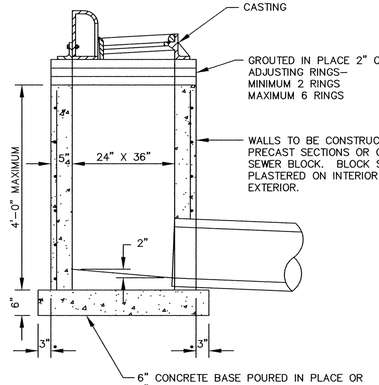
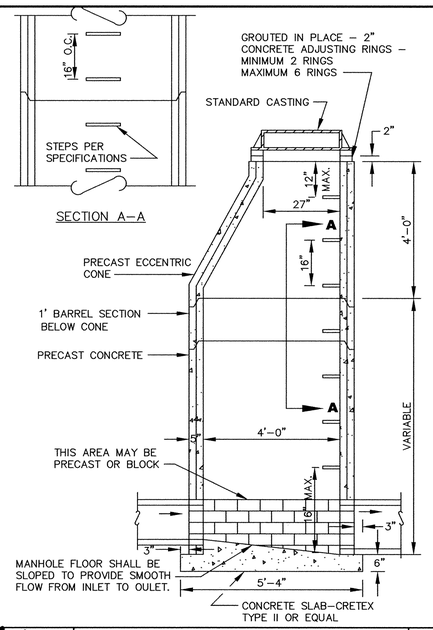
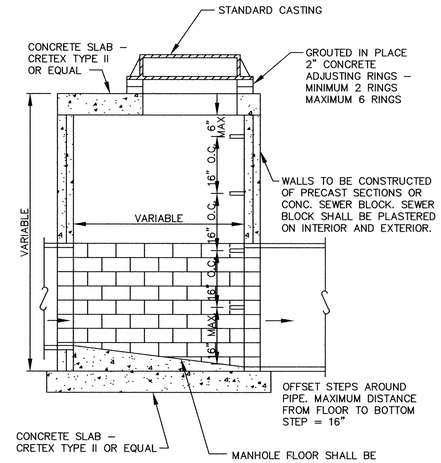



NOTE:
REINFORCING SHALL CONSIST OF A SINGLE LINE OF STEEL WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.17 SQ. IN. PER FOOT OF HEIGHT.

City of Elk River | **SHALLOW CATCH BASIN** | STANDARD PLATE NO. **2500**



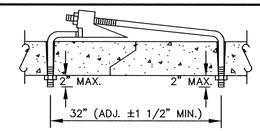

City of Elk River | **STANDARD MANHOLE** | STANDARD PLATE NO. **2501**



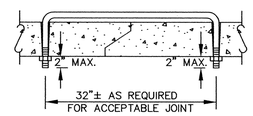

NOTE:
THIS TYPE MANHOLE SHALL BE USED WHEN SPECIFIED OR WHEN THE MANHOLE DEPTH IS LESS THAN EIGHT FEET.

City of Elk River | **SLAB TOP MANHOLE** | STANDARD PLATE NO. **2502**

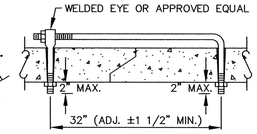
| PIPE SIZE | THREAD DIAMETER |
|---|---|
| 12, 15, 18, 21, 24, 27 | 5/8" ROLLED THREADS (SEE NOTE 4) |
| 30, 33, 36, 42, 48, 54, 60, 66 | 3/4" CUT OR ROLLED |
| 72, 78, 84, 90, 96, 102, 108, 120, 132 | 1" CUT OR ROLLED |



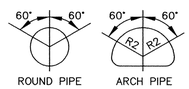

CANOPY TIE

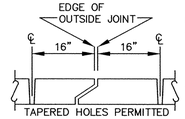



U BOLT TIE




EYE BOLT TIE

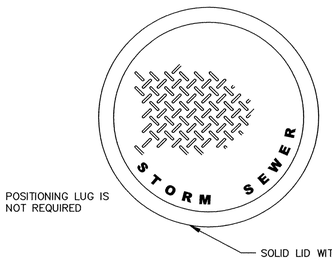


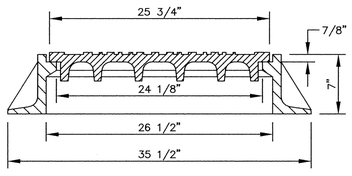




PLACEMENT OF HOLES

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 PIPE OR EQUIVALENT DIAMETER OF PIPE ARCH.

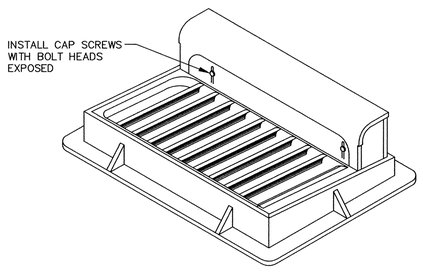
City of Elk River | **CONCRETE PIPE JOINT TIES** | STANDARD PLATE NO. **2503**

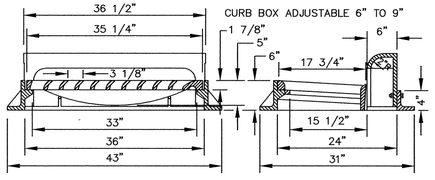



CASTING SHALL BE NEENAH R–1733 OR EQUAL

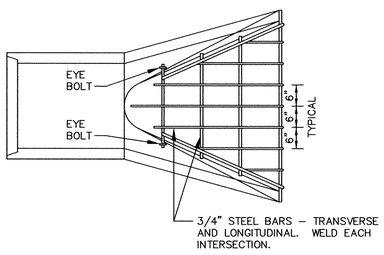
City of Elk River | **STANDARD MANHOLE CASTING** | STANDARD PLATE NO. **2506**



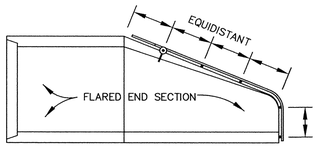




CASTINGS SHALL BE NEENAH R–3067–V OR EQUAL

City of Elk River | **STANDARD INLET CASTING** | STANDARD PLATE NO. **2507**

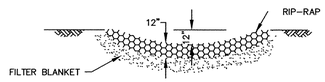



PLAN

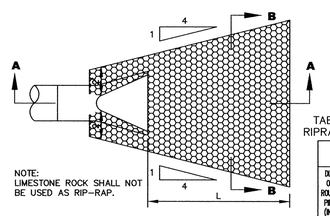



ELEVATION

City of Elk River | **TRASH GUARD** | STANDARD PLATE NO. **2504**




SECTION B–B



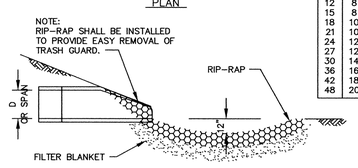

PLAN

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

TABLE OF QUANTITIES
RIPRAP AT RCP OUTLETS

| DIA. OF ROUND PIPE (IN.) | L (FT.) | CLASS IV $d_{50}$=12" 24" DEPTH RIPRAP (CU. YDS.) | CLASS IV $d_{50}$=12" 12" DEPTH GRANULAR FILTER (CU. YDS.) |
|---|---|---|---|
| 12 | 8 | 5.5 | 2.8 |
| 15 | 8 | 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:
RIP–RAP SHALL BE INSTALLED TO PROVIDE EASY REMOVAL OF TRASH GUARD.




SECTION A–A

City of Elk River | **RIP–RAP INSTALLATION** | STANDARD PLATE NO. **2505**

REVISIONS

| NO. | DATE | BY | DESCRIPTION |
|---|---|---|---|
| | | | |

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

JOHN M. ANDERSON
AUG. 12, 2005
LIC. NO. 25889
DATE 7/2/07

**CITY OF ELK RIVER**
**NORTHSTAR BUSINESS PARK**
**STORM SEWER DETAILS**

BDM
CONSULTING ENGINEERS, PLC
Engineers and Surveyors
4175 Lovell Road, Suite 112
Lexington, MN 55014
Phone: (763) 786–4570
Fax: (763) 786–4574
bdmce.com

DRAWN BY: JL
CHECKED BY: JMA
DESIGNED BY: JL
JOB NO. 226035

SHEET **D6** | SHEETS **25**

SAFCO PRODUCTS • NEW HOPE, MINNESOTA
REORDER BY PART NUMBER 63052
PERFORM SAME AT PART LINE THRU LINE