

**MATERIAL STANDARD****FRAMES AND COVERS, 42-INCH ROUND, IRON****1. Foreword****1.1 Scope**

This material standard covers the requirements for 42-inch round, iron, frames and covers.

This material standard applies to the following Seattle City Light Stock Numbers:

<b>Stock Number</b>	<b>Description</b>	<b>Load Rating (Minimum)</b>
720226	cover, vented	H-20
720466	cover, solid	H-20
720461	frame, 4-lug	H-20
012753	frame, 8-lug	H-25

**1.2 Application**

Frame and cover assemblies are used to construct the means for entering and exiting underground vaults located in pedestrian sidewalks, side streets, or arterials and highways.

Vented covers are for use with vaults that meet any one of the following conditions, unless provisions are made for separate ventilation:

- Require special ventilation
- Contain more than 75 kVA of transformer capacity

Solid covers are for use with vaults that meet any one of the following conditions:

- Do not require special ventilation
- Contain 75 kVA or less of transformer capacity
- Where higher security is desired
- Where debris falling into the vault may be a concern
- Where a minimum load rating of H-25 is required

SCL no longer purchases H10 42-in round covers or frames.

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**1.2 Application**, continued

H-20 rated frames and covers are for use in pedestrian sidewalks where an occasional car or light truck may inadvertently traverse, or side streets that see only light truck traffic; garbage trucks are not considered light trucks.

H-25 rated frames and covers are for use in arterials and highways that see frequent, heavy traffic from trucks and buses.

H-30 rated frames and covers are for use at heavily-used bus stops, or where repetitive, impact, and sustained loading (plus horizontal loading due to braking) is present.

For the purposes of this standard, H-20 may be considered equivalent to HS-20; H-25 may be considered equivalent to HS-25. AASHTO HB-17, Division I, Section 3.7, defines H loading as a two-axle truck and HS loading as tractor truck with semi-trailer.

AASHTO HB-17, Division I, Section 3.8, defines wheel loading in detail. Wheel loading classes above or below H-20 are calculated by simple ratio. For example,

$$\begin{aligned} \text{if, H-20 wheel loading} &= 32,000 \text{ pounds} \\ \text{then, H-25 wheel loading} &= 25/20 \times 32,000 \text{ pounds} \\ &= 40,000 \text{ pounds} \end{aligned}$$

Previous versions of this standard denoted H-25 as H-20+.

Four-lug (H-25) frames are no longer manufactured – cancelled Stock Number 720465 is retained here for record keeping and possible returns to Stores. Engineers should specify the 8-lug (H-25) frame for new designs.

**1.3 Industry Standards**

Frames and covers shall meet the applicable requirements of the latest revisions of following industry standards:

**AASHTO HB-17** – American Association of State Highway and Transportation Officials Standard Specification for Highway Bridges, 17th Edition, 2002

**AASHTO M 306** – Standard Specification for Drainage, Sewer, Utility and Related Castings

**ASTM A 48** – Standard Specification for Gray Iron Castings

**ASTM A 536** – Standard Specification for Ductile Iron Castings

**1.4 References**

**Federal Specification RR-F-621E**, February 23, 1989 - Frames, Covers, Gratings, Steps, Sump and Catch Basin, Manhole

**ASTM C 857-1995** – Minimum Structural Design Loading for Underground Precast Concrete Utility Structures

**2. Construction****2.1 General**

Unless stated otherwise in this standard, dimensional tolerances shall be +/- 1/16 inch, and an additional tolerance of +/- 1/16 inch per foot of dimension.

Finished product shall be free of blowholes, splits, cracks, blisters, mold-pull, sharp edges, and other imperfections that may impair serviceability or pose a hazard.

**2.2 Frame and Cover Assemblies**

Notwithstanding allowed dimensional tolerances, all frames and covers of the same nominal size shall assemble interchangeably.

Any cover placed in a matched frame shall seat without rocking.

The difference in level between a cover and a matched frame shall not exceed 1/8 inch at any point, and shall not exceed 1/16 inch over a total of more than one quarter of the frame perimeter.

Side play between a cover edge and a matched frame shall not exceed 1/8 inch per foot of diameter.

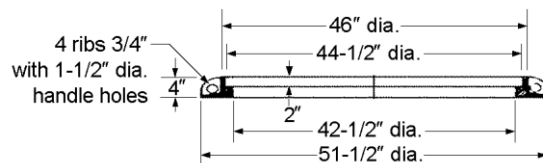
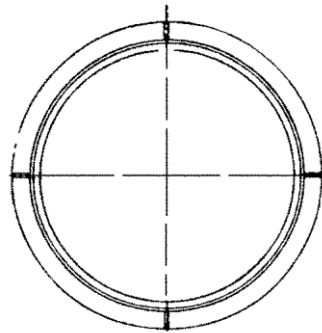
**2.3 Frames**

Frames shall be gray cast iron produced according to ASTM A 48, Class 35B (minimum).

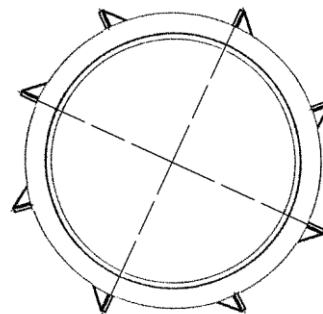
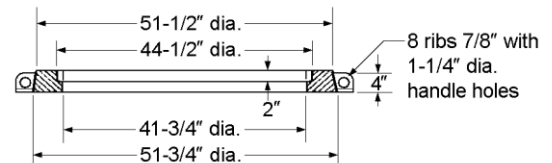
Frames shall meet the dimensional requirements of Figures 2.3.1 and 2.3.2.

**Figure 2.3.1**

4-Lug Frame, H-20  
Stock Number 720461

**Ring Section****Figure 2.3.2**

8-Lug Frame, H-25  
Stock Number 012753

**Ring Top View****Ring Section****2.4 Covers**

Covers shall be ductile cast iron produced according to ASTM A 536, Grade 80-55-06.

Covers shall meet the dimensional requirements of Figures 2.4.1 and 2.4.2.

Solid covers shall be manufactured with a safety tread design.

The word "ELECTRIC" shall be cast in the center of each solid cover and along the edge of each vented cover.

Each cover shall have a minimum of six, equally-spaced, 7/8 inch diameter holes for lifting.

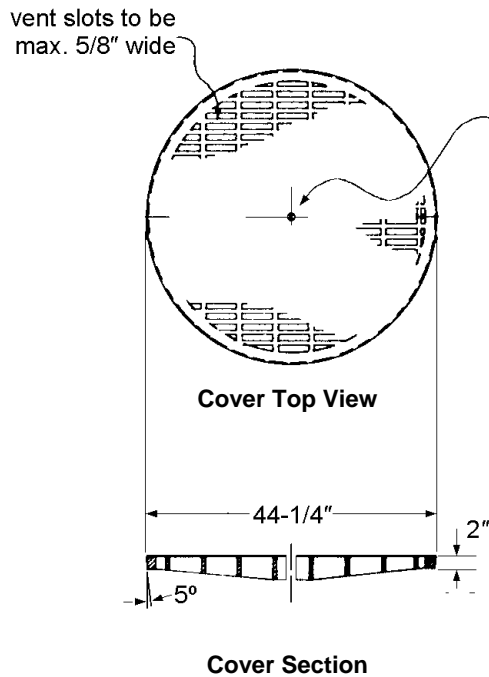
The bottom center of each cover shall be provided with a spin ring that extends at least 1-1/2 inches below the underside of the outside edge.

The center of each cover shall have one 1/2 inch, UNC-series threaded hole for a lifting eye bolt.

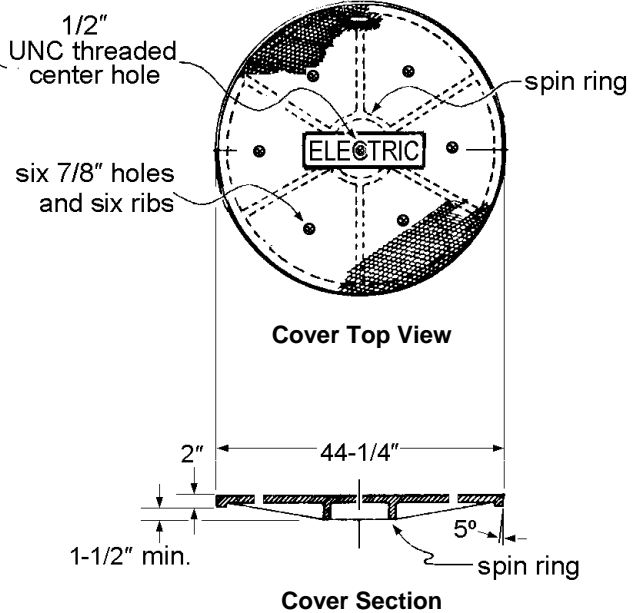
A plug shall be provide to protect the 1/2 inch, UNC-series threaded hole from debris and normal wear.

Each vented cover shall have at least 500 square inches of clear opening for ventilation.

**Figure 2.4.1**  
 vented cover  
 Stock Number 720226



**Figure 2.4.2**  
 solid cover  
 Stock Number 720466



**3. Packaging**

Frames and covers shall be shipped strapped to wood pallets.

Each pallet shall be legibly marked with the following information:

- Manufacturer's identification
- Product description
- Package weight (gross or net)
- Date of manufacture
- Seattle City Light's Purchase Order Number
- Seattle City Light's Stock Number

**4. Shipping**

Product shall be shipped to the address specified on the Purchase Order.

**5. Issuance**

EA

**6. Approved Manufacturers**

Stock No.	Description	Load Rating	Nominal Weight (lb)	East Jordan Iron Works	Oldcastle Precast	D&L Foundry
720226	cover, vented	H-20	445	184335	4220 CS	C-1470-01
720466	cover, solid	H-20	450	184341	4220 S	A-1470-01
720461	frame, 4-lug	H-20	272	184511	4210-4220	A-1470-R1
012753	frame, 8-lug	H-25	652	184306	4220-HD	A-1471-R1