

GENERAL NOTES:

1. MATERIALS AND WORKMANSHIP FOR DRAINAGE WORK SHALL CONFORM TO THE LATEST EDITION OF THE WSDOT/APWA "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE & MUNICIPAL CONSTRUCTION".
2. MATERIALS AND WORKMANSHIP FOR STORM SEWER WORK SHALL CONFORM TO THE LATEST EDITION OF THE "CITY OF BATTLE GROUND STANDARD DETAILS & CONSTRUCTION REQUIREMENTS."
3. THE CONTRACTOR IS TO VERIFY ALL INVERT AND TOP ELEVATIONS OF EXISTING STORM SEWERS, AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION AND TO NOTIFY THE ENGINEER OF ANY POTENTIAL CONFLICTS. THE CONTRACTOR SHALL POTHOLE OVER ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION TO DETERMINE THEIR EXACT LOCATION. CALL (360) 696-4848, (UTILITY COORDINATING COUNCIL), FOR LOCATION OF EXISTING UTILITIES, A MINIMUM OF 2 WORKING DAYS PRIOR TO START OF CONSTRUCTION.
5. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND/OR CONTRACTOR TO PROCURE ALL APPLICABLE PERMITS, LICENSES AND CERTIFICATES RELATIVE TO THE TRADES TO COMPLETE THE PROJECT AND FOR THE USE OF SUCH WORK WHEN COMPLETED. COMPLIANCE SHALL BE AT ALL LEVELS, FEDERAL, STATE AND CITY, RELATING TO THE PERFORMANCE OF THIS WORK.
6. THE CONTRACTOR SHALL OBTAIN ALL OFFSITE CONSTRUCTION EASEMENTS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THAT ALL OFFSITE UTILITIES EASEMENTS HAVE BEEN OBTAINED BY THE OWNER PRIOR TO THE COMMENCEMENT OF ANY OFFSITE CONSTRUCTION.
7. ALL CATCH BASINS AND CURB INLETS SHALL BE STENCILED AS FOLLOWS:
"DUMP NO WASTE-DRAINS TO STREAM". (SEE STD. DETAIL TR-8.09)
8. SIGNS SHALL BE INSTALLED ALONG WATER QUALITY BIOFILTRATION SYSTEMS THAT READS:
"WATER QUALITY FILTER-PLEASE LEAVE VEGETATED". (SEE STD. DETAIL TR-7.13)
9. PIPES OVER 15" DIA. SHALL HAVE A TRASH SCREEN AT END OF PIPE, EXCEPT WHERE PIPE IS LOCATED WITHIN A FENCED STORM FACILITY. (SEE STD. DETAIL ST-6.6)
10. LOCKING LID MUST BE USED ON MANHOLES LOCATED IN NON-HARDSCAPE AREAS EXCEPT WHERE MANHOLE IS LOCATED WITHIN FENCED STORM FACILITY.
11. MATERIAL CERTIFICATION FOR ALL STORM MANHOLES, CATCH BASINS, AND CURB INLETS SHALL BE PROVIDED TO THE CITY INSPECTOR.
12. ALL ROOF AND LOWPOINT DRAINS TO BE DIRECTED TO APPROVED DRAINAGE PER PLANS.

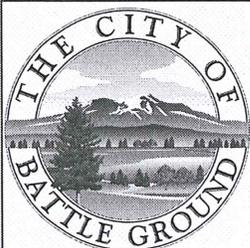
TESTING:

1. ALL MAIN LINE RUNS, REGARDLESS OF SIZE, AND LATERALS OVER 50 FEET IN LENGTH SHALL BE TELEVISION INSPECTED. TOLERANCES FOR BELLYS SHALL BE NO MORE THAN 1/2" IN 8-INCH PIPE, 3/4" IN 10-INCH PIPE, AND 1" IN PIPES 12-INCHES OR GREATER. VARIATIONS IN EXCESS OF THESE TOLERANCES MUST BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE CITY.
2. EXFILTRATION TEST WSDOT SPECIFICATION 7-04.3(1)B FOR DETAINAGE OR AS REQUIRED BY CITY ENGINEER.

N.T.S.

STORMWATER GENERAL NOTES & TESTING

STANDARD
DETAIL

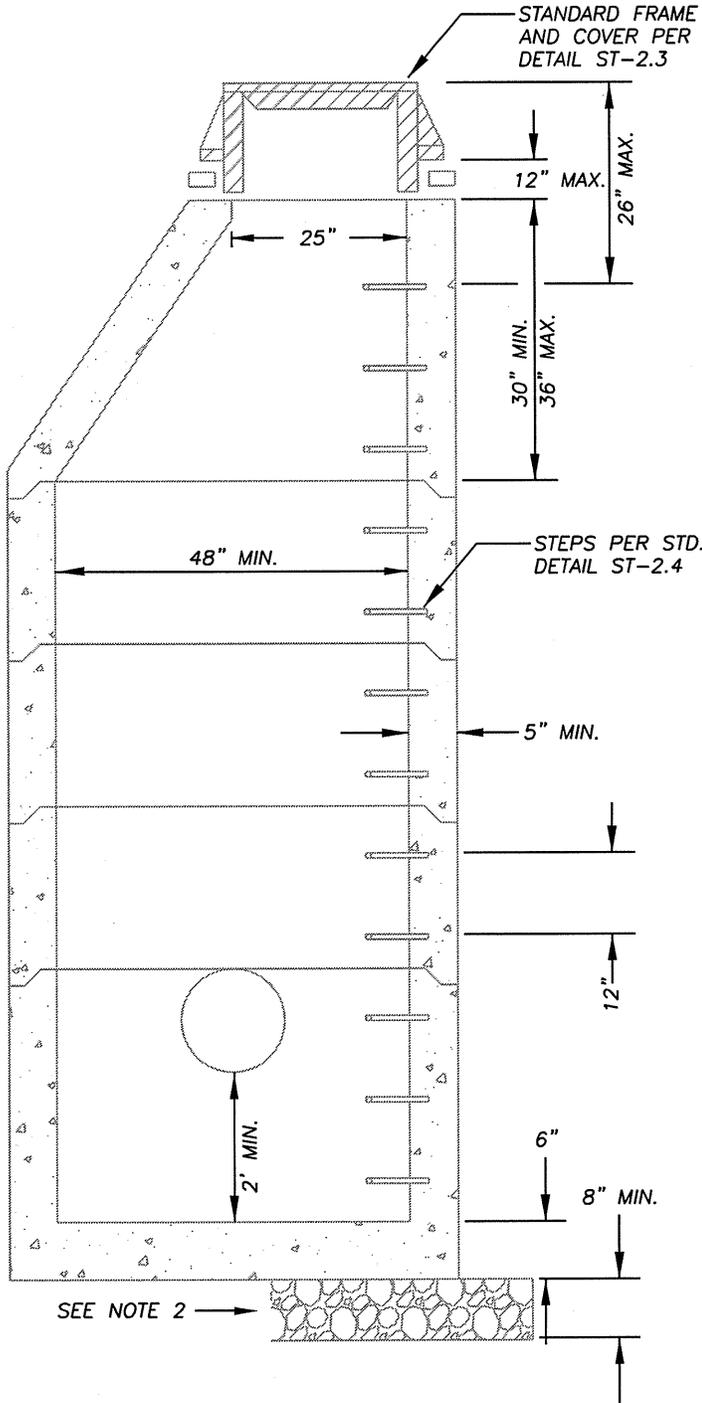


CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	8/30/05	MDB	MCH
3	7/22/09	RMJ	RMJ

ST-1.0



CONSTRUCTION NOTES:

1. IN OVER EXCAVATED AREAS PROVIDE SUPPORT FOR THE PIPE AS FOLLOWS: PLACE 3/4" MINUS CRUSHED ROCK OVER UNDISTURBED GROUND IN 6" LAYERS AND COMPACT.
2. BACKFILL MATERIAL BELOW & TO SIDE OF STRUCTURE SHALL BE ASTM D2321 CLASS I OR II CRUSHED STONE OR GRAVEL, PLACED UNIFORMLY. BACKFILL TO MEET WSDOT 7-05 & AASHTO T-99 95% COMPACTION.
3. ALL DIMENSIONS SUBJECT TO ALLOWABLE SPECIFICATION TOLERANCES.
4. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED TO THE SATISFACTION OF ENGINEER.
5. LIFT HOLES MUST BE GROUTED.

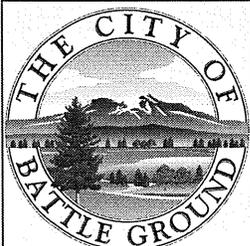
STRUCTURE NOTES:

1. MANHOLE TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS SHOWN ON PLANS OR NOTED IN WSDOT STANDARD SPECIFICATIONS.
2. ALL PRECAST MANHOLE SECTIONS AND CONES SHALL CONFORM TO ASTM C-478 WITH CAST IN STEPS.
3. BASE CONCRETE SHALL BE 3000 P.S.I., 2-4 IN. SLUMP. FLOW LINES AND INSIDE SURFACES SHALL BE TROWELED SMOOTH & UNIFORM AT TIME OF POUR.
4. CAST-IN-PLACE, MONOLITHIC MANHOLE MAY BE SUBSTITUTED WITH SPECIFIC APPROVAL OF THE CITY ENGINEER.
5. JOINTS SHALL BE CONSTRUCTED SO AS TO BE WATERTIGHT. KENT-SEAL NO. 2 OR APPROVED EQUAL SHALL BE USED ON TONGUE & GROOVE SECTIONS, AND ON RISER RINGS PREMOLDED "O-RING" MAY BE SUBSTITUTED ON BELL & SPIGOT SECTIONS. ALL JOINTS SHALL BE GROUTED WITH PORTLAND CEMENT CONCRETE GROUT & STRUCK EVEN WITH THE WALL.
6. MANHOLES UNDER 6'-0" IN DEPTH FROM RIM TO BOTTOM SHALL HAVE A TOP SLAB IN LIEU OF CONE, SEE STD. DETAIL ST-2.2.
7. WHIRLY GIG © MANHOLE RISER COLLAR SYSTEM MAY BE USED IN PLACE OF RISER RING.
8. ALL REINFORCED STEEL SHALL HAVE 1 1/2" CLEAR COVER UNLESS OTHERWISE NOTED, AND SHALL BE GRADE 60 (ASTM A615).
9. STEEL REINFORCED OR POLYPROPYLENE FIBER REINFORCED UNITS ARE ALLOWABLE.

N.T.S.

MANHOLE

STANDARD
DETAIL

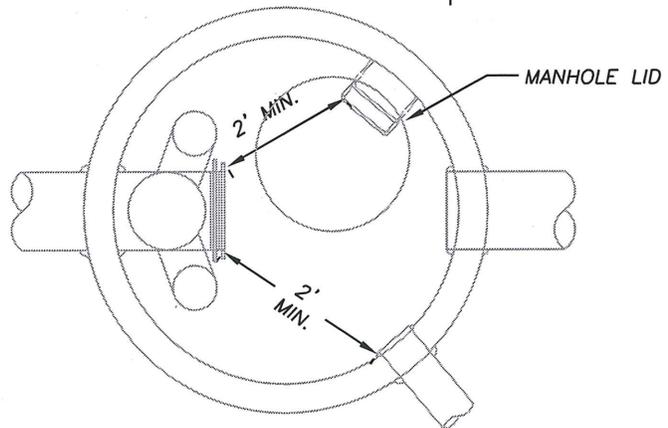
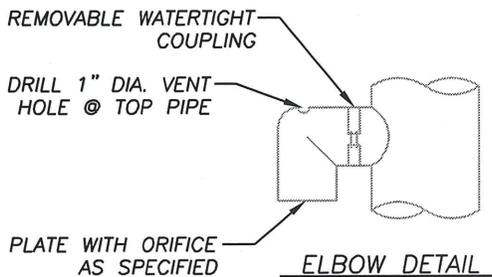
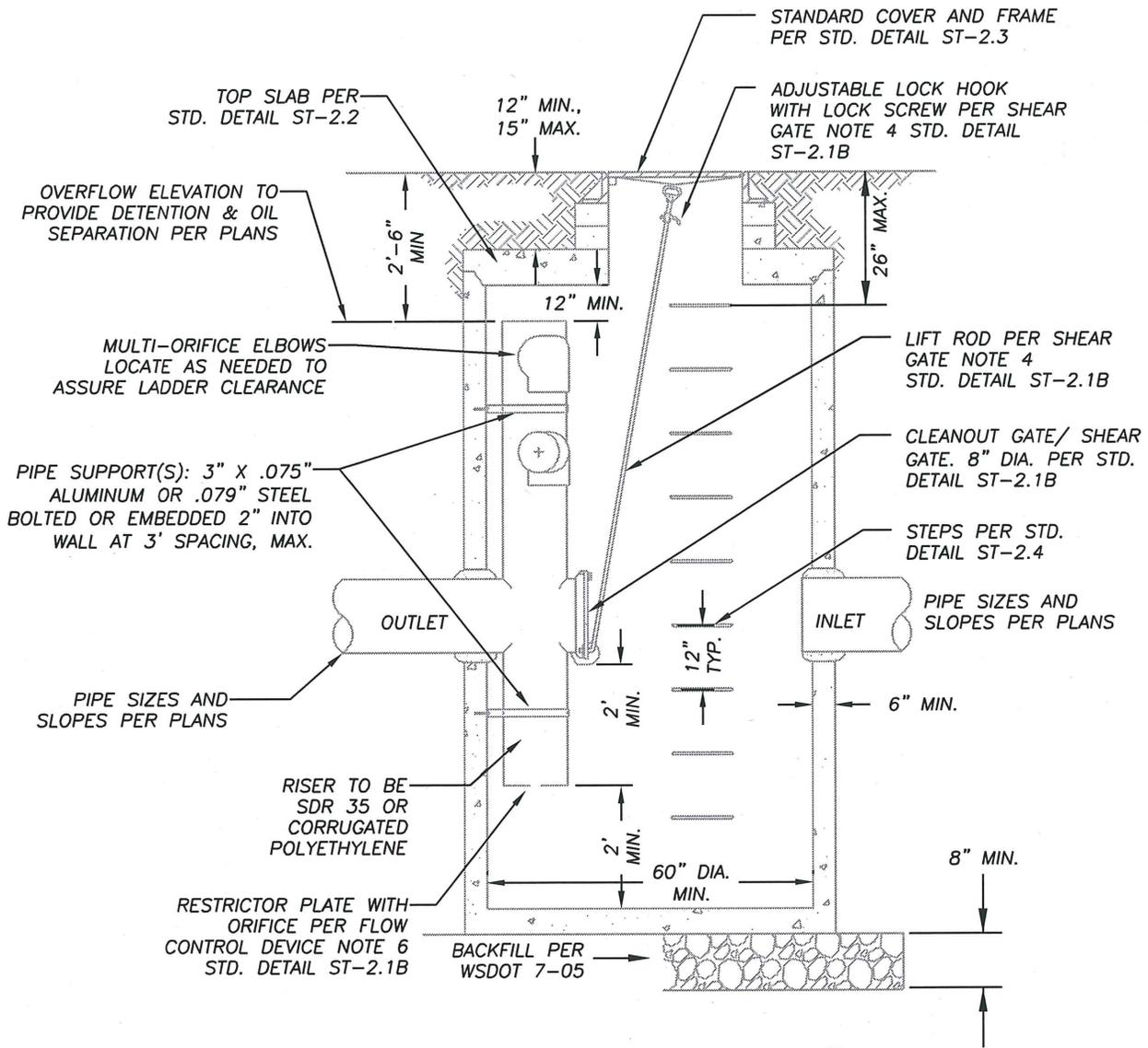


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2	7/22/09	RMJ	RMJ

ST-2.0



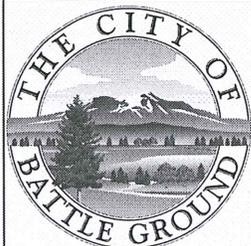
FOR NOTES SEE STD. DETAIL ST-2.1B

PLAN

SHEET 1 OF 2 N.T.S.

FLOW CONTROL MANHOLE (TEE TYPE)

STANDARD
DETAIL

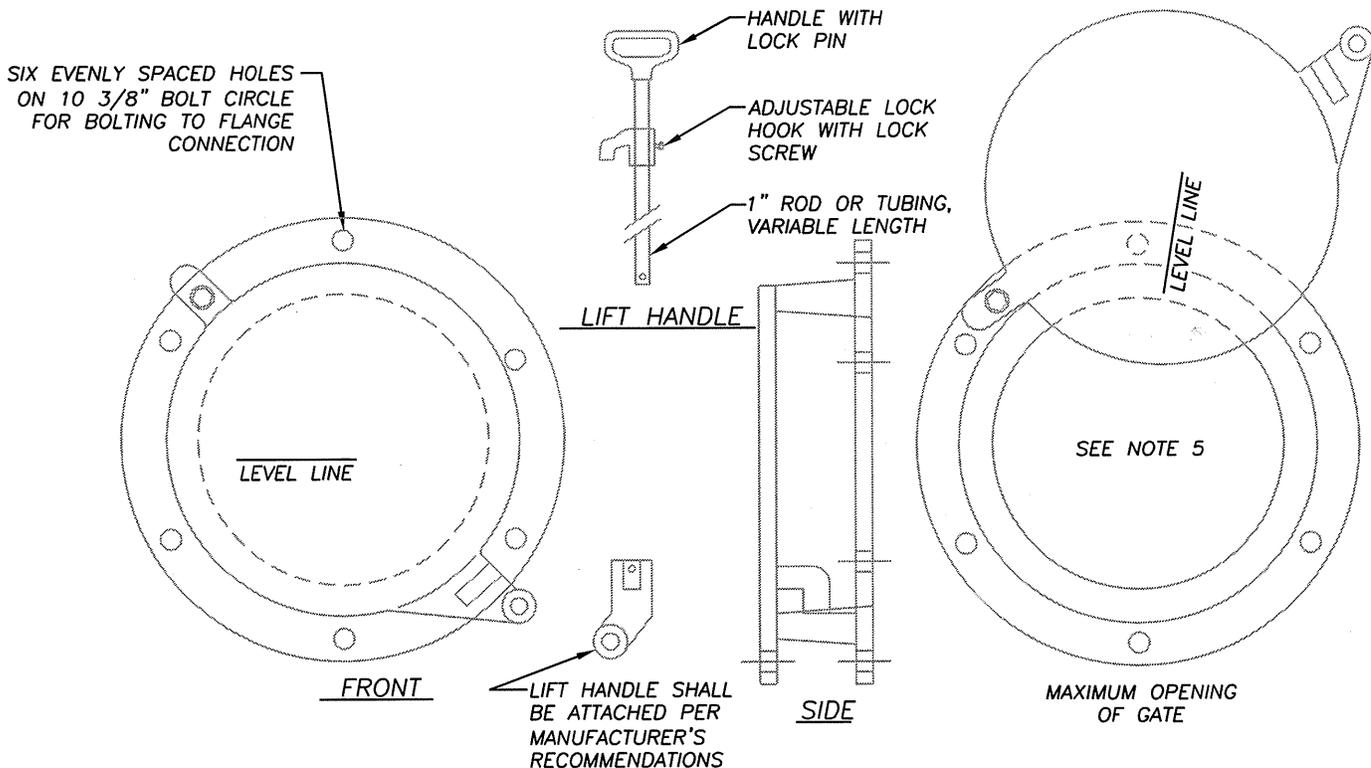


CITY OF BATTLE GROUND
APPROVED

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

Scott P. Sanyo 7-21-09
CITY ENGINEER DATE

ST-2.1A



SHEAR GATE NOTES:

1. SHEAR GATE SHALL BE ALUMINUM ALLOY PER ASTM B-26-ZG-32a OR CAST IRON ASTM A48 CLASS 30B AS REQUIRED.
2. GATE SHALL BE 8" DIA. UNLESS OTHERWISE SPECIFIED.
3. GATE SHALL BE JOINED TO TEE SECTION BY BOLTING (THROUGH FLANGE), WELDING, OR OTHER SECURE MEANS.
4. LIFT ROD: AS SPECIFIED BY MFR. WITH HANDLE EXTENDING TO WITHIN ONE FOOT OF COVER AND ADJUSTABLE HOOK LOCK FASTENED TO FRAME OR UPPER HANDHOLD. IF ATTACHED TO STEPS, MAKE SURE IT DOES NOT CREATE A TRIP HAZARD OR REDUCE ENTRY SPACE. MUST BE OPERATIONAL WITHOUT ENTERING MANHOLE.
5. GATE SHALL NOT OPEN BEYOND THE CLEAR OPENING BY LIMITED HINGE MOVEMENT, STOP TAB, OR SOME OTHER DEVICE.
6. NEOPRENE RUBBER GASKET REQUIRED BETWEEN RISER MOUNTING FLANGE AND GATE FLANGE.
7. MATING SURFACES OF LID AND BODY TO BE MACHINED FOR PROPER FIT.
8. FLANGE MOUNTING BOLTS SHALL BE 3/8" DIA. STAINLESS STEEL.
9. ALTERNATE CLEANOUT/SHEAR GATES TO THE DESIGN SHOWN ARE ACCEPTABLE, PROVIDED THEY MEET THE MATERIAL SPECIFICATIONS ABOVE AND HAVE SIX BOLTS, 10-3/8" BOLT CIRCLE FOR BOLTING TO THE FLANGE CONNECTION.

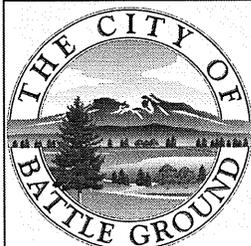
FLOW CONTROL DEVICE NOTES:

1. FOR DETAILS SHOWING GRADE RING, LADDER, STEPS, HANDHOLDS, AND TOP SLABS, SEE STD. DETAIL ST-2.1A.
2. THE RESTRICTOR/SEPARATOR AND PIPE SUPPORTS SHALL BE OF THE SAME MATERIAL AND SHALL BE FABRICATED FROM 0.060" ALUMINUM OR 0.064" ALUMINIZED STEEL OR 0.064" GALVANIZED STEEL PIPE IN ACCORDANCE WITH AASHTO M 36, M 196, M 197 AND M 274. GALVANIZED STEEL SHALL HAVE TREATMENT 1.
3. THE VERTICAL RISER STEM OF THE RESTRICTOR/SEPARATOR SHALL BE THE SAME DIAMETER AS THE HORIZONTAL OUTLET PIPE WITH AN 8" MIN. SIZE.
4. FRAME AND LADDER, OR STEPS TO BE OFFSET SO THAT:
 - A. CLEANOUT GATE IS VISIBLE FROM TOP.
 - B. CLIMB-DOWN SPACE IS CLEAR OF RISER AND CLEANOUT GATE.
 - C. FRAME IS CLEAR OF CURB (IF ANY EXISTS).
5. MULTI-ORIFICE ELBOWS MAY BE LOCATED AS SHOWN OR ALL ON ONE SIDE OF RISER TO ASSURE LADDER CLEARANCE. SIZE OF ELBOWS TO BE DETERMINED BY ENGINEER.
6. RESTRICTOR PLATE WITH ORIFICE AS SPECIFIED IN THE PLANS. OMIT PLATE IF ONLY FOR OIL POLLUTION CONTROL. SPECIFIED OPENING TO BE CUT ROUND AND SMOOTH EDGED.

FOR DETAIL SEE STD. DETAIL ST-2.1A

FLOW CONTROL MANHOLE (TEE TYPE)

STANDARD
DETAIL

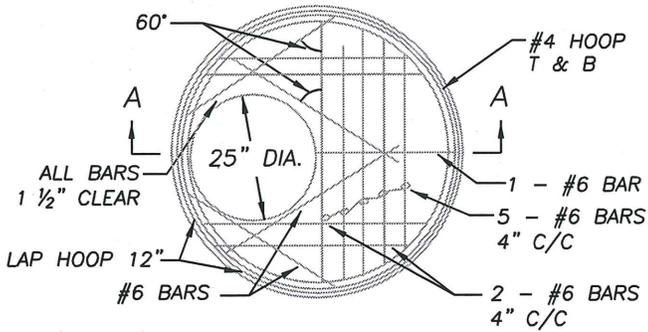


CITY OF BATTLE GROUND
APPROVED

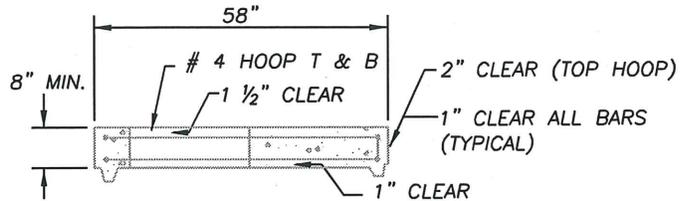
Scott P. Sanyo 7-21-09
CITY ENGINEER DATE

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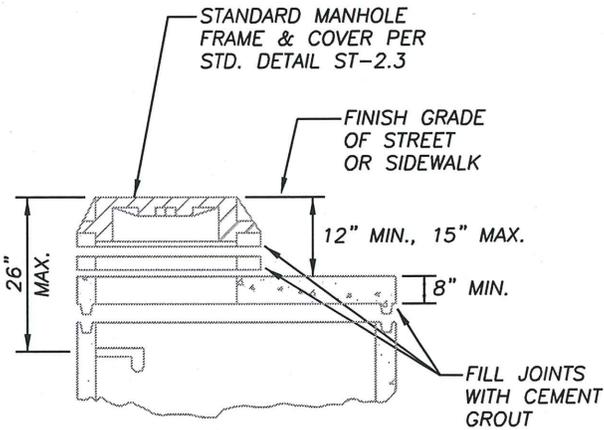
ST-2.1B



PLAN VIEW



SECTION A-A



FLAT SLAB ALTERNATE

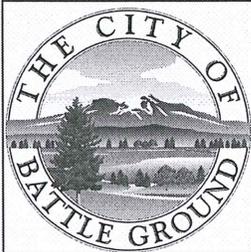
NOTES:

1. ALL PRECAST SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
2. ALL POURED IN PLACE CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 3000 P.S.I. & 2" TO 4" SLUMP. INSIDE SURFACES SHALL BE TROWELED SMOOTH AND UNIFORM AT TIME OF POUR.
3. ALL REINFORCING SHALL BE GRADE 40 STEEL.
4. MANHOLES UNDER 6'-0" IN DEPTH FROM RIM TO BOTTOM SHALL HAVE TOP SLAB IN LIEU OF CONE.
5. WHIRLY GIG © MANHOLE RISER COLLAR SYSTEM MAY BE USED IN PLACE OF RISER RING.

N.T.S.

TOP SLAB FOR MANHOLE

STANDARD
DETAIL



CITY OF BATTLE GROUND
APPROVED

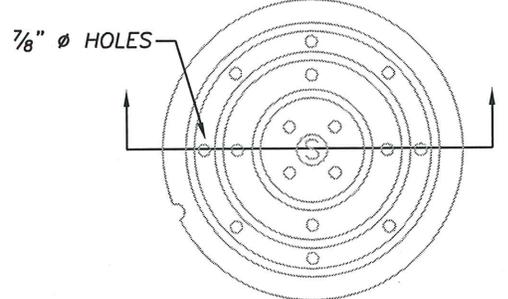
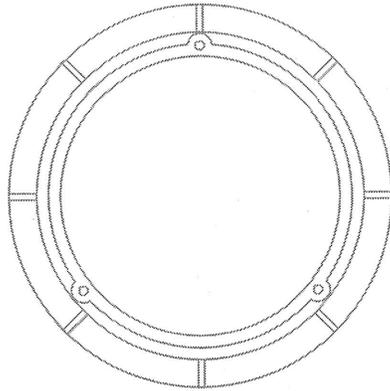
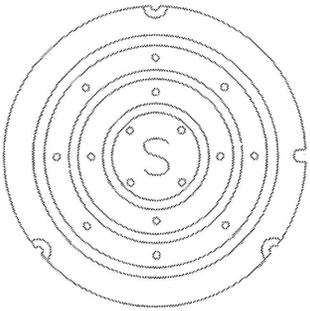
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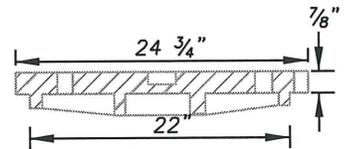
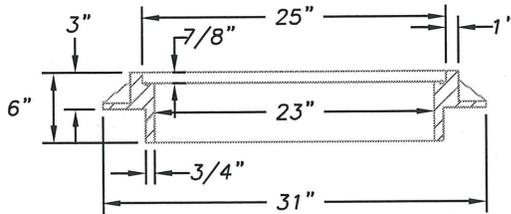
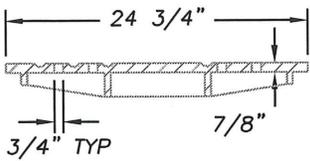
ST-2.2

LOCKING

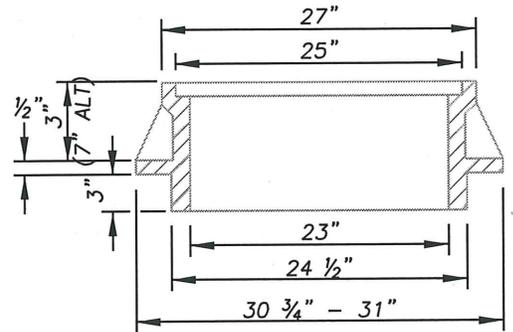
STANDARD



16 HOLE STORM SEWER ONLY



LOCKING LID TO BE D&L
FOUNDRY PART NUMBER
A-2107-R5-03 HALF &
HALF OR APPROVED EQUAL.



STANDARD & LOCKING
FRAME

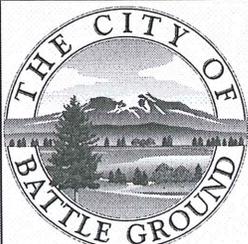
NOTES:

1. MANUFACTURED MANHOLE COVERS AND FRAMES SHALL BE PART OF THE *BUY AMERICA* PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1.
2. COVER & FRAME TO BE MACHINED TO A TRUE BEARING ALL AROUND.
3. MATERIAL SHALL BE OF GRAY CAST IRON. A.S.T.M. A-48, CLASS 30.
4. LOCKING LID MUST BE USED ON MANHOLES LOCATED IN NON-HARDSCAPE AREAS EXCEPT IN FENCED STORM FACILITIES.

N.T.S.

MANHOLE FRAMES & COVERS

STANDARD
DETAIL



CITY OF BATTLE GROUND
APPROVED

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CITY ENGINEER DATE

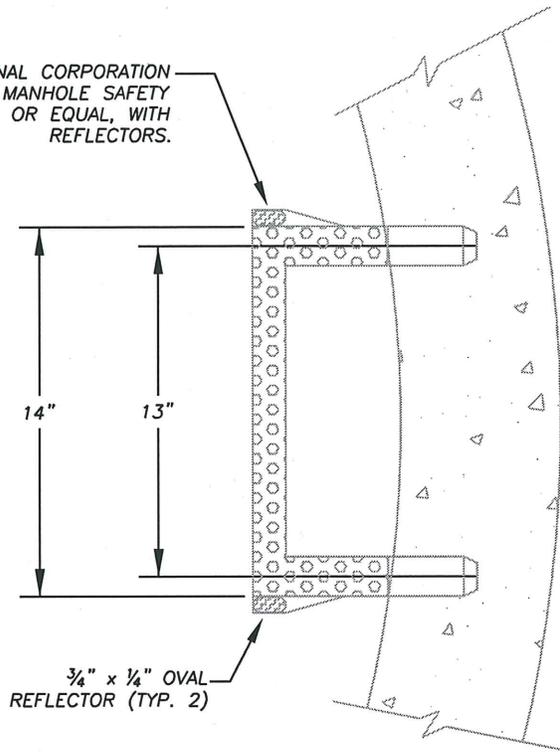
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1	8/12/98	BSG	GGH
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3	3/28/07	JMH	MCH
4	7/22/09	RMJ	RMJ

ST-2.3

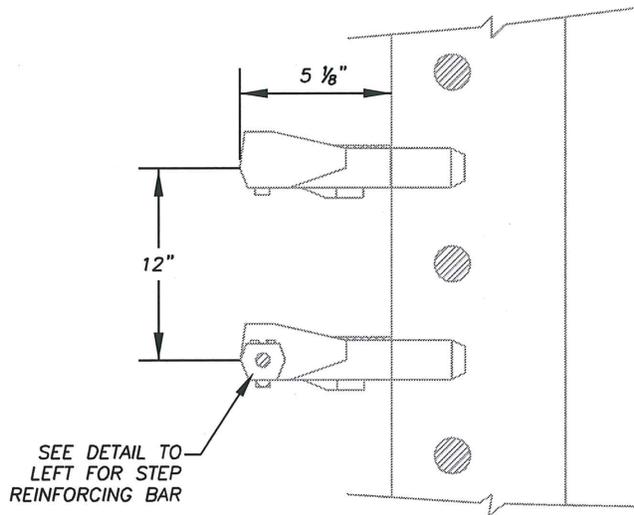
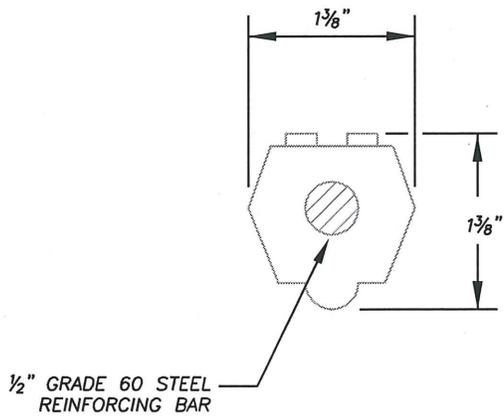
LANE INTERNATIONAL CORPORATION
 POLYPROPYLENE MANHOLE SAFETY
 STEP P-14850, OR EQUAL, WITH
 REFLECTORS.

NOTES:

1. ALL STEPS MUST MEET ASTM C-478 AND AASHTO M-199 SPECIFICATIONS, POLYPROPYLENE ASTM D4104-08, THE 1/2" GRADE 60 DEFORMED REINFORCING BAR ASTM A-615.
2. INSTALLATION METHOD MUST RESIST 1,500 LB. HORIZONTAL PULL OUT FORCE AND 500 LB. VERTICAL LOAD.



PLAN

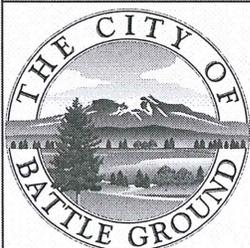


ELEVATION

N.T.S.

MANHOLE STEP

STANDARD
 DETAIL

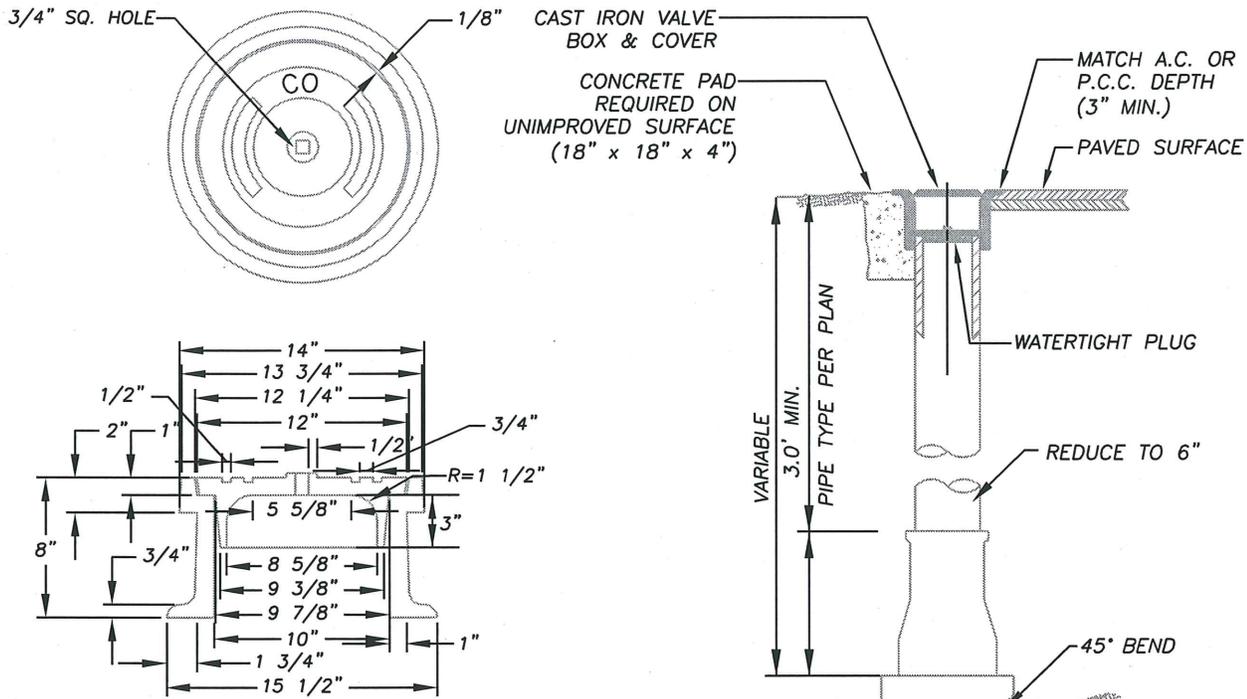


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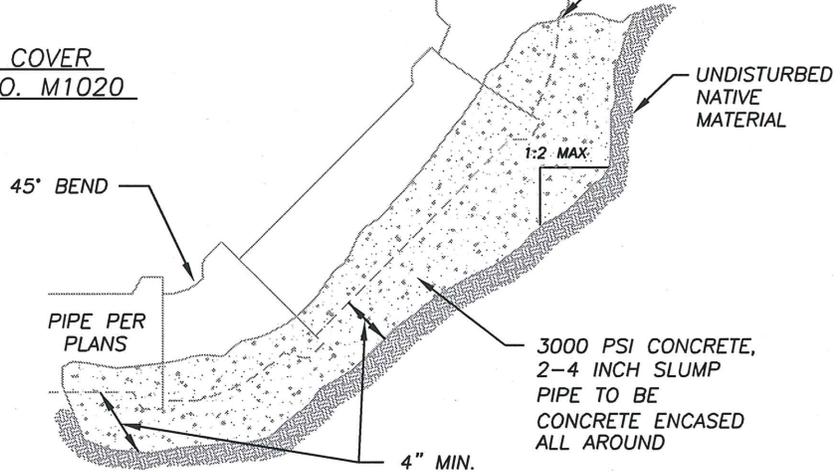
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ST-2.4



10"x8" MONUMENT RING AND COVER
OLYMPIC FOUNDRY INC, PART NO. M1020
OR EQUAL



STORM CLEANOUT

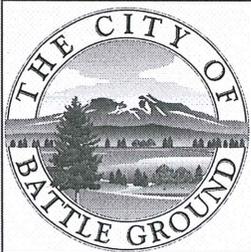
NOTES:

1. MANUFACTURED COVER AND FRAME SHALL BE PART OF THE **BUY AMERICA** PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1.
2. VALVE BOX SHALL BE GRAY CAST IRON MATERIAL CONFORMING TO ASTM A-46 CLASS 30
3. CLEANOUT SHALL BE INSTALLED OUTSIDE OF RIGHT OF WAY UNLESS ENGINEER RECEIVES PRIOR APPROVAL FROM CITY.

N.T.S.

CLEANOUT

STANDARD
DETAIL

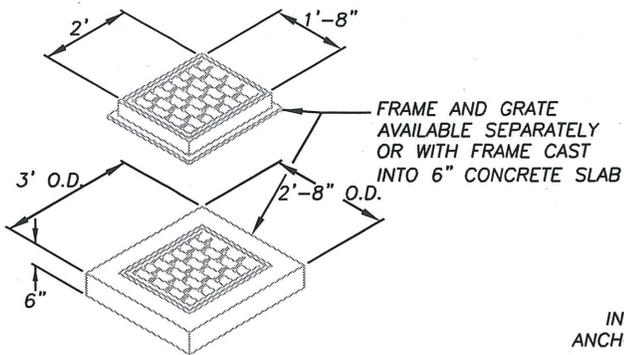


CITY OF BATTLE GROUND
APPROVED

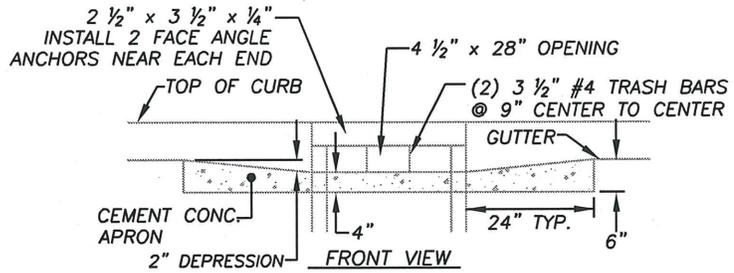
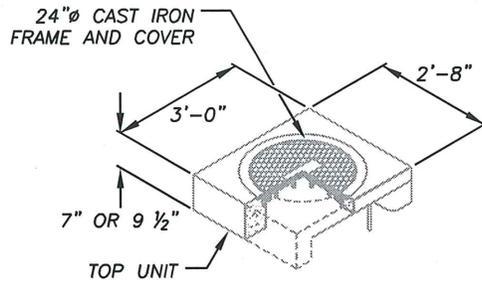
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ST-2.5

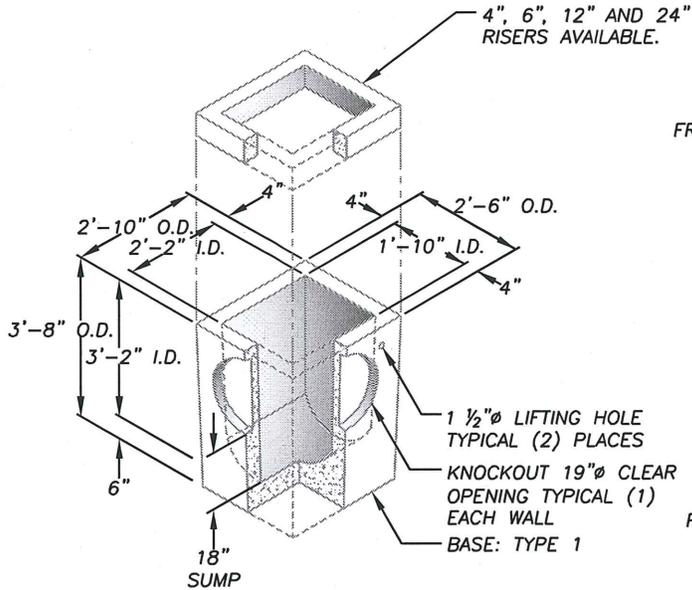


CATCH BASIN TOP

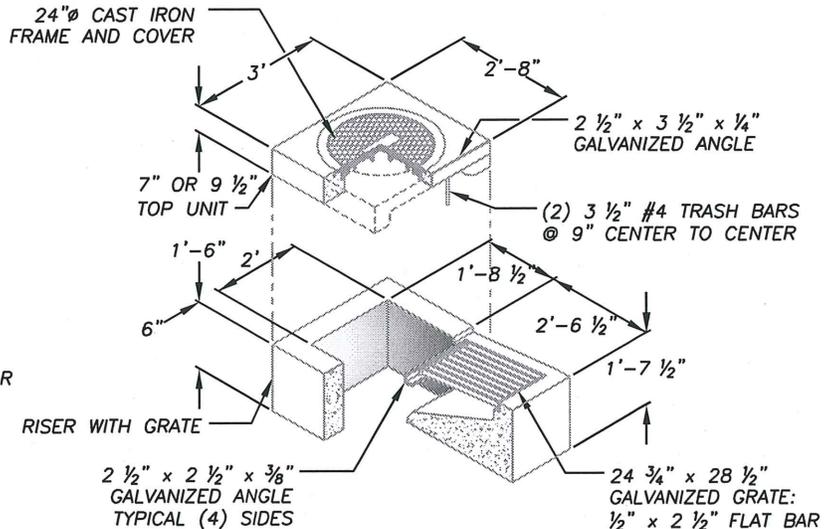


CURB INLET TOP

(CITY OF BATTLE GROUND PREFERRED TOP)



BASE UNIT



COMBINATION CURB INLET TOP

SEE NOTES STD. DETAIL ST-3.0B

SHEET 1 OF 2 N.T.S.

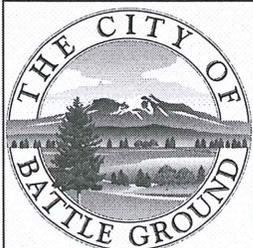
CATCH BASIN (TYPE 1)

STANDARD
DETAIL

CITY OF BATTLE GROUND
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2	8/30/05	ALL	MCH
3	7/22/09	RMJ	RMJ

ST-3.0A



Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

CONSTRUCTION NOTES:

1. IN OVER EXCAVATED AREAS PROVIDE SUPPORT FOR THE PIPE AS FOLLOWS: PLACE ¾" MINUS CRUSHED ROCK OVER UNDISTURBED GROUND IN 6" LAYERS AND COMPACT.
2. BACKFILL MATERIAL BELOW & TO SIDE OF STRUCTURE SHALL BE ASTM D2321 CLASS I OR II CRUSHED STONE OR GRAVEL, PLACED UNIFORMLY. BACKFILL TO MEET WSDOT 7-05 & AASHTO T-99 95% COMPACTION.
3. ALL DIMENSIONS SUBJECT TO ALLOWABLE SPECIFICATION TOLERANCES.
4. LATERALS WILL BE CONSTRUCTED TO ENTER THE STRUCTURE PERPENDICULAR TO THE WALL. THE LATERAL WILL ENTER ONLY AT THE LOCATION OF KNOCKOUT WITH NO LATERALS ALLOWED TO ENTER THE BASE AT THE CORNERS. IF NEEDED, A 45° BEND (MAX.) MAY BE USED WITHIN 5 FEET OF STRUCTURE.
5. TAPER GUTTER DOWN TO INLET. (CURB INLET & COMBINATION CURB INLET ONLY)
6. GUTTER PAN TO BE UTILIZED ON CATCH BASIN TOP AND COMBINATION CURB INLET TOP PER STD. DETAIL ST-5.0.
7. USE VANED GRATE WHERE LONGITUDINAL SLOPE IS 4% OR GREATER, SEE STD. DETAIL ST-5.2.
8. USE HERRINGBONE GRATE WHERE LONGITUDINAL SLOPE IS LESS THAN 4%, SEE STD. DETAIL ST-5.2.
9. INSTALL INLET STENCIL PER STD. DETAIL TR-8.09.
10. INSTALL REMOVABLE OUTLET TRAP OR EQUAL PER STD. DETAIL ST-5.1.
11. THE MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".
12. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED TO THE SATISFACTION OF ENGINEER.
13. LIFT HOLES MUST BE GROUTED.

STRUCTURE NOTES:

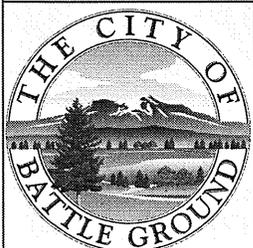
1. STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS SHOWN ON PLANS OR NOTED IN WSDOT STANDARD SPECIFICATIONS.
2. BASE CONCRETE SHALL BE 3000 P.S.I., 2-4 IN. SLUMP. FLOW LINES AND INSIDE SURFACES SHALL BE TROWELED SMOOTH & UNIFORM AT TIME OF POUR.
3. CAST-IN-PLACE, MONOLITHIC BASE UNIT MAY BE SUBSTITUTED WITH SPECIFIC APPROVAL OF THE ENGINEER.
4. ALL JOINTS SHALL BE GROUTED WITH PORTLAND CEMENT CONCRETE GROUT & STRUCK EVEN WITH THE WALL. RISERS SHALL BE PREMOLDED.
5. ALL REINFORCED STEEL SHALL HAVE 1 ½" CLEAR COVER UNLESS OTHERWISE NOTED, AND SHALL BE GRADE 60 (ASTM A615).
6. STEEL REINFORCED OR POLYPROPYLENE FIBER REINFORCED UNITS ARE ALLOWABLE.
7. MANUFACTURED COVERS, FRAMES, AND GRATES SHALL BE PART OF THE *BUY AMERICA* PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1
8. BASE UNIT SHALL HAVE 18" SUMP BELOW INVERT OUT.

SEE DETAIL STD. DETAIL ST-3.0A

SHEET 2 OF 2 N.T.S.

CATCH BASIN (TYPE 1)

STANDARD
DETAIL



CITY OF BATTLE GROUND
APPROVED

Scott J. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	8/30/05	ALL	MCH
3	7/22/09	RMJ	RMJ

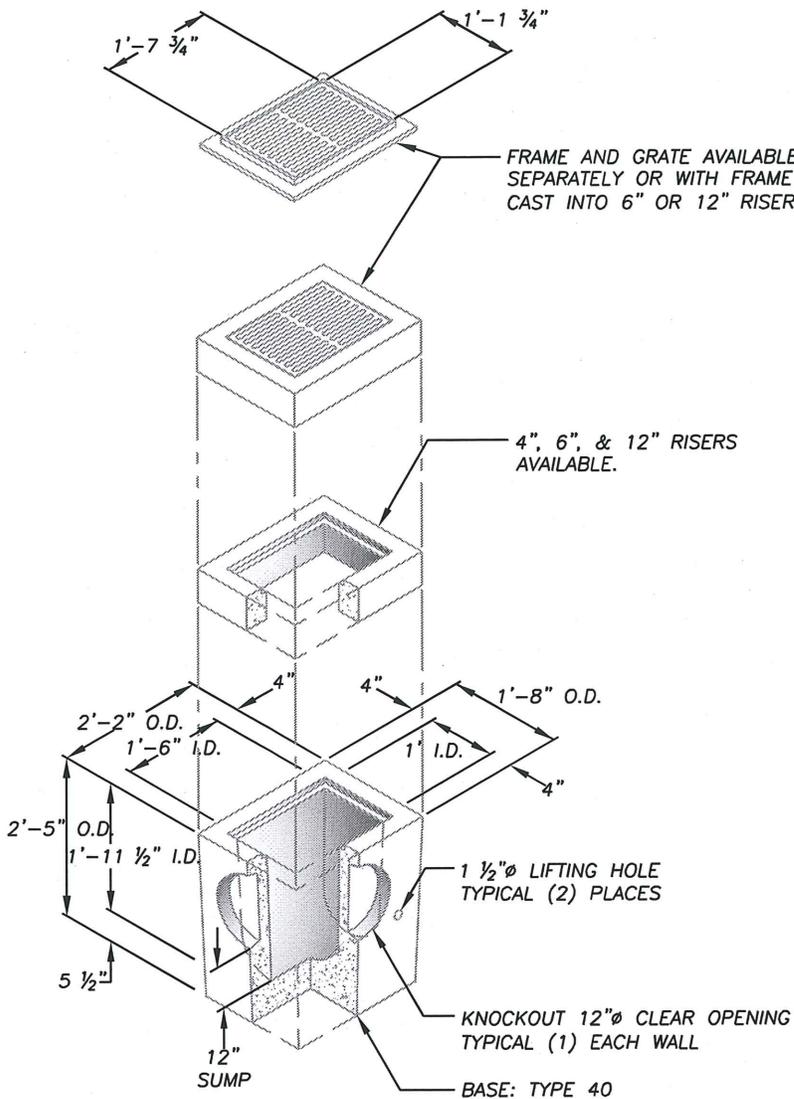
ST-3.0B

CONSTRUCTION NOTES:

1. IN OVER EXCAVATED AREAS PROVIDE SUPPORT FOR THE PIPE AS FOLLOWS: PLACE $\frac{3}{4}$ " MINUS CRUSHED ROCK OVER UNDISTURBED GROUND IN 6" LAYERS AND COMPACT.
2. BACKFILL MATERIAL BELOW & TO SIDE OF STRUCTURE SHALL BE ASTM D2321 CLASS I OR II CRUSHED STONE OR GRAVEL, PLACED UNIFORMLY. BACKFILL TO MEET WSDOT 7-05 & AASHTO T-99 95% COMPACTION.
3. ALL DIMENSIONS SUBJECT TO ALLOWABLE SPECIFICATION TOLERANCES.
4. LATERALS WILL BE CONSTRUCTED TO ENTER THE STRUCTURE PERPENDICULAR TO THE WALL. THE LATERAL WILL ENTER ONLY AT THE LOCATION OF KNOCKOUT. ONLY LATERALS ALLOWED TO ENTER THE BASE AT THE CORNERS. IF NEEDED, A 45° BEND (MAX.) MAY BE USED WITHIN 5 FEET OF STRUCTURE.
5. GUTTER PAN TO BE UTILIZED PER STD. DETAIL ST-5.0.
6. INSTALL INLET STENCIL PER STD. DETAIL TR-8.09.
7. INSTALL REMOVABLE OUTLET TRAP OR EQUAL, SEE STD. DETAIL ST-5.1.
8. THE MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".
9. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED TO THE SATISFACTION OF ENGINEER.
10. LIFT HOLES MUST BE GROUTED.

STRUCTURE NOTES:

1. STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS SHOWN ON PLANS OR NOTED IN WSDOT STANDARD SPECIFICATIONS.
2. BASE CONCRETE SHALL BE 3000 P.S.I., 2-4 IN. SLUMP. FLOW LINES AND INSIDE SURFACES SHALL BE TROWELED SMOOTH & UNIFORM AT TIME OF POUR.
3. CAST-IN-PLACE, MONOLITHIC BASE UNIT MAY BE SUBSTITUTED WITH SPECIFIC APPROVAL OF THE ENGINEER.
4. ALL JOINTS SHALL BE GROUTED WITH PORTLAND CEMENT CONCRETE GROUT & STRUCK EVEN WITH THE WALL. RISERS SHALL BE PREMOLDED.
5. ALL REINFORCED STEEL SHALL HAVE $1\frac{1}{2}$ " CLEAR COVER UNLESS OTHERWISE NOTED, AND SHALL BE GRADE 60 (ASTM A615).
6. STEEL REINFORCED OR POLYPROPYLENE FIBER REINFORCED UNITS ARE ALLOWABLE.
7. MANUFACTURED GRATE AND FRAME SHALL BE PART OF THE **BUY AMERICA** PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1.
8. BASE UNIT SHALL HAVE 12" SUMP BELOW INVERT OUT.



N.T.S.

CATCH BASIN (TYPE 40)

STANDARD
DETAIL



CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	8/30/05	ALL	MCH
3	7/22/09	RMJ	RMJ

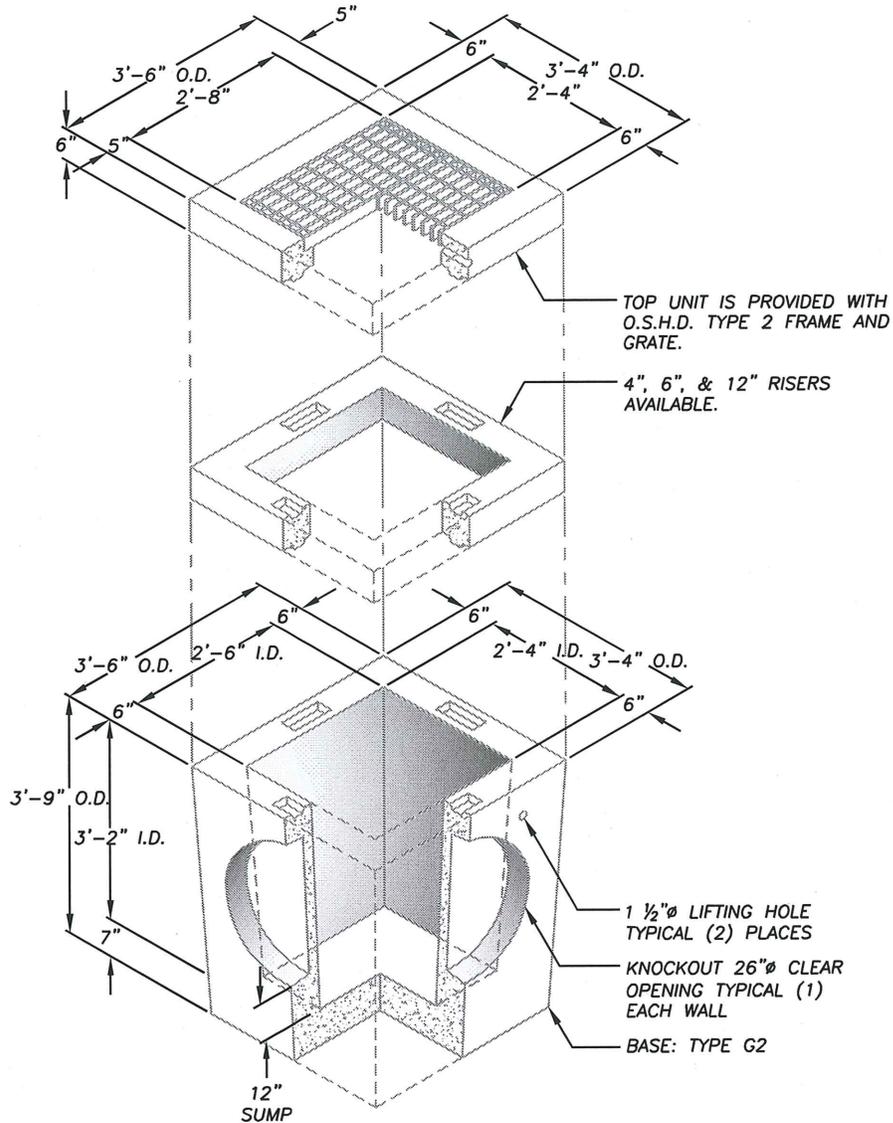
ST-3.1

CONSTRUCTION NOTES:

1. IN OVER EXCAVATED AREAS PROVIDE SUPPORT FOR THE PIPE AS FOLLOWS: PLACE $\frac{3}{4}$ " MINUS CRUSHED ROCK OVER UNDISTURBED GROUND IN 6" LAYERS AND COMPACT.
2. BACKFILL MATERIAL BELOW & TO SIDE OF STRUCTURE SHALL BE ASTM D2321 CLASS I OR II CRUSHED STONE OR GRAVEL, PLACED UNIFORMLY. BACKFILL TO MEET WSDOT 7-05 & AASHTO T-99 95% COMPACTION.
3. ALL DIMENSIONS SUBJECT TO ALLOWABLE SPECIFICATION TOLERANCES.
4. LATERALS WILL BE CONSTRUCTED TO ENTER THE STRUCTURE PERPENDICULAR TO THE WALL. THE LATERAL WILL ENTER ONLY AT THE LOCATION OF KNOCKOUT WITH NO LATERALS ALLOWED TO ENTER THE BASE AT THE CORNERS. IF NEEDED, A 45° BEND (MAX.) MAY BE USED WITHIN 5 FEET OF STRUCTURE.
5. GUTTER PAN TO BE UTILIZED PER STD. DETAIL ST-5.0.
6. INSTALL INLET STENCIL PER STD. DETAIL TR-8.09.
7. INSTALL REMOVABLE OUTLET TRAP OR EQUAL, SEE STD. DETAIL ST-5.1.
8. THE MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".
9. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED TO THE SATISFACTION OF ENGINEER.
10. LIFT HOLES MUST BE GROUTED.

STRUCTURE NOTES:

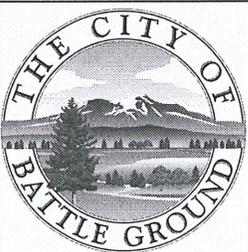
1. STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS SHOWN ON PLANS OR NOTED IN WSDOT STANDARD SPECIFICATIONS.
2. BASE CONCRETE SHALL BE 3000 P.S.I., 2-4 IN. SLUMP. FLOW LINES AND INSIDE SURFACES SHALL BE TROWELED SMOOTH & UNIFORM AT TIME OF POUR.
3. CAST-IN-PLACE, MONOLITHIC BASE UNIT MAY BE SUBSTITUTED WITH SPECIFIC APPROVAL OF THE ENGINEER.
4. ALL JOINTS SHALL BE GROUTED WITH PORTLAND CEMENT CONCRETE GROUT & STRUCK EVEN WITH THE WALL. RISERS SHALL BE PREMOLED.
5. ALL REINFORCED STEEL SHALL HAVE 1 1/2" CLEAR COVER UNLESS OTHERWISE NOTED, AND SHALL BE GRADE 60 (ASTM A615).
6. STEEL REINFORCED OR POLYPROPYLENE FIBER REINFORCED UNITS ARE ALLOWABLE.
7. MANUFACTURED GRATE AND FRAME SHALL BE PART OF THE BUY AMERICA PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1.
8. BASE UNIT SHALL HAVE 12" SUMP BELOW INVERT OUT.



N.T.S.

CATCH BASIN (TYPE G2)

STANDARD
DETAIL

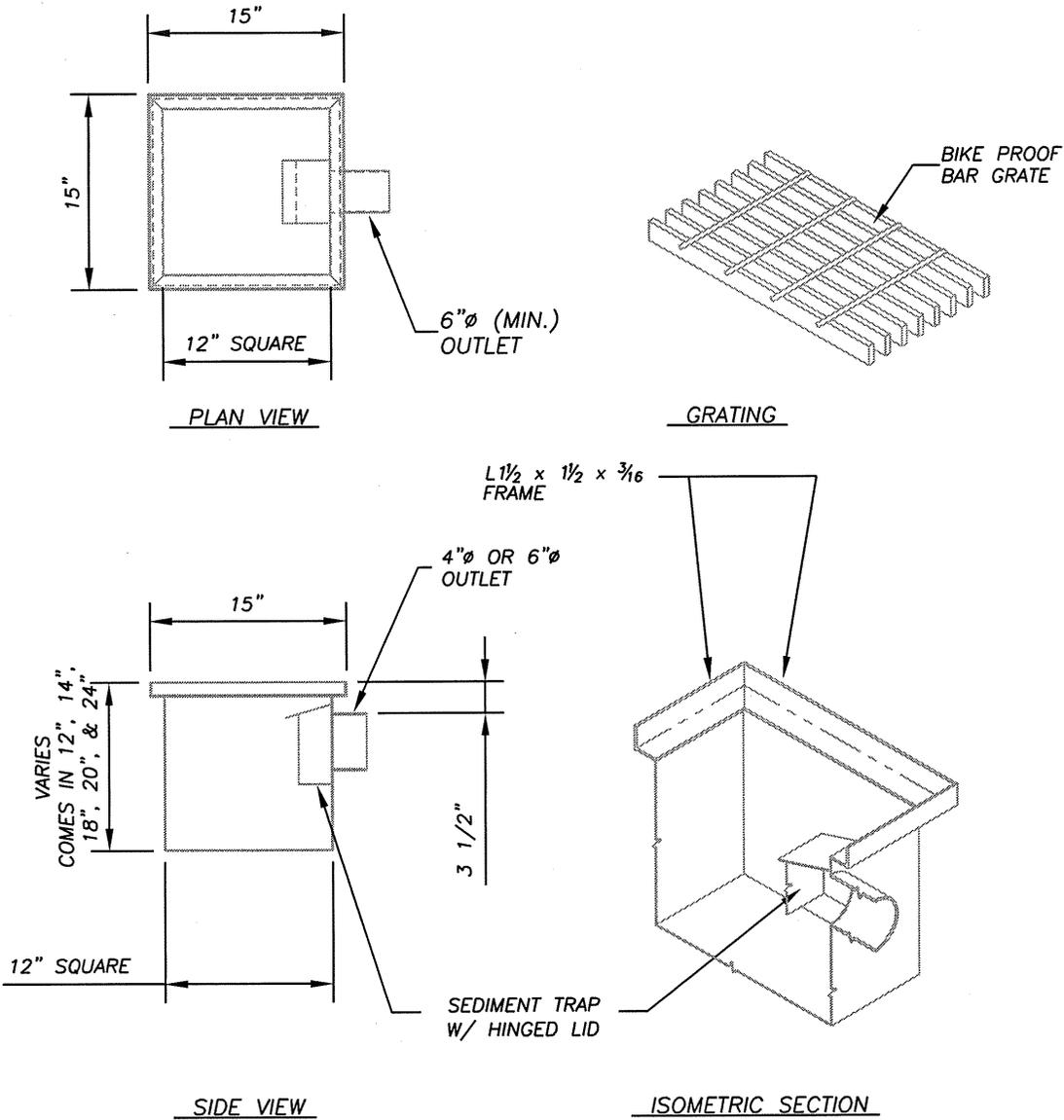


CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	8/30/05	ALL	MCH
3	7/22/09	RMJ	RMJ

ST-3.2



STATE APPROVED - ASPHALT DIPPED

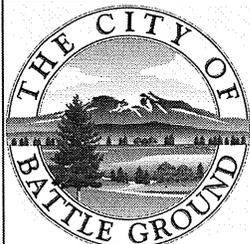
NOTES:

1. THIS CATCH BASIN CAN BE USED IN AREAS OUTSIDE RIGHT OF WAY AND TRAVELED WAY OR AS APPROVED BY CITY ENGINEER.
2. BOX FABRICATED FROM 10 GA. MATERIAL

N.T.S.

CATCH BASIN (STEEL)

STANDARD
DETAIL

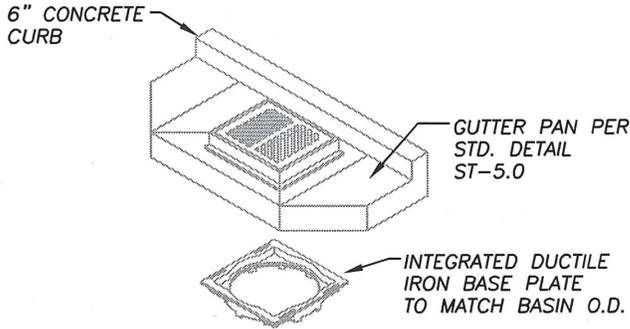


CITY OF BATTLE GROUND
APPROVED

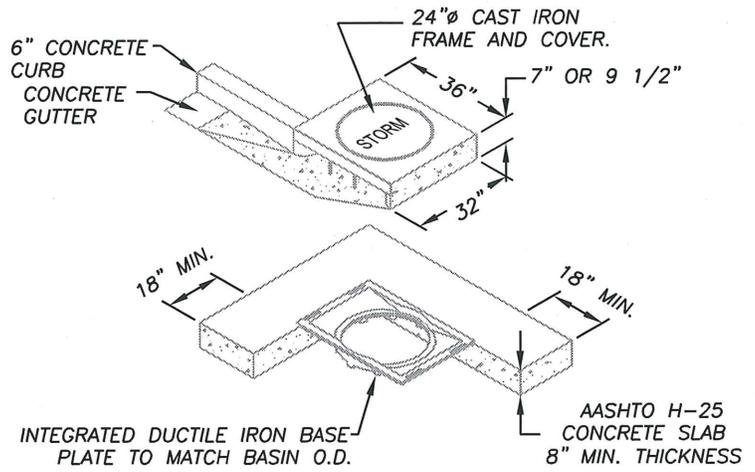
Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

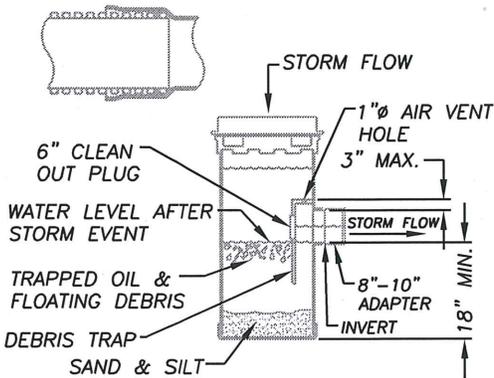
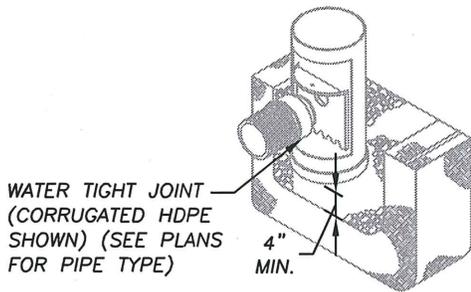
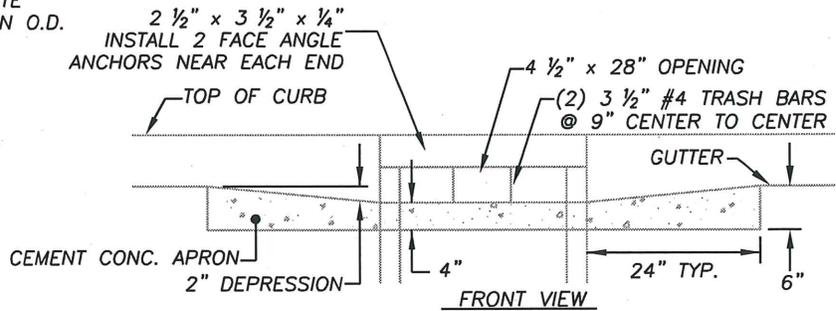
ST-3.3



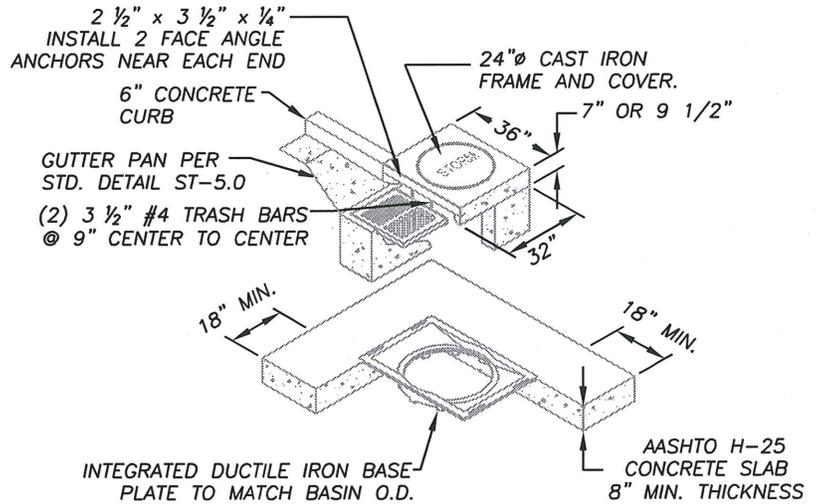
CATCH BASIN TOP



CURB INLET TOP
(CITY OF BATTLE GROUND PREFERRED TOP)



BASE UNIT



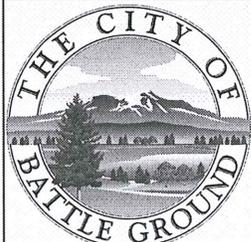
COMBINATION CURB INLET TOP

SEE NOTES STD. DETAIL ST-3.4B

N.T.S.

CATCH BASIN (NYLOPLAST OR EQUAL)

STANDARD
DETAIL



CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

ST-3.4A

CONSTRUCTION NOTES:

1. BACKFILL MATERIAL BELOW & TO SIDE OF STRUCTURE SHALL BE ASTM D2321 CLASS I OR II CRUSHED STONE OR GRAVEL, PLACED UNIFORMLY. BACKFILL TO MEET WSDOT 7-05 & AASHTO T-99 95% COMPACTION.
2. BASE PLATE SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
3. ALL CAST-IN-PLACE CONCRETE SHALL BE CLASS 3,000.
4. USE VANED GRATE WHERE LONGITUDINAL SLOPE IS 4% OR GREATER, SEE STD. DETAIL ST-5.2.
5. USE HERRINGBONE GRATE WHERE LONGITUDINAL SLOPE IS LESS THAN 4%, SEE STD. DETAIL ST-5.2.
6. INSTALL INLET STENCIL PER STD. DETAIL TR-8.09.
7. TAPER GUTTER DOWN TO INLET. (CURB INLET & COMBINATION CURB INLET ONLY)
8. GUTTER PAN TO BE UTILIZED ON CATCH BASIN TOP AND COMBINATION CURB INLET TOP PER STD. DETAIL ST-5.0.
9. THE MAX. DEPTH FROM FINISHED GRADE TO THE PIPE INVERT IS 5'.
10. FRAME MUST BE INSTALLED WITH FLANGE DOWN.

STRUCTURE NOTES:

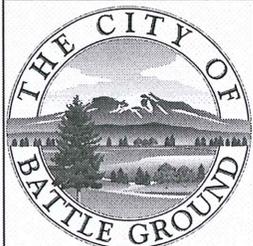
1. DRAIN BASIN TO BE 24" DIAMETER NYLOPLAST OR EQUAL (ROUND) STRUCTURE.
2. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
3. VARIOUS TYPES OF INLET & OUTLET ADAPTERS ARE AVAILABLE FOR CORRUGATED POLYETHYLENE, SDR 35, & CL 52 D.I..
4. DRAIN BASIN FRAME & GRATE SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS & MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-621D. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
5. MANUFACTURED COVERS, FRAMES, AND GRATES SHALL BE PART OF THE *BUY AMERICA* PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1

SEE DETAIL STD. DETAIL ST-3.4A

SHEET 2 OF 2 N.T.S.

CATCH BASIN (NYLOPLAST OR EQUAL)

STANDARD
DETAIL

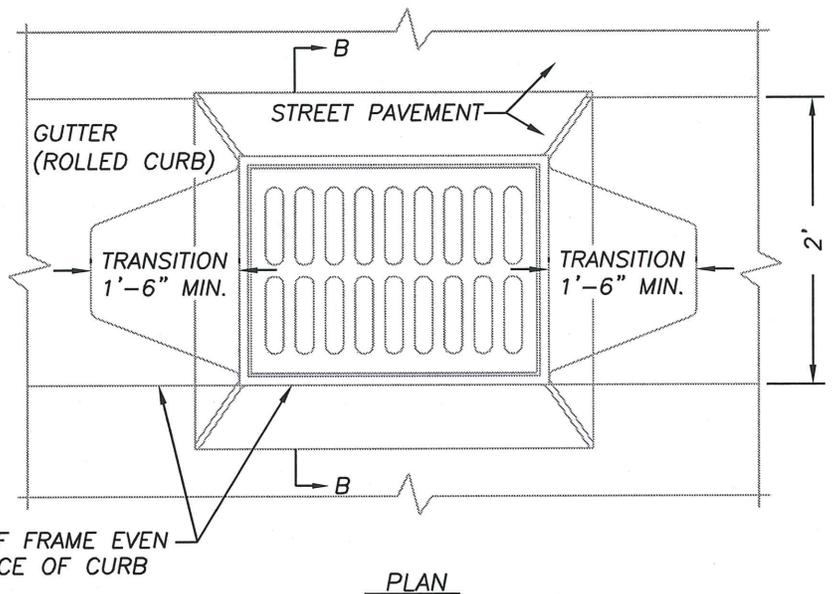
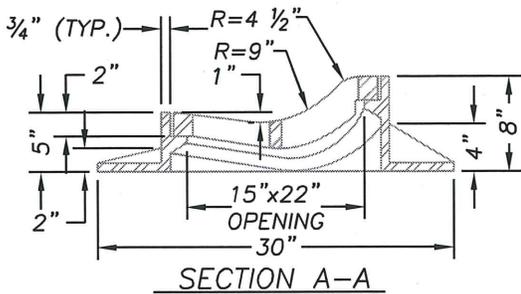
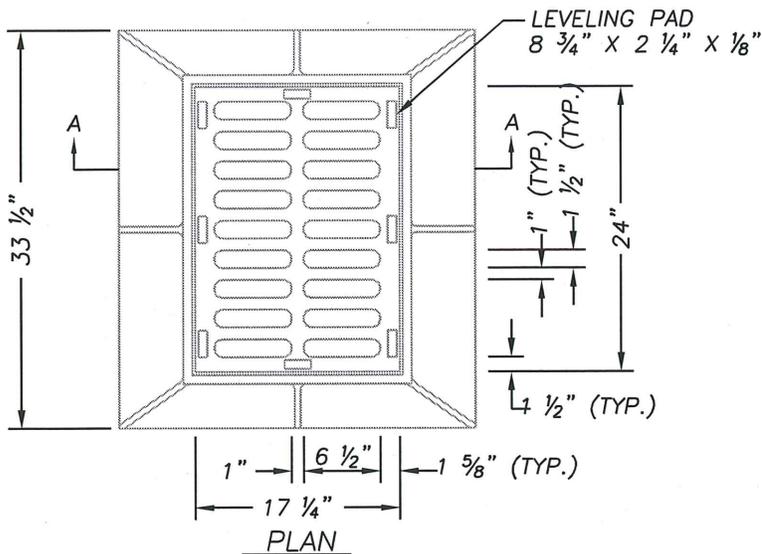


CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

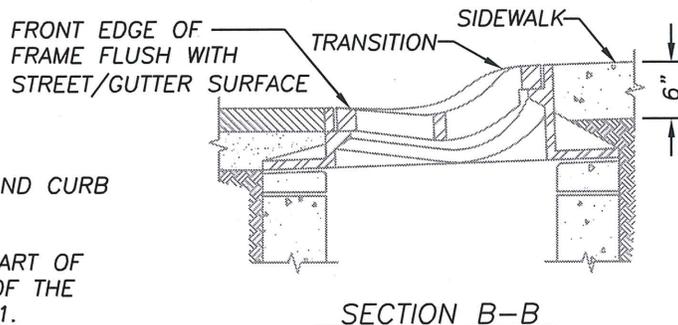
REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	8/30/05	ALL	MCH
3	7/22/09	RMJ	RMJ

ST-3.4B



NOTES:

1. MATERIAL IS CAST IRON ASTM A48 CLASS 30.
2. SET FRAME TO GRADE AND CONSTRUCT ROAD AND CURB TO BE FLUSH AT FRONT AND BACK OF FRAME.
3. MANUFACTURED GRATE AND FRAME SHALL BE PART OF THE *BUY AMERICA* PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1.



N.T.S.

CATCH BASIN (ROLLED CURB)

STANDARD
DETAIL

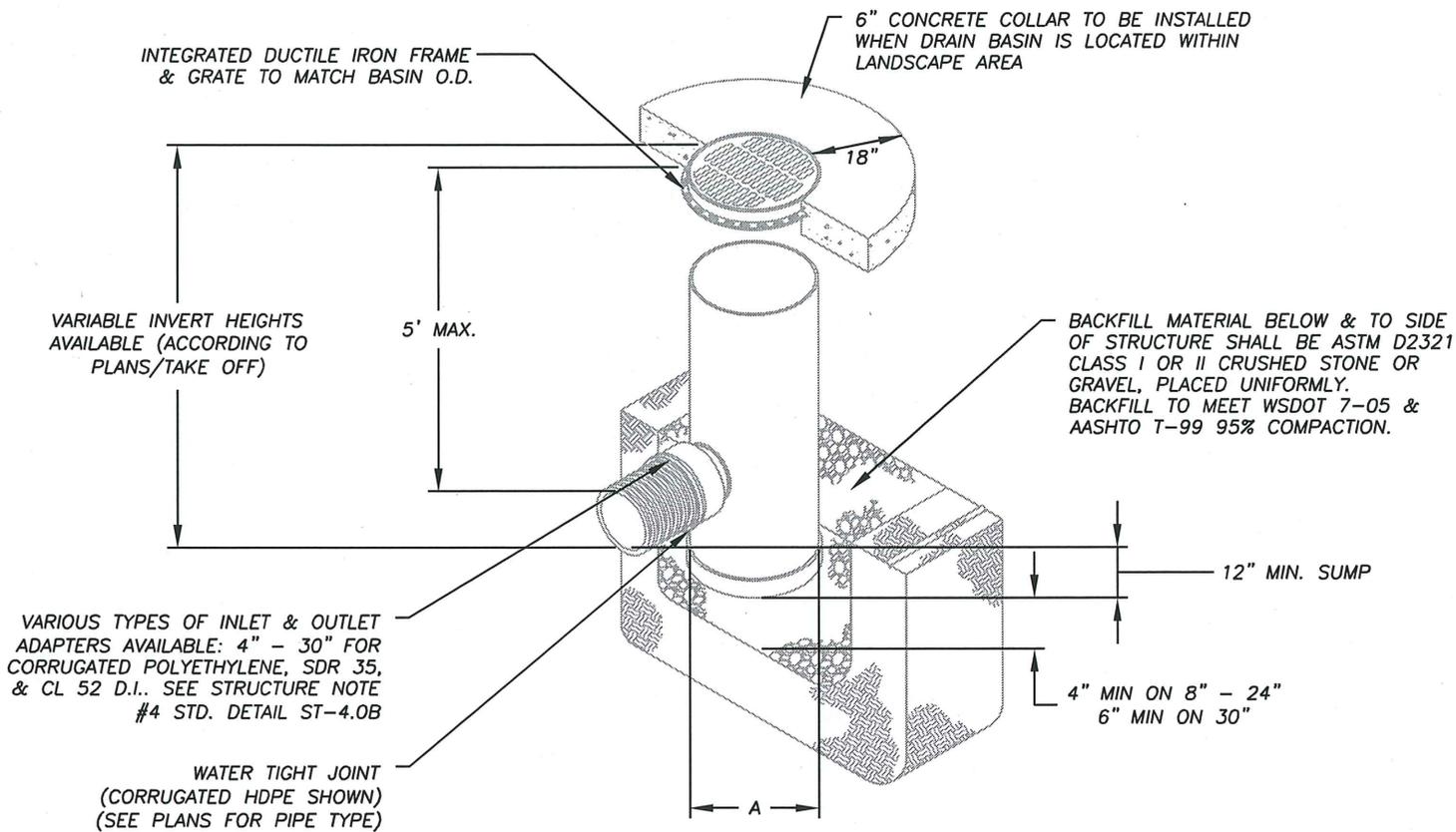


CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

ST-3.5



NOTE:

1. MANUFACTURED GRATES AND FRAMES SHALL BE PART OF THE BUY AMERICA PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1.

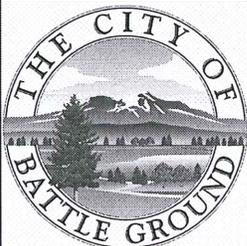
GRATE OPTIONS		
A	PART NUMBER	STYLE
8"	2808AG	PEDESTRIAN/STANDARD
10"	2810AG	PEDESTRIAN/STANDARD
12"	2812AG	PEDESTRIAN
15"	2815AG	PEDESTRIAN
18"	2818AG	PEDESTRIAN
24"	2824AG	PEDESTRIAN
30"	2830AG	PEDESTRIAN

FOR NOTES SEE STD. DETAIL ST-4.0B

N.T.S.

DRAIN BASIN (NYLOPLAST OR EQUAL)

STANDARD
DETAIL



CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

ST-4.0A

CONSTRUCTION NOTES:

1. DRAIN BASIN SHALL BE LOCATED OUTSIDE RIGHT-OF-WAY UNLESS APPROVED BY CITY ENGINEER.
2. PVC SURFACE DRAINAGE INLETS SHALL INCLUDE THE DRAIN BASIN TYPE AS INDICATED ON THE CONTRACT DRAWING AND REFERENCED WITHIN THE CONTRACT SPECIFICATIONS.
3. THE DUCTILE IRON GRATES FOR EACH OF THESE FITTINGS ARE TO BE CONSIDERED AN INTEGRAL PART OF THE SURFACE DRAINAGE INLET AND SHALL BE FURNISHED BY THE SAME MANUFACTURER.
4. THE SURFACE DRAINAGE INLETS SHALL BE AS MANUFACTURED BY NYLOPLAST, A DIVISION OF ADVANCED DRAINAGE SYSTEMS, INC., OR PRIOR APPROVED EQUAL.
5. THE DRAIN BASINS REQUIRED FOR THIS CONTRACT SHALL BE MANUFACTURED FROM PVC PIPE STOCK, UTILIZING A THERMO-MOLDING PROCESS TO REFORM THE PIPE STOCK TO THE SPECIFIED CONFIGURATION.
6. THE DRAINAGE PIPE CONNECTION STUBS SHALL BE MANUFACTURED FROM PVC PIPE STOCK AND FORMED TO PROVIDE A WATERTIGHT CONNECTION WITH THE SPECIFIED PIPE SYSTEM.
7. THIS JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR JOINTS FOR DRAIN AND SEWER PLASTIC PIPE USING FLEXIBLE ELASTOMERIC SEALS. THE FLEXIBLE ELASTOMERIC SEALS SHALL CONFORM TO ASTM F477.
8. THE PIPE BELL SPIGOT SHALL BE JOINED TO THE MAIN BODY OF THE DRAIN BASIN OR CATCH BASIN.
9. THE RAW MATERIAL USED TO MANUFACTURE THE PIPE STOCK THAT IS USED TO MANUFACTURE THE MAIN BODY AND PIPE STUBS OF THE SURFACE DRAINAGE INLETS SHALL CONFORM TO ASTM D1784 CELL CLASS 12454.
10. THE GRATES AND FRAMES FURNISHED FOR ALL SURFACE DRAINAGE INLETS SHALL BE DUCTILE IRON FOR SIZES 8", 10", 12", 15", 18", 24", AND 30" AND SHALL BE MADE SPECIFICALLY FOR EACH BASIN SO AS TO PROVIDE A ROUND BOTTOM FLANGE THAT CLOSELY MATCHES THE DIAMETER OF THE SURFACE DRAINAGE INLET.
11. GRATES FOR DRAIN BASINS SHALL BE CAPABLE OF SUPPORTING H-20 WHEEL LOADING FOR TRAFFIC AREAS OR H-10 LOADING FOR PEDESTRIAN AREAS.
12. THE SPECIFIED PVC SURFACE DRAINAGE INLET SHALL BE INSTALLED USING CONVENTIONAL FLEXIBLE PIPE BACKFILL MATERIALS AND PROCEDURES.
13. BEDDING AND BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED AND COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321. THE DRAIN BASIN BODY WILL BE CUT AT THE TIME OF THE FINAL GRADE. NO BRICK, STONE OR CONCRETE BLOCK WILL BE REQUIRED TO SET THE GRATE TO THE FINAL GRADE HEIGHT.
14. FOR H-20 LOAD RATED INSTALLATIONS, A CONCRETE RING WILL BE POURED UNDER AND AROUND THE GRATE AND FRAME. THE CONCRETE SLAB MUST BE DESIGNED TAKING INTO THE CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, AND OTHER APPLICABLE DESIGN FACTORS.
15. FOR OTHER INSTALLATION CONSIDERATIONS SUCH AS MIGRATION OF FINES, GROUND WATER, AND SOFT FOUNDATIONS REFER TO ASTM D2321 GUIDELINES.

STRUCTURE NOTES:

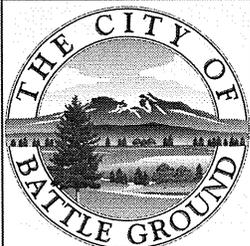
1. 8" - 30" GRATES AND 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. (SEE NYLOPLAST DRAWING NO. 7001-110-065).
3. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC.
4. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS (SEE NYLOPLAST DRAWINGS NO. 7001-110-012, 7001-110-013, & 7001-110-014).
5. GRATES SHALL MEET H-10 LOAD RATING FOR 12" - 24" PEDESTRIAN.
6. GRATES SHALL MEET H-20 LOAD RATING FOR 30" PED & 12" - 30" STANDARD.
7. 8" & 10" PED/STD GRATES ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY.
8. MANUFACTURED GRATES AND FRAMES SHALL BE PART OF THE BUY AMERICA PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1.

FOR DETAIL SEE STD. DETAIL ST-4.0A

N.T.S.

DRAIN BASIN (NYLOPLAST OR EQUAL)

STANDARD
DETAIL



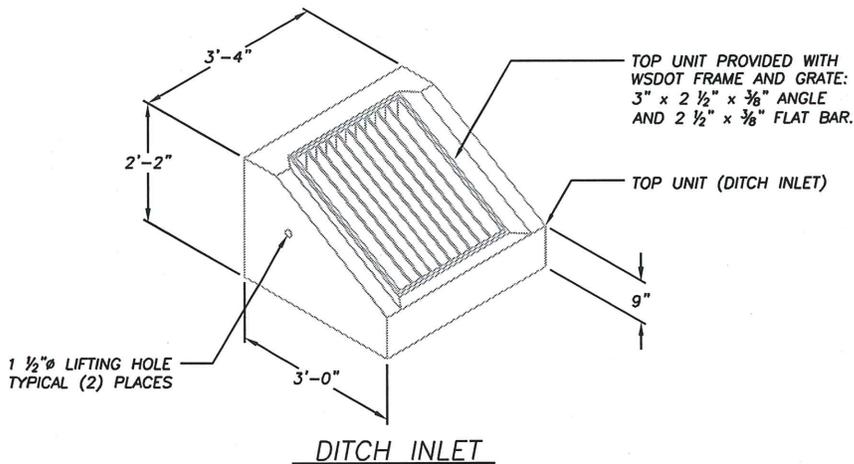
CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer
CITY ENGINEER

7-21-09
DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

ST-4.0B

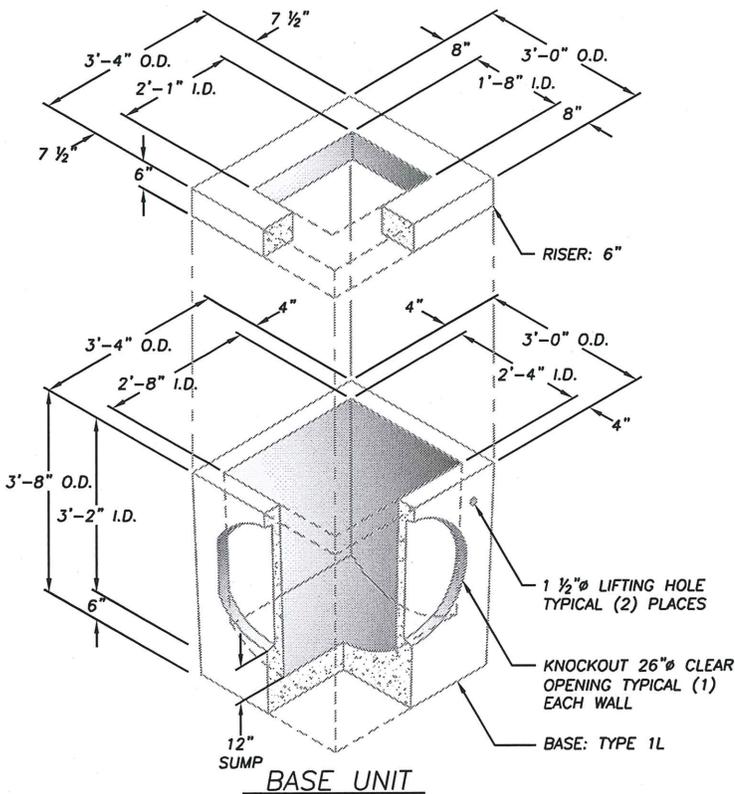


CONSTRUCTION NOTES:

1. IN OVER EXCAVATED AREAS PROVIDE SUPPORT FOR THE PIPE AS FOLLOWS: PLACE 3/4" MINUS CRUSHED ROCK OVER UNDISTURBED GROUND IN 6" LAYERS AND COMPACT.
2. BACKFILL MATERIAL BELOW & TO SIDE OF STRUCTURE SHALL BE ASTM D2321 CLASS I OR II CRUSHED STONE OR GRAVEL, PLACED UNIFORMLY. BACKFILL TO MEET WSDOT 7-05 & AASHTO T-99 95% COMPACTION.
3. ALL DIMENSIONS SUBJECT TO ALLOWABLE SPECIFICATION TOLERANCES.
4. LATERALS WILL BE CONSTRUCTED TO ENTER THE STRUCTURE PERPENDICULAR TO THE WALL. THE LATERAL WILL ENTER ONLY AT THE LOCATION OF KNOCKOUT WITH NO LATERALS ALLOWED TO ENTER THE BASE AT THE CORNERS. IF NEEDED, A 45° BEND (MAX.) MAY BE USED WITHIN 5 FEET OF STRUCTURE.
5. INSTALL REMOVABLE OUTLET TRAP OR EQUAL PER STD. DETAIL ST-5.1.
6. THE MAX. DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS 5'-0".
7. ANY PROTRUDING ENDS OF PIPES SHALL BE TRIMMED FLUSH WITH THE INSIDE WALLS AND GROUTED TO THE SATISFACTION OF ENGINEER.
8. LIFT HOLES MUST BE GROUTED.

STRUCTURE NOTES:

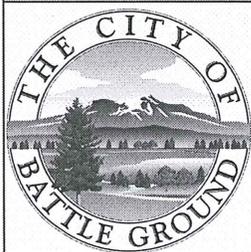
1. STRUCTURE TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS SHOWN ON PLANS OR NOTED IN WSDOT STANDARD SPECIFICATIONS.
2. BASE CONCRETE SHALL BE 3000 P.S.I., 2-4 IN. SLUMP. FLOW LINES AND INSIDE SURFACES SHALL BE TROWELED SMOOTH & UNIFORM AT TIME OF POUR.
3. CAST-IN-PLACE, MONOLITHIC BASE UNIT MAY BE SUBSTITUTED WITH SPECIFIC APPROVAL OF THE ENGINEER.
4. ALL JOINTS SHALL BE GROUTED WITH PORTLAND CEMENT CONCRETE GROUT & STRUCK EVEN WITH THE WALL. RISERS SHALL BE PREMOLDED.
5. ALL REINFORCED STEEL SHALL HAVE 1 1/2" CLEAR COVER UNLESS OTHERWISE NOTED, AND SHALL BE GRADE 60 (ASTM A615).
6. STEEL REINFORCED OR POLYPROPYLENE FIBER REINFORCED UNITS ARE ALLOWABLE.
7. MANUFACTURED GRATE AND FRAME SHALL BE PART OF THE BUY AMERICA PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1
8. BASE UNIT SHALL HAVE 12" SUMP BELOW INVERT OUT.



N.T.S.

DITCH INLET (TYPE 1L)

STANDARD
DETAIL

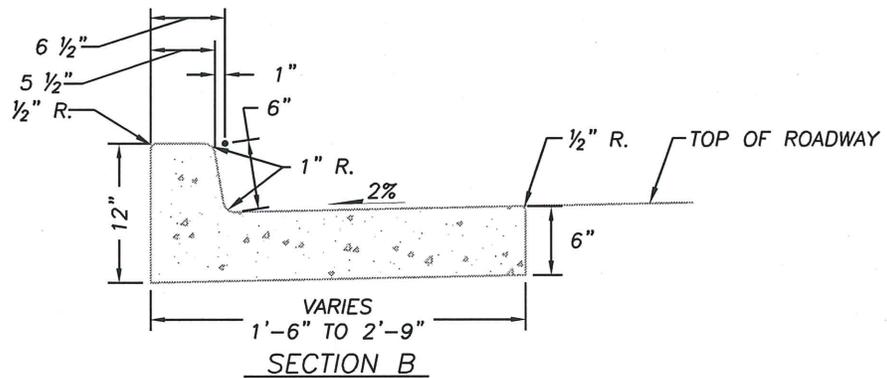
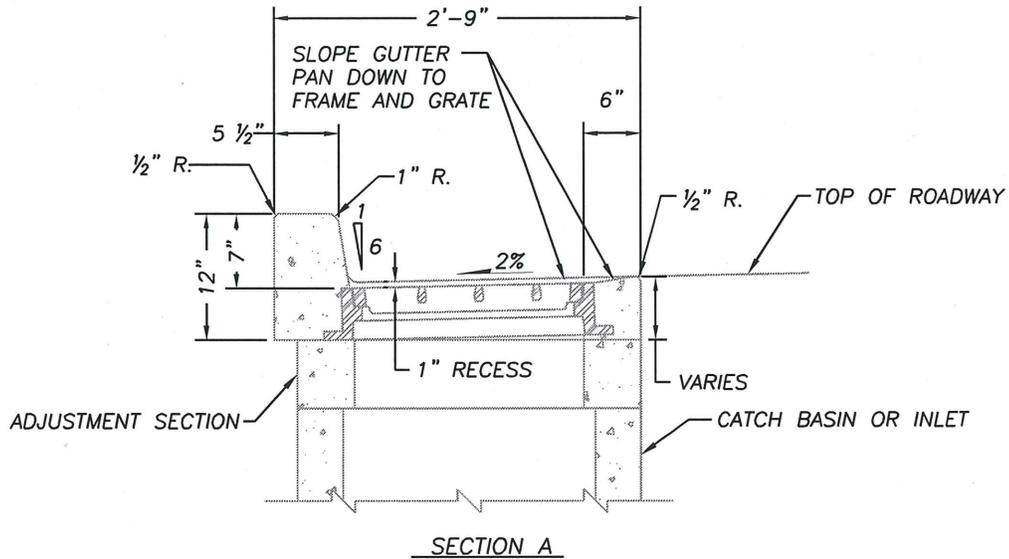
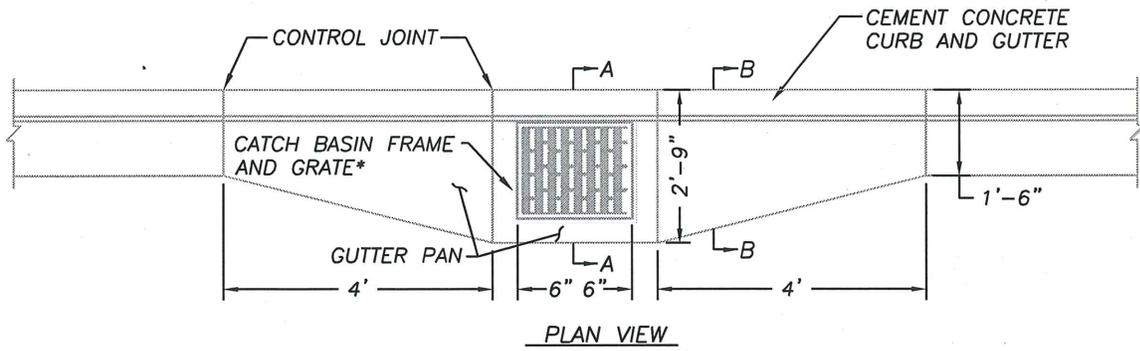


CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
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ST-4.1



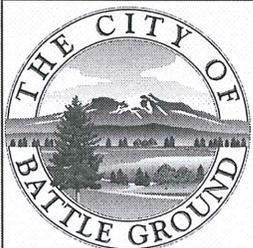
***NOTES:**

1. USE VANED GRATE WHERE LONGITUDINAL SLOPE IS 4% OR GREATER, SEE STD. DETAIL ST-5.2.
2. USE HERRINGBONE GRATE WHERE LONGITUDINAL SLOPE IS LESS THAN 4%, SEE STD. DETAIL ST-5.2.

N.T.S.

GUTTER PAN

STANDARD
DETAIL

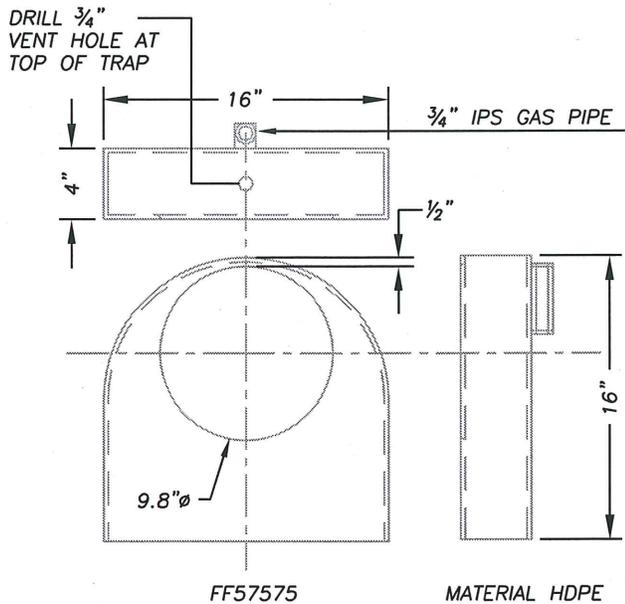


CITY OF BATTLE GROUND
APPROVED

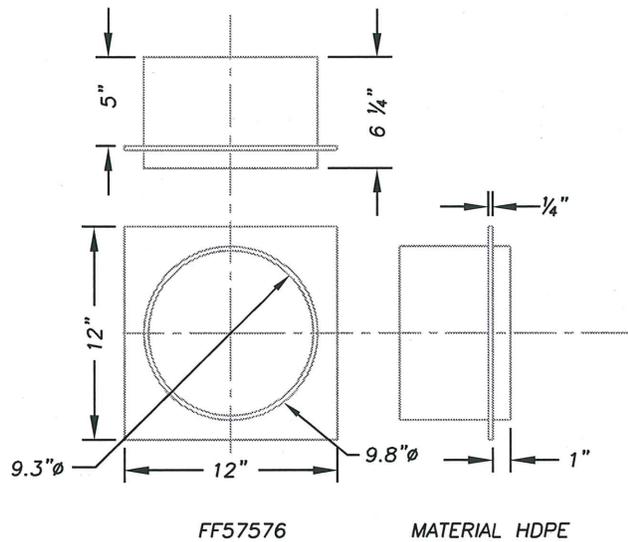
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1	7/22/09	RMJ	RMJ

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ST-5.0

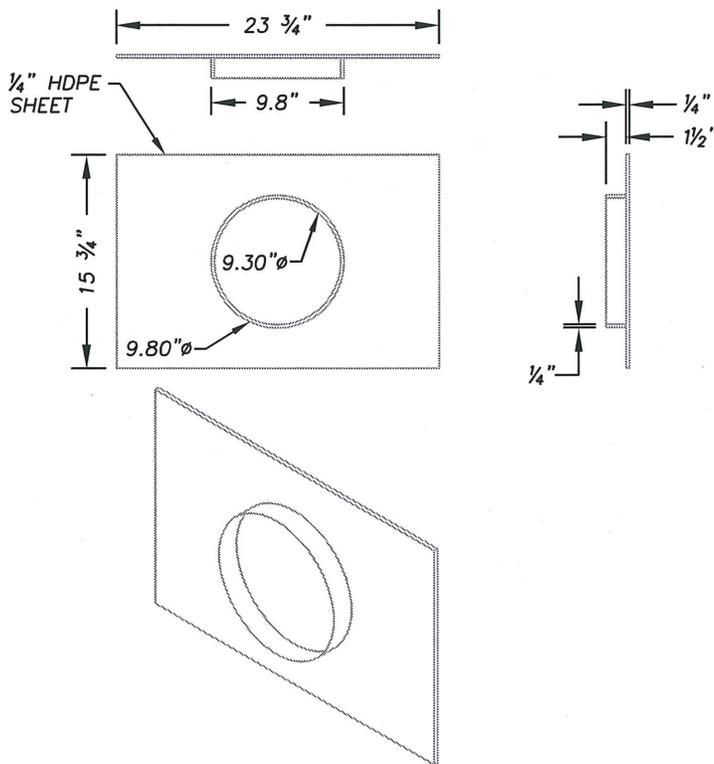


LOW PROFILE ELBOW

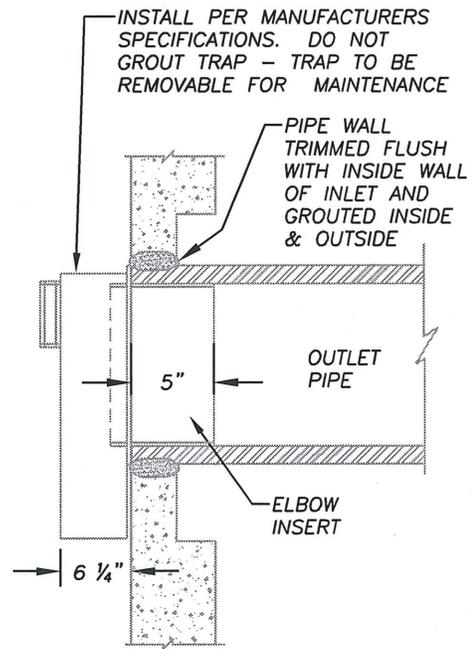


ELBOW INSERT

ZYMARK, ULTRATECH, BONAIR BRANDS OR EQUIVALENT



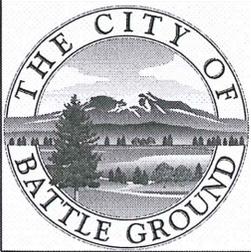
10" HDPE FLAT FACE ADAPTOR
FORD FABRICATIONS OR EQUIVALENT



N.T.S.

OUTLET TRAP

STANDARD
DETAIL

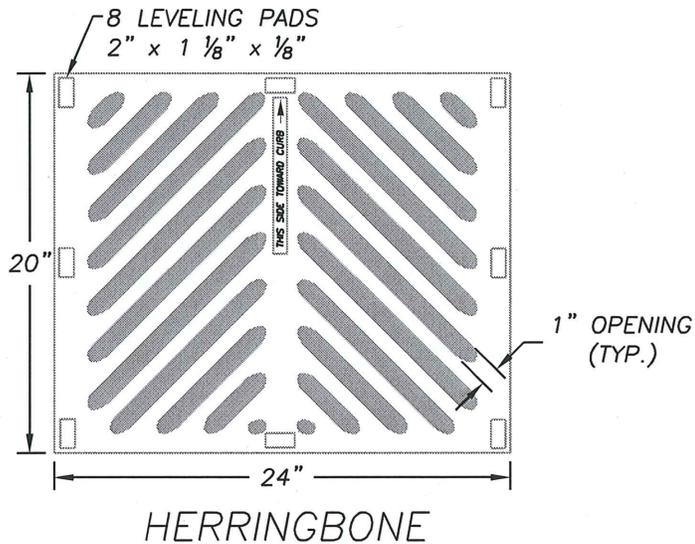
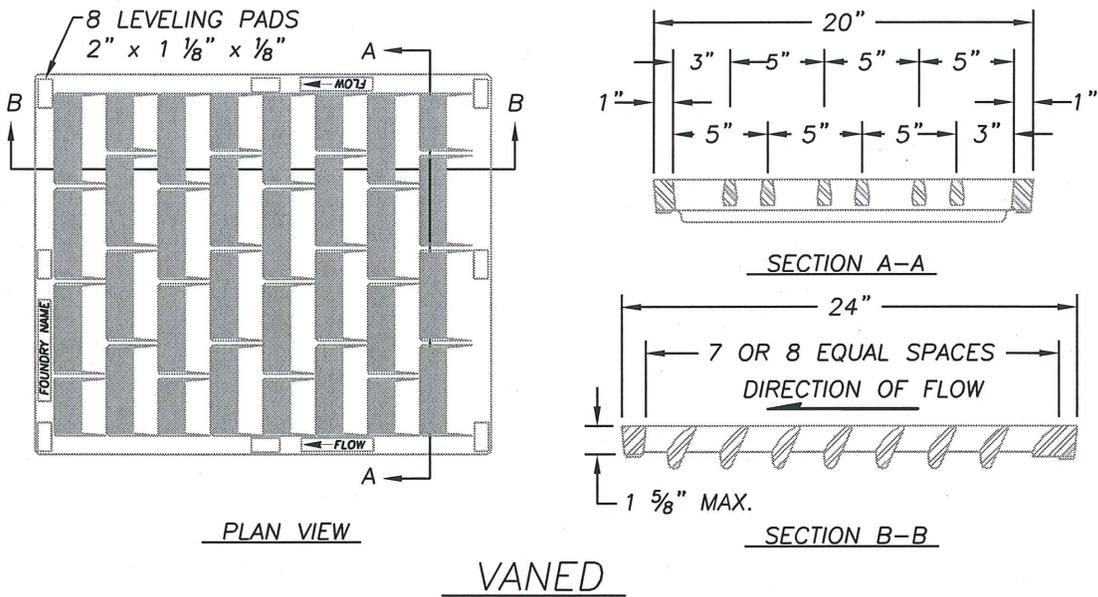


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ST-5.1



NOTES:

1. MATERIAL IS CAST IRON ASTM A48 CLASS 30.
2. USE VANED GRATE WHERE LONGITUDINAL SLOPE IS 4% OR GREATER.
3. USE HERRINGBONE GRATE WHERE LONGITUDINAL SLOPE IS LESS THAN 4%.
4. REFER TO WSDOT STANDARD SPECIFICATIONS 9-05.15(2) FOR ADDITIONAL REQUIREMENTS.
5. THE THICKNESS OF THE GRATE SHALL NOT EXCEED 1 5/8".
6. MANUFACTURED GRATE AND FRAME SHALL BE PART OF THE **BUY AMERICA** PROGRAM PER 0605.GR1 OF THE WSDOT GENERAL SPECIAL PROVISIONS DIVISION 1.

N.T.S.

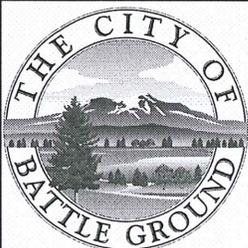
STORM GRATES

STANDARD
DETAIL

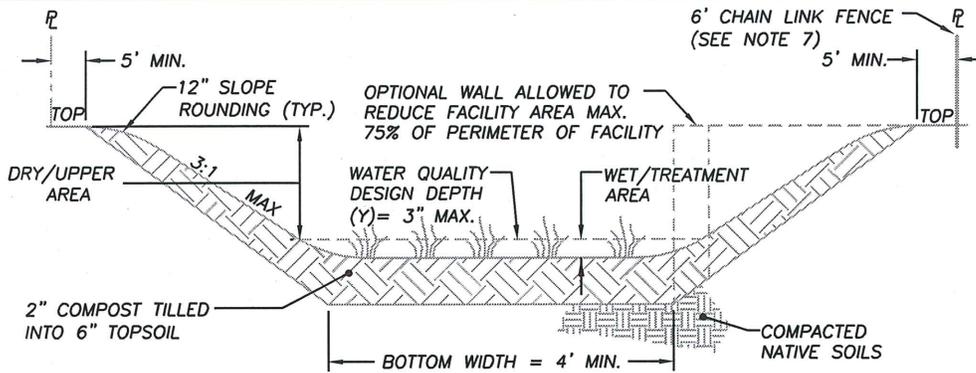
CITY OF BATTLE GROUND
APPROVED

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

ST-5.2



Scott P. Sawyer 7-21-09
CITY ENGINEER DATE



WET/TREATMENT*

MIX 1

TALL OR MEADOW FESCUE	75-80 PERCENT
SEASIDE/COLONIAL BENTGRASS	10-15 PERCENT
REDTOP	5-10 PERCENT

MIX 2

TALL FESCUE	60-70 PERCENT
SEASIDE/COLONIAL BENTGRASS	10-15 PERCENT
MEADOW FOXTAIL	6-10 PERCENT
ALSIKE CLOVER	1-5 PERCENT
REDTOP	1-6 PERCENT

APPLICATION RATE IS APPROX. 80 lbs/ACRE

*SEED MIX PER 2005 STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON, VOLUME V, TABLE 9.3

DRY/UPPER**

GROUNDCOVER

<u>COMMON NAME</u>	<u>BOTANICAL NAME</u>
KINNIKINNIK	ARCTOSTAPHYLOS UVA-URSI
ST. JOHN'S WORT	HYPERICUM PERFORATUM
EPIMEDIUM	EPIMEDIUM GRANDIFLORUM
CREeping FORGET ME NOT	OMPHALODES VERNA
-----	EUONYMUS LANCEOLATA
YELLOW ROOT	XANTHORHIZA SIMPLISSIMA
-----	GENISTA
WHITE LAWN CLOVER	TRIFOLIUM REPENS
WHITE SWEET CLOVER	MELILOTUS ALBA
-----	RUBUS CALYCINOIDES
STRAWBERRY	FRAGARIA CHILOENSIS
BROADLEAF LUPINE	LUPINUS LATIFOLIUS

GRASSES(drought-tolerant, minimum mowing)

<u>COMMON NAME</u>	<u>BOTANICAL NAME</u>
DWARF TALL FESCUES	FESTUCA SPP. (E.G., MANY MUSTANG, SILVERADO)
HARD FESCUE	FESTUCA OVINA DURIUSCULA (E.G., RELIANT, AURORA)
TUFTED FESCUE	FESTUCA AMETHYSTINE
BUFFALO GRASS	BUCHLOE DACTYLOIDES
RED FESCUE	FESTUCA RUBRA
TALL FESCUE GRASS	FESTUCA ARUNDINACEA
BLUE OATGRASS	HELICTOTRICHON SEMPERVIRENS

APPLICATION RATE IS APPROX. 80 lbs/ACRE

**GROUNDCOVER & GRASSES PER 2005 STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON, VOLUME V, TABLE 9.4

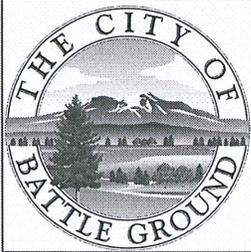
NOTES:

- IF BIOSWALE IS INSTALLED DURING A PERIOD OF WET WEATHER (OCT 1-APRIL 30), BIOSWALE SHALL BE ESTABLISHED BY SODDING. SINCE SOD IS NOT AVAILABLE IN RECOMMENDED GRASSES, IT SHOULD BE OVER SOWN WITH A RECOMMENDED MIX AT THE BEGINNING OF THE GROWING SEASON. IT IS RECOMMENDED TO INSTALL A SOD THAT IS A MIX OF CREEPING FESCUE AND HARD & SHEEP FESCUES.
- THE DESIGN OF WATER QUALITY FACILITIES SHALL MEET THE STANDARD AS SET FORTH IN BGMC 18.250.
- SOD SHALL BE LAID PERPENDICULAR TO SLOPE FROM BOTTOM TO TOP, WITH JOINTS STAGGERED.
- SWALE LONGITUDINAL SLOPE: 1.5-2.5% (0.5% MIN.). UNDERDRAINS REQUIRED FOR SLOPES LESS THAN 1.5%, SEE STD. DETAIL ST-6.1.
- FLOW SPREADERS REQUIRED FOR SLOPES GREATER THAN 2.5% OR FOR SWALES WHICH EXCEED 100' IN LENGTH. FLOW SPREADERS TO BE INSTALLED IN A MAXIMUM OF 50' INTERVALS. THE SPREADER SHALL BE INSTALLED LEVEL AND ON CONTOUR, SEE STD. DETAIL ST-6.3.
- SWALE SHALL HAVE 75% COVERAGE OF PROPER VEGETATION AS APPROVED BY THE CITY INSPECTOR PRIOR TO PAVING.
- INSTALL FENCE AT PROPERTY LINE (R).

N.T.S.

BIOSWALE SECTION

STANDARD
DETAIL

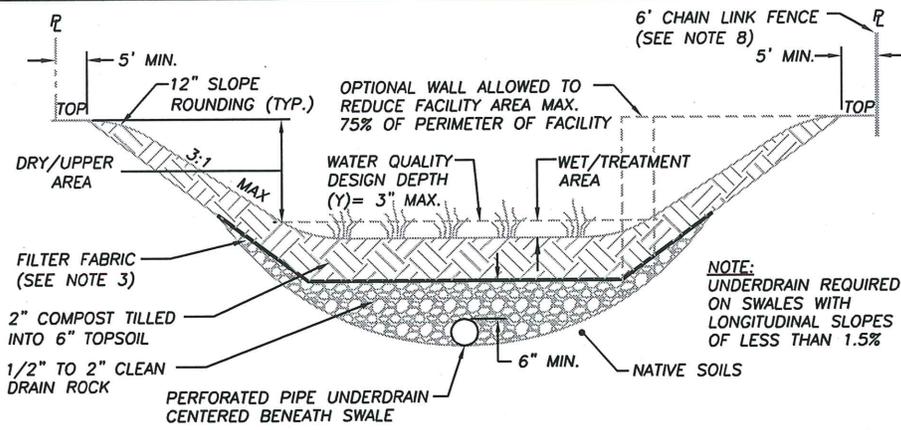


CITY OF BATTLE GROUND
APPROVED

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

ST-6.0



WET/TREATMENT*

<u>MIX 1</u>	
TALL OR MEADOW FESCUE	75-80 PERCENT
SEASIDE/COLONIAL BENTGRASS	10-15 PERCENT
REDTOP	5-10 PERCENT
<u>MIX 2</u>	
TALL FESCUE	60-70 PERCENT
SEASIDE/COLONIAL BENTGRASS	10-15 PERCENT
MEADOW FOXTAIL	6-10 PERCENT
ALSIKE CLOVER	1-5 PERCENT
REDTOP	1-6 PERCENT

APPLICATION RATE IS APPROX. 80 lbs/ACRE
 *SEED MIX PER 2005 STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON, VOLUME V, TABLE 9.3

DRY/UPPER**

<u>GROUND COVER</u>	
<u>COMMON NAME</u>	<u>BOTANICAL NAME</u>
KINNIKINNIK	ARCTOSTAPHYLOS UVA-URSI
ST. JOHN'S WORT	HYPERICUM PERFORATUM
EPIMEDIUM	EPIMEDIUM GRANDIFLORUM
CREeping FORGET ME NOT	OMPHALODES VERNA
-----	EUONYMUS LANCEOLATA
YELLOW ROOT	XANTHORHIZA SIMPLISSIMA
-----	GENISTA
WHITE LAWN CLOVER	TRIFOLIUM REPENS
WHITE SWEET CLOVER	MELILOTUS ALBA
-----	RUBUS CALYCINOIDES
STRAWBERRY	FRAGARIA CHILOENSIS
BROADLEAF LUPINE	LUPINUS LATIFOLIUS

GRASSES (drought-tolerant, minimum mowing)

<u>COMMON NAME</u>	<u>BOTANICAL NAME</u>
DWARF TALL FESCUES	FESTUCA SPP. (E.G., MANY MUSTANG, SILVERADO)
HARD FESCUE	FESTUCA OVINA DURIUSCULA (E.G., RELIANT, AURORA)
TUFTED FESCUE	FESTUCA AMETHYSTINE
BUFFALO GRASS	BUCHLOE DACTYLOIDES
RED FESCUE	FESTUCA RUBRA
TALL FESCUE GRASS	FESTUCA ARUNDINACEA
BLUE OATGRASS	HELICOTRICHON SEMPERVIRENS

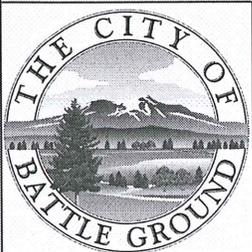
APPLICATION RATE IS APPROX. 80 lbs/ACRE
 **GROUND COVER & GRASSES PER 2005 STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON, VOLUME V, TABLE 9.4

- NOTES:**
- IF BIOSWALE IS INSTALLED DURING A PERIOD OF WET WEATHER (OCT 1-APRIL 30), BIOSWALE SHALL BE ESTABLISHED BY SODDING. SINCE SOD IS NOT AVAILABLE IN RECOMMENDED GRASSES, IT SHOULD BE OVER SOWN WITH A RECOMMENDED MIX AT THE BEGINNING OF THE GROWING SEASON. IT IS RECOMMENDED TO INSTALL A SOD THAT IS A MIX OF CREEPING FESCUE AND HARD & SHEEP FESCUES.
 - FLOW SPREADERS SHALL BE INSTALLED AT SWALE MIDPOINT FOR SHORT SWALE LENGTHS OF ±100, AND AT A MAXIMUM INTERVAL OF 50'. THE SPREADER SHALL BE INSTALLED LEVEL AND ON CONTOUR., SEE STD. DETAIL ST-6.3.
 - THE DESIGN OF WATER QUALITY FACILITIES SHALL MEET THE STANDARD AS SET FORTH IN BGMC 18.250.
 - INSTALL MIRAFI 140N FILTER FABRIC OR EQUIVALENT ABOVE DRAIN ROCK.
 - UNDERDRAIN MUST INFILTRATE OR DRAIN FREELY TO AN ACCEPTABLE DISCHARGE POINT.
 - SOD SHALL BE LAID PERPENDICULAR TO SLOPE FROM BOTTOM TO TOP, WITH JOINTS STAGGERED.
 - SWALE SHALL HAVE 75% COVERAGE OF PROPER VEGETATION AS APPROVED BY THE CITY INSPECTOR PRIOR TO PAVING.
 - INSTALL FENCE AT PROPERTY LINE (R).

N.T.S.

BIOSWALE SECTION WITH UNDERDRAIN

STANDARD
DETAIL

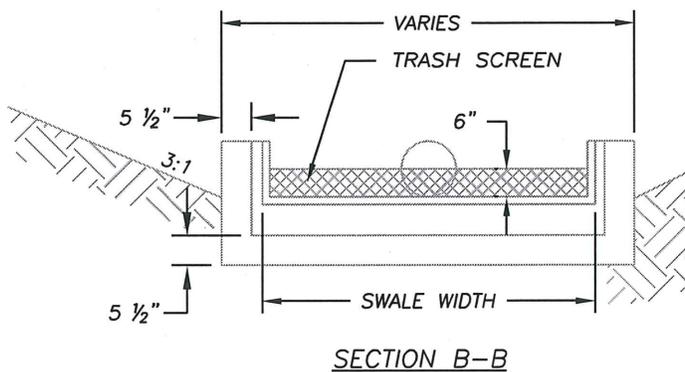
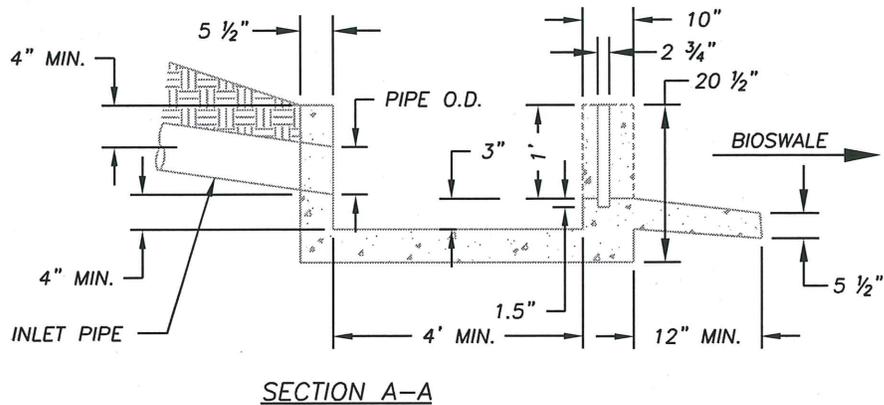
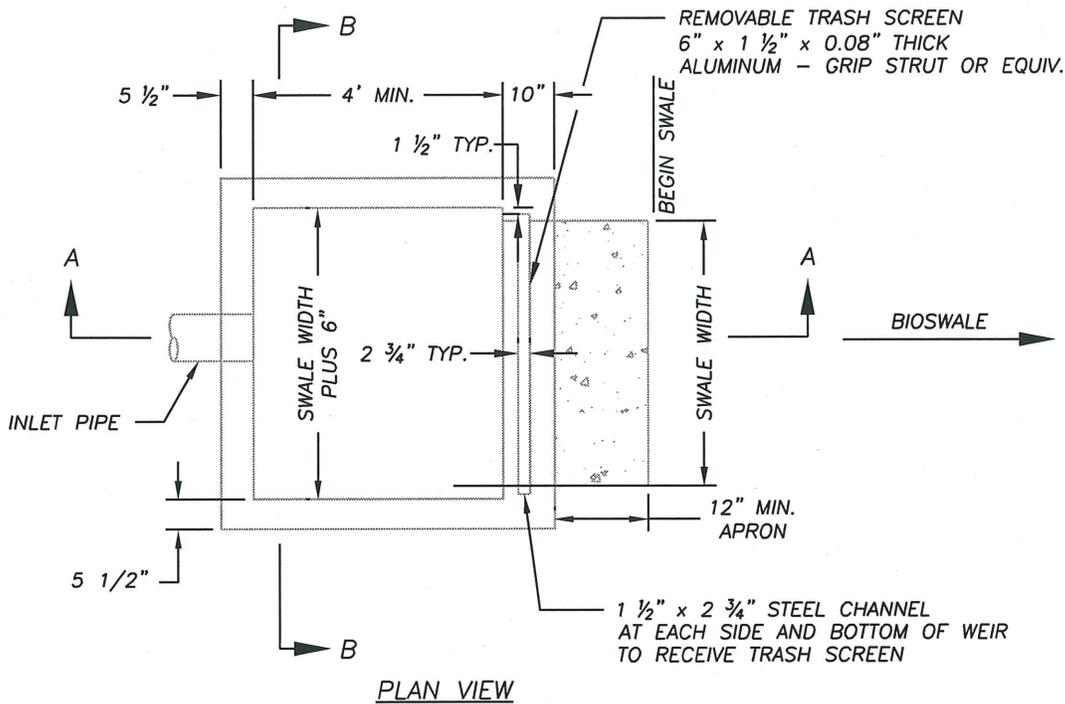


CITY OF BATTLE GROUND
APPROVED

Scott P. Amey 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

ST-6.1



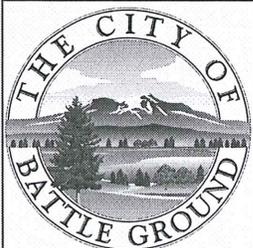
NOTE:

1. CONCRETE SHALL BE 3000 PSI MIN. MEETING WSDOT STANDARD SPECIFICATIONS 6-02.3(2)B.
2. BIOSWALE SEDIMENTATION TRAP IS REQUIRED WITH ALL BIOSWALES, UNLESS OMISSION IS APPROVED BY CITY ENGINEER.

N.T.S.

BIOSWALE SEDIMENTATION TRAP

STANDARD
DETAIL



CITY OF BATTLE GROUND
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CITY ENGINEER DATE

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ST-6.2

PROPERTY
LINE

5' MIN.

12" SLOPE
ROUNDING (TYP.)

4" x 7 1/2" CONCRETE

1' EMBEDMENT

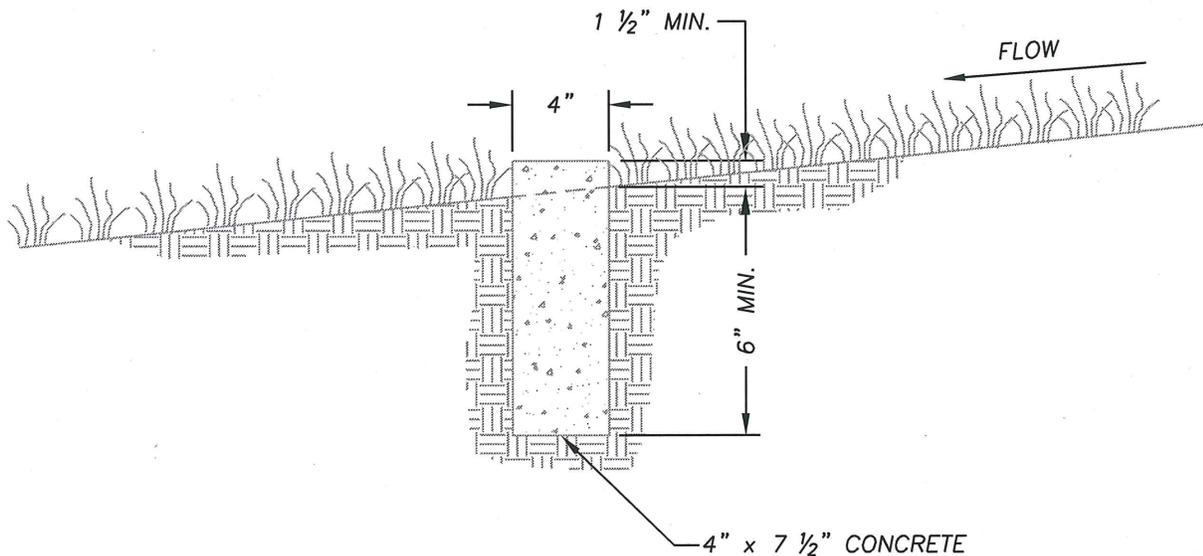
LEVEL

1/2" MIN.

NATIVE SOILS

6" MIN.

2" COMPOST TILLED
INTO 6" TOPSOIL



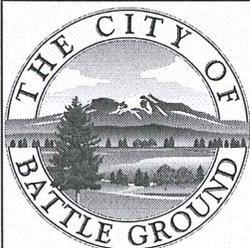
NOTES:

1. FLOW SPREADERS REQUIRED FOR SLOPES GREATER THAN 2.5% OR FOR SWALES WHICH EXCEED 100' IN LENGTH. FLOW SPREADERS TO BE INSTALLED IN A MAXIMUM OF 50' INTERVALS. THE SPREADER SHALL BE INSTALLED LEVEL AND ON CONTOUR, SEE STD. DETAIL ST-6.3.
2. CONCRETE SHALL BE 3000 PSI MIN. MEETING WSDOT STANDARD SPECIFICATIONS 6-02.3(2)B.

N.T.S.

FLOW SPREADER

STANDARD
DETAIL

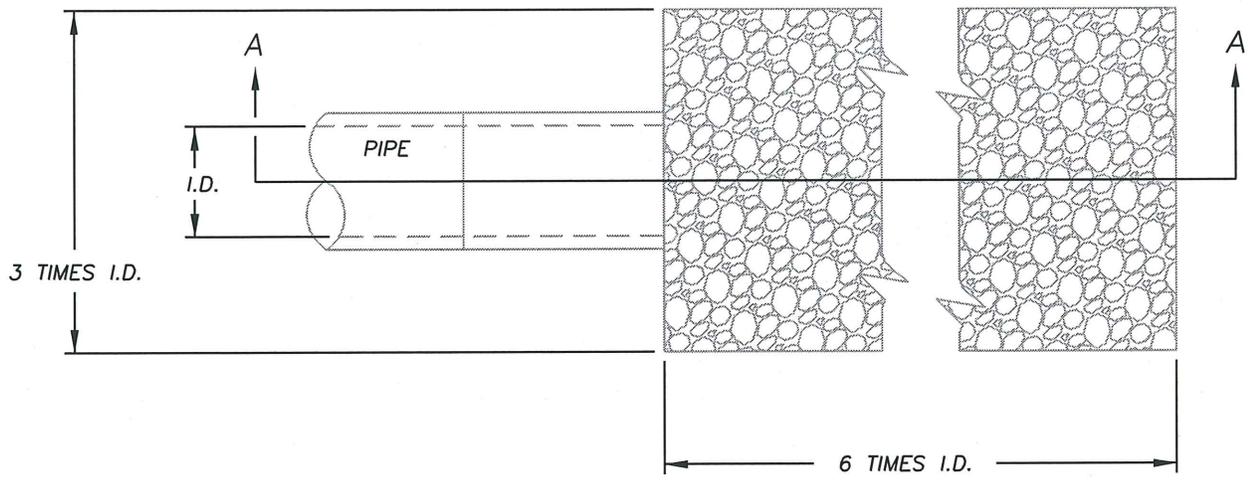


CITY OF BATTLE GROUND
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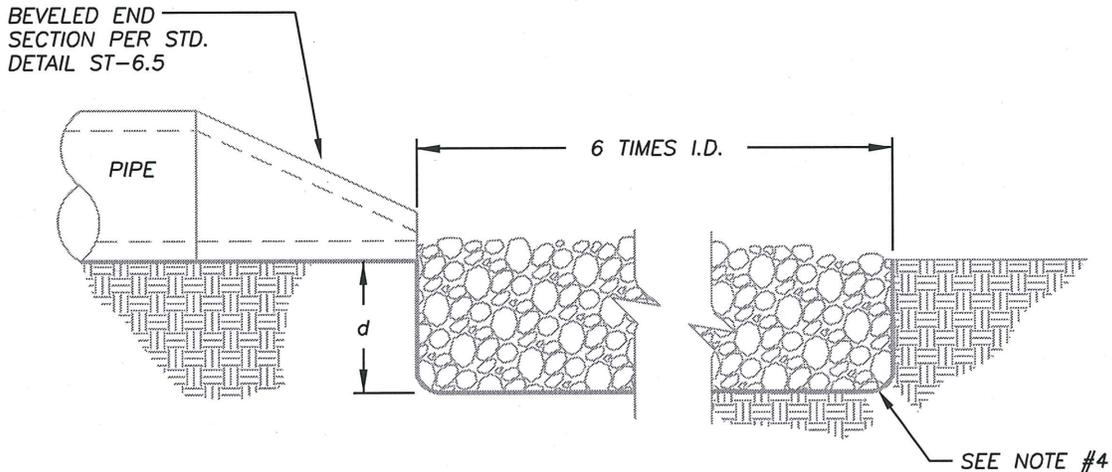
REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

ST-6.3

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE



PLAN VIEW



SECTION 'A-A'

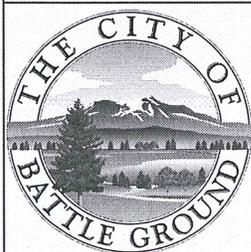
NOTES:

1. ROCK MATERIAL SHALL BE BETWEEN 3" TO 8" AND INSTALLED PER WSDOT 9-13.1.
2. $d = 1.5$ TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 4.5".
3. IN A WELL-DEFINED CHANNEL EXTEND RIP-RAP UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHALL BE INSTALLED BETWEEN THE RIP-RAP AND SOIL FOUNDATION.

N.T.S.

RIP-RAP

STANDARD
DETAIL

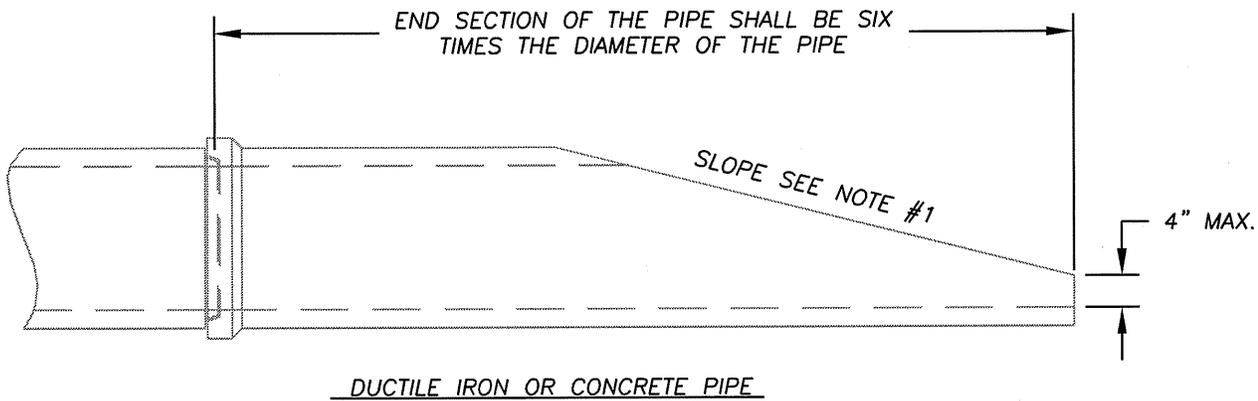
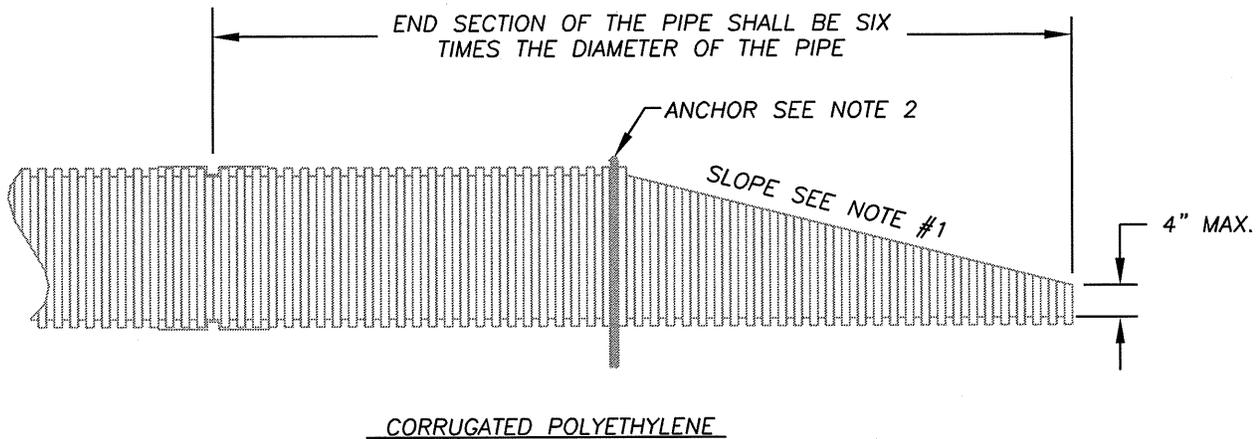


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APPROVED

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Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

ST-6.4



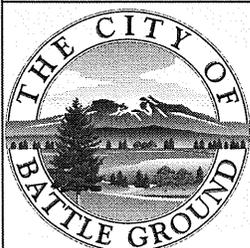
NOTES:

1. THE CULVERT ENDS SHALL BE BEVELED TO MATCH THE EMBANKMENT OR DITCH SLOPE, WITHOUT EXCEEDING THE LIMITS SHOWN ON THE PLAN. SLOPE FOR BEVELED EDGE SECTION SHALL MATCH BANK SIDE SLOPE UP TO A MAX. OF 3:1.
2. THE END OF CORRUGATED POLYETHYLENE SHALL BE ANCHORED. SEE STD. DETAIL ST-7.3.
3. FOR PIPES 15" OR LARGER, TRASH SCREEN REQUIRED. SEE STD. DETAIL ST-6.6.

N.T.S.

BEVELED END SECTION

STANDARD
DETAIL

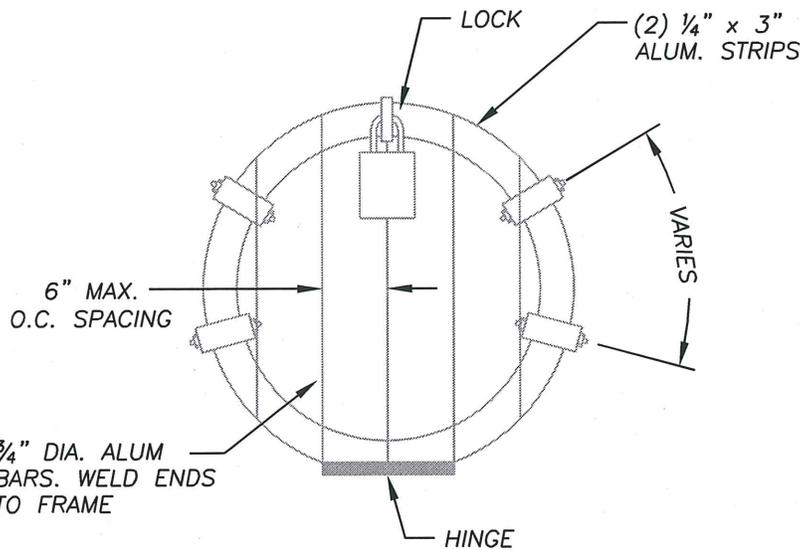
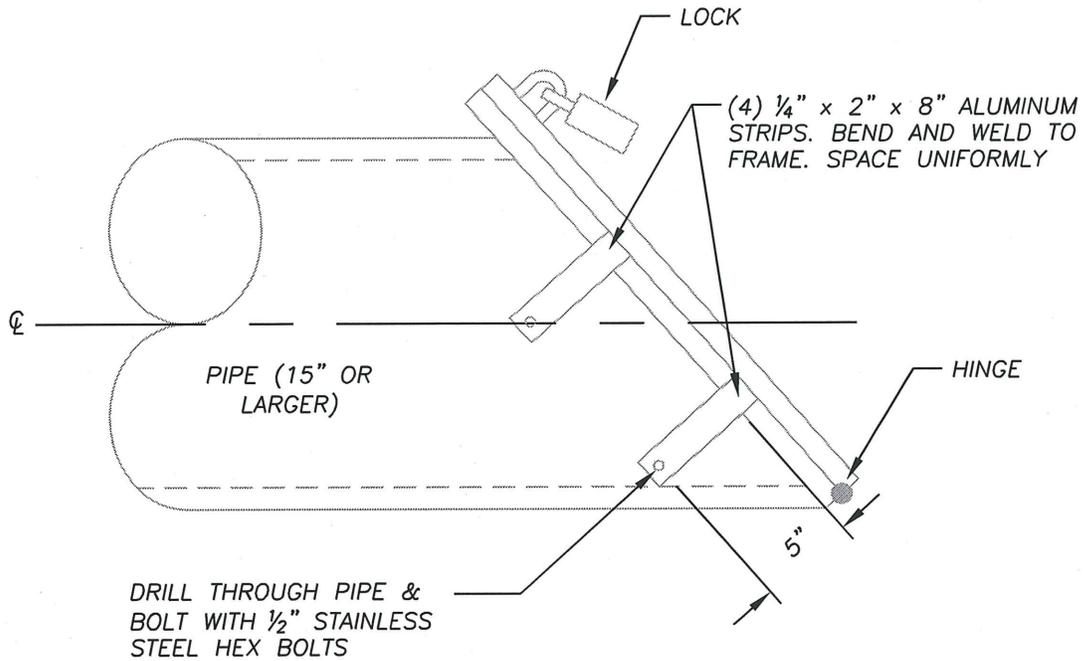


CITY OF BATTLE GROUND
APPROVED

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

ST-6.5



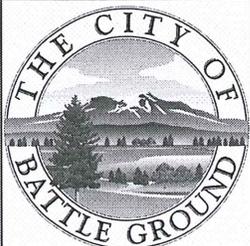
NOTES:

1. WELD ALL JOINTS.
2. SUBMITTAL SHOP DRAWING REQUIRED TO CITY INSPECTOR FOR REVIEW AND APPROVAL.
3. CONTRACTOR TO BE RESPONSIBLE FOR SUPPLYING LOCK. SPECIFICATIONS ON LOCK TO BE PROVIDED BY CITY INSPECTOR.

N.T.S.

TRASH SCREEN

STANDARD
DETAIL

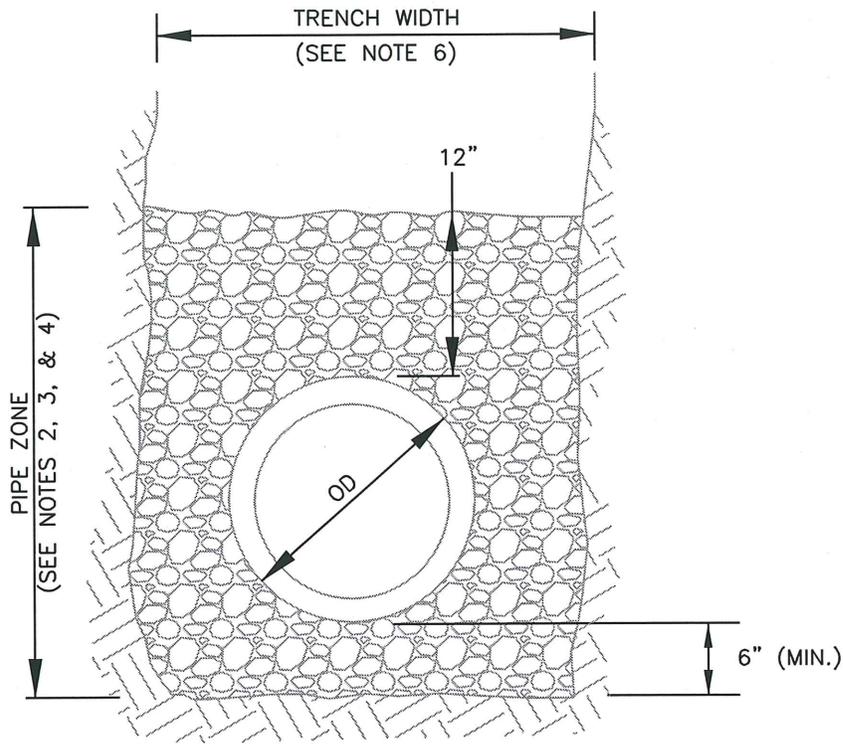


CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
1	7/22/09	RMJ	RMJ

ST-6.6



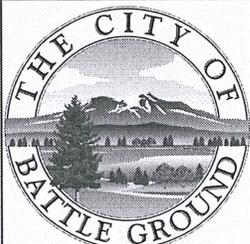
NOTES:

1. WHERE DIRECTED BY THE ENGINEER, GRANULAR TRENCH FOUNDATION STABILIZATION SHALL BE PLACED PRIOR TO PLACEMENT OF THE BEDDING. SIZE AND DEPTH ARE DEPENDENT ON SOIL CONDITIONS.
2. PIPE ZONE CONSTRUCTION SHALL BE PER WSDOT 7-08.03(1)C.
3. PIPE ZONE MATERIAL SHALL BE PER WSDOT 9-03.12(3).
4. BEDDING AND BACKFILL MATERIALS IN THE PIPE ZONE SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR (AASHTO T99) PRIOR TO BACKFILLING THE REMAINDER OF THE TRENCH.
5. FOR ROCK AND OTHER INCOMPRESSIBLE MATERIALS, THE TRENCH SHALL BE OVER-EXCAVATED A MINIMUM OF 6" AND REFILLED WITH GRANULAR MATERIAL AS DIRECTED BY THE ENGINEER.
6. TRENCH WIDTH SHALL NOT EXCEED ONE AND ONE-HALF THE INSIDE DIAMETER OF THE PIPE PLUS 18" CENTERED IN TRENCH.

N.T.S.

PIPE BEDDING (FLEXIBLE PIPE)

STANDARD
DETAIL

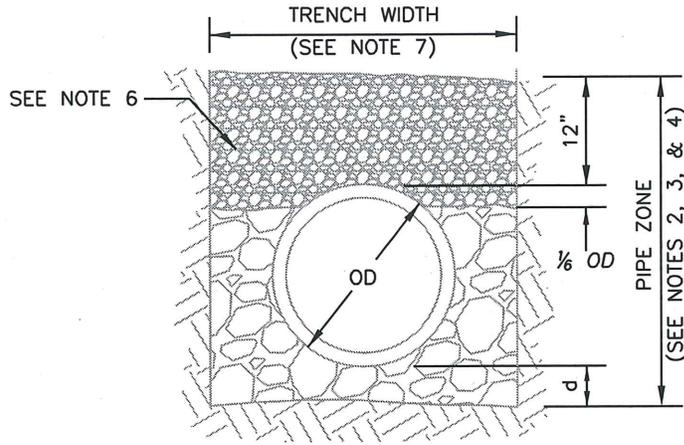


CITY OF BATTLE GROUND
APPROVED

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	8/30/05	ALL	MCH
3	3/28/07	JMH	MCH
4	7/22/09	RMJ	RMJ

ST-7.0



NOTES:

1. WHERE DIRECTED BY THE ENGINEER, GRANULAR TRENCH FOUNDATION STABILIZATION SHALL BE PLACED PRIOR TO PLACEMENT OF THE BEDDING. SIZE AND DEPTH ARE DEPENDENT ON SOIL CONDITIONS.
2. PIPE ZONE CONSTRUCTION SHALL BE PER WSDOT 7-08.03(1)C.
3. PIPE ZONE MATERIAL SHALL BE PER WSDOT 9-03.12(3).
4. BEDDING AND BACKFILL MATERIALS IN THE PIPE ZONE SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR (AASHTO T99) PRIOR TO BACKFILLING THE REMAINDER OF THE TRENCH.
5. FOR ROCK AND OTHER INCOMPRESSIBLE MATERIALS, THE TRENCH SHALL BE OVER-EXCAVATED A MINIMUM OF 6" AND REFILLED WITH GRANULAR MATERIAL AS DIRECTED BY THE ENGINEER.
6. ALTERNATIVE PRECOVER MATERIALS ARE ALLOWABLE FROM PIPE CENTERLINE TO ONE FOOT ABOVE THE TOP OF PIPE. ALTERNATE PRECOVER MATERIALS MUST BE PREAPPROVED BY THE INSPECTOR AND MAY BE SAND, SCREENINGS, GRAVEL, OR OTHER CLEAN GRANULAR MATERIAL CONTAINING NO ROCK LARGER THAN 1-1/4" IN LENGTH.
7. TRENCH WIDTH SHALL NOT EXCEED ONE AND ONE-HALF THE INSIDE DIAMETER OF THE PIPE PLUS 18". CENTERED IN THE TRENCH.

LEGEND:

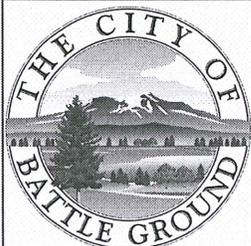
OD = OUTSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

DEPTH OF BEDDING MATERIAL BELOW PIPE	
OD	d (min) (SEE NOTE 3)
27" & SMALLER	4"
LARGER THAN 27"	6"

N.T.S.

PIPE BEDDING (RIGID PIPE)

STANDARD
DETAIL

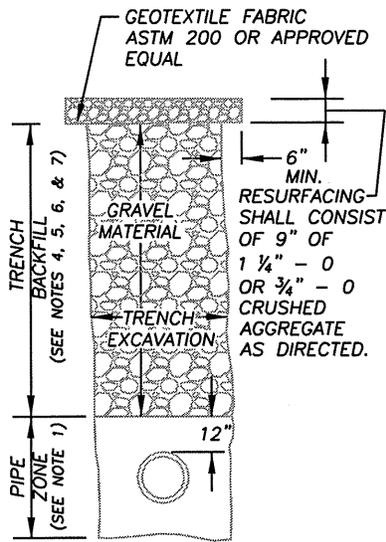


CITY OF BATTLE GROUND
APPROVED

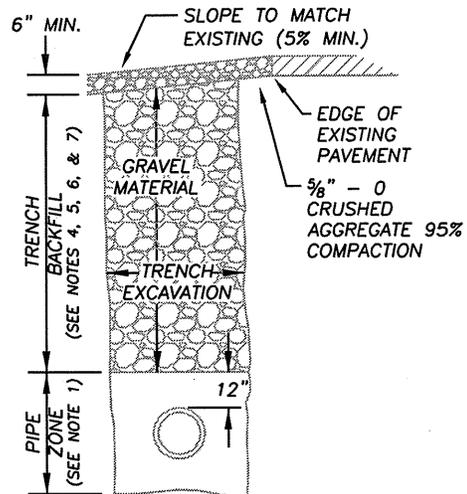
Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	8/30/05	ALL	MCH
3	3/28/07	JMH	MCH
4	7/22/09	RMJ	RMJ

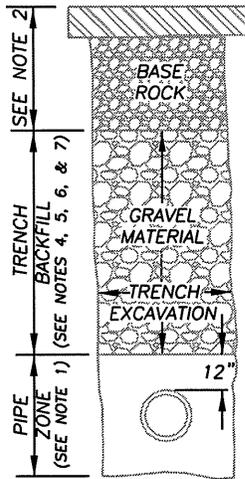
ST-7.1



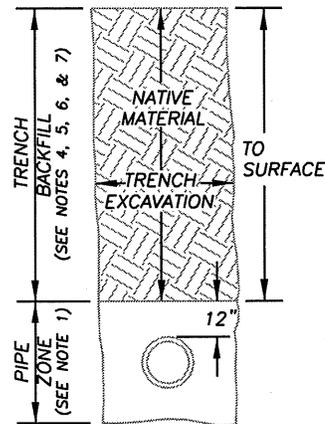
TRAVELED UNIMPROVED STREET



ROADWAY SHOULDER



PUBLIC STREET



UNTRAVELED EASEMENT

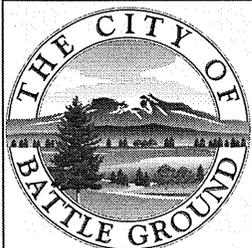
NOTES:

1. FOR PIPE ZONE REQUIREMENTS, SEE STD. PLANS ST-7.0 (FLEXIBLE PIPE) AND/OR ST-7.1 (RIGID PIPE).
2. ALL EXISTING PAVED SURFACES SHALL BE RESTORED PER STD. DETAIL TR-5.07A & TR-5.07B.
3. TRENCH BACKFILL CONSTRUCTION SHALL BE PER WSDOT 7-08.03(3).
4. TRENCH BACKFILL MATERIAL SHALL BE PER WSDOT 9-03.15 (NATIVE) OR 9-03.19 (GRAVEL).
5. TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF THE STANDARD PROCTOR (AASHTO T99).
6. ALL BACKFILL SHALL BE MECHANICALLY COMPACTED IN LIFTS WHICH IN NO CASE EXCEED 12" LOOSE.

N.T.S.

TRENCH BACKFILL

STANDARD
DETAIL

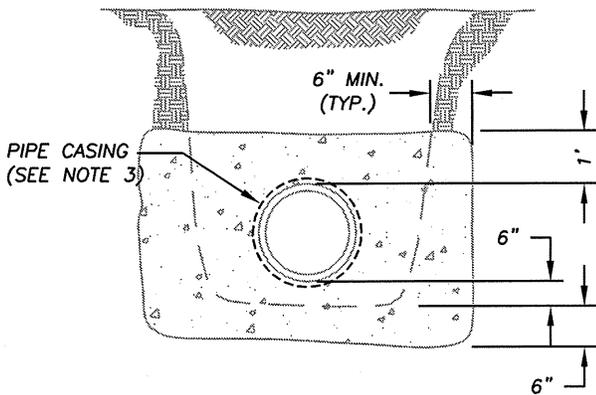
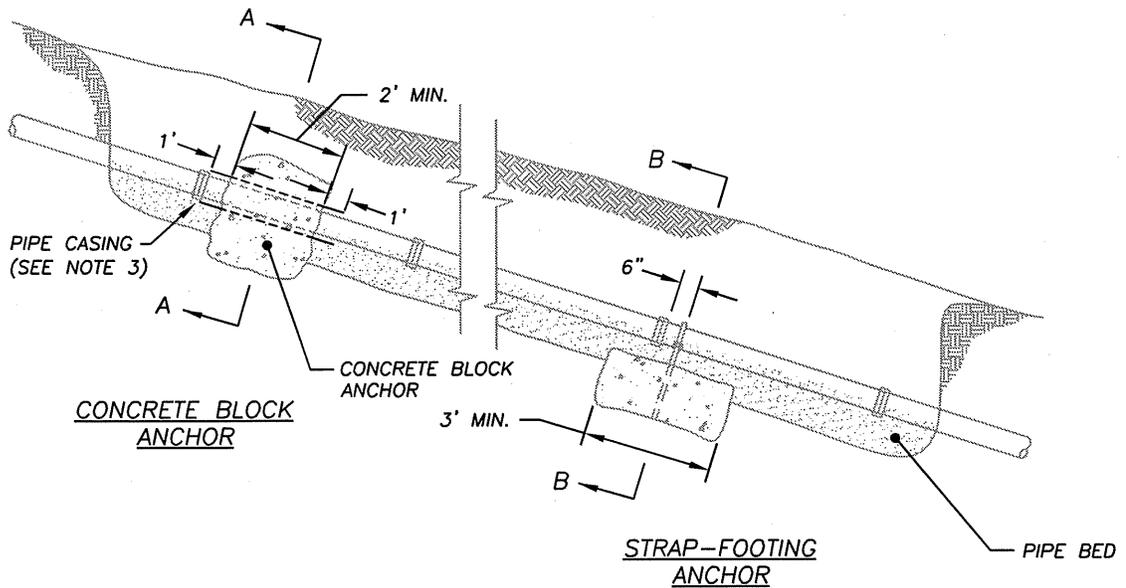


CITY OF BATTLE GROUND
APPROVED

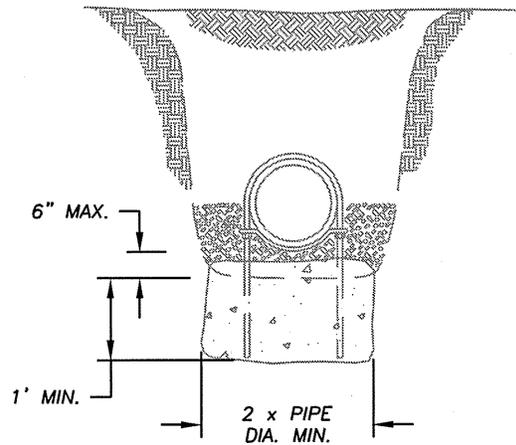
Scott P. Sawyer 7-21-09
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REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	8/30/05	ALL	MCH
3	3/28/07	JMH	MCH
4	7/22/09	RMJ	RMJ

ST-7.2



SECTION A-A



SECTION B-B

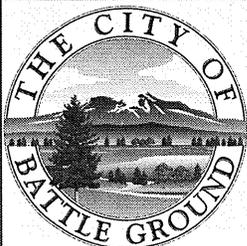
NOTES:

1. CONCRETE SHALL BE 3000 PSI MIN. MEETING WSDOT STANDARD SPECIFICATIONS 6-02.3(2)B.
2. CONCRETE SHALL BE POURED AGAINST FORMS OR STABLE UNDISTURBED SOIL.
3. FOR HDPE, PIPE MUST BE FREE TO SLIDE INSIDE A 4' (MIN.) LONG SECTION OF PIPE ONE SIZE DIAMETER LARGER.
4. ANCHORS TO BE USED WHERE GRADE IS 20% OR GREATER. MINIMUM SPACING AS FOLLOWS:
 NOT OVER 36' CENTER TO CENTER ON GRADES OF 20% AND UP TO 35%
 NOT OVER 24' CENTER TO CENTER ON GRADES OF 35% AND UP TO 50%
 NOT OVER 16' CENTER TO CENTER ON GRADES OF 50% AND MORE

N.T.S.

PIPE ANCHOR

STANDARD
DETAIL

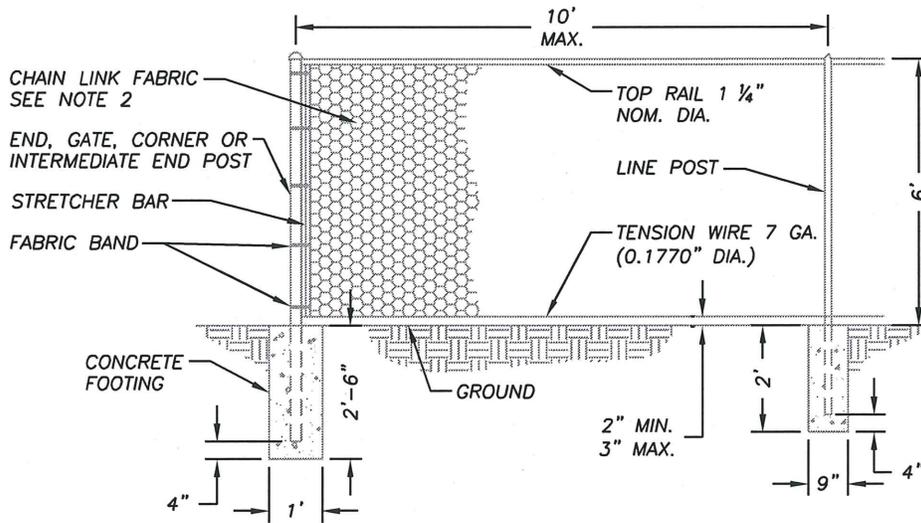
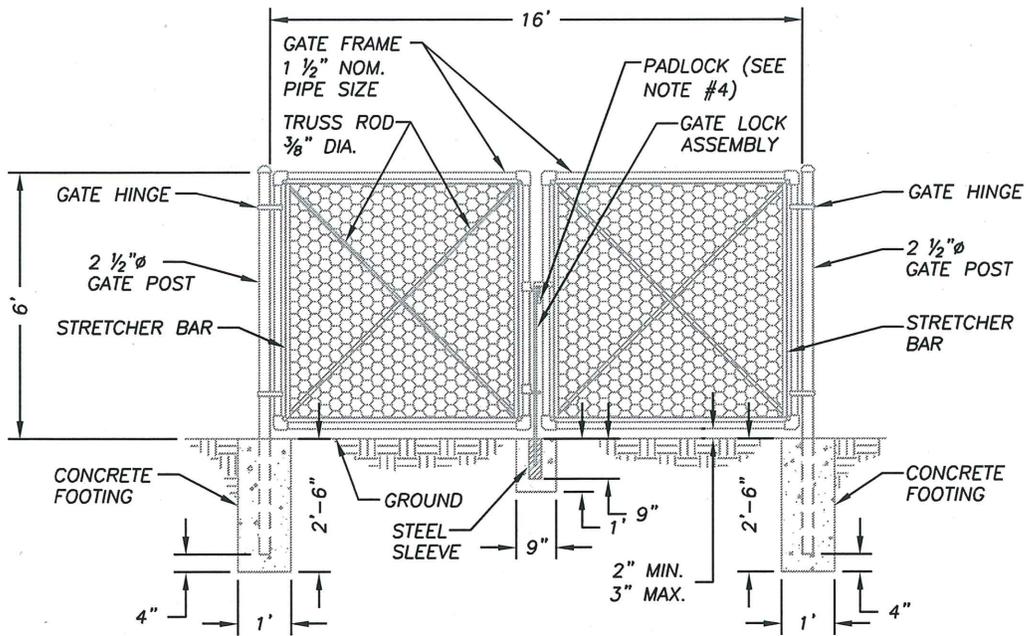


CITY OF BATTLE GROUND
APPROVED

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	7/22/09	RMJ	RMJ

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE

ST-7.3



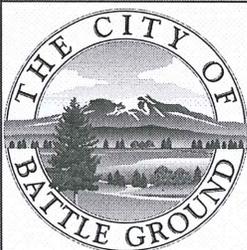
NOTES:

1. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION.
2. CHAIN LINK FENCE FABRIC TO MEET OR EXCEED REQUIREMENTS OF WSDOT STANDARD SPECIFICATIONS 9-16.1(1)A. CHAIN LINK FENCE FABRIC SHALL BE HOT DIP GALVANIZED WITH A MINIMUM OF 0.8 OUNCE PER SQUARE FOOT OF SURFACE AREA. FENCING MATERIALS SHALL BE COATED WITH AN ULTRAVIOLET INSENSITIVE PLASTIC OR OTHER INERT MATERIAL AT LEAST 2 MILS IN THICKNESS. ANY PRETREATED OR COATING SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE MANUFACTURER'S WRITTEN SPECIFICATIONS DETAILING THE PRODUCT AND METHOD OF FABRICATION SHALL BE PROVIDED TO CITY OF BATTLE GROUND PRIOR TO CONSTRUCTION.
3. FENCE SHALL BE BLACK VINYL COATED.
4. FENCE SHALL BE STRETCHED FROM CORNER POST TO CORNER POST. WRAPPING OF FENCE AROUND CORNER POST IS NOT PERMITTED.
5. CONTRACTOR TO BE RESPONSIBLE FOR SUPPLYING LOCK. SPECIFICATIONS ON LOCK TO BE PROVIDED BY CITY INSPECTOR.

N.T.S.

CHAIN LINK FENCE & GATE

STANDARD
DETAIL



CITY OF BATTLE GROUND
APPROVED

REVISIONS:	DATE:	DRAWN:	DESIGNED:
1	8/12/98	BSG	GGH
2	7/22/09	RMJ	RMJ

ST-8.0

Scott P. Sawyer 7-21-09
CITY ENGINEER DATE