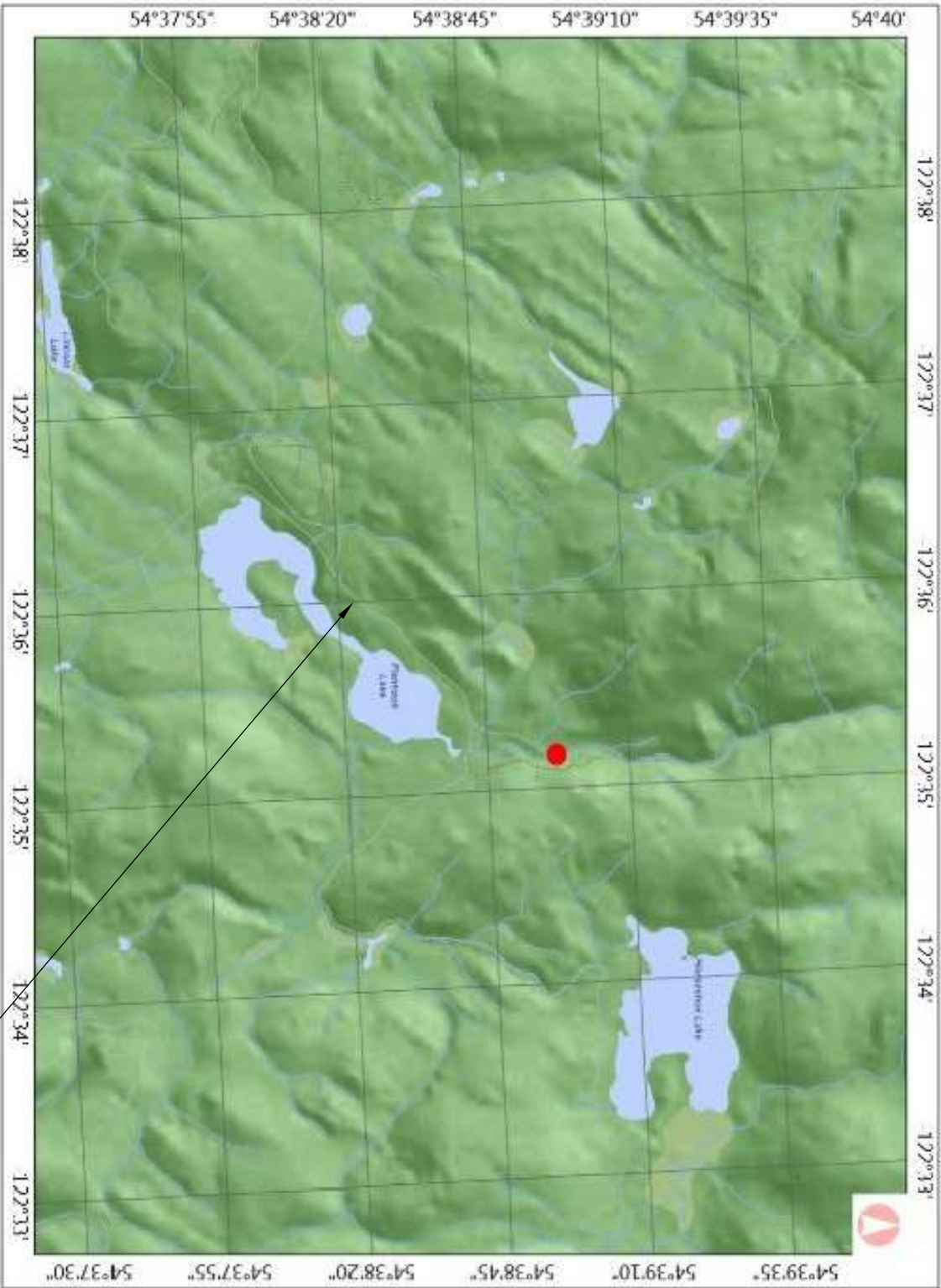




TYPICAL ROCK FILL SLOPE RETENTION DESIGN
FOR CHUCHINKA-COLBOURNE FSR
30+919.50 TO 33+600.00

PREPARED ON:
July 7, 2016

PREPARED FOR:



Ministry of
Forests, Lands and
Natural Resource Operations

Sheet Number	Sheet Name
1	Cover Sheet
2	Plan and Section views
3	Notes

NOT TO SCALE

CHUCHINKA-COLBOURNE FSR

DWG # 110-022-003 ROCK FILL SLOPE RETENTION	CURRENT REVISION	-
	REVISION DATE	-
INTENDED TO BE PRINTED ON 11"X17" PAPER. ANY COPIES OF PDFS MAY NOT BE TO SCALE	REVISION DESC.	-



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SHEET
1
OF 3

ENVIRONMENTAL NOTES:

1. WORK TO PROCEED IN ACCORDANCE WITH DFO AND BCMOE CONDITIONS NOTED AT THE WEB SITE:
<http://www.dfo-mpo.gc.ca/pnw-ppe/measurements-measures/index-eng.html> THE BCMOE REGIONAL TERMS AND REGIONAL PERIODS OF LEAST RISK TO RESIDENT FISH SPECIES AND FISH REMOVAL/RELOCATION FOR IN-STREAM WORK ALSO APPLY IF THE STREAM HAS FISH PRESENT OR IS CLASSIFIED AS S1 THROUGH S4, UNLESS THE SITE IS DRY.
2. A SEDIMENT MANAGEMENT PLAN WITH SPECIFIC MITIGATION MEASURES TO MINIMIZE SILTATION MUST BE ON SITE.
3. ALTERATION TO STREAM BANKS AND IN-STREAM WORK (NONE EXPECTED) SHOULD BE SUPERVISED BY AN ENVIRONMENTAL MONITOR.
4. REMOVE THE MINIMUM AMOUNT OF RIPARIAN VEGETATION NECESSARY TO INSTALL A SAFE STRUCTURE. VEGETATE DISTURBED SLOPES AS SOON AS POSSIBLE. SILT FENCING, GEOTEXTILE CLOTH FABRIC AND A ROLL OF PLASTIC SHOULD BE ON SITE. STOP WORK DURING EXTREME ADVERSE WEATHER.
5. MACHINERY IS TO BE CLEAN AND LEAK FREE WHILE ON SITE. PETROLEUM PRODUCTS MUST BE CAREFULLY MONITORED WITH NO FUELING WITHIN THE RIPARIAN MANAGEMENT AREA.
6. DIRECT SURFACE WATER AWAY FROM WORK SITE DURING CONSTRUCTION. ENSURE DITCH WATER AND SURFACE RUNOFF FROM THE ROAD DOES NOT FLOW DIRECTLY INTO THE STREAM. INSTALL CROSS DRAIN CULVERTS ON THE APPROACHES AND CONSTRUCT SUMPS AS REQUIRED.

STREAM NOTES:

1. PEAK FLOW FOR DESIGN PURPOSES WAS DETERMINED BASED ON REVIEW OF CHANNEL CHARACTERISTICS. PREVIOUS HIGH FLOW EVIDENCE, AND REVIEW OF THE RESULTS OF APPLYING SEVERAL PEAK FLOW EMPIRICAL MODELS. THESE EMPIRICAL MODELS EMPLOY ESTIMATES OF TIME OF CONCENTRATION, HYDROMETRIC STATISTICS, WATERSHED CHARACTERISTICS, AND OTHER RELEVANT INFORMATION TO ESTIMATE PEAK FLOW. Q100 EST. = 3.2 m³/s

2. STREAM RIPARIAN CLASS IS S3.

CONSTRUCTION SEQUENCE:

1. BANK ARMOURING IS TO BE COMPLETED FIRST. IN ORDER TO PLACE ARMOURING ALONG STREAM BANK, EXCAVATION MUST OCCUR FROM THE EXISTING ROAD, DOWN TO AN ELEVATION WHICH ENABLES CAREFUL PLACEMENT OF ARMOURING AT STREAM LEVEL THROUGH FOLLOWING THE PROCEEDING STEPS.
2. BUILD UP FROM EXISTING ROAD MATERIAL (REMOVE AS LITTLE MATERIAL AS POSSIBLE) TO A SAFE WORKING ELEVATION FOR EXCAVATOR TO BEGIN RECONSTRUCTION, STAYING WITHIN THE LIMITS OF EXCAVATION. THE BENCH WILL HAVE TO BE WIDE ENOUGH TO ACCOMMODATE AN EXCAVATOR WITH A SAFE WORKING GRADE. TO USE EXISTING ROAD FILL FOR BACKFILL, IT MUST BE FREE OF ALL ORGANICS AND MEET THE CRITERIA FOR BACKFILL MATERIAL AS IDENTIFIED IN STEP 10 AND BY THE CERTIFYING PROFESSIONAL OR THEIR REPRESENTATIVE.
3. BUILD UP THE SLOPE TO 1:5H:1V.
4. PLACE ARMTREC 250 NON-WOVEN GEOTEXTILE OR APPROVED EQUIVALENT AT LOCATIONS REQUIRING RIPRAP. ENSURE A MINIMUM OF 0.5m OVERLAP OF ROWS OF GEOTEXTILE.
5. PLACE LARGEST PIECES OF LARGE *RIPRAP (SEE SHEET 3 FOR *RIPRAP SPECIFICATIONS) AT TOE OF SLOPE.
6. PLACE FINE SHOT ROCK BLANKET UP TO CURRENT WORKING ELEVATION.
7. KEY IN 0.45m TO 1.0m PIECES OF *RIPRAP ON SLOPE. LONG AXIS OF LARGEST PIECES OF LARGE RIPRAP TO BE PERPENDICULAR TO CHANNEL AND SLOPED SLIGHTLY AWAY FROM STREAM.
8. ALL *RIPRAP IS TO BE CAREFULLY PLACED (NOT DUMPED) TO CREATE AN INTERLOCKING SURFACE.
9. REPEAT STEPS 3 TO 9 UP TO DESIGN ELEVATION. AS ARMOURING IS COMPLETED AND ROAD FILL BUILT UP TO THE NEXT WORKING ELEVATION THE PROCEDURES IDENTIFIED IN STEP 10 MUST BE FOLLOWED.
10. WHEN ARMOURING IS COMPLETE ROAD STRUCTURE CAN BE BUILT BACK WITH A MAXIMUM FILL SLOPE OF 1.5H:1V. SUBGRADE MATERIAL IS TO CONSIST OF WELL GRADED SANDS AND GRAVELS AND SMALL BOULDERS, AND IS TO BE APPROVED BY THE CERTIFYING PROFESSIONAL OR THEIR REPRESENTATIVE PRIOR TO PLACEMENT. THE MATERIAL IS TO BE PLACED AND COMPACTED IN LIFTS OF MAXIMUM 0.3m (MEASURED LOOSE). WATER MAY NEED TO BE ADDED (PRIOR TO COMPACTION AND DURING THE SPREADING OF LIFTS) TO THE MATERIAL TO ACHIEVE THE REQUIRED COMPACTION. MULTIPLE PASSES WITH A ROLLER VIBRATING DRUM TO 95% STANDARD PROCTOR OF THE MAXIMUM DRY DENSITY IS REQUIRED. COMPACTION IS TO BE SUPERVISED BY THE CERTIFYING PROFESSIONAL OR THEIR REPRESENTATIVE TO DETERMINE THAT ADEQUATE COMPACTION IS BEING ATTAINED.

RIPRAP: CLEAN ANGULAR ROCK

WELL GRADED
ROCK MAX
20cm Ø PIECES

ALL ROCK TO BE PLACED TO
MAXIMIZE INTERLOCKING
BETWEEN PIECES.
APPROXIMATELY
1m²/lin.m OF RIPRAP REQUIRED.

*RIPRAP: CLEAN ANGULAR ROCK

FINE SHOT ROCK:

WELL GRADED
0.05m TO 0.30m ANGULAR ROCK

LARGE RIPRAP:

GAP GRADED
ROCKS AT TOE: 1.0m TO 1.3m
ROCK ON SLOPE FACE: 0.45m TO 1.0m
*RIPRAP : CLEAN ANGULAR ROCK

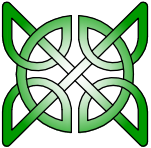
ROCK GRADATION
PERCENT LARGER THAN GIVEN
ROCK MASS (kg/DIA. (mm))
85% 10/200
50% 100/450
15% 300/700

ALL ROCK TO BE PLACED TO
MAXIMIZE INTERLOCKING
BETWEEN PIECES. ALL ROCK
TO BE UNDERLAIN WITH ARMTREC
250 NON-WOVEN GEOTEXTILE OR
APPROVED EQUIVALENT .
APPROXIMATELY

35m³ OF FINE SHOT ROCK AND
100m³ OF LARGE RIPRAP REQUIRED

NOTE: 1.3m RIPRAP = APPROX. 2800kg

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NOTES

SCALE: As Indicated

DESIGN BY: Edward Folk, P.Eng

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SITE SURVEY: June 13, 2016

SURVEY CREW: JB, DT

DATE: July 15, 2016

REVISION NUMBER:-

REVISION DATE:-

DWG # : 110-022-003 ROCK FILL SLOPE RETENTION

SHEET
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