

**BELL SYSTEM PRACTICES**  
**Outside Plant Construction**  
**and Maintenance**

**SECTION G43.120.3**  
**Issue 1, June, 1946**  
**AT&T Co Standard**

# **MANHOLES**

## **CONCRETE FORMS**

### **ASSEMBLY DIAGRAMS**

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#### **1. GENERAL**

1.01 The manhole form assemblies and lists of parts in this section cover a wide range of manhole types and sizes. Depending on the number of form parts available for the job, almost any size of rectangular manhole can be constructed using steel forms.

1.02 Each assembly diagram is arranged to show the form panel layout for a manhole of the headroom commonly needed. For line manholes, however, the associated list of parts also includes information concerning the form pieces required for constructing manholes of greater depth. The panels are placed in horizontal tiers either 18 or 24 inches high to form the manhole walls. By combining the proper number of these tiers, manholes of any desired headroom in 6-inch increments can be constructed. The following table lists the number of 18- and 24-inch tiers required for various headrooms. It will be noted that the corner pieces connecting the wall panels to the roof panels account for 6 inches of the headroom.

| <u>Headroom of<br/>Manhole</u> | <u>No. of 18-Inch<br/>Tiers</u> | <u>No. of 24-Inch<br/>Tiers</u> |
|--------------------------------|---------------------------------|---------------------------------|
| 3 ft.-6 in.                    | 2                               | 0                               |
| 4 ft.-0 in.                    | 1                               | 1                               |
| 4 ft.-6 in.                    | 0                               | 2                               |
| 5 ft.-0 in.                    | 3                               | 0                               |
| 5 ft.-6 in.                    | 2                               | 1                               |
| 6 ft.-0 in.                    | 1                               | 2                               |
| 6 ft.-6 in.                    | 0                               | 3                               |
| 7 ft.-0 in.                    | 3                               | 1                               |
| 7 ft.-6 in.                    | 2                               | 2                               |
| 8 ft.-0 in.                    | 1                               | 3                               |
| 8 ft.-6 in.                    | 0                               | 4                               |
| 9 ft.-0 in.                    | 3                               | 2                               |
| 9 ft.-6 in.                    | 2                               | 3                               |
| 10 ft.-0 in.                   | 1                               | 4                               |
| 10 ft.-6 in.                   | 0                               | 5                               |
| 11 ft.-0 in.                   | 3                               | 3                               |
| 11 ft.-6 in.                   | 2                               | 4                               |
| 12 ft.-0 in.                   | 1                               | 5                               |

1.03 If there is an insufficient number of form pieces of the size specified, other sizes may be combined to produce the desired manhole form. Several combinations of substitute form pieces are included with most of the assembly diagrams for convenience.

1.04 The rack spacings as shown on the assembly diagrams may be changed if required. In such cases, it may be necessary to shift the form pieces so a panel joint will not fall at the desired insert location.

## 2. CODE DESIGNATIONS ON ASSEMBLY DIAGRAMS

2.01 Following is a list of the various code designations used on the assembly diagrams :

| Code    | Form Piece                           |
|---------|--------------------------------------|
| 18 x 18 | 18 in. x 18 in. Panel                |
| 18 x 24 | 18 in. x 24 in. Panel                |
| 18 x 30 | 18 in. x 30 in. Panel                |
| 24 x 30 | 24 in. x 30 in. Panel                |
| 18 x 36 | 18 in. x 36 in. Panel                |
| 24 x 36 | 24 in. x 36 in. Panel                |
| 18      | 6 in. x 18 in. Panel                 |
| 24      | 6 in. x 24 in. Panel                 |
| 18 P    | 6 in. x 18 in. Pulling-In-Iron Panel |
| 24 P    | 6 in. x 24 in. Pulling-In-Iron Panel |
| 18 C    | 18 in. Corner                        |
| 24 C    | 24 in. Corner                        |
| J C     | Junction Corner                      |
| ⋈       | Location of Cross Brace              |
| ▶       | Location of Corner Brace             |
| •       | Insert Hole Location for Cable Racks |
| ▨       | Location of Roof Opening             |

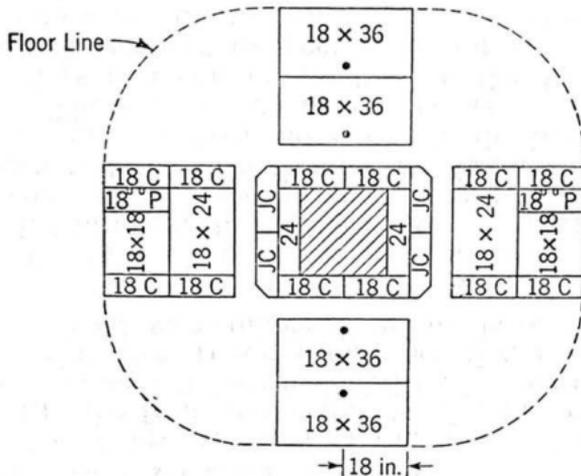
## 3. ASSEMBLY DIAGRAMS

3.01 The figure numbers of the following assemblies identify the form arrangements with the manhole diagrams of corresponding numbers in G43.110.1. Certain additional assemblies covering sizes required only occasionally and not appearing in G43.110.1 as manhole diagrams, have been included for convenience.

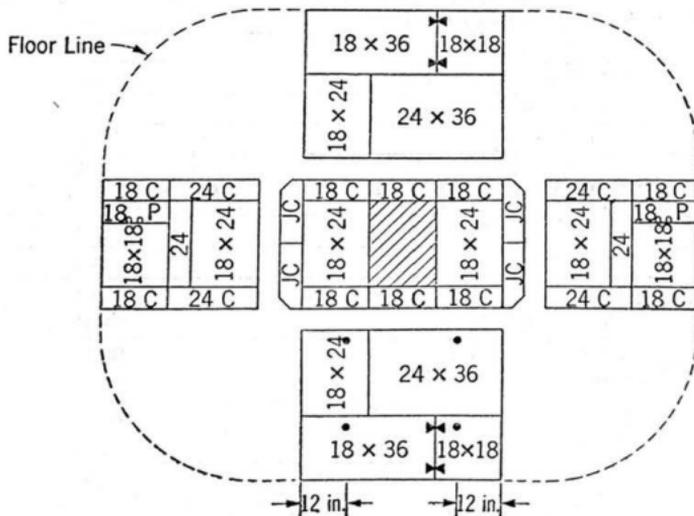
3.02 The tabulations of parts for the various form assemblies list in detail the parts required to obtain the headrooms most commonly specified. In addition there appear two columns which can be used to determine the extra parts needed when headrooms greater than those used in the basic assemblies are required. These columns are headed as additional 18-inch or 24-inch tiers and can be used as in the following example: Assume it is required to erect forms for a Type A manhole of 7-foot 6-inch headroom. This can be obtained by adding a 24-inch tier to the basic assembly for 5-foot 6-inch headroom as listed or by adding an 18-inch tier to the assembly for 6-foot headroom as listed. The number of parts listed under the particular depth of tier to be added gives the extra pieces to be combined with those of the basic assembly to obtain the desired headroom.

### MANHOLE FORM ASSEMBLIES SERVICE MANHOLES

3 FT.-0 IN. WIDE × 4 FT.-0 IN. LONG × 3 FT.-6 IN. H.R.  
TYPE X, FIGURE 1



3 FT.-0 IN. WIDE × 5 FT.-6 IN. LONG × 4 FT.-0 IN. H.R.  
TYPE Y, FIGURE 2



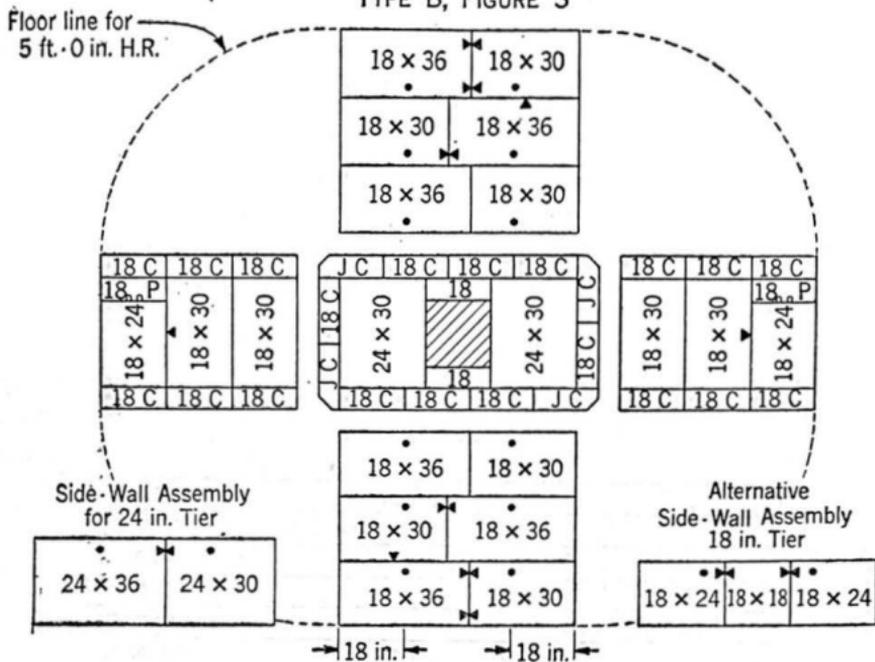
Note: For Cross-braces use 2 Corner Braces pinned together

**LIST OF PARTS FOR  
MANHOLE FORM ASSEMBLIES  
SERVICE MANHOLES**

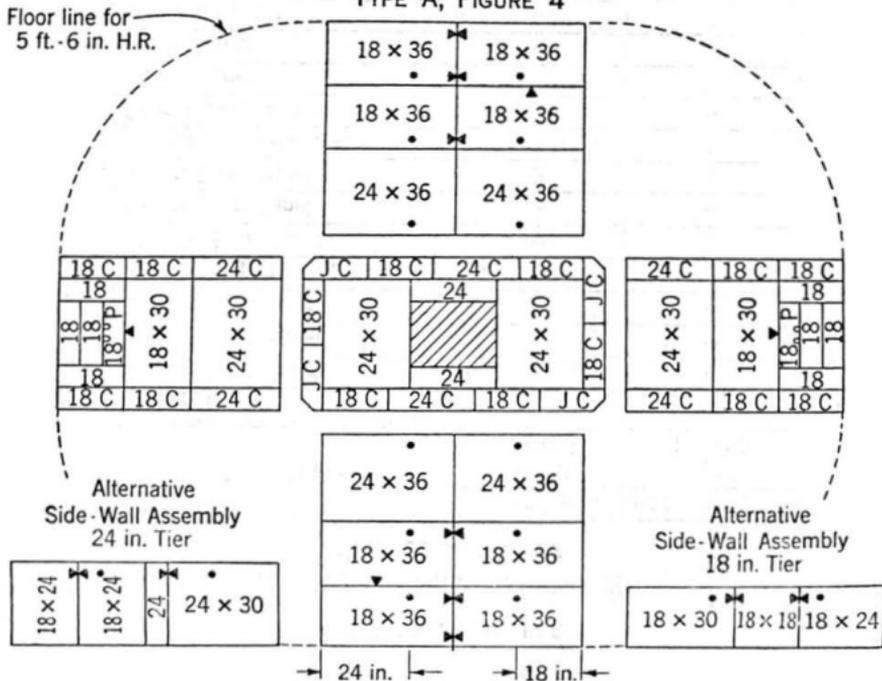
| Form Parts                   | Number of Parts Required |                    |
|------------------------------|--------------------------|--------------------|
|                              | Type X<br>Figure 1       | Type Y<br>Figure 2 |
| 18 in. x 18 in. Panel        | 2                        | 4                  |
| 18 in. x 24 in. Panel        | 2                        | 6                  |
| 18 in. x 30 in. Panel        | —                        | —                  |
| 24 in. x 30 in. Panel        | —                        | —                  |
| 18 in. x 36 in. Panel        | 4                        | 2                  |
| 24 in. x 36 in. Panel        | —                        | 2                  |
| 6 in. x 18 in. Panel         | —                        | —                  |
| 6 in. x 24 in. Panel         | 2                        | 2                  |
| 18 in. Pulling-In Iron Panel | 2                        | 2                  |
| 24 in. Pulling-In Iron Panel | —                        | —                  |
| 18 in. Corner                | 12                       | 10                 |
| 24 in. Corner                | —                        | 4                  |
| Junction Corner              | 4                        | 4                  |
| Corner Brace                 | —                        | 4                  |
| Cross Brace                  | —                        | —                  |
| Short Pin                    | 125                      | 140                |
| Long Pin                     | —                        | 10                 |
| Wedge                        | 125                      | 150                |
| Insert Hole Plug             | 6                        | 6                  |
| Roof Opening Cover Plate     | 1                        | 1                  |
| Aligner                      | 1                        | 1                  |

### MANHOLE FORM ASSEMBLIES

3 FT.-6 IN. WIDE × 6 FT.-6 IN. LONG  
TYPE B, FIGURE 3



3 FT.-6 IN. WIDE × 7 FT.-0 IN. LONG  
TYPE A, FIGURE 4



**LIST OF PARTS FOR  
MANHOLE FORM ASSEMBLIES**  
**3 FT.-6 IN. WIDE × 6 FT.-6 IN. LONG**  
**TYPE B, FIGURE 3**  
**AND**  
**3 FT.-6 IN. WIDE × 7 FT.-0 IN. LONG**  
**TYPE A, FIGURE 4**

| Form Parts                   | Number of Parts Required |                     |        |                     |                     |    |
|------------------------------|--------------------------|---------------------|--------|---------------------|---------------------|----|
|                              | Type B, Figure 3         |                     |        | Type A, Figure 4    |                     |    |
|                              | 5 ft.-0 in.<br>H.R.      | Additional<br>Tiers |        | 5 ft.-6 in.<br>H.R. | Additional<br>Tiers |    |
| 18 in.                       |                          | 24 in.              | 18 in. |                     | 24 in.              |    |
| 18 in. × 18 in. Panel        | -                        | -                   | -      | -                   | -                   | -  |
| 18 in. × 24 in. Panel        | 2                        | -                   | -      | -                   | -                   | -  |
| 18 in. × 30 in. Panel        | 10                       | 4                   | -      | 2                   | 2                   | -  |
| 24 in. × 30 in. Panel        | 2                        | -                   | 4      | 4                   | -                   | 2  |
| 18 in. × 36 in. Panel        | 6                        | 2                   | -      | 8                   | 4                   | -  |
| 24 in. × 36 in. Panel        | -                        | -                   | 2      | 4                   | -                   | 4  |
| 6 in. × 18 in. Panel         | 2                        | -                   | -      | 8                   | -                   | -  |
| 6 in. × 24 in. Panel         | -                        | -                   | -      | 2                   | -                   | -  |
| 18 in. Pulling-In Iron Panel | 2                        | -                   | -      | 2                   | -                   | -  |
| 24 in. Pulling-In Iron Panel | -                        | -                   | -      | -                   | -                   | -  |
| 18 in. Corner                | 20                       | 4                   | -      | 14                  | 4                   | -  |
| 24 in. Corner                | -                        | -                   | 4      | 6                   | -                   | 4  |
| Junction Corner              | 4                        | -                   | -      | 4                   | -                   | -  |
| Corner Brace                 | 2                        | 1                   | 1      | 2                   | 1                   | 1  |
| Cross Brace                  | 3                        | 1                   | 1      | 3                   | 1                   | 1  |
| Short Pin                    | 180                      | 50                  | 50     | 180                 | 50                  | 50 |
| Long Pin                     | 20                       | 10                  | 10     | 20                  | 10                  | 10 |
| Wedge                        | 200                      | 60                  | 60     | 200                 | 60                  | 60 |
| Insert Hole Plug             | 12                       | -                   | -      | 12                  | -                   | -  |
| Roof Opening Cover-Plate     | 1                        | -                   | -      | 1                   | -                   | -  |
| Aligner                      | 2                        | -                   | -      | 2                   | -                   | -  |

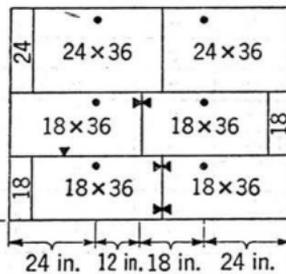
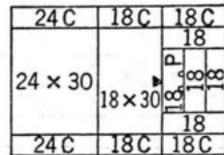
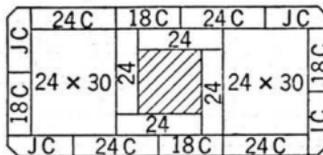
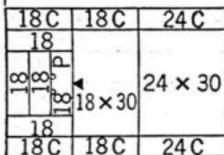
## MANHOLE FORM ASSEMBLY 3 FT.-6 IN. WIDE X 7 FT.-6 IN. LONG

TYPE A , FIGURES 5 & 6  
TYPE L , FIGURE 9  
TYPE T , FIGURE 12  
TYPE J3, FIGURE 14  
TYPE J4, FIGURE 16

Note  
Where conduit enters  
opposite side wall  
substitute 18 P for 18.

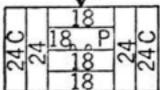
Floor line for  
5 ft.-6 in. H.R.

Note  
Rack spacing shown in  
diagram and list of parts  
are for type A, figure 5.  
For other types and  
figures, space racks  
and order additional  
parts as required.

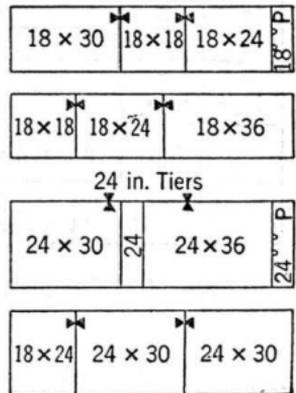
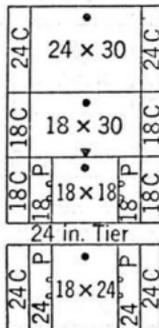


ALTERNATIVE  
SIDE WALL ASSEMBLIES  
18 in. Tiers

END WALL  
PULLING-IN IRON  
ASSEMBLY FOR  
24 IN. TIER



END WALL ASSEMBLY WHERE  
CABLE RACKS ARE REQUIRED

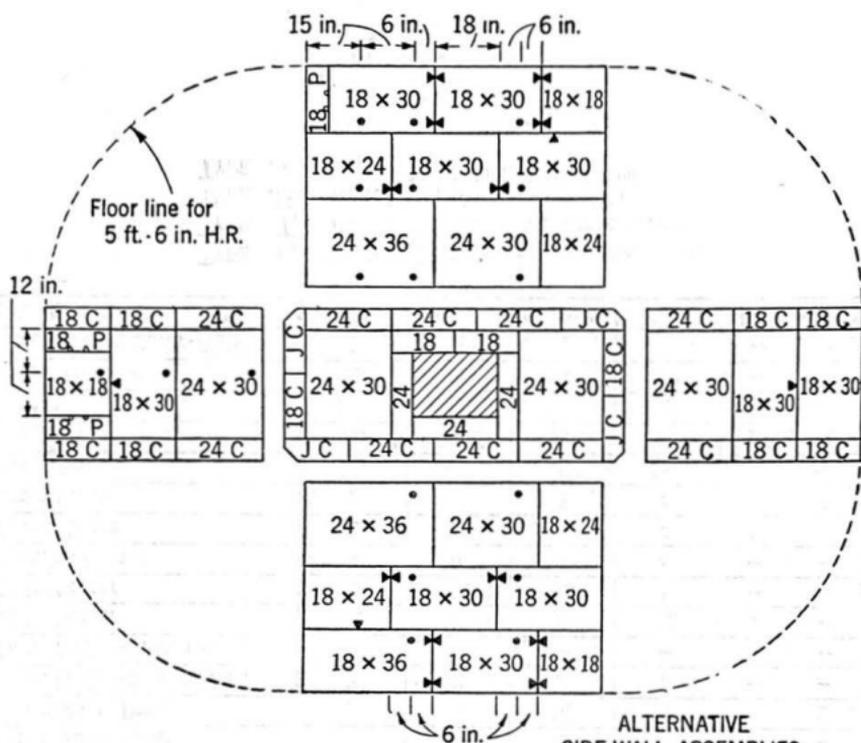


**LIST OF PARTS FOR  
MANHOLE FORM ASSEMBLY  
3 FT.-6 IN. WIDE × 7 FT.-6 IN. LONG  
TYPE A, FIGURES 5 & 6**

|                              | Headroom of Manhole             |             |             |             | Each Additional Tier |             |
|------------------------------|---------------------------------|-------------|-------------|-------------|----------------------|-------------|
|                              | 5 ft.-6 in.                     | 6 ft.-0 in. | 6 ft.-6 in. | 7 ft.-0 in. | 18 in. Tier          | 24 in. Tier |
| No. of 18 in. Tiers          | 2                               | 1           | 0           | 3           |                      |             |
| No. of 24 in. Tiers          | 1                               | 2           | 3           | 1           |                      |             |
| <b>Form Parts</b>            | <b>Number of Parts Required</b> |             |             |             |                      |             |
| 18 in. × 18 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 24 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 30 in. Panel        | 2                               | —           | —           | 4           | 2                    | —           |
| 24 in. × 30 in. Panel        | 4                               | 6           | 6           | 4           | —                    | 2           |
| 18 in. × 36 in. Panel        | 8                               | 4           | —           | 12          | 4                    | —           |
| 24 in. × 36 in. Panel        | 4                               | 8           | 12          | 4           | —                    | 4           |
| 6 in. × 18 in. Panel         | 12                              | 10          | 6           | 14          | 2                    | —           |
| 6 in. × 24 in. Panel         | 6                               | 8           | 14          | 6           | —                    | 2           |
| 18 in. Pulling-In Iron Panel | 2                               | 2           | 2           | 2           | —                    | —           |
| 24 in. Pulling-In Iron Panel | —                               | —           | —           | —           | —                    | —           |
| 18 in. Corner                | 12                              | 8           | 4           | 16          | 4                    | —           |
| 24 in. Corner                | 8                               | 12          | 16          | 8           | —                    | 4           |
| Junction Corner              | 4                               | 4           | 4           | 4           | —                    | —           |
| Corner Brace                 | 2                               | 2           | 2           | 4           | 1                    | 1           |
| Cross Brace                  | 3                               | 3           | 3           | 4           | 1                    | 1           |
| Short Pin                    | 180                             | 180         | 180         | 230         | 50                   | 50          |
| Long Pin                     | 20                              | 20          | 20          | 30          | 10                   | 10          |
| Wedge                        | 200                             | 200         | 200         | 260         | 60                   | 60          |
| Insert Hole Plug             | 20                              | 20          | 20          | 20          | —                    | —           |
| Roof Opening Cover-Plate     | 1                               | 1           | 1           | 1           | —                    | —           |
| Aligner                      | 2                               | 2           | 2           | 2           | —                    | —           |

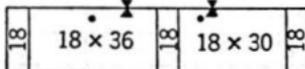
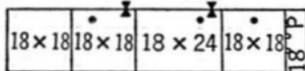
TYPE L, FIGURE 9 }  
 TYPE T, FIGURE 12 } For these manholes, adjust  
 TYPE J3, FIGURE 14 } above parts list according  
 TYPE J4, FIGURE 16 } to requirements for  
 pulling-in iron panels.

**MANHOLE FORM ASSEMBLY**  
**3 FT - 6 IN. WIDE × 8 FT - 0 IN. LONG**  
**TYPE L, FIGURE 10**

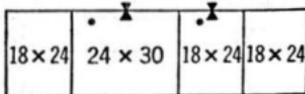
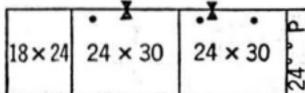


**ALTERNATIVE  
SIDE WALL ASSEMBLIES**

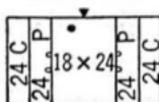
18 in. Tiers



24 in. Tiers



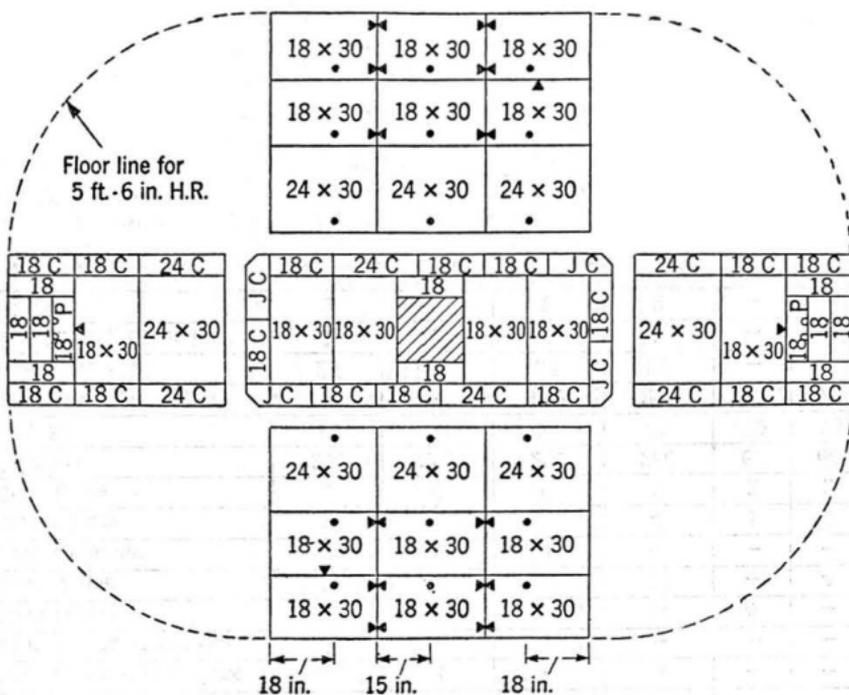
**END WALL  
PULLING-IN IRON  
ASSEMBLY FOR  
24 IN. TIER**



**LIST OF PARTS FOR**  
**MANHOLE FORM ASSEMBLY**  
**3 FT - 6 IN. WIDE x 8 FT.-0 IN. LONG**  
**TYPE L, FIGURE 10**

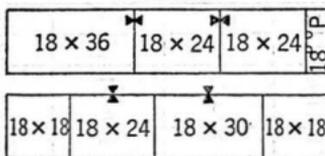
|                              | Headroom of Manhole      |             |             |             | Each Additional Tier |             |
|------------------------------|--------------------------|-------------|-------------|-------------|----------------------|-------------|
|                              | 5 ft.-6 in.              | 6 ft.-0 in. | 6 ft.-6 in. | 7 ft.-0 in. | 18 in. Tier          | 24 in. Tier |
| No. of 18 in. Tiers          | 2                        | 1           | 0           | 3           |                      |             |
| No. of 24 in. Tiers          | 1                        | 2           | 3           | 1           |                      |             |
| Form Parts                   | Number of Parts Required |             |             |             |                      |             |
| 18 in. x 18 in. Panel        | 3                        | 3           | -           | 3           | -                    | -           |
| 18 in. x 24 in. Panel        | 4                        | 4           | 7           | 6           | 2                    | 2           |
| 18 in. x 30 in. Panel        | 10                       | 4           | -           | 16          | 6                    | -           |
| 24 in. x 30 in. Panel        | 6                        | 10          | 14          | 6           | -                    | 4           |
| 18 in. x 36 in. Panel        | 1                        | 1           | -           | 1           | -                    | -           |
| 24 in. x 36 in. Panel        | 2                        | 4           | 5           | 2           | -                    | 2           |
| 6 in. x 18 in. Panel         | 2                        | 2           | 2           | 2           | -                    | -           |
| 6 in. x 24 in. Panel         | 3                        | 3           | 3           | 3           | -                    | -           |
| 18 in. Pulling-In Iron Panel | 3                        | 3           | -           | 3           | -                    | -           |
| 24 in. Pulling-In Iron Panel | -                        | -           | 3           | -           | -                    | -           |
| 18 in. Corner                | 10                       | 6           | 2           | 14          | 4                    | -           |
| 24 in. Corner                | 10                       | 14          | 18          | 10          | -                    | 4           |
| Junction Corner              | 4                        | 4           | 4           | 4           | -                    | -           |
| Corner Brace                 | 2                        | 2           | 2           | 4           | 1                    | 1           |
| Cross Brace                  | 6                        | 6           | 6           | 8           | 2                    | 2           |
| Short Pin                    | 200                      | 200         | 200         | 260         | 60                   | 60          |
| Long Pin                     | 30                       | 30          | 30          | 40          | 10                   | 10          |
| Wedge                        | 230                      | 230         | 230         | 300         | 70                   | 70          |
| Insert Hole Plug             | 25                       | 25          | 25          | 25          | -                    | -           |
| Roof Opening Cover Plate     | 1                        | 1           | 1           | 1           | -                    | -           |
| Aligner                      | 2                        | 2           | 2           | 2           | -                    | -           |

MANHOLE FORM ASSEMBLY  
3 FT.-6 IN. WIDE × 8 FT.-6 IN. LONG

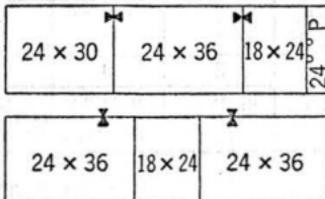


ALTERNATIVE  
SIDE WALL ASSEMBLIES

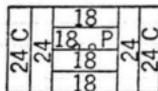
18 in. Tiers



24 in. Tiers



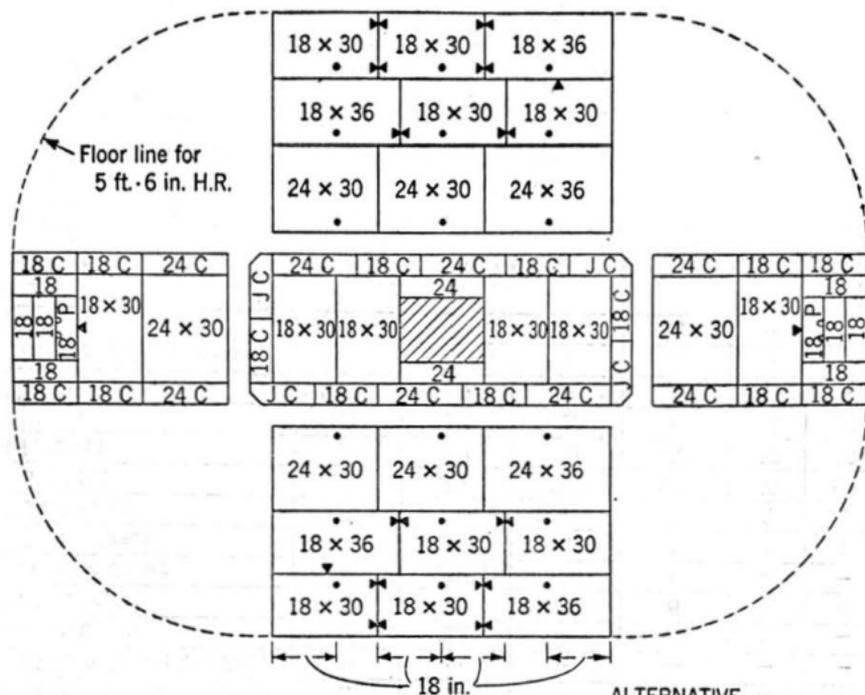
END WALL  
PULLING-IN IRON  
ASSEMBLY FOR  
24 IN. TIER



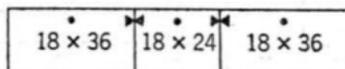
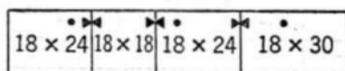
**LIST OF PARTS FOR  
MANHOLE FORM ASSEMBLY  
3 FT.-6 IN. WIDE × 8 FT.-6 IN. LONG**

|                              | Headroom of Manhole             |             |             |             | Each Additional Tier |             |
|------------------------------|---------------------------------|-------------|-------------|-------------|----------------------|-------------|
|                              | 5 ft.-6 in.                     | 6 ft.-0 in. | 6 ft.-6 in. | 7 ft.-0 in. |                      |             |
| No. of 18 in. Tiers          | 2                               | 1           | 0           | 3           |                      |             |
| No. of 24 in. Tiers          | 1                               | 2           | 3           | 1           | 18 in. Tier          | 24 in. Tier |
| <b>Form Parts</b>            | <b>Number of Parts Required</b> |             |             |             |                      |             |
| 18 in. × 18 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 24 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 30 in. Panel        | 18                              | 10          | 4           | 26          | 8                    | —           |
| 24 in. × 30 in. Panel        | 8                               | 16          | 22          | 8           | —                    | 8           |
| 18 in. × 36 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 24 in. × 36 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 6 in. × 18 in. Panel         | 10                              | 10          | 8           | 10          | —                    | —           |
| 6 in. × 24 in. Panel         | —                               | —           | 2           | —           | —                    | —           |
| 18 in. Pulling-in Iron Panel | 2                               | 2           | 2           | 2           | —                    | —           |
| 24 in. Pulling-in Iron Panel | —                               | —           | —           | —           | —                    | —           |
| 18 in. Corner                | 16                              | 12          | 8           | 20          | 4                    | —           |
| 24 in. Corner                | 6                               | 10          | 14          | 6           | —                    | 4           |
| Junction Corner              | 4                               | 4           | 4           | 4           | —                    | —           |
| Corner Brace                 | 2                               | 2           | 2           | 4           | 1                    | 1           |
| Cross Brace                  | 6                               | 6           | 6           | 8           | 2                    | 2           |
| Short Pin                    | 200                             | 200         | 200         | 260         | 60                   | 60          |
| Long Pin                     | 30                              | 30          | 30          | 40          | 10                   | 10          |
| Wedge                        | 230                             | 230         | 230         | 300         | 70                   | 70          |
| Insert Hole Plug             | 25                              | 25          | 25          | 25          | —                    | —           |
| Roof Opening Cover Plate     | 1                               | 1           | 1           | 1           | —                    | —           |
| Aligner                      | 2                               | 2           | 2           | 2           | —                    | —           |

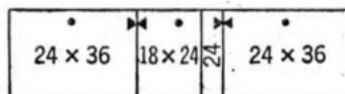
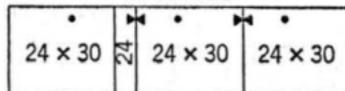
**MANHOLE FORM ASSEMBLY**  
**3 FT.-6 IN. WIDE × 9 FT.-0 IN. LONG**  
**TYPE A, FIGURE 7**



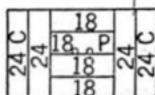
**ALTERNATIVE  
SIDE WALL ASSEMBLIES**  
18 in. Tiers



24 in. Tiers



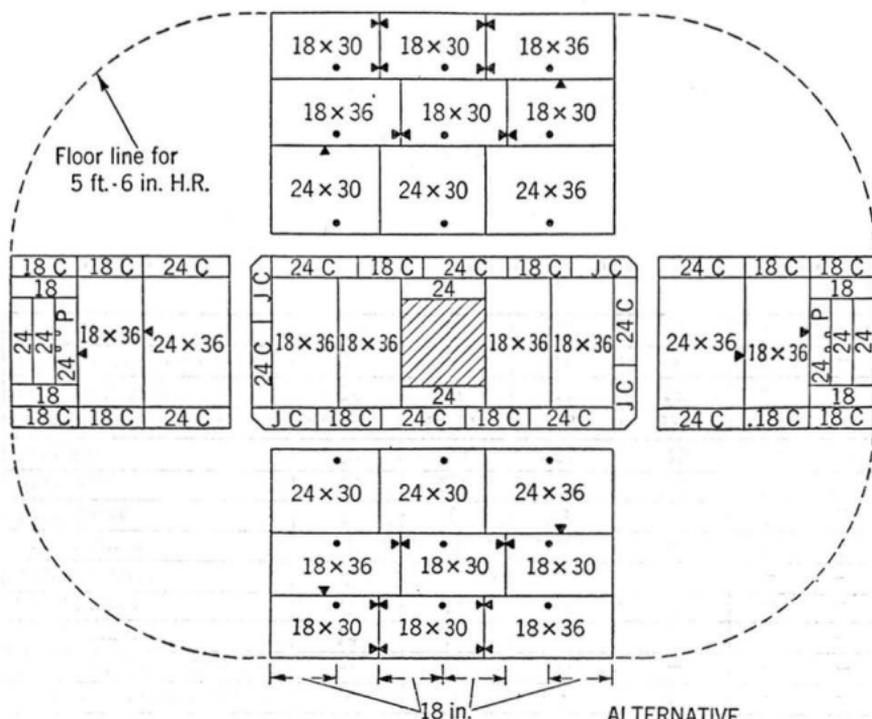
**END WALL  
PULLING-IN IRON  
ASSEMBLY FOR  
24 IN. TIER**



**LIST OF PARTS FOR  
MANHOLE FORM ASSEMBLY  
3 FT.-6 IN. WIDE × 9 FT.-0 IN. LONG  
TYPE A, FIGURE 7**

|                              | Headroom of Manhole             |             |             |             | Each Additional Tier |             |
|------------------------------|---------------------------------|-------------|-------------|-------------|----------------------|-------------|
|                              | 5 ft.-6 in.                     | 6 ft.-0 in. | 6 ft.-6 in. | 7 ft.-0 in. |                      |             |
| No. of 18 in. Tiers          | 2                               | 1           | 0           | 3           |                      |             |
| No. of 24 in. Tiers          | 1                               | 2           | 3           | 1           | 18 in. Tier          | 24 in. Tier |
| <b>Form Parts</b>            | <b>Number of Parts Required</b> |             |             |             |                      |             |
| 18 in. × 18 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 24 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 30 in. Panel        | 14                              | 8           | 4           | 20          | 6                    | —           |
| 24 in. × 30 in. Panel        | 6                               | 12          | 16          | 6           | —                    | 6           |
| 18 in. × 36 in. Panel        | 4                               | 2           | —           | 6           | 2                    | —           |
| 24 in. × 36 in. Panel        | 2                               | 4           | 6           | 2           | —                    | 2           |
| 6 in. × 18 in. Panel         | 8                               | 8           | 6           | 8           | —                    | —           |
| 6 in. × 24 in. Panel         | 2                               | 2           | 6           | 2           | —                    | —           |
| 18 in. Pulling-In Iron Panel | 2                               | 2           | 2           | 2           | —                    | —           |
| 24 in. Pulling-In Iron Panel | —                               | —           | —           | —           | —                    | —           |
| 18 in. Corner                | 14                              | 10          | 6           | 18          | 4                    | —           |
| 24 in. Corner                | 8                               | 12          | 16          | 8           | —                    | 4           |
| Junction Corner              | 4                               | 4           | 4           | 4           | —                    | —           |
| Corner Brace                 | 2                               | 2           | 2           | 4           | 1                    | 1           |
| Cross Brace                  | 6                               | 6           | 6           | 8           | 2                    | 2           |
| Short Pin                    | 220                             | 220         | 220         | 290         | 70                   | 70          |
| Long Pin                     | 30                              | 30          | 30          | 40          | 10                   | 10          |
| Wedge                        | 250                             | 250         | 250         | 330         | 80                   | 80          |
| Insert Hole Plug             | 25                              | 25          | 25          | 25          | —                    | —           |
| Roof Opening Cover Plate     | 1                               | 1           | 1           | 1           | —                    | —           |
| Aligner                      | 2                               | 2           | 2           | 2           | —                    | —           |

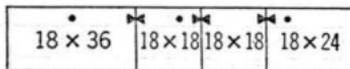
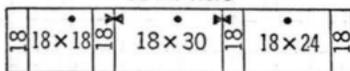
### MANHOLE FORM ASSEMBLY 4 FT.-0 IN. WIDE × 9 FT.-0 IN. LONG



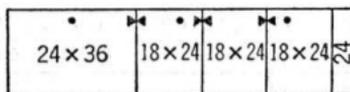
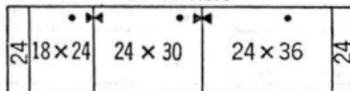
Floor line for  
5 ft.-6 in. H.R.

#### ALTERNATIVE SIDE WALL ASSEMBLIES\*

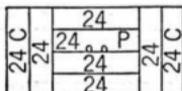
18 in. Tiers



24 in. Tiers



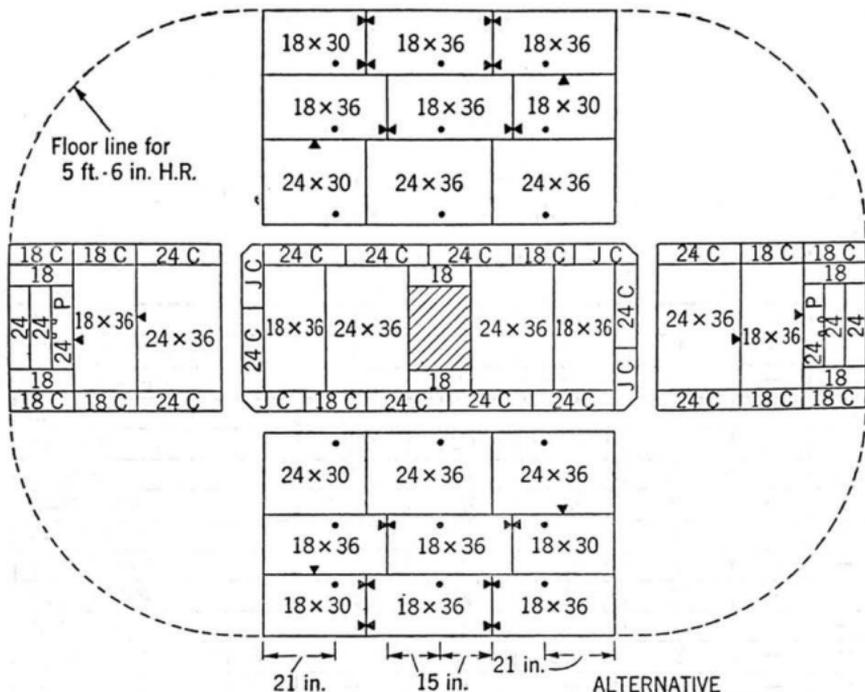
END WALL  
PULLING-IN IRON  
ASSEMBLY FOR  
24 IN. TIER



LIST OF PARTS FOR  
MANHOLE FORM ASSEMBLY  
4 FT.-0 IN. WIDE × 9 FT.-0 IN. LONG

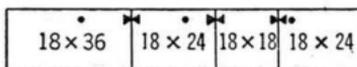
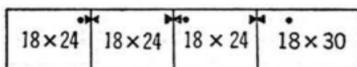
|                              | Headroom of Manhole      |             |             |             | Each Additional Tier |             |
|------------------------------|--------------------------|-------------|-------------|-------------|----------------------|-------------|
|                              | 5 ft.-6 in.              | 6 ft.-0 in. | 6 ft.-6 in. | 7 ft.-0 in. |                      |             |
| Number of 18 in. Tiers       | 2                        | 1           | 0           | 3           |                      |             |
| Number of 24 in. Tiers       | 1                        | 2           | 3           | 1           | 18 in. Tier          | 24 in. Tier |
| Form Parts                   | Number of Parts Required |             |             |             |                      |             |
| 18 in. × 18 in. Panel        | —                        | —           | —           | —           | —                    | —           |
| 18 in. × 24 in. Panel        | —                        | —           | —           | —           | —                    | —           |
| 18 in. × 30 in. Panel        | 8                        | 4           | —           | 12          | 4                    | —           |
| 24 in. × 30 in. Panel        | 4                        | 8           | 12          | 4           | —                    | 4           |
| 18 in. × 36 in. Panel        | 10                       | 6           | 4           | 14          | 4                    | —           |
| 24 in. × 36 in. Panel        | 4                        | 8           | 10          | 4           | —                    | 4           |
| 6 in. × 18 in. Panel         | 4                        | 4           | —           | 4           | —                    | —           |
| 6 in. × 24 in. Panel         | 6                        | 6           | 12          | 6           | —                    | —           |
| 18 in. Pulling-in Iron Panel | —                        | —           | —           | —           | —                    | —           |
| 24 in. Pulling-in Iron Panel | 2                        | 2           | 2           | 2           | —                    | —           |
| 18 in. Corner                | 12                       | 8           | 4           | 16          | 4                    | —           |
| 24 in. Corner                | 10                       | 14          | 18          | 10          | —                    | 4           |
| Junction Corner              | 4                        | 4           | 4           | 4           | —                    | —           |
| Corner Brace                 | 4                        | 4           | 4           | 6           | 2                    | 2           |
| Cross Brace                  | 12                       | 12          | 12          | 16          | 4                    | 4           |
| Short Pin                    | 220                      | 220         | 220         | 290         | 70                   | 70          |
| Long Pin                     | 30                       | 30          | 30          | 40          | 10                   | 10          |
| Wedge                        | 250                      | 250         | 250         | 330         | 80                   | 80          |
| Insert Hole Plug             | 25                       | 25          | 25          | 25          | —                    | —           |
| Roof Opening Cover-Plate     | 1                        | 1           | 1           | 1           | —                    | —           |
| Aligner                      | 2                        | 2           | 2           | 2           | —                    | —           |

**MANHOLE FORM ASSEMBLY**  
**4 FT.-0 IN. WIDE × 9 FT.-6 IN. LONG**  
**TYPE A, FIGURE 8**

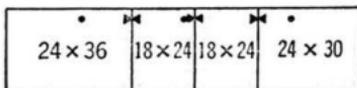
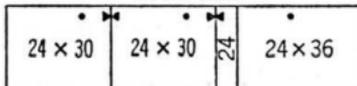


**ALTERNATIVE  
SIDE WALL ASSEMBLIES**

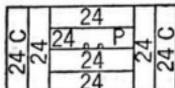
18 in. Tiers



24 in. Tiers



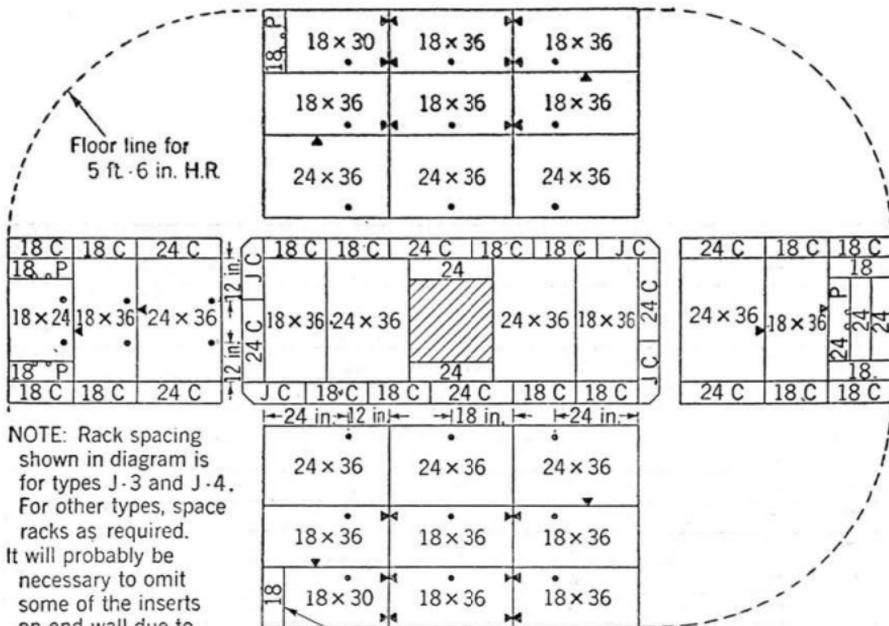
**END WALL  
PULLING-IN IRON  
ASSEMBLY  
24 IN. TIER**



**LIST OF PARTS FOR**  
**MANHOLE FORM ASSEMBLY**  
**4 FT.-0 IN. WIDE × 9 FT.-6 IN. LONG**  
**TYPE A, FIGURE 8**

|                              | Headroom of Manhole             |             |             |             | Each Additional Tier |             |
|------------------------------|---------------------------------|-------------|-------------|-------------|----------------------|-------------|
|                              | 5 ft.-6 in.                     | 6 ft.-0 in. | 6 ft.-6 in. | 7 ft.-0 in. |                      |             |
| Number of 18 in. Tiers       | 2                               | 1           | 0           | 3           |                      |             |
| Number of 24 in. Tiers       | 1                               | 2           | 3           | 1           | 18 in. Tier          | 24 in. Tier |
| <b>Form Parts</b>            | <b>Number of Parts Required</b> |             |             |             |                      |             |
| 18 in. × 18 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 24 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 30 in. Panel        | 4                               | 2           | —           | 6           | 2                    | —           |
| 24 in. × 30 in. Panel        | 2                               | 4           | 6           | 2           | —                    | 2           |
| 18 in. × 36 in. Panel        | 12                              | 6           | 2           | 18          | 6                    | —           |
| 24 in. × 36 in. Panel        | 8                               | 14          | 18          | 8           | —                    | 6           |
| 6 in. × 18 in. Panel         | 6                               | 6           | 2           | 6           | —                    | —           |
| 6 in. × 24 in. Panel         | 4                               | 4           | 10          | 4           | —                    | —           |
| 18 in. Pulling-in Iron Panel | —                               | —           | —           | —           | —                    | —           |
| 24 in. Pulling-in Iron Panel | 2                               | 2           | 2           | 2           | —                    | —           |
| 18 in. Corner                | 10                              | 6           | 2           | 14          | 4                    | —           |
| 24 in. Corner                | 12                              | 16          | 20          | 12          | —                    | 4           |
| Junction Corner              | 4                               | 4           | 4           | 4           | —                    | —           |
| Corner Brace                 | 4                               | 4           | 4           | 6           | 2                    | 2           |
| Cross Brace                  | 12                              | 12          | 12          | 16          | 4                    | 4           |
| Short Pin                    | 220                             | 220         | 220         | 290         | 70                   | 70          |
| Long Pin                     | 30                              | 30          | 30          | 40          | 10                   | 10          |
| Wedge                        | 250                             | 250         | 250         | 330         | 80                   | 80          |
| Insert Hole Plug             | 25                              | 25          | 25          | 25          | —                    | —           |
| Roof Opening Cover-Plate     | 1                               | 1           | 1           | 1           | —                    | —           |
| Aligner                      | 2                               | 2           | 2           | 2           | —                    | —           |

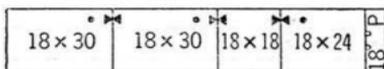
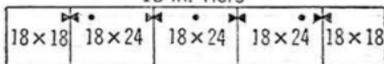
**MANHOLE FORM ASSEMBLY**  
**4 FT.-0 IN. WIDE × 10 FT.-0 IN. LONG**  
 TYPE T, FIGURE 13  
 TYPE J-3, FIGURE 15  
 TYPE J-4, FIGURE 17



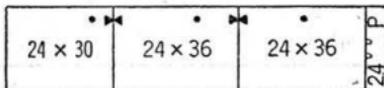
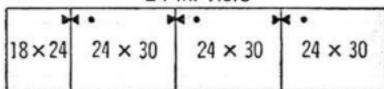
NOTE: Rack spacing shown in diagram is for types J-3 and J-4. For other types, space racks as required. It will probably be necessary to omit some of the inserts on end wall due to duct entrance. In this case additional holes for cable rack supports must be drilled after forms are removed.

NOTE  
 For type J-4,  
 Substitute  
 18P for 18

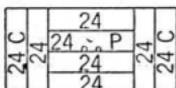
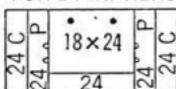
**ALTERNATIVE  
 SIDE WALL ASSEMBLIES  
 18 in. Tiers**



**24 in. Tiers**



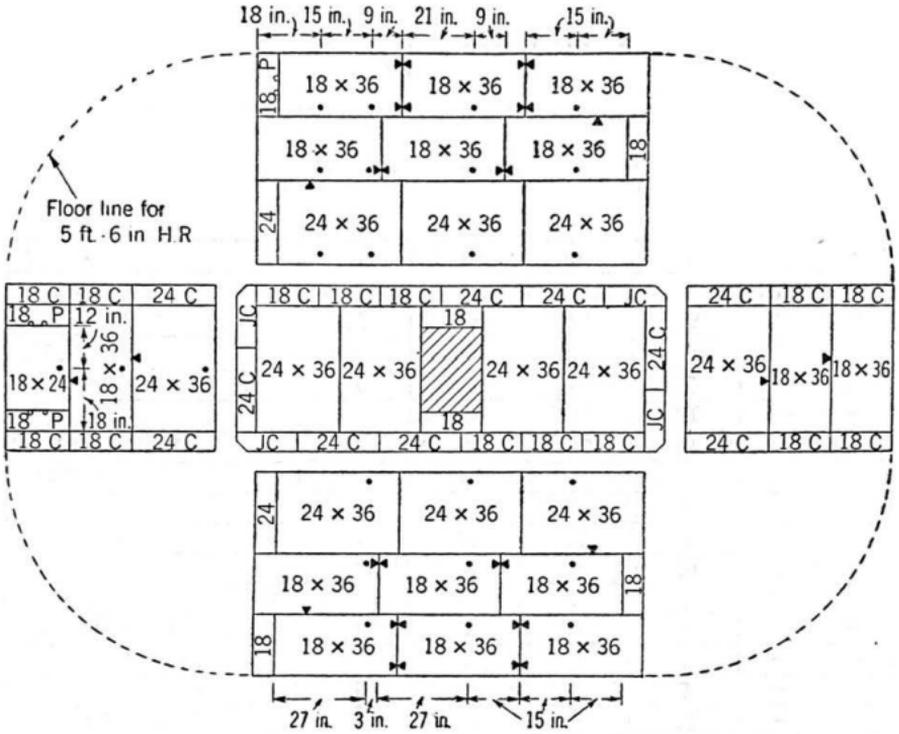
**END WALL  
 PULLING-IN IRON ASSEMBLIES  
 FOR 24 IN. TIERS**



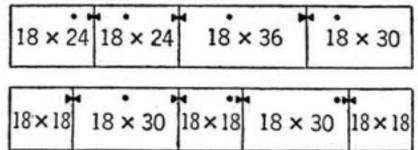
LIST OF PARTS FOR  
**MANHOLE FORM ASSEMBLY**  
 4 FT.-0 IN. WIDE × 10 FT.-0 IN. LONG  
 TYPE T, FIGURE 13  
 TYPE J-3, FIGURE 15  
 TYPE J-4, FIGURE 17

|                              | Headroom of Manhole             |             |             |             | Each Additional Tier |             |
|------------------------------|---------------------------------|-------------|-------------|-------------|----------------------|-------------|
|                              | 5 ft.-6 in.                     | 6 ft.-0 in. | 6 ft.-6 in. | 7 ft.-0 in. | 18 in. Tier          | 24 in. Tier |
| Number of 18 in. Tiers       | 2                               | 1           | 0           | 3           |                      |             |
| Number of 24 in. Tiers       | 1                               | 2           | 3           | 1           |                      |             |
| <b>Form Parts</b>            | <b>Number of Parts Required</b> |             |             |             |                      |             |
| 18 in. × 18 in. Panel        | —                               | —           | —           | —           | —                    | —           |
| 18 in. × 24 in. Panel        | 1                               | 1           | 1           | 1           | —                    | —           |
| 18 in. × 30 in. Panel        | 2                               | 2           | —           | 2           | —                    | —           |
| 24 in. × 30 in. Panel        | —                               | —           | 2           | —           | —                    | —           |
| 18 in. × 36 in. Panel        | 14                              | 6           | 2           | 22          | 8                    | —           |
| 24 in. × 36 in. Panel        | 10                              | 18          | 22          | 10          | —                    | 8           |
| 6 in. × 18 in. Panel         | 3                               | 3           | —           | 3           | —                    | —           |
| 6 in. × 24 in. Panel         | 2                               | 2           | 8           | 2           | —                    | —           |
| 18 in. Pulling-in Iron Panel | 3                               | 3           | —           | 3           | —                    | —           |
| 24 in. Pulling-in Iron Panel | 1                               | 1           | 4           | 1           | —                    | —           |
| 18 in. Corner                | 16                              | 12          | 8           | 20          | 4                    | —           |
| 24 in. Corner                | 8                               | 12          | 16          | 8           | —                    | 4           |
| Junction Corner              | 4                               | 4           | 4           | 4           | —                    | —           |
| Corner Brace                 | 4                               | 4           | 4           | 6           | 2                    | 2           |
| Cross Brace                  | 12                              | 12          | 12          | 16          | 4                    | 4           |
| Short Pin                    | 240                             | 240         | 240         | 320         | 80                   | 80          |
| Long Pin                     | 40                              | 40          | 40          | 50          | 10                   | 10          |
| Wedge                        | 280                             | 280         | 280         | 370         | 90                   | 90          |
| Insert Hole Plug             | 25                              | 25          | 25          | 25          | —                    | —           |
| Roof Opening Cover-Plate     | 1                               | 1           | 1           | 1           | —                    | —           |
| Aligner                      | 2                               | 2           | 2           | 2           | —                    | —           |

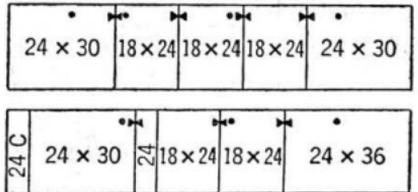
**MANHOLE FORM ASSEMBLY**  
**4 FT. 0 IN. WIDE x 10 FT. 6 IN. LONG**  
**TYPE L FIGURE 11**



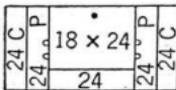
**ALTERNATIVE**  
**SIDE WALL ASSEMBLIES**  
 18 in. Tiers



24 in. Tiers



**END WALL**  
**PULLING-IN IRON**  
**ASSEMBLY FOR**  
 24 in. Tier



LIST OF PARTS FOR  
**MANHOLE FORM ASSEMBLY**  
 4 FT -0 IN. WIDE × 10 FT. 6 IN. LONG  
 TYPE L, FIGURE 11

|                              | Headroom of Manhole      |             |             |             | Each Additional Tier |             |
|------------------------------|--------------------------|-------------|-------------|-------------|----------------------|-------------|
|                              | 5 ft.-6 in.              | 6 ft.-0 in. | 6 ft.-6 in. | 7 ft.-0 in. | 18 in. Tier          | 24 in. Tier |
| No. of 18 in. Tiers          | 2                        | 1           | 0           | 3           |                      |             |
| No. of 24 in. Tiers          | 1                        | 2           | 3           | 1           |                      |             |
| Form Parts                   | Number of Parts Required |             |             |             |                      |             |
| 18 in. × 18 in. panel        | —                        | —           | —           | —           | —                    | —           |
| 18 in. × 24 in. panel        | 1                        | 1           | 1           | 1           | —                    | —           |
| 18 in. × 30 in. panel        | —                        | —           | —           | —           | —                    | —           |
| 24 in. × 36 in. panel        | —                        | —           | —           | —           | —                    | —           |
| 18 in. × 36 in. panel        | 15                       | 7           | —           | 23          | 8                    | —           |
| 24 in. × 36 in. panel        | 12                       | 20          | 27          | 12          | —                    | 8           |
| 6 in. × 18 in. panel         | 5                        | 3           | 2           | 7           | 2                    | —           |
| 6 in. × 24 in. panel         | 2                        | 4           | 5           | 2           | —                    | 2           |
| 18 in. Pulling-In Iron Panel | 3                        | 3           | —           | 3           | —                    | —           |
| 24 in. Pulling-In Iron Panel | —                        | —           | 3           | —           | —                    | —           |
| 18 in. Corner                | 14                       | 10          | 6           | 18          | 4                    | —           |
| 24 in. Corner                | 10                       | 14          | 18          | 10          | —                    | 4           |
| Junction Corner              | 4                        | 4           | 4           | 4           | —                    | —           |
| Corner Brace                 | 4                        | 4           | 4           | 6           | 2                    | 2           |
| Cross Brace                  | 12                       | 12          | 12          | 16          | 4                    | 4           |
| Short Pin                    | 240                      | 240         | 240         | 320         | 80                   | 80          |
| Long Pin                     | 40                       | 40          | 40          | 50          | 10                   | 10          |
| Wedge                        | 280                      | 280         | 280         | 370         | 90                   | 90          |
| Insert Hole Plug             | 25                       | 25          | 25          | 25          | —                    | —           |
| Roof Opening Cover Plate     | 1                        | 1           | 1           | 1           | —                    | —           |
| Aligner                      | 2                        | 2           | 2           | 2           | —                    | —           |