

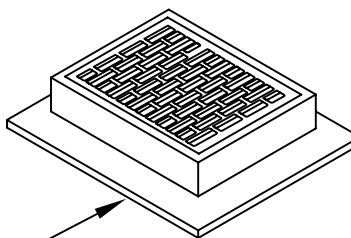
CHAPTER 4 - APPENDIX

Exhibit #	Standard Detail #	Title
1	SW- 1	Stormwater Precast Concrete Inlet
2	SW- 2	Standard Drainage Plan Infiltration System
3	SW- 3	Stormwater Catch Basin Type 1
4	SW- 4A	Stormwater Catch Basin Type 2
5	SW- 4B	Stormwater Catch Basin Type 2 (48" or 54")
6	SW- 5	Floatable Material Separator or Gas Trap (12" and Larger)
7	SW - 6	Open Curb Face Frame and Grate Installation
8	SW - 7A	Grate Detail for Catch Basin of Inlet
9	SW- 7B	Frame for Grate of Solid Cover
10	SW- 7C	Grate for Catch Basin or Inlet
11	SW - 8	Polypropylene Ladder and Maintenance Step
12	SW - 9	Pipe Outfall
13	SW - 10	450 Gallon Bottle Type Oil/Water Separator
14	SW - 11	Floatable Material Separator and/or Gas Trap (6" or 8")
15	SW -12B	Restrictor Unit and Lift Gate Assembly
16	SW - 12A	Lift Gate Assembly and Secondary Orifice Detail
17	SW - 13	Typical Frame and Grate Installation
18	SW - 14	Typical Dry Detention Pond
19	SW - 15	Vegetated Swale
20	SW - 16	Standard Drainage Plan Detention System

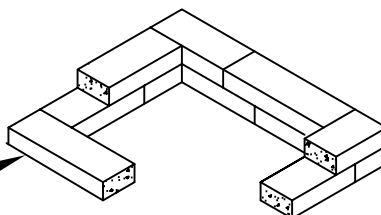


City of Port Townsend - Public Works Department

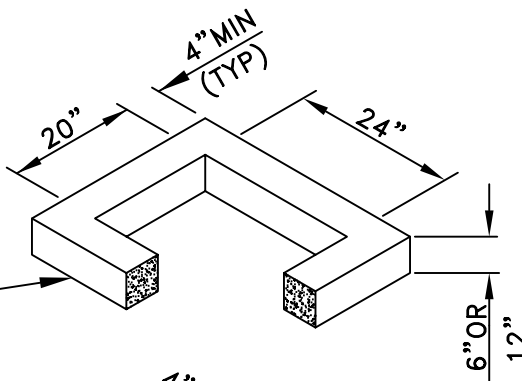
Standard Detail



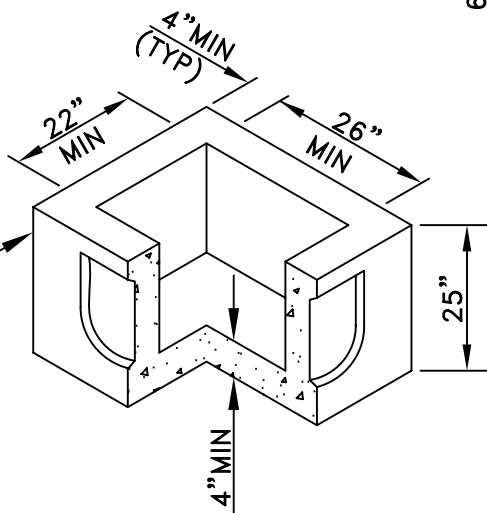
FRAME AND OPEN GRATE



2"x4"x8" SOLID BRICK
USED FOR FINAL ADJUSTMENT
TO GRADE. 6" HIGH MAX



6" OR 12" CONCRETE
RISER SECTION
CLASS 4000 CONC



PRECAST CONC BASE SECTION
W/MAX OF ONE 17"Ø KNOCKOUT
PER SIDE. ENTRANCE ANGLE
TO BE LIMITED BY KNOCKOUTS
CLASS 4000 CONC
PIPE OUTER DIA PLUS
INLET WALL THICKNESS
SHALL NOT EXCEED 17".

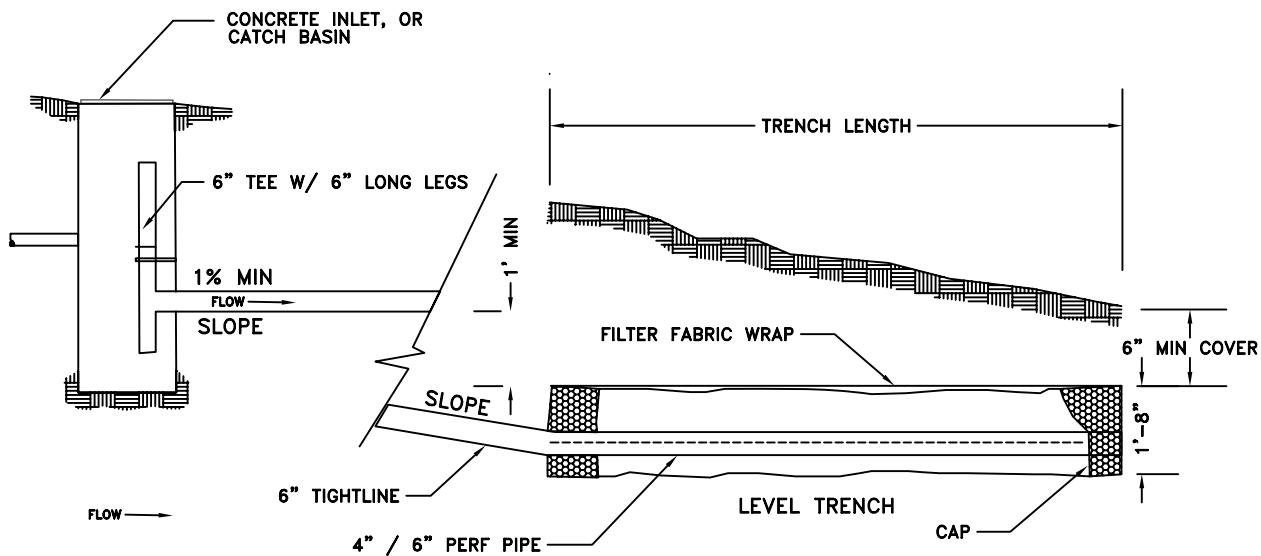
INLET TO CONFORM TO WSDOT STANDARD PLAN B-26

Date: April 1997	No.	Date	Revision	By	Apvd	Stormwater Precast Concrete Inlet Detail: SW-1
Approved By:						
File: E:\eng_std\standard\storm						

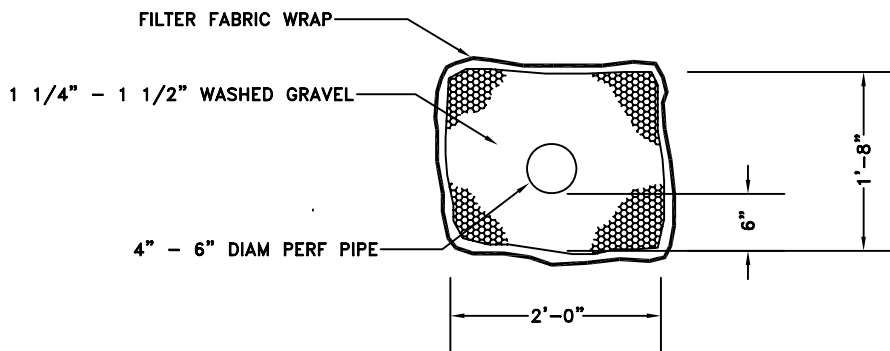


City of Port Townsend - Public Works Department

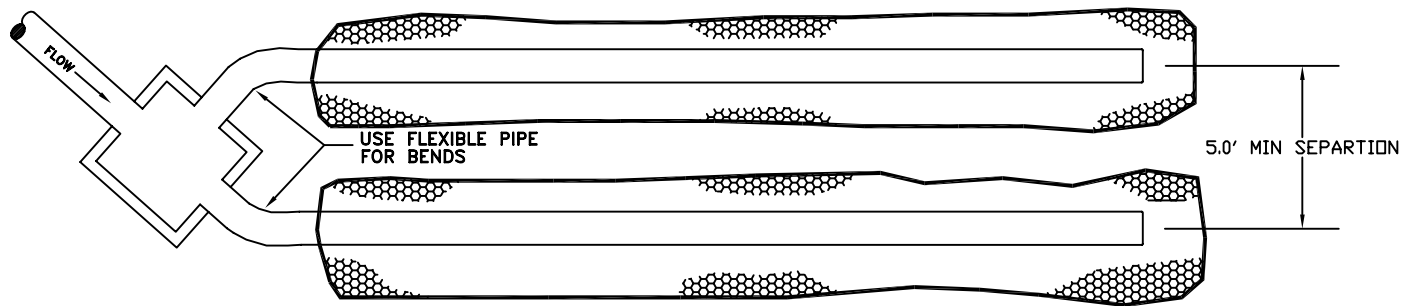
Standard Detail



SYSTEM CROSS-SECTION



TRENCH CROSS-SECTION



DOUBLE TRENCH SYSTEM

Date: April 1997

Approved By:

File: E:\eng_std\standard\storm

No.	Date	Revision	By	Apvd

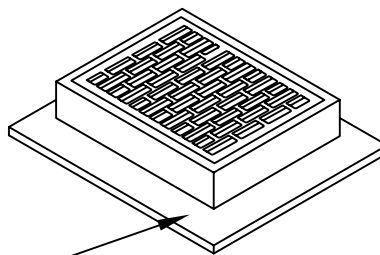
Standard Drainage Plan
Infiltration System

Detail: SW-2

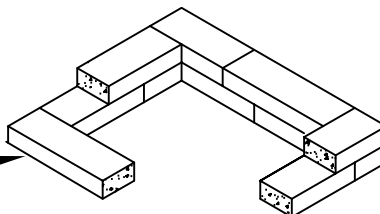


City of Port Townsend - Public Works Department

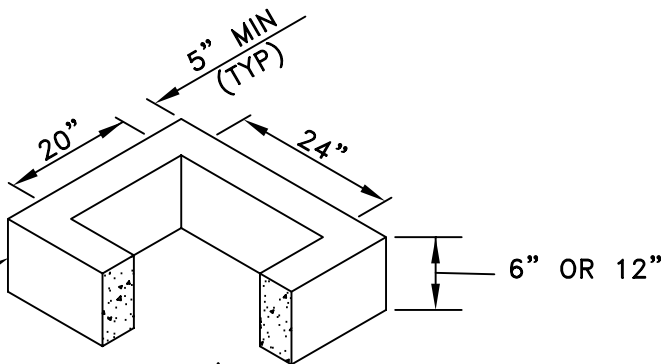
Standard Detail



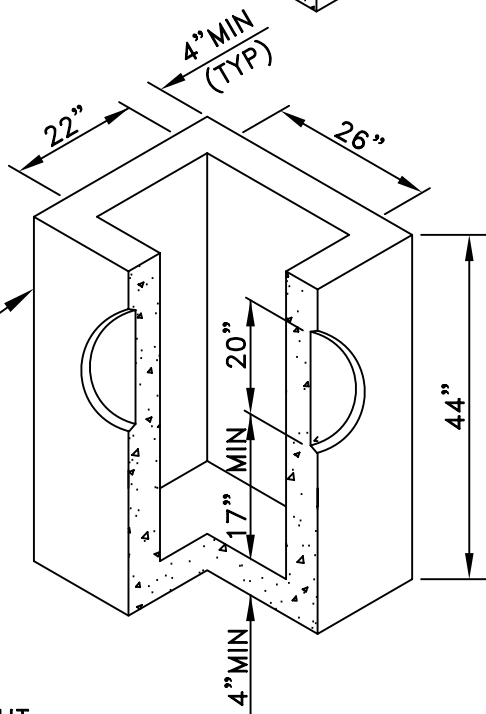
VANED GRATE PER STD SW-7A
SOLID COVER PER STD SW-7B



2"x4"x8" SOLID BRICK
USED FOR FINAL ADJUSTMENT
TO GRADE. 6" HIGH MAX



6" OR 12" CONCRETE
RISER SECTION
CLASS 4000 CONC



PRECAST CONC BASE SECTION
W/MAX OF ONE 20"Ø KNOCKOUT
PER SIDE, ENTRANCE ANGLE
TO BE LIMITED BY KNOCKOUTS
CLASS 4000 CONC
PIPE OUTER DIA PLUS CB
WALL THICKNESS SHALL
NOT EXCEED 20".

NOTES:

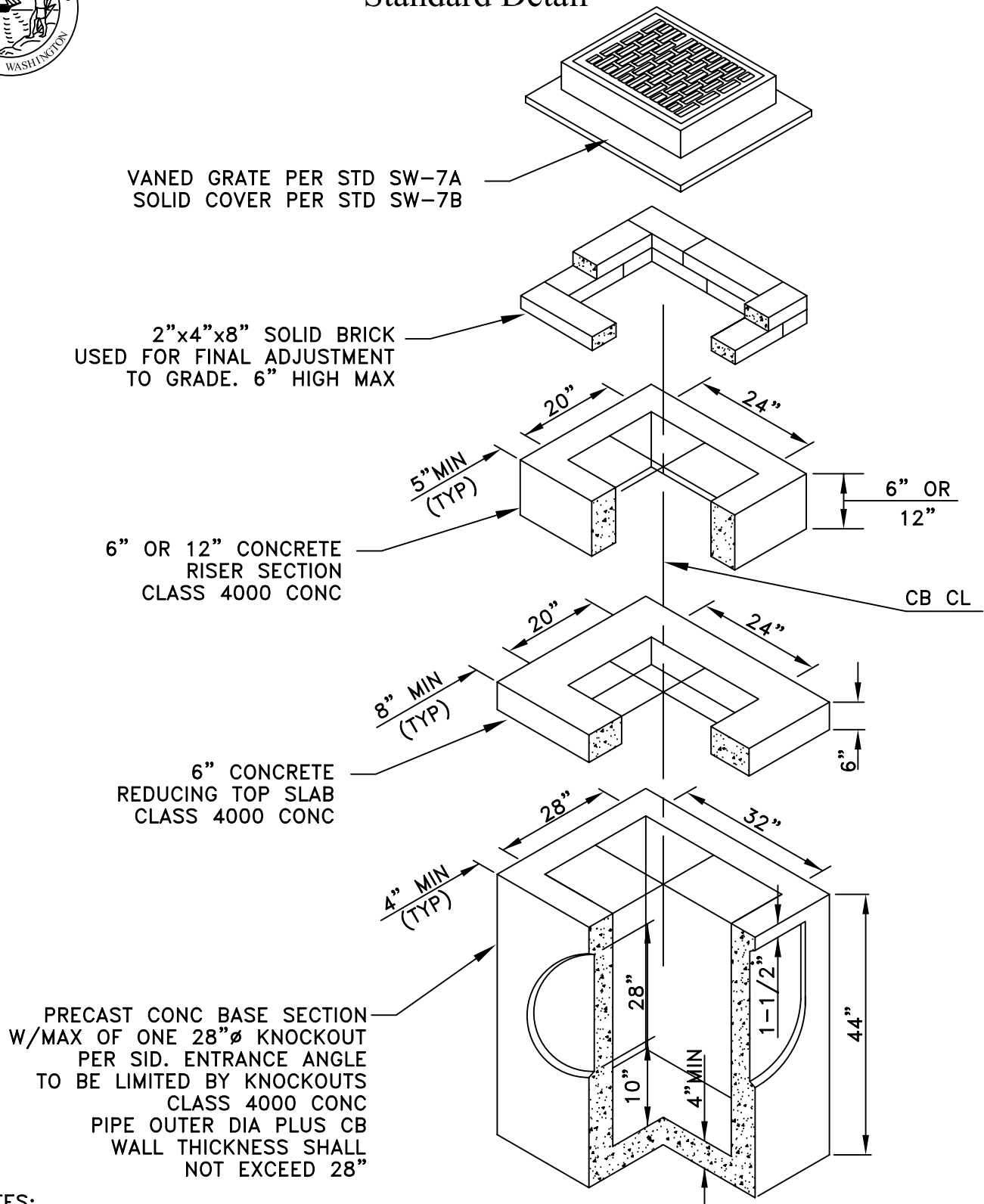
1. ALL JOINTS WILL BE MOTARED IN AND OUT.
2. CATCH BASIN TO CONFORM TO WSDOT STANDARD PLAN B-1

Date: April 1997	No.	Date	Revision	By	Apvd	Stormwater Catch Basin Type 1
Approved By:						
File: E:\eng_std\standard\storm						Detail: SW-3



City of Port Townsend - Public Works Department

Standard Detail



NOTES:

1. ALL JOINTS WILL BE MOTARED IN AND OUT.
2. CATCH BASIN TO CONFORM TO WSDOT STANDARD PLAN B-1A

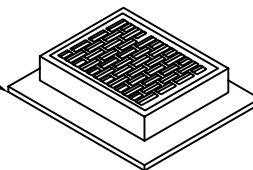
Date: April 1997	No.	Date	Revision	By	Apvd	Stormwater Catch Basin Type 2 Detail: SW-4A
Approved By:						
File: E:\eng_std\standard\storm						



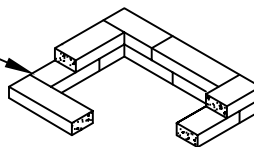
City of Port Townsend - Public Works Department

Standard Detail

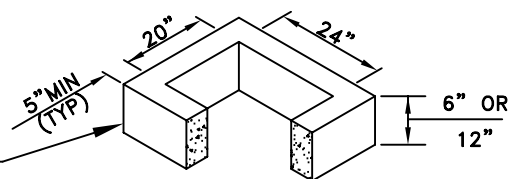
VANED GRATE PER STD SW-7A
SOLID COVER PER STD SW-7B



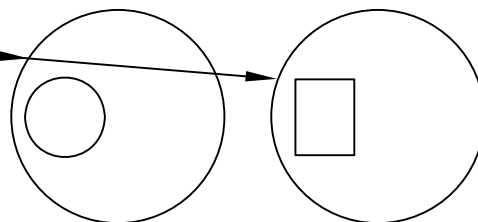
2"x4"x8" SOLID BRICK
USED FOR FINAL ADJUSTMENT
TO GRADE. 6" HIGH MAX



6" OR 12" CONCRETE
RISER SECTION
CLASS 4000 CONC

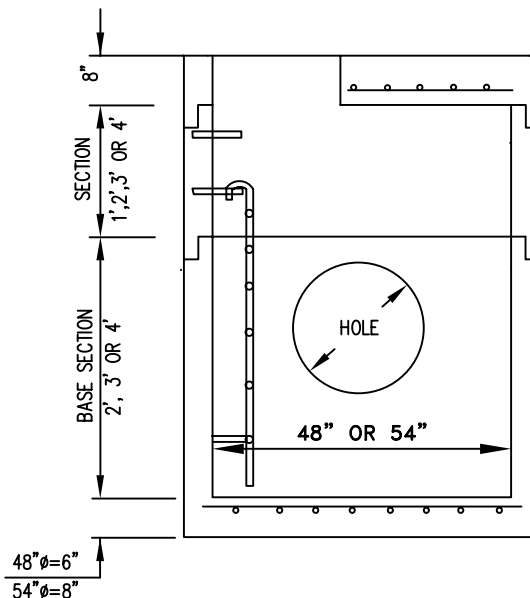


TOP SLAP WITH
24" ROUND ACCESS OR
20"x24" RECTANGULAR ACCESS



NOTES:

- 1 ALL TYPE 2 CB'S EQUIPPED WITH OPEN GRATES SHALL BE LOCKING TYPE.
- 2 ALL TYPE 2 CB'S NOT IN PAVED AREAS SHALL BE EQUIPPED WITH LOCKING LIDS,
- 3 CB'S SHALL BE SET SO THAT STEPS ARE DIRECTLY UNDER OPENING.
- 4 ALL TYPE 2 CB'S SHALL BE EQUIPPED WITH STEPS AND LADDER PER STD SW-8
- 5 CONCRETE SHALL BE CLASS 4000.
- 6 MIN DISTANCE FROM INVERT TO CB BOTTOM SHALL BE 2.0'.
- 7 CB SECTIONS AND LID WILL BE HS20 TRAFFIC LOAD CERTIFIED BY MFG.
- 8 HOLE SIZE = PIPE OD + 5". MAX
MAX HOLE SIZE = 36" (48" CB)
MAX HOLE SIZE = 42" (54" CB)



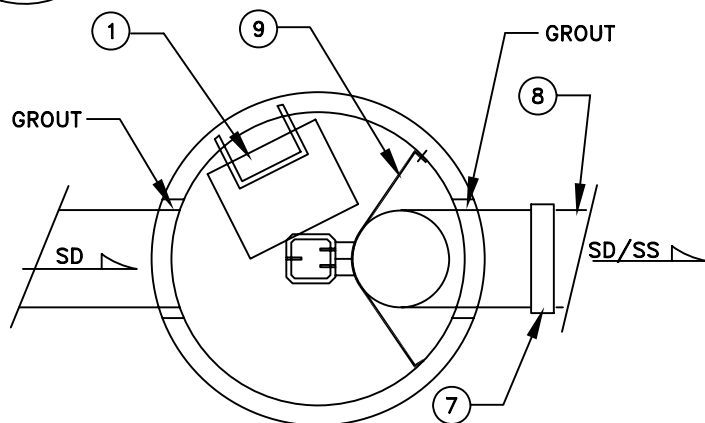
CATCH BASIN TO CONFORM TO WSDOT STANDARD PLAN B-1E

Date: April 1997	No.	Date	Revision	By	Apvd	Stormwater Catch Basin Type 2 (48" or 54") Detail: SW-4B
Approved By:						
File: E:\eng_std\standard\storm						

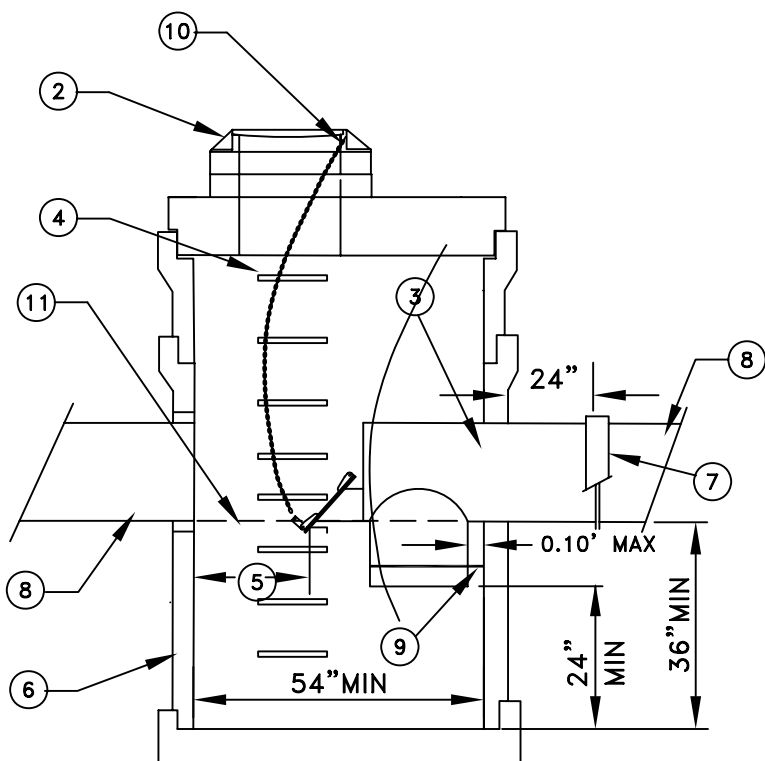


City of Port Townsend - Public Works Department

Standard Detail



PLAN



ELEVATION

NOTES:

- ① INSTALL CB TOP, FRAME, GRATE AND SECTIONS SO THAT LIFT GATE IS VISIBLE THROUGH OPENING AND STEPS CLEAR INLET AND RESTRICTOR UNIT.
- ② INSTALL LOCKING FRAME & GRATE OR LID PER STD DWG SW-7A.
- ③ SEPARATOR ASSEMBLY.
- ④ STEPS PER STD DWG SW-8.
- ⑤ MIN CLEARANCE:
36" FOR OUTLETS OF 24" AND LARGER
18" FOR OUTLETS OF 18" AND SMALLER
- ⑥ 54" TYPE 2 CB OR LARGER.
- ⑦ BAND STRAP WITH GASKET.
- ⑧ SEE PLAN AND SPECIFICATIONS FOR SIZE AND TYPE OF PIPE ENTERING AND EXITING CB.
- ⑨ SECURE SEPARATOR TO CB WITH 8 GA ALUMINUM STRAP. BOLT TO CB WALL WITH STAINLESS STEEL ANCHOR BOLTS AND TACK WELD TO SEPARATOR UNIT.
- ⑩ BOLT OR WELD CHAIN TO FRAME.
- ⑪ INVERT ELEVATION: SEE PLANS AND SPECIFICATIONS.

Date: April 1997

Approved By:

File: E:\eng_std\standard\storm

No.	Date	Revision	By	Apvd

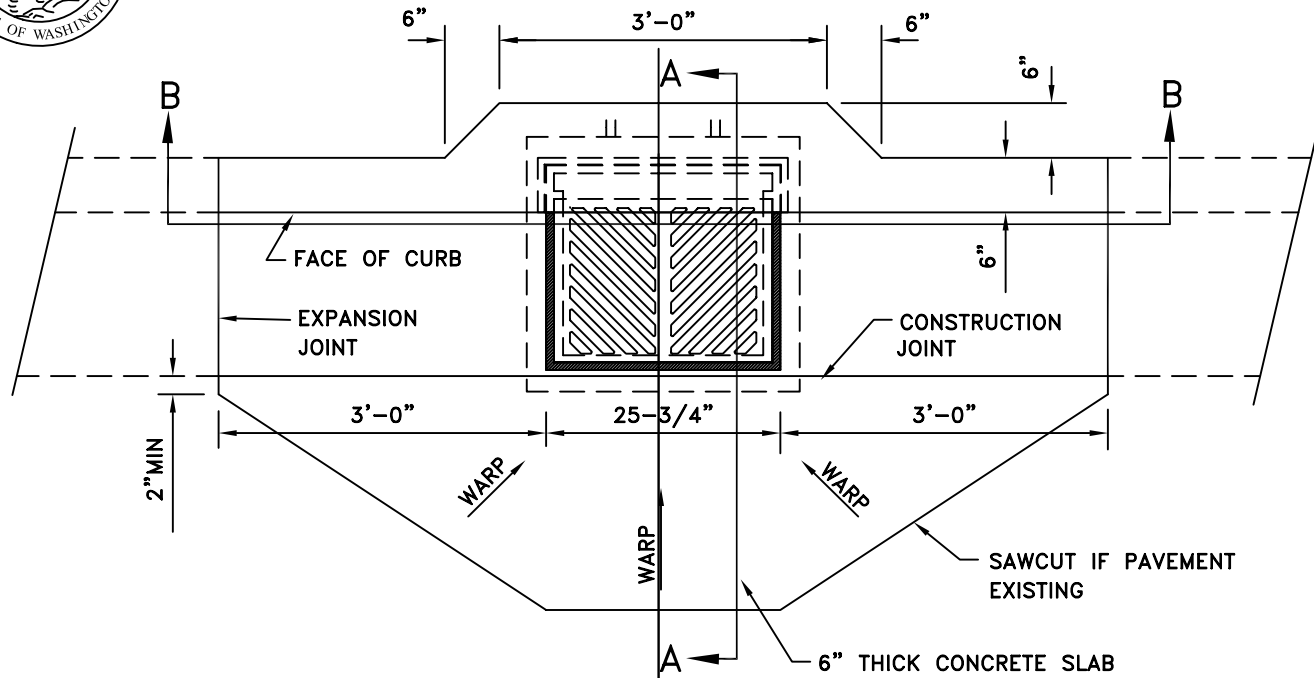
Floatable Material Separator
or Gas Trap (12" and Larger)

Detail: SW-5

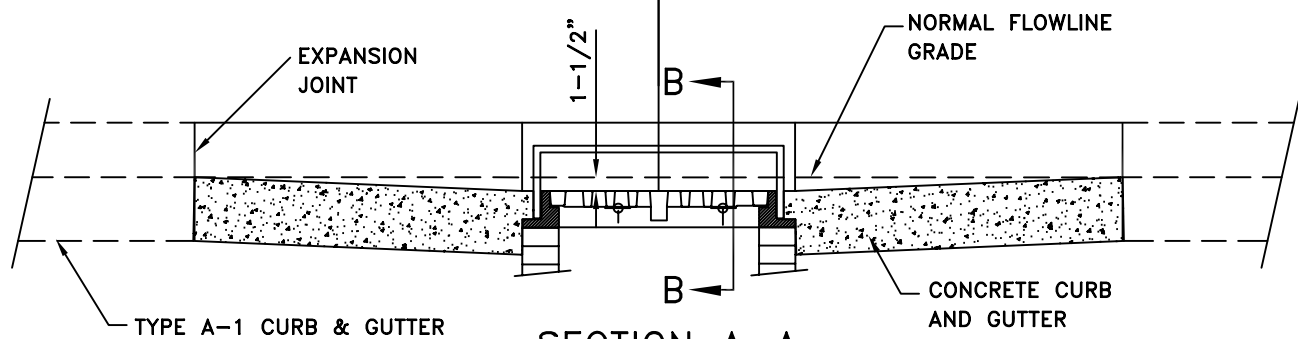


City of Port Townsend - Public Works Department

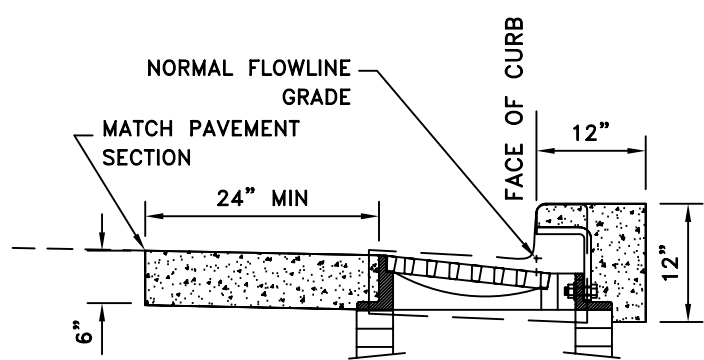
Standard Detail



TOP VIEW



SECTION A-A



SECTION B-B

NOTES:

1. INSTALLATION OF OPEN CURB FACE FRAME AND GRATE MUST BE APPROVED BY CITY ENGINEER ON A CASE BY CASE BASIS.

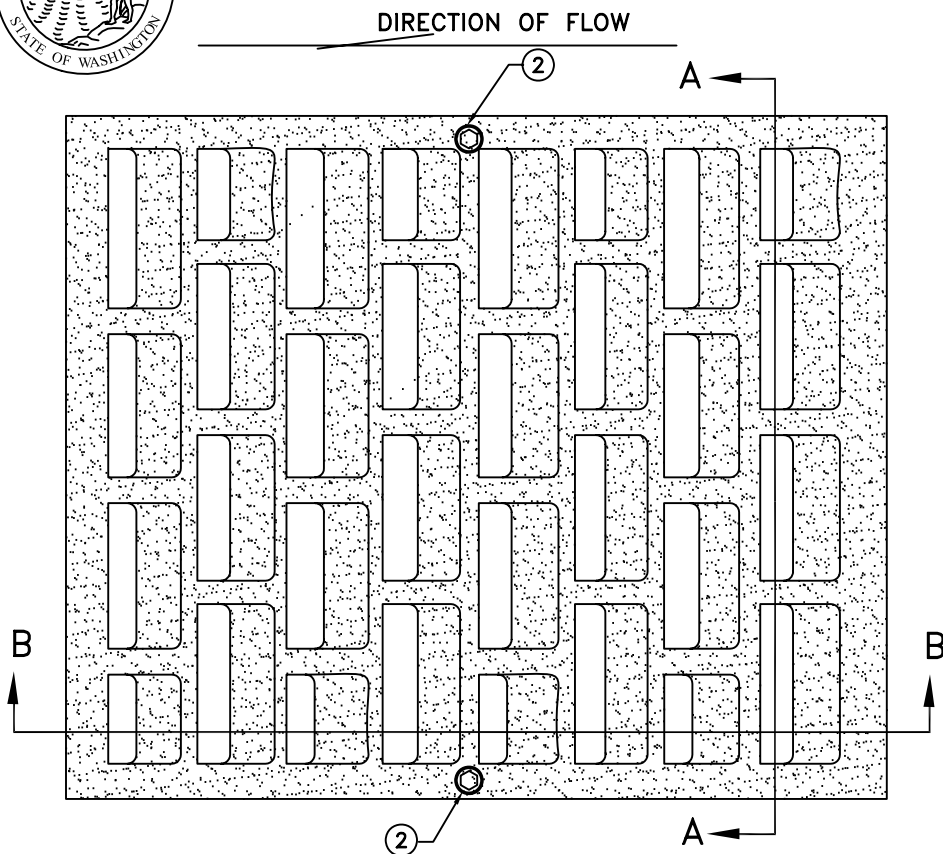
PROBLEMS OF FLOATABLE MATERIAL ENTERING STORM DRAINAGE SYSTEM BY USE OF THIS INSTALLATION MUST BE ADDRESSED.
2. SEE STD DWG SW-7A FOR FRAME AND GRATE DETAILS.

Date: April 1997	No.	Date	Revision	By	Apvd	<h3 style="margin: 0;">Open Curb Face Frame and Grate Installation</h3> <p style="font-size: 1.5em; margin: 10px 0 0 0;">Detail: SW-6</p>
Approved By:						
File: E:\eng_std\standard\storm						

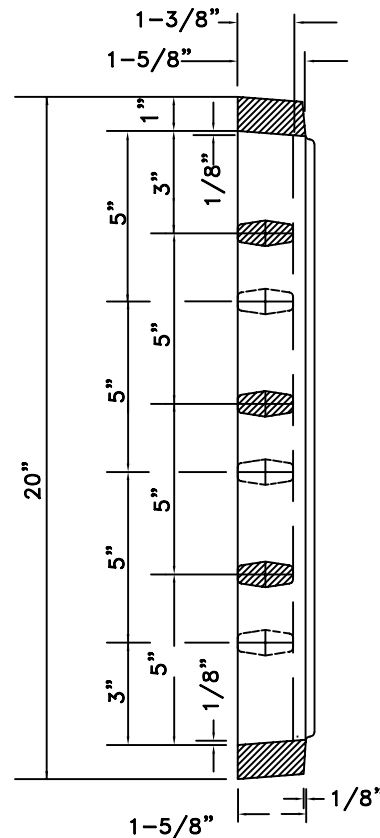


City of Port Townsend - Public Works Department

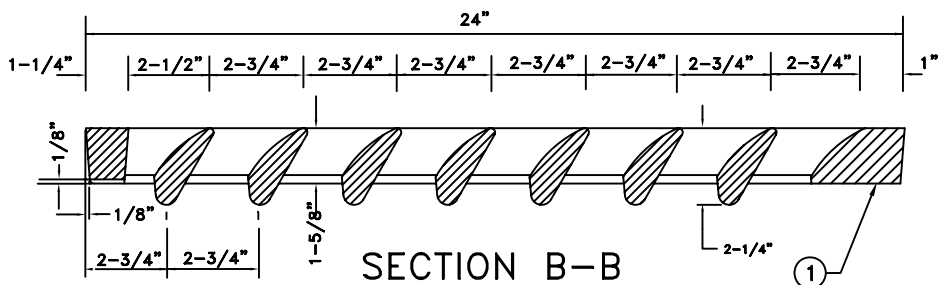
Standard Detail



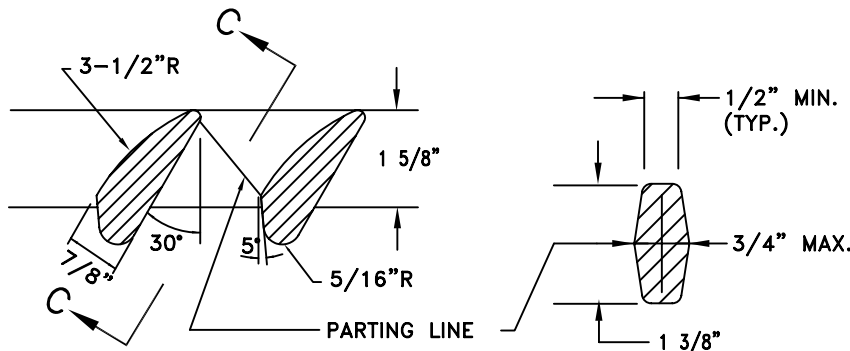
TOP VIEW



SECTION A-A



SECTION B-B



VANE DETAIL

SECTION C-C

NOTE:

- ① MATERIAL USED SHALL BE DUCTILE IRON PER ASTM-A536, GRADE 80-55-06, WITH BITUMINOUS COATING.
- ② WHEN LOCKING GRATE REQUIRED HOLES WILL BE PROVIDED IN CASTING TO ALLOW FOR TWO 5/8" DIA STAINLESS STEEL, SOCKET HEAD CAP SCREWS. NO PART OF SCREW WILL PROTRUDE ABOVE GRATE.
- ③ "DUMP NO WASTEDRAINS TO SOUND" SHALL BE STENCILED ON GRATE

W.S.D.O.T. STD PLAN B-2B

Date: April 1997

Approved By:

File: E:\eng_std\standard\storm

No.	Date	Revision	By	Apvd

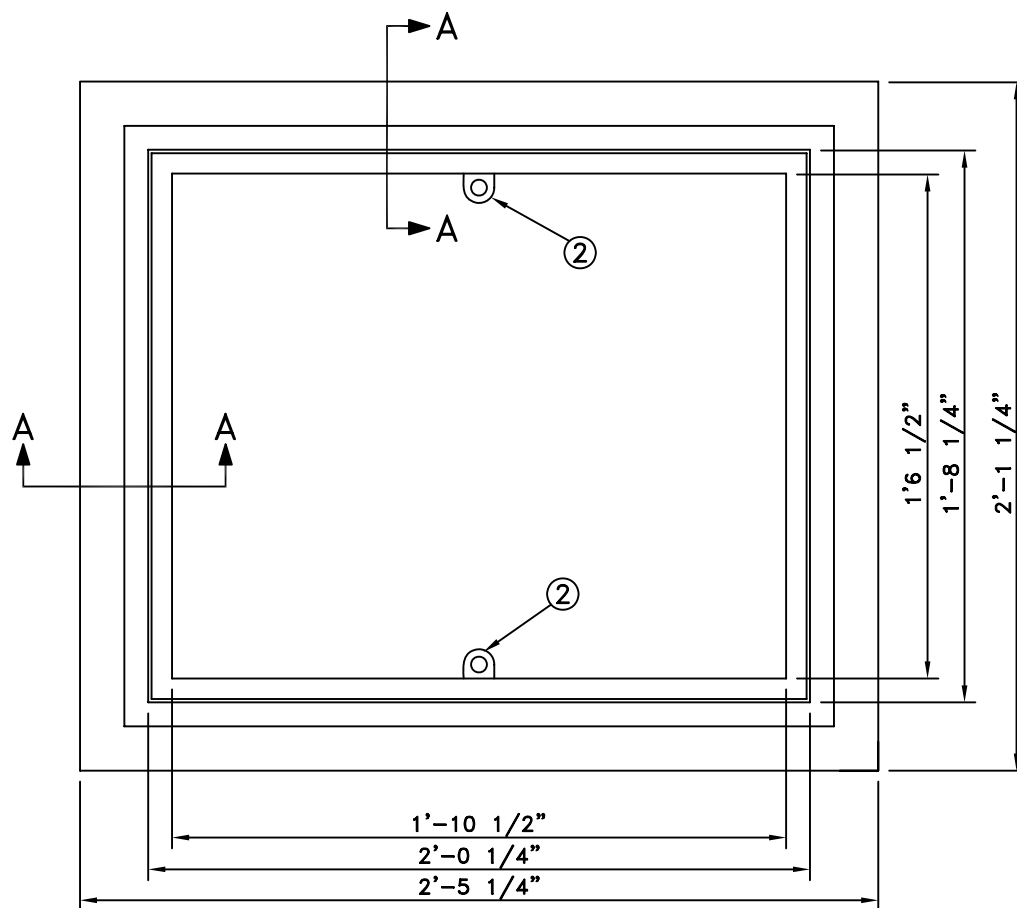
Grate Detail For Catch Basin of Inlet

Detail: SW-7A

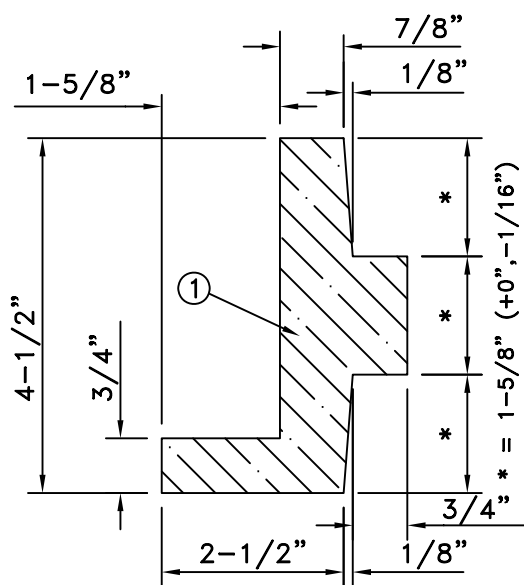


City of Port Townsend - Public Works Department

Standard Detail



TOP VIEW



SECTION A-A

NOTES:

- ① MATERIAL USED SHALL BE CAST IRON PER ASTM-A48, CLASS 30. FRAME SHALL HAVE A BITUMINOUS COATING APPLIED.
- ② WHEN A LOCKING GRATE OR COVER IS REQUIRED THE FRAME SHALL BE FABRICATED SO AS TO ACCEPT TWO (2) 5/8" STAINLESS STEEL SOCKET HEAD CAP SCREWS OF GRATE OR COVER.

Date: April 1997

Approved By:

File: E:\eng_std\standard\storm

No.	Date	Revision	By	Apvd

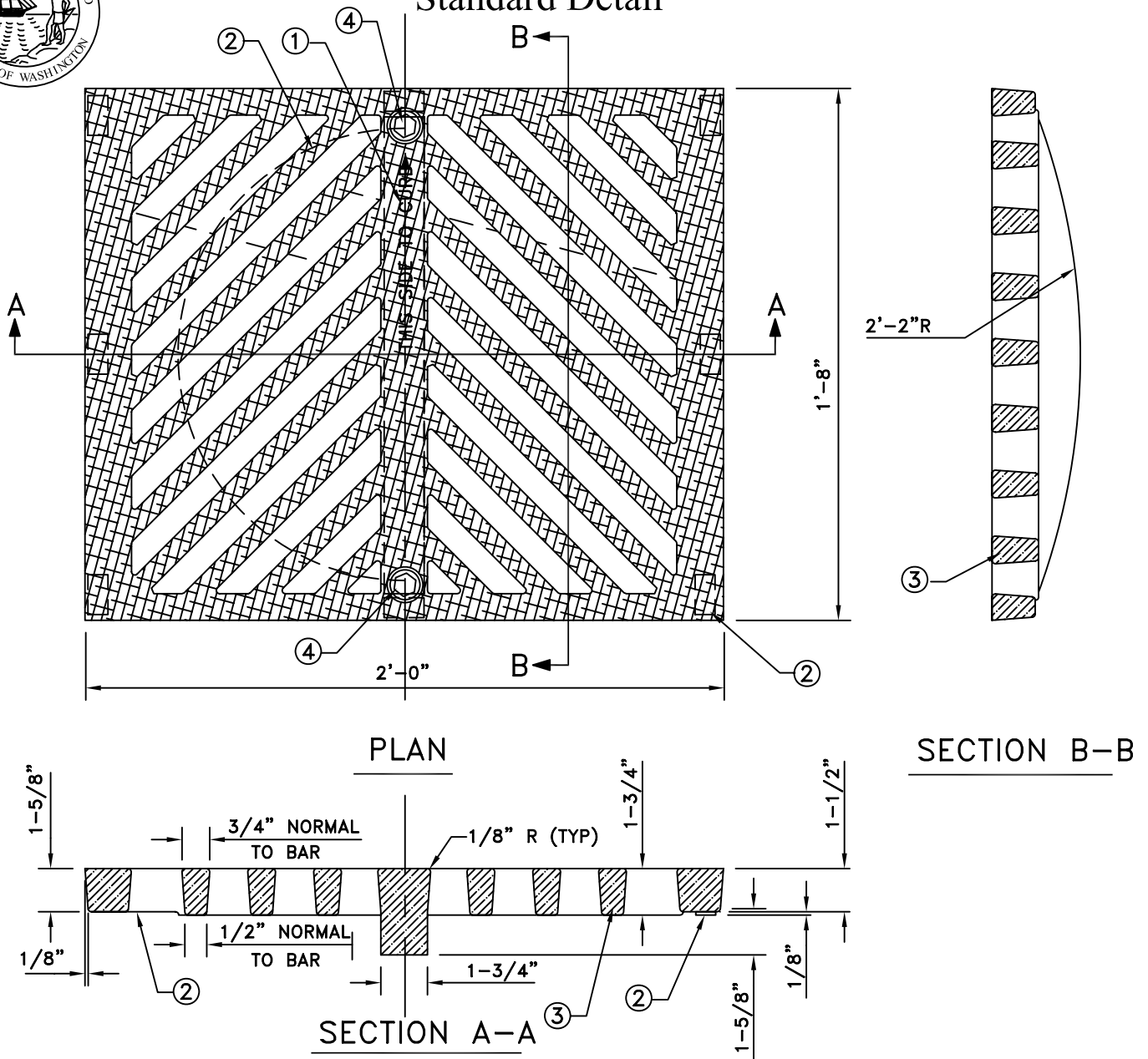
Frame for Grate
of Solid Cover

Detail: SW-7B



City of Port Townsend - Public Works Department

Standard Detail



NOTES:

- ① FOUNDRY NAME, THIS SIDE TO CURB W/ARROW AND (DI) FOR DUCTILE IRON SHALL BE EMBOSSED ON TOP OF GRATE WITH 1/16" RECESSED LETTERS.
- ② SEATING OF GRATE SHALL BE ACCOMPLISHED BY ONE OF THE FOLLOWING:
A. 8 INTEGRALLY CAST PADS (1-1/2"x3/4"x1/8").
B. MACHINE BOTTOM SURFACE OUTSIDE A 17" DIA
- ③ MATERIAL USED SHALL BE DUCTILE IRON PER ASTM-A536, GRADE 80-55-06. ALL CASTINGS SHALL HAVE A BITUMINOUS COATING.
- ④ WHEN LOCKING GRATE REQUIRED HOLES WILL BE PROVIDED IN CASTING TO ALLOW FOR TWO 5/8" DIA STAINLESS STEEL SOCKET HEAD CAP SCREWS SO THAT NO PART OF HEAD PROTRUDES ABOVE TOP OF CASTING.

Date: April 1997

Approved By:

File: E:\eng_std\standard\storm

No.	Date	Revision	By	Apvd

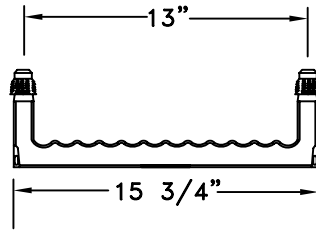
Grate for Catch
Basin or Inlet

Detail: SW-7C

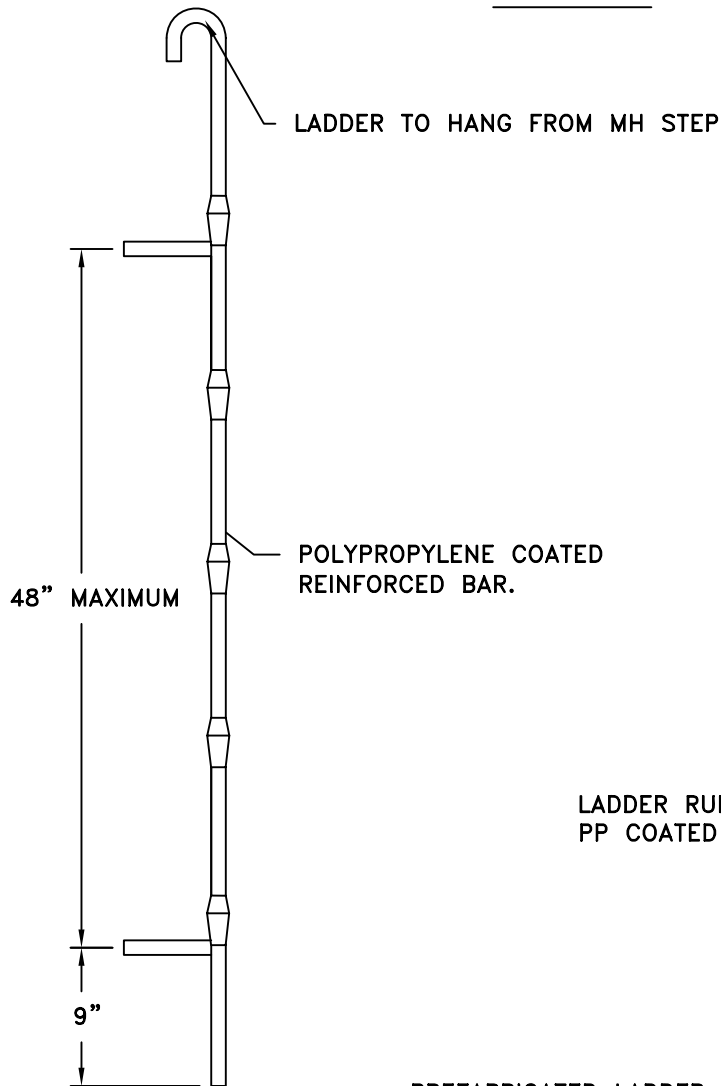


City of Port Townsend - Public Works Department

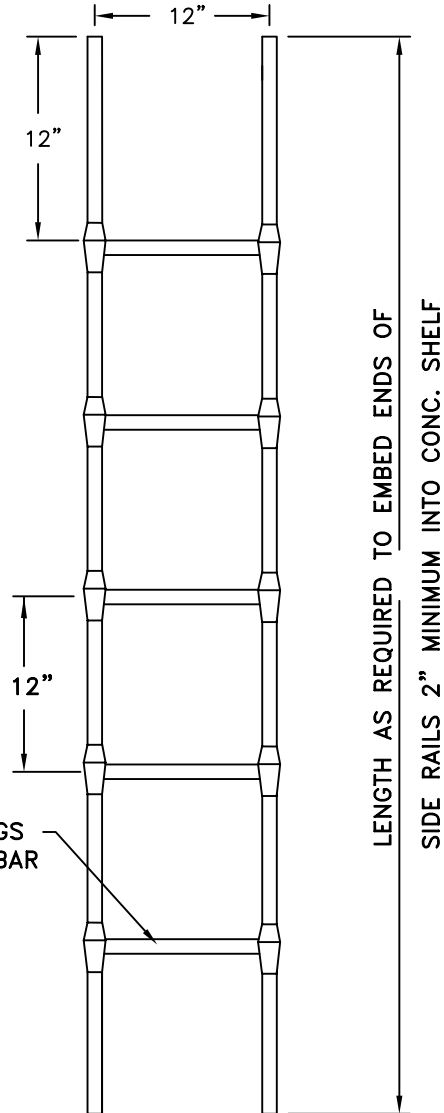
Standard Detail



SAFETY STEP



PREFABRICATED LADDER



NOTES:

1. ALL STEP SHOULD MEET ASTM C-478 AND AASHTO M-199
2. POLYPROPYLENE SHALL CONFORM TO ASTM D-4101.
3. 1/2" GRADE 60 REINFORCING BAR SHALL CONFORM TO ASTM A-615.



RAIL 9/16" ROUND BAR



RUNG 1/2" GRADE 60

Date: April 1997

No.	Date	Revision	By	Apvd

Approved By:

File: E:\eng_std\standard\storm

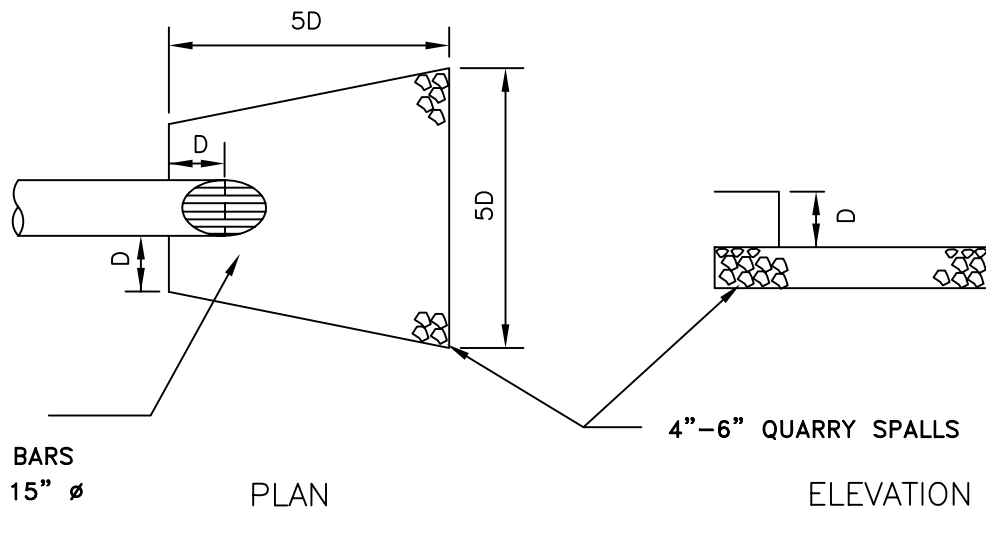
**Polypropylene Ladder
and Maintenance Step**

Detail: SW-8



City of Port Townsend - Public Works Department

Standard Detail



TAPERED END
TYPE 4 SAFETY BARS
FOR ALL PIPES 15" Ø
OR LARGER

4"-6" QUARRY SPALLS

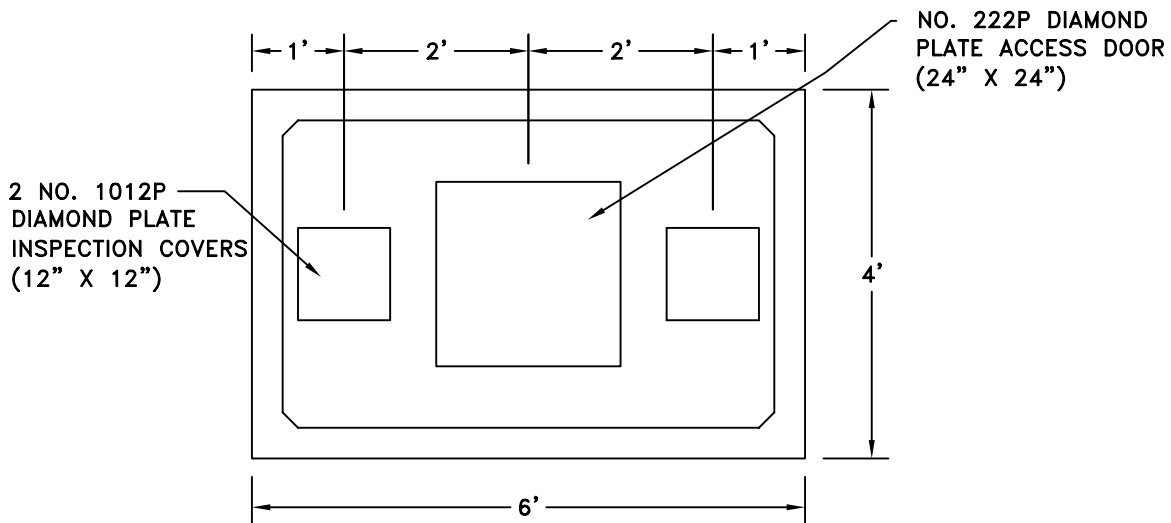
SPECIAL QUARRY SPALLS

Date: April 1997	No.	Date	Revision	By	Apvd	Pipe Outfall
Approved By:						
File: E:\eng_std\standard\storm						Detail:

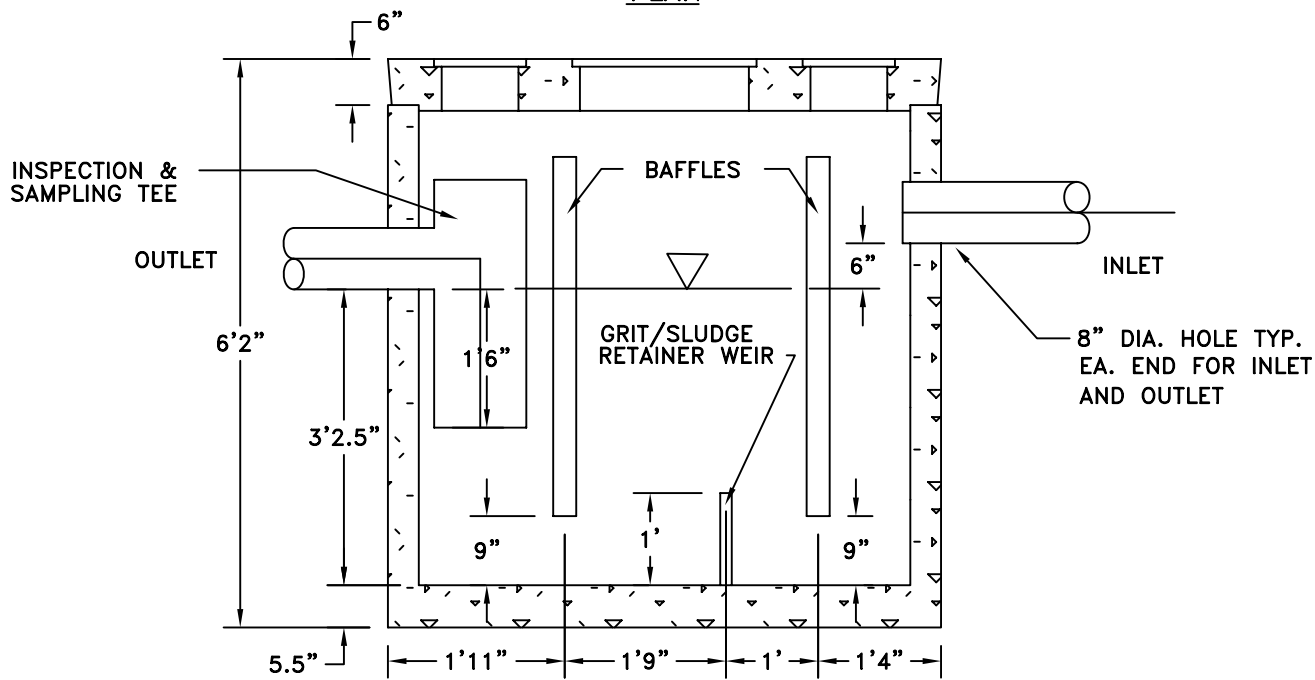


City of Port Townsend - Public Works Department

Standard Detail



PLAN



ELEVATION

NOTE:

1. UTILITY VAULT COMPANY, INC., #660-SA, OR EQUAL
2. LOCATE WITHIN 20 FEET OF DRIVE FOR ACCESS BY MAINTENANCE VEHICLE.
3. INSPECTION AND SAMPLING TEE TO BE INSTALLED BY CONTRACTOR. LINE-SIZED P.V.C. PIPE SHALL BE USED.
4. FILL WITH CLEAN WATER PRIOR TO START-UP OF SYSTEM.
5. GRAY AND BLACK WATER SHALL BE CARRIED BY SEPARATE SIDE SEWER.

Date: April 1997

Approved By:

File: E:\eng_std\standard\storm

No.	Date	Revision	By	Apvd

450 Gallon Bottle Type
Oil / Water Separator

Detail: SW-10



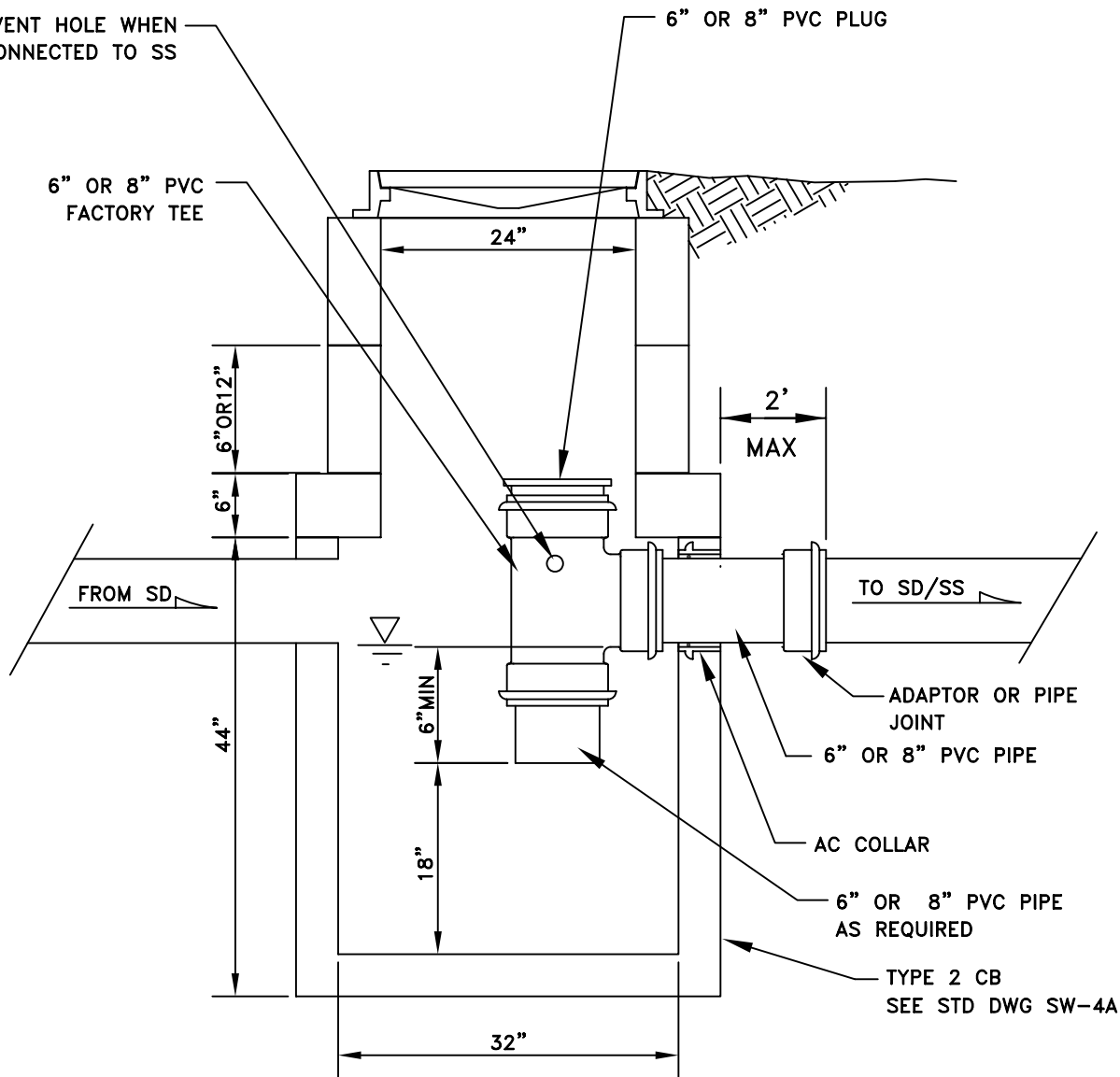
City of Port Townsend - Public Works Department

Standard Detail

1" VENT HOLE WHEN NOT CONNECTED TO SS

6" OR 8" PVC PLUG

6" OR 8" PVC FACTORY TEE



FROM SD

TO SD/SS

ADAPTOR OR PIPE JOINT

6" OR 8" PVC PIPE

AC COLLAR

6" OR 8" PVC PIPE AS REQUIRED

TYPE 2 CB
SEE STD DWG SW-4A

Date: April 1997

No.	Date	Revision	By	Apvd

Floatable Material Separator
and / or Gas Trap (6" or 8")

Approved By:

File: E:\eng_std\standard\storm

Detail: SW-11

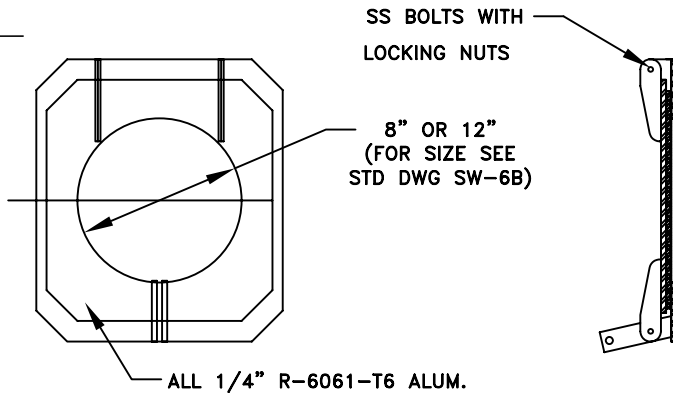


City of Port Townsend - Public Works Department

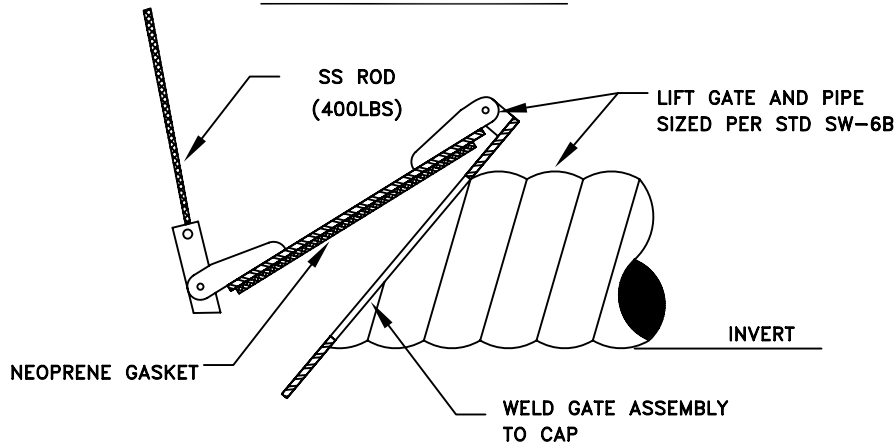
Standard Detail

NOTES:

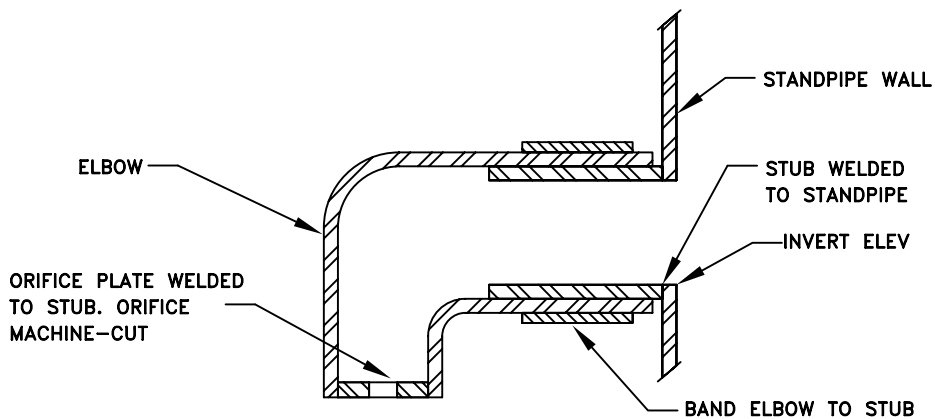
LIFT GATE SHALL BE CONSTRUCTED OF: 1/4" R-6061-T6 ALUM. W/CLOSED CELL NEOPRENE PER ASTM 1056-67 CHEMICAL RESISTANT (OIL & GREASE), OZONE RESISTANT, 67° TO +250° F SERVICE TEMP.



LIFT GATE DETAIL



LIFT GATE ASSEMBLY



ALL PARTS TO BE R-6061-T6 ALUM

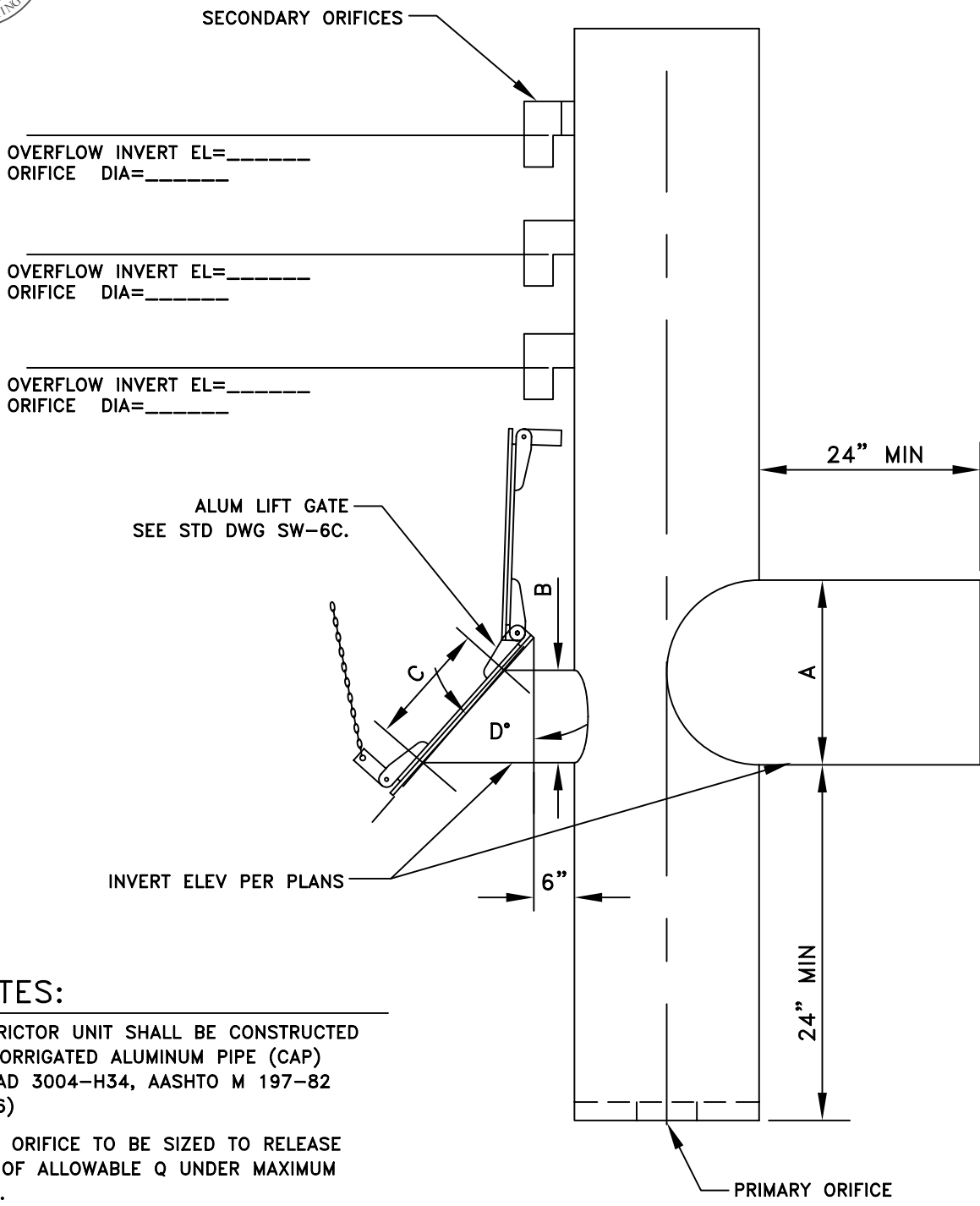
SECONDARY ORIFICE DETAIL

Date: April 1997	No.	Date	Revision	By	Apvd	<h3 style="margin: 0;">Lift Gate Assembly and Secondary Orifice Detail</h3> <p style="font-size: 1.2em; margin-top: 20px;">Detail: SW-12A</p>
Approved By:						
File: E:\eng_std\standard\storm						



City of Port Townsend - Public Works Department

Standard Detail



NOTES:

- 1 RESTRICTOR UNIT SHALL BE CONSTRUCTED OF CORRUGATED ALUMINUM PIPE (CAP) ALCLAD 3004-H34, AASHTO M 197-82 (1986)
- 2 EACH ORIFICE TO BE SIZED TO RELEASE 25% OF ALLOWABLE Q UNDER MAXIMUM HEAD.

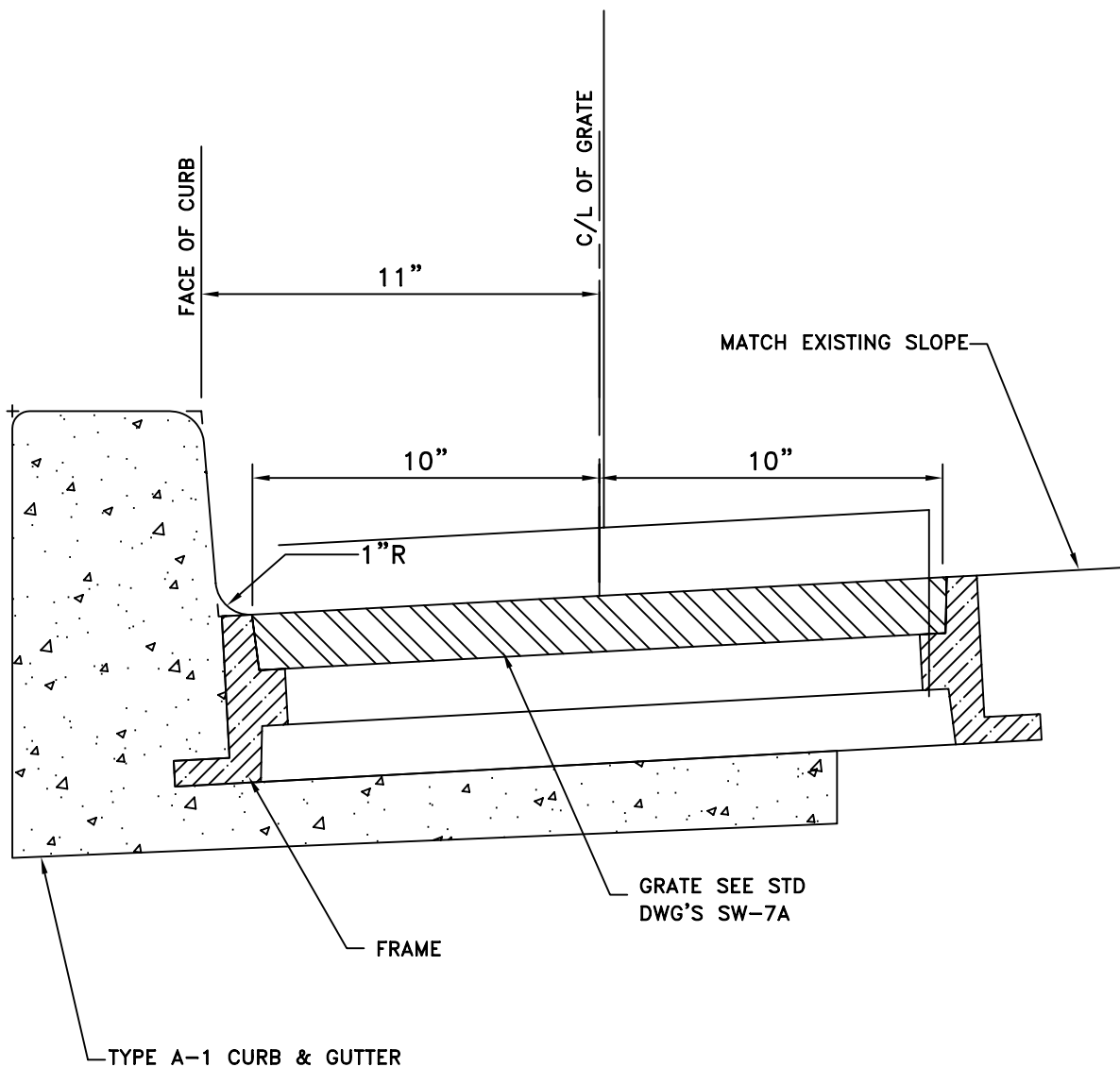
ITEM	DESCRIPTION	SIZE	
		18" AND SMALLER	24" AND LARGER
A	OUTLET	18" AND SMALLER	24" AND LARGER
B	CLEANING	6" ID	10" ID
C	GATE SIZE	8" OPENING	12" OPENING
D	ANGLE	42°±	34°±

Date: April 1997	No.	Date	Revision	By	Apvd	<h3>Restrictor Unit and Lift Gate Assembly</h3> <p style="font-size: 1.2em; margin-top: 20px;">Detail: SW-12B</p>
Approved By:						
File: E:\eng_std\standard\storm						



City of Port Townsend - Public Works Department

Standard Detail



Date: April 1997

Approved By:

File: E:\eng-std\standard\storm

No.	Date	Revision	By	Apvd

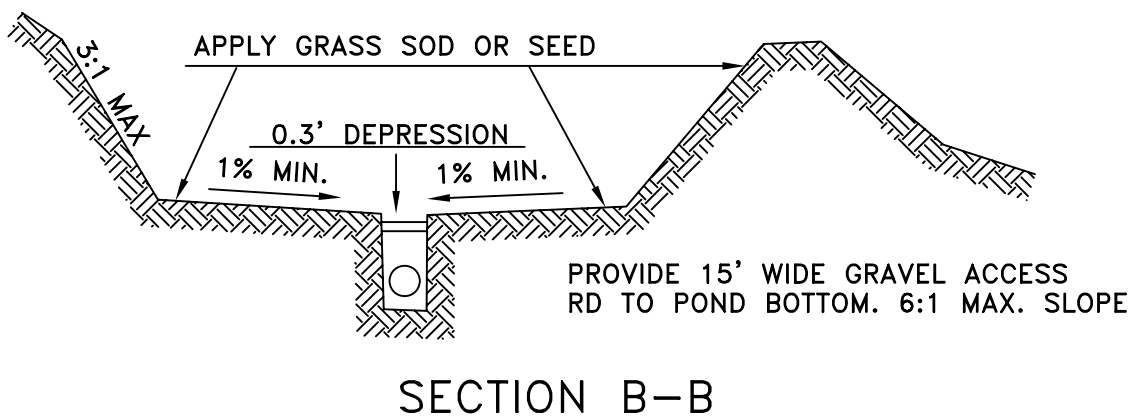
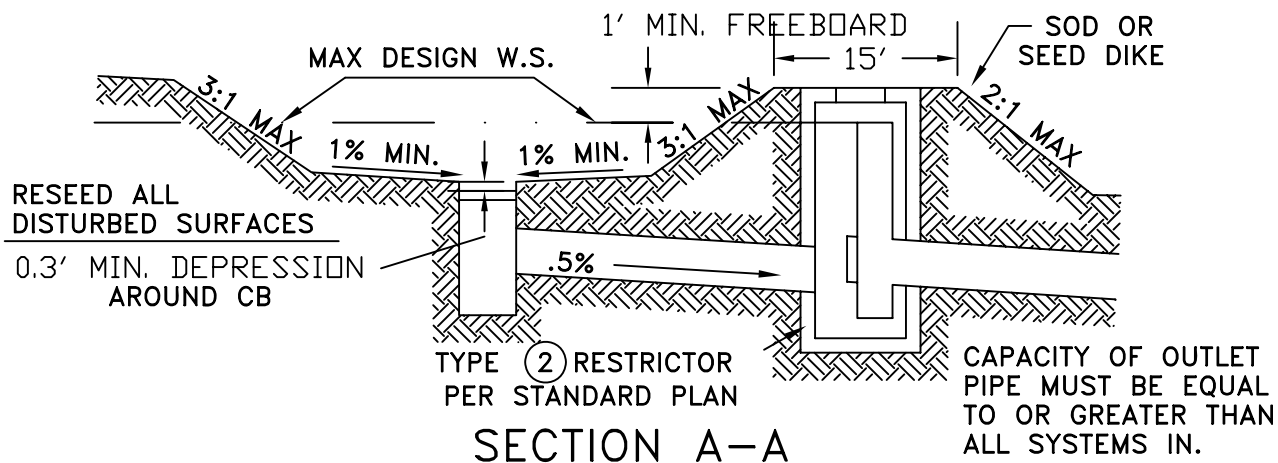
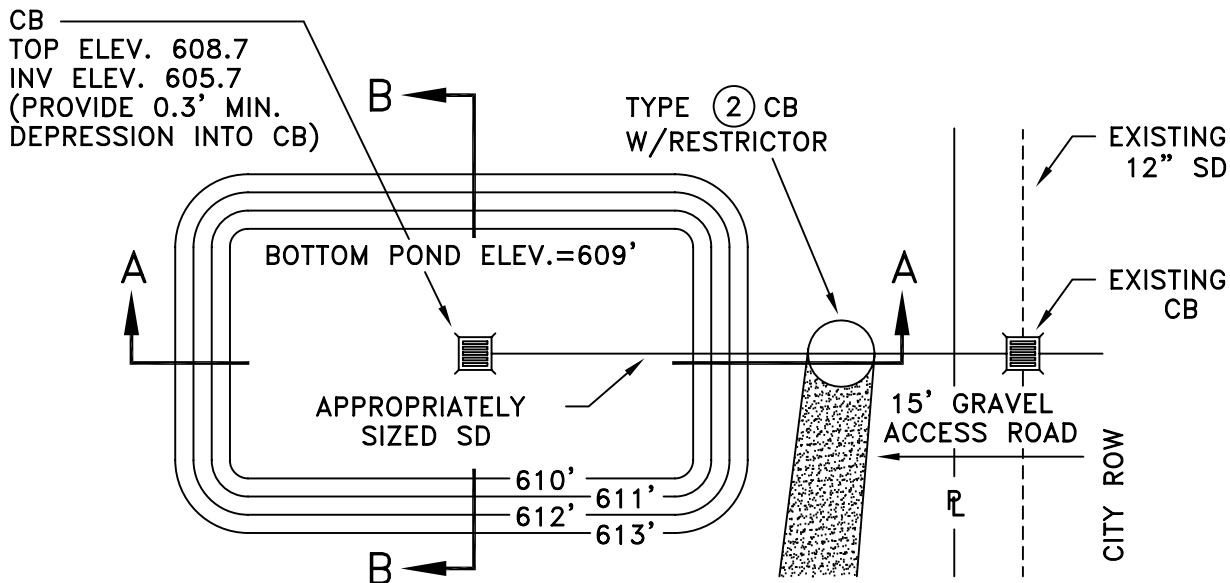
Typical Frame and
Grate Installation

Detail: SW-13



City of Port Townsend - Public Works Department

Standard Detail



Date: April 1997

No.	Date	Revision	By	Apvd

Typical Dry Detention Pond

Approved By:

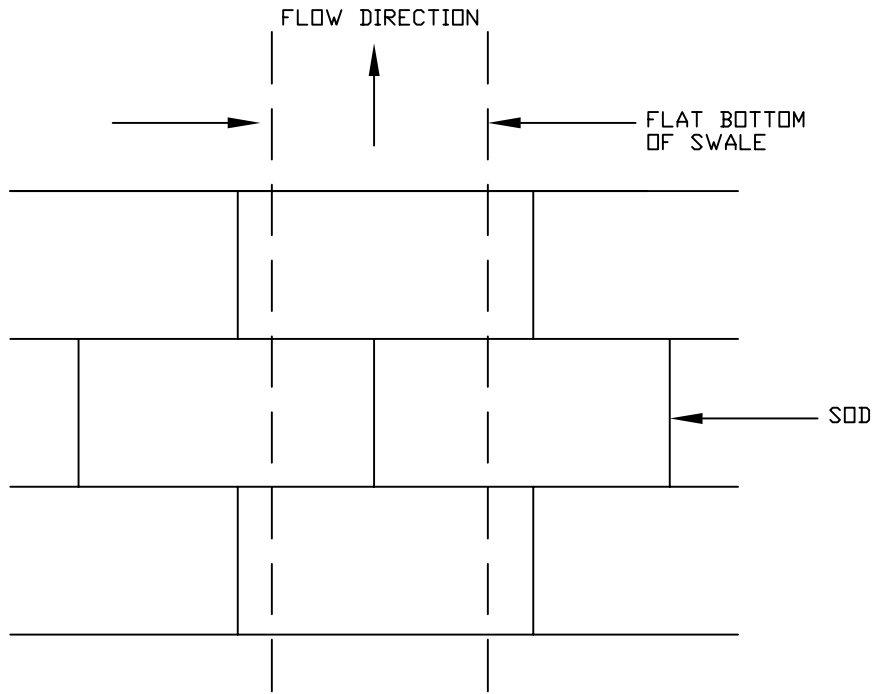
File: E:\eng_std\standard\storm

Detail: SW-14



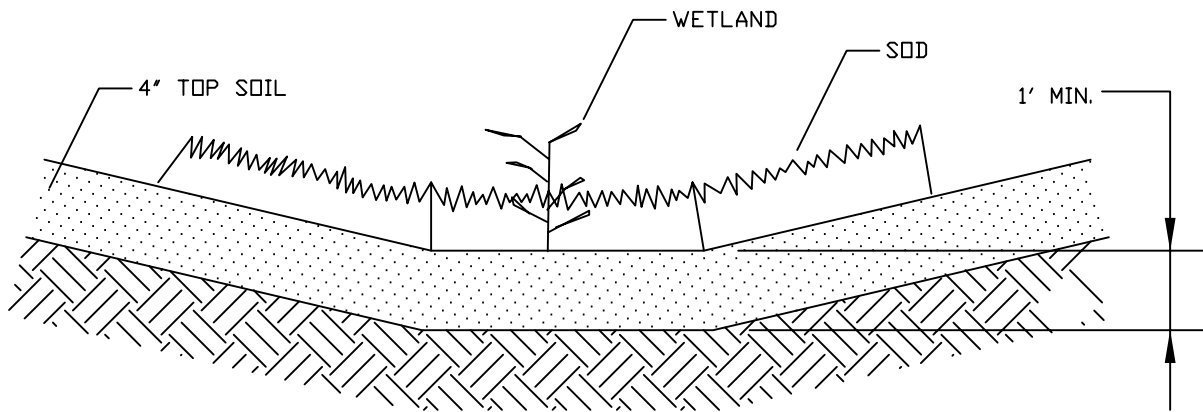
City of Port Townsend - Public Works Department

Standard Detail



VEGETATED SWALE PLAN VIEW

NTS



VEGETATED SWALE CROSS SECTION

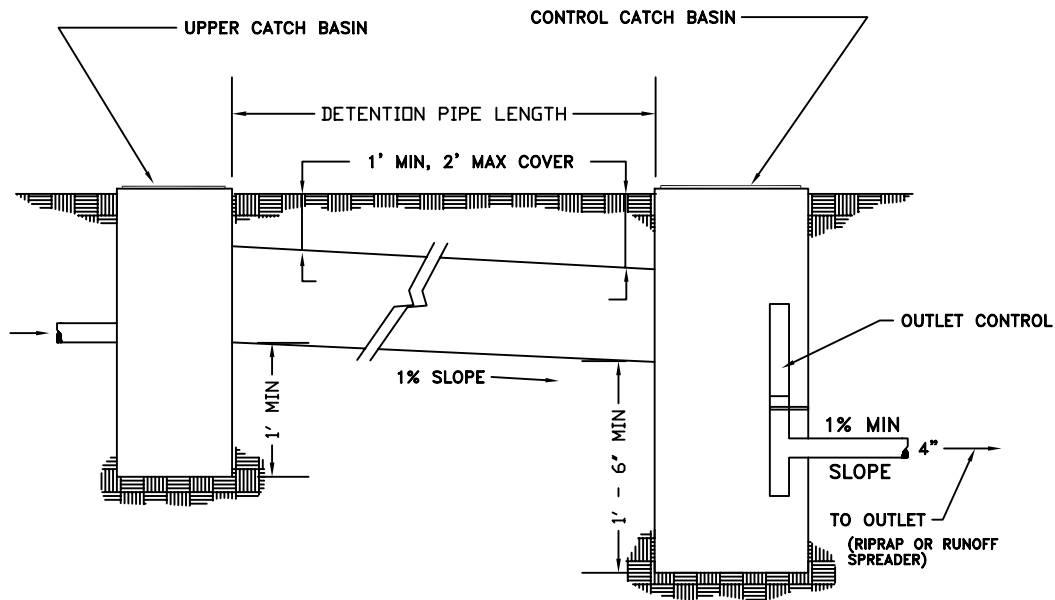
NTS

Date: April 1997	No.	Date	Revision	By	Apvd	Vegetated Swale
Approved By:						Detail: SW-15
File: E:\eng_std\standard\storm						

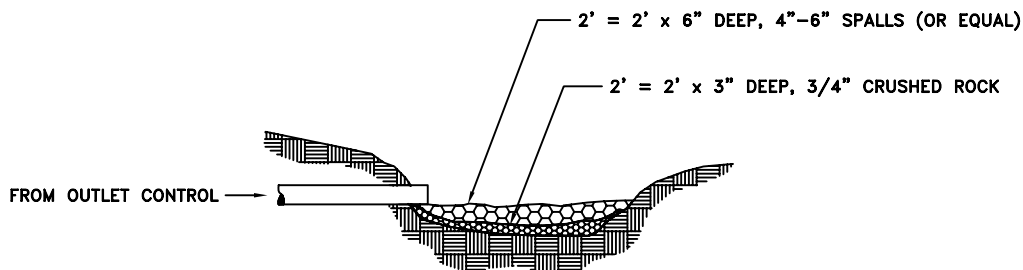


City of Port Townsend - Public Works Department

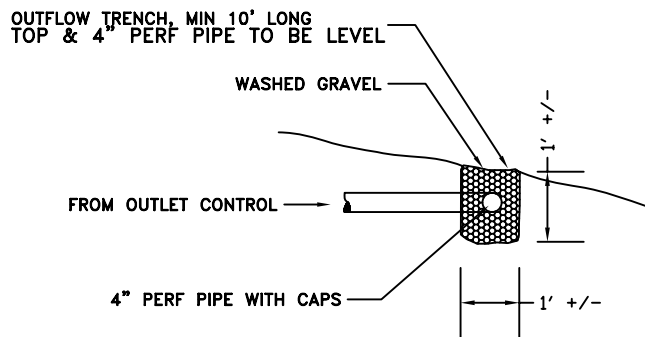
Standard Detail



SYSTEM CROSS SECTION



RIPRAP OUTLET



RUNOFF SPREADER OUTLET

Date: April 1997

Approved By:

File: E:\eng_std\standard\storm

No.	Date	Revision	By	Apvd

Standard Drainage Plan
Detention System

Detail: SW-16