



PUBLIC WORKS CONSTRUCTION CODE

CITY OF TUALATIN

COMMUNITY DEVELOPMENT DEPARTMENT

18876 S.W. MARTINAZZI AVENUE
TUALATIN, OR 97062-7092

NOVEMBER 2001

LATEST REVISION: FEBRUARY 25, 2013



ENGINEERING MANAGER

Standard Drawings

NUMBER	EFF. DATE	TITLE
010	Oct-01	48-INCH MANHOLE ECCENTRIC CONE TOP
011	Oct-01	48-INCH MANHOLE FLAT TOP
012	Oct-01	60-INCH MANHOLE ECCENTRIC CONE TOP
013	Oct-01	60-INCH MANHOLE FLAT TOP
014	Oct-01	72-INCH MANHOLE ECCENTRIC CONE TOP
015	Oct-01	72-INCH MANHOLE FLAT TOP
016	Oct-01	84-INCH MANHOLE ECCENTRIC CONE TOP
017	Oct-01	84-INCH MANHOLE FLAT TOP
018	Oct-01	96-INCH MANHOLE ECCENTRIC CONE TOP
019	Oct-01	96-INCH MANHOLE FLAT TOP
020	Feb-00	MANHOLE OUTSIDE DROP ASSEMBLY
021	Mar-04	MANHOLE INSIDE DROP ASSEMBLY
030	Jul-96	MANHOLE COVER AND FRAME
031	Jun-97	MANHOLE COVER AND FRAME WATERTIGHT
032	Feb-98	MANHOLE STEPS
040	Dec-01	CATCH BASIN GUTTER GRATE INLET 36-INCH
041	Dec-01	CATCH BASIN CURB INLET 30-INCH
042	Dec-01	CATCH BASIN CURB INLET 48-INCH
043	Dec-01	DITCH INLET 24-INCH
044	XXX	DITCH INLET 27-INCH
050	Feb-02	FRAME AND GRATE CATCH BASIN
051	XXX	FRAME AND GRATE DITCH INLET
060	Mar-03	MANHOLE WATER QUALITY CONTROL
100	Feb-98	SEWER CLEANOUT
240	Oct-01	PIPE TRENCH BACKFILL
270	Mar-03	CONCRETE PIPE SLOPE ANCHORS
290	Mar-04	UNDERCROSSING
300	Mar-03	SEWER BUILDING LATERAL (SERVICE)

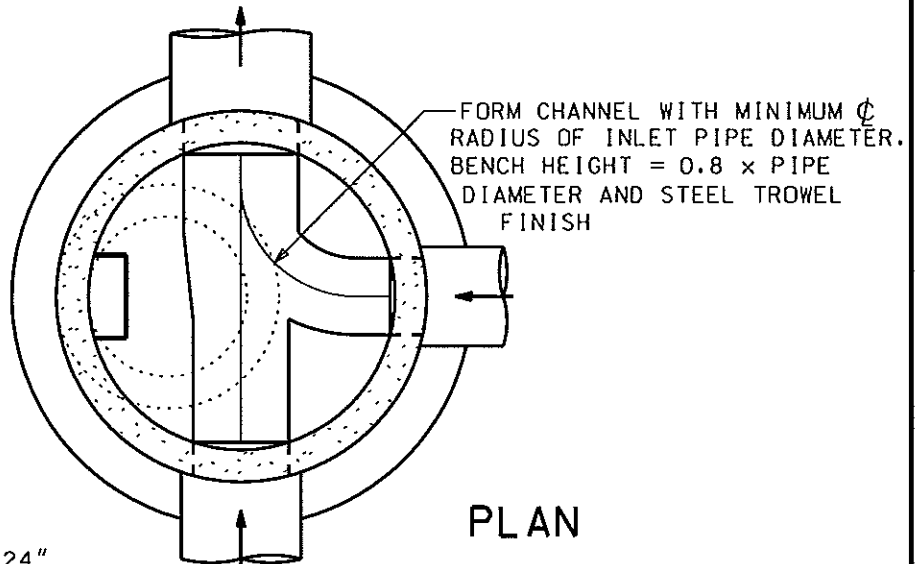
Standard Drawings

NUMBER	EFF. DATE	TITLE
310	Jan-02	SUBGRADE DRAIN
330	Mar-03	PIPELINE STREAM CROSSING
425	Jul-92	UTILITY LOCATIONS
435	XXX	BICYCLE/PEDESTRIAN ASPHALT CONCRETE PATH
436	XXX	BICYCLE PATH CONCRETE
437	XXX	PEDESTRIAN ACCESS CONCRETE PATH
438	XXX	PEDESTRIAN PATH CRUSHED ROCK
440	Mar-04	APPROACH COMMERCIAL DRIVEWAY CURBSIDE PLANTER STRIP
441	Mar-04	APPROACH COMMERCIAL DRIVEWAY CURBSIDE SIDEWALK
442	Mar-04	APPROACH RESIDENTIAL DRIVEWAY CURBSIDE PLANTER STRIP
443	Mar-04	APPROACH RESIDENTIAL DRIVEWAY CURBSIDE SIDEWALK
444	Mar-04	APPROACH PRIVATE ROAD ENTRANCE
450	Oct-02	PARABOLIC SPEED HUMP CONSTRUCTION
451	Oct-02	PARABOLIC SPEED HUMP PAVEMENT MARKINGS & STREET SIGNS
452	Oct-02	SPEED TABLE HUMP CONSTRUCTION
453	Oct-02	SPEED TABLE HUMP PAVEMENT MARKINGS AND STREET SIGNS
460	Aug-02	ADA RAMP CORNER DIAGONAL CURBSIDE PLANTER STRIP
461	Aug-02	ADA RAMP CORNER DIAGONAL CURBSIDE SIDEWALK
462	Sep-02	ADA RAMP TANGENT CURBSIDE PLANTER STRIP
463	Aug-02	ADA RAMP TANGENT CURBSIDE SIDEWALK
470	Dec-01	CURB AND GUTTER
471	Jan-02	CURB
475	Jan-02	CONCRETE SIDEWALK
500	Oct-01	MAILBOX POST INSTALLATION
510	Feb-02	STREET BARRICADE
511	Feb-02	STREET BARRICADE SIGN
512	Mar-04	STORMWATER FACILITY SIGN
514	Feb-13	TREE WELL AND GRATE
515	XXX	TYPICAL SIGN AND STREET TREE LOCATION
516	Feb-02	STREET SIGN POST

Standard Drawings

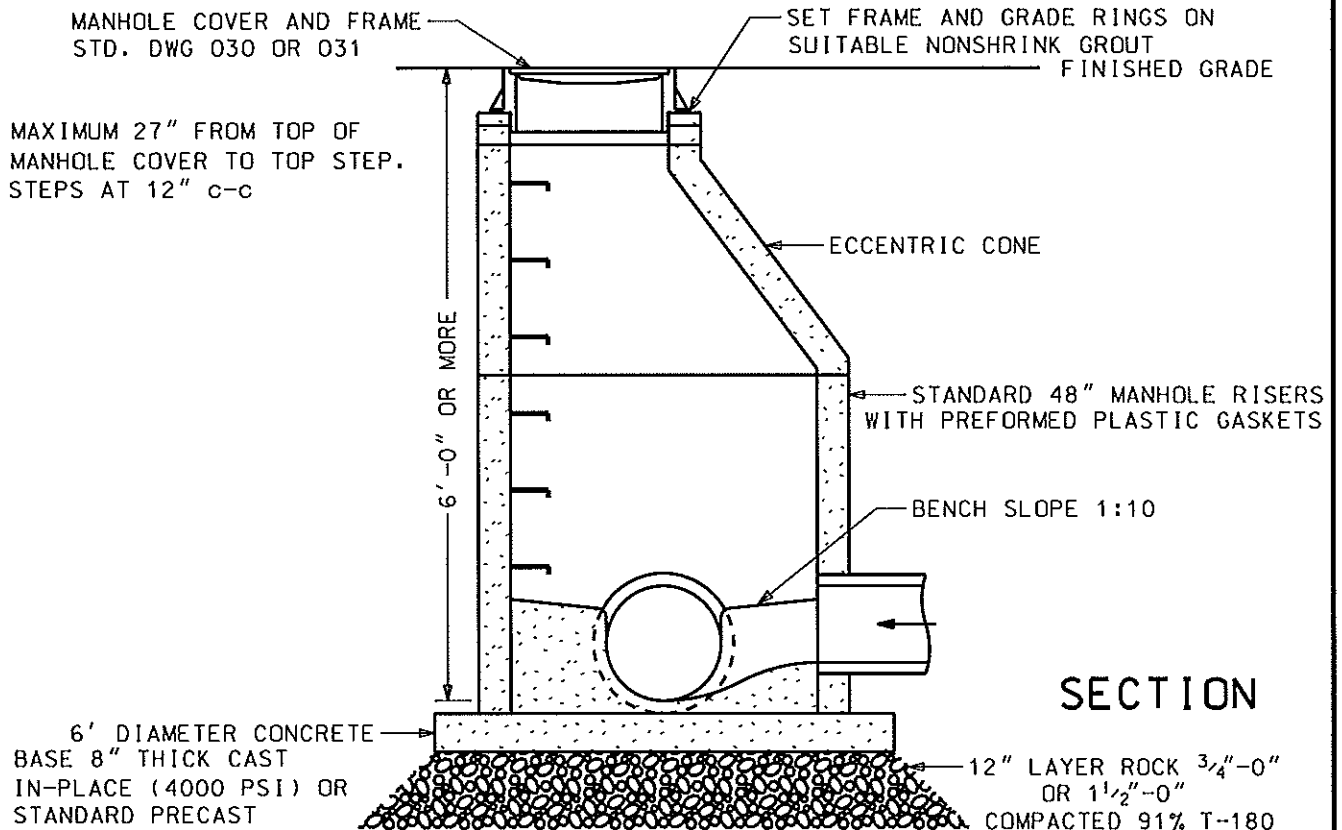
NUMBER	EFF. DATE	TITLE
520	Apr-10	CENTERLINE SURVEY MONUMENT
600	Aor-10	GATE VALVE AND BOX
601	Apr-10	.3UTTERFLY VALVE AND BOX
602	Mar-08	1-INCH AIR RELEASE VALVE
603	Mar-08	2-INCH AIR RELEASE VALVE
604	Mar-08	SAMPLE STATION
605	Mar-08	VALVE ASSEMBLY PERMANENT BLOW-OFF
606	Mar-08	VALVE ASSEMBLY TEMPORARY BLOW-OFF
607	Mar-08	OUTSIDE RPBA 2" AND SMALLER
608	Mar-08	INSIDE RPBA 2" AND SMALLER
609	Mar-08	INSIDE RPBA 3/4"- 1"
610	Mar-03	FIRE HYDRANT ASSEMBLY
611	Mar-08	INSIDE RPBA 1 1/2"- 2 1/2"
612	Mar-08	INSIDE RPBA 2 1/2"- 10"
613	Mar-08	BACKFLOW ASSEMBLY DOUBLE CHECK 3" THRU 10"
614	Mar-08	BACKFLOW ASSEMBLY FIRE PROTECTION WITHOUT FDC
615	Mar-08	BACKFLOW ASSEMBLY FIRE PROTECTION WITH FDC
616	Mar-08	BACKFLOW ASSEMBLY REDUCED PRESSURE 3/4" THRU 2"
617	Mar-08	BACKFLOW ASSEMBLY REDUCED PRESSURE 2 1/2"" THRU 10"
618	xxx	PRESSURE REDUCING/SUSTAINING ASSEMBLY
619	xxx	PRESSURE REDUCING ASSEMBLY
620	Feb-02	JOINT RESTRAINT BEARING THRUST BLOCKS
621	Oct-01	JOINT RESTRAINT GRAVITY THRUST BLOCKS
622	Oct-01	JOINT RESTRAINT STRADDLE THRUST BLOCK
630	Apr-10	WATER SERVICE 5/8" x 3/4" METER
631	Mar-08	WATER SERVICE 1" METER
632	Mar-08	WATER SERVICE 1 1/2" METER
633	Mar-08	WATER SERVICE 2" METER
634	Mar-08	WATER SERVICE 3" AND LARGER METER COMPOUND TYPE
635	Mar-08	WATER SERVICE 4" AND LARGER METER FIRE SERVICE TYPE

xxx - Denotes drawing in progress and not included in this document



NOTES:

1. MAXIMUM PIPE DIAMETER 24"
2. MANHOLE TO CONFORM WITH ASTM C-478
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 12"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



**CITY OF
TUALATIN, OR**

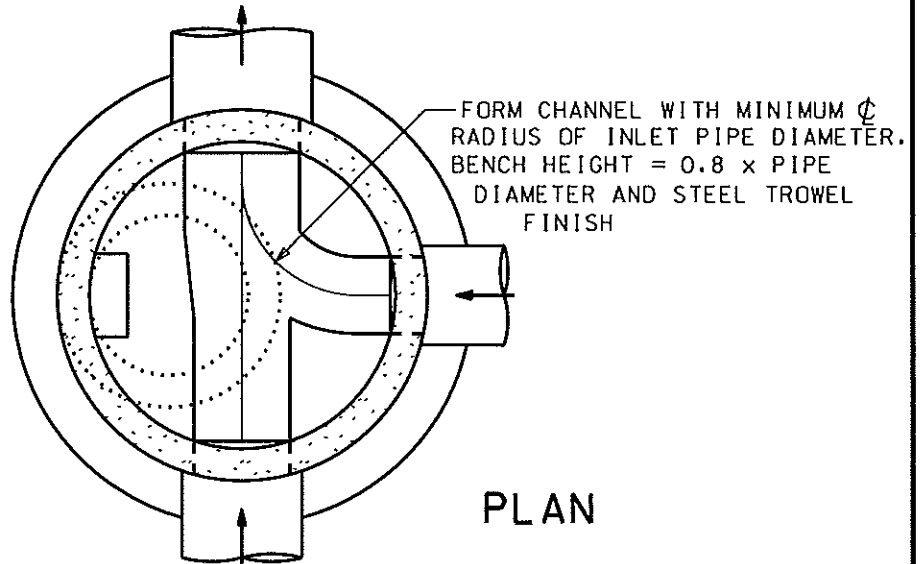
**MANHOLE
48-INCH
ECCENTRIC CONE TOP**

REVISED: 12/2001
VALID ID: 3/2003

SCALE: 1:30

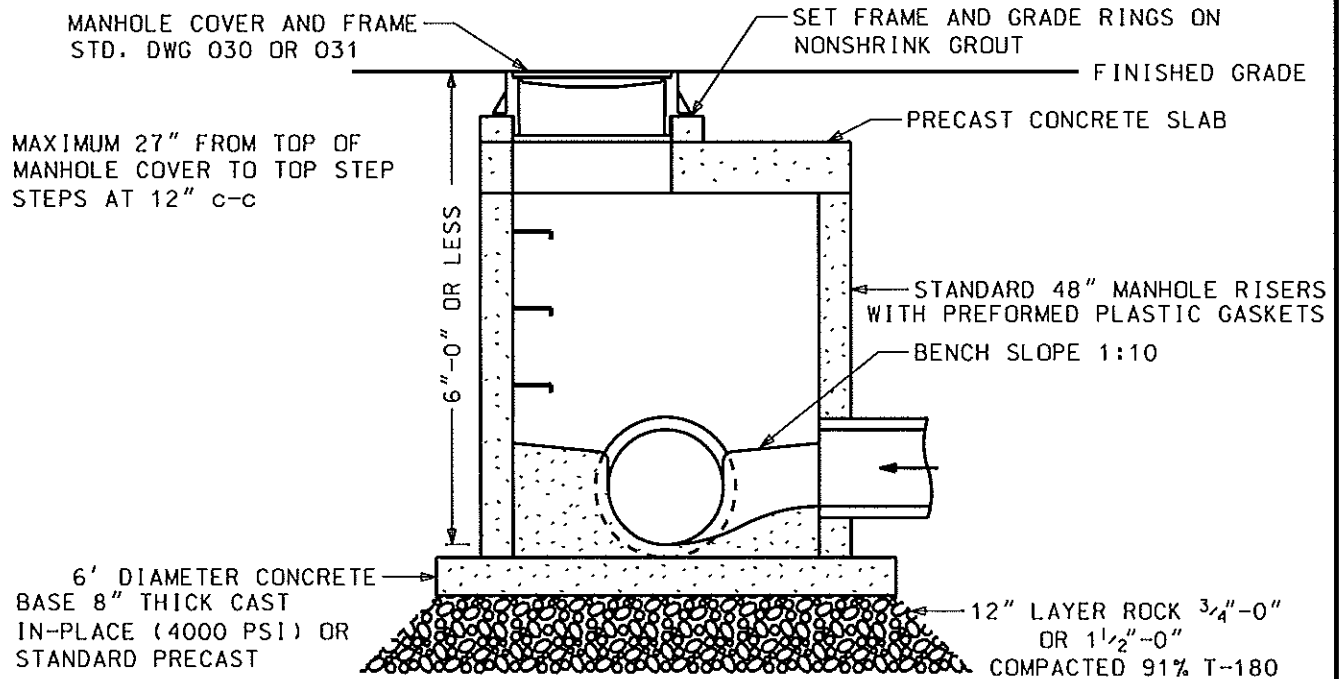
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 010



NOTES:

1. MAXIMUM PIPE DIAMETER 24"
2. MANHOLE TO CONFORM WITH ASTM C-478
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 10"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



SECTION



**CITY OF
TUALATIN, OR**

**MANHOLE
48-INCH
FLAT TOP**

REVISED: 12/2001
VALID: 3/2003

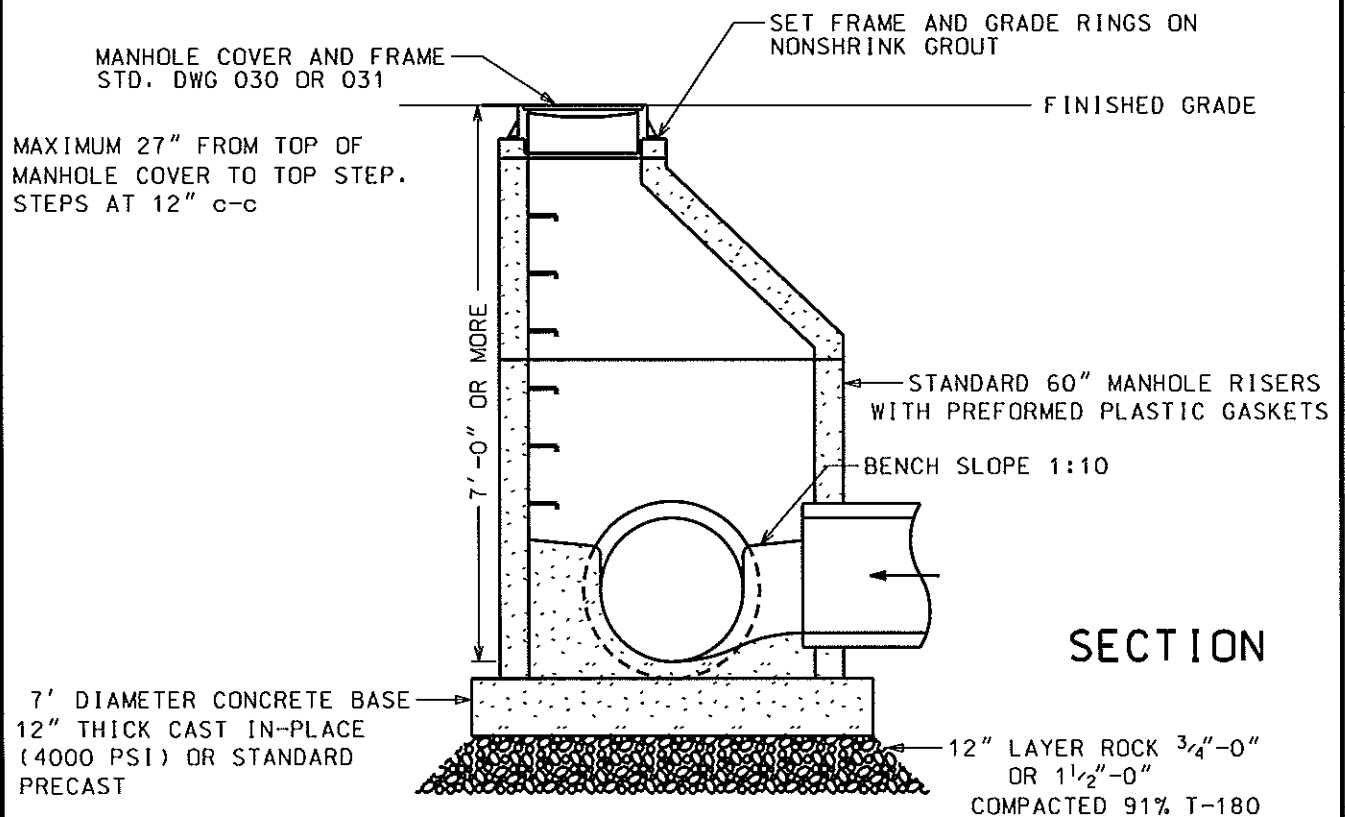
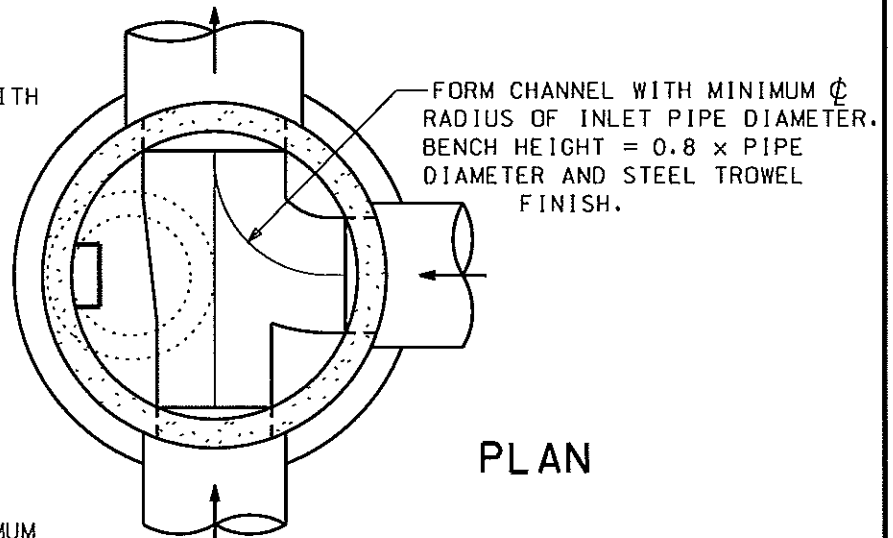
SCALE: 1:30

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 011

NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MAXIMUM PIPE DIAMETER WITH HORIZONTAL PIPE ANGLE CHANGE = 30".
STRAIGHT THRU = 36"
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 15"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



**CITY OF
TUALATIN, OR**

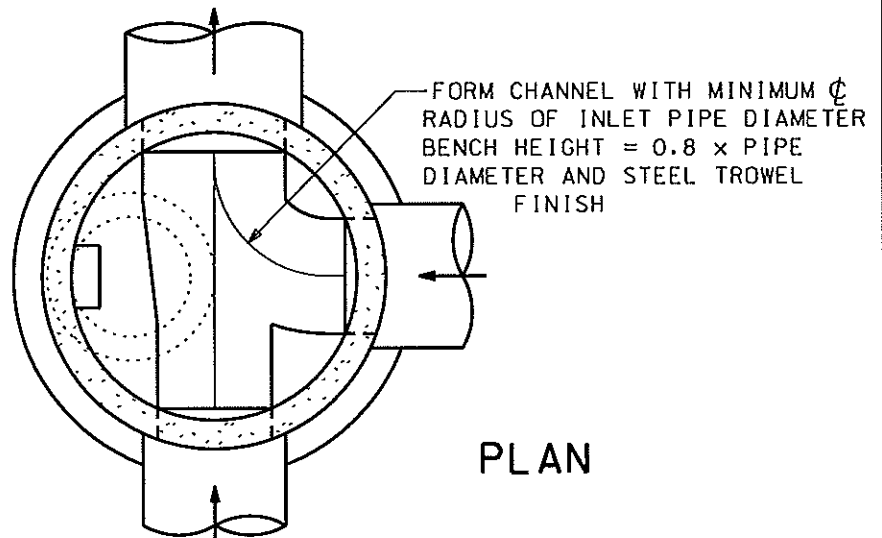
**MANHOLE
60-INCH
ECCENTRIC CONE TOP**

REVISED: 12/2001
VALID: 3/2003

SCALE: 1:40

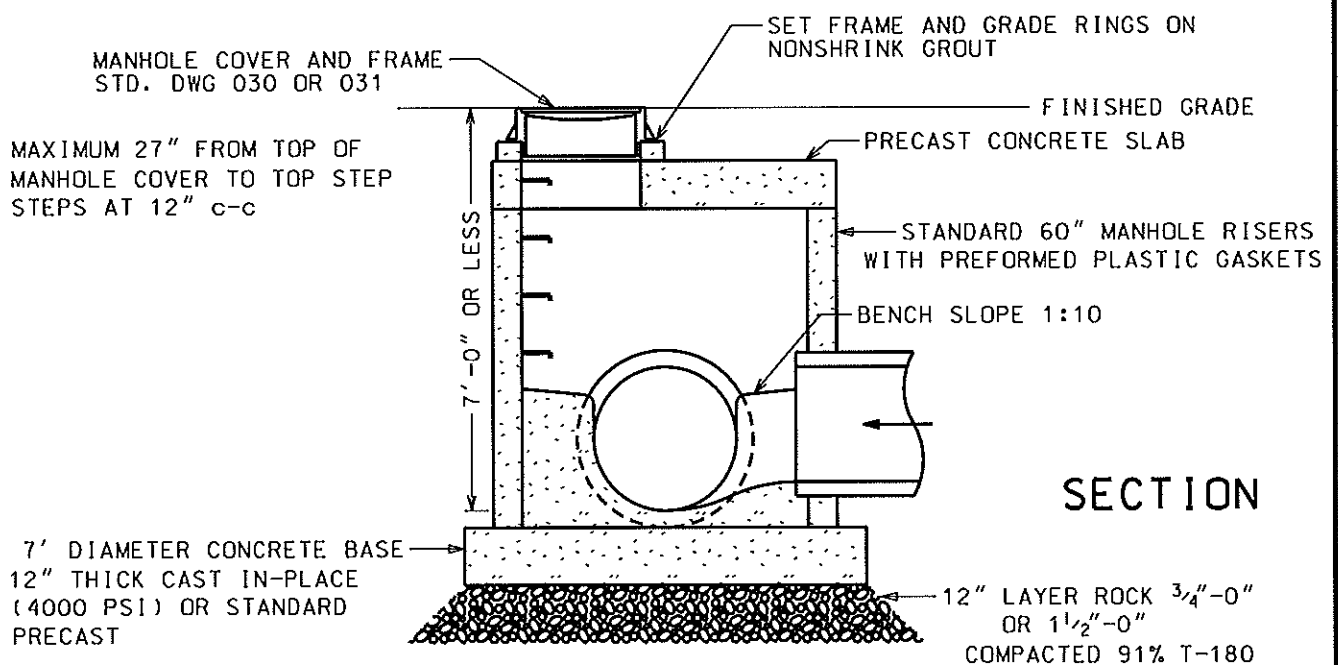
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 012



NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MAXIMUM PIPE DIAMETER WITH HORIZONTAL PIPE ANGLE CHANGE = 30", STRAIGHT THRU = 36"
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 15"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



**CITY OF
TUALATIN, OR**

**MANHOLE
60-INCH
FLAT TOP**

REVISED: 12/2001
VALID: 3/2003

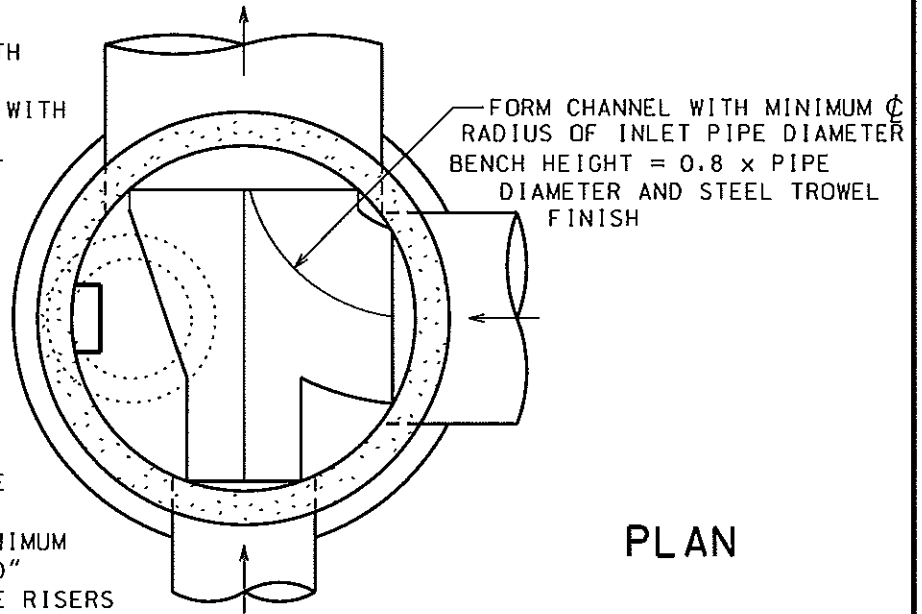
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DRAWN: D.L.
APPROVED: K.L.H.

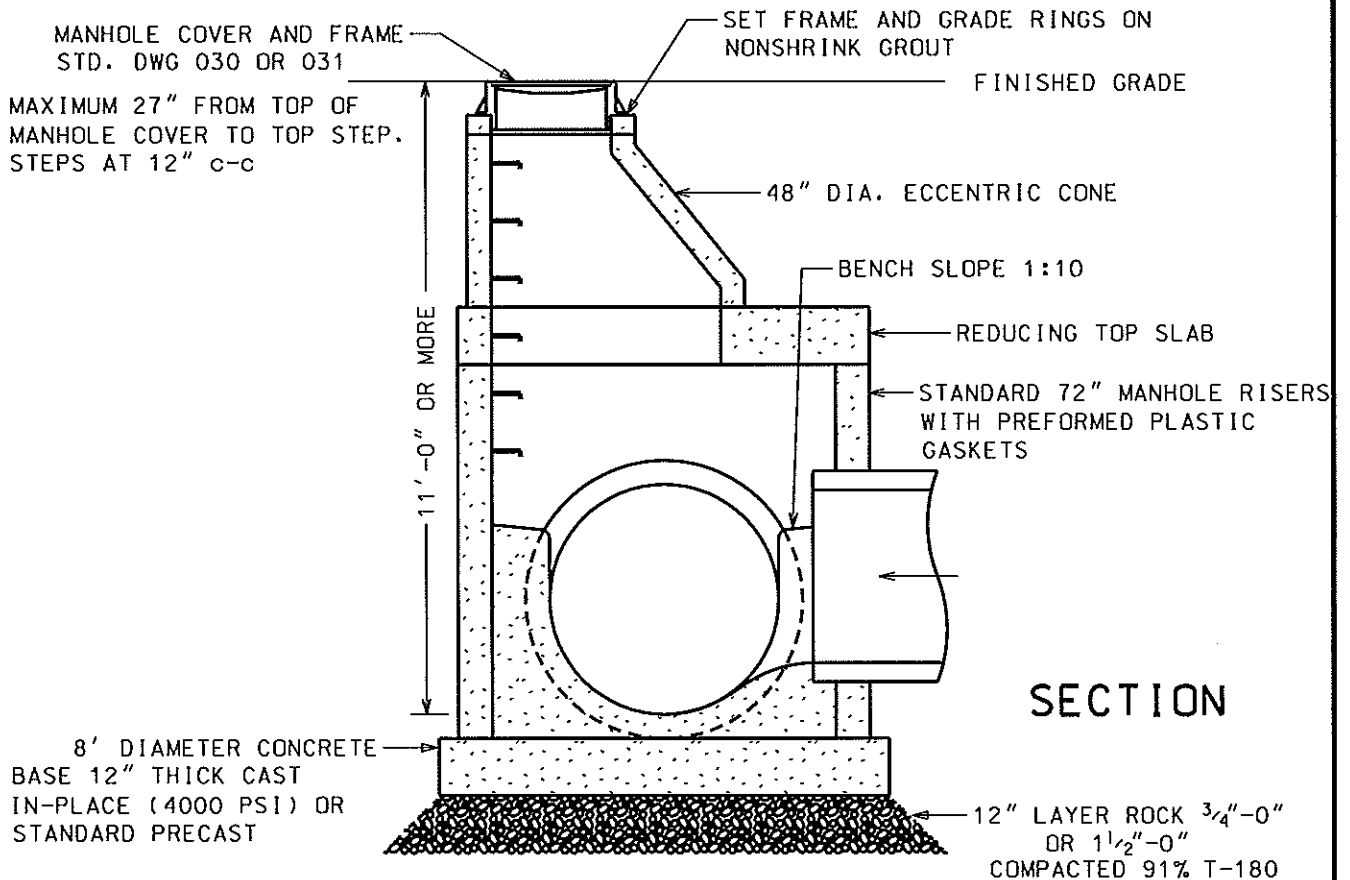
DWG NO. **013**

NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MAXIMUM PIPE DIAMETER WITH HORIZONTAL PIPE ANGLE CHANGE = 36", STRAIGHT THRU = 48"
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 15"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



PLAN



SECTION



**CITY OF
TUALATIN, OR**

**MANHOLE
72-INCH
ECCENTRIC CONE TOP**

REVISED: 12/2001
VALID: 3/2003

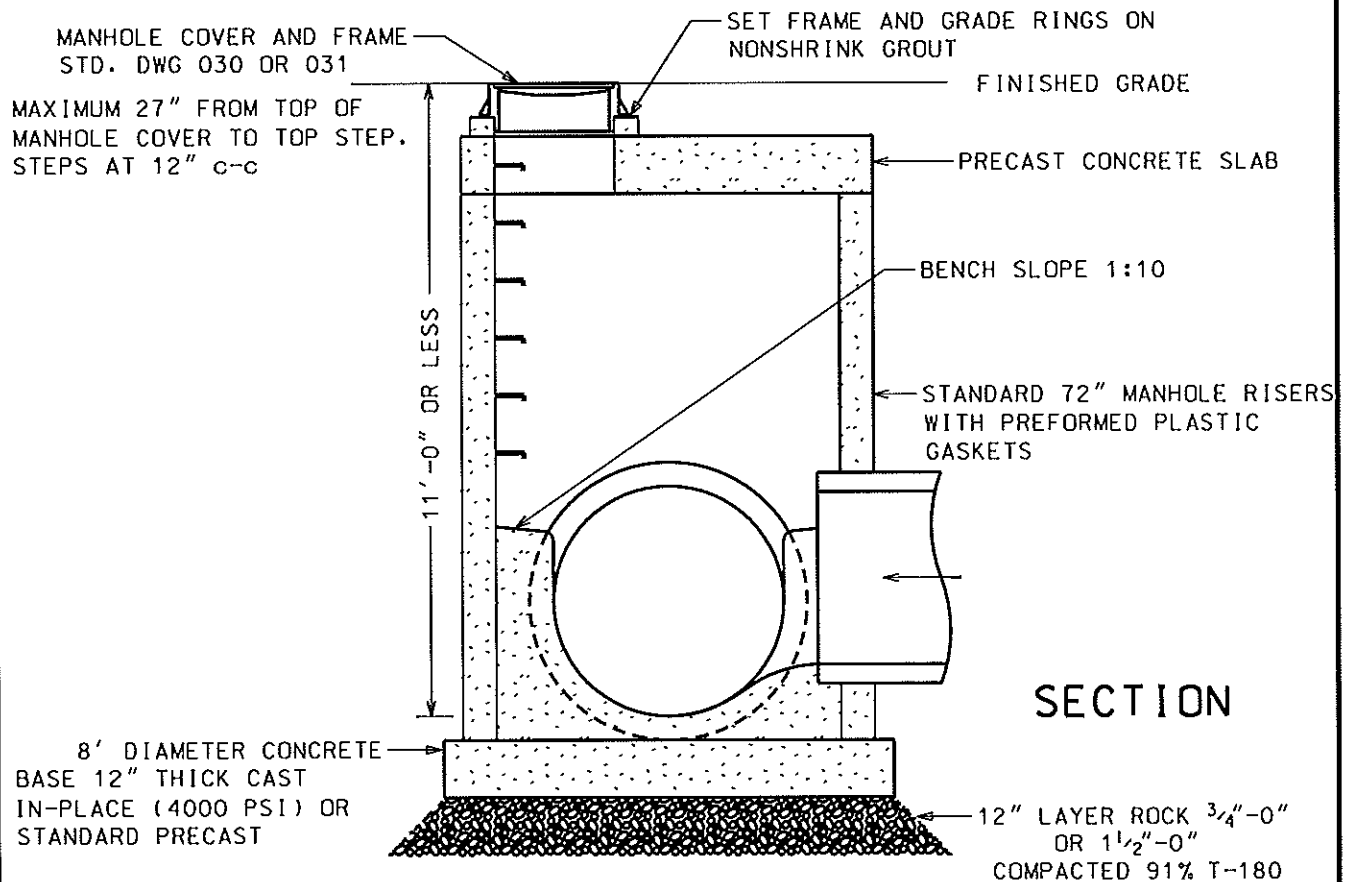
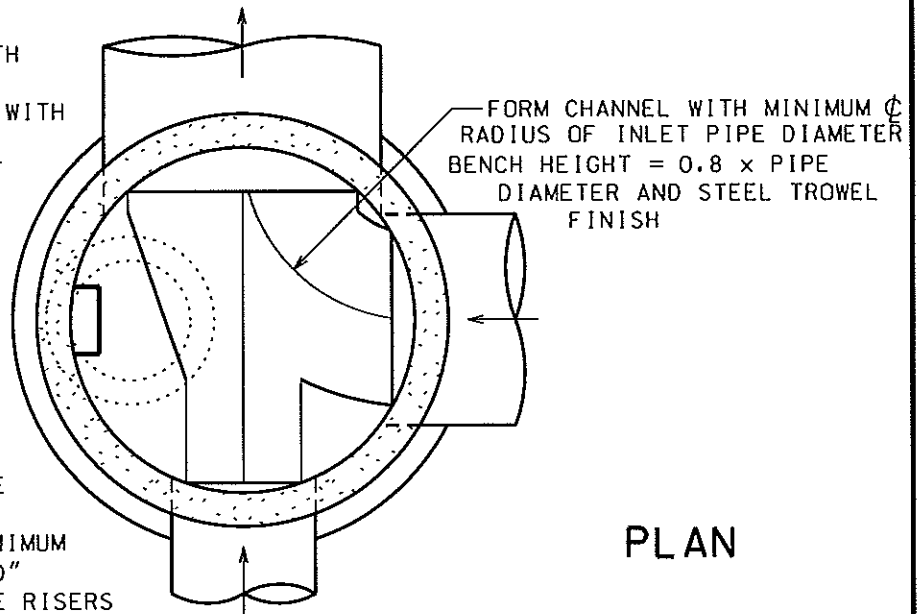
SCALE: 1:40

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 014

NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MAXIMUM PIPE DIAMETER WITH HORIZONTAL PIPE ANGLE CHANGE $\approx 36^\circ$, STRAIGHT THRU $= 48^\circ$
3. FALL THROUGH MANHOLE $= 0.20$ FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 15"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



**CITY OF
TUALATIN, OR**

**MANHOLE
72-INCH
FLAT TOP**

REVISED: 12/2001
VALID: 3/2003

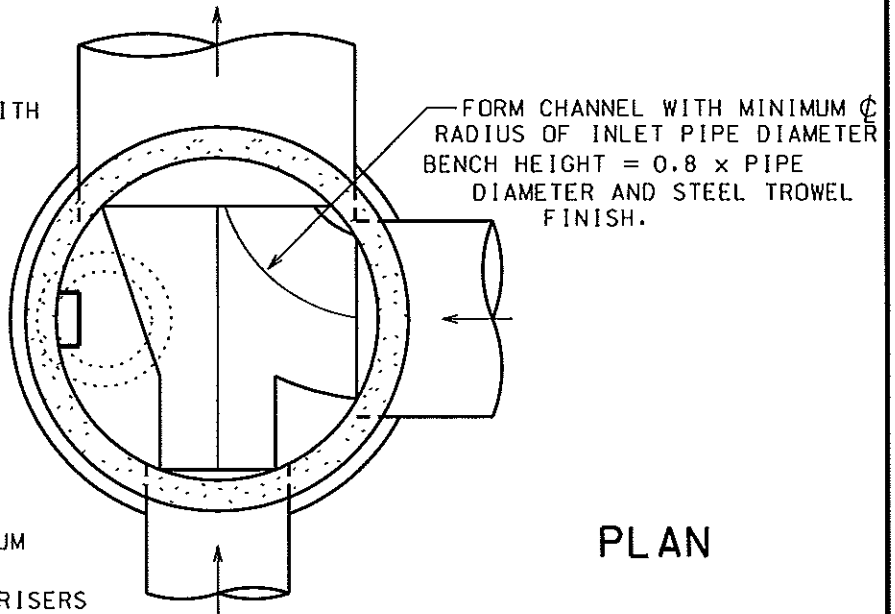
SCALE: 1:40

DRAWN: D.L.
APPROVED: K.L.H.

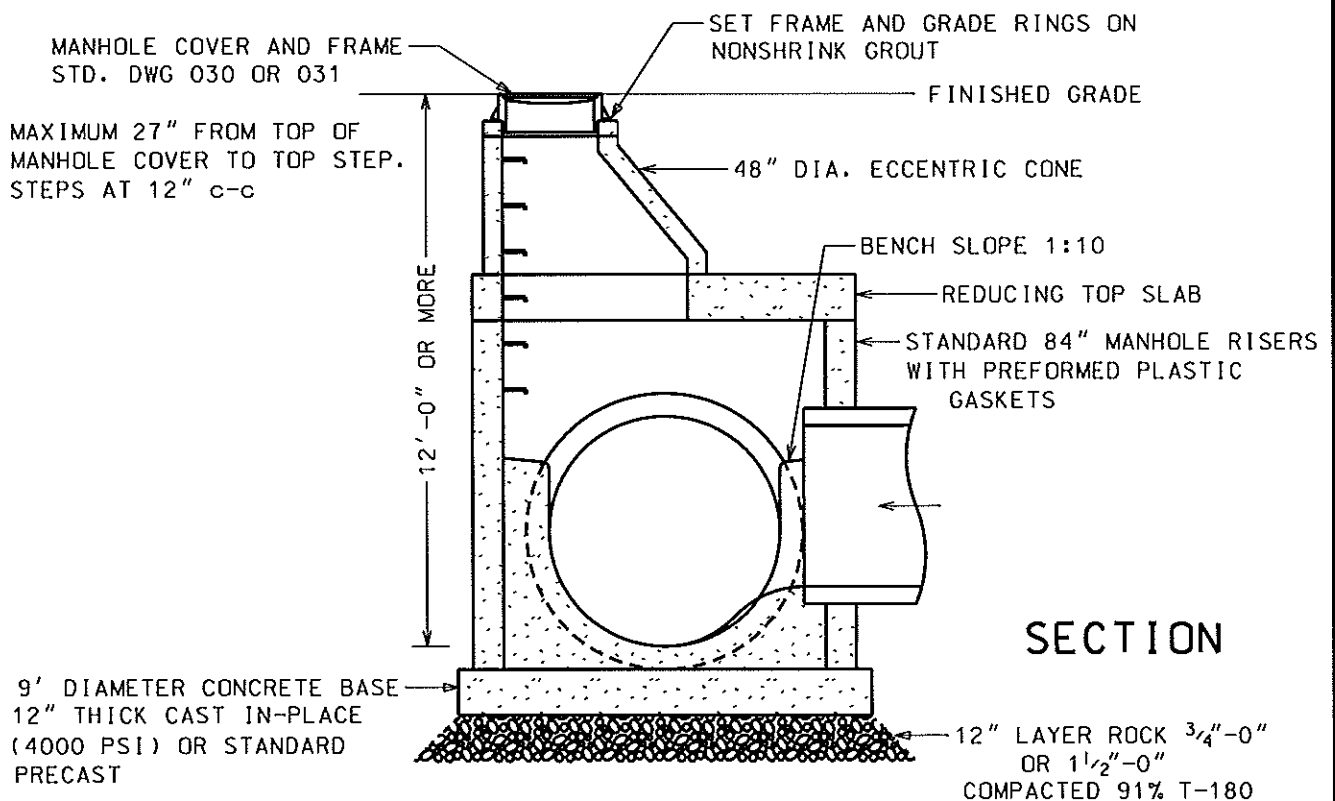
DWG NO. 015

NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MAXIMUM PIPE DIAMETER WITH HORIZONTAL PIPE ANGLE CHANGE = 42", STRAIGHT THRU = 60"
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 15"
6. IN PAVEMENT PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



PLAN



SECTION



**CITY OF
TUALATIN, OR**

**MANHOLE
84-INCH
ECCENTRIC CONE TOP**

REVISED: 12/2001
VALID: 3/2003

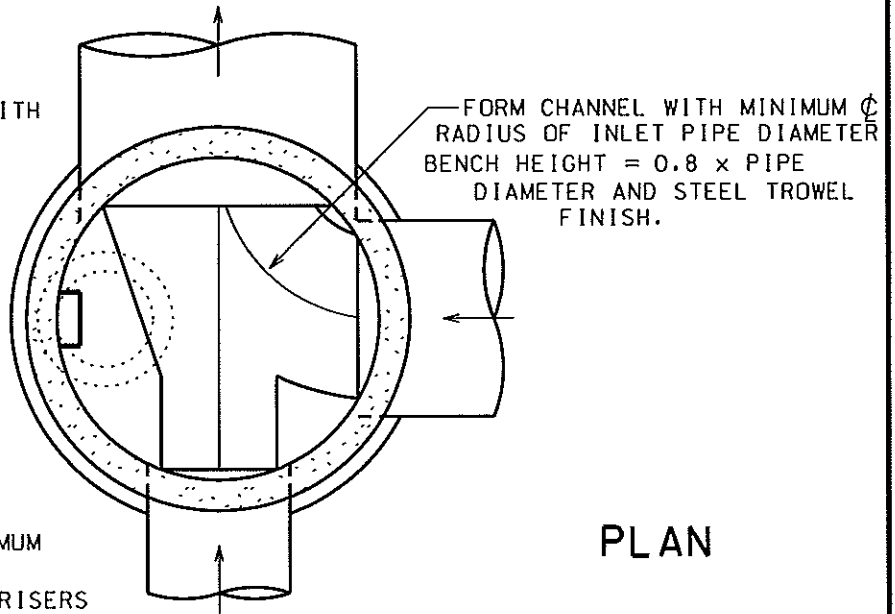
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DRAWN: D.L.
APPROVED: K.L.H.

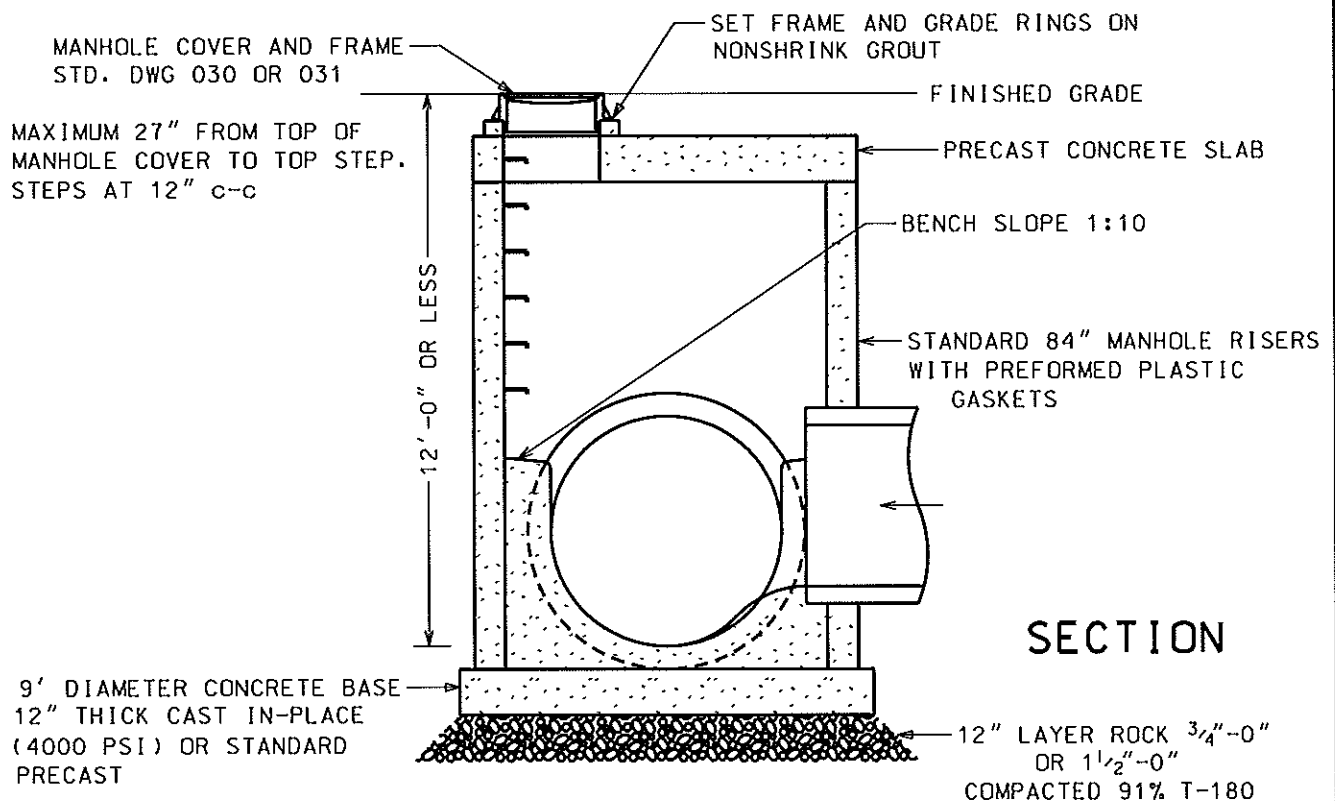
DWG NO. 016

NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MAXIMUM PIPE DIAMETER WITH HORIZONTAL PIPE ANGLE CHANGE = 42", STRAIGHT THRU = 60"
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 15"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



PLAN



SECTION



**CITY OF
TUALATIN, OR**

**MANHOLE
84-INCH
FLAT TOP**

REVISED: 12/2001
VALID: 3/2003

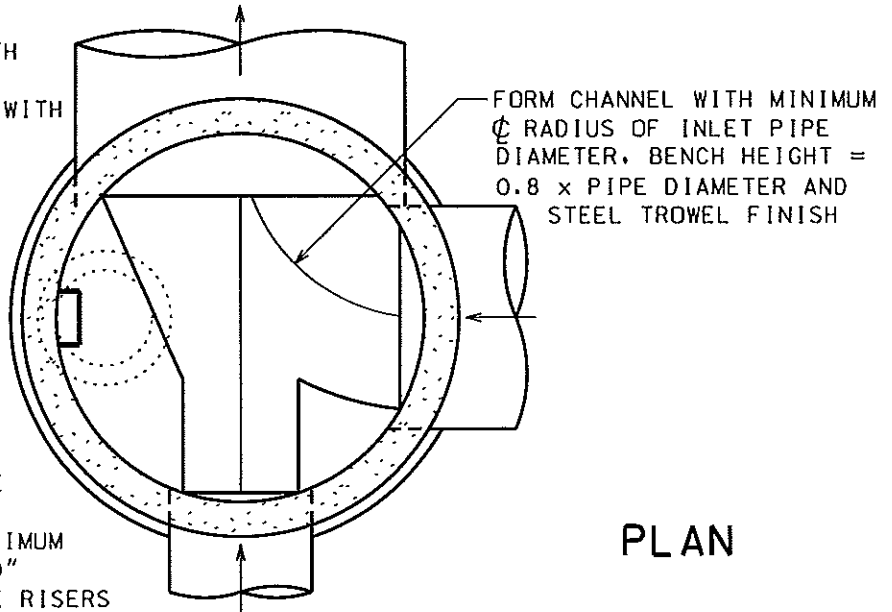
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DRAWN: D.L.
APPROVED: K.L.H.

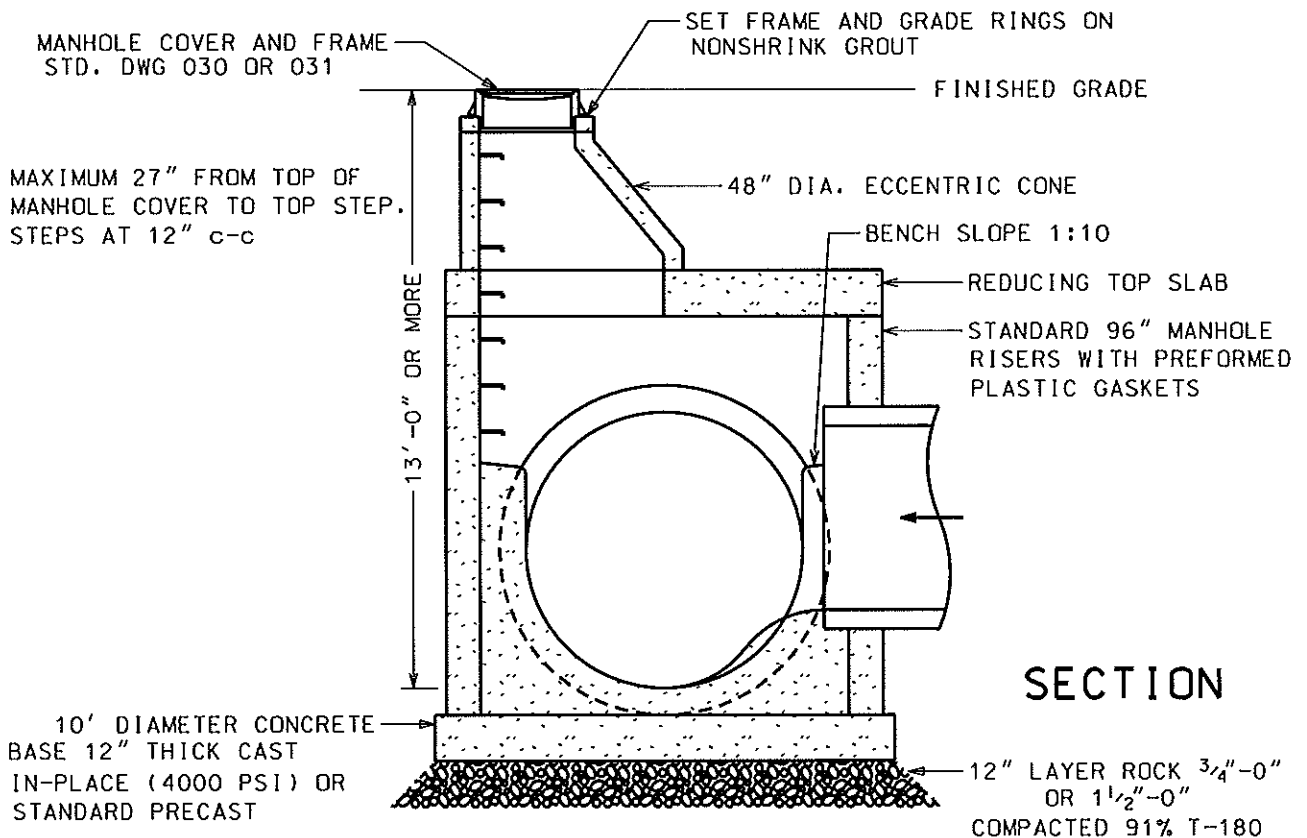
DWG NO. 017

NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MAXIMUM PIPE DIAMETER WITH HORIZONTAL PIPE ANGLE CHANGE = 48", STRAIGHT THRU = 72"
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 15"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



PLAN



SECTION



**CITY OF
TUALATIN, OR**

**MANHOLE
96-INCH
ECCENTRIC CONE TOP**

REVISED: 12/2001
VALID: 3/2003

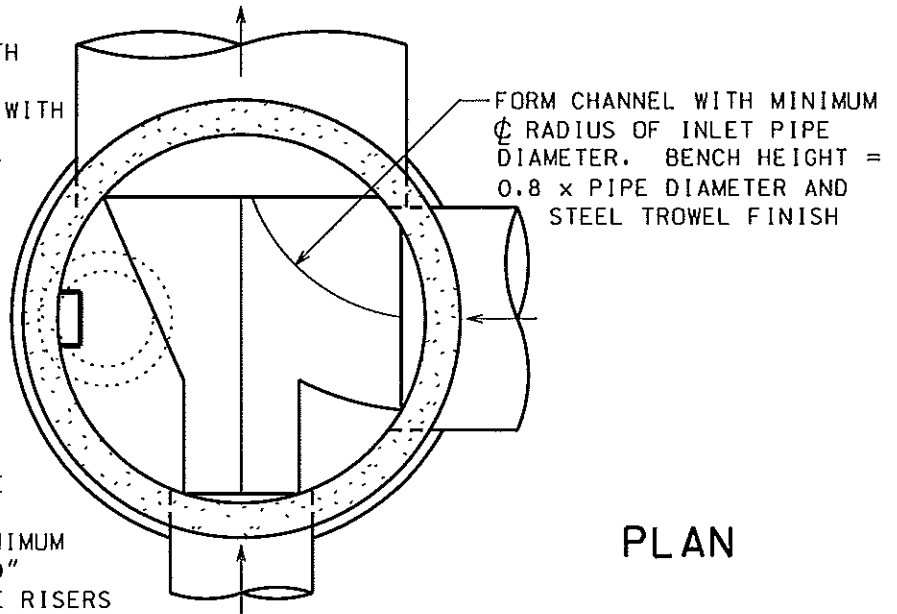
SCALE: 1:50

DRAWN: D.L.
APPROVED: K.L.H.

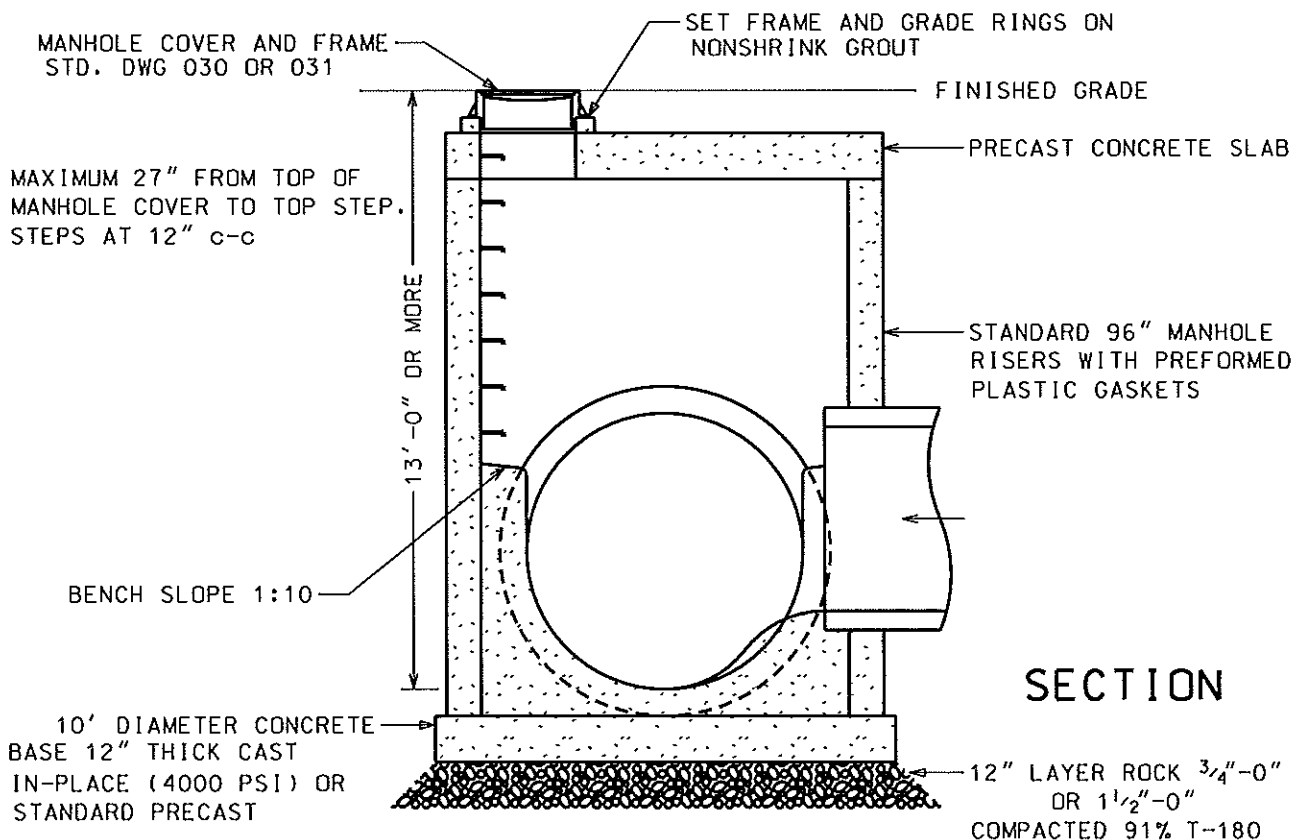
DWG NO. 018

NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MAXIMUM PIPE DIAMETER WITH HORIZONTAL PIPE ANGLE CHANGE = 48", STRAIGHT THRU = 72"
3. FALL THROUGH MANHOLE = 0.20 FT
4. PLACE CONCRETE PIPE JOINT A MAXIMUM OF ONE PIPE DIAMETER FROM WALL OF MANHOLE
5. LOCATE MANHOLE COVER/FRAME AND STEPS OVER BENCH LEDGE WITH MAXIMUM DEPTH OF GRADE RINGS OF 15"
6. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS



PLAN



SECTION



**CITY OF
TUALATIN, OR**

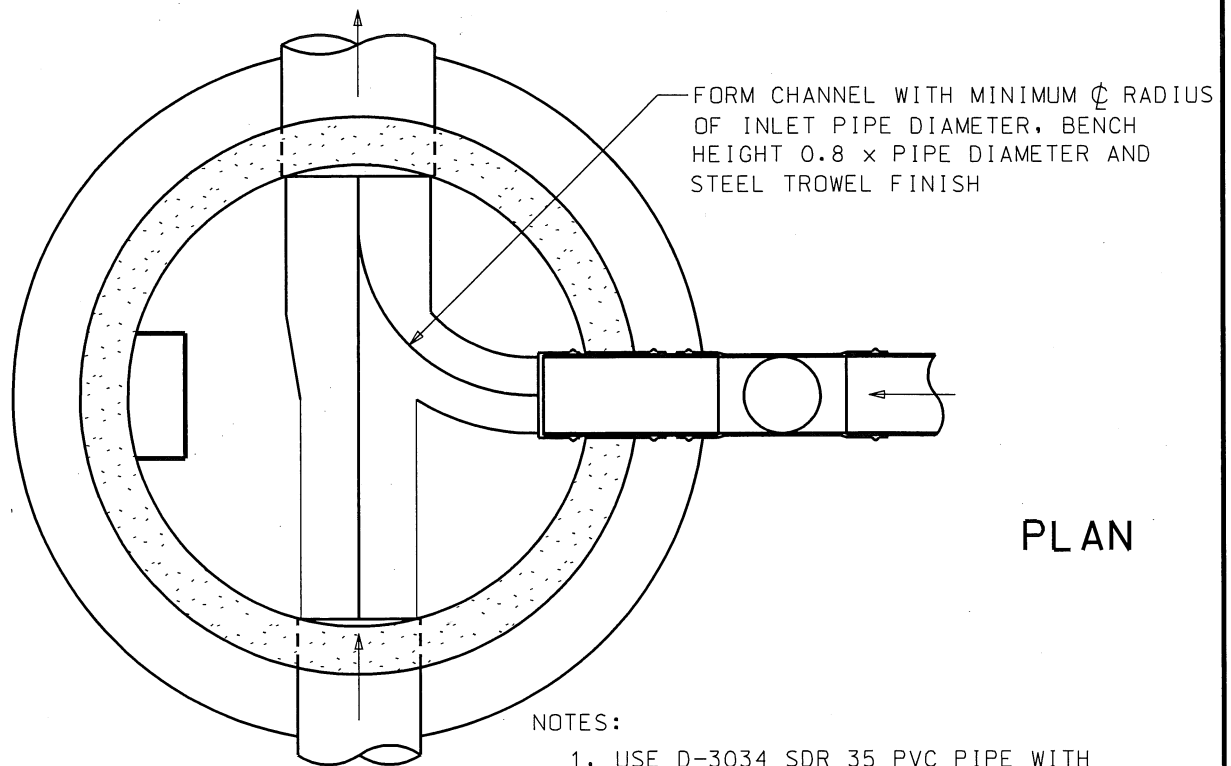
**MANHOLE
96-INCH
FLAT TOP**

REVISED: 12/2001
VALID: 3/2003

SCALE: 1:50

DRAWN: D.L.
APPROVED: K.L.H.

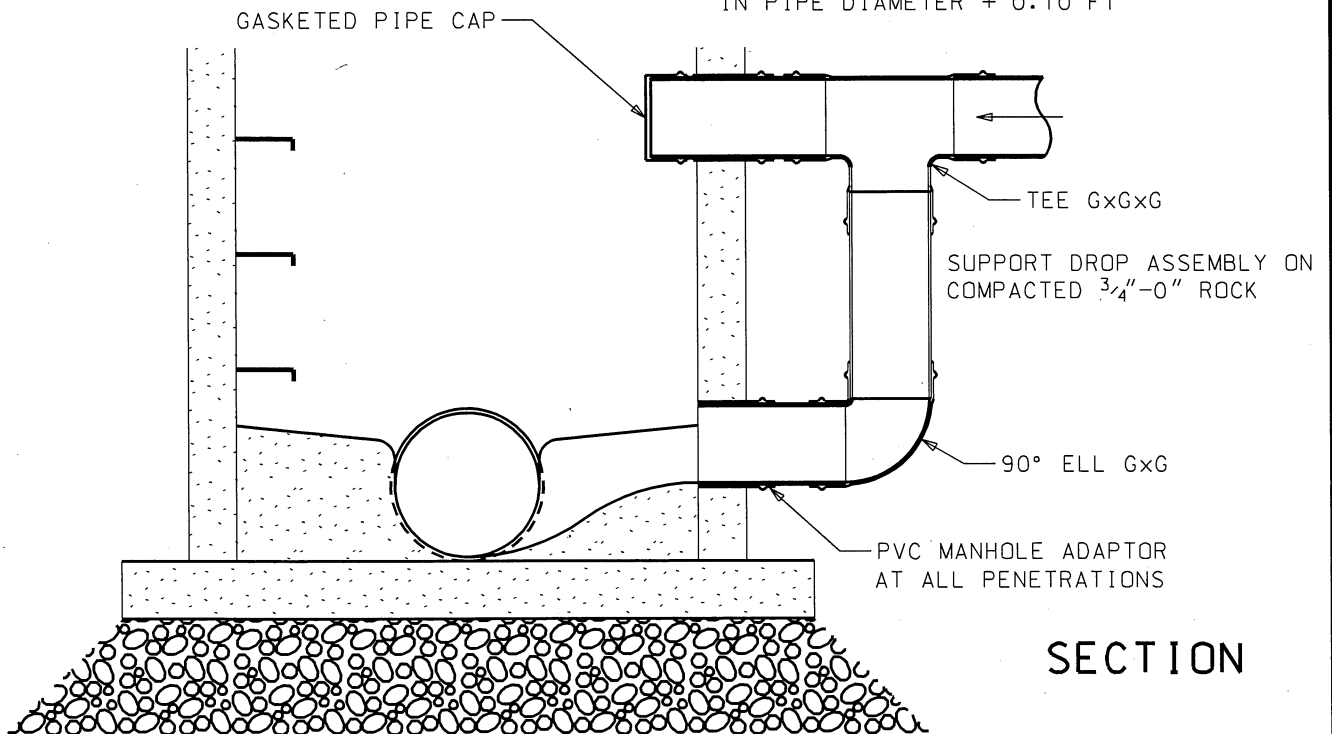
DWG NO. 019



PLAN

NOTES:

1. USE D-3034 SDR 35 PVC PIPE WITH GASKETED SEWER PIPE FITTINGS
2. FALL THROUGH MANHOLE = $0.8 \times \text{DIFFERENCE IN PIPE DIAMETER} + 0.10 \text{ FT}$



SECTION

TO BE USED ON ALL NEW MANHOLE DROP INSTALLATIONS



**CITY OF
TUALATIN, OR**

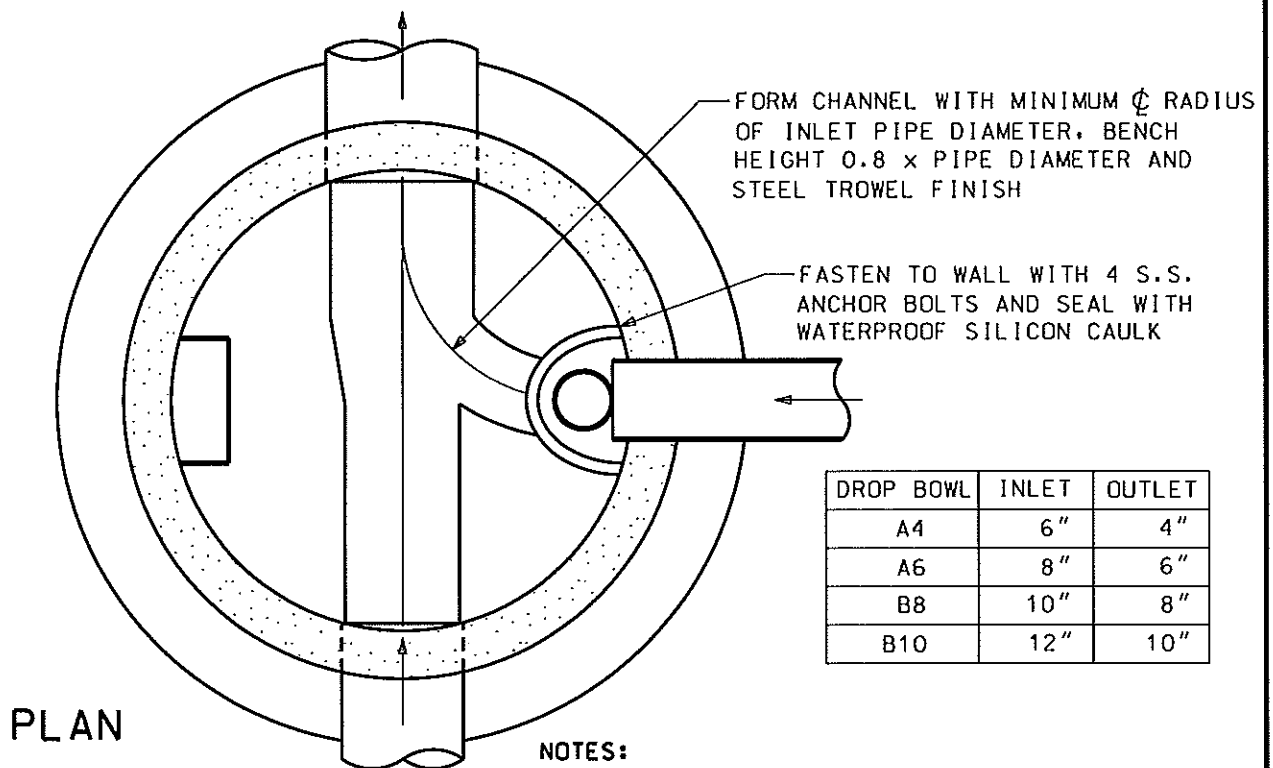
**MANHOLE
OUTSIDE DROP
ASSEMBLY**

REVISED: 10/2001
VALID ID: 3/2003

SCALE: 1:20

DRAWN: D.L.
APPROVED: K.L.H.

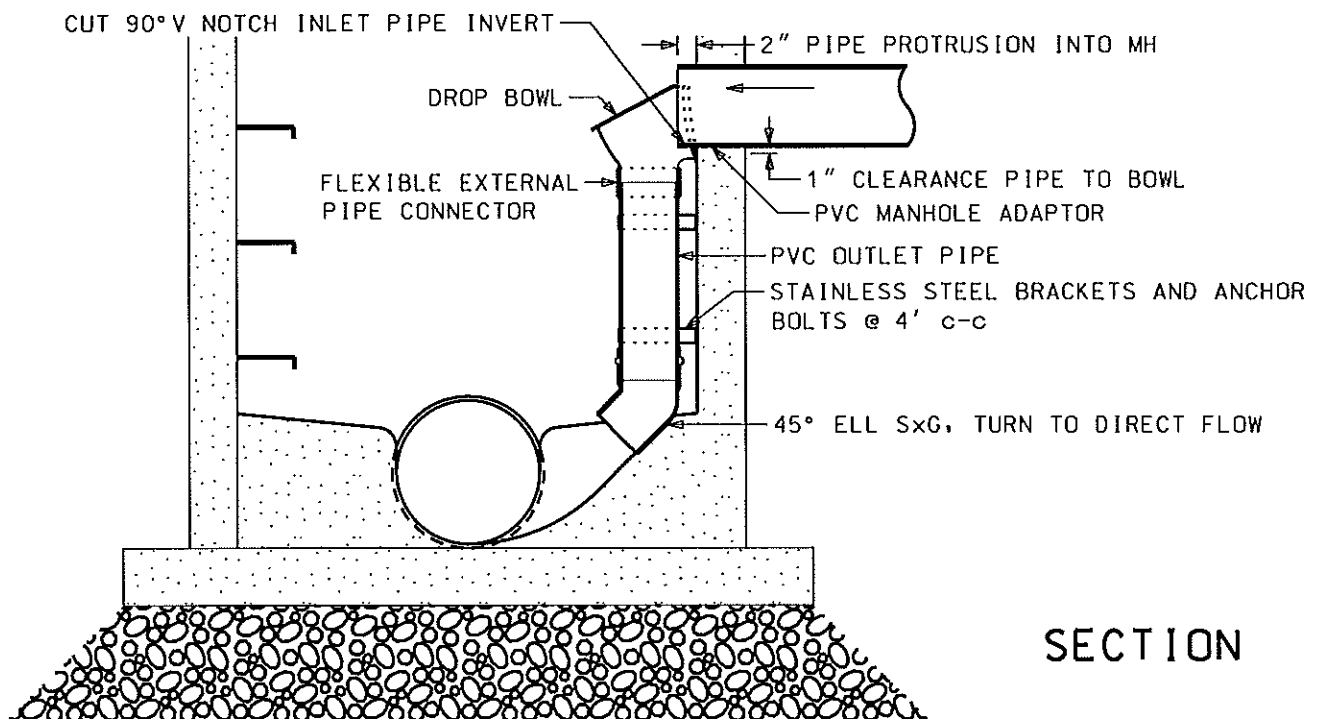
DWG NO. 020



DROP BOWL	INLET	OUTLET
A4	6"	4"
A6	8"	6"
B8	10"	8"
B10	12"	10"

NOTES:

1. USE D-3034 SDR 35 PVC PIPE AND "RELINER" FIBERGLASS DROP BOWL WITH GELCOAT FINISH
2. MINIMUM HORIZONTAL CLEARANCE 24" BETWEEN BOWL AND STEPS



**CITY OF
TUALATIN, OR**

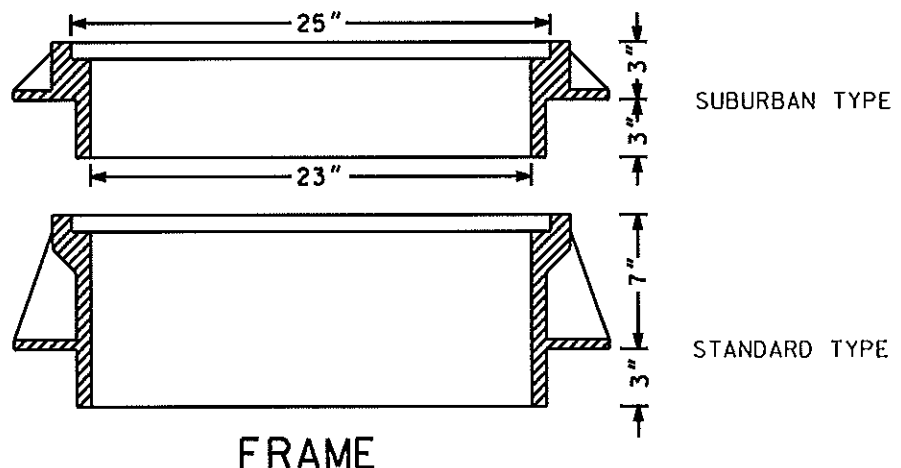
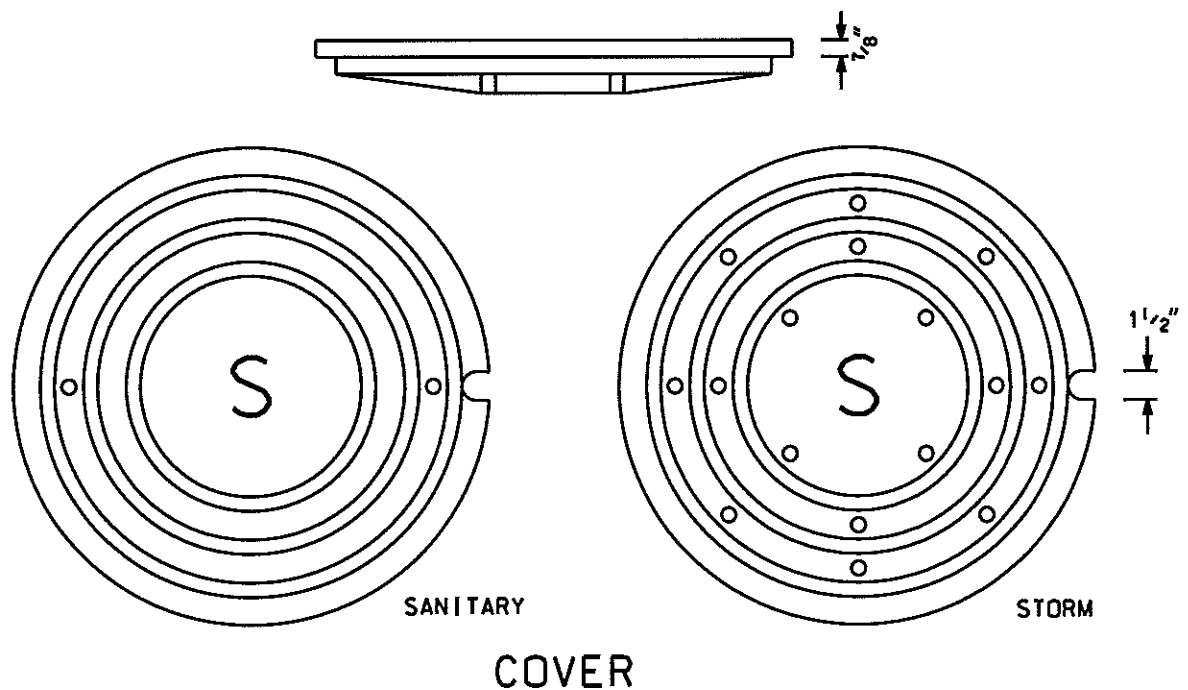
**MANHOLE
INSIDE DROP
ASSEMBLY**

REVISED: 2/2004
VALID ID: 3/2004

SCALE: 1:20

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 021



NOTES:

1. ALL ASSEMBLIES ARE TO BE RATED FOR H-20 TRAFFIC LOADING
2. COVER & FRAME SHALL BE GRAY CAST IRON ASTM A-48 CLASS 30, WITH MATCHING SURFACES MACHINED TO A TRUE BEARING
3. NOTCH LID FOR LIFTING HOOK
4. REFER TO STD DWG 031 FOR WATERTIGHT ASSEMBLY MODIFICATIONS



**CITY OF
TUALATIN, OR**

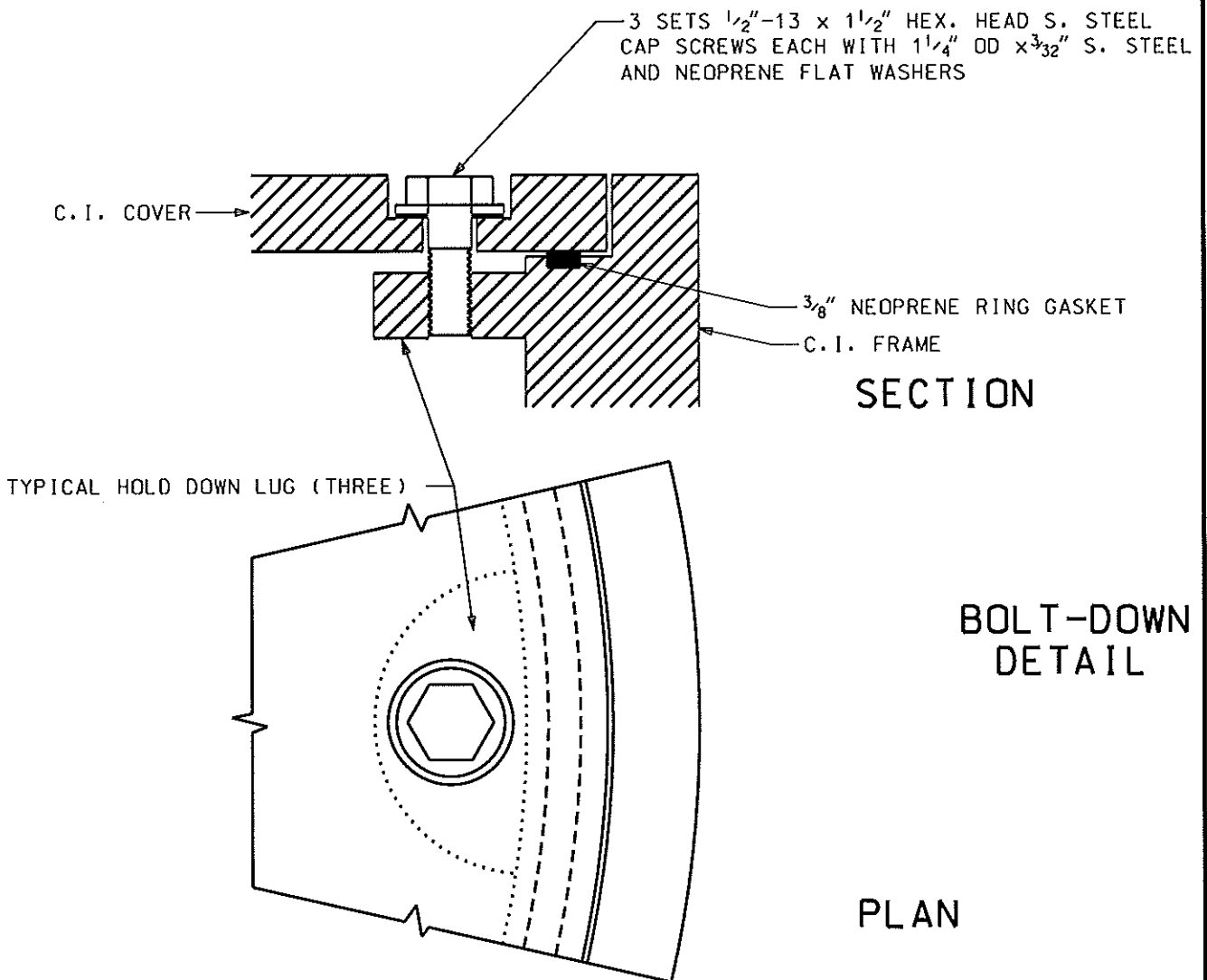
**MANHOLE
COVER AND FRAME
STANDARD**

REVISED: 7/1996
VALID: 3/2003

SCALE: 1:10

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. **030**



NOTES:

1. REFER TO STANDARD DWG 030
2. COVER SHALL INCORPORATE TWO DEPRESSED LIFTING HANDLES AND SHALL NOT INCLUDE THE NOTCH FOR A LIFTING HOOK OR DRAINAGE HOLES
3. THE THREE HOLD DOWN LUGS SHALL BE EVENLY SPACED AROUND THE INTERIOR OF THE FRAME
4. TO BE USED WHENEVER AN ASSOCIATED SANITARY SEWER MANHOLE IS LOCATED WITHIN A FLOODWAY, GREENWAY OR IS NOT IN A PAVED AREA



**CITY OF
TUALATIN, OR**

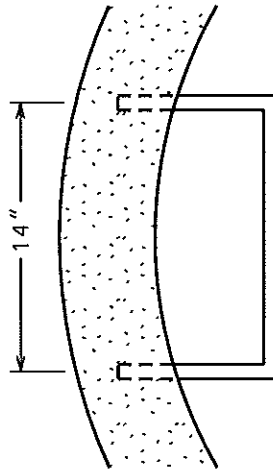
**MANHOLE
COVER AND FRAME
WATERTIGHT**

REVISED: 6/1997
VALID: 3/2003

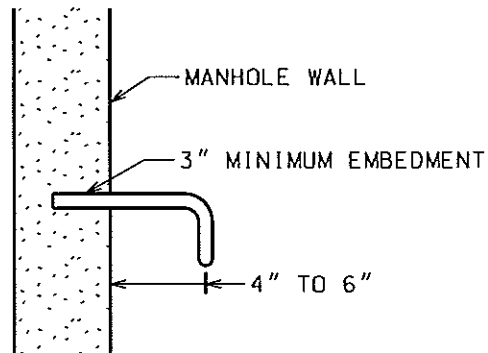
SCALE: 1:2

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 031



PLAN



SECTION

NOTES:

1. STEPS SHALL BE MANUFACTURED FROM $\frac{1}{2}$ " REINFORCING BAR (ASTM A-615 GRADE 60) ENCAPSULATED IN INJECTION MOLDED COPOLYMER POLYPROPYLENE WITH SERRATED NON-SLIP TOP SURFACE
2. STEPS SHALL BE VERTICALLY SPACED ON 12" CENTERS AND MUST BE FIRMLY EMBEDDED IN THE CONCRETE WALL MEETING THE PULLOUT REQUIREMENTS OF ASTM C-478
3. THE MINIMUM CLEAR HORIZONTAL DISTANCE BETWEEN THE RUNG AND THE OPPOSITE WALL OR OTHER OBSTRUCTION SHALL BE 24" MEASURED AT THE CENTER FACE OF THE STEP
4. THE MAXIMUM VERTICAL DISTANCE BETWEEN THE TOP RUNG AND THE MANHOLE COVER TOP SHALL BE 27"



**CITY OF
TUALATIN, OR**

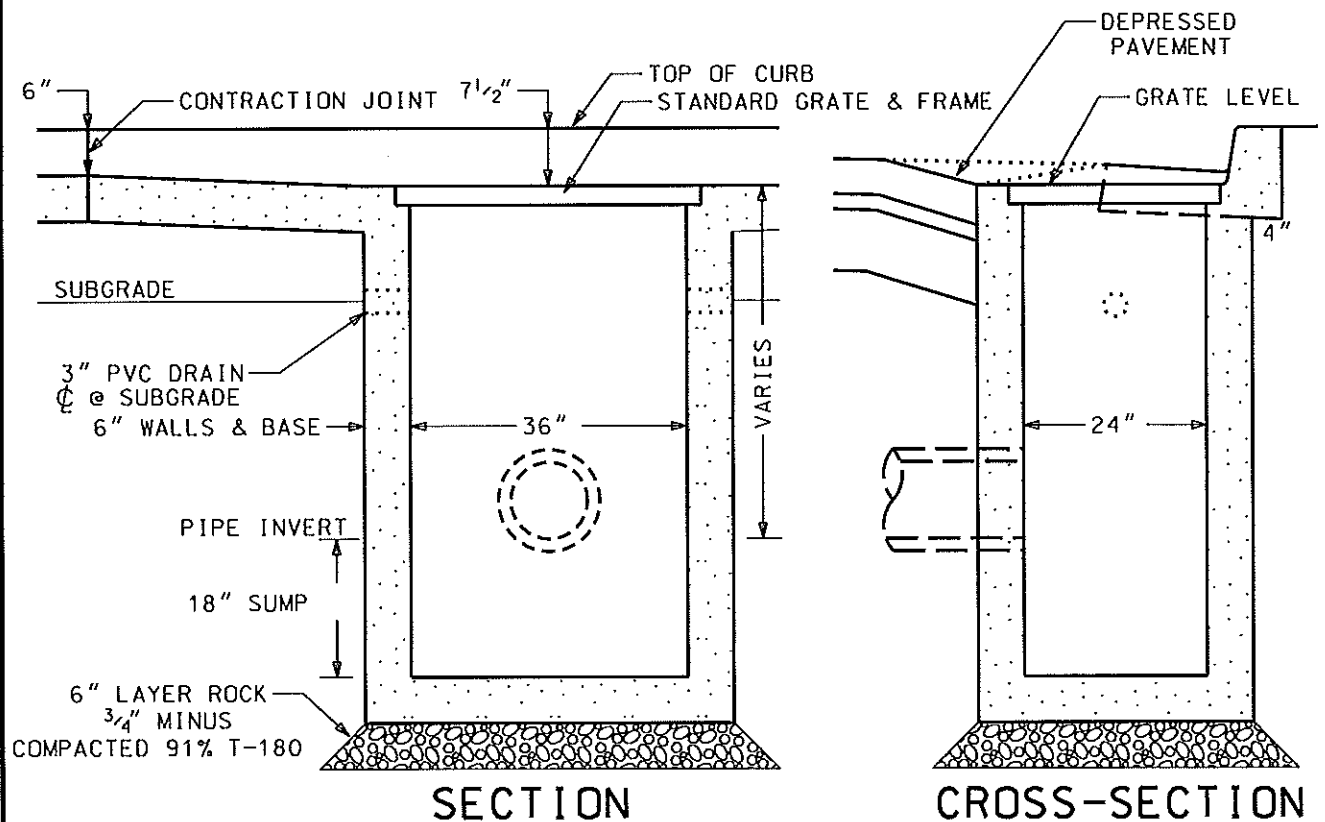
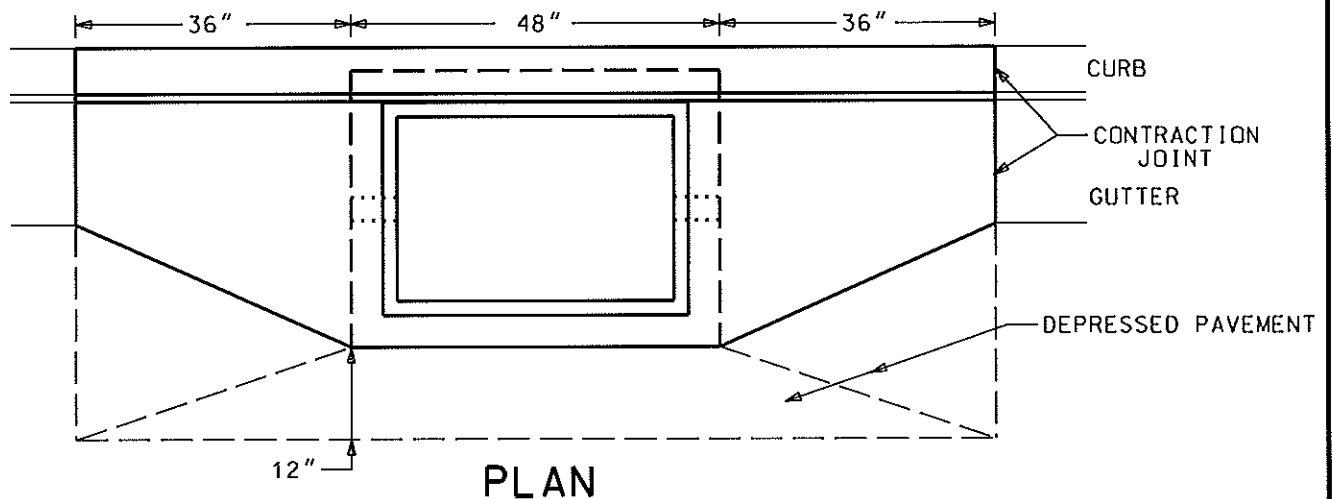
**MANHOLE
STEPS**

REVISED: 9/2001
VALID ID: 3/2003

SCALE: 1:10

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. **032**



NOTES:

1. SEE STD DWG 050 FOR STANDARD GRATE AND FRAME
2. SHALL BE CAST-IN-PLACE, CONCRETE COMPRESSIVE STRENGTH 3300 PSI AT 28 DAYS, ENTRAINED AIR 4% - 7%.



**CITY OF
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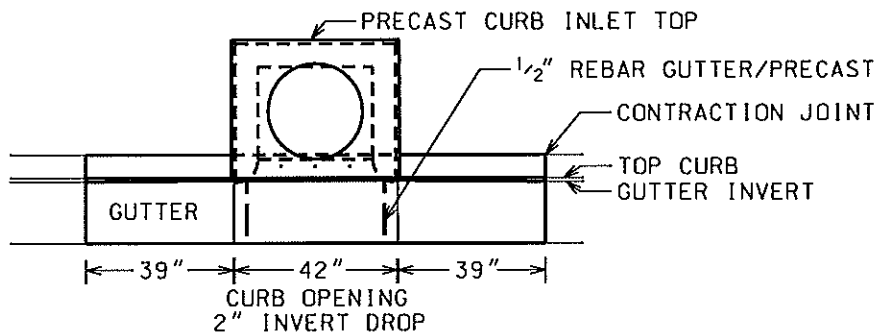
**CATCH BASIN
36-INCH
GUTTER GRATE INLET**

REVISED: 11/2004
VALID: 3/2003

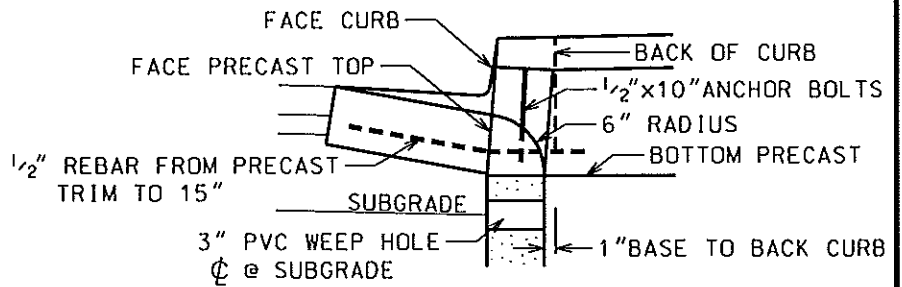
SCALE: 1:25

DRAWN: D.L.
APPROVED: K.L.H.

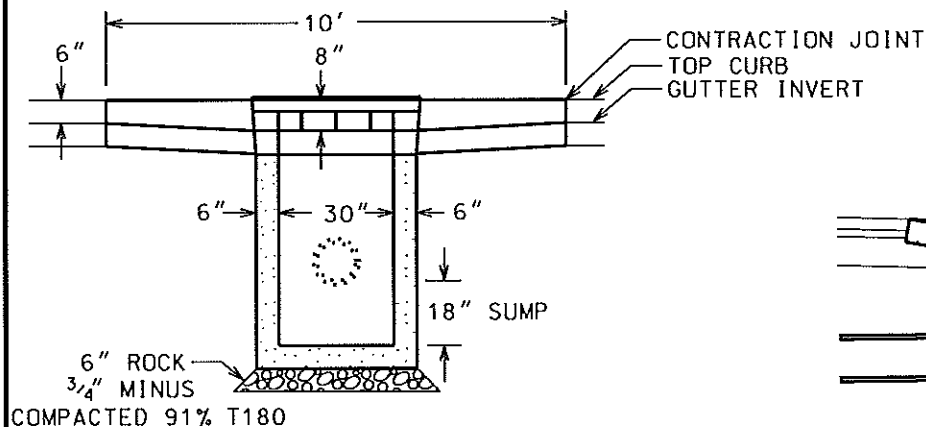
DWG NO. **040**



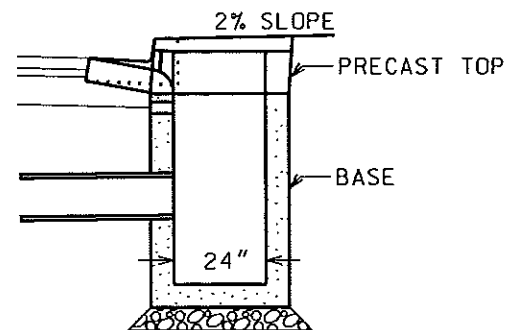
PLAN VIEW
1:50



TOP LEFT CNR OF SECTION
1:20



FRONT VIEW
1:50



SECTION
1:50

NOTES:

1. ALL FABRICATED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
2. BASE SHALL BE CAST-IN-PLACE WITH CONCRETE COMPRESSIVE STRENGTH 3300 P.S.I. AT 28 DAYS, ENTRAINED AIR 4-7%.
3. PRECAST CURB INLET 30" TOP SECTION MANUFACTURED BY UTILITY VAULT MODEL No. CI-30-23FC WITH CAST IRON MANHOLE COVER
4. FOR GRADES GREATER THAN 4% USE CATCH BASIN CURB INLET 48-INCH, DWG NO. 042



**CITY OF
TUALATIN, OR**

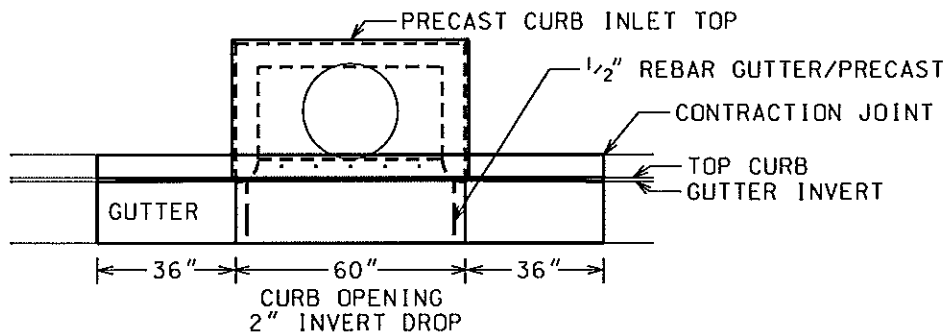
**CATCH BASIN
CURB INLET 30-INCH**

REVISED: 11/2004
VALID ID: 3/2003

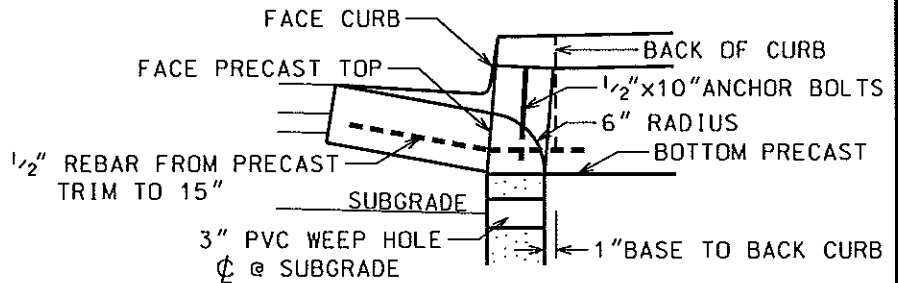
SCALE: AS SHOWN

DRAWN: D.L.
APPROVED: K.L.H.

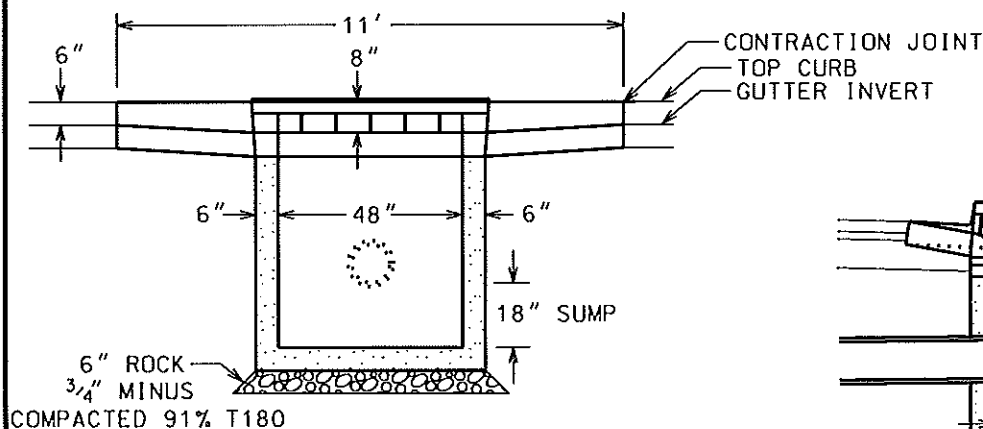
DWG NO. **041**



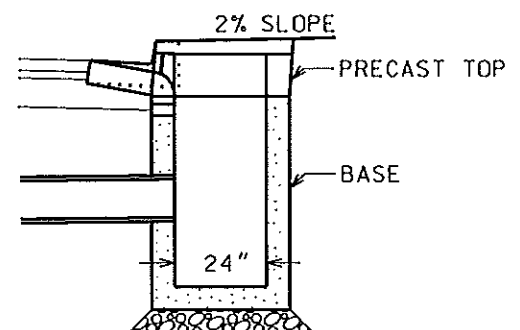
PLAN VIEW
1:50



TOP LEFT CNR OF SECTION
1:20



FRONT VIEW
1:50



SECTION
1:50

NOTES:

1. ALL FABRICATED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
2. BASE SHALL BE CAST-IN-PLACE WITH CONCRETE COMPRESSIVE STRENGTH 3300 P.S.I. AT 28 DAYS, ENTRAINED AIR 4%-7%.
3. PRECAST CURB INLET 48" TOP SECTION MANUFACTURED BY UTILITY VAULT, MODEL No. CI-48-23FC WITH CAST IRON MANHOLE COVER



**CITY OF
TUALATIN, OR**

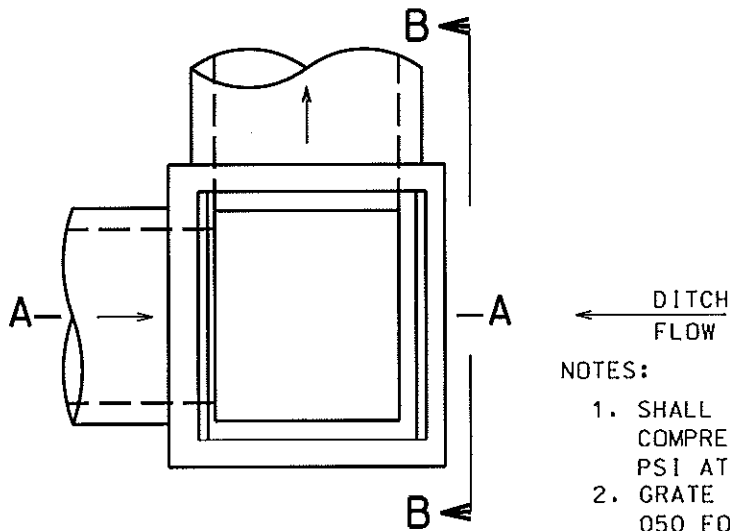
**CATCH BASIN
CURB INLET 48-INCH**

REVISED: 11/2004
VALID: 3/2003

SCALE: AS SHOWN

DRAWN: D.L.
APPROVED: K.L.H.

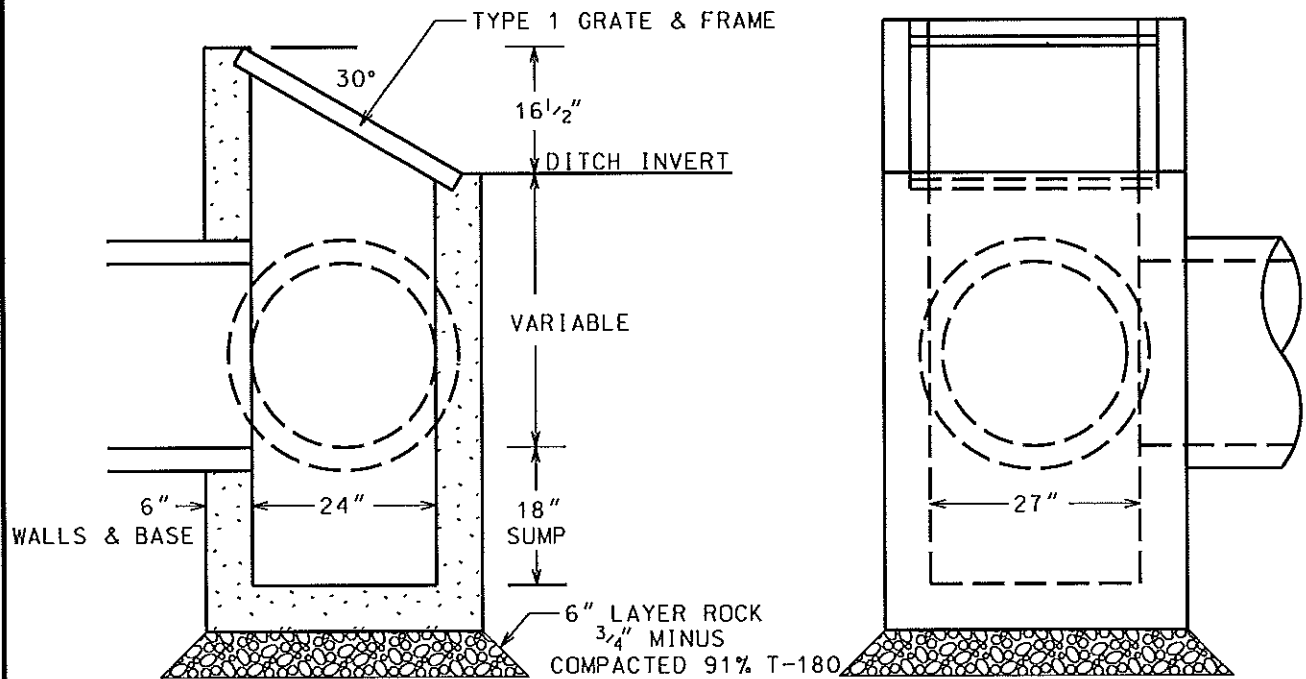
DWG NO. 042



NOTES:

1. SHALL BE CAST-IN-PLACE, CONCRETE
COMPRESSIVE STRENGTH BE NOT LESS THAN 3300
PSI AT 28 DAYS, ENTRAINED AIR 4% - 7%
2. GRATE NOT SHOWN FOR CLARITY. SEE DRAWING
050 FOR TYPE 1 GRATE AND FRAME

PLAN



SECTION A-A

ELEVATION B-B



**CITY OF
TUALATIN, OR**

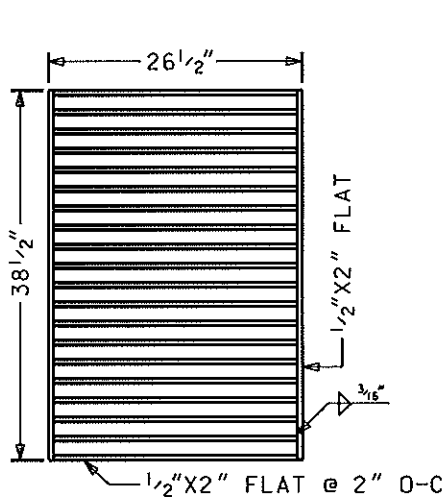
**DITCH INLET
24-INCH PIPE**

REVISED: 11/2004
VALID: 3/2003

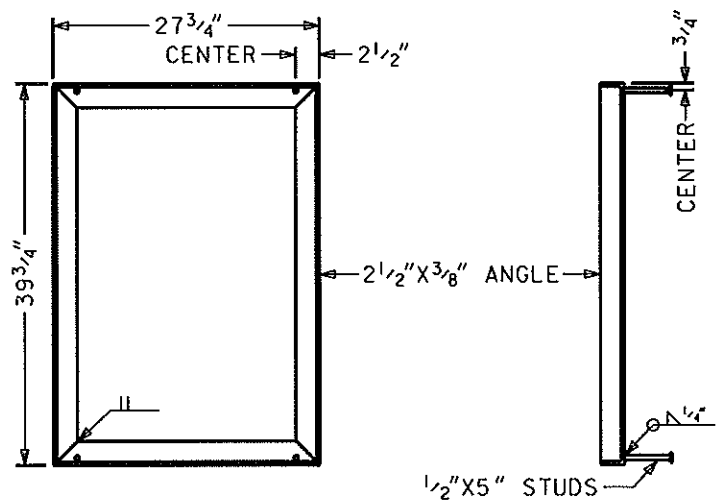
SCALE: 1:25

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. **043**



GRATE

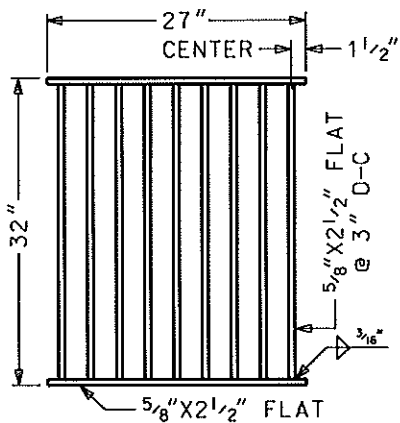


PLAN

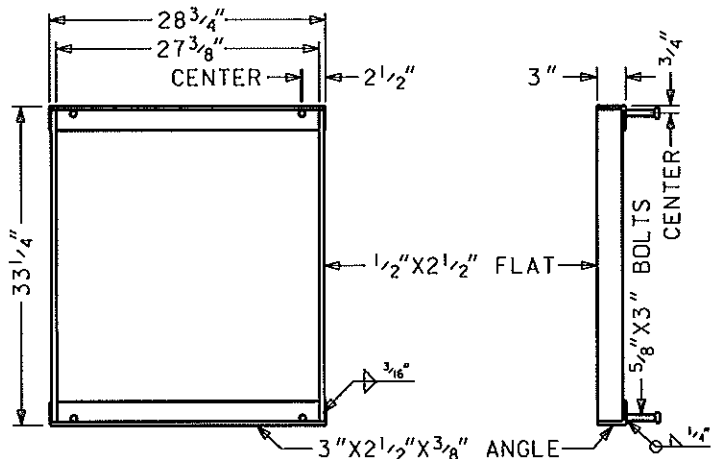
FRAME

SECTION

STANDARD



GRATE



PLAN

FRAME

SECTION

TYPE 1

NOTE:

1. ALL FLAT BARS SHALL HAVE SQUARE EDGES



**CITY OF
TUALATIN, OR**

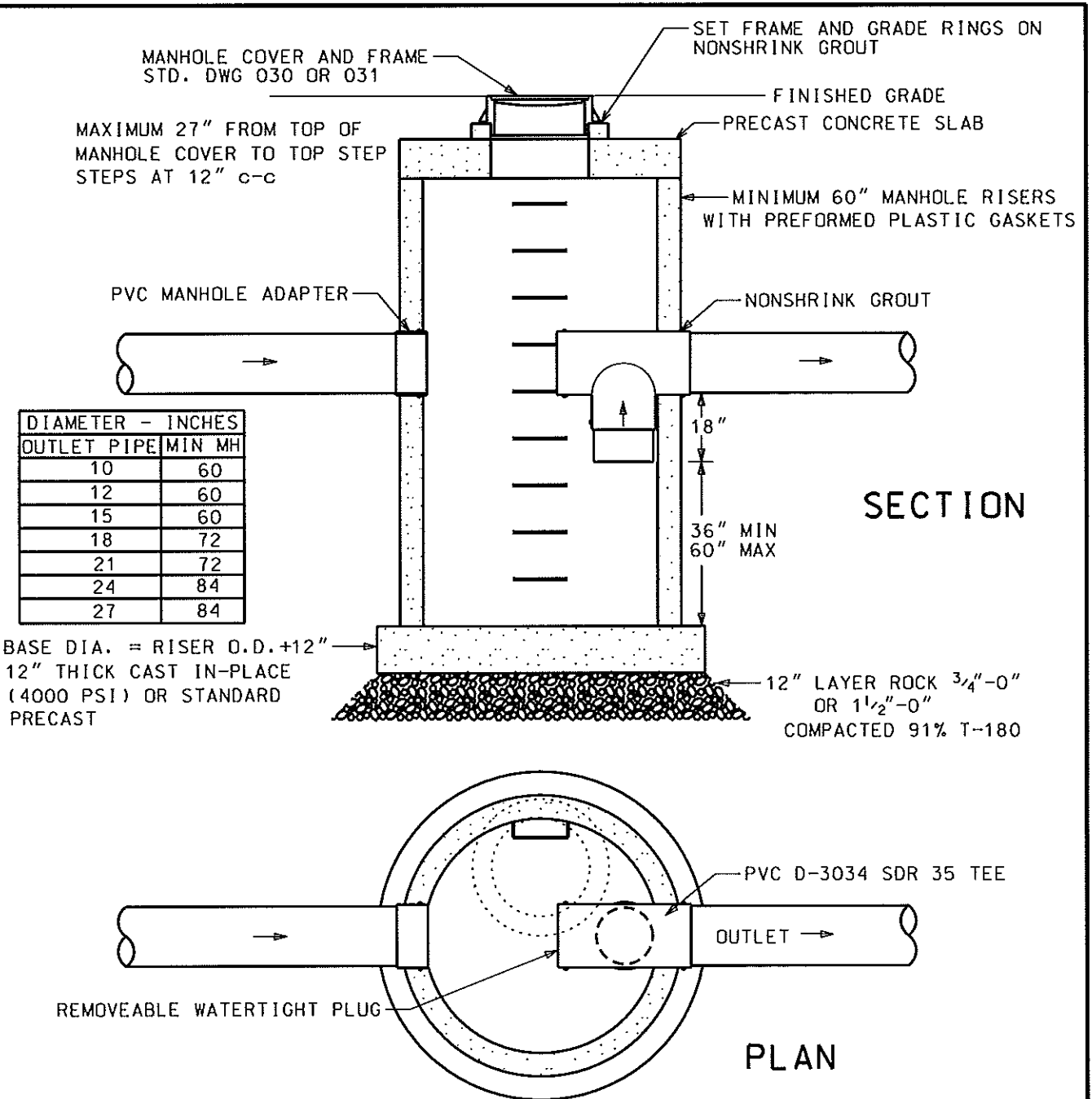
**GRATE AND FRAME
CATCH BASIN**

REVISED: 2/2002
VALID: 3/2003

SCALE: 1:20

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 050



NOTES:

1. MANHOLE TO CONFORM WITH ASTM C-478
2. MANHOLE DIAMETER VARIES WITH OUTLET PIPE DIAMETER, SEE TABLE ABOVE. MAINTAIN PIPE TEE/PLUG TO OPPOSITE WALL CLEARANCE OF 36"
4. IN PAVEMENT, PLACE MINIMUM 12" OF $\frac{3}{4}$ "-0" OR $1\frac{1}{2}$ "-0" COMPACTED ROCK OUTSIDE RISERS
5. HYDRAULIC FALL THROUGH MANHOLE = 0.02 FT
6. PVC D-3034 SDR 35 TEE (SOLVENT SOFTEN EXTERIOR AND SAND), GROUT THROUGH WALL AND FASTEN TO WALL WITH S.S. BAND AND $\frac{1}{2}$ " S.S. ANCHOR BOLTS
7. MINIMUM SUMP VOLUME 20 CUBIC FEET PER 1.0 CFS FLOW, WITH 25 YEAR EVENT, IF THIS IS EXCEEDED CONSTRUCT UPSTREAM FLOW SPLITTER OR INCREASE MANHOLE DIAMETER TO SUIT



**CITY OF
TUALATIN, OR**

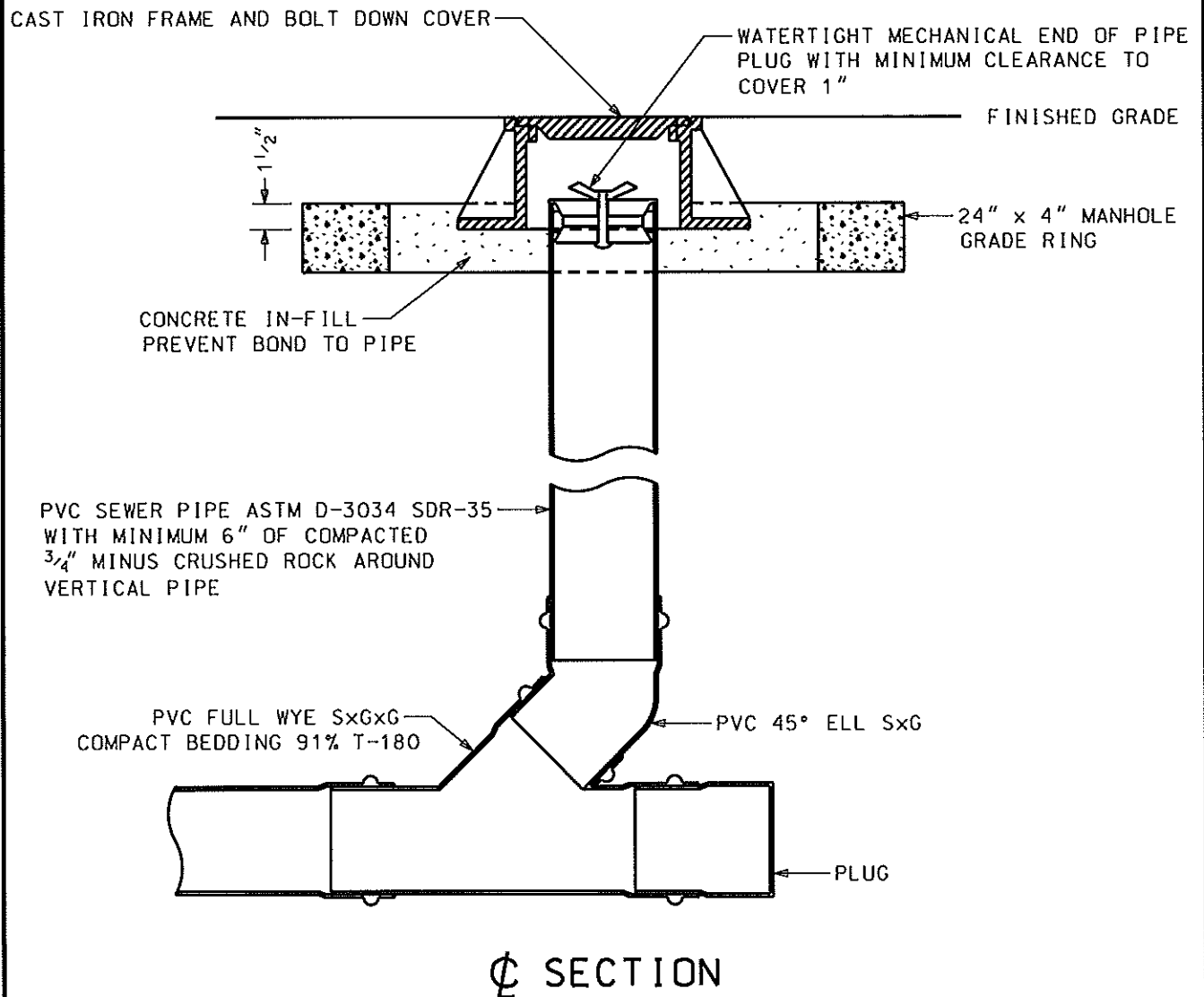
**MANHOLE
WATER QUALITY**

REVISED: 3/2004
VALID: 10/2005

SCALE: 1:40

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 060



NOTE:

1. CAST IRON CLEANOUT FRAME AND BOLT DOWN COVER (TWO RECESSED STAINLESS STEEL BOLTS)
 6" PIPE - 9" ID x 6 1/2" HIGH TYPICAL OLYMPIC M1018 D/T
 8" PIPE - 11 1/2" ID x 7 5/8" HIGH TYPICAL OLYMPIC M1035 D/T



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TUALATIN, OR**

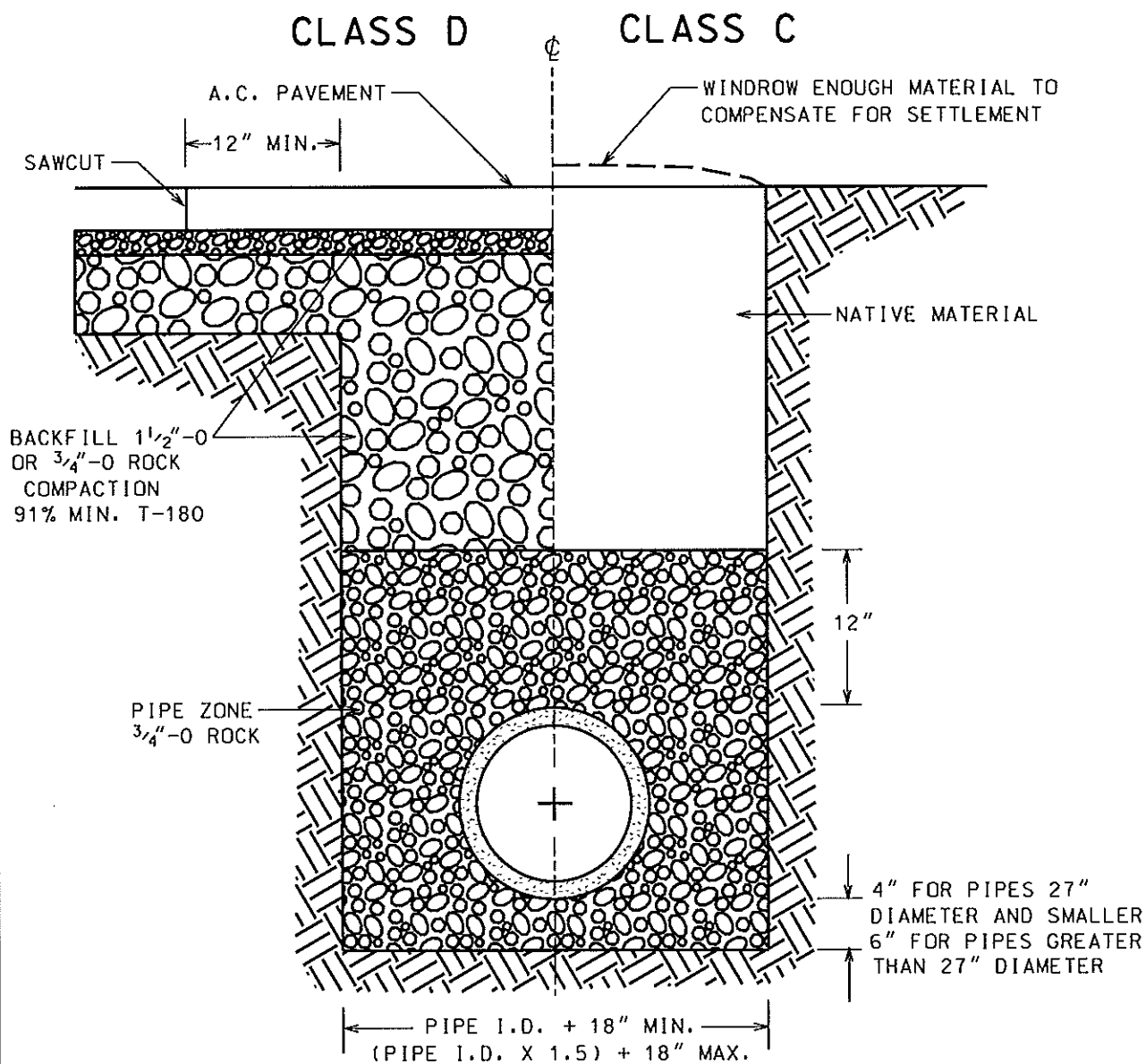
**SEWER
CLEANOUT**

REVISED: 3/2004
VALID ID: 10/2005

SCALE: 1:10

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 100



**CITY OF
TUALATIN, OR**

PIPE TRENCH BACKFILL

REVISED: 12/2001
VALID ID: 3/2003

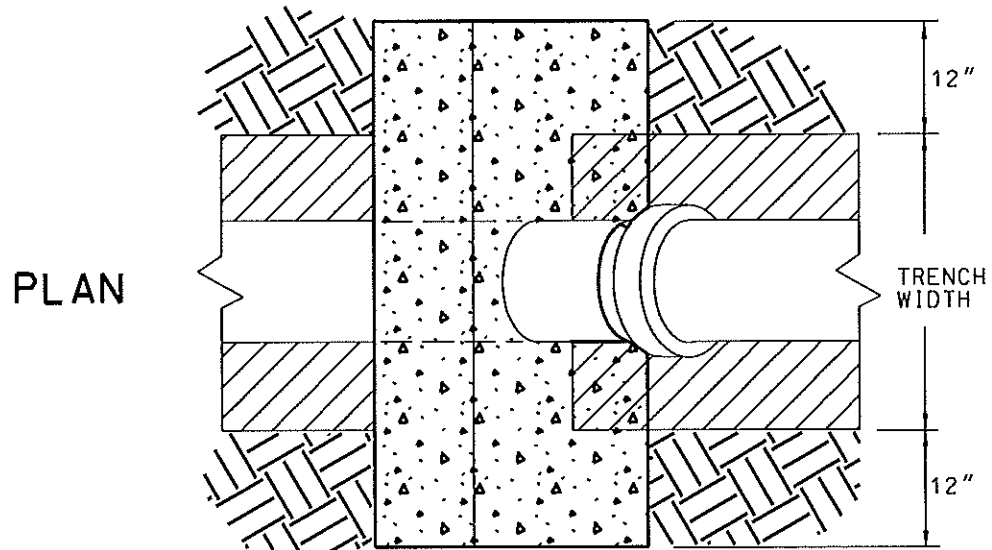
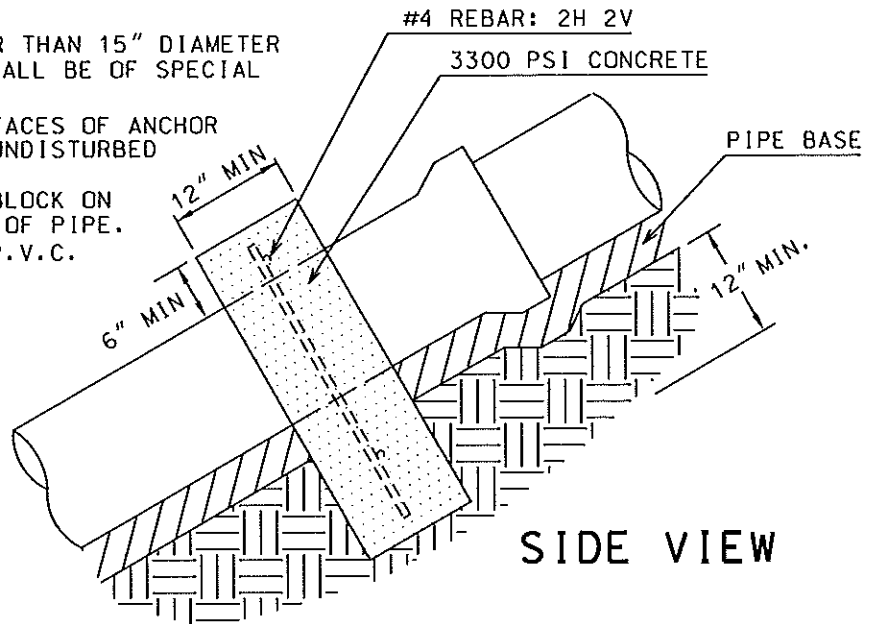
SCALE: NONE

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 240

NOTE:

1. FOR PIPE LARGER THAN 15" DIAMETER ANCHOR BLOCK SHALL BE OF SPECIAL DESIGN.
2. POUR DOWNHILL FACES OF ANCHOR BLOCK AGAINST UNDISTURBED SOIL.
3. LOCATE ANCHOR BLOCK ON BARREL SECTION OF PIPE.
4. DO NOT USE ON P.V.C. PIPE.



SLOPE	MINIMUM ANCHOR SPACING CENTER TO CENTER
0.20-0.34	35'
0.35-0.50	25'
0.51+	16'



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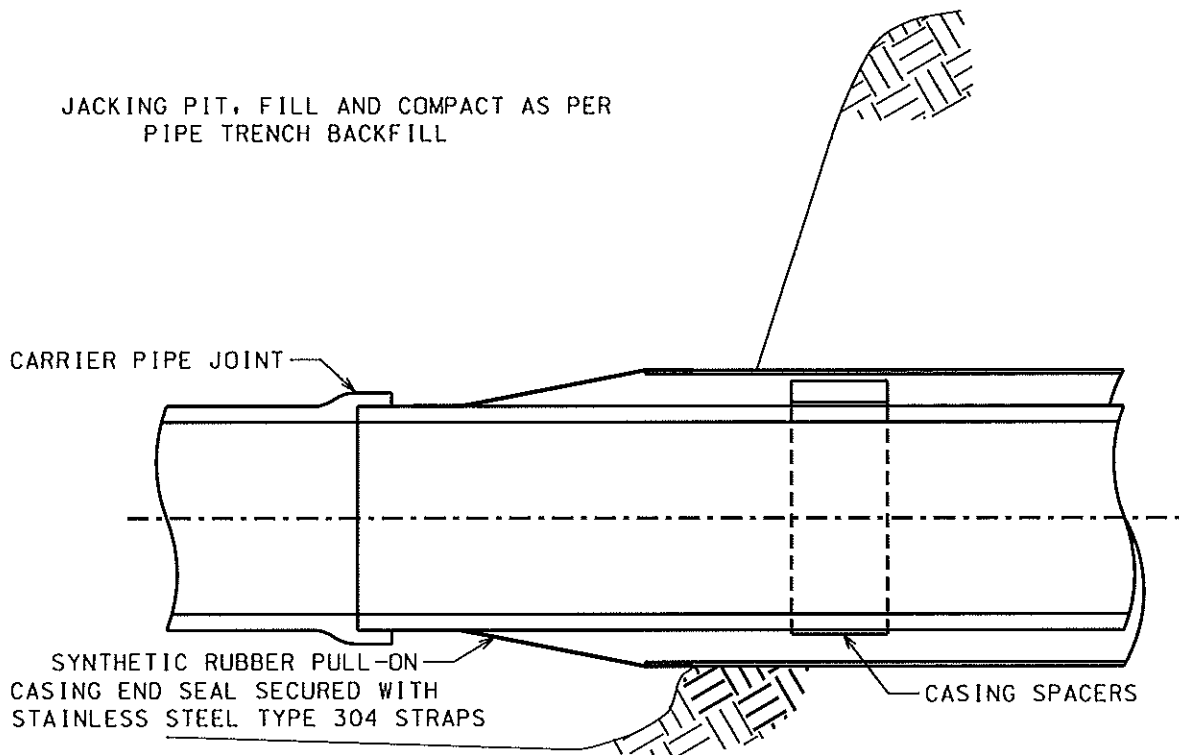
**CONCRETE PIPE
SLOPE ANCHORS**

REVISED: 11/2002
VALID: 7/2004

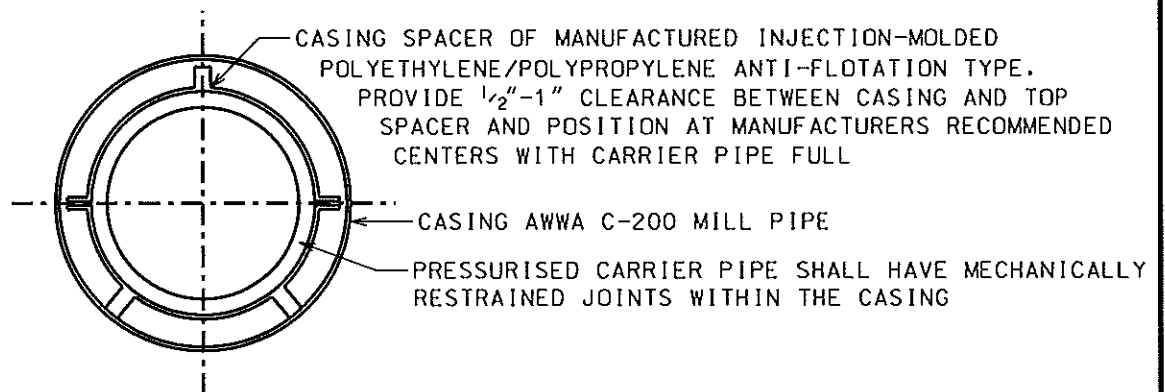
SCALE: 1:20

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 270



JACKING PIT SECTION ALONG PIPE CENTERLINE



CROSS SECTION



**CITY OF
TUALATIN, OR**

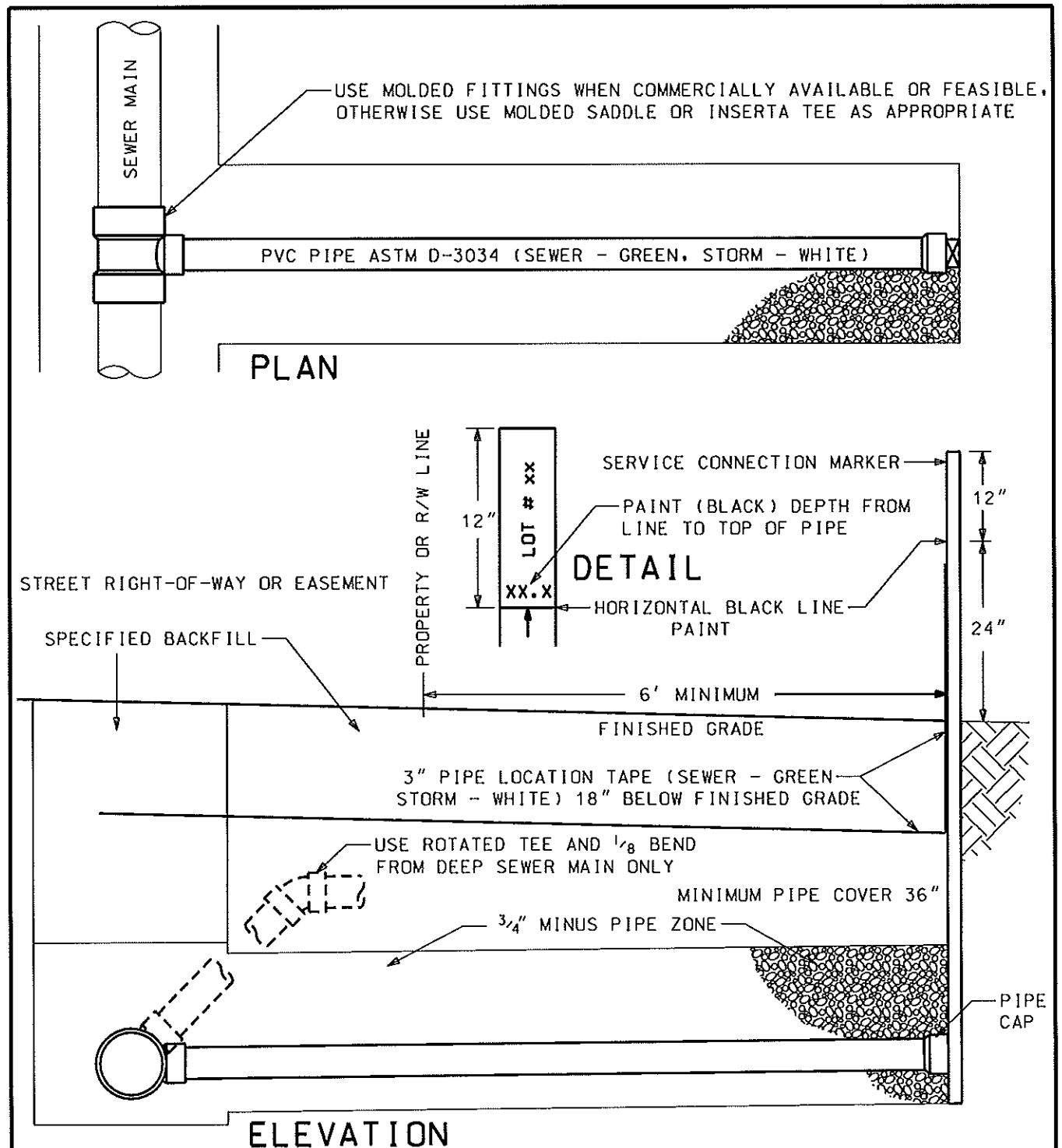
UNDERCROSSING

REVISED: 2/2004
VALID: 3/2004

SCALE: 1:12

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 290



NOTES:

- 1) SERVICE CONNECTION MARKER, 2X4, PAINTED GREEN - SEWER, WHITE - STORM, WITH BLACK LETTERS, SEE DETAIL
- 2) BACKFILL SERVICE CONNECTION MARKER AGAINST PIPE CAP TO SECURE IN PLACE
- 3) MINIMUM LATERAL PIPE SLOPE, $S=0.02$ FOR 4" DIA. AND $S=0.01$ FOR 6" AND LARGER



**CITY OF
TUALATIN, OR**

**SEWER
BUILDING LATERAL**

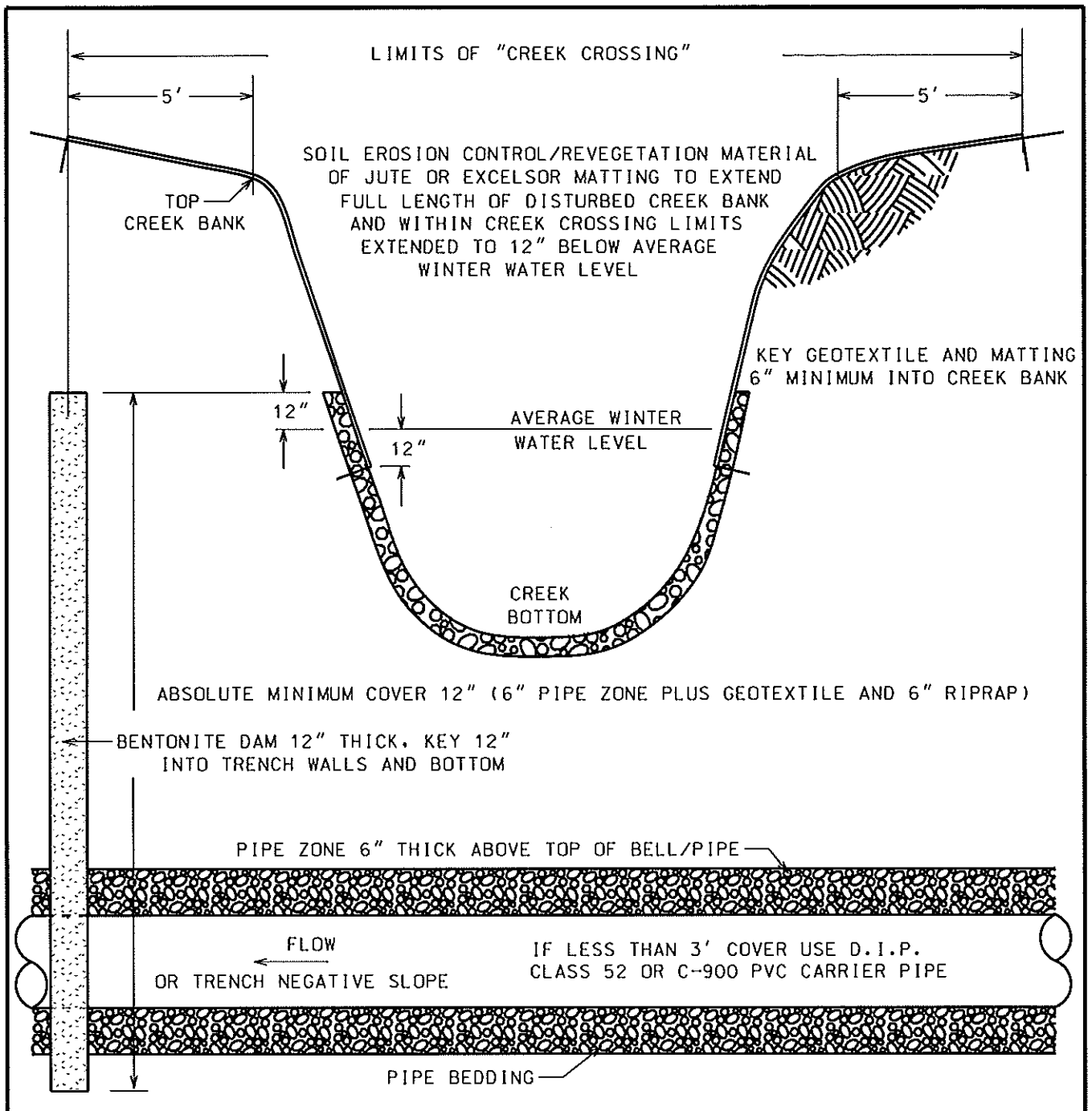
REVISED: 6/2004
VALID: 10/2005

SCALE: 1:20

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 300

SUBGRADE DRAIN



- NOTES:**
- 1) RIPRAP SIZE AND THICKNESS TO BE DETERMINED BY ENGINEER WITH A MINIMUM THICKNESS OF 6" AND SIZE OF CLASS 50. PLACE ON RIPRAP GEOTEXTILE TYPE 2
 - 2) WITHIN THE LIMITS OF THE CREEK CROSSING BACKFILL ABOVE THE PIPE ZONE TO THE FINISHED SURFACE WITH NATIVE MATERIAL
 - 3) SHAPE AND COMPACT CREEK BANK TO ORIGINAL CONFIGURATION AS DETERMINED BY THE ENGINEER.
 - 4) CHECK PIPE FOR FLOTATION WHEN EMPTY AND CORRECT, IF NECESSARY, TO PROVIDE NEGATIVE BUOYANCY.



**CITY OF
TUALATIN, OR**

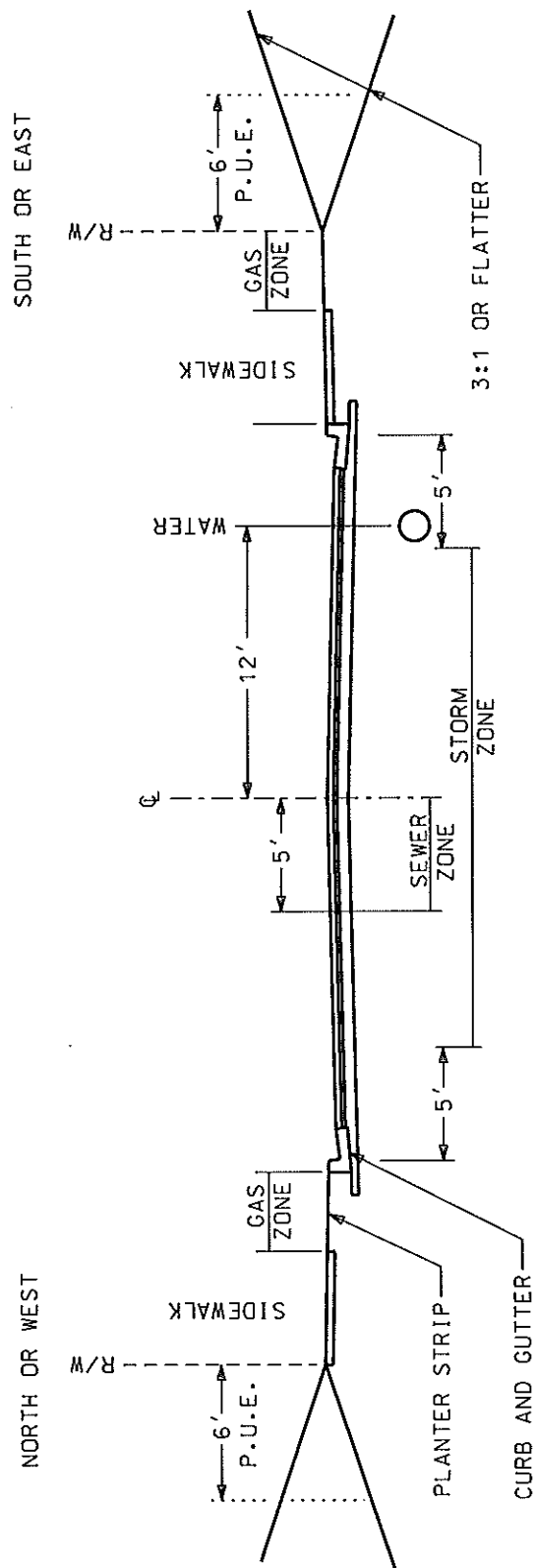
**PIPELINE
STREAM CROSSING**

REVISED: 4/2002
VAL ID: 3/2003

SCALE: 1:50

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 330



NOTE:

1. GAS AND SEWER ON THE NORTH OR WEST
2. WATER ON THE SOUTH OR EAST
3. 5-FOOT P.U.E. ADJACENT TO ALL SIDE AND REAR LOT LINES



**CITY OF
TUALATIN, OR**

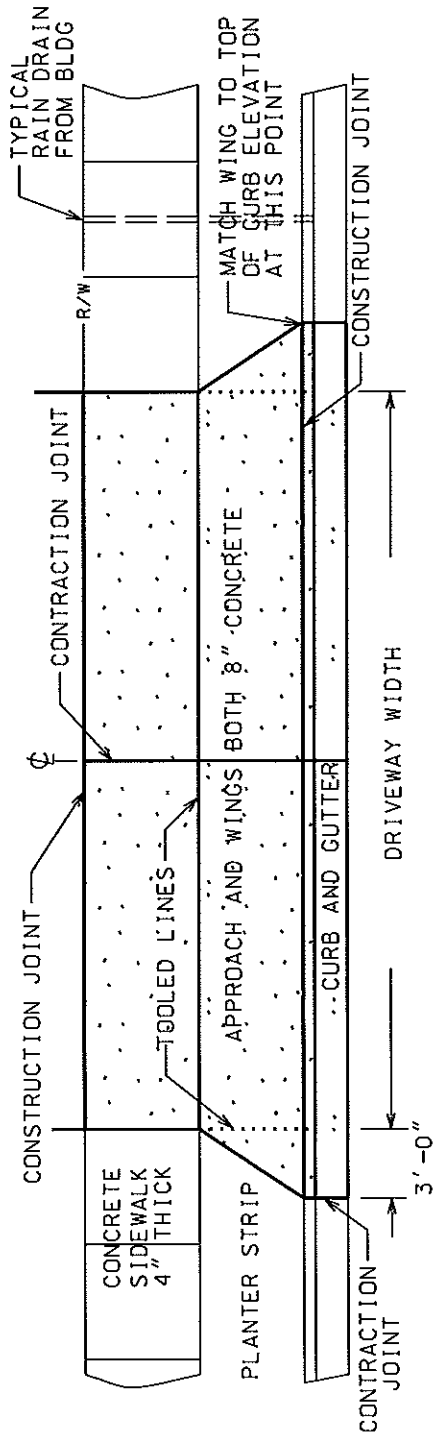
**STREET
UTILITY LOCATIONS**

REVISED: 7/2004
VALID: 10/2005

SCALE: 1:100

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. **425**

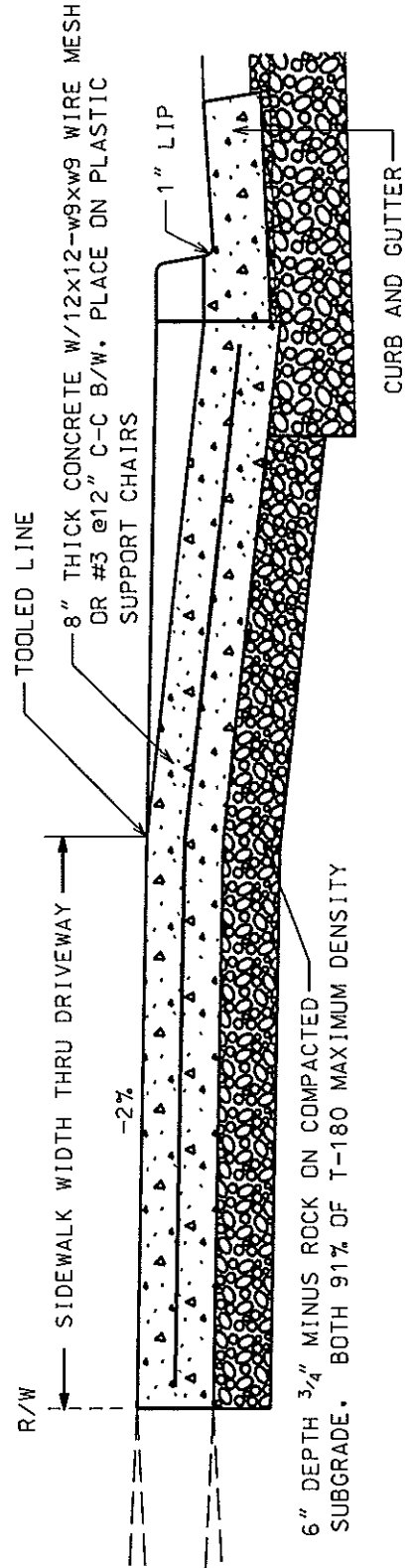


PLAN

SCALE = 1:100

NOTES:

1. CONTRACTION JOINTS SHALL BE OF THE WEAKENED PLANE TYPE FORMED TO A DEPTH $2\frac{3}{4}$ " WITH TOOLED EDGES. $\frac{1}{4}$ " R EDGE $3\frac{1}{2}$ " FLAT, EXCEPT IN CURB AND GUTTER $\frac{1}{4}$ " R EDGE ONLY. NO MESH ACROSS CONTRACTION JOINTS
2. TOOLED LINE SHALL BE FOR COSMETIC PURPOSES ONLY. $\frac{1}{4}$ " R EDGE, $3\frac{1}{2}$ " FLAT
3. LOCATION AND WIDTH OF DRIVEWAYS SHALL MEET THE REQUIREMENTS OF THE TUALATIN DEVELOPMENT CODE
4. CONCRETE APPROACH RAMP SURFACE SHALL BE BRUSH FINISHED, TRANSVERSE TO CENTERLINE
5. APPROACH SLAB AND WINGS (BOTH $8\frac{1}{2}$ " THICK) MAY BE POURED MONOLITHIC WITH CURB AND GUTTER
6. APPROACH $8\frac{1}{2}$ " CONCRETE, 4%-7% AIR, SHALL ATTAIN 4000 PSI COMPRESSIVE STRENGTH BEFORE OPENING TO TRAFFIC



ELEVATION

SCALE = 1:20



**CITY OF
TUALATIN, OR**

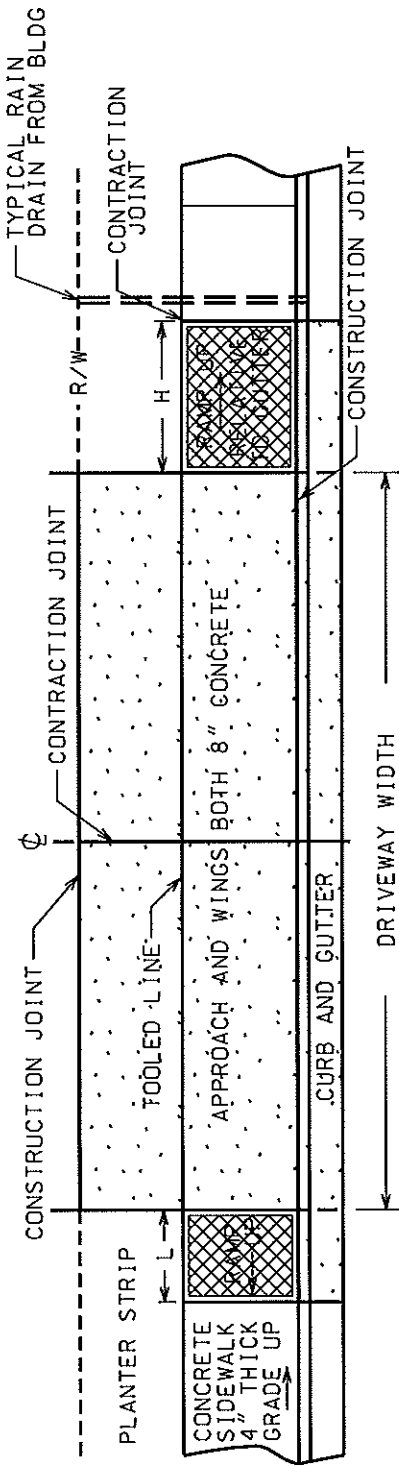
**APPROACH
COMMERCIAL DRIVEWAY
CURBSIDE PLANTER STRIP**

REVISED: 6/2004
VALID: 10/2005

SCALE: AS SHOWN

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 440

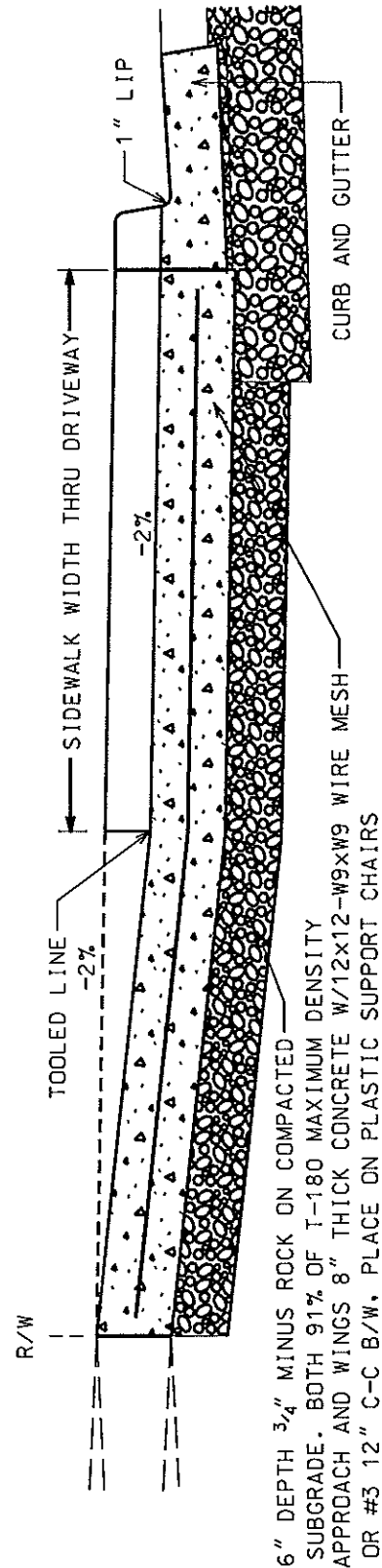


LENGTH H/L IN INCHES									
SIDEWALK GRADE %									
0	1	2	3	4	5	6	8	10	12
60	68/54	79/48	94/44	96/41	96/38	96/35	96/31	96/27	96/25

PLAN
SCALE = 1:100

NOTES:

1. CONTRACTION JOINTS SHALL BE OF THE WEAKENED PLANE TYPE FORMED TO A DEPTH $2\frac{3}{4}$ " WITH TOOLED EDGES, $\frac{1}{4}$ "R EDGE $3\frac{1}{2}$ " FLAT, EXCEPT IN CURB AND GUTTER $\frac{1}{4}$ "R EDGE ONLY. NO MESH ACROSS CONTRACTION JOINTS
2. TOOLED LINE SHALL BE FOR COSMETIC PURPOSES ONLY. $\frac{1}{4}$ "R EDGE $3\frac{1}{2}$ " FLAT
3. CONCRETE APPROACH SURFACE SHALL BE BRUSH FINISHED. TRANSVERSE TO CENTERLINE
4. LOCATION AND WIDTH OF DRIVEWAYS SHALL MEET THE REQUIREMENTS OF THE TUALATIN DEVELOPMENT CODE
5. APPROACH SLAB AND RAMPS (BOTH 8" THICK) MAY BE POURED MONOLITHIC WITH CURB AND GUTTER
6. PROVIDE TEXTURED SURFACE TO RAMPS USING A POLYETHYLENE TEMPLATE FROM TENAX SENTRY-SECURA SAFETY FENCE
7. APPROACH 8" CONCRETE, 4%-7% AIR, SHALL ATTAIN 4000 PSI COMPRESSIVE STRENGTH BEFORE OPENING TO TRAFFIC



ELEVATION
SCALE = 1:20



**CITY OF
TUALATIN, OR**

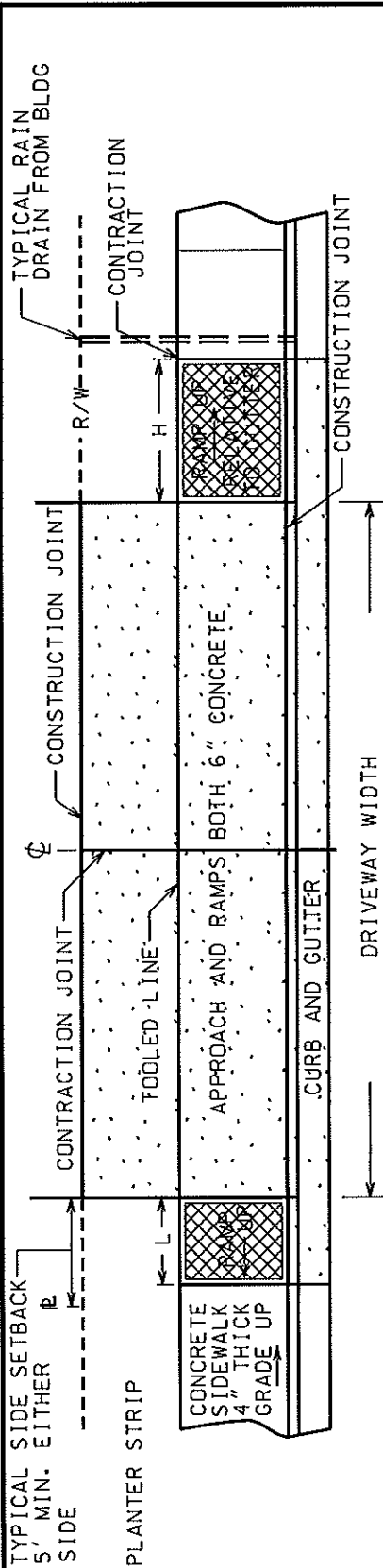
**APPROACH
COMMERCIAL DRIVEWAY
CURBSIDE SIDEWALK**

REVISED: 6/2004
VALID: 10/2005

SCALE: AS SHOWN

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 441



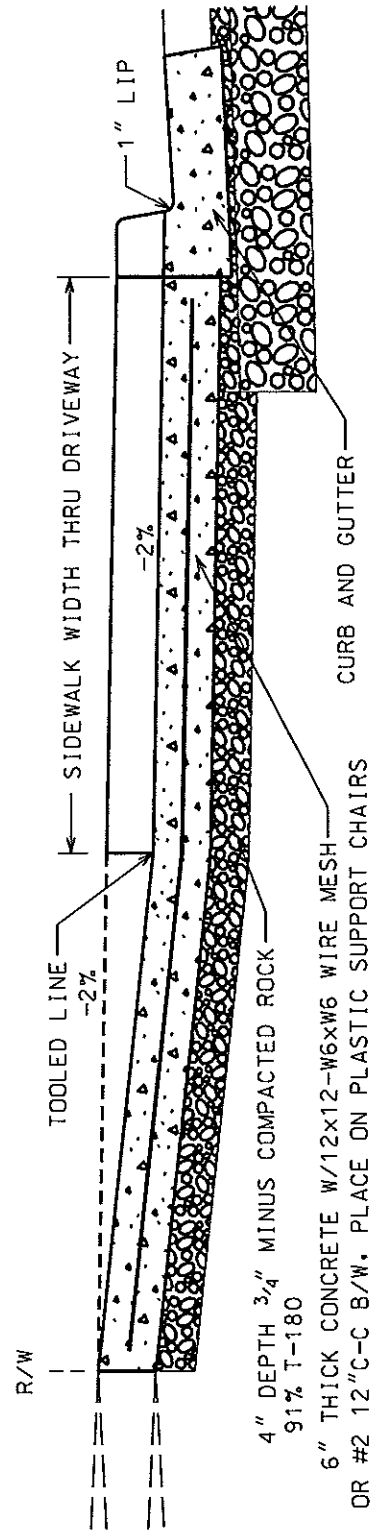
PLAN

SCALE = 1:100

LENGTH H/L IN INCHES										
SIDEWALK GRADE %										
0	1	2	3	4	5	6	8	10	12	
60	68/54	79/48	94/44	96/41	96/38	96/35	96/31	96/27	96/25	

NOTES:

1. TOOLED LINE SHALL BE FOR COSMETIC PURPOSES ONLY. $\frac{1}{4}$ "R EDGE 3" FLAT
2. CONCRETE APPROACH SURFACE SHALL BE BRUSH FINISHED, TRANSVERSE TO CENTERLINE
3. APPROACH SLAB AND RAMPS (BOTH 6" THICK) MAY BE POURED MONOLITHIC WITH CURB AND GUTTER
4. LOCATION AND WIDTH OF DRIVEWAYS SHALL MEET THE REQUIREMENTS OF THE TUALATIN DEVELOPMENT CODE
5. CONTRACTION JOINTS SHALL BE OF THE WEAKENED PLANE TYPE FORMED TO A DEPTH OF 2" WITH TOOLED EDGES. $\frac{1}{4}$ "R EDGE 3" FLAT, EXCEPT IN CURB AND GUTTER $\frac{1}{4}$ "R EDGE ONLY. NO MESH ACROSS CONTRACTION JOINTS
6. PROVIDE TEXTURED SURFACE TO RAMPS USING A POLYETHYLENE TEMPLATE FROM TENAX SENTRY-SECURA SAFETY FENCE
7. APPROACH 6" CONCRETE, 4%-7% AIR, SHALL ATTAIN 3300 PSI COMPRESSIVE STRENGTH BEFORE OPENING TO TRAFFIC



ELEVATION

SCALE = 1:20



**CITY OF
TUALATIN, OR**

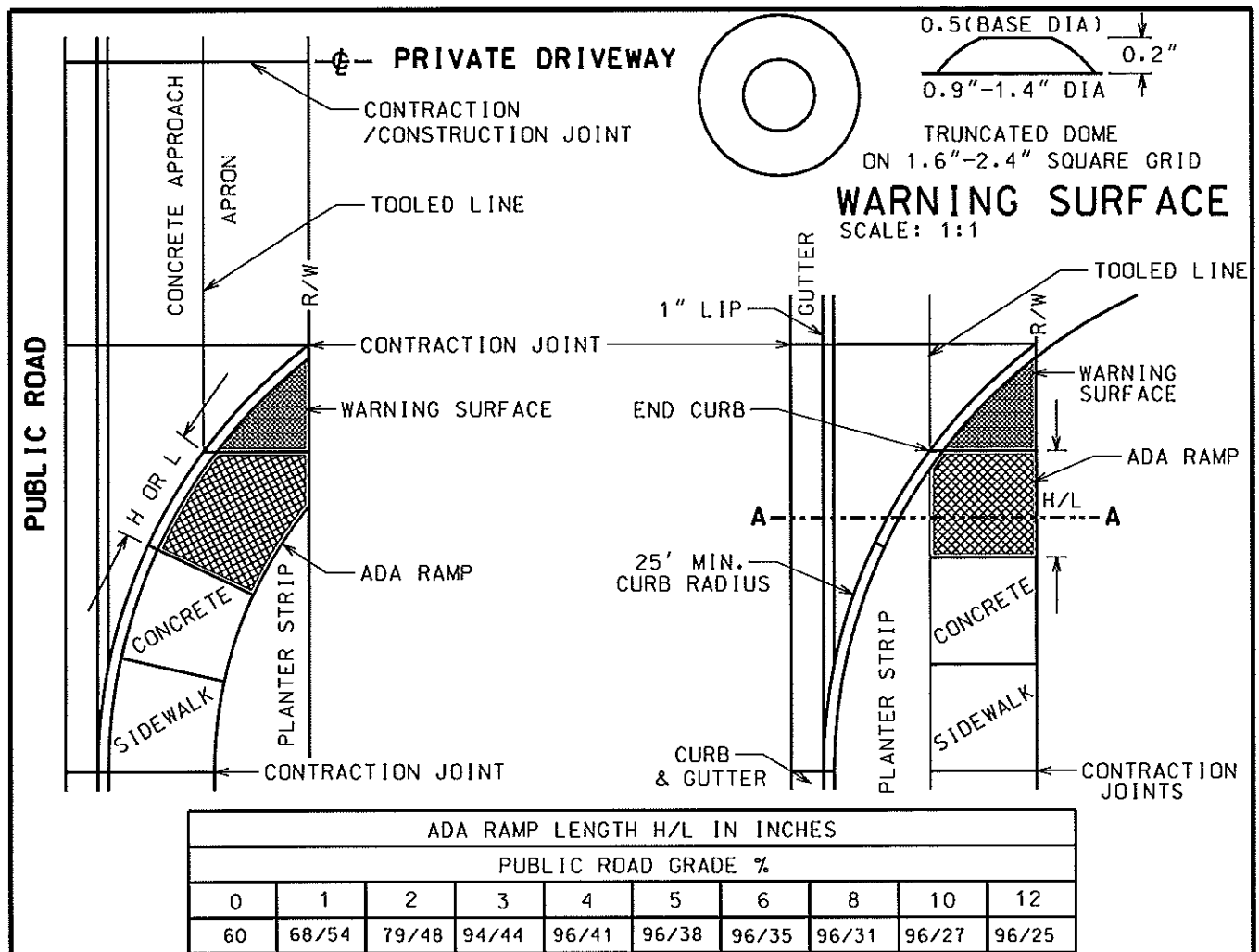
**APPROACH
RESIDENTIAL DRIVEWAY
CURBSIDE SIDEWALK**

REVISED: 6/2004
VALID: 10/2005

SCALE: AS SHOWN

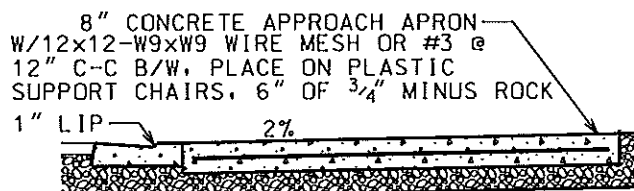
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 443



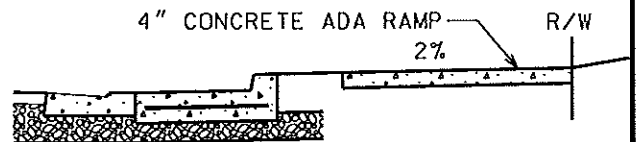
PLAN

SCALE: 1:100



APRON & SECTION

SCALE: 1:50



SECTION A - A

NOTES:

1. COMPACT SUBGRADE AND 3/4" MINUS ROCK TO 91% OF T-180 MAXIMUM DENSITY.
2. TOP OF CURB SHALL BE 5" ABOVE AND MONOLITHIC WITH APPROACH APRON
3. APRON SURFACE SHALL BE BRUSH FINISHED, TRANSVERSE TO PRIVATE DRIVEWAY CENTERLINE
4. TOOLED LINE SHALL BE FOR COSMETIC PURPOSES ONLY, 1/4" R EDGE 3" FLAT
5. CONTRACTION JOINTS IN THE APPROACH SLAB SHALL BE OF THE WEAKENED PLANE TYPE FORMED TO A DEPTH OF 2 3/4" WITH 1/4" R TOOLED EDGE 3" FLAT, EXCEPT IN CURB AND GUTTER 1/4" R EDGE, NO MESH ACROSS CONTRACTION JOINTS
6. PROVIDE TEXTURED SURFACE TO ADA RAMPS USING POLYETHYLENE TEMPLATE FROM TENAX SENTRY-SECURA SAFETY FENCE AND THE DETECTABLE WARNING SURFACE COLORED SAFETY YELLOW EXTENDING MINIMUM 24" FROM BACK OF CURB
7. CONCRETE, 4%-7% AIR, SHALL ATTAIN 4000 PSI COMPRESSIVE STRENGTH BEFORE TRAFFIC.



**CITY OF
TUALATIN, OR**

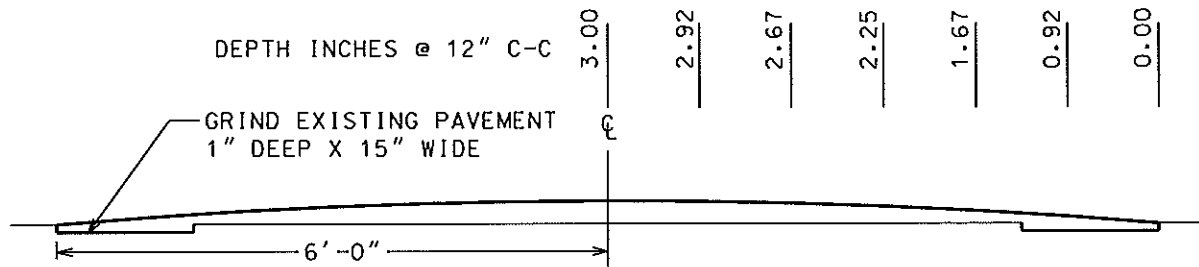
**APPROACH
PRIVATE DRIVEWAY**

REVISED: 7/2004
VALID: 7/2004

SCALE: AS SHOWN

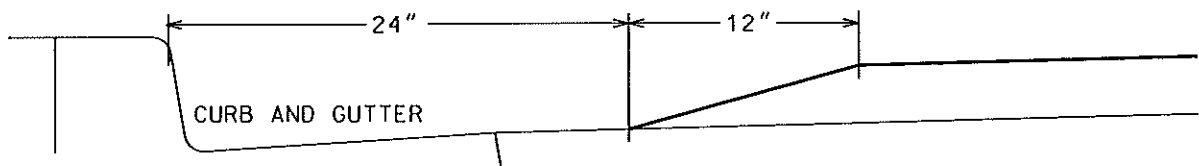
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 444



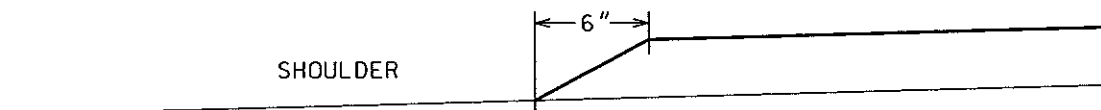
LONGITUDINAL CENTERLINE PARABOLIC PROFILE

SCALE: 1:25



TRANSVERSE EDGE TAPER WITH CURB AND GUTTER

SCALE: 1:10



TRANSVERSE EDGE TAPER WITH NO CURB AND GUTTER

SCALE: 1:10

NOTES

1. GRIND TRANSVERSE EDGES AS SHOWN TO ELIMINATE FEATHER EDGE
2. AFTER GRINDING PAVEMENT APPLY ASPHALT EMULSION TACK COAT TYPE CSS-1 OR CSS-1H ON CLEAN DRY ASPHALT CONCRETE PAVEMENT
3. ASPHALT SHALL BE CLASS "C" COMPACTED TO A MINIMUM OF 91% OF MAXIMUM DENSITY AASHTO T 209
4. SEAL THE JOINT BETWEEN NEW AND ORIGINAL ASPHALT PAVEMENT BY CAREFULLY APPLYING ASPHALT EMULSION TACK COAT 6 INCHES WIDE AND COVERING WITH DRY PAVING SAND
5. SURFACES OUTSIDE OF WORK AREA TO BE KEPT CLEAN AND FREE OF ASPHALT
6. APPLY PAVEMENT MARKINGS AND WARNING SIGNS PER STD DWG 451



**CITY OF
TUALATIN, OR**

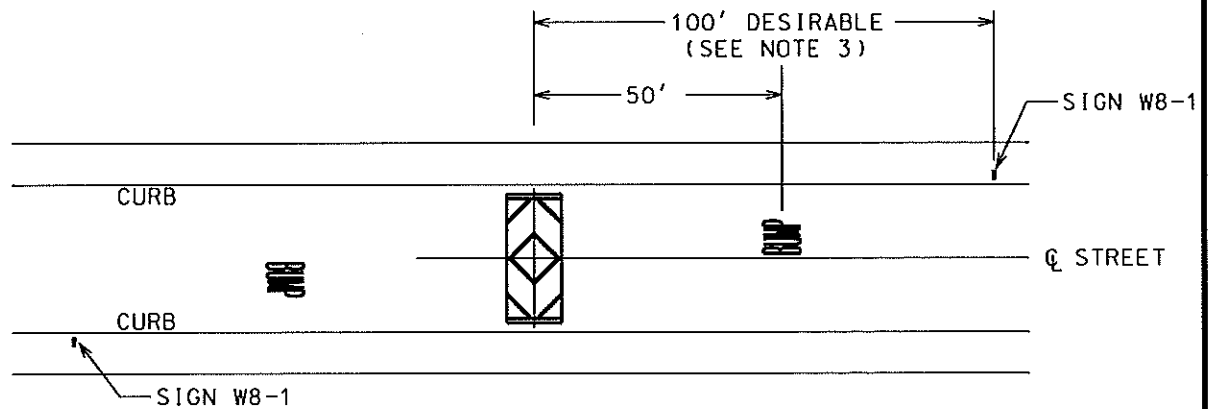
**PARABOLIC SPEED HUMP
CONSTRUCTION**

REVISED: 10/2002
VALID: 3/2003

SCALE: AS SHOWN

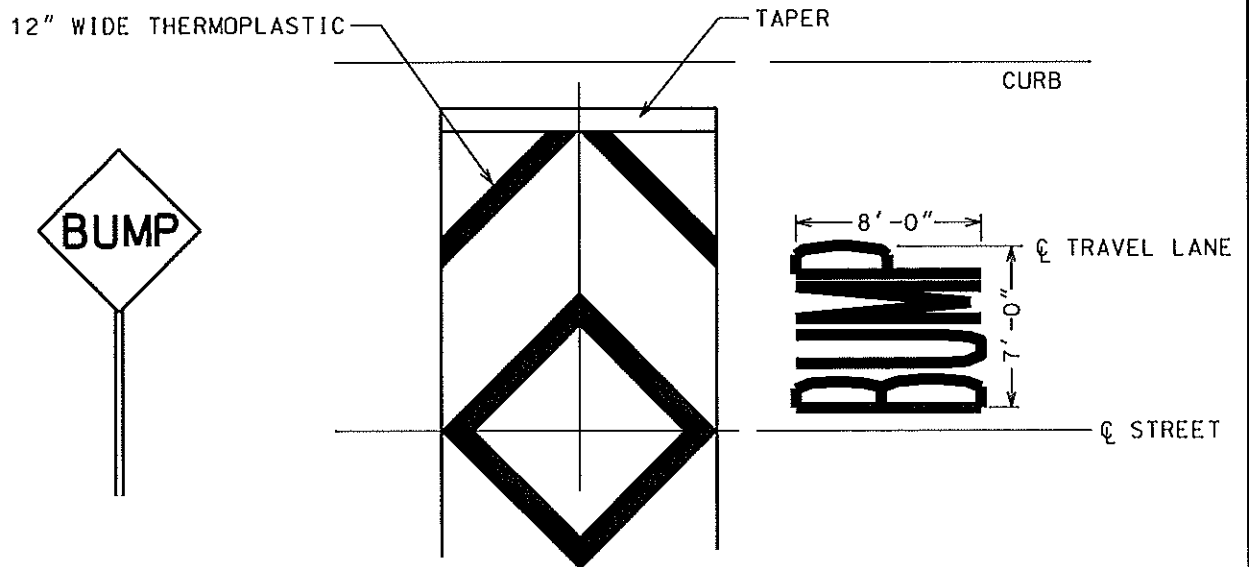
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 450



SIGN/MARKING LAYOUT

SCALE 1:500



SIGN W8-1

SCALE 1:50

MARKINGS

SCALE 1:100

NOTES

- 1) PAVEMENT MARKINGS SHALL BE PREFORMED WHITE THERMOPLASTIC, TYPE B-1, 90 MIL OR GREATER THICKNESS, WITH PRECOATED ADHESIVE
- 2) WITH STD SIGN (30"x30") W8-1, SEE ALSO STD DWG 516
- 3) ACTUAL LOCATION OF W8-1 SHALL BE DETERMINED BY THE ENGINEER



**CITY OF
TUALATIN, OR**

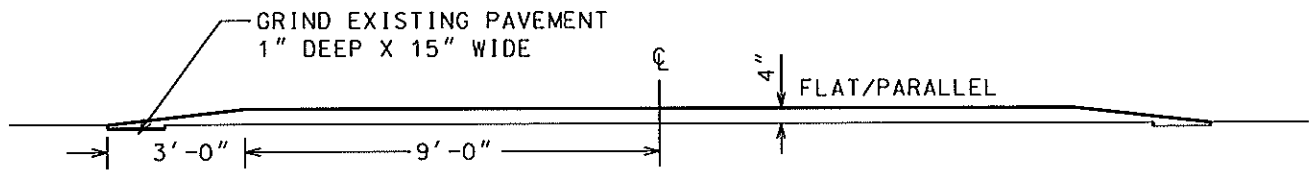
**PARABOLIC SPEED HUMP
PAVEMENT MARKINGS
AND STREET SIGNS**

REVISED: 10/2002
VALID: 3/2003

SCALE: AS SHOWN

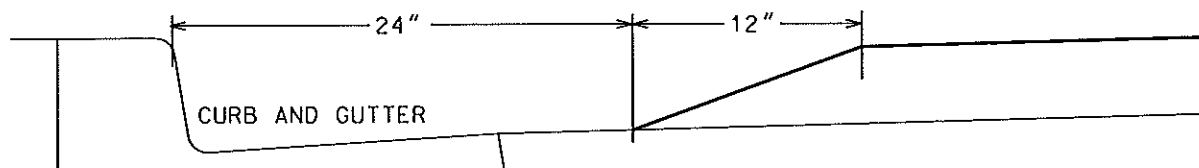
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 451



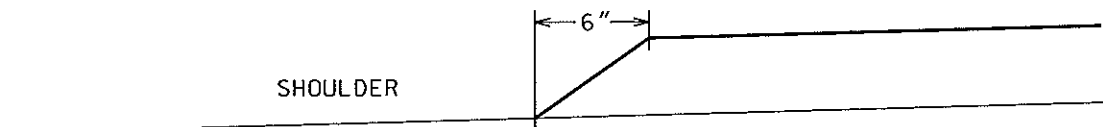
LONGITUDINAL CENTERLINE PROFILE

SCALE: 1:50



TRANSVERSE EDGE TAPER WITH CURB AND GUTTER

SCALE: 1:10



TRANSVERSE EDGE TAPER WITH NO CURB AND GUTTER

SCALE: 1:10

NOTES

1. GRIND TRANSVERSE EDGES AS SHOWN TO ELIMINATE FEATHER EDGE
2. AFTER GRINDING PAVEMENT APPLY ASPHALT EMULSION TACK COAT TYPE CSS-1 OR CSS-1H ON CLEAN DRY ASPHALT CONCRETE PAVEMENT
3. ASPHALT SHALL BE CLASS "C" COMPACTED TO A MINIMUM OF 91% OF MAXIMUM DENSITY AASHTO T 209
4. SEAL THE JOINT BETWEEN NEW AND ORIGINAL ASPHALT PAVEMENT BY CAREFULLY APPLYING ASPHALT EMULSION TACK COAT 6 INCHES WIDE AND COVERING WITH DRY PAVING SAND
5. SURFACES OUTSIDE OF WORK AREA TO BE KEPT CLEAN AND FREE OF ASPHALT
6. APPLY PAVEMENT MARKINGS AND WARNING SIGNS PER STD DWG 453



**CITY OF
TUALATIN, OR**

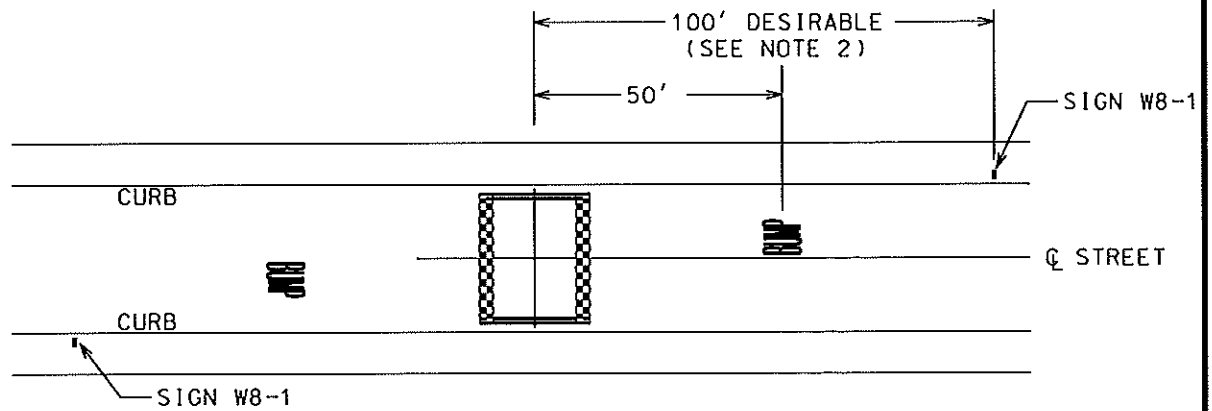
**SPEED TABLE HUMP
CONSTRUCTION**

REVISED: 10/2002
VALID: 3/2003

SCALE: AS SHOWN

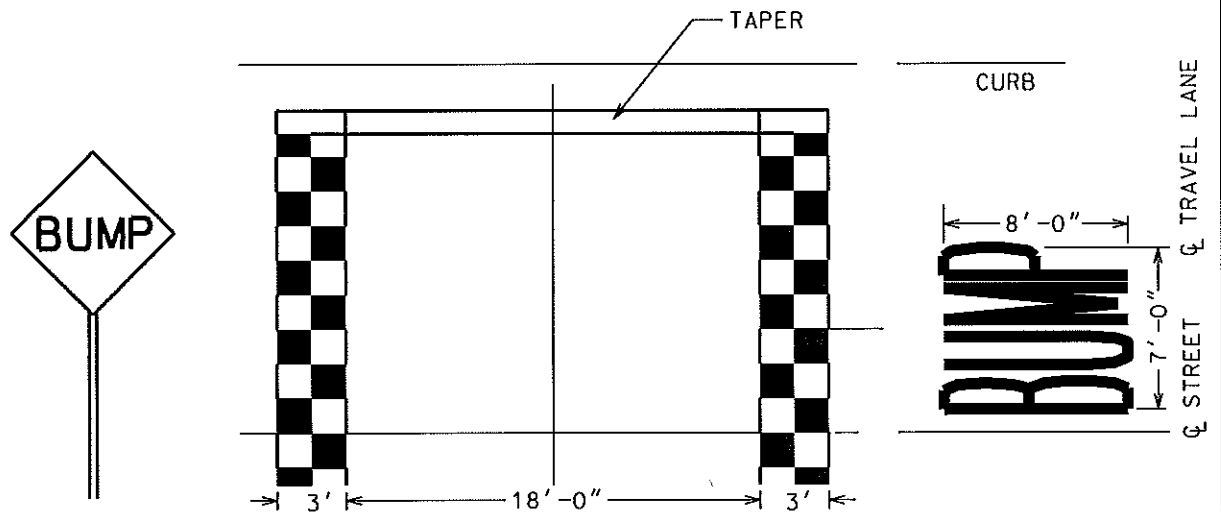
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 452



SIGN/MARKING LAYOUT

SCALE 1:500



SIGN W8-1

SCALE 1:50

MARKINGS

SCALE 1:100

NOTES

- 1) PAVEMENT MARKINGS SHALL BE PREFORMED WHITE THERMOPLASTIC, TYPE B-1, 90 MIL OR GREATER THICKNESS, WITH PRECOATED ADHESIVE. THE MARKINGS ON THE SLOPE OF THE HUMP SHALL BE 18" SQUARE
- 2) THE ACTUAL LOCATION OF STANDARD SIGN W8-1 (30"x30") SHALL BE DETERMINED BY THE ENGINEER. SEE ALSO STD DWG 516 AND 452



**CITY OF
TUALATIN, OR**

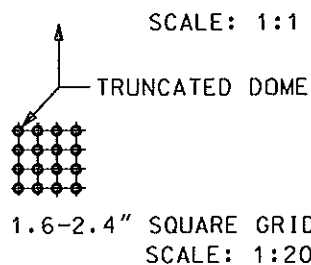
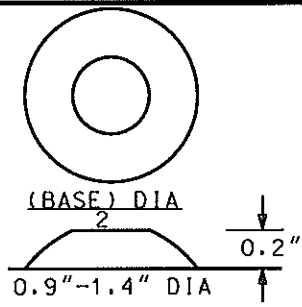
**SPEED TABLE HUMP
PAVEMENT MARKINGS
AND STREET SIGNS**

REVISED: 10/2002
VALID: 3/2003

SCALE: AS SHOWN

DRAWN: D.L.
APPROVED: K.L.H.

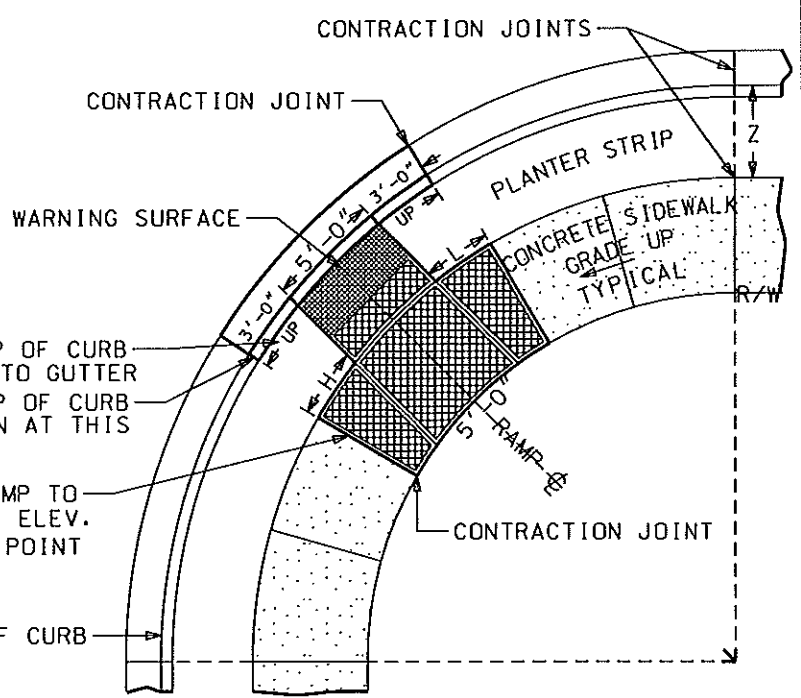
DWG NO. **453**



WARNING SURFACE

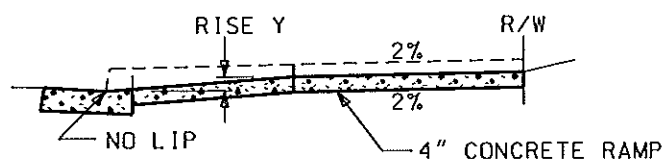
SLOPE TOP OF CURB
RELATIVE TO GUTTER
MATCH TOP OF CURB
ELEVATION AT THIS
POINT

MATCH RAMP TO
SIDEWALK ELEV.
AT THIS POINT



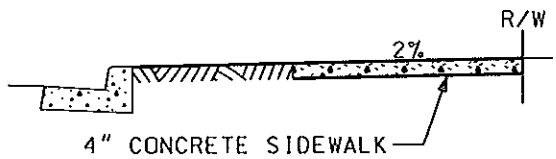
PLANTER Z	RISE Y	LENGTH H/L IN INCHES									
		SIDEWALK GRADE %									
		0	1	2	3	4	5	6	8	10	12
48"	4"	34	39/30	45/27	53/25	66/23	85/21	96/20	96/17	96/15	96/14
60"	5"	25	28/22	33/20	39/18	48/17	62/16	89/15	96/13	96/11	96/10
72"	6"	16	18/14	21/13	25/12	31/11	40/10	57/9	96/8	96/7	96/6

PLAN SCALE: 1:100



RAMP SECTION

SCALE: 1:50

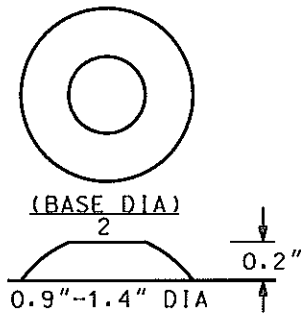


SIDEWALK SECTION

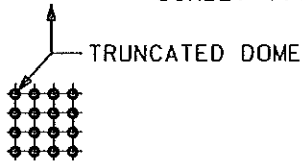
NOTES:

1. CONCRETE, 4%-7% AIR, SHALL ATTAIN 3300 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. RAMP SHALL BE CENTERED ON CURB RETURN OR RAMP CENTERLINE SHALL BE AT LEAST 2'-0" FROM EDGE OF A CATCH BASIN DEPRESSED GUTTER.
3. PROVIDE TEXTURED SURFACE TO RAMPS USING A POLYETHYLENE TEMPLATE FROM TENAX SENTRY-SECURA SAFETY FENCE AND THE DETECTABLE WARNING SURFACE COLORED SAFETY YELLOW EXTENDING UP SLOPE 24" FROM BACK OF CURB.
4. CONTRACTION JOINTS SHALL BE OF THE WEAKENED PLANE TYPE FORMED TO A DEPTH OF 1 1/2" OF CONCRETE THICKNESS WITH 1/4" R TOOLED EDGES, 3" FLAT.
5. DO NOT CONSTRUCT RAMP MONOLITHIC WITH CURB AND GUTTER.

 CITY OF TUALATIN, OR	ADA RAMP CORNER DIAGONAL CURBSIDE PLANTER STRIP	
	REVISED: 6/2004 VALID: 8/2004	SCALE: AS SHOWN
		DWG NO. 460

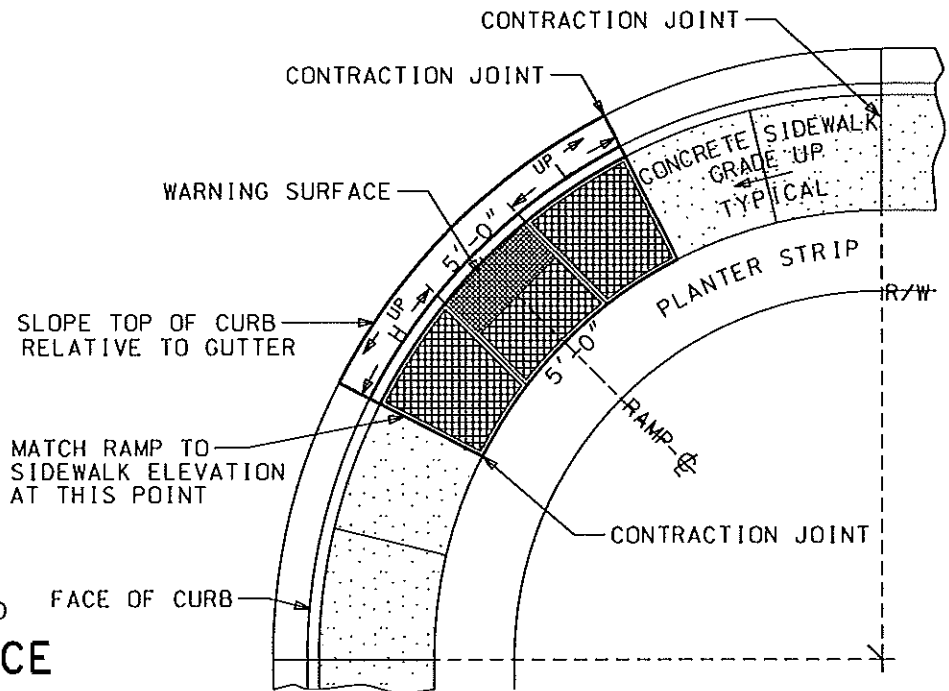


SCALE: 1:1



SCALE: 1:20

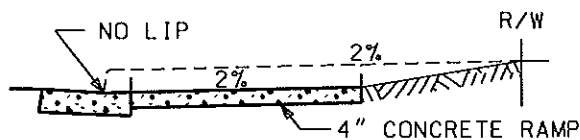
WARNING SURFACE



LENGTH H/L IN INCHES									
SIDEWALK GRADE %									
0	1	2	3	4	5	6	8	10	12
72	82/64	95/58	96/53	96/49	96/45	96/42	96/37	96/33	96/30

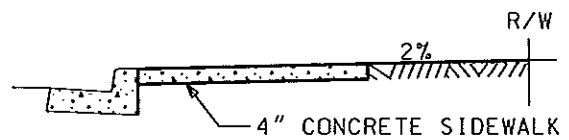
PLAN

SCALE: 1:100



RAMP ϕ SECTION

SCALE: 1:50



SIDEWALK SECTION

NOTES:

1. CONCRETE, 4%-7% AIR, SHALL ATTAIN 3300 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. RAMP SHALL BE CENTERED ON CURB RETURN OR RAMP CENTERLINE SHALL BE AT LEAST 2'-0" FROM EDGE OF A CATCH BASIN DEPRESSED GUTTER.
3. PROVIDE TEXTURED SURFACE TO RAMPS USING A POLYETHYLENE TEMPLATE FROM TENAX SENTRY-SECURA SAFETY FENCE AND THE DETECTABLE WARNING SURFACE COLORED SAFETY YELLOW EXTENDING UP SLOPE 24" FROM BACK OF CURB.
4. CONTRACTION JOINTS SHALL BE OF THE WEAKENED PLANE TYPE FORMED TO A DEPTH 1 1/2" OF CONCRETE THICKNESS WITH TOOLED EDGES 1/4" R, 3" FLAT.
5. DO NOT CONSTRUCT RAMP OR SIDEWALK MONOLITHIC WITH CURB AND GUTTER.



**CITY OF
TUALATIN, OR**

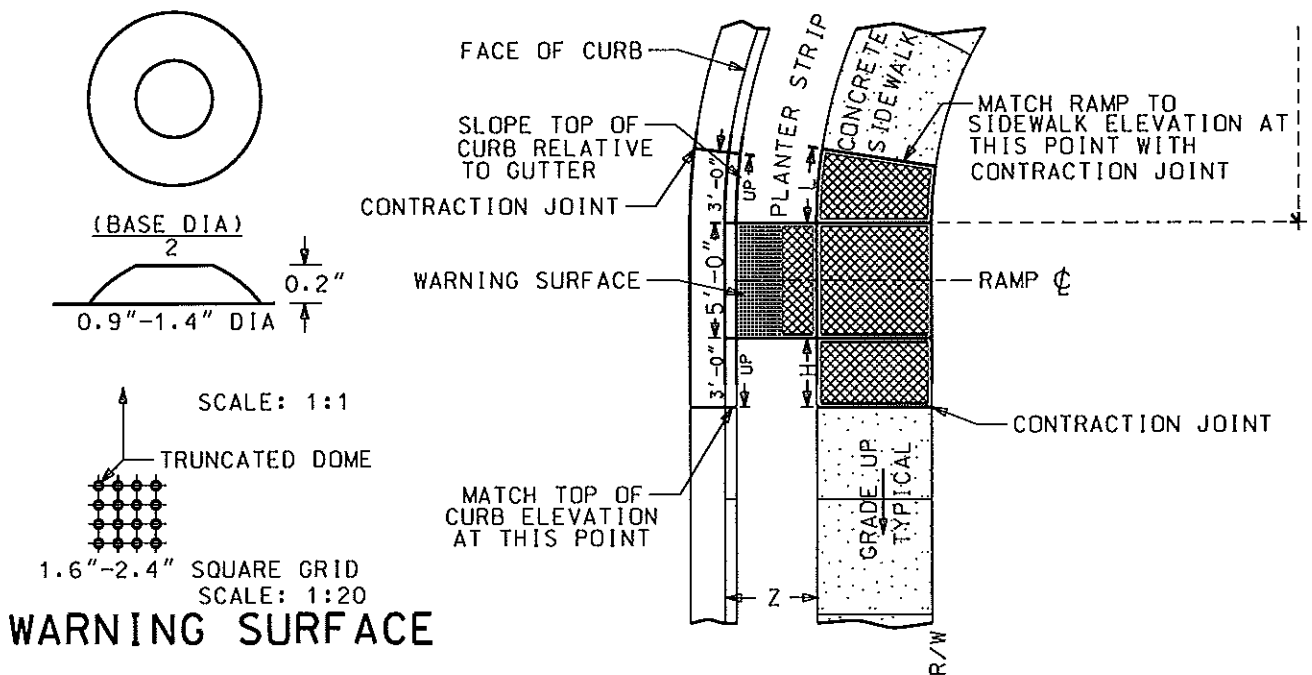
**ADA RAMP
CORNER DIAGONAL
CURBSIDE SIDEWALK**

REVISED: 6/2004
VALID: 8/2004

SCALE: AS SHOWN

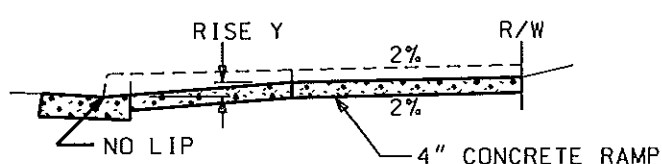
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 461



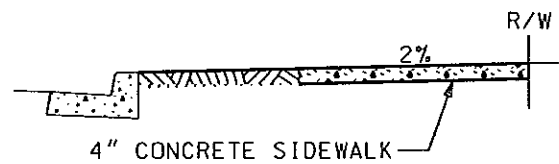
PLANTER Z	RISE Y	LENGTH H/L IN INCHES									
		SIDEWALK GRADE %									
		0	1	2	3	4	5	6	8	10	12
48"	4"	34	39/30	45/27	53/25	66/23	85/21	96/20	96/17	96/15	96/14
60"	5"	25	28/22	33/20	39/18	48/17	62/16	89/15	96/13	96/11	96/10
72"	6"	16	18/14	21/13	25/12	31/11	40/10	57/9	96/8	96/7	96/6

PLAN SCALE: 1:100



RAMP ϕ SECTION

SCALE: 1:50



SIDEWALK SECTION

NOTES:

1. CONCRETE, 4%-7% AIR, SHALL ATTAIN 3300 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. RAMP CENTERLINE SHALL BE AT LEAST 2'-0" FROM EDGE OF A CATCH BASIN DEPRESSED GUTTER.
3. PROVIDE TEXTURED SURFACE TO RAMPS USING A POLYETHYLENE TEMPLATE FROM TENAX SENTRY-SECURA SAFETY FENCE AND THE DETECTABLE WARNING SURFACE COLORED SAFETY YELLOW EXTENDING UP SLOPE 24" FROM BACK OF CURB
4. CONTRACTION JOINTS SHALL BE OF THE WEAKENED PLANE TYPE FORMED TO A DEPTH 1 1/2" OF CONCRETE THICKNESS WITH 1/4" R TOOLED EDGES, 3" FLAT.
5. DO NOT CONSTRUCT RAMP MONOLITHIC WITH CURB AND GUTTER.



**CITY OF
TUALATIN, OR**

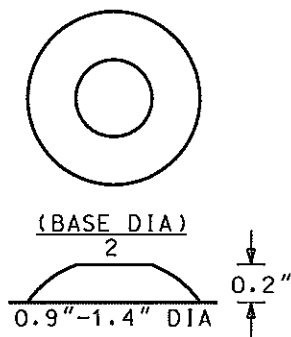
**ADA RAMP
TANGENT
CURBSIDE PLANTER STRIP**

REVISED: 6/2004
VALID: 7/2004

SCALE: AS SHOWN

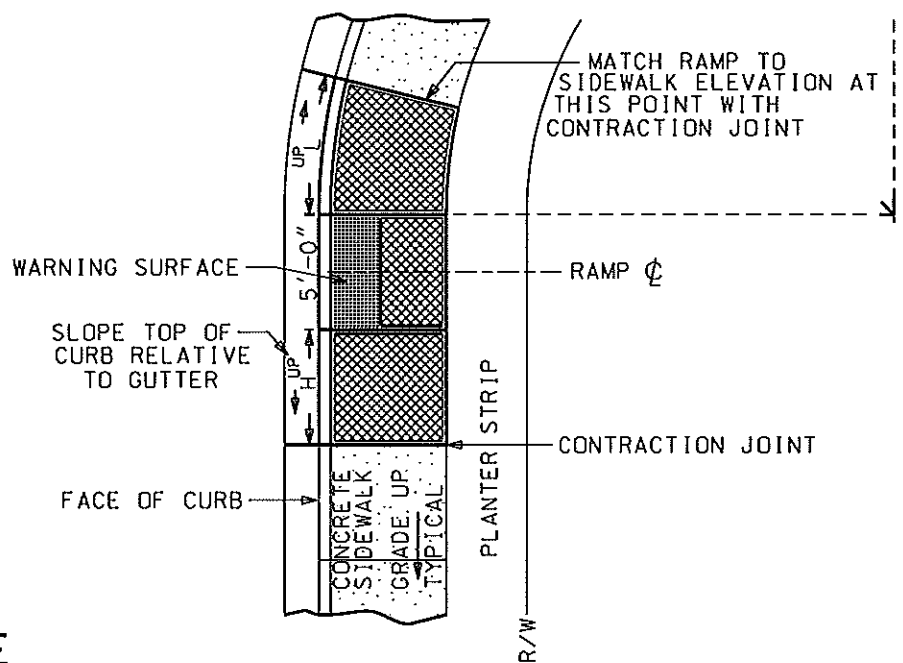
DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. **462**



SCALE: 1:1
TRUNCATED DOME
1.6"-2.4" SQUARE GRID
SCALE: 1:20

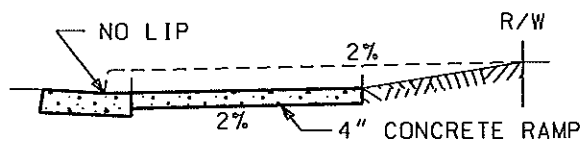
WARNING SURFACE



LENGTH H/L IN INCHES									
SIDEWALK GRADE %									
0	1	2	3	4	5	6	8	10	12
72	82/64	95/58	96/53	96/49	96/45	96/42	96/37	96/33	96/30

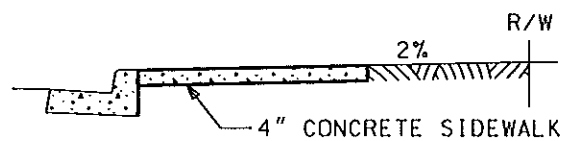
PLAN

SCALE: 1:100



RAMP SECTION

SCALE: 1:50



SIDEWALK SECTION

NOTES:

1. CONCRETE, 4%-7% AIR, SHALL ATTAIN 3300 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. RAMP CENTERLINE SHALL BE AT LEAST 2'-0" FROM EDGE OF A CATCH BASIN DEPRESSED GUTTER.
3. PROVIDE TEXTURED SURFACE TO RAMPS USING A POLYETHYLENE TEMPLATE FROM TENAX SENTRY-SECURA SAFETY FENCE AND THE DETECTABLE WARNING SURFACE COLORED SAFETY YELLOW EXTENDING UP SLOPE 24" FROM BACK OF CURB
4. CONTRACTION JOINTS SHALL BE OF THE WEAKENED PLANE TYPE FORMED TO A DEPTH 1 1/2" OF CONCRETE THICKNESS WITH 1/4" R TOOLED EDGES, 3" FLAT.
5. DO NOT CONSTRUCT RAMP OR SIDEWALK MONOLITHIC WITH CURB AND GUTTER.



**CITY OF
TUALATIN, OR**

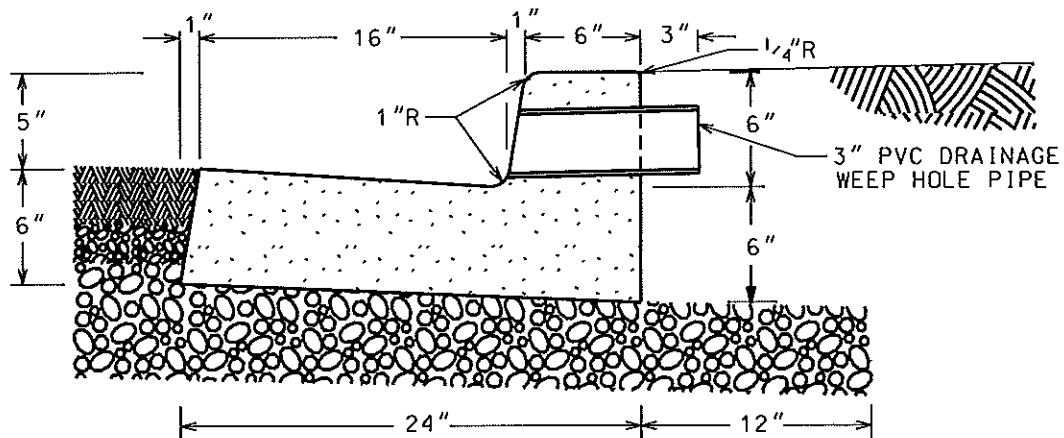
**ADA RAMP
TANGENT
CURBSIDE SIDEWALK**

REVISED: 6/2004
VALID: 8/2004

SCALE: AS SHOWN

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 463



CROSS SECTION

NOTES:

1. CONCRETE, 4%-7% AIR, SHALL ATTAIN 3300 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. CONTRACTION JOINTS OF THE WEAKENED PLANE TYPE, DOWN THROUGH THE CURB TO HALF THE DEPTH OF THE GUTTER, SHALL BE SPACED AT 15' INTERVALS AND AT POINTS OF TANGENCY FINISH THE EXPOSED EDGE WITH $\frac{1}{4}$ " RADIUS EDGER. DO NOT USE EXPANSION JOINTS
3. CONSTRUCTION JOINTS SHALL BE FORMED WITH A SMOOTH FACE SQUARE TO THE CURB AND DOWN THROUGH HALF THE DEPTH OF THE GUTTER. FINISH FUTURE EXPOSED EDGE WITH $\frac{1}{4}$ " RADIUS EDGER. THE LOWER HALF OF THE GUTTER CROSS SECTION SHALL BE LEFT WITH A ROUGH EXPOSED AGGREGATE SURFACE TO INTERLOCK WITH A FUTURE EXTENSION OF THE CURB AND GUTTER.
4. BASE ROCK UNDER THE CURB AND ALSO PLACED 12" BEYOND THE BACK OF THE CURB SHALL BE COMPACTED TO 91% OF T-180 MAXIMUM DENSITY.
5. DRAINAGE WEEP HOLES OF 3" DIAMETER PVC SCHEDULE 40 PIPE SHALL BE PLACED THROUGH THE CURB $\frac{1}{2}$ " ABOVE THE GUTTER INVERT AND EXTEND 3" BEYOND THE BACK OF THE CURB AT POSITIONS SHOWN ON THE PLANS, LOW POINTS IN THE CURB, OR WHERE DETERMINED BY THE ENGINEER.
6. THE BACK OF THE CURB SHALL BE BACKFILLED NOT EARLIER THAN 7 DAYS AFTER CONCRETE PLACEMENT AND PRIOR TO THE COMPACTION OF BASE AND TOP COURSE ROCK AND PAVEMENT.
7. THE EXPOSED SURFACES SHALL BE BROOM FINISHED IN THE DIRECTION OF GUTTER FLOW.



**CITY OF
TUALATIN, OR**

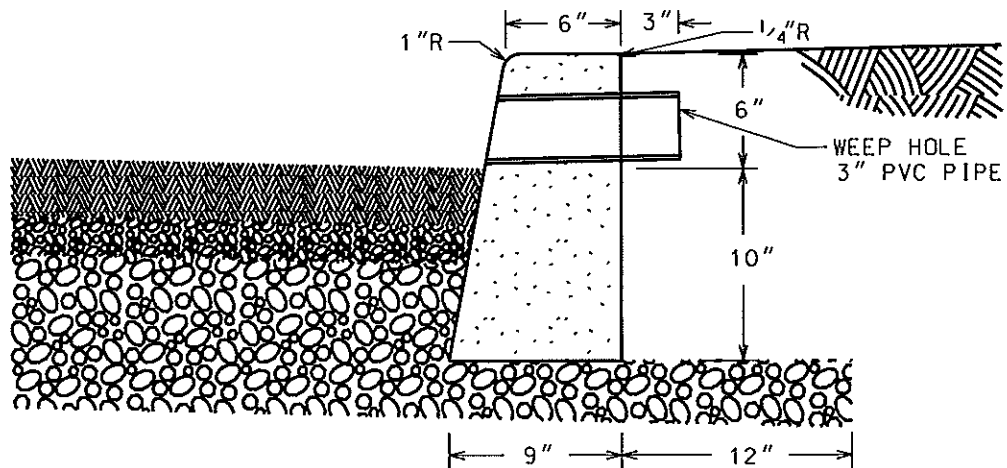
CURB AND GUTTER

DATE OF LAST
REVISION: 12/2001

SCALE: 1:10

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 470



CROSS SECTION

NOTES:

1. CONCRETE, 4-7% AIR, SHALL ATTAIN 3300 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. CONTRACTION JOINTS OF THE WEAKENED PLANE TYPE, DOWN THROUGH THE CURB TO HALF THE DEPTH OF THE CURB, SHALL BE SPACED AT 15' INTERVALS AND AT POINTS OF TANGENCY. FINISH THE EDGE WITH $\frac{1}{4}$ " RADIUS EDGER. USE NO EXPANSION JOINTS.
3. CONSTRUCTION JOINTS SHALL BE FORMED WITH A SMOOTH FACE SQUARE TO AND HALF THE DEPTH OF THE CURB. FINISH EXPOSED EDGE WITH A $\frac{1}{4}$ " RADIUS EDGER. THE LOWER HALF OF THE CURB CROSS SECTION SHALL BE LEFT WITH A ROUGH EXPOSED AGGREGATE SURFACE TO MECHANICALLY INTERLOCK WITH A FUTURE EXTENSION OF THE CURB.
4. BASE ROCK UNDER THE CURB AND ALSO PLACED 12" BEYOND THE BACK OF THE CURB SHALL BE COMPACTED TO 91% OF T-180 MAXIMUM DENSITY.
5. DRAINAGE WEEP HOLES OF 3" DIAMETER PVC SCHEDULE 40 PIPE SHALL BE PLACED THROUGH THE CURB WITH INVERT $5\frac{1}{2}$ " BELOW THE CURB TOP AND EXTEND 3" BEYOND THE BACK OF THE CURB, AT POSITIONS SHOWN ON THE PLANS, LOW POINTS IN THE CURB, OR WHERE DETERMINED BY THE ENGINEER.
6. THE BACK OF THE CURB SHALL BE BACKFILLED NOT EARLIER THAN 7 DAYS AFTER CONCRETE PLACEMENT AND PRIOR TO THE COMPACTION OF BASE AND TOP COURSE ROCK AND PAVEMENT.
7. THE EXPOSED SURFACES SHALL BE BROOM FINISHED LONGITUDINALLY.



**CITY OF
TUALATIN, OR**

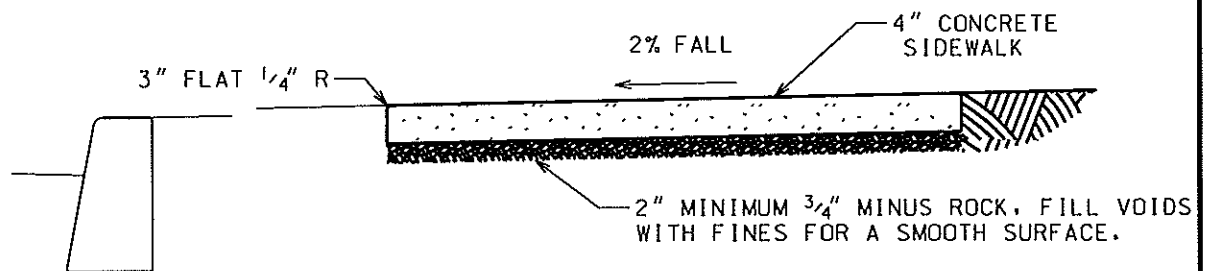
CURB

DATE OF LAST
REVISION: 1/2002

SCALE: 1:10

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 471



CROSS SECTION

NOTES:

1. DRAINAGE WEEP HOLE PIPE WHERE PROVIDED IN THE CURB SHALL BE EXTENDED UNDER THE SIDEWALK TO THE R/W LINE WITH 3" SCHEDULE 40 PVC.
2. THE SIDEWALK SUBGRADE AND $\frac{3}{4}$ " MINUS ROCK SHALL BE COMPACTED TO THE SATISFACTION OF THE ENGINEER. DO NOT COMPACT EARLIER THAN 7 DAYS AFTER CONSTRUCTING CURB OR BEFORE COMPLETING THE PLACEMENT OF PAVEMENT BASE ROCK. FILL VOIDS WITH FINES WHERE NECESSARY TO PROVIDE A SMOOTH SURFACE.
3. CONCRETE, 4 - 7% AIR, COMPRESSIVE STRENGTH SHALL BE NOT LESS THAN 3300 PSI AT 28 DAYS.
4. TRANSVERSE CONTRACTION JOINTS SHALL BE OF THE WEAKENED PLANE TYPE, $1\frac{1}{2}$ " CONCRETE DEPTH, SHALL BE SPACED AT 5' INTERVALS AND AT POINTS OF TANGENCY. USE NO EXPANSION JOINTS.
5. CONSTRUCTION JOINTS SHALL BE FORMED WITH A SMOOTH FACE SQUARE TO THE SIDEWALK.
6. WHERE A STRUCTURE IS SURROUNDED BY OR IS ADJACENT TO THE SIDEWALK (EXCEPT CURB), PROVIDE SEPARATION WITH $\frac{1}{2}$ " PREMOLDED ASPHALT IMPREGNATED, NONEXTRUDING EXPANSION JOINT MATERIAL.
7. THE SURFACE SHALL BE BROOMED TRANSVERSE TO THE LINE OF TRAFFIC.
8. FINISH ALL EDGES WITH $\frac{1}{4}$ " RADIUS EDGER WITH 3" FLAT (6" TOTAL WIDTH FOR TRANSVERSE JOINTS). WHERE PRACTICAL MATCH WITH CURB JOINTS.



**CITY OF
TUALATIN, OR**

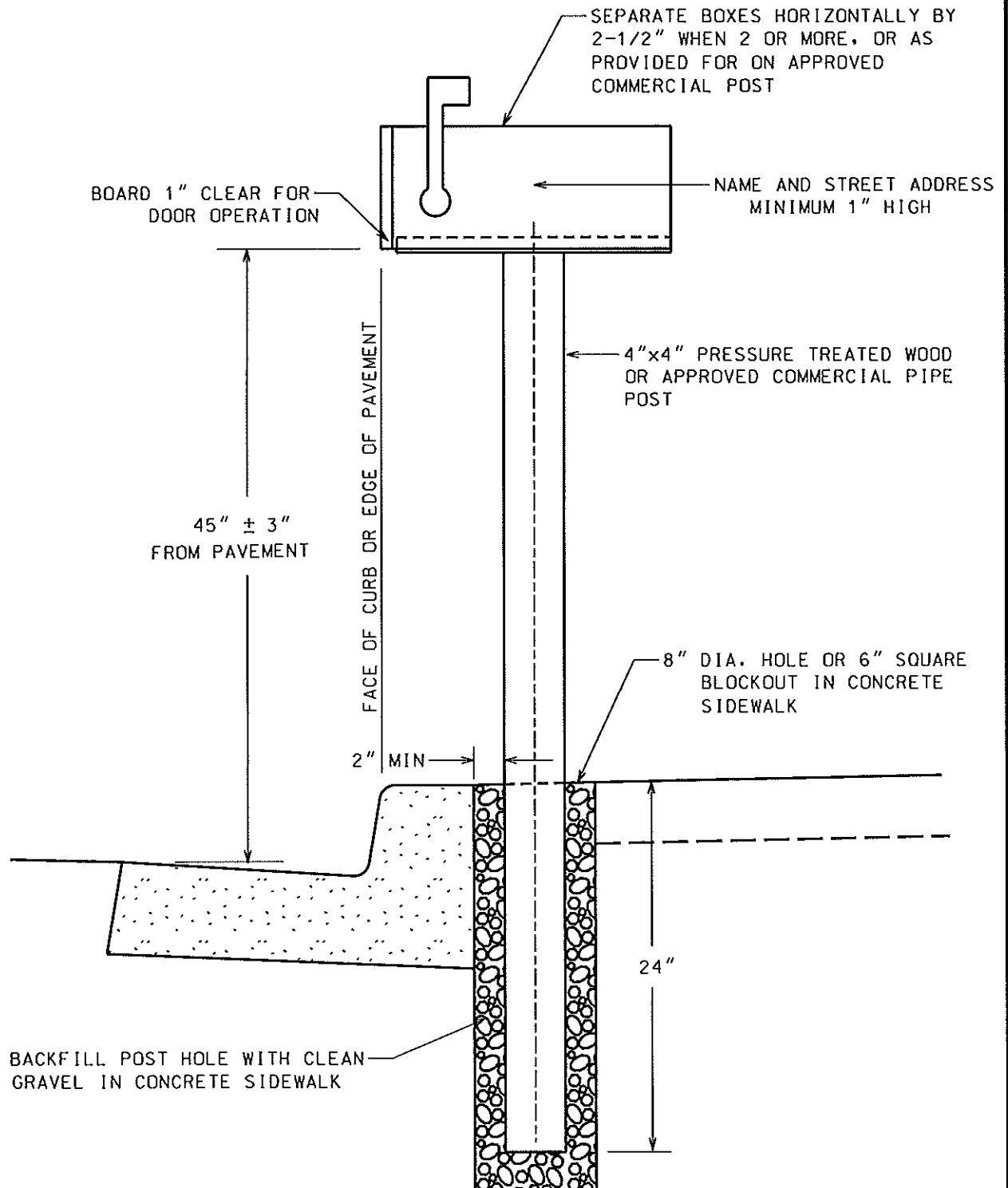
CONCRETE SIDEWALK

DATE OF LAST
REVISION: 1/2002

SCALE: 1:20

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 475



**CITY OF
TUALATIN, OR**

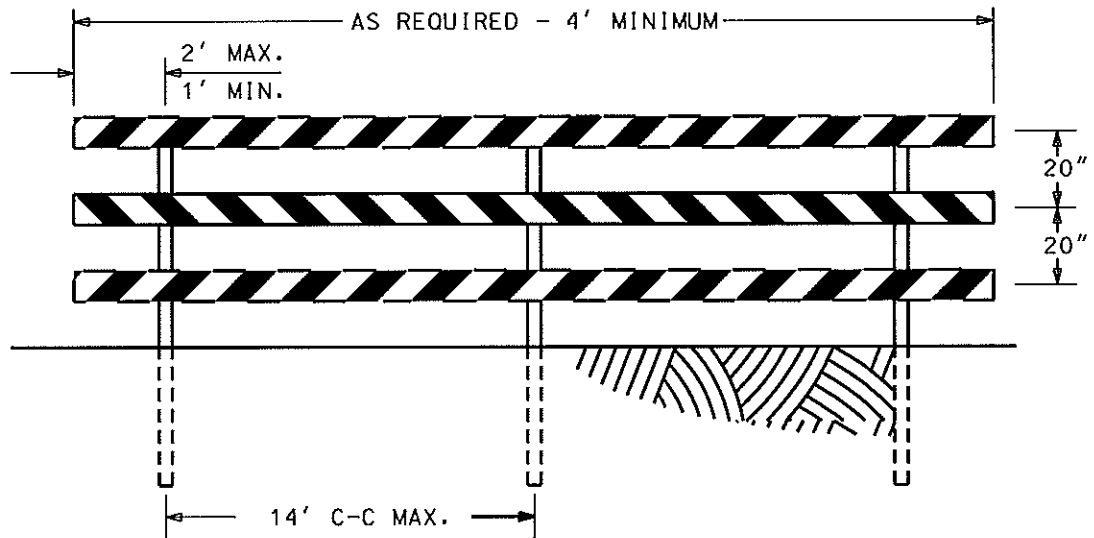
MAILBOX POST INSTALLATION

REVISED: 7/2004
VALID: 10/2005

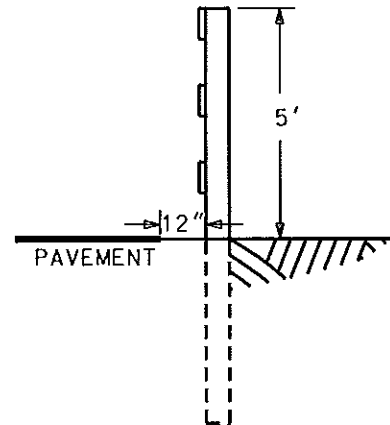
SCALE: 1:10

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 500



ELEVATION



END VIEW

NOTE:

PLASTIC REFLECTIVE PANELS

1. 2" x 8" (S4S) RAILS (MINIMUM LENGTH 4') TO BE PAINTED WHITE ENAMEL AND THEN FACED WITH MANUFACTURED ALUMINUM REFLECTIVE BAR PANELS (TRAFFIC SAFETY SUPPLY CO.) WITH DIAGONAL 7" WIDE ALTERNATE RED AND WHITE STRIPES (RIGHT AND LEFT AS SHOWN FOR END BARRICADES AND ALL LEFT OR RIGHT WHERE TRAFFIC IS DEFLECTED). FASTEN WITH 1-1/4" PANHEAD STAINLESS STEEL WOOD SCREWS @ 12" C-C TOP AND BOTTOM.
2. 4" x 6" x 8' (S4S) POSTS TO BE PRESSURE TREATED LUMBER BURIED 3' AND PAINTED WITH WHITE ENAMEL ABOVE GROUND.
3. FASTEN RAILS TO POSTS WITH 5/8" HOT DIPPED GALVANIZED ROUND HEAD STEP SQUARE NECK BOLTS, NUTS AND WASHERS.
4. WHEN REQUIRED STREET BARRICADE SIGN (STD DWG 511) OR OTHER, SHALL BE CENTERED AND FASTENED WITH GALVANIZED BOLTS TO THE UPPER RAIL.
5. BACKFILL POST HOLES WITH NATIVE MATERIAL OR WHEN IN SOFT GRADE 3/4" MINUS CRUSHED ROCK. DO NOT USE CONCRETE.



**CITY OF
TUALATIN, OR**

STREET BARRICADE

REVISED: 10/2002
VALID: 3/2003

SCALE: 1:50

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 510



NOTES:

1. SIGN SHALL HAVE BLACK LETTERING ON WHITE BACKGROUND, ON ALUMINUM SHEET REFLECTORIZED ALL AS PER O.S.H.D. 02910.10 AND 02910.20



**CITY OF
TUALATIN, OR**

**STREET BARRICADE
SIGN**

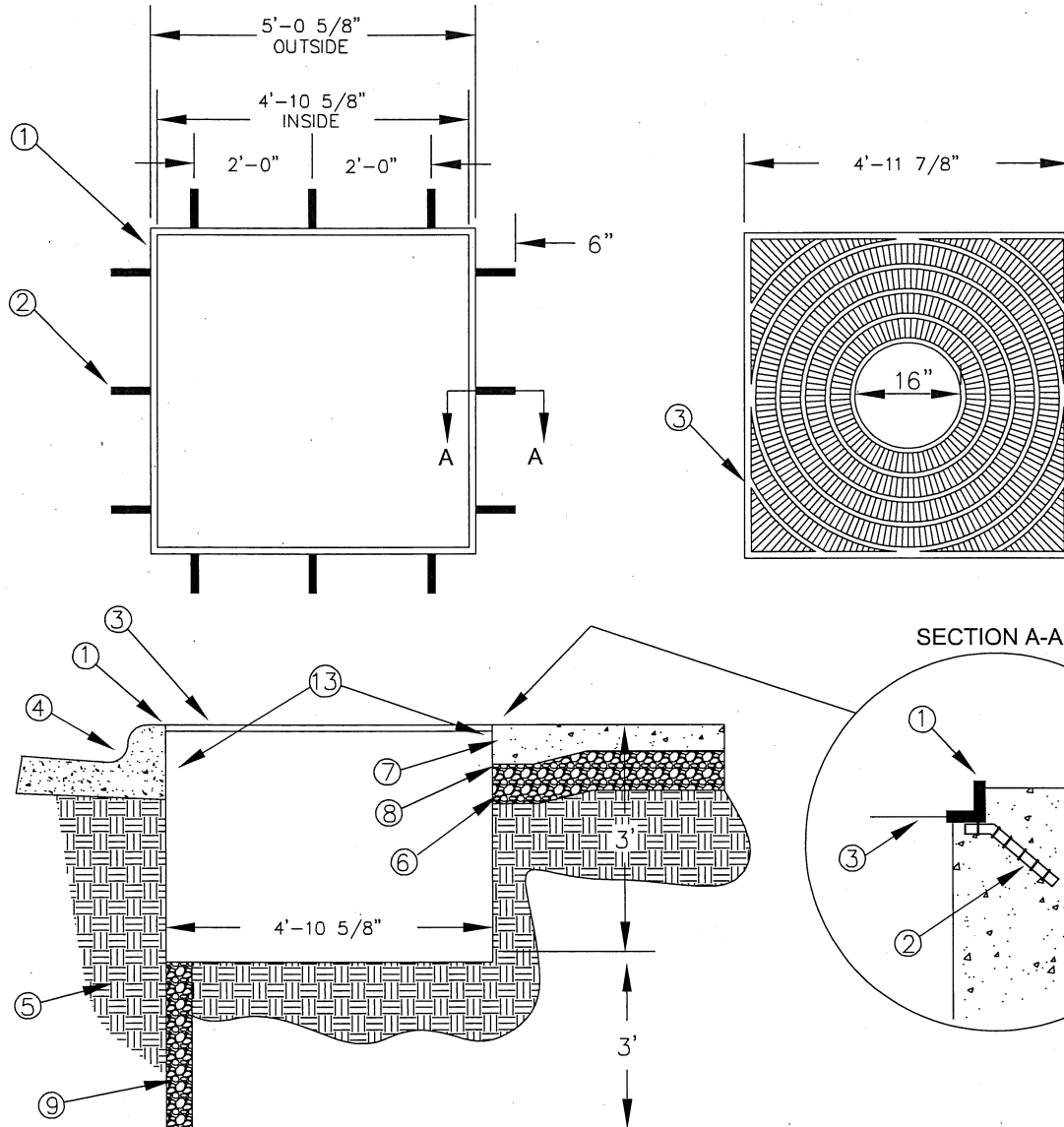
DATE OF LAST
REVISION: 2/2002

SCALE: 1:5

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 511

30" CITY OF TUALATIN 18880 SW MARTINAZZI AVENUE TUALATIN, OREGON 97062-7092 STORMWATER MANAGEMENT FACILITY This facility is maintained by the City of Tualatin. Its purpose is to remove nutrients and sediments from storm water before it enters the Tualatin River. For more information or to report problems, please call (503) 691-3091 Refer to (SITE ADDRESS) NO DUMPING ALLOWED PER CITY ORD. NO. 501-80 30"			
NOTES: 1. SIGN SHALL HAVE BLACK LETTERING ON WHITE BACKGROUND, ON ALUMINUM SHEET REFLECTORIZED ALL AS PER O.S.H.D. 02910.10 AND 02910.20 2. SITE ADDRESS AS PER CONSTRUCTION PLANS			
	CITY OF TUALATIN, OR	STORMWATER FACILITY SIGN	
REVISED: 11/2003 VALID: 3/2004	SCALE: 1:5	DRAWN: D.L. APPROVED: K.L.H.	DWG NO. 512



Notes:

1. 1" X 1" X 1/4" L SHAPE STEEL FRAME.
2. #3 REBAR, WELD TO FRAME
3. 3/4" THICK TREE GRATE CAST IN 2 PIECES, NO OPENINGS GREATER THAN 3/8", 16" DIA CENTER OPENING
4. CURB AND GUTTER, REFER TO COT DRAWING NO. 470 OR NO. 471 AS APPLICABLE.
5. COMPACTED SUBGRADE.
6. MINIMUM 2" LAYER OF COMPACTED 3/4" MINUS CLEAN CRUSHED AGGREGATE.
7. 4" CONCRETE SIDEWALK, REFER TO COT DRAWING NO. 475.
8. THICKENED EDGE (6" X 6")
9. 4" DIAMETER X 3' DEEP AUGERED HOLE WITH 4" RIGID PVC PERFORATED PIPE. FILL PIPE WITH DRAIN ROCK AND COVER WITH FILTER SOCK.
10. TREE GRATE SHALL BE SQUARE 5' FAN DESIGN (W/ FLAT BLACK POWDER COAT), URBAN ACCESSORIES, POLY-GRATE II, OR APPROVED EQUAL.
11. TREE GRATE SHALL BE CAST IRON PER ASTM A-48 CLASS 3b, RECYCLED PLASTIC, OR APPROVED EQUAL.
12. TREE GRATE FRAME SHALL BE TYPE "S" FRAME, URBAN ACCESSORIES OR APPROVED EQUAL.
13. A ROOT CONTROL SYSTEM, BIOBARRIER, DEEPROOT, OR APPROVED EQUAL, SHALL BE INSTALLED ON ALL SIDES ADJACENT TO HARDSCAPE. IT SHALL BE INSTALLED VERTICALLY A MINIMUM OF 12" IN DEPTH FROM FINISH GRADE & PER MANUFACTURERS RECOMMENDATIONS.



**CITY OF
TUALATIN, OR**

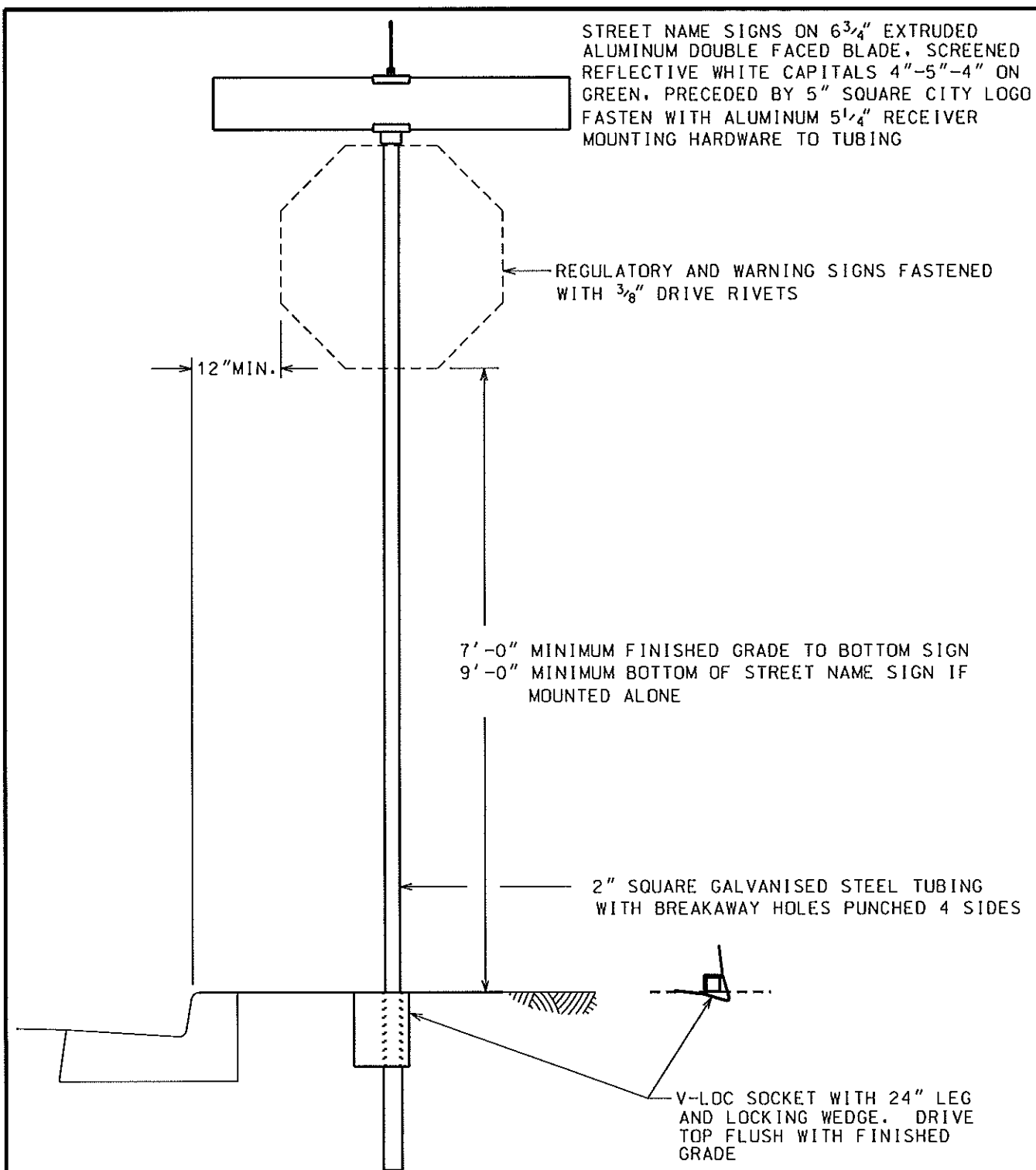
TREE WELL AND GRATE

REVISED: 01/2013
VALID ID: 01/2013

SCALE: N.T.S.

DRAWN: JLS
APPROVED: KH

DWG NO. 514



NOTE:

- 1) MEET REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND OREGON SUPPLEMENTS
- 2) HARDWARE SHOWN OBTAINABLE FROM TRAFFIC SAFETY SUPPLY CO., PORTLAND



**CITY OF
TUALATIN, OR**

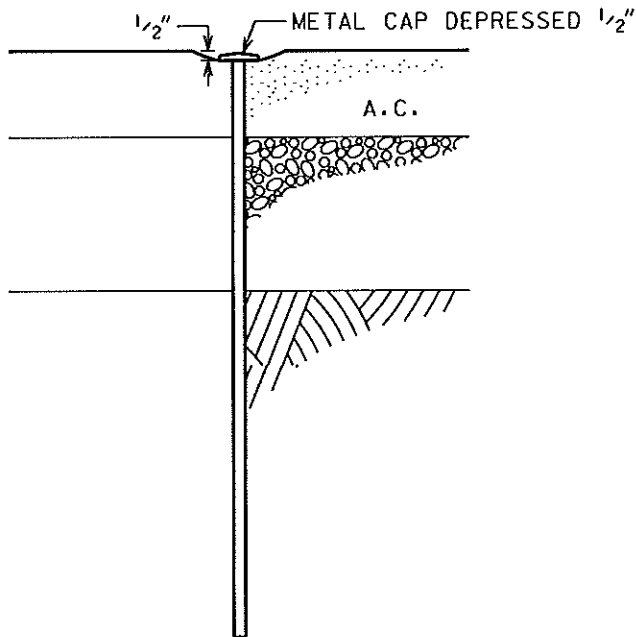
STREET SIGN POST

REVISED: 8/2005
VALID: 10/2005

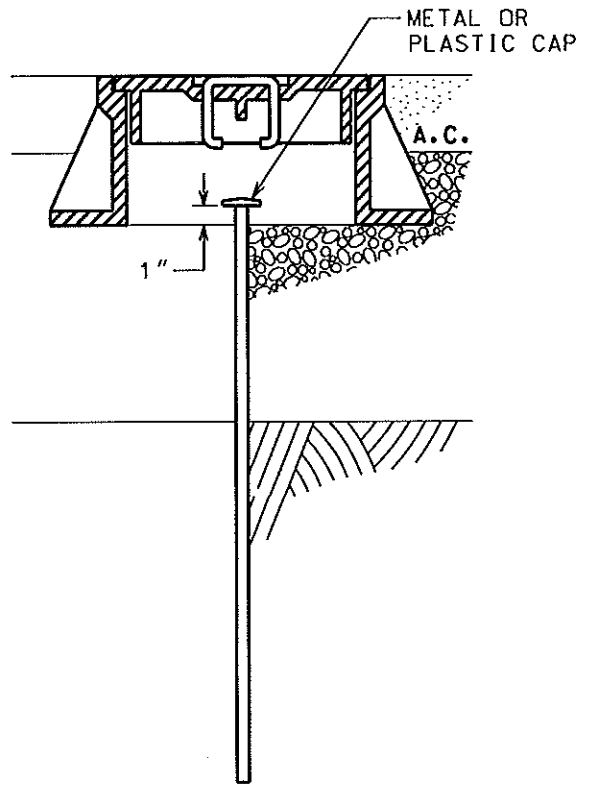
SCALE: 1:20

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 516



STANDARD



INTERSECTIONS

NOTES:

1. MONUMENTS SHALL BE IN ACCORDANCE WITH ORS 209.250(4), AND THE REQUIREMENTS OF THE COUNTY SURVEYOR
2. ALL MONUMENTS SHALL COMPRISE EITHER:
 $\frac{5}{8}$ " O.D. x 30" IRON ROD OR $\frac{3}{4}$ " I.D. x 30" IRON PIPE
3. USE EAST JORDAN IRON WORKS OR OLYMPIC FOUNDRY. RISER RINGS MAY BE USED WHEN AN ASPHALT OVERLAY.
4. 8" BOXES ALLOWED FOR LOCAL STREETS.
5. 12" BOXES REQUIRED FOR COLLECTOR AND ARTERIAL STREETS.



**CITY OF
TUALATIN, OR**

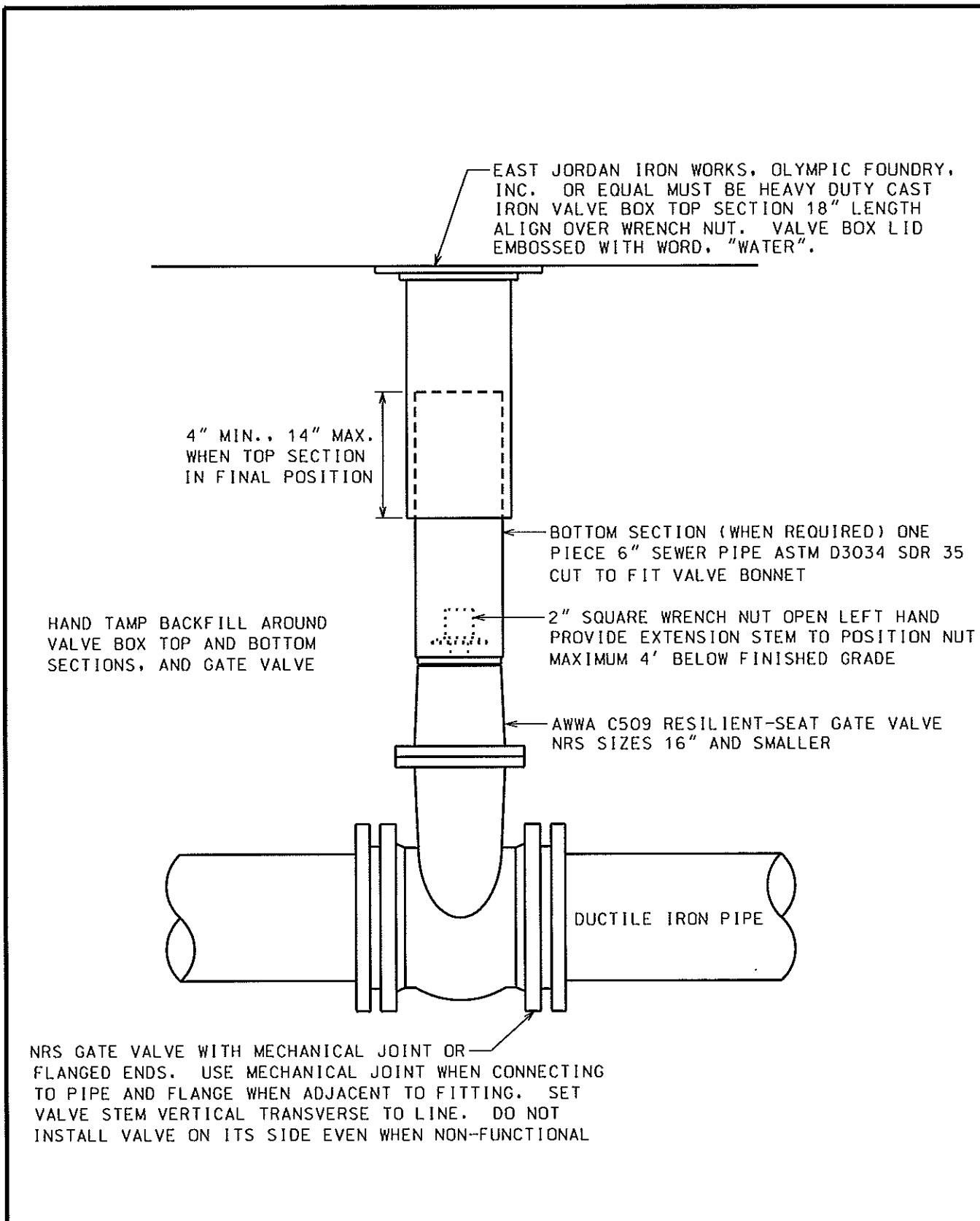
**CENTERLINE SURVEY
MONUMENT**

REVISED: 3/2010
VALID: 4/2010

SCALE: 1:10

DRAWN: L.V.
APPROVED: K.L.H.

DWG NO. 520



**CITY OF
TUALATIN, OR**

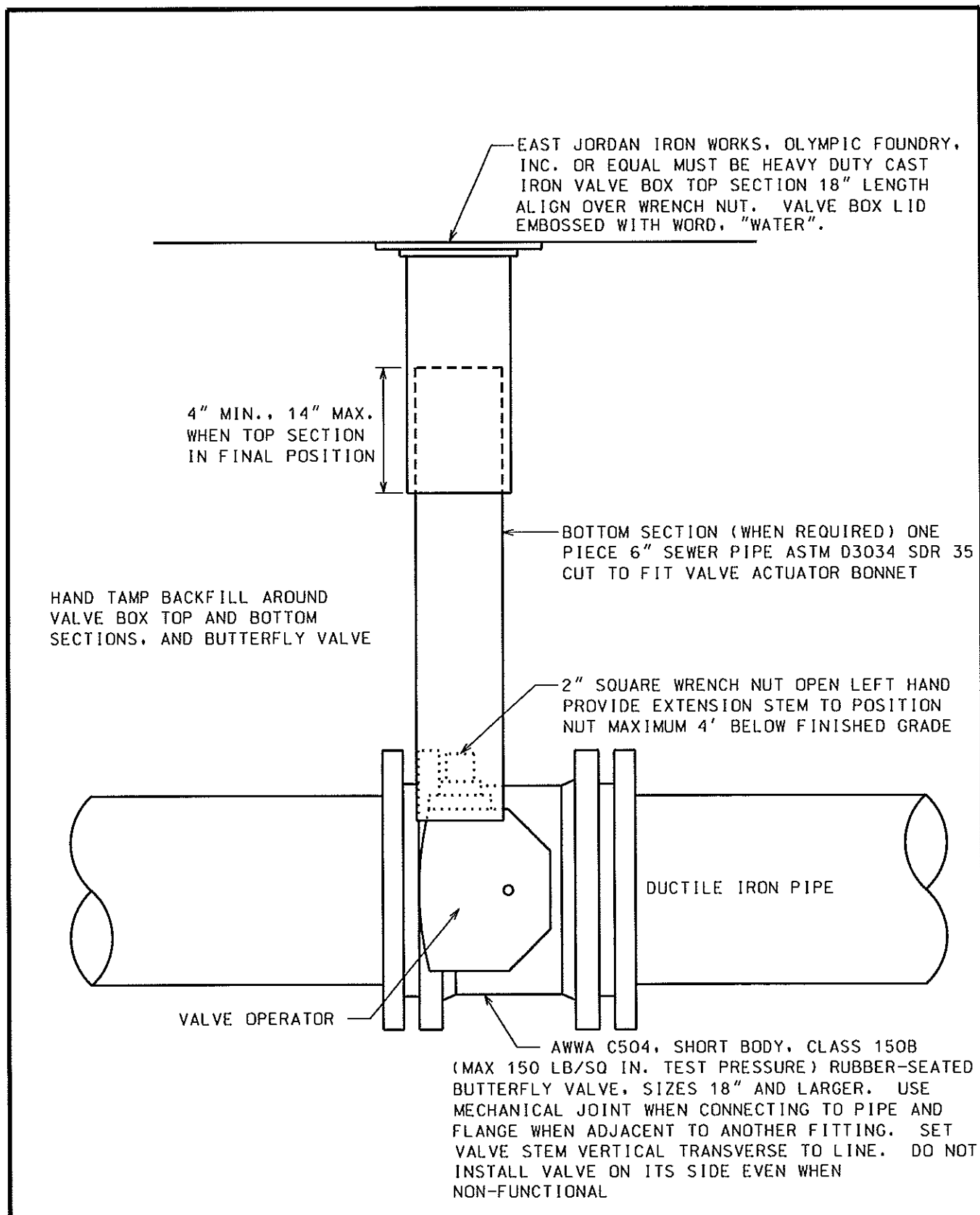
**VALVE
GATE**

REVISED: 3/2010
VALID: 4/2010

SCALE: 1:10

DRAWN: L.V.
APPROVED: K.L.H.

DWG NO. 600



**CITY OF
TUALATIN, OR**

**VALVE
BUTTERFLY**

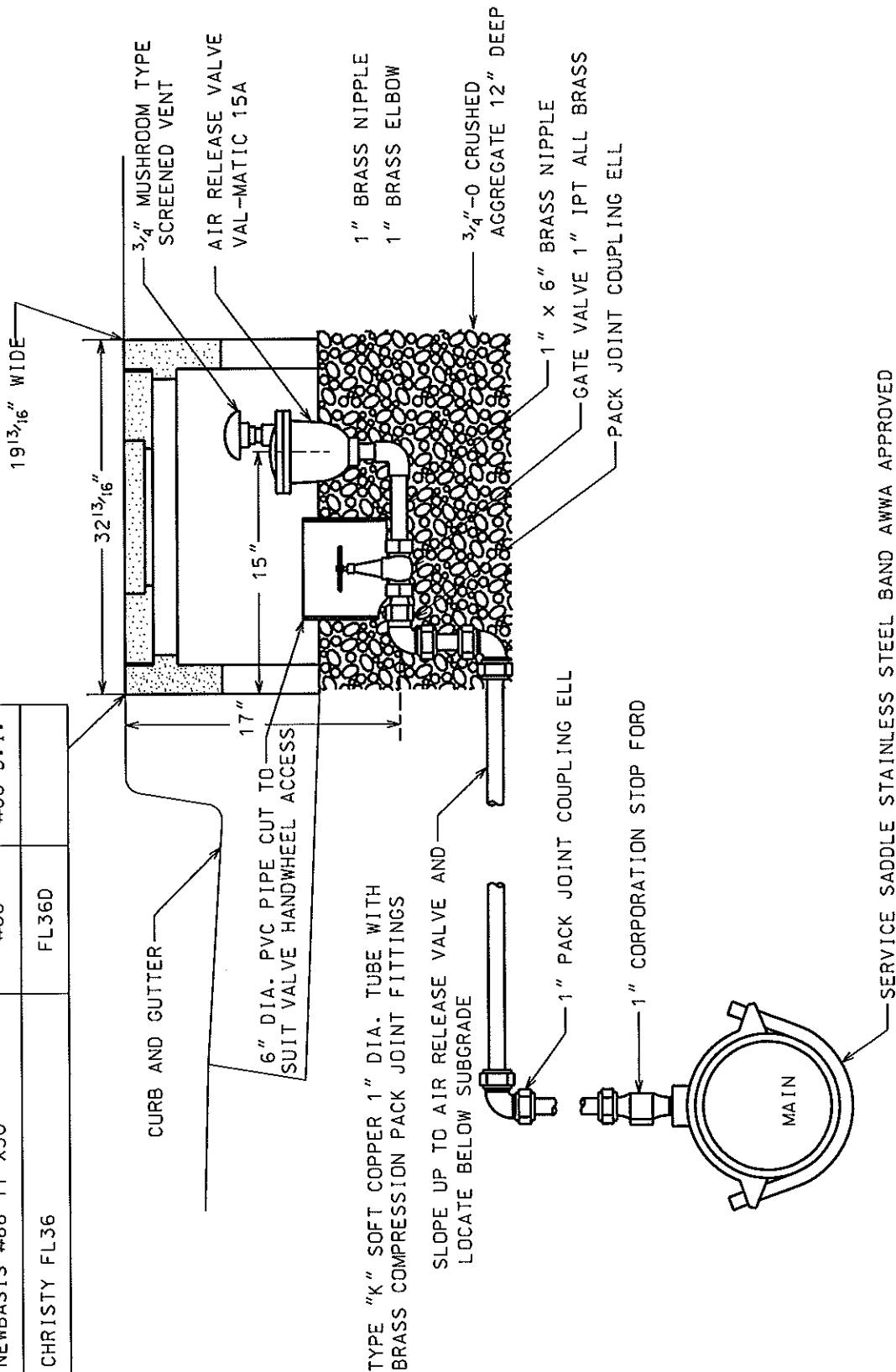
REVISED: 3/2010
VALID: 4/2010

SCALE: 1:10

DRAWN: L.V.
APPROVED: K.L.H.

DWG NO. 601

METER BOX No.	SIDEWALK	DRIVEWAY
NEWBASIS #66 17"X30"	#66	#66 D.I.
CHRISTY FL36	FL36D	



NOTE:

1. FLUSH LINE AFTER CONNECTION TO CORPORATION STOP AND BEFORE CONNECTION TO AIR RELEASE VALVE
2. VALVES AND FITTINGS FROM FORD OR MUELLER SHALL MEET THE REQUIREMENTS OF AWWA C-800



**CITY OF
TUALATIN, OR**

**VALVE
1-INCH AIR RELEASE**

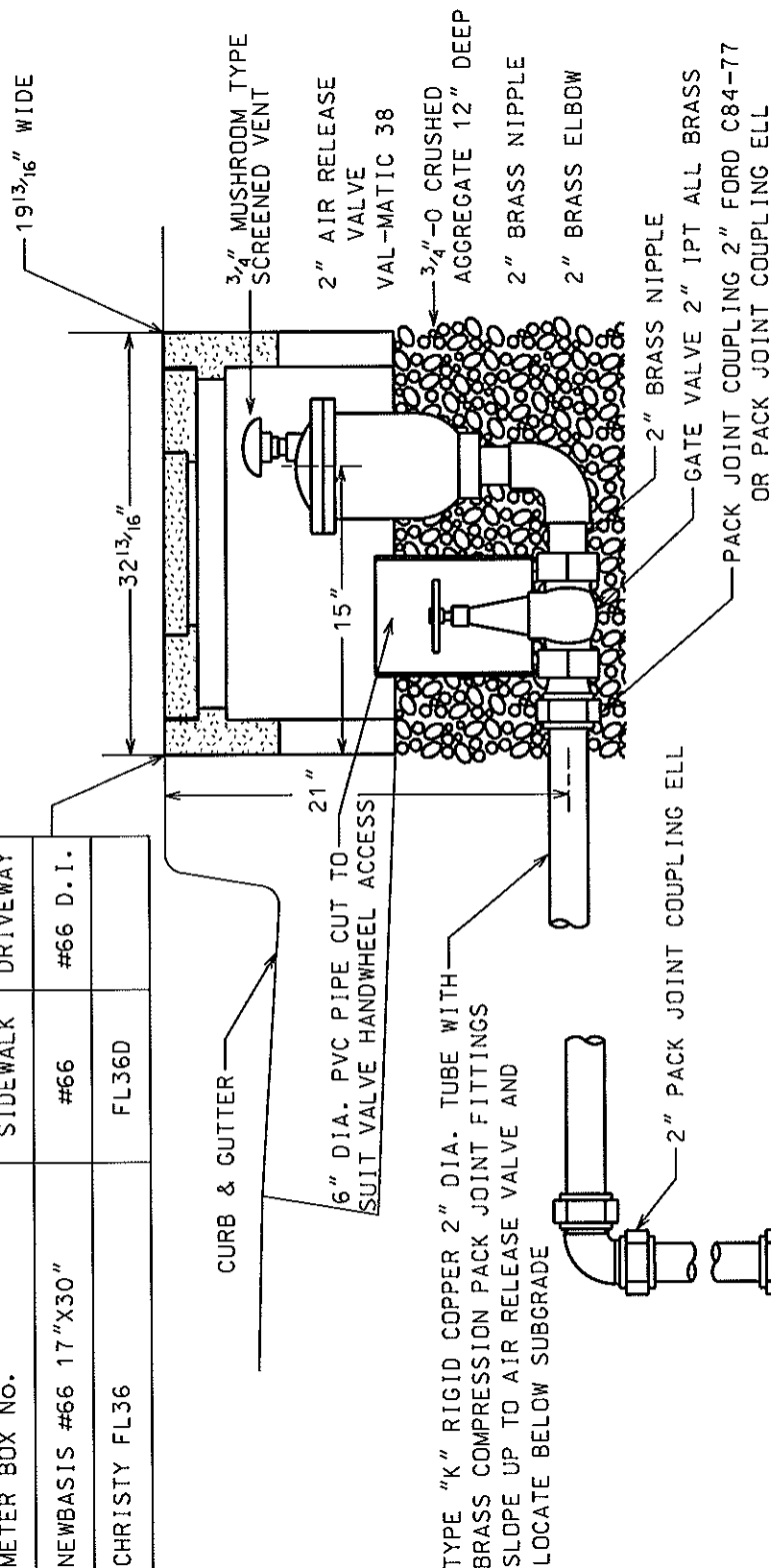
REVISED: 3/2008
VALID: 3/2008

SCALE: 1:10

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. **602**

METER BOX No.	SIDEWALK	DRIVEWAY
NEWBASIS #66 17"X30"	#66	#66 D.I.
CHRISTY FL36	FL36D	



NOTE:

1. FLUSH LINE AFTER CONNECTION TO CORPORATION STOP AND BEFORE CONNECTION TO AIR RELEASE VALVE
2. VALVES & FITTINGS FROM FORD OR MUELLER SHALL MEET THE REQUIREMENTS OF AWWA C-800
3. TO BE USED ONLY ON 18" DIAMETER PIPE OR LARGER.



**CITY OF
TUALATIN, OR**

**VALVE
2-INCH AIR RELEASE**

REVISED: 3/2008
VALID: 3/2008

SCALE: 1:10

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 603

METER BOX No.	SIDEWALK	DRIVEWAY
NEWBASIS #37 12"X30"	#37	#37 D.I.
CHRISTY FL12	FL12D	

SAMPLE STATION MODEL 900L WITH
STABILIZING MOUNTING STAKE
MANUFACTURED BY WATER PLUS CORP

14 ³/₁₆" WIDE

21"

CURB AND GUTTER

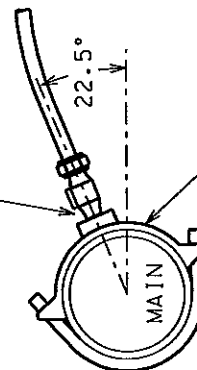
10 ¹/₂"

5"

ANGLE INVERTED KEY ³/₄" METER VALVE

³/₄"-Ø CRUSHED
AGGREGATE 12" DEEP

CORPORATION STOP
³/₄" IPT INLET



³/₄" DIA. TYPE "K" SOFT COPPER TUBE WITH BRASS
COMPRESSION PACK JOINT FITTINGS. USE ELBOWS WHEN
THERE IS A POSSIBILITY OF BUCKLING THE COPPER TUBE

SERVICE SADDLE STEEL BAND AWWA APPROVED FORD F202

NOTE:

1. FLUSH LINE AFTER CONNECTION TO CORPORATION STOP AND BEFORE
CONNECTION TO SAMPLE STATION
2. VALVES & FITTINGS FROM FORD OR MUELLER.
SHALL MEET THE REQUIREMENTS OF AWWA C-800



**CITY OF
TUALATIN, OR**

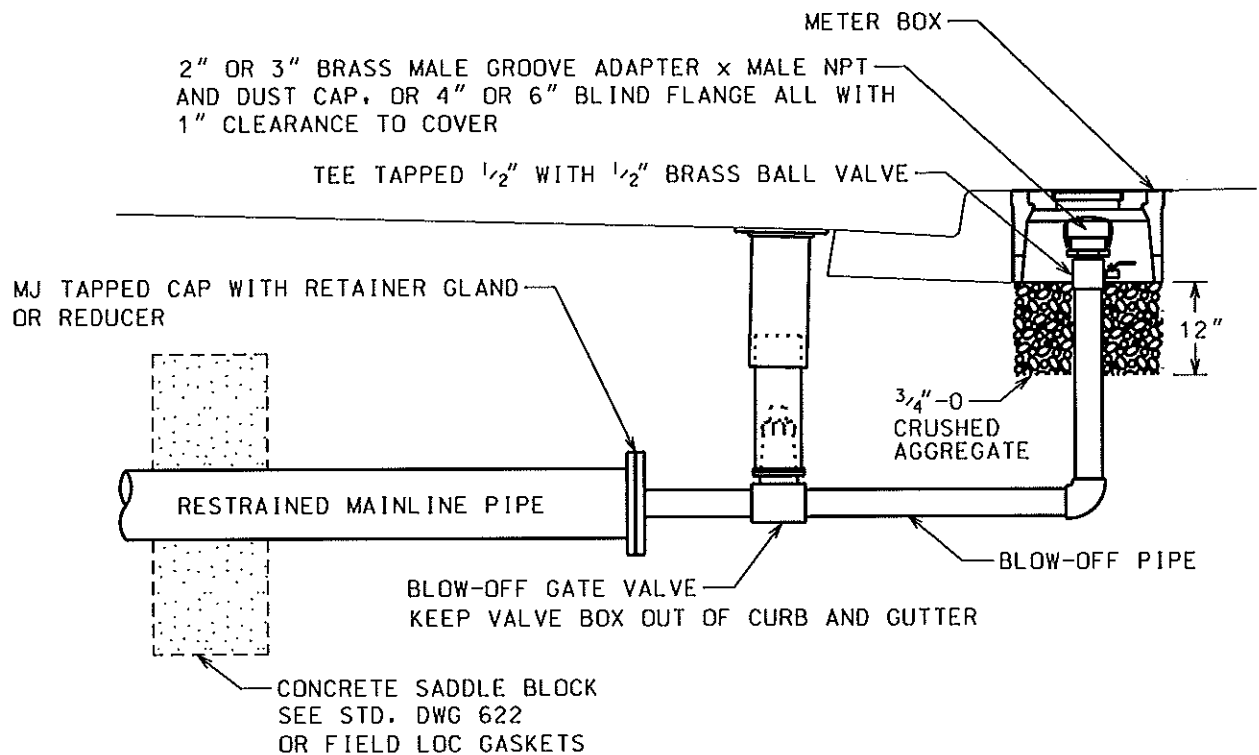
SAMPLE STATION

REVISED: 3/2008
VALID: 3/2008

SCALE: 1:10

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. **604**



MAINLINE	BLOW-OFF			METER BOX EQUIPMENT
	SIZE	PIPE MATERIAL	FITTING TYPE	
4" TO 6"	2"	BRASS	NPT	67-S OR 67-T
8" TO 12"	3"	BRASS	NPT	69-S OR 69-T
14" TO 24"	4"	D.I.	FLANGED	PERMANENT INSTALLATION
LARGER THAN 24"	6"	D.I.	FLANGED	PERMANENT INSTALLATION

NOTES:

1. BRASS CAM AND GROOVE ADAPTERS SHALL MEET MII-C-27487F SPECIFICATIONS
2. A PERMANENT INSTALLATION, WHERE THE WATERLINE WILL NOT BE EXTENDED LATER, SHALL CONSIST OF REQUIRED LENGTH OF BURIED RESTRAINED PIPE, AND THE ABOVE ASSEMBLY, ALL RESTRAINED WITH APPROVED RETAINER GLANDS, FIELD-LOCK GASKETS AND NPT THREADS. 4" AND 6" BLOW-OFFS SHALL BE INDIVIDUALLY DESIGNED WITH THE OUTLET ARRANGED TO DISSIPATE ENERGY WITHOUT DAMAGING PROPERTY.
3. BLOW-OFF TO BE IN-LINE HORIZONTALLY WITH MAINLINE PIPE WHERE POSSIBLE
4. MAINLINE WATER VELOCITY SHALL NOT BE LESS THAN 4 FT/SEC



**CITY OF
TUALATIN, OR**

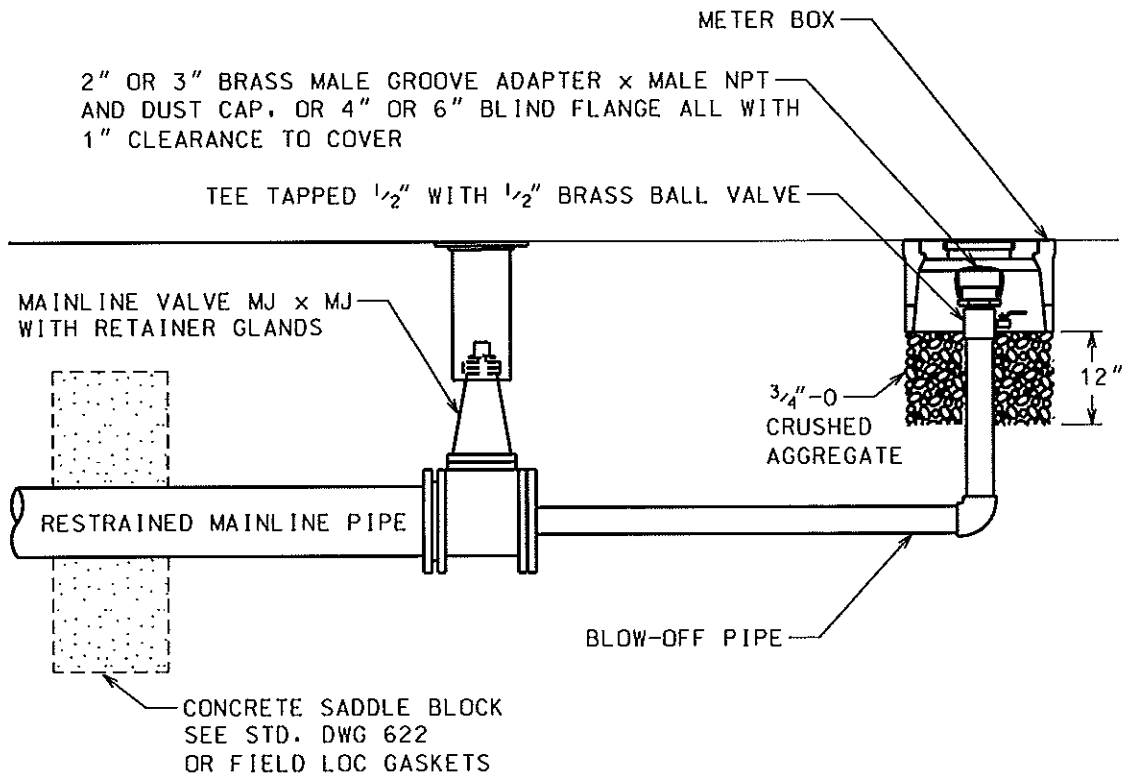
MAINLINE VALVE ASSEMBLY PERMANENT BLOW-OFF

REVISED: 3/2008
VALID: 3/2008

SCALE: 1:25

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 605



MAINLINE	BLOW-OFF			METER BOX EQUIPMENT
	SIZE	PIPE MATERIAL	FITTING TYPE	
4" TO 6"	2"	BRASS	NPT	67-S OR 67-T
8" TO 12"	3"	BRASS	NPT	69-S OR 69-T
14" TO 24"	4"	D.I.	FLANGED	
LARGER THAN 24"	6"	D.I.	FLANGED	

NOTES:

1. BRASS CAM AND GROOVE ADAPTERS SHALL MEET MII-C-27487F SPECIFICATIONS
2. A TEMPORARY INSTALLATION, WHERE THE WATERLINE IS TO BE EXTENDED LATER, SHALL CONSIST OF A MJxMJ MAINLINE VALVE RESTRAINED BY THE REQUIRED LENGTH OF BURIED RESTRAINING PIPE AND THE ABOVE ASSEMBLY. ALL RESTRAINED WITH APPROVED MJ RETAINER GLANDS, FIELD-LOK GASKETS AND NPT THREADS. 4" AND 6" BLOW-OFFS SHALL BE INDIVIDUALLY DESIGNED WITH AN OUTLET ARRANGED TO DISSIPATE ENERGY WITHOUT DAMAGING PROPERTY.
3. BLOW-OFF TO BE IN-LINE HORIZONTALLY WITH MAINLINE PIPE
4. MAINLINE WATER VELOCITY SHALL NOT BE LESS THAN 4 FT/SEC
5. MINIMUM DISTANCE MAINLINE VALVE TO BARRICADE 3'-0"



**CITY OF
TUALATIN, OR**

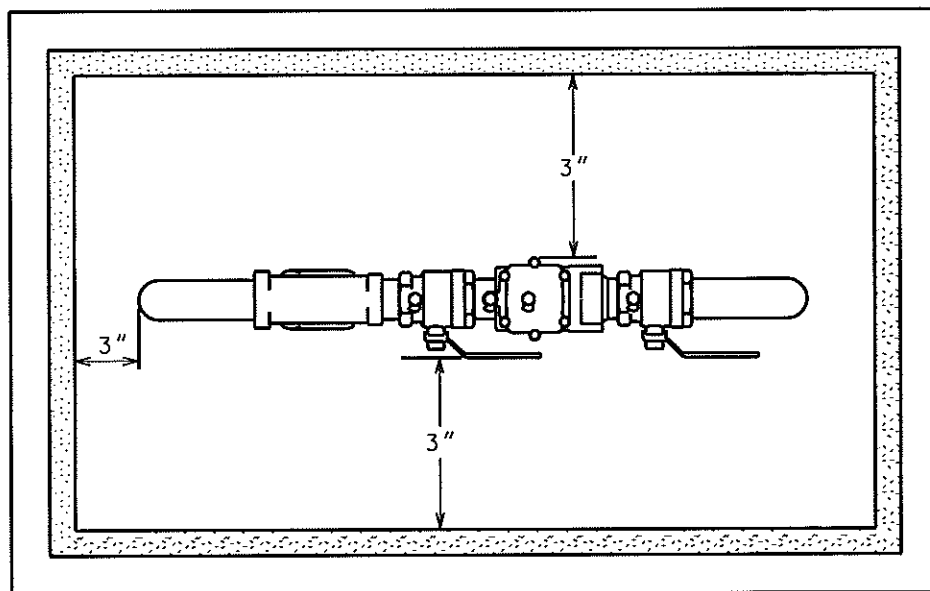
**MAINLINE
VALVE ASSEMBLY
TEMPORARY BLOW-OFF**

REVISED: 3/2008
VALID: 3/2008

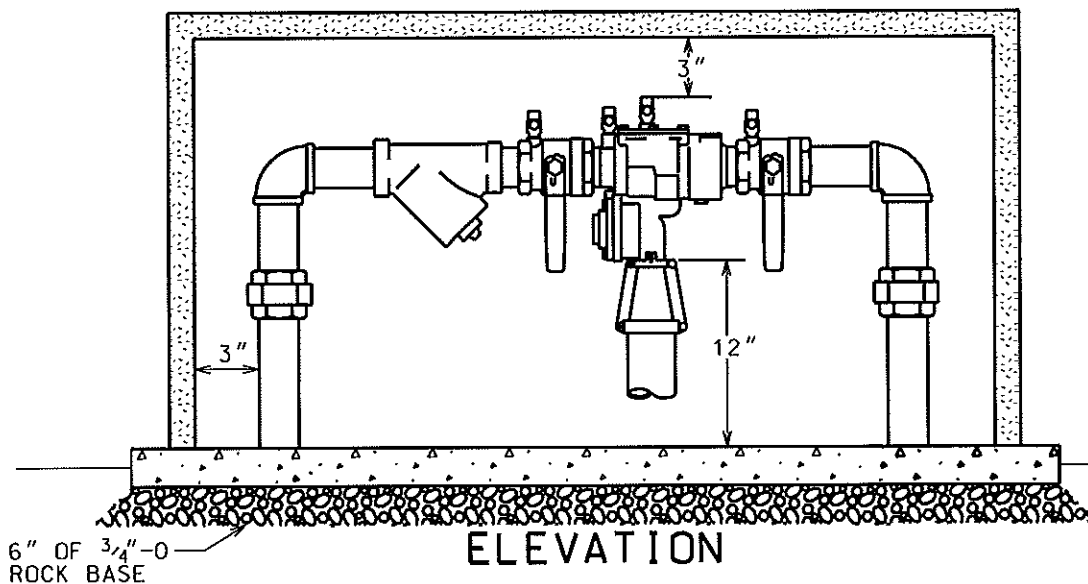
SCALE: 1:25

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 606



PLAN



ELEVATION

NOTES:

1. BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION AND COMPLY WITH OAR 333-61-070 AND AWWA C511. FLUSH SUPPLY LINE BEFORE INSTALLATION
2. ASSEMBLY SHALL BE MOUNTED ABOVE GROUND IN A HEATED, INSULATED AND PROTECTIVE ALUMINUM ENCLOSURE (HOT BOX OR SIMILAR) OR BUILDING, WITH FLOOR LEVEL ABOVE THE 100-YEAR FLOOD ELEVATION. PROVIDE ADEQUATE FLOOR DRAIN DISCHARGE TO DAYLIGHT
3. HEATING SHALL BE DESIGNED TO MAINTAIN A MINIMUM AMBIENT TEMPERATURE OF 40°F WITH AN OUTSIDE TEMPERATURE OF -10°F AND WIND SPEED OF 20 MPH
4. CLEARANCES SHOWN ARE MINIMUM.
5. ELECTRICAL EQUIPMENT AND INSTALLATION SHALL MEET ALL RELEVANT CODES
6. PROVIDE CERTIFIED TEST REPORT UPON COMPLETION TO INSPECTOR



**CITY OF
TUALATIN, OR**

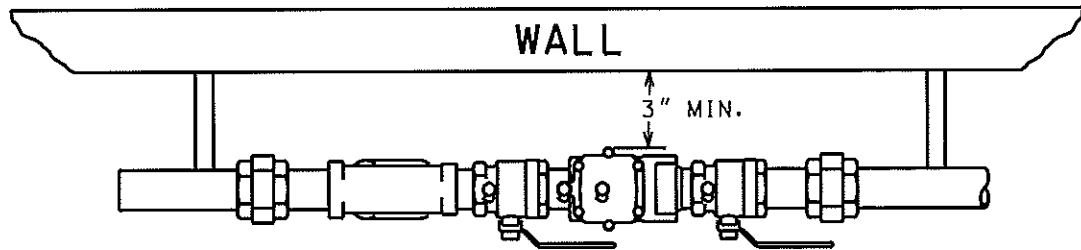
**REDUCED PRESSURE
BACKFLOW ASSEMBLY
3/4" THRU 2"**

REVISED: 3/2008
VALID: 3/2008

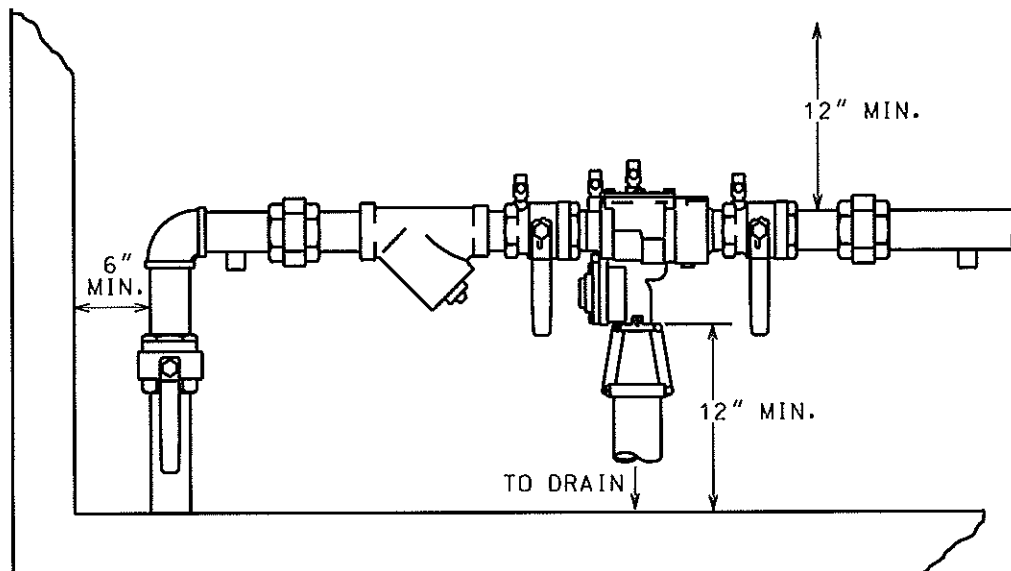
SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 607



PLAN



ELEVATION

NOTES:

1. BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION AND COMPLY WITH OAR 333-61-070 AND AWWA C511. FLUSH SUPPLY LINE BEFORE INSTALLATION
2. ASSEMBLY SHALL BE MOUNTED ABOVE GROUND IN A BUILDING, WITH FLOOR LEVEL ABOVE THE 100-YEAR FLOOD ELEVATION. PROVIDE ADEQUATE FLOOR DRAIN DISCHARGE TO DAYLIGHT
3. HEATING SHALL BE DESIGNED TO MAINTAIN A MINIMUM AMBIENT TEMPERATURE OF 40°F WITH AN OUTSIDE TEMPERATURE OF -10°F AND WIND SPEED OF 20 MPH
4. CLEARANCES SHOWN ARE MINIMUM.
5. ELECTRICAL EQUIPMENT AND INSTALLATION SHALL MEET ALL RELEVANT CODES
6. PROVIDE CERTIFIED TEST REPORT UPON COMPLETION TO INSPECTOR



**CITY OF
TUALATIN, OR**

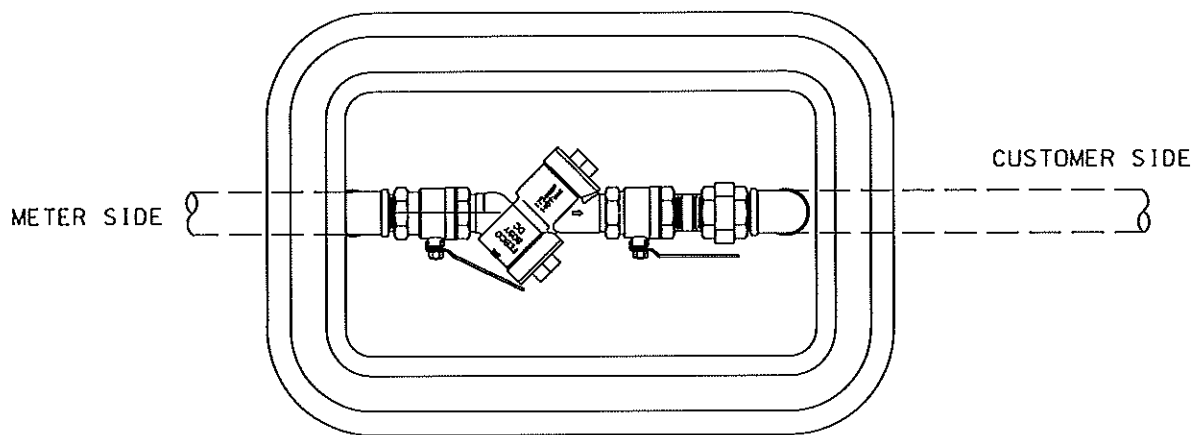
**REDUCED PRESSURE
BACKFLOW ASSEMBLY
3/4" THRU 2"**

REVISED: 3/2008
VALID: 3/2008

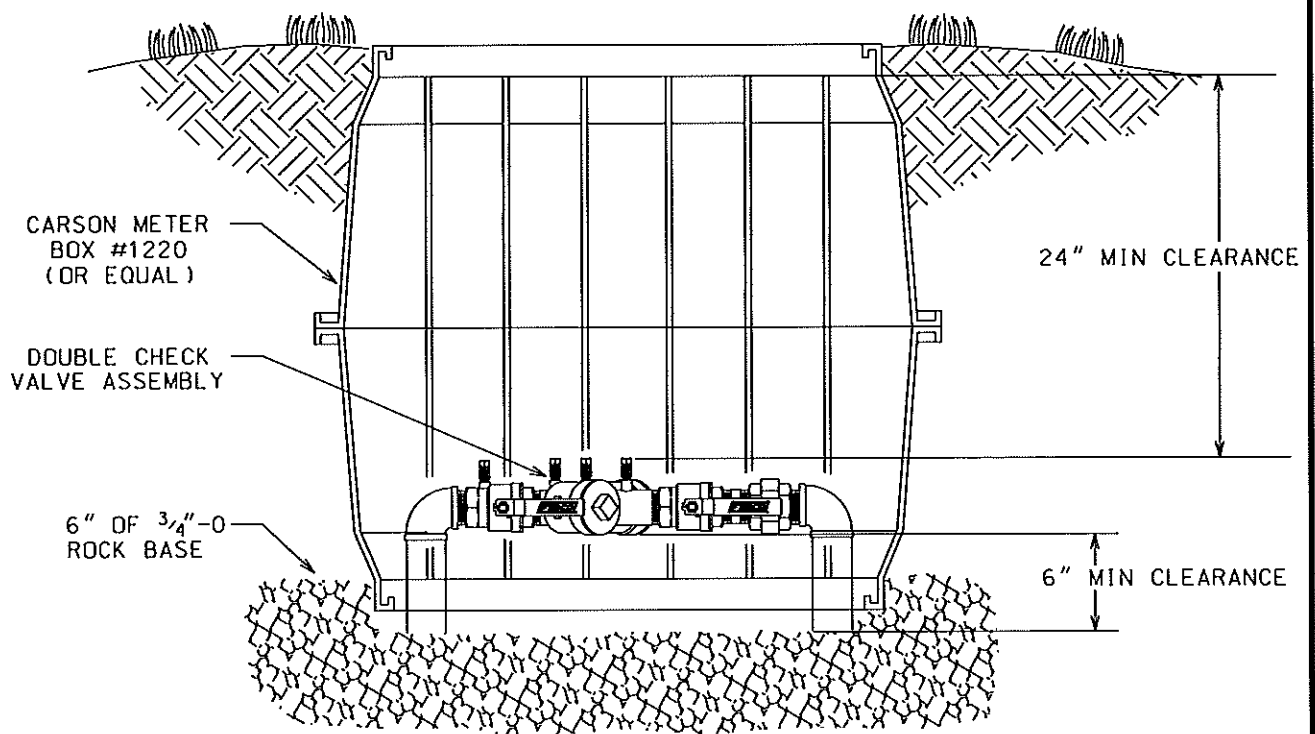
SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 608



PLAN



ELEVATION

NOTE:

1. BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION WITH TWO INTEGRAL BALL VALVES AND INSTALLED WITH UNIONS AT BOTH ENDS AND PLUGS IN TEST COCKS
2. INSTALL BELOW GROUND IN A CARSON BROOKS, AMETEK OR SIMILAR ENCLOSURE. MAY ALSO BE MOUNTED ABOVE GROUND IN A HEATED INSULATED PROTECTIVE ENCLOSURE OR BUILDING
3. PROVIDE DEVICE CLEARANCES AS FOLLOWS: TOP 24", ENDS 3", BOTTOM AND SIDES 6"
4. SHALL BE TESTED AND APPROVED BY A CERTIFIED TESTER AND A COPY OF THE REPORT PROVIDED TO THE BACKFLOW INSPECTOR, TUALATIN CITY OPERATIONS DEPARTMENT
5. FLUSH LINE FROM METER BEFORE INSTALLATION OF BACKFLOW ASSEMBLY.



**CITY OF
TUALATIN, OR**

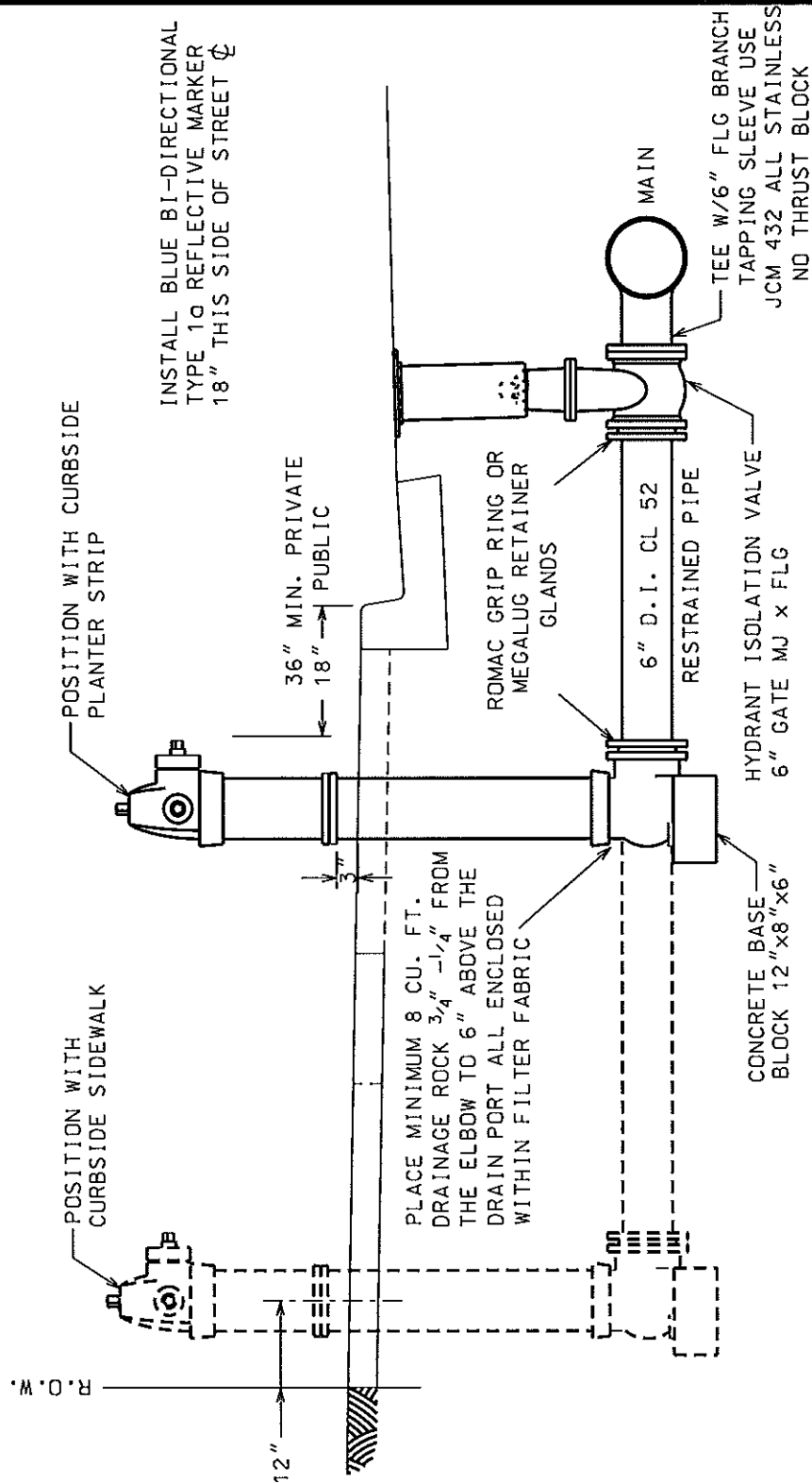
**DOUBLE CHECK
BACKFLOW ASSEMBLY
 $\frac{3}{4}$ " THRU 1"**

REVISED: 3/2008
VALID: 3/2008

SCALE: 1:10

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 609



NOTE:

1. APPLY MAINS TEST PRESSURE AGAINST CLOSED MAIN VALVE IN THE HYDRANT AND NOT THROUGH THE HYDRANT
2. FIRE HYDRANT SHALL BE WATEROUS PACER WB-67 (WITH 16" UPPER STANDPIPE), CLOW MEDALLION OR F-2500, MUELLER SUPER CENTURION 250 OR M & H VALVE 929 RELIANT, WITH ONE 4 1/2" AND TWO 2 1/2" NOZZLES, SHOE 6" MJ, 5 1/4" VALVE WITH 1 1/2" PENTAGON OPERATING NUT, PAINTED OVERALL WITH MILLER PAINT, BRIGHT RED # 2530, HIGH GLOSS SPAR ENAMEL, PRIVATE HYDRANTS ARE PAINTED YELLOW OVERALL. REMOVE NOZZLE CAP CHAINS.
3. HYDRANT SHALL CONFORM TO AWWA C502 AND BE INSTALLED GENERALLY IN ACCORDANCE WITH AWWA MANUAL M17



**CITY OF
TUALATIN, OR**

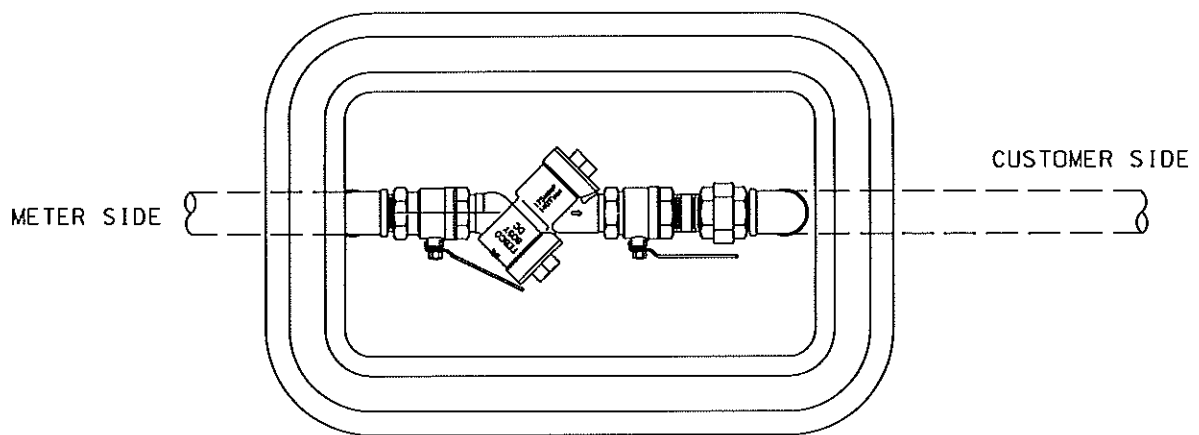
**FIRE HYDRANT
ASSEMBLY**

REVISED: 8/2004
VALID: 10/2005

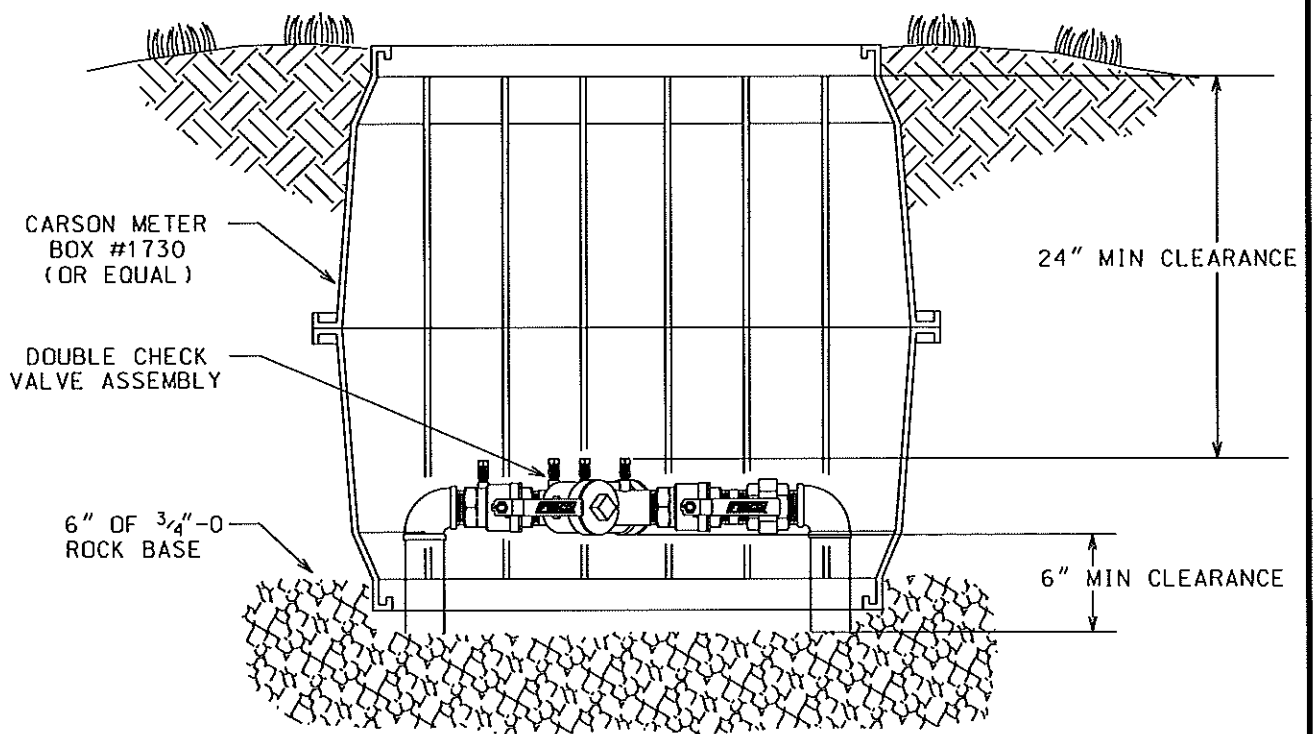
SCALE: 1:25

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. **610**



PLAN



ELEVATION

NOTE:

1. BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION WITH TWO INTEGRAL BALL VALVES AND INSTALLED WITH UNIONS AT BOTH ENDS AND PLUGS IN TEST COCKS
2. INSTALL BELOW GROUND IN A CARSON BROOKS, AMETEK OR SIMILAR ENCLOSURE. MAY ALSO BE MOUNTED ABOVE GROUND IN A HEATED INSULATED PROTECTIVE ENCLOSURE OR BUILDING
3. PROVIDE DEVICE CLEARANCES AS FOLLOWS: TOP 24", ENDS 3", BOTTOM AND SIDES 6"
4. SHALL BE TESTED AND APPROVED BY A CERTIFIED TESTER AND A COPY OF THE REPORT PROVIDED TO THE BACKFLOW INSPECTOR, TUALATIN CITY OPERATIONS DEPARTMENT
5. FLUSH LINE FROM METER BEFORE INSTALLATION OF BACKFLOW ASSEMBLY.



**CITY OF
TUALATIN, OR**

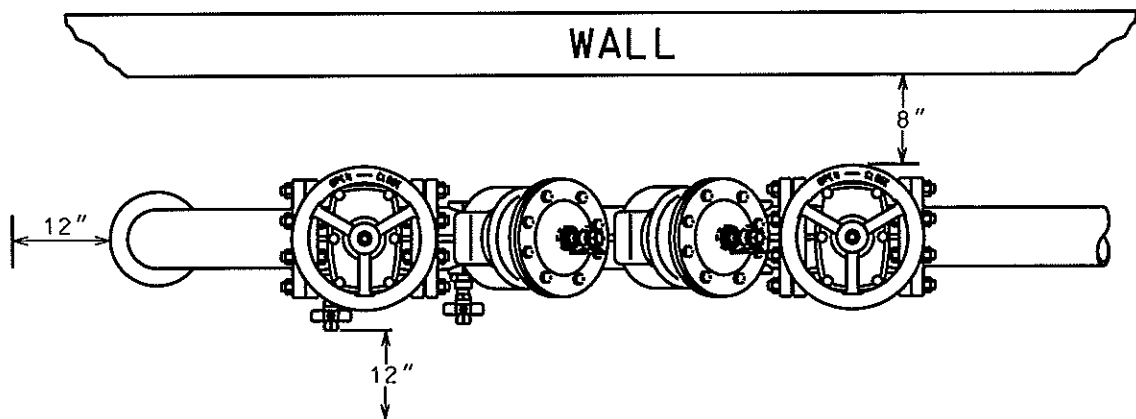
**DOUBLE CHECK
BACKFLOW ASSEMBLY
1 1/2" THRU 2 1/2"**

REVISED: 3/2008
VALID: 3/2008

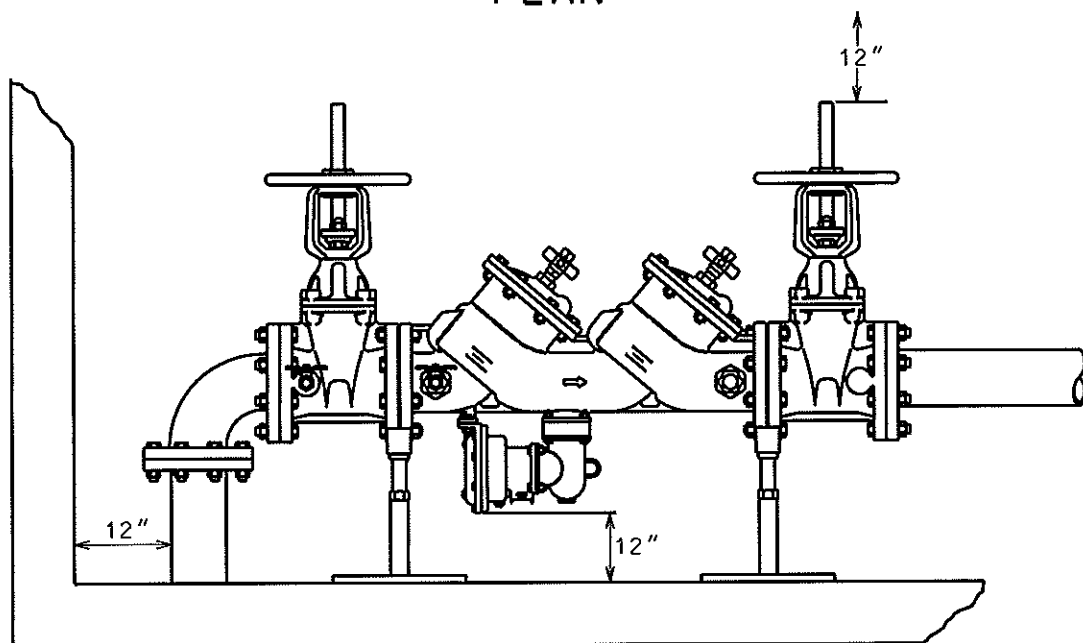
SCALE: 1:10

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 611



PLAN



ELEVATION

NOTES:

1. BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION AND COMPLY WITH OAR 333-61-070 AND AWWA C511. FLUSH SUPPLY LINE BEFORE INSTALLATION
2. ASSEMBLY SHALL BE MOUNTED ABOVE GROUND IN A BUILDING, WITH FLOOR LEVEL ABOVE THE 100-YEAR FLOOD ELEVATION. PROVIDE ADEQUATE FLOOR DRAIN DISCHARGE TO DAYLIGHT
3. HEATING SHALL BE DESIGNED TO MAINTAIN A MINIMUM AMBIENT TEMPERATURE OF 40°F WITH AN OUTSIDE TEMPERATURE OF -10°F AND WIND SPEED OF 20 MPH
4. CLEARANCES SHOWN ARE MINIMUM.
5. ELECTRICAL EQUIPMENT AND INSTALLATION SHALL MEET ALL RELEVANT CODES
6. PROVIDE CERTIFIED TEST REPORT UPON COMPLETION TO INSPECTOR



**CITY OF
TUALATIN, OR**

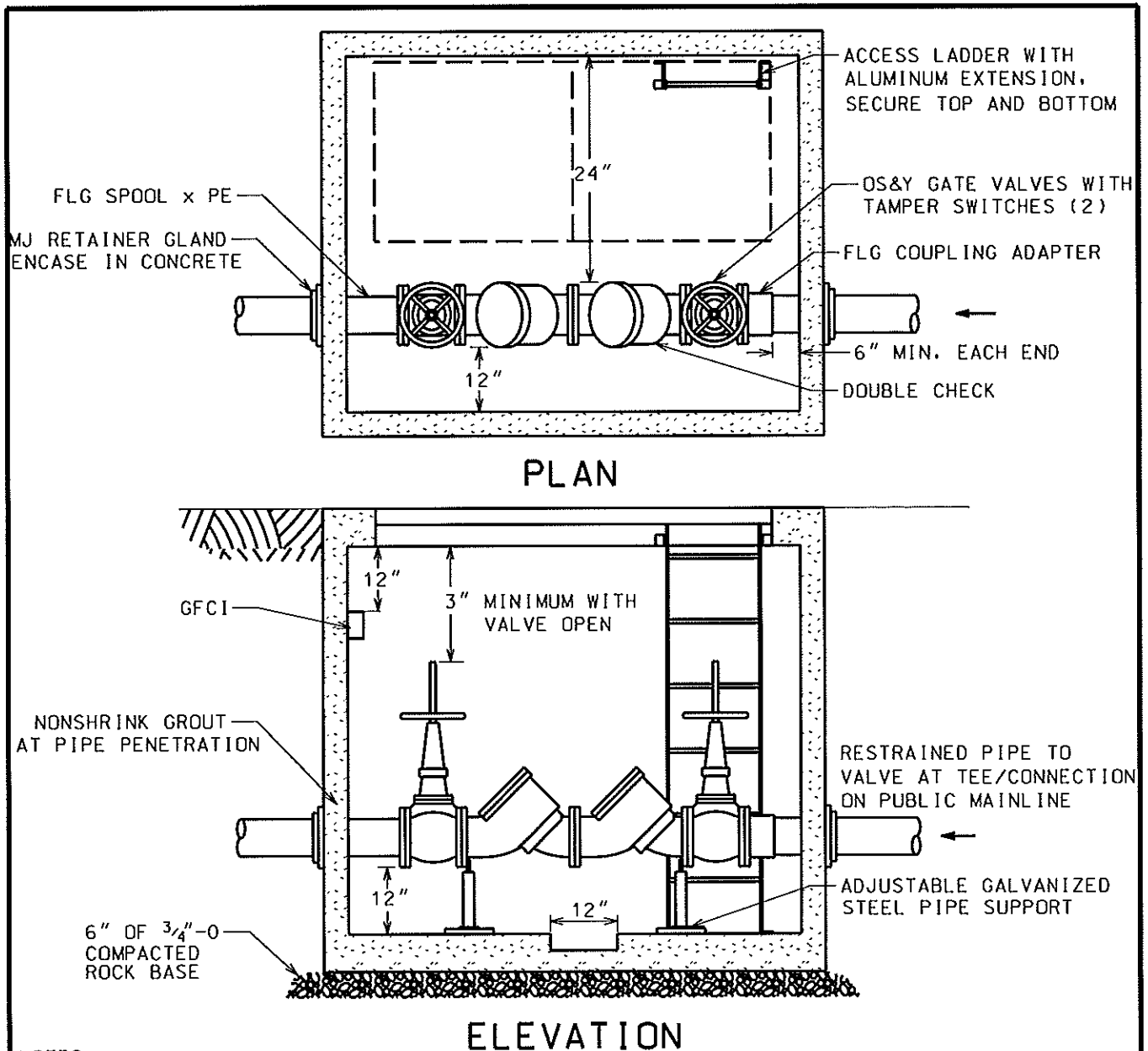
**REDUCED PRESSURE
BACKFLOW ASSEMBLY
2½" THRU 10"**

REVISED: 3/2008
VALID: 3/2008

SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 612



NOTES:

1. USE DUCTILE IRON PIPE THROUGH VAULT
2. PLUGS SHALL BE INSTALLED IN TEST COCKS.
3. ASSEMBLY MAY ALSO BE MOUNTED ABOVE GROUND IN AN INSULATED PROTECTIVE ENCLOSURE OR BUILDING.
4. CHECK VAULT FLOTATION AND CORRECT IF NECESSARY.
5. INSTALLATION AND BACKFLOW ASSEMBLY SHALL COMPLY WITH AWWA C510 AND OAR 333-61-070.
6. PROVIDE SUMP PUMP WITH DIAPHRAGM OR VERTICAL FLOAT SWITCH AND 1" PVC CHECK VALVE AND PIPE DISCHARGE TO DAYLIGHT. SUPPLY POWER THRU GFCI INTERNAL WALL MOUNT 12" BELOW CEILING.
7. IF BACKFLOW DEVICE IS INSTALLED INSIDE BUILDING, AN ISOLATION VALVE SHALL BE INSTALLED AT THE PROPERTY LINE.

PIPE SIZE	UTILITY VAULT	COVER OFFSET
3"	577-WA	2-332P
4"	577-WA	2-332P
6"	577-WA	2-332P
8"	687-WA	2-332P
10"	5106-WA	3-332P



**CITY OF
TUALATIN, OR**

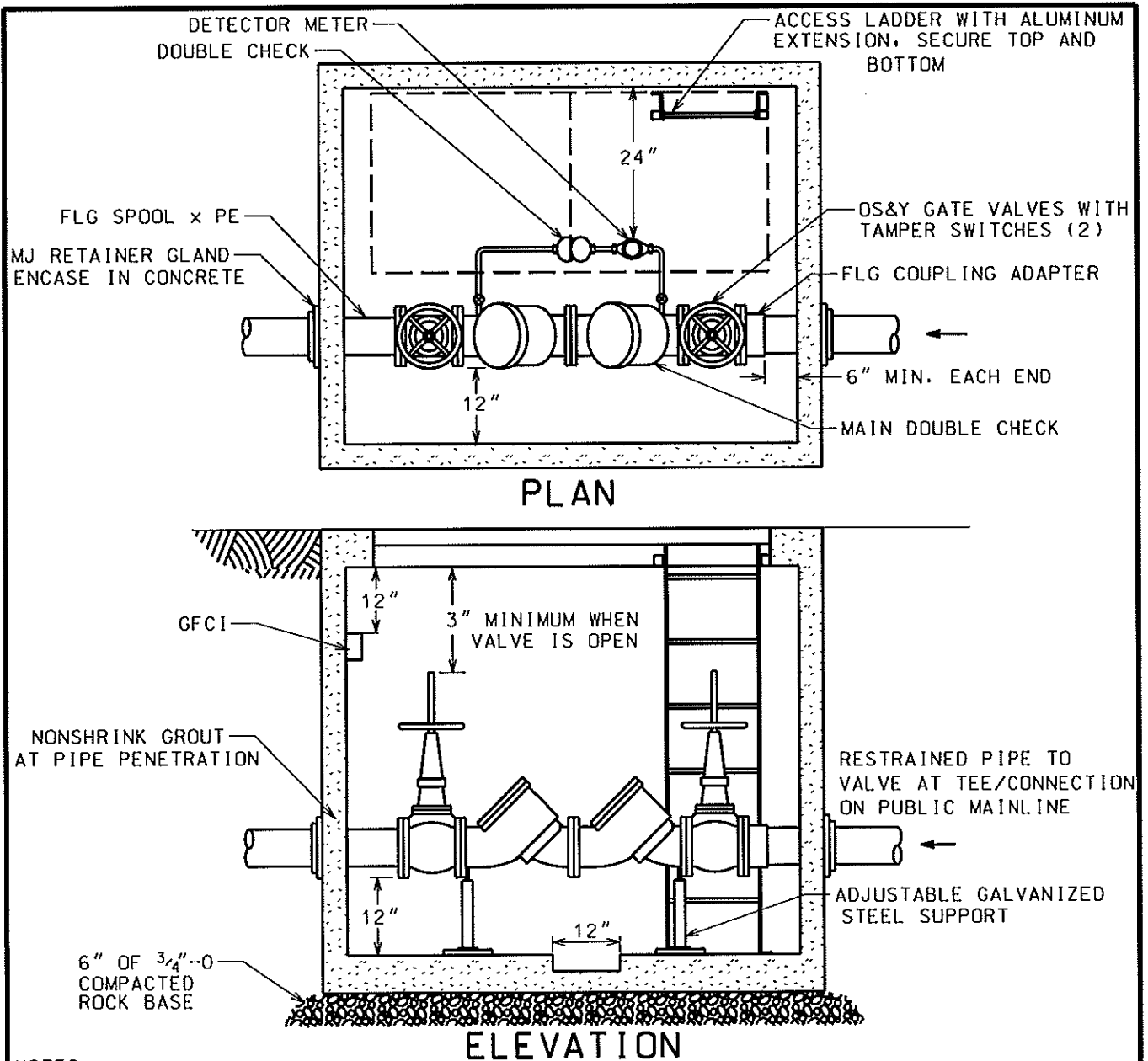
**DOUBLE CHECK
BACKFLOW ASSEMBLY
3" THRU 10"**

REVISED: 3/2008
VALID: 3/2008

SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. **613**



NOTES:

1. USE DUCTILE IRON PIPE THROUGH VAULT
2. PLUGS SHALL BE INSTALLED IN TEST COCKS.
3. ASSEMBLY MAY ALSO BE MOUNTED ABOVE GROUND IN AN INSULATED PROTECTIVE ENCLOSURE OR BUILDING.
4. CHECK VAULT FLOTATION AND CORRECT IF NECESSARY.
5. INSTALLATION AND BACKFLOW ASSEMBLY SHALL COMPLY WITH AWWA C510 AND DAR 333-61-070.
6. PROVIDE SUMP PUMP WITH DIAPHRAGM OR VERTICAL FLOAT SWITCH AND 1" PVC CHECK VALVE AND PIPE DISCHARGE TO DAYLIGHT. SUPPLY POWER THRU GFCI INTERNAL WALL MOUNT 12" BELOW CEILING.
7. IF BACKFLOW DEVICE IS INSTALLED INSIDE BUILDING, AN ISOLATION VALVE SHALL BE INSTALLED AT THE PROPERTY LINE.

PIPE SIZE	UTILITY VAULT	COVER OFFSET
4"	676-WA	2-332P
6"	676-WA	2-332P
8"	687-WA	2-332P
10"	5106-WA	3-332P



**CITY OF
TUALATIN, OR**

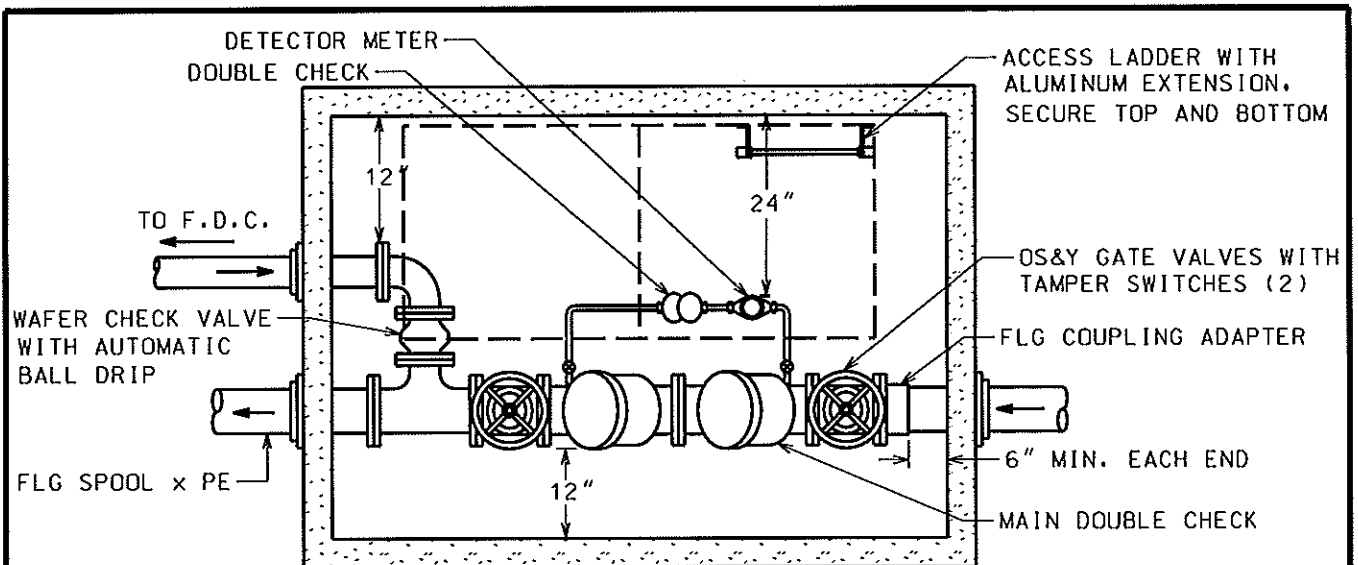
**DOUBLE CHECK DETECTOR
FIRE PROTECTION
WITHOUT FDC**

REVISED: 3/2008
VALID: 3/2008

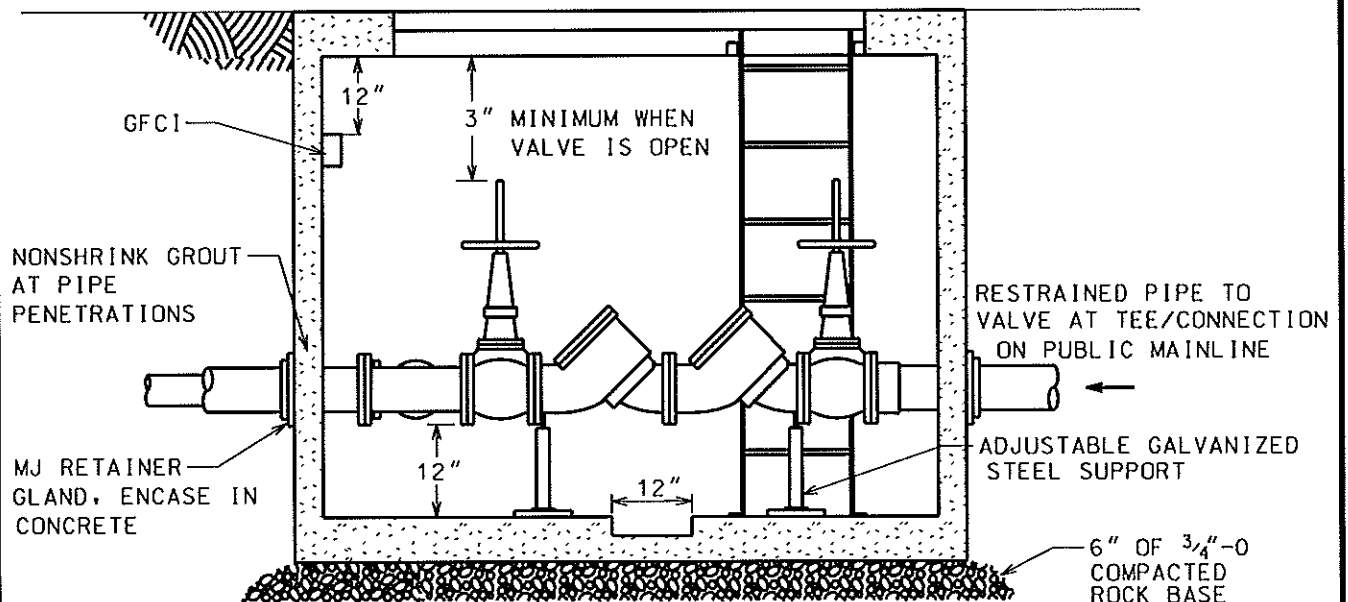
SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. **614**



PLAN



ELEVATION

NOTES:

1. USE DUCTILE IRON PIPE THROUGH VAULT
2. PLUGS SHALL BE INSTALLED IN TEST COCKS.
3. ASSEMBLY MAY ALSO BE MOUNTED ABOVE GROUND IN AN INSULATED PROTECTIVE ENCLOSURE OR BUILDING.
4. CHECK VAULT FLOTATION AND CORRECT IF NECESSARY.
5. INSTALLATION AND BACKFLOW ASSEMBLY SHALL COMPLY WITH AWWA C510 AND OAR 333-61-070.
6. PROVIDE SUMP PUMP WITH DIAPHRAGM OR VERTICAL FLOAT SWITCH AND 1" PVC CHECK VALVE AND PIPE DISCHARGE TO DAYLIGHT. SUPPLY POWER THRU GFCI INTERNAL WALL MOUNT 12" BELOW CEILING.
7. IF BACKFLOW DEVICE IS INSTALLED INSIDE BUILDING, AN ISOLATION VALVE SHALL BE INSTALLED AT THE PROPERTY LINE.

PIPE SIZE	UTILITY VAULT	COVER OFFSET
4"	676-WA	2-332P
6"	687-WA	2-332P
8"	5106-WA	2-332P
10"	5106-WA	3-332P



**CITY OF
TUALATIN, OR**

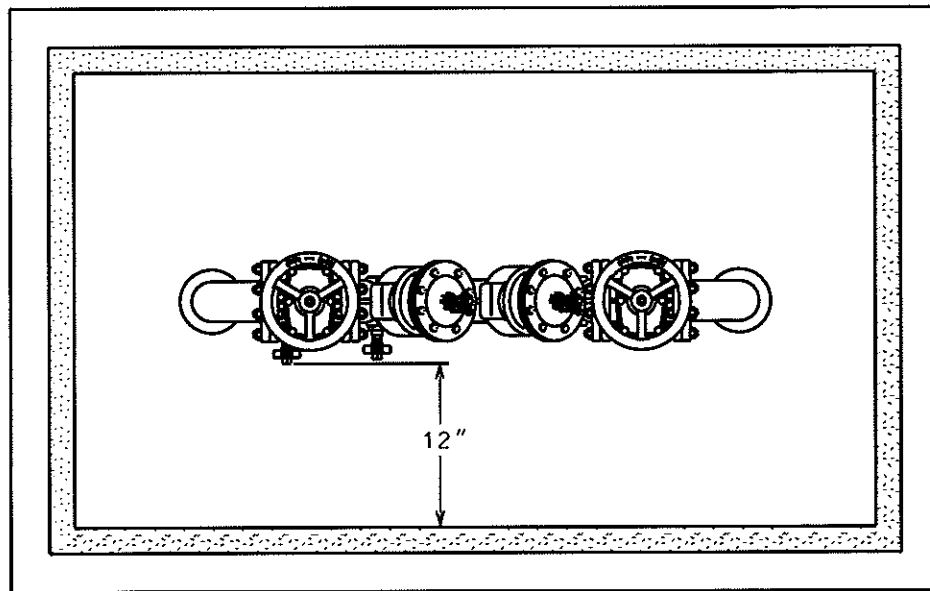
**DOUBLE CHECK DETECTOR
FIRE PROTECTION
WITH FDC CONNECTION**

REVISED: 3/2008
VALID: 3/2008

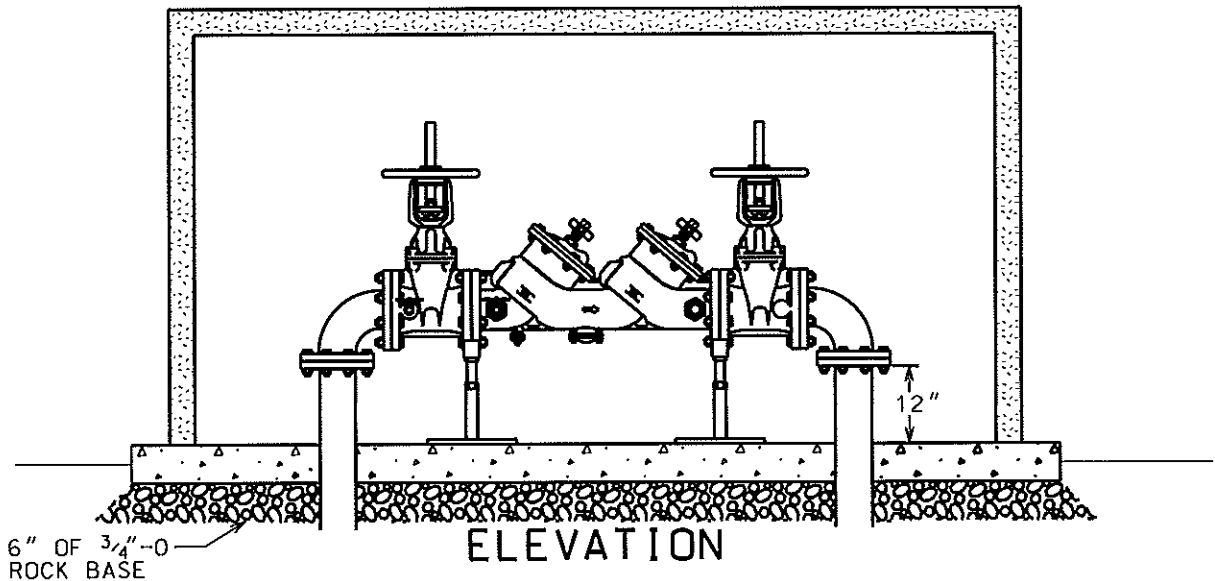
SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 615



PLAN



ELEVATION

NOTES:

1. BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION AND COMPLY WITH OAR 333-61-070 AND AWWA C511. FLUSH SUPPLY LINE BEFORE INSTALLATION
2. ASSEMBLY SHALL BE MOUNTED ABOVE GROUND IN A HEATED, INSULATED AND PROTECTIVE ALUMINUM ENCLOSURE (HOT BOX OR SIMILAR) OR BUILDING, WITH FLOOR LEVEL ABOVE THE 100-YEAR FLOOD ELEVATION. PROVIDE ADEQUATE FLOOR DRAIN DISCHARGE TO DAYLIGHT
3. HEATING SHALL BE DESIGNED TO MAINTAIN A MINIMUM AMBIENT TEMPERATURE OF 40°F WITH AN OUTSIDE TEMPERATURE OF -10°F AND WIND SPEED OF 20 MPH
4. CLEARANCES SHOWN ARE MINIMUM. PROVIDE RESTRAINED PIPING SYSTEM THRU ENCLOSURE
5. ELECTRICAL EQUIPMENT AND INSTALLATION SHALL MEET ALL RELEVANT CODES
6. PROVIDE CERTIFIED TEST REPORT UPON COMPLETION TO INSPECTOR



**CITY OF
TUALATIN, OR**

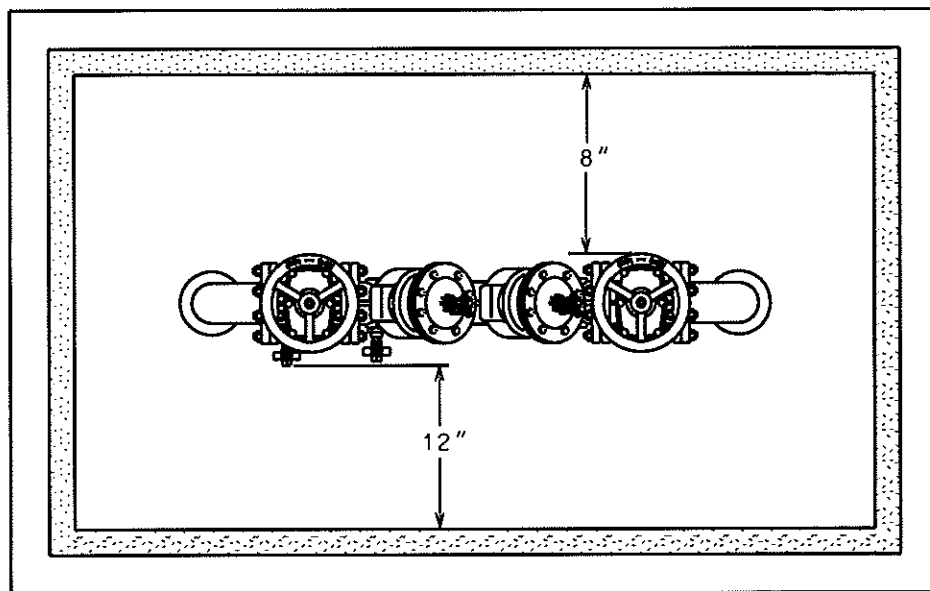
**DOUBLE CHECK VALVE
ASSEMBLY INSIDE BLDG.
3/4" THRU 2"**

REVISED: 3/2008
VALID: 3/2008

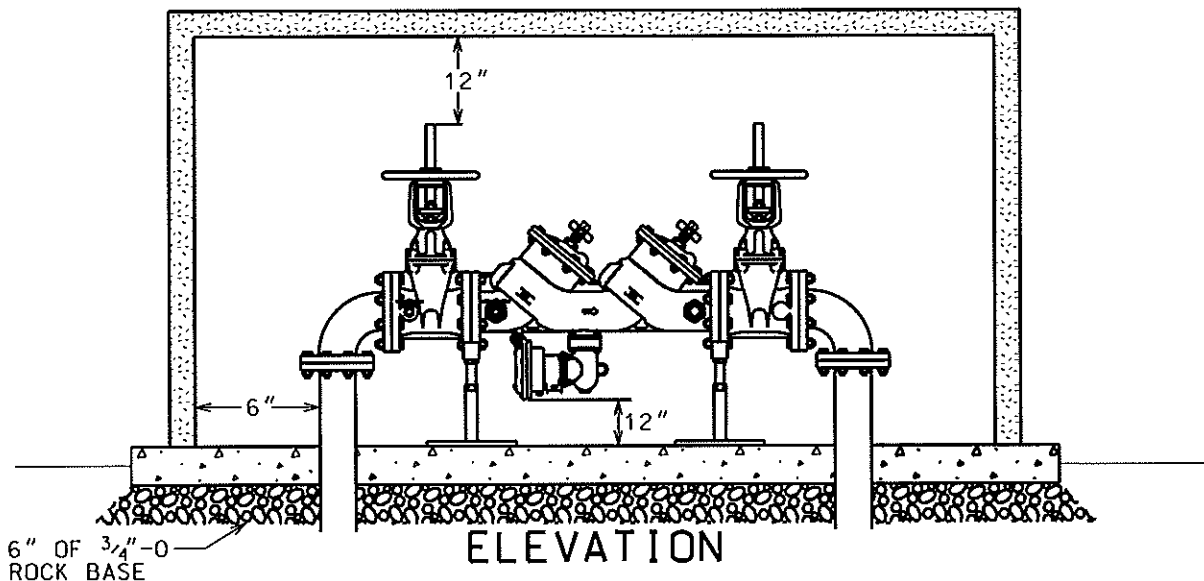
SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 616



PLAN



ELEVATION

NOTES:

1. BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION AND COMPLY WITH OAR 333-61-070 AND AWWA C511. FLUSH SUPPLY LINE BEFORE INSTALLATION
2. ASSEMBLY SHALL BE MOUNTED ABOVE GROUND IN A HEATED, INSULATED AND PROTECTIVE ALUMINUM ENCLOSURE (HOT BOX OR SIMILAR) OR BUILDING, WITH FLOOR LEVEL ABOVE THE 100-YEAR FLOOD ELEVATION. PROVIDE ADEQUATE FLOOR DRAIN DISCHARGE TO DAYLIGHT
3. HEATING SHALL BE DESIGNED TO MAINTAIN A MINIMUM AMBIENT TEMPERATURE OF 40°F WITH AN OUTSIDE TEMPERATURE OF -10°F AND WIND SPEED OF 20 MPH
4. CLEARANCES SHOWN ARE MINIMUM. PROVIDE RESTRAINED PIPING SYSTEM THRU ENCLOSURE
5. ELECTRICAL EQUIPMENT AND INSTALLATION SHALL MEET ALL RELEVANT CODES
6. PROVIDE CERTIFIED TEST REPORT UPON COMPLETION TO INSPECTOR



**CITY OF
TUALATIN, OR**

**REDUCED PRESSURE
BACKFLOW ASSEMBLY
2½" THRU 10"**

REVISED: 3/2008
VALID: 3/2008

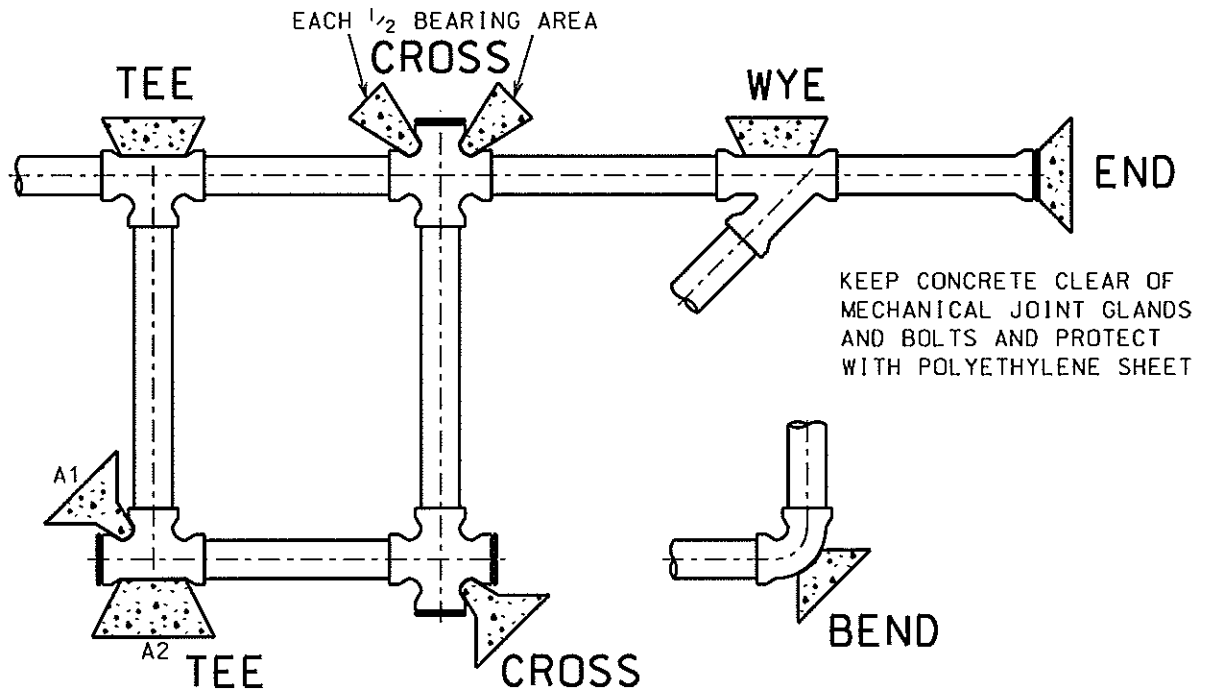
SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 617

THRUST BLOCK REQUIREMENTS AT SOIL/CONCRETE INTERFACE

1. BLOCK HEIGHT TO BE LESS THAN $\frac{1}{2}$ TOTAL DEPTH SOIL SURFACE TO BOTTOM OF BLOCK BUT NOT LESS THAN PIPE DIAMETER
2. BLOCK WIDTH TO VARY BETWEEN EQUAL TO OR NOT GREATER THAN TWICE BLOCK HEIGHT



NOTE:

THRUST BLOCKS TO BE USE ONLY WHEN CONNECTING TO AN UNKNOWN LENGTH OF PIPE OTHERWISE USE APPROVED MJ RETAINER GLANDS AND RESTRAINED PIPE

FITTING SIZE INCHES	BEARING AREA SQ. FT.					
	BEND 90° CROSS TEE A1	TEE A2	TEE WYE END	BEND 45°	BEND 22.5°	BEND 11.25°
3	1.31	1.85	0.92	0.71	0.36	0.18
4	1.92	2.71	1.36	1.04	0.53	0.27
6	3.97	5.61	2.80	2.15	1.09	0.55
8	6.82	9.65	4.82	3.69	1.88	0.95
10	10.26	14.52	7.26	5.55	2.83	1.42
12	14.51	20.53	10.26	7.86	4.00	2.01
14	19.50	27.58	13.79	10.55	5.38	2.70
16	25.22	35.67	17.83	13.65	6.96	3.50
18	31.68	44.80	22.40	17.14	8.74	4.39
20	38.87	54.97	27.48	21.03	10.72	5.39
24	55.45	78.42	39.21	30.01	15.30	7.69

DESIGN CRITERIA:

1. TEST PRESSURE 150 LB/SQ. IN., CONCRETE 3300-1 $\frac{1}{2}$ ", AFTER POURING BLOCK DO NOT APPLY TEST PRESSURE FOR AT LEAST FIVE DAYS.
2. SAFETY FACTOR 1.5, SOIL SANDY SILY WITH BEARING STRENGTH 3,000 LB/SQ.FT.
3. CONCRETE POURED AGAINST UNDISTURBED SOIL OR SOIL COMPACTED TO AT LEAST 91% MODIFIED PROCTOR DENSITY, T-180
4. SUBMIT BEARING AREA CALCULATIONS WITH CHANGE IN SOIL OR TEST PRESSURE



**CITY OF
TUALATIN, OR**

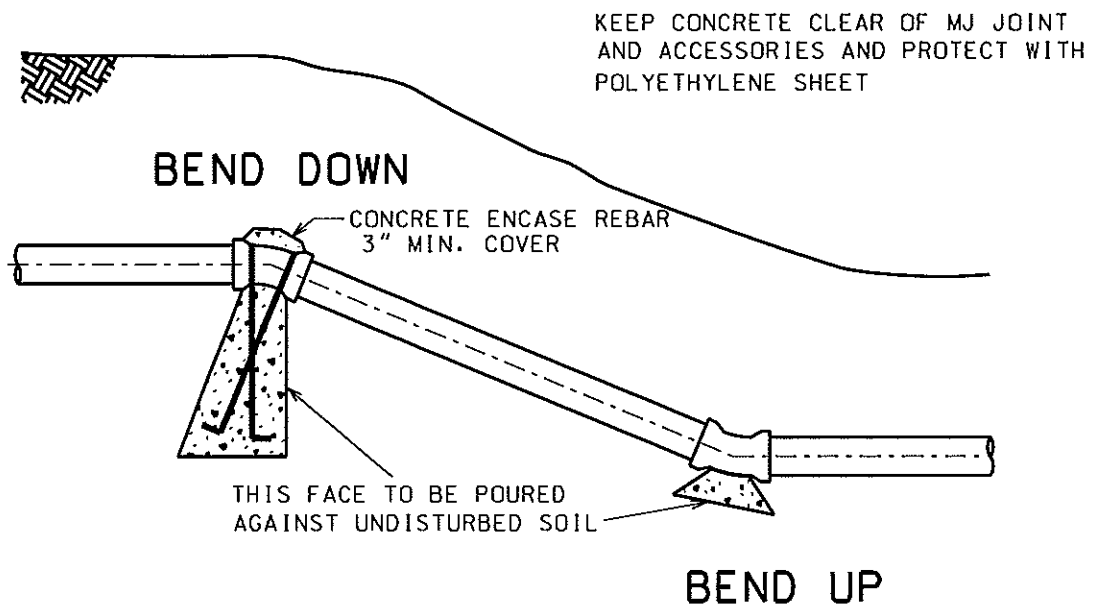
**PIPE JOINT RESTRAINT
BEARING THRUST BLOCKS**

REVISED: 2/2002
VALID: 7/2003

SCALE: NOT TO SCALE

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 620



NOTE:

ALWAYS USE APPROVED RETAINER GLANDS AND RESTRAINED PIPE INSTEAD OF
GRAVITY AND BEARING THRUST BLOCKS WHENEVER POSSIBLE

DESIGN CRITERIA:

1. TEST PRESSURE 150 LB/SQ. IN. CONCRETE 3300-1 $\frac{1}{2}$ ", DO NOT APPLY TEST PRESSURE BEFORE FIVE DAYS AFTER POURING THRUST BLOCK
2. SAFETY FACTOR 1.5
3. WEIGHT CONCRETE 140 LB/CU.FT.
4. SOIL SANDY SILT BEARING STRENGTH 3000 LB/SQ.FT.
5. SUBMIT REDESIGN WITH CHANGE IN SOIL OR TEST PRESSURE

FITTING SIZE INCHES	REBAR SIZE	CUBIC YARDS CONCRETE			BEARING AREA SQ. FT.		
		VERTICAL BEND DOWN			VERTICAL BEND UP		
		45°	22.5°	11.25°	45°	22.5°	11.25°
3	# 4	0.52	0.28	0.14	0.71	0.36	0.18
4		0.76	0.41	0.21	1.04	0.53	0.27
6		1.57	0.85	0.43	2.15	1.09	0.55
8		2.71	1.47	0.75	3.69	1.88	0.95
10	# 6	4.07	2.20	1.12	5.55	2.83	1.42
12	# 8	5.76	3.12	1.59	7.86	4.00	2.01
14		7.74	4.19	2.14	10.55	5.38	2.70
16	# 10	10.01	5.42	2.76	13.65	6.96	3.50
18		12.57	6.80	3.47	17.14	8.74	4.39
20	# 14	15.42	8.35	4.26	21.03	10.72	5.39
24		22.00	11.91	6.07	30.01	15.30	7.69



**CITY OF
TUALATIN, OR**

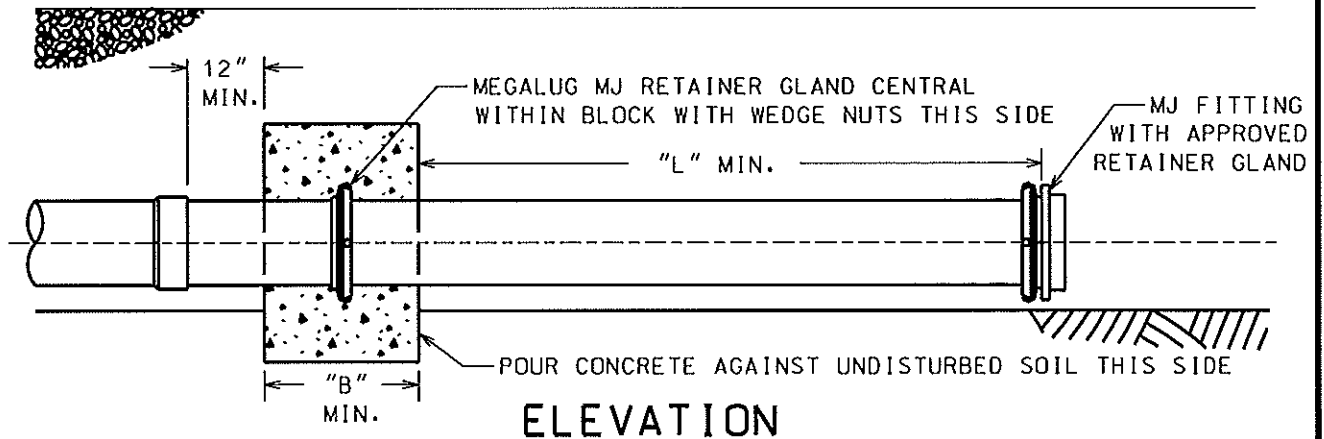
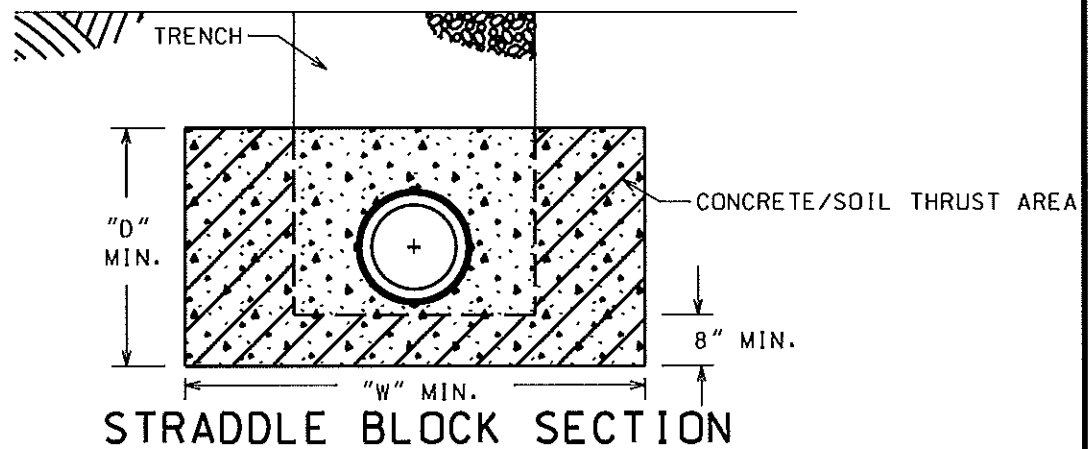
**PIPE JOINT RESTRAINT
GRAVITY THRUST BLOCKS**

REVISED: 10/2001
VALID: 7/2003

SCALE: NOT TO SCALE

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 621



NOTES:

1. DESIGN: CONCRETE 3300 PSI, SANDY SILT BEARING STRENGTH 3000 LB/SQ.FT., ANGLE INTERNAL FRICTION 25°, DENSITY 95 LB/CU.FT., TEST PRESSURE 150 LB/SQ.IN.
2. APPLY TEST PRESSURE NO LESS THAN 5 DAYS AFTER POURING CONCRETE STRADDLE BLOCK
3. IF TRENCH EXCEEDS MAXIMUM WIDTH SHOWN SUBMIT REDESIGN FOR APPROVAL
4. BLOCK SHALL PROTRUDE INTO TRENCH WALL BOTH SIDES AN EQUAL AMOUNT
5. CONCRETE 3300-1 1/2, 4-7% AIR, PROVIDE 2 CONCENTRIC HOOPS 3" RADIAL CLEARANCE

PIPE DIA.	INCHES					SQ.FT.
	"W" BLOCK WIDTH MIN.	"D" BLOCK DEPTH MIN.	"B" BLOCK THICKNESS MIN.	"L" MIN.	"T" TRENCH WIDTH MAX.	BEARING AREA
3	36	27.96	9	25	23.94	0.92
4	36	28.80	12	36	25.20	1.36
6	36	30.90	12	68	28.35	2.80
8	48	33.05	15	81	31.58	4.82
10	60	35.10	18	90	34.65	7.26
12	72	37.20	24	99	37.80	10.26
14	84	39.30	27	107	40.95	13.79
16	108	41.40	30	101	44.10	17.83
18	120	43.50	36	107	47.25	22.40
20	132	45.60	42	112	50.40	27.48
24	168	49.80	48	112	56.70	39.21



**CITY OF
TUALATIN, OR**

**PIPE JOINT RESTRAINT
STRADDLE THRUST BLOCK**

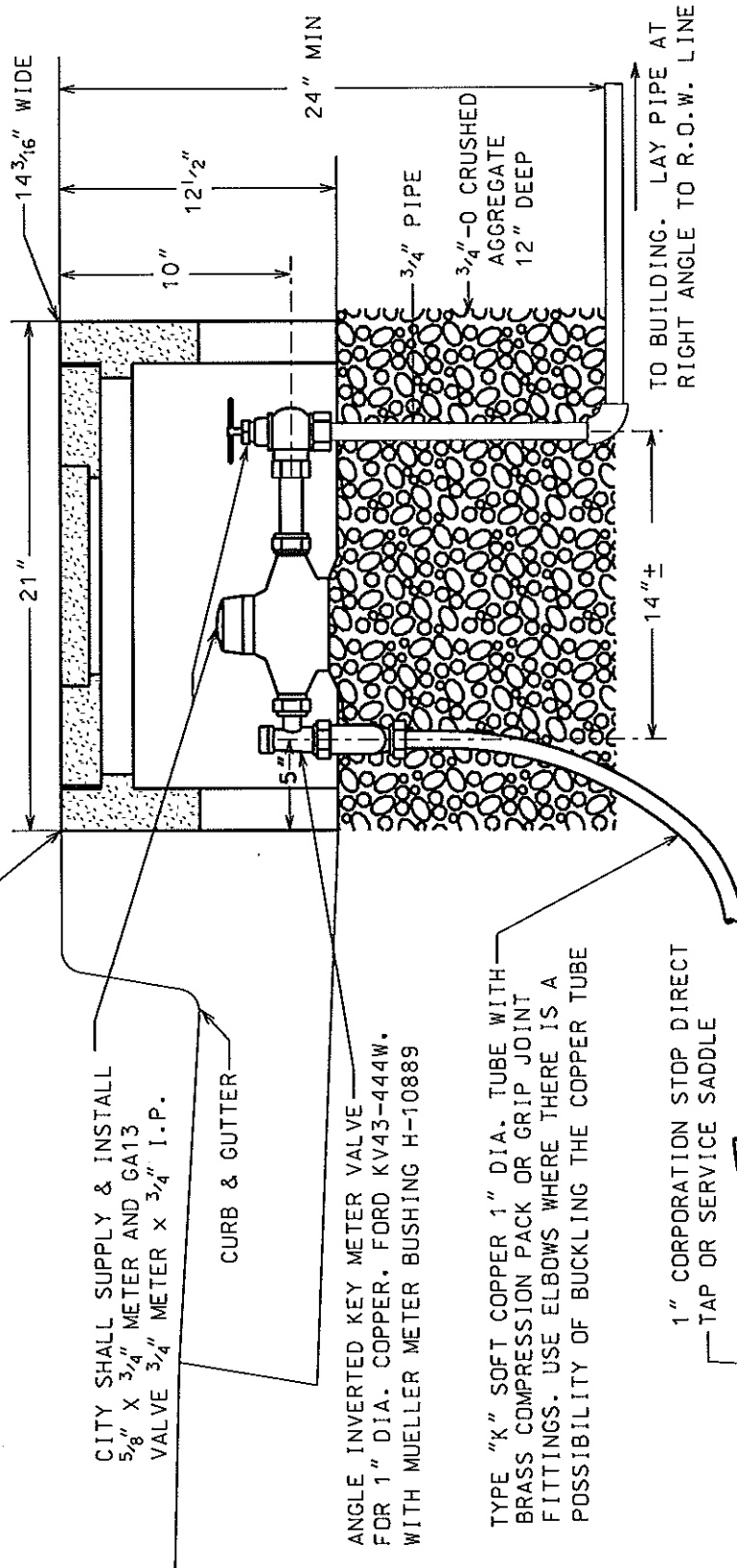
REVISED: 10/2001
VALID: 7/2003

SCALE: 1:30

DRAWN: D.L.
APPROVED: K.L.H.

DWG NO. 622

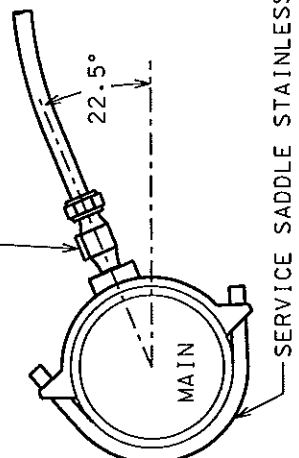
METER BOX No.	SIDEWALK	DRIVEWAY
NEWBASIS #37 12"X20"	#37	#37 D.I.
CHRISTY FL12	(APPROVED FOR PLANTER AREAS ONLY)	



FLUSH LINE AFTER CONNECTION TO CORPORATION STOP
AND BEFORE CONNECTION TO METER

NOTE:

1. MAXIMUM CONTINUOUS FLOW RATE PER METER SHALL NOT EXCEED 10 GPM
2. VALVES & FITTINGS FROM FORD OR MUELLER SHALL MEET THE REQUIREMENTS OF AWWA C-800



**CITY OF
TUALATIN, OR**

**WATER SERVICE
5/8" x 3/4" METER**

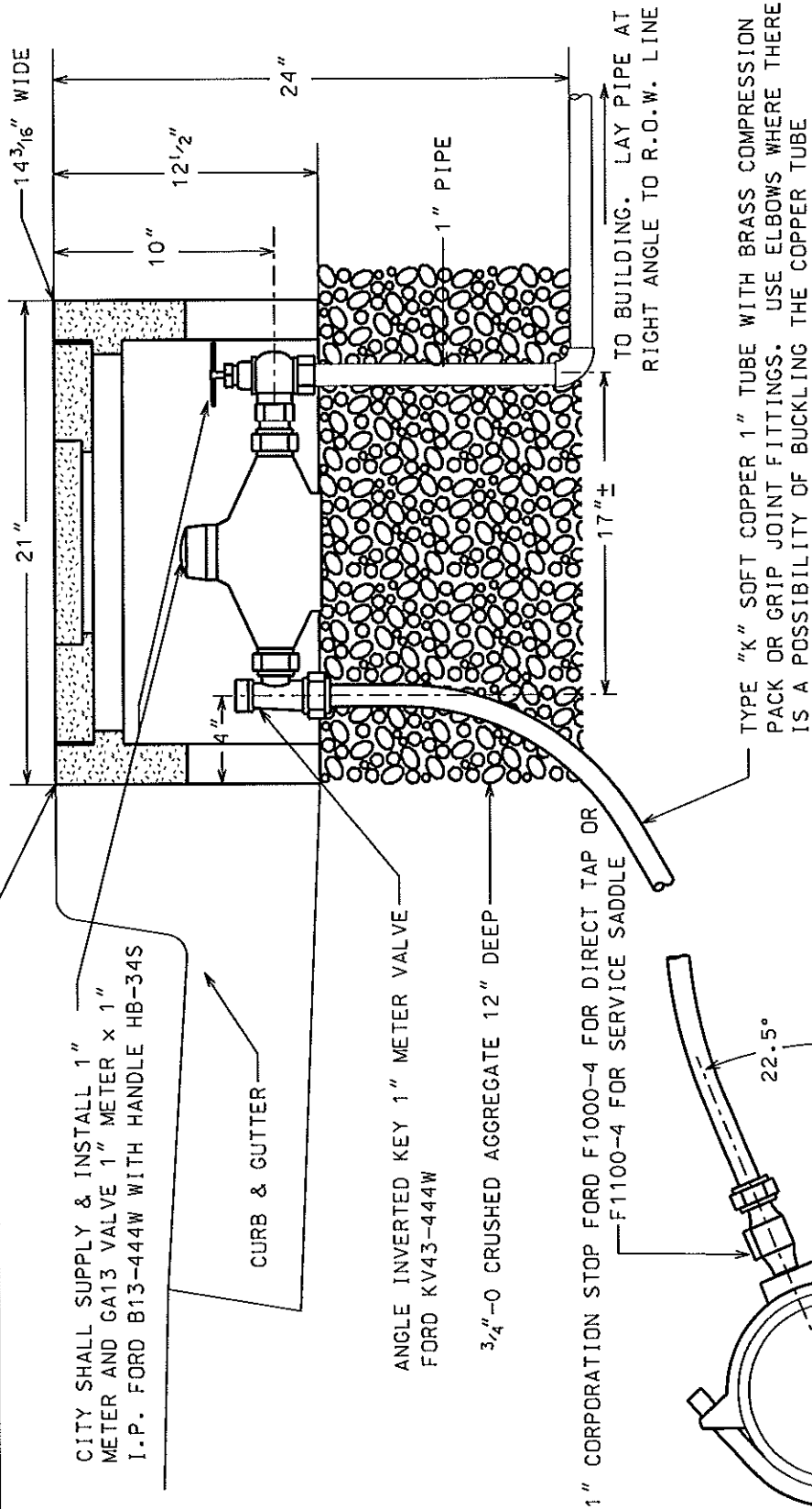
REVISED: 3/2010
VALID: 4/2010

SCALE: 1:8

DRAWN: L.V.
APPROVED: K.L.H.

DWG NO. 630

METER BOX NO.	SIDEWALK	DRIVEWAY
NEWBASIS #37 12"X20"	#37	#37 D.I.
CHRISTY FL12	FL12D	



NOTE:

1. FLUSH LINE AFTER CONNECTION TO CORPORATION STOP AND BEFORE CONNECTION TO METER
2. MAXIMUM CONTINUOUS FLOW RATE SHALL NOT EXCEED 25 GPM
3. APPROVED EQUAL VALVE & FITTINGS FROM FORD OR MUELLER SHALL MEET THE REQUIREMENTS OF AWWA C-800



**CITY OF
TUALATIN, OR**

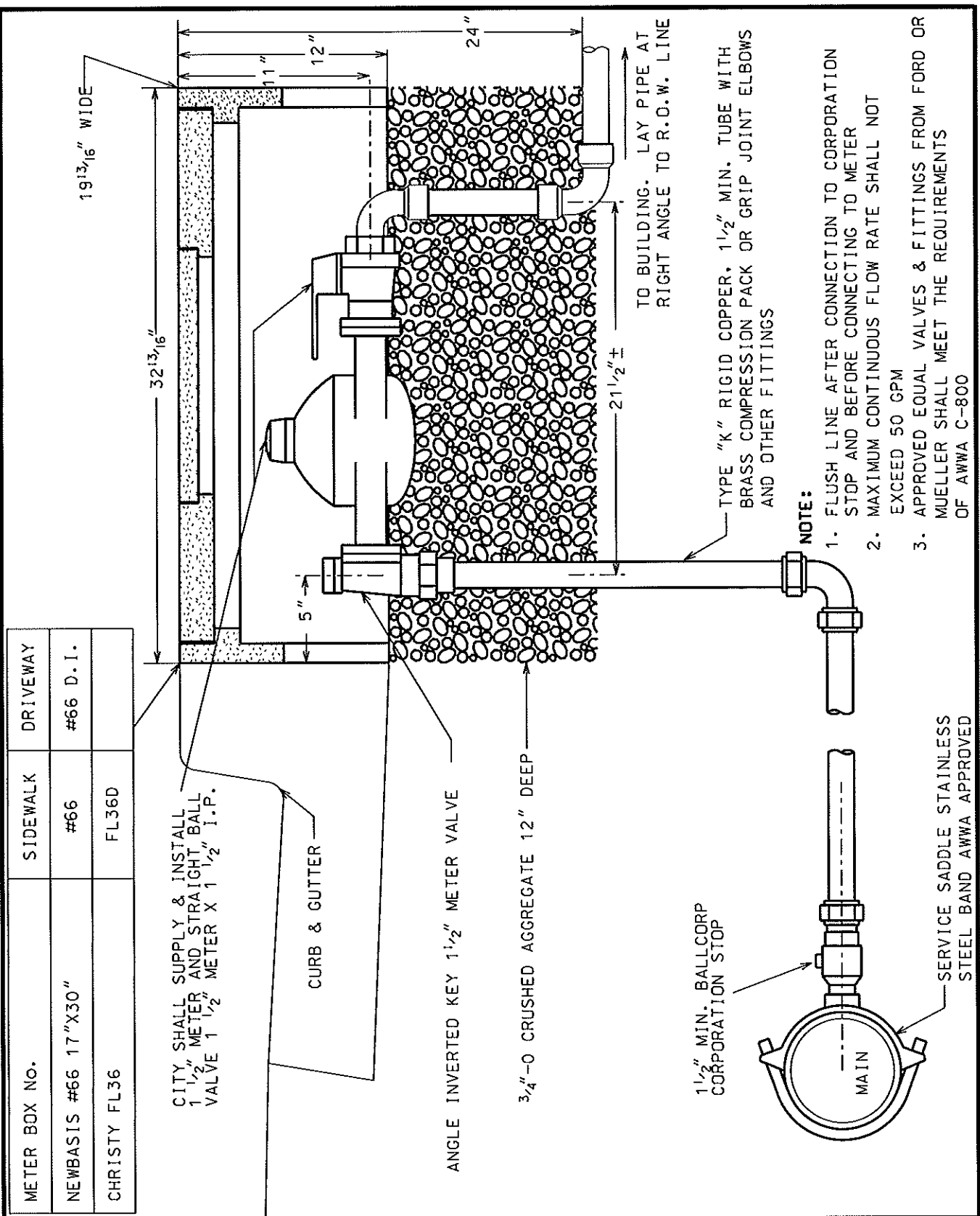
**WATER SERVICE
1" METER**

REVISED: 3/2008
VALID: 3/2008

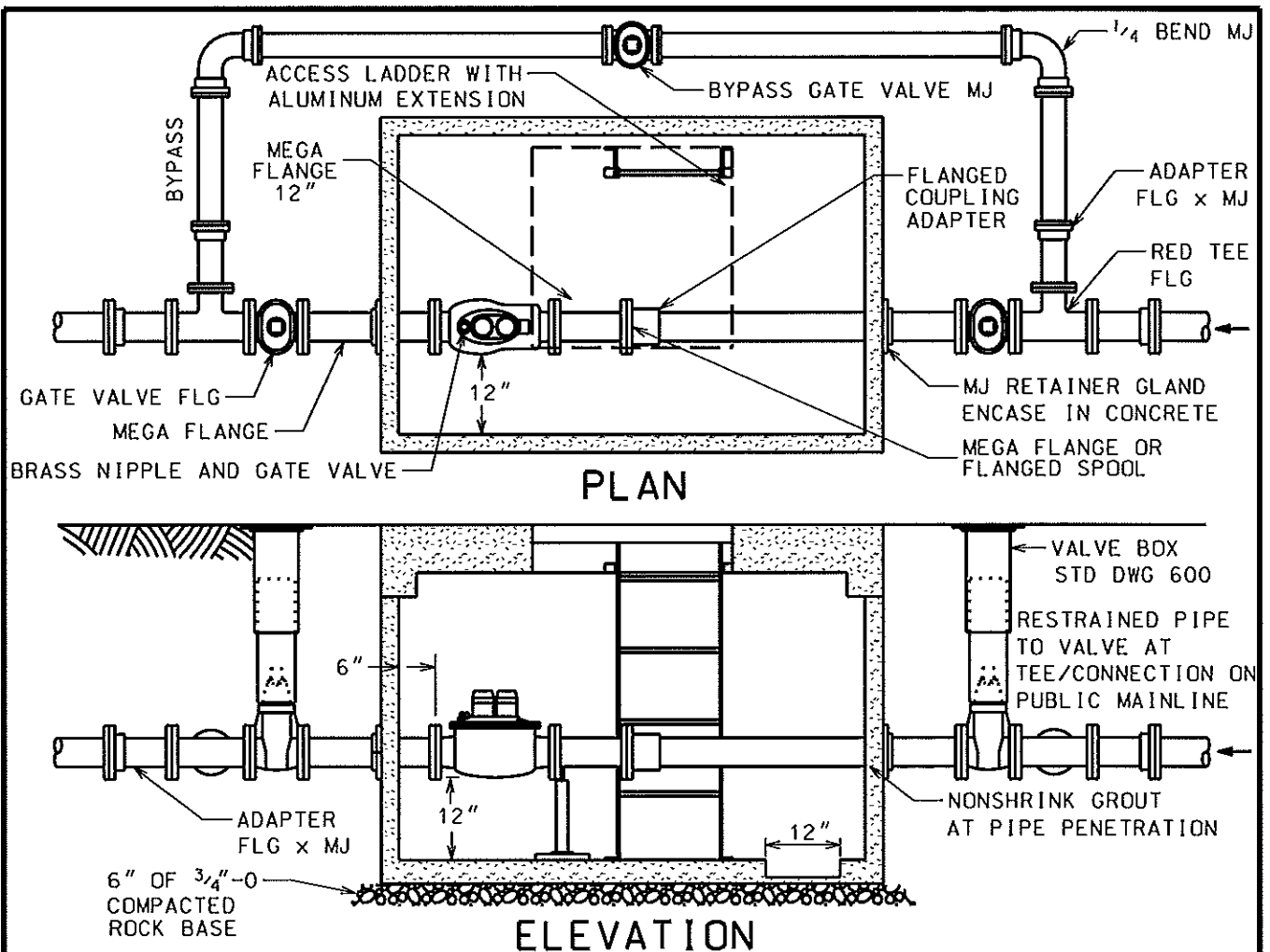
SCALE: 1:8

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. 631



 CITY OF TUALATIN, OR		WATER SERVICE 1 1/2" METER	
REVISID: 3/2008 VALID: 3/2008	SCALE: 1:8	DRAWN: S.N. APPROVED: K.L.H.	DWG NO. 632



METER SIZE	UTILITY VAULT	COVER	BY-PASS DIAMETER	MAX. CONTINUOUS FLOW RATE GPM	METER LENGTH
3"	575-LA	1-332P	4"	320	17"
4"	575-LA	1-332P	4"	500	20"
6"	575-LA	1-332P	4"	1000	24"
8"	675-WA	2-332P	6"	1600	55 ³ / ₈ "

NOTES:

1. USE DUCTILE IRON PIPE CL 52 THROUGH VAULT AND BYPASS
2. NEPTUNE TRU/FLO COMPOUND METER COMPLYING WITH AWWA C702 READING IN 100 CUBIC FEET AND INCORPORATING A NEPTUNE PROREAD ENCODER WITH EACH PIT RECEPTACLE FASTENED TO THE VAULT TOP WITH TWO S.S. ANCHOR BOLTS, LABEL S AND L. ELECTRICAL WIRING FED THROUGH HOLES DRILLED IN CONCRETE TOP AND NEATLY SPIRAL WRAP PROTECTED AND TIED. PROVIDE CERTIFIED TEST FOR METER AND ENCODER BEFORE ACCEPTANCE.
3. PROVIDE MANUFACTURED ADJUSTABLE GALVANIZED STEEL SUPPORT AT INLET END OF METER
4. USE APPROVED RETAINER GLANDS WITH MJ FITTINGS. USE NO THRUST BLOCKS OR RODS.
5. MEGA FLANGES MAY BE USED IN PLACE OF FLANGED SPOOLS
6. PROVIDE RULE A53S SUMP PUMP WITH 1" PVC CHECK VALVE AND PIPE DISCHARGE TO DAYLIGHT. SUPPLY POWER THRU GFCI WALL MOUNT INTERNALLY 12" BELOW CEILING.



**CITY OF
TUALATIN, OR**

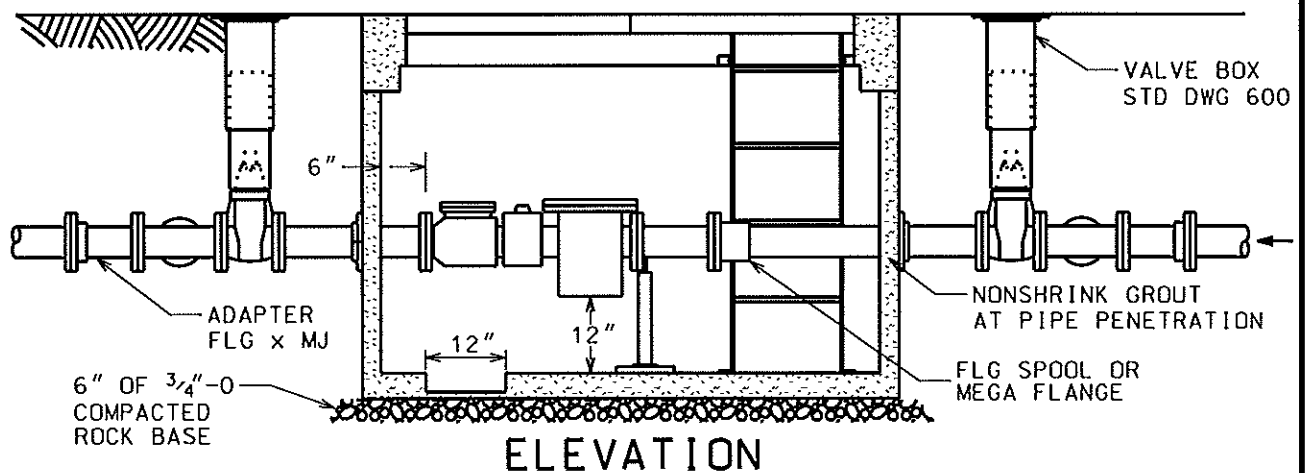
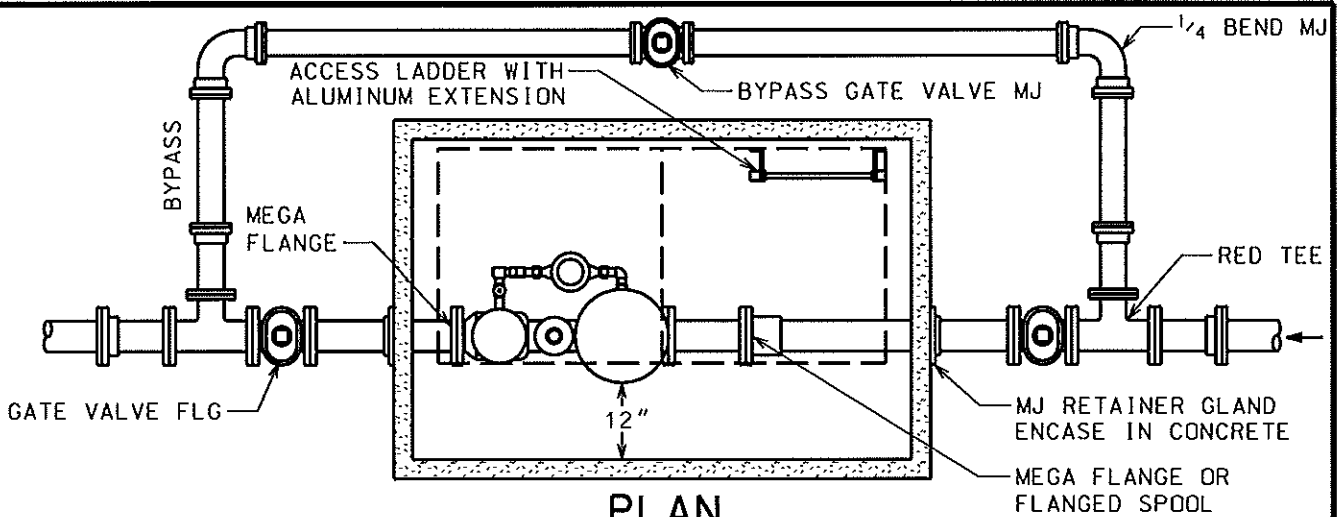
**3" WATER SERVICE
AND LARGER METER
COMPOUND TYPE**

REVISED: 3/2008
VALID: 3/2008

SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. **634**



METER SIZE	UTILITY VAULT	COVER	BY-PASS DIAMETER	MAXIMUM FLOW RATE GPM
4"	575-WA	2-332P	4"	700
6"	575-WA	2-332P	4"	1600
8"	675-WA	2-332P	6"	2800
10"	5106-WA	3-332P	8"	4400

NOTES:

1. USE DUCTILE IRON PIPE CL 52 THROUGH VAULT AND BYPASS
2. NEPTUNE HP PROTECTUS III METER COMPLYING WITH AWWA C703 READING IN 100 CUBIC FEET AND INCORPORATING A NEPTUNE PROREAD ENCODER WITH EACH PIT RECEPTACLE FASTENED TO THE VAULT TOP WITH TWO S.S. ANCHOR BOLTS, LABEL S. AND L. ELECTRICAL WIRING FED THROUGH HOLES DRILLED IN CONCRETE TOP AND NEATLY SPIRAL WRAP PROTECTED AND TIED. PROVIDE CERTIFIED TEST OF METER AND ENCODER BEFORE ACCEPTANCE.
3. PROVIDE MANUFACTURED ADJUSTABLE GALVANIZED STEEL SUPPORT AT INLET END OF METER
4. USE APPROVED RETAINER GLANDS WITH MJ FITTINGS. USE NO THRUST BLOCKS OR RODS
5. MEGA FLANGES MAY BE USED IN PLACE OF FLANGED SPOOLS
6. PROVIDE RULE A53S SUMP PUMP WITH 1" PVC CHECK VALVE AND PIPE DISCHARGE TO DAYLIGHT. SUPPLY POWER THRU GFCI WALL MOUNT INTERNAL 12" BELOW CEILING.



**CITY OF
TUALATIN, OR**

**WATER SERVICE
4" AND LARGER METER
FIRE SERVICE TYPE**

REVISED: 3/2008
VALID: 3/2008

SCALE: 1:30

DRAWN: S.N.
APPROVED: K.L.H.

DWG NO. **635**