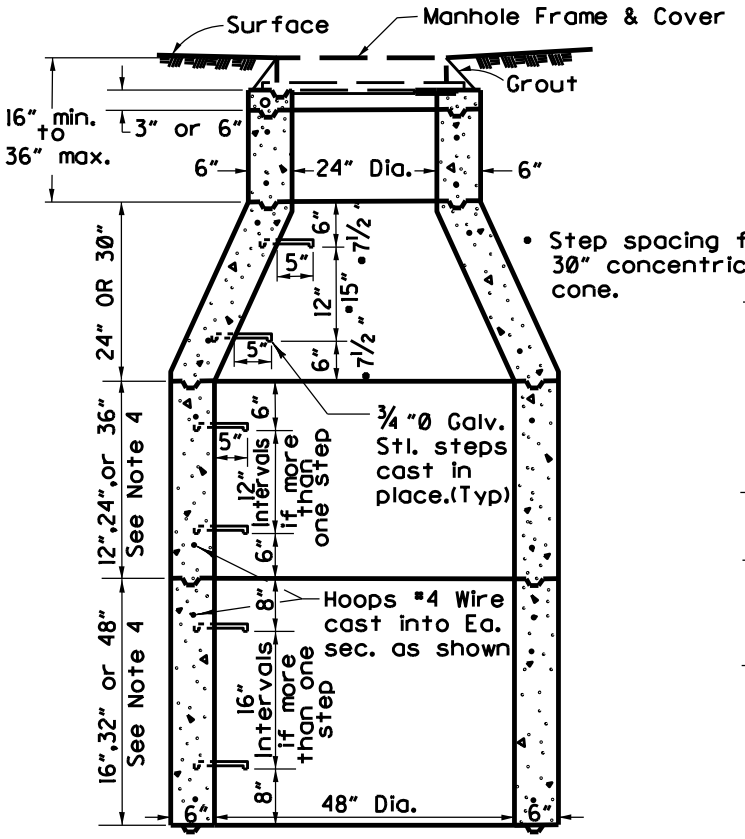
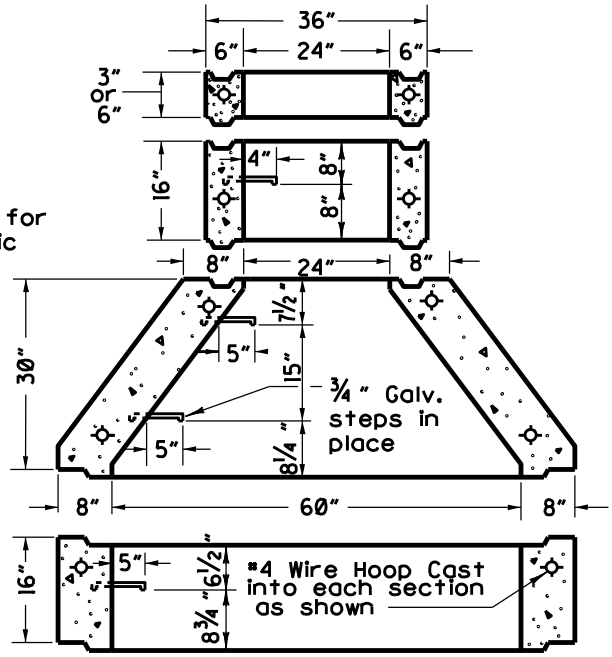


TYPICAL SECTION

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 ¼ 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, Chief Engineer

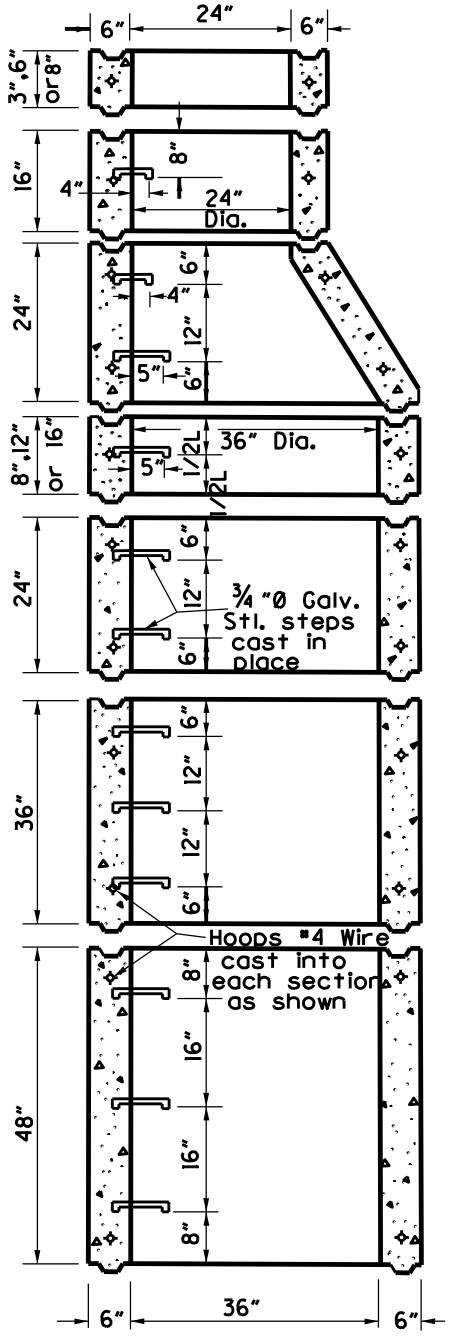
Revision: April 2013

STD. PLAN

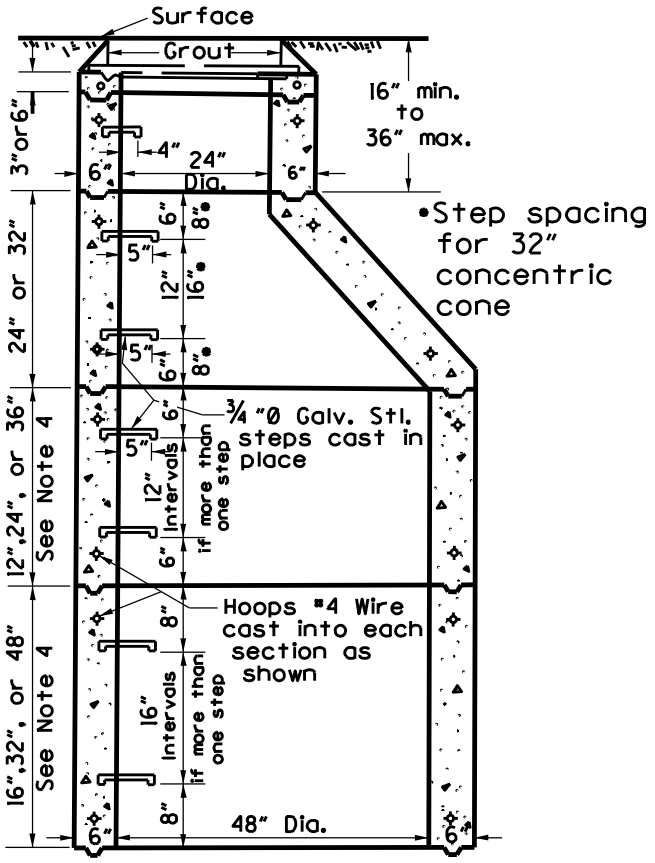
1501

SHT. 1 OF 1

NON-REINF. CONCRETE CONCENTRIC CONE MANHOLE



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 ¼ 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

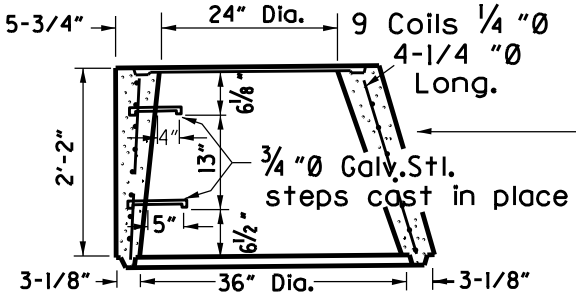
Revision: April 2013

STD. PLAN

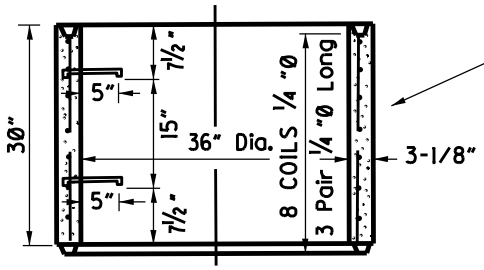
1502

SHT. 1 OF 1

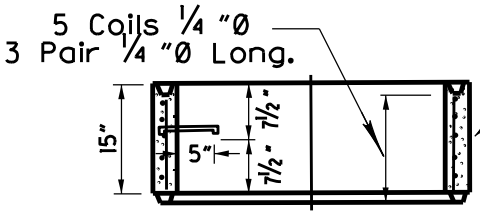
NON-REINF. CONCRETE ECCENTRIC CONE MANHOLE



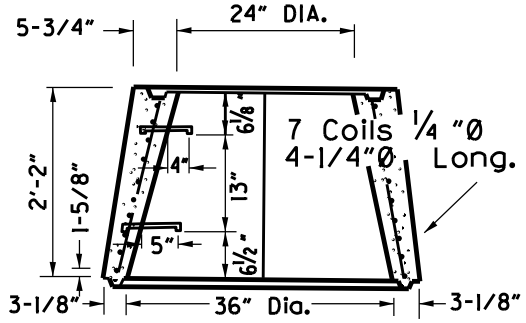
36"x 24" ECCENTRIC CONE



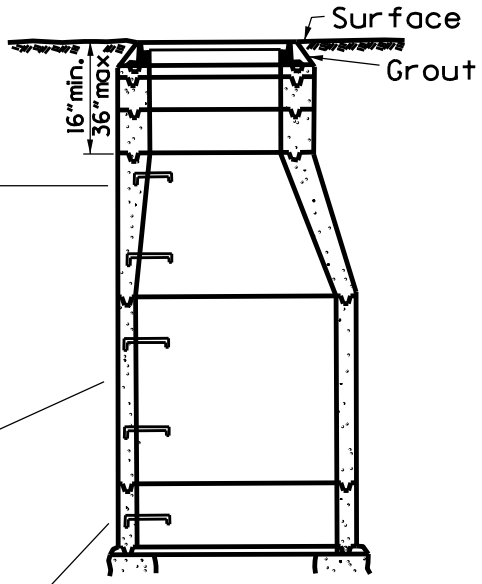
36"x 30" MANHOLE PIPE



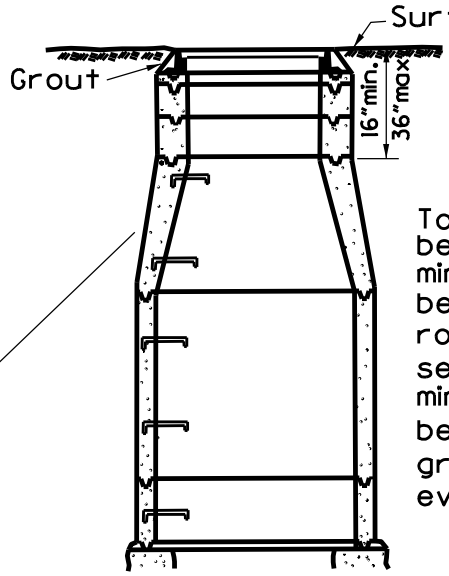
36"x 15" MANHOLE PIPE



36"x 24" CONCENTRIC CONE



TYPICAL SECTION
36" ID Eccentric 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.

TYPICAL SECTION
36" ID Concentric Cone Manhole

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.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved _____
Ignacio G. Ochoa, Chief Engineer

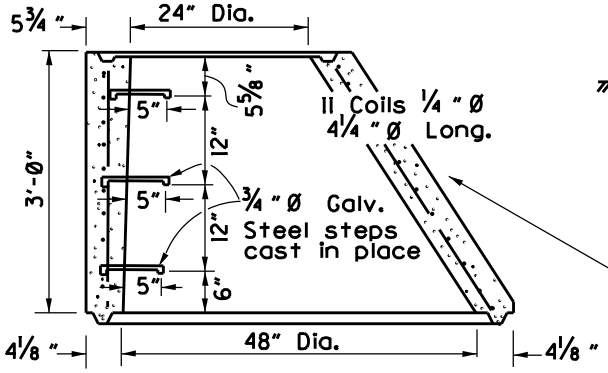
Revision: April 2013

STD. PLAN

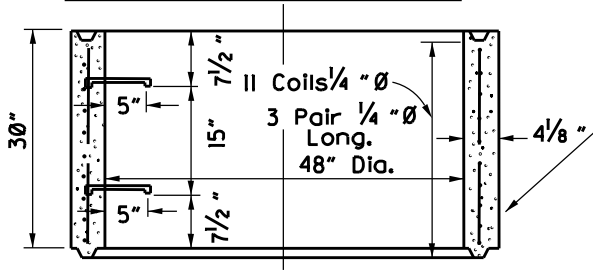
1503

SHT. 1 OF 1

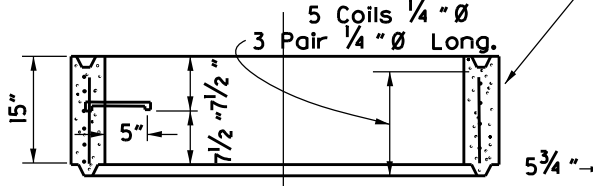
36" REINFORCED CONCRETE MANHOLE



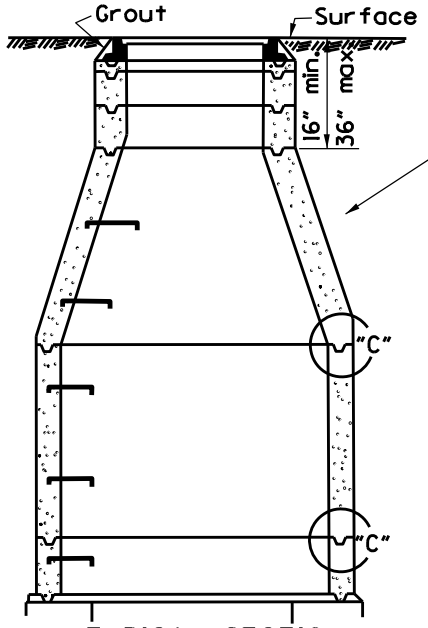
48"x 24" ECCENTRIC CONE



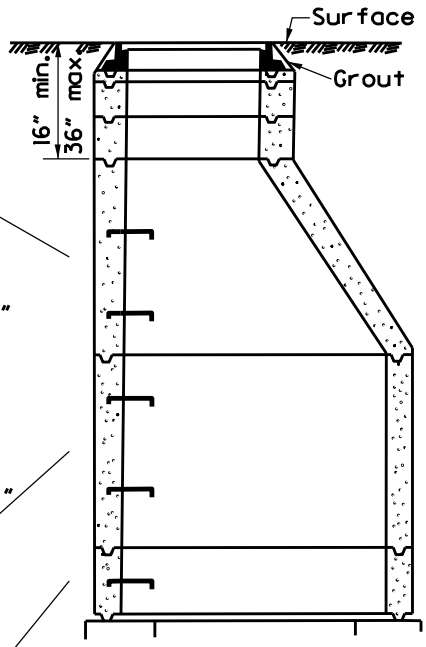
48"x 30" MANHOLE PIPE



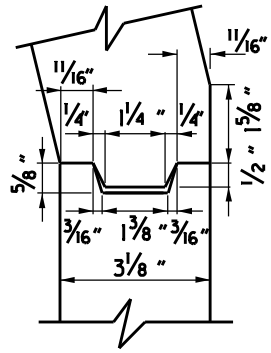
48"x 15" MANHOLE PIPE



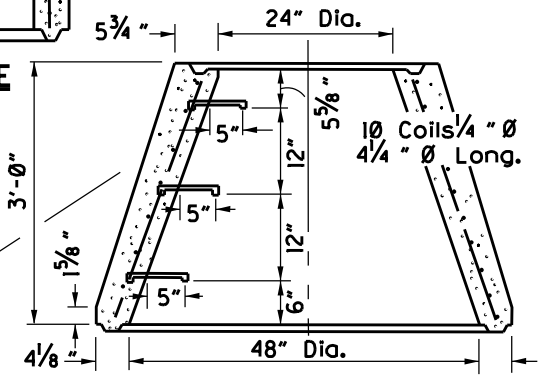
TYPICAL SECTION
48" ID Concentric Cone Manhole



TYPICAL SECTION
48" ID Eccentric Cone Manhole



JOINT DETAIL "C"



48"x 24" CONCENTRIC CONE

Top of cone shall be placed a minimum of 6" below bottom of roadway structural section or a minimum of 16" below finish grade, which-ever 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 ¼" above manhole frame.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved *Ignacio G. Ochoa, Chief Engineer*

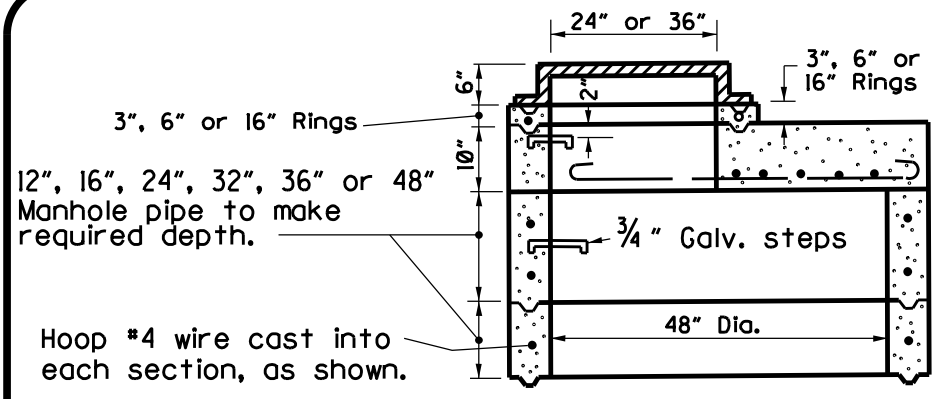
Revision: April 2013

48" REINFORCED CONCRETE MANHOLE

STD. PLAN

1504

SHT. 1 OF 1



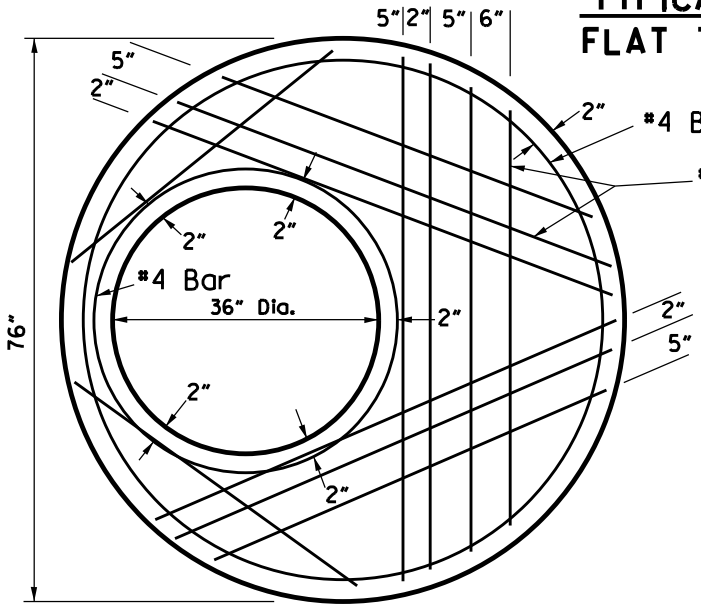
For Manhole frame & cover see Std. Plan 630-3-0C & 633-1-0C.

For Manhole steps see Std. Plan 1507.

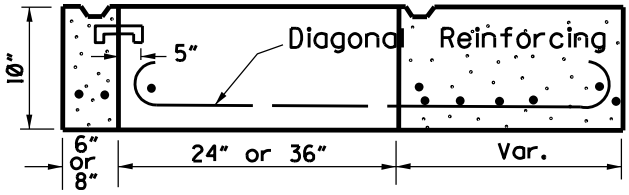
For Ring & Manhole pipe sections see Std. Plan 1501.

Construction shall be in accordance with the Greenbook.

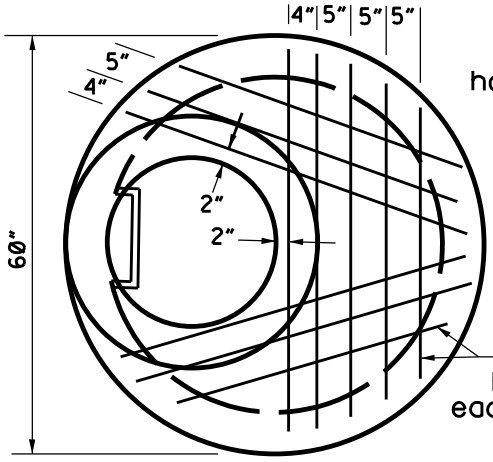
TYPICAL SECTION
FLAT TOP MANHOLE



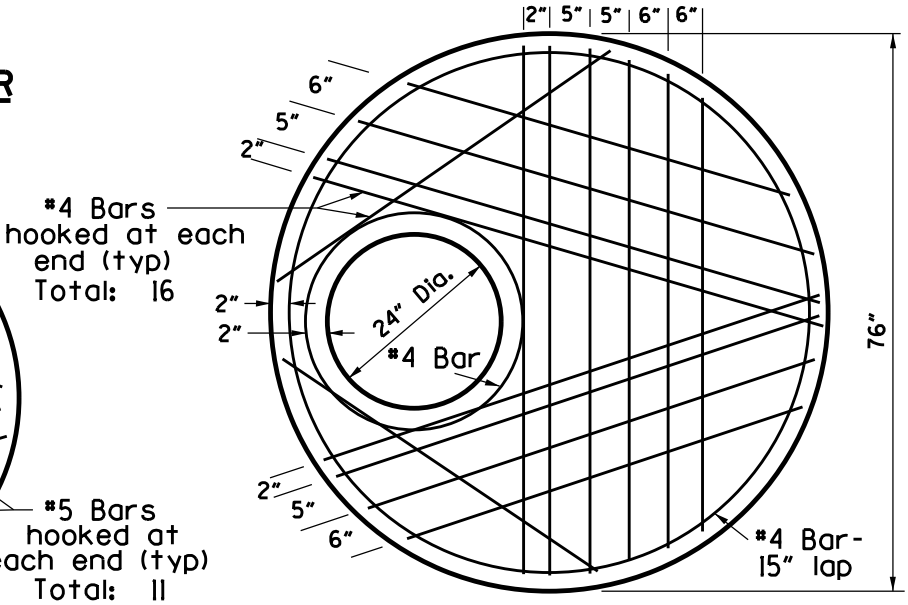
PLAN OF 60" COVER WITH 36" ACCESS



FLAT TOP COVER



PLAN OF 48" COVER WITH 24" ACCESS



PLAN OF 60" COVER WITH 24" ACCESS

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

Ignacio G. Ochoa, Chief Engineer

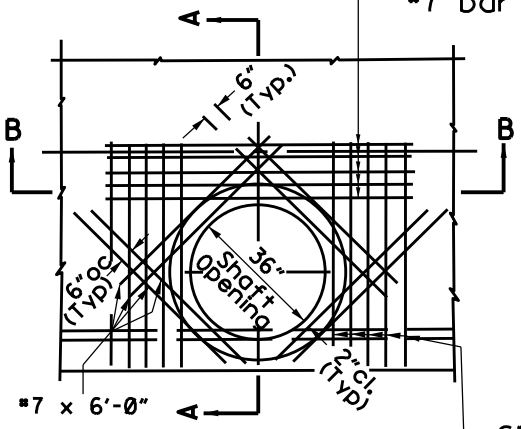
Revision: April 2013

STD. PLAN

1505

SHT. 1 OF 1

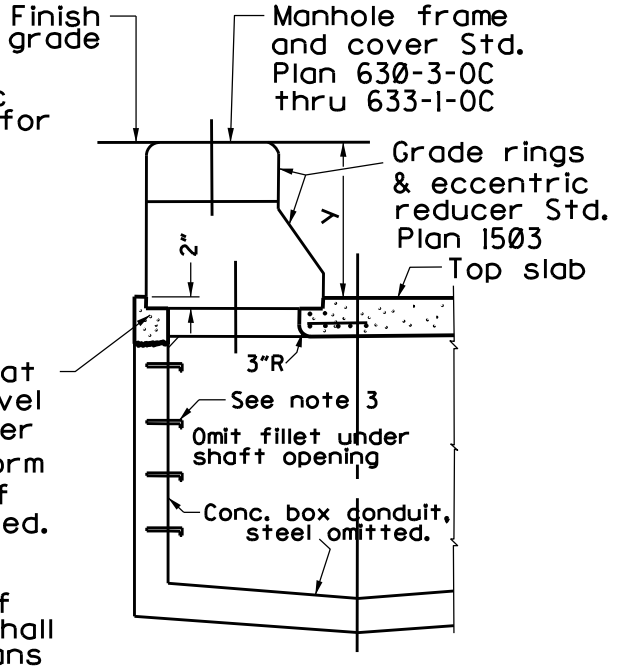
FLAT TOP MANHOLE COVERS



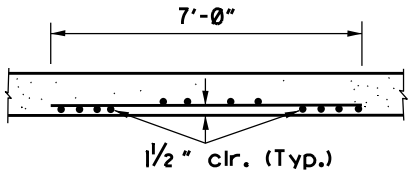
PLAN

(5) bars 7'-6" long, 6" oc of size shown on plans for transverse steel, #7 bar minimum.

Size and spacing of reinforcing steel shall be as shown on plans with the addition of (4) bars on each side of manhole shaft that shall be #7 minimum 6" oc or equivalent.



Section A-A



Section B-B
(Top Slab Only)

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 1½ inch clear, unless otherwise noted.
5. When depth Y from street grade to top of manhole seat is less than 2 feet-10½ 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, Chief Engineer*

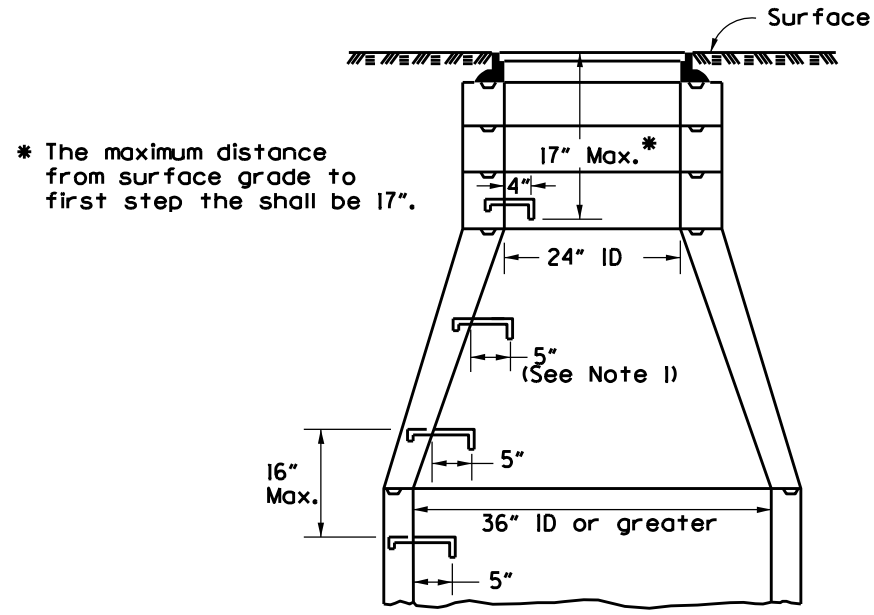
Revision: April 2013

STD. PLAN

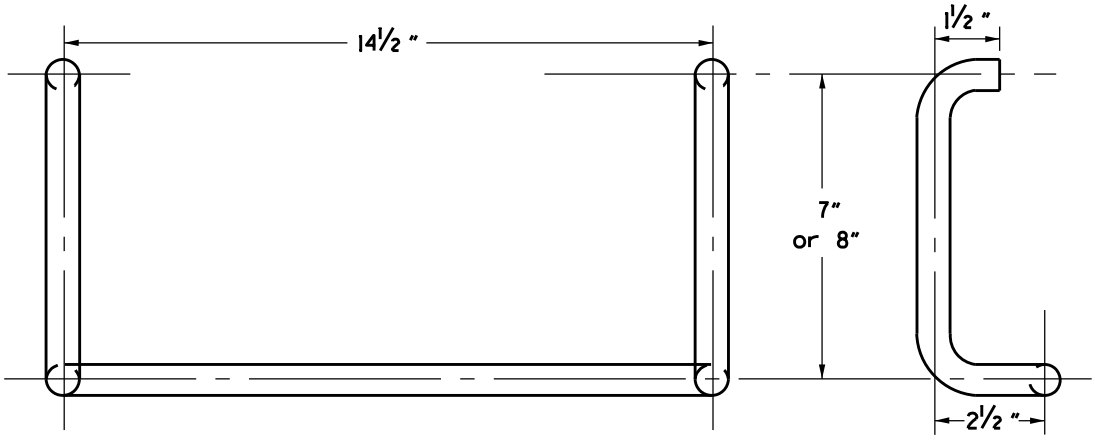
1506

SHT. 1 OF 1

REINFORCED CONCRETE BOX MANHOLE



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 ¾ 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

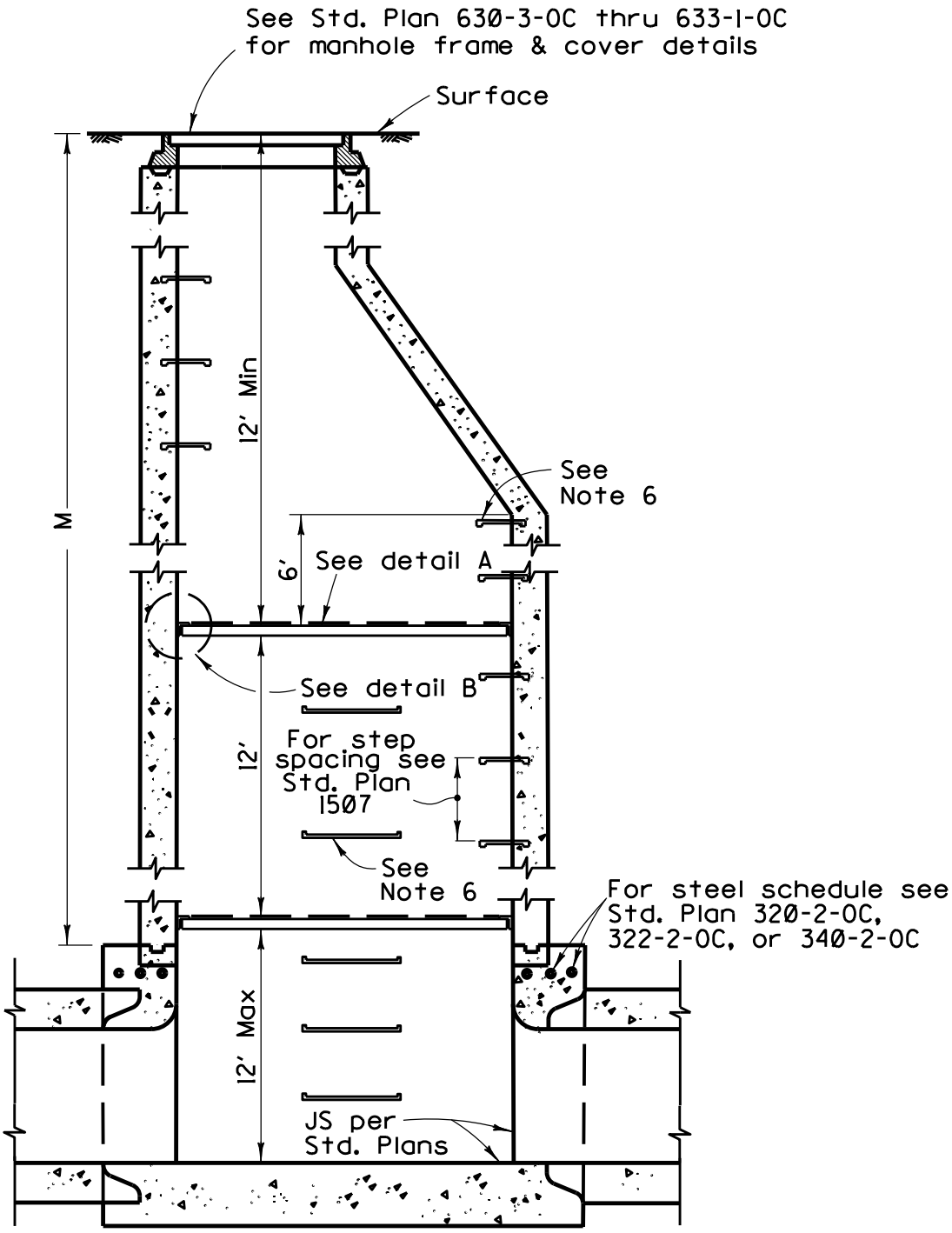
Revision: April 2013

STD. PLAN

1507

SHT. 1 OF 1

MANHOLE STEPS



48" ID Eccentric Cone Manhole
per Std. Plan 1504

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

Ignacio G. Ochoa, Chief Engineer

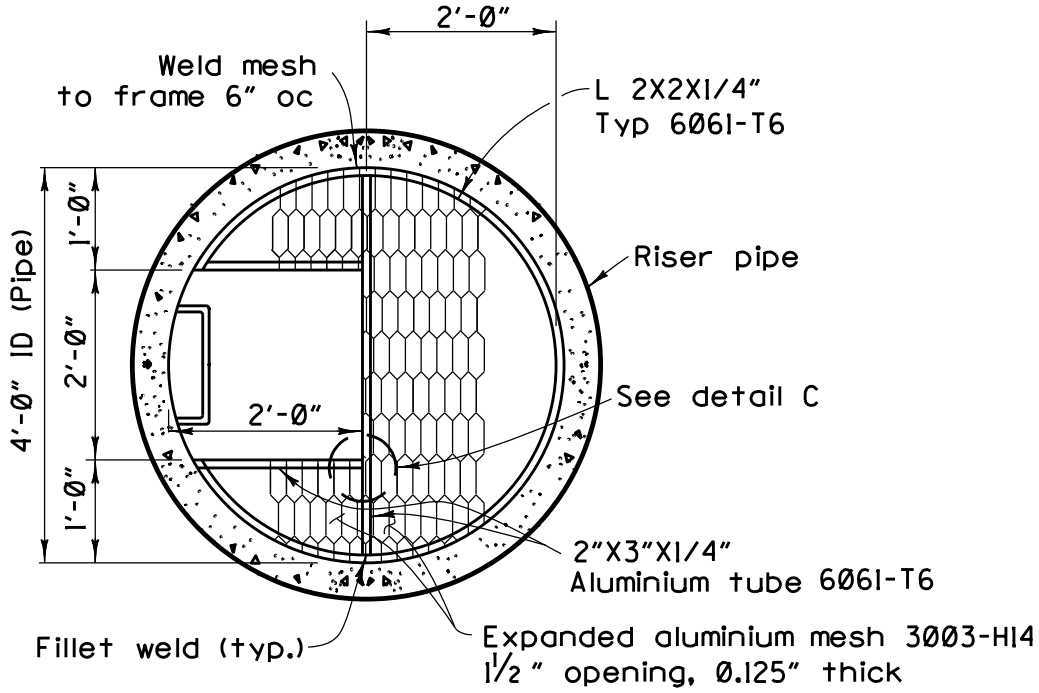
Revision: April 2013

STD. PLAN

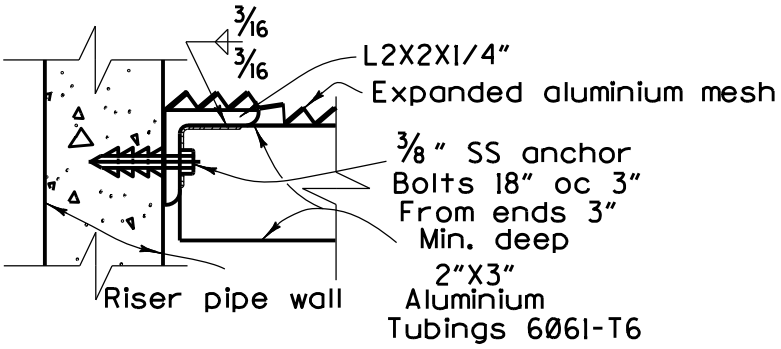
1508

SHT. 1 OF 2

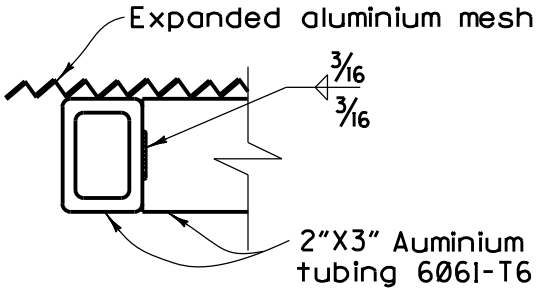
DEEP MANHOLE LANDINGS



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

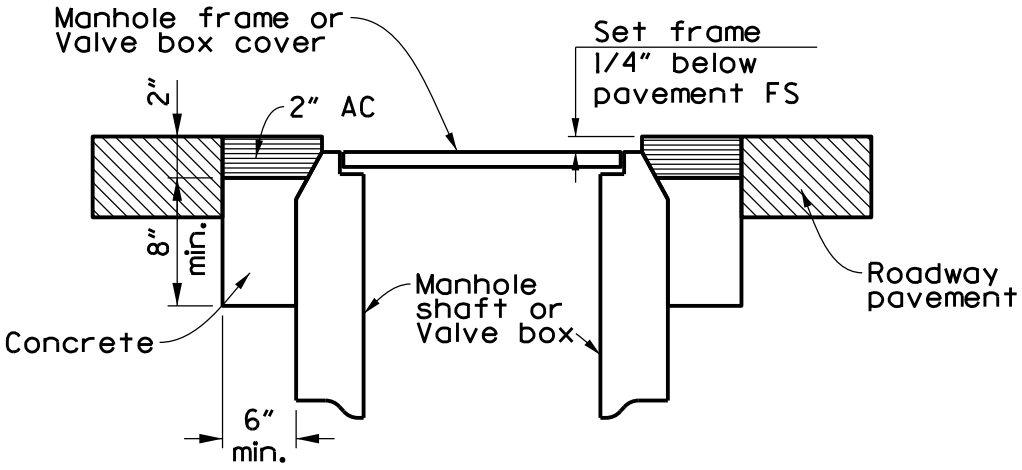
Revision: April 2013

STD. PLAN

1508

SHT. 2 OF 2

DEEP MANHOLE LANDINGS



MANHOLE/VALVE COVER

LEGEND:

Existing Pavement

New Pavement

NOTE:

1. Frame and cover to be set ¼ 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

SHT. 1 OF 1

MANHOLE/VALVE COVER ADJUSTMENT TO GRADE DETAIL