I. GENERAL

1.1 The pull box for the switchgear shall be designed, detailed, and fabricated in accordance with the requirements of this specification and the following drawings:

- Light-duty pull box.
- Heavy-duty pull box.
- Pull box details.

1.2 The pull box shall be of (light-duty or heavy-duty) construction and shall be sized to accommodate (15.5-kV, 29-kV, or 38-kV) switchgear with (two, three, four, five, or six) ways.

1.3 The pull box cover shall have opening sections above the switchgear to allow operation of the gear from grade level. The entire cover shall be removable for installation and removal of the switchgear, and installation and repair of the cables. A ladder and platforms (optional) shall be provided to facilitate installation, removal, and repair operations.

II. PULL BOX TYPES

2.1 Light-duty pull boxes are intended for yard applications where they will not be subjected to vehicular traffic on the covers. These pull boxes are only required to resist foot traffic on the covers, lateral earth pressures due to the surrounding soil, and nominal surcharge loads (due to pick-up trucks) applied to the area surrounding the pull box.

2.2 Heavy-duty pull boxes are intended for sidewalk or road applications where they could be subjected to truck traffic. These pull boxes are required to resist truck traffic on the covers, lateral earth pressures due to the surrounding soil, and large surcharge loads (due to semitrailer trucks) applied to the area surrounding the pull box.

III. DESIGN CRITERIA

3.1 Light-duty pull boxes and covers shall be designed in accordance with the requirements of ASTM C 857 Load Designation A-0.3.

3.2 Heavy-duty pull boxes and covers shall be designed in accordance with the requirements of ASTM C 857 Load Designation A-16.

3.3 Tolerances

(a) Pull boxes shall be designed and constructed so that the inside dimensions, as shown on the drawings, are maintained under the specified loading conditions.

(b) Wall embedments shall be located within ¼ inch of the position shown on the drawings.

IV. PULL BOX COVER

4.1 Light-duty cover

(a) The pull box cover shall include hinged sections for access to the operating mechanisms of the switchgear. These sections shall be manually operable by average operating personnel.

(b) Hinged cover sections shall include locking devices to prevent access by unauthorized persons.

(c) The entire pull box cover shall be removable by several operating personnel or by machine.

4.2 Heavy-duty cover

(a) The pull box cover shall include hinged or manually removable sections for access to the operating mechanisms of the switchgear. These sections shall be manually operable by average operating personnel using common hand tools.

(b) Hinged or removable cover sections shall include locking devices to prevent access by unauthorized persons.

(c) The entire pull box cover shall be removable by machine.

V. DETAILS

5.1 Embedded sleeves shall be provided for cable entry and exit as shown on the drawings.

5.2 Pulling-in irons shall be provided in the pull box walls as shown on the drawings. The maximum tensile load applied at any one time to one iron shall be 5,000 lbs. Pulling-in irons shall be McGraw-Edison, Cat. No. DU2T3, ⅞-inch diameter with hot-dipped galvanized finish, or equivalent.

5.3 Embedments shall be provided for support of the switchgear, ladder, platforms (optional), and cable-support angle (optional), as shown on the drawings.

VI. MATERIALS

6.1 Pull boxes shall be constructed from noncorrosive materials such as fiberglass, plastic, or reinforced concrete.

6.2 Pull box covers shall have irregular or rough surfaces to increase traction and shall be constructed from concrete, fiberglass, plastic, aluminum, or galvanized steel.

6.3 Embedments for support of the switchgear, ladder, platforms (optional), and cable-support angle (optional), shall be galvanized steel or a noncorrosive material such as fiberglass or plastic.

VII. OPTIONS

7.1 Light-duty pull boxes shall be provided with a (solid or open) base.

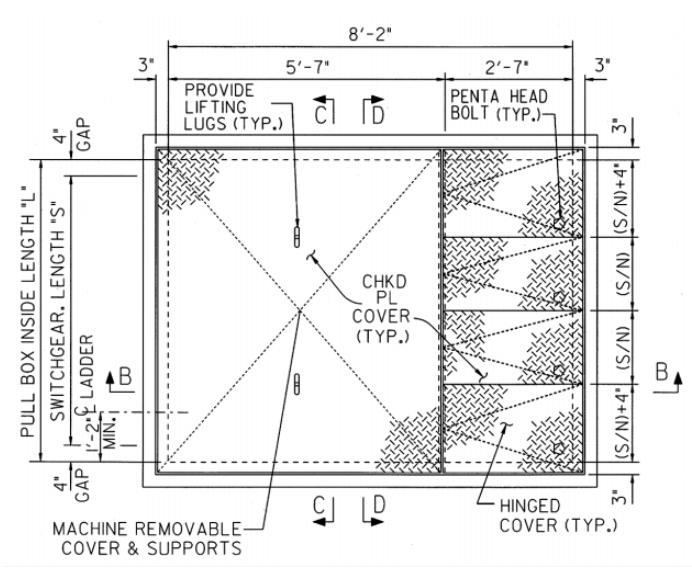
VIII. DRAINAGE

8.1 All pull boxes shall have drainage for prompt removal of rain or floodwaters that might submerge the switchgear. Solid-base pull boxes shall be connected to a storm sewer, dry well, or other drainage system. Open-base pull boxes may be drained into porous soil.

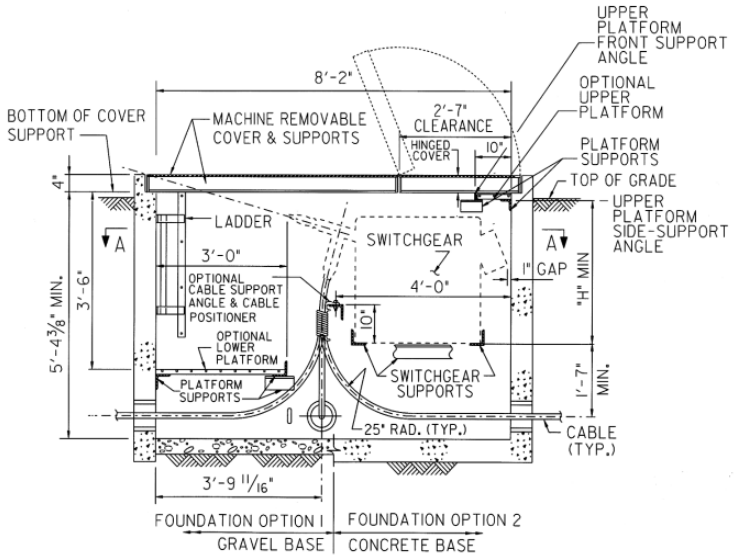
IX. CABLE TRAINING AND SUPPORT

9.1 Cable shall be routed to the switchgear in such a manner as to minimize forces on the bushings from cable expansion or movement. A minimum of a 90° bend shall be provided in the cable as shown on the drawings to mitigate the effects of cable expansion.

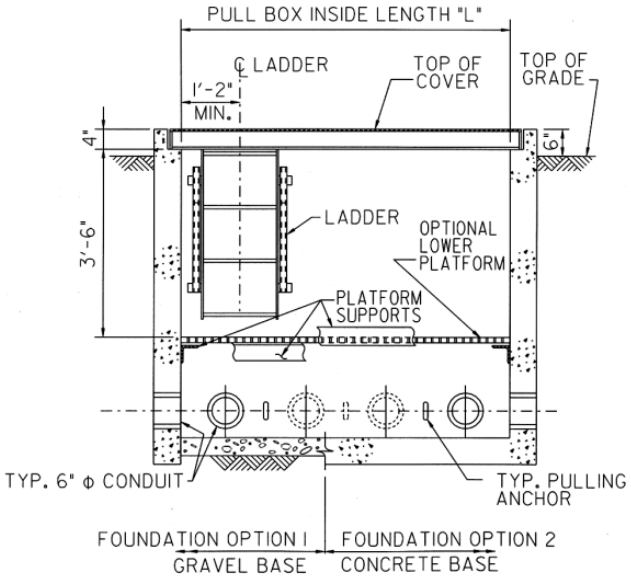
Light-Duty Pull Box



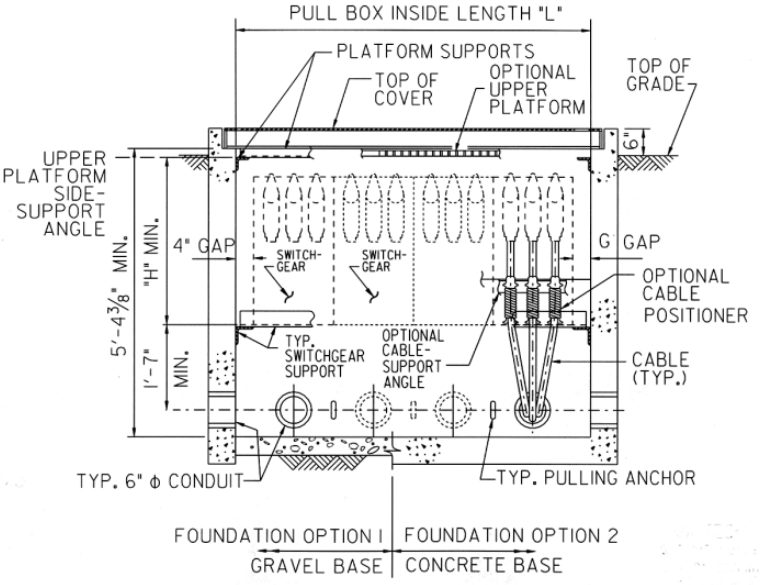
PLAN



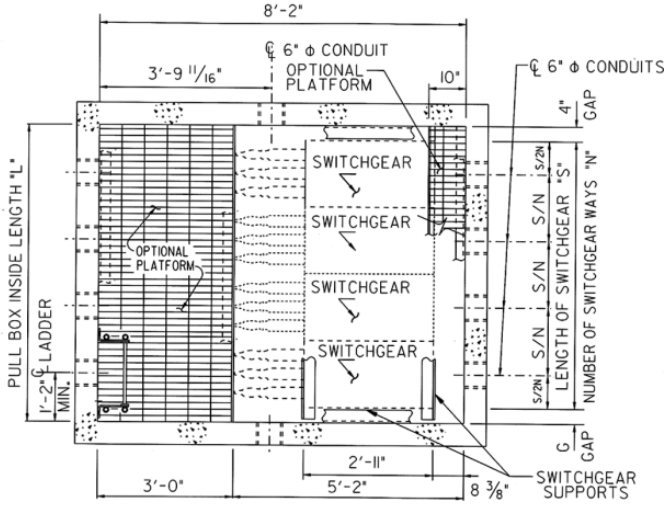
SECTION B-B



SECTION C-C



SECTION D-D



SECTION A-A

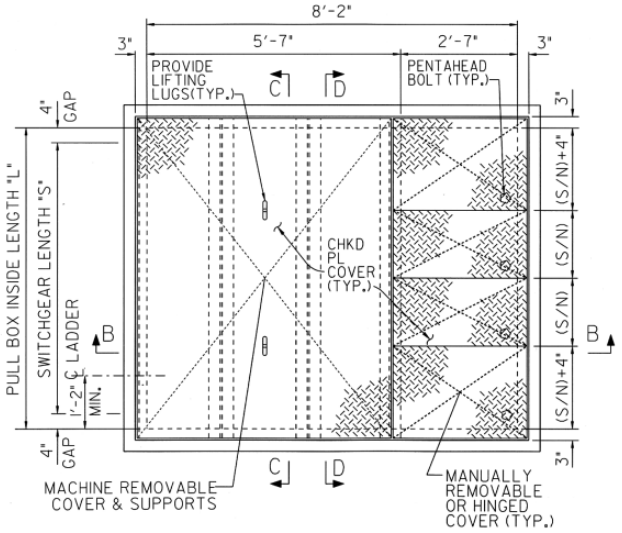
Pull Box Schedule

Switchgear				"L"		"H"		"G"	
kV, Max	No. of Ways, "N"	Weight, Lbs.	Length, "S"	Manual Switchgear	Power-Operated Switchgear	Manual Switchgear	Power-Operated Switchgear	Manual Switchgear	Power-Operated Switchgear
15.5 kV and 29 kV	2	550	2′-10″	3′-6″	5′-2″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	3	825	4′-1″	4′-9″	6′-5″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	4	1100	5′-6″	6′-2″	7′-10″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	5	1375	6′-9″	7′-5″	9′-1″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	6	1650	8′-0″	8′-8″	10′-4″	2′-9⅜″	3′-1⅜″	4″	2′-0″
38 kV	2	800	3′-3″	3′-11″	5′-7″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	3	1075	4′-8″	5′-4″	7′-0″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	4	1350	6′-2″	6′-10″	8′-6″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	5	1625	7′-7″	8′-3″	9′-11″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	6	1900	9′-0″	9′-8″	11′-4″	2′-9⅜″	3′-1⅜″	4″	2′-0″

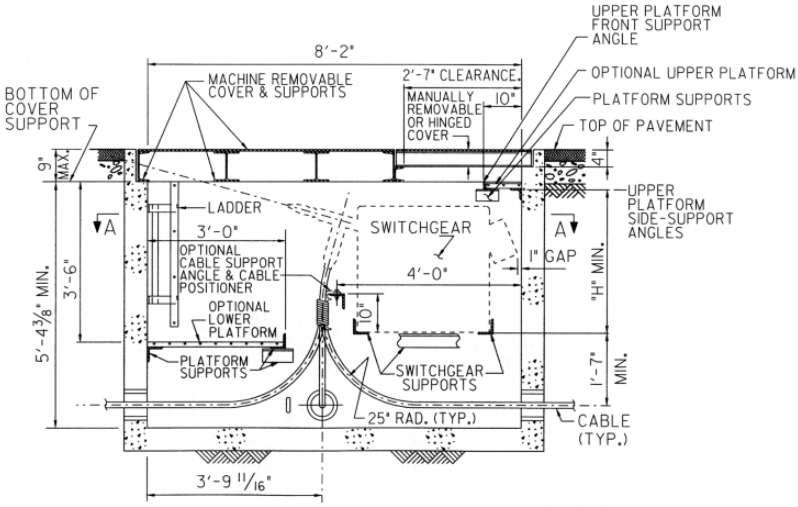
NOTES:

1. Light-duty pull boxes are intended for yard locations where they will not be subjected to vehicular traffic on the covers.
2. Light-duty pull boxes and covers shall be designed in accordance with the requirements of ASTM C 857 Load Designation A-0.3.
3. For details, see pages 8 through 12.
4. Motor operators require 4 inches additional space above switchgear.

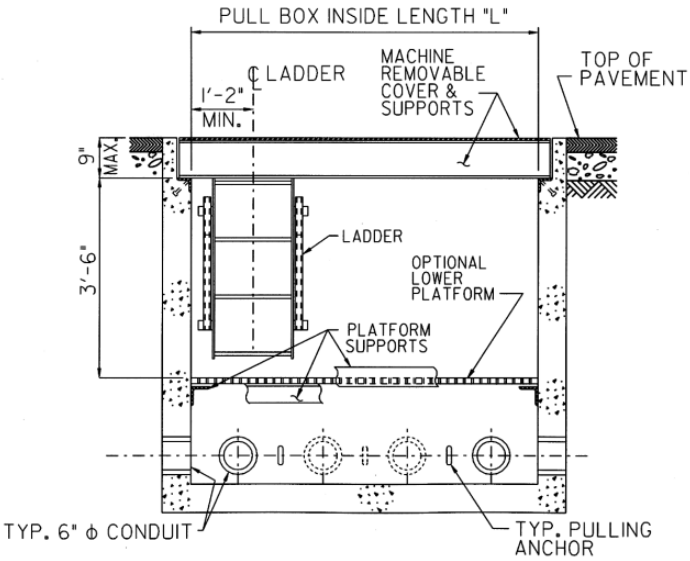
Heavy-Duty Pull Box



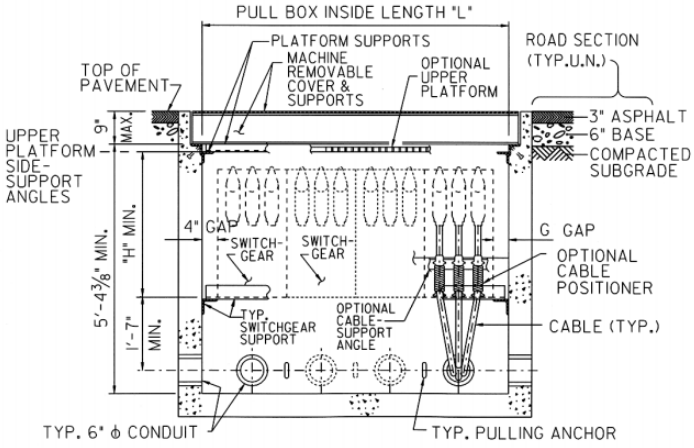
PLAN



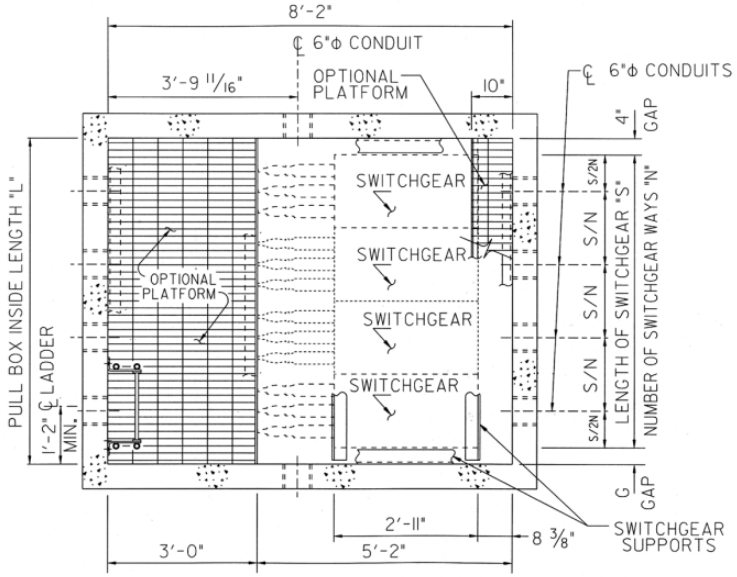
SECTION B-B



SECTION C-C



SECTION D-D



SECTION A-A

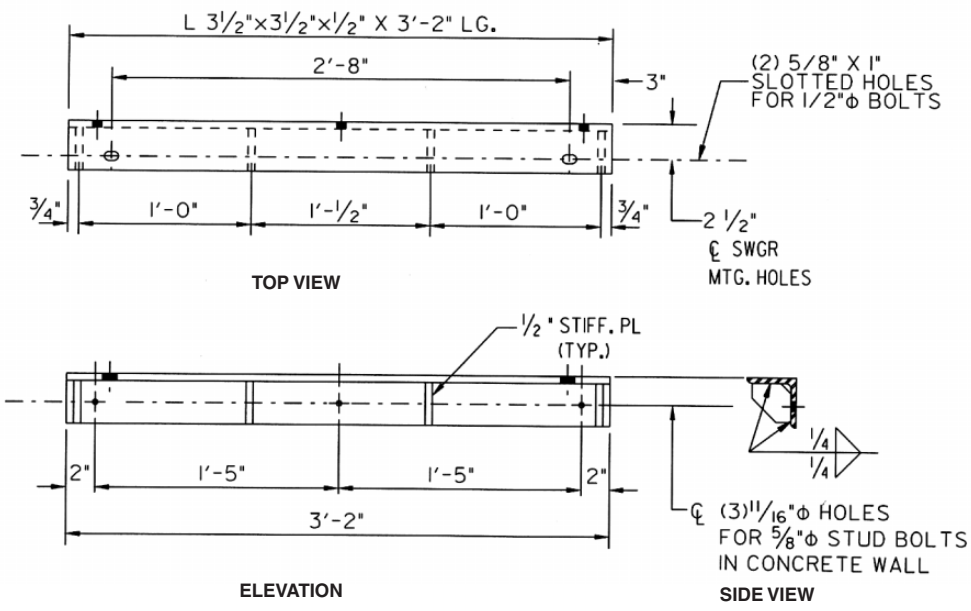
Pull Box Schedule

Switchgear				"L"		"H"		"G"	
kV, Max	No. of Ways, "N"	Weight, Lbs.	Length, "S"	Manual Switchgear	Power-Operated Switchgear	Manual Switchgear	Power-Operated Switchgear	Manual Switchgear	Power-Operated Switchgear
15.5 kV and 29 kV	2	550	2′-10″	3′-6″	5′-2″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	3	825	4′-1″	4′-9″	6′-5″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	4	1100	5′-6″	6′-2″	7′-10″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	5	1375	6′-9″	7′-5″	9′-1″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	6	1650	8′-0″	8′-8″	10′-4″	2′-9⅜″	3′-1⅜″	4″	2′-0″
38 kV	2	800	3′-3″	3′-11″	5′-7″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	3	1075	4′-8″	5′-4″	7′-0″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	4	1350	6′-2″	6′-10″	8′-6″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	5	1625	7′-7″	8′-3″	9′-11″	2′-9⅜″	3′-1⅜″	4″	2′-0″
	6	1900	9′-0″	9′-8″	11′-4″	2′-9⅜″	3′-1⅜″	4″	2′-0″

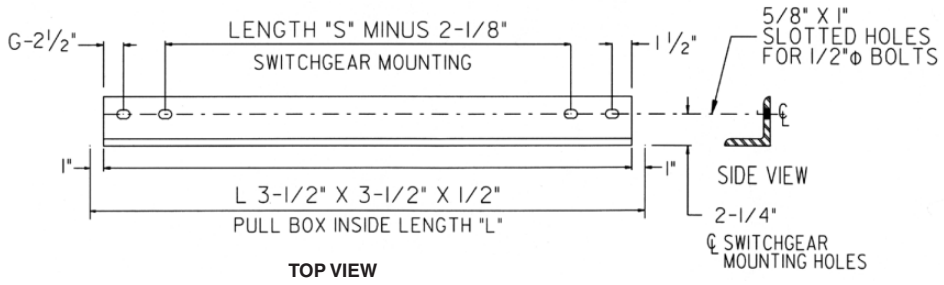
NOTES:

1. Heavy-duty pull boxes are intended for use in sidewalk or roadway locations where they could be subjected to large truck traffic.
2. Heavy-duty pull boxes and covers shall be designed in accordance with the requirements of ASTM C 857 Load Designation A-16.
3. For details, see pages 8 through 12.
4. Motor operators require 4 inches additional space above switchgear.

Pull Box Details

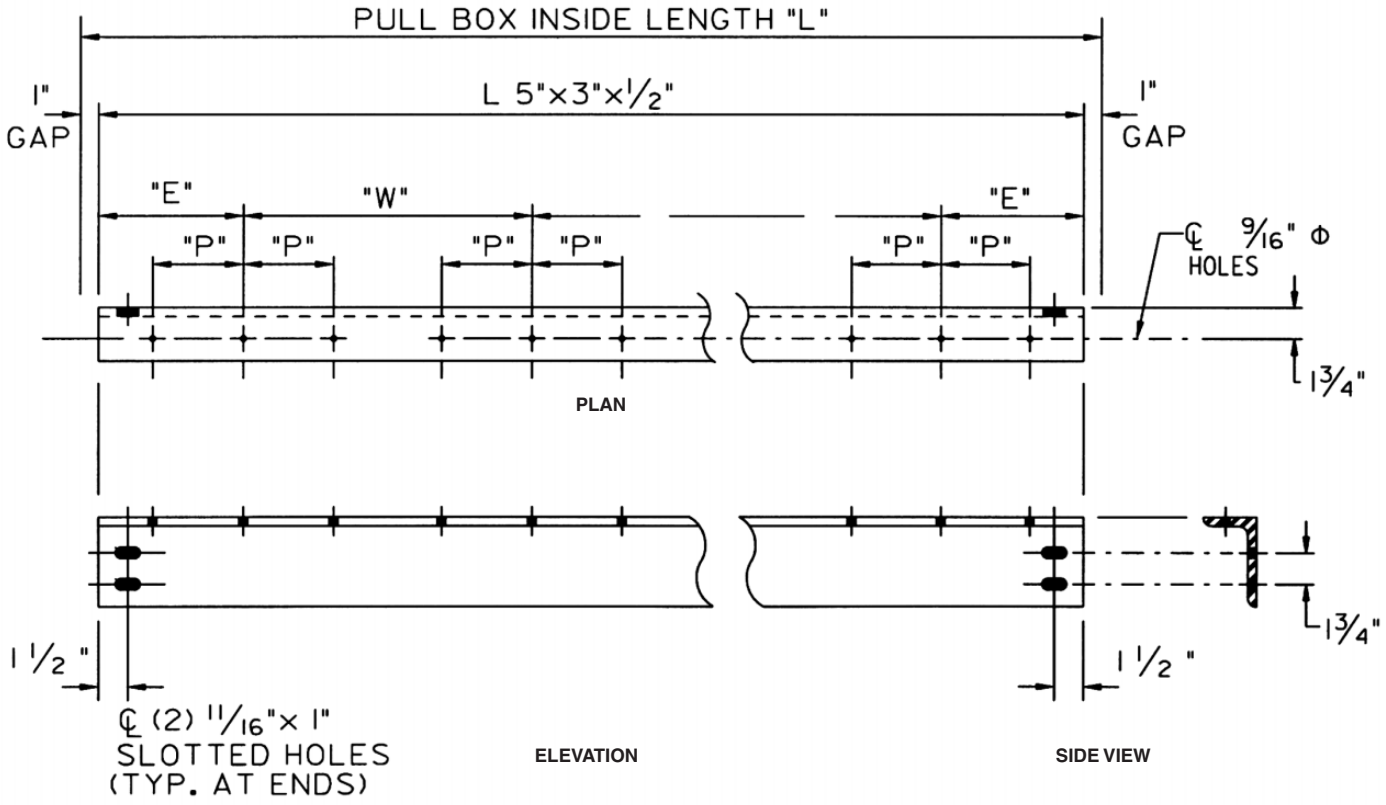


SWITCHGEAR SIDE-SUPPORT ANGLE
(2 REQUIRED/PULL BOX)

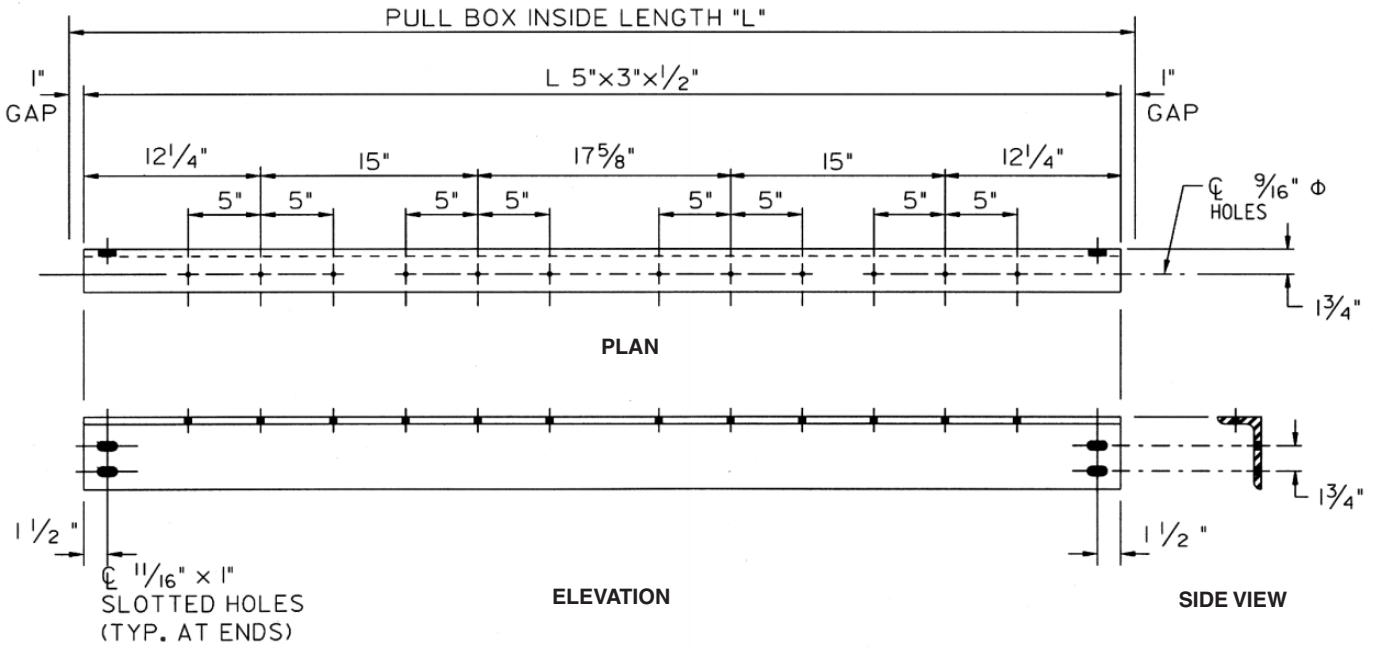


SWITCHGEAR FRONT- AND BACK-SUPPORT ANGLES
(2 REQUIRED/PULL BOX)

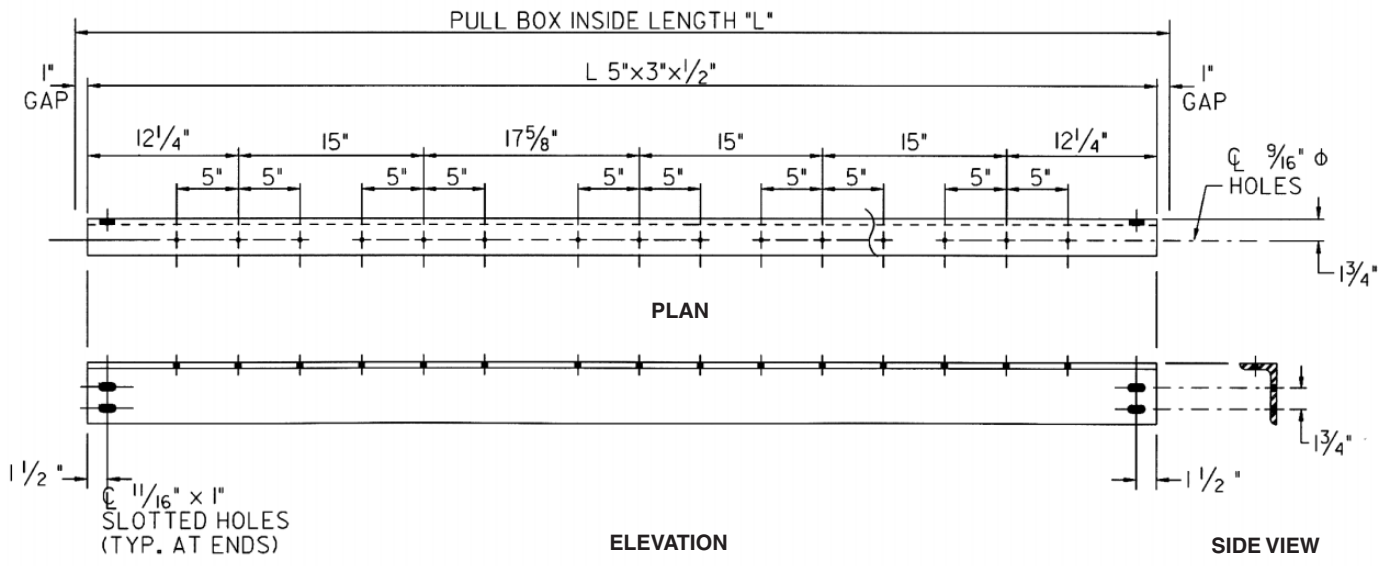
kV. MAX.	"P"	"E"	"W" PER WAY
15.5kV.	5"	12½"	15"
29kV.	5"	12½"	15"
38kV.	5 ¾"	13⅞"	17¼"



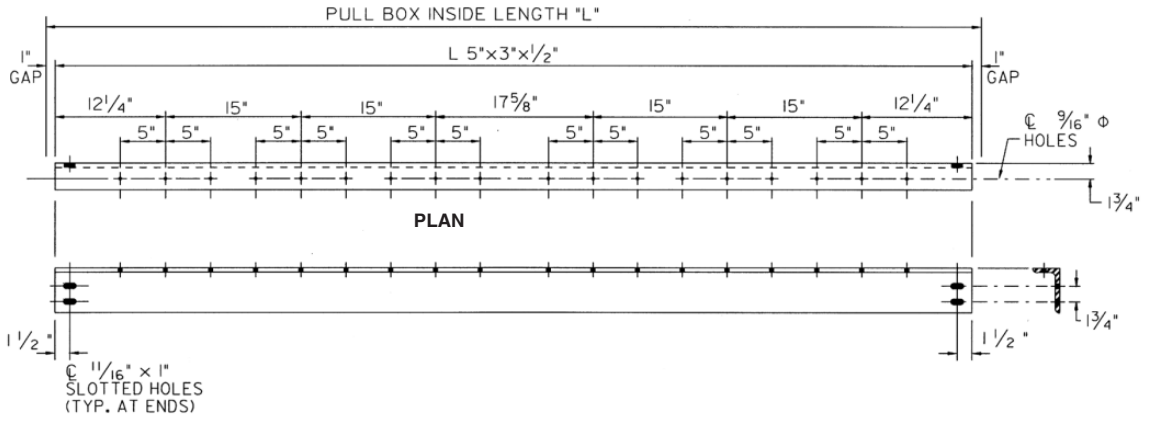
OPTIONAL CABLE-SUPPORT ANGLE
TWO-, THREE-WAY 15.5 AND 29 KV & TWO-, THREE-, FOUR-, FIVE-, AND SIX-WAY 38 KV
(1 REQUIRED/PULL BOX)



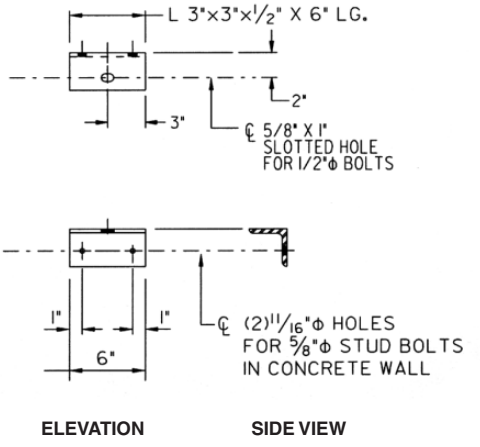
OPTIONAL CABLE-SUPPORT ANGLE
FOUR-WAY—15.5 AND 29 KV MAX
(1 REQUIRED/PULL BOX)



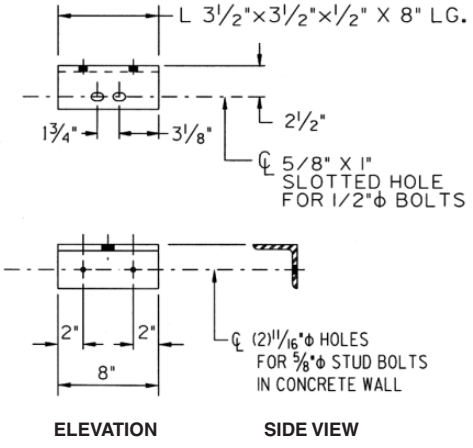
OPTIONAL CABLE-SUPPORT ANGLE
FIVE-WAY—15.5 AND 29 KV MAX
(1 REQUIRED/PULL BOX)



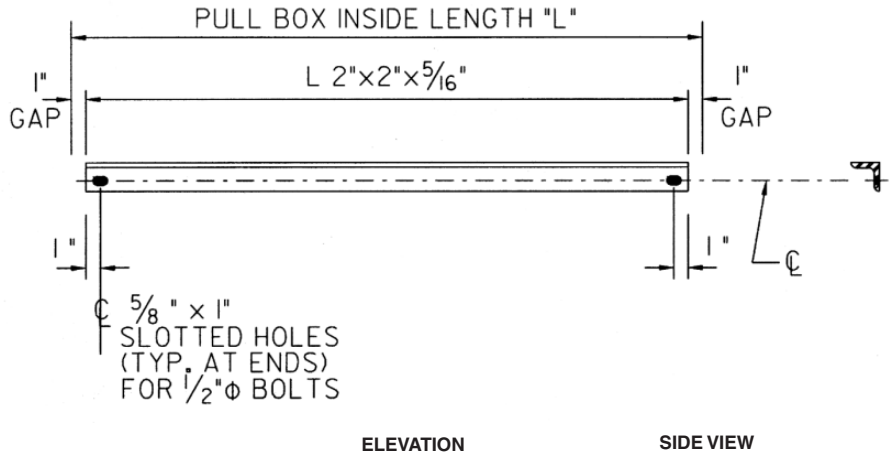
OPTIONAL CABLE SUPPORT ANGLE
SIX-WAY —15.5 AND 29 KV MAX
(1 REQUIRED/PULL BOX)



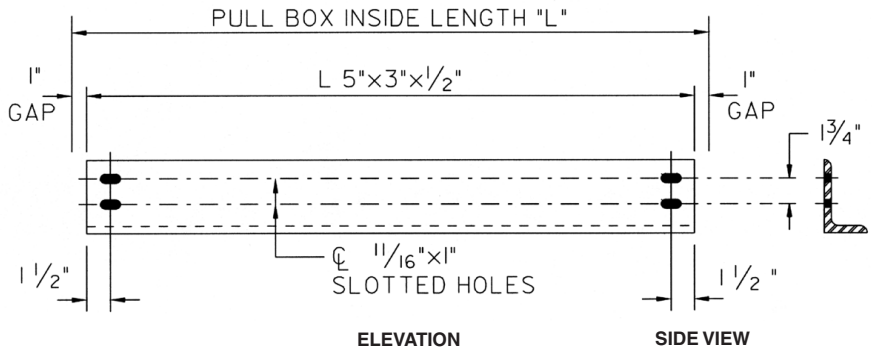
UPPER PLATFORM SIDE-SUPPORT ANGLE
(2 REQUIRED/PULL BOX)



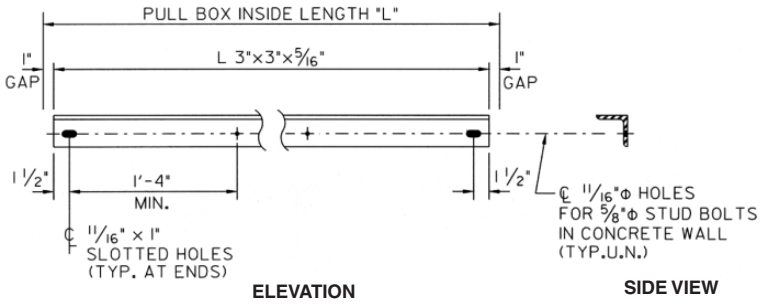
LOWER PLATFORM SIDE-SUPPORT ANGLE
(2 REQUIRED/PULL BOX)



UPPER PLATFORM FRONT-SUPPORT ANGLE
(1 REQUIRED/PULL BOX)

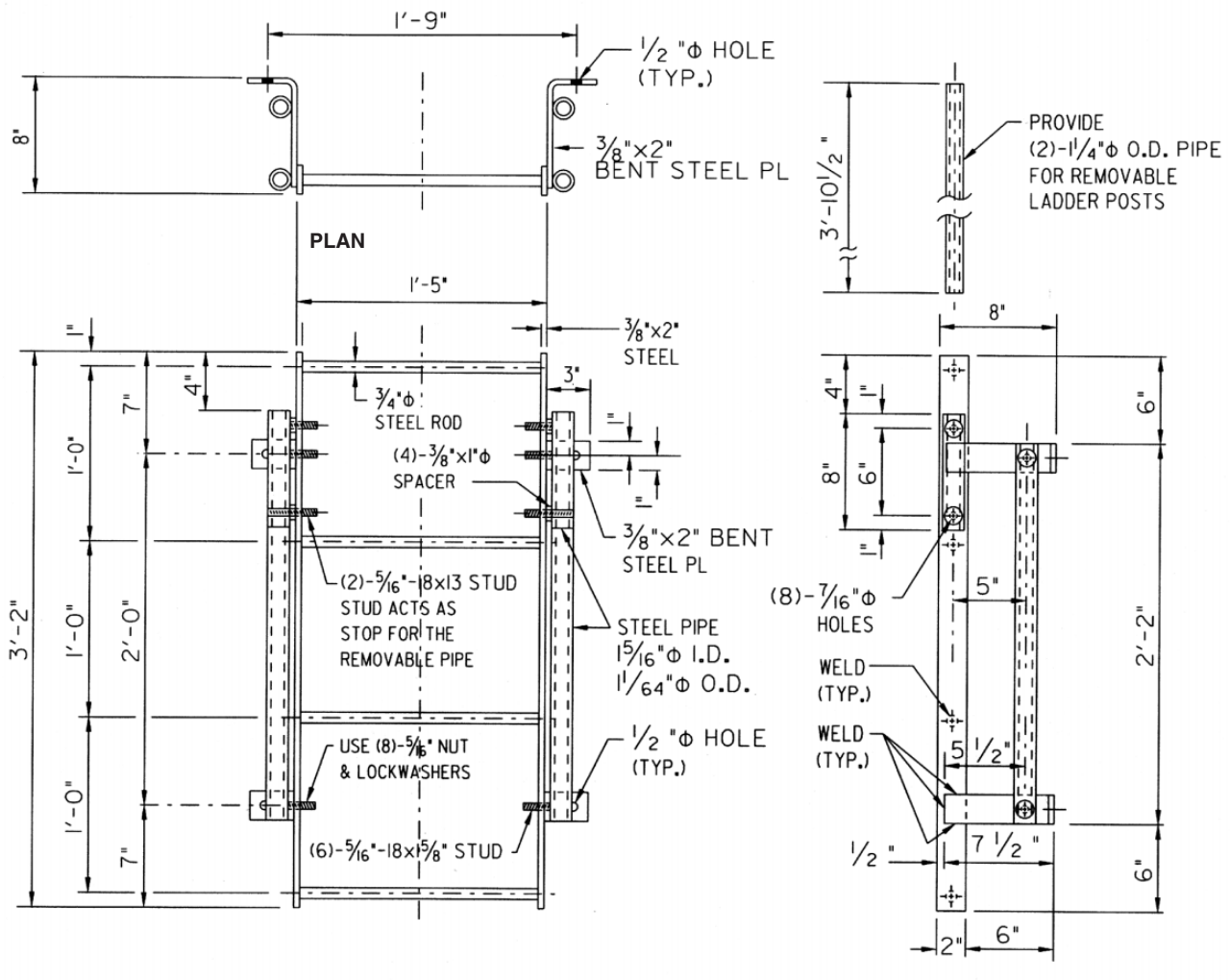


LOWER PLATFORM FRONT-SUPPORT ANGLE
(1 REQUIRED/PULL BOX)



UPPER AND LOWER PLATFORM BACK-SUPPORT ANGLE
(2 REQUIRED/PULL BOX)

Ladder



LADDER
(1 REQUIRED/PULL BOX)