

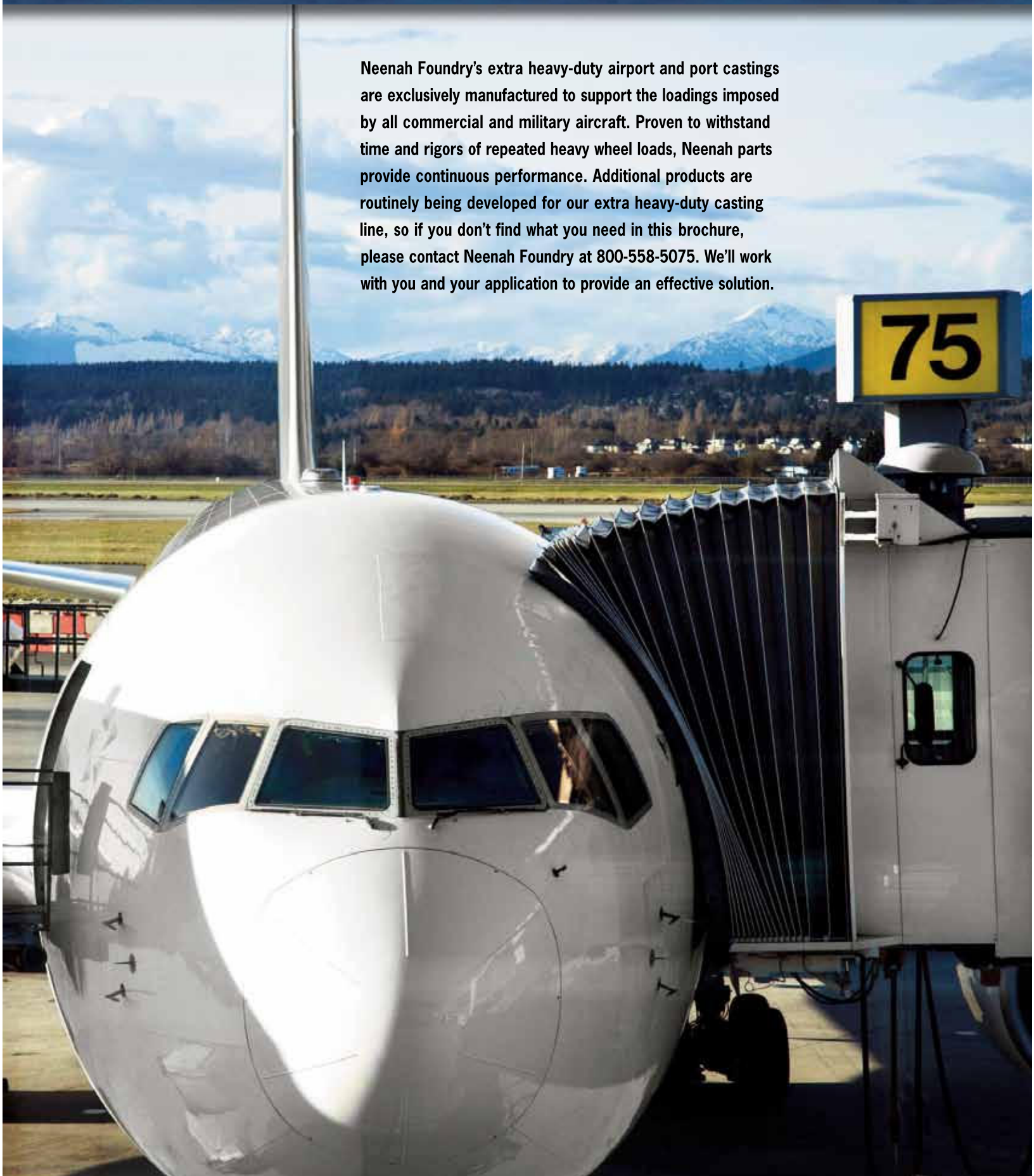


Airport & Port CASTINGS

Meets FAA Requirements • Simplified Installation • Integrated Safety Features

NEENAH
FOUNDRY 

Neenah Foundry's extra heavy-duty airport and port castings are exclusively manufactured to support the loadings imposed by all commercial and military aircraft. Proven to withstand time and rigors of repeated heavy wheel loads, Neenah parts provide continuous performance. Additional products are routinely being developed for our extra heavy-duty casting line, so if you don't find what you need in this brochure, please contact Neenah Foundry at 800-558-5075. We'll work with you and your application to provide an effective solution.



Airport Castings

Catalog Contents:

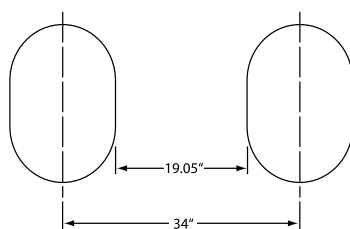
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Notes to the project designer:

- All items shown in Neenah's Airport Series are capable of withstanding minimum 100,000-pound loads as called for in FAA Advisory Circular AC 150/5320-6D Appendix 3 Item 2.d. (1).
- All items shown in Neenah's Airport Series will be furnished with covers or grates fastened to frames as called for in FAA Advisory Circular AC 150/5370-10A.
- All items shown in Neenah's Airport Series will be furnished unpainted per FAA Advisory Circular AC 150/5370-10A.
- Slotted vane drain shown on page 11 is furnished per FAA Advisory Circular AC 150/5370-10A.
- These products are to be specified and used under the guidance of qualified design professionals.

Military installations, container ports and industrial applications may have aircraft or equipment exerting heavier loads than those expected on commercial airports. The product designer must determine tire pressure, contact area and wheel spacing information for each such application, after which Neenah Product Engineering will be glad to provide the designer with product information to assist in the selection of appropriate castings.

The Boeing 727-200 gear configuration contact area (illustrated at right) is considered because of the possibility that the spacing of wheels is such that two wheels may be concentrated on one casting.



Boeing 727-200 Gear Configuration
Contact Area 290 Sq. In.
Tire Pressure 167 PSI.

Airport construction castings must sustain the loading requirements of a Boeing 727-200 or an Airbus 380 aircraft. Both present load-concentrated gear configurations and, essentially, the heaviest loads construction castings must bear. (See table below for individual wheel loads.)

For heavier dual gear aircraft, the FAA accepts the 34" between centerline of the tires as reasonable. Accordingly, construction castings with clear openings greater than 34" can be subjected to loadings greater than that of one wheel. However, load distribution on the casting may not necessarily be as critical as a single center-concentrated wheel load.

Wheel Chart

Aircraft	Wheels Per Strut	VMG* Pounds	Max. Load Per-Tire Pounds
727-100	2	76,900	34,450
727-200 STD	2	79,900	39,950
727-200 ADV	2	96,800	48,400
737-300	2	62,200	31,100
737-400	2	70,600	35,300
737-500	2	61,800	30,900
737-700	2	71,500	35,750
737-800	2	82,100	41,050
737-900	2	84,300	42,150
L1011-100	4	204,120	51,030
L1011-500	4	230,000	57,500
747-100B/300	4	174,000	43,500
747-400F	4	204,600	51,150
757-300	4	125,500	31,375
767-200ER	4	180,000	45,000
767-300ER	4	188,200	47,050
777	6	297,500	49,583
DC-10-10	4	212,535	53,134
DC-10-40	4	210,532	52,633
MD-11	4	242,000	60,500
MD-80-83	2	76,280	38,140
MD-90-30	2	75,740	37,870
A380	6	353,475	58,912
A380	4	235,650	58,912
A380F	6	372,025	62,004
A380F	4	248,025	62,006

*Maximum static load per strut at the most aft center of gravity.

Inlet Frames and Grates

Airport drainage inlet frames and grates meet the demands of airport applications and are manufactured under rigorous quality control procedures.

Extra Heavy Duty Inlet Frames and Grates (the Neenah **R-3475-E** through **R-3475-H** series) offer superior strength, durability and the added confidence of resilient, high performance ductile iron that:

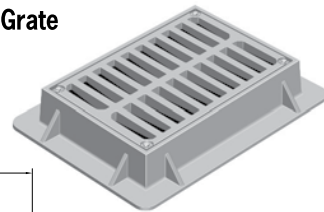
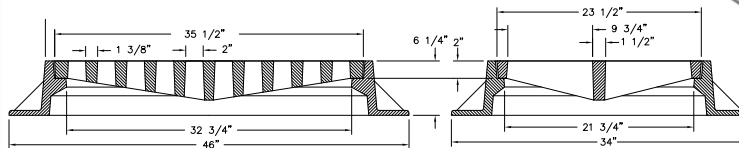
- is the best choice of metals
- only needs support on two short sides
- allows unobstructed clear opening

Hydraulic calculations available at neenahfoundry.com. Shop drawings available upon request.

R-3475 Airport Drainage Inlet Frame and Deep Vertical Bar Grate

- Also available with solid cover.

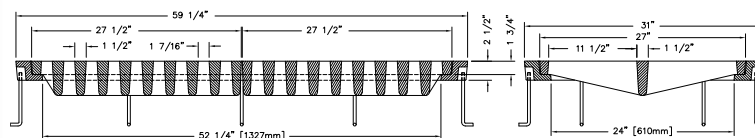
CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3475	A	2.7	9.8



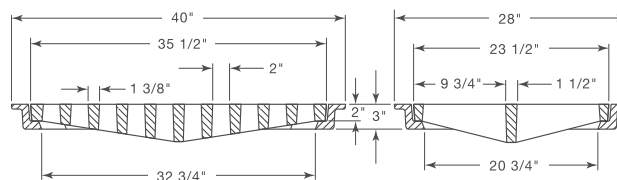
R-3475-3 Airport Drainage Inlet Frame and Double Grate

- Large area drain.
- Can be placed in multiples to make a continuous trench.

CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3475-3	A	4.1	13.7



R-3475-A Airport Drainage Inlet Frame and Deep Vertical Bar Grate

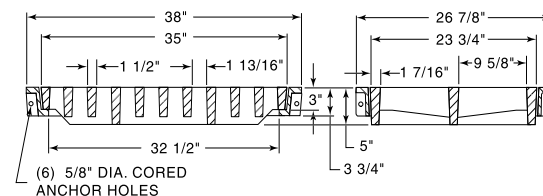


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3475-A	A	2.7	9.8

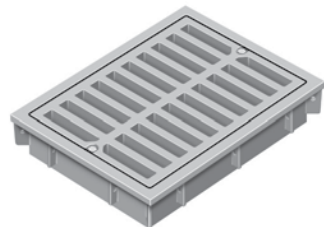


R-3475-E Airport Drainage Inlet — Single Ductile Iron Grate

- Easy-to-install one-piece frame.

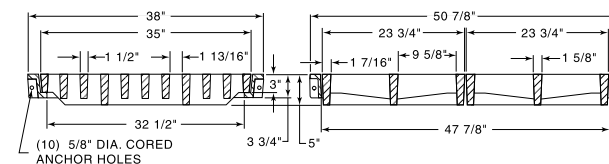


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3475-E	A	2.4	9.8

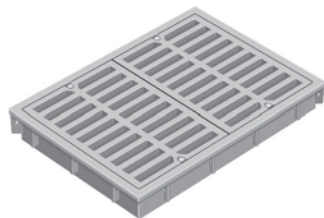


R-3475-F Airport Drainage Inlet — Two Ductile Iron Grates

- Free open area of grate approximately 2.4 sq. ft. per grate.
- Easy-to-install one-piece frame.

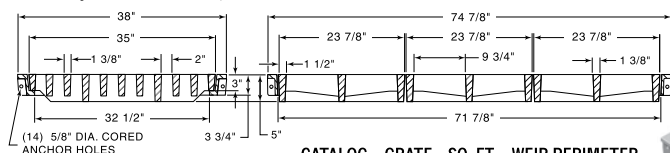


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3475-F	C	4.8	13.8

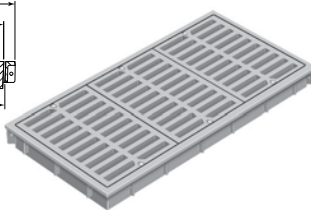


R-3475-G Airport Drainage Inlet — Three Ductile Iron Grates

- Free open area of grate approximately 2.4 sq. ft. per grate.
- Easy-to-install one-piece frame.

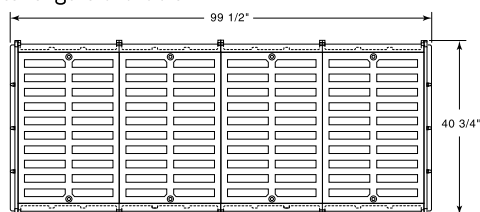


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3475-G	C	7.2	17.8

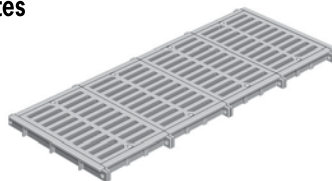


R-3475-H Airport Drainage Inlet — Four Ductile Iron Grates

- Free open area of grate approximately 2.4 sq. ft. per grate.
- Infinite lengths available.



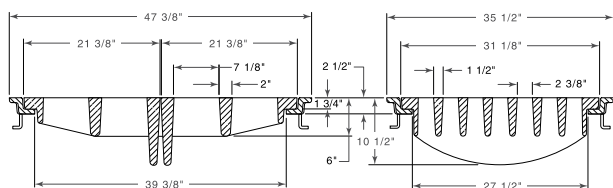
CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3475-H	C	9.6	21.8



NOTE:

Clear opening is 32\" x 96\". Frame height is 3-3/4\". Use same grates as R-3475-G. Frame/Grate units can be combined for longer length runs if specified.

R-3477-A Airport Drainage Inlet Frame and Grate

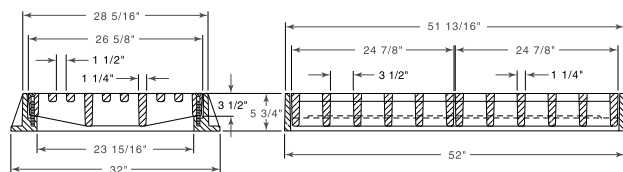


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3477-A	C	3.3	12.3



R-3480 Airport Drainage Inlet Frame and Double Grate

- Also available with solid cover.



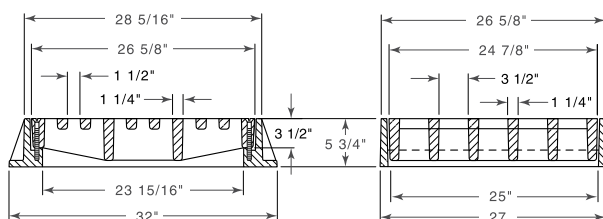
CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3480	C	3.3	12.7



R-3480 with one grate removed.

R-3480-A Airport Drainage Inlet Frame — Single Grate

- Same as R-3480 except single unit.
- Also available with solid cover.

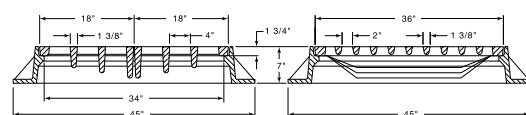


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3480-A	A	1.6	8.5

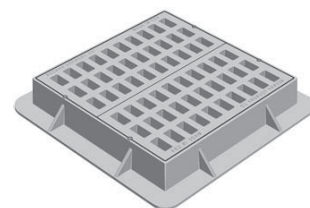


Like all Neenah castings, these products offer exceptional durability, ease of installation and reliable performance.

R-3481 Airport Inlet and Double Grate

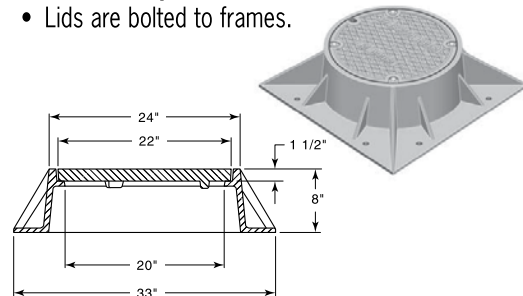


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3481	C	3.3	12



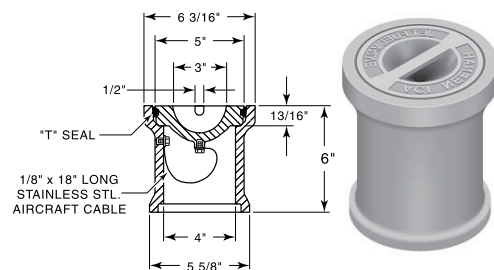
R-3485-B Airport Frame and Solid Lid

- Lids are bolted to frames.



R-3489 Airport Fuel Valve Frame and Lid

- Lids are attached with cable.



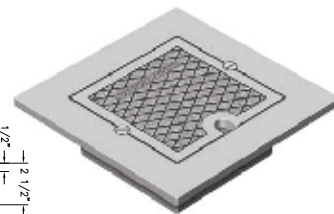
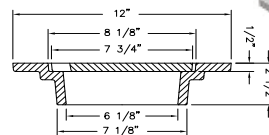
Handholes and Mooring Eyes



Handholes

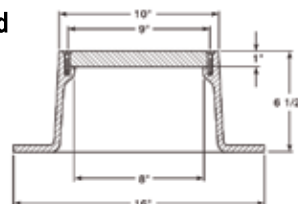
R-3486 Airport Tie-Down Frame and Lid

- Covers deeply anchored large tie-down eyes for heavy aircraft.
- Meets FAA 250 PSI tire pressure requirement.



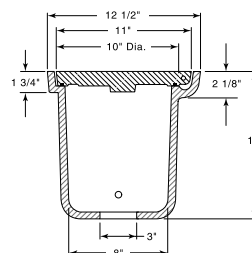
R-3487 Airport Inspection Frame and Lid

- Meets FAA 250 PSI tire pressure requirement.



R-3488 Airport Control Box Frame and Lid

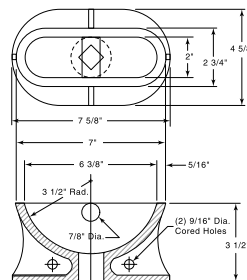
- Lid furnished in extra heavy-duty ductile iron.
- Polyisoprene gasket set in machined dovetail groove.
- Lid pivots on stainless steel hinge pin with compression springs.



Mooring Eyes

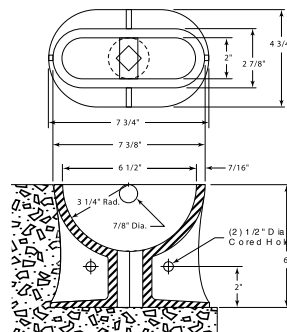
R-3490 Airport Mooring Eye

- For rope, clip- and hook-type anchors.
- 3-1/2" total depth, gray iron.
- Has 1/2" holes for reinforcing rods, if needed.
- Bars tested to withstand ultimate load of 9,000 lbs. in bending.



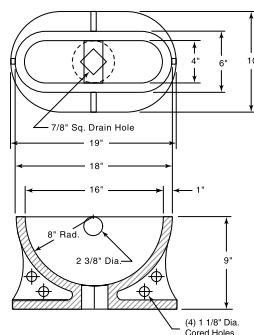
R-3490-A Airport Mooring Eye

- For rope, clip- and hook-type anchors.
- 6" total depth, ductile iron.
- Has 1/2" holes for reinforcing rods, if needed.
- Bars tested to withstand ultimate load of 9,000 lbs. in bending.



R-3490-B Airport Mooring Eye

- For rope, clip- and hook-type anchors.
- 9" total depth, ductile iron.
- Has 1-1/8" cored holes in ribs.
- Bars tested to withstand ultimate load of 200,000 lbs. in bending.



Mooring Eye is placed on subgrade and filled with sand to exclude concrete during the pouring and finishing operation. Sand is easily washed out when paving is completed. Socket opening at bottom of Mooring Eye for wood or metal stake to bring to grade. Square socket design prevents displacement while concrete is being poured and, if required, the hole provides drainage to the subgrade after Mooring Eye is in place. Alternative method of setting is to push the Mooring Eye in position in the wet concrete. Both methods can be effective.

When used with bituminous slab, the Mooring Eye should be set in concrete base before paving. Design permits in-flowing of concrete, and the wide base ensures proper anchorage. Ribs on the R-3490 and R-3490-A have 1/2" holes for reinforcing rods, if needed. R-3490-B has 1-1/8" holes in ribs.

CATALOG NUMBER	HEIGHT
R-3460	3.5
R-3490-A	6
R-3490-B	9

Round Manhole Frames, Covers and Grates



camlift™

The End of Lifting Manhole Covers

Patent Pending

Introducing Camlift!

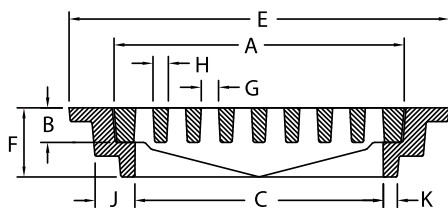
Neenah Foundry now brings you the next generation in manhole covers, the Camlift. This means no more dead lifting covers that are too heavy, and helps reduced the time lost to job injuries. Camlift utilizes ductile iron to meet the load bearing capabilities required for airport and port conditions.

- No dead lifting
- Easy open and close feature
- Helps reduce job injuries
- No need for a pick-axe
- Readily used in elevated manhole applications
- One man operable
- Ductile iron for heavy loading conditions
- Superior stability and security
- Controlled operation



R-3491 Series Airport Catch Basin Frames and Grates/Solid Lids

- For slab or built-up manhole construction.



CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3491-AG	G	0.9	5.5
R-3491-GG	G	1.6	7.1
R-3491-HG	G	1.9	7.6
R-3491-JG	G	2.4	8.5



Dimensions in Inches

Catalog No. Solid Lid	Catalog No. Open Grate	A	B	C	E	F	G	H	J	K
R-3491-AL	R-3491-AG*	21	2 1/2	18	27 1/2	5	1 1/4	1	2 7/8	1
R-3491-GL*	R-3491-GG*	27	2 1/2	24	33 1/2	5	1 1/2	1	2 7/8	1
R-3491-HL	R-3491-HG	29	1 3/4	27	35	6	1 1/2	1	2 7/8	1
R-3491-JL	R-3491-JG	32 3/8	2	30	39 1/2	6	1 1/2	1	2 7/8	1

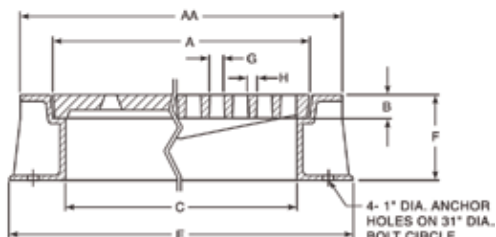
Frames in gray iron, grates/covers in ductile unless noted otherwise. * Gray iron grate/cover.

Round Manhole Frames, Covers and Grates

R-3492 Series Airport Manhole Frames with Solid Lid or Grate

- For slab or built-up manhole construction.
- Can be fitted with grates for drainage (see R-3491 listings for comparable sizes).
- Top and bottom flanges provide complete anchorage so frame becomes an integral part of the slab.
- Lids can be gasket-sealed for watertight application.

CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3492-1	G	1.6	7.1
R-3492-A1	G	2.4	8.5

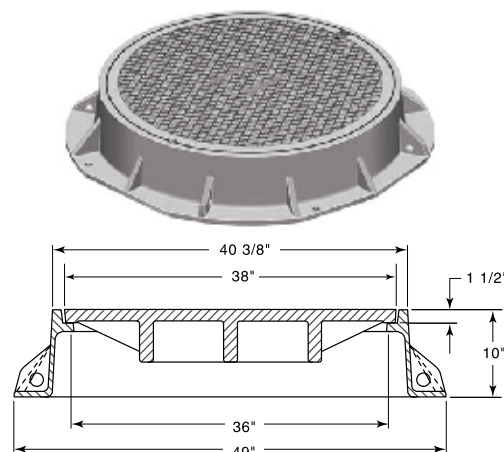


Dimensions in Inches

Catalog No. Solid Lid	Catalog No. Open Grate	A	AA	B	C	E	F	G	H	Lid/Grate Material
R-3492	R-3492-1	27	33 1/2	2 1/2	24	36	9	1 1/2	1	Gray Iron
R-3492-A	R-3492-A1	32 3/8	39 1/2	2	30	42	9	1 1/2	1	Ductile Iron

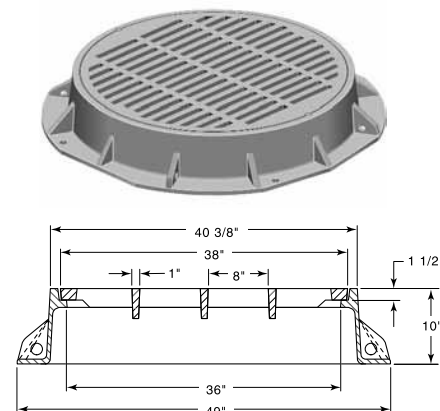
R-3492-C Airport Manhole Frame, Solid Lid

- For built-up manhole construction.



R-3492-CG Airport Manhole Frame and Ductile Iron Grate

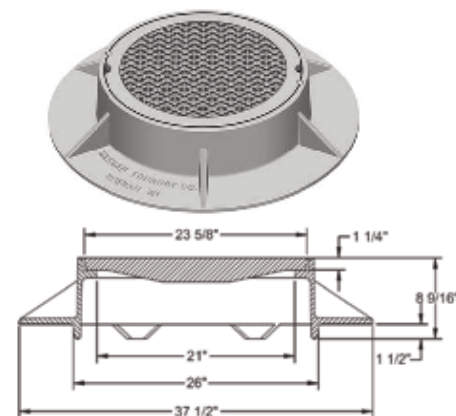
- For built-up manhole construction.



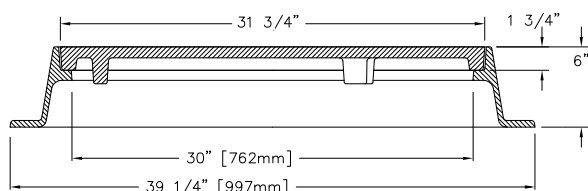
CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3492-CG	G	2.6	9.9

R-3493-A Airport Manhole Frame, Solid Lid

- For built-up manhole construction.

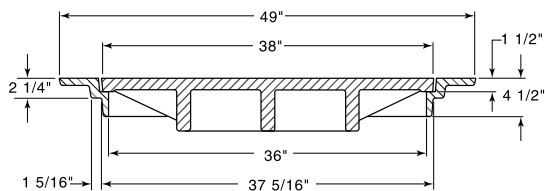


R-3492-AE Large Manhole Frame, Solid Lid



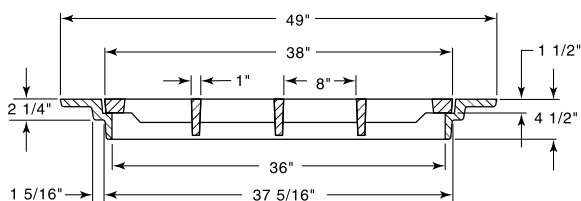
R-3492-B Airport Manhole Frame and Solid Lid

- For slab manhole construction.



R-3492-BG Airport Manhole Frame and Ductile Iron Grate

- For slab manhole construction.

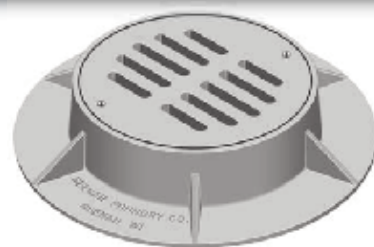
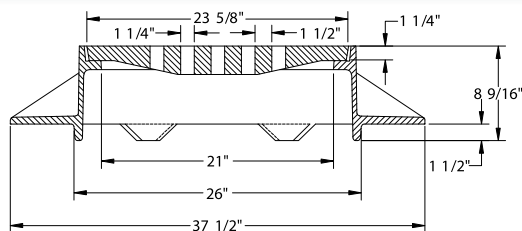


CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3492-BG	G	2.6	9.9

R-3493-C Airport Manhole Frame and Ductile Iron Grate

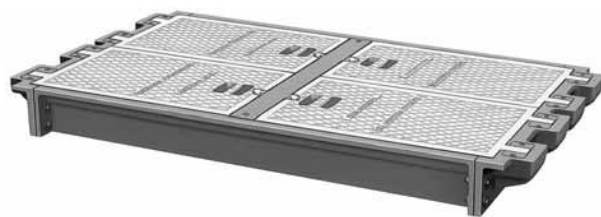
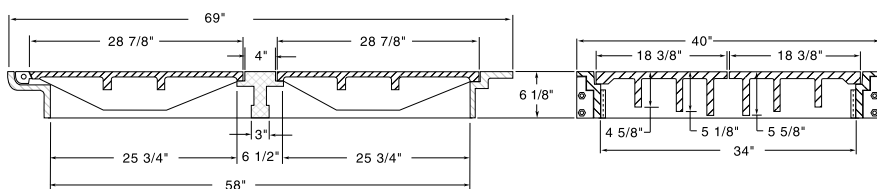
- For built-up manhole construction.

CATALOG NUMBER	GRATE TYPE	SQ. FT. OPEN	WEIR PERIMETER LINEAL FT.
R-3493-C	G	0.6	6.2



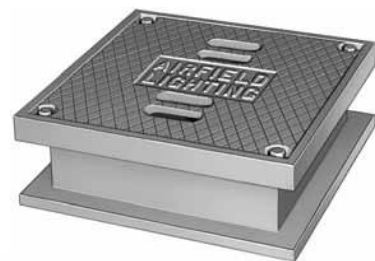
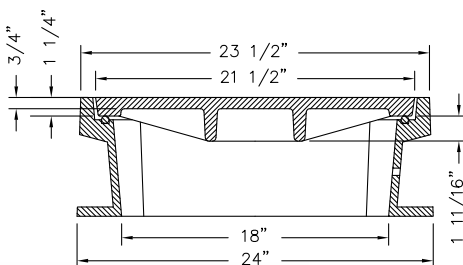
Square/Rectangular Covers

R-3494 Airport Hinged Frame with Ductile Iron 4-Piece Hinged Lids



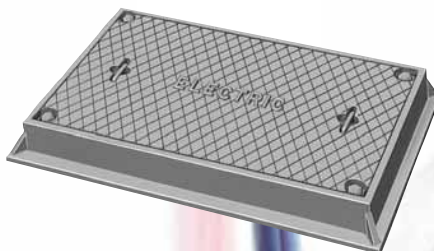
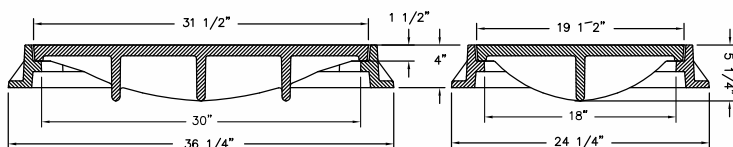
R-3495 Airport Manhole Frame, Ductile Iron Lid, C/S Bolted and Gasket Sealed

- Extra heavy-duty lid strength.
- Watertight.
- Lettered Airfield Lighting or other special lettering
- For slab or built-up manhole construction.



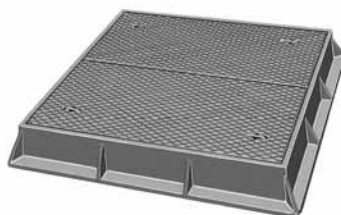
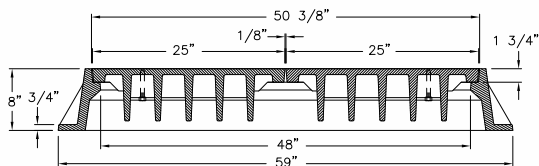
R-3497-A Airport Manhole Frame, Lid C/S Bolted

- Specify without lettering or other special lettering.
- Reversible frame for built-up or slab type manhole construction.



R-3499 Airport Utility Frame and Ductile Iron Lids

- Large 4' x 4' opening.



R-3498 Spring Assist Airport Hatches

Neenah Foundry Spring Assist R-3498 Series...

This innovative one-of-a-kind product is manufactured to deliver long-lasting performance, ease-of-use, and low maintenance under the strenuous demands of airport/port applications.

Featuring the new SA Hinge

- New SA Hinge allows lid to be replaced.
- Stainless steel spring provides significant lifting assist—hatches may be opened by any average-sized, able-bodied maintenance worker.
- Convenient, self-contained frame, lid and spring assembly.
- Eliminates the necessity to attach spring assemblies to concrete structure walls.
- Spring position on the lid allows it to swing out of the way of the free opening area.
- Allows easy spring removal and/or replacement.
- Integrated hold open safety bar.
- Ductile iron lid suitable for aircraft loads (exceeds FAA load requirements for direct heavy aircraft loadings).
- All covers furnished standard with countersunk stainless steel hex head bolts; meets FAA fastening requirements.

(Note: Neenah recommends all spring assist lids remain bolted when installed.)

“Slam Latch”

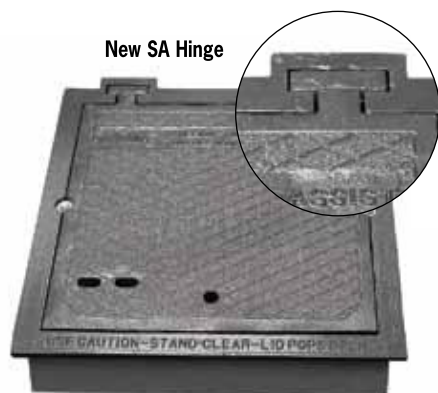
- High-strength ductile iron
- Facilitates lid-closing
- Easy installation/removal of safety bolts
- Provides additional fastening

Dimensions in Inches

Catalog No. Solid Lid	Catalog No. Open Grate	A	B	C	E	F	Lid Weight	Grate Weight
<i>Square</i>								
R-3498-K2S	R-3498-K2S	25 3/4 x 25 3/4	1 1/2	24 x 24	30 x 30	4	251#	189#
R-3498-P2S	R-3498-P2S	32 x 32	1 1/2	30 x 30	36 x 36	4	358#	325#
R-3498-R2S	R-3498-R2S	8 3/8 x 38 3/8	1 1/2	36 x 36	42 x 42	4	471#	415#
R-3498-T2S *		50 x 50	1 1/2	48 x 48	56 x 56	4	571# *	
<i>Rectangular</i>								
R-3498-J3S	-	25 7/8 x 37 7/8	1 1/2	36 x 24	42 x 30	4	340#	
R-3498-R3S * **	R-3498-R3S * **	76 9/16 x 38 3/8	1 1/2	74 3/16 x 36	80 3/16 x 42	4	471#	415#

* 2-piece cover

** utilizes removable support bar



New SA Hinge

- Furnished with Stainless Steel Fasteners
- Meets or Exceeds FAA Requirements
- Innovative Patented Design
- Many Units Available With Grate

Standard T-Handle makes bolting and latch operation easy.



Spring Assist Safety Arm



Stainless Steel Spring

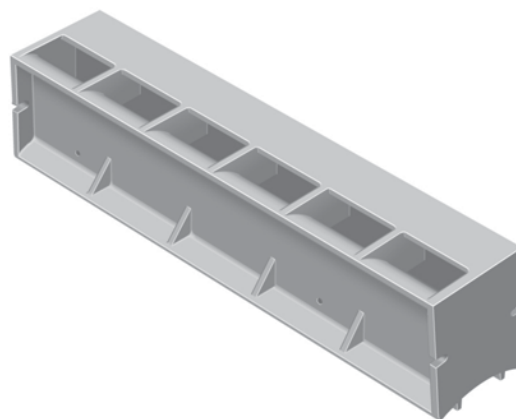
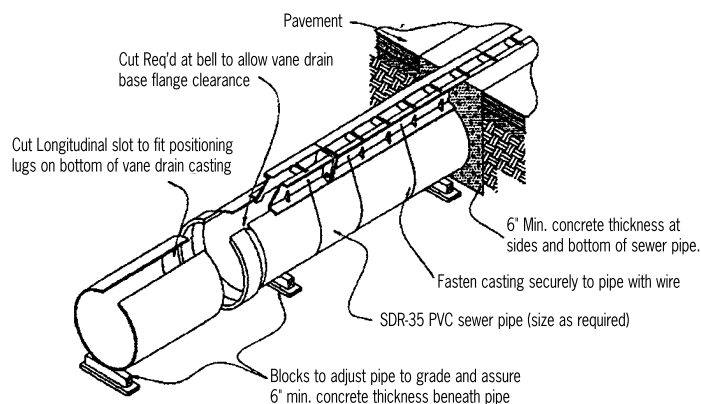
Patent #7216459

Airport Slotted Vane Drain

R-3599-B Slotted Vane Drain, for Sheetflow

Neenah offers an ingenious and easy-to-install means of dealing with sheetflow drainage. To install the system, saw a slot in the top of a conventional PVC pipe, place the pipe on grade, bolt the Cast Iron Slotted Drain in place, and pour the concrete. When used in conjunction with a vane grate inlet, this system can capture virtually all of the water that would normally bypass the inlet basin. For further information, please call 1-800-558-5075 and ask to speak with the Product Engineering Department.

See www.neenahfoundry.com for installation instructions



- Versatile, cost-effective means of capturing sheetflow drainage.
- Captures approximately 0.5 CFS per lineal foot on longitudinal slopes up to 6%.
- Allows increased spacing between inlets.
- Added safety factor should the inlet basin be plugged or covered with snow.
- Suitable for aircraft loads.

Security Bolting Products

Security Bolting

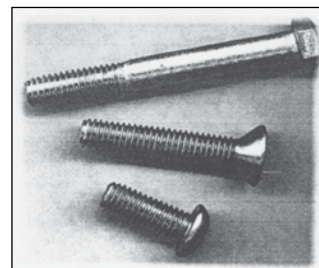
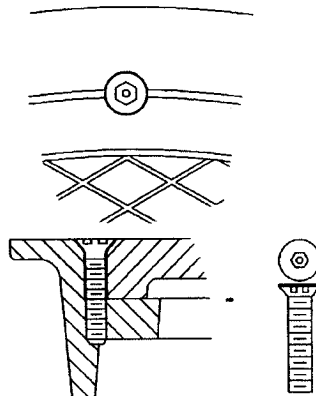
Neenah offers proven techniques for ensuring the security of castings. When bolting is specified, our standard issue is either hex head bolts or flat head slotted screws, both in high-quality stainless steel.

Should an installation require higher security levels, we can furnish other fastening options including:

- Pent Head Bolts
- Hex Socket with Pin*
- Pent Socket with Pin*
- McGard Bolts*

*Furnished as flathead or buttonhead

Neenah can also supply replacement or retrofit bolts to upgrade security in existing installations. For further information, contact your Neenah representative.



CAUTIONS:

Fastening Frames and Covers Together (Fastening Devices): Specifiers and users must recognize that bolts and other fastening devices may have a tendency to work loose over a period of time due to traffic patterns, vibrations, temperature cycles, etc., and that routine inspection and maintenance schedules should be implemented to assure these fasteners remain tight and functional. They must determine the necessity and frequency of these inspection and maintenance intervals for each installation. Procedures should be established to assure that maintenance crews check fastening devices for proper function and torque bolts to your established requirements. Crews must repair or replace fastening devices, stripped bolts, and threads promptly. Consider each installation individually to be sure traffic or usage patterns will allow the use of fastening devices.

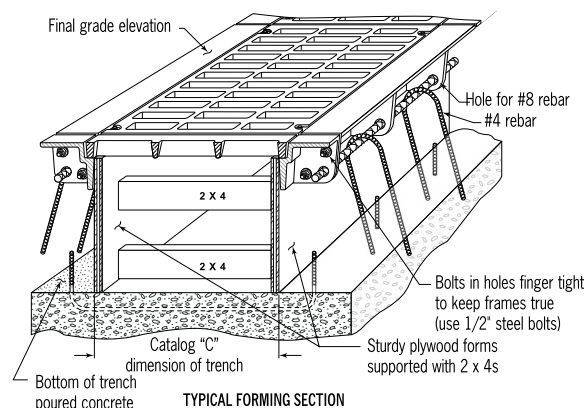
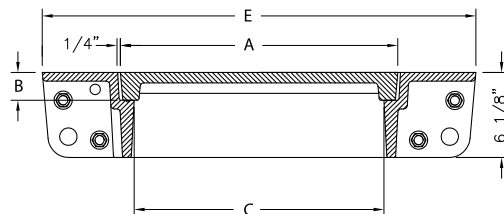
Trench Systems

R-4993 and R-4994 Superior Durability Frame Series for Airports, Ports, Industrial Sites and Roads

These two new frames offer designers versatile options for locations where traditional angle frames may not adequately endure extreme conditions, such as: braking forces of ultra heavy vehicles; torsion forces from turning aircraft and container port vehicles; heavy airfield and industrial applications; and, highway tunnels. See www.neenahfoundry.com for installation instructions

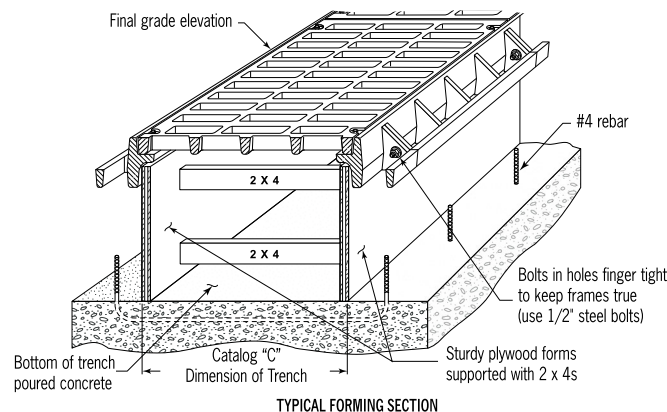
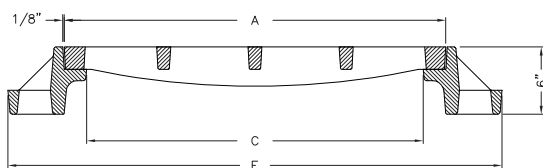
R-4993 w/ Type T Frame

- 254 square inches of masonry contact surface per foot.
- 150 square inches of masonry bearing surface per foot.
- Frame top section provides transition platform onto and off grating surface.
- Provision for bolting successive frame sections together
- Provides significant reinforcing bar opportunity



R-4994 w/ Type S Frame

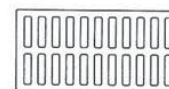
- 350 square inches of masonry contact surface per foot.
- 65 square inches of masonry bearing surface per foot.
- Unique frame shape allows for larger trench opening beneath frame seat.
- Bolt holes are drilled clear through cantilever seat and will not trap debris.
- Provision for bolting successive frame sections together
- Provides significant reinforcing bar opportunity
- Frame is integrated within the concrete slab.
- Available with LiftMate ball and socket connector. (see 4994-HALM page 14)



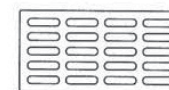
Dimensions in Inches

Type T Catalog No.	Type S Catalog No.	A	B	Type T C	Type T E	Type S C	Type S E	Grate Type Type A	Grate Type Type C	Grate Type Type D
R-4993-AAB	R-4994-AAB	8	2	6	19 1/4	4	18	x		
R-4993-BAB	R-4994-BAB	10	2	8	21 1/4	6	20	x		
R-4993-CAB	R-4994-CAB	12	2	10	23 1/4	8	22	x		
R-4993-DAB	R-4994-DAB	14	2	12	25 1/4	10	24	x	x	x
R-4993-EAB	R-4994-EAB	17	2	15	28 1/4	13	27	x		x
R-4993-FAB	R-4994-FAB	20	2	18	31 1/4	16	30	x		x
R-4993-HAB	R-4994-HAB	26	2	24	37 1/4	22	36	x		x
R-4993-KAB	R-4994-KAB	34	2	32	45 1/4	30	44	x		x
R-4993-OAB	R-4994-OAB	51	2	49	62 1/4	47	61	x		x

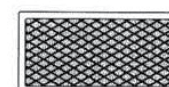
x - Indicates availability



TYPE A
GRATE OPENINGS



TYPE C
GRATE OPENINGS

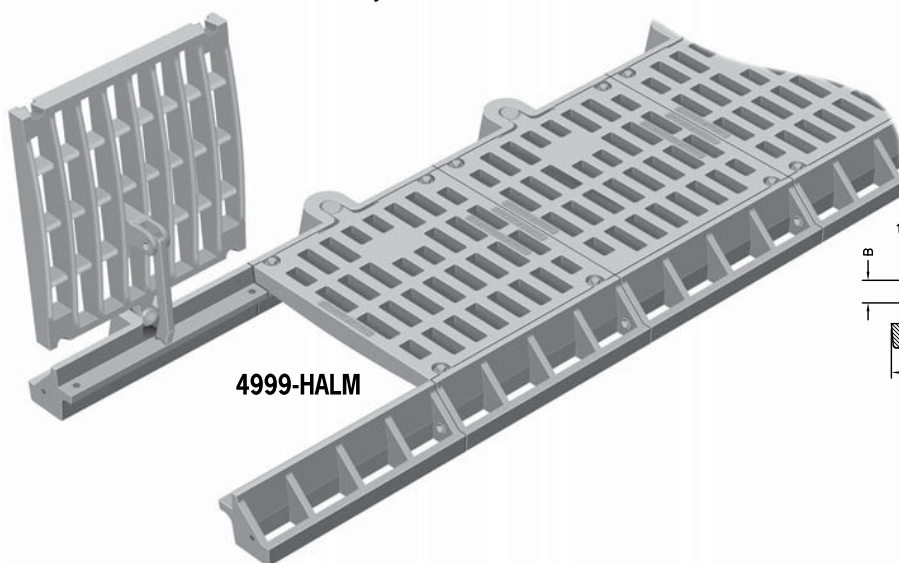


TYPE D
SOLID LID

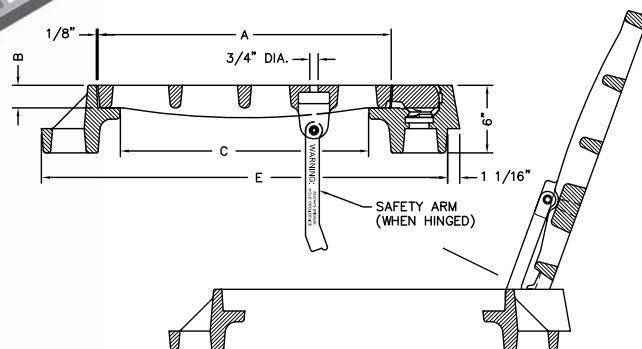
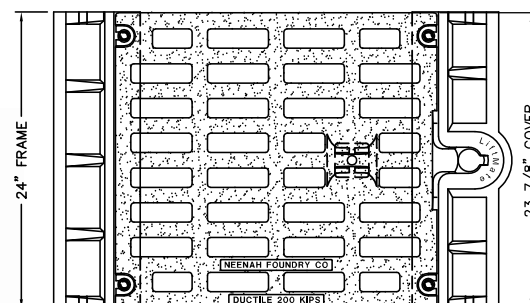
Trench Systems

Neenah's LiftMate Hinge System is now available with the R-4994 Type S Frame trench series.

These trench drains are capable of supporting the heavy wheel loads of today's commercial environments. Visit www.neenahfoundry.com for more information on the LiftMate series.



4999-HALM

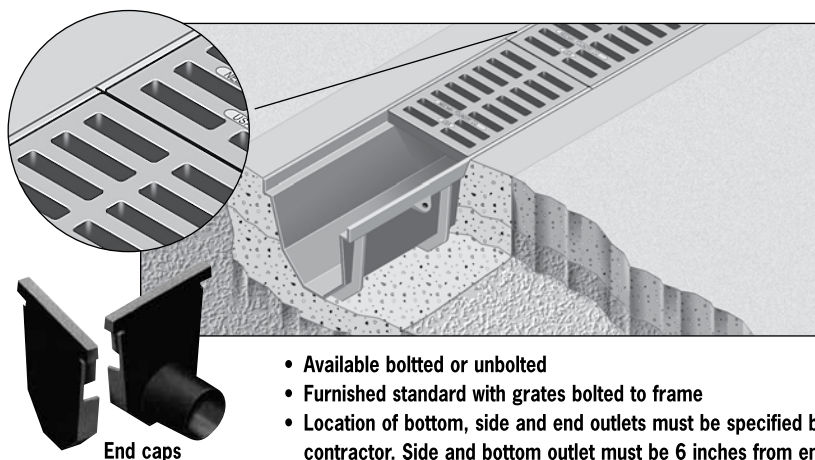


Catalog No.	Dimensions in Inches				Frame Length	Available	Permagrip	Cover
	A	B	C	E		Grate/Cover	Y/N	Material
R-4994-FALM	20	2	16	30	24	'A' Grate	N	Ductile Iron
R-4994-HALM	26	2	22	36	24	'A' Grate	Y	Ductile Iron

R-4996-CA Self-Forming Trench Frame and Grate

Neenah's innovative trench system offers an easy-to-install, affordable answer to airport drainage needs. Constructed with durable cast iron, the system features the proven hydraulic performance of a constant-depth trench system.

- Special trench pan design simplifies installation.
- Competitively priced.
- Saves labor and materials cost.
- Iron pans withstand tough jobsite handling.
- Reusable assembly materials.
- Prefabricated angles and intersections available.
- End caps available.



- Available bolted or unbolted
- Furnished standard with grates bolted to frame
- Location of bottom, side and end outlets must be specified by contractor. Side and bottom outlet must be 6 inches from end.

Catalog No.	Standard Cover Dimensions				Frame Length	Outlet Location, Sizes Available			Available
	A	B	C	D		Side	Bottom	End	Grate/Cover
R-4996-CA**	12	1 1/2	10	10	36	4, 6, 8	4, 6, 8	4, 6, 8	A

** Aircraft Rated – Standard Bolted.

Don't see what you're looking for? Call 800-558-5075

Available Published Specifications

There are several published specifications that are available to assist designers in specifying iron castings. It is the responsibility of the designer to determine if one or all of these specifications are appropriate for a given application. These specifications are referenced as follows:

For Gray Iron

AA 60005*	Federal Specification — Frames, covers, gratings, steps, sump and catch basin, manhole castings
ASTMA-48	Standard Specification for Gray Iron Castings
AASHTO-M 105	Standard Specification for Gray Iron Castings
AASHTO-M 306	Standard Specification for Drainage Structure Castings

For Ductile Iron

ASTMA-536	Standard Specification for Ductile Iron Castings
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For Airport Casting Use

FAA AC: 150/5370-10, item D-751	Manholes, Catch Basins, Inlets and Inspection Holes
FAA AC: 150/5320-6, Appendix 3	Design of Structures for Heavy Aircraft

For Handicapped Compliance

Americans With Disabilities Act (ADA), Sections 4 Accessible Routes and Section 4.5.4 Gratings.

There may be applicable requirements and specifications other than those shown above that need to be consulted before a designer specifies requirements.

*Replaced RRF-621E as of May 26, 1998.

Terms and conditions of sale: Visit www.neenahfoundry.com for more information.



CAUTIONS

PEDESTRIAN, BICYCLE AND HANDICAP CONSIDERATIONS

Neenah strongly recommends project designers and other specifiers carefully consider pedestrian, bicycle and handicap (ADA) issues when specifying the use of construction castings. Designers must responsibly take into consideration various circumstances involving each specific application that may not or could not have been anticipated by the manufacturer.

AMERICANS WITH DISABILITIES ACT (ADA)

Project designers and other specifiers must carefully consider and implement the regulations put forth in the Americans with Disabilities Act. Particular attention should be paid to grating types and their location. Neenah advises a review of the ADA requirements when designing a project.

FASTENING FRAMES AND COVERS TOGETHER (FASTENING DEVICES)

This Neenah Foundry catalog contains many items that have covers fastened to frames using bolts or other fastening devices. Specifiers and users must recognize that bolts and other fastening devices may have a tendency to work loose over a period of time due to traffic patterns, vibrations, temperature cycles, etc., and that routine inspection and maintenance schedules should be implemented to assure these fasteners remain tight and functional. They must determine the necessity and frequency of these inspection and maintenance intervals for each installation. Procedures should be established to assure that maintenance crews check fastening devices for proper function and torque bolts to your established requirements. Crews must repair or replace fastening devices, stripped bolts and threads promptly. Consider each installation individually to be sure traffic or usage patterns will allow the use of fastening devices. (see section titled "Gasketed Frames and Covers" below.)

GASKETED FRAMES AND COVERS

The Neenah Foundry catalog contains many items that have neoprene or EPDM gaskets placed between frame and cover. Specifiers and agencies must recognize that these gaskets compress under load and can release this compressed energy in the form of upward motion when released rapidly (such as normal traffic loading). This energy release may have a tendency to dislodge covers or loosen bolts in bolted and gasketed units. Consider each installation individually and carefully to be sure traffic or usage patterns will allow the use of gaskets. (see section "fastening frames and covers together (fastening devices)" above.)

TEST BARS DISCLAIMER

Most general iron casting specifications require producing foundries to maintain minimum tensile strength properties. These properties are to be measured on test specimens machined from standardized test coupons poured from the same iron, but separately from the castings. Test coupon design, details of the machined tensile test bar and test conditions have been developed such as ASTM A 48 and AASHTO M 306 to provide meaningful evaluations of sound, defect-free metal under standardized conditions. This is one of the fundamental principles upon which foundry operation and quality practices are based.

Significantly, these specifications explicitly caution that tensile properties determined from separately cast coupons demonstrate the potential of the iron used to make the casting. They are not the actual properties possible, likely, or to be expected in the casting. The actual properties developed in the casting may differ greatly from those of separately cast specimens and they are, to the greatest degree, determined by features of casting shape. This is mostly beyond the control of the producing foundry.

For those private casting specifications which require tensile properties to be determined from test bars machined from castings or from attached coupons, the details of compliance with these specifications and the costs thereof shall be as specifically agreed between the parties. Absent such an agreement, Neenah Foundry Company does not warrant or imply that tensile properties called for in a separately cast specimen will be achieved at any location in the casting(s).

WORKING WITH HEAVY CASTINGS CAN CAUSE INJURY

Cast iron parts, such as those sold by Neenah Foundry Company, tend to be heavy. In an effort to avoid injury, Neenah recommends users always use lifting devices when handling castings. Particular attention should be paid to protecting workers' backs and extremities. It is the user's responsibility to determine which lifting device is suitable to each situation.

Users should never allow any part of their bodies to enter the opening area of an open hatch cover unless the lid has been secured in a fashion that will make it impossible to accidentally close. It is the user's responsibility to be sure the castings are secure and the site is safe before proceeding.

NEENAH **IF**
FOUNDRY

Neenah Foundry

"Word on the Street is Neenah"

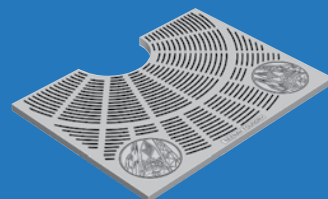
Since 1872, Neenah Foundry has been known for consistent quality, functional performance and design aesthetics. We're also proud of a reputation for responsive support and service. When you choose Neenah Foundry, you've chosen the best.

Neenah offers an extensive selection of castings for construction and municipal use including manhole covers and frames, catch basins and curb inlets, cast iron downspouts, tree grates, bridge scuppers, detectable warning plates, and many other specialty products.

Contact any Neenah Foundry office for more information. Visit www.neenahfoundry.com to order our catalogs and brochures or to locate your local Neenah Foundry representative.



In support of the Green Initiative, Neenah Foundry is pleased to report that our products contain a minimum of 85% recycled content in the form of a minimum of 35% consumer-generated scrap metal and a minimum of 50% industrial-generated scrap metal.



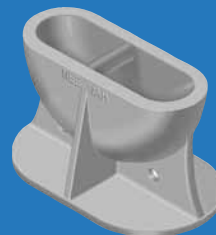
Tree Grate



LiftMate



Trench



Mooring Eye

NEENAH **INF**
FOUNDRY

Neenah Foundry Company
Box 729, Neenah, Wisconsin 54957-0729
800-558-5075 | www.neenahfoundry.com
920-725-7000 | Fax: 920-729-3661

These products are to be specified and used under the guidance of qualified design professionals.



Neenah Foundry Co. is a subsidiary of

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