

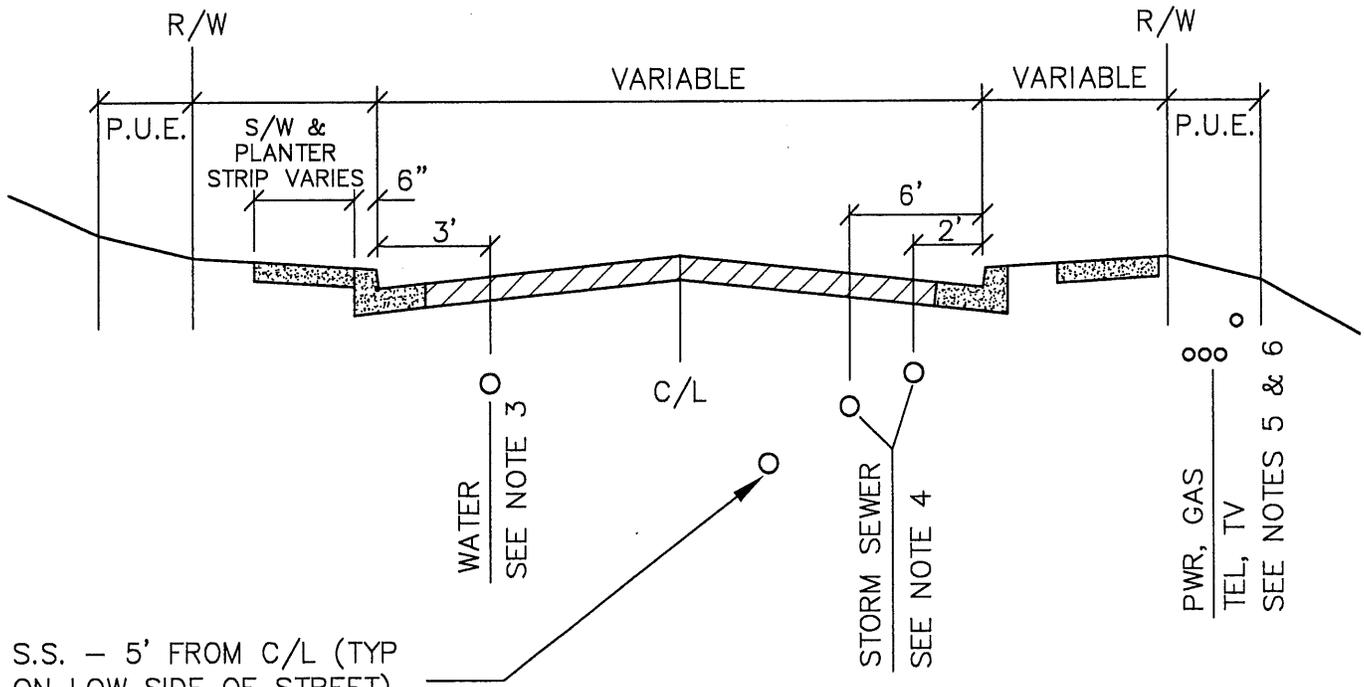
CITY OF SILVERTON
Public Works Design Standards

Standard Detail Drawings

Appendix A

Note:

1) Per PWDS 1.10.b.9, the applicable City standard details shall be included on construction drawings submitted for City review and approval.



S.S. - 5' FROM C/L (TYP ON LOW SIDE OF STREET).
 SEE NOTES 1 & 2. (3' MIN CLEAR SEPARATION BETWEEN SEWER & STORM MAINS)

CURBED STREETS

NTS

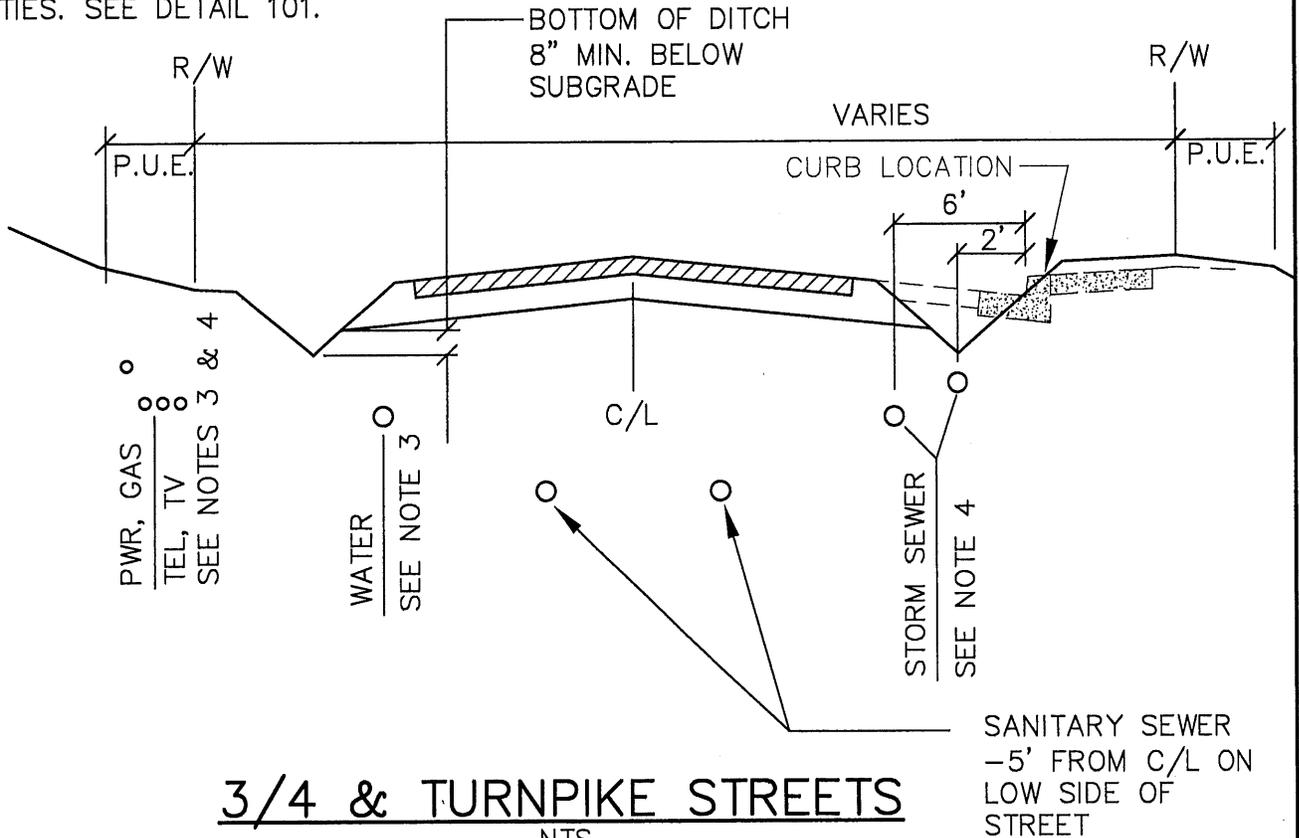
NOTES:

1. 6' MIN COVER REQUIRED FOR SANITARY SEWER MAINS (4' MIN. COVER TYPICALLY REQUIRED FOR SEWER SERVICE LATERALS W/IN RIGHT-OF-WAY).
2. LATERALS AND P/L CLEANOUTS TO BE INSTALLED DURING CONSTRUCTION OF SANITARY SEWER & STORM MAINS (TO AVOID FUTURE STREET CUTS).
3. WATER TO BE INSTALLED 3' IN FRONT OF FACE OF CURB ON HIGH SIDE OF STREET, UNLESS OTHERWISE REQUIRED BY THE PUBLIC WORKS DIRECTOR. 36" MIN. COVER ON ALL WATERLINES. 10' MINIMUM SEPARATION TYPICAL BETWEEN PARALLEL WATER & SEWER MAINS.
4. STORM SEWER TO BE INSTALLED ON LOW SIDE OF STREET:
 - a) 2' FROM FACE OF CURB FOR <4' RIM TO INVERT
 - b) 6' FROM FACE OF CURB FOR >4' RIM TO INVERT (MH SYSTEM)
5. MAINTAIN MIN. 3' HORIZ. SEPARATION BETWEEN PUBLIC UTILITIES & PARALLEL PRIVATE UTILITIES. OTHER VERTICAL AND HORIZONTAL SEPARATION DISTANCES SHALL BE AS SPECIFIED BY DEQ, ODWP, OR OTHER PUBLIC/PRIVATE UTILITY COMPANIES.
6. UNITY TRENCH PER FRANCHISE UTILITY COMPANY REQUIREMENTS, GENERALLY ON THE OPPOSITE SIDE OF STREET FROM WATERLINE WHERE FEASIBLE.

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TYP. UTILITY LOCATIONS (CURBED STREETS)	
(NTS)	
SILVERTON, OR	DETAIL NO. 101

NOTE:

UTILITIES FOR 3/4 STREET IMPROVEMENTS OR EXISTING TURNPIKE STREETS SHALL BE LOCATED TO ALLOW FUTURE CONSTRUCTION OF CURBED STREETS WITHOUT RELOCATING UTILITIES. SEE DETAIL 101.

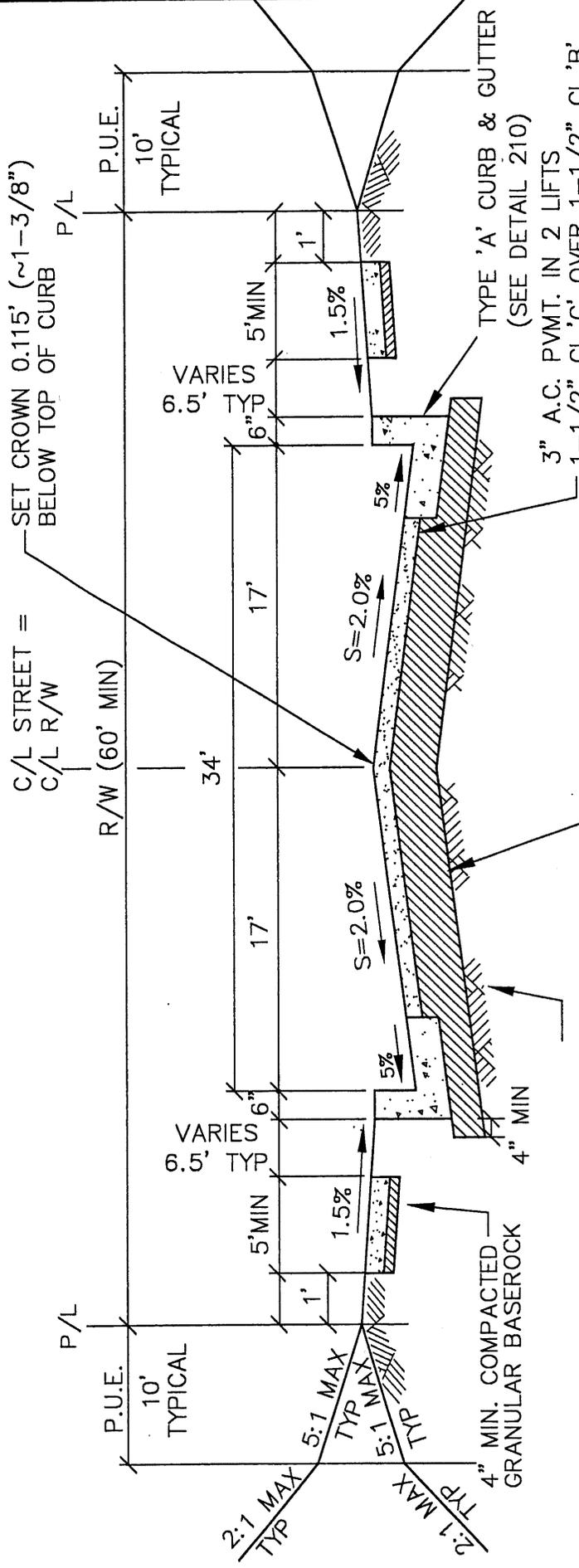


3/4 & TURNPIKE STREETS
NTS

NOTES:

1. 6' MIN COVER REQUIRED FOR SANITARY SEWER MAINS (4' MIN. COVER TYPICALLY REQUIRED FOR LATERALS).
2. LATERALS AND P/L CLEANOUTS TO BE INSTALLED DURING CONSTRUCTION OF SANITARY SEWER & STORM MAINS (TO AVOID FUTURE STREET CUTS).
3. WATER TO BE INSTALLED ON HIGH SIDE OF STREET, 3' IN FRONT OF FACE OF CURB ON IMPROVED SIDE OR 3' IN FRONT OF FUTURE FACE OF CURB LOCATION, UNLESS OTHERWISE REQUIRED BY THE PUBLIC WORKS DIRECTOR. 10' MINIMUM SEPARATION TYPICAL BETWEEN PARALLEL WATER & SEWER MAINS.
4. FOR 3/4 STREETS, STORM SEWER TO BE INSTALLED ON IMPROVED SIDE OF STREET, UNLESS OTHERWISE REQUIRED BY THE PUBLIC WORKS DIRECTOR:
 - a) 2' FROM FACE OF CURB FOR <4' RIM TO INVERT
 - b) 6' FROM FACE OF CURB FOR >4' RIM TO INVERT (MH SYSTEM)
5. MAINTAIN MIN. 3' HORIZ. SEPARATION BETWEEN PUBLIC UTILITIES & PARALLEL PRIVATE UTILITIES. OTHER VERTICAL AND HORIZONTAL SEPARATION DISTANCES SHALL BE AS SPECIFIED BY DEQ, ODWP, OR OTHER PUBLIC/PRIVATE UTILITY COMPANIES.
6. UNITY TRENCH PER UTILITY COMPANY REQUIREMENTS, GENERALLY ON THE OPPOSITE SIDE OF STREET FROM WATER LINE WHERE FEASIBLE.

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TYP. UTILITY LOCATIONS (TURNPIKE AND 3/4 STREETS)	
(NTS)	
SILVERTON, OR	DETAIL NO. 102



C/L STREET =
C/L R/W
R/W (60' MIN)
P.U.E. 10'
TYPICAL
P/L

SET CROWN 0.115' (~1-3/8")
BELOW TOP OF CURB

VARIES
6.5' TYP

VARIES
6.5' TYP

TYPE 'A' CURB & GUTTER
(SEE DETAIL 210)

3" A.C. PVMT. IN 2 LIFTS
1-1/2" CL.C' OVER 1-1/2" CL.B'
(COMPACT TO 91% OPTIMUM PER
RICE STANDARD METHOD)

10" OF 1"-0" GRANULAR BASEROCK
(COMPACT TO 95% OPTIMUM PER AASHTO T-180)

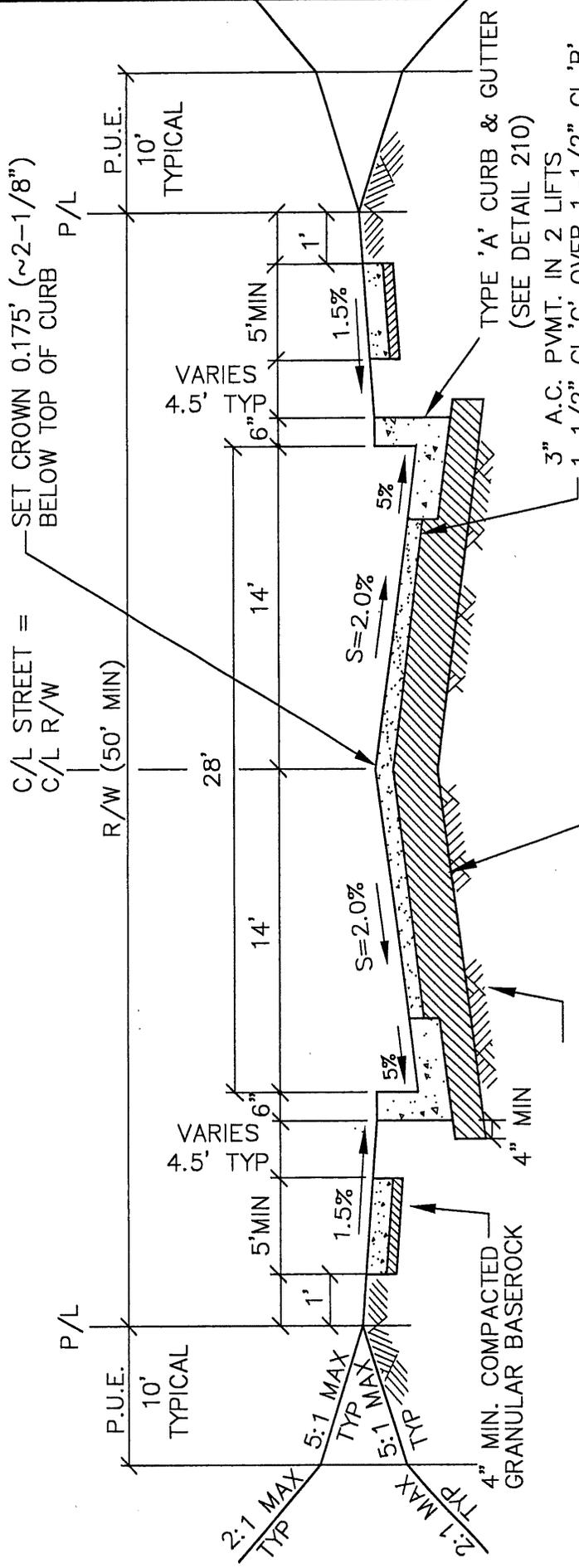
ALT: 2" OF 3/4"-0" GRANULAR BASEROCK OVER
10" OF 1-1/2"-0" GRANULAR BASEROCK.

-BASE LIFT AC - 3/4" DENSE
GRADED MIX (LEVEL 2 JMF).
-TOP LIFT AC - 1/2" DENSE
GRADED MIX (LEVEL 2 JMF).

NOTES:

1. ALL DESIGN SUBGRADES SHALL BE COMPACTED AND PROOF-ROLLED PRIOR TO PLACEMENT OF BASEROCK. COMPACTION TESTING OF SUBGRADE MAY BE WAIVED AS OUTLINED UNDER NOTE 3.
2. IF SUBGRADE FAILS THE PROOF-ROLL, SUBGRADE SHALL BE OVEREXCAVATED TO UNDISTURBED SOIL AND BACKFILLED WITH BASEROCK OVER GEOTEXTILE REINFORCEMENT FABRIC (AS SPECIFIED) TO ALLOW COMPACTION OF UPPER (DESIGN) BASEROCK SECTION AND TO MAINTAIN STRUCTURAL INTEGRITY OF NATIVE SUBGRADE SOILS. TYPICAL MIN. OVEREXCAVATION REQUIRED IS 12-INCHES. NO RUBBER Tired EQUIPMENT ALLOWED ON SUBGRADE FOLLOWING OVEREXCAVATION.
3. IF SUBGRADE PASSES PROOF-ROLL BUT CANNOT BE COMPACTED TO 95% OPTIMUM DENSITY PER AASHTO T-180 (OR IF CONTRACTOR CHOOSES NOT TO TEST), GEOTEXTILE SEPARATION FABRIC (AS SPECIFIED) SHALL BE PLACED ON THE SUBGRADE PRIOR TO PLACEMENT OF THE BASEROCK.
4. REINFORCEMENT FABRIC (FOR USE W/OVEREXCAVATION): NON-WOVEN (MIRAFI 1000N, GEOTEX 1001, LINQ 250EX OR EQUAL), WOVEN (MIRAFI 550X, GEOTEX 250ST, LINQ GTF250 OR EQUAL). SEPARATION FABRIC: NON-WOVEN (MIRAFI 160N, GEOTEX 601, LINQ 150EX OR EQUAL), WOVEN (MIRAFI 500X, GEOTEX 200ST, LINQ GTF200 OR EQUAL).

LAST REVISION DATE: NOV 2015		COPYRIGHT 1996 WESTECH ENGINEERING, INC.	
34' LOCAL STREET (PARKING BOTH SIDES) MINIMUM SECTION (NTS)			
SILVERTON, OR		DETAIL NO. 201	

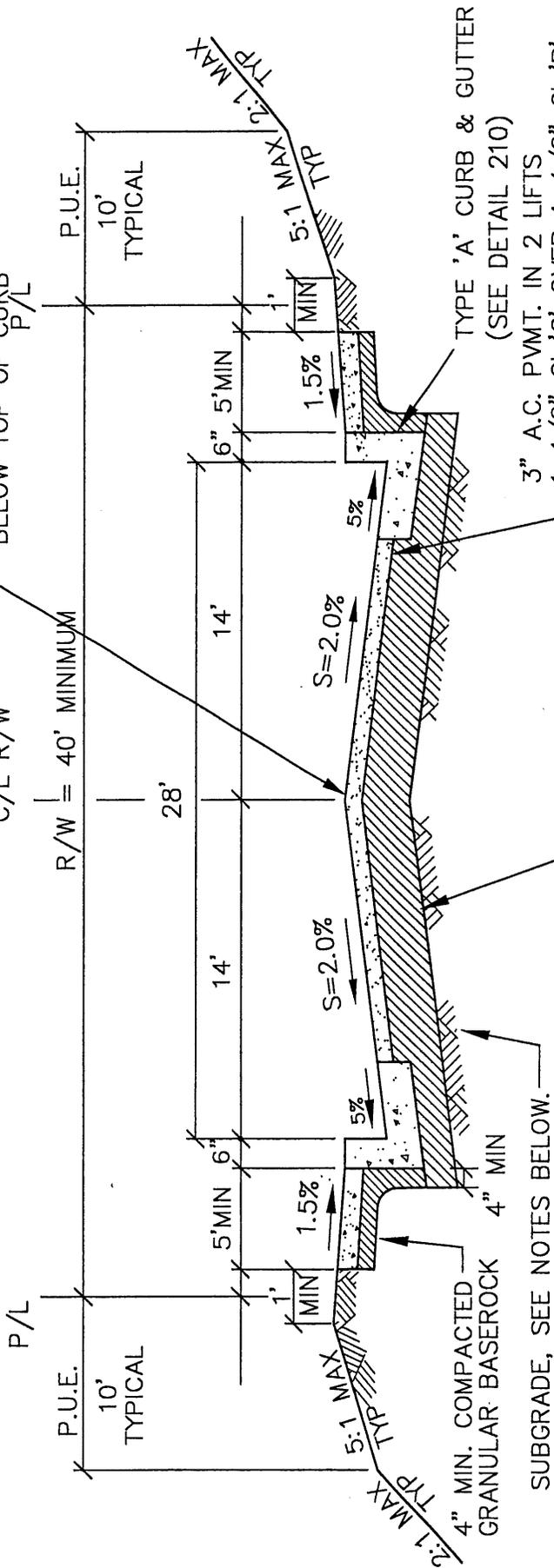


-BASE LIFT AC - 3/4" DENSE GRADED MIX (LEVEL 2 JMF).
 -TOP LIFT AC - 1/2" DENSE GRADED MIX (LEVEL 2 JMF).
 ALT: 2" OF 3/4"-0" GRANULAR BASEROCK OVER 10" OF 1-1/2"-0" GRANULAR BASEROCK.

- NOTES:
1. ALL DESIGN SUBGRADES SHALL BE COMPACTED AND PROOF-ROLLED PRIOR TO PLACEMENT OF BASEROCK. COMPACTION TESTING OF SUBGRADE MAY BE WAIVED AS OUTLINED UNDER NOTE 3.
 2. IF SUBGRADE FAILS THE PROOF-ROLL, SUBGRADE SHALL BE OVEREXCAVATED TO UNDISTURBED SOIL AND BACKFILLED WITH BASEROCK OVER GEOTEXTILE REINFORCEMENT FABRIC (AS SPECIFIED) TO ALLOW COMPACTION OF UPPER (DESIGN) BASEROCK SECTION AND TO MAINTAIN STRUCTURAL INTEGRITY OF NATIVE SUBGRADE SOILS. TYPICAL MIN. OVEREXCAVATION REQUIRED IS 12-INCHES. NO RUBBER Tired EQUIPMENT ALLOWED ON SUBGRADE FOLLOWING OVEREXCAVATION.
 3. IF SUBGRADE PASSES PROOF-ROLL BUT CANNOT BE COMPACTED TO 95% OPTIMUM DENSITY PER AASHTO T-180 (OR IF CONTRACTOR CHOOSES NOT TO TEST), GEOTEXTILE SEPARATION FABRIC (AS SPECIFIED) SHALL BE PLACED ON THE SUBGRADE PRIOR TO PLACEMENT OF THE BASEROCK.
 4. REINFORCEMENT FABRIC (FOR USE W/OVEREXCAVATION): NON-WOVEN (MIRAFI 1000N, GEOTEX 1001, LINQ 250EX OR EQUAL), WOVEN (MIRAFI 550X, GEOTEX 250ST, LINQ GTF250 OR EQUAL). SEPARATION FABRIC: NON-WOVEN (MIRAFI 160N, GEOTEX 601, LINQ 150EX OR EQUAL), WOVEN (MIRAFI 500X, GEOTEX 200ST, LINQ GTF200 OR EQUAL).

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28' LOCAL STREET (PARKING ONE SIDE) MINIMUM SECTION (NTS)			
SILVERTON, OR		DETAIL NO. 201A	

C/L STREET =
C/L R/W
R/W = 40' MINIMUM
P/L
P.U.E. 10' TYPICAL
10' TYPICAL
P.U.E. 10' TYPICAL



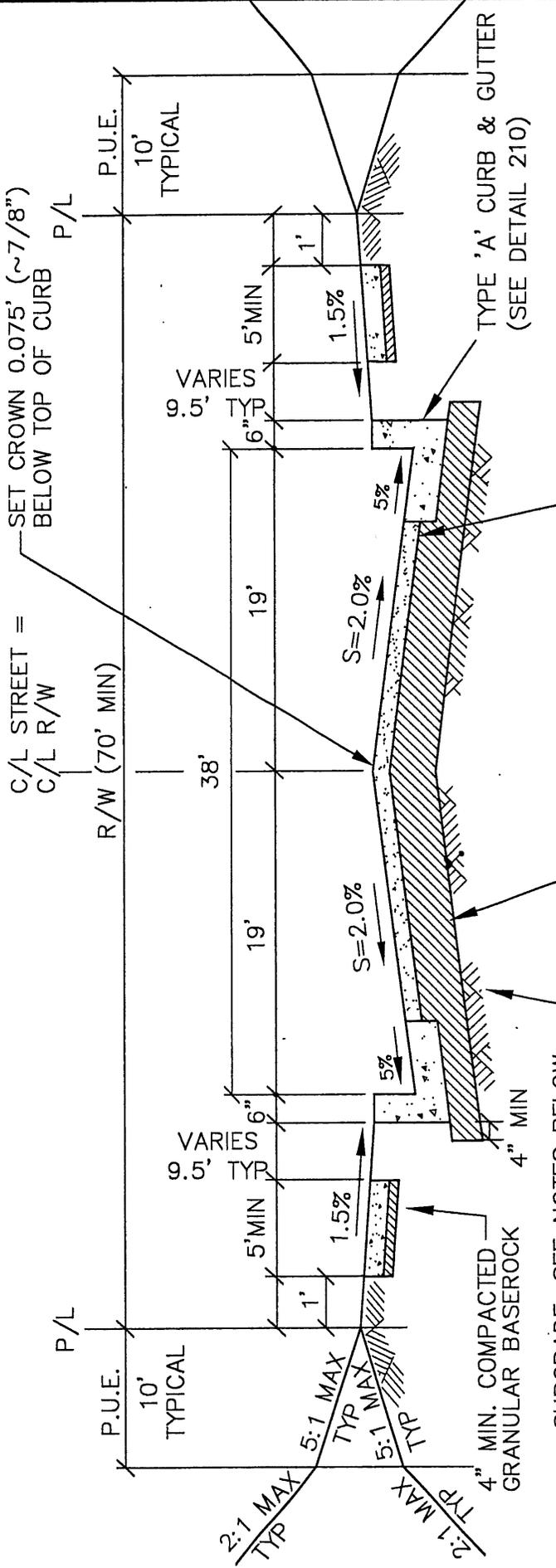
4" MIN. COMPACTED GRANULAR BASEROCK 4" MIN
SUBGRADE, SEE NOTES BELOW.
-BASE LIFT AC - 3/4" DENSE GRADED MIX (LEVEL 2 JMF).
-TOP LIFT AC - 1/2" DENSE GRADED MIX (LEVEL 2 JMF).
10" OF 1"-0" GRANULAR BASEROCK (COMPACT TO 95% OPTIMUM PER AASHTO T-180)
3" A.C. PVMT. IN 2 LIFTS 1-1/2" CL.C' OVER 1-1/2" CL.'B' (COMPACT TO 91% OPTIMUM PER RICE STANDARD METHOD)

ALT: 2" OF 3/4"-0" GRANULAR BASEROCK OVER 8" OF 1-1/2"-0" GRANULAR BASEROCK.

NOTES:

1. ALL DESIGN SUBGRADES SHALL BE COMPACTED AND PROOF-ROLLED PRIOR TO PLACEMENT OF BASEROCK. COMPACTION TESTING OF SUBGRADE MAY BE WAIVED AS OUTLINED UNDER NOTE 3.
2. IF SUBGRADE FAILS THE PROOF-ROLL, SUBGRADE SHALL BE OVEREXCAVATED TO UNDISTURBED SOIL AND BACKFILLED WITH BASEROCK OVER GEOTEXTILE REINFORCEMENT FABRIC (AS SPECIFIED) TO ALLOW COMPACTION OF UPPER (DESIGN) BASEROCK SECTION AND TO MAINTAIN STRUCTURAL INTEGRITY OF NATIVE SUBGRADE SOILS. TYPICAL MIN. OVEREXCAVATION REQUIRED IS 12-INCHES. NO RUBBER Tired EQUIPMENT ALLOWED ON SUBGRADE FOLLOWING OVEREXCAVATION.
3. IF SUBGRADE PASSES PROOF-ROLL BUT CANNOT BE COMPACTED TO 95% OPTIMUM DENSITY PER AASHTO T-180 (OR IF CONTRACTOR CHOOSES NOT TO TEST), GEOTEXTILE SEPARATION FABRIC (AS SPECIFIED) SHALL BE PLACED ON THE SUBGRADE PRIOR TO PLACEMENT OF THE BASEROCK.
4. REINFORCEMENT FABRIC (FOR USE W/OVEREXCAVATION): NON-WOVEN (MIRAFI 1000N, GEOTEX 1001, LINQ 250EX OR EQUAL), WOVEN (MIRAFI 550X, GEOTEX 250ST, LINQ GTF250 OR EQUAL). SEPARATION FABRIC: NON-WOVEN (MIRAFI 160N, GEOTEX 601, LINQ 150EX OR EQUAL), WOVEN (MIRAFI 500X, GEOTEX 200ST, LINQ GTF200 OR EQUAL).

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28' LOCAL STR (HILLSIDE/ LOW VOL, PARKING ONE SIDE) MINIMUM SECTION (NTS)	
SILVERTON, OR	DETAIL NO. 201B



SET CROWN 0.075' (~7/8") BELOW TOP OF CURB P/L

R/W (70' MIN)

38'

19'

19'

S=2.0%

S=2.0%

5%

5%

4" MIN. COMPACTED GRANULAR BASEROCK

4" A.C. PVMT. IN 2 LIFTS
2" CL.'C' OVER 2" CL.'B'
(COMPACT TO 91% OPTIMUM PER RICE STANDARD METHOD)

TYPE 'A' CURB & GUTTER
(SEE DETAIL 210)

10' TYPICAL

P.U.E.

10' TYPICAL

P.U.E.

VARIES

9.5' TYP

6"

5' MIN

1.5%

1"

5'

5%

5:1 MAX TYP

5:1 MAX TYP

2:1 MAX TYP

2:1 MAX TYP

SUBGRADE, SEE NOTES BELOW.

-BASE LIFT AC - 3/4" DENSE GRADED MIX (LEVEL 3 JMF).

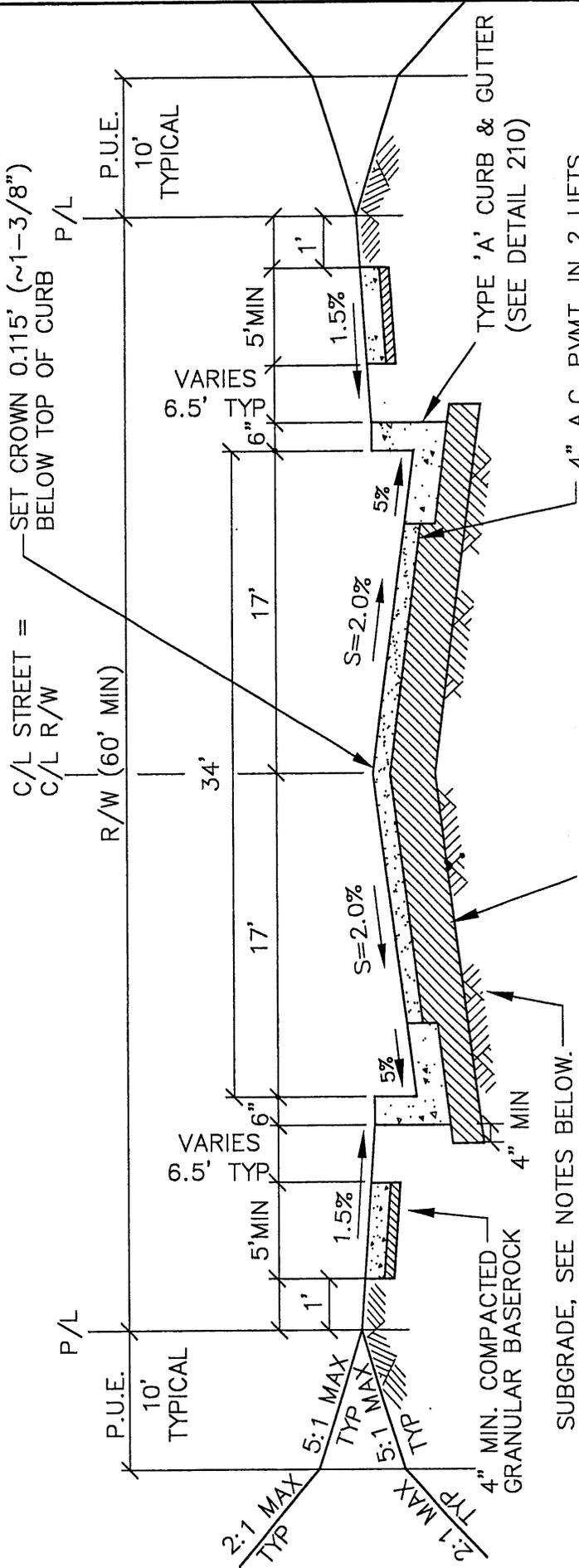
-TOP LIFT AC - 1/2" DENSE GRADED MIX (LEVEL 3 JMF).

ALT: 2" OF 3/4"-0" GRANULAR BASEROCK OVER 10" OF 1-1/2"-0" GRANULAR BASEROCK.

NOTES:

1. ALL DESIGN SUBGRADES SHALL BE COMPACTED AND PROOF-ROLLED PRIOR TO PLACEMENT OF BASEROCK. COMPACTION TESTING OF SUBGRADE MAY BE WAIVED AS OUTLINED UNDER NOTE 3.
2. IF SUBGRADE FAILS THE PROOF-ROLL, SUBGRADE SHALL BE OVEREXCAVATED TO UNDISTURBED SOIL AND BACKFILLED WITH BASEROCK OVER GEOTEXTILE REINFORCEMENT FABRIC (AS SPECIFIED) TO ALLOW COMPACTION OF UPPER (DESIGN) BASEROCK SECTION AND TO MAINTAIN STRUCTURAL INTEGRITY OF NATIVE SUBGRADE SOILS. TYPICAL MIN. OVEREXCAVATION REQUIRED IS 12-INCHES. NO RUBBER Tired EQUIPMENT ALLOWED ON SUBGRADE FOLLOWING OVEREXCAVATION.
3. IF SUBGRADE PASSES PROOF-ROLL BUT CANNOT BE COMPACTED TO 95% OPTIMUM DENSITY PER AASHTO T-180 (OR IF CONTRACTOR CHOOSES NOT TO TEST), GEOTEXTILE SEPARATION FABRIC (AS SPECIFIED) SHALL BE PLACED ON THE SUBGRADE PRIOR TO PLACEMENT OF THE BASEROCK.
4. REINFORCEMENT FABRIC (FOR USE W/OVEREXCAVATION): NON-WOVEN (MIRAFI 1000N, GEOTEX 1001, LINQ 250EX OR EQUAL), WOVEN (MIRAFI 550X, GEOTEX 250ST, LINQ GTF250 OR EQUAL). SEPARATION FABRIC: NON-WOVEN (MIRAFI 160N, GEOTEX 601, LINQ 150EX OR EQUAL), WOVEN (MIRAFI 500X, GEOTEX 200ST, LINQ GTF200 OR EQUAL).

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38' RESIDENTIAL COLLECTOR (BIKE LANES & NO PARKING) MINIMUM SECTION			
(NTS)			
SILVERTON, OR		DETAIL NO. 202	



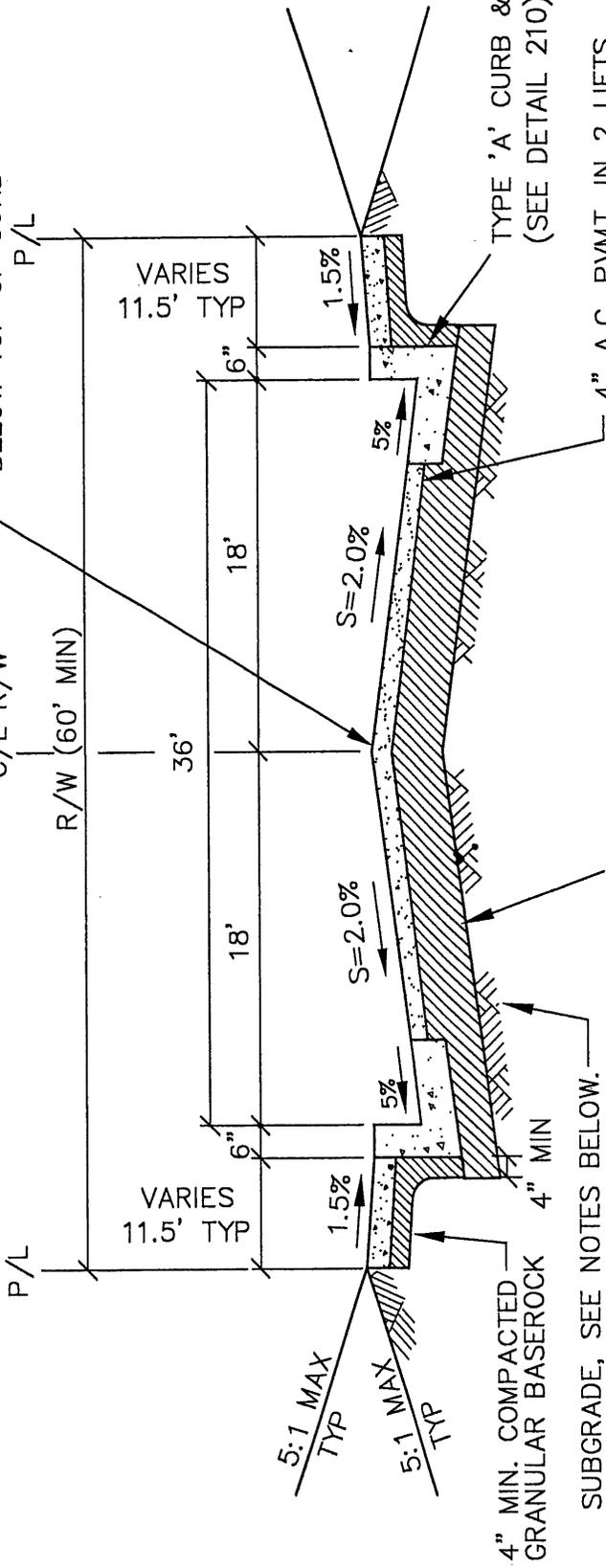
C/L STREET =
 C/L R/W
 R/W (60' MIN)
 P.U.E. 10' TYPICAL
 P/L 10' TYPICAL
 SET CROWN 0.115' (~1-3/8") BELOW TOP OF CURB
 VARIES 0.5' TYP
 5' MIN
 1.5%
 1'
 5%
 17'
 17'
 34'
 6"
 6"
 2:1 MAX TYP
 5:1 MAX TYP
 5:1 MAX TYP
 2:1 MAX TYP
 4" MIN. COMPACTED GRANULAR BASEROCK
 4" A.C. PVMT. IN 2 LIFTS
 2" CL.'C' OVER 2" CL.'B'
 (COMPACT TO 91% OPTIMUM PER RICE STANDARD METHOD)
 TYPE 'A' CURB & GUTTER (SEE DETAIL 210)
 SUBGRADE, SEE NOTES BELOW.
 -BASE LIFT AC - 3/4" DENSE GRADED MIX (LEVEL 3 JMF).
 -TOP LIFT AC - 1/2" DENSE GRADED MIX (LEVEL 3 JMF).
 ALT: 2" OF 3/4"-0" GRANULAR BASEROCK OVER 10" OF 1-1/2"-0" GRANULAR BASEROCK.

- NOTES:**
1. ALL DESIGN SUBGRADES SHALL BE COMPACTED AND PROOF-ROLLED PRIOR TO PLACEMENT OF BASEROCK. COMPACTION TESTING OF SUBGRADE MAY BE WAIVED AS OUTLINED UNDER NOTE 3.
 2. IF SUBGRADE FAILS THE PROOF-ROLL, SUBGRADE SHALL BE OVEREXCAVATED TO UNDISTURBED SOIL AND BACKFILLED WITH BASEROCK OVER GEOTEXTILE REINFORCEMENT FABRIC (AS SPECIFIED) TO ALLOW COMPACTION OF UPPER (DESIGN) BASEROCK SECTION AND TO MAINTAIN STRUCTURAL INTEGRITY OF NATIVE SUBGRADE SOILS. TYPICAL MIN. OVEREXCAVATION REQUIRED IS 12-INCHES. NO RUBBER Tired EQUIPMENT ALLOWED ON SUBGRADE FOLLOWING OVEREXCAVATION.
 3. IF SUBGRADE PASSES PROOF-ROLL BUT CANNOT BE COMPACTED TO 95% OPTIMUM DENSITY PER AASHTO T-180 (OR IF CONTRACTOR CHOOSES NOT TO TEST), GEOTEXTILE SEPARATION FABRIC (AS SPECIFIED) SHALL BE PLACED ON THE SUBGRADE PRIOR TO PLACEMENT OF THE BASEROCK.
 4. REINFORCEMENT FABRIC (FOR USE W/OVEREXCAVATION): NON-WOVEN (MIRAFI 1000N, GEOTEX 1001, LINQ 250EX OR EQUAL), WOVEN (MIRAFI 550X, GEOTEX 250ST, LINQ GTF250 OR EQUAL). SEPARATION FABRIC: NON-WOVEN (MIRAFI 160N, GEOTEX 601, LINQ 150EX OR EQUAL), WOVEN (MIRAFI 500X, GEOTEX 200ST, LINQ GTF200 OR EQUAL).

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34' COLLECTOR (HILLSIDE OR INFILL, PARKING OR BIKE LANE PER TSP) MIN SECTION (NTS)			
SILVERTON, OR		DETAIL NO. 202A	

SET CROWN 0.095' (~1-1/8")
BELOW TOP OF CURB

C/L STREET =
C/L R/W



4" MIN. COMPACTED
GRANULAR BASEROCK

SUBGRADE, SEE NOTES BELOW.

-BASE LIFT AC - 3/4" DENSE
GRADED MIX (LEVEL 3 JMF).
-TOP LIFT AC - 1/2" DENSE
GRADED MIX (LEVEL 3 JMF).

15" OF 1"-0" GRANULAR BASEROCK
(COMPACT TO 95% OPTIMUM PER AASHTO T-180)

ALT: 2" OF 3/4"-0" GRANULAR BASEROCK OVER
13" OF 1-1/2"-0" GRANULAR BASEROCK.

4" A.C. PVMT. IN 2 LIFTS
2" CL.'C' OVER 2" CL.'B'
(COMPACT TO 91% OPTIMUM PER
RICE STANDARD METHOD)

TYPE 'A' CURB & GUTTER
(SEE DETAIL 210)

VARIES
11.5' TYP

R/W (60' MIN)

36'

18'

18'

6"

6"

S=2.0%

S=2.0%

5%

5%

5:1 MAX
TYP

5:1 MAX
TYP

LAST REVISION DATE:
NOV 2015

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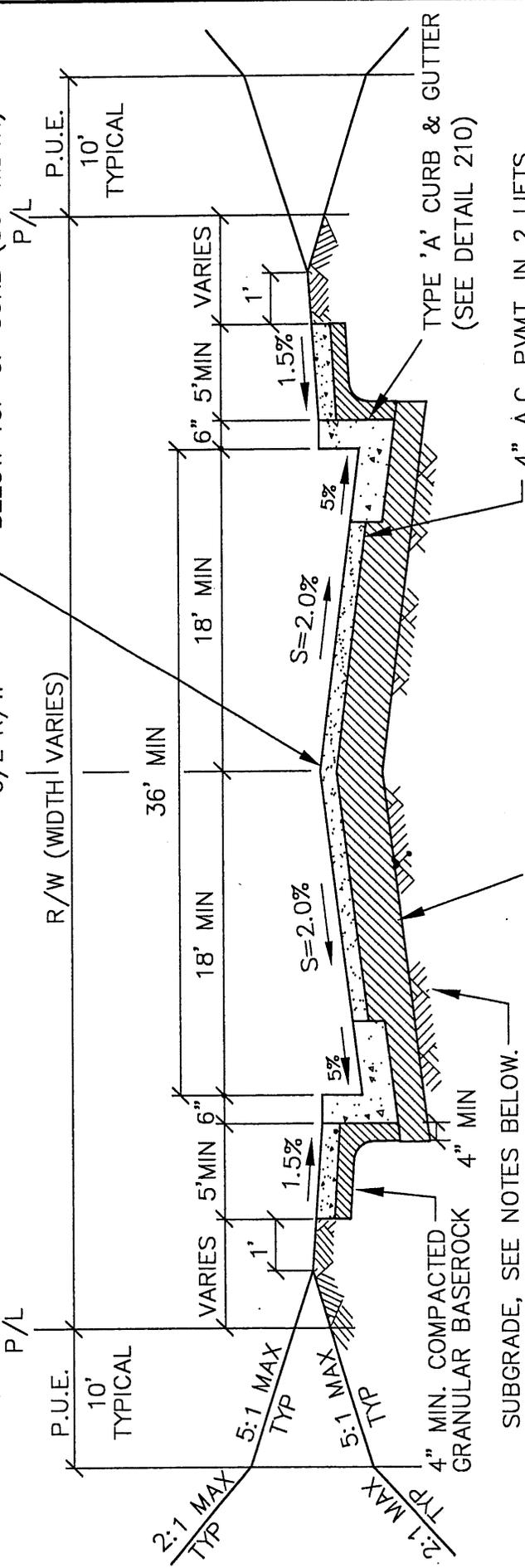
36' DOWNTOWN COLLECTOR
(PARKING BOTH SIDES)
MINIMUM SECTION

(NTS)

SILVERTON, OR

DETAIL NO.
202B

C/L STREET =
C/L R/W
R/W (WIDTH VARIES)
36' MIN
18' MIN
18' MIN
6" 5' MIN VARIES
10' TYPICAL
P.U.E.
10' TYPICAL
P/L



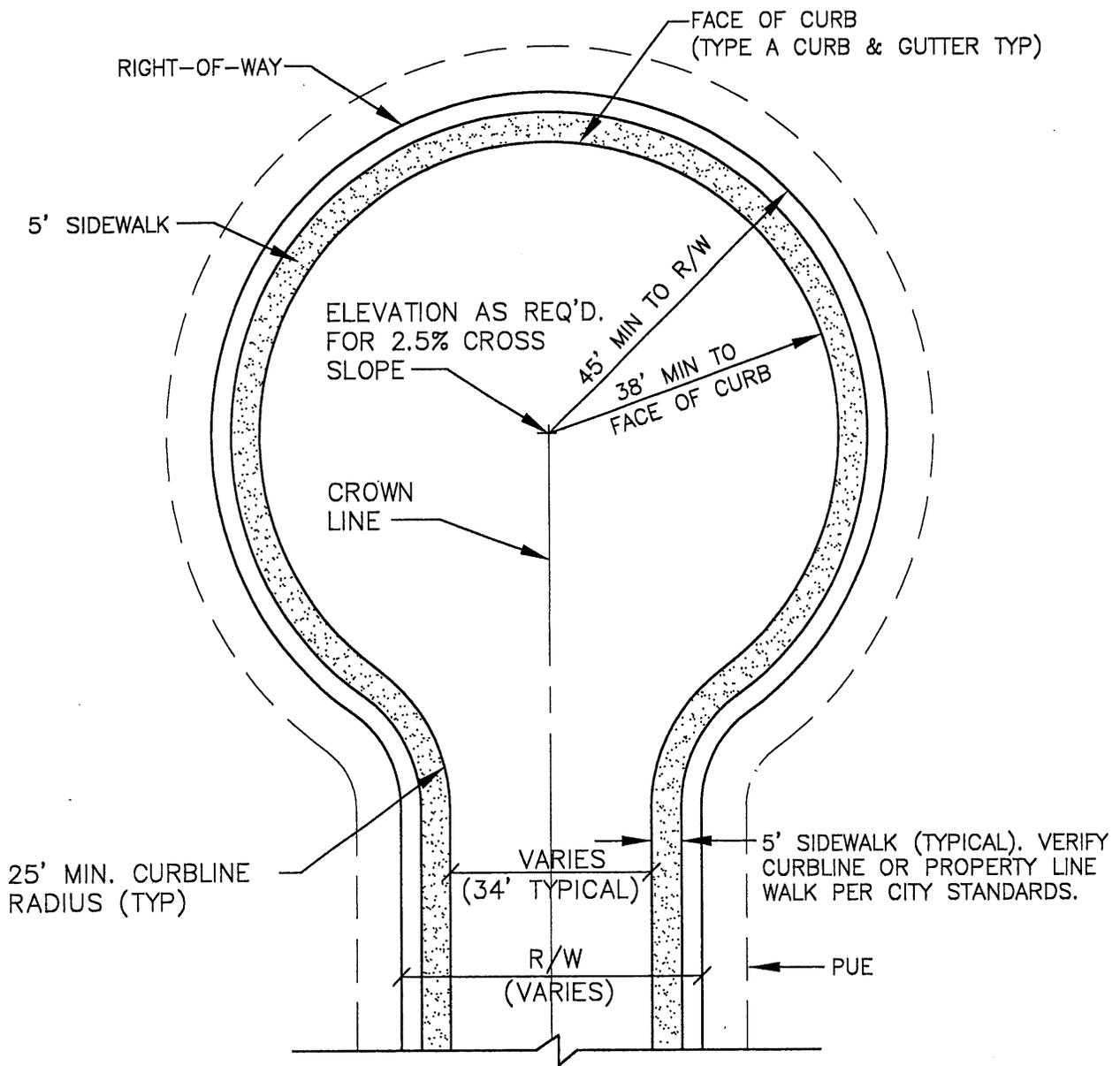
4" MIN. COMPACTED GRANULAR BASEROCK
4" MIN
5%
S=2.0%
S=2.0%
5%
TYPE 'A' CURB & GUTTER (SEE DETAIL 210)
1.5%
1'
4" A.C. PVMT. IN 2 LIFTS
2" CL.C' OVER 2" CL.B'
(COMPACT TO 91% OPTIMUM PER RICE STANDARD METHOD)

SUBGRADE, SEE NOTES BELOW.
15" OF 1"-0" GRANULAR BASEROCK (COMPACT TO 95% OPTIMUM PER AASHTO T-180)
ALT: 2" OF 3/4"-0" GRANULAR BASEROCK OVER 13" OF 1-1/2"-0" GRANULAR BASEROCK.

NOTES:

1. ALL DESIGN SUBGRADES SHALL BE COMPACTED AND PROOF-ROLLED PRIOR TO PLACEMENT OF BASEROCK. COMPACTION TESTING OF SUBGRADE MAY BE WAIVED AS OUTLINED UNDER NOTE 3.
2. IF SUBGRADE FAILS THE PROOF-ROLL, SUBGRADE SHALL BE OVEREXCAVATED TO UNDISTURBED SOIL AND BACKFILLED WITH BASEROCK OVER GEOTEXTILE REINFORCEMENT FABRIC (AS SPECIFIED) TO ALLOW COMPACTION OF UPPER (DESIGN) BASEROCK SECTION AND TO MAINTAIN STRUCTURAL INTEGRITY OF NATIVE SUBGRADE SOILS. TYPICAL MIN. OVEREXCAVATION REQUIRED IS 12-INCHES. NO RUBBER Tired EQUIPMENT ALLOWED ON SUBGRADE FOLLOWING OVEREXCAVATION.
3. IF SUBGRADE PASSES PROOF-ROLL BUT CANNOT BE COMPACTED TO 95% OPTIMUM DENSITY PER AASHTO T-180 (OR IF CONTRACTOR CHOOSES NOT TO TEST), GEOTEXTILE SEPARATION FABRIC (AS SPECIFIED) SHALL BE PLACED ON THE SUBGRADE PRIOR TO PLACEMENT OF THE BASEROCK.
4. REINFORCEMENT FABRIC (FOR USE W/OVEREXCAVATION): NON-WOVEN (MIRAFI 1000N, GEOTEX 1001, LINQ 250EX OR EQUAL), WOVEN (MIRAFI 550X, GEOTEX 250ST, LINQ GTF250 OR EQUAL).
SEPARATION FABRIC: NON-WOVEN (MIRAFI 160N, GEOTEX 601, LINQ 150EX OR EQUAL), WOVEN (MIRAFI 500X, GEOTEX 200ST, LINQ GTF200 OR EQUAL).

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INDUSTRIAL STREET MINIMUM SECTION (NTS)			
SILVERTON, OR		DETAIL NO. 203	

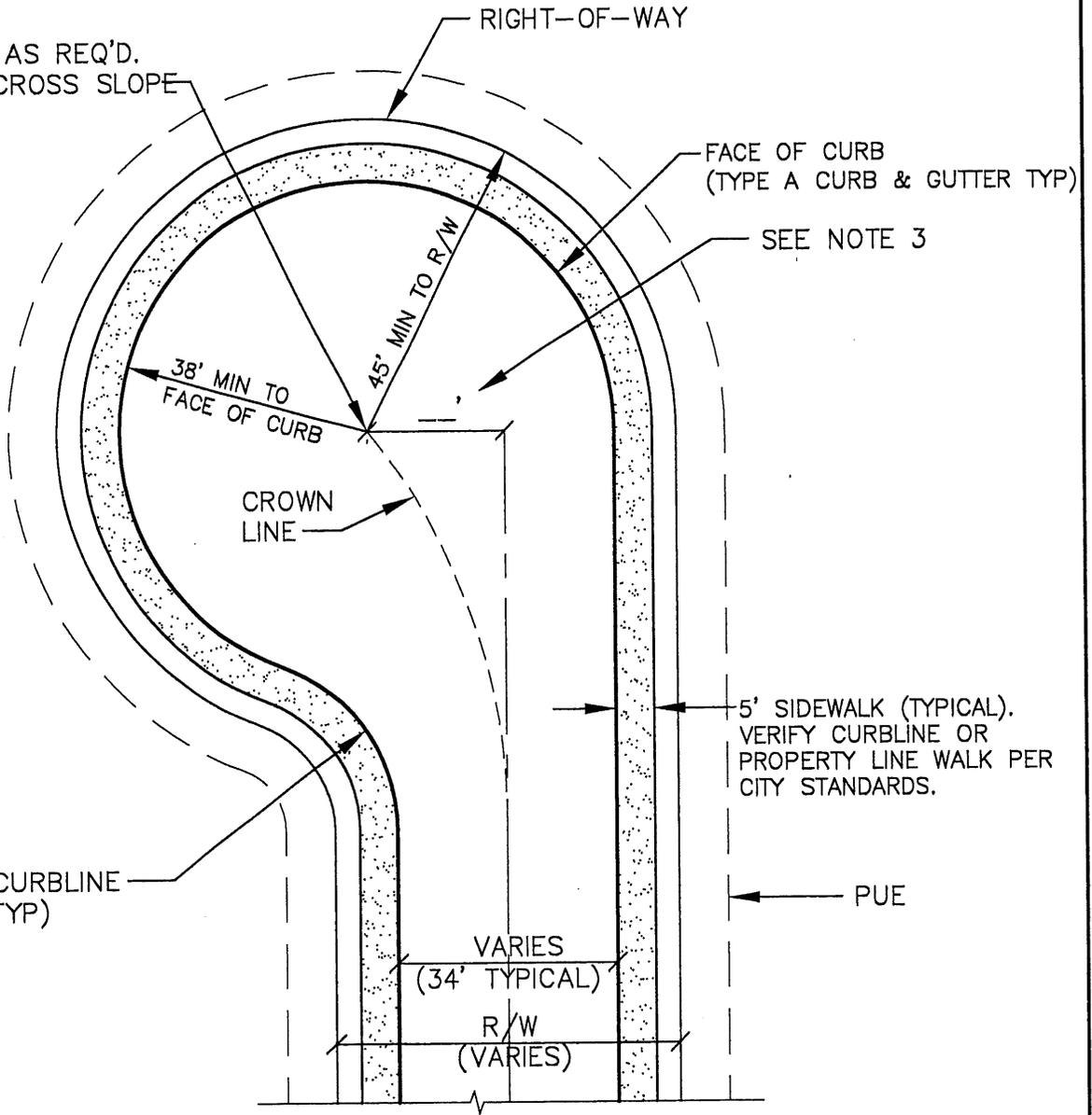


NOTES:

1. 2.5% MIN. CROSS SLOPE REQUIRED FROM CENTER OF BULB TO GUTTER.
2. MAINTAIN CROWN LINE TO CENTER OF CUL-DE-SAC BULB.

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STANDARD CUL-DE-SAC (RESIDENTIAL)	
(NTS)	
SILVERTON, OR	DETAIL NO. 205

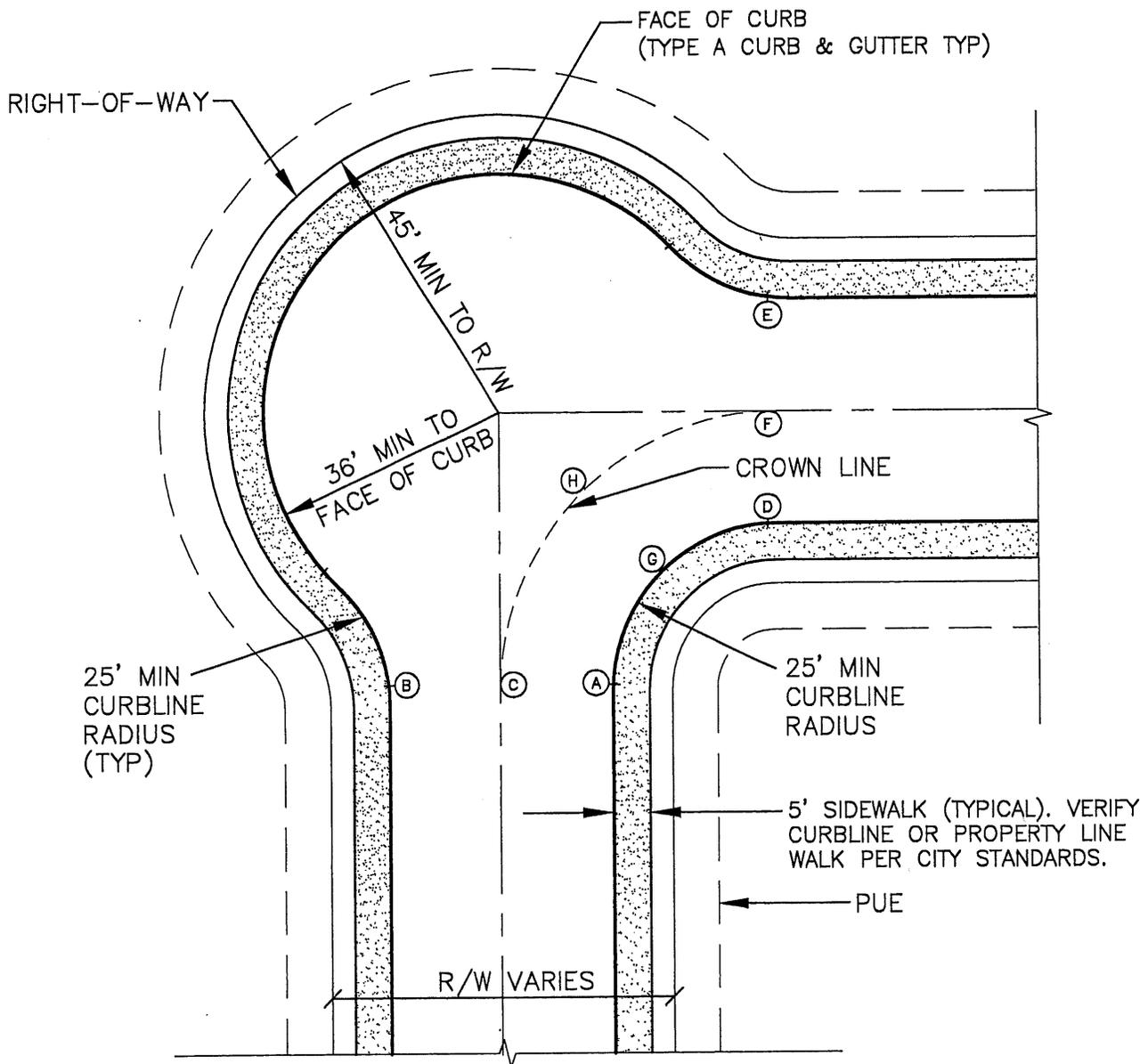
ELEVATION AS REQ'D.
FOR 2.5% CROSS SLOPE



NOTES:

1. 2.5% MIN. CROSS SLOPE REQUIRED FROM CENTER OF BULB TO GUTTER.
2. MAINTAIN CROWN LINE TO CENTER OF CUL-DE-SAC BULB.
3. OFFSET FROM ROADWAY CENTERLINE TO CENTER OF BULB = CURB RADIUS MINUS ONE-HALF STREET WIDTH.

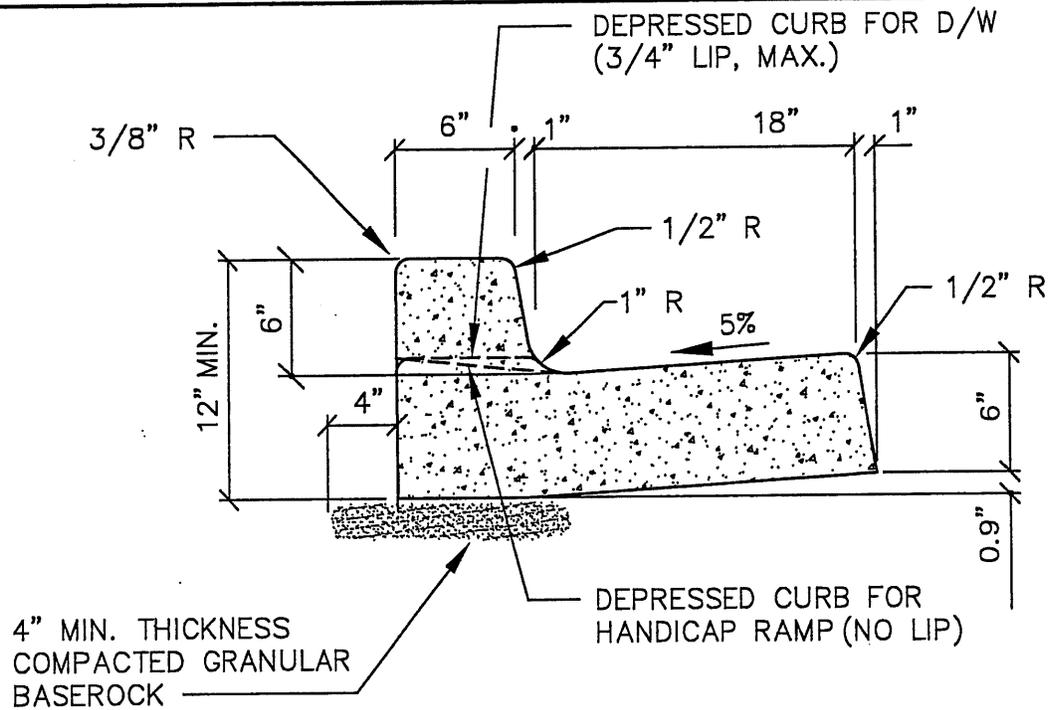
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OFFSET CUL-DE-SAC (RESIDENTIAL) (NTS)	
SILVERTON, OR	DETAIL NO. 206



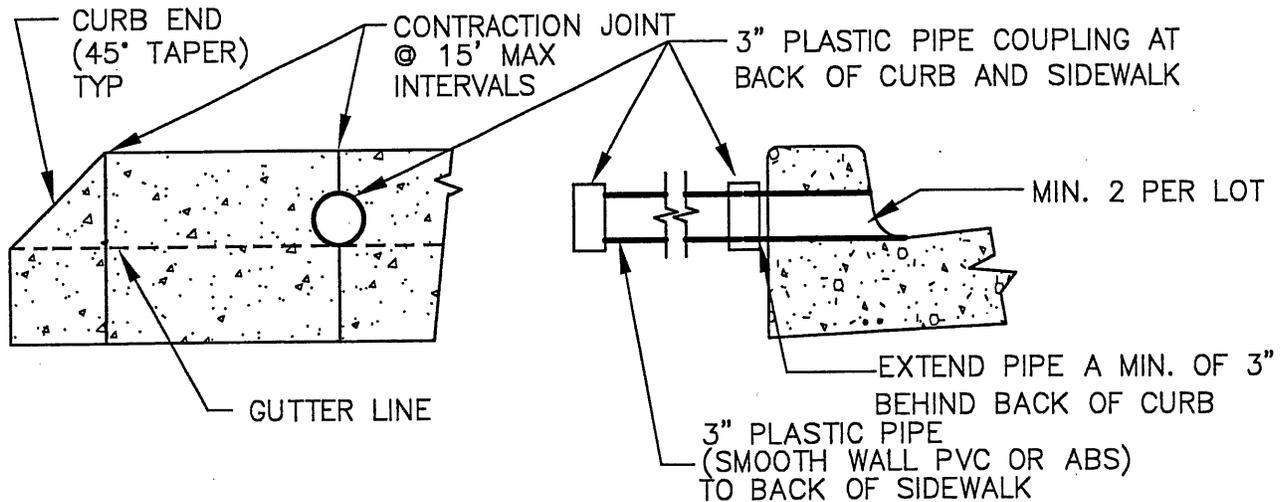
NOTES:

1. TOP CURB @ A = TOP CURB @ B = CROWN @ C
2. TOP CURB @ D = TOP CURB @ E = CROWN @ F
3. MIN. GUTTER SLOPE FROM E TO B = 0.75%
4. SET CROWN @ H 0.25' MIN. ABOVE TOP CURB @ G (4% MIN. CROSS SLOPE FROM H TO G)

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EYEBROW CUL-DE-SAC (RESIDENTIAL) (NTS)	
SILVERTON, OR	DETAIL NO. 207



TYPE A CURB & GUTTER

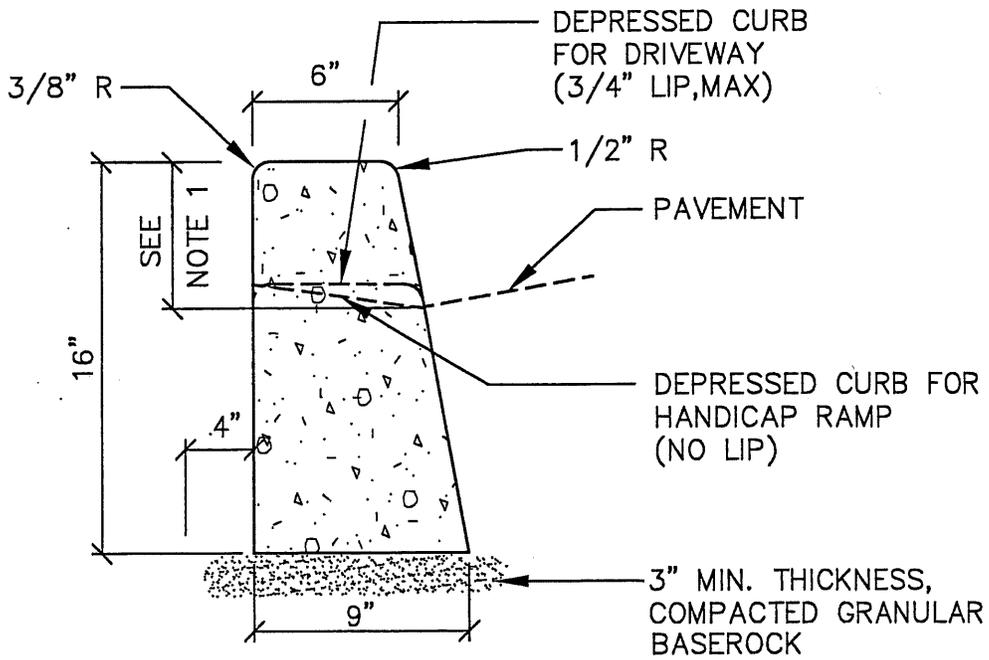


WEEP HOLE THROUGH CURB

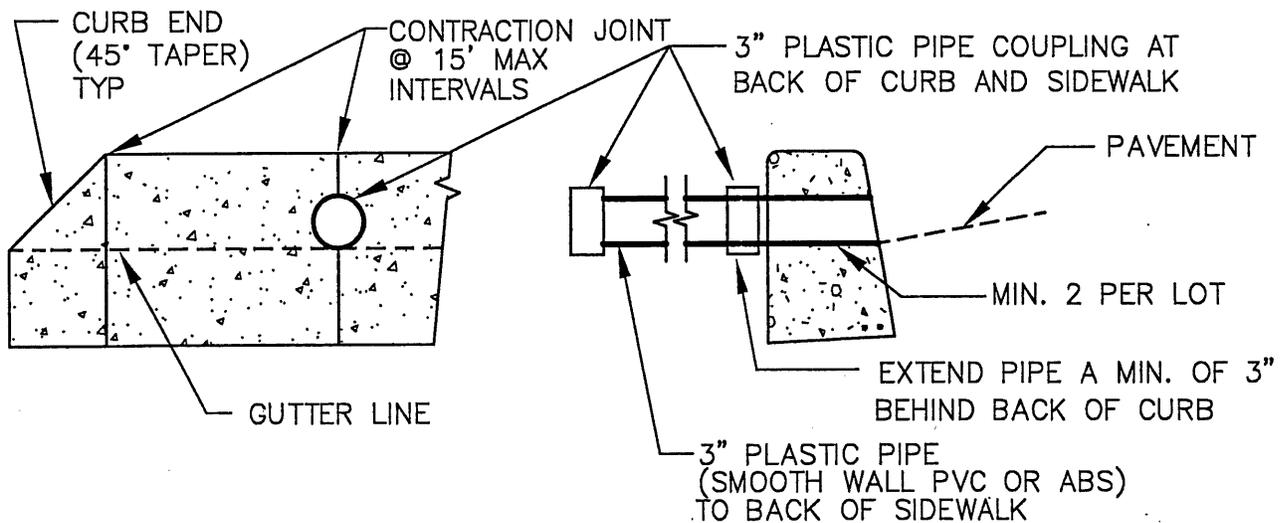
NOTES:

1. CONTRACTION JOINTS SHALL BE PLACED AT 15' MIN. INTERVALS AND SHALL EXTEND AT LEAST 50% THROUGH THE CURB OR CURB AND GUTTER.
2. A CONTRACTION JOINT SHALL BE PLACED ALONG AND OVER WEEP HOLE THROUGH THE SIDEWALK.
3. ALL CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
4. WHERE SIDEWALKS ARE TO BE CONSTRUCTED, EXTEND 3" PIPE TO BACK OF SIDEWALK LOCATION & INSTALL COUPLING.
5. INSTALL MIN. 2 WEEP HOLES ON ALL LOTS. ONE WEEP HOLE TO BE AT LOW END OF LOT FRONTAGE, 5' FROM P/L.
6. WEEPHOLES IN EXISTING CURBS SHALL BE CORE DRILLED.

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TYPE 'A' CURB AND GUTTER AND WEEP HOLE (NTS)	
SILVERTON, OR	DETAIL NO. 210



TYPE 'C' CURB

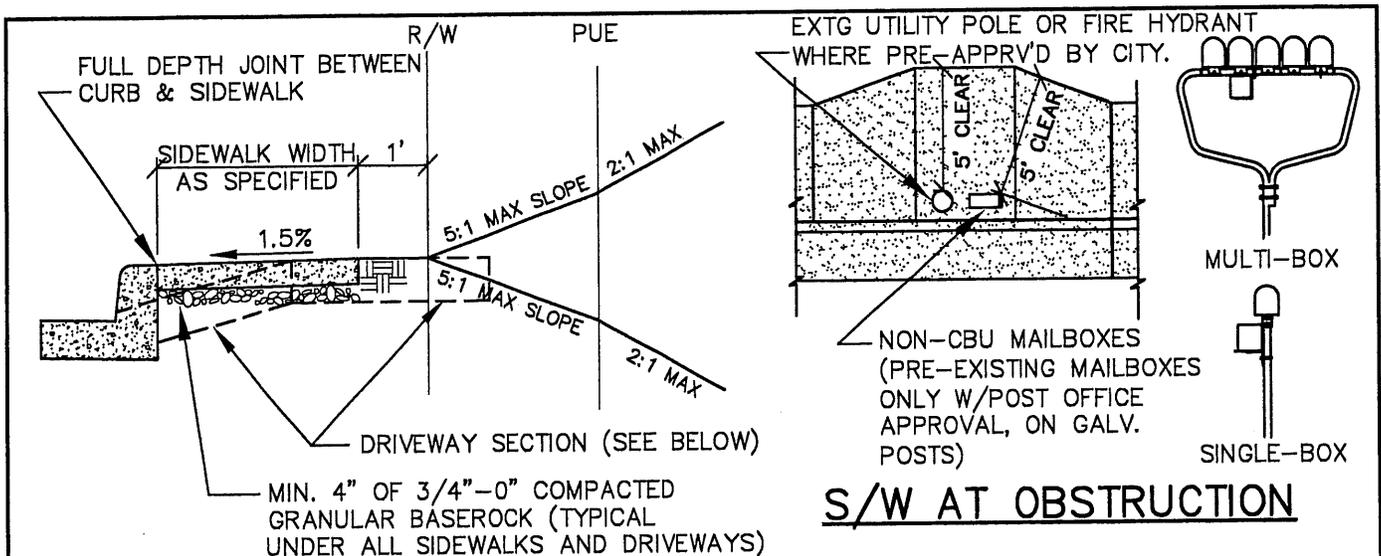


WEEP HOLE THROUGH CURB

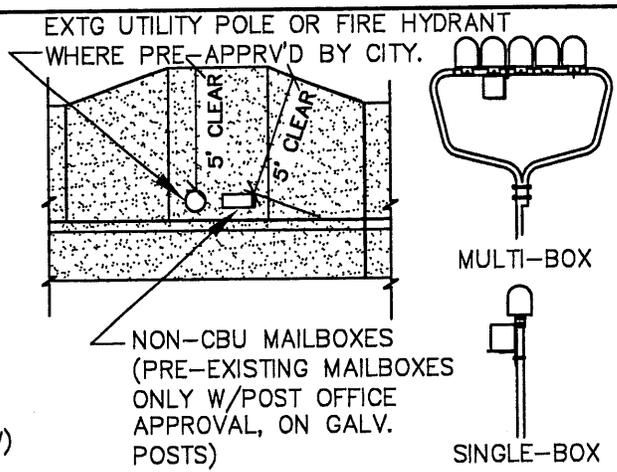
NOTES

1. 7" CURB EXPOSURE FOR ARTERIAL & COLLECTOR STREETS WHERE TYPE C CURB ALLOWED.
6" EXPOSURE ALL OTHER PUBLIC STREETS, PRIVATE STREETS & PARKING LOTS.
2. A CONTRACTION JOINT SHALL BE PLACED ALONG AND OVER WEEP HOLE THROUGH THE SIDEWALK.
3. ALL CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
4. WHERE SIDEWALKS ARE TO BE CONSTRUCTED, EXTEND 3" PIPE TO BACK OF SIDEWALK LOCATION & INSTALL COUPLING.
5. INSTALL MIN. 2 WEEP HOLES ON ALL LOTS. ONE WEEP HOLE TO BE AT LOW END OF LOT FRONTAGE, 5' FROM P/L.
6. WEEP HOLES IN EXISTING CURBS SHALL BE CORE DRILLED.

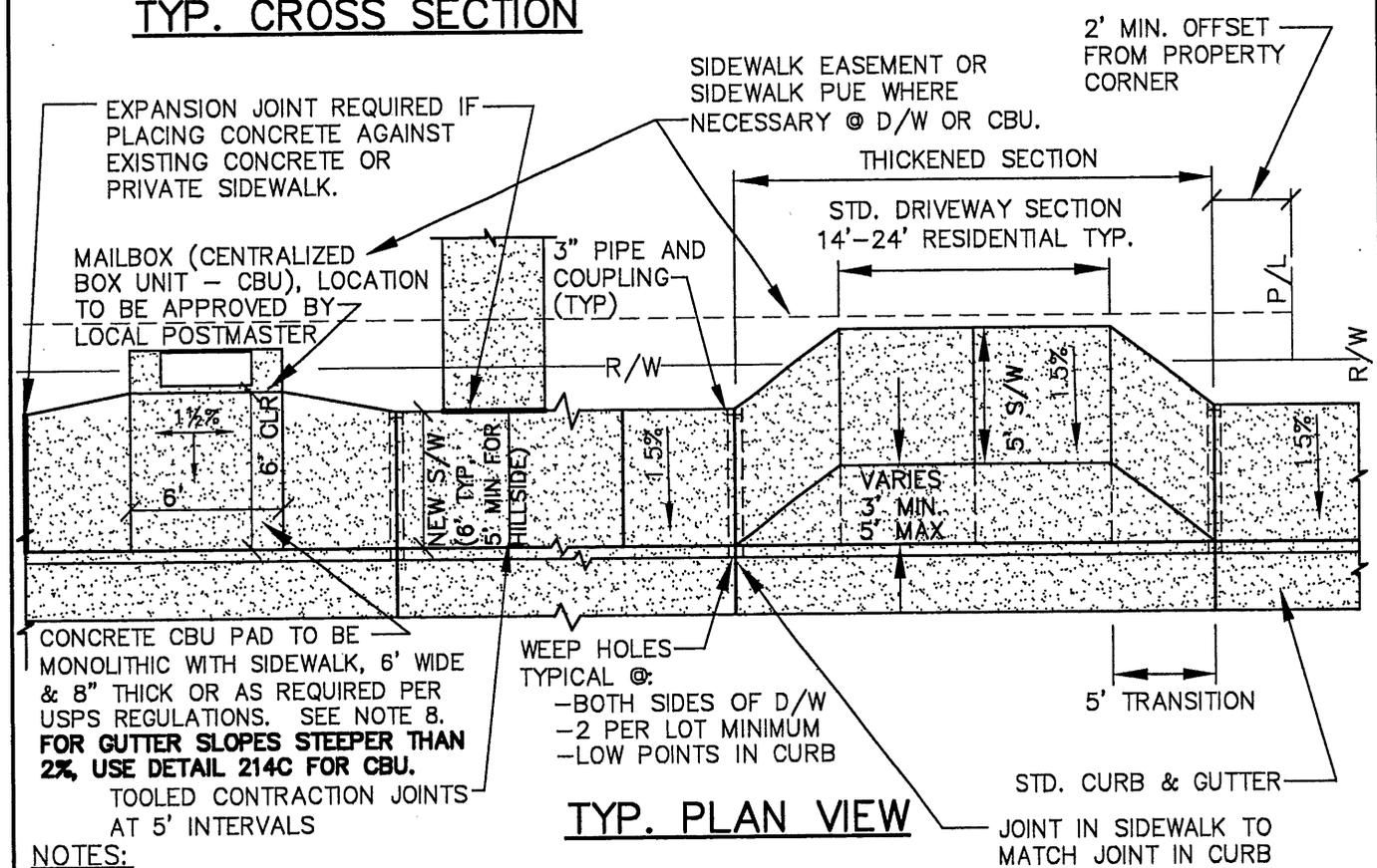
LAST REVISION DATE: JULY 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
TYPE 'C' CURB AND WEEPHOLE	
(NTS)	
SILVERTON, OR	DETAIL NO. 211



TYP. CROSS SECTION



S/W AT OBSTRUCTION



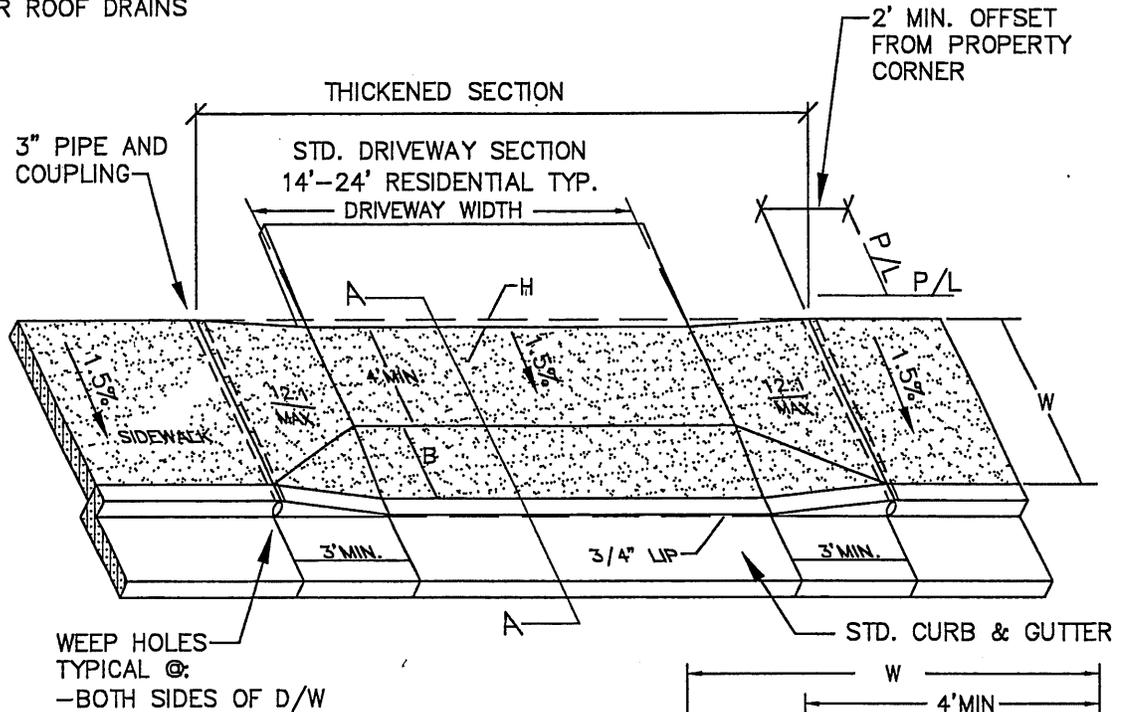
TYP. PLAN VIEW

NOTES:

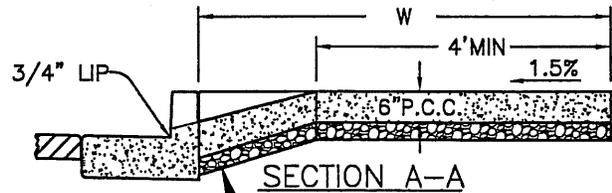
1. CONCRETE DEPTH FOR STANDARD SIDEWALKS SHALL BE 4" MIN.
2. MONOLITHIC STREET CURB & SIDEWALK PLACEMENT IS PROHIBITED FOR PUBLIC SIDEWALKS.
3. SIDEWALKS THROUGH RESIDENTIAL DRIVEWAYS (INCLUDING WINGS) SHALL BE 6" MIN. THICKNESS. COMMERCIAL DRIVEWAYS SHALL BE 8" MIN. THICK.
4. SIDEWALKS 8' & WIDER SHALL HAVE A LONGITUDINAL CONTRACTION JOINT AT MIDPOINT.
5. CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
6. PCC APRONS JOINTED TO MATCH SIDEWALK PATTERN.
7. SIDEWALKS SHALL BE LOCATED ENTIRELY WITHIN PUBLIC RIGHT-OF-WAY OR SIDEWALK EASEMENTS, INCLUDING AT DRIVEWAYS & INTERSECTIONS.
8. ADA ACCESS TO CBU MAILBOXES SHALL CONFORM WITH SECTION 1111 OF OSSC (OREGON STRUCTURAL SPECIALTY CODE), INCLUDING AN ADA PEDESTRIAN CURB RAMP LOCATED WITHIN 50 FEET OF THE CBU. PROWAG REQUIRED 6'x6' TURING SPACE IN FRONT OF CBU SHALL NOT EXCEED 2% IN ANY DIRECTION. **CBU LAYOUT ABOVE ASSUMES STREET & CURB GRADE DOES NOT EXCEED 2%.**

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CURBLINE SIDEWALKS AND DRIVEWAY APRONS	
(NTS)	
SILVERTON, OR	DETAIL NO. 212

NOTE:
CONTRACTION JOINT REQUIRED
AT BOTH SIDES OF DRIVEWAY
AND OVER ROOF DRAINS



W	B	H	
5'	1'	0.27'	(3-1/4")
6'	2'	0.23'	(2-3/4")
7'	3'	0.19'	(2-1/4")

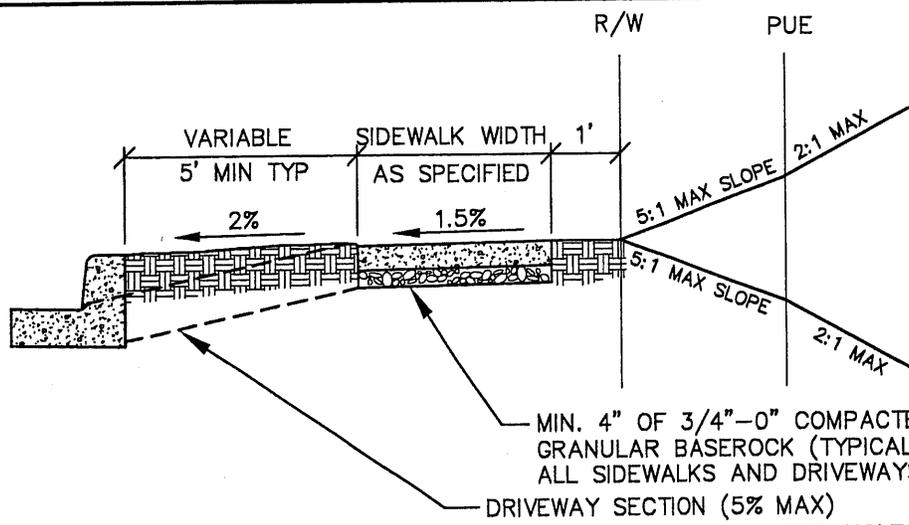


MIN. 4" OF 3/4"-0" COMPACTED
GRANULAR BASEROCK (TYPICAL
UNDER ALL SIDEWALKS AND
DRIVEWAYS)

NOTES:

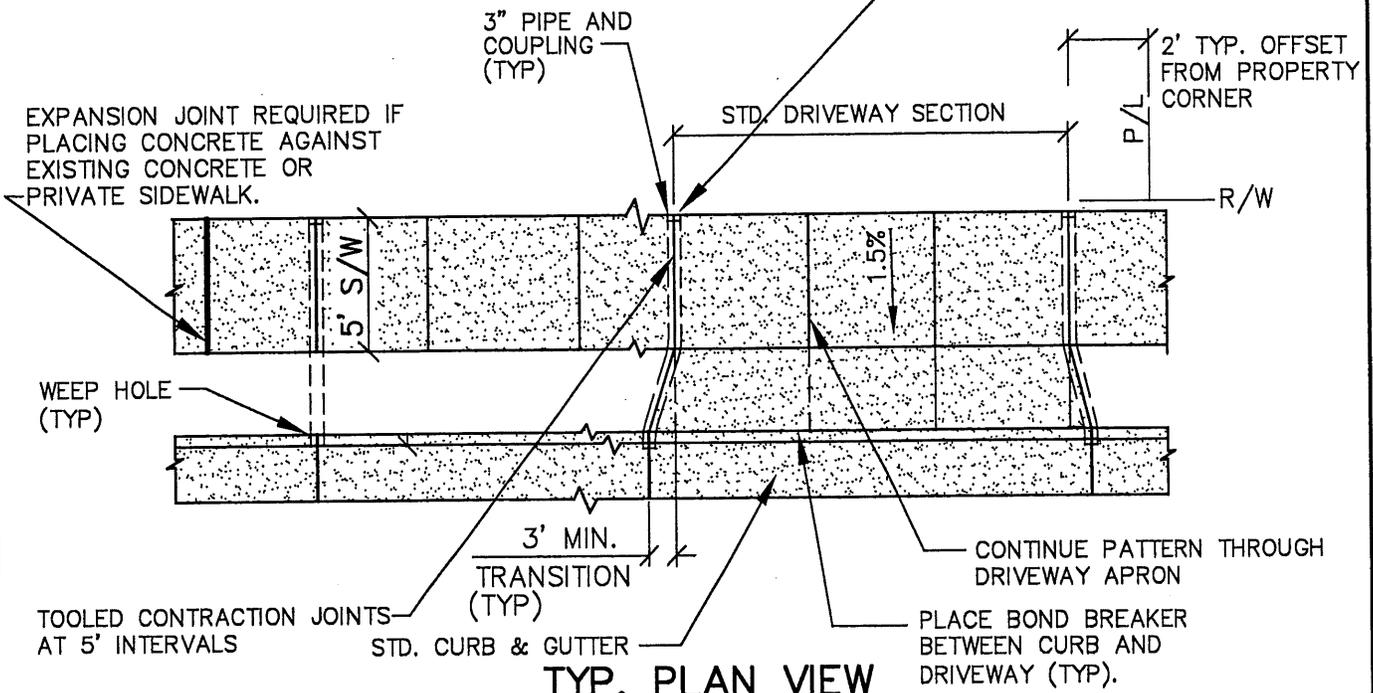
1. SEE DETAIL 212 FOR STANDARD APRON & SIDEWALK DETAILS. USE OF THIS DETAIL REQUIRES SPECIFIC APPROVAL BY PUBLIC WORKS PRIOR TO FORMING.
2. CONCRETE DEPTH FOR STANDARD SIDEWALKS SHALL BE 4" MIN.
3. SF & DUPLEX RESIDENTIAL DRIVEWAY SECTIONS INCLUDING SIDEWALKS THROUGH DRIVEWAYS SHALL BE 6" MIN. THICKNESS.
4. CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
5. PCC APRONS SHALL BE JOINTED TO MATCH SIDEWALK PATTERN.
6. PUBLIC SIDEWALKS SHALL BE LOCATED ENTIRELY WITHIN RIGHT-OF-WAY OR SIDEWALK EASEMENTS, INCLUDING SIDEWALKS THROUGH DRIVEWAY APRONS & AT CORNERS.
7. CROSS SLOPE IS MEASURED FROM HORIZONTAL.
8. RUNNING SLOPE OF SIDEWALK APPROACH TO LANDINGS SHALL TYPICALLY NOT EXCEED 1V:12H (8.33%), BUT SHALL NOT REQUIRE THE LENGTH TO EXCEED 15 FEET.

LAST REVISION DATE: JULY 2015	
RESIDENTIAL D/W APRON CURBLINE SIDEWALK UPHILL LOTS ONLY (NTS)	
SILVERTON, OR	DETAIL NO. 212A



TYP. CROSS SECTION

- WEEP HOLES TYPICAL @:
- BOTH SIDES OF D/W
 - 2 PER LOT MINIMUM
 - LOW POINTS IN CURB
 - LOW END OF LOT FRONTAGE

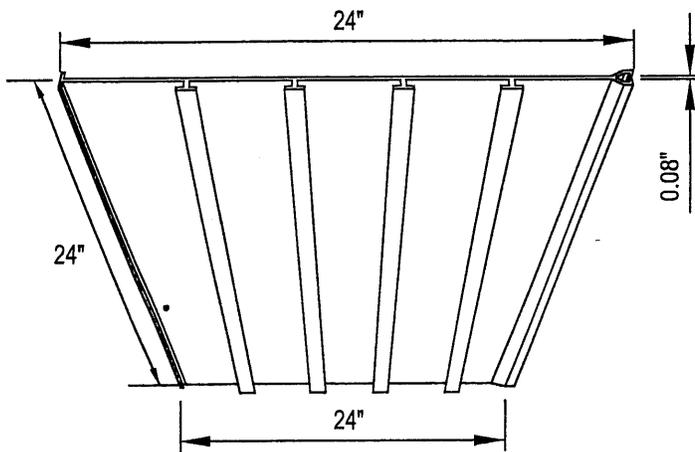


TYP. PLAN VIEW

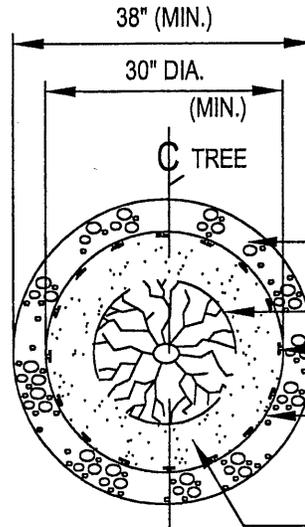
NOTES:

1. CONCRETE DEPTH FOR STANDARD SIDEWALKS SHALL BE 4" MIN.
2. MONOLITHIC STREET CURB & DRIVEWAY PLACEMENT IS PROHIBITED FOR PUBLIC STREETS.
3. RESIDENTIAL DRIVEWAY SECTIONS WITHIN R.O.W, INCLUDING SIDEWALKS THROUGH DRIVEWAYS SHALL BE 6" MIN. THICKNESS. COMMERCIAL D/W & ALLEY APPROACHES SHALL BE 8" MIN. THICKNESS.
4. SIDEWALKS 10' & WIDER SHALL HAVE A LONGITUDINAL CONTRACTION JOINT 5' MAX. ON CENTER.
5. JOINT PCC APRONS TO MATCH SIDEWALK PATTERN.
6. CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
7. CBU MAILBOXES ON PROPERTY LINE SIDEWALKS SHALL MEET PROWAG STANDARDS, INCLUDING TURNING SPACE/ LANDING FRONTING CBU (6'x6' MIN, 1 1/2% SLOPE), LANDING APPROACH WIDTHS/SLOPES/LENGTHS, AND CONCRETE THICKNESS AS SHOWN ON DETAILS 212 & 214C, AND PEDESTRIAN CURB RAMP LOCATED WITHIN 50 FEET OF THE CBU.

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PROPERTY LINE SIDEWALKS AND DRIVEWAY APRONS	
(NTS)	
SILVERTON, OR	DETAIL NO. 213

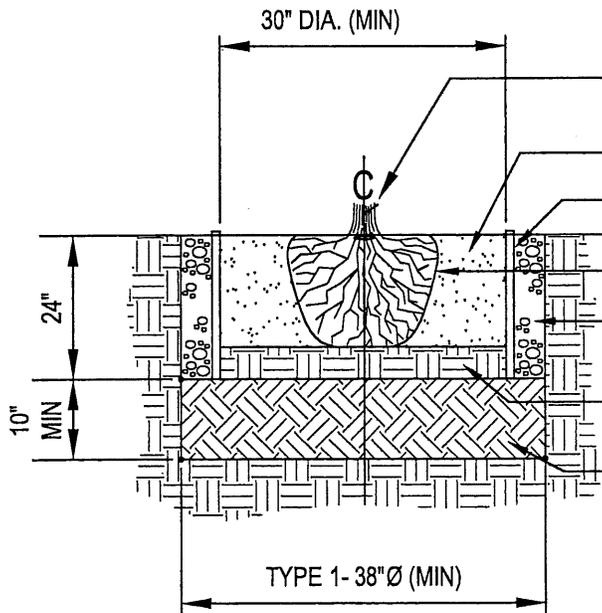


BARRIER PANEL
NTS (oblique view)



- NO. 3 CONCRETE AGGREGATE OR CRUSHED ROCK
- ROOTBALL
- RAISED RIBS TOWARD INSIDE
- ROOT BARRIER
- PREPARED SOIL MIX

TYPE 1 (4 PANELS)
NTS



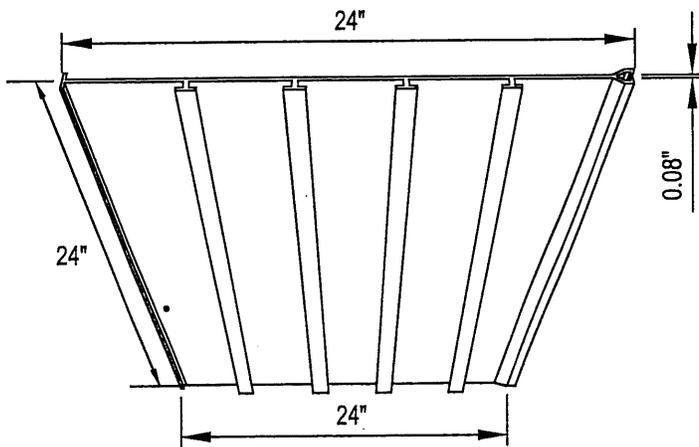
- TREES AS APPROVED BY CITY, PROVIDED & PLANTED BY CONTRACTOR.
- PREPARED SOIL MIX
- ROOT BARRIER (SET TOP 1" BELOW FINISH GRADE IN AREAS OUTSIDE OF SIDEWALKS)
- ROOT BALL
- 3/4"-0 AGGREGATE OR CRUSHED ROCK
- COMPACTED, PREPARED SOIL MIX TO BOTTOM OF ROOT BALL
- PREPARED SOIL MIX BACKFILL

SECTION
NTS

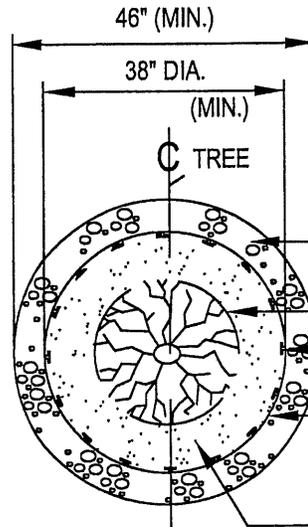
NOTES:

1. BARRIER PANEL ASSEMBLY & INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS & DRAWING/DETAIL NOTES, WHICHEVER IS MORE STRINGENT.
2. DO NOT SCALE DRAWINGS.
3. BARRIER PANELS TO BE NDS RP SERIES OR EQUAL.

LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
24" DEEP, 30" Ø 4 PANEL ROOT BARRIER TREE WELLS (NTS)	
SILVERTON, OR	DETAIL NO. 213B

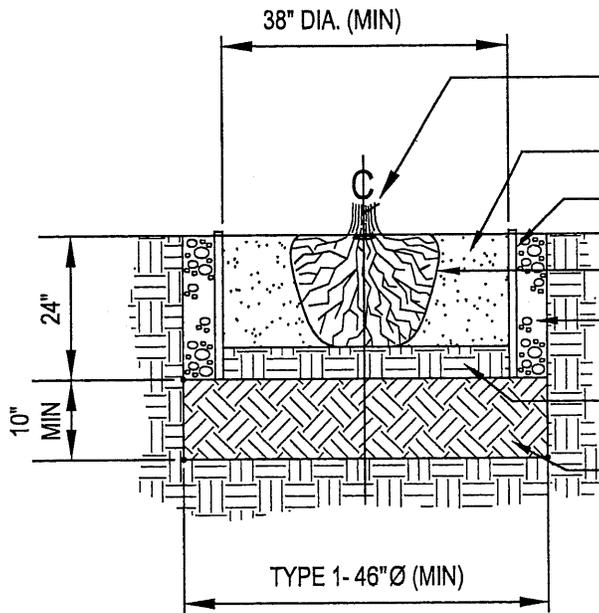


BARRIER PANEL
NTS (oblique view)



- NO. 3 CONCRETE AGGREGATE OR CRUSHED ROCK
- ROOTBALL
- RAISED RIBS TOWARD INSIDE
- ROOT BARRIER
- PREPARED SOIL MIX

TYPE 2 (5 PANELS)
NTS



- TREES AS APPROVED BY CITY, PROVIDED & PLANTED BY CONTRACTOR.
- PREPARED SOIL MIX
- ROOT BARRIER (SET TOP 1" BELOW FINISH GRADE IN AREAS OUTSIDE OF SIDEWALKS)
- ROOT BALL
- 3/4"-0 AGGREGATE OR CRUSHED ROCK
- COMPACTED, PREPARED SOIL MIX TO BOTTOM OF ROOT BALL
- PREPARED SOIL MIX BACKFILL

SECTION
NTS

NOTES:

1. BARRIER PANEL ASSEMBLY & INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS & DRAWING/DETAIL NOTES, WHICHEVER IS MORE STRINGENT.
2. DO NOT SCALE DRAWINGS.
3. BARRIER PANELS TO BE NDS RP SERIES OR EQUAL.

LAST REVISION DATE: NOV 2015	COPYRIGHT 1995 WESTECH ENGINEERING, INC.
24" DEEP, 38" Ø 5 PANEL ROOT BARRIER TREE WELLS (NTS)	
SILVERTON, OR	DETAIL NO. 213C

**DOMES SHALL BE RED CONCRETE INSET PANELS
(CAST IN TACT 3 OR EQUAL)**

INSTALL TRUNCATED DOME DETECTABLE WARNING SURFACE AS SPECIFIED

SPACING: D=1.6" MIN. TO 2.40" MAX
0.65" MIN CLEAR BETWEEN DOME BASES

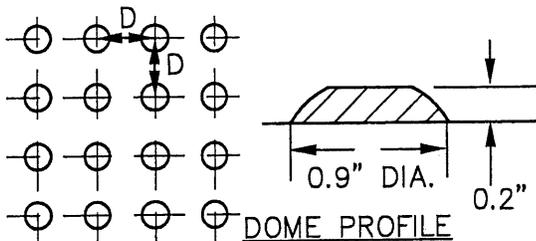
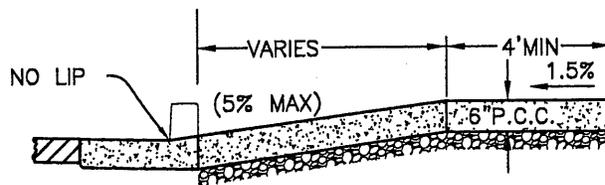
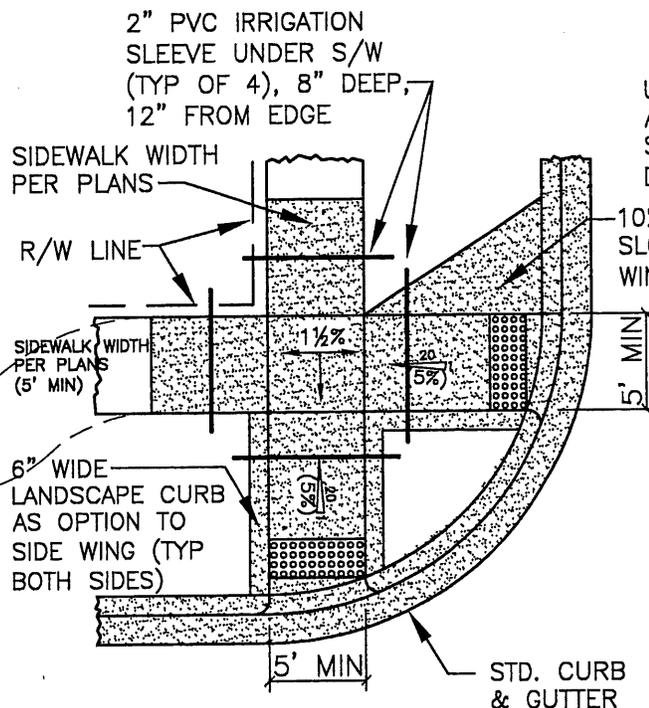


FIGURE A: TRUNCATED DOME DETAIL

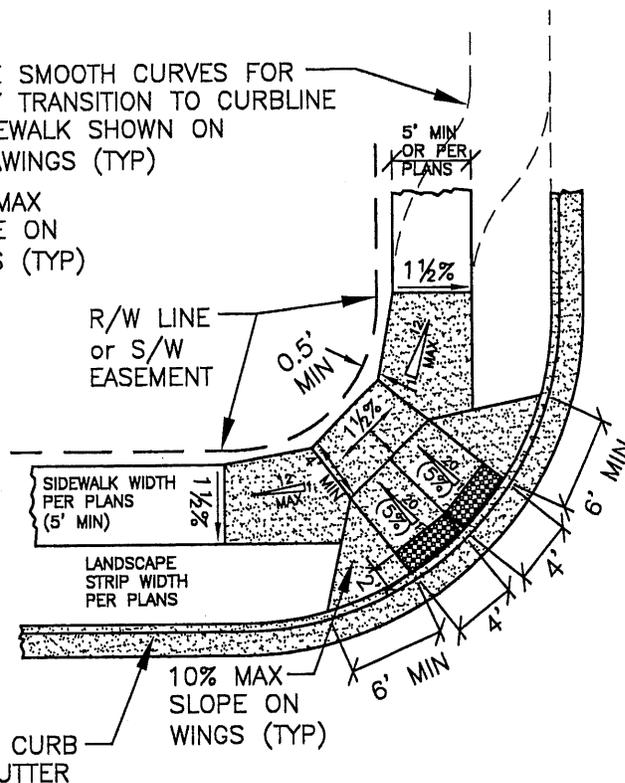


SECTION



SEPARATE RAMP FOR PROPERTY LINE SIDEWALKS

USE SMOOTH CURVES FOR ANY TRANSITION TO CURBLINE SIDEWALK SHOWN ON DRAWINGS (TYP)



**DOUBLE RAMP FOR PROPERTY LINE OR CURBLINE SIDEWALKS
(SEE SECTION A)**

GENERAL NOTES:

- SEE FIGURE A FOR RAMP TEXTURE DETAIL.
- SEE TYPICAL STREET SECTIONS FOR SIDEWALK & LANDSCAPE STRIP WIDTH.
- ALL RAMPS AND TRANSITIONS SHALL BE ADA & PROWAG COMPLIANT.
- LANDINGS & TURNING AREAS SHALL HAVE A MIN. WIDTH & DEPTH OF 4 FEET.
- CROSS SLOPES SHOWN ARE MEASURED FROM HORIZONTAL.
- SHADED SIDEWALK & RAMP AREAS TO BE CONSTRUCTED W/STREET IMPROVEMENTS, AND SHALL BE 6" THICK CONCRETE.**
- DROP CURBS FOR HANDICAP RAMPS SHALL BE CONSTRUCTED WITH NO LIP AT THE GUTTER LINE.
- PROVIDE 4-INCH MIN RADIUS ON ALL RETURNED CURBS.
- DOMES PANELS TO BE MASCO CASTINTACT OR EQUAL.
- PROVIDE 4" MIN. COMPACTED BASEROCK UNDER ALL S/W.
- RUNNING SLOPE OF SIDEWALK APPROACH TO LANDINGS SHALL TYPICALLY NOT EXCEED 1V:12H (8.33%), BUT SHALL NOT REQUIRE THE LENGTH TO EXCEED 15 FEET.

LAST REVISION DATE:	NOV 2015
INTERSECTION CURB RAMPS PROPERTY LINE SIDEWALKS LOCAL STREETS	
(NTS)	
SILVERTON, OR	DETAIL NO. 214B

**DOMES SHALL BE RED CONCRETE INSET PANELS
(CASTINTACT 3 OR EQUAL)**

INSTALL TRUNCATED DOME DETECTABLE WARNING SURFACE AS SPECIFIED

SPACING: D=1.6" MIN. TO 2.40" MAX
0.65" MIN CLEAR BETWEEN DOME BASES

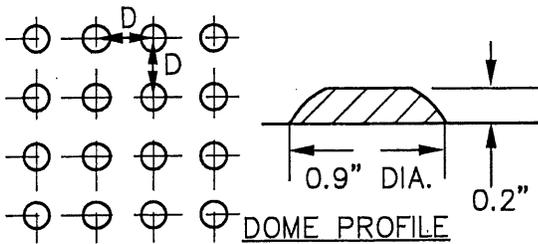
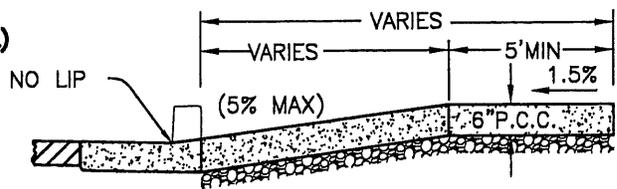
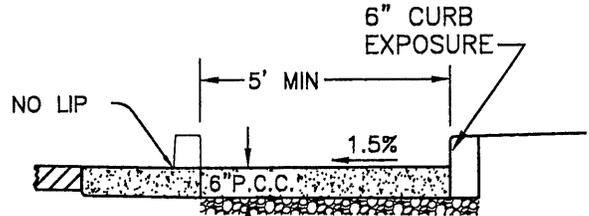


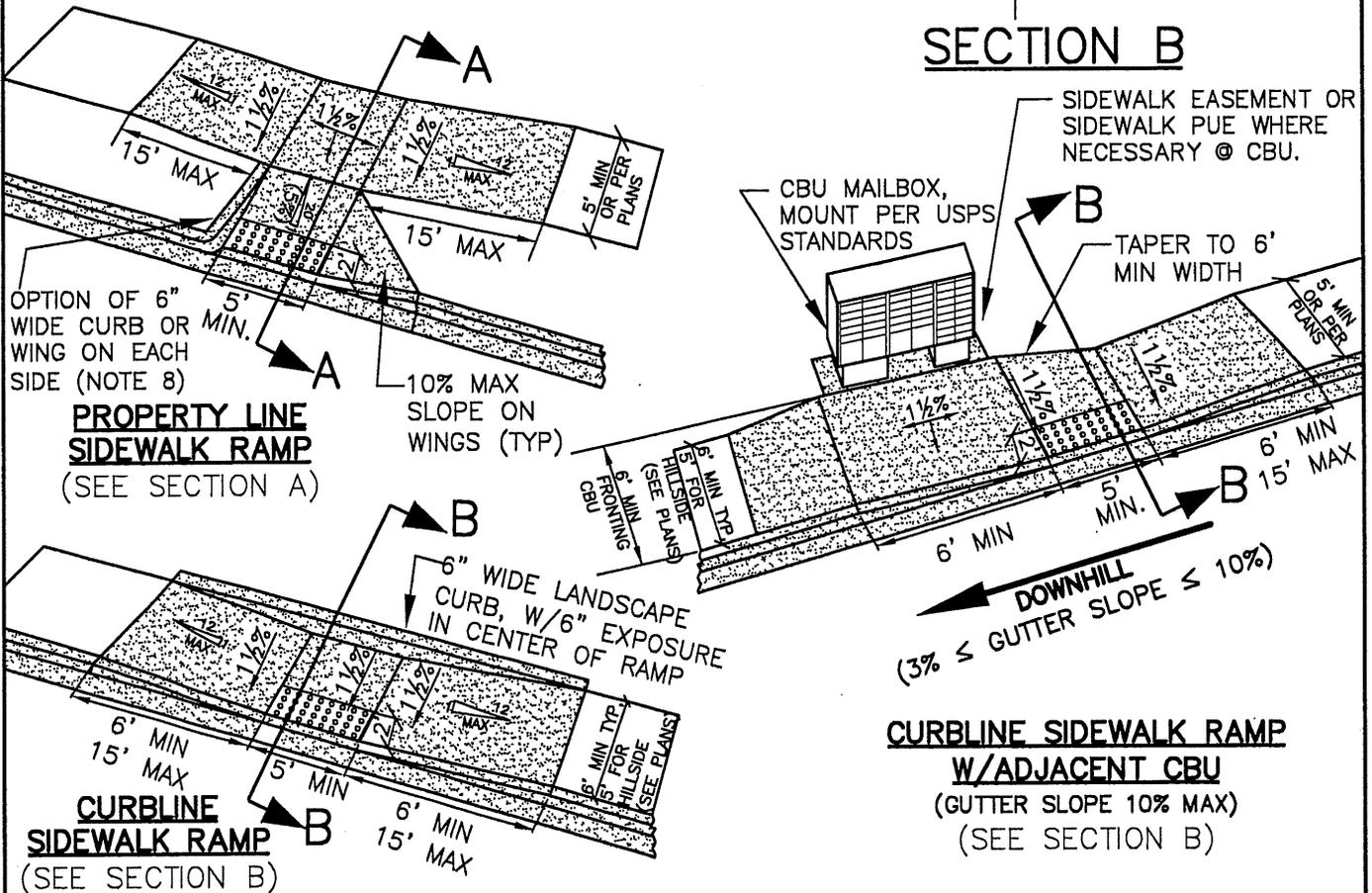
FIGURE A: TRUNCATED DOME DETAIL



SECTION A



SECTION B



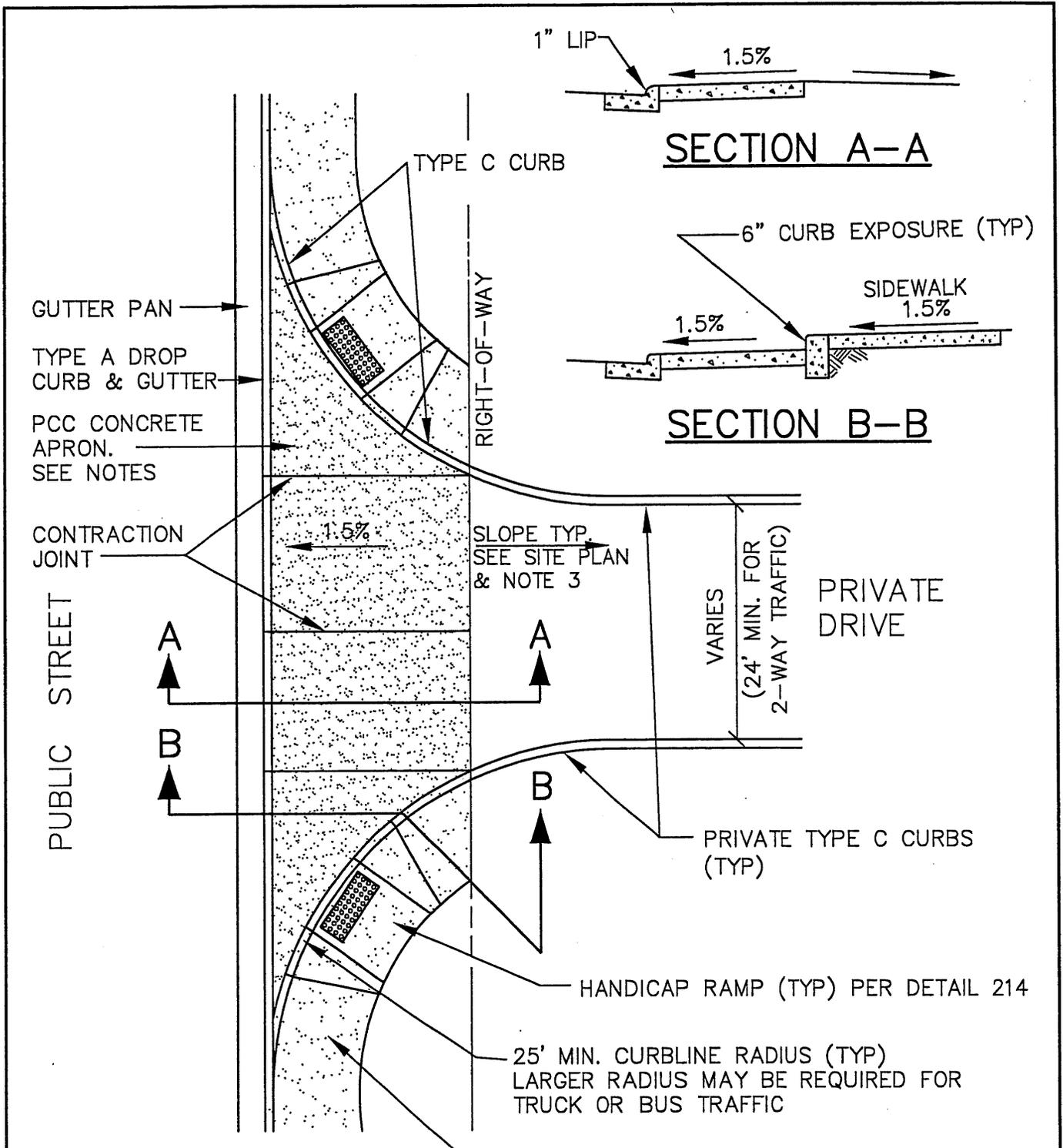
**PROPERTY LINE
SIDEWALK RAMP**
(SEE SECTION A)

**CURBLINE SIDEWALK RAMP
W/ADJACENT CBU**
(GUTTER SLOPE 10% MAX)
(SEE SECTION B)

GENERAL NOTES:

1. SEE FIGURE A FOR RAMP TEXTURE DETAIL.
2. SEE TYPICAL STREET SECTIONS FOR SIDEWALK WIDTH.
3. ALL RAMPS AND TRANSITIONS SHALL BE ADA & PROWAG COMPLIANT.
4. LANDINGS & TURNING AREAS SHALL HAVE A MIN. WIDTH & DEPTH OF 4 FEET.
5. CROSS SLOPES SHOWN ARE MEASURED FROM HORIZONTAL.
6. **SHADED SIDEWALK & RAMP AREAS TO BE CONSTRUCTED W/STREET IMPROVEMENTS, AND SHALL BE 6" THICK CONCRETE.**
7. DROP CURBS FOR HANDICAP RAMPS SHALL BE CONSTRUCTED WITH NO LIP AT THE GUTTER LINE.
8. PROVIDE 4-INCH MIN RADIUS ON ALL RETURNED CURBS.
9. DOMES PANELS TO BE MASCO CASTINTACT OR EQUAL.
10. PROVIDE 4" MIN. COMPACTED BASEROCK UNDER ALL S/Ws.
11. RUNNING SLOPE OF SIDEWALK APPROACH TO LANDINGS SHALL TYPICALLY NOT EXCEED 1V:12H (8.33%), BUT SHALL NOT REQUIRE THE LENGTH TO EXCEED 15 FEET.

LAST REVISION DATE: NOV 2015	
CURB RAMPS BETWEEN INTERSECTIONS	
(NTS)	
SILVERTON, OR	DETAIL NO. 214C



NOTES:

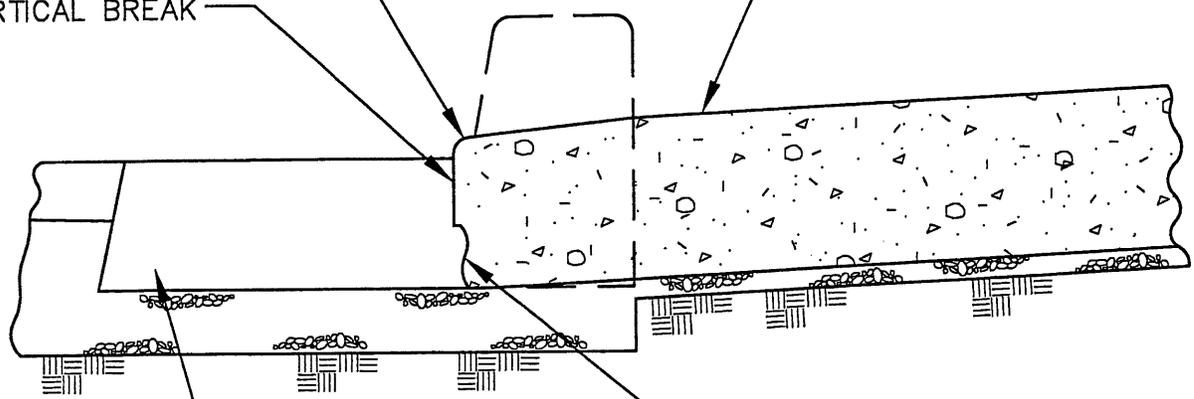
1. CONCRETE APRON TO HAVE A MIN. THICKNESS OF 8" CLASS 3300 PCC WITH #3 REBAR @ 12" O.C. EACH WAY, OR 6"X6" 10 GA. WELDED WIRE MESH, SET ON 3" DOBIES.
2. MIN. 4" OF 3/4"-0" COMPACTED GRANULAR BASEROCK (TYPICAL UNDER ALL SIDEWALKS AND CONCRETE DRIVEWAY APPROACHES).
3. CATCH BASINS REQUIRED IF DRIVEWAY OR PARKING LOT BEYOND DRIVEWAY APPROACH APRON SLOPES & DRAINS TOWARD STREET.

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COMMERCIAL DRIVEWAY APPROACH	
(NTS)	
SILVERTON, OR	DETAIL NO. 216

1/2" RADIUS &
3/4" LIP

MIN. 3" SAWCUT AND
VERTICAL BREAK

CONSTRUCT DRIVEWAY
APRON



EXIST. COMBINATION
CURB AND GUTTER

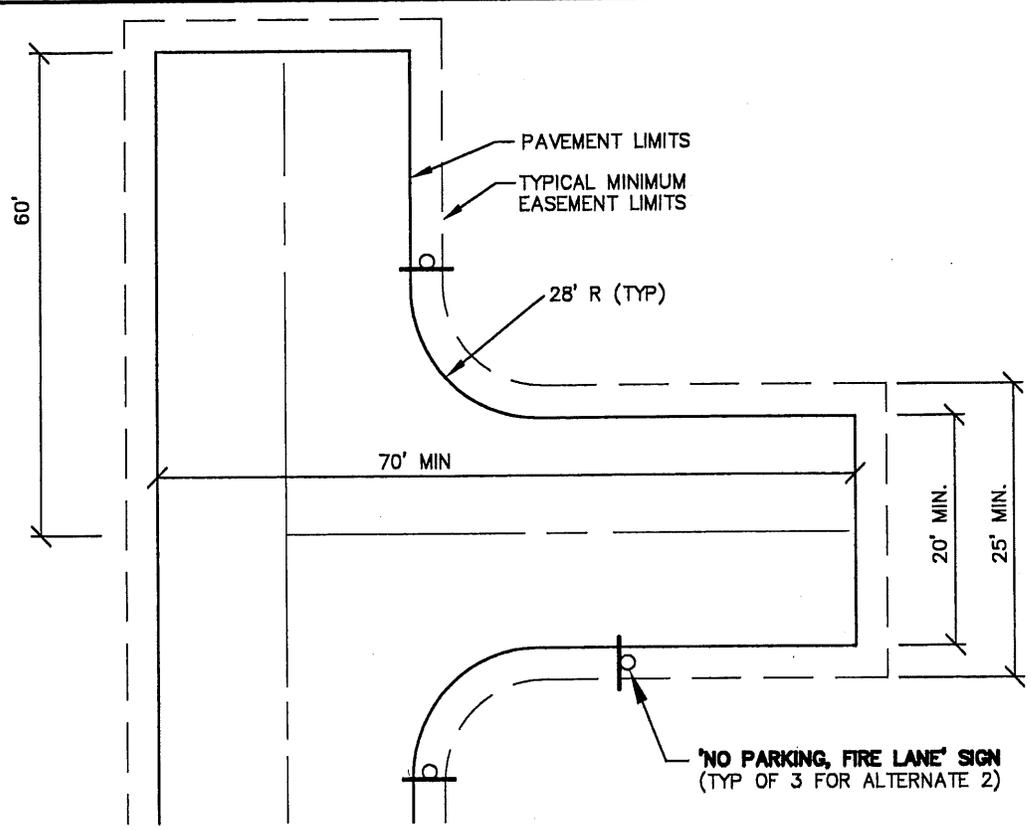
PLACE ADHESIVE ALONG
JOINT IMMEDIATELY PRIOR
TO POURING NEW
CONCRETE

NOTES:

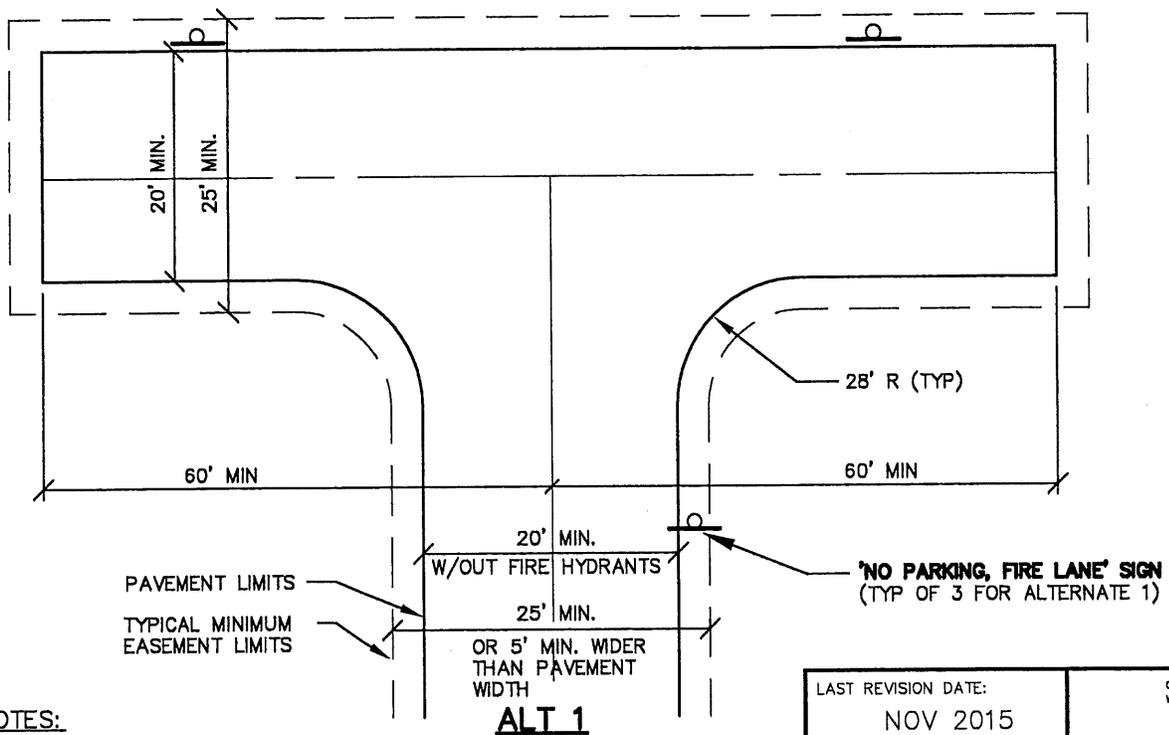
1. ONLY ALLOWED ON EXISTING PAVED STREETS.
2. SAWCUT THROUGH GUTTER PAN SHALL BE MADE AS CLOSE TO CURB FACE AS POSSIBLE.
3. COMPLETE CURB AND GUTTER SHALL NOT BE REMOVED UNLESS APPROVED BY THE CITY ENGINEER PRIOR TO START OF CONSTRUCTION.
4. WHEN TYPE 'C' CURBS ARE REMOVED, A MINIMUM OF 2 FEET OF PAVEMENT (MEASURED FROM THE FACE OF CURB) SHALL BE REMOVED AND REPLACED UNLESS OTHERWISE APPROVED BY THE CITY
5. ANY AC SAWCUTS WILL REQUIRE A BENCH GRIND (PER DETAILS 302A & 302B) IN CONJUNCTION WITH REPAVING.

LAST REVISION DATE: JULY 2015	COPYRIGHT 1998 WESTECH ENGINEERING, INC.
CURB KNOCKOUT FOR NEW DRIVEWAYS ON EXISTING CURBED STREETS (NTS)	
SILVERTON, OR	DETAIL NO. 217

FIRE CODE NOTE:
 ALL FIRE LANES,
 TURNAROUNDS AND
 ASSOCIATED
 IMPROVEMENTS SHALL
 COMPLY WITH THE
 MOST CURRENT
 VERSION OF THE
 OREGON FIRE CODE
 (OFC).



ALT 2

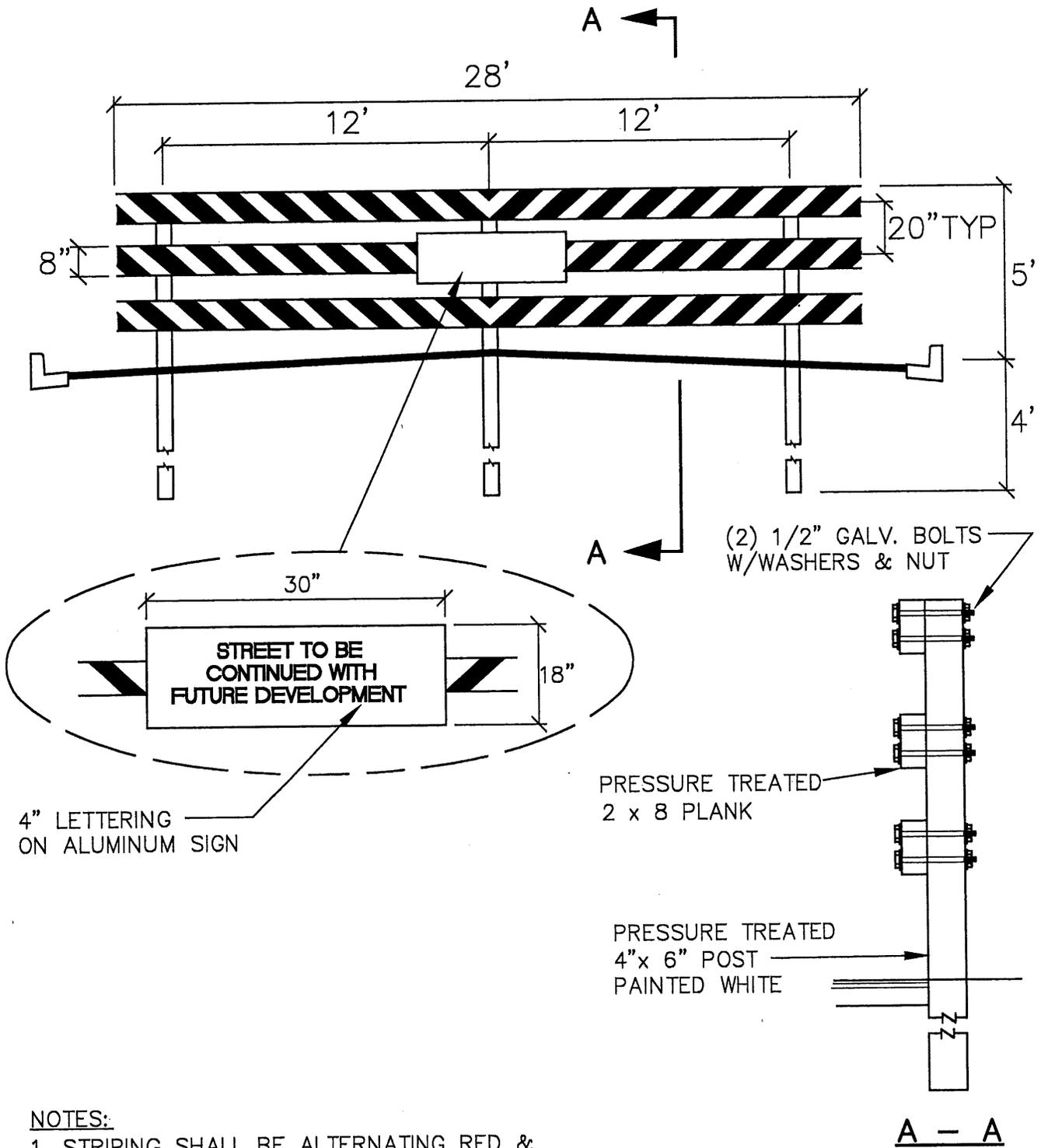


ALT 1

NOTES:

1. 'NO PARKING/FIRE LANE' SIGNS REQUIRED WITHIN LIMITS OF TURNAROUND AS SHOWN, & AT TYPICAL 50 FOOT MAXIMUM INTERVALS ALONG LENGTH OF FIRE LANE OR PER OFC REQUIREMENTS.
2. THESE ARE TYPICAL MINIMUM DESIGNS AS REQUIRED BY THE 2010 OFC D103.4 & FIGURE D103.1. ALTERNATE DESIGNS SHALL MEET THE APPROVAL OF THE LOCAL FIRE MARSHALL.
3. PAVEMENT DIMENSIONS SHOWN REFERS TO TOTAL DRIVABLE WIDTH BETWEEN CURBS IF PRESENT.
4. MIN. 26' PAVEMENT WIDTH AT FIRE HYDRANTS (OFC D103.1).

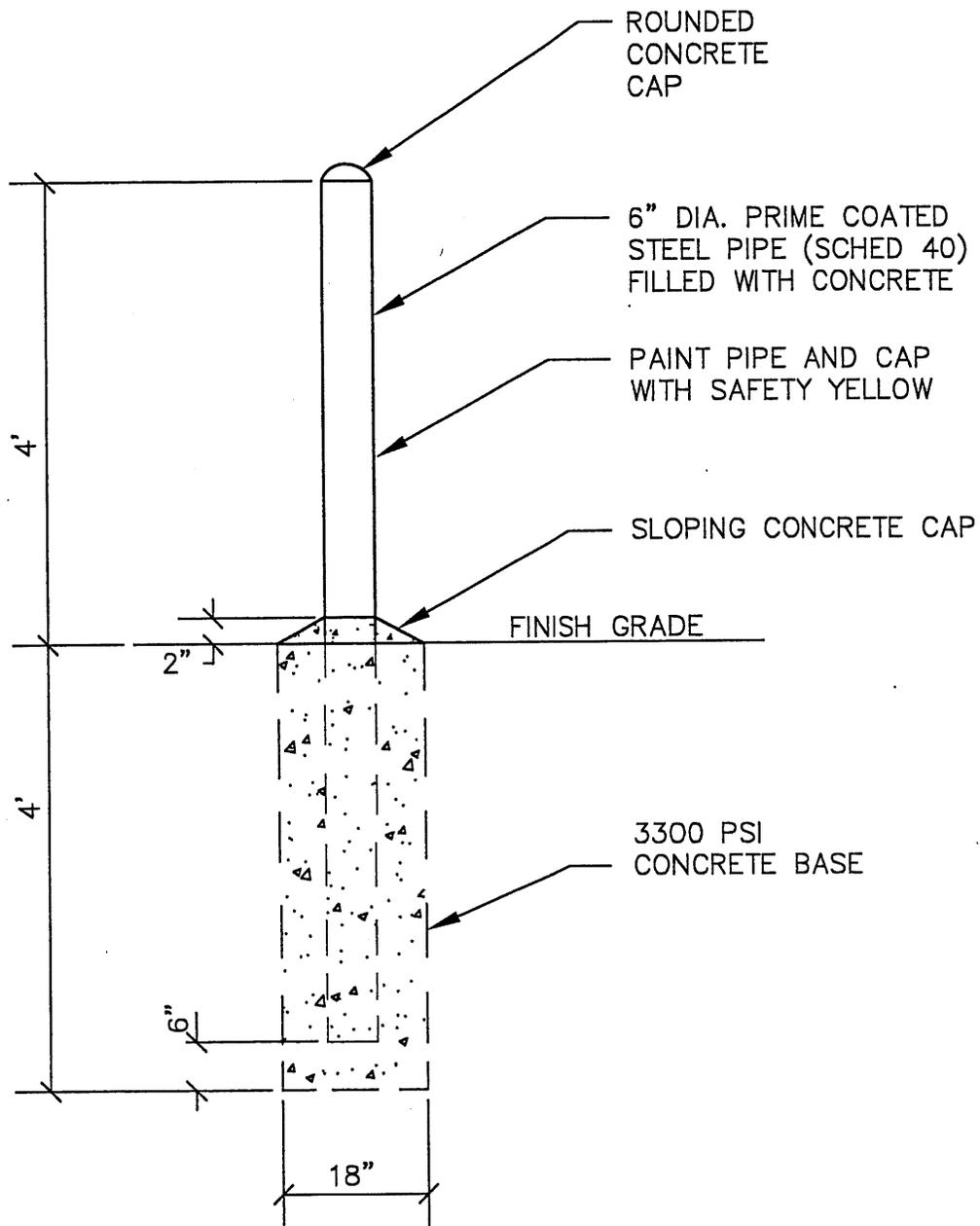
LAST REVISION DATE: NOV 2015	COPYRIGHT 1995 WESTECH ENGINEERING, INC.
FIRE CODE/FIRE LANE HAMMERHEAD TURNAROUND (PRIVATE DRIVES ONLY) (NTS)	
SILVERTON, OR	DETAIL NO. 220



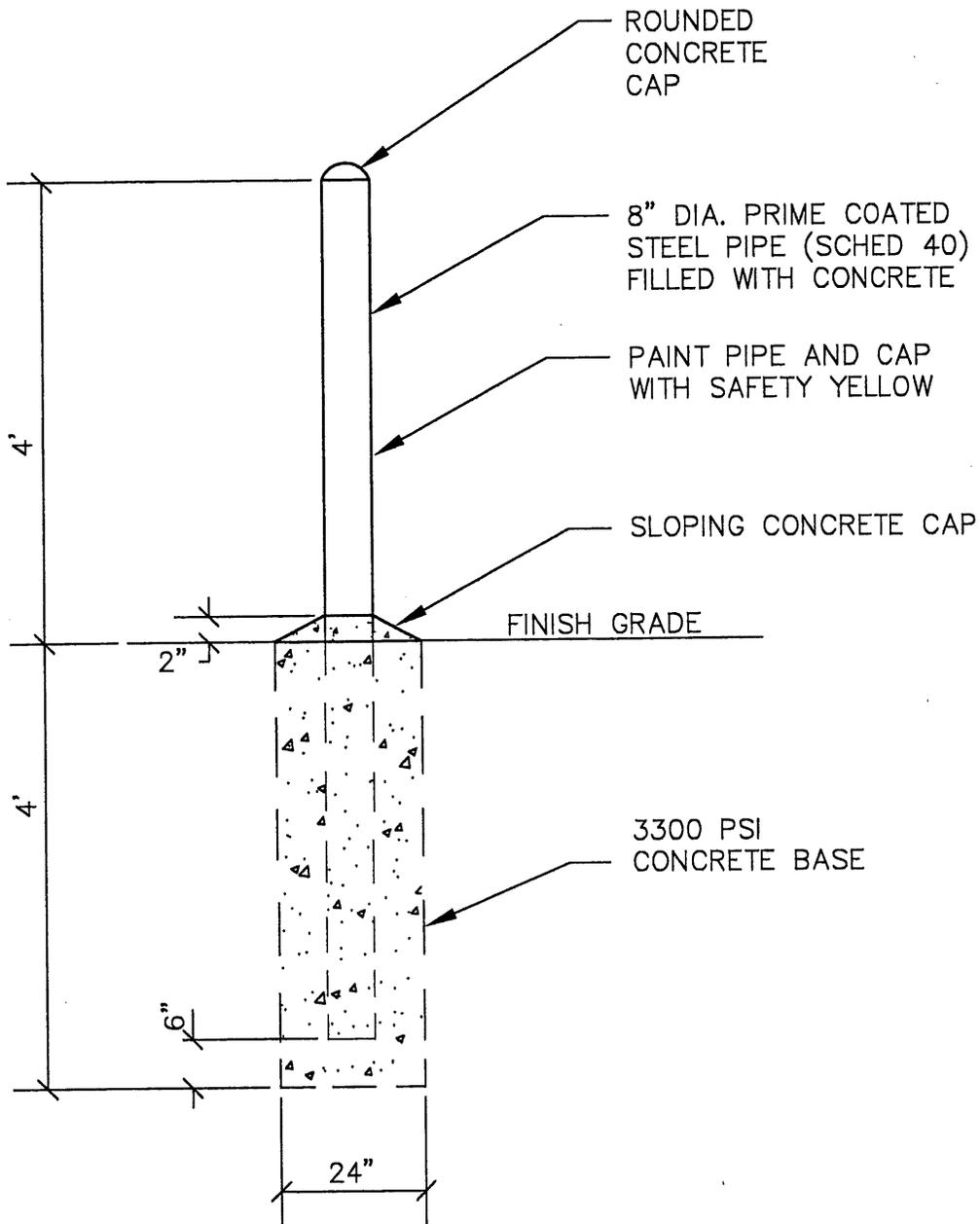
NOTES:

1. STRIPING SHALL BE ALTERNATING RED & WHITE STRIPES 6" WIDE & AT A 45° ANGLE.
2. STRIPING SHALL BE EITHER RETRO-REFLECTIVE TAPE OR PAINTED WITH A SEALED RETRO-REFLECTIVE SURFACE.
3. BARRICADE SHALL BE LOCATED WITHIN THE RESERVE STRIP, IF PRESENT.

LAST REVISION DATE: JULY 2015	COPYRIGHT 1998 WESTECH ENGINEERING, INC.
STREET BARRICADE (STUB STREETS)	
(NTS)	
SILVERTON, OR	DETAIL NO. 225



LAST REVISION DATE: JULY 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
6-INCH BOLLARD (GUARD POST) (NTS)	
SILVERTON, OR	DETAIL NO. 226

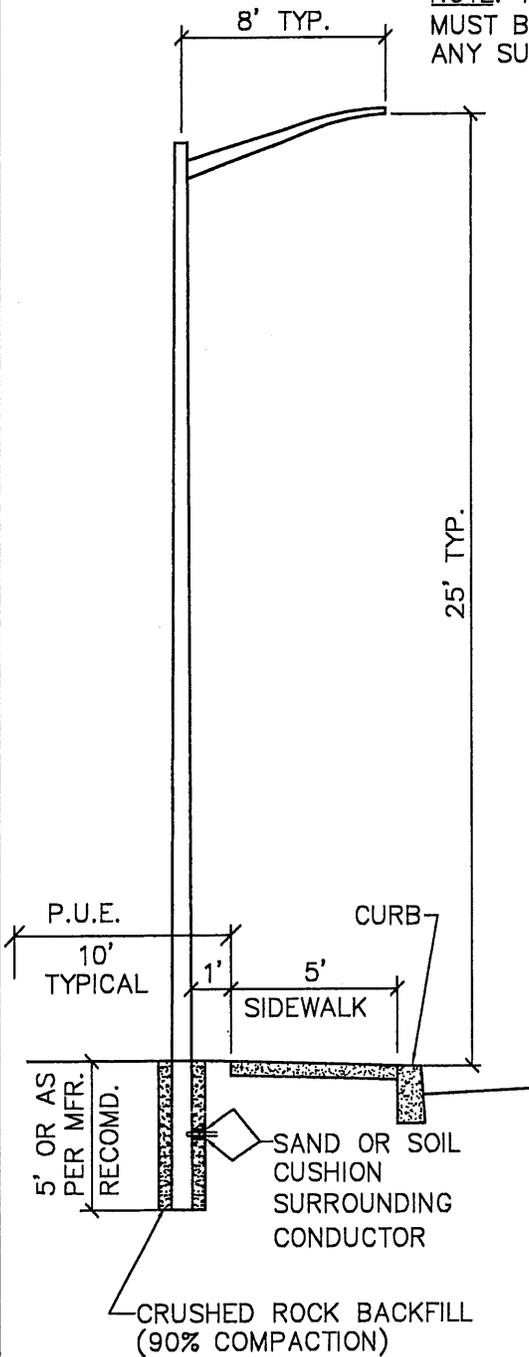


NOTES:

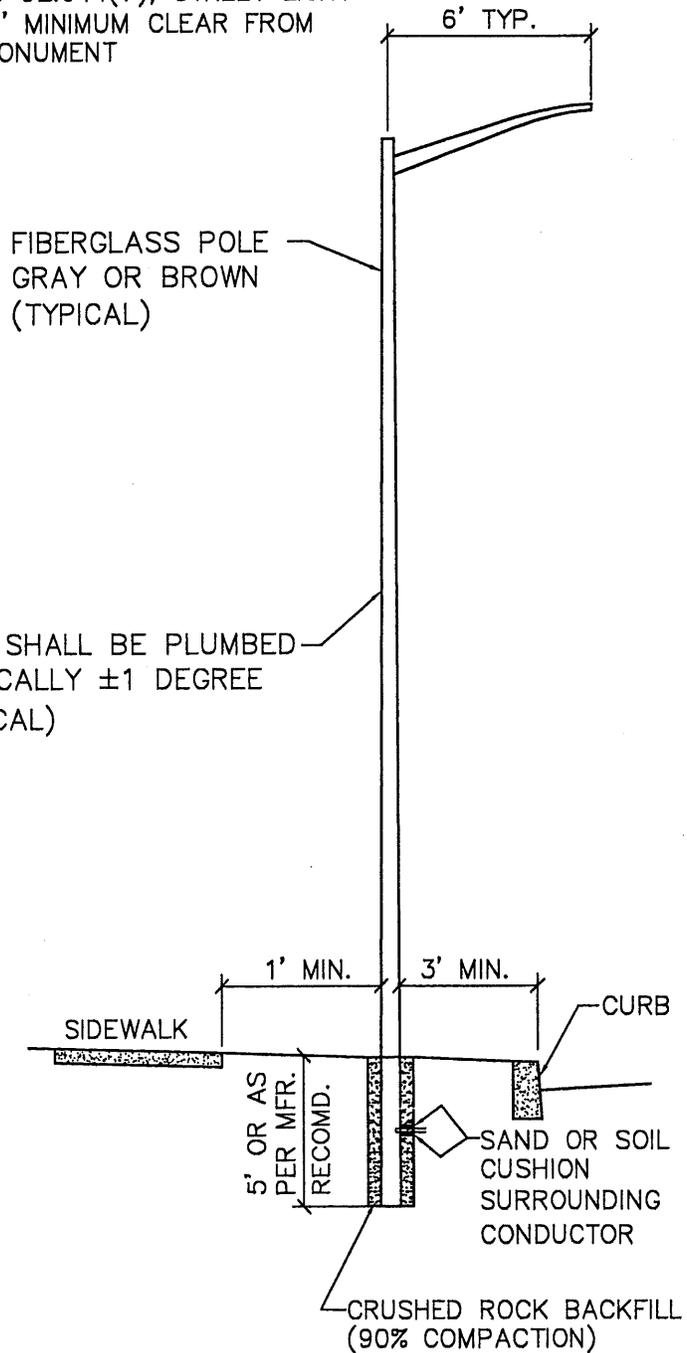
1. 8" BOLLARD TYPICALLY ONLY REQUIRED FOR LARGE COMMERCIAL/INDUSTRIAL TRUCK TRAFFIC.

LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
8-INCH BOLLARD (GUARD POST)	
(NTS)	
SILVERTON, OR	DETAIL NO. 227

NOTE: PER ORS 92.044(7), STREET LIGHT MUST BE SET 1' MINIMUM CLEAR FROM ANY SURVEY MONUMENT



TYPICAL LAMP POST
CROSS SECTION TYPE ONE

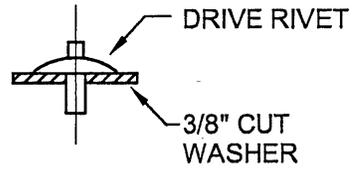
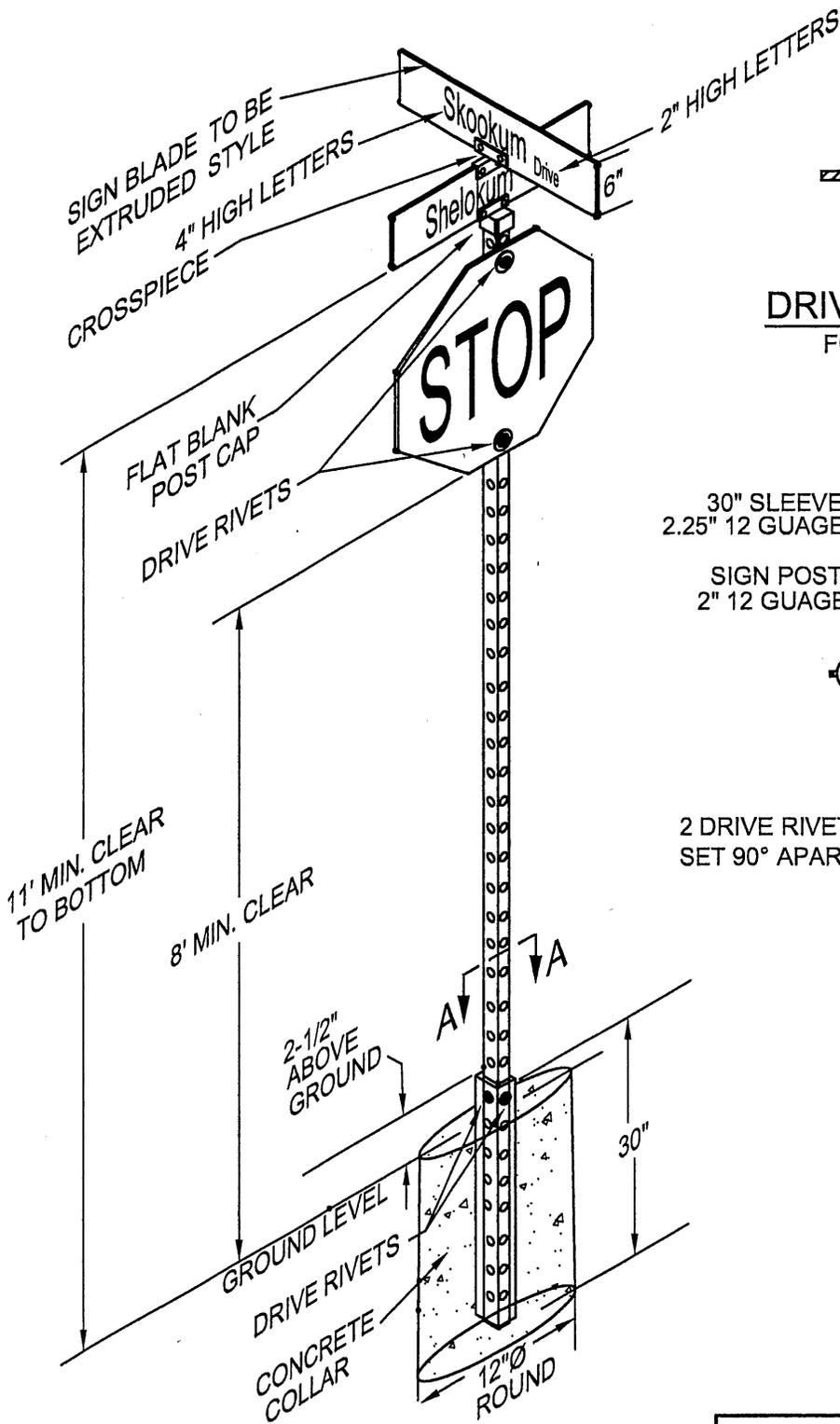


TYPICAL LAMP POST
CROSS SECTION TYPE TWO

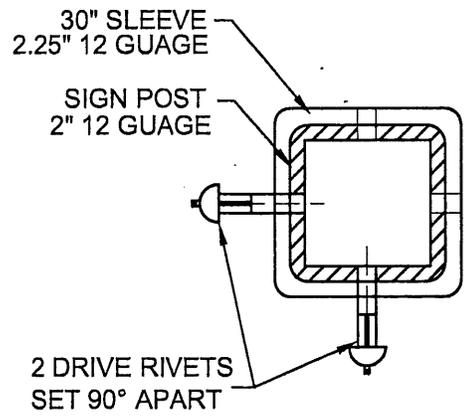
NOTES:

1. CONTRACTOR TO COORDINATE W/LOCAL POWER COMPANY FOR MATERIALS AND WORKMANSHIP REQUIREMENTS.
2. UNLESS OTHERWISE SHOWN ON DRAWINGS OR REQUIRED BY CITY, PROVIDE CITY APPROVED COBRAHEAD LED FIXTURE EQUIVALENT TO 100 WATT HPS.
3. STREET LIGHT POST & LIGHT FIXTURE TO BE APPROVED BY PGE.

LAST REVISION DATE: NOV 2015	
TYPICAL STREET LAMP POST	
(NTS)	
SILVERTON, OR	DETAIL NO. 230



DRIVE RIVET DETAIL
FOR MOUNTING SIGN

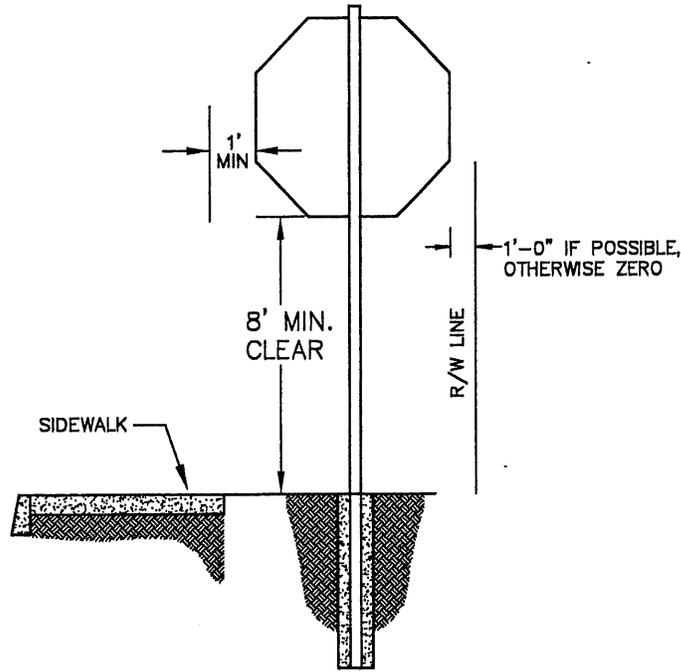


SECTION A - A

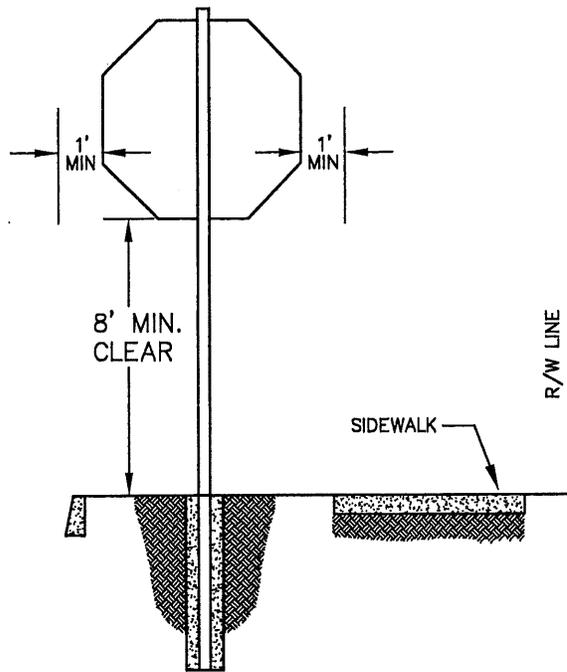
NOTES:

1. ALL NEWLY PLATTED & RECONSTRUCTED STREETS TO BE SIGNED PER CITY STANDARDS.
2. SIGN POST SHALL BE INSERTED ALL THE WAY INTO THE 30" BASE.
3. SEE ODOT DETAIL TM 687 FOR MATERIAL SPECIFICATIONS.
4. POST CAP AND CROSSPIECE TO BE THE SAME STYLE.

LAST REVISION DATE: NOV 2015	
SIGN POST FOR STREET SIGNS, STOP SIGNS & TRAFFIC CONTROL SIGNS (NTS)	
SILVERTON, OR	DETAIL NO. 231



CURBSIDE SIDEWALK
LOCATION OFFSET



PROPERTY LINE SIDEWALK
LOCATION OFFSET

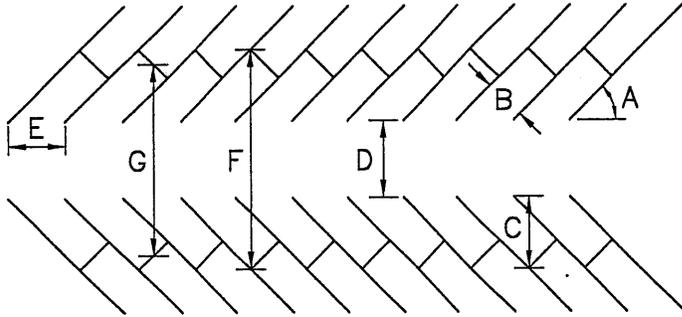
NOTES:

1. ALL NEWLY PLATTED & RECONSTRUCTED STREETS TO BE SIGNED PER DETAIL 231 & AS DIRECTED BY THE PUBLIC WORKS DIRECTOR.
2. SIGNS TO BE INSTALLED IN LOCATIONS SHOWN ON CITY APPROVED CONSTRUCTION DRAWINGS, AS APPLICABLE.

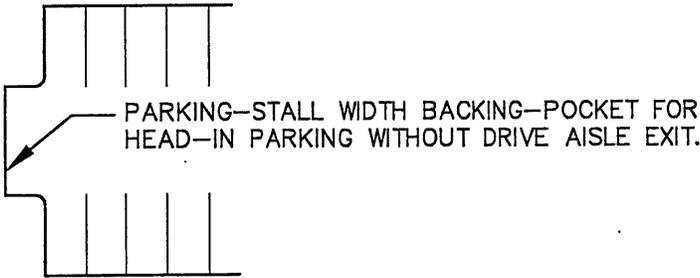
LAST REVISION DATE: NOV 2015	
TYPICAL STOP SIGN & STREET NAME SIGN LOCATION & OFFSETS (NTS)	
SILVERTON, OR	DETAIL NO. 232

OFF-STREET PARKING DIMENSIONS

STALLS WITHIN EACH PARKING LOT MAY BE DISTRIBUTED AS FOLLOWS:
60% STANDARD SPACES, 40% MAXIMUM COMPACT SPACES. ALL
COMPACT SPACES SHALL BE PERMANENTLY LABELED.



- A- PARKING ANGLE
- B- STALL WIDTH
- C- STALL TO CURB DEPTH
- D- AISLE WIDTH BETWEEN STALL LINES
- E- STALL WIDTH PARALLEL TO AISLE
- F- MODULE WIDTH (FRONT OF STALL TO FRONT OF STALL)
- G- MODULE WIDTH (FRONT OF STALL TO FRONT OF STALL AT BUMPER MIDPOINT)



OFF-STREET PARKING MATRIX

MINIMUM PARKING SPACE AND AISLE DIMENSIONS (FT)
ONE WAY TRAFFIC FLOW

COMPACT (8.5' x 16')							STANDARD (9' x 19')					
A	B	C	D	E	F	G	B	C	D	E	F	G
0°	8.5	8.5	12.0	19.0	28.0	-	9.0	9.0	12.0	22.0	28.0	-
30°	8.5	15.4	12.0	17.0	41.7	34.4	9.0	17.3	12.0	18.0	45.6	37.8
45°	8.5	17.3	13.0	12.0	47.6	41.6	9.0	19.8	13.0	12.7	52.6	46.2
60°	8.5	18.1	18.0	9.8	54.2	50.0	9.0	21.0	18.0	10.4	60.0	55.7
70°	8.5	17.9	19.0	9.0	54.9	52.0	9.0	21.0	19.0	9.6	61.0	57.8
90°	8.5	16.0	24.0	8.5	56.0	56.0	9.0	19.0	24.0	9.0	62.0	62.0

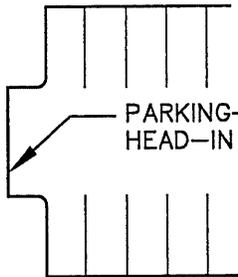
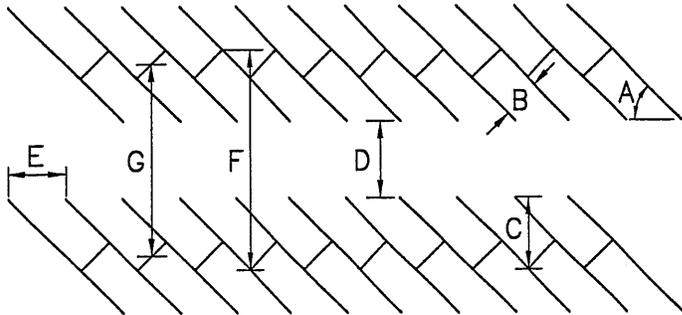
NOTES:

- WHERE DRIVE AISLE "D" IS A FIRE LANE, WIDTHS SHALL CONFORM WITH THE OREGON FIRE CODE MINIMUMS OF 20 FEET IN ALL CASES (26 FOOT MINIMUM ADJACENT TO FIRE HYDRANTS), PER OFC 503.2.1 & D103.1.

LAST REVISION DATE: JULY 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
OFFSTREET PARKING DIMENSIONS ONE WAY TRAFFIC FLOW (NTS)	
SILVERTON, OR	DETAIL NO. 235

OFF-STREET PARKING DIMENSIONS

STALLS WITHIN EACH PARKING LOT MAY BE DISTRIBUTED AS FOLLOWS:
 60% STANDARD SPACES, 40% MAXIMUM COMPACT SPACES. ALL
 COMPACT SPACES SHALL BE PERMANENTLY LABELED.



- A- PARKING ANGLE
- B- STALL WIDTH
- C- STALL TO CURB DEPTH
- D- AISLE WIDTH BETWEEN STALL LINES
- E- STALL WIDTH PARALLEL TO AISLE
- F- MODULE WIDTH (FRONT OF STALL TO FRONT OF STALL)
- G- MODULE WIDTH (FRONT OF STALL TO FRONT OF STALL AT BUMPER MIDPOINT)

OFF-STREET PARKING MATRIX

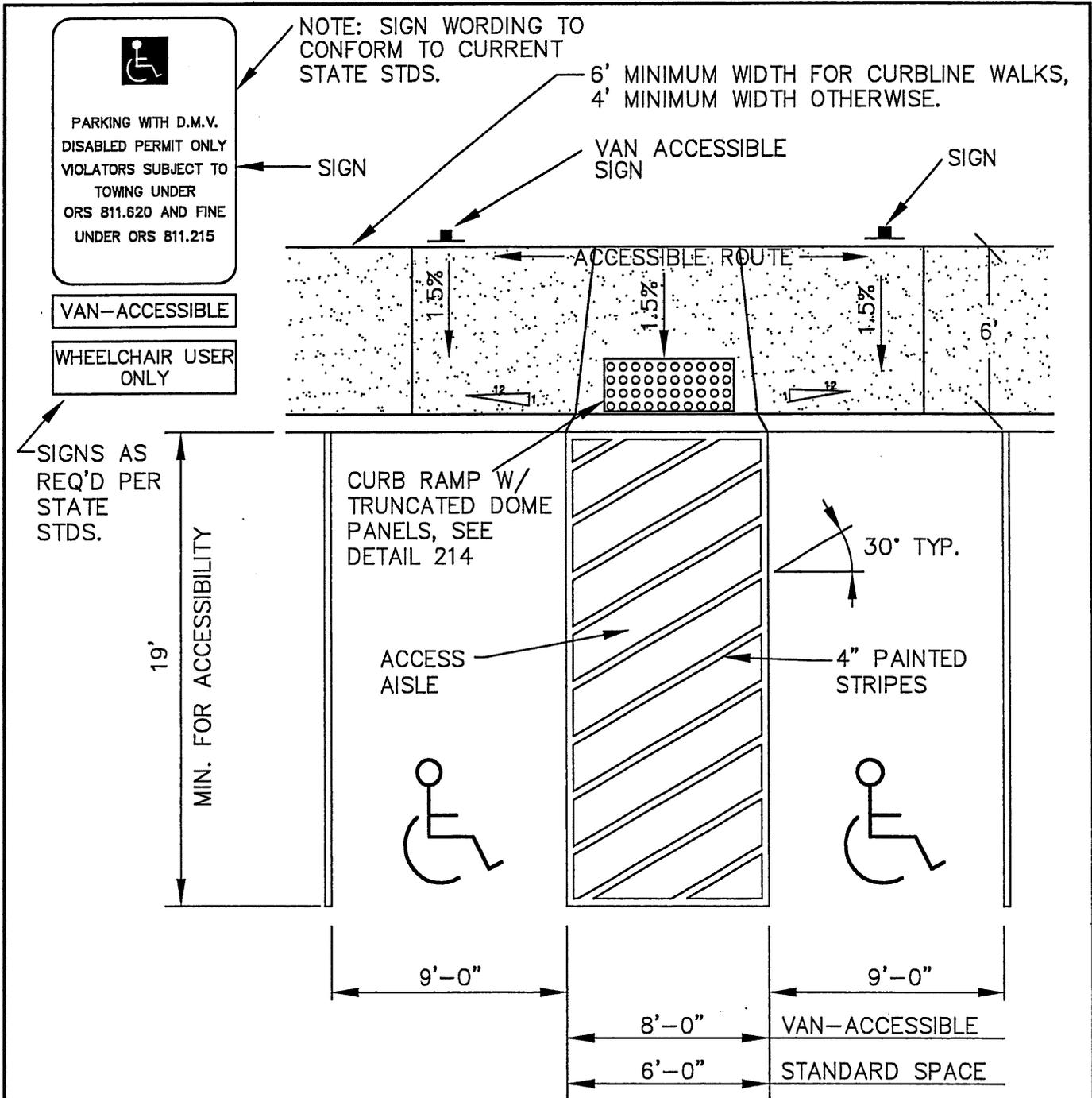
MINIMUM PARKING SPACE AND AISLE DIMENSIONS (FT)
 TWO WAY TRAFFIC FLOW

COMPACT (8.5' x 16')							STANDARD (9' x 19')					
A	B	C	D	E	F	G	B	C	D	E	F	G
0°	8.5	8.5	24.0	19.0	28.0	—	9.0	9.0	24.0	22.0	28.0	—
30°	8.5	15.4	24.0	17.0	41.7	34.4	9.0	17.3	24.0	18.0	45.6	37.8
45°	8.5	17.3	24.0	12.0	47.6	41.6	9.0	19.8	24.0	12.7	52.6	46.2
60°	8.5	18.1	24.0	9.8	54.2	50.0	9.0	21.0	24.0	10.4	60.0	55.7
70°	8.5	17.9	24.0	9.0	54.9	52.0	9.0	21.0	24.0	9.6	61.0	57.8
90°	8.5	16.0	24.0	8.5	56.0	56.0	9.0	19.0	24.0	9.0	62.0	62.0

NOTES:

- WHERE DRIVE AISLE "D" IS A FIRE LANE, WIDTHS SHALL CONFORM WITH THE OREGON FIRE CODE MINIMUMS OF 20 FEET IN ALL CASES (26 FOOT MINIMUM ADJACENT TO FIRE HYDRANTS), PER OFC 503.2.1 & D103.1.

LAST REVISION DATE: JULY 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
OFFSTREET PARKING DIMENSIONS TWO WAY TRAFFIC FLOW (NTS)	
SILVERTON, OR	DETAIL NO. 236



DOUBLE ACCESSIBLE PARKING SPACE

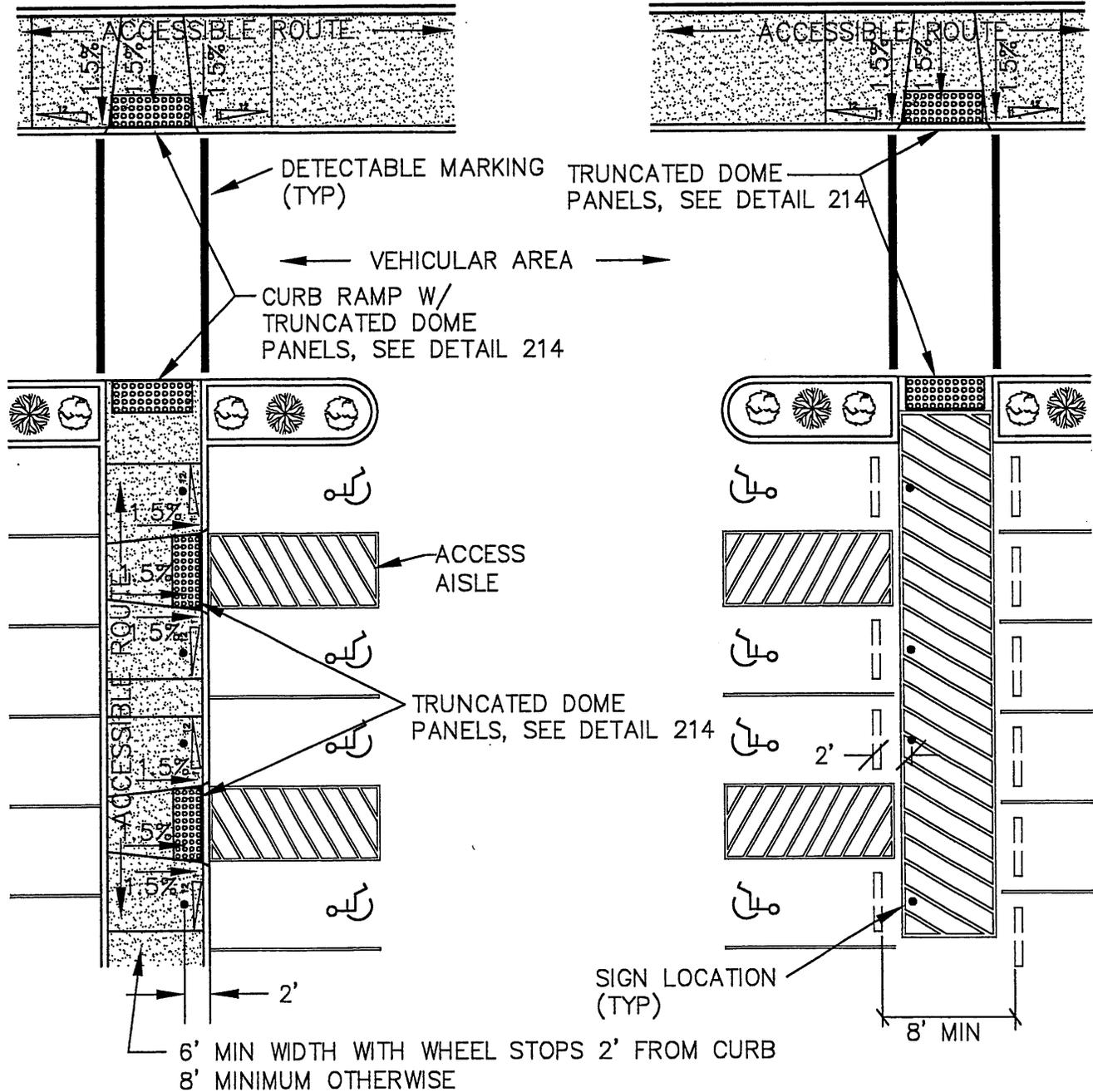
NOTES:

1. ONE ACCESSIBLE PARKING SPACE MUST BE DESIGNATED "VAN-ACCESSIBLE", THE OTHER SPACE CAN BE EITHER "VAN-ACCESSIBLE" OR STANDARD PARKING SPACE.
2. VAN-ACCESSIBLE OR WHEELCHAIR ONLY SPACES SHALL HAVE AN ADDITIONAL SIGN MOUNTED BELOW THE STANDARD PARKING SPACE PARKING SIGN.
3. VAN-ACCESSIBLE SPACE CAN BE USED BY ANY VEHICLE WITH A DMV DISABLED PERMIT.
4. MAXIMUM 2% CROSS SLOPE ALLOWED IN PARKING SPACE OR ACCESS AISLE.
5. POST MOUNTED SIGNS SHALL HAVE 7' ($\pm 3"$) CLEARANCE FROM SIGN BOTTOM TO GROUND.

LAST REVISION DATE: JULY 2015	
DOUBLE ACCESSIBLE PARKING SPACE	
(NTS)	
SILVERTON, OR	DETAIL NO. 237

BUILDING

BUILDING



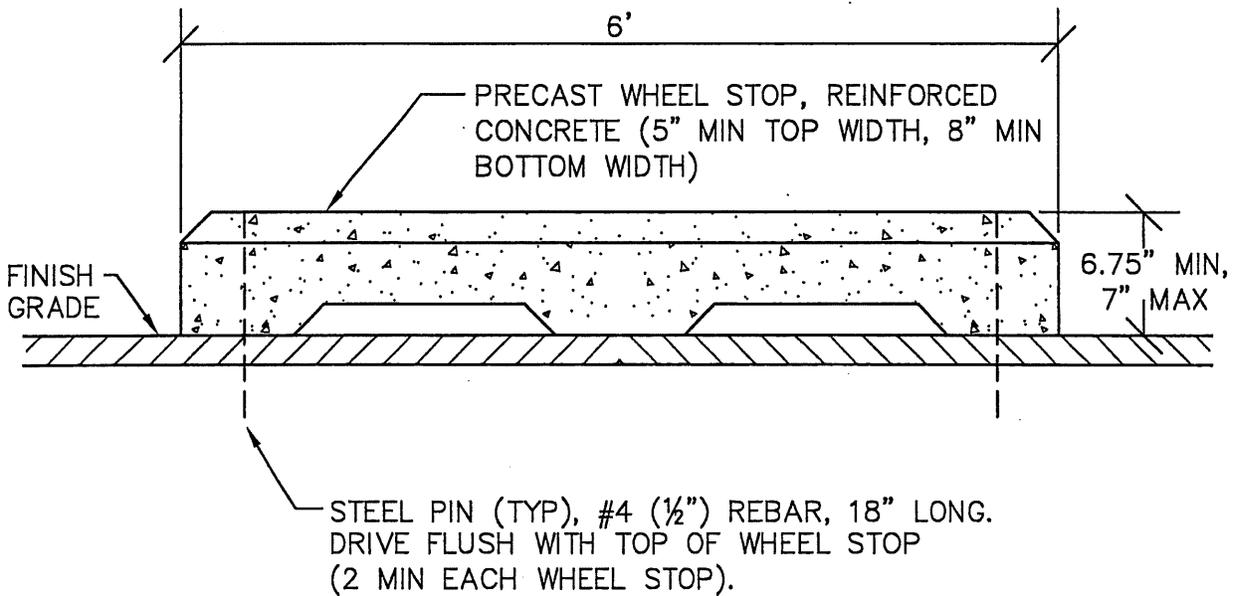
ACCESSIBLE PARKING PLAN ①

ACCESSIBLE PARKING PLAN ②

NOTES:

- 1. SEE DETAIL 237 FOR ACCESSIBLE PARKING PARKING SPACE LAYOUT.

LAST REVISION DATE:	
JULY 2015	
ACCESSIBLE ROUTES AND CROSSINGS IN VEHICULAR AREAS (NTS)	
SILVERTON, OR	DETAIL NO. 238



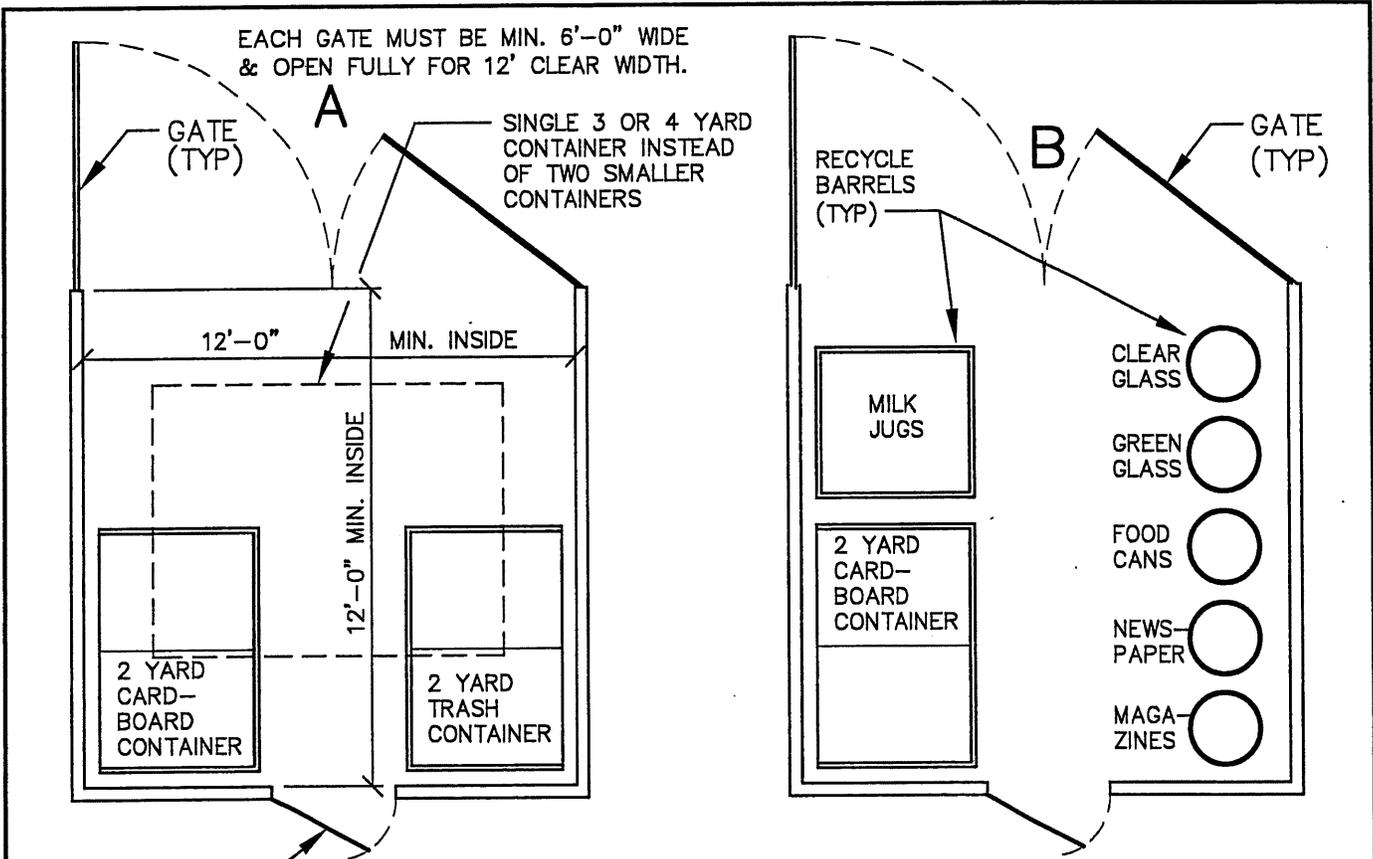
SECTION

NTS

NOTES:

1. SEE DRAWINGS FOR LOCATION & NUMBER OF WHEEL STOPS, INCLUDING DIMENSION FROM CURB, EDGE OF PAVEMENT OR BUILDING AS APPLICABLE.
2. UNLESS OTHERWISE SPECIFIED OR SHOWN ON SITE PLAN, SET WHEEL STOPS 2 FEET FROM FACE OF CURB OR EDGE OF PAVEMENT, MEASURED FROM THE FACE OF THE WHEEL STOP (VEHICLE SIDE) TO FACE OF CURB (OR EDGE OF PAVEMENT). SET BACK FROM PROPERTY LINES PER CITY STANDARDS (3' MIN). MIN SETBACK FROM BUILDINGS AS SHOWN ON DWGS.
3. FOR USE ON HEAD-IN PARKING WITHOUT FULL HEIGHT CURBS, OR WHERE A SIDEWALK ALONG HEAD-IN PARKING IS LESS THAN 6 FEET WIDE.

LAST REVISION DATE: JULY 2015	JO #
PRECAST WHEELSTOP DETAIL	
(NTS)	
SILVERTON, OR	DETAIL NO. 239



3'-0" GATE OR DOOR REQ'D. AT REAR OF ENCLOSURE (TYP).

ENCLOSURES SHALL BE LOCATED OUTSIDE OF THE PUBLIC R/W (UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY).

TRASH ENCLOSURE**

RECYCLE ENCLOSURE**

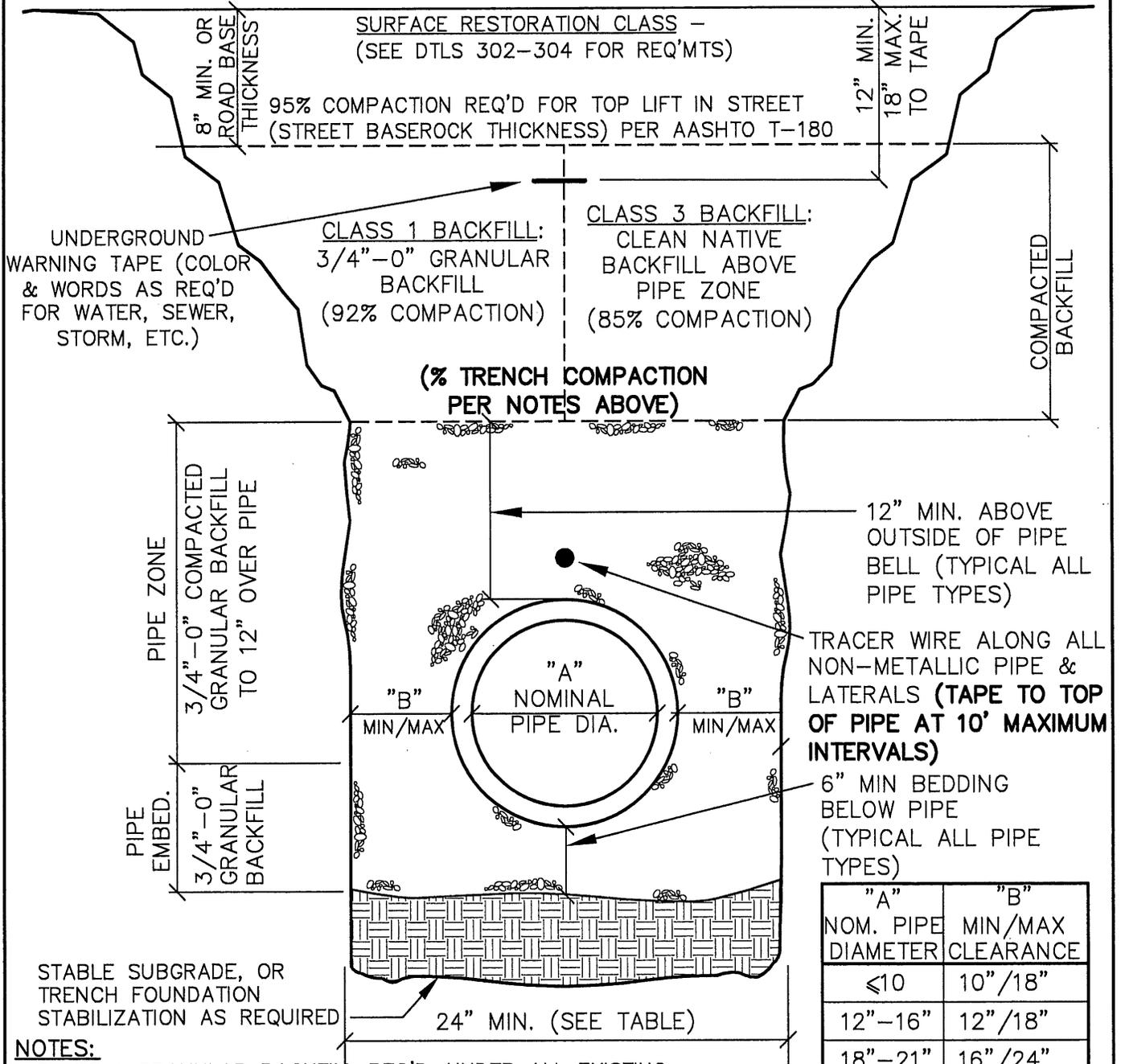
**ENCLOSURES SHOWN ARE TYPICAL EXAMPLES UNLESS ALTERNATE CONFIGURATION IS APPROVED BY TRASH/RECYCLING FRANCHISEE AND CITY PLANNER.

NOTES:

1. GATES:
 - (a) ALL GATES MUST ATTACH AT THE END OF OF THE WALLS TO PROVIDE A MINIMUM OF 12' CLEAR WORKING SPACE WHEN OPEN.
 - (b) TO SERVICE THE ENCLOSURE, THE GATES MUST BE ABLE TO BE PINNED IN MUST BE ABLE TO BE PINNED IN THE FULL OPEN POSITION.
 - (c) GATES MUST OPEN FROM OUTSIDE THE ENCLOSURE.
2. FOR 5 OR 6 YARD CONTAINERS THE ENCLOSURE DEPTH MUST BE 15'.
3. WHERE REQ'D. (I.E. RESTAURANTS), GREASE BARRELS MUST BE SEPARATE FROM TRASH AND RECYCLING ENCLOSURES.
4. ROOFS OR OVERHANGS SHALL HAVE 15' OF OVERHEAD CLEARANCE.
5. IF RECYCLING IS NOT INCLUDED, AREA (A) CAN PROVIDE SERVICE FOR TRASH AND CARDBOARD FOR CONTAINER SIZES OF 1 TO 2 YARDS. IF A 3 YARD OR LARGER TRASH CONTAINER IS NEEDED, AN ADDITIONAL 12' X 12' SPACE WILL BE NECESSARY FOR CARDBOARD CONTAINER SERVICE.
6. CONCRETE PADS REQUIRED FOR ALL ENCLOSURES. WALLS, GATE & DOOR MATERIALS & HEIGHT PER CITY STANDARDS BASED ON SCREENING REQUIREMENTS.
7. A 1 YD. CONTAINER WILL HOLD APPROXIMATELY THE SAME AS 6 TRASH CANS (32 GAL SIZE). USE 6 TIMES THE CONTAINER SIZE IN YARDS TO ESTIMATE A CONTAINER CAPACITY. FOR EXAMPLE, A 3 YD. CONTAINER WILL HOLD APPROX THE SAME AMOUNT AS 18 TRASH CANS (32 GAL. SIZE).

LAST REVISION DATE: JULY 2015	
TYPICAL TRASH AND RECYCLING ENCLOSURE (NTS)	
SILVERTON, OR	DETAIL NO. 240

TRENCH COMPACTION: CLASS 1 GRANULAR BACKFILL – 92% OPTIMUM PER AASHTO T-180 (MODIFIED PROCTOR)
 CLASS 3 NATIVE BACKFILL – 85% OPTIMUM PER AASHTO T-180



"A" NOM. PIPE DIAMETER	"B" MIN/MAX CLEARANCE
≤10	10"/18"
12"–16"	12"/18"
18"–21"	16"/24"
24"–30"	18"/30"
>30"	24"/36"

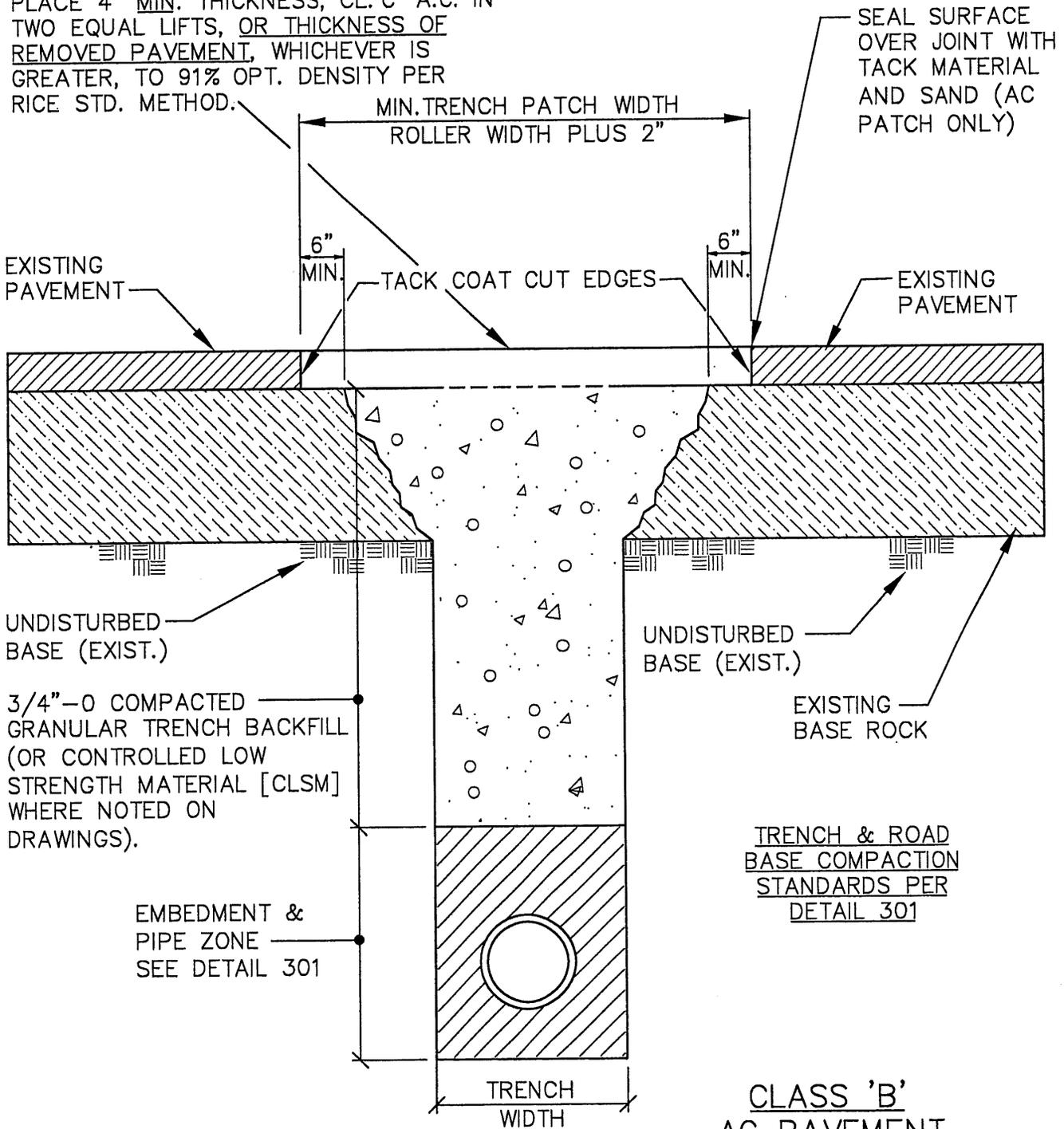
(SEE NOTE 4)

NOTES:

1. CLASS 1 GRANULAR BACKFILL REQ'D. UNDER ALL EXISTING OR FUTURE IMPROVED AREAS (INCLUDING SIDEWALKS).
2. WHERE NEW PIPING IS IN SAME ALIGNMENT AS EXISTING PIPING, THE PIPE EMBEDMENT SHALL EXTEND TO A MIN. OF 6" BELOW THE NEW PIPING OR 6" BELOW EXISTING PIPING, WHICHEVER IS DEEPER.
3. FOR FLEXIBLE PIPE, BOTTOM OF TRENCH SHORING SHALL BE ABOVE PIPE SPRINGLINE PRIOR TO COMPACTING BACKFILL BELOW THE PIPE SPRINGLINE AND UNDER THE PIPE HAUNCHES.
4. MINIMUM CLEARANCES SHOWN ("B") ASSUMES STANDARD 6" WALL TRENCH BOXES SET ON TRENCH BOTTOM, AND REPRESENTS WIDTH REQUIRED TO CONSOLIDATE GRANULAR MATERIAL UNDER PIPE HAUNCHES (TO AVOID LOSS OF SIDE SUPPORT WHEN TRENCH BOX IS MOVED OR PULLED FORWARD). TRENCH WIDTH REDUCTION REQUIRES PRIOR APPROVAL BASED ON ACTUAL TRENCH SHORING PROPOSED.

LAST REVISION DATE: JAN 2016	
TRENCH BACKFILL, BEDDING, AND PIPE ZONE	
(NTS)	
SILVERTON, OR	DETAIL NO. 301

PLACE 4" MIN. THICKNESS, CL.'C' A.C. IN TWO EQUAL LIFTS, OR THICKNESS OF REMOVED PAVEMENT, WHICHEVER IS GREATER, TO 91% OPT. DENSITY PER RICE STD. METHOD.



UNDISTURBED BASE (EXIST.)

3/4"-0 COMPACTED GRANULAR TRENCH BACKFILL (OR CONTROLLED LOW STRENGTH MATERIAL [CLSM] WHERE NOTED ON DRAWINGS).

EMBEDMENT & PIPE ZONE SEE DETAIL 301

UNDISTURBED BASE (EXIST.)

EXISTING BASE ROCK

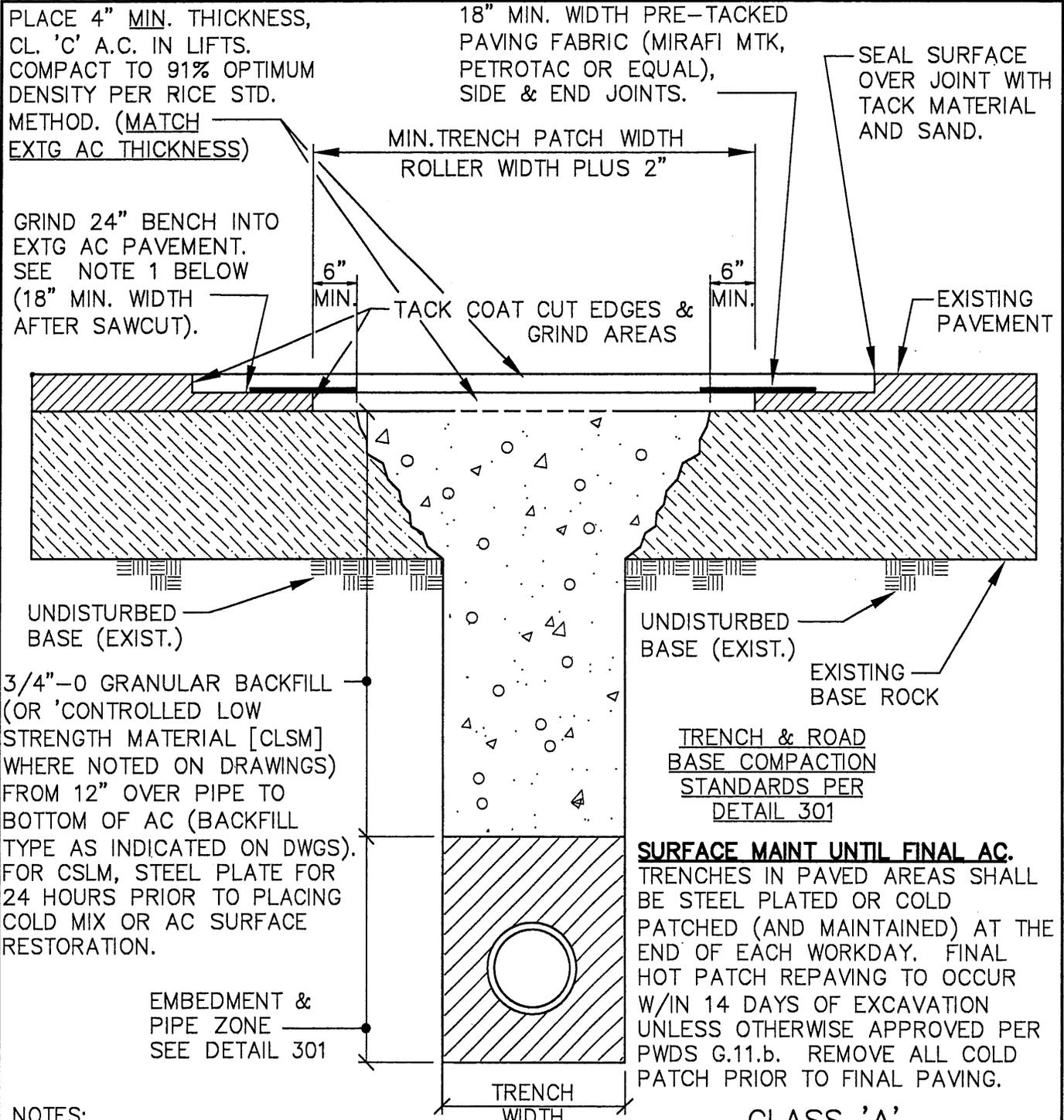
TRENCH & ROAD BASE COMPACTION STANDARDS PER DETAIL 301

CLASS 'B' AC PAVEMENT RESTORATION

NOTES:

1. ALL EXISTING AC OR PCC PAVEMENT SHALL BE SAWCUT PRIOR TO REPAVING.
2. PCC CONCRETE PAVEMENT SHALL BE REPLACED WITH 3300 PSI PCC TO A MINIMUM THICKNESS OF 6" OR TO THE THICKNESS OF REMOVED CONCRETE, WHICHEVER IS GREATER.
3. FOR PAVED DRIVEWAYS (EXCEPT COMMERCIAL OR INDUSTRIAL) WITH LESS THAN 4" EXISTING AC, PAVEMENT THICKNESS MAY BE REDUCED TO 3" AC IN 2 LIFTS, AND OVERCUT MAY BE REDUCED TO 3" EACH SIDE.

LAST REVISION DATE: NOV 2015	
MINOR OR PRIVATE STREET AND AC DRIVEWAY CUT SURFACE RESTORATION (NTS)	
SILVERTON, OR	DETAIL NO. 302



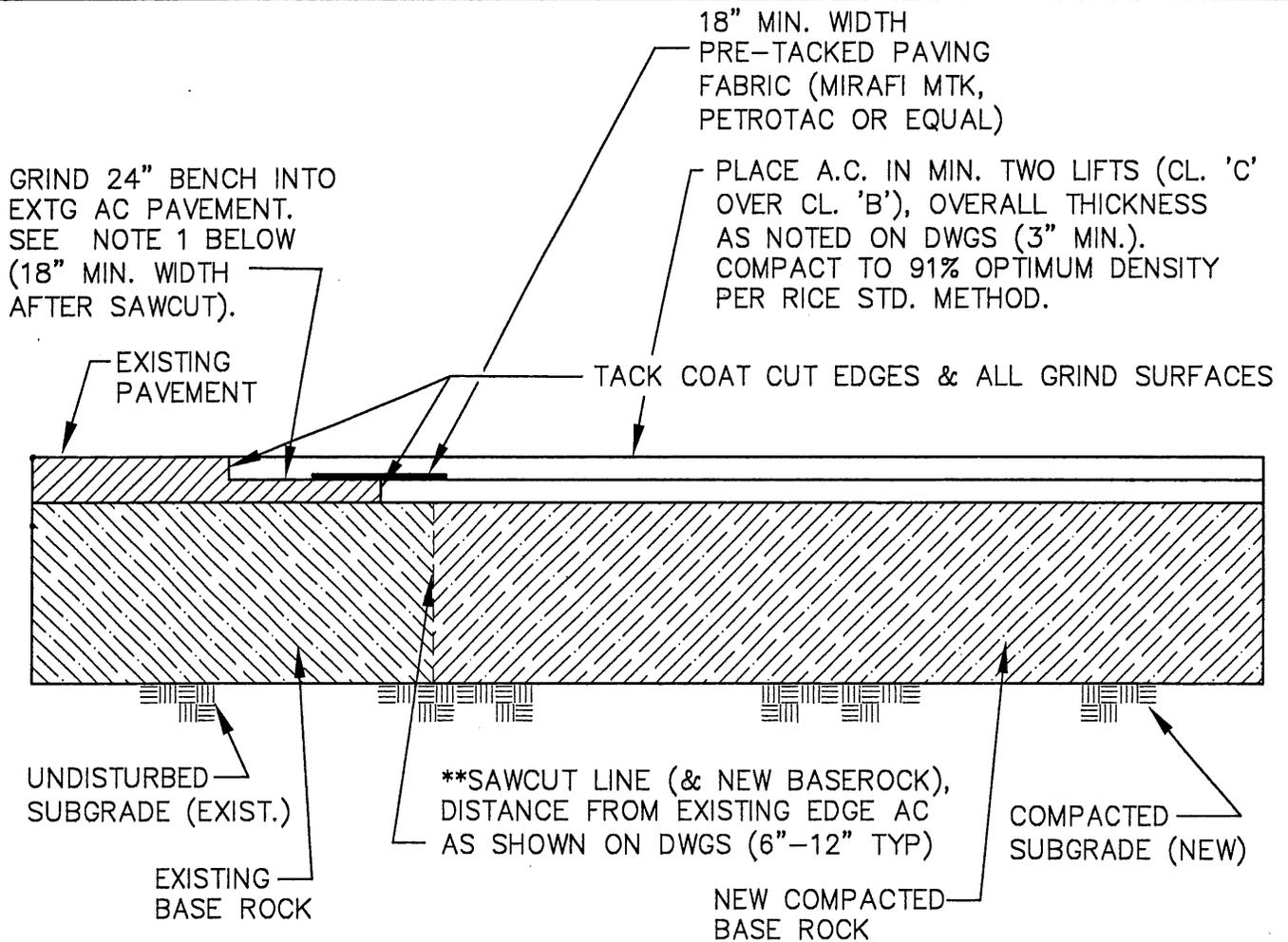
NOTES:

1. FOLLOWING BACKFILL COMPACTION OR CLSM INSTALLATION, GRIND 24" WIDE BENCH IN EXISTING AC ON BOTH SIDES & TRENCH ENDS, 2" DEEP OR HALF THE DEPTH OF EXISTING AC (3" MAX).
2. AFTER GRINDING, SAWCUT ALONG TRENCH SIDES, 6" BACK FROM TRENCH EDGE.
3. BASE LIFT(S). TACK COAT EDGES, INSTALL/COMPACT BASE LIFTS (3" MAX LIFT) TO LEVEL OF BENCH GRIND.
4. FINISH LIFT. INSTALL JOINT SEAL FABRIC, TACK COAT GRIND SURFACES & EDGES, & INSTALL TOP LIFT OF AC. SAND SEAL ALL JOINTS (REMOVE EXCESS SAND AFTER CURE).

SURFACE MAINT UNTIL FINAL AC.
 TRENCHES IN PAVED AREAS SHALL BE STEEL PLATED OR COLD PATCHED (AND MAINTAINED) AT THE END OF EACH WORKDAY. FINAL HOT PATCH REPAVING TO OCCUR W/IN 14 DAYS OF EXCAVATION UNLESS OTHERWISE APPROVED PER PWDS G.11.b. REMOVE ALL COLD PATCH PRIOR TO FINAL PAVING.

**CLASS 'A'
 AC PAVEMENT
 RESTORATION**

LAST REVISION DATE: NOV 2015	
AC STREET CUT SURFACE RESTORATION W/BENCH GRIND (NTS)	
SILVERTON, OR	DETAIL NO. 302A

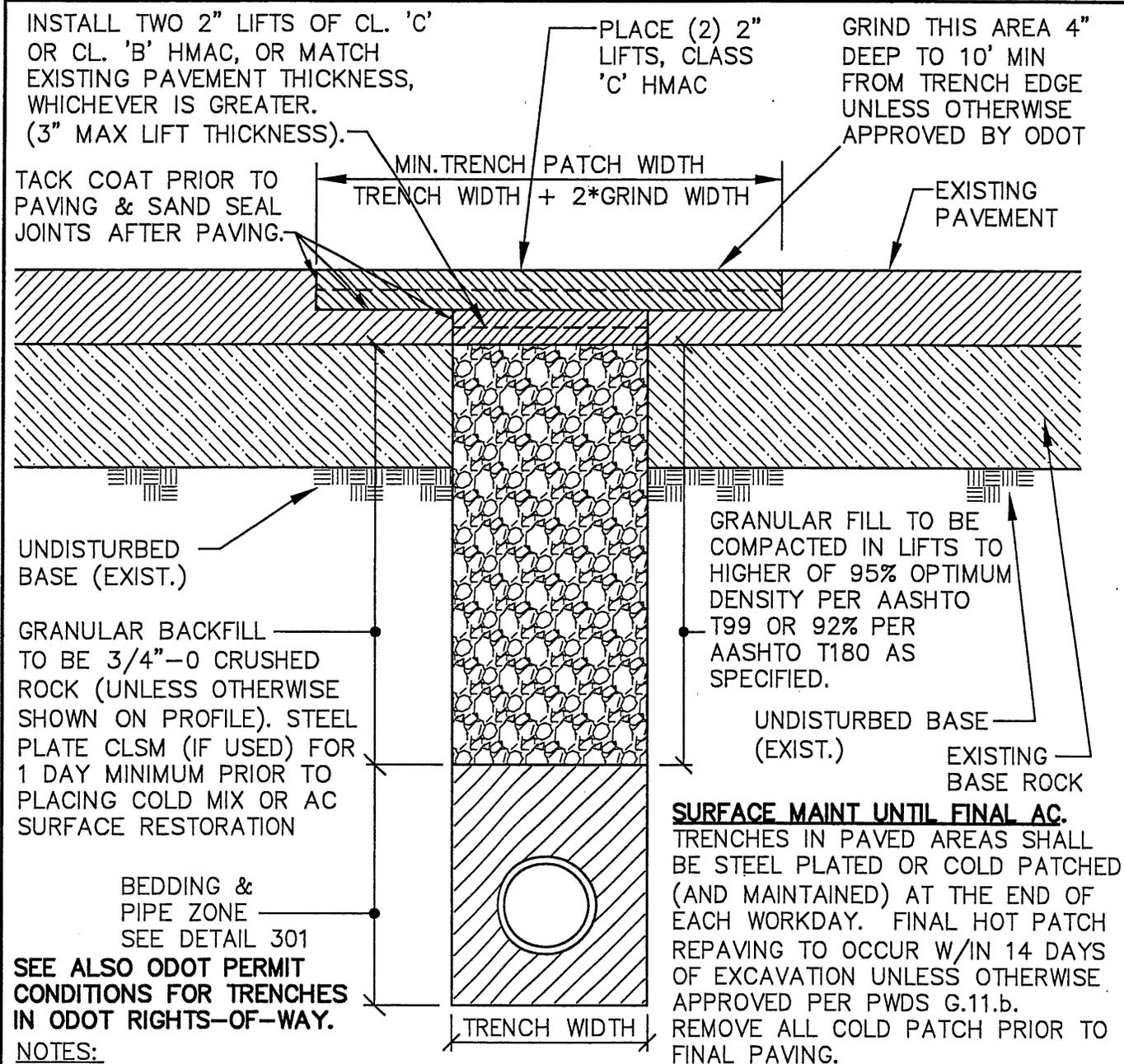


****BENCH GRIND REQUIREMENT SHOWN DOES NOT REPLACE ANY REQUIREMENT NOTED ON DRAWINGS FOR SAWCUT BACK FROM EDGE OF EXISTING AC & INSTALLATION OF NEW BASEROCK. BENCH GRIND REQUIREMENT APPLIES AFTER ALL EXCAVATION & BASEROCK PLACEMENT (PRIOR TO PAVING), TO AVOID FULL DEPTH AC JOINTS.**

NOTES:

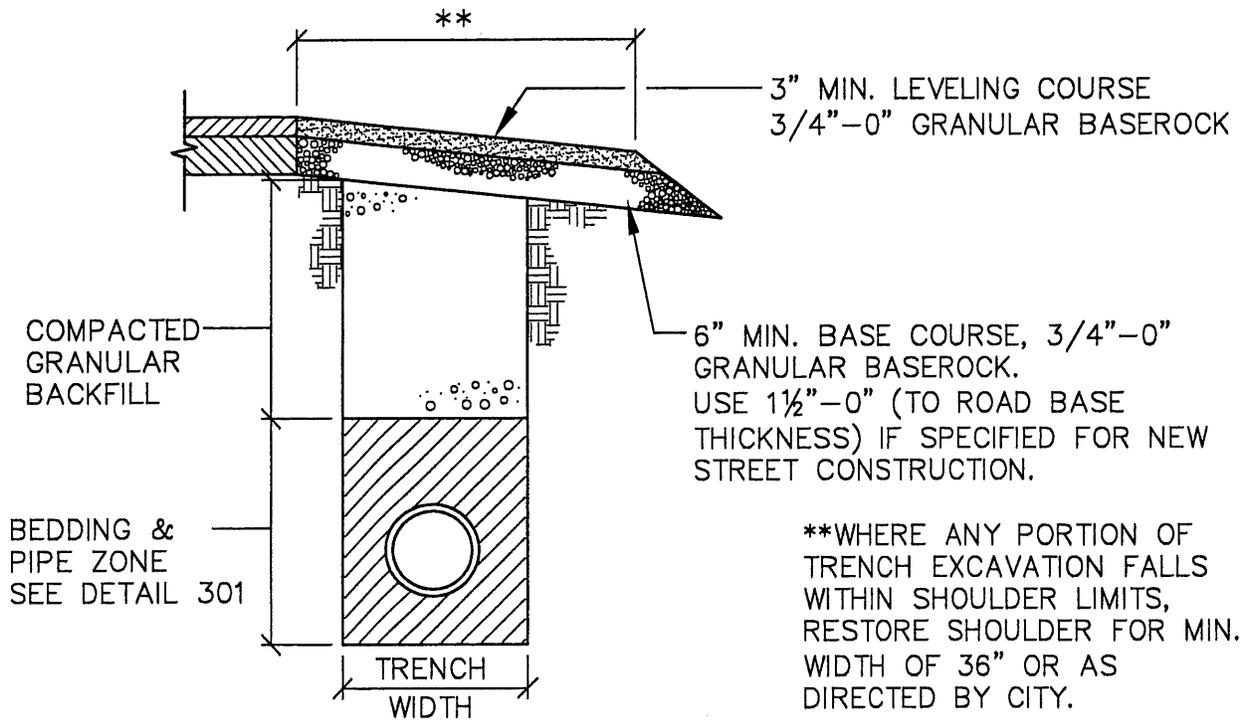
1. PRIOR TO SAWCUTTING, GRIND 24" WIDE BENCH IN EXISTING AC 2" DEEP. (BENCH TO EXTEND TO A POINT 18" MINIMUM BACK FROM FINAL SAWCUT LOCATION)
2. FOLLOWING GRINDING, SAWCUT PAVEMENT EDGES 6" BACK FROM EDGE.
3. TACK COAT CUT EDGES AND INSTALL BASE LIFT OF AC LEVEL WITH GROUND BENCH.
4. INSTALL PAVING FABRIC AT ALL JOINTS, TACK COAT ALL GRIND SURFACES & EDGES, INSTALL TOP LIFT OF AC.
5. SAND SEAL ALL JOINTS (REMOVE EXCESS SAND AFTER CURE).
6. ALONG WIDENED STREETS, THE CONTRACTOR SHALL VERIFY THAT THE PROPOSED CURB/GUTTER ELEVATIONS MATCH THE EXISTING EDGE OF PAVEMENT, BASED ON THE DESIGN STREET CROSS SLOPES SHOWN ON THE DRAWINGS AND THE SPECIFIED CURB EXPOSURE. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER PRIOR TO PLACEMENT OF CURB FORMS OR STRINGLINE. CURBS WHICH ARE PLACED TOO HIGH OR TOO LOW SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE CITY.

LAST REVISION DATE: JULY 2015	
AC STREET CUT FOR STREET WIDENING OR EXTENSION	
(NTS)	
SILVERTON, OR	DETAIL NO. 302B

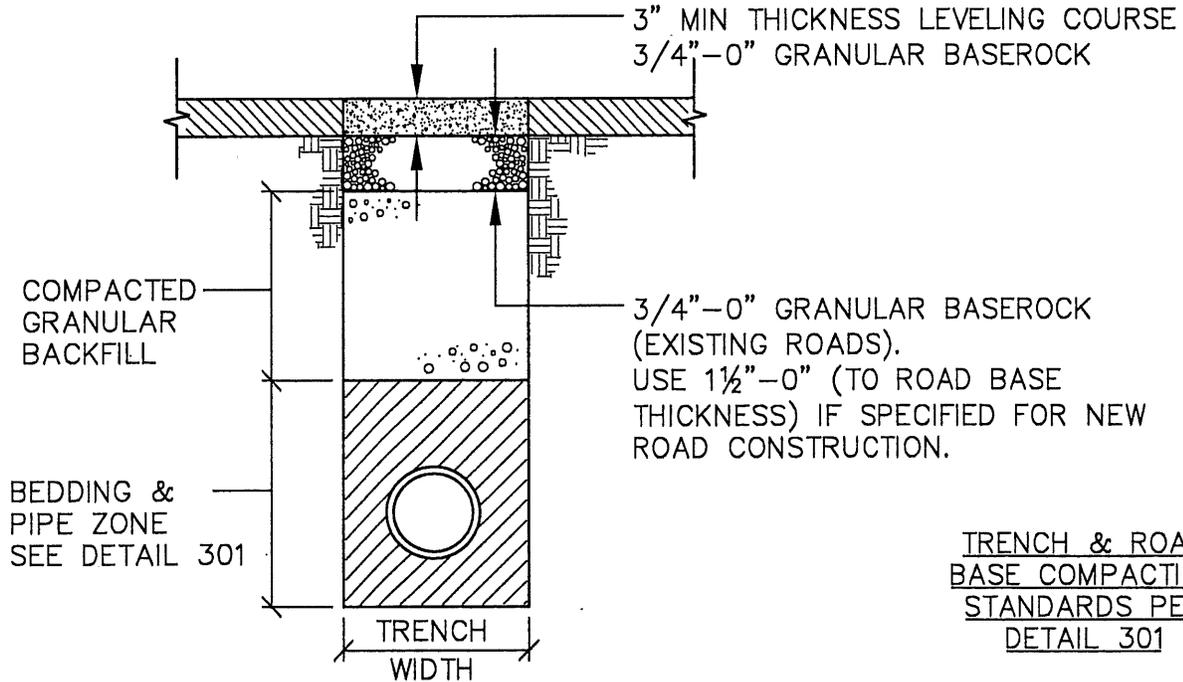


1. COMPACT ALL A.C. LIFTS TO 91% OPTIMUM DENSITY PER RICE STANDARD METHOD.
2. ASPHALT EMULSION TACK COAT SHALL BE USED TO SEAL THE HMAC TO THE EDGES OF THE EXISTING AC PAVEMENT. ALL AC PAVEMENT CUTS SHALL BE VERTICAL, CLEAN & ASPHALT SAND SEALED ALONG ALL EDGES AFTER INSTALLATION.
3. ALL PAVEMENT CUT AREAS SHALL BE COLD PATCHED OR PLATED AT THE END OF EACH WORK SHIFT, & THE PLATES OR PATCH MAINTAINED UNTIL FULL PAVEMENT RESTORATION IS MADE W/HMAC. COLD PATCH (IF USED) SHALL BE REPLACED WITH HOT MIX HMAC WITHIN FIVE CALENDAR DAYS OR AS DIRECTED BY THE DISTRICT MANAGER OR REPRESENTATIVE IN WRITING.
4. HMAC SHALL BE A COMMERCIALY PRODUCED PLANT MIXTURE CONFORMING TO ODOT STANDARDS ("B" OR "C" DESIGNATION REFERS TO AGGREGATE SIZE ONLY).
5. 48" MINIMUM COVER IS REQUIRED FOR ALL GAS, ELECTRIC, TELEPHONE, FIBER OPTIC AND OTHER POTENTIALLY DANGEROUS/HIGH IMPACT UTILITY FACILITIES, ALL OTHER FACILITIES REQUIRE 36" MINIMUM COVER DEPTH.

LAST REVISION DATE: JULY 2015	
ODOT TRENCH CROSSING, TRENCH BACKFILL & SURFACE RESTORATION (NTS)	
SILVERTON, OR	DETAIL NO. 302D



CLASS 'C'
GRAVEL SHOULDER RESTORATION



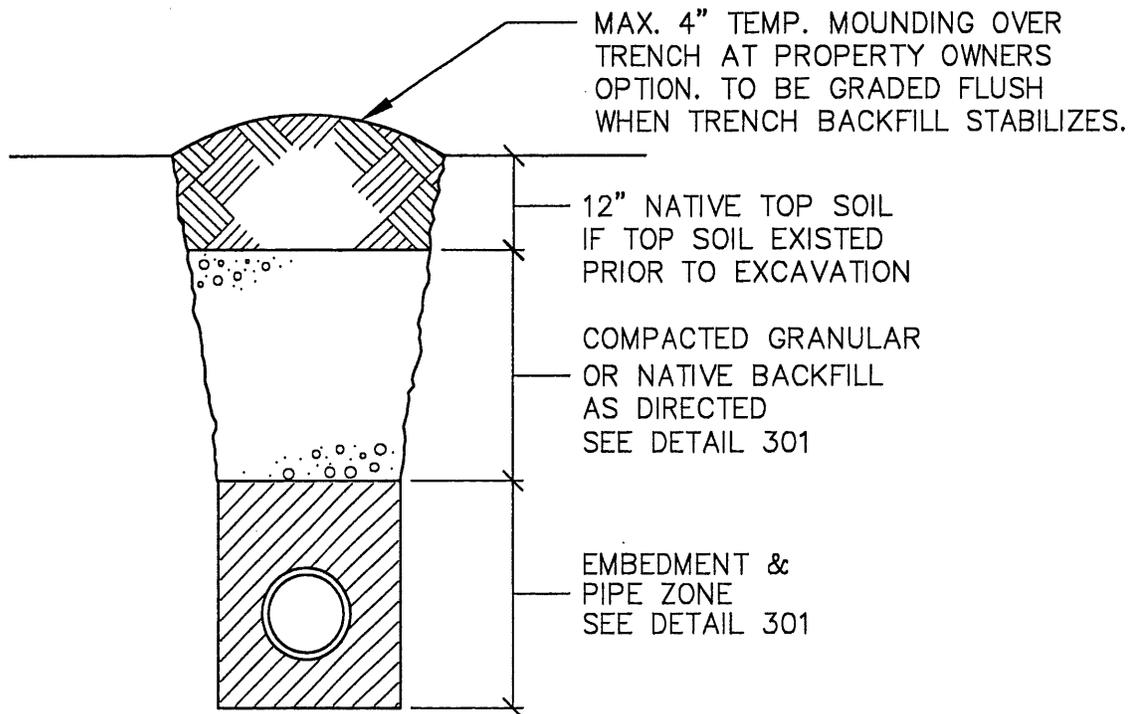
CLASS 'D'
GRAVEL STREET RESTORATION

TRENCH & ROAD
BASE COMPACTION
STANDARDS PER
DETAIL 301

NOTES:

1. SHOULDER ROCK TO BE COMPACTED TO ROAD BASEROCK STANDARDS.

LAST REVISION DATE: NOV 2015	
GRAVEL SURFACE RESTORATION	
(NTS)	
SILVERTON, OR	DETAIL NO. 303



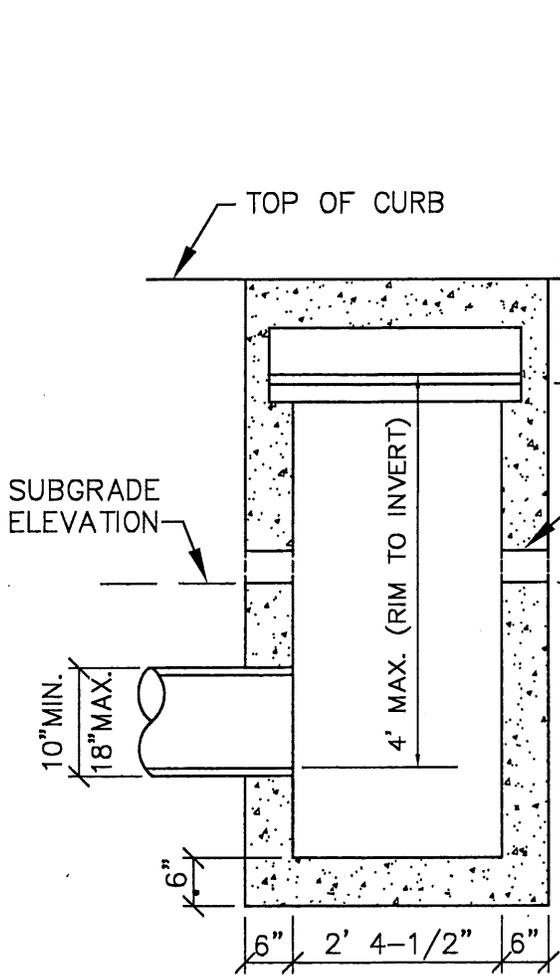
CLASS 'E'
UNIMPROVED & OPEN AREAS

TRENCH & ROAD
BASE COMPACTION
STANDARDS PER
DETAIL 301

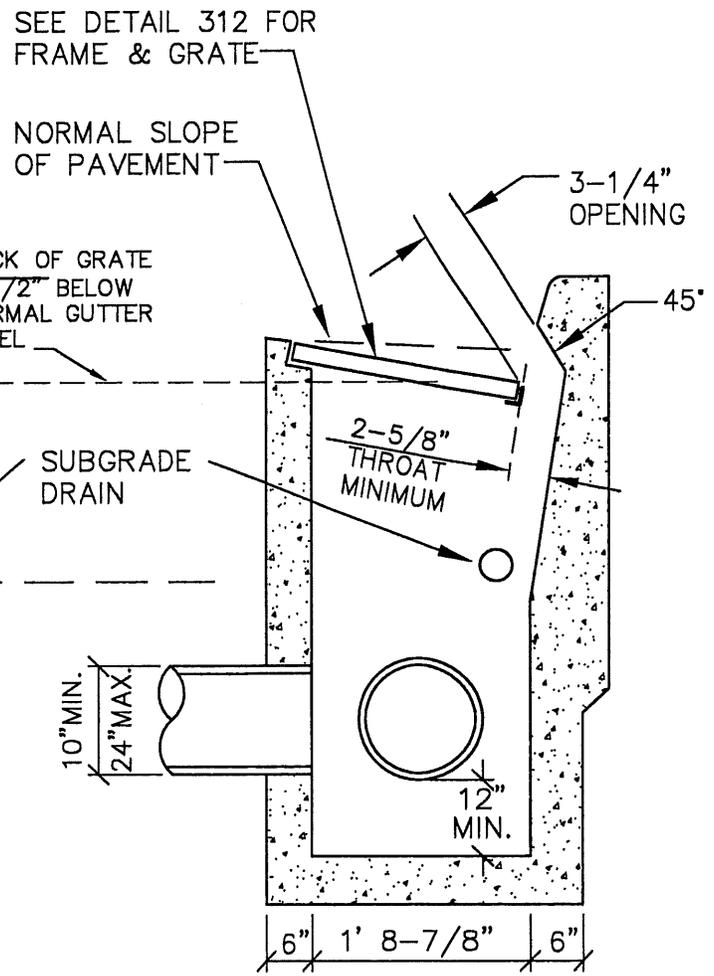
NOTES:

1. ANY TRENCH SETTLEMENT DURING WARRANTY PERIOD SHALL BE CORRECTED AT CONTRACTOR'S EXPENSE, INCLUDING SURFACE RESTORATION.

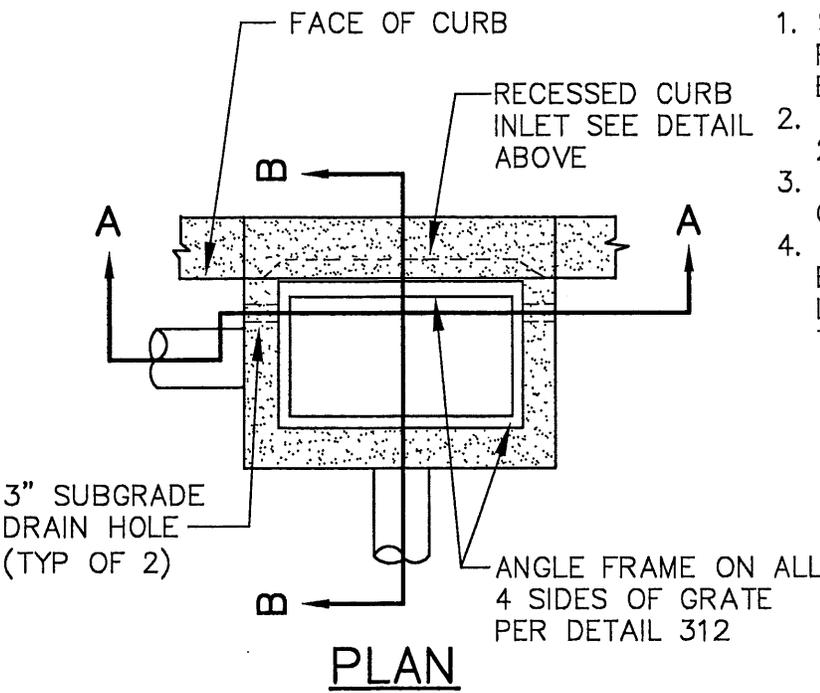
LAST REVISION DATE: NOV 2015	
NATIVE SURFACE RESTORATION	
(NTS)	
SILVERTON, OR	DETAIL NO. 304



SECTION A-A



SECTION B-B

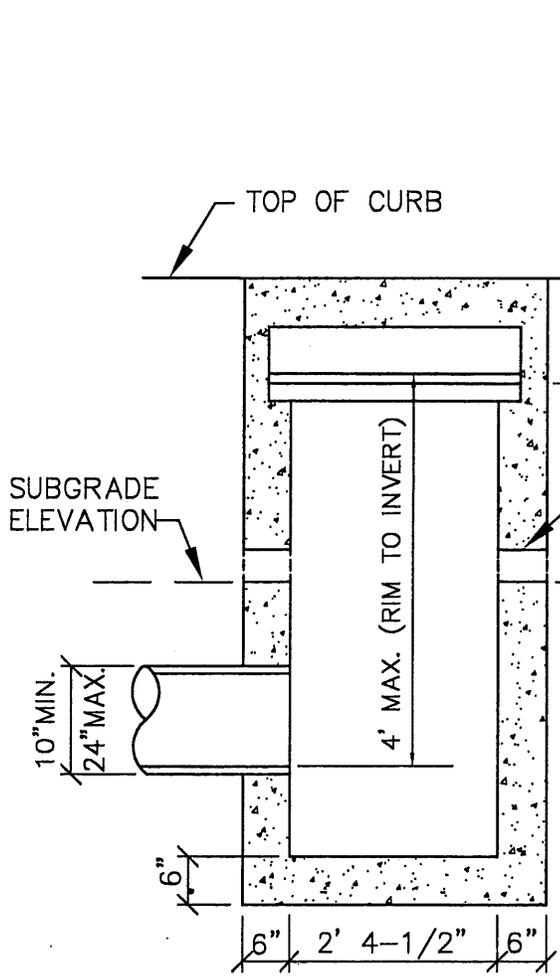


PLAN

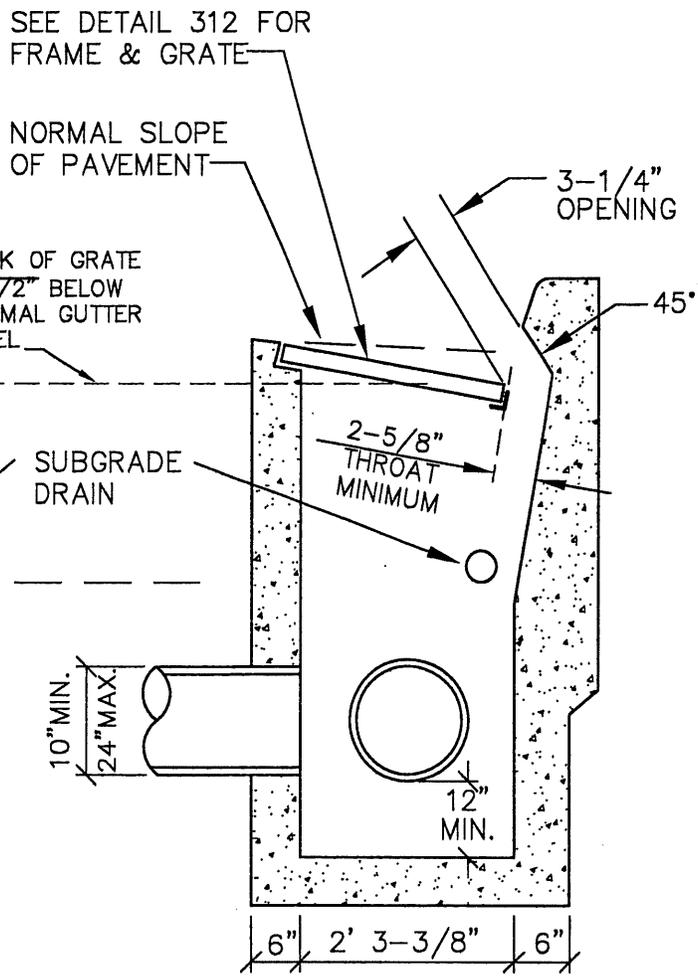
NOTES:

1. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION AND INVERT ELEVATION.
2. ALL CONCRETE TO BE 3300 PSI @ 28 DAYS.
3. MATCH EXISTING CURB UNLESS OTHERWISE NOTED.
4. CURB-INLET NOTCH TO BE ELIMINATED AT DROP CURB LOCATIONS WHERE APPROVED BY THE PUBLIC WORKS DIRECTOR.

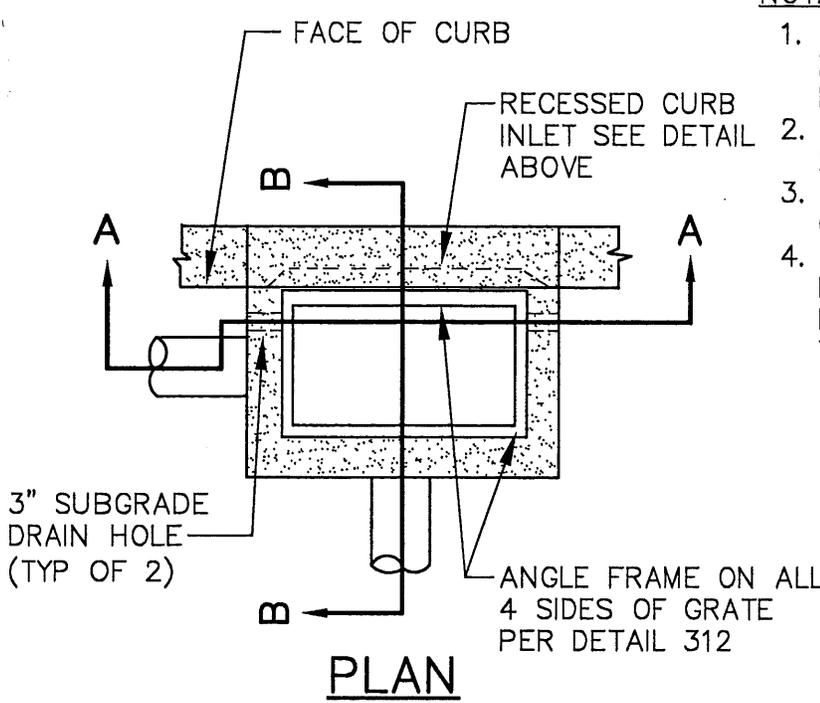
LAST REVISION DATE: NOV 2015	COPYRIGHT 1995 WESTECH ENGINEERING, INC.
STANDARD SIDE-INLET GRATED CATCH BASIN	
(NTS)	
SILVERTON, OR	DETAIL NO. 310



SECTION A-A



SECTION B-B

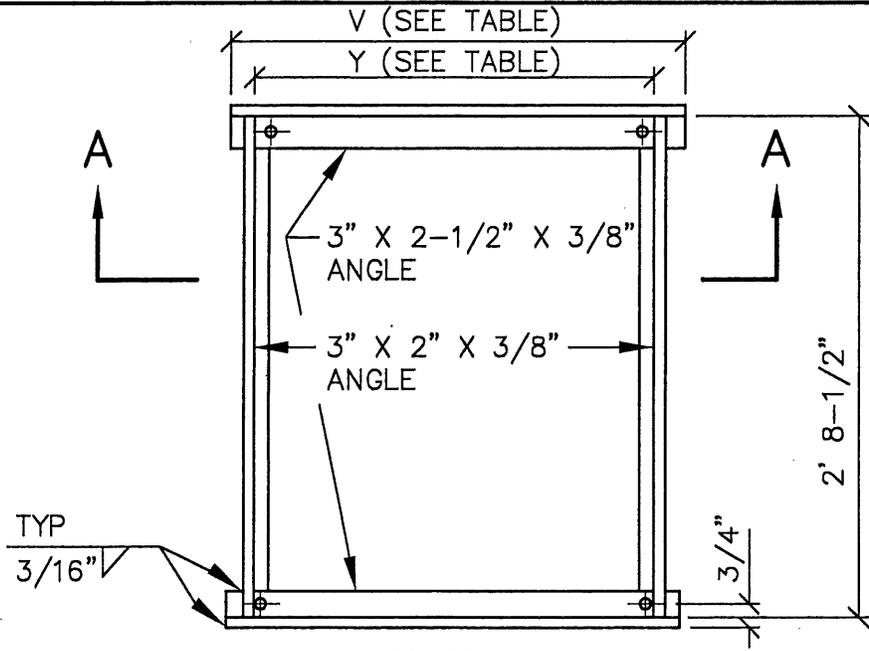


PLAN

NOTES:

1. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION AND INVERT ELEVATION.
2. ALL CONCRETE TO BE 3300 PSI @ 28 DAYS.
3. MATCH EXISTING CURB UNLESS OTHERWISE NOTED.
4. CURB-INLET NOTCH TO BE ELIMINATED AT DROP CURB LOCATIONS WHERE APPROVED BY THE PUBLIC WORKS DIRECTOR.

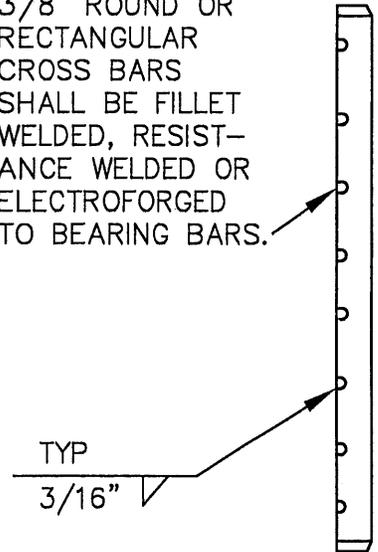
LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
OVERSIZE SIDE-INLET GRATED CATCH BASIN	
(NTS)	
SILVERTON, OR	DETAIL NO. 311



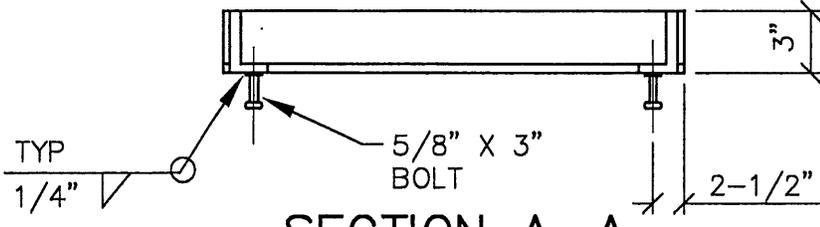
PLAN

NOTE:

3/8" ROUND OR RECTANGULAR CROSS BARS SHALL BE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.

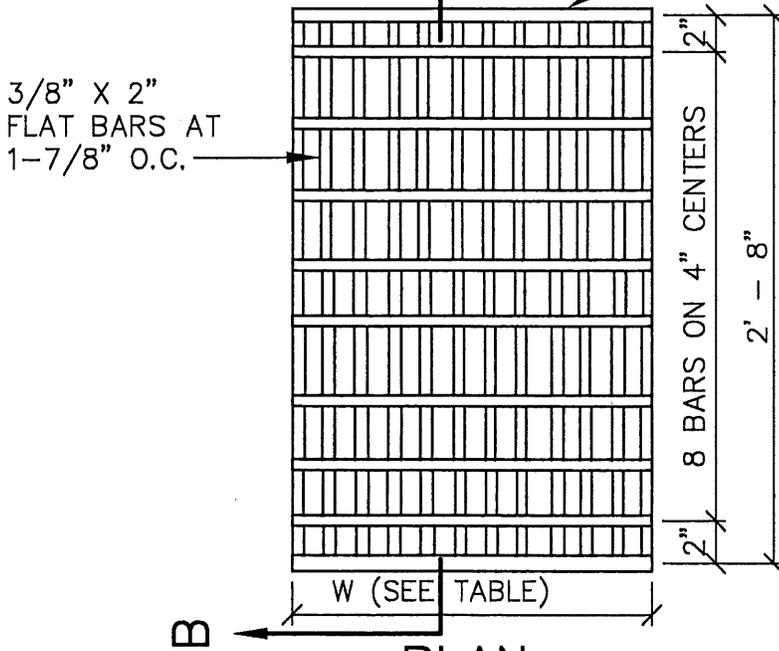


SECTION B-B



SECTION A-A

3/8" X 2" FLAT BAR EA. END



PLAN

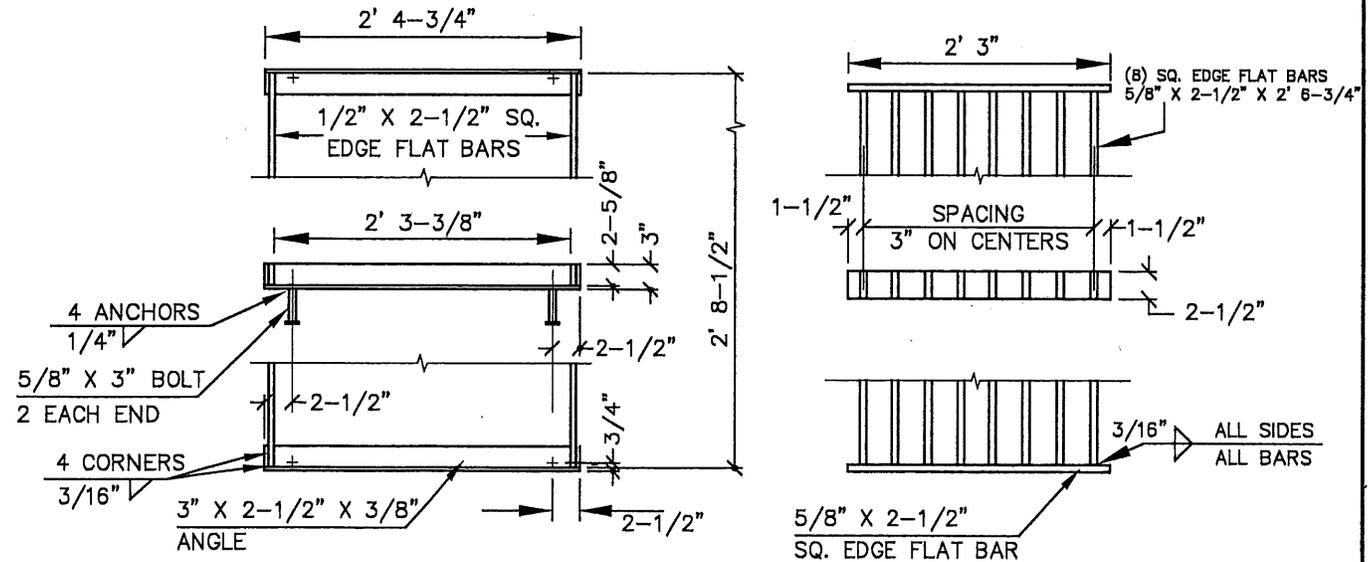
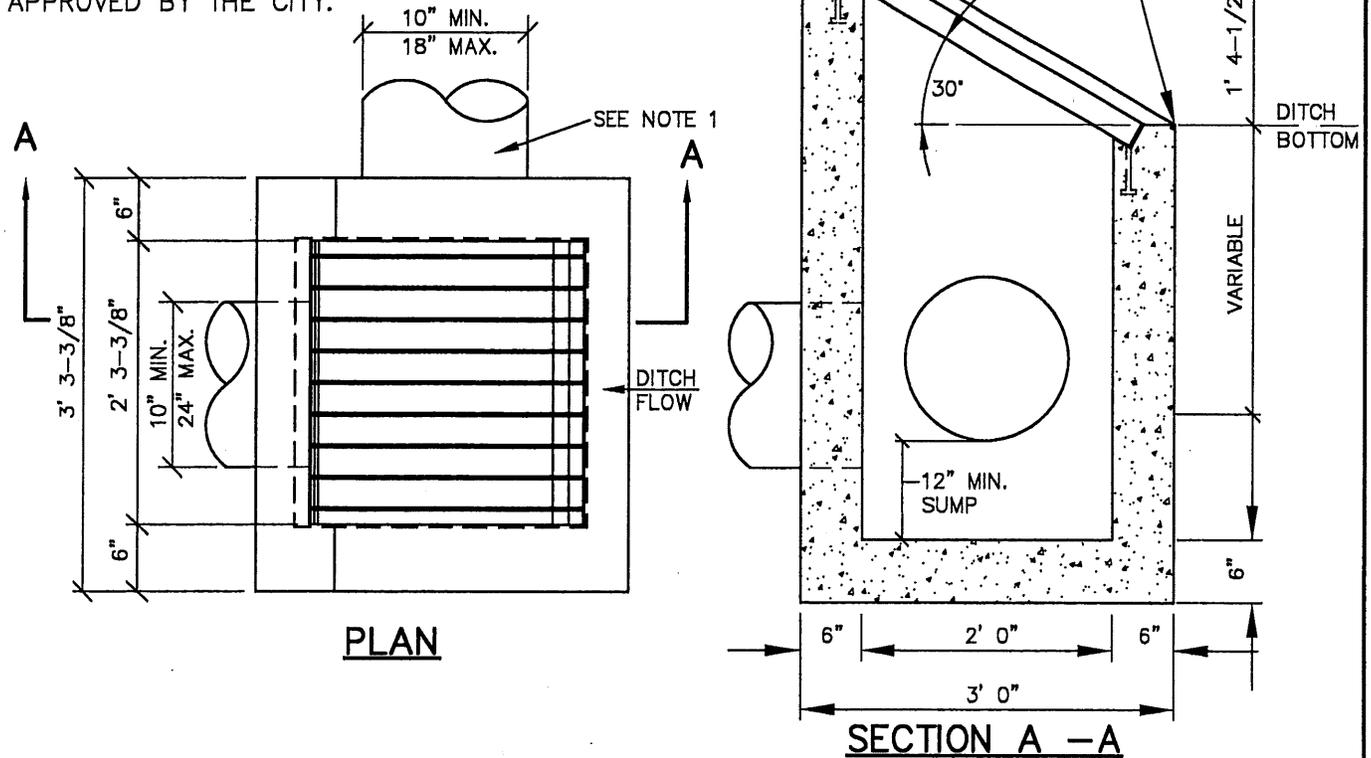
NOTE:

1. USE VERTICAL BEADS IN CORNERS, FILLET WELD JOINT ON BOTTOM OF FRAME. GRATE MUST REST FLAT ON FRAME SURFACE.
2. ALL STEEL SHALL BE ASTM A-36.
3. ANGLE FRAME REQUIRED ON ALL FOUR SIDES OF GRATE OPENING AS SHOWN.

INLET TYPE	FRAME			GRATE	
	V	Y	W	NO. OF BARS	REMARKS
STANDARD	1' 10-3/4"	1' 9-3/8"	1'- 9"	12	1-GRATE
OVERSIZE	2' 4-3/4"	2' 3-3/8"	1' 1-1/2"	8	2-GRATES

LAST REVISION DATE: JULY 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
CATCH BASIN GRATE DETAILS	
(NTS)	
SILVERTON, OR	DETAIL NO. 312

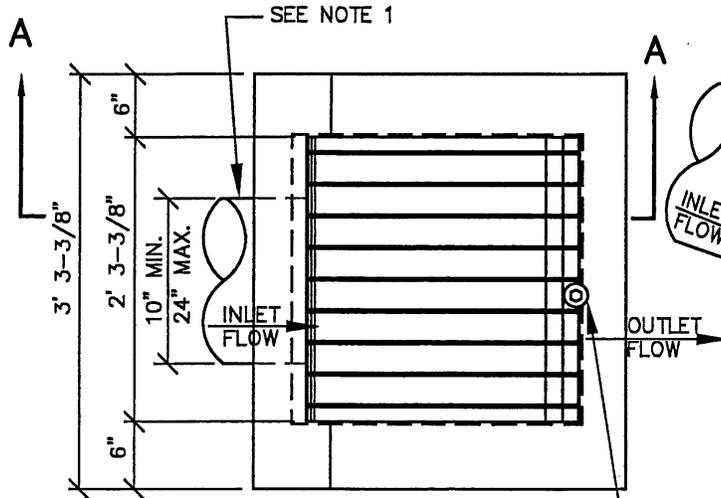
NOTE: CONTRACTOR TO VERIFY CB DATA & FINISH GRADE ELEV'S PRIOR TO INSTALLATION TO ENSURE THAT TOP OF CB DOES NOT EXTEND ABOVE SURROUNDING GRADE UNLESS OTHERWISE SPECIFICALLY NOTED ON THE DRAWINGS OR APPROVED BY THE CITY.



- NOTES:**
- FRAME & GRATE**
1. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION AND INVERT ELEVATION.
 2. FRAME & GRATE SHALL BE ASTM A-36 STEEL, HOT-DIPPED GALV. AFTER CONSTRUCTION.
 3. ALL CONCRETE TO BE 3000 PSI MIN AT 28 DAYS.
 4. PRIOR TO CB INSTALLATION, CONTRACTOR SHALL VERIFY RIM ELEVATIONS LISTED AGAINST DITCH & FINISH GRADE ELEVATIONS, & NOTIFY CITY OF ANY DISCREPANCIES.

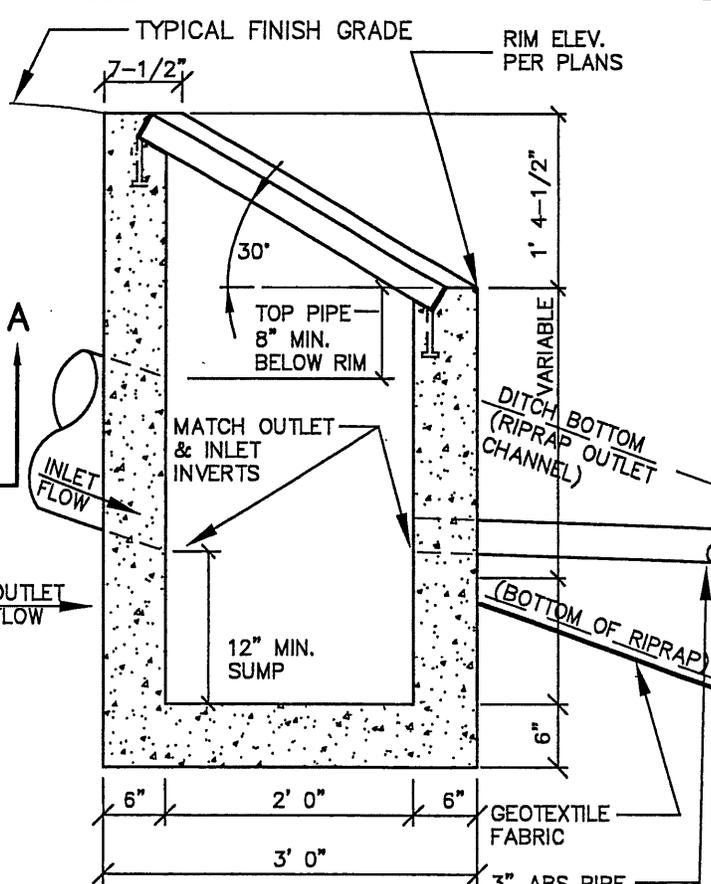
LAST REVISION DATE: JULY 2015.	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
TYPE 3 DITCH INLET CATCH BASIN	
(NTS)	
SILVERTON, OR	DETAIL NO. 313

NOTE: CONTRACTOR TO VERIFY FINISH GRADE ELEV'S PRIOR TO INSTALLATION TO ENSURE THAT TOP OF OUTLET STRUCTURE DOES NOT EXTEND ABOVE SURROUNDING GRADE UNLESS OTHERWISE NOTED ON DWGS OR APPROVED BY CITY. PROVIDE OUTLET PIPE & OUTLET CHANNEL (LENGTH & CONFIGURATION PER NOTE 4) AS NOTED UNLESS OTHERWISE SHOWN ON APPROVED DWGS OR REQUIRED BY CITY.

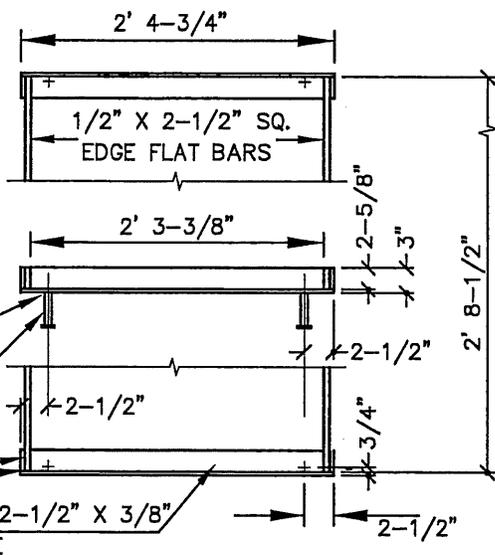


PLAN

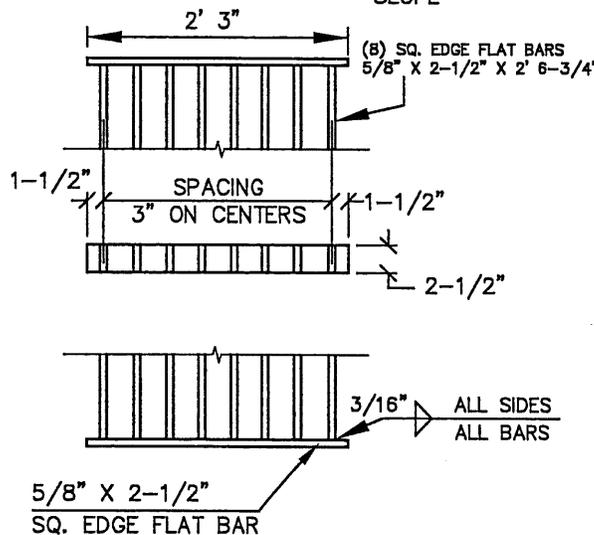
INSTALL SINGLE 1/2" ST. STEEL EXPANSION ANCHOR BOLT & 2" PLATE WASHER UNLESS OTHERWISE APPROVED OR REQUIRED BY CITY



SECTION A - A



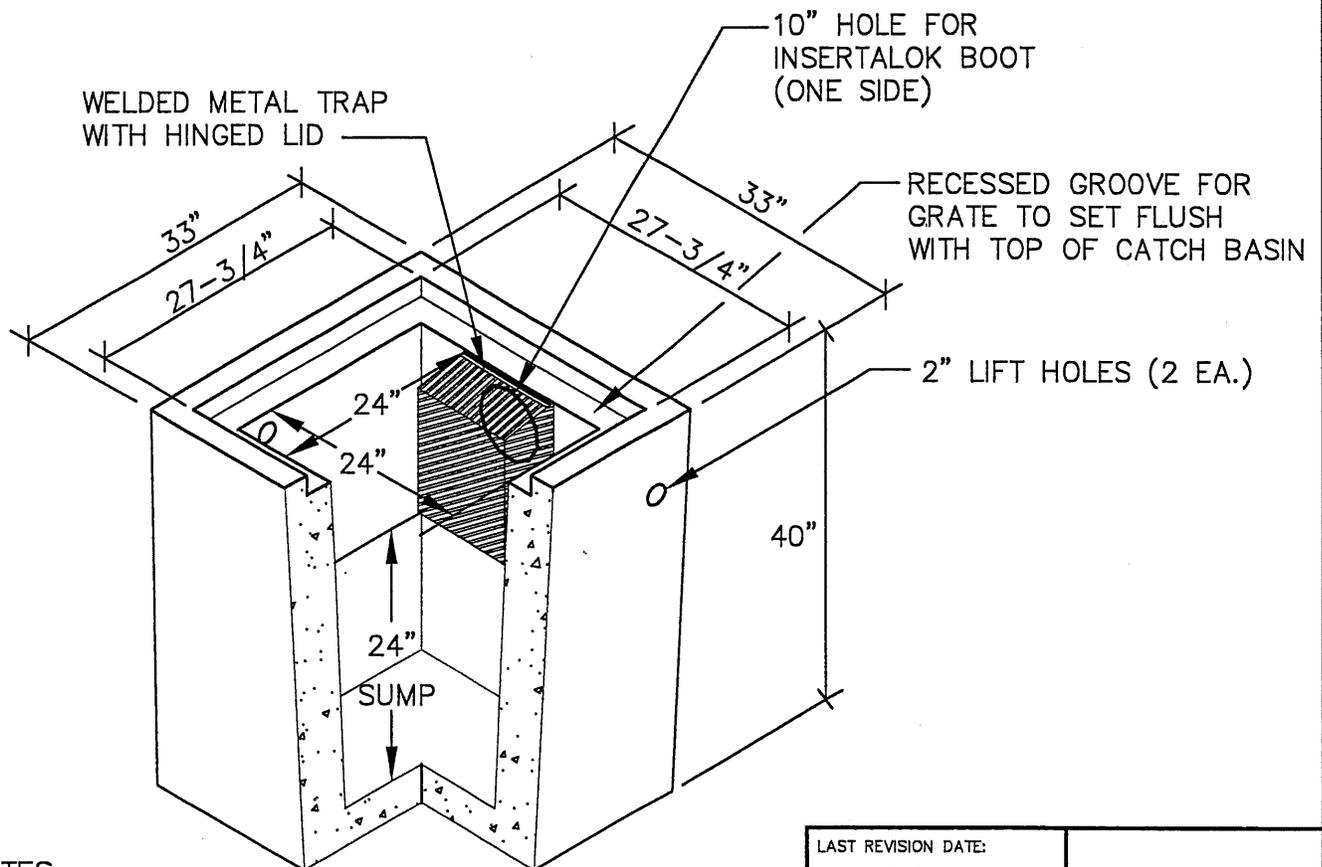
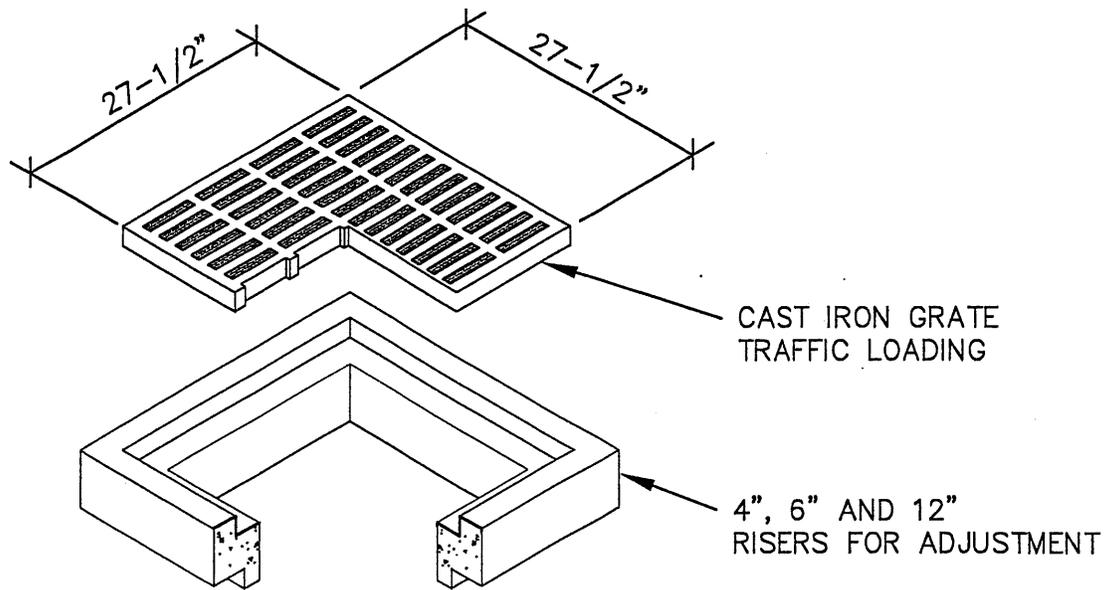
FRAME & GRATE



NOTES:

1. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION AND INVERT ELEVATION.
2. FRAME & GRATE SHALL BE ASTM A-36 STEEL, HOT-DIP GALV AFTER CONSTRUCTION.
3. ALL CONCRETE TO BE 3300 PSI MIN AT 28 DAYS.
4. PROVIDE RIPRAP OUTLET CHANNEL (TYP 18" MIN THICK) W/2H:1V SIDE SLOPES, 12" MIN CHANNEL DEPTH & LENGTH AS NOTED ON DRAWINGS (10' MIN). PROVIDE GEOTEXTILE UNDER RIPRAP TO TOP OF BANK (NO LAPS). USE 5"-12" GRADED ANGULAR RIPRAP (TYP), FILL VOIDS BETWEEN STONE WITH 3/4"-0 BASEROCK.

LAST REVISION DATE: JULY 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
STORM OUTLET ENERGY DISSIPATOR BASIN	
(NTS)	
SILVERTON, OR	DETAIL NO. 313A

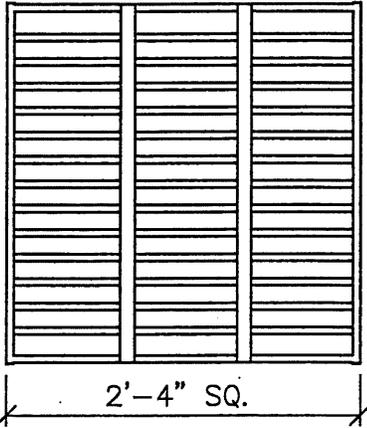


NOTES:

1. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION AND INVERT ELEVATION.
2. CONCRETE SHALL BE 4000 PSI @ 28 DAYS.
3. REBAR SHALL CONFORM TO ASTM A615 GRADE 60.
4. REBAR SHALL BE MIN. #4 BARS @ 6" C.C.
5. SET CB SQUARE WITH BUILDINGS OR WITH EDGE OF PARKING LOT OR DRIVEWAY WHEREIN IT LIES.
6. ADJUST PAVING SO WATER FLOWS TO CB WITH NO PONDING.

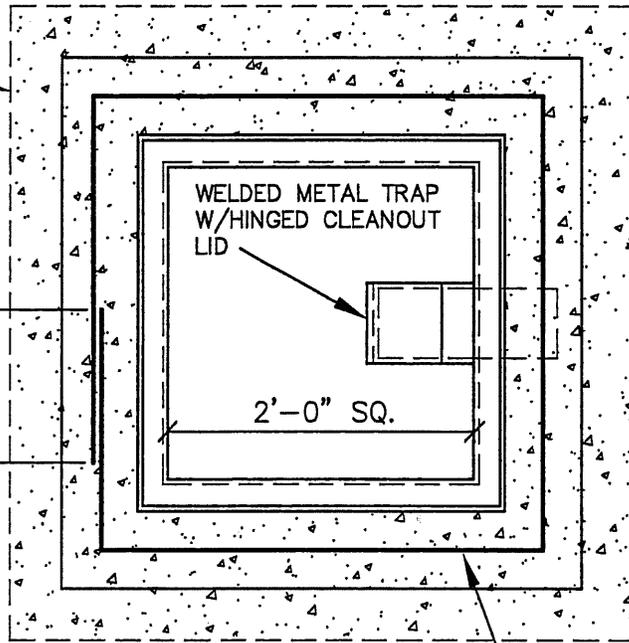
LAST REVISION DATE: JULY 2015	
PARKING LOT CATCH BASIN (PRECAST CONCRETE)	
(NTS)	
SILVERTON, OR	DETAIL NO. 315

CAST-IN-PLACE
REINFORCED CONCRETE
SUPPORT COLLAR



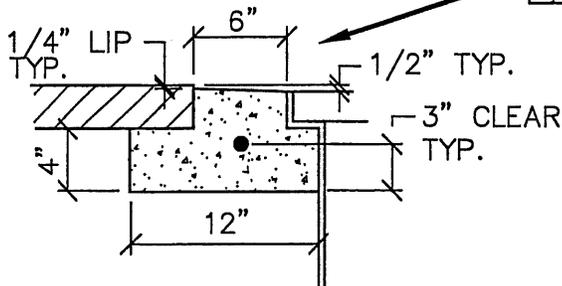
GRATE: WELDED STEEL DROP-IN
BAR GRATE (ASTM A36).
END BARS: 1/2" X 2"
CROSS BARS: 1/2" X 2" @ 2" O.C.
BIKE STRAPS: 1/8" X 1" (2 REQ'D)
16,000 LB. UNIFORM LOAD CAPACITY

GRATE DETAIL



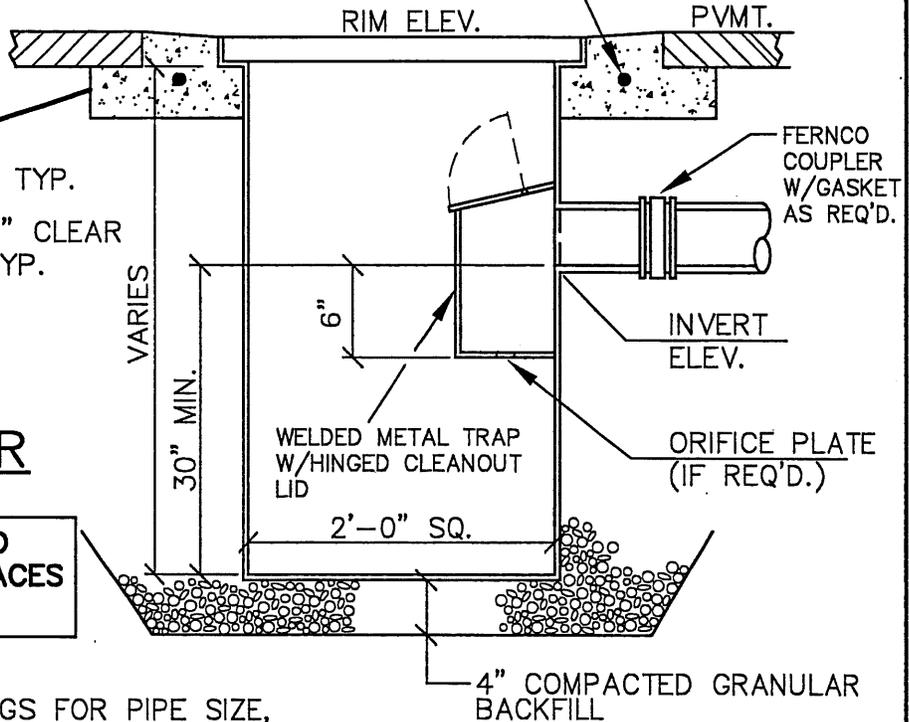
PLAN VIEW

#4 REBAR
CONTINUOUS



CONCRETE COLLAR

CONSTRUCT BASIN OF WELDED
1/4" STEEL. COAT ALL SURFACES
WITH ASPHALTIC PAINT.



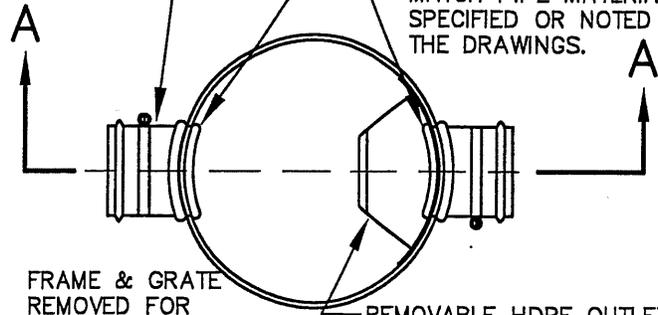
NOTES:

1. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION AND INVERT ELEVATION.
2. OUTLET: SIZE AS REQ'D. FOR INDICATED PIPE SIZE.
3. FOR JUNCTION BOX, REPLACE GRATE WITH 3/4" STEEL PLATE. DRILL ONE, 1" LIFTING HOLE, CENTERED IN ONE END OF THE PLATE. WELD SHIMS TO RIM AS REQUIRED TO RAISE PLATE TO RIM ELEVATION.
4. SET CB SQUARE WITH BUILDINGS OR WITH EDGE OF PARKING LOT OR DRIVEWAY WHEREIN IT LIES.
5. ADJUST PAVING SO WATER FLOWS TO CB WITH NO PONDING.

LAST REVISION DATE: JULY 2015	
PARKING LOT CATCH BASIN (LYNCH STYLE) (NTS)	
SILVERTON, OR	DETAIL NO. 316

SEE NOTE 5
(RE: INLET)

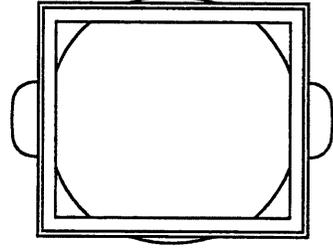
INSERTA-TEE CONNECTION,
SEE NOTE 3 & 4.
INSERTA-TEE SOCKET TO
MATCH PIPE MATERIAL
SPECIFIED OR NOTED ON
THE DRAWINGS.



FRAME & GRATE
REMOVED FOR
CLARITY

PLAN

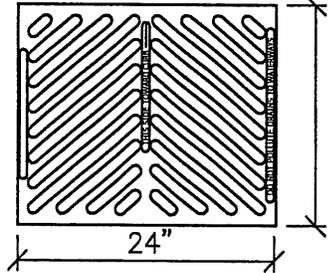
REMOVABLE HDPE OUTLET TRAP
REQUIRED ON ALL PRIVATE CATCH
BASINS (OMIT FOR FLOW-THRU JUNCTION
STRUCTURES). ALL CLIPS & HARDWARE
TO BE STAINLESS STEEL.



FRAME TO INCLUDE TABS THAT
MATCH BASIN OD TO PREVENT
DISPLACEMENT. FRAME BODY TO
BEAR ON COMPACTED BASEROCK
(SEE SECTION A-A)

FRAME

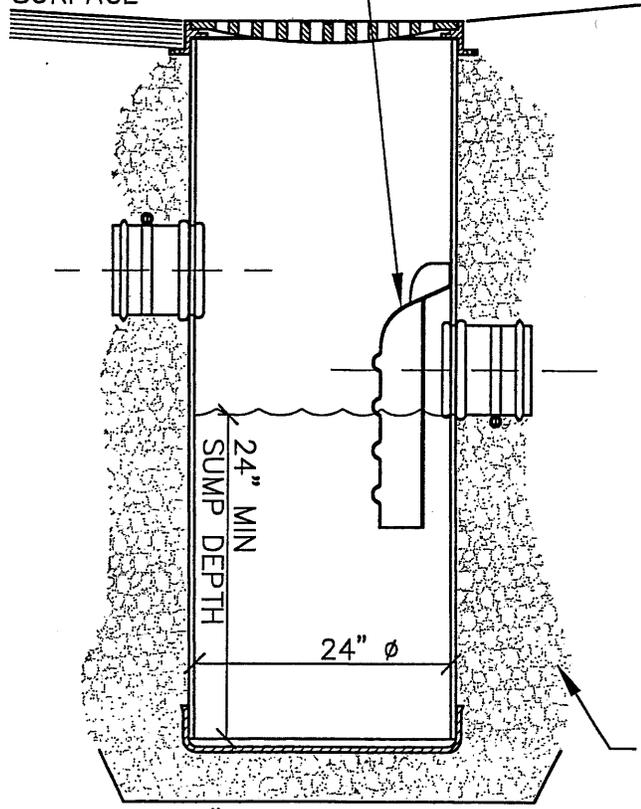
44 X SLOT ϕ 1.00 THRU



APPROX. DRAIN AREA =
202.48 SQ IN

GRATE

PAVED
SURFACE



24" MIN
SUMP DEPTH

24" ϕ

COMPACTED GRANULAR BACKFILL
AROUND CATCH BASINS & AREA
DRAINS (GRADE AS REQUIRED TO
SUPPORT GRATE FRAME).

MIN 4" GRANULAR BEDDING

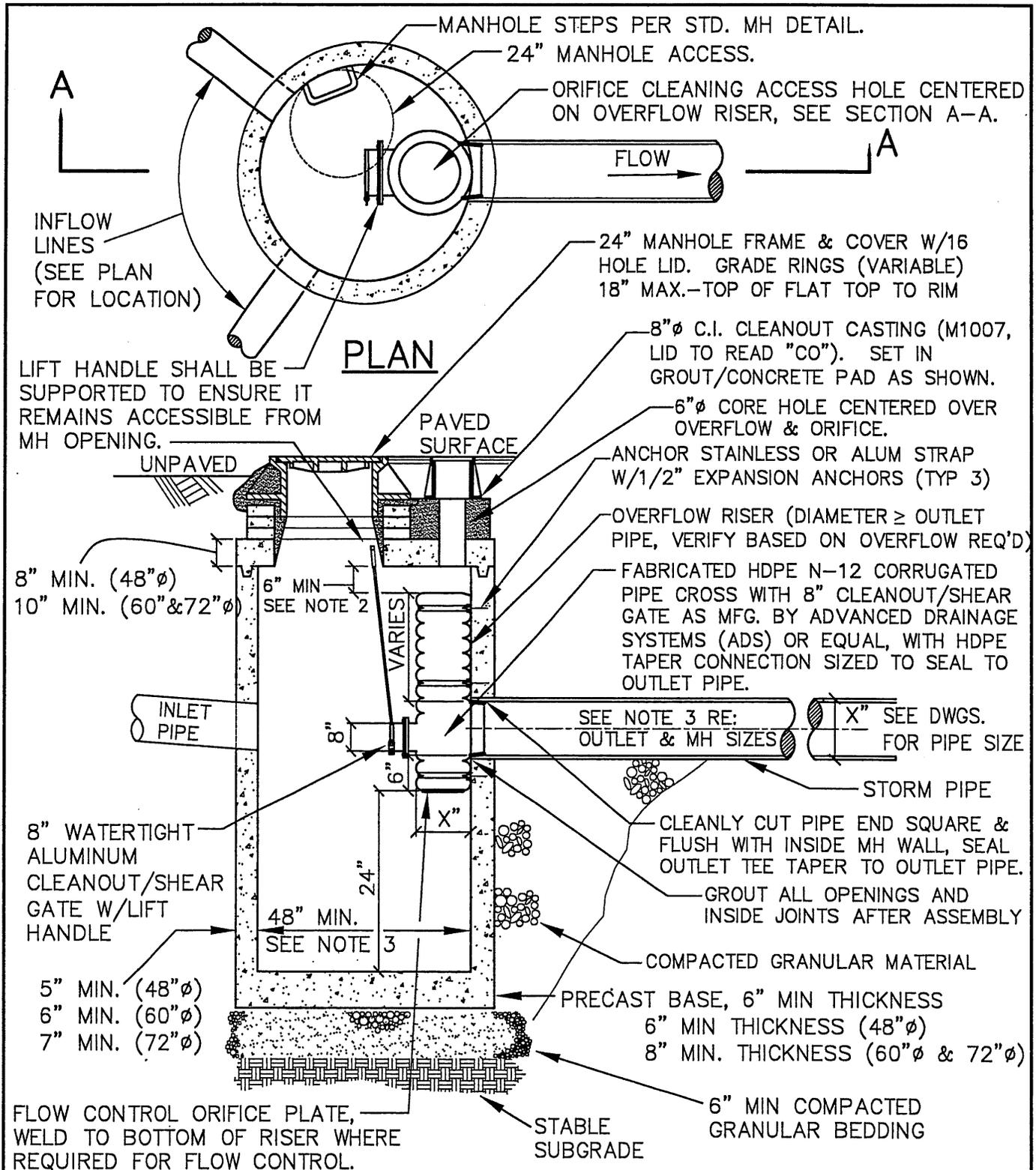
SECTION A-A

NOTES:

1. NYLOPLAST TRAFFIC RATED DRAIN BASIN OR APPROVED EQUAL W/NYLOPLAST FRAME & GRATE.
2. HERRING-BONE STYLE GRATE TO BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
3. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION, ORIENTATION AND INVERT ELEVATIONS.
4. CONNECTIONS TO PVC CATCH BASIN TO BE INSERTA-TEE STYLE FITTINGS (FACTORY OR FIELD INSTALLED).
5. FLOW-THRU CONFIGURATION SHOWN IS ALLOWED ONLY FOR AREA DRAINS OR JUNCTION BOXES.
6. SET CB GRATE SQUARE WITH BUILDINGS OR WITH EDGE OF PARKING LOT OR DRIVEWAY WHEREIN IT LIES.
7. ADJUST PAVING OR GRADING SO WATER FLOWS TO STRUCTURE INLET WITH NO PONDING.

NOTE: PER ORS 92.044(7),
AREA DRAIN MUST BE SET
1' MINIMUM CLEAR FROM
ANY SURVEY MONUMENT

LAST REVISION DATE: JULY 2015	JO #
PARKING LOT CATCH BASIN (TRAFFIC RATED PVC w/TRAP, DUCTILE IRON FRAME/GRATE) (NTS)	
SILVERTON, OR	DETAIL NO. 317



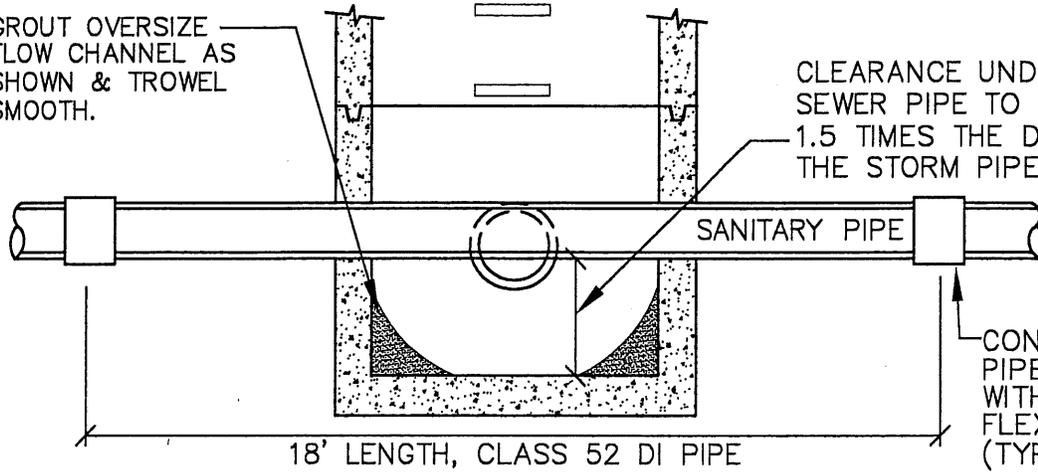
NOTES:

1. PRECAST SECTIONS SHALL CONFORM TO ASTM C-478.
2. DISTANCE FROM TOP OF OVERFLOW TO MH RIM SHALL BE BASED ON OVERFLOW CAPACITY CALC'S BY DESIGN ENGINEER (ASSUME ORIFICE CONTROL).
3. 60" MINIMUM DIA. MANHOLE REQUIRED FOR OUTLET PIPE LARGER THAN 15" OR INLET > 21".
4. ORIFICE CLEANING ACCESS TO BE 6" CORE HOLE THROUGH FLAT-TOP (CENTERED ON OVERFLOW) WITH CI CLEANOUT BOX GROUTED TO SLAB.

LAST REVISION DATE: JULY 2015	
POLLUTION/FLOW CONTROL MANHOLE W/OVERFLOW	
(NTS)	
SILVERTON, OR	DETAIL NO. 320

GROUT OVERSIZE FLOW CHANNEL AS SHOWN & TROWEL SMOOTH.

CLEARANCE UNDER SANITARY SEWER PIPE TO BE A MINIMUM OF 1.5 TIMES THE DIAMETER OF THE STORM PIPE



CONNECT DUCTILE IRON PIPE TO SEWER PIPE WITH APPROVED FLEXIBLE COUPLING. (TYP BOTH ENDS)

SECTION THRU SANITARY SEWER

MANHOLE FRAME AND COVER PVMT.

SET FRAME IN NON-SHRINK GROUT

30" MAX TO STEP
12" TYP

UNPAVED

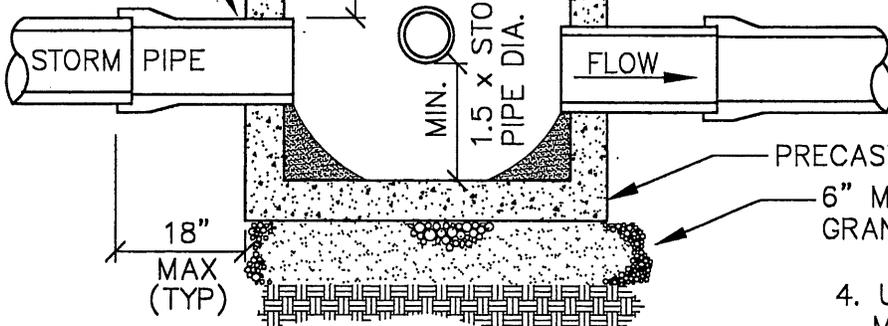
GRADE RINGS (VARIABLE) 18" MAX.—TOP OF FLAT TOP TO RIM

FLAT TOP SECTION, 8" MIN THICKNESS 5" MIN. THICK

INSIDE DIAMETER SEE NOTES

SEE DRAWINGS FOR INVERT ELEVATIONS AND PIPE ALIGNMENTS.

ALL OPENINGS CORED DRILLED.



PRECAST BASE, 6" MIN THICKNESS 6" MIN COMPACTED GRANULAR BEDDING

SECTION THRU STORM

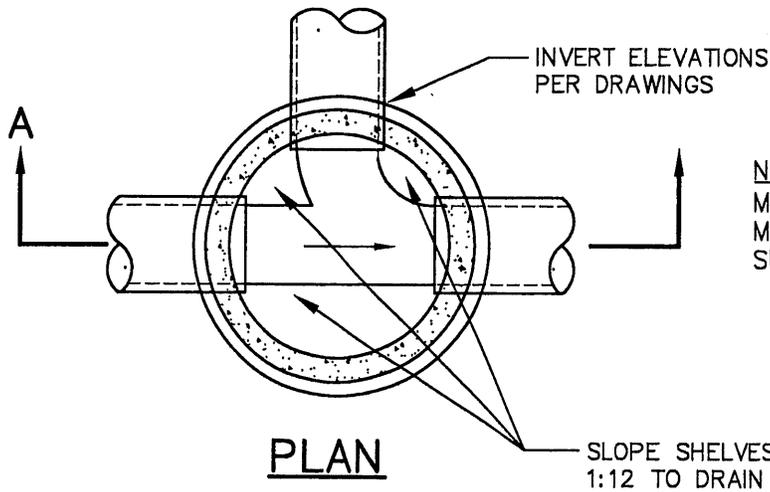
STABLE SUBGRADE

4. USE OF KUENZI MANHOLES MUST BE APPROVED ON A CASE BY CASE BASIS BY THE PUBLIC WORKS DIRECTOR.

NOTES:

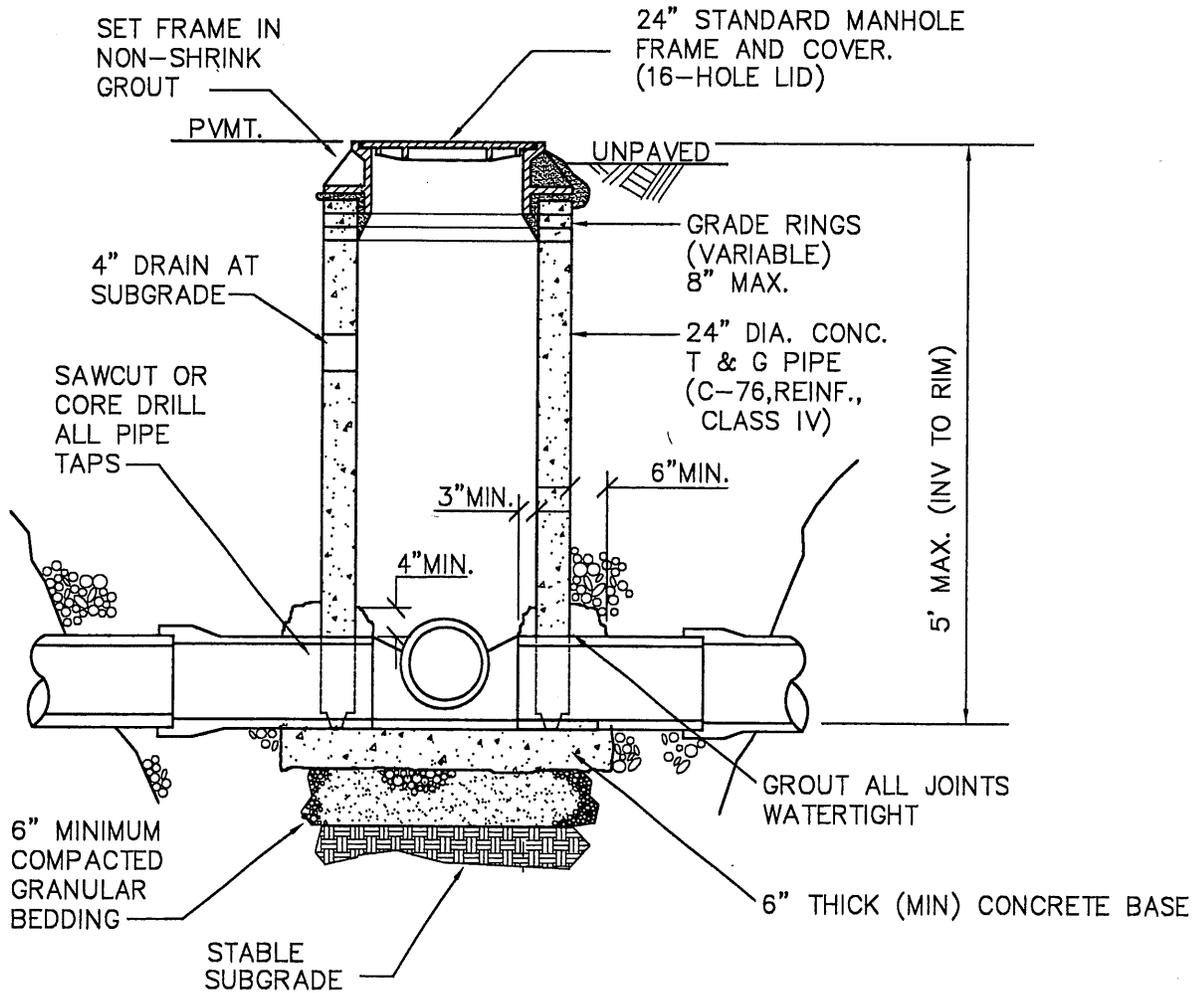
1. UNLESS OTHERWISE SHOWN ON DRAWINGS, USE 48" MANHOLE FOR SANITARY SEWER UP TO 12" DIA. & STORM DRAIN UP TO 18" DIAMETER.
2. PRECAST SECTIONS SHALL MEET OR EXCEED ASTM C-478. WATERTIGHT O-RING OR MASTIC KEYLOCK JOINTS REQUIRED.
3. STEPS TO BE POLYPROPYLENE PLASTIC WITH GRADE 60 REINFORCING ROD.

LAST REVISION DATE: NOV 2015	
KUENZI MANHOLE	
(NTS)	
SILVERTON, OR	DETAIL NO. 330



NOTE: PER ORS 92.044(7),
MANHOLE MUST BE SET 1'
MINIMUM CLEAR FROM ANY
SURVEY MONUMENT

PLAN

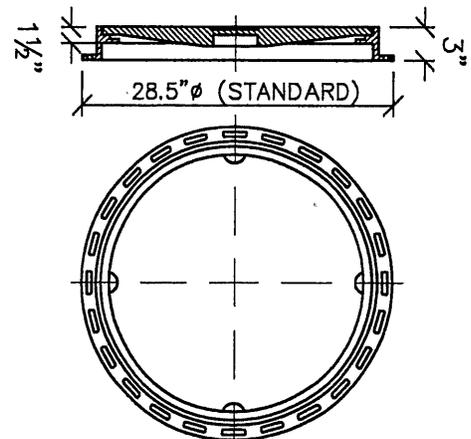
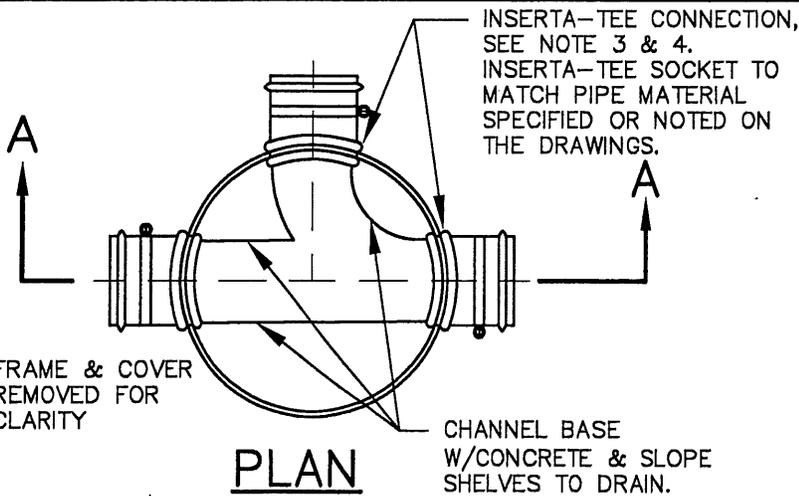


SECTION A-A

NOTE:

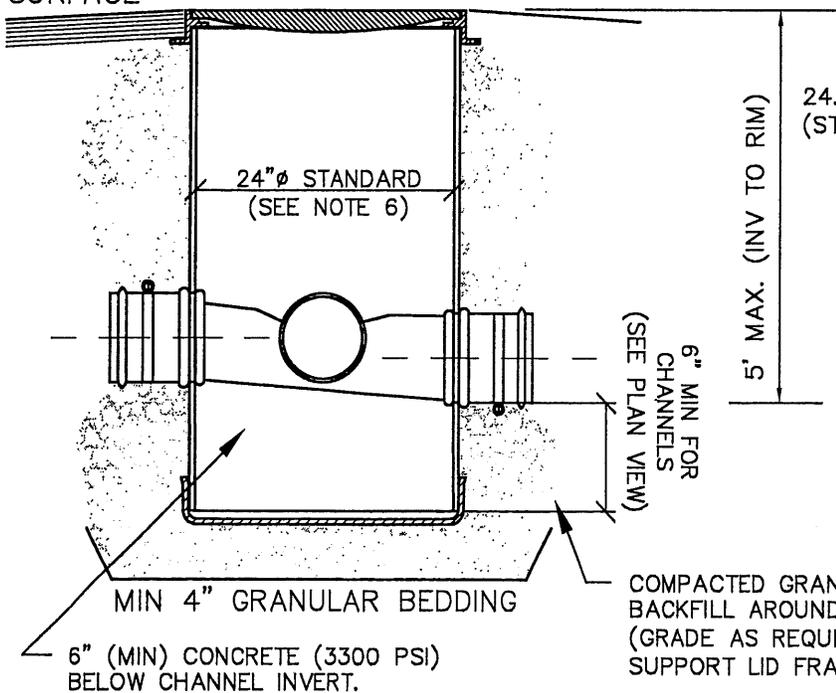
1. MAXIMUM PIPE NUMBER & DIAMETERS AS FOLLOWS:
12" DIAMETER OR LESS - 4 MAXIMUM.
15" DIAMETER - 2 MAXIMUM.
ALL OTHER CONFIGURATIONS REQUIRE STANDARD MANHOLE.
2. USE OF PUBLIC 24" STORM MANHOLE MUST BE APPROVED ON A CASE BY CASE BASIS BY THE PUBLIC WORKS DIRECTOR.

LAST REVISION DATE: NOV 2015	
24" DIA. STORM MANHOLE	
(NTS)	
SILVERTON, OR	DETAIL NO. 350

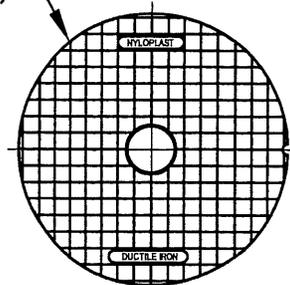


FRAME TO INCLUDE TABS THAT MATCH BASIN OD TO PREVENT DISPLACEMENT. FRAME BODY TO BEAR ON COMPACTED BASEROCK (SEE SECTION A-A)

PAVED SURFACE



FRAME



PROVIDE A MINIMUM OF (2) 1" DIAMETER PICK HOLES IN SOLID LID, OR PROVIDE STANDARD 16-HOLE STORM MANHOLE LID.

SOLID LID

NOTE: PER ORS 92.044(7), MANHOLE MUST BE SET 1' MINIMUM CLEAR FROM ANY SURVEY MONUMENT

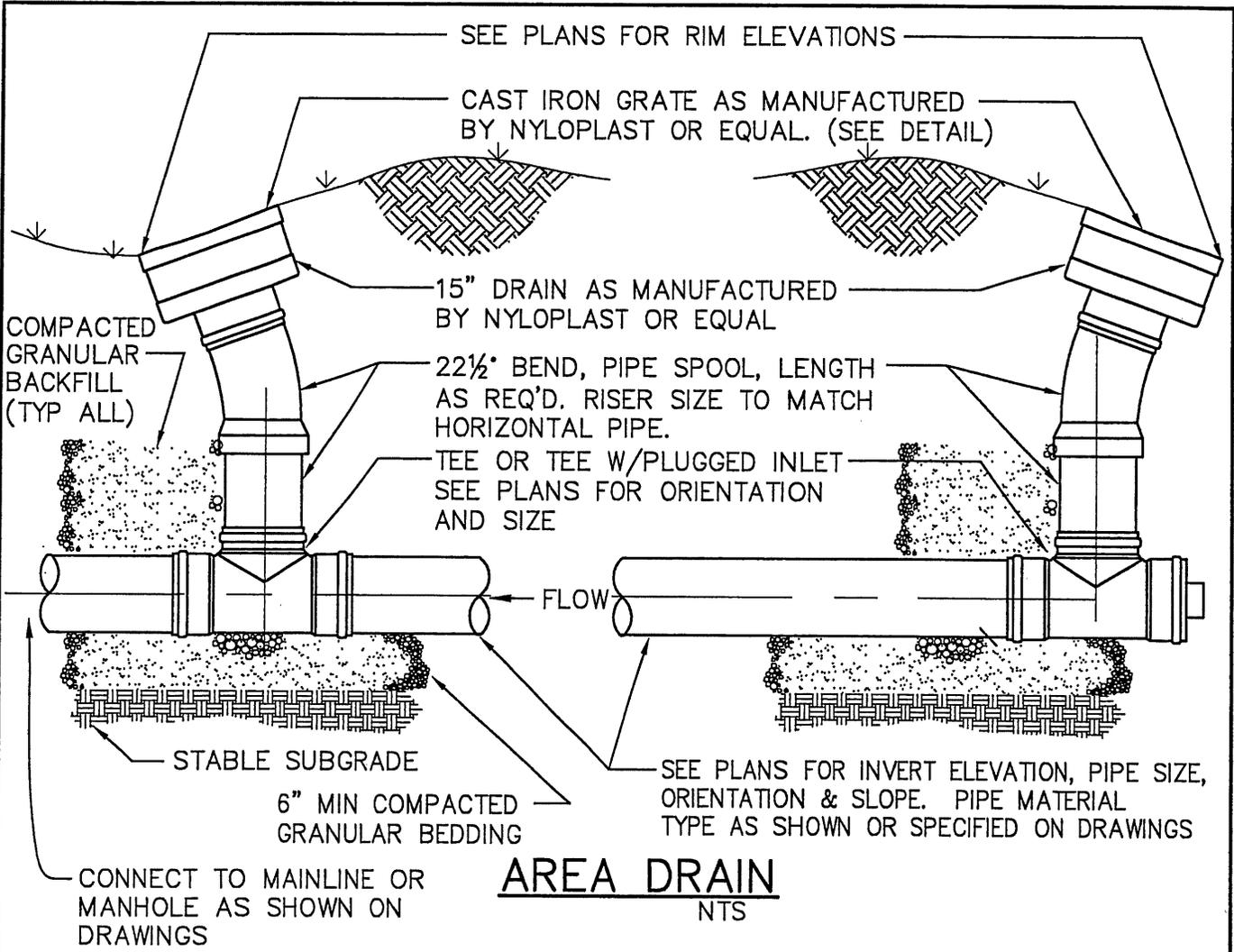
SECTION A-A

NOTES:

1. NYLOPLAST TRAFFIC RATED DRAIN BASIN OR APPROVED EQUAL WITH NYLOPLAST FRAME & MH LID.
2. MH FRAME & COVER TO BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
3. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION, ORIENTATION AND INVERT ELEVATIONS.
4. CONNECTIONS TO PVC MANHOLE TO BE INSERTA-TEE STYLE FITTINGS (FACTORY OR FIELD INSTALLED).
5. FIVE (5) FOOT MAXIMUM ALLOWABLE DEPTH FROM RIM TO OUTLET INVERT (DEEPER APPLICATIONS REQUIRE 48" MANHOLE).
6. MAXIMUM NUMBER & CONFIGURATION OF PIPE CONNECTIONS TO BE BASED ON INSERTA-TEE RECOMMENDATIONS. PROVIDE 30" DIAMETER BASIN & 30" SOLID COVER IF REQUIRED DUE TO NO. OF PIPES, SPACING &/OR ANGLES (30" MH TO MEET ALL DETAIL REQUIREMENTS SHOWN EXCEPT DIAMETER).

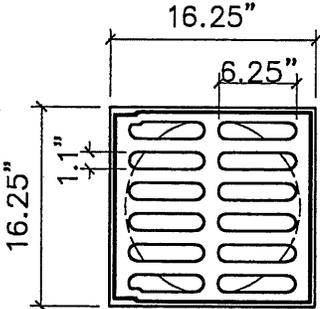
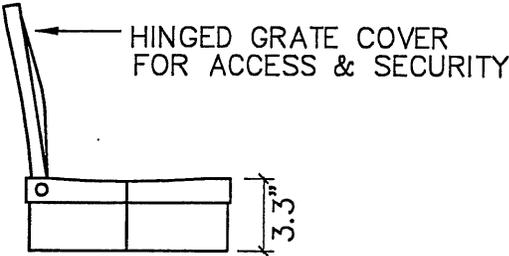
7. USE OF PUBLIC 24" STORM MANHOLE MUST BE APPROVED ON A CASE BY CASE BASIS BY THE PUBLIC WORKS DIRECTOR.

LAST REVISION DATE: NOV 2015	JO #
24" DIA. STORM MANHOLE (TRAFFIC RATED PVC W/SOLID DUCTILE IRON FRAME/COVER)	
(NTS)	
SILVERTON, OR	DETAIL NO. 351



AREA DRAIN
NTS

CONNECT TO MAINLINE OR MANHOLE AS SHOWN ON DRAWINGS



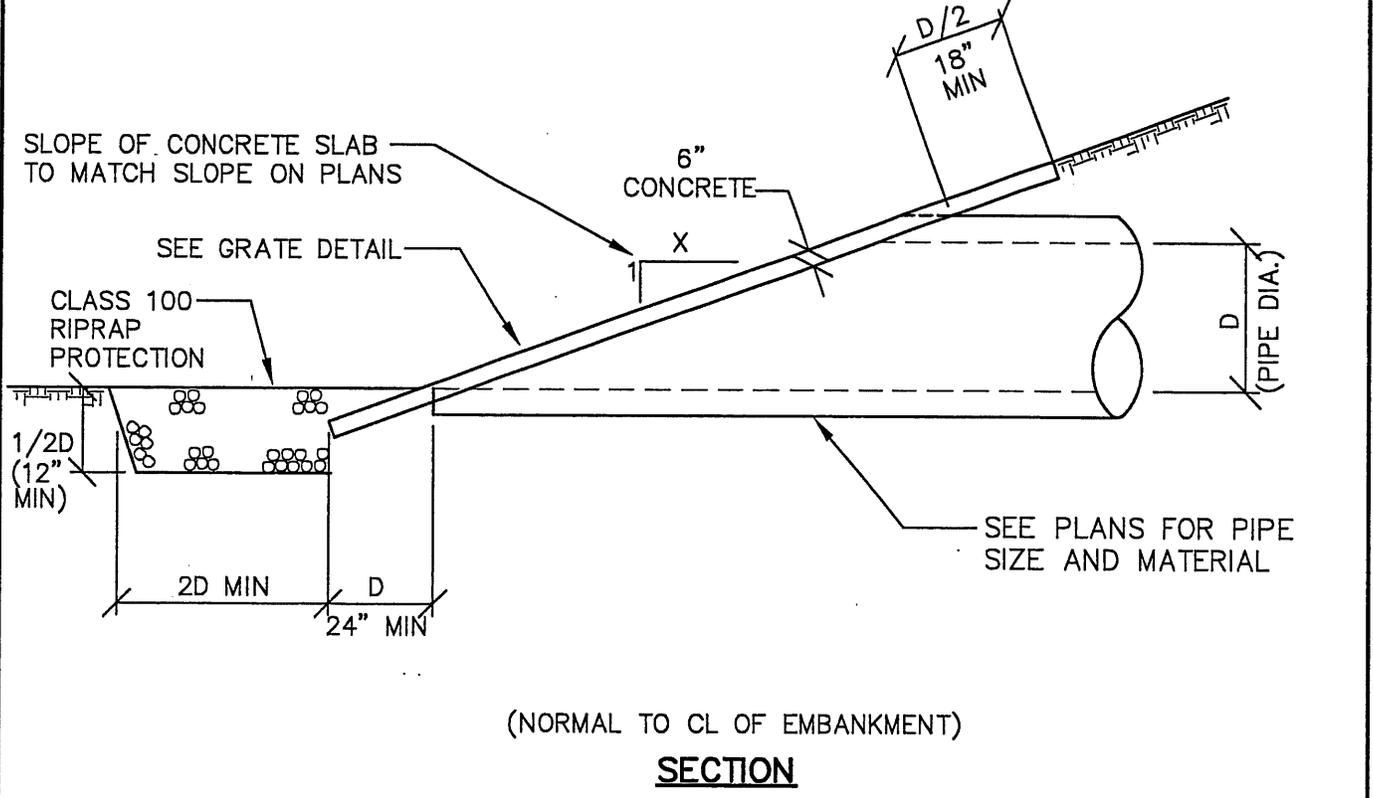
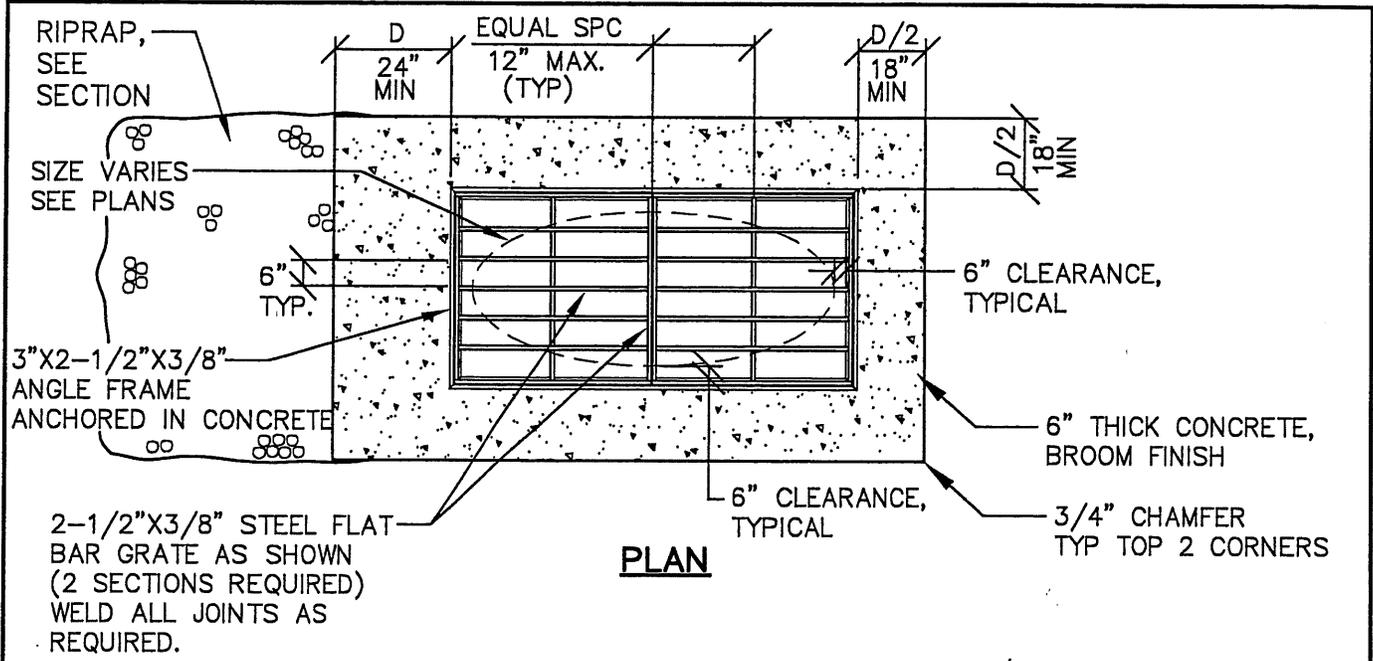
STANDARD

15" CAST IRON GRATE DETAIL
NTS

NOTES:

1. AREA DRAIN NOT FOR USE IN AREAS SUBJECT TO VEHICLE TRAFFIC.
2. USE WATERTIGHT GASKETED FITTINGS AND ADAPTORS FOR ALL PIPE CONNECTIONS.
3. ALL GRATES IN PEDESTRIAN AREAS SHALL CONFORM WITH ADA REQUIREMENTS, INCLUDING GRATE OPENING SIZE.

LAST REVISION DATE: JULY 2015	JO # STANDARD
PRIVATE AREA DRAIN, NON-TRAFFIC AREAS	
(NTS)	
SILVERTON, OR	DETAIL NO. 355



NOTES:

1. SEE CONSTRUCTION DRAWINGS FOR PIPE SIZE, LOCATION AND INVERT ELEVATION.
2. FRAME AND GRATE SHALL BE ASTM A-36 STEEL, HOT DIP GALVANIZED AFTER CONSTRUCTION.
3. ALL CONCRETE TO BE 3300 PSI AT 28 DAYS.

LAST REVISION DATE: JULY 2015	
CONCRETE PIPE END CAP WITH GRATE (NTS)	
SILVERTON, OR	DETAIL NO. 362

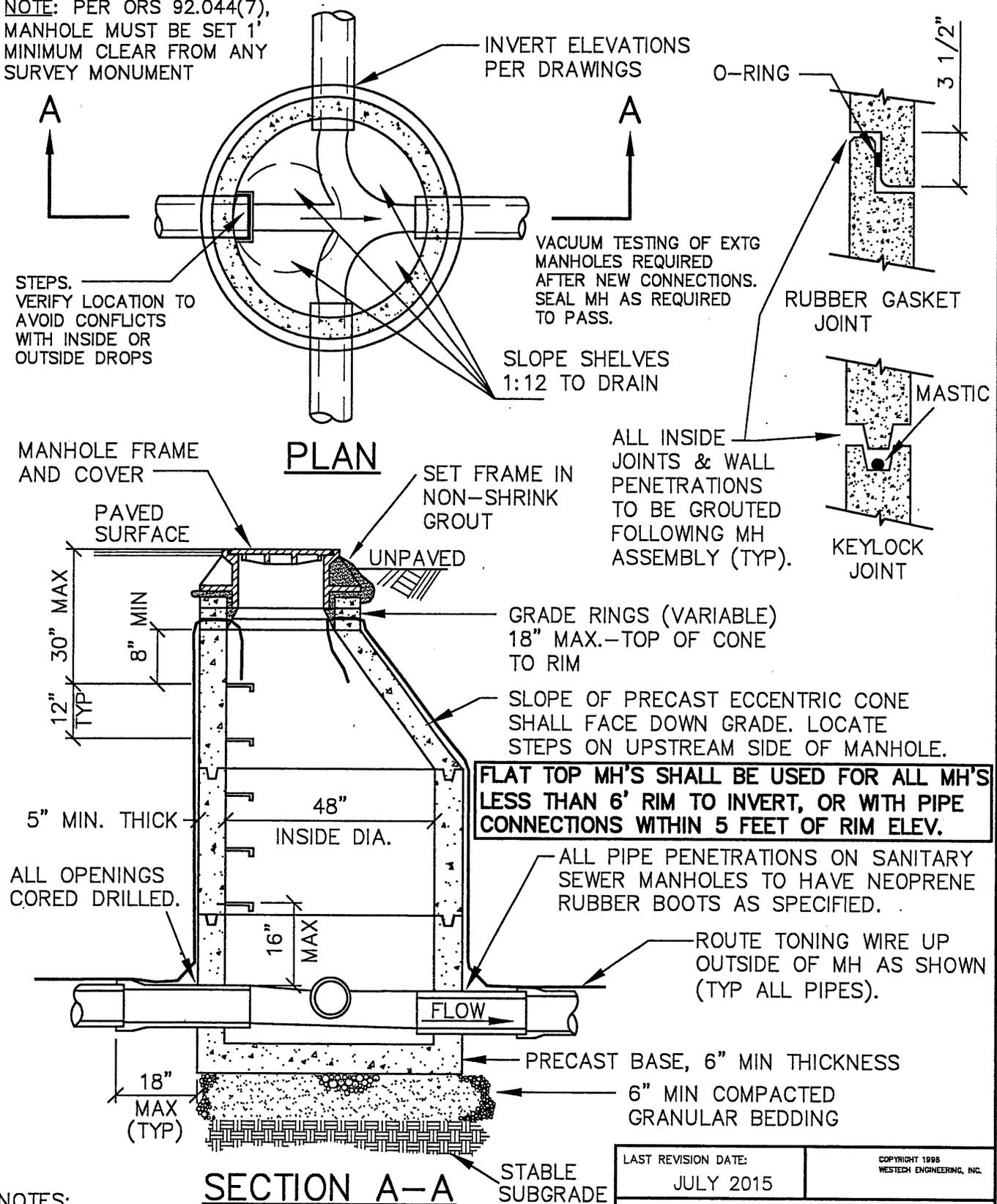
STORM SEWER MANDREL TEST REPORT

Project Location: (City)	Project Name:
Inspector: (Print)	Date: (Separate Report Required for Each Test Session)
Mandrel Diameters Verified? Yes / No	

Station (& Manhole #)		Size & Material	Length (ft)	Results	Backfill Compaction Completed?	Date Sewer Flushed & Cleaned	Comments
From	To						
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		

1. Mandrel testing shall be conducted on a manhole to manhole (or cleanout) basis and shall be done after the line has been completely flushed out with water.
2. Mandrel testing shall be conducted after trench backfill and compaction has been completed.
3. The mandrel diameter shall be 95% of the pipe initial inside diameter. The inspector shall verify the diameter of each mandrel used during each test session.

NOTE: PER ORS 92.044(7),
MANHOLE MUST BE SET 1'
MINIMUM CLEAR FROM ANY
SURVEY MONUMENT



NOTES:

1. PRECAST SECTIONS SHALL MEET OR EXCEED ASTM C-478.
2. WATERTIGHT O-RING OR MASTIC KEYLOCK JOINTS REQUIRED.
3. STEPS TO BE POLYPROPYLENE PLASTIC WITH GRADE 60 REINFORCING ROD. ADD STEPS TO EXTG CONNECTION MH IF EXTG STEPS ARE ABSENT.

LAST REVISION DATE:
JULY 2015

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STANDARD MANHOLE
FOR 21" PIPE AND SMALLER

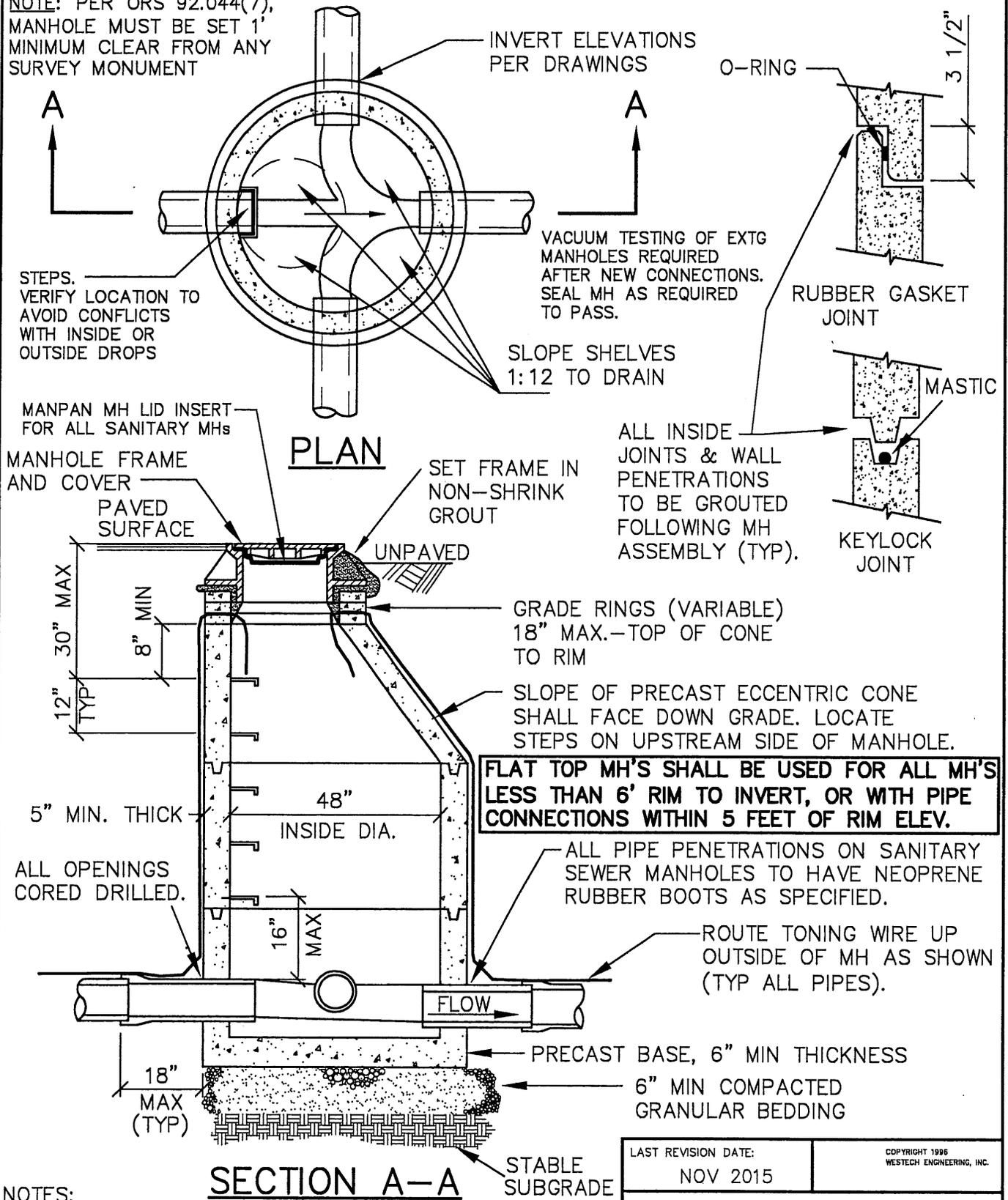
(NTS)

SILVERTON, OR

DETAIL NO.

401

NOTE: PER ORS 92.044(7),
MANHOLE MUST BE SET 1'
MINIMUM CLEAR FROM ANY
SURVEY MONUMENT



**FLAT TOP MH'S SHALL BE USED FOR ALL MH'S
LESS THAN 6' RIM TO INVERT, OR WITH PIPE
CONNECTIONS WITHIN 5 FEET OF RIM ELEV.**

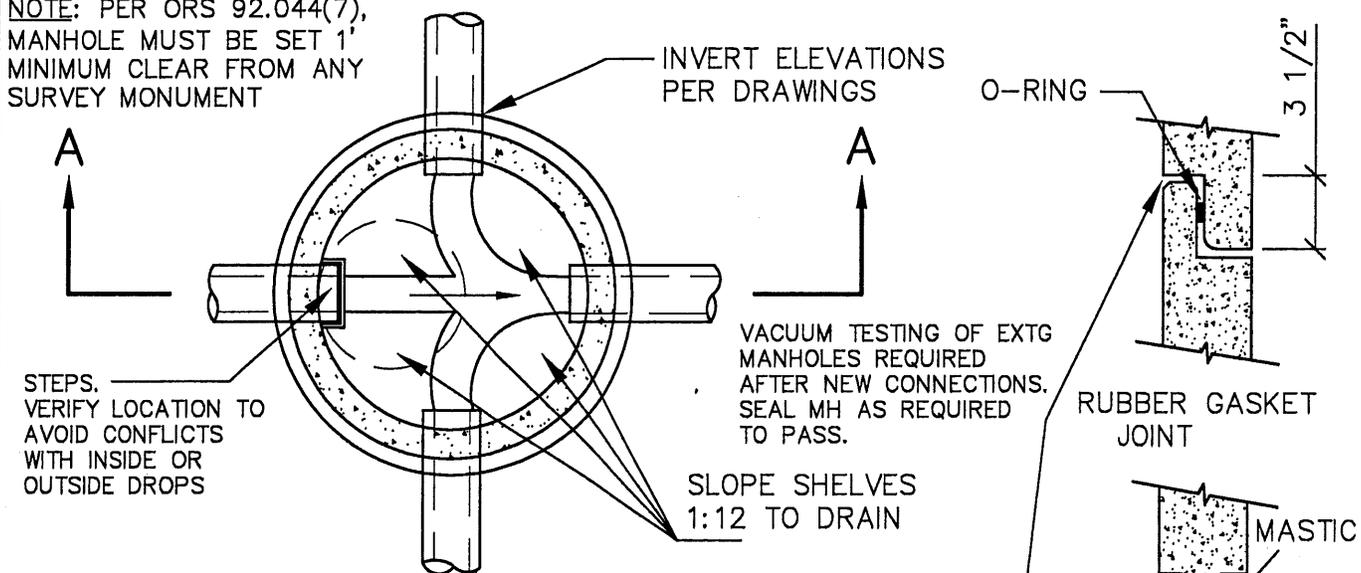
NOTES:

1. PRECAST SECTIONS SHALL MEET OR EXCEED ASTM C-478.
2. WATERTIGHT O-RING OR MASTIC KEYLOCK JOINTS REQUIRED.
3. STEPS TO BE POLYPROPYLENE PLASTIC WITH GRADE 60 REINFORCING ROD. ADD STEPS TO EXTG CONNECTION MH IF EXTG STEPS ARE ABSENT.

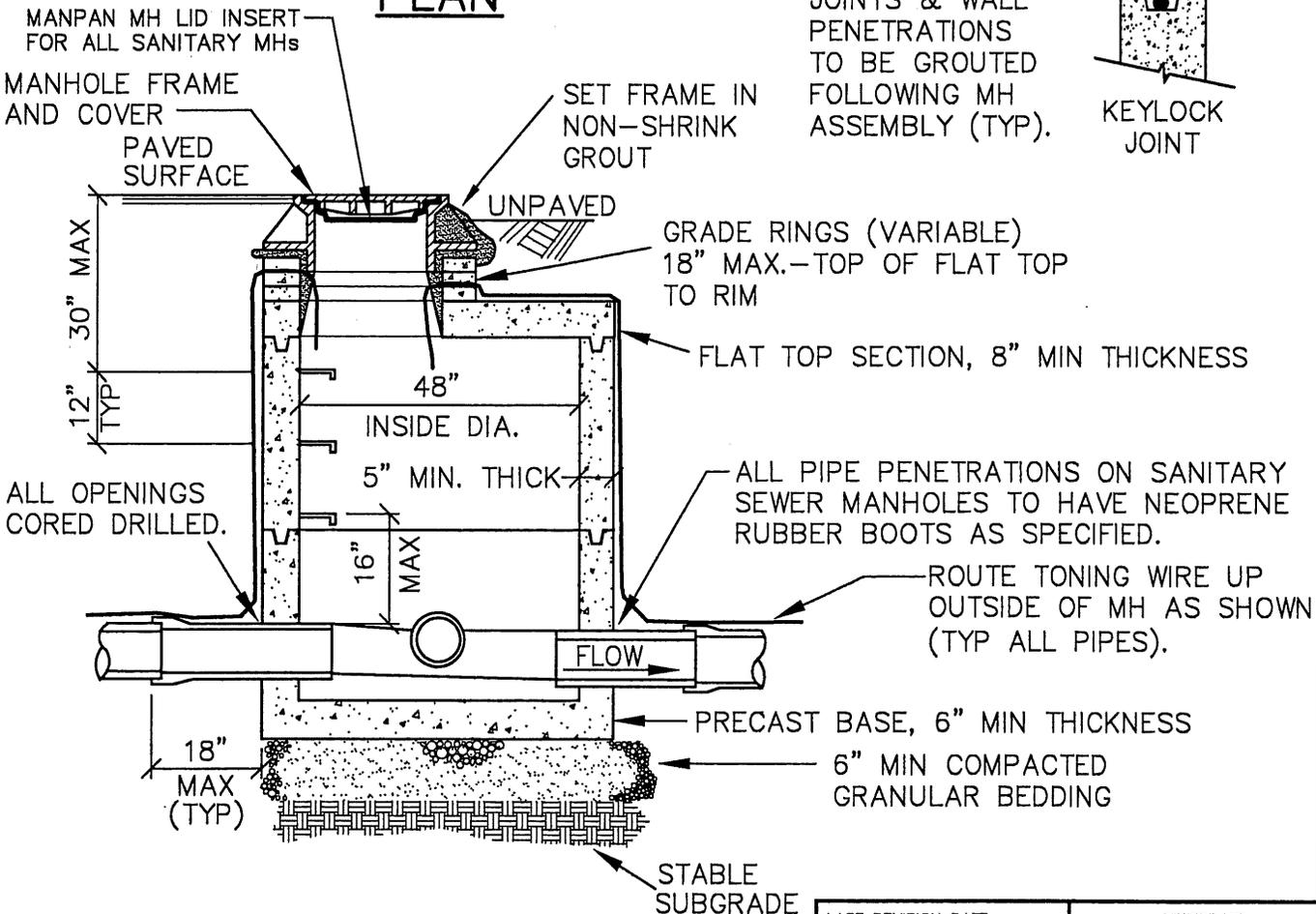
SECTION A-A

LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
STANDARD MANHOLE FOR 21" PIPE AND SMALLER	
(NTS)	
SILVERTON, OR	DETAIL NO. 401

NOTE: PER ORS 92.044(7),
MANHOLE MUST BE SET 1'
MINIMUM CLEAR FROM ANY
SURVEY MONUMENT



PLAN



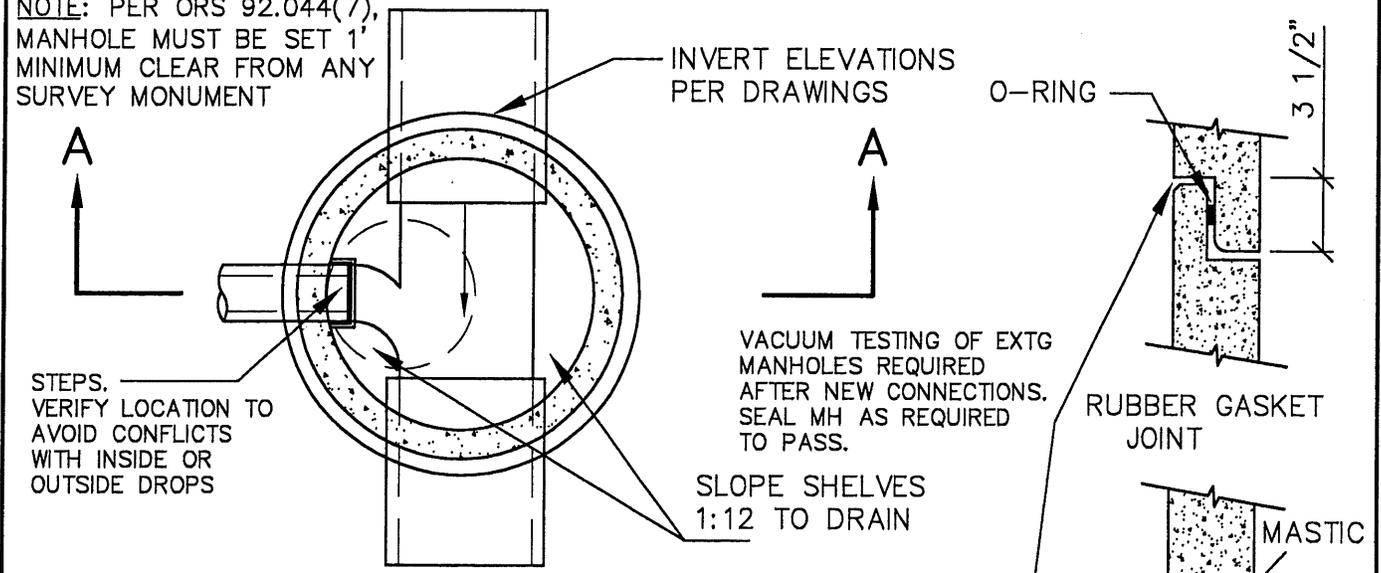
SECTION A-A

NOTES:

1. PRECAST SECTIONS SHALL MEET OR EXCEED ASTM C-478.
2. WATERTIGHT O-RING OR MASTIC KEYLOCK JOINTS REQUIRED.
3. STEPS TO BE POLYPROPYLENE PLASTIC WITH GRADE 60 REINFORCING ROD. ADD STEPS TO EXTG CONNECTION MH IF EXTG STEPS ARE ABSENT.

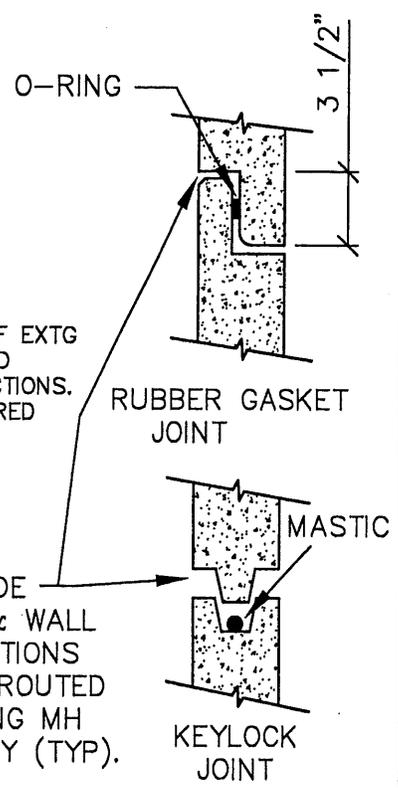
LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
FLAT TOP MANHOLE FOR 21" PIPE AND SMALLER	
(NTS)	
SILVERTON, OR	DETAIL NO. 402

NOTE: PER ORS 92.044(7),
MANHOLE MUST BE SET 1'
MINIMUM CLEAR FROM ANY
SURVEY MONUMENT



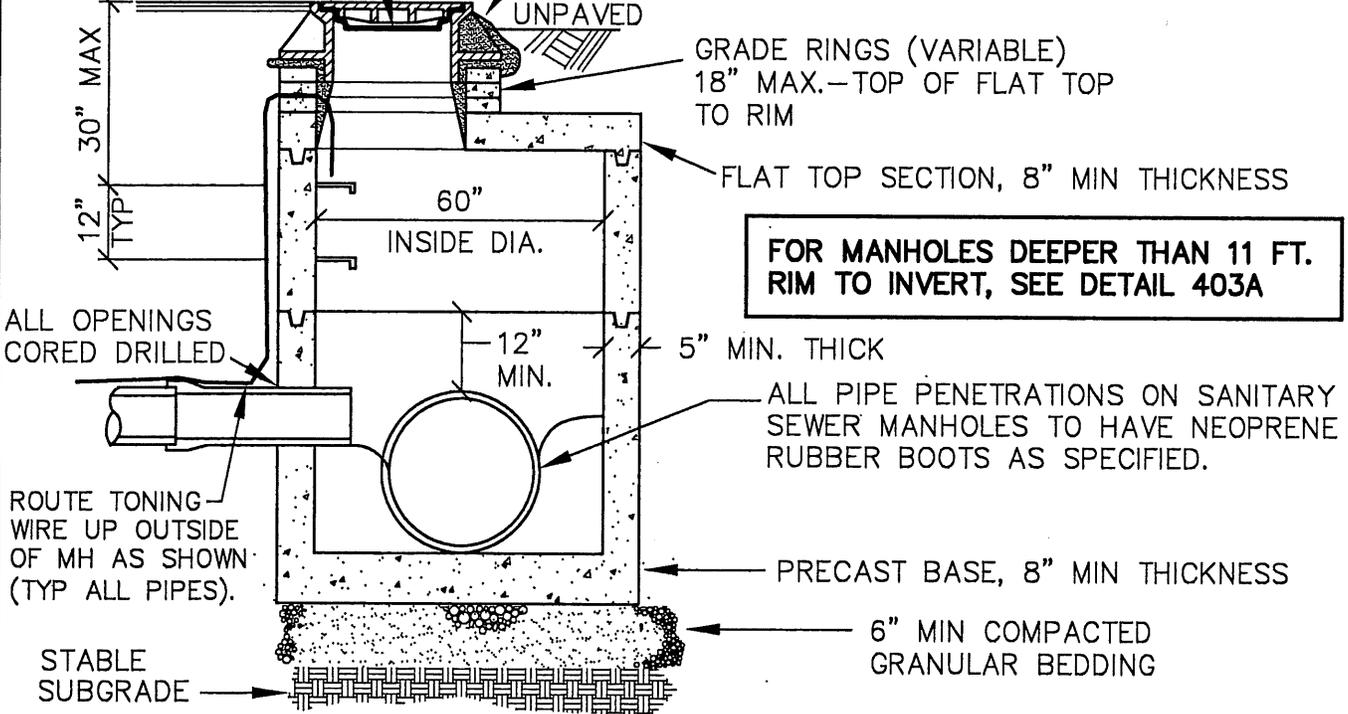
PLAN

VACUUM TESTING OF EXTG
MANHOLES REQUIRED
AFTER NEW CONNECTIONS.
SEAL MH AS REQUIRED
TO PASS.



MANPAN MH LID INSERT
FOR ALL SANITARY MHs
MANHOLE FRAME
AND COVER
PAVED SURFACE
UNPAVED
SET FRAME IN
NON-SHRINK
GROUT

ALL INSIDE
JOINTS & WALL
PENETRATIONS
TO BE GROUTED
FOLLOWING MH
ASSEMBLY (TYP).



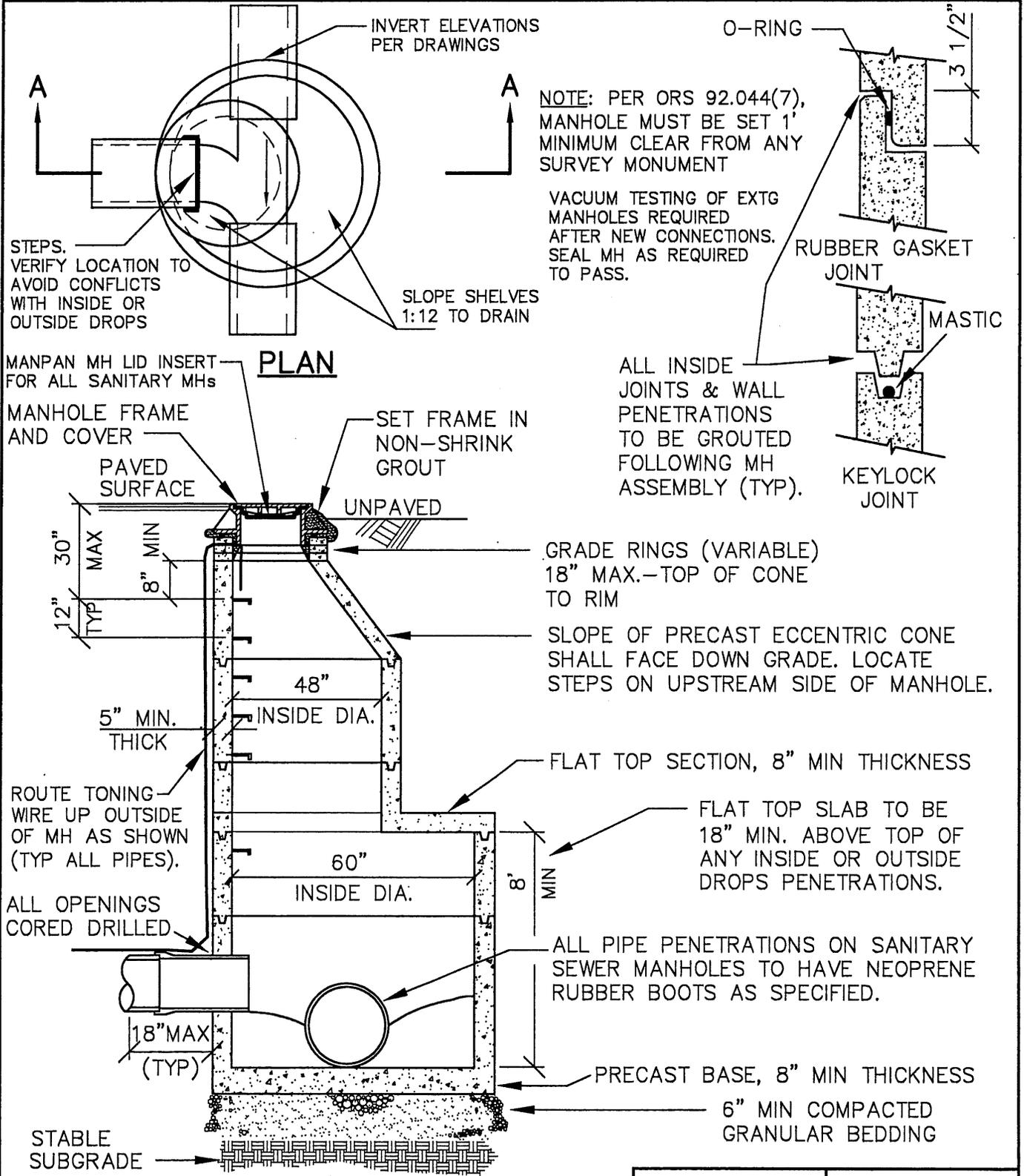
**FOR MANHOLES DEEPER THAN 11 FT.
RIM TO INVERT, SEE DETAIL 403A**

SECTION A-A

NOTES:

1. PRECAST SECTIONS SHALL MEET OR EXCEED ASTM C-478.
2. WATERTIGHT O-RING OR MASTIC KEYLOCK JOINTS REQUIRED.
3. STEPS TO BE POLYPROPYLENE PLASTIC WITH GRADE 60 REINFORCING ROD. ADD STEPS TO EXTG CONNECTION MH IF EXTG STEPS ARE ABSENT.

LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
MANHOLE FOR 24" AND 27" PIPE	
(NTS)	
SILVERTON, OR	DETAIL NO. 403



NOTE: PER ORS 92.044(7), MANHOLE MUST BE SET 1' MINIMUM CLEAR FROM ANY SURVEY MONUMENT

VACUUM TESTING OF EXTG MANHOLES REQUIRED AFTER NEW CONNECTIONS. SEAL MH AS REQUIRED TO PASS.

ALL INSIDE JOINTS & WALL PENETRATIONS TO BE GROUTED FOLLOWING MH ASSEMBLY (TYP).

GRADE RINGS (VARIABLE) 18" MAX.—TOP OF CONE TO RIM

SLOPE OF PRECAST ECCENTRIC CONE SHALL FACE DOWN GRADE. LOCATE STEPS ON UPSTREAM SIDE OF MANHOLE.

ALL PIPE PENETRATIONS ON SANITARY SEWER MANHOLES TO HAVE NEOPRENE RUBBER BOOTS AS SPECIFIED.

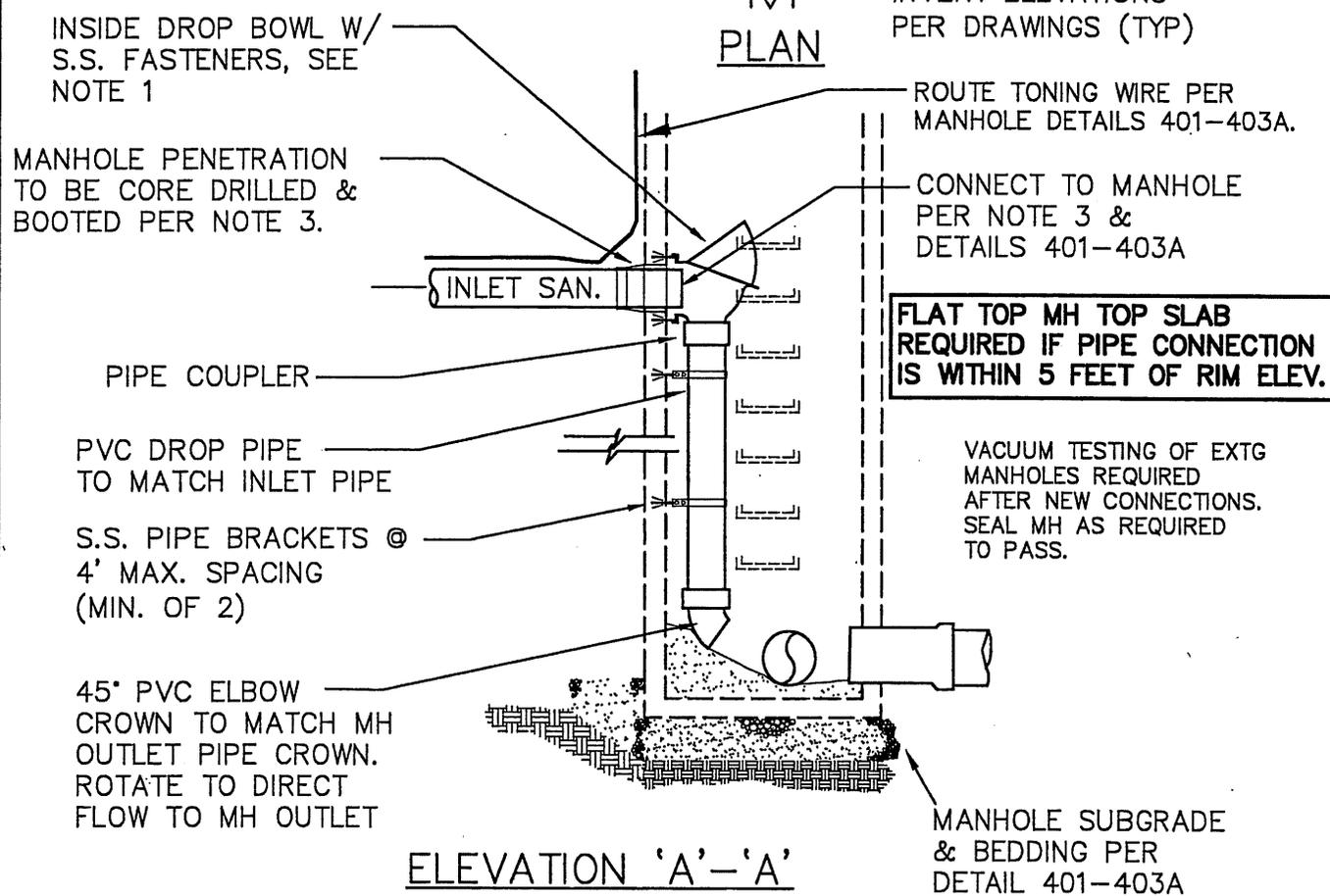
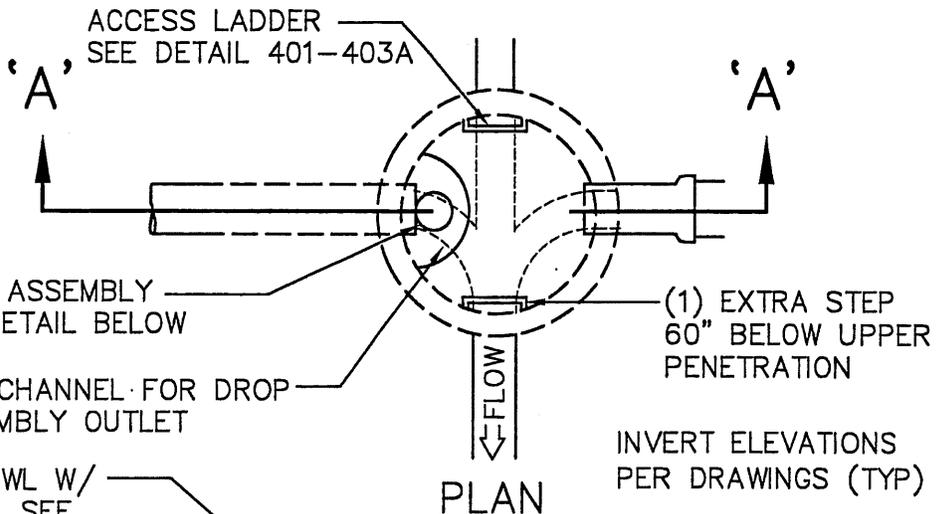
PRECAST BASE, 8" MIN THICKNESS
6" MIN COMPACTED GRANULAR BEDDING

SECTION A-A

NOTES:

1. PRECAST SECTIONS SHALL MEET OR EXCEED ASTM C-478.
2. WATERTIGHT O-RING OR MASTIC KEYLOCK JOINTS REQUIRED.
3. STEPS TO BE POLYPROPYLENE PLASTIC WITH GRADE 60 REINFORCING ROD. ADD STEPS TO EXTG CONNECTION MH IF EXTG STEPS ARE ABSENT.

LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
DEEP MANHOLE FOR 24" AND 27" PIPE	
(NTS)	
SILVERTON, OR	DETAIL NO. 403A

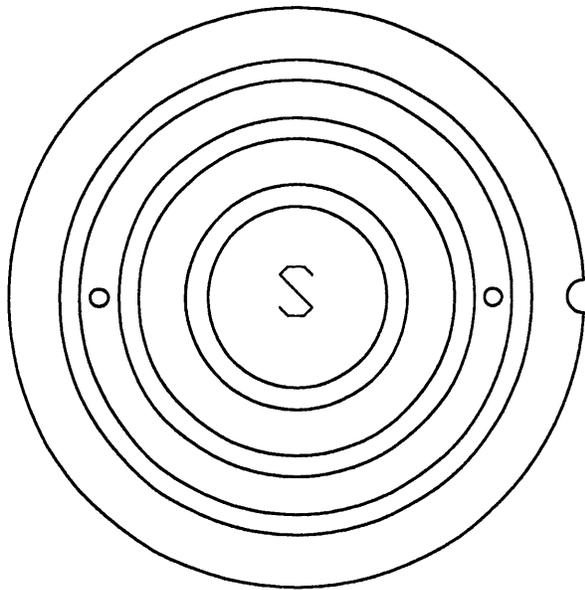


NOTES:

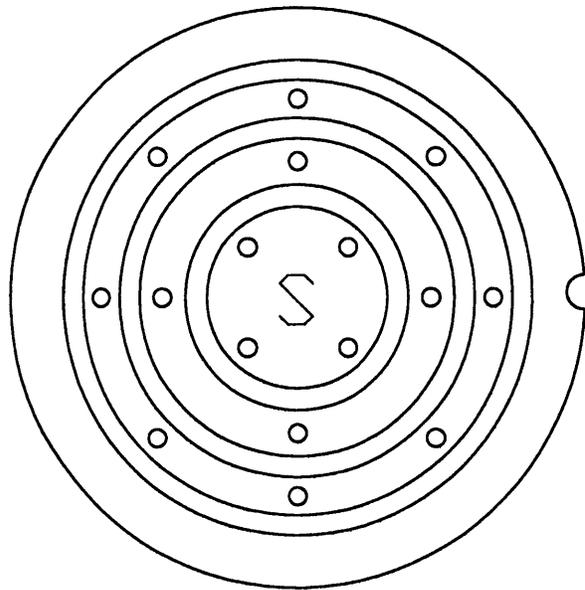
1. ALL INSIDE DROPS MUST BE APPROVED ON A CASE BY CASE BASIS BY THE PUBLIC WORKS SUPERINTENDANT. MINIMUM 60" DIAMETER MANHOLE REQUIRED FOR INSIDE DROPS UNLESS OTHERWISE APPROVED IN WRITING BY THE PUBLIC WORKS SUPERINTENDANT.
2. "RELINER" INSIDE DROP BOWL BY DURAN, INC. OR APPROVED EQUIVALENT. FOR INLET PIPES WITH SLOPES GREATER THAN 5%, PROVIDE BOWL WITH OPTIONAL HOOD.
3. ALL PIPE PENETRATIONS SHALL HAVE NEOPRENE RUBBER BOOTS. MANHOLE BASE, BARREL & TOP TO CONFORM WITH DETAILS 401-403A.

4. STEPS TO BE POLYPROPYLENE PLASTIC WITH GRADE 60 REINFORCING ROD. ADD STEPS TO EXTG CONNECTION MH IF EXTG STEPS ARE ABSENT.

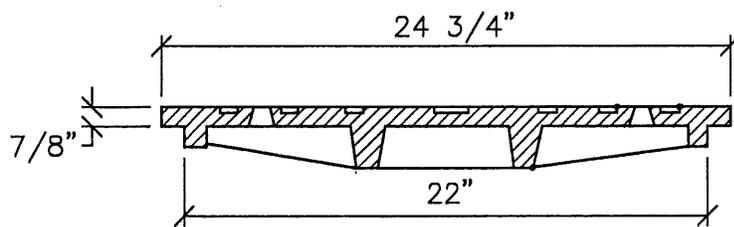
LAST REVISION DATE: JULY 2015	
INSIDE DROP CONNECTION FOR SANITARY SEWER OR STORM MANHOLE	
(NTS)	
SILVERTON, OR	DETAIL NO. 404



SANITARY

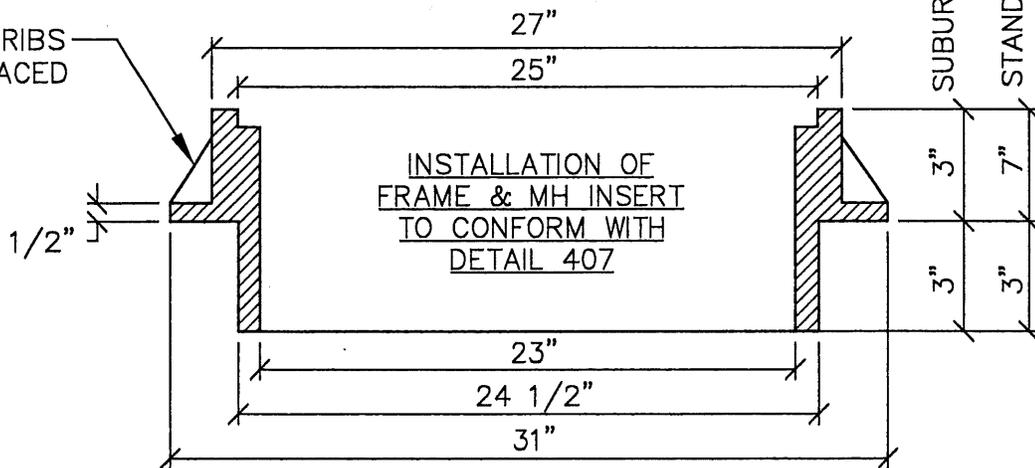


STORM



SUBURBAN FRAME
STANDARD FRAME

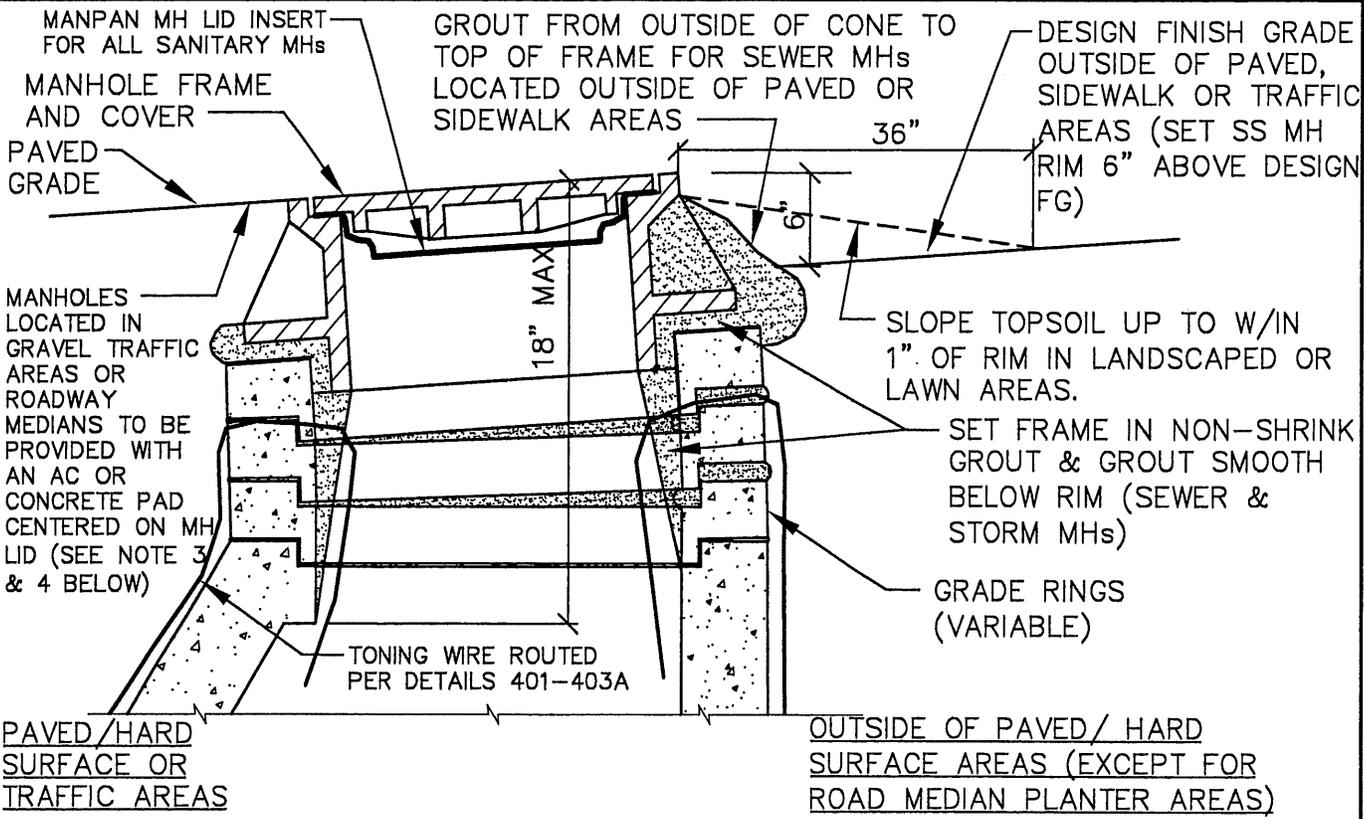
8 EA. -1/2" RIBS
EQUALLY SPACED



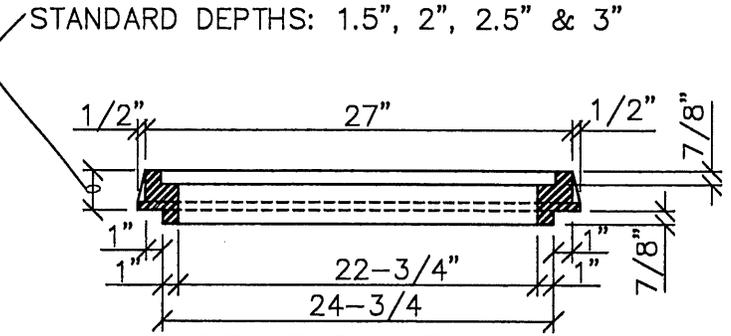
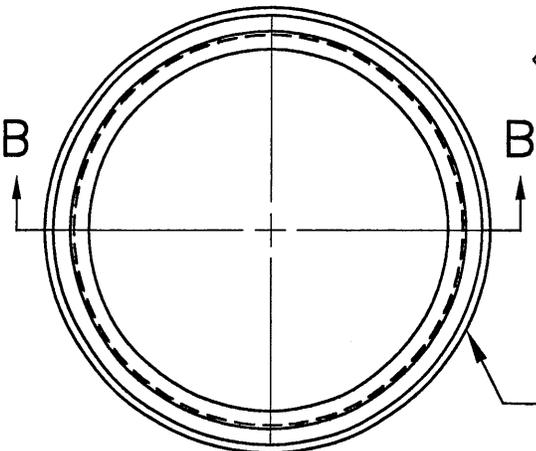
NOTES:

1. COVER AND FRAME SHALL BE GRAY CAST IRON ASTM A-48, CLASS 30.
2. COVER AND FRAME TO BE MACHINED TO A TRUE BEARING ALL AROUND.
3. NOTCH LID FOR LIFTING HOOK.
4. SUBURBAN FRAME SHALL BE USED ONLY WITH PRIOR WRITTEN AUTHORIZATION FROM THE PUBLIC WORKS DIRECTOR.

LAST REVISION DATE: NOV 2015	
MANHOLE FRAME AND COVER (STANDARD AND SUBURBAN)	
(NTS)	
SILVERTON, OR	DETAIL NO. 405



TYPICAL MANHOLE GRADE ADJUSTMENT



SECTION B-B

CAST IRON ADJUSTMENT RINGS

MANHOLE ADJUSTMENT RINGS FOR RESURFACING ONLY

5. ALL NEW SEWER MHs (OR EXISTING SEWER MHs CONNECTED TO) SHALL BE PROVIDED WITH MANHOLE LID INSERTS (MANPAN MANHOLE INSERT OR EQUAL).

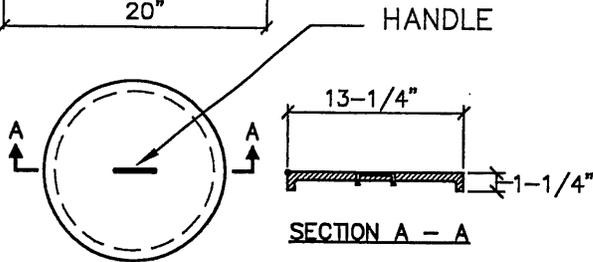
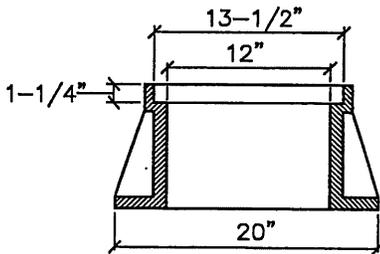
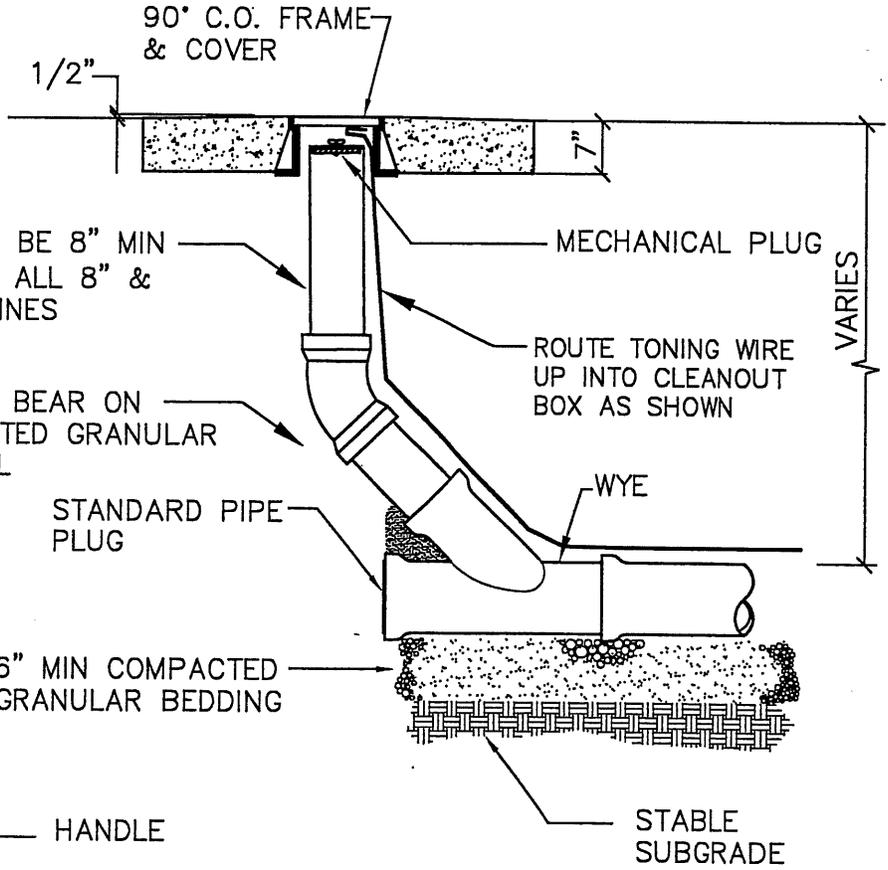
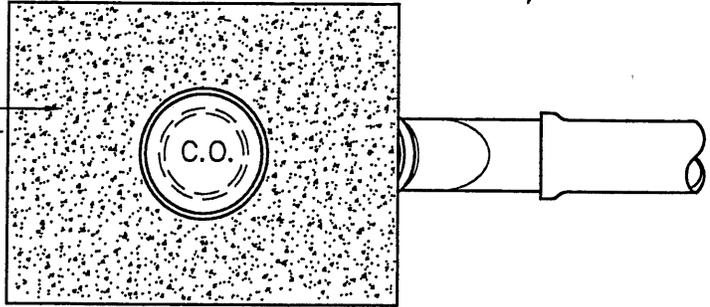
NOTES:

1. CAST IRON ADJUSTMENT RINGS ALLOWED ONLY WITH OVERLAYS AND NOT ON NEW MANHOLES. MAXIMUM 1 ADJUSTMENT RING PER MANHOLE.
2. SANITARY SEWER MHs - 2 HOLE LIDS
STORM DRAIN MHs - 16 HOLE LIDS
3. MH PADS IN UNPAVED TRAFFIC AREAS - 8'x8' MIN SIZE OF (A) 3" MIN. AC OVER 10" COMPACTED BASEROCK (OR PUBLIC ROAD STANDARD THICKNESS IF LOCATED IN R.O.W) OR (B) 8" CONCRETE OVER 2" BASEROCK.
4. MH PADS IN ROAD MEDIAN PLANTER AREAS - 4" CONC (PER DTL 212, 15' SQUARE W/5' SCORING PATTERN).

LAST REVISION DATE: NOV 2015	JO #
MANHOLE RIM ADJUSTMENT DETAILS	
(NTS)	
SILVERTON, OR	DETAIL NO. 407

CLEANOUT COVERS: ALL SEWER CLEANOUT LIDS TO READ "SEWER"
 ALL STORM CLEANOUT LIDS TO READ "STORM" OR "C/O".

24" SQUARE CONCRETE PAD
 OR AC PAVEMENT OUTSIDE OF
 PAVED AREAS. SLOPE AWAY
 FROM CLEANOUT.



CLEANOUT FRAME & COVER

NOTES:

1. USE INLAND FOUNDRY MODEL 240 FRAME & COVER IN ALL AREAS.
2. COVER AND FRAME SHALL BE GRAY CAST IRON ASTM A-48, CLASS 30.
3. COVER AND FRAME TO BE MACHINED TO A TRUE BEARING ALL AROUND.

LAST REVISION DATE: JULY 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
MAINLINE CLEANOUT	
(NTS)	
SILVERTON, OR	DETAIL NO. 411

NOTE: NO VERTICAL OR HORIZONTAL BENDS GREATER THAN 22-1/2° WITHIN RIGHT-OF-WAY OR PUBLIC UTILITY EASEMENT (IE. FROM MAINLINE TO CLEANOUT).

NOTE: PER ORS 92.044(7), SERVICE LINES MUST BE SET 1' MINIMUM CLEAR FROM ANY SURVEY MONUMENT

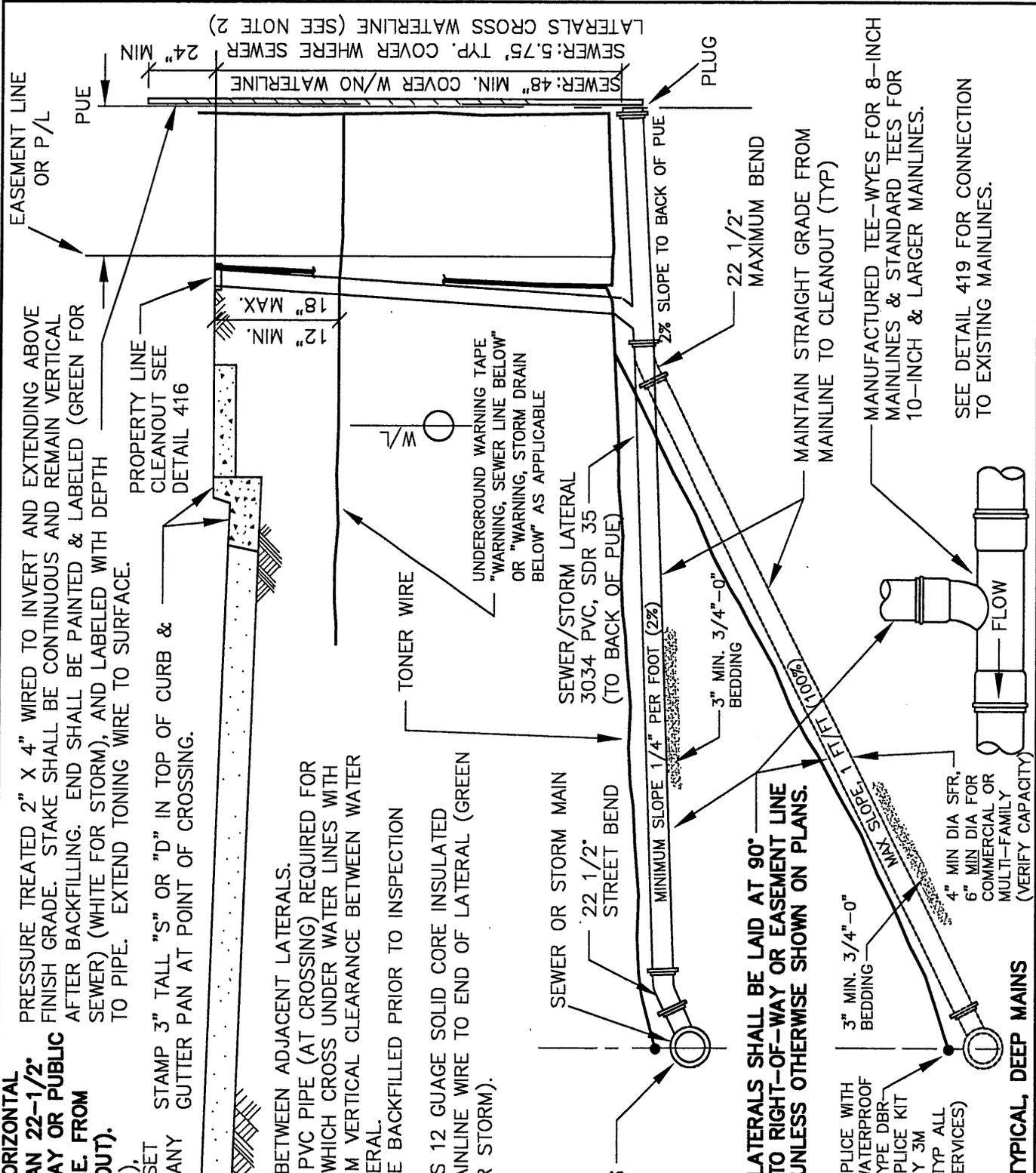
PRESSURE TREATED 2" X 4" WIRED TO INVERT AND EXTENDING ABOVE FINISH GRADE. STAKE SHALL BE CONTINUOUS AND REMAIN VERTICAL AFTER BACKFILLING. END SHALL BE PAINTED & LABELED (GREEN FOR SEWER) (WHITE FOR STORM), AND LABELED WITH DEPTH TO PIPE. EXTEND TONING WIRE TO SURFACE.

STAMP 3" TALL "S" OR "D" IN TOP OF CURB & GUTTER PAN AT POINT OF CROSSING.

PROPERTY LINE CLEANOUT SEE DETAIL 416

NOTES:

1. MIN. 18" SEPARATION BETWEEN ADJACENT LATERALS.
2. ONE FULL LENGTH OF PVC PIPE (AT CROSSING) REQUIRED FOR ALL SEWER LATERALS WHICH CROSS UNDER WATER LINES WITH LESS THAN 18" MINIMUM VERTICAL CLEARANCE BETWEEN WATER LINE AND SERVICE LATERAL.
3. SERVICE SHALL NOT BE BACKFILLED PRIOR TO INSPECTION BY PUBLIC WORKS.
4. INSTALL A CONTINUOUS 12 GAUGE SOLID CORE INSULATED TRACER WIRE FROM MAINLINE WIRE TO END OF LATERAL (GREEN FOR SEWER, WHITE FOR STORM).



TYPICAL, SHALLOW MAINS

LATERALS SHALL BE LAID AT 90° TO RIGHT-OF-WAY OR EASEMENT LINE UNLESS OTHERWISE SHOWN ON PLANS.

TYPICAL, DEEP MAINS

LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
SEWER AND STORM SERVICE LATERALS	
(NTS)	
SILVERTON, OR	DETAIL NO. 415

CLEANOUT COVERS: ALL SEWER CLEANOUT LIDS TO READ "SEWER"
 ALL STORM CLEANOUT LIDS TO READ "STORM" OR "C/O".

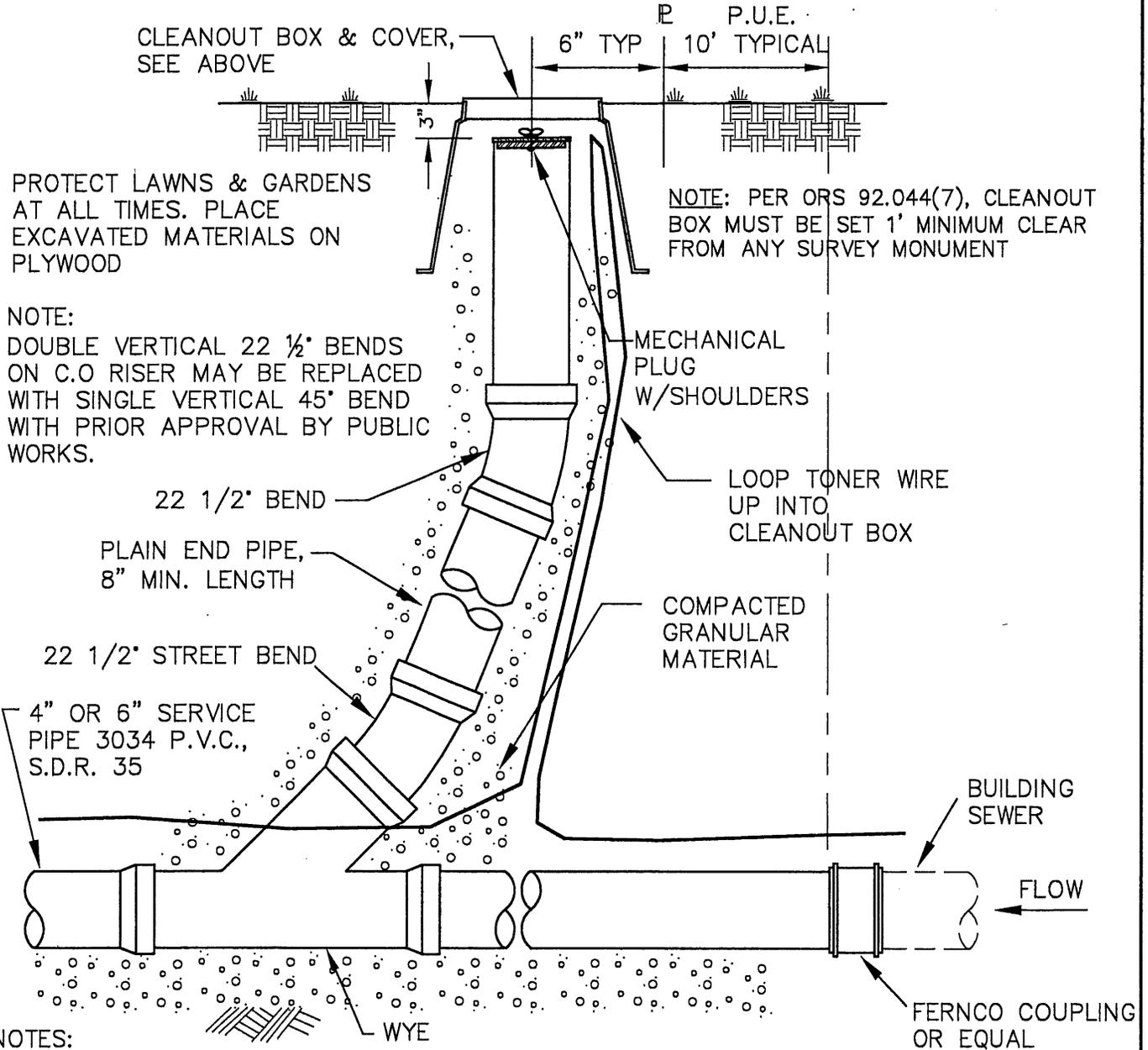
1. NON-TRAFFIC AREAS:

CARSON MODEL 910 T-COVER OR EQUAL (GREEN FOR SEWER, GREY FOR STORM).

2. TRAFFIC AREAS, INCLUDING DRIVEWAYS:

BROOKS #1RT VALVE BOX & LID "TRAFFIC" STYLE OR EQUAL
 (WORDING AS NOTED PER ABOVE).

(FOR CI CLEANOUTS IN UNPAVED AREAS, SET IN 6" THICK CONCRETE PAD)



PROTECT LAWNS & GARDENS AT ALL TIMES. PLACE EXCAVATED MATERIALS ON PLYWOOD

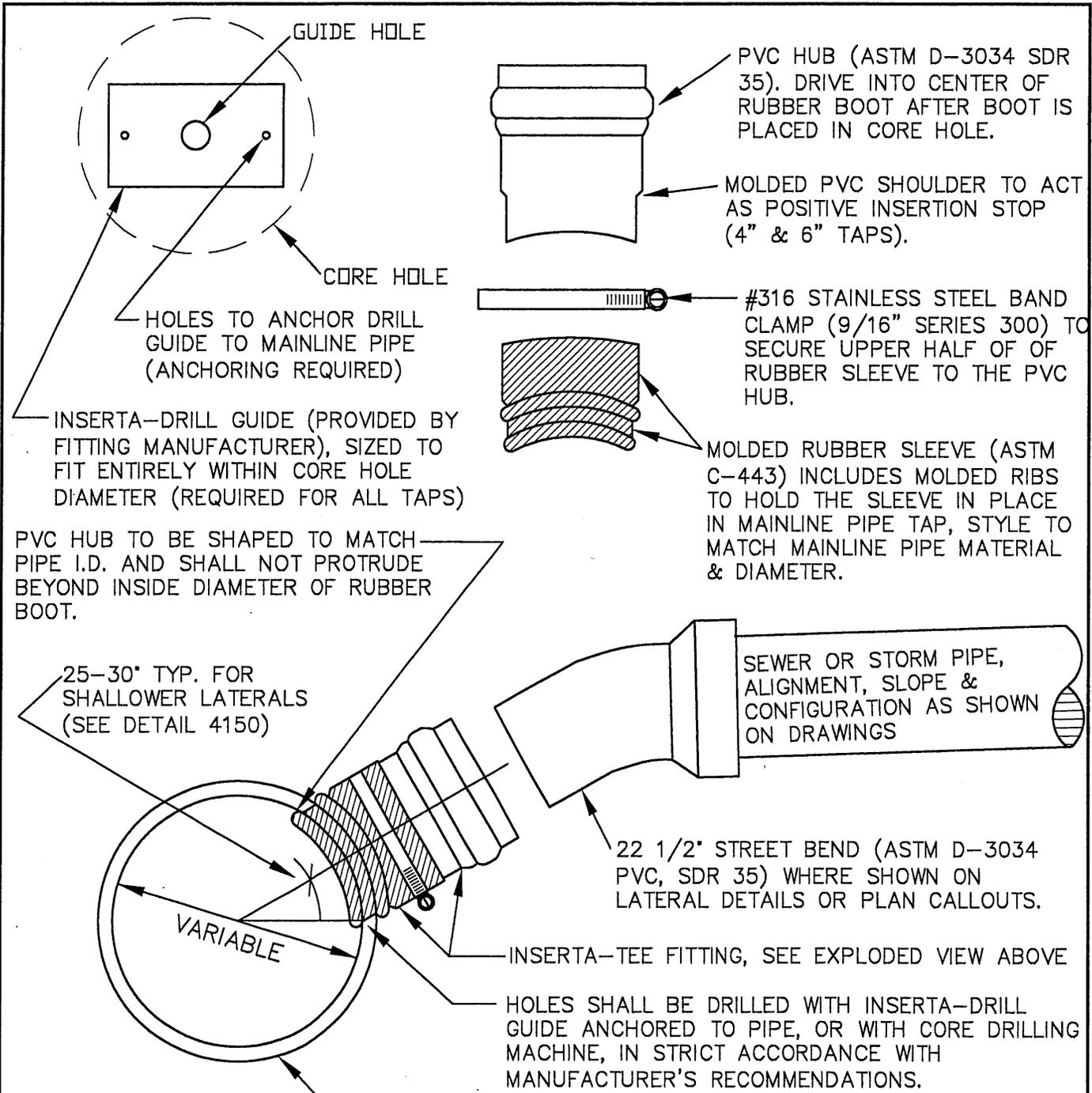
NOTE: PER ORS 92.044(7), CLEANOUT BOX MUST BE SET 1' MINIMUM CLEAR FROM ANY SURVEY MONUMENT

NOTE: DOUBLE VERTICAL 22 1/2° BENDS ON C.O RISER MAY BE REPLACED WITH SINGLE VERTICAL 45° BEND WITH PRIOR APPROVAL BY PUBLIC WORKS.

NOTES:

1. CLEANOUT RISER SHALL BE SAME SIZE AND MATERIAL AS LATERAL PIPE.
2. PROVIDE C.I. BOX FOR CLEANOUTS LOCATED IN DRIVEWAYS OR TRAFFIC AREAS (PROVIDE 6" THICK CONCRETE PAD, THAT IS 6" LARGER THAN OUTSIDE DIM OF CLEANOUT BOX).
3. CLEANOUT PIPE SHALL BE LEFT A MINIMUM OF 18" ABOVE EXISTING GRADE UNTIL ALL CURBING IS INSTALLED AND ALL PRIVATE UTILITY TRENCHES ARE BACKFILLED. CLEANOUTS SHALL THEN BE SET NO MORE THAN 6" BELOW FINISH GRADE, AND CLEANOUT BOXES SET FLUSH WITH FINISH GRADE.

LAST REVISION DATE: NOV 2015	COPYRIGHT 1996 WESTECH ENGINEERING, INC.
STANDARD SERVICE LATERAL CLEANOUT (SEWER & STORM) (NTS)	
SILVERTON, OR	DETAIL NO. 416



NOTES:

1. EXISTING SANITARY SEWERS - INSERTA-TEES ALLOWED ON EXISTING PVC OR DUCTILE IRON SEWER MAINS. USE ON OTHER PIPE TYPES IS SUBJECT TO CITY APPROVAL AND ACCEPTABLE PIPE CONDITION.
2. EXISTING STORM DRAINS - INSERTA-TEES ALLOWED ON ALL PIPE TYPES, SUBJECT TO CITY APPROVAL AND ACCEPTABLE PIPE CONDITION.
3. NEW MAINLINES - MANUFACTURED FITTINGS (PER DETAIL 415) SHALL BE USED FOR CONNECTION ON ALL NEW SEWER AND STORM MAINLINES.
4. THE TAP SHALL NOT BE MADE EXCEPT IN THE PRESENCE OF A CITY INSPECTOR; NOR SHALL ANY CONNECTION BE MADE WITHOUT PRIOR CITY APPROVAL.
5. CENTERLINE OF TAP SHALL BE ABOVE SPRINGLINE.

INSERTA-TEE "FATBOY" FITTING SHALL BE USED FOR ALL 4" & 6" TAPS ON EXTG PIPE (95% MANDREL TESTING OF EXISTING MAINLINES AFTER TAP MAY BE REQUIRED AT DISCRETION OF PUBLIC WORKS DIRECTOR).

LAST REVISION DATE: NOV 2015	JO # STANDARD
INSERTA-TEE CONNECTION TO EXISTING SEWER OR STORM DRAIN (NTS)	
SILVERTON, OR	DETAIL NO. 419

MANHOLE VACUUM TEST REPORT

Project Location: (City)				Project Name:			
Inspector: (Print)				Date: (Separate Report Required for Each Test Session)			
Testing Company: (Name & Phone #)							
Manhole No.	Manhole Diameter (inch)	Manhole Depth (ft)	Surface Restoration Complete?	Time Required ³ (sec)	Time to Drop from 10" Hg to 9" Hg (sec)	Results	Comments
			Yes / No			Pass / Fail	
			Yes / No			Pass / Fail	
			Yes / No			Pass / Fail	
			Yes / No			Pass / Fail	
			Yes / No			Pass / Fail	
			Yes / No			Pass / Fail	
			Yes / No			Pass / Fail	
			Yes / No			Pass / Fail	

1. All adjacent surface restoration shall be completed prior to conducting manhole acceptance tests, including finish paving and final adjustments to grade. Any test conducted prior to completion of surface restoration shall be considered informal, and will not count for acceptance.
2. The vacuum test head seal shall be inflated in accordance with the manufacturer's recommendations, but in all cases the grade rings and casting shall be included in the test. A vacuum of 10-inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9-inches.
3. The manhole shall pass if the time for the vacuum reading to drop to 9-inches meets or exceeds the values indicated on the following table. Times for deeper depths as required by the Public Works Director.

REQUIRED MANHOLE VACUUM TEST TIMES			
Manhole Depth (feet)	Required Time (sec)		
	48-inch diameter	60-inch diameter	72-inch diameter
8	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
18	40	52	65
20	45	59	73
22	50	65	81

SANITARY SEWER AIR TEST REPORT

Project Location:					Project Name:					
Inspector: (Print)					Date: (Separate Report Required for Each Test Session)					
TV Inspection Required? Yes / No					Mandrel Testing Completed? Date Completed or Scheduled:					
Station (& Manhole #)		Main/ Lateral	Size & Material	Total Length (ft)	C ¹	K ¹	Test Time (Seconds) for Pressure Drop Shown (psi)			Comments
							From	To	Required ²	
		Main								Pass / Fail
		Laterals								
		Totals								
		Main								Pass / Fail
		Laterals								
		Totals								
		Main								Pass / Fail
		Laterals								
		Totals								
		Main								Pass / Fail
		Laterals								
		Totals								

¹ For C and K values, see table and formulas on reverse side.

² For total C ≤ 1.0, test time (seconds) required = 2 times K
For total C > 1.0, test time (seconds) required = 2 times (K/C)

TEST PROCEDURE

1. Add air slowly to the portion of the pipe installation under test until the internal air pressure is raised to 4.0 psig (or higher pressure as required to address groundwater). Increase the test pressure by 0.433 psi for each foot of average ground water depth over the exterior crown of the pipe under test, with the maximum test pressure not to exceed 9.0 psi.
2. Add air slowly until the internal air pressure is raised to 4.0 psig (or higher pressure as required due to groundwater).
3. After required test pressure is reached, allow 2-minutes minimum for air temperature to stabilize, adding only the amount of air required to maintain pressure.
4. After the temperature stabilization period, disconnect the air supply.
5. Record the time required for the internal air pressure to drop from 3.5 psi (or higher as required due to groundwater backpressure) to 2.5 psi (or higher as required due to groundwater backpressure). If this time exceeds the required time (or if there is less than 1.0 psi pressure drop), the test is successful.

ACCEPTANCE: The tested sewer section shall be considered acceptable if the pressure drop during the test time is less than 1.0 psi from the starting pressure.

SEWER AIR TEST C AND K VALUES

Pipe Size (inch)	C-Value ¹ per foot length	K-Value ² per foot length
4	0.00155	0.176
6	0.00233	0.396
8	0.00311	0.704
10	0.00388	1.100
12	0.00466	1.584
15	0.00582	2.475
18	0.00699	3.564
21	0.00815	4.851

¹ C = 0.0003882dL

Where d = diameter (inches)

² K = 0.011d²L

L = Length (ft)

Example:

Air Test a system consisting of two mainline segments as follows:

Segment 1: 395 feet of 8-inch mainline, 100 feet of 4-inch laterals, and 35 feet of 6 inch laterals.

Segment 2: 200 feet of 8-inch mainline, 30 feet of 4-inch laterals, and 20 feet of 6 inch laterals.

Station (& Manhole #)		Main/Lateral	Size & Material	Total Length (ft)	C ¹	K ¹	Test Time (Seconds) for Pressure Drop Shown (psi)			Comments	
From	To						Required ²	4.0 - 3.5	3.5 - 2.5		
0+00 MH A1	3+95 MH A2	Main	8" PVC	395	1.227	278.1	310/1.46= 212			Pass / Fail	
		Laterals	4" PVC 6" PVC	100 35	0.155 0.082	17.6 13.86					212*2= 414 sec
		Totals			1.464	309.54					
3+95 MH A2	5+95 MH A3	Main	8" PVC	200	0.621	140.8	2*154= 308 sec			Pass / Fail	
		Laterals	4" PVC 6" PVC	20 30	0.047 0.047	5.28 7.92					
		Totals			0.714	154.0					

Note: For total C ≤ 1.0, test time (seconds) required = 2 times K

For total C > 1.0, test time (seconds) required = 2 times (K/C)

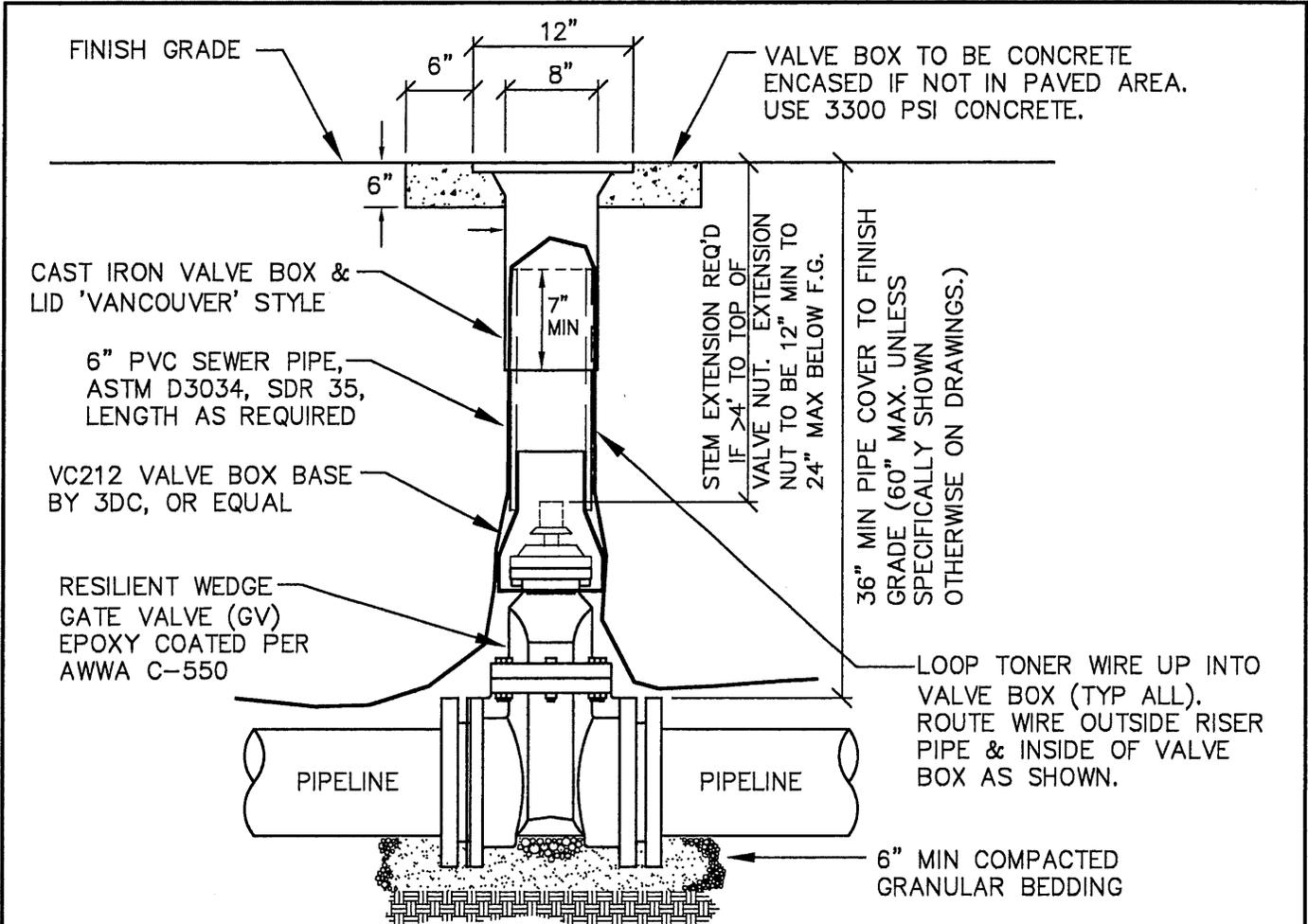
The tested sewer section shall be considered acceptable when tested as described herein if the section under test does not loose air at a rate greater than 0.0015 cfm per square foot of internal sewer surface.

SANITARY SEWER MANDREL TEST REPORT

Project Location: (City)	Project Name:
Inspector: (Print)	Date: (Separate Report Required for Each Test Session)
Mandrel Diameters Verified? Yes / No	

Station (& Manhole #)		Size & Material	Length (ft)	Results	Backfill Compaction Completed?	Date Sewer Flushed & Cleaned	Comments
From	To						
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		
				Pass / Fail	Yes / No		

1. Mandrel testing shall be conducted on a manhole to manhole (or cleanout) basis and shall be done after the line has been completely flushed out with water.
2. Mandrel testing shall be conducted after trench backfill and compaction has been completed.
3. The mandrel diameter shall be 95% of the pipe initial inside diameter. The inspector shall verify the diameter of each mandrel used during each test session.



FINISH GRADE

CAST IRON VALVE BOX & LID 'VANCOUVER' STYLE

6" PVC SEWER PIPE, ASTM D3034, SDR 35, LENGTH AS REQUIRED

VC212 VALVE BOX BASE BY 3DC, OR EQUAL

RESILIENT WEDGE GATE VALVE (GV) EPOXY COATED PER AWWA C-550

VALVE BOX TO BE CONCRETE ENCASED IF NOT IN PAVED AREA. USE 3300 PSI CONCRETE.

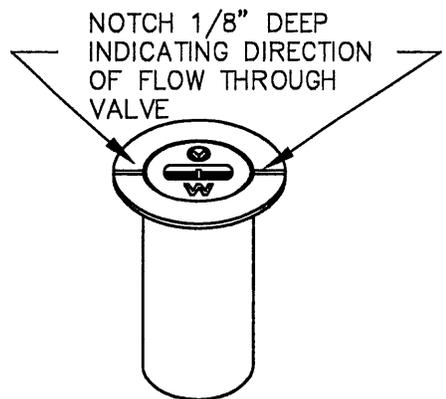
STEM EXTENSION REQ'D IF >4' TO TOP OF VALVE NUT. EXTENSION NUT TO BE 12" MIN TO 24" MAX BELOW F.G.

36" MIN PIPE COVER TO FINISH GRADE (60" MAX. UNLESS SPECIFICALLY SHOWN OTHERWISE ON DRAWINGS.)

LOOP TONER WIRE UP INTO VALVE BOX (TYP ALL). ROUTE WIRE OUTSIDE RISER PIPE & INSIDE OF VALVE BOX AS SHOWN.

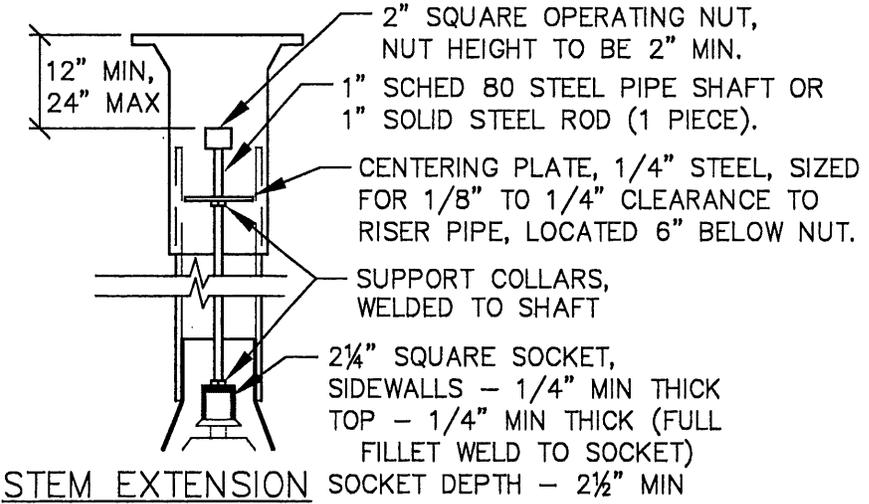
6" MIN COMPACTED GRANULAR BEDDING

STABLE SUBGRADE



NOTCH 1/8" DEEP INDICATING DIRECTION OF FLOW THROUGH VALVE

VANCOUVER '910' STYLE
18" TALL VALVE BOX



STEM EXTENSION

2" SQUARE OPERATING NUT, NUT HEIGHT TO BE 2" MIN.

1" SCHED 80 STEEL PIPE SHAFT OR 1" SOLID STEEL ROD (1 PIECE).

CENTERING PLATE, 1/4" STEEL, SIZED FOR 1/8" TO 1/4" CLEARANCE TO RISER PIPE, LOCATED 6" BELOW NUT.

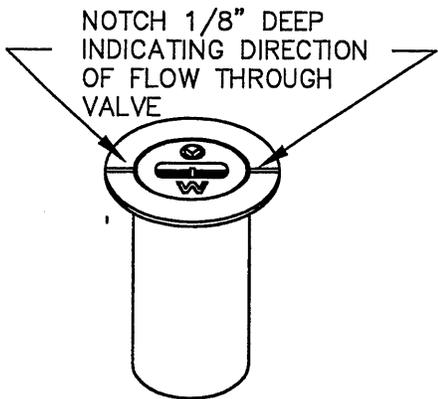
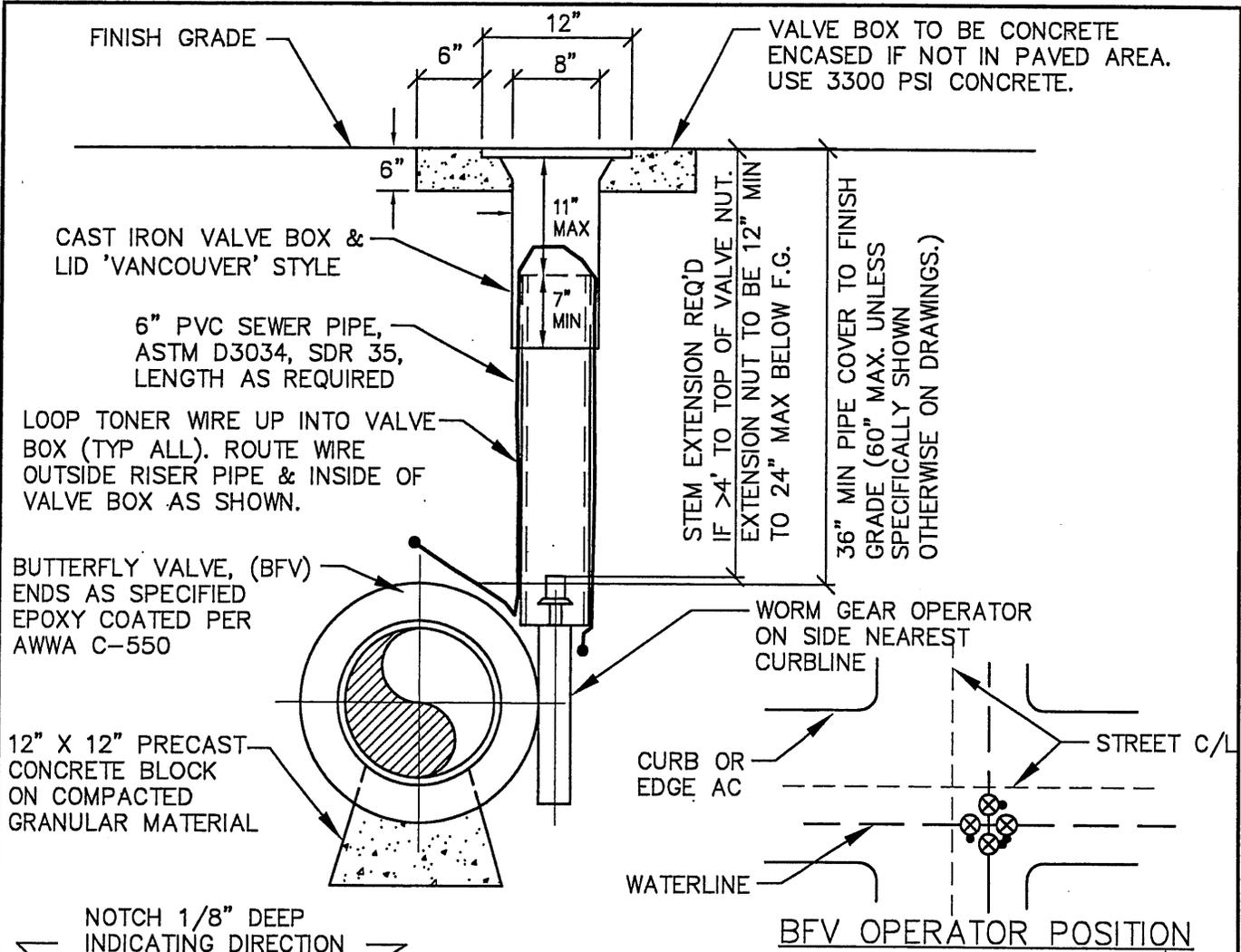
SUPPORT COLLARS, WELDED TO SHAFT

2 1/4" SQUARE SOCKET, SIDEWALLS - 1/4" MIN THICK TOP - 1/4" MIN THICK (FULL FILLET WELD TO SOCKET) SOCKET DEPTH - 2 1/2" MIN

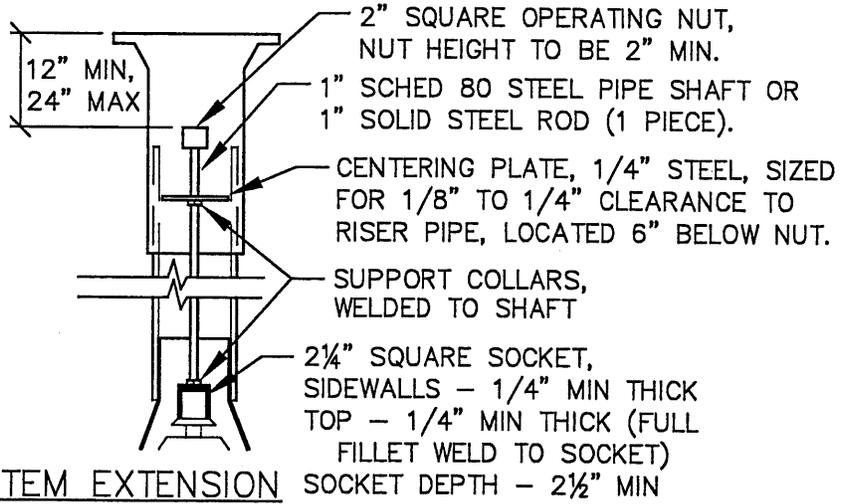
NOTES:

1. GV SHALL CONFORM TO AWWA C-509.
2. VALVE BOXES SHALL BE PLUMB AND CENTERED DIRECTLY OVER THE VALVE NUT.
3. VALVE BOX TOP SHALL BE ADJUSTED TO FINISHED GRADE.
4. PVC SHALL BE ONE CONTINUOUS PIECE, NO BELLS OR COUPLERS.
5. VALVE BOXES ON PRESSURE SEWER PLUG VALVES TO READ "S" OR "SEWER".

LAST REVISION DATE: NOV 2015	JO # STANDARD
GATE VALVE AND VALVE BOX DETAIL	
(NTS)	
SILVERTON, OR	DETAIL NO. 501



VANCOUVER '910' STYLE
18" TALL VALVE BOX



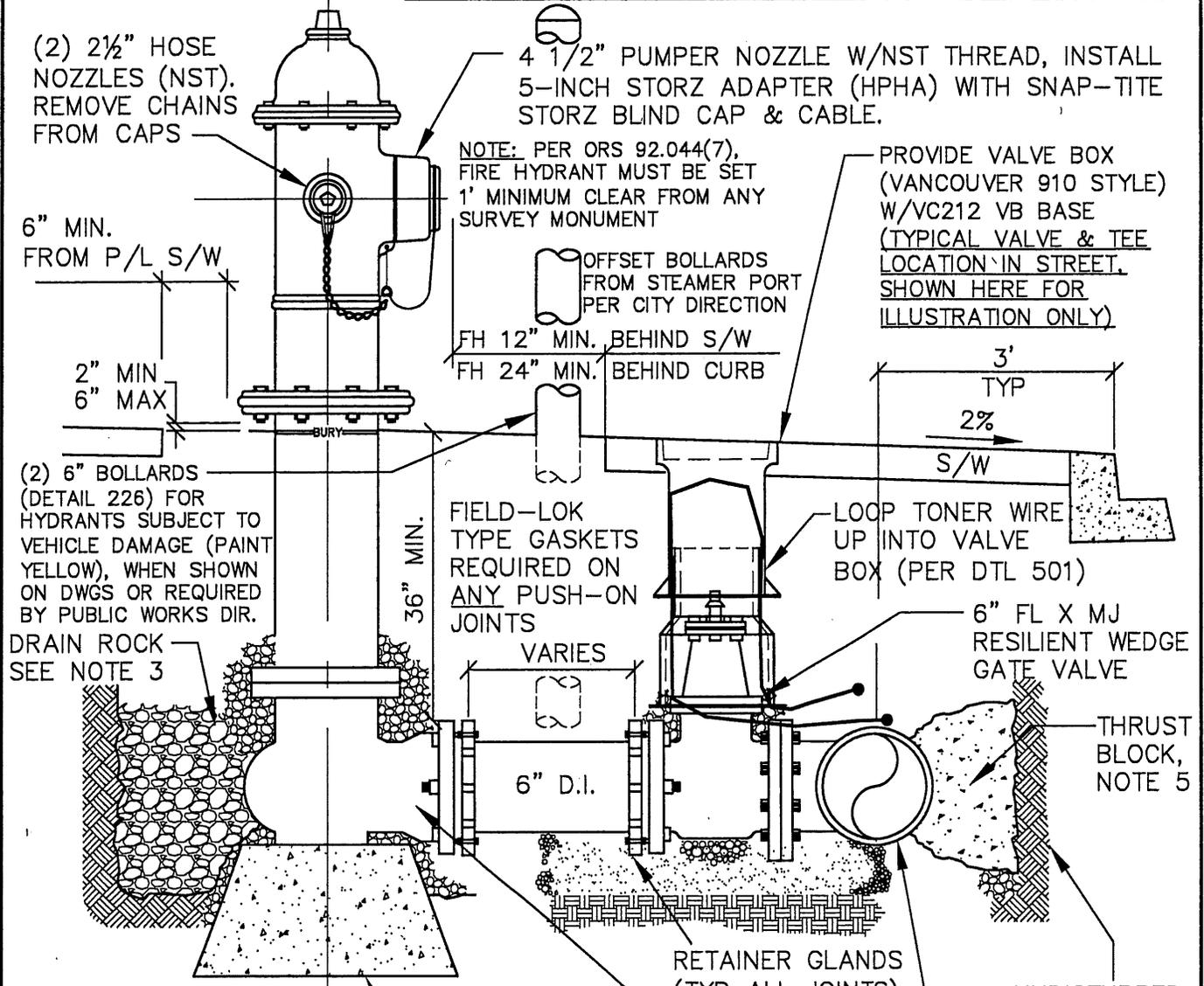
STEM EXTENSION

NOTES:

1. BFV SHALL BE SHORT BODY TYPE B VALVE PER AWWA C-504.
2. VALVE BOXES SHALL BE PLUMB AND CENTERED DIRECTLY OVER THE VALVE NUT.
3. VALVE BOX TOP SHALL BE ADJUSTED TO FINISHED GRADE.
4. PVC SHALL BE ONE CONTINUOUS PIECE, NO BELLS OR COUPLERS.
5. BFV ACTUATOR TO BE LOCATED ON THE CURBLINE SIDE OF WATERLINE AS SHOWN. INSTALL DI SPOOLS OR FLEX ADAPTER IF REQUIRED FOR ACTUATOR CLEARANCE.

LAST REVISION DATE: JULY 2015	JO # STANDARD
BUTTERFLY VALVE AND VALVE BOX DETAILS	
(NTS)	
SILVERTON, OR	DETAIL NO. 502

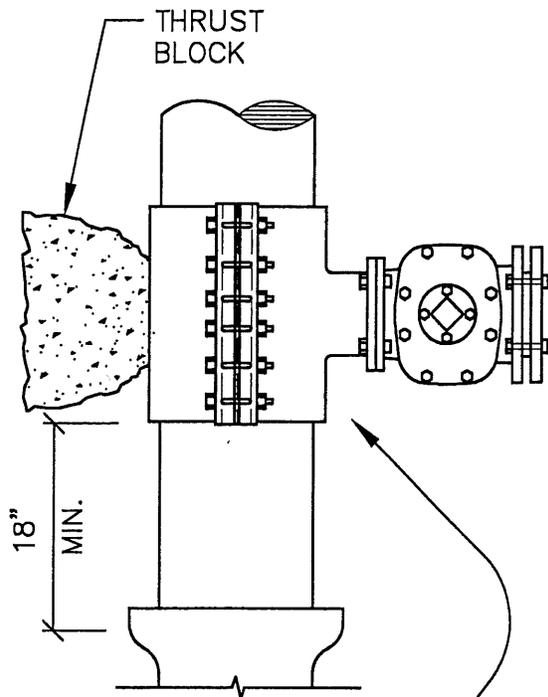
NOTE: HYDRANT COLOR TO BE FACTORY YELLOW



NOTES:

1. HYDRANTS TO BE KENNEDY GUARDIAN K81D or MUELLER SUPER CENTURION 250, MODEL A-423 WITH FULL SIZE (5 1/4") FOOT VALVE.
2. **ALL FITTINGS IN CONTACT WITH CONCRETE SHALL BE WRAPPED IN PLASTIC.** HYDRANT DRAIN HOLES TO REMAIN OPEN TO DRAIN ROCK AND OPERATIONAL.
3. 1-1/2" TO 3/4" CLEAN DRAIN ROCK SHALL BE PLACED TO A MIN. OF 6" ABOVE DRAIN OUTLET.
4. WHERE PLANTER STRIP EXISTS, HYDRANT SHALL BE PLACED SO FRONT PORT IS A MIN. OF 24" BEHIND FACE OF CURB.
5. THRUST BLOCK AT STANDARD 6" FIRE HYDRANT TEE SHALL HAVE MIN. 3.7 SQ. FT. BEARING AREA.
6. ALL HYDRANTS SHALL BE SET PLUMB.
7. FOR HYDRANT LEADS LONGER THAN 30', AN ADDITIONAL GATE VALVE SHALL BE PROVIDED WITHIN 3 FT. OF THE HYDRANT.
8. RESTRAIN ALL JOINTS ON ALL HYDRANT LEADS. RETAINER GLANDS SHALL TO BE USED IN LEIU OF THRUST BLOCK BEHIND HYDRANT.
9. PAINT CURB YELLOW 10 FEET EACH WAY FROM HYDRANT & INSTALL REFLECTIVE BLUE TRAFFIC MARKER @ STREET CENTERLINE.

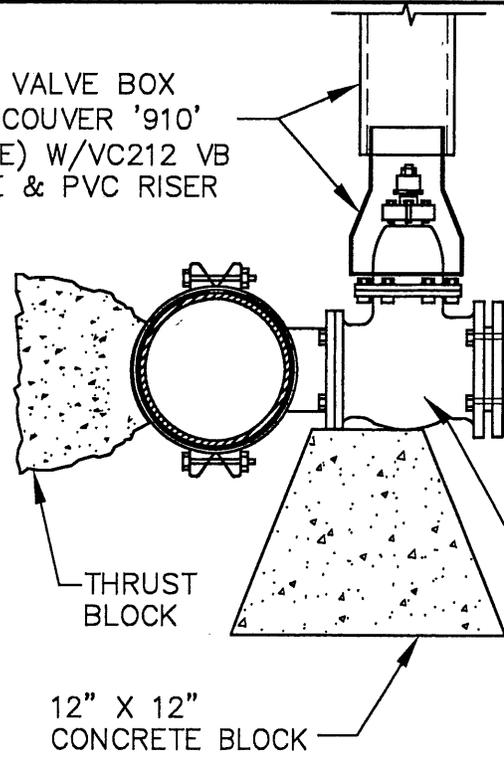
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STANDARD FIRE HYDRANT ASSEMBLY	
(NTS)	
SILVERTON, OR	DETAIL NO. 503



ROMAC SST/SSTIII, MUELLER H304,
JCM MODEL 432 OR APPROVED EQUAL
(STAINLESS STEEL SLEEVE & FLANGE)

TOP VIEW

STD. VALVE BOX
(VANCOUVER '910'
STYLE) W/VC212 VB
BASE & PVC RISER



RESILIENT WEDGE GATE VALVE
(FL x MJ UNLESS OTHERWISE
NOTED ON PLANS)

SIDE VIEW

NOTES:

1. WATER MAIN SHALL BE CLEANED & SPRAYED WITH CHLORINE SOLUTION IN TAP AREA BEFORE ATTACHING SLEEVE.
2. TAPPING SLEEVE SHALL BE ALL STAINLESS STEEL WITH FULL PERIMETER GASKET.
3. TAPPING VALVE SHALL BE EPOXY COATED PER AWWA C-550.
4. SLEEVE AND VALVE SHALL BE PRESSURE TESTED BEFORE MAKING TAP. PRESSURE TEST AND TAP SHALL BE MADE IN THE PRESENCE OF AN AUTHORIZED CITY REPRESENTATIVE.
5. APPROVED TAPPING MACHINE SHALL BE USED TO MAKE TAP.
6. 3/4" GRANULAR BACKFILL SHALL BE PLACED AND COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
7. THRUST BLOCKING PER DETAIL 510.
8. TAP SHALL BE MADE NO CLOSER THAN 18" FROM THE NEAREST JOINT.
- 9. SLEEVE AND VALVE SHALL BE WRAPPED WITH 8 MIL PLASTIC PRIOR TO CONCRETE PLACEMENT.**
10. CONCRETE BLOCK(S) SHALL COMPLETELY SUPPORT TAPPING TEE AND VALVE.
11. CONTRACTOR SHALL COORDINATE ALL TAPS WITH CITY AND PERFORM ALL TAPS WITH PUBLIC WORKS STAFF PRESENT.
12. ALL TAPPING EQUIPMENT (AND ANY TOOL COMING IN CONTACT WITH THE PIPE THROUGH THE TAPPING SLEEVE) SHALL BE CHLORINE DISINFECTED WITH A 300 MG/L CHLORINE SOLUTION.

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TAPPING TEE
AND VALVE

(NTS)

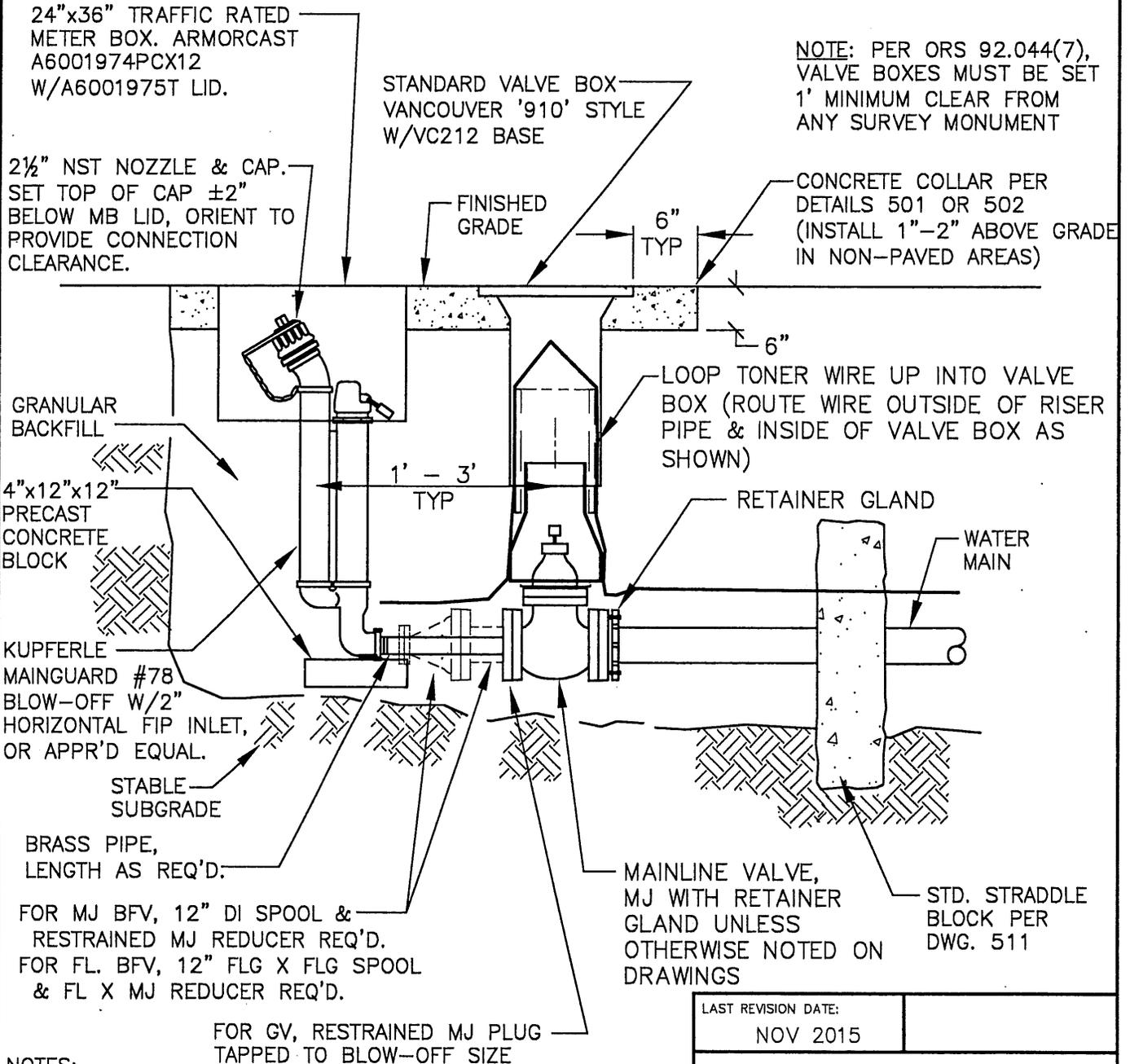
SILVERTON, OR

DETAIL NO.

505

**BLOW-OFF
SIZES REQUIRED
(ASSUMES 40 PSI RESIDUAL PRESS.)**

MAIN SIZE	BLOW-OFF SIZE
6" - 8"	2"
10" - 12"	4"
>12"	BY ENGR.



NOTES:

1. BACKFILL WITH GRANULAR BACKFILL.
2. REQUIRED ON ALL LINES WHICH MAY BE EXTENDED IN FUTURE OR AS DIRECTED BY PUBLIC WORKS DIRECTOR.
3. ALL CONCRETE TO BE 3300 PSI @ 28 DAYS.
4. FLANGED DUCTILE IRON PIPE AND FITTINGS REQUIRED FOR 4" & LARGER BLOWOFFS.

LAST REVISION DATE:
NOV 2015

**MAINLINE BLOWOFF
ASSEMBLY**

(NTS)

SILVERTON, OR

DETAIL NO.

506

24"x36" TRAFFIC RATED
METER BOX. ARMORCAST
A6001974PCX12
W/A6001975T LID.

STANDARD VALVE BOX
VANCOUVER '910' STYLE
W/VC212 BASE

NOTE: PER ORS 92.044(7),
VALVE BOXES MUST BE SET
1' MINIMUM CLEAR FROM
ANY SURVEY MONUMENT

2½" NST NOZZLE & CAP.
SET TOP OF CAP ±2"
BELOW MB LID, ORIENT TO
PROVIDE CONNECTION
CLEARANCE.

FINISHED
GRADE

CONCRETE COLLAR PER
DETAILS 501 OR 502
(INSTALL 1"-2" ABOVE GRADE
IN NON-PAVED AREAS)

GRANULAR
BACKFILL

4"x12"x12"
PRECAST
CONCRETE
BLOCK

KUPFERLE
MAINGUARD #78
BLOW-OFF W/2"
HORIZONTAL FIP INLET,
OR APPR'D EQUAL.

STABLE
SUBGRADE

BRASS PIPE,
LENGTH AS REQ'D.

EPOXY COATED RESILIENT
WEDGE GATE VALVE (2" MIN)
WITH 2" SQUARE OPERATING
NUT

MJ CAP & RETAINER GLAND
(TAPPED TO BLOWOFF SIZE)

BRASS NIPPLE

LOOP TONER WIRE UP INTO VALVE
BOX (ROUTE WIRE OUTSIDE OF RISER
PIPE & INSIDE OF VALVE BOX AS
SHOWN)

6" & 8"
WATER MAIN

STD. STRADDLE
BLOCK PER
DWG. 511

NOTES:

1. BACKFILL WITH GRANULAR BACKFILL.
2. ALLOWED ONLY ON PERMANENT DEAD END LINES IN CUL-DE-SACS WHICH CANNOT BE EXTENDED IN THE FUTURE.
3. ALL CONCRETE TO BE 3300 PSI @ 28 DAYS.
4. 2" BLOWOFF SIZE ASSUMES 40 PSI RESIDUAL PRESSURE.

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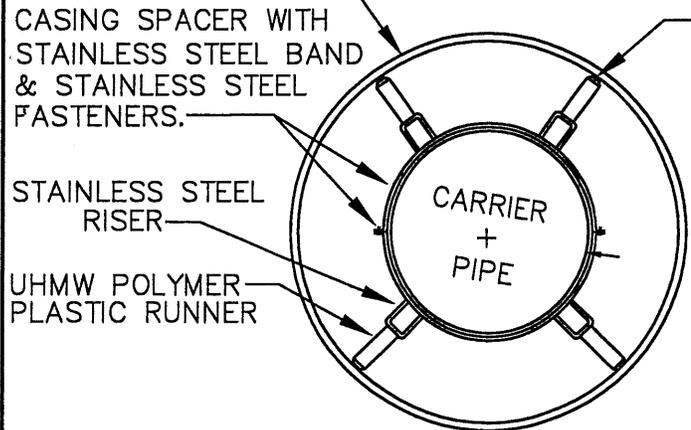
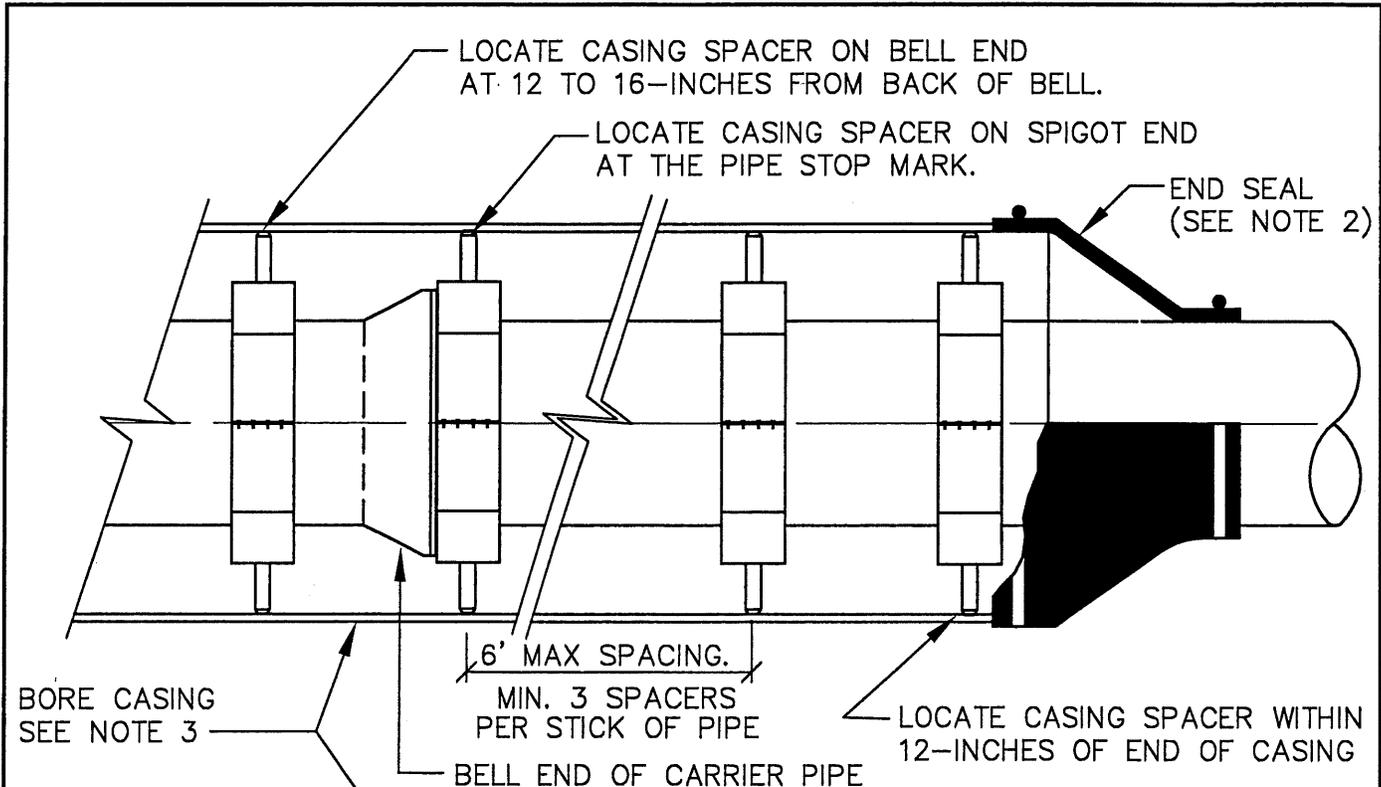
STANDARD BLOWOFF
WITH PLUGGED END

(NTS)

SILVERTON, OR

DETAIL NO.

507



SEE NOTE 5 FOR RUNNER TO BORE CLEARANCE REQUIREMENTS FOR GRAVITY CARRIER PIPES.

CARRIER PIPE DIAMETER	MIN. DIA. CASING (*1, *2)	MIN CASING WALL THICKNESS (INCH)
6"	12"	0.25 (1/4)
8"	14"	0.25 (1/4)
10"	16"	0.312 (5/16)
12"	18"	0.375 (3/8)

*1: CASING SIZE LISTED IS FOR PRESSURE PIPE. LARGER DIA CASING REQ'D FOR GRAVITY PIPE.
 *2: SEE PWDS 5.8.m FOR GRAVITY PIPE CASING SIZE REQUIREMENTS OR LARGER CASING SIZES.

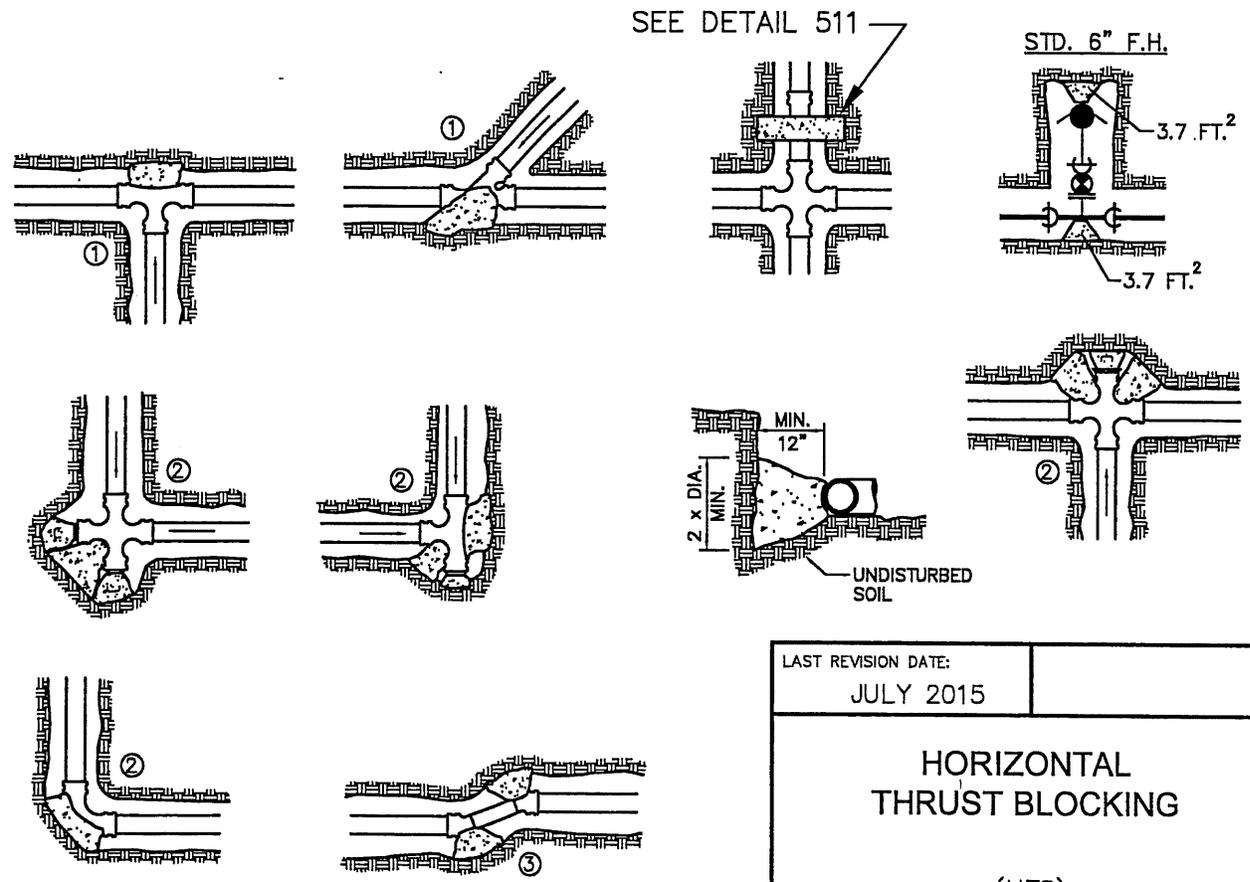
NOTES:

- CASING SPACERS - APS MODEL SSI, CALPICO M-SS SERIES OR APPROVED EQUIV. 4"-18" CARRIER PIPE, USE 8" WIDE BAND. >18" CARRIER PIPE, USE 12" WIDE BAND.
- SEAL BOTH ENDS OF BORE CASING WITH END SEALS. WITHOUT SAND FILL, USE APS MODEL AZ OR APPROVED EQUIV. FASTEN TO CASING AND CARRIER PIPE WITH ST. STEEL BANDS. WITH SAND FILL, USE GROUT END CAPS (PLUG VENT TUBES AFTER SAND FILL)
- CASING SHALL BE WELDED SMOOTH STEEL PIPE CONFORMING TO ASTM A-53, GRADE B OR APPROVED EQUIVALENT (Fy = 35,000 psi).
- CARRIER PIPE DIAMETER & MATERIAL AS PER DWGS.
- FOR GRAVITY SEWER OR STORM CARRIER PIPES, THE CASING ANNULAR SPACE SHALL BE COMPLETELY FILLED WITH SAND TO PREVENT FLOATATION OF CARRIER PIPE BY GROUNDWATER.
- CARRIER PIPE SHALL BE COMPLETELY FILLED WITH WATER PRIOR TO INSTALLING OR BLOWING SAND.
- INCREASE CASING DIA AS REQ'D TO ALLOW TRIMMING OF CASING SPACERS ON GRADE CRITICAL BORES

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BORE CASING, CARRIER PIPE AND CASING SPACER DETAIL (NTS)	
SILVERTON, OR	DETAIL NO. 508

FITTING SIZE (Inches)	TEE, WYE, & ① HYDRANTS	90° BEND ② PLUGGED CROSS TEE PLUGGED—RUNS	45° BEND ③	22 1/2° BEND ③	11 1/4° BEND ③
2	*	*	*	*	*
4	1.7	2.4	1.3	*	*
6	3.7	5.3	2.9	1.5	*
8	6.7	9.5	5.1	2.7	1.3
10	10.5	14.8	8	4.1	2
12	15.1	21.3	11.6	5.9	2.9
16	26.8	37.9	20.5	10.4	5.2
18	33.9	47.9	25.9	12.8	6.7
LARGER	* *	* *	* *	* *	* *
BEARING AREA OF THRUST BLOCKS (sq. ft.)					

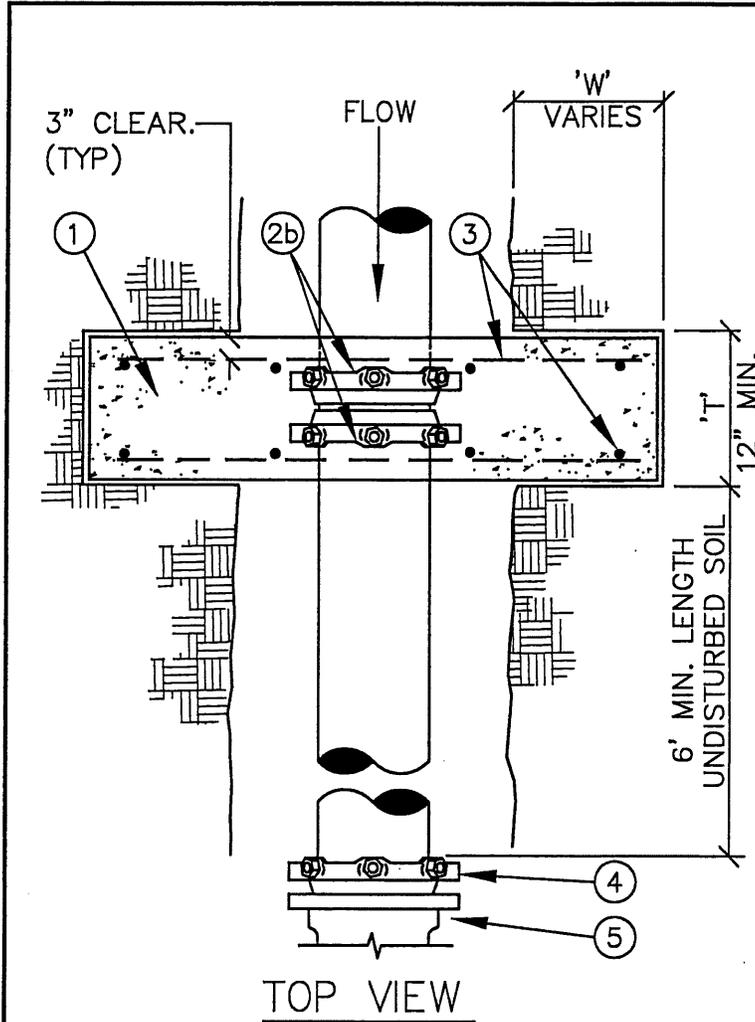
1. ALL VALUES ARE BASED ON THE FOLLOWING ASSUMPTIONS:
AVG. PRESSURE = 100 PSI x 2 (safety factor); 1500 PSF SOIL BEARING CAPACITY;
NORMAL DISTRIBUTION SYSTEM DESIGN VELOCITY NOT TO EXCEED 5 FPS.
 2. **ALL FITTINGS SHALL BE WRAPPED IN PLASTIC PRIOR TO PLACEMENT OF CONCRETE.**
 3. BEARING SURFACE OF THRUST BLOCKING SHALL BE AGAINST UNDISTURBED SOIL.
 4. TRUCK-MIXED CONCRETE MIX SHALL HAVE A MIN. 28 DAY STRENGTH OF 3300 PSI (5" MAX SLUMP). USE OF HAND-MIXED SACK-CRETE TYPE CONCRETE REQUIRES WRITTEN CITY APPROVAL PRIOR TO USE, AND SHALL BE 4000 PSI MIX, MIXED WITH MIN AMOUNT OF WATER NECESSARY FOR WORKABILITY (5" MAX SLUMP). USE OF DRY SACK-CRETE MIX (BAGS OR LOOSE MIX) IS PROHIBITED FOR PERMANENT THRUST RESTRAINT.
 5. ALL PIPE ZONES SHALL BE BACKFILLED WITH GRANULAR BACKFILL AND COMPACTED.
 6. THRUST BLOCKS FOR PLUGGED CROSS AND PLUGGED TEE SHALL HAVE #4 REBAR LIFTING LOOPS INSTALLED AS SHOWN.
 7. VERTICAL THRUST DETAILS—SEE DWG. 512.
 8. STRADDLE BLOCK DETAILS—SEE DWG. 511.
- * BLOCK TO UNDISTURBED TRENCH WALLS
 - * * THRUST BLOCKS FOR PIPES LARGER THAN 18" WILL BE INDIVIDUALLY DESIGNED BY THE ENGINEER.



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HORIZONTAL THRUST BLOCKING	
(NTS)	
SILVERTON, OR	DETAIL NO. 510

MATERIALS

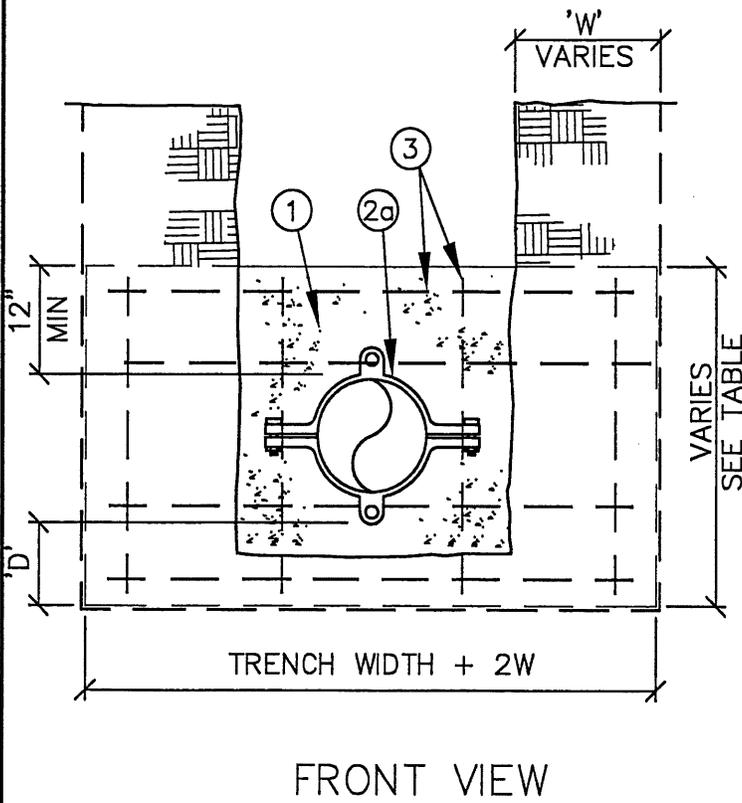
- ① CONCRETE STRADDLE BLOCK.
- ② - EITHER (a) ONE SERRATED-LOCK STYLE SPLIT-RING RESTRAINT HARNESS (ROMAC 600 OR EQUAL), OR (b) TWO RETAINER GLAND WEDGE-STYLE RESTRAINTS, SET OPPOSED (EBBA MEGA-LUG OR EQUAL).
- WEDGE STYLE RESTRAINTS SHALL BE WRAPPED WITH PLASTIC PRIOR TO CONCRETE PLACEMENT.
- ③ #4 REBAR EA. WAY, 12" O.C.
- ④ RETAINER GLAND.
- ⑤ MJ FITTING, VALVE OR BLOWOFF.



PIPE SIZE	'W'	'D'	'T'
6"	12"	8"	12"
8"	16"	10"	12"
10"	20"	12"	12"
12"	24"	18"	18"
>12"	BY ENGINEER		

NOTES:

1. STRADDLE BLOCKS FOR >12" PIPE SHALL BE DESIGNED INDIVIDUALLY BY THE ENGINEER AND SHALL BE BASED ON THE FOLLOWING:
 - a.) 200 PSI WATER PRESSURE.
 - b.) SOIL BRG. CAPACITY, STEEL SIZE & SPACING BY THE ENGINEER.
2. BEARING AREA OF BLOCK SHALL BE AGAINST UNDISTURBED SOIL.
3. STRADDLE BLOCK SHALL HAVE A MINIMUM OF 18" COVER.
4. CONCRETE SHALL HAVE A MIN. 28 DAY STRENGTH OF 3300 PSI.



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STRADDLE BLOCK FOR
12" AND SMALLER PIPE

(NTS)

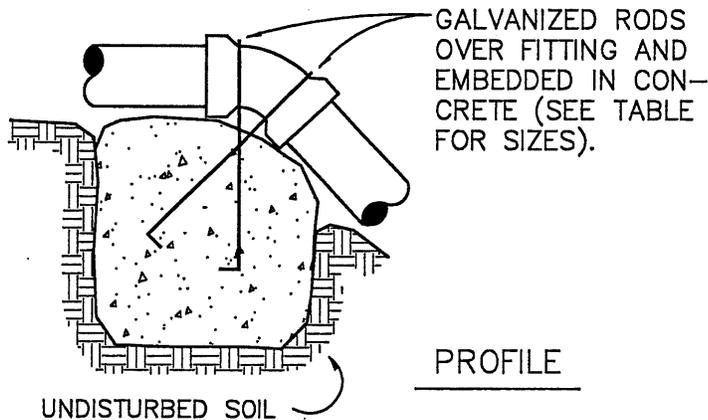
SILVERTON, OR

DETAIL NO.

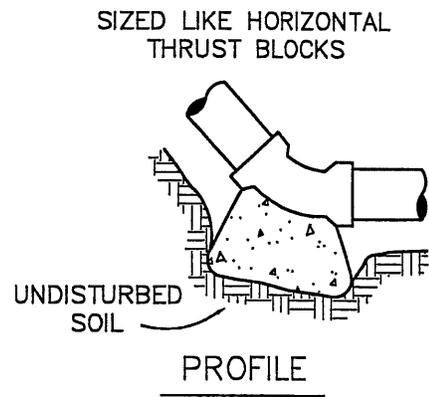
511

NOTES:

1. GRAVITY VERTICAL THRUST BLOCKS SHALL BE DESIGNED BY THE ENGINEER.
2. **KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES. FITTINGS SHALL BE WRAPPED IN PLASTIC PRIOR TO PLACEMENT OF CONCRETE.**
3. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH.
4. CONCRETE MIX SHALL HAVE A MIN. 28 DAY STRENGTH OF 3000 P.S.I.
5. THRUST BLOCK VOLUMES FOR VERTICAL BENDS HAVING UPWARD RESULTANT THRUSTS ARE BASED ON TEST PRESSURE OF 150 P.S.I.G. AND THE WEIGHT OF CONCRETE = 4050 LBS./CU.YD.
6. VERTICAL BENDS THAT REQUIRE A THRUST BLOCK VOLUME EXCEEDING 5 CUBIC YARDS REQUIRE SPECIAL BLOCKING DETAILS. SEE PLANS FOR VOLUMES SHOWN INSIDE HEAVY LINE IN TABLE.
7. ALL REBAR SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM-123 (MIN. 3.4 MIL). REBAR SHALL BE BENT BEFORE GALVANIZATION, AND LAST 4" OF BAR SHALL BE BENT 90 DEGREES WITH A 1/2" RADIUS BEND. REBAR SHALL BE TIGHTLY FIT TO RESTRAINED FITTING.
8. FOR HORIZONTAL THRUST BLOCK DETAILS SEE DRAWING NO. 510.



GRAVITY VERTICAL THRUST BLOCK

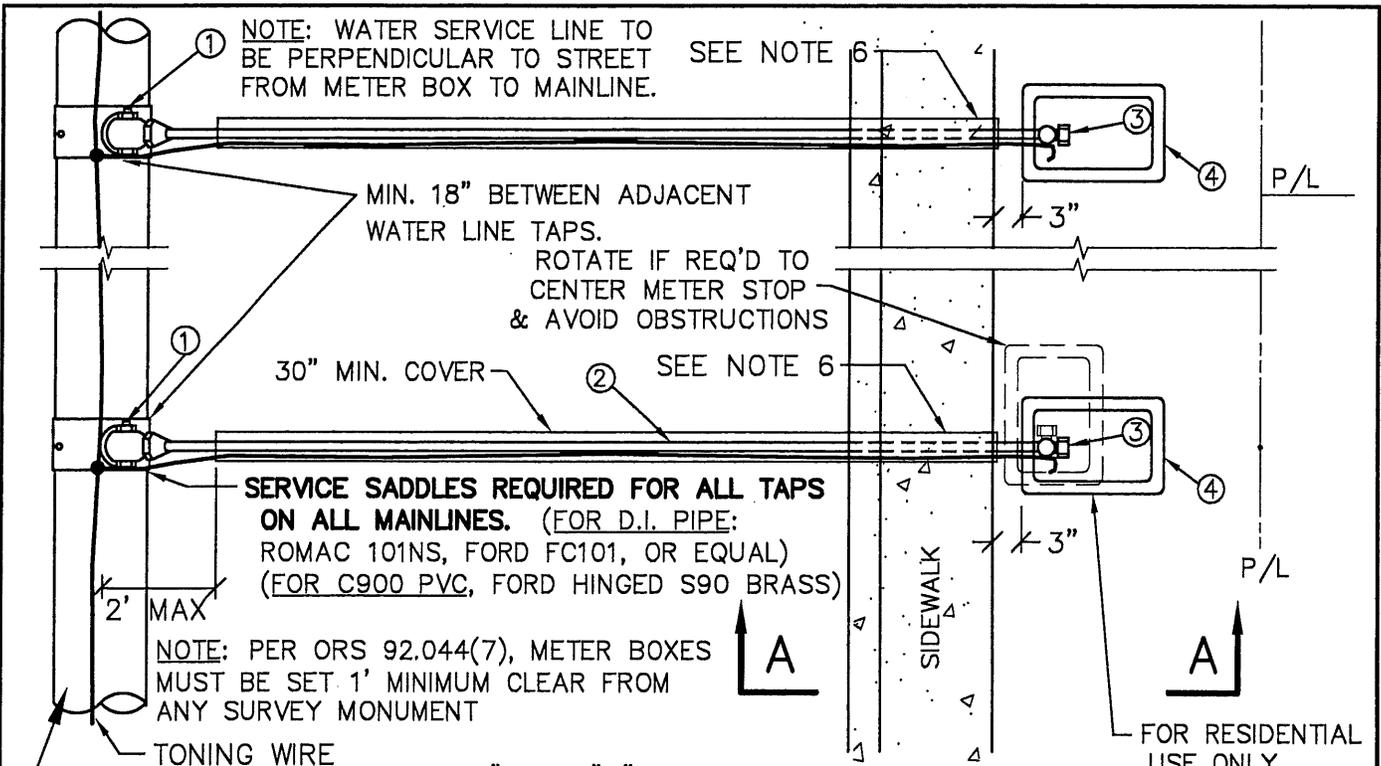


NORMAL VERTICAL THRUST BLOCK

VOLUME OF THRUST BLOCK IN CUBIC YARDS (VERTICAL BENDS)			
FITTING SIZE	BEND ANGLE		
	45°	22 1/2°	11 1/4°
4	1.1	0.4	0.2
6	2.7	1.0	0.4
8	4.0	1.5	0.6
10	6.0	2.3	0.9
12	8.5	3.2	1.3
14	11.5	4.3	1.8
16	14.8	5.6	2.3

FITTING SIZE	ROD SIZE	EMBEDMENT
12" AND LESS	#6	30"
14" - 16"	#8	36"

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VERTICAL THRUST BLOCKING	
(NTS)	
SILVERTON, OR	DETAIL NO. 512

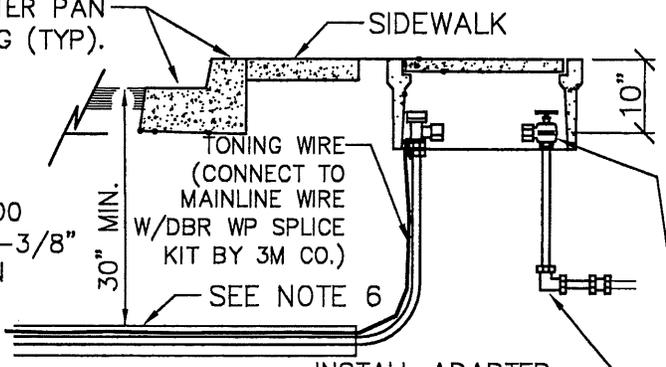


MATERIALS:

- ① BALL STYLE CORPORATION STOP FORD FB-1100. SET AT 30° ANGLE UP FROM HORIZONTAL.
- ② CENCORE BLUE HDPE (CTS OD, SDR 9, 200 PSI) CONFORMING TO AWWA C901, USE 2-3/8" LONG INSERT STIFFENER ON COMPRESSION FITTINGS (McDONALD 6133T). SINGLE RESIDENTIAL SERVICE: 1" (TYP)
- ③ BALL STYLE 1" LOCKING ANGLE METER STOP, FORD KV43-444W-NL. PROVIDE ALL 1" SERVICES WITH 1"x 3/4" METER ADAPTER.
- ④ ARMORCAST POLYMER CONCRETE METER BOX WITHOUT MOUSE HOLES (13"x24"): A6001946PCX12 W/A6001969 LID

NOTES:

- 1. SUBSTITUTES FOR ANY MATERIALS SHOWN SHALL BE APPROVED BY THE PUBLIC WORKS DIRECTOR.
- 2. ALL PIPE AND BACKFILL ZONES SHALL BE BACKFILLED USING 3/4" MINUS GRANULAR MATERIAL AND COMPACTED TO 92% MAX. DENSITY DETERMINED BY AASHTO T-180.
- 3. SET FRONT OF METER BOX 3-INCHES BEHIND BACK OF SIDEWALK LOCATION.
- 4. METER BOX SHALL BE CENTERED OVER THE COMPLETED METER ASSEMBLY.
- 5. 1 1/2-INCH MIN. PIPE SIZE FOR COMMERCIAL SERVICES.
- 6. FAR SIDE COMMERCIAL SERVICES SHALL BE INSTALLED IN A 4" MIN DIA SCHED 40 PVC SLEEVE WHICH BEGINS 2' FROM MAIN AND EXTENDS TO BACK OF FAR SIDE SIDEWALK.
- 7. TRACER WIRE SPLICES SHALL USE WATERTIGHT CONNECTION, TYPE DBR DIRECT BURY SPLICE KIT BY 3M COMPANY (NO EQUAL).



INSTALL ADAPTER, VALVE, RISER & COUPLING FOR RELOCATED/REPLACED METER ASSEMBLIES.

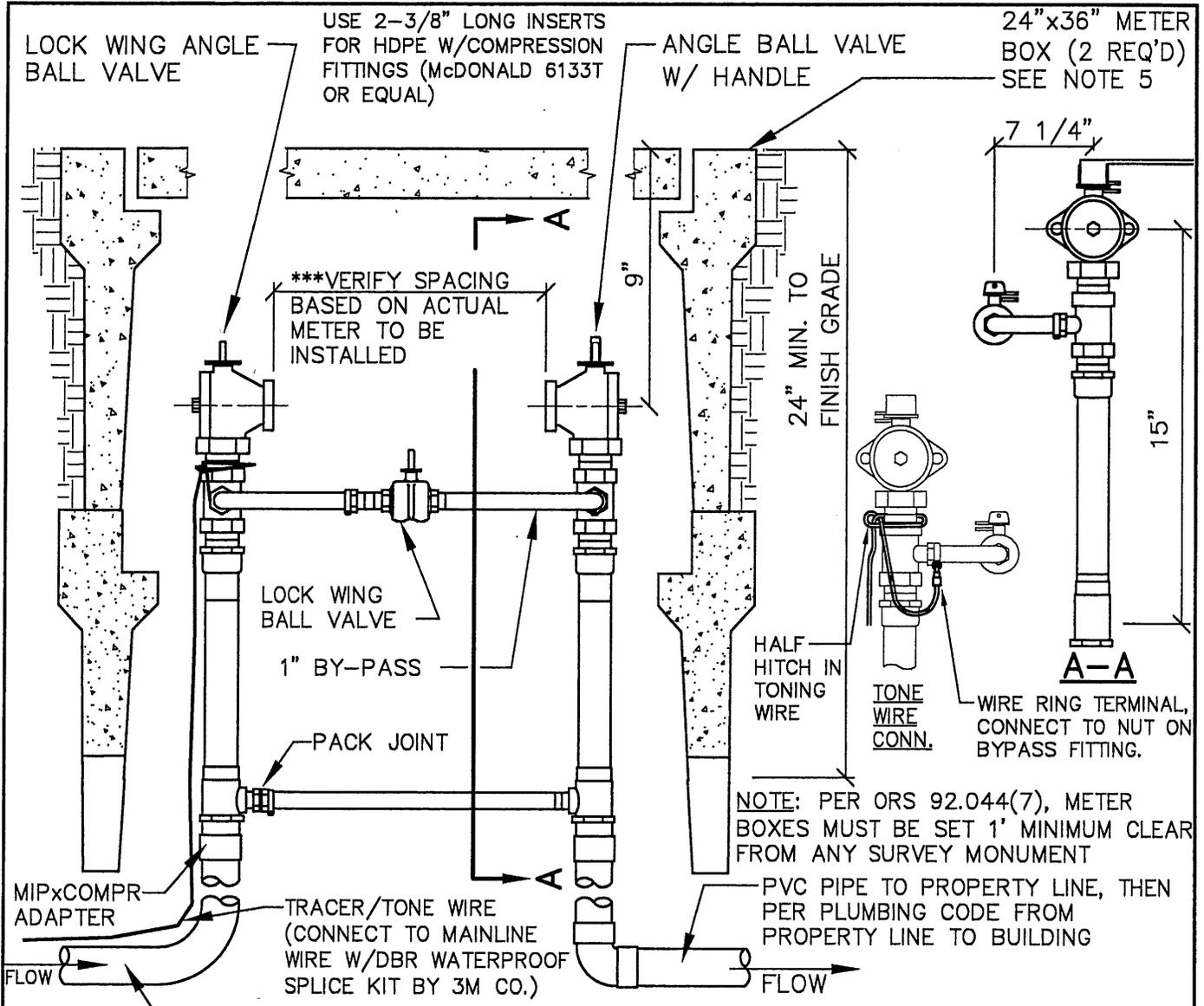
SECTION A-A

HALF HITCH IN TONING WIRE

WIRE RING TERMINAL, CONNECT UNDER NUT ON METER STOP.

1" X 3/4" METER ADAPTER, 1" FORD GA13-444-NL ANGLE COMPRESSION VALVE. PROVIDE PRIOR TO WATER METER INSTALLATION.

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TYPICAL 1" WATER SERVICE (HDPE SERVICE LINE) (NTS)	
SILVERTON, OR	DETAIL NO. 515

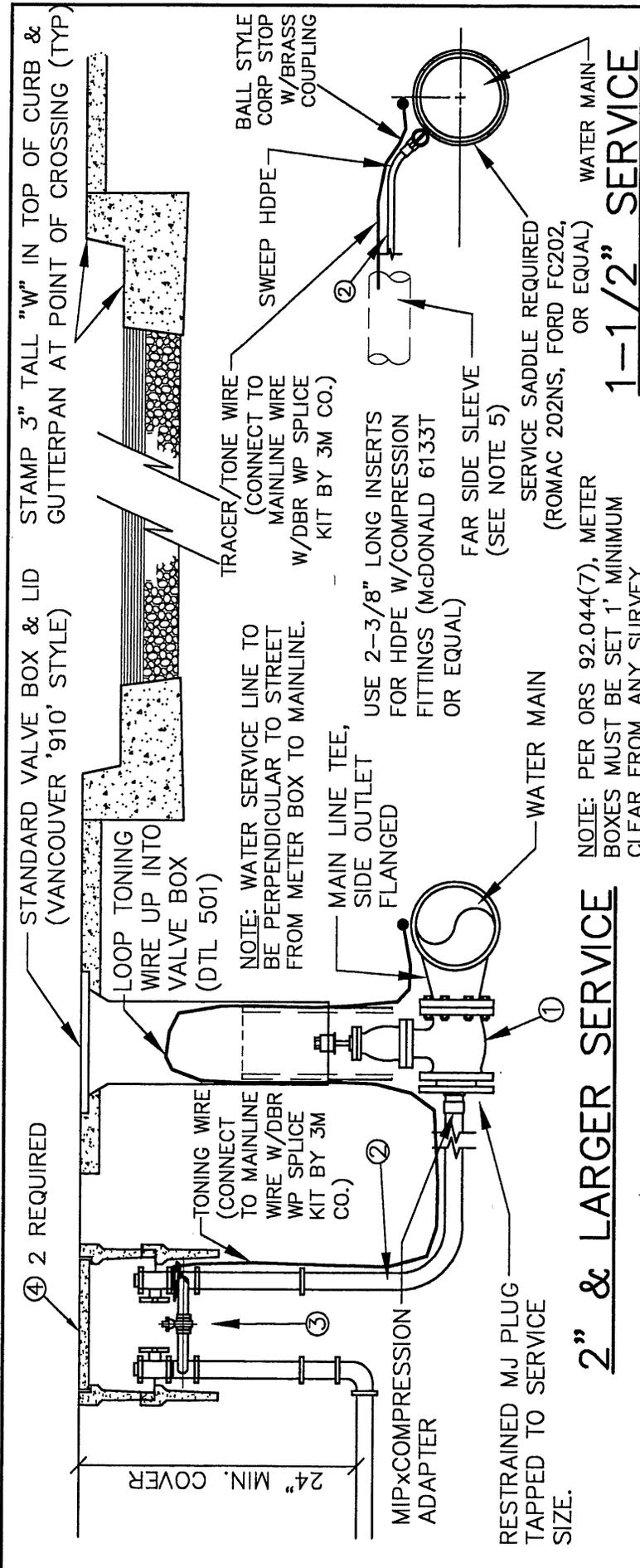


NOTES:

- METERSET TO BE FORD 70 SERIES COPPERSETTER, #VBB86-15HB-11-66 (1 1/2") OR #VBB87-15HB-11-77 (2") WITH RAISED LOCKING BYPASS OR APPROVED EQUAL.
- SUBSTITUTES FOR MATERIALS SHOWN SHALL BE APPROVED BY PUBLIC WORKS DIRECTOR.
- ALL PIPE AND BACKFILL ZONES SHALL BE BACKFILLED USING 3/4" MINUS GRANULAR MATERIAL AND COMPACTED TO 92% OPTIMUM DENSITY PER AASHTO T-180.
- SET FRONT OF METER BOX 3-INCHES BEHIND SIDEWALK LOCATION. NO METERS ON PRIVATE PROPERTY WITHOUT A RECORDED EASEMENT.
- METER BOX SHALL BE CENTERED OVER THE COMPLETED METER ASSEMBLY. ARMORCAST POLYMER CONCRETE METER BOX WITHOUT MOUSE HOLES (24"x36") -A6001974PCX12 W/A6001975T LID
- COPPERSETTER, METER BOX, & ALL FITTINGS PROVIDED BY CONTRACTOR. CONTRACTOR TO VERIFY DIMENSIONS & CLEARANCE BASED ON ACTUAL METER TO BE PROVIDED BY THE CITY. WATER METER INSTALLED BY CONTRACTOR UNDER CITY INSPECTION & APPROVAL.
- SEE DETAIL 517 FOR TAPPING REQUIREMENTS.
- THREADED FEMALE PVC FITTINGS ARE NOT ALLOWED.**
- FAR SIDE COMMERCIAL SERVICES SHALL BE INSTALLED IN A 4" MIN DIA SCHED 40 PVC SLEEVE WHICH BEGINS 2' FROM MAIN AND EXTENDS TO BACK OF FAR SIDE SIDEWALK.

***TYPICAL METER LENGTHS (VERIFY)
 1 1/2" COMPOUND - 13" TYP,
 2" COMPOUND - 15 1/4" TYP,
 2" TURBINE - 17" TYP.

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1-1/2" AND 2" METER SET W/1" HIGH BY-PASS (HDPE SERVICE LINE) (NTS)	
SILVERTON, OR	DETAIL NO. 516



MATERIALS

- ① FLG X MJ RESILIENT WEDGE GATE VALVE PER AWWA C-509. 4" DIA. OR SERVICE SIZE, WHICHEVER IS LARGER. EPOXY COATED PER AWWA C-550.
- ② CENCORE BLUE HDPE (CTS, DR 9, 200 PSI) W/OUT JOINTS PER DETAIL 516 (30" MIN COVER TO METER). **FEMALE THREADED PVC FITTINGS ARE NOT ALLOWED.**
- ③ METER STOP ASSEMBLY W/BYPASS PER PUBLIC WORKS REQUIREMENTS. SEE DETAIL 516 FOR 1-1/2" & 2" SERVICES.
- ④ METER BOX FOR 1-1/2" AND 2" SHALL BE PER DETAIL 516 WITHOUT MOUSE HOLES. USE TRAFFIC RATED VERSION OF BOX/LID. METER VAULT FOR LARGER SERVICE SHALL BE PER PUBLIC WORKS REQUIREMENTS.

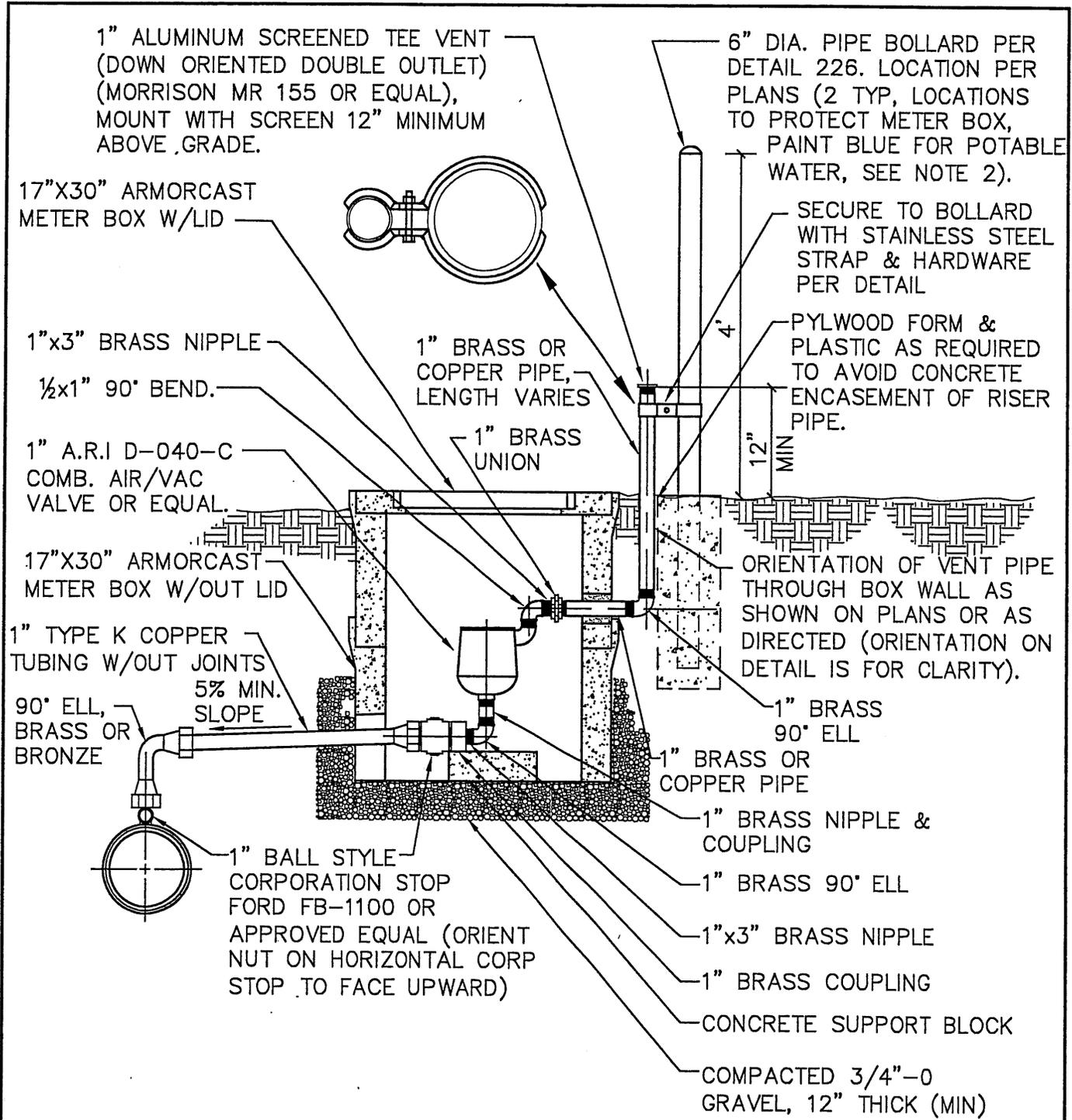
NOTES

- 1. SUBSTITUTES FOR ANY MATERIAL SHOWN SHALL BE APPROVED BY THE CITY ENGINEER.
- 2. ALL PIPE AND STRUCTURE ZONES SHALL BE BACKFILLED USING 3/4" MINUS GRANULAR MATERIAL AND COMPACTED TO 95% MAX DENSITY AS DETERMINED BY ASHTO T-180.
- 3. METER BOX SHALL BE CENTERED OVER THE COMPLETED METER AND FITTING ASSEMBLY.
- 4. CUSTOMER SHALL INSTALL AN APPROVED BACKFLOW PREVENTION DEVICE ON PRIVATE PROPERTY IMMEDIATELY DOWNSTREAM OF WATER METER IF REQUIRED BY PUBLIC WORKS.
- 5. FAR SIDE COMMERCIAL SERVICES SHALL BE INSTALLED IN A 4" MIN DIA SCHED 40 PVC SLEEVE WHICH BEGINS 2' FROM MAIN AND EXTENDS TO BACK OF FAR SIDE SIDEWALK.

2" & LARGER SERVICE

1-1/2" SERVICE

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TAPPING REQUIREMENTS, 1-1/2" AND LARGER SERVICE (HDPE SERVICE LINE)			
(NTS)			
SILVERTON, OR		DETAIL NO. 517	



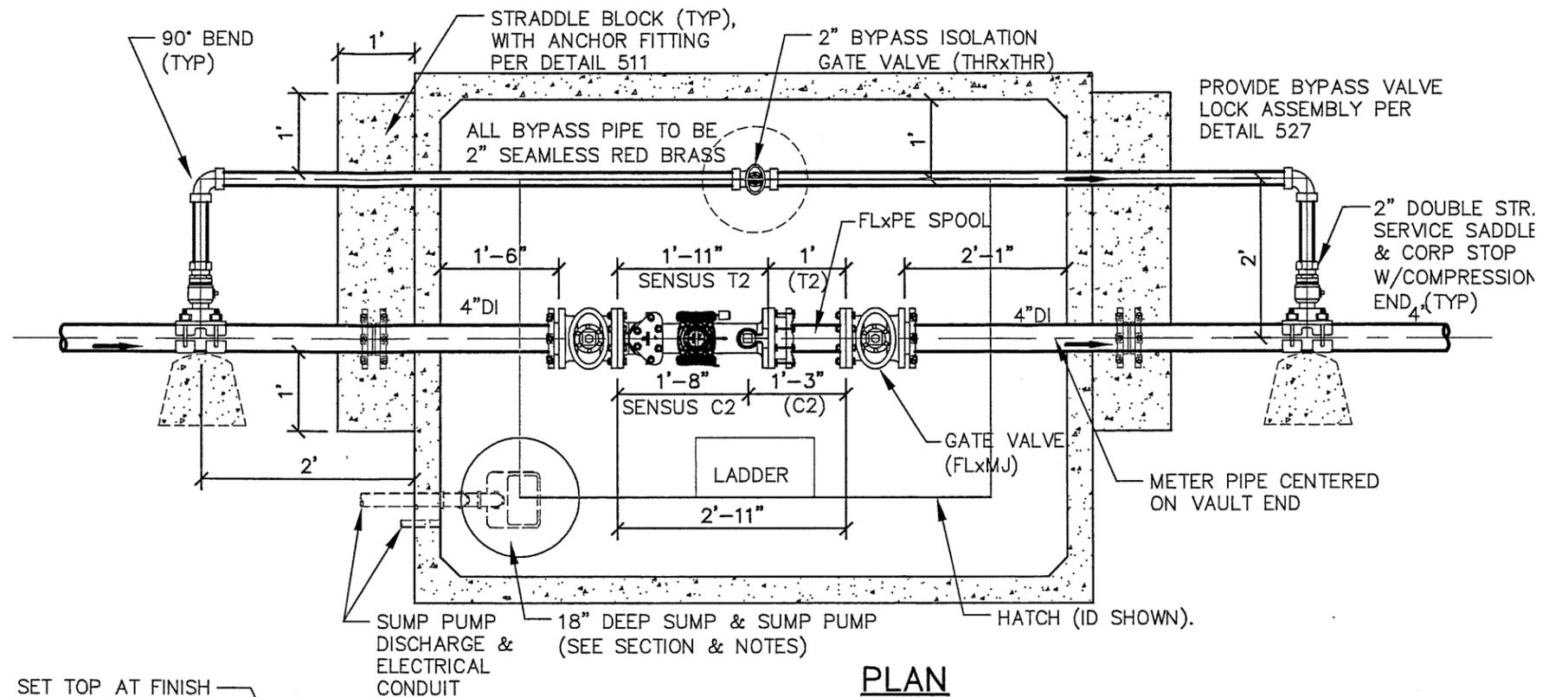
NOTES:

1. RISER SHALL BE PROTECTED FROM VEHICULAR OR PEDESTRIAN TRAFFIC AS APPROVED BY THE CITY ENGINEER & PUBLIC WORKS.
2. PAINT BOLLARD & TOP SAFETY BLUE FOR POTABLE WATER APPLICATIONS.
3. WHERE ARV ASSEMBLIES ARE INSTALLED ADJACENT TO FENCES, BOLLARDS SHALL BE SET 3" MIN CLEAR FROM FENCE UNLESS OTHERWISE APPROVED BY PROPERTY OWNER.
4. EXACT LOCATION OF RISER PENETRATION THROUGH BOX & BOLLARDS TO BE VERIFIED IN FIELD WITH CITY ENGINEER & PUBLIC WORKS PRIOR TO RISER & BOLLARD INSTALLATION.

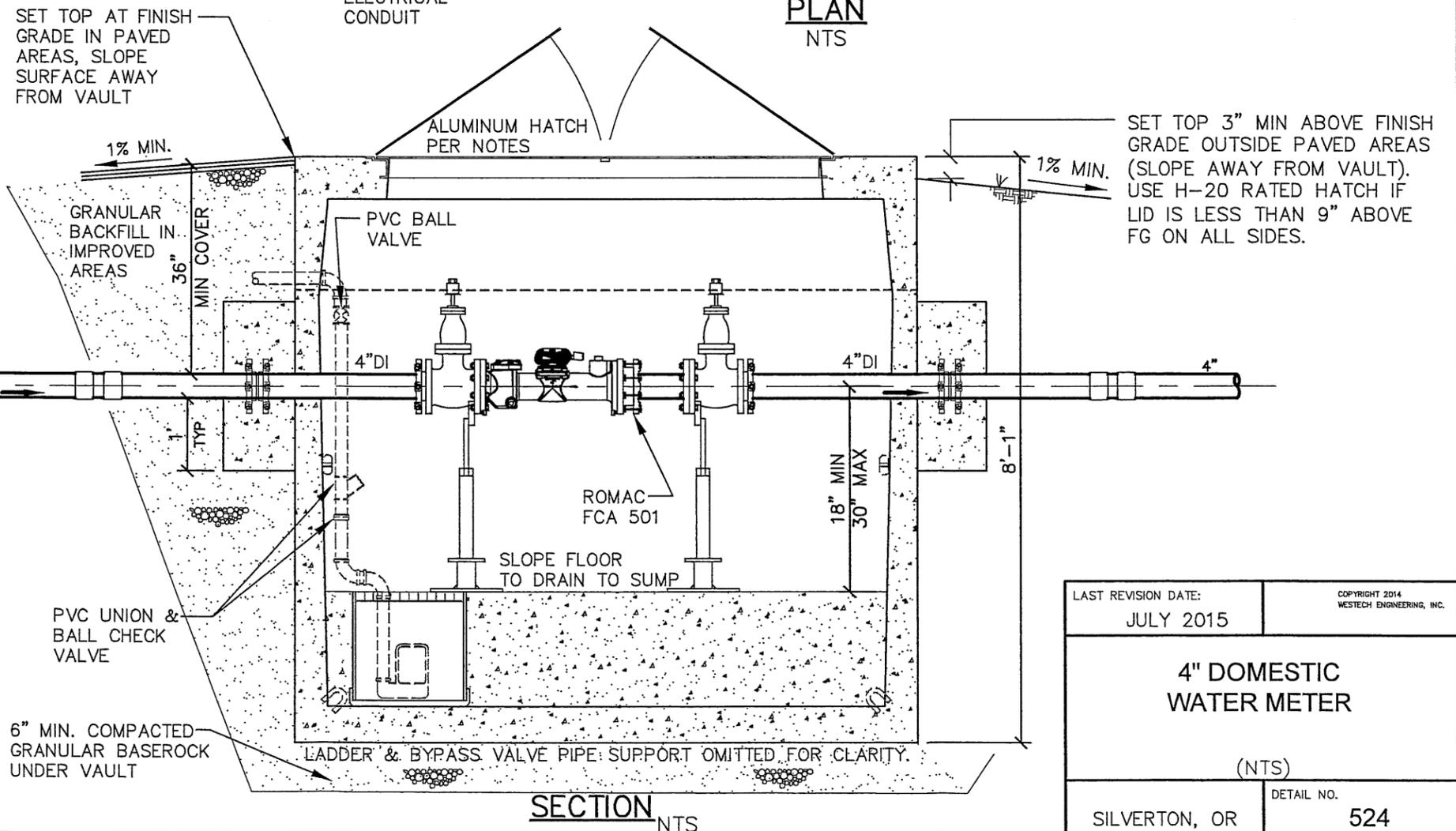
LAST REVISION DATE: JULY 2015	JO #
1" COMBINATION AIR RELEASE VALVE (CARV) (NTS)	
SILVERTON, OR	DETAIL NO. 518

NOTES:

1. METER VAULT & PIPING SHALL CONFORM TO REQUIREMENTS OF ALL PUBLIC/PRIVATE AGENCIES HAVING JURISDICTION.
2. METER VAULT SHALL BE PLACED WITHIN RIGHT-OF-WAY UNLESS OTHERWISE APPROVED (RECORDED EASEMENT TO THE CITY REQUIRED FOR ANY METER ON PRIVATE PROPERTY).
3. ALL MATERIALS (EXCEPT THE METER) SHALL BE FURNISHED & INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL INSTALL A TEMPORARY SPACER SPOOL BETWEEN METER ISOLATION VALVES FOR TESTING. THE TEMPORARY SPOOL SHALL MATCH THE LENGTH OF THE ACTUAL METER TO BE PROVIDED BY THE CITY.
4. PIPING INSIDE VAULT & THROUGH WALLS TO BE CL 52 DUCTILE IRON, EXCEPT AS OTHERWISE SHOWN.
5. METER WILL BE SUPPLIED BY THE CITY, BUT SHALL BE INSTALLED (AFTER PRESSURE & OTHER TESTING OF METER VAULT PIPING) BY THE CONTRACTOR UNDER CITY INSPECTION AND APPROVAL (MOUNT RADIO READ SENSOR ON HINGE SIDE OF ACCESS HATCH AT CITY APPROVED LOCATION).
6. ISOLATION VALVES IN METER VAULT SHALL BE NON-RISING STEM GATE VALVE (EPOXY COATED) WITH 2-INCH SQUARE OPERATING NUT.
7. ALL MJ CONNECTIONS (INCLUDING BYPASS LINE FITTINGS) SHALL BE ASSEMBLED WITH RETAINER GLANDS (EBBA MEGA-LUGS OR APPROVED EQUAL).
8. ALL PIPE OPENINGS SHALL BE CORE DRILLED (REGARDLESS OF PRESENCE OF 'KNOCKOUTS'), AND SEALED WATERTIGHT WITH NON-SHRINK GROUT.
9. PIPE SUPPORTS SHALL BE GALVANIZED STANDON S89 OR APPROVED EQUAL AT EACH ISOLATION AND BYPASS VALVE.
10. METER VAULT TO BE UTILITY VAULT 687-WA OR APPROVED EQUAL, CONFORMING WITH ASTM C-857. PROVIDE ALUMINUM ANGLE FRAME HATCH (48"x 72" MIN) BY SYRACUSE CASTINGS WEST OR APPROVED EQUAL (HATCH COVER TOP TO BE SAND BLASTED NON-SLIP).
 - (1) TO BE 300 PSF PEDESTRIAN RATED WHERE LID IS SET MIN. OF 9" ABOVE GRADE.
 - (2) TO BE H-20 RATED IF LID IS LESS THAN 9" ABOVE GRADE, OR IF LOCATED IN TRAFFIC AREA.
11. METER VAULT SHALL BE PROVIDED WITH AN OSHA APPROVED GALVANIZED STEEL LADDER AND ALUMINUM LADDER SAFETY EXTENSION. ATTACH TO VAULT WITH STAINLESS STEEL BOLTS.
12. CONTRACTOR TO INSTALL SUMP PUMP (5 GPM MIN) WITH 120V POWER SUPPLY, ALONG WITH PRIVATE POWER SOURCE. SUMP PUMP POWER SHALL CONFORM WITH NEC REQUIREMENTS AND BE INSTALLED IN SCHEDULE 40 CONDUIT.
13. SUMP PUMP DISCHARGE PIPE SHALL BE 2-INCH SCHEDULE 40 PVC, PROVIDED WITH UNION (FOR PUMP REMOVAL), CHECK VALVE AND ISOLATION BALL VALVE. CONNECT DISCHARGE TO GRAVITY STORM DRAIN OR CURB WEEP HOLE (AT LOCATION APPROVED BY PUBLIC WORKS).
14. SUMP TO BE 18" ROUND PVC OR CONCRETE PIPE. PROVIDE FRP SUMP GRATE WITH CUTOUT FOR DISCHARGE PIPING (GRATE TO BE REMOVABLE WITHOUT DISASSEMBLING DISCHARGE PIPING).



PLAN
NTS

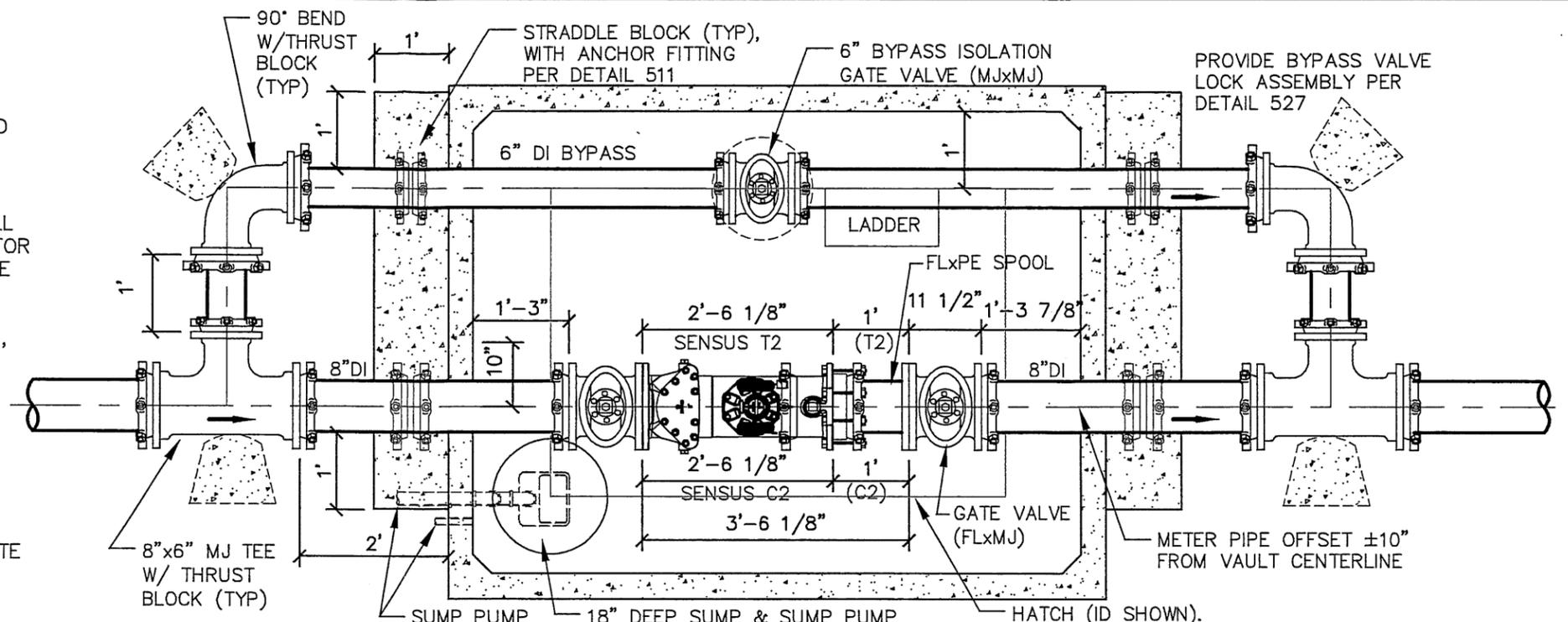


SECTION
NTS

LAST REVISION DATE: JULY 2015	COPYRIGHT 2014 WESTECH ENGINEERING, INC.
4" DOMESTIC WATER METER	
(NTS)	
SILVERTON, OR	DETAIL NO. 524

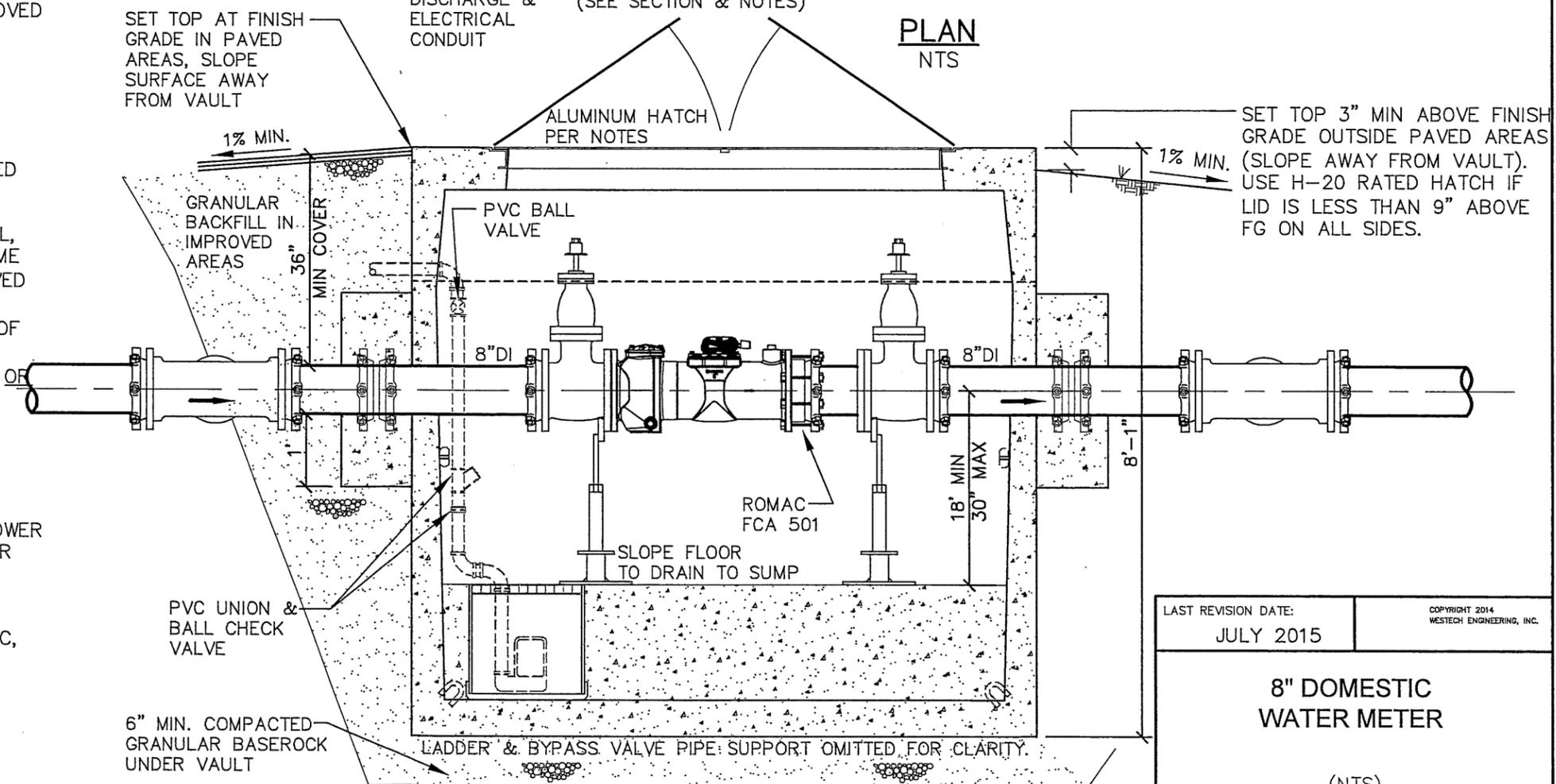
NOTES:

1. METER VAULT & PIPING SHALL CONFORM TO REQUIREMENTS OF ALL PUBLIC/PRIVATE AGENCIES HAVING JURISDICTION.
2. METER VAULT SHALL BE PLACED WITHIN RIGHT-OF-WAY UNLESS OTHERWISE APPROVED (RECORDED EASEMENT TO THE CITY REQUIRED FOR ANY METER ON PRIVATE PROPERTY).
3. ALL MATERIALS (EXCEPT THE METER) SHALL BE FURNISHED & INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL INSTALL A TEMPORARY SPACER SPOOL BETWEEN METER ISOLATION VALVES FOR TESTING. THE TEMPORARY SPOOL SHALL MATCH THE LENGTH OF THE ACTUAL METER TO BE PROVIDED BY THE CITY.
4. PIPING INSIDE VAULT & THROUGH WALLS TO BE CL 52 DUCTILE IRON, EXCEPT AS OTHERWISE SHOWN.
5. METER WILL BE SUPPLIED BY THE CITY, BUT SHALL BE INSTALLED (AFTER PRESSURE & OTHER TESTING OF METER VAULT PIPING) BY THE CONTRACTOR UNDER CITY INSPECTION AND APPROVAL (MOUNT RADIO READ SENSOR ON HINGE SIDE OF ACCESS HATCH AT CITY APPROVED LOCATION).
6. ISOLATION VALVES IN METER VAULT SHALL BE NON-RISING STEM GATE VALVE (EPOXY COATED) WITH 2-INCH SQUARE OPERATING NUT.
7. ALL MJ CONNECTIONS (INCLUDING BYPASS LINE FITTINGS) SHALL BE ASSEMBLED WITH RETAINER GLANDS (EBBA MEGA-LUGS OR APPROVED EQUAL).
8. ALL PIPE OPENINGS SHALL BE CORE DRILLED (REGARDLESS OF PRESENCE OF 'KNOCKOUTS'), AND SEALED WATERTIGHT WITH NON-SHRINK GROUT.
9. PIPE SUPPORTS SHALL BE GALVANIZED STANDON S89 OR APPROVED EQUAL AT EACH ISOLATION AND BYPASS VALVE.
10. METER VAULT TO BE UTILITY VAULT 687-WA OR APPROVED EQUAL, CONFORMING WITH ASTM C-857. PROVIDE ALUMINUM ANGLE FRAME HATCH (48"x 72" MIN) BY SYRACUSE CASTINGS WEST OR APPROVED EQUAL (HATCH COVER TOP TO BE SAND BLASTED NON-SLIP).
 - (1) TO BE 300 PSF PEDESTRIAN RATED WHERE LID IS SET MIN. OF 9" ABOVE GRADE.
 - (2) TO BE H-20 RATED IF LID IS LESS THAN 9" ABOVE GRADE, OR IF LOCATED IN TRAFFIC AREA.
11. METER VAULT SHALL BE PROVIDED WITH AN OSHA APPROVED GALVANIZED STEEL LADDER AND ALUMINUM LADDER SAFETY EXTENSION. ATTACH TO VAULT WITH STAINLESS STEEL BOLTS.
12. CONTRACTOR TO INSTALL SUMP PUMP (5 GPM MIN) WITH 120V POWER SUPPLY, ALONG WITH PRIVATE POWER SOURCE. SUMP PUMP POWER SHALL CONFORM WITH NEC REQUIREMENTS AND BE INSTALLED IN SCHEDULE 40 CONDUIT.
13. SUMP PUMP DISCHARGE PIPE SHALL BE 2-INCH SCHEDULE 40 PVC, PROVIDED WITH UNION (FOR PUMP REMOVAL), CHECK VALVE AND ISOLATION BALL VALVE. CONNECT DISCHARGE TO GRAVITY STORM DRAIN OR CURB WEEP HOLE (AT LOCATION APPROVED BY PUBLIC WORKS).
14. SUMP TO BE 18" ROUND PVC OR CONCRETE PIPE. PROVIDE FRP SUMP GRATE WITH CUTOUT FOR DISCHARGE PIPING (GRATE TO BE REMOVABLE WITHOUT DISASSEMBLING DISCHARGE PIPING).



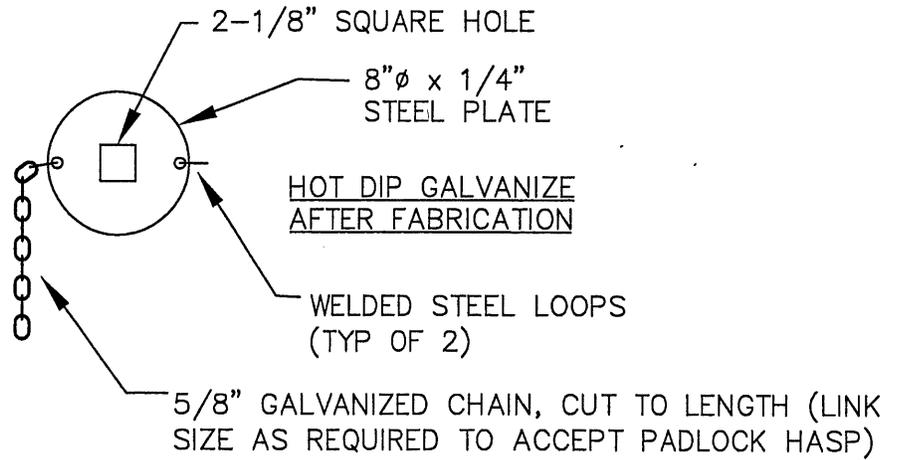
SET TOP AT FINISH GRADE IN PAVED AREAS, SLOPE SURFACE AWAY FROM VAULT

PLAN
NTS

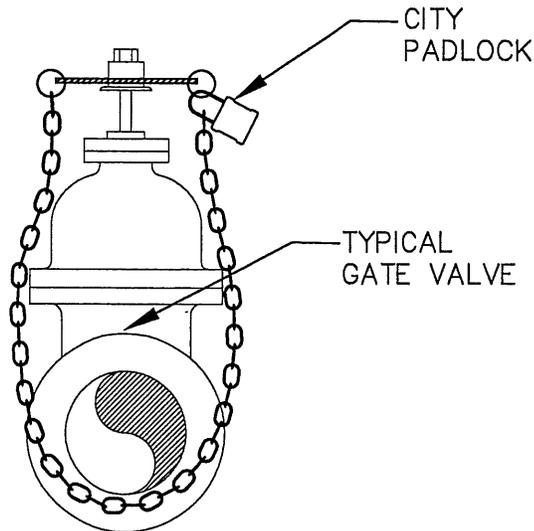


SECTION
NTS

LAST REVISION DATE: JULY 2015	COPYRIGHT 2014 WESTECH ENGINEERING, INC.
8" DOMESTIC WATER METER	
(NTS)	
SILVERTON, OR	DETAIL NO. 526



TOP VIEW

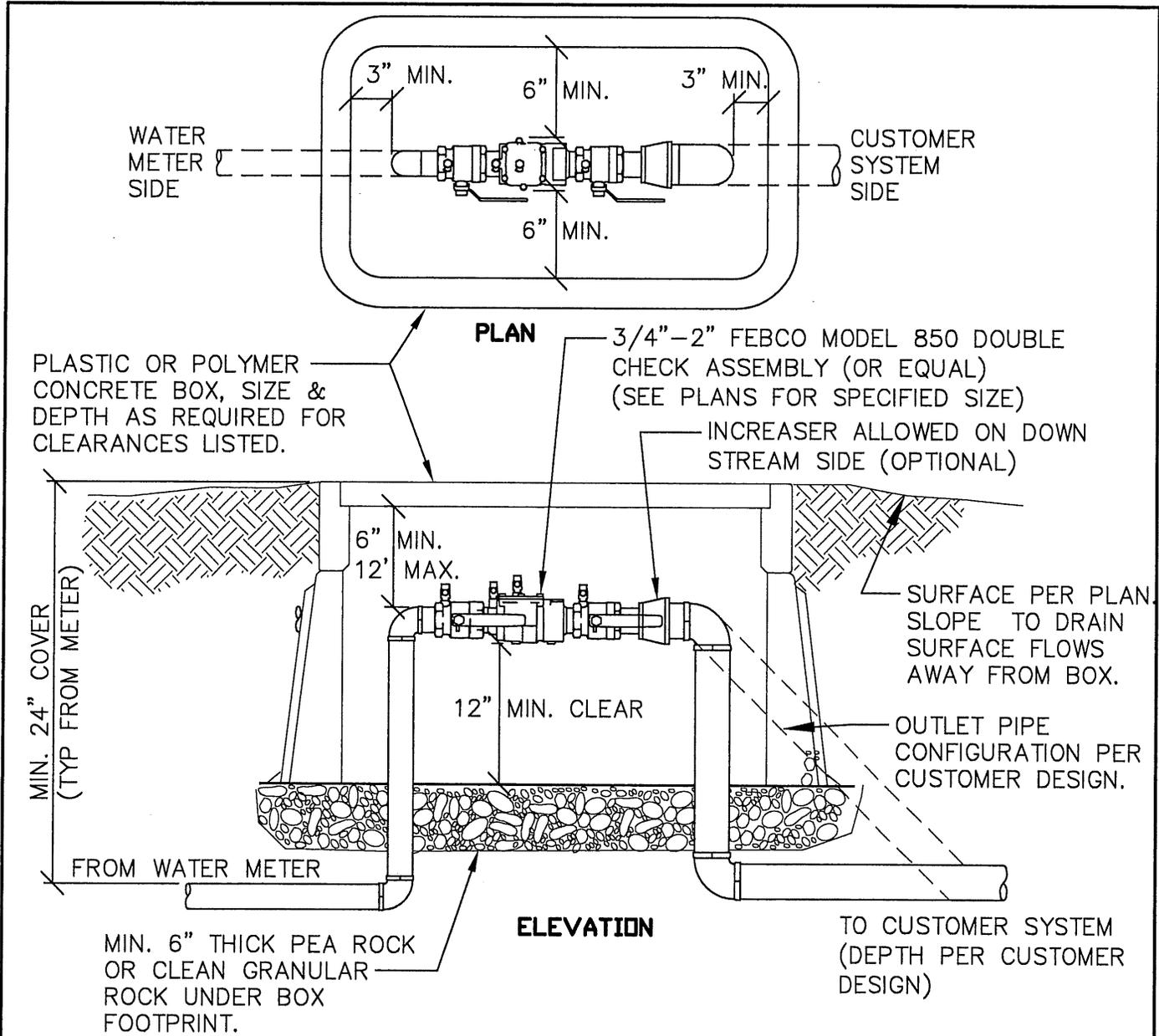


SIDE VIEW

NOTES:

1. UNLESS OTHERWISE REQUIRED BY PUBLIC WORKS, PROVIDE ONE LOCK ASSEMBLY PER VAULT.
2. VALVE LOCK ASSEMBLY TO BE HOT DIP GALVANIZED AFTER FABRICATION.

LAST REVISION DATE: JULY 2015	JO #
WATER METER VAULT BYPASS VALVE LOCK	
(NTS)	
SILVERTON, OR	DETAIL NO. 527



NOTES:

1. VERIFY THE ENCLOSURE/BOX DIMENSIONS & DEPTH ARE ADEQUATE FOR CLEARANCES SHOWN, BASED ON THE SIZE OF THE DCA AND FITTINGS ACTUALLY PROVIDED & INSTALLED.
2. ENCLOSURE/BOX SHALL BE CENTERED OVER THE COMPLETED DOUBLE CHECK ASSEMBLY.
3. PER OAR 333-61-0071, DCA SHALL NOT BE SUBJECT TO CONTINUOUS IMMERSION.
4. DCA's SHALL BE INSTALLED ABOVE THE 100 YEAR FLOOD LEVEL UNLESS OTHERWISE APPROVED IN WRITING BY THE PUBLIC WORKS DIRECTOR.
5. BYPASS LINES AROUND DOUBLE CHECK ASSEMBLIES ARE NOT ALLOWED.
6. DCA's SHALL BE PROVIDED WITH BRASS OR PLASTIC PLUGS IN ALL TEST PORTS.
7. DCA SHALL BE LOCATED ON PRIVATE PROPERTY, AND SHALL NOT BE INSTALLED IN SIDEWALKS OR AREAS SUBJECT TO VEHICULAR TRAFFIC.
8. THE PROPERTY OWNER IS RESPONSIBLE TO MAINTAIN A MINIMUM OF 3 FEET OF MAINTENANCE ACCESS WORKING CLEARANCE AROUND DCA ENCLOSURES/BOXES.
9. PRIOR TO REQUESTING APPROVAL OR FINAL INSPECTION BY THE CITY, CONTRACTOR SHALL HAVE DCA TESTED, AND COPIES OF TEST REPORTS PROVIDED TO PUBLIC WORKS.
10. PROPERTY OWNER SHALL BE RESPONSIBLE TO PROVIDE FREEZE PROTECTION DURING COLD WEATHER PERIODS AS NECESSARY.

LAST REVISION DATE: AUG 2015	JO # STANDARD
2" AND SMALLER DOUBLE CHECK VALVE ASSEMBLY (DCA) (NTS)	
SILVERTON, OR	DETAIL NO. 531

PAD MOUNTED FIBERGLASS INSULATED ENCLOSURE W/HEATER, HOT BOX MODEL AS SHOWN ON TABLE (OR APPROVED EQUIVALENT). ANCHOR ENCLOSURE TO CONCRETE PAD PER MANUFACTURER'S REQUIREMENTS.

RPBA DIAMETER	HOT BOX MODEL
1"	HB1
1½"	HB1
2"	HB1.5

NOTE: VERIFY HB SIZE FOR OTHER MODEL RPBA DEVICES.

ELECTRICAL RECEPTICAL FOR HEAT TAPE (GFI). PROVIDE HEAT TAPE OR ENCLOSURE HEATER FOR ALL ABOVE GRADE PIPING. MOUNT RECEPTACLE 18" ABOVE SLAB ON TOP OF RIGID CONDUIT OR ON UNI-STRUT.

REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) MFR'D BY FEBCO, MODEL 825YA (OR APPROVED EQUAL)

DO NOT OBSTRUCT ENCLOSURE OPENINGS (TYP)

SCH 80 PVC PIPE, TYPICAL BOTH VERTICAL RISERS

12" MIN.
TYP
(ALL WAYS)

12" MIN

4" CONCRETE PAD

SURFACE PER PLAN SLOPE TO DRAIN

3" PIPE SLEEVE FIELD LOCATE (TYP 2)

ELECTRICAL CONDUIT TO POWER SOURCE. COORDINATE AS REQ'D TO PROVIDE 120V POWER.

MIN. 2" COMPACTED GRANULAR BASEROCK

COMPACTED SUBGRADE

SCHEDULE 40 PVC FROM WATER SERVICE, SIZE AS SHOWN ON PLANS

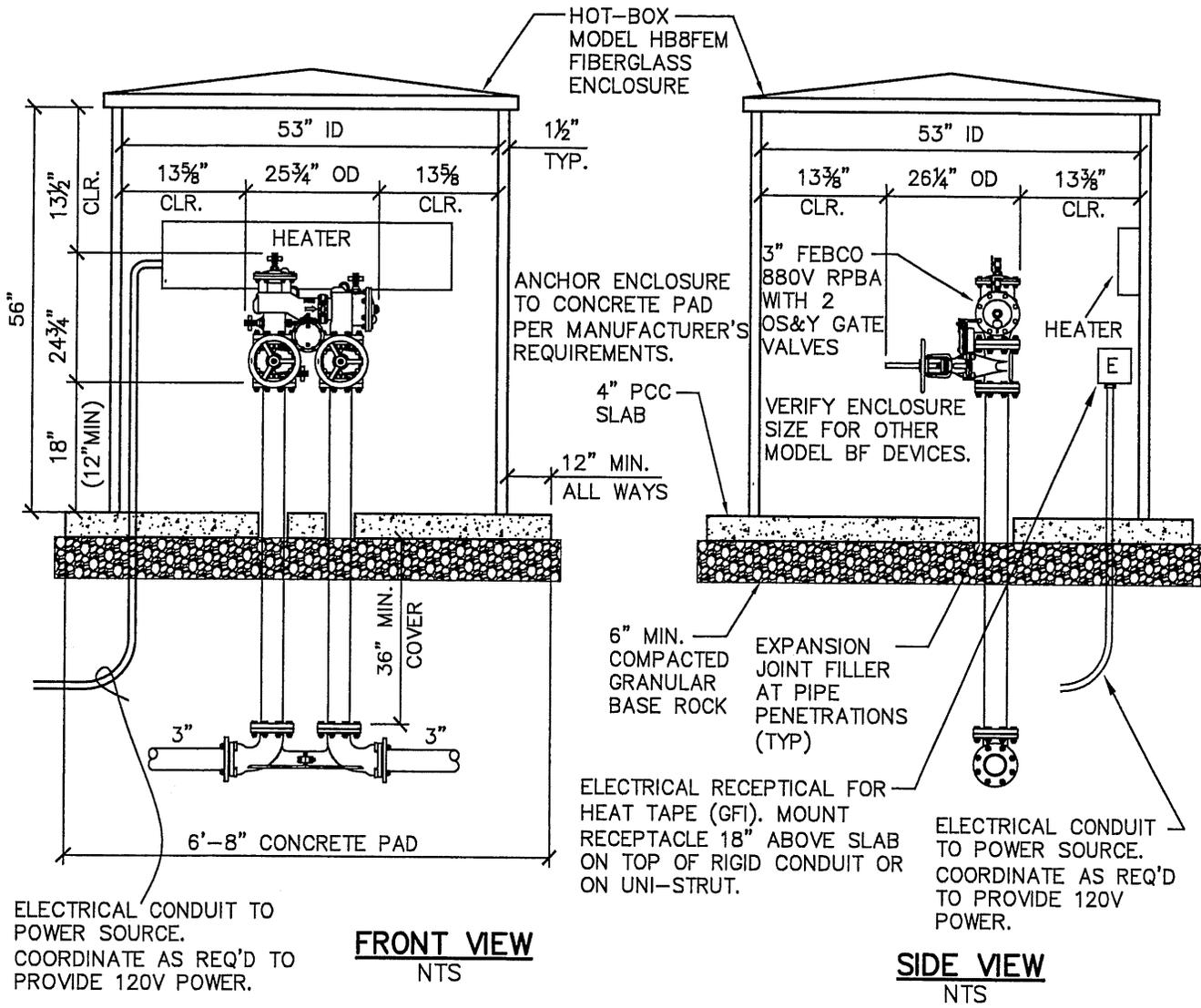
30" TYP

SCHEDULE 40 PVC TO BUILDING. SIZE AS SHOWN ON PLANS

NOTES:

1. RPBA— REDUCED PRESSURE BACKFLOW ASSEMBLY.
2. RPBA & VAULT INSTALLATION SHALL MEET STATE OF OREGON, DEPARTMENT OF HUMAN RESOURCES, HEALTH DIVISION REQUIREMENTS.
3. CONTRACTOR SHALL HAVE RPBA TESTED AND CERTIFIED PRIOR TO APPROVAL BY THE CITY.
4. RPBA & VAULT SHALL CONFORM TO REQUIREMENTS OF PUBLIC/PRIVATE AGENCIES HAVING JURISDICTION.
5. VAULTS SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL OTHER VAULTS OR STRUCTURES.
6. VERIFY ENCLOSURE DIMENSIONS ARE ADEQUATE FOR CLEARANCE BASED ON HEIGHT OF REDUCED PRESSURE ASSEMBLY.
7. ENCLOSURE SHALL BE CENTERED OVER THE COMPLETED REDUCED PRESSURE BACKFLOW ASSEMBLY.
8. POWER SHALL BE INSTALLED IN SCHEDULE 40 RIGID CONDUIT PER NEC REQUIREMENTS.
9. ALL CONCRETE SHALL HAVE 3,300 PSI COMPRESSIVE STRENGTH @ 28 DAYS.
10. HOT BOX DRAINAGE OPENINGS SHALL NOT BE OBSTRUCTED BY GRADING OR PLANTINGS.
11. RPBA SHALL BE INSTALLED A MIN. OF 12 INCHES ABOVE THE 100-YEAR FLOOD ELEVATION AS DETERMINED BY FEMA.

LAST REVISION DATE: JULY 2015	JO # STANDARD
2" AND SMALLER REDUCED PRESSURE BACKFLOW ASSEMBLY (NTS)	
SILVERTON, OR	DETAIL NO. 541



FRONT VIEW
NTS

SIDE VIEW
NTS

ELECTRICAL CONDUIT TO POWER SOURCE. COORDINATE AS REQ'D TO PROVIDE 120V POWER.

ANCHOR ENCLOSURE TO CONCRETE PAD PER MANUFACTURER'S REQUIREMENTS.

4" PCC SLAB
12" MIN. ALL WAYS

ELECTRICAL RECEPTICAL FOR HEAT TAPE (GFI). MOUNT RECEPTACLE 18" ABOVE SLAB ON TOP OF RIGID CONDUIT OR ON UNI-STRUT.

ELECTRICAL CONDUIT TO POWER SOURCE. COORDINATE AS REQ'D TO PROVIDE 120V POWER.

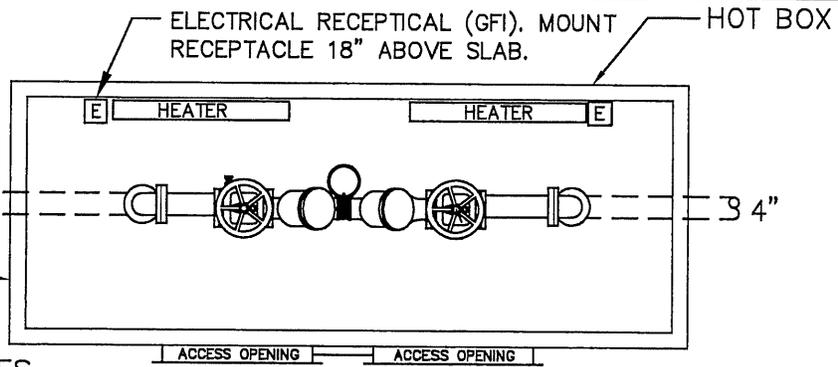
NOTES:

1. RPBA— REDUCED PRESSURE BACKFLOW ASSEMBLY.
2. RPBA & VAULT INSTALLATION SHALL MEET STATE OF OREGON, DEPARTMENT OF HUMAN RESOURCES, HEALTH DIVISION REQUIREMENTS.
3. CONTRACTOR SHALL HAVE RPBA TESTED AND CERTIFIED PRIOR TO APPROVAL BY THE CITY.
4. RPBA & VAULT SHALL CONFORM TO REQUIREMENTS OF PUBLIC/PRIVATE AGENCIES HAVING JURISDICTION.
5. VAULTS SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL OTHER VAULTS OR STRUCTURES.
6. VERIFY ENCLOSURE DIMENSIONS ARE ADEQUATE FOR CLEARANCE BASED ON HEIGHT OF REDUCED PRESSURE ASSEMBLY.
7. ENCLOSURE SHALL BE CENTERED OVER THE COMPLETED REDUCED PRESSURE BACKFLOW ASSEMBLY.
8. POWER SHALL BE INSTALLED IN SCHEDULE 40 RIGID CONDUIT PER NEC REQUIREMENTS.
9. ALL CONCRETE SHALL HAVE 3,300 PSI COMPRESSIVE STRENGTH @ 28 DAYS.
10. HOT BOX DRAINAGE OPENINGS SHALL NOT BE OBSTRUCTED BY GRADING OR PLANTINGS.
11. RPBA SHALL BE INSTALLED A MIN. OF 12 INCHES ABOVE THE 100-YEAR FLOOD ELEVATION AS DETERMINED BY FEMA.
12. FINISH GRADE TO SLOPE AWAY FROM VAULT AT MIN. SLOPE = 2%

LAST REVISION DATE: JULY 2015	JO #
3" REDUCED PRESSURE ASSEMBLY	
(NTS)	
SILVERTON, OR	DETAIL NO. 543

MODEL NO. HB4E AS
 MANUFACTURED BY HOT BOX
 (1-800-736-0238)
 ANCHOR ENCLOSURE
 TO CONCRETE PAD
 PER MANUFACTURER'S
 REQUIREMENTS.

NOTE: VERIFY VAULT SIZE
 FOR OTHER MODEL BF DEVICES.



PLAN
 NTS

4" FEBCO 860 REDUCED
 PRESSURE ASSEMBLY (OR
 APPROVED EQUAL) WITH 2
 OS&Y GATE VALVES (TYP)

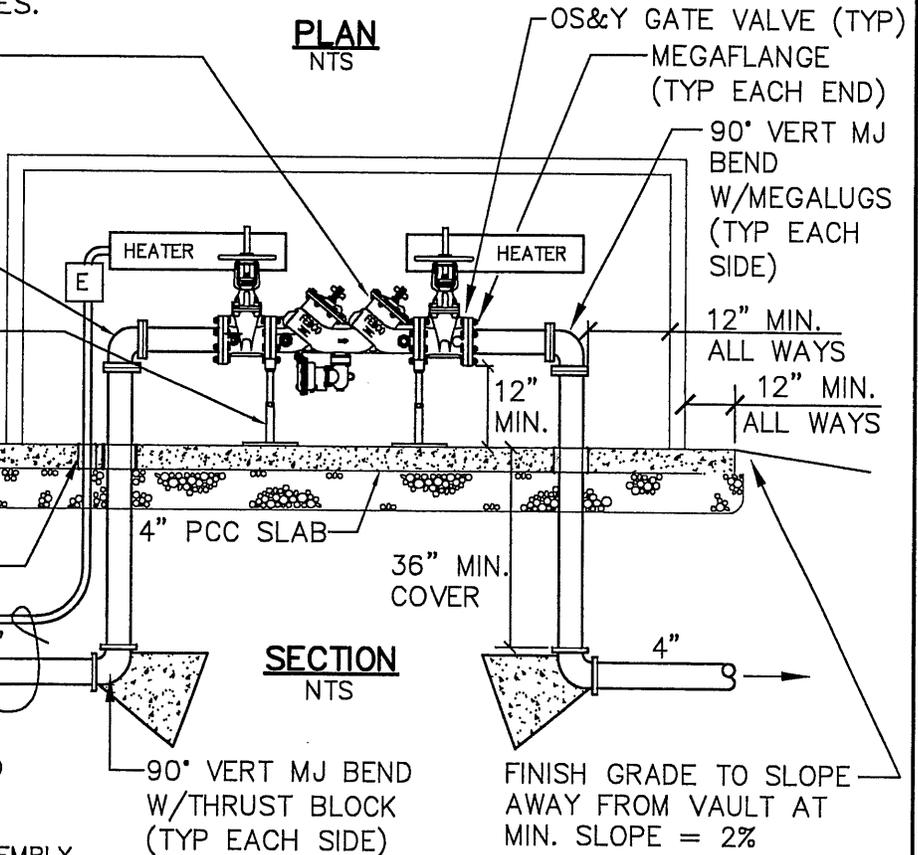
90° VERT MJ BEND
 W/MEGALUGS
 (TYP EACH SIDE)

STANDON MODEL S89
 FLANGE SUPPORT OR
 APPROVED EQUAL (TYP).

6" MIN. COMPACTED
 GRANULAR BASEROCK

PROVIDE EXPANSION
 JOINT FILLER AT PIPE
 PENETRATIONS (TYP)

ELECTRICAL CONDUIT TO
 POWER SOURCE.
 COORDINATE AS REQ'D TO
 PROVIDE 120V POWER.

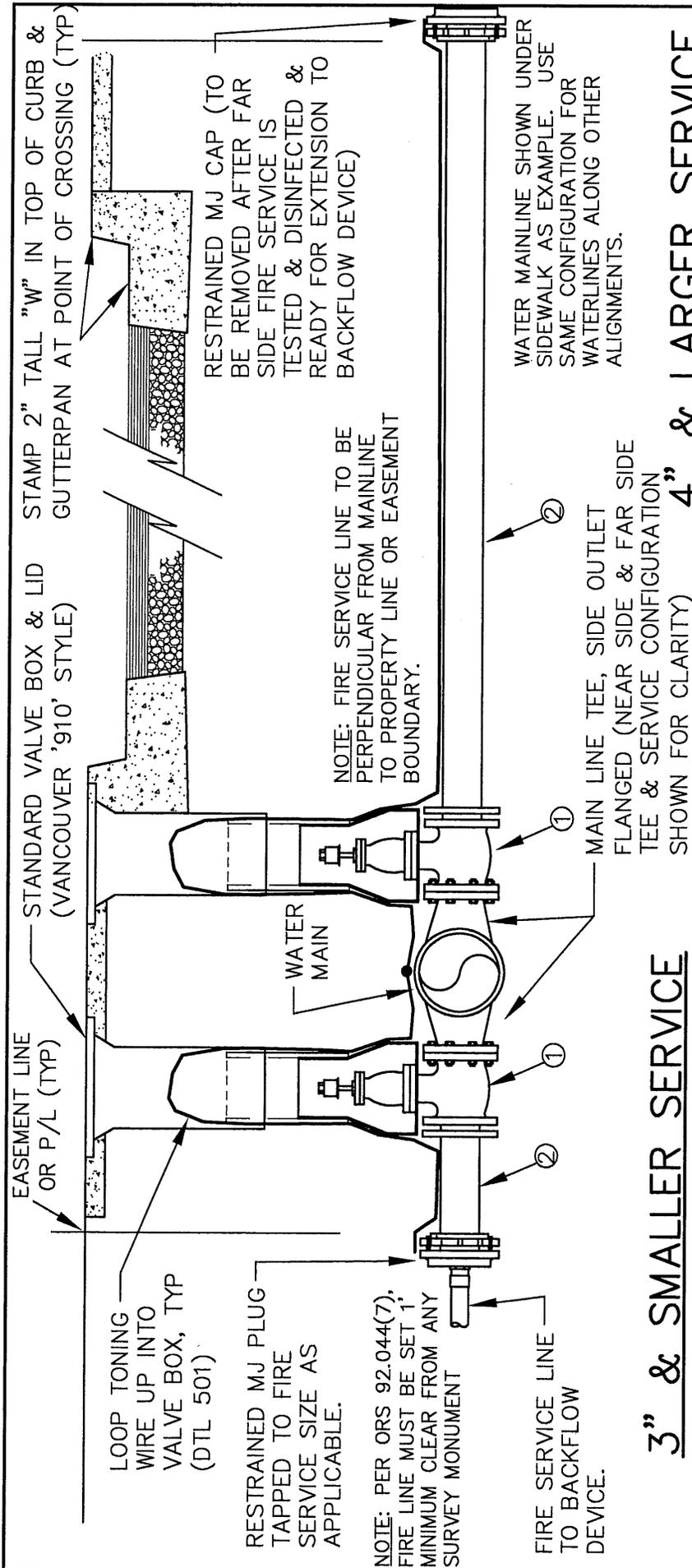


SECTION
 NTS

NOTES:

1. RPA- REDUCED PRESSURE ASSEMBLY
2. RPA & VAULT INSTALLATION SHALL MEET STATE OF OREGON, DEPARTMENT OF HUMAN RESOURCES, HEALTH DIVISION REQUIREMENTS.
3. CONTRACTOR SHALL HAVE RPA TESTED AND CERTIFIED PRIOR TO APPROVAL BY THE CITY.
4. RPA & VAULT SHALL CONFORM TO REQUIREMENTS OF PUBLIC/PRIVATE AGENCIES HAVING JURISDICTION.
5. VAULTS SHALL HAVE A MINIMUM OF 3' CLEARANCE FROM ALL OTHER VAULTS OR STRUCTURES.
6. VERIFY ENCLOSURE DIMENSIONS ARE ADEQUATE FOR CLEARANCE BASED ON HEIGHT OF REDUCED PRESSURE ASSEMBLY.
7. ENCLOSURE SHALL BE CENTERED OVER THE COMPLETED REDUCED PRESSURE ASSEMBLY.
8. POWER SHALL BE INSTALLED IN SCHEDULE 40 RIGID CONDUIT PER NEC REQUIREMENTS.
9. 'E' INDICATES THE ELECTRICAL RECEPTACLE. IT SHALL BE MOUNTED A MIN. OF 18" ABOVE THE SLAB.
10. ALL CONCRETE SHALL HAVE 3,300 PSI COMPRESSIVE STRENGTH @ 28 DAYS.
11. HOT BOX DRAINAGE OPENINGS SHALL NOT BE OBSTRUCTED BY GRADING OR PLANTINGS.
12. RPA SHALL BE INSTALLED A MIN. OF 12 INCHES ABOVE THE 100-YEAR FLOOD ELEVATION AS DETERMINED BY FEMA.

LAST REVISION DATE: JULY 2015	JO # STANDARD
4" REDUCED PRESSURE ASSEMBLY	
(NTS)	
SILVERTON, OR	DETAIL NO. 544



3" & SMALLER SERVICE

4" & LARGER SERVICE

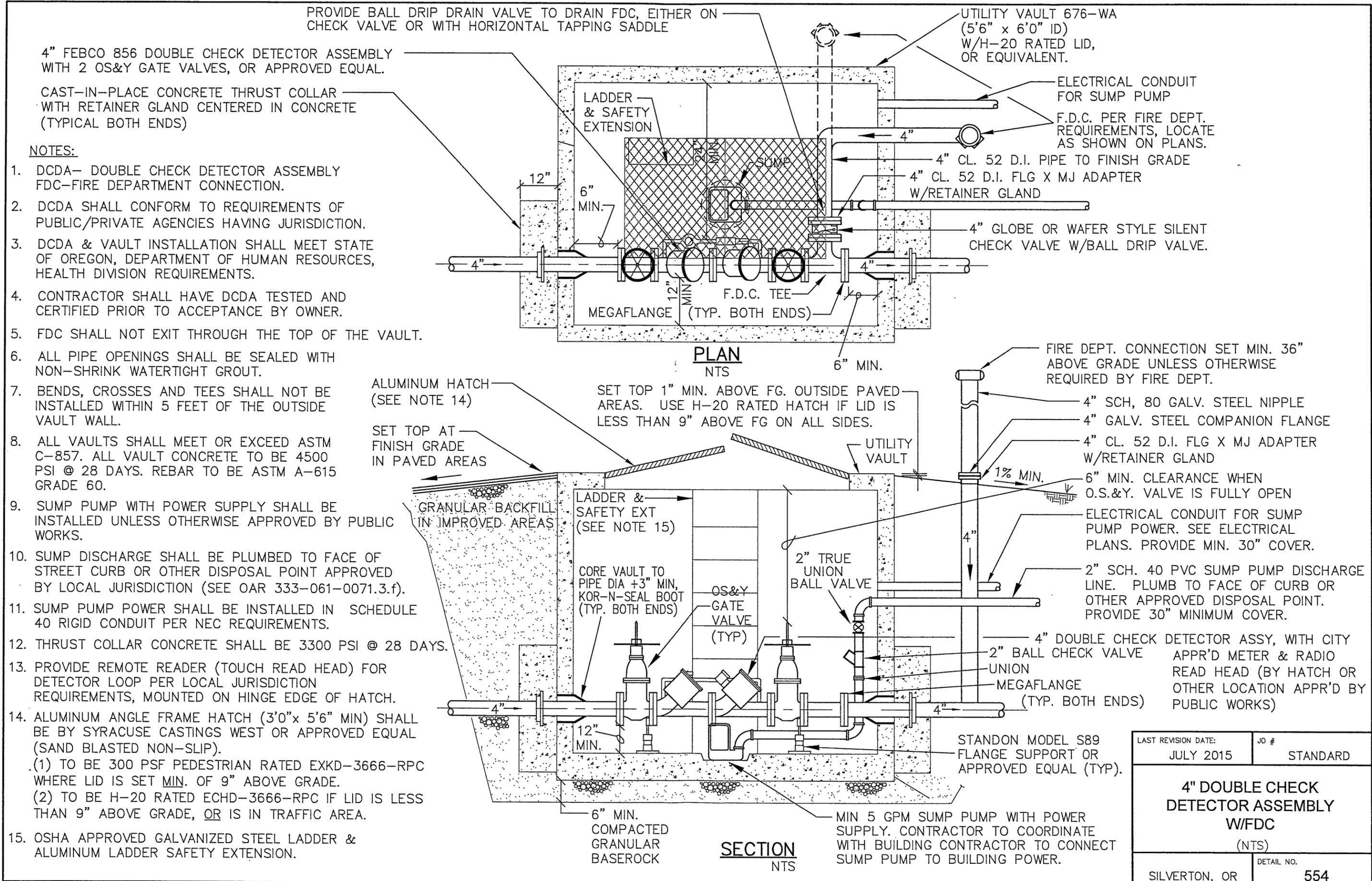
MATERIALS

- ① FLG X MJ RESILIENT WEDGE GATE VALVE PER AWWA C-509. 4" DIA. OR FIRE SERVICE SIZE, WHICHEVER IS LARGER. EPOXY COATED PER AWWA C-550.
- ② CLASS 52 DUCTILE IRON PIPE REQUIRED WITHIN RIGHT-OF-WAY OR EASEMENT BOUNDARY, TYP. 4" DIA OR FIRE SERVICE SIZE, WHICHEVER IS LARGER.

NOTES

1. SUBSTITUTES FOR ANY MATERIAL SHOWN SHALL BE APPROVED BY THE CITY ENGINEER.
2. ALL PIPE AND STRUCTURE ZONES SHALL BE BACKFILLED USING 3/4" MINUS GRANULAR MATERIAL AND COMPACTED TO 95% MAX DENSITY AS DETERMINED BY ASHTO T-180.
3. FIRE SERVICE LINE BEYOND PROPERTY OR EASEMENT LINE TO BE NFPA & NSF 61 APPROVED.
4. CUSTOMER SHALL INSTALL AN APPROVED BACKFLOW PREVENTION DEVICE ON PRIVATE PROPERTY AT A LOCATION APPROVED BY PUBLIC WORKS.

LAST REVISION DATE: SEPT 2015		COPYRIGHT WESTECH ENGINEERING, INC.	
FIRE SERVICE LINE CONNECTION REQUIREMENTS (1-1/2" AND LARGER SERVICE) (NTS)			
SILVERTON, OR		DETAIL NO. 550	



4" FEBCO 856 DOUBLE CHECK DETECTOR ASSEMBLY WITH 2 OS&Y GATE VALVES, OR APPROVED EQUAL.

CAST-IN-PLACE CONCRETE THRUST COLLAR WITH RETAINER GLAND CENTERED IN CONCRETE (TYPICAL BOTH ENDS)

NOTES:

1. DCDA- DOUBLE CHECK DETECTOR ASSEMBLY FDC-FIRE DEPARTMENT CONNECTION.
2. DCDA SHALL CONFORM TO REQUIREMENTS OF PUBLIC/PRIVATE AGENCIES HAVING JURISDICTION.
3. DCDA & VAULT INSTALLATION SHALL MEET STATE OF OREGON, DEPARTMENT OF HUMAN RESOURCES, HEALTH DIVISION REQUIREMENTS.
4. CONTRACTOR SHALL HAVE DCDA TESTED AND CERTIFIED PRIOR TO ACCEPTANCE BY OWNER.
5. FDC SHALL NOT EXIT THROUGH THE TOP OF THE VAULT.
6. ALL PIPE OPENINGS SHALL BE SEALED WITH NON-SHRINK WATERTIGHT GROUT.
7. BENDS, CROSSES AND TEES SHALL NOT BE INSTALLED WITHIN 5 FEET OF THE OUTSIDE VAULT WALL.
8. ALL VAULTS SHALL MEET OR EXCEED ASTM C-857. ALL VAULT CONCRETE TO BE 4500 PSI @ 28 DAYS. REBAR TO BE ASTM A-615 GRADE 60.
9. SUMP PUMP WITH POWER SUPPLY SHALL BE INSTALLED UNLESS OTHERWISE APPROVED BY PUBLIC WORKS.
10. SUMP DISCHARGE SHALL BE PLUMBED TO FACE OF STREET CURB OR OTHER DISPOSAL POINT APPROVED BY LOCAL JURISDICTION (SEE OAR 333-061-0071.3.f).
11. SUMP PUMP POWER SHALL BE INSTALLED IN SCHEDULE 40 RIGID CONDUIT PER NEC REQUIREMENTS.
12. THRUST COLLAR CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
13. PROVIDE REMOTE READER (TOUCH READ HEAD) FOR DETECTOR LOOP PER LOCAL JURISDICTION REQUIREMENTS, MOUNTED ON HINGE EDGE OF HATCH.
14. ALUMINUM ANGLE FRAME HATCH (3'0"x 5'6" MIN) SHALL BE BY SYRACUSE CASTINGS WEST OR APPROVED EQUAL (SAND BLASTED NON-SLIP).
 (1) TO BE 300 PSF PEDESTRIAN RATED EXKD-3666-RPC WHERE LID IS SET MIN. OF 9" ABOVE GRADE.
 (2) TO BE H-20 RATED ECHD-3666-RPC IF LID IS LESS THAN 9" ABOVE GRADE, OR IS IN TRAFFIC AREA.
15. OSHA APPROVED GALVANIZED STEEL LADDER & ALUMINUM LADDER SAFETY EXTENSION.

PROVIDE BALL DRIP DRAIN VALVE TO DRAIN FDC, EITHER ON CHECK VALVE OR WITH HORIZONTAL TAPPING SADDLE

UTILITY VAULT 676-WA (5'6" x 6'0" ID) W/H-20 RATED LID, OR EQUIVALENT.

ELECTRICAL CONDUIT FOR SUMP PUMP

F.D.C. PER FIRE DEPT. REQUIREMENTS, LOCATE AS SHOWN ON PLANS.

LADDER & SAFETY EXTENSION

SUMP

MEGAFLANGE (TYP. BOTH ENDS) F.D.C. TEE

PLAN
NTS

SET TOP 1" MIN. ABOVE FG. OUTSIDE PAVED AREAS. USE H-20 RATED HATCH IF LID IS LESS THAN 9" ABOVE FG ON ALL SIDES.

ALUMINUM HATCH (SEE NOTE 14)

SET TOP AT FINISH GRADE IN PAVED AREAS

GRANULAR BACKFILL IN IMPROVED AREAS

LADDER & SAFETY EXT (SEE NOTE 15)

CORE VAULT TO PIPE DIA +3" MIN, KOR-N-SEAL BOOT (TYP. BOTH ENDS)

OS&Y GATE VALVE (TYP)

2" TRUE UNION BALL VALVE

FIRE DEPT. CONNECTION SET MIN. 36" ABOVE GRADE UNLESS OTHERWISE REQUIRED BY FIRE DEPT.

4" SCH, 80 GALV. STEEL NIPPLE

4" GALV. STEEL COMPANION FLANGE

4" CL. 52 D.I. FLG X MJ ADAPTER W/RETAINER GLAND

6" MIN. CLEARANCE WHEN O.S.&Y. VALVE IS FULLY OPEN

ELECTRICAL CONDUIT FOR SUMP PUMP POWER. SEE ELECTRICAL PLANS. PROVIDE MIN. 30" COVER.

2" SCH. 40 PVC SUMP PUMP DISCHARGE LINE. PLUMB TO FACE OF CURB OR OTHER APPROVED DISPOSAL POINT. PROVIDE 30" MINIMUM COVER.

4" DOUBLE CHECK DETECTOR ASSY, WITH CITY APPR'D METER & RADIO READ HEAD (BY HATCH OR OTHER LOCATION APPR'D BY PUBLIC WORKS)

2" BALL CHECK VALVE

UNION

MEGAFLANGE (TYP. BOTH ENDS)

STANDON MODEL S89 FLANGE SUPPORT OR APPROVED EQUAL (TYP).

MIN 5 GPM SUMP PUMP WITH POWER SUPPLY. CONTRACTOR TO COORDINATE WITH BUILDING CONTRACTOR TO CONNECT SUMP PUMP TO BUILDING POWER.

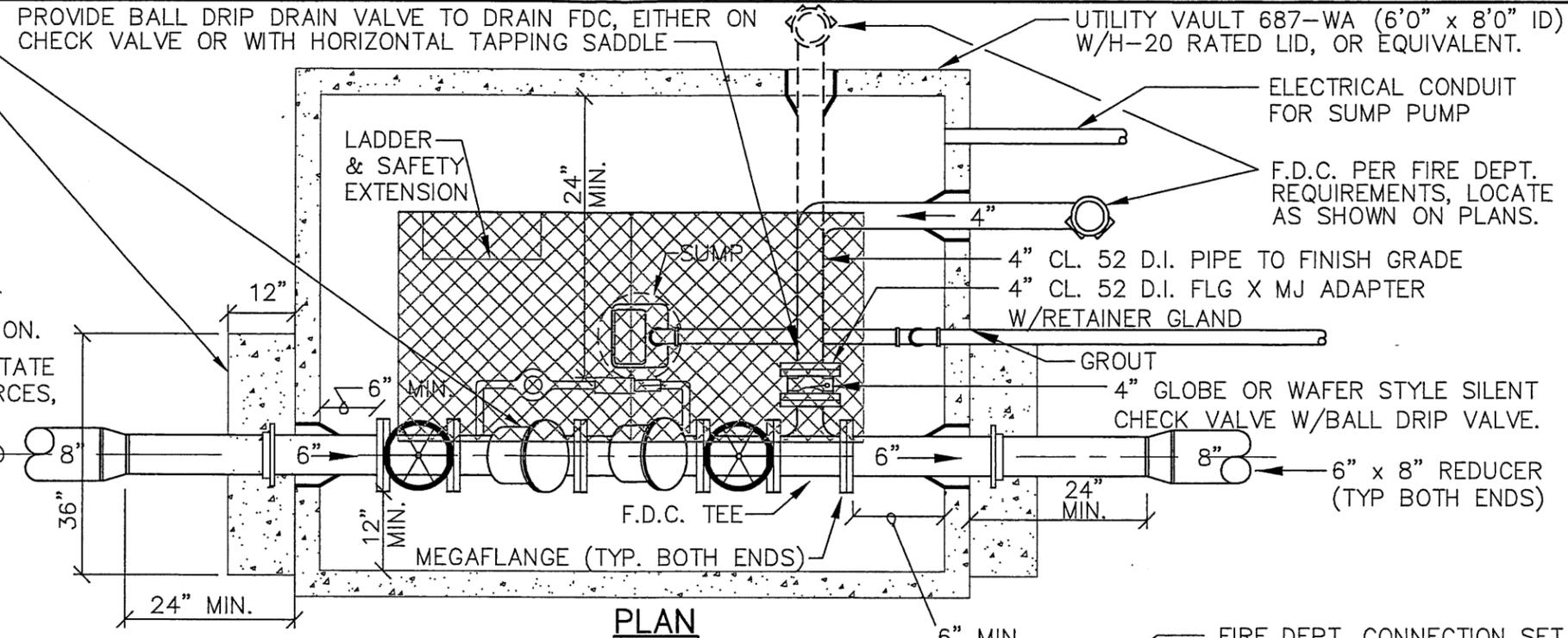
SECTION
NTS

LAST REVISION DATE: JULY 2015	JO # STANDARD
4" DOUBLE CHECK DETECTOR ASSEMBLY W/FDC (NTS)	
SILVERTON, OR	DETAIL NO. 554

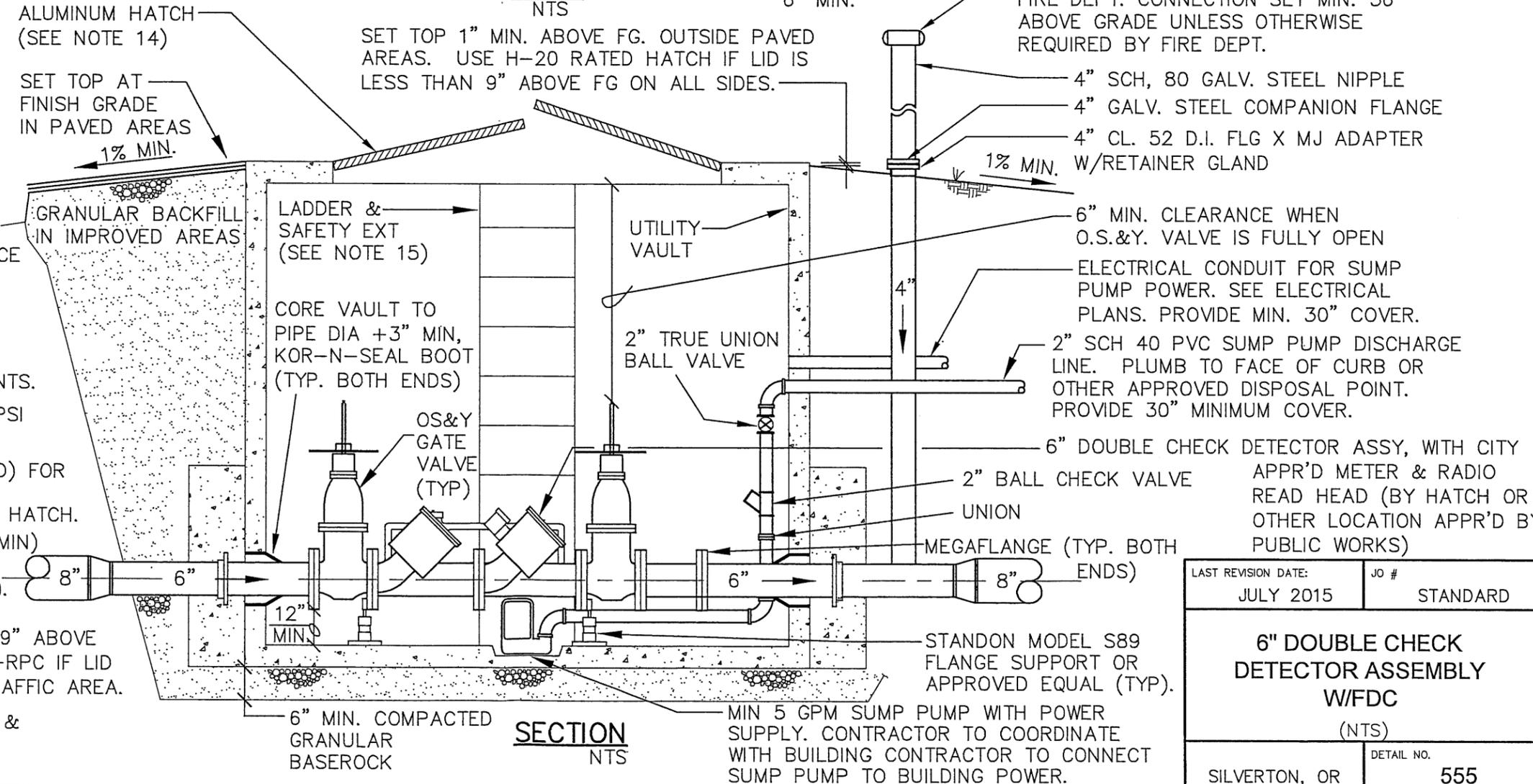
6" FEBCO 856 DOUBLE CHECK DETECTOR ASSEMBLY WITH 2 OS&Y GATE VALVES, OR APPROVED EQUAL.
 CAST-IN-PLACE CONCRETE THRUST COLLAR WITH RETAINER GLAND CENTERED IN CONCRETE (TYPICAL BOTH ENDS)

NOTES:

1. DCDA- DOUBLE CHECK DETECTOR ASSEMBLY
 FDC-FIRE DEPARTMENT CONNECTION.
2. DCDA SHALL CONFORM TO REQUIREMENTS OF PUBLIC/PRIVATE AGENCIES HAVING JURISDICTION.
3. DCDA & VAULT INSTALLATION SHALL MEET STATE OF OREGON, DEPARTMENT OF HUMAN RESOURCES, HEALTH DIVISION REQUIREMENTS.
4. CONTRACTOR SHALL HAVE DCDA TESTED AND CERTIFIED PRIOR TO ACCEPTANCE BY OWNER.
5. FDC SHALL NOT EXIT THROUGH THE TOP OF THE VAULT.
6. ALL PIPE OPENINGS SHALL BE SEALED WITH NON-SHRINK WATERTIGHT GROUT.
7. BENDS, CROSSES AND TEES SHALL NOT BE INSTALLED WITHIN 5 FEET OF THE OUTSIDE VAULT WALL.
8. ALL VAULTS SHALL MEET OR EXCEED ASTM C-857. ALL VAULT CONCRETE TO BE 4500 PSI @ 28 DAYS. REBAR TO BE ASTM A-615 GRADE 60.
9. SUMP PUMP WITH POWER SUPPLY SHALL BE INSTALLED UNLESS OTHERWISE APPROVED BY PUBLIC WORKS.
10. SUMP DISCHARGE SHALL BE PLUMBED TO FACE OF STREET CURB OR OTHER DISPOSAL POINT APPROVED BY LOCAL JURISDICTION (SEE OAR 333-061-0071.3.f).
11. SUMP PUMP POWER SHALL BE INSTALLED IN SCHEDULE 40 RIGID CONDUIT PER NEC REQMNTS.
12. THRUST COLLAR CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
13. PROVIDE REMOTE READER (TOUCH READ HEAD) FOR DETECTOR LOOP PER LOCAL JURISDICTION REQUIREMENTS, MOUNTED ON HINGE EDGE OF HATCH.
14. ALUMINUM ANGLE FRAME HATCH (3'0"x 5'6" MIN) SHALL BE BY SYRACUSE CASTINGS WEST OR APPROVED EQUAL (SAND BLASTED NON-SLIP). (1) TO BE 300 PSF PEDESTRIAN RATED EXKD-3666-RPC WHERE LID IS SET MIN. OF 9" ABOVE GRADE. (2) TO BE H-20 RATED ECHD-3666-RPC IF LID IS LESS THAN 9" ABOVE GRADE, OR IS IN TRAFFIC AREA.
15. OSHA APPROVED GALVANIZED STEEL LADDER & ALUMINUM LADDER SAFETY EXTENSION.



PLAN
 NTS



SECTION
 NTS

LAST REVISION DATE: JULY 2015	JO # STANDARD
6" DOUBLE CHECK DETECTOR ASSEMBLY W/FDC (NTS)	
SILVERTON, OR	DETAIL NO. 555

8" FEBCO 856 DOUBLE CHECK DETECTOR ASSEMBLY WITH 2 OS&Y GATE VALVES, OR APPROVED EQUAL.

CAST-IN-PLACE CONCRETE THRUST COLLAR WITH RETAINER GLAND CENTERED IN CONCRETE (TYPICAL BOTH ENDS)

NOTES:

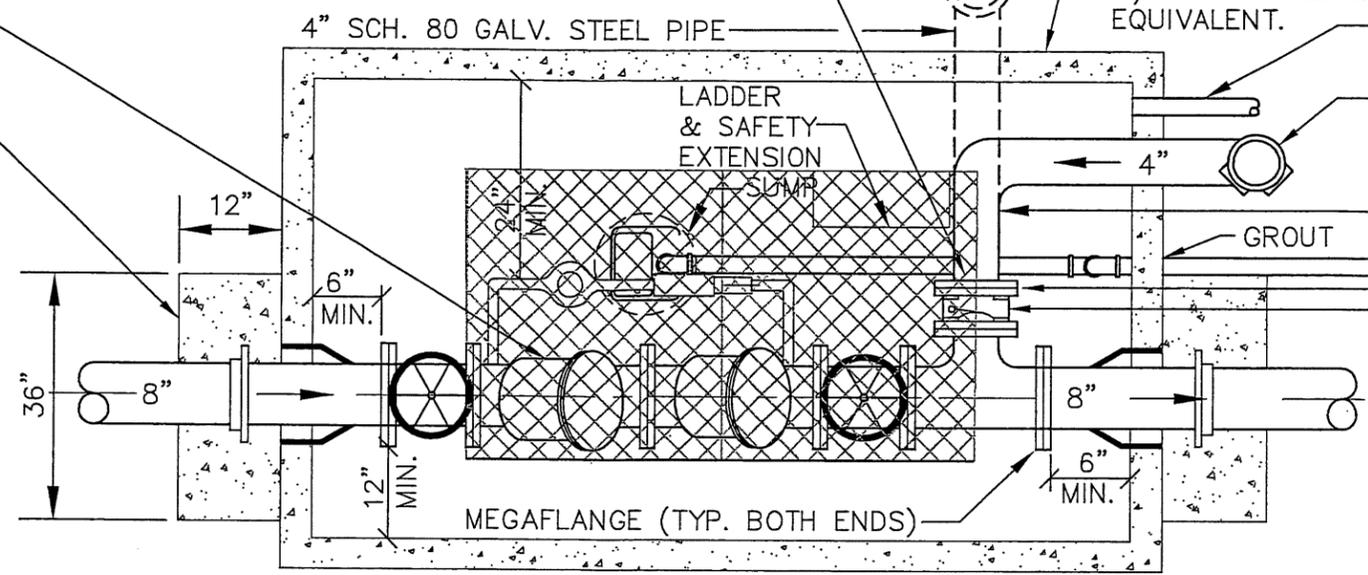
1. DCDA- DOUBLE CHECK DETECTOR ASSEMBLY FDC-FIRE DEPARTMENT CONNECTION.
2. DCDA SHALL CONFORM TO REQUIREMENTS OF PUBLIC/PRIVATE AGENCIES HAVING JURISDICTION.
3. DCDA & VAULT INSTALLATION SHALL MEET STATE OF OREGON, DEPARTMENT OF HUMAN RESOURCES, HEALTH DIVISION REQUIREMENTS.
4. CONTRACTOR SHALL HAVE DCDA TESTED AND CERTIFIED PRIOR TO ACCEPTANCE BY OWNER.
5. FDC SHALL NOT EXIT THROUGH THE TOP OF THE VAULT.
6. ALL PIPE OPENINGS SHALL BE SEALED WITH KOH-N-SEAL RUBBER BOOTS, EXCEPT AS NOTED.
7. BENDS, CROSSES AND TEES SHALL NOT BE INSTALLED WITHIN 5 FEET OF THE OUTSIDE VAULT WALL.
8. ALL VAULTS SHALL MEET OR EXCEED ASTM C-857. ALL VAULT CONCRETE TO BE 4500 PSI @ 28 DAYS. REBAR TO BE ASTM A-615 GRADE 60.
9. SUMP PUMP WITH POWER SUPPLY SHALL BE INSTALLED UNLESS OTHERWISE APPROVED BY PUBLIC WORKS.
10. SUMP DISCHARGE SHALL BE PLUMBED TO FACE OF STREET CURB OR OTHER DISPOSAL POINT APPROVED BY LOCAL JURISDICTION (SEE OAR 333-061-0071.3.f).
11. SUMP PUMP POWER SHALL BE INSTALLED IN SCHEDULE 40 RIGID CONDUIT PER NEC REQMENTS.
12. THRUST COLLAR CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
13. PROVIDE REMOTE READER (TOUCH READ HEAD) FOR DETECTOR LOOP PER LOCAL JURISDICTION REQUIREMENTS, MOUNTED ON HINGE EDGE OF HATCH.
14. ALUMINUM ANGLE FRAME HATCH (3'0" x 5'6" MIN) SHALL BE BY SYRACUSE CASTINGS WEST OR APPROVED EQUAL (SAND BLASTED NON-SLIP). (1) TO BE 300 PSF PEDESTRIAN RATED EXKD-3666-RPC WHERE LID IS SET MIN. OF 9" ABOVE GRADE. (2) TO BE H-20 RATED ECHD-3666-RPC IF LID IS LESS THAN 9" ABOVE GRADE, OR IS IN TRAFFIC AREA.
15. OSHA APPROVED GALVANIZED STEEL LADDER & ALUMINUM LADDER SAFETY EXTENSION.

PROVIDE BALL DRIP DRAIN VALVE TO DRAIN FDC, EITHER ON CHECK VALVE OR WITH HORIZONTAL TAPPING SADDLE

UTILITY VAULT 5106-WA (5'0" x 10'6" ID) W/H-20 RATED LID, OR EQUIVALENT.

ELECTRICAL CONDUIT FOR SUMP PUMP

F.D.C. PER FIRE DEPT. REQMENTS. LOCATE AS SHOWN ON PLANS.



MEGAFLANGE (TYP. BOTH ENDS)

4" CL. 52 D.I. PIPE TO FINISH GRADE
4" CL. 52 D.I. FLG X MJ ADAPTER W/RETAINER GLAND
4" GLOBE OR WAFER STYLE SILENT CHECK VALVE W/BALL DRIP VALVE.

PLAN

NTS

SET TOP 1" MIN. ABOVE FG. OUTSIDE PAVED AREAS. USE H-20 RATED HATCH IF LID IS LESS THAN 9" ABOVE FG ON ALL SIDES.

SET TOP AT FINISH GRADE IN PAVED AREAS

ALUMINUM HATCH (SEE NOTE 14)

UTILITY VAULT

FIRE DEPT. CONNECTION SET MIN. 36" ABOVE GRADE UNLESS OTHERWISE REQUIRED BY FIRE DEPT.

4" SCH, 80 GALV. STEEL NIPPLE
4" GALV. STEEL COMPANION FLANGE
4" CL. 52 D.I. FLG X MJ ADAPTER W/RETAINER GLAND

6" MIN. CLEARANCE WHEN O.S.&Y. VALVE IS FULLY OPEN
ELECTRICAL CONDUIT FOR SUMP PUMP POWER. SEE ELECTRICAL PLANS. PROVIDE MIN. 30" COVER.
2" SCH 40 PVC SUMP PUMP DISCHARGE LINE. PLUMB TO FACE STREET CURB OR OTHER APPROVED DISPOSAL POINT. PROVIDE 30" MINIMUM COVER.

8" DOUBLE CHECK DETECTOR ASSY, WITH CITY 2" BALL CHECK VALVE APPR'D METER & RADIO READ HEAD (BY HATCH OR OTHER LOCATION APPR'D BY PUBLIC WORKS)

GRANULAR BACKFILL IN IMPROVED AREAS

CORE VAULT TO PIPE DIA +3" MIN, KOR-N-SEAL BOOT (TYP. BOTH ENDS)

2" TRUE UNION BALL VALVE

LADDER & SAFETY EXT (SEE NOTE 15)

OS&Y GATE VALVE (TYP)

8"

8"

6" MIN. COMPACTED GRANULAR BASEROCK

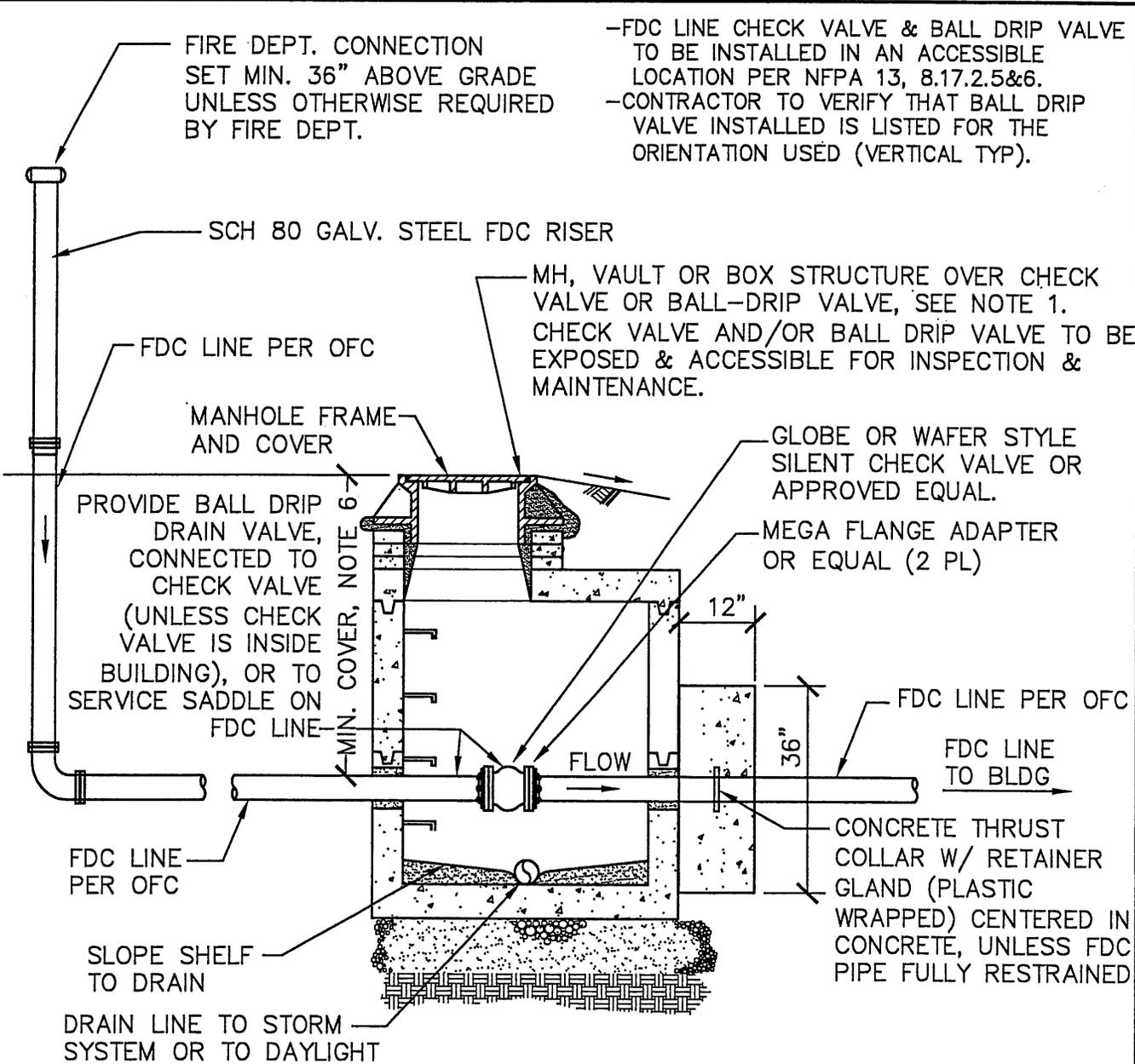
STANDON MODEL S89 FLANGE SUPPORT OR APPROVED EQUAL (TYP).

MIN 5 GPM SUMP PUMP WITH POWER SUPPLY. CONTRACTOR TO COORDINATE WITH BUILDING CONTRACTOR TO CONNECT SUMP PUMP TO BUILDING POWER.

SECTION

NTS

LAST REVISION DATE: JULY 2015	JO # STANDARD
8" DOUBLE CHECK DETECTOR ASSEMBLY W/FDC (NTS)	
SILVERTON, OR	DETAIL NO. 556

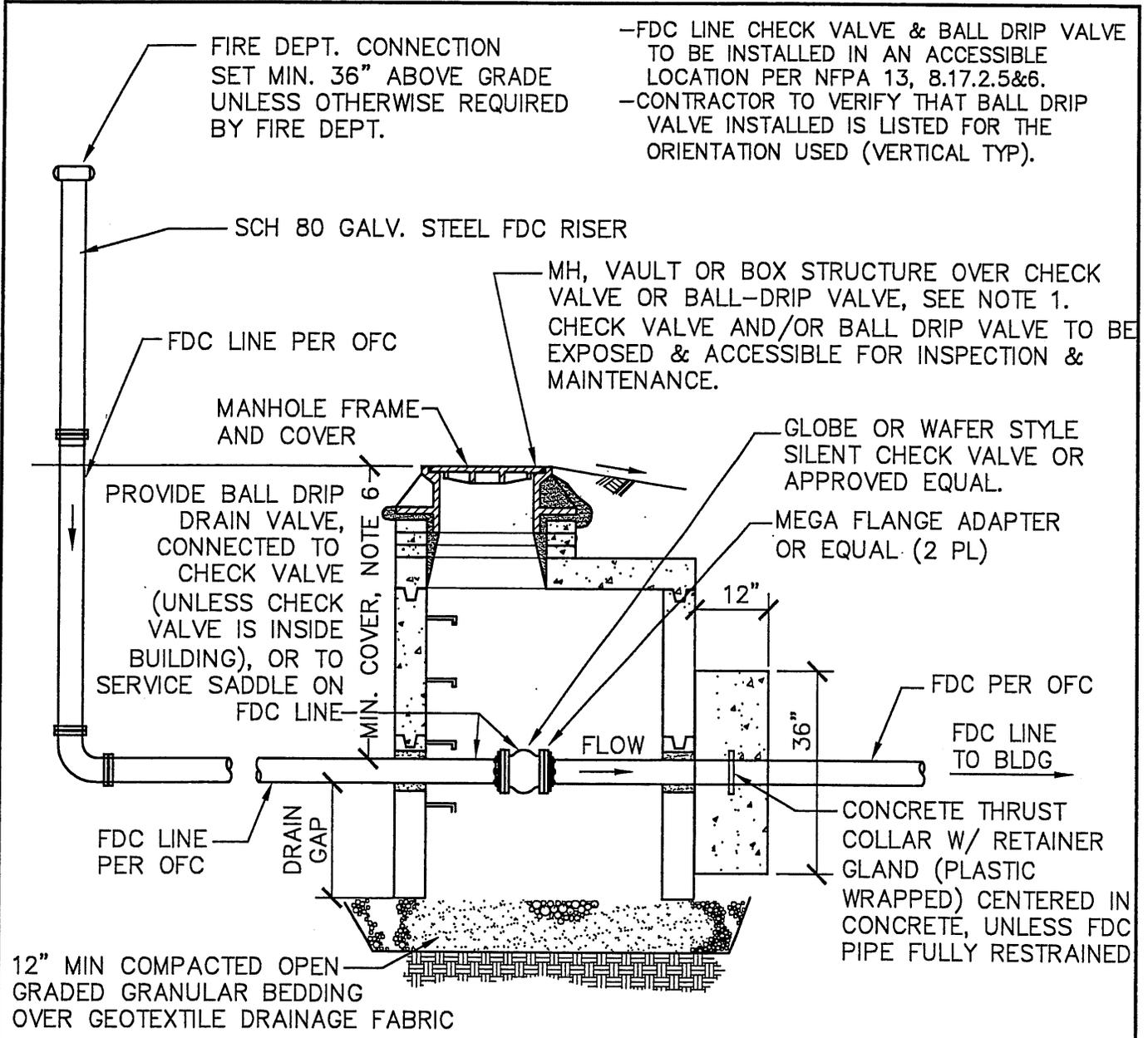


-FDC LINE CHECK VALVE & BALL DRIP VALVE TO BE INSTALLED IN AN ACCESSIBLE LOCATION PER NFPA 13, 8.17.2.5&6.
 -CONTRACTOR TO VERIFY THAT BALL DRIP VALVE INSTALLED IS LISTED FOR THE ORIENTATION USED (VERTICAL TYP).

NOTES:

1. INSTALL 48" PRECAST MANHOLE PER DETAIL 402, UNLESS OTHER APPROVED VAULT OR BOX IS SHOWN OR NOTED ON DWGS.
2. ALL PIPE OPENINGS SHALL BE SEALED WITH NON-SHRINK WATERTIGHT GROUT.
3. WHERE REQUIRED, THRUST COLLAR CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
4. IF AN FDC LINE CHECK VALVE IS PROVIDED INSIDE BUILDING, AN EXTERIOR FDC LINE CHECK VALVE IS NOT REQUIRED UNLESS OTHERWISE DIRECTED IN WRITING BY FIRE CODE OFFICIAL. BALL DRIP DRAIN VALVE SHALL BE INSTALLED ON CHECK VALVE OR AT LOW POINT ON FDC LINE (DETAIL 562) TO DRAIN FDC LINE BETWEEN CHECK VALVE & FDC RISER.
5. PER NFPA 13, A10.4.1, 36" MIN COVER REQUIRED FOR "WET" FDC LINES (ANY PORTION OF FDC LINE WHICH REMAINS FILLED WHEN NOT IN USE). COVER MAY BE REDUCED TO 12" MIN ON "DRY" FDC LINE WHICH IS DRAINED COMPLETELY WHEN NOT IN USE.
6. THIS DETAIL DOES NOT SUPERCEDE REQUIREMENTS UNDER THE OREGON FIRE CODE, NFPA STANDARDS OR DIRECTION FROM FIRE CHIEF.

LAST REVISION DATE: JULY 2015	JO # STANDARD
BELOW GRADE CHECK VALVE & BALL DRIP VALVE, IN CLOSE BOTTOM DRAIN STRUCT (NTS)	
SILVERTON, OR	DETAIL NO. 560



-FDC LINE CHECK VALVE & BALL DRIP VALVE TO BE INSTALLED IN AN ACCESSIBLE LOCATION PER NFPA 13, 8.17.2.5&6.
 -CONTRACTOR TO VERIFY THAT BALL DRIP VALVE INSTALLED IS LISTED FOR THE ORIENTATION USED (VERTICAL TYP).

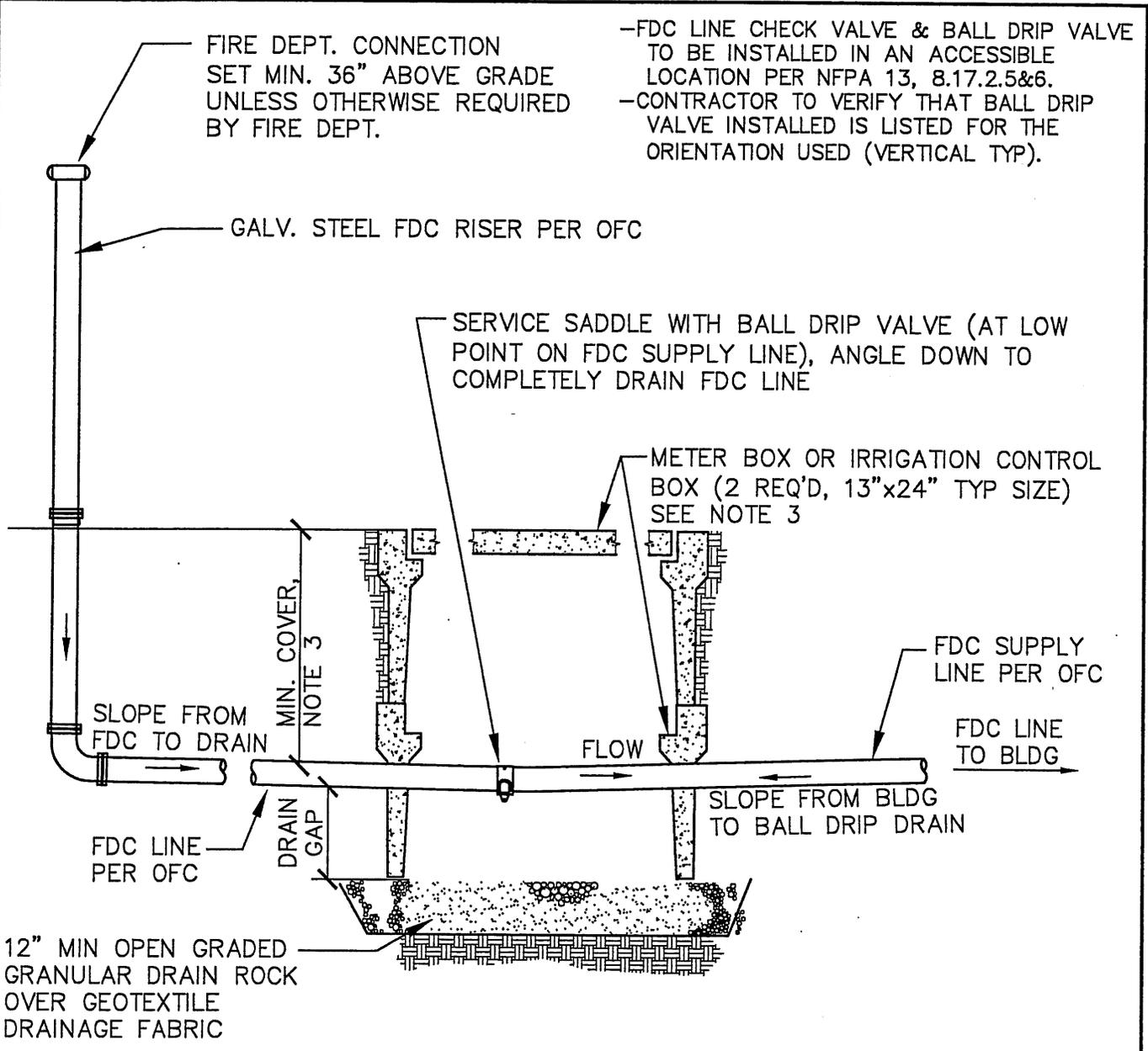
PROVIDE BALL DRIP DRAIN VALVE, CONNECTED TO CHECK VALVE (UNLESS CHECK VALVE IS INSIDE BUILDING), OR TO SERVICE SADDLE ON FDC LINE

12" MIN COMPACTED OPEN GRADED GRANULAR BEDDING OVER GEOTEXTILE DRAINAGE FABRIC

NOTES:

1. INSTALL 48" PRECAST MANHOLE PER DETAIL 402, UNLESS OTHER APPROVED VAULT OR BOX IS SHOWN OR NOTED ON DWGS.
2. ALL PIPE OPENINGS SHALL BE SEALED WITH NON-SHRINK WATERTIGHT GROUT.
3. WHERE REQUIRED, THRUST COLLAR CONCRETE SHALL BE 3300 PSI @ 28 DAYS.
4. IF AN FDC LINE CHECK VALVE IS PROVIDED INSIDE BUILDING, AN EXTERIOR FDC LINE CHECK VALVE IS NOT REQUIRED UNLESS OTHERWISE DIRECTED IN WRITING BY FIRE CODE OFFICIAL. BALL DRIP DRAIN VALVE SHALL BE INSTALLED ON CHECK VALVE OR AT LOW POINT ON FDC LINE (DETAIL 562) TO DRAIN FDC LINE BETWEEN CHECK VALVE & FDC RISER.
5. PER NFPA 13, A10.4.1, 36" MIN COVER REQUIRED FOR "WET" FDC LINES (ANY PORTION OF FDC LINE WHICH REMAINS FILLED WHEN NOT IN USE). COVER MAY BE REDUCED TO 12" MIN ON "DRY" FDC LINE WHICH IS DRAINED COMPLETELY WHEN NOT IN USE.
6. THIS DETAIL DOES NOT SUPERCEDE REQUIREMENTS UNDER THE OREGON FIRE CODE, NFPA STANDARDS OR DIRECTION FROM FIRE CHIEF.

LAST REVISION DATE: JULY 2015	JD # STANDARD
BELOW GRADE CHECK VALVE & BALL DRIP VALVE, IN OPEN BOTTOM DRAIN STRUCTURE (NTS)	
SILVERTON, OR	DETAIL NO. 561



-FDC LINE CHECK VALVE & BALL DRIP VALVE TO BE INSTALLED IN AN ACCESSIBLE LOCATION PER NFPA 13, 8.17.2.5&6.
 -CONTRACTOR TO VERIFY THAT BALL DRIP VALVE INSTALLED IS LISTED FOR THE ORIENTATION USED (VERTICAL TYP).

NOTES:

1. INSTALL BALL-DRIP DRAIN VALVE & BOX AT LOW POINT IN FDC LINE PROFILE (IE. BALL DRIP VALVE SHALL BE CONFIGURED TO DRAIN ENTIRE FDC PIPE BETWEEN FDC RISER & BUILDING WHEN FDC IS NOT IN USE).
2. CONFIGURATION SHOWN IS BASED ON FDC LINE CHECK VALVE INSIDE BUILDING (IE. FDC LINE "DRY" WHEN NOT IN USE).
3. UNLESS OTHERWISE REQUIRED TO ADDRESS UTILITY CONFLICTS OR OTHER ISSUES, COVER DEPTH FOR "DRY" FDC LINE SHALL BE 12" MIN AT ALL LOCATIONS.
4. BALL DRIP VALVE SHALL BE ACCESSIBLE IN BOX FOR INSPECTION & MAINTENANCE AS SHOWN (PROVIDE LARGER BOXES AS NECESSARY TO ACCOMPLISH THIS).
5. THIS DETAIL DOES NOT SUPERCEDE REQUIREMENTS UNDER THE OREGON FIRE CODE, NFPA STANDARDS OR DIRECTION FROM FIRE CHIEF.

LAST REVISION DATE: JULY 2015	JO # STANDARD
FDC LINE BALL DRIP DRAIN VALVE (CHECK VALVE IN BLDG) OPEN BOTTOM DRAIN STRUCT (NTS)	
SILVERTON, OR	DETAIL NO. 562

WATERLINE PRESSURE TEST REPORT

Project Location:	Project Name:	Date:
Inspector: (Print)	Waterline to be tested. From Station:	To Station:
Verify that all in-line valves, including hydrant mainline valves, are open? Yes / No		
Verify that all corp stops are open? Yes / No		
Verify that pressure gauge is mounted at high point of line to be tested? Yes / No If no, correct for elevation difference (ie. add 0.433 psi per foot elevation difference).		
System Static Pressure (psi):	Starting Pressure (psi): (greater of 150 psi or 1.5 times static)	Ending Pressure (psi):
Test Length: (2 hours minimum)	Starting Time:	Ending Time:
Volume Required to Reach Initial Test Pressure (gal):	Allowable Leakage (gal): (2 times table value below)	Measured Leakage (gal):
TEST RESULTS: Pass / Fail		

ALLOWABLE LEAKAGE PER 1,000 FEET OF PIPELINE - *gph*

Test Pressure <i>psi</i>	NOMINAL PIPE DIAMETER - <i>in.</i>									
	3	4	6	8	10	12	14	16	18	20
200	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12
175	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84

If the pipeline under test contains various diameters, the allowable leakage shall be the sum of the allowable leakage for each size. No additional leakage allowance will be given for fire hydrant assemblies or valves.

Allowable leakage based on : $L = SD(P)^{1/2}/133,200$

Where:

L = allowable leakage, in gallons per hour

S = length of pipe tested, in feet

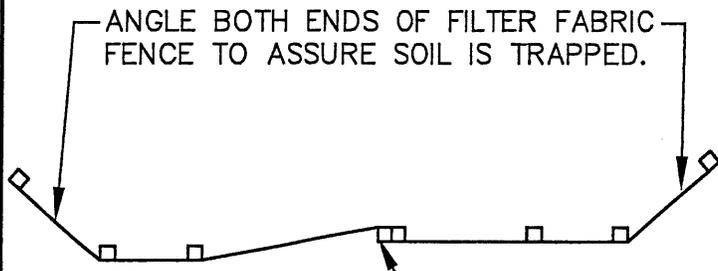
D = nominal diameter of the pipe, in inches

P = test pressure during the leakage test, in psig

Regardless of leakage, maximum pressure drop during test period shall not exceed 5 psi/hour.

TEST PROCEDURE

1. Apply hydrostatic pressure by pumping water from an auxiliary supply basin. Accurately determine the amount of water required to reach the initial test pressure by refilling the supply basin with a calibrated container following pressurization of pipeline.
2. Monitor test pressure for 2 hour period.
3. At the completion of the test period, re-pressurize the pipeline by pumping water from the auxiliary supply basin. Accurately determine the amount of water required to reach the test pressure by refilling the supply basin with a calibrated container following pressurization of pipeline. If the measured leakage is less than the allowable leakage, the test is successful.

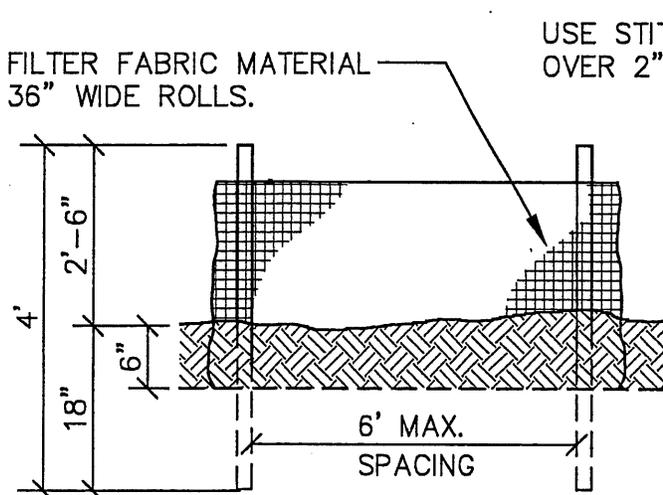


TOP VIEW

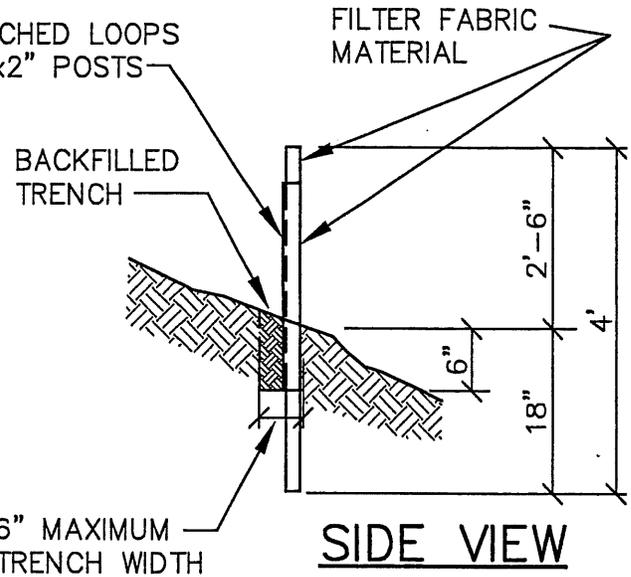
INTERLOCK 2"x2" POSTS AND ATTACH.

SILT FENCE NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. TRENCH TO BE DUG WITH DITCH-WITCH, BY HAND OR OTHER METHOD AS REQUIRED TO MINIMIZE WIDTH.
3. BACKFILL & COMPACT NATIVE SOIL IN TRENCH AFTER FENCE INSTALLATION.
4. STITCHED LOOPS TO BE INSTALLED TO THE UPHILL SIDE OF THE FENCE.



FRONT VIEW

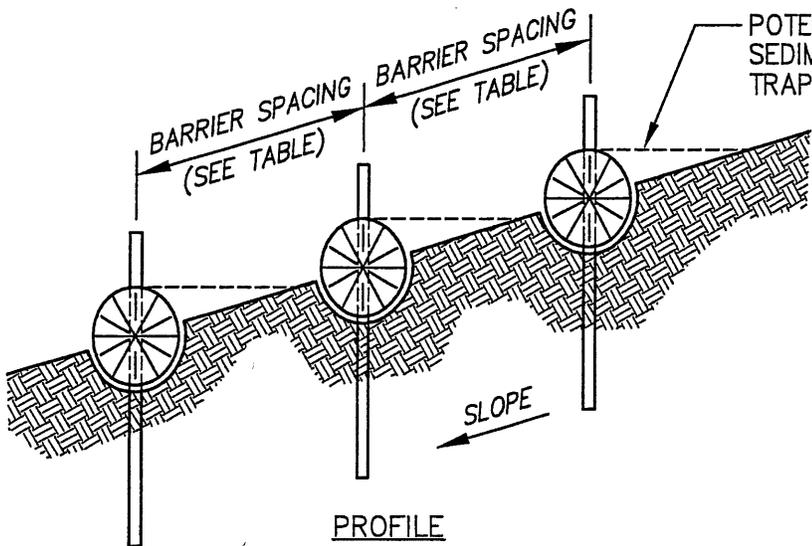


SIDE VIEW

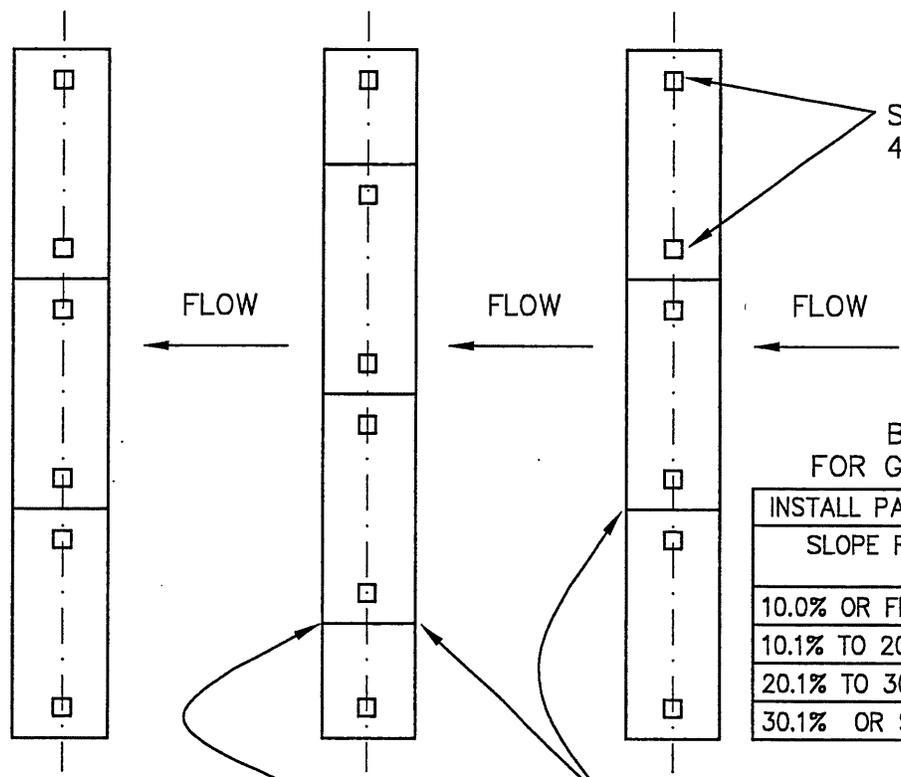
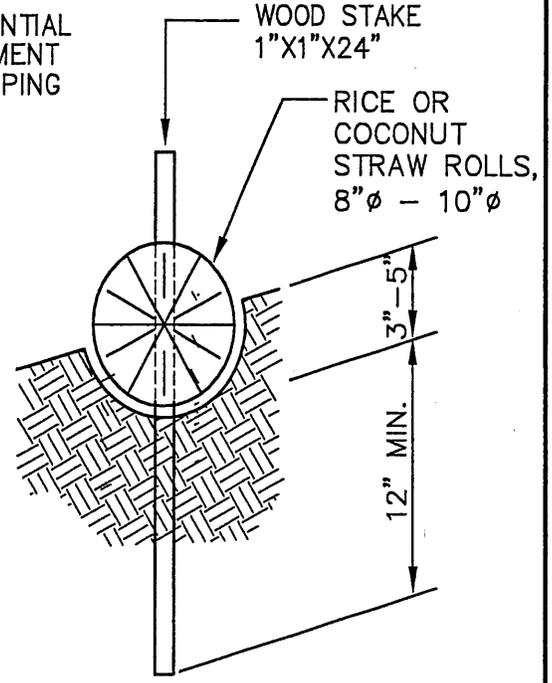
MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP-SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND SEDIMENT FENCES OR BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

LAST REVISION DATE: JULY 2015	JO # STANDARD
SEDIMENT BARRIERS	
(NTS)	
SILVERTON, OR	DETAIL NO. 611



PLACE STRAW WATTLES PARALLEL TO SLOPE CONTOURS



BARRIER SPACING FOR GENERAL APPLICATION

INSTALL PARALLEL TO CONTOURS AS FOLLOWS	
SLOPE RATIO	MAXIMUM SPACING ON SLOPE BETWEEN WATTLES
10.0% OR FLATTER	50' O.C.
10.1% TO 20.0%	25' O.C.
20.1% TO 30.0%	10' O.C.
30.1% OR STEEPER	5' O.C.

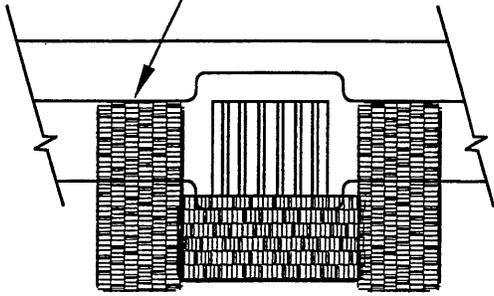
TIGHTLY ABUT ADJACENT WATTLES

STAGGER JOINTS

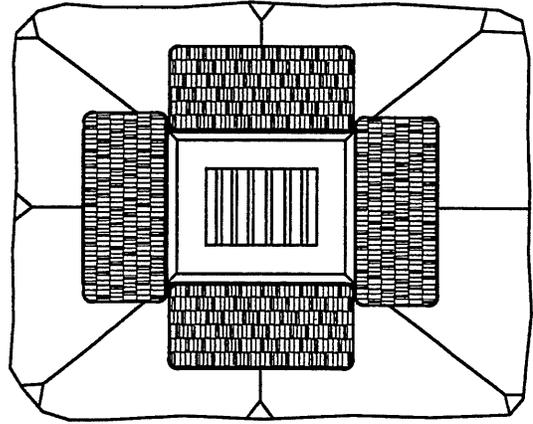
- NOTES:
1. ALL MATERIAL SHALL CONFORM TO OSSC (ODOT/APWA) SPECIFICATIONS, CURRENT EDITION.
 2. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP-SLOPE AREA IS PERMANENTLY STABILIZED.
 3. AT NO TIME SHALL SEDIMENT BE ALLOWED TO ACCUMULATE ABOVE THE TOP OF THE STRAW WATTLE.
 4. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

LAST REVISION DATE: JULY 2015	JO # STANDARD
STRAW WATTLE SEDIMENT BARRIER	
(NTS)	
SILVERTON, OR	DETAIL NO. 612

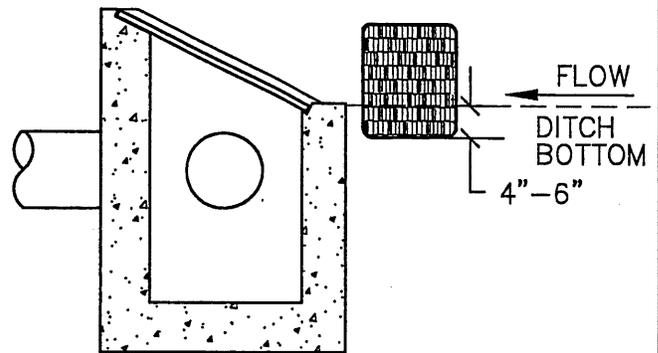
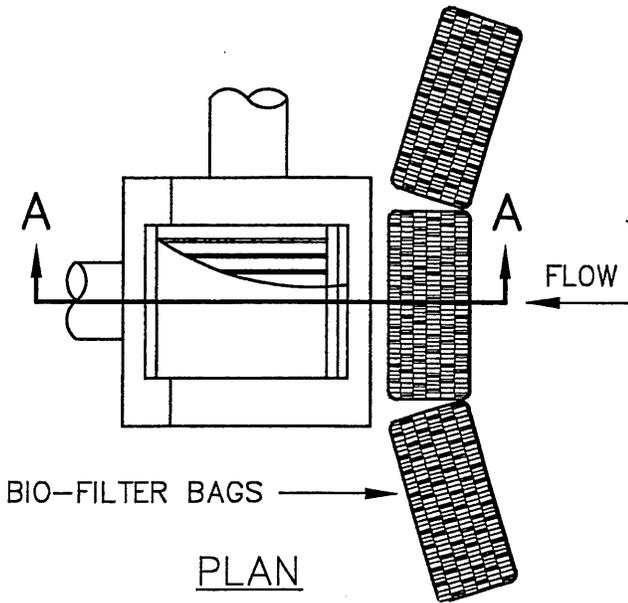
MAY BE USED SHORT TERM
W/UTILITY WORK AND WITH
PHASING OF DEVELOPMENT.



CURB INLET C.B.



AREA DRAIN



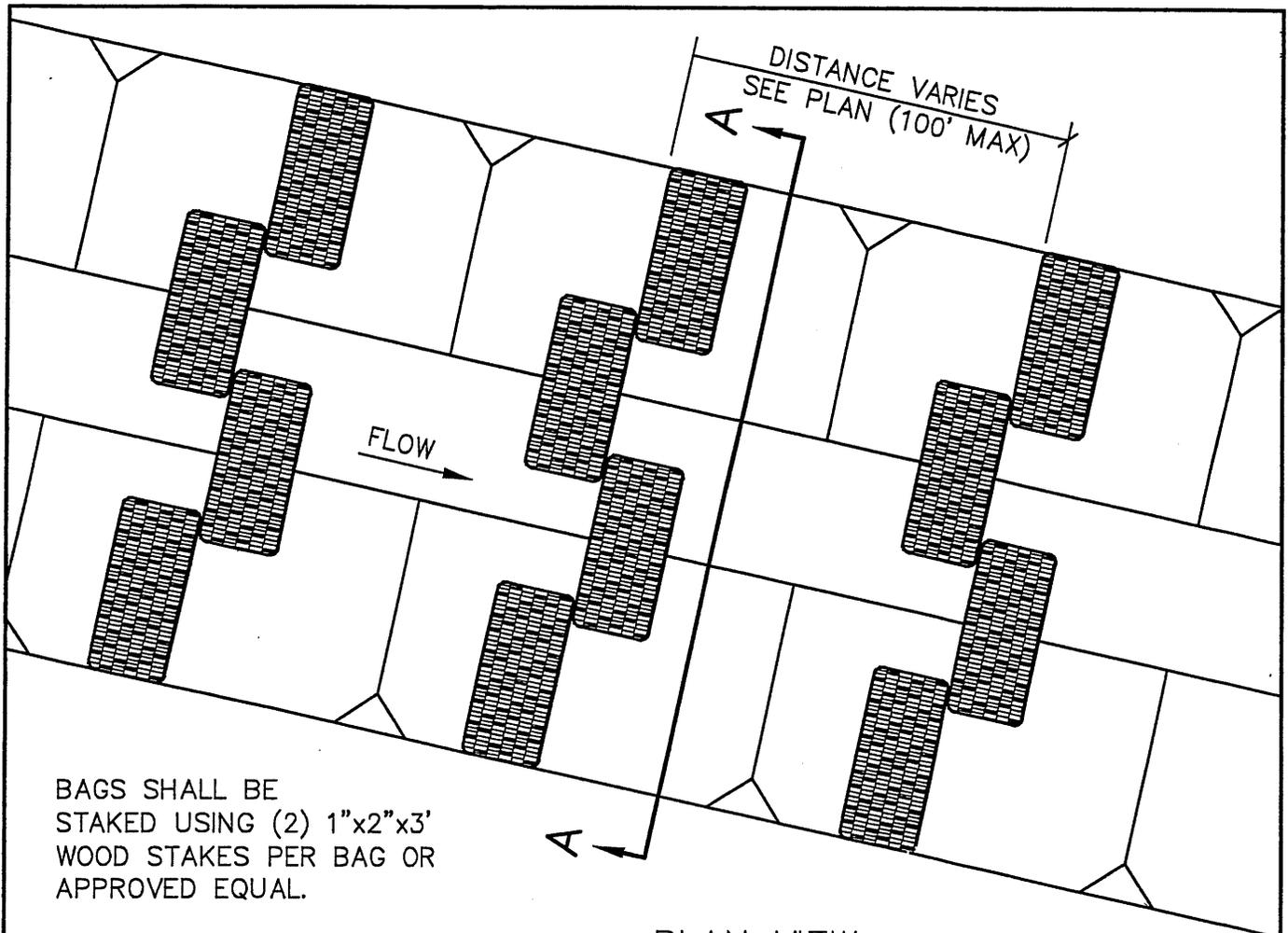
SECTION A-A

DITCH INLET C.B.

MAINTENANCE NOTES:

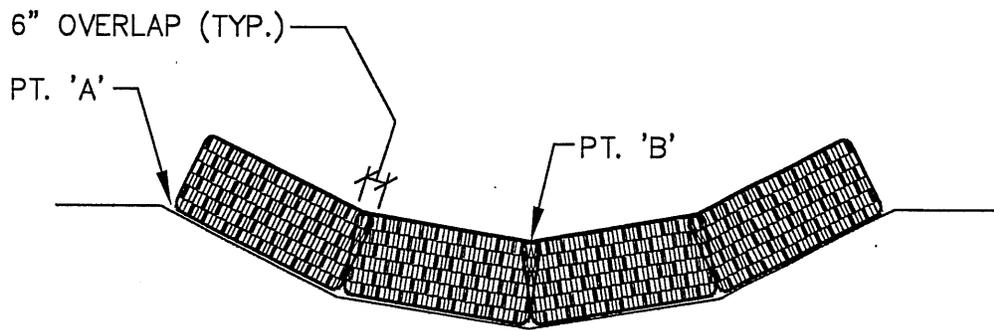
1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP-SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND SEDIMENT FENCES OR BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

LAST REVISION DATE: JULY 2015	JO # STANDARD
INLET SEDIMENT CONTROL	
(NTS)	
SILVERTON, OR	DETAIL NO. 613



BAGS SHALL BE STAKED USING (2) 1"x2"x3' WOOD STAKES PER BAG OR APPROVED EQUAL.

PLAN VIEW

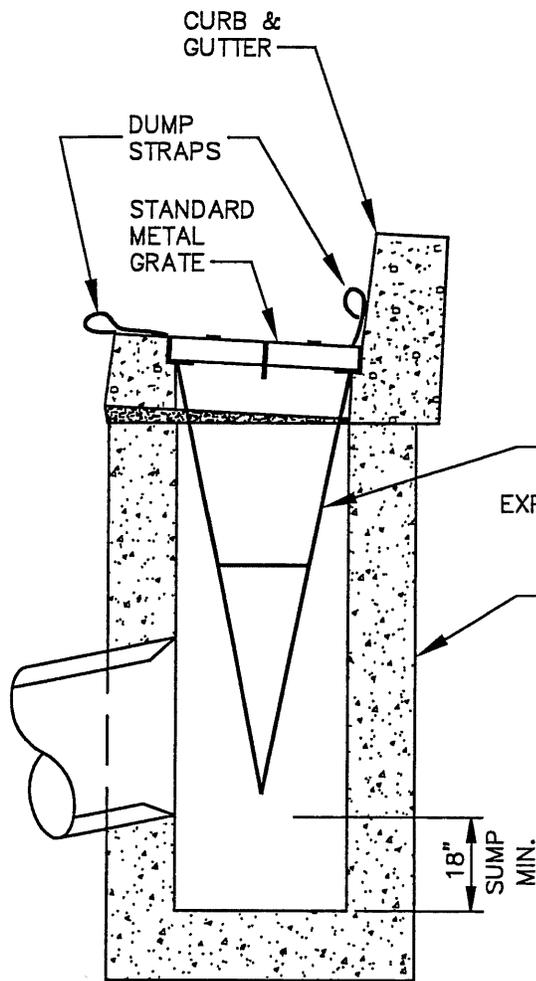


SECTION A-A

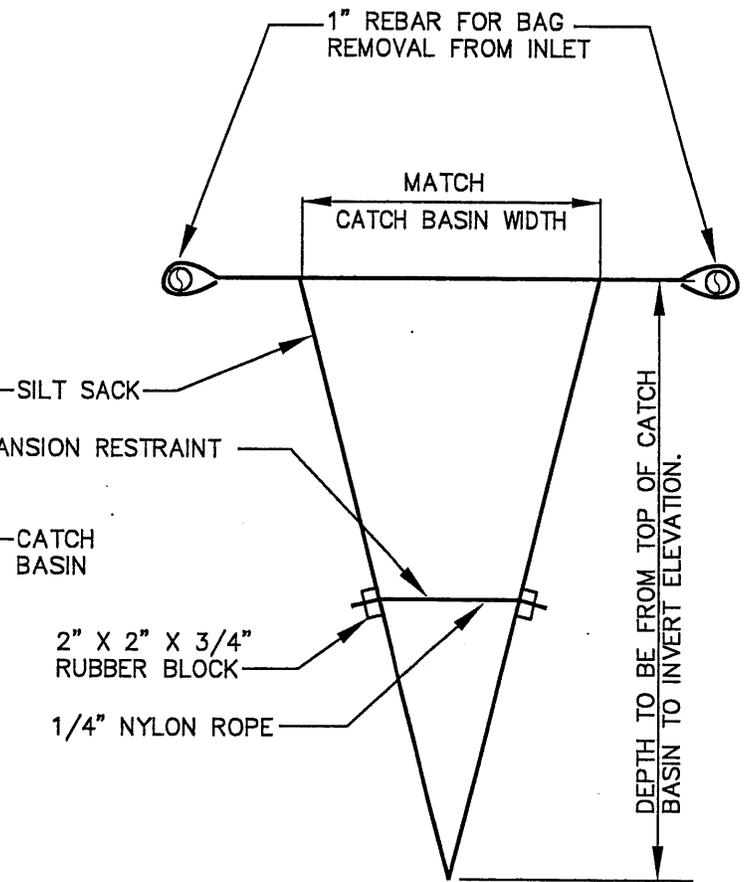
MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP-SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.
4. PT. 'A' SHALL BE 6" MIN. HIGHER THAN PT. 'B'.

LAST REVISION DATE: JULY 2015	JO # STANDARD
DITCH AND SWALE EROSION PROTECTION	
(NTS)	
SILVERTON, OR	DETAIL NO. 614



INSTALLATION DETAIL



BAG DETAIL

NOTES:

1. EMPTY SILT SACK AS NECESSARY.
2. SILTSACK SEDIMENT CONTROL DEVICE AS MANUFACTURED BY ACF ENVIRONMENTAL AND SUPPLIED BY ACF WEST (503) 771-5115 OR APPROVED EQUAL.

LAST REVISION DATE: JULY 2015	
SILT SACK INLET DETAIL	
(NTS)	
SILVERTON, OR	DETAIL NO. 615