

# Alternate Measures of Control (AMC) for Fine Screens (2) Confined Space Entries Medium Hazard Atmosphere

City of Penticton AWWTP  
January 13, 2016

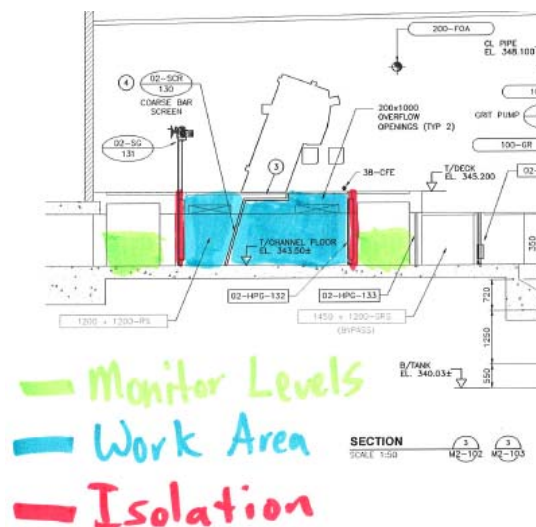
## Alternate Measures Submission Elements:

1. The two confined spaces are rectangular concrete channels that each house fine screen equipment. The channels are 1.2 m wide x 1.7m deep. There are two adjacent concrete channels, the inlet (upstream) channel and the outlet (Downstream) channel. The inlet (Upstream) channel is gravity feed from the Influent screw pumps and is typical of municipal raw wastewater (Typical water level (TWL) 600 mm). The outlet channel (downstream) is gravity feed from downstream of fine screens (TWL 400 mm).
2. The space is isolated by:
  - a. The inlet gravity feed channel has a Armtec 1200mm x 1700mm aluminum in channel mounted gate for each fine screen (2). They were installed in 2012, and are exercised at a minimum annually (no provision for double block and bleed or blanking). Drawing attached. The total head pressure of water from the upstream channel to the bottom of fine screen channel is 700 mm or <1 psi of head pressure
  - b. The outlet gravity feed channels (2) have 1200mm x 1700 mm Armtec in channel mounted hand pull gates. They were installed in 2012 and are exercised at a minimum annually (no provision for double block and bleed or blanking). Drawing attached. The total head pressure of water from the upstream channel to the bottom of fine screen channel is 500 mm or <1 psi of head pressure.
3. Glenn Robertson, CRSP the City's Safety Coordinator 250-490-2553 [glenn.roberston@penticton.ca](mailto:glenn.roberston@penticton.ca) administers the Confined Space program for the City of Penticton. Glenn Robertson and Randy Craig (AWWTP Supervisor) prepared the Alternate Measures and Hazard Identification/Risk Assessment (HIRA). This AMC includes information from Gary Marsden (Op III) and Gord Austrom (Op III), workers health and safety representatives at the AWWTP
4. Hazards to be addressed see the attached HIRA. The characteristic of the water on both the upstream and downstream side is that of typical raw municipal wastewater. No work will be performed that will contribute to the likelihood of material flowing into the space
5. Alternate Measures;

- The analysis of valves as a control measure should assume that all valves leak. However, there is no expectation that a properly installed and maintained valve will fail catastrophically if no work is being performed on it. It is recognized that systems will often permit some leakage; a means of pumping out the fluid will be undertaken.
- Any potential leakage from the upstream gate will be visually checked every 20 minutes by the standby person. The water level in the upstream channel will be continuously monitored with a local audio/visual high level float set to 1.2 m while space is occupied. If the water level rises above 1.2 m the alarm will sound and a light will flash (leaving 500mm of freeboard). The confined space will be evacuated and the issue will be addressed prior to re-entry.



- Any potential leakage from the downstream gate will be visually checked every 20 minutes by the standby person. The water level in the downstream channel will be continuously monitored with a local audio/visual high level float set to 1.2 m while space is occupied, if the water level rises above 1.2 m the alarm will sound and light will flash (leaving 500mm of freeboard) and the confined space will be evacuated and the issue will be addressed prior to re-entry.
  - See medium hazard entry procedure for ventilation and atmospheric monitoring requirements
  - Communication will be verbal between worker and stand-by person. The stand-by person will have radio and cell phone contact
  - See attached emergency procedures
6. Workers will be orientated to this AMC and required to sign off on their orientation
  7. AMC will be supervised by AWWTP Supervisor and regular visits documented
  8. Time frame that the AMC is needed is 3 years, with annual engineering reviews



# PENTAGON ENGINEERING LTD.

142 PENROSE COURT  
PENTICTON, BC, V2A 9B6  
TELEPHONE: (250) 809-9933

E-MAIL: P-ENG@OUTLOOK.COM

Date: January 13, 2016

City of Penticton AWWTP  
459 Waterloo Ave  
Penticton, BC

Via email: randy.craig@penticton.ca

Attention: **Randy Craig**

RE: Penticton AWWTP – Alternate Measures of Control (AMC), Fines Screens (2)

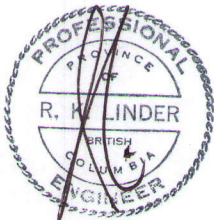
Dear Mr. Craig,

The Armtec gates inlet and outlet are of adequate engineering, construction and maintenance to hold back the head applied to it for the time required to be in the confined space. The analysis of the gate as a control measure assumes that all gates leak. However, there is no expectation that a properly installed and maintained valve will fail catastrophically if no work is being performed on it which these gates are. It is recognized that systems will often permit some leakage; a means of pumping out the fluid should be undertaken. The upstream and downstream water should be continuously monitored and if the level rises too high that space should be evacuated.

Given these facts it is our opinion that the proposed AMC for entering the Fines Screens (2) confined space is adequate. This AMC is adequate for one year and after that time it should be revisited to ensure its adequacy.

**PENTAGON ENGINEERING LTD.**

Per:



Rob Linder, P.Eng.  
**Director**



## CONFINED SPACE ENTRY PROCEDURES & RESCUE PLAN

[< back](#)

### Fine Screens

**Work to be performed or location of confined space**

**Prepared By:** Randy & Gary

**Technical Information By:** Randy & Gary

	Atmospheric Conditions	Details	P			Control Measures	P		
1	Carbon Monoxide (CO)	Vehicles	3	2	C	CO (Carbon monoxide) gas detector - continuous monitoring, Min. 3000 cfm fan in push mode continuous	2	3	C
2	Hydrogen Sulphide (H2S)	Possible sewer gas	3	2	C	H2S (Hydrogen sulfide) gas detector - continuous monitoring, Min. 3000 cfm fan in push mode continuous	2	3	C
9	Oxygen (O2) Deficiency / Enrichment	Decaying matter	3	2	C	continuous, O2 (Oxygen) gas detector - continuous monitoring Min. 3000 cfm fan in push mode continuous	2	3	C
14	Combustible Gases	Possible LEL	3	2	C	LEL (combustible) gas detector - continuous monitoring, Min. 3000 cfm fan in push mode continuous	2	3	C
			Initial				Final		
	Hazards / Exposure	Details	P			Control Measures	P		
35	Engulfment or Immersion Hazards	Close upstream and downstream gates & lock out	3	2	C	Lockout procedures attached. Any potential leakage from the upstream gate will be visually checked every 20 minutes by the standby person. The water level in the upstream channel will be continuously monitored with a local audio/visual high level float set to 1.2 m while space is occupied. If the water level rises above 1.2 m the alarm will sounds and a light will flash (leaving 500 mm of free board). The confined space will be evacuated and the issue will be addressed prior to re-entry. • Any potential leakage from the downstream gate will be visually checked every 20 minutes by the standby person he water level in the downstream channel will be continuously monitored with a local audio/visual high level float set to 1.2 m while space is occupied, if the water level rises above 1.2 m the alarm will sounds and light will flash (leaving 500 mm of free board) and the confined space will be evacuated and the issue will be addressed prior to re-entry.	2	3	C
32	Mechanical / Moving Part Hazards	Lock out fine screen	3	2	C	Lockout procedures attached	2	3	C
50	Overhead / Falling Object Hazards	Hard hat keep area clear of tools	3	2	C	PPE	2	3	C
18	Bio-hazardous Material Contact	Possible exposure to wastewater	3	2	C	Ensure proper PPE is worn and wash up after job	2	3	C



**Area Preparation:**

1. Keep general area clean and tidy
2. Drain and clean both channels prior to entry
3. Isolate and lock out
4. Keep area around channels clear of tools and equipment
5. Install and test hi level audio/visual float switch to alarm at 1.2 m in upstream channel as per Alternate Measures of Control (AMC)
6. Install and test hi level audio/visual float switch to alarm at 1.2 m in downstream channel as per AMC

**Confined Space Entry Procedures - Supplementary Instructions:**

1. Follow Moderate Hazard confined space entry procedures and lock out procedures

**Confined Space Entry Rescue Plan:**

1. Fire hall 911
2. Follow confined space emergency procedure



## CITY OF PENTICTON OPERATIONAL SAFETY PROCEDURE

### AWWTP Moderate Hazard Confined Space Entry Procedure

Works/ Safety Procedures/Confined Spaces

**PURPOSE:** To safely allow workers to enter a Moderate Hazard Confined Space

**PERSONAL** **Eye Protection:** Safety Glasses or Goggles may be required

**PROTECTIVE** **Head Protection:** Hard Hat

**EQUIPMENT:** **Foot Protection:** Steel toed work boots

**Hand Protection:** Work Gloves

**Other:** Coveralls

- PROCEDURES:**
1. Ensure the Hazard Identification/Risk Assessment (HIRA) is completed in order for the work to be performed in the confined space.
  2. Attach lock out procedure. If no procedure is written, see Supervisor. Lock out of adjacent piping without a double block and bleeding or blinding, requires an "Alternate Measure of Control" to be submitted to and approved by Work Safe prior to entering a confined Space
  3. Conduct a tailboard meeting, which includes confirmation that a copy of this procedure is on site, and will be followed. Document the Tailboard meeting
  4. When a confined space requires entry by a worker, each point of access which is not secured against entry must be identified by a sign or other effective means which indicates the hazard and prohibits entry by unauthorized workers.
  5. Ensure high point is used for fall protection and available for rescue. When entering and exiting into a confined space on ladders workers must be hooked up to fall protection.
  6. Fill out the "Confined Space Entry Permit" that is found in the "Confined Space Entry Forms" binder. Have a supervisor sign off on the permit before entering space.
  7. (a) A worker or workers will be assigned as the standby person(s), (b) a standby person must be stationed at or near the entrance to the space, (c) the standby person must visually observe or otherwise check the well-being of the worker(s) inside the space, as often as may be required by the nature of the work to be performed, but at least every 20 minutes, (d) there must be a continuous means of summoning the standby person from inside the space, and (e) the standby person must have a means to immediately summon rescue personnel.
  8. Check Calibration date of gas detectors (must be calibrated within the last 30 days), if calibration is out of date, calibrate gas detectors. Bump test both gas detectors before use. In a well ventilated area ensure gas detectors indicate "Clean Respirable Air" See definition attached.
  9. Testing the atmosphere The pre-entry testing must 1.)be completed not more than

20 minutes before a worker enters a confined space. 2.)When all workers have vacated the confined space for more than 20 minutes, pre-entry testing, must be repeated. 3.)While a worker is inside a confined space with a moderate hazard atmosphere, additional testing must be conducted as necessary to ensure the worker's continuing safety. 4.)Continuous monitoring of the atmosphere must be done. 5.)If a worker enters a confined space with a moderate hazard atmosphere, the employer must continuously monitor the atmosphere if a flammable or explosive atmosphere in excess of 20% of the lower explosive limit could develop. 6.)The test record must show the date and time of the test, the initials of the tester and the levels or condition found. 7.)Test results, other than continuous monitoring results, must be posted without delay at all points of entry to the confined space.

10. (1) A ventilation system for the control of airborne contaminants in a confined space must be designed, installed and maintained in accordance with established engineering principles (2) Ventilation equipment must be located and arranged so as to adequately ventilate every occupied area inside the confined space. (3) If a contaminant is produced in a confined space, it must be controlled at the source by a local exhaust ventilation system if practicable, by general (dilution) ventilation, or by a combination of both. (4) If practicable, a mechanical ventilation system for a confined space must be sufficient to maintain concentrations of airborne contaminants below the applicable exposure limits.

11. Before entering the confined space, fax fire dispatch the confined space notification sheet.

12. Notify the Fire Dispatch when you are finished and out of the confined space.

13. Emergency/Rescue Procedure The procedures outlined above ensure that the atmosphere in the confined space remains a Moderate hazard and, therefore, will not present a risk to the worker(s) in the space. Extrication of a worker from the space may, however, be required if a medical condition prevents the worker from exiting the space on his/her own. To ensure that such an extrication can be performed effectively and without undue delay in the provision of needed medical assistance, the following requirements must be met: • Emergency equipment (tripod or retrieval device and line) will be set up appropriately during all confined space space entry/work; and • The worker(s) in the space will wear a retrieval harness If a worker (conscious or unconscious) inside a confined space requires extrication, the standby worker will use the tripod or retrieval device to effect extrication of the worker(s). In addition the standby worker is responsible for ensuring that appropriate emergency and medical aid has been summoned (call 911). If, for any reason, the standby worker is unable to successfully perform the extrication, the fire department should be called (911). He/she must inform the fire department personnel: • That medical assistance has been summoned; • Whether the gas detector is functioning properly and if it shows Clean Respirable Air inside the space (top, middle and bottom); • That continuous ventilation is being provided

**REFERENCES:** Lock out procedures, HIRA and Confined space program. Worksafe BC Part 9 Confined Spaces

**TOOLS:**

Ventilator  
Gas Detectors (2)  
Cell Phone and 2 way radios  
Hi point  
2 Safety Winches  
2 Fall protection Body Harnesses

**MATERIALS:**

Definitions:

"moderate hazard atmosphere" means an atmosphere that is not clean respirable air but is not likely to impair the ability of the worker to escape unaided from a confined space, in the event of a failure of the ventilation system or respirator.

"clean respirable air" when used to describe the atmosphere inside a confined space, means an atmosphere which is equivalent to clean, outdoor air and which contains

- (a) about 20.9% oxygen by volume,
- (b) no measurable flammable gas or vapour as determined using a combustible gas measuring instrument, and
- (c) no air contaminant in concentrations exceeding either 10% of its applicable exposure limit in Part 5 (Chemical Agents and Biological Agents) or an acceptable ambient air quality standard established by an authority having jurisdiction over environmental air standards, whichever is greater;

<b>Developed by:</b> Operations/Waste Water Treatment <b>Development Team:</b> Randy Craig, Gary Marsden, Gord Austrom	
<b>Reviewed By:</b> Glenn Robertson - Safety Coordinator	<b>Approved By:</b> Randy Craig - Supervisor
<b>Originated Date:</b> 10/01/2006	<b>Last Modified:</b> 13/01/2016







## CITY OF PENTICTON OPERATIONAL SAFETY PROCEDURE

### AWWTP Confined Space Emergency Procedure

Program, Safety/Confined Space

**PURPOSE:** To direct staff in the event of a confined space emergency

**PERSONAL PROTECTIVE EQUIPMENT:**  
**Head Protection:** Hardhat  
**Foot Protection:** Steel Toed Boots  
**Hand Protection:** Work Gloves  
**Other:** Coveralls

**PROCEDURES:**

1. If, at any time during a confined space entry, the worker is incapacitated for any reason and can not leave the confined space, the stand-by worker immediately summons 911, with the plant cell phone. The stand-by person informs the other staff members by 2 way radios of the situation so that plant personel can be used to assist.
2. Inform the 911 where exactly you are and that this is a confined space emergency. If the confined space is at the Wastewater Plant, get another worker to meet the Fire dept. at the plant gates.
3. If, at any point, the atmosphere contaminants are at a level to trip the alarm on the gas detectors or any adjacent channel hi level alarm, the worker must be removed from the confined space by immediately winching the worker out. If the worker is unable to be winched out due to entanglement, the worker is allowed to unhook the life line and climb out. If the worker cannot do that, or is unconscious, the stand-by worker should move the ventilation discharge as close to the workers head as possible and wait for the Fire Dept.
4. If a worker has been injured in a confined space, and the atmosphere is O.K., then leave the worker where they are, **DO NOT MOVE THEM UNLESS THE ATMOSPHERE CHANGES.** The Stand-by worker can hook onto the second safety winch, as long as another worker comes out to act as the Stand-by person, and enter the confined space to give first aid if it is needed. Otherwise, wait for the Fire Dept. to arrive.

**REFERENCES:** City of Penticton Confined Space Policy

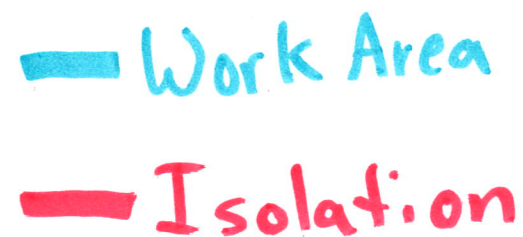
**TOOLS:**

Ventilator  
 GFI  
 Gas Detector  
 Cell Phone  
 Uni-Hoist or Tripod  
 2 Safety Winches  
 2 Fall protection Body Harnesses  
 2 way radios



**MATERIALS:**

<b>Developed by:</b> Operations/Waste Water Treatment	
<b>Development Team:</b> Randy Craig, Gord Austrom, Gary Marsden	
<b>Reviewed By:</b> Glenn Robertson - Safety Coordinator	<b>Approved By:</b> Randy Craig - Supervisor
<b>Originated Date:</b> 03/01/2005	<b>Last Modified:</b> 13/01/2016



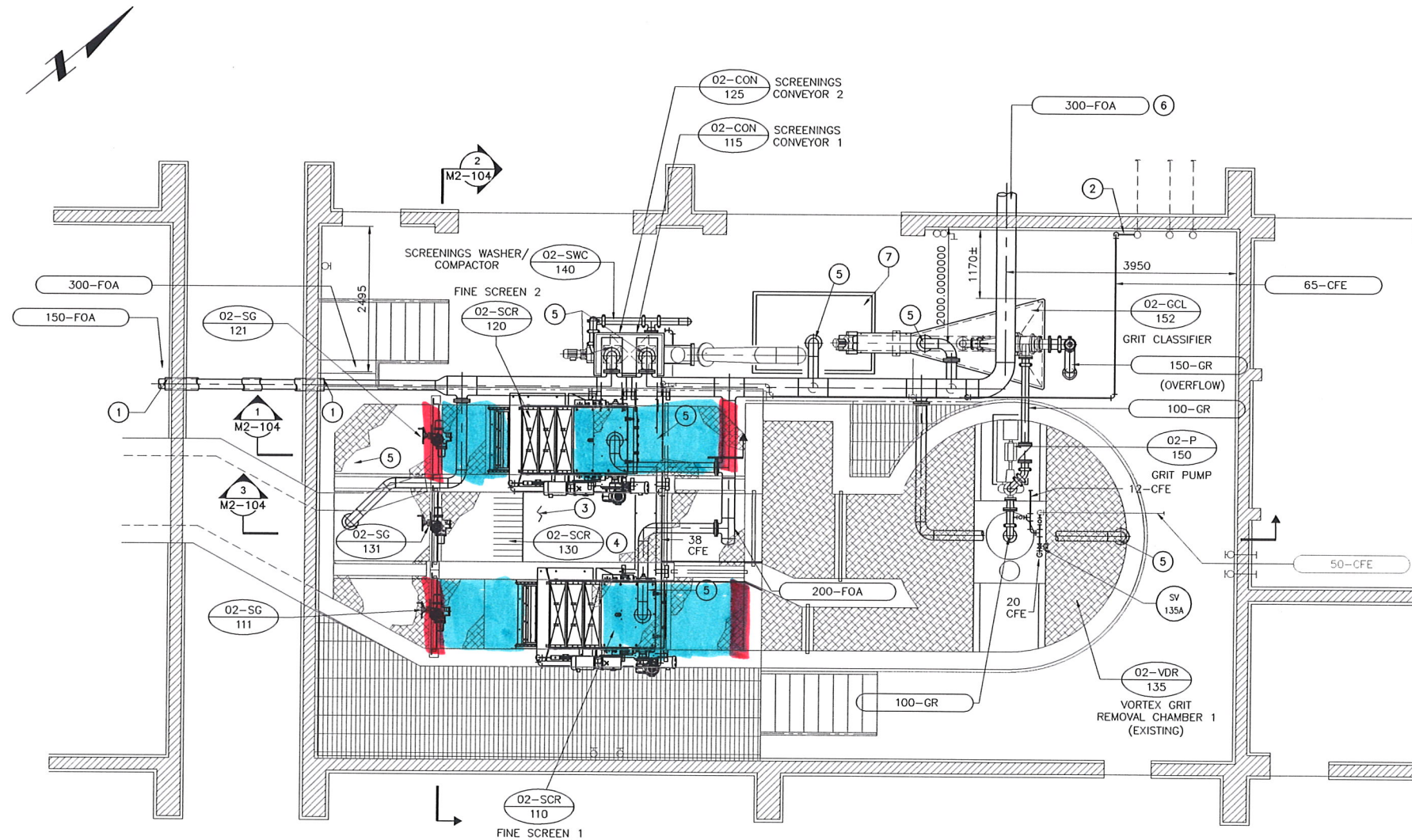


1. WHEREVER POSSIBLE SMALL BORE UTILITY PIPING HAS BEEN ILLUSTRATED ON THIS DRAWING. DUE TO THE SIZE NOT ALL VALVES AND FITTINGS HAVE BEEN SHOWN, REFER TO THE CORRESPONDING PROCESS AND INSTRUMENTATION DIAGRAM FOR DETAILS.

CITY OF PENTICTON AAWWTP UPGRADE PENTICTON, B.C.		PREPARED BY: 		PREPARED FOR: 		DRN BY: K/JW			
PROCESS MECHANICAL INFLUENT SCREENS		Suite 321, 3275 LAKESHORE ROAD, KELOWNA, BC, CANADA V1W 3S9 250/622-3727				DES BY: PG			
GENERAL ARRANGEMENT - CHANNEL LEVEL						CHK BY: LN		2 RECORD DRAWING 1 ISSUED FOR CONSTRUCTION 0 ISSUED FOR TENDER	
						APP BY: KM		REV DESCRIPTION	
PROJECT START DATE (M/Y)		APRIL 2008							
PROJECT NO.		102949							
FILENAME M2-102.dwg									
SHEET NO.									
DRAWING NO.		M2-102							
								C/JW KM K/JW LN REV DATE (Y/M/D)	



Plotted By: millercj  
Plot File Date Created: Aug/06/2013 10:58 AM  
Layout-Sheet Name: M2-103  
Filename: L:\WORK\102000\102049\02A-CAD\WAT\DETAIL DESIGN\6-PROCESS MECH\M2-103.DWG



— Work Area  
— Isolation

MEZZANINE LEVEL PLAN  
SCALE 1:50

#### KEY NOTES

- 25mm INSULATION C/W ALUMINUM JACKET EXPOSED FOA DUCTING, SEAL END WATERTIGHT 150mm FROM INSIDE FACE OF WALL.
- CONNECT 65-CFE TO EXISTING 100mm CFE PIPE, C/W ISOLATION VALVE.
- REMOVABLE CHECKERED PLATE OVER COARSE BAR SCREEN, C/W RECESSED POCKET LIFTING HANDLES.
- COARSE BAR SCREEN, SEE DETAIL A/M2-104.
- 150mm FOA BRANCHES C/W BALANCING VALVE, SEE DRAWING M2-103. ALL FOA AIR DUCTING AND ACCESSORIES (FOA) INSIDE BUILDING TO BE 18 GA 316L STAINLESS STEEL (TYP).
- 300-FOA PIPE TO PRIMARY CLARIFIERS, FOR CONTINUATION SEE DRAWING M12-102.
- SCREENINGS BIN.

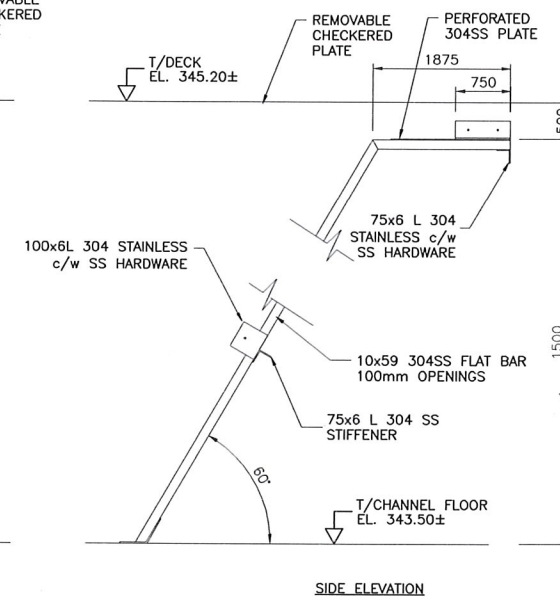
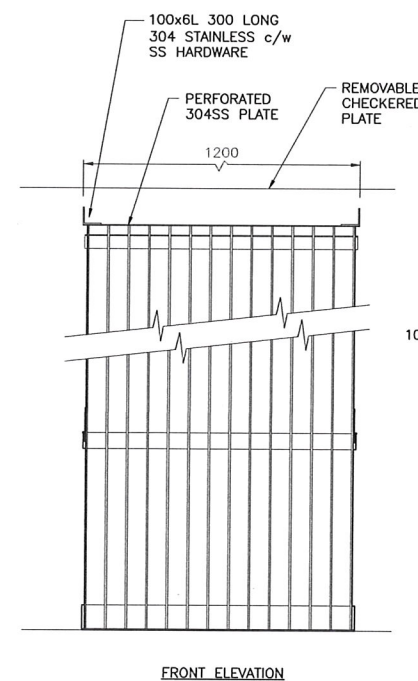
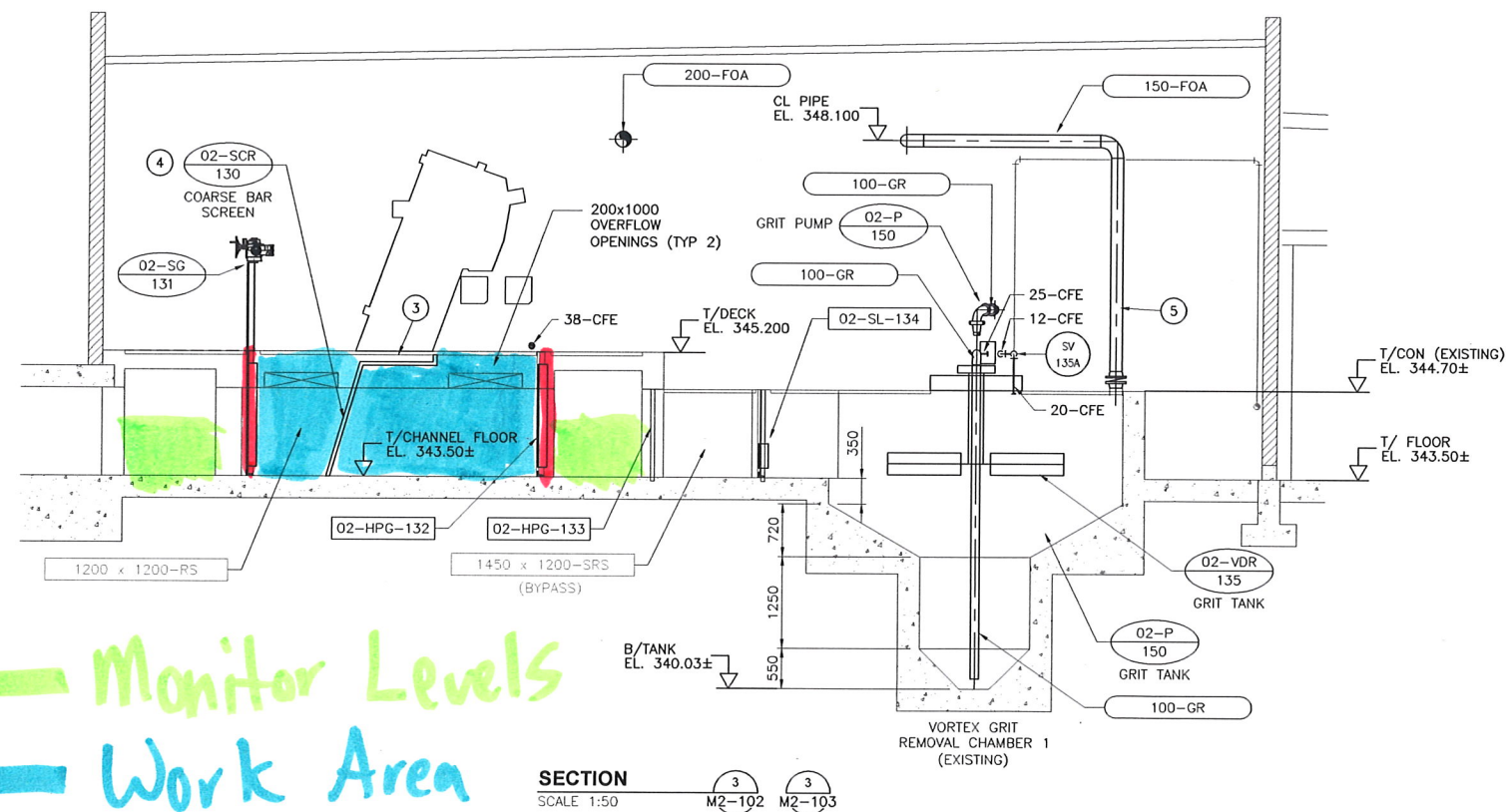
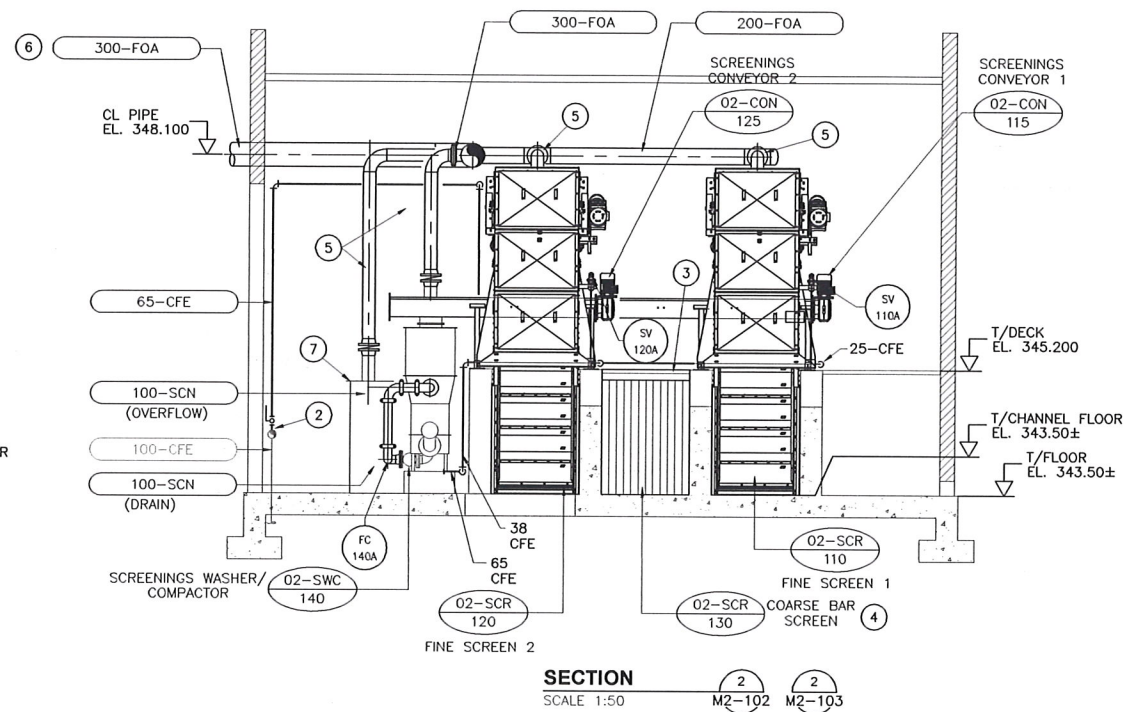
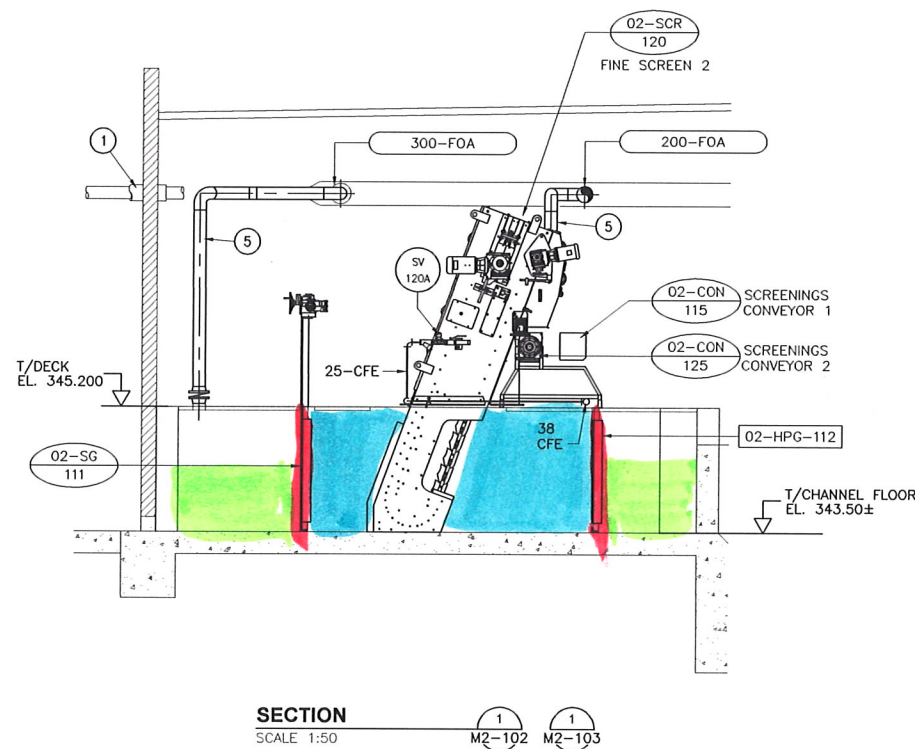
#### GENERAL NOTES

- WHEREVER POSSIBLE SMALL BORE UTILITY PIPING HAS BEEN ILLUSTRATED ON THIS DRAWING. DUE TO THE SIZE NOT ALL VALVES AND FITTINGS HAVE BEEN SHOWN, REFER TO THE CORRESPONDING PROCESS AND INSTRUMENTATION DIAGRAM FOR DETAILS.
- INSTALL CHECKERED PLATE OVER CHANNELS AS REMOVABLE SECTIONS LIFTABLE BY AN OPERATOR.

NOTICE:  
AS-CONSTRUCTED DIMENSIONS, MEASUREMENTS AND OTHER DETAILS CONTAINED IN THIS RECORD DRAWING HAVE BEEN OBTAINED BY AECOM CANADA LTD. ("AECOM") FROM VARIOUS SOURCES. SUCH INFORMATION REPRESENTS THE BEST INFORMATION AVAILABLE TO AECOM AT THE TIME OF PREPARATION OF THIS RECORD DRAWING. AECOM DOES NOT IN ANY WAY REPRESENT OR WARRANT THAT SUCH INFORMATION IS ACCURATE AND ASSUMES NO RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS CONTAINED THEREIN.

CITY OF PENTICTON AWWTP UPGRADE PENTICTON, B.C.		PROJECT START DATE (M/Y) APRIL 2008	
PROCESS MECHANICAL INFLUENT SCREENS		PROJECT NO. 102949	
GENERAL ARRANGEMENT - MEZZANINE LEVEL		FILENAME M2-103.dwg	
		SHEET NO.	
		DRAWING NO. M2-103	
PREPARED BY: AECOM Suite 201, 3275 LAKESHORE ROAD, KELOWNA, BC, CANADA V1W 3S9 250-762-3727		DRN BY: KJW	
		DES BY: PG	
		CHK BY: LN	
		APP BY: KM	
		REV	
		DESCRIPTION	
		20130809	
		20090831	
		20090525	
		DATE (Y/M/D)	





- ## KEY NOTES

- ① 25mm INSULATION C/W ALUMINUM JACKET EXPOSED FOA DUCTING, SEAL END WATERTIGHT 150mm FROM INSIDE FACE OF WALL.
- ② CONNECT 65-CFE TO EXISTING 100mm CFE PIPE, C/W ISOLATION VALVE.
- ③ REMOVABLE CHECKERED PLATE OVER COARSE BAR SCREEN, C/W RECESSED POCKET LIFTING HANDLES.
- ④ COARSE BAR SCREEN, SEE DETAIL A/M2-104.
- ⑤ 150mm FOA BRANCHES C/W BALANCING VALVE, SEE DRAWING M2-103. ALL FOA AIR DUCTING AND ACCESSORIES (FOA) INSIDE BUILDING TO BE 18 GA 316L STAINLESS STEEL (TYP).
- ⑥ 300-FOA PIPE TO PRIMARY CLARIFIERS, FOR CONTINUATION SEE DRAWING M2-102.
- ⑦ SCREENINGS BIN.

## GENERAL NOTES

1. WHEREVER POSSIBLE SMALL BORE UTILITY PIPING HAS BEEN ILLUSTRATED ON THIS DRAWING. DUE TO THE SIZE NOT ALL VALVES AND FITTINGS HAVE BEEN SHOWN, REFER TO THE CORRESPONDING PROCESS AND INSTRUMENTATION DIAGRAM FOR DETAILS.

Plotted By: millercj  
Plot File Date Created: Aug/08/2013 10:58 AM  
Layout-Sheet Name: M2-104  
Filename: L:\WORK\102000\102949\02A-CAD\WAT

Plotted By: millercj  
Plot File Date Created: Aug/08/2013 10:58 AM

Plot File Date Created: Aug/01  
Layout-Sheet Name: M2-104



Layout-Sheet Name: M2-104  
 Filename: L:\WORK\102000\102949\02A-CAD\WAT\DETAIL DESIGN\6-PROCESS MECH\M2-104.DWG

- Monitor Levels
- Work Area
- Isolation

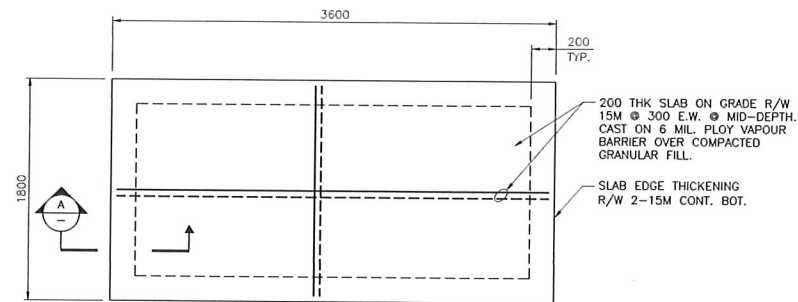
## — Work Area

## — Isolation

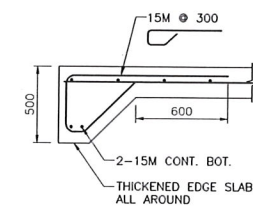
**NOTICE:**  
AS-CONSTRUCTED DIMENSIONS, MEASUREMENTS AND OTHER DETAILS CONTAINED IN THIS RECORD DRAWING HAVE BEEN OBTAINED BY AECOM CANADA LTD. ("AECOM") FROM VARIOUS SOURCES. SUCH INFORMATION REPRESENTS THE BEST INFORMATION AVAILABLE TO AECOM AT THE TIME OF PREPARATION OF THIS RECORD DRAWING. AECOM DOES NOT IN ANY WAY REPRESENT OR WARRANT THAT SUCH INFORMATION IS ACCURATE AND ASSUMES NO RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS CONTAINED THEREIN.

<p><b>CITY OF PENTICTON</b>  <b>AWWTP UPGRADE</b>  <b>PENTICTON, B.C.</b></p>		<p><b>PREPARED BY:</b>            Suite 201, 3275 LAKESHORE ROAD,          KELOWNA, BC, CANADA          V2Y 6Z5          250-762-3727</p>		<p><b>PREPARED FOR:</b>  </p>		<p><b>DRN BY:</b> KJW</p> <p><b>DGS BY:</b></p> <p><b>CHK BY:</b> PG</p>		<p><b>2013/08/09</b></p>	
<p><b>PROJECT START DATE (M/Y)</b>          APRIL 2008</p>		<p><b>PROJECT NO.</b>          102949</p>		<p><b>FILENAME</b>          M2-104.dwg</p>		<p><b>SHEET NO.</b></p>		<p><b>DRAWING NO.</b>  <b>M2-104</b></p>	
<p><b>PROCESS MECHANICAL</b>  <b>INFLUENT SCREENS</b>  <b>SECTIONS AND DETAILS</b></p>		<p><b>2</b></p>		<p><b>RECORD DRAWING</b></p>		<p><b>2009/08/31</b></p>		<p><b>2009/05/25</b></p>	
<p><b>DESCRIPTION</b></p>		<p><b>1</b></p>		<p><b>ISSUED FOR CONSTRUCTION</b></p>		<p><b>PTL</b></p>		<p><b>CHK</b></p>	
<p><b>0</b></p>		<p><b>ISSUED FOR TENDER</b></p>		<p><b>KJW</b></p>		<p><b>CHK</b></p>		<p><b>DATE (Y/M/D)</b></p>	

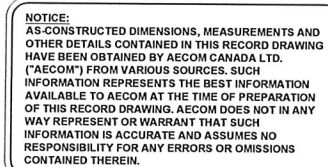




**ODOUR CONTROL SYSTEM CONCRETE PAD**  
SCALE 1:25



**SECTION**  
SCALE : 1:20

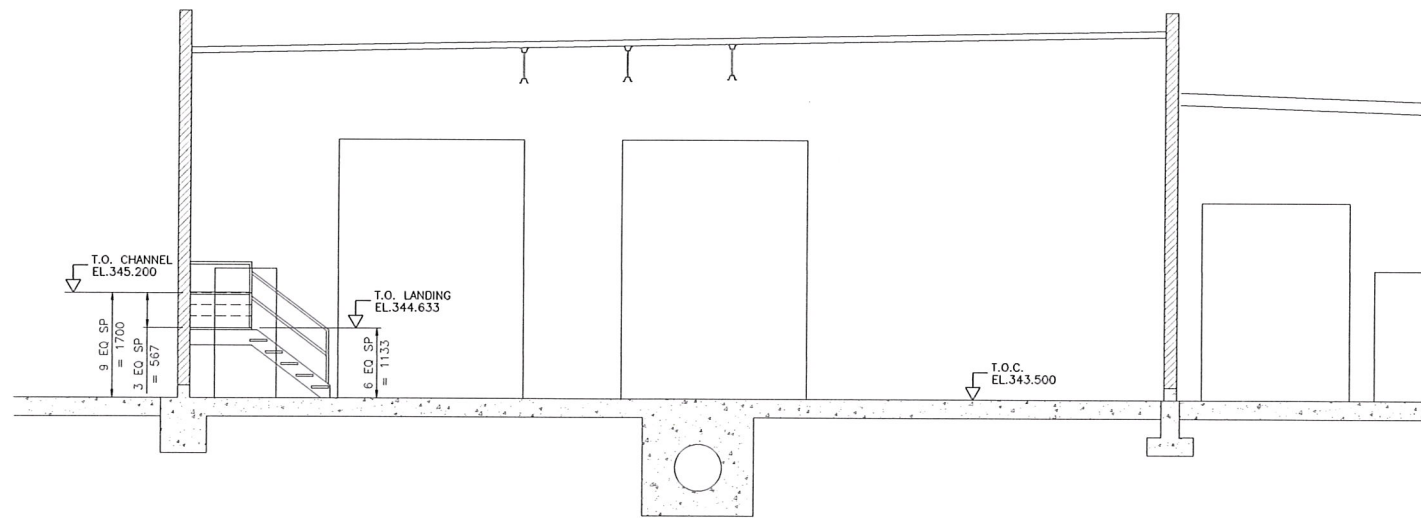


**MEZZANINE FLOOR PLAN**  
SCALE 1:50

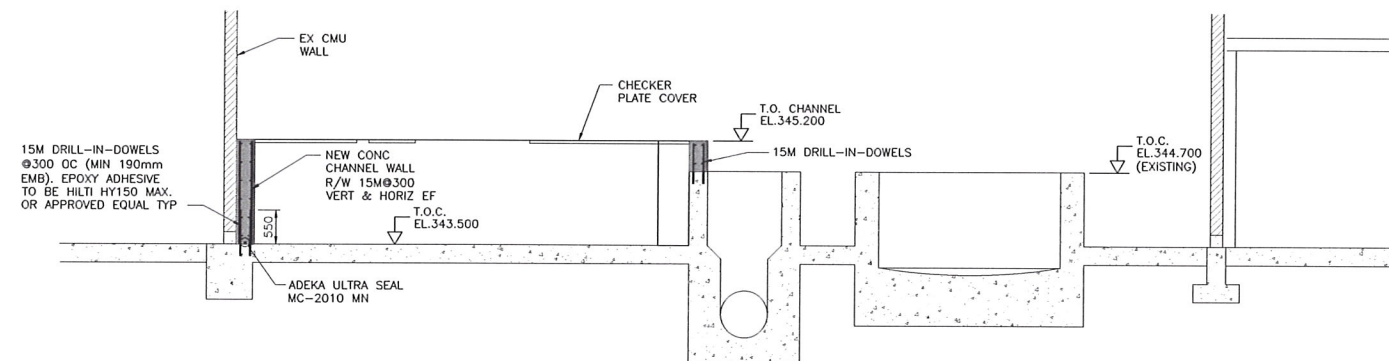
<p><b>CITY OF PENTICTON AWWTP UPGRADE PENTICTON, B.C.</b></p>		<p>PROJECT START DATE (M/Y) APRIL 2009</p>	
<p><b>STRUCTURAL HEADWORK BUILDING CHANNEL AND MEZZ. FLOOR PLAN</b></p>		<p>PROJECT NO. 102949</p>	
<p>FILENAME 120949-S2-101.dwg</p>		<p>SHEET NO.</p>	
<p>DRAWING NO.</p>		<p>S2-101</p>	

Plotted By: millercj  
Plot File Date Created: Aug/08/2013 10:45 AM  
Layout-Sheet Name: S2-101  
Filename: L:\WORK\1022000\102949\02A-CAD\WAT\DETAIL DESIGN\4-STRUCT\102949-S2-101.DWG

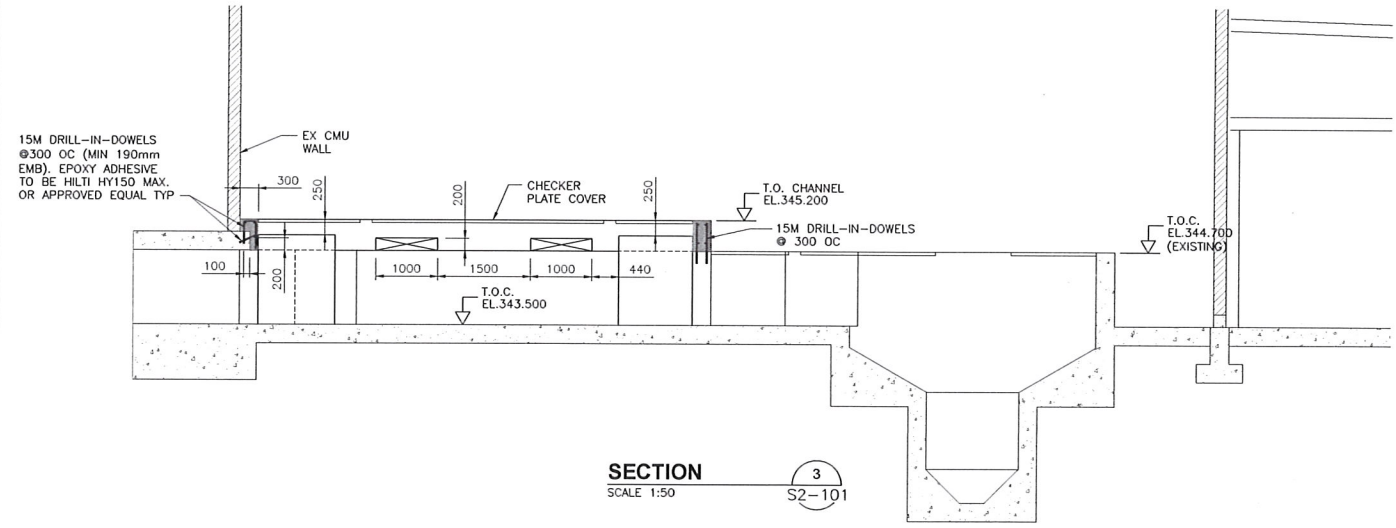
Plotted By: railersj  
Plot File Date: Created: Aug/08/2013 10:45 AM  
Layout-Sheet Name: S2-102  
Filename: L:\WORK\102949\02A-CAD\WAT DETAIL DESIGN\4-STRUCT\102949-S2-102.DWG



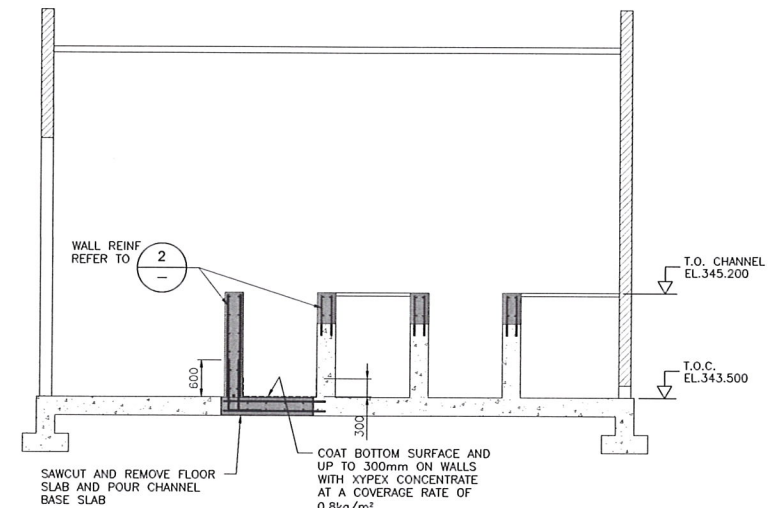
SECTION 1  
SCALE 1:50  
S2-101



SECTION 2  
SCALE 1:50  
S2-101



SECTION 3  
SCALE 1:50  
S2-101



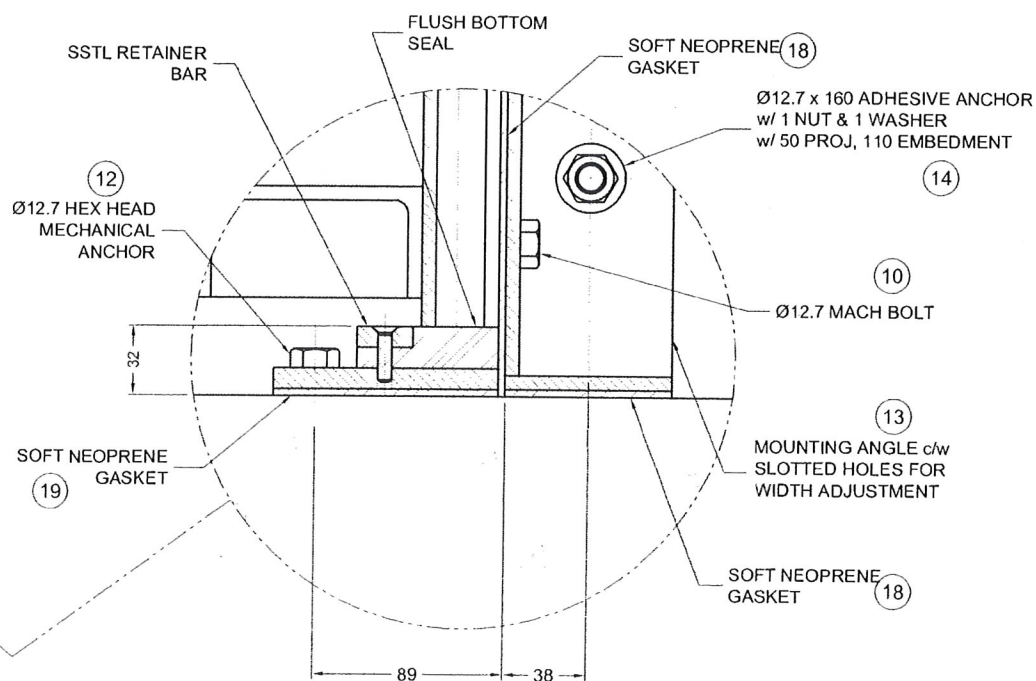
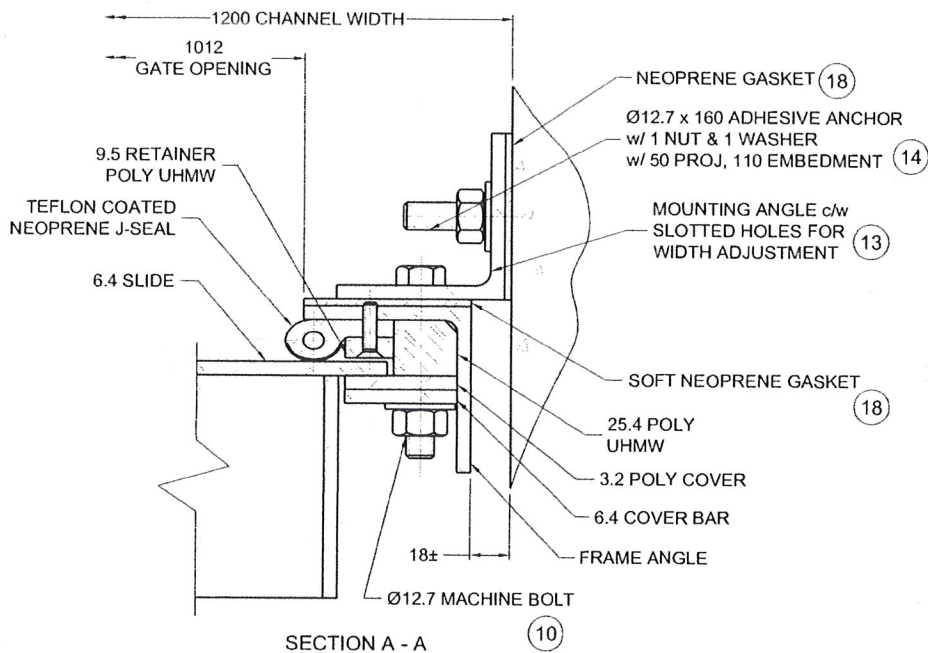
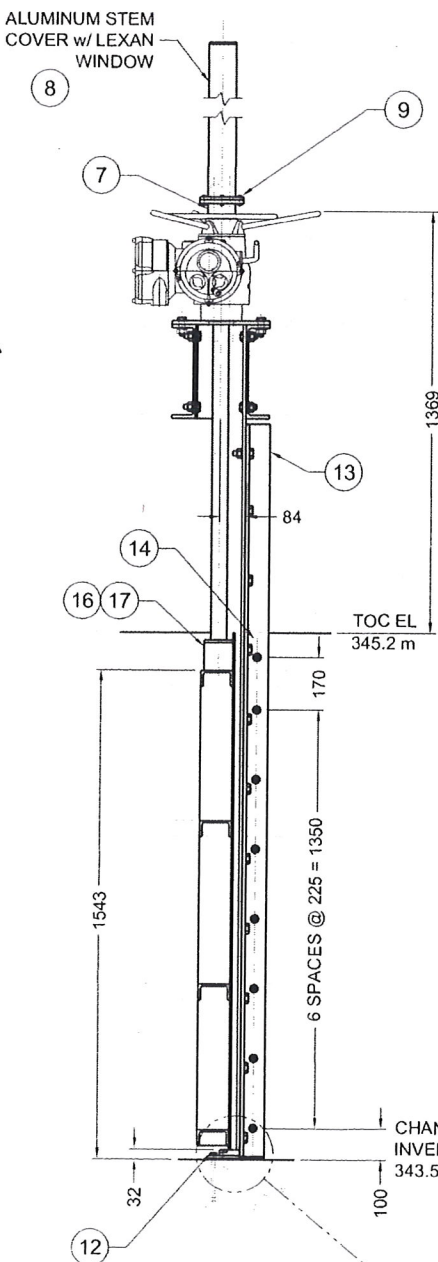
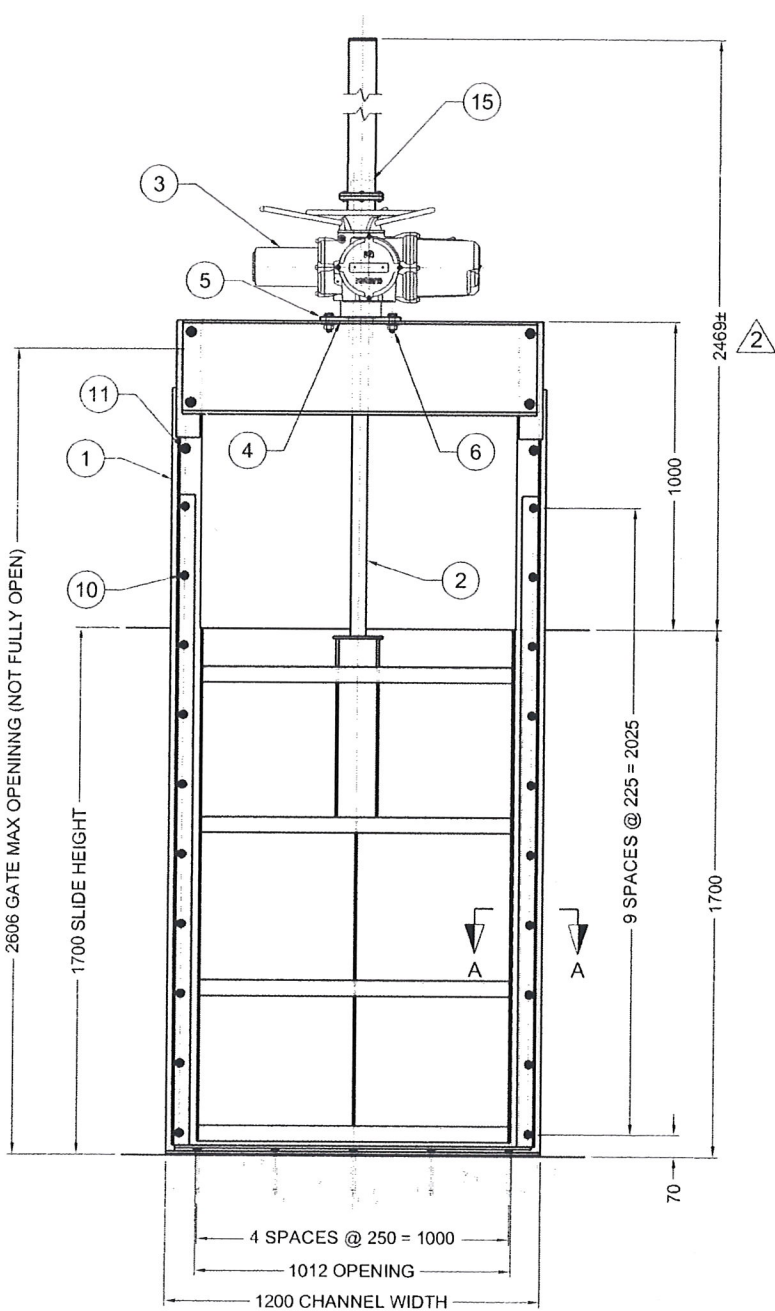
SECTION 4  
SCALE 1:50  
S2-101

NOTICE:  
AS-CONSTRUCTED DIMENSIONS, MEASUREMENTS AND OTHER DETAILS CONTAINED IN THIS RECORD DRAWING HAVE BEEN OBTAINED BY AECOM CANADA LTD. ("AECOM") FROM VARIOUS SOURCES. SUCH INFORMATION REPRESENTS THE BEST INFORMATION AVAILABLE TO AECOM AT THE TIME OF PREPARATION OF THIS RECORD DRAWING. AECOM DOES NOT IN ANY WAY REPRESENT OR WARRANT THAT SUCH INFORMATION IS ACCURATE AND ASSUMES NO RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS CONTAINED THEREIN.

CITY OF PENTICTON AWWTP UPGRADE PENTICTON, B.C.		STRUCTURAL HEADWORK BUILDING BUILDING SECTIONS	
PREPARED BY: AECOM		PROJECT START DATE (M/Y) APRIL 2008	
Sue 201, 3275 LAKESHORE ROAD, VICTORIA, BC CANADA 250-762-3727		PROJECT NO. 102949	
		FILENAME 102949-S2-102.dwg	
		SHEET NO.	
		DRAWING NO. S2-102	
PREPARED FOR: THE CITY OF Penticton		RECORD DRAWING 20130809	
		ISSUED FOR CONSTRUCTION 20080831	
		ISSUED FOR TENDER 20080525	
		REV 0	
		DESCRIPTION	
		DATE (Y/M/D)	
		CHK	
		DL	
		KJM	
		PTL	
		CJM	
		DES BY:	
		BA	
		CHK BY:	
		HL	
		APP BY:	
		KJM	
		REV	



ACTUATOR INFO:  
- ROTORK IQ SERIES  
- MODEL IQ20 FA14Z3  
- 43 R.P.M. OUTPUT (FINAL)  
- INPUT SUPPLY VOLTAGE: 480/3/60  
- OUTPUT CONTROL VOLTAGE: 120VAC  
- OPEN-CLOSE  
- WIRING DIAGRAM 3000-901  
- TRAVEL SPEED: 273 mm/min  
- OPENING TIME ONE WAY: 3.35 min (NOT FULLY OPEN)  
- OPERATING TEMPERATURE TO -40°C TO +60°C  
- TOP HANDWHEEL  
- PROFIBUS SINGLE CHANNEL  
- WEATHER TIGHT ENCLOSURE



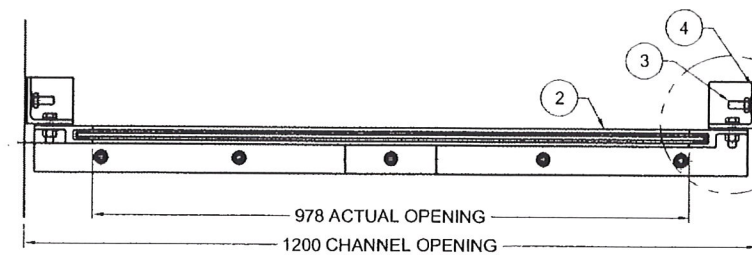
# BILL OF MATERIAL

NO.	QTY	DESCRIPTION	MATL	WT.	PART/DWG NO.
1	1	GATE ASSEMBLY	AI	112.0	09-1097706-086
2	1	Ø50.8 STEM x 1635 LG	303SS	26.0	09-1097706-091
3	1	ROTORK IQ20 SERIES		52.2	
4	4	Ø15.9 x 38 FLAT HEAD BOLT	304SS	0.3	ABM16038SF
5	1	LIFT MOUNTING PLATE	304SS	8.2	09-1097706-095
6	4	Ø19.1 x 51 MACHINE BOLT w/ 1 NUT AND 1 WASHER	304SS	1.5	ABM19051S0
7	1	STEM COVER ADAPTOR (3" NPT)	304SS	1.7	ACFT076000
8	1	STEM COVER (1067 LG)	AI	2.5	ACTA182900
9	4	Ø9.5 x 32 MACHINE BOLT w/ 1 NUT AND 1 WASHER	304SS	0.2	ABM10032S0
10	20	Ø12.7 x 76 MACHINE BOLT w/ 1 NUT AND 1 WASHER	304SS	3.1	ABM13076S0
11	2	Ø12.7 x 51 MACHINE BOLT w/ 1 NUT AND 1 WASHER	304SS	0.4	ABM13051S0
12	5	Ø12.7 x 121 HEX HEAD MECH ANCHOR	304SS	0.8	ABQ13121SH
13	2	MOUNTING ANGLE	AI	11.5	09-1097706-092
14	16	Ø12.7 x 160 ADHESIVE ANCHOR w/ 1 NUT AND 1 WASHER	304SS	4.4	ABD13160S0
15	1	Ø50.8 STOP NUT	AI	0.3	ALUS510000
16	1	121 x 121 x 111 STEM BLOCK	BRZ	11.3	AR121BBTRH
17	1	Ø15.9 x 127 MACHINE BOLT	304SS	0.1	ABM16127S0
18	1	9.5 x 76 x 11200 LG NEOPRENE	RUBB	2.4	AK07609040
19	1	9.5 x 102 x 1300 LG NEOPRENE	RUBB	0.4	AK10209040

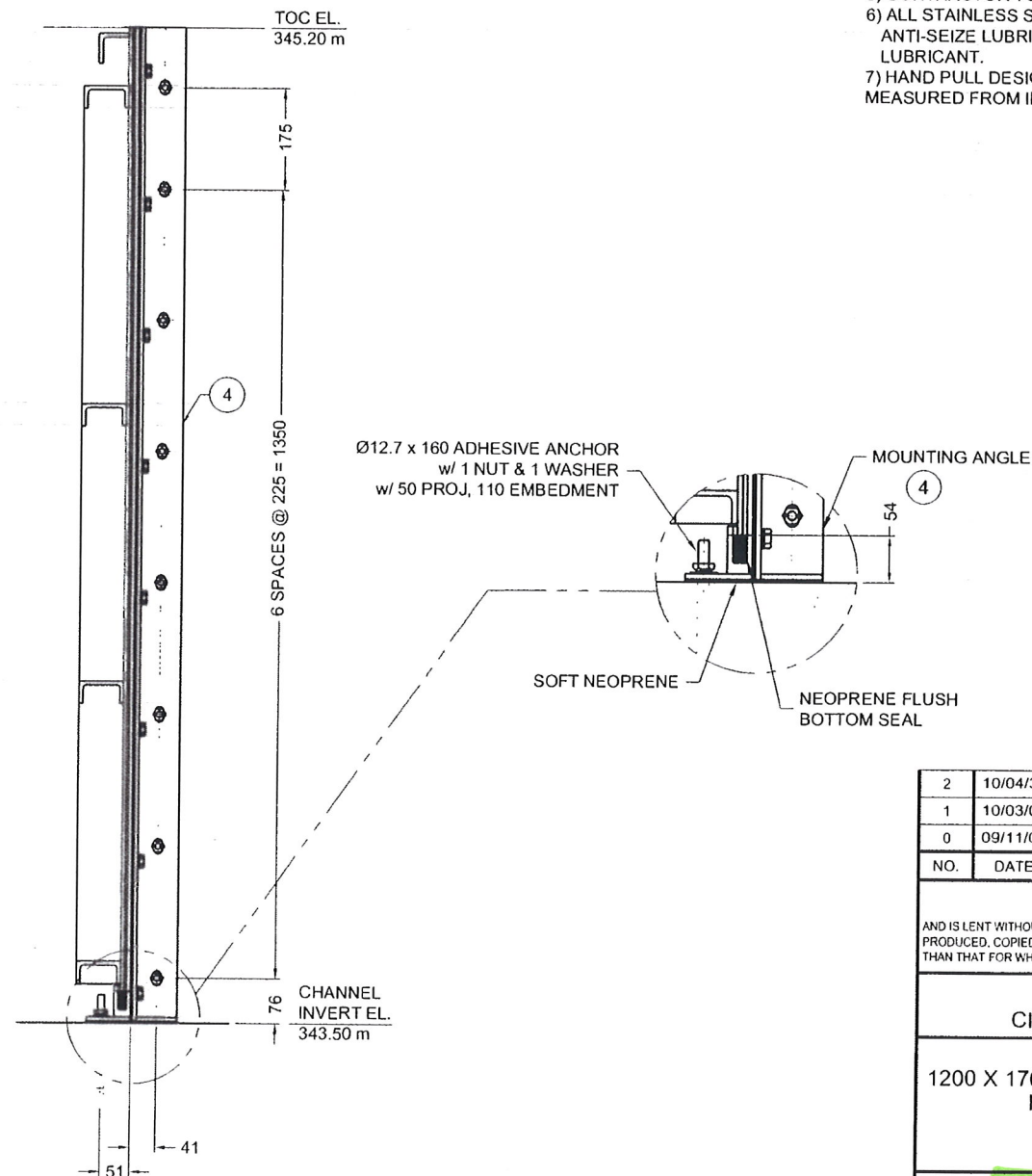
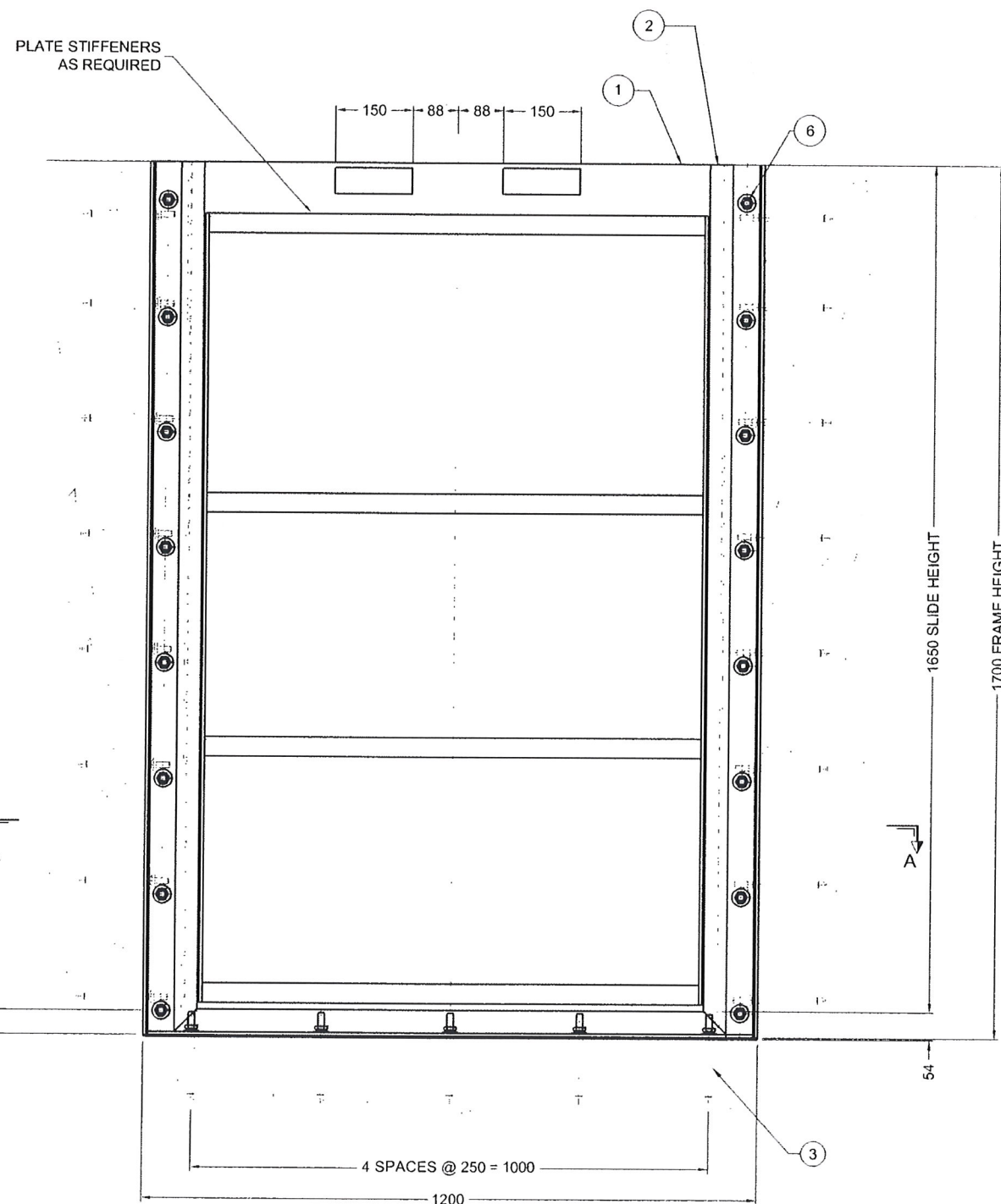
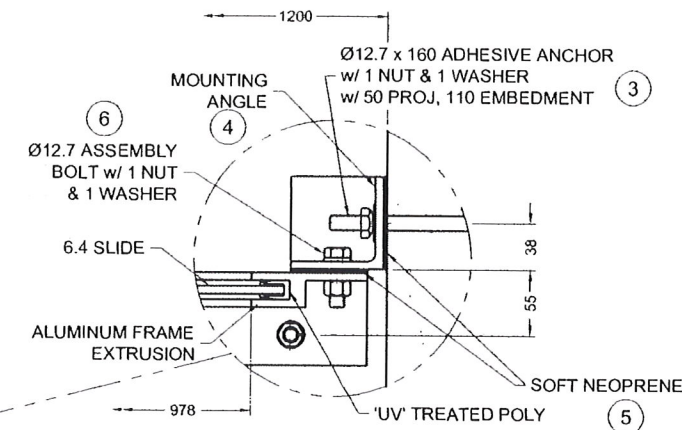
- NOTES:
- 1) ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE
  - 2) SEE MANUAL G-1900-1 FOR INSTALLATION AND ADJUSTMENT INSTRUCTIONS
  - 3) STEM THREAD - MODIFIED SINGLE ACME RIGHT HAND, 4 THREADS PER 25.4 mm STEM MATERIAL - STAINLESS STEEL 303
  - 4) DO NOT SCALE DRAWING
  - 5) GATE OPENS WHEN OPERATOR IS TURNED COUNTER-CLOCKWISE
  - 6) PROPER INSTALLATION OF THE ANCHOR BOLTS IS THE RESPONSIBILITY OF THE CONTRACTOR
  - 7) ALL ANCHOR BOLT PROJECTIONS ASSUME NO GROUT
  - 8) CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS
  - 9) MATERIAL:
    - FASTENERS: 304SS - STAINLESS STEEL ASTM F593, F594 TYPE 304
    - PLATES: ALUMINUM ASTM B-209, ALLOY 6061 T-6
    - GATE: AL - STRUCTURALS 6061-T6
    - SEALS: RUBBER - NEOPRENE ASTM D2000
    - POLY: ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE (UHMW PE)
    - GASKET: SOFT SC41 NEOPRENE SPONGE PSA-1S ASTM D1056-67
  - 10) ALL PAINTED SURFACES SUPPLIED w/ MANUFACTURES STANDARD COATING, UNLESS OTHERWISE NOTED
  - 11) ALL STAINLESS STEEL FASTENERS SHOULD BE INSTALLED WITH FELPRO C5A COPPER BASE ANTI-SEIZE LUBRICANT (OR EQUIVALENT)
  - 12) STOP NUT MUST BE SET PRIOR TO OPERATING THE GATE
  - 13) GATE & LIFT DESIGNED FROM INVERT FOR 1.0 m SEATING & UNSEATING HEAD

2	10/04/30	ISSUED FOR CONSTRUCTION	AL	
1	10/03/02	RE-ISSUED FOR APPROVAL	AL	JB
0	09/11/09	ISSUED FOR APPROVAL	dp	JB
NO.	DATE	DESCRIPTION OF REVISION	BY	CK'D
THIS DRAWING IS THE PROPERTY OF ARMEC LIMITED PARTNERSHIP AND IS LENT WITHOUT CONSIDERATION OTHER THAN THE BORROWER'S AGREEMENT THAT IT SHALL NOT BE RE-PRODUCED, COPIED, LENT OR DISPOSED OF, DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SPECIFICALLY FURNISHED. THIS PRINT IS LENT SUBJECT TO RETURN ON DEMAND.				
MAPLE REINDERS INC. CITY OF PENTICTON - AWWTP UPGRADE				
1200 x 1700 ALUMINUM IN-CHANNEL MOUNTED GATE w/ RISING STEM & IQ20 ELECTRIC ACTUATOR			DATE 09/10/20	
			DRAWN dp	
			CHECKED JB	
			REVIEWED	
			SCALE N.T.S.	
TAG NO. 02-SG-111, 02-SG-121 & 02-SG-131			BR.-SG# 580-1097706	
QUANTITY 3			DRAWING NO. 09_1097706_001	REV 2
WT 239.3 kg			SHEET 1 OF 21	





SECTION A-A



BILL OF MATERIAL					
NO.	QTY	DESCRIPTION	MAT'L	WT.	PART/DWG NO.
1	1	HANDPULL SLIDE	AI	42.8	09-1097706-082
2	1	HANDPULL FRAME	AI	23.4	09-1097706-083
3	21	Ø12.7 x 160 ADHESIVE ANCHOR w/ 1 NUT & 1 WASHER	304SS	6.5	ABD13160S0
4	2	MOUNTING ANGLE	AI	8.8	09-1097706-085
5	1	6.4 x 76 x 8100 NEOPRENE	RUBB	0.2	AK07609040
6	16	Ø12.7 x 38 MACHINE BOLT w/ 1 NUT & 1 WASHER	304SS	2.0	ABM13038S0

NOTES:

- 1) ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- 2) DO NOT SCALE DRAWING.
- 3) PROPER INSTALLATION OF THE ANCHOR BOLTS IS THE RESPONSIBILITY OF THE CONTRACTOR.
- 4) MATERIAL: SLIDE PLATE - ALUMINUM 6061-T6.  
EXTRUSIONS - ALUMINUM 6061-T6.  
ALL OTHER ALUMINUM - 6061-T6.  
FASTENERS - ASTM F593, F594 SSTL TYPE 304  
SIDE SEAL - LOW DENSITY BLACK POLYETHYLENE  
BOTTOM SEAL - NEOPRENE SPONGE ASTM D1056 GRADE 285  
GASKET - SOFT NEOPRENE SPONGE PSA-1S  
ASTM D1056 GRADE 2A1
- 5) CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS.
- 6) ALL STAINLESS STEEL FASTENERS SHOULD BE INSTALLED WITH AN ANTI-SEIZE LUBRICANT SUCH AS FELPRO C5A COPPER BASE ANTI-SEIZE LUBRICANT.
- 7) HAND PULL DESIGNED FOR 1.0 m SEATING AND 1.0 m UNSEATING HEAD MEASURED FROM INVERT.

2	10/04/30	ISSUED FOR CONSTRUCTION	AL	JB
1	10/03/02	RE-ISSUED FOR APPROVAL	AL	JB
0	09/11/06	ISSUED FOR APPROVAL	MMC	JB
NO.	DATE	DESCRIPTION OF REVISION	BY	CK'D

THIS DRAWING IS THE PROPERTY OF  
ARMTEC LIMITED PARTNERSHIP  
AND IS LENT WITHOUT CONSIDERATION OTHER THAN THE BORROWER'S AGREEMENT THAT IT SHALL NOT BE RE-PRODUCED, COPIED, LENT OR DISPOSED OF, DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SPECIFICALLY FURNISHED. THIS PRINT IS LENT SUBJECT TO RETURN ON DEMAND.

MAPLE REINDERS INC. CITY OF PENTICTON- AWWTP UPGRADE			
1200 X 1700 IN-CHANNEL MOUNTED HANDPULL GATE		DATE	09/10/26
		DRAWN	MMC
		CHECKED	JB
		REVIEWED	
		SCALE	N.T.S.
TAG NO. 02-HPG-112,02-HPG-132 & 02-HPG-122		BR. SG#	580-1097706
		QUANTITY	3
		DRAWING NO.	09,1097706,002
		WT	83.7 kg
		SHEET	2 OF 21