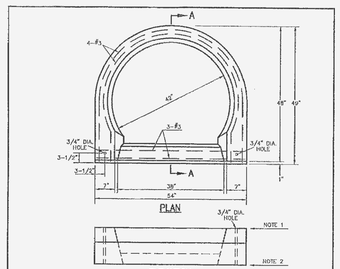
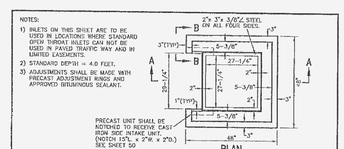
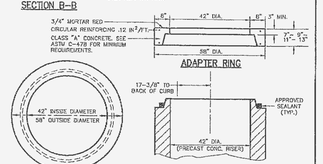


NOTES:
1) SET STANDARD INLET STONE IN 3/4" MORTAR BED AND DOWEL WITH 5/8" DIA. 1'-0" LONG PINS AND GROUT.
2) RAISE TO FINAL GRADE WITH COURSES OF BRICK AND SET THE UNIT TO BASE WITH 3/4" MORTAR BED.
3) THIS UNIT IS TO BE USED WITH 42 INCH I.D. POURED-IN-PLACE CONCRETE.
4) 5000 P.S.I. CONCRETE IS REQUIRED.

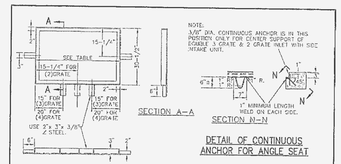
PRECAST CONCRETE UNIT FOR SINGLE STREET INLET	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	Dr. WSH/SAM Ch. J.C.K.	2009	SHEET 39

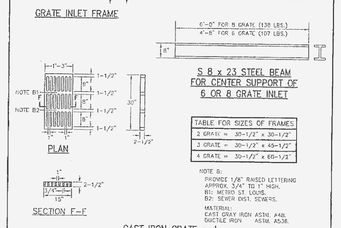
NOTES:
1) INLETS ON THIS SHEET ARE TO BE USED IN LOCATIONS WHERE STANDARD OPEN THROAT INLETS CAN NOT BE USED IN PAVED TRAFFIC WAY AND IN LIMITED EASEMENTS.
2) STANDARD DEPTH = 4.0 FEET.
3) ADJUSTMENTS SHALL BE MADE WITH PRECAST ADJUSTMENT RINGS AND APPROVED BITUMINOUS SEALANT.



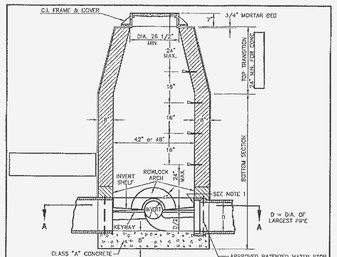


GRATE SEAT FOR 2 GRATE INLET WITH SIDE INTAKE	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	Dr. WSH/AKD Ch. J.C.K.	2009	SHEET 32

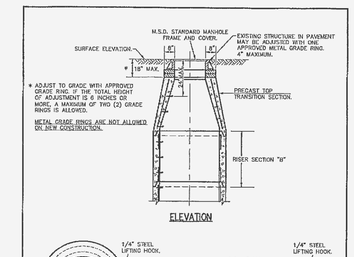




DETAILS OF INLET FRAME AND GRATES	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	DR. RCW/SAM Ch. J.C.K.	2009	SHEET 47 (REVISED)

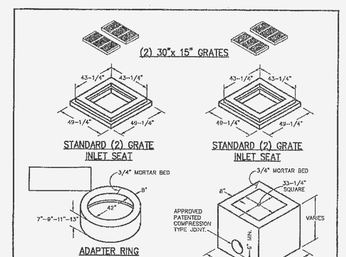


LINE MANHOLE PIPE SEWERS 8"–24" DIA.	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	Dr. WSH/SAM Ch. J.C.K.	2009	SHEET 10



NOTES:
2) IF MANHOLE IS BURIED MORE THAN 18 INCHES, A RISER SECTION WILL HAVE TO BE ADDED.
3) DIMENSION "A" STOCK GRADE RING HEIGHT OPTIONS. (3 INCHES MINIMUM TO 11 INCHES MAXIMUM.)
4) DIMENSION "B" STOCK RISER SECTION HEIGHT OPTIONS. (12 INCH, 24 INCH, 36 INCH AND 48 INCH)

ADJUST TO GRADE	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	Dr. S.A.M. Ch. P.W.S.	2009	SHEET 23



NOTE: INLETS ON THIS SHEET ARE TO BE USED IN LOCATIONS WHERE STANDARD OPEN THROAT INLETS CANNOT BE USED IN PAVED TRAFFIC WAY AND IN LIMITED EASEMENTS.

SEE CHART FOR MINIMUM DIMENSIONS.

2 GRATE INLETS PRECAST CONCRETE	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	Dr. JLG/SAM Ch. J.C.K.	2009	SHEET 35

AREA INLET MANHOLE (12" THRU 24")	METROPOLITAN ST. LOUIS SEWER DISTRICT *Standard Details of Sewer Construction*		
	Dr. RCW/SAM Ch. J.C.K.	2009	SHEET 29

PAVEMENT THICKNESS	"T" DIMENSION
LESS THAN OR EQUAL TO 11"	11"
12"	12"
13"	13"
GREATER THAN OR EQUAL TO 14"	14"

TYPE F COVER BAR DETAIL			
MARK	SIZE	NO.	LENGTH
1' 2"	#3	5	2'-0"
	#4	5	2'-0"
1' 3"	#3	5	3'-6"
	#4	5	3'-6"
1' 2"	#3	6	5'-3"
	#4	6	5'-3"
1' 3"	#3	6	7'-0"
	#4	7	5'-3"

GENERAL NOTES:

THE SIZE OF THE DROP INLET AND TYPE OF COVER WILL BE SHOWN ON THE PLANS.

THE CONSTRUCTION DETAILS SHOWN ARE ESSENTIALLY ONLY AND MAY BE VARIED TO CONFORM WITH LOCALLY USED MANUFACTURING PROCEDURES.

TOP OF DROP INLET WALL SHALL BE CONSTRUCTED TO THE ELEVATION AS SHOWN ON THE PLANS AT THE LOW POINT OF MINIMUM OF BOTTOM OF CURB AND GUTTER AT SWAY JUNCTION.

WHERE THE DROP INLET IS LOCATED IN AN UNPAVED AREA, THE TOP OF THE DROP INLET WALLS SHALL BE SET TO THE ELEVATION SHOWN ON THE PLANS.

ALL CONCRETE AROUND ONE TAR PAPER SEPARATION JOINT IS TO BE CONSTRUCTED DURING PAVING OPERATIONS OF CURB AND GUTTER CONSTRUCTION, AND WILL BE PAID FOR AS SQUARE YARDS OF CONCRETE PAVEMENT ON LINEAR FEET OF CURB AND GUTTER.

FORMED OR CUT-AWAY OPENINGS SHALL BE PROVIDED WHERE PIPE INLETS AND OUTLETS ARE SHOWN ON THE PLANS.

REINFORCING BARS IN PAVEMENT SHALL BE EPOXY COATED AND SECURELY TIED TOGETHER AND FASTENED TO AVOID ANY POSSIBLE DISPLACEMENT DURING THE PLACING OF CONCRETE. UNLESS OTHERWISE SHOWN ON THE PLANS, THE REINFORCEMENT SHOWN FOR CONCRETE PAVEMENT OF CURB AND GUTTER.

JOINTS SHALL BE SEALED IN ACCORDANCE WITH SECTION 726.3.1 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR WILL BE PERMITTED TO CAST IN PLACE THE DROP INLETS CALLED FOR IN THE PLANS, IF THE DIMENSIONS REQUIRED FOR PRECAST DROP INLETS.

WELDED WIRE FABRIC MAY BE IN LIEU OF REINFORCING BARS. THE REINFORCEMENT SHALL NOT BE LESS THAN .25 SQUARE INCHES PER LINEAR FOOT BOTH HORIZONTALLY AND VERTICALLY.

NO DIRECT PAYMENT WILL BE MADE FOR REINFORCING STEEL.

NO DIRECT PAYMENT WILL BE MADE FOR CUTTING PIPE NOR FOR CUTTING OR BENDING REINFORCING STEEL.

THE TOP OF THE INLET PIPES SHALL NOT BE SET BELOW THE TOP OF THE OUTLET PIPE.

NO DIRECT PAYMENT WILL BE MADE FOR FORMING FOR CURVED VANE GRATES AND FRAMES.

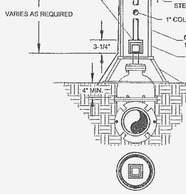
THE REINFORCEMENT SHOWN IS THE MINIMUM REQUIRED. AT THE CONTRACTOR'S OPTION, ADDITIONAL REINFORCEMENT MAY BE USED.

REINFORCING STEEL EDGE DISTANCE WILL BE 1½" UNLESS OTHERWISE SPECIFIED.

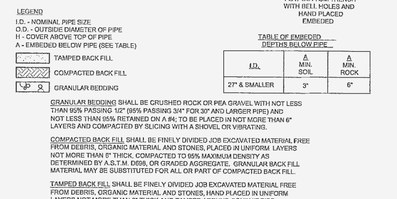
NOT MORE THEN TWO LIFT HOLES OR LIFTING INSERTS MAY BE PROVIDED.

CLASS A EXCAVATION WILL BE PAID WITHIN VERTICAL PLANES 18" OUTSIDE OF THE OUTER WALLS OF THE BASE SECTION AT THE DROP INLETS. CLASS A EXCAVATION WILL NOT BE PAID FOR OUTSIDE THE FOOTING LIMITS.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION 105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)			
PRECAST DROP INLET COVERS			
DATE ESTABLISHED: 10/15/2009 DATE REVISED: 8/21/2009	731.10R	SHEET NO. 4 OF 8	



WATER VALVE DETAIL
NOT TO SCALE



LEGEND
I.D. - NOMINAL PIPE SIZE
O.D. - OUTSIDE DIAMETER OF PIPE
H - COVER ABOVE TOP OF PIPE
A - EMBEDED BELOW PIPE (SEE TABLE)
TAMPED BACK FILL
COMPACTED BACK FILL
GRANULAR BEDDING

TABLE OF EMBEDED DEPTHS BELOW PIPE

I.D.	A MIN. SOIL	A MIN. ROCK
27" & SMALLER	3"	6"

GRANULAR BEDDING SHALL BE CRUSHED ROCK OR PEA GRAVEL WITH NOT LESS THAN 95% PASSING 1/2" (95% PASSING 3/4" FOR 30" AND LARGER PIPE) AND NOT LESS THAN 15% RETAINED ON A #4, TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED BY SLICING WITH A SHOVEL OR VIBRATING.

COMPACTED BACK FILL SHALL BE FINELY DIVIDED JOB EXCAVATED MATERIAL FREE FROM DEBRIS, ORGANIC MATERIAL AND STONES, PLACED IN UNIFORM LAYERS NOT MORE THAN 9" THICK, COMPACTED TO 95% MAXIMUM DENSITY AS DETERMINED BY A.S.T.M. D698, OR GRADED AGGREGATE. GRANULAR BACK FILL MATERIAL MAY BE SUBSTITUTED FOR ALL OR PART OF COMPACTED BACK FILL.

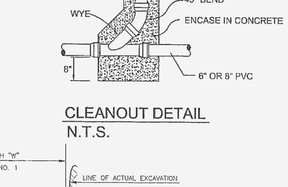
TAMPED BACK FILL SHALL BE FINELY DIVIDED JOB EXCAVATED MATERIAL FREE FROM DEBRIS, ORGANIC MATERIAL AND STONES, HAND PLACED IN UNIFORM LAYERS NOT MORE THAN 9" THICK AND TAMPED AROUND CONDUIT PIPE. GRANULAR BACK FILL MATERIAL MAY BE SUBSTITUTED FOR ALL OR PART OF TAMPED BACK FILL.

TRENCH BACK FILL SHALL BE AS REQUIRED IN THE "LAYING AND BACK FILL" SECTION OF THE DETAILED SPECIFICATIONS.

EMBEDED THE TYPE OF EMBEDED TO BE USED SHALL BE AS SPECIFIED IN THE PLANS AND SPECIFICATIONS.

TRACER WIRE REQUIRED ON ALL WATER MAINS

WATER MAIN EMBEDED
NOT TO SCALE



CLEANOUT DETAIL
N.T.S.

PIPE BEDDING CLASS "C"
(FOR ALL PIPE EXCEPT REINFORCED CONCRETE PIPE)

PIPE BEDDING CLASS "C"
(MODIFIED FOR REINFORCED CONCRETE PIPE)

NOTE
Underground utilities and structures have been plotted from available information and therefore, their location must be considered approximate only. It is the responsibility of the individual contractors to notify the utility companies before actual construction.

NYLOPLAST INLINE DRAIN WITH DOME GRATE

1. 4"-12" DUCTILE GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. 15" & 18" ECCENTRIC STUB ADAPTER THICKNESS SHALL CONFORM TO EXPANSION FOR CORRUGATED PIPE ENDS IN CORRUGATION (DUAL WALL) 8-24 IN. & PVC (SDR 35 & 26).
3. 4"-12" SOLID GRATES SHALL BE DUCTILE IRON PER ASTM A536

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	DATE: 3-21-16		
	APPR BY: ERC	PROJECT NO./NAME:	TITLE: INLINE DRAIN WITH DOME GRATE ASSEMBLY
	DATE: 6-28-11		QUICK SPEC: 05713.42 NYLOPLAST DETAIL
	DWG SIZE: A	SCALE: 1:40 SHEET: 1 OF 1	DWG NO.: 7095-1501-07 REV: B

0899CGD

DIMENSIONS ARE FOR REFERENCE ONLY.
ACTUAL DIMENSIONS MAY VARY.
DIMENSIONS ARE IN INCHES.
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05
PRINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
LOCKING DEVICE AVAILABLE UPON REQUEST SEE DRAWING NO. 7001-110-229

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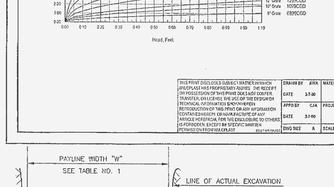
	DATE: 3-21-16		
	APPR BY: ERC	PROJECT NO./NAME:	TITLE: 8" DOME GRATE ASSEMBLY
	DATE: 3-21-16		
	DWG SIZE: A	SCALE: 1:4 SHEET: 1 OF 1	DWG NO.: 7095-1501-07 REV: B



Grate Size	Flow Rate CFS*
4"	0.228
6"	0.652
8"	1.441
10"	2.652
12"	4.102
15"	7.136
18"	10.163
24"	21.821
30"	33.173

*Maximum flow assumes before drain basin begins to backfill. Calculation based on an average grate slope of 1%

Dome Grates	
Grate Size	Approx. Grate Area (SQ.IN)
4"	20.00
10"	34.00
12"	52.37
15"	115.43
18"	176.14
24"	265.19
30"	412.73

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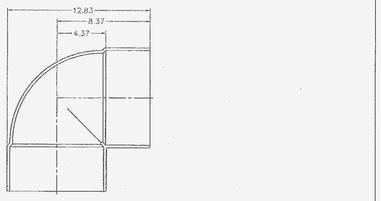
	DATE: 3-7-08		
	APPR BY: CJH	PROJECT NO./NAME:	TITLE: 8"-30" DOME GRATE INLET CAPACITY
	DATE: 3-7-08		
	DWG SIZE: A	SCALE: 1:2 SHEET: 1 OF 1	DWG NO.: 7001-0808 REV: D

YARD DRAIN CONNECTION TO EXISTING 8" PVC



SDR 35 1/4 BEND VENT
8X8

PLASTIC TRENDS 2, LLC
66400 Mound Road, Shelby Township, MI 48316
Phone: (586) 781-2700 Fax: (586) 781-0883
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DATE: 2/15/2006 BY: KJS
P208.D01

\PREMIERDRIVE1\Server\CIVIL 3D PROJECTS\09040\dwg\CONSTRUCTION PLANS\09040-UTILITY DETAILS.dwg, 7/16/2014 4:25 PM

* ALL OTHER STORM INLETS SHALL HAVE 5/8" TRASH BAR CENTERED WITHIN THE OPENINGS OF ALL INLETS.

* ALL OTHER STORM OR SANITARY SEWER DETAILS WILL BE BY M.S.D. 2009 STANDARDS AND SPECIFICATIONS.

CVS pharmacy®

PROJECT TITLE
NORTHERN 13,225-LEFT CHAMFER DRIVE-THRU
STORE NUMBER: 10134
SWC VETERAN'S MEMORIAL PARKWAY & HWY. K O'FALLON, MO
PROJECT TYPE: NEW CONSTRUCTION
DEAL TYPE: Fee for Service/Land/Type B
CS PROJECT NUMBER: 52332

NORR
ARCHITECTS ENGINEERS PLANNERS
719 Griswold Street
Suite 1000
Detroit, MI 48226
(313) 324-3113

PREMIER CIVIL ENGINEERING
308 TCW Court
Lake Saint Louis, MO 63367
Phone: (314) 925-7444 Fax: (314) 925-7457
Missouri Certificate of Authority #: E-2011000031
Missouri Certificate of Authority #: LS-2012007849

ENGINEERS AUTHENTICATION
The responsibility for professional engineering liability on this project is hereby limited to this set of plans authenticated by the seal, signature, and date hereunder attached. Responsibility is disclaimed for all other engineering plans involved in this project and specifically excludes revisions after this date unless reauthenticated.

STATE OF MISSOURI STEVE A. MARION NUMBER PE-2010007195 PROFESSIONAL ENGINEER

STEVE MARION P.E.
ENGINEER
PE2010007195

Developer / Owner Information
T.M. CROWLEY & ASSOCIATES
Utility Details

P+Z No. 20-13
APPROVED 9-5-13
City No.

Sheet Number:
18
PCE PROJECT NO. 094201