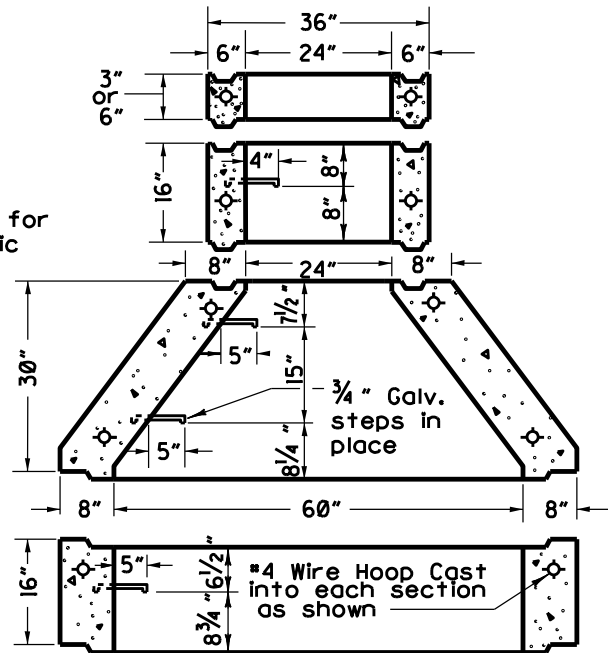


**TYPICAL SECTION**  
**48" ID Concentric Concrete Manhole**



**TYPICAL SECTION**  
**60" ID Concentric Concrete Manhole**

**NOTES:**

1. Construction shall be in accordance with the Greenbook.
2. See Std. Plan 630-3-0C for Manhole Frame & Cover detail.
3. See Std. Plan 1507 for Manhole Step details. Max. spacing = 17 inches.
4. The manhole pipes and grade rings shall be arranged in order of longer to shorter lengths from bottom to top.
5. Manhole details shall be submitted to the Engineer for approval.
6. Pavement surface shall be finished 1/4 inch above manhole frame.
7. Top of cone shall be placed a minimum of 6 inch below bottom of roadway structural section or a minimum of 16 inches below finish grade, whichever is greatest.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Ignacio G. Ochoa*  
Ignacio G. Ochoa, Chief Engineer

STD. PLAN

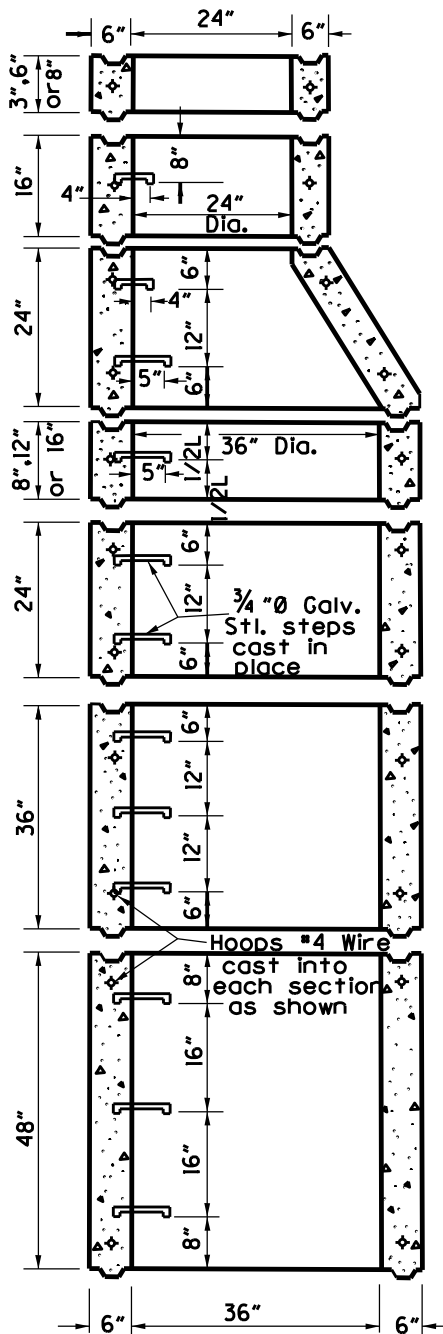
1501

Revision: April 2013

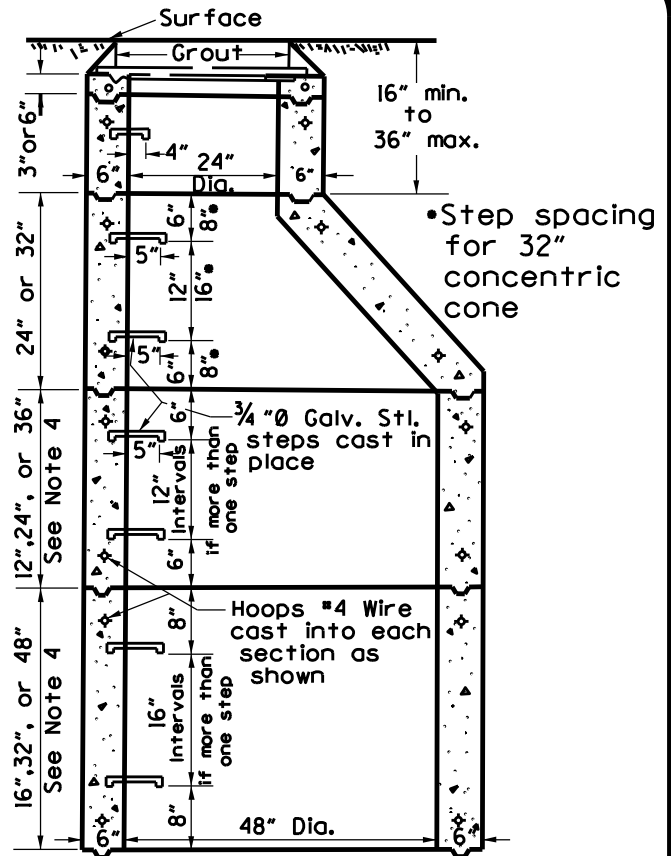
NON-REINF. CONCRETE CONCENTRIC CONE MANHOLE

SHT. 1 OF 1





**TYPICAL SECTION 36" ID  
Eccentric Cone Manhole**



**TYPICAL SECTION 48" ID  
Eccentric Cone Manhole**

**NOTES:**

1. See Std. Plan 630-3-0C for Manhole Frame and Cover Details.
2. See Std. Plan 1507 for Manhole Steps details. Max. spacing=17 inches.
3. Construction shall be in accordance with the Greenbook.
4. The manhole pipes and grade rings shall be arranged in order of longer to shorter lengths from bottom to top.
5. Manhole details shall be submitted to the Engineer for approval.
6. Pavement to be finished 1/4 inch above manhole frame.
7. Top of cone shall be placed a minimum of 6 inches below bottom of roadway structural section or a minimum of 16 inches below finish grade, whichever is greatest.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Ignacio G. Ochoa, Chief Engineer*

STD. PLAN

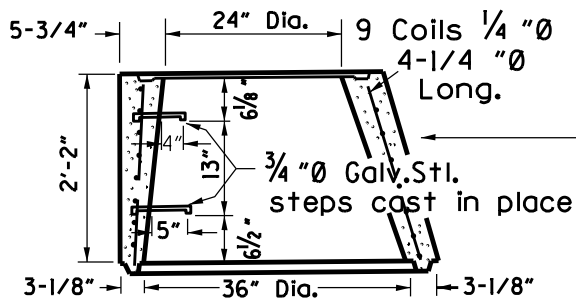
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Revision: April 2013

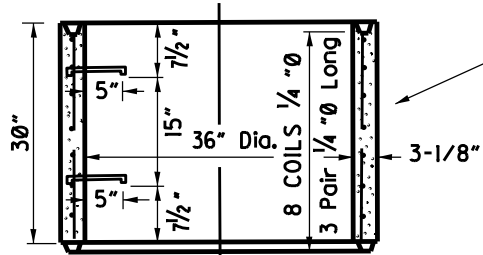
NON-REINF. CONCRETE ECCENTRIC CONE MANHOLE

SHT. 1 OF 1

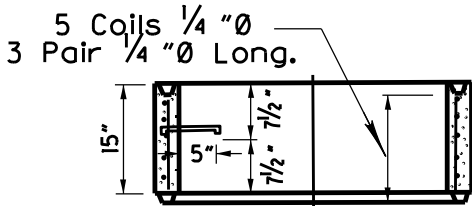




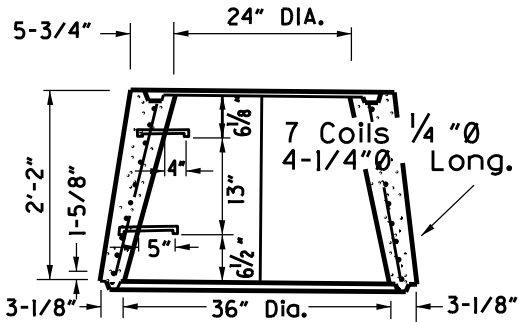
**36"x 24" ECCENTRIC CONE**



**36"x 30" MANHOLE PIPE**



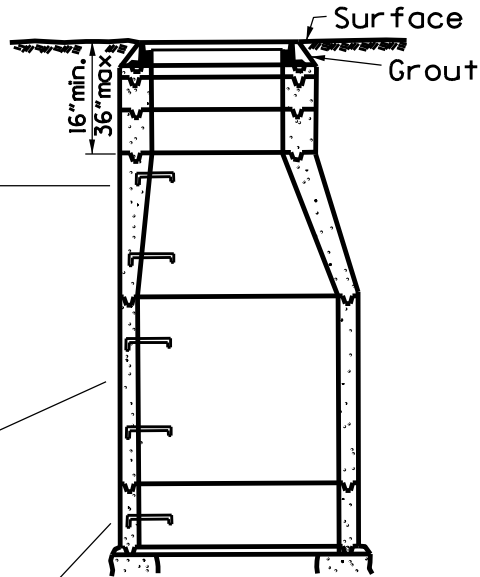
**36"x 15" MANHOLE PIPE**



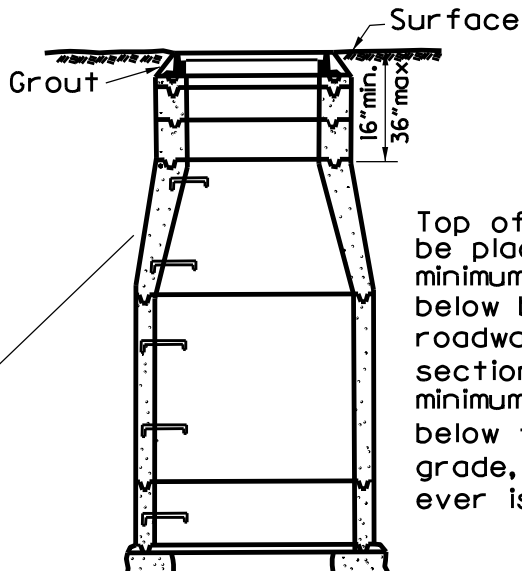
**36"x 24" CONCENTRIC CONE**

**NOTES:**

1. See Std Plan 630-3-0C for Manhole Frame and Cover Details.
2. See Std. Plan 1507 for Manhole Step details.
3. Construction shall be in accordance with the Greenbook.
4. The manhole pipes and grade rings shall be arranged in order of longer to shorter lengths from bottom to top.
5. Manhole details shall be submitted to the Engineer for approval.
6. Pavement shall be finished 1/4 inch above manhole frame.



**TYPICAL SECTION  
36" ID Eccentric  
Cone Manhole**



**TYPICAL SECTION  
36" ID Concentric  
Cone Manhole**

Top of cone shall be placed a minimum of 6" below bottom of roadway structural section or a minimum of 16" below finish grade, whichever is greatest.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Ignacio G. Ochoa, Chief Engineer

STD. PLAN

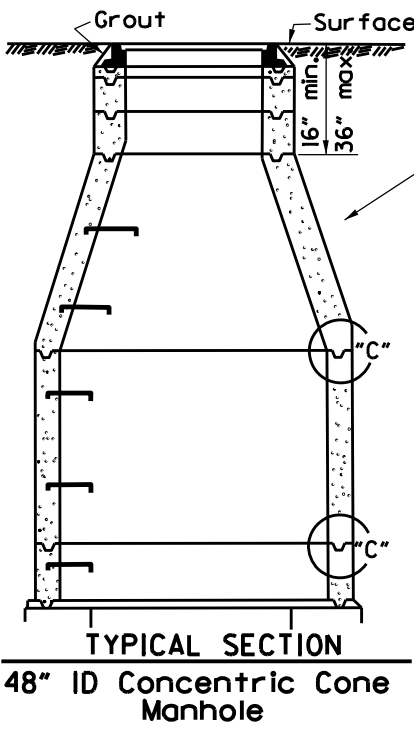
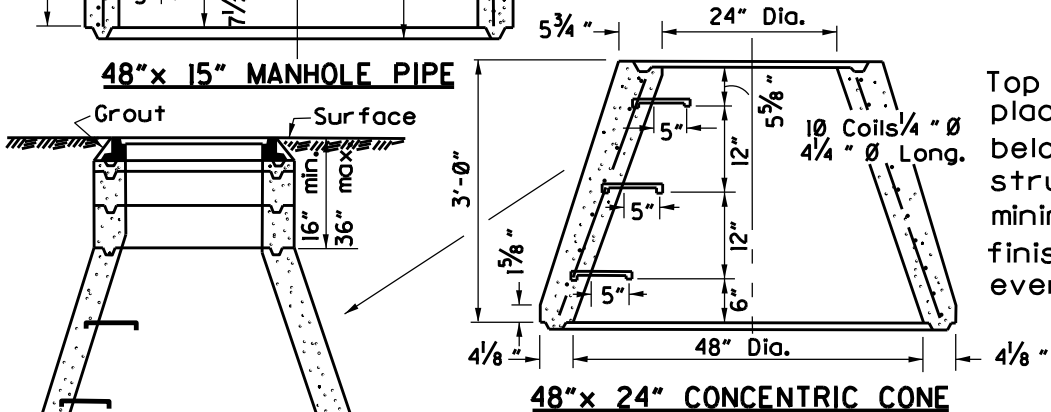
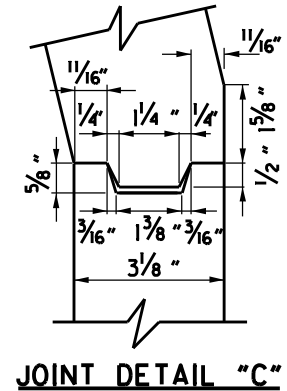
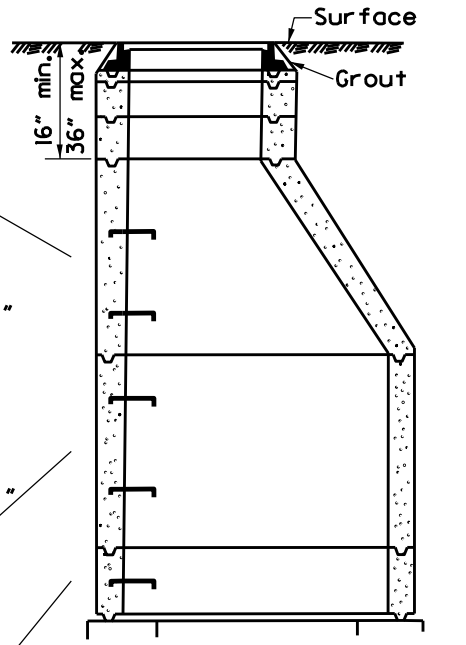
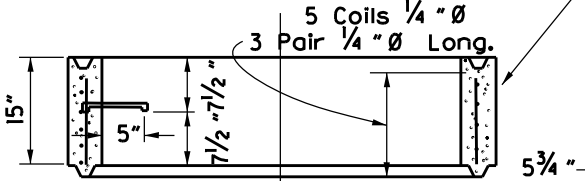
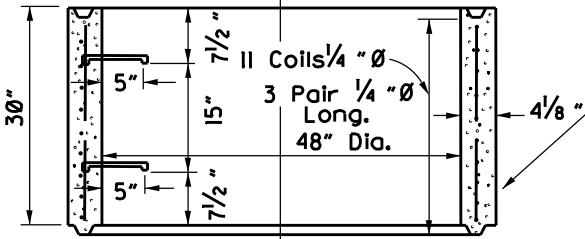
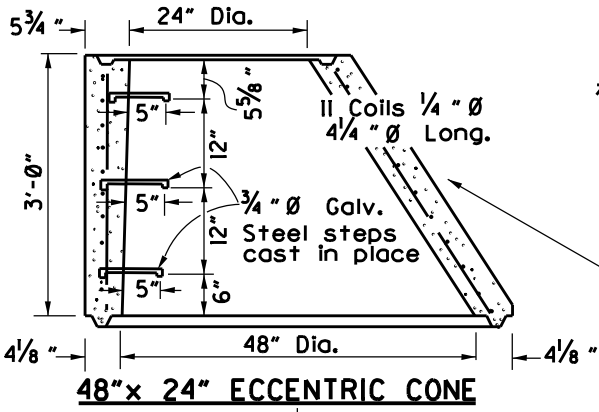
**1503**

Revision: April 2013

**36" REINFORCED CONCRETE MANHOLE**

SHT. 1 OF 1





Top of cone shall be placed a minimum of 6" below bottom of roadway structural section or a minimum of 16" below finish grade, whichever is greatest.

**NOTES:**

1. See Std. Plan 630-3-0C thru 633-1-0C for Manhole Frame and Cover details.
2. See Std. Plan 1507 for Manhole Step details.
3. Construction shall be in accordance with the Greenbook.
4. The manhole pipes and grade ring shall be arranged in order of longer to shorter lengths from bottom to top.
5. Manhole details shall be submitted to the Engineer
6. Pavement to be finished 1/4" above manhole frame.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved   
Ignacio G. Ochoa, Chief Engineer

Revision: April 2013

STD. PLAN

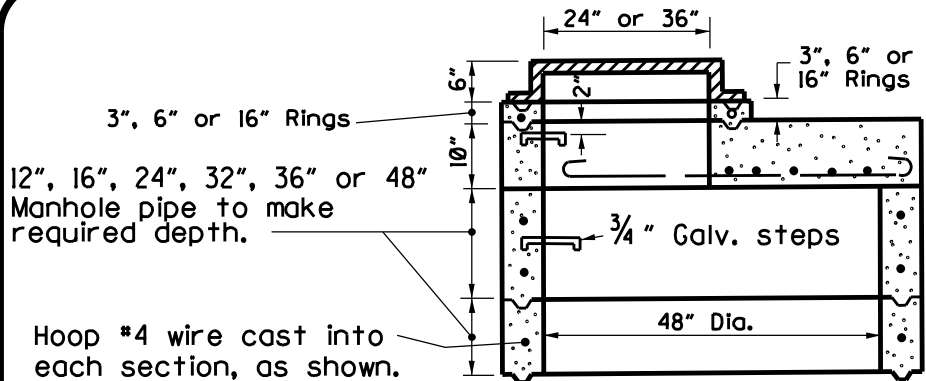
**1504**

**48" REINFORCED CONCRETE MANHOLE**

SHT. 1 OF 1

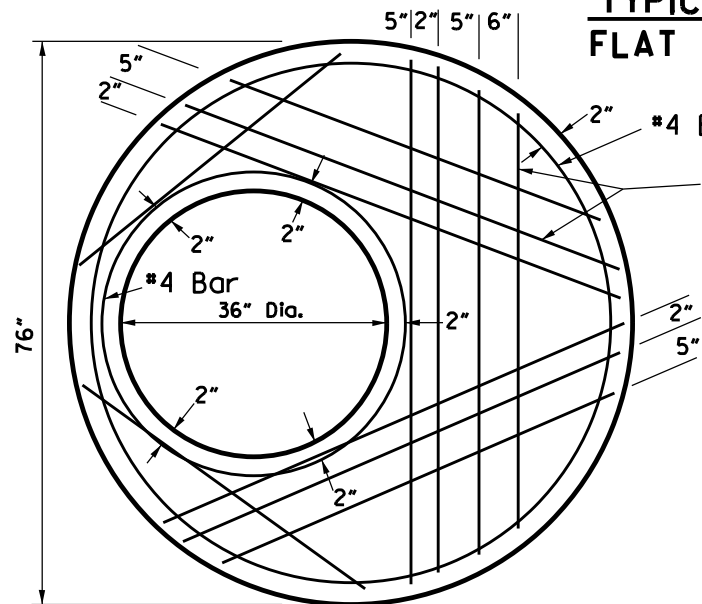




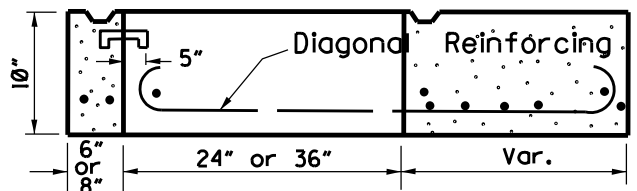


For Manhole frame & cover see Std. Plan 630-3-0C & 633-1-0C.  
 For Manhole steps see Std. Plan 1507.  
 For Ring & Manhole pipe sections see Std. Plan 1501.  
 Construction shall be in accordance with the Greenbook.

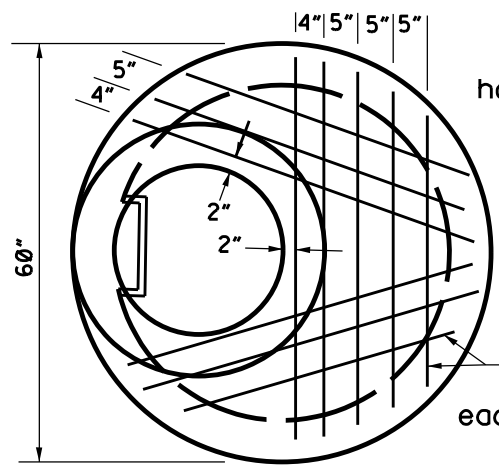
**TYPICAL SECTION  
 FLAT TOP MANHOLE**



**PLAN OF 60" COVER  
 WITH 36" ACCESS**



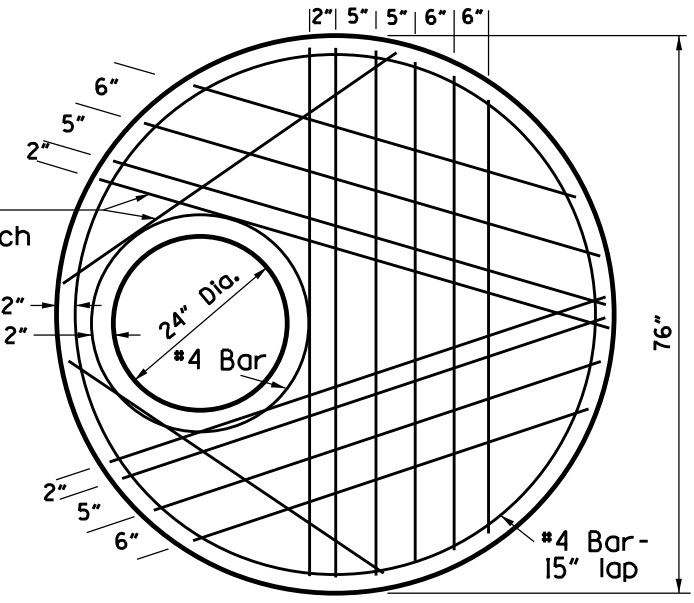
**FLAT TOP COVER**



**PLAN OF 60" COVER  
 WITH 24" ACCESS**

#4 Bars hooked at each end (typ)  
 Total: 16

#5 Bars hooked at each end (typ)  
 Total: 11



**PLAN OF 60" COVER  
 WITH 24" ACCESS**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved   
 Ignacio G. Ochoa, Chief Engineer

Revision: April 2013

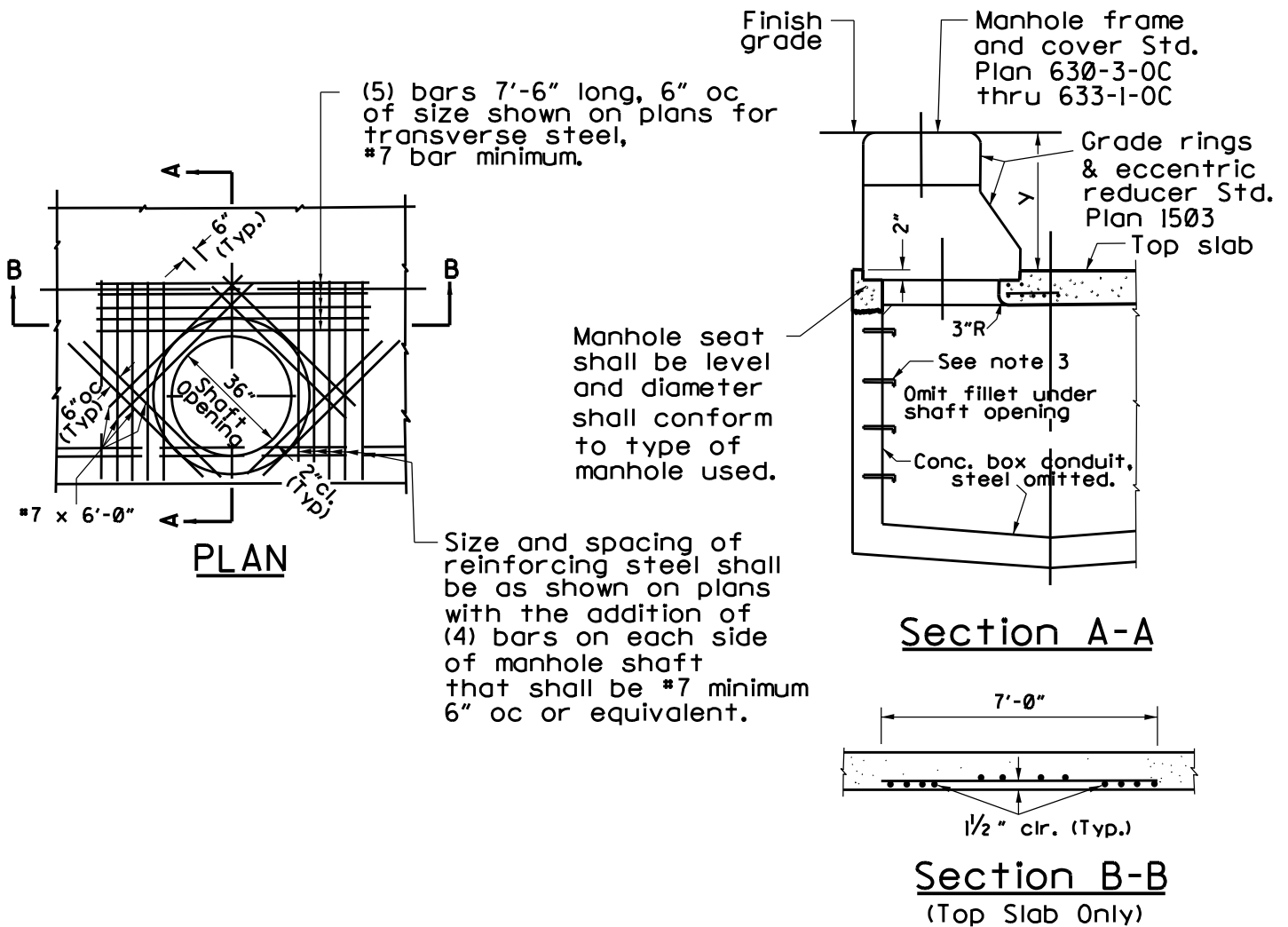
STD. PLAN

**1505**

**FLAT TOP MANHOLE COVERS**

SHT. 1 OF 1





**NOTES:**

1. Manhole shaft centerlines are shown on plans.
2. All reinforcing steel shown shall be placed in bottom face only.
3. See Std. Plan 1507 for step placement and embedment details.
4. All steel reinforcement shall be 1/2 inch clear, unless otherwise noted.
5. When depth Y from street grade to top of manhole seat is less than 2 feet-10 1/2 inches in paved streets or 3 feet-6 inches in unpaved streets, construct 2-foot diameter shaft using concrete rings as per Std. Plan 1502, otherwise construct 3-foot diameter shaft as shown on this plan.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Ignacio G. Ochoa*  
*Ignacio G. Ochoa, Chief Engineer*

Revision: April 2013

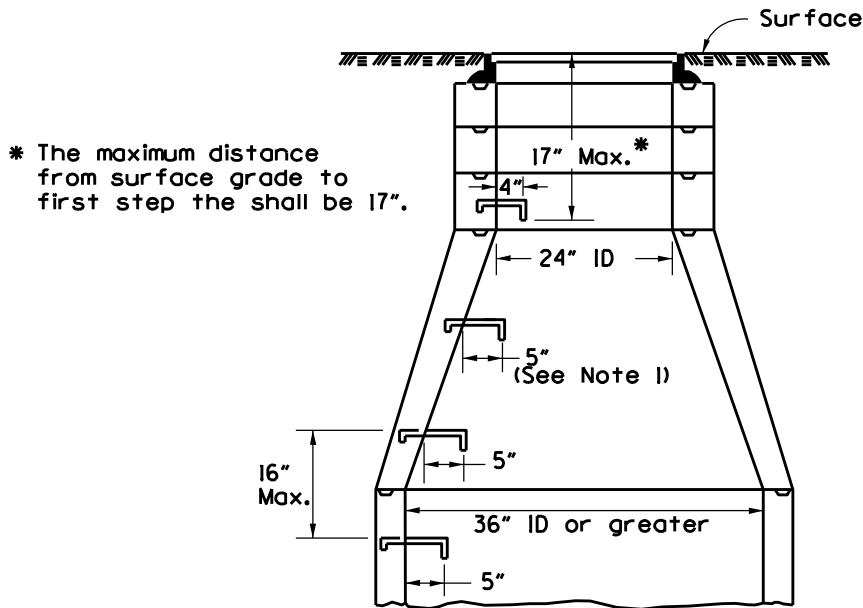
STD. PLAN

**1506**

**REINFORCED CONCRETE BOX MANHOLE**

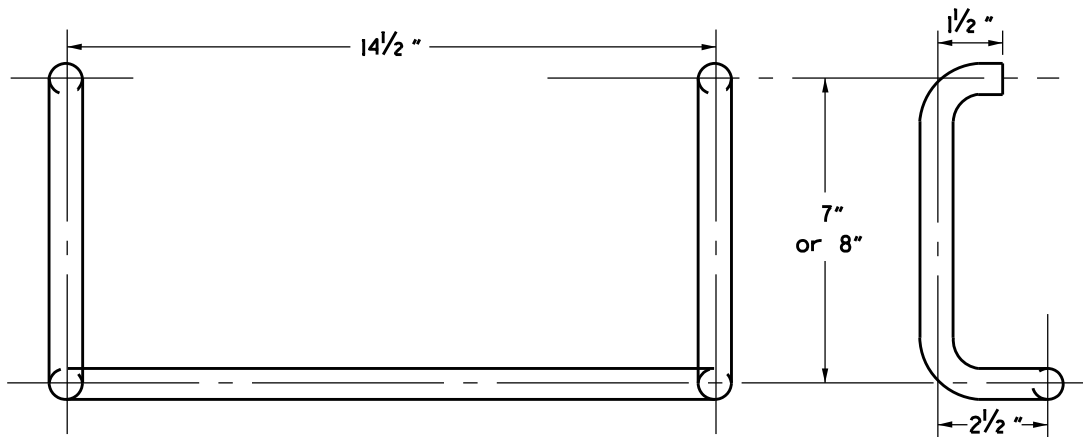
SHT. 1 OF 1





\* The maximum distance from surface grade to first step shall be 17".

**TYPICAL MANHOLE**



**NOTES:**

1. See Std. Plan 1501, 1502, 1503, 1504, 1505, or 1506 for Manhole Step spacing and placement.
2. Steps 7 inches in length shall be used in 24 inch ID units.  
Steps 8 inches in length shall be used in 36 inch ID units.  
Steps 8 inches in length shall be used in 48 inch ID units.
3. Material shall be  $\frac{3}{4}$  inch dia. steel conforming to ASTM A615, galvanized after fabrication in accordance with ASTM A123.
4. Steps shall have a minimum of 4 inch projection from point of embedment and a minimum of 3 inch embedment.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Ignacio G. Ochoa, Chief Engineer*

STD. PLAN

**1507**

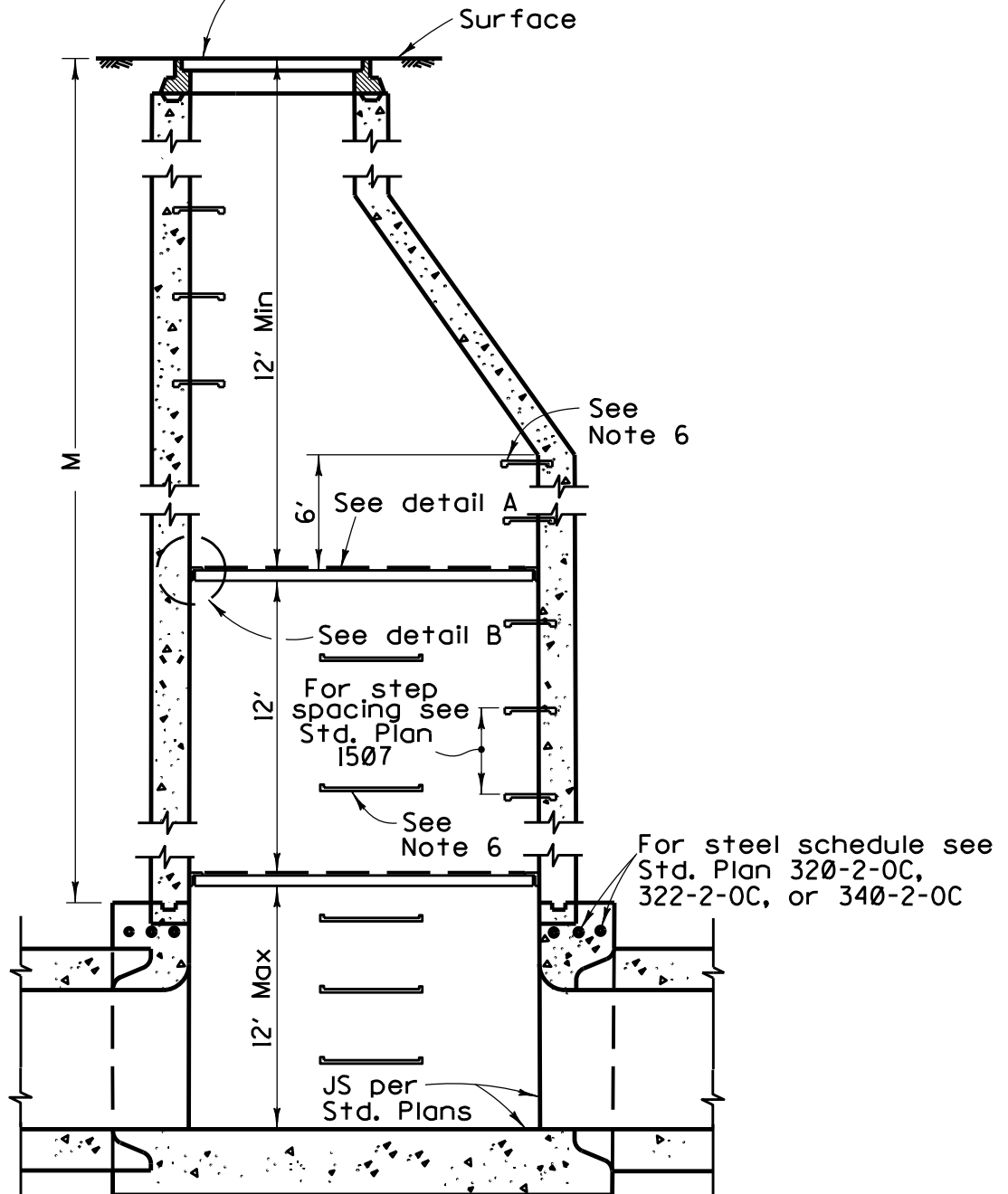
Revision: April 2013

**MANHOLE STEPS**

SHT. 1 OF 1



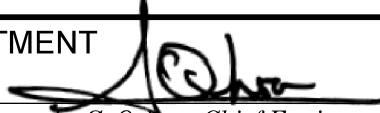
See Std. Plan 630-3-0C thru 633-1-0C  
for manhole frame & cover details



48" ID Eccentric Cone Manhole  
per Std. Plan 1504

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Ignacio G. Ochoa, Chief Engineer

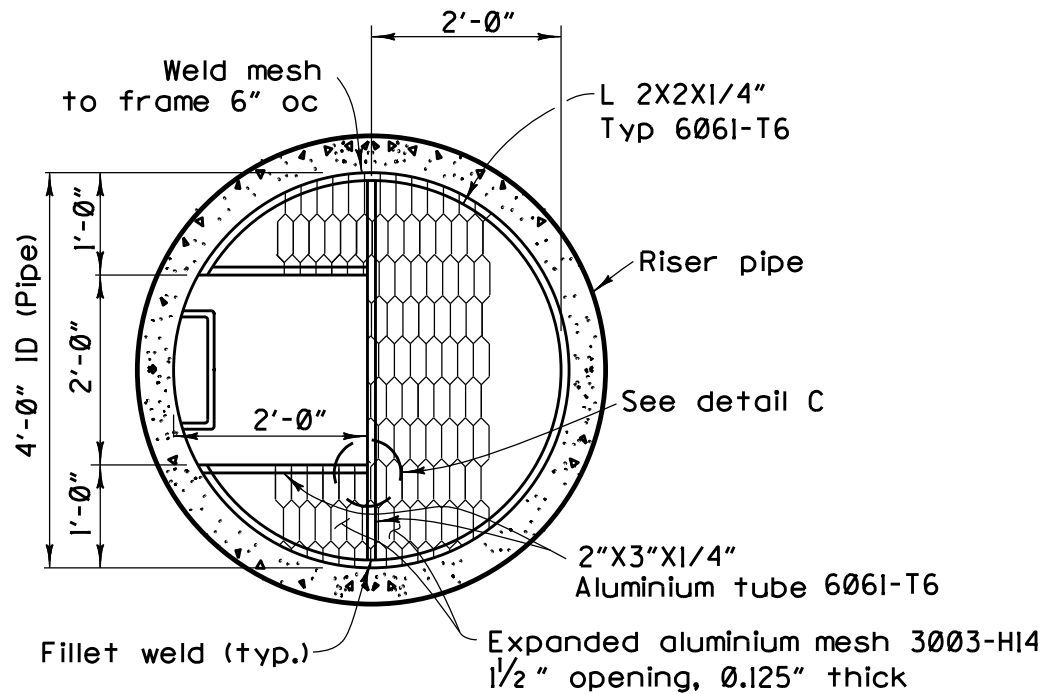
STD. PLAN

1508

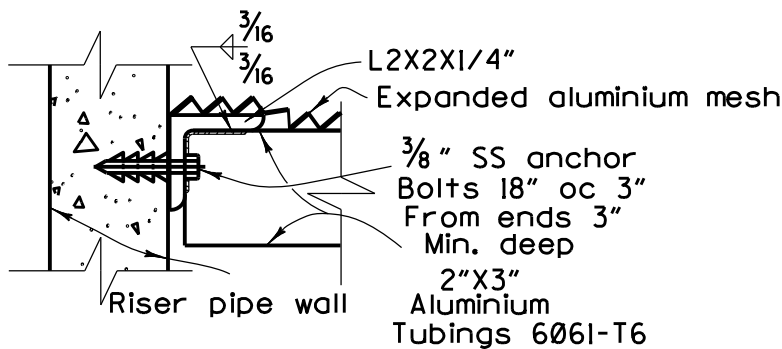
Revision: April 2013

DEEP MANHOLE LANDINGS

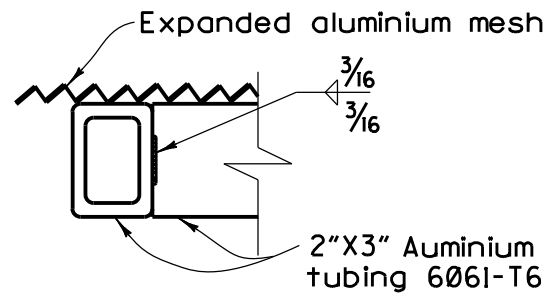
SHT. 1 OF 2



**DETAIL A**



**DETAIL B**



**DETAIL C**

**NOTES:**

1. Spacing dimensions between landings to start at bottom of hole.
2. Rotate platform opening 90 degree minimum from opening below.
3. Welds to be Heli-Arc per AWS specs.
4. For base see Std. Plan 320-2-0C.
5. For pipe & cone see Std. Plan 1504.
6. Steps to extend minimum feet above landing for use as handholds.
7. Design live load : 150 psf.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Ignacio G. Ochoa, Chief Engineer

STD. PLAN

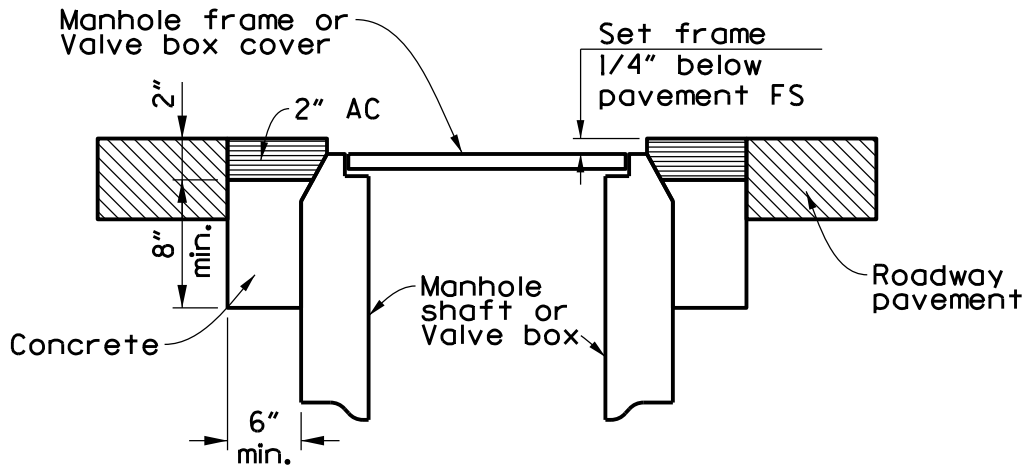
1508

Revision: April 2013

DEEP MANHOLE LANDINGS

SHT. 2 OF 2





**MANHOLE/VALVE COVER**

**LEGEND:**

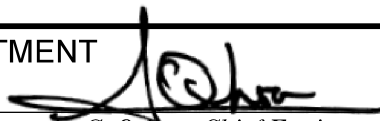
-  Existing Pavement
-  New Pavement

**NOTE:**

1. Frame and cover to be set  $\frac{1}{4}$  inch below finished surface of surrounding roadway pavement.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
*Ignacio G. Ochoa, Chief Engineer*

April 2013

STD. PLAN

**1509**

**MANHOLE/VALVE COVER ADJUSTMENT TO GRADE DETAIL**

SHT. 1 OF 1

