

Westwood Professional Services, Inc.
 7599 Anagram Drive
 Eden Prairie, MN 55344
 Phone: 612/937-5150 Fax: 612/937-5822

CENTEX HOMES

RIP-RAP INSTALLATION

SECTION B-B
SECTION A-A

TABLE OF QUANTITIES
RIP-RAP AT RCP OUTLETS

DIA. OF ROUND PIPE (IN.)	L (FT.)	CLASS IV d ₅₀ 12"	
		24" DEPTH RIP-RAP (CU. YDS.)	12" DEPTH GRANULAR FILTER (CU. YDS.)
12	8	5.5	2.8
15	9	5.8	2.9
18	10	7.8	3.9
21	10	8.4	4.2
24	12	11.0	5.5
27	12	11.6	5.8
30	14	14.5	7.3
36	16	18.3	9.2
42	18	21.7	10.9
48	20	25.8	12.9

NOTE: LIMESTONE ROCK SHALL NOT BE USED AS RIP-RAP.

NOTE: RIP-RAP SHALL BE INSTALLED TO PROVIDE EASY REMOVAL OF TRASH GUARD.

TRASH GUARD

PLAN
ELEVATION

3/4" STEEL BARS - TRANSVERSE AND LONGITUDINAL. WELD EACH INTERSECTION.

EQUIDISTANT
FLARED END SECTION

STANDARD MANHOLE CASTING

POSITIONING LUG IS NOT REQUIRED

SOLID LID WITH TWO CONCEALED PICK HOLES

CASTING SHALL BE NEENAH R-1733 OR EQUAL

SLAB TOP MANHOLE

STANDARD CASTING

CONCRETE SLAB - CRETEX TYPE II OR EQUAL

GROUTED IN PLACE 2" CONCRETE ADJUSTING RINGS - MINIMUM 2 RINGS MAXIMUM 6 RINGS

WALLS TO BE CONSTRUCTED OF PRECAST SECTIONS OR CONC. SEWER BLOCK. SEWER BLOCK SHALL BE PLASTERED ON INTERIOR AND EXTERIOR.

CONCRETE SLAB - CRETEX TYPE II OR EQUAL

MANHOLE FLOOR SHALL BE SLOPED TO PROVIDE SMOOTH FLOW FROM INLET TO OUTLET.

NOTE: THIS TYPE MANHOLE SHALL BE USED WHEN SPECIFIED OR WHEN THE MANHOLE DEPTH IS LESS THAN EIGHT FEET.

CATCH BASIN SEDIMENTATION BARRIER

RUNOFF WATER WITH SEDIMENT

SEDIMENT

FILTERED WATER

CLEAR ROCK (3/4" TO 1 1/2")

WIRE MESH (1/2" BY 1/2")

18" MINIMUM

CONCRETE PIPE JOINT TIES

PIPE SIZE	THREAD DIAMETER
12	5/8" ROLLED THREADS (SEE NOTE 4)
15	
18	
21	
24	
27	
30	3/4" CUT OR ROLLED
33	
36	
42	
48	
54	1" CUT OR ROLLED
60	
66	
72	
78	
84	
90	
96	
102	
108	
120	
132	

CANOPY TIE
U BOLT TIE
EYE BOLT TIE

NOTE:
 1. HOLES SHALL BE CAST-IN OR DRILLED 16" FROM OUTSIDE EDGE OF JOINT.
 2. NUTS AND WASHERS ARE NOT REQUIRED ON INSIDE OF PIPE WITH 27" DIAMETER OR LESS.
 3. TIES ARE NOT REQUIRED FOR BELL PIPE 24" AND SMALLER. ON OTHER SIZES, TIE MAY BE INSERTED FROM INSIDE.
 4. CUT THREADS MAY BE USED IF WASHER AND NUT ARE USED.
 5. PIPE SIZES LISTED ARE INSIDE DIAMETER OF ROUND PIPE OR EQUIVALENT DIAMETER OF PIPE ARCH.

GRATE CASTING

MANHOLE FRAME

CASTING SHALL BE NEENAH R-4370 TYPE C OR EQUAL FOR YARDS
 CASTING NEENAH R-4342 TYPE C FOR DITCHES

STANDARD INLET CASTING

CASTINGS SHALL BE NEENAH R-3508-A OR EQUAL

NOTE: THIS TYPE INLET CASTING SHALL BE USED WHEN SPECIFIED. STANDARD MANHOLE ON SLAB TOP MANHOLE ONLY.

STANDARD INLET CASTING

INSTALL CAP SCREWS WITH BOLT HEADS EXPOSED

CURB BOX ADJUSTABLE 6" TO 9"

CASTINGS SHALL BE NEENAH R-3067-V OR EQUAL

SHALLOW CATCH BASIN

CASTING

GROUTED IN PLACE 2" CONCRETE ADJUSTING RINGS - MINIMUM 2 RINGS MAXIMUM 6 RINGS

WALLS TO BE CONSTRUCTED OF PRECAST SECTIONS OR CONCRETE SEWER BLOCK. BLOCK SHALL BE PLASTERED ON INTERIOR AND EXTERIOR.

6" CONCRETE BASE POURED IN PLACE OR 4" MINIMUM PRECAST BASE.

NOTE: REINFORCING SHALL CONSIST OF A SINGLE LINE OF STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.17 SQ. IN. PER FOOT OF HEIGHT.

CONTRACTOR: RYAN CONTRACTING
 RECORD DRAWING
 CONFORMING TO CONSTRUCTION RECORDS.
 BY ALLAN SPILLES DATE 05/03/05
 WESTWOOD PROFESSIONAL SERVICES

DESIGNED BY: _____ DRAWN BY: _____
 APPROVED: _____ JOB NUMBER: _____
 CAD DATE: April 14, 1999 11:14:59 a.m.
 CAD FILE: 230000m_ER-SM.DWG

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE: _____ REG. NO.: _____

NO.	DATE	BY	REVISION DESCRIPTION
1	05/03/05	GKB	RECORD DRAWING

1326 ENERGY PARK DRIVE
 ST. PAUL, MINNESOTA 55108
 (612) 644-4389

Howard R. Green Company
 CONSULTING ENGINEERS

CITY OF ELK RIVER
 ELK RIVER STATION - 2nd ADDITION
 STORM SEWER DETAILS

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