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SUBMITTAL TRANSMITTAL

December 6, 2011  
WCM Submittal No: 02709-003.A

PROJECT: Harold Thompson Regional WRF  
 Birdsall Rd.  
 Fountain, CO 80817  
 Job No. 2908

ENGINEER: GMS, Inc.  
 611 No. Weber St., #300  
 Colorado Springs, CO 80903  
 719-475-2935 Roger Sams

OWNER: Lower Fountain Metropolitan  
 Sewage Disposal District  
 901 S. Santa Fe Ave.  
 Fountain, CO 80817  
 719-382-5303 James Heckman

CONTRACTOR: Superior Sales, Inc.  
 13301 W 43<sup>rd</sup> Drive #11  
 Golden, CO 80403  
 303-279-3600 Jim Warner  
 JimWarner@superiorsalesco.com

SUBJECT: Resubmittal of Neenah R4990 DX Trench Drain for Headworks Building Exterior - WCM comments letter and product data.

Note: Please disregard submittal number 15400-005. The data was a resubmittal and is being submitted here.

SPEC SECTION: 02709 (DL-2 of HW drawings)

PREVIOUS SUBMISSION DATES: none

DEVIATIONS FROM SPEC: \_\_\_ YES  NO

CONTRACTOR'S STAMP: This submittal has been reviewed by WCM and approved with respect to the means, methods, techniques, & safety precautions & programs incidental thereto. Weaver General Construction also warrants that this submittal complies with contracted documents and comprises on deviations thereto.

<p>Contractor's Stamp:</p> <p>Date: 12/06/11</p> <p>Reviewed by: H.C. Myers  <input checked="" type="checkbox"/> Reviewed Without Comments  <input type="checkbox"/> Reviewed With Comments</p> <p>ENGINEER'S        COMMENTS: _____</p>	<p>Engineer's Stamp:</p>
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**Project: HDTWRF Project**

**Location: Fountain, CO**

**Supplier: Superior Sales**

**Date: 11/28/11**

**Submittal for: Neenah R4990 DX for Headworks exterior**

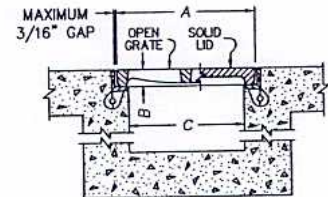
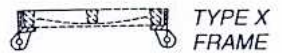
**This product is the same as specified by the engineer on DL-2 of HW drawings. Please see accompanying attachment for product specifications. Please post for engineer's review.**

■ Note: When specifying/ordering grates, refer to "Choosing the Proper Inlet Grate" on pages 117-118.  
 For a complete listing of FREE OPEN AREAS and WEIR PERIMETERS of all NEENAH grates, refer to pages 306-311.

## R-4990 ~~and R-4999~~ Series Heavy Duty Trench

Materials: All frames and grates/lids are furnished standard in gray iron, Class 35-B for heavy-duty use. For extra heavy-duty use or superior durability requirements, see our Airport and Port Grating Series on page 198 and our R-4993 & R-4994 Series on page 269.

Neenah recommends project designers avoid the use of light duty trench installations because it is likely that applications will be subjected to heavy delivery vehicle traffic at some time. Furthermore, the use of a site could be changed to heavy duty use patterns at some unanticipated future date.



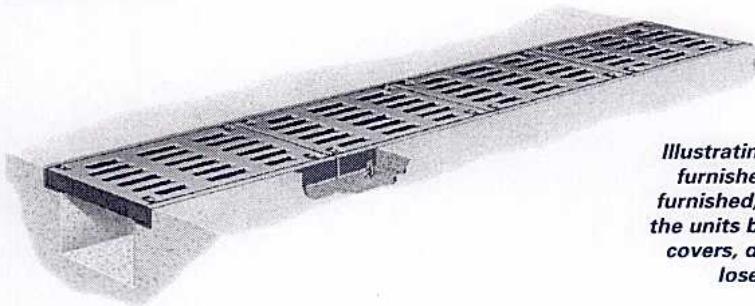
HEAVY DUTY

General schematic shown may not apply to all designs. Bar and rib depths, plate thicknesses, and seating widths vary on different sizes and styles. If your project has design restrictions, contact your sales representative or product engineering.

Dimensions in inches

Un-Bolted Catalog No.	Bolted Catalog No.	A	B	C	Type A	Type C	Type D	Type E	Type P	Type Q
R-4990-AX	<del>R-4999-AX</del>	8	1 1/2	6	x	x	x	x	x	
R-4990-BX	<del>R-4999-BX</del>	10	1 1/2	8	x	x	x	x	x	
R-4990-CX	<del>R-4999-CX</del>	12	1 1/2	10	x	x	x	x	x	x
R-4990-DX	<del>R-4999-DX</del>	14	1 1/2	12	x	x	x	x	x	x
R-4990-EX	<del>R-4999-EX</del>	17	1 1/2	15	x	x	x	x	x	
R-4990-FX	<del>R-4999-FX</del>	20	1 1/2	18	x	x	x	x	x	
R-4990-GX	<del>R-4999-GX</del>	23	1 1/2	21	x	x	x			
R-4990-HX	<del>R-4999-HX</del>	26	1 1/2	24	x	x	x	x		x
R-4990-JX	<del>R-4999-JX</del>	30	2	27	x	x	x			
R-4990-KX	<del>R-4999-KX</del>	33	2	30	x	x	x	x		
R-4990-LX	<del>R-4999-LX</del>	36	2	33	x	x	x			
R-4990-MX	<del>R-4999-MX</del>	39	2	36	x	x	x			
R-4990-NX	<del>R-4999-NX</del>	45	2	42	x	x	x			
R-4990-OX	<del>R-4999-OX</del>	51	2	48	x		x			

x - Indicates availability



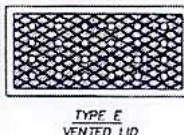
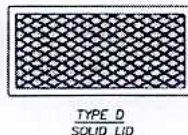
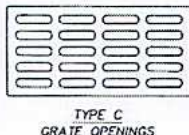
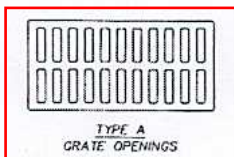
Illustrating Type C bolted trench. Bolted trench sections are furnished in 24" standard lengths. When bolted trench is furnished, they are shipped assembled – AT NO TIME should the units be disassembled during installation. When removing covers, do not mix or rotate 180 degrees as bolt holes may lose alignment and improper bearing may occur.

### Read Carefully Before Ordering

The various standard trench drains are available with a number of alternatives. It is important to examine all of the variables carefully and specify your requirements fully. Your order will be entered correctly and promptly if it includes the following information:

- Complete catalog number
- Frame end pieces, when required
- Type of Lid or Grate: A, ~~C, D, E, P or Q~~
- Length of trench sections
- Angles and intersections \*
- Load requirements

\*Trenches with angles, intersections, size changes, or other special requirements require detail drawings prior to ordering. Contact your sales representative or product engineering for assistance.





■ Note: The suggested forming procedures shown in this catalog are general suggestions to qualified professionals and may not be appropriate for every installation.

## Suggested Forming Procedures for R-4990 and R-4999 Series With Type X Frame

For those who are not experienced in the installation of Neenah drainage structures (R-4990 or R-4999 Series), the following procedures are one method of achieving desirable results.

### Forming Procedures, Non-Bolted Units

#### Materials

Under normal situations, use 3/4 inch plywood for forming walls. 2x4's are suitable for studs, plates, bracing and spreaders. A typical installation is shown in Figure 1a. Details and suggestions are based on using the Neenah Foundry Type "X" frame.

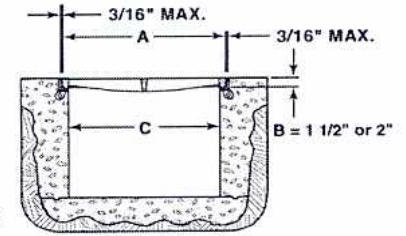


FIGURE 1a

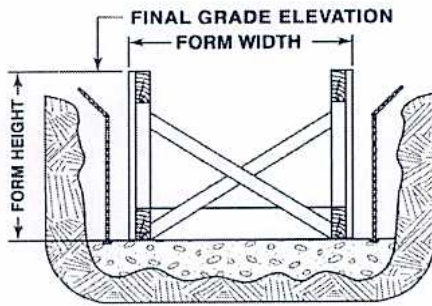


FIGURE 1b

Pour the trench bottom to the proper depth and slope and allow curing time. Construct the forms. For properly fitting covers, the forms must be PLUMB, STRAIGHT, LEVEL and SOLID. The width of the forms (see Figure 1b) establishes the trench wall. This dimension must correspond with the "C" dimension on Figure 1a. The top of the form (see Figure 1b) corresponds to the final grade elevation when installing non-bolted frame and grates/lids. Spreaders are installed, extending them beyond the edge of the form, to provide a stop for the wood seat forms (see Figure 2 and 3).

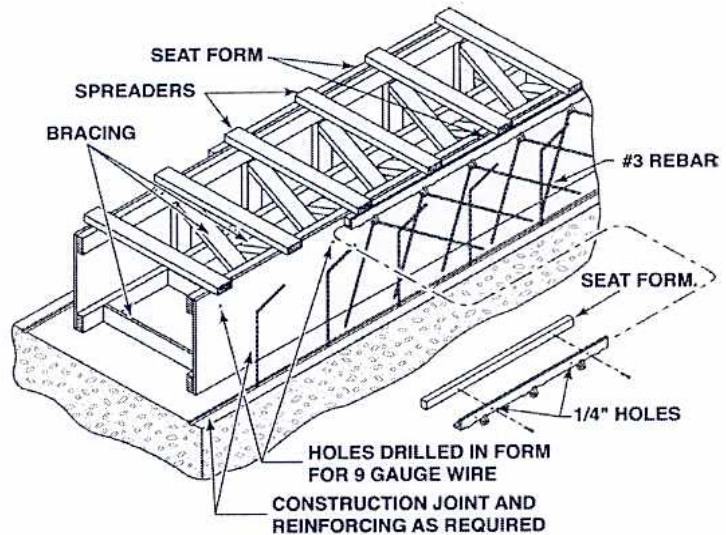


FIGURE 2

Cut the wood seat forms to the exact inside horizontal and vertical dimension of the iron frame seat (Note: all Neenah frames have a slight radius at the corner of the seat and vertical face of the iron frame sections so the wood seat form pieces should be beveled to accommodate this radius). The wood seat form is nailed flush to the top of the form walls, and the iron frame pieces are nailed to the wood seat forms through the holes provided in the side wall of the iron frame sections. In proper orientation, the anchor lugs on the iron frame pieces are positioned downward. Iron frame sections should be butted together snugly, leaving as little gap as possible. The iron frame seat form and plywood sides of the form are then secured with 9 gauge tie wire tied through a drilled hole in the plywood side wall (see Figure 3). Number 3 rebar can be installed through the anchor holes provided on the iron frames.

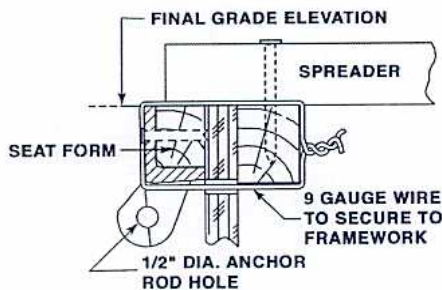


FIGURE 3

Check measurements. The grate/lid opening dimension must correspond to the "A" dimension plus 3/16" maximum per side (see Figure 1a and 3).

Pour concrete using the top edge of the iron frame pieces as a final elevation guide. Strip forms after concrete is properly cured. Install grates/lids. The completed installation should resemble Figure 1a.



■ Note: The suggested forming procedures shown in this catalog are general suggestions to qualified professionals and may not be appropriate for every installation.

## Forming Procedures, Bolted Trench

### Materials

Under normal situations, use 3/4 inch plywood for forming walls. 2x4's are suitable for studs, plates, bracing and spreaders. A typical installation is shown in Figure 1a. Details and suggestions are based on using the Neenah Foundry Type "X" frame.

Bolted frames and grates/lids are furnished assembled (see Figure 4a), and therefore require appropriate forming procedures. AT NO TIME SHOULD THE UNITS BE DISASSEMBLED DURING INSTALLATION! VERIFY THAT THE 3/16" PER SIDE MAXIMUM GAP BETWEEN FRAME AND LID HAS NOT CHANGED DURING TRANSPORT. WHEN SATISFIED THE GAP IS CORRECT, TORQUE BOLTS TO ASSURE THE PIECES REMAIN IN THAT ORIENTATION.

Pour the trench bottom to the proper depth and slope and allow curing time. Construct the forms per Figure 4a. For properly fitting covers, the forms must be PLUMB, STRAIGHT, LEVEL and SOLID. The width of the forms establishes the trench wall. This dimension must correspond with the "C" dimension on Figure 1a.

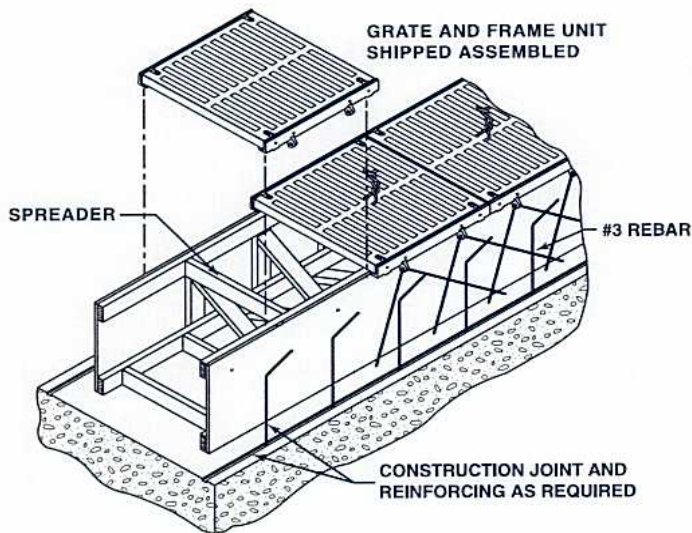


FIGURE 4a

Construct the forms (see Figure 4a). The grate/lid top surface establishes the final grade elevation when the assembled iron casting unit is set on the form (See Figure 4b). Accordingly, form side wall elevation is set at final grade elevation less the seat depth "B" dimension (Note: "B" dimensions vary per catalog number. Neenah recommends checking dimensions on the catalog line item of page 266. If unsure, contact product engineering or your Neenah representative.).

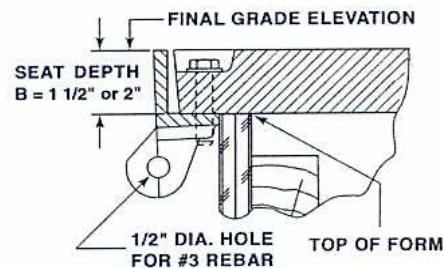


FIGURE 4b

Set frame and grate/lid assembled sections on the forms, taking care to keep the sections tight to one another to eliminate creep. When the sections are in the proper position, wire them to the bracing as show (see Figure 5). Number 3 rebar can be installed through the anchor holes provided on the iron frames.

Check measurements. The grate/lid opening dimension must correspond to the "A" dimension plus 3/16" maximum per side (see Figure 1a).

Pour concrete using the top edge of the iron frame pieces as a final elevation guide. When concrete is properly cured, unbolt and remove grates/lids, retaining their position and orientation. GRATES/LIDS MUST BE REINSTALLED IN THE EXACT WAY THEY CAME OUT TO ASSURE PROPER BOLTHOLE ALIGNMENT. DO NOT ALLOW DEBRIS TO FALL INTO THE FRAME BOLTHOLES AS IT MAY PROHIBIT PROPER TIGHTENING OF BOLTS. Strip forms and replace grates/lids in the same location and orientation as they came out. Reinstall bolts, tightening them to the specifiers desired torque. The completed installation should resemble Figure 1a.

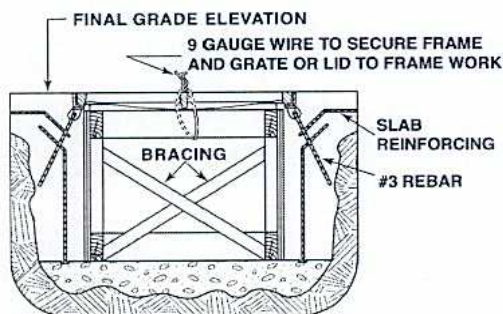


FIGURE 5

### General Comments for Non-bolted and Bolted Applications

All frame sections are manufactured and furnished in standard lengths. It is the responsibility of the installer to cut frame pieces to the proper length and miter corners where applicable. In cases where trench direction must change, special drawings can be furnished by our Product Engineering Department. These prints will show special lengths and cuts of grates/lids and other essential information.