

KICKING HORSE WHITEWATER PARK & HABITAT IMPROVEMENTS TOWN OF GOLDEN, BRITISH COLUMBIA



VICINITY MAP



MAP COURTESY OF TOWN OF GOLDEN

SHEET INDEX:

PLAN VIEW PROPOSED IMPROVEMENTS	SHEET 2
TYPICAL DETAILS	SHEET 3
TYPICAL DETAILS	SHEET 4
TYPICAL DETAILS	SHEET 5
GENERAL NOTES & DE-WATER PLAN	SHEET 6

Page Number:

1

Client Information:

Town of Golden, BC
810 S. 9th St.
Golden, BC VOA 1H0
Canada

Project:

KICKING HORSE WHITEWATER PARK AND HABITAT
IMPROVEMENTS
GOLDEN, BRITISH COLUMBIA

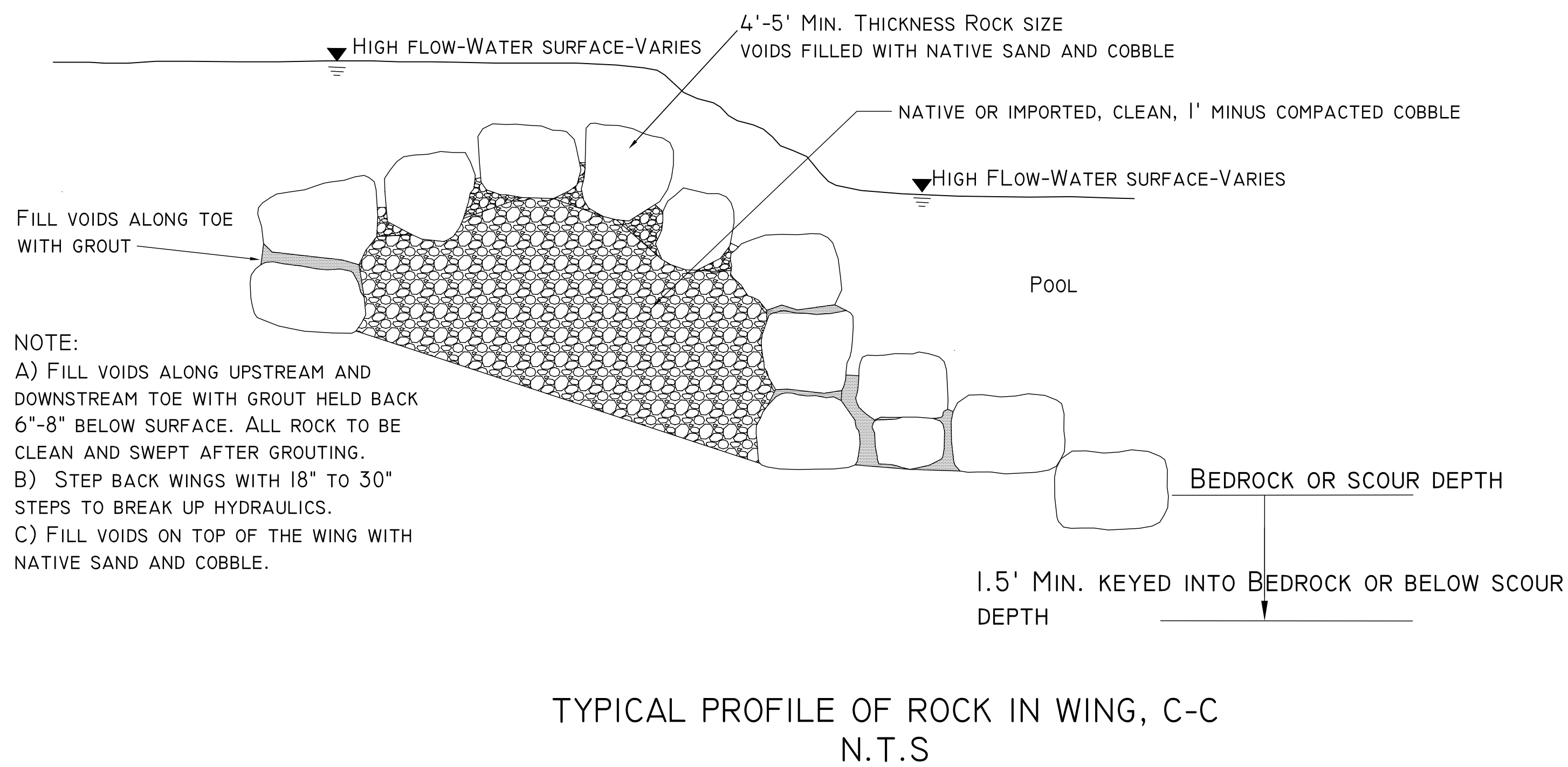
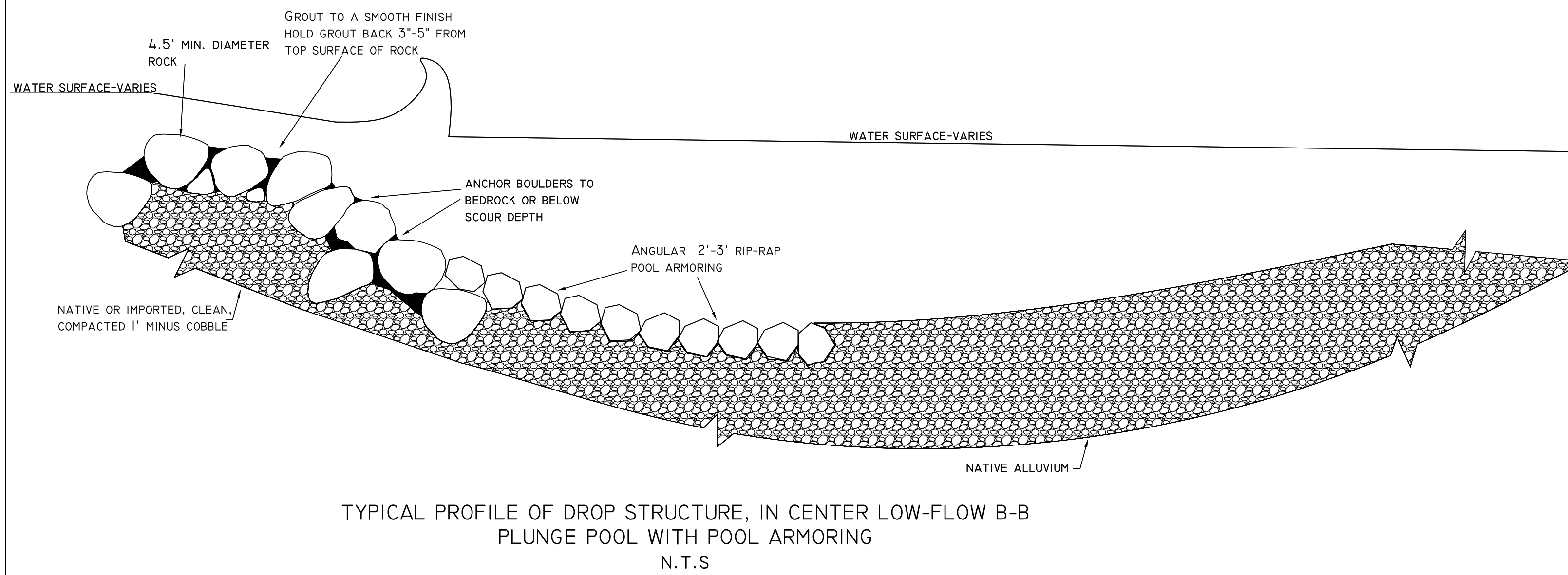
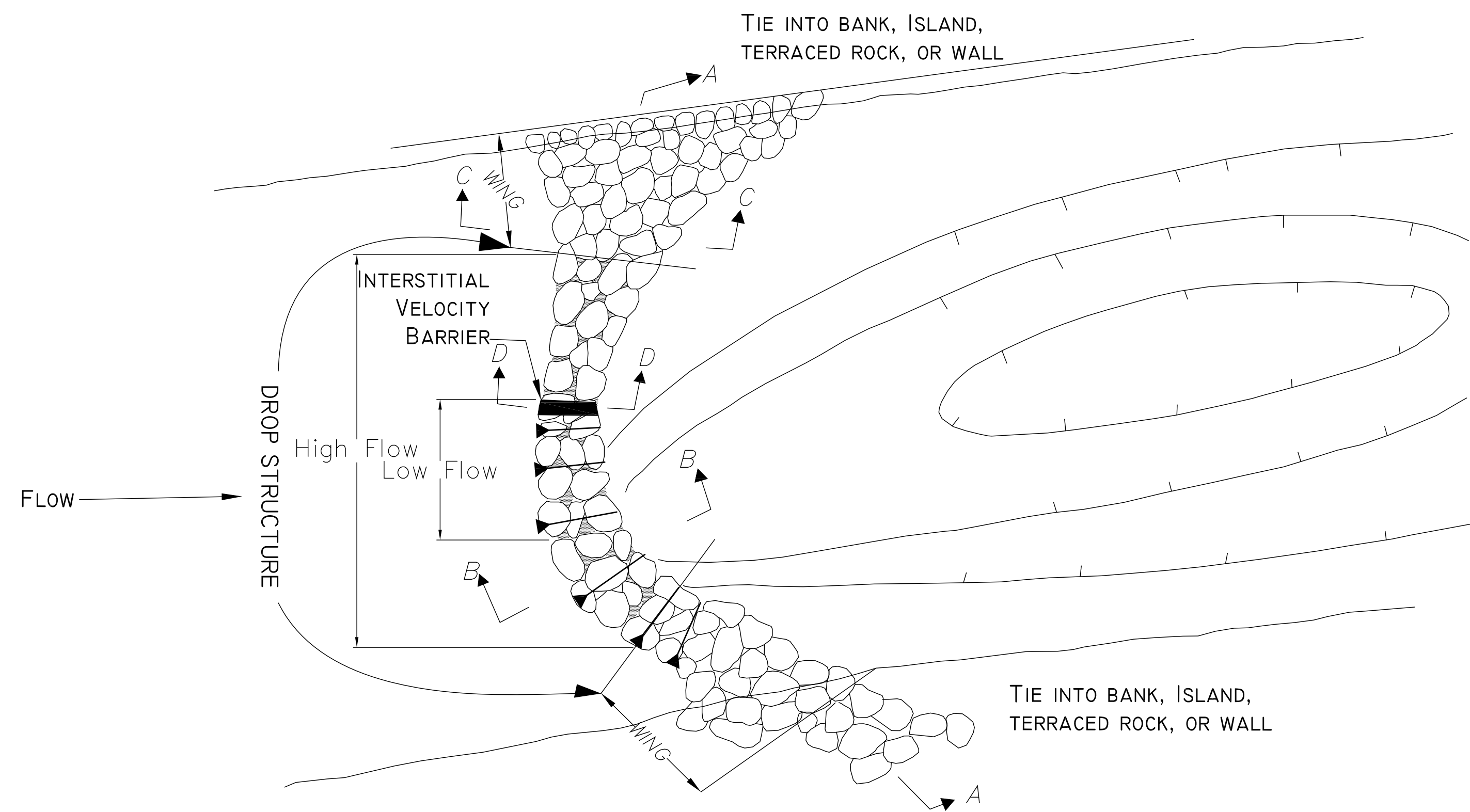
Recreation Engineering
and Planning
485 Arapahoe Ave.
Boulder | CO | 80302
www.boaterparks.com



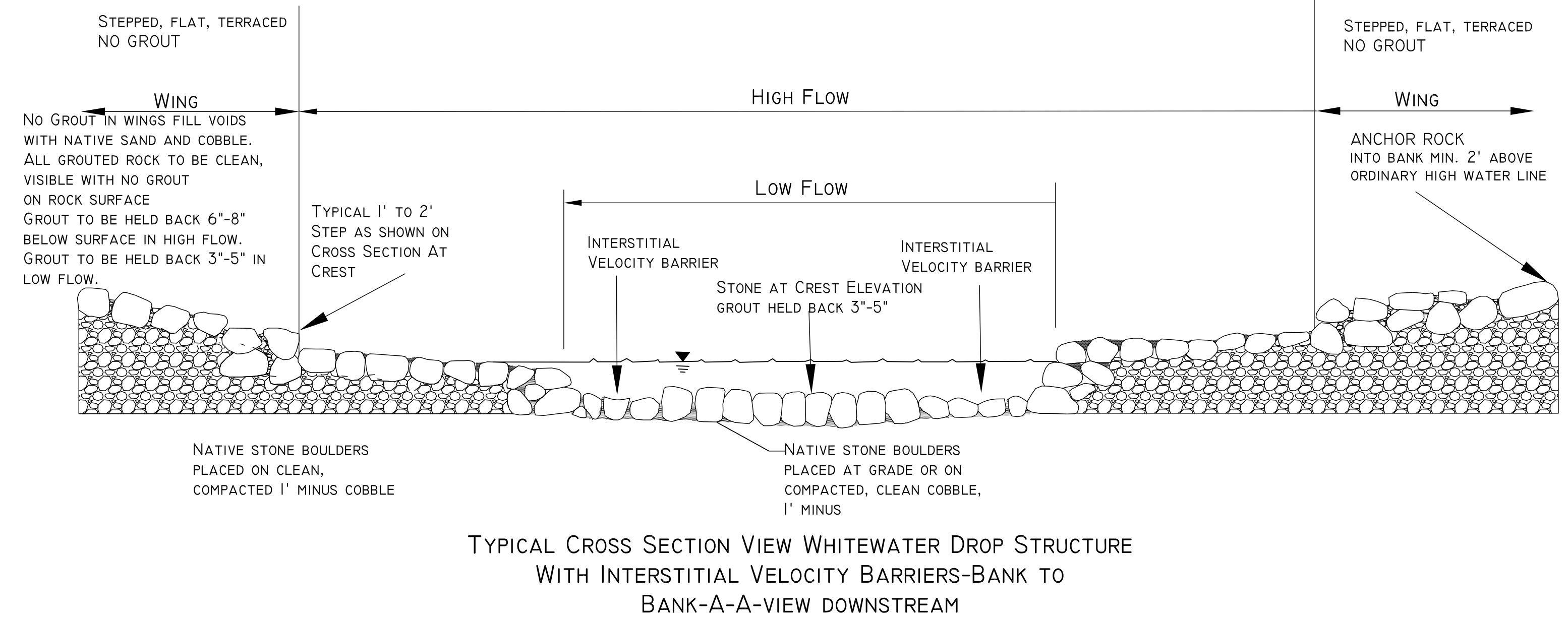


- NOTES:
1. ADDITIONAL SURVEYING/FIELD VERIFICATION OF ELEVATIONS IS REQUIRED FOR FUTURE DESIGN PHASES.
 2. NOTED STRUCTURE ELEVATIONS ARE ESTIMATES AND NEED TO BE VERIFIED THROUGH HYDRAULIC MODELING.
 3. ALL ELEVATIONS ARE IN FEET ABOVE SEA LEVEL.

TYPICAL DROP STRUCTURE



NOTE:
A) FILL VOIDS ALONG UPSTREAM AND DOWNSTREAM TOE WITH GROUT HELD BACK 6"-8" BELOW SURFACE. ALL ROCK TO BE CLEAN AND SWEEPED AFTER GROUTING.
B) STEP BACK WINGS WITH 18" TO 30" STEPS TO BREAK UP HYDRAULICS.
C) FILL VOIDS ON TOP OF THE WING WITH NATIVE SAND AND COBBLE.



Page Number:

3

Client Information:

Town of Golden, BC
810 S. 9th St.
Golden, BC V0A 1H0
Canada



Project:

Preliminary Design-Not for Construction

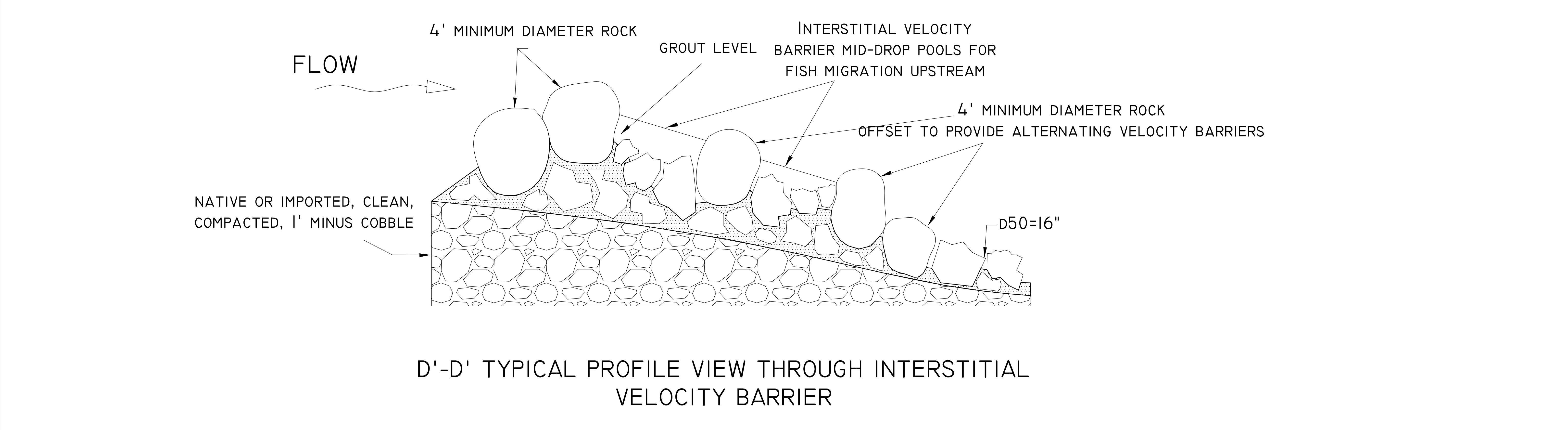
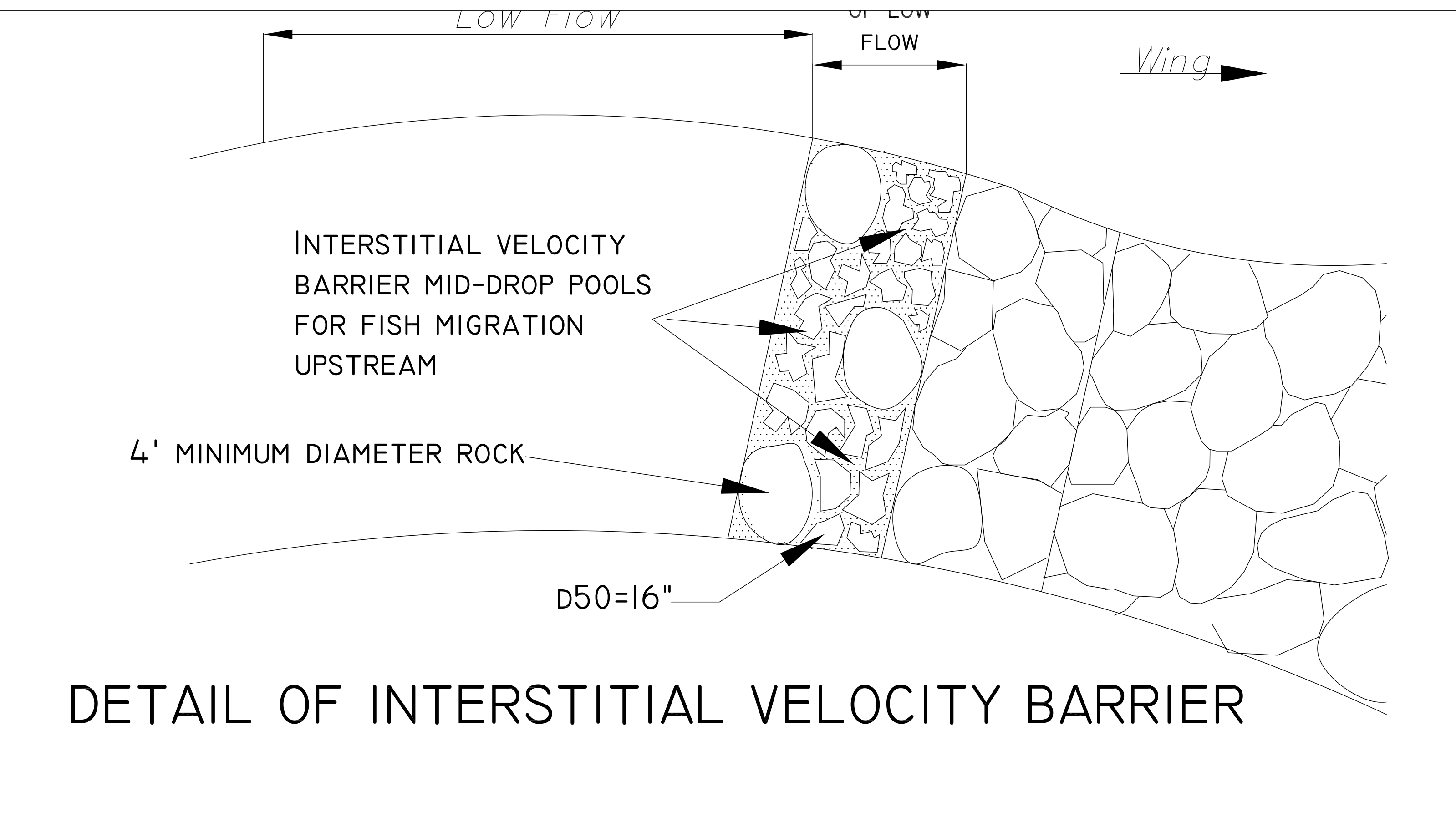
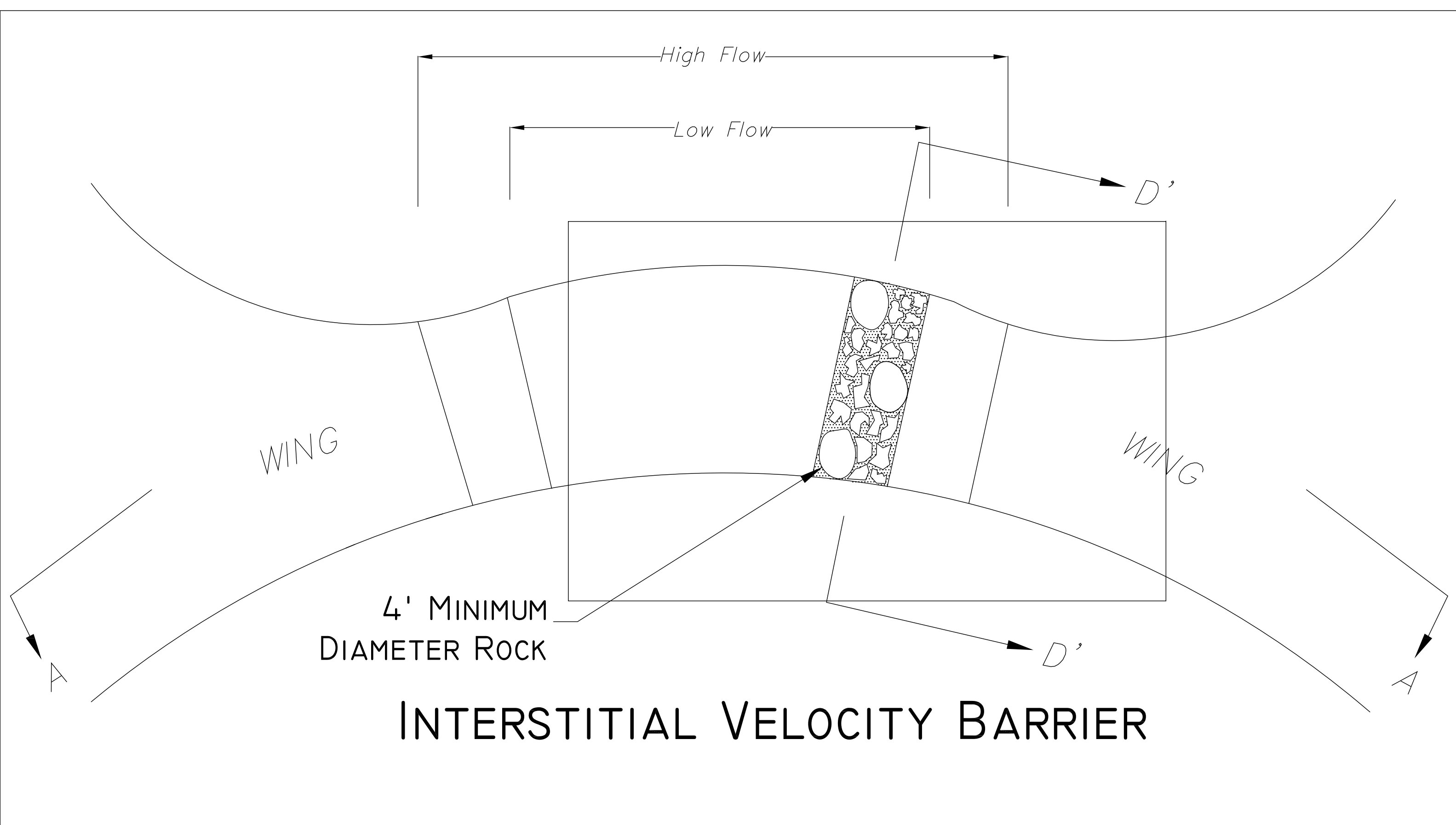
KICKING HORSE WHITEWATER PARK AND HABITAT IMPROVEMENTS
GOLDEN, BRITISH COLUMBIA

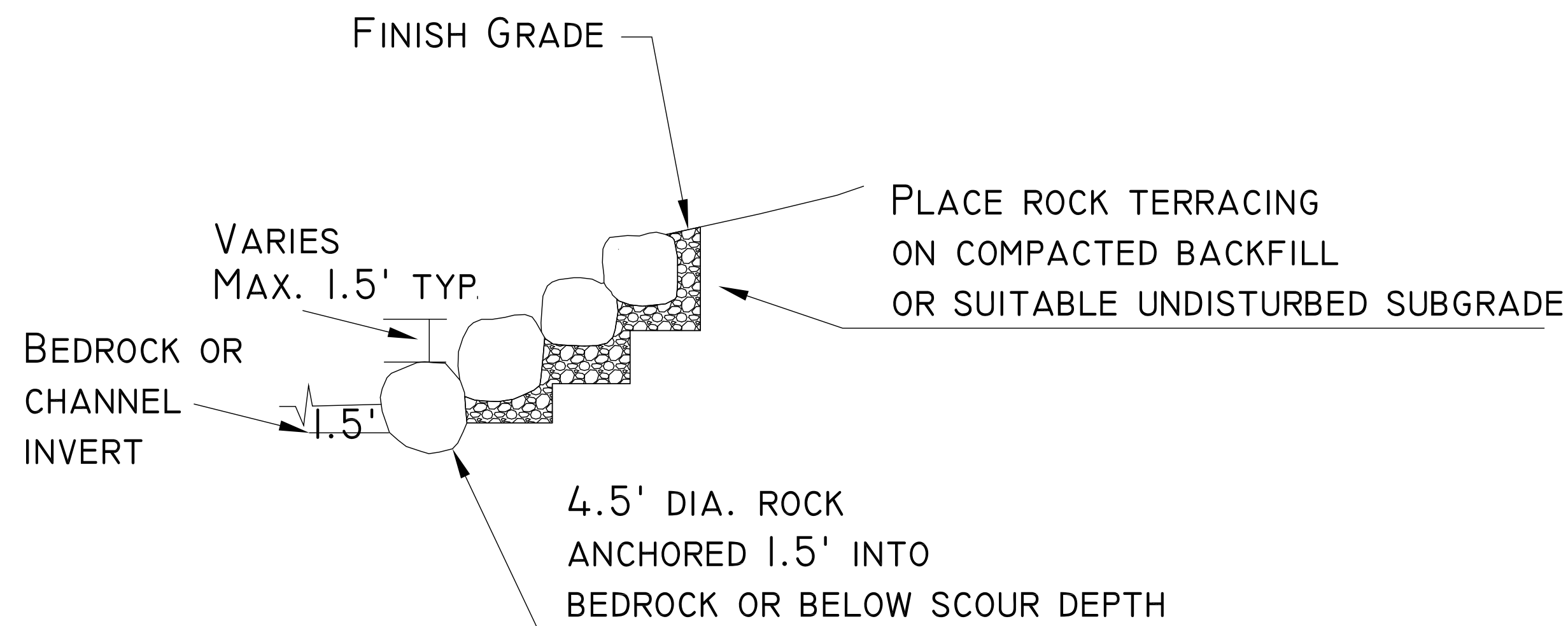
TYPICAL DETAILS
NOT TO SCALE

Revisions:

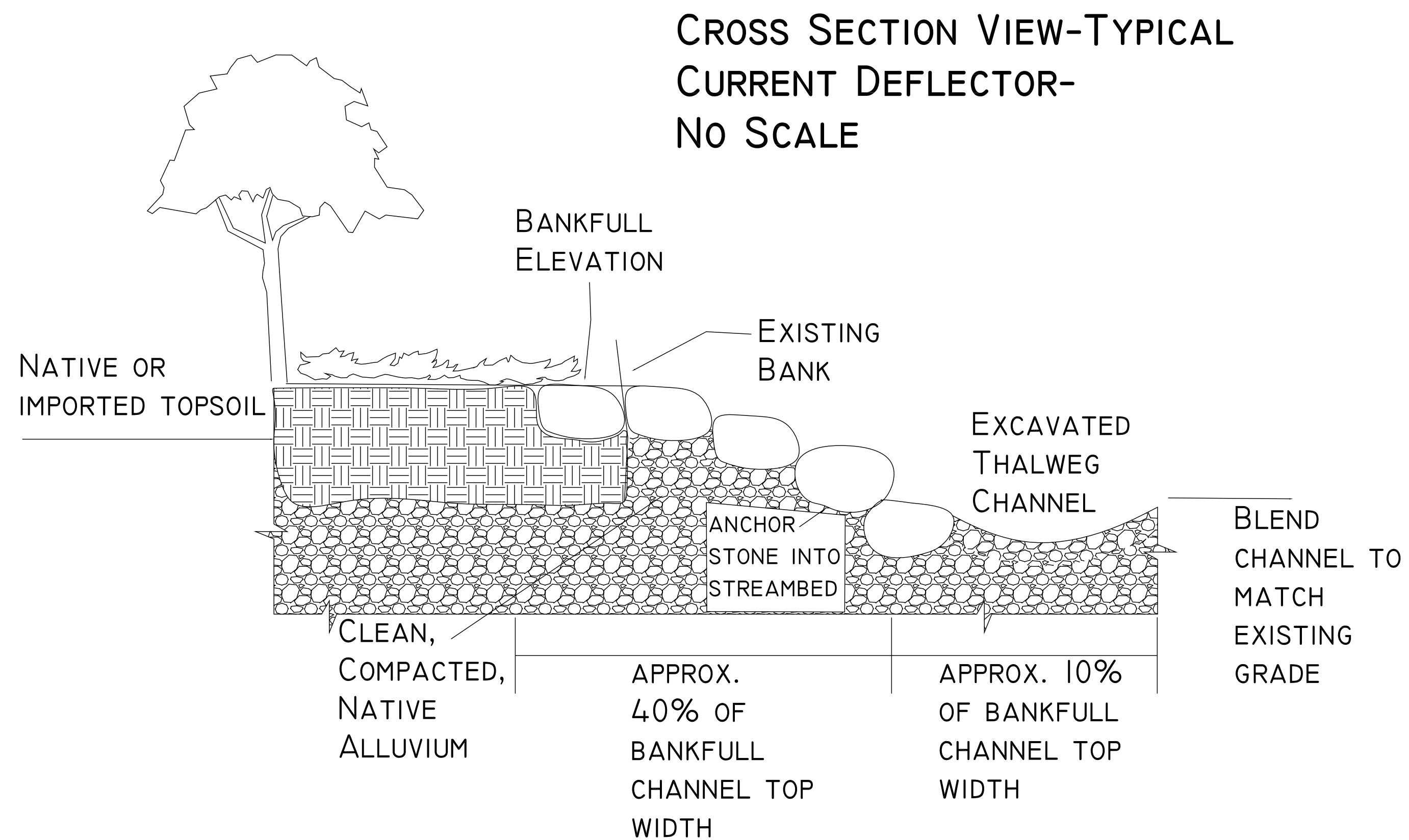
Recreation Engineering and Planning
485 Arapahoe Ave.
Boulder | CO | 80302
www.boaterparks.com





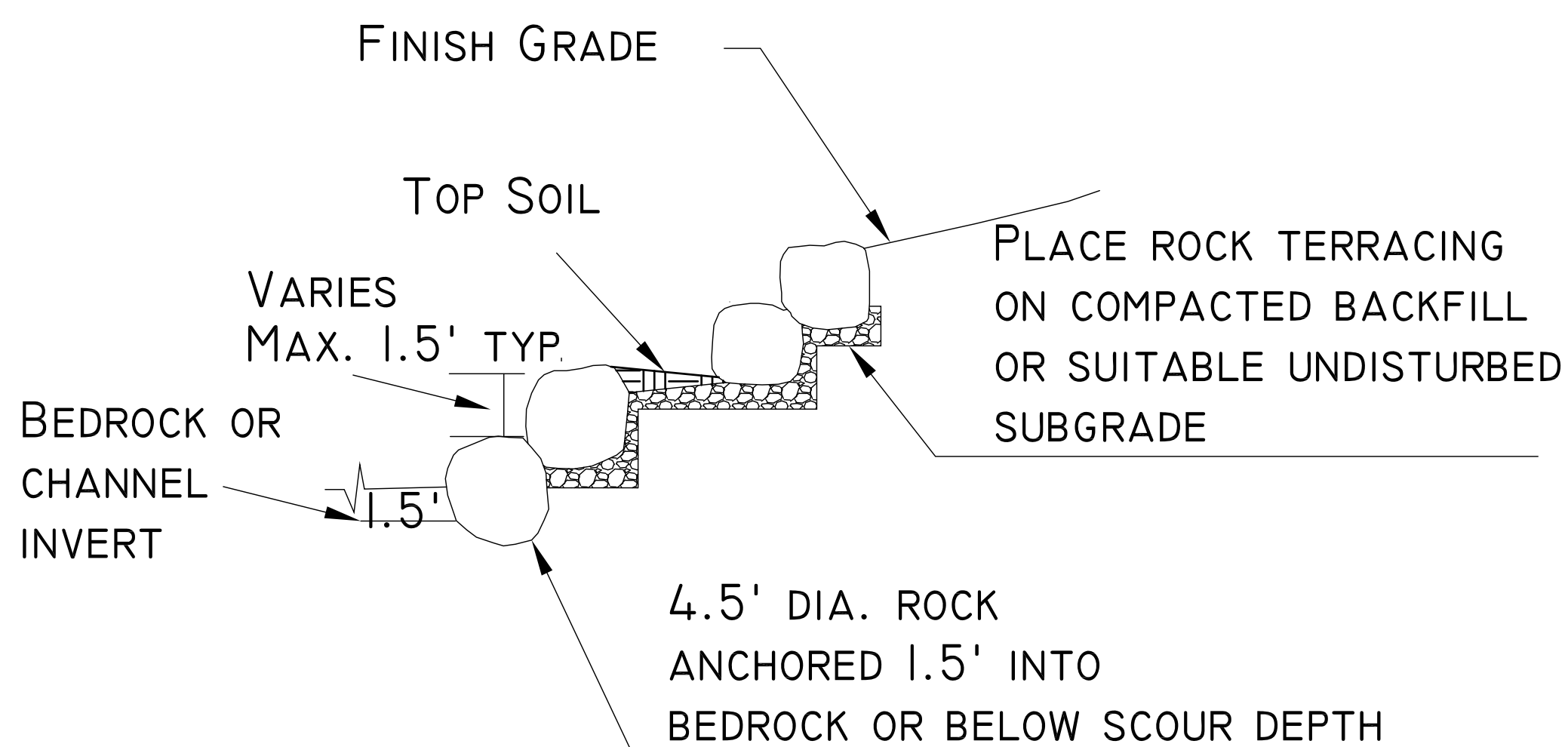
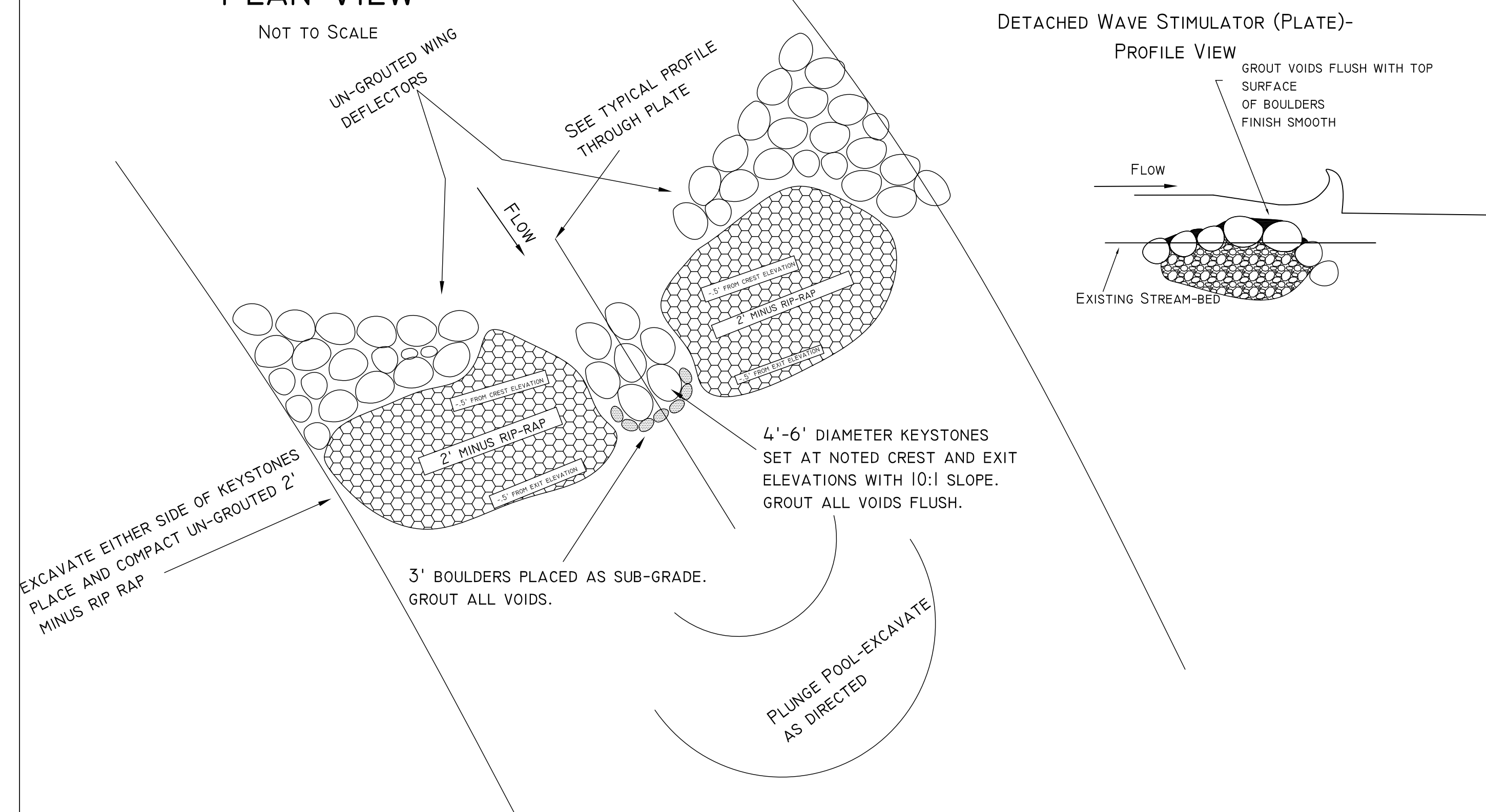


TERRACED ROCK TYPICAL
N.T.S



DETACHED WAVE STIMULATOR-
PLAN VIEW

NOT TO SCALE



TERRACED ROCK TYPICAL-WITH PLANTING
POCKET
N.T.S

Page Number:

5

Client Information:

Town of Golden, BC
810 S. 9th St.
Golden, BC V0A 1H0
Canada



Project:

KICKING HORSE WHITEWATER PARK AND HABITAT
IMPROVEMENTS
GOLDEN, BRITISH COLUMBIA

Preliminary Design-Not for
Construction

TYPICAL
DETAILS
NOT TO SCALE

Revisions:

Recreation Engineering
and Planning
485 Arapahoe Ave.
Boulder | CO | 80302
www.boaterparks.com



GENERAL NOTES

Rock

- QUALITY**
- INDIVIDUAL STONE BOULDERS SHALL BE DENSE, SOUND AND FREE FROM CRACKS, SEAMS AND OTHER DEFECTS CONDUCTIVE TO ACCELERATED WEATHERING.
 - THE BOULDERS SHALL BE ROUNDED TO SUB-ROUNDED IN SHAPE. AT A MINIMUM EXPOSED ROCK SHOULD HAVE ONE FLAT SURFACE AND THIS SHOULD BE THE ONLY EXPOSED SURFACE, THE LOW FLOW, HIGH FLOW AND WING AREAS. THE STONE PLACED IN THE INTERSTITIAL BARRIERS SHOULD BE ANGULAR, IRREGULAR AND NON-COMPACTED.
 - THE ROCK SHALL HAVE THE FOLLOWING PROPERTIES:
 - BULK SPECIFIC GRAVITY (SATURATED SURFACE-DRY BASIS) NOT LESS THAN 2.5.
 - ABSORPTION NOT MORE THAN 2% BY WEIGHT.
 - THE BULK SPECIFIC GRAVITY AND ABSORPTION SHALL BE DETERMINED BY ASTM METHOD C-127.
 - ROCK THAT FAILS TO MEET THESE REQUIREMENTS MAY BE ACCEPTED ONLY IF SIMILAR ROCK FROM THE SAME SOURCE HAS BEEN DEMONSTRATED TO BE SOUND AFTER FIVE YEARS OR MORE OF SERVICE UNDER CONDITIONS OF WEATHER, WETTING AND DRYING, AND EROSION FORCES SIMILAR TO THOSE ANTICIPATED. ALTERNATIVELY NATIVE OR IMPORTED STONE, ALREADY AT THE SITE AND MEETING THE STANDARDS OUTLINED ABOVE, MAY BE USED.

GRADATION

- ROCK SHALL BE OF THE SIZE AND PLACED IN A MANNER AS SPECIFIED BY REP ENGINEER.

SITE PREPARATION- ROCKS PLACED IN BANK "STONE TERRACING"

- ALL ROCK PLACED AS BANK TERRACING OR STABILIZATION SHALL BE KEYED INTO THE BANKS A MINIMUM OF 12" IN THE HORIZONTAL AND VERTICAL DIRECTION.
- ALL STONE TERRACING SHALL BE SET SUCH THAT IT IS SUPPORTED BY PLACED STONE OR SOLID, EXISTING, FOUNDATIONAL MATERIAL, AS APPROVED BY REP ENGINEER.
- ALL STONE TERRACING SHALL BE BACKFILLED WITH CLEAN FILL.

SITE PREPARATION- ROCKS PLACED IN CHANNEL

- ALL ROCK STRUCTURES SHALL BE PLACED AS DIRECTED BY REP REPRESENTATIVE.
- NO ROCK PLACEMENT SHALL OCCUR IN CHANNEL UNTIL APPROPRIATE WATER CONTROL MEASURES ARE IN PLACE (AS OUTLINED IN THE WATER CONTROL DETAILED PLAN).
- EXCAVATION FOR KEYSTONE BOULDERS SHALL BE BELOW SCOUR DEPTH.

PLACEMENT

- STONE BOULDERS SHALL BE PLACED AS SHOWN ON THE DRAWINGS WITHOUT ANY GAPS, SO THAT EACH BOULDER TOUCHES THE NEXT ONE.
- EACH STONE SHALL BE PLACED TO THE FINAL POSITION BY SUITABLE EQUIPMENT FOR HANDLING MATERIAL AND, IF NECESSARY; THE STONE SHALL BE PICKED UP AND REPOSITIONED.
- DRAGLINE BUCKETS AND SKIPS SHALL NOT BE USED FOR PLACEMENT OF BOULDERS. IT SHOULD BE ANTICIPATED THAT RE-HANDLING OF INDIVIDUAL STONES, AFTER INITIAL PLACEMENT WILL BE REQUIRED TO ACHIEVE REQUIRED SLOPES, GRADES, ELEVATIONS AND POSITION.
- THE ENGINEER SHALL OBSERVE ALL ROCK PLACEMENT AND APPROVE OF THE PLACEMENT BEFORE BOULDERS ARE CHINKED OR BACKFILLED, UNLESS EXPLICIT EXCEPTION IS MADE BY THE ENGINEER BEFORE PLACEMENT.

GROUT

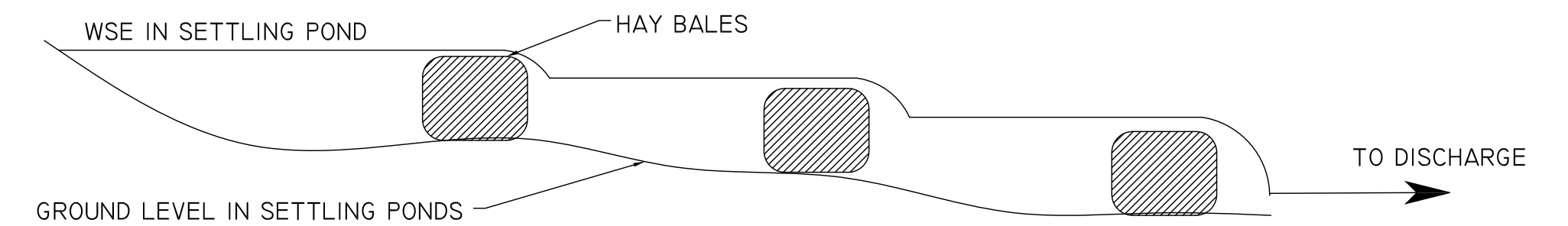
PLACEMENT

- GROUT SHALL BE PUMPED INTO VOIDS AS DIRECTED BY REP REPRESENTATIVE.
- ALL GROUT SHOULD BE "HELD BACK" FROM EXPOSED ROCK AS NOTED ON DRAWINGS.
- ALL EXPOSED VISIBLE GROUT SHALL BE SMOOTHED, EVEN IN VOID SPACES.
- AT COMPLETION OF PLACEMENT ALL ROCK SHOULD BE CLEANED OF CONCRETE AND CONCRETE RESIDUE.
- GROUT SHALL NOT BE PLACED UNLESS APPROPRIATE WATER CONTROL MEASURES ARE IN PLACE.
- BMP'S SHALL EMPLOYED TO AVOID GROUT MAKING CONTACT WITH THE LIVE RIVER.

MATERIAL

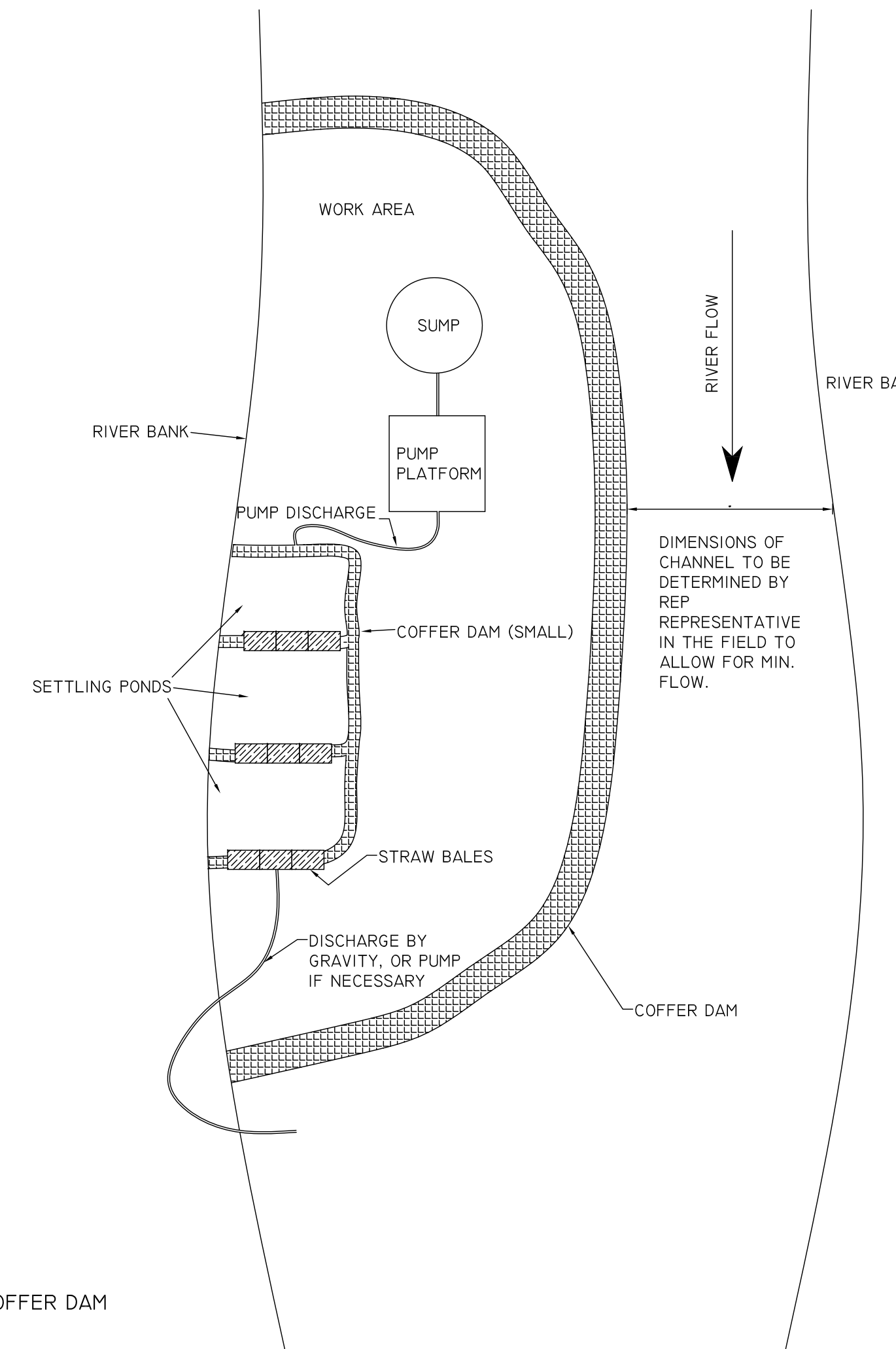
- GROUT SHALL CONSIST OF PORTLAND CEMENT, SAND AND GRAVEL, THOROUGHLY MIXED WITH WATER TO PRODUCE GROUT HAVING A THICK, CREAMY CONSISTENCY. THE AGGREGATE, FOR GROUT, SHALL CONSIST OF 70% SAND AND 30% 3/8 ROCK. MAXIMUM AGGREGATE SHALL BE 1/2 INCH. THE CONCRETE MIX SHALL INDICATE EVIDENCE OF MEETING OF EXCEEDING THE FOLLOWING CRITERIA UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

- MINIMUM STRENGTH: 4000LBS
- SLUMP: ASTM C-143, 3-5 INCHES



TYPICAL SECTION IN SETTLING POND

NOTE: SCHEMATIC LAYOUT TO DESCRIBE FUNCTIONALITY ONLY. ACTUAL LAYOUT TO BE DETERMINED FOR EACH STRUCTURE.

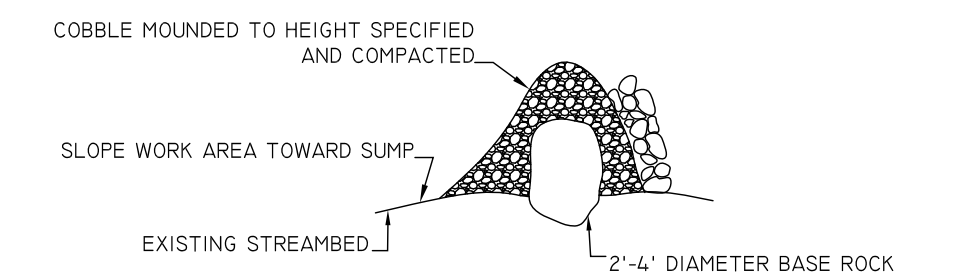


NOTES: DEWATERING AREA DETAILS:

- SUMPS CAN BE MADE FROM DIGGING A HOLE AND INSERTING A PERFORATED PIPE AND BACKFILLING WITH CLEAN DRAIN ROCK OR OTHER APPROVED METHOD.
- SETTLING BASINS SHOULD BE BASED UPON SITE SPECIFICS (I.E. INFILTRATION AND SETTLING RATES, PARTICLE SIZE). DETENTION TIMES WILL BE BASED UPON THE SIZE OF THE SUSPENDED PARTICLES. IF THERE IS EXCESSIVE LEAKAGE THROUGH ANY COFFER DAM, BASE ROCK IS TO BE LINED WITH VISQUENE PRIOR TO BEING COVERED IN COBBLE. NUMBER OF SETTLING PONDS TO BE DETERMINED BY CLARITY OF DISCHARGE FLUID.
- UPON COMPLETION VISQUENE AND SETTLED FINES SHALL BE REMOVED AND DISPOSED OF OFFSITE BY THE CONTRACTOR.
- PUMP STATION SHALL BE ELEVATED. FUEL CONTAINMENT BMP'S SHALL BE ONSITE AT ALL TIMES.
- PUMP REMAINING WATER IN CONSTRUCTION AREA AS NECESSARY, TO MANAGE GROUNDWATER AND LEAKAGE. ALL DISCHARGED WATER MUST BE ROUTED TO THE SETTLING BASINS.
- CONTRACTOR IS RESPONSIBLE FOR OWN SECURITY DURING CONSTRUCTION. ANY VANDALISM WILL BE CORRECTED AT CONTRACTOR'S OWN EXPENSE.
- DETAILS SUBJECT TO REVIEW AND CHANGE DURING REGULATORY PERMIT PROCESS.

TYPICAL LAYOUT DEWATERING AREA

NOTE: SCHEMATIC LAYOUT TO DESCRIBE FUNCTIONALITY ONLY. ACTUAL LAYOUT TO BE DETERMINED FOR EACH STRUCTURE.



TYPICAL COFFER DAM CROSS SECTION

Page Number:

6

Client Information:

Town of Golden, BC
810 S. 9th St.
Golden, BC V0A 1H0
Canada



Project:

KICKING HORSE WHITEWATER PARK AND HABITAT IMPROVEMENTS
GOLDEN, BRITISH COLUMBIA

Preliminary Design-Not for Construction

GENERAL NOTES & DE-WATERING PLAN

Revisions:

Recreation Engineering and Planning
485 Arapahoe Ave.
Boulder | CO | 80302
www.boaterparks.com

