General Construction Plans

for Power Development Purposes Associated with the

Keeyask Project (Generation and Transmission) on the Nelson River

in accordance with Sections 21 to 23 of the Regulations under

the Water Power Act (C.C.S.Mc. W60)

---Figure Folio---

Keeyask Project
Water Power Act
General Construction Plans (Section 21-23 of the Water Power Act Regulations)

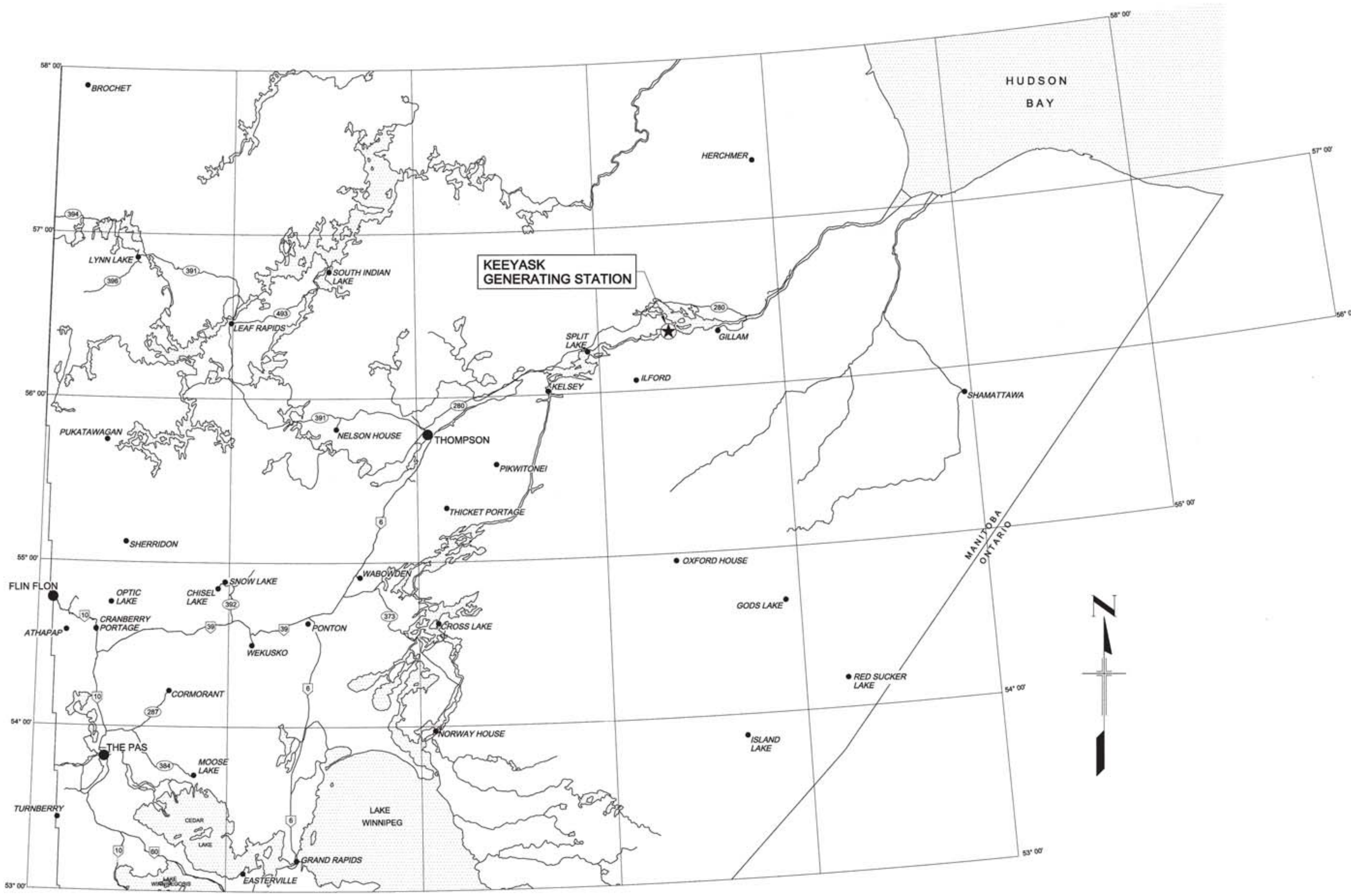
Figure Number	Figure Title	Figure Reference Number	Water Stewardship File number
1	VICINITY PLAN	1-00195-DE-10000-0086-0001	WULS-1-00195-DE-10000-0086-0001
2	PROJECT SITE ACCESS	1-00195-DE-16000-0001-0001	WULS-1-00195-DE-16000-0001-0001
3	BASIS FOR DESIGN GENERAL ARRANGEMENT PROJECT AREA	1-00195-DE-06200-0003-0001	WULS-1-00195-DE-06200-0003-0001
4	BASIS FOR DESIGN GENERAL ARRANGEMENT PROJECT GENERAL ARRANGEMENT	1-00195-DE-06200-0004-0001	WULS-1-00195-DE-06200-0004-0001
5	BASIS FOR DESIGN GENERAL ARRANGEMENT POTENTIAL BORROW AREA LOCATIONS – PLAN	1-00195-DE-06200-0005-0001	WULS-1-00195-DE-06200-0005-0001
6	REGIONAL BEDROCK GEOLOGY	1-00195-DE-11000-0001-0001	WULS-1-00195-DE-11000-0001-0001
7	STAGE I COFFERDAMS - LOCATION OF EXPLORATIONS	1-00195-DE-11600-0019-0001	WULS-1-00195-DE-11600-0019-0001
8	BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES EXPLORATION PLAN	1-00195-DE-06200-0007-0001	WULS-1-00195-DE-06200-0007-0001
9	BASIS FOR DESIGN GENERAL ARRANGEMENT DYKE INVESTIGATIONS EXPLORATIONS PLANS - 1 OF 3	1-00195-DE-06200-0009-0001	WULS-1-00195-DE-06200-0009-0001
10	BASIS FOR DESIGN GENERAL ARRANGEMENT DYKE INVESTIGATIONS EXPLORATIONS PLANS - 2 OF 3	1-00195-DE-06200-0009-0002	WULS-1-00195-DE-06200-0009-0002
11	BASIS FOR DESIGN GENERAL ARRANGEMENT DYKE INVESTIGATIONS EXPLORATIONS PLANS - 3 OF 3	1-00195-DE-06200-0009-0003	WULS-1-00195-DE-06200-0009-0003
12	BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES GEOLOGICAL SECTION A-A 1 OF 5	1-00195-DE-06200-0008-0001	WULS-1-00195-DE-06200-0008-0001
13	BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES GEOLOGICAL SECTION A-A 2 OF 5	1-00195-DE-06200-0008-0002	WULS-1-00195-DE-06200-0008-0002
14	BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES GEOLOGICAL SECTION A-A 3 OF 5	1-00195-DE-06200-0008-0003	WULS-1-00195-DE-06200-0008-0003
15	BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES GEOLOGICAL SECTION A-A 4 OF 5	1-00195-DE-06200-0008-0004	WULS-1-00195-DE-06200-0008-0004
16	BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES GEOLOGICAL SECTION A-A 5 OF 5	1-00195-DE-06200-0008-0005	WULS-1-00195-DE-06200-0008-0005
17	BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES GENERAL ARRANGEMENT	1-00195-DE-06200-0013-0001	WULS-1-00195-DE-06200-0013-0001
18	BASIS FOR DESIGN GENERAL ARRANGEMENT CAUSEWAYS -	1-00195-DE-06200-0062-0001	WULS-1-00195-DE-06200-0062-0001

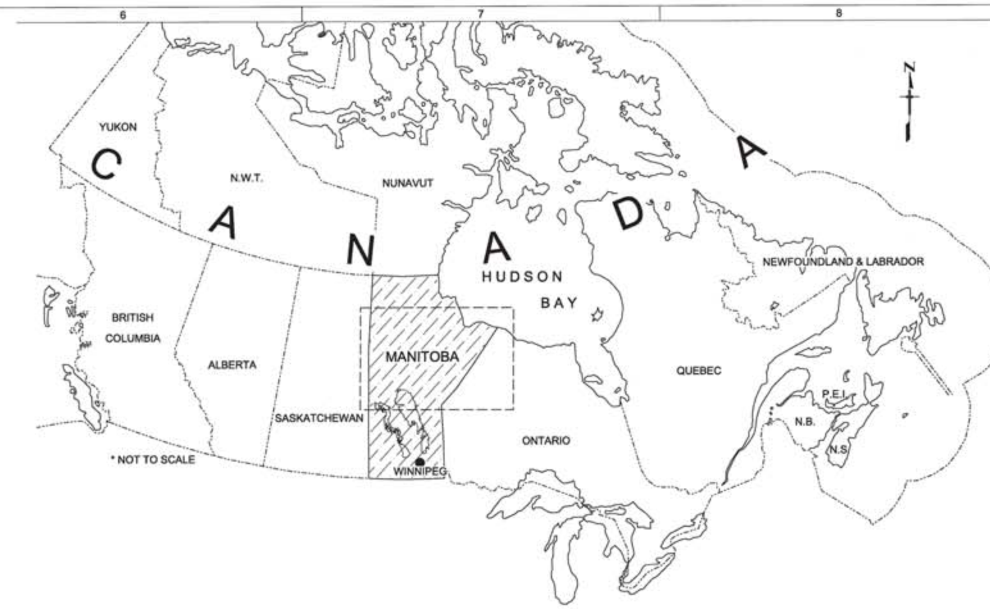
Keeyask Project
Water Power Act
General Construction Plans (Section 21-23 of the Water Power Act Regulations)

Figure Number	Figure Title	Figure Reference Number	Water Stewardship File number
	PLANS, SECTIONS, & DETAILS		
19	BASIS FOR DESIGN GENERAL ARRANGEMENT CONSTRUCTION DIVERSION AND STAGING	1-00195-DE-06200-0014-0001	WULS-1-00195-DE-06200-0014-0001
20	BASIS FOR DESIGN GENERAL ARRANGEMENT COFFERDAM SECTIONS	1-00195-DE-06200-0015-0001	WULS-1-00195-DE-06200-0015-0001
21	STAGE I COFFERDAMS STAGE I DIVERSION PLAN	1-00195-DE-11430-0001-0001	WULS-1-00195-DE-11430-0001-0001
22	STAGE I COFFERDAMS QUARRY COFFERDAM PLAN AND SECTION	1-00195-DE-21600-0002-0001	WULS-1-00195-DE-21600-0002-0001
23	STAGE I COFFERDAMS NORTH CHANNEL STAGE I COFFERDAM PLAN AND SECTIONS	1-00195-DE-21600-0003-0001	WULS-1-00195-DE-21600-0003-0001
24	STAGE I COFFERDAMS NORTH CHANNEL ROCK GROIN PLAN AND SECTIONS	1-00195-DE-21600-0004-0001	WULS-1-00195-DE-21600-0004-0001
25	STAGE I COFFERDAMS STAGE I ISLAND COFFERDAM PLAN, SECTION AND DETAILS	1-00195-DE-21600-0005-0001	WULS-1-00195-DE-21600-0005-0001
26	STAGE I COFFERDAMS SPILLWAY STAGE 1 COFFERDAM PLAN, SECTIONS, PROFILE & DETAIL	1-00195-DE-21600-0006-0001	WULS-1-00195-DE-21600-0006-0001
27	STAGE I COFFERDAMS SPILLWAY STAGE 1 COFFERDAM - SECTION & PROFILES	1-00195-DE-21600-0006-0002	WULS-1-00195-DE-21600-0006-0002
28	STAGE I COFFERDAMS POWERHOUSE STAGE 1 COFFERDAM, PLANS, SECTION & DETAIL	1-00195-DE-21600-0007-0001	WULS-1-00195-DE-21600-0007-0001
29	STAGE I COFFERDAMS CENTRAL DAM STAGE I COFFERDAM PLAN SECTION AND DETAILS	1-00195-DE-21600-0008-0001	WULS-1-00195-DE-21600-0008-0001
30	BASIS FOR DESIGN GENERAL ARRANGEMENT NORTH AND CENTRAL DAM - SECTIONS	1-00195-DE-06200-0043-0001	WULS-1-00195-DE-06200-0043-0001
31	BASIS FOR DESIGN GENERAL ARRANGEMENT SOUTH DAM – SECTIONS AND PROFILE	1-00195-DE-06200-0044-0001	WULS-1-00195-DE-06200-0044-0001
32	BASIS FOR DESIGN GENERAL ARRANGEMENT NORTH AND SOUTH DYKES AND ROAD - SECTIONS	1-00195-DE-06200-0045-0001	WULS-1-00195-DE-06200-0045-0001
33	BASIS FOR DESIGN GENERAL ARRANGEMENT TRANSMISSION TOWER SPUR - PLAN, SECTIONS AND DETAILS	1-00195-DE-06200-0055-0001	WULS-1-00195-DE-06200-0055-0001
34	BASIS FOR DESIGN GENERAL ARRANGEMENT FOREBAY IMPROVEMENT AREAS PLAN	1-00195-DE-06200-0057-0001	WULS-1-00195-DE-06200-0057-0001
35	CONCRETE STRUCTURES - EXCAVATION	1-00195-DE-06200-0016-0001	WULS-1-00195-DE-06200-0016-0001
36	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE PLAN	1-00195-DE-06200-0017-0001	WULS-1-00195-DE-06200-0017-0001
37	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE CROSS SECTION AT CENTERLINE OF	1-00195-DE-06200-0018-0001	WULS-1-00195-DE-06200-0018-0001

Figure Number	Figure Title	Figure Reference Number	Water Stewardship File number
	UNITS		
38	SERVICE BAY CROSS SECTION	1-00195-DE-06200-0029-0001	WULS-1-00195-DE-06200-0029-0001
39	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE UNITS 1 TO 7 DEWATERING GALLERY PLAN	1-00195-DE-06200-0020-0001	WULS-1-00195-DE-06200-0020-0001
40	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE UNITS 1 TO 3 PLAN AT CENTERLINE OF DISTRIBUTER	1-00195-DE-06200-0021-0001	WULS-1-00195-DE-06200-0021-0001
41	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE UNITS 4 TO 7 PLAN AT CENTERLINE OF DISTRIBUTER	1-00195-DE-06200-0022-0001	WULS-1-00195-DE-06200-0022-0001
42	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE UNITS 1 TO 3 PLAN AT GENERATOR FLOOR	1-00195-DE-06200-0025-0001	WULS-1-00195-DE-06200-0025-0001
43	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE UNITS 4 TO 7 PLAN AT GENERATOR FLOOR	1-00195-DE-06200-0026-0001	WULS-1-00195-DE-06200-0026-0001
44	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE LONGITUDINAL SECTION	1-00195-DE-06200-0027-0001	WULS-1-00195-DE-06200-0027-0001
45	BASIS FOR DESIGN GENERAL ARRANGEMENT SERVICE BAY PLANS AT EL 127.0 & EL 142.0	1-00195-DE-06200-0030-0001	WULS-1-00195-DE-06200-0030-0001
46	BASIS FOR DESIGN GENERAL ARRANGEMENT SERVICE BAY PLANS AT EL 147.0 & EL 153.0	1-00195-DE-06200-0031-0001	WULS-1-00195-DE-06200-0031-0001
47	BASIS FOR DESIGN GENERAL ARRANGEMENT SERVICE BAY PLANS AT EL 157.0, EL 161.8 & EL 173.5	1-00195-DE-06200-0032-0001	WULS-1-00195-DE-06200-0032-0001
48	BASIS FOR DESIGN GENERAL ARRANGEMENT SPILLWAY PLAN	1-00195-DE-06200-0033-0001	WULS-1-00195-DE-06200-0033-0001
49	BASIS FOR DESIGN GENERAL ARRANGEMENT SPILLWAY DIVERSION STAGE CROSS SECTION	1-00195-DE-06200-0034-0001	WULS-1-00195-DE-06200-0034-0001
50	BASIS FOR DESIGN GENERAL ARRANGEMENT SPILLWAY FINAL CONFIGURATION CROSS SECTION	1-00195-DE-06200-0035-0001	WULS-1-00195-DE-06200-0035-0001
51	BASIS FOR DESIGN GENERAL ARRANGEMENT SPILLWAY ELEVATION	1-00195-DE-06200-0036-0001	WULS-1-00195-DE-06200-0036-0001
52	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE TRANSITION STRUCTURES - PLANS & SECTIONS	1-00195-DE-06200-0037-0001	WULS-1-00195-DE-06200-0037-0001
53	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE TRANSITION - PLANS AND SECTIONS	1-00195-DE-06200-0038-0001	WULS-1-00195-DE-06200-0038-0001
54	BASIS FOR DESIGN GENERAL	1-00195-DE-06200-0039-0001	WULS-1-00195-DE-06200-0039-0001

Figure Number	Figure Title	Figure Reference Number	Water Stewardship File number
	ARRANGEMENT SOUTH TRANSITION - SECTIONS		
55	BASIS FOR DESIGN GENERAL ARRANGEMENT SPILLWAY TRANSITION STRUCTURES PLANS & SECTIONS	1-00195-DE-06200-0040-0001	WULS-1-00195-DE-06200-0040-0001
56	BASIS FOR DESIGN GENERAL ARRANGEMENT SPILLWAY WALLS 'A', 'B', 'C', & 'D' PLANS, ELEVATIONS & SECTIONS	1-00195-DE-06200-0041-0001	WULS-1-00195-DE-06200-0041-0001
57	BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE WALL 'E' PLAN, ELEVATION, & SECTION	1-00195-DE-06200-0042-0001	WULS-1-00195-DE-06200-0042-0001
58	CONSTRUCTION POWER STATION 138- 12KV STATION SITE LAYOUT	1-02820-DD-10100-001_0001	WULS-1-02820-DD-10100-0001_0001
59	SWITCHING STATION CONCEPT LAYOUT FOR 138kV STATION	1-02811-DD-10100-0001_0001	WULS-1-02811-DD-10100-0001_0001
60	RADISSON STATION OVERALL STATION LAYOUT	1-42100-E-42001_0001	WULS-1-42100-E-42001_0001
61	KETTLE GENERATING STATION PRINCIPAL STRUCTURES GENERAL ARRANGEMENT PLAN AND TRANSVERSE SECTIONS	1-00113-DE-22000-0001_01	WULS-1-00113-DE-22000-0001_01
62	KELSEY GENERATING STATION GENERAL ARRANGEMENT OF DEVELOPMENT	1-00111-DD-10100-0004-0001	WULS-1-00111-DD-10100-0004-0001
63	PROJECT LAYOUT CONTROL PLAN	1-00195-DE-11520-0011-0001	WULS-1-00195-DE-11520-0011-0001
64	NORTH ACCESS ROAD – SITE ACCESS ROAD (B) KEY PLAN	1-00195-DE-16100-0001 0001	WULS-1-00195-DE-16100-0001 0001
65	SOUTH ACCESS ROAD – GENERAL ARRANGEMENT	1-00195-DE-16100-0006 0001	WULS-1-00195-DE-16100-0006 0001





KEY PLAN
NTS

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2013-03-15

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

HATCH
HA DWG. NO.
H341433-1000-00-014-0003
AREA COORD
P. PANTEL
DATE
DISCIP. ENGR.
R. HALIM
DATE
PROJ. ENGR.
A. TRUDEL
DATE
PROJ. MGR.
W. GENDZELEVICH
DATE 2013-03-11

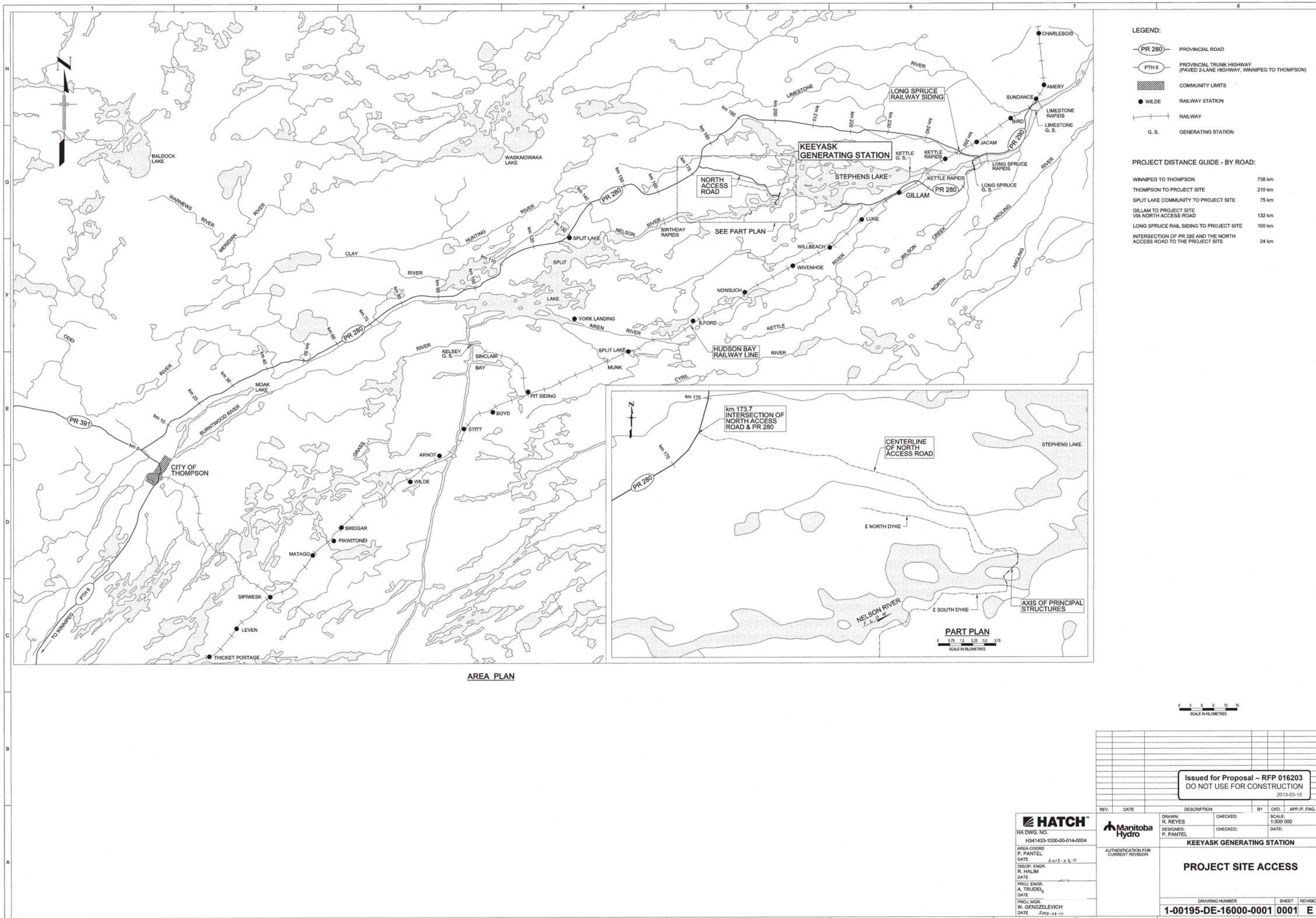
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. ALVERO
CHECKED:
SCALE: NTS
DESIGNED: P. PANTEL
CHECKED:
DATE:

KEEYASK GENERATING STATION

VICINITY PLAN

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-10000-0086	0001	E



LEGEND:
PR 280 PROVINCIAL ROAD
PTH 6 PROVINCIAL TRUNK HIGHWAY (PAVED 2-LANE HIGHWAY, WINNIPEG TO THOMPSON)
COMMUNITY LIMITS
WILDE RAILWAY STATION
RAILWAY
G. S. GENERATING STATION
PROJECT DISTANCE GUIDE - BY ROAD:
WINNIPEG TO THOMPSON 738 km
THOMPSON TO PROJECT SITE 210 km
SPLIT LAKE COMMUNITY TO PROJECT SITE 75 km
GILLAM TO PROJECT SITE VIA NORTH ACCESS ROAD 132 km
LONG SPRUCE RAIL SIDING TO PROJECT SITE 100 km
INTERSECTION OF PR 280 AND THE NORTH ACCESS ROAD TO THE PROJECT SITE 24 km
KEEYASK GENERATING STATION
NORTH ACCESS ROAD
SEE PART PLAN
STEPHENS LAKE
GILLAM
LONG SPRUCE RAILWAY SIDING
HUDSON BAY RAILWAY LINE
CITY OF THOMPSON
SPLIT LAKE
YORK LANDING
KELSEY G. S.
NELSON RIVER
BIRTHDAY RAPIDS
CHARLEBOIS
AMERY
SUNDANCE
LIMESTONE RAPIDS
LIMESTONE G. S.
BIRD
JACAM
KETTLE G. S.
KETTLE RAPIDS
LONG SPRUCE RAPIDS
LONG SPRUCE G. S.
LUKE
WILLBEACH
WIVENHOE
NONSUCH
ILFORD
SPLIT LAKE
MUNK
PIT SIDING
BOYD
STITT
ARNOT
WILDE
BRIDGAR
PIKWITONEI
MATAGO
SIPIWESK
LEVEN
THICKET PORTAGE
BALDOCK LAKE
WASKAIOWAKA LAKE
MOAK LAKE
SINCLAIR BAY
PR 280
PR 290
PR 391
PTH 6
TO WINNIPEG
AREA PLAN
km 173.7 INTERSECTION OF NORTH ACCESS ROAD & PR 280
CENTERLINE OF NORTH ACCESS ROAD
STEPHENS LAKE
℄ NORTH DYKE
℄ SOUTH DYKE
AXIS OF PRINCIPAL STRUCTURES
NELSON RIVER FLOW
PART PLAN
SCALE IN KILOMETRES
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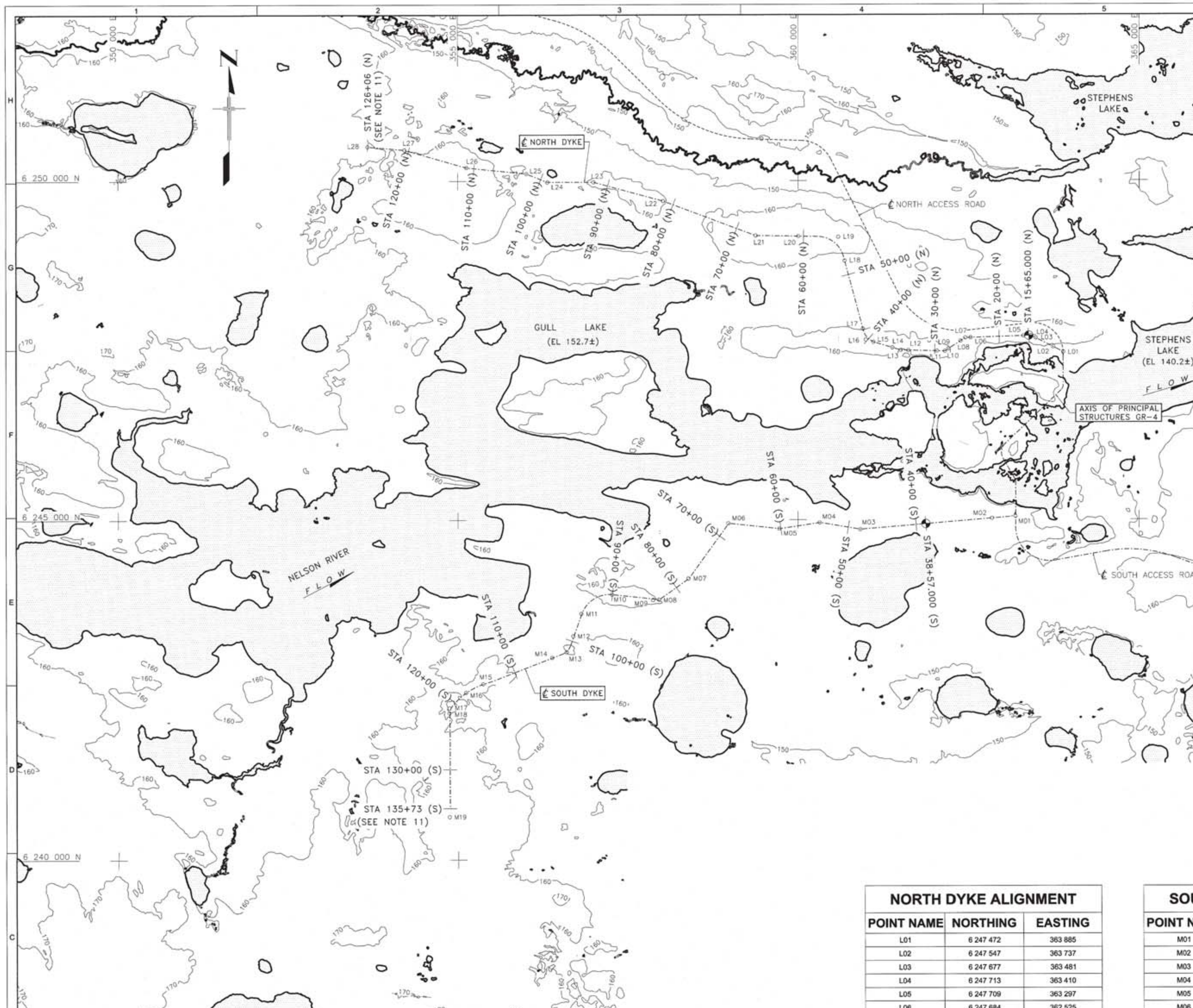
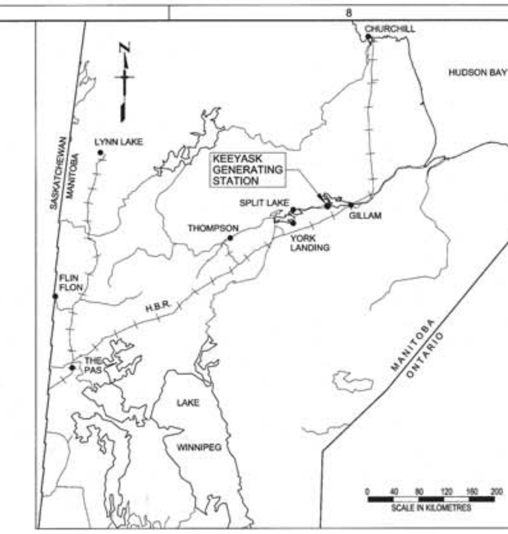
2013-03-15
HATCH
HA DWG. NO. H341433-1000-00-014-0004
AREA COORD P. PANTEL
DISCIP. ENGR. R. HALIM
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION
DRAWN: R. REYES
DESIGNED: P. PANTEL
SCALE: 1:300 000
KEEYASK GENERATING STATION
PROJECT SITE ACCESS
DRAWING NUMBER 1-00195-DE-16000-0001
SHEET 0001
REVISION E



PLAN

POINT NAME	NORTHING	EASTING
NORTH DYKE ALIGNMENT		
L01	6 247 472	363 885
L02	6 247 547	363 737
L03	6 247 677	363 481
L04	6 247 713	363 410
L05	6 247 709	363 297
L06	6 247 684	362 525
L07	6 247 682	362 445
L08	6 247 635	362 376
L09	6 247 520	362 205
L10	6 247 486	362 155
L11	6 247 489	362 034
L12	6 247 498	361 617
L13	6 247 501	361 505
L14	6 247 538	361 383
L15	6 247 621	361 105
L16	6 247 655	360 993
L17	6 247 816	360 950
L18	6 248 819	360 681
L19	6 249 170	360 587
L20	6 249 180	360 000
L21	6 249 190	359 376
L22	6 249 703	358 015
L23	6 249 982	356 995
L24	6 249 982	356 315
L25	6 250 107	356 005
L26	6 250 198	355 126
L27	6 250 459	354 215
L28	6 250 508	353 671

POINT NAME	NORTHING	EASTING
SOUTH DYKE ALIGNMENT		
M01	6 245 048	363 182
M02	6 245 019	362 838
M03	6 244 857	360 913
M04	6 244 957	360 315
M05	6 244 868	359 725
M06	6 244 948	358 975
M07	6 244 137	358 387
M08	6 243 828	357 955
M09	6 243 823	357 867
M10	6 243 903	357 263
M11	6 243 622	356 812
M12	6 243 292	356 694
M13	6 243 057	356 596
M14	6 242 973	356 379
M15	6 242 588	355 366
M16	6 242 461	355 114
M17	6 242 232	354 869
M18	6 242 158	354 869
M19	6 240 634	354 869



LEGEND:

- SHORELINE (SEE NOTE 6)
- 160 GROUND SURFACE CONTOUR (SEE NOTE 7)
- STA 50+00 (N) STATIONING ALONG AXIS AND CENTERLINE OF NORTH BANK EARTH STRUCTURES (SEE NOTE 9)
- STA 50+00 (S) STATIONING ALONG AXIS AND CENTERLINE OF SOUTH BANK EARTH STRUCTURES (SEE NOTE 9)
- REFERENCE POINT (SEE NOTE 10)
- COORDINATE GRID MARKER

NOTES:

1. TOPOGRAPHY IS BASED ON MAPPING RECEIVED FROM MANITOBA HYDRO MARCH 2004.
2. MAPPING WAS PRODUCED USING PHOTOGRAMMETRIC METHODS BASED ON 1:20 000 SCALE PHOTOGRAPHY DATED OCTOBER 1986.
3. THE COORDINATE GRID IS BASED ON UNIVERSAL TRANSVERSE MERCATOR SYSTEM, ZONE 15, NORTH AMERICAN DATUM 1983.
4. COORDINATES, STATIONING AND ELEVATIONS ARE IN METRES.
5. ELEVATIONS ARE BASED ON CGVD 1928.
6. WATER SURFACE ELEVATION AND LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
7. CONTOUR INTERVAL IS 10 METRES.
8. DYKE CENTERLINES SHOWN ARE FOR THE AXIS GR-4 ALTERNATIVE ARRANGEMENT, WITH NORMAL FULL SUPPLY LEVEL AT EL 159.0.
9. STATIONING IS BASED ON DISTANCE ALONG THE NORTH AND SOUTH BANK EARTH STRUCTURES' AXES AND CENTERLINES FOR AXIS GR-3 ALTERNATIVE ARRANGEMENT WITH FULL NORMAL SUPPLY LEVEL AT EL 159.0. FOR THE NORTH BANK STATION 0+00 IS LOCATED AT COORDINATES 6 246 876.230 N AND 364 450.762 E. FOR THE SOUTH BANK STATION 0+00 IS LOCATED AT COORDINATES 6 246 476.050 N AND 364 543.280 E.
10. THE REFERENCE POINTS ARE LOCATED AT THE STATIONS WHERE THE NORTH AND SOUTH DYKE CENTERLINES FOR AXIS GR-4 INTERSECT WITH THE NORTH AND SOUTH DYKE CENTERLINES FOR AXIS GR-3 ALTERNATIVE ARRANGEMENT.
11. THE LAST STATION SHOWN FOR THE NORTH AND SOUTH DYKES IS BASED ON THE POINT WHERE THE FREEBOARD DYKE CREST DESIGN ELEVATION INTERSECTS WITH THE GROUND SURFACE INTERPRETED FROM TOPOGRAPHIC MAPPING AND THEREFORE IS APPROXIMATE.

0 250 500 750 1000 1250
SCALE IN METRES

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2013-04-22

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO. H341433-1000-00-042-0003

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

AREA COORD P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE 2013-04-22

DRAWN: R.E. GASPAR | CHECKED: | SCALE: 1:25000
DESIGNED: P. PANTEL | CHECKED: | DATE:

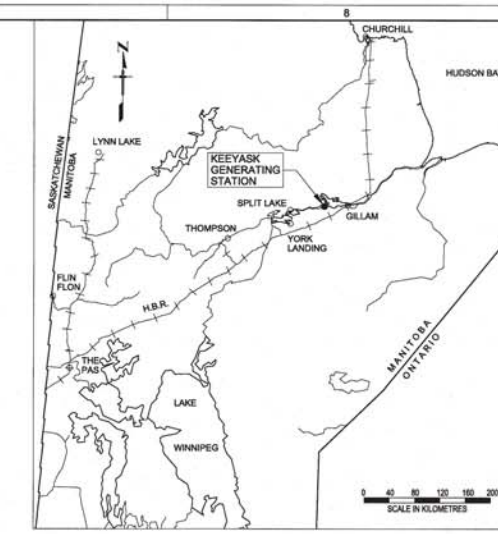
KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT PROJECT AREA

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0003	0001	0C

ISO A0 (46.8 x 33.1)

PLAN



LEGEND:

——	SHORELINE (SEE NOTE 6)
—144—	GROUND SURFACE CONTOUR (SEE NOTE 7)
——	STREAM
	SWAMP
+	COORDINATE GRID MARKER (LOCATED AT 2000 METRE INTERVALS)
	TEMPORARY CONSTRUCTION ACCESS ROAD
	COFFERDAM REMOVED
	TRANSMISSION LINE
	REFERENCE POINT (SEE NOTE 10)

NOTES:

1. TOPOGRAPHY IS BASED ON MAPPING RECEIVED FROM MANITOBA HYDRO MARCH, 2004.
2. MAPPING WAS PRODUCED USING PHOTOGRAMMETRIC METHODS BASED ON 1:20 000 SCALE PHOTOGRAPHY DATED OCTOBER 1986.
3. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
4. COORDINATES AND ELEVATIONS ARE IN METRES.
5. ELEVATIONS ARE BASED ON CGVD 1928.
6. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
7. CONTOUR INTERVAL IS 2 METRES.
8. LOCATION AND PRESENTATION OF CONCRETE AND EARTHFILL STRUCTURES IS PRELIMINARY.
9. STATIONING IS BASED ON DISTANCE ALONG THE NORTH AND SOUTH BANK EARTH STRUCTURES' AXES AND CENTERLINES FOR AXIS GR-3 ALTERNATIVE ARRANGEMENT WITH FULL SUPPLY LEVEL AT EL 159.0 FOR THE NORTH BANK STATION 0+00 IS LOCATED AT COORDINATES 6 246 876.230 N AND 364 450.762 E. FOR THE SOUTH BANK STATION 0+00 IS LOCATED AT COORDINATES 6 246 476.050 N AND 364 543.280 E.
10. THE REFERENCE POINTS ARE LOCATED AT THE STATIONS WHERE THE NORTH AND SOUTH DYKE CENTERLINES FOR AXIS GR-4 INTERSECT WITH THE NORTH AND SOUTH DYKE CENTERLINES FOR AXIS GR-3 ALTERNATIVE ARRANGEMENT. FOR THE NORTH DYKE IT IS STA 15+65.000 (N) AND FOR THE SOUTH DYKE IT IS STA 38+57.000 (S).
11. EXISTING AND PROPOSED LAYOUT CONTROL POINTS FOR LOCAL AND UTM COORDINATE SYSTEMS ARE PROVIDED ON DRAWING 1-00195-DE-11000-0001 "PROJECT LAYOUT CONTROL PLANS".
12. DETAILS FOR KEEYASK GS CONSTRUCTION INFRASTRUCTURE ARE PROVIDED ON DRAWINGS DEVELOPED FOR THE KEEYASK INFRASTRUCTURE PROJECT (KIP) AND ARE FILED UNDER MANITOBA HYDRO S.C.I. CODE 16100 DRAWINGS.

0 100 200 300 400 500
SCALE IN METRES

CLIENT REVIEW

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 04 17	ISSUED FOR CLIENT REVIEW	RAR	PRP	IRD

HATCH

HA DWG. NO. H341433-1000-00-042-0004

AREA COORD P. PANTEL
DATE

DISCIP. ENGR. R. HALIM
DATE 2012-04-02

PROJ. ENG. A. TRUD
DATE 2012-04-02

PROJ. MGR. W. GENDZELEVICH
DATE

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

DRAWN: R.E. GASPAR | CHECKED: | SCALE: 1:10000

DESIGNED: P. PANTEL | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT PROJECT GENERAL ARRANGEMENT

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0004	0001	0B

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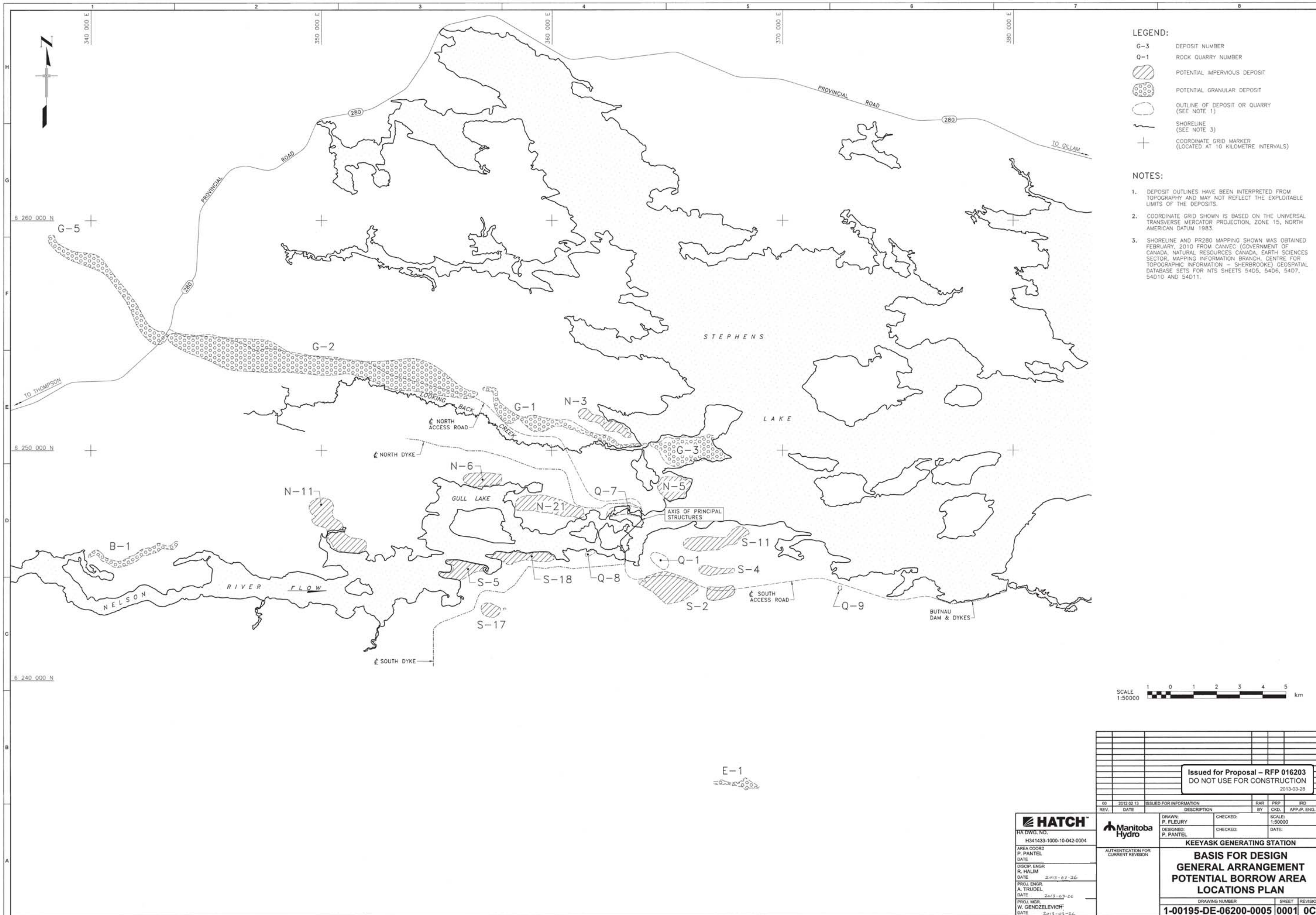

LEGEND:
G-3 DEPOSIT NUMBER
Q-1 ROCK QUARRY NUMBER
POTENTIAL IMPERVIOUS DEPOSIT
POTENTIAL GRANULAR DEPOSIT
OUTLINE OF DEPOSIT OR QUARRY (SEE NOTE 1)
SHORELINE (SEE NOTE 3)
COORDINATE GRID MARKER (LOCATED AT 10 KILOMETRE INTERVALS)
NOTES:
1. DEPOSIT OUTLINES HAVE BEEN INTERPRETED FROM TOPOGRAPHY AND MAY NOT REFLECT THE EXPLOITABLE LIMITS OF THE DEPOSITS.
2. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
3. SHORELINE AND PR280 MAPPING SHOWN WAS OBTAINED FEBRUARY, 2010 FROM CANVEC (GOVERNMENT OF CANADA, NATURAL RESOURCES CANADA, EARTH SCIENCES SECTOR, MAPPING INFORMATION BRANCH, CENTRE FOR TOPOGRAPHIC INFORMATION – SHERBROOKE) GEOSPATIAL DATABASE SETS FOR NTS SHEETS 54D5, 54D6, 54D7, 54D10 AND 54D11.
340 000 E
350 000 E
360 000 E
370 000 E
380 000 E
6 260 000 N
6 250 000 N
6 240 000 N
PROVINCIAL ROAD
280
TO GILLAM
TO THOMPSON
STEPHENS LAKE
NELSON RIVER FLOW
GULL LAKE
LOOKING BACK CREEK
G-5
G-2
G-1
G-3
N-3
N-6
N-5
N-11
N-21
Q-7
Q-1
Q-8
Q-9
S-11
S-4
S-2
S-5
S-18
S-17
B-1
E-1
℄ NORTH ACCESS ROAD
℄ NORTH DYKE
℄ SOUTH DYKE
℄ SOUTH ACCESS ROAD
AXIS OF PRINCIPAL STRUCTURES
BUTNAU DAM & DYKES
SCALE 1:50000
1 0 1 2 3 4 5 km
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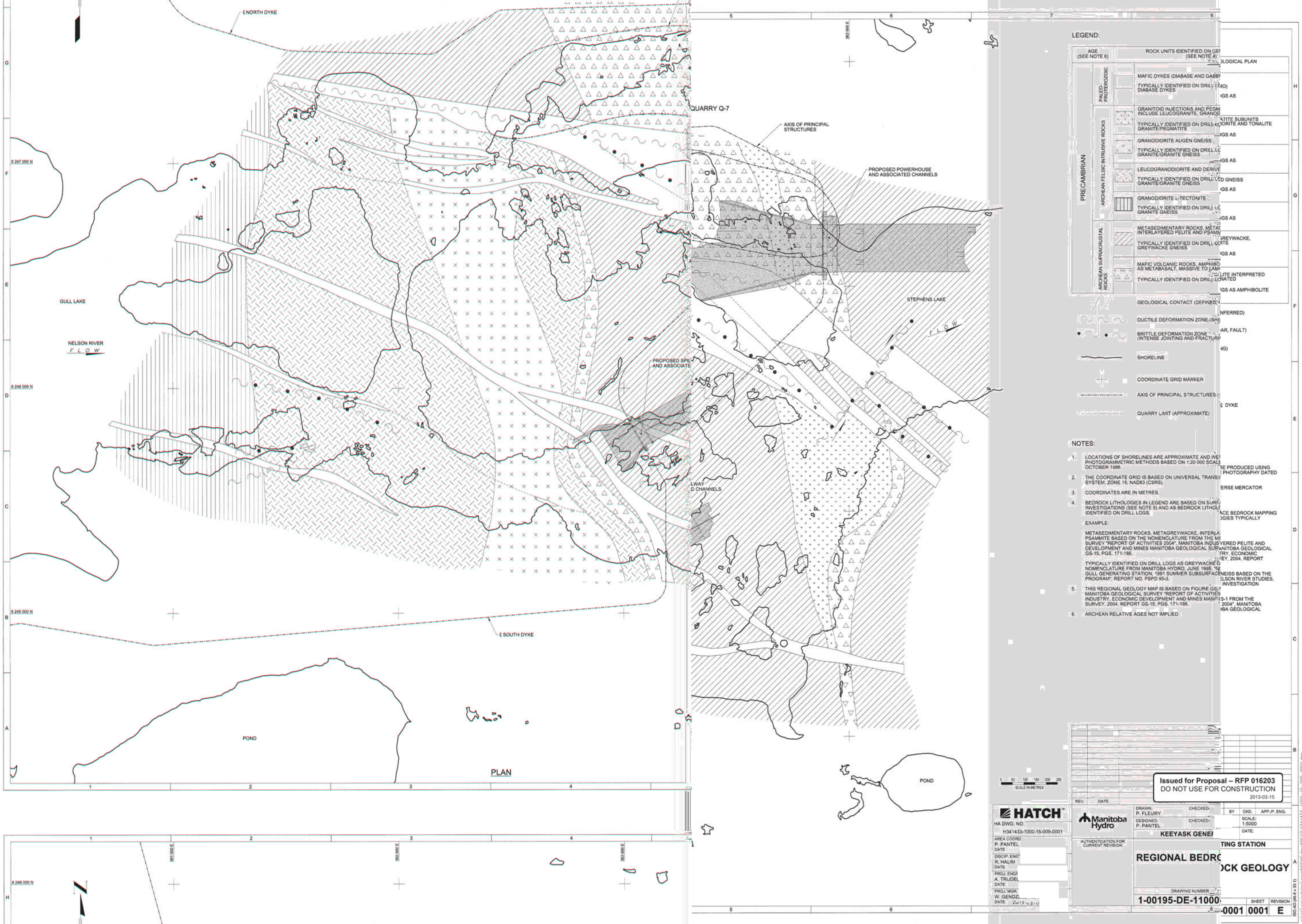
REV. DATE DESCRIPTION BY CKD. APP./P. ENG.
HATCH
HA DWG. NO. H341433-1000-10-042-0004
AREA COORD P. PANTEL DATE
DISCIP. ENGR R. HALIM DATE 2013-03-26
PROJ. ENGR. A. TRUDEL DATE 2013-03-26
PROJ. MGR. W. GENDZELEVICH DATE 2013-03-26
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION
DRAWN: P. FLEURY
CHECKED:
SCALE: 1:50000
DESIGNED: P. PANTEL
CHECKED:
DATE:
KEEYASK GENERATING STATION
BASIS FOR DESIGN
GENERAL ARRANGEMENT
POTENTIAL BORROW AREA
LOCATIONS PLAN
DRAWING NUMBER 1-00195-DE-06200-0005
SHEET 0001
REVISION 0C


℄ NORTH DYKE
QUARRY Q-7
AXIS OF PRINCIPAL STRUCTURES
PROPOSED POWERHOUSE AND ASSOCIATED CHANNELS
PROPOSED SPI
AND ASSOCIATE
LWAY
D CHANNELS
GULL LAKE
NELSON RIVER
FLOW
STEPHENS LAKE
℄ SOUTH DYKE
POND
PLAN
6 247 000 N
6 246 000 N
6 245 000 N
6 248 000 N
363 000 E
361 000 E
362 000 E
LEGEND:
AGE (SEE NOTE 6)
ROCK UNITS IDENTIFIED ON GE (SEE NOTE 4)
OLOGICAL PLAN
PRECAMBRIAN
PALEO-PROTEROZOIC
ARCHEAN FELSIC INTRUSIVE ROCKS
ARCHEAN SUPRACRUSTAL ROCKS
MAFIC DYKES (DIABASE AND GABBRO)
TYPICALLY IDENTIFIED ON DRILL LOGS AS DIABASE DYKES
GRANITOID INJECTIONS AND PEGMATITE SUBUNITS INCLUDE LEUCOGRANITE, GRANODIORITE AND TONALITE
TYPICALLY IDENTIFIED ON DRILL LOGS AS GRANITE/PEGMATITE
GRANODIORITE AUGEN GNEISS
TYPICALLY IDENTIFIED ON DRILL LOGS AS GRANITE/GRANITE GNEISS
LEUCOGRANODIORITE AND DERIVED GNEISS
TYPICALLY IDENTIFIED ON DRILL LOGS AS GRANITE/GRANITE GNEISS
GRANODIORITE L-TECTONITE
TYPICALLY IDENTIFIED ON DRILL LOGS AS GRANITE GNEISS
METASEDIMENTARY ROCKS, METAGREYWACKE, INTERLAYERED PELITE AND PSAMMITE
TYPICALLY IDENTIFIED ON DRILL LOGS AS GREYWACKE GNEISS
MAFIC VOLCANIC ROCKS, AMPHIBOLITE INTERPRETED AS METABASALT, MASSIVE TO LAMINATED
TYPICALLY IDENTIFIED ON DRILL LOGS AS AMPHIBOLITE
GEOLOGICAL CONTACT (DEFINED, INFERRED)
DUCTILE DEFORMATION ZONE (SHEAR, FAULT)
BRITTLE DEFORMATION ZONE (INTENSE JOINTING AND FRACTURING)
SHORELINE
COORDINATE GRID MARKER
AXIS OF PRINCIPAL STRUCTURES / ℄ DYKE
QUARRY LIMIT (APPROXIMATE)
NOTES:
1. LOCATIONS OF SHORELINES ARE APPROXIMATE AND WERE PRODUCED USING PHOTOGRAMMETRIC METHODS BASED ON 1:20 000 SCALE PHOTOGRAPHY DATED OCTOBER 1986.
2. THE COORDINATE GRID IS BASED ON UNIVERSAL TRANSVERSE MERCATOR SYSTEM, ZONE 15, NAD83 (CSRS).
3. COORDINATES ARE IN METRES.
4. BEDROCK LITHOLOGIES IN LEGEND ARE BASED ON SURFACE BEDROCK MAPPING INVESTIGATIONS (SEE NOTE 5) AND AS BEDROCK LITHOLOGIES TYPICALLY IDENTIFIED ON DRILL LOGS.
EXAMPLE:
METASEDIMENTARY ROCKS, METAGREYWACKE, INTERLAYERED PELITE AND PSAMMITE BASED ON THE NOMENCLATURE FROM THE MANITOBA GEOLOGICAL SURVEY "REPORT OF ACTIVITIES 2004", MANITOBA INDUSTRY, ECONOMIC DEVELOPMENT AND MINES MANITOBA GEOLOGICAL SURVEY, 2004, REPORT GS-15, PGS. 171-186.
TYPICALLY IDENTIFIED ON DRILL LOGS AS GREYWACKE GNEISS BASED ON THE NOMENCLATURE FROM MANITOBA HYDRO, JUNE 1995, "NELSON RIVER STUDIES, GULL GENERATING STATION, 1991 SUMMER SUBSURFACE INVESTIGATION PROGRAM", REPORT NO. PSPD 95-3.
5. THIS REGIONAL GEOLOGY MAP IS BASED ON FIGURE GS-15-1 FROM THE MANITOBA GEOLOGICAL SURVEY "REPORT OF ACTIVITIES 2004", MANITOBA INDUSTRY, ECONOMIC DEVELOPMENT AND MINES MANITOBA GEOLOGICAL SURVEY, 2004, REPORT GS-15, PGS. 171-186.
6. ARCHEAN RELATIVE AGES NOT IMPLIED.
0 50 100 150 200 250
SCALE IN METRES
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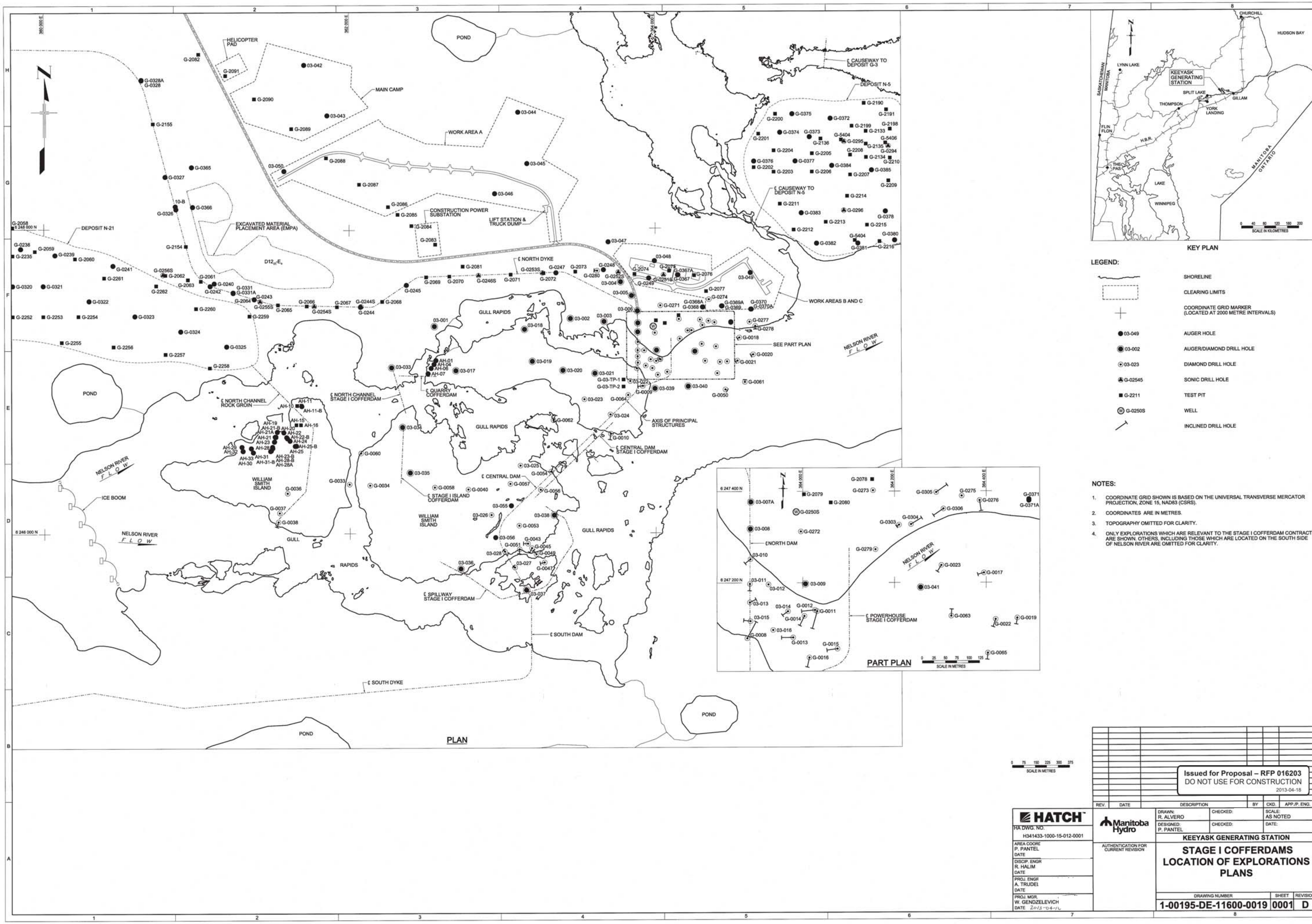
REV.
DATE
BY
CKD.
APP./P. ENG.
HATCH
HA DWG. NO.
H341433-1000-15-009-0001
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION
DRAWN: P. FLEURY
CHECKED:
DESIGNED: P. PANTEL
CHECKED:
SCALE: 1:5000
DATE:
AREA COORD P. PANTEL DATE
DISCIP. ENG R. HALIM DATE
PROJ. ENGR A. TRUDEL DATE
PROJ. MGR. W. GENDZ DATE
KEEYASK GENERATING STATION
REGIONAL BEDROCK GEOLOGY
DRAWING NUMBER
1-00195-DE-11000-0001
SHEET 0001
REVISION E
ISO A0 (46.8 x 33.1)


PLAN
PART PLAN
KEY PLAN
LEGEND:
SHORELINE
CLEARING LIMITS
COORDINATE GRID MARKER (LOCATED AT 2000 METRE INTERVALS)
AUGER HOLE
AUGER/DIAMOND DRILL HOLE
DIAMOND DRILL HOLE
SONIC DRILL HOLE
TEST PIT
WELL
INCLINED DRILL HOLE
NOTES:
1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NAD83 (CSRS).
2. COORDINATES ARE IN METRES.
3. TOPOGRAPHY OMITTED FOR CLARITY.
4. ONLY EXPLORATIONS WHICH ARE RELEVANT TO THE STAGE I COFFERDAM CONTRACT ARE SHOWN. OTHERS, INCLUDING THOSE WHICH ARE LOCATED ON THE SOUTH SIDE OF NELSON RIVER ARE OMITTED FOR CLARITY.
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2013-04-18
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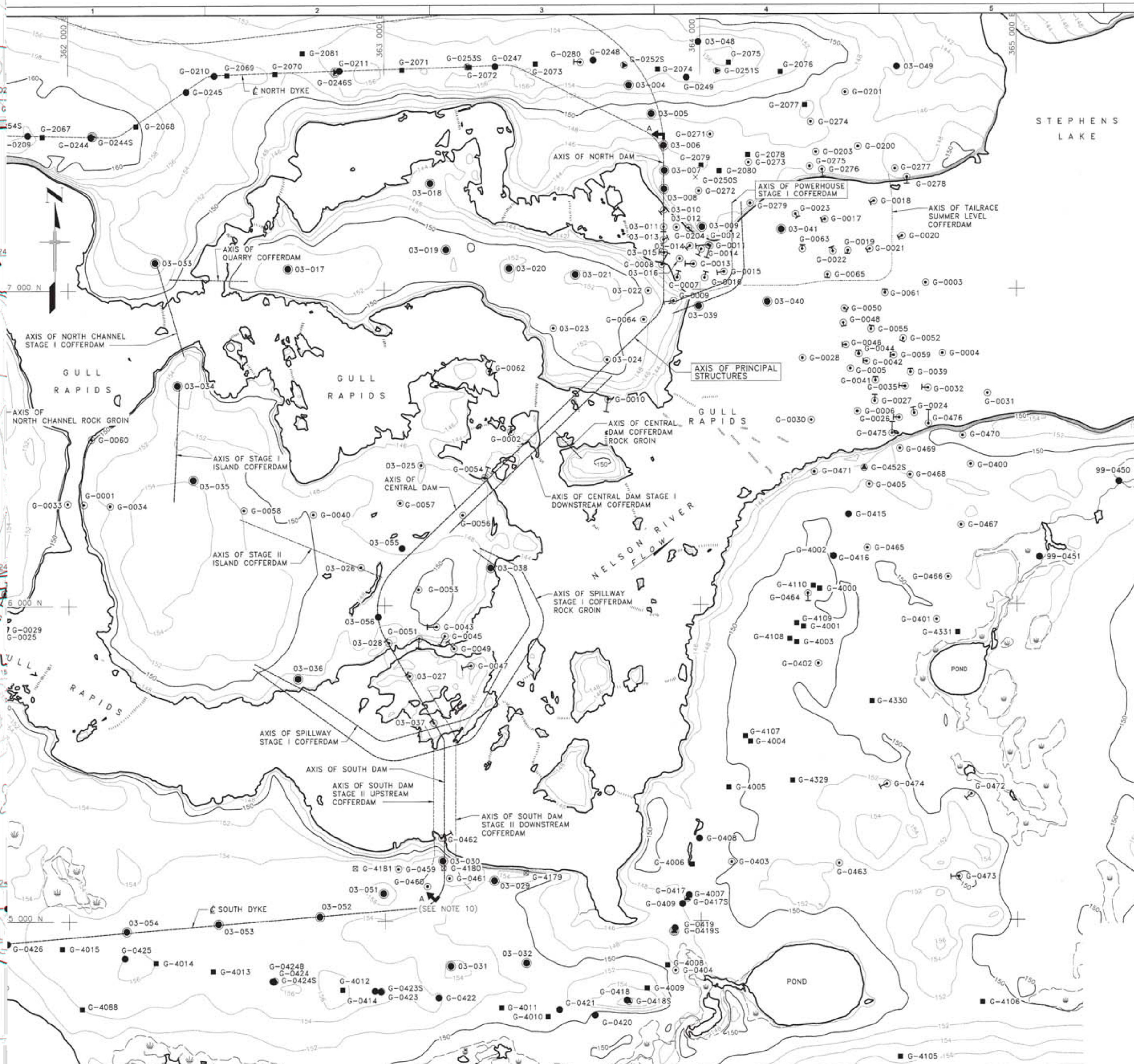
HA DWG. NO. H341433-1000-15-012-0001
Manitoba Hydro
DRAWN: R. ALVERO
DESIGNED: P. PANTEL
SCALE: AS NOTED
KEEYASK GENERATING STATION
STAGE I COFFERDAMS
LOCATION OF EXPLORATIONS
PLANS
1-00195-DE-11600-0019
SHEET 0001
REVISION D
HELICOPTER PAD
MAIN CAMP
WORK AREA A
CONSTRUCTION POWER SUBSTATION
LIFT STATION & TRUCK DUMP
EXCAVATED MATERIAL PLACEMENT AREA (EMPA)
DEPOSIT N-21
DEPOSIT N-5
CAUSEWAY TO DEPOSIT G-3
CAUSEWAY TO DEPOSIT N-5
WORK AREAS B AND C
NORTH DYKE
GULL RAPIDS
NELSON RIVER FLOW
SEE PART PLAN
NORTH CHANNEL STAGE I COFFERDAM
NORTH CHANNEL ROCK GROIN
QUARRY COFFERDAM
AXIS OF PRINCIPAL STRUCTURES
CENTRAL DAM STAGE I COFFERDAM
CENTRAL DAM
STAGE I ISLAND COFFERDAM
WILLIAM SMITH ISLAND
ICE BOOM
SPILLWAY STAGE I COFFERDAM
SOUTH DAM
SOUTH DYKE
POND
NORTH DAM
POWERHOUSE STAGE I COFFERDAM
CHURCHILL
HUDSON BAY
LYNN LAKE
KEEYASK GENERATING STATION
SPLIT LAKE
GILLAM
THOMPSON
YORK LANDING
FLIN FLON
THE PAS
WINNIPEG
MANITOBA
ONTARIO
SASKATCHEWAN



KEY PLAN

LEGEND:

- SHORELINE (SEE NOTE 6)
- 144 GROUND SURFACE CONTOUR (SEE NOTE 7)
- STREAM
- SWAMP
- RAPIDS
- DIAMOND DRILL HOLE (VERTICAL, INCLINED)
- SONIC/DIAMOND DRILL HOLE
- SONIC DRILL HOLE
- AUGER HOLE
- AUGER/DIAMOND DRILL HOLE
- TEST PIT
- EXPLORATORY HOLE
- 03-004 2003 SUMMER EXPLORATION (SEE NOTE 8)
- G-0031 EXPLORATION HOLE, TEST PIT NUMBER
- COORDINATE GRID MARKER (LOCATED AT 1000 METRE INTERVALS)

NOTES:

1. TOPOGRAPHY IS BASED ON MAPPING RECEIVED FROM MANITOBA HYDRO MAY 2000.
2. MAPPING WAS PRODUCED USING PHOTOGRAMMETRIC METHODS BASED ON 1:20 000 SCALE PHOTOGRAPHY DATED OCTOBER 1986.
3. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
4. COORDINATES AND ELEVATIONS ARE IN METRES.
5. ELEVATIONS ARE BASED ON CGVD 1928.
6. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
7. CONTOUR INTERVAL IS 2 METRES.
8. SUMMER 2003 EXPLORATIONS ARE SHOWN AT THEIR PROPOSED LOCATIONS.
9. EXPLORATORY HOLES AND TEST PITS HAVE BEEN REPOSITIONED, USING A COMMON TOPOGRAPHIC FEATURE AS AN INSERTION POINT, ON TO THE NORTH AMERICAN DATUM 1983 COORDINATE GRID FROM THEIR ORIGINALLY PLOTTED LOCATION ON THE NORTH AMERICAN DATUM 1927 COORDINATE GRID. AS A RESULT, THE HOLES AND TEST PITS MAY HAVE SLIGHTLY DIFFERENT COORDINATES THAN THE FIELD SURVEYED COORDINATES.
10. GEOLOGICAL SECTION A–A SHOWN ON DRAWING NO. 1-00195-DE-06200-0008 SHEETS 0001 THROUGH 0005.

SCALE 1:5000 — 100 0 100 200 300 400 500 METRES

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Manitoba Hydro

DRAWN: R.E. GASPAR	CHECKED:	SCALE: 1:5000
DESIGNED: P. PANTEL	CHECKED:	DATE:

AREA COORD. P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

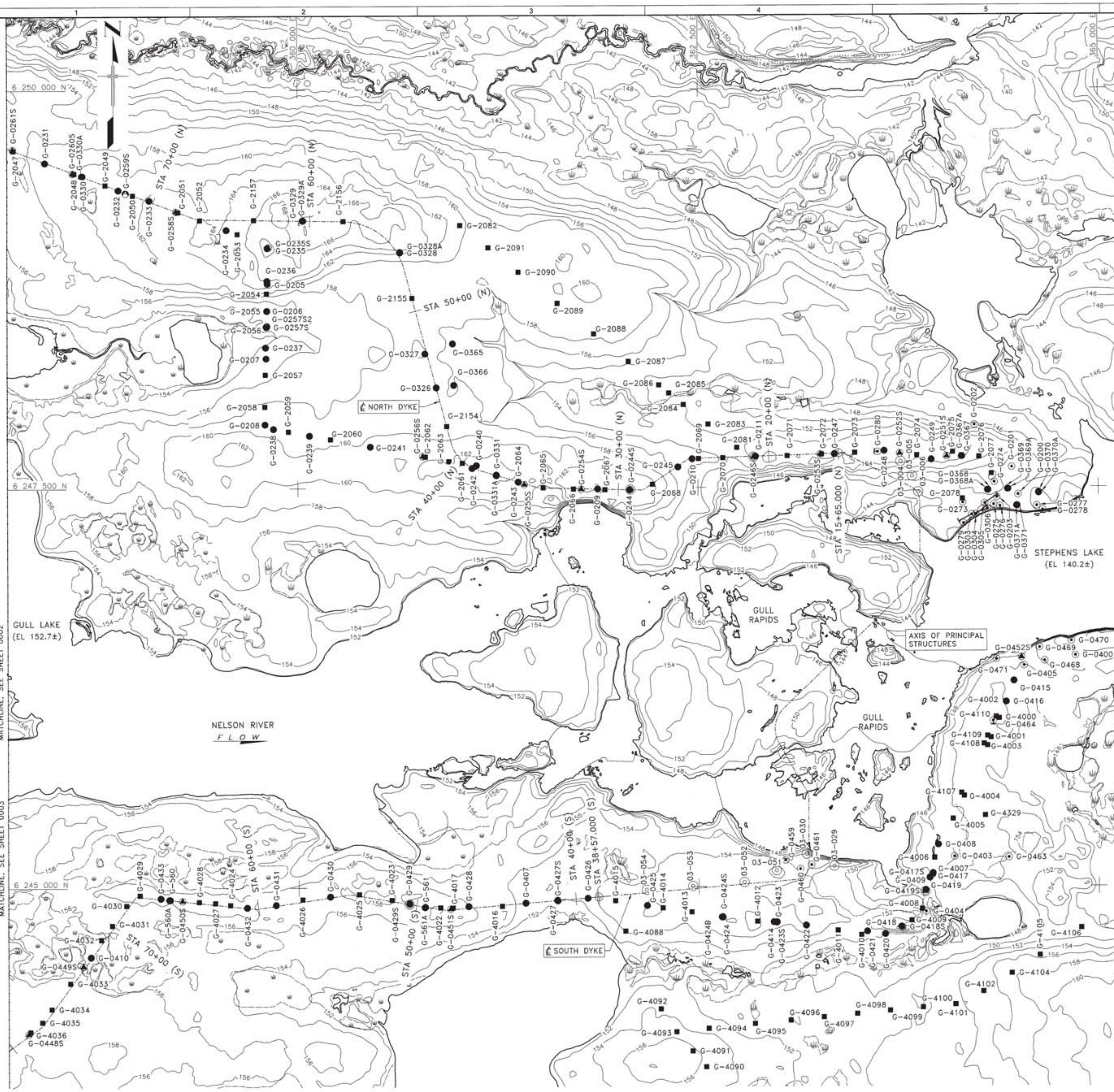
AUTHENTICATION FOR CURRENT REVISION

KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES EXPLORATIONS PLAN

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0007	0001	0C

ISO A0 (46.8 x 33.1)



PLAN

LEGEND:

148	GROUND SURFACE CONTOUR (SEE NOTE 7)
	SHORELINE (SEE NOTE 8)
	SWAMP
	TOP OF RIDGE
	STREAM
	DIAMOND DRILL HOLE (VERTICAL, INCLINED)
	AUGER/DIAMOND DRILL HOLE
	SONIC/DIAMOND DRILL HOLE
	SONIC DRILL HOLE
	AUGER HOLE
	TEST PIT
G-0211	EXPLORATION HOLE OR TEST PIT NUMBER
STA 50+00 (N)	STATIONING ALONG CENTERLINE OF NORTH BANK EARTH STRUCTURES (SEE NOTE 10)
STA 50+00 (S)	STATIONING ALONG CENTERLINE OF SOUTH BANK EARTH STRUCTURES (SEE NOTE 10)
	REFERENCE POINT (SEE NOTE 11)
	COORDINATE GRID MARKER (LOCATED AT 2500 METRE INTERVALS)

NOTES:

1. TOPOGRAPHY IS BASED ON MAPPING RECEIVED FROM MANITOBA HYDRO MARCH 2004.
2. MAPPING WAS PRODUCED USING PHOTOGRAMMETRIC METHODS BASED ON 1:20 000 SCALE PHOTOGRAPHY DATED OCTOBER 1986.
3. COORDINATE GRID SHOWN IS BASED ON UNIVERSAL TRANSVERSE MERCATOR SYSTEM, ZONE 15, NORTH AMERICAN DATUM 1983.
4. COORDINATES, STATIONING AND ELEVATIONS ARE IN METRES.
5. ELEVATIONS ARE BASED ON CGVD 1928.
6. EXPLORATORY HOLES AND TEST PITS HAVE BEEN REPOSITIONED, USING A COMMON TOPOGRAPHIC FEATURE AS AN INSERTION POINT, ON TO THE NORTH AMERICAN DATUM 1983 COORDINATE GRID FROM THEIR ORIGINALLY PLOTTED LOCATION ON THE NORTH AMERICAN DATUM 1927 COORDINATE GRID. AS A RESULT, THE HOLES AND TEST PITS MAY HAVE SLIGHTLY DIFFERENT COORDINATES THAN THE FIELD SURVEYED COORDINATES.
7. CONTOUR INTERVAL IS TWO METRES.
8. WATER SURFACE ELEVATION AND LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
9. EXPLORATIONS IN RIVER AND LAKE NOT SHOWN.
10. STATIONING IS BASED ON DISTANCE ALONG THE NORTH AND SOUTH BANK EARTH STRUCTURES' AXES AND CENTERLINES FOR AXIS GR-3 ALTERNATIVE ARRANGEMENT WITH FULL SUPPLY LEVEL AT EL 159.0. FOR THE NORTH BANK STATION 0+00 IS LOCATED AT COORDINATES 6 246 876.230 N AND 364 450.762 E. FOR THE SOUTH BANK STATION 0+00 IS LOCATED AT COORDINATES 6 246 476.050 N AND 364 543.280 E.
11. THE REFERENCE POINTS ARE LOCATED AT THE STATIONS WHERE THE NORTH AND SOUTH DYKE CENTERLINES FOR AXIS GR-4 INTERSECT WITH THE NORTH AND SOUTH DYKE CENTERLINES FOR AXIS GR-3 ALTERNATIVE ARRANGEMENT. FOR THE NORTH DYKE IT IS STA 15+65.000 (N) AND FOR THE SOUTH DYKE IT IS STA 38+57.000 (S).
12. THE LAST STATION SHOWN FOR THE NORTH AND SOUTH DYKES IS BASED ON THE POINT WHERE THE FREEBOARD DYKE CREST ELEVATION INTERSECTS WITH THE GROUND SURFACE INTERPRETED FROM TOPOGRAPHIC MAPPING AND THEREFORE IS APPROXIMATE.
13. TOPOGRAPHY HAS NOT BEEN ADJUSTED TO CONFORM TO DRILL HOLE OR TEST PIT INFORMATION.
14. FOR NORTH AND SOUTH DYKE GEOLOGICAL SECTIONS SEE DRAWING 1-00195-DE-06200-0059 AND DRAWING 1-00195-DE-06200-0060 RESPECTIVELY.

CONTINUED ON SHEET 0002

SCALE 1:10000 — 200 0 200 400 600 800 1000 METRES

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AREA COORD. P. PANTEL DATE
DISCIP. ENGR R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. C. ALVERO | CHECKED: | SCALE: 1:10000
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
DYKE INVESTIGATIONS
EXPLORATIONS PLANS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0009	0001	0C

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NOTE:

FOR LEGEND AND NOTES SEE SHEET 0001.

CONTINUED ON SHEET 0003

SCALE 1:10000 — 200 0 200 400 600 800 1000 METRES

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DISCIP. ENGR: R. HALIM
PROJ. ENGR.: A. TRUDEL
PROJ. MGR.: W. GENDZE

Manitoba Hydro
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DRAWN: R.C. ALVERO | CHECKED: | SCALE: 1:10000
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
DYKE INVESTIGATIONS
EXPLORATIONS PLANS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0009	0002	0C

PLAN

NOTE:

1. FOR LEGEND AND NOTES SEE SHEET 0001.

SCALE 1:10000 — 200 0 200 400 600 800 1000 METRES

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H341433-1300-15-042-0009

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AREA COORD: P. PANTEL
DATE

DISCIP. ENGR: R. HALIM
DATE

PROJ. ENGR.: A. TRUDEL
DATE

PROJ. MGR.: W. GENDZELEVICH
DATE

DRAWN: P.FLEURY
CHECKED:
SCALE: 1:10000

DESIGNED: P.PANTEL
CHECKED:
DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT DYKE INVESTIGATIONS EXPLORATIONS PLANS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0009	0003	0C

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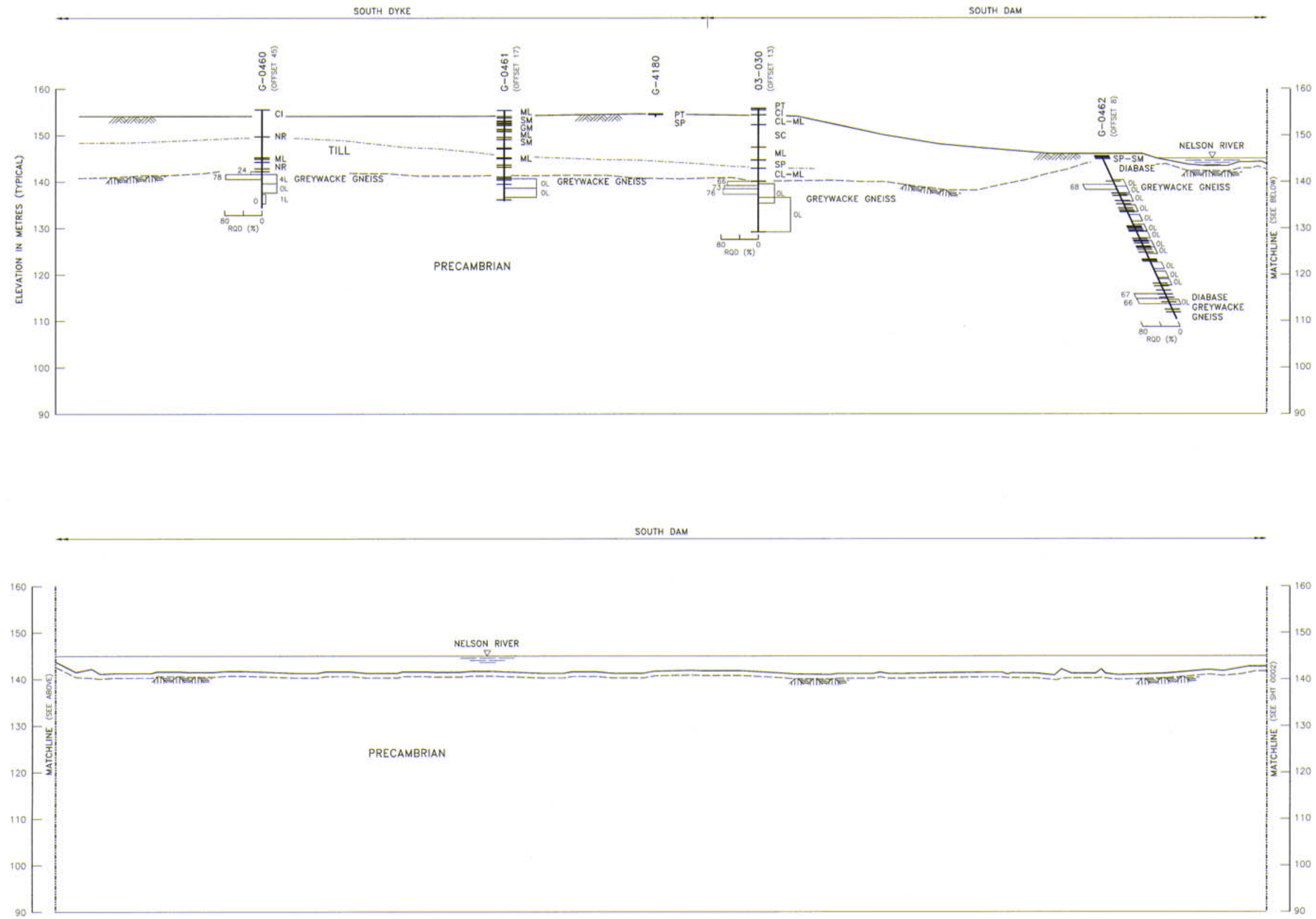


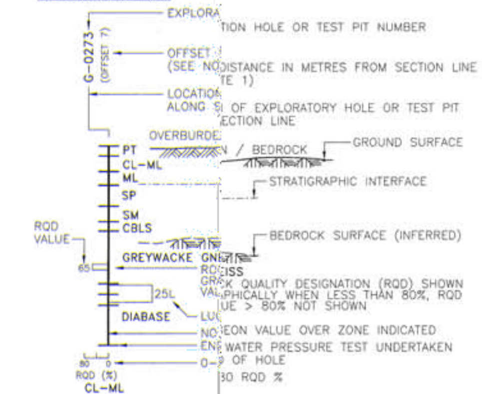
SECTION A–A (1-00195-DE-06200-0007)

NOTES:

1. OFFSET DISTANCE SHOWN IF GREATER THAN 5 METRES FROM SECTION LINE.
2. SEE DRAWING 1-00195-DE-06200-0007 FOR LOCATION OF EXPLORATIONS WITH RESPECT TO THE AXIS OF PRINCIPAL STRUCTURES.
3. WHENEVER POSSIBLE THE GROUND SURFACE PROFILES WERE ADJUSTED TO CONFORM TO THE INFORMATION FROM THE DRILL HOLES OR TEST PITS WHICH ARE WITHIN 5 METRES FROM THE SECTION LINES AND THEREFORE THEY MAY DIFFER FROM THAT SHOWN BY THE CONTOURS ON DRAWING 1-00195-DE-06200-0007.
4. ELEVATIONS ARE BASED ON CGVD 1928.

LEGEND:

EXPLORATION HOLE



CL-ML	UNIFIED SOIL CLASSIFICATION SYMBOL
CBLS	COBBLES
BLDR	BOULDER
GREYWACKE GNEISS DIABASE GRANITE AMPHILBOLITE	ROCK TYPE
NR	NO RECOVERY
▽	LAKE, RIVER OR POND WATER LEVEL

SOIL CLASSIFICATION SYMBOLS BASED UPON THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

PT	PEAT, MUSKEG, HIGHLY ORGANIC SOILS
OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
CI	INORGANIC CLAYS OF INTERMEDIATE PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS
OL	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS WITH SLIGHT PLASTICITY
SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
SP	POORLY GRADED SANDS, GRAVELLY SANDS; LITTLE OR NO FINES
SW	WELL GRADED SANDS, GRAVELLY SANDS; LITTLE OR NO FINES
GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES; LITTLE OR NO FINES
CL-ML, GP-GC, SP-SM, ETC.	TYPICAL BORDER LINE CLASSIFICATION REQUIRING THE USE OF DUAL SYMBOLS

FROZEN GROUND SYMBOLS

Frozen	SEASONAL FROST
Nf	POORLY BONDED OR FRIABLE ICE
Nbn	WELL BONDED, NO EXCESS ICE
Nbe	WELL BONDED, EXCESS ICE
Vx	INDIVIDUAL ICE CRYSTALS OR INCLUSIONS
Vc	ICE COATINGS ON PARTICLES
Vr	RANDOM OR IRREGULARLY ORIENTED ICE FORMATIONS
Vs	STRATIFIED OR DISTINCTLY ORIENTED ICE FORMATIONS
Ice +	ICE WITH SOIL INCLUSIONS (ICE + UNIFIED SOIL CLASSIFICATION)
Ice	ICE WITHOUT SOIL INCLUSIONS

CONTINUED ON SHT 0002

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2013-03-28

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00	2012-02-13	ISSUED FOR INFORMATION	RAR	PRP	IRD

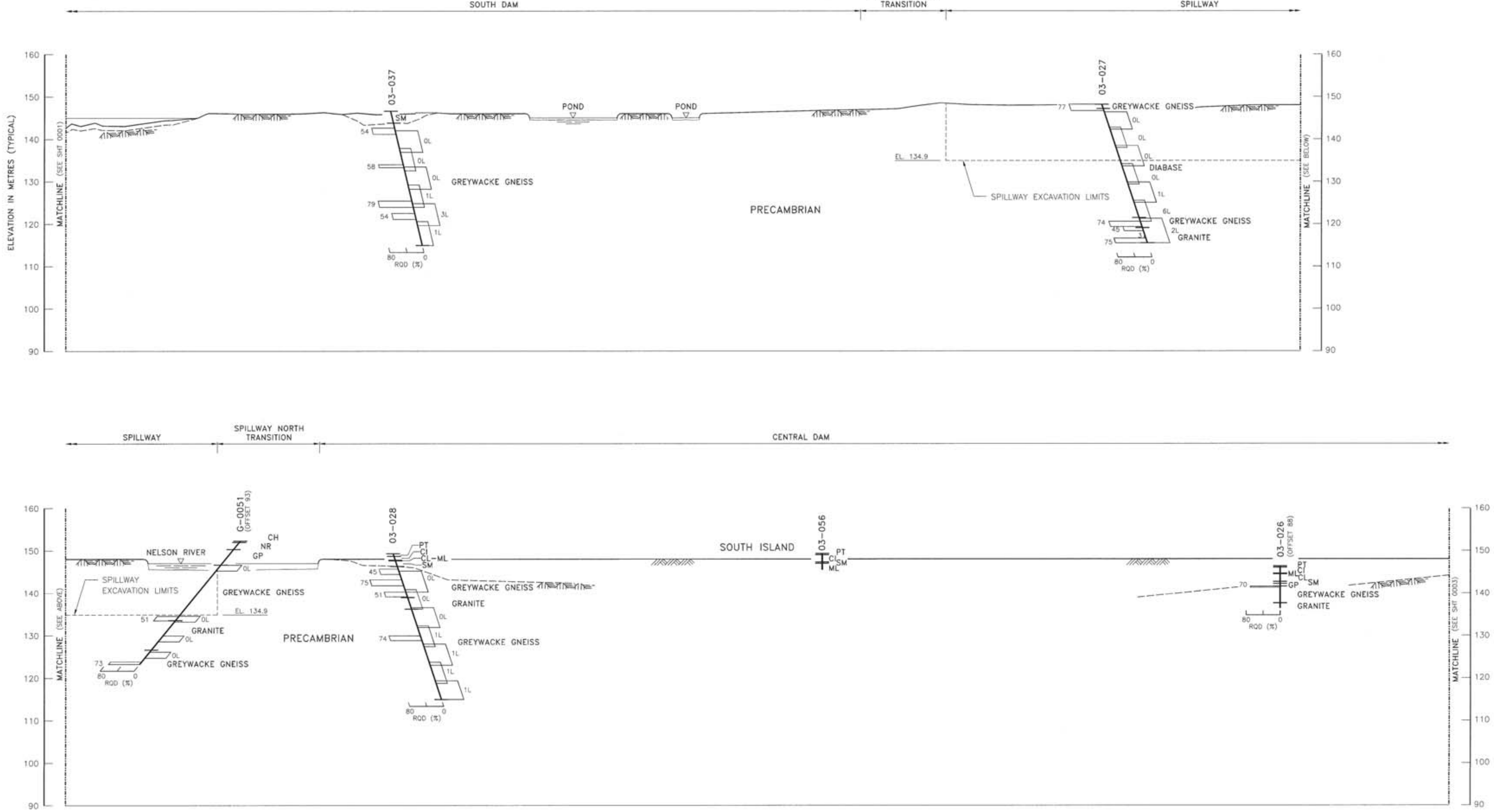
HATCH
HA DWG. NO. H341433-1300-15-042-0002
AREA COORD: P. PANTEL
DISCIP. ENGR: R. HALIM
PROJ. ENGR: A. TRUDEL
PROJ. MGR: W. GENDZELEVICH

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R.E. GASPAR
DESIGNED: P. PANTEL
CHECKED:
CHECKED:
SCALE: 1:400
DATE:

KEEYASK GENERATING STATION
BASIS FOR DESIGN
GENERAL ARRANGEMENT
PRINCIPAL STRUCTURES
GEOLOGICAL SECTION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0008	0001	0C



SECTION A–A (1-00195-DE-06200-0007, CONTINUED)

CONTINUED ON SHT 0003

REV.	DATE	DESCRIPTION
00	2012-02-13	ISSUED FOR INFORMATION

HATCH

HA DWG. NO. H341433-1300-15-042-0003

AREA COORD P. PANTEL

DISCIP. ENGR R. HALIM

PROJ. ENGR. A. TRUDEL

PROJ. MGR. W. GENDZELEVICH

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

DRAWN: R.E. GASPAR

DESIGNED: P. PANTEL

KEEYASK GENERATING STATION

Issued for Proposal – RFP 016203
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2013-03-28

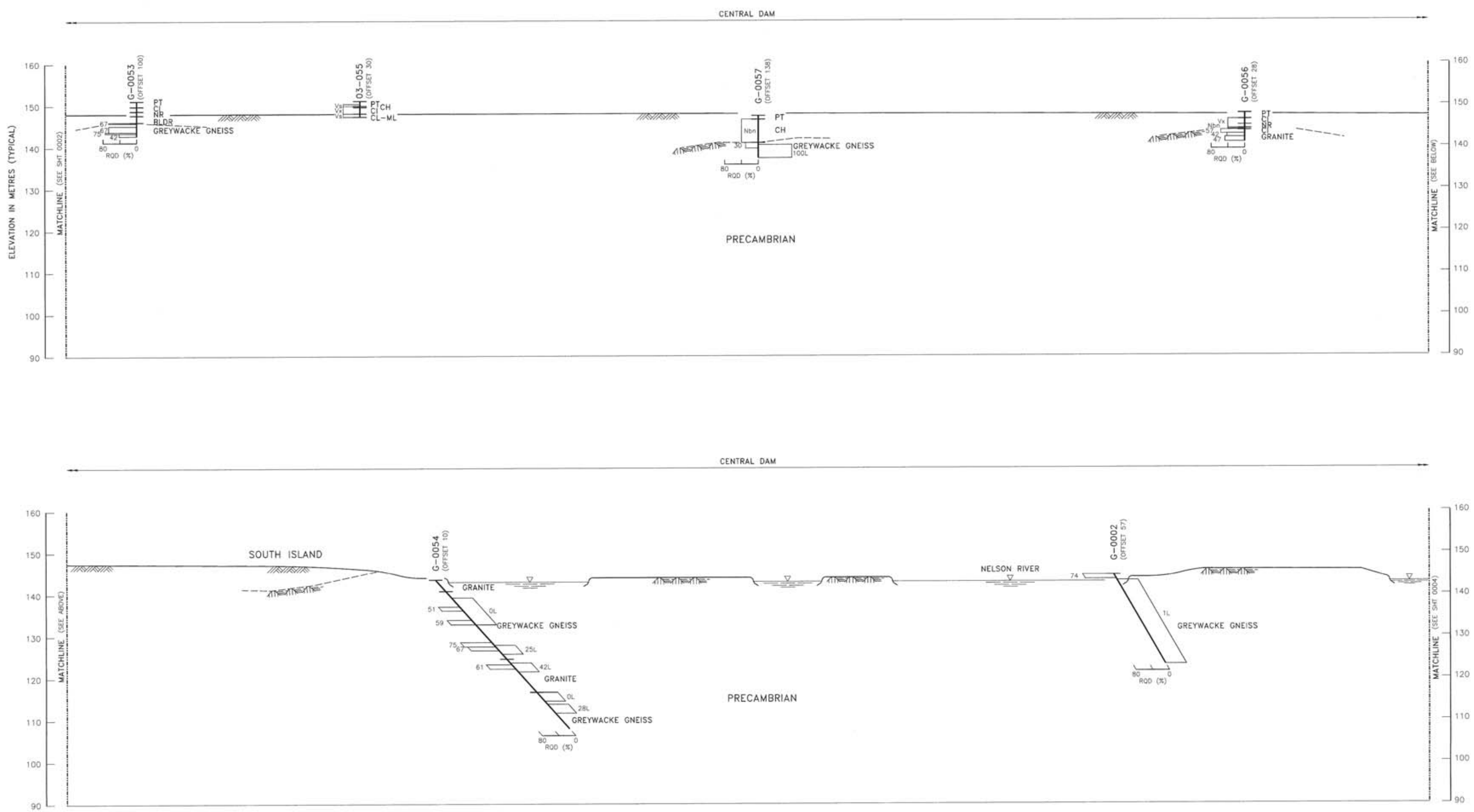
PRINCIPAL STRUCTURES FOR DESIGN
GENERAL ARRANGEMENT
GEOLOGICAL SECTION

SCALE: 1:400

DRAWING NUMBER 1-00195-DE-06200-0008 | SHEET 0002 | REVISION 0C

NOTE:
FOR LEGEND AND NOTES SEE SHEET

NOTE:
FOR LEGEND AND NOTES SEE SHEET 0001.



SECTION A–A (1-00195-DE-06200-0007, CONTINUED)

CONTINUED ON SHT 0004

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2013-03-28

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00	2012-02-13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO. H341433-1300-15-042-0004
AREA COORD. P. PANTEL
DISCIP. ENGR. R. HALIM
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

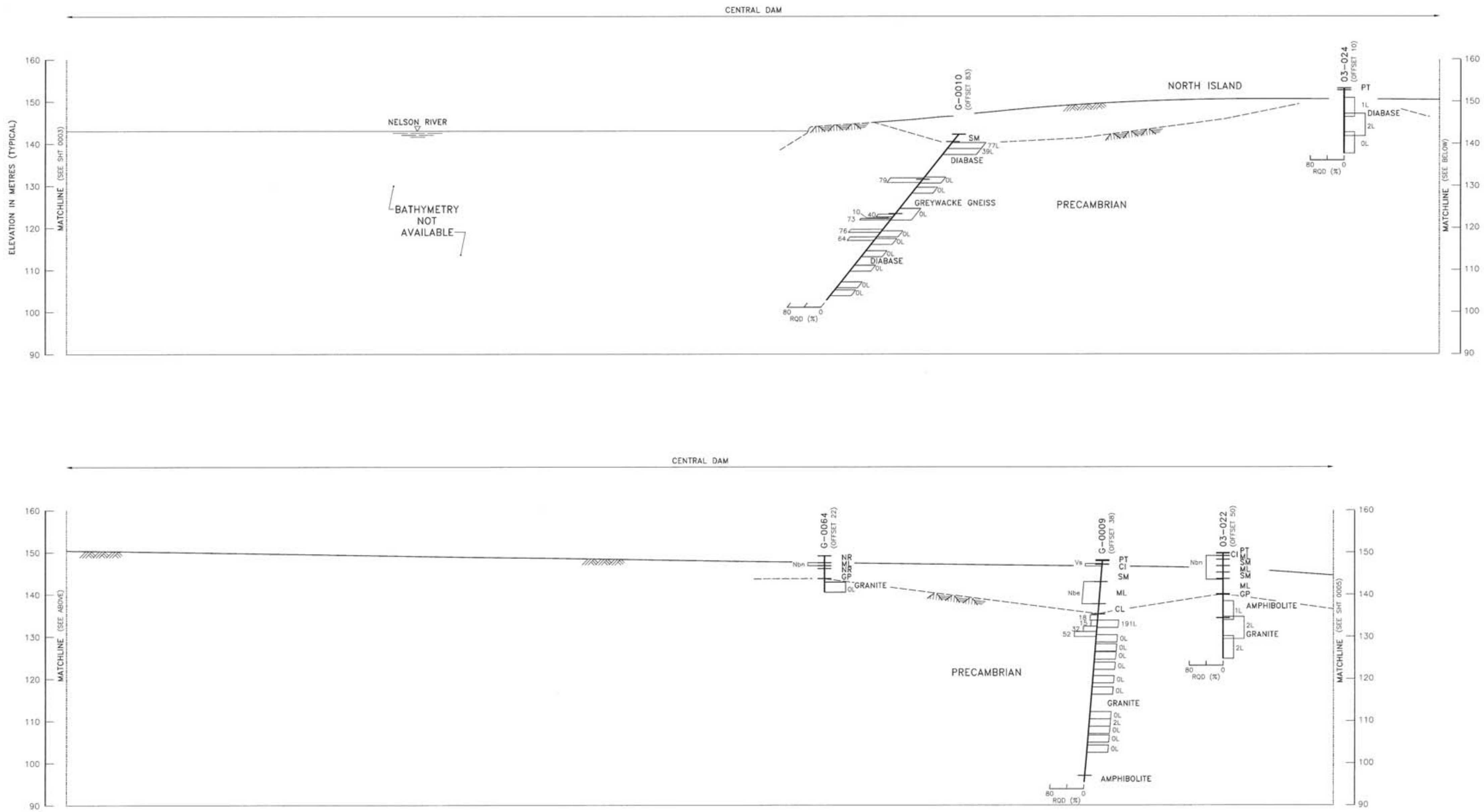
DRAWN: R.E. GASPAR | CHECKED: | SCALE: 1:400
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
PRINCIPAL STRUCTURES
GEOLOGICAL SECTION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0008	0003	0C

NOTE:
FOR LEGEND AND NOTES SEE SHEET 0001.



SECTION A–A (1-00195-DE-06200-0007, CONTINUED)

CONTINUED ON SHT 0005

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2013-03-28

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00	2012-02-13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO.: H341433-1300-15-042-0005
AREA COORD: P. PANTEL
DISCIP. ENGR: R. HALIM
PROJ. ENGR.: A. TRUDEL
PROJ. MGR.: W. GENDZELEVICH

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

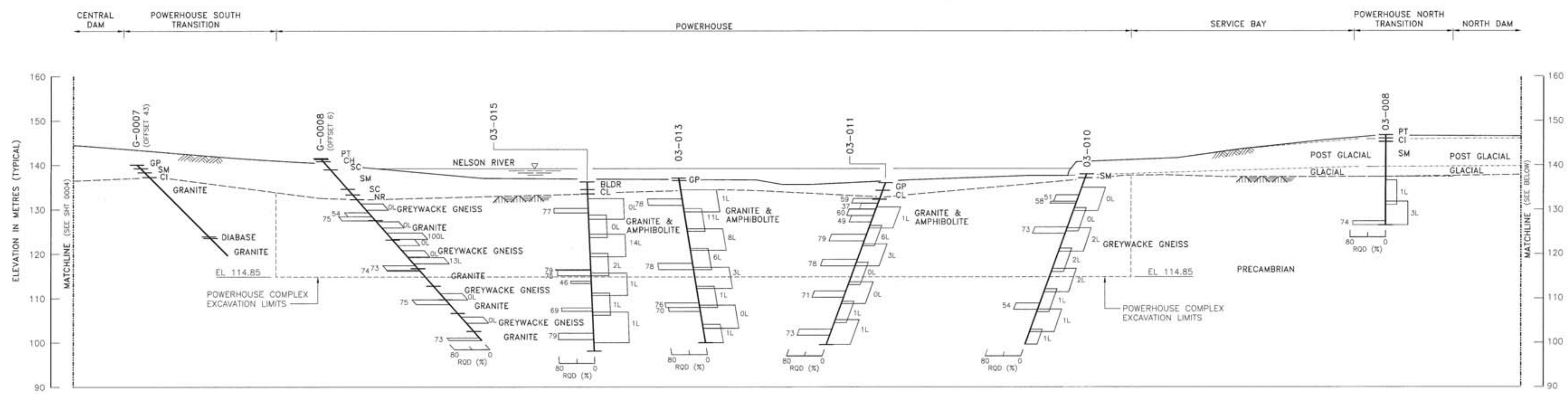
DRAWN: R.E. GASPAR
DESIGNED: P. PANTEL
SCALE: 1:400

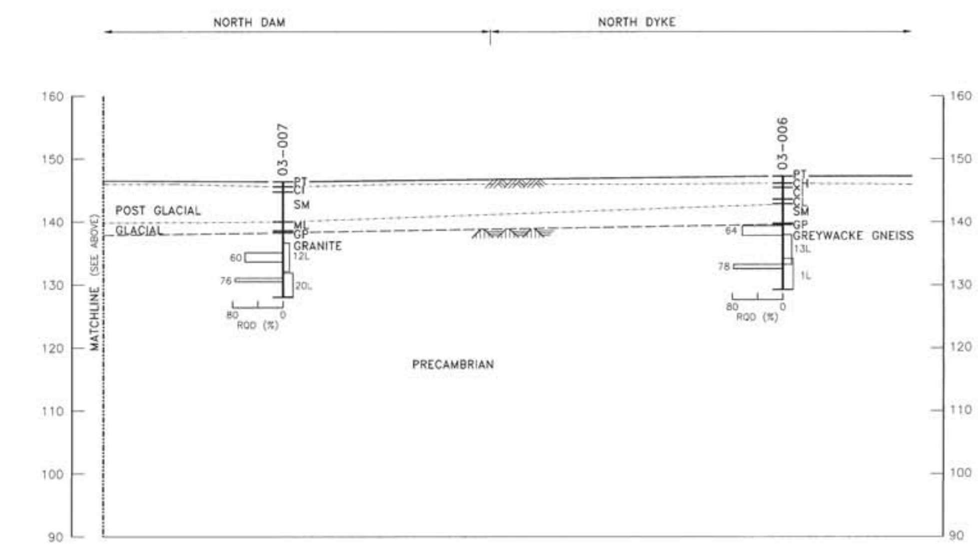
KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
PRINCIPAL STRUCTURES
GEOLOGICAL SECTION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0008	0004	0C

NOTE:
FOR LEGEND AND NOTES SEE SHEET 0001.





SECTION A-A (1-00195-DE-06200-0007, CONTINUED)

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO. H341433-1300-15-042-0006
AREA COORD P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R.E. GASPAR
CHECKED:
SCALE: 1:400
DESIGNED: P. PANTEL
CHECKED:
DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
PRINCIPAL STRUCTURES
GEOLOGICAL SECTION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0008	0005	0C

ISO A0 (46.8 x 33.1)
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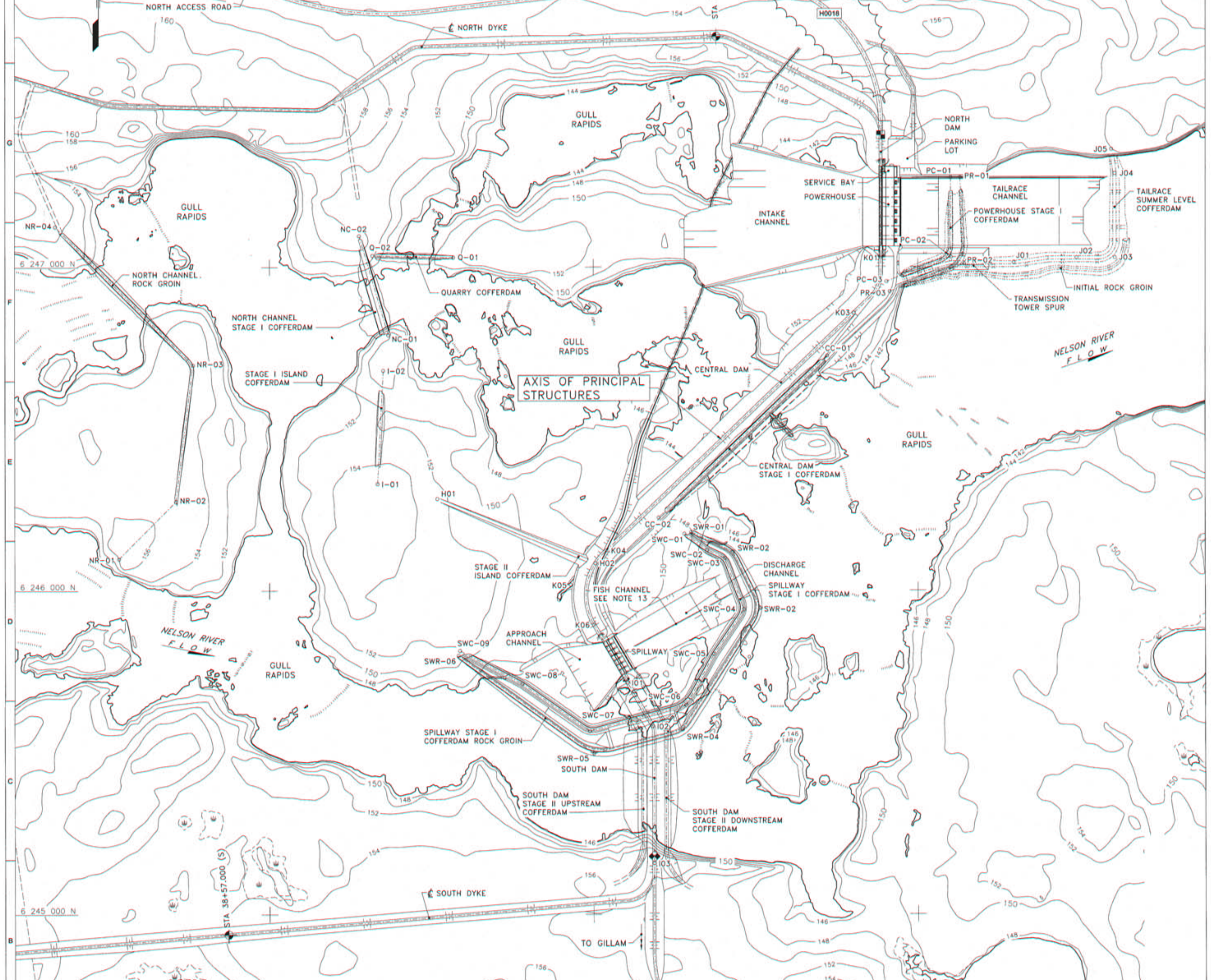

PLAN

NORTH CHANNEL ROCK GROIN

POINT NAME	NORTHING	EASTING
NR-01	6 246 098.810	361 535.401
NR-02	6 246 276.243	361 711.520
NR-03	6 246 697.211	361 764.449
NR-04	6 247 126.276	361 339.206

NORTH CHANNEL STAGE I COFFERDAM

POINT NAME	NORTHING	EASTING
NC-01	6 246 789.725	362 367.194
NC-02	6 247 096.790	362 277.134

STAGE I ISLAND COFFERDAM

POINT NAME	NORTHING	EASTING
I-01	6 246 330.310	362 334.442
I-02	6 246 679.893	362 351.520

STAGE II ISLAND COFFERDAM

POINT NAME	NORTHING	EASTING
H01	6 246 284	362 519
H02	6 246 084	363 006

QUARRY COFFERD

POINT NAME	NORTHING	E
Q-01	6 247 029.673	
Q-02	6 247 035.557	

POWERHOUSE STAGE I COFFERDAM

POINT NAME	NORTHING	EASTING
PC-01	6 247 275.999	364 100.745
PC-02	6 247 030.000	364 102.000
PC-03	6 246 954.593	363 903.080
PR-01	6 247 276.146	364 129.491
PR-02	6 247 009.476	364 142.797
PR-03	6 246 923.248	363 913.139

TAILRACE SUMMER LEVEL COFFERDAM

POINT NAME	NORTHING	EASTING
J01	6 247 013	364 295
J02	6 247 027	364 489
J03	6 247 027	364 607
J04	6 247 287	364 606
J05	6 247 362	364 596

CENTRAL DAM STAGE I COFFERDAM

POINT NAME	NORTHING	EASTING
CC-01	6 246 724.419	363 720.686
CC-02	6 246 225.541	363 201.532

CENTRAL DAM

POINT NAME	NORTHING	EASTING
K01	6 247 029	363 885
K02	6 246 936	363 885
K03	6 246 857	363 803
K04	6 246 124	363 040
K05	6 246 018	362 930
K06	6 245 895	363 001

SPILLWAY STAGE I COFFERDAM

POINT NAME	NORTHING	EASTING
SWC-01	6 246 175.49	363 280.57
SWC-02	6 246 124.99	363 350.65
SWC-03	6 246 099.13	363 405.09
SWC-04	6 245 941.10	363 463.89
SWC-05	6 245 803.81	363 371.33
SWC-06	6 245 646.57	363 285.69
SWC-07	6 245 566.15	362 988.88
SWC-08	6 245 712.41	362 780.36
SWC-09	6 245 814.56	362 588.33
SWR-01	6 246 180.63	363 301.75
SWR-02	6 246 119.71	363 429.99
SWR-03	6 245 945.94	363 515.75
SWR-04	6 245 571.08	363 275.12
SWR-05	6 245 496.87	363 001.22
SWR-06	6 245 799.63	362 583.82

SOUTH DAM

POINT NAME	NORTHING	EASTING
I01	6 245 716	363 105
I02	6 245 581	363 183
I03	6 245 157	363 187

LEGEND:

- SHORELINE (SEE NOTE 6)
- 144 GROUND SURFACE CONTOUR (SEE NOTE 7)
- STREAM
- SWAMP
- RAPIDS
- ACCESS ROAD
- COORDINATE GRID MARKER (LOCATED AT 1000 METRE INTERVALS)
- COFFERDAM REMOVED
- TRANSMISSION LINE
- REFERENCE POINT (SEE NOTE 10)
- REFERENCE POINT (SEE NOTE 11)
- REFERENCE POINT (SEE NOTE 12)

NOTES:

1. TOPOGRAPHY IS BASED ON MAPPING RECEIVED FROM MANITOBA HYDRO MARCH, 2004.
2. MAPPING WAS PRODUCED USING PHOTOGRAMMETRIC METHODS BASED ON 1:20 000 SCALE PHOTOGRAPHY DATED OCTOBER, 1986.
3. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
4. COORDINATES AND ELEVATIONS ARE IN METRES.
5. ELEVATIONS ARE BASED ON CGVD 1928.
6. WATER LEVELS SHOWN ARE APPROXIMATE ONLY AND RELATE TO THE DATE OF PHOTOGRAPHY.
7. CONTOUR INTERVAL IS 2 METRES.
8. LOCATION AND PRESENTATION OF CONCRETE AND EARTHFILL STRUCTURES IS PRELIMINARY.
9. STATIONING IS BASED ON DISTANCE ALONG THE NORTH AND SOUTH BANK EARTH STRUCTURES' AXES AND CENTERLINES FOR AXIS GR-3 ALTERNATIVE ARRANGEMENT WITH FULL SUPPLY LEVEL AT EL 159.0. FOR THE NORTH BANK STATION 0+00 IS LOCATED AT COORDINATES 6 246 876.230 N AND 364 450.762 E. FOR THE SOUTH BANK STATION 0+00 IS LOCATED AT COORDINATES 6 246 476.050 N AND 364 543.280 E.
10. THE REFERENCE POINTS ARE LOCATED AT THE STATIONS WHERE THE NORTH AND SOUTH DYKE CENTERLINES FOR AXIS GR-4 INTERSECT WITH THE NORTH AND SOUTH DYKE CENTERLINES FOR AXIS GR-3 ALTERNATIVE ARRANGEMENT. FOR THE NORTH DYKE IT IS STA 15+65.000 (N) AND FOR THE SOUTH DYKE IT IS STA 38+57.000 (S).
11. THE REFERENCE POINT IS LOCATED AT THE INTERSECTION OF THE AXIS OF THE NORTH DAM AND THE CENTERLINE OF THE NORTH DYKE AND IS AT COORDINATES 6 247 407.573 N,363 884.861 E.
12. THE REFERENCE POINT IS LOCATED AT THE INTERSECTION OF THE AXIS OF THE SOUTH DAM AND THE CENTERLINE OF THE SOUTH DYKE AND IS AT COORDINATES 6 245 178.480 N, 363 186.860 E.
13. FISH CHANNEL INVERT 138.9 m LONG AND 2 m WIDE. THIS CHANNEL IS TO CONNECT INTO THE RIVER CHANNEL DOWNSTREAM OF THE DISCHARGE CHANNEL. LOCATION AND LENGTH TO BE DETERMINED IN THE FIELD.

HOLD:

H0018 NORTH ACCESS RAMP DESIGN ON HOLD

THE PRINCIPAL STRUCTURES GENERAL ARRANGEMENT IS CONCEPTUAL AND IS SHOWN USING THE GENERAL ARRANGEMENT PLAN FROM THE PRE-DESIGN STUDIES. CIVIL IFRASTRUCTURE, INCLUDING TRANSMISSION TOWER CORRIDORS ARE OMITTED FOR CLARITY. THIS DRAWING ALSO SHOWS THE CURRENT FOOTPRINTS AND ALIGNMENTS OF THE STAGE I COFFERDAMS.

THE PURPOSE OF THIS DRAWING IS TO ASSIST IN LOCATING STRUCTURES IN THE FIELD DURING SITE RECONAISSANCE. IT IS FOR INFORMATION ONLY.

SCALE 1:5000 100 0 100 200 300 400 500 METRES

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2013-04-22

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-04-19	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO. H341433-1000-00-042-0002
AREA COORD. P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENGZELEVICH DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R.C. ALVERO | CHECKED: | SCALE: 1:5000
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT PRINCIPAL STRUCTURES GENERAL ARRANGEMENT

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0013	0001	0D

ISO A0 (46.8 x 33.1)

AM

EASTING

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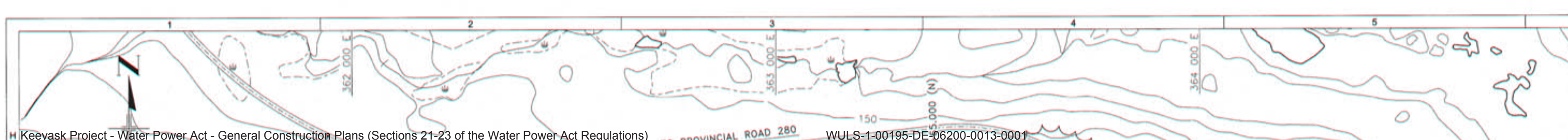
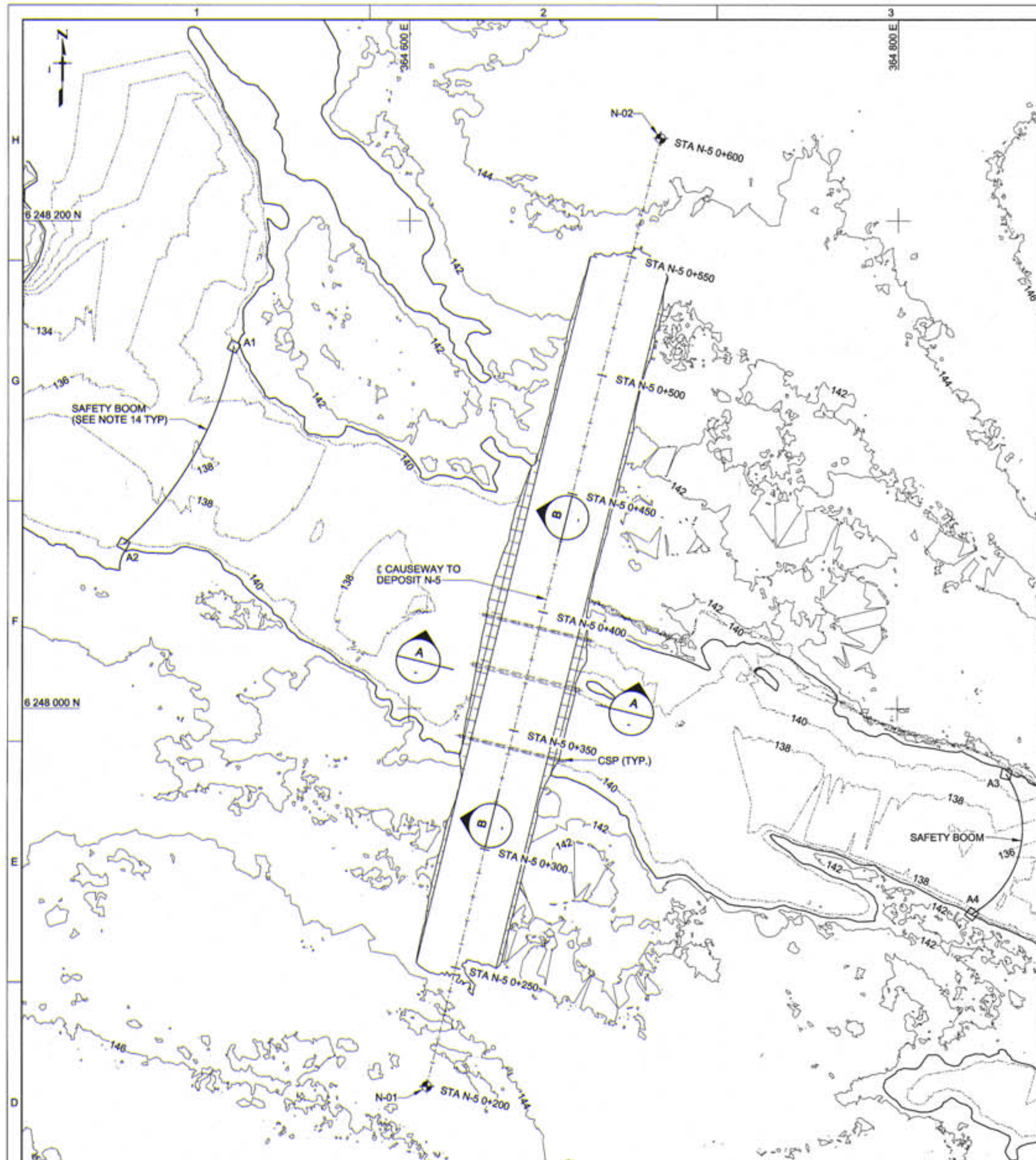
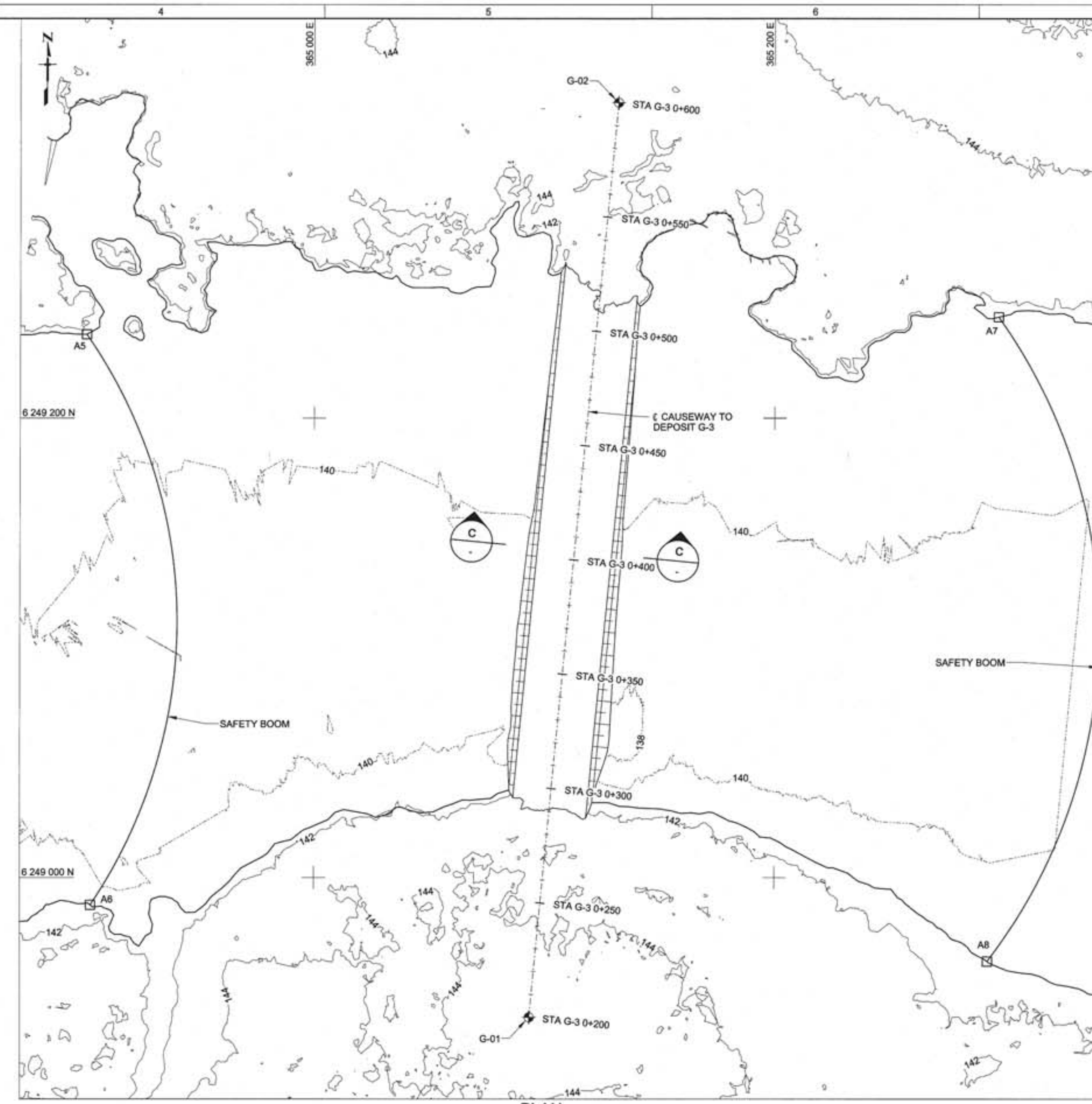
362 318.116

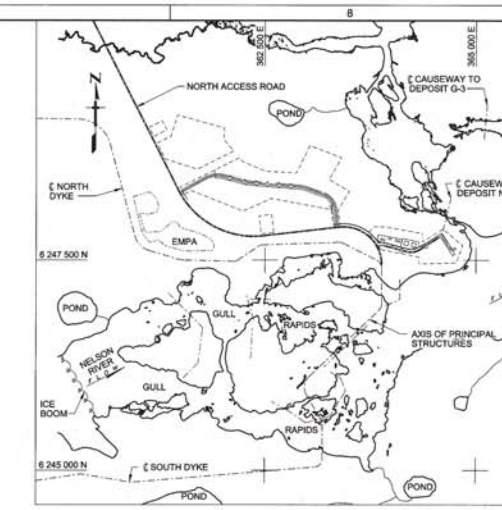




PLAN
DEPOSIT N-5 CAUSEWAY
SCALE 1:1000



PLAN
DEPOSIT G-3 CAUSEWAY
SCALE 1:1000



KEY PLAN

LEGEND:

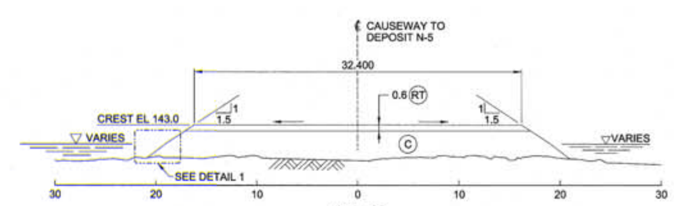
- SHORELINE
- GROUND SURFACE CONTOUR (2 m INTERVAL)
- BATHYMETRY CONTOUR (2 m INTERVAL)
- COORDINATE GRID MARKER
- REFERENCE POINT
- (C) ROCKFILL
- (RT) ROAD TOPPING
- SLOPE DOWN
- STA N-5 0+250 — STATIONING ALONG CENTERLINE CAUSEWAY TO DEPOSIT N-5
- STA G-3 0+450 — STATIONING ALONG CENTERLINE CAUSEWAY TO DEPOSIT G-3
- WATER ELEVATION
- A1 / A2 — SAFETY BOOM WITH ANCHOR LOCATIONS

NOTES:

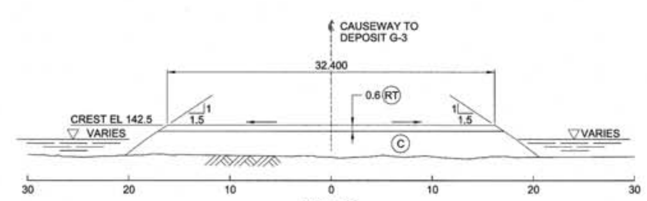
1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NAD83 (CSRS).
2. ELEVATIONS ARE BASED ON GS OF C, CGVD28, 1929 ADJ.
3. COORDINATES, DIMENSIONS, DISTANCES, STATIONING, AND ELEVATIONS ARE IN METRES.
4. TOPOGRAPHY IS BASED ON 2010 LIDAR DATA PROVIDED BY MANITOBA HYDRO. PLAN SHOWS CONTOUR INTERVAL AT 2 m.
5. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
6. FILL FOR THE CAUSEWAYS THAT IS PLACED IN WATER SHALL BE ALLOWED TO FALL TO ITS NATURAL ANGLE OF REPOSE. FILL PLACED ABOVE WATER LEVEL SHALL BE PLACED AT THE FOLLOWING SLOPES, UNLESS NOTED OTHERWISE:
   - CLASS C (ROCK FILL) 1V:1.5H
7. ROCKFILL FOR THE CAUSEWAYS SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT UNLESS NOTED OTHERWISE.
8. RIPRAP SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT.
9. THE CREST OF THE CAUSEWAYS SHALL BE SLOPED SLIGHTLY SO THAT THE SURFACE RUNOFF FROM THE CREST IS DIRECTED TOWARD THE SIDES OF THE CAUSEWAYS.
10. PURCHASER'S REPRESENTATIVE WILL PROVIDE FORECASTED WATER ELEVATIONS FOR USE DURING CONSTRUCTION.
11. THE RIVERBED MATERIAL VARIES IN THE CAUSEWAY AREAS. INVESTIGATION PROGRAMS HAVE OBSERVED CLAY, SILT, SAND & GRAVEL LENSES, COBBLES, BOULDERS AND BEDROCK OUTCROPS.
12. CONTRACTOR TO DETERMINE NUMBER OF CULVERT SEGMENTS REQUIRED. THE ENGINEER WILL CONFIRM THE STATIONING AND ORIENTATION OF CULVERTS DURING CONSTRUCTION.
13. THE CREST ELEVATIONS FOR THE CAUSEWAYS WERE SELECTED BASED ON THE HYDRAULIC CONDITIONS OF THE AREAS. THE CONTRACTOR SHALL NOTE THAT UNDER EXTREME WINTER WATER LEVELS THERE IS A POSSIBILITY THAT ICE MAY BE PUSHED UP ONTO THE CAUSEWAYS AND HENCE WINTER ACCESS ACROSS THE CAUSEWAYS MAY BE COMPROMISED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY ICE ON THE CREST OF THE CAUSEWAYS, AND MAINTAINING THE CAUSEWAYS FOR PROVIDING WINTER ACCESS IF NECESSARY.
14. SAFETY BOOM INSTALLED BY OTHERS AS PER TRANSPORT CANADA APPROVAL.

CENTERLINE ALIGNMENT GEOMETRY REFERENCE POINTS

NO.	NORTHING	EASTING
N-01	6 247 845.232	364 607.355
N-02	6 248 233.714	364 702.654
G-01	6 248 939.184	365 093.519
G-02	6 249 337.333	365 131.952



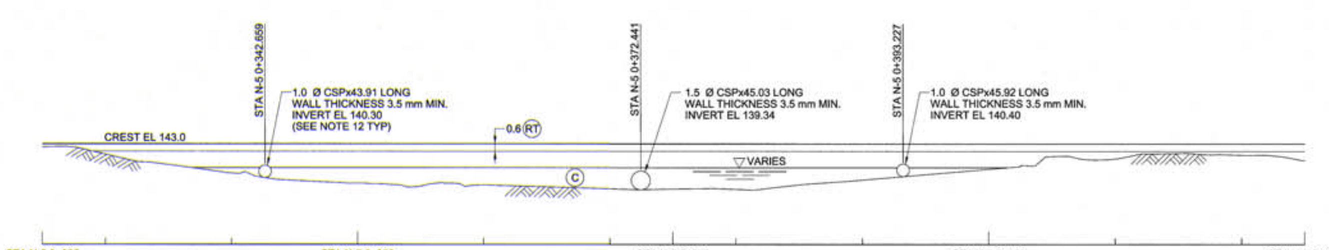
TYPICAL SECTION (A)
CULVERTS OMITTED FOR CLARITY
SCALE 1:250



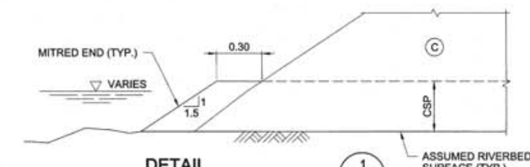
TYPICAL SECTION (C)
SCALE 1:250

SAFETY BOOM ANCHORS LOCATION POINTS

NO.	NORTHING	EASTING
A1	6 248 148.432	364 528.021
A2	6 248 067.436	364 482.952
A3	6 247 973.163	364 844.668
A4	6 247 915.900	364 830.621
A5	6 249 236.479	364 901.224
A6	6 248 988.105	364 903.078
A7	6 249 244.010	365 297.170
A8	6 248 963.510	365 292.575



LONGITUDINAL SECTION (B)
SCALE 1:200



DETAIL (1)
TYPICAL CULVERT END TREATMENT
NTS

0 10 20 30 40 50
SCALE IN METRES

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

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2013-04-16

HATCH
HA DWG. NO.
H341433-1000-10-012-0001

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. ALVERO	CHECKED:	SCALE: AS NOTED
DESIGNED: R. DAVOODI-BILESAVAR	CHECKED:	DATE:

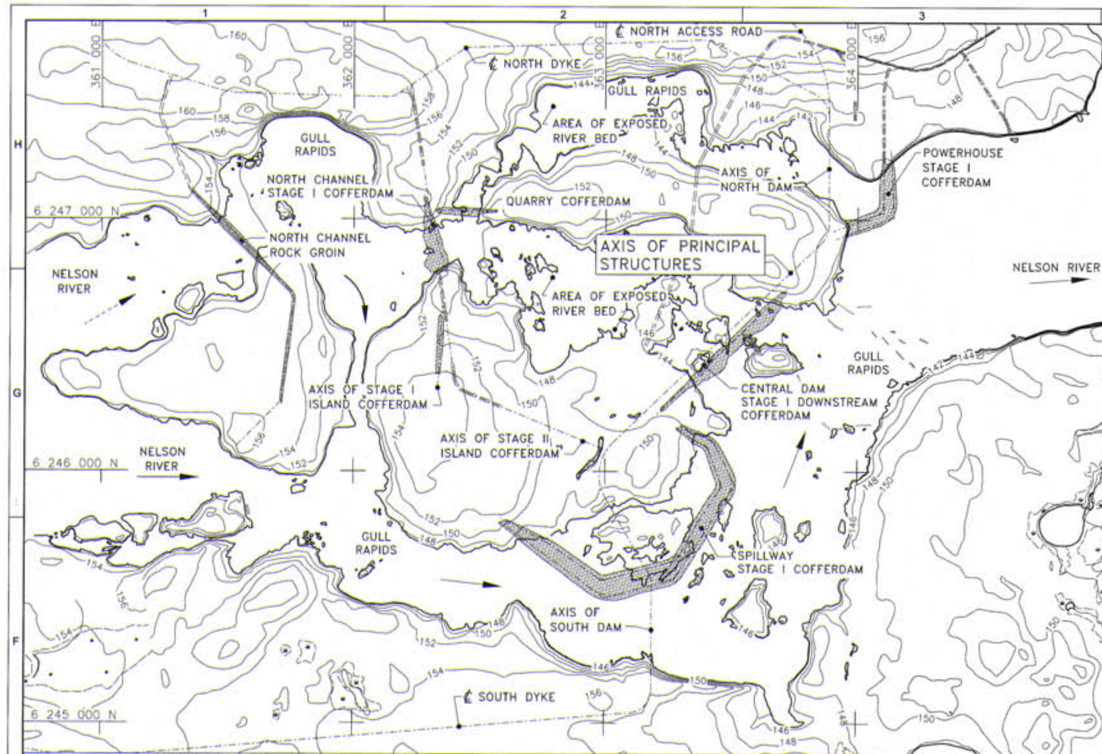
AREA COORD: P. PANTEL — DATE
DISCIP. ENGR.: R. HALIM — DATE
PROJ. ENGR.: A. TRUDEL — DATE
PROJ. MGR.: W. GENDZELEVICH — DATE

KEEYASK GENERATING STATION

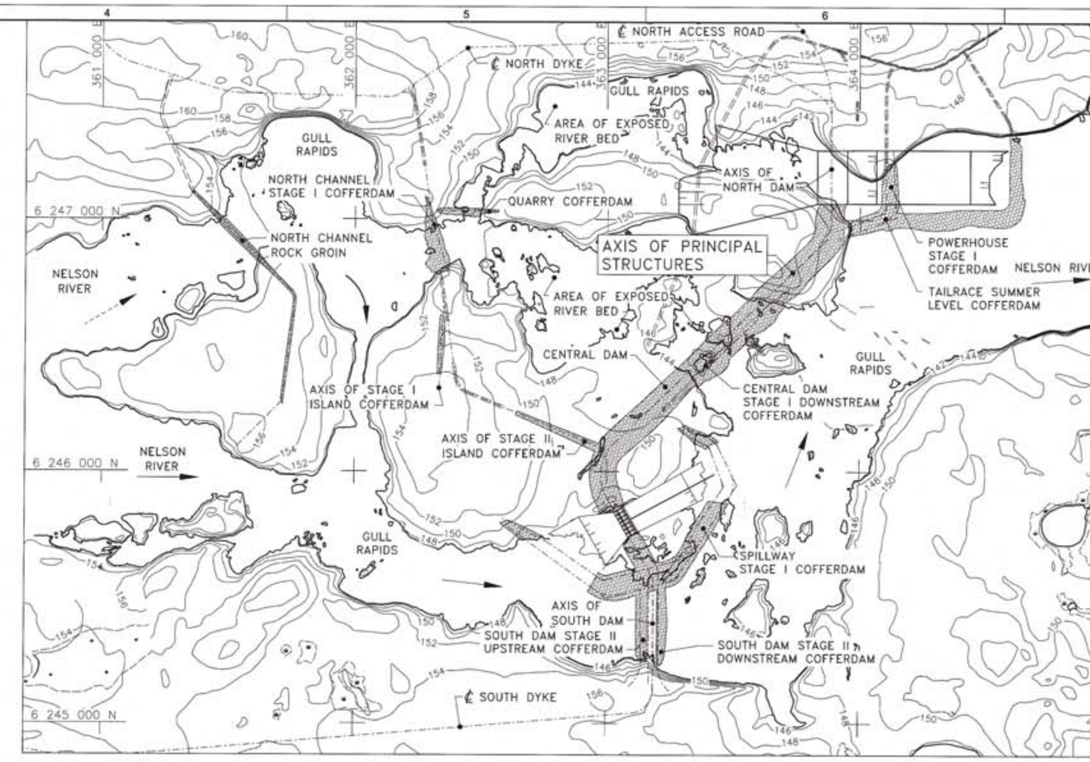
BASIS FOR DESIGN
GENERAL ARRANGEMENT
CAUSEWAYS
PLANS, SECTIONS & DETAIL

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0062	0001	C

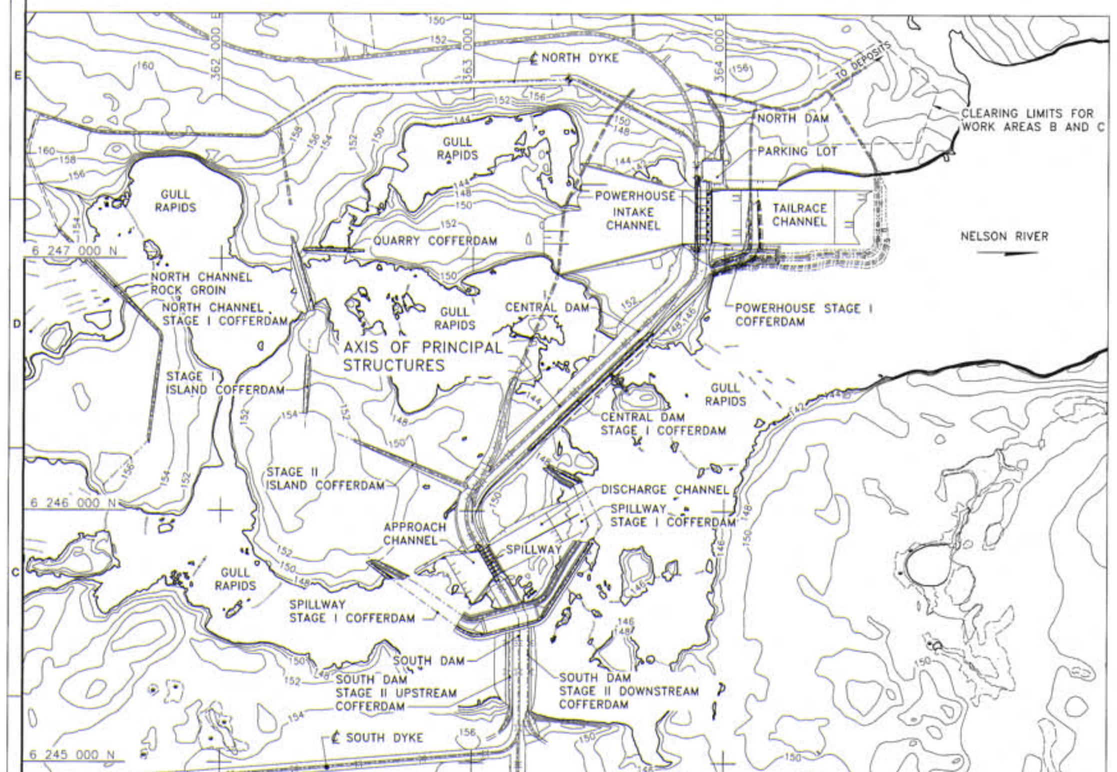
ISO A0 (46.8 x 33.1)



STAGE I DIVERSION



STAGE II DIVERSION



FINAL ARRANGEMENT

LEGEND:

- SHORELINE (SEE NOTE 6)
- FORMER SHORELINE (SEE NOTES 6 AND 7)
- COFFERDAM REMOVED
- 150 — GROUND SURFACE CONTOUR
- DIRECTION OF WATER FLOW DURING STAGE I & II DIVERSIONS (SEE NOTE 8)
- DIRECTION OF RESTRICTED WATER FLOW DURING STAGE I & II DIVERSIONS (SEE NOTE 8)
- DIRECTION OF WATER FLOW AFTER ALL STRUCTURES ARE BUILT
- ROCK GROIN AND COFFERDAMS IN PLACE DURING STAGE I & II DIVERSIONS
- COORDINATE GRID MARKER (LOCATED AT 1000 METRE INTERVAL)
- TEMPORARY CONSTRUCTION ACCESS ROAD

NOTES:

1. TOPOGRAPHY IS BASED ON MAPPING RECEIVED FROM MANITOBA HYDRO MARCH, 2004.
2. MAPPING WAS PRODUCED USING PHOTOGRAMMETRIC METHODS BASED ON 1:20 000 SCALE PHOTOGRAPHY DATED OCTOBER, 1986.
3. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
4. ELEVATIONS ARE BASED ON CGVD 1928.
5. COORDINATES AND ELEVATIONS ARE IN METRES.
6. WATER LEVELS SHOWN ARE APPROXIMATE ONLY AND RELATE TO THE DATE OF PHOTOGRAPHY.
7. FORMER SHORELINE DRY DUE TO RIVER MANAGEMENT.
8. FLOW OF WATER WITH ALL COFFERDAMS AND ROCK GROIN IN PLACE.
9. THE LAYOUT AND THE DESIGN SHOWN ARE CONCEPTUAL AND ARE BASED ON THE PRE-DESIGN STUDIES. IT IS PRESENTED FOR PROPOSAL 016203 ONLY. THE LAYOUT AND THE DESIGN FOR KEEYASK GENERATING STATION WILL BE FINALIZED DURING DETAIL DESIGN.

SCALE 1:10000 — 200 0 200 400 600 800 1000 METRES

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2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO. H341433-1000-10-042-0006
AREA COORD. P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: P. FLEURY | CHECKED: | SCALE: 1:10000
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT CONSTRUCTION DIVERSION AND STAGING

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0014	0001	0C

ISO A0 (46.8 x 33.1)
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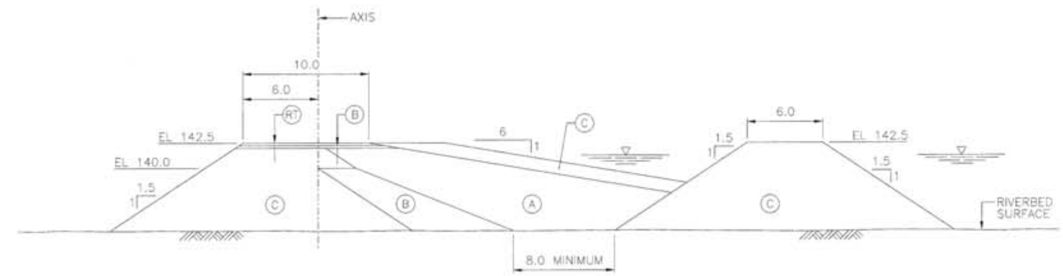
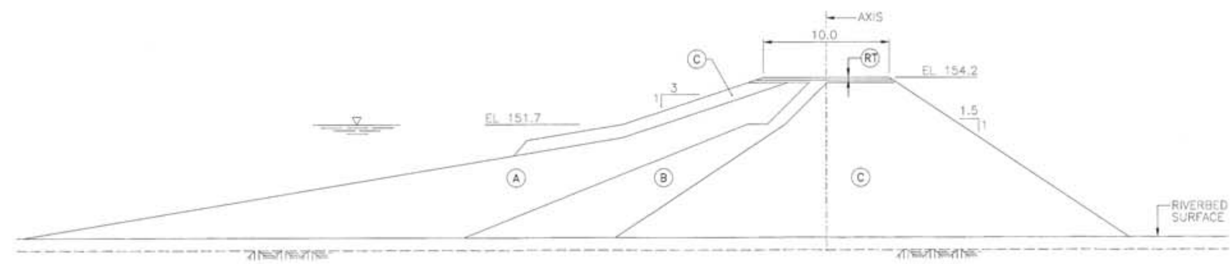
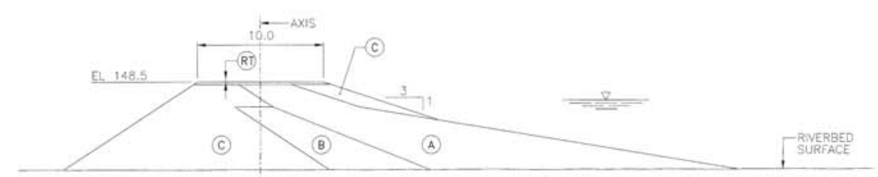


TAILRACE SUMMER LEVEL COFFERDAM – TYPICAL SECTION
PLACED IN THE WET



SOUTH DAM UPSTREAM STAGE II COFFERDAM



SOUTH DAM DOWNSTREAM STAGE II COFFERDAM

LEGEND:

- A IMPERVIOUS FILL
- B GRANULAR TRANSITION FILL
- C ROCKFILL (SEE NOTE 3)
- RT ROAD TOPPING
- WATER LEVEL

NOTES:

1. DIMENSIONS AND ELEVATIONS ARE IN METRES.
2. ELEVATIONS ARE BASED ON CGVD 1928.
3. VARIOUS SIZES AND GRADATIONS OF ROCKFILL (CLASSES C1, C2, C3 AND C4) WILL BE UTILIZED. PRECISE LOCATIONS OF UTILIZATION WILL BE BASED ON FLOW CONDITIONS.
4. STAGE I COFFERDAMS FOR RIVER DIVERSION ARE SHOWN ON SEPARATE DRAWINGS. SEE REFERENCES.

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

DRAWING NO.	DRAWING TITLE
1-00195-DE-21600-0008	CENTRAL DAM STAGE I COFFERDAM PLAN, SECTIONS & DETAILS
1-00195-DE-21600-0007	POWERHOUSE STAGE I COFFERDAMPLANS, SECTION & DETAIL
1-00195-DE-21600-0005	STAGE I ISLAND COFFERDAM PLAN, SECTIONS & DETAILS
1-00195-DE-21600-0004	NORTH CHANNEL ROCK GROIN PLAN & SECTIONS
1-00195-DE-21600-0003	NORTH CHANNEL STAGE I COFFERDAM PLAN & SECTIONS
1-00195-DE-21600-0002	QUARRY COFFERDAM PLAN & SECTIONS

REFERENCE DRAWINGS

HATCH
HA DWG. NO. H341433-2000-10-042-0001
AREA COORD. P. PANTEL DATE
DISCIP. ENGR R. HALIM DATE
PROJ. ENGR A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

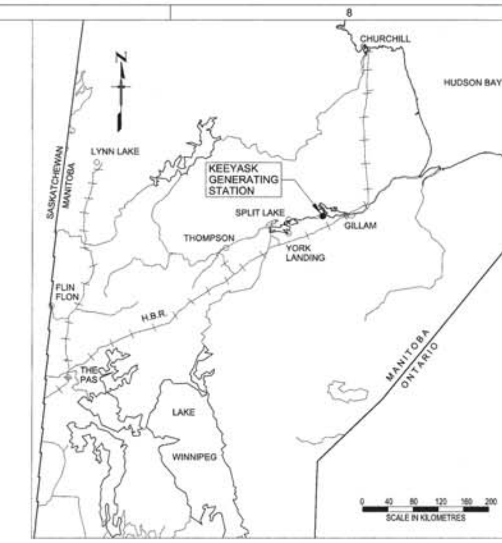
DRAWN: P.FLEURY	CHECKED:	SCALE: 1:200
DESIGNED: P.PANTEL	CHECKED:	DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
COFFERDAM SECTIONS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0015	0001	C

ISO A0 (46.8 x 33.1)



KEY PLAN

LEGEND:

- SHORELINE
- 150 — GROUND SURFACE CONTOUR
- CLEARING LIMITS
- COORDINATE GRID MARKER

NOTES:

1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NAD83 (CSRS).
2. COORDINATES AND ELEVATIONS ARE IN METRES.
3. ELEVATIONS ARE BASED ON GS OF C, CGVD28, 1929 ADJ.
4. INFRASTRUCTURE SHOWN ON THE NORTH BANK OF THE NELSON RIVER WAS OBTAINED FROM DRAWING 1-00195-DE-06200-0004 0001, REV. 0C, PROVIDED BY MANITOBA HYDRO SEPTEMBER 18, 2012.
5. TOPOGRAPHY SHOWN IS BASED ON 2010 LIDAR DATA AS PROVIDED BY MANITOBA HYDRO. CONTOUR INTERVAL IS 2 m.

0 75 150 225 300 375
SCALE IN METRES

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-15

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE
1-00195-DE-06200-0062	BASIS FOR DESIGN GENERAL ARRANGEMENT CAUSEWAYS PLANS & SECTIONS
1-00195-DE-21230-0002	EXCAVATED MATERIAL PLACEMENT AREA (EMPA) PLAN, SECTIONS & DETAILS
1-00195-DE-06200-0004	BASIS FOR DESIGN GENERAL ARRANGEMENT
1-00195-DE-10100-0001	PROJECT GENERAL ARRANGEMENT PLAN
1-00195-DE-21600-0008	CENTRAL DAM STAGE I COFFERDAM PLAN, SECTIONS & DETAILS
1-00195-DE-21600-0007	STAGE I POWERHOUSE COFFERDAM PLAN, SECTIONS & DETAILS
1-00195-DE-21600-0006	STAGE I SPILLWAY COFFERDAM PLAN, SECTIONS & DETAILS
1-00195-DE-21600-0005	STAGE I ISLAND COFFERDAM PLAN, SECTIONS & DETAILS
1-00195-DE-21600-0004	NORTH CHANNEL ROCK GROIN PLAN & SECTIONS
1-00195-DE-21600-0003	NORTH CHANNEL STAGE I COFFERDAM PLAN & SECTIONS
1-00195-DE-21600-0002	QUARRY COFFERDAM PLAN, SECTIONS

HATCH

HA DWG. NO. H341433-1000-00-014-0002
AREA COORD P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

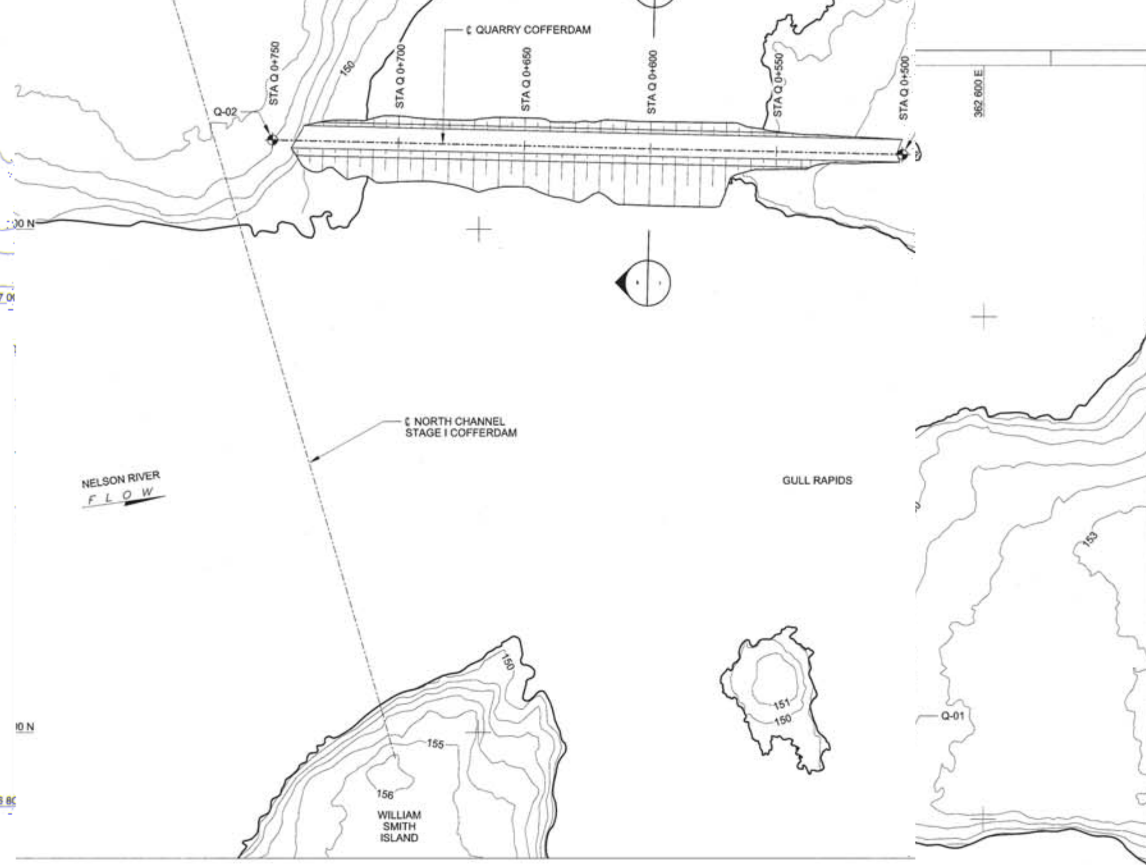
DRAWN: P. FLEURY	CHECKED:	SCALE: 1:7500
DESIGNED: P. PANTEL	CHECKED:	DATE:

KEEYASK GENERATING STATION

STAGE I COFFERDAMS
STAGE I DIVERSION
PLAN

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-11430-0001	0001	E

ISO A0 (46.8 x 33.1)



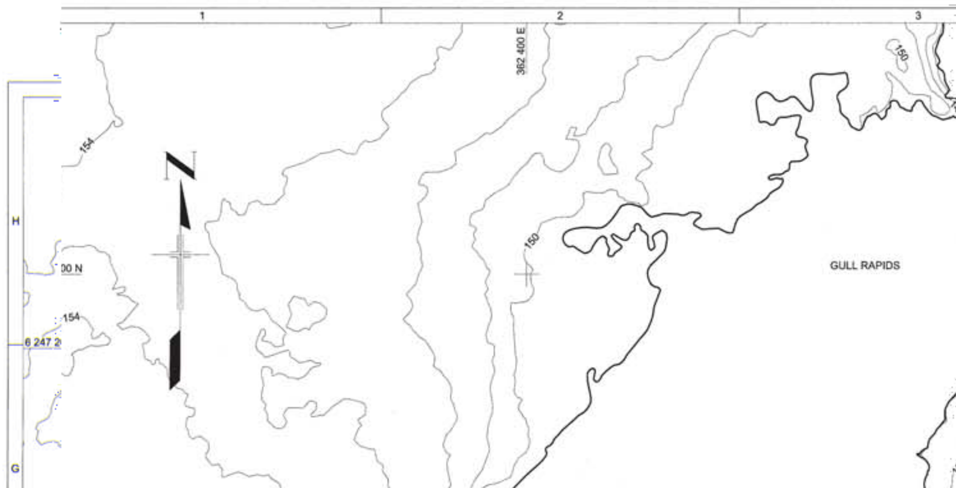
PLAN

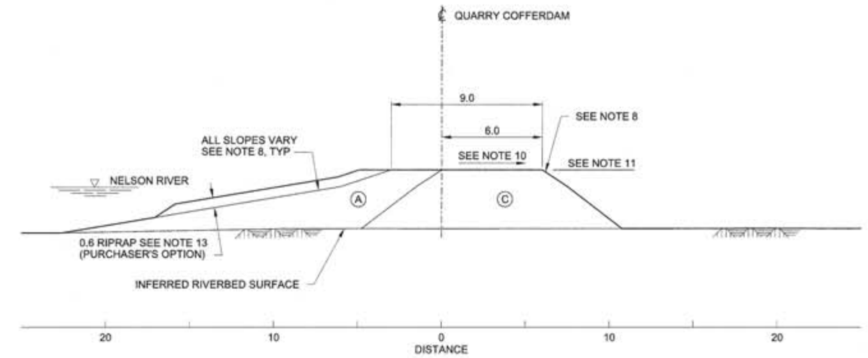
CENTERLINE ALIGNMENT GEOMETRY REFERENCE POINTS		
NO.	NORTHING	EASTING
Q-01	6 247 029.673	362 568.046
Q-02	6 247 035.557	362 318.116

ROCKFILL PLACEMENT		
FROM	TO	ROCKFILL PRODUCT
STA Q 0+747	STA Q 0+500	CLASS C1

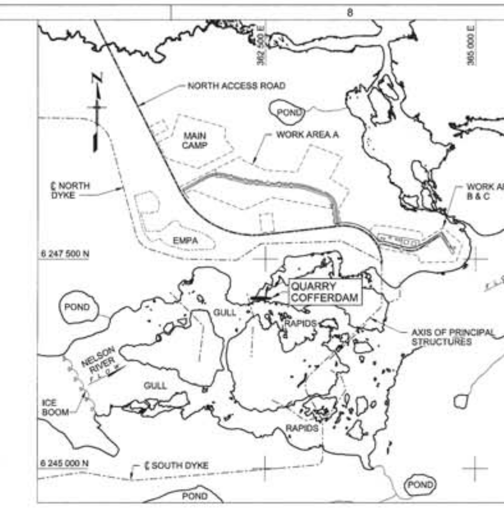
THE CONTRACTOR SHALL ASSESS THE LOCAL FLOW CONDITIONS SITUATION AND SHALL HAVE AVAILABLE FOR USE, ADDITIONAL MATERIAL OF SUITABLE SIZE AND QUANTITY AS MAY BE NECESSARY TO EFFECT CLOSURE OF THE RIVER.

THE STATIONING OF THE PLACEMENT OF THE ROCKFILL PRODUCT IS PRELIMINARY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSESS THE LOCAL FLOW CONDITIONS AND TO ADJUST THE STATIONING FOR THE ROCKFILL PRODUCT DEPENDING UPON RIVER FLOWS AT TIME OF CONSTRUCTION, AS ACCEPTED BY THE PURCHASER'S REPRESENTATIVE.





TYPICAL SECTION
SCALE 1:150



KEY PLAN

LEGEND:

- SHORELINE
- 154 GROUND SURFACE CONTOUR (EL 154)
- COORDINATE GRID MARKER
- REFERENCE POINT
- STA Q 0+550 STATIONING ALONG QUARRY COFFERDAM CENTERLINE
- WATER LEVEL
- SLOPE DOWN
- (A) IMPERVIOUS FILL
- (C) ROCKFILL

NOTES:

1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
2. ELEVATIONS ARE BASED ON GS OF C, CGVD28, 1929 ADJ.
3. COORDINATES, DIMENSIONS, DISTANCES, STATIONING, AND ELEVATIONS ARE IN METRES.
4. TOPOGRAPHY IS BASED ON 2010 LIDAR DATA PROVIDED BY MANITOBA HYDRO. CONTOUR INTERVAL IS 1 m.
5. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
6. CLEAR ALONG ALIGNMENT. CLEAR A 30 m WIDE CORRIDOR AT ABUTMENTS CENTERED ALONG ALIGNMENT.
7. THE AREAS OF THE COFFERDAM FOUNDATION WHICH LIE ABOVE WATER ELEVATION AND ARE ACCESSIBLE AT THE TIME OF COFFERDAM CONSTRUCTION SHALL BE STRIPPED AND PREPARED FOR FILL PLACEMENT AS PER THE TECHNICAL SPECIFICATIONS.
8. FILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE ALLOWED TO FALL TO ITS NATURAL ANGLE OF REPOSE. FILL PLACED ABOVE WATER ELEVATION SHALL BE PLACED AT THE FOLLOWING SLOPES, UNLESS NOTED OTHERWISE:
   - CLASS A (IMPERVIOUS FILL) 1V:3H
   - CLASS C (ROCK FILL) 1V:1.5H
9. ROCKFILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE DETERMINED AS OUTLINED IN THE ROCKFILL PLACEMENT TABLE AND TECHNICAL SPECIFICATIONS. ROCKFILL PLACED ABOVE THE WATER SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT UNLESS NOTED OTHERWISE.
10. THE CREST OF THE COFFERDAM SHALL BE SLOPED SLIGHTLY SO THAT THE SURFACE RUNOFF FROM THE CREST IS DIRECTED TOWARD THE DOWNSTREAM SIDE OF THE COFFERDAM.
11. CONSTRUCT UP TO EL 151.4 OR UP TO 1 m ABOVE THE FORECASTED WATER ELEVATION AT TIME OF CONSTRUCTION WHICHEVER IS GREATER. THE LENGTH OF THE COFFERDAM SHALL BE EXTENDED AS REQUIRED, AND AS DIRECTED BY THE PURCHASER'S REPRESENTATIVE.
12. PURCHASER'S REPRESENTATIVE WILL PROVIDE FORECASTED WATER ELEVATIONS.
13. PURCHASER'S OPTION: RIPRAP SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT. RIPRAP SHALL BE PLACED DOWN TO 1 m BELOW THE FORECASTED WATER ELEVATION, OR AS DIRECTED BY THE PURCHASER'S REPRESENTATIVE.

Issued for Proposal – RFP 016203
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2013-03-15

0 10 20 30 40 50 SCALE IN METRES

DRAWING NO.	DRAWING TITLE
1-00195-DE-11430-0001	STAGE I DIVERSION PLAN

REFERENCE DRAWINGS

HATCH
HA DWG. NO. H341433-2100-10-035-0001
AREA COORD. P. PANTEL
DISCIP. ENGR. R. HALIM
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH

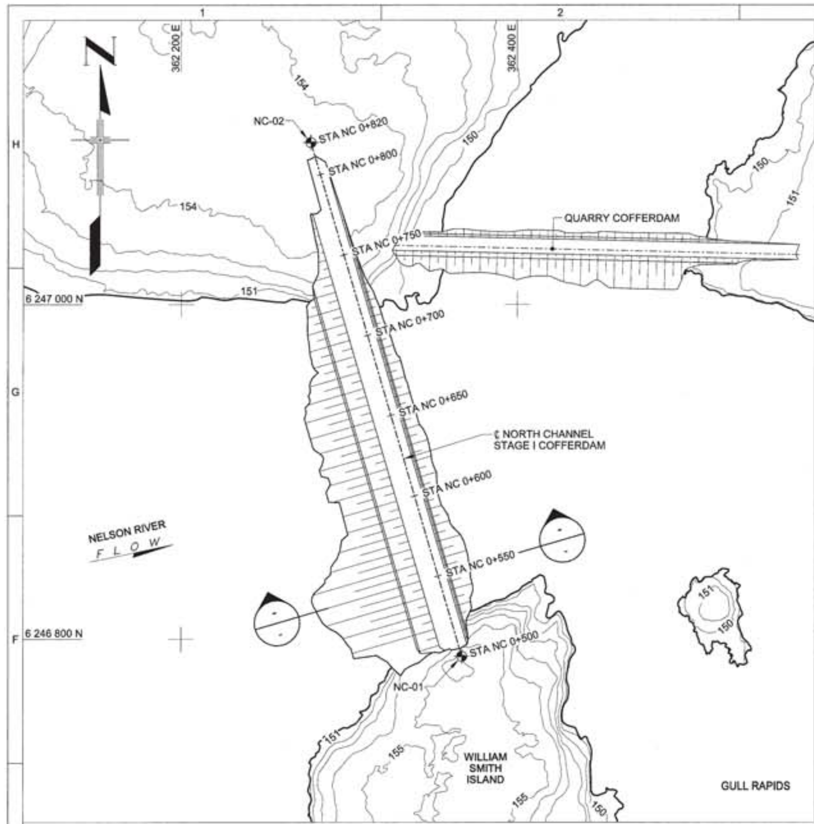
REV. | DATE | DESCRIPTION | BY | CKD. | APP./P. ENG.

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

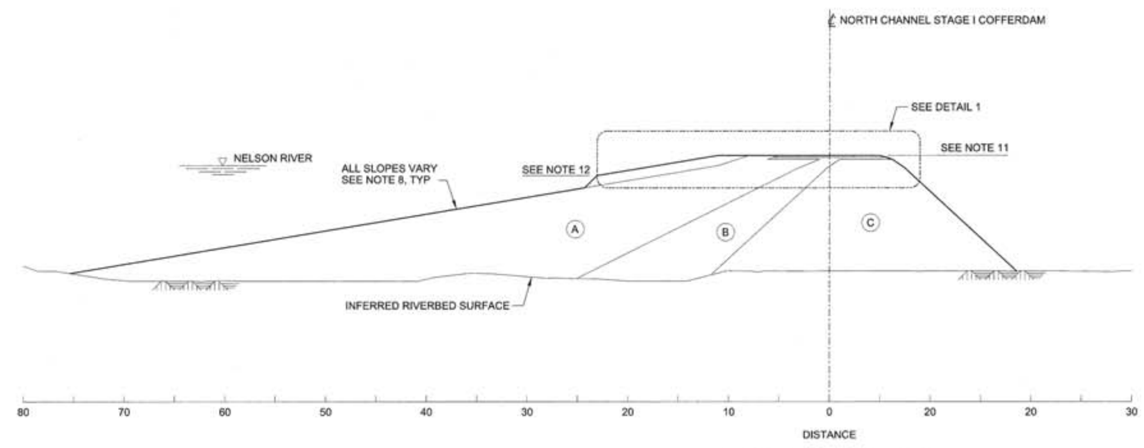
DRAWN: R. ALVERO | CHECKED: | SCALE: 1:1000
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEYASK GENERATING STATION
STAGE I COFFERDAMS
QUARRY COFFERDAM
PLAN & SECTION

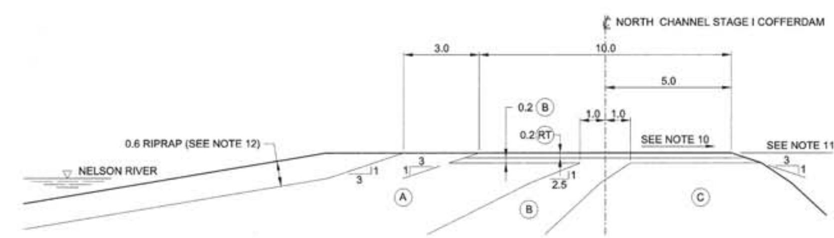
DRAWING NUMBER 1-00195-DE-21600-0002 | SHEET 0001 | REVISION D



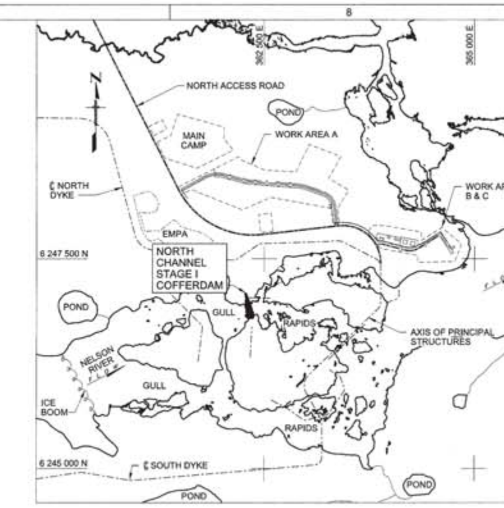
PLAN



TYPICAL SECTION
SCALE 1:400



DETAIL 1
SCALE 1:100



KEY PLAN

LEGEND:

- SHORELINE
- 151 — GROUND SURFACE CONTOUR (EL 151)
- COORDINATE GRID MARKER
- REFERENCE POINT
- STA NC 0+600 — STATIONING ALONG NORTH CHANNEL STAGE I COFFERDAM CENTERLINE
- WATER LEVEL
- SLOPE DOWN
- A — IMPERVIOUS FILL
- B — GRANULAR TRANSITION FILL
- C — ROCKFILL
- RT — ROAD TOPPING

CENTERLINE ALIGNMENT GEOMETRY REFERENCE POINTS

NO.	NORTHING	EASTING
NC-01	6 246 789.725	362 367.194
NC-02	6 247 096.790	362 277.134

ROCKFILL PLACEMENT

FROM	TO	ROCKFILL PRODUCT
STA NC 0+800	STA NC 0+600	CLASS C1
STA NC 0+600	STA NC 0+530	CLASS C2
STA NC 0+530	STA NC 0+500	CLASS C1

THE CONTRACTOR SHALL ASSESS THE LOCAL FLOW CONDITIONS AND SHALL HAVE AVAILABLE FOR USE, ADDITIONAL MATERIAL OF SUITABLE SIZE AND QUANTITY AS MAY BE NECESSARY TO EFFECT CLOSURE OF THE RIVER.

THE STATIONING OF THE PLACEMENT OF THE ROCKFILL PRODUCT IS PRELIMINARY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSESS THE LOCAL FLOW CONDITIONS AND TO ADJUST THE STATIONING FOR THE ROCKFILL PRODUCT DEPENDING UPON RIVER FLOWS AT TIME OF CONSTRUCTION, AS ACCEPTED BY THE PURCHASER'S REPRESENTATIVE.

NOTES:

1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
2. ELEVATIONS ARE BASED ON GS OF C, CGVD28, 1929 ADJ.
3. COORDINATES, DIMENSIONS, DISTANCES, STATIONING, AND ELEVATIONS ARE IN METRES.
4. TOPOGRAPHY IS BASED ON 2010 LIDAR DATA PROVIDED BY MANITOBA HYDRO. CONTOUR INTERVAL IS 1 m.
5. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
6. CLEAR ALONG ALIGNMENT. CLEAR A 40 m WIDE CORRIDOR AT ABUTMENTS CENTERED ALONG ALIGNMENT.
7. THE AREAS OF THE COFFERDAM FOUNDATION WHICH LIE ABOVE WATER ELEVATION AND ARE ACCESSIBLE AT THE TIME OF COFFERDAM CONSTRUCTION SHALL BE STRIPPED AND PREPARED FOR FILL PLACEMENT AS PER THE TECHNICAL SPECIFICATIONS.
8. FILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE ALLOWED TO FALL TO ITS NATURAL ANGLE OF REPOSE. FILL PLACED ABOVE WATER ELEVATION SHALL BE PLACED AT THE FOLLOWING SLOPES, UNLESS NOTED OTHERWISE:
   - CLASS A (IMPERVIOUS FILL) 1V:6H
   - CLASS B (TRANSISTION FILL) 1V:2H
   - CLASS C (ROCK FILL) 1V:1.5H
9. ROCKFILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE DETERMINED AS OUTLINED IN THE ROCKFILL PLACEMENT TABLE AND TECHNICAL SPECIFICATIONS. ROCKFILL PLACED ABOVE THE WATER SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT UNLESS NOTED OTHERWISE.
10. THE CREST OF THE COFFERDAM SHALL BE SLOPED SLIGHTLY SO THAT THE SURFACE RUNOFF FROM THE CREST IS DIRECTED TOWARD THE DOWNSTREAM SIDE OF THE COFFERDAM.
11. CONSTRUCT UP TO EL 154.5 OR UP TO 1 m ABOVE THE FORECASTED WATER ELEVATION AT TIME OF CONSTRUCTION WHICHEVER IS GREATER. THE LENGTH OF THE COFFERDAM SHALL BE EXTENDED AS REQUIRED, AND AS DIRECTED BY THE PURCHASER'S REPRESENTATIVE.
12. RIPRAP SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT. RIPRAP SHALL BE PLACED DOWN TO 1 m BELOW THE FORECASTED WATER LEVEL, OR AS DIRECTED BY THE PURCHASER'S REPRESENTATIVE.
13. PURCHASER'S REPRESENTATIVE WILL PROVIDE FORECASTED WATER ELEVATIONS.

SCALE IN METRES

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-15

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

DRAWING NO.	DRAWING TITLE
1-00195-DE-11430-0001	STAGE I DIVERSION PLAN

REFERENCE DRAWINGS

HATCH
HA DWG. NO. H341433-2150-10-035-0001
AREA COORD. P. PANTEL
DATE
DISCIP. ENGR R. HALIM
DATE
PROJ. ENGR. A. TRUDEL
DATE
PROJ. MGR. W. GENDZELEVICH
DATE

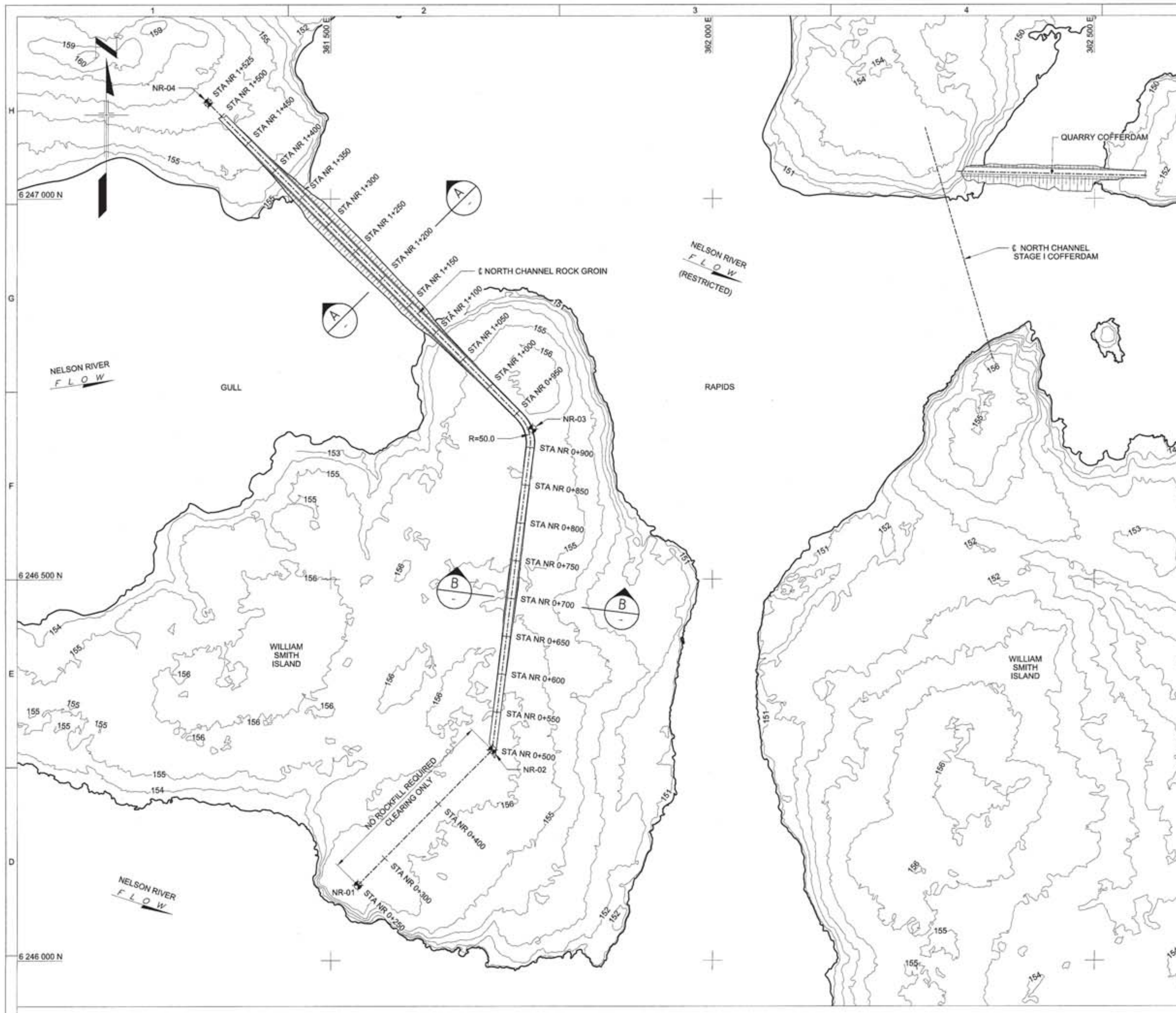
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. ALVERO | CHECKED: | SCALE: 1:1500
DESIGNED: P. PANTEL | CHECKED: | DATE:

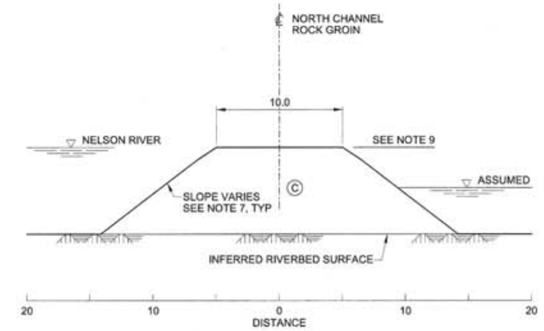
KEEYASK GENERATING STATION

STAGE I COFFERDAMS NORTH CHANNEL STAGE I COFFERDAM PLAN, & SECTIONS

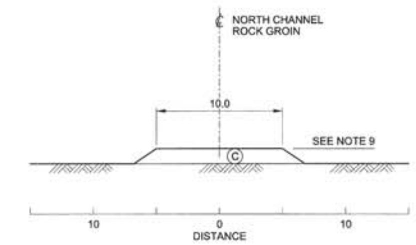
DRAWING NUMBER	SHEET	REVISION
1-00195-DE-21600-0003	0001	D



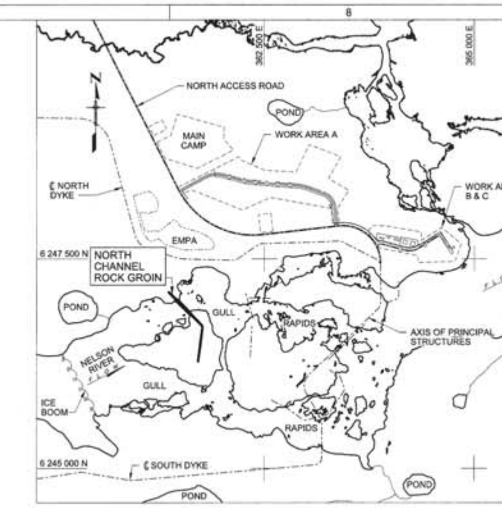
PLAN



SECTION A
STA NR 1+200
SCALE 1:200



SECTION B
STA NR 0+700
SCALE 1:200



KEY PLAN

LEGEND:

- SHORELINE
- 153 GROUND SURFACE CONTOUR (EL 153)
- COORDINATE GRID MARKER
- REFERENCE POINT
- STA NR 0+600 STATIONING ALONG NORTH CHANNEL ROCK GROIN CENTERLINE
- WATER LEVEL
- (C) ROCKFILL

NOTES:

1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
2. ELEVATIONS ARE BASED ON GS OF C, CGVD28, 1929 ADJ.
3. COORDINATES, DIMENSIONING, DISTANCES, STATIONING AND ELEVATIONS ARE IN METRES.
4. TOPOGRAPHY IS BASED ON 2010 LIDAR DATA PROVIDED BY MANITOBA HYDRO. CONTOUR INTERVAL IS 1 m.
5. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY
6. CLEAR ALONG ALIGNMENT ONLY, NO STRIPPING OR GRUBBING. CLEAR A 30 m WIDE CORRIDOR CENTERED ALONG ALIGNMENT.
7. FILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE ALLOWED TO FALL TO ITS ANGLE OF REPOSE. CLASS C (ROCKFILL) PLACED ABOVE WATER ELEVATION SHALL BE PLACED AT 1V:1.5H, UNLESS NOTED OTHERWISE.
8. ROCKFILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE DETERMINED AS OUTLINED IN THE ROCKFILL PLACEMENT TABLE AND TECHNICAL SPECIFICATIONS. ROCKFILL PLACED ABOVE THE WATER SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT UNLESS NOTED OTHERWISE.
9. CONSTRUCT TO EL 156.2 OR UP TO 1 m ABOVE THE FORECASTED WATER ELEVATION AT TIME OF CONSTRUCTION WHICHEVER IS GREATER. IF CONSTRUCTING TO A CREST EL GREATER THAN 156.2 m, NARROW THE CREST WIDTH ACCORDINGLY FOLLOWING THE SLOPES INDICATED IN NOTE 7. IN ADDITION THE LENGTH OF THE ROCK GROIN SHALL BE EXTENDED AS REQUIRED, AND AS DIRECTED BY THE PURCHASER'S REPRESENTATIVE.
10. PURCHASER'S REPRESENTATIVE WILL PROVIDE FORECASTED WATER ELEVATIONS.

CENTERLINE ALIGNMENT GEOMETRY REFERENCE POINTS

NO.	NORTHING	EASTING
NR-01	6 246 098.810	361 535.401
NR-02	6 246 276.243	361 711.520
NR-03	6 246 697.211	361 764.449
NR-04	6 247 126.276	361 339.206

ROCKFILL PLACEMENT

FROM	TO	ROCKFILL PRODUCT
STA NR 1+501	STA NR 1+350	CLASS C1
STA NR 1+350	STA NR 1+050	CLASS C2
STA NR 1+050	STA NR 0+500	CLASS C1

THE CONTRACTOR SHALL ASSESS THE LOCAL FLOW CONDITIONS AND SHALL HAVE AVAILABLE FOR USE, ADDITIONAL MATERIAL OF SUITABLE SIZE AND QUANTITY AS MAY BE NECESSARY TO EFFECT CLOSURE OF THE RIVER.

THE STATIONING OF THE PLACEMENT OF THE ROCKFILL PRODUCT IS PRELIMINARY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSESS THE LOCAL FLOW CONDITIONS AND TO ADJUST THE STATIONING FOR THE ROCKFILL PRODUCT DEPENDING UPON RIVER FLOWS AT TIME OF CONSTRUCTION, AS ACCEPTED BY THE PURCHASER'S REPRESENTATIVE.

0 25 50 75 100 125
SCALE IN METRES

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE
1-00195-DE-11430-0001	STAGE I DIVERSION PLAN

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-15

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

HATCH
HA DWG. NO. H341433-2200-10-035-0001
AREA COORD. P. PANTEL
DATE
DISCIP. ENG R. HALIM
DATE
PROJ. ENGR A. TRUDEL
DATE
PROJ. MGR. W. GENDZELEVICH
DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. ALVERO
CHECKED:
SCALE: 1:2500
DESIGNED: P. PANTEL
CHECKED:
DATE:

KEEYASK GENERATING STATION

STAGE I COFFERDAMS NORTH CHANNEL ROCK GROIN PLAN & SECTIONS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-21600-0004	0001	D

ISO A0 (46.8 x 33.1)
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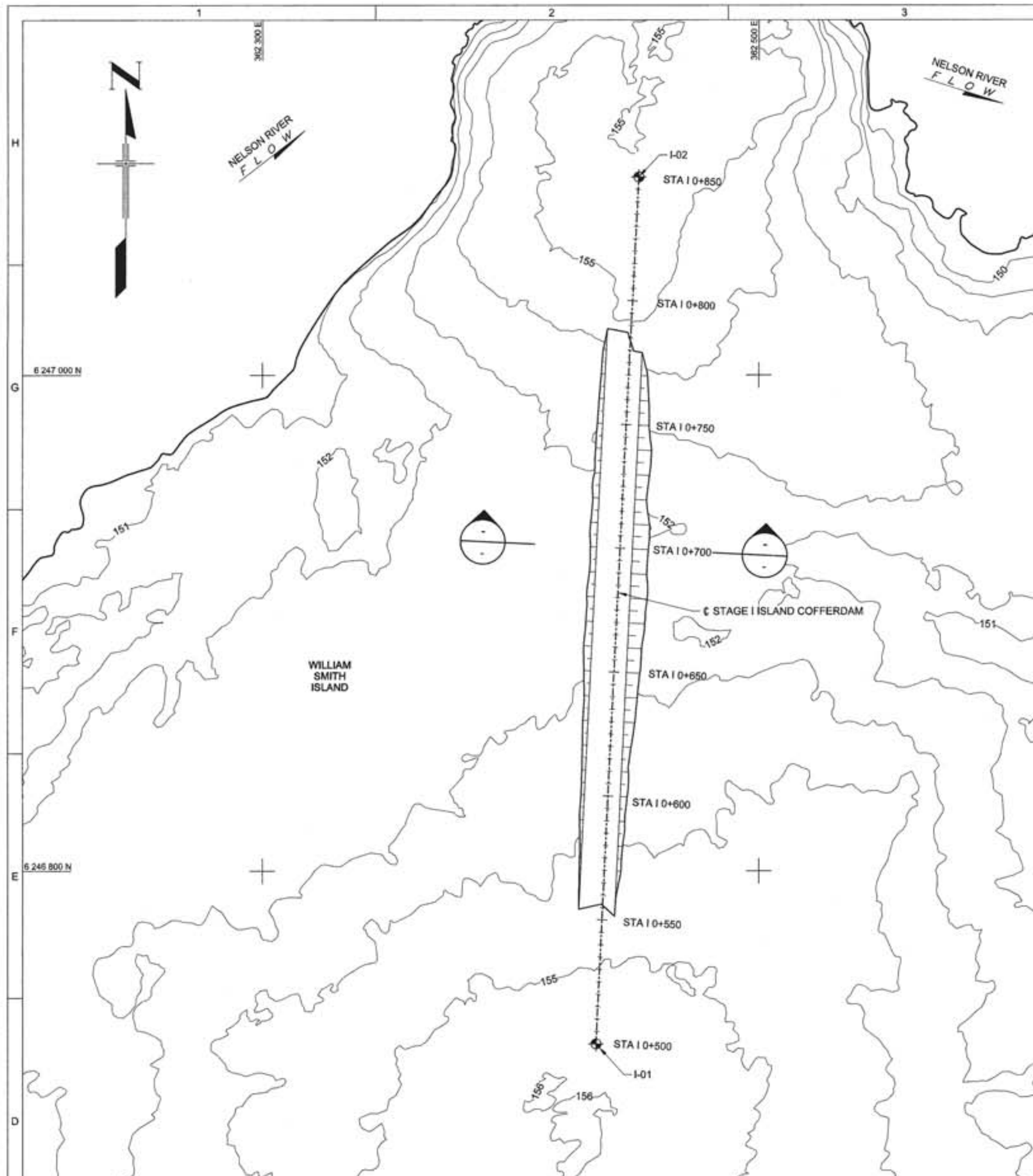
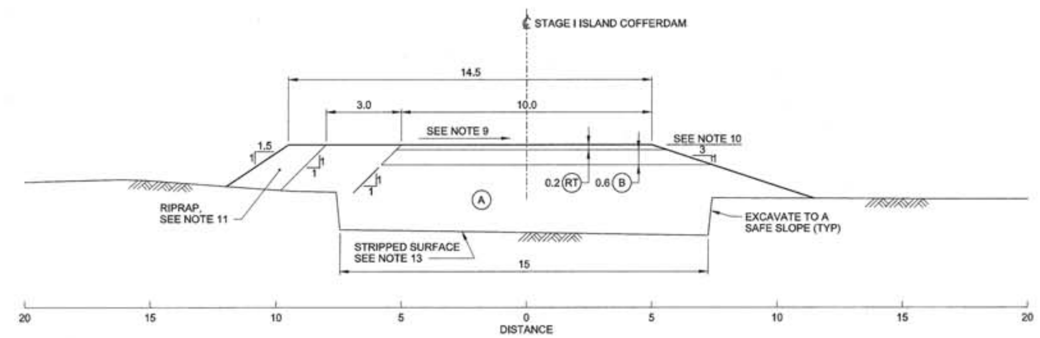
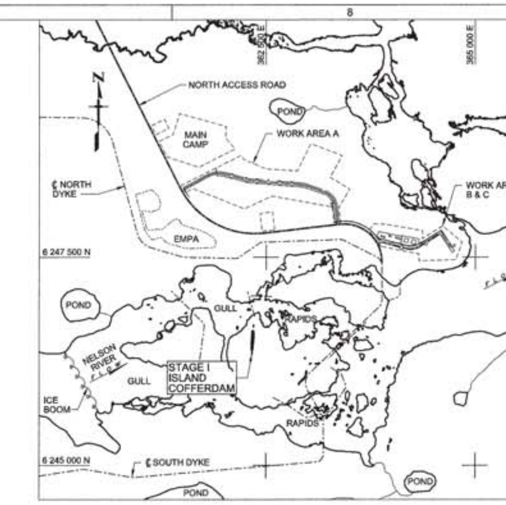


PLAN



TYPICAL SECTION
STA I 0+700
SCALE 1:100



KEY PLAN

LEGEND:

(line)	SHORELINE
155	GROUND SURFACE CONTOUR (EL 155)
+	COORDINATE GRID MARKER
(symbol)	REFERENCE POINT
STA I 0+550	STATIONING ALONG STAGE I ISLAND COFFERDAM CENTERLINE
▽	WATER LEVEL
→	SLOPE DOWN
(A)	IMPERVIOUS FILL
(B)	GRANULAR TRANSITION FILL
(RT)	ROAD TOPPING

NOTES:

1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
2. ELEVATIONS ARE BASED ON GS OF C, CGVD28.
3. COORDINATES , DIMENSIONS, DISTANCES, STATIONING AND ELEVATIONS ARE IN METRES.
4. TOPOGRAPHY IS BASED ON 2010 LIDAR DATA PROVIDED BY MANITOBA HYDRO. CONTOUR INTERVAL IS 1 m.
5. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
6. CLEAR ALONG ALIGNMENT. CLEAR 40 m WIDE CORRIDOR CENTERED ALONG ALIGNMENT.
7. THE AREA OF THE COFFERDAM FOUNDATION WHICH LIE ABOVE WATER ELEVATION AND ARE ACCESSIBLE AT THE TIME OF COFFERDAM CONSTRUCTION SHALL BE STRIPPED AND PREPARED FOR FILL PLACEMENT AS PER THE TECHNICAL SPECIFICATIONS.
8. FILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE ALLOWED TO FALL TO ITS NATURAL ANGLE OF REPOSE. FILL PLACED ABOVE WATER ELEVATION SHALL BE PLACED AT THE FOLLOWING SLOPES, UNLESS NOTED OTHERWISE:
   - CLASS A (IMPERVIOUS FILL) 1V:3H
   - CLASS B (TRANSITION FILL) 1V:2H
   - CLASS C (ROCKFILL) 1V:1.5H
9. THE CREST OF THE COFFERDAM SHALL BE SLOPED SLIGHTLY SO THAT THE SURFACE RUNOFF FROM THE CREST IS DIRECTED TOWARD THE DOWNSTREAM SIDE OF THE COFFERDAM.
10. CONSTRUCT UP TO EL 154.5 OR UP TO 1 m ABOVE THE FORECASTED WATER ELEVATION AT TIME OF CONSTRUCTION WHICHEVER IS GREATER. THE LENGTH OF THE COFFERDAM SHALL BE EXTENDED AS REQUIRED, AND AS DIRECTED BY THE PURCHASER'S REPRESENTATIVE.
11. RIPRAP SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT.
12. PURCHASER'S REPRESENTATIVE WILL PROVIDE FORECASTED WATER ELEVATIONS.
13. EXCAVATE TRENCH DOWN TO MINERAL SOIL OR UP TO 1.5 m IN DEPTH WHICHEVER IS SHALLOWER, OR AS DIRECTED BY PURCHASER'S REPRESENTATIVE.

CENTERLINE ALIGNMENT GEOMETRY REFERENCE POINTS

NO.	NORTHING	EASTING
I-01	6 246 330.310	362 334.442
I-02	6 246 679.893	362 351.520

0 10 20 30 40 50
SCALE IN METRES

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-15

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE
1-00195-DE-11430-0001	STAGE I DIVERSION PLAN

HATCH
HA DWG. NO. H341433-2250-10-035-0001
AREA COORD. P. PANTEL
DATE
DISCIP. ENG R. HALIM
DATE
PROJ. ENGR A. TRUDEL
DATE
PROJ. MGR. W. GENDZELEVICH
DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. ALVERO | CHECKED: | SCALE: 1:1000
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEEYASK GENERATING STATION

STAGE I COFFERDAMS
STAGE I ISLAND COFFERDAM
PLAN, SECTIONS & DETAILS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-21600-0005	0001	D

ISO A0 (46.8 x 33.1)
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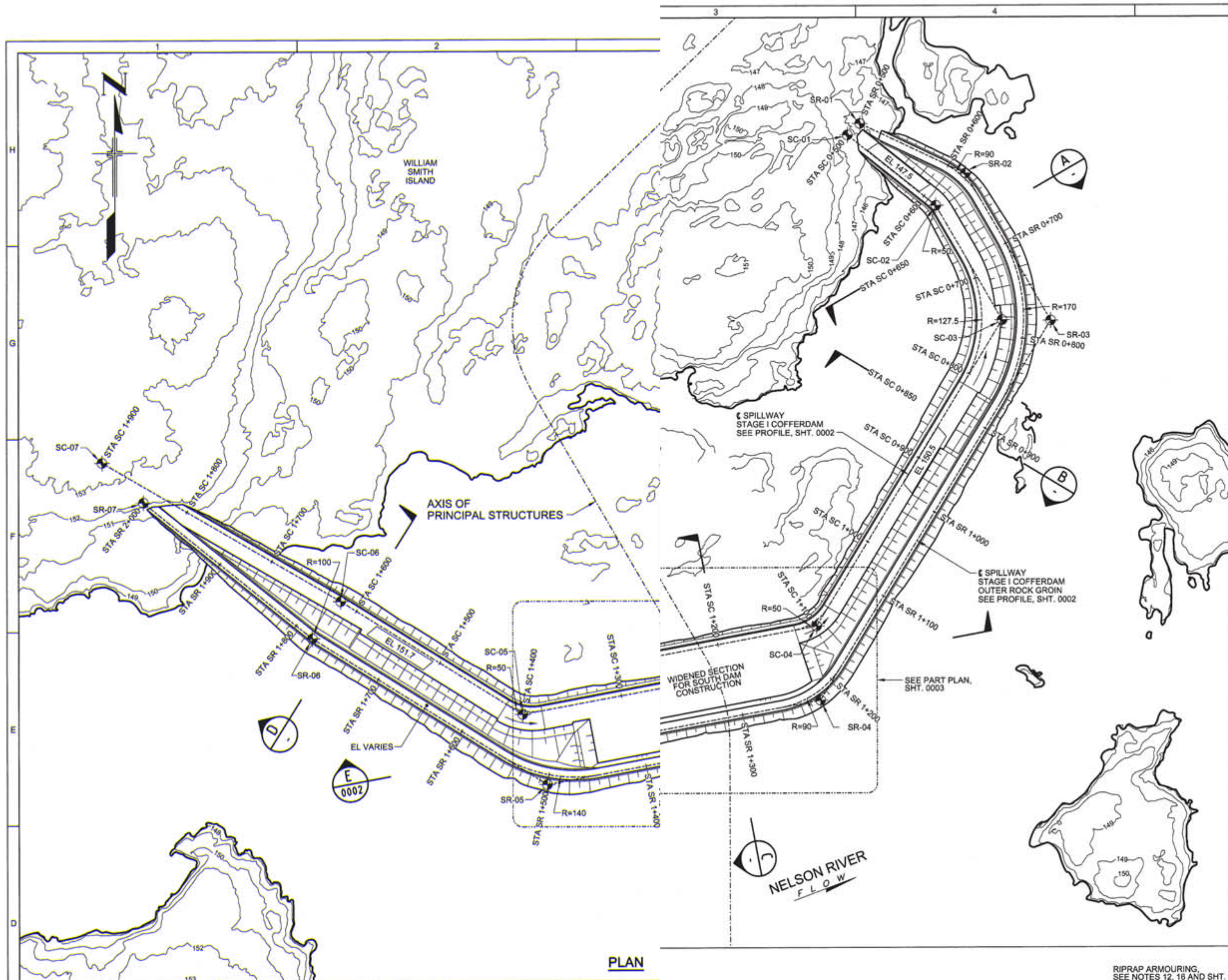

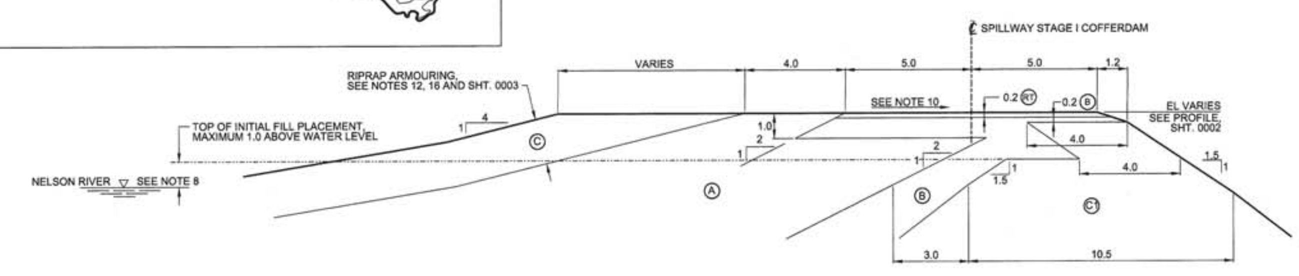

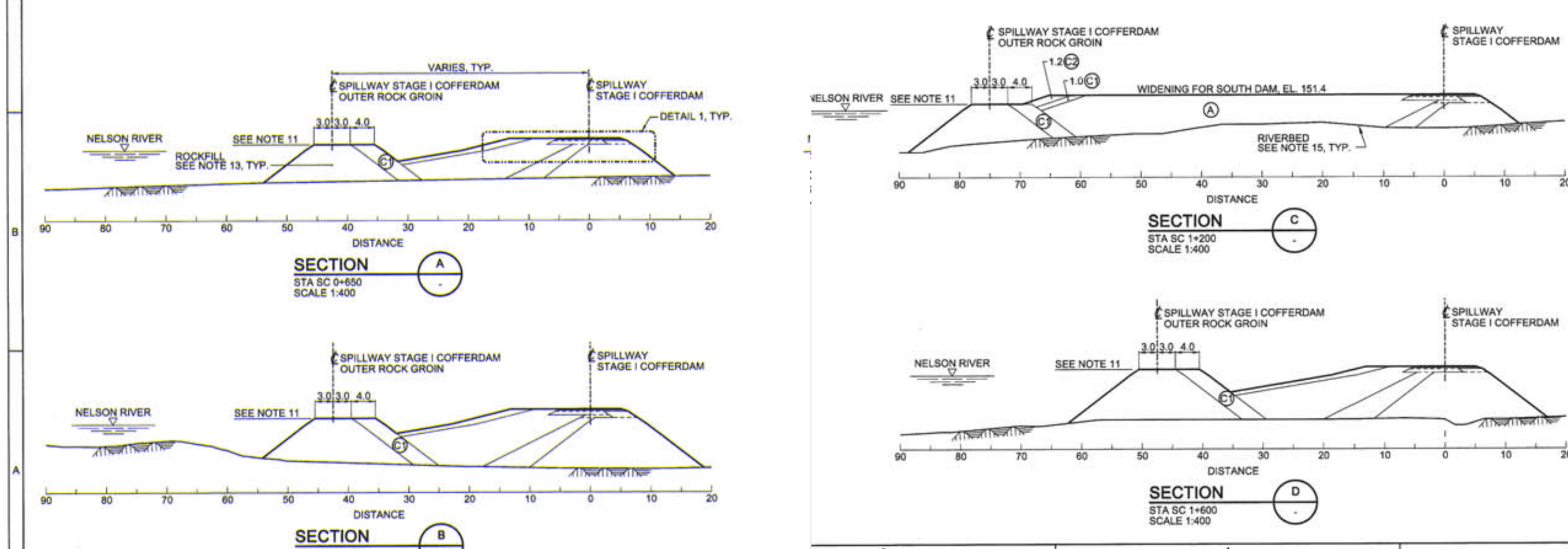

CLIENT REVIEW

CENTERLINE ALIGNMENT GEOMETRY REFERENCE POINTS (LCG)		
NO.	NORTHING	EASTING
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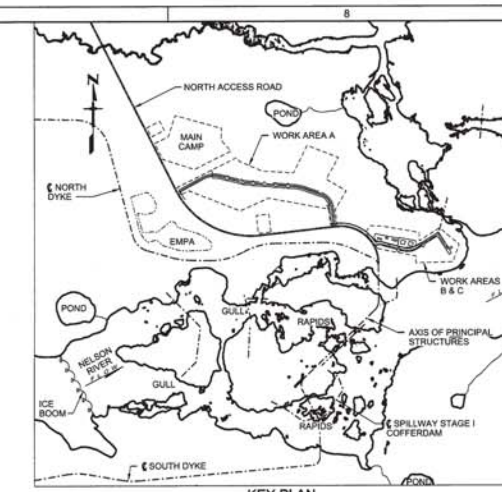
SC-02	48 802.572	19 512.107
SC-03	48 685.535	19 579.652
SC-04	48 373.409	19 390.249
SC-05	48 317.932	19 090.918
SC-06	48 434.433	18 904.477
SC-07	48 575.558	18 663.217
SR-01	48 886.375	19 434.750
SR-02	48 835.286	19 542.307
SR-03	48 684.992	19 629.046
SR-04	48 297.833	19 394.111
SR-05	48 246.275	19 115.937
SR-06	48 395.682	18 876.836
SR-07	48 534.638	18 705.240



KEY PLAN

LEGEND:

SHORELINE

GROUND SURFACE CONTOUR (EL. 150)

COORDINATE GRID MARKER

REFERENCE POINT

STA SC 0+600 — STATIONING ALONG SPILLWAY STAGE I COFFERDAM CENTERLINE

STA SR 0+600 — STATIONING ALONG SPILLWAY STAGE I COFFERDAM OUTER ROCK GROIN CENTERLINE

WATER ELEVATION

SLOPE DOWN

A — IMPERVIOUS FILL

B — GRANULAR TRANSITION FILL

C1 C2 C3 C4 — ROCKFILL OR RIPRAP ARMOURING CLASS WITH SPECIFIC GRADATION

RT — ROAD TOPPING

NOTES:

1. LOCAL CONSTRUCTION GRID (LCG) COORDINATE SYSTEM.
2. ELEVATIONS ARE BASED ON GS OF C, CGVD28, 1929 ADJ.
3. COORDINATES, DIMENSIONS, DISTANCES, STATIONING, AND ELEVATIONS ARE IN METRES.
4. TOPOGRAPHY IS BASED ON 2010 LIDAR DATA PROVIDED BY MANITOBA HYDRO. CONTOUR INTERVAL IS 1 m.
5. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
6. CLEAR ALONG ALIGNMENT. CLEAR A 60 m WIDE CORRIDOR AT ABUTMENTS CENTERED ALONG ALIGNMENT.
7. THE AREAS OF THE COFFERDAM FOUNDATION WHICH LIE ABOVE WATER LEVEL AND ARE ACCESSIBLE AT THE TIME OF COFFERDAM CONSTRUCTION SHALL BE STRIPPED AND PREPARED FOR FILL PLACEMENT AS PER THE TECHNICAL SPECIFICATIONS.
8. FILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE ALLOWED TO FALL TO ITS NATURAL ANGLE OF REPOSE. FILL PLACED ABOVE WATER LEVEL SHALL BE PLACED AT THE FOLLOWING SLOPES, UNLESS NOTED OTHERWISE:
   - CLASS A (IMPERVIOUS FILL) 1V:4H
   - CLASS B (TRANSISTION FILL) 1V:2.5H
   - CLASS C (ROCKFILL) 1V:1.5H
9. ROCKFILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE DETERMINED AS OUTLINED IN THE ROCKFILL PLACEMENT TABLE AND TECHNICAL SPECIFICATIONS.
10. THE CREST OF THE SPILLWAY STAGE I COFFERDAM SHALL BE SLOPED SLIGHTLY SO SO THAT SURFACE RUNOFF FROM THE CREST IS DIRECTED TOWARD THE INSIDE OF THE COFFERDAM.
11. CONSTRUCT OUTER ROCK GROIN UP TO 1 m ABOVE THE FORECASTED WATER ELEVATION AT TIME OF CONSTRUCTION.
12. RIPRAP ARMOURING SHALL CONSIST OF CLASS C2, C3 OR C4 ROCKFILL PRODUCT AS OUTLINED IN THE PLAN AND TABLE ON SHEET 0003.
13. OUTER ROCK GROIN ROCKFILL SHALL CONSIST OF CLASS C2, C3 OR C4 ROCKFILL PRODUCT AS OUTLINED IN THE PLAN AND TABLE ON SHEET 0003.
14. THE ENGINEER WILL PROVIDE FORECASTED WATER ELEVATIONS.
15. THE RIVERBED MATERIAL VARIES IN THE COFFERDAM AREA. INVESTIGATION PROGRAMS HAVE OBSERVED SILT, SAND AND GRAVEL LENSES, COBBLES, BOULDERS AND BEDROCK OUTCROPS.
16. IF THE OUTER ROCK GROIN IS CONSTRUCTED FOR A WATER LEVEL BELOW THE 1:20 YEAR FLOOD, A 1.0 m THICK LAYER OF CLASS C1 SHALL BE PLACED BETWEEN THE RIPRAP ARMOURING AND THE CLASS A IMPERVIOUS FILL.

0 20 40 60 80 100
SCALE IN METRES

DRAWING NO.	DRAWING TITLE
1-00195-DE-11430-0001	STAGE I DIVERSION PLAN

REFERENCE DRAWINGS

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

HATCH

HA DWG. NO. H341433-2300-10-035-0001

AREA COORD: P. PANTEL
DATE

DISCIP. ENGR.: R. HALIM
DATE

PROJ. ENGR.: I. AINSLIE
DATE

PROJ. MGR.: W. GENDZELEVICH
DATE

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. ALVERO
CHECKED:
SCALE: 1:2000
DESIGNED: P. PANTEL
CHECKED:
DATE: 2013-06-24

KEEYASK GENERATING STATION

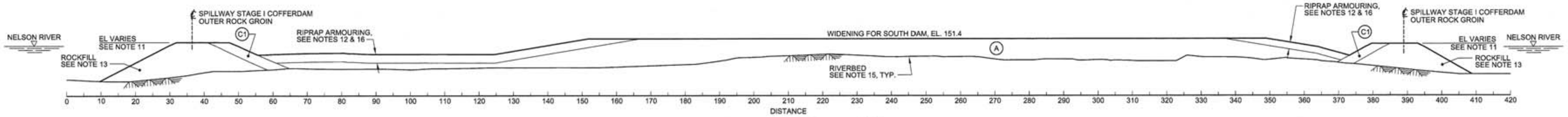
STAGE I COFFERDAMS SPILLWAY STAGE I COFFERDAM PLANS, SECTIONS, PROFILES & DETAIL

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-21600-0006	0001	K

ISO A0 (46.8 x 33.1)

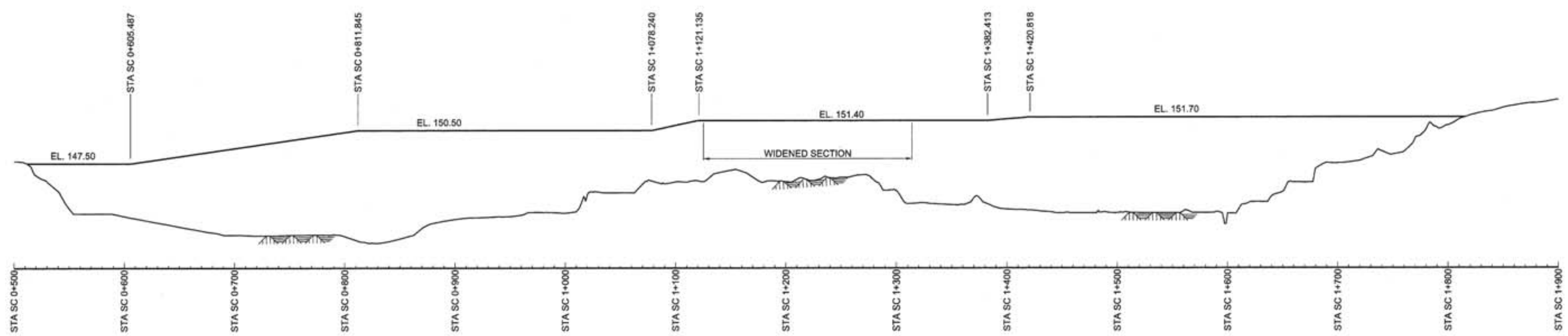
NOTE:

FOR LEGEND AND NOTES SEE SHEET 0001.



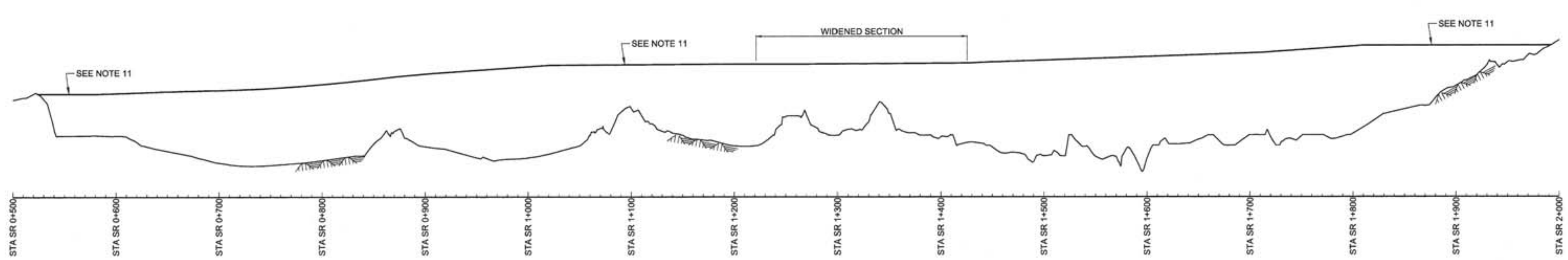
SECTION AT WIDENING (E / 0001)

SCALE 1:500



PROFILE (- / 0001)

SPILLWAY STAGE I COFFERDAM
SCALE 1:2000 HORIZONTAL
1:200 VERTICAL



PROFILE (- / 0001)

SPILLWAY STAGE I COFFERDAM OUTER ROCK GROIN
SCALE 1:2000 HORIZONTAL
1:200 VERTICAL

CLIENT REVIEW

0 2 4 6 8 10 SCALE IN METRES

0 5 10 15 20 25 SCALE IN METRES

0 20 40 60 80 100 SCALE IN METRES

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

HATCH

HA DWG. NO. H341433-2300-10-035-0002

AREA COORD. P. PANTEL DATE

DISCIP. ENGR. R. HALIM DATE

PROJ. ENGR. I. AINSLIE DATE

PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

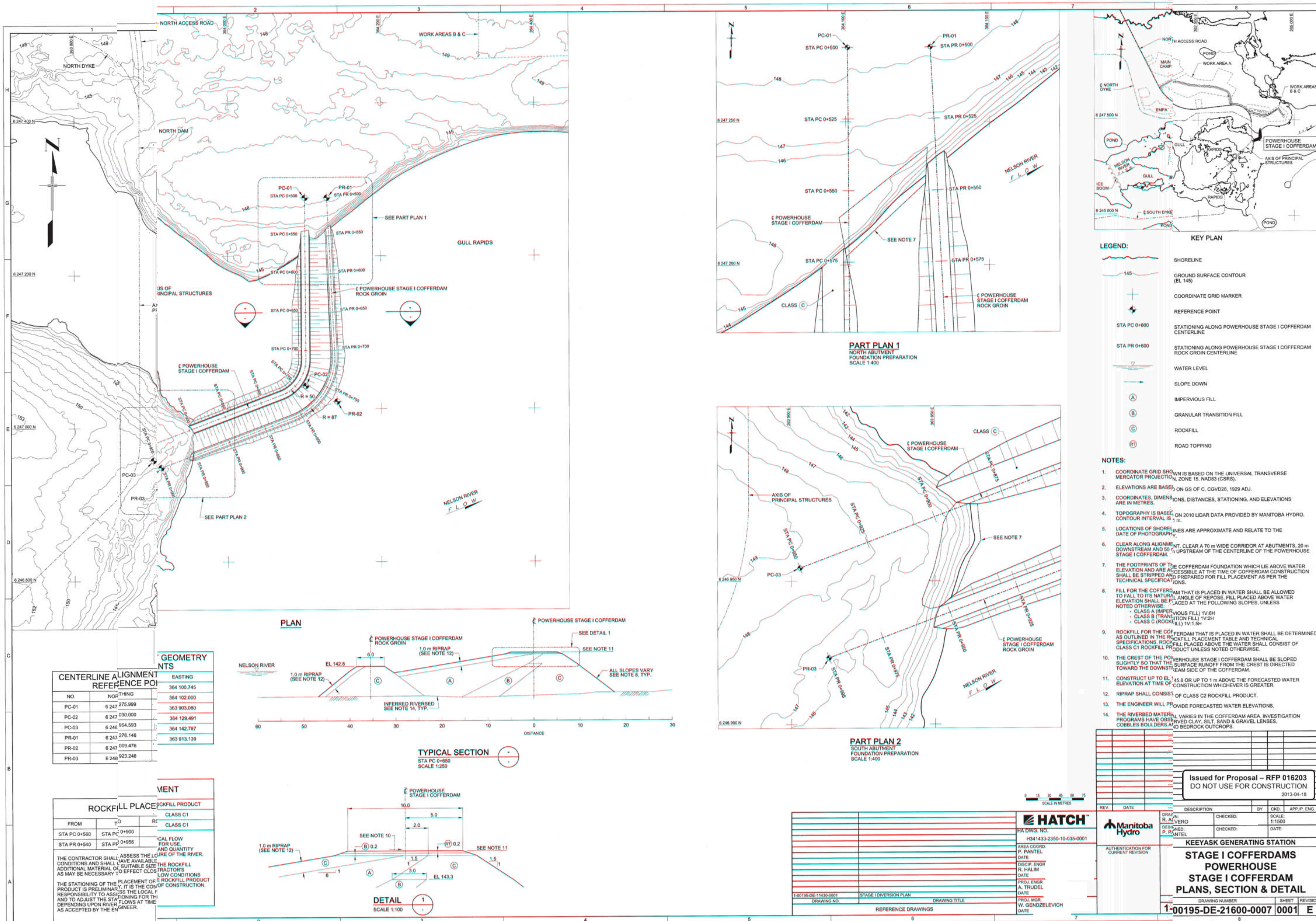
DRAWN: R. ALVERO	CHECKED:	SCALE: AS NOTED
DESIGNED: P. PANTEL	CHECKED:	DATE: 2013-06-24

KEEYASK GENERATING STATION

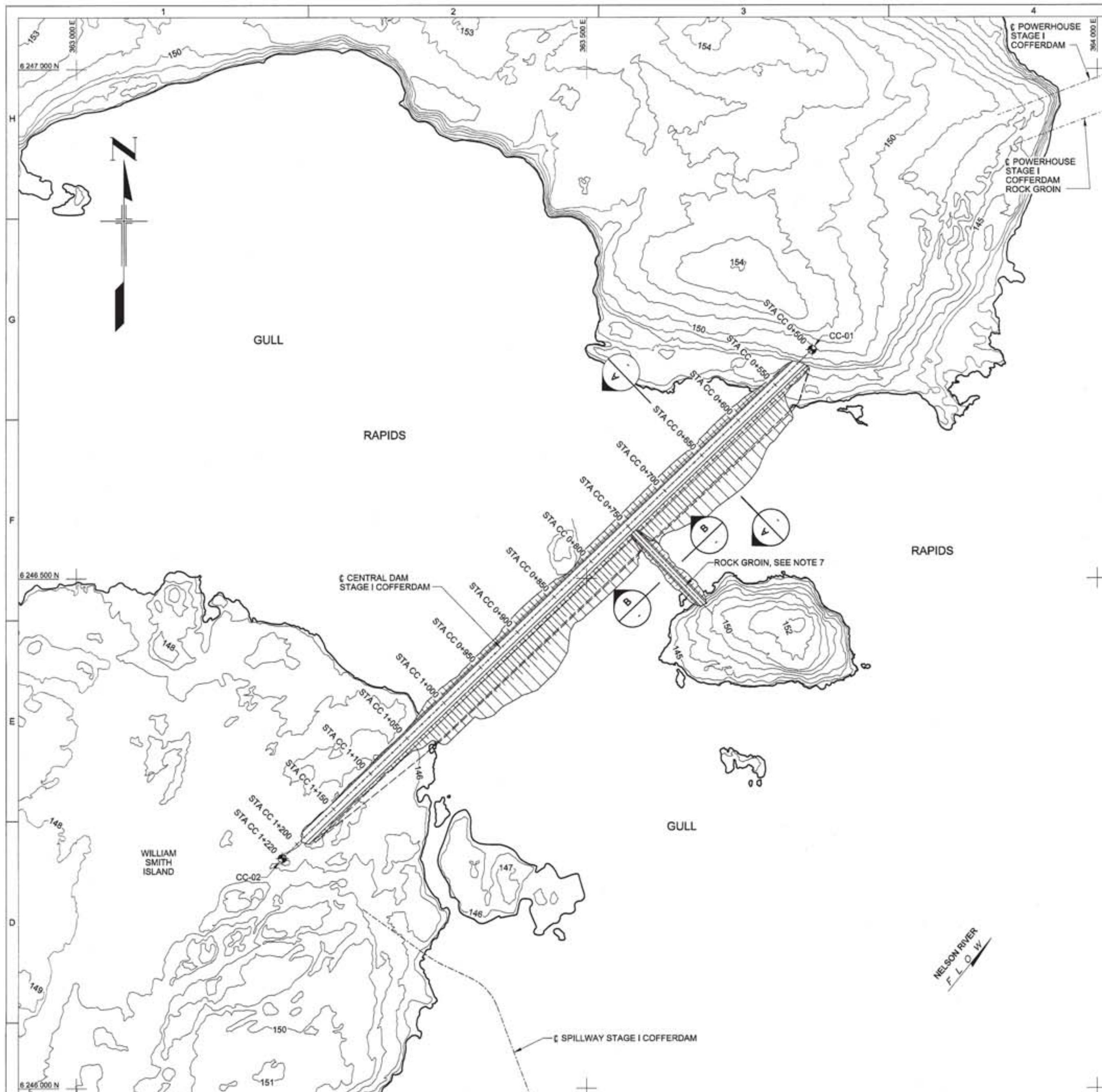
**STAGE I COFFERDAMS
SPILLWAY STAGE I COFFERDAM
PLANS, SECTIONS,
PROFILES & DETAIL**

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-21600-0006	0002	K

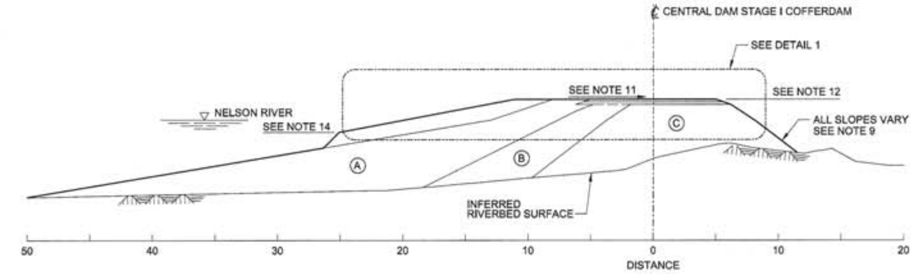
ISO A0 (46.8 x 33.1)



NORTH ACCESS ROAD
WORK AREAS B & C
NORTH DYKE
NORTH DAM
GULL RAPIDS
SEE PART PLAN 1
SEE PART PLAN 2
℄ POWERHOUSE STAGE I COFFERDAM ROCK GROIN
℄ POWERHOUSE STAGE I COFFERDAM
NELSON RIVER FLOW
PLAN
TYPICAL SECTION
STA PC 0+650
SCALE 1:250
DETAIL
SCALE 1:100
PART PLAN 1
NORTH ABUTMENT FOUNDATION PREPARATION
SCALE 1:400
PART PLAN 2
SOUTH ABUTMENT FOUNDATION PREPARATION
SCALE 1:400
KEY PLAN
POWERHOUSE STAGE I COFFERDAM
AXIS OF PRINCIPAL STRUCTURES
LEGEND:
SHORELINE
GROUND SURFACE CONTOUR (EL 145)
COORDINATE GRID MARKER
REFERENCE POINT
STATIONING ALONG POWERHOUSE STAGE I COFFERDAM CENTERLINE
STATIONING ALONG POWERHOUSE STAGE I COFFERDAM ROCK GROIN CENTERLINE
WATER LEVEL
SLOPE DOWN
IMPERVIOUS FILL
GRANULAR TRANSITION FILL
ROCKFILL
ROAD TOPPING
NOTES:
CENTERLINE ALIGNMENT GEOMETRY REFERENCE POINTS
ROCKFILL PLACEMENT
Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-04-18
HATCH
H341433-2350-10-035-0001
Manitoba Hydro
KEEYASK GENERATING STATION
STAGE I COFFERDAMS
POWERHOUSE
STAGE I COFFERDAM
PLANS, SECTION & DETAIL
1-00195-DE-21600-0007
0001
E

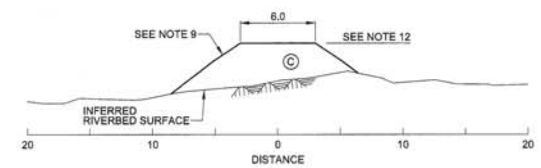


PLAN



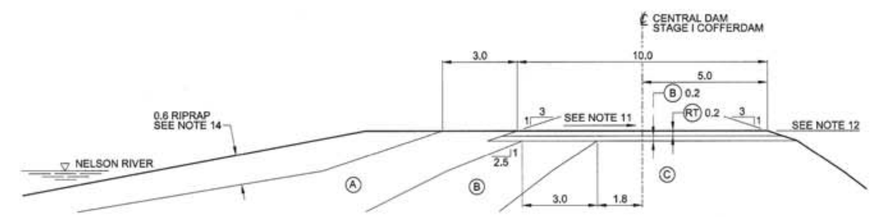
TYPICAL SECTION A

STA CC 0+650
SCALE 1:200



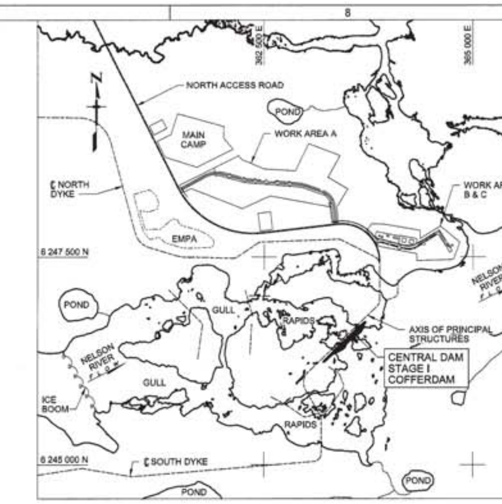
TYPICAL SECTION B

ROCK GROIN
SCALE 1:200



DETAIL 1

SCALE 1:100



KEY PLAN

LEGEND:

(shoreline symbol)	SHORELINE
—150—	GROUND SURFACE CONTOUR (EL 150)
+	COORDINATE GRID MARKER
	REFERENCE POINT
STA CC 0+600	STATIONING ALONG CENTRAL DAM STAGE I COFFERDAM CENTERLINE
▽	WATER LEVEL
→	SLOPE DOWN
A	IMPERVIOUS FILL
B	GRANULAR TRANSITION FILL
C	ROCKFILL
RT	ROAD TOPPING

NOTES:

1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
2. ELEVATIONS ARE BASED ON GS OF C, CGVD28, 1929 ADJ.
3. COORDINATES, DIMENSIONS, DISTANCES, STATIONING, AND ELEVATIONS ARE IN METRES.
4. TOPOGRAPHY IS BASED ON 2010 LIDAR DATA PROVIDED BY MANITOBA HYDRO. CONTOUR INTERVAL IS 1 m.
5. LOCATIONS OF SHORELINES ARE APPROXIMATE AND RELATE TO THE DATE OF PHOTOGRAPHY.
6. CLEAR ALONG ALIGNMENT. CLEAR A 30 m WIDE CORRIDOR AT ABUTMENTS CENTERED ALONG ALIGNMENT.
7. ROCK GROIN CENTERLINE ALIGNMENT IS PERPENDICULAR TO THE STAGE I CENTRAL DAM COFFERDAM CERTERLINE ALIGNMENT AT STA CC 0+750.
8. THE AREAS OF THE COFFERDAM FOUNDATION WHICH LIE ABOVE WATER ELEVATION AND ARE ACCESSIBLE AT THE TIME OF COFFERDAM CONSTRUCTION SHALL BE STRIPPED AND PREPARED FOR FILL PLACEMENT AS PER THE TECHNICAL SPECIFICATIONS.
9. FILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE ALLOWED TO FALL TO ITS NATURAL ANGLE OF REPOSE. FILL PLACED ABOVE WATER ELEVATIONS SHALL BE PLACED AT THE FOLLOWING SLOPES, UNLESS NOTED OTHERWISE:
   - CLASS A (IMPERVIOUS FILL) 1V:3H
   - CLASS B (TRANSISTION FILL) 1V:2H
   - CLASS C (ROCKFILL) 1V:1.5H (SEE NOTE 10)
10. ROCKFILL FOR THE COFFERDAM THAT IS PLACED IN WATER SHALL BE DETERMINED AS OUTLINED IN THE ROCKFILL PLACEMENT TABLE AND TECHNICAL SPECIFICATIONS. ROCKFILL PLACED ABOVE THE WATER SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT UNLESS NOTED OTHERWISE.
11. THE CREST OF THE COFFERDAM SHALL BE SLOPED SLIGHTLY SO THAT THE SURFACE RUNOFF FROM THE CREST IS DIRECTED TOWARD THE DOWNSTREAM SIDE OF THE COFFERDAM.
12. CONSTRUCT UP TO EL 147.3 OR UP TO 1 m ABOVE THE FORECASTED WATER ELEVATION AT TIME OF CONSTRUCTION WHICHEVER IS GREATER. THE LENGTH OF THE COFFERDAM SHALL BE EXTENDED AS REQUIRED, AND AS DIRECTED BY THE PURCHASER'S REPRESENTATIVE
13. PURCHASER'S REPRESENTATIVE WILL PROVIDE FORECASTED WATER ELEVATIONS.
14. RIPRAP SHALL CONSIST OF CLASS C1 ROCKFILL PRODUCT. RIPRAP SHALL BE PLACED DOWN TO 1 m BELOW THE FORECASTED WATER LEVEL, OR AS DIRECTED BY THE PURCHASER'S REPRESENTATIVE.

CENTERLINE ALIGNMENT GEOMETRY REFERENCE POINTS

NO.	NORTHING	EASTING
CC-01	6 246 724.419	363 720.686
CC-02	6 246 225.541	363 201.532

ROCKFILL PLACEMENT

FROM	TO	ROCKFILL PRODUCT
STA CC 0+500	STA CC 1+213	CLASS C1
ROCK GROIN (SEE NOTE 7)		CLASS C1

THE CONTRACTOR SHALL ASSESS THE LOCAL FLOW CONDITIONS AND SHALL HAVE AVAILABLE FOR USE, ADDITIONAL MATERIAL OF SUITABLE SIZE AND QUANTITY AS MAY BE NECESSARY TO EFFECT CLOSURE OF THE RIVER.

THE STATIONING OF THE PLACEMENT OF THE ROCKFILL PRODUCT IS PRELIMINARY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSESS THE LOCAL FLOW CONDITIONS AND TO ADJUST THE STATIONING FOR THE ROCKFILL PRODUCT DEPENDING UPON RIVER FLOWS AT TIME OF CONSTRUCTION, AS ACCEPTED BY THE PURCHASER'S REPRESENTATIVE.

0 20 40 60 80 100
SCALE IN METRES

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-15

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE
1-00195-DE-11430-0001	STAGE I DIVERSION PLAN

HATCH
HA DWG. NO. H341433-2400-10-035-0001
AREA COORD P. PANTEL
DATE
DISCIP. ENGR. R. HALIM
DATE
PROJ. ENGR. A. TRUDEL
DATE
PROJ. MGR. W. GENDZELEVICH.
DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. ALVERO
CHECKED:
SCALE: 1:2000
DESIGNED: P. PANTEL
CHECKED:
DATE:

KEEYASK GENERATING STATION

STAGE I COFFERDAMS
CENTRAL DAM STAGE I COFFERDAM
PLAN, SECTIONS & DETAILS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-21600-0008	0001	D

ISO A0 (46.8 x 33.1)
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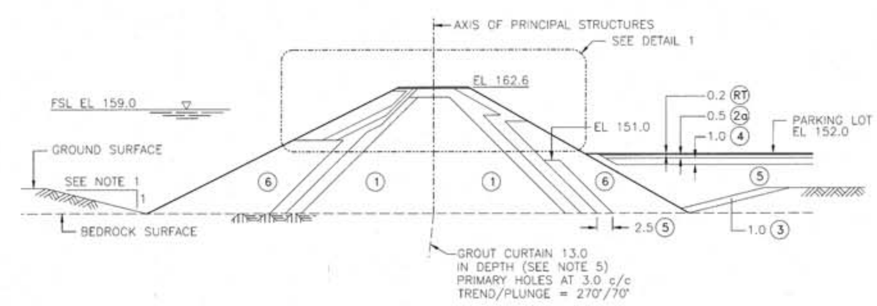
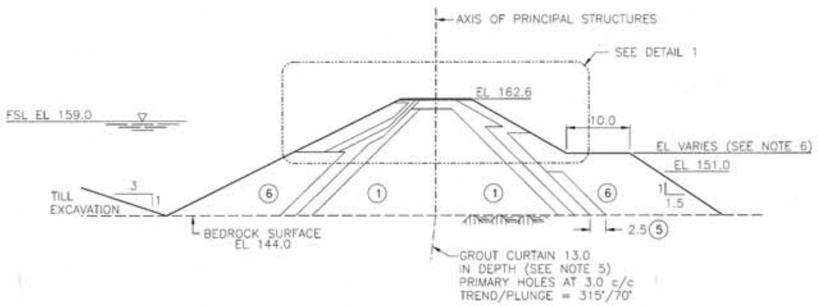
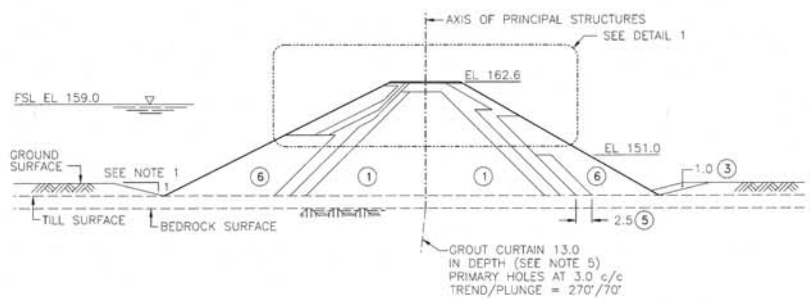


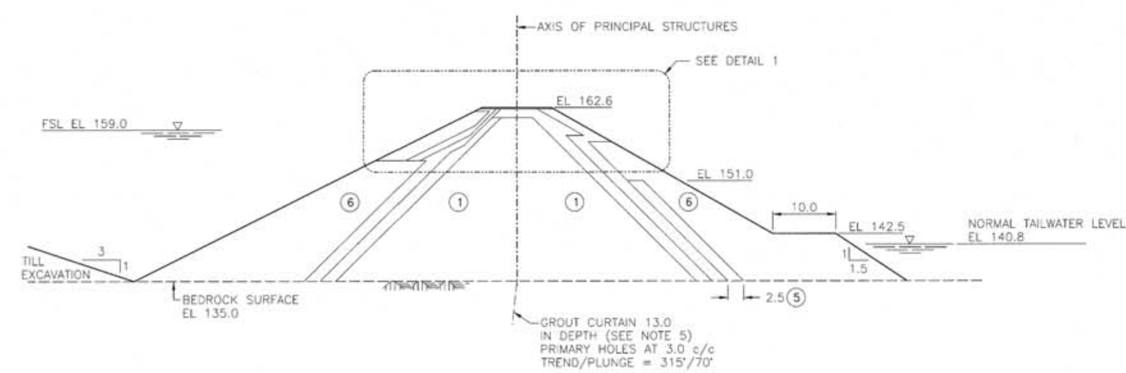
NORTH DAM
MAIN SECTION
SCALE A



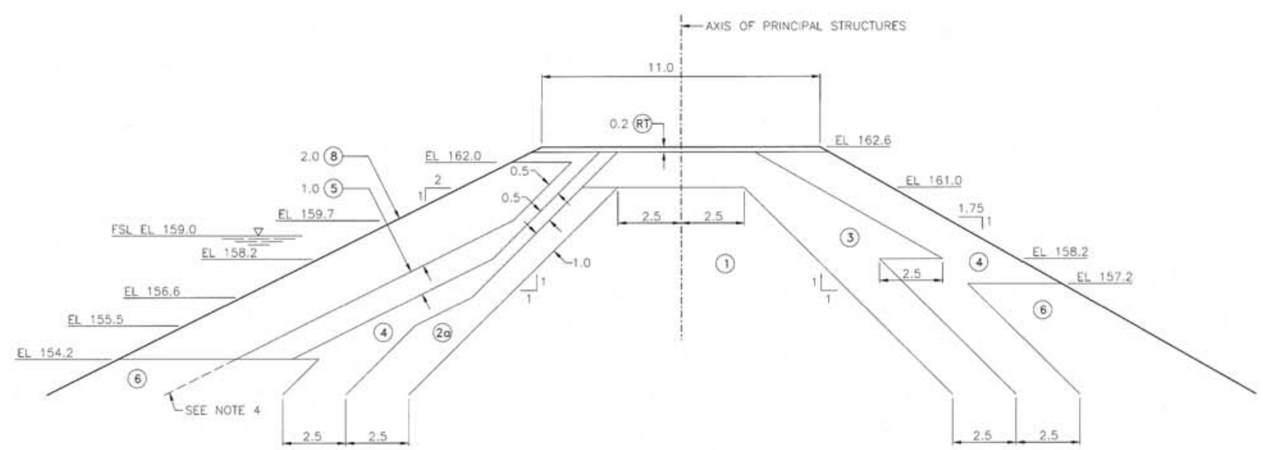
CENTRAL DAM
NEAR SPILLWAY
SCALE A



NORTH DAM
NORTH BANK SECTION
SCALE A



CENTRAL DAM
NEAR POWERHOUSE
SCALE A



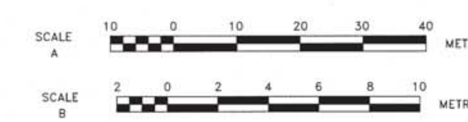
DETAIL 1
SCALE B

LEGEND:

- (1) IMPERVIOUS FILL
- (2a) PERVIOUS GRANULAR FILL
- (3) FINE FILTER
- (4) TRANSITION – CRUSHED ROCK/COARSE FILTER
- (5) RIPRAP BEDDING/FINE ROCKFILL
- (6) ROCKFILL
- (8) RIPRAP
- (RT) ROAD TOPPING
- ▽ WATER LEVEL
- FSL NORMAL FULL SUPPLY LEVEL

NOTES:

1. WHEN POSTGLACIAL CLAYS ARE 3 METRES THICK OR LESS USE 1 VERTICAL TO 3.5 HORIZONTAL AND, WHEN POSTGLACIAL CLAYS ARE GREATER THAN 3 METRES THICK USE 1 VERTICAL TO 4 HORIZONTAL.
2. ELEVATIONS AND DIMENSIONS ARE IN METRES.
3. ELEVATIONS ARE BASED ON CGVD 1928.
4. CLASS (8) PLACED ALONG FULL LENGTH OF UPSTREAM SLOPE AT CONCRETE STRUCTURES TIE-INS.
5. DEPTH MEANS THE VERTICAL DEPTH, IT IS NOT THE LENGTH ALONG THE AXIS OF THE BOREHOLE.
6. DOWNSTREAM TOE BERM TO BE USED FOR ACCESS TO SPILLWAY BRIDGE DECK.



Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO.
H341433-3000-10-042-0001

AREA COORD: P. PANTEL
DISCIP. ENGR.: R. HALIM
PROJ. ENGR.: A. TRUDEL
PROJ. MGR.: W. GENDZELEVICH

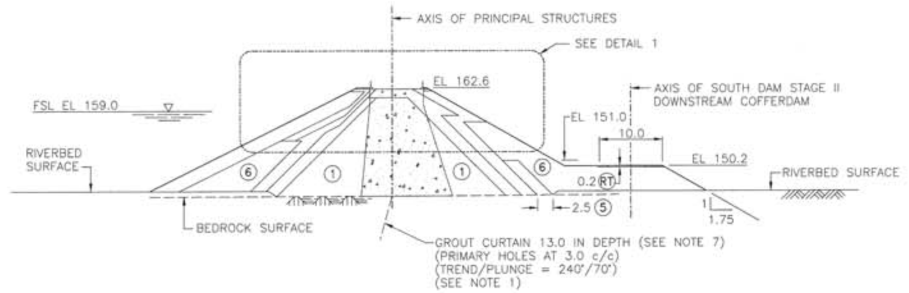
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R.C. ALVERO | CHECKED: | SCALE: 1:400
DESIGNED: P. PANTEL | CHECKED: | DATE:

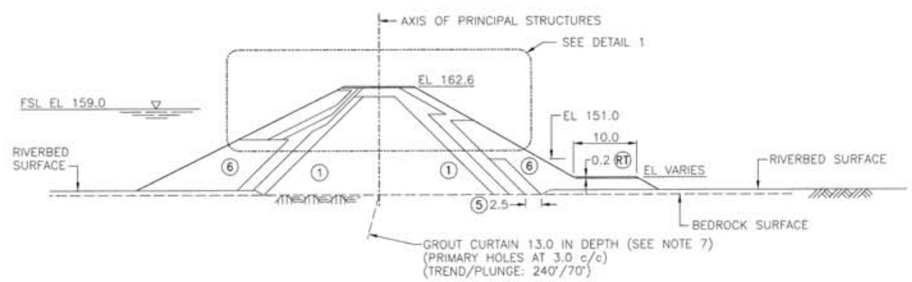
KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
NORTH AND CENTRAL DAM
SECTIONS

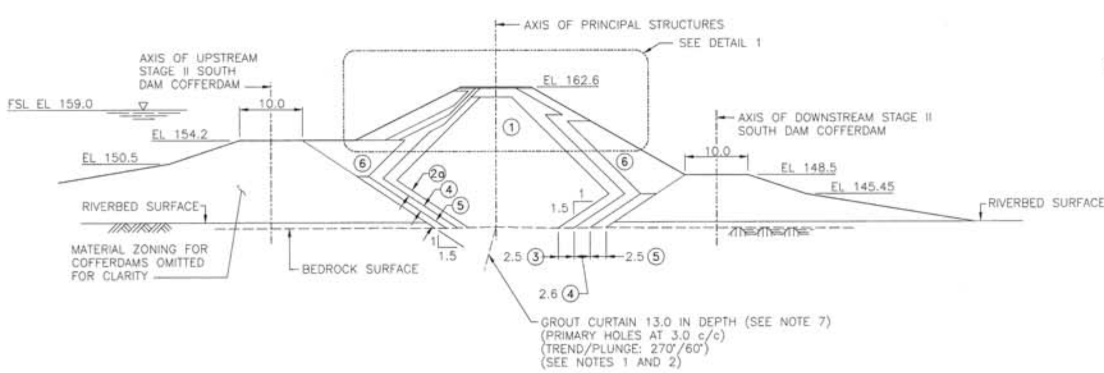
DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0043	0001	0C



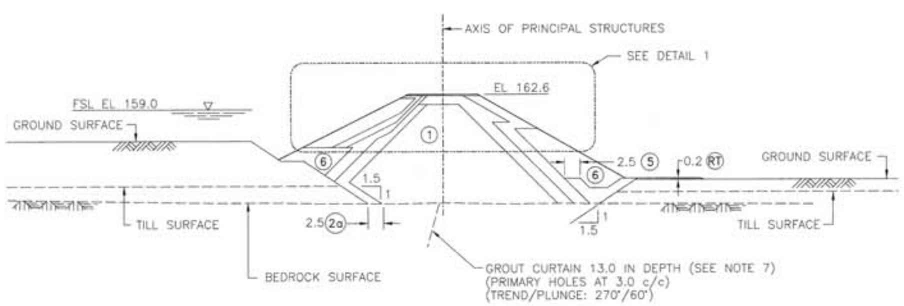
AT SPILLWAY TRANSITION STRUCTURE
SCALE A



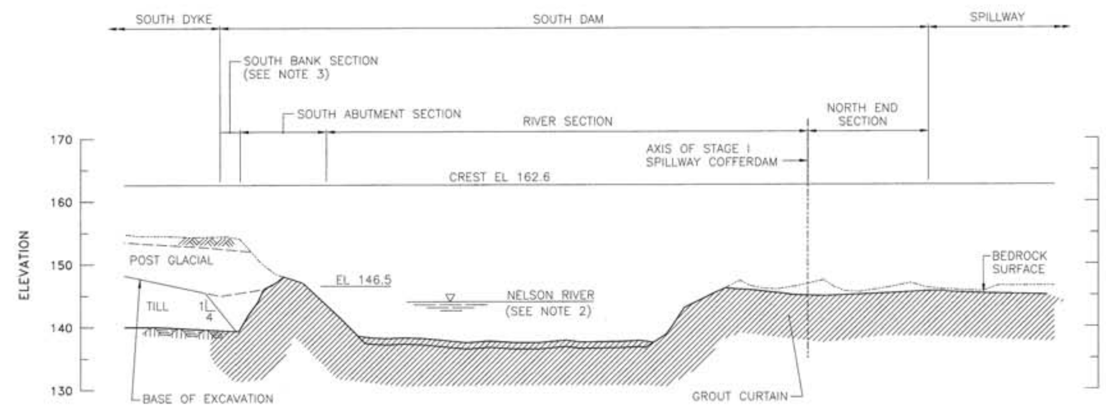
NORTH END SECTION
BETWEEN SPILLWAY STRUCTURE AND STAGE I SPILLWAY COFFERDAM
SCALE A



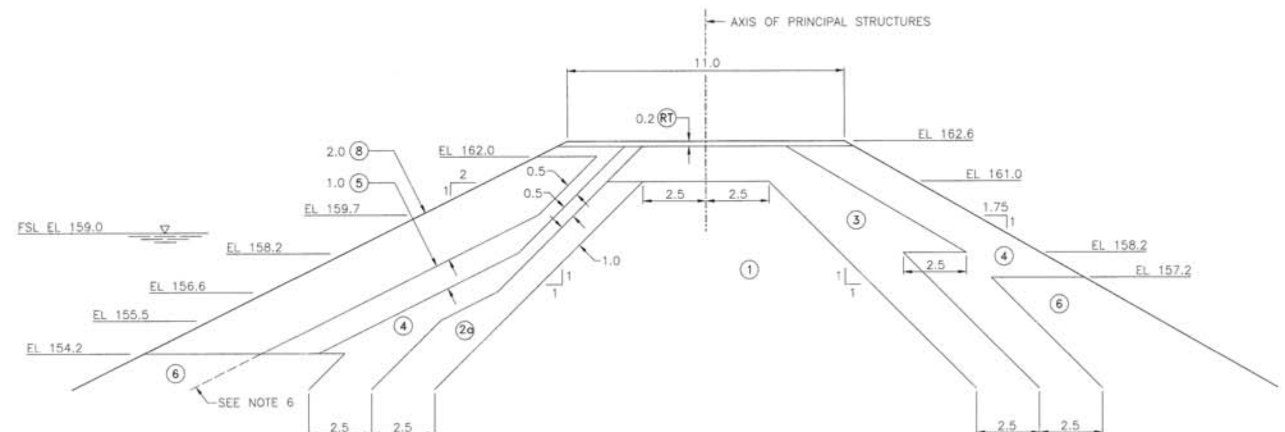
RIVER SECTION
SCALE A



AT SOUTH ABUTMENT AND SOUTH BANK
SCALE A



PROFILE ALONG AXIS
N.T.S.



DETAIL 1
SCALE B

LEGEND:

1	IMPERVIOUS FILL
2a	GRANULAR FILL
3	FILTER
4	TRANSITION FILL
5	RIPRAP BEDDING
6	ROCKFILL
8	RIPRAP
RT	ROAD TOPPING
▽	WATER LEVEL
FSL	NORMAL FULL SUPPLY LEVEL

NOTES:

1. AFTER DEWATERING OF THE STAGE II COFFERDAMS, THE BEDROCK FOUNDATION SHALL BE REVIEWED AND THE TREND/PLUNGE SHALL BE ADJUSTED ACCORDINGLY FOR THE GROUTING PROGRAM.
2. INFORMATION ON THE BEDROCK AND OVERBURDEN IN THE RIVERBED IS VERY LIMITED. THE RIVERBED HAS BEEN ASSUMED TO BE BEDROCK CONTROLLED WITH LITTLE OR NO OVERBURDEN.
3. SOUTH BANK SECTION SHALL BE FOUNDED ON TILL.
4. ELEVATIONS AND DIMENSIONS ARE IN METRES.
5. ELEVATIONS ARE BASED ON CGVD 1928.
6. CLASS 8 PLACED ALONG FULL LENGTH OF UPSTREAM SLOPE AT CONCRETE STRUCTURES TIE-INS.
7. DEPTH MEANS THE VERTICAL DEPTH. IT IS NOT THE LENGTH ALONG THE AXIS OF THE BOREHOLE.

SCALE A: 10 0 10 20 30 40 METRES

SCALE B: 2 0 2 4 6 8 10 METRES

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2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO. H341433-3000-10-042-0002
AREA COORD. P. PANTEL
DISCIP. ENGR. R. HALIM
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH

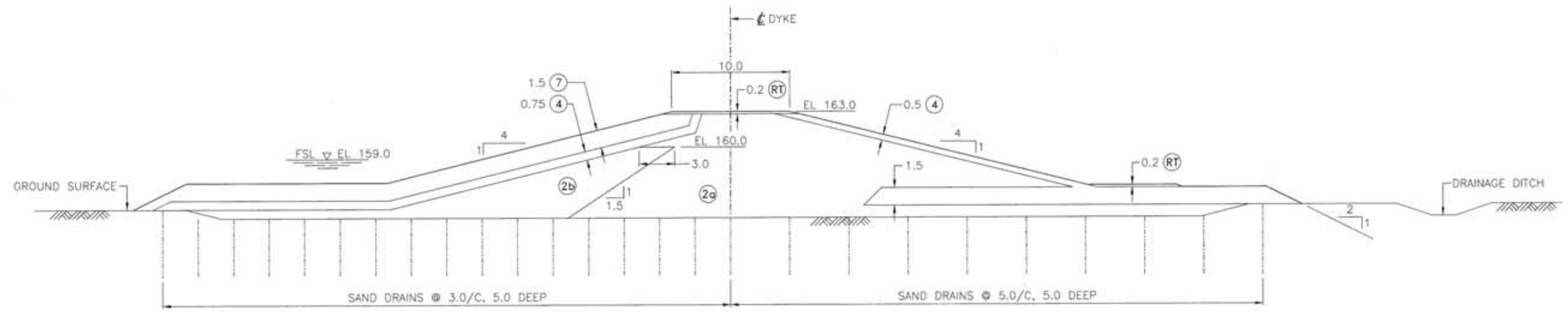
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R.C. ALVERO — CHECKED: — SCALE: 1:400
DESIGNED: P. PANTEL — CHECKED: — DATE:

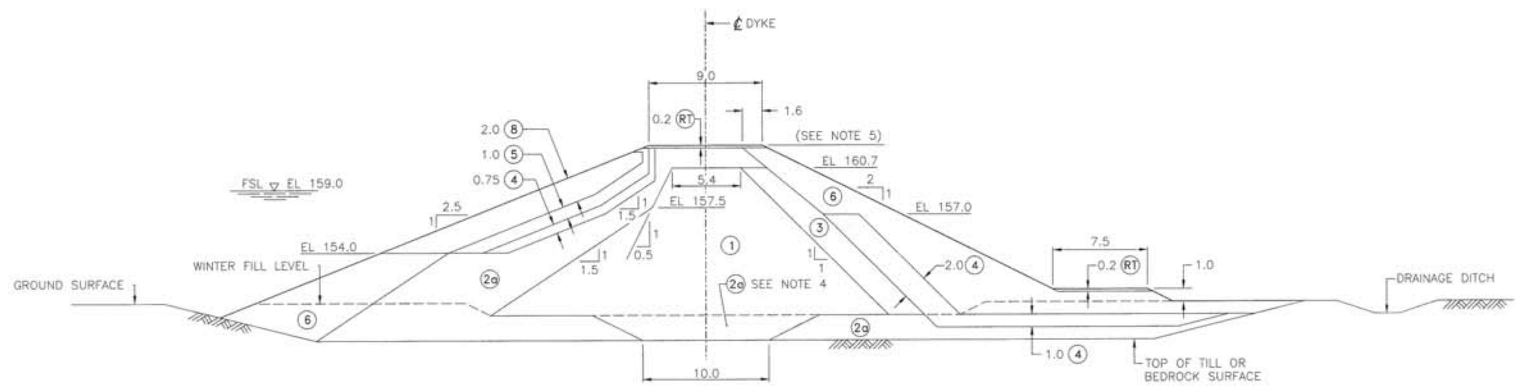
KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
SOUTH DAM
SECTIONS AND PROFILE

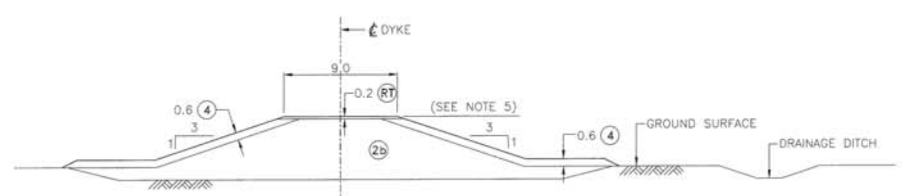
DRAWING NUMBER: 1-00195-DE-06200-0044 — SHEET: 0001 — REVISION: 0C



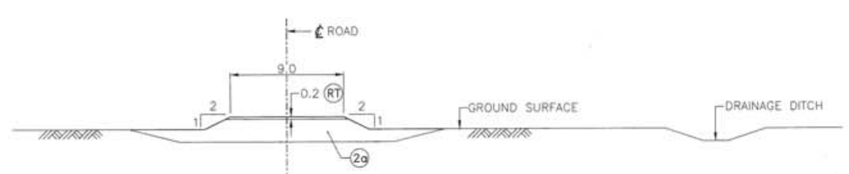
GRANULAR DYKE



ZONED IMPERVIOUS CORE DYKE



FREEBOARD DYKE



ROAD SECTION

LEGEND:

- (1) IMPERVIOUS FILL
- (2a) PERVIOUS GRANULAR FILL
- (2b) SEMI-PERVIOUS GRANULAR FILL
- (3) FILTER
- (4) TRANSITION – CRUSHED ROCK
- (5) RIPRAP BEDDING
- (6) ROCKFILL
- (7) RIPRAP (SEE NOTE 1)
- (8) RIPRAP
- (RT) ROAD TOPPING
- WATER LEVEL

NOTES:

1. FOR NORTH DYKE FROM STATION 35+00 TO STATION 121+63, USE 1.5 METRE THICK RIPRAP CLASS (7) AND 0.75 METRE THICK RIPRAP BEDDING.
2. DIMENSIONS AND ELEVATIONS ARE IN METRES.
3. ELEVATIONS ARE BASED ON CGVD 1928.
4. CLASS (2a) WINTER FILL SHALL BE EXCAVATED FROM THIS AREA AND REPLACED WITH CLASS (1) DURING SUMMER CONSTRUCTION.
5. CREST ELEVATIONS FOR THE ZONED IMPERVIOUS CORE DYKE OF THE NORTH DYKE SHALL BE EL 162.2 FROM THE NORTH DAM TO STA 15+65 AND THEN EL 161.8 TO THE END OF THE NORTH DYKE. CREST ELEVATIONS FOR THE ZONE IMPERVIOUS CORE AND FREEBOARD DYKES OF THE SOUTH DYKE SHALL BE EL 162.0 FROM THE SOUTH DAM TO STA 68+90 AND THEN EL 162.2 TO THE END OF THE SOUTH DYKE.
6. CREST ELEVATION TRANSITION GRADE IS SET AT A 4%.

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REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH™
HA DWG. NO. H341433-3000-10-042-0003
AREA COORD. P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

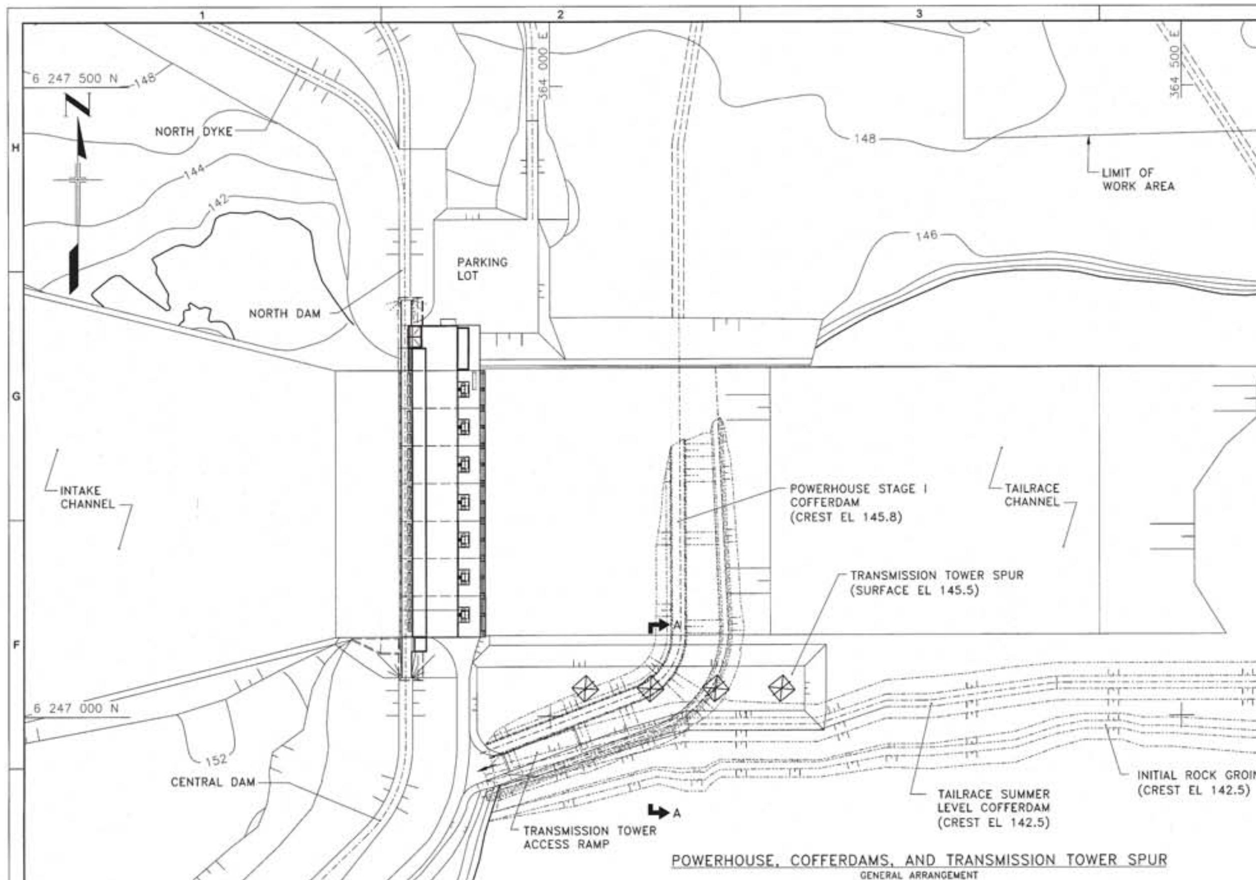
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. C. ALVERO | CHECKED: | SCALE: 1:200
DESIGNED: P. PANTEL | CHECKED: | DATE:

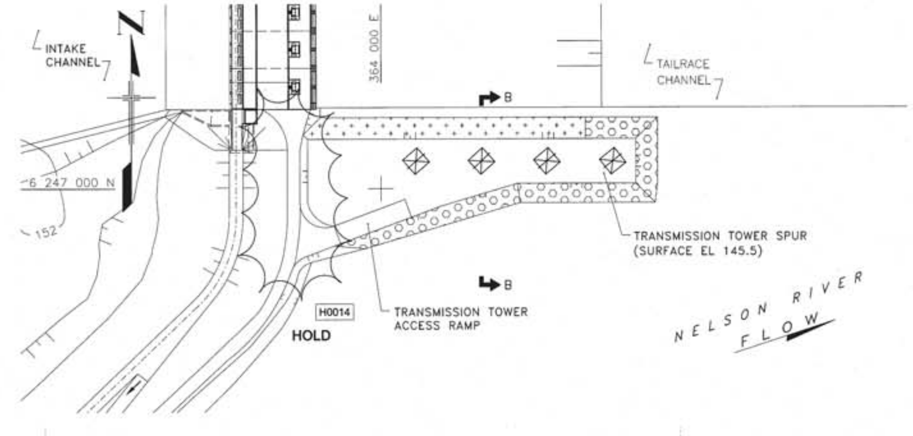
KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT NORTH AND SOUTH DYKES AND ROAD SECTIONS

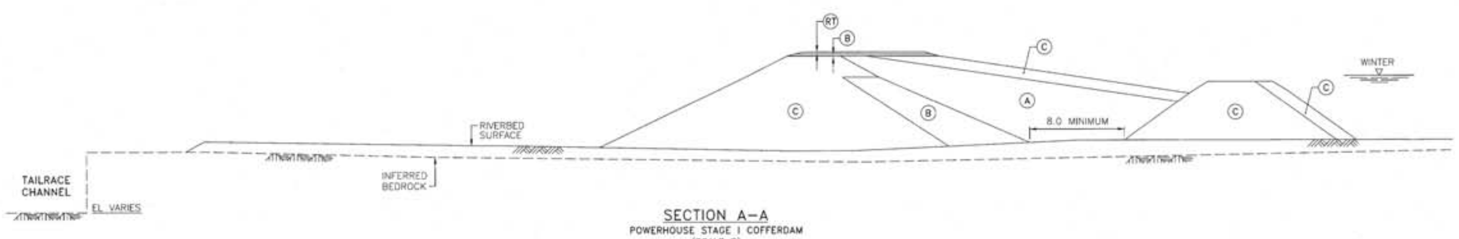
DRAWING NUMBER	SHEET	REVISION
1-0095-DE-06200-0045	0001	0C



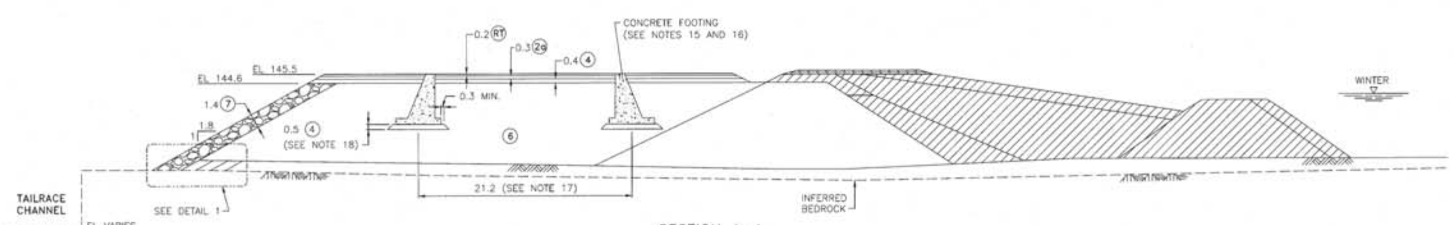
POWERHOUSE, COFFERDAMS, AND TRANSMISSION TOWER SPUR
GENERAL ARRANGEMENT
(SCALE A)



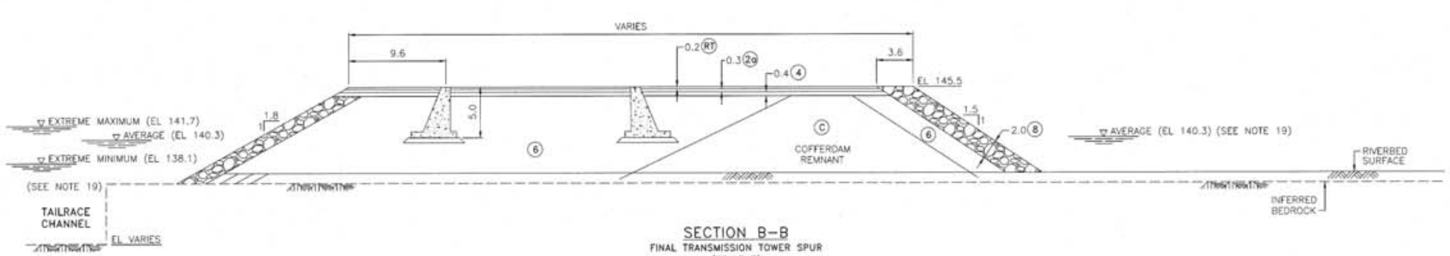
FINAL ARRANGEMENT
PLAN
(SCALE A)



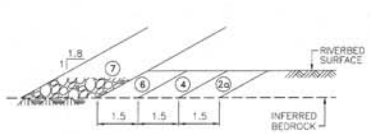
SECTION A–A
POWERHOUSE STAGE I COFFERDAM
(SCALE B)



SECTION A–A
COFFERDAM REMOVAL FOLLOWING CONSTRUCTION OF TRANSMISSION TOWER FOOTINGS
(SCALE B)



SECTION B–B
FINAL TRANSMISSION TOWER SPUR
(SCALE B)



DETAIL 1
N.T.S.

LEGEND:

- SHORELINE (SEE NOTE 6)
- GROUND SURFACE CONTOUR (SEE NOTE 7)
- TEMPORARY CONSTRUCTION ACCESS ROAD
- COFFERDAM REMOVED
- COORDINATE GRID MARKER (LOCATED AT 500 METRE INTERVALS)
- TRANSMISSION TOWER
- (A) IMPERVIOUS FILL
- (B) GRANULAR (TRANSITION) FILL
- (C) ROCKFILL
- (RT) ROAD TOPPING
- (2a) PERVIOUS GRANULAR FILL
- (4) TRANSITION – CRUSHED ROCK
- (6) ROCKFILL
- (7) RIPRAP
- (8) RIPRAP
- WATER LEVEL
- COFFERDAM REMOVAL
- RIPRAP (SEE NOTE 13)
- RIPRAP ARMOUR CLASS 8 D_{50} = 1.0 m (SEE NOTES 9 AND 10)
- RIPRAP ARMOUR CLASS 7 D_{50} = 0.7 m (SEE NOTES 9 AND 10)

NOTES:

1. TOPOGRAPHY IS BASED ON MAPPING RECEIVED FROM MANITOBA HYDRO MARCH, 2004.
2. MAPPING WAS PRODUCED USING PHOTOGRAMMETRIC METHODS BASED ON 1:20 000 SCALE PHOTOGRAPHY DATED OCTOBER 1986.
3. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NORTH AMERICAN DATUM 1983.
4. COORDINATES, ELEVATIONS AND DIMENSIONS ARE IN METRES.
5. ELEVATIONS ARE BASED ON CGVD 1928.
6. WATER LEVELS SHOWN ARE APPROXIMATE ONLY AND RELATE TO THE DATE OF PHOTOGRAPHY.
7. CONTOUR INTERVAL IS 2 METRES.
8. OVER HEAD POWERLINES AND THE LINE ANGLES FROM THE POWERHOUSE AND FROM THE TRANSMISSION TOWERS ARE OMITTED FOR CLARITY.
9. RIPRAP ARMOUR LIMITS TO BE DEFINED DURING FINAL DESIGN.
10. RIPRAP LAYER SHALL HAVE A MINIMUM THICKNESS OF 2 x D_{50}.
11. FREEBOARD ALLOWANCE APPROXIMATELY 3.3 METRES ABOVE MAXIMUM TAILWATER ELEVATION.
12. ADDITIONAL ROCK ARMOUR SHALL BE PLACED AS REQUIRED, WHERE HIGHER VELOCITIES ARE ANTICIPATED.
13. CLASS 7 OR 8 (2 X D_{50}) ROCKFILL ARMOUR PROTECTION.
14. PRIOR TO THE REMOVAL OF THE POWERHOUSE COFFERDAM, ALL EXPOSED RIVERBED SLOPES WITHIN THE TAILRACE CHANNEL SHALL HAVE FILTERS AND RIPRAP INSTALLED TO MINIMIZE THE HYDRAULIC FORCES ACTING ON THE ALLUVIUM. THIS IS TO PREVENT THE POWERHOUSE DISCHARGE FLOWS FROM UNDERMINING THE TRANSMISSION TOWER SPUR.
15. FOOTINGS ARE SHOWN FOR ILLUSTRATION PURPOSES ONLY. FOOTINGS DESIGN AND ORIENTATION WILL BE REVIEWED DURING THE FINAL DESIGN.
16. CONCRETE FOOTINGS WILL EXTEND INTO THE TRANSMISSION TOWER SPUR.
17. THE CENTER–TO–CENTER SPACING OF THE TOWER FOOTINGS WILL BE 15.0 m, HOWEVER THE ORIENTATION OF THE TOWERS RELATIVE TO SECTION A–A RESULTS IN THE INCREASED DISTANCE INDICATED.
18. CLASS 4 TO BE WRAPPED WITH NON–WOVEN GEOTEXTILE FILTER FABRIC.
19. WATER LEVELS PRESENTED ARE BASED ON STEPHENS LAKE WATER LEVELS AT KETTLE GENERATING STATION.

HOLD:

H0014 ACCESS RAMP FROM POWERHOUSE DESIGN UNDER REVIEW

TRANSMISSION TOWER SPUR IS CONCEPTUAL AND IS SHOWN USING THE POWERHOUSE AND GENERAL ARRANGEMENT LAYOUT FROM THE PRE-DESIGN STUDIES

SCALE A: 50 0 50 100 150 200 METRES
SCALE B: 5 0 5 10 15 20 METRES

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2013-04-16

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

HATCH
HA DWG. NO. H341433-5000-10-042-0001
AREA COORD P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

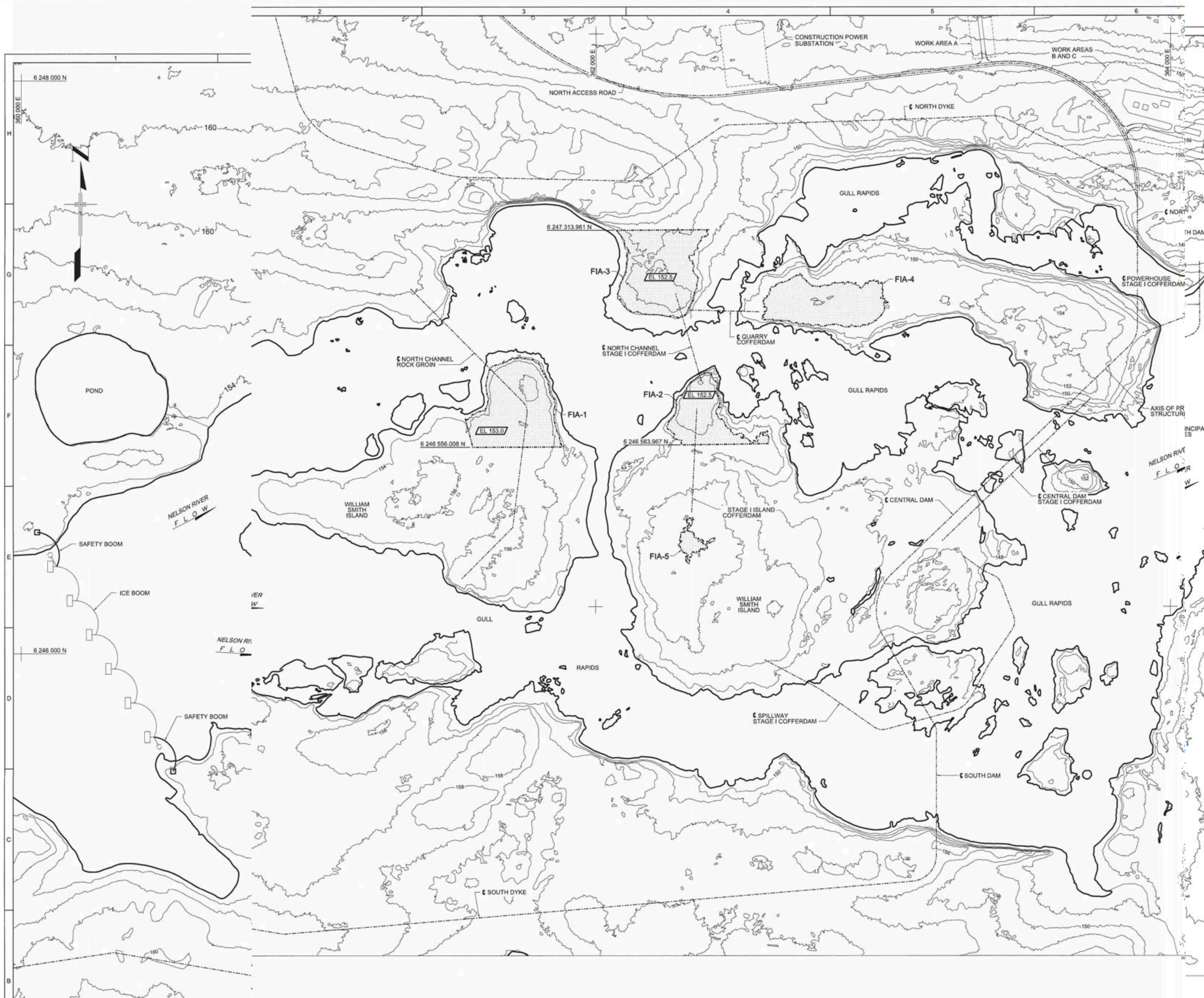
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: P. FLEURY	CHECKED:	SCALE: AS SHOWN
DESIGNED: P. PANTEL	CHECKED:	DATE:

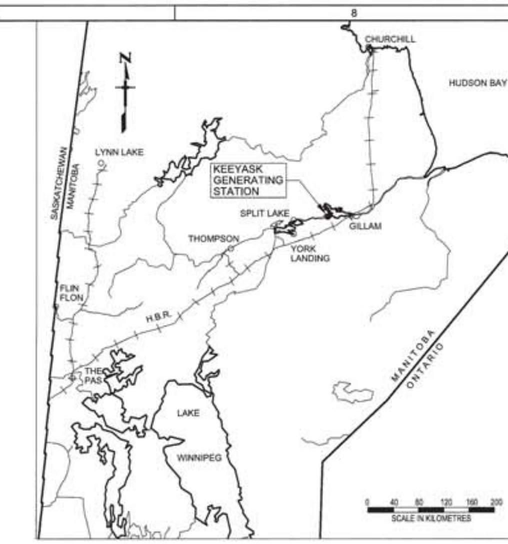
KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT TRANSMISSION TOWER SPUR PLAN, SECTIONS AND DETAILS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0055	0001	D



FOREBAY IMPROVEMENT AREAS SUMMARY TABLE			
ID	AREA [m²]	VOLUME [m³]	GRADE EL [m]
FIA-1	74 820	151 383	153.0
FIA-2	39 642	92 998	152.5
FIA-3	73 547	57 192	152.5
FIA-4	UNDER REVIEW		
FIA-5	UNDER REVIEW		



KEY PLAN

LEGEND:

	SHORELINE
150	GROUND SURFACE CONTOUR
	CLEARING LIMIT
	COORDINATE GRID MARKER
FIA-1	FOREBAY IMPROVEMENT AREA

NOTES:

1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NAD83 (CSRS).
2. COORDINATES AND ELEVATIONS ARE IN METRES.
3. ELEVATIONS ARE BASED ON GS OF C, CGVD28, 1929 ADJ.
4. INFRASTRUCTURE SHOWN ON THE NORTH BANK OF THE NELSON RIVER WAS OBTAINED FROM DRAWING 1-00195-DE-06200-0004 0001, REV. 0C, PROVIDED BY MANITOBA HYDRO SEPTEMBER 18, 2012.
5. TOPOGRAPHY SHOWN IS BASED ON 2010 LIDAR DATA AS PROVIDED BY MANITOBA HYDRO. CONTOUR INTERVAL IS 2 m.

0 75 150 225 300 375
SCALE IN METRES

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

HATCH™
HA DWG. NO. H341433-1300-15-042-0010
AREA COORD P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

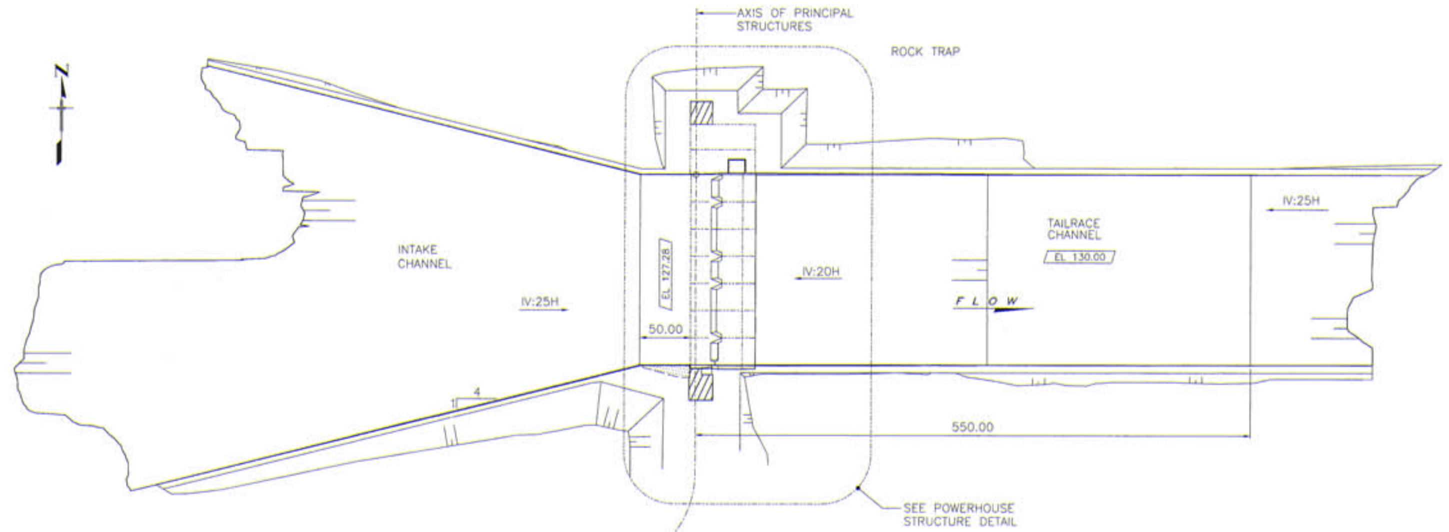
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. REYES | CHECKED: | SCALE: 1:5000
DESIGNED: P. PANTEL | CHECKED: | DATE:

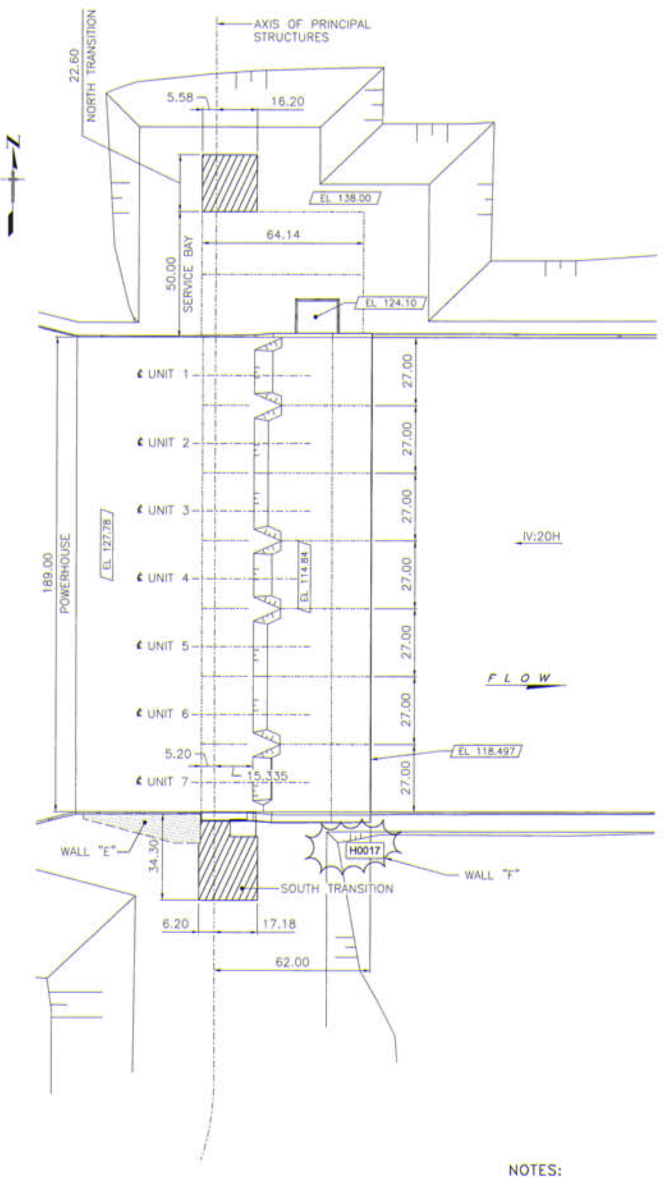
KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
FOREBAY
IMPROVEMENT AREAS PLAN

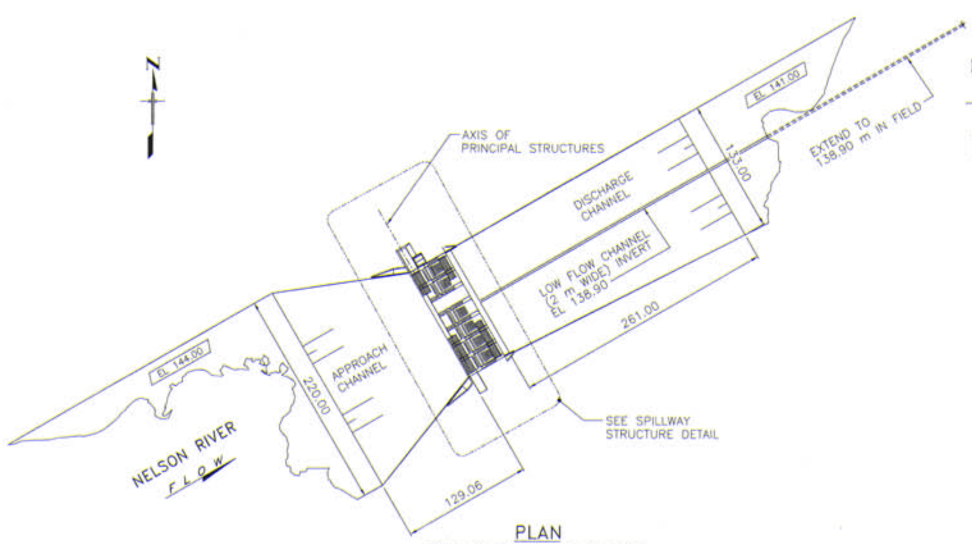
DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0057	0001	C



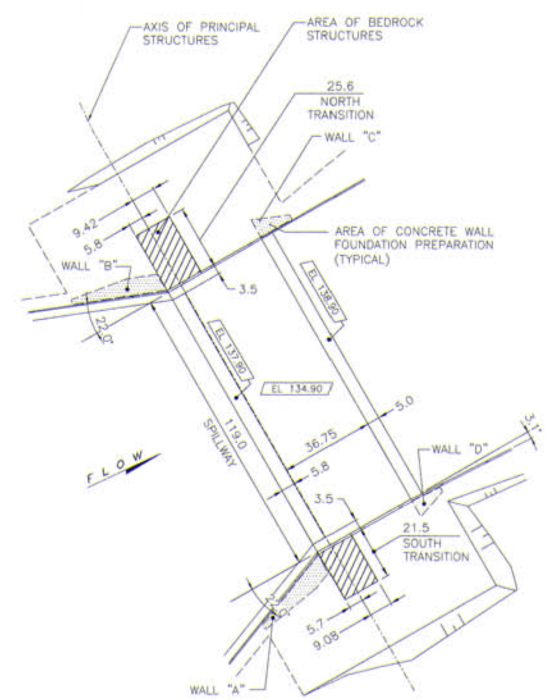
PLAN
POWERHOUSE STRUCTURE & CHANNELS
SCALE A



PLAN
POWERHOUSE STRUCTURE DETAIL
SCALE B



PLAN
SPILLWAY STRUCTURE & CHANNELS
SCALE A



PLAN
SPILLWAY STRUCTURE DETAIL
SCALE B

NOTES:

1. ELEVATIONS AND DIMENSIONS ARE IN METRES.
2. ELEVATIONS ARE BASED ON CANADIAN GEODETIC VERTICAL DATUM 1928.

HOLD:

H0017 WALL F TO BE DETERMINED

SCALE A: 50 0 50 100 150 200 250 METRES

SCALE B: 20 0 20 40 60 80 100 METRES

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2013-03-28

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00	2012 02 13	ISSUED FOR INFORMATION	RAR	PRP	IRD

HATCH
HA DWG. NO. H341433-1000-10-042-0001
AREA COORD. P. PANTEL
DISCIP. ENGR. R. HALIM
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: R. C. ALVERO | CHECKED: | SCALE: 1:2500
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGMENT
CONCRETE STRUCTURES
EXCAVATION

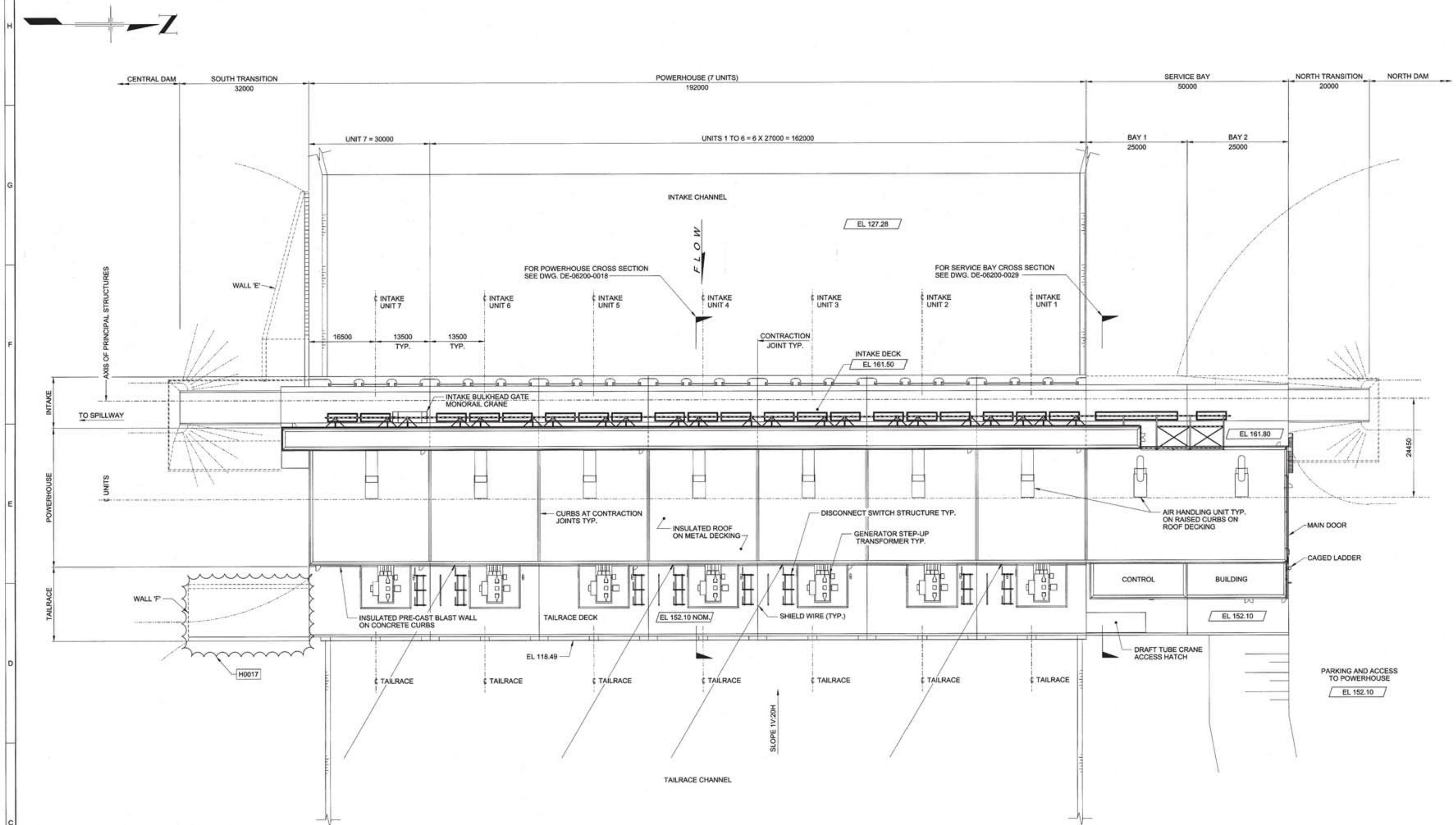
DRAWING NUMBER: 1-00195-DE-06200-0016 | SHEET: 0001 | REVISION: 0C

NOTES:

1. FLOOR SLOPES NOT SHOWN FLOR CLARITY.
2. WATERSTOPS NOT SHOWN. IN GENEREAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.

HOLD:

H0017 WALL 'F' UNDER REVIEW



PLAN

00	2012-02-12	ISSUED FOR INFORMATION	RAR	RM	WLM
REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

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HATCH™

HA DWG. NO.
H341433-5050-00-042-0001

AREA COORD.
R. MANNEM
DATE

DISCIP. ENGR.
W. MILLIONS
DATE

PROJ. ENGR.
A. TRUDEL
DATE

PROJ. MGR.
W. GENDZELEVICH
DATE

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

DRAWN: D.S. BODNARUK | CHECKED: | SCALE: 1:400
DESIGNED: L.K. STANSELL | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
POWERHOUSE
PLAN

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0017	0001	0C

ISO A0 (46.8 x 33.1)

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3/25/2013 11:42:09 AM
poli150373

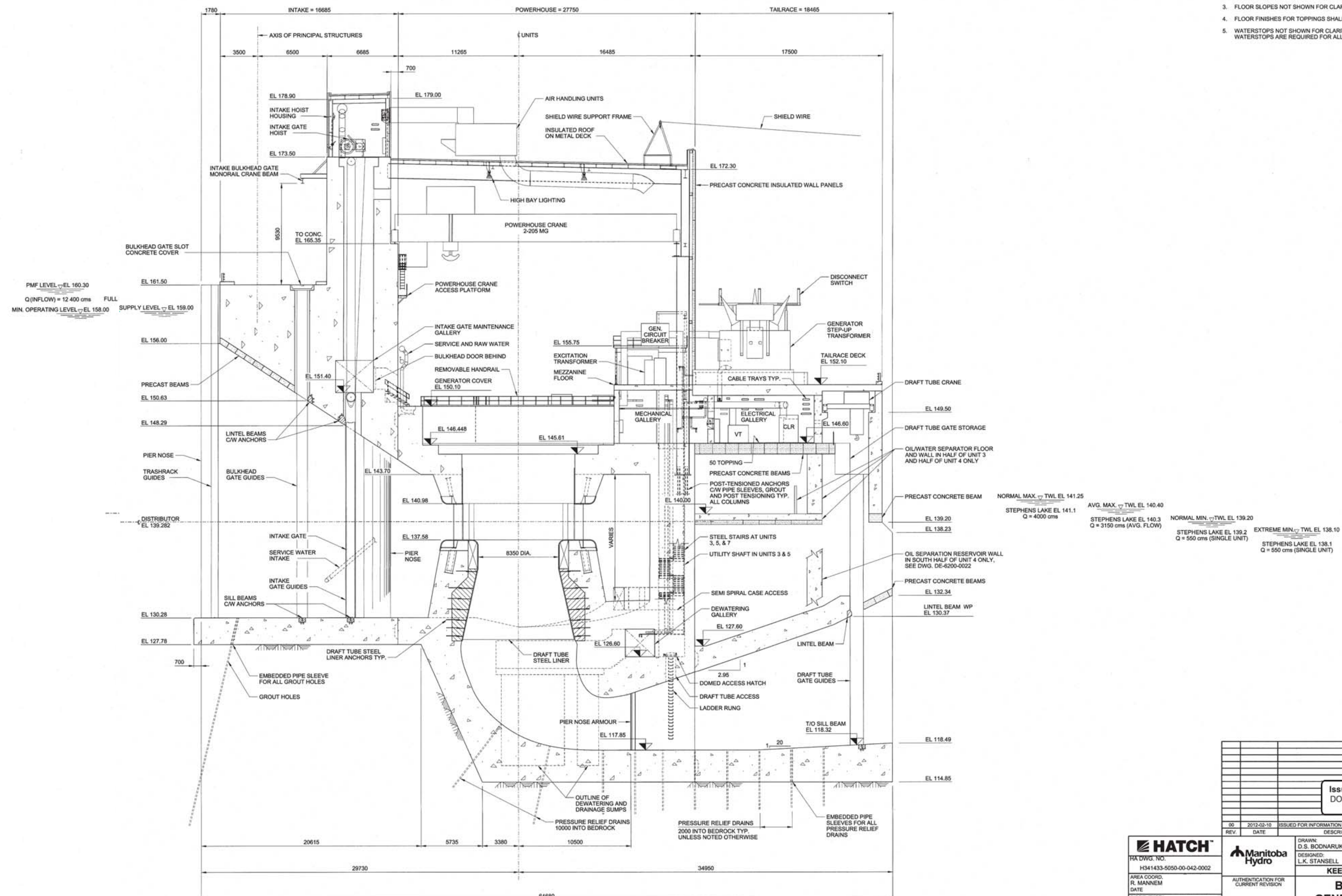
LEGEND:

CLR CURRENT LIMITING REACTOR

VT REVENUE METERING CUBICLE

NOTES:

1. DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS ARE IN METERS.
2. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
3. FLOOR SLOPES NOT SHOWN FOR CLARITY.
4. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
5. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.



CROSS SECTION

SEE DWG. DE-06200-0017

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DO NOT USE FOR CONSTRUCTION
2013-04-10

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH

HA DWG. NO. H341433-5050-00-042-0002

AREA COORD. R. MANNEM DATE

DISCIP. ENGR. W. MILLIONS DATE

PROJ. ENGR. A. TRUDEL DATE

PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

DRAWN: D.S. BODNARUK | CHECKED: | SCALE: 1:125

DESIGNED: L.K. STANSELL | CHECKED: | DATE:

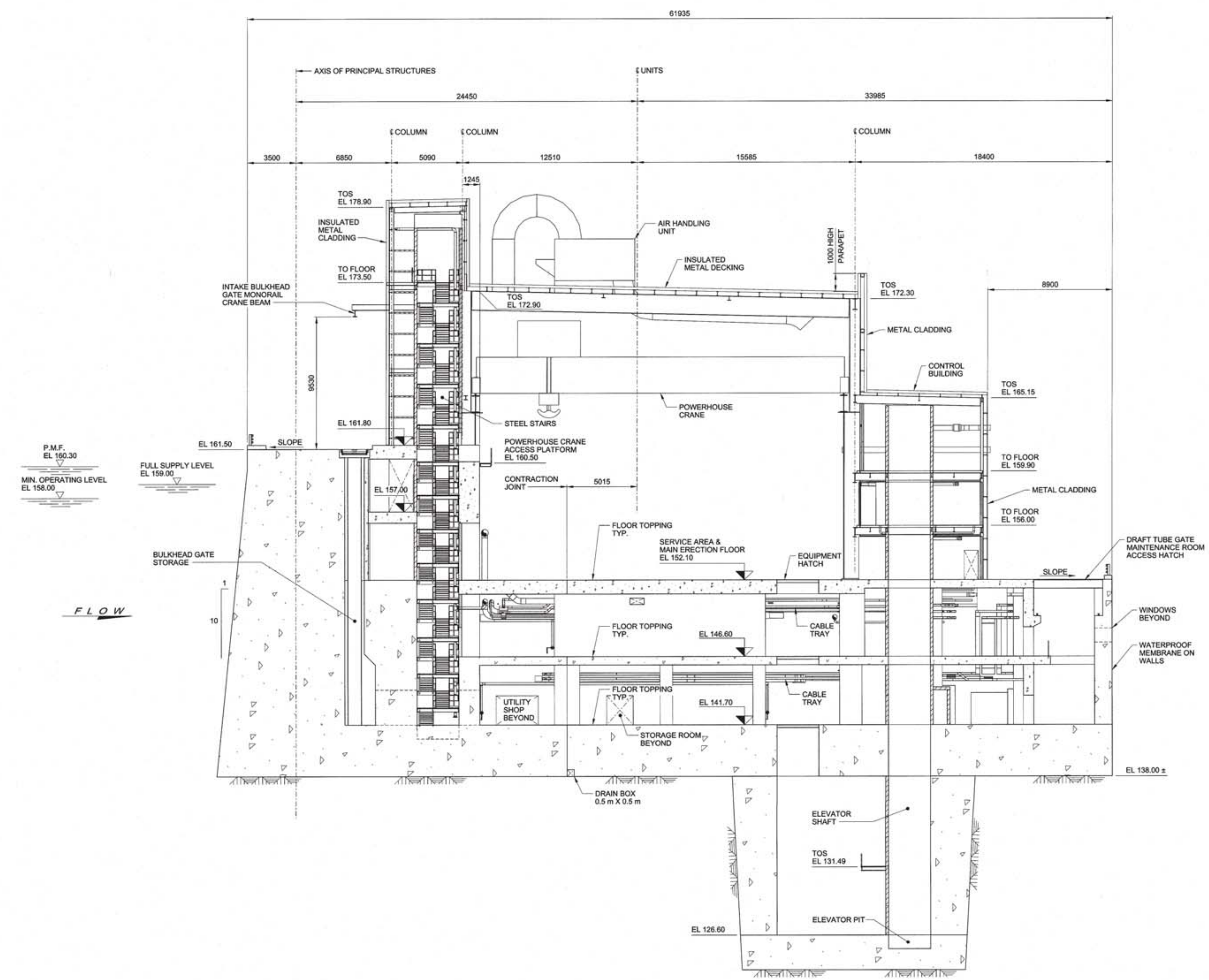
KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE CROSS SECTION AT CENTERLINE OF UNITS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0018	0001	0C

NOTES:

1. THE ROOM LAYOUT SHOWN IS PRELIMINARY. FINAL LAYOUT AND EGRESS REQUIREMENTS ARE TO BE DEVELOPED DURNING FINAL DESIGN IN ACCORDANCE WITH NBCC REUIREMENTS.
2. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
3. FLOOR SLOPES NOT SHOWN FOR CLARITY.
4. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
5. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.



CROSS SECTION

SEE DWG. DE-06200-0017

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2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH

HA DWG. NO. H341433-5550-00-042-0001

AREA COORD. W. MILLIONS DATE

DISCIP. ENGR. W. MILLIONS DATE

PROJ. ENGR. A. TRUDEL DATE

PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

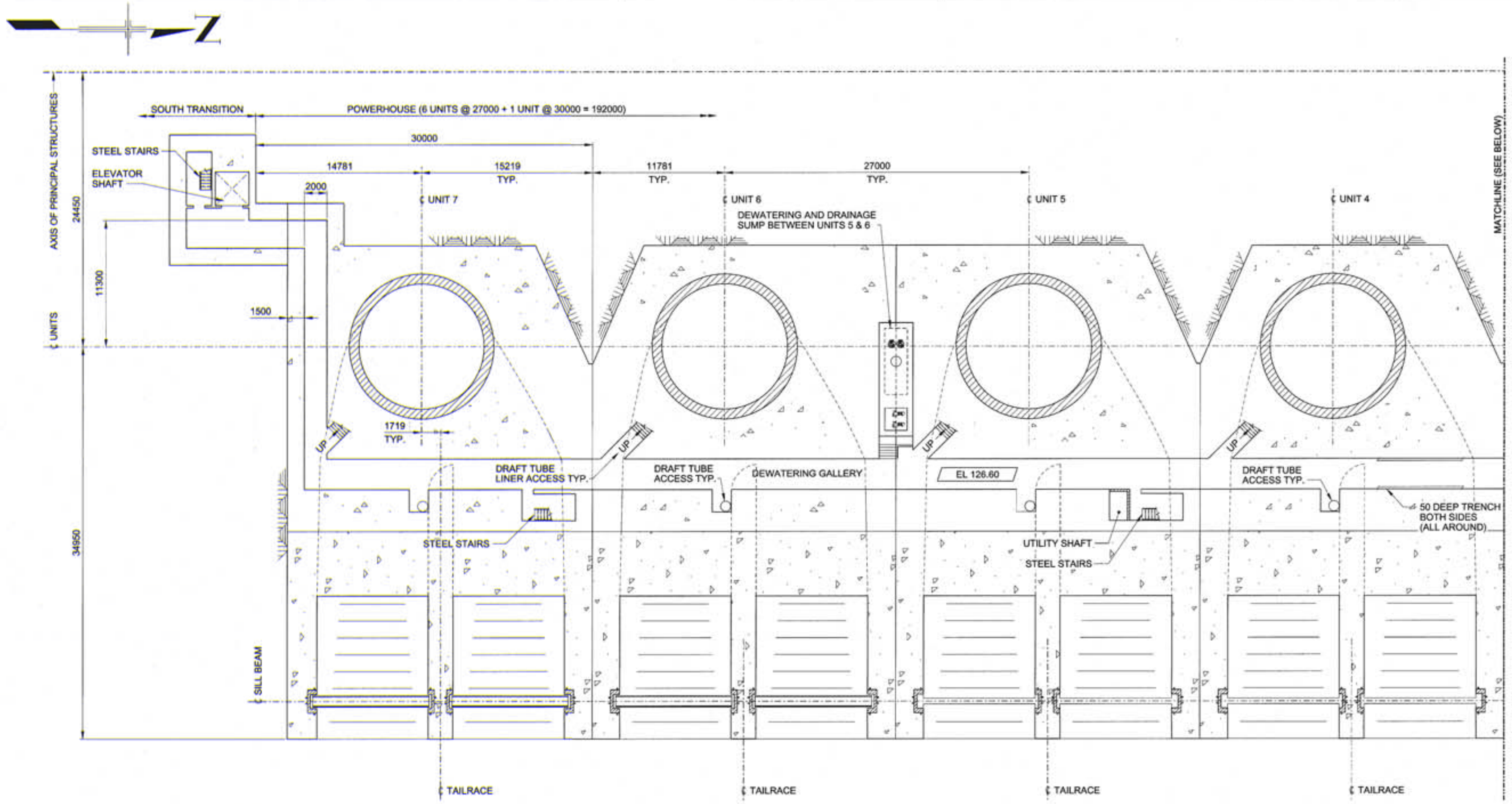
DRAWN: S. POLINCHUK | CHECKED: | SCALE: 1:125

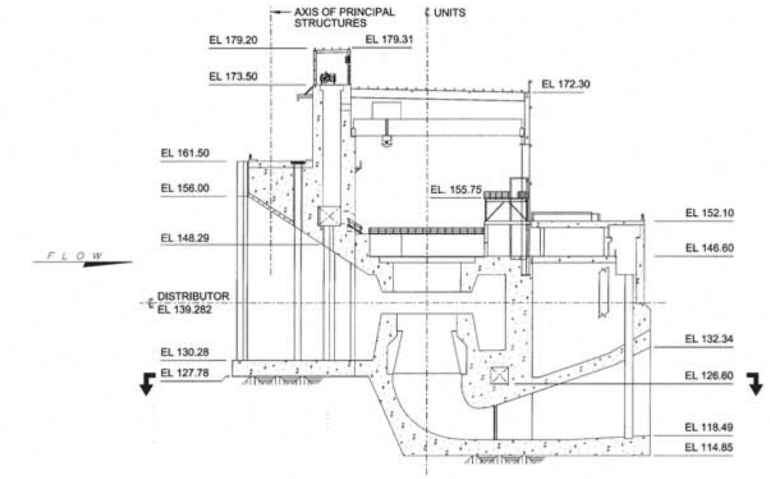
DESIGNED: D.B. DRAKE | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT SERVICE BAY CROSS SECTION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0029	0001	0C

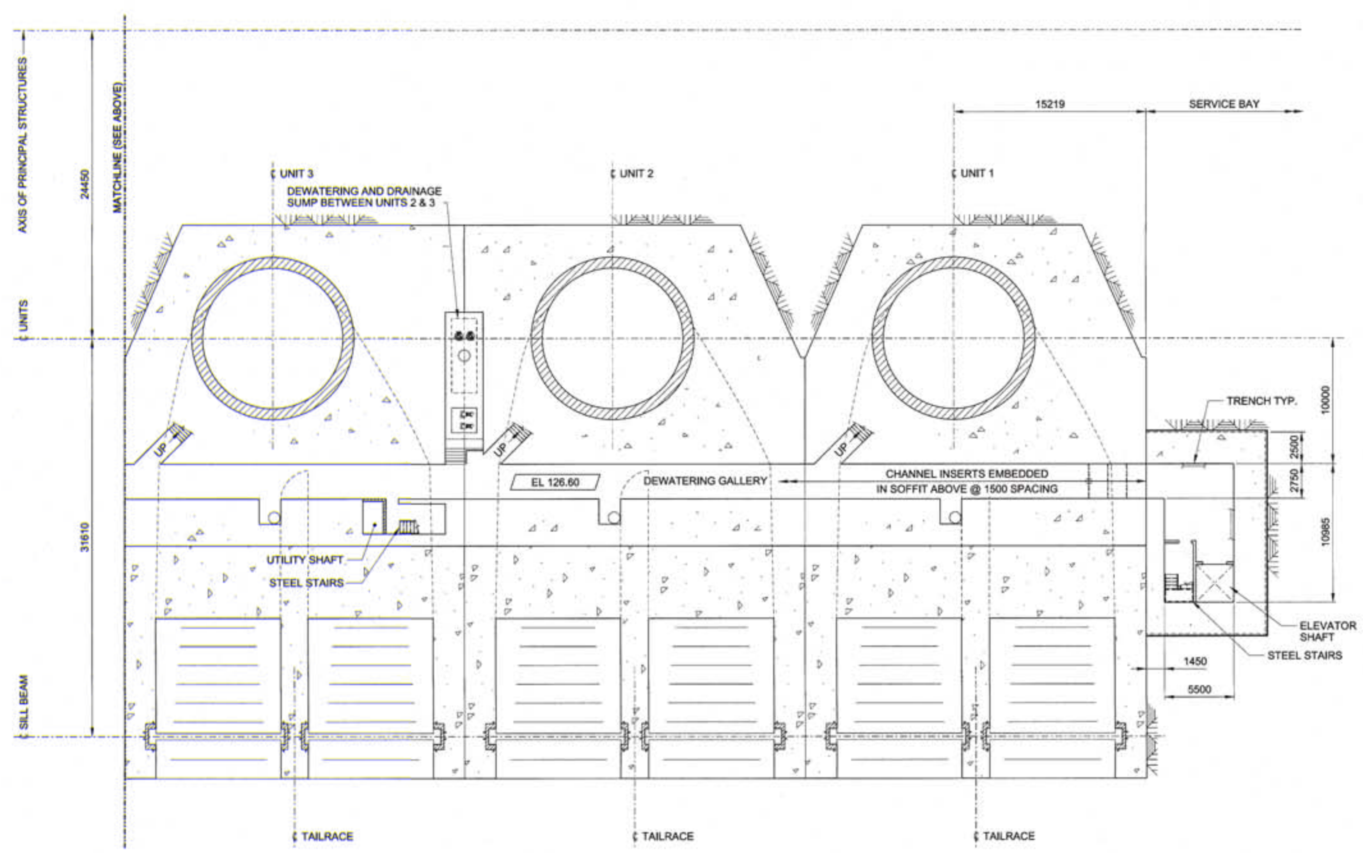




KEY SECTION

NOTES:

1. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
2. FLOOR SLOPES NOT SHOWN FOR CLARITY.
3. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
4. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.



PLAN ABOVE DEWATERING GALLERY AT EL 126.60

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 12	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO. H341433-5050-00-042-0003
AREA COORD. R. MANNEM DATE
DISCIP. ENGR. W. MILLIONS DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

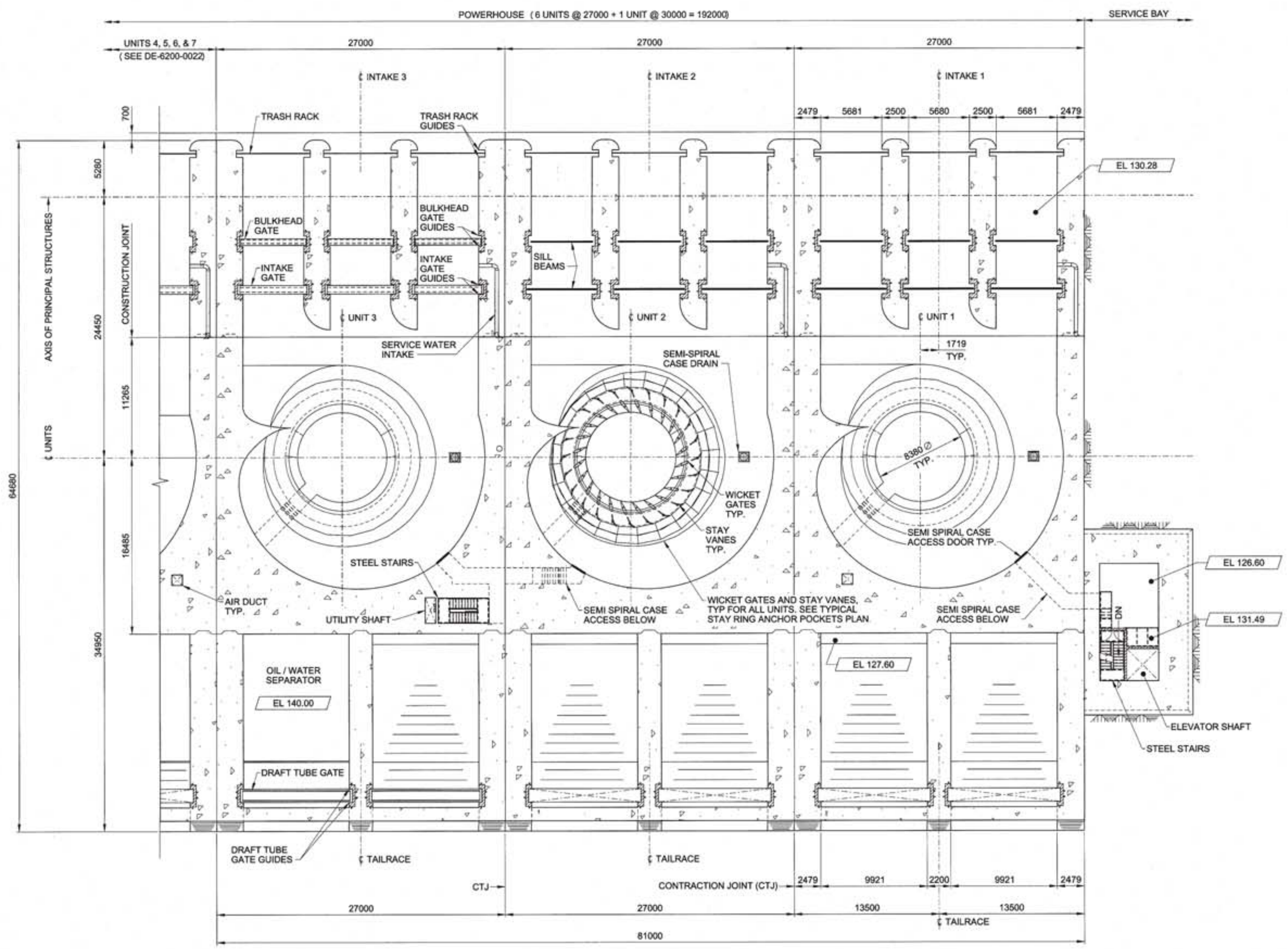
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: D.S. BODNARUK — CHECKED: — SCALE: 1:200
DESIGNED: S.W. HAY — CHECKED: — DATE:

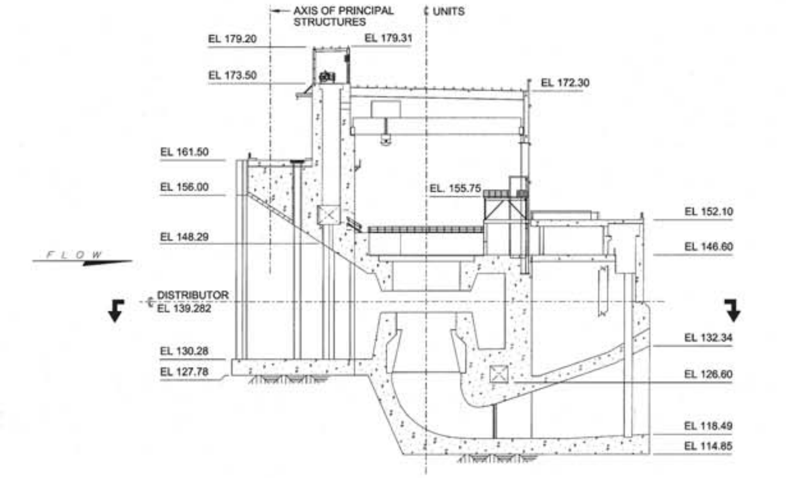
KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE UNITS 1 TO 7 DEWATERING GALLERY PLAN

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0020	0001	0C



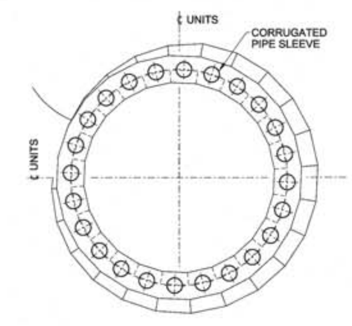
PLAN AT CENTERLINE OF DISTRIBUTOR AT EL 139.28



KEY SECTION

NOTES:

1. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
2. FLOOR SLOPES NOT SHOWN FOR CLARITY.
3. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
4. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.



TYP STAY RING ANCHOR POCKETS PLAN

CONCEPTUAL

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO. H341433-5050-00-042-0004
AREA COORD. R. MANNEM
DISCIP. ENGR. W. MILLIONS
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH

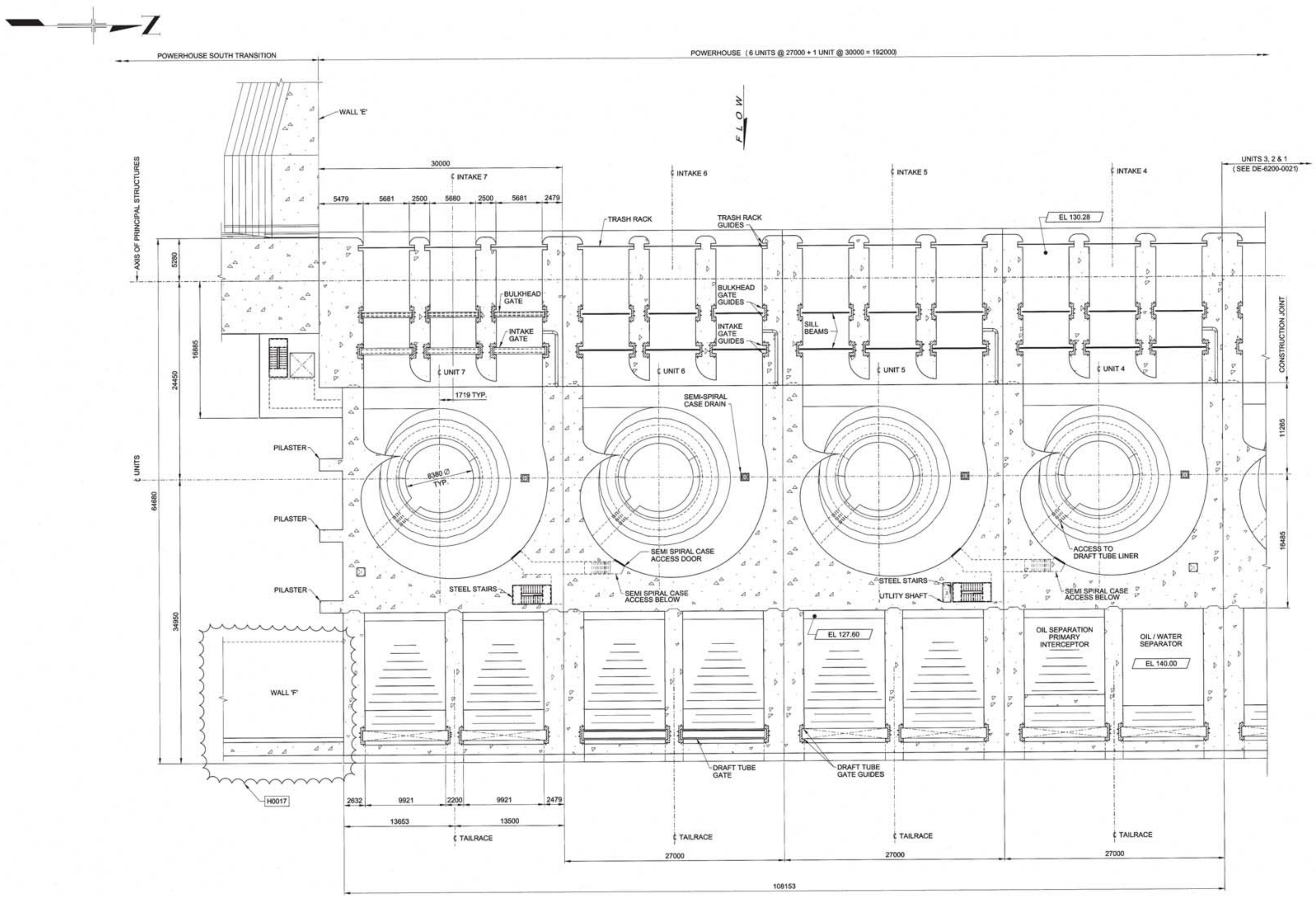
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: D.S. BODNARUK | CHECKED: | SCALE: 1:200
DESIGNED: L.K. STANSELL | CHECKED: | DATE:

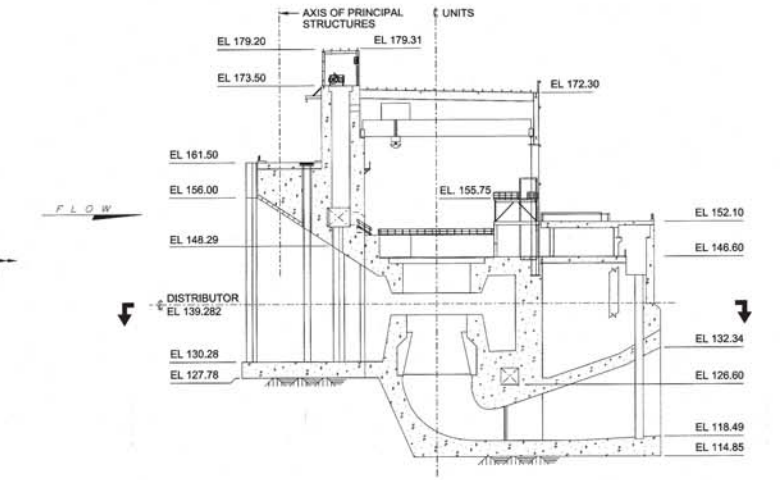
KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
POWERHOUSE UNITS 1 TO 3
PLAN AT DISTRIBUTOR CL

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0021	0001	0C



PLAN AT CENTERLINE OF DISTRIBUTOR AT EL 139.28



KEY SECTION

NOTES:

1. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
2. FLOOR SLOPES NOT SHOWN FOR CLARITY.
3. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
4. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.

HOLD:

H0017	WALL 'F' UNDER REVIEW

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 12	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO. H341433-5050-00-042-0005
AREA COORD. R. MANNEM DATE
DISCIP. ENGR. W. MILLIONS DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: D.S. BODNARUK	CHECKED:	SCALE: 1:200
DESIGNED: L.K. STANSELL	CHECKED:	DATE:

KEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
POWERHOUSE UNITS 4 TO 7
PLAN AT DISTRIBUTOR CL

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0022	0001	0C

ISO A0 (46.8 x 33.1)
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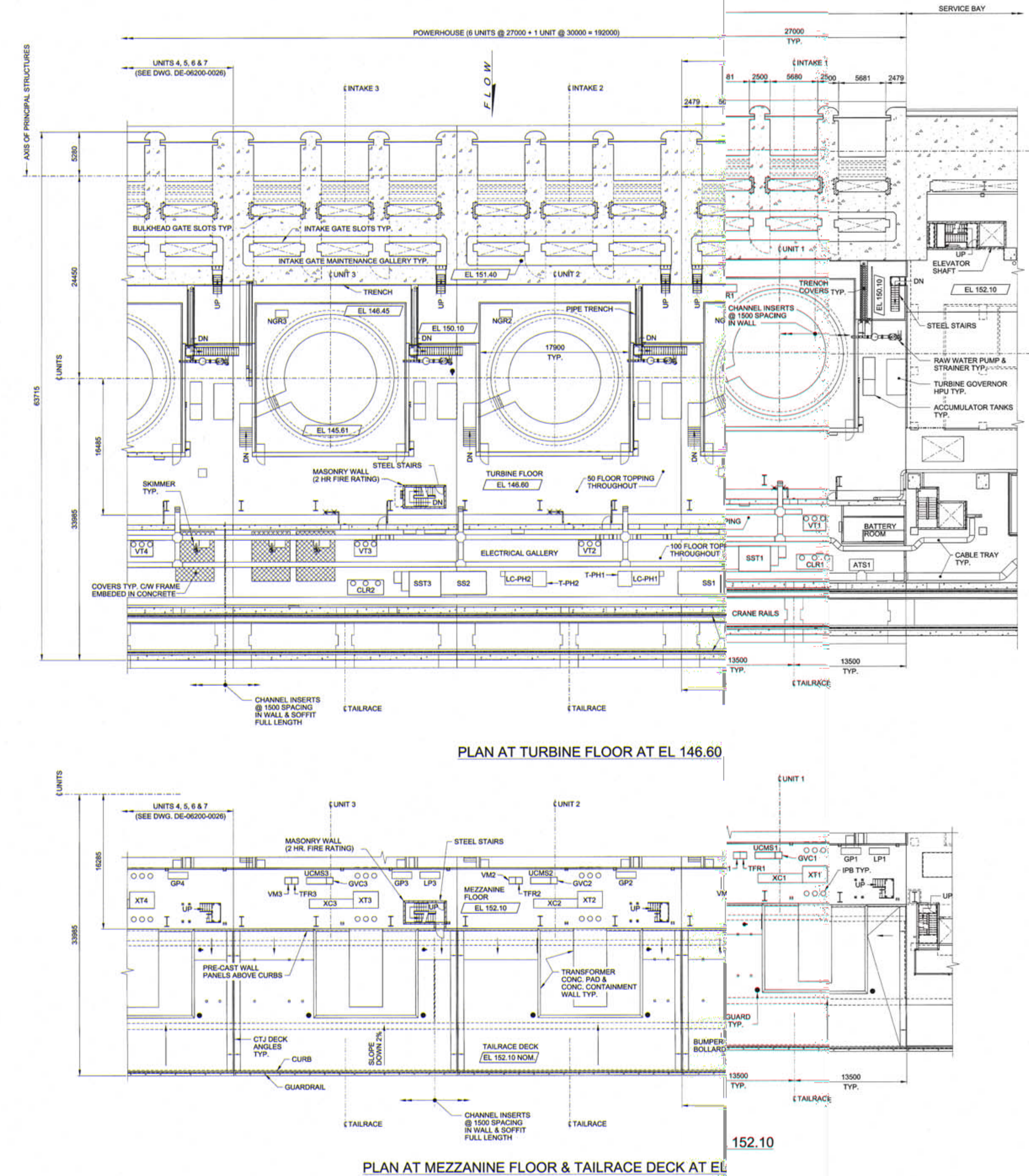
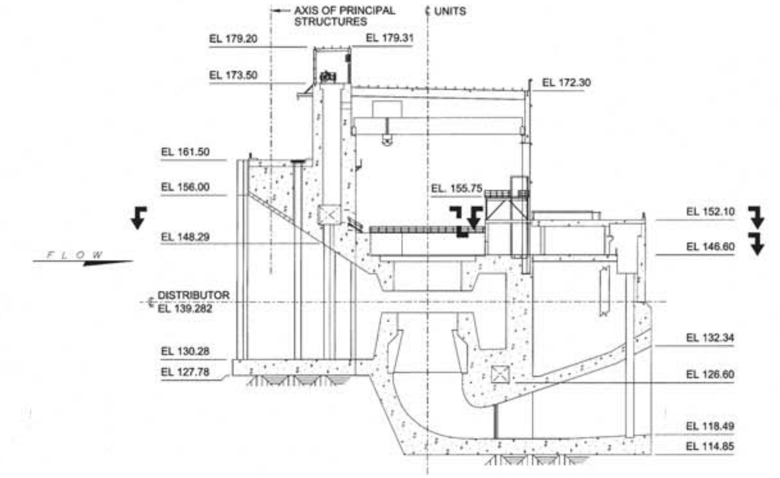




KEY SECTION

LEGEND:

ELECTRICAL EQUIPMENT

NGR	GENERATOR NEUTRAL GROUNDING CUBICLE
ATS	AUTOMATIC TRANSFER SWITCH
CLR	CURRENT LIMITING REACTOR
VT	REVENUE METERING CUBICLE
SST	15KV STATION SERVICE TRANSFORMER
SS	15KV STATION SERVICE SWITCHGEAR
T-PH	600V STATION SERVICE TRANSFORMER
LC-PH	600V STATION SERVICE LOAD CENTRE
LP	LINE PROTECTION PANEL
GP	GENERATOR PROTECTION PANEL
XT	EXCITATION TRANSFORMER
XC	EXCITATION CUBICLE
VM	VIBRATION MONITORING CUBICLE
TFR	TRANSIENT FAULT RECORDER CUBICLE
UCMS	UNIT CONTROL & MONITORING SYSTEM
GVC	UNIT ELECTRONIC GOVERNOR CUBICLE
IPB	ISOLATED PHASE BUS
HPU	HYDRAULIC POWER UNIT
OWS	OIL-WATER SEPARATOR

NOTES:

1. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
2. FLOOR SLOPES NOT SHOWN FOR CLARITY.
3. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
4. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO. H341433-5050-00-042-0006
AREA COORD. R. MANNEM DATE
DISCIP. ENGR. W. MILLIONS DATE
PROJ. ENGR. A. TRUDEL, DATE
PROJ. MGR. W. GENDZELEVICH DATE

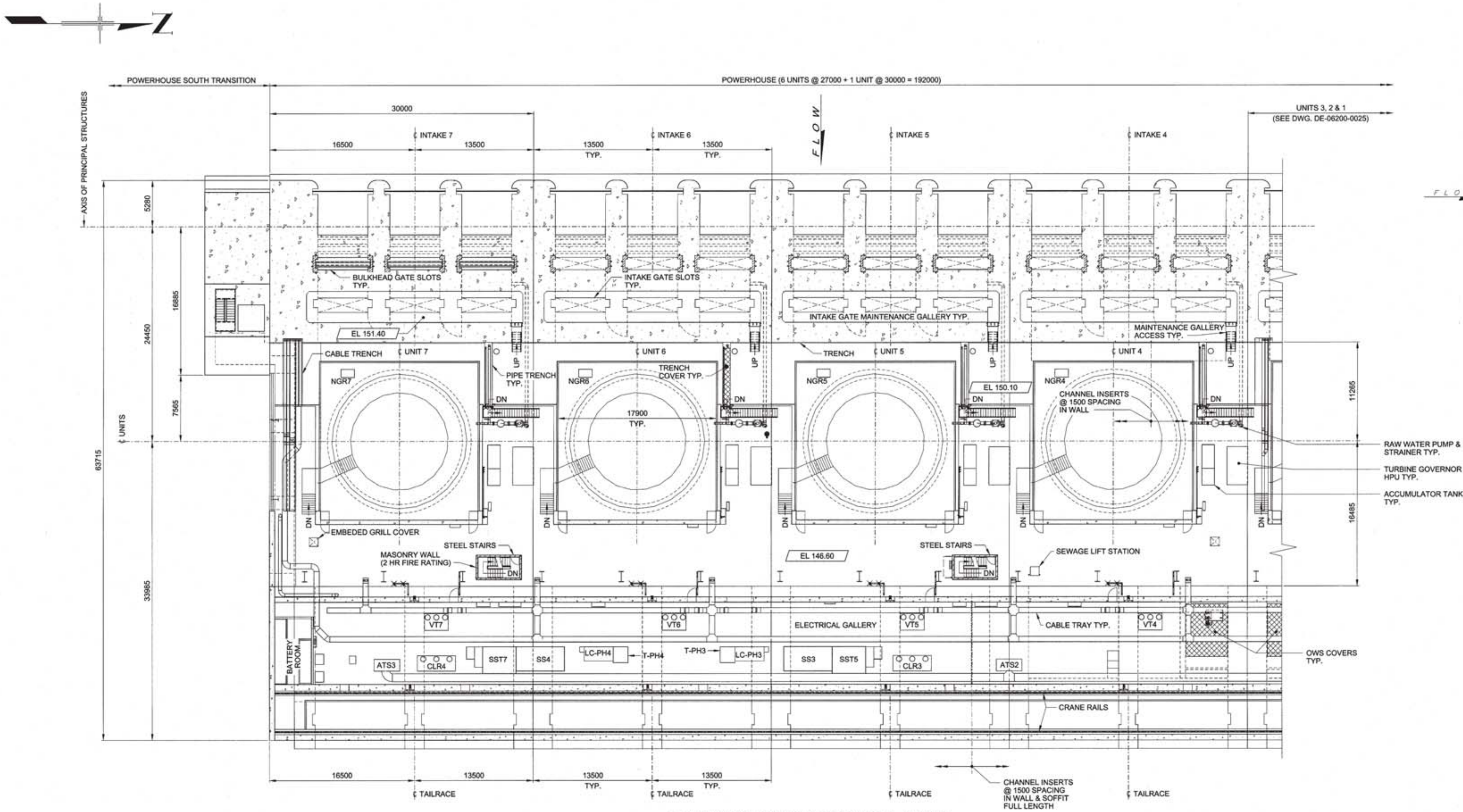
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: D.S. BODNARUK | CHECKED: | SCALE: 1:200
DESIGNED: L.K. STANSELL | CHECKED: | DATE:

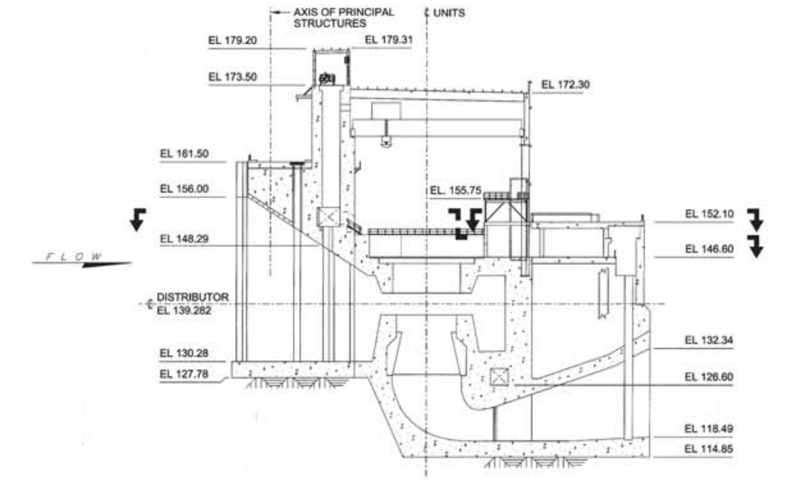
KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE UNITS 1 TO 3 PLAN AT GENERATOR FLOOR

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0025	0001	0C



PLAN AT TURBINE FLOOR AT EL 146.60



KEY SECTION

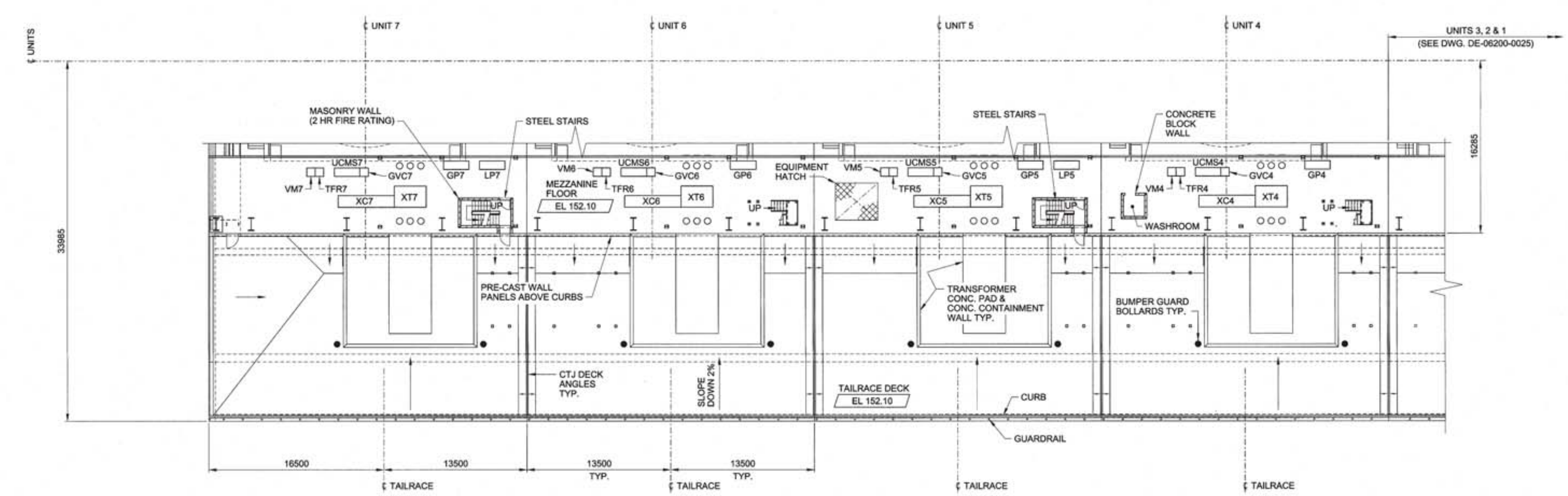
LEGEND:

ELECTRICAL EQUIPMENT

NGR	GENERATOR NEUTRAL GROUNDING CUBICLE
ATS	AUTOMATIC TRANSFER SWITCH
CLR	CURRENT LIMITING REACTOR
VT	REVENUE METERING CUBICLE
SST	15KV STATION SERVICE TRANSFORMER
SS	15KV STATION SERVICE SWITCHGEAR
T-PH	600V STATION SERVICE TRANSFORMER
LC-PH	600V STATION SERVICE LOAD CENTRE
LP	LINE PROTECTION PANEL
GP	GENERATOR PROTECTION PANEL
XT	EXCITATION TRANSFORMER
XC	EXCITATION CUBICLE
VM	VIBRATION MONITORING CUBICLE
TFR	TRANSIENT FAULT RECORDER CUBICLE
UCMS	UNIT CONTROL & MONITORING SYSTEM
GVC	UNIT ELECTRONIC GOVERNOR CUBICLE
IPB	ISOLATED PHASE BUS
HPU	HYDRAULIC POWER UNIT
OWS	OIL-WATER SEPARATOR

NOTES:

1. EMBEDDED PIPES AND OTHER ITEMS NOT SHOWN ON THE DRAWING FOR CLARITY.
2. FLOOR SLOPES NOT SHOWN FOR CLARITY.
3. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
4. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.



PLAN AT MEZZANINE FLOOR & TAILRACE DECK AT EL 152.10

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-06-30	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH — HA DWG. NO. H341433-5050-00-042-0007

AREA COORD.: R. MANNEM
DISCIP. ENGR.: W. MILLIONS
PROJ. ENGR.: A. TRUDEL
PROJ. MGR.: W. GENDZELEVICH

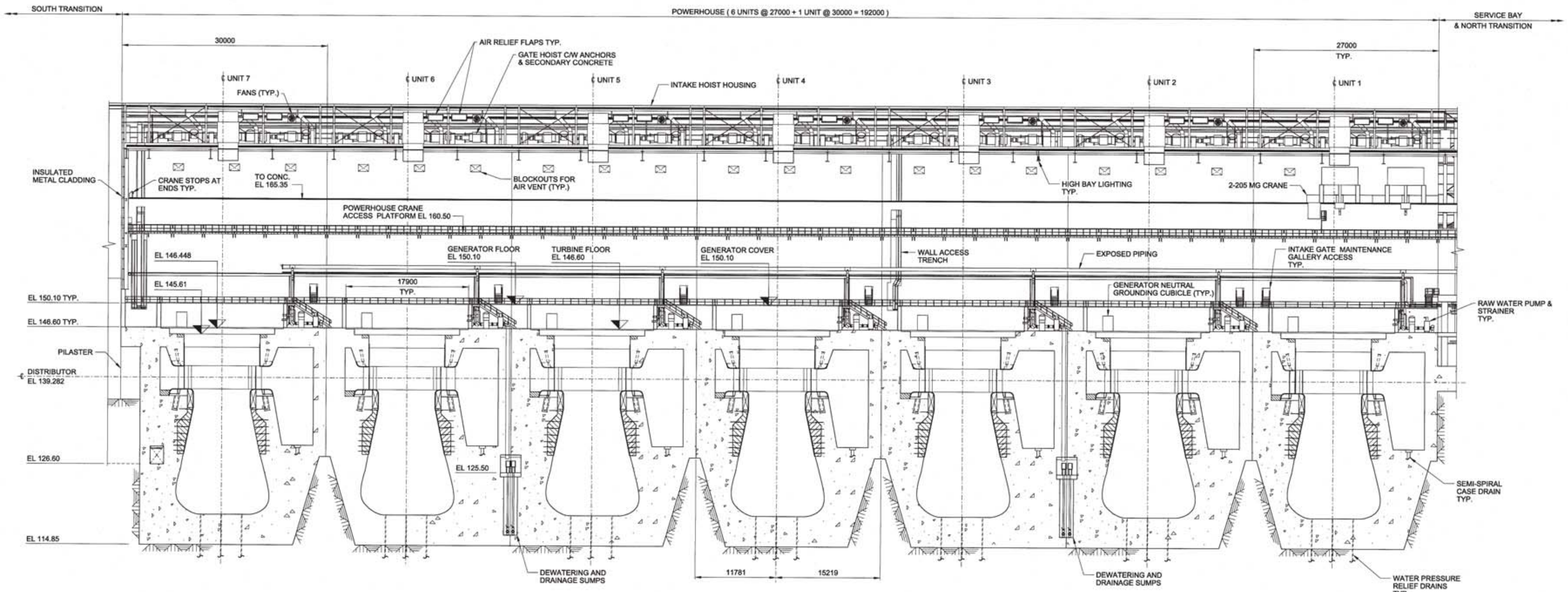
Manitoba Hydro — AUTHENTICATION FOR CURRENT REVISION

DRAWN: S.W. POLINCHUK — CHECKED: — SCALE: 1:200
DESIGNED: L.K. STANSELL — CHECKED: — DATE:

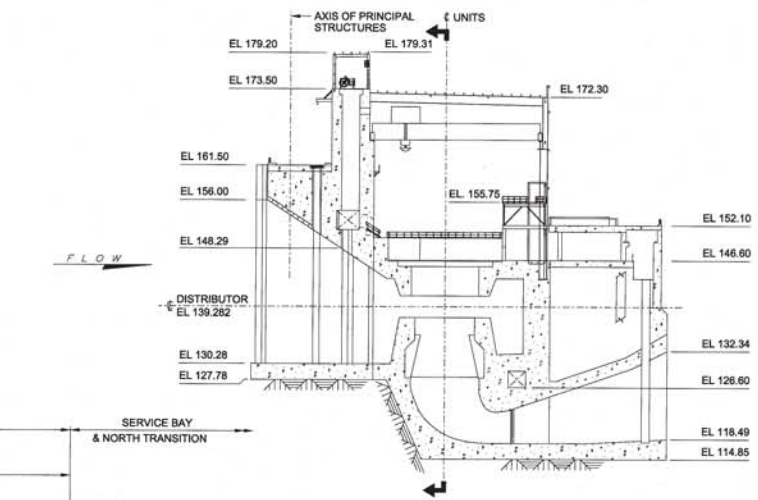
KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE UNITS 4 TO 7 PLAN AT GENERATOR FLOOR

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0026	0001	0C



LONGITUDINAL SECTION AT CENTERLINE OF UNITS



KEY SECTION

NOTES:

1. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
2. FLOOR SLOPES NOT SHOWN FOR CLARITY.
3. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
4. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH™
HA DWG. NO. H341433-5050-00-042-0008
AREA COORD. R. MANNEM
DATE
DISCIP. ENGR. W. MILLIONS
DATE
PROJ. ENGR. A. TRUDEL
DATE
PROJ. MGR. W. GENDZELEVICH
DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S.W. POLINCHUK | CHECKED: | SCALE: 1:250
DESIGNED: L.K. STANSELL | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT POWERHOUSE LONGITUDINAL SECTION AT CL OF UNITS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0027	0001	0C

ISO A0 (46.8 x 33.1)
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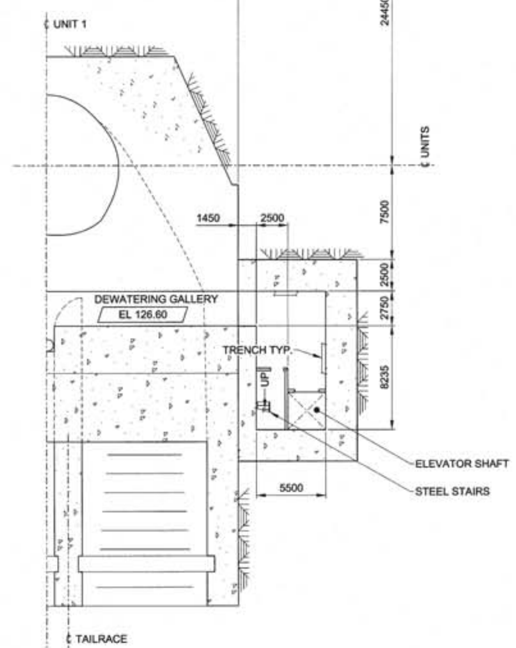
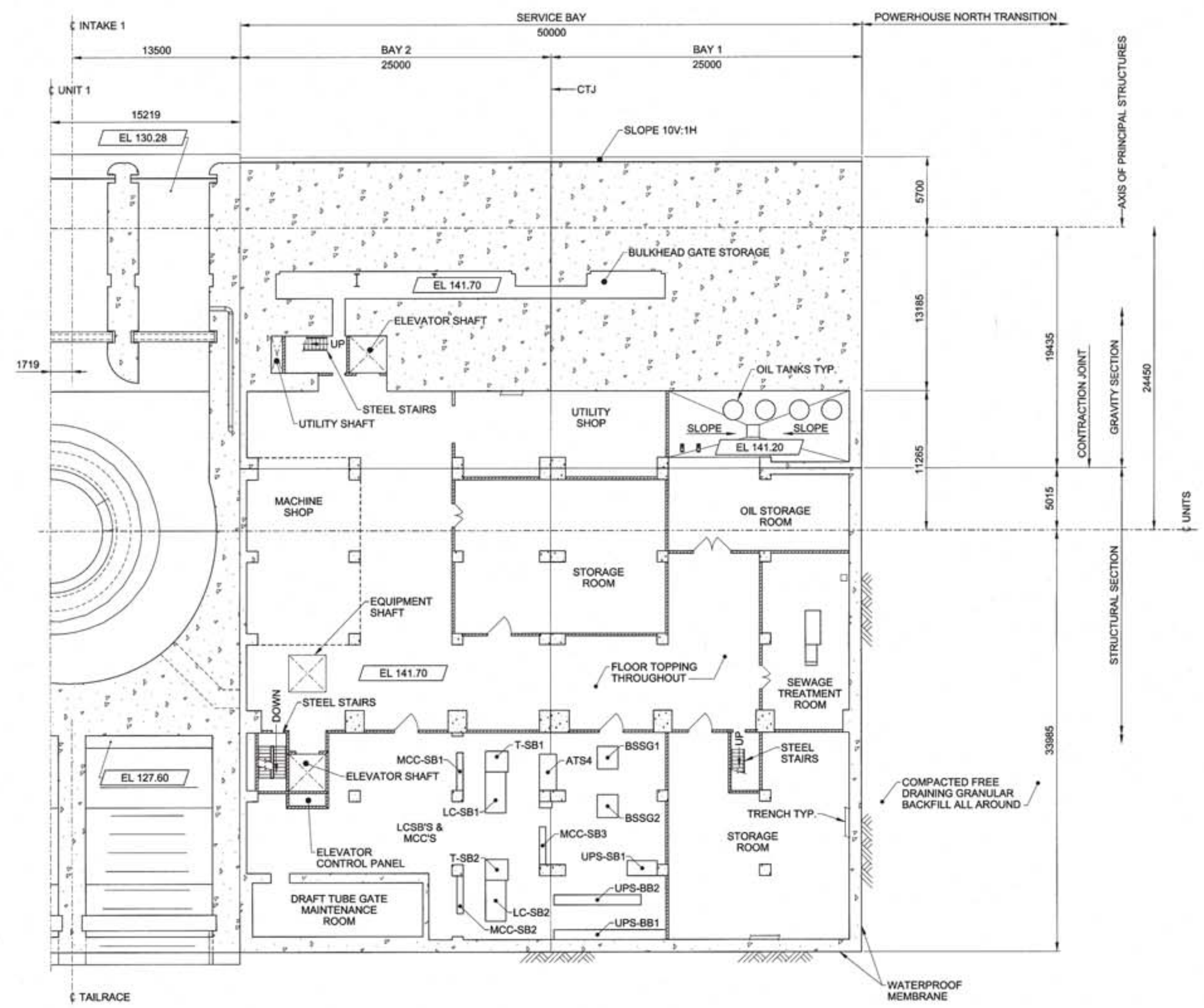
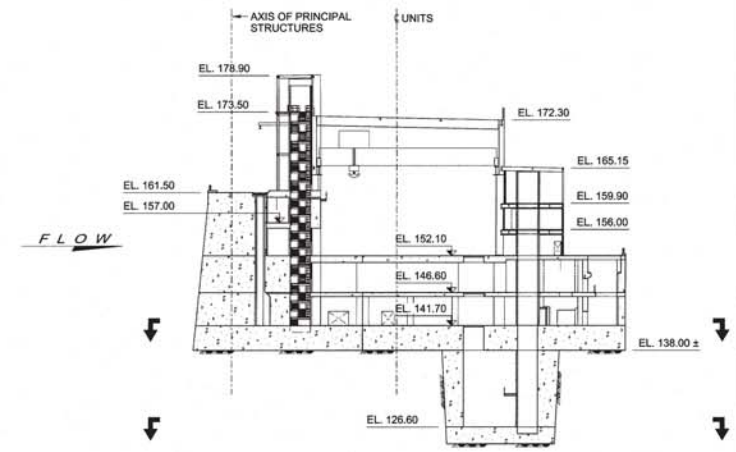


PLAN AT EL 126.60



PLAN AT EL 141.70



KEY SECTION

LEGEND:

ELECTRICAL EQUIPMENT

BSSG	BLACK START SWITCHGEAR
UPS-BB	UPS BATTERY BANK
UPS-SB	EMERGENCY LIGHTING UPS
LC-SB	600V SERVICE BAY LOAD CENTRE
ATS	AUTOMATIC TRANSFER SWITCH
T-SB	600V SERVICE BAY TRANSFORMER
MCC-SB	600V SERVICE BAY MOTOR CONTROL CENTRE

NOTES:

1. THE ROOM LAYOUT SHOWN IS PRELIMINARY. FINAL LAYOUT AND EGRESS REQUIREMENTS ARE TO BE DEVELOPED DURING FINAL DESIGN IN ACCORDANCE WITH NBCC REQUIREMENTS.
2. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
3. FLOOR SLOPES NOT SHOWN FOR CLARITY.
4. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
5. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.

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2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 12	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO. H341433-5550-00-042-0002
AREA COORD. W. MILLIONS DATE
DISCIP. ENGR. W. MILLIONS DATE
PROJ. ENGR. A. TRUDEL, DATE
PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK | CHECKED: | SCALE: 1:200
DESIGNED: D.B. DRAKE | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
SERVICE BAY
PLANS AT EL 126.6 & EL 141.7

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0030	0001	0C

ISO A0 (46.8 x 33.1)
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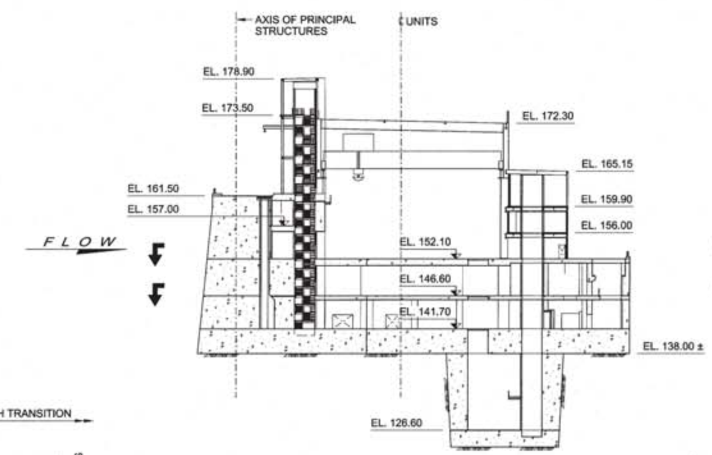


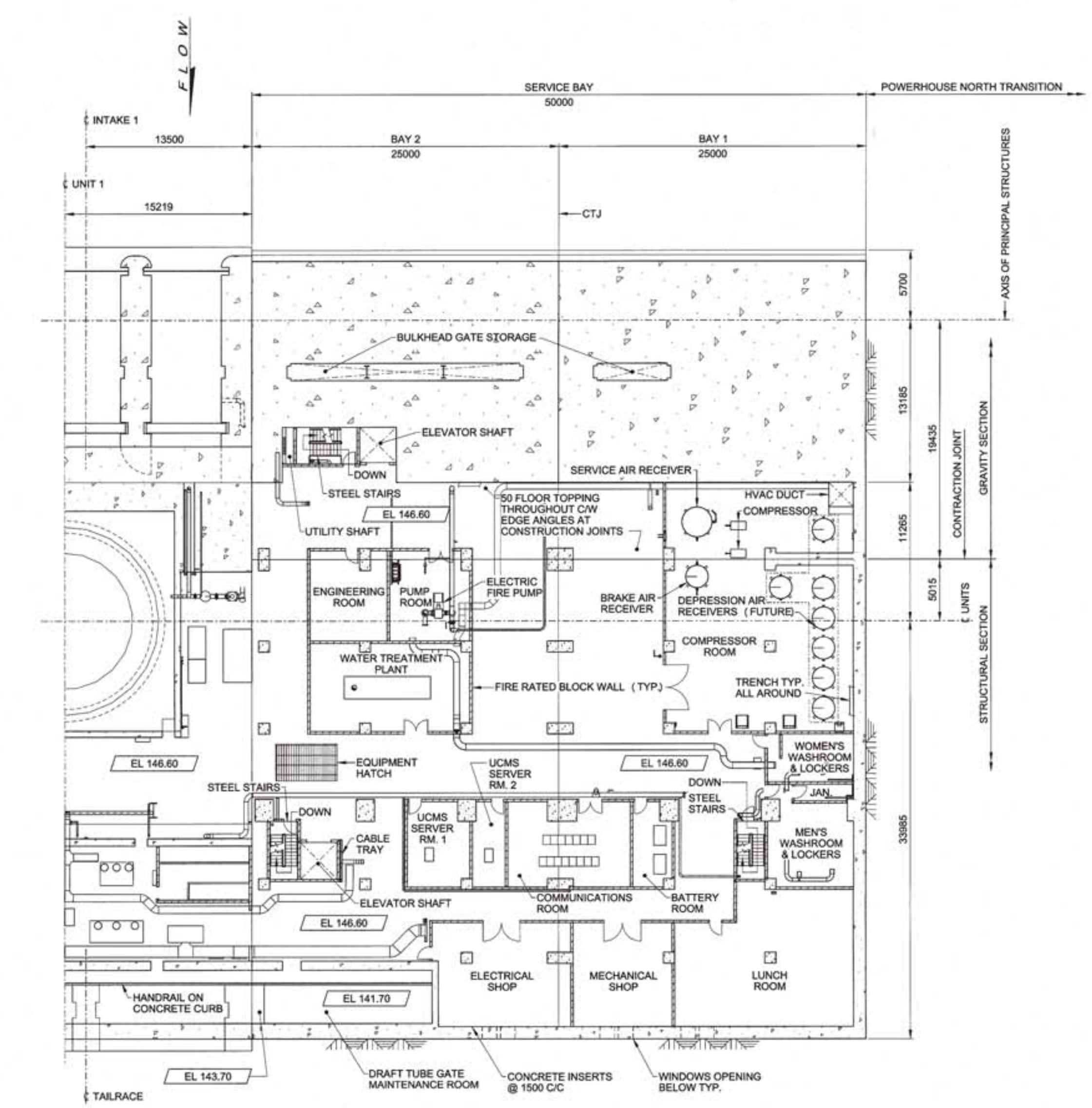
KEY SECTION

LEGEND:

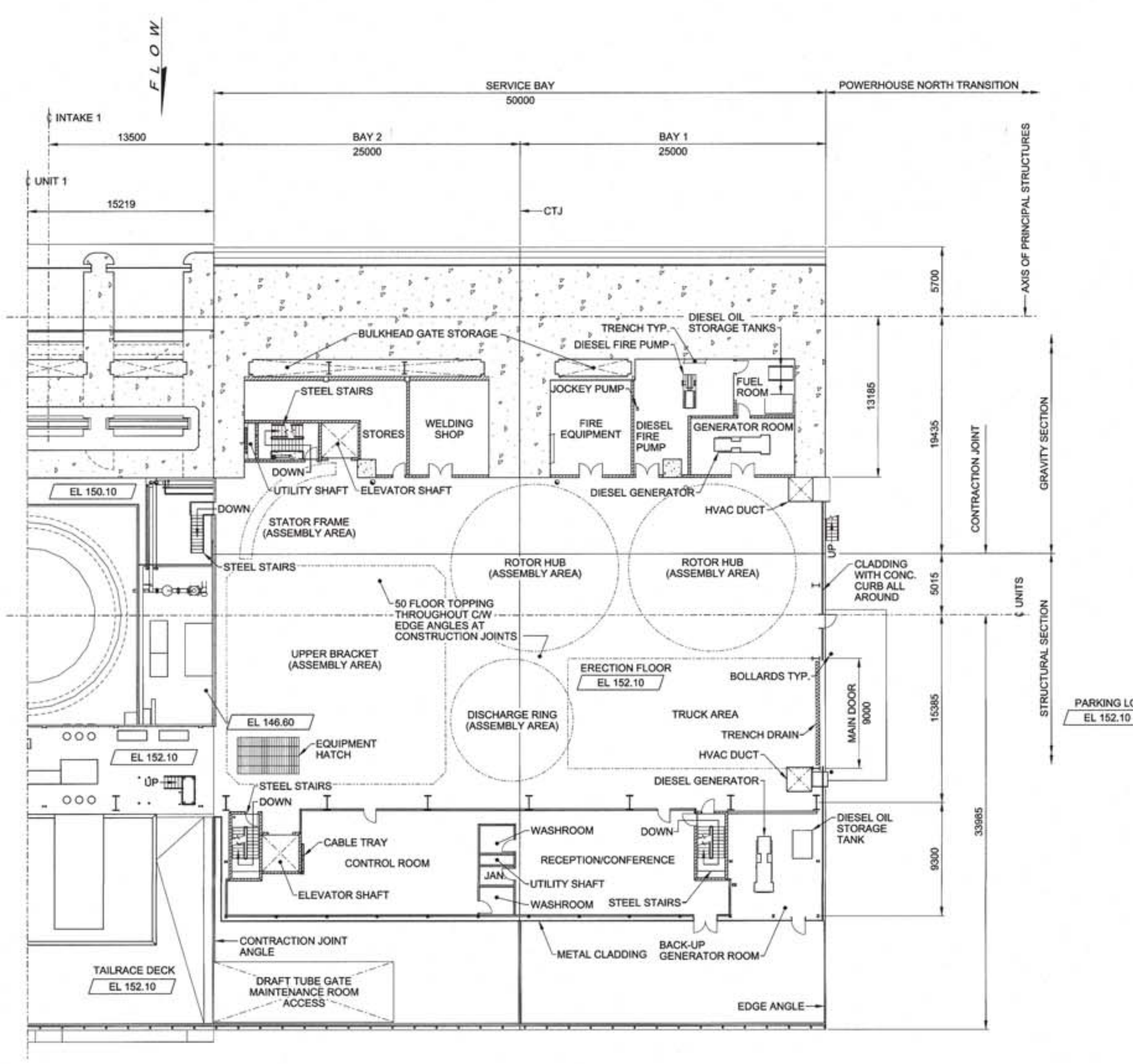
UCMS	UNIT CONTROL & MONITORING SYSTEM
HVAC	HEATING VENTILATION & AIR CONDITIONING
CTJ	CONCRETE THERMAL JOINT
JAN.	JANITORIAL ROOM

NOTES:

1. THE ROOM LAYOUT SHOWN IS PRELIMINARY. FINAL LAYOUT AND EGRESS REQUIREMENTS ARE TO BE DEVELOPED DURNING FINAL DESIGN IN ACCORDANCE WITH NBCC REUIREMENTS.
2. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
3. FLOOR SLOPES NOT SHOWN FOR CLARITY.
4. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
5. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.



PLAN AT EL 146.60



PLAN AT EL. 152.10

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DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO.
H341433-5550-00-042-0003
AREA COORD. W. MILLIONS
DISCIP. ENGR. W. MILLIONS
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH

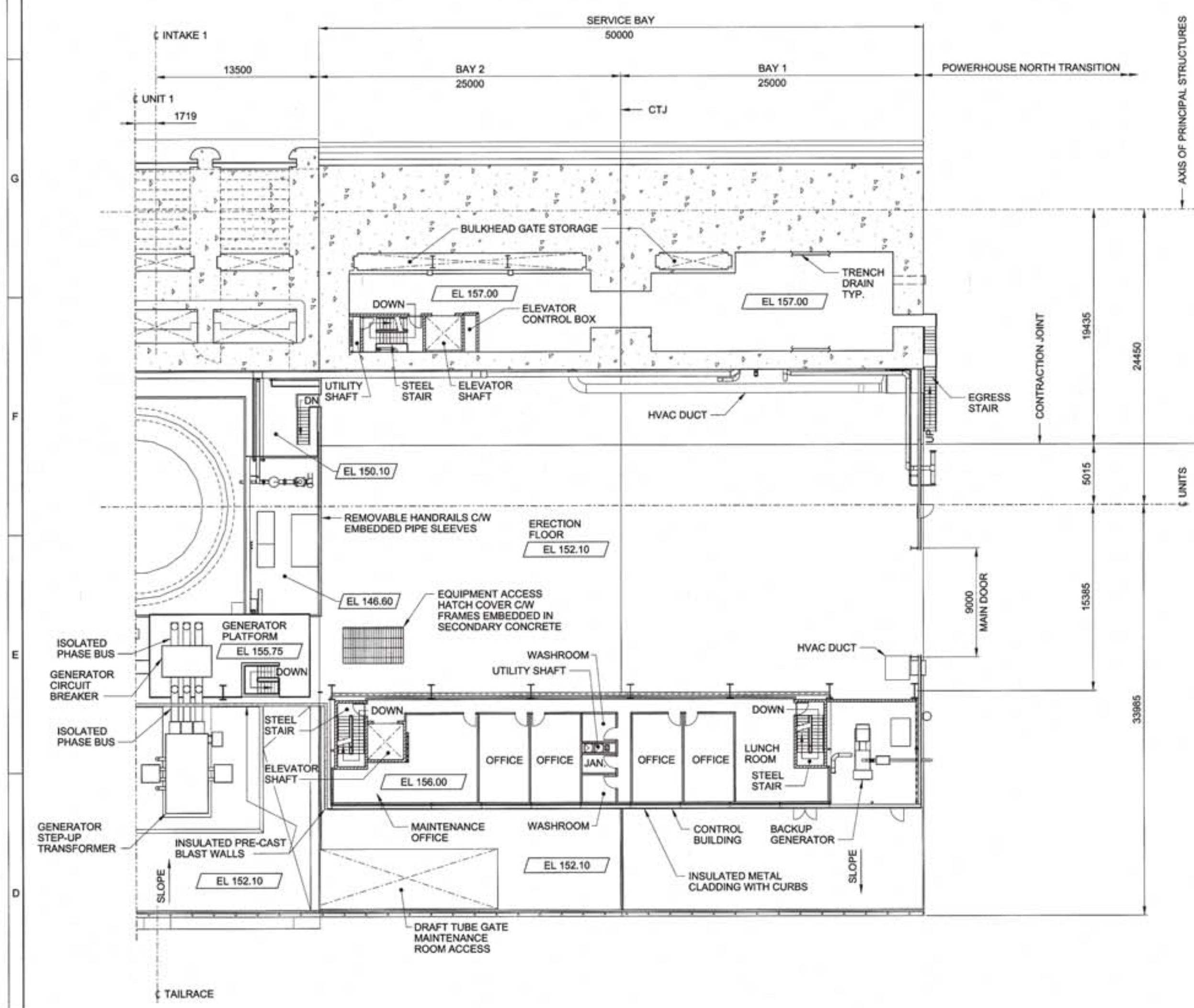
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK
DESIGNED: D.B. DRAKE
SCALE: 1:200

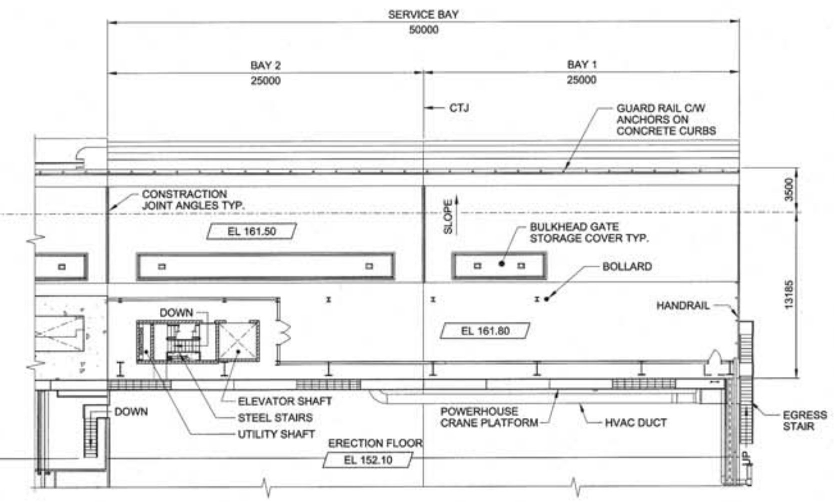
KEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT SERVICE BAY PLANS AT EL 146.6 & 152.1

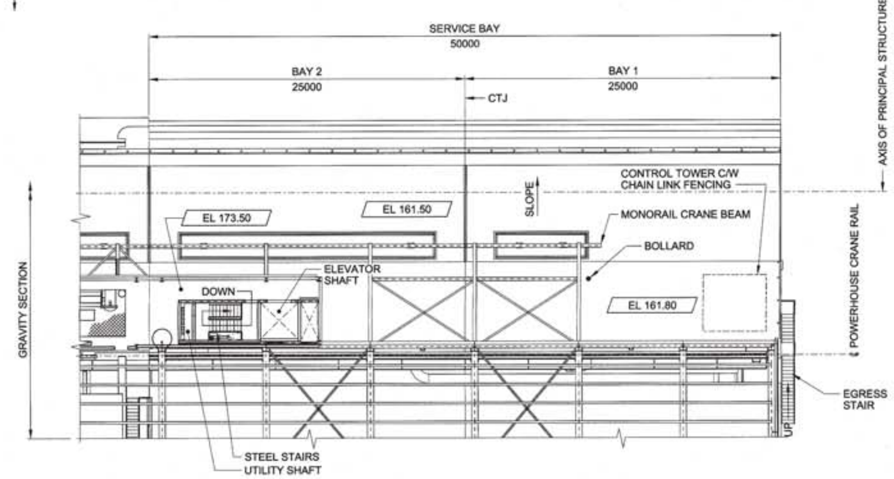
DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0031	0001	0C



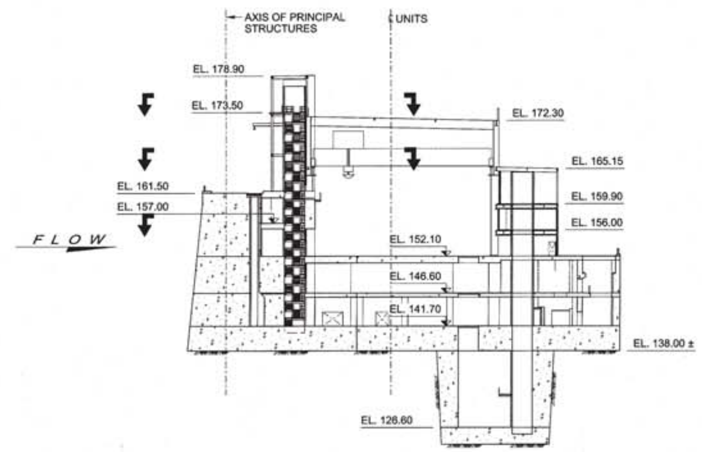
PLAN AT EL 157.00



PARTIAL PLAN AT EL 161.80



PARTIAL PLAN AT EL 173.50



KEY SECTION

LEGEND:

UCMS	UNIT CONTROL & MONITORING SYSTEM
HVAC	HEATING VENTILATION & AIR CONDITIONING
CTJ	CONCRETE THERMAL JOINT
JAN.	JANITORIAL ROOM

NOTES:

1. THE ROOM LAYOUT SHOWN IS PRELIMINARY. FINAL LAYOUT AND EGRESS REQUIREMENTS ARE TO BE DEVELOPED DURNING FINAL DESIGN IN ACCORDANCE WITH NBCC REUIREMENTS.
2. EMBEDDED PIPES NOT SHOWN ON THE DRAWING FOR CLARITY.
3. FLOOR SLOPES NOT SHOWN FOR CLARITY.
4. FLOOR FINISHES FOR TOPPINGS SHALL BE U3-TROWELLED TYPE FINISHING.
5. WATERSTOPS NOT SHOWN FOR CLARITY. IN GENERAL TWO LINES OF PVC-RIBBED WATERSTOPS ARE REQUIRED FOR ALL CONSTRUCTION AND CONTRACTION JOINTS.

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO.
H341433-5550-00-042-0004

AREA COORD.	W. MILLIONS
DISCIP. ENGR.	W. MILLIONS
PROJ. ENGR.	A. TRUDEL
PROJ. MGR	W. GEND

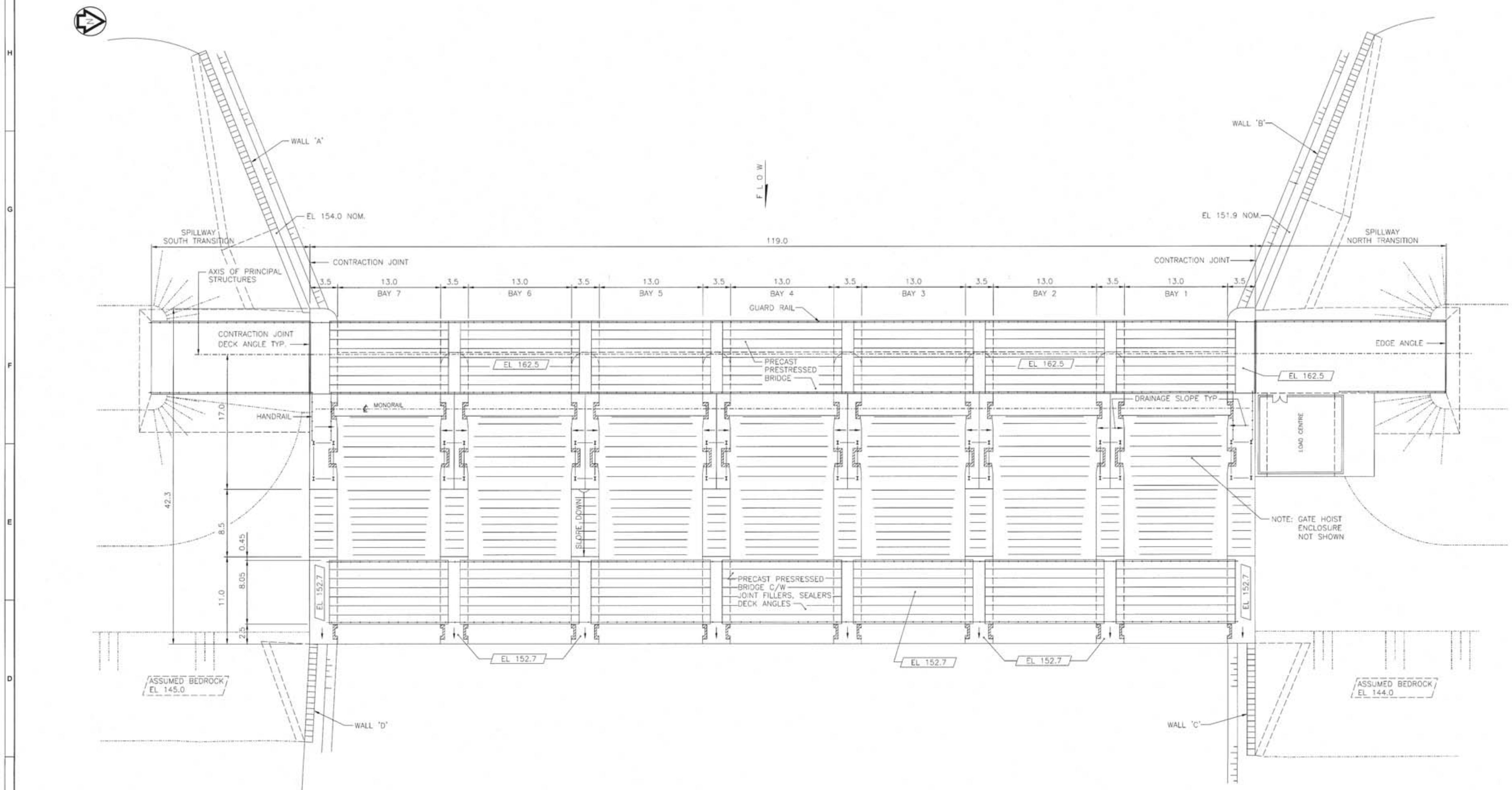
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK	CHECKED:	SCALE: 1:200
DESIGNED: D.B. DRAKE	CHECKED:	DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
SERVICE BAY
PLANS AT EL 157.0, 161.8 & 173.5

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0032	0001	0C



REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

HATCH
HA DWG. NO. H341433-4000-00-042-0001
AREA COORD.: W. MILLIONS
DISCIP. ENGR.: W. MILLIONS
PROJ. ENGR: A. TRUDEL
PROJ. MGR.: W. GENDZELEVICH

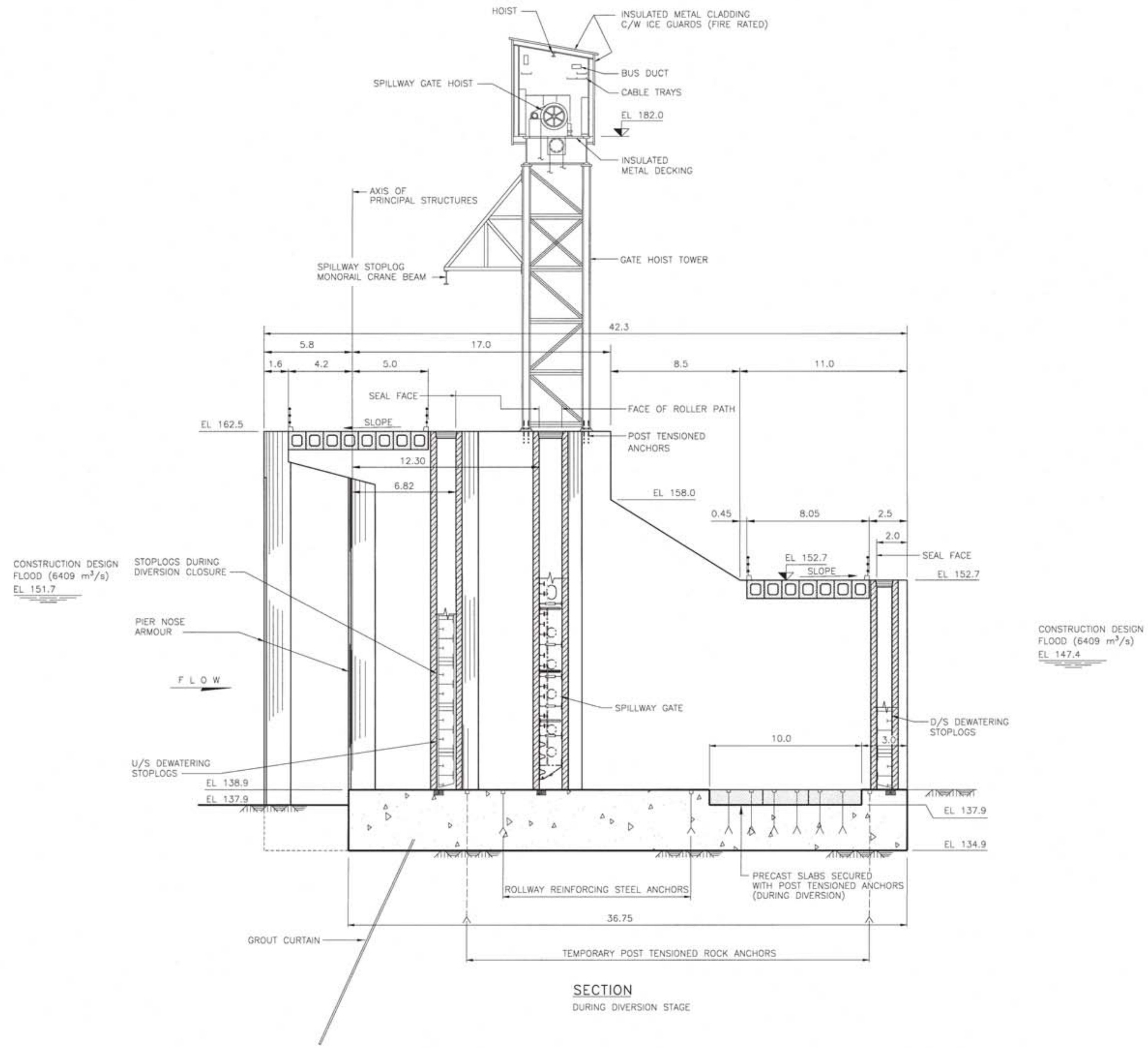
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK | CHECKED: | SCALE: 1:200
DESIGNED: R. MANNEM | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN GENERAL ARRANGEMENT SPILLWAY PLAN

DRAWING NUMBER: 1-00195-DE-06200-0033 | SHEET: 0001 | REVISION: 0C



SECTION
DURING DIVERSION STAGE

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO.
H341433-4000-00-042-0002
AREA COORD.
W. MILLIONS
DATE
DISCIP. ENGR.
W. MILLIONS
DATE
PROJ. ENGR.
A. TRUDEL
DATE
PROJ. MGR.
W. GENDZELEVICH
DATE

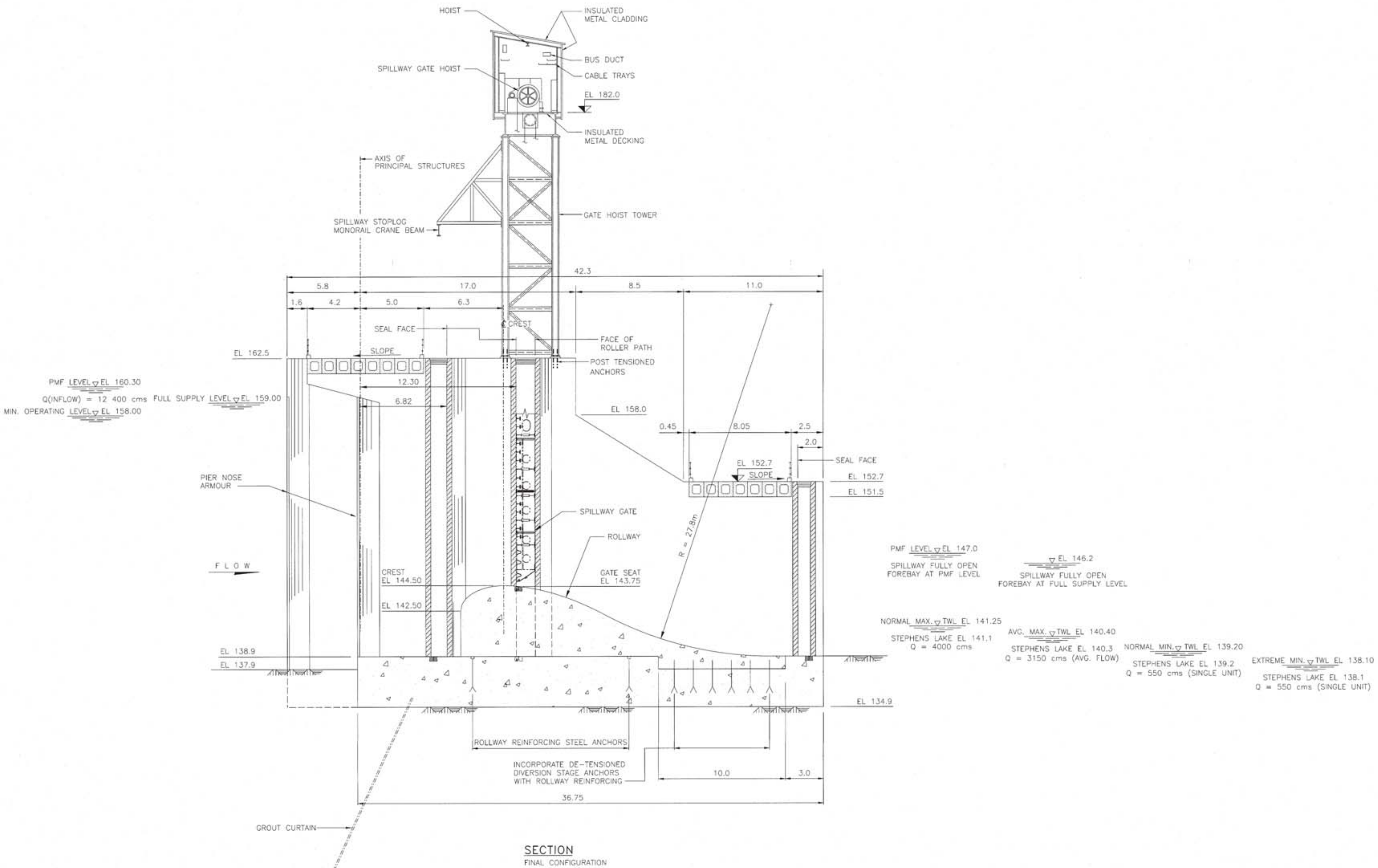
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK
CHECKED:
SCALE: 1:125
DESIGNED: R. MANNEM
CHECKED:
DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
SPILLWAY DIVERSION STAGE
CROSS SECTION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0034	0001	0C



SECTION
FINAL CONFIGURATION

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-04-10

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO. H341433-4000-00-042-0003
AREA COORD. W. MILLIONS DATE
DISCIP. ENGR. W. MILLIONS DATE
PROJ. ENGR. A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

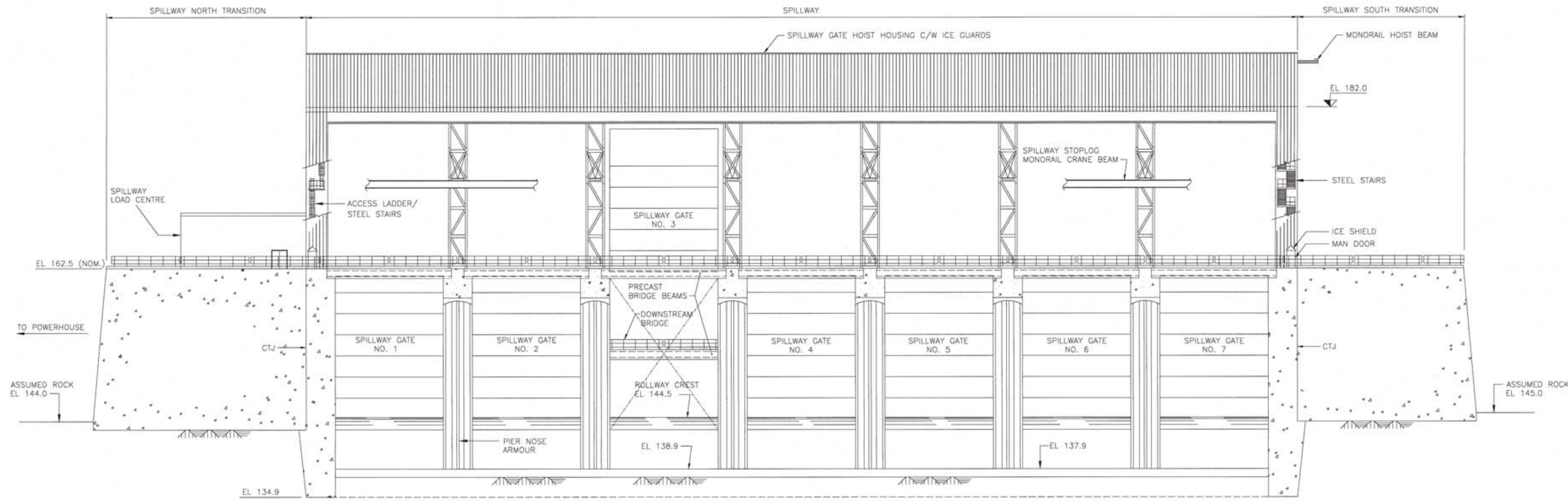
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK | CHECKED: | SCALE: 1:125
DESIGNED: R. MANNEM | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
SPILLWAY FINAL CONFIGURATION
CROSS SECTION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0035	0001	0C



UPSTREAM ELEVATION
FINAL CONFIGURATION

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO.
H341433-4000-00-042-0004
AREA COORD.
W. MILLIONS
DATE
DISCIP. ENGR.
W. MILLIONS
DATE
PROJ. ENGR.
A. TRUDE
DATE
PROJ. MGR.
W.GENDZELEVICH
DATE

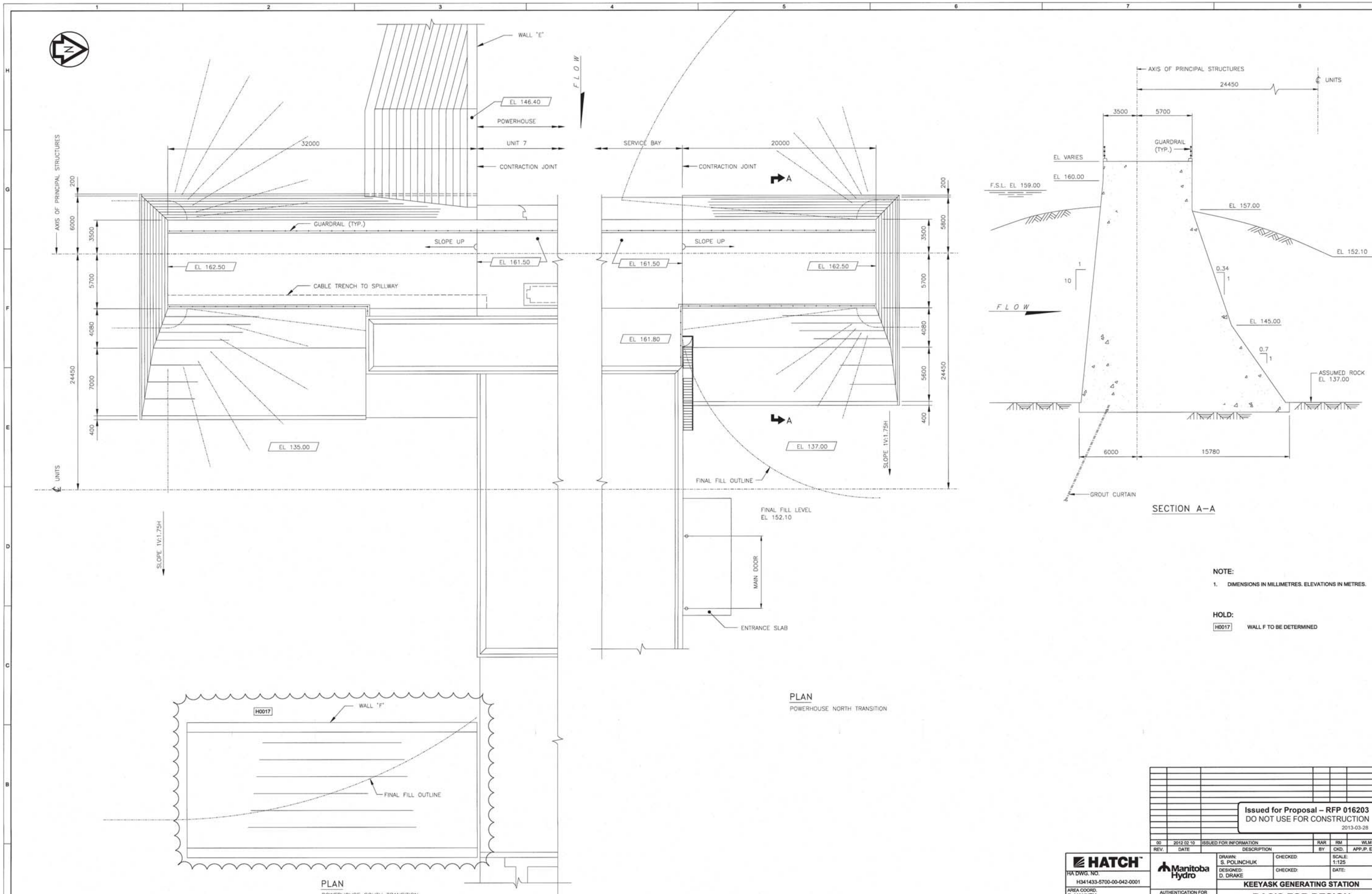
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK
CHECKED:
SCALE: 1:200
DESIGNED: D. DRAKE
CHECKED:
DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
SPILLWAY
ELEVATION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0036	0001	0C



NOTE:

1. DIMENSIONS IN MILLIMETRES. ELEVATIONS IN METRES.

HOLD:

H0017 WALL F TO BE DETERMINED

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO.
H341433-5700-00-042-0001
AREA COORD. R. MANNEM
DISCIP. ENGR. W. MILLIONS
PROJ. ENGR A. TRUDEL
PROJ. MGR. W. GENDZELEVICH

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK
CHECKED:
SCALE: 1:125
DESIGNED: D. DRAKE
CHECKED:
DATE:

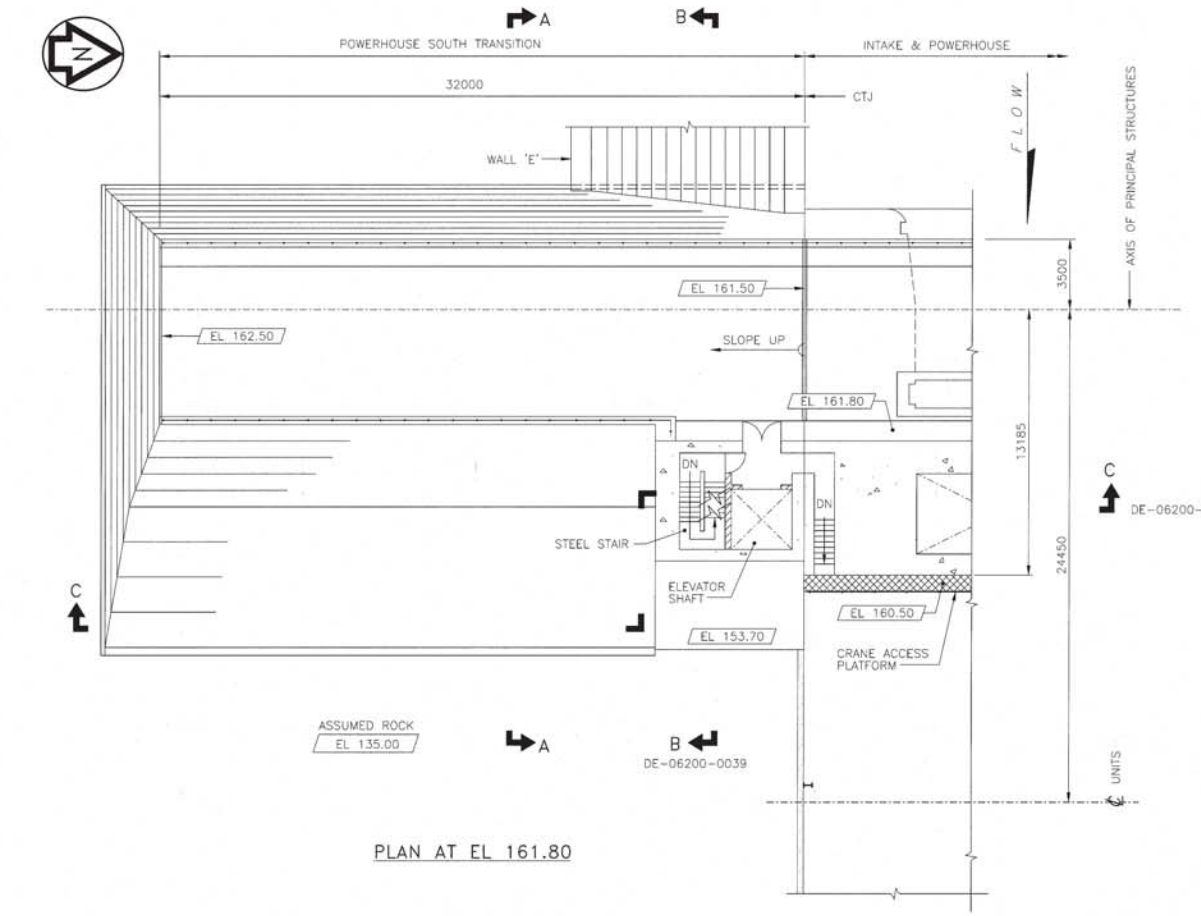
KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
POWERHOUSE TRANSITION
STRUCTURES PLANS & SECTION

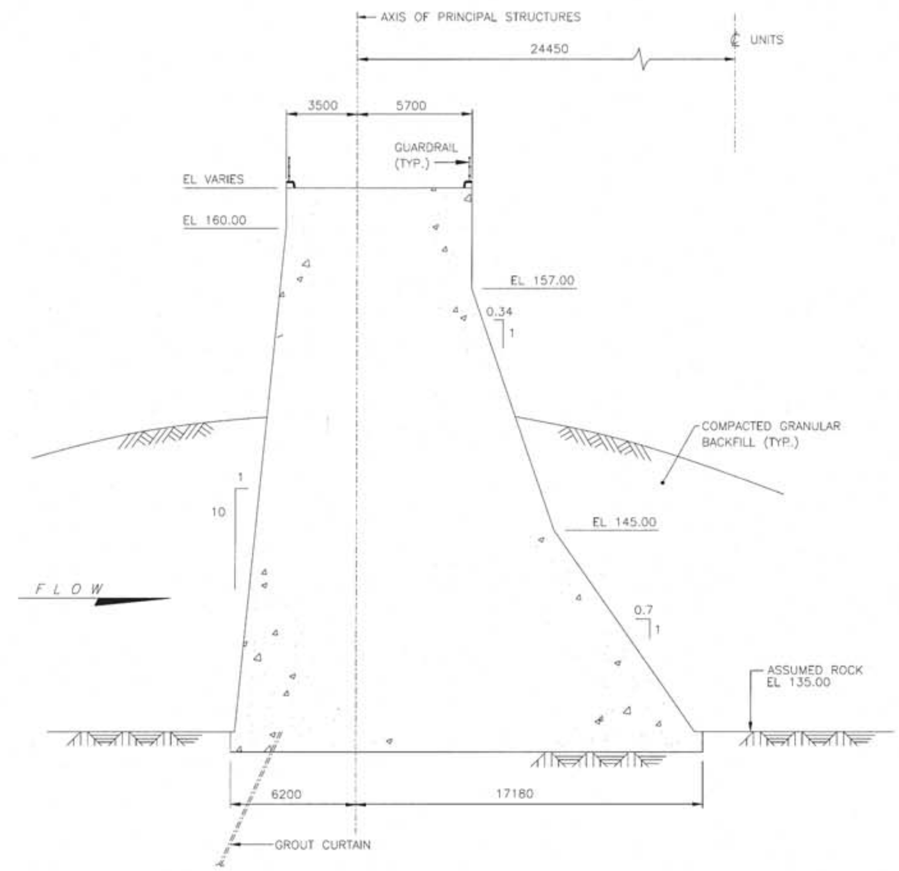
DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0037	0001	0C

NOTE:

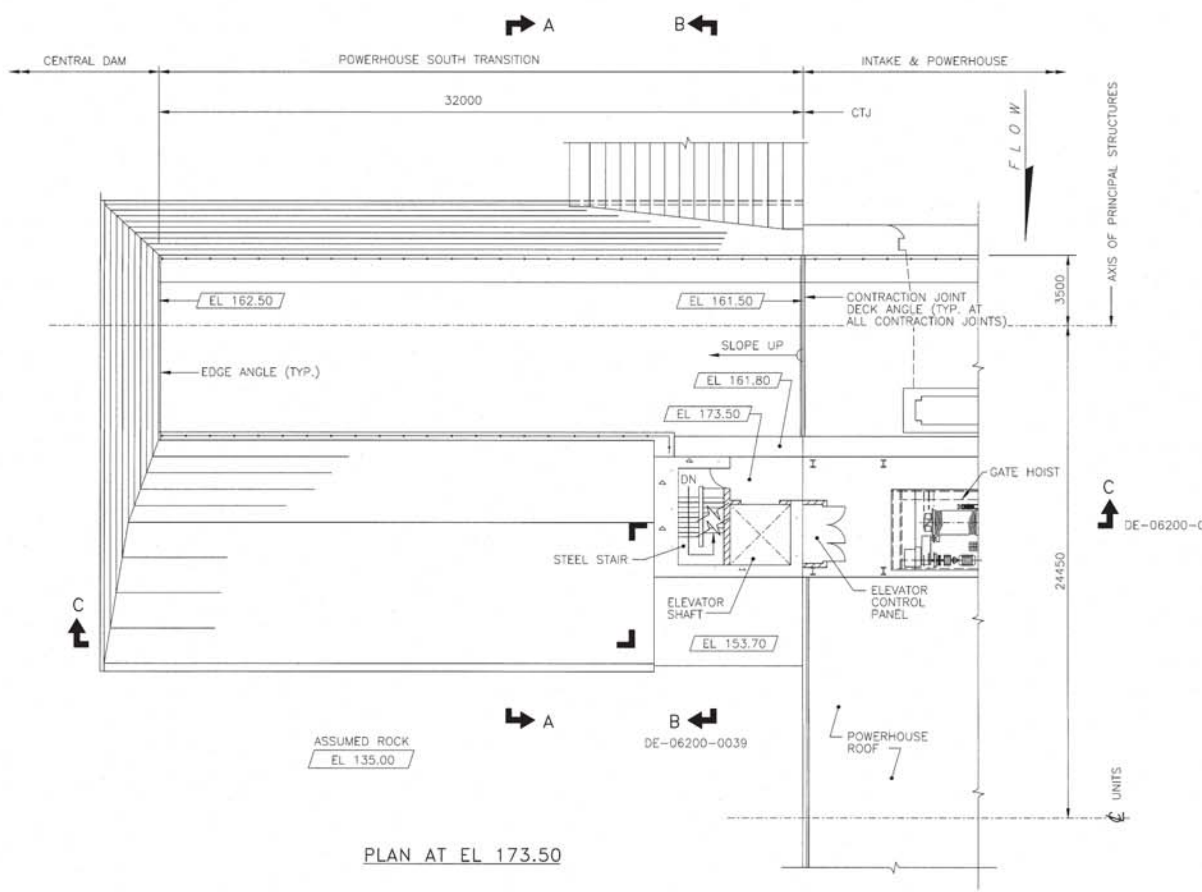
CENTRAL DAM WORKS NOT SHOWN FOR CLARITY.



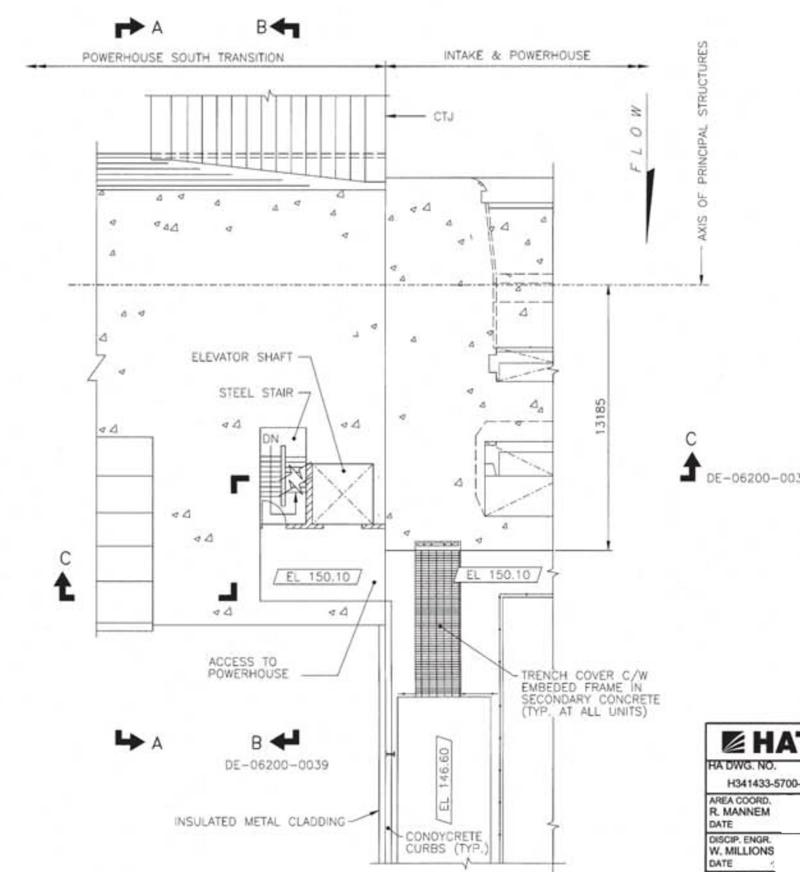
PLAN AT EL 161.80



SECTION A–A



PLAN AT EL 173.50



PLAN AT EL 150.10

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO. H341433-5700-00-042-0002
AREA COORD. R. MANNEM
DISCIP. ENGR. W. MILLIONS
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

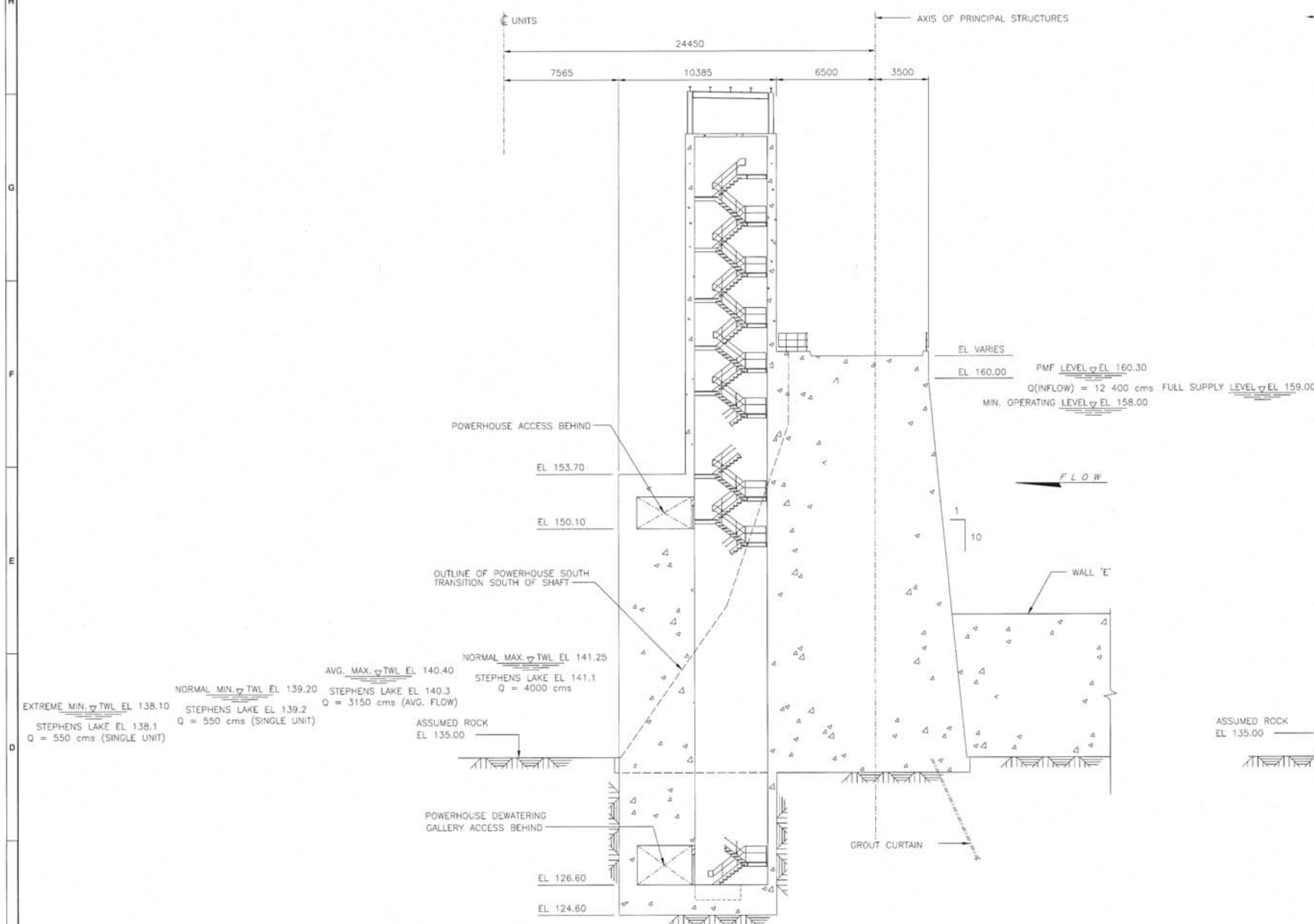
DRAWN: S. POLINCHUK
CHECKED:
SCALE: 1:125
DESIGNED: D.B. DRAKE
CHECKED:
DATE:

KEYASK GENERATING STATION

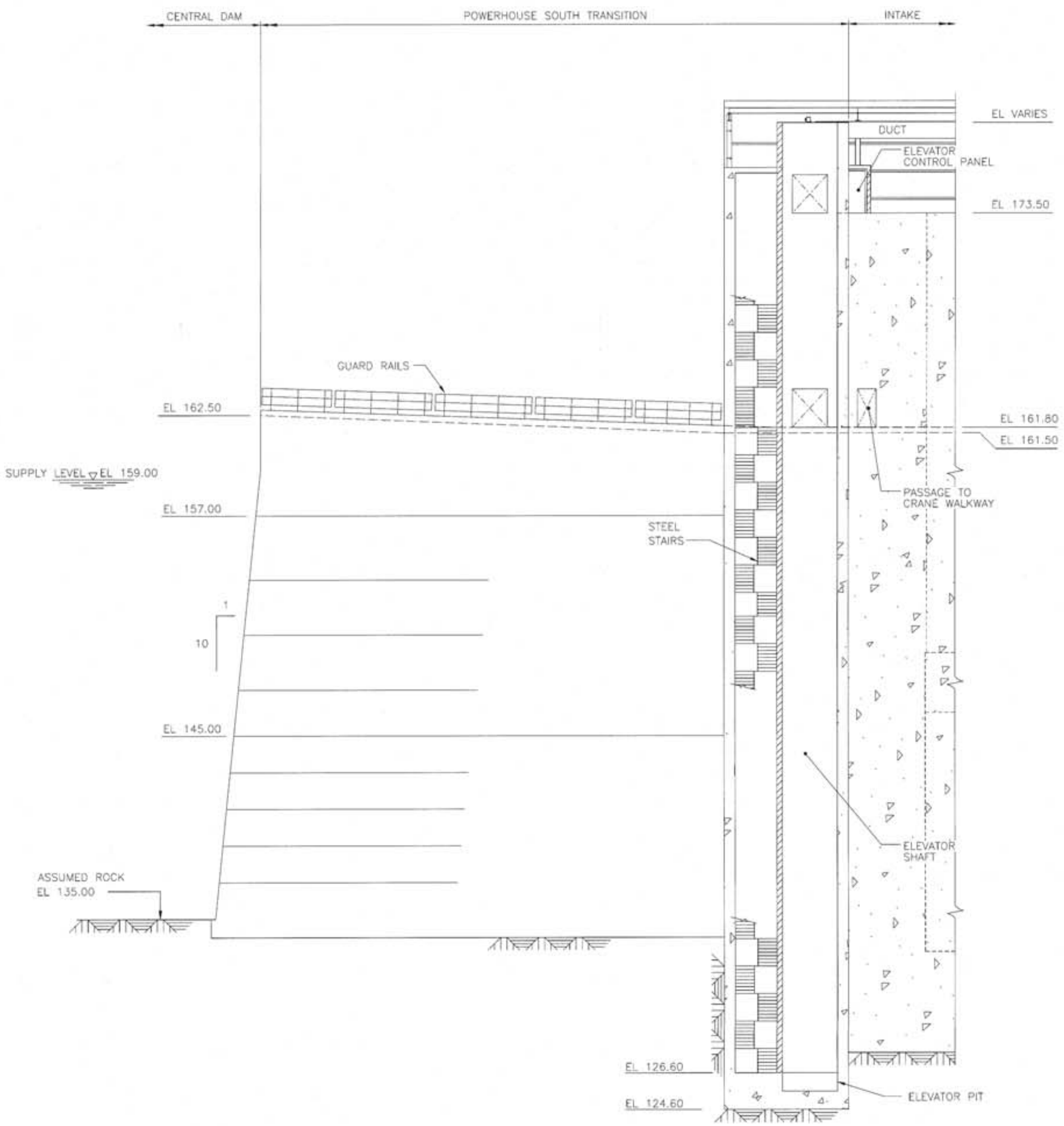
BASIS FOR DESIGN
GENERAL ARRANGEMENT
POWERHOUSE SOUTH
TRANSITION PLANS & SECTIONS

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0038	0001	0C

NOTE:
CENTRAL DAM WORKS NOT SHOWN FOR CLARITY.



SECTION B–B DE–06200–0038



SECTION C–C DE–06200–0038

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-04-10

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH
HA DWG. NO. H341433-5700-00-042-0003
AREA COORD. W. MILLIONS
DATE
DISCIP. ENGR. W. MILLIONS
DATE
PROJ. ENGR A. TRUDEL
DATE
PROJ. MGR. W. GENDZELEVICH
DATE

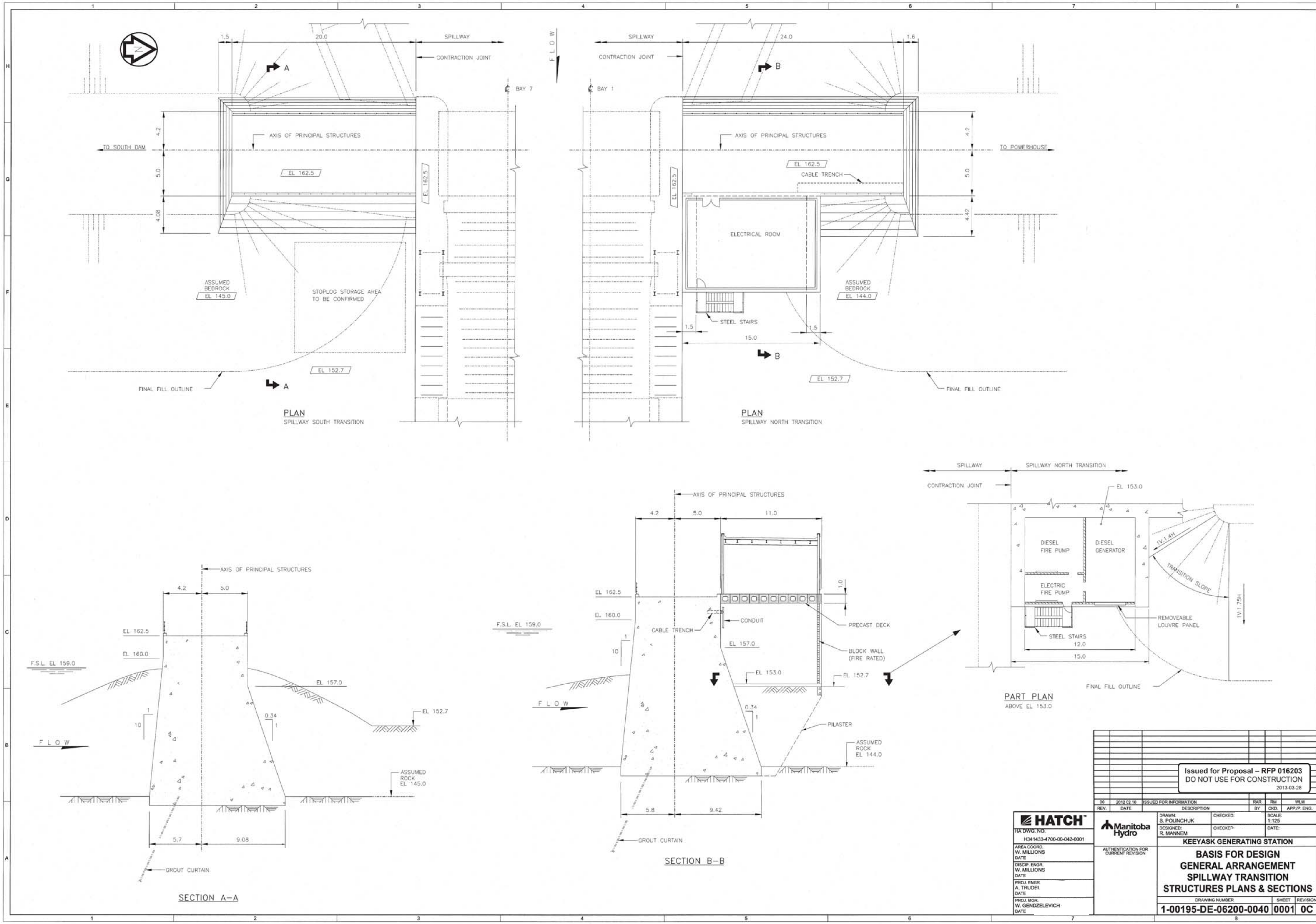
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

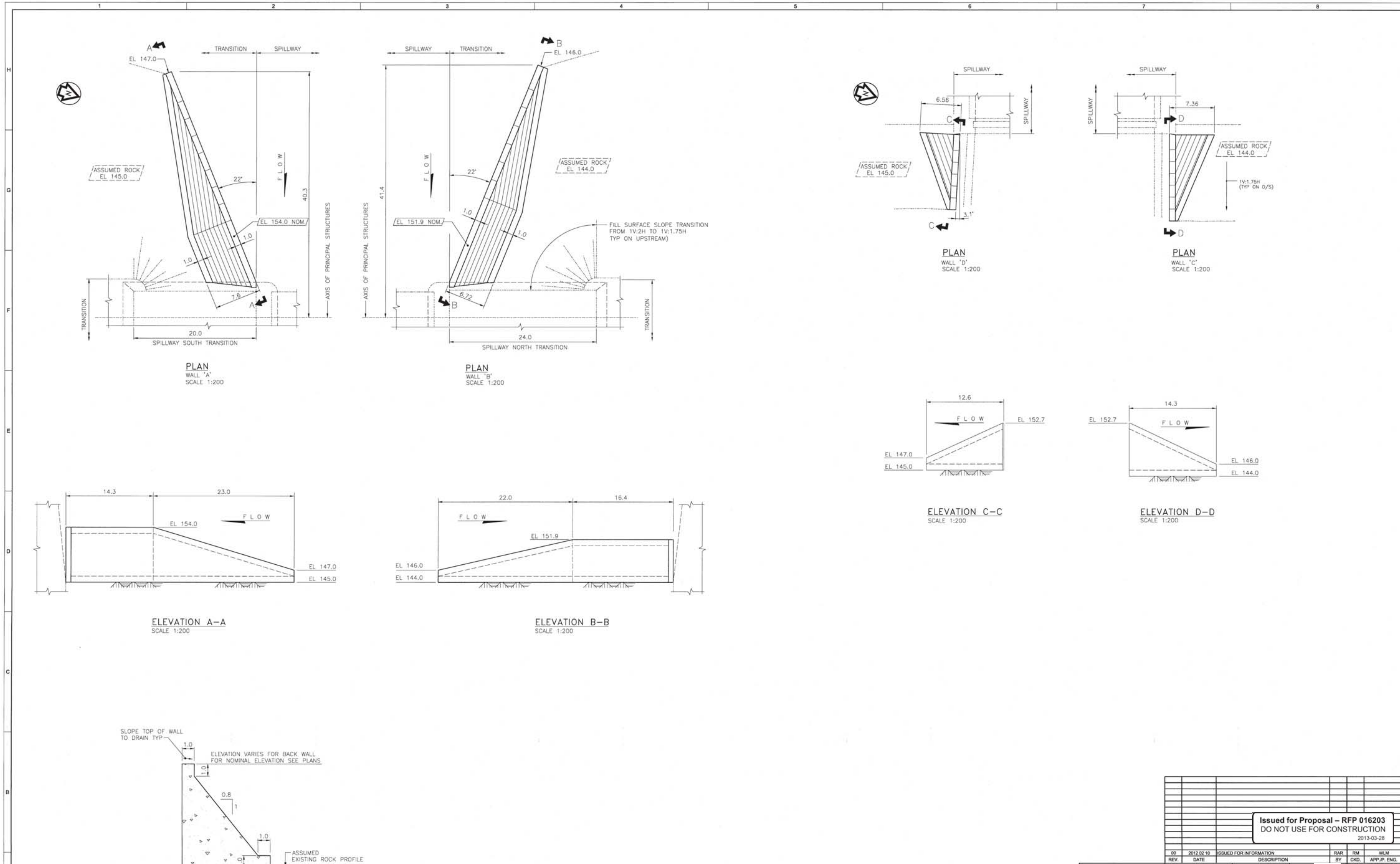
DRAWN: S. POLINCHUK | CHECKED: | SCALE: 1:125
DESIGNED: D.B. DRAKE | CHECKED: | DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
POWERHOUSE
SOUTH TRANSITION SECTIONS

DRAWING NUMBER: 1-00195-DE-06200-0039 | SHEET: 0001 | REVISION: 0C


PLAN
SPILLWAY SOUTH TRANSITION
PLAN
SPILLWAY NORTH TRANSITION
SPILLWAY
CONTRACTION JOINT
FLOW
℄ BAY 7
℄ BAY 1
AXIS OF PRINCIPAL STRUCTURES
TO SOUTH DAM
TO POWERHOUSE
EL 162.5
CABLE TRENCH
ELECTRICAL ROOM
ASSUMED BEDROCK EL 145.0
ASSUMED BEDROCK EL 144.0
STOPLOG STORAGE AREA TO BE CONFIRMED
STEEL STAIRS
EL 152.7
FINAL FILL OUTLINE
SECTION A–A
SECTION B–B
F.S.L. EL 159.0
EL 160.0
EL 157.0
EL 153.0
ASSUMED ROCK EL 145.0
ASSUMED ROCK EL 144.0
GROUT CURTAIN
CONDUIT
PRECAST DECK
BLOCK WALL (FIRE RATED)
PILASTER
SPILLWAY NORTH TRANSITION
EL 153.0
DIESEL FIRE PUMP
DIESEL GENERATOR
ELECTRIC FIRE PUMP
TRANSITION SLOPE
1V:1.4H
1V:1.75H
REMOVEABLE LOUVRE PANEL
PART PLAN
ABOVE EL 153.0
Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28
00 | 2012 02 10 | ISSUED FOR INFORMATION | RAR | RM | WLM
REV. | DATE | DESCRIPTION | BY | CKD. | APP./P. ENG.
HATCH
HA DWG. NO. H341433-4700-00-042-0001
AREA COORD. W. MILLIONS
DISCIP. ENGR. W. MILLIONS
PROJ. ENGR. A. TRUDEL
PROJ. MGR. W. GENDZELEVICH
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION
DRAWN: S. POLINCHUK
DESIGNED: R. MANNEM
SCALE: 1:125
KEEYASK GENERATING STATION
BASIS FOR DESIGN
GENERAL ARRANGEMENT
SPILLWAY TRANSITION
STRUCTURES PLANS & SECTIONS
DRAWING NUMBER 1-00195-DE-06200-0040
SHEET 0001
REVISION 0C



00	2012 02 10	ISSUED FOR INFORMATION	RAR	RM	WLM
REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

HATCH™
HA DWG. NO. H341433-4700-00-042-0002
AREA COORD. W. MILLIONS
DATE
DISCIP. ENGR. W. MILLIONS
DATE
PROJ. ENGR. A. TRUDEL
DATE
PROJ. MGR. W. GENDZELEVICH
DATE

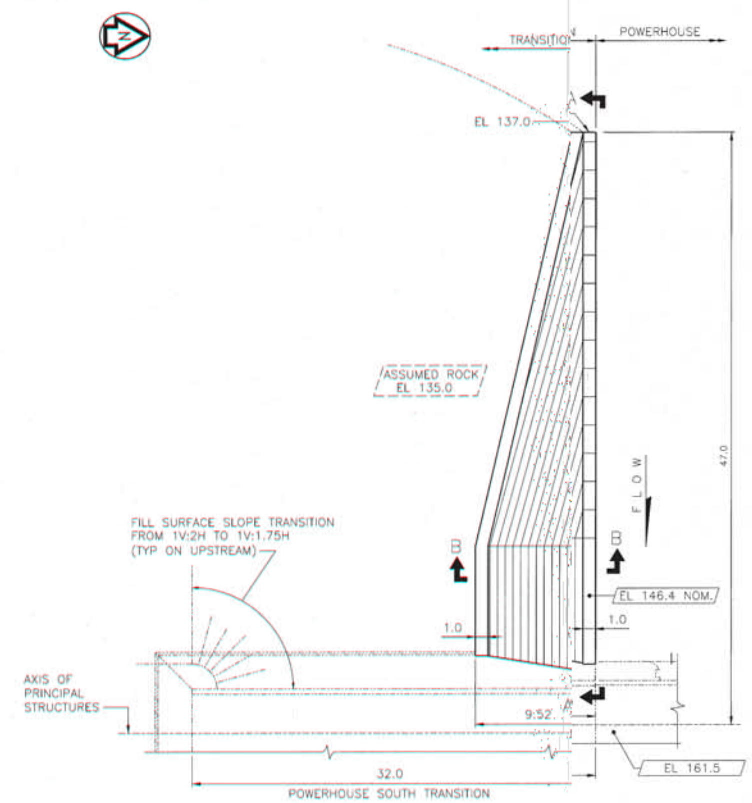
Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK
CHECKED:
SCALE: AS NOTED
DESIGNED: D. DRAKE
CHECKED:
DATE:

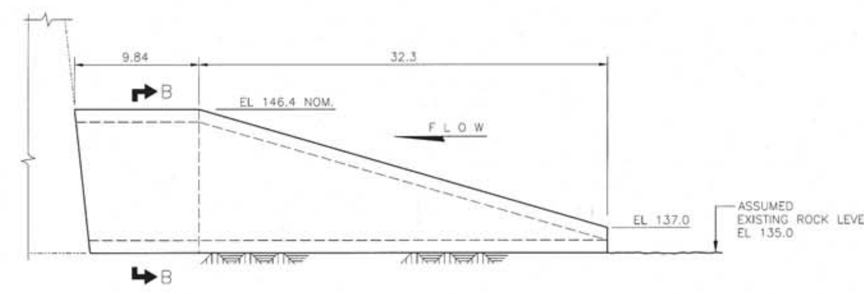
KEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
SPILLWAY WALLS 'A', 'B', 'C' & 'D'
PLANS, ELEVATIONS & SECTIONS

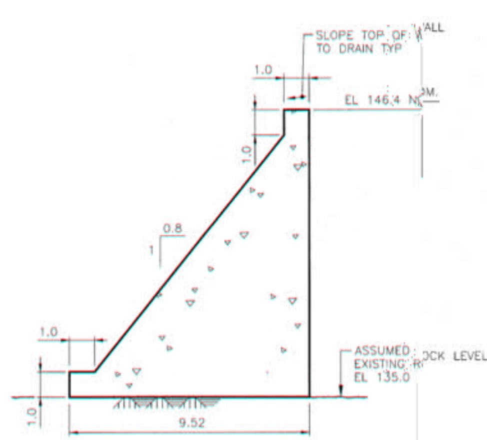
DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0041	0001	0C



PLAN
WALL 'E'
SCALE 1:200



ELEVATION A–A
SCALE 1:200



SECTION B–B
SCALE 1:100

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-03-28

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00	2012-02-10	ISSUED FOR INFORMATION	RAR	RM	WLM

HATCH

HA DWG. NO.
H341433-5700-00-042-0004

AREA COORD.
W. MILLIONS
DATE

DISCIP. ENGR.
W. MILLIONS
DATE

PROJ. ENGR.
A. TRUDEL
DATE

PROJ. MGR.
W. GENDZELEVICH
DATE

Manitoba Hydro

AUTHENTICATION FOR CURRENT REVISION

DRAWN: S. POLINCHUK
CHECKED:
SCALE: NTS
DESIGNED: D. DRAKE
CHECKED:
DATE:

KEEYASK GENERATING STATION

BASIS FOR DESIGN
GENERAL ARRANGEMENT
POWERHOUSE WALL 'E'
PLAN, ELEVATION & SECTION

DRAWING NUMBER	SHEET	REVISION
1-00195-DE-06200-0042	0001	0C

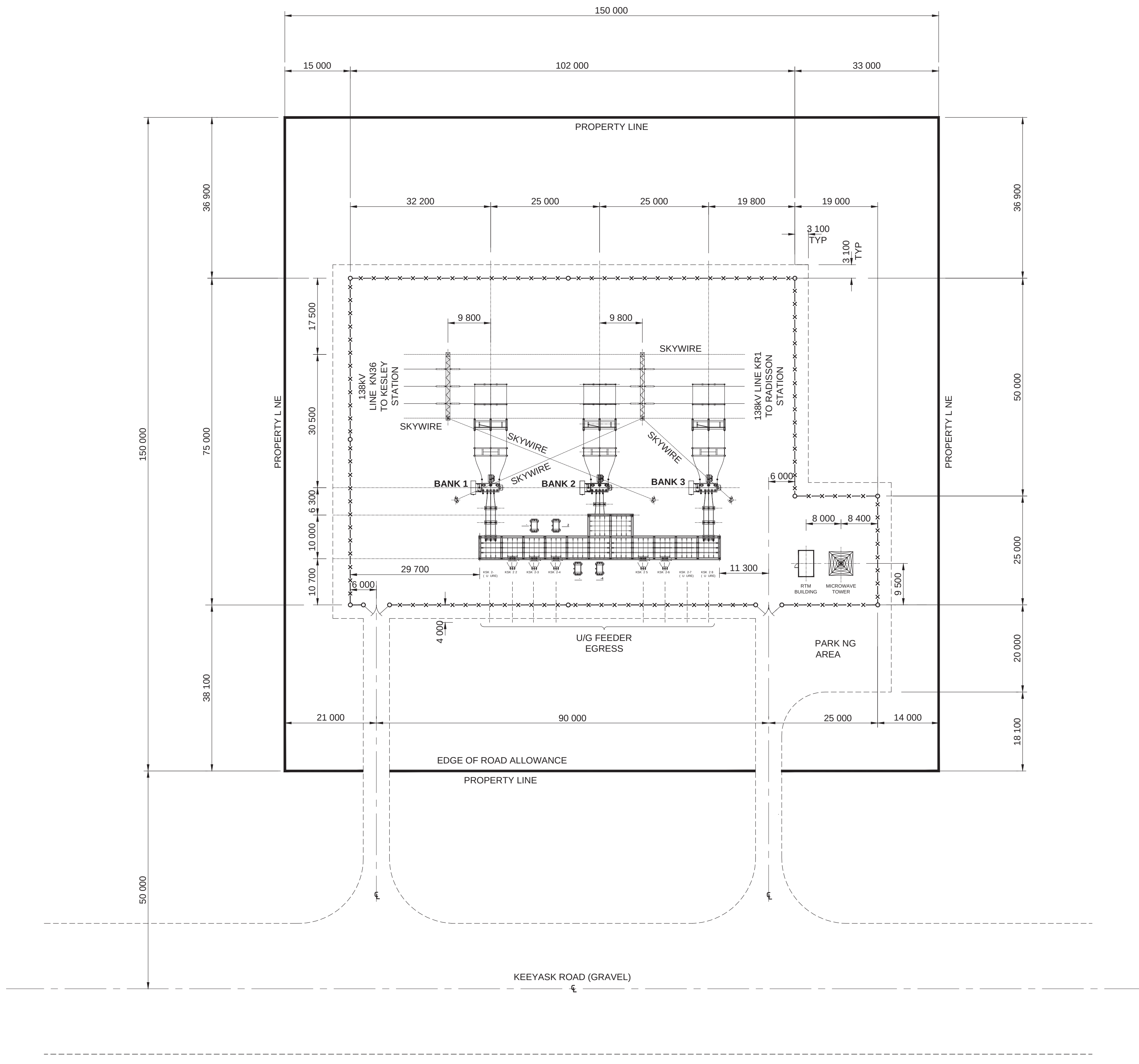
ISO A0 (46.8 x 33.1)

REFERENCE DRAWINGS

CODE	DRAWING NUMBER	DRAWING TITLE
	1-02820-FD-50000-0001 0001	138 - 12kV SWITCHYARD S NGLE L NE DIAGRAM
	1-02820-DD-50200-0001 0001	138 - 12kV STATION LAYOUT
	1-02820-DD-51500-0001 0001	138 - 12kV SWITCHYARD 138kV STRUCTURE & EQUIPMENT PLAN VIEW
	1-02820-DE-52300-0001 0001	138 - 12kV SWITCHYARD 12kV STRUCTURE & EQUIPMENT PLAN VIEW
	1-02820-DE-12000-0001 0001	138 - 12kV SWITCHYARD SITE MPROVEMENT PLAN

GENERAL NOTES

1. ALL D MENSIONS ARE IN M LLIMETERS.



NOT APPROVED

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.
00		NETWORK #246320	RD		

Manitoba Hydro

DRAWN: RD
CHECKED:
SCALE: 1 500
DESIGNED:
DATE: 2013-03-21

AUTHENTICATION FOR CURRENT REVISION

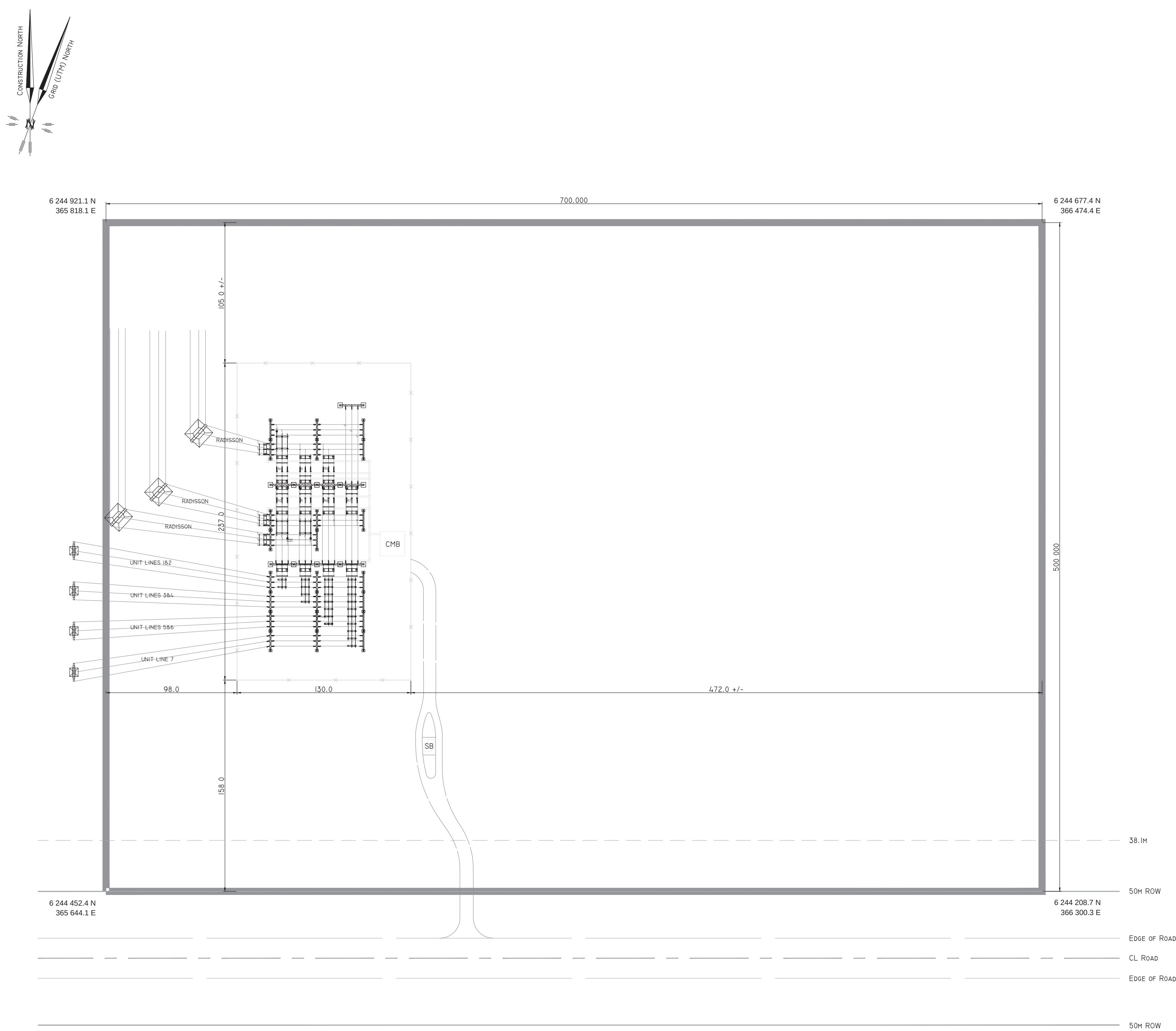
KEEYASK CONSTRUCTION POWER STATION

138 - 12kV STATION SITE LAYOUT

DRAWING NUMBER	SHEET	REVISION
1-02820-DD-10100-0001	0001	00

ISO A1 (841 x 594)

C:\Documentum\Viewed\1-02820-DD-10100-0001 0001.dwg 12/12/2013 7:52 AM



NOTES

1. TRANSMISSION AND UNIT LINE TOWERS ARE SHOWN FOR INFORMATION ONLY. SIZES AND LOCATIONS ARE TO BE DETERMINED.
2. THIS DRAWING IS CONCEPT ONLY AND IS NOT TO BE USED FOR CONSTRUCTION PUPOSES.
3. UTM COORDINATES SHOWN ARE FOR INFORMATION ONLY. ACTUAL LOCATION IS TO BE DETERMINED BY GROUND SURVEY.
4. UTM COORDINATES SHOWN ARE NAD83, ZONE15 CSRS.

LEGEND

CMB Control Building

Tower - Transmission Line, Unit Line

Road

Station Fence

Cable Trench

REV.	DATE	DESCRIPTION	BY	CKD.	APP.
00	2013-05-24	NETWORK #246321	SH	GK	

Manitoba Hydro

DRAWN: SH	CHECKED: GK	SCALE: 1 : 1750
DESIGNED: GK	DATE: 2013-05-24	

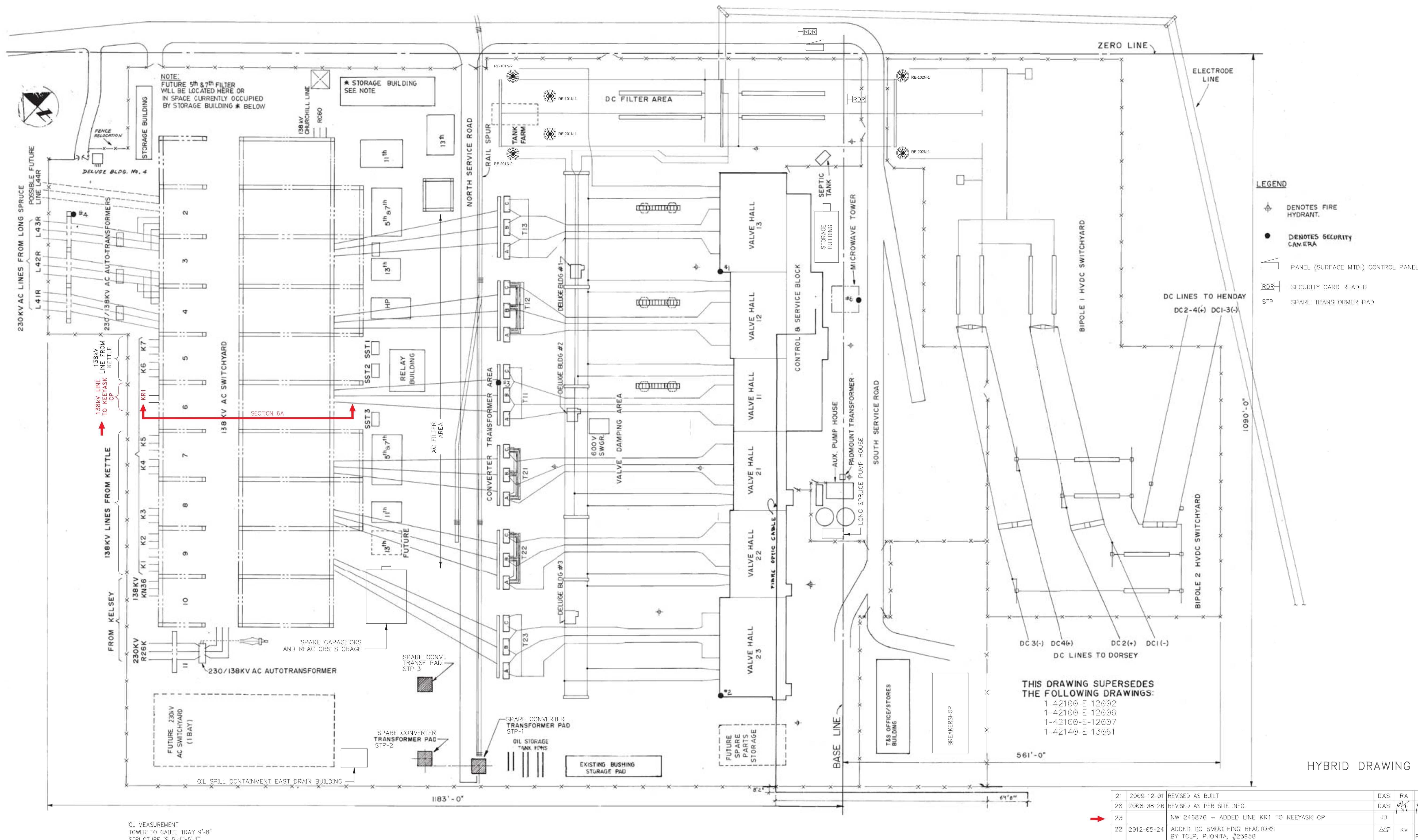
AUTHENTICATION FOR CURRENT REVISION

KEEYASK SWITCHING STATION

CONCEPT LAYOUT FOR 138kV STATION

DRAWING NUMBER	SHEET	REVISION
1-02811-DD-10100-0001	0001	00

ISO A1 (841 x 594)



THIS DRAWING SUPERSEDES THE FOLLOWING DRAWINGS:
1-42100-E-12002
1-42100-E-12006
1-42100-E-12007
1-42140-E-13061

HYBRID DRAWING

CL MEASUREMENT TOWER TO CABLE TRAY 9'-8"
STRUCTURE IS 5'-1"x5'-1"

NO.	DATE	REVISIONS	BY	CKD.	APP.
21	2009-12-01	REVISED AS BUILT	DAS	RA	RA
20	2008-08-26	REVISED AS PER SITE INFO.	DAS		
23		NW 246876 – ADDED LINE KR1 TO KEEYASK CP	JD		
22	2012-05-24	ADDED DC SMOOTHING REACTORS BY TCLP, P.IONITA, #23958		KV	PI P.Eng.

NOTED

CODE	DWG. NO.	REFERENCE DRAWINGS
34	1-42100-DE-22910-0001 SHT.01	CONCRETE FOUNDATION/REINFORCING STEEL PLANS & SECTIONS
33	1-42100-DD-15000 SHT.01	CARD ACCESS SYSTEM LAYOUT DRAWING
32	1-42100-DD-65450-0005	SPARE CONVERTER TRANSFORMER ELECT EQUIPMENT LAYOUT
31	1-42125-E-30047	CONV. TRANS. DELUGE BLDGS 1, 2 & 3 ELECTRICAL LAYOUT
30	1-42184-B-20001 SHT.01	POLE 2 PANEL SCHEDULE
29	1-42184-B-11001 SHT.01	CANCELLED PNL SCHEDULE POLE 1 AND MASTER BIPOLE PNL SCHED.
28	1-42182-E-10007	SUPERSEDED BY 1-42182-E-30105 SHTS. 01 - 03
27	1-42190-E-20011	OVERHEAD SHIELD WIRE LAYOUT PLAN AND DETAILS
26	1-42178-D-42005	DC SWYD OVERHEAD SHIELD WIRE LYT PLN & GRND DTLS
25	1-42150-E-30049 SHTS.01 - 03	FILTER BANK & CONV. TRANSFORMER. AREA PLAN @ EL. 432'-0"
24	1-42150-E-30048 SHTS.01 & 02	FILTER BANK & CONV. TRANSFORMER. AREA PLAN @ EL. 451'-0"
23	1-42150-E-30047 SHTS.01 - 03	FILTER BANK & CONV. TRANSFORMER. AREA PLAN @ EL. 469'-0"
22	1-42150-E-30043 SHTS.01 - 03	138KV AC SWITCHYARD BAYS 1-11 PLAN AT ELEVATION 432'-0"
21	1-42150-E-30042 SHTS.01 - 03	138KV AC SWITCHYARD BAYS 1-11 PLAN AT ELEVATION 451'-0"
20	1-42150-E-30041 SHTS.01 - 03	138KV AC SWITCHYARD BAYS 1-11 PLAN AT ELEVATION 469'-0"
19	1-42140-E-30022 SHT.1A	CNVTR BLDG VALVE GROUP VG22 AREA B2 ELECTRICAL EQUIP. LAYOUT
18	1-42140-E-30021 SHT.1A	CNVTR BLDG VALVE GROUP VG23 AREA B1 ELECTRICAL EQUIP. LAYOUT
17	1-42140-E-20003	CNVTR BLDG VALVE GROUP VG21 AREA B3 ELECTRICAL EQUIP. LAYOUT
16	3-42140-E-101-3015	PLAN OF 150kV, 650kV BIL VG.11 POLE 1
15	3-42140-E-101-3010	PLAN OF 300kV, 1050kV BIL VG.12 POLE 1
14	3-42140-E-101-3004	PLAN OF 450kV, 1550kV BIL VG.13 POLE 1
13	1-42190-D-42001	BIPOLE 2 DC LINE SWITCHYARD EQUIPMENT LAYOUT PLAN
12	1-42140-E-13028	HVDC SWYD SMTHNG RCTR AND FLTR BANK AREA GENERAL LAYOUT PLAN & SECTION 'A'
11	1-42140-E-13005	BIPOLE 1 DC LINE SWITCHYARD EQUIPMENT LAYOUT PLAN
10	1-42190-E-20001	VALVE GROUPS 21 & 23 VALVE DAMPING & CONV.TRANS. AREAS GENERAL PLAN LAYOUT
9	1-42140-E-13002	138kV SWYD DAMPING AND CONVERTER TRANS. AREA LAYOUT
8	1-42115-D-10004	DRAWING SUPERSEDED BY 1-42110-E-10003
7	1-42114-E-20004	SECURITY FENCE ARRANGEMENT & DETAILS
6	1-42114-E-10003	SECURITY FENCE ARRANGEMENT & DETAILS
5	1-42110-E-42003 SHTS 01 & 02	CONSOLIDATED SITE IMPRVMNT & WATER SERVS SECT & DETAILS
4	1-42110-E-42002 SHT.01	138kV AC SWITCHYARD SITE DRAINAGE & WATER SERVICES PLAN
3	1-42640-E-44001 SHTS 01 & 02	230kV SWITCHYARD POLE 3/4 DC POWER CIRCUIT SCHEM. DIAG.
2	1-42140-D-20006/20007	VALVE GROUPS VG11 TO VG23 DC POWER CIRCUIT SCHEM. DIAG.
1	1-42150-E-30040 SHTS 01 & 02	138kV AC SWYD BAYS 1-5 ELECTRICAL EQUIP. SINGLE LINE DIAG.

TESHMONT CONSULTANTS LP

AUTHENTICATION FOR CURRENT REVISION

MANITOBA HYDRO

RADISSON STATION

OVERALL STATION LAYOUT

DRAWN RJG
CHECK DLG
SCALE 1"=60'-0"
DATE 77-04-29

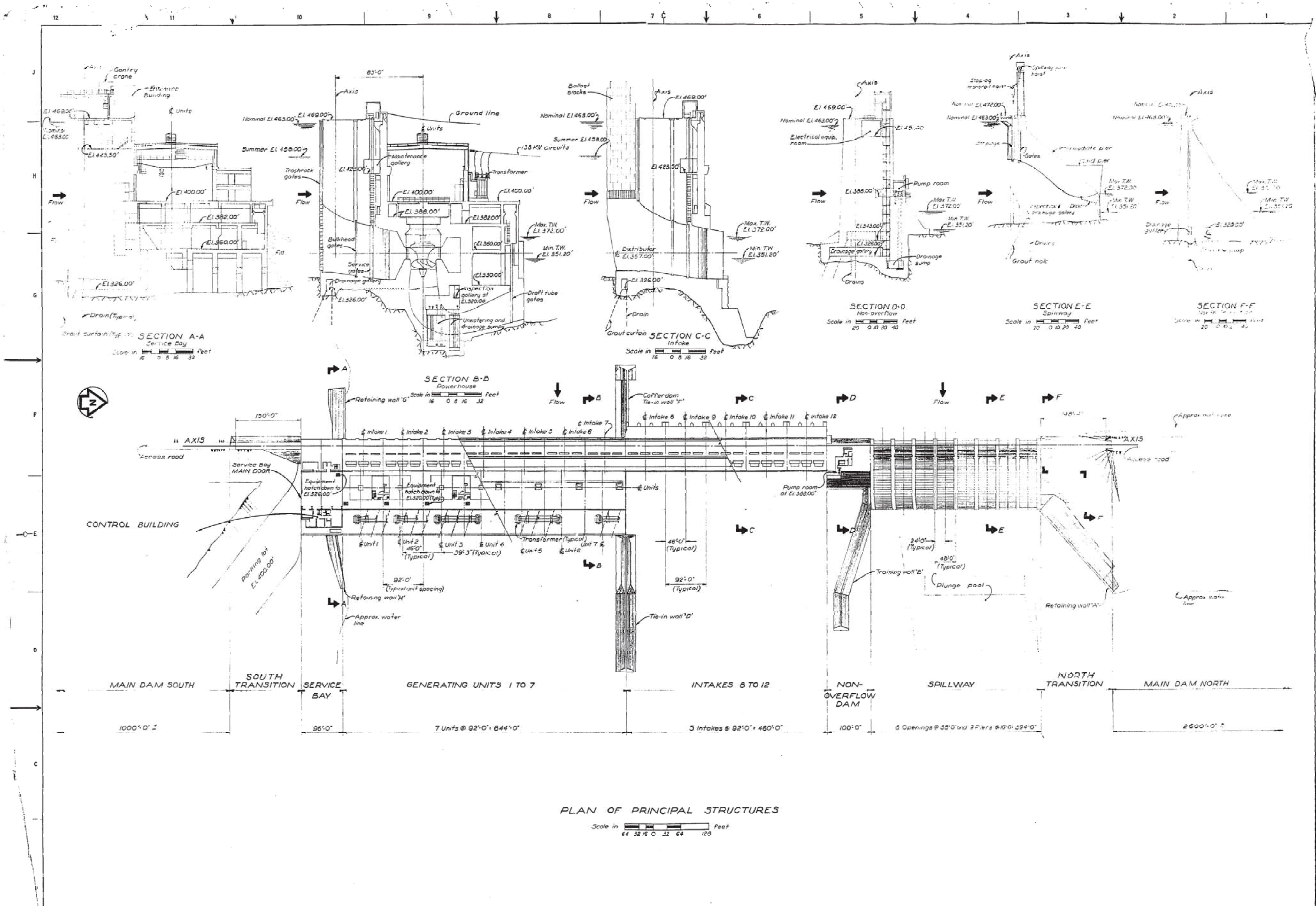
1-42100-E-42001 SHT. 0001 REV. 23

AUTOCAD ORIGINAL

FOR MICROFILM USE ONLY

E SIZE – 671 x 952

C:\DOCUMENTUM\CHECKOUT\1-42100-E-42001 0001.DWG



CRIPPEN ACRES LTD. - WINNIPEG, MANITOBA

MANITOBA HYDRO

KETTLE GENERATING STATION

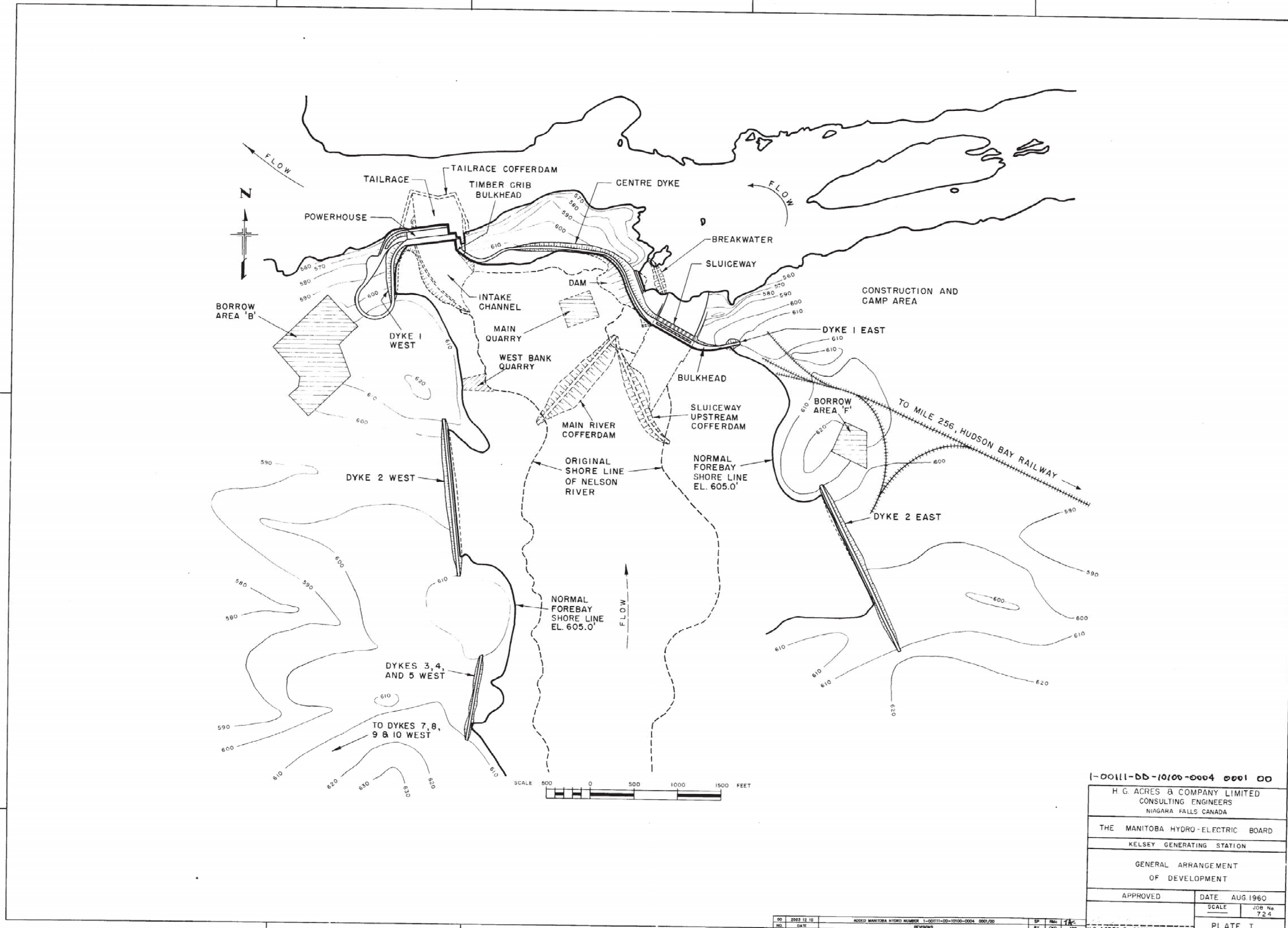
PRINCIPAL STRUCTURES
GENERAL ARRANGEMENT
PLAN AND TRANSVERSE SECTIONS

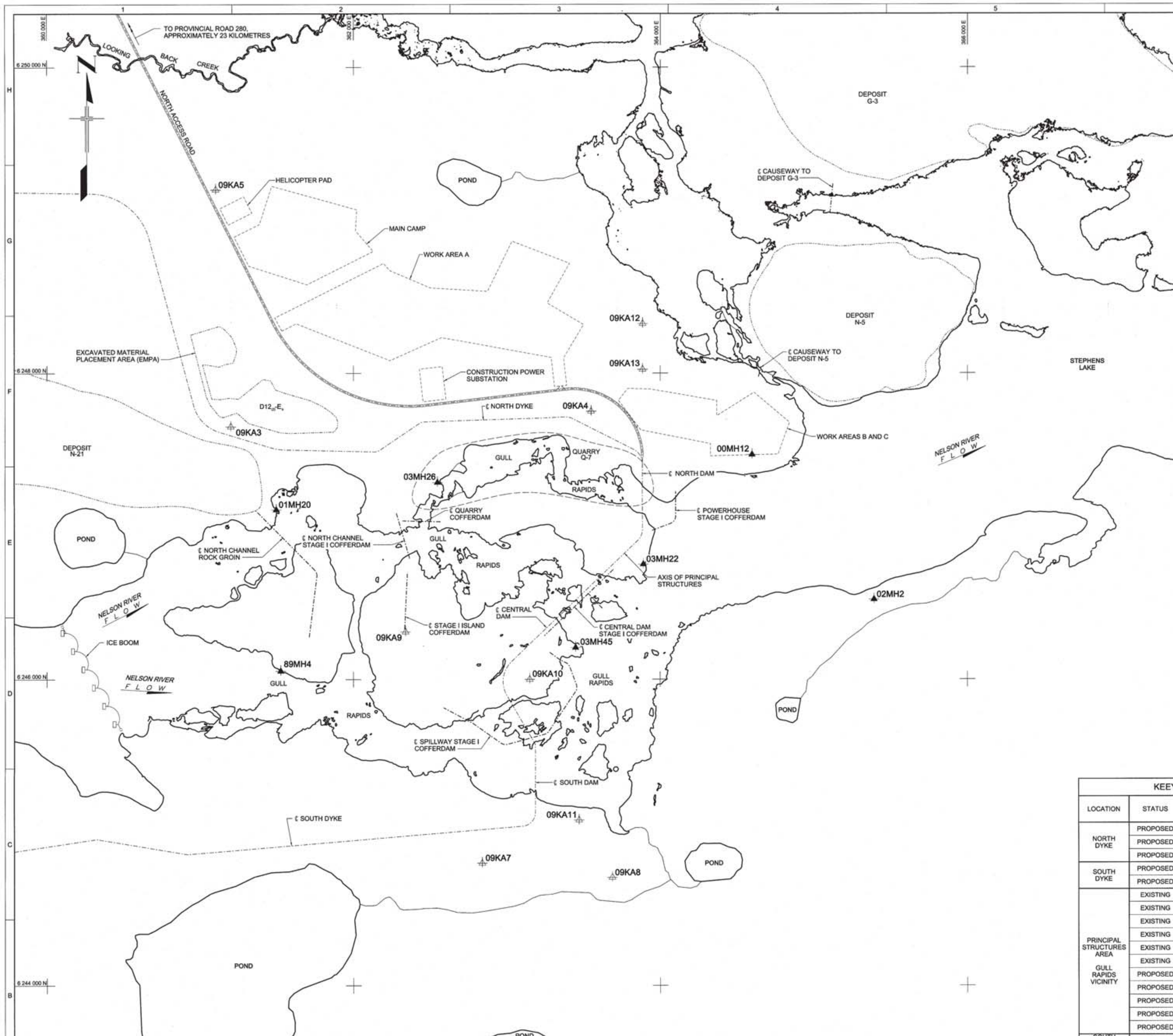
DATE March 14, 1969

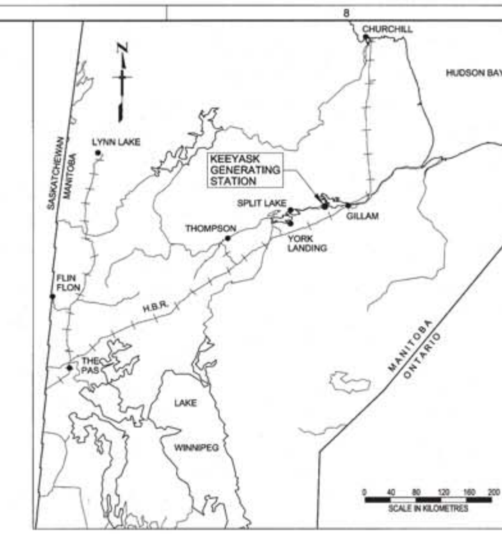
SCALE As Noted

DWG NO. MANITOBA HYDRO 6113-C; CRIPPEN ACRES LTD. 101-C; 1183

S.C.I. DWG NO ADDED


FLOW
TAILRACE COFFERDAM
TAILRACE
TIMBER CRIB BULKHEAD
CENTRE DYKE
FLOW
N
POWERHOUSE
BREAKWATER
SLUICEWAY
DAM
INTAKE CHANNEL
CONSTRUCTION AND CAMP AREA
BORROW AREA 'B'
DYKE I WEST
MAIN QUARRY
DYKE I EAST
WEST BANK QUARRY
BULKHEAD
BORROW AREA 'F'
TO MILE 256, HUDSON BAY RAILWAY
MAIN RIVER COFFERDAM
SLUICEWAY UPSTREAM COFFERDAM
ORIGINAL SHORE LINE OF NELSON RIVER
NORMAL FOREBAY SHORE LINE EL. 605.0'
DYKE 2 WEST
DYKE 2 EAST
NORMAL FOREBAY SHORE LINE EL. 605.0'
FLOW
DYKES 3, 4, AND 5 WEST
TO DYKES 7, 8, 9 & 10 WEST
SCALE 500 0 500 1000 1500 FEET
1-00111-DD-10100-0004 0001 00
H. G. ACRES & COMPANY LIMITED
CONSULTING ENGINEERS
NIAGARA FALLS CANADA
THE MANITOBA HYDRO-ELECTRIC BOARD
KELSEY GENERATING STATION
GENERAL ARRANGEMENT OF DEVELOPMENT
APPROVED
DATE AUG. 1960
JOB No. 724
PLATE I
H.G. ACRES & COMPANY LIMITED
ADDED MANITOBA HYDRO NUMBER 1-00111-DD-10100-0004 0001/00
REVISIONS





KEY PLAN

LEGEND:

SHORELINE

STREAM

CLEARING LIMITS

COORDINATE GRID MARKER (LOCATED AT 2000 METRE INTERVALS)

D12-E — DESIGNATION NUMBER FOR EXCAVATED MATERIAL PLACEMENT AREA (EMPA)

NOTES:

1. COORDINATE GRID SHOWN IS BASED ON THE UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 15, NAD83 (CSRS).
2. COORDINATES ARE IN METRES.
3. INFRASTRUCTURE SHOWN ON THE NORTH BANK OF THE NELSON RIVER WAS OBTAINED FROM DRAWING 1-00195-DE-06200-0004 0001, REV. 0C, PROVIDED BY MANITOBA HYDRO SEPTEMBER 18, 2012.
4. THE LOCAL CONSTRUCTION GRID IS BASED ON ASSUMED VALUES OF 50 000 N AND 20 000 E AT THE INTERSECTION OF THE AXIS OF PRINCIPAL STRUCTURES AND THE NORTHMOST CONCRETE CONTRACTION JOINT OF THE POWERHOUSE.

HOLDS:

H0009 CONTROL POINT POSITIONS AND LOCAL CONSTRUCTION GRID UNDER MANITOBA HYDRO REVIEW

THIS DRAWING ON HOLD

KEEYASK G.S. - LAYOUT CONTROL POINTS ▲ OR

LOCATION	STATUS	POINT NAME	NAD83(CSRS) UTM ZONE 15		LOCAL CONSTRUCTION GRID	
			NORTHING	EASTING	NORTHING	EASTING
NORTH DYKE	PROPOSED	09KA3	6247650.000	361200.000	50375.472	17314.480
	PROPOSED	09KA4	6247750.008	363550.050	50475.500	19665.000
	PROPOSED	09KA5	6249200.000	361100.000	51925.782	17214.460
SOUTH DYKE	PROPOSED	09KA7	6244800.000	362840.000	47524.902	18954.808
	PROPOSED	09KA8	6244706.328	363688.000	47431.212	19802.978
PRINCIPAL STRUCTURES AREA GULL RAPIDS VICINITY	EXISTING	01MH20	6247106.965	361496.907	49832.328	17611.446
	EXISTING	89MH4	6246054.271	361525.073	48779.424	17639.618
	EXISTING	03MH26	6247285.670	362548.426	50011.069	18663.176
	EXISTING	03MH45	6246207.080	363449.510	48932.264	19564.440
	EXISTING	03MH22	6246751.340	363890.818	49476.632	20005.836
	EXISTING	00MH12	6247466.669	364598.430	50192.104	20713.590
	PROPOSED	09KA9	6246309.796	362340.292	49035.000	18455.000
	PROPOSED	09KA10	6245999.858	363150.130	48725.000	19265.000
	PROPOSED	09KA11	6245081.042	363471.659	47806.000	19586.593
	PROPOSED	09KA12	6248324.393	363884.983	51050.000	20000.000
	PROPOSED	09KA13	6248024.453	363884.983	50750.000	20000.000
SOUTH BANK	EXISTING	02MH2	6246521.630	365392.420	49246.876	21507.739

0 100 200 300 400 500
SCALE IN METRES

REV.	DATE	DESCRIPTION	BY	CKD.	APP./P. ENG.

Issued for Proposal – RFP 016203
DO NOT USE FOR CONSTRUCTION
2013-04-24

HATCH
HA DWG. NO. H341433-1000-00-017-0001
AREA COORD P. PANTEL DATE
DISCIP. ENGR. R. HALIM DATE
PROJ. ENGR A. TRUDEL DATE
PROJ. MGR. W. GENDZELEVICH DATE

Manitoba Hydro
AUTHENTICATION FOR CURRENT REVISION

DRAWN: P. FLEURY | CHECKED: | SCALE: 1:10000
DESIGNED: P. PANTEL | CHECKED: | DATE:

KEEYASK GENERATING STATION

PROJECT LAYOUT CONTROL PLAN

DRAWING NUMBER: 1-00195-DE-11520-0011 | SHEET: 0001 | REVISION: D

ISO A0 (46.8 x 33.1)
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4/23/2013 8:48:23 AM
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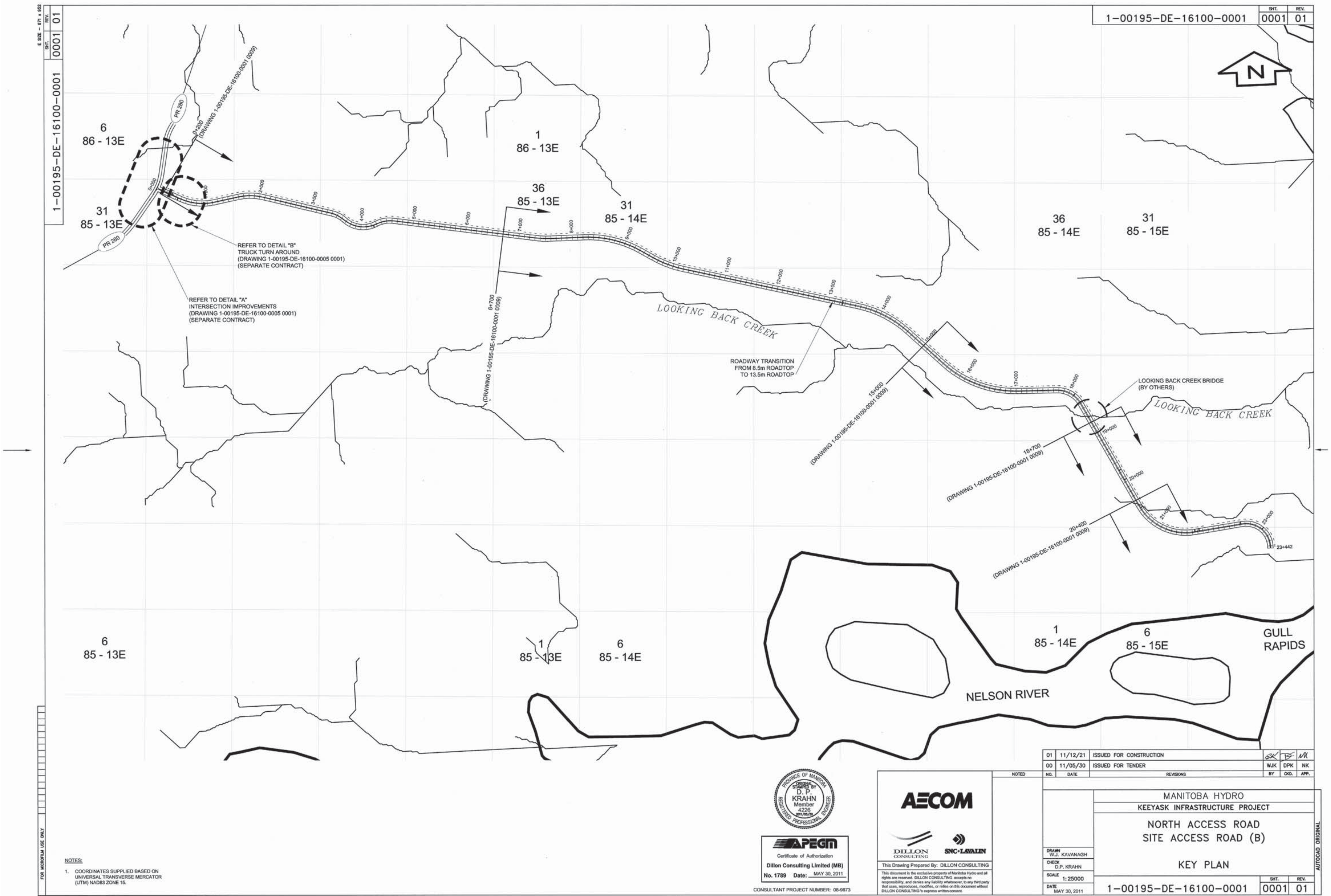

1-00195-DE-16100-0001
SHT. 0001
REV. 01
N
6
86 - 13E
1
86 - 13E
36
85 - 13E
31
85 - 14E
31
85 - 13E
36
85 - 14E
31
85 - 15E
PR 280
REFER TO DETAIL "B"
TRUCK TURN AROUND
(DRAWING 1-00195-DE-16100-0005 0001)
(SEPARATE CONTRACT)
REFER TO DETAIL "A"
INTERSECTION IMPROVEMENTS
(DRAWING 1-00195-DE-16100-0005 0001)
(SEPARATE CONTRACT)
LOOKING BACK CREEK
ROADWAY TRANSITION
FROM 8.5m ROADTOP
TO 13.5m ROADTOP
LOOKING BACK CREEK BRIDGE
(BY OTHERS)
23+442
6
85 - 13E
1
85 - 13E
6
85 - 14E
1
85 - 14E
6
85 - 15E
GULL
RAPIDS
NELSON RIVER
NOTES:
1. COORDINATES SUPPLIED BASED ON UNIVERSAL TRANSVERSE MERCATOR (UTM) NAD83 ZONE 15.
FOR MICROFILM USE ONLY
Certificate of Authorization
Dillon Consulting Limited (MB)
No. 1789 Date: MAY 30, 2011
CONSULTANT PROJECT NUMBER: 08-9873
AECOM
DILLON CONSULTING
SNC-LAVALIN
This Drawing Prepared By: DILLON CONSULTING
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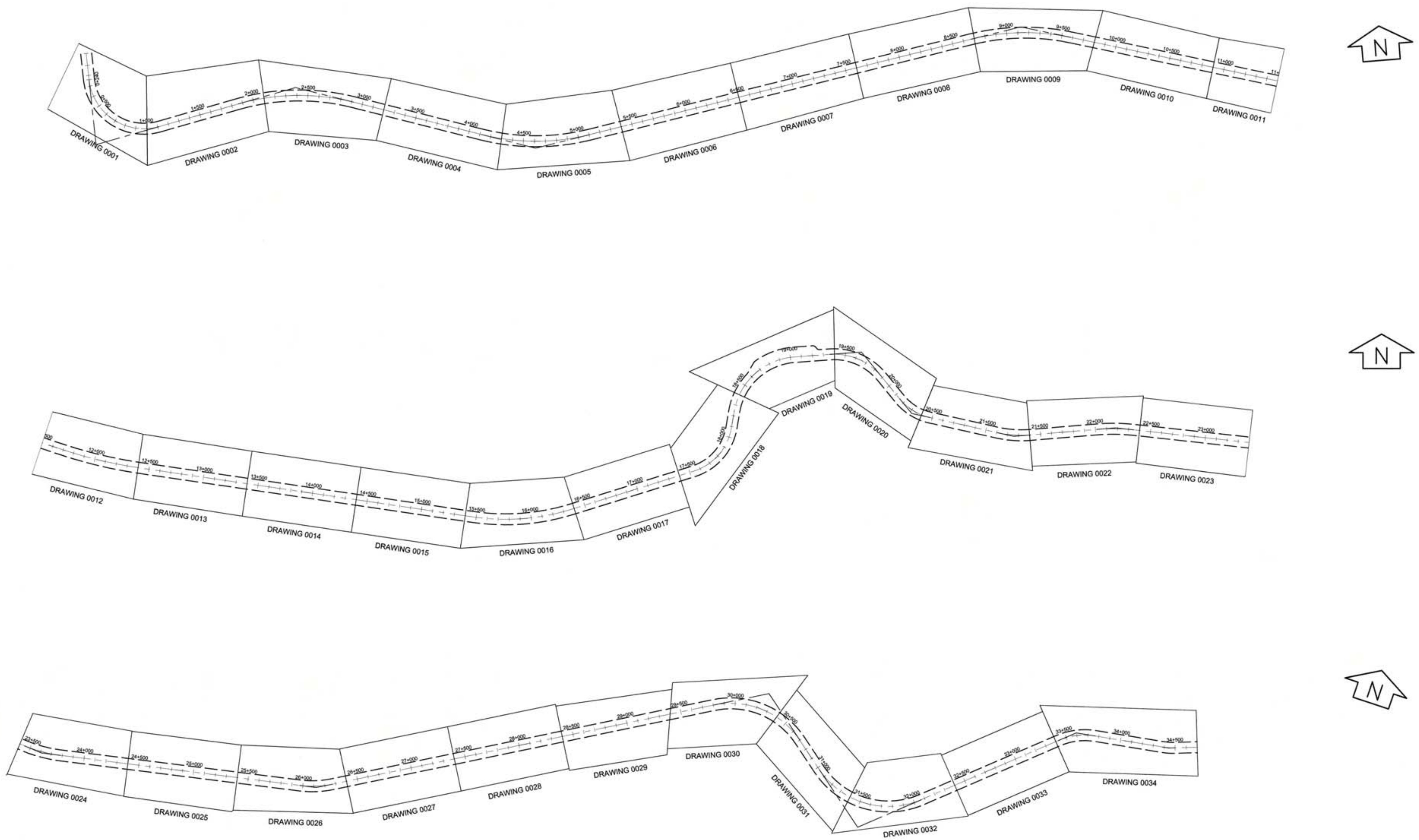
NOTED
01 11/12/21 ISSUED FOR CONSTRUCTION
00 11/05/30 ISSUED FOR TENDER WJK DPK NK
NO. DATE REVISIONS BY CKD. APP.
MANITOBA HYDRO
KEEYASK INFRASTRUCTURE PROJECT
NORTH ACCESS ROAD
SITE ACCESS ROAD (B)
KEY PLAN
DRAWN W.J. KAVANAGH
CHECK D.P. KRAHN
SCALE 1:25000
DATE MAY 30, 2011
AUTOCAD ORIGINAL
Plot Time 12/22/2011 11:04 AM
Drawing File: 1-00195-DE-16100-0001 0001.DWG

	SHT.	REV.
1-00195-DE-16100-0006	0001	00



SOUTH ACCESS ROADWAY
GENERAL ARRANGEMENT PLAN

ISSUED FOR DNC
February 28, 2014

APEGM
Certificate of Authorization
AECOM Canada Ltd.
No. 4671 Date: Feb 28/14

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NO.	DATE	REVISIONS	BY	CKD.	APP.
00	02/28/2014	ISSUED FOR DNC			

NOTED

PROVINCE OF MANITOBA
K.W. RAE
Feb 28/14
REGISTERED PROFESSIONAL ENGINEER

AECOM
DILLON CONSULTING
SNC·LAVALIN

This Drawing Prepared By: AECOM

CONSULTANT PROJECT NUMBER: 60237881

MANITOBA HYDRO
KEEYASK INFRASTRUCTURE PROJECT
SOUTH ACCESS ROAD
GENERAL ARRANGEMENT

DRAWN	CS,PB,PP
CHECK	BC,KR
SCALE	1:16000
DATE	02/28/2014

	SHT.	REV.
1-00195-DE-16100-0006	0001	00

AUTOCAD ORIGINAL

FOR MICROFILM USE ONLY

E SIZE - 671 x 952

1-00195-DE-16100-0006 SHT. 0001 REV. 00

Drawing File: 1-00195-DE-16100-0006 0001.DWG