SADDLE TAP-ALL SIZE OF PVC SEWER



DATE	05/07/08	DATE	
ENGINEER	JAR	ENGINEER	
PROVIDER		PROVIDER	
SECTION		SECTION	
TOWN		TOWN	
RANGE		RANGE	
CITY/TOWNSHIP	CITY OF LINCOLN PARK	CITY/TOWNSHIP	CITY OF LINCOLN PARK
COUNTY	WAYNE	COUNTY	WAYNE
SCALE		SCALE	
H. NTS		H. NTS	
V. NTS		V. NTS	
HORIZONTAL		HORIZONTAL	
VERT DATUM		VERT DATUM	

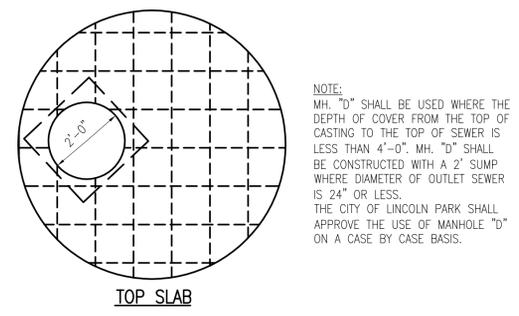
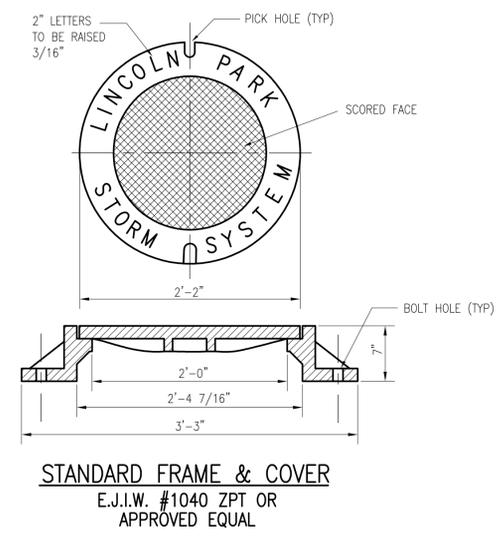
STANDARD SANITARY DETAILS
CITY OF LINCOLN PARK
WAYNE COUNTY, MICHIGAN

SHEET
SAN2

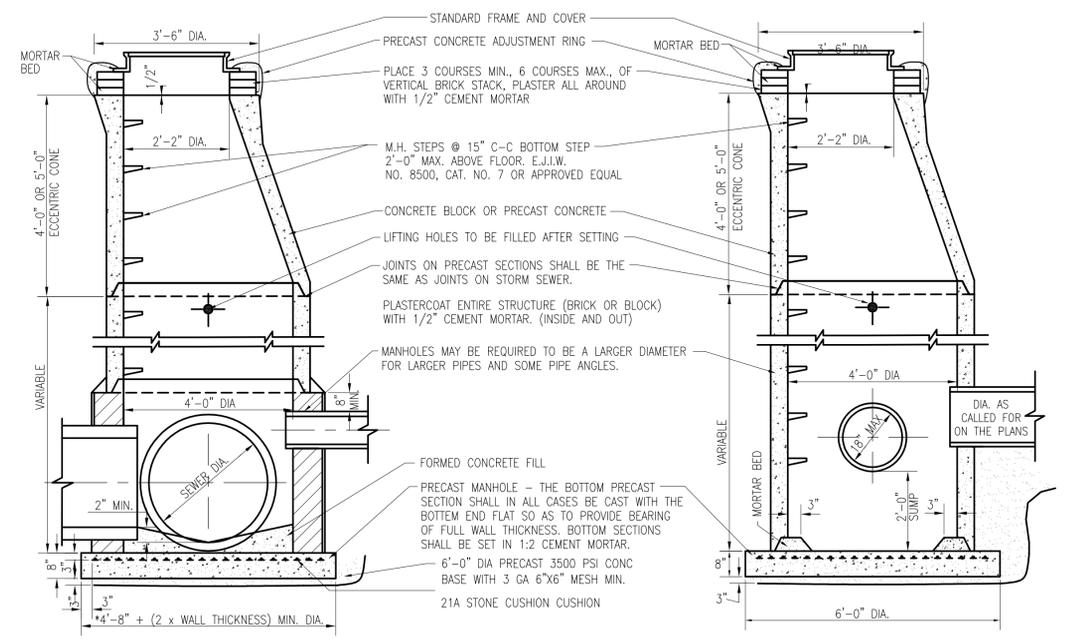
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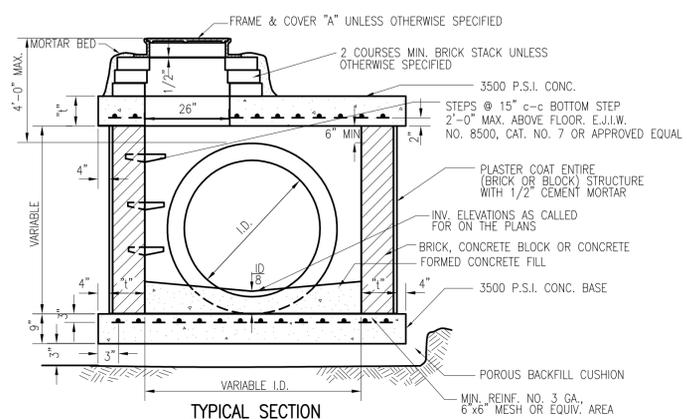
NOTE:
MH, "D" SHALL BE USED WHERE THE DEPTH OF COVER FROM THE TOP OF SEWER IS LESS THAN 4'-0". MH, "D" SHALL BE CONSTRUCTED WITH A 2" SUMP WHERE DIAMETER OF OUTLET SEWER IS 24" OR LESS. THE CITY OF LINCOLN PARK SHALL APPROVE THE USE OF MANHOLE "D" ON A CASE BY CASE BASIS.



NOTES:
1. THIS MANHOLE SHALL BE USED ONLY WHEN MEETING CONDITIONS STATED IN THE "GENERAL MANHOLE NOTES", ITEM NO. 2A.
2. PRECAST UNITS SHALL MEET REQUIREMENTS SPECIFIED BY A.S.T.M. C-478-68.
3. DIAMETER OF MANHOLE SHALL BE INCREASED AS SHOWN ON PLANS OR IN THE PROPOSAL, DEPENDING ON THE DIAMETERS AND ANGLES OF THE SEWERS.

NOTES:
1. THIS MANHOLE SHALL BE USED ONLY WHEN MEETING CONDITIONS STATED IN THE "GENERAL MANHOLE NOTES", ITEM NO. 2A.
2. PRECAST UNITS SHALL MEET REQUIREMENTS SPECIFIED BY A.S.T.M. C-478-68.

STANDARD STORM MANHOLE FOR SEWERS 18" & UNDER

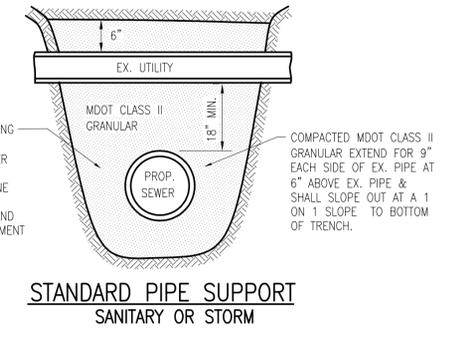
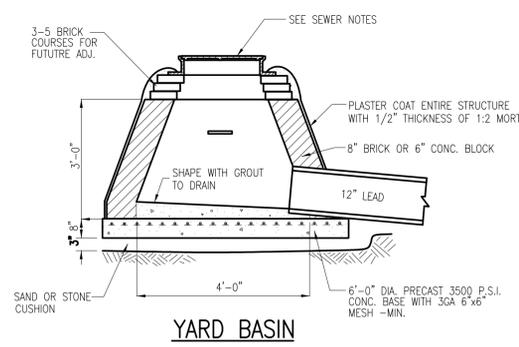
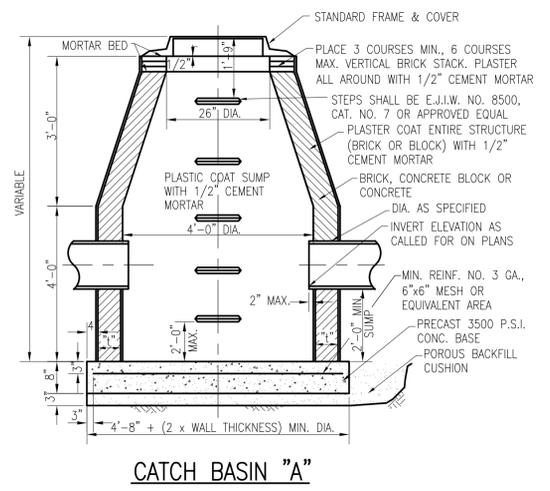
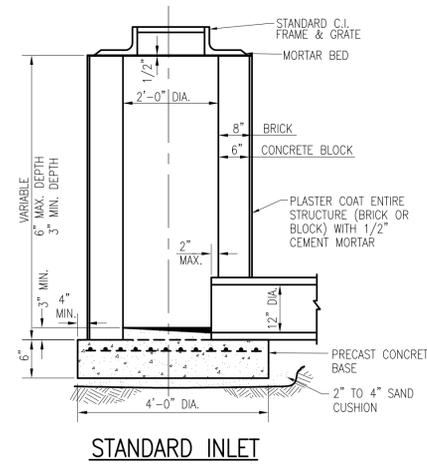


OUTLET I.D.	M.H. D	TOP SLAB T	WALLS T	REINFORCING STEEL (SLAB)
24" OR LESS	4'-0"	9"	8"	3/4" @ 9" EACH WAY
30"	4'-0"	9"	8"	3/4" @ 9" EACH WAY
36"	4'-0"	9"	12"	3/4" @ 9" EACH WAY
42"	4'-0"	10"	12"	3/4" @ 9" EACH WAY
48"	4'-0"	11"	12"	7/8" @ 9" EACH WAY
54"	4'-0"	11"	12"	7/8" @ 9" EACH WAY

M.H. D	TOP SLAB T	WALLS T	REINFORCING STEEL (SLAB)
7'-0"	12"	12"	7/8" @ 9" EACH WAY
8'-0"	12"	12"	1" @ 9" EACH WAY

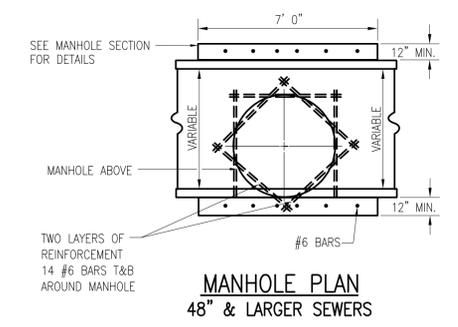
* DIA. SHALL BE INCREASED AS SHOWN ON PLANS OR IN THE PROPOSAL DEPENDING ON THE ANGLE OF THE SEWERS.

MANHOLE "D"



WHERE DET. "D" BEDDING IS SPECIFIED FOR NEW UTILITY A 6" MIN. LAYER OF MECHANICALLY COMPACTED 21AA STONE SHALL BE MAINTAINED BETWEEN EX. UTILITY AND TOP OF CONC ENCASEMENT

COMPACTED MDO CLASS II GRANULAR EXTEND FOR 9" EACH SIDE OF EX. PIPE AT 6" ABOVE EX. PIPE & SHALL SLOPE OUT AT A 1 ON 1 SLOPE TO BOTTOM OF TRENCH.

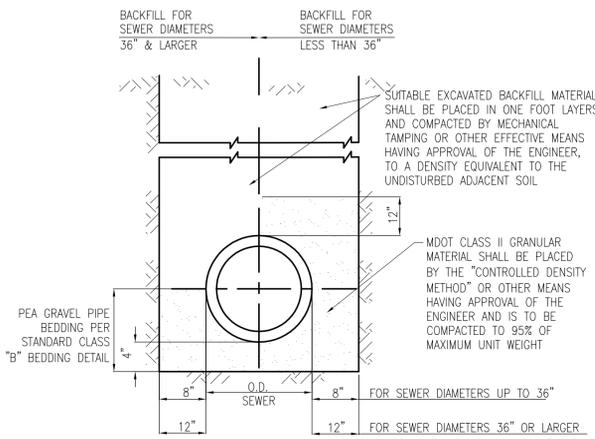


DATE	05/07/08	BO DATE		ENGINEER	JAR	PROVIDER	JAR	SECTION		TOWN	RANGE	CITY/TOWNSHIP	CITY OF LINCOLN PARK	SCALE	V: NTS	H: NTS	VERT DATUM
REVISIONS		REVISIONS		REVISIONS		REVISIONS		REVISIONS		REVISIONS		REVISIONS		REVISIONS		REVISIONS	

STANDARD STORM DETAILS
CITY OF LINCOLN PARK
WAYNE COUNTY, MICHIGAN

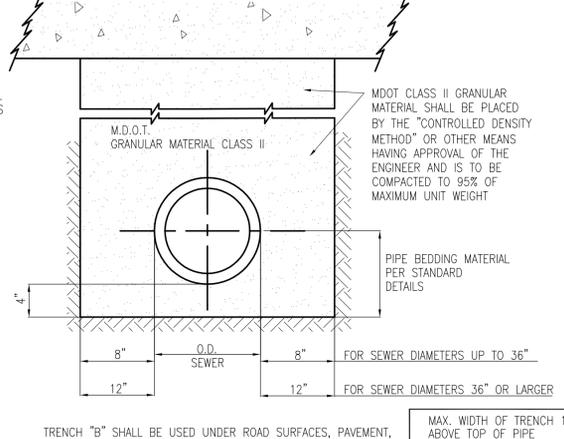
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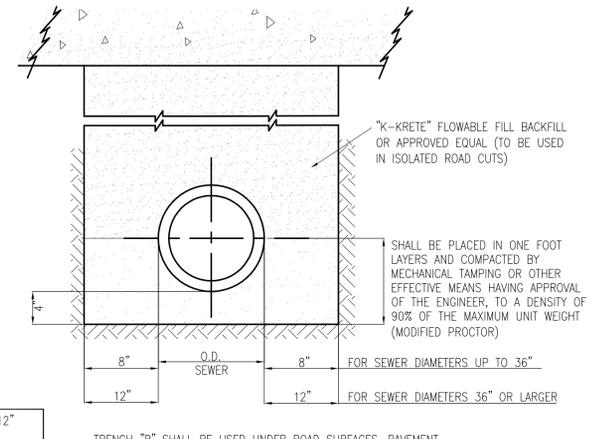
SEWER TRENCH "A"

NOTE:
PVC PIPE: MIN. TRENCH WIDTH = 1.5 X O.D.+12"
(FOR ALL INSTALLATION DEPTHS).
HDPE PIPE: PER MANUFACTURER'S RECOMMENDATIONS.



SEWER TRENCH "B"

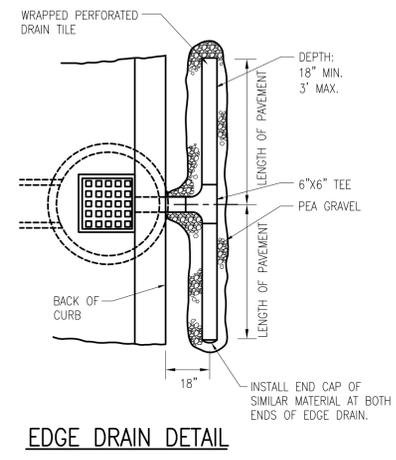
NOTE:
PVC PIPE: MIN. TRENCH WIDTH = 1.5 X O.D.+12"
(FOR ALL INSTALLATION DEPTHS).
HDPE PIPE: PER MANUFACTURER'S RECOMMENDATIONS.



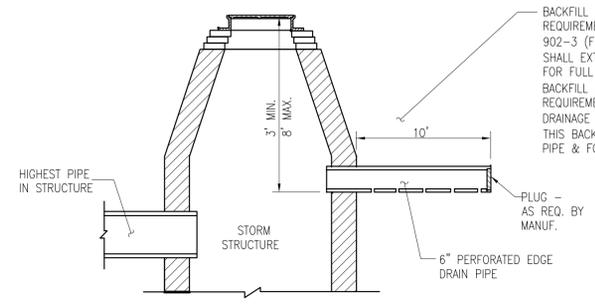
SEWER TRENCH "C"

NOTE:
PVC PIPE: MIN. TRENCH WIDTH = 1.5 X O.D.+12"
(FOR ALL INSTALLATION DEPTHS).
HDPE PIPE: PER MANUFACTURER'S RECOMMENDATIONS.

MAX. WIDTH OF TRENCH 12" ABOVE TOP OF PIPE
6" THRU 12" PIPE 30" WIDE
15" THRU 36" PIPE - OD+16"
42" THRU 60" PIPE - OD+20"
OVER 60" PIPE OUTSIDE DIA. OF PIPE+24"
MIN. WIDTH OF TRENCH 12" ABOVE THE TOP OF THE PIPE SHALL BE 6" ON EACH SIDE OF PIPE.

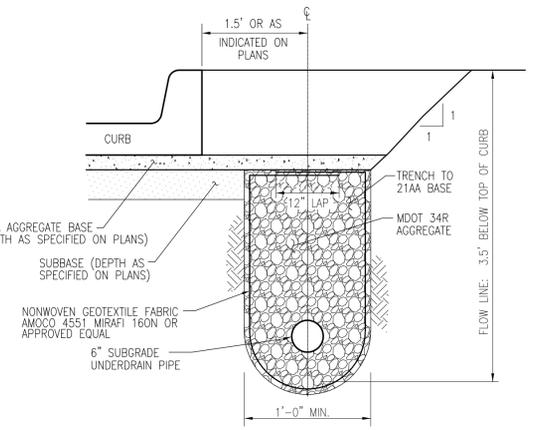


EDGE DRAIN DETAIL



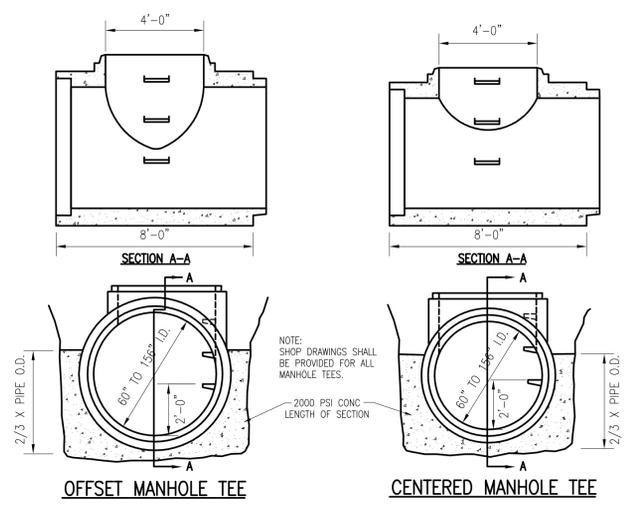
STANDARD UNDERDRAIN

BACKFILL SHALL MEET MDOT REQUIREMENTS FOR CLASS I TABLE 902-3 (FEB 2003). THIS BACKFILL SHALL EXTEND 4" BELOW PIPE 7' FOR FULL WIDTH OF TRENCH. BACKFILL SHALL MEET M.D.S.H. REQUIREMENTS FOR 34R OPEN GRADED DRAINAGE COURSE AGGREGATES (1984). THIS BACKFILL SHALL EXTEND 4" BELOW PIPE & FOR FULL WIDTH OF TRENCH.



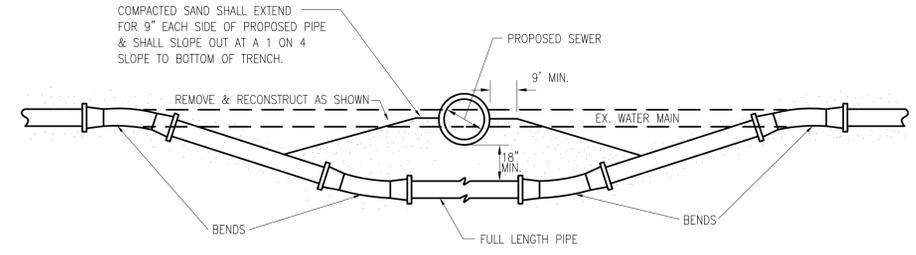
- NOTES:
1. LOCATION MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
 2. ALL UNDERDRAIN SHALL BE APPROVED PLASTIC PIPE. METAL PIPE SHALL NOT BE USED.
 3. ALL UNDERDRAIN SHALL OUTLET TO DRAINAGE STRUCTURE.
 4. UNDERDRAIN CONNECTIONS (AT LOW POINTS) SHALL BE MADE AS CLOSE TO THE STRUCTURE INVERT AS PRACTICAL, WITH A SPIRAL WRAP OF THE STRUCTURE USED TO MAKE THE TRANSITION FROM THE FLOW LINE DEPTH TO STRUCTURE INVERT.

SUBGRADE UNDERDRAIN, 6"



STANDARD MANHOLE TEES

- MANHOLE STEPS SHALL BE SPACED AS FOLLOWS:
- CONC BLK MH 18" CENTERS
 - BRICK MH 15" CENTERS
 - PRECAST MH 16" CENTERS
- TOP STEP TO BE 21" BELOW TOP OF FRAME
- MINIMUM CONE HEIGHTS AS FOLLOWS:
- BRICK CONCENTRIC 3'-0"
 - BLOCK CONCENTRIC 3'-0"
 - PRECAST ECCENTRIC 2'-8" OR 3'-4"
- CONCRETE BLOCK MANHOLE: APPROVED CONC BLOCK
- USE 6" OR 8" THICK BLOCK TO 16' DEPTH
 - USE 12" THICK BLOCK TO 24' DEPTH
 - USE 16" BLOCK WALL BELOW 24' DEPTH
- BRICK MANHOLE: APPROVED BRICK
- USE 8" BRICK WALL TO 16' DEPTH
 - USE 12" BRICK WALL TO 24' DEPTH
 - USE 16" BRICK WALL BELOW 24' DEPTH
- PRECAST MANHOLE: C-478-72 UP TO 32' DEEP WITH 5" THICK WALL



RELOCATION OF WATER MAIN SANITARY OR STORM

- NOTE:
1. FOR ANCHORAGE DETAILS AT BENDS SEE WATER DETAIL SHEET W.D.1
 2. FOR BEDDING OF WATERMAIN, SEE STANDARD 21A STONE ENCASEMENT DETAIL "B" THIS SHEET.