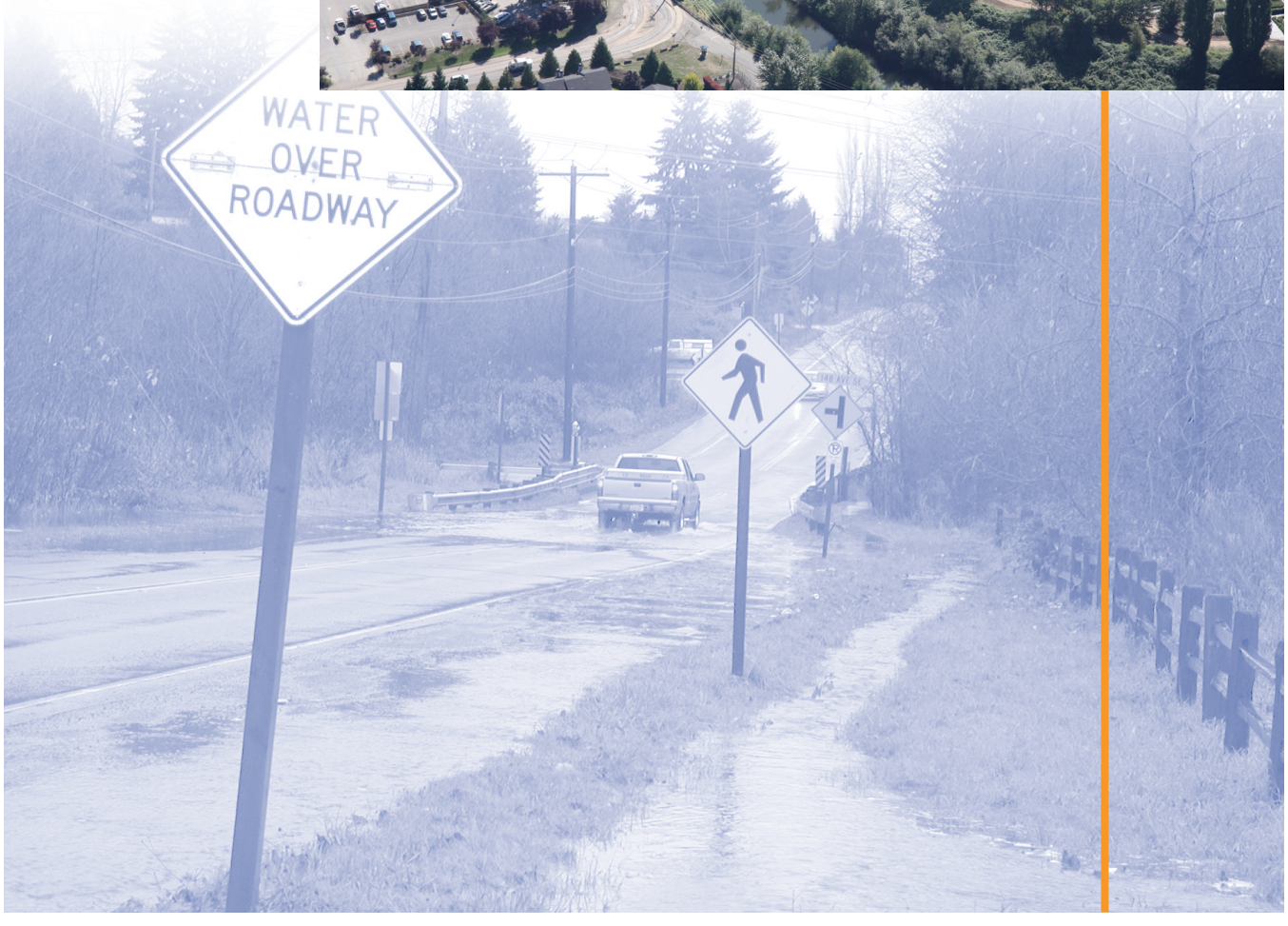
SECTION 5:

Standards for Storm Drainage Systems



5.0 STANDARDS FOR STORM DRAINAGE SYSTEMS

5.1 GENERAL

5.1.A Design Standards

Drainage facilities shall be designed in accordance with the City of Kent Surface Water Design Manual (KSWDM).

5.1.B Specifications

Materials, construction, and testing are specified in Section 7-04 of the WSDOT Standard Specifications.

5.1.C Conflicts

Where technical conflicts may occur between this document and the KSWDM, these Standards shall govern.

5.2 EASEMENTS AND RIGHTS-OF-WAY

Permanent on-site easements for access, maintenance, and construction are required in accordance with KSWDM Section 4.1 for all storm drain extensions located outside of public right-of-way.

Private improvements such as buildings, fences, garages, carports, retaining walls, utilities, signs, light standards, etc., are not allowed in public easements and rights-of-way. Where an encroachment occurs, the Developer shall remove and relocate the conflicting private improvement immediately upon direction from the Engineer.

Easements shall be accessible for construction equipment normally used for the operation and maintenance of the facility. Cross slopes exceeding 5 percent will require a deviation approval of the Engineer.

5.3 STORM WATER SYSTEM AND CULVERTS

5.3.A Pipe Bedding

Pipe bedding shall be placed under and all around the pipe meeting the requirements of gravel backfill for pipe zone bedding per Section 9-03.12(3) of the WSDOT Standard Specifications, latest edition. It shall be compacted in layers around the pipe and to a sufficient height above the pipe to adequately support and protect the pipe to 95 percent compaction ASTM D-1557. See WSDOT Standard Plans and Standard Plan 3-22.

5.3.B Access Roads

Access roads to each catch basin and manhole are required for maintenance. Access and/or maintenance roads (where required) shall be 15' wide and have a minimum inside turning radius of 45'. Access and/or maintenance roads will require an approved all-weather surface, and shall be designed to support an HS-20 vehicle load to support construction equipment and loads. The profile of an access road shall not exceed 15 percent. Access roads with grades exceeding 12 percent shall be paved. Whenever an easement or right-of-way is fenced, a gate shall be installed matching the width of the easement and a City lock must be placed in "series".

All access roads longer than 150' from the nearest face of curb or edge of pavement of the connecting street shall have an approved hammerhead turnaround per Standard Plan 6-21 or shall be looped to connect back to a public street.

5.3.C Casings:

Where a storm water line passes under or through a retaining wall or is attached to a bridge structure, the pipe shall be cased in steel pipe at least 4" larger than the largest outer diameter of the bell or joint of the storm water line. No pipe joints will be allowed within the casing, except on bridge structures or unless otherwise approved by the Engineer. The casing shall extend on either side of the wall a distance equal to the highest height of the retaining wall at the wall penetration, plus 4'. All voids within the casing shall be filled with blown sand except on bridge structures. Casing spacers shall be Cascade Waterworks Manufacturing Company stainless steel casing spacers or approved equal. The casing spacers shall be installed such that the storm water line is centered and restrained within the casing and spaced such that a uniform profile grade will be maintained within the casing.

5.4 CATCH BASIN LOCATIONS AND JUNCTIONS

5.4.A Catch Basins

Catch basins, rather than inlets, shall be used to collect storm water from street surfaces, unless otherwise approved by the Engineer. See Standard Plans 5-1 and 5-2.

5.4.B Connections to Pipe Systems

Connections to pipe systems may be made without placing a catch basin or manhole on the mainline only nin accordance with Standard Plan 5-18. All other connections shall be made at catch basins or manholes.

5.4.C Manholes in Lieu of Catch Basins

Manholes may be used in lieu of catch basins if they do not collect surface water. Manholes must be used if invert elevations are different by more than 18". See Standard Plan 4-1.

5.4.D Control Structure Placement

A control structure shall be placed in a manhole downstream of detention systems utilizing pumps.

5.4.E Roof and Yard Drains

Roof and yard drains, or other concentrated flow from adjacent property, shall not discharge over the surface of streets, sidewalks, pathways, or shoulders.

5.5 FRAMES, GRATES, AND COVERS

5.5.A Metal Castings for Drainage Structures

Metal castings for drainage structures shall not be dipped, painted, welded, plugged or repaired.

5.5.B Porosity in Metal Castings for Drainage Structures

Porosity in metal castings for drainage structures shall be considered a workmanship defect subject to rejection by the Inspector.

5.5.C Casting for Manhole Rings

Castings for manhole rings shall be gray-iron conforming to the requirements of AASHTO M 105, Grade 30B. Covers shall be ductile iron conforming to ASTM A 536, Grade 80-55-06. Manhole rings and covers shall meet the strength requirements of Federal Specification RR-F-621 E. All mating surfaces shall be machine finished to ensure a non-rocking fit.

5.5.D Manhole Rings and Covers Identification

All manhole rings and covers shall be identified as specified in Section 9-05.15 of the WSDOT Standard Specifications and Standard Plans 5-10 or 5-11.

5.5.E Metal Frame Castings for Catch Basins and Inlets

1. Castings for metal frames for catch basins and inlets shall be cast steel, gray iron, or ductile iron as specified in Sections 9-06.8, 9-06.9, or 9-06.14 of the WSDOT Standard Specifications.
2. Castings for metal frames for catch basins, inlets, grates and solid metal covers shall meet the strength requirements of Federal Specification RR-F-621 E.

5.5.F Metal Grates and Covers for Catch Basins and Inlets

Castings for grates and solid metal covers for catch basins and inlets shall be cast steel or ductile iron as specified in Sections 9-06.8 or 9-06.14 of the WSDOT Standard Specifications. The foundry name and material designation shall be embossed on the top of the grate. The material shall be identified as "CS" for cast steel, and "DUC" or "DI" for ductile iron and shall be located near the manufacturer's name. See Standard Plans 5-4 through 5-9.

5.5.G Grate and Cover Seating

Grates and covers shall be seated properly to prevent rocking, including the replacement of existing covers with solid metal covers.

5.5.H Vaned Grates

Unless otherwise specified, vaned grates shall be used with standard frame in the traveled way, gutter, or shoulder. Vaned grates shall not be located within crosswalks. See Standard Plans 5-4 through 5-6.

5.5.I Rolled Curbs

Use rolled curb frame and grates along rolled curbs. See Standard Plan 5-7.

5.5.J Runoff Collection in Catch Basins

New catch basins that do not collect runoff shall use solid locking covers. Existing catch basins, which no longer collect runoff, shall have their frame and grates replaced with new frames and solid covers. See Standard Plan 5-9.

5.5.K Locking Drain Covers and Grates

All storm drain covers and grates shall be locking. All control structures storm drain covers shall be locking regardless of their location.

5.5.L Fencing for Stormwater Facilities

All on-site detention ponds located within commercial or residential zones shall have fencing 6' high. See Standard Plans 5-22 & 5-23.

5.6 TELEVISION INSPECTION

All new storm drain extensions will be TV camera inspected by the City prior to acceptance.

Prior to TV camera inspection:

1. Storm drain lines and catch basins must be cleaned

2. All construction must be completed and approved by the Inspector.
3. The casting and top grade rings do not have to be mudded in until after the finished grade is established.
4. The Developer shall bear all costs for correction of deficiencies found during TV inspection, including all costs for subsequent TV inspections to verify the correction of deficiencies.
5. The Developer shall schedule TV inspections no less than five (5) working days prior to being ready. If the system is not ready, the Developer shall notify the City no later than 24 hours prior to the scheduled time. If the Developer fails to notify the City that they are not ready and the TV inspection crew shows up at the site, the Developer will be responsible for all costs of additional TV inspections to verify the system.
6. All costs for re-inspections including the Inspector's time to come back due to "not being ready" will be the responsibility of the Developer. Costs shall include labor at overtime rates, overhead, equipment, material and any other associated charges. The costs shall be based on the latest cost schedule prepared and approved annually by the Engineer.
7. Sags in storm drain lines indentified during the TV inspection greater than 0.5" shall be repaired by the contractor by removal and re-laying of the pipe. Repaired sections of pipe shall be TV inspected for verification prior to final inspection at the cost of the Developer as described above.

5.7 EROSION CONTROL

All projects shall provide erosion control in accordance with the KSWDM.

DOE requires coverage under the NPDES Construction Stormwater General Permit when the disturbed area for the project exceeds one (1) acre. The NPDES permit requires that a stormwater pollution prevention plan (SWPPP) be developed for all projects covered. A Certified Erosion and Sediment Control Lead shall be required to be onsite during construction. See the Department of Ecology website at:

http://www.ecy.wa.gov/programs/wq/stormwater/construction

See the Kent Surface Water Design Manual, King County Surface Water Design Manual for allowable erosion control best management practices. See Standard Plans 5-27, 5-30 and 5-31 for additional information.

5.8 LOW IMPACT DEVELOPMENT TECHNOLOGIES

The City encourages the use of Low Impact Development (LID) technologies. LID is a stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of

existing natural site features integrated with engineered small scale hydrologic controls to more closely mimic pre-development functions. The goal of LID is to prevent measurable harm to streams, lakes, wetlands, and other natural aquatic systems from residential, commercial, or industrial development sites.

LID technologies include stormwater best management practices designed to reduce runoff from development using infiltration, evapotranspiration, or stormwater reuse. Examples of LID technologies include trees, preservation of native vegetation, porous pavement, bio-retention swales, infiltration systems, dry wells, cisterns, and rain gardens. Examples of these technologies are provided in the 2005 King County Surface Water Design Manual.

5.9 STORM DRAIN SYSTEM STANDARD PLANS

5-1 Catch Basin Type I

5-2 Catch Basin Type II

5-3 Misc. Details for Drainage Structures

5-4 18” x 24” Catch Basin Frame

5-5 18” x 24” Vaned Grate

5-6 18” x 24” 2-Way Vaned Grate

5-7 Through – Curb Inlet Frame

5-8 Through-Curb Inlet Installation

5-9 Solid Catch Basin Cover

5-10 ~~Round Solid Catch Basin Frame and Cover~~

Use WSDOT Standard Plan B-30.70-03 Type 2

5-11 Private Round Catch Basin Cover

5-12 15” X 22” Rolled Curb Frame and Grate

5-13 Beehive Grate

5-14 20” x 24” Catch Basin Frame

5-15 Debris Cage

5-16 Extended Debris Cage

5-17 Catch Basin with Oil/Water Separator

5-18 Field Tapping of Concrete Pipe

5-19 Beveled End Pipe Section

5-20 Trash Screen

5-21 Shear Gate

5-22 Chain Link Fence, Type I for Ponds Only

5-23 Driveway and Walk Gate for Ponds Only

5-24 Tree Planting

5-25 Shrub Planting

5-26 Trench Infiltration System for Small Sites

5-27 Flow Spreader Option Catch Basin with Beehive Grate

5-28 Critical Areas Sign

5-29 Split Rail Fence

5-30 Sample TESC Site Plan, 1 Acre and Smaller

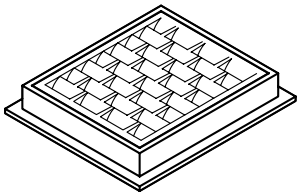
5-31 Filter Fabric Fence

5-32 TESC Sediment Trap Earth Berm

5-33 TESC Interceptor Ditch with Rock Check Dams

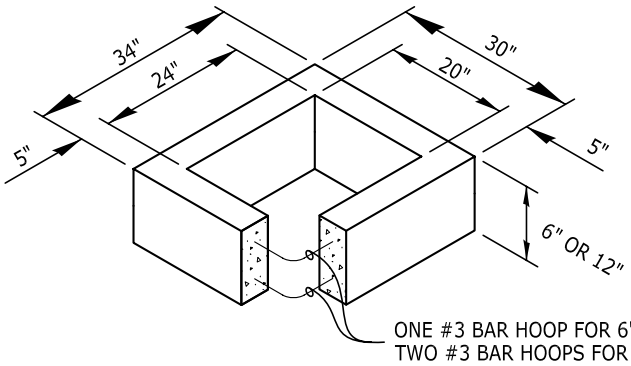
5-34 TESC Pipe Slope Drain

5-35 Temporary Stockpiling



FRAME AND GRATE

SEE STANDARD PLANS 5-4 THRU 5-8 AND 5-12



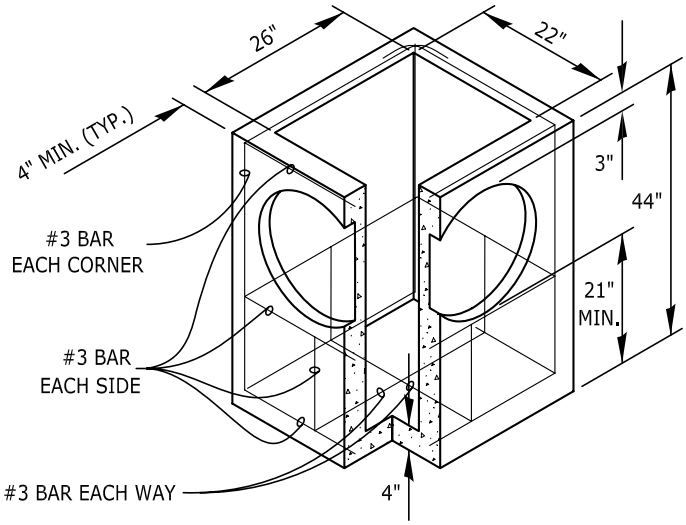
NOTES:

1. CATCH BASIN TO BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199, (ASTM C 478, & ASTM C 890) UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT STANDARD SPECIFICATIONS.
2. AS AN ACCEPTABLE ALTERNATE TO REBAR, WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO AASHTO M 221 (ASTM A 497). WIRE FABRIC SHALL NOT BE PLACED IN THE KNOCKOUTS.
3. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. THE KNOCKOUT DIAMETER SHALL NOT EXCEED 20". KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE.
4. ALL JOINTS IN THE BRICKS, GRADE RINGS, RISERS AND CASTINGS SHALL BE SEATED IN MORTAR. PICK HOLES, CRACKS AND ANY OTHER JOINTS SHALL BE FINISH GROUTED TO PROVIDE A WATERTIGHT STRUCTURE.
5. THE MAXIMUM DEPTH FROM THE FINISHED GRADE TO THE LOWEST PIPE INVERT SHALL BE 5'.

RECTANGULAR ADJUSTMENT SECTION

(WEIGHT - 200 LBS. - 6")

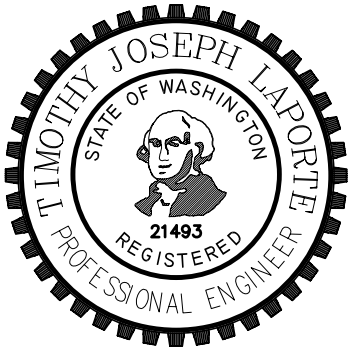
(WEIGHT - 580 LBS. - 12")



PRECAST BASE SECTION

(WEIGHT - 2170 LBS.)

PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER
REINFORCED OR PLAIN CONCRETE	12"
ALL METAL PIPE	15"
SOLID WALL PVC (WSDOT STD. SPEC. 9-05.12(1))	15"



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KENT WASHINGTON

CITY OF KENT
ENGINEERING DEPARTMENT

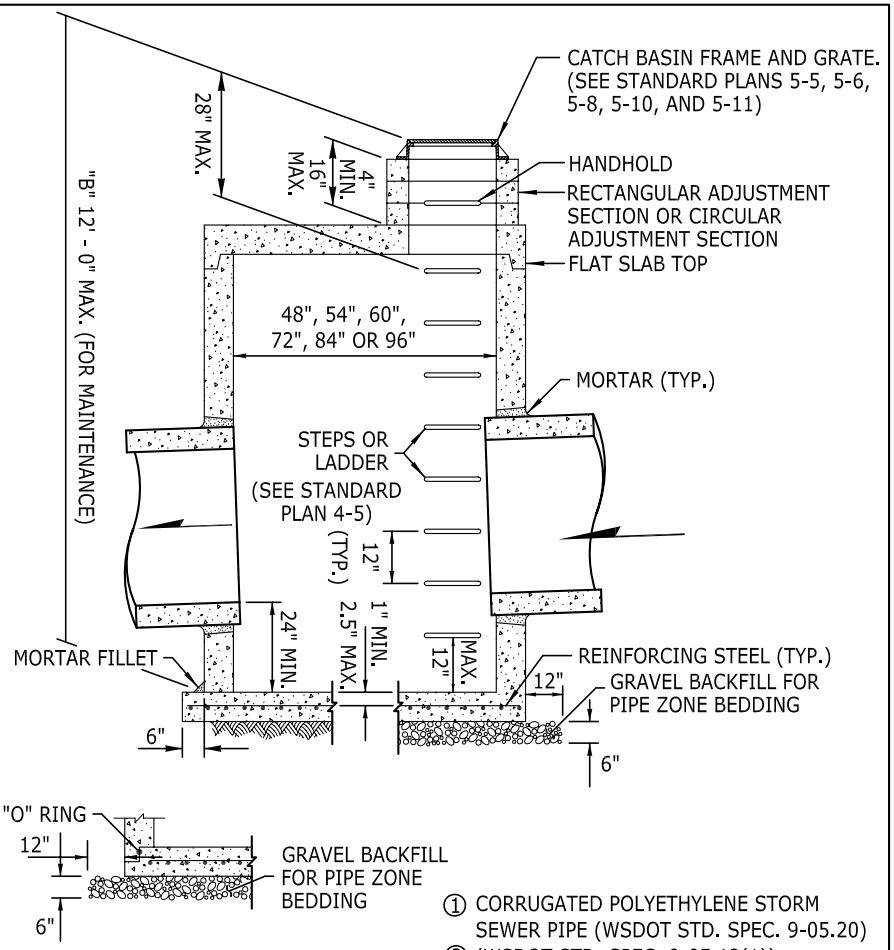
CATCH BASIN TYPE I

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–1
APPROVED ENGINEER		

September 2009

NOTES:

1. CATCH BASINS TO BE CONSTRUCTED IN ACCORDANCE W/ AASHTO M 199, (ASTM C 478, AND ASTM C 890) UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT STD. SPECS.
2. HANDHOLDS IN RISER OR ADJUSTMENT SECTION SHALL HAVE 3" MIN. CLEARANCE. STEPS IN CATCH BASIN SHALL HAVE 6" MIN. CLEARANCE. NO STEPS ARE REQ'D WHEN 'B' IS 4' OR LESS.
3. THE BOTTOM OF THE PRECAST CATCH BASIN MAY BE SLOPED TO FACILITATE CLEANING.
4. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM TO 2.5" MAXIMUM. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 9-04.3.
5. ALL BASE REINFORCING STEEL SHALL HAVE A MIN. YIELD STRENGTH OF 60,000 PSI & BE PLACED IN THE UPPER HALF OF THE BASE WITH 1" MIN. CLEARANCE.
6. PICK HOLES, CRACKS AND ANY OTHER JOINTS SHALL BE FINISHED GROUTED TO PROVIDE A WATERTIGHT STRUCTURE.



① CORRUGATED POLYETHYLENE STORM SEWER PIPE (WSDOT STD. SPEC. 9-05.20)
② (WSDOT STD. SPEC. 9-05.12(1))
③ (WSDOT STD. SPEC. 9-05.12(2))

CATCH BASIN DIMENSIONS						
CATCH BASIN DIA.	WALL THICKNESS	BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	BASE REINFORCING STEEL in²/ft. IN EACH DIRECTION	
					SEPARATE BASE	INTEGRAL BASE
48"	4"	6"	36"	8"	0.23	0.15
54"	4.5"	8"	42"	8"	0.19	0.19
60"	5"	8"	48"	8"	0.25	0.25
72"	6"	8"	60"	12"	0.35	0.24
84"	8"	12"	72"	12"	0.39	0.29
96"	8"	12"	84"	12"	0.39	0.29

PIPE ALLOWANCES					
CATCH BASIN DIAMETER	PIPE MATERIAL WITH MAXIMUM INSIDE DIAMETER				
	CONCRETE	ALL METAL	CPSSP ①	SOLID WALL PVC ②	PROFILE WALL PVC ③
48"	24"	30"	24"	27"	30"
54"	30"	36"	30"	27"	36"
60"	36"	42"	36"	36"	42"
72"	42"	54"	42"	36"	48"
84"	54"	60"	54"	36"	48"
96"	60"	72"	60"	36"	48"

TIMOTHY JOSEPH LAPORTE
PROFESSIONAL ENGINEER
STATE OF WASHINGTON
REGISTERED
21493

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KENT WASHINGTON

DESIGNED DWH
DRAWN BB
CHECKED
APPROVED
DATE
ENGINEER

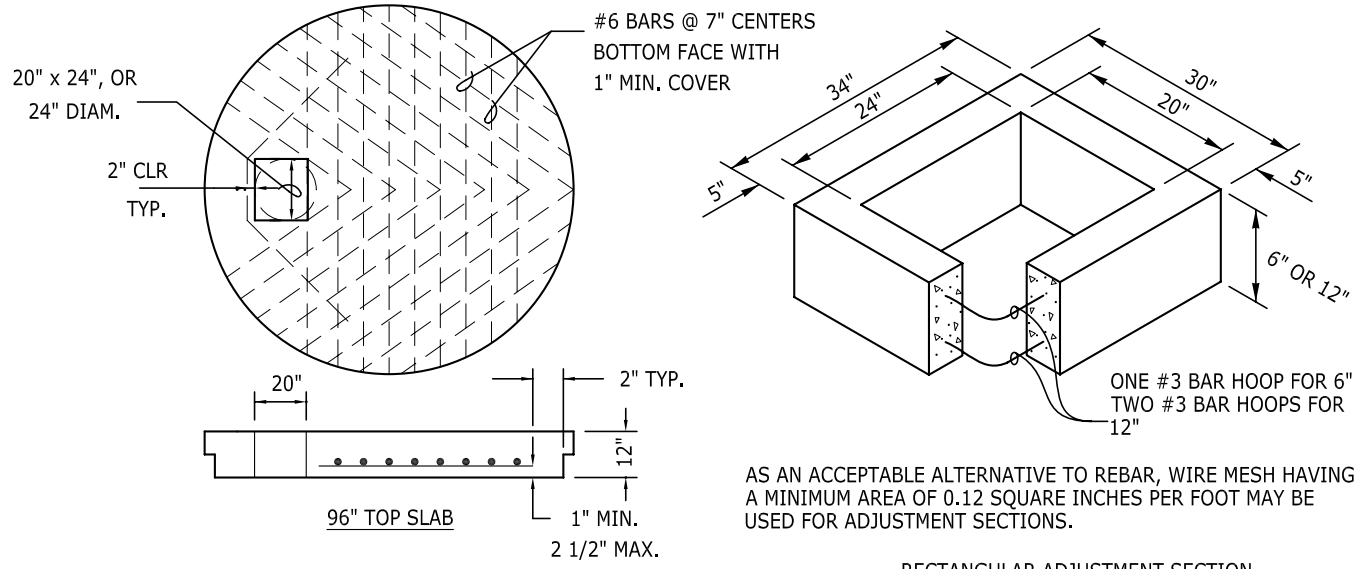
CITY OF KENT
ENGINEERING DEPARTMENT

CATCH BASIN TYPE II

SCALE NONE

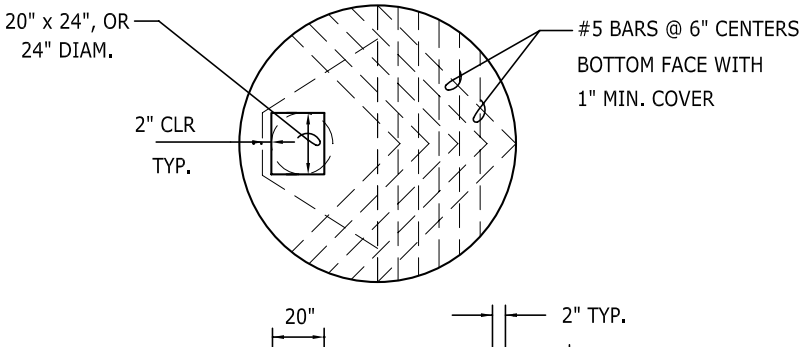
STANDARD PLAN

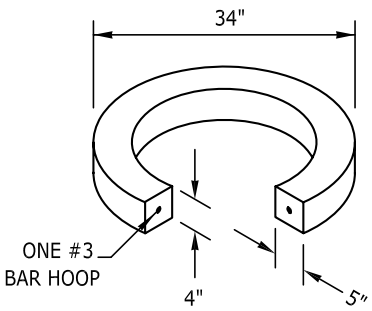
5-2



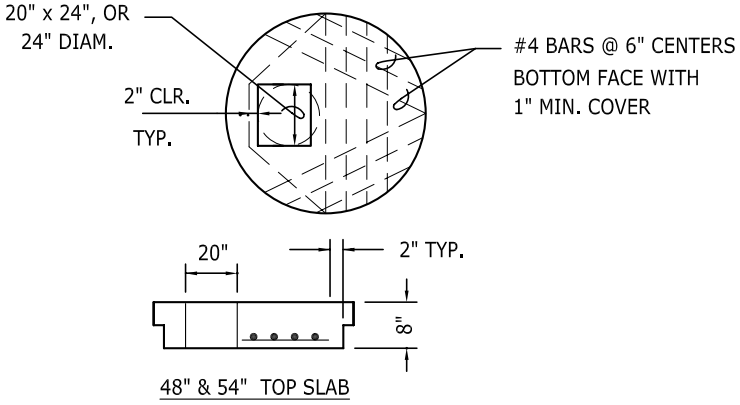
AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WIRE MESH HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED FOR ADJUSTMENT SECTIONS.

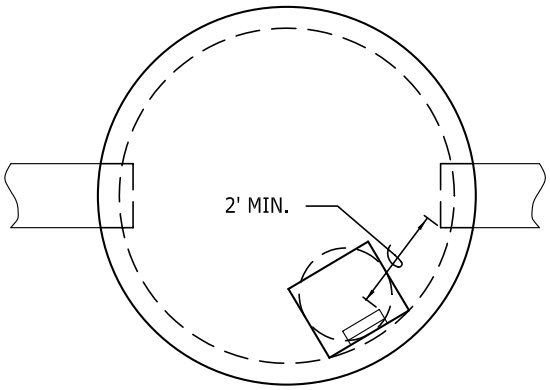
RECTANGULAR ADJUSTMENT SECTION





CIRCULAR ADJUSTMENT SECTION

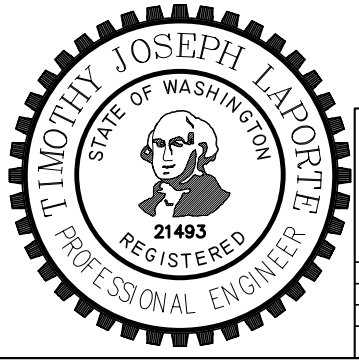




TYPICAL ORIENTATION
FOR ACCESS AND STEPS

NOTES:

1. SLAB OPENING SHALL BE 24" X 20" FOR RECTANGULAR AND 24" DIAMETER FOR ROUND.
2. SEE STANDARD PLAN 4-5 FOR STEP, LADDER AND GRADE RING.
3. ONLY ONE STYLE OF CATCH BASIN STEPS MAY BE USED IN A CATCH BASIN. DO NOT MIX STYLES.



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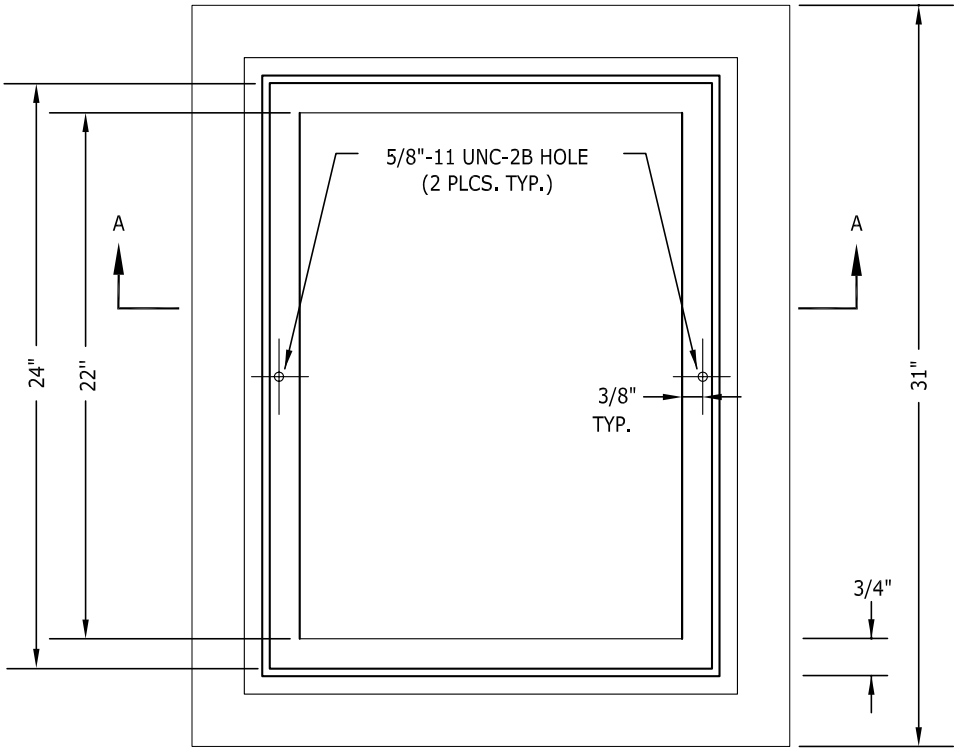
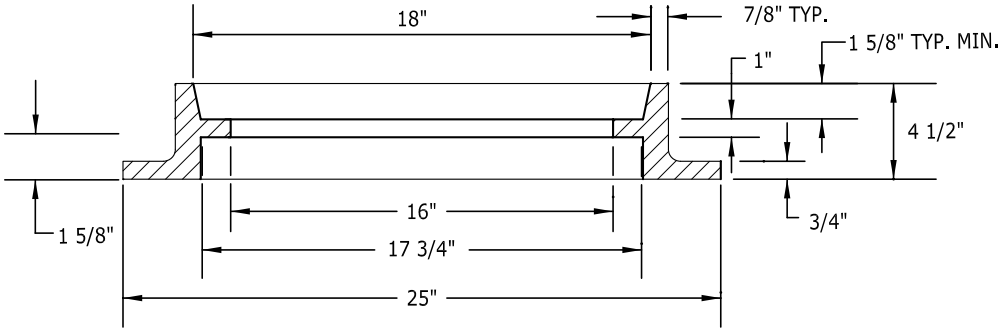
CITY OF KENT
ENGINEERING DEPARTMENT

MISC. DETAILS FOR DRAINAGE STRUCTURES

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–3
APPROVED ENGINEER		



TOP VIEW

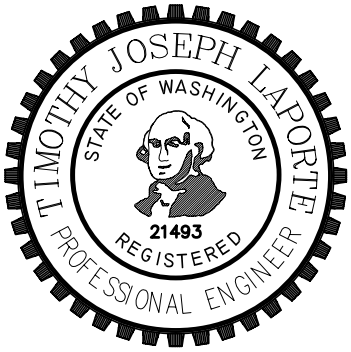


SECTION A-A

NOTES:

1. MATERIAL USED FOR THE FRAME SHALL BE CAST IRON ONLY. (PER ASTM A48 CL30 H-20 LOADING).

2. TOP OF FRAME SHALL BE ADJUSTED EVEN WITH ROADWAY SECTION.



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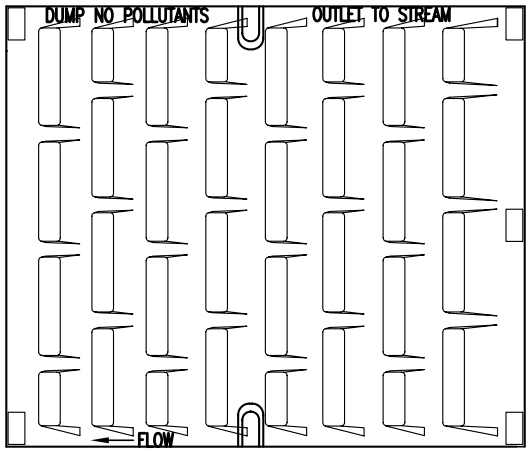
KENT WASHINGTON

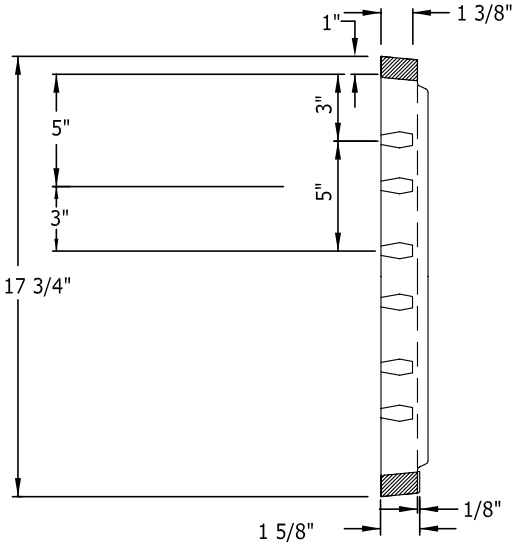
CITY OF KENT
ENGINEERING DEPARTMENT

18"X 24" CATCH BASIN FRAME

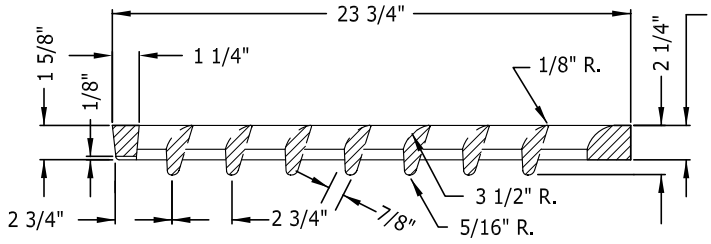
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–4
APPROVED ENGINEER		



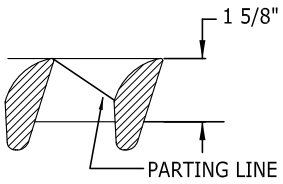
TOP VIEW



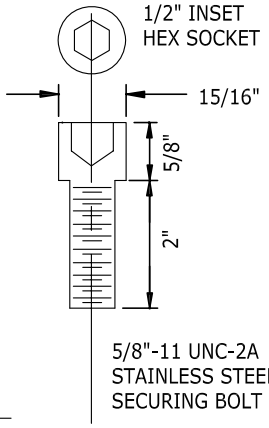
END VIEW

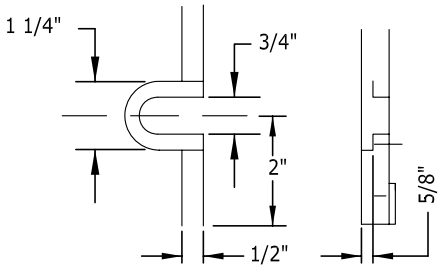


FRONT VIEW



VANE DETAIL



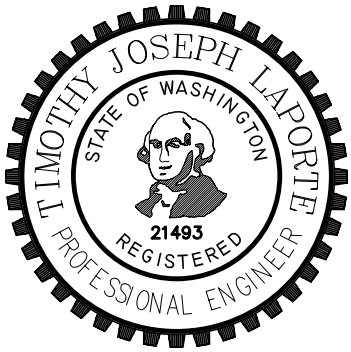


SLOT DETAIL

SLOT FORMED AND RECESSED FOR 5/8" - 11 NC x 2"
S.S. SOCKET HEAD (ALLEN HEAD) CAP SCREW.

NOTES:

1. PROVIDE FRAME SHOWN IN STANDARD PLAN 5-4.
2. PROVIDE 2-5/8" DIAMETER STAINLESS STEEL ALLEN TYPE BOLTS COUNTER SUNK FLUSH WITH COVER.
3. GRATE SHALL BE STAMPED "DUMP NO POLLUTANTS", "OUTLET TO STREAM".
4. ALL LETTERING SHOWN SHALL BE 1/2" AND SHALL BE RECESSED UNLESS OTHERWISE INDICATED IN THE SPECIAL PROVISIONS.
5. DUCTILE IRON ASTM A-536 GRADE 80-55-06 H-20 RATED.
6. GRATE SHALL BE LOCKING.



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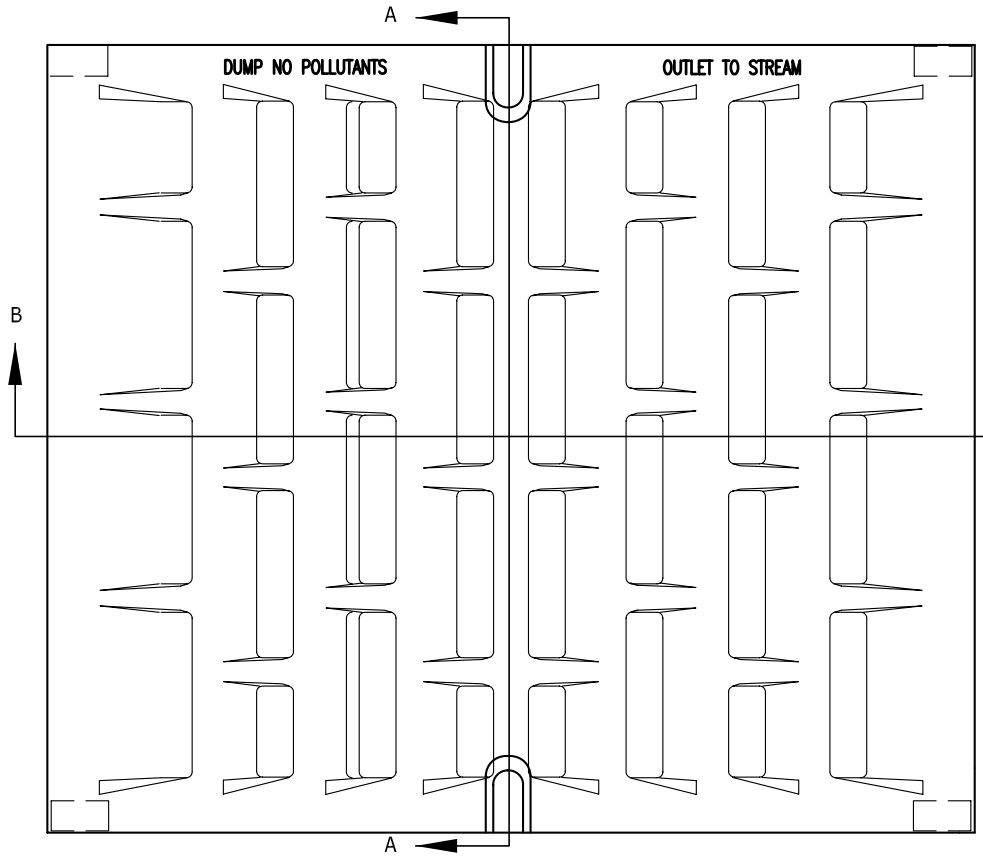
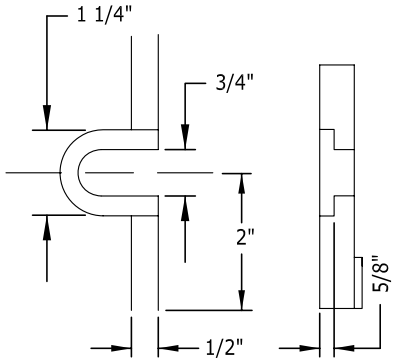
18" x 24" VANED GRATE

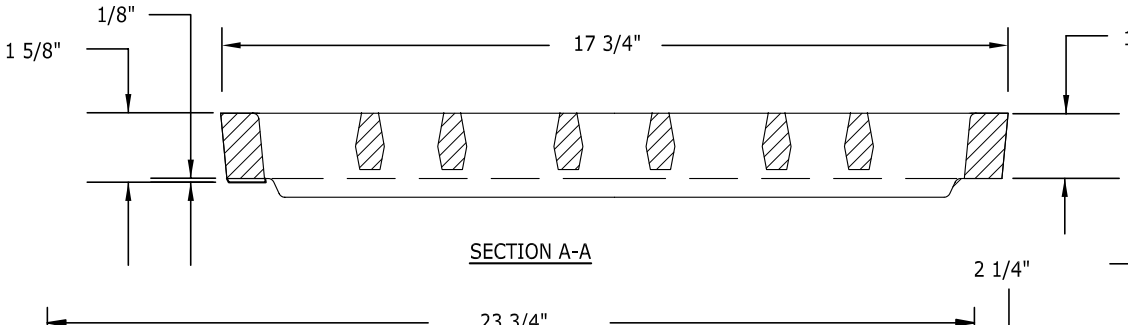
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–5
APPROVED ENGINEER		



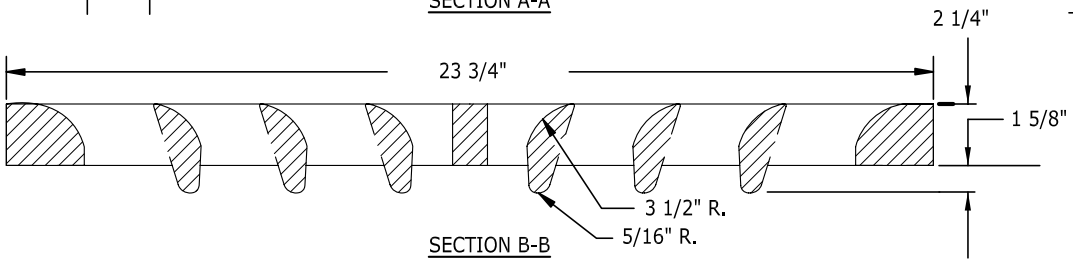


SLOT DETAIL

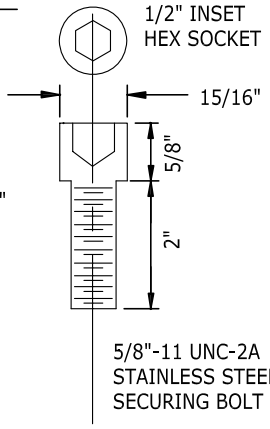
SLOT FORMED AND RECESSED FOR 5/8" - 11 NC x 2" S.S. SOCKET HEAD (ALLEN HEAD) CAP SCREW.



SECTION A-A



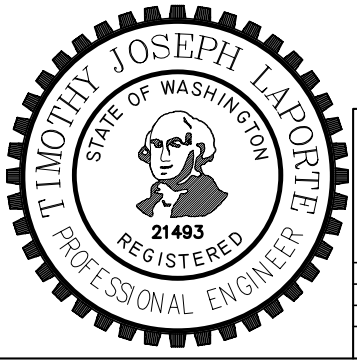
SECTION B-B



5/8"-11 UNC-2A STAINLESS STEEL SECURING BOLT

NOTES:

1. PROVIDE FRAME SHOWN STANDARD PLAN 5-4.
2. FOR THRU CURB INLETS AT LOW POINTS, USE 2-WAY VANED GRATE.
3. GRATE SHALL BE STAMPED "DUMP NO POLLUTANTS", "OUTLET TO STREAM".
4. ALL LETTERING SHOWN SHALL BE 1/2" AND SHALL BE RECESSED.
5. DUCTILE IRON ASTM A-536 GRADE 80-55-06 H-20 RATED.
6. GRATE SHALL BE LOCKING.
7. PROVIDE 2-5/8" DIAMETER STAINLESS STEEL ALLEN TYPE BOLTS COUNTER SUNK FLUSH WITH COVER.



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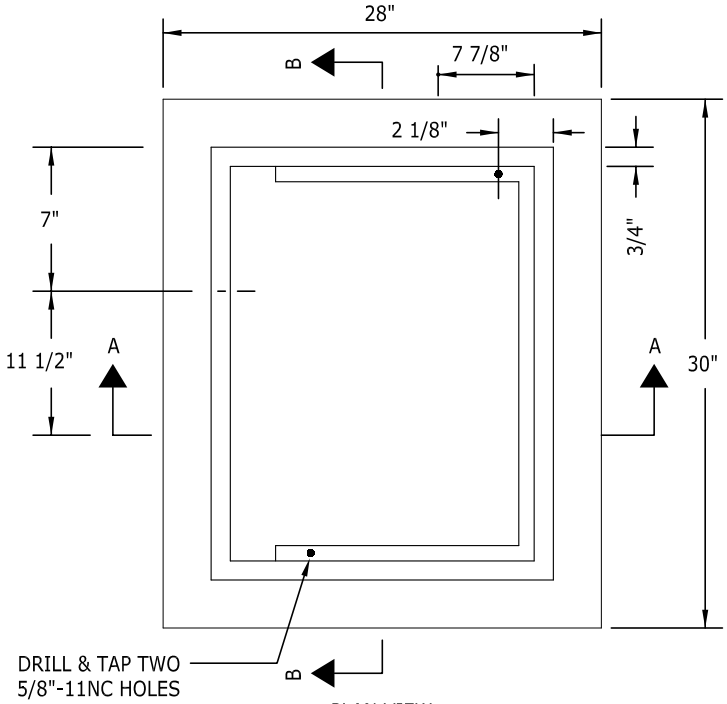
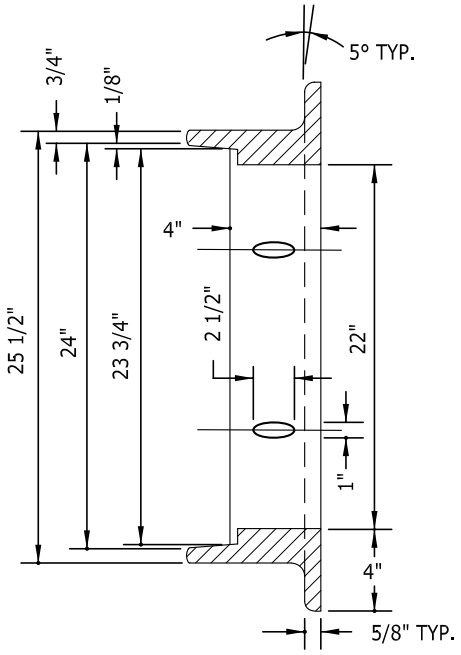
18"x 24"
2-WAY VANED GRATE

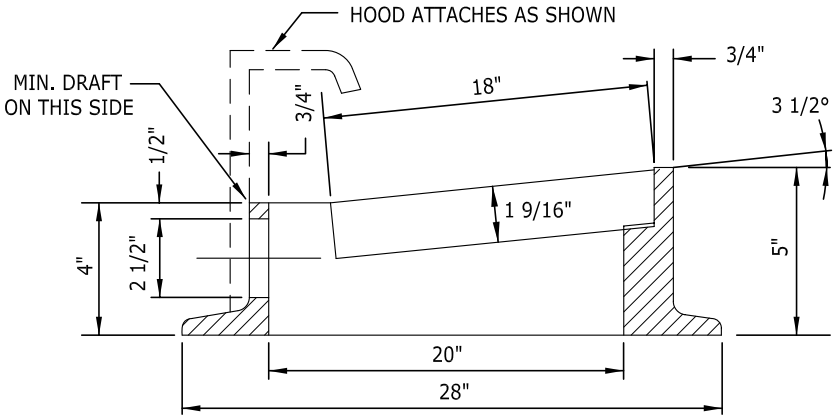
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5-6
APPROVED ENGINEER		



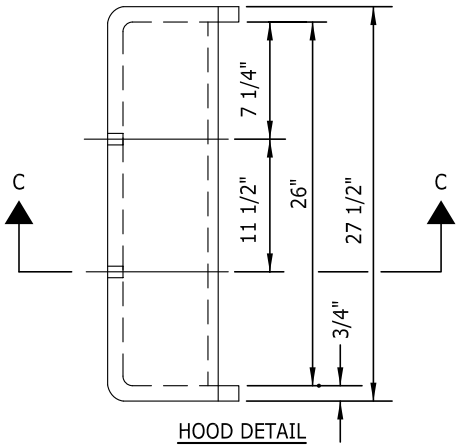
PLAN VIEW



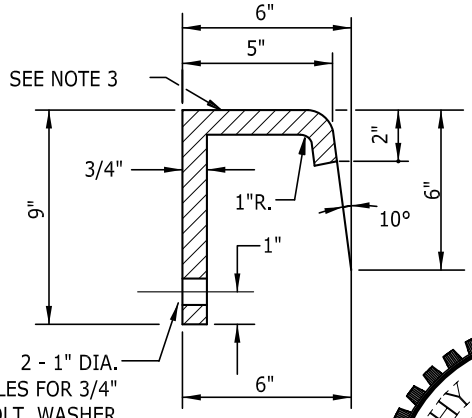
SECTION B-B



SECTION A-A



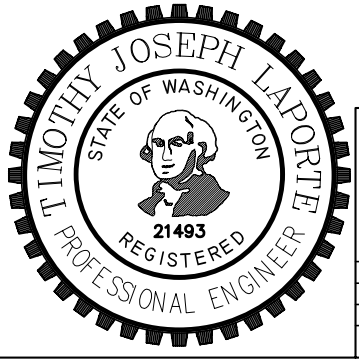
HOOD DETAIL



SECTION C-C

NOTES:

1. FRAME AND HOOD CAST IRON ASTM A48 CL30 H-20 LOADING.
2. USE VANED GRATE AS SHOWN ON STANDARD PLAN 5-5.
3. AT LOW POINTS, USE 2-WAY VANED GRATE AS SHOWN ON STANDARD PLAN 5-6.
4. MAKE 3/16" NON-SKID DIAMOND PATTERN ON TOP SURFACE OF HOOD. SEE STANDARD PLAN 5-9.
5. BOLT, WASHER AND NUT SHALL BE GALVANIZED OR CORROSION RESISTANT.



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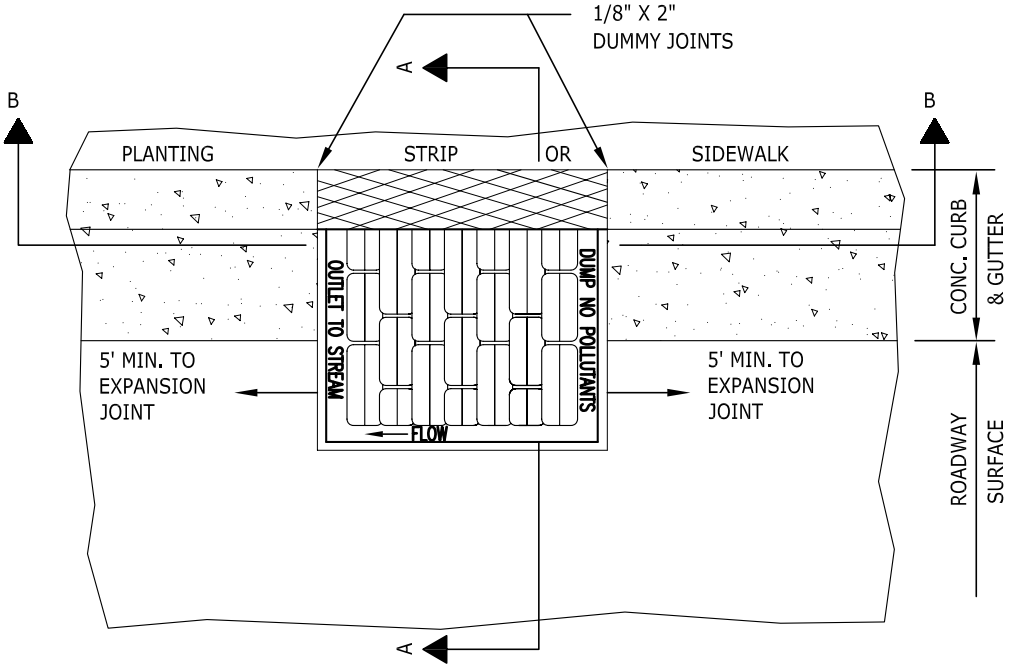
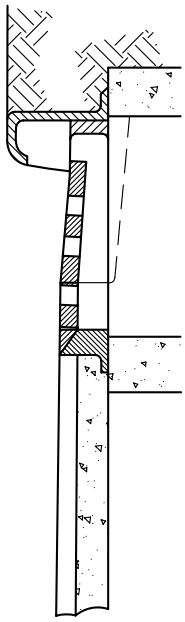
ENGINEERING DEPARTMENT

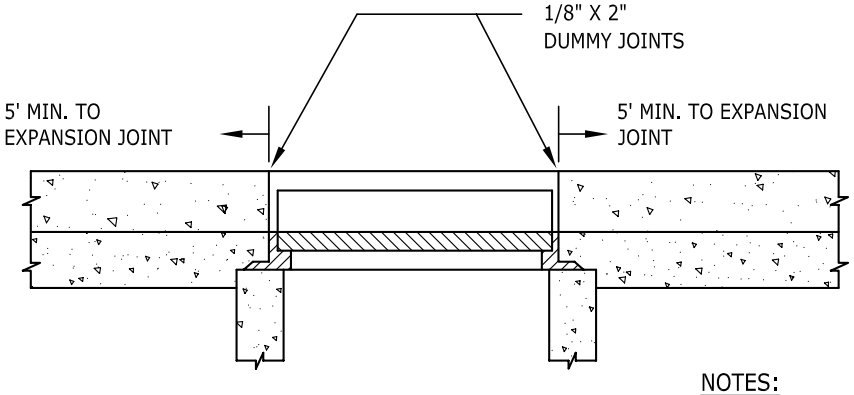
THROUGH–CURB INLET FRAME

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–7
APPROVED ENGINEER		





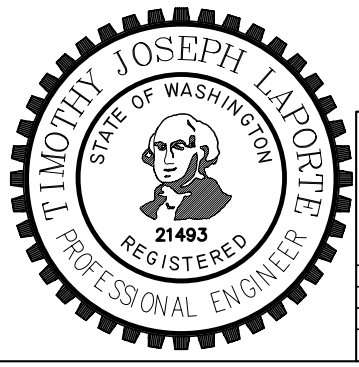
SECTION A-A



SECTION B-B

NOTES:

1. FOR INSTALLATIONS AT LOW POINTS USE 2-WAY VANED GRATE. OTHERWISE, USE STANDARD VANED GRATE.
2. CURB AND GUTTER 5' EITHER SIDE OF CATCH BASIN SHALL BE POURED AT THE TIME OF FRAME AND GRATE INSTALLATION.



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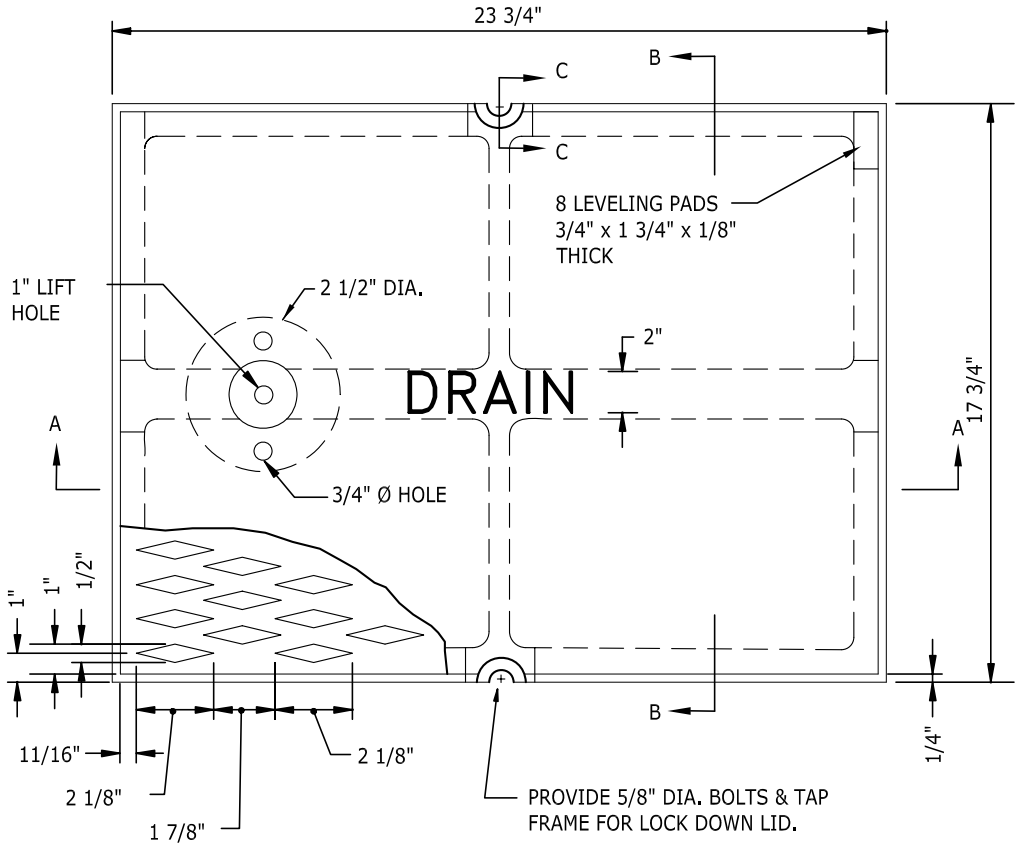
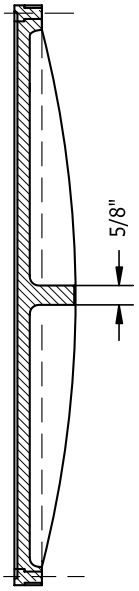
THROUGH–CURB INLET INSTALLATION

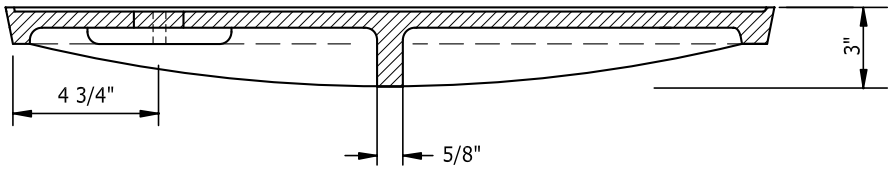
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–8
APPROVED ENGINEER		



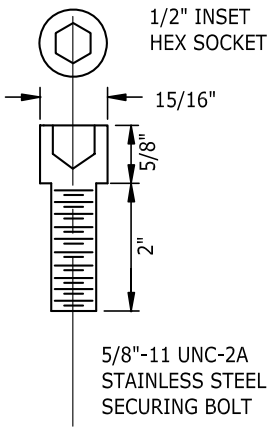
PLAN



SECTION B-B

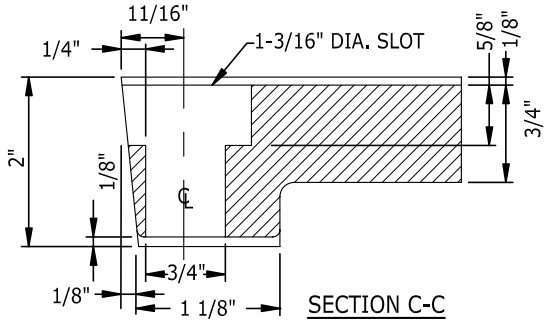


SECTION A-A

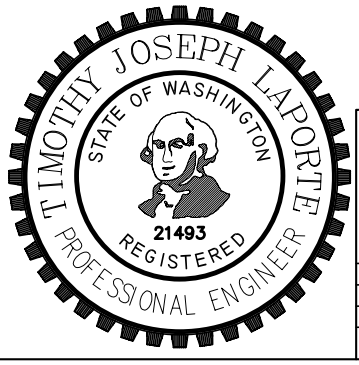


NOTES:

1. WHEN SPECIFIED ON THE APPROVED PLANS, THE SOLID METAL COVER FOR CATCH BASIN SHALL BE FURNISHED IN PLACE OF THE GRATE PROVIDED FOR ON STANDARD PLAN 5-5.
2. RAISED DESIGNS OTHER THAN THE DIAMOND DESIGN SHOWN HEREON MAY BE USED IF APPROVED BY THE ENGINEER.
3. CAST IN THE LETTERS "DRAIN" IN 2" RAISED LETTERS, 1/8" HIGH.
4. TO BE USED WITH FRAME SHOWN IN STANDARD PLAN 5-4.
5. PROVIDE 2-5/8" DIAMETER STAINLESS STEEL ALLEN TYPE BOLTS COUNTER SUNK FLUSH WITH COVER. (SEE STANDARD PLAN 5-4 FOR BOLT-DOWN CATCH BASIN FRAME).
6. FRAME, CAST IRON ASTM A48 CL30, COVER, DUCTILE IRON ASTM A 536 GR 8055-06 H-20 RATED.



SECTION C-C



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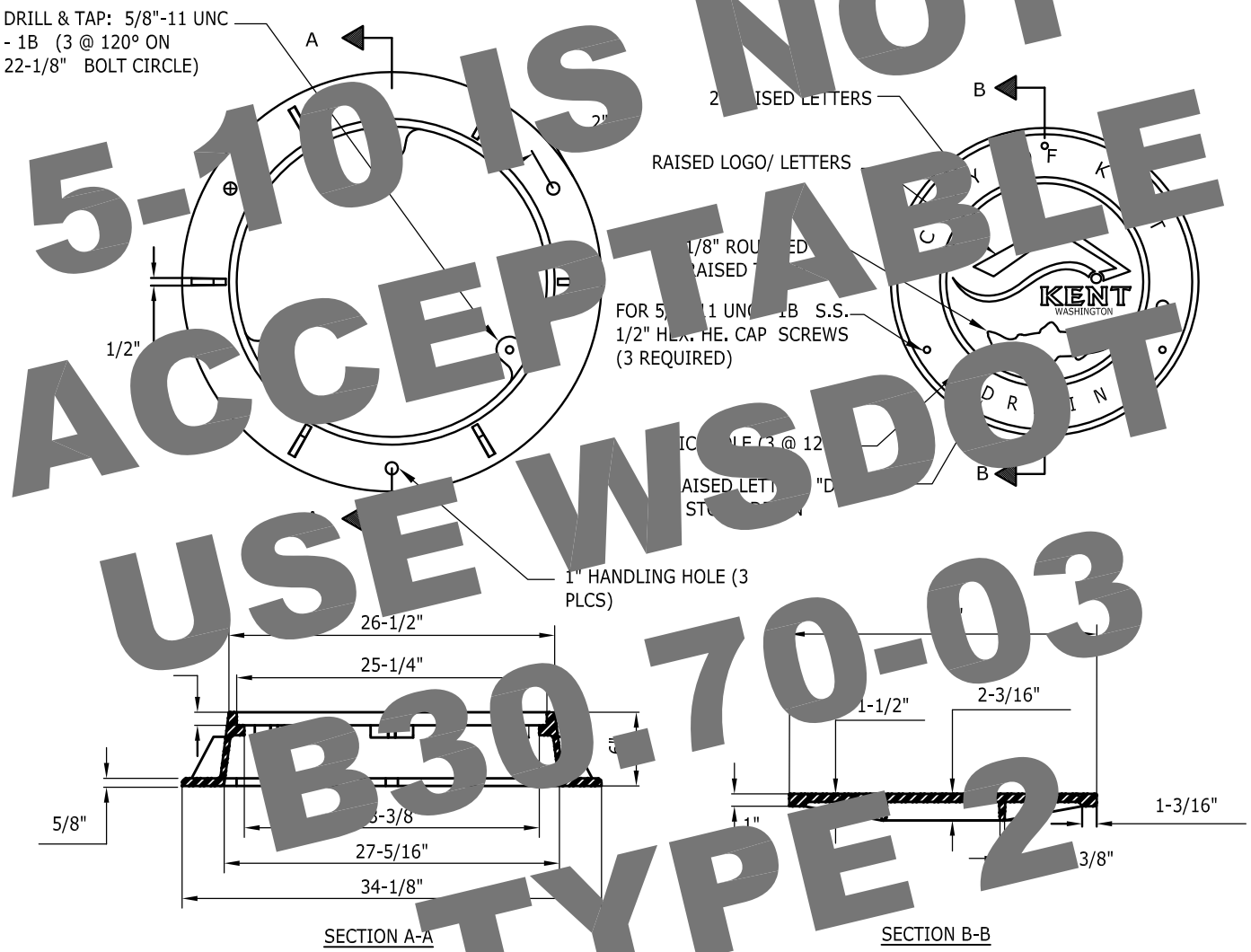
SOLID CATCH BASIN COVER

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–9
APPROVED ENGINEER		



5-10 IS NOT ACCEPTABLE USE WSDOT B30.70-03 TYPE 2

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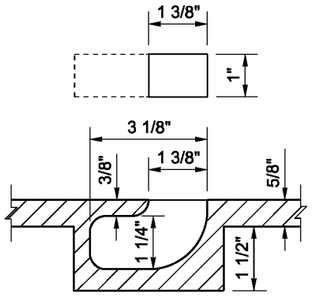
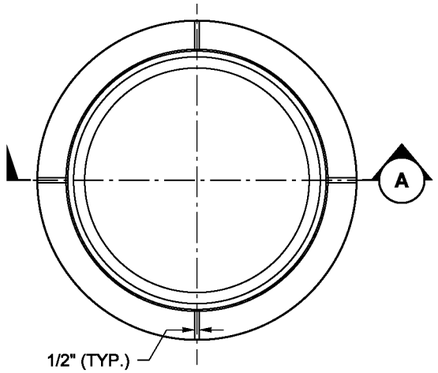
ROUND SOLID CATCH BASIN FRAME AND COVER

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–10
APPROVED ENGINEER		

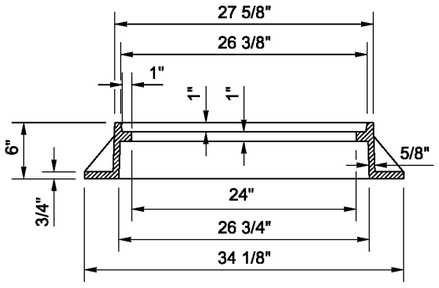
DRAWN BY: LISA CYFORD



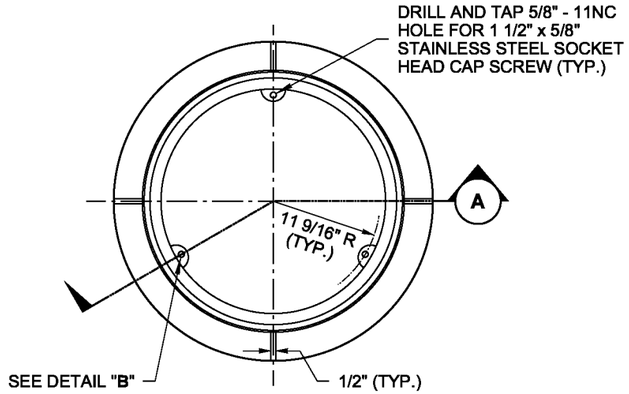
BLIND PICK NOTCH
DETAIL "A"



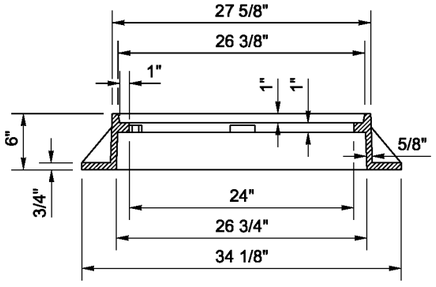
RING PLAN



RING SECTION (A)



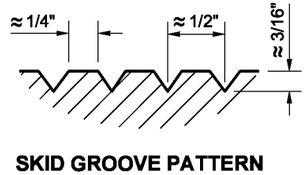
RING PLAN



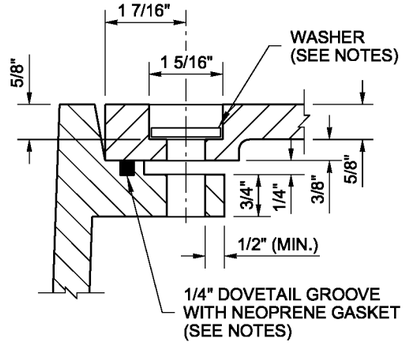
RING SECTION (A)

NOTES

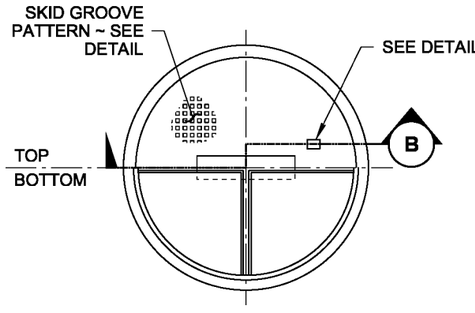
1. The gasket and groove may be in the seat (frame) or in the underside of the cover. The gasket may be "T" shaped in section. The groove may be cast or machined.
2. Bolt-down capability is required on all frames, grates, and covers, unless specified otherwise in the Contract. Provide 3 holes in the frame that are vertically aligned with the grate or cover slots. The frame shall accept the 5/8" - 1 NC × 2" Allen head cap screw by being tapped, or other approved mechanism. Location of bolt down holes varies by manufacturer.
3. For bolt-down manhole ring and covers that are not designated "Watertight," the neoprene gasket, groove, and washer are not required.
4. Washer shall be neoprene (Detail "B").
5. In lieu of blind pick notch for manhole covers, a single 1" pick hole is acceptable. Hole location and number of holes may vary by manufacturer.
6. Alternative reinforcing designs are acceptable in lieu of the rib design.
7. For clarity, the vertical scale of the Cover Section has been exaggerated, it is 1.5 times the horizontal scale (1H:1.5V).



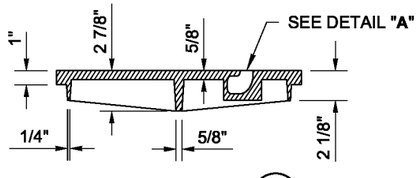
SKID GROOVE PATTERN DETAIL



BOLT-DOWN / WATERTIGHT
DETAIL "B"



COVER PLAN

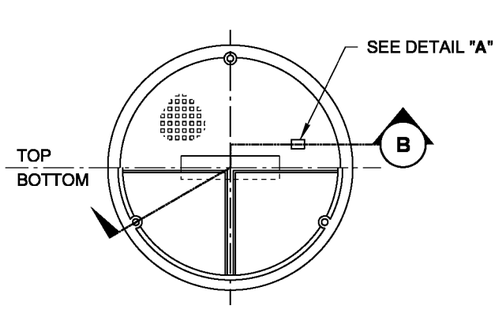


COVER SECTION (B)

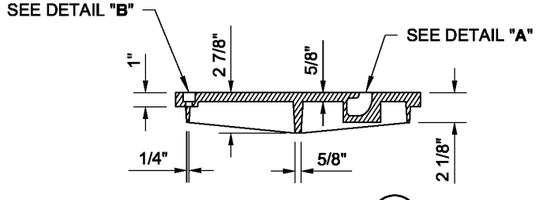
(SEE NOTE 7)

STANDARD

TYPE 1



COVER PLAN

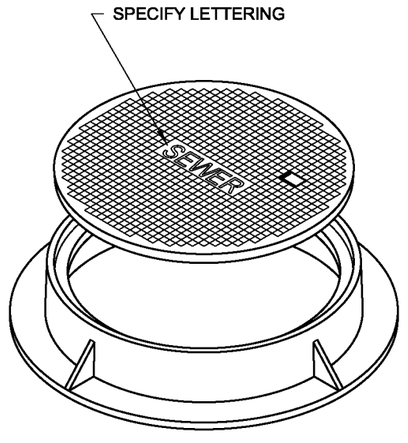


COVER SECTION (B)

(SEE NOTE 7)

BOLT-DOWN / WATERTIGHT

TYPE 2



ISOMETRIC VIEW

CIRCULAR FRAME (RING) AND COVER

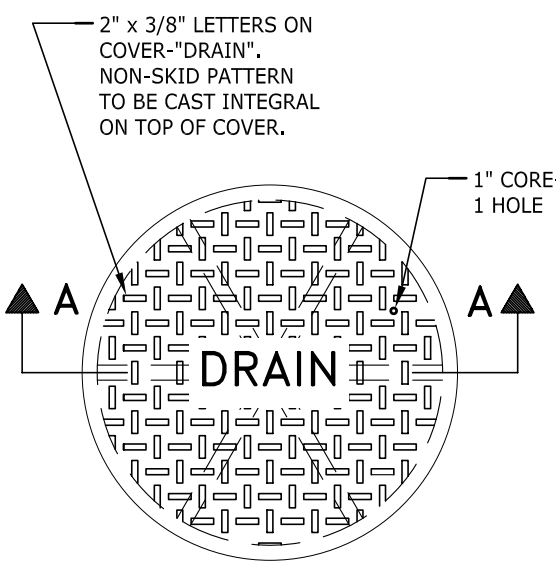
STANDARD PLAN B-30.70-03

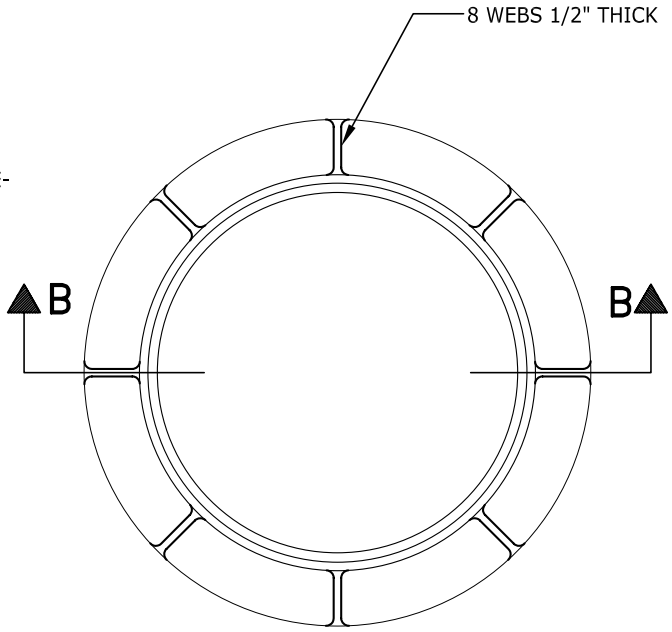
SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

Pasco Bakotich III — STATE DESIGN ENGINEER — *04/26/12* — DATE

Washington State Department of Transportation

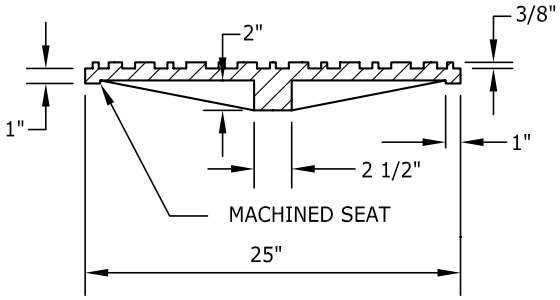




LOCKING DEVICES FOR COVER MAY BE USED PROVIDING DETAILS HERE ARE NOT CHANGED

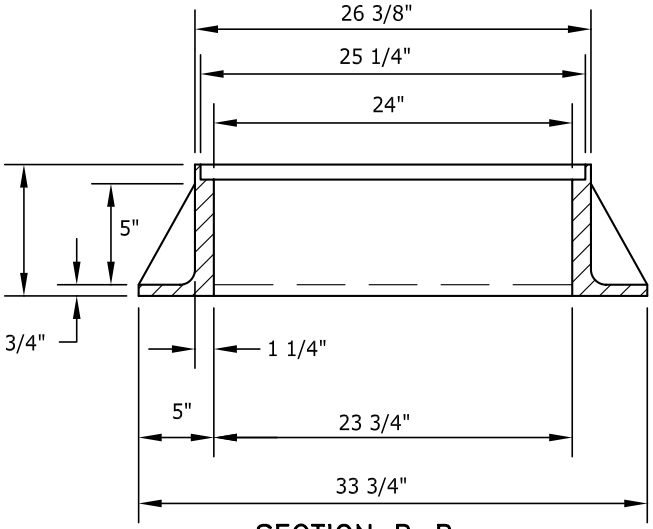
HEAVY RINGS - (9" DEPTH) USE WHERE PORTLAND CEMENT CONC. PAVMT. IS BEING PLACED TO THICKNESS GREATER THAN 6"

LIGHT RINGS - (6" DEPTH) USE WHERE PAVMT. THICKNESS IS 6" OR LESS



SECTION A–A

CAST IRON NON-LOCKING COVER
MIN. WEIGHT - 150 LBS.

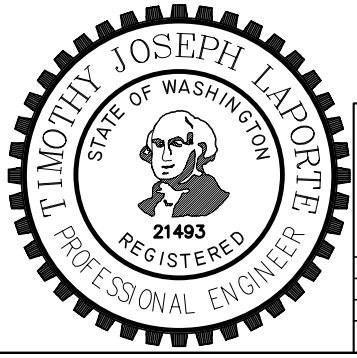


SECTION B–B

CAST IRON FRAME MINIMUM WEIGHT - 207 LBS.

NOTES:

1. CAST IRON TO CONFORM TO SPEC. ASTM - 159-55, ALLOY #111 RATING H-20.
2. SEAT OF COVER & FRAME MACHINED.
3. NON-ROCKING FIT FOR MANHOLE COVERS.
4. BREAK ALL SHARP CORNERS WHERE POSSIBLE.
5. CASTING TO BE SHOT BLASTED AND FREE FROM SURFACE SAND AND SCALE.
6. CASTING TO BE SMOOTH, TRUE TO PATTERN, FREE FROM BLOWHOLES, POROSITY, HARD SPOTS, SHRINK HOLES, WARP, OR ANY OTHER DEFECTS WHICH COULD IMPAIR SERVICEABILITY.
7. CASTINGS SHALL BE COATED AS DIRECTED BY THE ENGINEER.



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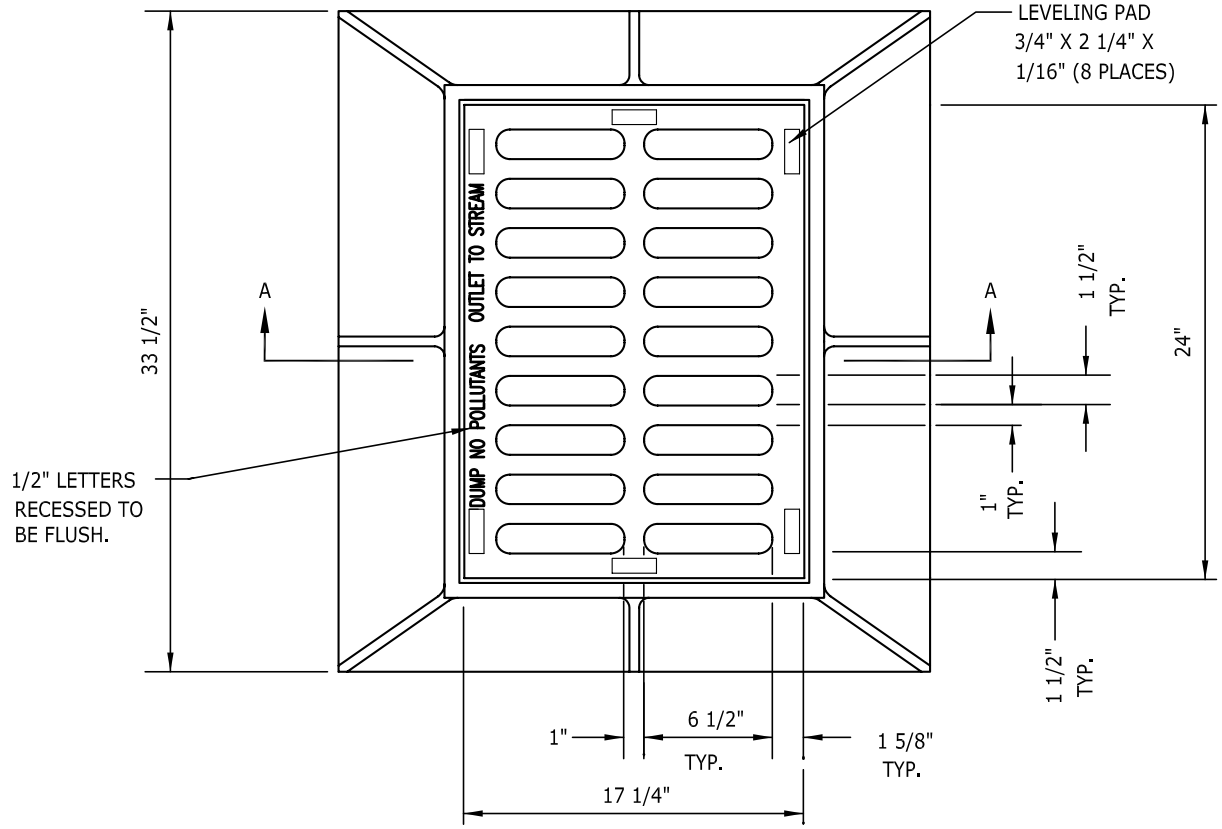
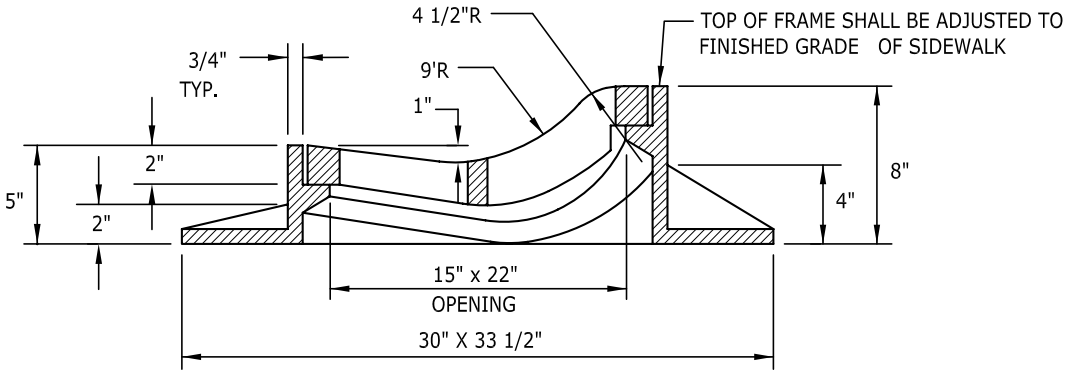
CITY OF KENT
ENGINEERING DEPARTMENT

PRIVATE ROUND CATCH BASIN COVER

DESIGNED DMW	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–11
APPROVED ENGINEER		



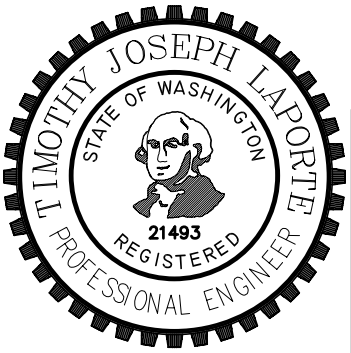
PLAN



SECTION A-A

NOTES:

1. MATERIAL USED FOR THE FRAME SHALL BE CAST IRON ONLY (PER ASTM A48 CL30 H-20 LOADING).
2. GRATE SHALL BE STAMPED "DUMP NO POLLUTANTS-OUTLET TO STREAM".
3. SEE STANDARD PLAN 5-8 FOR INSTALLATION IN ROLLED CURB & GUTTER.



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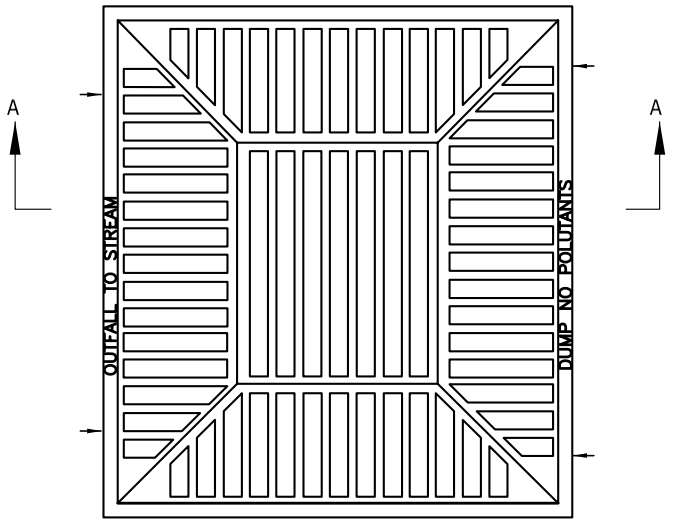
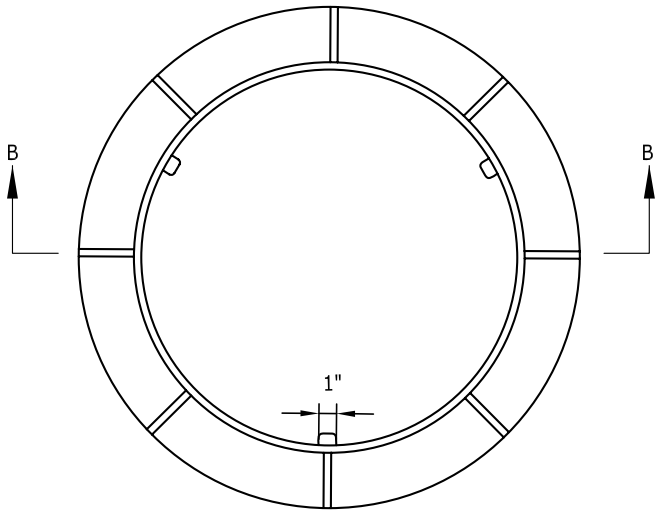
ENGINEERING DEPARTMENT

15"x 22" ROLLED CURB FRAME AND GRATE

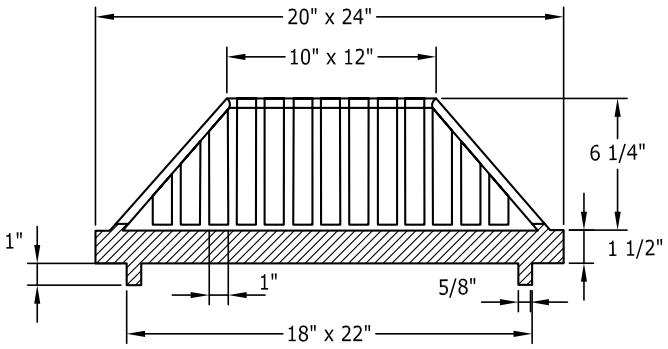
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–12
APPROVED ENGINEER		



PLAN

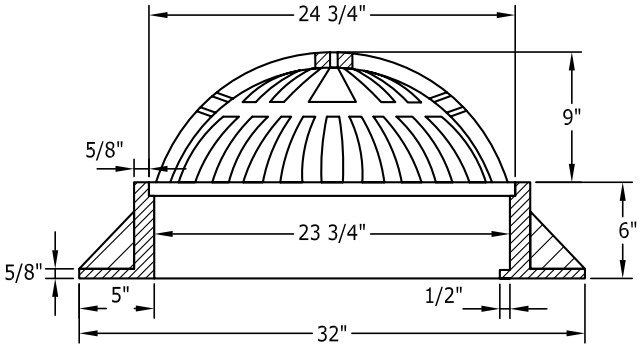


PLAN



SECTION A-A

LOCKING BEEHIVE GRATE



SECTION B-B

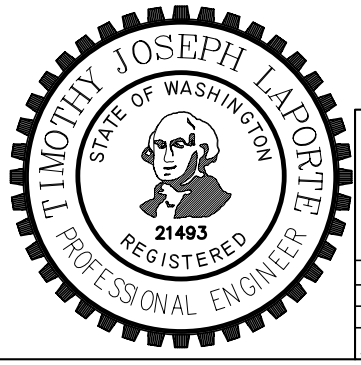
23"x6" MANHOLE RING & LOCKING BEEHIVE GRATE

NOTES:

1. MATERIAL: DUCTILE IRON ASTM A536, CL 80-55-06.
2. SEE STANDARD PLAN 5-14 FOR FRAME.
3. PROVIDE 2-5/8" DIAMETER STAINLESS STEEL ALLEN TYPE BOLTS COUNTER SUNK FLUSH WITH COVER.

NOTES:

1. MATERIAL: CAST IRON ASTM A48, CL 30.
2. SEE STANDARD PLAN 5-10 FOR FRAME.
3. PROVIDE 2-5/8" DIAMETER STAINLESS STEEL ALLEN TYPE BOLTS COUNTER SUNK FLUSH WITH COVER.



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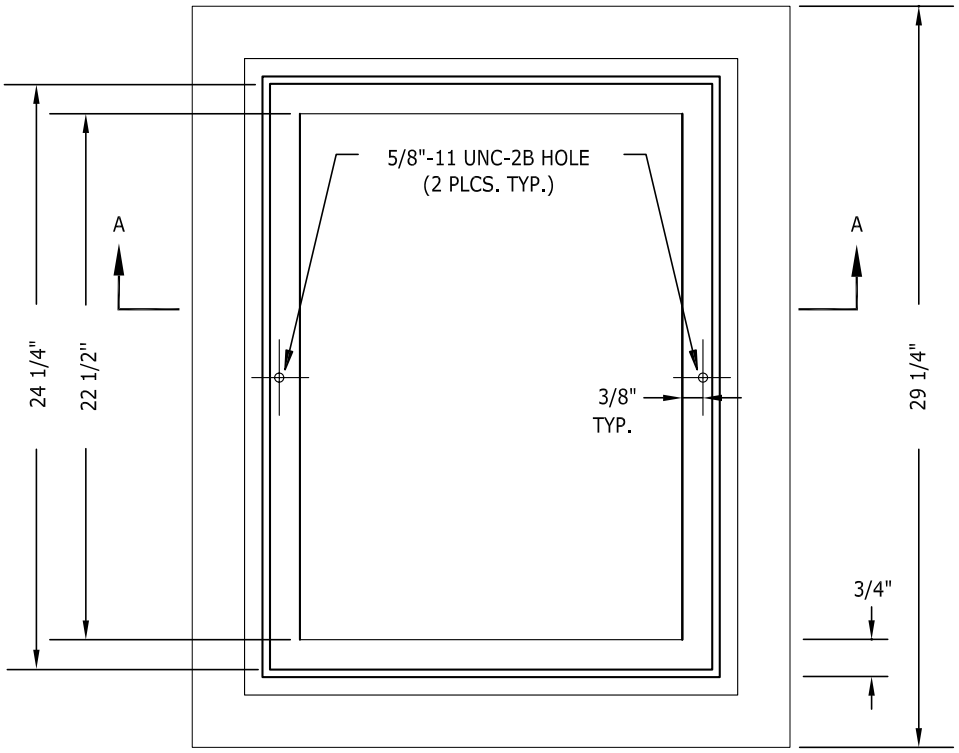
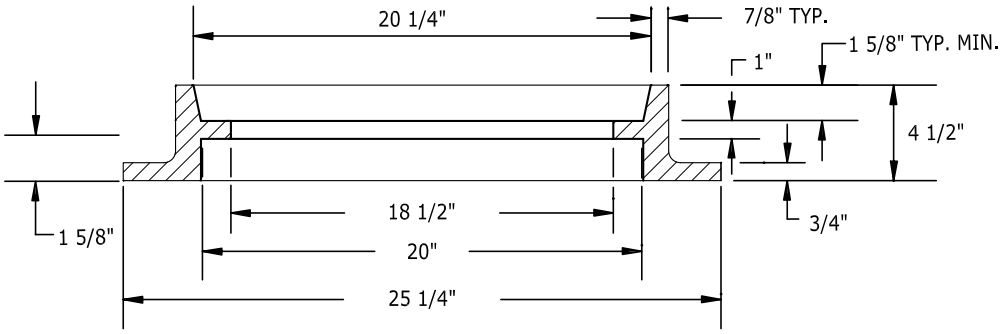
ENGINEERING DEPARTMENT

BEEHIVE GRATE

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–13
APPROVED ENGINEER		



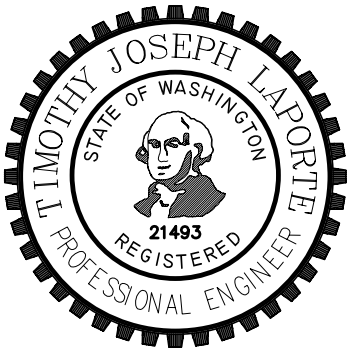
TOP VIEW



SECTION A-A

NOTES:

1. MATERIAL USED FOR THE FRAME SHALL BE CAST IRON ONLY. (PER ASTM A48 CL30 H-20 LOADING).
2. TOP OF FRAME SHALL BE ADJUSTED EVEN WITH ROADWAY SECTION.
3. FOR USE WITH RECTANGULAR BEEHIVE GRATE.



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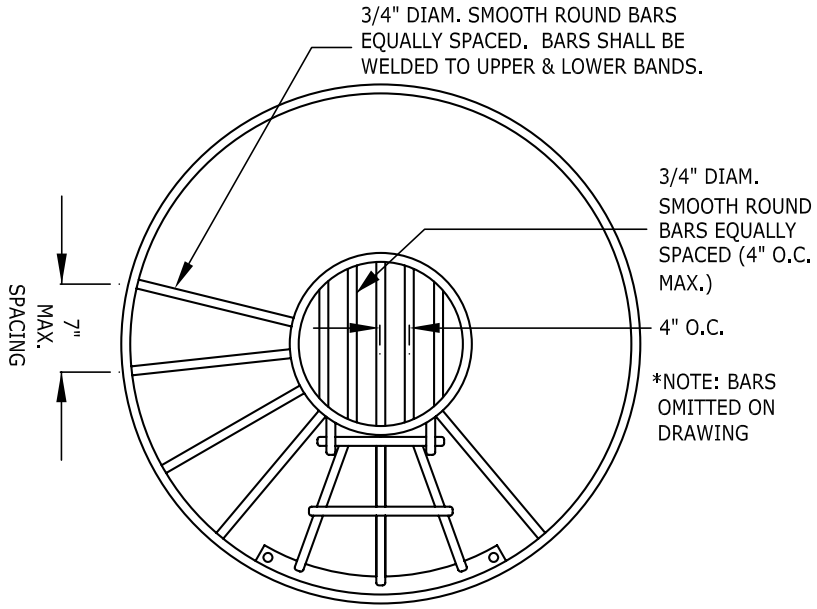
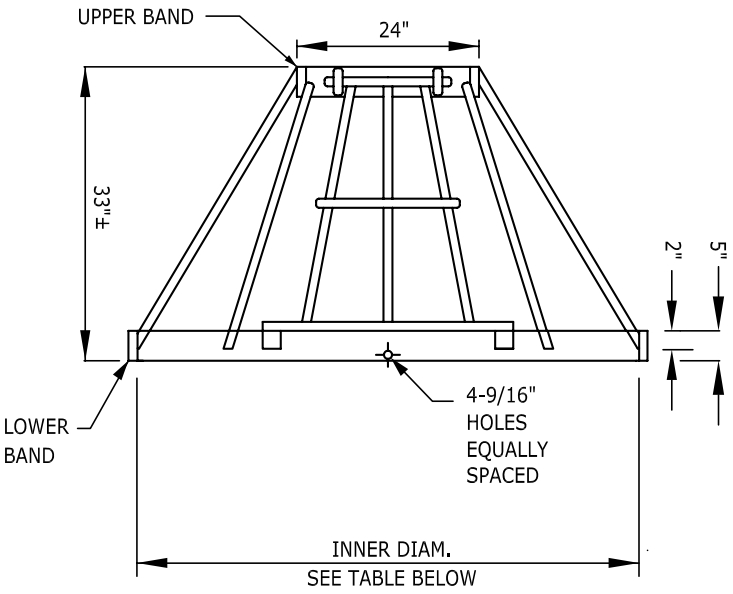
ENGINEERING DEPARTMENT

20"x 24"
CATCH BASIN FRAME

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–14
APPROVED ENGINEER		

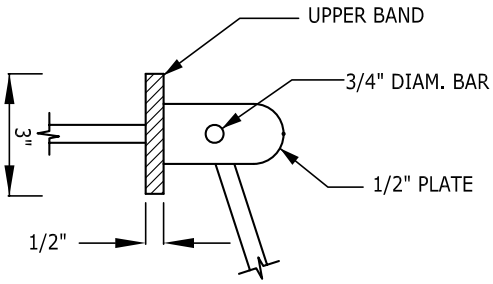


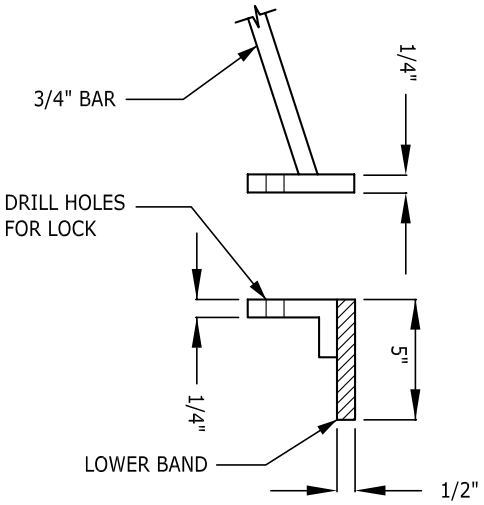
PLAN



ELEVATION

CB	INNER DIAM.
48"	58"
54"	65"
60"	72"
72"	86"
96"	114"

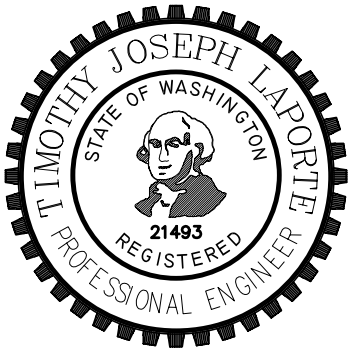




ENTRY GATE DETAIL

NOTES:

1. ALL STEEL IN PLATES, BARS AND BANDS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36.
2. DEBRIS CAGE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123).
3. ENTRY GATE SHALL BE LOCKABLE WITH A CITY OF KENT PADLOCK.



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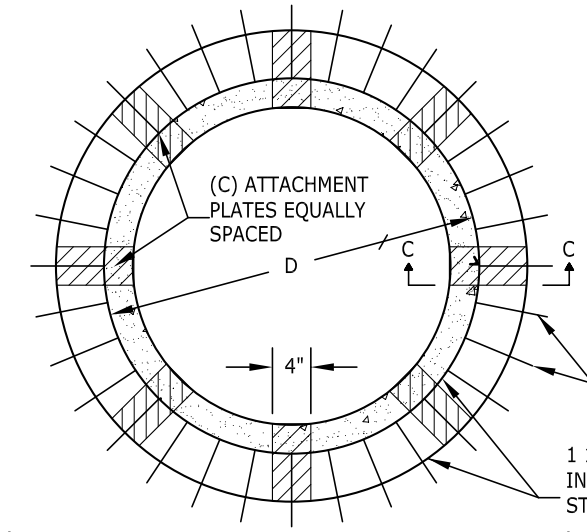
ENGINEERING DEPARTMENT

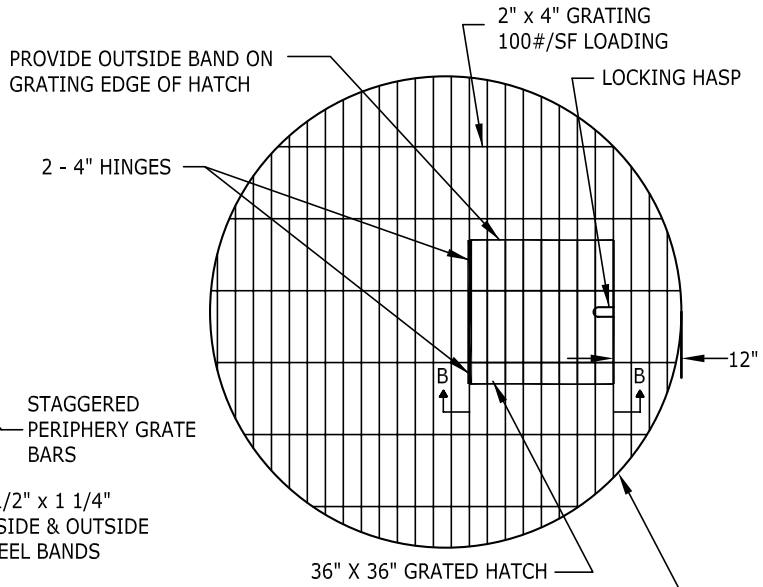
DEBRIS CAGE

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–15
APPROVED ENGINEER		

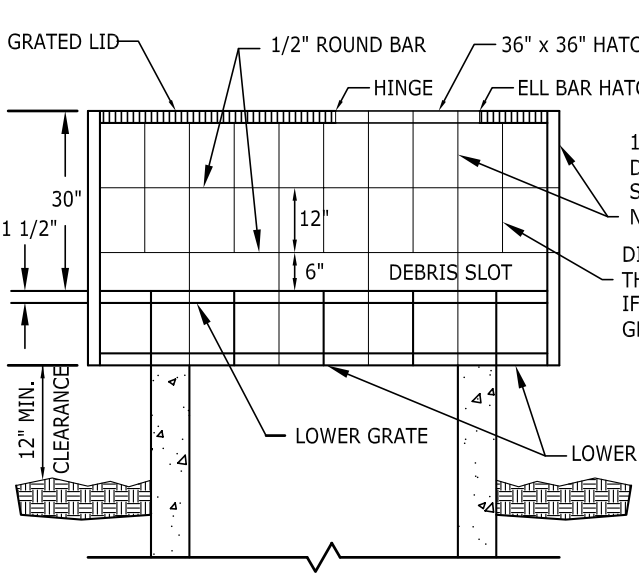


PLAN

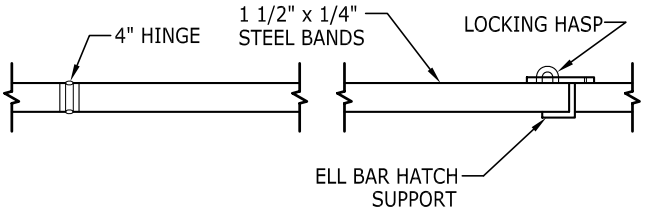
LOWER GRATING PLAN



GRATED LID

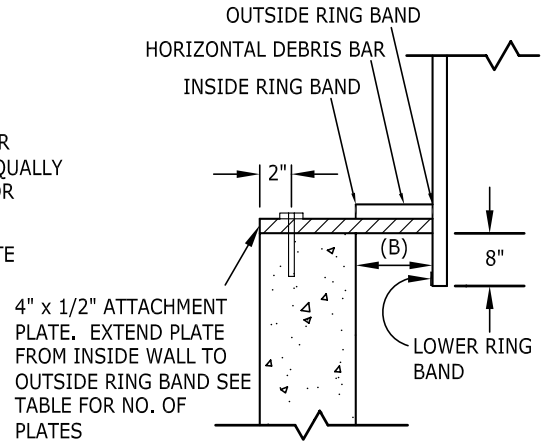


SECTION A-A



SECTION B-B

HATCH DETAIL



SECTION C-C

MANHOLE ATTACHMENT DETAIL

NOTES:

1. ALL PARTS OF THE CAGE SHALL BE GALVANIZED STEEL AND JOINTS WELDED. (PER WSDOT STD. SPECS. 9-05.1(2)).
2. UNLESS INDICATED OTHERWISE, ALL BANDS AND BARS SHALL BE 1 1/2" x 1/4".
3. GRATED LID SHALL BE CONSTRUCTED TO WITHSTAND A 100 PSF LOADING.

TABLE OF VARIABLES

CB DIA. INSIDE	NO. OF BARS (A)	(B)	NO. OF ATTACH-MENT PLATES (C)	(D)
48"	26	8"	4	60"
54"	29	8"	6	67"
60"	32	10"	6	74"
72"	39	12"	8	88"
96"	50	12"	8	116"

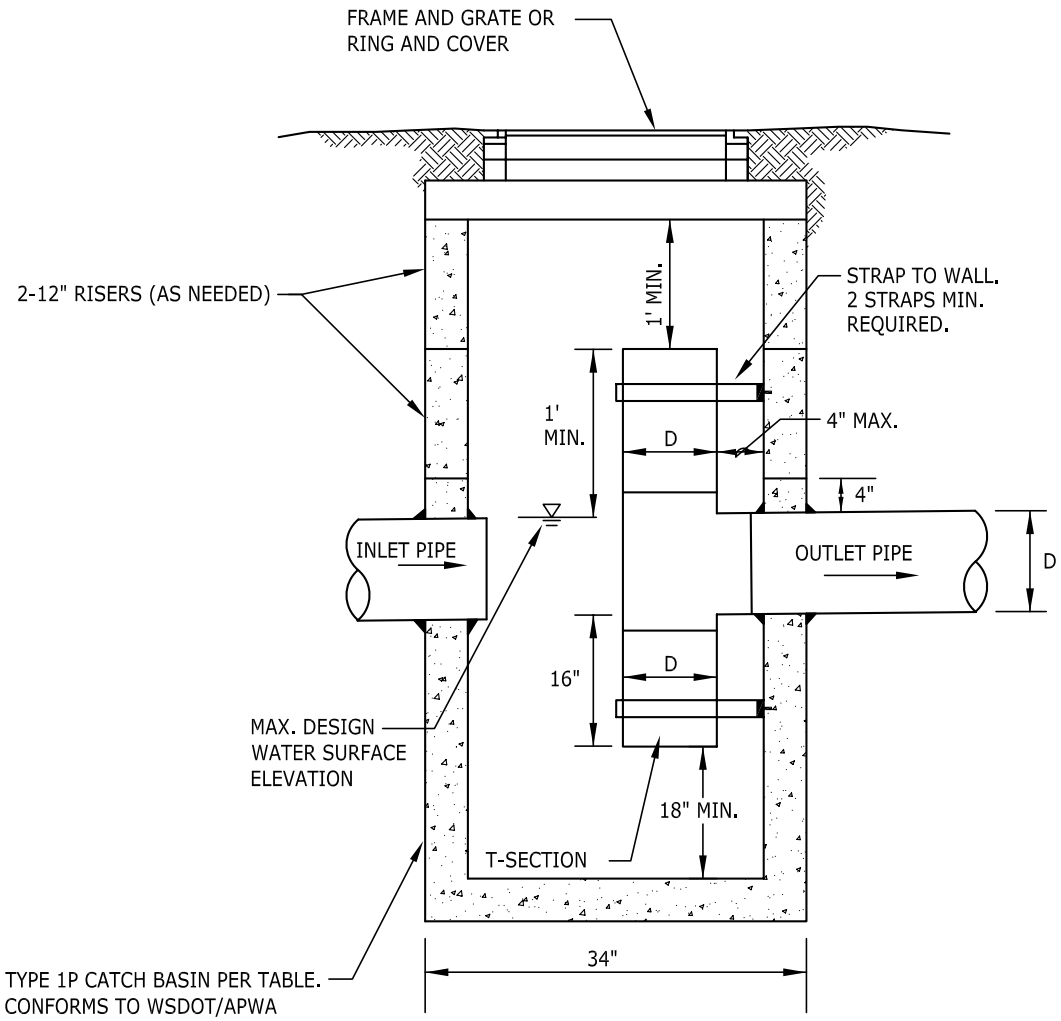
TIMOTHY JOSEPH LAPORTE STATE OF WASHINGTON 21493 REGISTERED PROFESSIONAL ENGINEER

KENT WASHINGTON

CITY OF KENT
ENGINEERING DEPARTMENT

EXTENDED DEBRIS CAGE

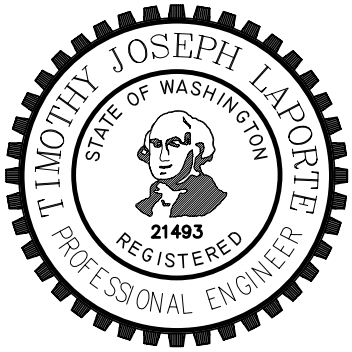
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–16
APPROVED ENGINEER		



NOTES:

1. MIN. OUTLET PIPE DIAMETER IS 12".
2. ALL METAL PARTS AND SURFACES MUST BE MADE OF CORROSION RESISTANT MATERIAL OR GALVANIZED.
3. DIMENSION "D" IS NOMINAL DIAMETER OF OUTLET PIPE.

OUTLET PIPE DIAM.	STRUCTURE TYPE
≤ 12"	TYPE 2 CB-48"
≤ 18"	TYPE 2 CB-54"



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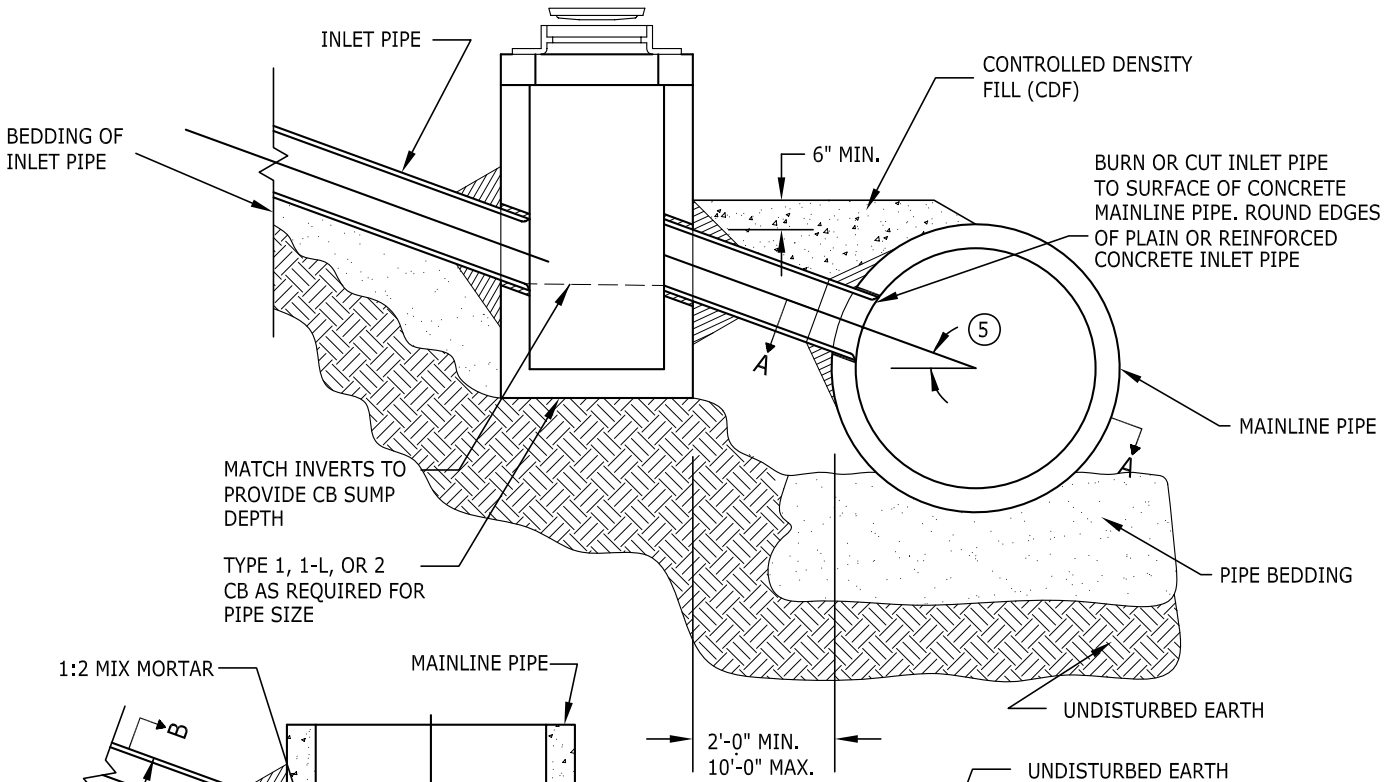
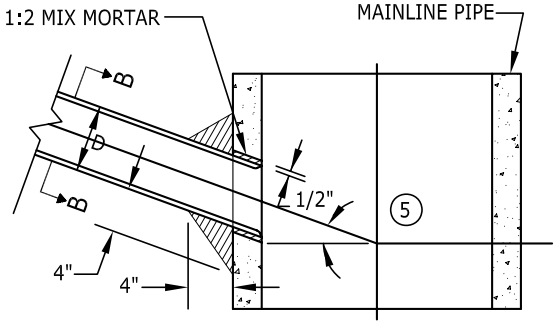
ENGINEERING DEPARTMENT

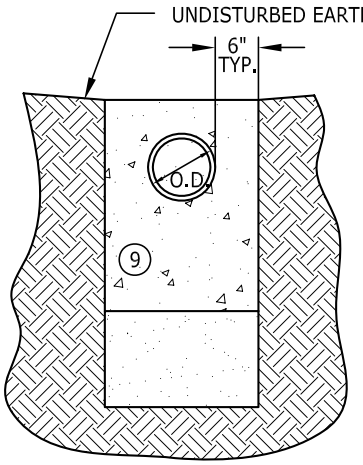
CATCH BASIN WITH OIL/WATER SEPARATOR

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–17
APPROVED ENGINEER		





SECTION A-A



SECTION B-B

NOTES:

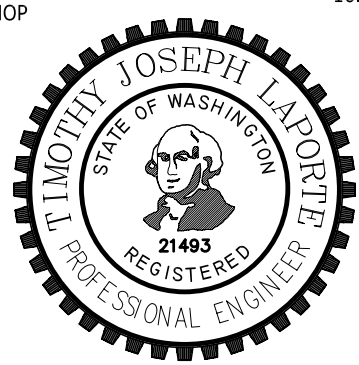
1. "D", THE INSIDE DIAM. OF THE INLET PIPE, SHALL BE 24 IN. OR LESS. FOR LARGER VALUES, OF "D", USE AN APPROVED STRUCTURE.
2. IN NO CASE SHALL THE OUTSIDE DIAM. OF THE INLET PIPE EXCEED ONE-HALF THE INSIDE DIAM. OF THE MAIN STORM SEWER.
3. ℄ OF INLET PIPE SHALL BE ON RADIUS OF MAIN STORM DRAIN.
4. THE MIN. OPENING INTO THE EXISTING STORM DRAIN SHALL BE THE OUTSIDE DIAM. OF THE INLET PIPE PLUS 1 IN.

(5) FIELD TAPPING ONLY WHERE ANGLE IS 0° TO 45°.

6. MAKE CONNECTIONS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. STANDARD SHOP FABRICATED TEES, WYES AND SADDLES SHALL BE USED.
7. THERE SHALL BE A CATCH BASIN OR MANHOLE ON THE CONNECTING PIPE WITHIN TWO TO TEN FEET OF THE EXTERNAL WALL OF THE MAIN LINE.
8. OFFSET ANGLE OF CONNECTING PIPE TO MAIN LINE, HORIZONTALLY AND VERTICALLY, SHALL BE LESS THAN 45 DEGREES.

(9) SEE PIPE BEDDING STD. PLAN 3-22

10. MAIN LINE SHALL BE 48 IN. MIN. DIAM.



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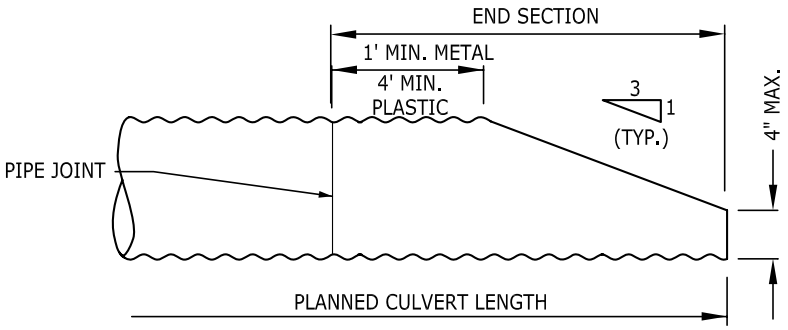
FIELD–TAPPING OF CONCRETE PIPE

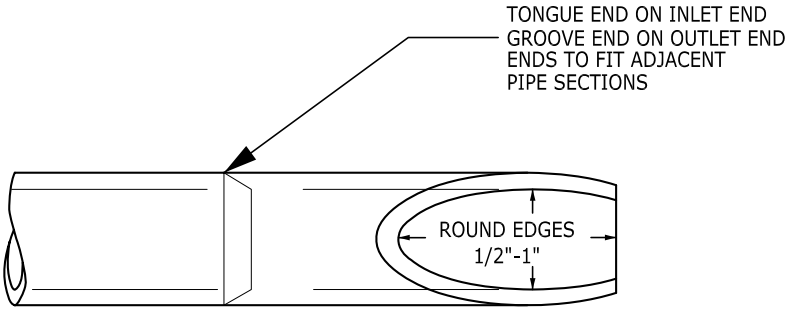
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–18
APPROVED ENGINEER		



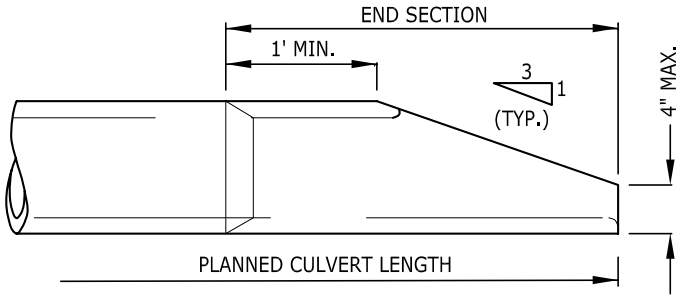
METAL & PLASTIC PIPE

NOTE:

SIDE SLOPE SHALL BE WARPED TO MATCH THE BEVELED PIPE END. WHEN CULVERT IS ON SKEW, BEVELED END SHALL BE ROTATED TO CONFORM TO SLOPE. IF SLOPE DIFFERS FROM 3:1, PIPE SHALL BE BEVELED TO MATCH SLOPE.

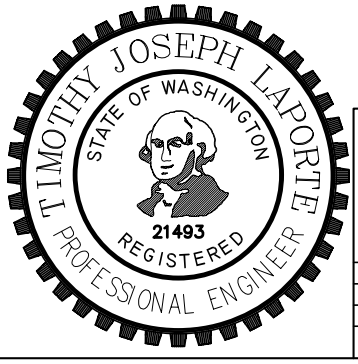


PLAN



ELEVATION

CONCRETE PIPE



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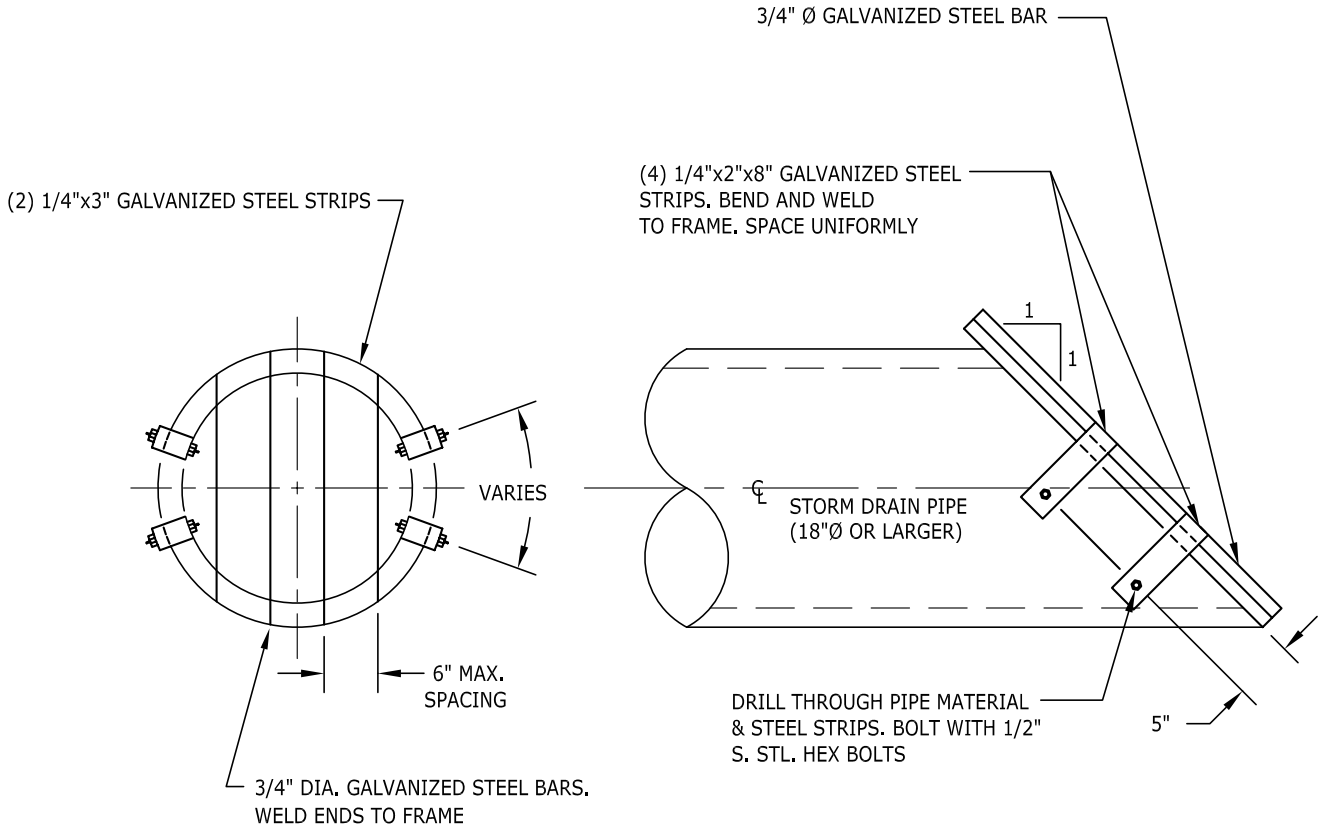
ENGINEERING DEPARTMENT

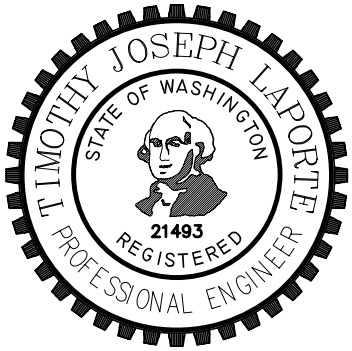
BEVELED END PIPE SECTION

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–19
APPROVED ENGINEER		



NOTES:

1. WELD AT ALL JOINTS.
2. SHOP DRAWINGS REQUIRED.
3. ALL STEEL IN PLATES, BARS AND BANDS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36.
4. DEBRIS CAGE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123).
5. GALVANIZING SHALL BE PER WSDOT STD. SPECIFICATION 9-05.1(2).



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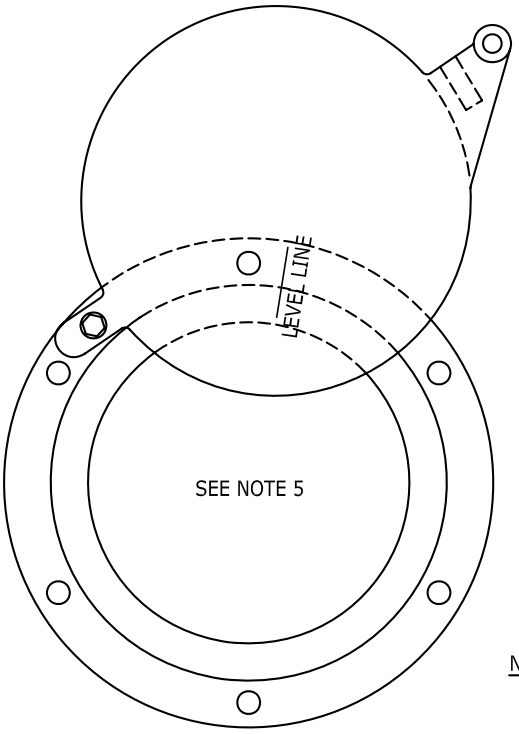
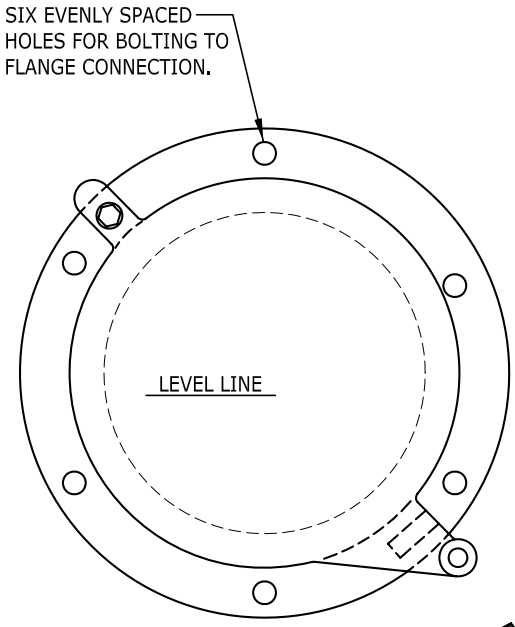
ENGINEERING DEPARTMENT

TRASH SCREEN

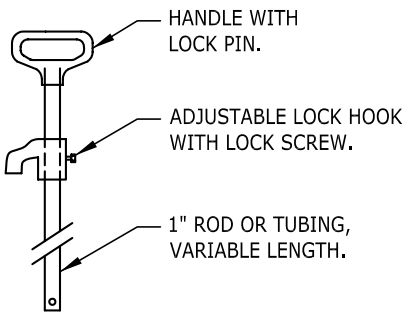
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–20
APPROVED ENGINEER		



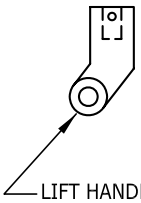
MAXIMUM OPENING OF GATE

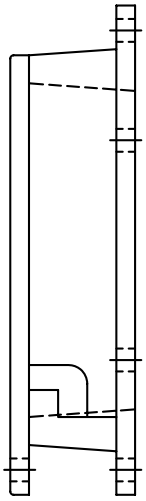


FRONT



LIFT HANDLE

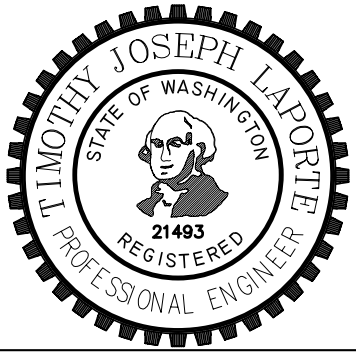




SIDE

NOTES:

1. SHEAR GATE SHALL BE STAINLESS STEEL PER ASTM A480.
2. GATE SHALL BE 8" DIAMETER FOR PIPE 12 INCHES OR LESS IN DIAMETER, 12" DIAMETER FOR PIPES GREATER THAN 12" INCHES.
3. GATE SHALL BE JOINED TO TEE SECTION BY BOLTING THROUGH FLANGE.
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.
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 SHEAR GATES PROVIDED THEY MEET THE MATERIAL SPECIFICATIONS AND DESIGN ABOVE, ARE ALLOWED WITH THE ENGINEERS APPROVAL.



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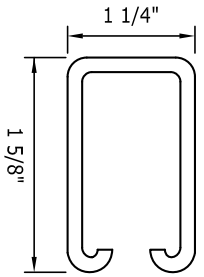
CITY OF KENT
ENGINEERING DEPARTMENT

SHEAR GATE

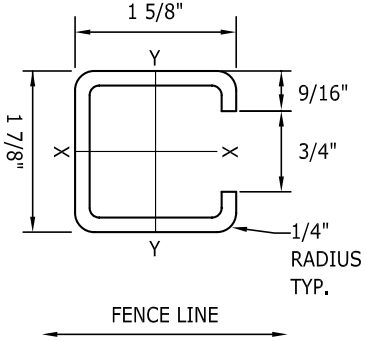
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–21
APPROVED ENGINEER		

September 2009

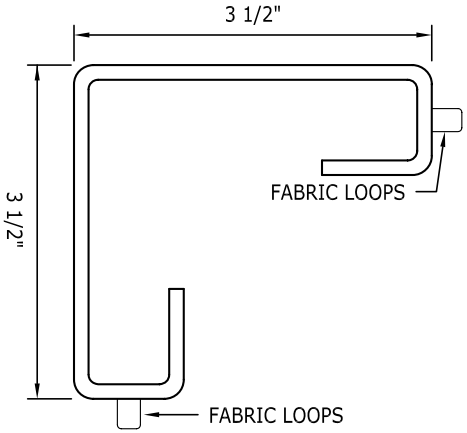
TYPE	MEMBER																			
	TOP RAIL						LINE & BRACE POST						END, CORNER & PULL POST				GATE POST		ALL POSTS	
	ROUND		HI-COLUMN		ROLL FORMED		ROUND		HI-COLUMN		ROLL FORMED		ROUND		ROLL FORMED		ROUND			
	1.0 PIPE (INCHES)	WEIGHT PER FOOT (POUNDS)	SIZE (INCHES)	WEIGHT PER FOOT (POUNDS)	SIZE (INCHES)	WEIGHT PER FOOT (POUNDS)	1.0 PIPE (INCHES)	WEIGHT PER FOOT (POUNDS)	SIZE (INCHES)	WEIGHT PER FOOT (POUNDS)	SIZE (INCHES)	WEIGHT PER FOOT (POUNDS)	1.0 PIPE (INCHES)	WEIGHT PER FOOT (POUNDS)	SIZE (INCHES)	WEIGHT PER FOOT (POUNDS)	SIZE (INCHES)	WEIGHT PER FOOT (POUNDS)	LENGTH	
1	1 1/4	2.27	1 1/4 X 1 5/8	1.35	1 5/8 X 1 1/4	1.35	2	3.65	2 1/4	4.0	1 5/8 X 1 7/8	2.34	2 1/2	5.79	3 1/2 X 3 1/2	5.14	3 1/2	9.1	8'-8"	



RAIL AND BRACE



LINE POST

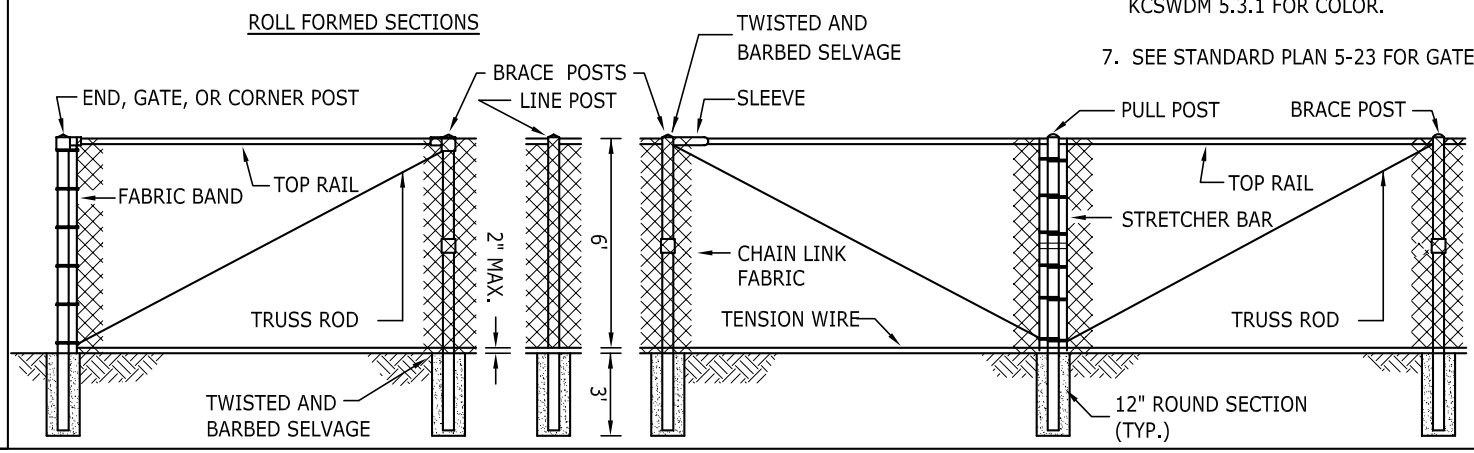


END, CORNER AND PULL POST

NOTES:

1. ALL MATERIAL AND INSTALLATION SHALL BE PER SECTION 8-12 AND 9-16 OF THE WSDOT STANDARD SPECIFICATIONS
2. ALL CONCRETE POST BASES SHALL BE 12" MINIMUM DIAMETER.
3. ALL POSTS SHALL BE SPACED AT 10' MAXIMUM INTERVALS AND SET IN CONCRETE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. BOTTOM TENSION WIRE SHALL BE PLACED WITHIN THE LIMITS OF THE FIRST FULL FABRIC WEAVE.
5. DETAILS ARE ILLUSTRATIVE AND SHALL NOT LIMIT HARDWARE DESIGN OR POST SELECTION OF ANY PARTICULAR FENCE TYPE.
6. COATING FOR POSTS, TOP RAIL, FITTINGS AND FABRIC SHALL BE VINYL OR POWDER COATED FROM THE FACTORY. SEE 1998 KCSWDM 5.3.1 FOR COLOR.
7. SEE STANDARD PLAN 5-23 FOR GATE DETAIL.

ROLL FORMED SECTIONS



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KENT WASHINGTON

DESIGNED DWH
DRAWN BB
CHECKED
APPROVED
DATE
ENGINEER

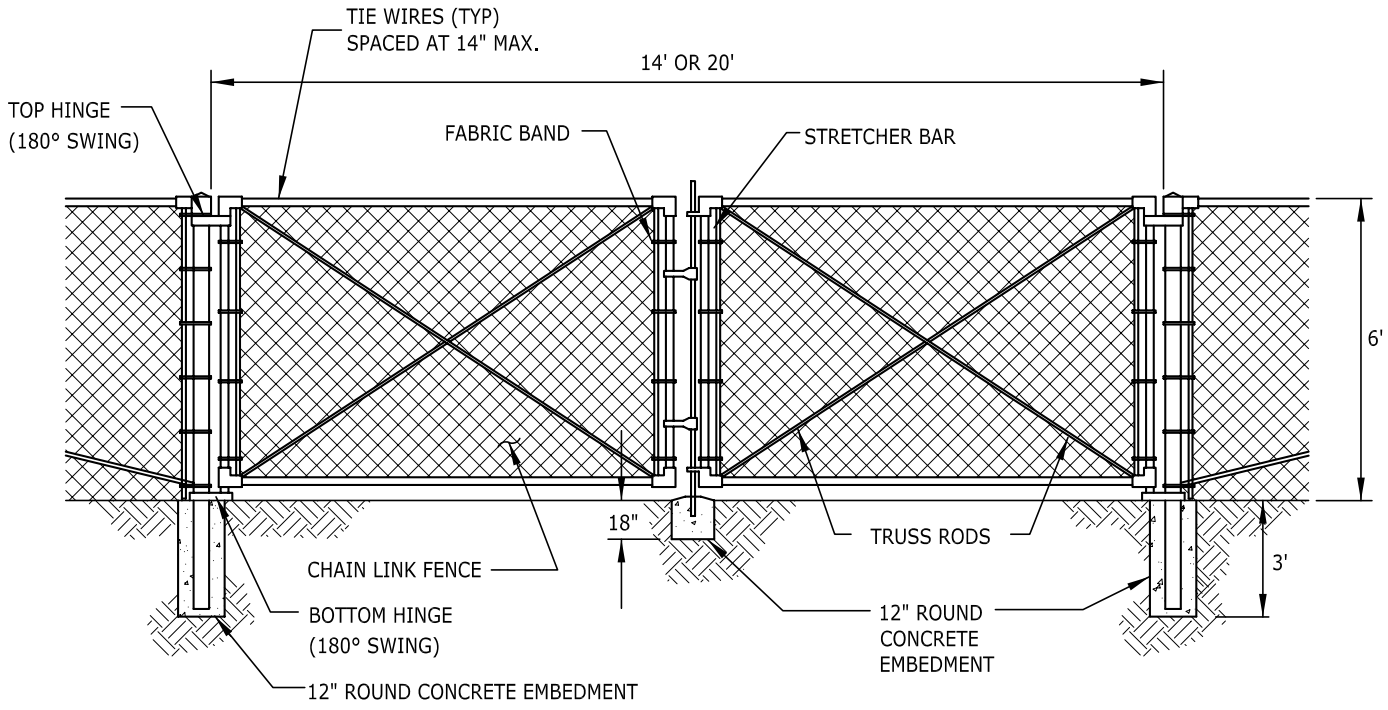
SCALE NONE

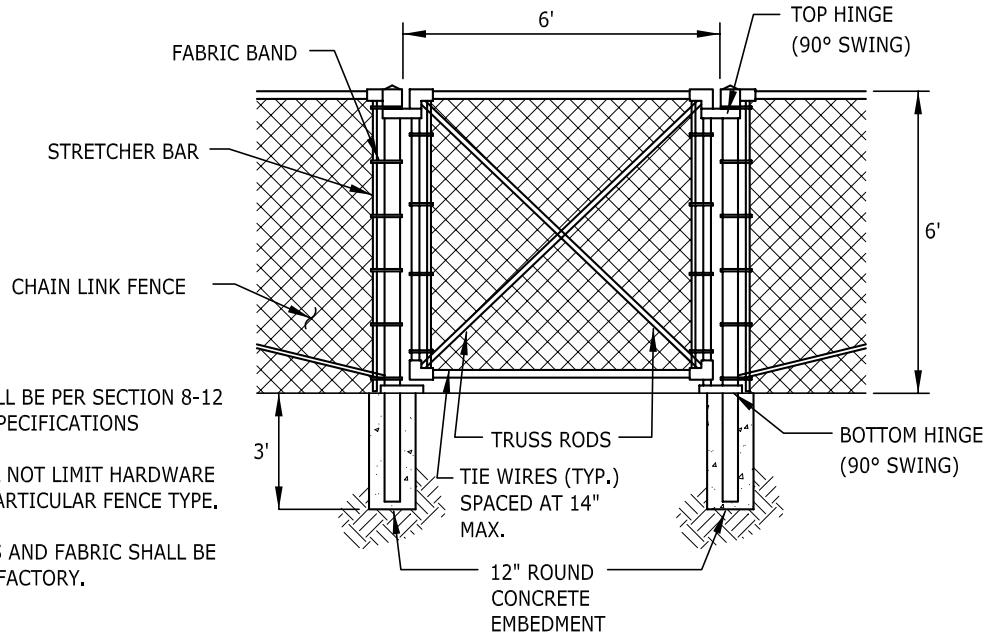
STANDARD PLAN

5-22

CITY OF KENT
ENGINEERING DEPARTMENT

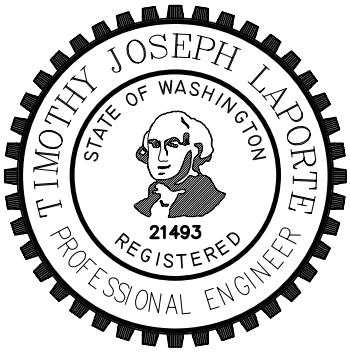
CHAIN LINK FENCE, TYPE 1
FOR PONDS ONLY





NOTES:

1. ALL MATERIAL AND INSTALLATION SHALL BE PER SECTION 8-12 AND 9-16 OF THE WSDOT STANDARD SPECIFICATIONS
2. DETAILS ARE ILLUSTRATIVE AND SHALL NOT LIMIT HARDWARE DESIGN OR POST SELECTION OF ANY PARTICULAR FENCE TYPE.
3. COATING FOR FRAME, POSTS, FITTINGS AND FABRIC SHALL BE VINYL OR POWDER COATED FROM THE FACTORY. SEE 1998 KCSWDM 5.3.1 FOR COLOR.
4. SEE STANDARD PLAN 5-22 FOR FENCE DETAIL.



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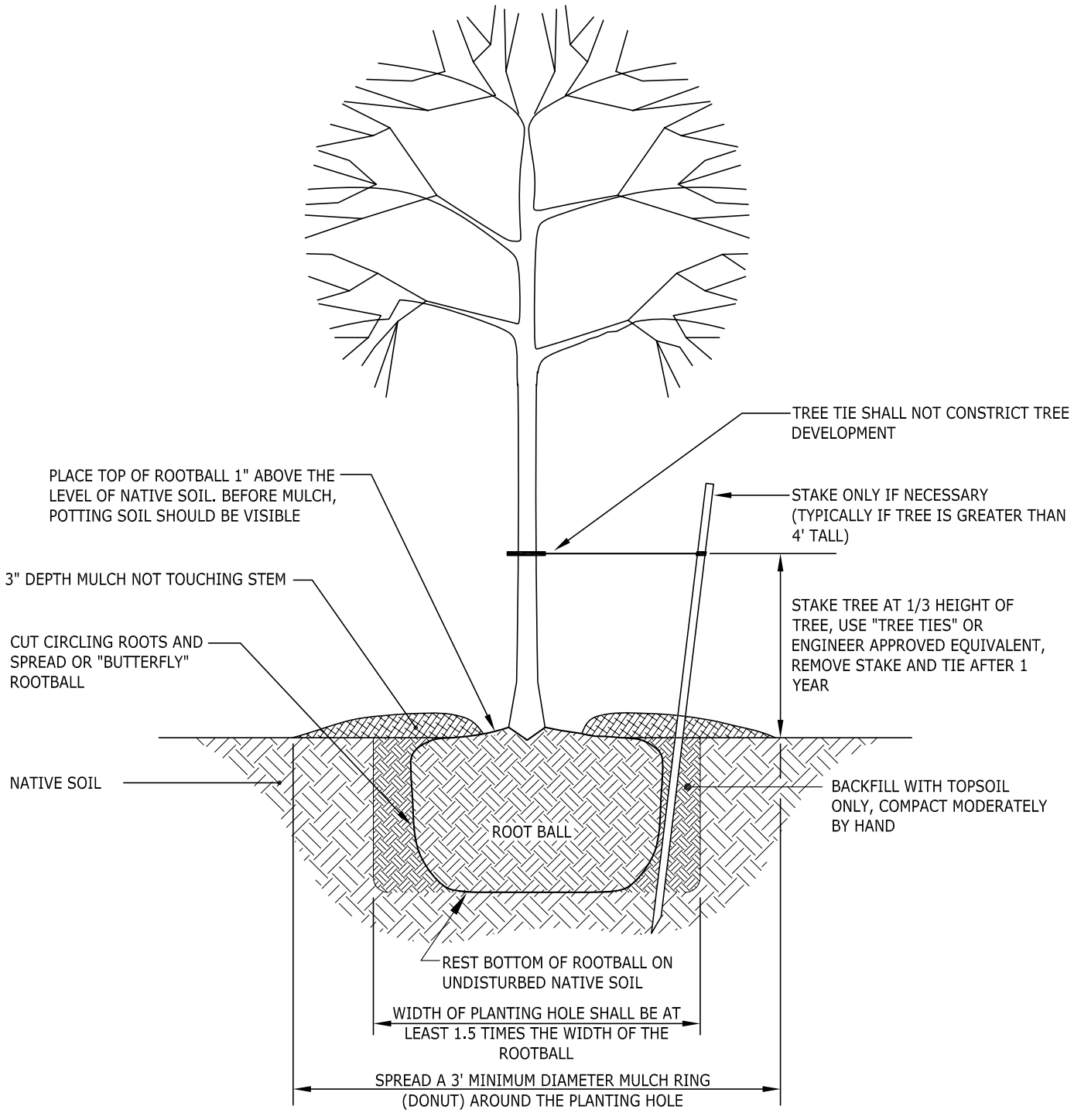
CITY OF KENT
ENGINEERING DEPARTMENT

DRIVEWAY AND WALK GATE FOR PONDS ONLY

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–23
APPROVED ENGINEER		



NOT TO SCALE

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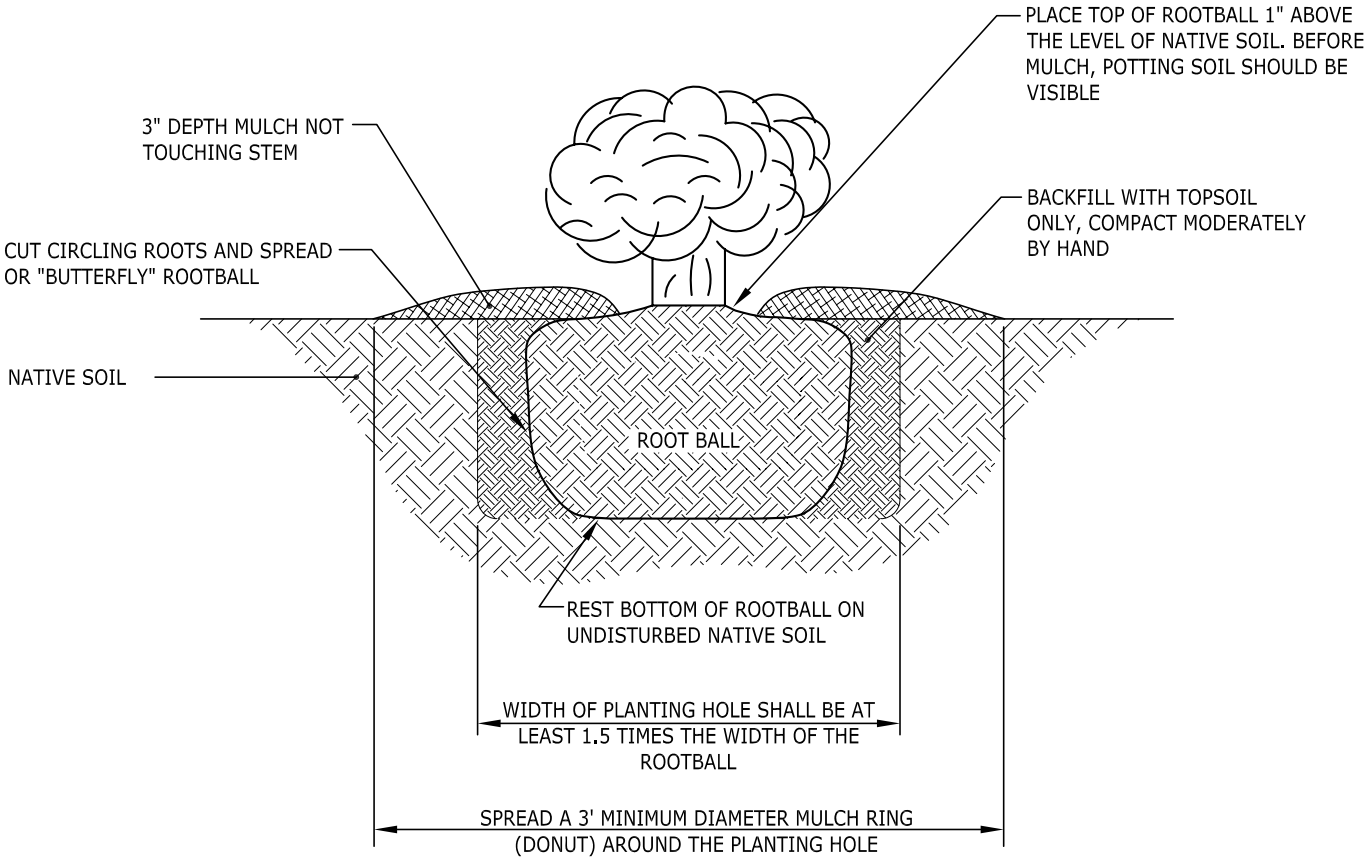
CITY OF KENT
ENGINEERING DEPARTMENT

TREE PLANTING

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–24
APPROVED ENGINEER		



NOT TO SCALE

TIMOTHY JOSEPH LAPORTE
STATE OF WASHINGTON
21493
REGISTERED
PROFESSIONAL ENGINEER

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ENGINEERING DEPARTMENT

SHRUB PLANTING

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–25
APPROVED ENGINEER		

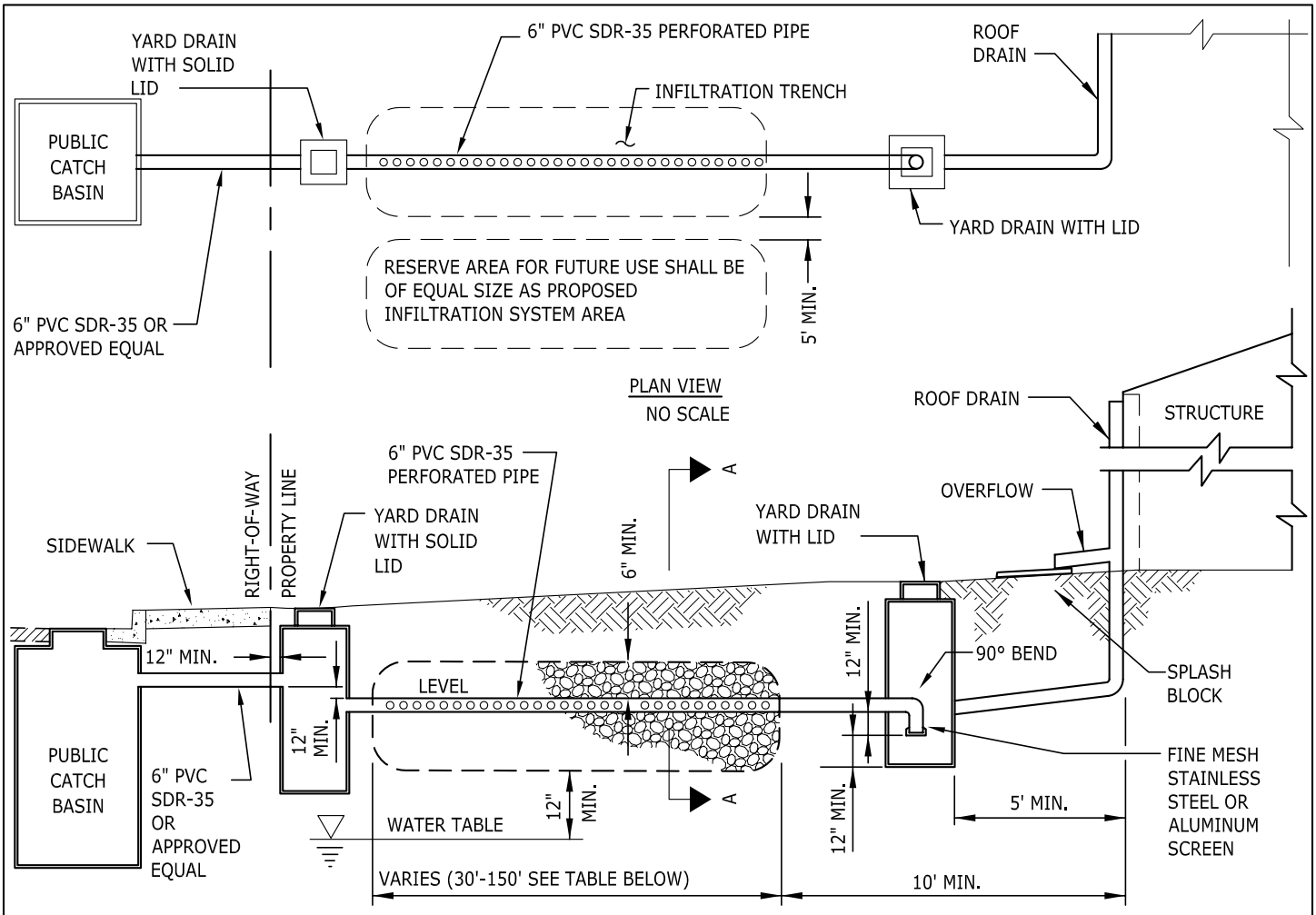
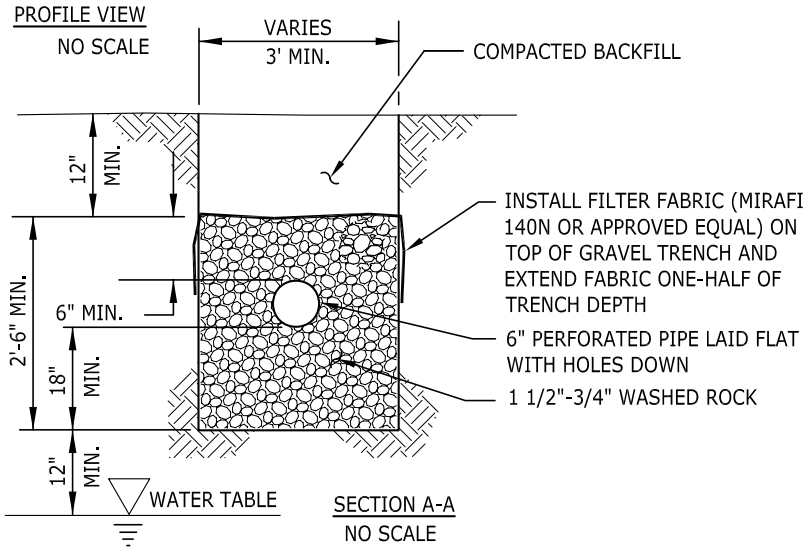
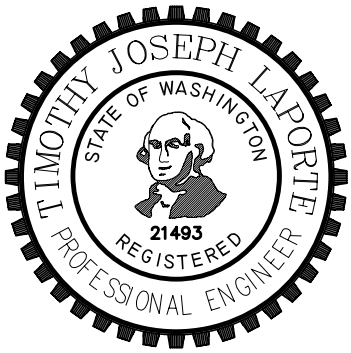


TABLE	
FOR AREAS LESS THAN 5,000 SQ. FT. OF IMPERVIOUS AREA	
IMPERVIOUS AREA (SQ. FT.)	LENGTH IN FEET*
1,000	30
1,500	45
2,000	60
2,500	75
3,000	90
3,500	105
4,000	120
4,500	135
5,000	150
USE THE NEXT HIGHEST NUMBER FOR CALCULATIONS BETWEEN LISTED NUMBERS	





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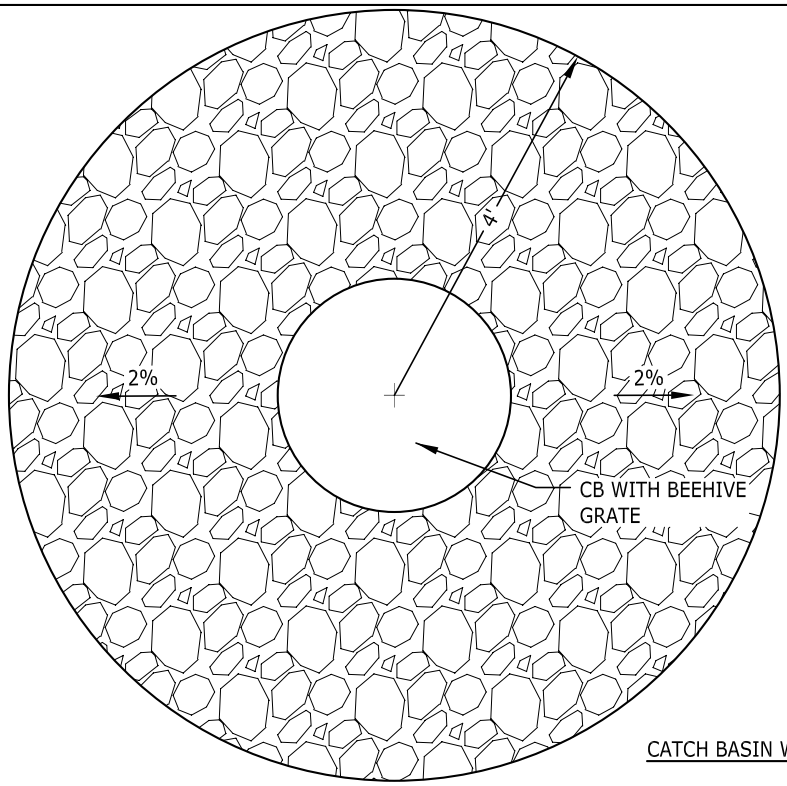
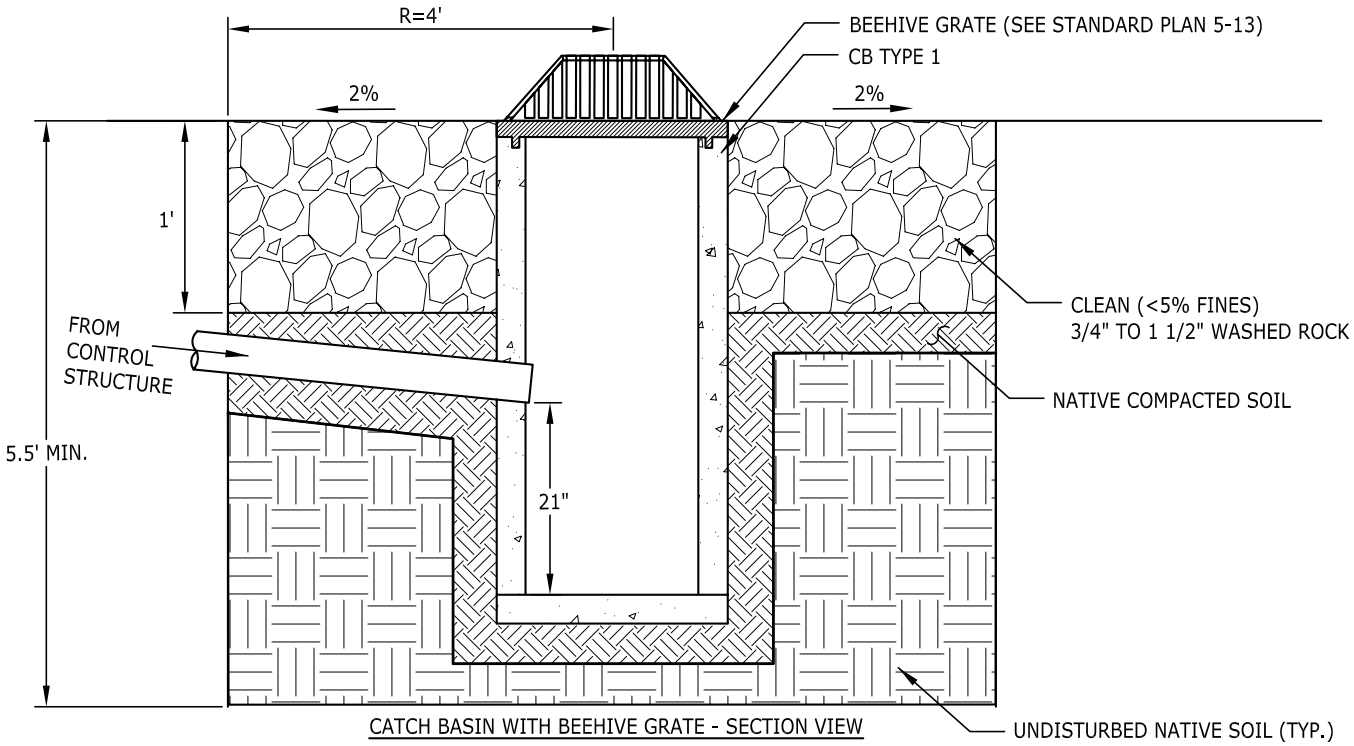
CITY OF KENT
ENGINEERING DEPARTMENT

TRENCH INFILTRATION SYSTEM FOR SMALL SITES

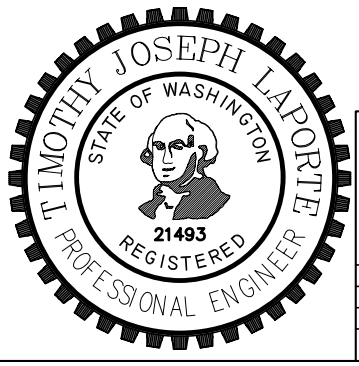
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–26
APPROVED ENGINEER		



CATCH BASIN WITH BEEHIVE GRATE - PLAN VIEW



CATCH BASIN WITH BEEHIVE GRATE - SECTION VIEW



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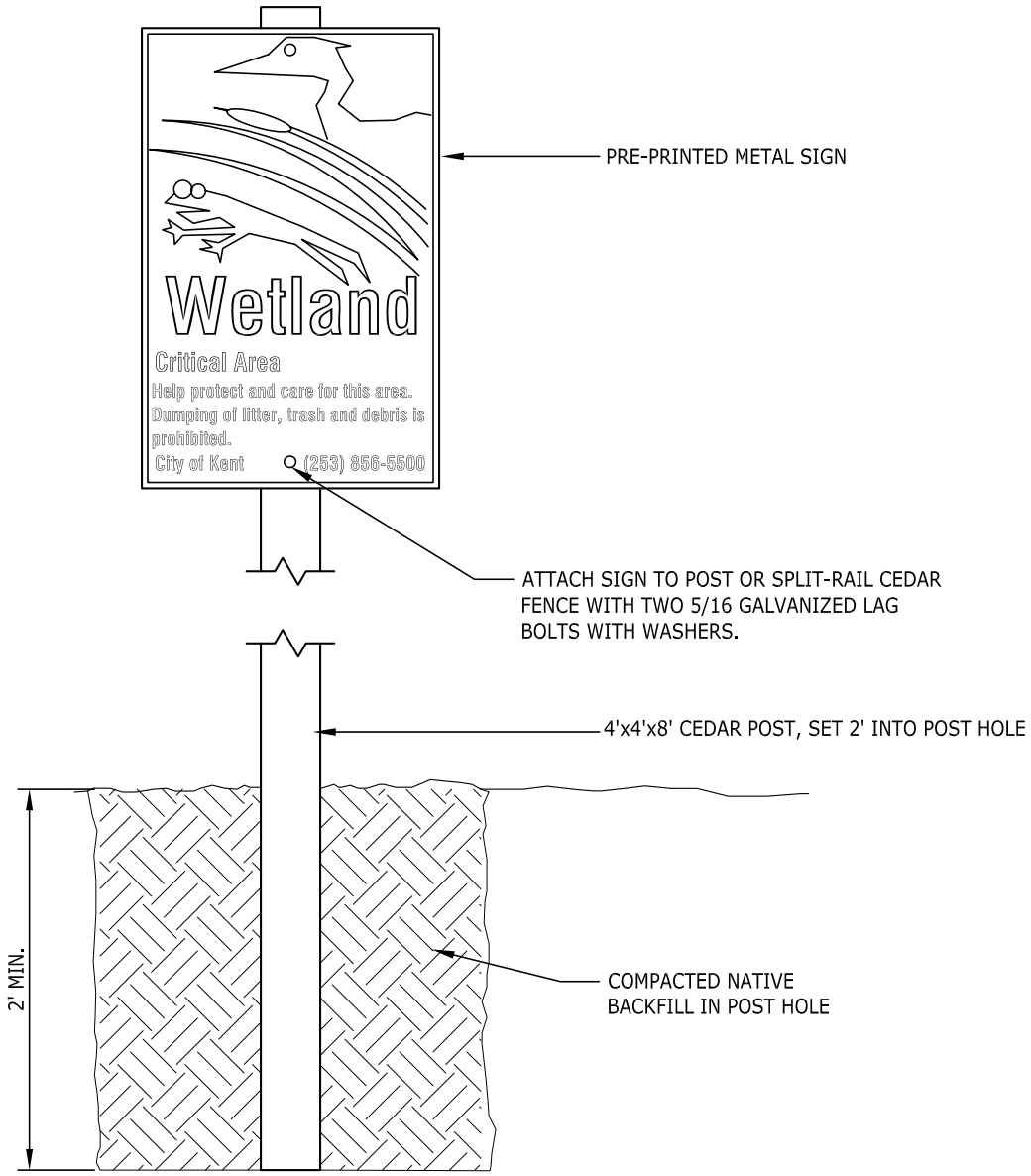
CITY OF KENT
ENGINEERING DEPARTMENT

FLOW SPREADER OPTION CATCH BASIN WITH BEEHIVE GRATE

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–27
APPROVED ENGINEER		

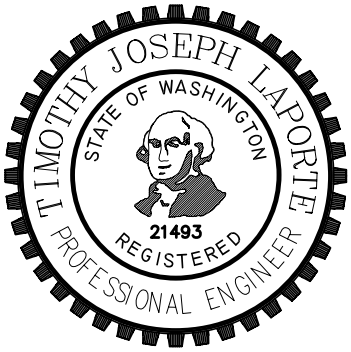


NOTES:

1. THE WETLAND/STREAM SIGN SHALL BE POSTED AT THE BOUNDARY BETWEEN THE LOT AND THE CRITICAL AREA BUFFER.

2. ONE SIGN SHALL BE POSTED FOR EVERY RESIDENTIAL LOT AND ONE PER EVERY 100 FEET FOR ALL PUBLIC RIGHTS OF WAY, TRAILS, PARKING AREAS, PLAYGROUNDS AND ALL OTHER USES LOCATED ADJACENT TO CRITICAL AREAS AND ASSOCIATED BUFFERS AND SHALL BE STATIONED PER LOCATION, ON THE APPROVED PLANS TO THE PROPOSED DEVELOPMENT.

3. PRE-PRINTED METAL SIGN (AVAILABLE AT CITY OF KENT)

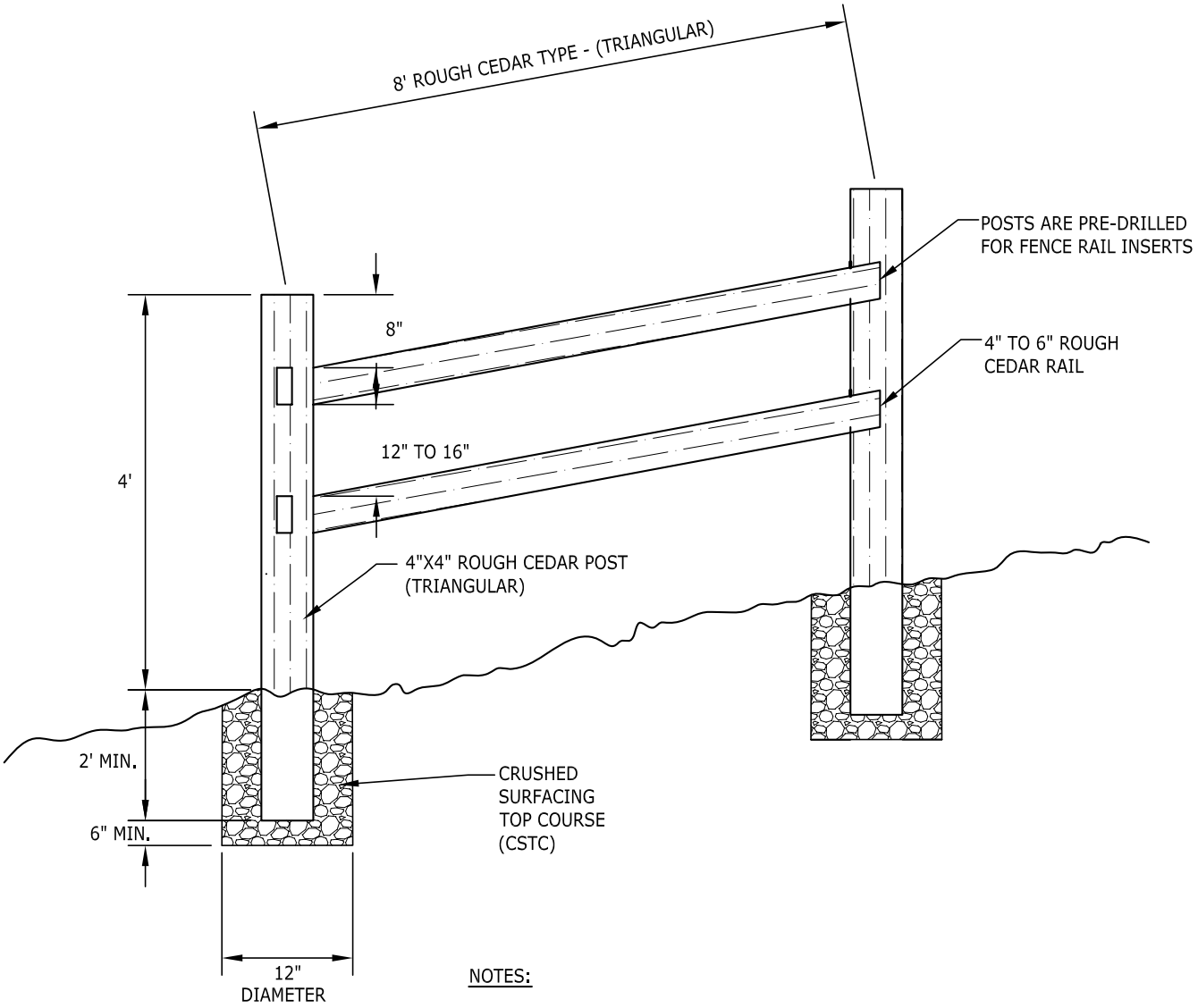


KENT WASHINGTON

CITY OF KENT
ENGINEERING DEPARTMENT

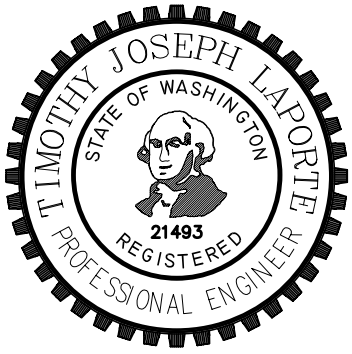
CRITICAL AREA SIGN

DESIGNED	SCALE NONE	STANDARD PLAN
DRAWN TJH		
CHECKED	DATE	5–28
APPROVED ENGINEER		



NOTES:

1. POSTS AND RAILINGS ARE PRECUT FOR ASSEMBLY.
2. 3 RAILS ARE PERMITTED.
3. FENCES SHALL BE PLACED AT THE APPROVED BUFFER EDGE.



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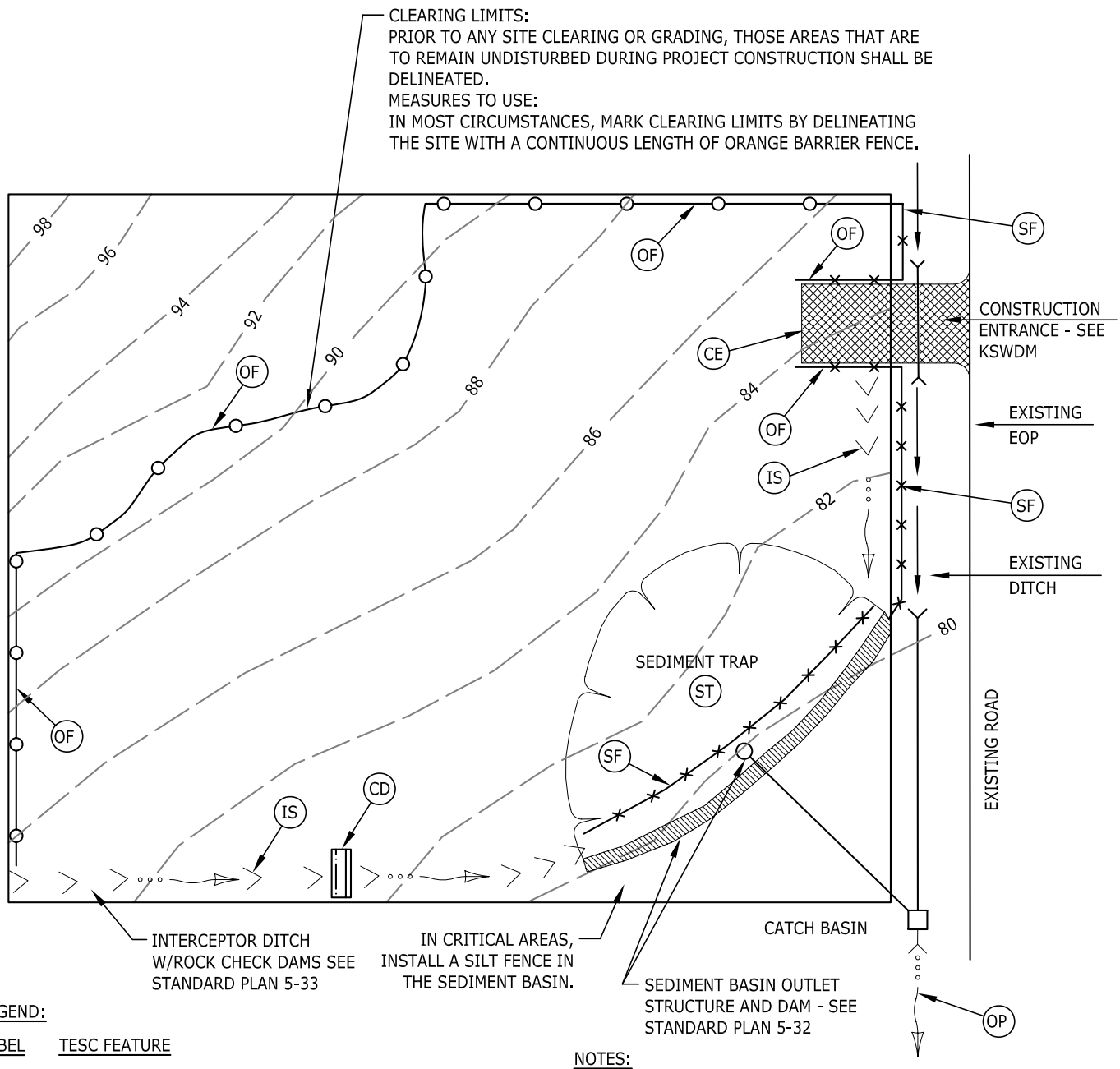
ENGINEERING DEPARTMENT

SPLIT RAIL FENCE

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–29
APPROVED ENGINEER		



LEGEND:

LABEL	TESC FEATURE
IS	INTERCEPTOR SWALE OR DITCH
ST	SEDIMENT TRAP
CD	CHECK DAM
CE	STABILIZED CONSTRUCTION ENTRANCE
SF	SILT FENCE
OP	OUTLET PROTECTION
OF	ORANGE BARRIER FENCE

NOTES:

1. THIS IS A SAMPLE PLAN ONLY, INTENDING TO SHOW HOW TESC FEATURES MAY BE SHOWN ON A SITE PLAN. INDIVIDUAL PROJECT TESC PLANS SHOULD BE LAID OUT TO MEET PROJECT SPECIAL REQUIREMENTS.
2. TESC FEATURES ARE SHOWN IN THESE STD PLANS (5-29, 5-32, 5-34) AND THE KSWDM.

TIMOTHY JOSEPH LAPORTE
STATE OF WASHINGTON
21493
REGISTERED PROFESSIONAL ENGINEER

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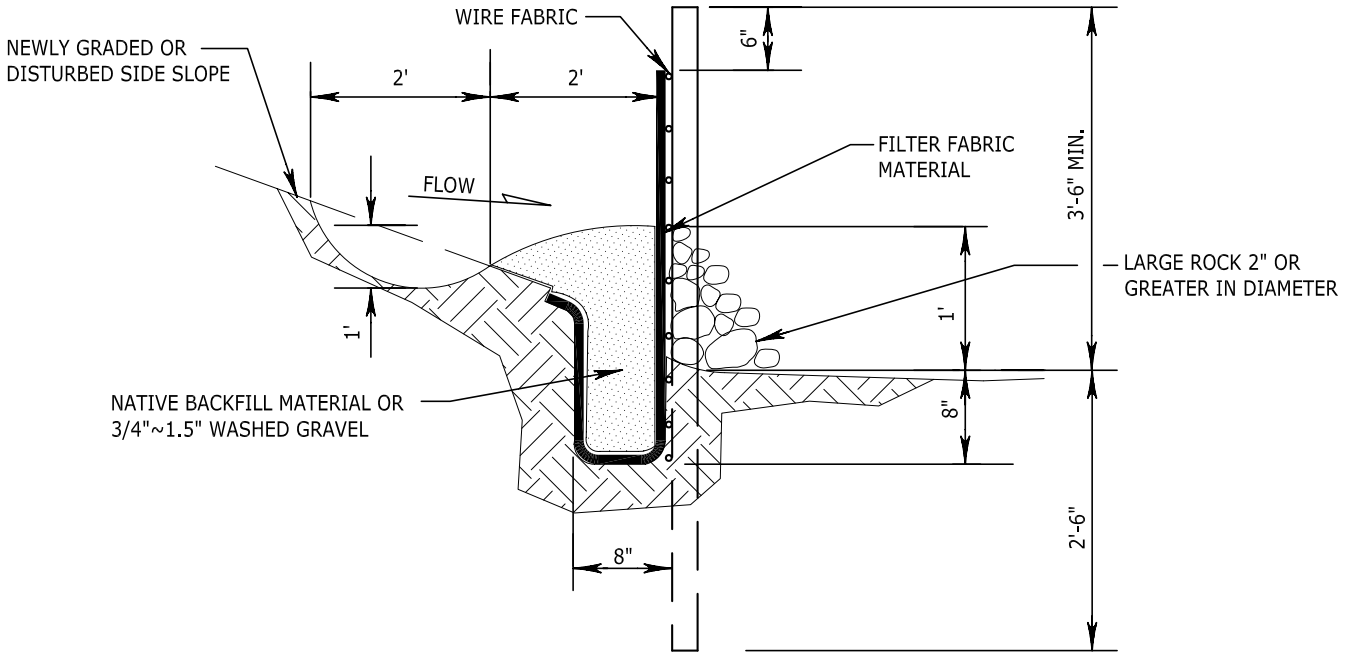
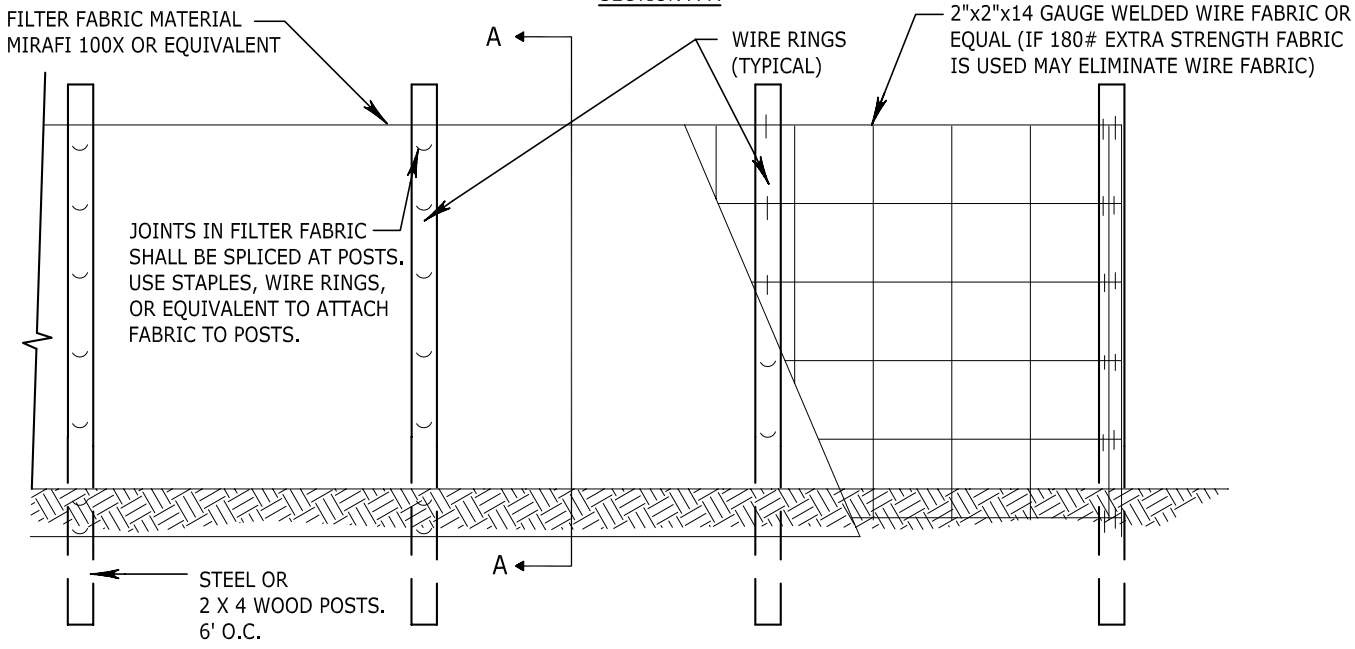
ENGINEERING DEPARTMENT

SAMPLE TESC SITE PLAN 1 ACRE AND SMALLER

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–30
APPROVED ENGINEER		



SECTION A-A



ELEVATION

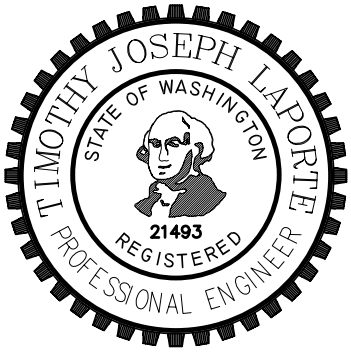
INSTALLATION NOTES:

1. FILTER FABRIC FENCE SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE AFTER THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED. THE NEWLY DISTURBED AREAS RESULTING FROM FILTER FABRIC REMOVAL SHALL BE IMMEDIATELY SEEDED AND MULCHED OR STABILIZED AS APPROVED BY THE ENGINEER.

2. FILTER FABRIC FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

3. REMOVE SEDIMENT WHEN IT REACHES 1/3 FENCE HEIGHT.

4. INSTALL THE SILT FENCE FIRST. AFTER THE SILT FENCE HAS BEEN INSTALLED, CONSTRUCT BERM AND TRENCH.



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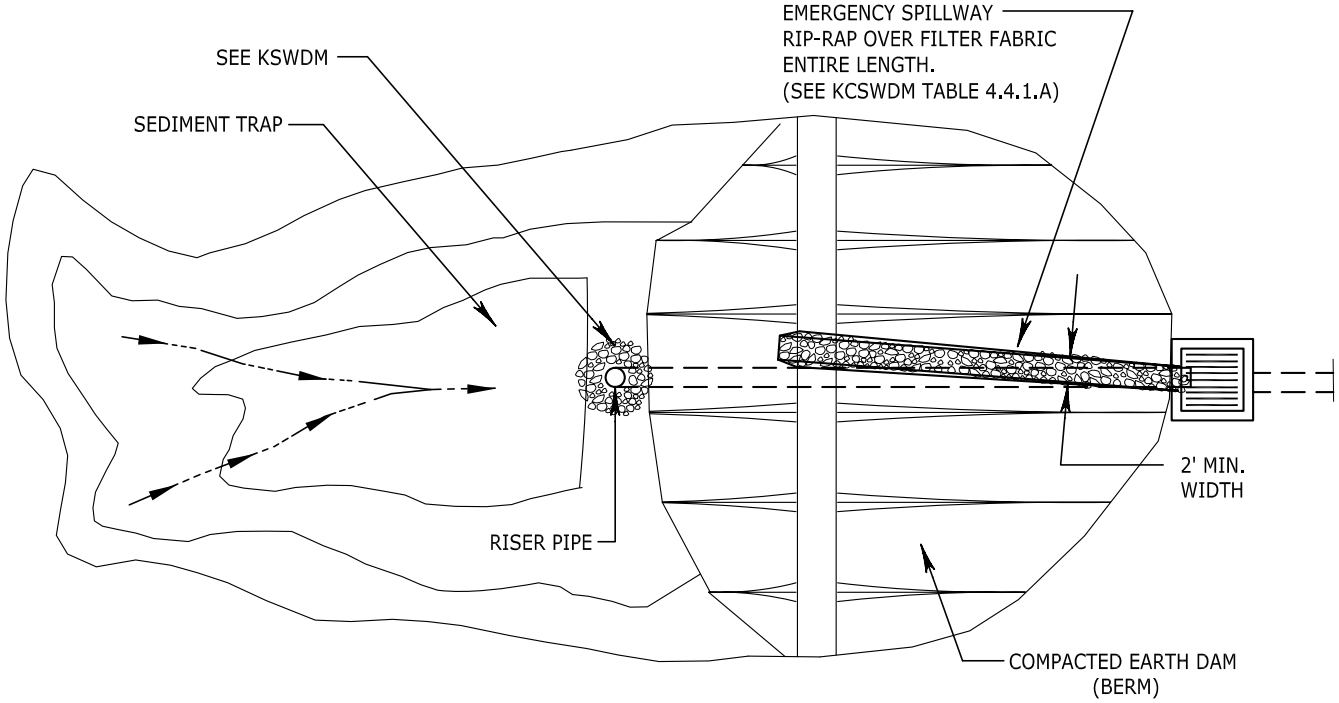
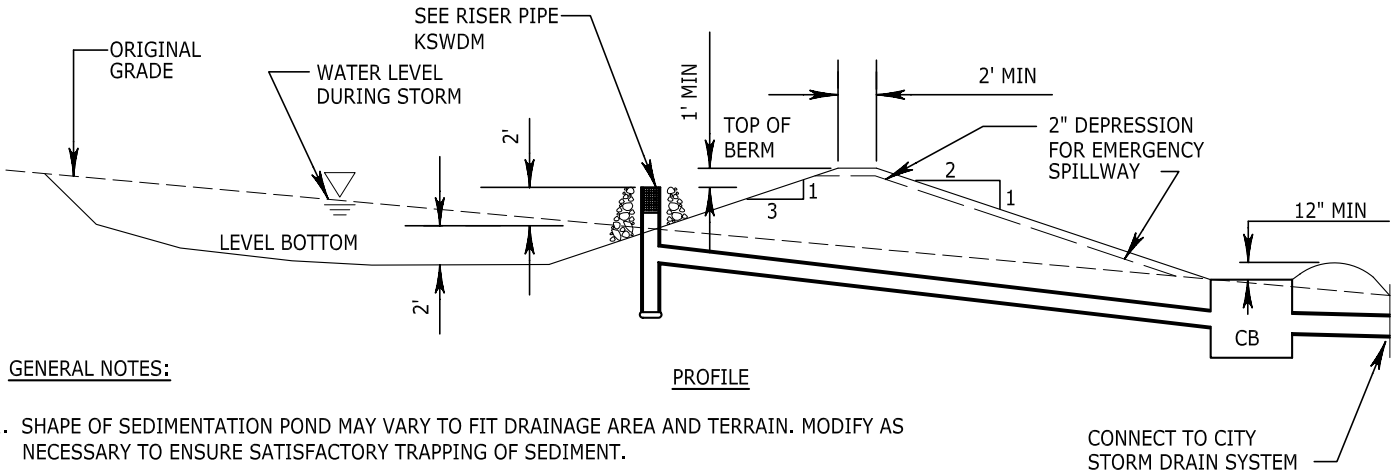
FILTER FABRIC FENCE

DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–31
APPROVED ENGINEER		



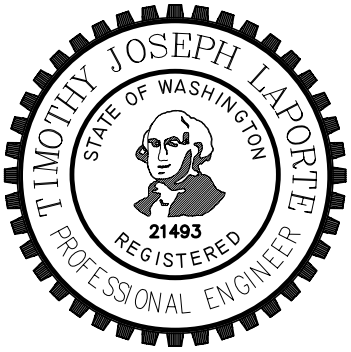
PLAN



PROFILE

GENERAL NOTES:

1. SHAPE OF SEDIMENTATION POND MAY VARY TO FIT DRAINAGE AREA AND TERRAIN. MODIFY AS NECESSARY TO ENSURE SATISFACTORY TRAPPING OF SEDIMENT.
2. USE THE KENT SURFACE WATER DESIGN MANUAL TO DETERMINE THE TRAP GEOMETRY.
3. TO AID IN DETERMINING SEDIMENT DEPTH, ALL TRAPS SHALL HAVE A STAFF GAUGE WITH A PROMINENT MARK 1 FOOT ABOVE THE BOTTOM OF THE TRAP. CONTRACTOR SHALL RESTORE THE TRAP BACK TO ORIGINAL DEPTH AND SIZE WHEN THE SEDIMENT REACHES THIS LEVEL.
4. FOR USE ON SITES LESS THAN 1 ACRE IN SIZE.
5. TRAP MAY BE BERM OR BY PARTIAL OR COMPLETE EXCAVATION.



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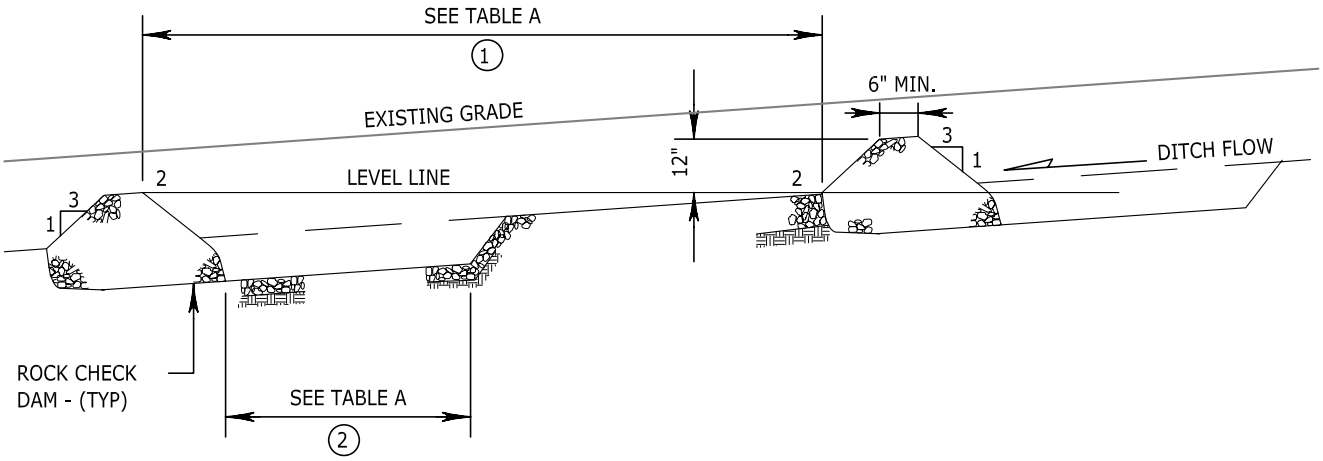
CITY OF KENT
ENGINEERING DEPARTMENT

TESC SEDIMENT TRAP EARTH BERM

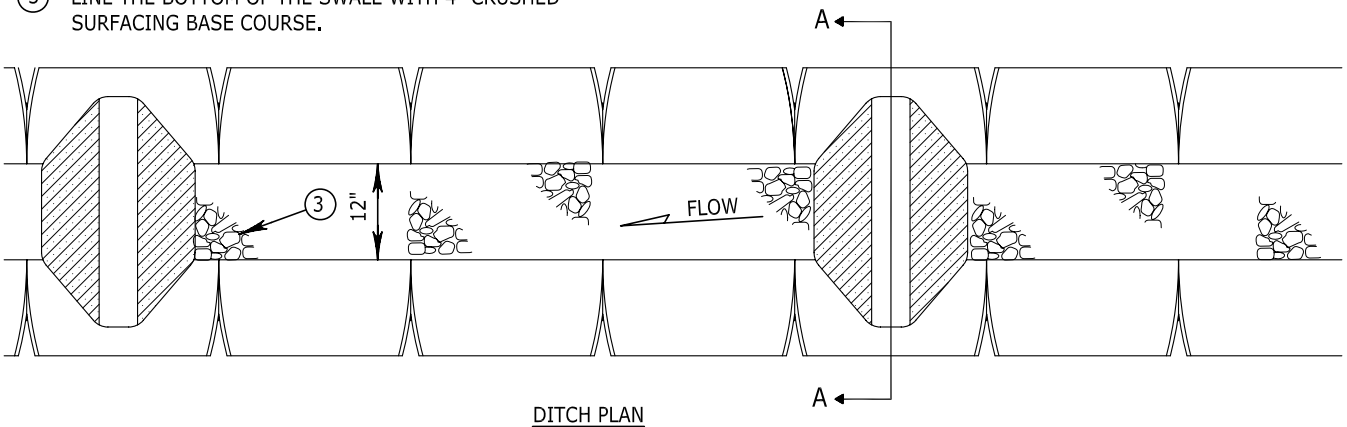
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5-32
APPROVED ENGINEER		



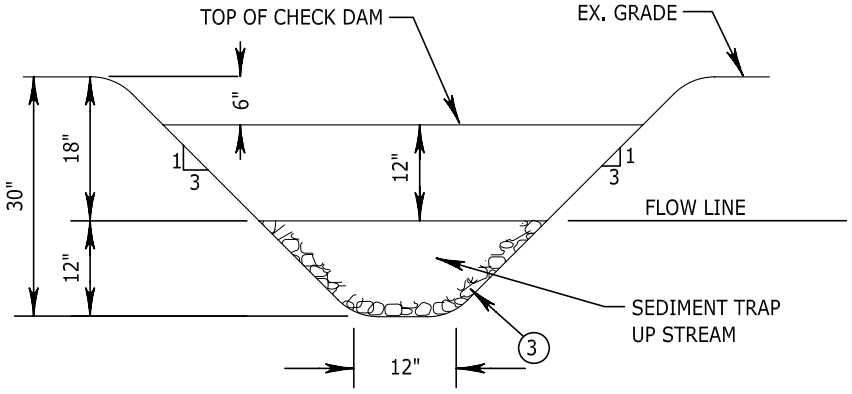
DITCH PROFILE

DETAIL NOTES:

1. DAM SPACING
2. SEDIMENT TRAP LENGTH
3. LINE THE BOTTOM OF THE SWALE WITH 4" CRUSHED SURFACING BASE COURSE.



DITCH PLAN



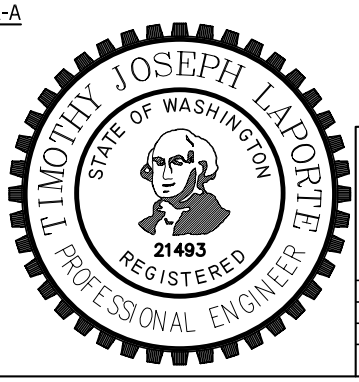
SECTION A-A

TABLE A

SLOPE FT/FT	1	2
1:100	100	10
1:50	50	10
1:25	25	5
1:20	20	4
1:15	15	3
1:10	10	2
1:5	5	0

GENERAL NOTES:

1. SUMP BEHIND ROCK CHECK DAM SHALL BE INSPECTED DAILY, AND CLEANED WHEN COLLECTED DEBRIS EXCEEDS 1/2 OF ITS DEPTH.



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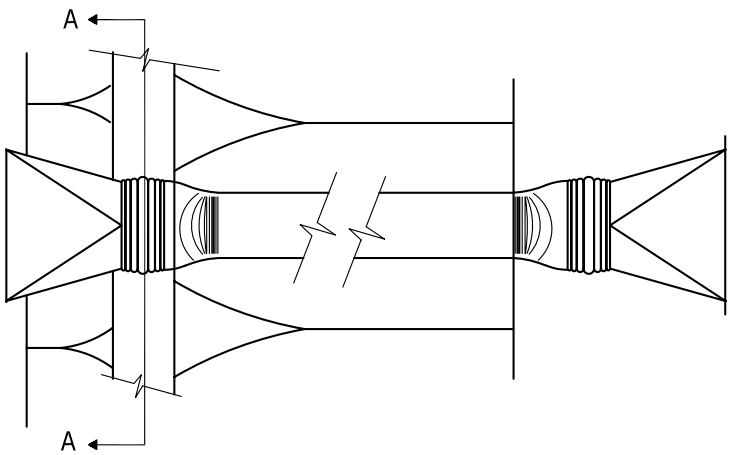
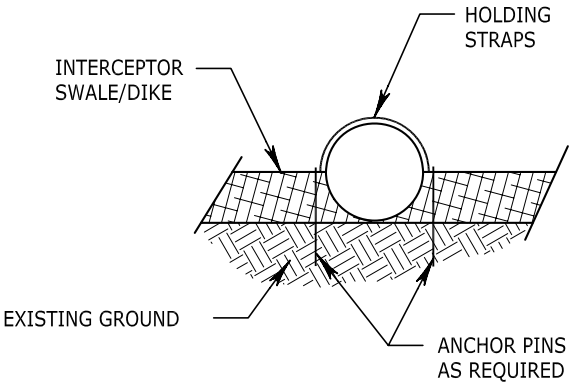
ENGINEERING DEPARTMENT

TESC INTERCEPTOR DITCH WITH ROCK CHECK DAMS

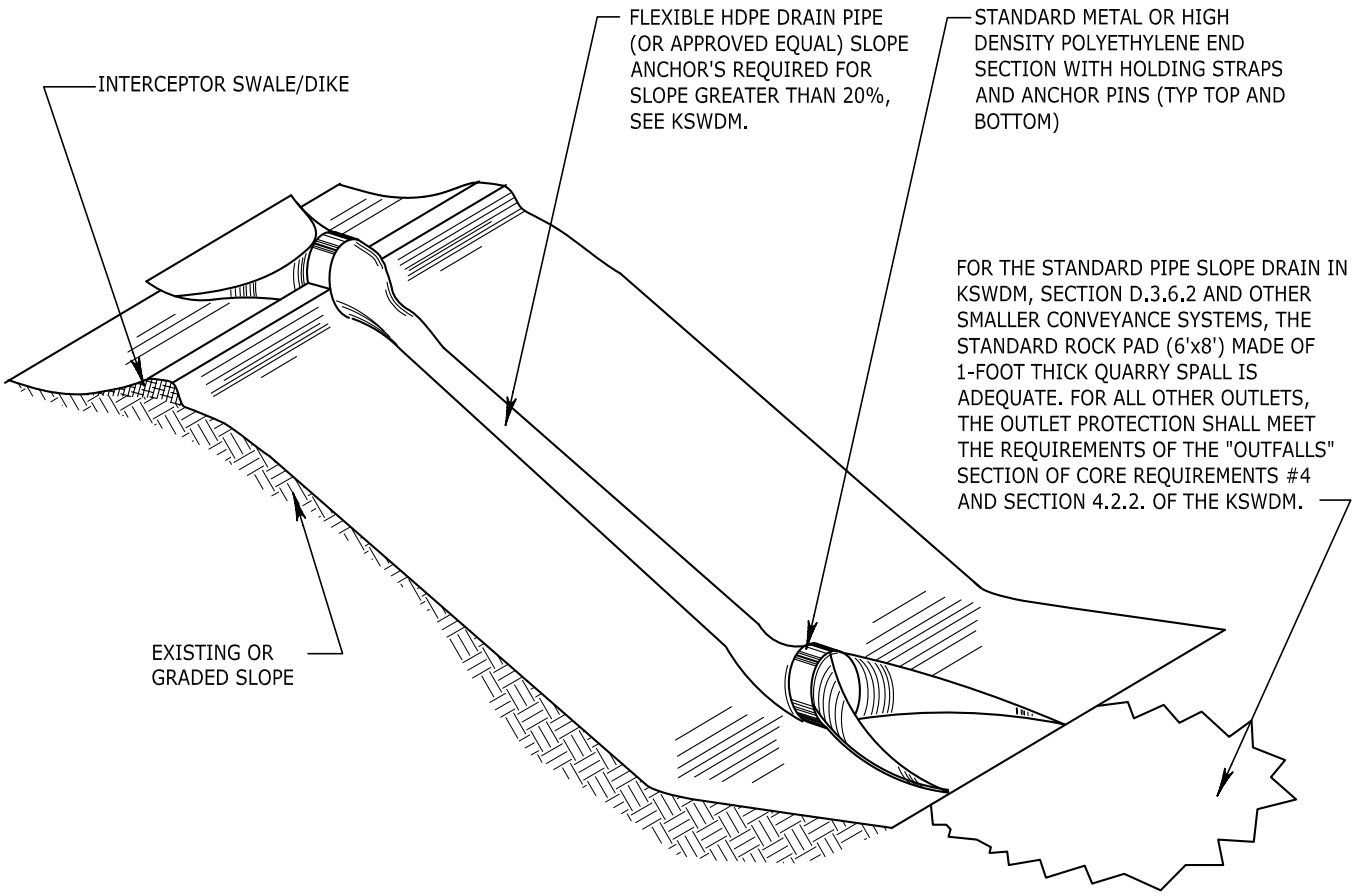
DESIGNED DWH	SCALE NONE	STANDARD PLAN
DRAWN BB		
CHECKED	DATE	5–33
APPROVED ENGINEER		



PLAN



SECTION A-A



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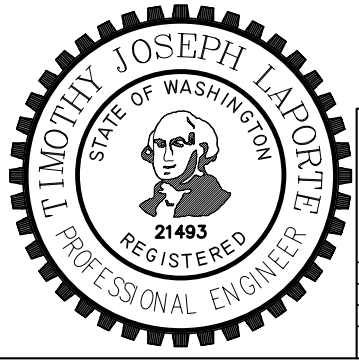

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CITY OF KENT
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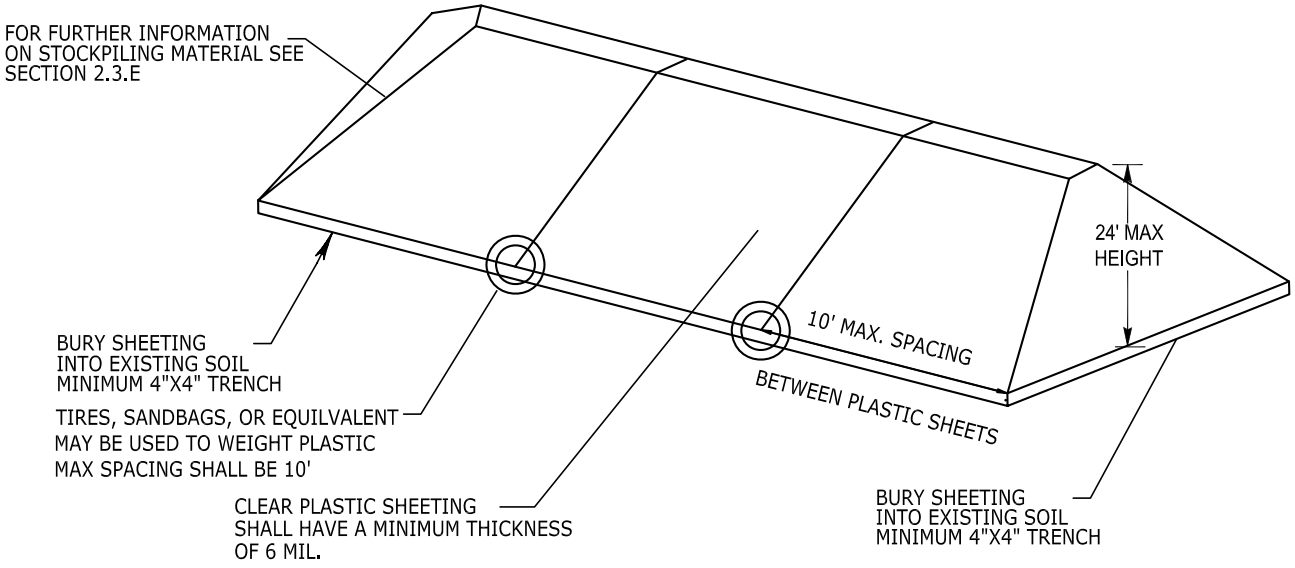
APPROVED ENGINEER		



GENERAL NOTES:

1. PLASTIC SHEETING SHALL MEET THE REQUIREMENTS OF WSDOT STANDARD SPECIFICATIONS 9-14.5.

2. MAXIMUM PERMITTED SLOPE SHALL BE 2H:1V.

3. SEAMS BETWEEN SHEETS MUST OVERLAP A MINIMUM OF 12" AND BE WEIGHTED OR TAPED.

4. TEMPORARY STOCKPILES SHALL NOT BLOCK THE SIGHT DISTANCES OF ANY INTERSECTION OR DRIVEWAY.

TIMOTHY JOSEPH LAPORTE
STATE OF WASHINGTON
21493
REGISTERED PROFESSIONAL ENGINEER

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TEMPORARY STOCKPILING

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