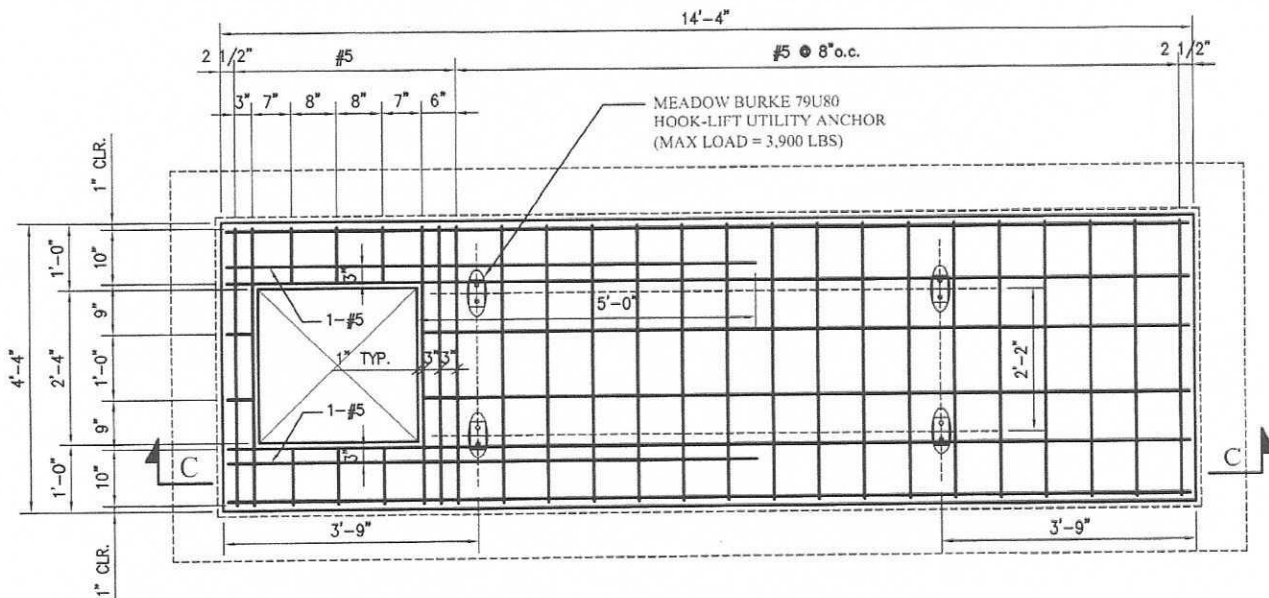
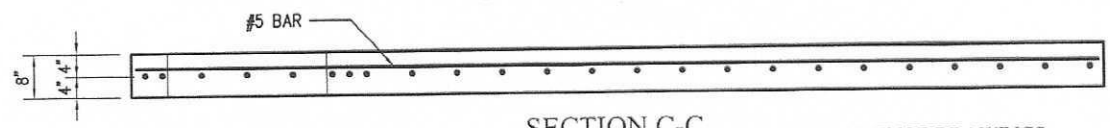


**MANHOLE WALLS**



**FLOOR SLAB PLAN**

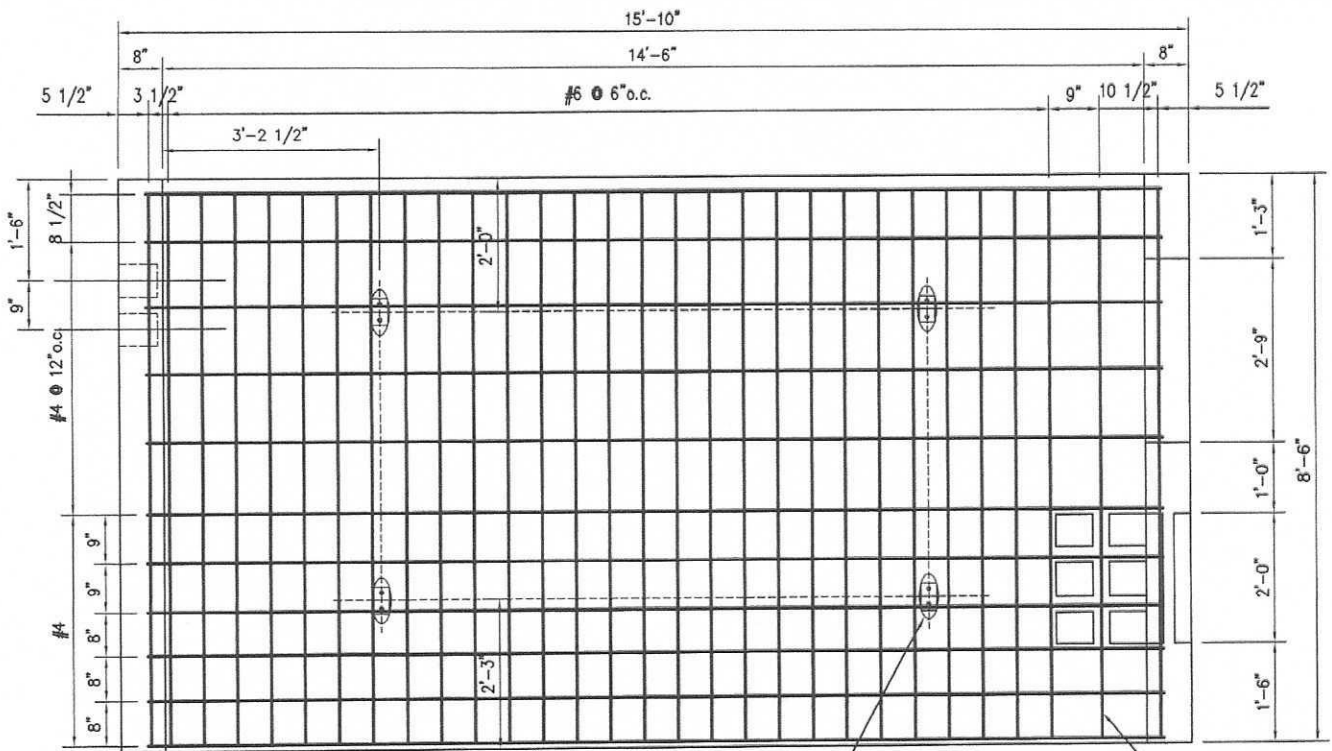


**SECTION C-C**

- REFERENCE DRAWINGS**
- CS-6526 RECESSES, KNOCKOUTS & LIFT HOLES
  - CS-6541 TM 14-6 MANHOLE COMPONENTS
  - CS-6550 MH DETAILS
  - D14-95-001 1' HEIGHT EXTENSION
  - D25-10-005 STEEL FRAME FOR TM-14-6 MH
  - D14-20-001 CONCRETE SPEC.

ITEM ID 131009

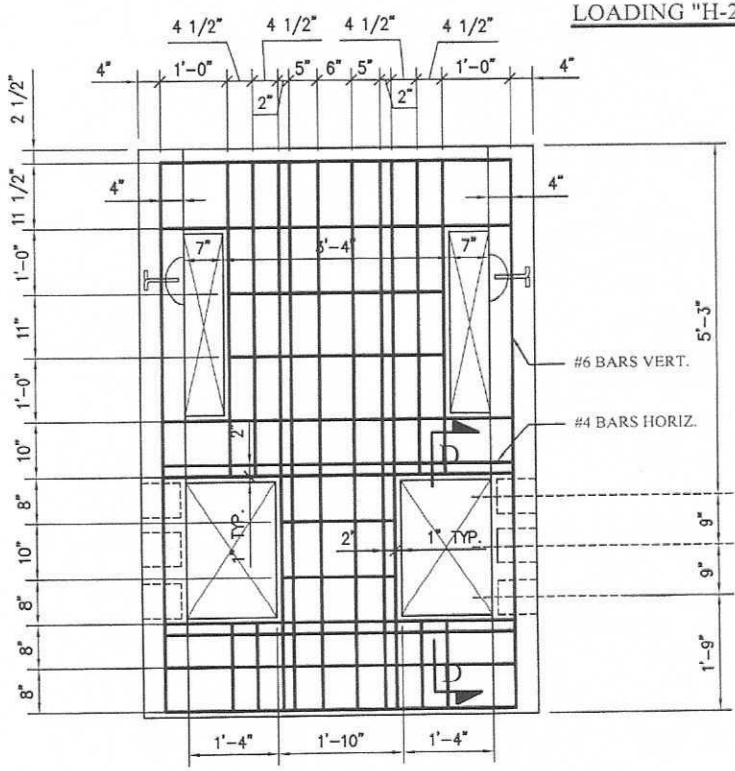
|   |                              |   |                       |          |     |
|---|------------------------------|---|-----------------------|----------|-----|
| APPROVED BY<br><i>Kevin M. DeRosa</i>                                 | REVISION                     | MANHOLES AND BOXES  | CONSTRUCTION STANDARD |          |     |
|   | 8. 02/07: COMPLETELY REVISED |   | DRAWN BY AH           |          |     |
| DATE: 03/14/07  |                              | TRANSFORMER MANHOLE: TYPE TM 14-6<br>14'-6" x 4'-6" x 8'-0" | NUMBER                | SHEET No | REV |
| LONG ISLAND POWER AUTHORITY<br>prepared by KeySpan Energy Corporation |                              |   | 6563                  | 1 of 2   | 8   |



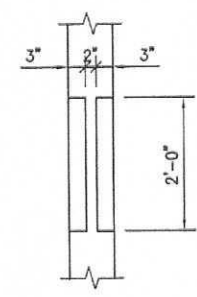
**SECTION A-A  
MANHOLE WALLS**

MEADOW BURKE 79U80  
HOOK-LIFT UTILITY ANCHOR  
(MAX LOAD = 9,000 LBS)

LOADING "H-20"



**SECTION B-B**



**SECTION D-D**

Place reinforcing bars 1" clear from face of concrete unless otherwise noted.

| REVISION | DATE |
|----------|------|
|          |      |

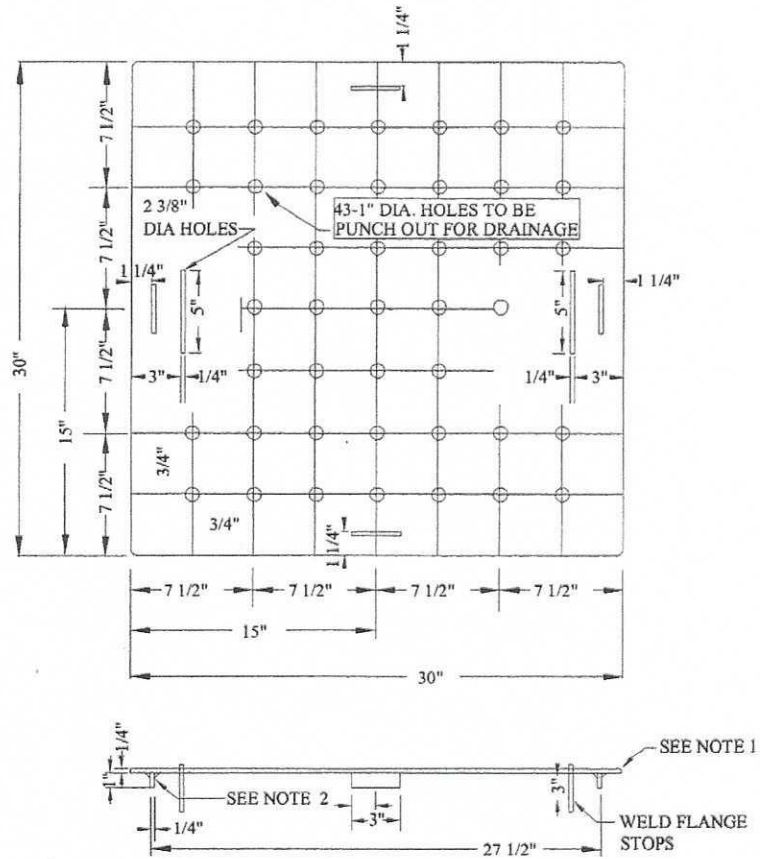
8. 02/07: COMPLETELY REVISED

LONG ISLAND POWER AUTHORITY  
prepared by KeySpan Energy Corporation

MANHOLES AND BOXES

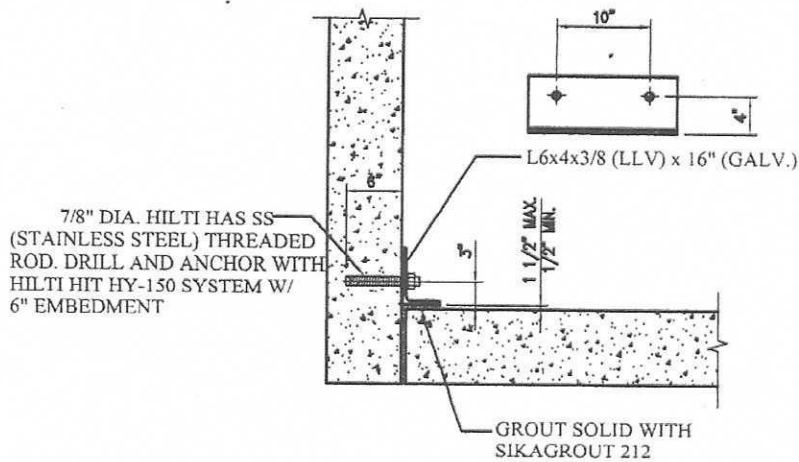
TRANSFORMER MANHOLE: TYPE TM 14-6  
14'-6" x 4'-6" x 8'-0"  
PRECAST CONCRETE WALLS AND FLOORS

| CONSTRUCTION STANDARD |          |     |
|-----------------------|----------|-----|
| DRAWN BY AH           |          |     |
| NUMBER                | SHEET No | REV |
| 6563                  | 2 of 2   | 8   |



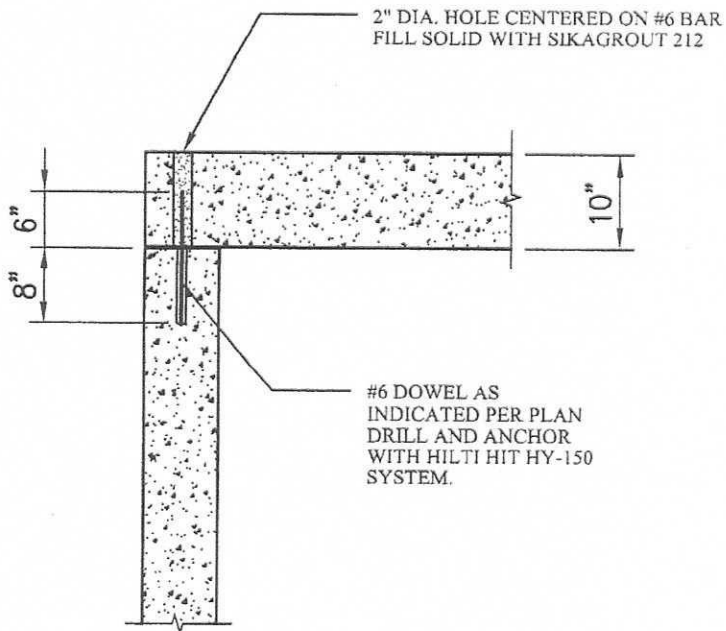
- NOTES:
1. ALL EDGES 1/4" RADIUS
  2. FOUR (4) 1/4" x 1" x 3" STOPS TO BE WELDED

FIGURE 1  
COVER  
FOR  
28" x 28" SUMP PIT OPENING IN MANHOLE



**PRECAST FLOOR SLAB / WALL CONNECTION DETAIL**

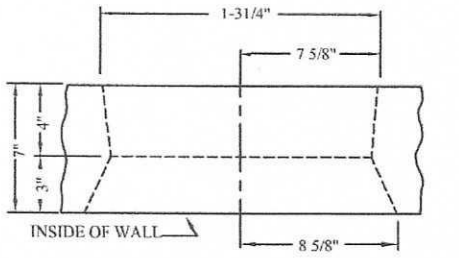
SCALE: 1" = 1'-0"



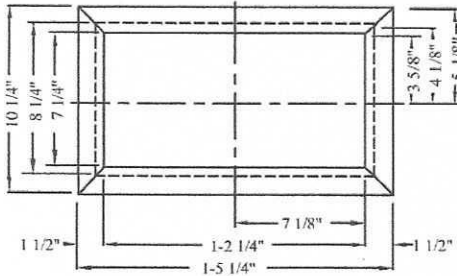
**PRECAST ROOF SLAB/WALL CONNECTION DETAIL**

SCALE: 1/2" = 1'-0"

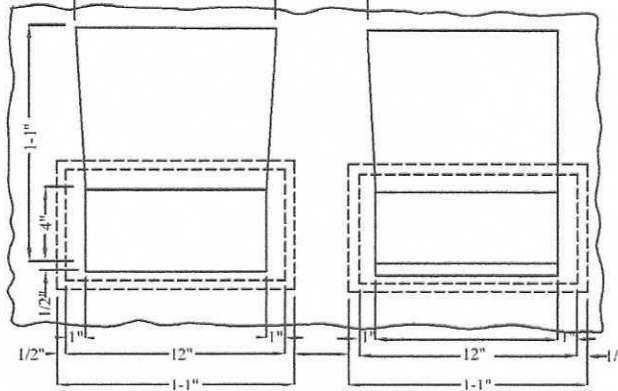
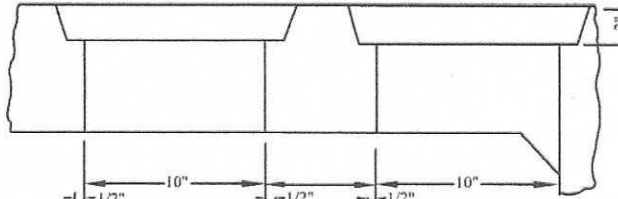
|   |                              |                                 |                       |          |     |
|---|------------------------------|---------------------------------|-----------------------|----------|-----|
| REVISION  |                              | MANHOLES AND BOXES              | CONSTRUCTION STANDARD |          |     |
|   | 5. 01/07: COMPLETELY REVISED | TYPICAL MANHOLE DETAILS FOR     | DRAWN BY AH           |          |     |
|   |                              | PRECAST CONCRETE CABLE MANHOLES | NUMBER                | SHEET No | REV |
| LONG ISLAND POWER AUTHORITY<br>prepared by KeySpan Energy Corporation |                              |                                 | 6550                  | 2 of 2   | 5   |



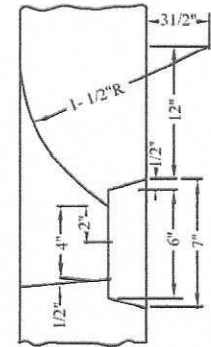
INSIDE OF WALL



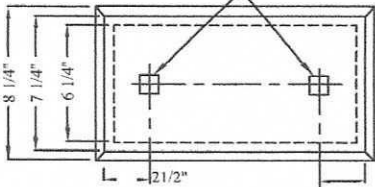
DETAIL OF DUCT ENTRANCE TYPE 1



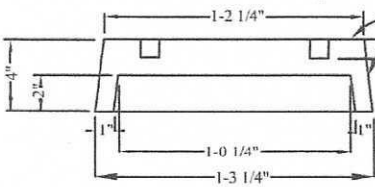
DETAIL OF DUCT ENTRANCE TYPE 2



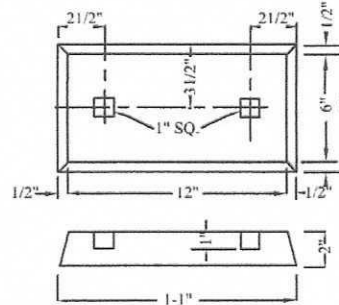
WHEN POURING BOX OR MANHOLE  
INSERT SQUARE SHAFT INTO 1" SQUARE  
HOLE OF KNOCKOUT.



THESE SURFACES  
TO BE PARAFFINED  
TO PREVENT BONDING



PRECAST KNOCKOUT FOR DUCT ENTRANCE  
TYPE 1

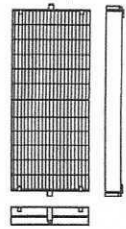


PRECAST KNOCKOUT FOR DUCT ENTRANCE  
TYPE 2

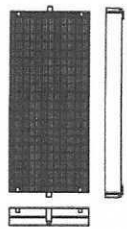
NOTES:

1. MATERIALS FOR PRECAST CONCRETE KNOCKOUTS TO BE ONE(1) PART OF PORTLAND CEMENT WITH THREE(3) PARTS SAND.
2. DUST ENTRANCE DETAILS ARE APPLICABLE TO ALL MANHOLES AND DISTRIBUTION BOX DRAWINGS WHERE SPECIFIED.

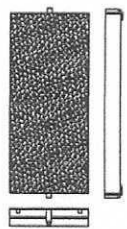
|   |   |                     |                       |          |     |
|---|---|---------------------|-----------------------|----------|-----|
| REVISION  | 4. 04/07: REDRAWN USING<br>AUTOCAD & UPDATE<br>REFERENCES | MANHOLES AND BOXES  | CONSTRUCTION STANDARD |          |     |
|   |   |                     | DRAWN BY AH           |          |     |
| LONG ISLAND POWER AUTHORITY<br>prepared by KeySpan Energy Corporation |   | RECESSES, KNOCKOUTS | NUMBER                | SHEET No | REV |
|   |   |                     | 6526                  | 2 of 2   | 4   |



VENTED ROADWAY GRATE  
4'-6"x2'-0"x4"  
ITEM ID 131021



VENTED SIDEWALK GRATE  
4'-6"x2'-0"x4"  
ITEM ID 131011



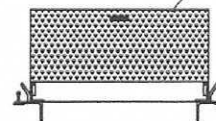
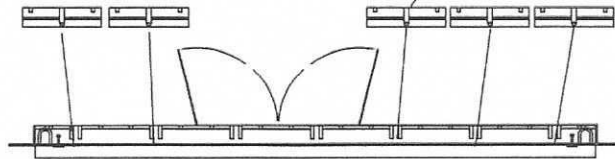
EPOXY FILLED SOLID GRATE  
4'-6"x2'-0"x4"  
ITEM ID 131049

BILCO DOORS  
(DIAMOND PLATE STEEL)  
(NOT FOR ROADWAY  
CONSTRUCTION)  
4'-6"x2'-0"  
(INTEGRAL PAIR,  
TWIN DOOR UNIT)  
ITEM ID -131053

ITEM ID -131011 (2)

ITEM ID -131049 (1)

ITEM ID-131011 (2)



DOORS ARE  
SHOWN IN  
STEEL FRAME  
(FRAME) IS  
NOT PART  
OF ITEM ID #.

ONLY FOR GRASS OR SIDEWALK (NON-VEHICLE) AREAS

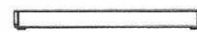
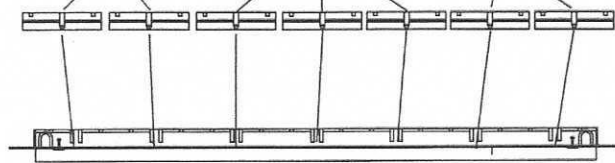
(OR)

ITEM ID-131021(2)

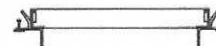
ITEM ID-131049 (3)

ITEM ID-131021 (2)

ROADWAY  
GRATES (7)



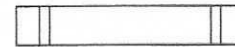
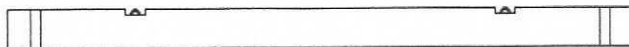
GRATES  
(VARIOUS)



STEEL  
FRAME  
ITEM ID-131122

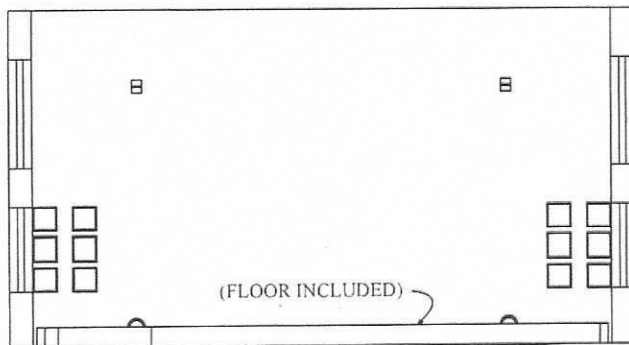
FOR VEHICLE TRAFFIC AREAS

CONCRETE  
HEIGHT  
EXTENSION  
(1 IF REQUIRED)



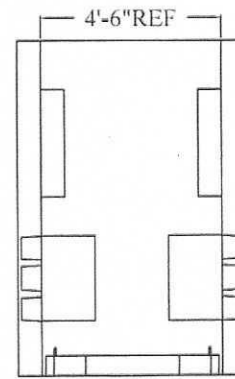
ITEM ID-131031  
PT 14-95-001

TM-14'-6"  
CONCRETE  
MANHOLE  
(1)



(FLOOR INCLUDED)

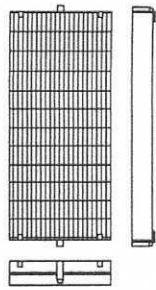
SIDE VIEWS



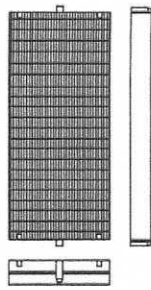
END VIEWS

ITEM ID-131009  
CS-6563

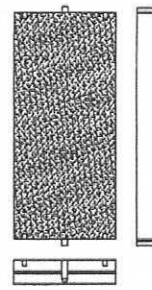
|   |  |                       |   |                                      |                    |          |
|---|--|-----------------------|---|--------------------------------------|--------------------|----------|
| <b>nationalgrid</b><br>APPROVED BY: <i>[Signature]</i> DATE: 09/24/12<br>APPROVED BY: <i>[Signature]</i> DATE: 10/12/12 | <b>PA</b><br>Long Island Power Authority | REVISION              | MANHOLES AND BOXES<br>TM-14-6 (TRANSFORMER) MANHOLE<br>COMPONENTS | CONSTRUCTION STANDARD<br>DRAWN BY AH |                    |          |
|   |  | 2. 08/12: ADD REF. PT |   | NUMBER<br>6541                       | SHEET No<br>1 of 1 | REV<br>2 |
| DO NOT REVERSE PRINT BY ANY OTHER METHOD THAN AUTO-CAD<br>PREPARED BY National Grid Engineering & Survey, Inc.          |  |                       |   |                                      |                    |          |



VENTED ROADWAY GRATE  
4'-6"x2'-0"x4"  
ITEM ID 131021



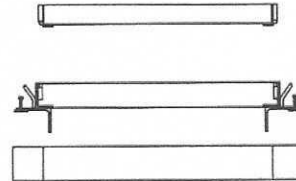
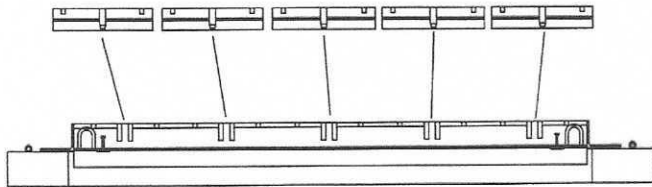
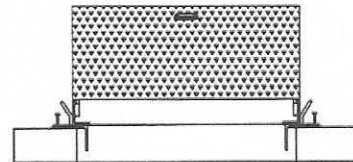
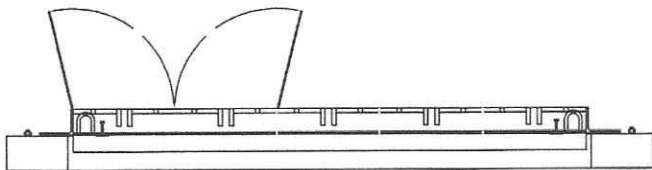
VENTED SIDEWALK GRATE  
4'-6"x2'-0"x4"  
ITEM ID 131011



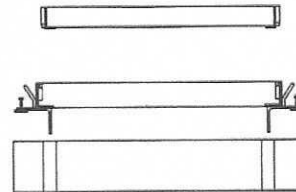
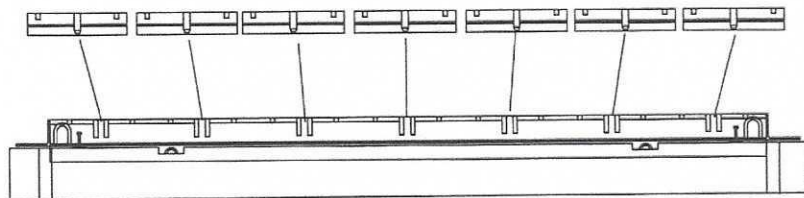
EPOXY FILLED SOLID GRATE  
4'-6"x2'-0"x4"  
ITEM ID 131049

BILCO DOORS (DIAMOND PLATE STEEL)  
(NOT FOR ROADWAY CONSTRUCTION)  
4'-6"x2'-0"x4"  
ITEM ID 131053

DOOR(S) SHOWN IN FRAME AND COLLAR  
AND NOT PART OF ITEM ID NUMBER



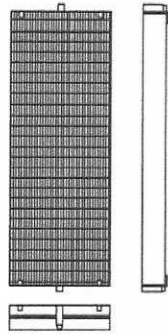
FRAME FOR M-11-6 AND CM-11-6 MANHOLES  
ITEM ID 131123  
REQUIRES 5 GRATES



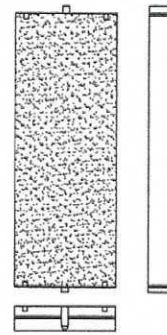
FRAME FOR TM-14-6 MANHOLE  
ITEM ID 131122  
REQUIRES 7 GRATES

ALL FRAMES SHOWN IN CONCRETE COLLAR WHICH IS NOT INCLUDED WITH ITEM ID NUMBER

|   |   |  |  |                       |          |     |
|---|---|--|--|-----------------------|----------|-----|
| <b>nationalgrid</b><br><small>Long Island Power Authority</small>   | <b>PA</b><br><small>Long Island Power Authority</small> | REVISION   | MANHOLES AND BOXES<br>RECTANGULAR COVER AND FRAMES<br>FOR<br>M-11-6, CM-11-6, TM-18-6, TM-20-6 TM-14-6 | CONSTRUCTION STANDARD |          |     |
|   |   | 2.08/12: CHANGE<br>D-SPECS TO<br>PURCHASE & TEST |  | DRAWN BY AH           |          |     |
| APPROVED BY   | DATE  | APPROVED BY                                      | DATE   | NUMBER                | SHEET No | REV |
| <i>Richard Zundt</i>  | 09/14/12  | <i>W. Paul</i>                                   | 10/12/12   | 6544                  | 1 of 3   | 2   |
| <small>DO NOT REVISE PRINT BY ANY OTHER METHOD THAN AUTO-CAD<br/>         PREPARED BY: National Grid Engineering &amp; Survey, Inc.</small> |   |  |  |                       |          |     |

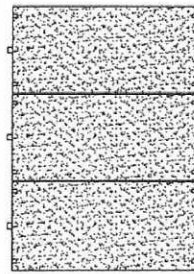
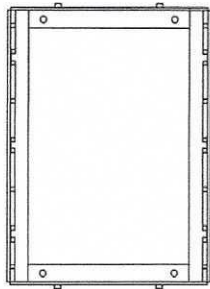


VENTED SIDEWALK GRATE  
5'-6"x2'-0"x6"  
ITEM ID 131050



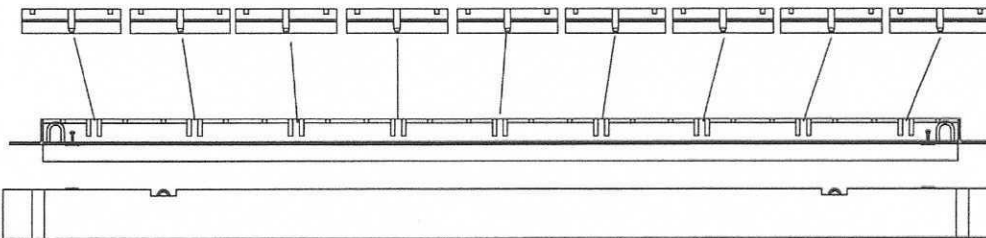
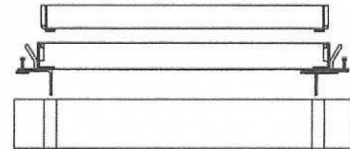
EPOXY FILLED SOLID GRATE  
5'-6"x2'-0"x6"  
ITEM ID 131063

STEEL FRAME ADAPTER  
ITEM ID 131006

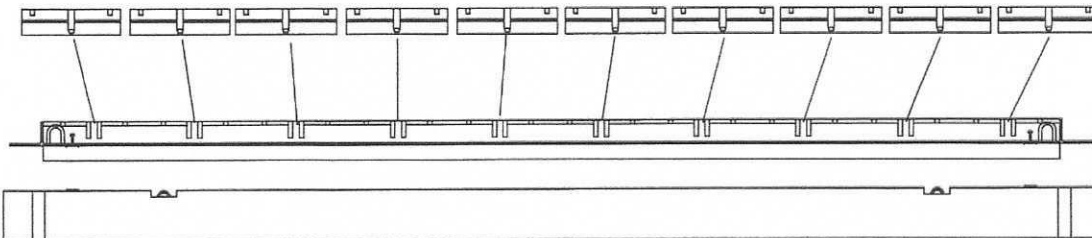


VENTED ROADWAY GRATE  
21 3/8" X 44 1/4"  
ITEM ID 131056

(combination replaces 2 regular grates)



STEEL FRAME FOR TM 18-6 MANHOLE  
ITEM ID 131126  
REQUIRES NINE 5'-6"x2'-0"x6" GRATES



STEEL FRAME FOR TM 20-6 MANHOLE  
ITEM ID 131129  
REQUIRES TEN 5'-6"x2'-0"x6" GRATES

- ▶ PT-14-95-001 PRECAST ROOFS, COLLARS, AND HEIGHT EXTENSIONS
- ▶ PT-25-10-005 STEEL FRAMES FOR MANHOLES

|   |   |   |  |                       |          |     |
|---|---|---|--|-----------------------|----------|-----|
| REVISION  | 2.08/12: CHANGE D-SPECS. TO PURCHASE & TEST | MANHOLES AND BOXES                        |  | CONSTRUCTION STANDARD |          |     |
|   |   | RECTANGULAR COVER AND FRAMES              |  | DRAWN BY AH           |          |     |
| LONG ISLAND POWER AUTHORITY                           |   | FOR                                       |  | NUMBER                | SHEET No | REV |
| prepared by: National Grid Engineering & Survey, Inc. |   | M-11-6, CM-11-6, TM-18-6, TM-20-6 TM-14-6 |  | 6544                  | 2 of 3   | 2   |



E F P O L L E D  
X Y

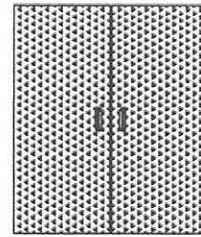
E F P O L L E D  
X Y

E F P O L L E D  
X Y

E F P O L L E D  
X Y

E F P O L L E D  
X Y

B I L C O  
D O O R



BILCO DOORS (DIAMOND PLATE STEEL)

M-11-6 / CM-11-6

ALL SOLID EPOXY FILLED ROADWAY GRATES FOR SPLICING MANHOLES.  
(ROADWAY AREAS)

E F P O L L E D  
X Y

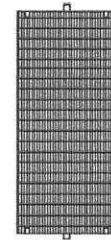
B I L C O  
D O O R

B I L C O  
D O O R

E F P O L L E D  
X Y

E F P O L L E D  
X Y

S I D E W A L K  
V E N T E D



VENTED SIDEWALK GRATE

M-11-6 / CM-11-6

BILCO DOORS WITH 3 SOLID EPOXY FILLED GRATES FOR SWITCHING MANHOLES  
(GRASS OR SIDEWALK AREAS ONLY)

V R E O N T E W D A Y  
V R E O N T E W D A Y

E F P O L L E D  
X Y

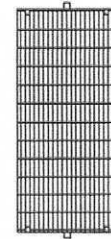
E F P O L L E D  
X Y

E F P O L L E D  
X Y

E F P O L L E D  
X Y

V R E O N T E W D A Y

V R O A D W A Y  
V E N T E D



VENTED ROADWAY GRATE

TM-14-6

COMBINATION OF OPEN TYPE ROADWAY AND SOLID GRATES TO COVER 15kV ELBOWS  
(ROADWAY AREAS 150 - 500 KVA)

V R E O N T E W D A Y  
V R E O N T E W D A Y

E F P O L L E D  
X Y

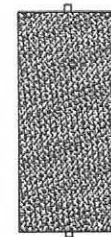
E F P O L L E D  
X Y

E F P O L L E D  
X Y

V R E O N T E W D A Y

V R E O N T E W D A Y

E F P O L L E D  
X Y



EPOXY FILLED SOLID GRATE

TM-14-6  
(ROADWAY AREAS 750 - 1500 KVA)

(\*REPLACE ROADWAY OPEN TYPE GRATES WITH SIDEWALK OPEN TYPE GRATES ONLY IN PEDESTRIAN /GRASS AREAS)

|  |   |   |  |  |                       |          |     |
|--|---|---|--|--|-----------------------|----------|-----|
| REVISION   | 2.08/12: CHANGE D-SPECS. TO PURCHASE & TEST | MANHOLES AND BOXES                        |  |  | CONSTRUCTION STANDARD |          |     |
|  |   | RECTANGULAR COVER AND FRAMES              |  |  | DRAWN BY AH           |          |     |
| LONG ISLAND POWER AUTHORITY                          |   | FOR                                       |  |  | NUMBER                | SHEET No | REV |
| prepared by National Grid Engineering & Survey, Inc. |   | M-11-6, CM-11-6, TM-18-6, TM-20-6 TM-14-6 |  |  | 6544                  | 3 of 3   | 2   |