STORM DRAIN GENERAL NOTES:

1. MATERIALS AND WORKMANSHIP FOR STREET AND DRAINAGE WORK SHALL CONFORM TO WSDOT "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION" (CCC 40.386), AND STANDARD DETAIL SHEETS ATTACHED HEREWITH.

2. PRECAST DRAINAGE STRUCTURES PREVIOUSLY APPROVED BY WASHINGTON DEPARTMENT OF TRANSPORTATION AND THE CLARK COUNTY PUBLIC WORKS DEPARTMENT MAY BE SUBSTITUTED FOR ANY NEW STANDARD CAST-IN-PLACE UNIT. HOWEVER, IT IS THE CONTRACTOR’S RESPONSIBILITY TO ASSURE THAT THE PRECAST DRAINAGE STRUCTURES COMPLY WITH THE DESIGN INVERTS AND RIM ELEVATIONS.

3. THE CONTRACTOR IS TO VERIFY ALL INVERT AND TOP ELEVATIONS OF EXISTING STORM DRAINS, AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.

4. CONTRACTOR TO VERIFY CENTERLINE AND TOP OF THE CURB ELEVATIONS PRIOR TO CONSTRUCTION TO ENSURE COMPLIANCE WITH THE CONSTRUCTION DRAWINGS AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION AND TO NOTIFY THE ENGINEER OF ANY POTENTIAL COLLISIONS. THE CONTRACTOR SHALL DIG TEST HOLES OVER ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO DETERMINE THEIR EXACT LOCATION. CALL 1-800-553-4344 FOR UTILITIES LOCATE, A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION.

6. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND/OR CONTRACTOR TO PURCHASE ALL APPLICABLE PERMITS, LICENSES AND CERTIFICATES RELATIVE TO THE TRADES TO COMPLETE THE PROJECT AND FOR THE USE OF SUCH WORK WHEN COMPLETED. COMPLIANCE SHALL BE AT ALL LEVELS: FEDERAL, STATE AND COUNTY RELATING TO THE PERFORMANCE OF THIS WORK.

7. ALL EROSION CONTROL DEVICES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN AND EROSION CONTROL DETAILS, PRIOR TO START OF CONSTRUCTION (CCC 40.386 AND CLARK COUNTY STORMWATER MANUAL (CCSWM)).

8. THE DEVELOPER SHALL OBTAIN ALL OFFSITE CONSTRUCTION EASEMENTS PRIOR TO THE START OF CONSTRUCTION. THE APPLICANT SHALL VERIFY THAT ALL OFFSITE UTILITIES EASEMENTS HAVE BEEN OBTAINED BY THE OWNER PRIOR TO PLAN APPROVAL FOR OFFSITE CONSTRUCTION.

9. A CLARK COUNTY APPROVED MEDALLION WITH THE WORDS "PROTECT WATER, ONLY RAIN IN DRAIN" MESSAGE SHALL BE INSTALLED AT ALL CATCH BASINS, INLETS AND MANHOLES CAPABLE OF ACCEPTING STORMWATER.

10. PER CCWMB SIGNS SHALL BE INSTALLED AS FOLLOWS:

   "ALONG WATER QUALITY BIOFILTRATION SYSTEMS TO READ
   "WATER QUALITY FILTER - PLEASE LEAVE VEGETATED"

   "FENCED RETENTION AND DETENTION BASINS TO READ
   "[PUBLIC/PRIVATE] STORMWATER CONTROL FACILITY"

   PRIVATE SYSTEMS NOT MAINTAINED BY CLARK COUNTY SHALL INCLUDE ADDRESS AND CONTACT INFORMATION OF RESPONSIBLE PARTY.

   REFER TO STANDARD DETAILS, CCWMB BOOK 2 FOR STANDARD SIGN LAYOUT.

11. VEGETATION IN STORMWATER FACILITIES SHALL BECOME FULLY ESTABLISHED PRIOR TO COMMENCING WITH INSTALLATION OF PAVEMENT FOR ALL AREAS DRAINING INTO THE WATER QUALITY SYSTEM. WATER QUALITY SWALES SHOULD BE GENERALLY VEGETATED WITH RECOMMENDED GRASSES IN THE SWALE BOTTOM; GRASSES, GROUND COVER, AND SHRUBS ON THE SIDE SLOPES; AND GROUND COVERS, SHRUBS, AND TREES ON THE ADJACENT DRY AREAS. PLANTING PLANS MUST BE INDIVIDUALLY TAILORED TO UNIQUE CONDITIONS AT EACH SITE.

12. PER CCC 40.386 AND CCWMB, ALL LOTS WITHIN THE URBAN GROWTH AREA MUST BE DESIGNED TO PROVIDE POSITIVE DRAINAGE FROM BOTTOM OF FOOTINGS TO AN APPROVED STORMWATER SYSTEM. POSITIVE DRAINAGE MAY BE ACCOMPLISHED BY THE USE OF THE BMP’S SHOWN IN THE CCWMB, BOOK 2.

13. PRIVATE SYSTEMS MUST MEET PLUMBING CODE, HAVE AN OPERATIONS AND MAINTENANCE MANUAL, MAINTENANCE COVNETANT OVER THE REQUIRED EASEMENT, AND COVNETANT TO CLARK COUNTY FOR INSPECTION AND REVIEW.
1.3 PER CCC 40.386 AND CCSWM, ALL LOTS WITHIN THE URBAN GROWTH AREA MUST BE DESIGNED TO PROVIDE POSITIVE DRAINAGE FROM BOTTOM OF FOOTINGS TO AN APPROVED STORMWATER SYSTEM. POSITIVE DRAINAGE MAY BE ACCOMPLISHED BY THE USE OF THE BMP’S SHOWN IN THE CCSWM, BOOK 2.

PRIVATE SYSTEMS MUST MEET PLUMBING CODE, HAVE AN OPERATIONS AND MAINTENANCE MANUAL, MAINTENANCE COVENANT OVER THE REQUIRED EASEMENT, AND COVENANT TO CLARK COUNTY FOR INSPECTION AND REVIEW.
NOTES:

1. MANHOLE RINGS AND COVERS SHALL BE IN ACCORDANCE WITH AASHTO M-199 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT STANDARD SPECIFICATIONS.

2. HANDHOLDS IN ADJUSTMENT SECTION SHALL HAVE 3" MIN. CLEARANCE. STEPS IN MANHOLE SHALL HAVE 6" MIN. CLEARANCE. SEE STD. DETAIL D1.5, "MANHOLE DETAILS."

3. MANHOLE RINGS AND COVERS SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS SEC. 7-05 AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.

4. ALL PRECAST CONCRETE SHALL BE CLASS 4000.

5. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HANDHOLDS, AND TOP SLABS, SEE STD. DETAIL D1.5, "MANHOLE DETAILS."

6. NOT FOR USE IN TRAFFIC BEARING AREAS.

48" DIAM. RISER
SECTION CASTED TO PIPE BY FABRICATOR

MORTAR

REINFORCED CONCRETE PIPE 48" MIN. DIAM.

SECTION A-A
NOTES:
1. COVER MATERIAL TO BE DUCTILE IRON ASTM A536 GRADE B0-55-06.
2. RING MATERIAL TO BE GRAY CAST IRON ASTM A-48 CLASS 30.
3. SEE WSDOT STANDARD SPECIFICATIONS SEC. 7-05.
4. RING AND COVER TO BE MACHINED TO A TRUE BEARING ALL AROUND.
5. NOTCH LID FOR LIFTING HOOK.
NOTES:

1. CURB INLET TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS SHOWN ON PLANS OR NOTED IN WSDOT STANDARD SPECIFICATIONS.

2. REINFORCING FOR INLET UNIT, 3 EA. #4 HORIZONTAL BARS.

3. REINFORCING FOR TOP UNIT, 2 EA. #3 HORIZONTAL BARS.

4. ALL REBAR TO MEET ASTM A615 GRADE 60.

5. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MIN. AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A497. WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS.

6. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4,000.

7. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MIN. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT.

8. KNOCKOUTS OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAM. PLUS INLET WALL THICKNESS.

9. KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAX. DIAM. OF 17".

10. THE MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".

11. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED Flush WITH THE INSIDE WALLS AND GROUTED TO THE SATISFACTION OF ENGINEER.

12. CURTAIN IS TAPERED DOWN TO INLET.

13. INSTALL REMOVABLE OUTLET PIPE TRAP OR EQUAL SEE STD. DETAIL 02.1.

14. CONTRACTOR SHALL HAVE THE OPTION OF FURNISHING PRECAST OR CAST-IN-PLACE INLET STRUCTURES, UNLESS SPECIFIED.

15. 4" STORMWATER MEDALLION (FIG. 9.1 CCSWM, BOOK 2).
DRILL 3/4" VENT HOLE AT TOP OF TRAP

3/4" IPS GAS PIPE
GAS PIPE

0.5"

4"

16"

FF57575
MATERIAL HOPE

LOW PROFILE ELBOW

ZYMARK, ULTRATECH, BONAIR BRANDS OR EQUIVALENT

23.75"

9.8"

15.75"

3/4" HOPE SHEET

0.25"

1.5"

0.25"

12"

12"

1/4"

0.25"

0.25"

5"

6.25"

6.25"

OUTLET PIPE

PIPE WALL TRIMMED FLUSH WITH INSIDE WALL OF INLET AND GROUTED INSIDE & OUTSIDE

INSTALL PER MANUFACTURERS SPECIFICATIONS. DO NOT GROUT TRAP – TRAP TO BE REMOVABLE FOR MAINTENANCE

FF57576
MATERIAL HOPE

10" HOPE FLAT FACE ADAPTOR
FORD FABRICATIONS OR EQUIVALENT

DEBRIS TRAP

01/30/15

APPROVED

COUNTY ENGINEER

DETAILED

D2.1

Department of Public Works

CLARK COUNTY
WASHINGTON

proud past, promising future
NOTES:

1. COMBINATION CURB INLET TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS SHOWN ON PLANS OR NOTED IN WSDOT STANDARD SPECIFICATIONS.

2. REINFORCING FOR INLET UNIT, 3 EA. #4 HORIZONTAL BARS; REINFORCING FOR TOP UNIT, 2 EA. #3 HORIZONTAL BARS; REINFORCING FOR INLET SLOPED BASE, 4x4 MESH.

3. ALL REBAR TO MEET ASTM A615 GRADE 60.

4. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MIN. AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A497. WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS.

5. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000.

6. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MIN. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT.

7. KNOCKOUTS OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAM. PLUS INLET WALL THICKNESS.

8. ROUND KNOCKOUTS MAY BE ON ALL 4 SIDES WITH MAX. DIAM. OF 20".

9. THE MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".

10. ANY PROTRUING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED TO THE SATISFACTION OF ENGINEER.

11. GRATE TO HAVE 1" DEPRESSION AT GUTTER INLET WITH GUTTER TO BE TAPERED DOWN TO INLET.

12. INSTALL REMOVABLE OUTLET PIPE TRAP OR EQUAL. SEE STD. DETAIL D2.1

13. CONTRACTOR SHALL HAVE THE OPTION OF FURNISHING PRECAST OR CAST-IN-PLACE INLET STRUCTURES, UNLESS SPECIFIED.

14. SEE STD. DETAIL 4.1 FOR BASIN GUTTER PAN DETAIL.

15. 4" STORMWATER MEDALLION (FIG. 9.1 CC506M, BOOK 2).
NOTES:
1. DRAIN BASIN TO BE 24" DIAMETER NYLOPLAST OR EQUAL (ROUND) STRUCTURE.
2. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO
   PLANS DETAILS.
3. VARIOUS TYPES OF INLET & OUTLET ADAPTERS AVAILABLE:
   4" - 18" FOR CORRUGATED HOPE (ADS N-12, ADS SINGLE
   WALL, HANCOR DUAL WALL), SDR 35, SCH 40 PVC,
   CORRUGATED & RIBBED PVC.
4. DRAINAGE CONSTRUCTION STUB JOINT TIGHTNESS SHALL
   CONFORM TO ASTM D3212 FOR CORRUGATED HOPE (ADS &
   HANCOR DUAL WALL) & SDR 35 PVC.
5. MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE
   INVERT IS 5'-0''.
6. BACKFILL MATERIAL BELOW & TO SIDE OF STRUCTURE
   SHALL BE ASTM D2211 CLASS I OR II CRUSHED STONE OR
   GRAVEL, PLACED UNIFORMLY. BACKFILL TO MEET WSDOT
   M41-10 & AASHTO T-99 95% COMPACTION.
7. DRAINAGE FRAME & GRATE SHALL BE IN ACCORDANCE
   WITH WSDOT STANDARD SPECIFICATIONS & MEET THE
   STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION
   RR-T-621D. MATING SURFACES SHALL BE FINISHED TO
   ASSURE NON-ROCKING FIT ANY COVER POSITION.
8. FRAME MUST BE INSTALLED WITH FLANGE DOWN.
   BASE PLATE SHALL BE DUCTILE IRON PER ASTM A536
   GRADE 70-30-05.
9. ALL CAST-IN-PLACE CONCRETE SHALL BE CLASS 4,000.
   4" STORMWATER MEDALLION (CCSMM, BOOK 2).
NOTES:

1. DRAIN BASIN TO BE 24" DIAMETER NYLOPLAST OR EQUAL (ROUND) STRUCTURE.
2. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
3. VARIOUS TYPES OF INLET & OUTLET ADAPTERS AVAILABLE: 4" - 24" FOR CORRUGATED HDPE (ADS N-12, ADS SINGLE WALL, HANCOR DUAL WALL), SDR 35, SCH 40 DWV, CORRUGATED & RIBBED PVC.
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC.
5. THE MAX DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".
6. BACKFILL MATERIAL BELOW & TO SIDE OF STRUCTURE SHALL BE ASTM D2312 CLASS I OR II CRUSHED STONE OR GRAVEL, PLACED UNIFORMLY. BACKFILL TO MEET WSDOT M41-10 & AASHTO T-99 95% COMPACTION.
7. DRAIN BASIN FRAME & GRATE SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS & MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-6210. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
8. FRAME MUST BE INSTALLED WITH FLANGE DOWN.
9. BASE PLATE SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
10. ALL CAST-IN-PLACE CONCRETE SHALL BE CLASS 4,000.
11. 4# STORMWATER MEDALLION (CCSWM, BOOK 2).
NOTES:

1. THIS FRAME IS DESIGNED TO ACCOMMODATE 20" x 24" GRATES OR COVERS AS SHOWN ON STD. DETAILS D4.3 AND D4.4.

2. WHEN BOLT DOWN GRATES OR COVERS ARE SPECIFIED, PROVIDE TWO HOLES IN THE FRAME THAT ARE VERTICALLY ALIGNED WITH THE GRATE OR COVER SLOTS. TAP EACH HOLE TO ACCEPT A 5/8" x 2" - 11 NC ALLEN HEAD CAP SCREW. LOCATION OF BOLT DOWN HOLES VARIES AMONG DIFFERENT MANUFACTURERS.

3. REFER TO WSDOT STANDARD SPECIFICATIONS 9-05.15(2) FOR ADDITIONAL REQUIREMENTS.

4. SEE WSDOT STANDARD SPECIFICATIONS SECTION 7-05.
8 LEVELING PADS
2" x 1-1/8" x 1/8"

SEE SLOT DETAIL & NOTE 7

NOTES:
1. WELDING NOT PERMITTED.
2. USE VANED GRATE PER STD. DETAIL D4.4 WHERE LONGITUDINAL SLOPE EXCEEDS 4%.
3. WHEN BOLT DOWN GRATES ARE SPECIFIED, PROVIDE TWO SLOTS IN THE GRATE THAT ARE VERTICALLY ALIGNED WITH THE HOLES IN THE FRAME. LOCATION OF BOLT DOWN SLOTS VARIES AMONG DIFFERENT MANUFACTURERS.
4. REFER TO WSDOT STANDARD SPECIFICATIONS 9-05.15(2) FOR ADDITIONAL REQUIREMENTS.
5. FOR FRAME DETAIL, SEE STD. DETAIL D4.2.
6. THE THICKNESS OF THE GRATE SHALL NOT EXCEED 1-5/8".
NOTES:

1. WELDING NOT PERMITTED.

2. USE HERRINGBONE GRATE PER STD. DETAIL D4.3 WHERE LONGITUDINAL SLOPE IS LESS THAN 4%.

3. WHEN BOLT DOWN GRATES ARE SPECIFIED, PROVIDE TWO SLOTS IN THE GRATE THAT ARE VERTICALLY ALIGNED WITH THE HOLES IN THE FRAME. LOCATION OF BOLT DOWN SLOTS VARIES AMONG DIFFERENT MANUFACTURERS.

4. REFER TO WSDOT STANDARD SPECIFICATIONS 9-05.15(2) FOR ADDITIONAL REQUIREMENTS.

5. FOR FRAME DETAIL, SEE STD. DETAIL D4.2.
NOTES:

1. WELDING NOT PERMITTED
2. USE ROLLED CURB VANE GRATE PER STD. DETAIL D4.7 WHERE LONGITUDINAL SLOPE IS GREATER THAN 4%.
3. MATERIAL IS CAST IRON ASTM A48 CLASS 30.
4. SEE WSDOT STANDARD SPECIFICATIONS SECTION 7-05.

LEVELING PAD
8 - 3/4" X 2 1/4" X 1/8"

PLAN

SECTION A-A

15"x22" OPENING
NOTES:

1. WELDING NOT PERMITTED.

2. USE ROLLED CURB VANE GRATE PER STD. DETAIL 04.7 WHERE LONGITUDINAL SLOPE IS GREATER THAN 4%.

3. SET FRAME TO GRADE AND CONSTRUCT ROAD AND CURB TO BE FLUSH AT FRONT AND BACK OF FRAME.

4. SEE WSDOT STANDARD SPECIFICATIONS SECTION 7-05.
NOTES:

1. WELDING NOT PERMITTED.

2. USE ROLLED CURB VANED GRADE WHERE LONGITUDINAL SLOPE IS GREATER THAN 4%.

3. MATERIAL IS CAST IRON ASTM A48 CLASS 30.

4. SEE WSDOT STANDARD SPECIFICATIONS SECTION 7-05.
CAST IRON BELL
GRATE SEE NOTE 4

CONCRETE PIPE
SECTION

4" MIN. CONCRETE
CLASS B

SEE TABLE

AREA INLET APPROVED FOR USE IN
PRIVATE STORM DRAIN SYSTEMS ONLY

NOTES:

1. AREA INLETS TO BE CONSTRUCTED FROM CONCRETE PIPE, IN ACCORDANCE WITH
   ASTM C 414 UNLESS OTHERWISE SHOWN ON THE PLANS OR NOTED IN THE
   STANDARD SPECIFICATIONS.

2. KNOCKOUTS OR CUTOUT HOLE SIZE IS EQUAL TO THE OUTLET PIPE OUTSIDE
   DIAMETER PLUS AREA INLET WALL THICKNESS.

3. CONNECTION TO OUTLET PIPE TO BE MORTARED (INSIDE/OUTSIDE) AND MADE
   FLUSH WITH INSIDE OF THE AREA INLET WALL.

4. CAST IRON BELL GRATE SHALL MEET THE STRENGTH REQUIREMENTS OF FEDERAL
   SPECIFICATIONS RR-F-621D. THE GRATE SHALL HAVE SLOTS (HOLES) THAT
   CONSTITUTE 50% OPEN AREA FOR DRAINAGE. INLET BELL SURFACE SHALL BE
   FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.

5. AREA INLET TO BE USED FOR PRIVATE STORM SYSTEMS ONLY.
NOTES:

1. DITCH INLET CONSTRUCTION IN ACCORDANCE WITH ASTM C-478.

2. CATCH BASIN, FRAME, AND GRATES SHALL BE FLAT BAR STEEL OR APPROVED EQUAL.

3. INSIDE FRAME DIMENSIONS: 2'-3 3/8"x 2'-8 1/2".

4. 3/8" CROSS BARS SHALL BE FLUSH WITH THE GRATE SURFACE AND MAY BE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO HAVING BARS.
PIECE SUPPORT(S): 2"X0.075" ALUMINUM OR .079" STAINLESS STEEL, BOLTED OR EMBEDDED 2" INTO WALL, USE 1/2" BOLTS

NOTES:

1. EXCEPT AS SHOWN OR NOTED, UNITS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS FOR WSDOT CATCH BASIN TYPE 2, 60" MINIMUM DIAMETER. SEE WSDOT STANDARD PLAN R-10.20-00.

2. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HANDHELD, AND TOP SLABS, SEE STD. DETAIL D1.5.

3. CPSSP-CORRUGATED POLYETHYLENE STORM SEWER PIPE.
SIX EVENLY SPACED HOLES ON 10 3/8" BOLT CIRCLE FOR BOLTING TO FLANGE CONNECTION.

HANDLE WITH LOCK PIN

ADJUSTABLE LOCK HOOK WITH LOCK SCREW

1" ROD OR TUBING, VARIABLE LENGTH

LIFT HANDLE

LEVEL LINE

LIFT HANDLE SHALL BE ATTACHED PER MANUFACTURER’S RECOMMENDATIONS.

MAXIMUM OPENING OF GATE

SHEAR GATE NOTES:

1. SHEAR GATE SHALL BE ALUMINUM ALLOY PER ASTM B-261-ZG-32a OR CAST IRON ASTM A48 CLASS 30B AS REQUIRED.

2. GATE SHALL BE 8" DIAM. UNLESS OTHERWISE SPECIFIED.

3. GATE SHALL BE JOINED TO TEE SECTION BY BOLTING (THROUGH FLANGE), WELDING, OR OTHER SECURE MEANS.

4. LIFT ROD: AS SPECIFIED BY MFR. WITH HANDLE EXTENDING TO WITHIN ONE FOOT OF COVER AND ADJUSTABLE HOOK LOCK FASTENED TO FRAME OR UPPER HANDHOLD. IF ATTACHED TO STEPS, MAKE SURE IT DOES NOT CREATE A TRIP HAZARD OR REDUCE ENTRY SPACE. MUST BE OPERATIONAL WITHOUT ENTERING MANHOLE.

5. GATE SHALL NOT OPEN BEYOND THE CLEAR OPENING BY LIMITED HINGE MOVEMENT, STOP TAB, OR SOME OTHER DEVICE.

6. NEOPRENE RUBBER GASKET REQUIRED BETWEEN RISER MOUNTING FLANGE AND GATE FLANGE.

7. MATING SURFACES OF LID AND BODY TO BE MACHINED FOR PROPER FIT.

8. FLANGE MOUNTING BOLTS SHALL BE 3/8" DIAM. STAINLESS STEEL.

9. ALTERNATE CLEANOUT/SHEAR GATES TO THE DESIGN SHOWN ARE ACCEPTABLE, PROVIDED THEY MEET THE MATERIAL SPECIFICATIONS ABOVE AND HAVE A SIX BOLTS, 10-3/8" BOLT CIRCLE FOR BOLTING TO THE FLANGE CONNECTION.

FLOW CONTROL DEVICE NOTES:

10. EXCEPT AS SHOWN OR NOTED, UNITS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS FOR WSDOT CATCH BASIN TYPE 2, 54" MIN. DIA.

11. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HANDHOLDS, AND TOP SLABS, SEE STD. DETAIL D1.5.

12. THE RESTRICTOR/SEPARATOR AND PIPE SUPPORTS SHALL BE OF THE SAME MATERIAL AND SHALL BE FABRICATED FROM 0.060" ALUMINUM OR 0.064" ALUMINIZED STEEL OR 0.064" GALVANIZED STEEL PIPE IN ACCORDANCE WITH AASHTO M 36, M 196, M 197 AND M 274. GALVANIZED STEEL SHALL HAVE TREATMENT 1.

13. OUTLET SHALL BE CONNECTED TO CULVERT OR SEWER PIPE WITH A STANDARD COUPLING BAND FOR CORRUGATED METAL PIPE OR GROUTED INTO THE BELL OF CONCRETE PIPE.

14. THE VERTICAL RISER STEM OF THE RESTRICTOR/SEPARATOR SHALL BE THE SAME DIAMETER AS THE HORIZONTAL OUTLET PIPE WITH AN 8" MIN. SIZE.

15. FRAME AND LADDER, OR STEPS TO BE OFFSET SO THAT:
   A. CLEANOUT GATE IS VISIBLE FROM TOP.
   B. CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE.
   C. FRAME IS CLEAR OF CURB (IF ANY EXISTS).

16. MULTI-ORIFICE ELBOWS MAY BE LOCATED AS SHOWN OR ALL ON ONE SIDE OF RISER TO ASSURE LADDER CLEARANCE. SIZE OF ELBOWS TO BE DETERMINED BY ENGINEER.

17. RESTRICTOR PLATE WITH ORIFICE AS SPECIFIED IN THE PLANS. OMIT PLATE IF ONLY FOR OIL POLLUTION CONTROL. SPECIFIED OPENING TO BE CUT ROUND AND SMOOTH EDGED.

Department of Public Works
CLARK COUNTY WASHINGTON

CATCH BASIN TYPE 2 - SHEAR GATE DETAIL
AND NOTES (CONTINUED FROM DB.1)
NOTES:

1. PIPE SIZE, SLOPES AND ALL ELEVATIONS: PER PLANS.
2. OUTLET CAPACITY: NOT LESS THAN COMBINED INLETS.
3. EXCEPT AS SHOWN OR NOTED, UNIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS FOR WSDOT CATCH BASIN TYPE 2, 72" MIN. DIA.
4. COVERS: ROUND, SOLID MARKED "DRAIN," WITH BOLT DOWN COVER, SEE STD. DETAIL D1.7.
5. ORIFICES: SIZED AND LOCATED AS REQUIRED, WITH LOWEST ORIFICE MIN. 2" FROM BASE.
6. BAFFLE WALL SHALL HAVE #4 BAR AT 12" SPACING EACH WAY.
7. PRECAST BAFFLE WALL SHALL BE KEYED AND GROUTED IN PLACE.
8. BOTTOM ORIFICE PLATE TO BE 1/4" MIN. STAINLESS STEEL OR POLYETHYLENE EQUIVALENT AND ATTACHED WITH 1/2" STAINLESS STEEL BOLTS. OMIT ORIFICE PLATE IF ONLY FOR OIL SEPARATION.
9. UPPER FLOW ORIFICE SHALL BE ALUMINUM, ALUMINIZED STEEL OR STAINLESS STEEL. SEE STD. DETAIL D8.1.
NOTES:

1. All precast sections shall conform to requirements of A.S.T.M. C478.

2. Precast cone sections may be eccentric or concentric.

3. All piping to and from precast drywells shall have at least 8" of crushed rock cover continuously around pipe where drain rock would otherwise be in contact with pipe.

4. Perforations shall be horizontal rows of (14) 2-1/4" square or (14) 2-3/8" round holes, equally spaced. Rows shall be spaced 6-1/2" center to center.

5. Gravel backfill for drywells per WSDOT standard specifications 9-03.12(5).


7. Typical drywell depth is 13'.

8. Seepage port orientation varies among manufacturers.
FLOW CONTROL - MANHOLE SEE STD. DETAILS D8 & D9

DITCH INLET PER STD. DETAIL D6

3:1 MAX. GRADED SIDE SLOPE

SWALE BOTTOM (SEE STD. SWALE SECTION)

2' MIN.

FLOW SPREADER - INSTALLED AT 50' INTERVAL

6' CHAIN LINK FENCE ON PROPERTY LINE
(SEE STD. DETAIL WHERE REQUIRED)

OVERFLOW BYPASS

GATE PER STD. DETAIL D26

10' WIDE (MIN.) TYPE 3 CONCRETE
APPROACH FACILITY ACCESS & EMERGENCY
OVERFLOW

EMERGENCY OVERFLOW

5:1 MAX

CONCRETE BIOSEDIMENTATION TRAP
PER STD. DETAIL D11.5

1' FREEBOARD VARY

TOP DIVIDER BERM

FLOW SPREADER RAMP @ 5:1 MAX.

2' MIN.

10' FREEBOARD VARY

TOP DIVIDER BERM

OVERFLOW

8' MIN.

SEE STD. SWALE SECTIONS

NOTE:
SWALE DESIGN REQUIRES A MINIMUM OF
9 MINUTES OF RESIDENCE TIME (n=0.20)

SWALE BOTTOM - LONGITUDINAL SLOPE 1-2.5%
PROVIDE UNDERDRAINS FOR SLOPES < 1.5%

SECTION A-A

SECTION B-B

DIOFILTRATION SWALE 2' MIN. BOTTOM WIDTH FOR MAINTENANCE PURPOSES

MAX. WATER SURFACE ELEVATION

NOTE:
1. THE DESIGN OF THE STORMWATER FACILITIES
   SHALL MEET THE DESIGN STANDARD AS SET
   FORTH IN CCC 40.386 AND CCCSWM.
2. THIS DETAIL IS AN EXAMPLE STORMWATER
   FACILITY FOR URBAN INFILL. EACH SWALE
   NEEDS TO BE ENGINEERED TO SITE SPECIFIC
   CONDITIONS AND ELEVATIONS.
3. SEE STANDARD SWALE SECTIONS, AND FLOW
   SPREADER DETAILS.

Department of
Public Works
CLARK COUNTY
WASHINGTON

EXAMPLE STORMWATER FACILITY
FOR URBAN INFILL DEVELOPMENT

Proud past, promising future

01/07/16

CLARK COUNTY ENGINEER

D11.0

01/07/16

DOW

08/03/16

H. M. Way

S. Way

S. Way
MAINTENANCE ACCESS ROAD (MODULAR GRID PAVEMENT, POROUS PAVEMENT, ASPHALT, CONCRETE OR GRAVEL) FOR VEHICULAR ACCESS

INLET

VEHICLE TURN-AROUND

30'

R = 15'

CONCRETE BIOSWALE SEDIMENTATION TRAP
PER STD. DETAIL D11.5

FLOW SPREADER AT —
MINIMUM 50' INTERVAL

5' WIDE MAINTENANCE ACCESS
RAMP 5:1 MAX. SLOPE

SWALE BOTTOM—LONGITUDINAL SLOPE 1-2.5%
PROVIDE UNDERDRAINS FOR SLOPES < 1.5%

NOTE:
SWALE DESIGN REQUIRES A MINIMUM OF
9 MINUTES OF RESIDENCE TIME.
MINIMUM LENGTH = 100'

NOTES:

1. THE DESIGN OF WATER QUALITY FACILITIES SHALL MEET THE DESIGN STANDARD AS SET FORTH IN CCC 40.386.

2. THIS DETAIL IS AN EXAMPLE BIOFILTRATION SWALE FOR STORMWATER TREATMENT.

3. SEE STANDARD SWALE SECTIONS, AND FLOW SPREADER DETAILS.
NOTE: IF BIOFILTRATION SWALE IS INSTALLED DURING A PERIOD OF WET WEATHER, IT CAN BE ESTABLISHED BY SODDING. SINCE SOD IS NOT AVAILABLE IN RECOMMENDED GRASSES, IT SHOULD BE OVER SOWN WITH A RECOMMENDED MIX AT THE BEGINNING OF THE GROWING SEASON. IT IS RECOMMENDED TO INSTALL A SOD THAT IS A MIX OF CREEPING FESCUE AND HARD & SHEEP FESCUES.

NOTES:

1. THE DESIGN OF WATER QUALITY FACILITIES SHALL MEET THE STANDARD AS SET FORTH IN CCC 40.386 AND CCSWM.
2. SOD SHALL BE LAID PERPENDICULAR TO SLOPE FROM BOTTOM TO TOP, WITH JOINTS STAGGERED.
3. FOR NATIVE SOILS WITH CLASSIFICATIONS A-1-a, A-1-b, A-3, A-2-4, AND A-2-5 AS DEFINED IN AASHTO SPEC. M145, INSTALL A 30 MIL GEOTEXTILE LINER OR EQUIVALENT WITH PERMEABILITY RATE OF (LESS THAN) 2.4 INCHES/HOUR.
4. SWALE LONGITUDINAL SLOPE: 1%-2.5% MAX. UNDERDRAINS REQUIRED FOR SLOPES LESS THAN 1.5%, SEE STD. DETAIL D11.3.
5. SWALE SHALL HAVE A VIALBE STAND OF VEGETATION APPROVED BY THE COUNTY INSPECTOR PRIOR TO PAVING.
6. FOR LOW-GROWING TURF SEED MIX, SEE TABLE 8.2 IN CCSWM, BOOK 2 - BMP DESIGN.
7. FOR WET AREA SEED MIX, SEE TABLE 8.4 IN CCSWM, BOOK 2 - BMP DESIGN.
NOTE:
IF BIOFILTRATION SWALE IS INSTALLED DURING A PERIOD OF WET WEATHER, IT CAN BE ESTABLISHED BY SODDING. SINCE SOD IS NOT AVAILABLE IN RECOMMENDED GRASSES, IT SHOULD BE OVER SOWN WITH A RECOMMENDED MIX AT THE BEGINNING OF THE GROWING SEASON. IT IS RECOMMENDED TO INSTALL A SOD THAT IS A MIX OF CREEPING FESCUE AND HARD & SHEEP FESCUES.

NOTES:
1. THE DESIGN OF WATER QUALITY FACILITIES SHALL MEET THE STANDARD AS SET FORTH IN CCC 40.386 AND CCSWM.
2. SOD SHALL BE LAID PERPENDICULAR TO SLOPE FROM BOTTOM TO TOP, WITH JOINTS STAGGERED.
3. INSTALL MINAFI 140N FILTER FABRIC OR EQUIVALENT ABOVE DRAIN ROCK.
4. UNDERDRAIN MUST INFILTRATE OR DRAIN FREELY TO AN ACCEPTABLE DISCHARGE POINT.
5. SWALE SHALL HAVE A VAILABLE STAND OF VEGETATION APPROVED BY THE COUNTY INSPECTOR PRIOR TO PAVING.
6. FOR LOW-GROWING TURF SEED MIX, SEE TABLE 8.2 IN CCSWM, BOOK 2 – BMP DESIGN.
7. FOR WET AREA SEED MIX, SEE TABLE 8.4 IN CCSWM, BOOK 2 – BMP DESIGN.
NOTES:

1. LEVEL SPREADERS SHALL BE INSTALLED AT A MINIMUM INTERVAL OF 50', TO KEEP THE FLOWS FROM CONCENTRATING. THE SPREADER SHALL BE INSTALLED LEVEL AND ON CONTOUR.

2. CONCRETE SPREADER SHALL BE CAST-IN-PLACE, TOP OF SPREADER SHALL BE BROOM FINISHED IN THE DIRECTION OF FLOW.

3. SEE STD. DETAIL D11.2 FOR SEED MIX.
2-REMOVABLE TRASH SCREEN
6"x 1 1/2"x 0.08" THICK
ALUMINUM - GRIP STRUT OR EQUIV.

1-1/2" x 2-3/4" BLOCK OUT
AT EACH SIDE AND BOTTOM OF WEIR
TO RECEIVE TRASH SCREEN

STORM DRAIN OUTLET
PIPE OR S/W UNDERDRAIN

NOTE:
1. ALL CONCRETE SHALL BE 3000 PSI.
2. STRUCTURE CAN BE USED AS AN AFFECTIVE
   TEMPORARY EROSION CONTROL SEDIMENTATION
   TRAP DURING SITE GRADING.
3. TRASH SCREEN CAN BE LINED WITH FILTER
   FABRIC FOR SEDIMENT REMOVAL.
4. SEDIMENTATION TRAP IS REQUIRED WITH ALL
   SWALES, UNLESS OMISSION APPROVED BY
   REVIEWING AUTHORITY.
NOTES:

1. DRAIN ROCK SHALL BE LINED ON BOTH SIDES AND OVER LAPPED ON TOP WITH GEOTEXTILE MATERIAL.

2. THE INFILTRATION TRENCH IS GENERALLY USED FOR SMALL DRAINAGE AREAS, AN EMERGENCY SPILLWAY MAY NOT BE NECESSARY. HOWEVER, AN OVERFLOW OUTLET MAY BE REQUIRED TO BE PROVIDED.

3. AN OBSERVATION WELL SHOULD BE INSTALLED AT THE LOWER END OF THE INFILTRATION TRENCH TO CHECK WATER LEVELS, DRAWDOWN TIME, SEDIMENT ACCUMULATION, AND CONDUCT WATER QUALITY MONITORING. FOR LARGER TRENCHES A 12"-36" WELL CAN BE INSTALLED TO FACILITATE MAINTENANCE OPERATIONS SUCH AS PUMPING OUT OF SEDIMENT. THE TOP OF THE WELL IS TO BE CAPPED TO DISCOURAGE VANDALISM AND TAMPERING. PUBLIC INFILTRATION TRENCH REQUIRES A CLEANOUT TO BE INSTALLED AT END OF PERFORATED PIPE.

4. THE STONE AGGREGATE IS TO BE PLACED IN LIFTS AND COMPACTED USING PLATE COMPACTORS. THE MAXIMUM LOOSE LIFT THICKNESS IS TO BE 12".


6. VOIDS BETWEEN THE GEOTEXTILE AND THE EXCAVATION SIDES MUST BE AVOIDED.

7. IF VERTICALLY EXCAVATED WALLS BECOME DIFFICULT TO MAINTAIN, USE TRAPEZOIDAL SECTION.

8. PER CCSWM BMP T5.108.

Approved for private storm drain system
NOTE:
Air tight seal is accomplished when PVC hub (No. 5) is driven into rubber sleeve (No. 2) causing the rubber sleeve to compress between pipe wall (No. 1).

CONCRETE OR CLAY

PVC

PROFILE WALL

NOTES:

1. Mainline pipe wall where branch line is connected.
2. Complete rubber sleeve consisting of C-443 specifications.
3. Rubber segment which is molded onto the rubber sleeve. This segment snaps out on the inside of the drilled hole (plastic pipe only) and helps hold the fitting in place, not creating the seal.
4. Rubber segment which is molded into the rubber sleeve. This prevents the rubber sleeve from going through the drilled hole when PVC hub is being driven into the rubber sleeve.
5. SDR-35 PVC hub (ASTM D-3034 sewer pipe) which is driven into the center of the rubber sleeve after the rubber sleeve is in the hole.
6. Stainless steel band, put on above as an added precaution.
NOTES:

1. FOR INSTALLATION OF DRAINAGE PIPE IN NEW DEVELOPMENT.

2. GENERAL PIPE INSTALLATION REQUIREMENTS SHALL BE PER SECTION 7-08 OF WSDOT STANDARD SPECIFICATIONS.

3. TRENCH BACKFILL SHALL CONFORM TO CCC 40.356.030(C)(4)(e).

4. PIPE ZONE AND BEDDING MATERIAL SHALL CONFORM TO WSDOT STANDARD SPECIFICATIONS 9-03.12(3).

5. GRAVEL BACKFILL PER WSDOT SPECIFICATIONS SECTION 9-03.19, AND COMPACTED TO 95% MAX. DENSITY (AASHTO T-99). NATIVE SOILS MAY BE USED UPON APPROVAL BY REVIEWING AUTHORITY IF TESTING SHOWS MATERIAL IS CLASSIFIED AS A-1 OR A-3 BY AASHTO.

6. OUTSIDE THE ROADWAY PRISM, SUITABLE NATIVE BACKFILL SHALL BE COMPACTED TO 90% MAX. DENSITY (AASHTO T-99).

7. ALL COMPACTION SHALL BE IN ACCORDANCE WITH THE COMPACTION CONTROL TEST OF WSDOT STANDARD SPECIFICATIONS 2-03.3(14)D.

8. CONTACT CCPW FOR NATIVE MATERIAL FOR TRENCH BACKFILL APPROVAL FORM.

Department of Public Works
CLARK COUNTY
WASHINGTON

PIPE BEDDING AND BACKFILL

D14

01/07/16

[Signature]
COUNTY ENGINEER

[Signature]
RESIDENT

[Signature]
DRAWN
"5" CAST IN OR STAMPED ON LID

#4 REBAR (TYP)

NOTE: "W" CASTING ON LID NOT ALLOWED.

1/4" Ø ROD CAST INTEGRLY INTO LID

#4 REBAR (TYP)

3.5" MIN.

NOTE: MATERIAL TO BE GRAY CAST IRON CONFORMING TO ASTM A-46 CLASS 30.

NOTE: TOLERANCE = 1/8"

NOTE: CLEANOUT TO BE SAME SIZE AND TYPE AS MAIN SEWER LINE. 8" MAXIMUM.

CAST IRON VALVE BOX AND COVER NO. 910

VALVE BOX SHALL BE FORT VANCOUVER PATTERN NO. 910 CAST IRON OR APPROVED EQUAL
NOTE:
1. TRENCH TO BE LOCATED 100' MIN. FROM SEPTIC DRAINFIELD (WHERE APPLICABLE).
2. PER CCESS BMP T5.10B.
3. TRENCH TO BE LOCATED 10' MIN. FROM ANY PROPERTY LINE.
4. TRENCH TO BE LOCATED 10' MIN. FROM BUILDING FOUNDATION.

POSSIBLE ALIGNMENTS

DEPARTMENT OF PUBLIC WORKS
CLARK COUNTY WASHINGTON

TYPICAL DOWNSPOUT INfiltrATION SYSTEM
INfiltrATION TRENCH (SINGLE-FAMILY HOME)

APPROVED 01/07/16
COUNTY ENGINEER
CONNECT OVERFLOW TO AN APPROVED INTERCEPTOR SYSTEM AS REQUIRED (OPTIONAL)

CB SUMP W/ SOLID LID

FLOW

48" DIA. HOLE FILLED WITH 1 1/2"-3" CLEAN DRAIN ROCK

PLAN VIEW

ROOF DOWNSPOUT

HOUSE

FLOW

ROOF DOWNSPOUT

OVERFLOW

SPASH BLOCK

CB SUMP WITH SOLID LID
(WITH TRAFFIC BEARING COVER AS NECESSARY)

MIN. 4" DIA PVC PIPE

MIN. 1" SUMP

1.5' MIN.

5' MIN.

15' MIN.

1' MIN.

4' MIN.

OBSERVATION WELL W/ CAP. SEE STD. DETAIL D12 (OPTIONAL)

LOW POINT FOOTING DRAIN TO SEPARATE SYSTEM

SECTION

NOTE:

1. DRYWELL TO BE LOCATED 100' MIN. FROM SEPTIC DRAINFIELD (WHERE APPLICABLE).
2. PER CCSWM BMP T5.10A.
NOTE:

1. Gabion cribbing to be installed per WSDOT specifications 8-24.3(3) and 9-27.3.

2. Stone for filling gabions shall conform to WSDOT specifications 9-27.3(6).
NOTE:

1. TRENCH DAMS SHALL BE USED AS NEEDED TO PREVENT MIGRATION OF WATER INTO TRENCH BACKFILL.

2. ALTERNATE DESIGNS MAY BE ALLOWED.

3. TRENCH DAMS SHALL BE OF A MATERIAL WITH PERMEABILITY OF NO GREATER THAN $1 \times 10^{-6}$ CM/S.
CONCRETE BLOCK ANCHOR

SECTION A-A

NOTES:

1. FOR HOPP, PIPE MUST BE FREE TO SLIDE INSIDE A 4' LONG SECTION OF PIPE ONE SIZE DIAMETER LARGER.

2. ON SLOPES OF 15% OR GREATER, PIPE SHALL HAVE WATERTIGHT JOINTS.
MATERIAL TO BE ASTM A36
1/4" PLATE GALVANIZED AFTER
FABRICATION PER ASTM A 123

SLOTS TO BE —
1-12/32" x 3/4"

1" R

0.75" DIA

1" - 7/8"

12"

4-1/2"

7/8"

6-3/8"

4-1/8"

7" COUPLING BAND

12" OR 24" COUPLING BAND

ANCHOR ASSEMBLY — CORRUGATED
METAL PIPE (OR EQUIVALENT)

NOTES:

1. PAYMENT FOR PIPE ANCHORS WHICH SHALL
INCLUDE ALL PIPE Stokes AND HARDWARE
SHALL BE CONSIDERED AS INCIDENTAL AND
SHALL NOT BE INCLUDED IN THE PER LINEAR
FOOT COST OF PIPE.

2. THE SMOOTH COUPLING BAND SHALL BE USED
IN COMBINATION WITH CONCRETE PIPE.

3. CONCRETE PIPE WITHOUT BELL AND SPIGOT
SHALL NOT BE INSTALLED ON GRADES IN
EXCESS OF 20%.

4. THE FIRST ANCHOR SHALL BE INSTALLED ON THE FIRST
SECTION OF THE LOWER END OF THE PIPE, AND
REMAINING ANCHORS EVENLY SPACED THROUGHOUT THE
INSTALLATION.

5. IF THE PIPE BEING INSTALLED HAS A MANHOLE OR CATCH
BASIN ON THE LOWER END OF THE PIPE, THE FIRST PIPE
ANCHOR MAY BE ELIMINATED.

6. WHEN C.M.P. IS USED, THE ANCHORS MAY BE ATTACHED
TO THE COUPLING BANDS USED TO JOIN THE PIPE AS
LONG AS THE SPECIFIED SPACING IS NOT EXCEEDED.

7. ALL PIPE ANCHORS SHALL BE SECURELY INSTALLED
BEFORE BACKFILLING AROUND THE PIPE.
END SECTION OF THE PIPE SHALL BE SIX TIMES THE DIAMETER OF THE PIPE

ANCHOR SEE NOTE 3

4:1 OR STEEPER
4" MAX.

THERMOPLASTIC PIPE

4:1 OR STEEPER
4" MAX.

CONCRETE PIPE

12" MIN

METAL PIPE

4:1 OR STEEPER
4" MAX.

NOTES:

1. THE CULVERT ENDS SHALL BE BEVELED TO MATCH THE EMBANKMENT OR DITCH SLOPE, WITHOUT EXCEEDING THE LIMITS SHOWN ON THE PLAN.

2. FIELD CUT OF CULVERT ENDS IS PERMITTED, WHEN APPROVED BY THE ENGINEER. ALL FIELD CUT PIPE CULVERTS SHALL BE TREATED WITH TREATMENT SHOWN IN THE STANDARD SPECIFICATION OR GENERAL SPECIAL PROVISIONS.

3. THE END OF THERMOPLASTIC PIPE SHALL BE ANCHORED. SEE STD. DETAIL D22.

4. FOR PIPES 18" OR LARGER, TRASH SCREEN REQUIRED. SEE STD. DETAIL D25.
3/4"Φ ALUMINUM BAR

(4) 1/4"x2"x8" ALUMINUM STRIPS. BEND AND WELD TO FRAME. SPACE UNIFORMLY

PIPE (18" OR LARGER)

DRILL THROUGH CONC. & THRU-BOLT WITH 1/2" STAINLESS STEEL HEX BOLTS

(2) 1/4"x3" ALUM. STRIPS

VARES

3/4" DIA. ALUM. BARS, WELD ENDS TO FRAME

6" MAX. O.C. SPACING

NOTES:

1. WELD AT ALL JOINTS.
2. SHOP DRAWING REQUIRED.
3. USE WITH PLASTIC PIPE REQUIRES MODIFICATION TO BE REVIEWED AND APPROVED BY COUNTY ENGINEER.
NOT ALLOWED ADJACENT / ALONG ANY STREET, ONLY OFF-SITE FACILITY LOCATION CAN HAVE TOP RAIL.

NOTES:

1. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.

2. CHAIN LINK FENCE FABRIC TO MEET OR EXCEED REQUIREMENTS OF WSDOT STANDARD SPECIFICATIONS 9–16.1.1(1)3 FOR TYPE 1 FENCE (9 GA) 2" DIAMOND. CHAIN LINK FENCE FABRIC SHALL BE HOT DIP GALVANIZED WITH A MINIMUM OF 0.8 OUNCE PER SQUARE FOOT OF SURFACE AREA. FENCING MATERIALS SHALL BE COATED WITH AN ULTRAVIOLET INSSENSITIVE PLASTIC OR OTHER INERT MATERIAL AT LEAST 2 MILS IN THICKNESS. ANY PRETREATED OR COATING SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE MANUFACTURER'S WRITTEN SPECIFICATIONS DETAILING THE PRODUCT AND METHOD OF FABRICATION SHALL BE PROVIDED TO CLARK COUNTY PRIOR TO CONSTRUCTION. THE COLOR SHALL BE BLACK.
Type A-1/E-1 Curb - See Std. Detail F18

Drainage Blockout
3" I.D. PVC Pipe W/ Coupling

2" I.D. PVC Pipe

For Example Only

Vent Screen

House

Vent Screen

5" Higher Than Gutter Line

2% Pipe Grade
(1/4" Rise Per Foot Horiz.)

Slope Varies

12"

18"

6"

6"

5 1/2"

1"

20'

CCC 40.385:
All lots within the urban growth area must be designed to provide positive drainage from bottom of footings to an approved stormwater system. Positive drainage may be accomplished by swales, drywells, french drains, laterals to the street, laterals behind the curb or within a public utility easement, an approved system, in the side or rear setback, or some other method acceptable to the responsible official.
NOTE:
ROOF DOWNSPOUT & LOW POINT CRAWL SPACE DRAIN CONNECTION TO STORM DRAIN
(ALL OTHER APPLICATIONS TO BE APPROVED BY ENGINEERING DEPARTMENT)
ALL LOTS WITHIN THE URBAN GROWTH AREA MUST BE DESIGNED TO PROVIDE POSITIVE DRAINAGE FROM BOTTOM OF FOOTINGS TO AN APPROVED STORMWATER SYSTEM. POSITIVE DRAINAGE MAY BE ACCOMPLISHED BY SWALES, DRYWells, FRENCH DRAINS, LATERALS TO THE STREET, LATERALS BEHIND THE CURB OR WITHIN A PUBLIC UTILITY EASEMENT, AN APPROVED SYSTEM, IN THE SIDE OR REAR SETBACK, OR SOME OTHER METHOD ACCEPTABLE TO THE RESPONSIBLE OFFICIAL.

IRC R401.3 DRAINAGE. SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE OR OTHER APPROVED POINT OF COLLECTION THAT DOES NOT CREATE A HAZARD. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL A MINIMUM OF 6 INCHES (152mm) WITHIN THE FIRST 10 FEET (3048mm).

EXCEPTION: WHERE LOT LINES, WALLS, SLOPES OR OTHER PHYSICAL BARRIERS PROHIBIT 6 INCHES (152mm) OF FALL WITHIN 10 FEET (3048mm), DRAINS OR SWALES SHALL BE CONSTRUCTED TO ENSURE DRAINAGE AWAY FROM THE STRUCTURE. IMPERVIOUS SURFACES WITHIN 10 FEET (3048mm) OF THE STRUCTURE. IMPERVIOUS SURFACES WITHIN 10 FEET (3048mm) OF THE BUILDING FOUNDATION SHALL BE SLOPED A MINIMUM OF 2 PERCENT AWAY FROM THE BUILDING.

PUMPS ARE NOT ALLOWED FOR LOW POINT DRAIN.
ALL LOTS WITHIN THE URBAN GROWTH AREA MUST BE DESIGNED TO PROVIDE POSITIVE DRAINAGE FROM BOTTOM OF FOOTINGS TO AN APPROVED STORMWATER SYSTEM. POSITIVE DRAINAGE MAY BE ACCOMPLISHED BY SWALES, DRYWELLS, FRENCH DRAINS, LATERALS TO THE STREET, LATERALS BEHIND THE CURB OR WITHIN A PUBLIC UTILITY EASEMENT, AN APPROVED SYSTEM, IN THE SIDE OR REAR SETBACK, OR SOME OTHER METHOD ACCEPTABLE TO THE RESPONSIBLE OFFICIAL.

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PUMPS ARE NOT ALLOWED FOR LOW POINT DRAIN.
1. **Take Core Drill (4") and Score Concrete**
   1/8 - 1/4 inch (generator required for power). Use water sprayer to assist concrete cutting.

2. **Place Medallion into Groove.**

3. **Take Hand Drill with 1/4 in. Drill Bit and Drill to 3/4 in. Depth.**

4. **Place Rivet into Hole of Medallion.**

5. **Take a 2-3 pound hand held mallet and drive rivet into hole.**