

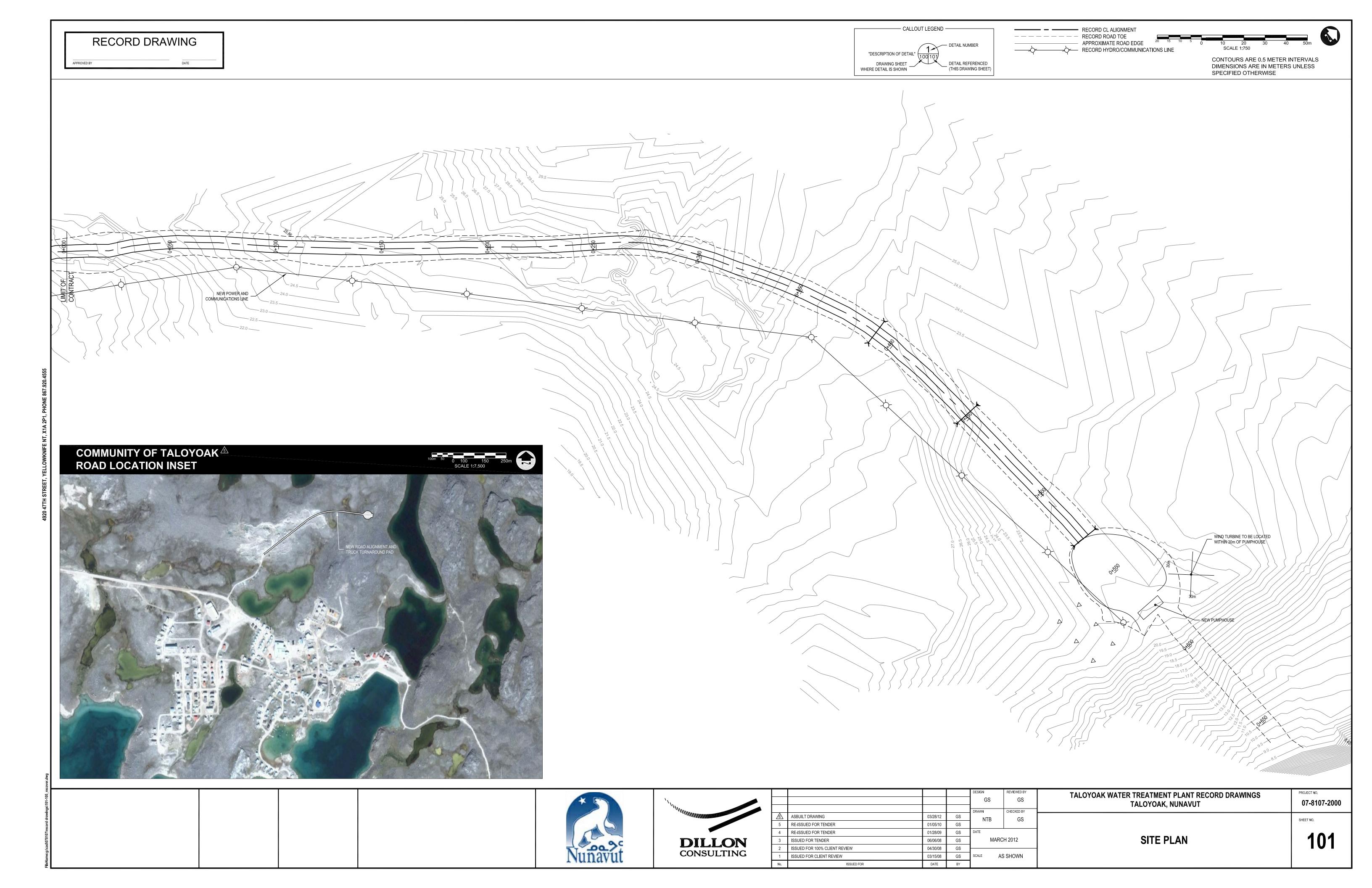


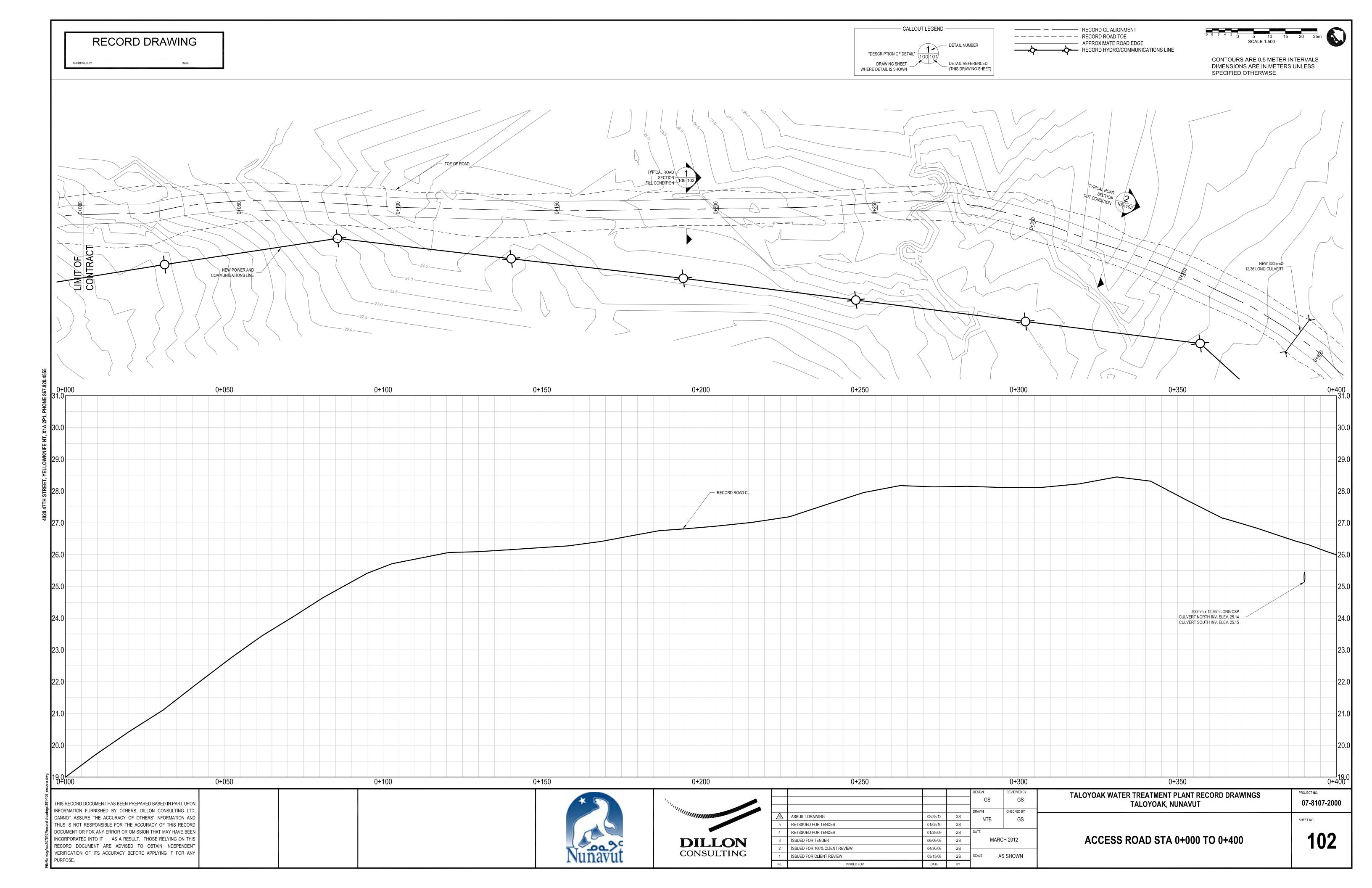
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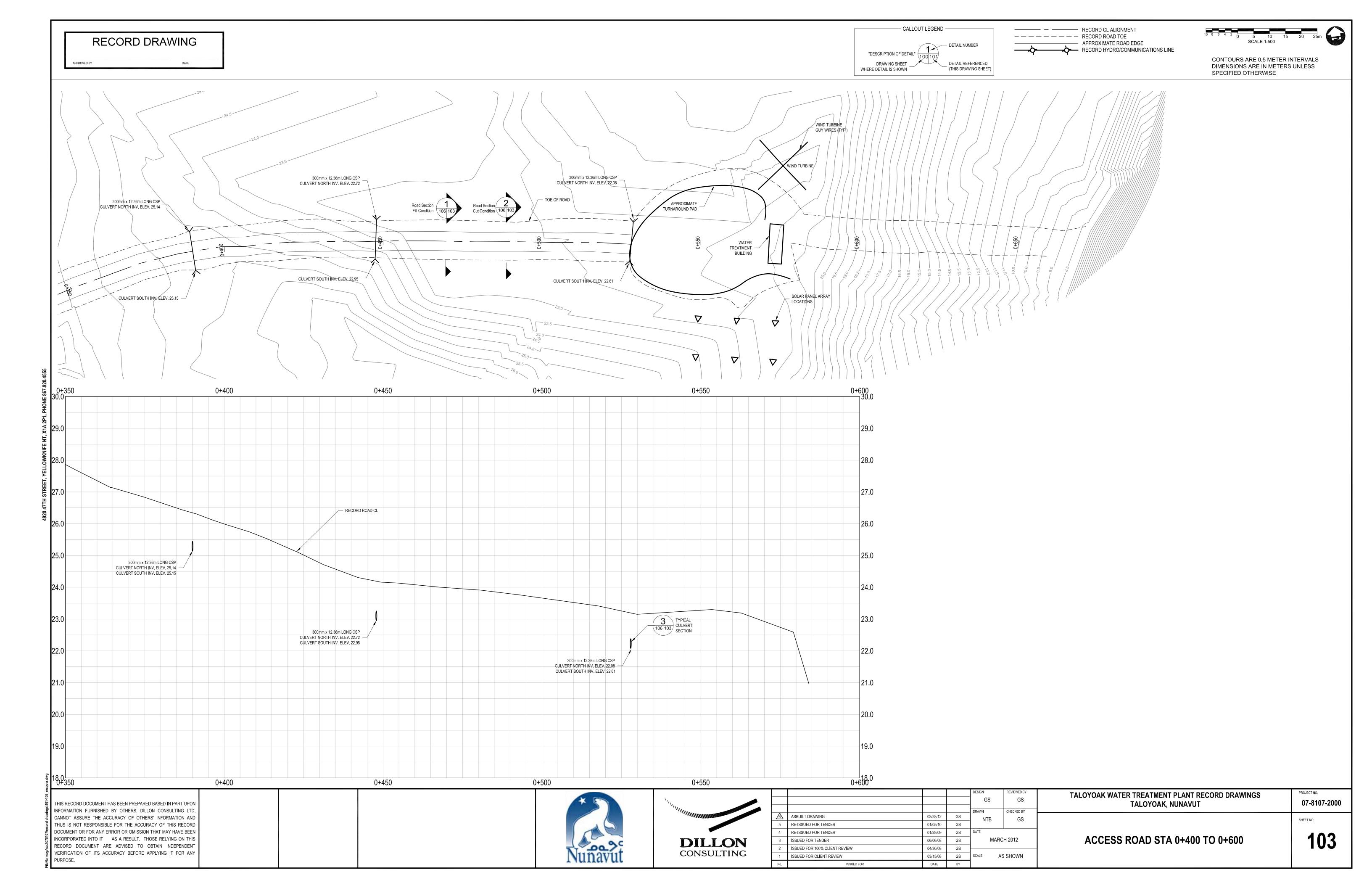
RECORD DRAWINGS MARCH, 2012

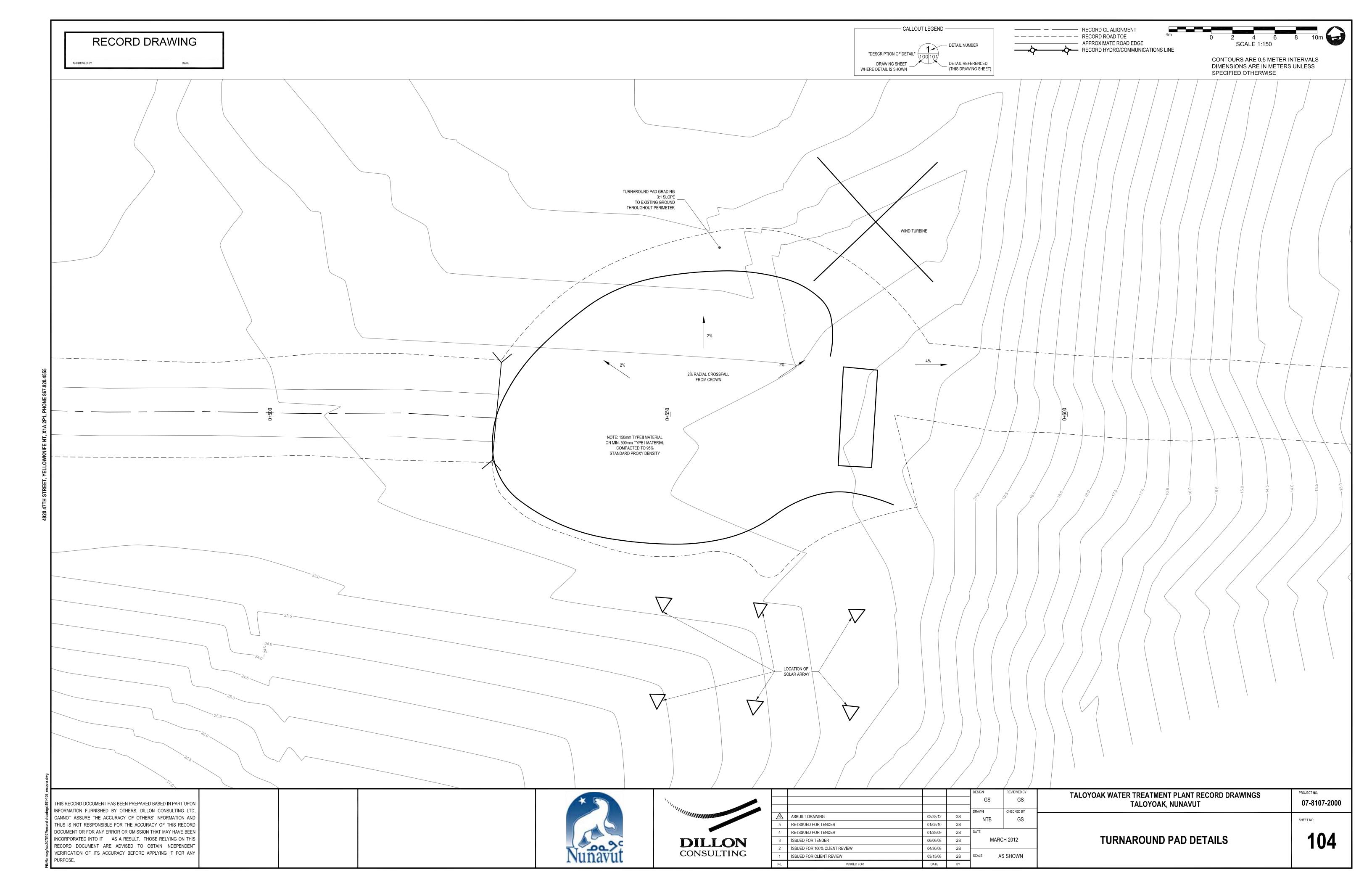
PROJECT No. 078107

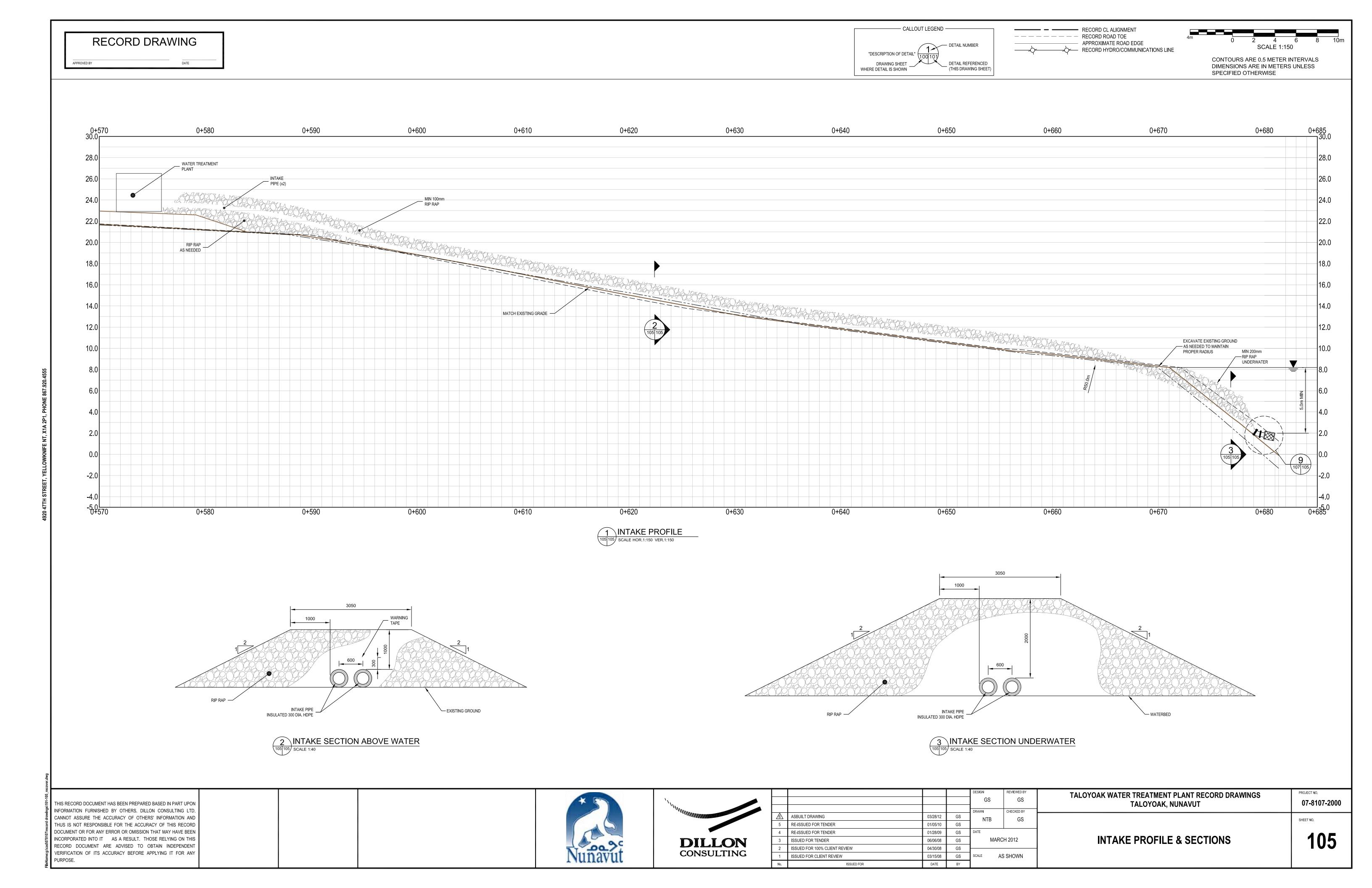


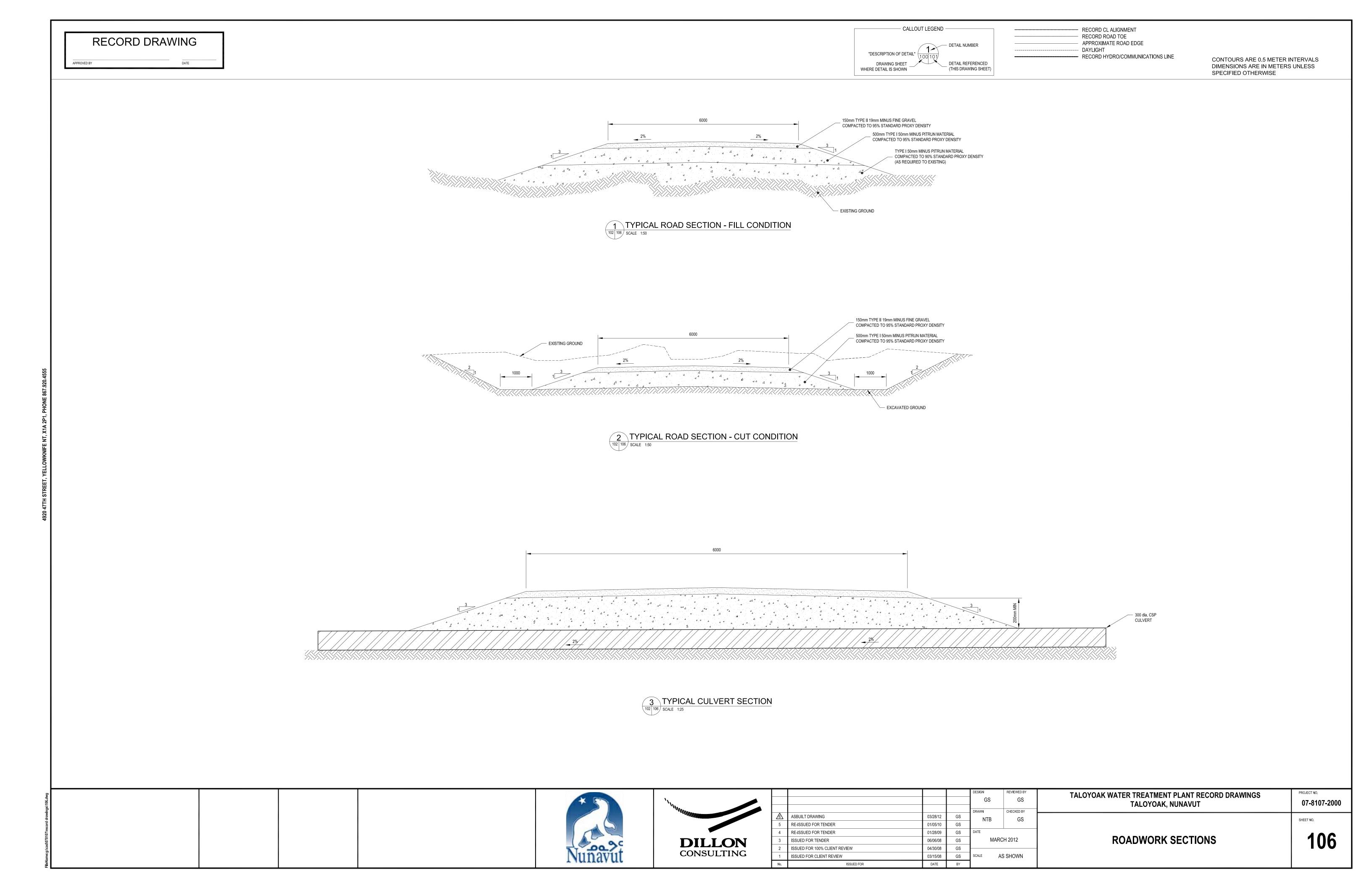


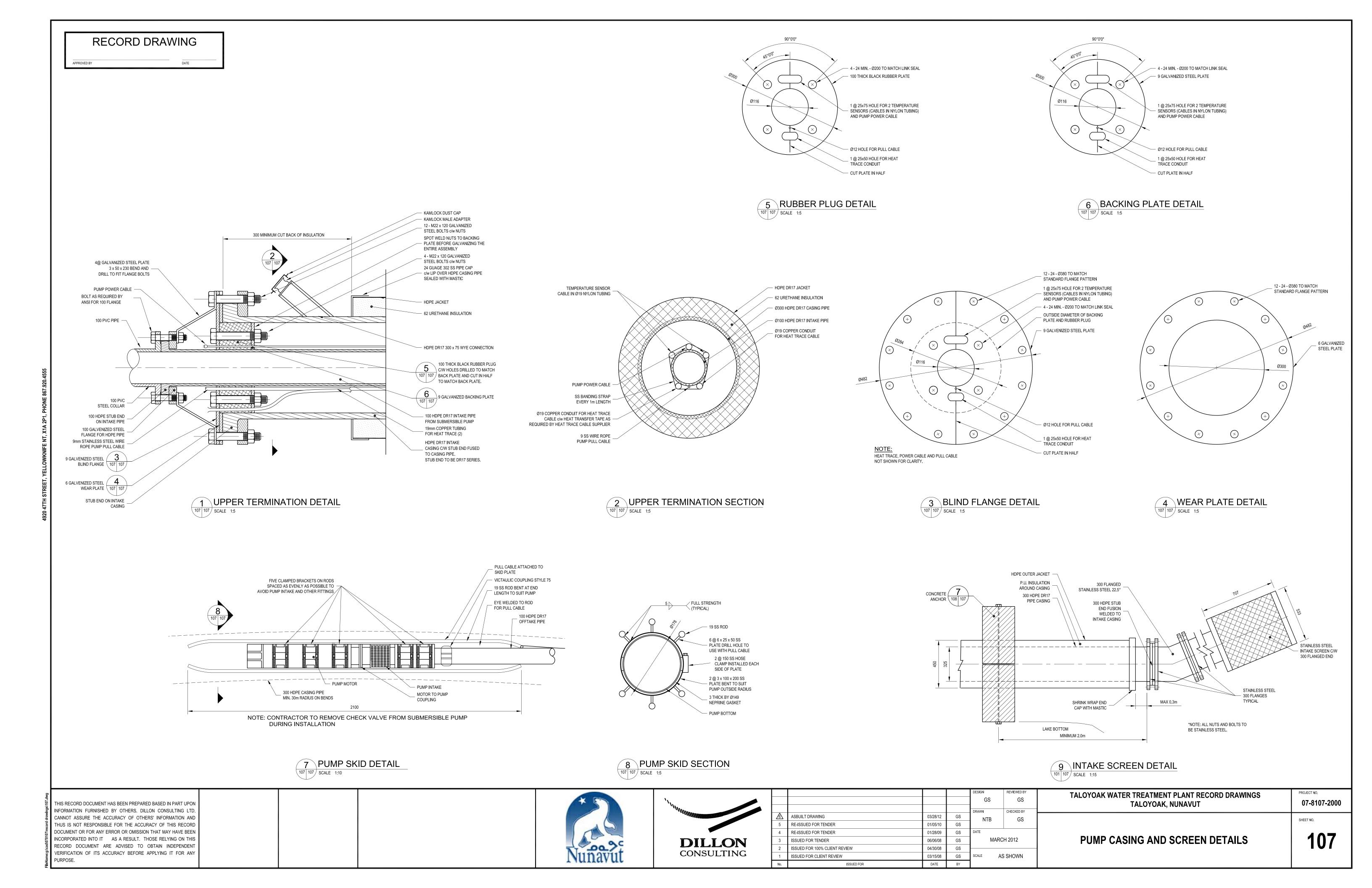


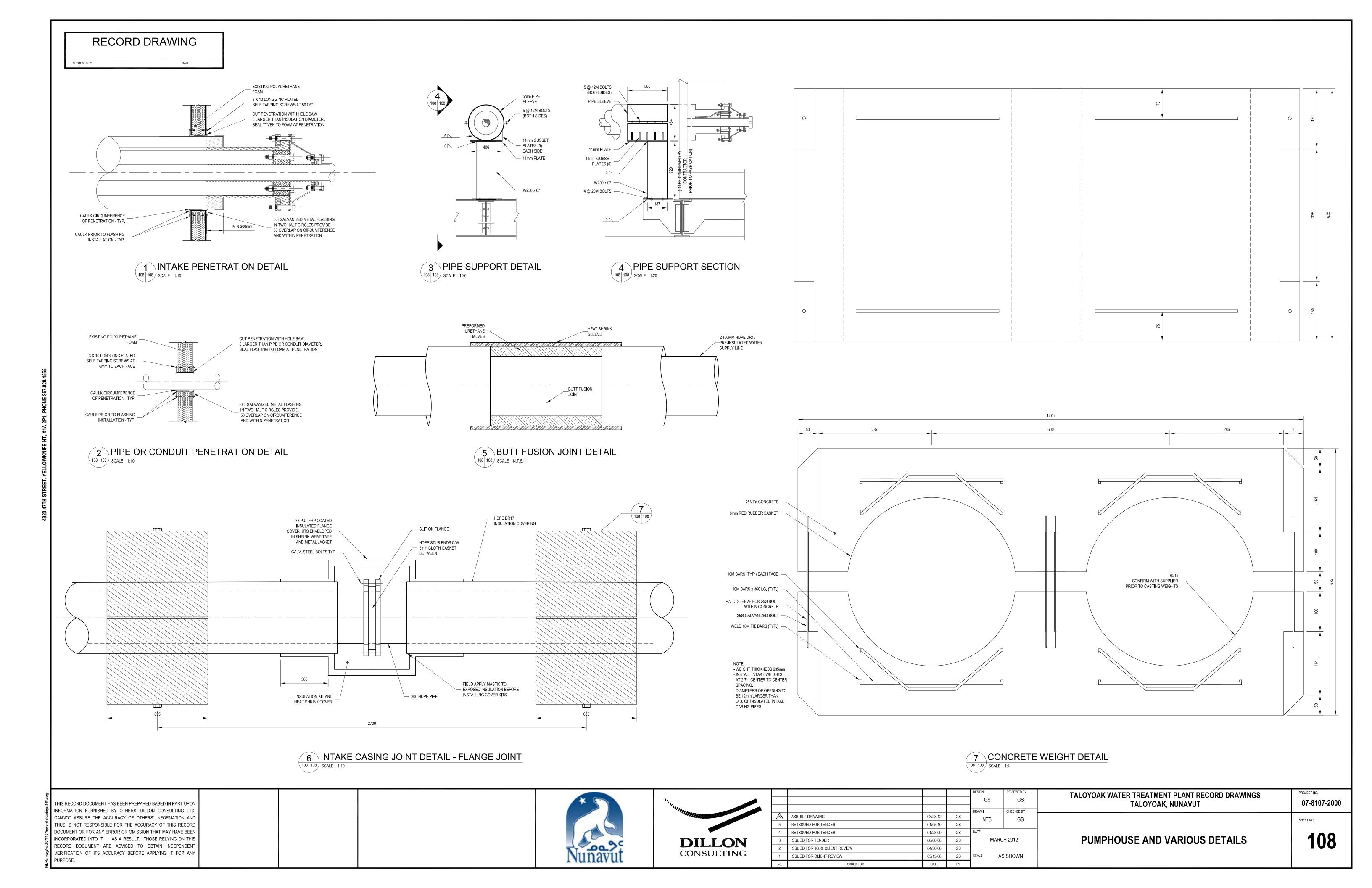


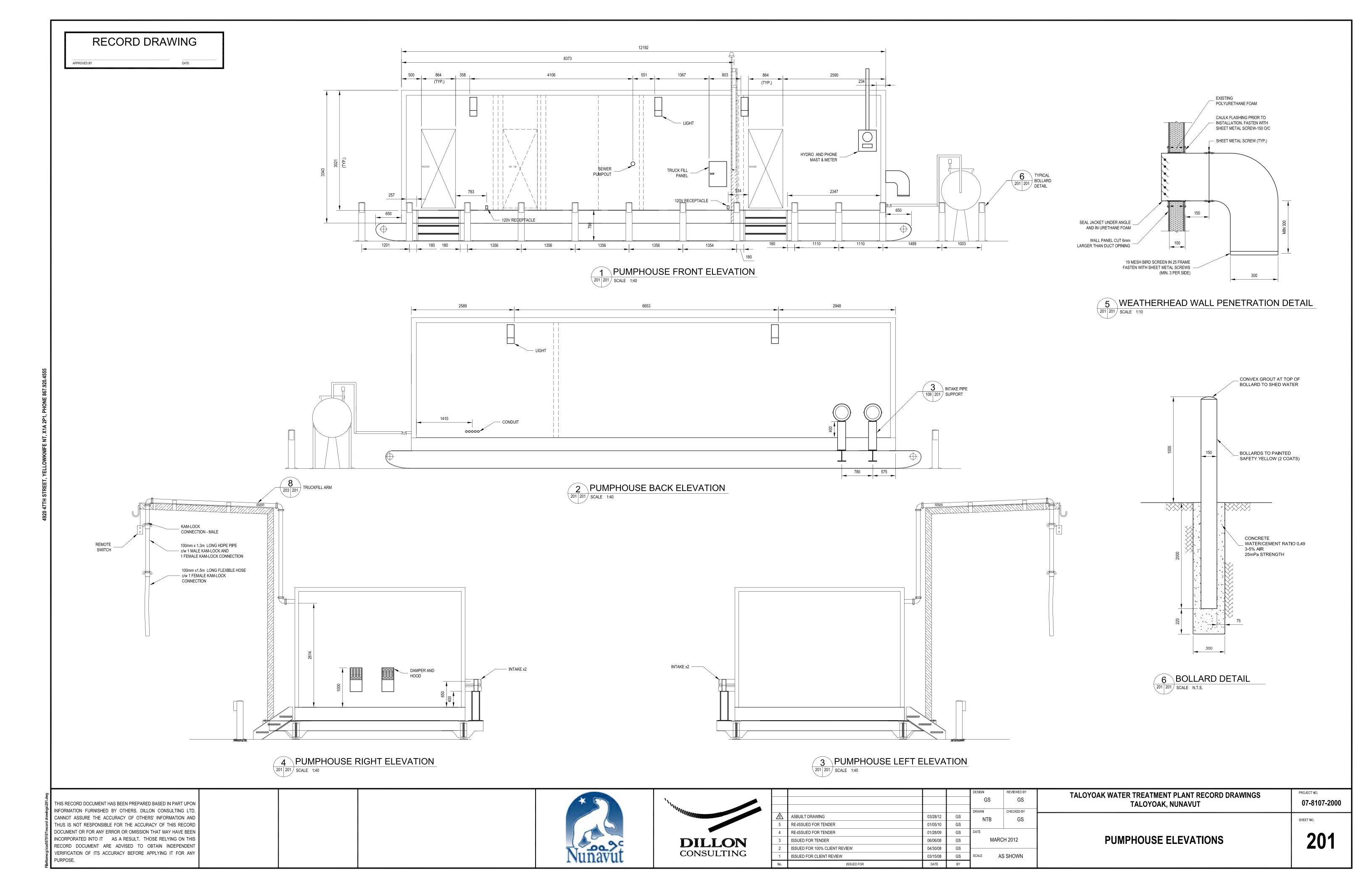


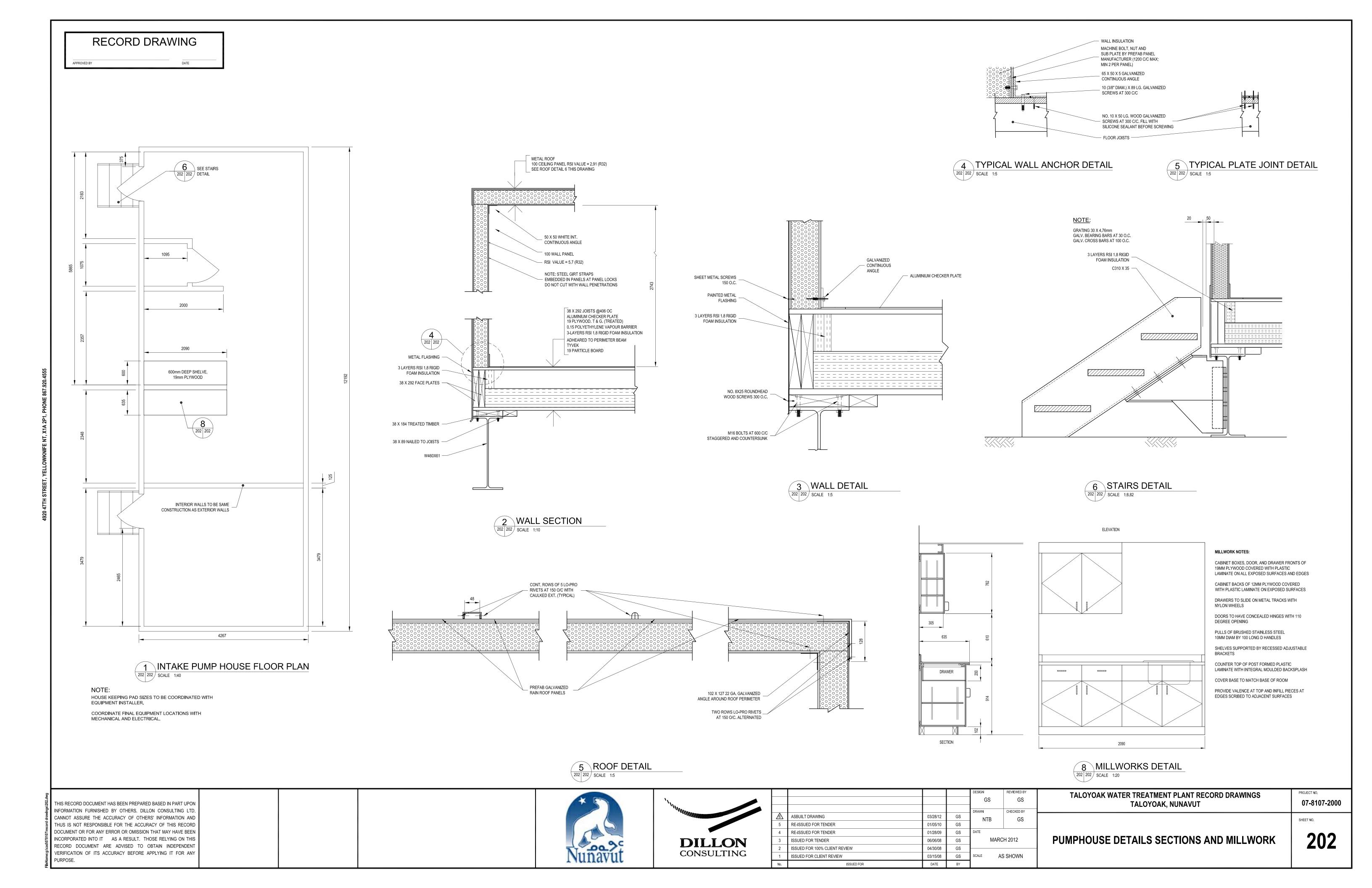


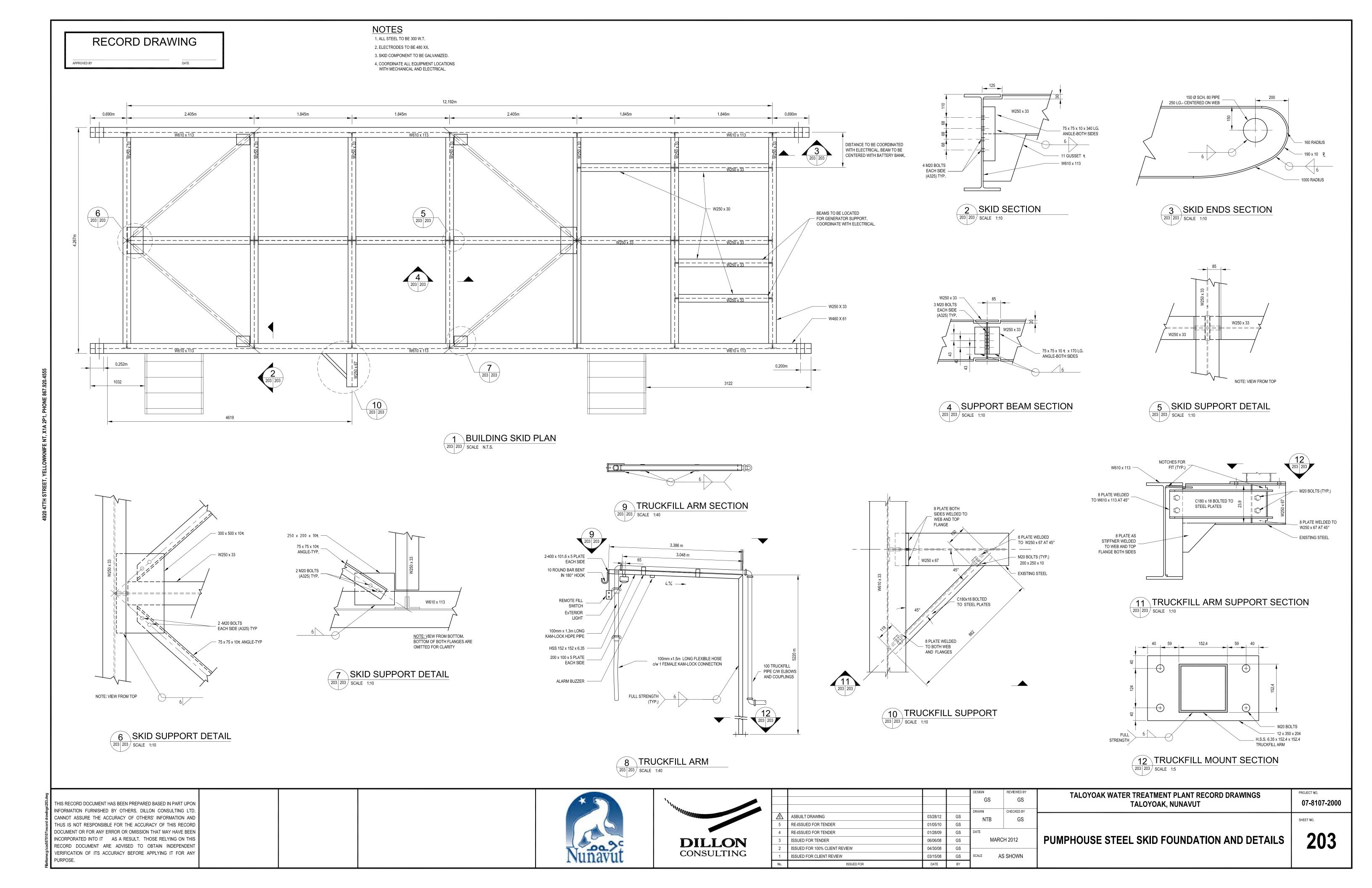


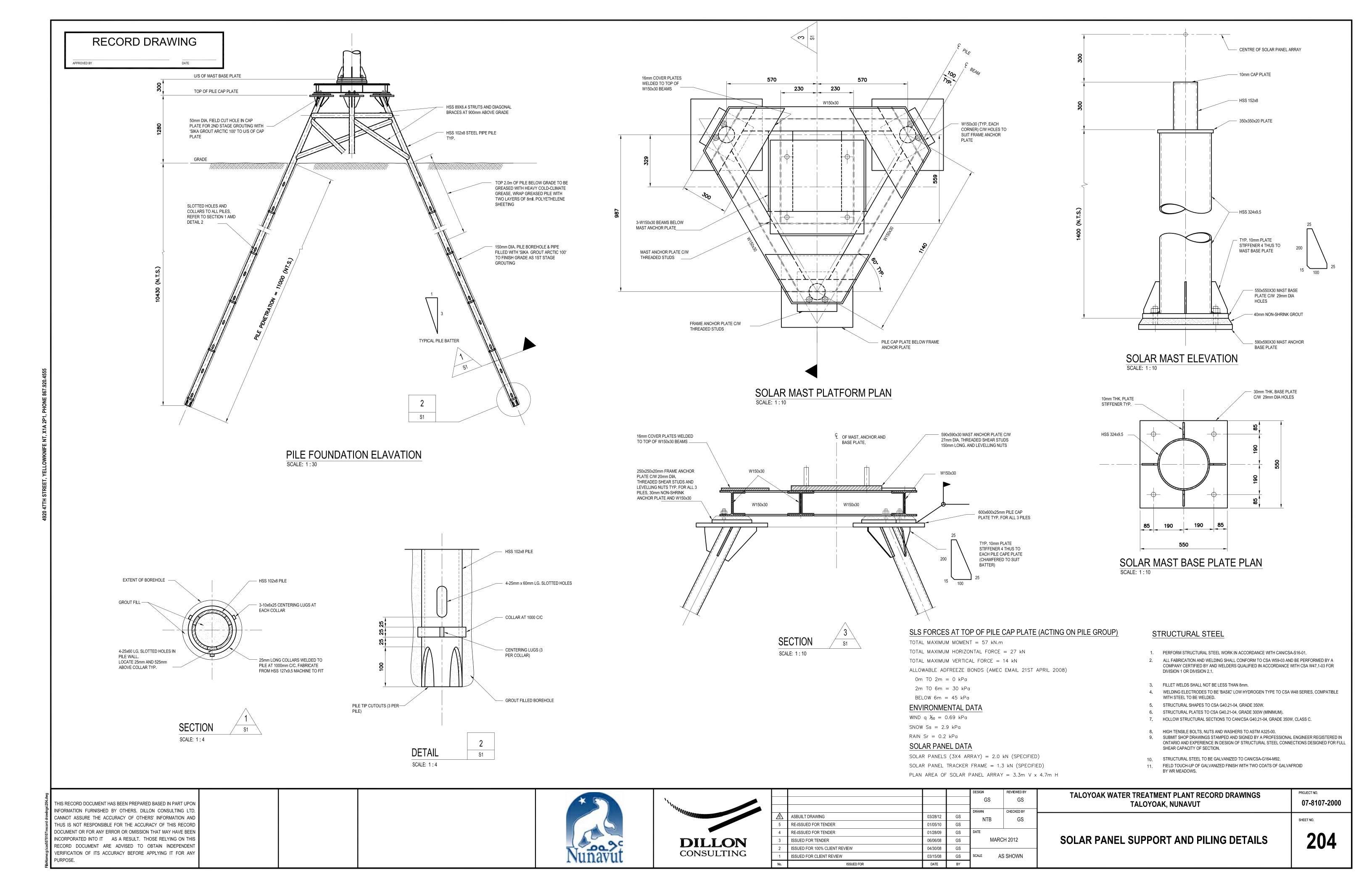












RECORD DRAWINGCESS LEGEND - MISCELLANEOUS

— LOCATION ELEMENT

FOLITEMENT

FRAGMENT No. DESIGNATION

PIPE SIZE CONVERSION

15

16

380

400

IMPERIAL(in) METRIC(mm) IMPERIAL(in) METRIC(mm

10

1/8 1/4

3/8

APPROVED BY

	PROCESS LEGEND -	SERVICE	ABBREVIATIONS
SYMBOL	COMMODITY	SYMBOL	COMMODITY
AA	AQUEOUS AMMONIA	NaOCI	SODIUM HYPOCHLORITE
AAS	AERATION AIR SUPPLY	NaOH	SODIUM HYDROXIDE
ACTSI	ACTIVATED SILICA	NaSI	SODIUM SILICATE
AMG	AMMONIA GAS (ANHYDROUS)	NG	NATURAL GAS
AML	AMMONIA LIQUID (ANHYDROUS)	OF	OVERFLOW
AMS	AMMONIA SOLUTION	OZNE	OZONE TANK EFFLUENT
ALUM	ALUMINUM SULPHATE	OZNI	OZONE TANK INFLUENT
AS	AERATED SEWAGE	oz	OZONE
CBD	CLARIFIER BLOWDOWN	PA	PROCESS AIR
CHW	CHEMICAL WASTE	PACL	POLYALUMINUM CHLORIDE
CLD	CHLORINE DIOXIDE	PLY	POLYELECTROLYTE
CLG	CHLORINE GAS	PLYPH	POLYPHOSPHATE
CLS	CHLORINE SOLUTION	PS	PRIMARY SLUDGE
CO2	CARBON DIOXIDE	PSW	PLANT SERVICE WATER
CUS	COPPER SULPHATE	PW PW	POTABLE WATER
CW	COLD WATER	RAS	RETURN ACTIVATED SLUDGE
		RSD	RECIRCULATED SLUDGE DISCHARGE
CWR	COOLING WATER RETURN		RECIRCULATED SLUDGE DISCHARGE RECIRCULATED SLUDGE SUCTION
CWS	COOLING WATER SUPPLY	RSS	
CWW	COOLING WATER WASTE	RSW	RAW SEWAGE
DHW	DOMESTIC HOT WATER	RW	RAW WATER
DIS	DIGESTED SLUDGE	RWAS	RAW WASTE ACTIVATED SLUDGE
DR	DRAIN	RWL	RAINWATER LEADER
EE	ENGINE EXHAUST	SA	SCOURING AIR
EW	EFFLUENT WATER	SAM	SAMPLE
F	FLUORIDE	SAN	SANITARY
FA	FLUOSILICIC ACID	SCE	SECONDARY CLARIFIER EFFLUENT
FBW	FILTER BACKWASH SUPPLY	SCS	SCRUBBING SOLUTION
FEC	FERRIC CHLORIDE	SCUM	SCUM
FEFF	FILTER EFFLUENT	SDG	SULPHUR DIOXIDE GAS
FESU	FERRIC SULPHATE	SDS	SULPHUR DIOXIDE SOLUTION
FHS	HYDROFLUOSILICIC ACID	SETW	SETTLED WATER
FILW	FILTER TO WASTE	SG	SLUDGE GAS (DIGESTER)
FINF	FILTER INFLUENT	SGC	SLUDGE GAS CIRCULATED (DIGESTER)
FLW	FLOCCULATED WATER	SGF	SLUDGE GAS FUEL (DIGESTER)
FLS	FLUORIDE SOLUTION	SGH	SLUDGE GAS (HIGH PRESSURE)
FO	FUEL OIL	SLD	SETTLED SLUDGE
FOF	FUEL OIL FILL	SLG	MIXED SLUDGE
FOR	FUEL OIL RETURN	SLU	SLUDGE UNLOADING
FOS	FUEL OIL SUPPLY	SQW	SQUEEZE WATER (FILTER PRESS)
FOV	FUEL OIL SUPPLY	STM	STORM
	FILTER SURFACE WASH	SUP	
FSW FW	FILTERED WATER		SUPERNATANT TREATED WATER
		TRW TS	TREATED WATER
HCL	HYDROCHLORIC ACID		THICKENED SLUDGE
HSO	SULPHURIC ACID	TWAS	TREATED WASTE ACTIVATED SLUDGE
HWR	HOT WATER RETURN (HEATING)	V	VENT
HWS	HOT WATER SUPPLY (HEATING)	VA	VENT (AIR)
IA	INSTRUMENT AIR	VP	VENT (PUMPING)
LPG	LIQUID PROPANE GAS	VT	VENT (TANK)
KMnO	POTASSIUM PERMANGANATE	WAS	WASTE ACTIVATED SLUDGE
NaCO	SODIUM CARBONATE	WD	WASTE DRAIN
NaHCO	SODIUM BICARBONATE	WBW	WASTE BACKWASH WATER

PROCESS LEGEND - VALVE SYMBOLS						
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION			
─────────────────────────────────────	GATE	—— VGL*	GLOBE			
VTW*	THREE-WAY	VAN*	ANGLE			
O VBA*	BALL	<>	PLUG			
	BUTTERFLY		STOP COCK			
—— ▼ VKG*	KNIFE GATE	─────────────────────────────────────	NEEDLE			
——───────────────────────────────────	DIAPHRAGM		PINCH			
VMU*	MUD	VSQ*	SQUARE HEAD COCK			
Vsc*	SWING CHECK		SPRING CHECK			
VSC*	WEIGHTED CHECK	E VEC*	ELECTRIC CHECK			
— ├	DOUBLE DOOR CHECK	——	BALL CHECK			
\\VFP*	FLAP	VFS*	FOOT VALVE/ STRAINER			
VAC*	AIR VACUUM	VAV*	AIR & VACUUM			
VAR*	AIR RELEASE	VSR*	SAFETY RELIEF			
PRV*	PRESSURE REDUCING (SELF CONTAINED)	PRV*	PRESSURE REDUCING			
BPV*	BACK PRESSURE (SELF CONTAINED)	BPV*	BACK PRESSURE			
	STOP GATE		ADJUSTABLE WEIR GATE			
SLG*	SLIDE GATE	SIL	STOP LOGS			
₩ VRO*	ROTARY	─────────────────────────────────────	YARD HYDRANT			
—	DAMPER					

DIRECTION OF FLOW FOR THE ABOVE SYMBOLS IS FROM LEFT TO RIGHT. 2. STATUS MAY BE SHOWN- N.O.=NORMALLY OPEN, N.C.=NORMALLY CLOSED. 3. (VKG*) VKG INDICATES VALVE TYPE AND * INDICATES SPECIFICATION No.. 4. ADD ACTUATORS TO VALVES FROM VALVE ACTUATOR TABLE.

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLOAT		DIAPHRAGM
G	GEAR	S	SOLENOID
À	LEVER	Cw	CHAIN WHEEL
M	MOTORIZED		VALVE BOX (C/W EXTENSION STEM)
T _N	NON RISING STEM (HANDWHEEL)		QUICK OPENING
+	RISING STEM (HANDWHEEL)		
	SINGLE ACTION PISTON (FAIL OPEN)	# <u>#</u>	DOUBLE ACTION PISTON (FAIL CLOSE)

NOTE: GATE VALVES ARE USED FOR ILLUSTRATION PURPOSES ONLY

	PROCESS LEGE	ND - EQUIPM	ENT
SYMBOL	DESCRIPTION	SYMBOL	
(M)	CENTRIFUGAL PUMP	W.O	ROTA
- <u></u>	METERING PUMP	***************************************	DUPL
M	VERTICAL TURBINE PUMP	- W	CIRC
	SUBMERSIBLE PUMP	(A)	PRO
W	SUMP PUMP	₩ 	REC
	RECIPROCATING COMPRESSOR	- (i) -	BLOV
ENG	COMBUSTION ENGINE	GEN. EI	GENI
M-	CENTRIFUGAL COMPRESSOR	®	BLOW
- VAC M	VACUUM PUMP	∞-↓↓↓ •	CENT
M	INLINE MIXER	(M)	TRAV WATE
(M)	MIXER	-\$-	HEAT
	TANK (OPEN)		PRES ACCU
OR	TANK (CLOSED)	Ď	GAS (INDI
T X	SWAB LAUNCHER		SWA
		SYMBOL DESCRIPTION CENTRIFUGAL PUMP METERING PUMP VERTICAL TURBINE PUMP SUBMERSIBLE PUMP SUMP PUMP RECIPROCATING COMPRESSOR COMBUSTION ENGINE CENTRIFUGAL COMPRESSOR VACUUM PUMP INLINE MIXER MIXER TANK (OPEN) TANK (CLOSED)	CENTRIFUGAL PUMP WETERING PUMP WETERING PUMP WETERING PUMP WETERING PUMP SUBMERSIBLE PUMP SUBMERSIBLE PUMP WETERING PUM

(M) - DENOTES CONSTANT SPEED DRIVE

(vsp) * - DENOTES VARIABLE SPEED DRIVE (* M FOR MECHANICAL, E FOR ELECTRICAL) CONSTANT SPEED DRIVES ARE USED FOR ILLUSTRATION PURPOSES ONLY.

DESCRIPTION

DUPLEX METERING PUMP

CIRCULATING PUMP

PROGRESSIVE CAVITY

RECIPROCATING PUMP

BLOWER (LOBE TYPE)

BLOWER (CENTRIFUGAL)

GENERATOR

CENTRIFUGE

TRAVELLING WATER SCREEN

HEAT EXCHANGER

ACCUMULATOR

GAS CYLINDER

PRESSURE TANK OR

(INDICATE CONTENTS)

SWAB CATCHER

ROTARY PUMP

PROCESS LEGEND - P & ID SYMBOL DESIGNATIONS SYMBOL DESCRIPTION PRIMARY FLOW LINE SECONDARY FLOW LINE TERTIARY LINE EXISTING PRIMARY FLOW LINE EXISTING SECONDARY FLOW LINE EXISTING TERTIARY LINE FUTURE LINE DIRECTION OF FLOW DIRECTION OF SLOPE 2% SLOPE CONNECTION LINE LINES CROSSING OVER (BREAK VERTICAL LINE) CHANNEL LINE CONTINUATION-TO ANOTHER DRAWING LINE CONTINUATION-FROM ANOTHER DRAWING LINE SPECIFICATION CHANGE PNEUMATIC LINE ELECTRICAL SIGNAL HYDRAULIC LINE INSULATED LINE INSULATED LINE WITH ELECTRIC TRACING FLEXIBLE LINE **├**~~~├

PROCESS LEGEND - INSTRUMENTATION

	INITIATING OR	CONTRO	LLERS	READOUT	AL S	WITCHE	ES AND EVICES*	TRANSMIT	TERS		VIEWING		
FIRST— LETTERS	MEASURED VARIABLE	INDICATING	BLIND	DEVICES INDICATING	HIGH**	LOW*	* COMB	INDICATING	BLIND	PRIMAR	Y DEVICE, T GLASS	SAFETY DEVICE	
A ***	ANALYSIS	AIC	AC	Al	ASH	ASL	ASHL	AIT	AT	AE			
D	DENSITY	DIC	DC	DI	DSH	DSL	. DSHL	DIT	DT	DE			
F	FLOW RATE	FIC	FC	FI	FSH	FSL	FSHL	FIT	FT	FE	FG		
Н	HAND ON/OFF	HIC	HC										Ι
ı	CURRENT	IIC		II	ISH	ISL	ISHL	IIT	IT	ΙE			
L	LEVEL	LIC	LC	П	LSH	LSL	LSHL	LIT	LT	LE	LG		
М	MOTORIZED												
Р	PRESSURE/ VACUUM	PIC	PC	PI	PSH	PSL	. PSHL	PIT	PT	PE		PSV,PSE	
PD	PRESSURE, DIFFERENTIAL	PDIC	PDC	PDI	PDSH	PDS	SL	PDIT	PDT	PE			
S	SPEED/ FREQUENCY	SIC	sc	SI	SSH	SSL	SSHL	SIT	ST	SE			Ī
т	TEMPERATURE	пс	тс	П	TSH	TSL	TSHL	ПТ	П	TE	1	TSE	t
V	VIBRATION			VI	VSH	VSL	. VSHL	ИТ	VT	VE	1		t
w	WEIGHT/FORCE	wic	wc	wı	WSH	WSL	WSHL	WIT	wT	WE			Ī
Y	STATUS	УIC	YC	YI	YSH	YSL			YT	YE			T
Z	POSITION / DIMENSION	ZIC	zc	ZI	ZSH	ZSL	ZSHL	ZIT	ZT	ZE			
***	DESCRIPTION	T \ ***		WATER SCRIPTION	SYN	MBOL		GENERAL ESCRIPTION		SYMBOL		ESCRIPTION	
pН	-11												
	pН	pН	рН			\neg	MOUNTED	LOCALLY		ÁND	LOGIC GAT	IS EFFECTIVE	
CLR	CHLORINE RESIDUAL	CLR	CHLORIN	NE RESIDUAL		\supset	MOUNTED	LOCALLY		ÁND		IS EFFECTIVE	
CLC	CHLORINE RESIDUAL CHLORINE LEAK	CLR	CHLORIN	NE LEAK			MOUNTED		OLS	$\overline{}$	(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT	IS EFFECTIVE INPUTS ARE	
CLC Tu	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY	CLR CLC CB	CHLORIN CHLORIN COMBUS	NE LEAK STION GAS		○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○○<		ON	STRUMENT	ÁND OR	(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT	IS EFFECTIVE INPUTS ARE TE - OR IS EFFECTIVE MORE INPUTS	
CLC Tu OZR	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY OZONE RESIDUAL	CLR CLC CB H2S	CHLORIN CHLORIN COMBUS	NE LEAK STION GAS SEN SULPHIDE))	MOUNTED FACE OF	ON PANEL	INSTRUMENT SYMBOLS	OR OR	(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT (INTERLOCK IF ONE OR IN ARE ACTIVE) LOGIC GAT	IS EFFECTIVE INPUTS ARE TE — OR IS EFFECTIVE MORE INPUTS E — OR	
CLC Tu	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY OZONE RESIDUAL OZONE LEAK STREAMING	CLR CLC CB H2S C0	CHLORIN CHLORIN COMBUS HYDROG CARBON	NE LEAK STION GAS SEN SULPHIDE I MONOXIDE)))	MOUNTED	ON PANEL BEHIND	INSTRUMENT SYMBOLS	$\overline{}$	(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT (INTERLOCK IF ONE OR IN ARE ACTIVE)	IS EFFECTIVE INPUTS ARE IE — OR IS EFFECTIVE MORE INPUTS E — OR S EFFECTIVE	
CLC Tu OZR OZL SCD	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY OZONE RESIDUAL OZONE LEAK STREAMING CURRENT DETECTOR	CLR CLC CB H2S CO CH4	CHLORIN CHLORIN COMBUS HYDROG CARBON METHAN	NE LEAK STION GAS SEN SULPHIDE I MONOXIDE)))	MOUNTED FACE OF MOUNTED PANEL DO	ON PANEL BEHIND OOR		OR OR	(INTERLOCK INTERLOCK INTERLOCK IF ONE OR MARE ACTIVE) LOGIC GAT (INTERLOCK IF ONE OR MARE ACTIVE) COMPLEX (OMPLEX (OMPLEX OMPLEX OMPL	IS EFFECTIVE INPUTS ARE IFE — OR IS EFFECTIVE ADDRE INPUTS IFE — OR IS EFFECTIVE ORE INPUTS OR	
CLC Tu OZR OZL	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY OZONE RESIDUAL OZONE LEAK STREAMING	CLR CLC CB H2S C0	CHLORIN CHLORIN COMBUS HYDROG CARBON METHAN	NE LEAK STION GAS SEN SULPHIDE MONOXIDE SE MONOXIDE SE MONOXIDE MONOXIDE)))	MOUNTED FACE OF MOUNTED PANEL DO	ON PANEL BEHIND OOR	SCADA INSTRUMENT SYMBOLS	OR	(INTERLOCK INTERLOCK INTERLOCK IF ONE OR MARE ACTIVE) LOGIC GAT (INTERLOCK IF ONE OR MARE ACTIVE) COMPLEX (OMPLEX (OMPLEX OMPLEX OMPL	IS EFFECTIVE INPUTS ARE IE — OR IS EFFECTIVE MORE INPUTS E — OR S EFFECTIVE ORE INPUTS	
CLC Tu OZR OZL SCD ALU	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY OZONE RESIDUAL OZONE LEAK STREAMING CURRENT DETECTOR ALUMINUM	CLR CLC CB H2S CO CH4	CHLORIN CHLORIN COMBUS HYDROG CARBON METHAN DISSOLV	NE LEAK STION GAS SEN SULPHIDE M MONOXIDE SEE SED OXYGEN UM			MOUNTED FACE OF MOUNTED PANEL DO SCADA INPUT/OL	ON PANEL BEHIND OOR	SCADA	OR	(INTERLOCK INTERLOCK INTERLOCK IF ONE OR MARE ACTIVE) LOGIC GAT (INTERLOCK IF ONE OR MARE ACTIVE) COMPLEX (OMPLEX (OMPLEX OMPLEX OMPL	IS EFFECTIVE INPUTS ARE IF — OR IS EFFECTIVE AND IS EFFECTIVE ORE INPUTS ORE INPUTS OR INTERLOCATION INTERLOCAT	
CLC Tu OZR OZL SCD ALU COL	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY OZONE RESIDUAL OZONE LEAK STREAMING CURRENT DETECTOR ALUMINUM COLOUR	CLR CLC CB H2S CO CH4 DO ALU	CHLORIN CHLORIN COMBUS HYDROG CARBON METHAN DISSOLV ALUMINI TURBIDI	NE LEAK STION GAS SEN SULPHIDE M MONOXIDE SEE SED OXYGEN UM			MOUNTED FACE OF MOUNTED PANEL DO SCADA INPUT/OL	ON PANEL BEHIND OOR	SCADA	OR XOR	(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT (INTERLOCK IF ONE OR IN ARE ACTIVE) LOGIC GAT (INTERLOCK I IF ONE OR IN ARE ACTIVE) COMPLEX (UNDEFINED	IS EFFECTIVE INPUTS ARE IF — OR IS EFFECTIVE AND IS EFFECTIVE ORE INPUTS ORE INPUTS OR INTERLOCATION INTERLOCAT	
CLC Tu OZR OZL SCD ALU COL F	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY OZONE RESIDUAL OZONE LEAK STREAMING CURRENT DETECTOR ALUMINUM COLOUR FLUORIDE	CLR CLC CB H2S CO CH4 DO ALU Tu SS	CHLORIN CHLORIN COMBUS HYDROG CARBON METHAN DISSOLV ALUMINI TURBIDI	NE LEAK STION GAS SEN SULPHIDE I MONOXIDE SEE OF OXYGEN UM			MOUNTED FACE OF MOUNTED PANEL DO SCADA INPUT/OL	ON PANEL BEHIND OOR	SCADA	OR XOR	(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT (INTERLOCK IF ONE OR IN ARE ACTIVE) LOGIC GAT (INTERLOCK I IF ONE OR IN ARE ACTIVE) COMPLEX (UNDEFINED	IS EFFECTIVE INPUTS ARE ITE — OR IS EFFECTIVE AIGNE INPUTS ITE — OR S EFFECTIVE ORE INPUTS OR INTERLOCK MBER IN INTERLOCK	
CLC Tu OZR OZL SCD ALU COL F CON SBI	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY OZONE RESIDUAL OZONE LEAK STREAMING CURRENT DETECTOR ALUMINUM COLOUR FLUORIDE CONDUCTIVITY SLUDGE BLANKET IN	CLR CLC CB H2S CO CH4 DO ALU Tu SS TERFACE	CHLORIN CHLORIN CHLORIN COMBUS HYDROG CARBON METHAN DISSOLV ALUMINI TURBIDI SUSPEN	NE LEAK STION GAS SEN SULPHIDE I MONOXIDE SEE OF OXYGEN UM			MOUNTED FACE OF MOUNTED PANEL DO SCADA INPUT/OL NOT ACC TO OPER.	ON PANEL BEHIND OOR			(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT (INTERLOCK II IF ONE OR II ARE ACTIVE) LOGIC GAT (INTERLOCK II IF ONE OR II ARE ACTIVE) COMPLEX (UNDEFINED PANEL NUI MOTOR CO CENTRE NU PROGRAMM CONTROLLE	IS EFFECTIVE INPUTS ARE IE — OR IS EFFECTIVE ORE INPUTS E — OR SEFFECTIVE ORE INPUTS OR INTERLOCH MBER n NTROL JMBER n HABLE	K
CLC Tu OZR OZL SCD ALU COL F CON SBI NO THIS	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY DZONE RESIDUAL OZONE LEAK STREAMING CURRENT DETECTOR ALUMINUM COLOUR FLUORIDE CONDUCTIVITY SLUDGE BLANKET IN TE: TABLE IS NOT ALL ALARM, THE ANNUI HE SAME FASHION	CLR CLC CB H2S CO CH4 DO ALU Tu SS TERFACE	CHLORIN CHLORIN CHLORIN COMBUS HYDROG CARBON METHAN DISSOLV ALUMINI TURBIDI SUSPEN	NE LEAK STION GAS SEN SULPHIDE MONOXIDE SEE VED OXYGEN UM TY DEED SOLIDS			MOUNTED FACE OF MOUNTED PANEL DO SCADA INPUT/OL NOT ACC TO OPER.	ON PANEL BEHIND OOR JTPUT ESSIBLE ATOR BLE ATOR Y LOCATION	DISTRIBUTED CONTROL SCADA SYMBOLS OR SHARED INSTRUMENTS		(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT (INTERLOCK II IF ONE OR II ARE ACTIVE) LOGIC GAT (INTERLOCK II IF ONE OR II ARE ACTIVE) COMPLEX (UNDEFINED PANEL NUI MOTOR CO CENTRE NU PROGRAMM CONTROLLE	IS EFFECTIVE INPUTS ARE IE — OR IS EFFECTIVE ORE INPUTS E — OR S EFFECTIVE ORE INPUTS OR INTERLOCATION INTERLOC	K
CLC Tu OZR OZL SCD ALU COL F CON SBI THIS *A, IN T DEVI	CHLORINE RESIDUAL CHLORINE LEAK TURBIDITY DZONE RESIDUAL OZONE LEAK STREAMING CURRENT DETECTOR ALUMINUM COLOUR FLUORIDE CONDUCTIVITY SLUDGE BLANKET IN TE: TABLE IS NOT ALL ALARM, THE ANNUI HE SAME FASHION	CLR CLC CB H2S CO CH4 DO ALU Tu SS TERFACE L—INCLUSIVE. NCIATING DE' AS S, SWITC	CHLORIN CHLORIN CHLORIN COMBUS HYDROG CARBON METHAN DISSOLV ALUMINI TURBIDI SUSPEN VICE, MAY	TY DED SOLIDS Y BE USED ACTUATING			MOUNTED FACE OF MOUNTED PANEL DO SCADA INPUT/OL NOT ACC TO OPER. ACCESSIB TO OPER. AUXILIARY	ON PANEL BEHIND OOR JTPUT ESSIBLE ATOR BLE ATOR Y LOCATION	SCADA		(INTERLOCK I ONLY IF ALL ACTIVE) LOGIC GAT (INTERLOCK II IF ONE OR II ARE ACTIVE) LOGIC GAT (INTERLOCK II IF ONE OR II ARE ACTIVE) COMPLEX (UNDEFINED PANEL NUI MOTOR CO CENTRE NU PROGRAMM CONTROLLE I/O RACK SUPPLIED AN BY OTHER DI CONNECTED II	IS EFFECTIVE INPUTS ARE IE — OR IS EFFECTIVE ADDRE INPUTS E — OR S EFFECTIVE ORE INPUTS OR INTERLOCH MBER n NTROL JMBER n MABLE R NUMBER n D INSTALLED VISIONS, BY THIS	

PROCESS LEGEND - PRIMARY FLOW ELEMENTS							
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION				
	WEIR	F	SNAP-ON FLOW METER				
	INSERT VENTURI		SONIC FLOW METER				
	PITOT TUBE (SINGLE)	— -[M]- -	MAGNETIC FLOW METER				
	PITOT TUBE (AVERAGING)	—— - 	ORIFICE PLATE				
<u> </u>	FLUME	—	FLOW SIGHT GLASS				
-8-	TURBINE / PROPELLER	——FG	ROTAMETER				
	POSITIVE DISPLACEMENT	-\\\\\	STATIC INLINE MIXER				
	GUAGE INDICATOR						
PROCE	SS LEGEND - MI	SCELLANEOUS	SYMBOLS				
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION				
S.P.	SAMPLE POINT (12mm)		UNION				
D.P.	DRAIN POINT (MIN. 12mm)		HOSE CONNECTION				
	IN LINE STRAINER		EYEWASH				
$\overline{}$	DRAIN / OVERFLOW						

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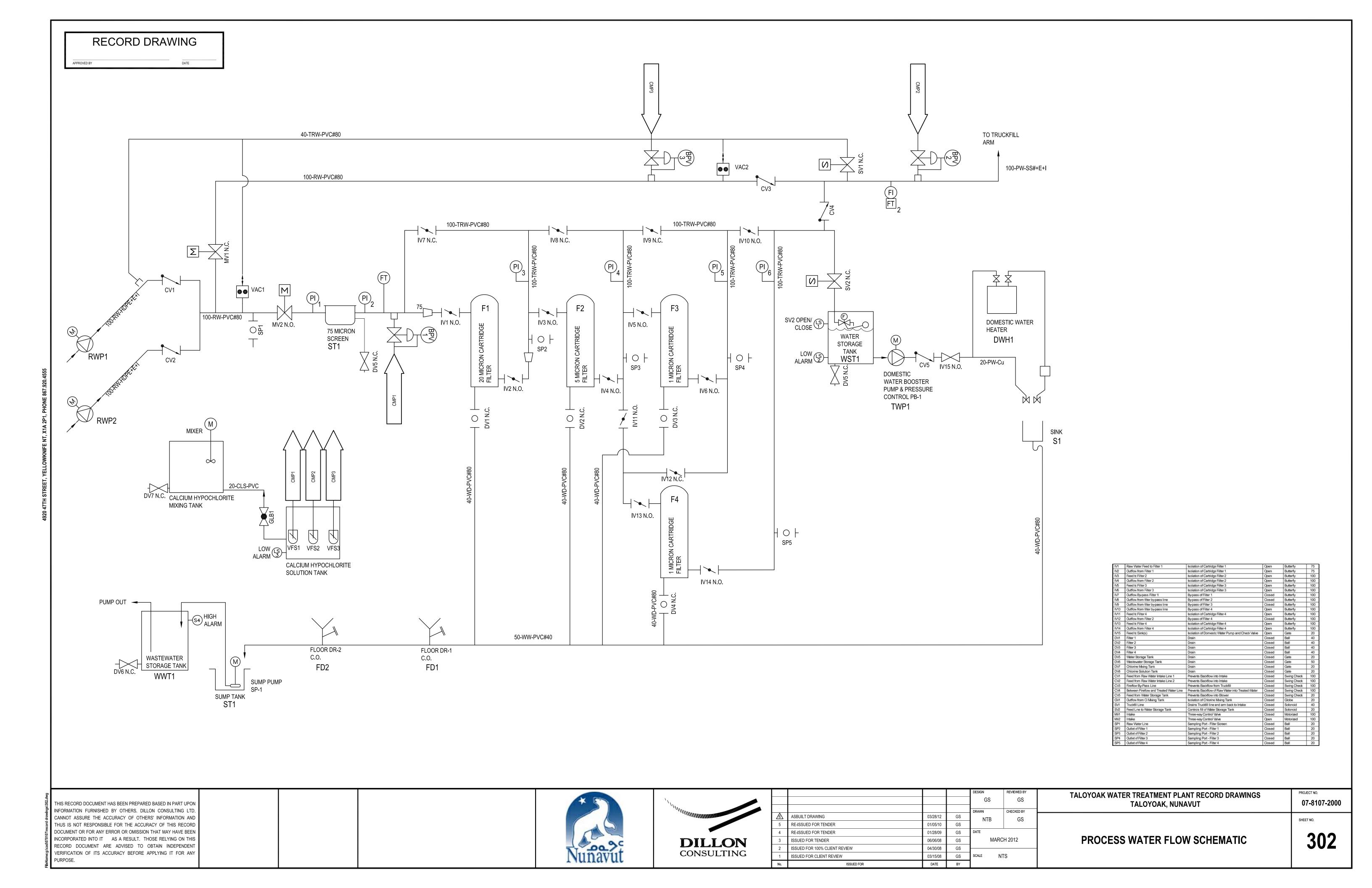
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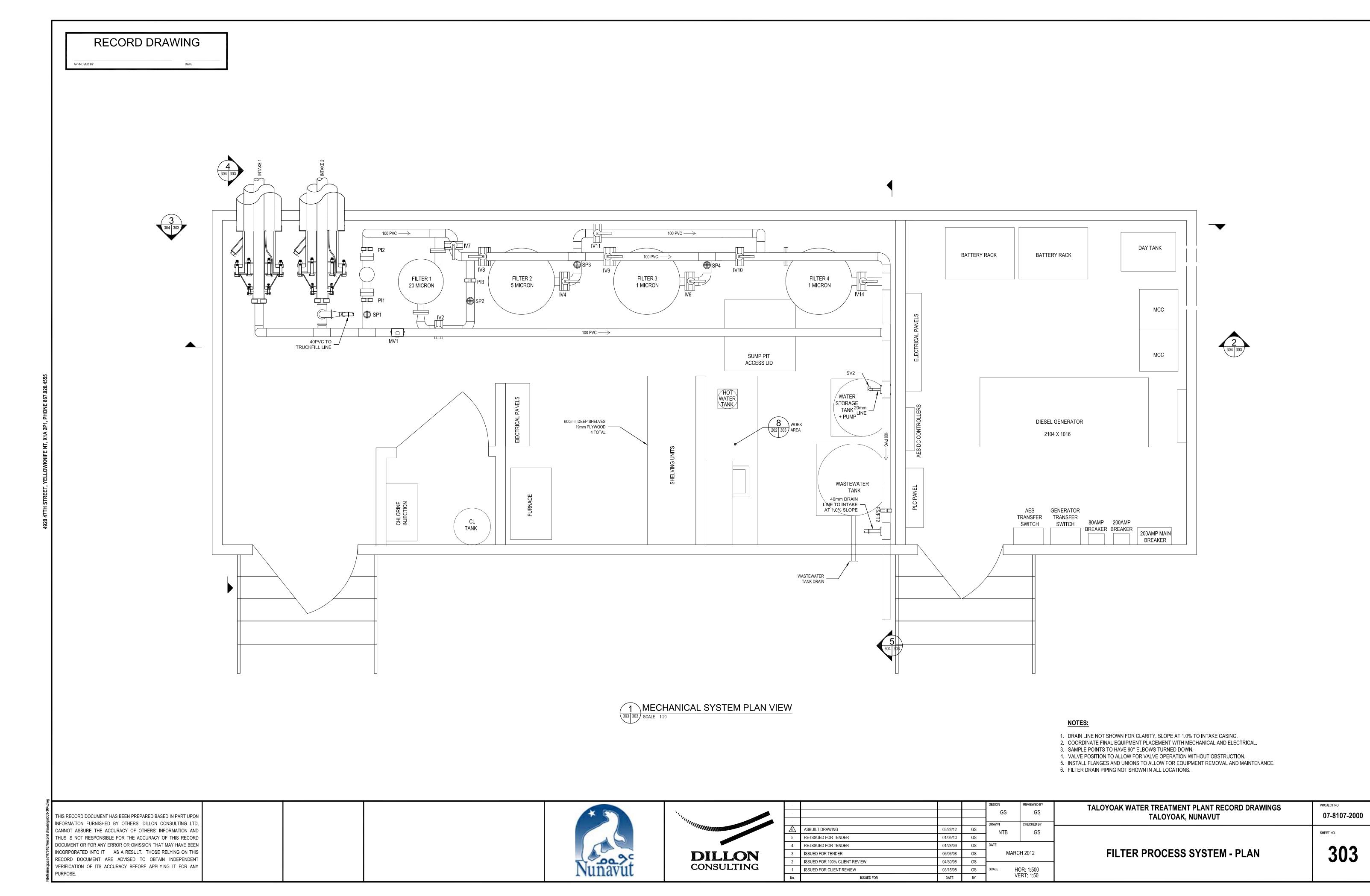
TALOYOAK WATER TREATMENT PLANT RECORD DRAWINGS GS TALOYOAK, NUNAVUT CHECKED BY

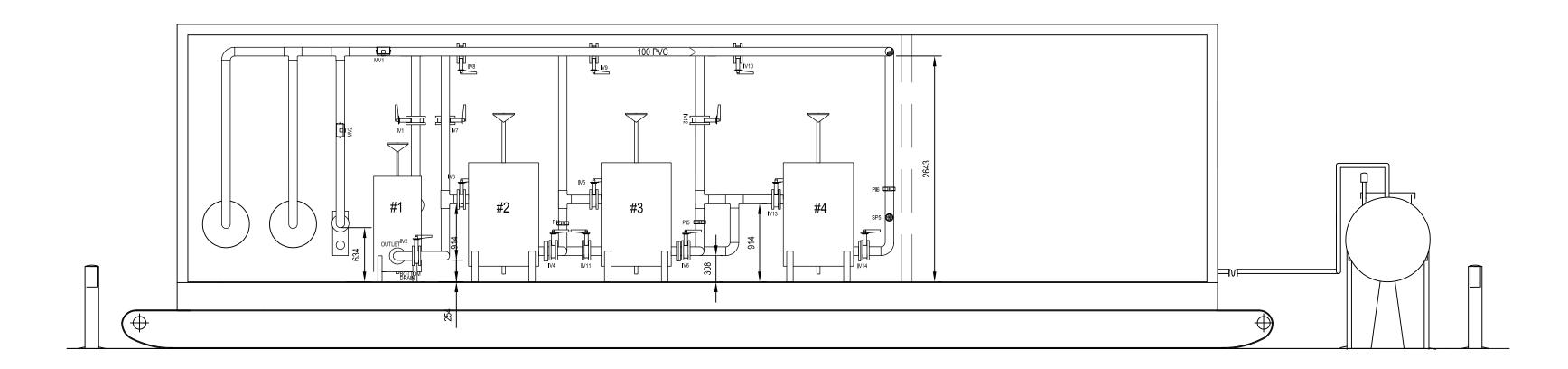
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SHEET NO.

07-8107-2000

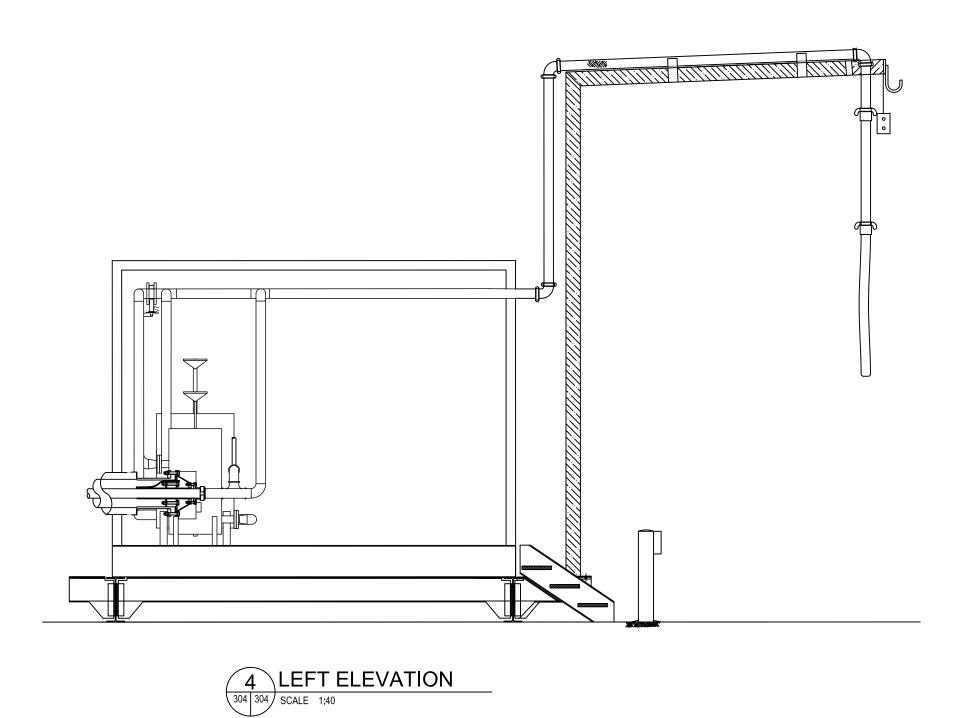


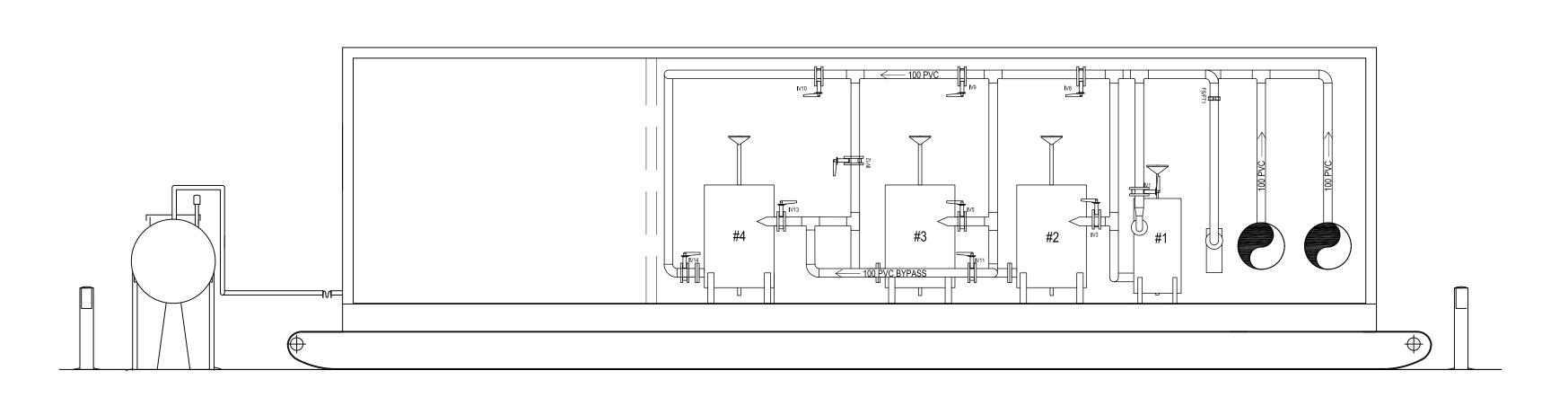




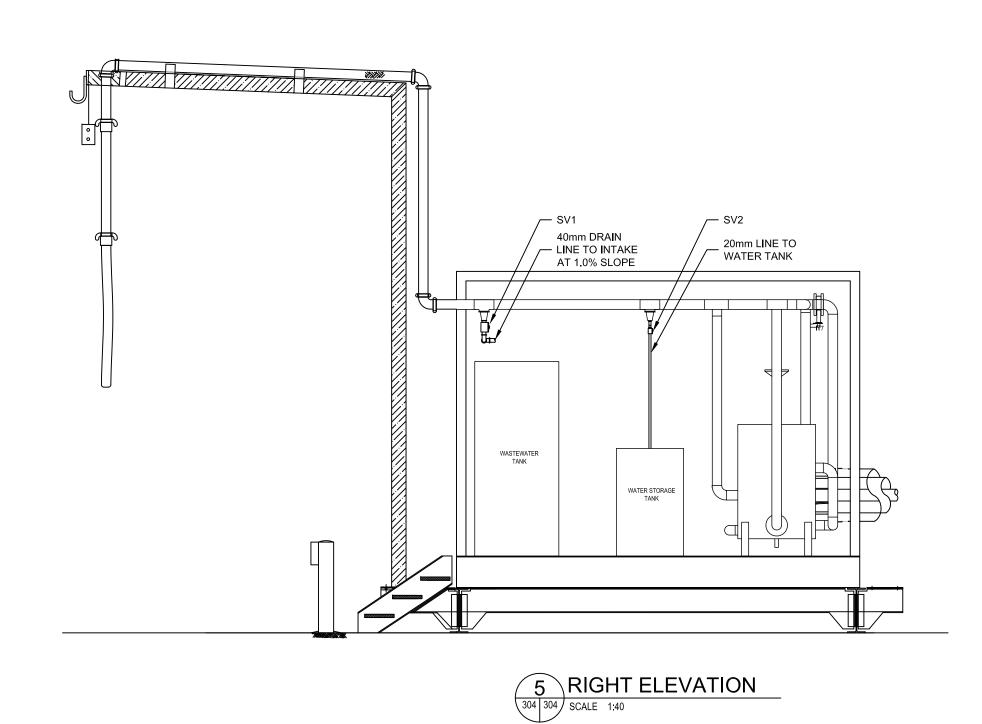
PRONT ELEVATION

SCALE 1:40









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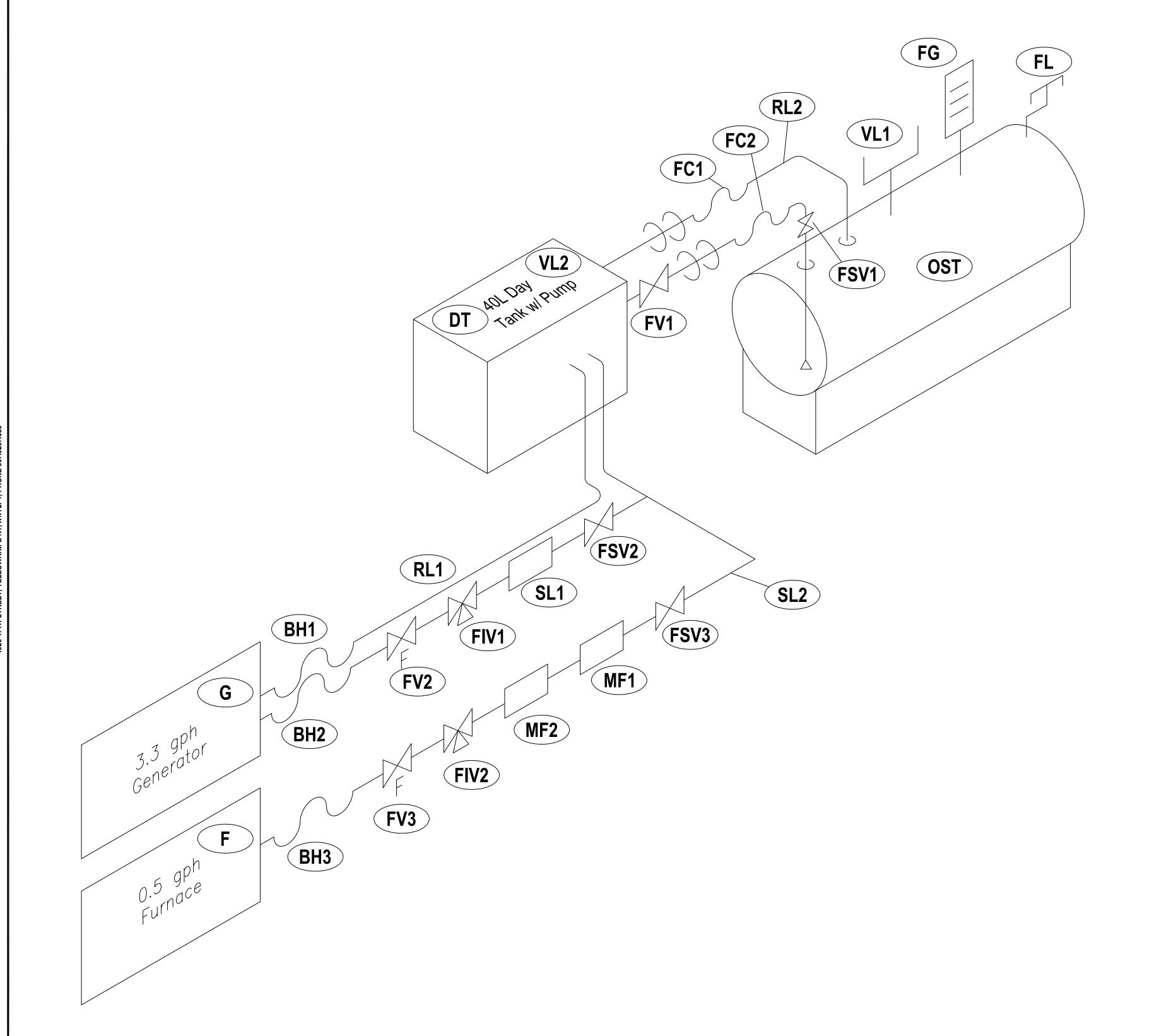
VERIFICATION OF ITS ACCURACY BEFORE APPLYING IT FOR ANY





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TALOYOAK WATER TREATMENT PLANT RECORD DRAWINGS TALOYOAK, NUNAVUT	PROJECT NO. 07-8107-2000
	SHEET NO.
FILTER PROCESS SYSTEM - SECTIONS	304



- (OST) 4328L OIL STORAGE TANK TO BE INSTALLED ON NON COMBUSTIBLE STRUCTURE TO BUILDING FLOOR ELEVATION
- **FL** 50mm (2") FILL W/ SECURED CAP.
- FG FLOAT GAUGE
- **VL** 31mm (1 1/4") VENT LINE W/ CAP
- **FC** 500MM 50MM DIA. FLEXIBLE COUPLING JUST PRIOR TO BUILDING PENATRATION
- FV FUSIBLE VALVES FOR FIRE PROTECTION
- **DT** INTEGRAL 40L DAY TANK & PUMP. TANK TO BE MOUNTED AT ELEVATION, SO THAT PUMP FEED IS ABOVE TOP OF TANK, TO AVOID SIPHONING.
- SL SUPPLY LINE FROM DAY TANK TO GENERATOR AND FURNACE. 12mm Ø HEAVY WALLED COPPER TUBING FROM FUEL DAY TANK (TYPE K GREEN) REDUCED TO 9mm Ø AT FILTERS.
- MF1 40 to 50 MICRON FILTER
- MF2 ADDITIONAL 7 TO 10 MICRON FILTER
- **FIV** 3-WAY BLEED & ISOLATION VALVES
- **BH** 300mm FLEXIBLE COUPLING (ULC LISTED BRADED STAINLESS STEEL)
- RL 25mm RETURN LINE
- (FSV) FUEL SOLENOID VALVES TO CONTROL FUEL FLOW RATE.

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TALOYOAK WATER TREATMENT PLANT RECORD DRAWINGS TALOYOAK, NUNAVUT	PROJECT NO. 07-8107-2000
	SHEET NO.
HEATING OIL SYSTEM	305



- CIL1) COMBUSTION AIR INTAKE LOUVER. 200mm x 200mm DUCT LOCATED AT LOW LEVEL AND DUCTED TO OUTLET 300mm BELOW CEILING.
- CIL2 COMBUSTION AIR INTAKE LOUVER INSULATED TO MANUFACTURE'S SPECIFICATION.
- (HRV) FLOOR MOUNTED HRV UNIT. UNIT TO RUN CONTINUOUSLY.
- **(EF)** CABINET TYPE EXHAUST FAN FROM CHLORINE ROOM.
- **LEF** EXHAUST LOUVER.
- DC 200mm FLEXIBLE DUCT CONNECTIONS AT RADIATOR DUCT COLLAR. FULL SIZE DUCT CONNECTION FROM RADIATOR AND TRANSITION TO 762mm X 762mm LOUVER.
- (IL) ALL LOUVERS TO HAVE MODULATING ACTUATORS AS ROOM TEMPERATURE RISES.
- **EL** EXTERNAL LOUVERS TO BE INSTALLED W/ TURNDOWN 90° WEATHERHOODS AND BIRDSCREENS.
- T DAMPER CONTROL BY APPROPIATE HONEYWELL, PID THERMOSTAT
- **OST** 4328L OIL STORAGE TANK TO BE INSTALLED ON NON COMBUSTIBLE STRUCTURE TO BUILDING FLOOR ELEVATION
- **FL** 50mm (2") FILL W/ SECURED CAP.
- FG FLOAT GAUGE
- **VL** 31mm (1 1/4") VENT LINE W/ CAP

SEQUENCE OF OPERATION

GENERATOR

- (1) GENERATOR RADIATOR COOLING AIR INTAKE AND EXHAUST DAMPERS
- ON START-UP OF THE GENERATOR, ID-1 AND ED-1 DAMPERS ARE ENERGIZED OPEN ALLOWING OUTSIDE AIR TO COOL THE ENGINE.
- WITH THE SHUTTING DOWN OF THE GENERATOR, ID-1 AND ED-1 ARE DE-ENERGIZED. ID-1 AND ED-1 HAVE NORMALLY CLOSED SPRING RETURNS.
- (2) DIESEL GENERATOR COMBUSTION AIR INTAKE DAMPERS
 - ON START-UP OF THE GENERATOR, ID-2 AND OD-2 DAMPERS ARE ENERGIZED AND MODULATED TO MAINTAIN THE REQUIRED MINIMUM COMBUSTION AIR TEMPERATURE OF THE ENGINE.

CHLORINE ROOM FAN EXHAUST DAMPER (DEF-2)

- ON START-UP OF THE EXHAUST FAN (EF-1), THE DEF-2 DAMPER WILL BE ENERGIZED.
- WITH STOPPING OF THE EXHAUST FAN (EF-1), THE DEF-2 DAMPER WILL BE DE-ENERGIZED.

 \triangleright

<u>LEGEND</u>

GATE VALVE GLOBE VALVE

SWING CHECK VALVE 3-WAY DIAPHRAGM CONTROL VALVE

 \searrow SOLENOID VALVE

Y-PATTERN LINE STRAINER BACK FLOW PREVENTER

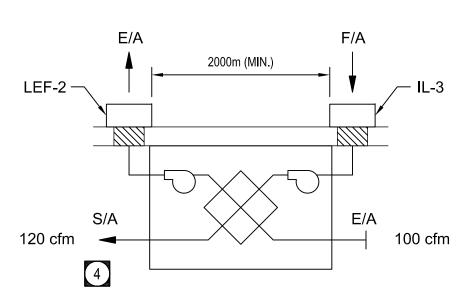
BOOSTER PUMP

FLOAT GAUGE

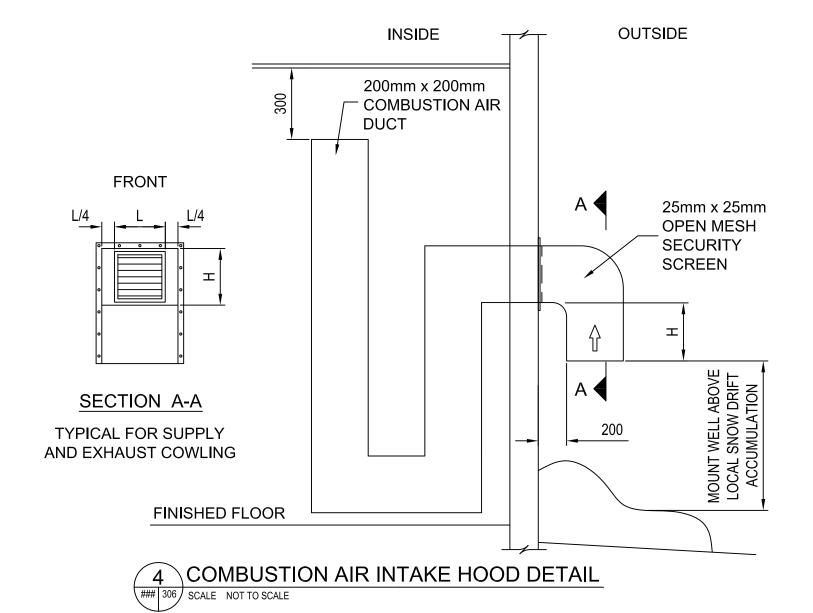
VOLUME CONTROL DAMPER

CLEAN OUT

BACK DRAFT DAMPER FLOOR DRAIN



3 HEAT RECOVERY VENTILATION UNIT ### 306 SCALE NOT TO SCALE



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VENTILATION SYSTEM AND DETAILS

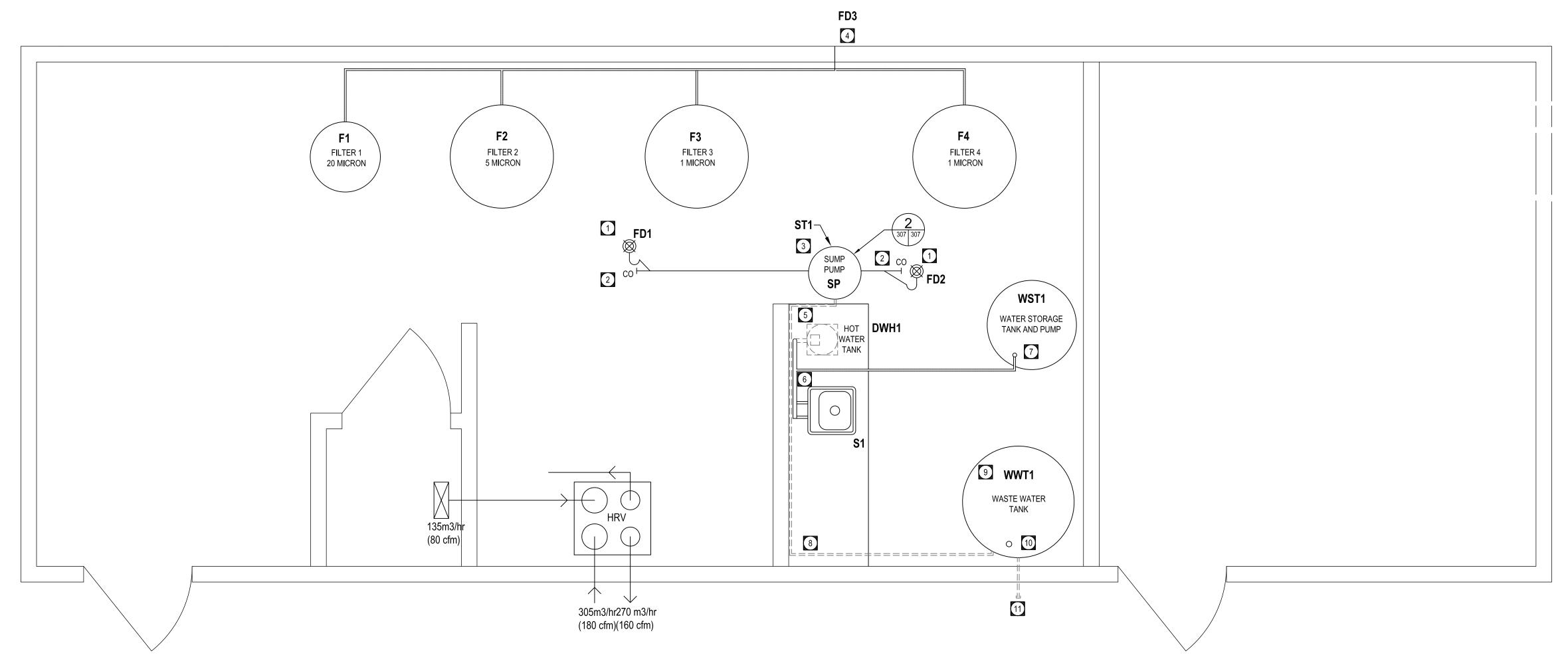
TALOYOAK WATER TREATMENT PLANT RECORD DRAWINGS

TALOYOAK, NUNAVUT

306

SHEET NO.

07-8107-2000



FD1&2 THOOR DRAINS TO TYPE SPECIFIED INSTALLED IN VOID SPACE OF FLOOR. HOLE DRILLED IN JOISTS TO BE REINFORCED. CO-ORDINATE WITH JOIST LOCATIONS.

CO 2 PROVIDE CLEAN OUTS FOR DRAINS

ST1 3 POLYETHYLENE SUMP PIT TO BE RECESSED INTO FLOOR C/W SUMP PUMP. SUMP TO BE INSTALLED THROUGH FLOOR. TOP OF SUMP TO BE LEVEL WITH

FD3 4 50mm FILTER DRAIN TO OUTSIDE.

DWH1 5 ELECTRIC HOT WATER TANK MOUNTED UNDER COUNTER.

19mmØ DOMESTIC COLD WATER LINE CONNECT TO SINK FIXTURE AND HOT WATER TANK. VERIFY LOCATION ON SITE. EXTEND 13mmØ WATER CONNECTION TO EACH FIXTURE. PROVIDE SHUT-OFF VALVES ON BOTH WATER

WST1 7 WATER STORAGE TANK

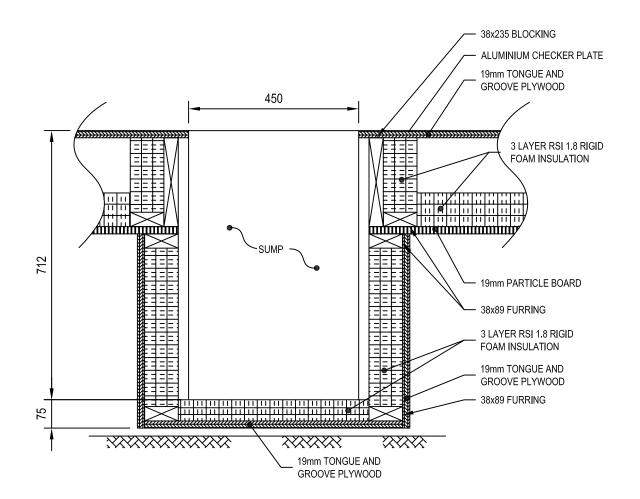
8 50mm PVC PIPING BETWEEN SUMP AND WASTE WATER TANK.

WWT1 9 WASTEWATER TANK TO BE MOUNTED ON SLEEPER 50mm ABOVE FLOOR OF FACILITY.

\DOMESTIC WATER AND FLOOR DRAIN LAYOUT 307 307 SCALE 1:20

ALL PLUMBING VENTS TO BE INSTALLED AT HIGH LEVEL AND PENETRATE

• 75mmØ PUMPED SANITARY DISCHARGE PIPE.





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TALOYOAK, NUNAVUT	07-8107-2000
	SHEET NO.
DOMESTIC PLUMBING	307

TALOYOAK WATER TREATMENT PLANT RECORD DRAWINGS

RECORD DRAWING

EQUIPMENT SCHEDULE

			Manufacturers	Model No.	Operating Equipment Weight	Electrical	Motor (Kw)	Motor (HP)	Remarks
Tag	Name	Equipment Characteristices	Carrier	58CMA	235 lbs (ship wt)	115/1/60		0.3	Oil Fired furnace; Beckett Burner, Model (3450 rpm): AFG—F3, complete with wall mount thermostat
			Greenheck	BSQ-70-4	_	115/1/60		0.25	Belt driven centrifugal inline fan, Hi-Pro polyester coated, explosion proof motor with corrosion resistant fasteners.
	Damper Include where it is located	Size: 12"*12" Note these Symbols and include the pressure drop at the design flow NOTE FOR AIR EQUIPMENT ITEMS	Greenheck	WD-330		N/A			Gravity operated, Hi—Pro polyester coated damper
	Exhaust louver	Size: 12"*12"	Greenheck	ESJ-202		N/A			Weather lover, Hi-Pro polyester coated
	Diffusers	Size: 6"	Price	Price 6"/RCDA/B12	_	N/A			
	Return Grills	Size: 6"*6"	Price	Price F/L/A/B12	_	N/A			
D-1	Damper	Size: 2'*4'	Tamco	Tamco 9000 ECT	_	N/A			Parrelel blade damper
D-2	Damper	Size: 1'*1'	Tamco	Tamco 9000 ECT	_	N/A			Parrelel blade damper
	Intake louvre	Size: 2'*4'	Price	Price DE 635	_	N/A		_	
EL-1	Intake louvre	Size: 2'*4'	Price	Price DE 635	_	N/A			
IL-2	Intake louvre	Size: 1'*0.5'	Price	Price DE 635		N/A			
IL-3	Intake louvre	Size: 1'*0.5'	Price	Price DE 635		/ N/A			
	Water heater	6 Usgal tank, 1500W heater		RE 6		120/1/60			
	Fuel Day Tank	10 Usgal COMPLETE DESCRIPTION	Simplex	SDE Series Economy Day Tank	128 lb Is this Operating Weight?	115/1/60		0.3	Factory installed 2 GPM pump
	Aboveground fuel tank	4328 Liters NOTE COMPLETE DESCRIPTION	Nothern Steel Industries	HSEAL 4328L	2100 lb IS this Operating Weight?				List the features that are included
FD-1, FD-2, FD-3	Treatment Floor Drains, Non Public Area		Mifab	F1000 complete with 4" funnel					
BP-1	Domestic Water Booster Pump	See spec sheets attached	SHURflo®	2088-492-144	5 lbs (net, boxed)	120/1/			To be complete with pressure control
SP-1	Sump Pump	Capacity to 138 gpm, Heads to 25 ft, Discharge size 2" female NPT		E-PAQ™ SE40		115/1/		0.4	Packaged System includes pump, basin, cover, discharge pipe and check valve; Complete with float control
WWST-1	Wastewater Storage Tank	35" D x 81" H 300 gallons 8" Manway, 2" Drain fitting	Plastic-Mart	VT0300-35	86 lbs (empty)	N/A			
WT-1	Treated Water Storage Tank	28" D x 45" H 100 gallons 8" Manway, 1" Drain fitting	Plastic-Mart	VT0100-28	36 lbs (empty)	N/A			
	Hot Water Tank/Heater	6 gallons	Rheem	81VP6S	36 lbs (ship wt)	120/1/			Furnished with standard 120 volt AC, 2000 watt single element, 3/4" NPT outlet, inlet, anode rod, T & P valve connections

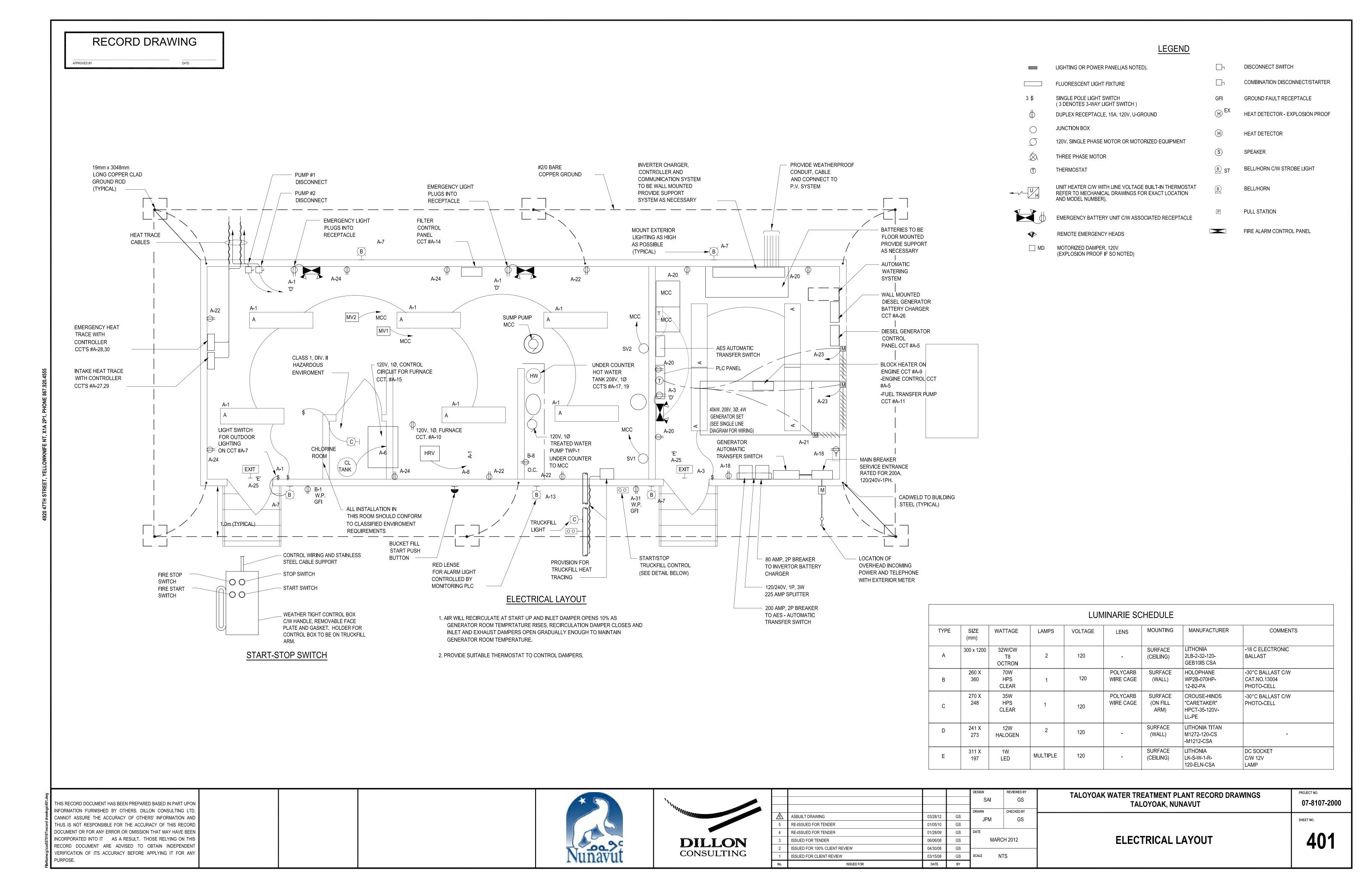
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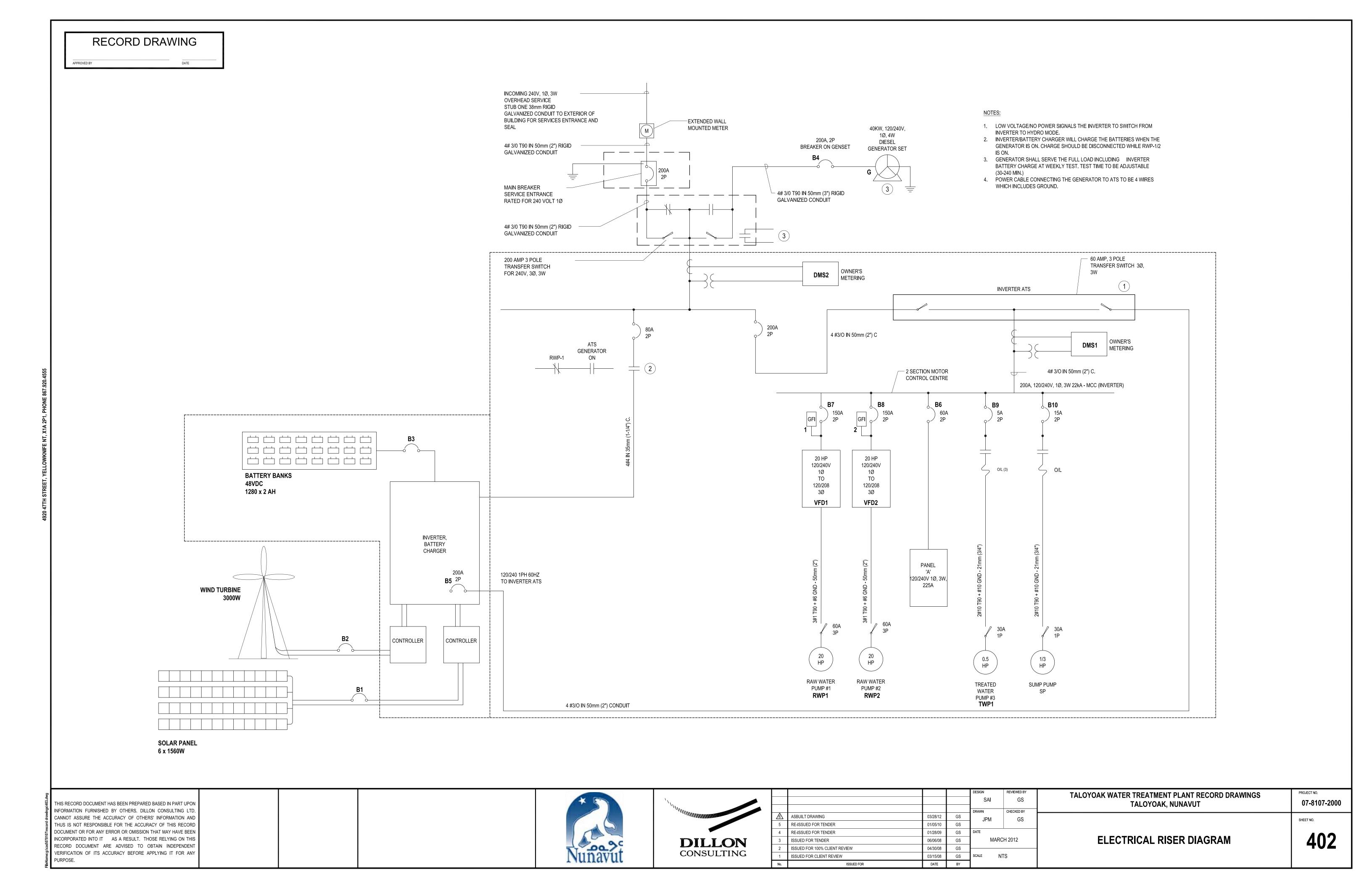


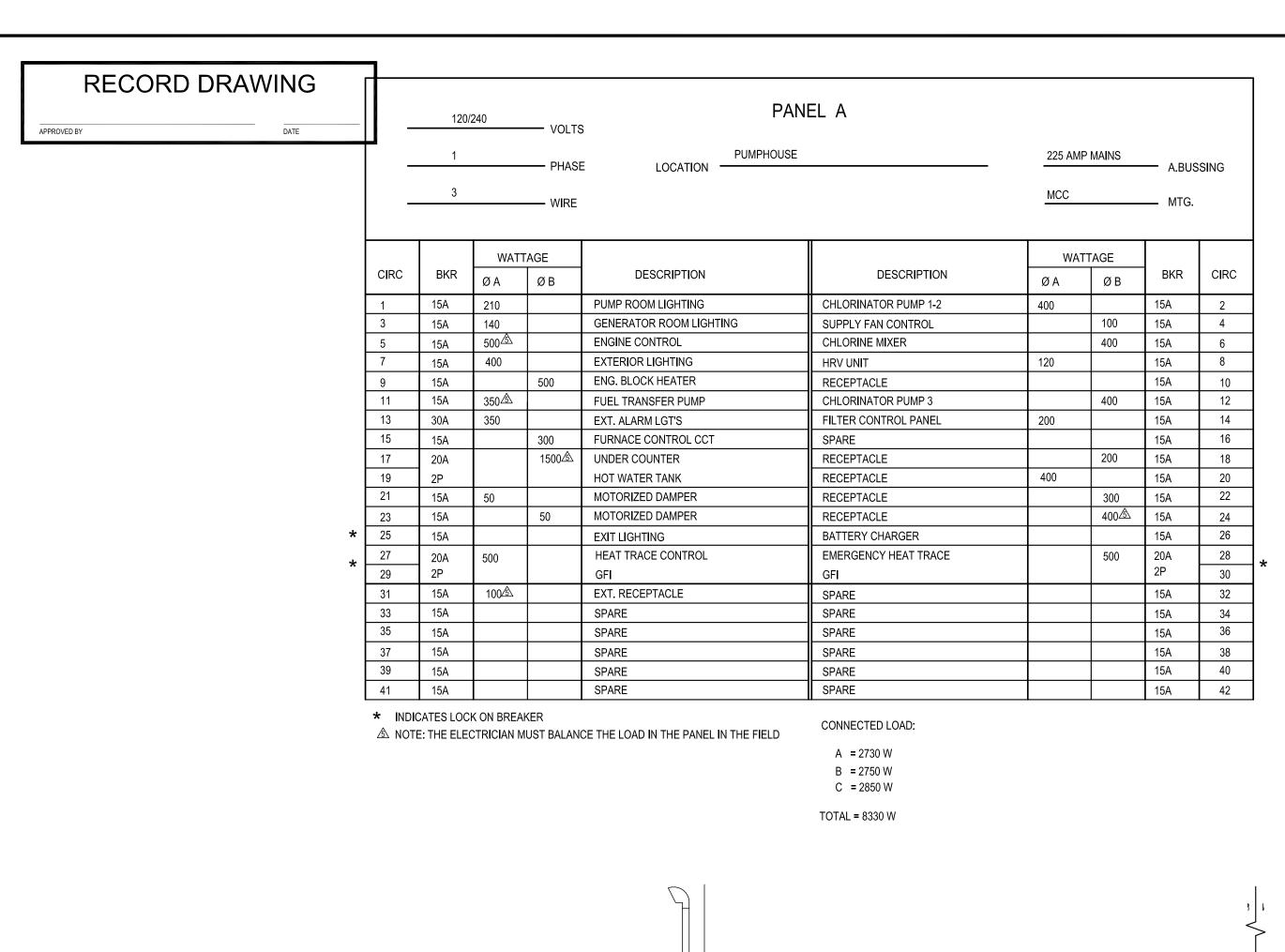


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TALOYOAK WATER TREATMENT PLANT RECORD DRAWINGS TALOYOAK, NUNAVUT	PROJECT NO. 07-8107-2000	
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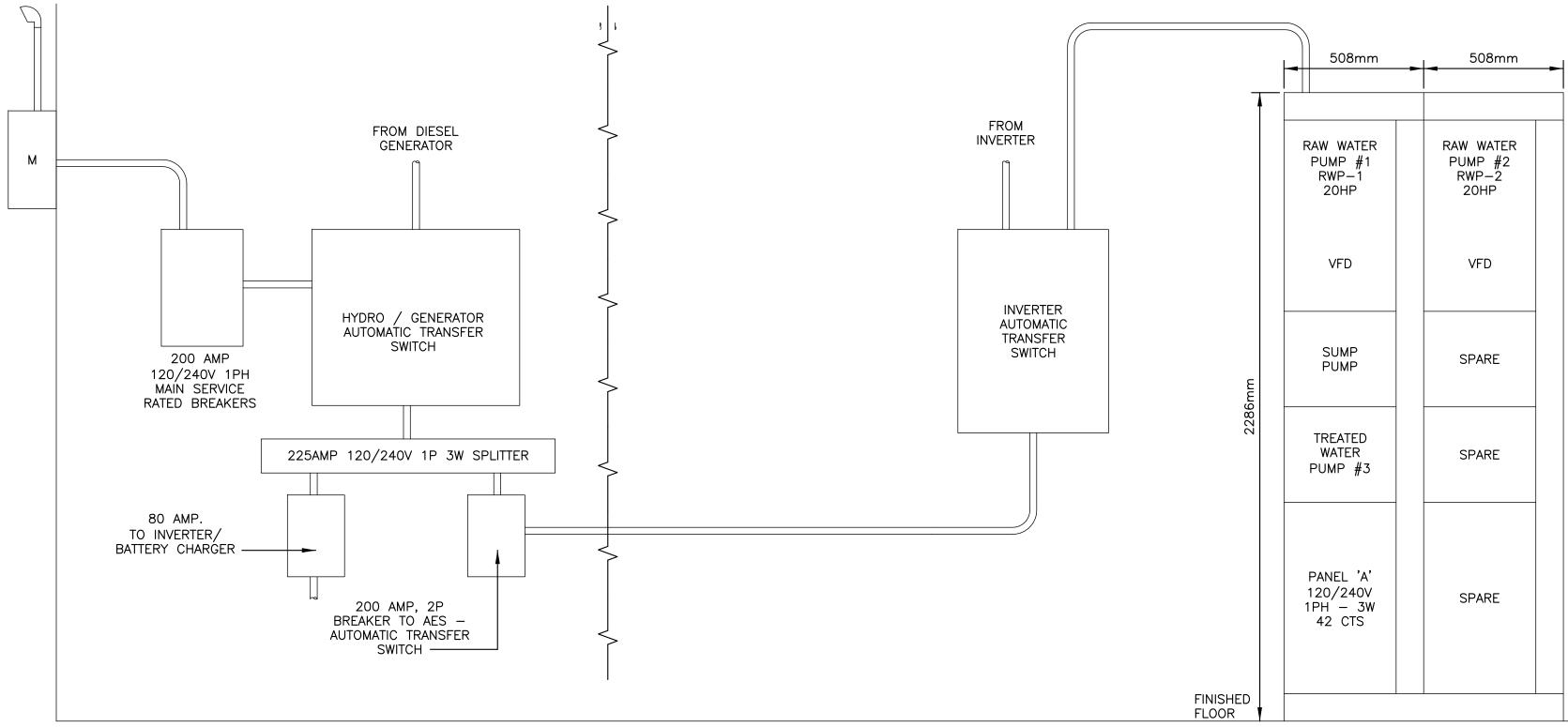


	F	PUMP CON	TROL SCHEDULE
NAME	FUNCTION	POWER	CONTROL
RWP-1	RAW WATER PUMP #1 & 2	208/3ph 20hp	ON_START BUTTON OF FIRE SITUATION OFF_STOP BUTTON OF FIRE SITUATION ON_START BUTTON OF TRUCKFILL OFF-STOP BUTTON OF TRUCKFILL TANK OFF_HIGH WATER LEVEL SENSOR OF STORAGE TANK
TWP-3	TREATED WATER TAP FILL PUMP	120/1ph 0.5hp	ON AND OFF BY PRESSURE SWITCH
SP	SUMP PUMP	120/1ph 1/3hp	ON AND OFF BY INTEGRAL LEVEL SWITCH

NOTE: ALL PUMPS HAVE HAND-OFF-AUTO CONTROL SWITCH

REFER TO DWG. E4 FOR CONTROL DIAGRAMS.

VALVE CONTROL SCHEDULE							
NAME	CONTROL						
MV1	OPENS WITH FIRE SITUATION START PUSH BUTTON AND CLOSES WITH FIRE SITUATION STOP PUSH BUTTON						
MV2	CLOSES WHEN MV1 OPENS AND OPENS WHEN MV1 CLOSES						
SV1	CLOSES WITH TRUCKFILL START AND OPENS WITH TRUCKFILL STOP OR TIMER						
SV2	OPENS WITH BUCKETFILL START AND CLOSES WITH BUCKETFILL STOP OR TIMER						



ORIGINAL SIGNED BY ENGINEER

NOT TO SCALE:
PANEL FED FROM MULTIPLE SOURCES

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ELECTRICAL PANELS AND ELEVATION

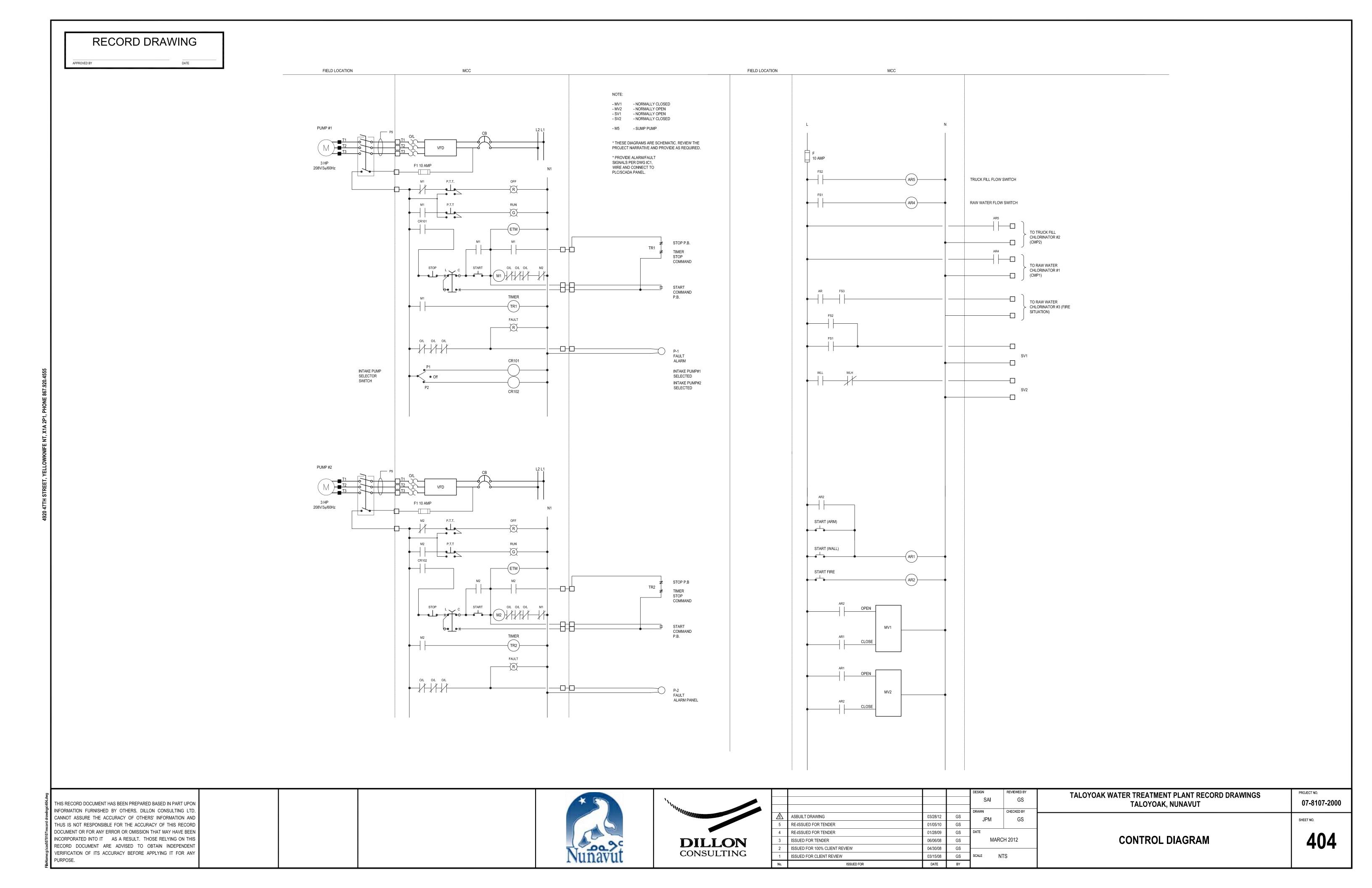
TALOYOAK WATER TREATMENT PLANT RECORD DRAWINGS

TALOYOAK, NUNAVUT

403

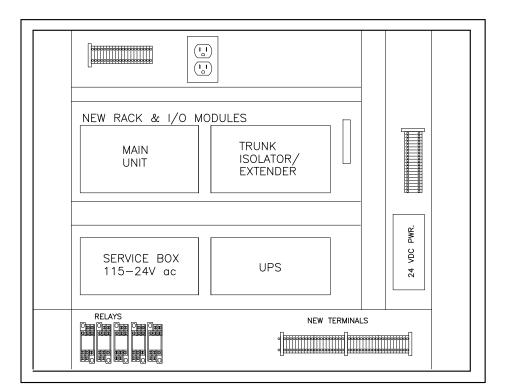
07-8107-2000

SHEET NO.



APPROVED BY

406mm INTAKE PUMPING STATION



PLC PANEL DOOR FRONT VIEW

PLC PANEL INTERIOR

PANEL GENERAL ARRANGEMENT

SCALE: NOT TO SCALE <u>NOTES:</u>

- 1. PANEL SIZE SHALL BE 610mm(H) x 406mm(W) x 118mm(D) (MIN. SIZE).
- 2. PANEL SHALL BE 12 GAUGE STEEL, CSA TYPE 12 SINGLE DOOR, WALL MOUNTED ENCLOSURE WITH GRAY POLYESTER POWDER COATING INSIDE AND OUT STANDARD OF ACCEPTANCE: HOFFMAN A-24N16ALP.
- 3. CONTRACTOR TO PROVIDE DETAIL PANEL DRAWING WITH DIMENSIONS.
- 4. CONTRACTOR TO COORDINATE DETAILS, SIZE AND OPENINGS.
- 5. PROVIDE INPUT MODULES FOR ALARM MONITORING OF THE FOLLOWING (PROVIDE 30% FE SPARE I/O FOR FUTURE:
- RWP1; ON, OFF, ALARM/FAULT
- RWP2; ON, OFF, ALARM/FAULT
- HEAT TRACE #1; ALARM/FAULT
- HEAT TRACE #2; ALARM/FAULT - DIESEL GENERATOR; AUTO, ON, OFF, FAULT
- FUEL TANK; LOW ALARM
- ALL ALARMS (MAJOR & MINOR)

ALARMS

MAJOR ALARM (DIAL OUT)

intake pump failure RWP 1 & 2 LOW BUILDING TEMP POWER OFF - STAND-BY GENERATOR FAIL VERY LOW FUEL HEAT TRACE LOW TEMP RWP 1 & 2

MINOR ALARM (LOCAL ANNUCIATOR ONLY)

HIGH BUILDING TEMP POWER OFF - STAND-BY GENERATOR ON LOW FUEL TEMP HIGH WASTE WATER TANK LEVEL HEAT TRACE GENERAL FAULT GENERATOR GENERAL FAULT

- 6. PROVIDE PLC TO ACCOMMODATE FOR THE ABOVE CAPTIONED INPUT. ACCEPTABLE PLC: CONTROL MICRO SYSTEM (SCADA PACK), SIEMENS(S7-200 SERIES) W10 (DATA PACK) PHOENIX. PROVIDE ALL NÈCESSARY ACCESSORIES ÀS INDICATED INCLUDING POWER SUPPLY, UPS AND MODEM MODULE FOR A COMPLETE SYSTEM.
- 7. PROVIDE A FOUR (4) CHANNEL AUTO DIALER TO DIAL OUT ON ANY MAJOR ALARM/FAULT. PROGRAM AS INSTRUCTIONS AT SITE.
- 8. PROVIDE ONE COPY AND LICENSE OF THE SYSTEM MANUFACTURER'S PROPRIETARY SCADA SOFTWARE AND INSTALL ON THE SCADA COMPUTER.
- 9. PROVIDE A DESKTOP SCADA COMPUTER INCLUDING:
- 19" LCD MONITOR - 500 GB HARD DRIVE
- RECOMMENDATIONS (MIN; CORE II DUO 2QHZ CPU AND 1 GB MEMORY)

- PROCESSOR AND MEMORY ACCORDING TO SCADA MANUFACTURER'S

- DVD Z BURNER - KEYBOARD AND OPTICAL MOUSE
- EXTERNAL US ROBOTICS MODEM
- 10/100 ETHERNET CARD
- OPERATING SYSTEM PER SCADA MANUFACTURER'S RECOMMENDATIONS.

10. SYSTEM TO BE SIMILAR TO CURRENTLY ADVERTISED COMPLETE SYSTEMS BY MAJOR MANUFACTURERS (DELL, HP, ETC.)

11. INSTALL SCADA SÒFTWARE AND TRAIN TWO PEOPLE AS INTRODUCED BY CLIENT.



						CB PLC POWER SUPPLY MODULE PLC 24VDC—EN PLC 24VDC—EN PLC 24VDC POWER ENABLE PLC 14: DI: IMO3 POWER ENABLE REFER TO SPECIFICATIONS AND CEMERAL MOTES:	
						REFER TO SPECIFICATIONS	
	5 4 3 2	ASBUILT DRAWING RE-ISSUED FOR TENDER RE-ISSUED FOR TENDER ISSUED FOR TENDER ISSUED FOR 100% CLIENT REVIEW	03/28/12 01/05/10 01/28/09 06/06/08 04/30/08	GS GS GS GS GS	DESIGN REVIEWED BY SAI GS DRAWN CHECKED BY JPM GS DATE MARCH 2012	TALOYOAK WATER TREATMENT PLANT RECORD DRAWINGS TALOYOAK, NUNAVUT INSTRUMENTATION AND CONTROL	PROJECT NO. 07-8107-2000 SHEET NO.
· [1	ISSUED FOR CLIENT REVIEW	03/15/08	GS	SCALE NTS		

LOCAL CONTROL PANEL

PROGRAMMER

120VAC-EN PLC 120VAC NORMAL POWER FNABI

AUTO DIALER

COMMUNICATION

DIAL IN (MODEM)

TELEPHONE INTERFACE

POWER ENABLE

PANEL#

RECEPTACLE

PANEL LIGHTING

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DATE

FIELD LOCATION

LOCATION

15A

PANEL#

SURGE PROTECTION

> 120 VAC UPS