

City of Gresham
Department of Environmental Services
1333 NW Eastman Parkway
Gresham, Oregon 97030-3813
503-618-2525
Fax 503-661-5927
www.greshamoregon.gov



STANDARD DETAIL MODIFICATION PROCEDURE

In the event it is necessary to modify any of the enclosed Standard Detail Drawings, please obtain the “BORDER FOR MODIFIED DETAILS” from the *Public Works Standards* CD and follow the directions as noted. Include the Drawing description at the bottom of the border.

Standard Details

Table of Contents

Drawing Number	WASTEWATER
301	Manhole, Standard (for 27" and lesser diameter pipes) – Wastewater & Stormwater
302	Manhole, Standard (for 30" and larger diameter pipes) – Wastewater & Stormwater
303	Manhole, Shallow (for 27" and lesser diameter pipes) – Wastewater & Stormwater
304	Manhole, Inside-drop, Standard – Wastewater & Stormwater
305	Manhole, Inside-drop, Shallow
306	Manhole, Cast-in-place – Wastewater & Stormwater
307	Manhole Frame, Suburban – Wastewater & Stormwater
308	Manhole Frame, Industrial
309	Manhole Frame, Waterproof & Tamperproof – Wastewater & Stormwater
310	Manhole Cover, Standard
311	Manhole Cover, Tamperproof
312	Manhole Cover, Waterproof
313	Manhole Step
314	Bedding & Backfill, Pipe Zone – Wastewater & Stormwater
315	Trench & Resurfacing
316	Lateral, Sewer
317	Tapping Into Existing Main for Sewer Lateral
318	Siamese Service Branch
319	Wastewater Connection (3 or 4 lots with private easements)
320	Cleanout, Standard
321	Anchor Wall, Sewer Pipe
322	Concrete Encasement, Sewer Pipe
323	Joint, Reinforced Concrete (T = 4 ⁵ / ₈ " and larger)
324	Joint, Reinforced Concrete Pipe (T = 4 ³ / ₈ " and larger)
325	Joint, Typical & Data Form

Drawing Number	STORMWATER
401A	Catch Basin (1)
401B	Catch Basin Section (1)
401C	Catch Basin Frame & Grate (1)
401D	Catch Basin, Double (1)
401E	Catch Basin (1) – with P-45 grate
401F	Catch Basin Frame, Modified (1) – with single P-45 grate
402A	Catch Basin (2)
402B	Catch Basin Section (2)
402C	Frame & Grate
403	Catch Basin, Non-grated
404A	Ditch Inlet – Type D
404B	Ditch Inlet Frame & Grate
405A	Inlet Manhole, Standard
405B	Inlet Manhole, Combination Curb Inlet
405C	Inlet Manhole Alternate Top
405D	Inlet Manhole – A, Non-grated
407	Manhole, Flow Control

**Drawing
Number**

STORMWATER (Continued)

408	Detention Pipe, Typical Closed
409	Sump System
410	Sump System & Sedimentation Manhole – typical retrofit installation
411	Ladder, Hanging Polypropylene
413A	Manhole Cover, Tamperproof
413B	Manhole Cover

**Drawing
Number**

WATER

501A	Fire Hydrant Assembly – standard
501B	Fire Hydrant Assembly Specifications – standard
502	Trench Section – standard
503	1” Water Service – standard
504A	2” Irrigation – standard (1½” – 2” meter)
504B	2” Domestic Service – standard – Without Irrigation (1½” – 2” meter)
504C	2” Domestic Service – standard – With or Without Irrigation (1½” – 2” meter)
505	Water Sampling Station – standard
506A	Air Valve Unit, Combination – standard
506B	Air Valve Notes, Combination – standard
507A	2” Blow-off Assembly – standard (for 4” & 6” waterlines)
507B	Blow-off, 4” & 6” – Permanent or Temporary
507C	Fill Point, 4” & 6” – Temporary – standard
508	Thrust Blocking, Horizontal
509	Thrust Blocking, Vertical
510	Straddle Block – standard
511	Gravity Sanitary Sewer Separation – standard
512	Symbols, Water Project
513	Valve Box – standard
514	Valve Box, Portland Style
515A	Hersey MCT2 Compound Private-side Meter Install (3”x3”, 4”x4”, & 6”x6”) – standard
515B	Hersey MCT2 Compound City of Gresham Meter Installation (3”x3”) – standard
515C	Hersey MCT2 Compound City of Gresham Meter Installation (4”x4” & 6”x6”) – standard
515D	Hersey MCT2 Compound Meter Specifications (3”x3”, 4”x4”, & 6”x6”) – standard
515E	Hersey MCT2 Compound Private Meter Installation (4”x2”, 6”x2”, & 8”x4”) – standard
515F	Hersey MCT2 Compound City of Gresham Meter Installation (4”x2”, 6”x3”, & 8”x4”) – standard
515G	Hersey MFM/MCT2 Compound Meter Specifications (4”x2”, 6”x3”, & 8”x4”) – standard
515H	Hersey Compound Meter Installation Notes - standard
515I	Ladder, for all Water Vaults, Galvanized, with Aluminum Extension - standard
516A	Backflow Assembly
516B	Backflow Assembly, Double-check Valve (detector)
516C	Backflow Assembly
516D	Backflow Assembly, Double-check Valve (detector)
516E	Backflow Assembly, Reduced Pressure
516F	Backflow Assembly Specifications
516G	Principle Assembly, Reduced Pressure, 3” & Larger
516H	Principle Small Assembly, Reduced Pressure, 2½” & Smaller
516I	Drainage Route Between Meter & Backflow Vaults

**Drawing
Number**

TRANSPORTATION

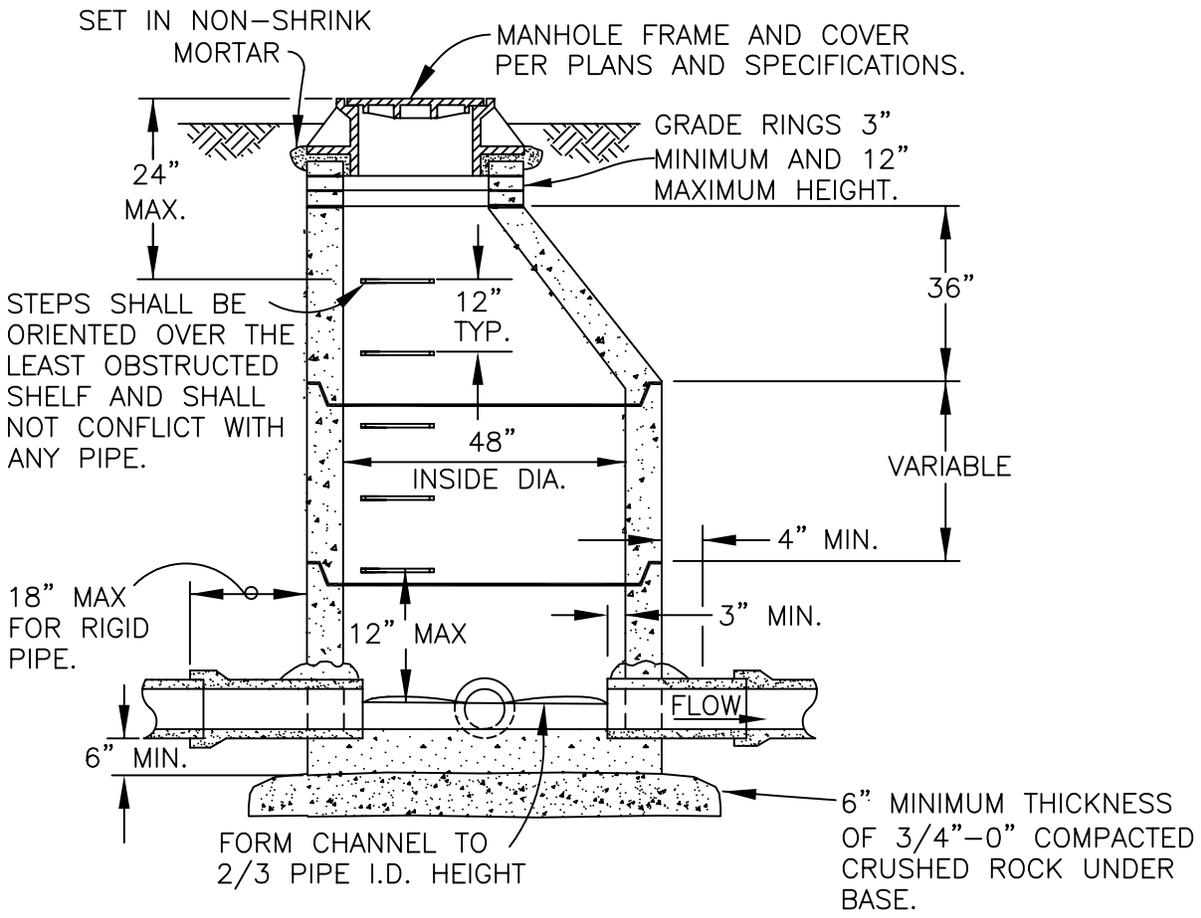
601	Utility Placement, Typical
602	Monolithic Curb & Gutter
603	Curb, Type “C”
604	Curb, Mountable
605	Access Road, Public Facility Heavy Vehicle
606	Access Road, Public Facility – Standard
607	Alley Section (15’ or 21’ ROW Width)
608	Access Street, Minor
609	Street Section, Local Lane
610	Street Section, Local Queuing
611	Street Section, Local Transitional
612	Street Section, Community
613	Street Section, Collector
614	Boulevard
615	Street Section, Arterial
616	Principal Arterial
617	Civic Neighborhood Local Street
618	Civic Neighborhood Collector Street
GS-1	Local Transitional or Queuing Green Street (50’ or 56’ Right-of-way)
GS-2	Sample Local Green Street Plan
GS-3	Connector or Community Green Street (72’ or 62’ Right-of-way)
GS-4	Green Neighborhood Connector
GS-5	Collector Green Street (80’ or 72’ Right-of-way)
GS-6	Sample Collector Green Street Plan
GS-7	Green Parkway (Arterial or Collector) (62’ or 60’ Right-of-way)
GS-8	Sample Green Parkway Plan
GS-9	Major/Minor Arterial Green Street (100’/78’ Right-of-way)
GS-10	Sample Arterial Green Street Plan
GS-11	Major/Minor Boulevard Green Street (111’/89’ Right-of-way)
GS-12	Sample Boulevard Green Street Plan
GS-13	Rain Garden Corner Bulbout
GS-14	Mid Block Bulbout Rain Garden
GS-15	Rain Garden Planting Detail
GS-16	Green Street Rain Garden Details
GS-17	Green Street Bulbout Driveway Detail
GS-18	Large Tree Planting Detail
GS-19	Rain Garden Curb Opening
DT-1	Downtown Urban Boulevard
DT-2	Downtown Urban Commercial Street
DT-3	Downtown Urban Residential Street
DT-4	Downtown Shared Green Street
DT-5	Downtown Main – Powell to 4 th
DT-6	Downtown Stanley Avenue
DT-7	Downtown Third Street – Main to Kelly
DT-8	Downtown Cleveland Avenue
619	Cul-de-sac, Standard
620	Branch Turnaround
621	Driveway Approach, Residential
622	Driveway Approach, Commercial
623	Driveway Approach, Curb Return
624	Sidewalk, Typical
625	Sidewalk Ramp, Parallel
626	Sidewalk Ramp, Perpendicular

627	Curb Extension, Downtown
628	Crosswalk, Concrete
629	Crosswalk, Paver
630	Accessway, Pedestrian/Bicycle
631	Bollard
632	End-of-road Markers
633	Barricade, Street
634	Monument Box, Standard
635	Streetlight, Standard
636	Lighting Pole, Decorative
637	Streetlight, Arterial
638	Streetlight, Architectural
639	Mast Arm
640	Signpost, Standard
641	Barricade, End of Sidewalk
642	Tree Well
643	Overlay Notching
644	Manhole Frame Adjustment
645	PCC Trench Restoration
646	Speed Bump, Mountable 14' Wide
647	Speed Hump, 22' Wide

**Drawing
Number**

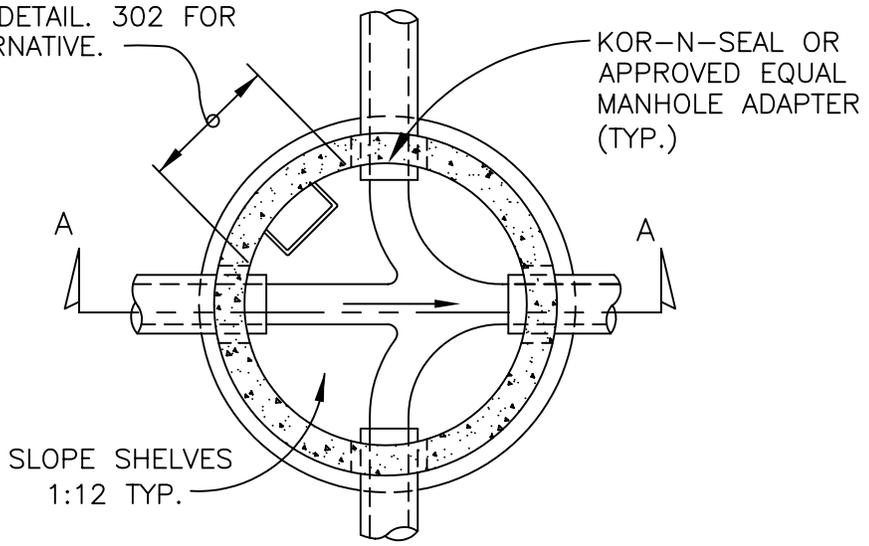
PARKS

701	Trash Receptacle
-----	------------------



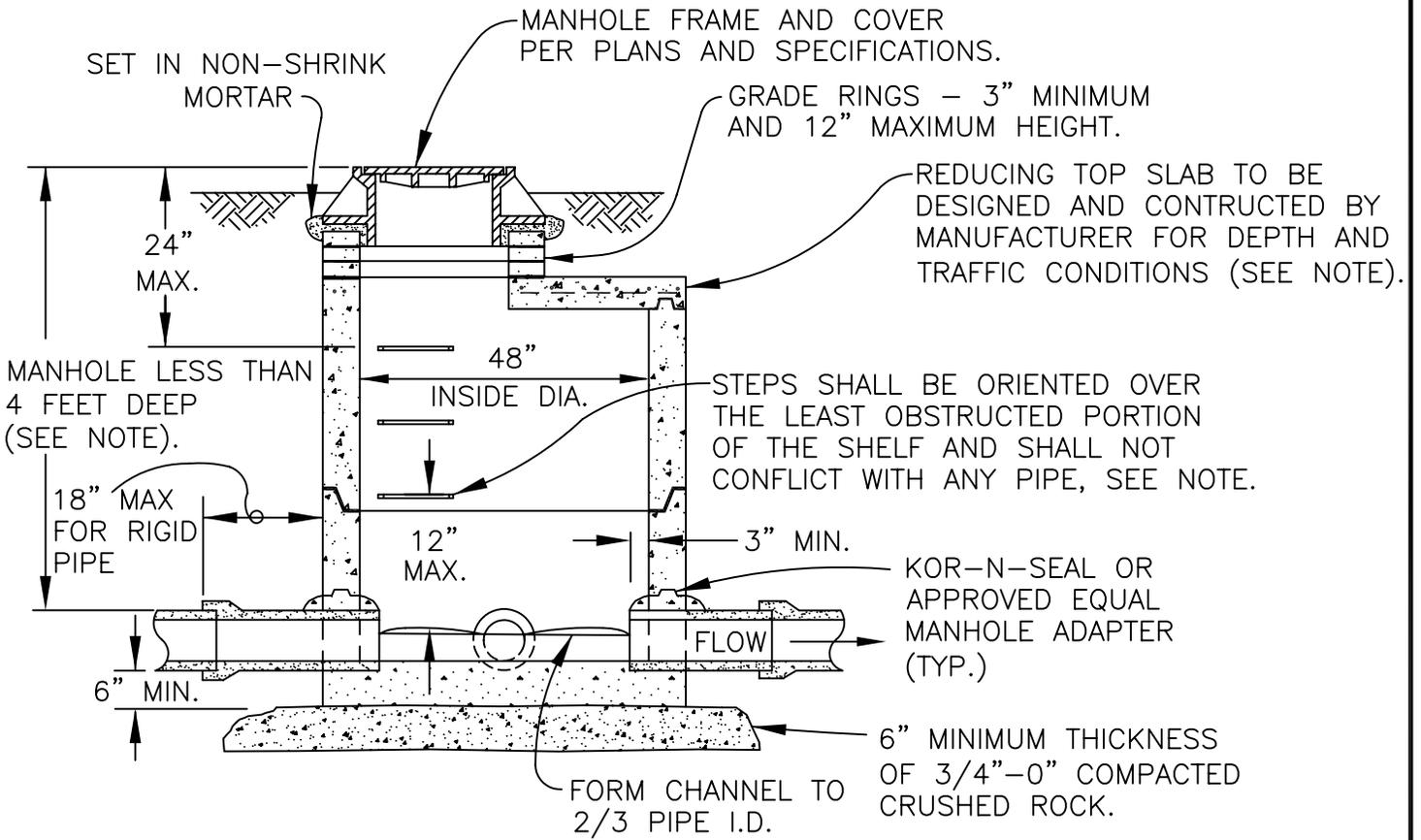
SECTION A-A

MINIMUM OF 9" PRECAST WALL BETWEEN PIPE CORES. SEE DETAIL. 302 FOR ALTERNATIVE.



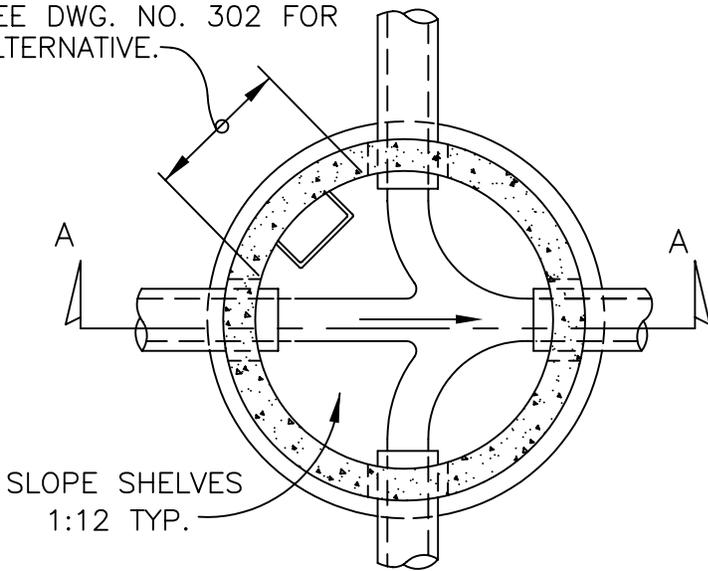
PLAN

DRAWN: DLS			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 WASTEWATER & STORMWATER STANDARD MANHOLE FOR 27" and LESSER DIA. PIPES	SCALE NTS
DIV.				DATE JAN 1, 2006
REV.	DATE	APPR.		APPR. <i>[Signature]</i>
				DWG. NO. 301



SECTION A-A

MINIMUM OF 9" PRECAST WALL BETWEEN PIPE CORES. SEE DWG. NO. 302 FOR ALTERNATIVE.



PLAN

NOTE:

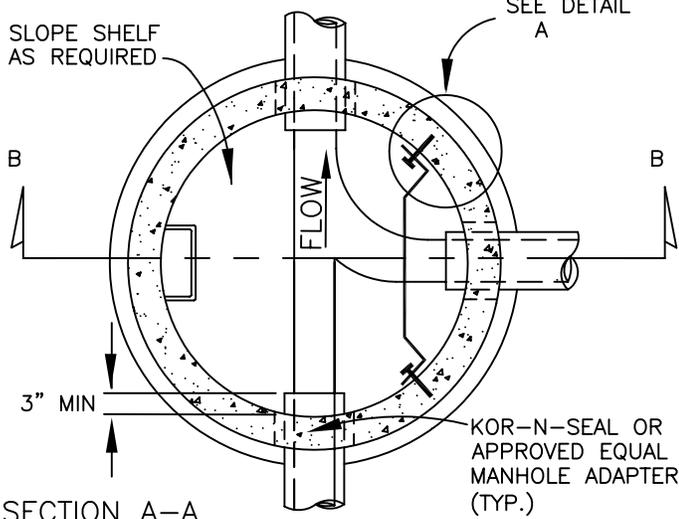
FOR MANHOLES LESS THAN 2' DEEP A CONCENTRIC CONE SHALL BE USED (NOT SHOWN), AND NO STEPS SHALL BE INSTALLED.

DRAWN DLS		
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
**WASTEWATER & STORMWATER SHALLOW MANHOLE
 FOR 27" and LESSER DIA. PIPES**

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	303

SLOPE SHELF AS REQUIRED



SECTION A-A

NOTES:

NO PARTITION SHALL BE INSTALLED IN STORMWATER MANHOLES.

PARTITION MATERIAL SHALL BE 1/2" H.D.P.E (TYP. PER ASSOCIATED PIPE), OR 1/8" FIBERGLASS (TYP. PER PIPE INC.) OR 16 GA. ALUMINUM OR 18 GA. STAINLESS STEEL. FIBERGLASS SHALL BE 3 OR 4 MAT LAYUP PER MANUFACTURERS' RECOMMENDATIONS.

MAXIMUM FLOW IS 3 C.F.S. FOR INSIDE DROP MANHOLE. IF GREATER THAN 3 C.F.S. NO DROP IS ALLOWED.

FOR A 48" DIA. MANHOLE THE MAXIMUM INCOMING PIPE DIAMETER IS 15". A LARGER DIAMETER INCOMING PIPE WILL REQUIRE A SPECIAL DESIGN.

STANDARD TYPE MANHOLE SHOWN. FLATTOP MANHOLE SIMILAR.

1/2" Ø SELF TAPPING CONCRETE ANCHORS, PHILLIPS S-12 OR APPROVED EQUAL, W/ 1/2" X 1-1/2" Ø Lg. STAINLESS STEEL BOLT & STAINLESS STEEL LOCK WASHER.

MANHOLE FRAME AND COVER AS SPECIFIED.

STANDARD MANHOLE STEPS SHALL BE ORIENTED OVER THE LEAST OBSTRUCTED PORTION OF THE SHELF AND SHALL NOT CONFLICT WITH ANY PIPE OR APPURTENANCE.

SEE STANDARD MANHOLE DRAWINGS.

DEFLECTION PLATE HEIGHT + 2" CLEAR.

STAINLESS STEEL CHAIN 200LBS CAPACITY, SLACK WHEN DEFLECTION PLATE IS IN PLACE.

CLASS B PIPE ZONE

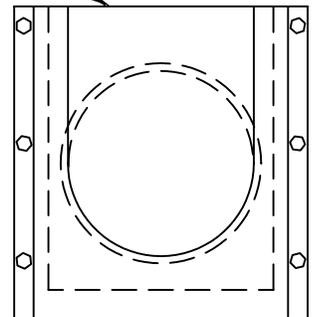
CDF REQUIRED UP TO BEDDING.

6" MIN.

FORMED CHANNEL @ 1:12 SLOPE
2" MIN.

REMOVABLE DEFLECTION PLATE (MIN. 12" WIDTH). MATERIAL TO BE STAINLESS STEEL, ALUMINUM, FIBERGLASS OR H.D.P.E. PLATE. TOP PARTITION TO BE CUT SO THAT BOTTOM OF CUT MATCHES THE INVERT OF THE INCOMING PIPE. THE RADIUS OF THE CUT SHOULD MATCH THAT OF THE INSIDE OF THE INCOMING PIPE.

DETAIL A (PARTITION ATTACHMENT)



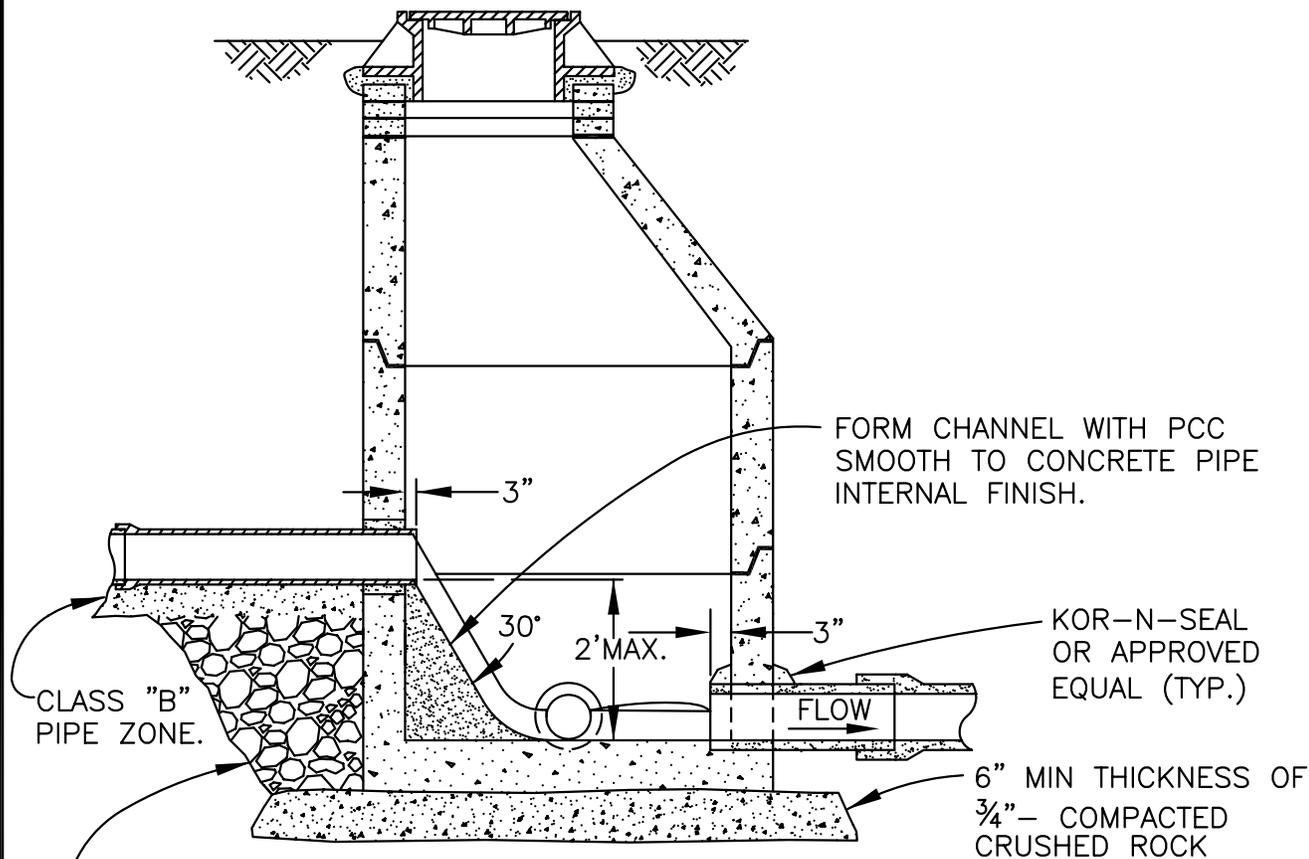
SECTION C-C

SECTION B-B

DRAWN DLS		
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
WASTEWATER AND STORMWATER
STANDARD INSIDE DROP MANHOLE

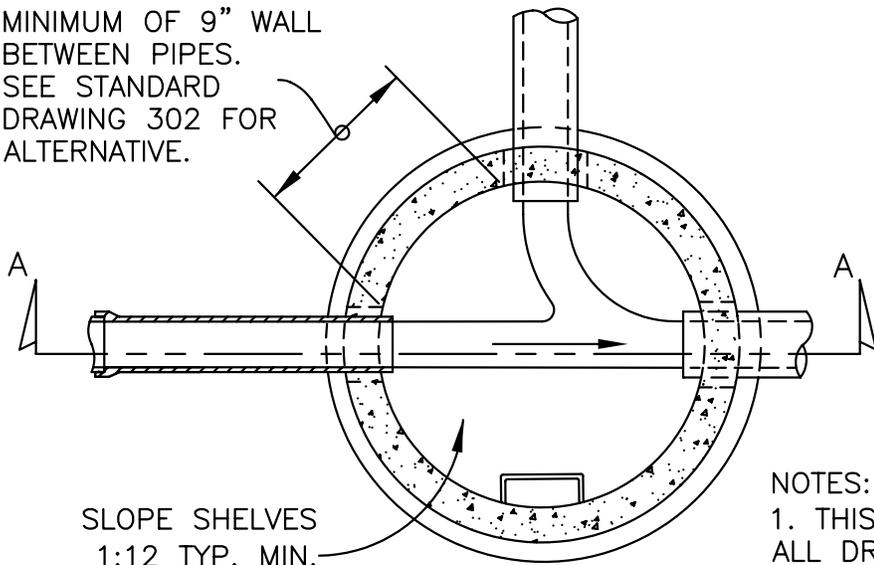
SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	304



SECTION A-A

IMPORTED SELECT (CRUSHED AGGREGATE) BACKFILL COMPACTED TO 95% M.D.D. PER AASHTO T-180, OR C.D.F. AS REQUIRED.

MINIMUM OF 9" WALL BETWEEN PIPES. SEE STANDARD DRAWING 302 FOR ALTERNATIVE.



PARTIAL TOP VIEW

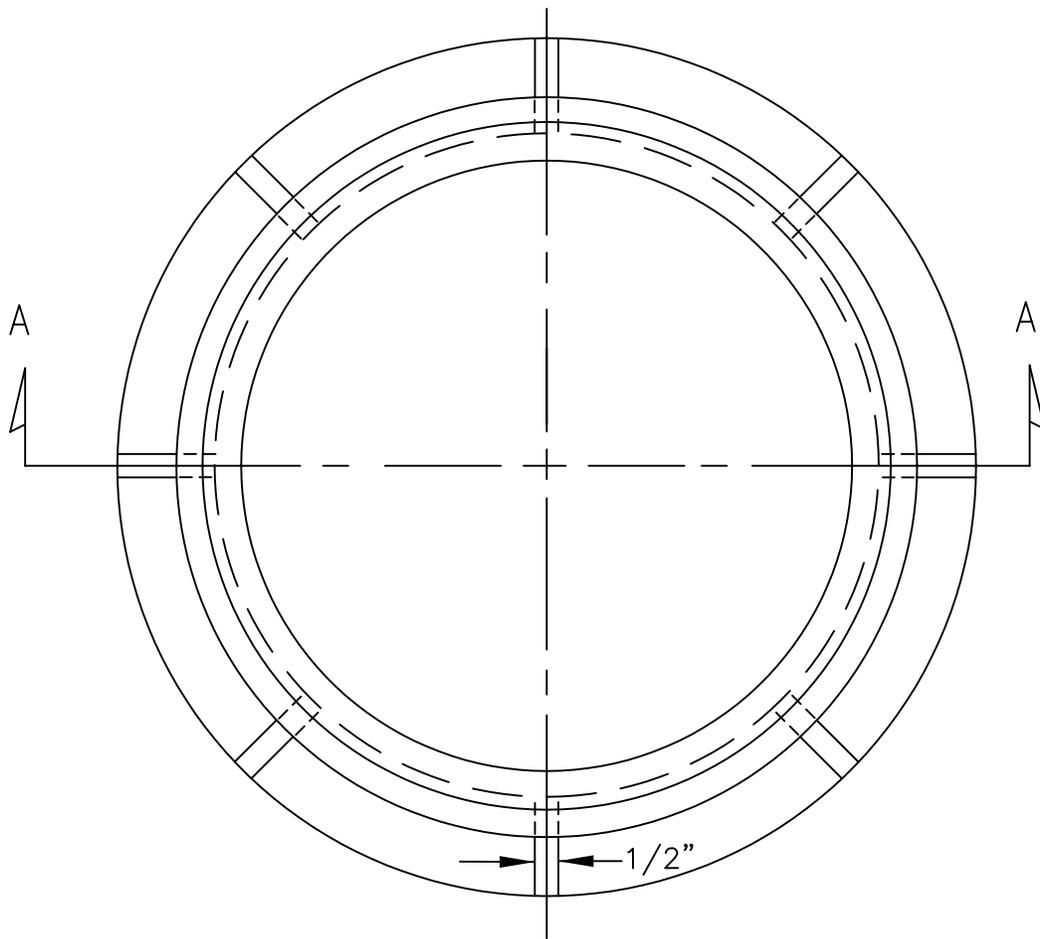
- NOTES:
1. THIS DESIGN TO BE USED FOR ALL DROPS 2 FEET AND LESS.
 2. SEE DETAILS, 301,302 OR 303 FOR OTHER DIMENSIONS AND NOTES.

DRAWN		DLS	
DIV.			
REV.	DATE	APPR.	

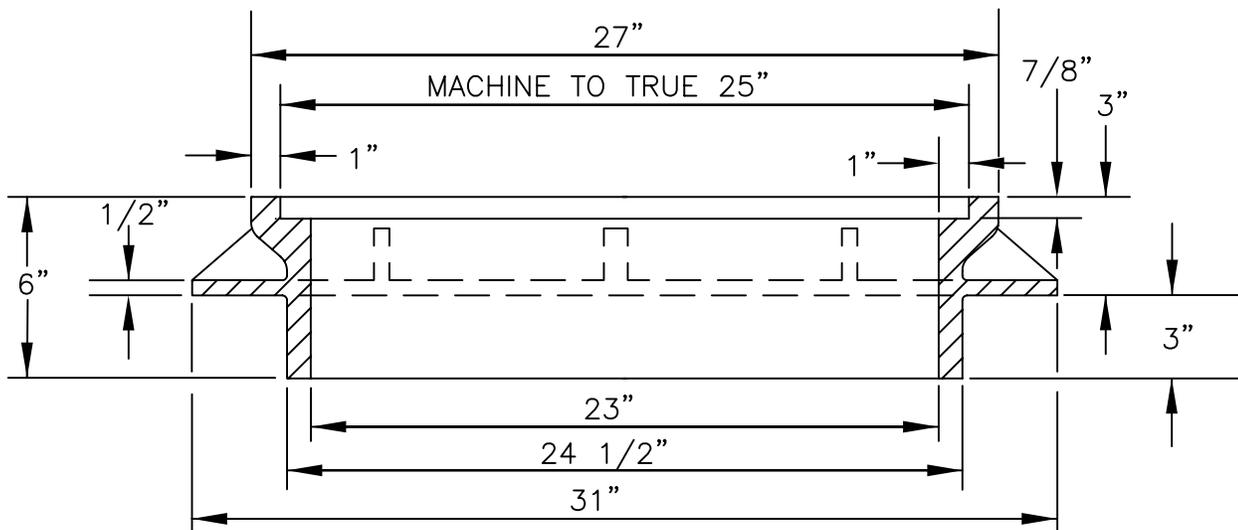
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

WASTEWATER SHALLOW INSIDE DROP MANHOLE

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	305



PLAN SECTION



SECTION A-A

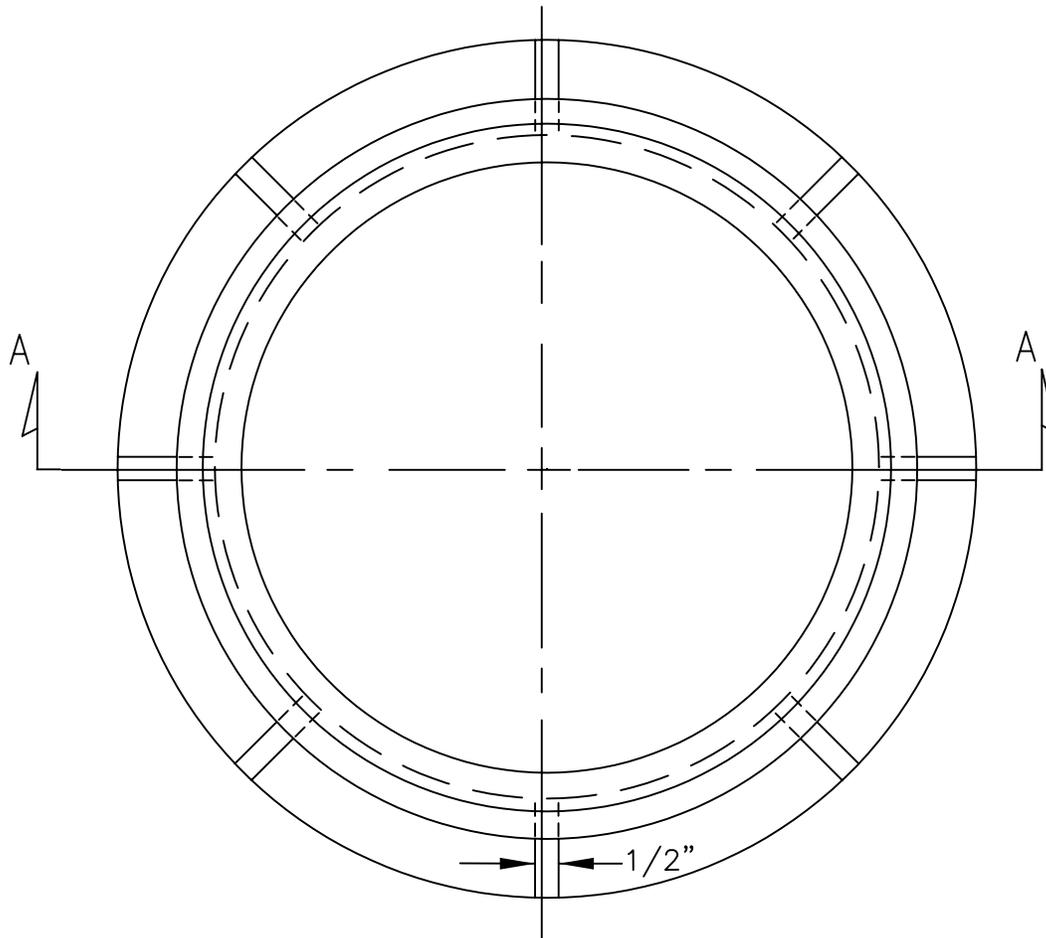
NOTES:

1. THIS MANHOLE FRAME MAY BE USED ONLY FOR LOCAL ROAD LOCATIONS.
2. MATERIAL TO BE GRAY CAST IRON ASTM A-48, CLASS 30. APPROX. WEIGHT = 172 LBS.

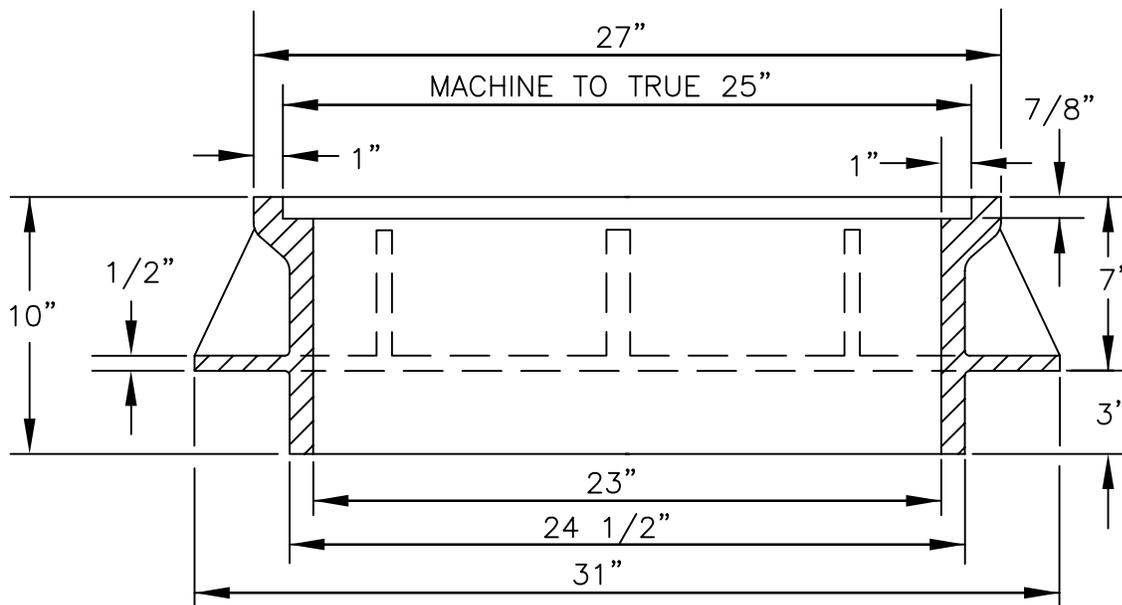
DRAWN DLS		
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
WASTEWATER AND STORMWATER
SUBURBAN MANHOLE FRAME

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	307



PLAN



SECTION A-A

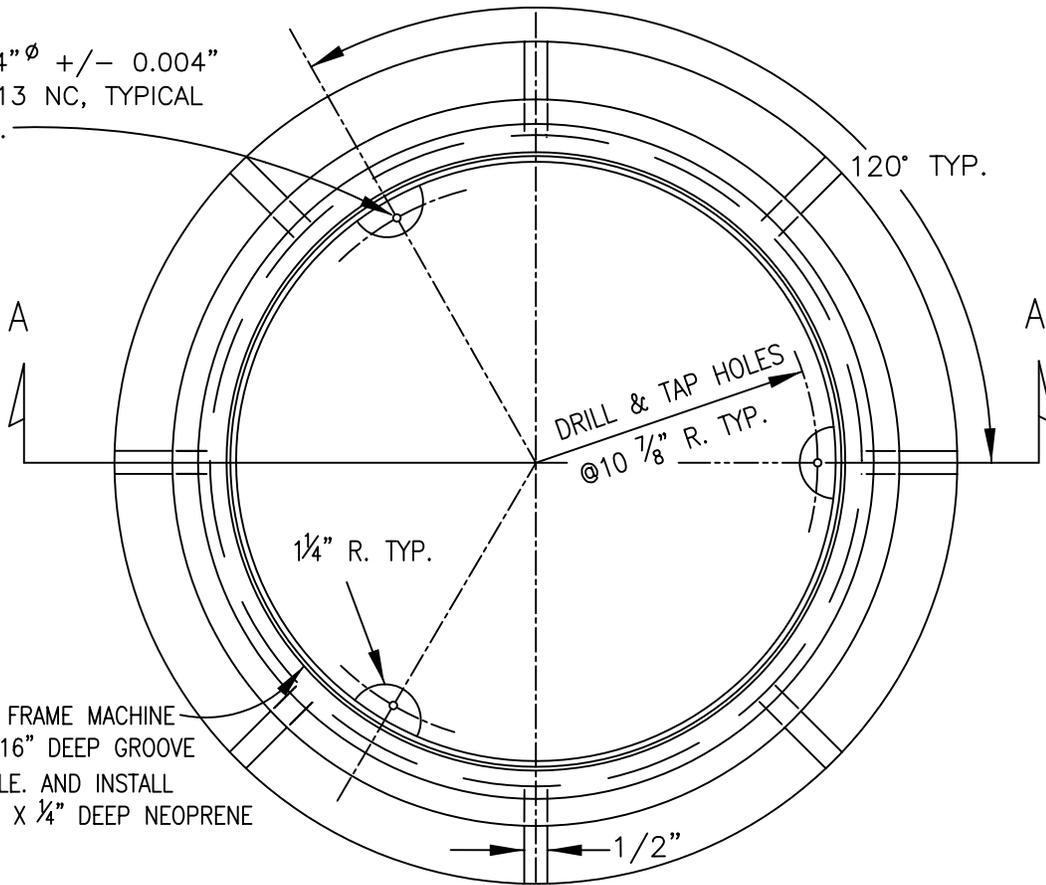
NOTE:
 1. MATERIAL TO BE GRAY CAST
 IRON ASTM-48, CLASS 30,
 APPROXIMATE WEIGHT = 237 LBS.

DRAWN		DLS
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
INDUSTRIAL MANHOLE FRAME

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	308

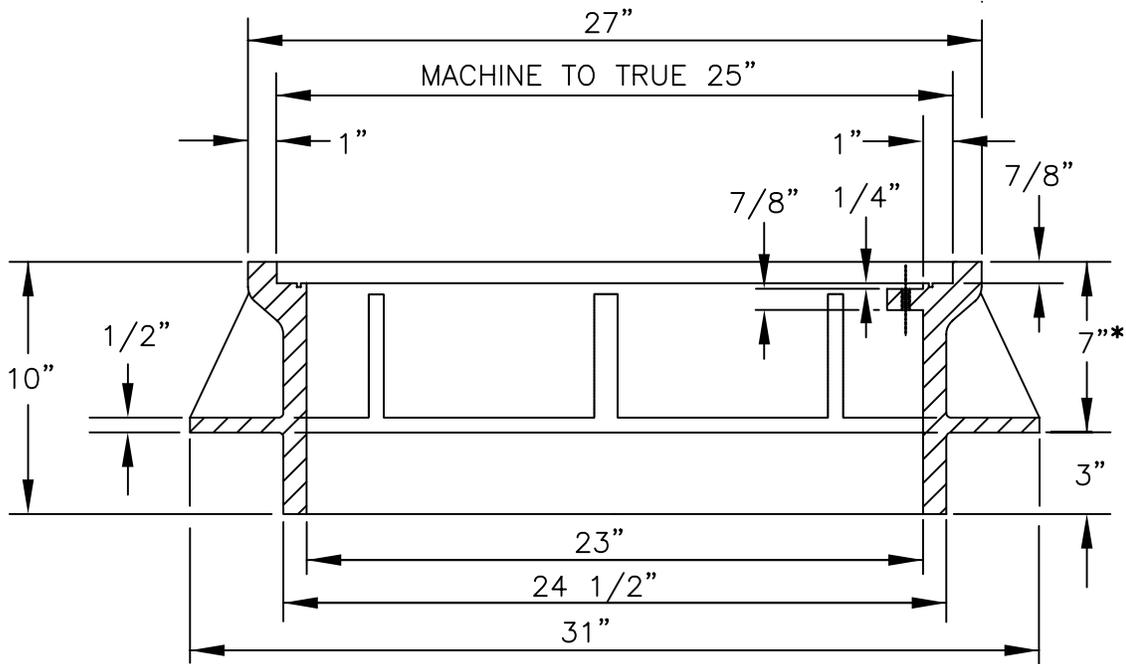
DRILL $0.434'' \phi \pm 0.004''$
 TAP $1/2''-13$ NC, TYPICAL
 (3) PLACES.



FOR WATERPROOF FRAME MACHINE
 $9/32'' \phi$ WIDE x $3/16''$ DEEP GROOVE
 ON $23 3/4''$ I.D. CIRCLE. AND INSTALL
 $23 3/4''$ I.D., $1/4''$ WIDE x $1/4''$ DEEP NEOPRENE
 GASKET.

PLAN

* SUBURBAN STYLE DIMENSIONS MAY
 BE USED FOR LOCAL ROAD INSTALLATION



SECTION A-A

NOTE:

1. MATERIAL TO BE GRAY CAST IRON ASTM A-48, CLASS 30. APPROXIMATE WEIGHT = 237 (INDUSTRIAL) AND APPROXIMATE WEIGHT = 172 LBS +/- (SUBURBAN).

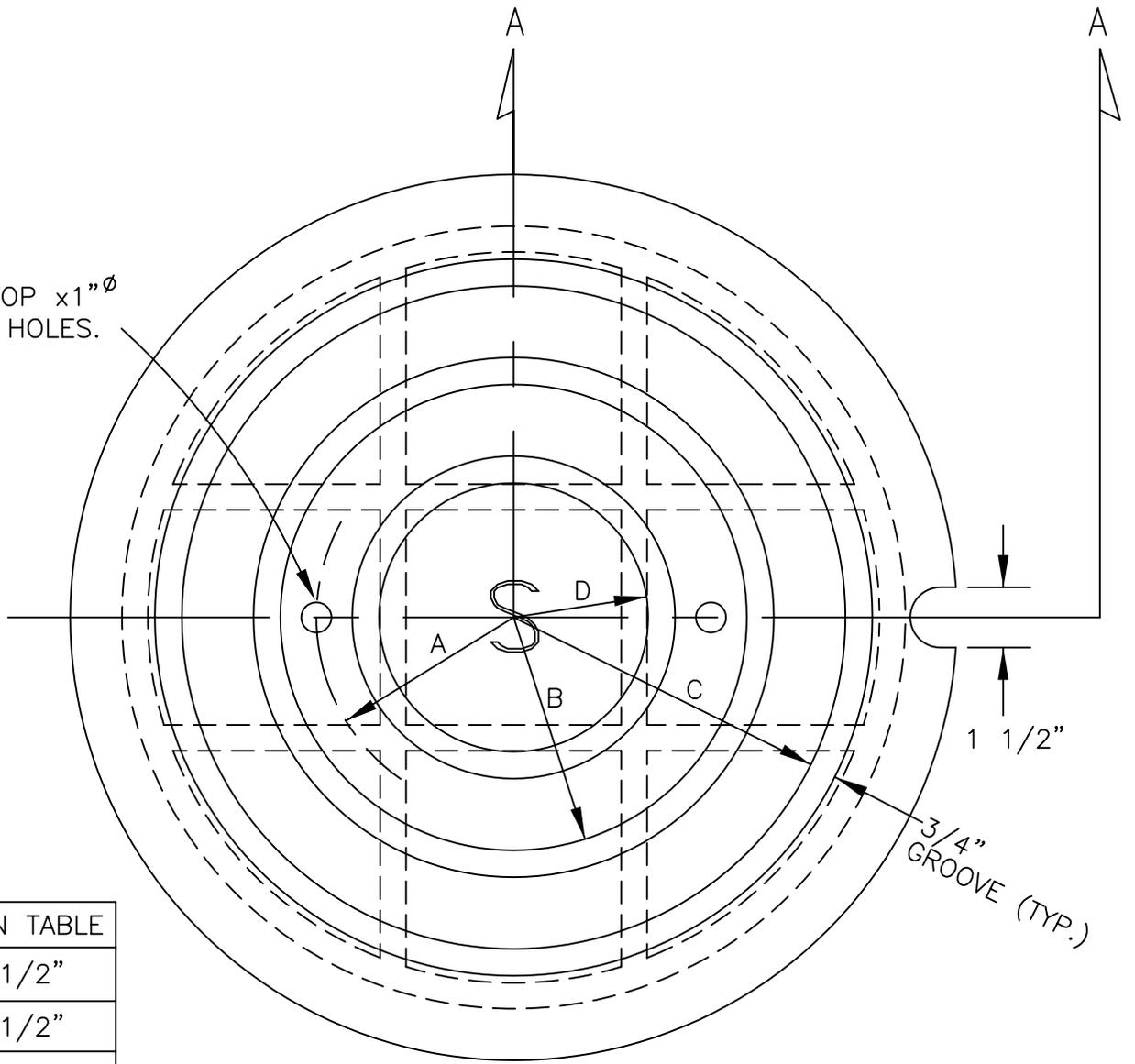
2. ONE BOLT DOWN TAB MUST BE ORIENTED DIRECTLY OVER CENTER OF MANHOLE STEPS

DRAWN		DLS	
DIV.			
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	
WASTEWATER & STORMWATER WATERPROOF & TAMPERPROOF MANHOLE FRAME	

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	309

3/4"Ø TOP x 1"Ø
BOTTOM HOLES.

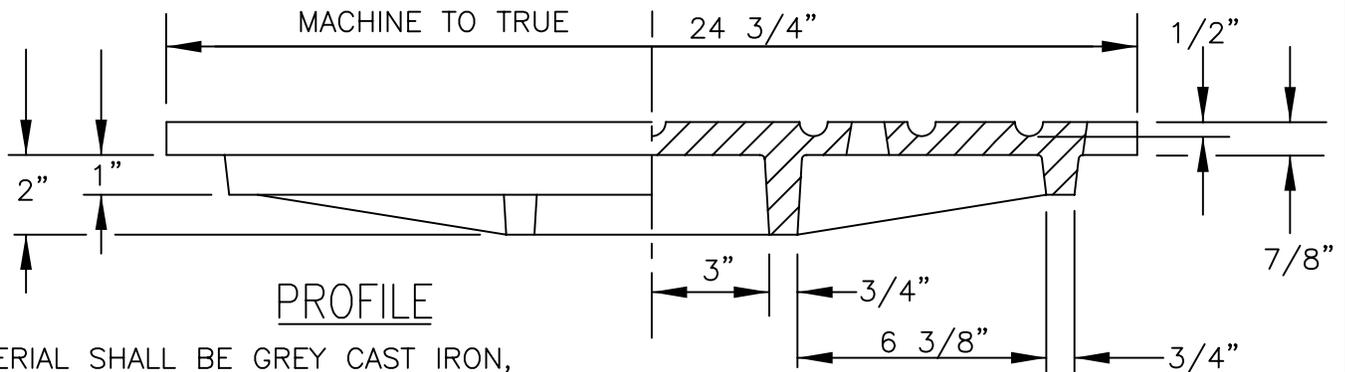


1 1/2"

3/4" GROOVE (TYP.)

DIMENSION TABLE	
A	5 1/2"
B	6 1/2"
C	9 1/4"
D	3 3/4"

PLAN



PROFILE

SECTION A-A

NOTES:
1. MATERIAL SHALL BE GREY CAST IRON,
ASTM A- 48, CLASS 30.
APPROXIMATE WT. = 139 lbs.

2. THESE COVERS TO BE USED FOR
IN-ROAD LOCATIONS ONLY.

DRAWN		DLS	
DIV.			
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD WASTEWATER
MANHOLE COVER

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	310

DRILL 5/8" ϕ HOLE
COUNTERBORE 1 7/16" ϕ
1/2" DEEP (TYP)

3/4" ϕ TOP x 1" ϕ
BOTTOM HOLES

1 1/4" RADIUS
(TYP.)

120° (TYP.)

DRILL & TAP HOLE

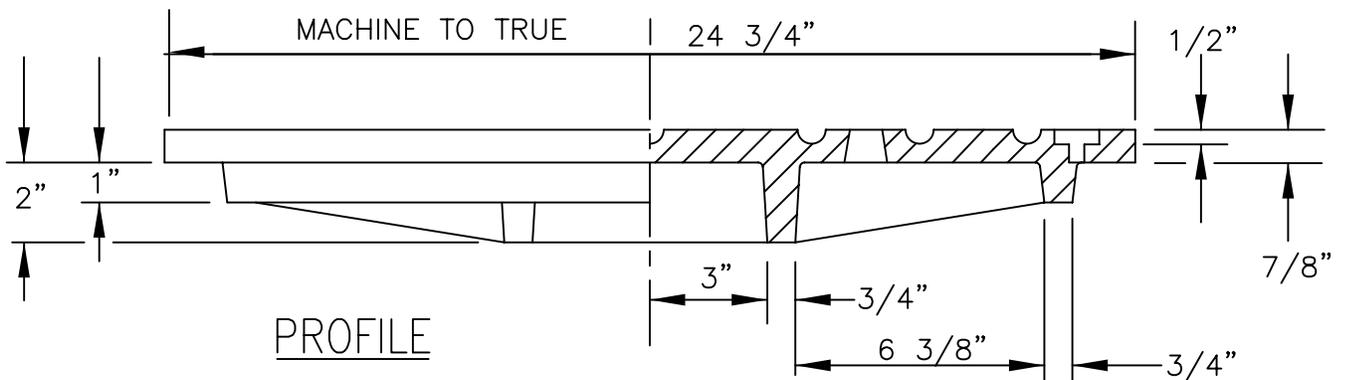
1 1/2"
3/4" GROOVE (TYP.)

DIMENSION TABLE	
A	5 1/2"
B	6 1/2"
C	9 1/4"
D	3 3/4"
E	10 7/8"

1/2" -13 NC x 1 1/4" STAINLESS
STEEL HEX HEAD CAP SCREW W/ 1 1/4"
OD x 3/32" THK. 8-18 STAINLESS STEEL
WASHER & 3/32" NEOPRENE WASHER. (3)
EA. REQUIRED.

PLAN

LOCKDOWN DETAIL



PROFILE

SECTION A-A

NOTE:

1. MATERIAL SHALL BE GREY CAST IRON, ASTM A-48,
CLASS 30. APPROXIMATE WT. = 139 lbs.

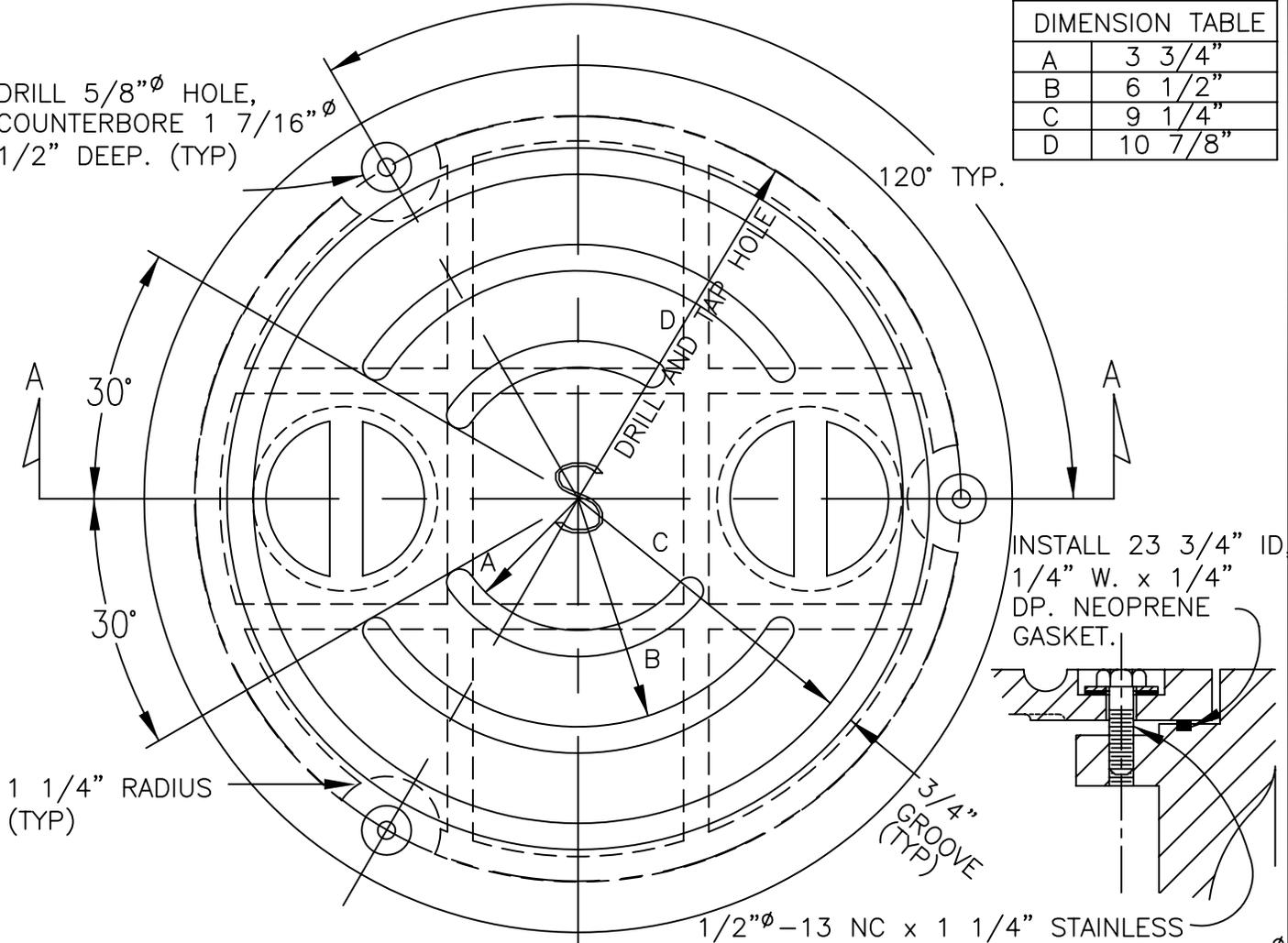
DRAWN		DLS
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
WASTEWATER MANHOLE
TAMPERPROOF COVER

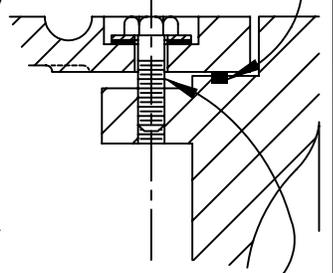
SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	311

DIMENSION TABLE	
A	3 3/4"
B	6 1/2"
C	9 1/4"
D	10 7/8"

DRILL 5/8"Ø HOLE,
COUNTERBORE 1 7/16"Ø
1/2" DEEP. (TYP)



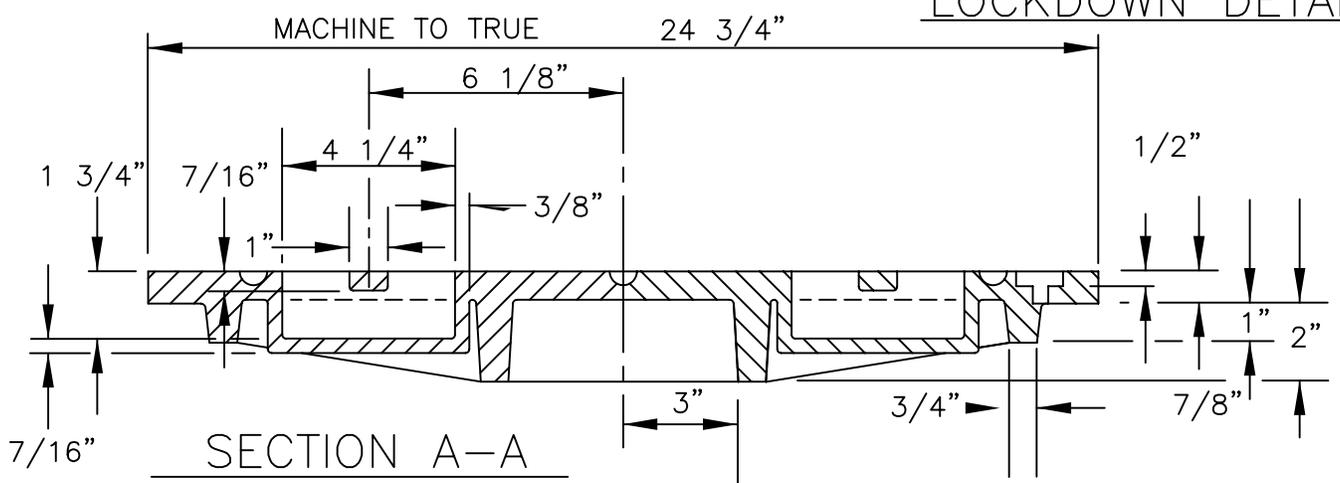
INSTALL 23 3/4" ID
1/4" W. x 1/4"
DP. NEOPRENE
GASKET.



1/2"Ø-13 NC x 1 1/4" STAINLESS
STEEL HEX HEAD CAP SCREW W/ 1 1/4"Ø
OD x 3/32" THK. 8-18 STAINLESS STEEL
WASHER & 3/32" NEOPRENE WASHER. (3)
EA. REQUIRED.

PLAN

LOCKDOWN DETAIL

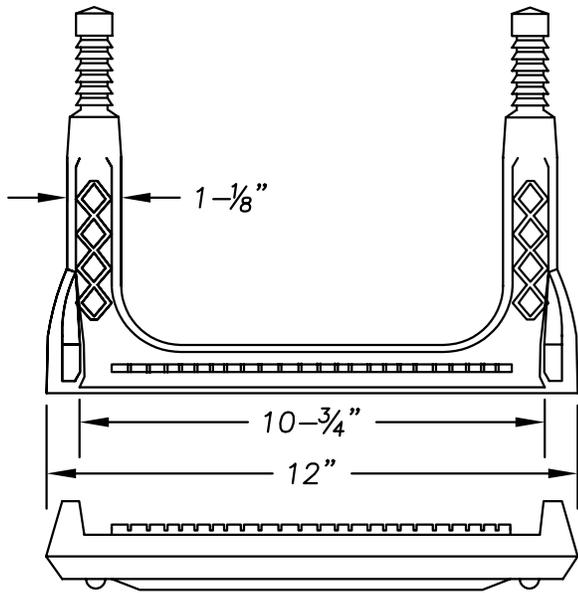


SECTION A-A

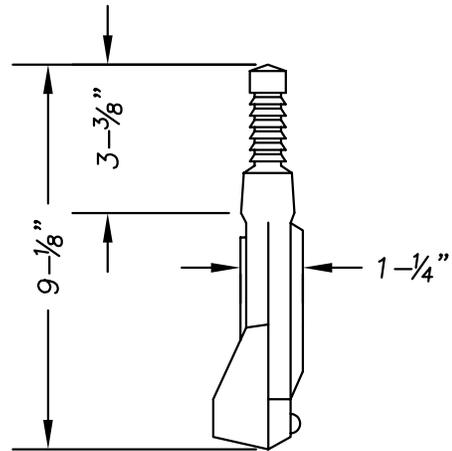
NOTES:

1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A-48, CLASS 30. APPROXIMATE Wt. = 139 lbs

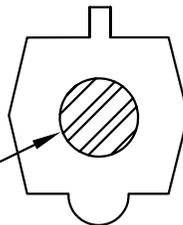
DRAWN DLS			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE NTS
DIV.				DATE JAN 1, 2006
REV.	DATE	APPR.	WASTEWATER WATERPROOF MANHOLE COVER	APPR. <i>[Signature]</i>
				DWG. NO. 312



COPOLYMER POLYPROPYLENE PLASTIC



1/2" GRADE 60 REINFORCEMENT



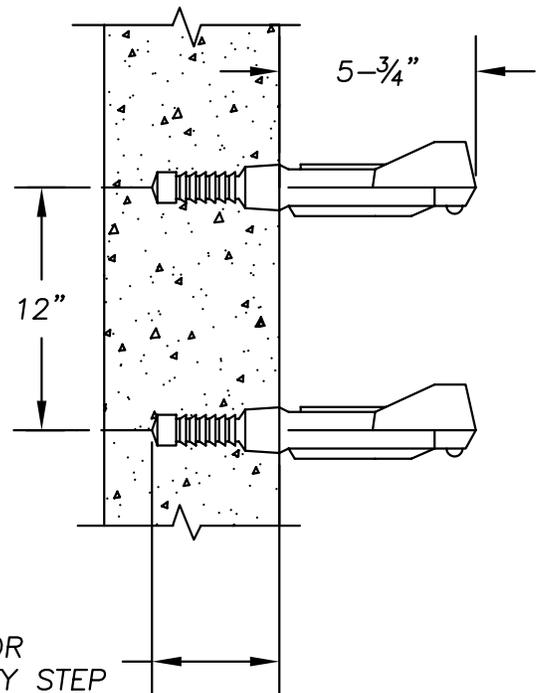
NOTE:

MANHOLE STEPS MUST BE TIGHT AND FIRMLY EMBEDDED. THEY MUST ALSO MEET THE ASTM TEST FOR WITHSTANDING PULLING OUT.

MATERIALS:

PLASTIC:

MUST CONFORM WITH ASTM C-478.
 STEEL REINFORCING BAR MINIMUM 1/2" GRADE 60 MEETING REQUIREMENTS OF ASTM A-615 ENCAPSULATED WITH INJECTION MOLDED COPOLYMER POLYPROPYLENE WITH SERRATED SURFACES.



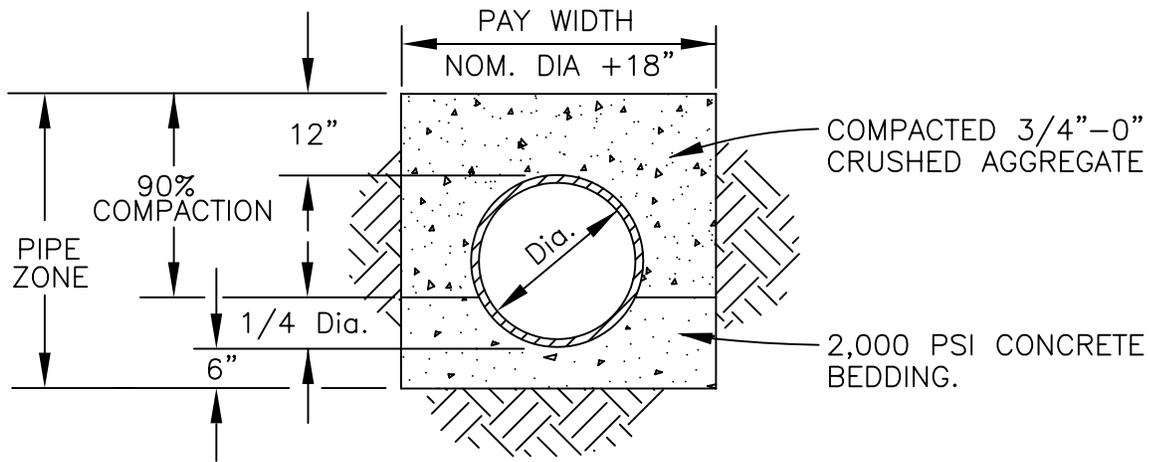
3-3/8" FOR PLASTIC SAFETY STEP

DRAWN: TNP		
DIV. STORMWATER/WASTEWATER		
REV.	DATE	APPR.

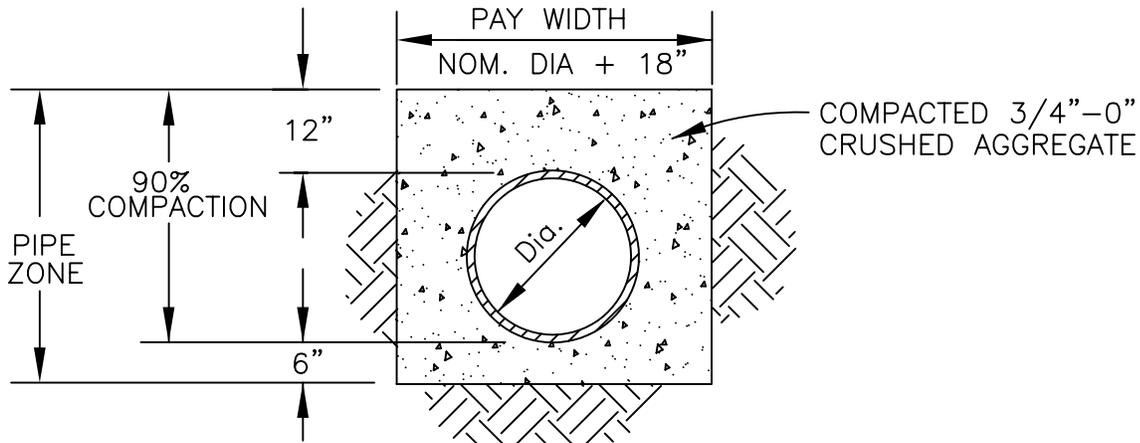
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

MANHOE STEP DETAIL

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	313



CLASS A



CLASS B

NOTE:

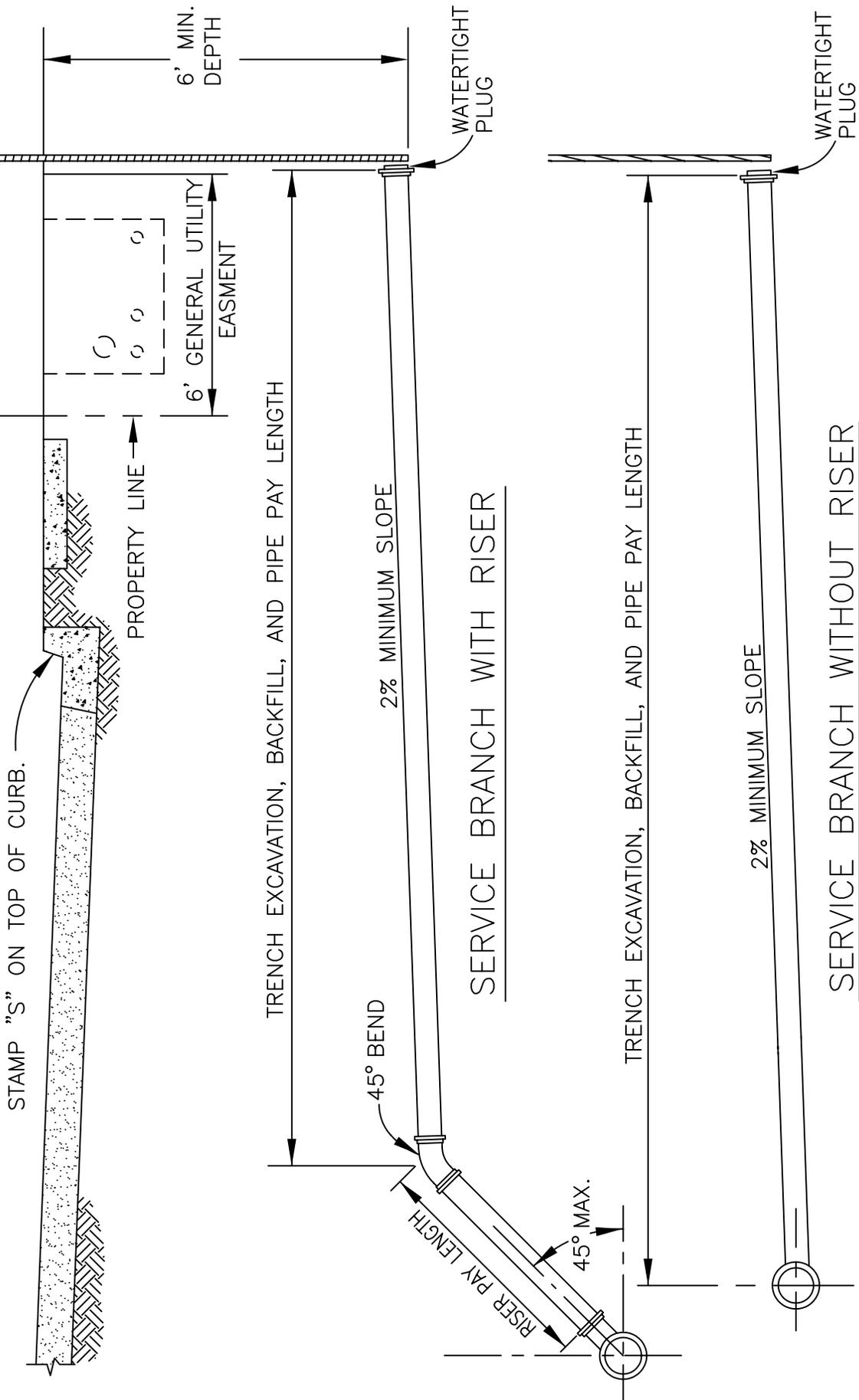
1. WHERE REQUIRED BY THE ENGINEER OF RECORD OR THE CITY, GRANULAR TRENCH STABILIZATION SHALL BE PLACED PRIOR TO THE PIPE ZONE MATERIAL. SIZE AND DEPTH OF TRENCH STABILIZATION PER SOIL CONDITIONS
2. PIPE ZONE MATERIAL SHALL BE COMPACTED TO 90% OF AASHTO - 180
3. PIPE ZONE MATERIAL SHALL BE COMPACTED AS SPECIFIED PRIOR TO BACKFILLING THE REMAINDER OF THE TRENCH.

DRAWN DLS		
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
WASTEWATER AND STORMWATER
PIPE ZONE BEDDING and BACKFILL

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	314

2" x 4" STAKE FROM INVERT TO 2' ABOVE EXISTING GRADE. STAKE SHALL BE CONTINUOUS AND REMAIN VERTICAL AFTER BACKFILLING. END SHALL BE PAINTED WHITE. SEE NOTE 2.

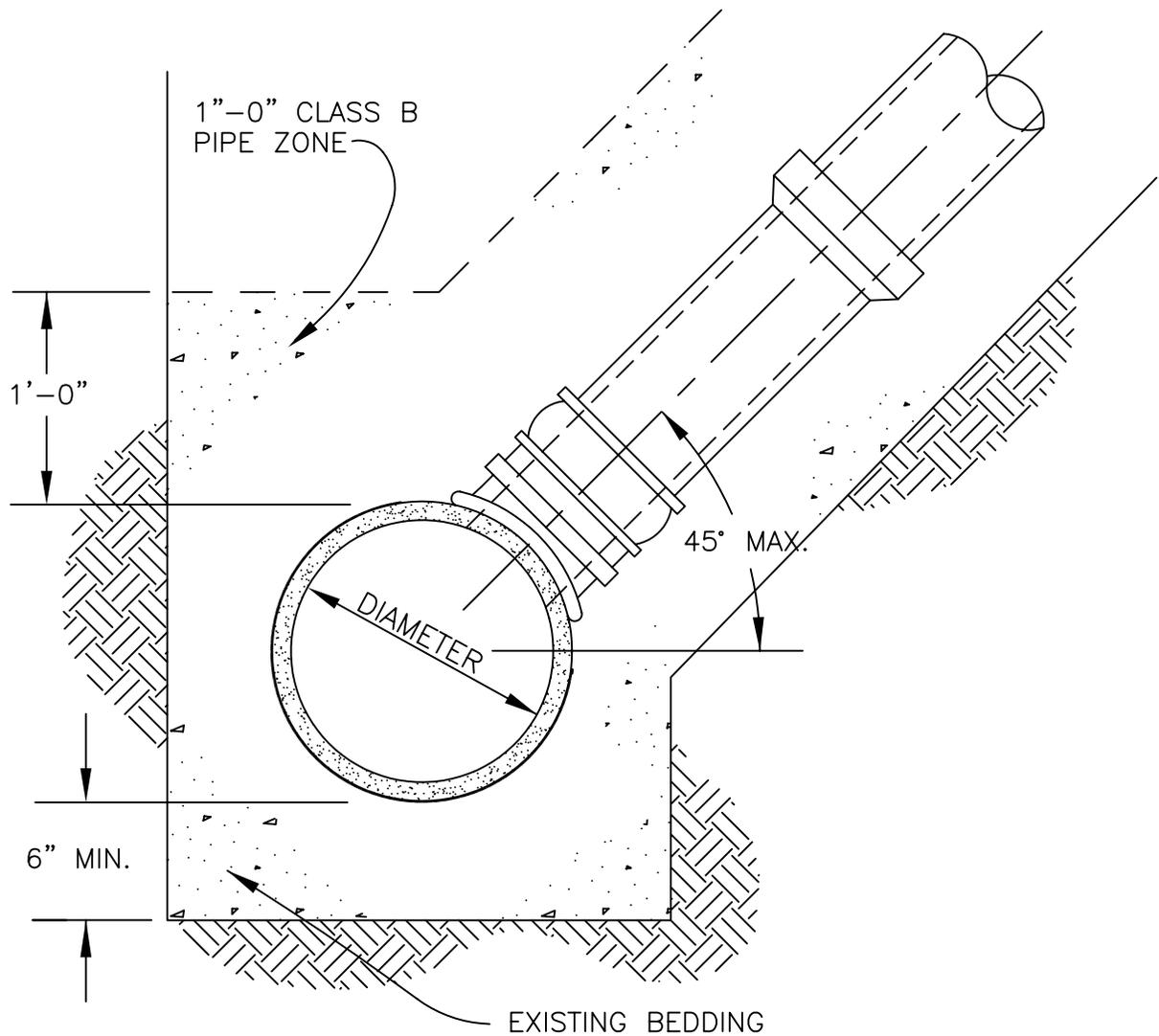


NOTES:
 1. SERVICE SHALL NOT BE BACKFILLED PRIOR TO INSPECTION.
 2. GREEN MAGNETIC TAPE WITH "WASTEWATER" IN RED LETTERS SHALL BE WRAPPED AROUND THE PLUG AT THE END OF THE SEWER LATERAL AND BROUGHT TO THE SURFACE WRAPPED AROUND THE 2" X 4" MARKER

DRAWN		DLS	
DIV.			
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
SEWER LATERAL

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	316



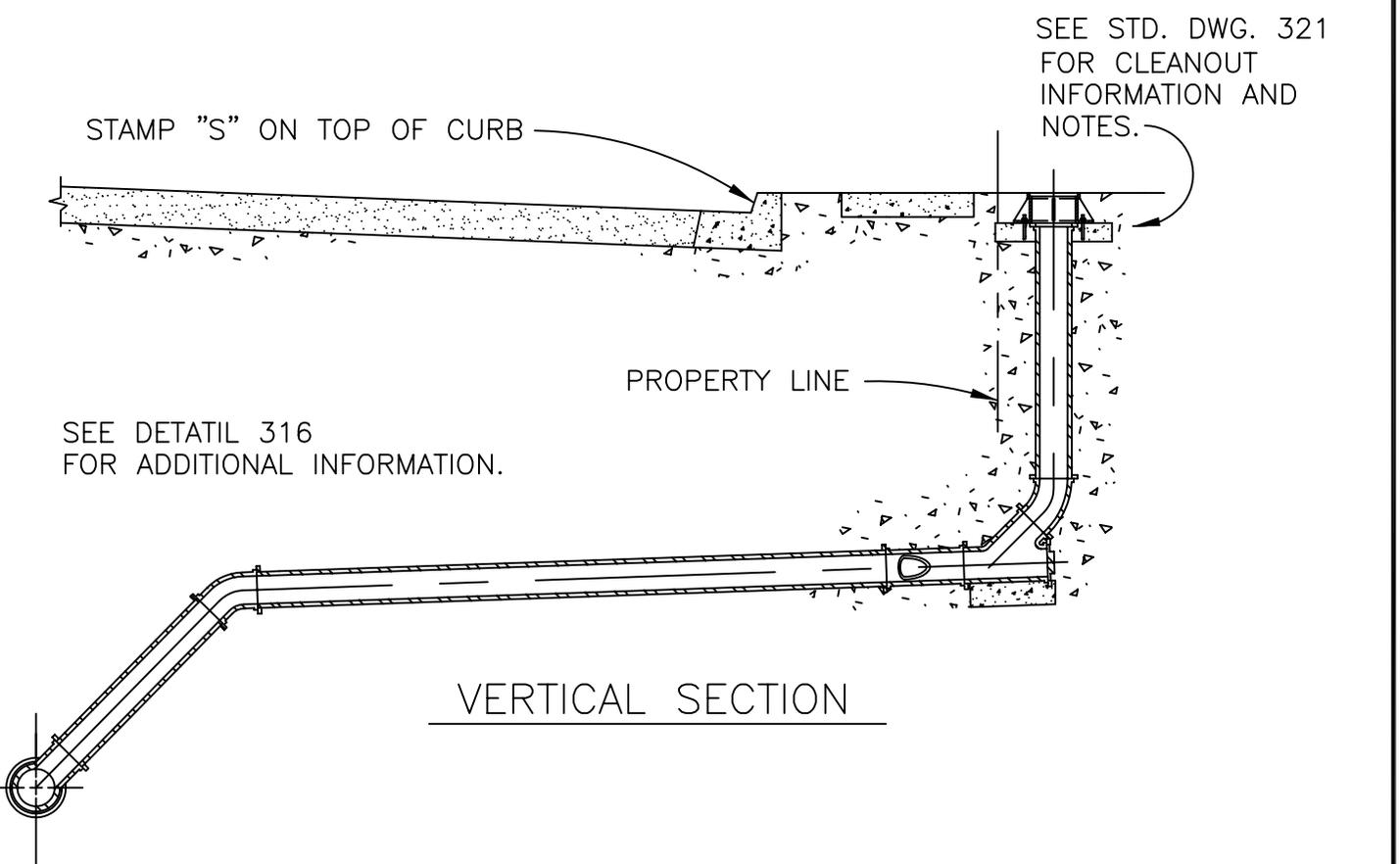
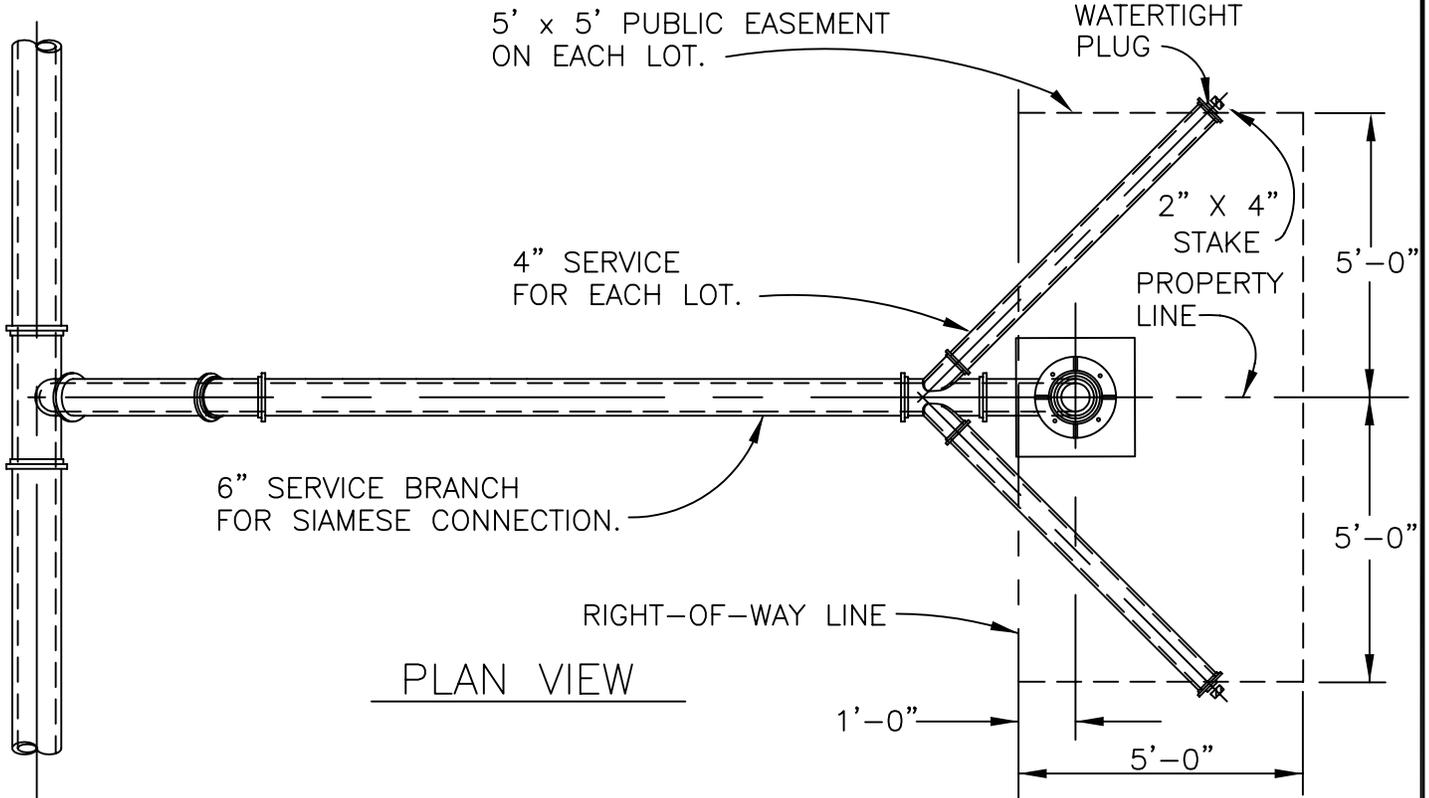
NOTES:

1. THE TAP SHALL NOT BE MADE EXCEPT IN THE PRESENCE OF A CITY INSPECTOR; NOR SHALL ANY CONNECTION BE MADE WITHOUT CITY APPROVAL.
2. A "INSERT-A-TEE" OR "FERNCO" TYPE CONNECTION SHALL BE USED. AND SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS
3. THE HOLE MADE IN MAIN SHALL BE CORED.
4. ϕ OF TAP TO BE ABOVE SPRINGLINE.
5. 4" MAXIMUM HOLE FOR 8" MAIN UNLESS OTHERWISE APPROVED BY THE ENGINEER

DRAWN		DLS
DIV.		
REV.	DATE	APPR.

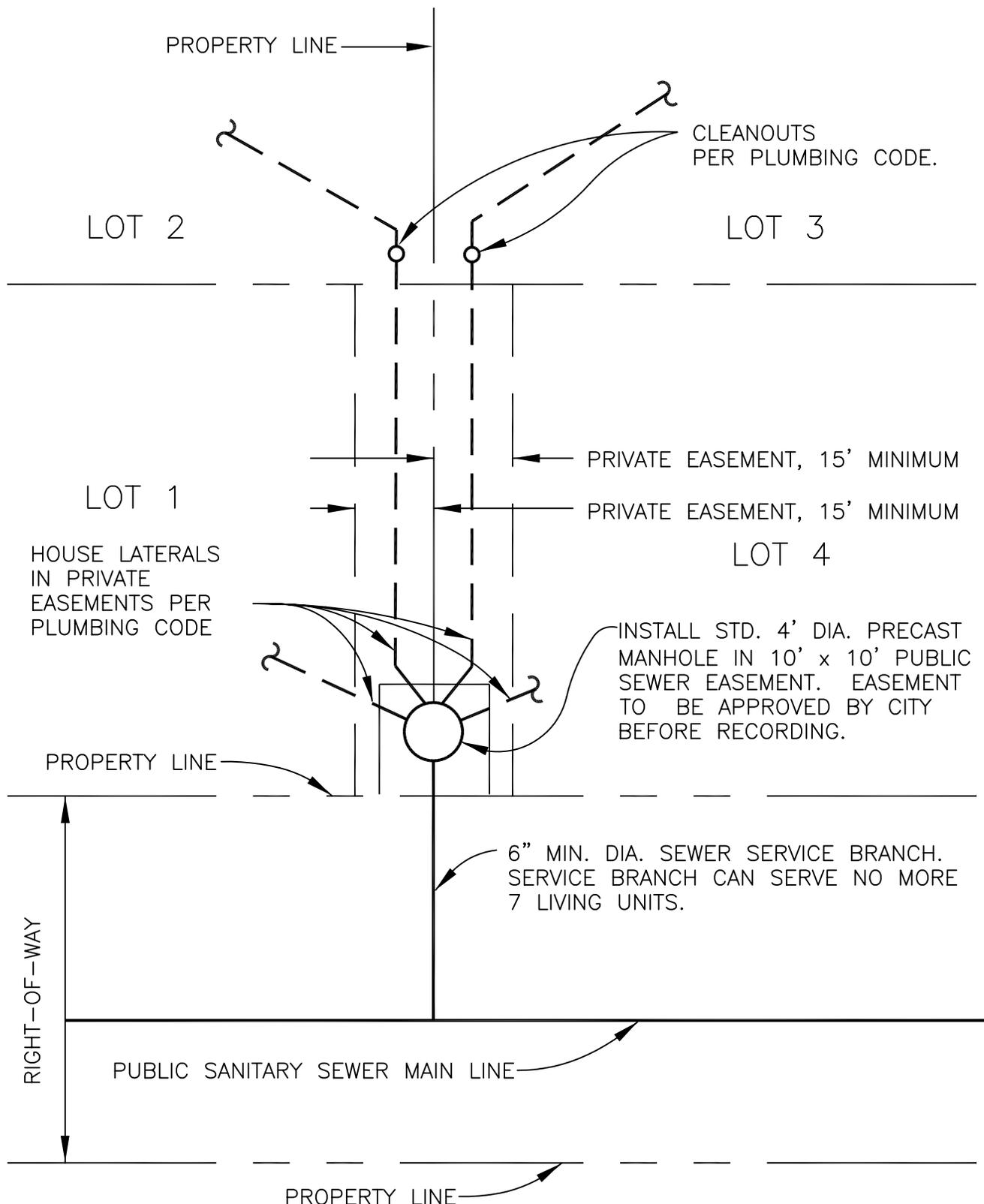
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
TAP IN EXISTING WASTEWATER
MAIN FOR SEWER LATERAL

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	317



NOTE:
 1. SERVICE SHALL NOT BE BACKFILLED PRIOR TO INSPECTION.

DRAWN DLS			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE NTS
DIV.				DATE: JAN 1, 2006
REV.	DATE	APPR.		APPR. <i>[Signature]</i>
			SIAMESE SERVICE BRANCH	DWG. NO. 318



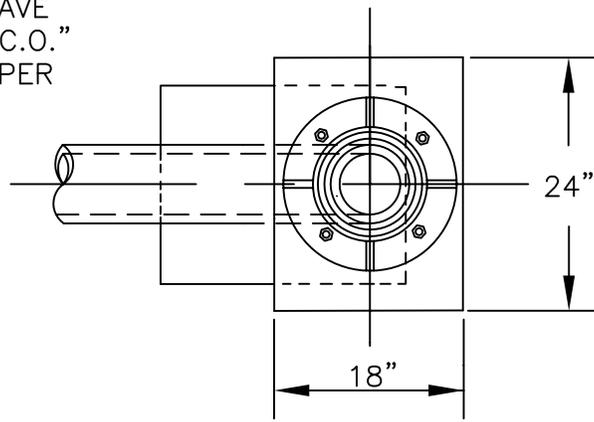
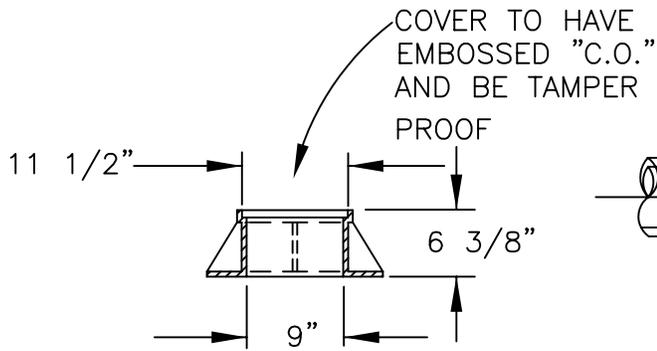
NOTES:

1. CONNECTION PLAN FOR 4 LOT COMMON LATERAL (3 LOTS SIMILAR).
2. EASEMENTS TO BE RECORDED & A COPY THEREOF SUBMITTED TO CITY PRIOR TO CONSTRUCTION.
3. PRIVATE EASEMENT ARRANGMENT SHOWN TO BE USED ONLY WHEN SEWER IN PUBLIC ROAD RIGHT-OF-WAY CANNOT BE USED AS, AS DETERMINED BY THE ENGINEER

DRAWN DLS		
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
WASTEWATER CONNECTION, 3 or 4 LOTS
w/ PRIVATE EASEMENTS

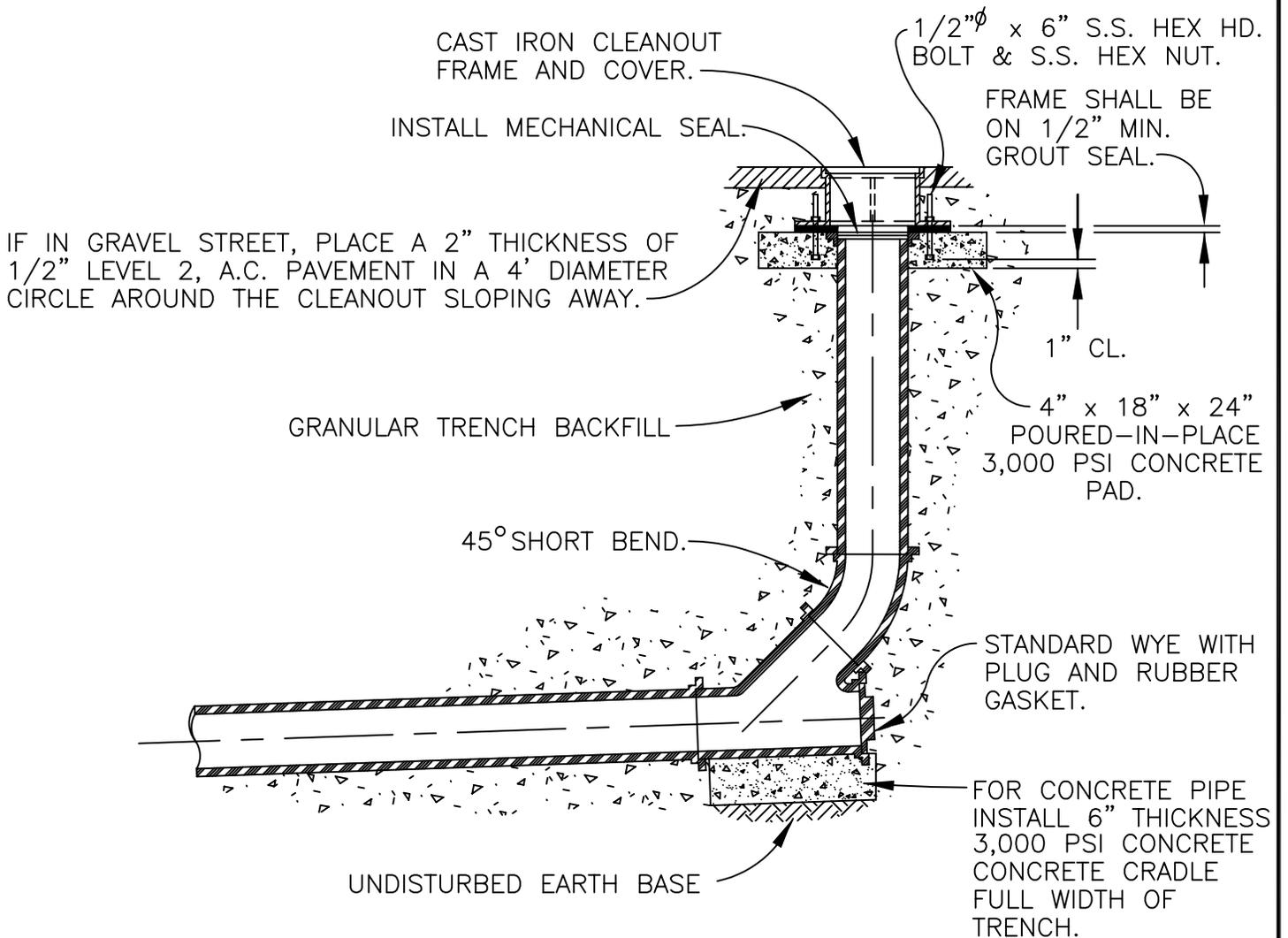
SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	319



FRAME & COVER

PLAN

SALEM IRON WKS.
#4233 & 4234 OR EQUAL.



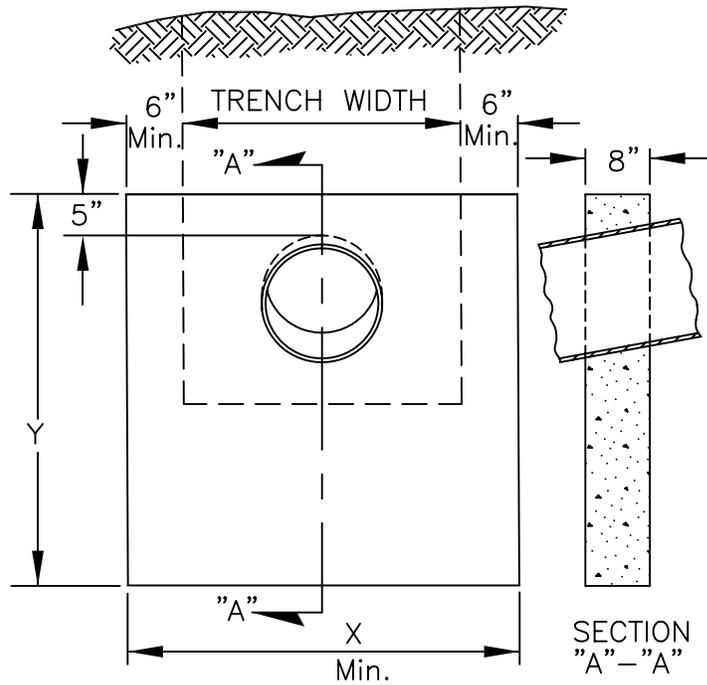
ELEVATION

DRAWN		DLS
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

STANDARD CLEANOUT

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	320



DIMENSION TABLE			
PIPE DIA.	X, MIN (ft)	Y (ft)	MIN VOL(cy)
6" TO 10"	4	3	0.29
12" TO 15"	4	4	0.37
18" TO 24"	5	4	0.42
> 24"	TO BE DETERMINED BY ENGINEER OF RECORD		

NOTES:

1. ALL CONCRETE SHALL BE 3,000 psi 28 DAY COMPRESSIVE STRENGTH, WITH 2" TO 4" SLUMP.

2. ANCHOR WALLS MUST BE USED WITH PIPES WITH SLOPES OVER 20%. ANCHOR WALLS TO BE EQUALLY SPACED. PROPORTION SPACING WITH SLOPE.

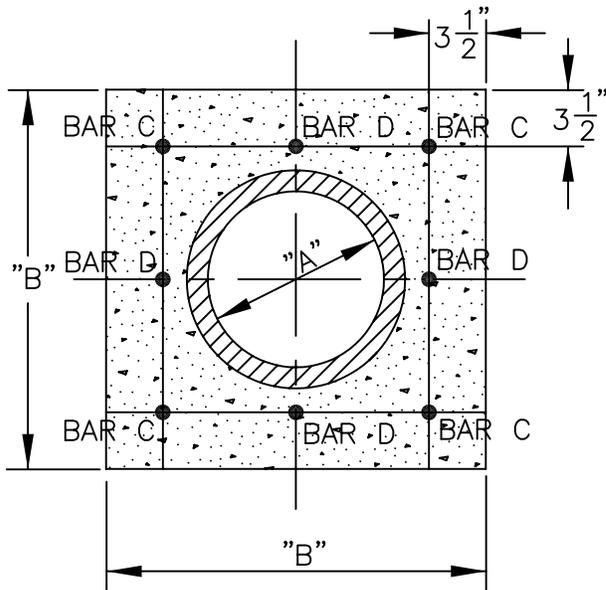
PIPE SLOPE	WALL SPACING
20%	21'
100%	12'
> 100%	NOT ALLOWED

3. PLACE WALL IMMEDIATELY BELOW BELL OF PIPE WHERE POSSIBLE.

DRAWN DLS		
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
SEWER PIPE ANCHOR WALL

SCALE NTS
DATE JAN 1, 2006
APPR. <i>[Signature]</i>
DWG. NO. 321



DIMENSIONS—IN.		BARS REQ'D.
"A"	"B"	
6"	16"	C
8"	19"	C
10"	21"	C
12"	23"	C
15"	26 1/2"	C
18"	30 1/2"	C
21"	39"	C&D
24"	43"	C&D
27"	50"	C&D

VERTICAL SECTION

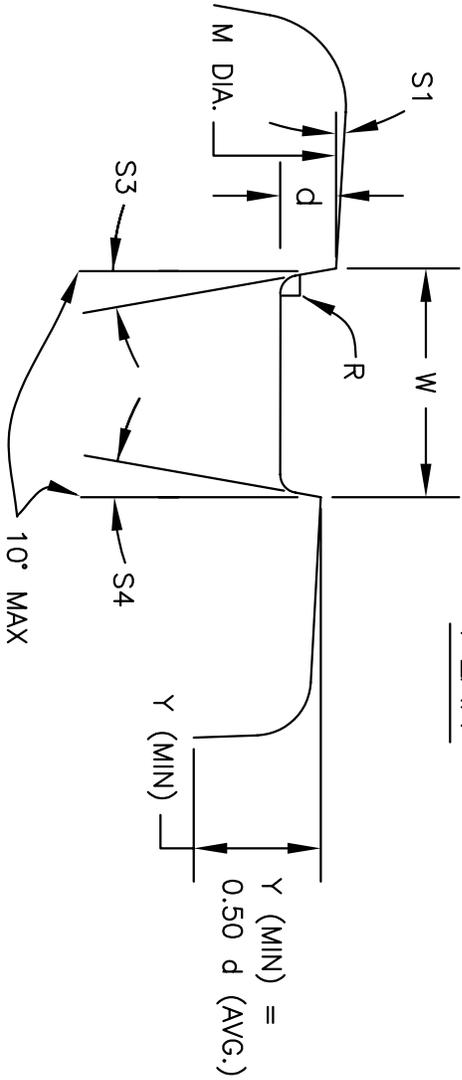
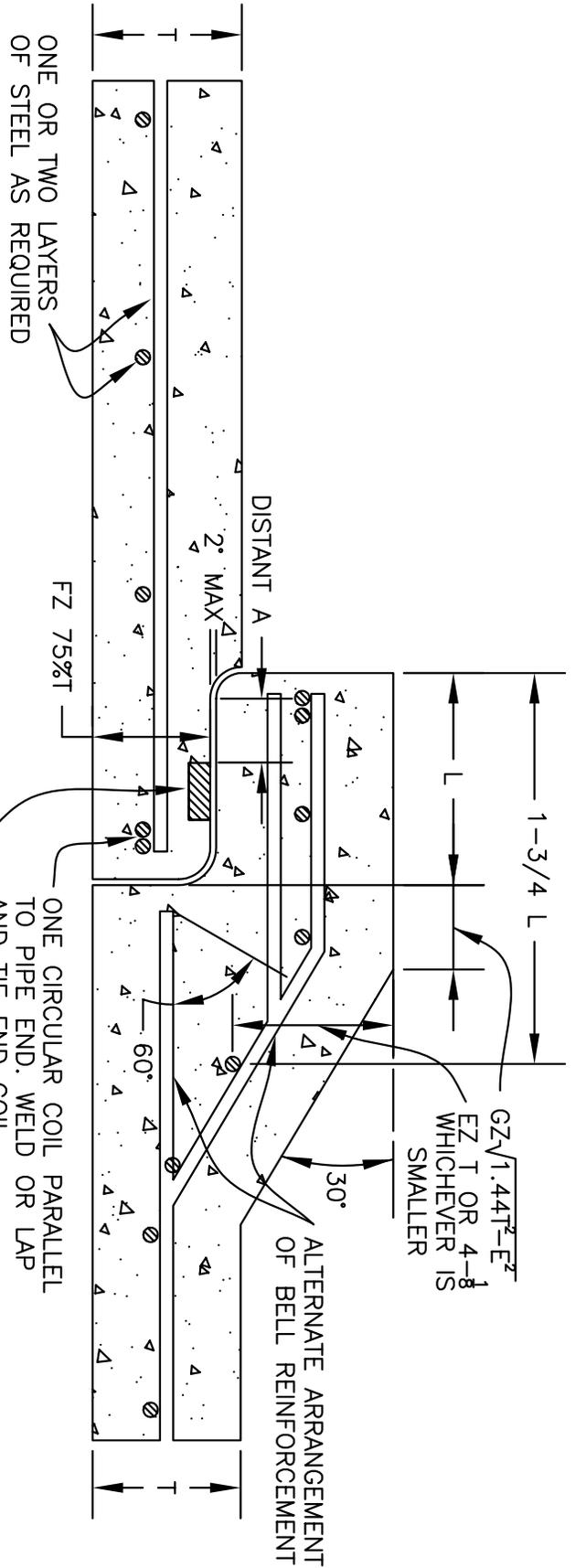
NOTES:

1. ALL CONCRETE SHALL BE 3,000 PSI, 3" TO 5" SLUMP.
2. STEEL REINFORCING SHALL BE NO. 5^Ø IN CONFORMANCE WITH ASTM A 615, GRADE 60, WITH DEFORMATIONS PER ASTM A 305.

DRAWN DLS		
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
**SEWER PIPE
 CONCRETE ENCASEMENT**

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	322

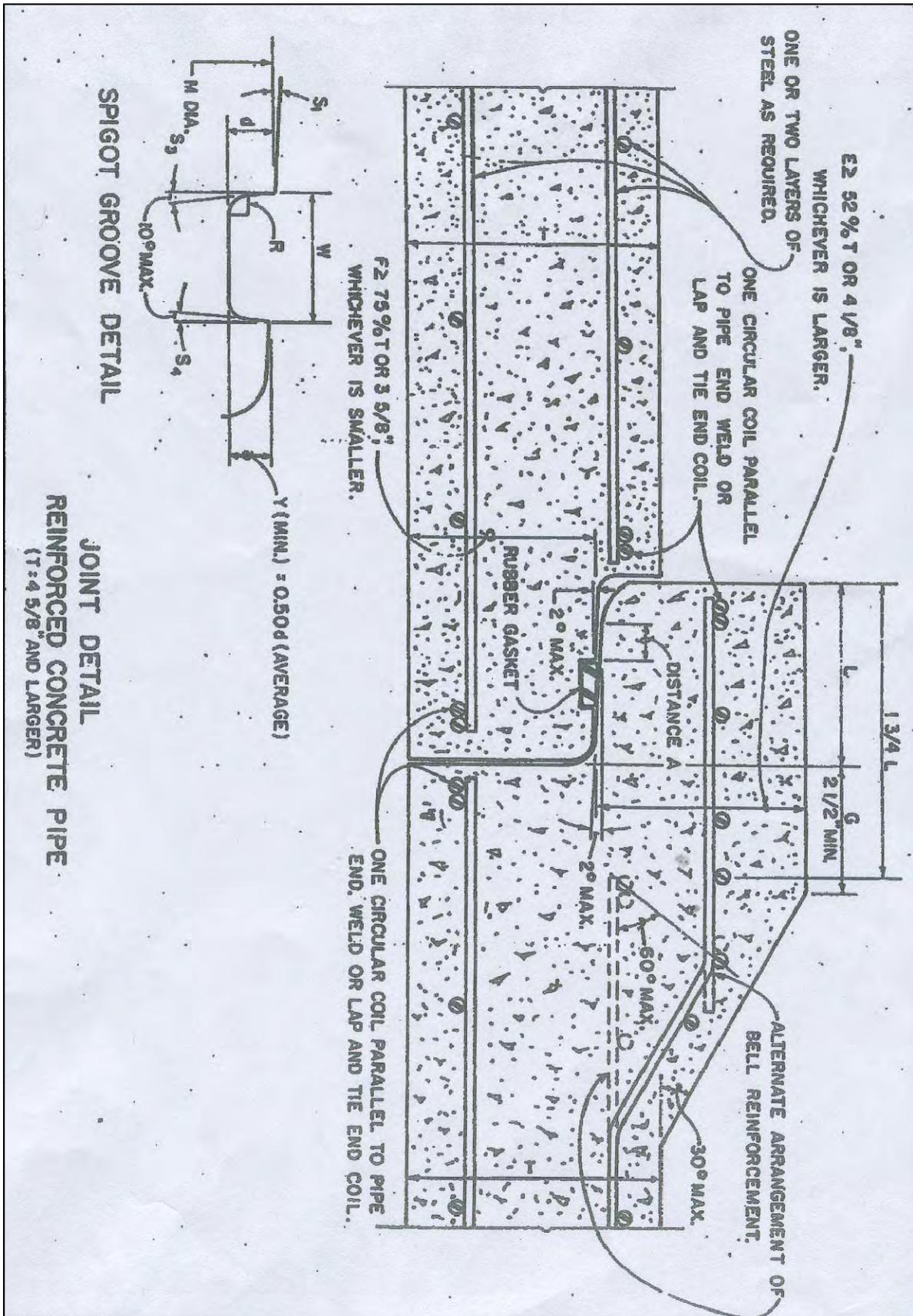


SIGOT GROOVE DETAIL

DRAWN: DLS		
DIV.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
 JOINT DETAIL
 REINFORCED CONCRETE (T=4 5/8" AND LARGER)

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	323



DRAWN		DLS	
DIV.			
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

JOINT DETAIL
 REINFORCED CONCRETE PIPE (T=4 3/8" AND LARGER)

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	324

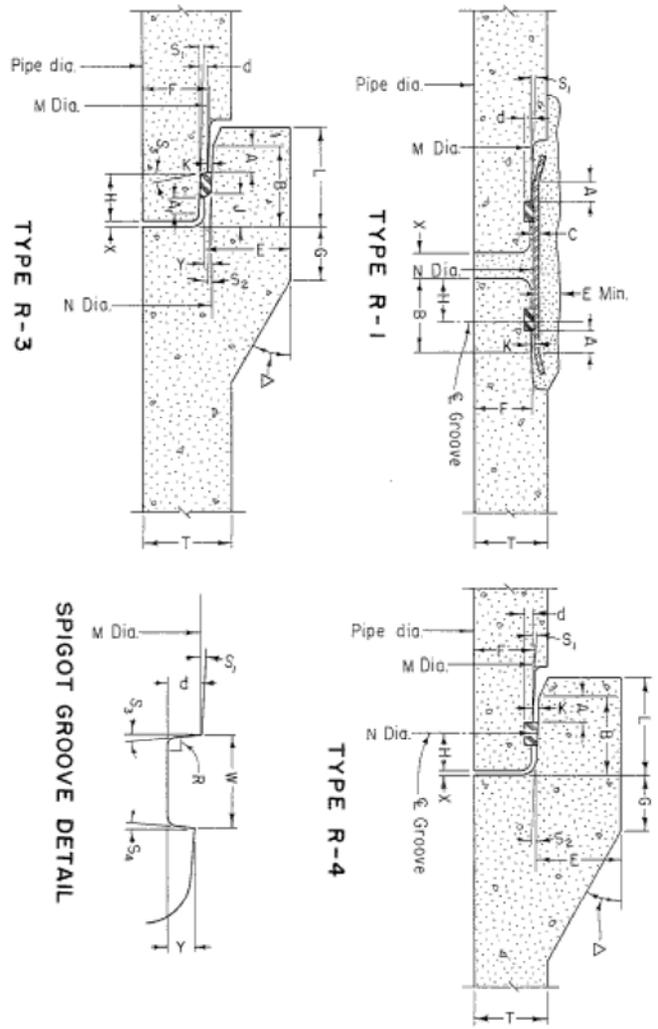
PIPE DIAMETER	JOINT TYPE	DIMENSIONS							
		GROOVE WIDTH (W)		d		M (DIAMETER)		N (DIAMETER)	
		MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

JOINT CLEARANCE	K	SLOPE DEGREES				RUBBER GASKET			G	H	J	MAX HEAD GLASS
		S1	S2	S3	S4	DESIGN	DESIGN MINMAX	DESIGN				
1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49	50	51	52
53	54	55	56	57	58	59	60	61	62	63	64	65
66	67	68	69	70	71	72	73	74	75	76	77	78

Δ DEG.	A	A ₁	B	C	E	F	T	L	X	Y
1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22
23	24	25	26	27	28	29	30	31	32	33
34	35	36	37	38	39	40	41	42	43	44
45	46	47	48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63	64	65	66
67	68	69	70	71	72	73	74	75	76	77
78	79	80								

NOTES

Contractor shall submit all information required by the above tables, unless a dimension shown in the tables is not applicable to the specific type of pipe joint furnished, in which case it shall be left blank. All dimensions shall be given in inches, unless otherwise noted, and are for bell and spigot in concentric position. Joint clearance dimension K is at closest point within distance A.



UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION

JOINT DATA FORM
 PIPE DIAMETER _____ INCHES
 MANUFACTURER _____

SPECIFICATIONS NO. _____
 DATE _____

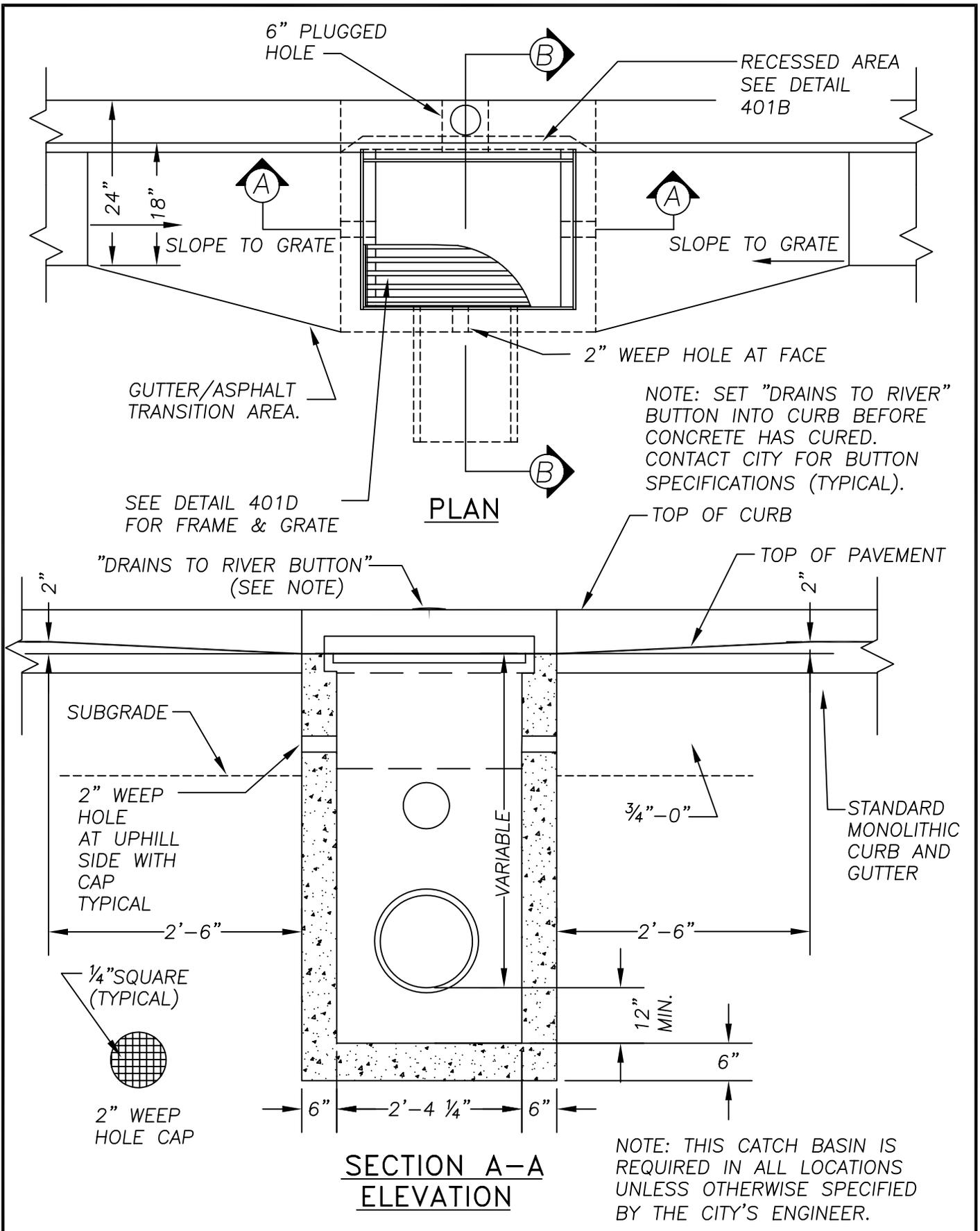
MANUFACTURER'S NUMBER _____

DRAWN: TNP		
DIV. STORMWATER/WASTEWATER		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

TYPICAL JOINT DETAIL AND DATA FORM

SCALE	NTS
DATE	JAN 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	325

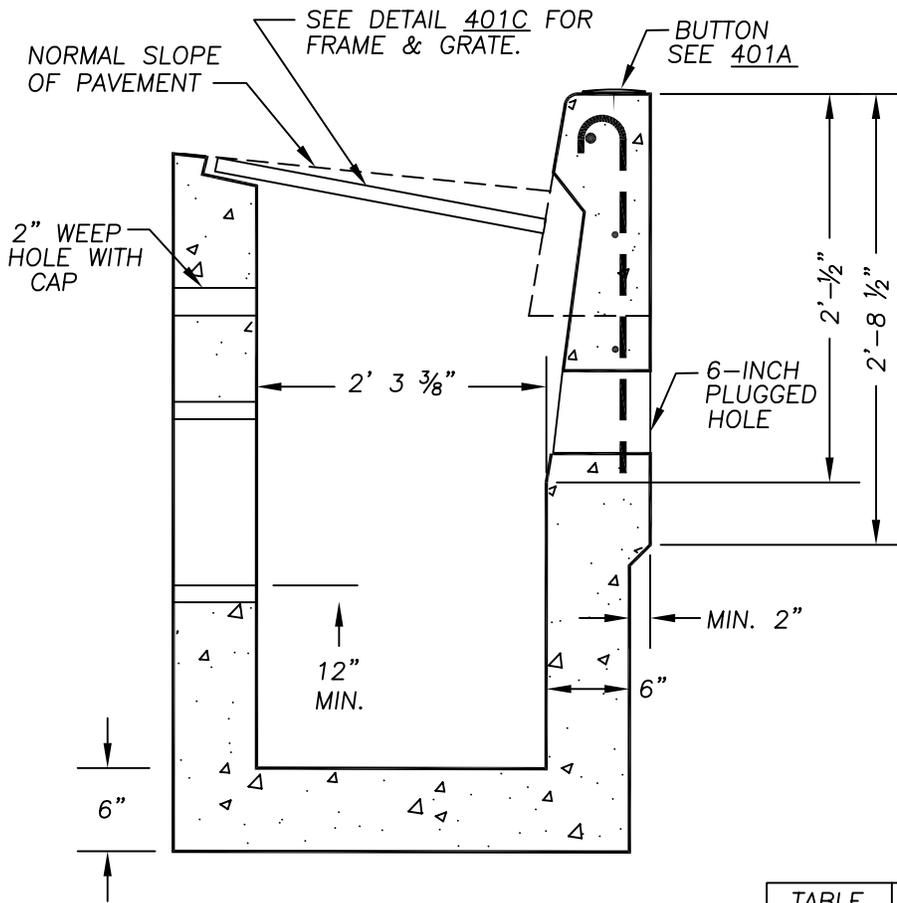


DRAWN TNP		
DIV. STORMWATER		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

CATCH BASIN (1)

SCALE	N.T.S.
DATE	JAN.1,2006
APPR.	<i>OR</i>
DWG. NO.	401A



NOTES:

1. INSTALL 6" DRAIN PIPE SUCH THAT THE TOP OF PIPE IS 6" BELOW GRATE OR ALIGNED WITH THE CROWN OF THE OUTLET WHICH EVER IS LESS.
2. IF CATCH BASIN WILL BE PART OF A DRIVEWAY WING, SLANT THE REBAR CAGE AND INLET FORM TO THE SLOPE OF THE TOP OF CURB IN THE WING WHEN POURING THE CATCH BASIN. MAINTAIN THE "Y2" DIMENSION AND DECREASE THE INLET AS NEEDED.
3. IF THE DISTANCE FROM TOP OF CURB TO THE GRATE IS EQUAL TO OR LESS THAN "Y2" NO CURB INLET IS REQUIRED.
4. #3 BARS SHALL BE PLACED DURING CURB CONSTRUCTION.
5. ALL BARS SHALL BE PLACED 1 1/2" CLEAR OF NEAREST FACE OF CONCRETE UNLESS SHOWN OR OTHERWISE NOTED.
6. ALL BAR SPLICE LENGTHS SHALL BE A MIN. 20".
7. CLASS 3300 CONCRETE SHALL BE USED IN ALL INLET CONSTRUCTION.

SECTION B-B

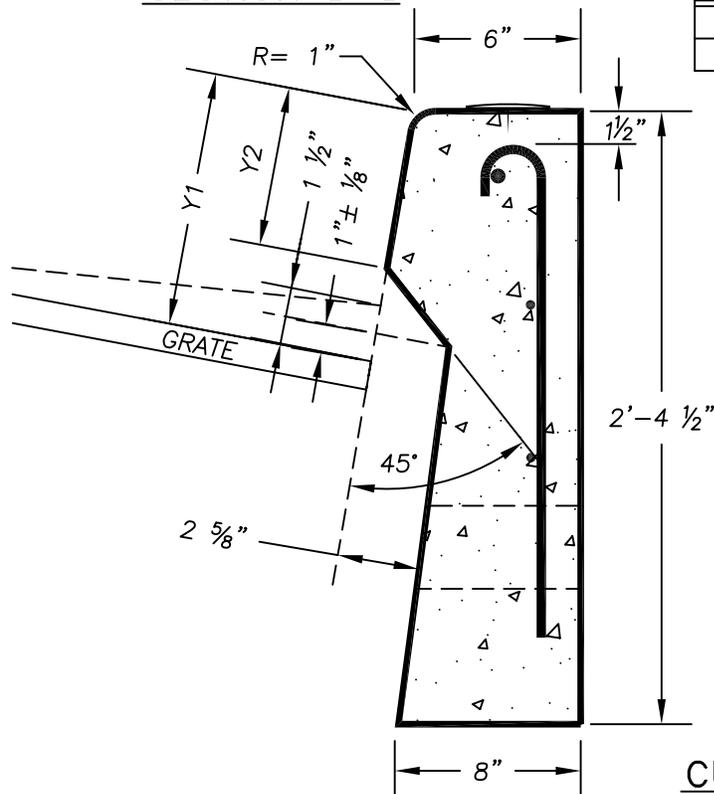
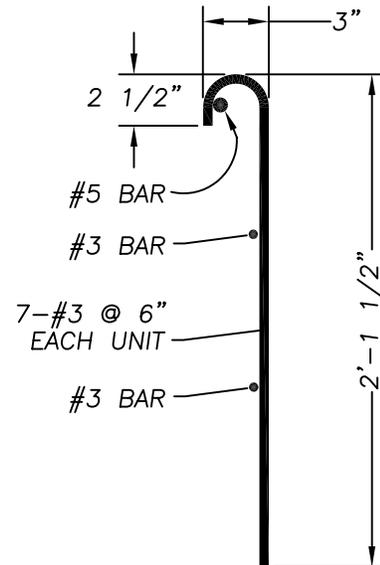


TABLE 601-C	CURB TYPE	
	TYPE "C"	MONOLITHIC
Y1	8 1/2"	7 1/2"
Y2	5 3/4" ±	4 3/4" ±

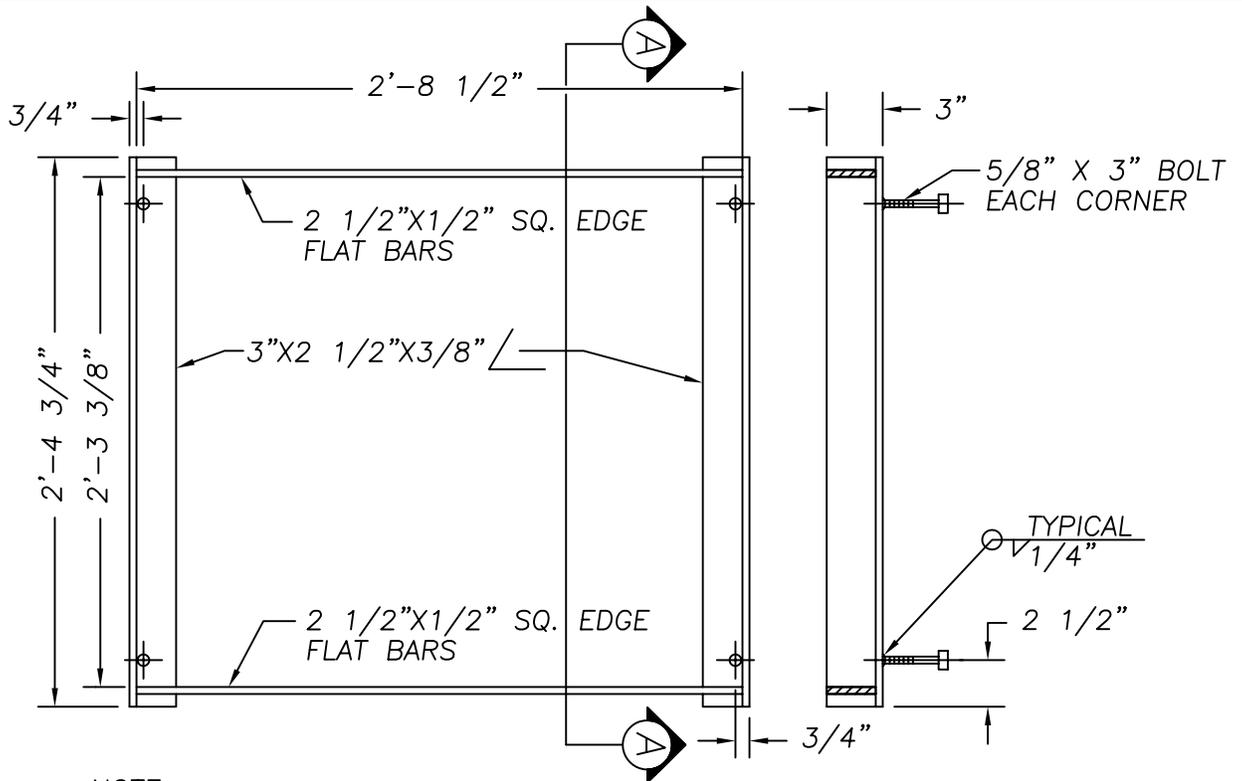


CURB DETAIL AT CATCH BASIN

DRAWN TNP		
DIV. STORMWATER		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
CATCH BASIN SECTION (1)

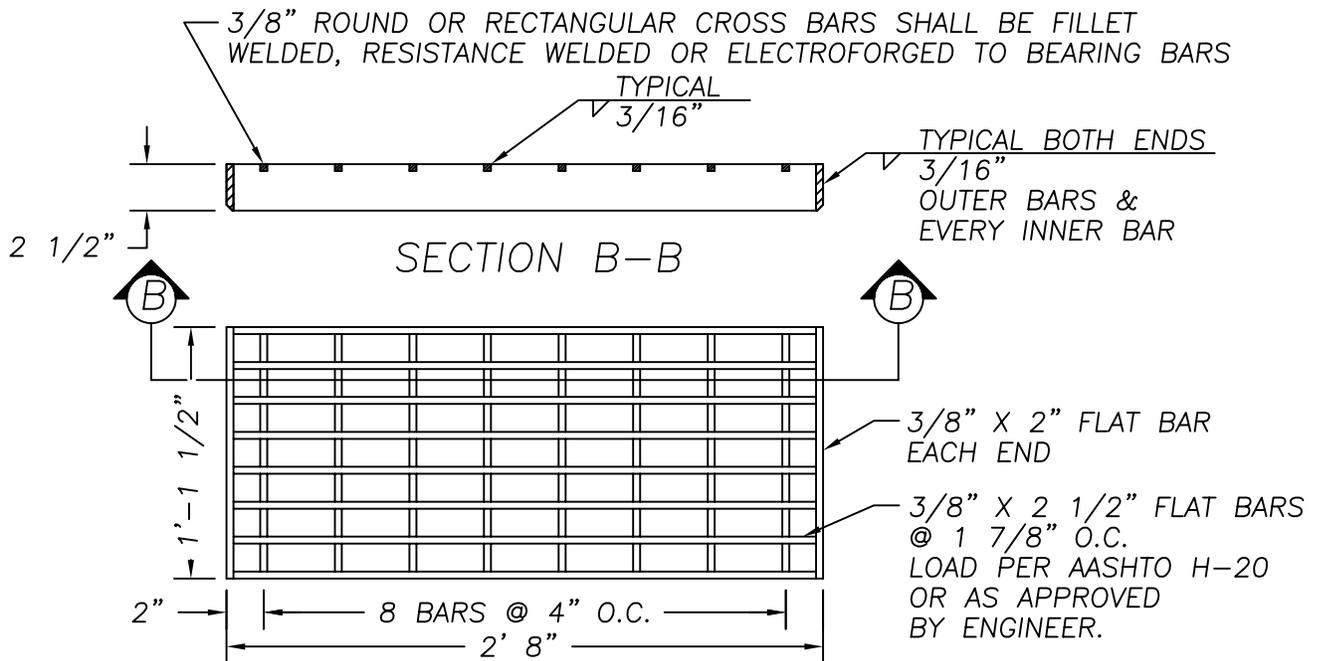
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	401B



NOTE:
 USE VERTICAL BEADS IN CORNERS, FILLET WELD JOINT ON
 BOTTOM OF FRAME. GRATE MUST REST FLAT ON FRAME SURFACE.

PLAN (FRAME)

SECTION A-A

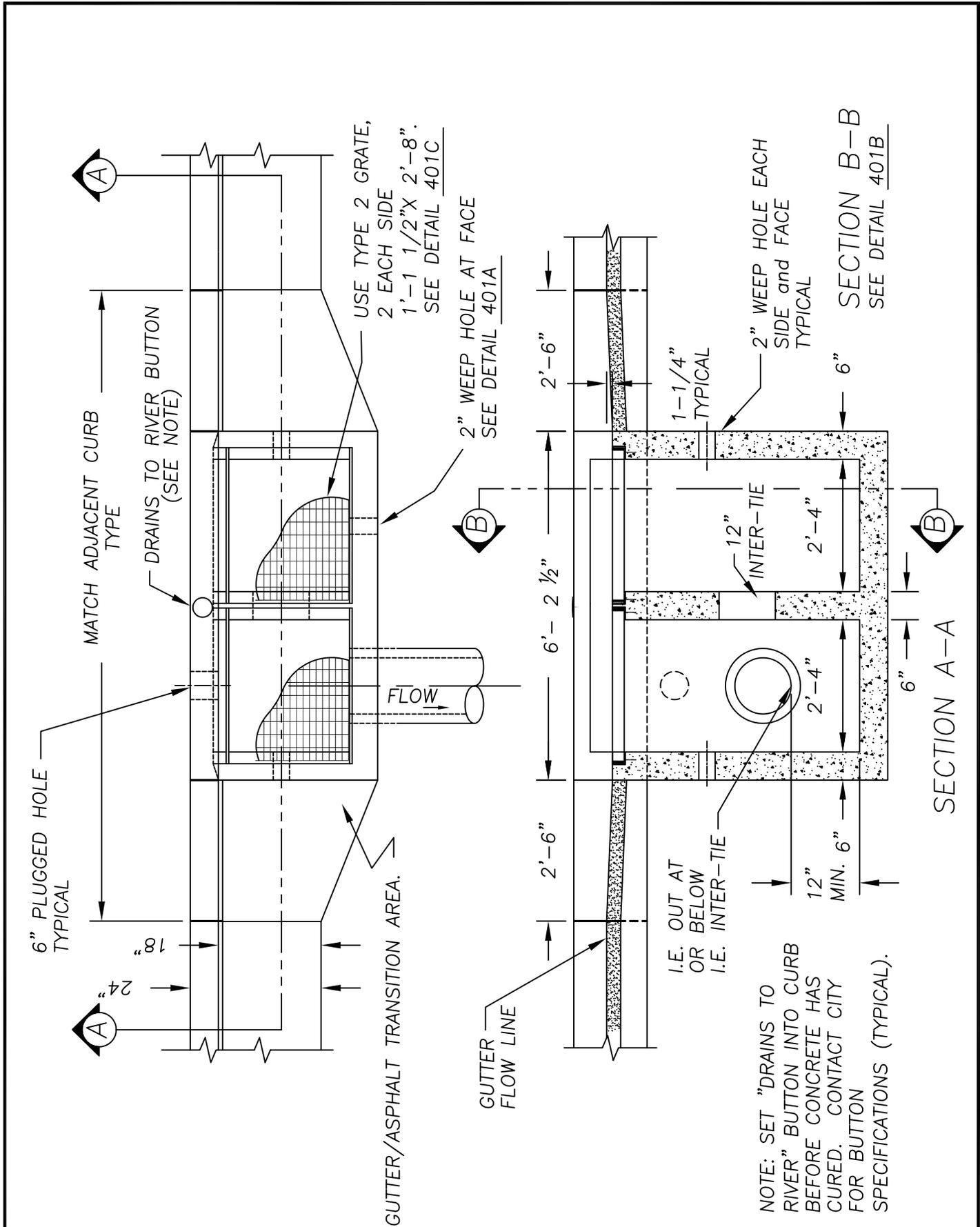


PLAN (GRATE)
 TYPE 2 GRATE

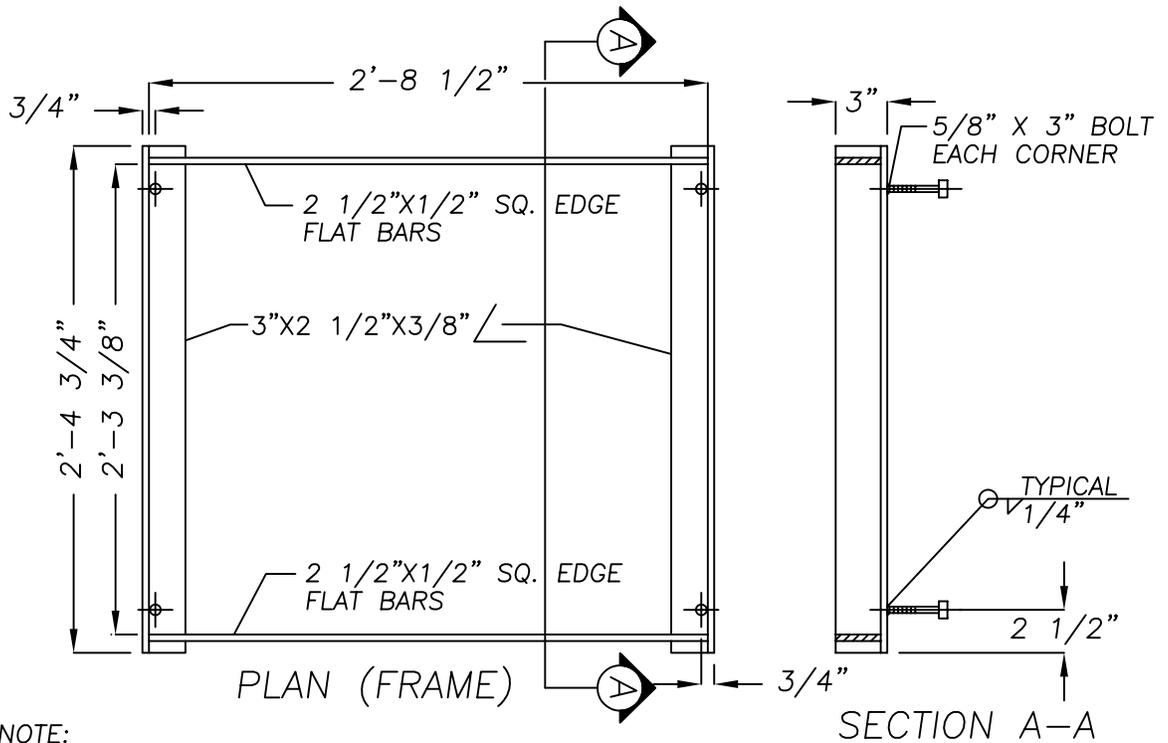
DRAWN RRB		
DIV. STORMWATER		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
CATCH BASIN FRAME AND GRATE (1)

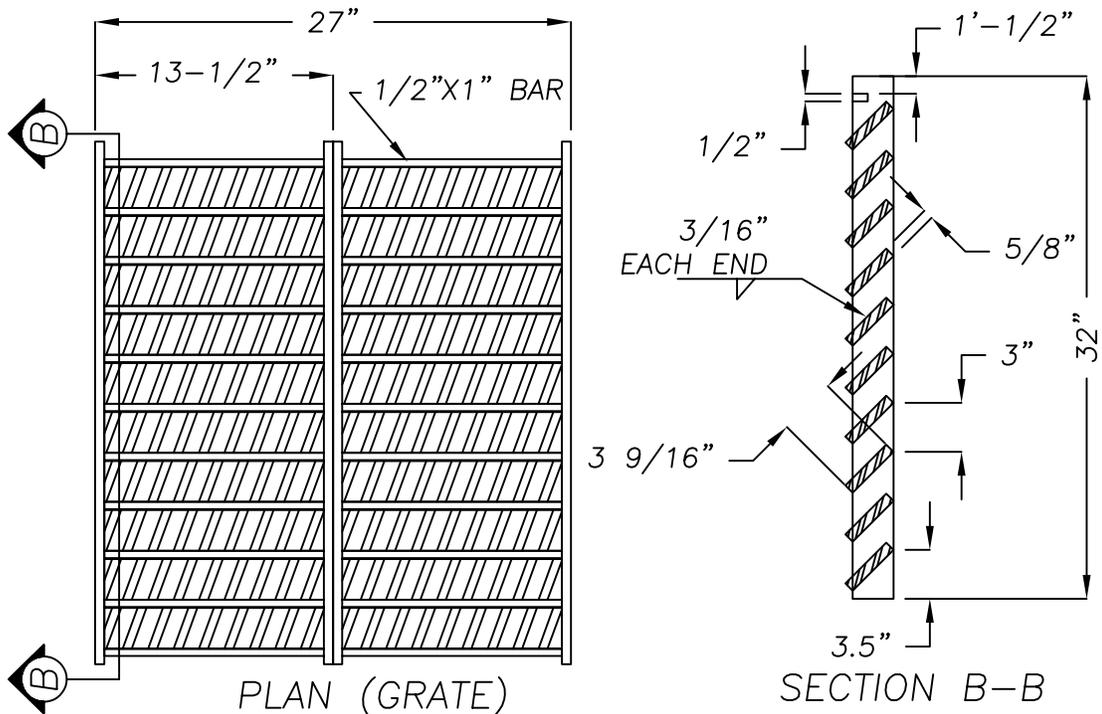
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	401C



DRAWN RRB			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM		SCALE N.T.S.
DIV. STORMWATER					DATE JAN. 1, 2006
REV.	DATE	APPR.	1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030		APPR. <i>OR</i>
			DOUBLE CATCH BASIN (1)		DWG. NO. 401D



NOTE:
 USE VERTICAL BEADS IN CORNERS, FILLET WELD JOINT ON
 BOTTOM OF FRAME. GRATE MUST REST FLAT ON FRAME SURFACE.
 BAR SIZE PER AASHTO LOAD REQUIREMENTS AND AS APPROVED BY ENGINEER.

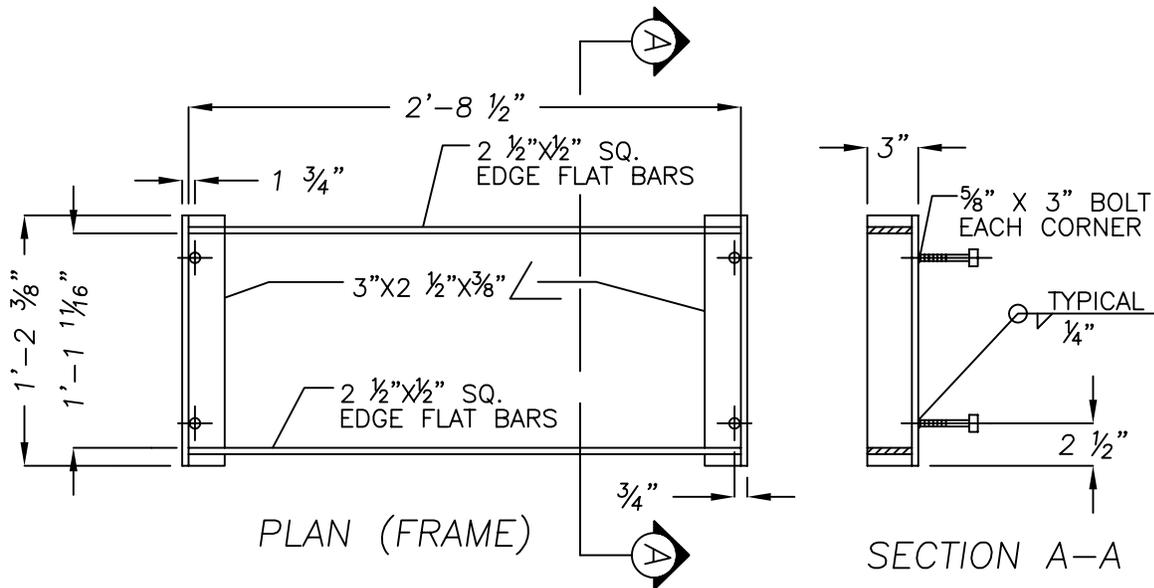


NOTE: THIS GRATE MAY BE REQUIRED IN HILLSIDE AREAS OR
 WHERE STREET SLOPES EXCEED 5 PERCENT GRADE, OR
 WHERE THE CATCH BASIN FRAME AND GRATE (1) IS NOT CAPABLE OF
 INTERCEPTING COMPLETELY THE DESIGN STORM FLOW AT THE CURB.

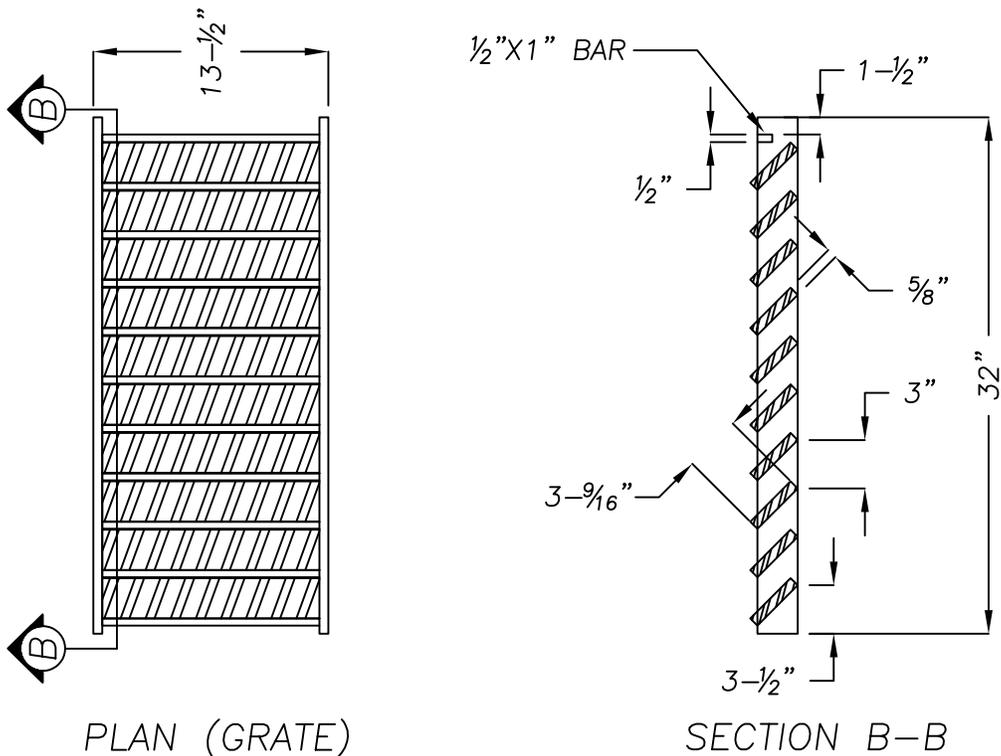
DRAWN	TNP	
DIV.	STORMWATER	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
CATCH BASIN (1)
WITH P-45 GRATE

SCALE	N.T.S.
DATE	JAN. 1,2006
APPR.	<i>[Signature]</i>
DWG. NO.	401E

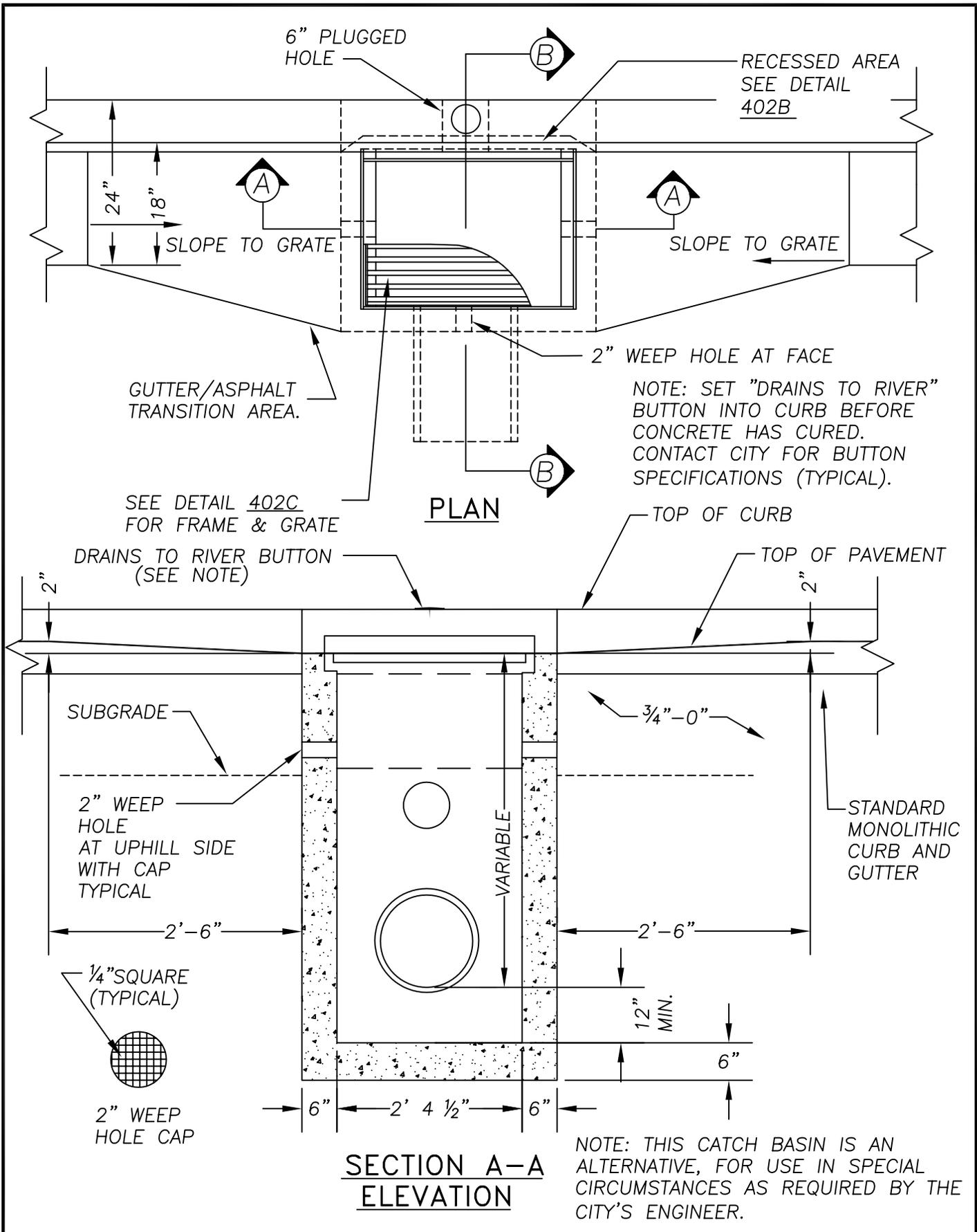


NOTE:
 USE VERTICAL BEADS IN CORNERS, FILLET WELD JOINT ON BOTTOM OF FRAME. GRATE MUST REST FLAT ON FRAME SURFACE. BAR SIZE PER AASHTO LOAD REQUIREMENTS AND AS APPROVED BY ENGINEER.



NOTE: THIS GRATE MAY BE REQUIRED IN HILLSIDE AREAS OR WHERE STREET SLOPES EXCEED 5 PERCENT GRADE, OR WHERE THE CATCH BASIN FRAME AND GRATE (1) IS NOT CAPABLE OF INTERCEPTING COMPLETELY THE DESIGN STORM FLOW AT THE CURB.

DRAWN TNP			DEPARTMENT OF ENVIRONMENTAL SERVICES	SCALE N.T.S.
DIV. STORMWATER				DATE JAN. 1, 2006
REV.	DATE	APPR.	CITY OF GRESHAM	APPR. <i>[Signature]</i>
				1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
			MODIFIED CATCH BASIN (1)	
			FRAME WITH SINGLE P-45 GRATE	



PLAN

**SECTION A-A
ELEVATION**

NOTE: SET "DRAINS TO RIVER"
BUTTON INTO CURB BEFORE
CONCRETE HAS CURED.
CONTACT CITY FOR BUTTON
SPECIFICATIONS (TYPICAL).

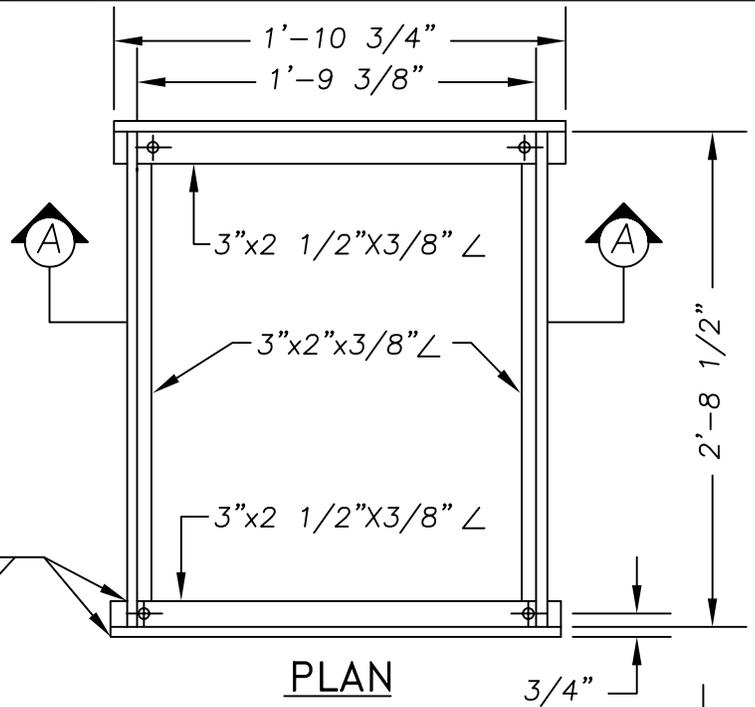
NOTE: THIS CATCH BASIN IS AN
ALTERNATIVE, FOR USE IN SPECIAL
CIRCUMSTANCES AS REQUIRED BY THE
CITY'S ENGINEER.

DRAWN TNP		
DIV. STORMWATER		
REV.	DATE	APPR.

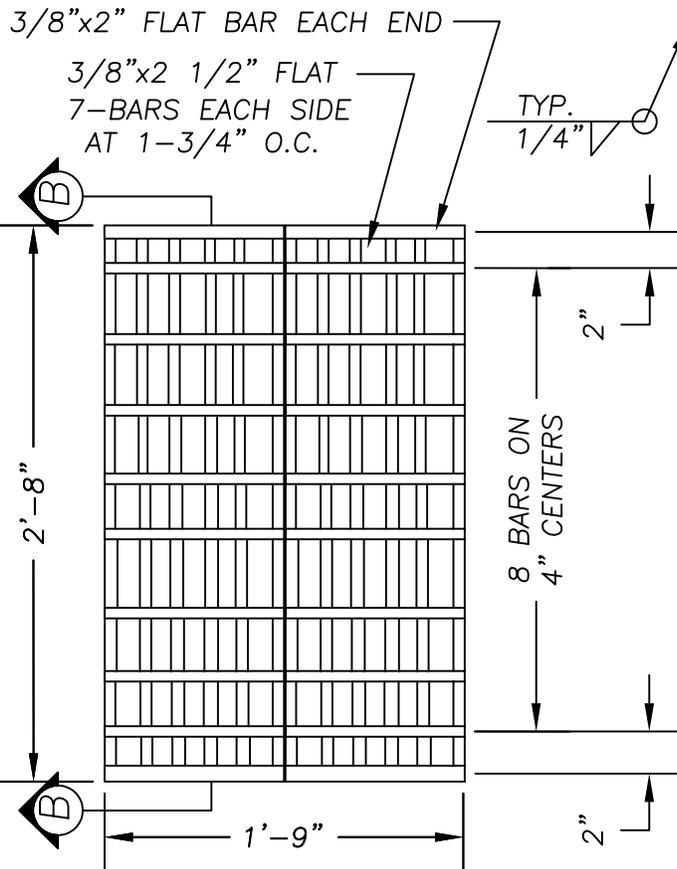
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
CATCH BASIN (2)

SCALE	N.T.S.
DATE	JAN. 1,2006
APPR.	<i>[Signature]</i>
DWG. NO.	402A

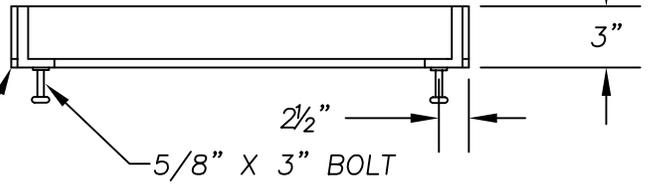
NOTE:
USE VERTICAL BEADS IN CORNERS,
FILLET WELD JOINT ON BOTTOM OF
FRAME. GRATE MUST REST FLAT ON
FRAME SURFACE.



PLAN



PLAN-DOUBLE GRATE



SECTION A-A

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

TYP.
3/16"

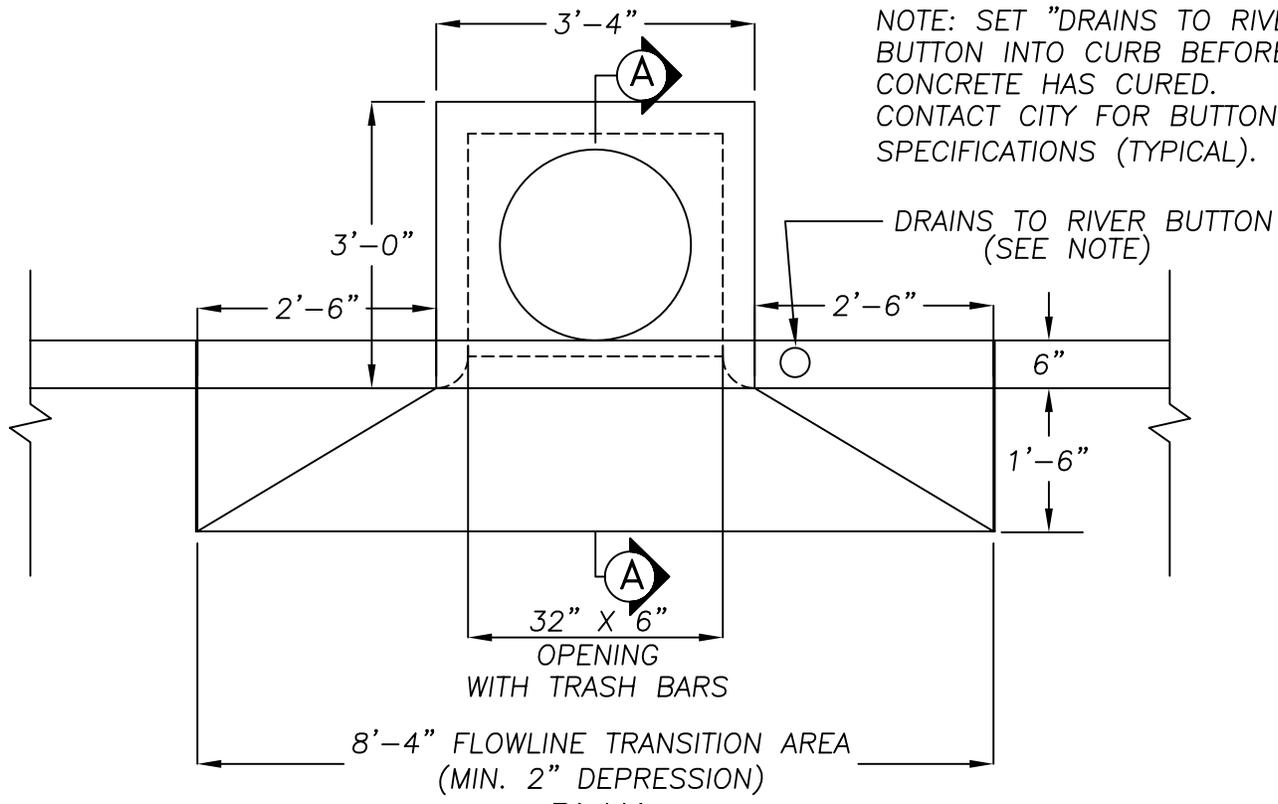


SECTION B-B

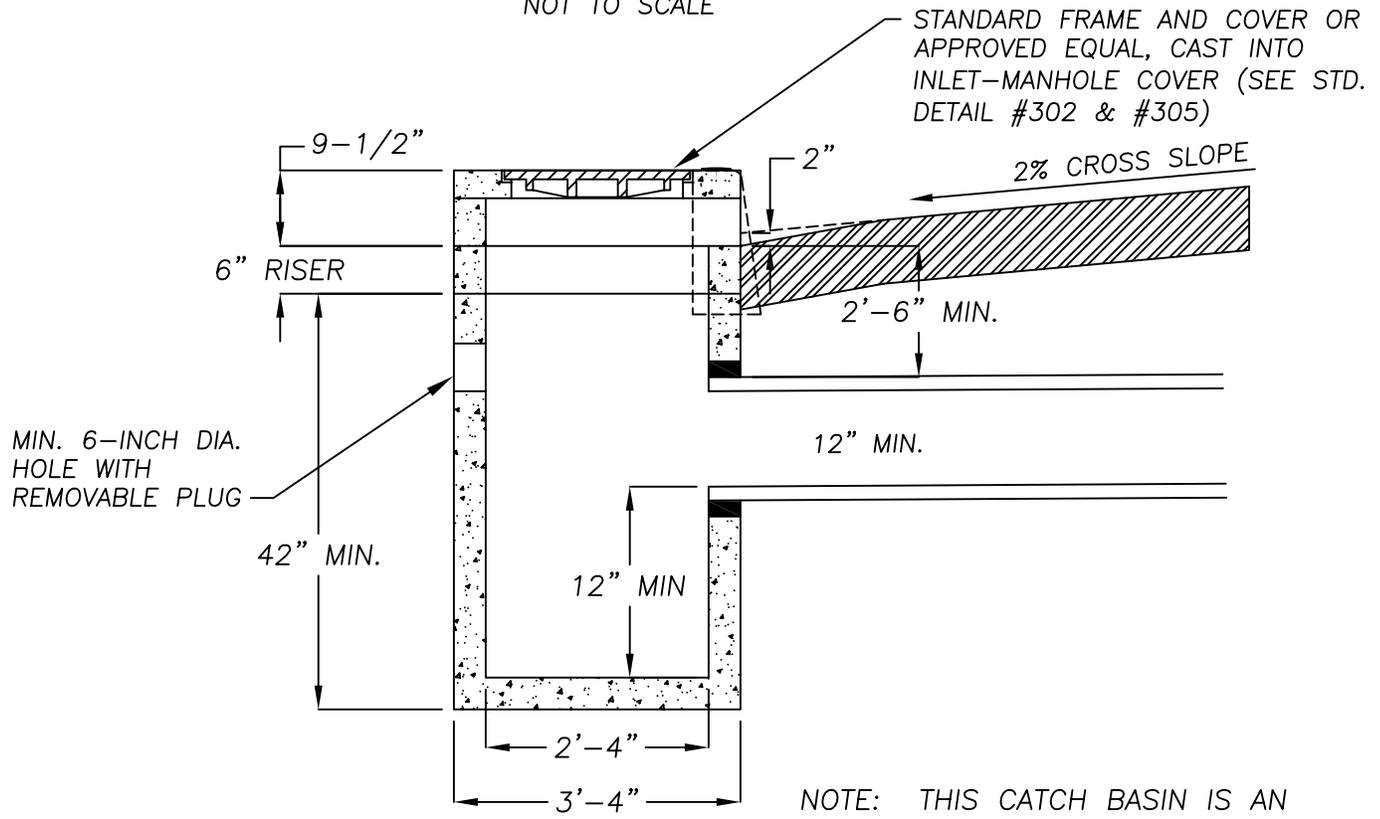
DRAWN		RRB
DIV.		STORMWATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
FRAME AND GRATE

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	402C



PLAN
NOT TO SCALE



PROFILE
(SECTION A-A)
NOT TO SCALE

NOTE: THIS CATCH BASIN IS AN ALTERNATIVE, FOR USE IN SPECIAL CIRCUMSTANCES AS REQUIRED BY THE CITY'S ENGINEER.

DRAWN TNP		
DIV. STORMWATER		
REV.	DATE	APPR.

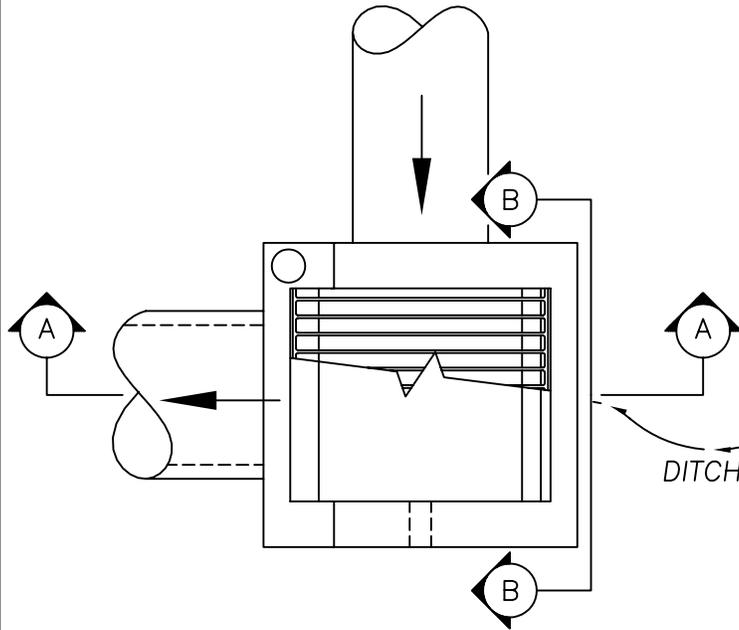
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
NON-GRATED CATCH BASIN

SCALE	N.T.S.
DATE	JAN. 1,2006
APPR.	<i>[Signature]</i>
DWG. NO.	403

1. CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 3300 P.S.I. IN 28 DAYS

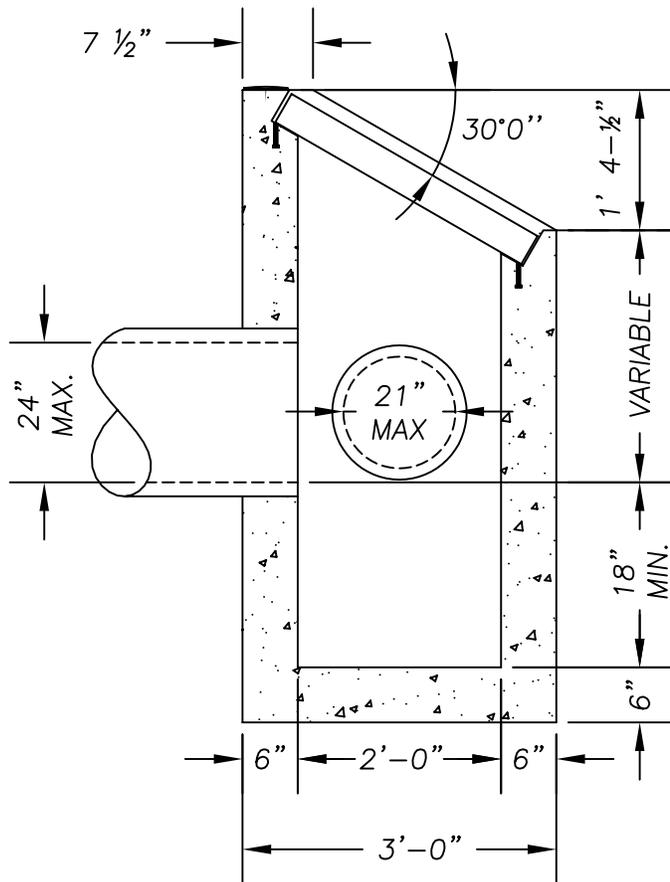
2. FOR FRAME & GRATE DETAIL SEE STD. DWG NO. 404B

3. WHERE PRECAST INLETS ARE USED AS AN ALTERNATIVE TO CAST IN PLACE INLETS, A 4" COMPACTED LEVELING BED OF 3/4"-0" CRUSHED AGGREGATE SHALL BE PROVIDED

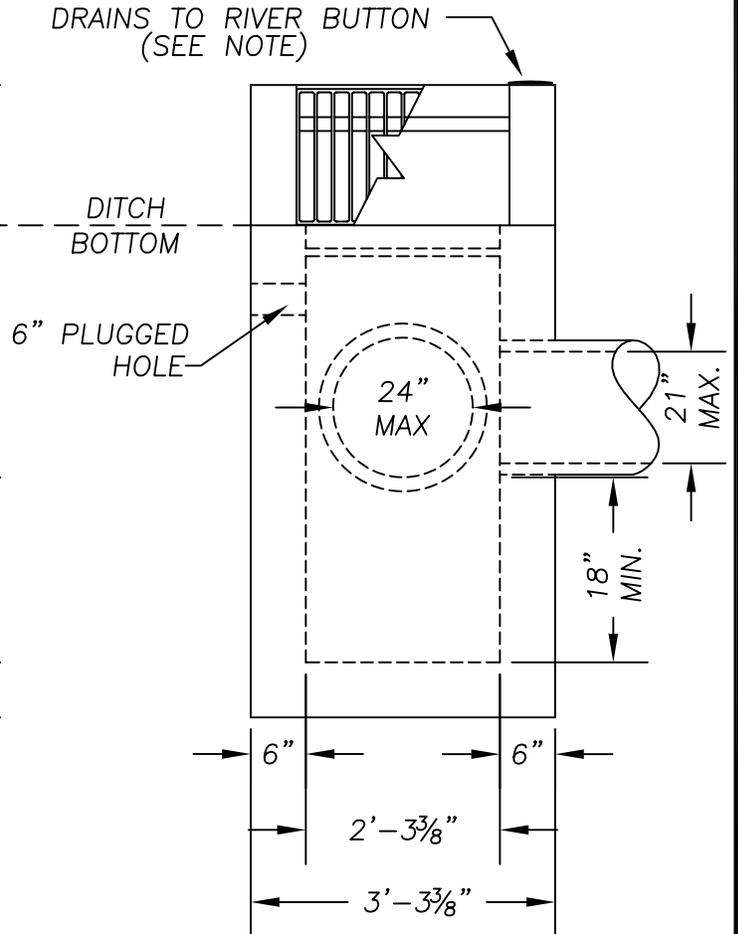


PLAN

NOTE: SET "DRAINS TO RIVER" BUTTON INTO CURB BEFORE CONCRETE HAS CURED. CONTACT CITY FOR BUTTON SPECIFICATIONS (TYPICAL).



SECTION A-A

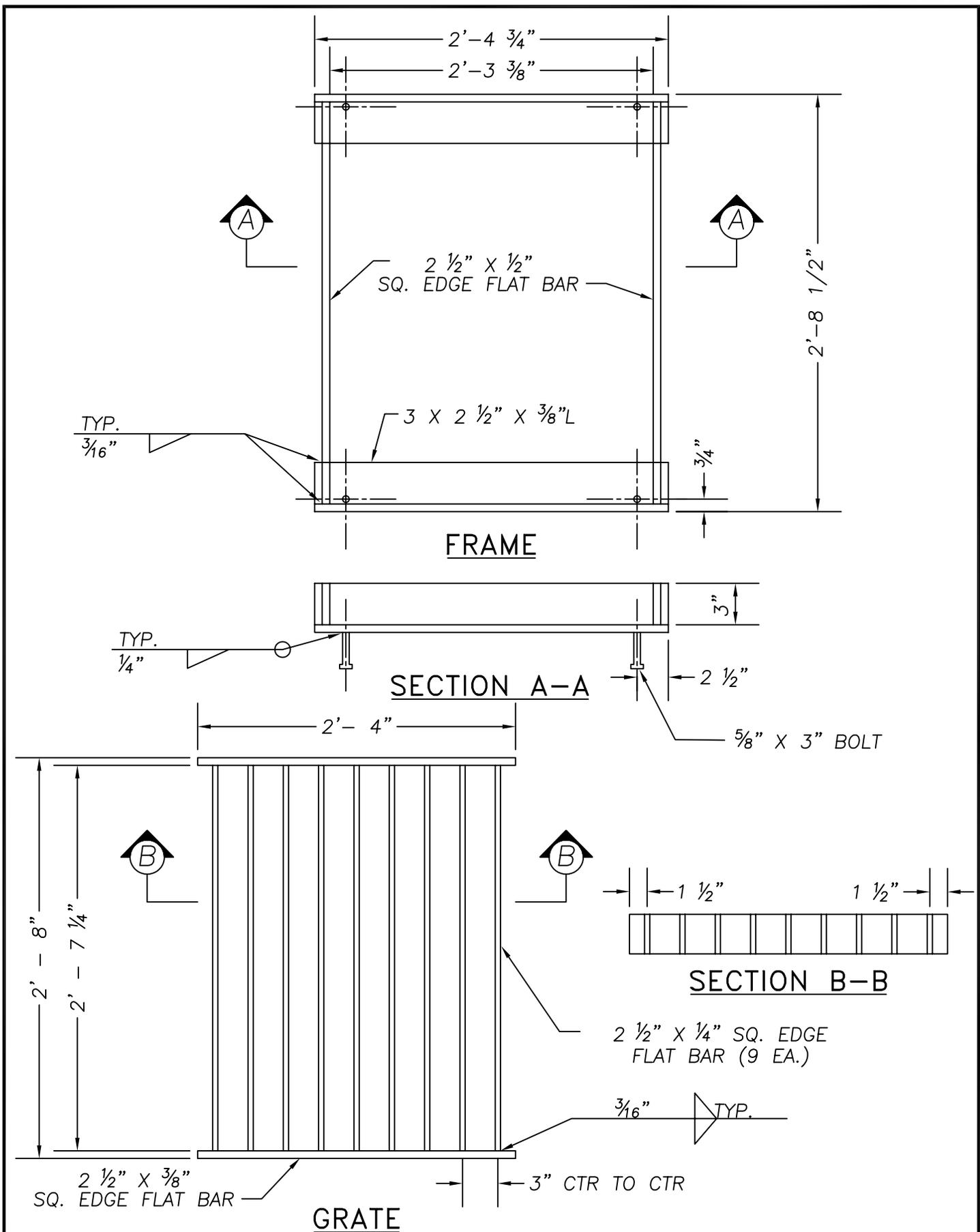


SECTION B-B

DRAWN	TNP	
DIV.	STORMWATER	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DITCH INLET
TYPE D

SCALE	N.T.S.
DATE	JAN. 1,2006
APPR.	<i>[Signature]</i>
DWG. NO.	404A



DRAWN TNP			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM			SCALE N.T.S.	
DIV. STORMWATER						1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	
REV.	DATE	APPR.	DITCH INLET FRAME & GRATE			APPR. <i>OR</i>	
						DWG. NO. 404B	

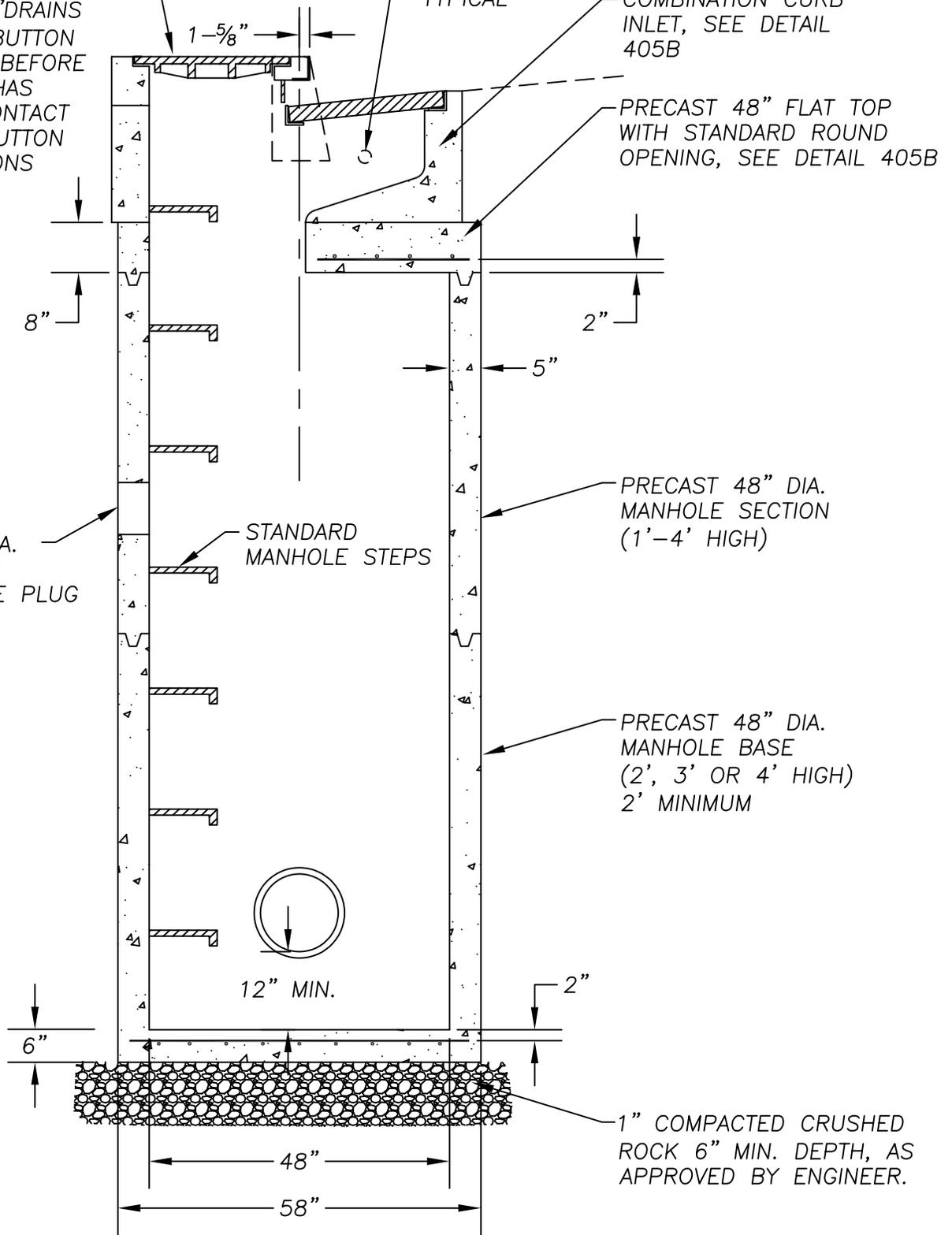
SEE DETAIL 405B

NOTE: SET "DRAINS TO RIVER" BUTTON INTO CURB BEFORE CONCRETE HAS CURED. CONTACT CITY FOR BUTTON SPECIFICATIONS (TYPICAL).

2" WEEP HOLE BOTH SIDES TYPICAL

COMBINATION CURB INLET, SEE DETAIL 405B

PRECAST 48" FLAT TOP WITH STANDARD ROUND OPENING, SEE DETAIL 405B



MIN. 6" DIA. HOLE WITH REMOVABLE PLUG

STANDARD MANHOLE STEPS

PRECAST 48" DIA. MANHOLE SECTION (1'-4' HIGH)

PRECAST 48" DIA. MANHOLE BASE (2', 3' OR 4' HIGH) 2' MINIMUM

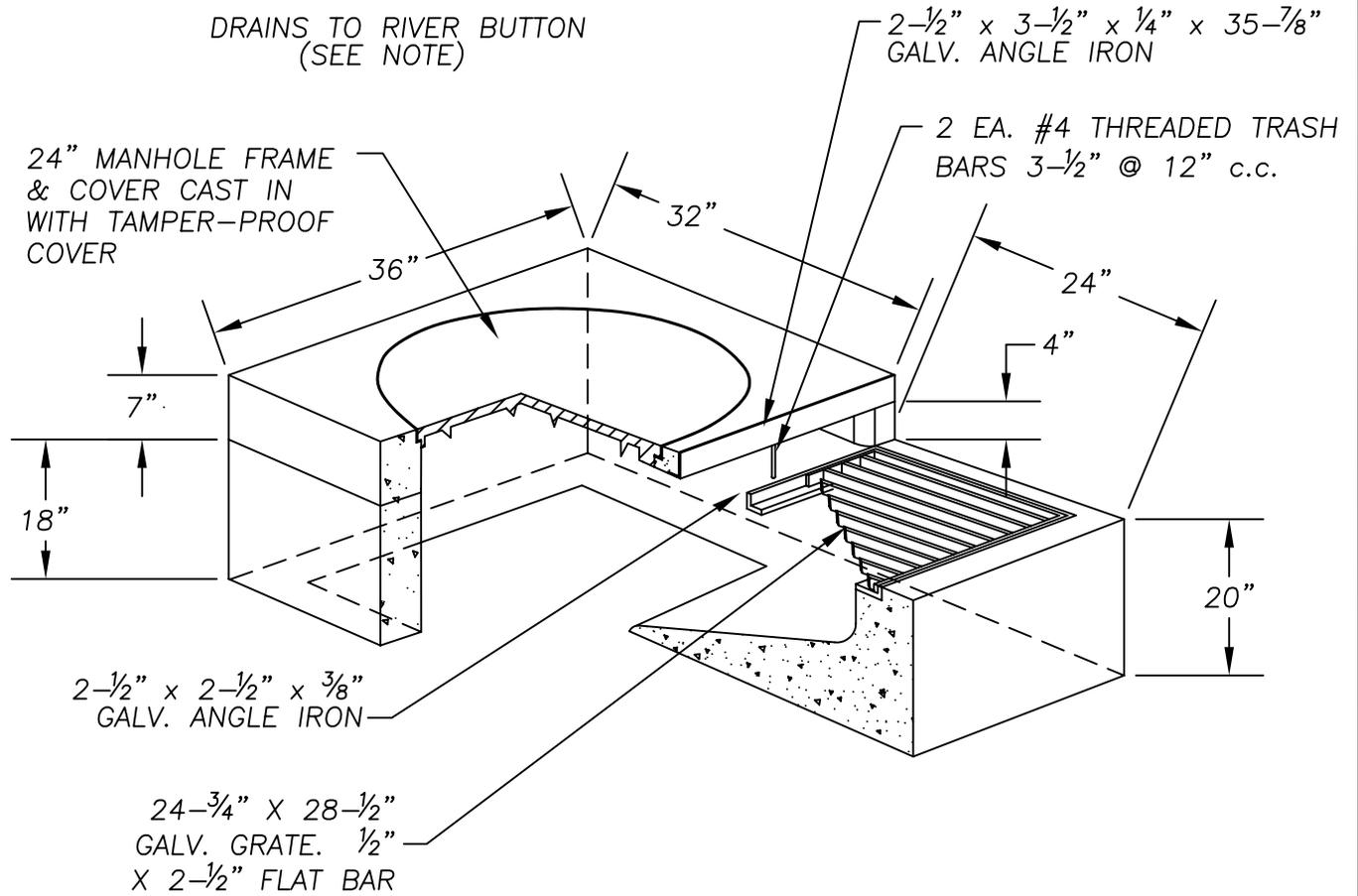
12" MIN.

PROFILE

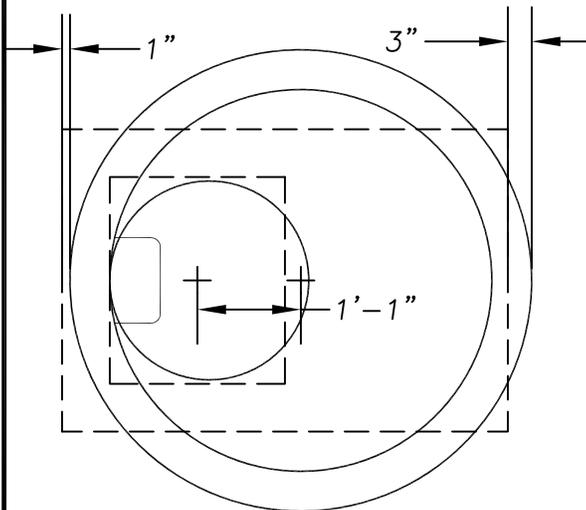
DRAWN	TNP	
DIV.	STORMWATER	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
INLET-MANHOLE STANDARD

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	405A



COMBINATION CURB INLET



STANDARD FLAT TOP WITH ROUND OPENING

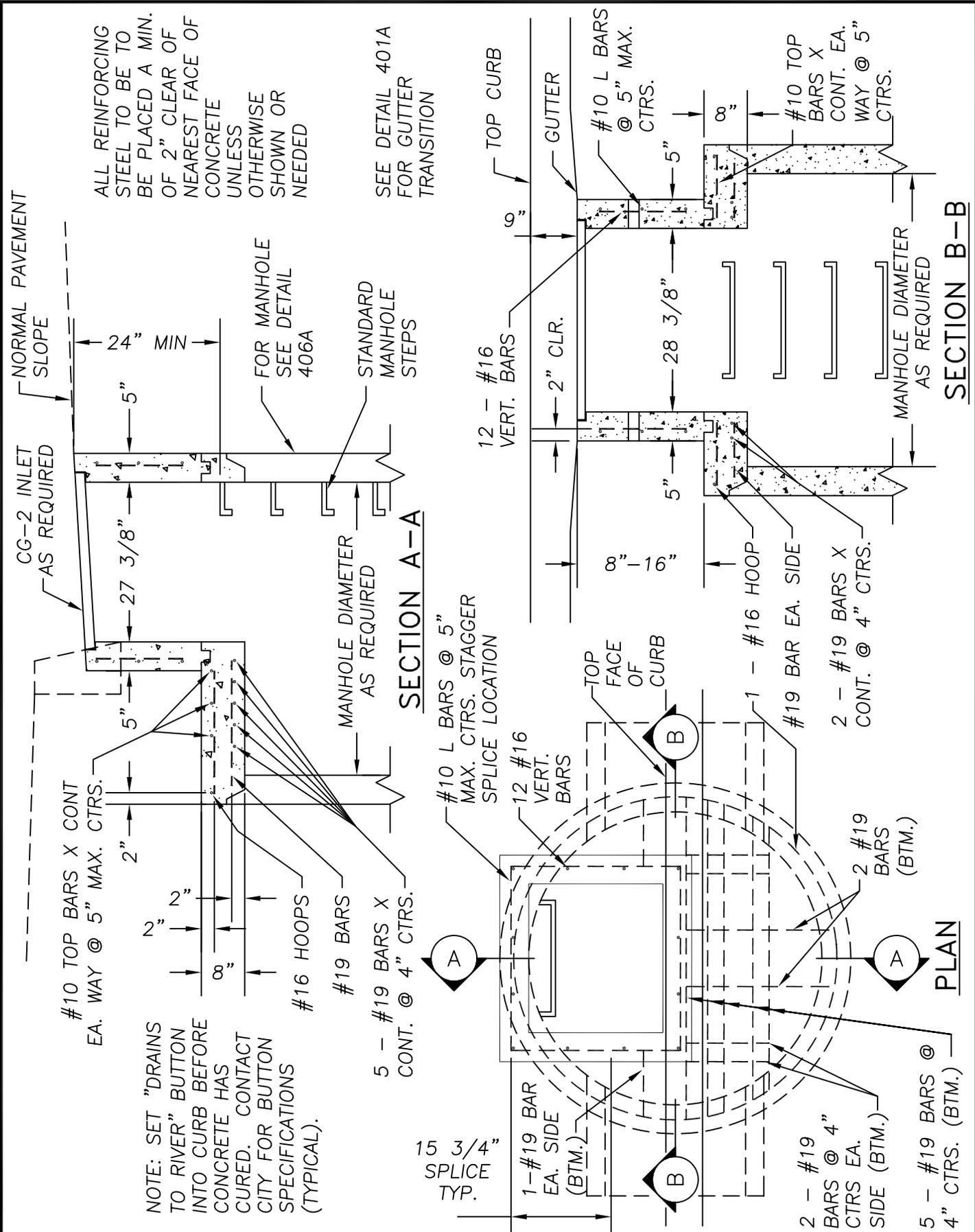
NOTES:

1. REINFORCING FOR INLET UNIT 3 EA. #4 HORIZONTAL BARS.
2. REINFORCING FOR TOP UNIT 2 EA. #3 HORIZONTAL BARS.
3. REINFORCING FOR INLET SLOPED BASE, 4" X 4" MESH.
4. GUTTER IS TAPERED DOWN TO GRATE INLET.
5. SET "DRAINS TO RIVER" BUTTON INTO ADJACENT CURB BEFORE CONCRETE HAS CURED, CONTACT CITY FOR BUTTON SPECIFICATIONS (TYPICAL).

DRAWN	TNP	
DIV.	STORMWATER	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
INLET-MANHOLE COMBINATION CURB INLET

SCALE	N.T.S.
DATE	JAN. 1,2006
APPR.	<i>OR</i>
DWG. NO.	405B



ALL REINFORCING STEEL TO BE TO BE PLACED A MIN. OF 2" CLEAR OF NEAREST FACE OF CONCRETE UNLESS OTHERWISE SHOWN OR NEEDED

SEE DETAIL 401A FOR GUTTER TRANSITION

FOR MANHOLE SEE DETAIL 406A

STANDARD MANHOLE STEPS

SECTION A-A

SECTION B-B

NOTE: SET "DRAINS TO RIVER" BUTTON INTO CURB BEFORE CONCRETE HAS CURED. CONTACT CITY FOR BUTTON SPECIFICATIONS (TYPICAL).

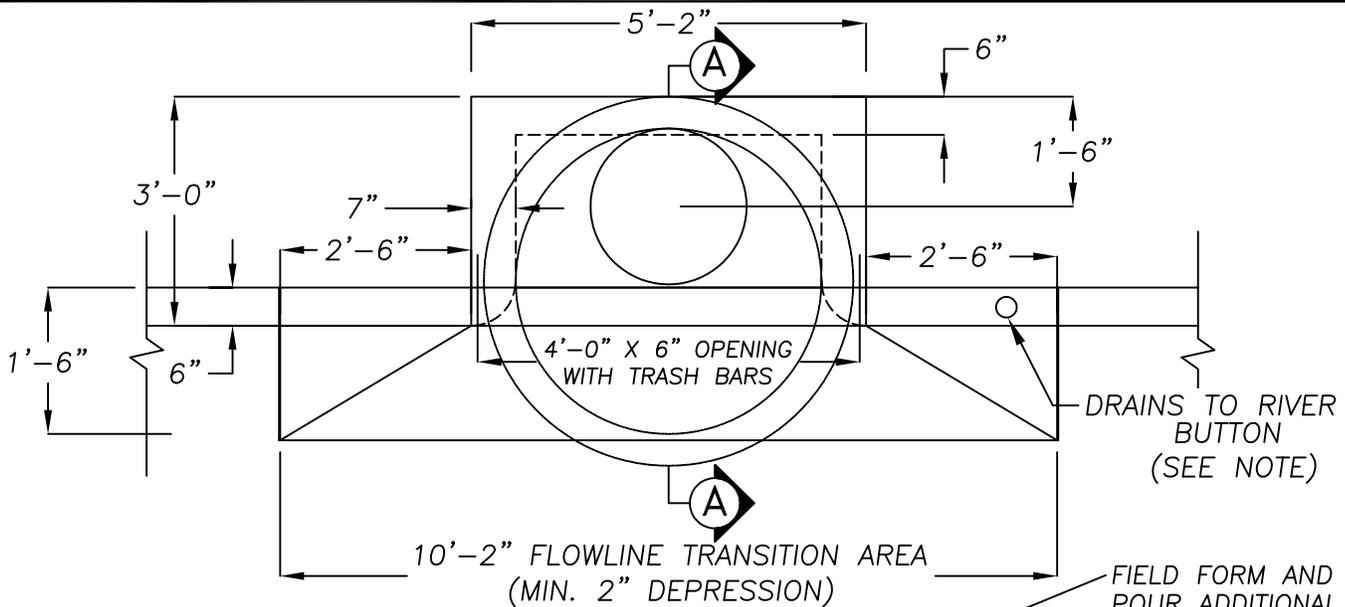
15 3/4" SPLICE TYP.

PLAN

DRAWN	TNP		
DIV.	STORMWATER		
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
INLET-MANHOLE
ALTERNATE TOP

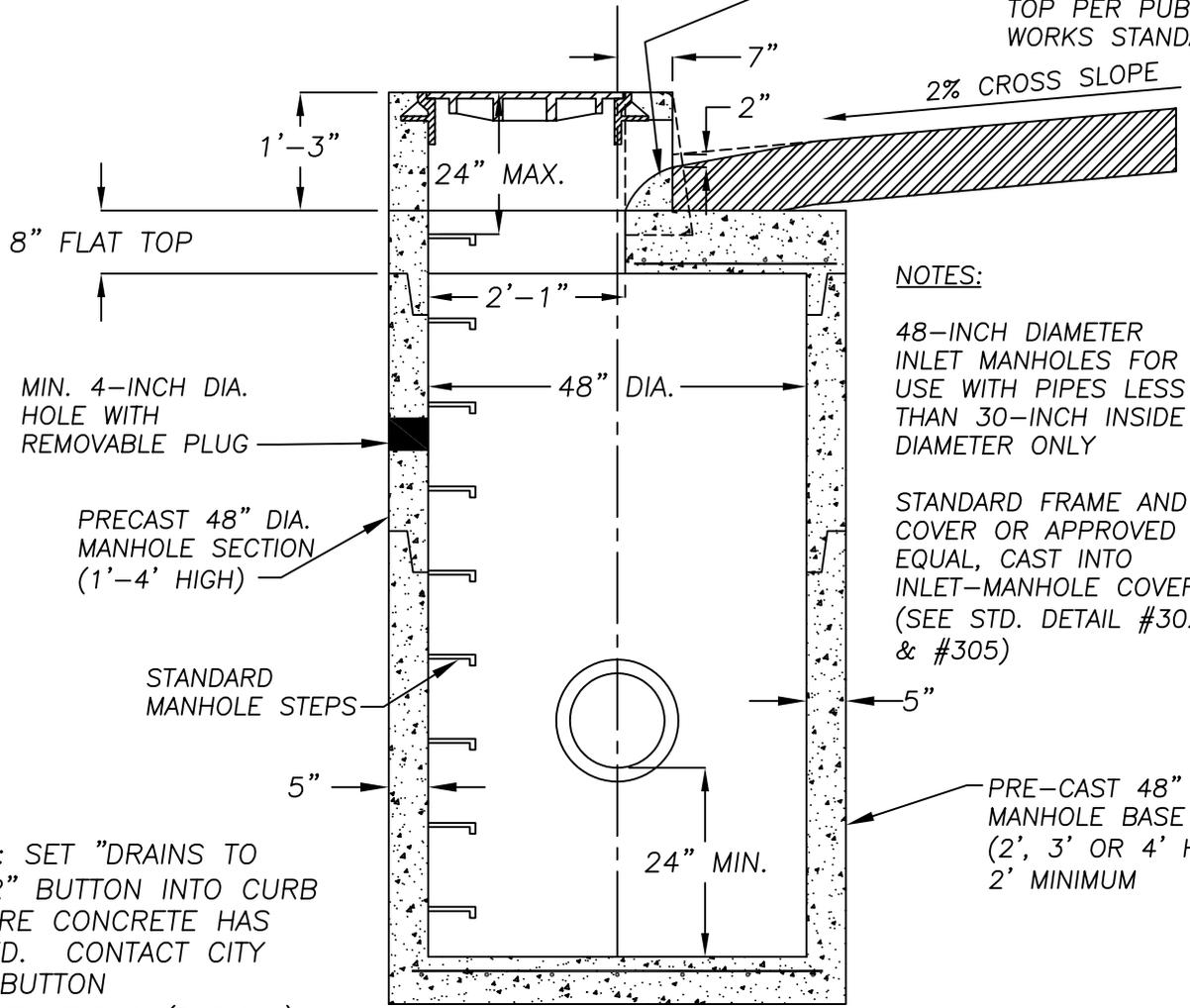
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	405C



PLAN

NOT TO SCALE

FIELD FORM AND POUR ADDITIONAL CONCRETE TRANSITION TO FLAT TOP PER PUBLIC WORKS STANDARDS



NOTES:

48-INCH DIAMETER INLET MANHOLES FOR USE WITH PIPES LESS THAN 30-INCH INSIDE DIAMETER ONLY

STANDARD FRAME AND COVER OR APPROVED EQUAL, CAST INTO INLET-MANHOLE COVER (SEE STD. DETAIL #302 & #305)

PRE-CAST 48" DIA. MANHOLE BASE (2', 3' OR 4' HIGH) 2' MINIMUM

NOTE: SET "DRAINS TO RIVER" BUTTON INTO CURB BEFORE CONCRETE HAS CURED. CONTACT CITY FOR BUTTON SPECIFICATIONS (TYPICAL).

PROFILE

(SECTION A-A)
NOT TO SCALE

DRAWN		TNP
DIV.		STORMWATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

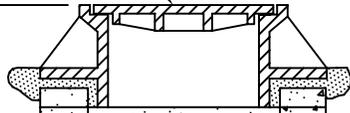
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>OR</i>
DWG. NO.	405D

NON-GRATED INLET-MANHOLE-A

FRAME AND COVER
SET IN MORTAR
SEE STD. DETAILS
308 & 309
AS CALLED OUT
ON PLANS

MANHOLE ACCESS
FROM ABOVE

24" MAX.



36" MAX.

1/2" BOLT
(STAINLESS
STEEL)

12"

OVERFLOW EL.

12" MIN.

STAINLESS CHAIN
200LB. CAPACITY
SLACK WHEN
GATE IS DOWN

3"

30" MIN.

FLOW

INVERT
ELV.

FLOW

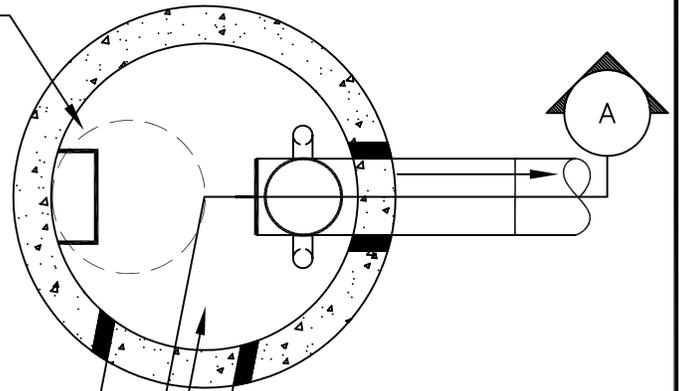
WATER TIGHT
TURN OUT GATE
IN PLACE AS
APPROVED
BY ENGINEER.
MIN. 8" DIA.

60" MIN.

5" MIN.

36" MIN.

12" MIN. SECTION A-A



INFLOW LINE(S)
PER PLAN

PLAN

6" MIN.

MULTI-ORIFICE ELBOWS TO BE
LOCATED TO ASSURE LADDER
CLEARANCE. ORIFICE SHALL BE
MOUNTED ON BOTTOM OF
ELBOWS. ELBOWS SHALL BE
SHORT RADIUS AND SHALL NOT
EXTEND MORE THAN 8" FROM
OVERFLOW PIPE.

FABRICATED SOLID WALL HDPE
CROSS PER ASTM D-1248 SDR 26.
SLIGHT TAPER ON OUTLET PIPE BY
MANUFACTURER TO MAKE
WATERTIGHT CONNECTION BY
SLIPPING INTO OUTLET PIPE.

VARIES

APPROVED PIPE
12" MIN.

NON SHRINK GROUT
(TYPICAL)

COMPACTED GRANULAR
MATERIAL

RESTRICTOR PLATE (FOR
FLOW CONTROL ONLY)
ORIFICE DIA. = _____

DRAWN	TNP	
DIV.	STORMWATER	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES

CITY OF GRESHAM

1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

FLOW CONTROL
MANHOLE

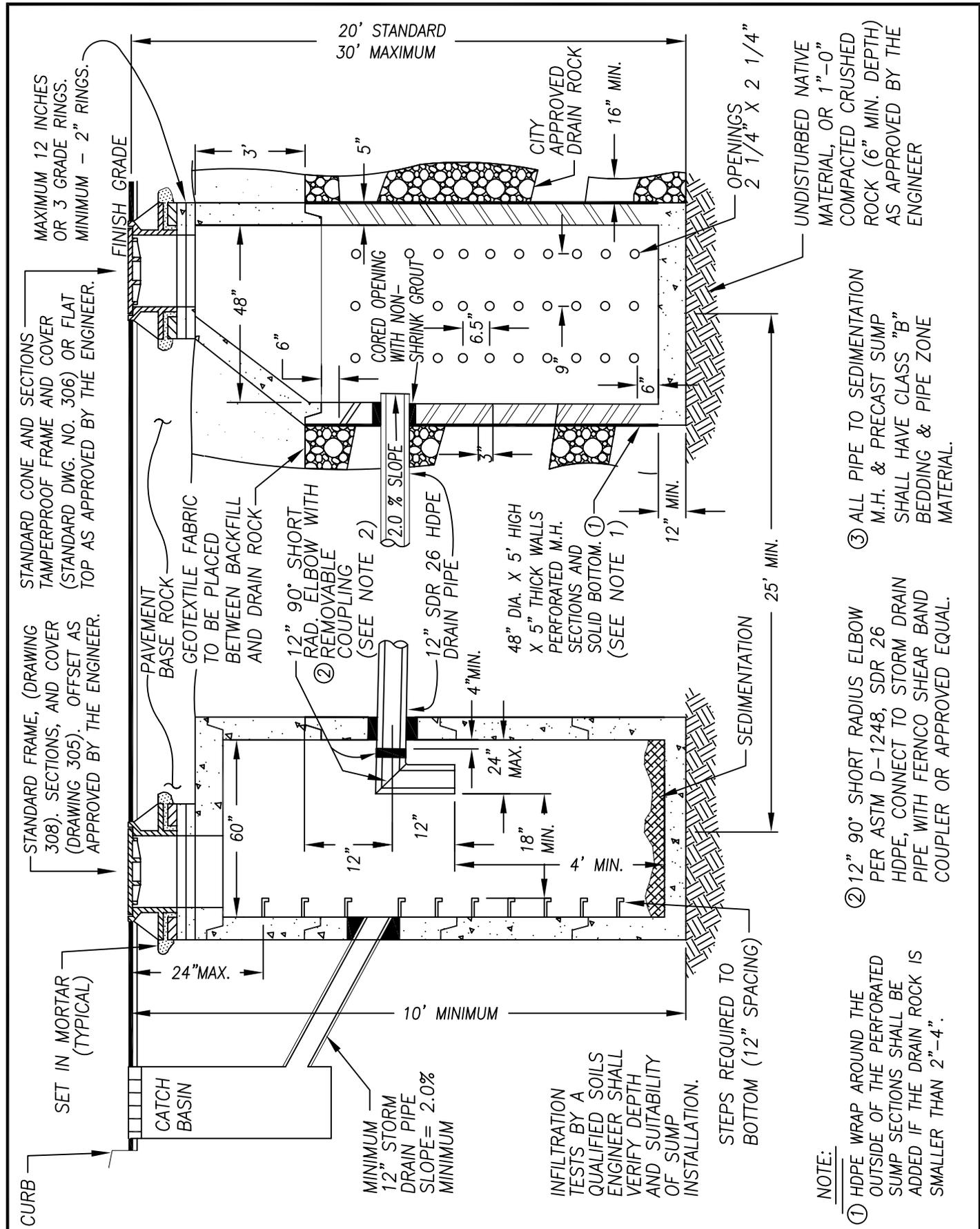
SCALE N.T.S.

DATE JAN. 1, 2006

APPR.

OR

DWG. NO. 407



STANDARD FRAME, (DRAWING 308). SECTIONS, AND COVER (DRAWING 305). OFFSET AS APPROVED BY THE ENGINEER.

STANDARD CONE AND SECTIONS TAMPERPROOF FRAME AND COVER (STANDARD DWG. NO. 306) OR FLAT TOP AS APPROVED BY THE ENGINEER.

PAVEMENT BASE ROCK TO BE PLACED BETWEEN BACKFILL AND DRAIN ROCK

GEOTEXTILE FABRIC TO BE PLACED BETWEEN BACKFILL AND DRAIN ROCK

MAXIMUM 12 INCHES OR 3 GRADE RINGS. MINIMUM - 2" RINGS.

20' STANDARD
30' MAXIMUM

12" 90° SHORT RAD. ELBOW WITH REMOVABLE COUPLING (SEE NOTE 2)

12" SDR 26 HDPE DRAIN PIPE

48" DIA. X 5' HIGH PERFORATED M.H. SECTIONS AND SOLID BOTTOM. (SEE NOTE 1)

CITY APPROVED DRAIN ROCK

UNDISTURBED NATIVE MATERIAL, OR 1"-0" COMPACTED CRUSHED ROCK (6" MIN. DEPTH) AS APPROVED BY THE ENGINEER

OPENINGS 2 1/4" X 2 1/4"

12" MIN.

SEDIMENTATION

25' MIN.

STEPS REQUIRED TO BOTTOM (12" SPACING)

60"

12"

18" MIN.

4' MIN.

24" MAX.

12"

18" MIN.

4' MIN.

12" MIN.

SEDIMENTATION

25' MIN.

STEPS REQUIRED TO BOTTOM (12" SPACING)

12" MIN.

SEDIMENTATION

25' MIN.

STEPS REQUIRED TO BOTTOM (12" SPACING)

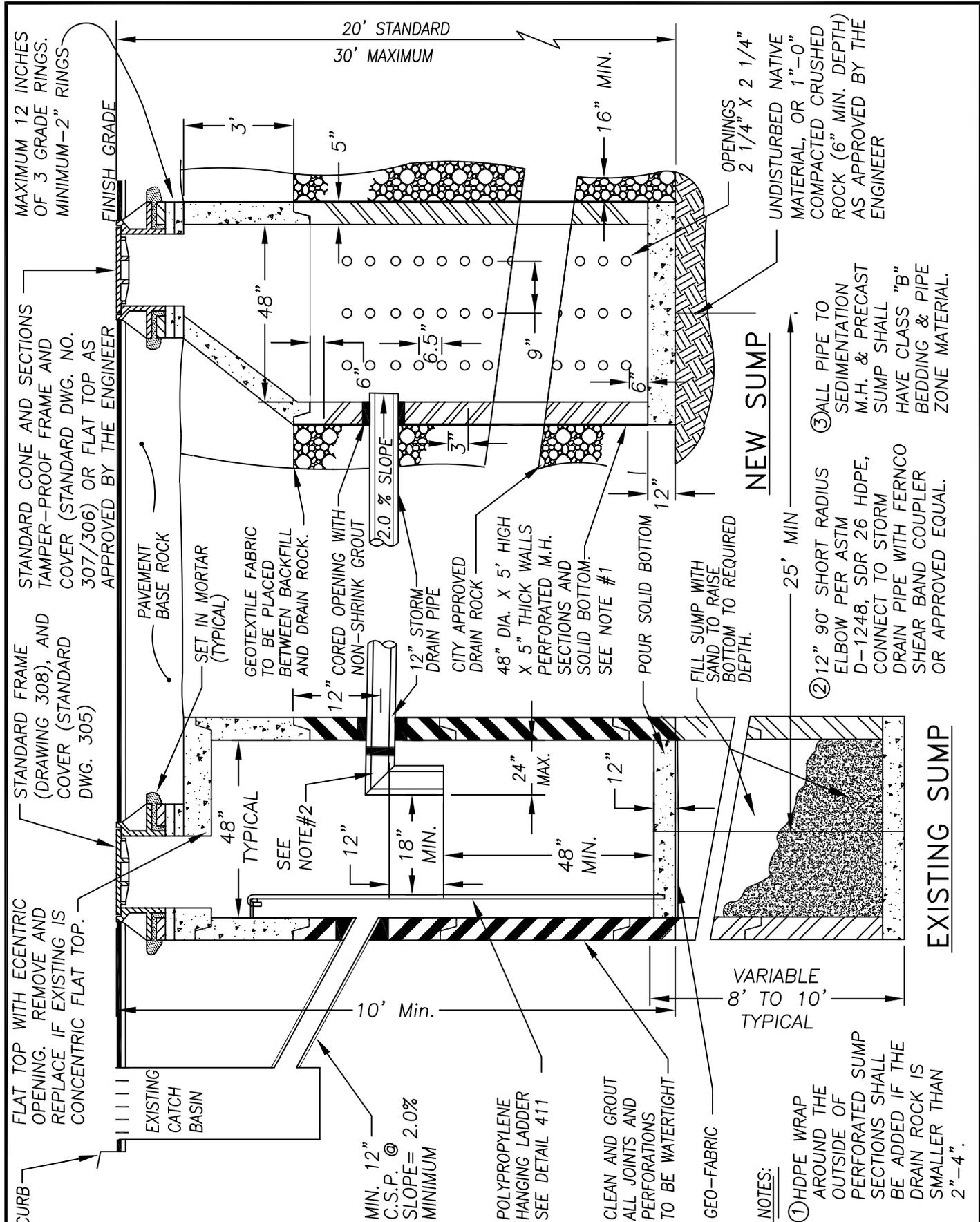
- NOTE:
- ① HDPE WRAP AROUND THE OUTSIDE OF THE PERFORATED SUMP SECTIONS SHALL BE ADDED IF THE DRAIN ROCK IS SMALLER THAN 2"-4".
 - ② 12" 90° SHORT RADIUS ELBOW PER ASTM D-1248, SDR 26 HDPE, CONNECT TO STORM DRAIN PIPE WITH FERONCO SHEAR BAND COUPLER OR APPROVED EQUAL.
 - ③ ALL PIPE TO SEDIMENTATION M.H. & PRECAST SUMP SHALL HAVE CLASS "B" BEDDING & PIPE ZONE MATERIAL.

DRAWN	TNP	
DIV.	STORMWATER	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

STORM SUMP SYSTEM

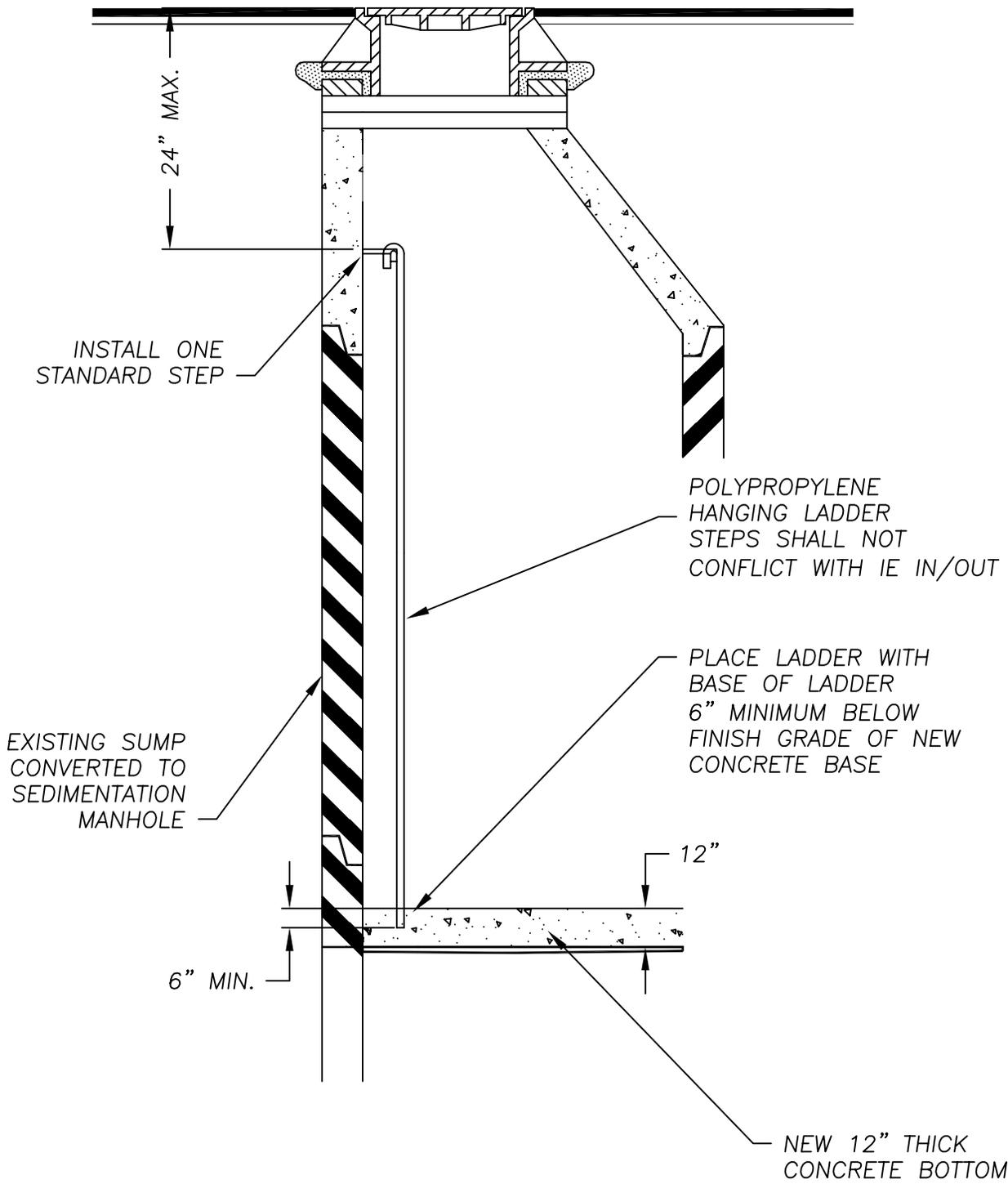
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	409



DRAWN	TNP	
DIV.	STORMWATER	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
**STORM SUMP SYSTEM AND SEDIMENTATION
 MANHOLE (TYPICAL RETROFIT INSTALLATION)**

SCALE	N.T.S.
DATE	JAN. 1,2006
APPR.	<i>[Signature]</i>
DWG. NO.	410



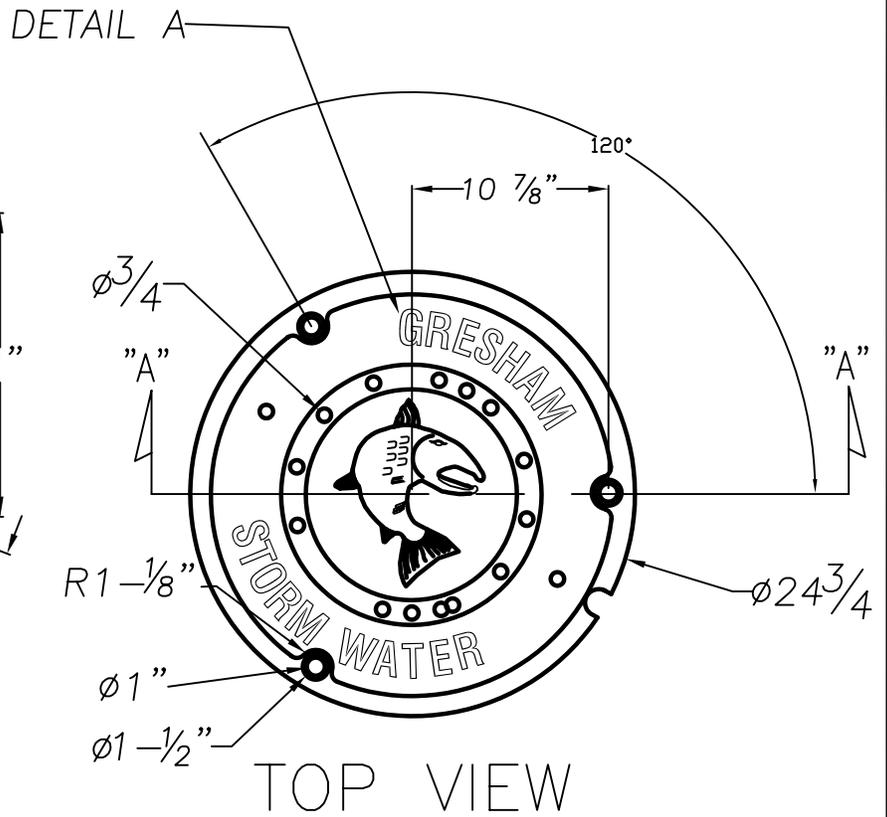
DRAWN TNP		
DIV. STORMWATER		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
POLYPROPYLENE HANGING LADDER

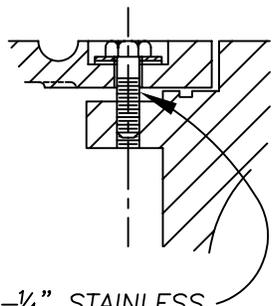
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	411



DETAIL A
RAISED TEXT

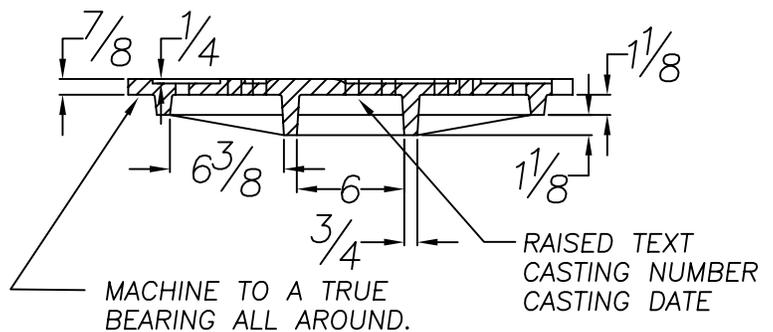


TOP VIEW



1/2"-13 NC X 1-1/4" STAINLESS
STEEL HEX HEAD CAP SCREW
W/1-1/4" Ø OD X 3/32" THK. 8-18
STAINLESS STEEL WASHER & 3/32"
NEOPRENE WASHER, (3) EA. REQUIRED.

LOCKDOWN DETAIL



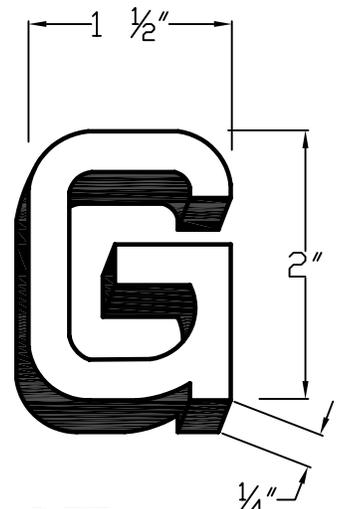
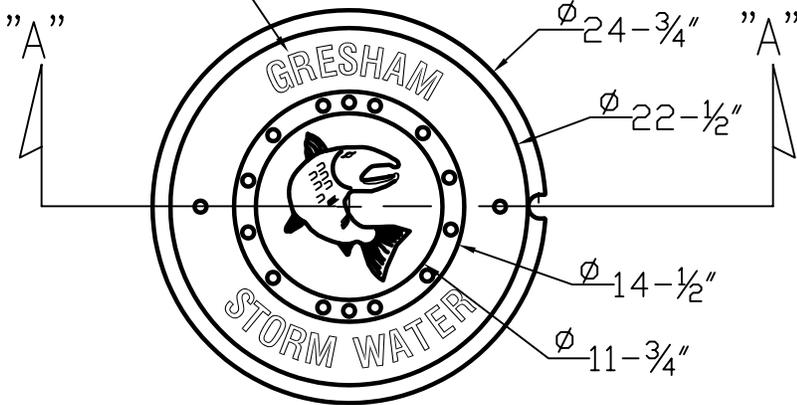
SECTION A-A

DRAWN	BOEB-RRB	
DIV.	STORMWATER	
REV.	DATE	APPR.

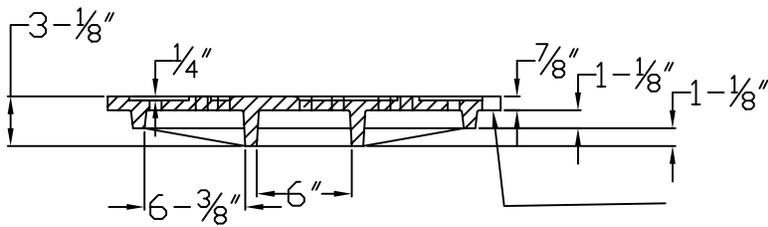
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STORMWATER TAMPERPROOF
MANHOLE COVER

SCALE	N.T.S.
DATE	JAN. 1,2006
APPR.	<i>OR</i>
DWG. NO.	413A

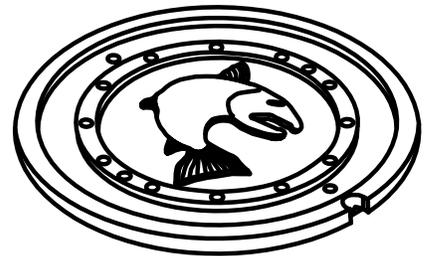
DETAIL "A"



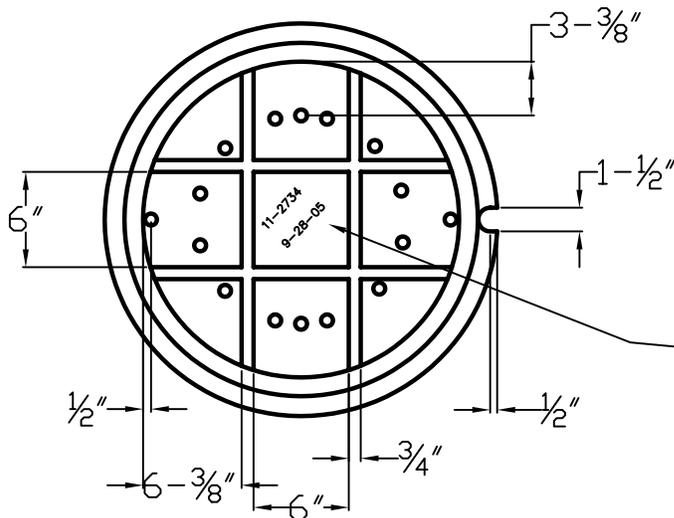
DETAIL A
RAISED TEXT



SECTION A-A



RAISED TEXT NOT SHOWN

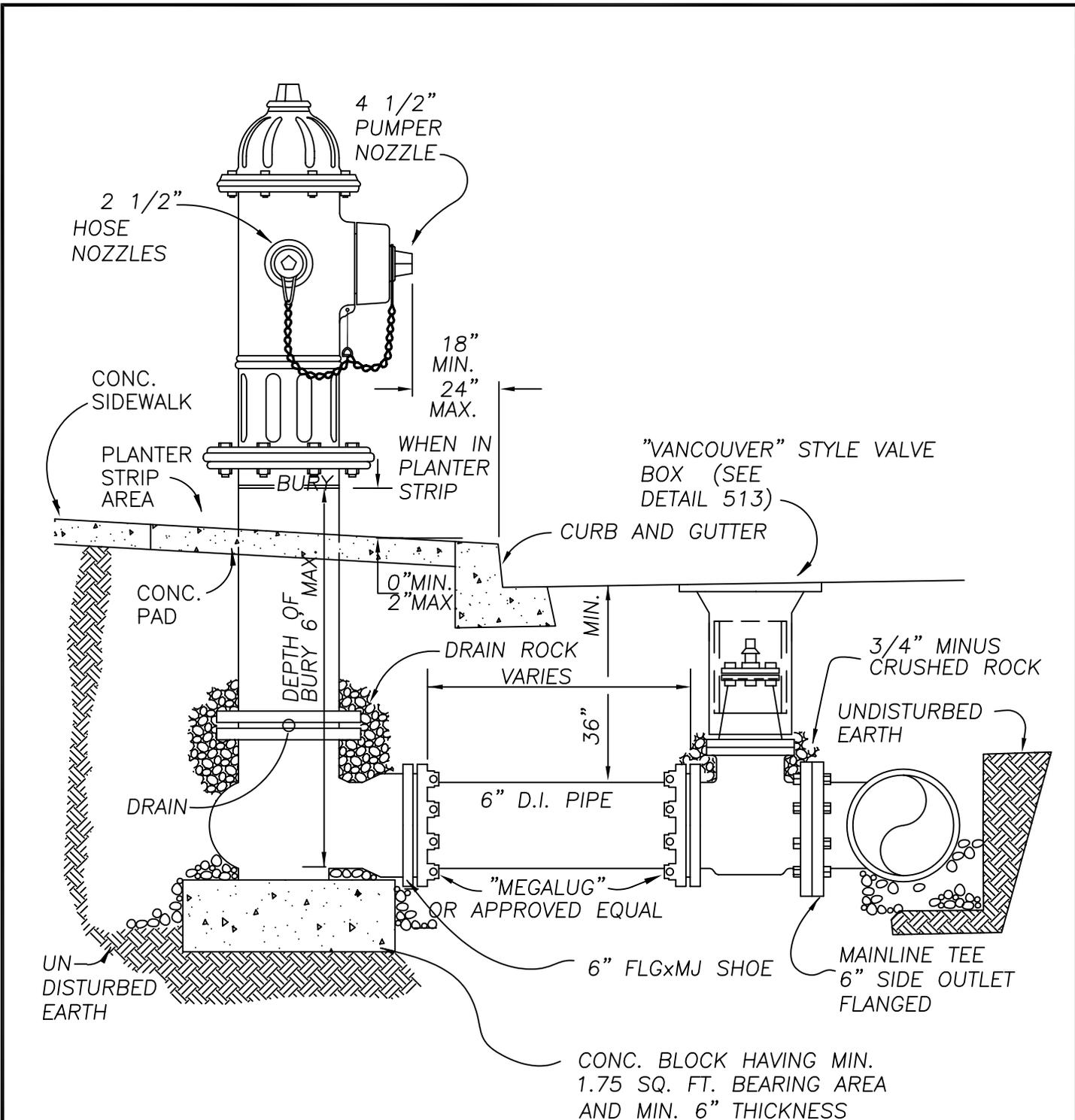


RAISED TEXT
Casting Number
Casting Date

DRAWN	BOEB-RRB	
DIV.	STORMWATER	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STORMWATER
MANHOLE COVER

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>OR</i>
DWG. NO.	413B



DRAWN		RWL
DIV.		WATER DIVISION
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD FIRE HYDRANT ASSEMBLY

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	501A

NOTES:

1. HYDRANT TO BE MUELLER SUPER CENTURION 250, MDL A-423 ONLY WITH 1-1/2" OPERATION NUT. SEE 502.12, DIVISION 5, "WATER TECHNICAL REQUIREMENTS".
2. HYDRANT COLOR TO BE YELLOW SHERWIN WILLIAMS GCC-5006, OR APPROVED EQUAL.
3. ALL MJ'S ON TEE, VALVE AND FIRE HYDRANT TO BE RESTRAINED WITH "MEGALUG" FOLLOWER GLANDS OR APPROVED EQUAL. RESTRAIN MIN. 10 LF OF PIPE EACH SIDE OF TEE ON MAIN LINE AND ALL PIPE AND FITTINGS RESTRAIN ON THE BRANCH SIDE OF TEE. NO JOINTS BETWEEN VALVE AND SHOE UNLESS PIPE RUN LENGTH IS OVER 18 LF.
4. MIN. 4' CU. FT. OF 1-1/2"-3/4" CLEAN DRAIN ROCK SHALL BE PLACED AROUND SHOE UP TO A MIN. OF 6" ABOVE DRAIN OUTLETS
5. WHERE CURB TIGHT SIDEWALK (NO PLANTER STRIP) AND CURB EXIST, HYDRANT PUMPER PORT SHALL BE PLACED AT BACK OF SIDEWALK, OR AS DIRECTED BY ENGINEER.
6. BURY OF HYDRANT SHALL BE MEASURED FROM BURY LINE TO BOTTOM OF CONNECTING PIPE. HYDRANT SHALL HAVE A MAX. OF A 6' BURY, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
7. HYDRANT VALVE SHALL BE MUELLER RESILIENT WEDGE GATE VALVE #A-2360-16 OR APPROVED EQUAL.
8. WHERE NO SIDEWALK EXISTS AROUND A HYDRANT, INCLUDING A PLANTER STRIP, PLACE A 5'x5'x4" THICK CONC. PAD AROUND HYDRANT. PLACE ANY ADJACENT SIDEWALK AT THE TIME HYDRANT PAD IS POURED. EXPANSION JOINT MATERIAL SHALL BE PLACED AROUND HYDRANT BARRELL WHEN PLACED IN CONCRETE.

DRAWN		RWL	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 STD. F.H. ASSEMBLY SPECIFICATIONS	SCALE	N.T.S.
DIV.		WATER		DATE	JAN.1, 2006
REV.	DATE	APPR.		APPR.	
	RWL			DWG. NO.	501B

IF NATIVE MATERIAL IS UNSUITABLE FOR BACKFILL, APPROVED GRANULAR MATERIAL WILL BE REQ'D

NATIVE MATERIAL OR 4" OF 1" MINUS AS REQUIRED.

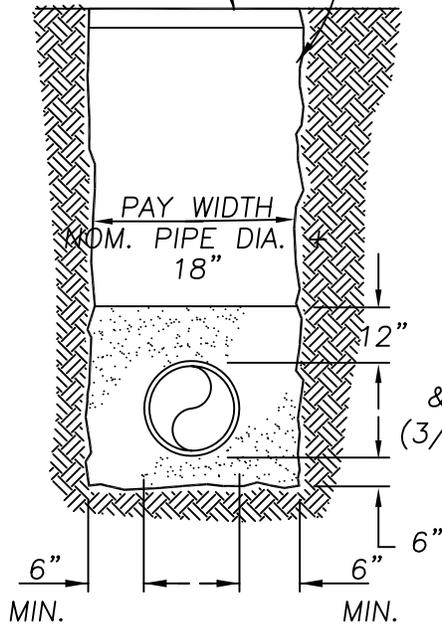
SAW CUT EXISTING A.C. TO NEAT, STRAIGHT LINES.

3" A.C. PAVEMENT OR SAME AS EXIST. DEPTH, WHICHEVER IS GREATER, OR AS REQ'D BY PERMIT.

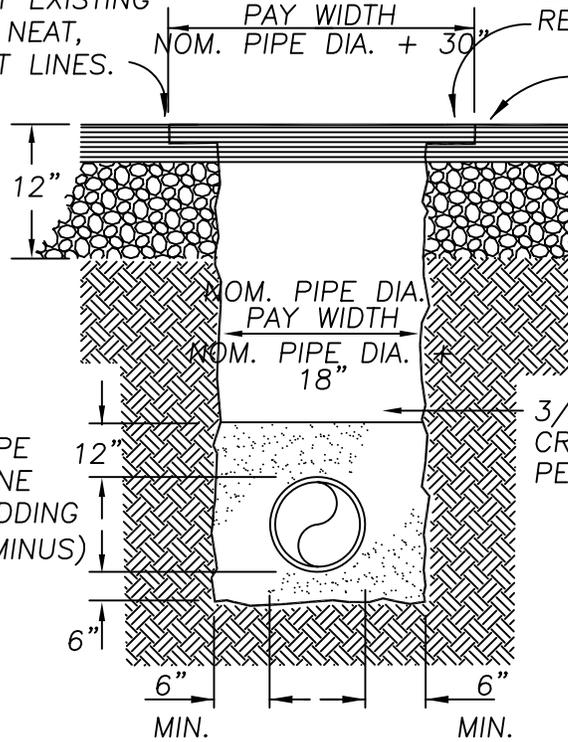
T-CUT 1 1/2" THICK OR DEPTH OF EXIST. TOP LIFT, WHICHEVER IS GREATER

EXIST. BASE ROCK

3/4" MINUS CRUSHED AGG. PER CITY SPECS.



UNPAVED EASEMENT SECTION



PAVING SECTION

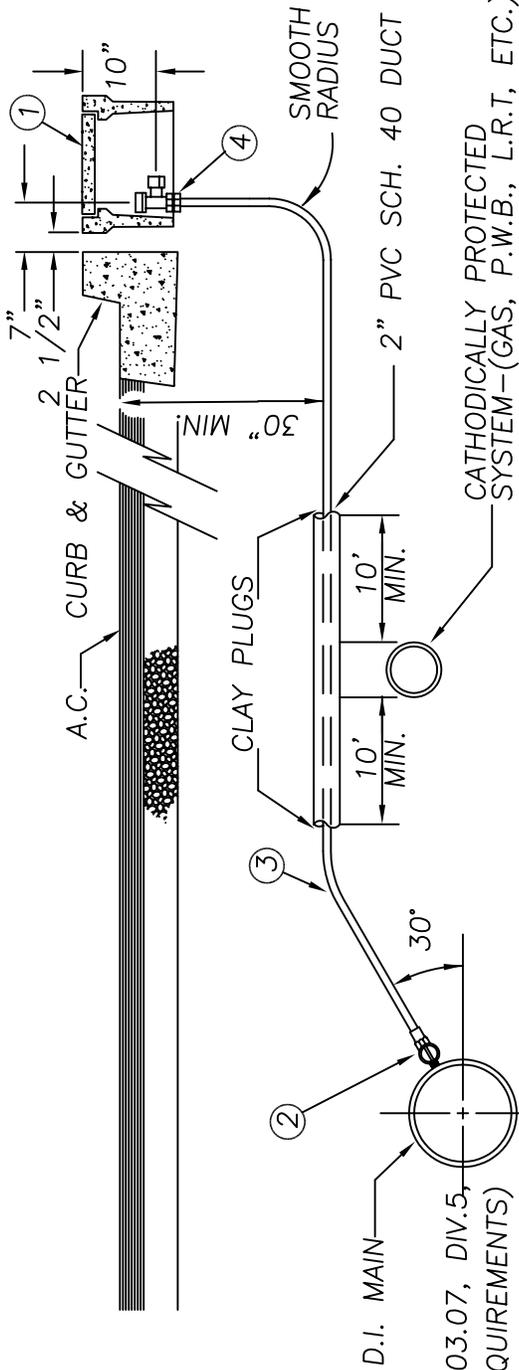
NOTES.

1. ALL WATER MAINS SHALL HAVE A MIN. COVER OF 36" IN RIGHT-OF-WAY AND 48" IN EASEMENTS
2. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95% OF MAX. DENSITY PER AASHTO T-180.
3. ALL TRENCH BACKFILL AND PATCHING SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY.
4. PAYMENT FOR PAVEMENT CUT AND REPAIR SHALL INCLUDE ALL A.C. AND CRUSHED AGGREGATE TO 12" BELOW FINISH GRADE.
5. SAND BACKFILL WILL BE REQ'D IN PIPE ZONE WHEN PIPE LINE IS TO BE POLYBAGGED.
6. BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS, OR AS DETERMINED IN FIELD BY THE CITY ENGINEER.

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD TRENCH SECTION

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	502



MATERIALS: (SEE 503.07, DIV. 5, WATER TECHNICAL REQUIREMENTS)

1. ARMORCAST METER BOX P6000485, COVER A6000484DQ, DROP-IN A6000484DQ, IN NON-TRAFFIC AREAS. IN TRAFFIC AREAS, A "OLDCASTLE #37 METER BOX SHALL BE USED AND TRAFFIC RATED LID. (OR AN APPROVED EQUAL).
2. MUELLER CORP. STOP #B-25008 (110 COMPRESSION), A.Y. McDONALD #4701BQ, OR AN APPROVED EQUAL.
3. 1" SOFT TEMPER, TYPE "K" COPPER TUBING COMPLYING WITH ASTM B-88.
4. MUELLER, ANGLE METER STOP NO. B-24258, (110 COMPRESSION), A.Y. McDONALD #4602 BQ, OR AN APPROVED EQUAL.

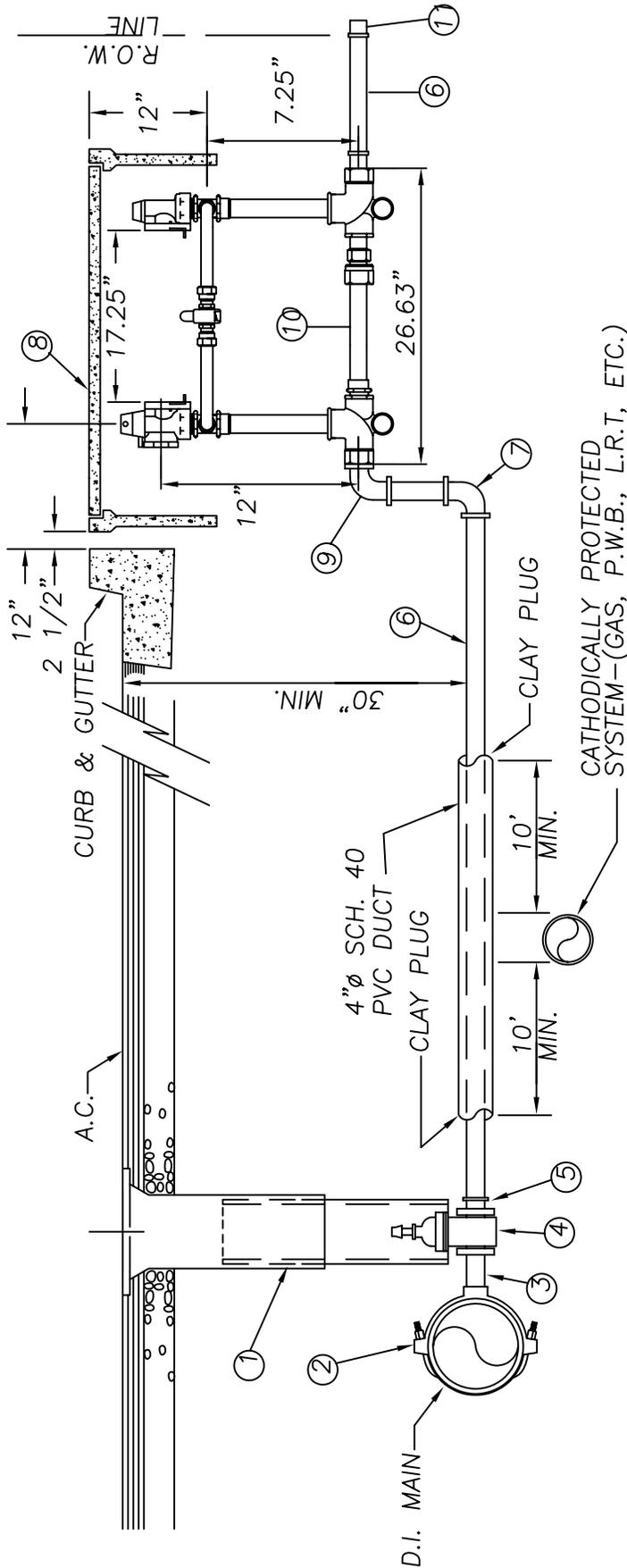
NOTES:

1. SUBSTITUTES FOR ANY MATERIALS SHOWN SHALL BE APPROVED BY THE ENGINEER.
2. ALL PIPE AND STRUCTURE ZONES SHALL BE BACKFILLED USING 3/4" MINUS CRUSHED AGG. AND COMPACTED TO 95% MAX. DENSITY AS DETERMINED BY AASHTO T-180.
3. WHEN AN ACTIVE CATHODIC PROTECTED SYSTEM IS ENCOUNTERED, SCH. 40 PVC SHALL BE INSTALLED WITH IMPERVIOUS PLUG AS SHOWN ABOVE.
4. METER BOX SHALL BE CENTERED OVER THE COMPLETED METER ASSEMBLY.
5. FOR VACANT RESIDENTIAL LOTS, LOCATE SERVICE 18" INSIDE SIDE LOT LINE. LOT LINE TO BE PROJECTED PERPENDICULAR TO CURB.
6. ANGLE METER STOP SHALL BE PERPENDICULAR TO CURB LINE.
7. SET CORP. STOP WITH OPERATION NUT AT 3 OR 9 O'CLOCK.
8. TRAFFIC BEARING METER BOX AND LIDS (OLDCASTLE NO. 37 OR APPROVED EQUAL) SHALL BE USED WHERE METERS ARE LOCATED WITHIN ANY PORTION OF DRIVEWAY OR APRON AND OTHER TRAFFIC AREAS.
9. ONLY APPROVED BIT WITH CC THREADS AND TAPPING MACHINE ALLOWED FOR INSTALLATION OF CORP. STOP.
10. COPPER SERVICE SHALL BE INSTALLED IN A DIRECT LINE BETWEEN TAP AND METER.
11. COPPER TO BE ONE CONTINUOUS PIECE (NO UNIONS) UNLESS OTHERWISE APPROVED.

DRAWN		RWL	
DIV.		WATER	
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD 1" WATER SERVICE

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	503



SEE STANDARD DETAIL DRAWING NO. 504C
FOR MATERIAL AND INSTALLATION NOTES

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD 2" SERVICE - DOMESTIC
W/O IRRIGATION (1 1/2" - 2" METER)

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	504B

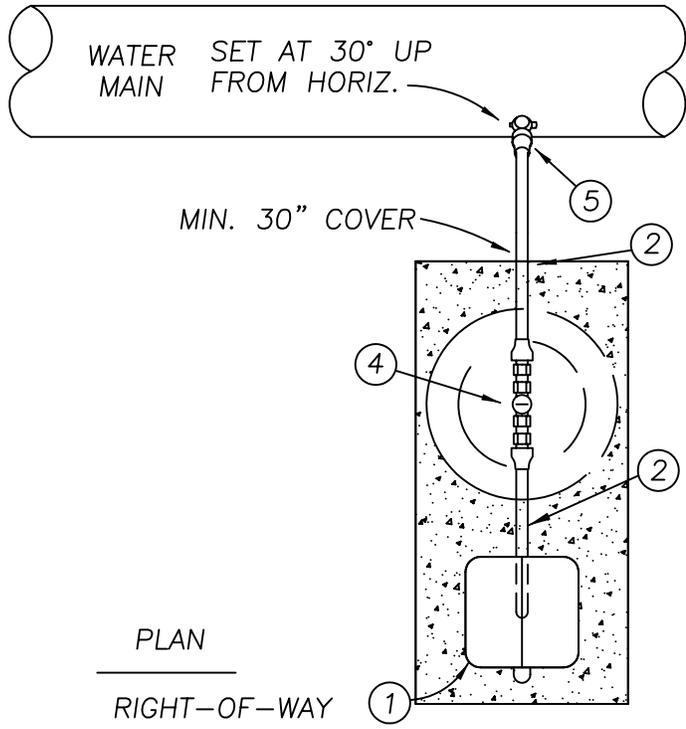
MATERIALS:

1. STANDARD VALVE BOX, (SEE DETAIL 513)
2. PIPE O.D. x 2" TEE OR 2" F.I.P. SERVICE SADDLE (A.Y. McDONALD MFG. CO. MODEL 3826 OR APPROVED EQUAL)
3. 2" BRASS M.I.P. NIPPLE, 3" OR 6" LENGTH
4. 2" F.I.P. GATE VALVE (MUELLER NO. A-2369-8 OR APPROVED EQUAL)
5. 2" M.I.P. x MUELLER 110 COMPRESSION COUPLING (NO. H-15428) OR APPROVED EQUAL.
6. 2" ASTM B-88 TYPE "K" RIGID COPPER TUBING.
7. 2" 90° BEND, MUELLER 110 COMPRESSION (NO. H-15526) OR APPROVED EQUAL.
8. ARMORCAST METER BOX P6001534X12, COVER A600164312DZ, DROP IN A600048Z.
9. 2" 90° BEND, COMP. x M.I.P. (MUELLER H-15531) OR APPROVED EQUAL.
10. 2" METER YOKE (SETTER) (MUELLER NO. B-2423-99000), OR APPROVED EQUAL.
11. 2" COMP. x F.I.P. (MUELLER H-15451) W/PVC PLUG, OR APPROVED EQUAL.

NOTES:

1. SUBSTITUES FOR ANY MATERIALS SHOWN SHALL BE APPROVED BY THE ENGINEER,
2. ALL PIPE AND STRUCTURE ZONES SHALL BER BACKFILLED USING ¾"-MINUS CRUSHED AGG. AND COMPACTED TO 95% MAX. DENSITY AS DETERMINED BY AASHTO T-180.
3. WHEN AN ACTIVE CATHODIC PROTECTION SYSTEM, IS ENCOUNTERED, SCH. 40 PVC SHALL BE INSTALLED WITH IMPERVIOUS PLUGS, AS SHOWN.
4. METER BOXS SHALL BE CENTERED OVEDR THE COMPLETED METER AND FITTING ASSEMBLY.
5. CUSTOMER SHALL INSTALL AN APPROVED BACKFLOW PREVENTION ASSEMBLY AT RIGHT-OF-WAY.
6. METER SETTER SHALL BE PERPENDICULAR TO CURB LINE.

DRAWN			RWL	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 STANDARD 2" SERVICE - DOMESTIC WITH OR W/O IRRIGATION (1 1/2" - 2" METER)	SCALE	N.T.S.
DIV.			T		DATE	JAN.1, 2006
REV.	DATE	APPR.			APPR.	
					DWG. NO.	504C

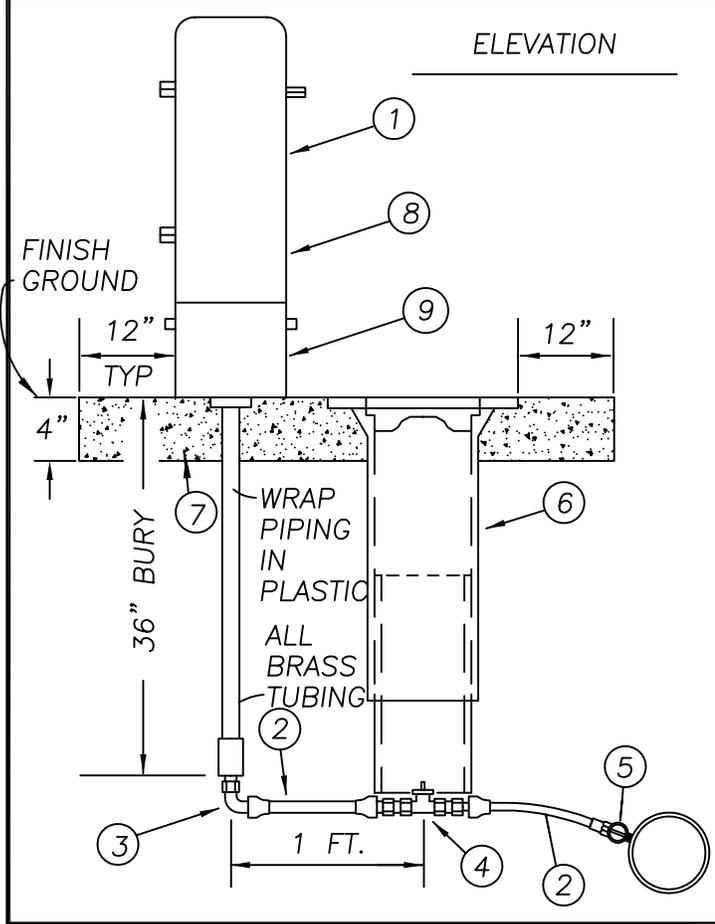


PLAN
RIGHT-OF-WAY

- MATERIALS
- ECLIPSE NO. 88 SAMPLING STATION WITH THREADED OUTLET NOZZLE AND BRASS INTERIOR, STAND PIPE GALVANIZED EXTERIOR OR APPROVED EQUAL.
 - $\frac{3}{4}$ " TYPE "K" SOFT TEMPER COPPER TUBING.
 - $\frac{3}{4}$ " QUARTER BEND M.I.P. x COMP. MUELLER H-15531 (110 COMPRESSION) OR APPROVED EQUAL.
 - $\frac{3}{4}$ " F.I.P. BALL VALVE, MUELLER B-25209 OR APPROVED EQUAL.
 - $\frac{3}{4}$ " CORP. STOP, MUELLER B-25008 (110 COMPRESSION XCC) OR APPROVED EQUAL.
 - STD. VALVE BOX (SEE DETAIL 513).
 - CONCRETE PAD 4" THK., x 46" LG x 31" WIDE.

NOTES

- ALL PIPE AND STRUCTURES SHALL BE BACKFILLED WITH $\frac{3}{4}$ "-0 CRUSHED ROCK COMPACTED TO MIN. 95% OF MAX. DENSITY PER AASHTO T-180
- SET STATION AT LOT LINE UNLESS OTHERWISE SPECIFIED.
- WHEN CROSSING CATHODICALLY PROTECTED SYSTEM, INSTALL PVC SLEEVE PER DETAIL 503.
- WHERE NO SIDEWALK EXISTS, PLACE CONC. PAD AS SHOWN. WHERE SIDEWALK EXIST., PLACE MIN. 12" AROUND BACK OF SAMPLE STA. AND INCORPORATE INTO NEW SIDEWALK POUR.



ELEVATION

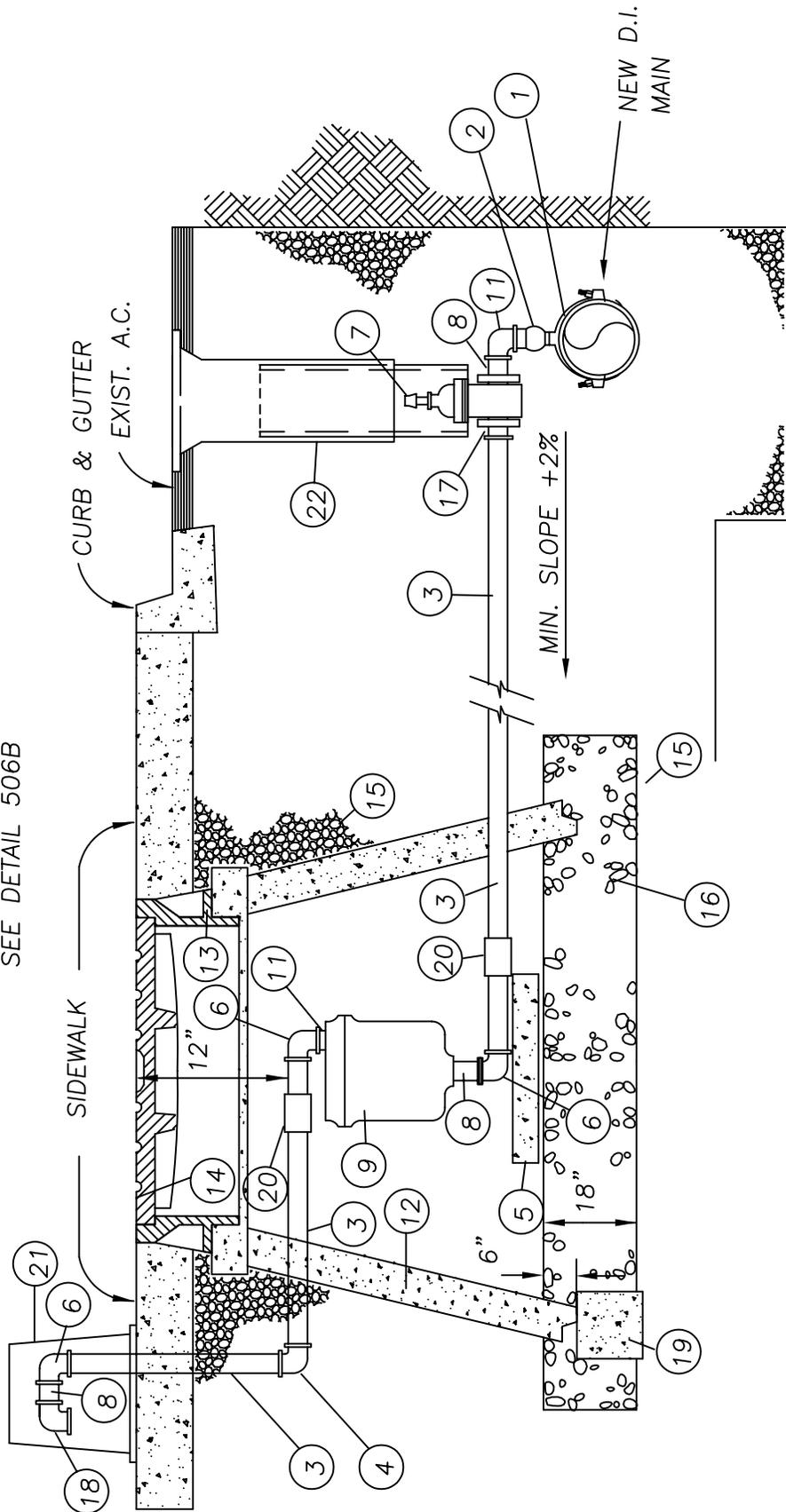
DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD WATER SAMPLING STATION

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	505

COMBINATION AIR VALVE UNIT SECTION

FOR SPECIFICATIONS OF AIR VALVE UNIT
SEE DETAIL 506B



DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
 STANDARD COMBINATION AIR VALVE UNIT

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	506A

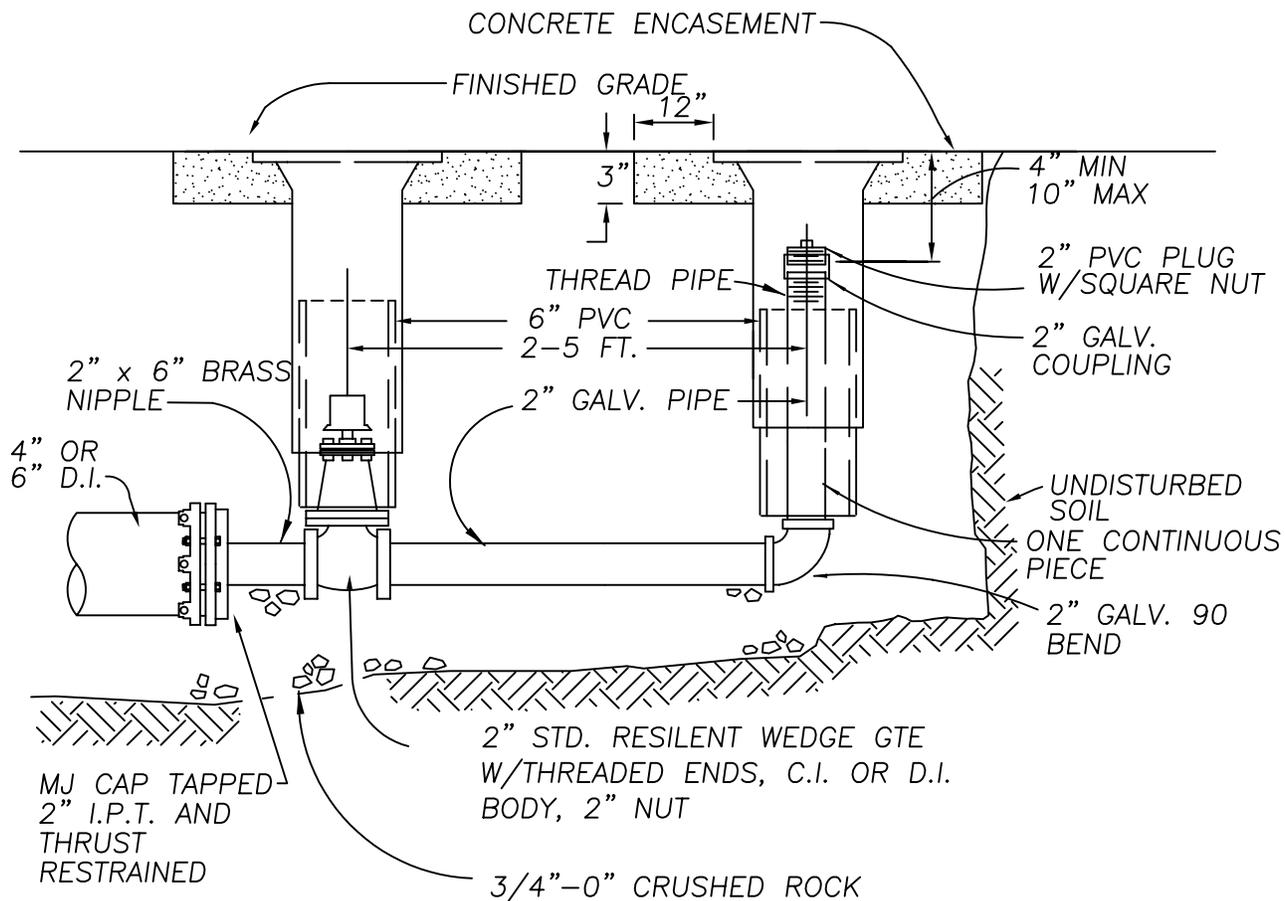
MATERIALS

1. A.Y. McDONALD MDL. 3826 OR APPROVED EQUAL
2. 2" M.I.P. CORP. STORP, MUELLER B-2969, OR APPROVED EQUAL
3. 2" ASTM B-88 RIGID COPPER
4. 2" BRASS 1/4 BEND, MUELLER 110 COMPRESSION OR APPROVED EQUAL
5. 12"x12"x4" CONCRETE BLOCK
6. 2" BRASS 1/4 BEND, F.I.P. x MUELLER 110 COMPRESSION, OR APPROVED EQUAL.
7. 2" R.W. F.I.P. GATE VALVE
8. 2" x3" BRASS M.I.P. NIPPLE
9. 2" COMBINATION AIR VALVE (VAL-MATIC NO. 202C OR APCO NO. 145C-2 OR APPROVED EQUAL).
10. 2" x 1-1/2" BRASS M.I.P. NIPPLE
11. 2" F.I.P. BRASS 1/4 BEND
12. STD. 48" CONCRETE ECCENTRIC MANHOLE CONE W/NO STEPS
13. VALLEY IRON & STEEL FRAME NO. 106, 108 OR APPROVED EQUAL
14. VALLEY IRON & STEEL LID NO. 105, 107 OR APPROVED EQUAL
15. 3/4"-MINUS CRUSHED AGGREGATE.
16. 1-1/2" - 3/4" CLEAN DRAIN ROCK
17. 2" BRASS COUPLING, M.I.P. x MUELLER 110 COMPRESSION OR APPROVED EQUAL
18. 2" F.I.P. BRASS 1/4 BEND WITH SCREEN ON OUTLET.
19. 12" MANHOLE ADJUSTMENT RING.
20. 2" UNION, MUELLER 110 COMPRESSION OR A.Y. McDONALD
21. "HOT BOX" (EZBOX NO. EZ75 OR APPROVED EQUAL)
22. STANDARD VALVE BOX. SEE DETAIL 513.

NOTES

1. INSTALLATION LOCATED AT HIGH POINT OF MAIN.
2. 48" MANHOLE BARREL SECTIONS SHALL BE USED TO INCREASE DEPTH IF NECESSARY.
3. ALL PIPE AND STRUCTURE ZONES SHALL BE COMPACTED TO 95% OF MAX. DENSITY AS DETERMINED BY AASHTO T-180 OR AS SPECIFIED IN THE CONTRACT DOCUMENTS.
4. DETAIL NOT FOR SHALLOW INSTALLATIONS. INSTALLATIONS FOR WATERLINES WITH LESS THAN 36" OF COVER SHALL BE INDIVIDUALLY DESIGNED BY THE ENGINEER.
5. GROUT ALL AREAS WHERE COPPER PASSES THROUGH MANHOLE CONE.
6. PLACE "HOT BOX" OR APPROVED EQUAL AT BACK OF SIDEWALK IN UTILITY EASEMENT OR OBTAIN 5' x 5' WATER FACILITY EASEMENT.

DRAWN RWL			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030		SCALE N.T.S.
DIV. WATER					DATE JAN.1, 2006
REV.	DATE	APPR.	STANDARD COMBINATION AIR VALVE NOTES		APPR. <i>OR</i>
					DWG. NO. 506B



NOTES:

1. USE CITY STANDARD VALVE BOXES, LIDS, AND 6" PVC EXTENSION (SEE DETAIL 513)
2. VALVE BOXES TO BE CONCRETE ENCASED AS SHOWN, IF NOT IN PAVED AREA.
3. BLOW-OFF UNIT SHALL BE BACKFILLED WITH 3/4"-0" CRUSHED ROCK AND COMPACTED TO 95% OF MAX. DENSITY AS DETERMINED BY AASHTO T-180.
4. PLACE BLOW-OFF STANDPIPE 3 FT INSIDE R.O.W. LINE AT THE END OF STREET (2 FT. FROM BARRICADE).
5. 2" GALVANIZED TO BE ONE CONTINUOUS PIECE.
6. USE EBAA IRON "MEGALUG" OR APPROVED EQUAL RETAINER GLAND ON MJ CAP. RESTRAIN A MIN. 70 LF OF PIPE PRIOR TO BLOW-OFF OR INSTALL A STRADDLE BLOCK.
7. 2" PVC PLUG W/SQUARE NUT TO BE HAND TIGHTENED ONLY.

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

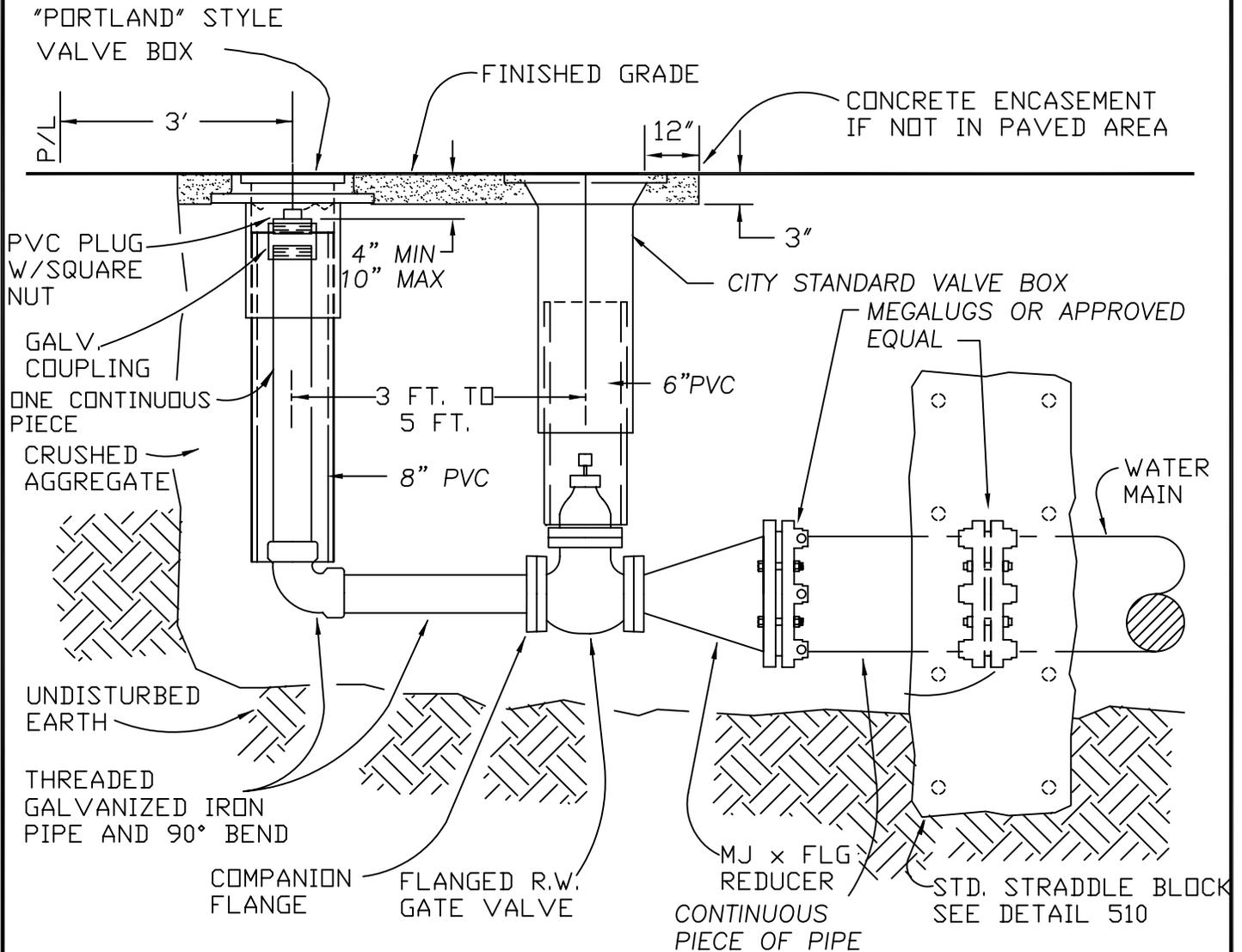
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD 2" BLOW-OFF ASSEMBLY
FOR 4" AND 6" WATERLINES

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	507A

NOTES:

1. BACKFILL WITH SELECT CRUSHED AGGREGATE A MINIMUM OF 6" ON ALL SIDES.
2. ON TEMPORARY BLOW-OFFS ONLY, AN MJ CAP TAPPED 4" OR 6" MAY BE SUBSTITUTED FOR REDUCER.
3. TEMPORARY BLOW-OFF IS ONE REMOVED AT THE END OF PROJECT CONSTRUCTION. A PERMANENT BLOW-OFF REMAINS ON THE PROJECT AFTER ACCEPTANCE.
4. PLACE BLOW-OFF STANDPIPE 3 FT. INSIDE P/L. LINE AT END OF STREET (2 FT. FROM BARRICADE).
5. USE CITY STANDARD VALVE BOX, LID, AND 6" PVC EXTENSION FOR BLOW-OFF VALVE. USE "PORTLAND" STYLE VALVE BOX, LID, AND 8" PVC EXTENSION FOR BLOW-OFF STAND PIPE (SEE DETAILS 513 & 514)

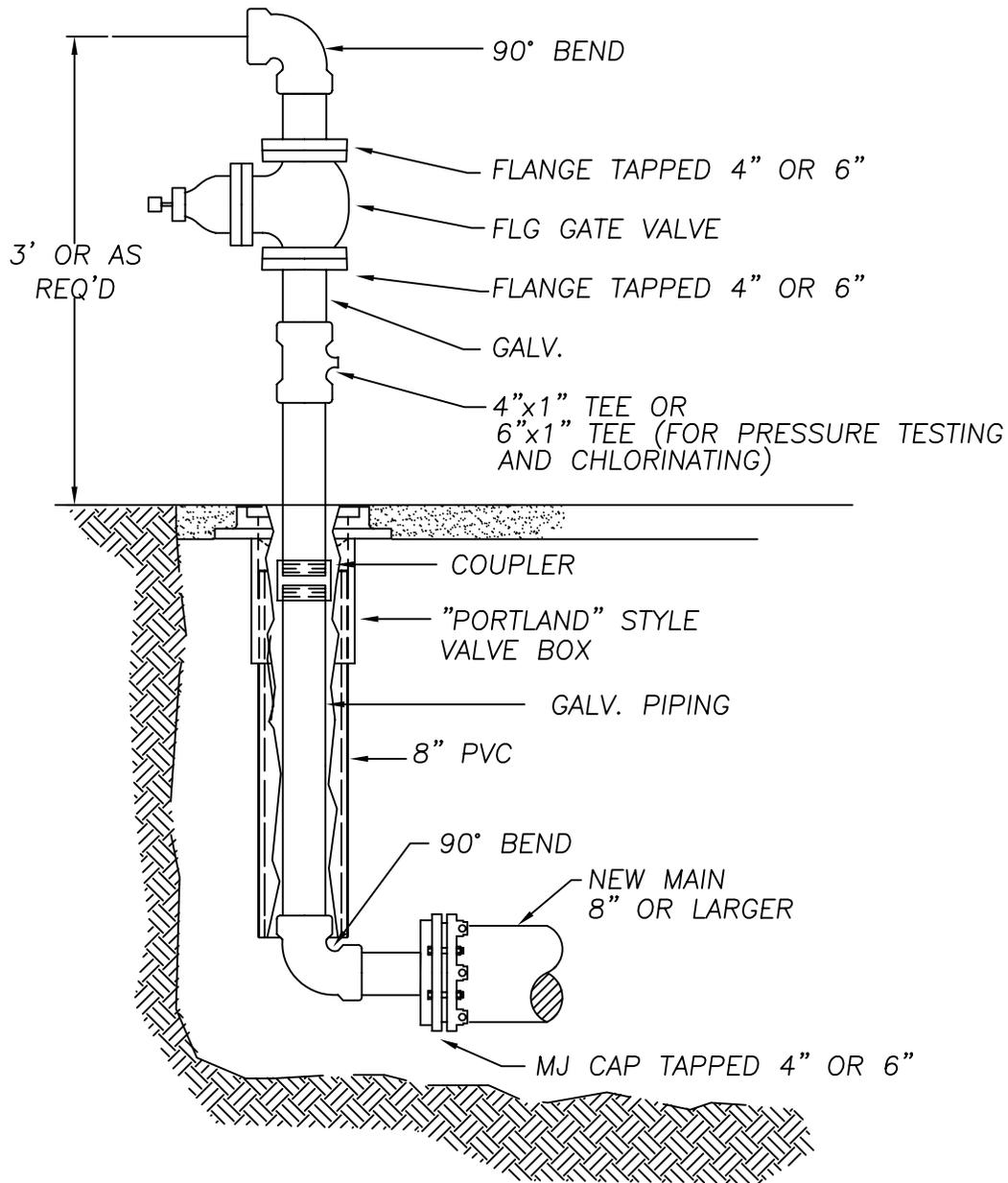
BLOW-OFF SIZES REQUIRED	
MAIN SIZE	BLOW-OFF SIZE
4" TO 6"	2"
8" TO 12"	4"
14" TO 18"	6"
20" & UP	PER ENGR.



DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
PERMANENT OR TEMPORARY
4" & 6" BLOW-OFF

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	507B



NOTES:

1. ALL FILLING, FLUSHING, AND TESTING OF NEW WATERLINE FACILITIES SHALL BE DONE THROUGH A 6" DOUBLE CHECK ASSEMBLY WITH A METERING DEVICE.
2. PROVIDE TEMPORARY BLOCKING AS REQUIRED.
3. ALL PIPING AND FITTINGS SHALL BE GALVANIZED IRON.
4. FOR 8"-12" WATERLINES: FILL POINT SHALL BE 4" PIPING AND FITTINGS. FOR 14"-18" WATERLINES: FILL POINT SHALL BE 6" PIPING AND FITTINGS. FOR 20" AND LARGER: FILL POINT SHALL SIZED AS DETERMINED BY THE ENGINEER.

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

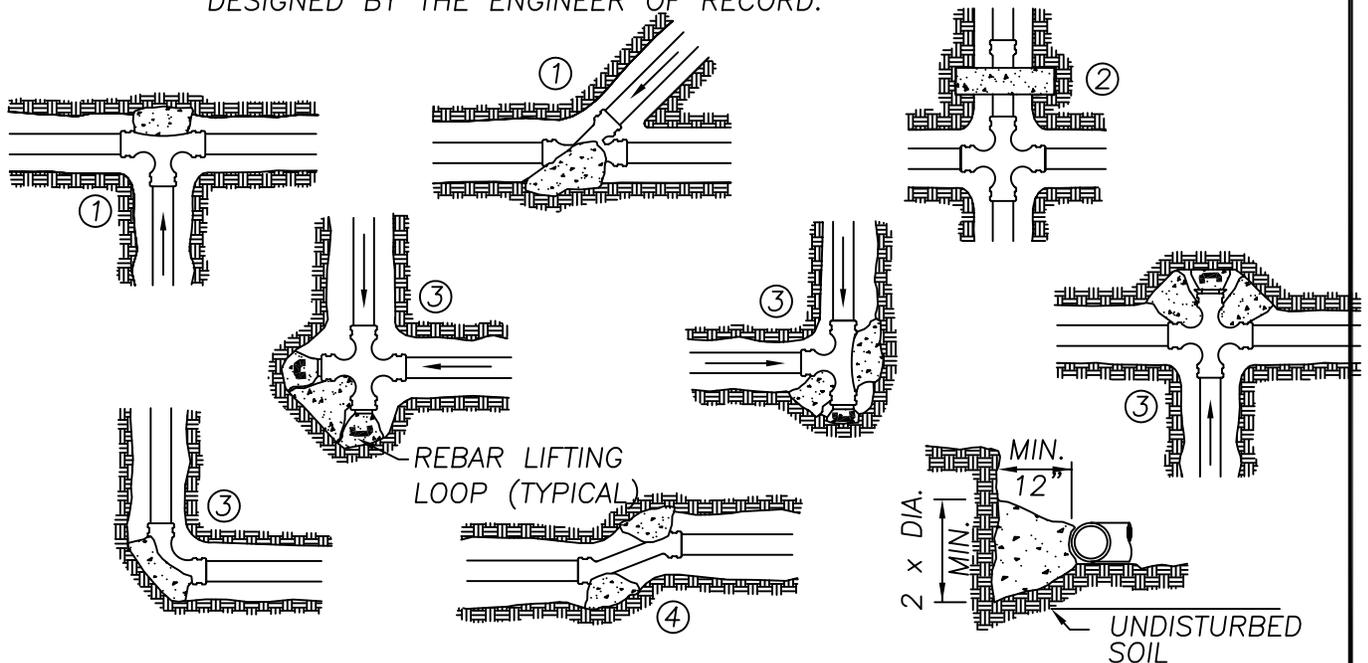
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD 4" AND 6"
TEMPORARY FILL POINT

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	507C

FITTING SIZE (Inches)	TEE, & WYE ①	STRADDLE BLOCK ②	90° BEND ③ PLUGGED CROSS TEE PLUGGED-RUNS	45° BEND ④	22 1/2° BEND ④	11 1/4° BEND ④
2	*	*	*	*	*	*
4	1.7	2.1	2.4	1.3	*	*
6	3.7	4.9	5.3	2.9	1.5	*
8	6.7	8.7	9.5	5.1	2.7	1.3
10	10.5	13.6	14.8	8	4.1	2
12	15.1	19.6	21.3	11.6	5.9	2.9
16	26.8	34.8	37.9	20.5	10.4	5.2
18	33.9	44	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 DESIGN VELOCITY NOT TO EXCEED 8 F/S.
2. ALL FITTINGS SHALL BE WRAPPED IN PLASTIC PRIOR TO PLACEMENT OF CONCRETE.
3. ALL THRUST BLOCKS SHALL BE FORMED TO ELIMINATE ANY CONCRETE AROUND FITTING BOLTS.
4. BEARING SURFACE OF THRUST BLOCKING SHALL BE AGAINST UNDISTURBED SOIL.
5. ALL CONCRETE MIX SHALL HAVE A MIN. 28 DAY STRENGTH OF 3300 PSI.
6. ALL PIPE ZONES SHALL BE GRAVEL FILLED AND COMPACTED.
7. THRUST BLOCKS FOR PLUGGED CROSS AND PLUGGED TEE SHALL HAVE #4 REBAR LIFTING LOOPS INSTALLED AS SHOWN.
8. VERTICAL THRUST DETAILS - SEE DWG. #509
9. STRADDLE BLOCK DETAILS - SEE DWG. #510.
10. EACH PROPOSED MECHANICAL RESTRAINT LENGTHS SHALL BE REVIEWED ON A CASE BY CASE BASIS BY THE ENGINEER OF RECORD.
 - * BLOCK TO UNDISTURBED TRENCH WALLS
 - * * THRUST BLOCKS FOR PIPES LARGER THAN 18" WILL BE INDIVIDUALLY DESIGNED BY THE ENGINEER OF RECORD.



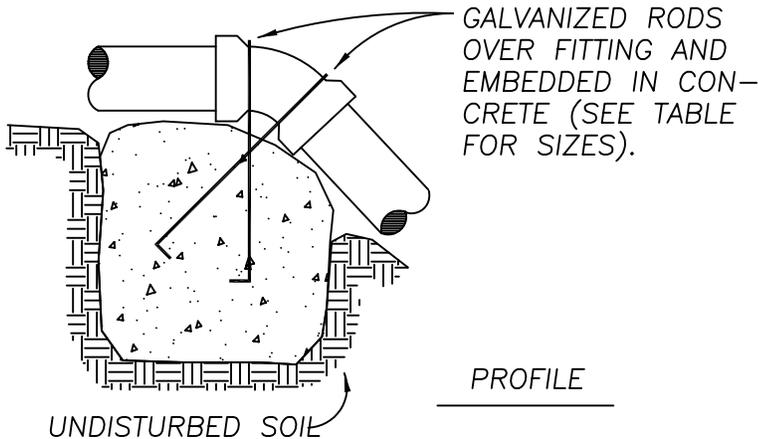
DRAWN		RWL	
DIV.		WATER	
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
HORIZONTAL THRUST BLOCKING

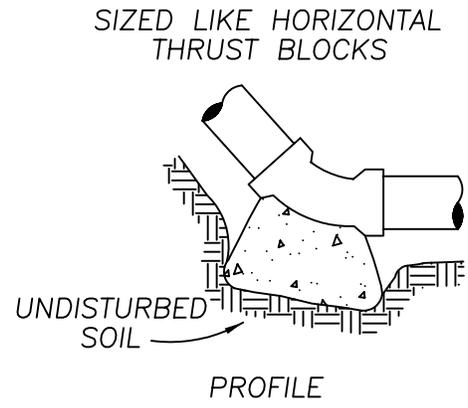
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>OR</i>
DWG. NO.	508

NOTES:

1. GRAVITY VERTICAL THRUST BLOCKS AND MECHANICAL RESTRAINT LENGTHS VALUES SHALL BE REVIEWED BY THE ENGINEER OF RECORD.
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 3300 P.S.I.
5. GRAVITY 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 GRAVITY THRUST BLOCK VOLUME EXCEEDING 5 CUBIC YARDS REQUIRE SPECIAL BLOCKING DETAILS DESIGNED BY THE ENGINEER. NOTE VOLUMNS SHOWN INSIDE HEAVY LINE IN TABLE.
7. PAYMENT SHALL BE THE SAME AS FOR HORIZONTAL THRUST BLOCKS.
8. 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.
9. FOR HORIZONTAL THRUST BLOCK DETAILS SEE DETAIL NO. 508.



GRAVITY VERTICAL THRUST BLOCK



NORMAL VERTICAL THRUST BLOCK

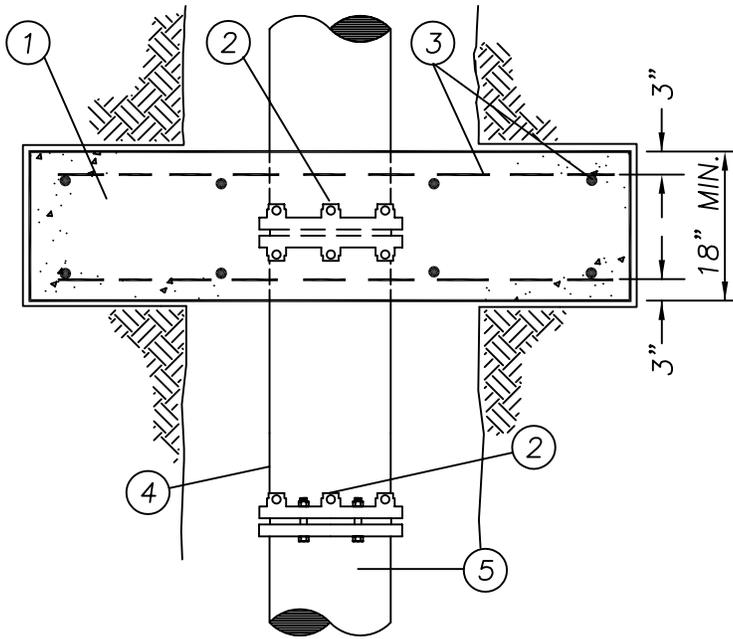
VOLUME OF GRAVITY THRUST BLOCK IN CUBIC YARDS (VERTICAL BENDS)			
FITTING SIZE	BEND ANGLE		
	45 °	22 1/2 °	11 1/4 °
4	1.1	0.4	0.2
6	2.7	1.0	0.4
8	4.0	1.5	0.6
10	6.0	2.3	0.9
12	8.5	3.2	1.3
14	11.5	4.3	1.8
16	14.8	5.6	2.3

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

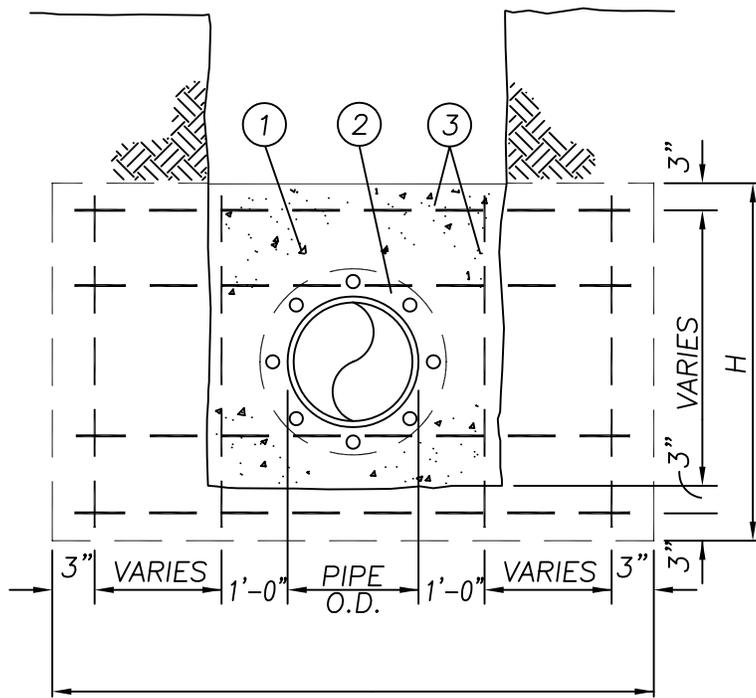
DRAWN		RWL	
DIV.		WATER	
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
VERTICAL THRUST BLOCKING

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	509



TOP VIEW



FRONT VIEW

MATERIALS:

1. CONCRETE STRADDLE BLOCK.
2. 2-MEGALUG OR APPROVED EQUAL RETAINER GLANDS
3. #4 REBAR EACH WAY, 12" O/C.
4. NO JOINTS ALLOWED BETWEEN STRADDLE BLOCK AND FITTING/BLOW-OFF ASSEMBLY.
5. FITTING/BLOW-OFF ASSEMBLY

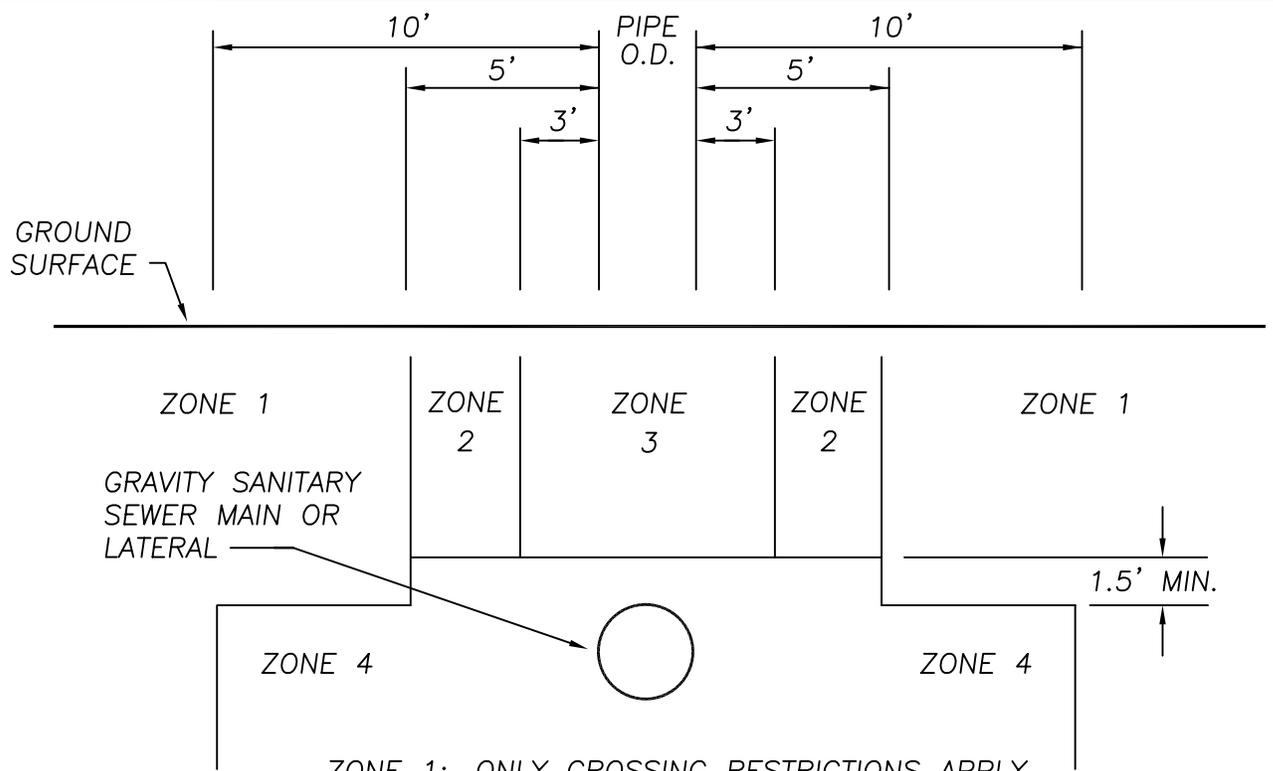
NOTES:

1. STRADDLE BLOCKS HEIGHT AND WIDTH SHALL BE DESIGNED INDIVIDUALLY BY THE ENGINEER AND SHALL BE BASED ON THE FOLLOWING:
 - a.) 200 PSI WATER PRESSURE
 - b.) SOIL BRG. CAPACITY
 - c.) STEEL SIZE AND SPACING
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
5. ALL FITTINGS, & PIPE WITHIN THE CONC. SHALL BE WRAPPED IN 8 MIL. PLASTIC
6. STRADDLE BLOCK HEIGHT (H) & WIDTH (W) SHALL BE DETERMINED BY THE ENGINEER OF RECORD.

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD STRADDLE BLOCK

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	510



- ZONE 1: ONLY CROSSING RESTRICTIONS APPLY
- ZONE 2: CASE-BY CASE DETERMINATION
- ZONE 3: PARALLEL WATERLINE PROHIBITED
- ZONE 4: PARALLEL WATERLINE PROHIBITED

NOTES:

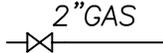
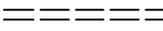
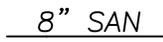
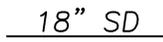
1. WHERE THE PROPOSED WATERLINE WILL BE INSTALLED PARALLEL TO AN EXISTING GRAVITY SANITARY SEWER MAIN OR LATERAL LINE, THE SEPERATION BETWEEN THE TWO SHALL BE AS INDICATED ABOVE.
2. CROSSING:
 - a. WHENEVER POSSIBLE, THE BOTTOM OF THE WATERLINE SHALL BE 1.5 FEET ABOVE THE TOP OF THE SEWER LINE. ONE FULL LENGTH OF WATERLINE SHALL BE CENTERED AT THE CROSSING, REGARDLESS OF VERTICAL SEPARATION.
 - b. WHERE IT IS NOT POSSIBLE FOR THE WATER LINE TO BE 1.5 FEET ABOVE THE SEWER LINE, OR THE WATERLINE PASSES UNDER THE SEWER LINE, THE EXISTING SEWER LINE SHALL BE EXPOSED FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, AND SHALL BE REPLACED WITH C-900 PVC, DR-18, DR-25 OR CLASS 50 DUCTILE IRON PIPE AS APPROVED BY THE ENGINEER, AND A LENGTH OF WATER PIPE SHALL BE CENTERED AT THE CROSSING, OR AS APPROVED BY THE ENGINEER.
3. SEPARATION FROM FORCE MAIN SANITARY SEWER SHALL BE REVIEWED ON A CASE-BY-CASE BASIS

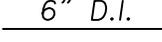
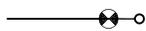
DRAWN RWL			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030		SCALE N.T.S.
DIV. WATER					DATE JAN.1, 2006
REV.	DATE	APPR.	STANDARD GRAVITY SANITARY SEWER SEPERATION		APPR. <i>OR</i>
					DWG. NO. 511

L E G E N D

EXISTING

PROPOSED

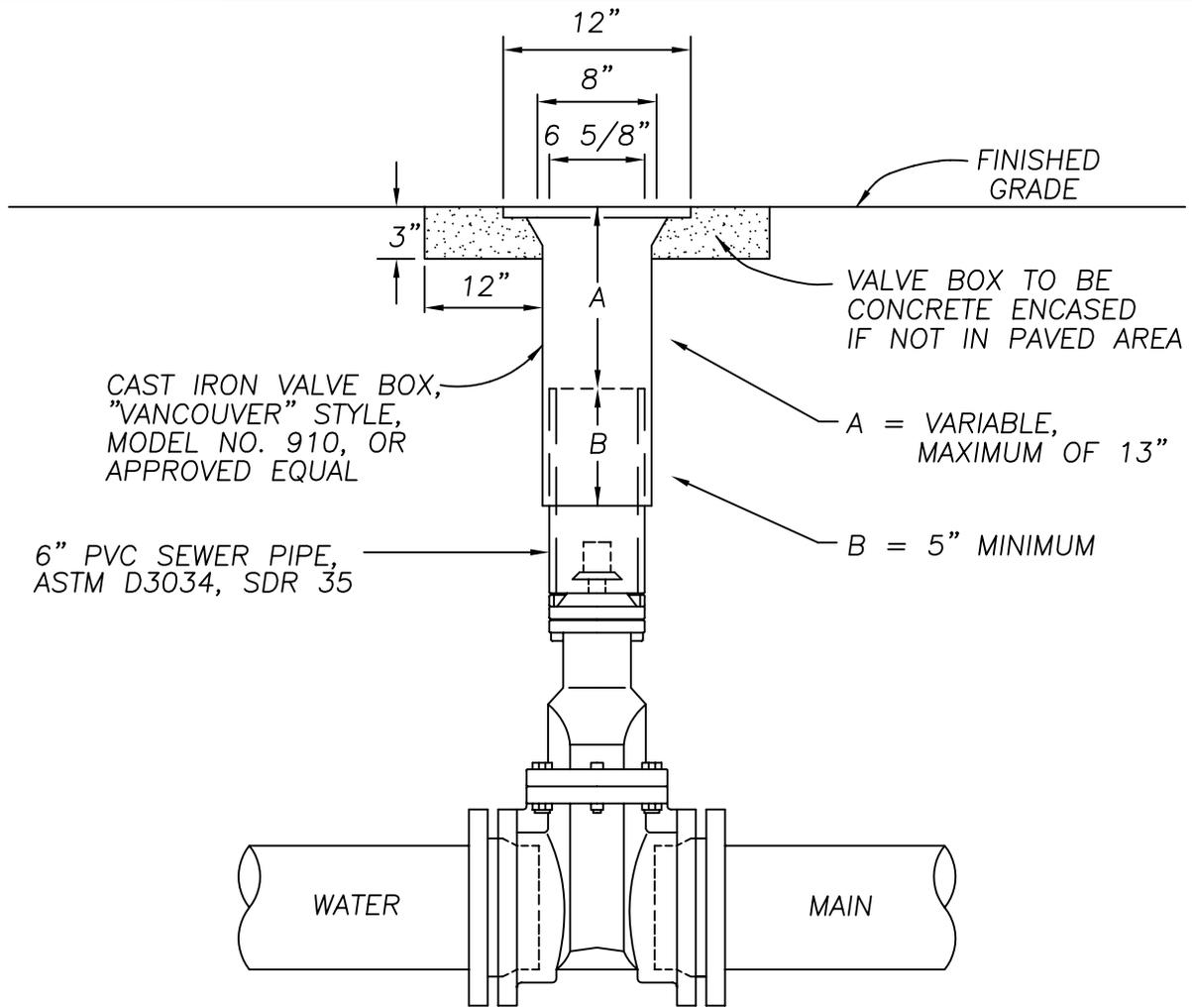
-  FIRE HYDRANT
-  GATE VALVE
-  BUTTERFLY VALVE W/Oper.
-  WATER METER
-  6" C.I. WATER MAIN
-  THRUST BLOCK
-  MJ PLUG ON MJxFLG TEE
-  FLG TEE W/BLIND FLG
-  UNDERGROUND TV CABLE
-  UNDERGROUND POWER
-  UNDERGROUND TELEPHONE
-  2" GAS MAIN W/VALVE
-  POWER POLE W/GUY
-  CULVERT
-  MANHOLE
-  8" SAN SANITARY SEWER
-  18" SD STORM DRAIN
-  SURVEY MONUMENT
-  DITCH OR STREAM

-  FIRE HYDRANT
-  MJxFLG GATE VALVE
-  MJxFLG B.F.VALVE W/Oper.
-  WATER METER
-  6" D.I. WATER MAIN
-  THRUST BLOCK
-  STRADDLE BLOCK
-  BLOW-OFF
-  SAMPLE STATION

JOINTS and FITTINGS

-  FLANGE JOINT (FLG)
-  MECHANICAL JOINT
-  BELL END OF PIPE
-  FLANGED TEE
-  45 DEGREE BEND, MJ
-  ADAPTER, FLG x MJ
-  REDUCER, FLG
-  MJ PLUG ON MJxFLG TEE
-  MJ CAP
-  BLIND FLANGE ON FLG TEE
-  SLEEVE OR COUPLING
-  MECHANICAL JOINT W/RETAINER GLAND
-  RESTRAINED BELL JOINT

DRAWN	RWL	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 WATER PROJECT SYMBOLS	SCALE	N.T.S.
DIV.	WATER		DATE	JAN.1, 2006
REV.	DATE		APPR.	
			DWG. NO.	512



CAST IRON VALVE BOX,
"VANCOUVER" STYLE,
MODEL NO. 910, OR
APPROVED EQUAL

6" PVC SEWER PIPE,
ASTM D3034, SDR 35

FINISHED GRADE

VALVE BOX TO BE
CONCRETE ENCASED
IF NOT IN PAVED AREA

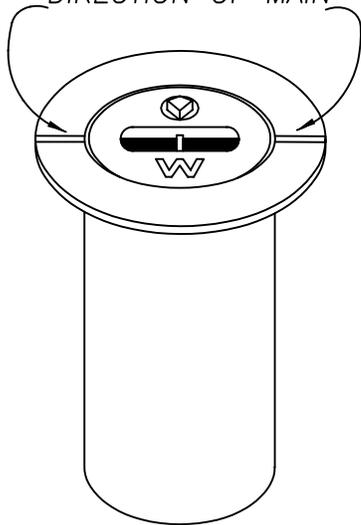
A = VARIABLE,
MAXIMUM OF 13"

B = 5" MINIMUM

WATER

MAIN

NOTCH 1/16"
DEEP INDICATING
DIRECTION OF MAIN



"VANCOUVER" STYLE
18" TALL VALVE BOX

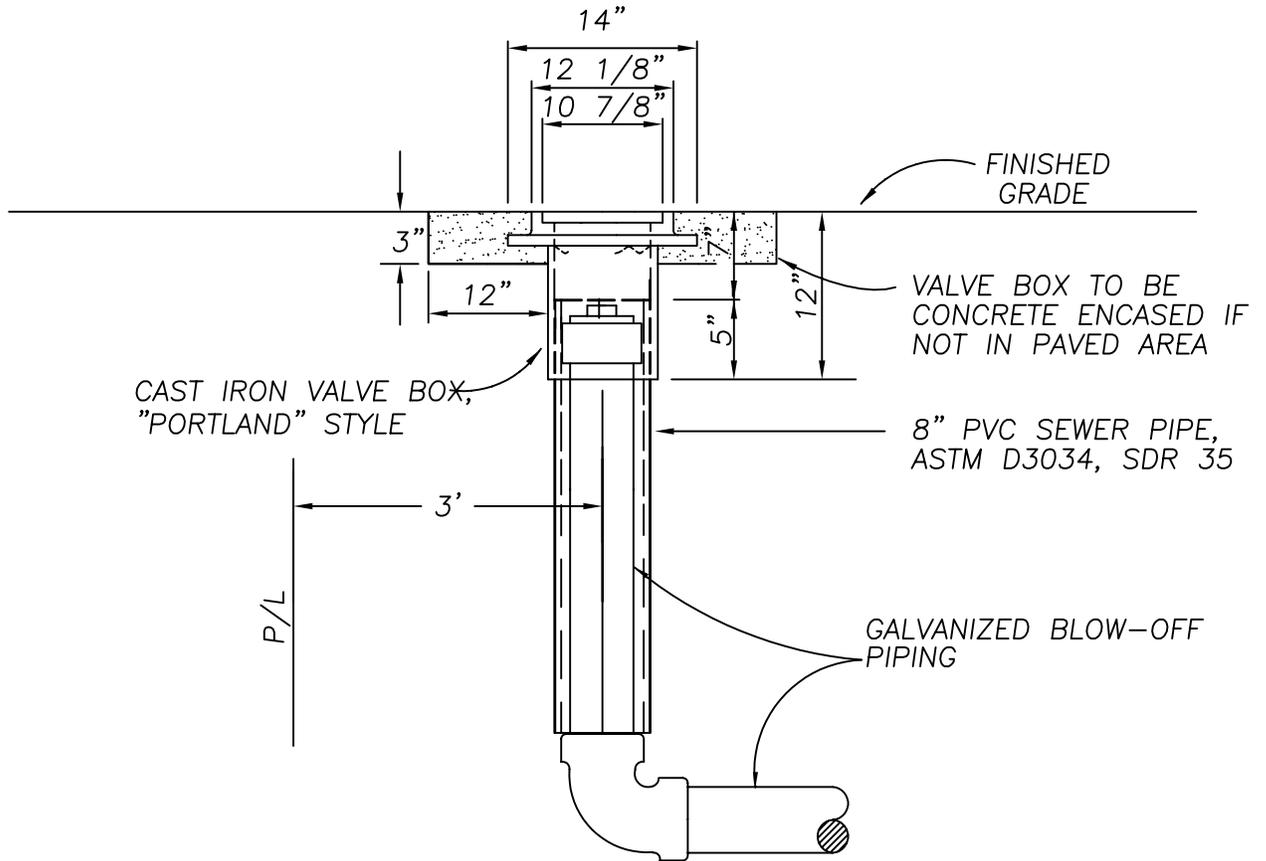
NOTES:

1. VALVE BOXES SHALL BE CENTERED DIRECTLY OVER THE VALVE NUT IN A VERTICAL POSITION.
2. VALVE BOX TOP SHALL BE ADJUSTED TO MEET FINISHED GRADE.
3. PVC SHALL BE ON CONTINUOUS PIECE - NO BELLS OR COUPLERS.
4. USE FOR ALL VALVES AND 2" BLOW-OFF STANDPIPES

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD VALVE BOX

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	513



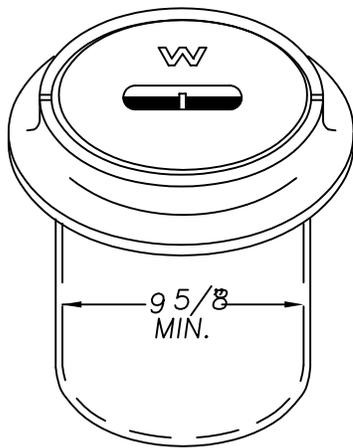
CAST IRON VALVE BOX,
"PORTLAND" STYLE

FINISHED
GRADE

VALVE BOX TO BE
CONCRETE ENCASED IF
NOT IN PAVED AREA

8" PVC SEWER PIPE,
ASTM D3034, SDR 35

GALVANIZED BLOW-OFF
PIPING



"PORTLAND" STYLE
VALVE BOX

NOTES:

1. VALVE BOXES SHALL BE CENTERED DIRECTLY OVER THE STANDPIPE IN A VERTICAL POSITION.
2. VALVE BOX TOP SHALL BE ADJUSTED TO MEET FINISHED GRADE.
3. PVC SHALL BE ONE CONTINUOUS PIECE—NO BELLS OR COUPLERS.
4. USE FOR 4" & 6" BLOW-OFF STANDPIPES AND FLUSH MOUNTED CATHODIC PROTECTION TEST STATIONS ONLY.

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
PORTLAND STYLE VALVE BOX

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	514

NOTE:

SPECIFICATION FOR THE STANDARD WATER METER VAULT ARE LOCATED ON DETAIL 515D

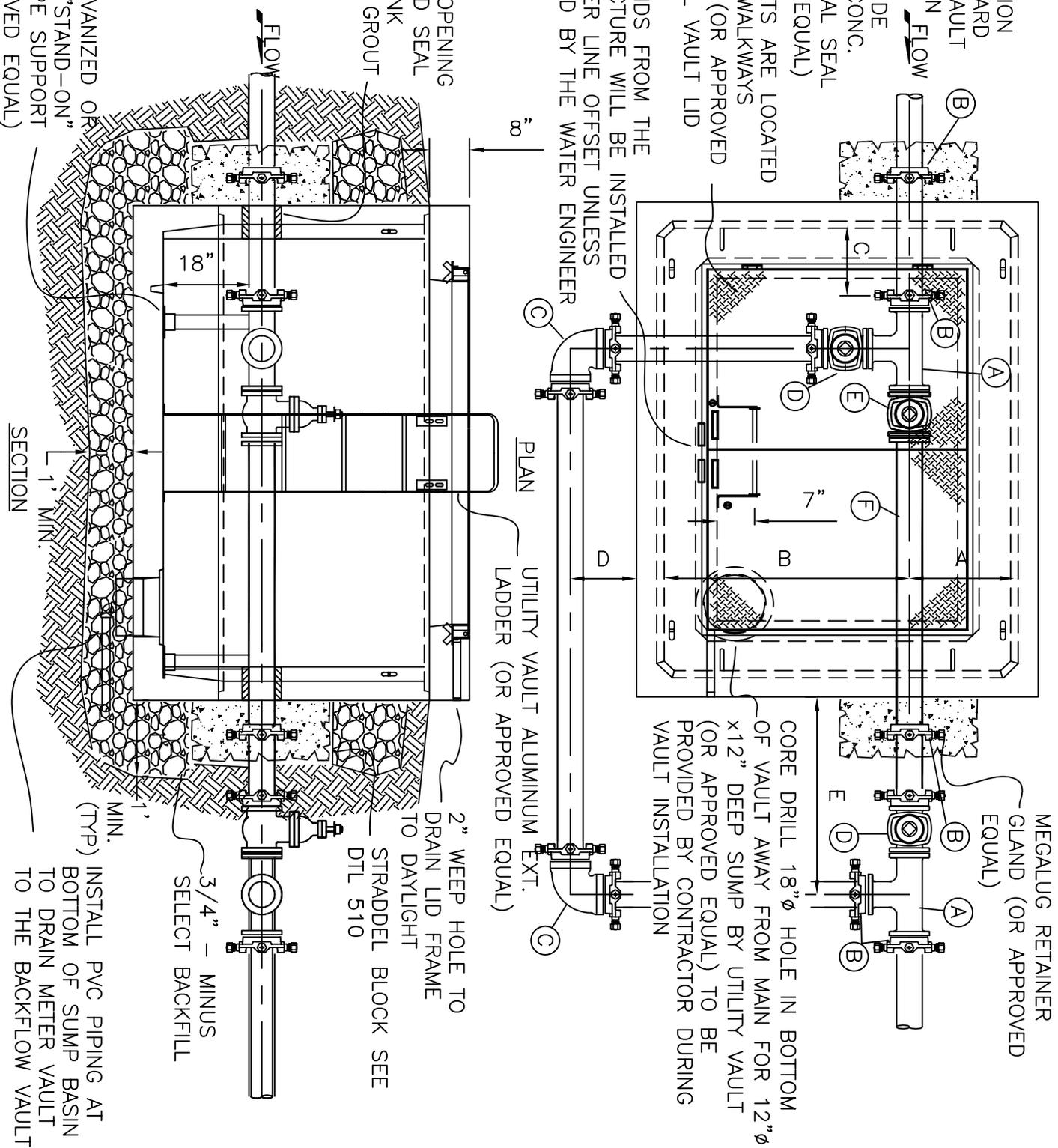
COAT ALL OUTSIDE SURFACES OF CONC. VAULT W/CRYSTAL SEAL (OR APPROVED EQUAL)

WHENEVER VAULTS ARE LOCATED IN PEDESTRAIN WALKWAYS APPLY SLIPNOT (OR APPROVED EQUAL) ON ALL VAULT LID SURFACES.

VAULT LIDS FROM THE MANUFACTURE WILL BE INSTALLED W/CENTER LINE OFFSET UNLESS SPECIFIED BY THE WATER ENGINEER

3" GALVANIZED OR EPOXY COATED "STAND-ON" PIPE SUPPORT (OR APPROVED EQUAL)

CORE DRILL OPENING FOR PIPE AND SEAL W/NON-SHRINK WATERPROOF GROUT



CORE DRILL 18" Ø HOLE IN BOTTOM OF VAULT AWAY FROM MAIN FOR 12" Ø x12" DEEP SUMP BY UTILITY VAULT (OR APPROVED EQUAL) TO BE PROVIDED BY CONTRACTOR DURING VAULT INSTALLATION

2" WEEP HOLE TO DRAIN LID FRAME TO DAYLIGHT STRADEL BLOCK SEE DTL 510

3/4" - MINUS SELECT BACKFILL

INSTALL PVC PIPING AT BOTTOM OF SUMP BASIN TO DRAIN METER VAULT TO THE BACKFLOW VAULT

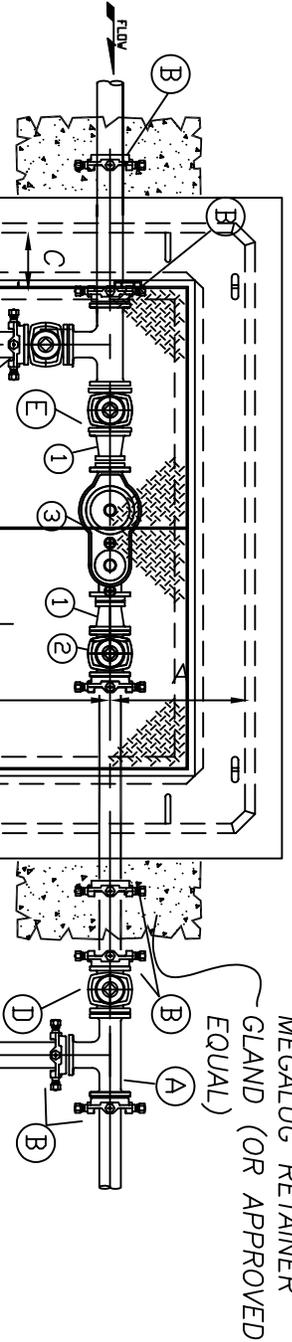
DRAWN	RWL
DIV.	WATER
REV.	DATE
	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
 STANDARD HERSEY MCT2 COMPOUND
 PRIVATE SIDE METER INSTALL-3"x3", 4"x4" & 6"x6"

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	515A

NOTE:
SPECIFICATION
FOR THE STANDARD
WATER METER VAULT
DETAIL 515D

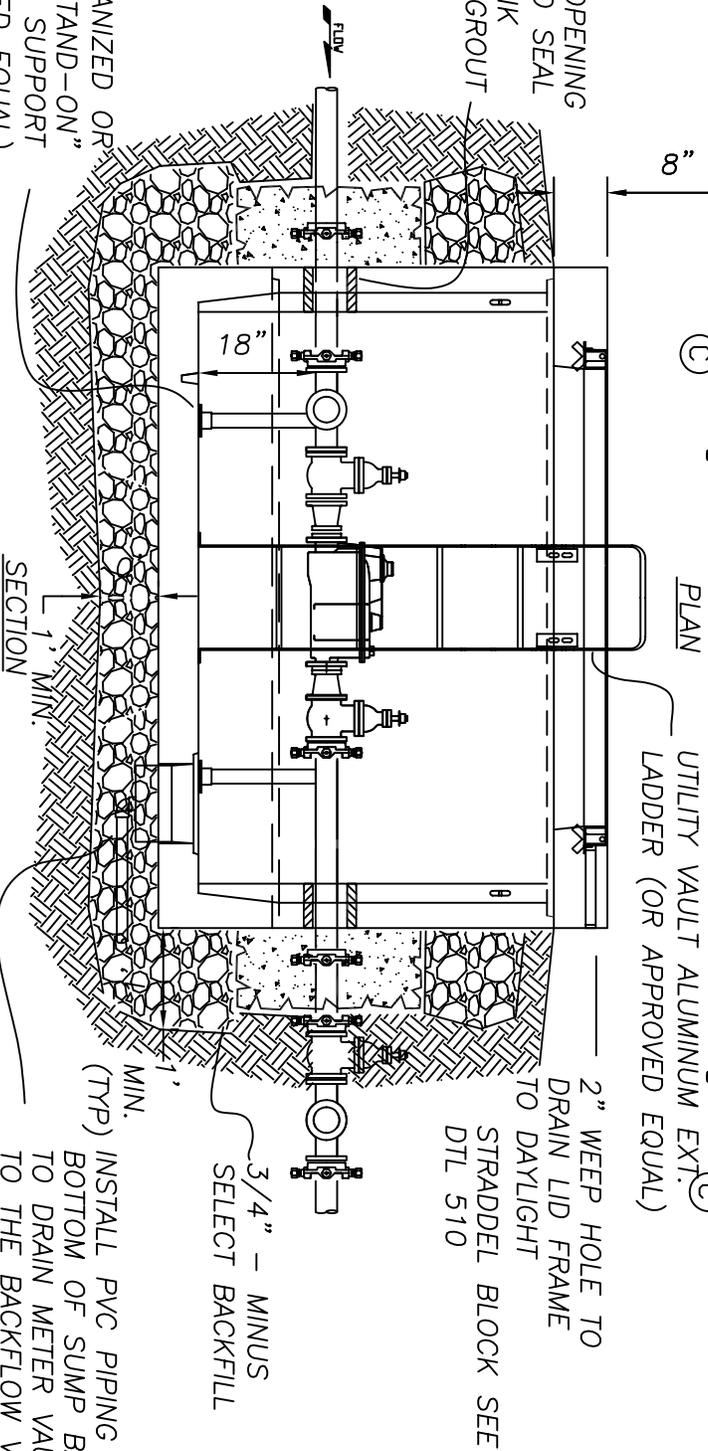
WHENEVER VAULTS ARE
LOCATED IN PEDESTRAIN
WALKWAYS APPLY SLIPNOT (OR
APPROVED EQUAL) ON ALL
VAULT LID SURFACES.



CORE DRILL 18"Ø HOLE IN BOTTOM
OF VAULT AWAY FROM MAIN FOR 12"Ø
x12" DEEP SUMP BY UTILITY VAULT
(OR APPROVED EQUAL) TO BE
PROVIDED BY CONTRACTOR DURING
VAULT INSTALLATION

CORE DRILL OPENING
FOR PIPE AND SEAL
W/NON-SHRINK
WATERPROOF GROUT

3" GALVANIZED OR
EPOXY COATED "STAND-ON"
PIPE SUPPORT
(OR APPROVED EQUAL)



INSTALL PVC PIPING AT
BOTTOM OF SUMP BASIN
TO DRAIN METER VAULT
TO THE BACKFLOW VAULT
(TYP)
MIN.
3/4" - MINUS
SELECT BACKFILL

2" WEEP HOLE TO
DRAIN LID FRAME
TO DAYLIGHT
STRADDEL BLOCK SEE
DTL 510

DRAWN	RWL
DIV.	WATER
REV.	DATE
	APPR.

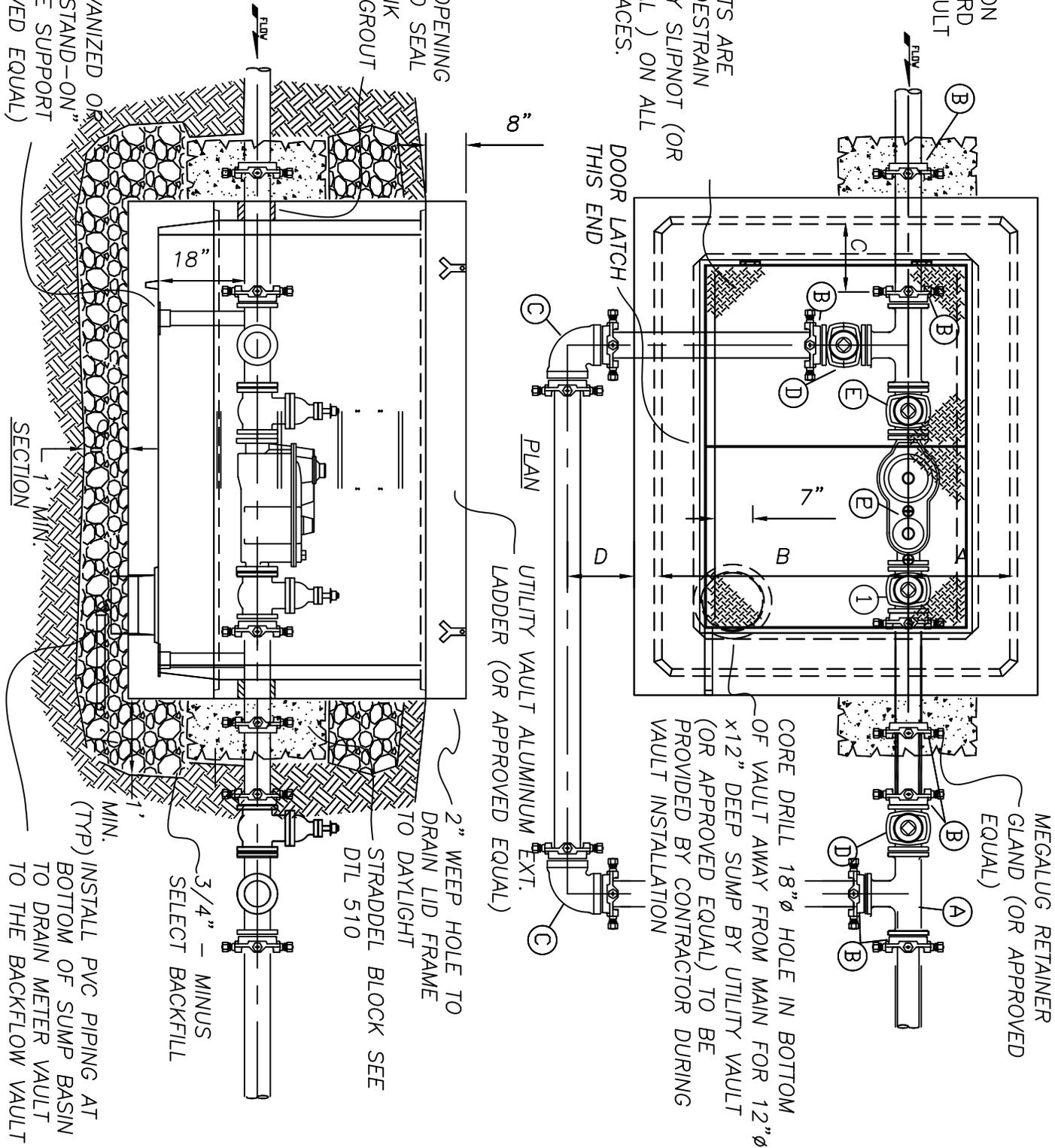
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD HERSEY MCT2 COMPOUND
CITY OF GRESHAM METER INSTALLATION - 3"x3"

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	515B

NOTE:
SPECIFICATION FOR THE STANDARD WATER METER VAULT ARE LOCATED ON DETAIL 515D

WHENEVER VAULTS ARE LOCATED IN PEDESTRAIN WALKWAYS APPLY SLIPNOT (OR APPROVED EQUAL) ON ALL VAULT LID SURFACES.

3" GALVANIZED OR EPOXY COATED "STAND-ON" PIPE SUPPORT (OR APPROVED EQUAL)



SECTION

1" MIN. (TYP) INSTALL PVC PIPING AT BOTTOM OF SUMP BASIN TO DRAIN METER VAULT TO THE BACKFLOW VAULT

3/4" - MINUS SELECT BACKFILL

2" WEEP HOLE TO DRAIN LID FRAME TO DAYLIGHT STRADDEL BLOCK SEE DTL 510

UTILITY VAULT ALUMINUM EXT. LADDER (OR APPROVED EQUAL)

CORE DRILL 18"Ø HOLE IN BOTTOM OF VAULT AWAY FROM MAIN FOR 12"Ø x12" DEEP SUMP BY UTILITY VAULT (OR APPROVED EQUAL) TO BE PROVIDED BY CONTRACTOR DURING VAULT INSTALLATION

MEGALUG RETAINER GLAND (OR APPROVED EQUAL)

DRAWN	RWL
DIV.	WATER
REV.	DATE
	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
 STANDARD HERSEY MCT2 COMPOUND
 CITY OF GRESHAM METER INSTALLATION-4"x4" & 6"x6"

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	515C

SPECIFICATIONS			
METER	3" METER	4" METER	6" METER
INCOMING LINE SIZE	4"	4"	6"
BY-PASS LINE SIZE	4"	4"	6"
UTILITY VAULT NO.	687-COG (OR APPROVED EQUAL)	687-COG (OR APPROVED EQUAL)	612-COG (OR APPROVED EQUAL)
LID NO. (OR APPROVED EQUAL)	CHD-11AL PEDESTRAIN RATED DOORS	CHD-11AL PEDESTRAIN RATED DOORS	CHD-11AL PEDESTRAIN RATED DOORS
A	24" MIN.	24" MIN.	24" MIN.
B	36" MIN.	36" MIN.	36" MIN.
C	12" MIN.	12" MIN.	12" MIN.
D	24" MIN.	24" MIN.	24" MIN.
E	24" MIN.	24" MIN.	24" MIN.

FITTINGS & VALVES BY CONTRACTOR			
METERS	3"x3"	4"x4"	6"x6"
A	4" FLG TEE	4" FLG TEE	6" FLG TEE
B	4" MJxFLG ADAPTER	4" MJxFLG ADAPTER	6" MJxFLG ADAPTER
C	4" MJ 90° BEND	4" MJ 90° BEND	6" MJ 90° BEND
D	4" MJxFLG R.W. GATE VALVE	4" MJxFLG R.W. GATE VALVE	6" MJxFLG R.W. GATE VALVE
E	4" FLG R.W. GATE VALVE	4" FLG R.W. GATE VALVE	6" FLG R.W. GATE VALVE
F	4" FLGxPE CONTINUOUS D.I. PIPE	4" FLGxPE CONTINUOUS D.I. PIPE	6" FLGxPE CONTINUOUS D.I. PIPE

FITTINGS, VALVES & METER BY CITY			
METER	3"x4"	4"x4"	6"x6"
1	4"x3" FLG REDUCER	4" MJxFLG R.W. GATE VALVE	6" MJxFLG R.W. GATE VALVE
2	4" MJxFLG R.W. GATE VALVE	4" HERSEY/MCT METER (OR APPROVED EQUAL)	6" HERSEY/MCT METER (OR APPROVED EQUAL)
3	3" HERSEY/MCT METER (OR APPROVED EQUAL)		

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.
	RWL	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD HERSEY MCT2 COMPOUND
METER SPECIFICATIONS - 3"x3", 4"x4" & 6"x6"

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	
DWG. NO.	515D

NOTE:

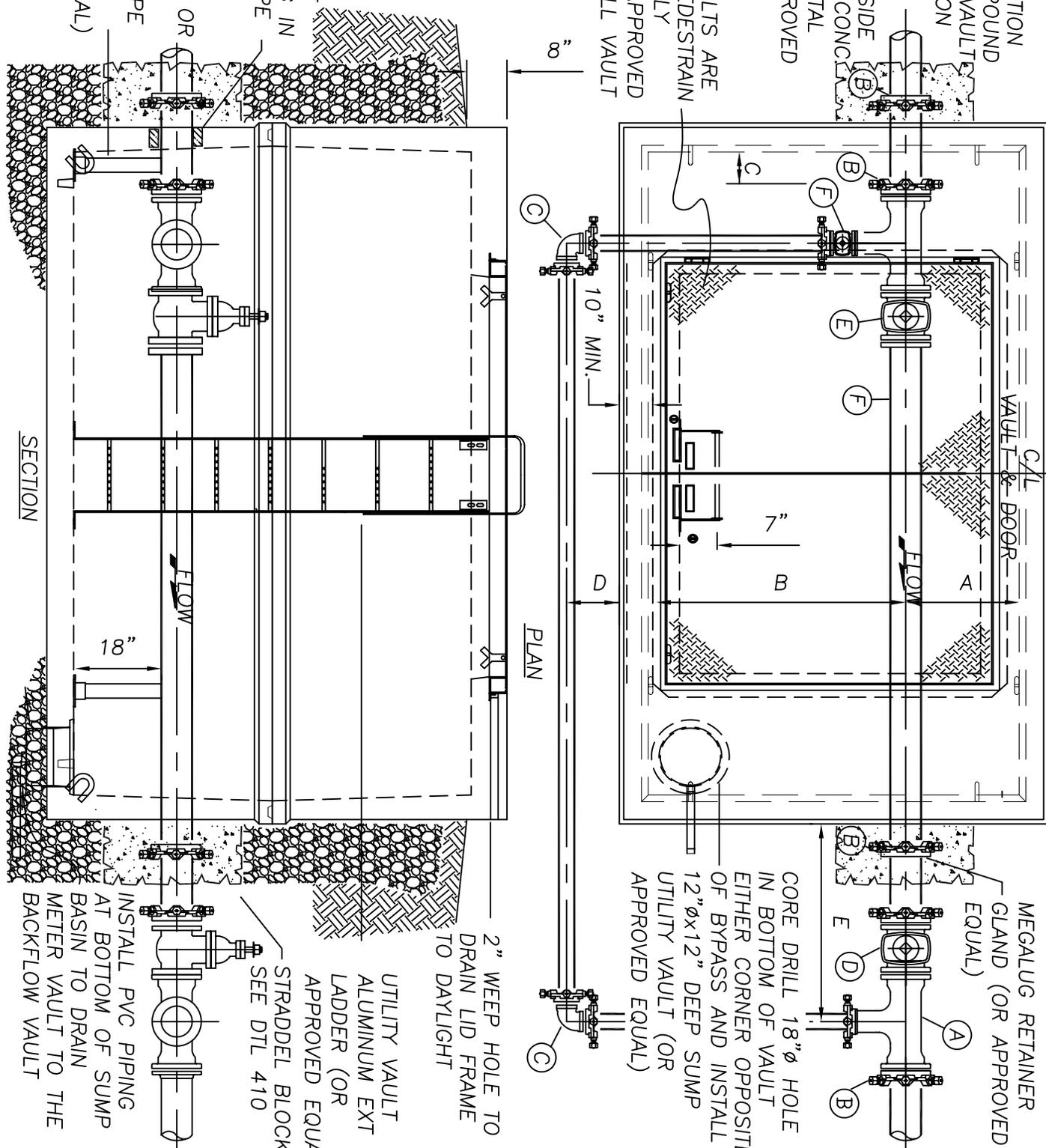
SPECIFICATION FOR THE COMPOUND WATER METER VAULTS ARE LOCATED ON DETAIL 5156

COAT ALL OUTSIDE SURFACES OF CONCRETE VAULT W/CRYSTAL SEAL (OR APPROVED EQUAL)

WHENEVER VAULTS ARE LOCATED IN PEDESTRAIN WALKWAYS APPLY SLIPNOT (OR APPROVED EQUAL) ON ALL VAULT LID SURFACES.

SEAL W/NON SHRINK GROUT CORE OPENING IN VAULT FOR PIPE

3" GALVANIZED OR EPOXY COATED "STAND-ON" PIPE SUPPORT (OR APPROVED EQUAL)



MEGALUG RETAINER GLAND (OR APPROVED EQUAL)

A

B

C

D

E

CORE DRILL 18"Ø HOLE IN BOTTOM OF VAULT EITHER CORNER OPPOSITE OF BYPASS AND INSTALL 12"Øx12" DEEP SUMP UTILITY VAULT (OR APPROVED EQUAL)

2" WEEP HOLE TO DRAIN LID FRAME TO DAYLIGHT

UTILITY VAULT ALUMINUM EXT LADDER (OR APPROVED EQUAL)

STRADEL BLOCK SEE DTL 410

INSTALL PVC PIPING AT BOTTOM OF SUMP BASIN TO DRAIN METER VAULT TO THE BACKFLOW VAULT

DRAWN	RWL	
DIV.	WATER	
REV.	DATE	APPR.

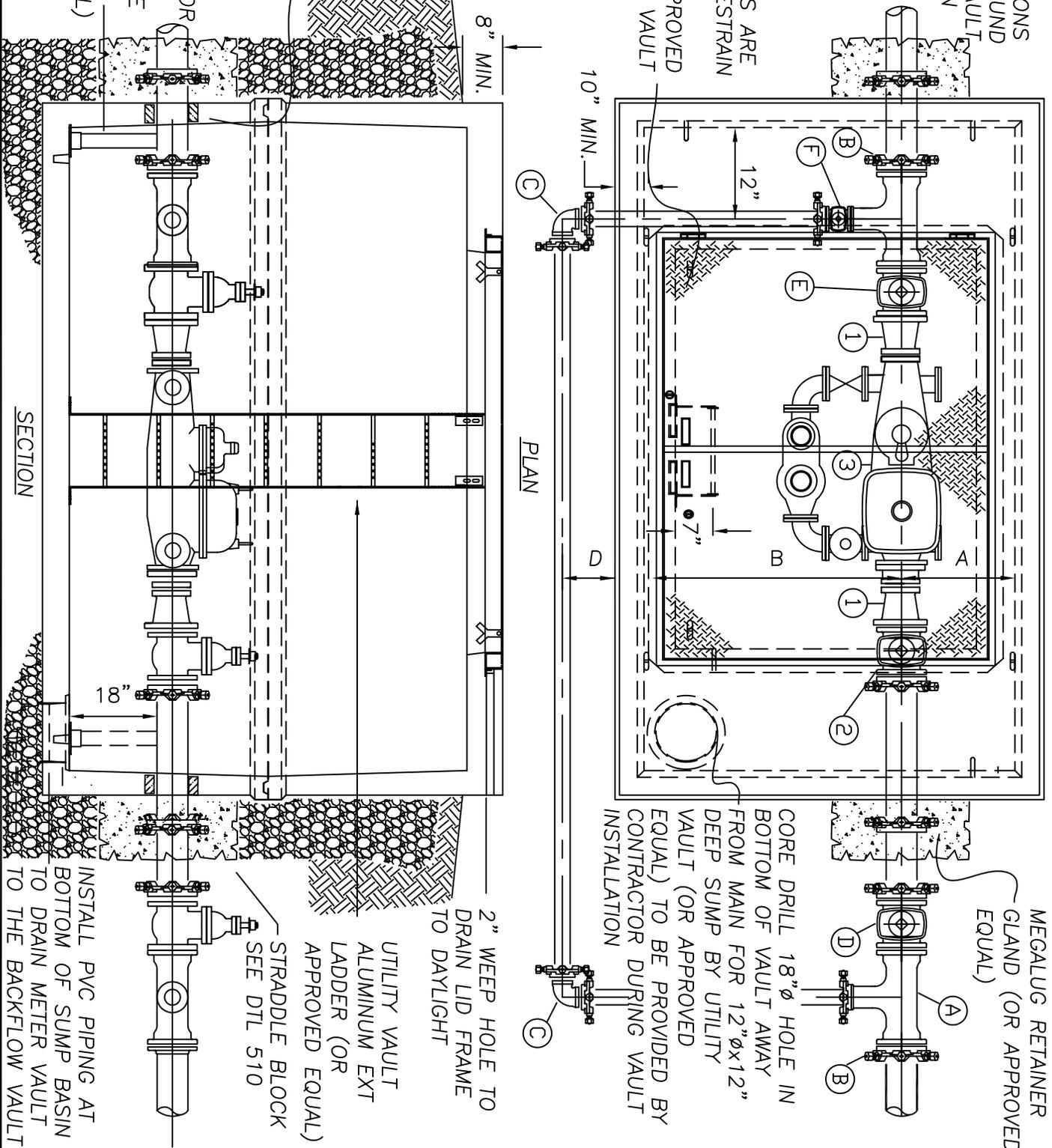
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD HERSEY MCT2 COMPOUND
 PRIVATE METER INSTALLATION - 4"x2", 6"x2" & 8"x4"

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	515E

NOTE:
SPECIFICATIONS FOR THE COMPOUND WATER METER VAULT ARE LOCATED ON DETAIL 515G

WHENEVER VAULTS ARE LOCATED IN PEDESTRAIN WALKWAYS APPLY SLIPNOT (OR APPROVED EQUAL) ON ALL VAULT LID SURFACES.

CORE DRILL OPENING FOR PIPE AND SEAL W/NON-SHRINK WATERPROOF GROUT
3" GALVANIZED OR EPOXY COATED "STAND-ON" PIPE SUPPORT (OR APPROVED EQUAL)



MEGALUG RETAINER GLAND (OR APPROVED EQUAL)
CORE DRILL 18" ϕ HOLE IN BOTTOM OF VAULT AWAY FROM MAIN FOR 12" ϕ x 12" DEEP SUMP BY UTILITY VAULT (OR APPROVED EQUAL) TO BE PROVIDED BY CONTRACTOR DURING VAULT INSTALLATION

2" WEEP HOLE TO DRAIN LID FRAME TO DAYLIGHT
UTILITY VAULT ALUMINUM EXT LADDER (OR APPROVED EQUAL)
STRADDLE BLOCK SEE DTL 510
INSTALL PVC PIPING AT BOTTOM OF SUMP BASIN TO DRAIN METER VAULT TO THE BACKFLOW VAULT

DRAWN	XX
DIV.	WATER
REV.	DATE
	APPR.
	RWL

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD HERSEY MCT2 COMPOUND
C.O.G. METER INSTALLATION - 4"x2", 6"x3" & 8"x4"

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	515F

SPECIFICATIONS

METER	4"x2"	6"x3"	8"x4"
INCOMING LINE SIZE	6"	8"	10"
BY-PASS LINE SIZE	4"	4"	6"
UTILITY VAULT	810-COG	712=COG	816-COG
SYRACUSE LID (OR APPROVED EQUAL)	CHD-11AL PEDESTRIAN RATED DOORS	CHD-11AL PEDESTRIAN RATED DOORS	CHD-11AL PEDESTRIAN RATED DOORS
A	24" MIN	24" MIN	24" MIN
B	36" MIN	36" MIN	36" MIN
C	12" MIN	12" MIN	12" MIN
D	24" MIN	24" MIN	26" MIN
E	24" MIN	28" MIN	30" MIN

FITTINGS & VALVES BY CONTRACTOR

METER	4"x2"	6"x3"	8"x4"
(A)	6"x4" FLG TEE	8"x4" FLG TEE	10"x6" FLG TEE
(B)	6" MJxFLG ADAPTER	8" MJxFLG ADAPTER	10" MJxFLG ADAPTER
(C)	4" MJ 90° BEND	4" MJ 90° BEND	4" MJ90° BEND
(D)	6" MJxFLG R.W. GATE VALVE	8" MJxFLG R.W. GATE VALVE	10" MJxFLG R.W. GATE VALVE
(E)	6" FLG R.W. GATE VALVE	8" FLG R.W. GATE VALVE	10" FLG R.W. GATE VALVE
(F)	4" MJxFLG R.W. GATE VALVE	4" MJxFLG R.W. GATE VALVE	6" MJxFLG R.W. GATE VALVE
(G)	6" FLGxPE CONTINUOUS D.I. PIPEL	8" FLGxPE CONTINUOUS D.I. PIPE	10" FLGxPE CONTINUOUS D.I. PIPE

FITTING, VALVES & METER BY CITY

METER	4"x2"	6"x3"	8"x4"
(1)	6"x4" FLG REDUCER	8"x6" FLG REDUCER	10"x8" FLG REDUCER
(2)	6" MJxFLG R.W. GATE VALVE	8" MJxFLG R.W. GATE VALVE	10" MJxFLG R.W. GATE VALVE
(3)	4"x2" HERSEY MFM/MCT2 COMPOUND METER (OR APPROVED EQUAL)	6"x3" HERSEY MFM/MCT2 COMPOUND METER (OR APPROVED EQUAL)	8"x4" HERSEY MFM/MCT2 COMPOUND METER (OR APPROVED EQUAL)

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD HERSEY MFM/MCT2 COMPOUND
METER 4"x2", 6"x3" & 8"x4" SPECIFICATIONS

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	
DWG. NO.	515G

NOTES:

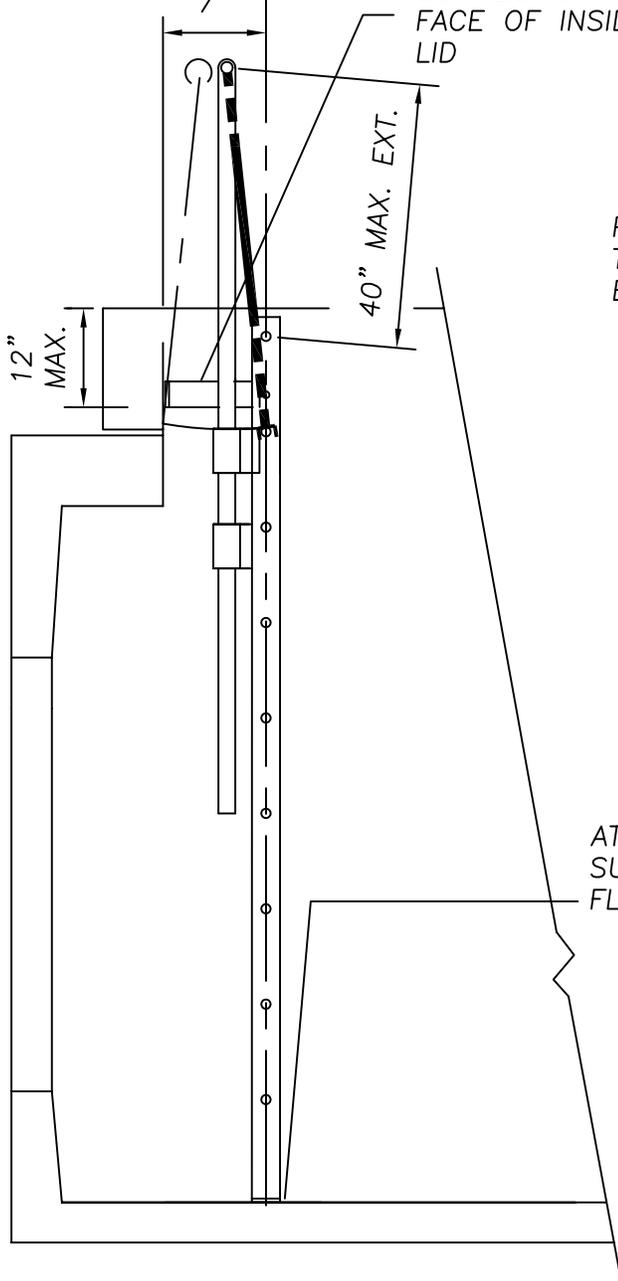
1. METER AND DOWNSTREAM VALVE TO BE INSTALLED BY THE CITY ONCE NEW PIPING AND FITTINGS HAVE BEEN TESTED AND ACCEPTED.
2. ALL VAULT WALL OPENINGS SHALL BE CORE DRILLED AND SEALED WITH NON-SHRINK GROUT.
3. TOP OF VAULT BE A MINIMUM 8" ABOVE FINISH GRADE.
4. INSTALL 4" DRAIN FROM BOTTOM OF VAULT FLOOR TO DAYLIGHT, TO BACKFLOW ASSEMBLY VAULT, TO STORM DRAIN SYSTEM OR TO APPROVED SUMP. IN NO CASE SHALL BACKFLOW VAULT DRAIN INTO METER VAULT.
5. VAULT SHALL BE CLEAN, DRY AND FREE OF DEBRIS PRIOR TO METER INSTALLATION
6. ALL MECHANICAL JOINTS SHALL BE RESTRAINED WITH "MEGALUG" RETAINER GLANDS OR APPROVED EQUAL.
7. SERVICE LINE INTO VAULT SHALL BE MECHANICALLY RESTRAINED FROM MAINLINE THROUGH VAULT.
8. ALL PIPING TO BE BACKFILLED AS DESCRIBED & SHOWN IN STANDARD DETAIL 502.
9. INSTALL A MIN. OF 3 PIPE SUPPORTS IN VAULT (GRINNELL NO. 264 ELCEN NO. 59 OR APPROVED EQUAL).
10. ALL PIPING AND FITTINGS IN VAULT SHALL BE LEVEL AND MINIMUM OF 18" AND A MAX. 42" ABOVE THE FLOOR OF VAULT.
11. ONLY APPROVED RESILIENT WEDGE VALVES ARE ALLOWED.
12. ALL VAULT LIDS SHALL BE EQUIPPED WITH SYRACUSE OR BILCO LIDS (OR AN APPROVED EQUAL) SEE DETAILS 515D AND 516F FOR LID SIZES FOR VARIOUS UTILITY VAULTS.
13. ALL VAULTS SHALL BE EQUIPPED WITH OSHA APPROVED UTILITY VAULT ALUMINUM EXT. LADDER(OR AN APPROVED EQUAL).
14. PIPE BETWEEN THE TWO TEES SHALL BE ONE LEVEL CONTINUOUS PIECE OF PIPE.
15. ALL FITTINGS, VALVES AND PIPING THROUGH ENTIRE VAULT SHALL BE LEVEL AT COMPLETION OF INSTALLATION.
16. VAULT PIPE OPENINGS SHALL BE SEALED WITH NON-SHRINK GROUT. "CRYSTAL SEAL" (OR APPROVED EQUAL) AT MANUFACTURE.
17. ON THE EXTERIOR SURFACES OF ALL VAULTS WILL MAINTAIN A 2 FOOT CLEARANCE FROM OUTSIDE WALL OF VAULT TO EXCAVATED BANK OF EARTH AND WILL BE BACKFILLED WITH ¾" MINUS SELECT BACKFILL.

DRAWN		RWL		DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 STANDARD HERSEY COMPOUND METER INSTALLATION NOTES	SCALE	N.T.S.
DIV.		WATER			DATE	JAN.1, 2006
REV.	DATE	APPR.			APPR.	
				DWG. NO.	515H	

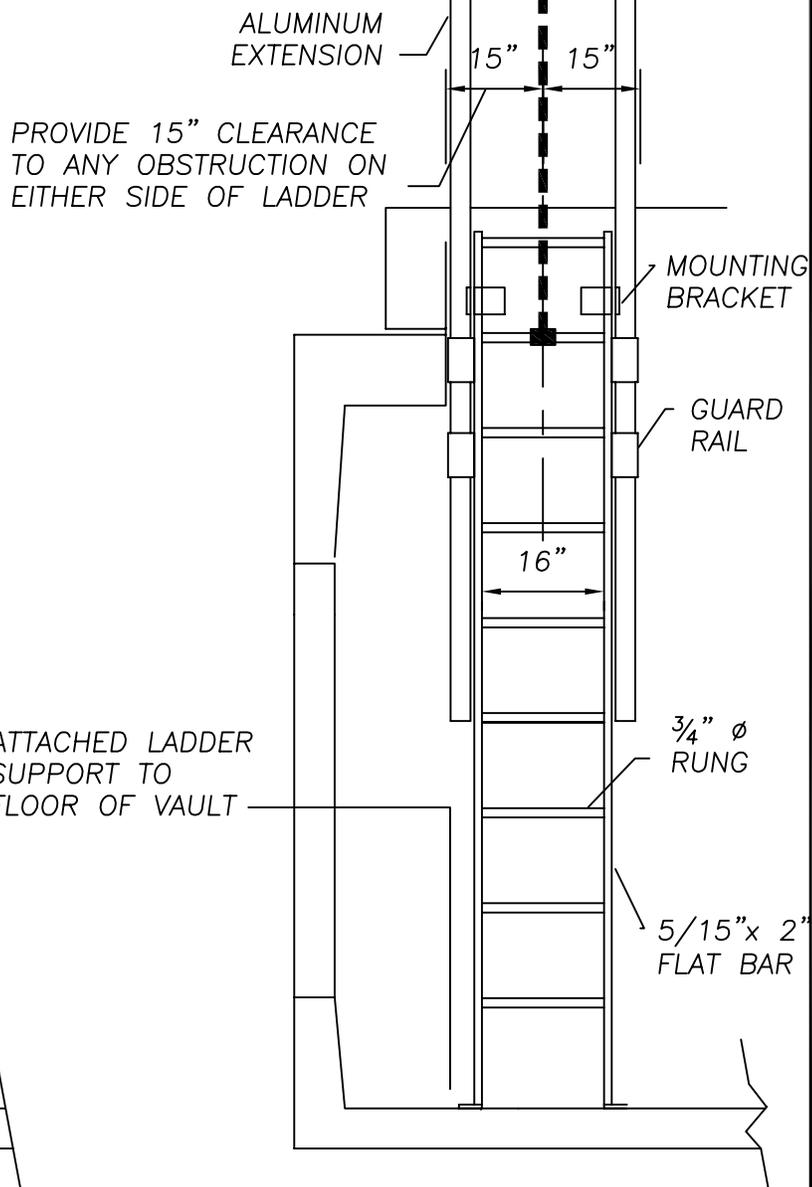
LADDER CONNECTION C/L

ATTACH LADDER SUPPORT TO INSIDE FACE OF VAULT COVER OPENING AS SHOWN. CENTERLINE OF LADDER CONNECTION MUST BE SET 7" FROM FACE OF INSIDE SURFACE OF VAULT LID

LADDER C/L



SIDE VIEW



FRONT VIEW

NOTE:

GALV. LADDER W/AN ALUMINUM EXT. BY UTILITY VAULT (OR APPROVED EQUAL)

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
 GALVANIZED LADDER W/ALUMINUM EXT.
 STANDARD FOR ALL WATER VAULTS

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	5151

CITY OF GRESHAM
CROSS CONNECTION PROGRAM

BACKFLOW ASSEMBLY AND VAULT
INSTALLATION STANDARDS

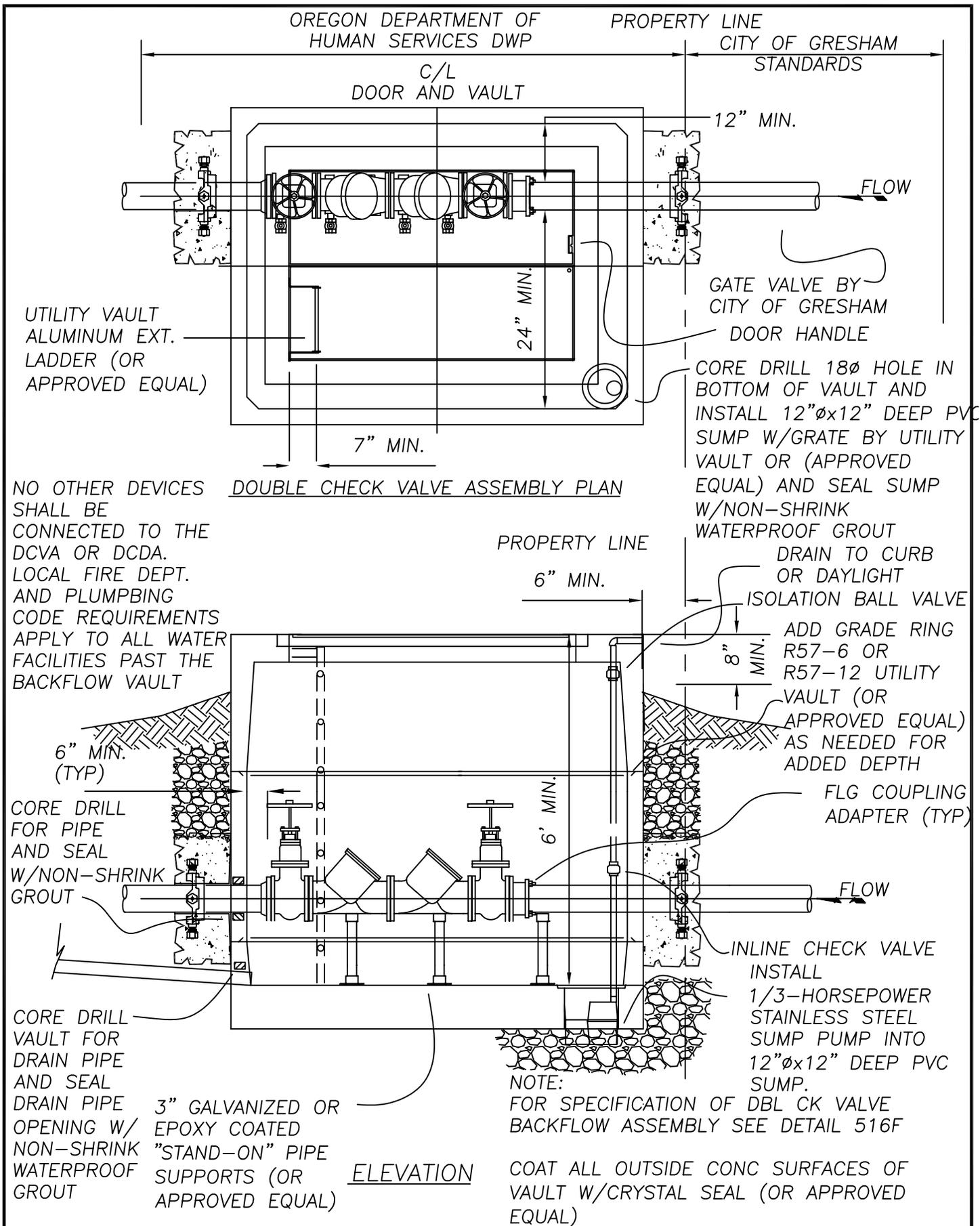
- * DOUBLE CHECK VALVE ASSEMBLY
- * DOUBLE CHECK DETECTOR ASSEMBLY
- * REDUCED PRESSURE (R.P.) ASSEMBLY



CONTACTS

<u>DEPARTMENT</u>	<u>PHONE NO.</u>
ENGINEERING	618-2633
OPERATIONS	618-2626
PLUMBING INSPECTION	618-2830
FIRE DEPARTMENT	618-2573

DRAWN <u>RWL</u>			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE <u>N.T.S.</u>
DIV. <u>WATER</u>				DATE <u>JAN.1, 2006</u>
REV.	DATE	APPR.	APPR. <i>OR</i>	
			DWG. NO. <u>516A</u>	
BACKFLOW ASSEMBLY				



DRAWN	RWL	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 DOUBLE CHECK VALVE (DETECTOR) BACKFLOW ASSEMBLY	SCALE	N.T.S.
DIV.	WATER		DATE	JAN., 2006
REV.	DATE		APPR.	<i>OR</i>
			DWG. NO.	516B

CITY OF GRESHAM
REQUIREMENTS FOR BACK FLOW PREVENTION ASSEMBLY
INSTALLATIONS ON 1 1/2" AND LARGER DOMESTIC SERVICES,
IRRIGATION SERVICES AND FIRE LINE SERVICES

AN APPROVED BACK FLOW PREVENTION ASSEMBLY IS REQUIRED ON ALL 1 1/2" AND LARGER DOMESTIC METER SIZE SERVICES, PLUS ALL DEDICATED IRRIGATION AND ALL FIRE LINE SYSTEMS. AN ASSEMBLY WILL BE APPROVED BY THE CITY OF GRESHAM ONLY IF THE DEPT. OF HUMAN SERVICES HAS APPROVED ITS USE AS A BACK FLOW ASSEMBLY, AND THE ASSEMBLY IS TESTABLE. THE ASSEMBLY SHALL BE INSTALLED AT THE PROPERTY LINE. WHEN IT IS NOT POSSIBLE TO LOCATE THE ASSEMBLY AT THE PROPERTY LINE, THE PROPOSED LOCATION MUST BE APPROVED BY THE WATER DIVISION ENGINEER BEFORE INSTALLATION. A WATER SERVICE SHALL NOT BE TURNED ON UNTIL ALL REQUIRED BACK FLOW PREVENTION ASSEMBLIES ARE INSTALLED, INSPECTED, TESTED, AND REGISTERED WITH THE CITY OF GRESHAM (SEE NOTE 8 BELOW). COST OF ALL INSTALLATIONS, INCLUDING ALL COST OF INITIAL INSPECTION AND TESTING FEES, SHALL BE THE RESPONSIBILITY OF THE CUSTOMER. THE CUSTOMER WILL BE RESPONSIBLE FOR ALL MAINTENANCE AND TESTING OF THE ASSEMBLY AND VAULT WHEN USED.

CONSTRUCTION AND DESIGN STANDARDS FOR WATER FACILITIES

1. ALL PIPE WILL BE INSTALLED TO THE CITY OF GRESHAM'S PUBLIC WORKS STANDARDS.
2. THE CITY OF GRESHAM WILL BE FURNISHED WITH THREE SETS OF PLANS AND SPECIFICATIONS. THE PLANS WILL BE DRAWN AT A SCALE OF 1"=20' FOR PLAN CHECK. ONE SET OF REVISED PLANS WILL BE RETURNED TO THE ENGINEER FOR REVISIONS.
3. THE CONTRACTOR WILL KEEP ONE SET OF APPROVED PLANS AT THE CONSTRUCTION SITE.
4. THE ENGINEER WILL FURNISH THE CITY OF GRESHAM 48-HOUR NOTICE PRIOR TO CONSTRUCTION.
5. WATER FACILITIES WILL BE INSTALLED IN THE PRESENCE OF THE CITY OF GRESHAM'S INSPECTOR. THE INSPECTOR SHALL HAVE ACCESS TO THE CONSTRUCTION SITE AT ALL TIMES.
6. NEW MAINS ARE TO BE PRESSURE TESTED AND DISINFECTED BY THE CONTRACTOR AND PROVEN TO BE BACTERIOLOGIC ALLY SAFE PRIOR TO PLACING NEW MAINS IN SERVICE AND PRIOR TO CONNECTION TO CITY FACILITIES.
7. UPON COMPLETION OF THE WATER FACILITY, THE ENGINEER WILL NOTIFY THE CITY OF GRESHAM 48 HOURS IN ADVANCE OF DESIRED, FINAL INSPECTION.
8. CONTRACTOR MUST COORDINATE BACK FLOW ASSEMBLY TEST WITH GRESHAM WATER QUALITY DEPT. (WATER OPERATION TELEPHONE NO. (503)618-2626), TO RECEIVE SERVICE TO PROPERTY. METER STOPS AND VALVES TO REMAIN LOCKED & OFF UNTIL THAT TIME OF COORDINATION AND APPROVED TEST.

DRAWN		RWL		DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 BACKFLOW ASSEMBLY	SCALE	N.T.S.
DIV.		WATER			DATE	JAN.1, 2006
REV.	DATE	APPR.			APPR.	
					DWG. NO.	516C

DOUBLE CHECK VALVE (DETECTOR) ASSEMBLY
BACK FLOW ASSEMBLY INSTALLATION STANDARD

TO ENSURE PROPER OPERATION AND ACCESSIBILITY OF ALL BACK FLOW PREVENTION ASSEMBLIES, THE FOLLOWING REQUIREMENTS SHALL APPLY TO INSTALLATION OF THESE ASSEMBLIES UNLESS SPECIFICALLY APPROVED BY THE WATER DIVISION ENGINEER/SUPERINTENDENT. THE CITY OF GRESHAM PUBLIC WORKS STANDARDS AND CHAPTER 5 OF THE CITY CODE WILL TAKE PRECEDENCE IN DESIGN AND INSTALLATION.

1. NO PART OF THE BACKFLOW PREVENTION ASSEMBLY SHALL BE SUBMERGED IN WATER OR INSTALLED IN A LOCATION SUBJECT TO FLOODING. IF INSTALLED IN A VAULT OR CHAMBER, ADEQUATE DRAINAGE SHALL BE PROVIDED ONTO OWNER'S PROPERTY BY EITHER DRAINAGE TO DAYLIGHT OR BY SUMP PUMP TO DAYLIGHT. TEST COCKS SHALL BE PLUGGED. THE PLUGS SHALL NOT BE OF DISSIMILAR METALS
2. THE ASSEMBLY MUST BE PROTECTED FROM FREEZING AND OTHER SEVERE WEATHER CONDITIONS.
3. ONLY ASSEMBLIES APPROVED FOR VERTICAL INSTALLATION MAY BE INSTALLED VERTICALLY.
4. THE ASSEMBLY SHALL BE READILY ACCESSIBLE WITH ADEQUATE ROOM FOR MAINTENANCE AND TESTING. ASSEMBLIES 2 INCHES AND SMALLER SHALL HAVE AT LEAST A 12-INCH CLEARANCE BELOW AND ON BOTH SIDES OF THE ASSEMBLY; AND IF LOCATED IN A VAULT, THE TOP OF THE ASSEMBLY SHALL BE BETWEEN 18 AND 24 INCHES BELOW GRADE.

ALL ASSEMBLIES LARGER THAN 2 INCHES SHALL HAVE A 12-INCH CLEARANCE ON THE BACKSIDE, A 24-INCH CLEARANCE ON THE TEST-COCK SIDE, AND 12 INCH BELOW THE ASSEMBLY. ADEQUATE CLEARANCE (3 INCHES MIN.) MUST BE MAINTAINED ABOVE O.S. & Y. GATE-VALVE STEM. HEADROOM OF 6'-0" IS REQ'D IN VAULTS. ACCESS TO THE ASSEMBLIES AND TO ANY VAULT OR CHAMBER SHALL REMAIN CLEAR AT ALL TIMES. AN OR/OSHA APPROVED CHAMBER LADDER THAT EXTENDS 3 FT. ABOVE SURFACE OF VAULT SHALL BE INSTALLED.

5. NO POST INDICATING VALVES ARE ALLOWED TO BE INSTALLED DIRECTLY ON DOUBLE CHECK DETECTOR ASSEMBLIES.
6. ONLY APPROVED DOUBLE CHECK DETECTOR ASSEMBLIES ARE TO BE USED FOR SYSTEM CONTAINMENT ON FIRE LINE SERVICES IN THE CITY OF GRESHAM. THE METER ON BYPASS ASSEMBLY SHALL READ IN CUBIC FEET.
7. IF A FIRE LINE FLOW, OR TAMPER SWITCH IS INSTALLED, IT MUST BE CONNECTED TO A MONITORED FIRE DETECTION SYSTEM APPROVED BY THE FIRE MARSHAL. NO INSTALLATION WILL MODIFY THE BACK FLOW ASSEMBLY OR INTERFERE WITH ITS OPERATION OR MAINTENANCE.
8. ALL BACK FLOW ASSEMBLIES SHALL BE INSTALLED AT THE SERVICE CONNECTION TO THE PREMISES PER OREGON ADMINISTRATIVE RULES 333-61-070, CROSS CONNECTION CONTROL REQUIREMENTS, UNLESS SPECIFICALLY APPROVED BY THE WATER DIVISION MANAGER. (SERVICE CONNECTION - A LOCATION WHERE THE PUBLIC WATER FACILITIES END AT OR NEAR THE PROPERTY LINE)
9. ALL PIPE BETWEEN MAIN AND ASSEMBLY SHALL BE RESTRAINED. USE "MEGALUG" OR APPROVED EQUAL RETAINER GLANDS ON MJ FITTINGS AND "FIELD-LOK" OR APPROVED EQUAL GASKETS ON BELL JOINTS. UNI-FLANGE ADAPTERS MAY BE USED IN VAULTS.
10. APPROVED BACK FLOW ASSEMBLY MAY NOT BE MODIFIED IN ANY WAY FROM WHICH IT WAS MANUFACTURED, TESTED AND APPROVED.

DRAWN	RWL	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 DOUBLE CHECK VALVE (DETECTOR) BACKFLOW ASSEMBLY		SCALE	N.T.S.
DIV.	WATER			DATE	JAN.1, 2006
REV.	DATE			APPR.	APPR. 
				DWG. NO.	516D

REDUCED PRESSURE (R.P.) PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.)

INSTALLATION STANDARD

AS WELL AS IN THE PREVIOUSLY STATED INSTALLATION STANDARDS, THESE INSTALLATION STANDARDS SHALL APPLY TO THE INSTALLATION OF R.P. ASSEMBLIES:

R.P.'S SHALL BE UTILIZED AT PREMISES WHERE A SUBSTANCE IS HANDLED THAT WOULD BE HIGH HAZARD TO HEALTH IF INTRODUCED INTO THE POTABLE WATER SYSTEM. THE R.P. IS NORMALLY USED IN LOCATION WHERE AND AIR GAP IS IMPRACTICAL. THE R.P. IS EFFECTIVE AGAINST BOTH BACKSHIPONAGE AND BACKPRESSURE.

1. R.P.'S MUST BE SIZED TO PROVIDE AN ADEQUATE SUPPLY OF WATER AND PRESSURE FOR THE PREMISES BEING SERVED. FLOW CHARACTERISTICS ARE NOT STANDARD. CONSULT MANUFACTURER'S SPECIFICATIONS FOR SPECIFIC PERFORMANCE DATA.
2. PREMISES WHERE INTERRUPTION OF WATER SUPPLY IS CRITICAL SHOULD BE PROVIDED WITH TWO ASSEMBLIES INSTALLED IN PARALLEL. THEY SHOULD BE SIZED IN SUCH A MANNER THAT EITHER ASSEMBLY WILL PROVIDE THE MINIMUM WATER REQUIREMENTS WHILE THE TWO TOGETHER WILL PROVIDE THE MAXIMUM FLOW REQUIRED.
3. BYPASS LINES ARE PROHIBITED. PIPE FITTINGS WHICH COULD BE USED FOR CONNECTING A BYPASS LINE SHALL NOT BE INSTALLED.
4. THE ASSEMBLY SHALL BE READILY ACCESSIBLE FOR TESTING AND MAINTENANCE AND SHALL BE LOCATED IN AN AREA WHERE WATER DAMAGE TO BUILDING OR FURNISHINGS WOULD NOT OCCUR FROM RELIEF VALVE DISCHARGE. AN APPROVED AIR GAP FUNNEL ASSEMBLY MAY BE USED TO DIRECT MINOR DISCHARGES AWAY FROM THE ASSEMBLY; THIS ASSEMBLY WILL NOT CONTROL FLOW IN A CONTINUOUS RELIEF SITUATION. DRAIN LINES TO ACCOMMODATE FULL RELIEF VALVE DISCHARGE FLOW SHALL BE REQUIRED.

R.P.'S SHALL BE INSTALLED ABOVE GRADE IN WELL DRAINED AREA, BUT MAY BE INSTALLED BELOW GRADE BY APPROVAL OF WATER DIVISION ENGINEER BEFORE INSTALLATION, IF AN ADEQUATE DRAIN BY GRAVITY THROUGH A "BORESIGHT" DRAIN TO DAYLIGHT IS PROVIDED.

ENCLOSURES SHALL BE DESIGNED FOR READY ACCESS AND SIZED TO ALLOW FOR THE MINIMUM CLEARANCES ESTABLISHED BELOW. REMOVABLE PROTECTIVE ENCLOSURES ARE TYPICALLY INSTALLED ON THE SMALLER ASSEMBLIES. BORE SIGHTED DAYLIGHT DRAIN PORTS MUST BE PROVIDED TO ACCOMMODATE FULL PRESSURE DISCHARGE FROM THE ASSEMBLY.

ALL ASSEMBLIES LARGER THAN 2 INCHES SHALL HAVE A MINIMUM OF 12 INCHES CLEARANCE ON THE BACK SIDE, 24 INCHES CLEARANCE ON THE TEST COCK SIDE, AND RELIEF VALVE OPENING SHALL BE AT LEAST 12 INCHES PLUS NOMINAL SIZE OF ASSEMBLY ABOVE THE FLOOR OR HIGH TEST POSSIBLE WATER LEVEL WHICHEVER IS HIGHER. HEADROOM OF 6 FEET IS REQUIRED IN VAULTS. A MINIMUM ACCESS OPENING OF 36"x72" INCHES SQUARE IS REQUIRED ON ALL VAULT LIDS. A CHAMBER LADDER MEETING OSHA REQUIREMENTS SHALL BE PERMANENTLY INSTALLED IN THE VAULT, UNLESS A SIDE ENTRY ENCLOSURE IS USED.

DRAWN		RWL		DEPARTMENT OF ENVIRONMENTAL SERVICES		SCALE	N.T.S.
DIV.		WATER				CITY OF GRESHAM	DATE
REV.	DATE	APPR.		1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030		APPR.	
				REDUCED PRESURE BACKFLOW ASSEMBLY		DWG. NO.	516E

REDUCED PRESSURE (R.P.) PRINCIPLE BACKFLOW PREVENTION ASSEMBLY (R.P.)
INSTALLATION STANDARD

ASSEMBLIES INSTALLED MORE THAN 5 FEET ABOVE FLOOR LEVEL MUST HAVE A SUITABLE PLATFORM FOR USE BY TESTING OR MAINTENANCE PERSONNEL.

5. THE ASSEMBLY MUST BE PROTECTED FROM FREEZING AND OTHER SEVERE WEATHER CONDITIONS.
6. ONLY R.P. DEVICES APPROVED FOR VERTICAL INSTALLATION WILL BE ACCEPTED.
7. THE PROPERTY OWNER ASSUMES ALL RESPONSIBILITY FOR LEAKS AND DAMAGE. THE OWNER SHALL ALSO KEEP THE VAULT REASONABLY FREE OF SILT AND DEBRIS.
8. VARIANCES FROM THESE REGULATIONS WILL BE EVALUTED ON A CASE-BY-CASE BASIS. ANY DEVIATIONS MUST HAVE PRIOR WRITTEN APPROVAL OF THE WATER DIVISION ENGINEER PRIOR TO INSTALLATION.
8. APPLY CRYSTAL SEAL (OR APPROVED EQUAL) ON ALL OUTSIDE SURFACES OF PROPOSED CONC. VAULTS

END OF R.P. INSTALLATION STANDARD

VAULT SIZING CHART FOR DOUBLE CHECK		
SIZE	VAULT*	VAULT LID *
3"	577-LA UTILTIY VAULT (OR APPROVED EQUAL)	2-332P UTILITY VAULT (OR APPROVED EQUAL) CENTER OFFSET
4"	577-LA UTILITY VAULT (OR APPROVED EQUAL)	2-332P UTILITY VAULT (OR APPROVED EQUAL) CENTER OFFSET
6"	676-WA UTILITY VAULT (OR APPROVED EQUAL)	2-332P UTILITY VAULT (OR APPROVED EQUAL) CENTER OFFSET
8"	687-WA UTILITY VAULT (OR APPROVED EQUAL)	2-332P UTILITY VAULT (OR APPROVED EQUAL) CENTER OFFSET
10"	5106-WA UTILITY VAULT (OR APPROVED EQUAL)	2-332P UTILITY VAULT (OR APPROVED EQUAL) CENTER OFFSET

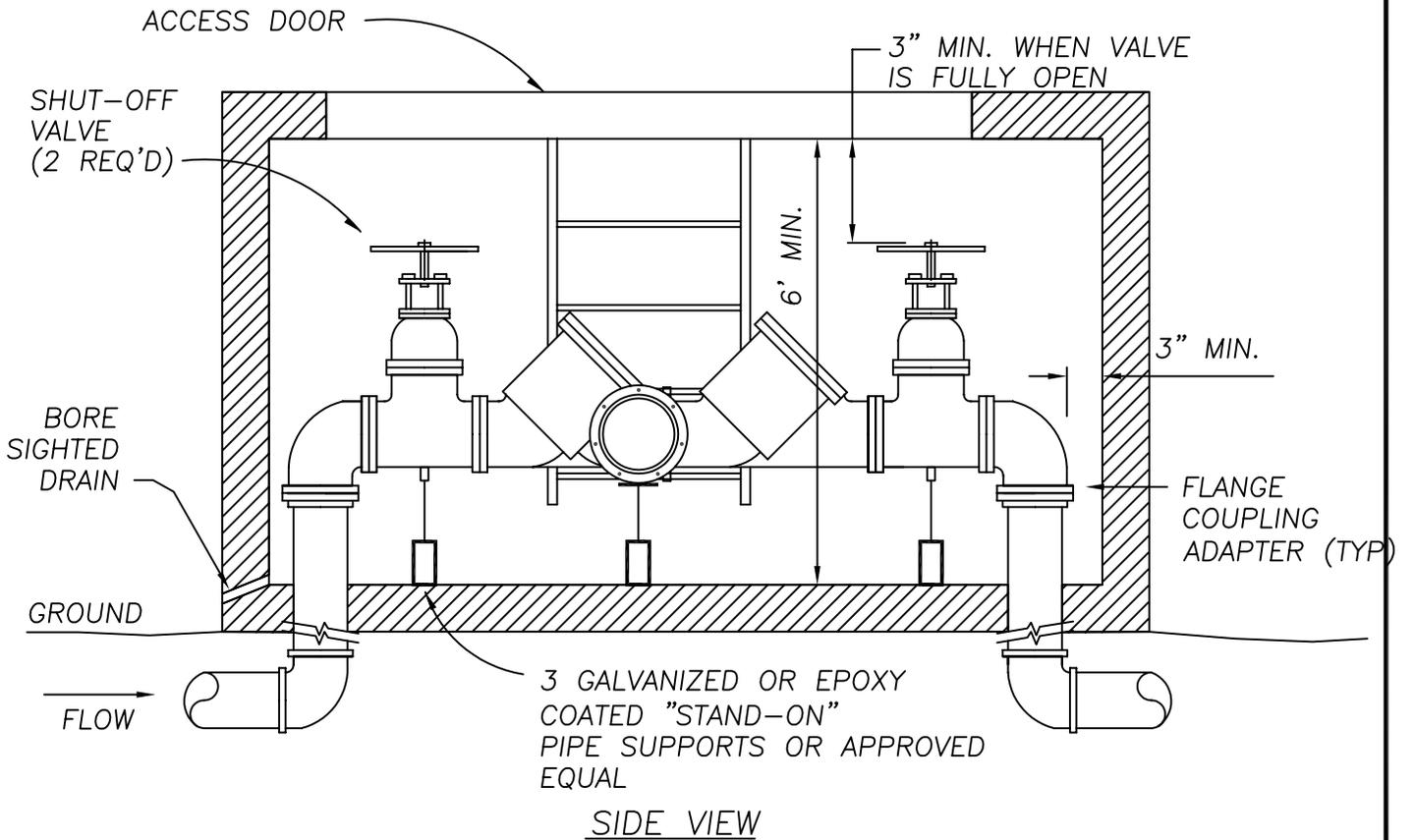
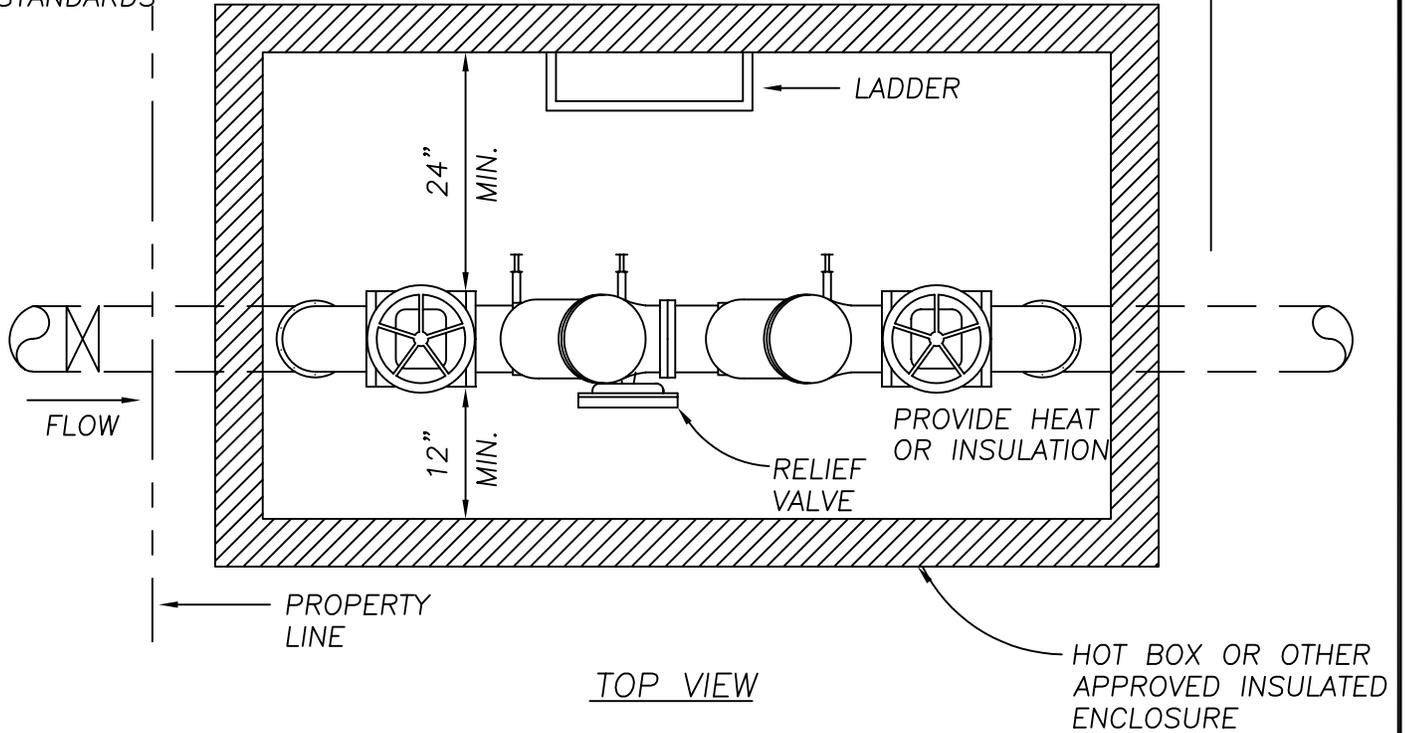
NOTE:

FOR ALL BACK FLOW VAULTS ADD 57R-6 AND/OR 57R-12 RISER TO ACCOMODATE EXTRA DEPTHS DUE TO METER VAULT DRAINING TO BACK FLOW VAULTS

DRAWN		RWL	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 BACKFLOW ASSEMBLY SPECIFICATIONS	SCALE	N.T.S.
DIV.		WATER		DATE	JAN.1, 2006
REV.	DATE	APPR.		APPR.	
				DWG. NO.	516F

DEPARTMENT OF HUMAN SERVICES
APPROVED ASSEMBLY
AND INSTALLATION

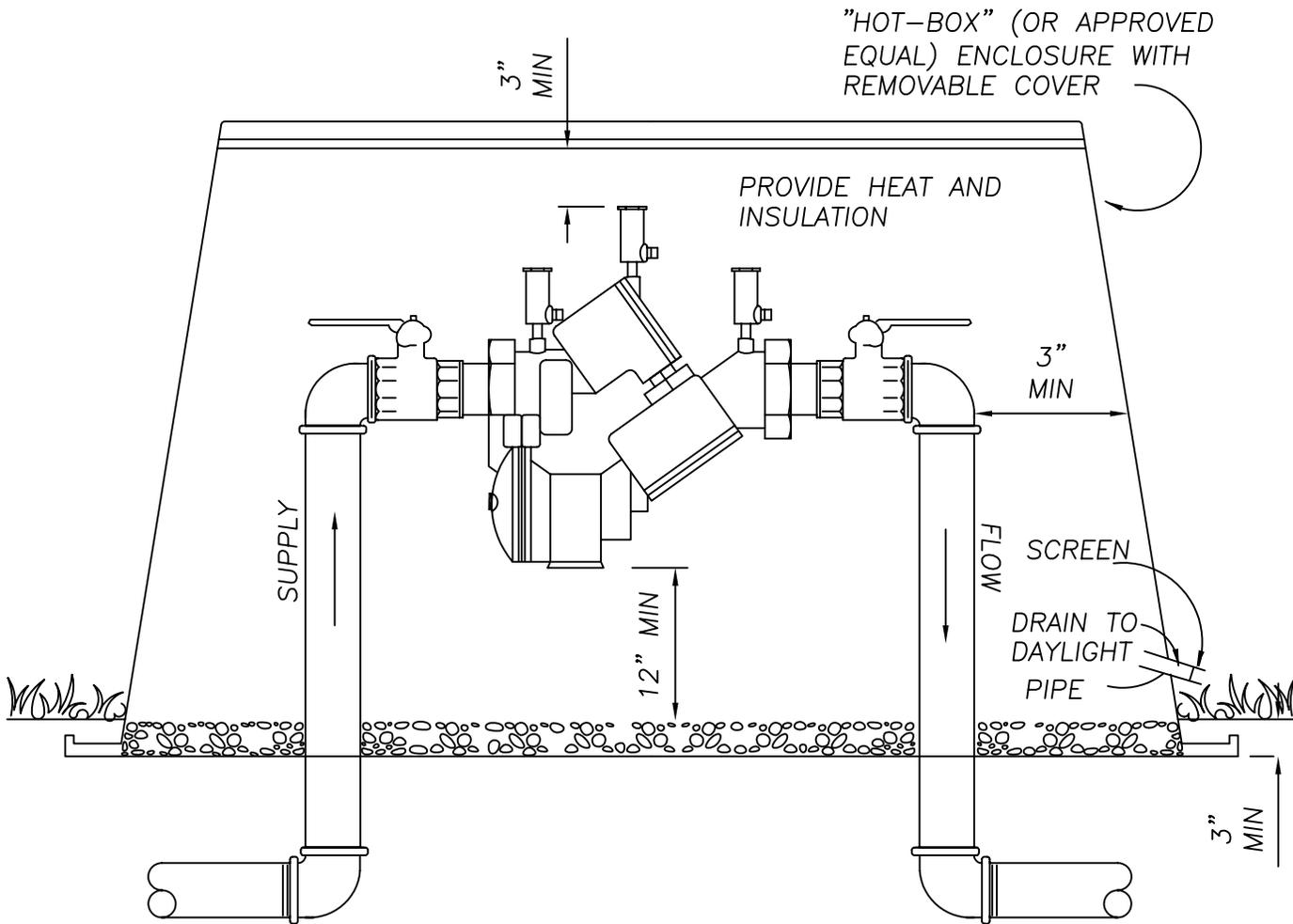
CITY OF
GRESHAM
STANDARDS



DRAWN		RWL	
DIV.		WATER	
REV.	DATE	APPR.	

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
REDUCED PRESSURE PRINCIPLE ASSEMBLY
3" AND LARGER

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	516G



DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
REDUCED PRESSURE PRINCIPLE SMALL ASSEMBLY
2 1/2" AND SMALLER

SCALE	N.T.S.
DATE	JAN.1, 2006
APPR.	<i>OR</i>
DWG. NO.	516H

METER VAULT

MANTAIN MIN. 1% SLOPE OF PVC PIPE FROM THE SUMP OF METER VAULT TO THE BACKFLOW VAULT AS SHOWN

NOTE:
PVC DRAIN PIPE TO BE SIZED BY WATER ENGINEER

8" MIN.

BACKFLOW VAULT

CORE DRILL HOLES IN BACKFLOW VAULTS TO ACCOMODATE PVC DRAIN PIPE FROM METER VAULT. SEE DETAIL 516B FOR DRAINAGE REQUIREMENTS OF BACKFLOW VAULT

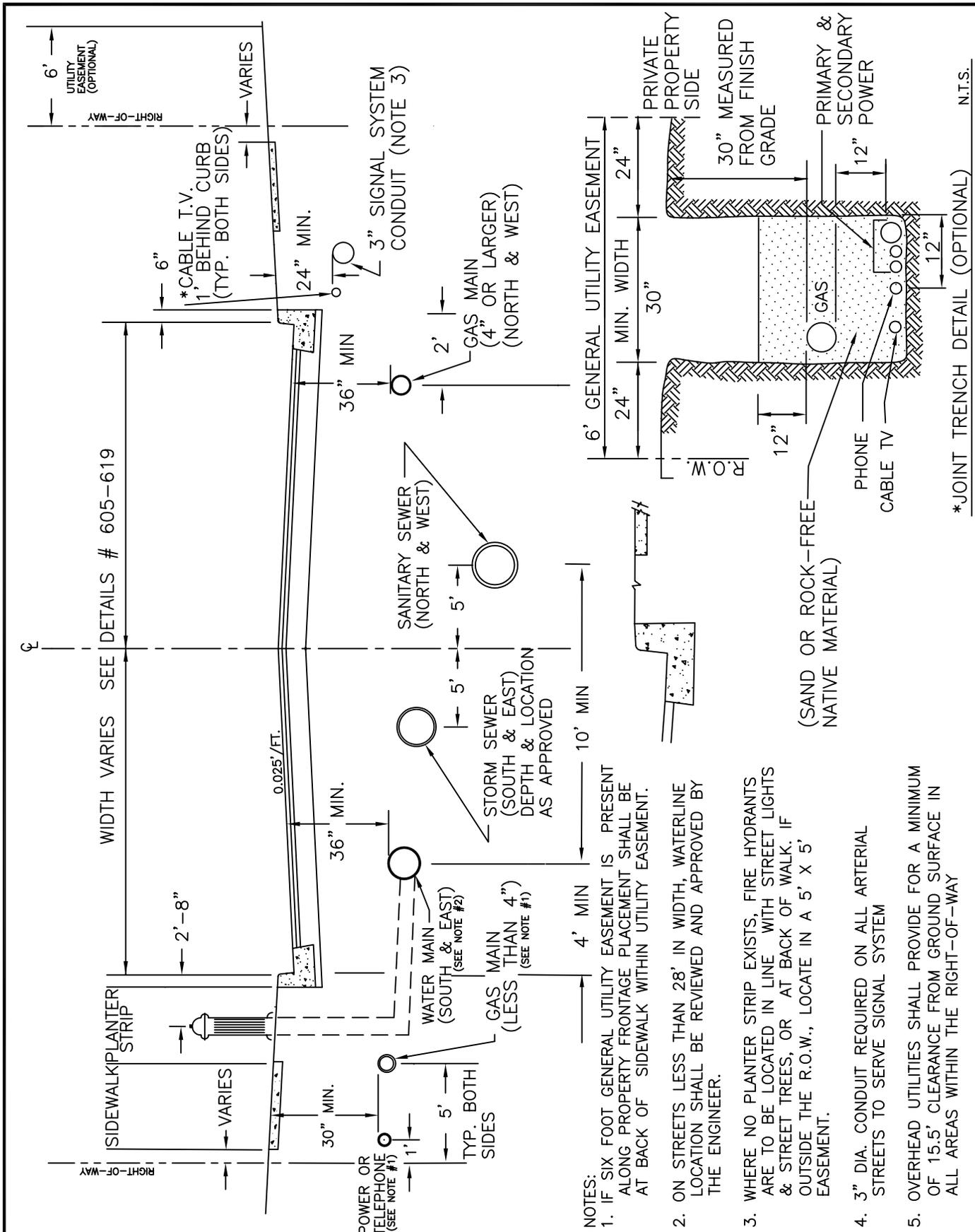
ADD EXTRA GRADE RING FOR THE BACK FLOW VAULT AS NEEDED TO MAINTAIN A DEEPER DEPTH TO ACCOMMODATE DRAINAGE FROM METER OR COMPOUND METER VAULT SEE DETAIL 516F.

SUMP PUMP DRAIN LINE TO CURB OR DAYLIGHT

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
 DRAINAGE ROUTE
 BETWEEN METER AND BACKFLOW VAULTS

SCALE N.T.S.
 DATE JAN.1, 2006
 APPR. *OR*
 DWG. NO. 5161

DRAWN		RWL
DIV.		WATER
REV.	DATE	APPR.



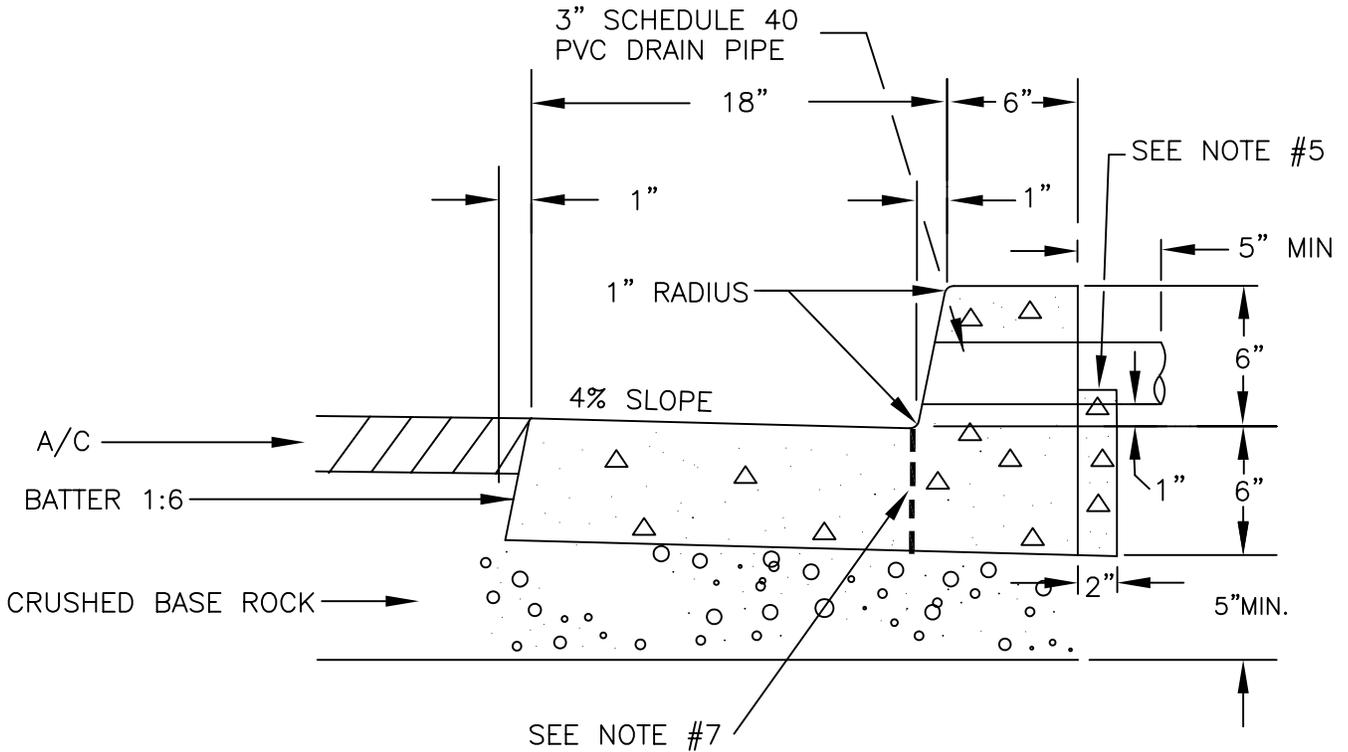
DRAWN	DRB	
DIV.	TRANSPORTATION	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

TYPICAL UTILITY PLACEMENT DETAIL

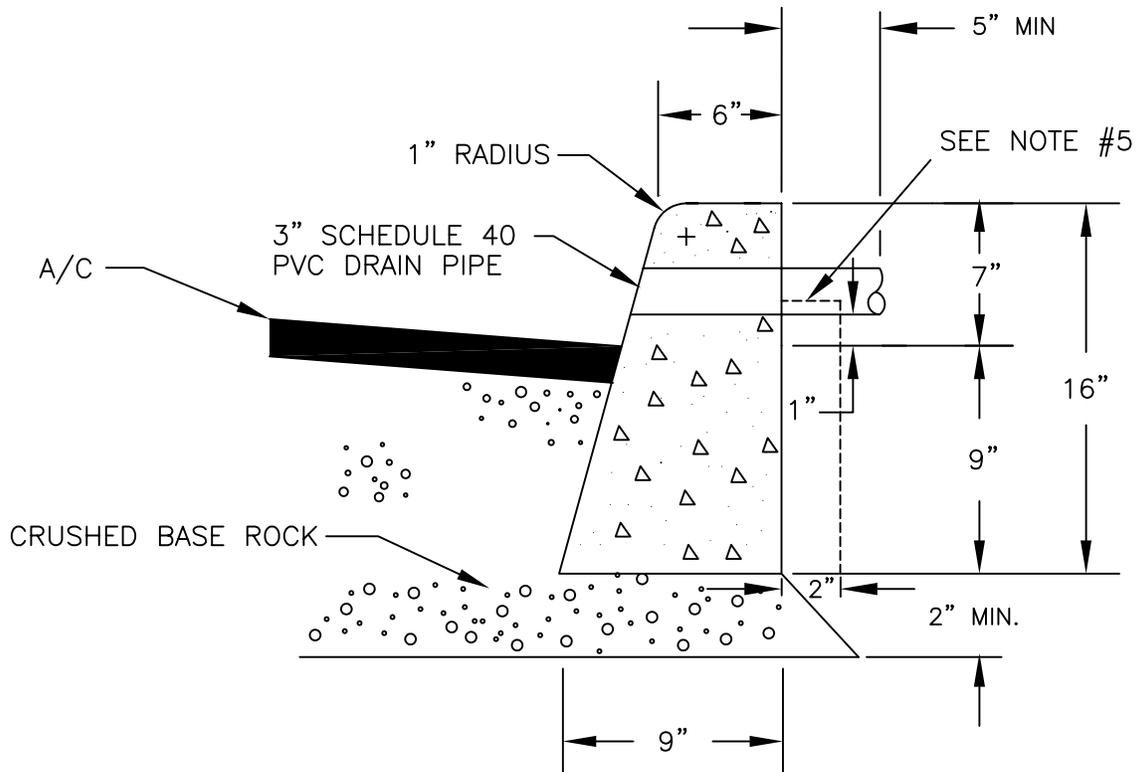
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	601

*JOINT TRENCH DETAIL (OPTIONAL) N.T.S.



1. PCC SHALL BE 3300 PSI STRENGTH AT 28 DAYS EXCEPT IN COMMERCIAL AREAS WHERE PCC SHALL BE 5000 PSI STRENGTH AT 28 DAYS.
2. CONTRACTION JOINTS SHALL BE PLACED AT 15' MAX. SPACING.
3. CURB EXPOSURE SHALL BE 7.5" AT ALL CATCH INLETS.
4. DRAIN BLOCKOUTS SHALL BE PLACED 2 PER LOT 6" INSIDE EACH PROPERTY LINE. DRAIN PIPE SHALL BE EXTENDED TO 1' BEHIND BACK OF SIDEWALK WHEN SIDEWALK IS INSTALLED BEFORE THE LOT IS CONNECTED TO THE DRAIN PIPE.
5. ADD 2" WIDE AND 4" DEEP SHELF WHEN CURB IS PLACED ADJACENT TO SIDEWALK.
6. CRUSHED BASE ROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
7. WHEN A DRIVEWAY IS PLACED WHERE THERE IS AN EXISTING MONOLITHIC CURB MAKE A VERTICAL SAWCUT AT THE FACE OF CURB. REPLACE BACK PART OF CURB AND ADD DRIVEWAY WITH ONE CONTIGUOUS POUR.

DRAWN DRB			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JAN. 1, 2006
REV.	DATE	APPR.		APPR. <i>OR</i>
			MONOLITHIC CURB AND GUTTER	DWG. NO. 602



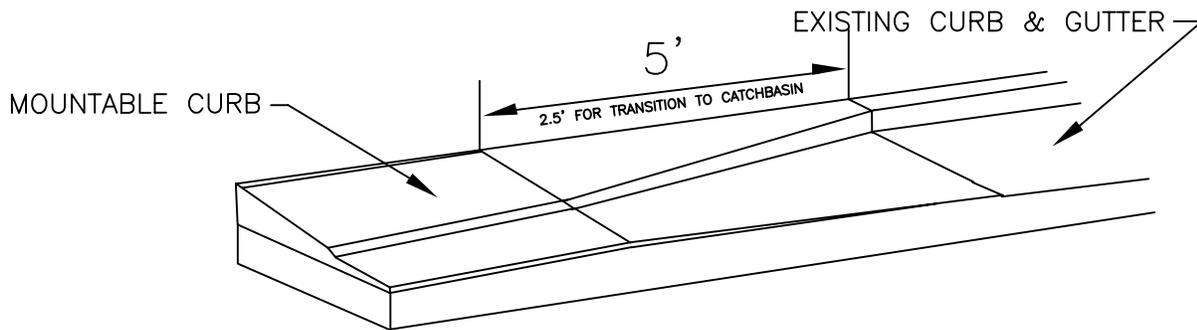
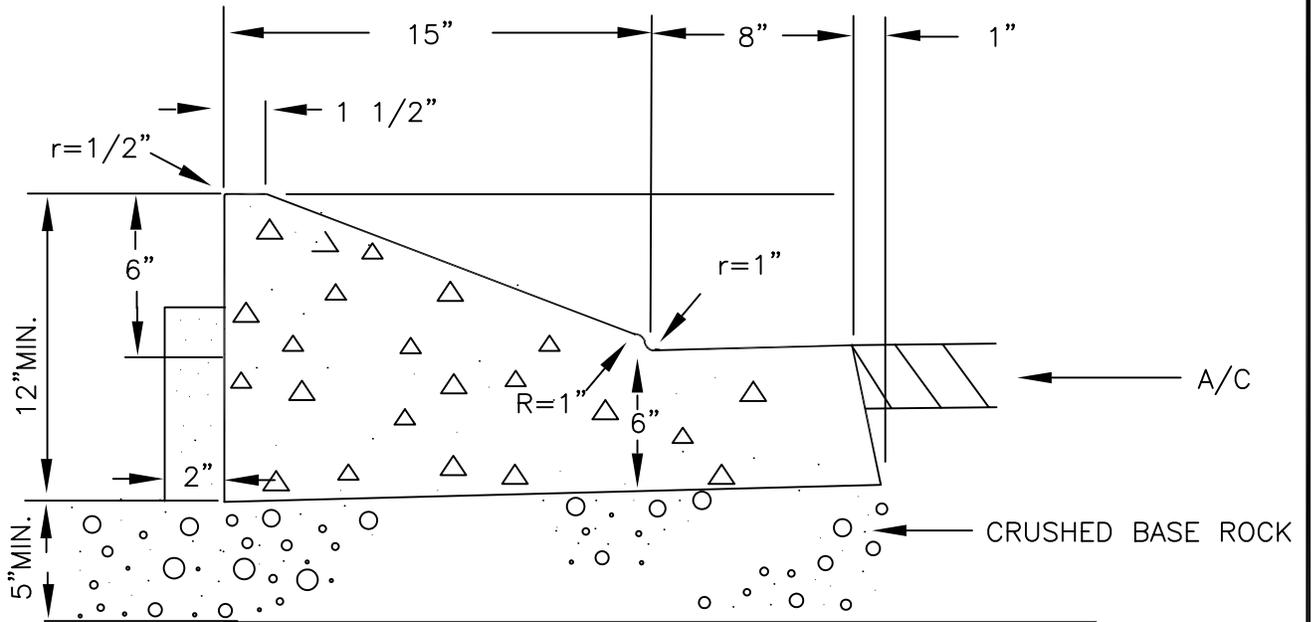
1. PCC SHALL BE 3300 PSI STRENGTH AT 28 DAYS. EXCEPT IN COMMERCIAL AREAS WHERE PCC SHALL BE 5,000 PSI STRENGTH AT 28 DAYS.
2. CONTRACTION JOINTS SHALL BE PLACED AT 15' MAX. SPACING.
3. CURB EXPOSURE SHALL BE 8.5" AT ALL CATCH INLETS.
4. DRAIN BLOCKOUTS SHALL BE PLACED 2 PER LOT 6" INSIDE EACH PROPERTY LINE. DRAIN PIPE SHALL BE EXTENDED TO 1' BEHIND BACK OF WALK WHERE SIDEWALK IS INSTALLED BEFORE THE LOT IS CONNECTED TO THE DRAIN PIPE.
5. ADD 2" WIDE AND 4" DEEP SHELF WHEN CURB IS PLACED ADJACENT TO SIDEWALK.
6. CRUSHED BASE ROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
7. TYPE "C" CURB SHALL ONLY BE INSTALLED AT LOCATIONS (REPLACEMENT) TO MATCH EXISTING CURB TYPE.

DRAWN DRB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
TYPE "C" CURB

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>OR</i>
DWG. NO. 603

MOUNTABLE CURB
TO BE USED FOR HIGH DENSITY DEVELOPMENT
WITH MANAGER'S APPROVAL



TRANSITION DETAIL

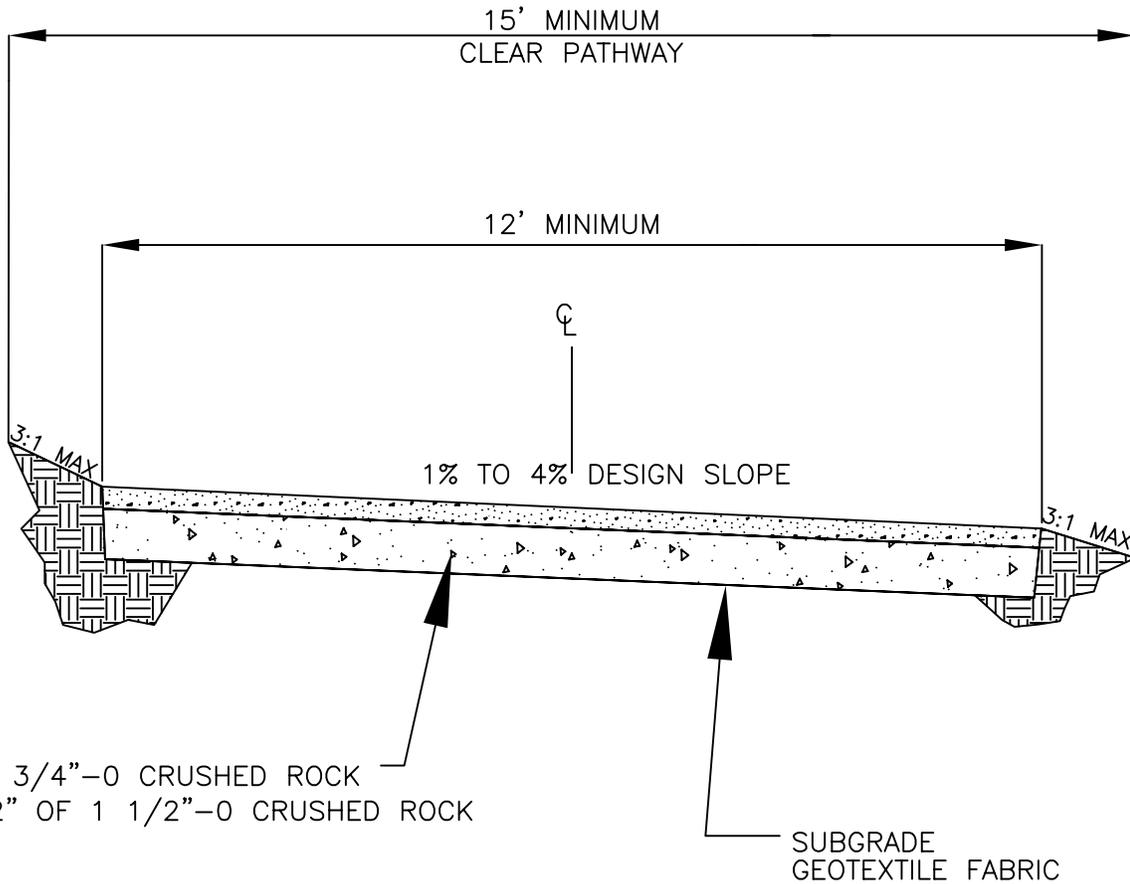
1. PCC SHALL BE 3300 PSI STRENGTH AT 28 DAYS.
2. CONTRACTION JOINTS SHALL BE PLACED AT 15' MAX. SPACING.
3. ADD 2" WIDE 4" DEEP SHELF WHEN CURB IS PLACED ADJACENT TO SIDEWALK.
4. CRUSHED BASE ROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
5. ROOF DRAINS SHALL DRAIN DIRECTLY TO DRAINAGE CATCH BASINS.

DRAWN DRB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

MOUNTABLE CURB

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>OR</i>
DWG. NO. 604



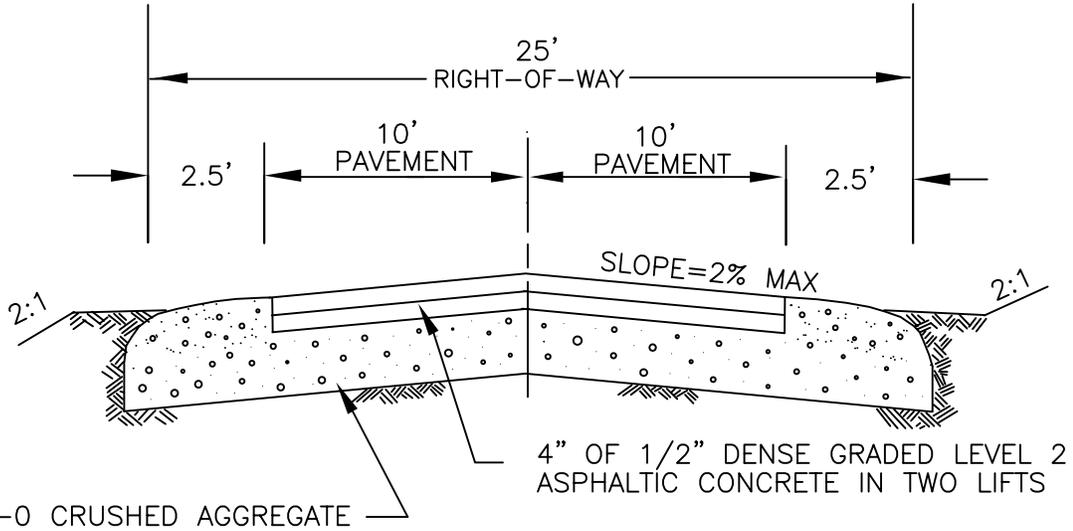
NOTES:

1. A BRANCH TURN-AROUND SHALL BE PROVIDED ON ALL DEAD-END ACCESS ROADS. THE BRANCH TURN-AROUND SHALL HAVE A MINIMUM TURNING RADIUS OF 50'.
2. SUBGRADE AND AGGREGATE SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. ACCESS ROAD GRADES ARE NOT TO EXCEED 10%.
4. BOLLARDS, PER DETAIL 631, ARE REQUIRED AT ALL ENTRANCES TO ACCESS ROADS.

DRAWN DRB			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JAN. 1, 2006
REV.	DATE	APPR.	HEAVY VEHICLE PUBLIC FACILITY ACCESS ROAD	APPR. <i>[Signature]</i>
				DWG. NO. 605

TYPICAL STREET SECTION

ACCESS TO PARKS AND OPEN SPACE



1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. VEHICLE CONTROL DEVICES MAY BE INSTALLED TO DETER INTRUSION INTO THE PARK. THESE INCLUDE BOLLARDS, BERMS, OR 6" EXTRUDED CURBS.
4. A SIDEWALK AND PLANTER STRIP ARE NOT REQUIRED.
5. ENGINEER OF RECORD IS RESPONSIBLE FOR PROVIDING ADEQUATE DRAINAGE/CONVEYANCE IN LIEU OF PROVIDING CURBS.

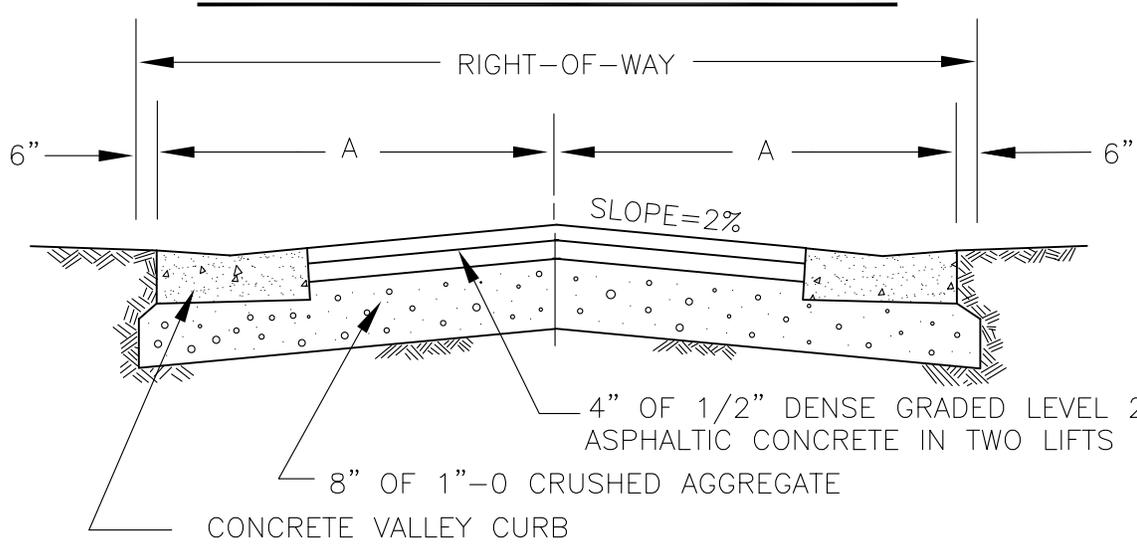
DRAWN DRB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

STANDARD PUBLIC FACILITY ACCESS ROAD

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>[Signature]</i>
DWG. NO. 606

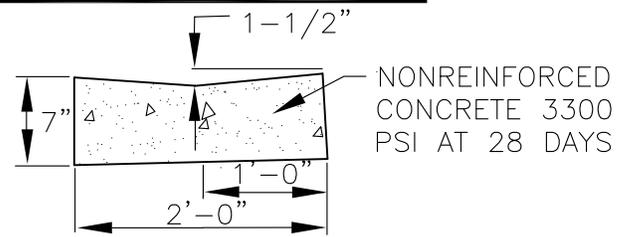
TYPICAL STREET SECTION



ALLEY DIMENSIONS

FUNCTIONAL CLASSIFICATION	RIGHT-OF-WAY	"A" PAVEMENT WIDTH
MINOR ALLEY	15'	7'
MAJOR ALLEY	21'	10'

VALLEY CURB DETAIL



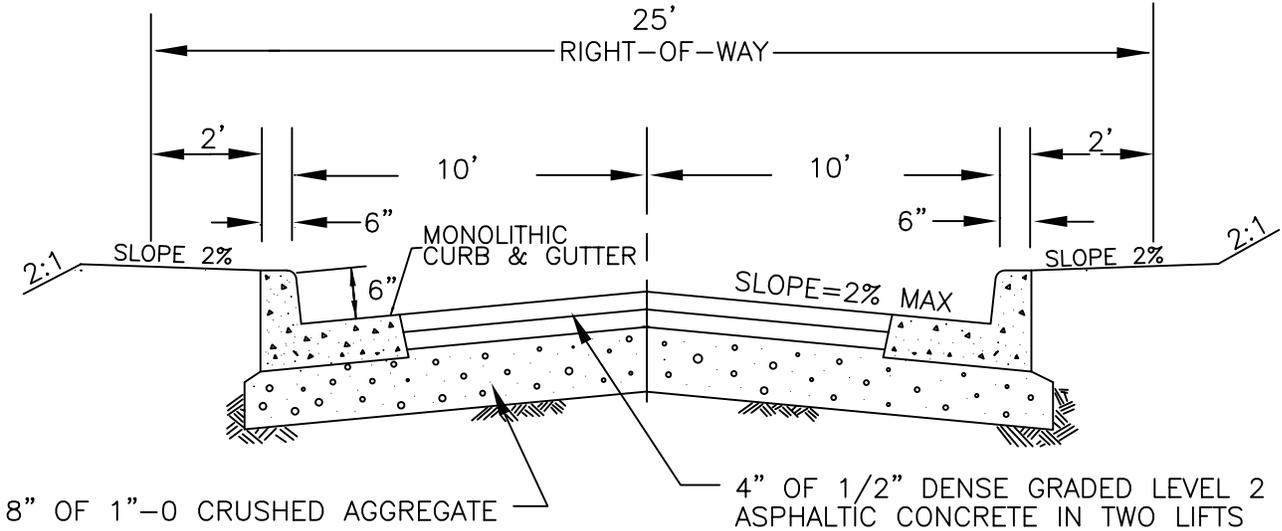
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. "NO PARKING" SHALL BE POSTED THE ENTIRE LENGTH OF ALLEY.
4. FIRE HYDRANTS WHEN REQUIRED ARE TO BE LOCATED OUTSIDE THE R-O-W IN A 5' BY 5' EASEMENT.
5. STORM WATER FROM GREEN ALLEYS SHALL BE TREATED BY RAIN GARDENS IN PUBLIC EASEMENTS NEXT TO ALLEY OR IN LANDSCAPE STRIP ON CONNECTING PUBLIC STREETS. AN INVERTED ALLEY SECTION WITH PERMEABLE SURFACE MAY BE PROPOSED AS AN ALTERNATIVE TO ADJACENT RAIN GARDENS.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.
1	6/07	XXX

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
ALLEY SECTION
 15' OR 21' ROW WIDTH

SCALE N.T.S.
DATE JUNE 2007
APPR.
DWG. NO. 607

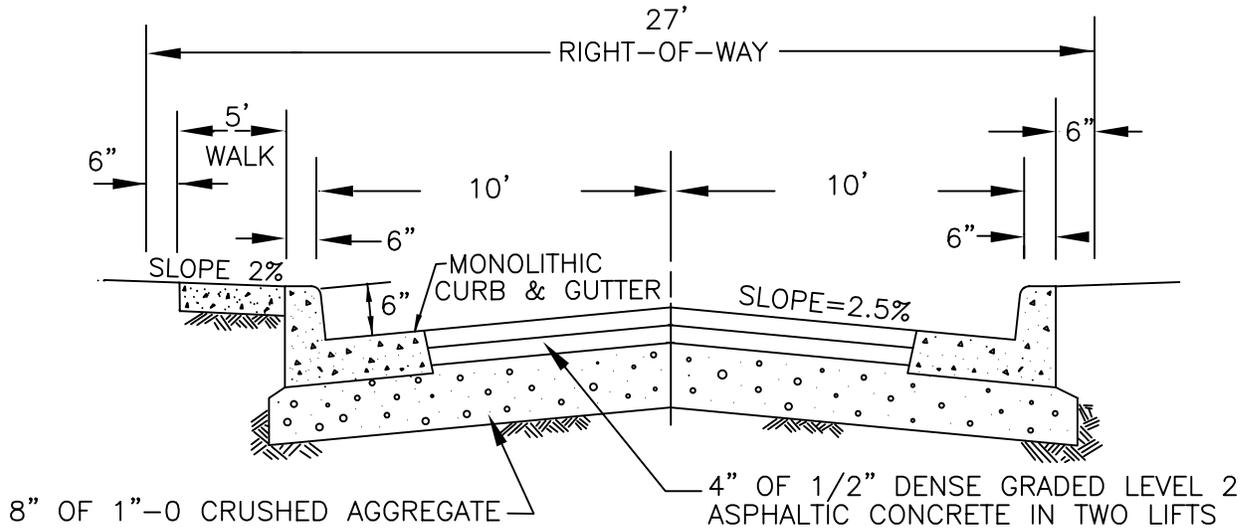
TYPICAL STREET SECTION



1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. PUBLIC PARKING FOR VISITORS (3-4 SPACES) AND A BRANCH TYPE TURNAROUND SHALL BE PROVIDED AT THE END OF THE MINOR ACCESS STREET. (SEE DETAIL # 621)
4. A "DEAD END" SIGN SHALL BE POSTED AT THE ENTRANCE TO THE MINOR ACCESS STREET.
5. "NO PARKING" SHALL BE POSTED FOR THE ENTIRE LENGTH OF THE MINOR ACCESS STREET.
6. THERE IS NO REQUIREMENT FOR A SIDEWALK OR PLANTER STRIP.

DRAWN DRB			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.	
DIV. TRANSPORTATION				DATE JAN. 1, 2006	
REV.	DATE	APPR.		APPR. <i>[Signature]</i>	
			MINOR ACCESS STREET		DWG. NO. 608

TYPICAL STREET SECTION



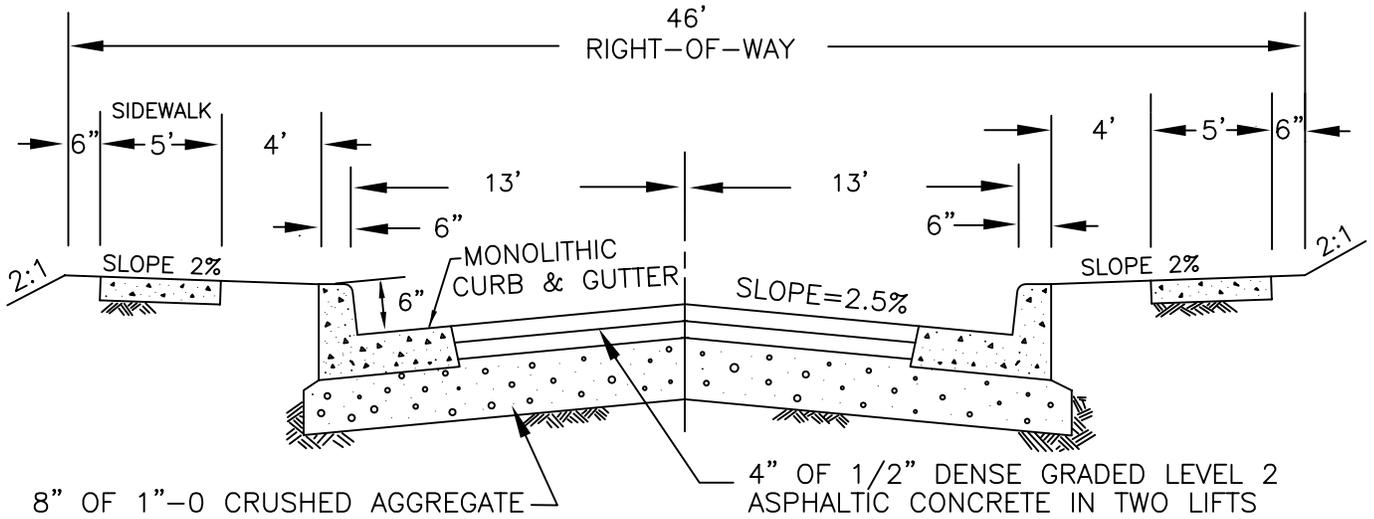
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180
3. "NO PARKING" SHALL BE POSTED FOR THE ENTIRE LANE.
4. FIRE HYDRANTS, WHEN REQUIRED, ARE TO BE LOCATED OUTSIDE THE R-O-W IN A 5' BY 5' EASEMENT.
5. A PLANTER STRIP IS NOT REQUIRED.

DRAWN DRB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
LOCAL LANE STREET SECTION

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	609

TYPICAL STREET SECTION



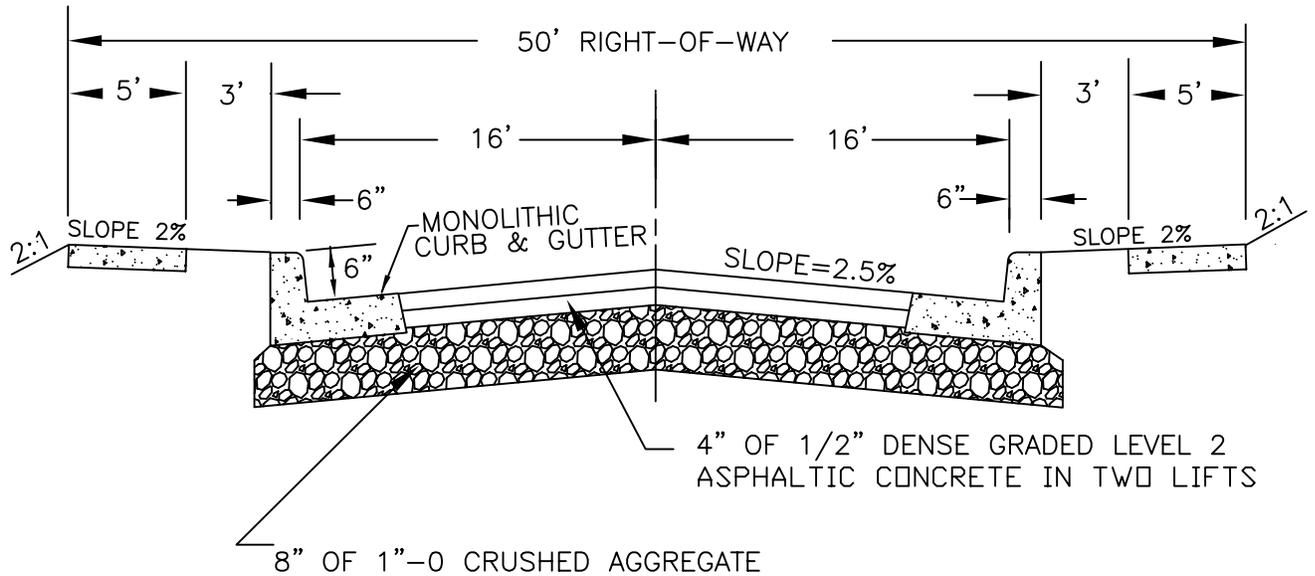
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE SIDEWALK SHALL HAVE A 5' MINIMUM CLEAR OF ALL OBSTACLES, UNLESS APPROVED BY THE CITY ENGINEER.
4. THE MAXIMUM BLOCK LENGTH FOR A QUEUING STREET IS 400 FT.
5. "NO PARKING" SHALL BE POSTED WITHIN 30 FT. OF CURB RETURN ON QUEUING STREET.

DRAWN DRB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES		
CITY OF GRESHAM		
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030		
LOCAL QUEUING STREET SECTION		

SCALE	N.T.S.
DATE	AUGUST 2005
APPR.	<i>[Signature]</i>
DWG. NO.	610

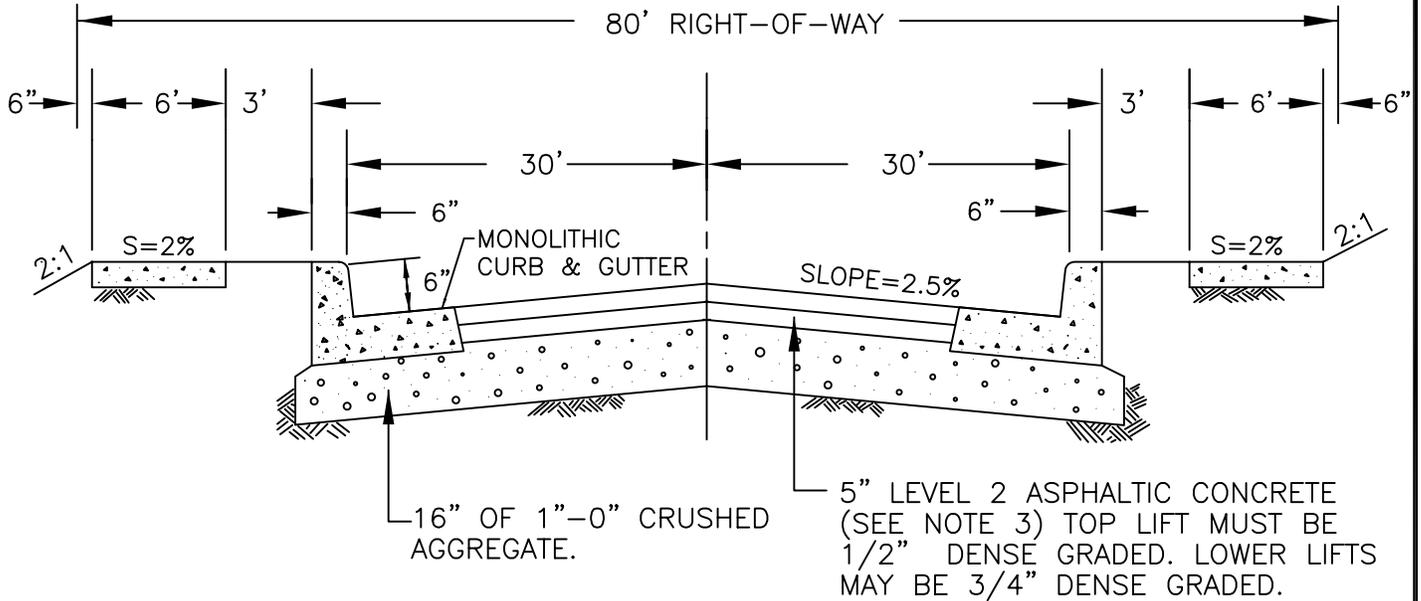
TYPICAL STREET SECTION



1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RELATIVE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY. PER AASHTO T-180
3. IN HILLSIDE CONSTRAINT DISTRICT RIGHT-OF-WAY WIDTH MAY BE 40' WITH A PAVEMENT WIDTH OF 28'.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' AREA CLEAR OF ALL OBSTACLES UNLESS APPROVED BY THE ENGINEER.
5. LOCAL STREETS PROJECTED TO HAVE AN AVERAGE DAILY TRAFFIC (ADT) OVER 1000 VEHICLES PER DAY SHALL BE CONSTRUCTED TO A COMMUNITY STREET.
6. FIRE HYDRANTS BEHIND THE WALK ON HILLSIDE CONSTRAINT DISTRICT AND COMMERCIAL/INDUSTRIAL DISTRICTS REQUIRE A 5' BY 5' EASEMENT.

DRAWN	DRB	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE	N.T.S.
DIV. TRANSPORTATION			DATE	JAN. 1, 2006
REV.	DATE		APPR.	<i>[Signature]</i>
LOCAL TRANSITIONAL STREET SECTION			DWG. NO.	611

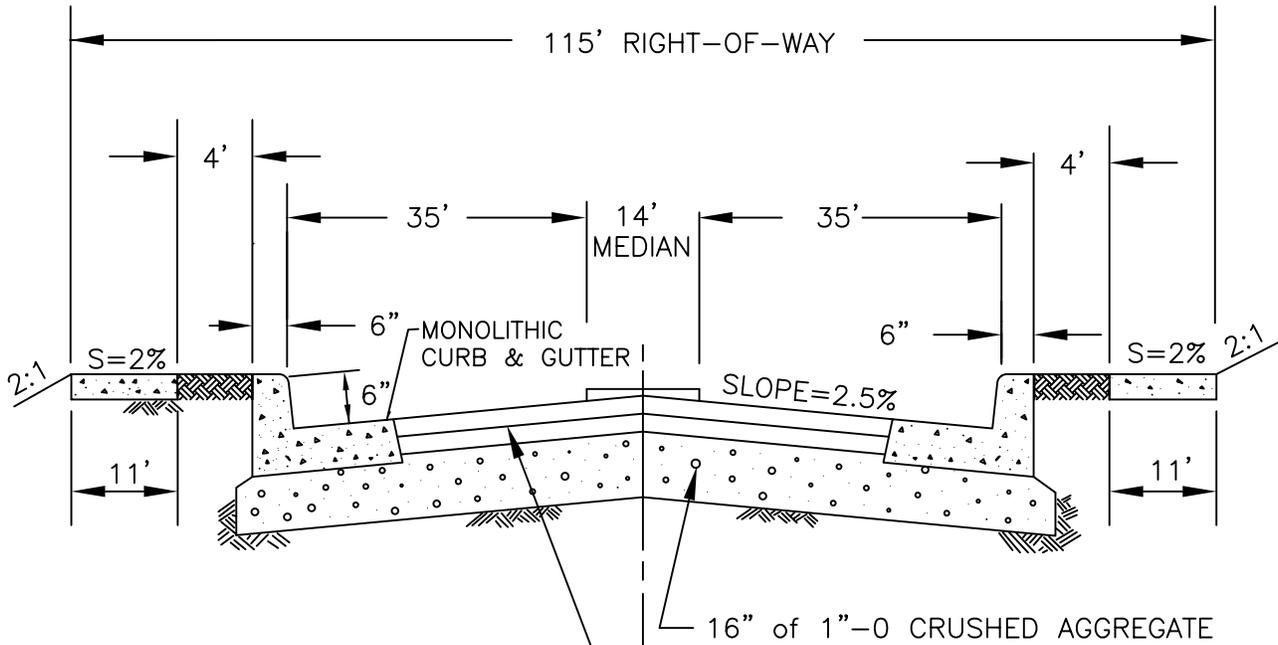
TYPICAL STREET SECTION



1. ASPHALT CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED T 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES UNLESS APPROVED BY THE CITY ENGINEER.
5. A 12' RAISED MEDIAN OR TWO-WAY LEFT TURN LANE SHALL SEPARATE THROUGH LANES.

DRAWN	AJB	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV.	TRANSPORTATION		DATE JAN. 1, 2006
REV.	DATE	APPR.	APPR. <i>[Signature]</i>
			DWG. NO. 613
COLLECTOR STREET SECTION			

TYPICAL STREET SECTION



8" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFTS MAY BE 1/2" OR 3/4" DENSE GRADED.

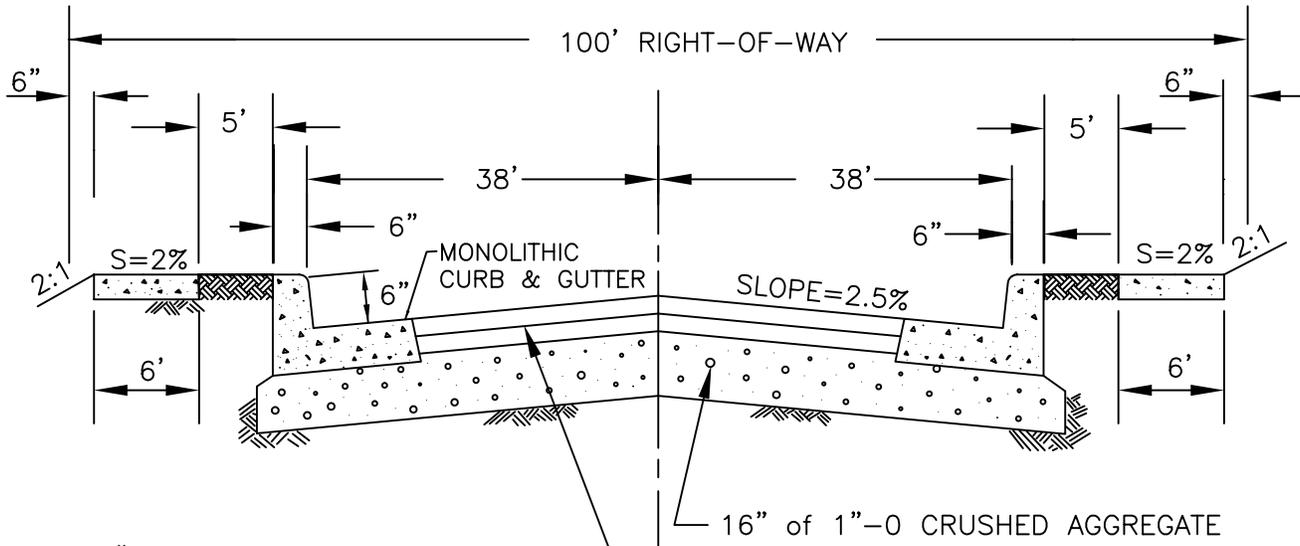
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES, UNLESS APPROVED BY CITY ENGINEER.

DRAWN AJB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
BOULEVARD

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	614

TYPICAL STREET SECTION



8" LEVEL 2 ASPHALTIC CONCRETE
 (SEE NOTE 3) TOP LIFT MUST BE
 1/2" DENSE GRADED. LOWER LIFTS
 MAY BE 1/2" OR 3/4" DENSE GRADED.

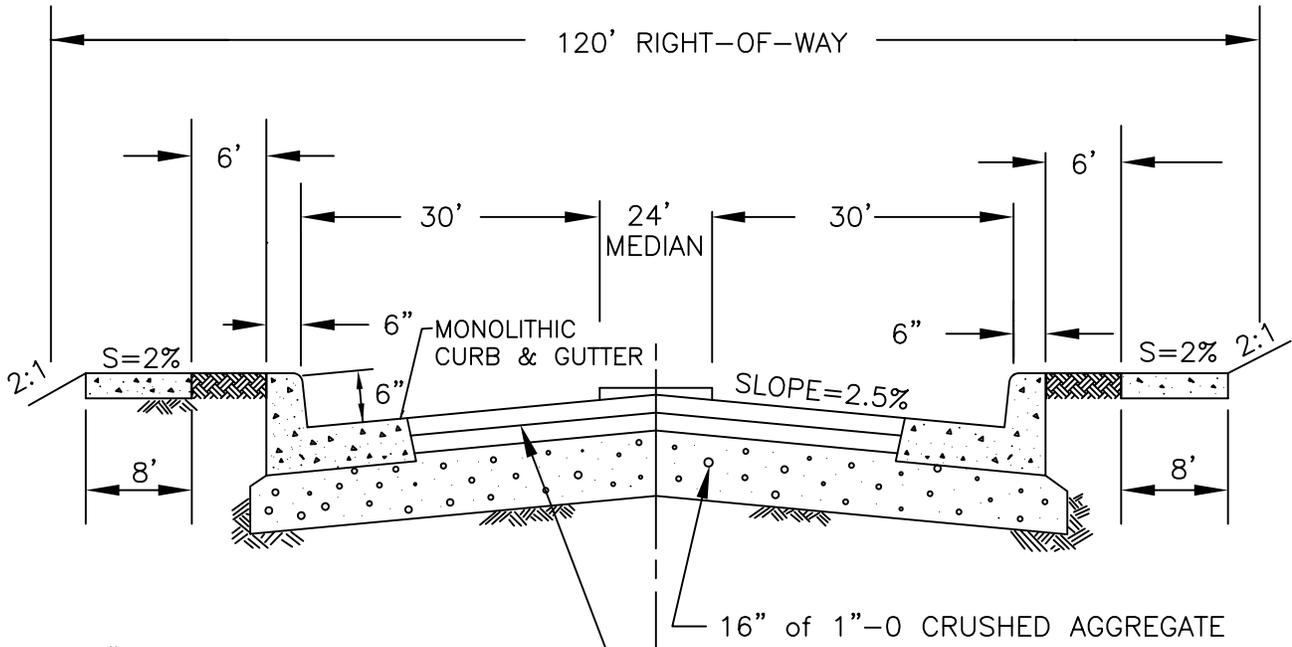
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES, UNLESS APPROVED BY CITY ENGINEER.
5. A 16' RAISED MEDIAN OR TWO-WAY-LEFT LANE SHALL SEPARATE OPPOSING TRAVEL LANES.

DRAWN AJB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
ARTERIAL STREET SECTION

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	615

TYPICAL STREET SECTION



8" LEVEL 2 ASPHALTIC CONCRETE
 (SEE NOTE 3) TOP LIFT MUST BE
 1/2" DENSE GRADED. LOWER LIFTS
 MAY BE 1/2" OR 3/4" DENSE GRADED.

1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES, UNLESS APPROVED BY CITY ENGINEER.

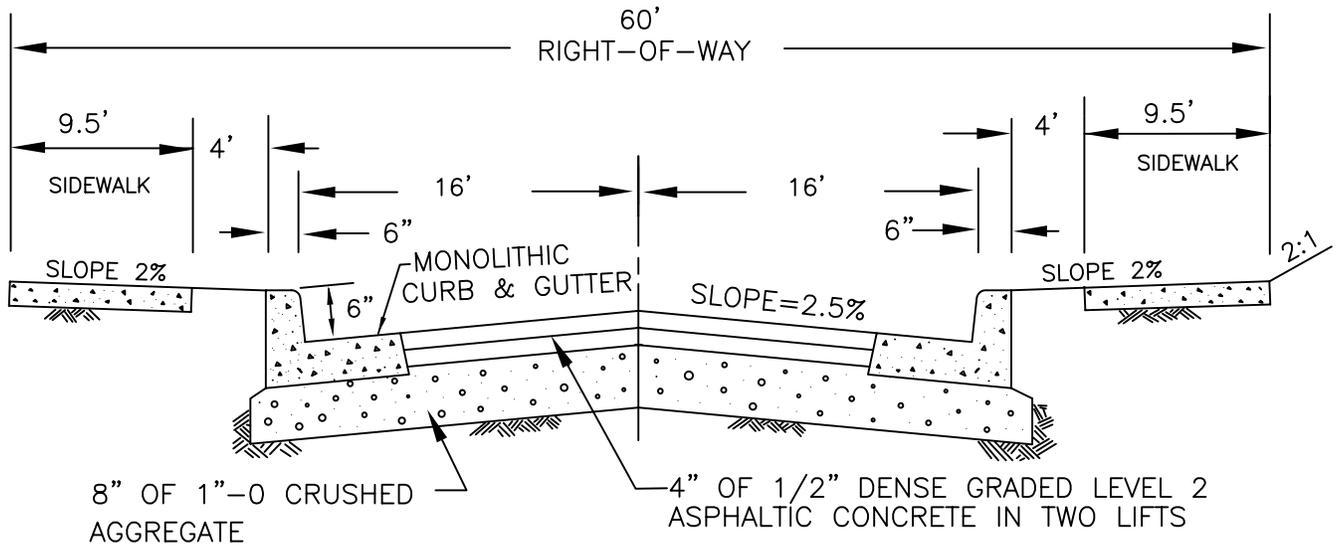
DRAWN AJB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

PRINCIPAL ARTERIAL

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	616

TYPICAL STREET SECTION



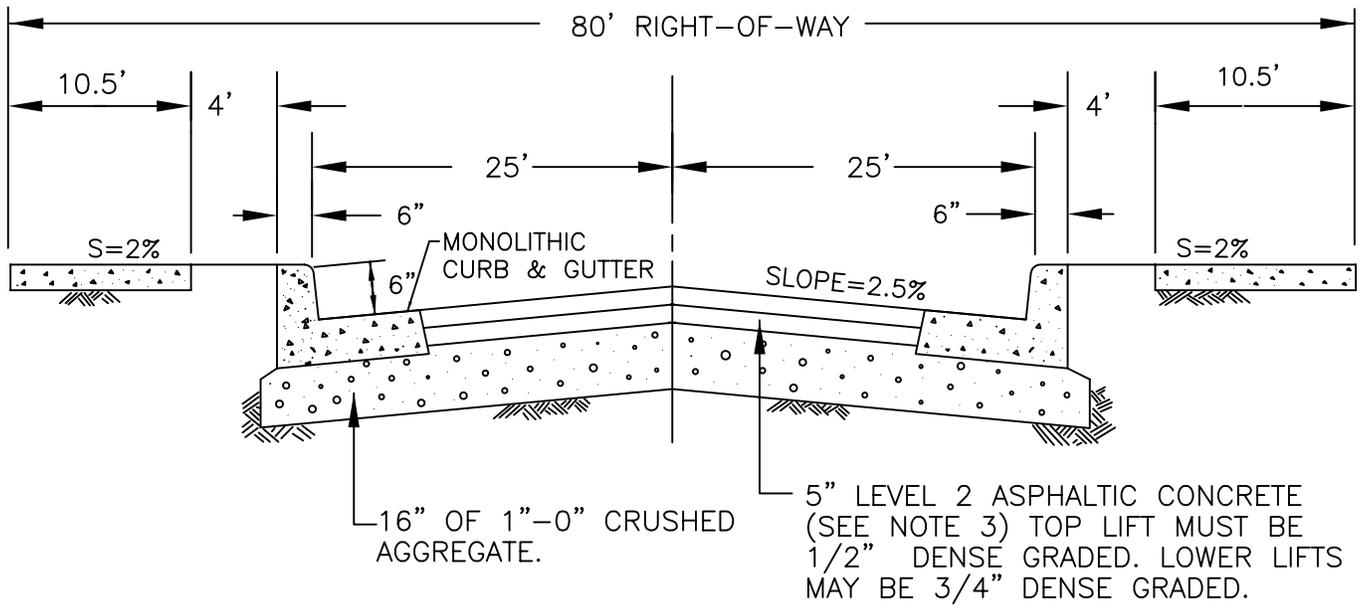
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE SIDEWALK SHALL HAVE A 5' MINIMUM CLEAR OF ALL OBSTACLES, UNLESS APPROVED BY THE CITY ENGINEER.
4. THE MAXIMUM BLOCK LENGTH FOR A QUEUING STREET IS 400 FT.
5. "NO PARKING" SHALL BE POSTED WITHIN 30 FT. OF CURB RETURN ON QUEUING STREET.

DRAWN AJB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
CIVIC NEIGHBORHOOD
LOCAL STREET

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>OR</i>
DWG. NO.	617

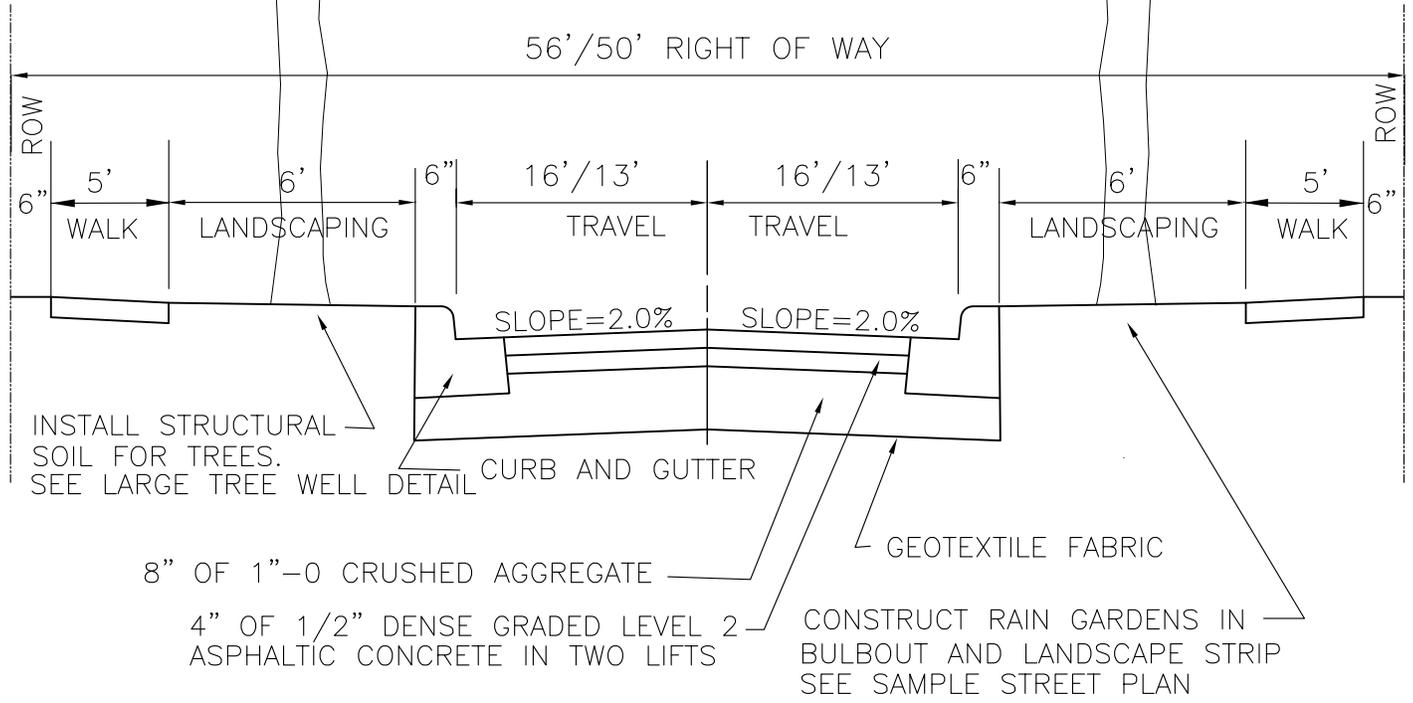
TYPICAL STREET SECTION



1. ASPHALT CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES UNLESS APPROVED BY THE CITY ENGINEER.

DRAWN	AJB	DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 CIVIC NEIGHBORHOOD COLLECTOR STREET	SCALE	N.T.S.
DIV.	TRANSPORTATION		DATE	JAN. 1, 2006
REV.	DATE		APPR.	<i>OR</i>
			DWG. NO.	618

TYPICAL STREET SECTION



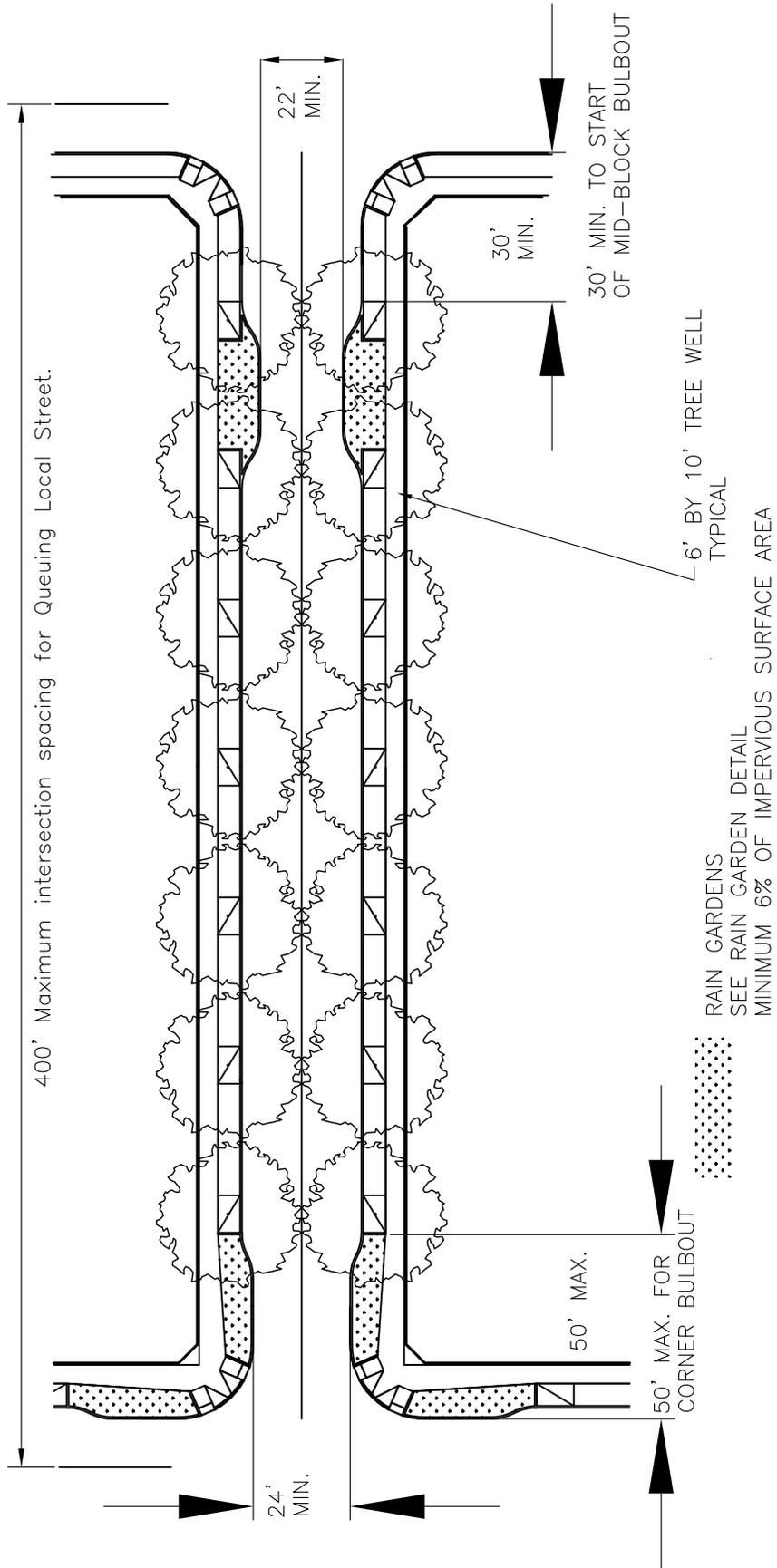
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. IN HILLSIDE CONSTRAINT DISTRICT PAVEMENT WIDTH OF 28' MAY BE USED WITH MANAGERS APPROVAL. PARKING SHALL BE LIMITED TO ONE SIDE OF THE STREET.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES UNLESS APPROVED BY THE CITY ENGINEER.
5. LOCAL STREETS PROJECTED TO HAVE AN AVERAGE DAILY TRAFFIC (ADT) OVER 1,000 VEHICLES PER DAY SHALL BE CONSTRUCTED TO A CONNECTOR STREET.
6. FIRE HYDRANTS BEHIND THE WALK ON HILLSIDE CONSTRAINT DISTRICT AND COMMERCIAL/INDUSTRIAL DISTRICTS REQUIRE A 5' BY 5' EASEMENT.
7. AT ROW LINE MINIMUM SLOPE 2%, MAXIMUM SLOPE CUT 2:1, FILL 3:1.
8. "NO PARKING" SHALL BE POSTED WITHIN 30 FT. OF CURB RETURN AND NEXT TO RAIN GARDENS.
9. AT ROW LINE MINIMUM SLOPE 2%, MAXIMUM SLOPE CUT 2:1, FILL 3:1.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
LOCAL TRANSITIONAL OR QUEUING GREEN STREET
50' OR 56' RIGHT OF WAY

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-1

Green Local Transitional or Queuing Street



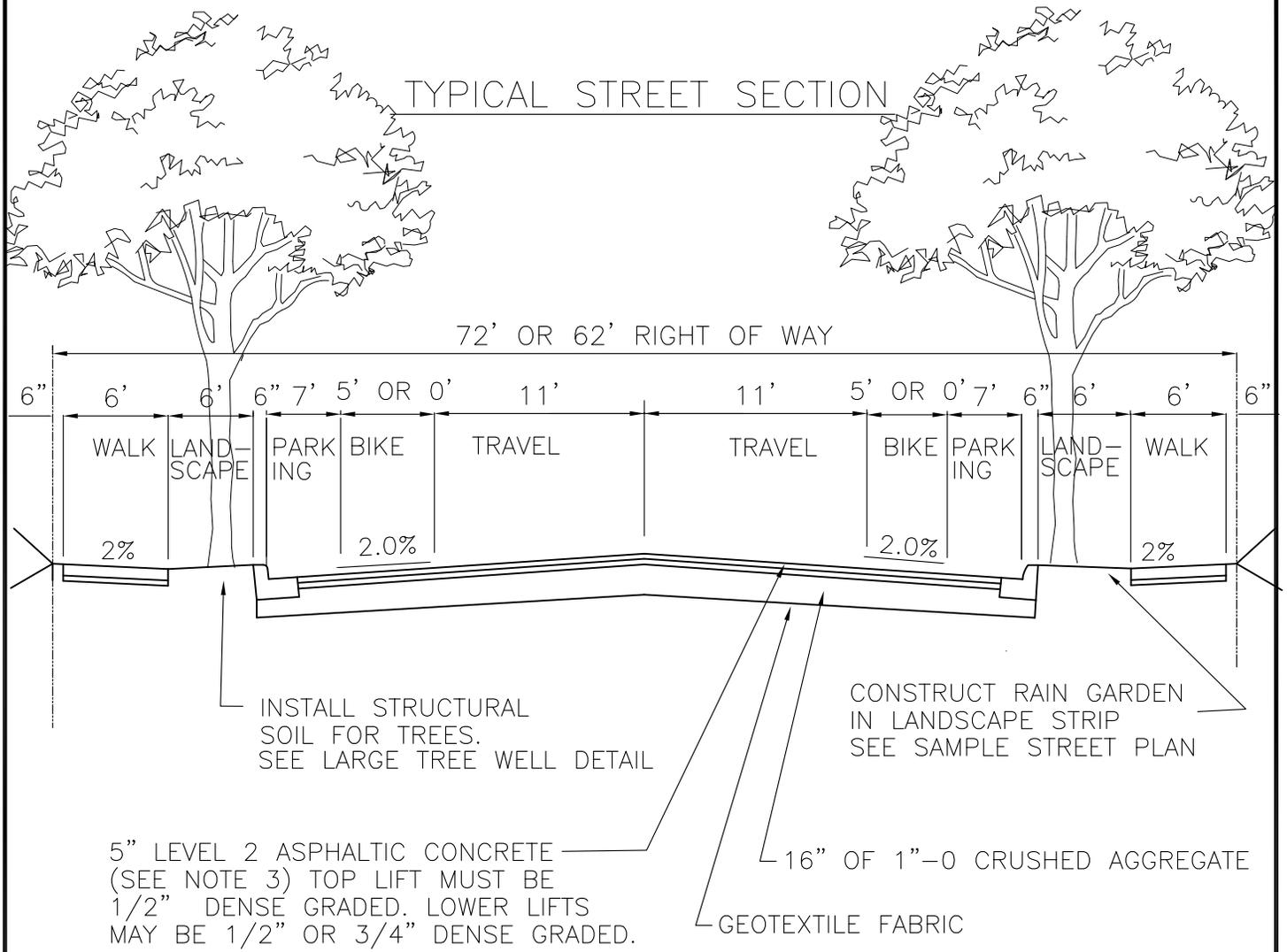
SEE SECTION VIEW FOR DIMENSIONS.
 SAMPLE STREET PLAN PROVIDED AS EXAMPLE ONLY.
 ACTUAL STREET PLAN WILL VARY.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
SAMPLE LOCAL GREEN STREET PLAN

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-2

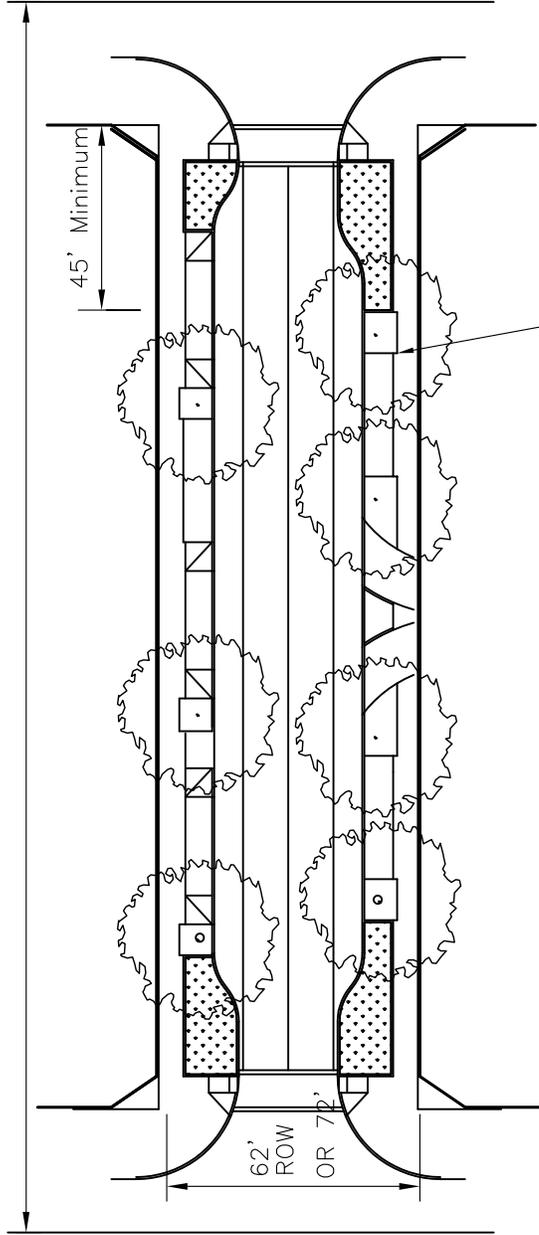
TYPICAL STREET SECTION



1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. AT ROW LINE MINIMUM SLOPE 2%, MAXIMUM SLOPE CUT 2:1, FILL 3:1.
5. THE 72' SECTION MAY BE USED AS A COMMUNITY STREET.

DRAWN RCS			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JUNE 2007
REV.	DATE	APPR.	CONNECTOR OR COMMUNITY GREEN STREET 72' OR 62' RIGHT OF WAY	APPR.
				DWG. NO. GS-3

Neighborhood Connector



RAIN GARDENS
SEE RAIN GARDEN DETAIL
MINIMUM 6% OF IMPERVIOUS SURFACE AREA

SEE SECTION VIEW FOR DIMENSIONS.
SAMPLE STREET PLAN PROVIDED AS EXAMPLE ONLY.
ACTUAL STREET PLAN WILL VARY.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

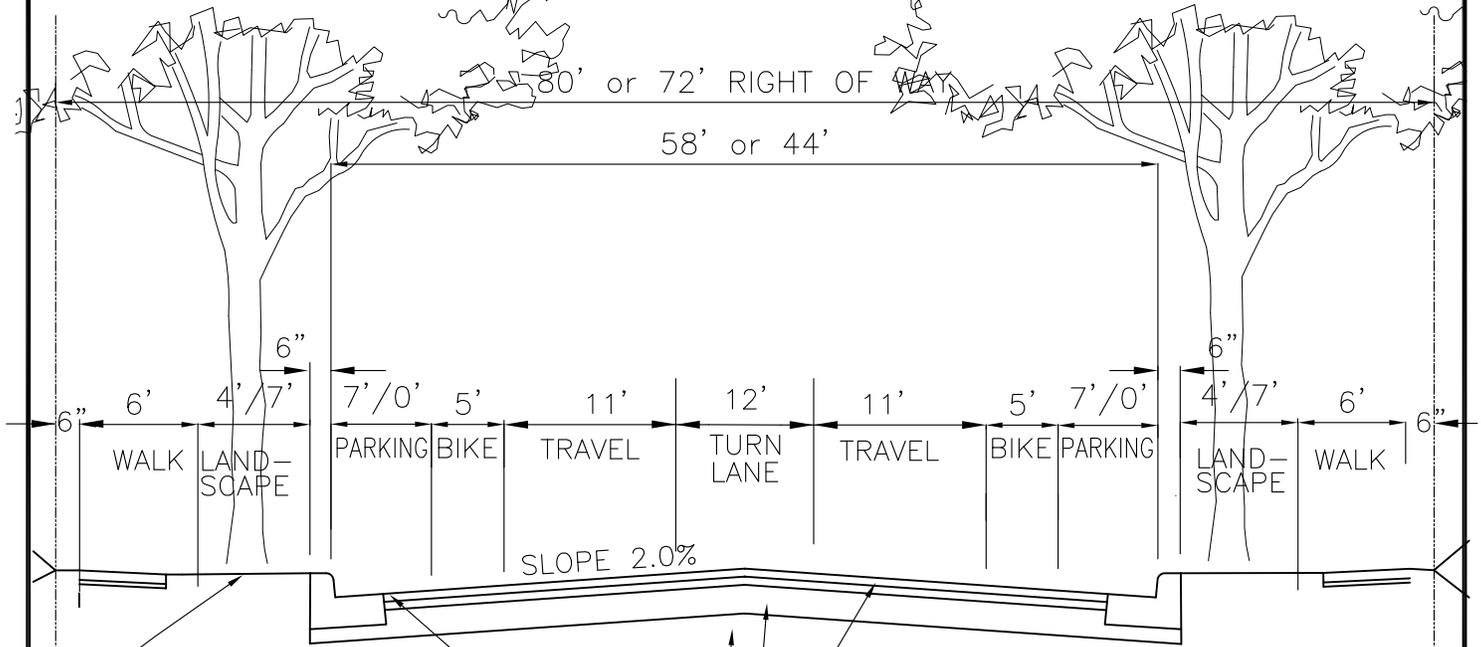
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

GREEN NEIGHBORHOOD CONNECTOR

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-4

TYPICAL STREET SECTION

80' or 72' RIGHT OF WAY
58' or 44'



INSTALL STRUCTURAL SOIL FOR TREES. SEE LARGE TREE WELL DETAIL

IF THERE IS PARKING SHADOW WITH BULBOUTS CONSTRUCT RAIN GARDENS IN BULBOUT AND 5' OF SIDEWALK SEE SAMPLE STREET PLAN

5" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFT MAY BE 1/2" OR 3/4" DENSE GRADED.

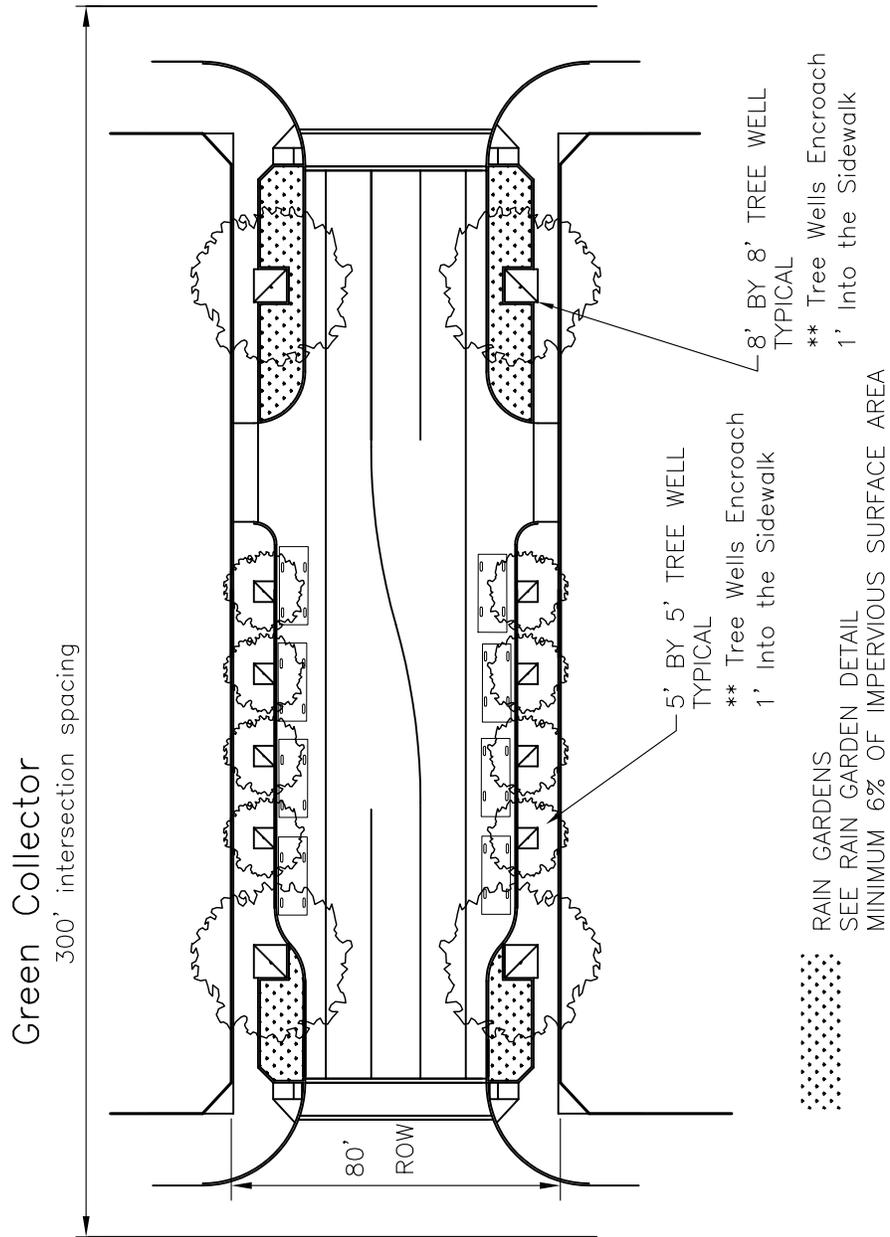
16" OF 1"-0 CRUSHED AGGREGATE
- GEOTEXTILE FABRIC

1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES UNLESS APPROVED BY THE CITY ENGINEER.
5. AT ROW LINE MINIMUM SLOPE 2%, MAXIMUM SLOPE CUT 2:1, FILL 3:1.
6. WHERE NO PARKING IS REQUIRED INCREASE LANDSCAPE STRIP FROM 4' TO 7'.
7. TREE WELLS ENCROACH 1' INTO SIDEWALK
8. "NO PARKING" SHALL BE POSTED WITHIN 30 FT. OF CURB RETURN AND NEXT TO RAIN GARDENS.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
COLLECTOR GREEN STREET
 80' or 72' RIGHT OF WAY

SCALE N.T.S.
DATE JUNE 2007
APPR.
DWG. NO. GS-5



SEE SECTION VIEW FOR DIMENSIONS.
 SAMPLE STREET PLAN PROVIDED AS EXAMPLE ONLY.
 ACTUAL STREET PLAN WILL VARY.

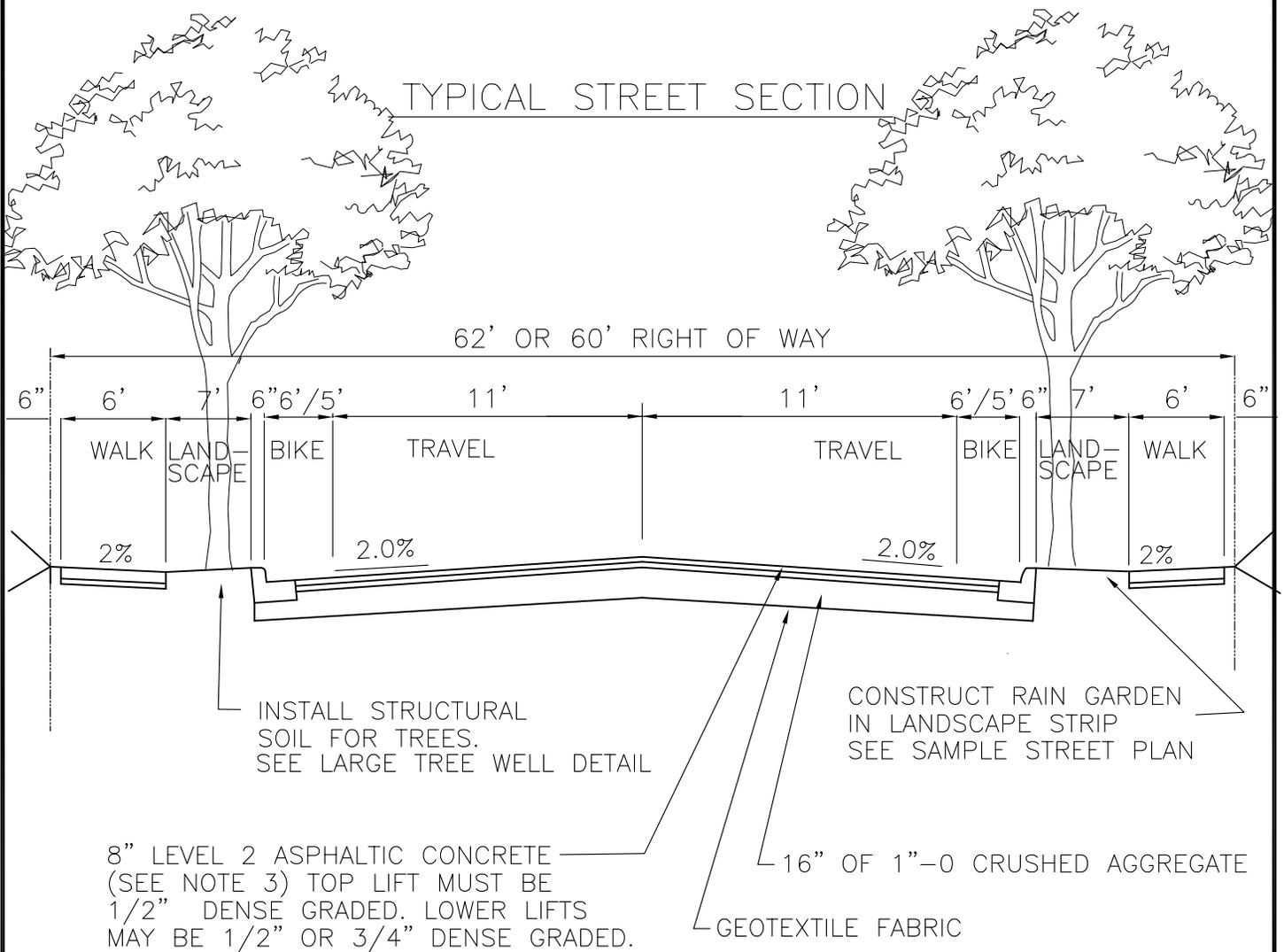
DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

SAMPLE COLLECTOR GREEN STREET PLAN

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-6

TYPICAL STREET SECTION



1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. WHERE LEFT TURN LANE IS ADDED INCREASE ROW BY 12 FEET.
5. PARKWAYS SHALL BE POSTED NO PARKING
6. REDUCE BIKE LANES TO 5' AND ROW TO 60' ON COLLECTOR PARKWAYS.

DRAWN RCS			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JUNE 2007
REV.	DATE	APPR.	GREEN PARKWAY (ARTERIAL OR COLLECTOR) 62' OR 60' RIGHT OF WAY	APPR.
				DWG. NO. GS-7

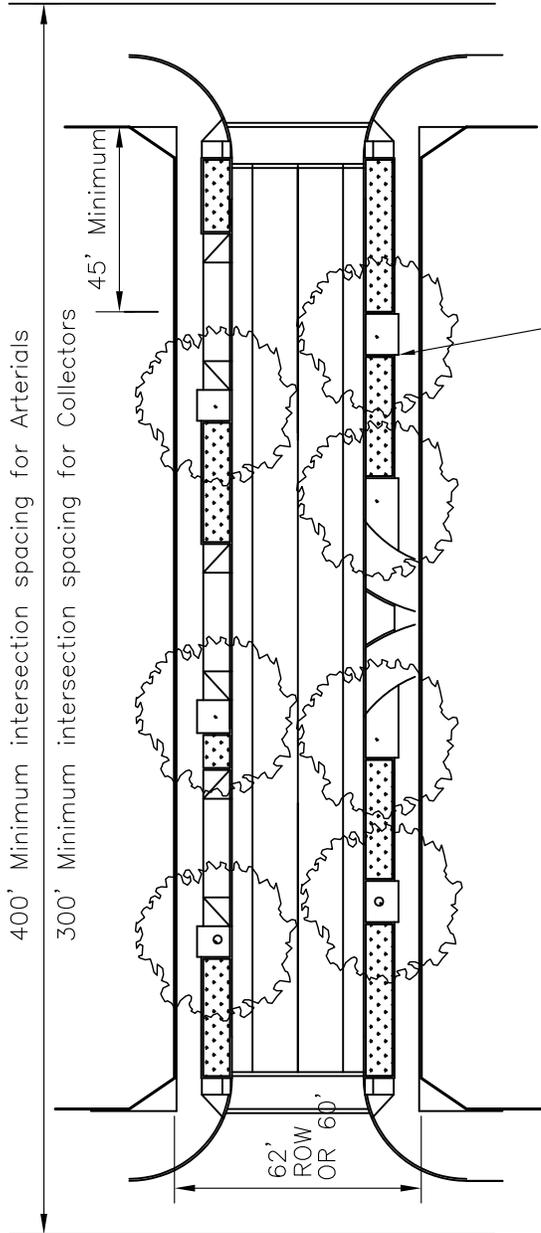
Parkway

Construct in environmental zones to limit impact

400' Minimum intersection spacing for Arterials

300' Minimum intersection spacing for Collectors

45' Minimum



RAIN GARDENS
SEE RAIN GARDEN DETAIL
MINIMUM 6% OF IMPERVIOUS SURFACE AREA

8' BY 8' TREE WELL
TYPICAL

** Tree Wells Encroach
1' Into the Sidewalk

SEE SECTION VIEW FOR DIMENSIONS.

SAMPLE STREET PLAN PROVIDED AS EXAMPLE ONLY.

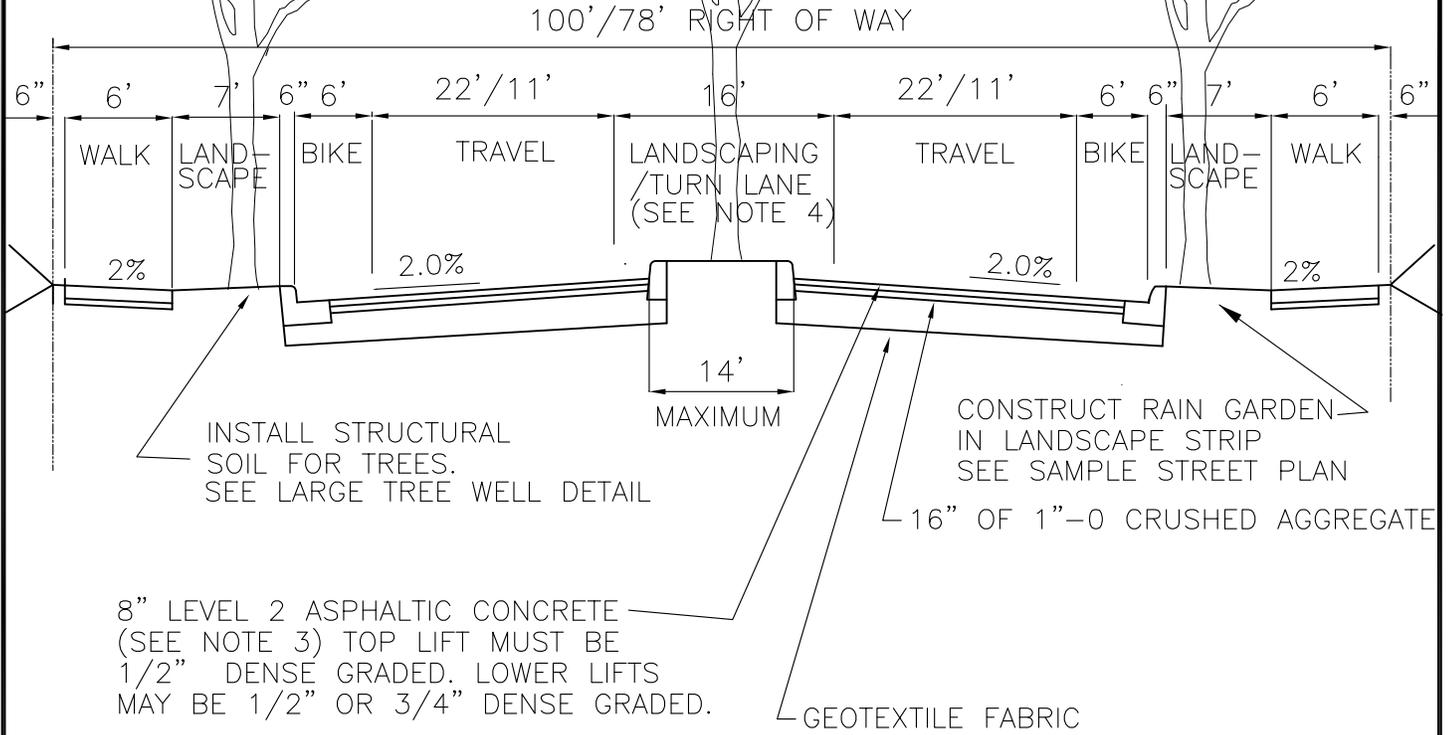
ACTUAL STREET PLAN WILL VARY.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
SAMPLE GREEN PARKWAY PLAN

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-8

TYPICAL STREET SECTION



1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. A 14' MEDIAN OR LEFT TURN LANE WITH 2' MEDIAN SHALL SEPARATE OPPOSING TRAVEL LANES.
5. AT ROW LINE MINIMUM SLOPE 2%, MAXIMUM SLOPE CUT 2:1, FILL 3:1.
6. ARTERIALS SHALL BE POSTED NO PARKING.

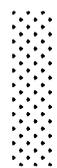
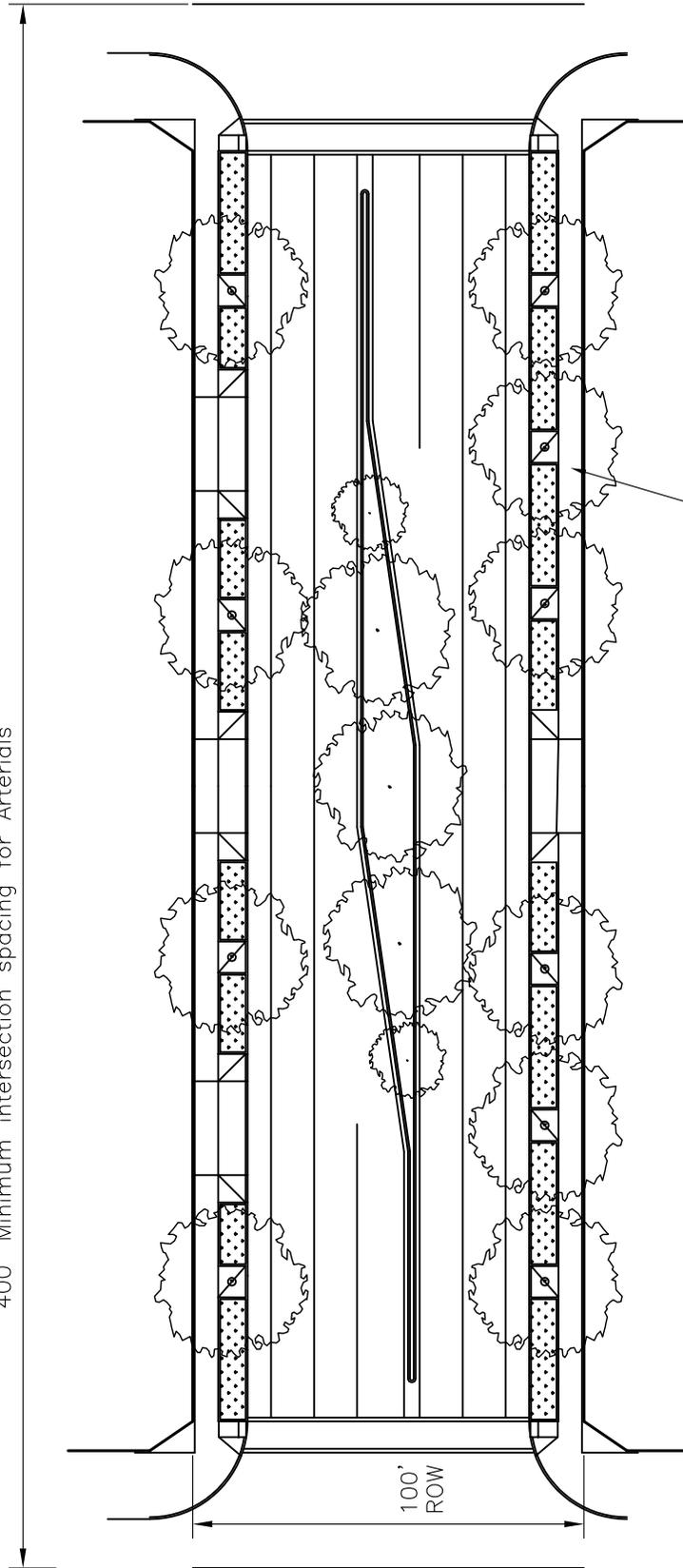
DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
MAJOR/MINOR ARTERIAL GREEN STREET
100'/78' RIGHT OF WAY

SCALE N.T.S.
DATE JUNE 2007
APPR.
DWG. NO. GS-9

Green Major Arterial (delete second travel lane for minor arterial)

400' Minimum intersection spacing for Arterials



RAIN GARDENS
SEE RAIN GARDEN DETAIL
MINIMUM 6% OF IMPERVIOUS SURFACE AREA

7' BY 9' TREE WELL
TYPICAL

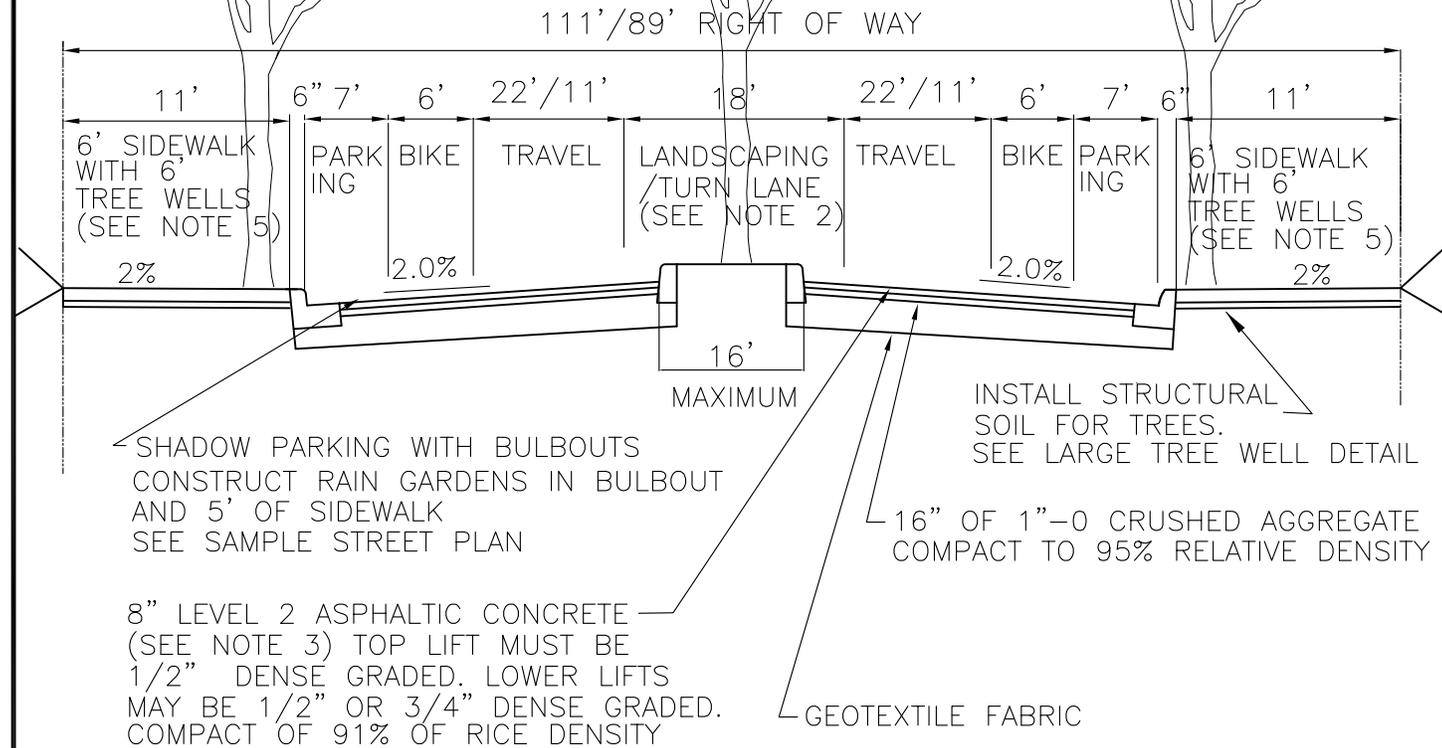
SEE SECTION VIEW FOR DIMENSIONS.
SAMPLE STREET PLAN PROVIDED AS EXAMPLE ONLY.
ACTUAL STREET PLAN WILL VARY.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
SAMPLE ARTERIAL GREEN STREET PLAN

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-10

TYPICAL STREET SECTION



1. COMPACT TOP 12 INCHES OF SUBGRADE TO 95% RELATIVE DENSITY
2. AT 12' LEFT TURN LANES CONSTRUCT 4' MEDIAN WITH 1' SHY DISTANCE
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. AT ROW LINE MINIMUM SLOPE 2%, MAXIMUM SLOPE CUT 2:1, FILL 3:1.
5. TREE WELLS ENCROACH 1' INTO SIDEWALK
6. "NO PARKING" SHALL BE POSTED WITHIN 30 FT. OF CURB RETURN AND NEXT TO RAIN GARDENS.

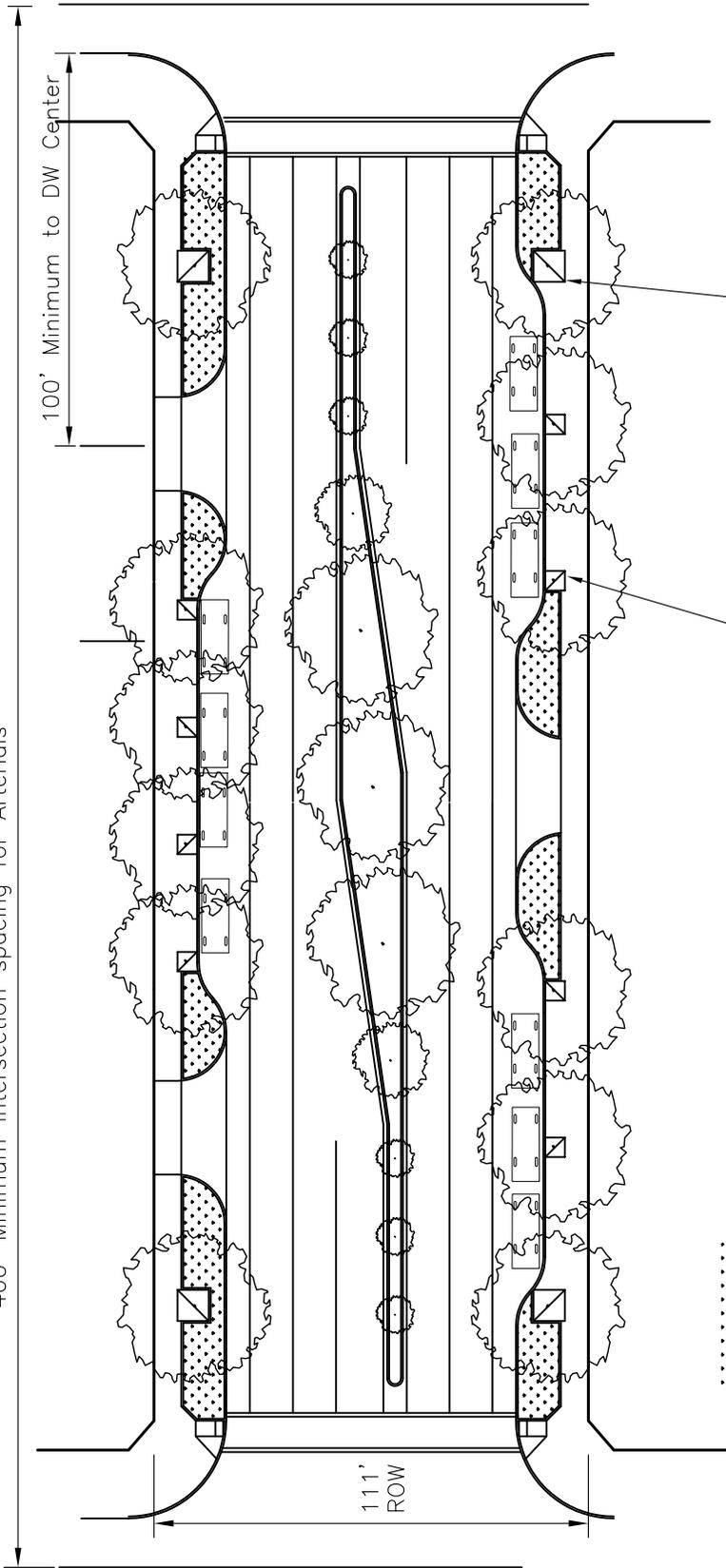
DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
MAJOR/MINOR BOULEVARD GREEN STREET
111'/89' RIGHT OF WAY

SCALE N.T.S.
DATE JUNE 2007
APPR.
DWG. NO. GS-11

Green Major Boulevard (delete second travel lane for minor boulevard)

400' Minimum intersection spacing for Arterials



RAIN GARDENS
SEE RAIN GARDEN DETAIL
MINIMUM 6% OF IMPERVIOUS SURFACE AREA

SEE SECTION VIEW FOR DIMENSIONS.
SAMPLE STREET PLAN PROVIDED AS EXAMPLE ONLY.
ACTUAL STREET PLAN WILL VARY.

8' BY 8' TREE WELL
TYPICAL
** Tree Wells Encroach
1' Into the Sidewalk

6' BY 10' TREE WELL
TYPICAL
** Tree Wells Encroach
1' Into the Sidewalk

111'
ROW

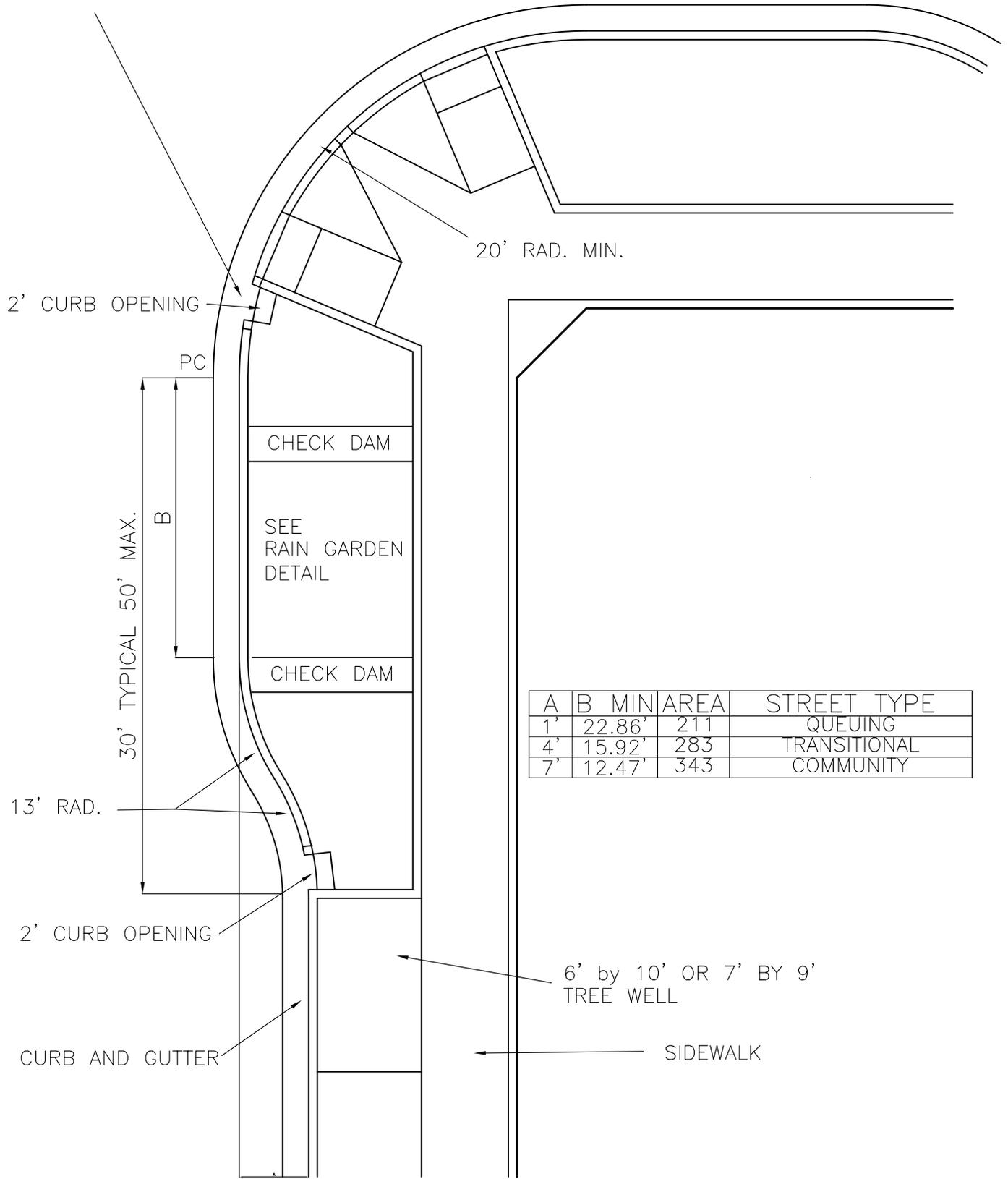
100' Minimum to DW Center

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
SAMPLE BOULEVARD GREEN STREET PLAN

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-12

CONSTRUCT INLET INSIDE RAIN GARDEN
OR OUT SIDE RAIN GARDEN IN STREET
NEAR CURB OPENING DOWNHILL FROM GAREN.



DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
RAIN GARDEN CORNER BULBOUT

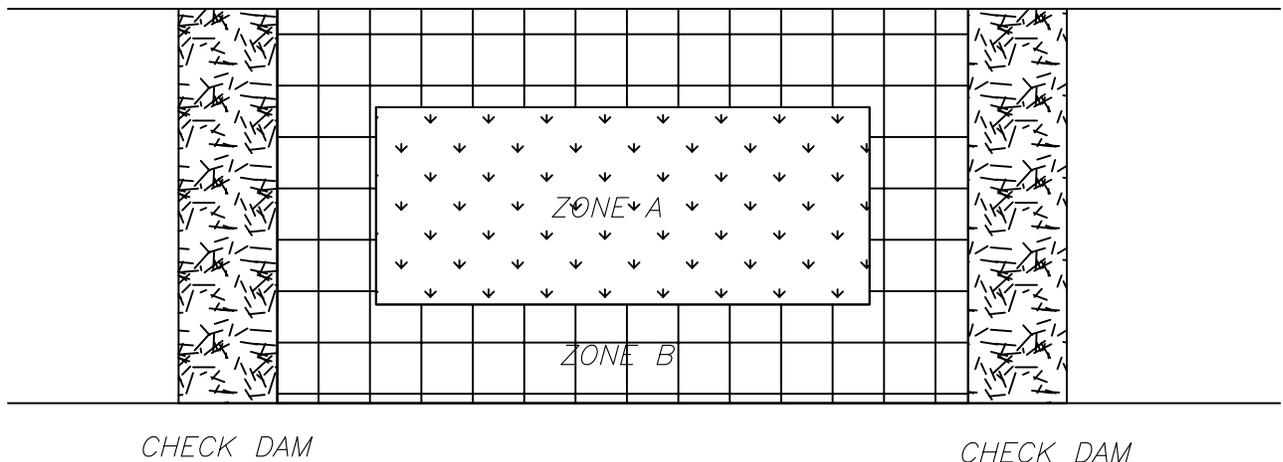
SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-13

RAIN GARDEN PLANTS

ZONE	BOTANICAL NAME	COMMON NAME
A	CAREX APERTA	COLUMBIA SEDGE
A	CAREX DENSA	DENSE SEDGE
A	CAREX PANSA	
A	CAREX TESTACAE	NEW ZEALAND ORANGE SEDGE
A	CAREX TUMILICOLA	FOOTHILL SEDGE
A	DESCHAMPSIA CAESPITOSA "NORTHERN LIGHTS"	TUFTED HAIR GRASS
A	ELEOCHARIS PALUSTRIS	CREEPING SPIKE RUSH
A	JUNCUS BALTICUS	BALTIC RUSH
A	JUNCUS EFFUSUS "CARMEN'S JAPANESE"	COMMON RUSH
A	JUNCUS EFFUSUS "GOLD STRIKE"	COMMON RUSH
A	JUNCUS EFFUSUS "CARMAN'S GRAY"	COMMON RUSH
A	JUNCUS PATENS	SPREADING RUSH
B	ARCTOSTAPHYLLOS UVA-URSI	KINNICKINNIK
B	BLECHNUM SPICANT	DEER FERN
B	CORNUS SERICEA VAR. KELSEYII	DWARF REDTWIG DOGWOOD
B	LIRIOPE MUSCARI "BIG BLUE"	BIG BLUE LILY TURF
B	GAUTHERIA SHALLON	SALAL
B	MAHONIA NERVOSA	LOW OREGON GRAPE
B	MAHONIA REPENS	CREEPING OREGON GRAPE

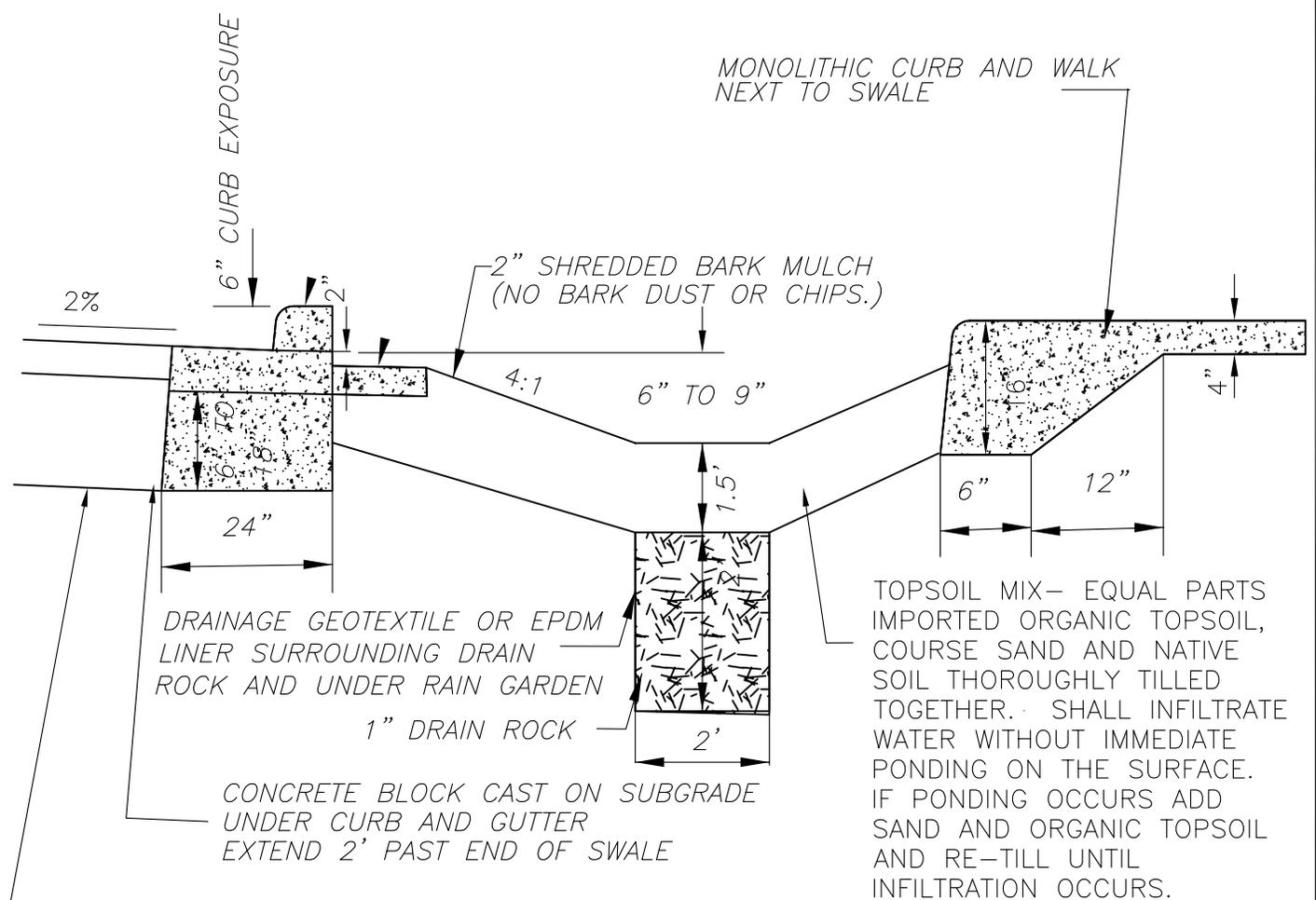
PLANT 1 GALLON POTS 12" ON CENTER IN EACH ZONE. A MINIMUM OF 3 SPECIES SHALL BE USED IN EACH ZONE.

PERENNIAL ACCENT PLANTS AND BULBS MAY BE PLANTED SPORADICALLY THROUGHOUT RAIN GARDEN TO ADD SEASONAL COLOR AND VARIETY.



RAIN GARDEN TYPICAL PLAN VIEW

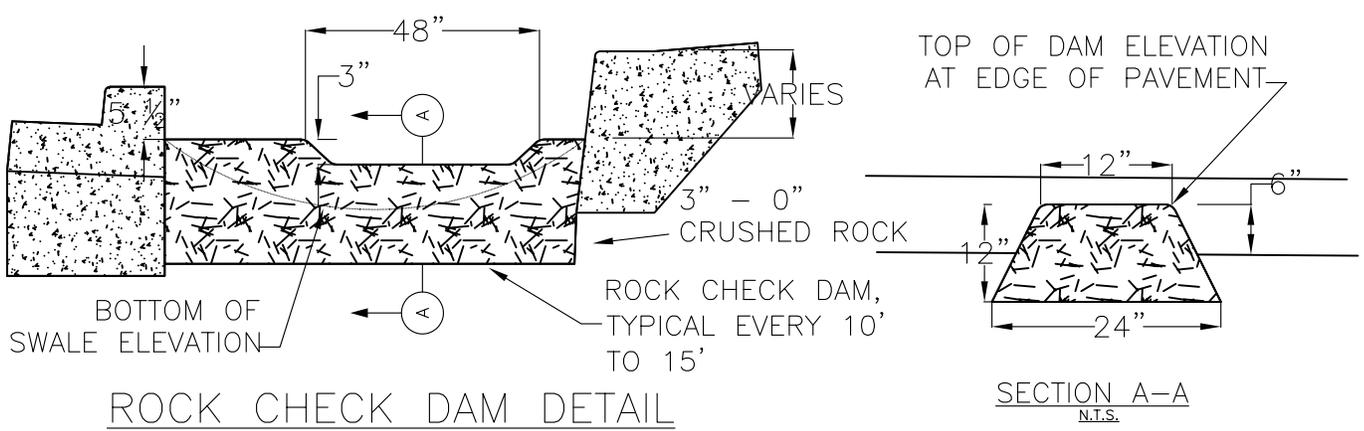
DRAWN RCS			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JUNE 2007
REV.	DATE	APPR.	RAIN GARDEN PLANTING DETAIL	APPR.
				DWG. NO. GS-15



SUBGRADE GEOTEXTILE WITHIN 50' OF ALL RAIN GARDENS

NOTE: IN HILLSIDE PHYSICAL CONSTRAINT DISTRICT OR ON SLOPES OVER 15% LINE RAIN GARDEN AND DRAIN ROCK WITH 30 MIL EPDM. INSTALL 4" DRAIN PIPE IN DRAIN ROCK. CONNECT DRAIN PIPE TO STORM SEWER INLET.

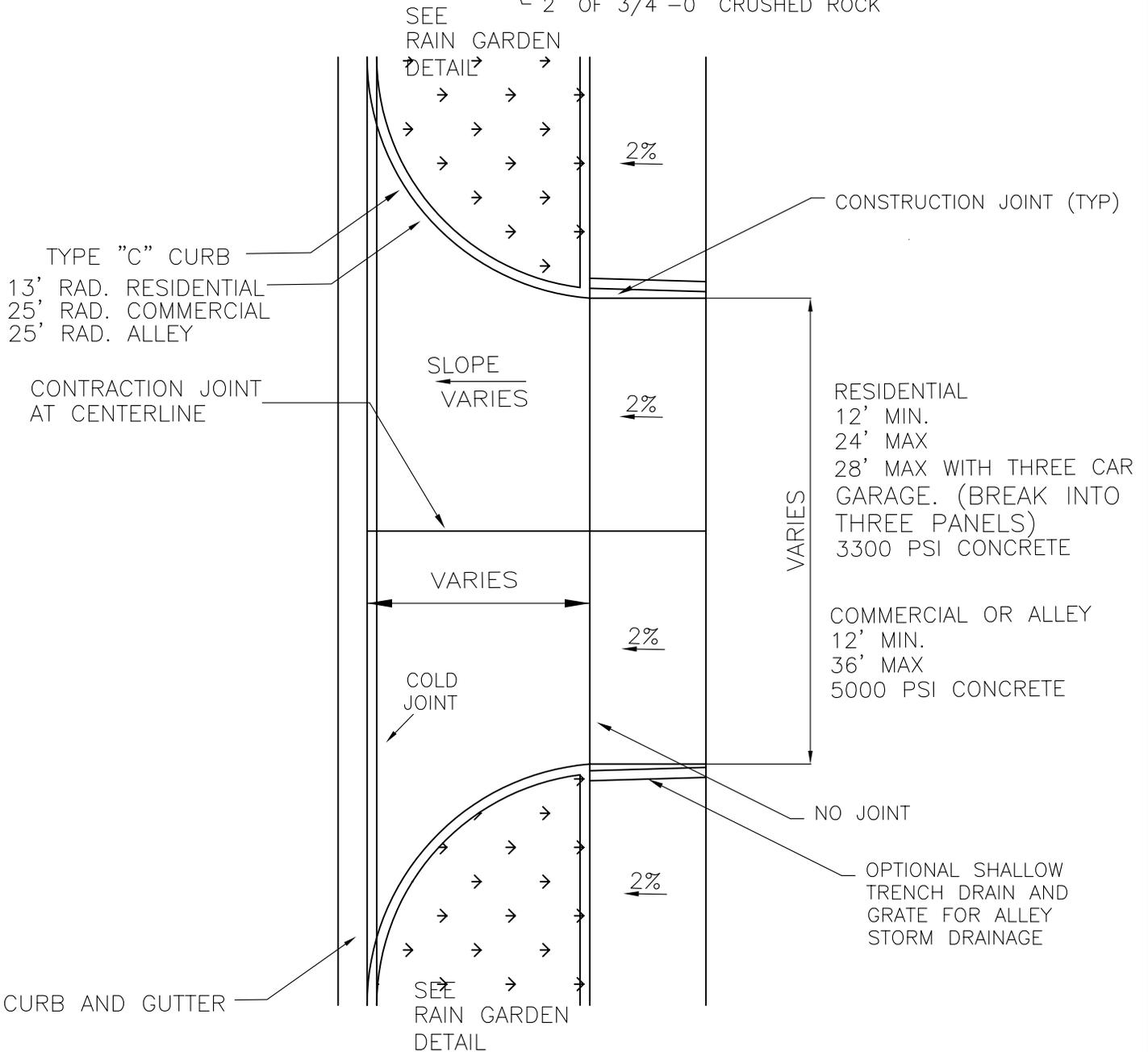
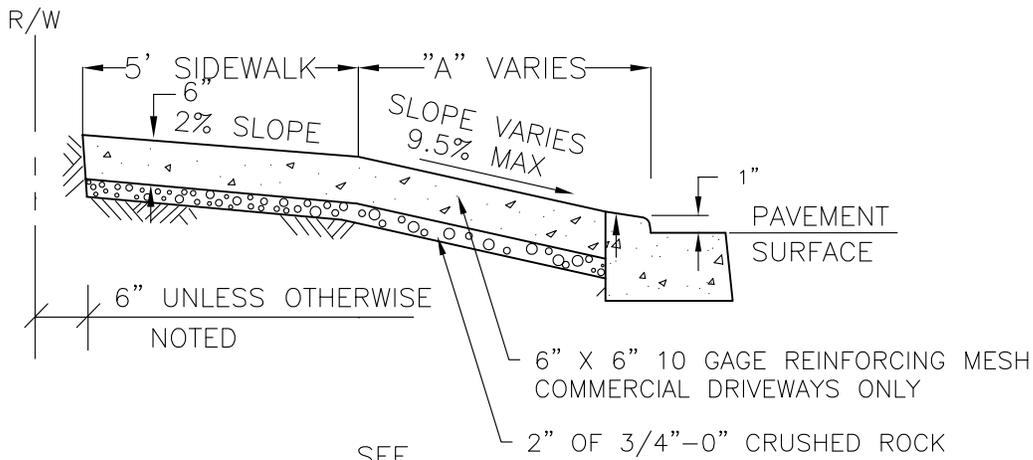
RAIN GARDEN TYPICAL SECTION



ROCK CHECK DAM DETAIL

RAIN GARDEN AREA SHALL BE MINIMUM 6% OF IMPERVIOUS SURFACE AREA TREATED.

DRAWN RCS			DEPARTMENT OF ENVIRONMENTAL SERVICES	SCALE N.T.S.
DIV. TRANSPORTATION				CITY OF GRESHAM
REV.	DATE	APPR.	1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	APPR.
			GREEN STREET	DWG. NO. GS-16
			RAIN GARDEN DETAILS	



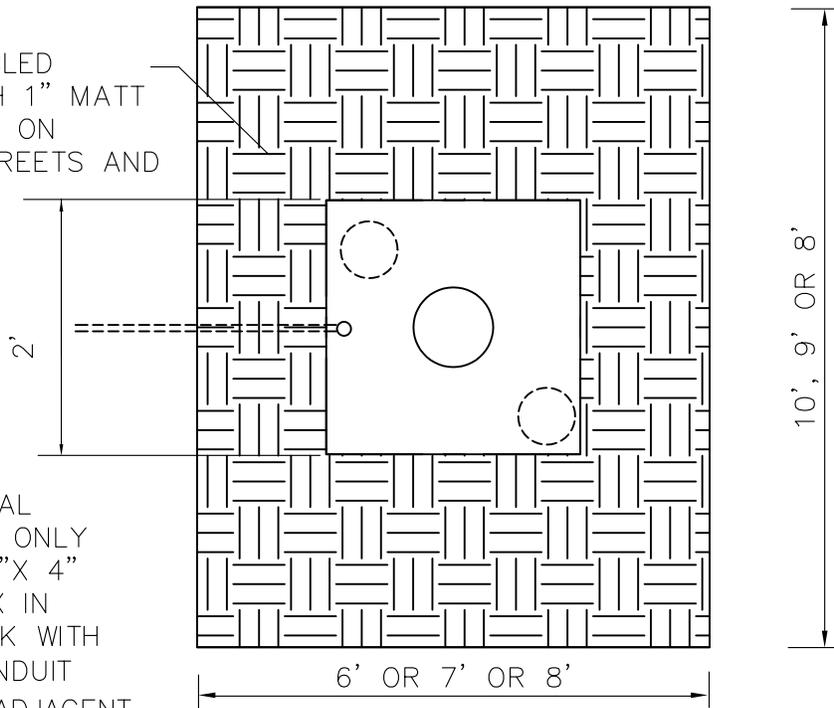
DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

GREEN STREET BULBOUT DRIVEWAY DETAIL

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-17

INSTALL RECYCLED RUBBER MULCH 1" MATT IN TREE WELLS ON COMMUNITY STREETS AND LARGER.

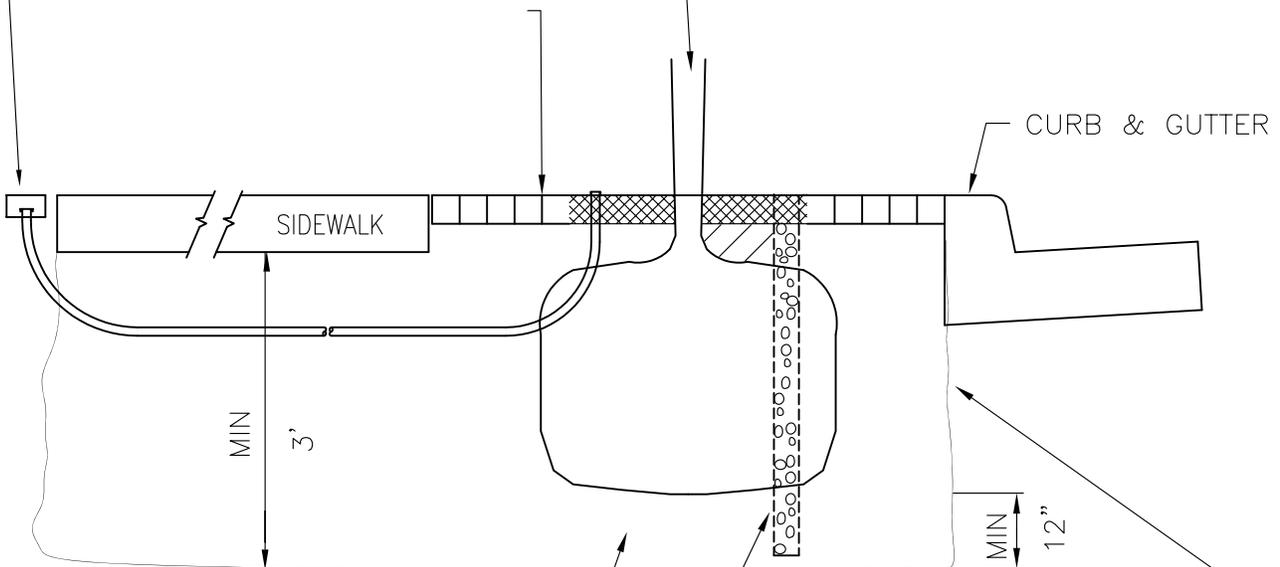


ON COMMERCIAL DEVELOPMENT ONLY IN-GROUND 4"X 4" JUNCTION BOX IN BACK OF WALK WITH 1" ELECT. CONDUIT CONNECT TO ADJACENT PROPERTY

PLAN

1 3/4" DIA. CALIPER TREE HEADED @ 6' TYP. EXCEPT 2" DIA CALIPER HEADED @ 8' SHALL BE USED WHEN TREE IS IN VISION TRIANGLE. TREES SHALL BE WELL BRANCHED, BALLED AND BURLAPED. WITH 40' CANOPY AT FULL GROWTH.

RECYCLED RUBBER MULCH 1" MAT PERM-A-MULCH OR APPROVED EQUAL



CU-STRUCTURAL SOIL (tm) OR APPROVED EQUAL

SCARIFY SIDES OF PLANTING PIT

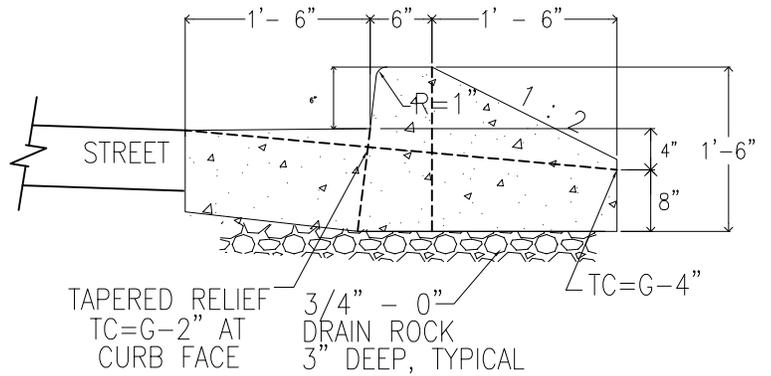
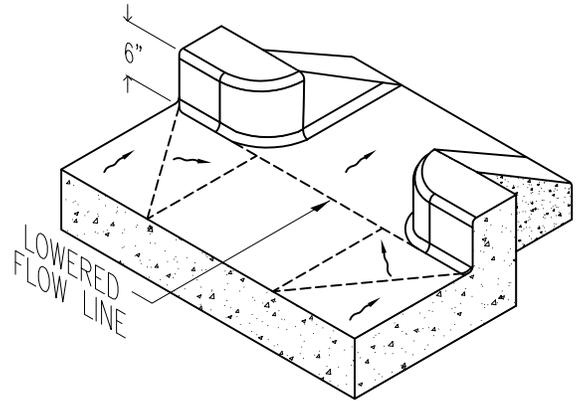
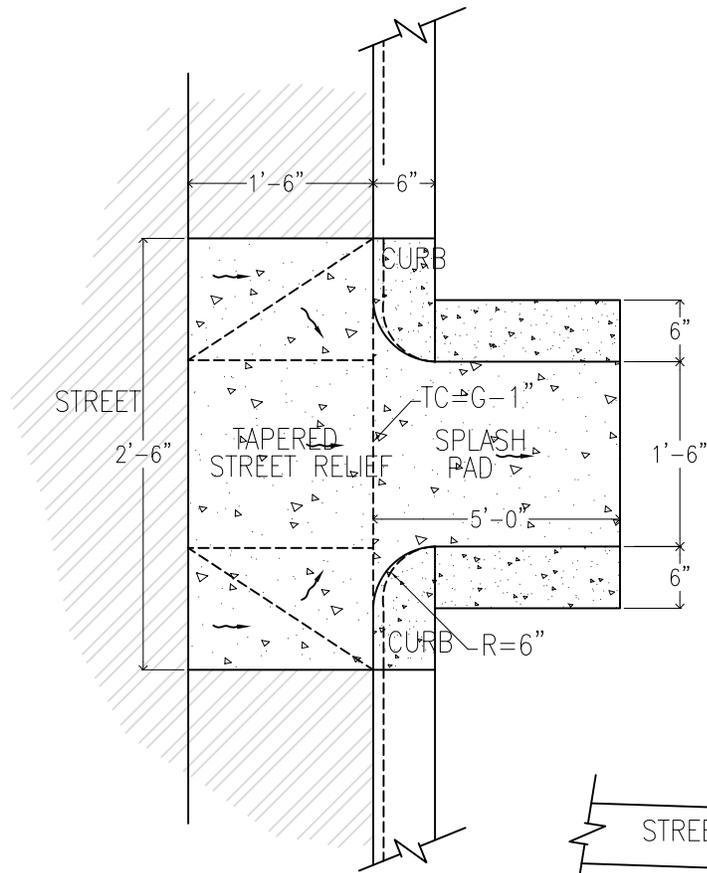
(2) 4" PERF. PVC DRAIN PIPE FILLED WITH 1" WASHED RIVER ROCK

LARGE TREE WELLS SHALL BE 35' TO 50' ON CENTER, WHEREVER GREEN STREETS HAVE A LANDSCAPE STRIP OF 6' OR GREATER.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
LARGE TREE PLANTING DETAIL

SCALE N.T.S.
DATE JUNE 2007
APPR.
DWG. NO. GS-18



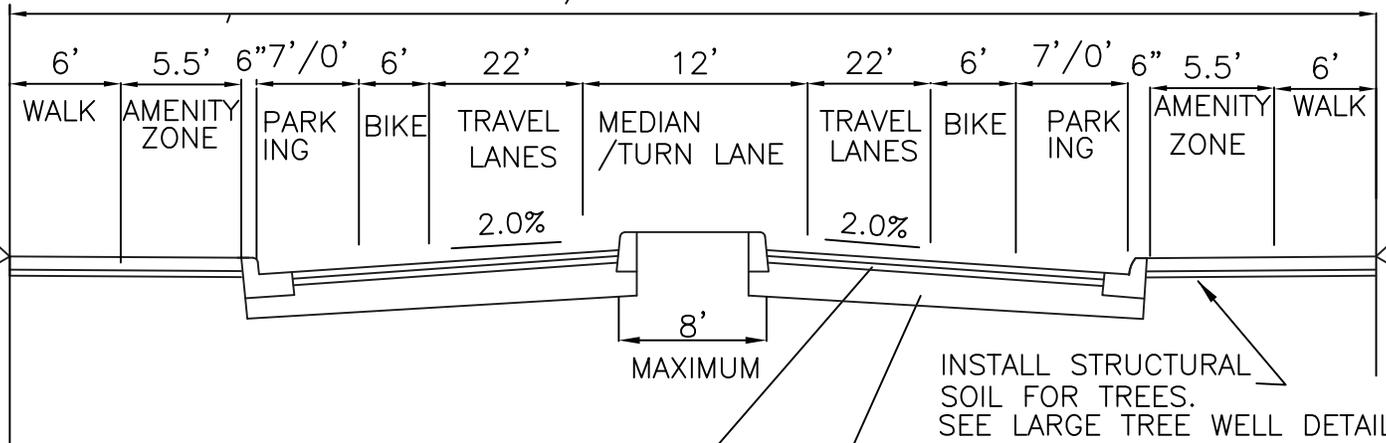
1. CONCRETE SPLASH PAD NECESSARY WHERE WATER ENTERS AND/OR EXITS RAIN GARDEN.
2. INSTALL STORM INLET NEAR LOWER RAIN GARDEN CURB OPENING, INSIDE OR OUTSIDE OF THE RAIN GARDEN.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
RAIN GARDEN CURB OPENING

SCALE	N.T.S.
DATE	JUNE 2007
APPR.	
DWG. NO.	GS-19

106'92" RIGHT OF WAY



8" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFTS MAY BE 1/2" OR 3/4" DENSE GRADED. COMPACT OF 91% OF RICE DENSITY

16" OF 1"-0 CRUSHED AGGREGATE

INSTALL STRUCTURAL SOIL FOR TREES. SEE LARGE TREE WELL DETAIL

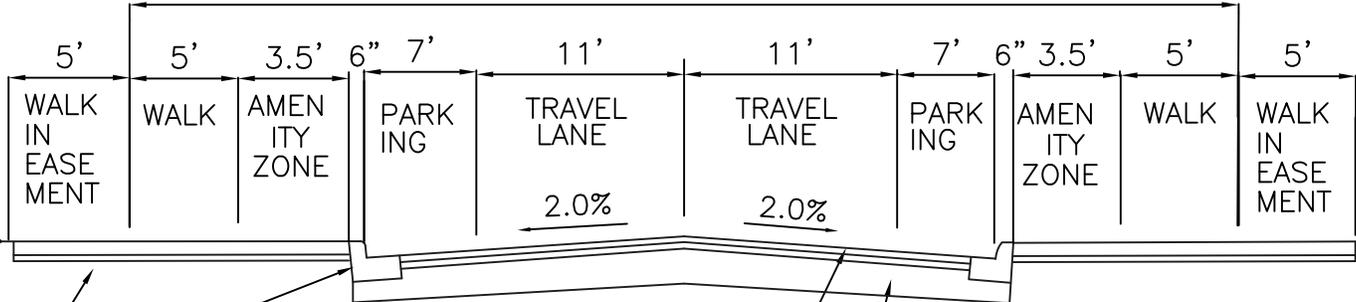
1. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
2. AT 12' LEFT TURN LANES CONSTRUCT CURB MEDIAN
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. AT ROW LINE MAXIMUM SLOPE CUT 2:1, FILL 3:1.
5. SHADOW PARKING WITH BULBOUT RAIN GARDEN AT ALL INTERSECTIONS.
6. "NO PARKING" SHALL BE POSTED WITHIN 30 FT. OF CURB RETURN AND NEXT TO RAIN GARDENS.
5. CONSTRUCT MONOLITHIC CURB AND GUTTER ADJACENT TO PARKING LANES AND. ALL RETURNS. CONSTRUCT TYPE C CURB NEXT TO BIKE LANES AND FOR MEDIANS.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN URBAN BOULEVARD

SCALE	N.T.S.
DATE	JULY 2009
APPR.	7/23/09
DWG. NO.	DT-1

54' RIGHT OF WAY



MONOLITHIC CURB AND GUTTER (TYPICAL)

INSTALL STRUCTURAL SOIL FOR TREES. SEE LARGE TREE WELL DETAIL

8" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFTS MAY BE 1/2" OR 3/4" DENSE GRADED.

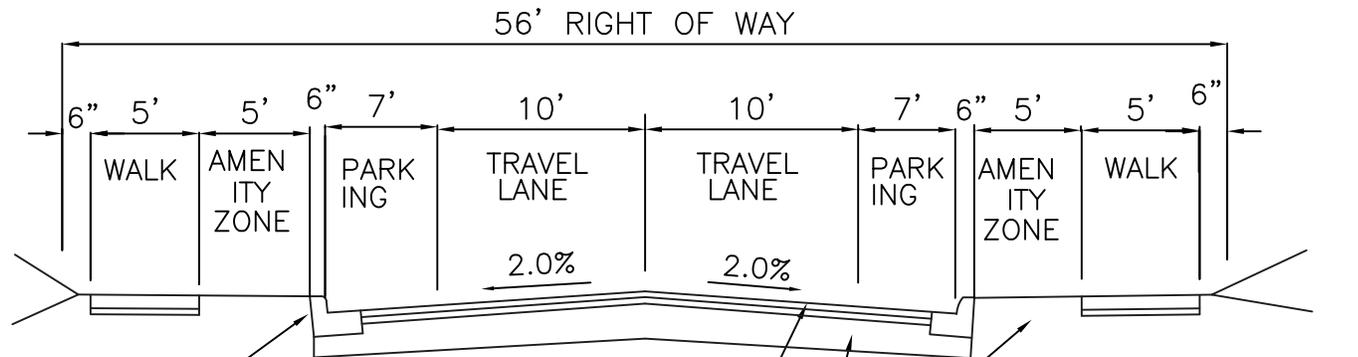
16" OF 1"-0 CRUSHED AGGREGATE

1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. AT ROW LINE MAXIMUM SLOPE CUT 2:1, FILL 3:1.
5. DEVELOPMENT SHALL PROVIDE A 5 FOOT SIDEWALK EASEMENT ON EACH SIDE.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN URBAN COMMERCIAL STREET

SCALE	N.T.S.
DATE	JULY 2009
APPR.	7/23/09
DWG. NO.	DT-2



MONOLITHIC CURB AND GUTTER (TYPICAL)

INSTALL STRUCTURAL SOIL FOR TREES. SEE LARGE TREE WELL DETAIL

6" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFTS MAY BE 1/2" OR 3/4" DENSE GRADED.

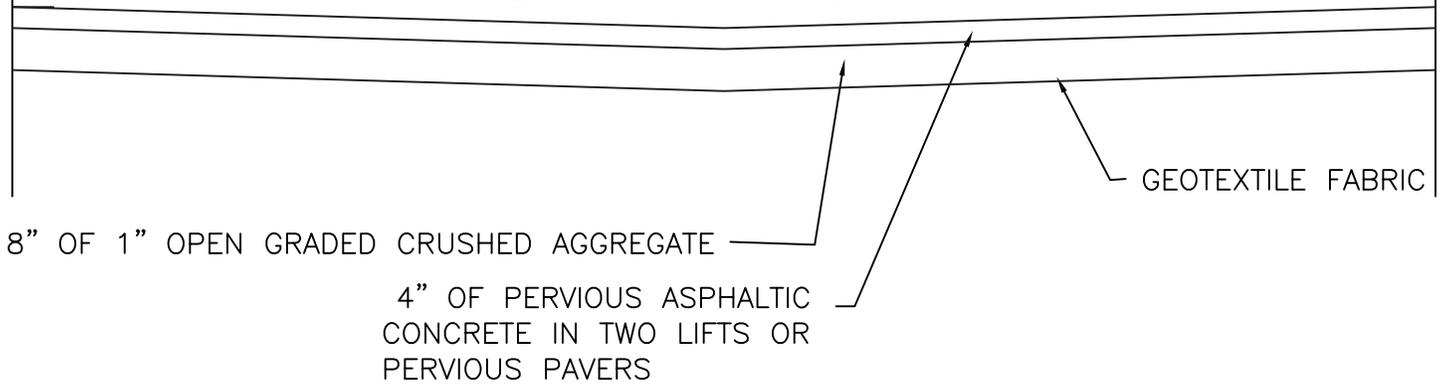
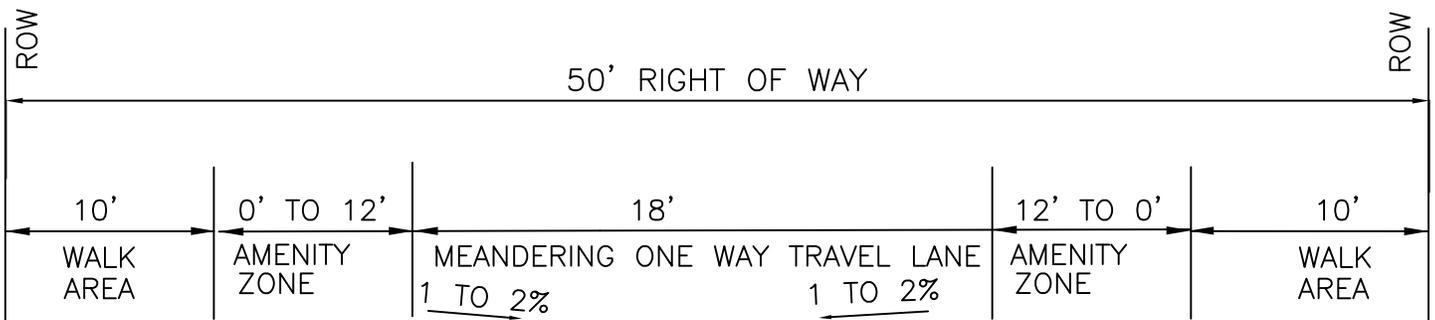
9" OF 1"-0 CRUSHED AGGREGATE

1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. AT ROW LINE MAXIMUM SLOPE CUT 2:1, FILL 3:1.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN URBAN RESIDENTIAL STREET

SCALE	N.T.S.
DATE	JULY 2009
APPR.	7/23/09
DWG. NO.	DT-3

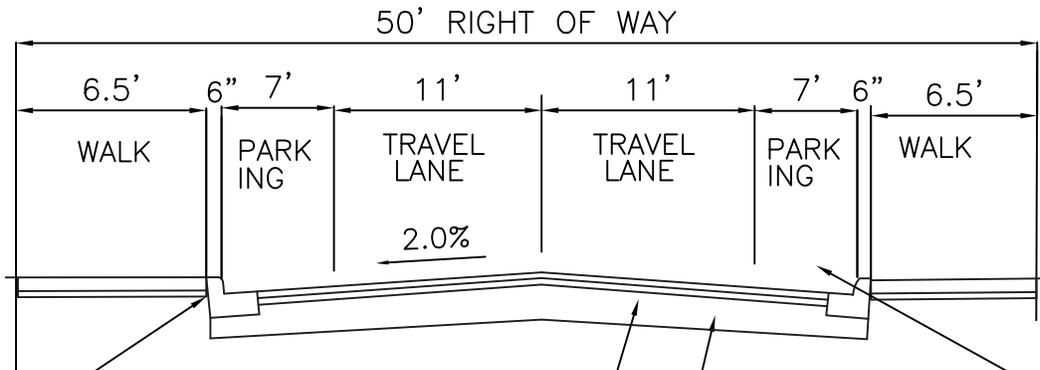


SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN SHARED GREEN STREET

SCALE	N.T.S.
DATE	JULY 2009
APPR.	7/23/09
DWG. NO.	DT-4



MONOLITHIC CURB AND GUTTER (TYPICAL)

SHADOW PARKING WITH BULBOUTS. INSTALL RAMPS, SIDEWALKS, LANDSCAPING AND TREES IN BULBOUT.

6" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFTS MAY BE 1/2" OR 3/4" DENSE GRADED.

9" OF 1"-0 CRUSHED AGGREGATE

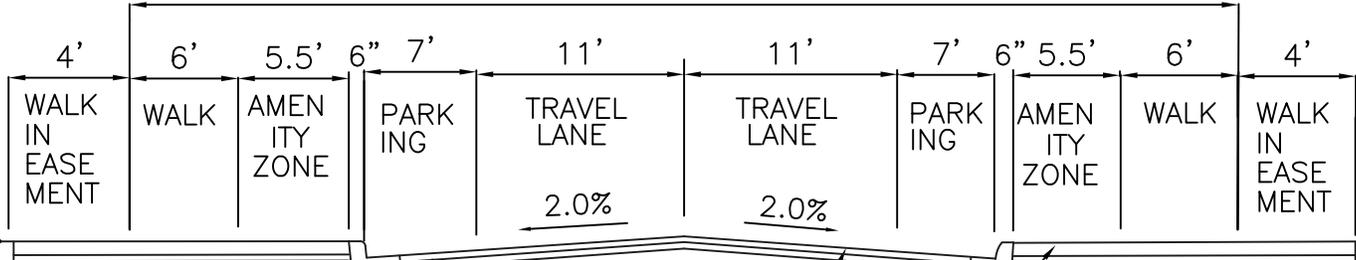
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. STREET TREES SHALL BE PLANTED IN BULBOUTS.
4. AT ROW LINE MAXIMUM SLOPE CUT 2:1, FILL 3:1.
5. SIDEWALK SHALL MAINTAIN A 4' CLEAR ADA CONTINUOUS PATHWAY.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN MAIN-POWELL TO 4TH

SCALE	N.T.S.
DATE	JULY 2009
APPR.	7/23/09
DWG. NO.	DT-5

60' RIGHT OF WAY



SHADOW PARKING WITH BULBOUTS CONSTRUCT RAIN GARDENS IN BULBOUT.

MONOLITHIC CURB AND GUTTER (TYPICAL)

6" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFTS MAY BE 1/2" OR 3/4" DENSE GRADED.

INSTALL STRUCTURAL SOIL FOR TREES. SEE LARGE TREE WELL DETAIL

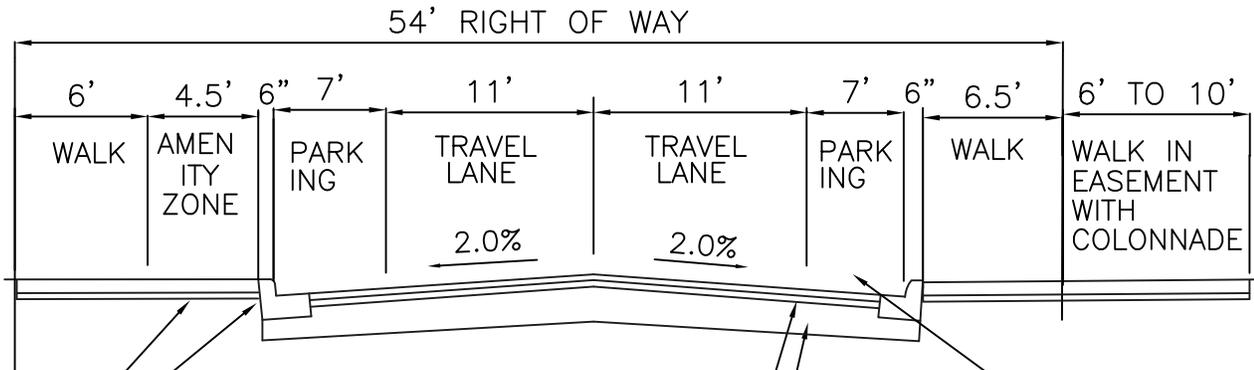
9" OF 1"-0 CRUSHED AGGREGATE

1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. AT ROW LINE MAXIMUM SLOPE CUT 2:1, FILL 3:1.
5. DEVELOPMENT SHALL PROVIDE A 4 FOOT SIDEWALK EASEMENT ON EACH SIDE.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN STANLEY AVENUE

SCALE	N.T.S.
DATE	JULY 2009
APPR.	7/23/09
DWG. NO.	DT-6



MONOLITHIC CURB AND GUTTER (TYPICAL)
 INSTALL STRUCTURAL SOIL FOR TREES.
 SEE LARGE TREE WELL DETAIL

6" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFTS MAY BE 1/2" OR 3/4" DENSE GRADED.

SHADOW PARKING WITH BULBOUTS CONSTRUCT RAIN GARDENS IN BULBOUT AND LANDSCAPE STRIP

9" OF 1"-0 CRUSHED AGGREGATE

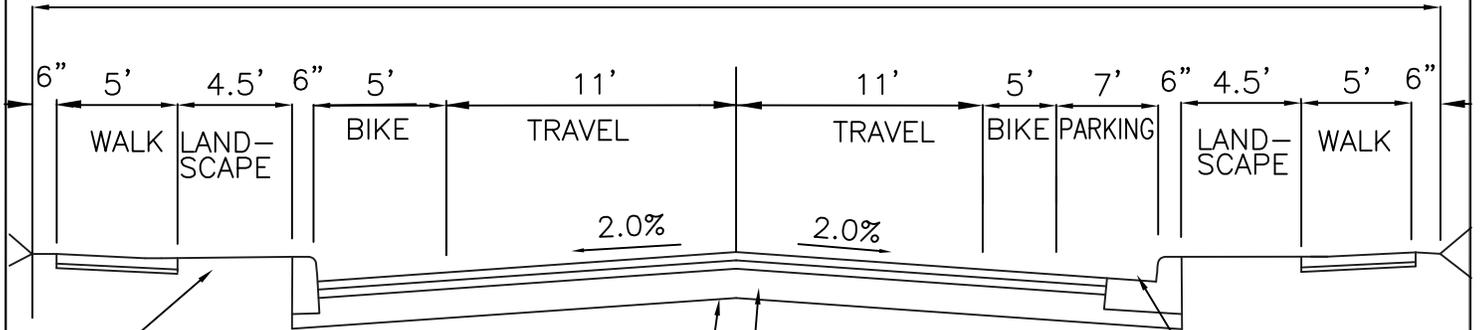
1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. AT ROW LINE MAXIMUM SLOPE CUT 2:1, FILL 3:1.
5. DEVELOPMENT SHALL PROVIDE A 6 TO 10 FOOT SIDEWALK EASEMENT AND COLONNADE ON THE NORTH SIDE.
6. ROW IS 29' TO THE SOUTH AND 25' TO THE NORTH OF LEGAL CENTERLINE.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN THIRD STREET—MAIN TO KELLY

SCALE	N.T.S.
DATE	JULY 2009
APPR.	7/23/09
DWG. NO.	DT-7

60' RIGHT OF WAY



INSTALL STRUCTURAL SOIL FOR TREES. SEE LARGE TREE WELL DETAIL

SHADOW PARKING WITH BULBOUTS CONSTRUCT RAIN GARDENS IN BULBOUT AND LANDSCAPE STRIP

6" LEVEL 2 ASPHALTIC CONCRETE (SEE NOTE 3) TOP LIFT MUST BE 1/2" DENSE GRADED. LOWER LIFT MAY BE 1/2" OR 3/4" DENSE GRADED.

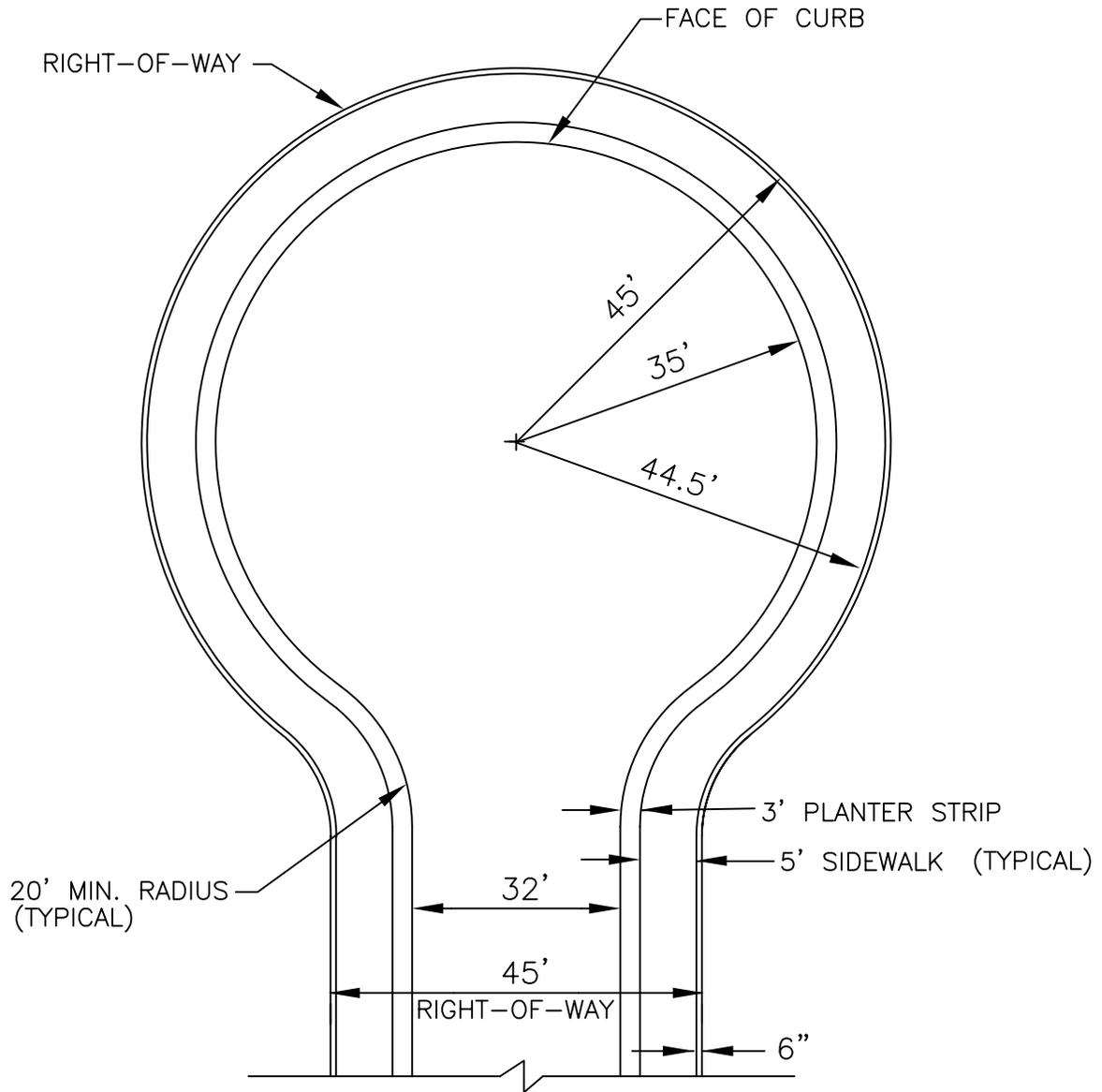
9" OF 1"-0 CRUSHED AGGREGATE

1. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% OF RICE DENSITY.
2. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
3. THE ENGINEER MAY REQUIRE LEVEL 3 ASPHALTIC CONCRETE.
4. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES UNLESS APPROVED BY THE ENGINEER.
5. AT ROW LINE MAXIMUM SLOPE CUT 2:1, FILL 3:1.
6. ROW IS 26.5' TO THE WEST AND 33.5' TO THE EAST OF LEGAL CENTERLINE.
7. CONSTRUCT MONOLITHIC CURB AND GUTTER ADJACENT TO PARKING LANES AND ALL RETURNS. CONSTRUCT TYPE C CURB NEXT TO BIKE LANES AND FOR MEDIANS.

DRAWN RCS		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN CLEVELAND AVE

SCALE	N.T.S.
DATE	JULY 2009
APPR.	7/23/09
DWG. NO.	DT-8



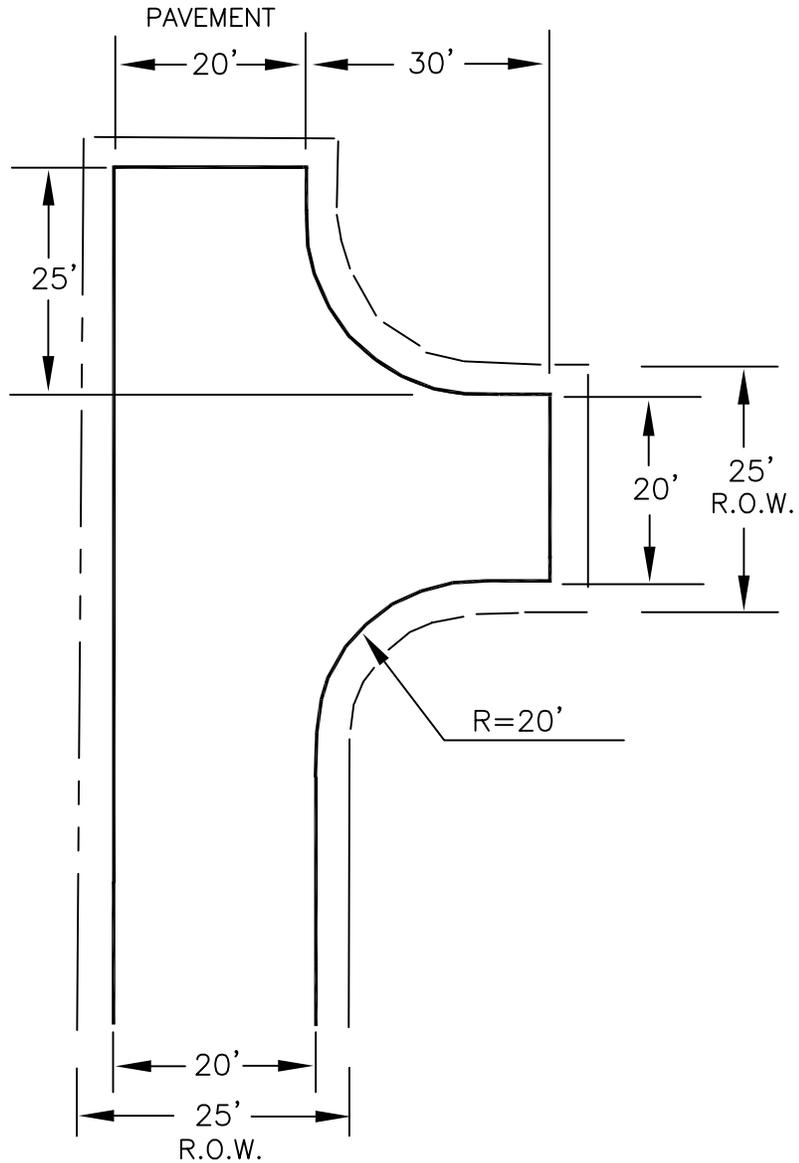
PAVEMENT WIDTH EXCEPTIONS:

1. A 28' WIDTH MAY BE ALLOWED WITHIN THE HILLSIDE CONSTRAINT DISTRICTS WITH ENGINEER'S APPROVAL.
2. THE SIDEWALK IS TO BE LOCATED NEXT TO THE CURB ON THE ENTIRE LENGTH OF THE CUL-DE-SAC IN HILLSIDE CONSTRAINT DISTRICTS.
3. THE SIDEWALK SHALL HAVE A MINIMUM 5' CLEAR OF ALL OBSTACLES, UNLESS APPROVED BY THE CITY ENGINEER.
4. NO FIRE HYDRANTS ARE TO BE LOCATED IN THE CUL-DE-SAC AREA.

DRAWN DRB		
ENGR. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STANDARD CUL-DE-SAC

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	619



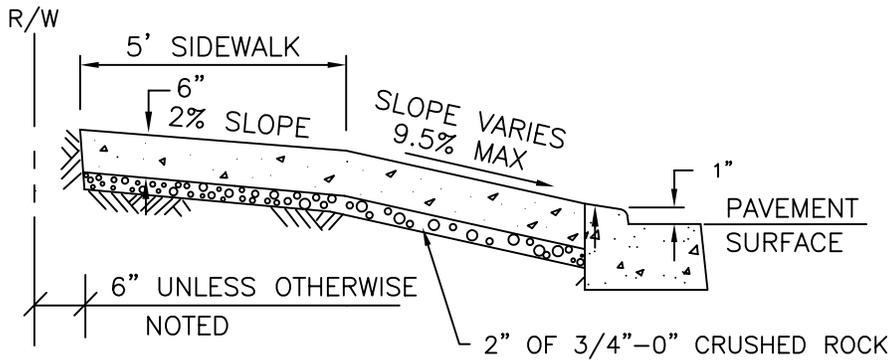
1. BRANCH TURNAROUND TO BE USED AT THE END OF A MINOR ACCESS STREET.
2. A "DEAD-END" SIGN SHALL BE POSTED AT ENTRANCE TO THE MINOR ACCESS STREET.
3. "NO PARKING" SHALL BE POSTED FOR THE ENTIRE MINOR ACCESS STREET.
4. THE MAXIMUM LENGTH OF THE MINOR ACCESS STREET SHALL BE 150 FT. TO THE END OF THE TURNAROUND.
5. NO FIRE HYDRANTS ARE TO BE LOCATED ON A MINOR ACCESS STREET WITH A BRANCH TURNAROUND.

DRAWN DRB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

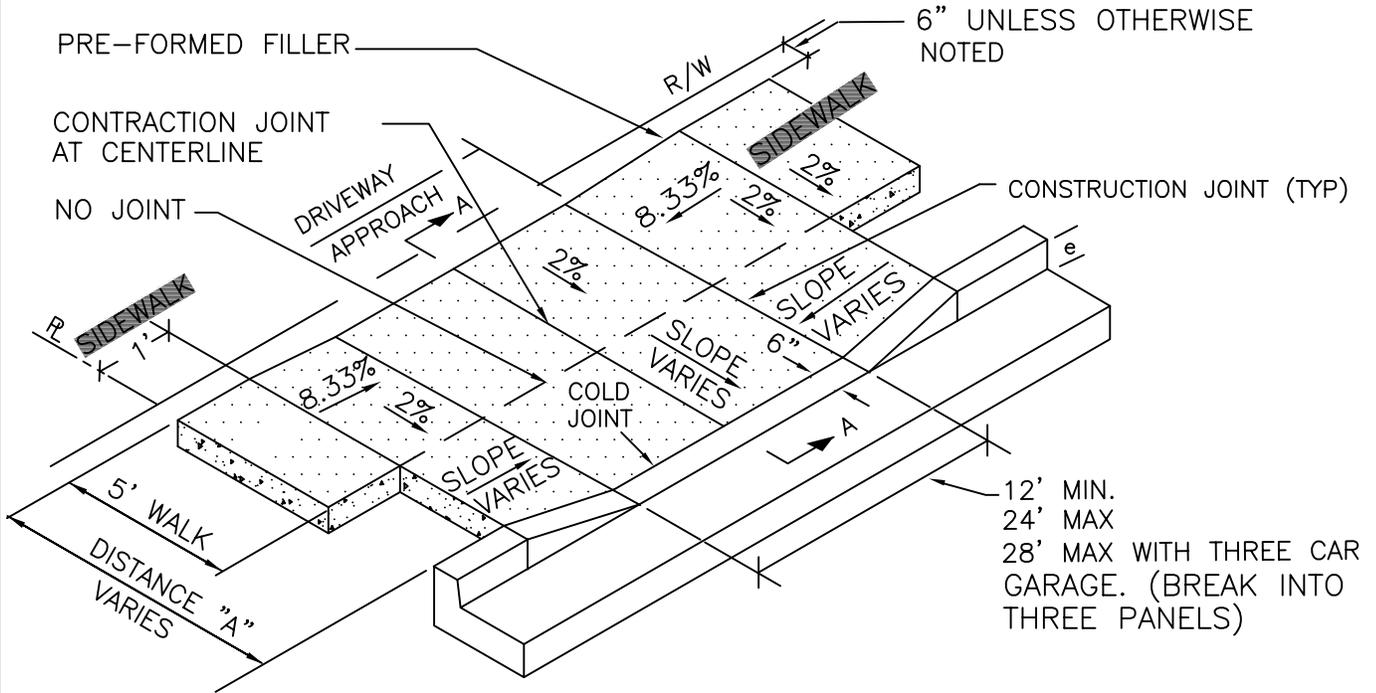
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

BRANCH TURNAROUND

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	620



SECTION A - A

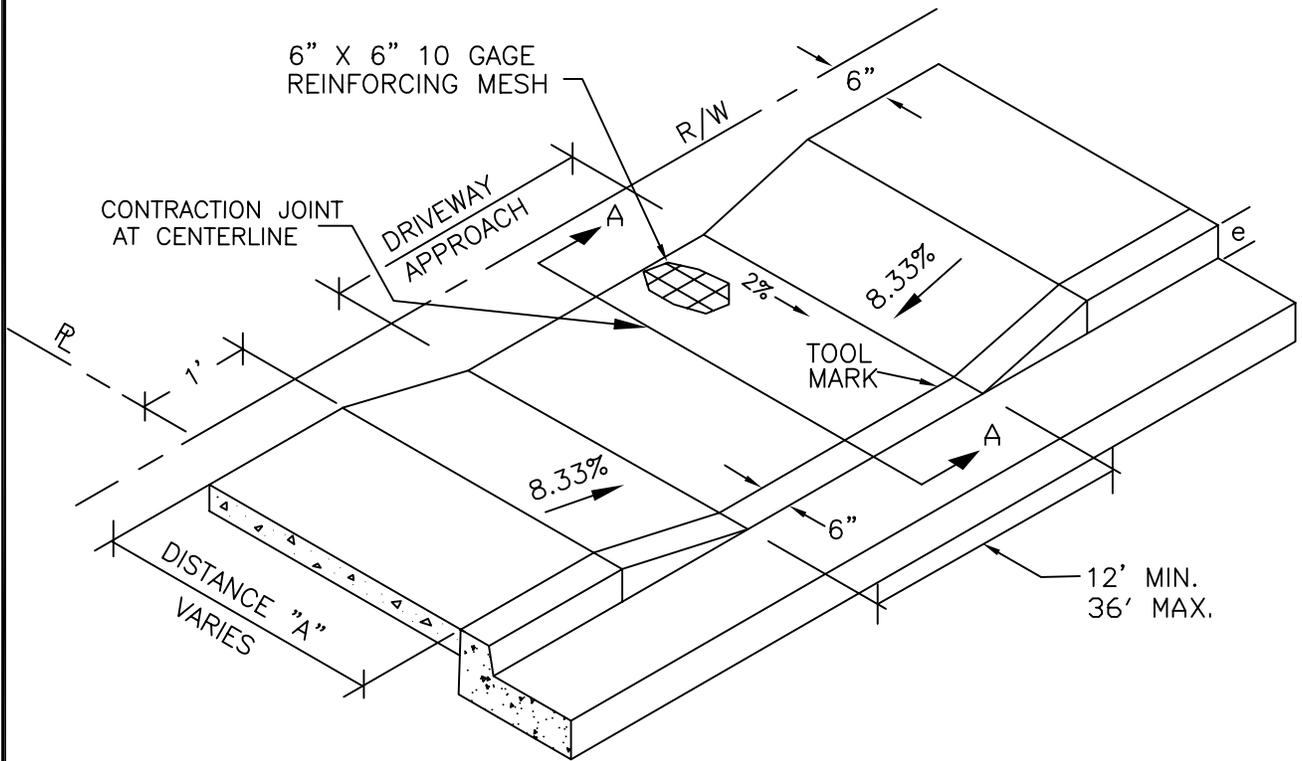
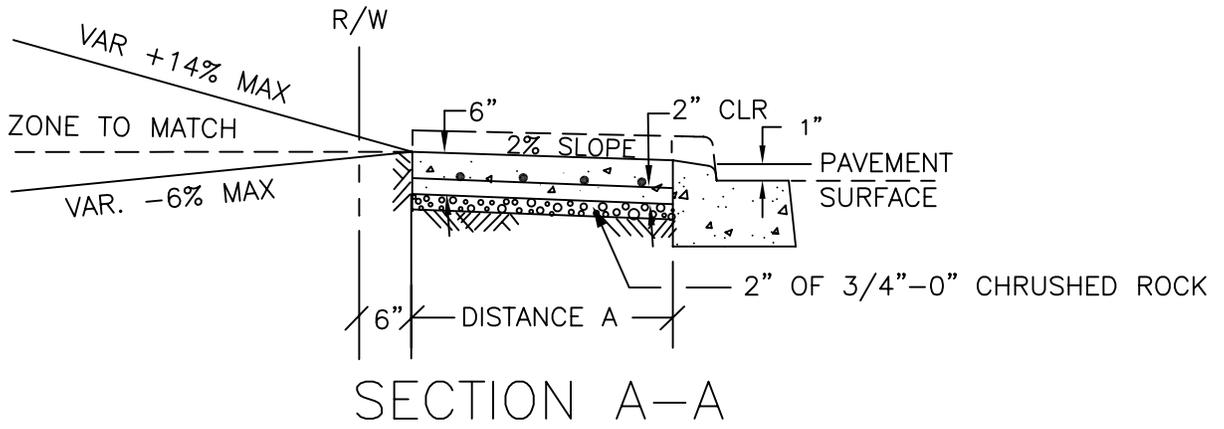


1. DISTANCE "A" VARIES WITH STREET FUNCTIONAL CLASSIFICATION. SLOPE WILL VARY WITH DISTANCE "A".
2. SEE STANDARD DETAILS 602 AND 603 FOR CURB EXPOSURE DIMENSION 'e'.
3. SLOPES SHOWN ARE RELATIVE TO HORIZONTAL. TRANSITION RAMP (8.33% MAX SLOPE) SHALL NOT EXCEED MAXIMUM LENGTH OF 8'. SIDE FLARES IN PLANTER STRIP MAY BE ANY SLOPE.
4. DO NOT SLOPE LANDING MORE THAN 2% IN ANY DIRECTION.
5. CONCRETE SHALL BE 3,300 PSI AT 28 DAYS.

DRAWN DRB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
RESIDENTIAL DRIVEWAY APPROACH

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>[Signature]</i>
DWG. NO. 621

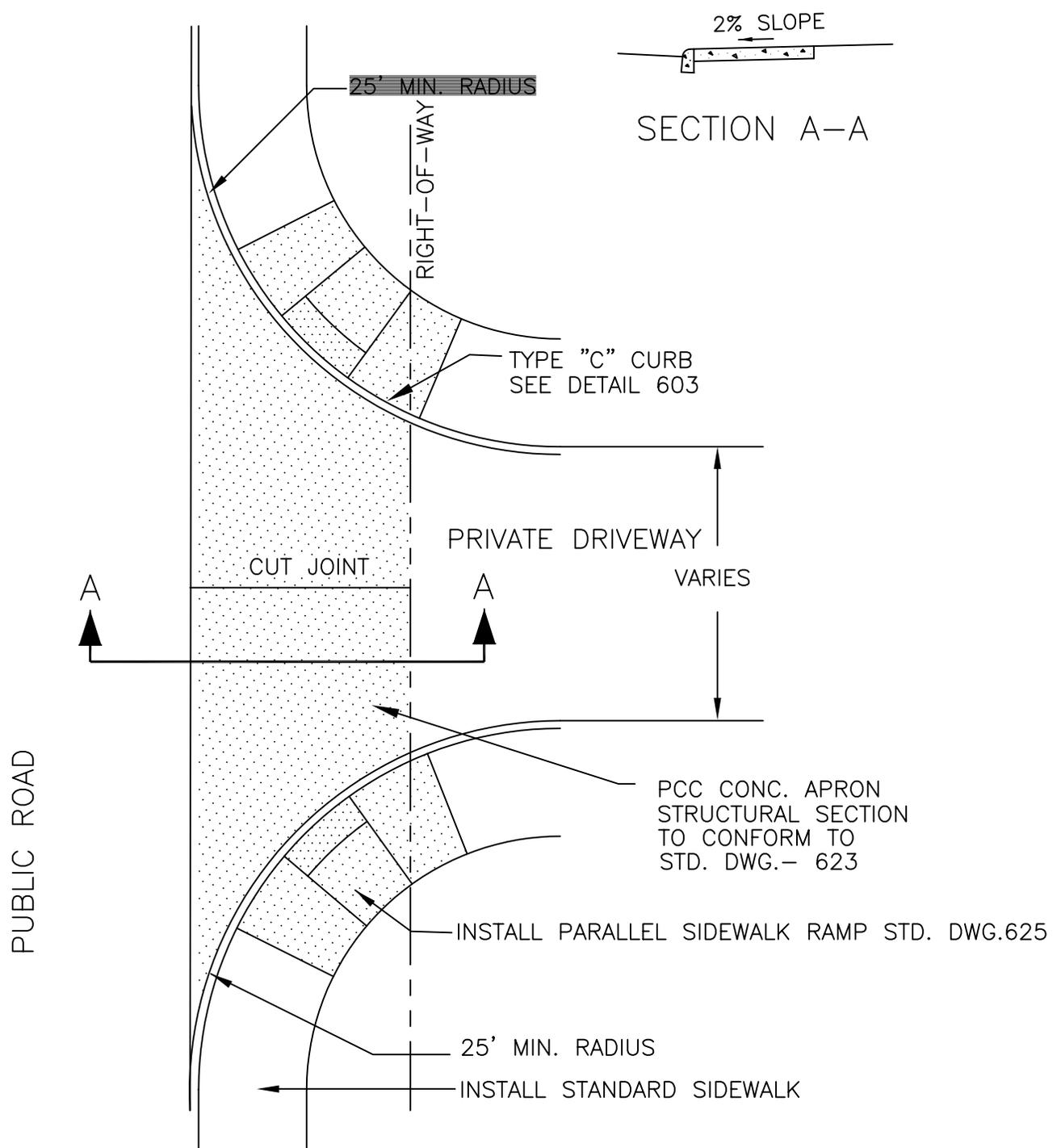


1. DISTANCE "A" VARIES WITH STREET FUNCTIONAL CLASSIFICATION.
2. SEE STANDARD DETAILS 602 AND 603 FOR CURB EXPOSURE DIMENSION 'e'.
3. SLOPES SHOWN ARE RELATIVE TO HORIZONTAL. TRANSITION RAMP (8.33% MAX. SLOPE) SHALL NOT EXCEED MAXIMUM LENGTH OF 8'.
4. CONCRETE SHALL BE 5,000 PSI AT 28 DAYS.

DRAWN DRB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
COMMERCIAL DRIVEWAY APPROACH

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>[Signature]</i>
DWG. NO. 622



THIS TYPE OF APPROACH TO BE USED FOR HIGH VOLUME TRAFFIC GENERATORS (500 ADT OR GREATER) WITH APPROVAL OF ENGINEER.

DRAWN TA		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

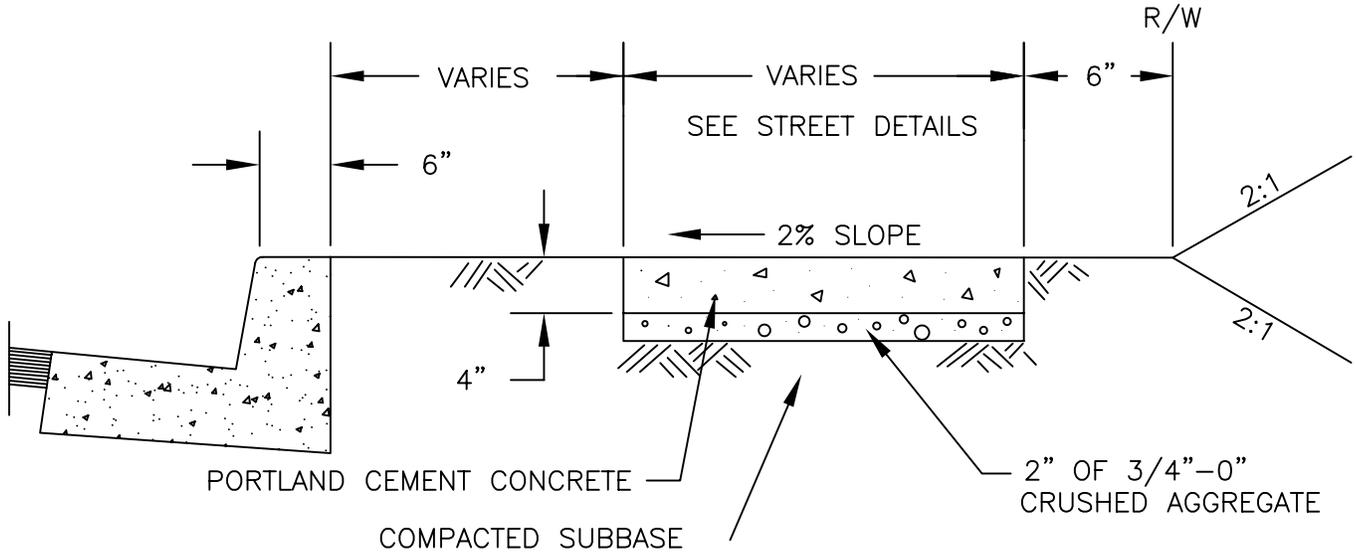
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

CURB RETURN DRIVEWAY APPROACH

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>OR</i>
DWG. NO.	623

TYPICAL SIDEWALK DETAIL

(FOR LOCAL STREET)

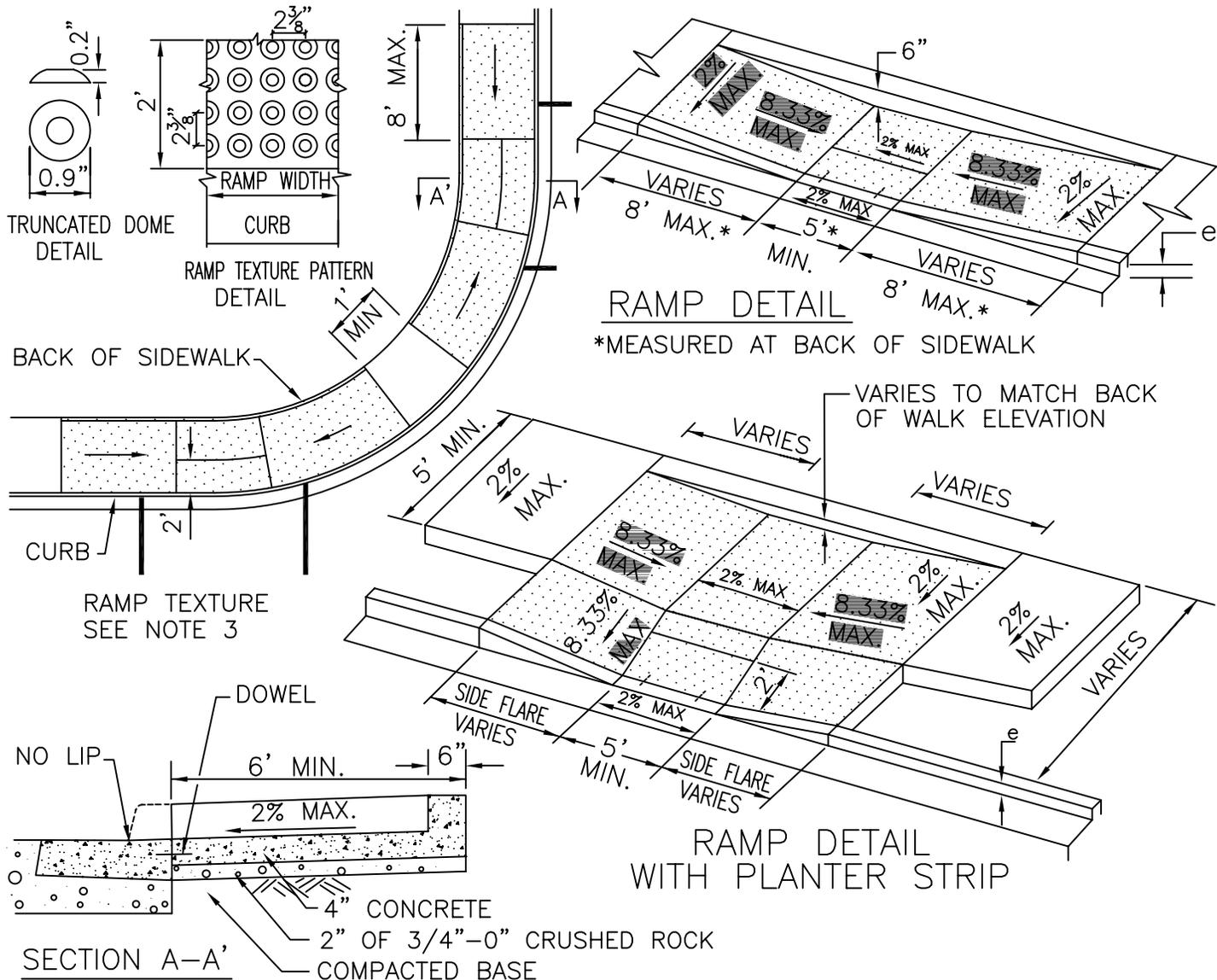


1. LOCATION AND WIDTH OF SIDEWALK WILL VARY DEPENDING UPON FUNCTIONAL CLASSIFICATION OF THE STREET. SEE TYPICAL STREET SECTION STANDARD DETAILS.
2. PCC SHALL BE 3300 PSI STRENGTH AT 28 DAYS.
3. EXPANSION JOINTS SHALL BE PLACED IN SIDEWALK WHEN CURB AND SIDEWALK ARE ADJACENT AND THERE IS AN EXPANSION JOINT IN THE CURB.
4. CONTRACTION JOINTS SHALL BE PLACED AT ALL CHANGES OF DIRECTION, POINTS OF CURVATURE, ALIGNED WITH CURB CONTRACTION JOINTS WHEN SIDEWALK IS ADJACENT TO CURB, AND AT 15' (MAX) INTERVALS. JOINTS SHALL BE 1/8" TO 1/4" WIDE AND A MINIMUM DEPTH OF 1/3 THE THICKNESS OF THE CONCRETE.
5. ALL SURFACES SHALL BE TROWELED AND BROOMED IN A WORKMANLIKE MANNER. ALL CONTRACTION JOINTS SHALL BE STEEL TROWELED (3 IN. TYP.).

DRAWN TA		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

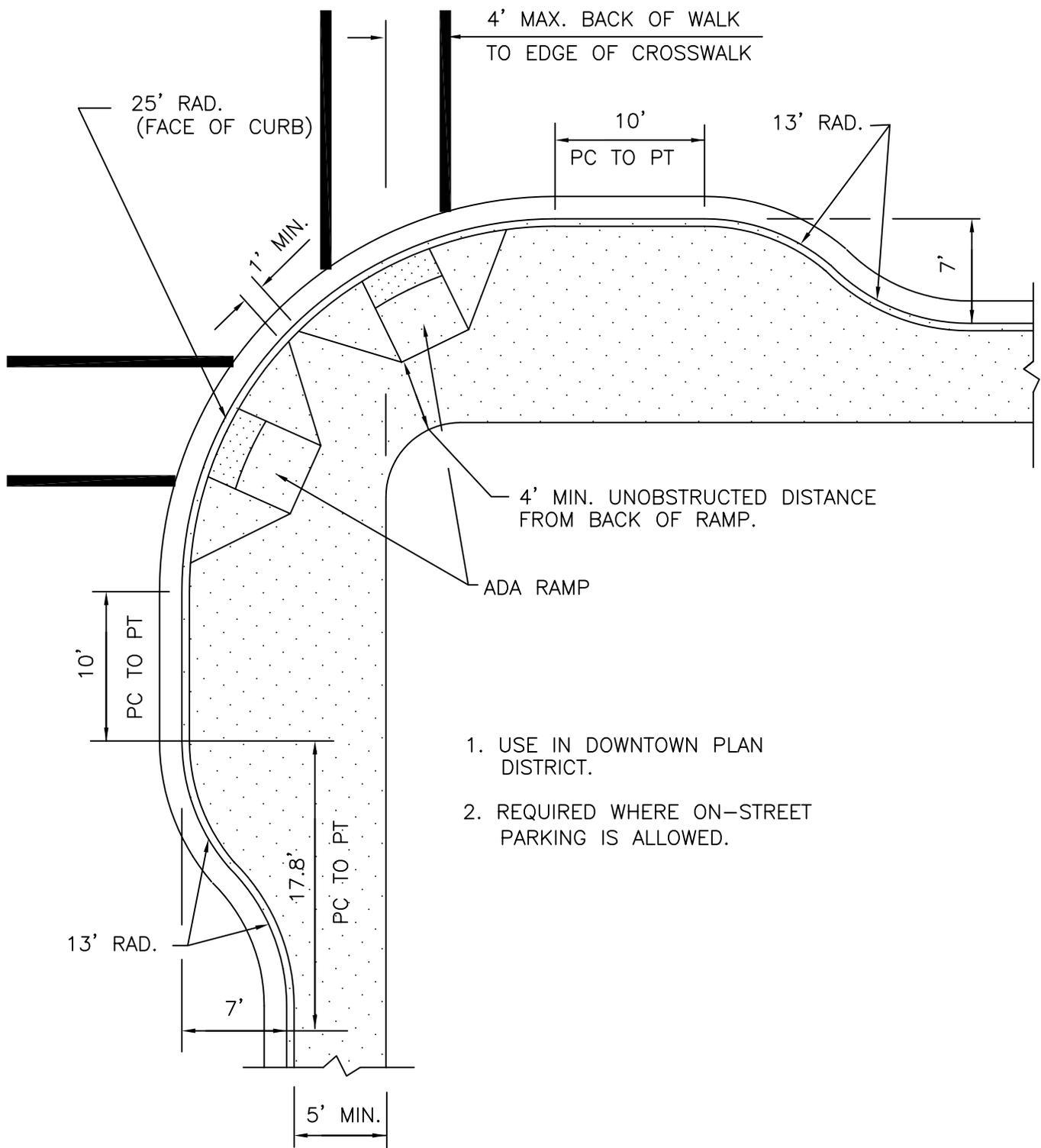
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
TYPICAL SIDEWALK DETAIL

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	624



1. TWO SIDEWALK RAMPS PER CORNER ARE REQUIRED AT ALL NEW INTERSECTIONS. RAMPS SHALL BE LOCATED WITHIN THE CROSSWALK AND AS NEAR THE CONTINUOUS PEDESTRIAN ROUTE AS PRACTICAL.
2. A SINGLE DIAGONAL RAMP MAY BE USED ONLY WHEN SITE CONSTRAINTS PROHIBIT INSTALLING TWO RAMPS AND APPROVED BY CITY ENGINEER.
3. PLACE TRUNCATED DOME DETECTABLE WARNING TEXTURE IN THE LOWER 2' OF THROAT OF RAMP ONLY. ARRANGE DOMES USING IN-LINE-PATTERN ONLY AS SHOWN IN DETAIL. COLOR OF TEXTURE TO BE BRICK RED.
4. SEE STANDARD DRAWING NUMBERS 602 AND 603 FOR CURB EXPOSURE DIMENSION "e". MATCH EXISTING "e" FOR RETROFIT APPLICATIONS.
5. SLOPES SHOWN ARE RELATIVE TO HORIZONTAL. SIDE FLARES IN PLANTER STRIP MAY BE OF ANY SLOPE.
6. SIDEWALK RAMPS SHALL BE FORMED AND POURED SEPARATE FROM SIDEWALK AND LANDINGS. COLD JOINTS SHALL BE KEYED OR DOWELED. EDGES OF THE ACCESSIBLE ROUTE SHALL BE POURED AGAINST RIGID FORMS OR CURED CONCRETE TO ENSURE COMPLIANCE WITH ORS 447.310 AND AMERICANS WITH DISABILITIES ACT.
7. DO NOT SLOPE LANDING MORE THAN 2% IN ANY DIRECTION. ADA RAMP CROSS-SLOPE SHALL NOT EXCEED 2% IN NEW CONSTRUCTION.
8. IN ALTERATIONS CURB RAMP SLOPE(S) MAY BE 10% FOR A MAX. RISE OF 6" OR 12.5% FOR MAX. RISE OF 3". CURB RAMP IN ALTERATIONS NEED NOT EXCEED 6' IN LENGTH. ADA RAMP CROSS-SLOPE MAYBE WARPED TO MATCH EXISTING GUTTER GRADE.

DRAWN TA			DEPARTMENT OF ENVIRONMENTAL SERVICES	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JAN. 1, 2006
REV.	DATE	APPR.	CITY OF GRESHAM	APPR. <i>[Signature]</i>
				1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
			PARALLEL SIDEWALK RAMP	

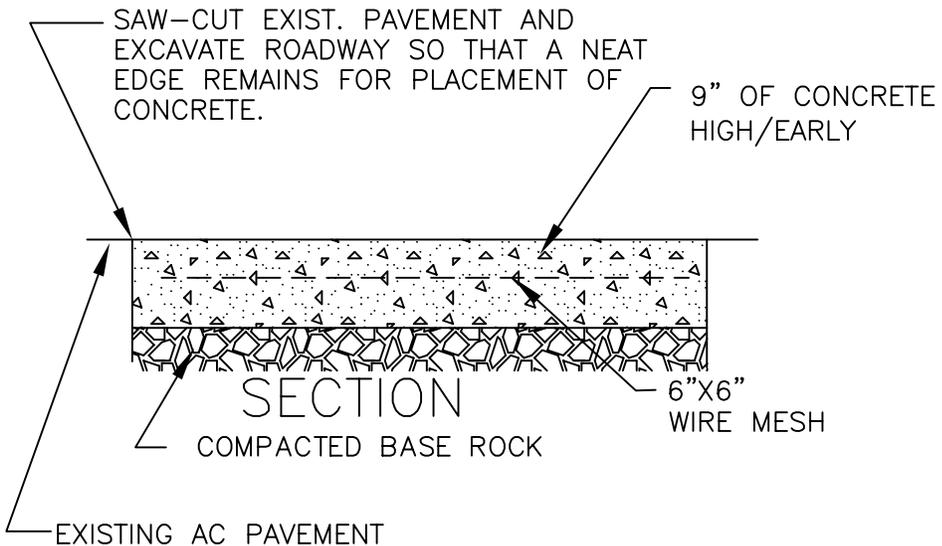
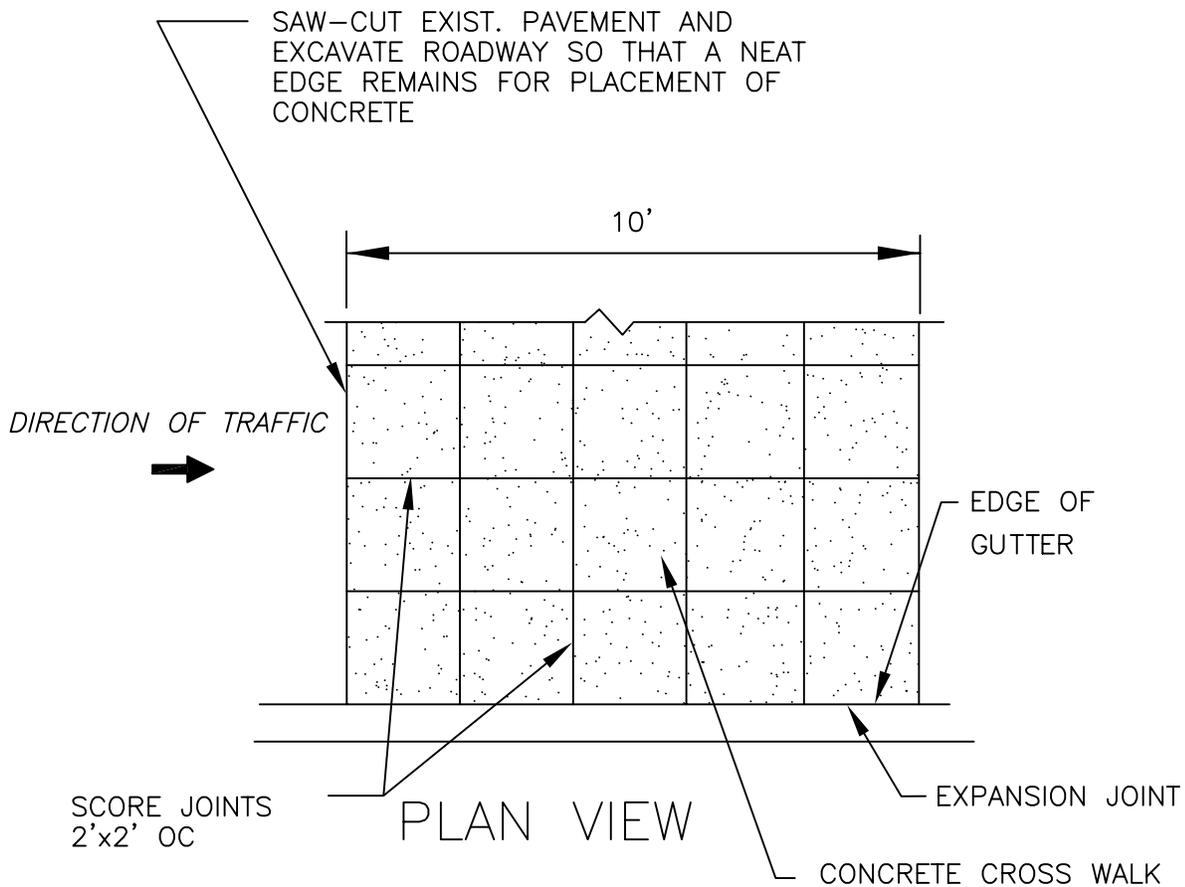


1. USE IN DOWNTOWN PLAN DISTRICT.
2. REQUIRED WHERE ON-STREET PARKING IS ALLOWED.

DRAWN TA		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
DOWNTOWN CURB EXTENSION

SCALE	NTS
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	627

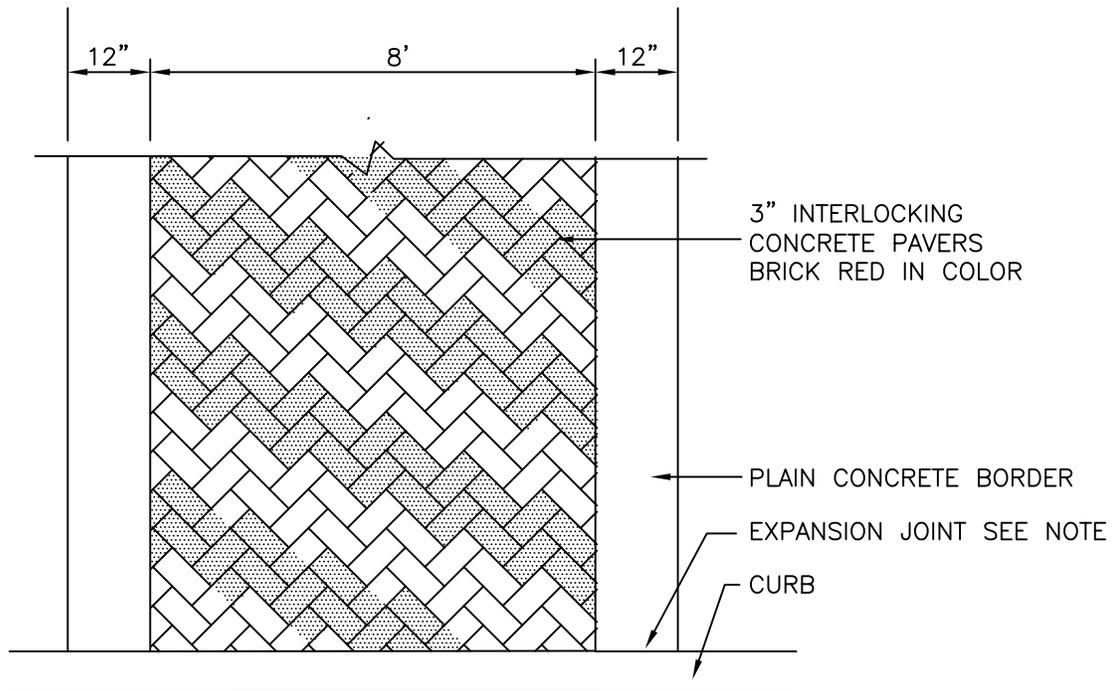


NOTE:
PLACE 1/2" EXPANSION JOINT AT CENTER

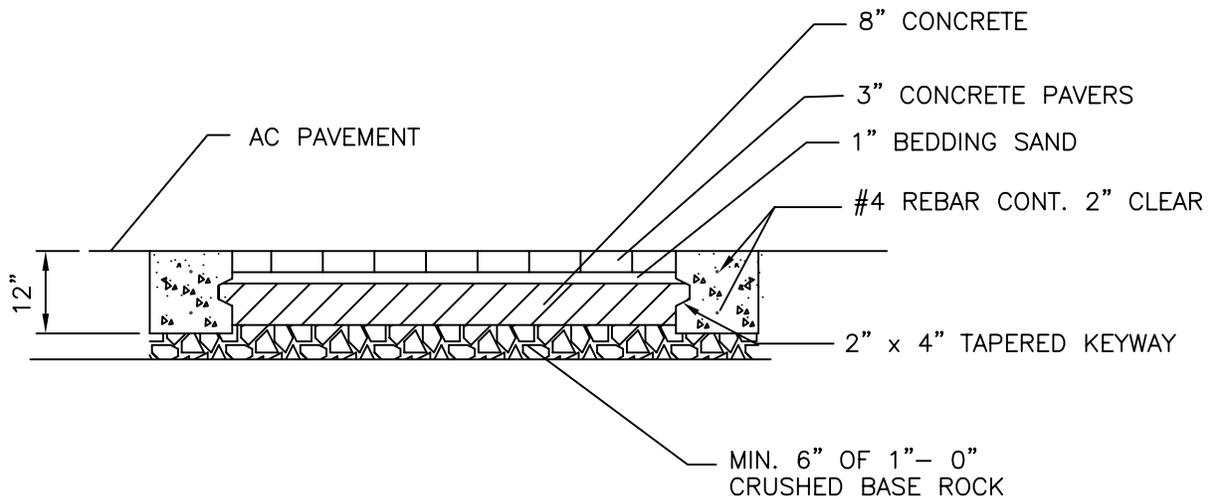
DRAWN AJB		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
CONCRETE CROSSWALK DETAIL

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>OR</i>
DWG. NO.	628



PLAN VIEW

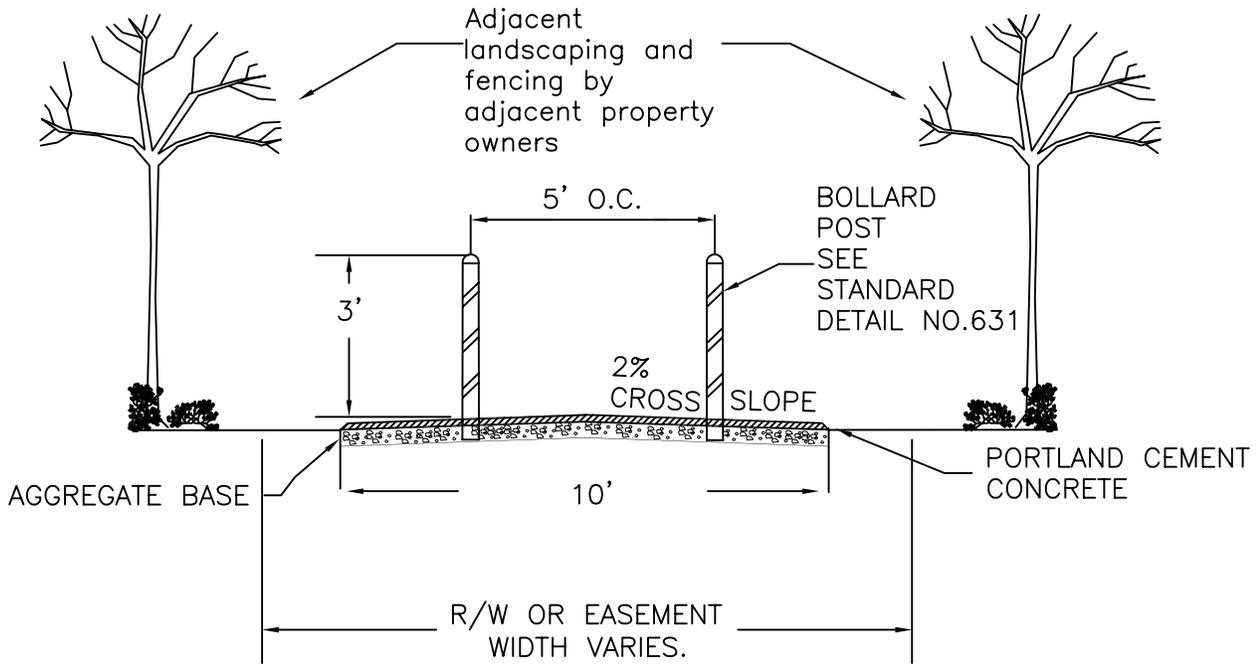


NOTE:

ALL CONC. TO BE 3,300 PSI AT 28 DAYS. PROVIDE
1/2" EXPANSION JOINT AT CENTER
OF CROSSWALK OR AT 15' O.C.

SECTION

DRAWN AJB			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JAN. 1, 2006
REV.	DATE	APPR.		APPR. <i>OR</i>
			PAVER CROSSWALK DETAIL	DWG. NO. 629



1. PATH SHALL BE CENTERED IN THE RIGHT-OF-WAY OR EASEMENT.
2. IF THE RIGHT-OF-WAY OR EASEMENT IS WIDER THAN 15' THEN THE SHOULDERS SHALL HAVE A WEED BARRIER PLACED ON THE SUBGRADE AND BE COVERED BY 6" OF 3/4"-0 CRUSHED ROCK COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180 OR SHALL BE PORTLAND CEMENT CONCRETE.
3. SUBGRADE AND BASEROCK SHALL BE COMPACTED TO 95% RELATIVE DENSITY PER AASHTO T-180.
4. CONTRACTION JOINTS SHALL BE PLACED AT ALL CHANGES OF DIRECTION, POINTS OF CURVATURE AND AT 15' (MAX) INTERVALS. JOINTS SHALL BE 1/8" TO 1/4" WIDE AND A MINIMUM DEPTH OF 1/3 THE THICKNESS OF THE CONCRETE.
5. ALL SURFACES SHALL BE TROWELED AND BROOMED IN A WORKMANLIKE MANNER. ALL CONTRACTION JOINTS SHALL BE STEEL TROWELED (3 IN. TYP).
6. WHERE LIGHTING IS NEEDED, MEET IES STANDARDS FOR PEDESTRIAN SCALE LIGHTING. STYLE AND HEIGHT MAY VARY (UP TO 12' HEIGHT).
7. WHERE ACCESSWAYS CONTINUE ACROSS STREETS, ADA RAMPS SHALL BE REQUIRED.

USE	AGGREGATE BASE	CONCRETE THICKNESS	CONCRETE STRENGTH	REINFORCEMENT
NONVEHICULAR	2"	6"	3,300 PSI	N/A
HEAVY VEHICLE	6"	8"	5,000 PSI	10 GA. WIRE 6" O.C.

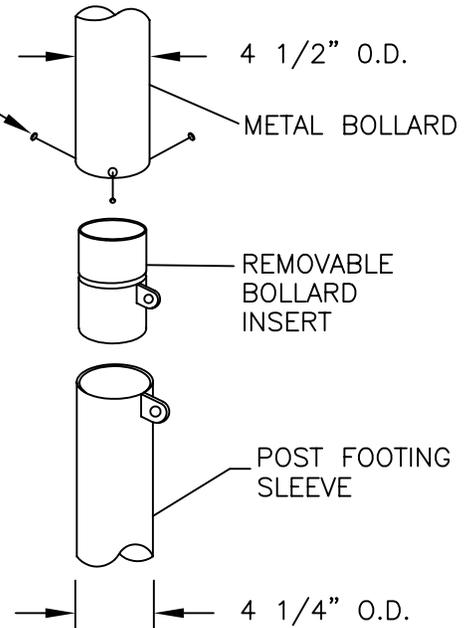
*NOTE: PARK/NATURAL AREA ACCESSWAYS MAY BE PCC OR SOFT SURFACE, BASED ON NATURAL AREA CONSTRAINTS AND ANTICIPATED LEVEL OF USE AS APPROVED BY THE MANAGER.

DRAWN TA			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030 PEDESTRIAN / BICYCLE ACCESSWAY DETAIL		SCALE N.T.S.
DIV. TRANSPORTATION					DATE JAN. 1, 2006
REV.	DATE	APPR.			APPR. <i>[Signature]</i>
				DWG. NO. 630	

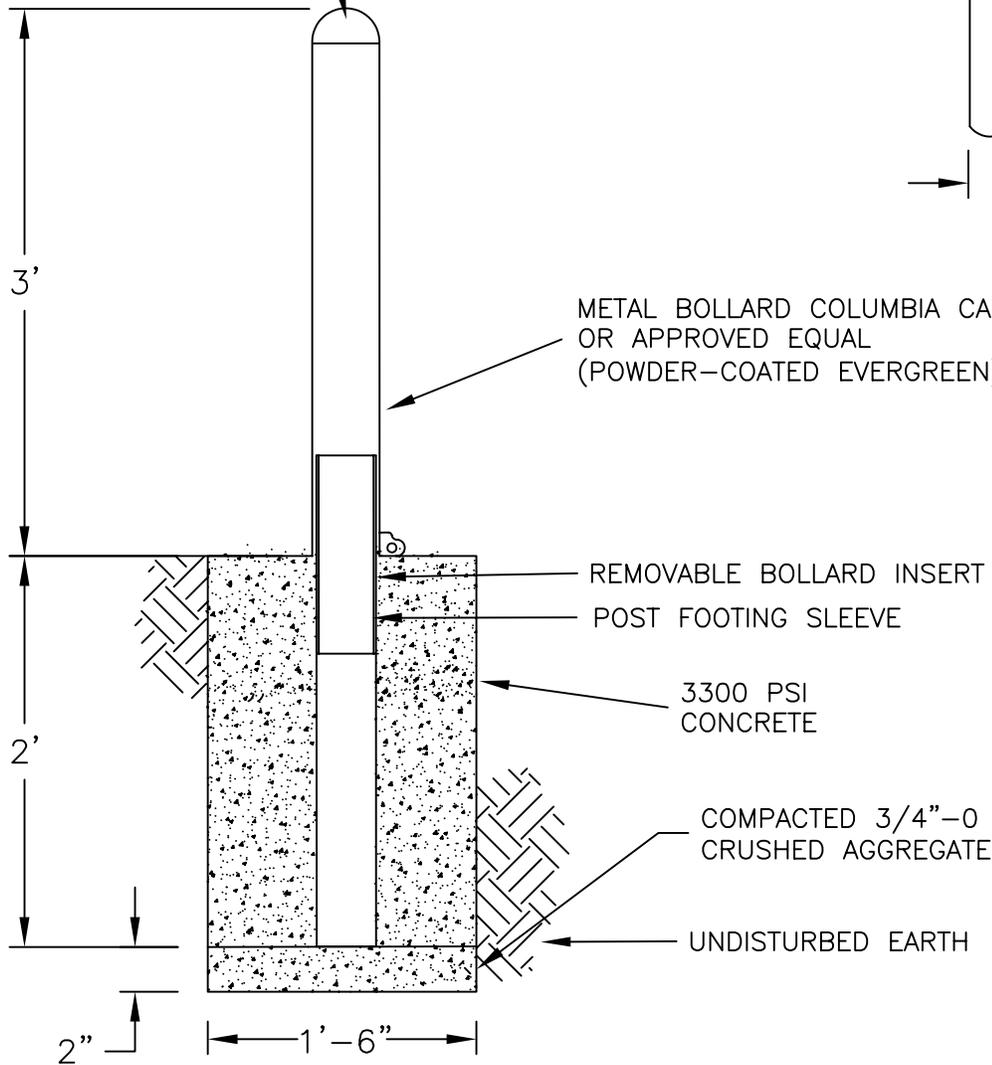
- 1- BOLLARD TO REMOVABLE BOLLARD INSERT
- 3- 3/8"-16x3/8" HEX SOCKET SET SCREW

INSTALLATION SEQUENCE

1. DIG FOOTING HOLE AND SET POST FOOTING SLEEVE PLUM AND SQUARE IN CONCRETE (BY OTHERS)
2. INSERT REMOVABLE BOLLARD INSERT INTO BOLLARD.
3. TIGHTEN HEX SOCKET SET SCREWS.
4. SET THE BOLLARD AND REMOVABLE BOLLARD INSERT INTO THE POST FOOTING SLEEVE.



POST W/ DOME TOP



METAL BOLLARD COLUMBIA CASCADE #2190-R OR APPROVED EQUAL (POWDER-COATED EVERGREEN)

NOTES:

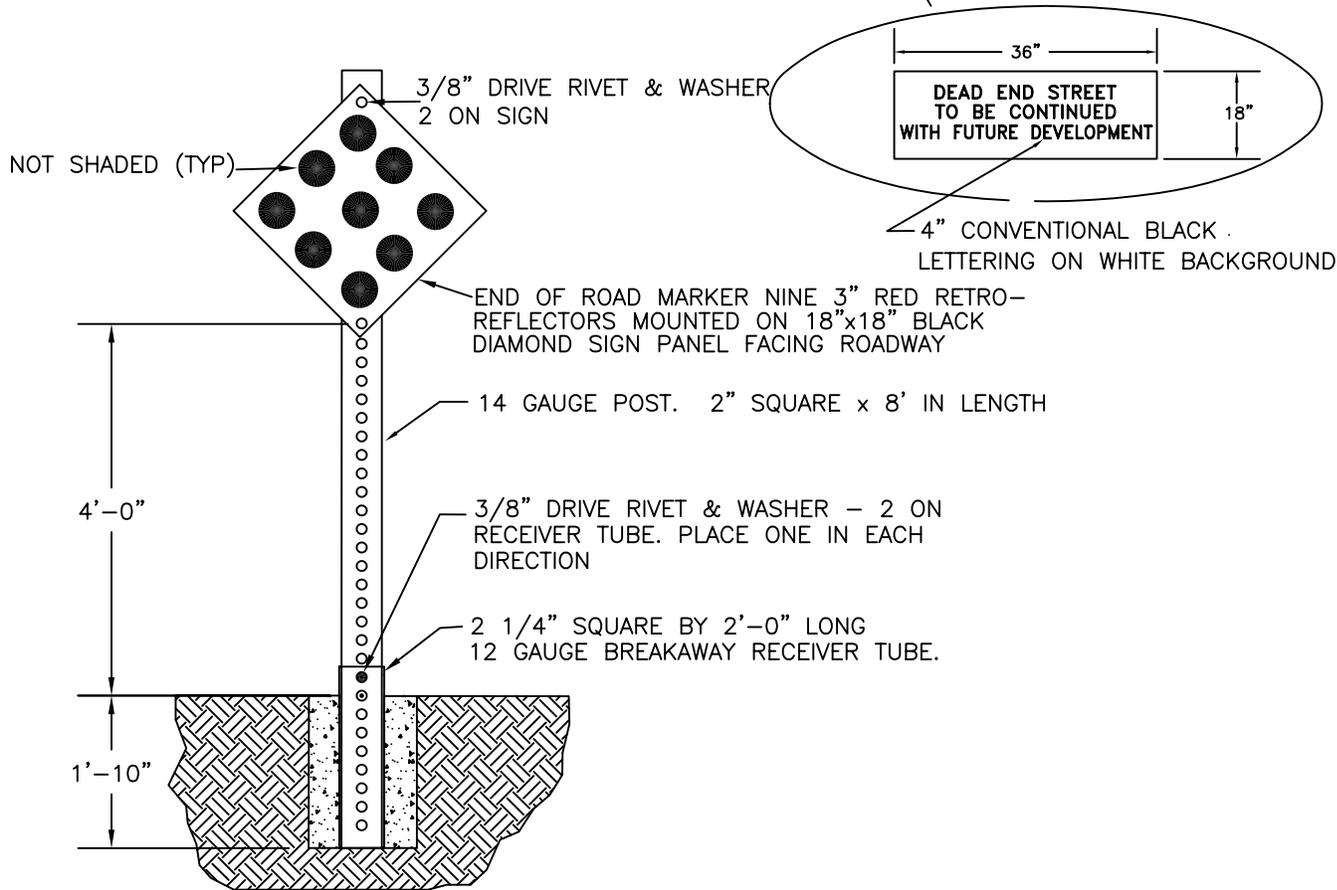
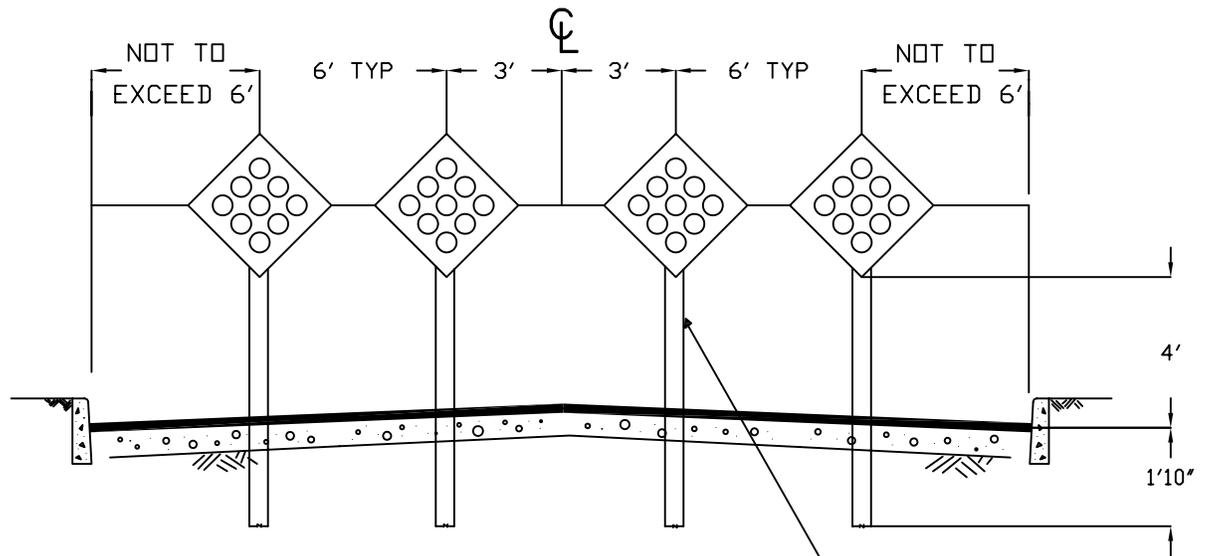
- 1: LOCK TAB TO BE ORIENTED OPPOSITE THE DIRECTION OF VEHICULAR ACCESS.
- 2: DECORATIVE STANDARD BOLLARD MAY BE APPROVED BY THE MANAGER. SEE STANDARD DETAIL DRAWING 630 FOR ACCESSWAY DETAIL.

DRAWN	TA	
DIV.	TRANSPORTATION	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

BOLLARD DETAIL

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	631

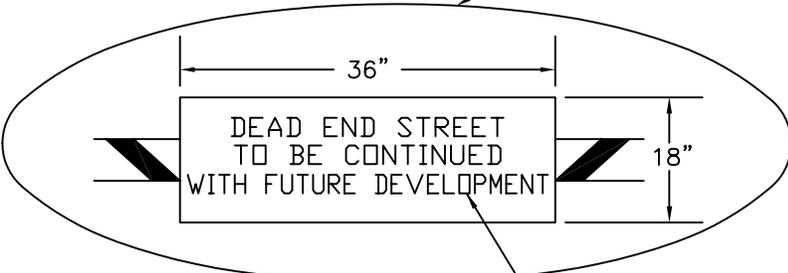
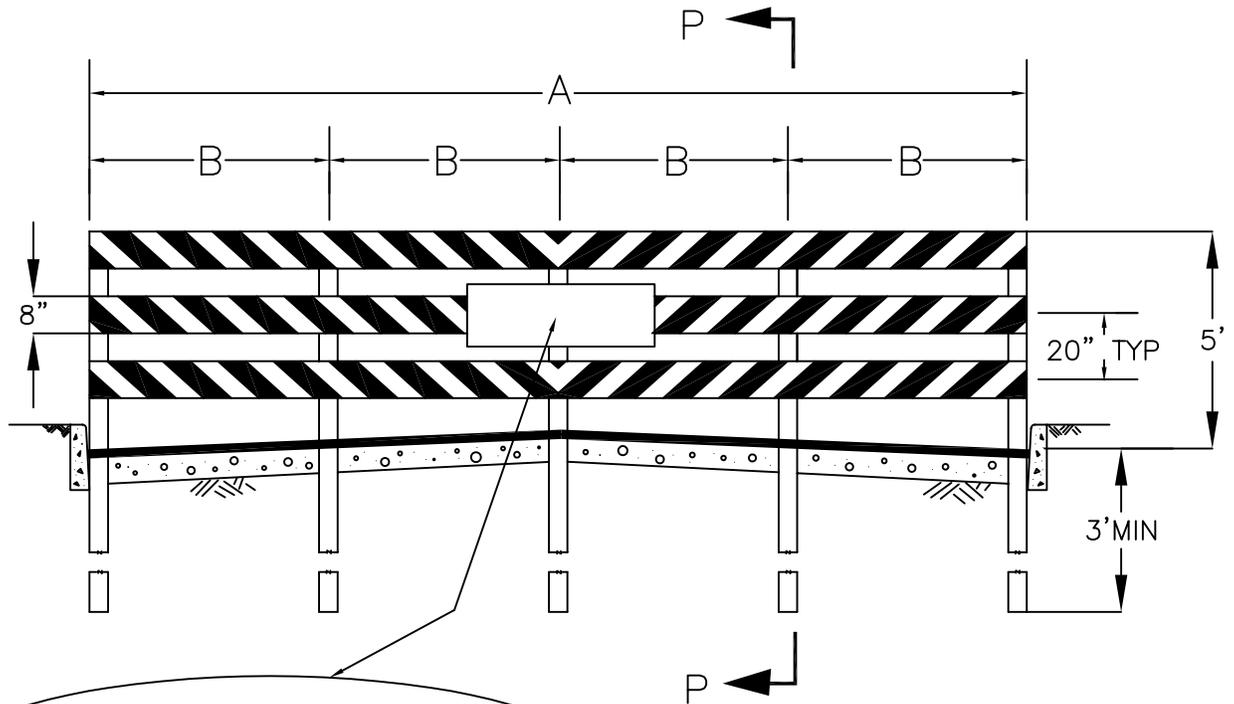


- NOTES:
1. END OF ROAD MARKERS SHALL BE USED IN LIEU OF STREET BARRICADE WHERE NO DROP OFF HAZARD (SLOPES STEEPER THAN 3:1 FOR 18" OR GREATER VERTICALLY) EXISTS.
 2. PLACE POSTS 3' LEFT AND RIGHT OF CENTERLINE AND SPACE ADDITIONAL POSTS AT 6' INTERVALS.
 3. ANCHOR SHALL BE COVERED BY DUCT TAPE ON ALL SIDES.
 4. POST SHALL BE SPRAYED WITH ANTI-SIEZE ON THE BOTTOM 2'.

DRAWN TA	
DIV. TRANSPORTATION	
REV.	DATE APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
END OF ROAD MARKERS

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>[Signature]</i>
DWG. NO. 632



4" CONVENTIONAL BLACK LETTERING ON WHITE BACKGROUND

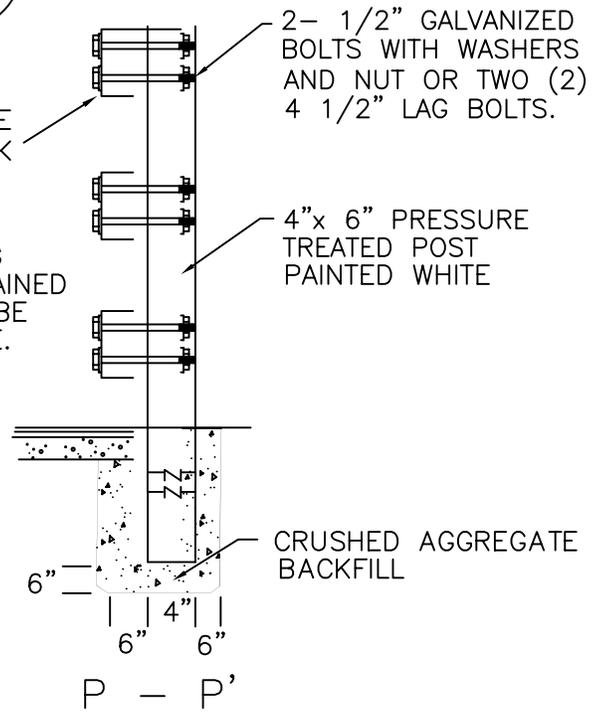
2" PRESSURE TREATED PLANK

A*	B
40'	10'
36'	9'
32'	8'

* FOR STREETS THAT DO NOT FIT STANDARD WIDTHS EQUAL SPACING BETWEEN POSTS SHALL BE MAINTAINED NOT TO EXCEED 10' AND SHALL BE CENTERED ON STREET CENTERLINE.

NOTES:

1. STRIPING SHALL BE ALTERNATING RED (RODDA #1249 OR EQUAL) AND WHITE STRIPES 6" IN WIDTH AT A 45 DEGREE ANGLE AND SHALL BE EITHER RETRO-REFLECTIVE TAPE OR PAINTED WITH A SEALED RETRO-REFLECTIVE SURFACE.
2. THIS BARRICADE SHALL CONFORM TO SECTION 3F-1, UNIFORM MANUAL ON TRAFFIC CONTROL DEVICES-FHWA.



2- 1/2" GALVANIZED BOLTS WITH WASHERS AND NUT OR TWO (2) 4 1/2" LAG BOLTS.

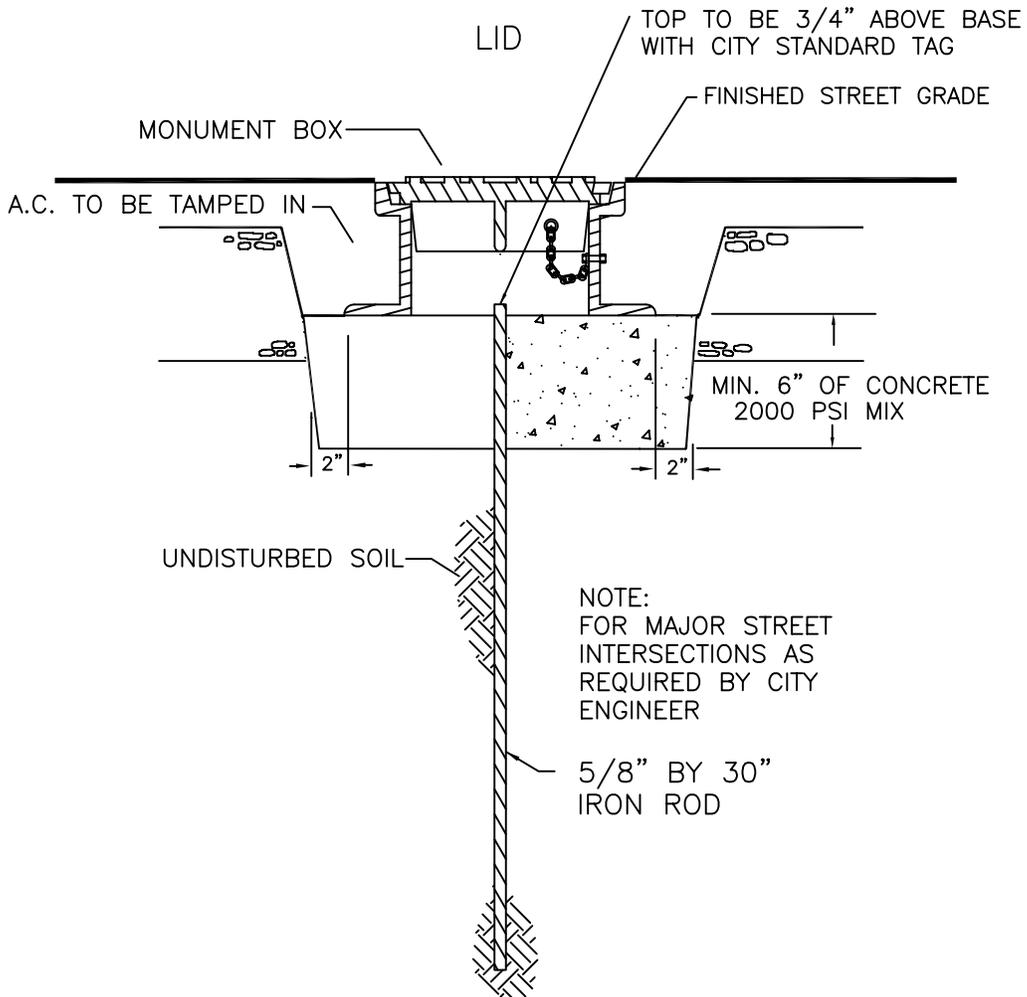
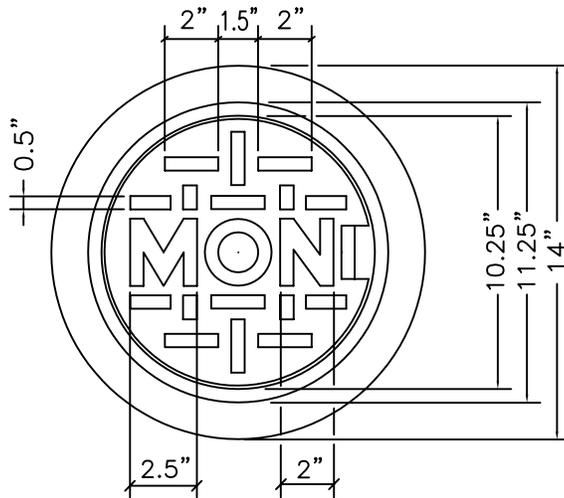
4"x 6" PRESSURE TREATED POST PAINTED WHITE

CRUSHED AGGREGATE BACKFILL

DRAWN	TA	
DIV.	TRANSPORTATION	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
STREET BARRICADE

SCALE N.T.S.
 DATE JAN. 1, 2006
 APPR. *[Signature]*
 DWG. NO. 633



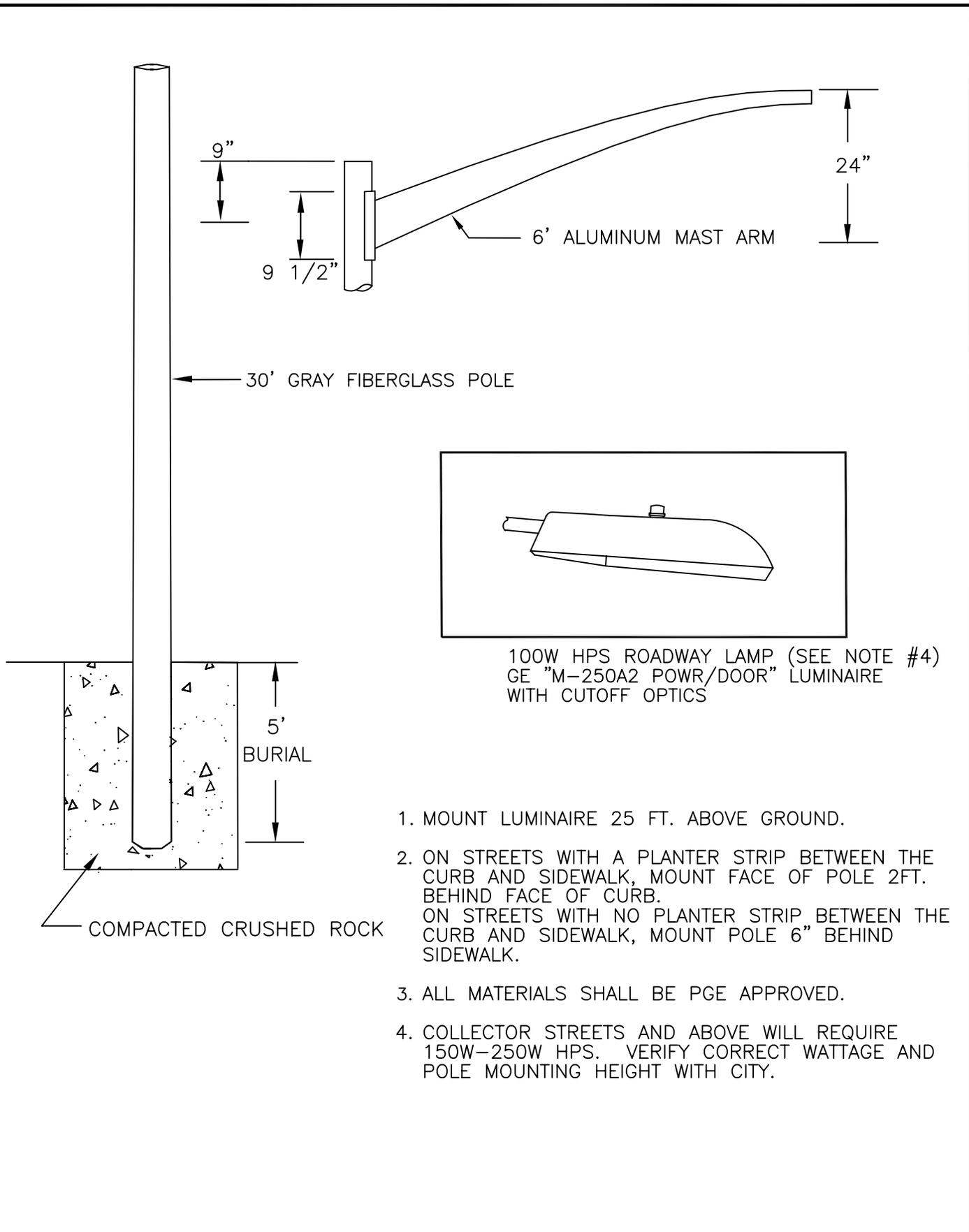
PLACEMENT OF BRASS CAP AND MONUMENT BOX SHALL FOLLOW
 MULTNOMAH COUNTY SURVEYORS OFFICE STANDARDS.

DRAWN MRM		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

STANDARD MONUMENT BOX

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>OR</i>
DWG. NO. 634



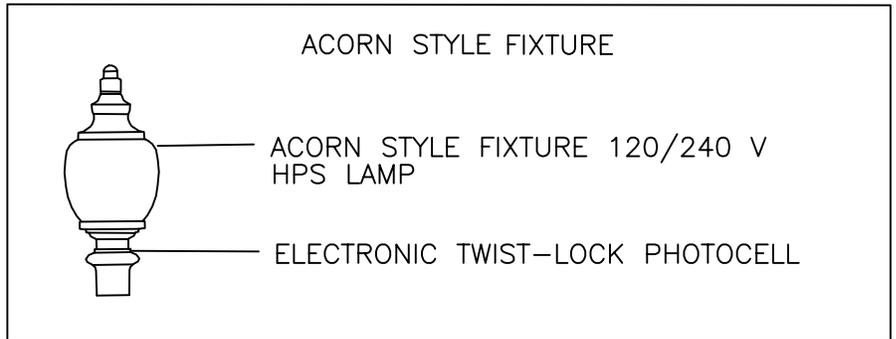
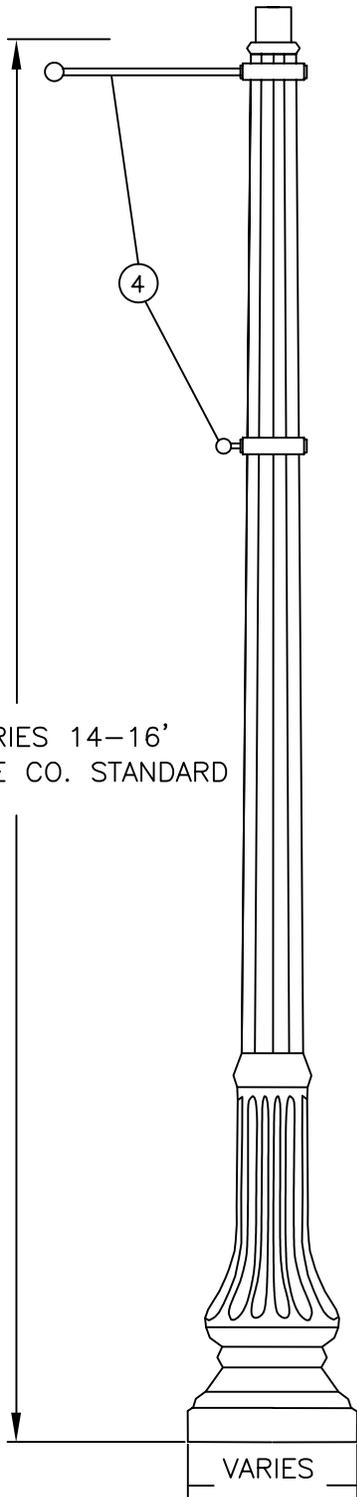
1. MOUNT LUMINAIRE 25 FT. ABOVE GROUND.
2. ON STREETS WITH A PLANTER STRIP BETWEEN THE CURB AND SIDEWALK, MOUNT FACE OF POLE 2FT. BEHIND FACE OF CURB.
 ON STREETS WITH NO PLANTER STRIP BETWEEN THE CURB AND SIDEWALK, MOUNT POLE 6" BEHIND SIDEWALK.
3. ALL MATERIALS SHALL BE PGE APPROVED.
4. COLLECTOR STREETS AND ABOVE WILL REQUIRE 150W-250W HPS. VERIFY CORRECT WATTAGE AND POLE MOUNTING HEIGHT WITH CITY.

DRAWN MRM		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

STANDARD STREET LIGHT DETAIL

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>OR</i>
DWG. NO.	635



ILLUMINAIRE: 150-200 WATT -16' POLE (SEE NOTE #7)
100 WATT -14' POLE

1. FLUTED TAPERED POLE, COLOR BLACK
USE 14' POLE ON LOCAL STREETS
USE 16' POLE ON COLLECTOR STREETS
2. ON STREET WITH PLANTER STRIP BETWEEN THE CURB AND SIDEWALK, MOUNT POLE 2 FT. BEHIND FACE OF CURB. ON STREET WITH NO PLANTER STRIP MOUNT POLE AT CITY ENGINEERS DIRECTION.
3. USE UTILITY VAULT PRECAST CONCRETE FOOTING NO. 20R-LB-4-PGE WITH AN 11" BOLT CIRCLE FOR SIDEWALK LOCATIONS.
4. BANNER ARM/PLANT HANGER REQUIRED IN DOWNTOWN DISTRICT.
5. ALL MATERIALS SHALL BE PGE APPROVED.
6. DECORATIVE LIGHTING OUTSIDE OF DOWNTOWN AND SPECIAL COMMERCIAL DISTRICTS MUST BE APPROVED BY THE CITY ENGINEER.
7. LUMINAIRE WATTAGE TO BE DETERMINED BY CITY.

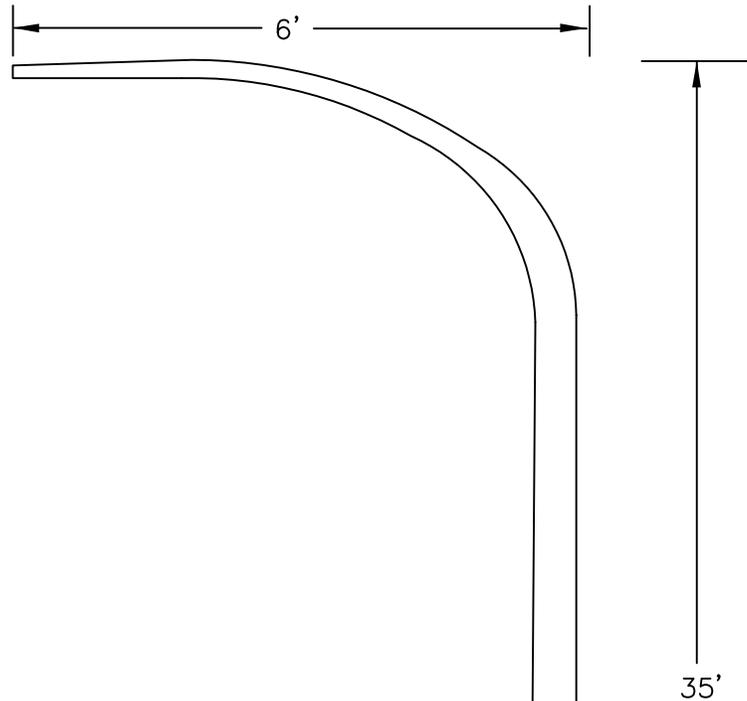
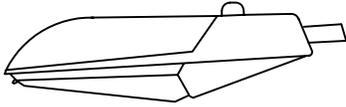
DRAWN MRM		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

DECORATIVE LIGHTING POLE DETAIL

SCALE	N.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	636

GE "POWER DOOR" FIXTURE
 FLAT LENS STYLE HPS LAMP

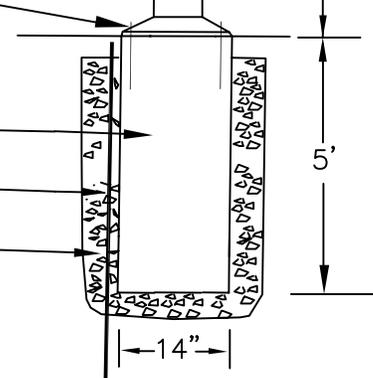


NOTES:

1. 250-400 WATT HPS ROADWAY LAMP
 (WILL VARY DEPENDING ON LIGHTING REQ.)
 VERIFY CORRECT WATTAGE WITH CITY.
2. ALUMINUM DAVIT POLE MOUNTING HEIGHT 35 FT.
3. USE PRECAST CONCRETE FOOTING
 PGE # 5CL-LB OR EQUAL.
4. ALL MATERIALS SHALL BE PGE APPROVED.

FOUR 1" DIAM. GAL. STEEL BOLTS
 ON 11 INCH BOLT CIRCLE
 WITH 3 1/2" PROJECTION

PRECAST CONCRETE FOOTING
 5/8" X 8' VERTICAL STEEL GROUND ROD
 COMPACTED 3/4" MINUS CRUSHED ROCK

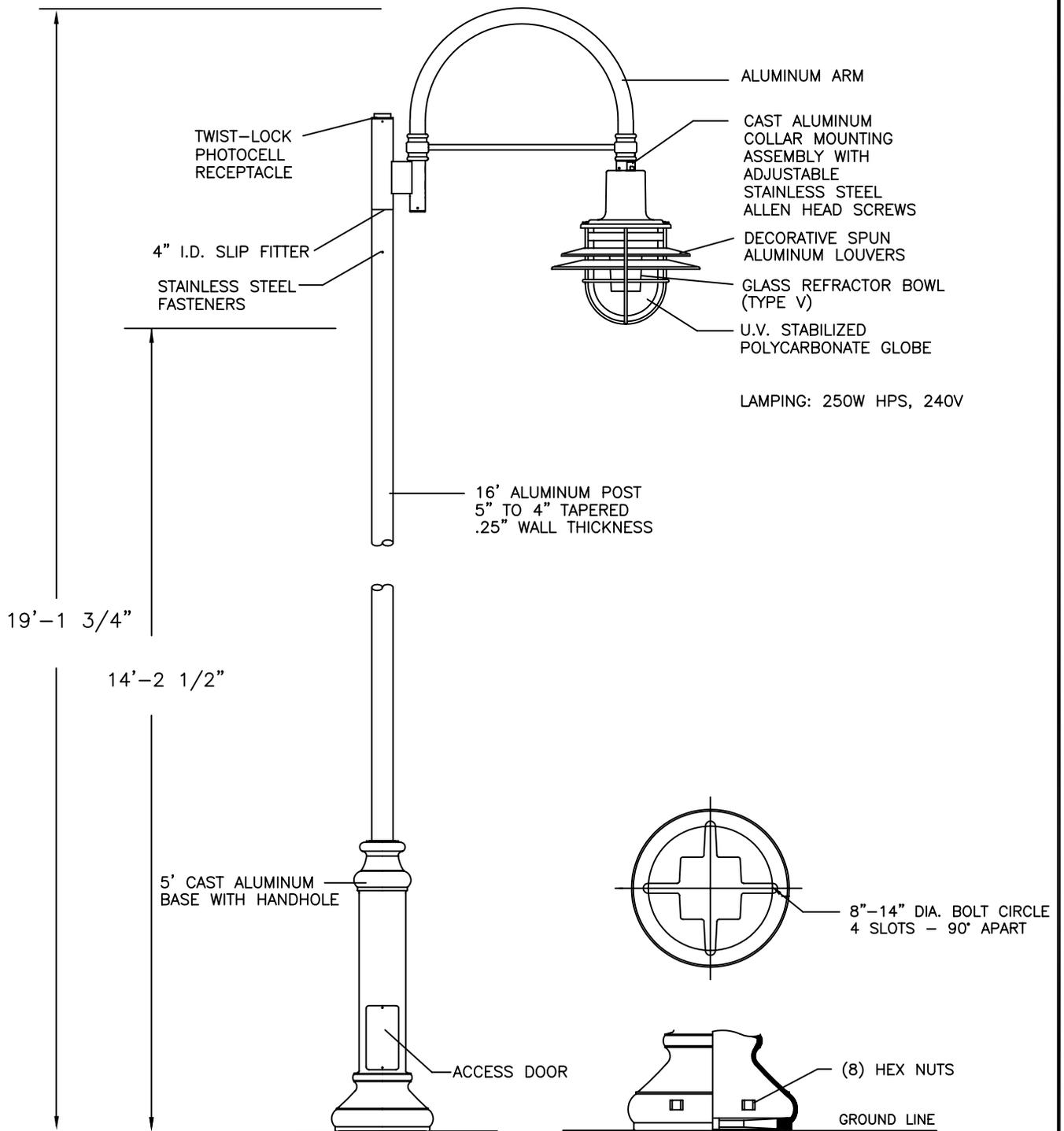


DRAWN		MRM
DIV.		TRANSPORTATION
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

ARTERIAL STREET LIGHT DETAIL

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	637



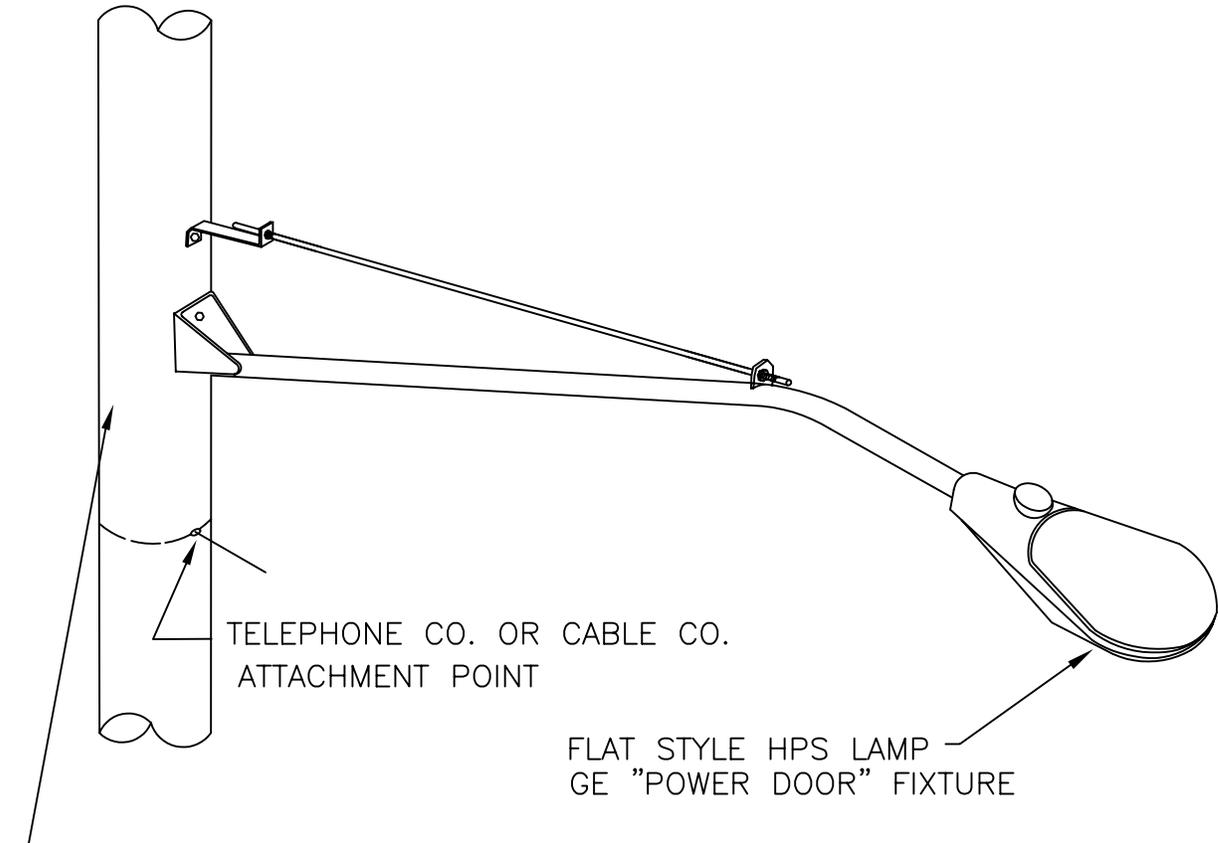
FIXTURE = S5980
 POST = SP5980
 ARM = SA5980
 HADCO
 USE UTILITY VAULT PRECAST FOOTING NO. 20R-LB-4-PGE
 ALL MATERIALS SHALL BE PGE APPROVED.

DRAWN	M.R.M.	
DIV.	TRANSPORTATION	
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
ARCHITECTURAL STREETLIGHT

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	638

LUMINAIRE MOUNTED ON EXISTING POLE

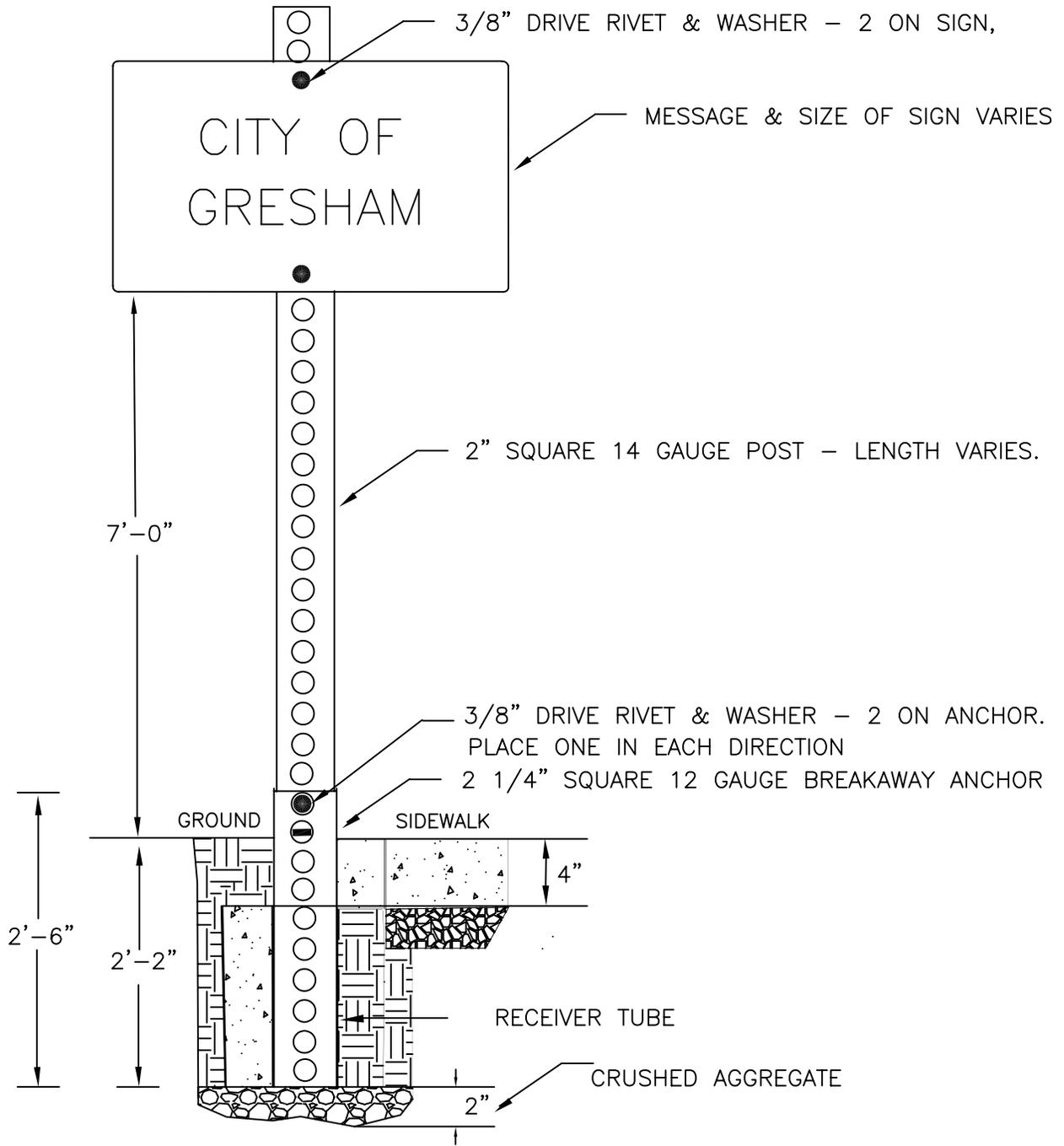


POLE: EXISTING WOOD POLE

NOTES:

1. WATTAGE REQUIREMENTS WILL VARY DEPENDING ON LIGHTING REQUIREMENTS.
2. MAST ARM LENGTH WILL VARY.
3. VERIFY WATTAGE AND MAST ARM LENGTH WITH CITY.
4. ALL MATERIALS SHALL BE PGE APPROVED.

DRAWN MRM			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.S.
ENGR. TRANSPORTATION				DATE JAN. 1, 2006
REV.	DATE	APPR.		APPR.
			MAST ARM DETAIL	DWG. NO. 639



1. ANCHOR SHALL BE COVERED BY DUCT TAPE ON ALL SIDES.
2. ANCHOR SHALL BE SET IN 22" OF CONCRETE UNLESS IN SIDEWALK.
3. IF RECEIVER TUBE IS SET IN SIDEWALK IT SHALL BE 2'-2" DEEP & BACKFILLED WITH COMPACTED FILL, THEN CONCRETE FROM BOTTOM TO TOP OF WALK.
4. SIGN PLACEMENT IN SIDEWALK SHALL ALLOW FOR 5' CLEAR PASSAGE & SIGN POST SHALL BE 12" FROM BACK OF CURB.
5. POST SHALL BE SPRAYED WITH ANTI-SEIZE ON THE BOTTOM 2'-6".

DRAWN TA			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JAN. 1, 2006
REV.	DATE	APPR.		APPR. <i>[Signature]</i>
			STANDARD SIGNPOST	DWG. NO. 640



24" X 18" .080 ALUMINUM BLACK ON WHITE HIGH INTENSITY SHEETING

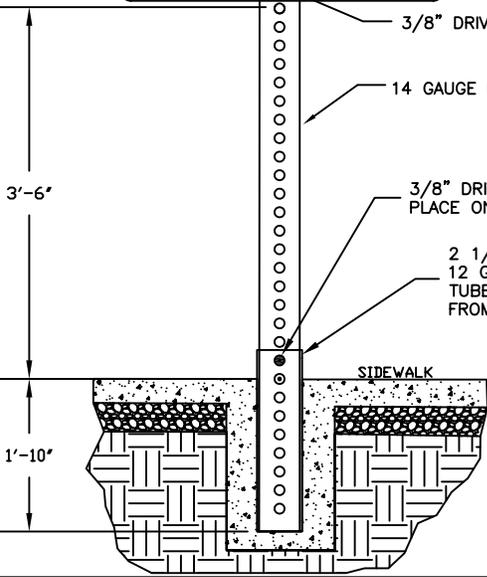
4" BLACK "HIGHWAY GOTHIC" "D" LETTERS

3/8" DRIVE RIVET & WASHER - 2 ON SIGN

14 GAUGE POST. 2" SQUARE X 7' IN LENGTH

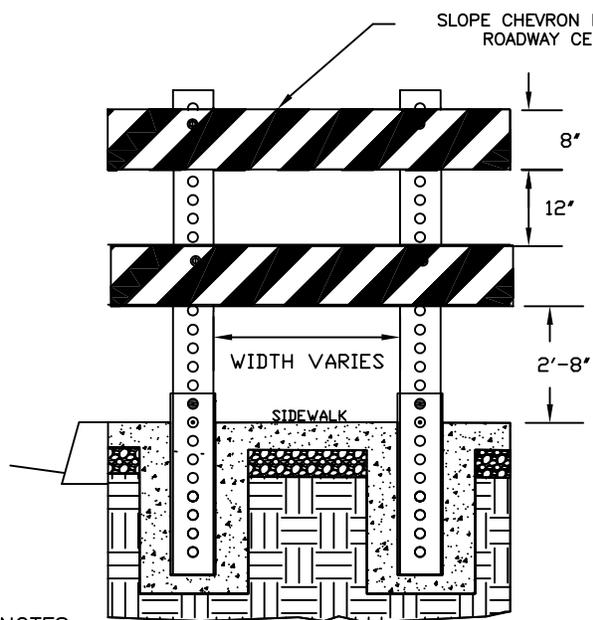
3/8" DRIVE RIVET & WASHER - 2 ON RECEIVER TUBE. PLACE ONE IN EACH DIRECTION

2 1/4" SQUARE BY 2'-0" LONG 12 GAUGE BREAKAWAY RECEIVER TUBE. COVER TUBE WITH DUCT TAPE TO PREVENT CONCRETE FROM FILLING TUBE



NOTES

1. TO BE USED WHERE SIDEWALK HAS A DROP-OFF OF LESS THAN 18".
2. CENTER POST(S) ON SIDEWALK 6" PAST END OF SIDEWALK. WHEN POST(S) MUST BE SET IN THE SIDEWALK THEN THE SIDEWALK MUST HAVE A TOOLED CONTRACTION JOINT INSTALLED 12" IN FRONT OF POST(S).



SLOPE CHEVRON DOWN TOWARD ROADWAY CENTERLINE

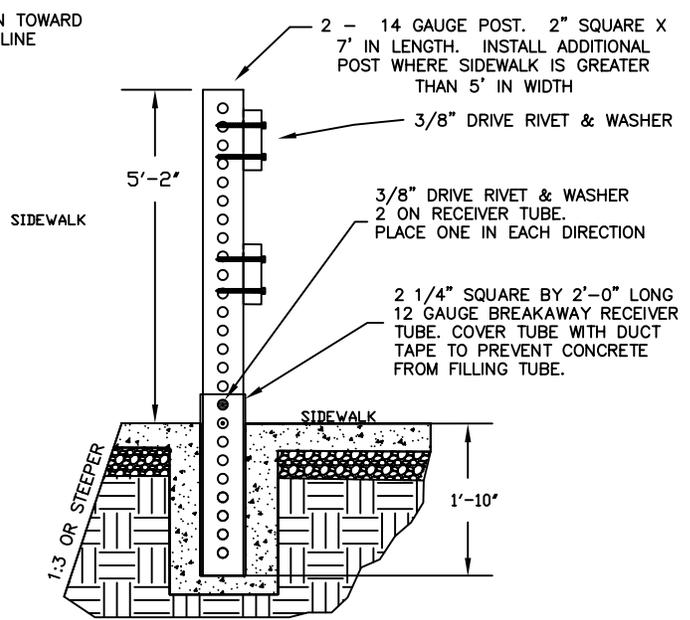
8" TYP

12"

WIDTH VARIES

2'-8"

SIDEWALK



2 - 14 GAUGE POST. 2" SQUARE X 7' IN LENGTH. INSTALL ADDITIONAL POST WHERE SIDEWALK IS GREATER THAN 5' IN WIDTH

3/8" DRIVE RIVET & WASHER

3/8" DRIVE RIVET & WASHER 2 ON RECEIVER TUBE. PLACE ONE IN EACH DIRECTION

2 1/4" SQUARE BY 2'-0" LONG 12 GAUGE BREAKAWAY RECEIVER TUBE. COVER TUBE WITH DUCT TAPE TO PREVENT CONCRETE FROM FILLING TUBE.

5'-2"

SIDEWALK

SIDEWALK

1'-10"

1:3 OR STEEPER

NOTES

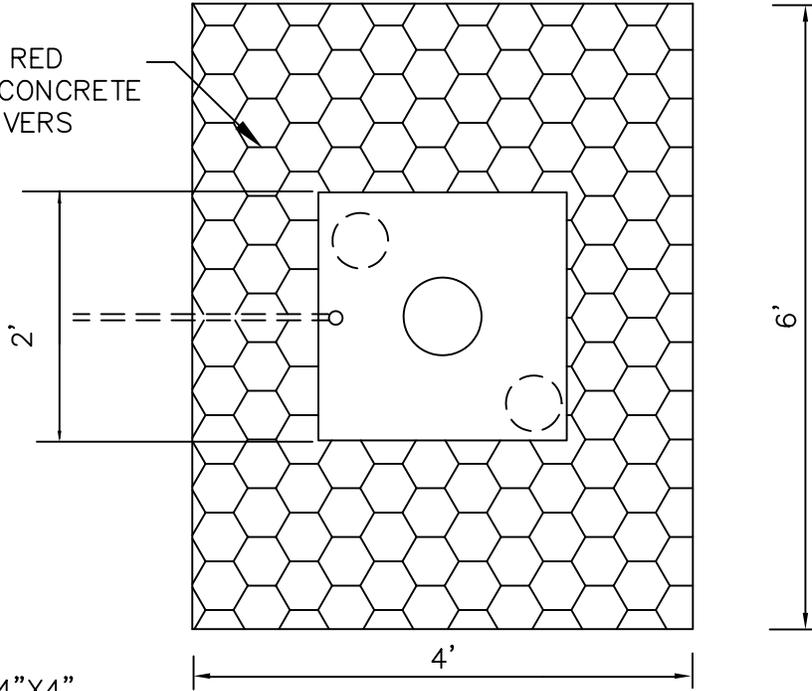
1. TEMPORARY ASPHALT ADA RAMP MAY BE USED INSTEAD OF BARRICADES OR SIGNAGE.
2. TYPE II BARRICADE TO BE USED WHERE SIDEWALK DROP-OFF EXCEEDS 18" VERTICAL WITH A SLOPE OF 1:3 OR STEEPER.
3. STRIPING FOR TYPE II BARRICADE: TYPE 1 RETRO-REFLECTIVE SHEET WITH ALTERNATING 6" RED AND WHITE STRIPES PLACED AT A 45 DEGREE ANGLE SHALL BE PLACED ON A 7 1/4" X 48" MIN. .080 GAGE ALUMINUM PANEL. PANEL TO BE ATTACHED TO 2" PRESSURE TREATED PLANK WITH 6 #8-3/4" SELF-TAPPING VANDAL PROOF SCREWS.
4. CENTER POST(S) ON SIDEWALK 6" PAST END OF SIDEWALK. WHEN POST(S) MUST BE SET IN THE SIDEWALK THEN THE SIDEWALK MUST HAVE A TOOLED CONTRACTION JOINT INSTALLED 12" IN FRONT OF POST(S).

DRAWN DRB	
DIV. TRANSPORTATION	
REV.	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
END OF SIDEWALK BARRICADE

SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	641

INSTALL BRICK RED INTERLOCKING CONCRETE PERMEABLE PAVERS



PLAN

1 3/4" DIA. CALIPER TREE HEADED @ 6' TYP. EXCEPT 2" DIA CALIPER HEADED @ 8' SHALL BE USED WHEN TREE IS IN VISION TRIANGLE. TREES SHALL BE WELL BRANCHED, BALLED AND BURLAPED.

IN-GROUND 4"X4" JUNCTION BOX IN BACK OF WALK (ON COMMERCIAL PROPERTY ONLY)

USE SAME ROCK AS USED TO FILL VOIDS IN PAVERS 1/4"-#10 TYP

PAVER EDGER

1" OF COARSE SAND

2" OF 3/4"-0 CRUSHED ROCK

BRICK RED PERMEABLE CONCRETE PAVERS

CURB & GUTTER

SIDEWALK

GEOTEXTILE FABRIC

GEOTEXTILE FABRIC

12" MIN

1" ELECT. CONDUIT CONNECT TO ADJACENT PROPERTY. (AT COMMERCIAL PROPERTY ONLY)

SCARIFY SIDES OF PLANTING PIT

(2) 4" PERF. PVC DRAIN PIPE FILLED WITH 1" WASHED RIVER ROCK

UNDISTURBED SOIL

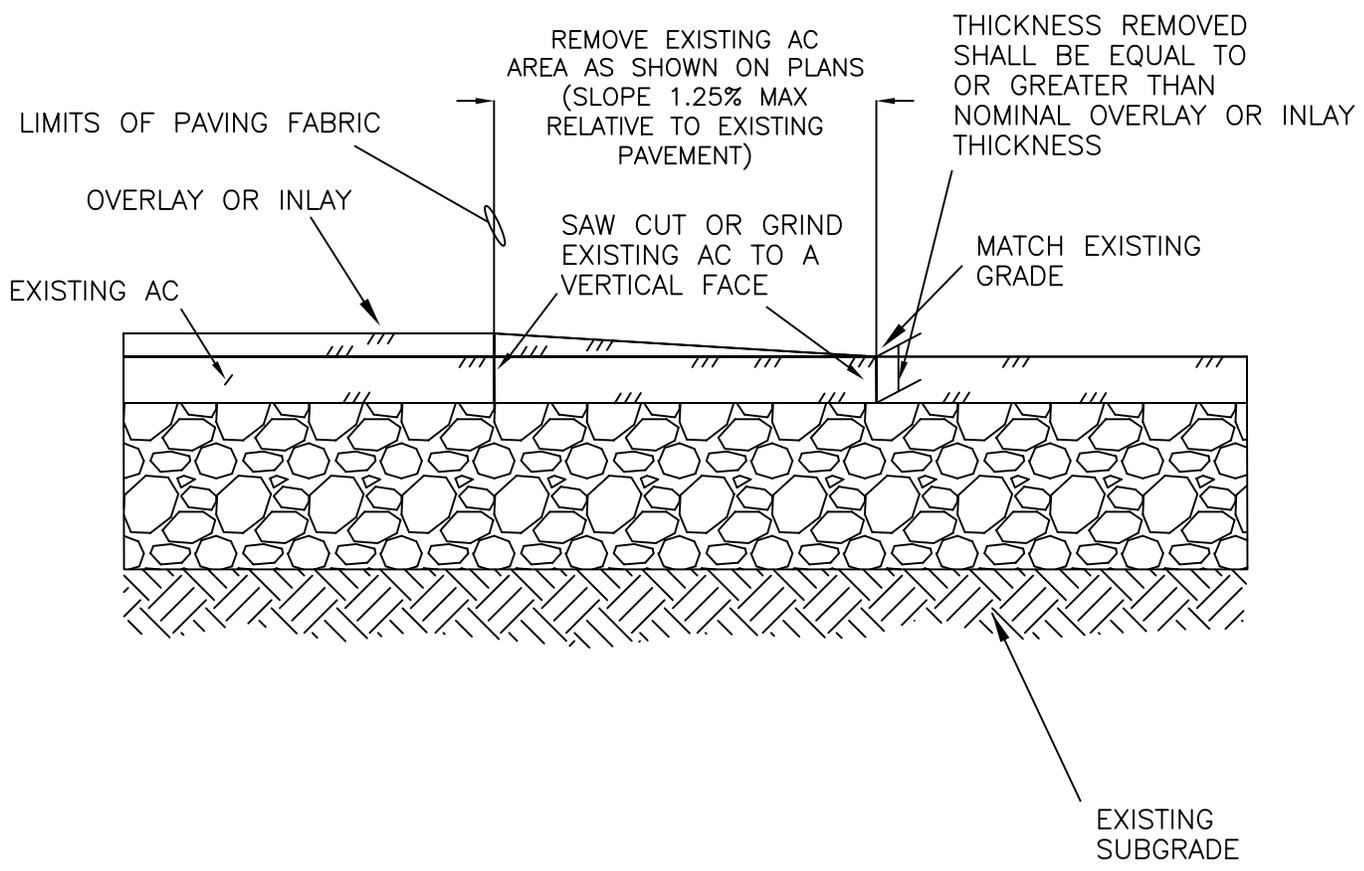
SOIL MIXTURE (SEE SPECS)

DRAWN TA		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030

TREE WELL DETAIL

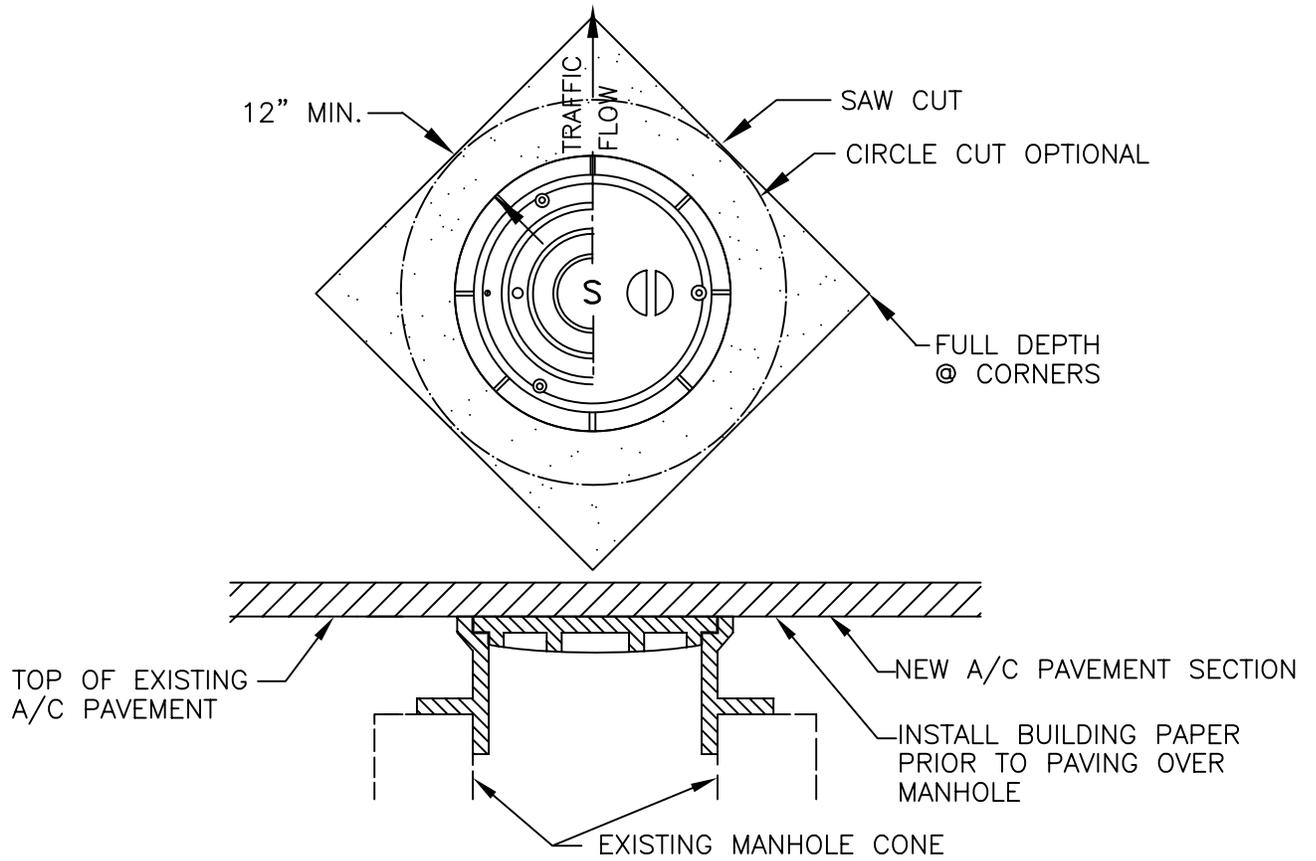
SCALE	N.T.S.
DATE	JAN. 1, 2006
APPR.	<i>[Signature]</i>
DWG. NO.	642



NOTES:

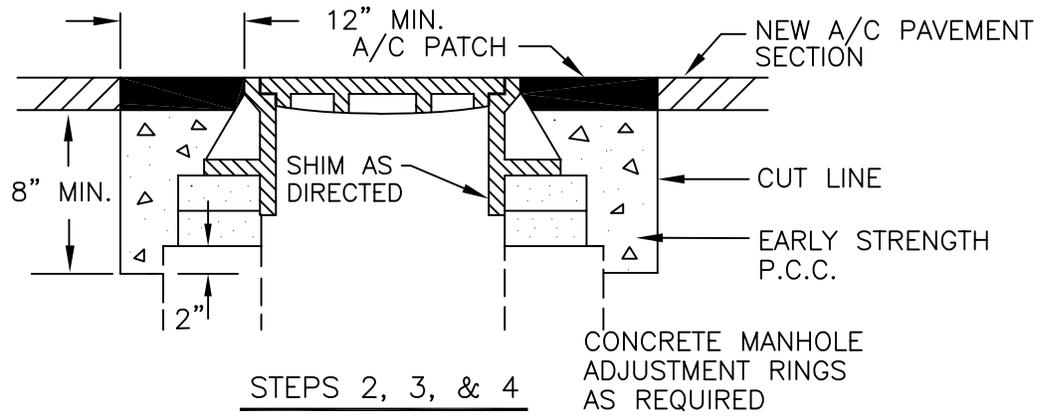
1. ALL SURFACES SHALL BE PROPERLY PREPARED AND TACKED PRIOR TO PLACEMENT OF ASPHALT.
2. ASPHALTIC CONCRETE SHALL BE COMPACTED TO 91% RICE DENSITY.

DRAWN TA			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030	SCALE N.T.S.
DIV. TRANSPORTATION				DATE JAN. 1, 2006
REV.	DATE	APPR.		APPR. <i>OR</i>
			OVERLAY NOTCHING	DWG. NO. 643



STEP 1

PLAN VIEW



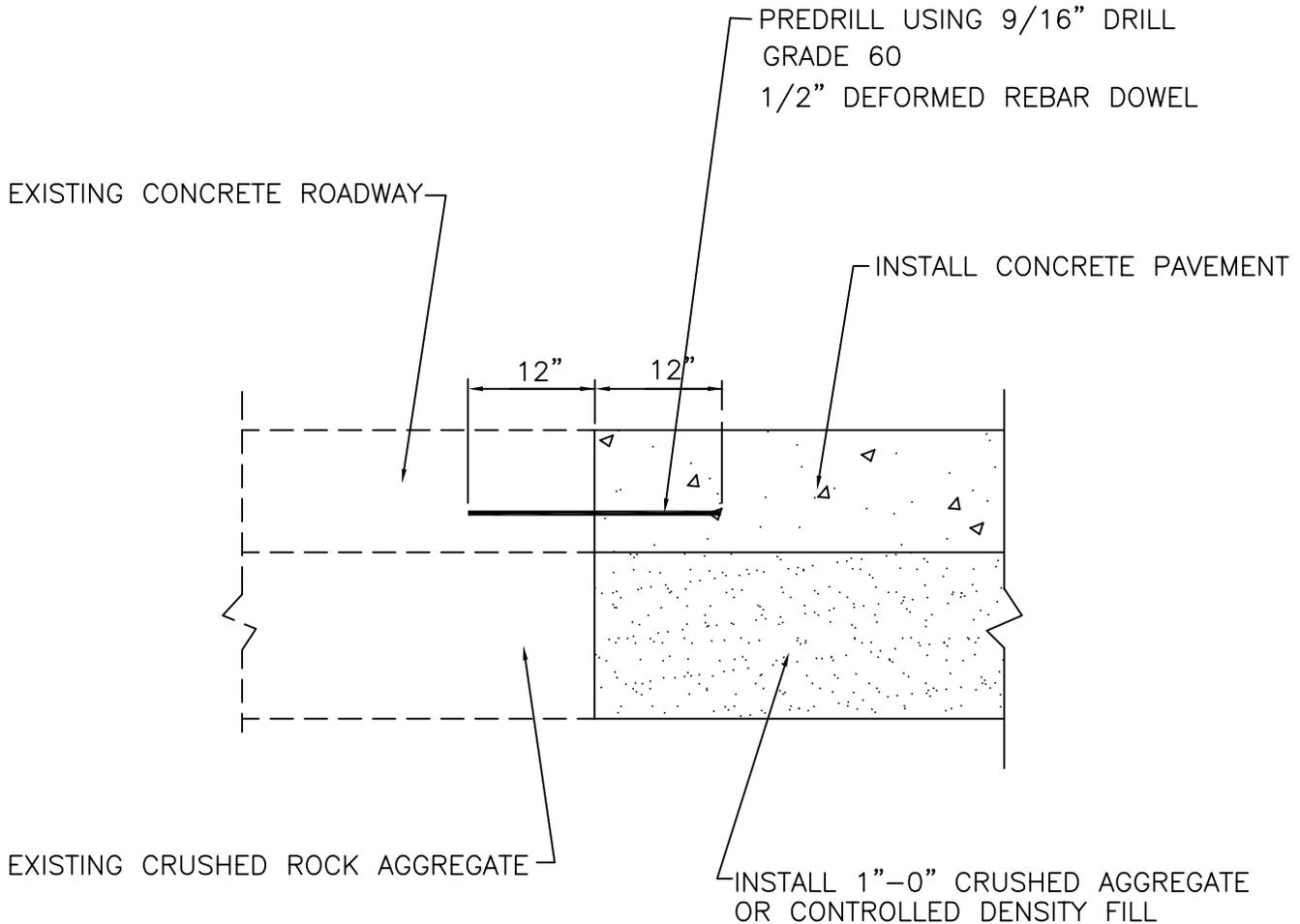
STEPS 2, 3, & 4

- STEP 1 COVER EXISTING MANHOLE WITH BUILDING PAPER AND CONSTRUCT A/C PAVEMENT OVER TOP OF MANHOLE.
- STEP 2 SAW CUT AND REMOVE PAVEMENT AROUND MANHOLE 12" MIN. FROM MANHOLE FRAME.
- STEP 3 RAISE OR LOWER MANHOLE FRAME AND IF NECESSARY INSTALL CONCRETE RINGS TO FINISH PAVEMENT PROFILE AND CROSS SLOPE.
- STEP 4 WHERE APPLICABLE, BACKFILL WITH 5000 PSI EARLY STRENGTH P.C.C. AND A/C TO DEPTHS AS DIRECTED.

DRAWN TA		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
MANHOLE FRAME ADJUSTMENT DETAIL

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>OR</i>
DWG. NO. 644



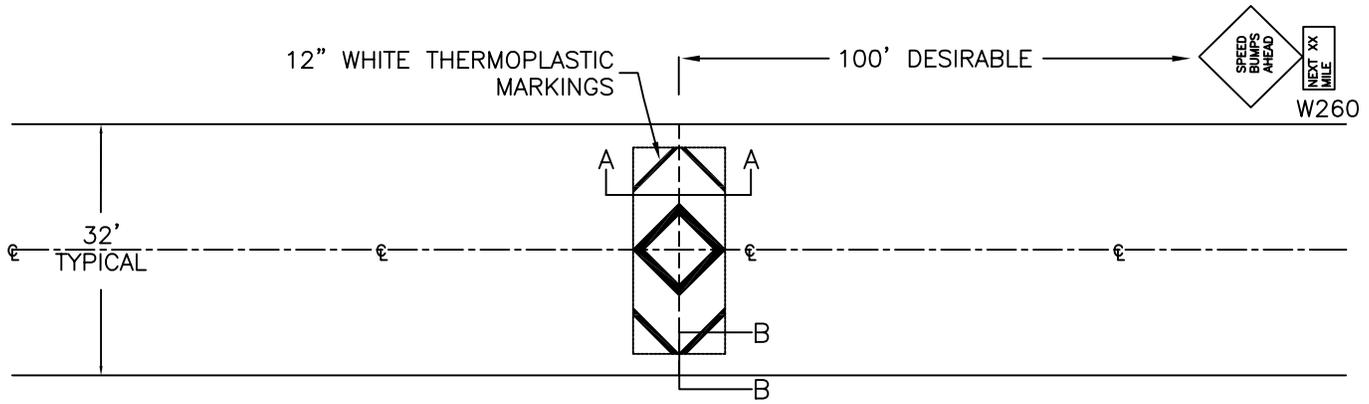
NOTES:

1. EXISTING SLAB SHALL BE DRILLED USING APPROPREATE MASONARY DRILL BIT (ROTO HAMMER WILL NOT BE ALLOWED)
2. DOWELS SHALL BE PLACED AT 24" O.C.

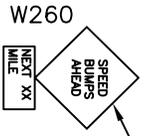
DRAWN TA		
DIV. TRANSP.		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
 PCC TRENCH RESTORATION DETAIL

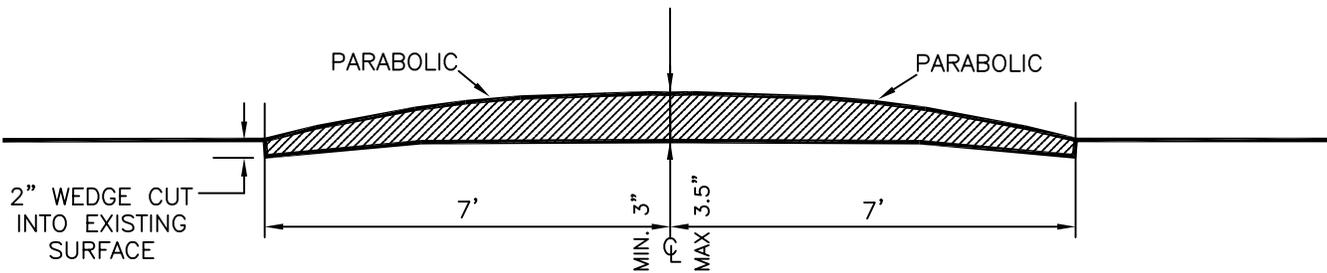
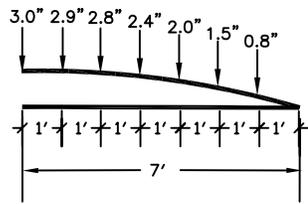
N.T.S.	
DATE	JAN. 1, 2006
APPR.	<i>OR</i>
DWG. NO.	645



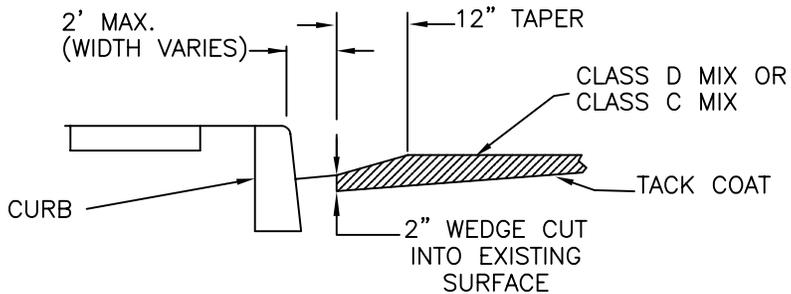
SIGNING AND STRIPING PLAN



SIGNS TO BE INSTALLED BY OTHERS



SECTION A-A



SECTION B-B

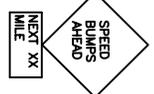
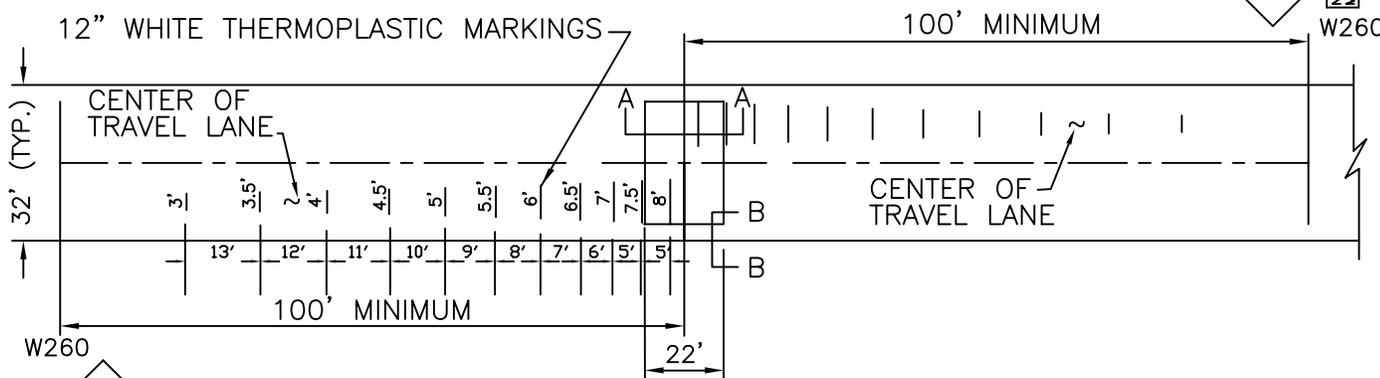
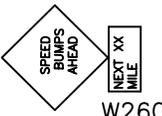
NOTES:

1. SPACING – SPEED HUMPS SHOULD BE PLACED ACCORDING TO THE ENGINEER’S EVALUATION OF THE PHYSICAL STREET SECTION AS WELL AS TRAFFIC OPERATIONS DATA. TYPICALLY, SPEED HUMPS SHOULD BE PLACED BETWEEN 300 AND 600 FEET APART.
2. TOLERANCE – THE TOLERANCE FOR SPEED HUMPS SHOULDN’T VARY BY MORE THAN .5” HIGH OR .25” LOW FROM THE CITY’S TEMPLATE.

DRAWN MRM		
DIV. TRANSPORTATION		
REV.	DATE	APPR.

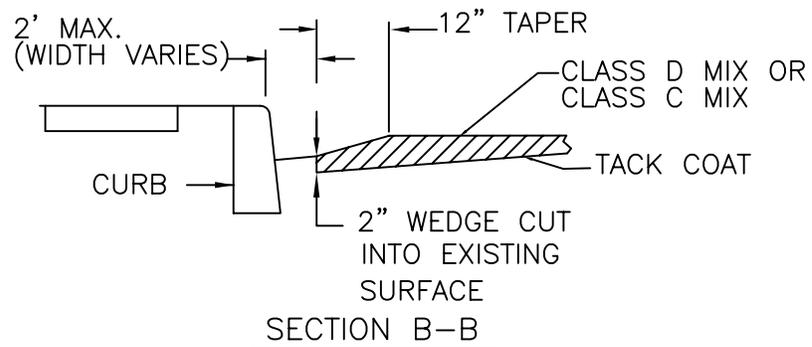
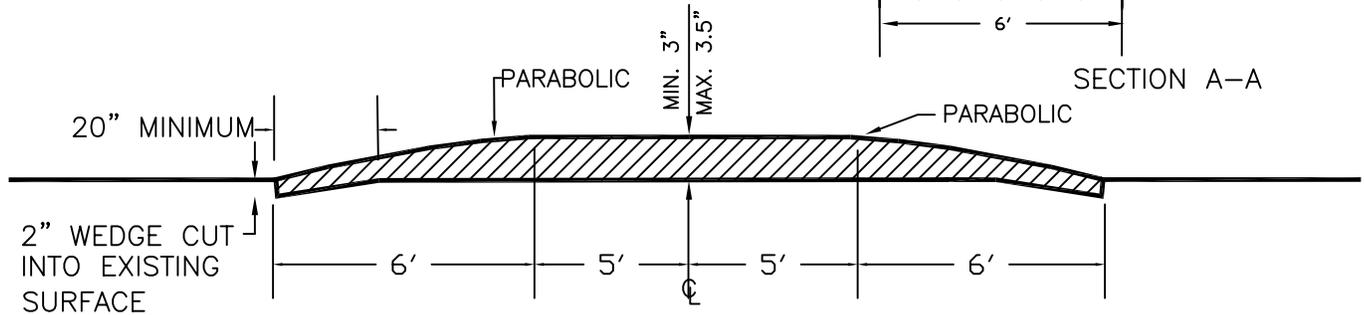
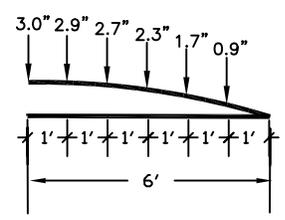
DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
14FT. WIDE
MOUNTABLE SPEED BUMP

SCALE N.T.S.
DATE JAN. 1, 2006
APPR. <i>[Signature]</i>
DWG. NO. 646



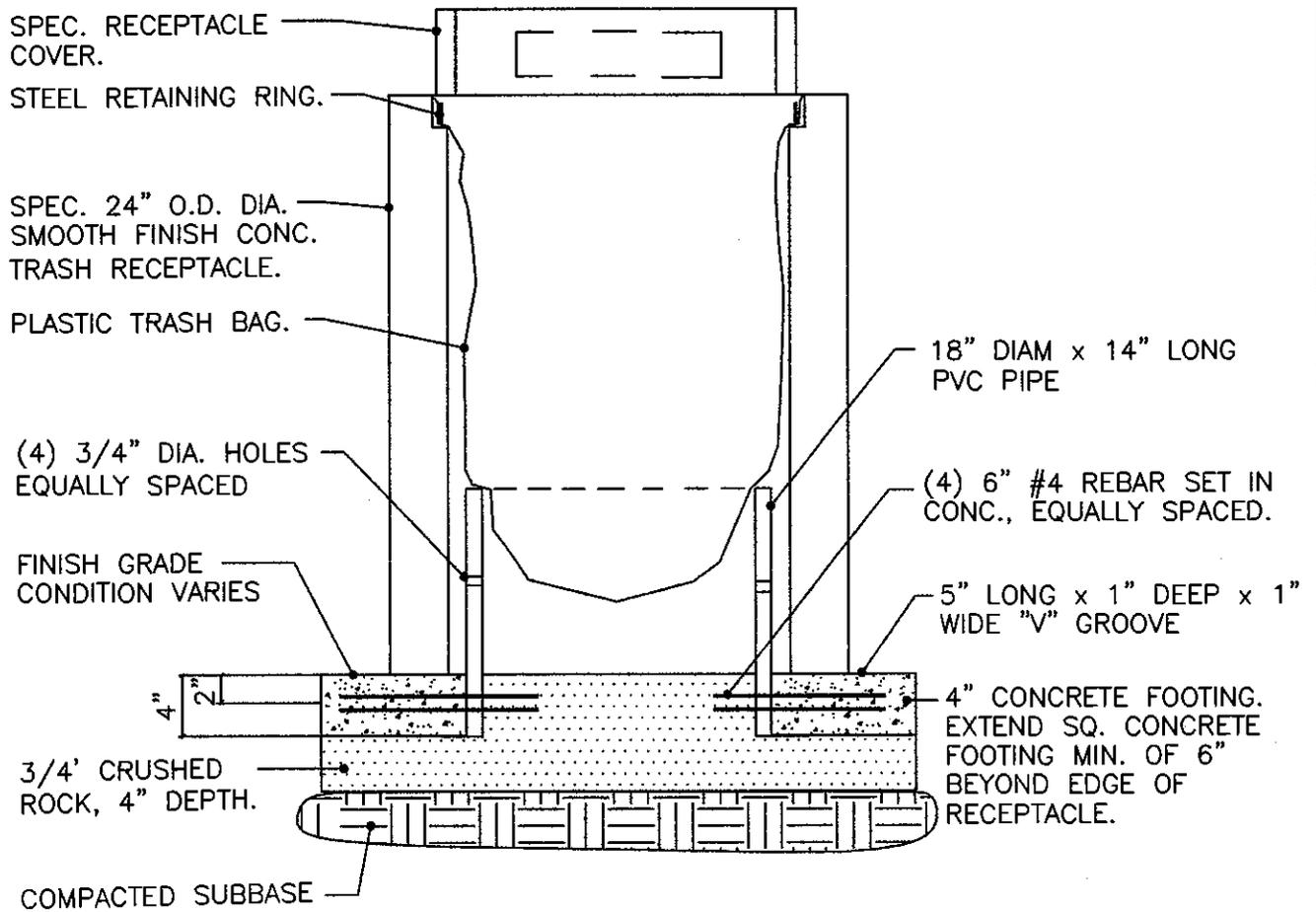
SIGNING AND STRIPING PLAN
N.T.S.

SIGNS TO BE INSTALLED BY OTHERS



- NOTES:
1. SPACING - SPEED BUMPS SHOULD BE PLACED ACCORDING TO THE ENGINEER'S EVALUATION OF THE PHYSICAL STREET SECTION AS WELL AS TRAFFIC OPERATIONS DATA. TYPICALLY, SPEED BUMPS SHOULD BE PLACED BETWEEN 300 AND 600 FEET APART.
 2. TOLERANCE - THE TOLERANCE FOR SPEED BUMPS SHOULDN'T VARY BY MORE THAN .5" HIGH OR .25" LOW FROM THE CITY'S TEMPLATE.

DRAWN MRM			DEPARTMENT OF ENVIRONMENTAL SERVICES CITY OF GRESHAM 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030		SCALE N.T.S.
DIV. TRANSPORTATION					DATE JAN. 1, 2006
REV.	DATE	APPR.	22 FT. WIDE SPEED HUMPS		APPR. <i>[Signature]</i>
					DWG. NO. 647



DRAWN		DRL
DIV. PARKS		
REV.	DATE	APPR.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY OF GRESHAM
 1333 N.W. EASTMAN PARKWAY, GRESHAM, OREGON 97030
TRASH RECEPTACLE

SCALE	N.T.S.
DATE	— —
APPR.	
DWG. NO.	701