Prepared by: MZGD

PRIMARY ELECTRIC UNDERGROUND ENCLOSURES 062000

Asset Type:	Electric Distribution	**Function:**	Design and Construction
Issued by:	Calvin Yu (CCY6)	**Date:**	06-30-23

Rev. #26: This document replaces PG&E Document 062000, Rev. #25 For a description of the changes, see Page 26.

Purpose and Scope

This document provides dimensions, illustrations, and ordering information for surface-operable, primary, electric underground equipment and splice enclosures including frame and cover assemblies. The primary enclosures shown in this document are the preferred enclosures. Precast and poured-in-place manholes should be used only when space for surface-operable enclosures cannot be obtained.

General Information

1. Monolithically poured concrete enclosures may be provided by the supplier, for any depth combination of body and extension, if the enclosure is delivered “in-hole” by the supplier and the enclosure accommodates the approved frame and cover assembly by matching the dimensional requirements herein. Precast and poured-in-place enclosures shall meet the requirements herein.
2. Size all enclosures to accommodate the largest size cable or piece of equipment that may ultimately be installed for 600-Amp and 200-Amp distribution circuits.
3. The greatest cost savings is achieved by taking delivery of the enclosure at the jobsite and using supplier’s equipment to install the enclosure into the prepared excavation.
4. Design, design loads, concrete, and reinforcing steel materials, concrete mixes, frame and cover assemblies and materials, and construction of enclosures shall meet the requirements of ASTM C858 and ASTM C857 as modified herein, in the Engineering Material Specification No. 53.
5. It is the responsibility of the installing party to check and prepare the jobsite as follows:
   A. Make space available for the supplier’s equipment and/or a crane.
   B. Arrange for the removal of any overhead facilities that might prohibit the use of the supplier’s equipment and/or crane (if necessary).
   C. Provide the excavation in the proper location and of the correct size, depth, and alignment, dewatered as needed.
   D. Prepare the excavation with 6 inches of compacted 3/4” minimum crushed rock. 1.5” to 2” crushed rock can be used in soggier soil conditions to prevent settling of the enclosure. Provide backfilling, tamping, and resurfacing to ensure uniform distribution of soil pressure on floor.
   E. Provide for waterproofing and protection board where required by Document 072149.
   F. Provide the necessary manpower to assist in the installation of the enclosure.
6. Mastic sealant is to be provided by the supplier for all concrete-to-concrete joints. Mastic sealant must be installed for all concrete-to-concrete joints.
7. Install enclosure body as level as practical, but do not exceed 1/8” elevation change per foot. Use adjustment bolts to adjust the cover to final grade. Grout the frame continuously 360° to the enclosure. If grade adjustment bolts are used, remove bolts after grouting.
8. **Do not** break out the bottom of the sump hole. The base rock is for leveling the enclosure, not for drainage.

9. The enclosures in this document are equipped with conduit terminators. Secondary conduits may enter the terminators with 21” to 24” of cover at the entrance of the enclosures. When entering these enclosures with conduit of a different diameter than the terminator, use a swedge reducer (Document 062288) not to be installed closer than 18” to the terminator. New enclosure designs no longer have knockout windows. Conduits entering through knockout windows on existing enclosures should use end bells and grout. Conduits must be straight with no bends, couplings, or swedge reducers for 18”.
10. Every effort should be made to route all conduits through the short walls of the enclosure to facilitate cable pulling. Long wall entry should only be used when all other options have been exhausted.
11. Core drilling at the enclosure wall beyond designated knockout window(s) for installation of additional conduits is not allowed.
12. Pulling irons shall be designed for 20,000 pounds ultimate, with a safety factor of two (40,000 pounds).
13. Lifting
    A. All extensions and heavy full traffic covers shall be provided with four 7/8-inch diameter, 2-1/4-inch minimum deep inserts with unified coarse thread, Class 2A threads.
    B. Boxes shall be lifted using pulling irons in the floor.
14. Marking
    A. All covers shall be marked with one “High Voltage” and three blank number ID plates in accordance with Document 051768.
    B. All covers shall be permanently marked on the underside with the manufacturer’s name and the date of the manufacturer in this format: mm/yy.
    C. All concrete parts shall be permanently identified with the manufacturer’s name on the inside and outside surfaces.
    D. All concrete parts shall have the weight stenciled on the outside surface.
15. All bodies and extensions shall conform to the dimensional specifications so as to be fully interchangeable with the bodies and extensions of all other manufacturers.
16. Custom extensions made of bricks, Concrete Masonry Units (CMU, aka cinder blocks, cement blocks, etc), Cast−In−Place plain concrete, or other conventional materials are not allowed. Install only the PG&E coded materials or custom extensions by PG&E approved manufacturers.
17. All covers shall have a PG&E-approved, high coefficient of friction (0.65 or better), slip-resistant surface.
18. The following parts of the frame and cover assembly shall conform to the dimensional specifications and the applicable PG&E standards so as to be compatible with the frame and cover assemblies of any approved manufacturer.
    A. Viewport (Refer to Document 066205)
    B. Identification Plates (Refer to Document 051768)
    C. Replacement Bolt Down Assembly (M040586). This assembly is part of the cover release locking mechanism.
19. Each approved manufacturer of frame and cover assemblies shall maintain dimensional consistency between all the parts of the frame and cover assembly such that replacement parts will be compatible with that manufacturer’s existing assemblies in use in the field.
20. Grounding is required for all new primary concrete enclosures. Grounding is highly recommended to be added to existing primary enclosures. For grounding requirements of the enclosure refer to Document 060462.
21. Drawings are intended to be generic for the various approved enclosure and cover manufacturers. Appearances may vary slightly. All approved enclosures are compatible with all approved frame and cover assemblies.

Application

22. Incidental-vehicular-traffic (IVT) (ASTM C-857, Rating H-10-44, light traffic): For use in sidewalks, paved and unpaved pedestrian areas, parkway strips adjacent to curbs, and any other area subject to occasional vehicular traffic not to exceed 10 tons gross vehicle weight (GVW) or 10 mph speed limits.
    A. IVT covers installed in commercial districts, urban environments, areas with congested parking conditions, or any area where it can be expected or observed that vehicles park or drive on these locations with any regularity should consider the use of the FVT cover instead in order to prevent damage to the enclosure.

23. Full−vehicular−traffic (FVT) (ASTM C-857, Rating HS−20−44, full traffic): Quick−release covers designed for H−20 vehicular wheel load but not subject to high−density traffic with speed higher than 25 mph; locations such as alleys, driveways, parking strips, etc.
24. Heavy full-vehicular-traffic (HFVT) (ASTM C-857, Rating HS-20-44, heavy traffic): For use in streets and all other areas subject to vehicular traffic in excess of 10 tons GVW, but not to exceed 20 tons GVW. Entrance into this type of enclosure shall not be allowed through an opened grate per OSHA work safety requirements.
25. Heavy full-vehicular-traffic (HFVT) enclosures are not to be used to install sectionalizing equipment (including switching devices and automatic interrupters) or transformers, except on projects where a location for an incidental-vehicular-traffic box is not available. Do not install HFVT enclosures in new business jobs unless all other options have been exhausted and PG&E has agreed to its installation.
    A. Due to the entry restrictions of this enclosure and the requirement to remove the entire concrete cover to access, the HFVT enclosure may not be placed in a location where overhead obstacles or facilities pose a safety risk when using lifting equipment.
26. Separation of enclosures from wet and non−utility facilities (Similar to Section C of UO Standard S5453):
    A. The maximum practicable horizontal separation shall be maintained between the outer edge of the new primary enclosures and the outer edge of parallel existing “wet” utilities. The minimum allowable separation between the enclosures and “wet” facilities is 3’ with the presence of a minimum of 1’ of undisturbed earth or the installation of a suitable concrete barrier.
    B. In the extraordinary case that the minimum 3’ horizontal separation cannot be attained between “wet” utilities and the enclosures, a variance may be recommended by the local Inspection Supervisor and submitted to Engineering Standards for approval. In no case will a separation of less than 1’ be allowed.
    C. The minimum 3’ horizontal separation requirement may be allowed as a variance, at the request of an applicant if warranted and the need is clearly demonstrated. The request for a variance must:
        - Be made in writing and submitted to the Company ADE during the planning and design phase of the project.
        - Clearly describe the conditions necessitating the variance.
        - Include a proposed design.
        - And, include a mitigation proposal to provide a concrete barrier between the “wet” utilities and the enclosures in the event 3’ horizontal separation cannot be maintained.
27. Enclosures with drag-off style covers which are also in close proximity to other potential fall hazards, such as other enclosures or uneven terrain, or which are lacking standard support beams, must be changed when doing any work other than routine switching in that enclosure. For drag−off cover replacement requirements refer to Note 10 to 12 of Document 066205.

References	Location	Document
Cable Support for Underground Use	UG-1: Splices	028077
Identification Plates for Subsurface Enclosures	UG-1: Marking	051768
Duplex-Type, Three-Phase, Subsurface Transformer	UG-1: Transformers	051776
Grounding of Underground Equipment	UG-1: General	060462
Underground Conduits	UG-1: Conduits	062288
Enclosure Repair/Replacement Criteria and Replacement Materials	UG-1: Enclosures	066205
Requirements for Allowing Installation of Subsurface Transformers	UG−1: General/Greenbook	072149
Engineering Material Specification No. 53, “Electric Underground Concrete Enclosures”	TIL	EMS53

Table 1 Enclosure and Excavation Sizes for New Installations of Subsurface Equipment

Application	Location		Enclosure Size [4]	Excavation Size [1]	
	Incidental and Full Traffic	Heavy Full Traffic Allowed		Incidental and Full Traffic	Heavy Full-Traffic
200-Amp Cable and Non-Lead Splices [5]	Yes	Yes	4’ x 6’ 6” x 5’	6’ x 8’ 6” x 6’ 6”	6’ x 8’ 6” x 6’ 6”
200-Amp Junctions		No	4’ x 6’ 6” x 5’	6’ x 8’ 6” x 6’ 6”	–
200-Amp Sectionalizing Switches		Yes [2]	4’ x 6’ 6” x 5’	6’ x 8’ 6” x 6’ 6”	6’ x 8’ 6” x 7’ 6”
200-Amp Subsurface Fused Switches		No	4’ x 6’ 6” x 5’	6’ x 8’ 6” x 6’ 6”	–
200-Amp Automatic Interrupter		No	4’ x 6’ 6” x 5’	6’ x 8’ 6” x 6’ 6”	–
1Ø Horizontal Transformers		Yes [2]	4’ x 6’ 6” x 5’	6’ x 8’ 6” x 6’ 6”	6’ x 8’ 6” x 7’ 6”
1Ø Round Transformers		Yes [2]	4’ x 6’ 6” x 6’	6’ x 8’ 6” x 7’ 6”	6’ x 8’ 6” x 8’ 6”
600-Amp Cable Non-Lead Splices		Yes	4’ 6” x 8’ 6” x 6’	6’ 6” x 10’ 6 ”x 7’ 6”	6’ 6” x 10’ 6” x 8’ 6”
600-Amp Separable Connectors		No	4’ 6” x 8’ 6” x 6’	6’ 6” x 10’ 6 ”x 7’ 6”	–
600-Amp Sectionalizing Switch		Yes [2]	4’ 6” x 8’ 6” x 6’	6’ 6” x 10’ 6” x 7’ 6”	6’ 6” x 10’ 6” x 8’ 6”
600-Amp Scada Switch		No	4’ 6” x 8’ 6” x 6’	6’ 6” x 10’ 6” x 9’	–
600-Amp Automatic Interrupter		No	4’ 6” x 8’ 6” x 6’	6’ 6” x 10’ 6 ”x 7’ 6”	–
3Ø Duplex Transformer [3]		Yes [2]	4’ 6” x 8’ 6” x 6’	6’ 6” x 10’ 6” x 7’ 6”	6’ 6” x 10’ 6” x 8’ 6”
3Ø UCD (112.5 through1,000 kVA)		Yes [2]	4’ 6” x 8’ 6” x 7’ 6”	6’ 6” x 10’ 6” x 9’	6’ 6” x 10’ 6” x 10’

1 Depth allows for 6” of crushed rock, per Note 5D. on Page 1.

2 Installing this equipment in heavy full-traffic enclosures is the least desirable option, and should only be considered on reconstruction projects where suitable locations for incidental and full vehicle traffic boxes are not available. Refer to Item 25 in the Application section of this document.

3 See Document 051776.

4 The 12” extension that is included in the heavy full-traffic assembly is not listed in this column.

5 Installation of a 3’x5’x3’6” enclosure for straight splices is only allowed if no future expansion is expected that would require a transformer, junction, or switch to be installed in that enclosure.

6 1Ø Round transformers require a 6’ deep enclosure; add a 12” extension to the standard enclosure.

Primary Electric Underground Enclosures

Notes

1. Existing 3’ x 5’ (#5) enclosure with minimum 36” depth will continue to be allowed when:
   A. Replacing existing 200-Amp splice junction, and equipment.
   B. Converting existing 200-Amp splices to a 200-Amp junction.
2. When intercepting existing 200-Amp primary cable to install 200-Amp equipment, the installation of a 3’ x 5’ (#5) enclosure will only be allowed if there is no physical space for the installation of a 4’ x 6’ 6” (#6) enclosure and all other design alternatives have been exhausted. However, installation of 167 kVA single phase transformers requires a 4’ x 6’ 6” (#6) enclosure.
3. The installation of new 200-Amp junction and equipment is not allowed in new 3’ x 5’ (#5) primary enclosure for **new** PG&E job estimates or Applicant Design (AD) estimates.

3’ 0” x 5’ 0” (#5) Complete Enclosure Assemblies (incidental transformer cover shown)

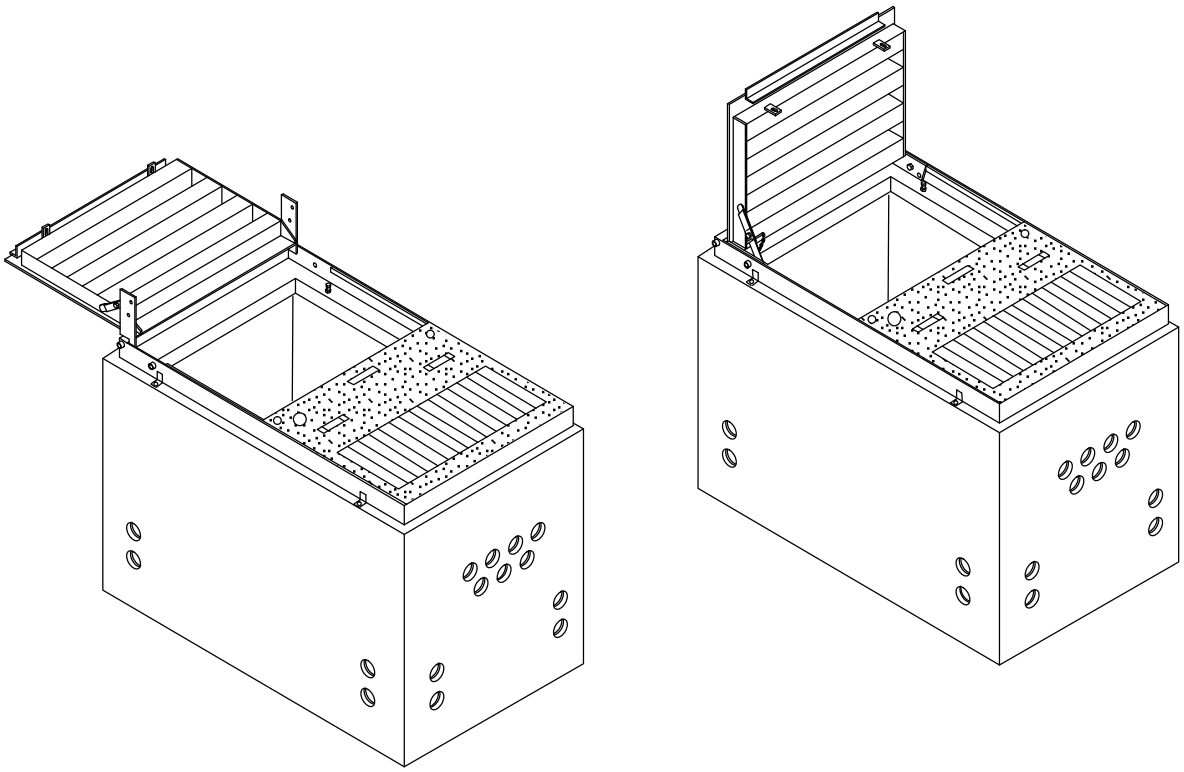


Figure 1
Isometric View of 3’ x 5’ Enclosure Assembly
(not to scale)

Table 2 Complete Enclosure Assembly (for 200-Amp distribution)

Application	Enclosure Size	Type of Traffic Loading	Type of Cover [2]	Code [1]
Splice Box	3’ x 5’ x 3’ 6”	Incidental	Quick-Release Aluminum	025601
	3’ x 5’ x 3’ 6”	Full-Traffic	Quick-Release Steel	041668
	3’ x 5’ x 4’ 6”	Heavy Full-Traffic	Concrete	041612
	3’ x 5’ x 4’ 6”	Incidental	Quick-Release Aluminum	040334
	3’ x 5’ x 4’ 6”	Full-Traffic	Quick-Release Steel	041669
	3’ x 5’ x 5’ 6”	Heavy Full-Traffic	Concrete	040327

[1] Code includes body, frame, and cover assembly. The heavy full-traffic assembly also includes a 12” extension. When extra depth is required, order additional extension from Table 3 on Page 7.

[2] Transformer covers for 3’ x 5’ (#5) boxes are not available for new construction. Replacement cover material can be found in Document 066205.

3’ 0” x 5’ 0” (#5) Enclosure and Extensions

Table 3 Codes for Enclosure Bodies and Extensions (see Figure 2)

Description	Code	Weight - Approximate (lbs.)
Body, 42” Depth	043361	5,940 MAX
Body, 54” Depth	043588	7,060 MAX
Extension, 6” Depth [1]	043197	560
Extension, 12” Depth [1]	043362	1,130
Extension, 18” Depth [1]	040578	1,690
Extension, 24” Depth [1]	043531	2,250

[1] Joints must be interchangeable with those shown in Detail A and approved by PG&E electric distribution personnel.

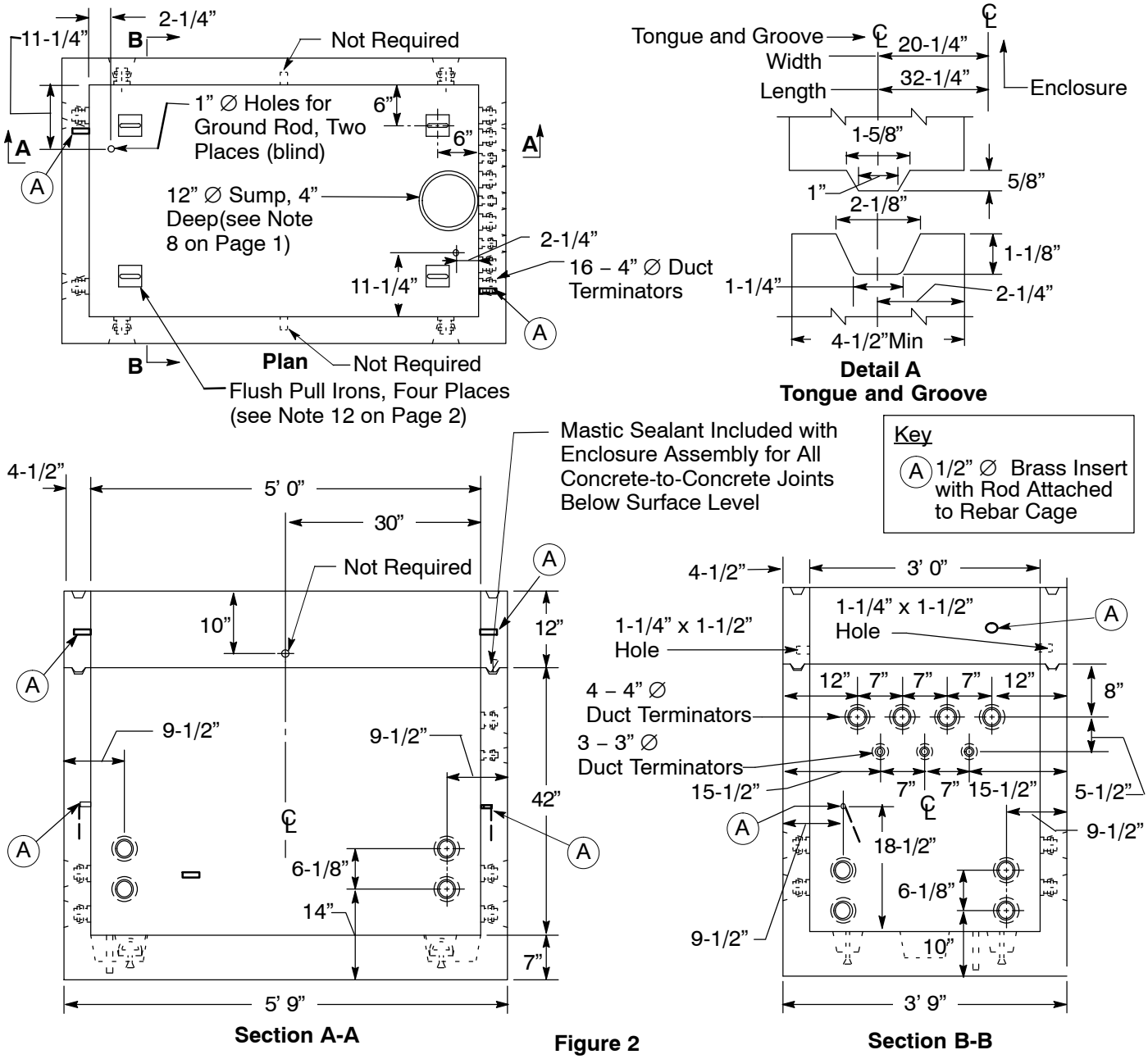


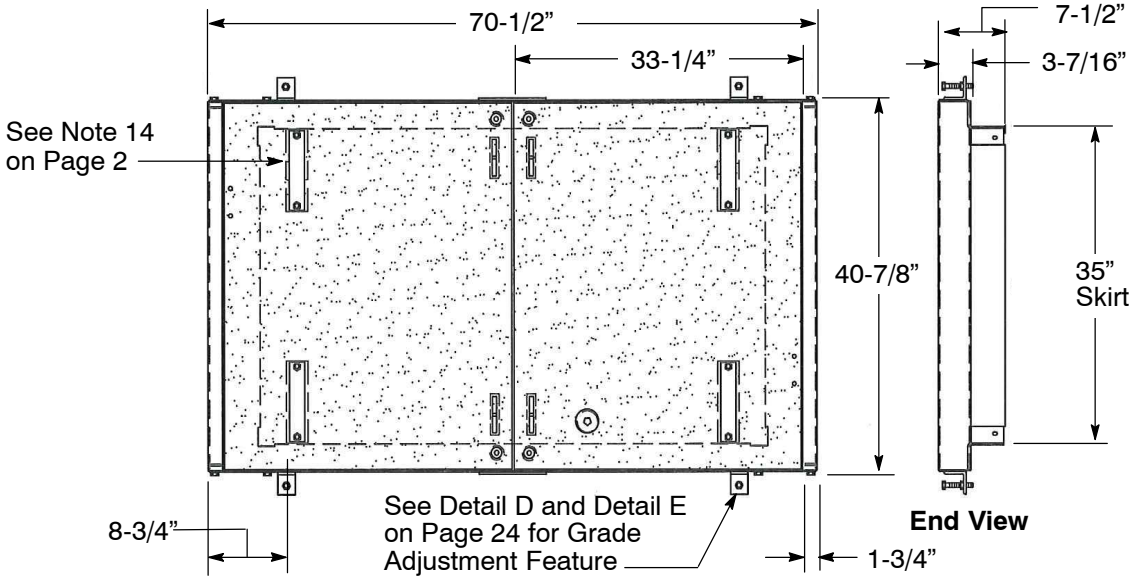
Figure 2
3’ 0” x 5’ 0” Body Enclosure and Extensions

3' 0" x 5' 0" (#5) Aluminum Quick Release Cover Assembly – Incidental Traffic

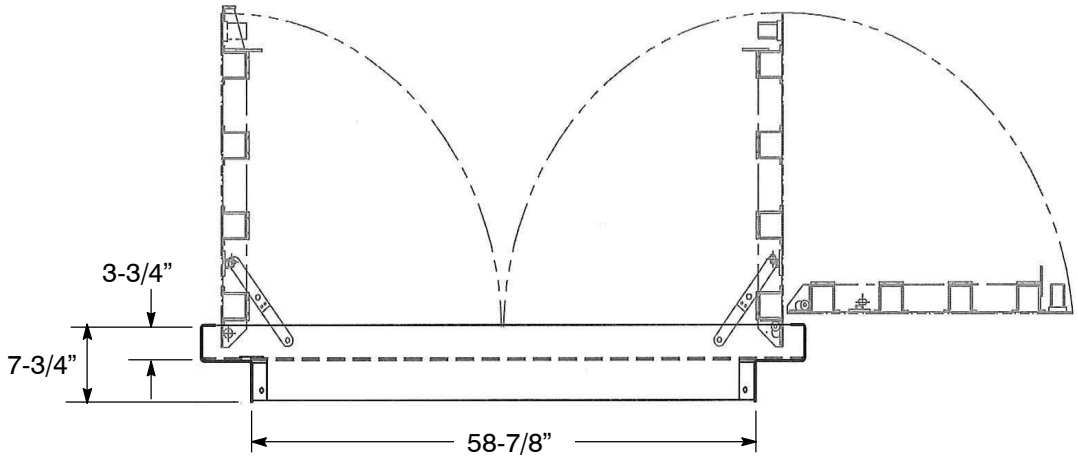
Table 4 Complete Frame and Cover Assembly

Type of Enclosure	Type of Traffic Loading	Type of Cover	Code
Splice Box	Incidental	Quick-Release Aluminum	025604
	Full-Traffic[1]	Quick-Release Steel	041052
	Heavy Full-Traffic	Concrete	041616

[1] For application guide, see Note 23 on Page 3.



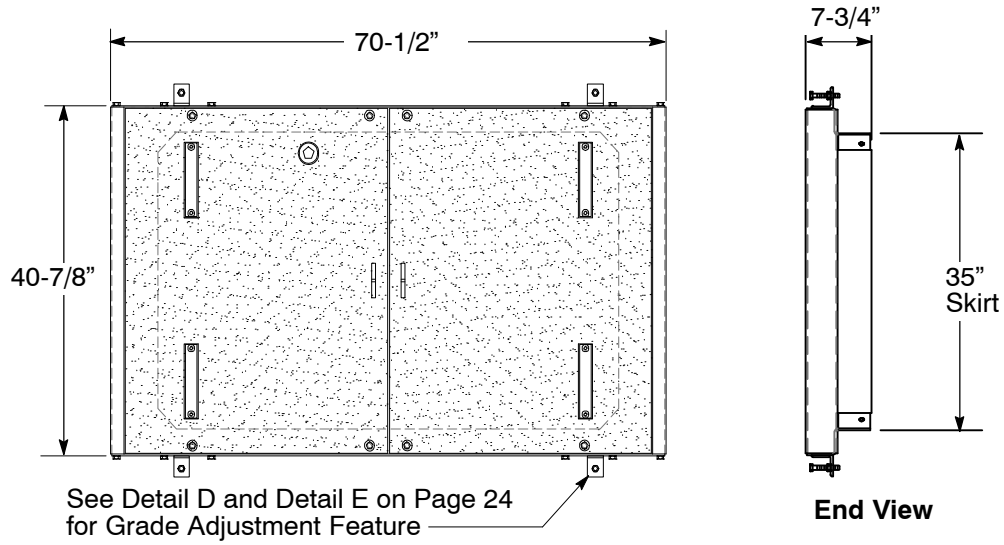
Equipment Frame and Cover Assembly



Side View

Figure 3
3' 0" x 5' 0" Quick Release Cover Assembly – Incidental Traffic

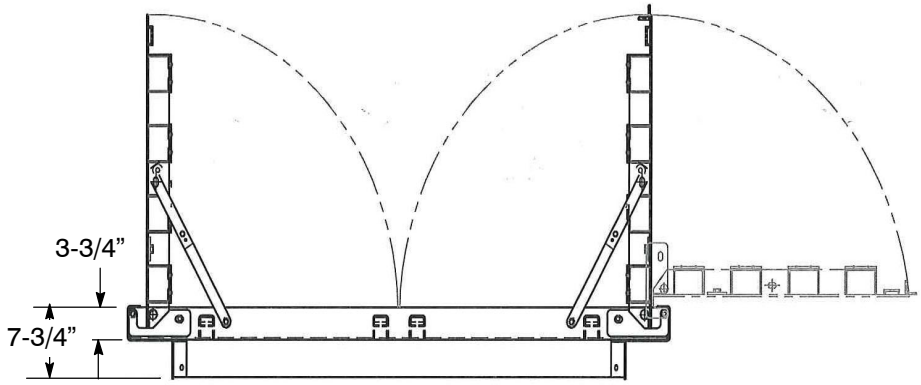
3’ 0” x 5’ 0” (#5)Steel Quick-Release Cover Assembly – Full Traffic



Plan

End View

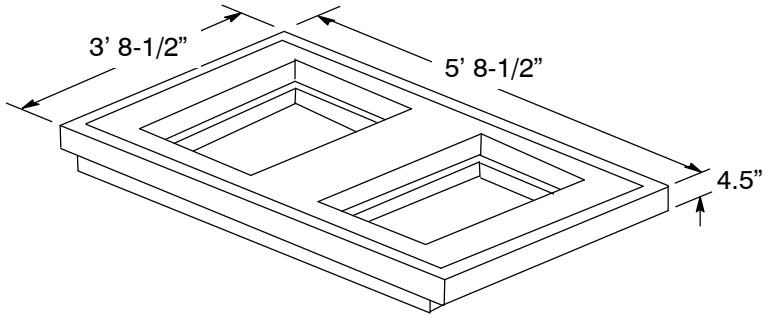
Equipment Frame and Cover Assembly



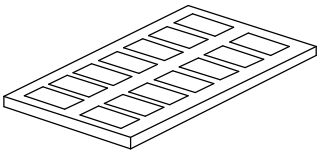
**Equipment Cover
Side View**

**Figure 4
3’ 0’ x 5’ 0” Quick-Release Cover Assembly - Full Traffic**

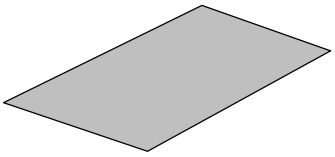
3’ 0” x 5’ 0” (#5) Heavy Full-Traffic Cover Assemblies



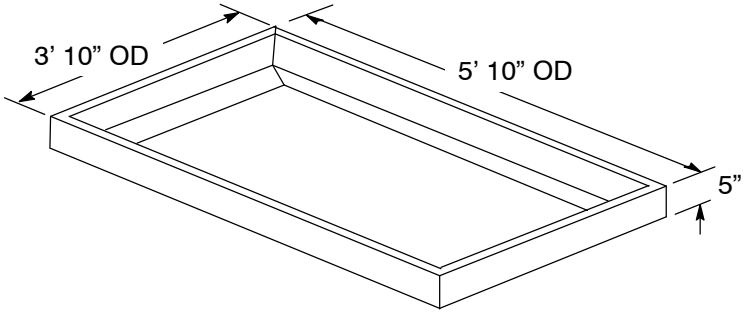
Heavy Full-Traffic Cover



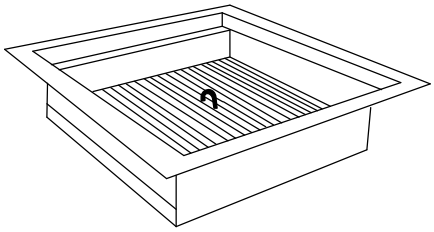
Grated Heavy Full-Traffic Cast Iron Insert



Solid Heavy Full-Traffic Cast Iron Insert



Heavy Full-Traffic Frame



Baffle

Figure 5
3’ 0” x 5’ 0” Heavy Full-Traffic Cover Assemblies

Table 5 Component Parts

Description	Weight	Code
3’ x 5’ HFVT, Concrete Cover Without Inserts	1,160 lbs.	040338
3’ x 5’ HFVT, 5’ x 5’ x 1/2” Steel Frame With Adjustment Feature	290 lbs.	040339
Cast Iron Grate Inserts for Transformer Enclosures	120 lbs.	040346
Cast Iron Solid Inserts for Splice/Equipment Enclosures	180 lbs.	040343
Baffle	25 lbs.	360036

4’ 0” x 6’ 6” (#6) Complete Enclosure Assemblies (incidental transformer shown)

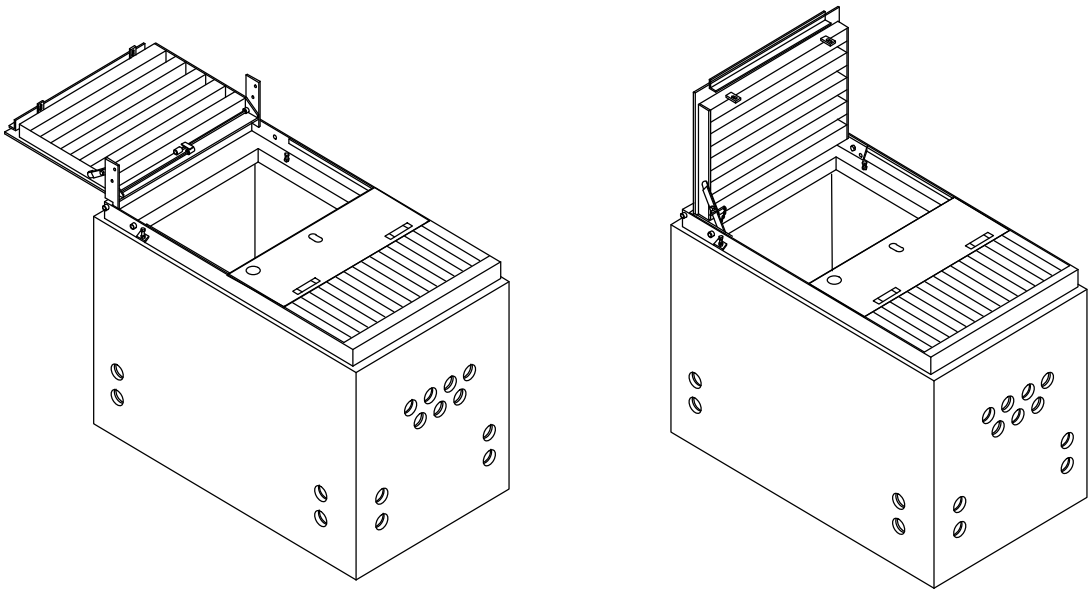


Figure 6
Isometric View of 4’ 0” x 6’ 6” Enclosure Assembly
(not to scale)

Table 6 Complete Enclosure Assembly (for 200-amp distribution)

Application	Enclosure Size	Type of Traffic	Type of Cover	Code [1]
1∅ Horizontal Transformers	4’ 0” x 6’ 6” x 5’ 0”	Incidental	Quick-Release Aluminum	041492
	4’ 0” x 6’ 6” x 5’ 0”	Full-Traffic	Quick-Release Steel	041493
	4’ 0” x 6’ 6” x 6’ 0”	Heavy Full-Traffic	Concrete	041494
Equipment/Splice Box	4’ 0” x 6’ 6” x 5’ 0”	Incidental	Quick-Release Aluminum	041495
	4’ 0” x 6’ 6” x 5’ 0”	Full-Traffic	Quick-Release Steel	041496
	4’ 0” x 6’ 6” x 6’ 0”	Heavy Full-Traffic	Concrete	041521

[1] Code includes body, frame, and cover assembly. The heavy full-traffic assembly also includes a 12” extension. When extra depth is required, order additional extension from Table 7 on Page 12.

4’ 0” x 6’ 6” (#6) Enclosure and Extensions

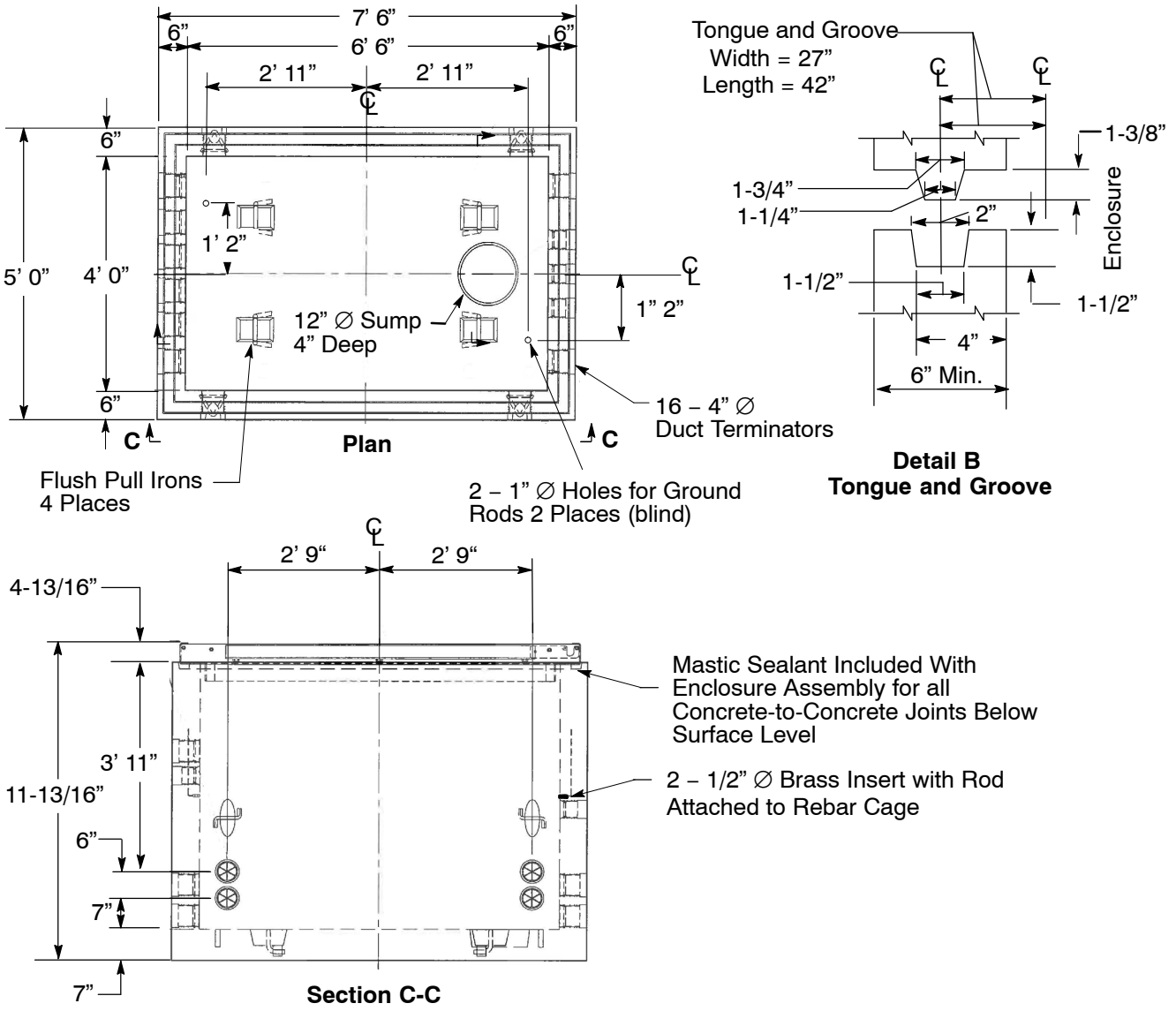


Figure 7
4’ 0” x 6’ 6” Body Enclosure

Table 7 Codes for Enclosure Bodies and Extensions (Figure 7)

Item	Description	Code	Weight - Approximate (lbs.)
1	Body, 60” Depth	041567	12,140 MAX
2	Extension, 6” Depth [1]	041569	800
3	Extension, 12” Depth [1]	041570	1,600
4	Extension, 18” Depth [1]	041574	2,400

[1] Joints must be interchangeable with those shown in Detail B on Page 12 and approved by PG&E electric distribution personnel.

4' 0" x 6' 6" (#6) Enclosure and Extensions (continued)

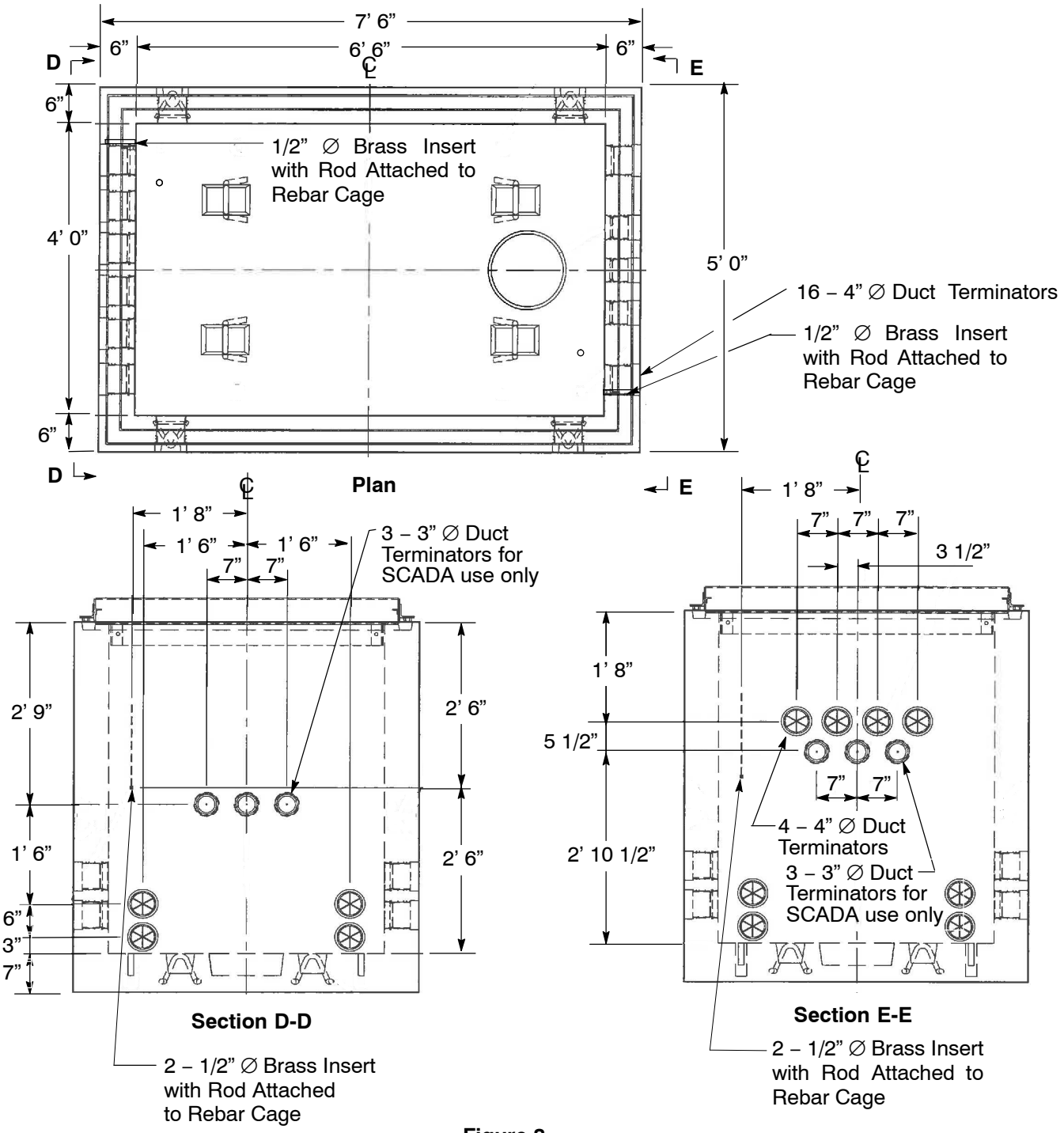
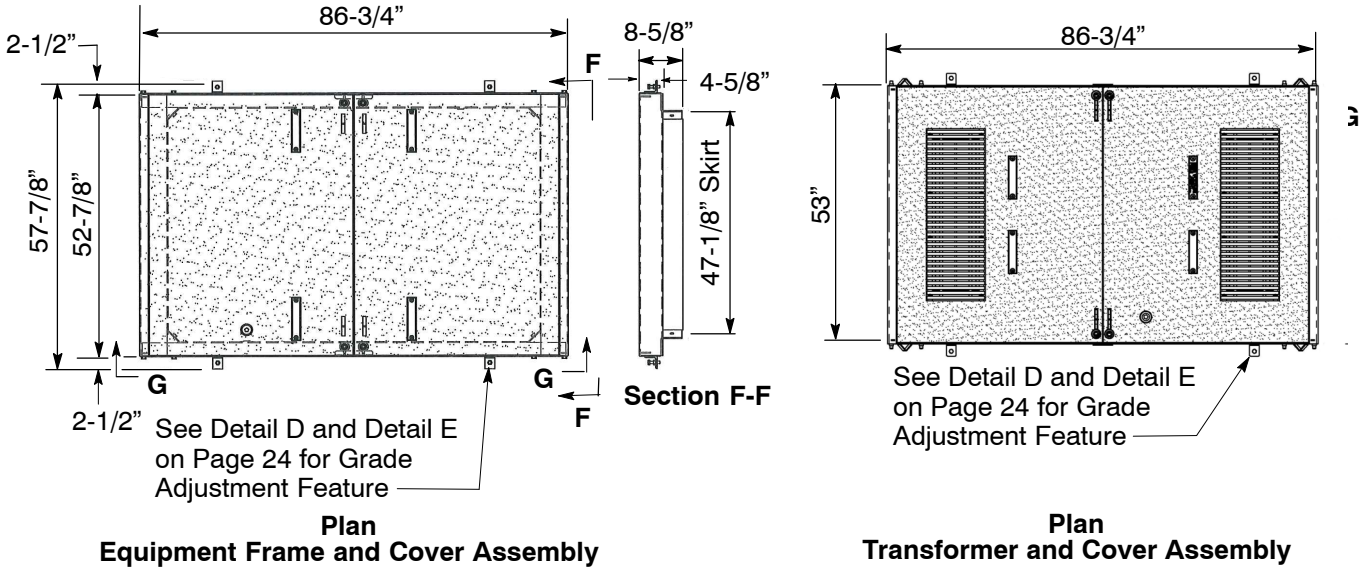


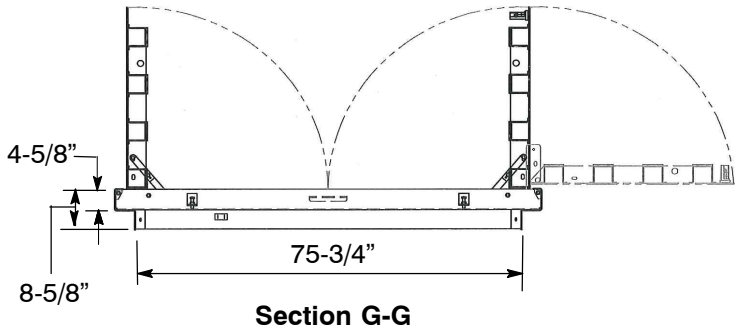
Figure 8
4' 0" x 6' 6" Body Enclosure

4’ 0” x 6’ 6”(#6) Aluminum Quick-Release Cover Assembly – Incidental Traffic



Plan
Equipment Frame and Cover Assembly

Plan
Transformer and Cover Assembly



Section G-G
Side View of Equipment Frame and Cover Assembly
Dimensions for Transformer Frame and Cover Assembly
Same as Detailed

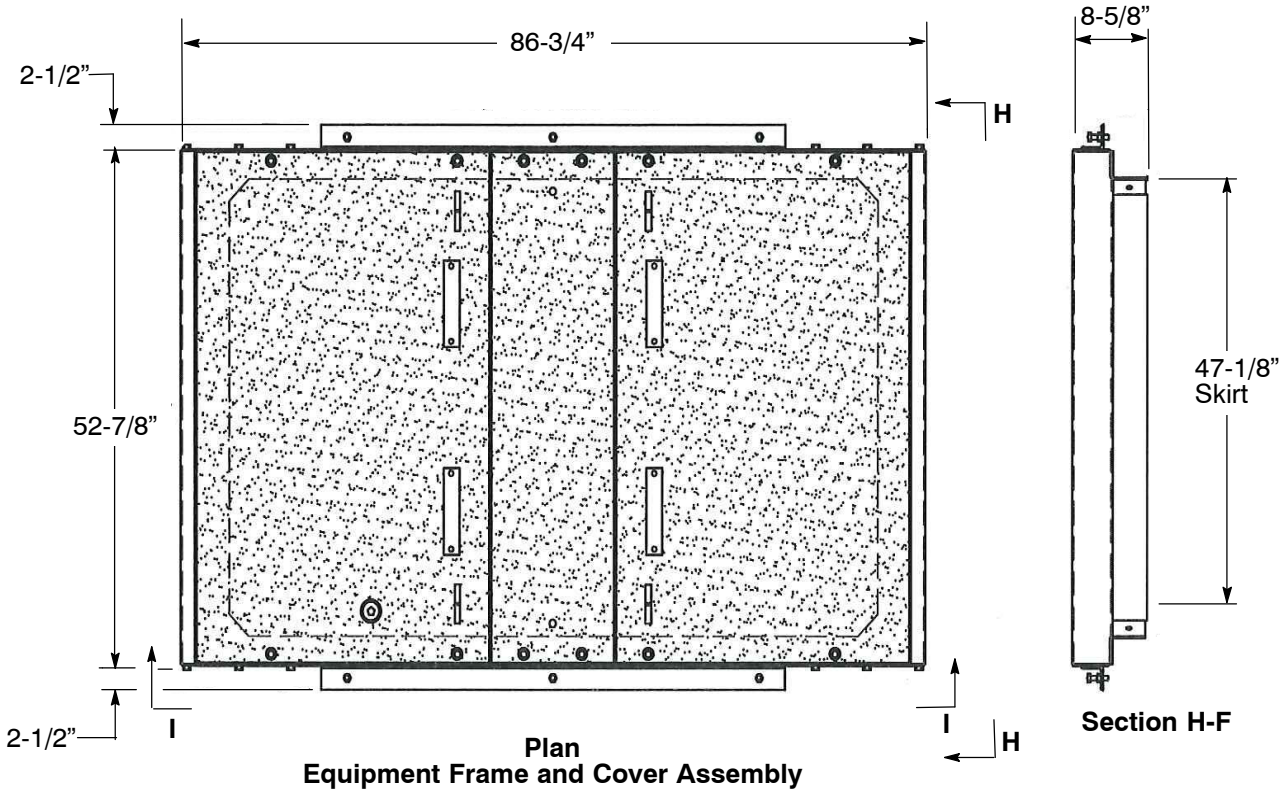
Figure 9
4’ 6” x 6’ 6” Quick-Release Cover Assembly – Incidental Traffic

Table 8 Complete Frame and Cover Assembly

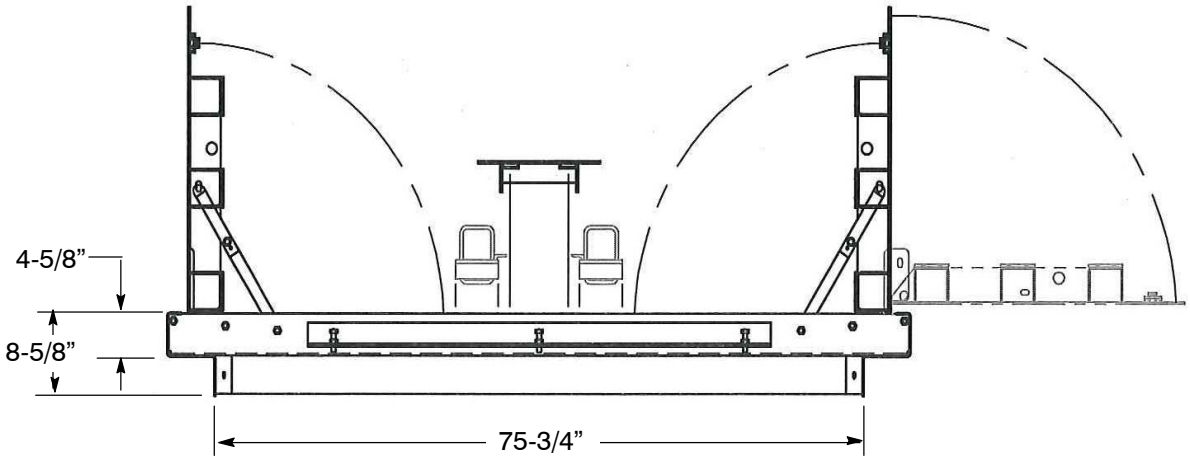
Type of Enclosure	Type of Traffic	Type of cover	Code
1∅ Horizontal Transformers	Incidental	Quick-Release Aluminum	041092
	Full-Traffic[1]	Quick-Release Steel	360148
	Heavy Full-Traffic	Concrete	041541
Equipment/Splice Box	Incidental	Quick-Release Aluminum	041093
	Full-Traffic[1]	Quick-Release Steel	360149
	Heavy Full-Traffic	Concrete	041557

[1] For application guide, see Note 23 on Page 3.

4’ 0” x 6’ 6” (#6) Steel Quick-Release Cover Assembly – Full Traffic



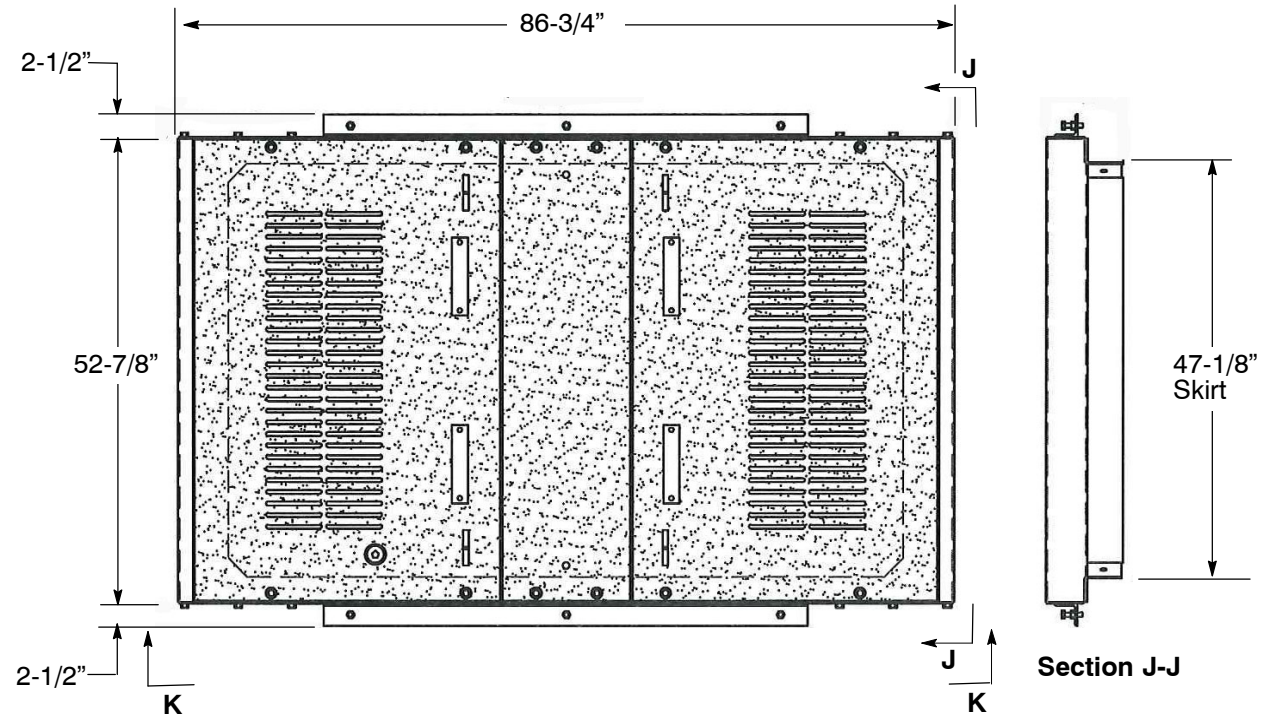
Equipment Frame and Cover Assembly

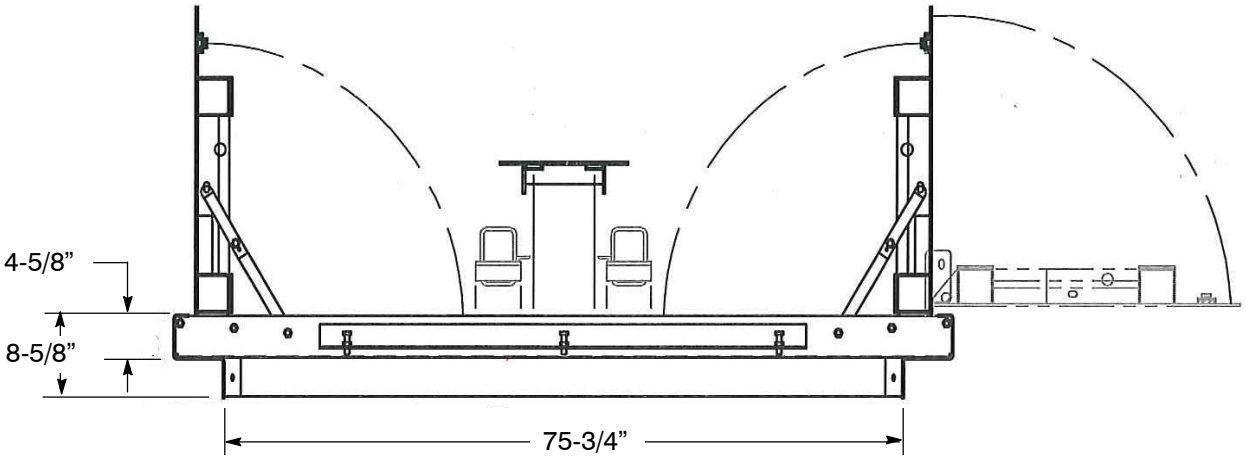


Side View (open)
Section I-I

Figure 10
4’ 0” x 6’ 6” Steel Quick-Release Cover Assembly – Full Traffic

4’ 0” x 6’ 6” (#6) Steel Quick-Release Cover Assembly – Full Traffic (continued)

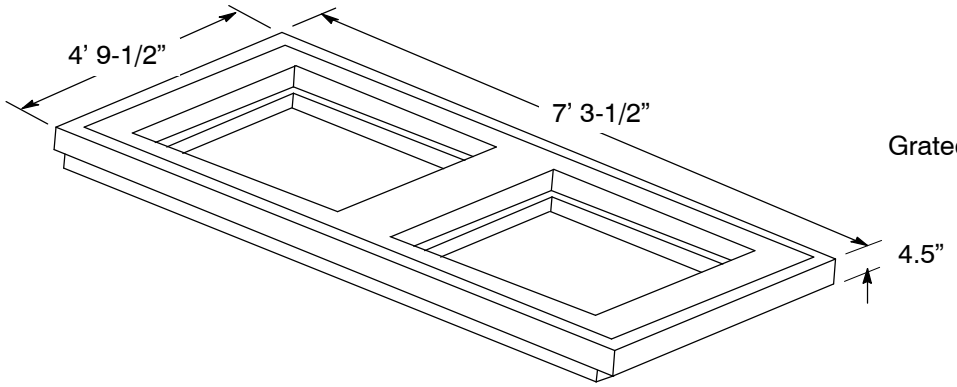




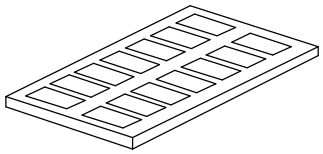
Side View (open)
Section K-K

Figure 11
4’ 0” x 6’ 6” Steel Quick-Release Cover Assembly – Full Traffic

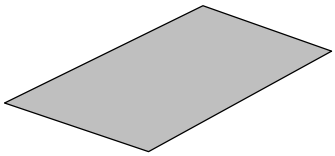
4’ 0” x 6’ 6” (#6) Heavy Full-Traffic Cover Assemblies



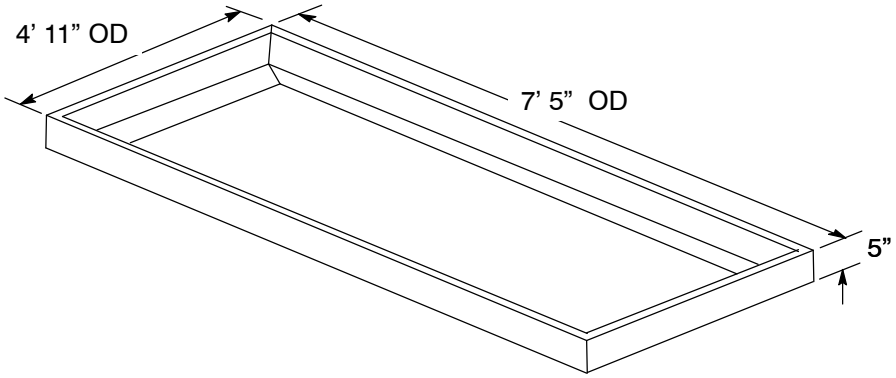
Heavy Full-Traffic Cover



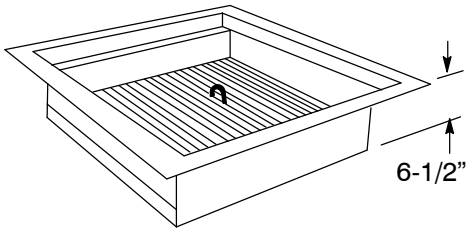
Grated Heavy Full-Traffic Cast Iron Insert



Solid Heavy Full-Traffic Cast Iron Insert



Heavy Full-Traffic Frame



Baffle

Figure 12
4’ 0” x 6’ 6” Heavy Full-Traffic Cover Assembly

Table 9 Component Parts

Description	Weight	Code
4’ 0” x 6’ 6”, HFVT Concrete Cover Without Inserts	3,835 lbs.	041926
4’ 0” x 6’ 6”, HFVT 5’ x 5’ x 1/2” Steel Frame With Adjustment Feature	339 lbs.	041927
Cast Iron Grate Inserts for Transformer Enclosures	120 lbs.	040346
Cast Iron Solid Inserts for Splice Equipment Enclosures	180 lbs.	040343
Baffle	25 lbs.	360036

Table 10 4’ 0” x 6’ 6” Cable Tail Lengths for Estimating [1]

4’ 0” x 6’ 6”	28’
Horizontal TX Enclosure (Sec. Entrance Side)	26’ Primary/ 7’ Secondary
Horizontal TX Enclosure (Opp. Sec. Entrance Side)	15’ Primary/ 15’ Secondary

[1] Cable tail length for 3’ 0” x 5” 0” and 4’ 6” x 8’ 6” enclosures are found on the Electric Design Manual under the Underground 10.10 Section, Table 10 – 4.

4’ 6” x 8’ 6” (#7) Complete Enclosure Assemblies

Notes

1. Swedge reducers are necessary with primary conduit smaller than 6 inches (see Document 062288).

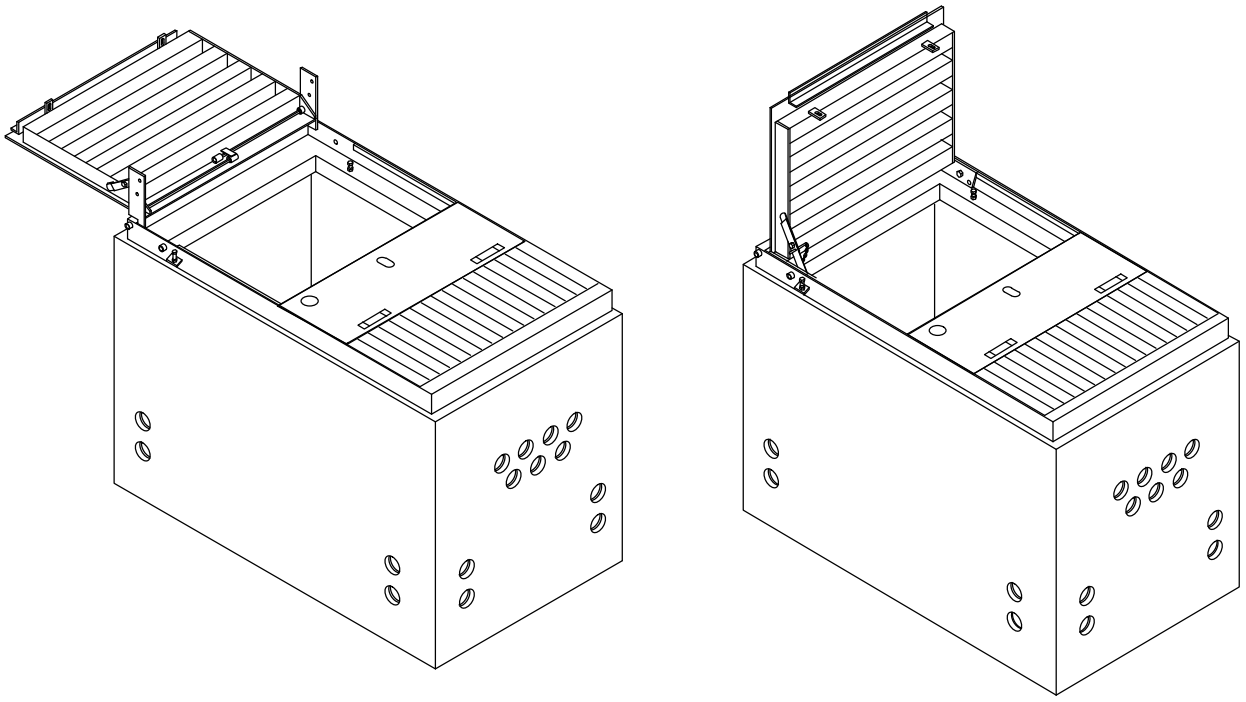


Figure 13
4’ 6” x 8’ 6” Enclosure Assembly
(not to scale)

Table 11 Complete Enclosure Assembly (for 600-amp distribution)

Application	Enclosure Size	Type of Traffic	Type of Cover	Code [1]
3∅ Duplex Transformer [2]	4’ 6” x 8’ 6” x 6’ 0”	Incidental	Quick-Release Aluminum	043371
	4’ 6” x 8’ 6” x 6’ 0”	Full-Traffic	Quick-Release Steel	041649
	4’ 6” x 8’ 6” x 7’ 0”	Heavy Full-Traffic	Concrete	041439
Equipment [3]	4’ 6” x 8’ 6” x 6’ 0”	Incidental	Quick-Release Aluminum	043411
	4’ 6” x 8’ 6” x 6’ 0”	Full-Traffic	Quick-Release Steel	041666
	4’ 6” x 8’ 6” x 7’ 0”	Heavy Full-Traffic	Concrete	041441
UCD Transformer [4]	4’ 6” x 8’ 6” x 7’ 6”	Incidental	Quick-Release Aluminum	040325
	4’ 6” x 8’ 6” x 7’ 6”	Full-Traffic	Quick-Release Steel	041662
	4’ 6” x 8’ 6” x 8’ 6”	Heavy Full-Traffic	Concrete	040324

1 Code includes body, extension (as appropriate), frame, and cover assembly. When extra depth is required, order additional extension from Table 12 on Page 19.
2 See Document 051776.
3 600-amp non-lead splices, 600-amp switches, 600-amp separable connectors.
4 112.5 through 500 kVA UCD transformers with 4-hole secondary spades will fit into existing 4’ 6” x 8’ 6” x 6’ 0” enclosures.

4’ 6” x 8’ 6” (#7) Enclosure and Extensions

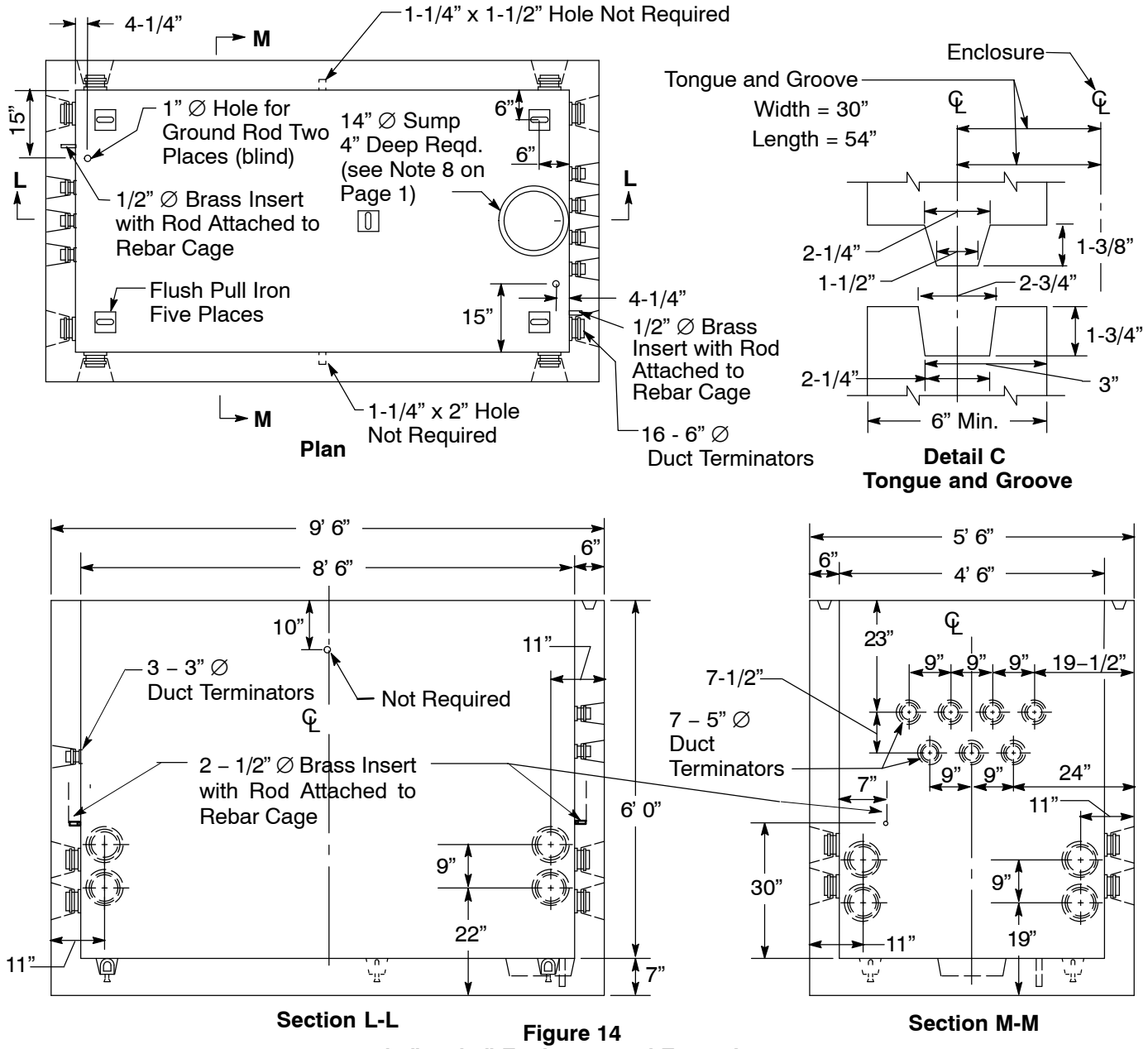


Figure 14
4’ 6” x 8’ 6” Enclosure and Extensions

Table 12 Parts for Enclosure and Extensions (Figure 14)

Item	Description	Code	Weight - Approximate (lbs.)
1	Body, 72” Depth [1]	043376	17,520 MAX
2	Extension, 6” Depth [2]	041094	1,070
3	Extension, 12” Depth [2]	043415	2,140
4	Extension, 18” Depth [2]	043377	3,210

1 Do not break out sump.
2 Joints must be interchangeable with those shown in Detail C on Page 19 and approved by PG&E electric distribution personnel.

4’ 6” x 8’ 6” (#7) Aluminum Quick-Release Cover Assembly - Incidental Traffic

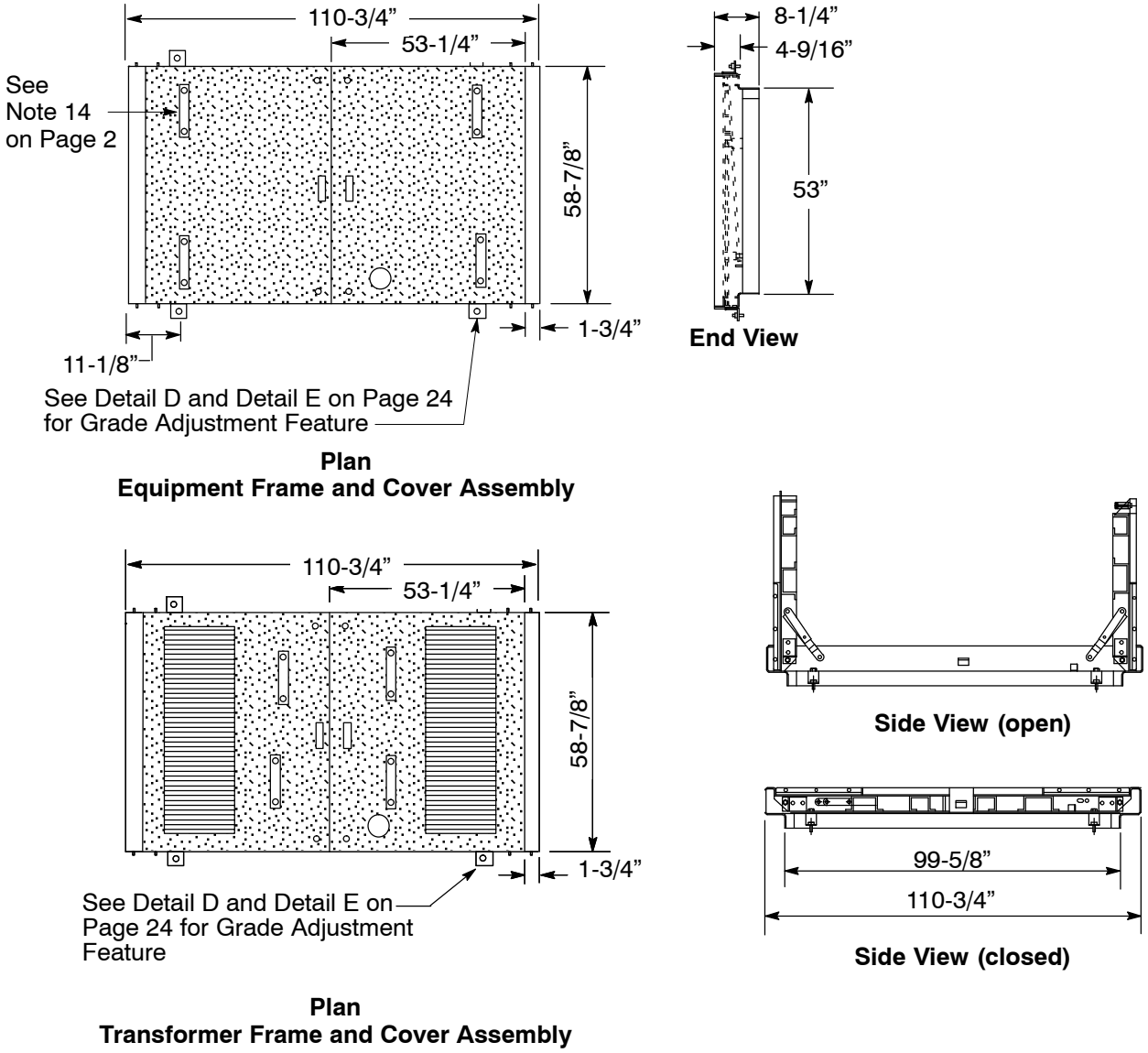


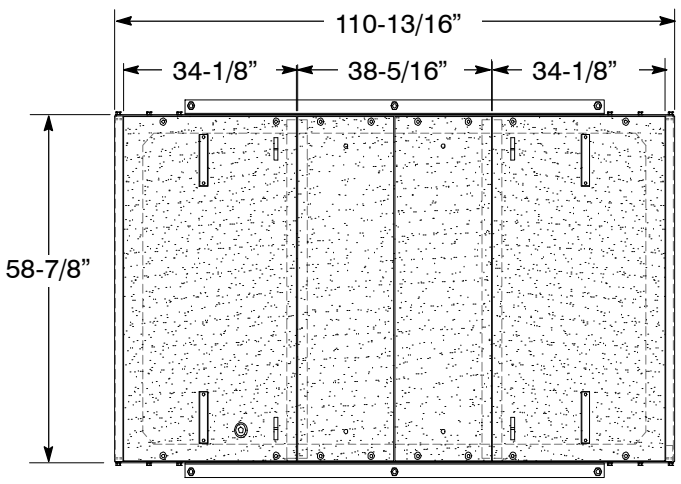
Figure 15
4’ 6” x 8’ 6” Quick-Release Cover Assembly - Incidental Traffic

Table 13 Complete Frame and Cover Assembly

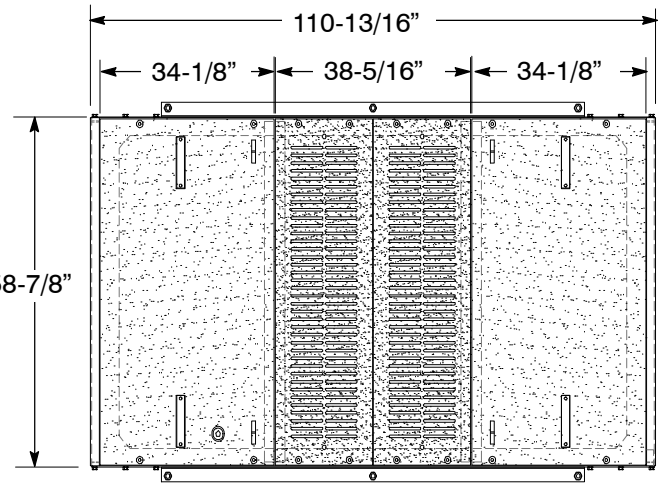
Type of Enclosure	Type of Traffic	Type of cover	Code
Transformer	Incidental	Quick-Release Aluminum	031830
	Full-Traffic[1]	Quick-Release Steel	041055
	Heavy Full-Traffic	Concrete	041442
Equipment	Incidental	Quick-Release Aluminum	040642
	Full-Traffic[1]	Quick-Release Steel	041054
	Heavy Full-Traffic	Concrete	041443

[1] For application guide, see Note 23 on Page 3.

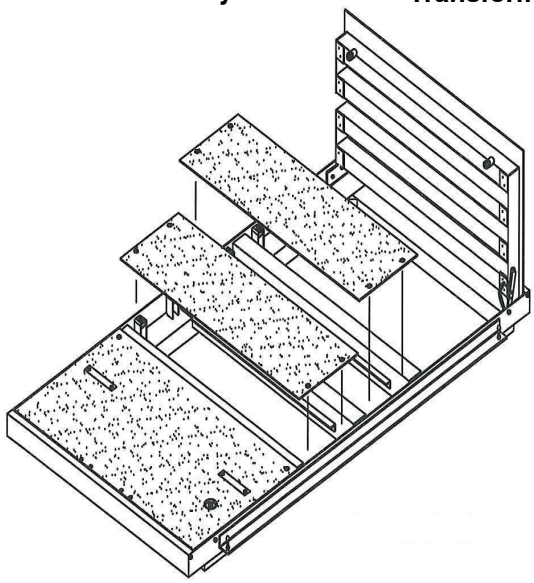
4’ 6” x 8’ 6”(#7) Steel Quick-Release Cover Assembly– Full Traffic



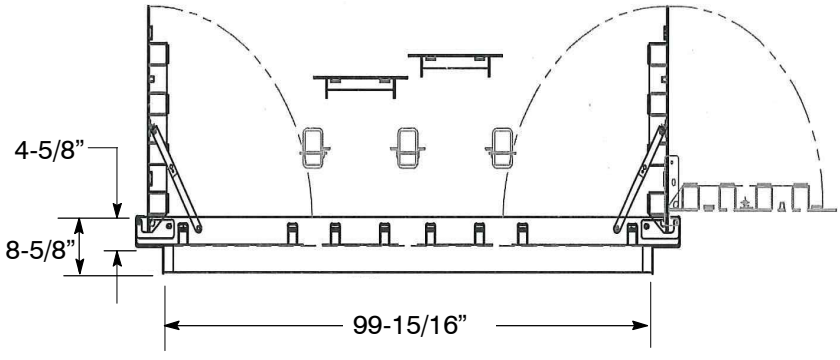
Plan
Equipment Frame and Cover Assembly



Plan
Transformer Frame and Cover Assembly



Isometric View



Side View

Figure 16
4’ 6” x 8’ 6” Steel Quick-Release Cover Assembly – Full Traffic

4’ 6” x 8’ 6” (#7) Heavy Full-Traffic Cover Assemblies

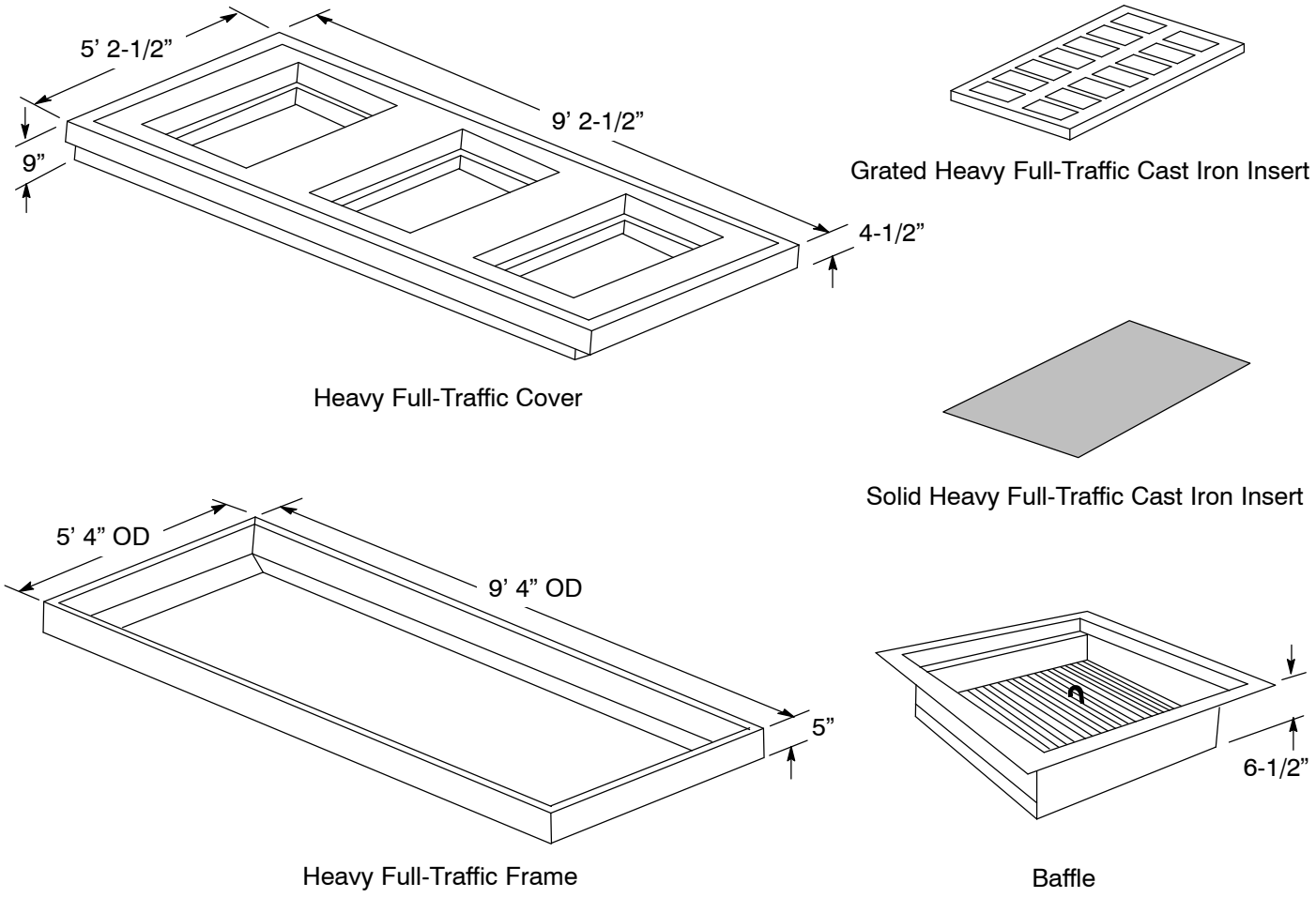
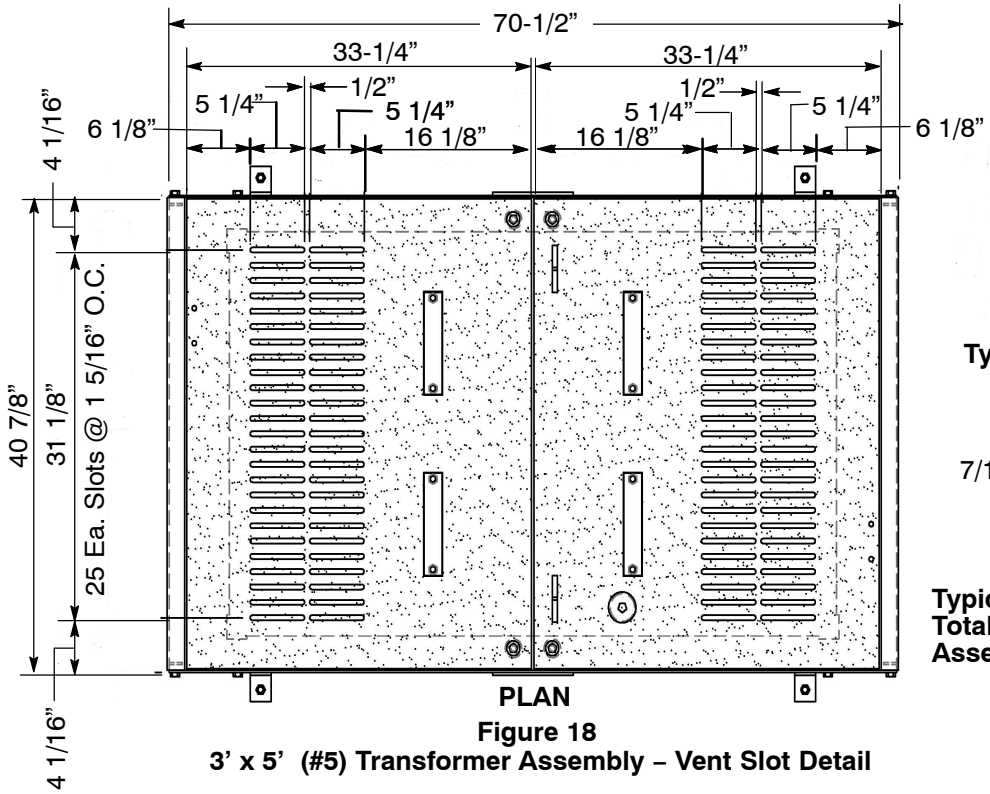


Figure 17
4’ 6” x 8’ 6” Heavy Full-Traffic Cover Assembly

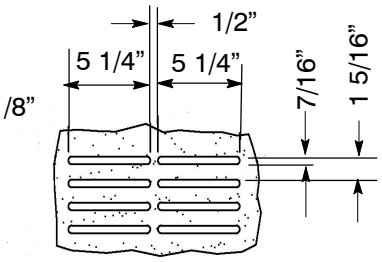
Table 14 Component Parts

Description	Weight	Code
4’ 6” x 8’ 6”, HFVT Concrete Cover Without Inserts	3,840 lbs.	040340
4’ 6” x 8’ 6”, HFVT 5’ x 5’ x 1/2” Steel Frame With Adjustment Feature	450 lbs.	040341
Cast Iron Grate Inserts for Transformer Enclosures	120 lbs.	040346
Cast Iron Solid Inserts for Splice Equipment Enclosures	180 lbs.	040343
Baffle	25 lbs.	360036

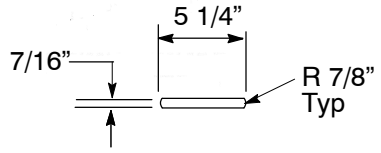
Transformer Laser/Plasma Cut Cover Assembly (Incidental Traffic Shown)



PLAN

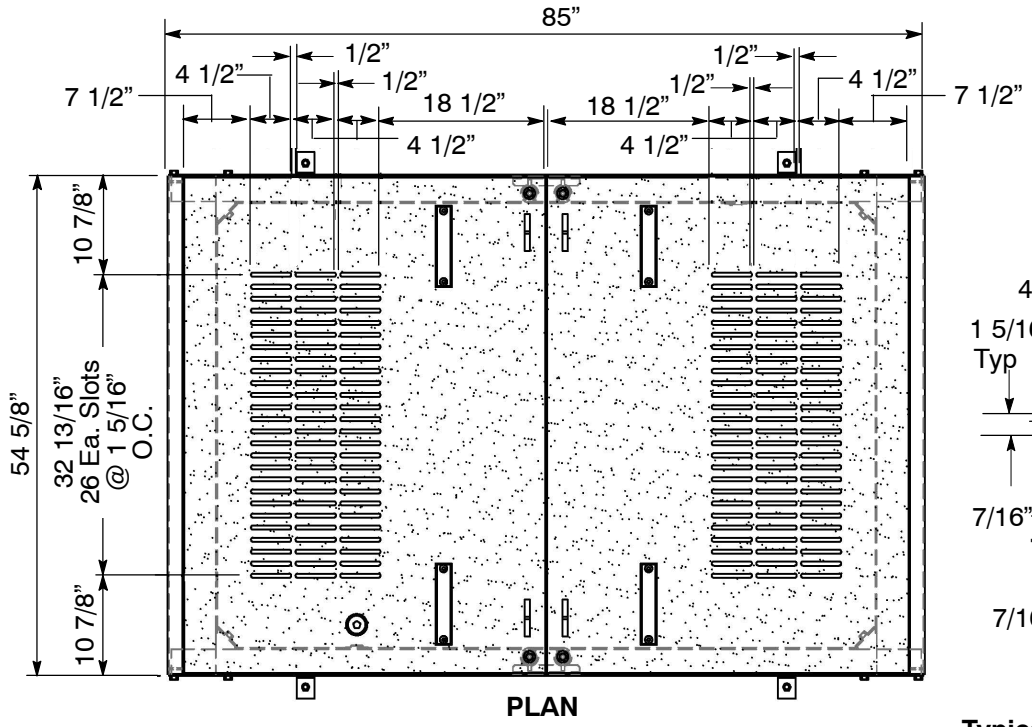


Typical Vent Slot Spacing

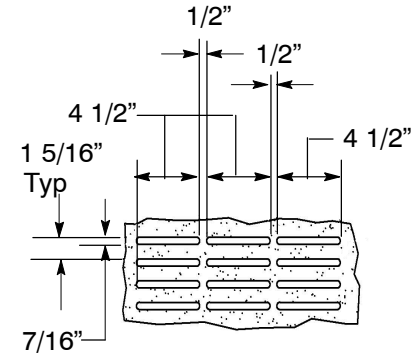


Typical Vent Slot Area = 2.26 in ^{2}
Total Minimum Open Area per Assembly = 225.6 in ^{2}

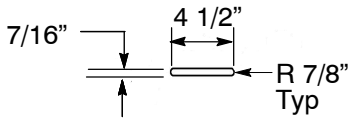
Figure 18
3’ x 5’ (#5) Transformer Assembly – Vent Slot Detail



PLAN



Typical Vent Slot Spacing

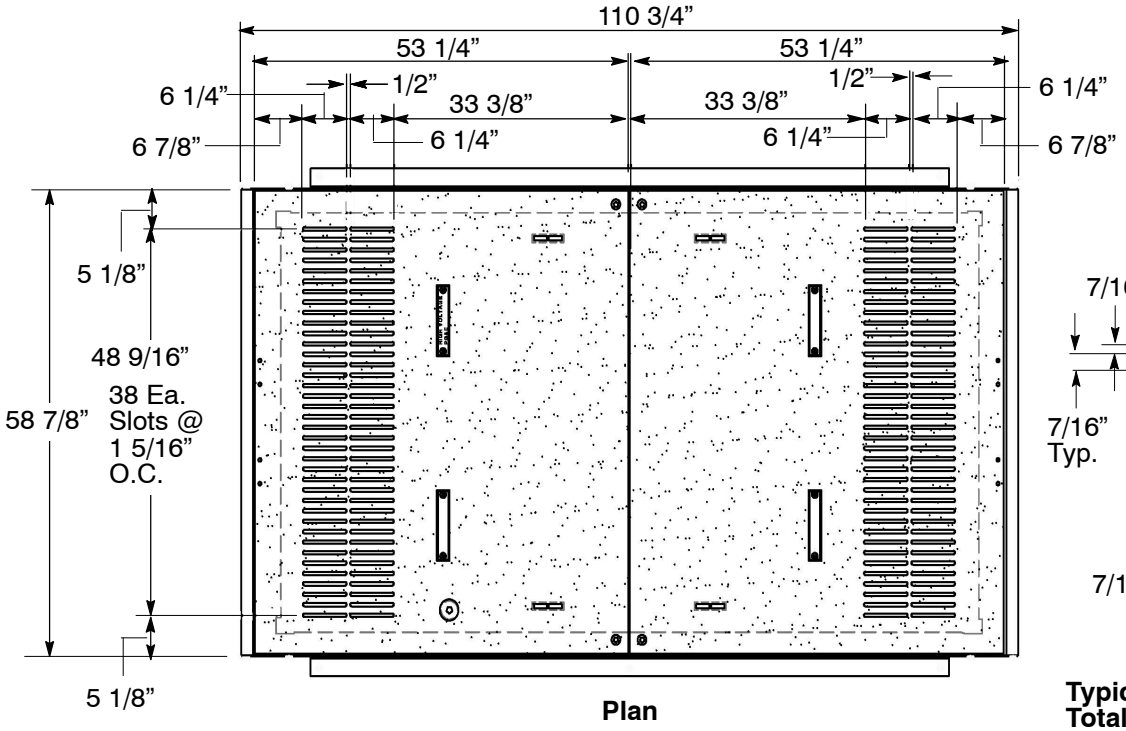


Typical Vent Slot Area = 1.93 in ^{2}
Total Minimum Open Area per Assembly = 300.7 in ^{2}

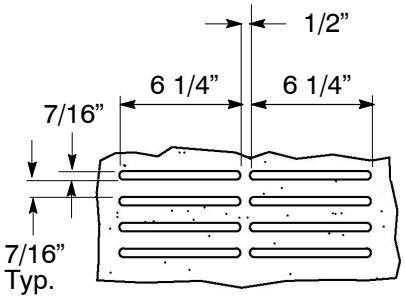
Figure 19
4’ 0” x 6’ 6” (#6) Transformer Assembly – Vent Slot Detail

Note:
Although the 4’ 0” x 6’ 6” (#6) cover has slightly different dimensions than the cover shown on Figure 9 on Page 14, this cover fits on the #6 body enclosure just as well as the cover shown on Figure 9 on Page 14.

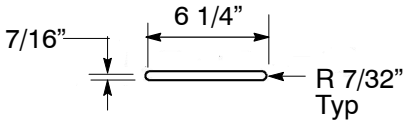
Transformer Laser/Plasma Cut Cover Assembly (continued)



Plan



Typical Vent Slot Spacing



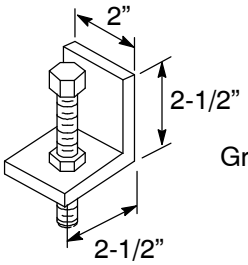
Typical Vent Slot Area = 2.70 in ^{2}
Total Minimum Open Area per Assembly = 409.4 in ^{2}

Figure 20
4' 6" x 8' 6" (#7) Transformer Assembly – Vent Slot Detail

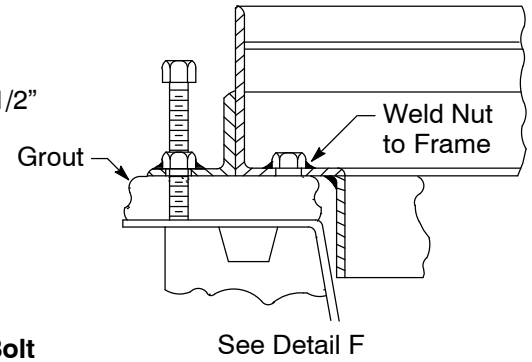
Notes

1. Laser/plasma cut transformer quick-release cover assembly is an approved design for incidental and full-traffic cover assemblies.
2. Material codes for ordering laser/plasma cut cover assemblies are the same as the fiberglass grate insert cover assemblies. Therefore, either type of transformer quick-release cover assembly will be shipped.
3. Design complies with the Americans with Disabilities Act (ADA) Section 30.2.

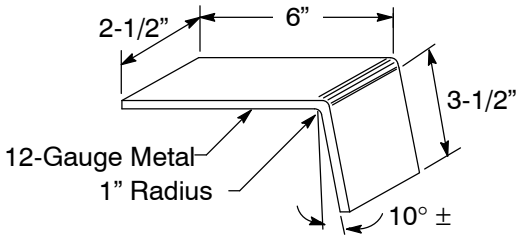
Details for Frame Assemblies



Detail D
Grade Adjusting Bolt



Detail E
Grade Adjusting Feature



Detail F
Adjustment Bolt Support Bracket
Use M041601 Code to Order

Cement Grouting Instructions for All Enclosure Frame

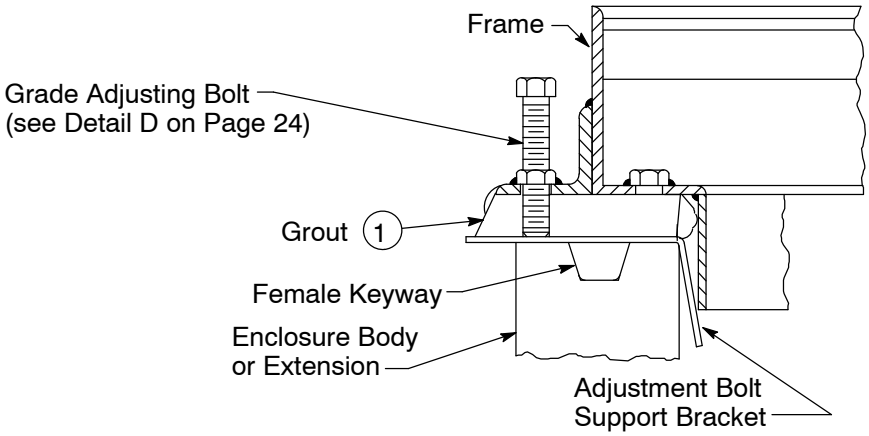


Figure 21
Grouting Incidental Enclosure Frame

Table 15 Grouting Material (structural - Figure 21)

Item	Quantity	Description	Code
1 [1]	Sack - 55 lbs.	Grout, Zero Shrink, High-Early Strength	121016

[1] One sack of grout is required for approximately each 1/2" of space between the enclosure and the frame on a 4' 6" x 8' 6" enclosure.

Instructions

1. Thoroughly clean all surfaces of the enclosure that the grout will contact. Use clean water to remove dust from surfaces.
2. Remove sufficient soil from around the enclosure to preclude accidentally mixing dirt with the grout. Install the enclosure frame and adjust it to grade.
3. Saturate all grout-contact surfaces of the enclosure with water for as long as possible before grouting using wet rags laid in and around the keyway. The recommended minimum saturation time is **24 hours**. Re-saturate the keyways with water before leaving the job. Remove excess water from the female keyway just prior to grouting.
4. Mix grout in a wheelbarrow with **clean** water. Do not mix more grout than can be easily used within 15 minutes. The consistency of the grout should allow it to flow under pressure.
5. Install the grout directly from a shovel onto the enclosure using hands with gloves. After an adequate amount of grout has been applied, use a trowel to apply additional pressure to the grout so that all voids are filled and the grout is completely consolidated. This is necessary to ensure a full bearing surface for the frame.
6. After wiping off any excess grout and making sure that all voids are filled with grout, cover the grout surface with water-saturated rags. While on the job, moisten the rags often. Re-saturate the rags with water before leaving the job. The water-saturated rags are required to cure the grout properly.
7. Keep wet rags on and traffic off the enclosure for **24 hours** to allow the grout to set up properly.
8. Do not backfill and tamp around the enclosure until the set-up period has concluded.
9. Remove the rags before backfilling around the enclosure.
10. Repair any damaged grout by repeating the above procedure.
11. Ready-mix concrete (5-sack mix) is an acceptable alternate.

Primary Electric Underground Enclosures

Revision Notes

Revision 26 has the following changes:

1. Update Note 5D on Page 1 about the specifications of using crushed rock only, and 3/4” minimum size.
2. Revise Note 8 rock description as base rock.
3. Update Note 24 to clarify “opened grate” is not allowed for HFVT enclosures entry per OSHA work safety requirements.
4. Update Note 27 reference to Note 10 to 12 of Document 066205.
5. Clarify Table 1 – 200–Amp Cable, non–lead splice applications requiring 4’x6’6”x5’ enclosure for new construction, and keep footnote 5 for allowing 3’x5’ enclosure under the described conditions.
6. Update Table 1 to add 600–Amp Cable, non–lead splice applications for 4’6” x 8’6” enclosure requirements.
7. Update Table 1 to provide Excavation Size for 600-Amp Sectionalizing Switch at Heavy Full-Traffic application.
8. Update Table 7, Item 1 weight.
9. Move Notes 1 and 2 to Table 12 footnotes on Page 19.
10. Add Figure 18 on Page 23 to include transformer cover ventilation requirement for 3’x5’ (#5) enclosure.
11. Clarify Laser Cut to Laser/Plasma Cut on Pages 23 and 24.
12. Update detail letter sequencing.