





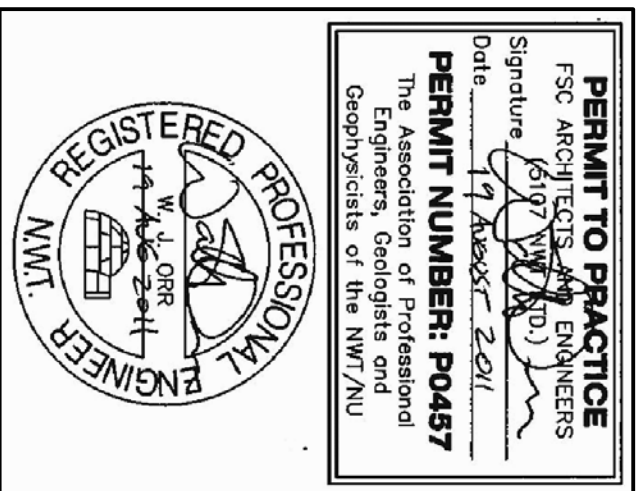


© Copyright Reserved 2011 by FSC Architects & Engineers  
The information contained in this drawing is copyright and has been prepared for the sole benefit of the Client. No part of this drawing may be reproduced or transmitted in any form or by any means electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of FSC Architects & Engineers. The use of this drawing for any purpose other than that intended by the Client is at the sole risk of the user.

NOTE:  
MAINTAIN CONSISTENT SLOPE TOWARDS HIGH POINTS AND LOW POINTS TO FACILITATE SUGGESTED PRELINE DRAINAGE.

E	ISSUED FOR TENDER - REVISED 2011/09/12
D	ISSUED FOR TENDER 2011/08/19
C	ISSUED FOR REVIEW 2010/12/15
B	ISSUED FOR SCHEMATIC DESIGN 2 2010/09/24
A	ISSUED FOR SCHEMATIC DESIGN 2010/06/18
NO.	REVISION DESCRIPTION DATE ISSUED

PROFESSIONAL SEAL / PERMIT TO PRACTICE	
FSC ARCHITECTS & ENGINEERS Signature: <i>[Signature]</i> Date: <i>17 August 2011</i> PERMIT NUMBER: P0497 The Association of Professional Engineers, Geologists and Geoscientists of the NW/NU	



**FSC**  
ARCHITECTS & ENGINEERS  
4910 - 53rd Street, P.O. Box 1777  
Yellowknife, NT, X1A 2P4, Canada  
T 867.920.2882 | F 867.920.4319

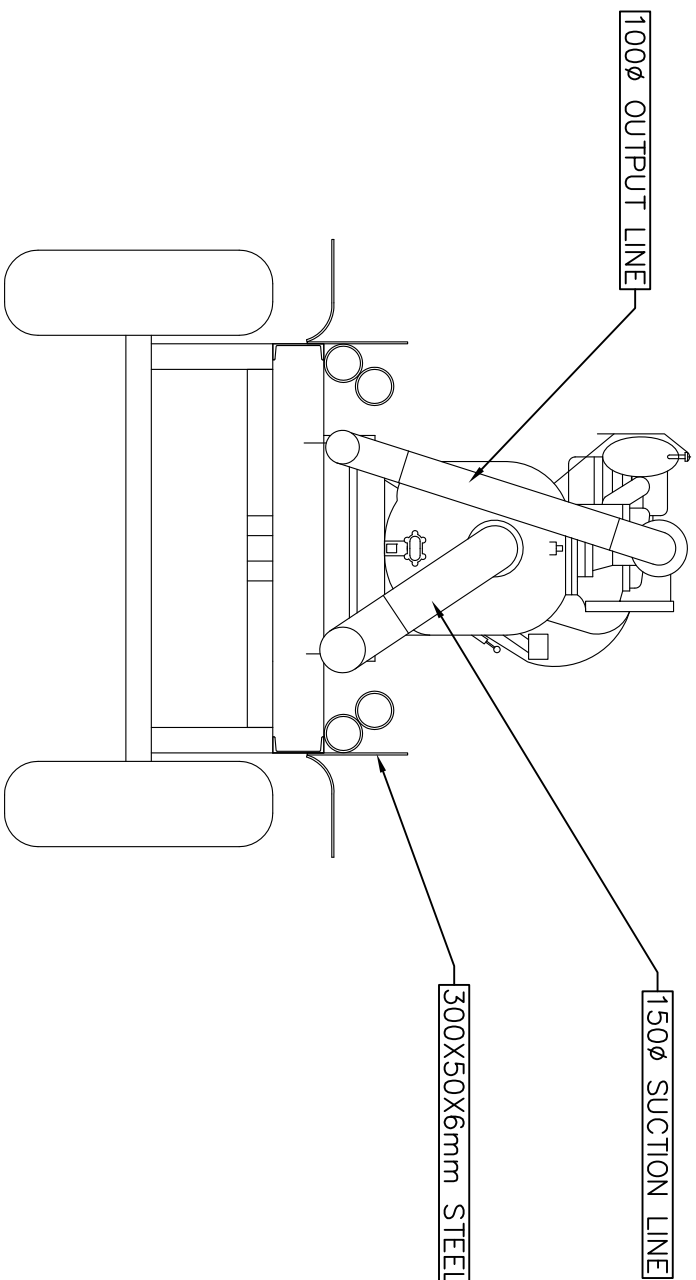
PROJECT TITLE  
**NIPISSAR LAKE  
RESUPPLY LINE**

LOCATION  
RANKIN INLET, NU

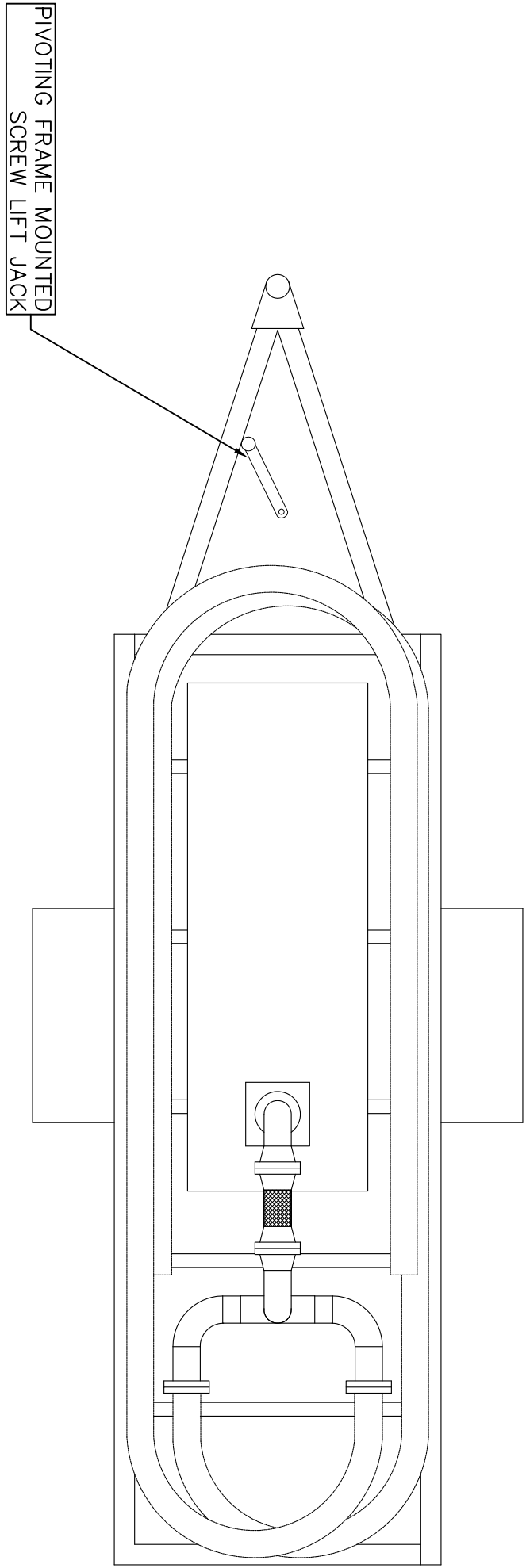
DRAWING TITLE  
**INTAKE PUMP DETAILS**

REVISED

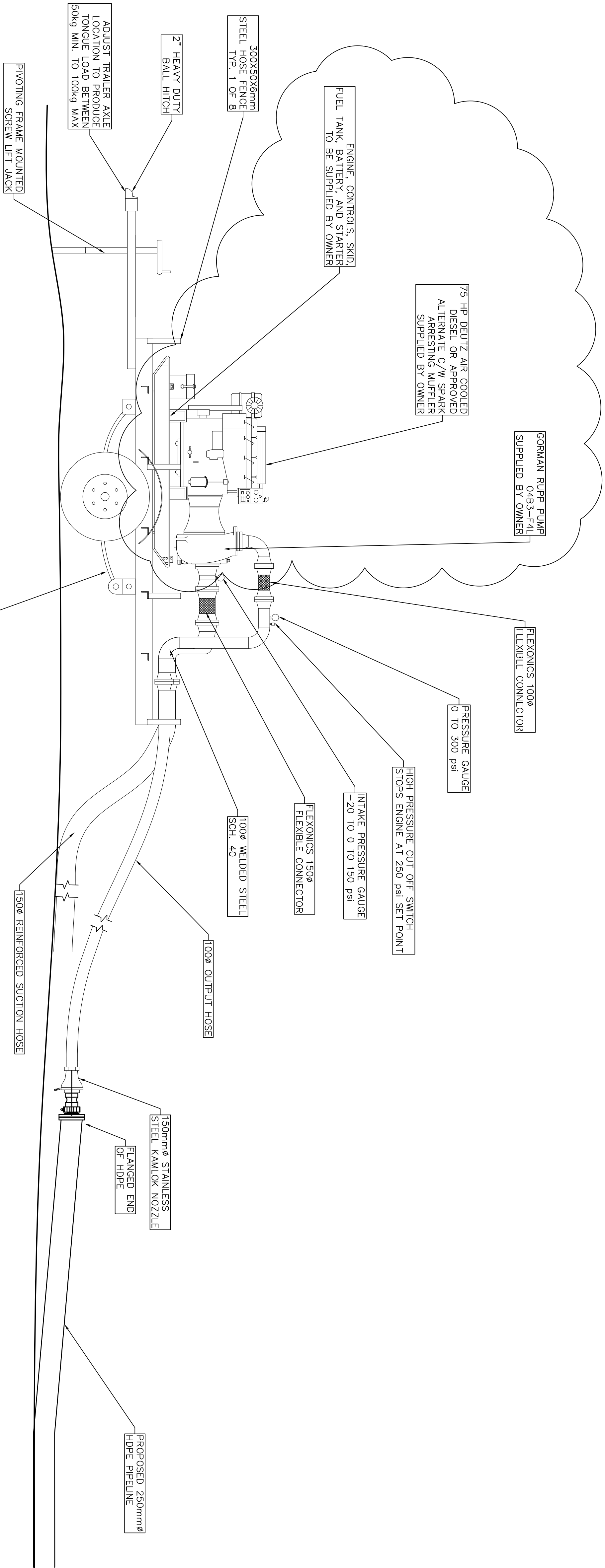
DRAWN BY	SCALE	NTS
CS/FC/AF		
CHECKED BY	CLIENT PROJECT NO.	
WO		
FSC PROJECT NO.	2010 0570	
DRAWING NO.	C9	



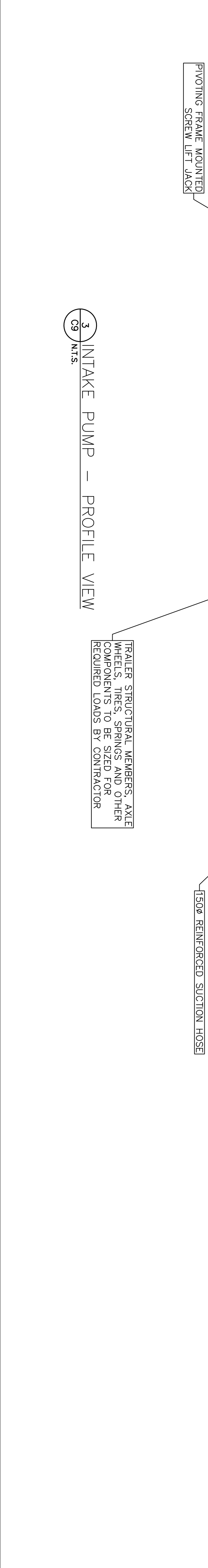
1 INTAKE PUMP – REAR VIEW  
C9 N.T.S.



2 INTAKE PUMP – PLAN VIEW  
C9 N.T.S.



3 INTAKE PUMP – PROFILE VIEW  
C9 N.T.S.







© Copyright Reserved 2011 by FSC Architects & Engineers  
The information contained in this drawing is copyright and has been prepared for the sole benefit of the Client. Any unauthorized use of this information is strictly prohibited. Use of this information for any purpose other than the project described herein is at the user's risk.

NOTE:  
MATERIALS, CONSTRUCTION, SIZES, DIMENSIONS, HIGH POINTS AND LOW POINTS TO BE DETERMINED BY THE CLIENT.

D	ISSUED FOR TENDER	2011/08/19
C	ISSUED FOR REVIEW	2010/12/15
B	ISSUED FOR SCHEMATIC DESIGN 2	2010/09/24
A	ISSUED FOR SCHEMATIC DESIGN	2010/06/18
NO.	REVISION DESCRIPTION	DATE ISSUED

PROFESSIONAL SEAL / PERMIT TO PRACTICE



**FSC**  
ARCHITECTS & ENGINEERS  
4910 - 53rd Street, P.O. Box 1777  
Yellowknife, NT, X1A 2P4, Canada  
T 867.920.2882 | F 867.920.4319

PROJECT TITLE

**NIPISSAR LAKE  
RESUPPLY LINE**

LOCATION

RAVINK INLET, NU

DRAWING TITLE

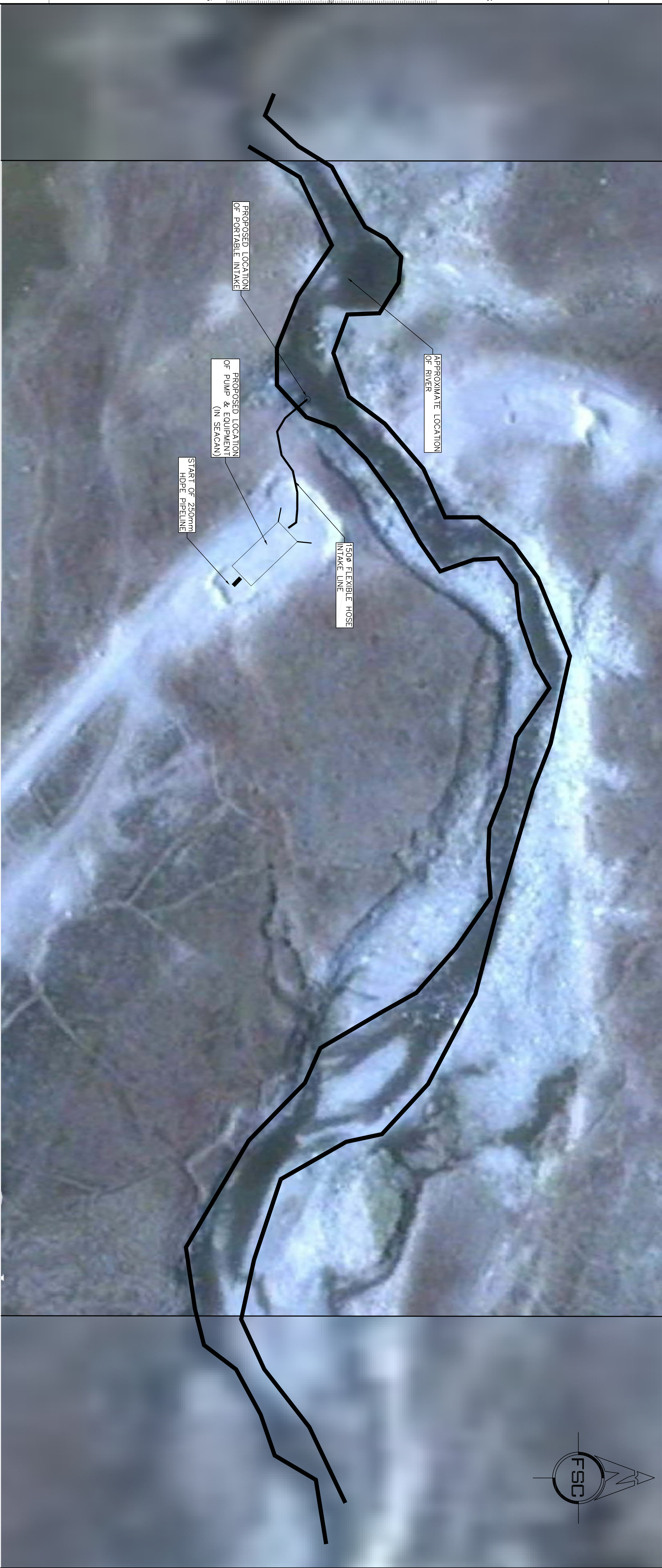
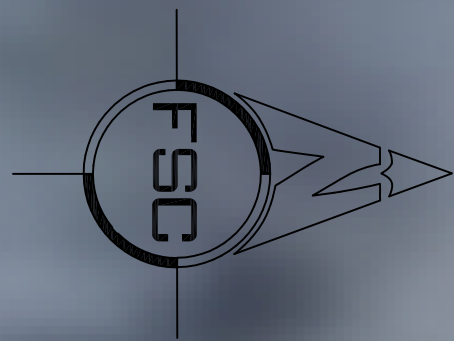
**INTAKE SITE PLAN**

DRAWN BY	SCALE
CS/Fc/AF	1:1000
DESIGNED BY	CLIENT PROJECT NO.
WO	-

FSC PROJECT NO. 2010 0570

DRAWING NO.

**C10**





INSTALLATION OF HDPE PIPE SPECIFICATIONS.

A) PREPARATION

- .1 CLEAN PIPES, FITTINGS, AND APPURTENANCE OF ACCUMULATED DEBRIS AND WATER BEFORE INSTALLATION. CAREFULLY INSPECT MATERIALS FOR DEFECTS. REMOVE DEFECTIVE MATERIALS FROM SITE.

B) PIPE PLACEMENT

- .1 HDPE PIPE SHALL BE PLACED DIRECTLY ON THE GROUND, MATCHING AS CLOSELY AS IS PRACTICAL THE ENGINEERS LAYOUT STAKES AND HUBS. PLACE PIPE TO AVOID LARGE ROCKS WHERE POSSIBLE, HOWEVER.
- .2 THE INTENT OF THE DESIGN OF THIS SYSTEM, IS TO HAVE A SINGLE LOW POINT AND DRAIN ALONG THE PIPELINE ROUTE, WITH THE ONLY OTHER LOW POINTS BEING AT EITHER END OF THE PIPELINE ROUTE. PLACE THE PIPE SUCH THAT NO LOCATION IN THE PIPELINE HAS MORE THAN 100 MM MAXIMUM DEPRESSION IN THE PIPELINE DESIGN GRADE, WHICH WOULD HOLD WATER WHEN THE PIPE IS DRAINED.
- .3 THE INTENT OF THE DESIGN OF THIS SYSTEM, IS TO HAVE A ONLY TWO HIGH POINTS ALONG THE PIPELINE ROUTE. CONNECT THE TWO HIGH POINT AIR RELEASES AT THE HIGH POINTS IN THE PIPELINE, ONE NEAR NIPISSAR LAKE, AND ONE NEAR THE PUMP CONNECTION POINT. PLACE THE PIPE SUCH THAT NO LOCATION IN THE PIPELINE HAS MORE THAN 100 MM MAXIMUM ELEVATION ABOVE THE PIPELINE DESIGN GRADE, WHICH WOULD TRAP AIR WHEN THE PIPE IS FILLED.
- .4 SECURE THE PIPE EVERY 50 M WITH 'U' SHAPED GALVANIZED OR STAINLESS STEEL CONSTRAINTS, TO MINIMIZE THE SHIFTING OF THE PIPE WITH THERMAL EXPANSION AND CONTRACTION.
- .5 PIPE ALIGNMENT AND ELEVATION REQUIRE ENGINEER'S APPROVAL PRIOR TO PLACING PIPE.

C) PIPE INSTALLATION

- .1 LAY PIPE TRUE TO LINE AND GRADE, EITHER ON PREPARED BEDDING OR DIRECTLY ON THE GROUND WHERE APPROPRIATE.
- .2 HANDLE PIPE BY APPROVED METHODS. DO NOT USE CHAINS OR CABLES PASSED THROUGH PIPE BORE SO THAT WEIGHT OF PIPE BEARS ON PIPE ENDS.
- .3 KEEP JOINING MATERIALS AND INSTALLED PIPE FREE TO DIRT, WATER AND OTHER FOREIGN MATERIALS. WHENEVER WORK IS STOPPED, INSTALL A REMOVAL WATERTIGHT BULB-HEAD AT OPEN END OF LAST PIPE LAID TO PREVENT ENTRY OF FOREIGN MATERIALS.
- .4 DO NOT TRAVEL ON THE EXPOSED TUNDRA TO LAY AND FUSE PIPE WHILE THE TUNDRA IS NOT FROZEN. ALL WORK ON THE TUNDRA IS TO BE SCHEDULED AND COORDINATED TO MINIMIZE DAMAGE TO THE TUNDRA AND IT'S ASSOCIATED VEGETATION.
- .5 THERMAL BUTT-FUSION AND THERMAL SOCKET FUSION OF POLYETHYLENE PIPE SHALL BE CARRIED OUT AS DESCRIBED IN BULLETIN "CONSTRUCTION 3" BY DUPONT OF CANADA LTD. BY A CERTIFIED FUSION TECHNICIAN. THE TECHNICIAN SHALL HAVE A MINIMUM OF 2 YEARS EXPERIENCE AND A COPY OF HIS RESUME SHALL BE SUBMITTED FOR APPROVAL.
- .6 FLANGED COLLARS TO BE FUSED TO POLYETHYLENE PIPE SHALL BE MADE FROM THE SAME TYPE AND GRADE OF POLYETHYLENE, FROM THE SAME RAW MATERIAL SUPPLIER, AS THE PIPE. UNDER NO CIRCUMSTANCES WILL SOCKET FUSION JOINTS BE PERMITTED.
- .7 PIPE SHALL BE JOINED BY THERMAL BUTT-FUSION.
- .8 MINIMUM BEND RADIUS OF HDPE PIPE TO BE 50 X PIPE DIAMETER

D) HYDROSTATIC AND LEAKAGE TESTING

PROVIDE LABOUR, EQUIPMENT AND MATERIALS REQUIRED TO PERFORM HYDROSTATIC AND LEAKAGE TESTS HEREINAFTER DESCRIBED.

PRESSURE TESTING OF NIPISSAR WATER SUPPLY LINE

- .1 ONCE THE WATER LINE IS ASSEMBLED AND PRIOR TO THE PIPE BEDDING AND BACKFILL BEING PLACED, THEY SHALL BE PRESSURE TESTED. THE ENDS OF THE MAIN TO BE TESTED SHALL BE SEALED OFF USING BLIND FLANGES AND GASKETS. THE FLANGE ON THE LOWER END OF THE MAIN SHALL BE TAPPED TO RECEIVE THE TEST PUMP DISCHARGE LINE. THE AIR RELEASE VALVE ON THE HIGH END OF THE MAIN SHALL BE OPENED TO DISCHARGE AIR FROM THE LINE DURING THE FILLING PROCESS.
- .2 THE MAIN SHALL BE LAID TO A CONTINUOUSLY RISING GRADE TO THE VENT COCK. THE MAIN SHALL BE FILED WITH WATER AT A GAUGE PRESSURE OF AT LEAST 100 PSI. THE PRESSURE SHALL BE MAINTAINED FOR ONE HOUR. NO LEAKAGE SHALL BE PERMITTED.
- .3 ALL LEAKS OR DEFECTIVE MATERIAL SHALL BE REPAIRED TO THE ENGINEER'S REQUIREMENTS, OR REPLACED. AFTER REPAIR WORK IS COMPLETED REPEAT TESTING SHALL BE REQUIRED.
- .4 NOTIFY ENGINEER AT LEAST 7 DAYS IN ADVANCE OF ALL PROPOSED TESTS. PERFORM TESTS IN PRESENCE OF ENGINEER.
- .5 ISOLATE ALL LOW PRESSURE EQUIPMENT DURING TESTING SO AS NOT TO PLACE ANY HYDROSTATIC HEAD IN EXCESS OF DESIGN OPERATING PRESSURE ON THE EQUIPMENT.
- .6 WHERE LEAKS ARE FOUND, THE LINE SHALL BE RETESTED AFTER MAKING REPAIRS EXCEPT, THAT WHERE LEAKS ARE MINOR, THE ENGINEER MAY AT HIS SOLE DISCRETION WAIVE THE RETEST.

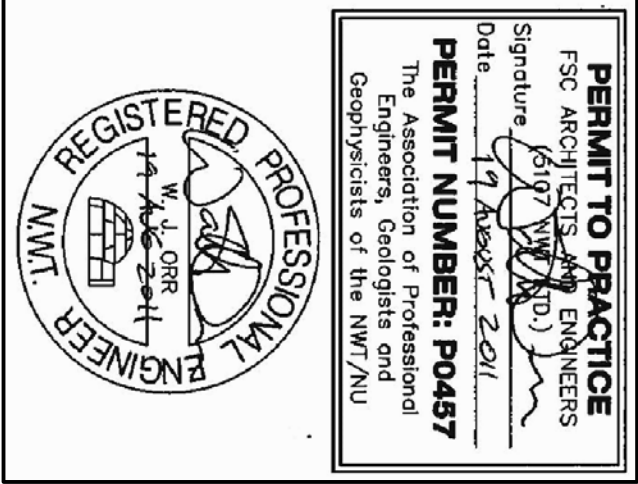


© Copyright Reserved 2011 by FSC Architects & Engineers  
The information contained in this drawing is copyright and has been prepared by FSC Architects & Engineers for the sole benefit of the Client. Any unauthorized use of this information is prohibited. The Client agrees to indemnify and hold FSC Architects & Engineers harmless from any and all claims, damages, costs and expenses, including reasonable attorneys' fees, that may be incurred by FSC Architects & Engineers as a result of the Client's use of this information for any purpose other than that for which it was originally intended. The Client's use of this information for any purpose other than that for which it was originally intended is at the Client's sole risk.

NOTE:  
MATERIALS: CONSTRUCTION MATERIALS, HIGH POINTS AND LOW POINTS TO BE DETERMINED BY THE ENGINEER.

D	ISSUED FOR TENDER
C	ISSUED FOR REVIEW
B	ISSUED FOR SCHEMATIC DESIGN 2
A	ISSUED FOR SCHEMATIC DESIGN
NO.	REVISION DESCRIPTION
DATE ISSUED	

PROFESSIONAL SEAL / PERMIT TO PRACTICE





**ARCHITECTS & ENGINEERS**  
4910 - 53rd Street, P.O. Box 1777  
Yellowknife, NT, X1A 2P4, Canada  
T 867.920.2882 | F 867.920.4319

**NIPISSAR LAKE  
RESUPPLY LINE**

LOCATION: RANKIN INLET, NU

**PROJECT  
SPECIFICATIONS**

DRAWN BY	SCALE
CS/Fc/AF	NTS
DESIGNED BY	CLIENT PROJECT NO.
WO	-
FSC PROJECT NO.	2010 0570
DRAWING NO.	

C11