

Alternate Measures of Control (AMC) for Disk Filters (3) Confined Space Entries Medium Hazard Atmosphere

City of Penticton AWWTP
January 18, 2016

Alternate Measures Submission Elements:

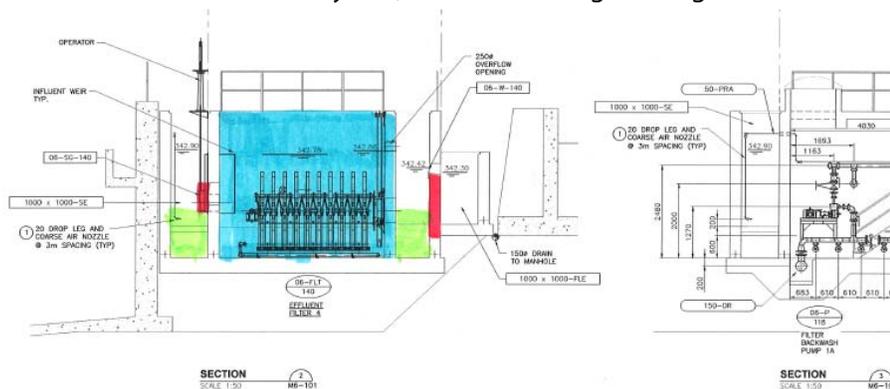
1. The three confined spaces are rectangular concrete tanks that each houses a disk filter unit. Each tank is 2.6m wide x 4.4 m long x 3.9m deep. There are two adjacent concrete channels; the inlet (upstream) channel and the outlet (downstream) channel. The inlet channel is 1m wide x 3 m deep and is gravity fed from the secondary clarifiers containing secondary wastewater treatment plant effluent (Typical Water Level (TWL) 342.9 m). The outlet channel (downstream) is 1m wide x 3 m deep and is gravity fed from the disk filters that contain filtered (10 micron) secondary treatment plant effluent (TWL 342.3 m)
2. The space is isolated by:
 - a. The concrete inlet gravity feed channel has a Fontaine sluice gate constructed from 304L Stainless Steel for each tank (3), measuring 600mm x 600mm. They were installed in 2012, and are exercised at a minimum annually (no provision for double block and bleed or blanking) see attached drawing. The total head pressure of the water from upstream channel to bottom of disk filter is 2.9 m or 4.1 psi of head pressure
 - b. The outlet gravity feed channel has a concrete wall with a weir that the water has to overflow prior to entering the downstream channel. The weir elevation is 342.42m, and the downstream channel TWL is 342.30 allowing for 12 cm of free board (no provision for double block and bleed or blanking)
3. Glenn Robertson, CRSP the City's Safety Coordinator 250-490-2553 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. For the hazards that need to be addressed see the attached HIRA. The characteristic of the water on both the upstream and downstream side of the filters is effluent from two secondary clarifiers within our tertiary AWWTP. 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, each tanks contain a 4" gravity drain that will be left in the open position while the tank is occupied. The water level in the upstream channel will be continuously monitored with a local audio/visual high level float set to 2.5 m while space is occupied. If the water level rises above 2.5 m the alarm will sounds 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.



- The water level in the downstream channel will be continuously monitored with a local audio/visual high level float set to 100 mm while space is occupied, if the water level rises above 100 mm the alarm will sounds and light will flash (leaving 840 mm 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



— Monitor levels

KEY NOTES

1. INSTALL 20# STAINLESS STEEL DOP LEGS AND 20# 100FLX COARSE DIFFUSERS.

— Isolation

— Work Area

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), Disk Filters (3)

Dear Mr. Craig,

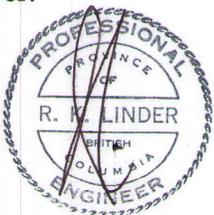
The Fontaine sluice gate is of adequate engineering, construction and maintenance to hold back the head applied to it for the time required to be in the confined space. The analysis of the gate as a control measure assumes that all gates leak. However, there is no expectation that a properly installed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

The outlet gravity feed channel after being pumped out is also considered as adequate Alternate Measure of Control as the design of the system does not allow for water to flow back into the channel. The 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 Disk Filters (3) 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](#)

Disk Filters

Work to be performed or location of confined space

Prepared By: Gary Marsden / Gord Austrom / Glen Robertson / Randy Craig

Technical Information By: Randy Craig

	Atmospheric Conditions	Details	P			Control Measures	P		
9	Oxygen (O2) Deficiency / Enrichment	decaying material in the bottom of the tank	2	2	B	Min. 3000 cfm fan in push mode continuous, O2 (Oxygen) gas detector - continuous monitoring. Ensure sludge is cleaned from tank.	1	2	A
2	Hydrogen Sulphide (H2S)	dacaying material in the bottom of the tank	2	2	B	Min. 3000 cfm fan in push mode continuous, H2S (Hydrogen sulfide) gas detector - continuous monitoring, ensure sludge is cleaned out of tank	1	2	A
1	Carbon Monoxide (CO)	Gas and diesel vehicles driving by the tank	2	2	B	Min. 3000 cfm fan in push mode continuous, CO (Carbon monoxide) gas detector - continuous monitoring, Place air intake away from source of CO	1	2	A
			Initial				Final		
	Hazards / Exposure	Details	P			Control Measures	P		
27	Restricted Access / Egress	must employ a ladder to enter the tank	2	2	B	Caution when climbing ladder(s) - maintain 3-point contact. Stay hooked up to rescue winch	1	2	A
35	Engulfment or Immersion Hazards	Risk of flooding from filter influent and filter effluent	2	2	B	Lock out procedures attached. 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, each tanks contain a 4" gravity drain that will be left in the open position while the tank is occupied. The water level in the upstream channel will be continuously monitored with a local audio/visual high level float set to 2.5 m while space is occupied. If the water level rises above 2.5 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. • The water level in the downstream channel will be continuously monitored with a local audio/visual high level float set to 100 mm while space is occupied, if the water level rises above 100 mm the alarm will sounds and light will flash (leaving 840 mm of free board) and the confined space will be evacuated and the issue will be addressed prior to re-entry.	1	2	A
		climbing							

37	Falling Hazard	over railing and into open tank with machinery inside	2	2	B	Fall protection plan attached, ensure staff performing the entry/work do not have an existing fear of heights.	1	2	A
50	Overhead / Falling Object Hazards	tools and materials could be kicked into the open tank	2	2	B	Kick-boards, Keep work area clear of obstructions. Hardhat must be worn by person entering tank. Worker must stay attached to life line at all times	1	2	A
32	Mechanical / Moving Part Hazards	rotating assembly inside tank	2	2	B	Lockout procedures attached	1	2	A
23	Heat / Cold Stress Exposure	Out door temperature	2	2	B	Take breaks in a cool environment, Take breaks in a warm environment	1	2	A

Area Preparation:

1. Drain and clean both filters that will remain in service during the work as per Cloth Cleaning procedure prior to Lockout and Isolation.
2. Isolate and Lockout.
3. Keep area around tank clear of tools and equipment.
4. Drain and clean filter to be worked on and space as per Cloth Cleaning procedure, ensure bottom of tank is clear of sludge.
5. Install and test Float Switch High Level Alarm to alarm at 2.5 meters from bottom of upstream channel.
6. Install float operated pump in the downstream chamber
7. Install and test Float Switch High Level Alarm to alarm at 0.1 meters from bottom of downstream channel.

Confined Space Entry Procedures - Supplementary Instructions:

1. Follow moderate hazard confined space entry procedure and lock out procedure

Confined Space Entry Rescue Plan:

1. 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;

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

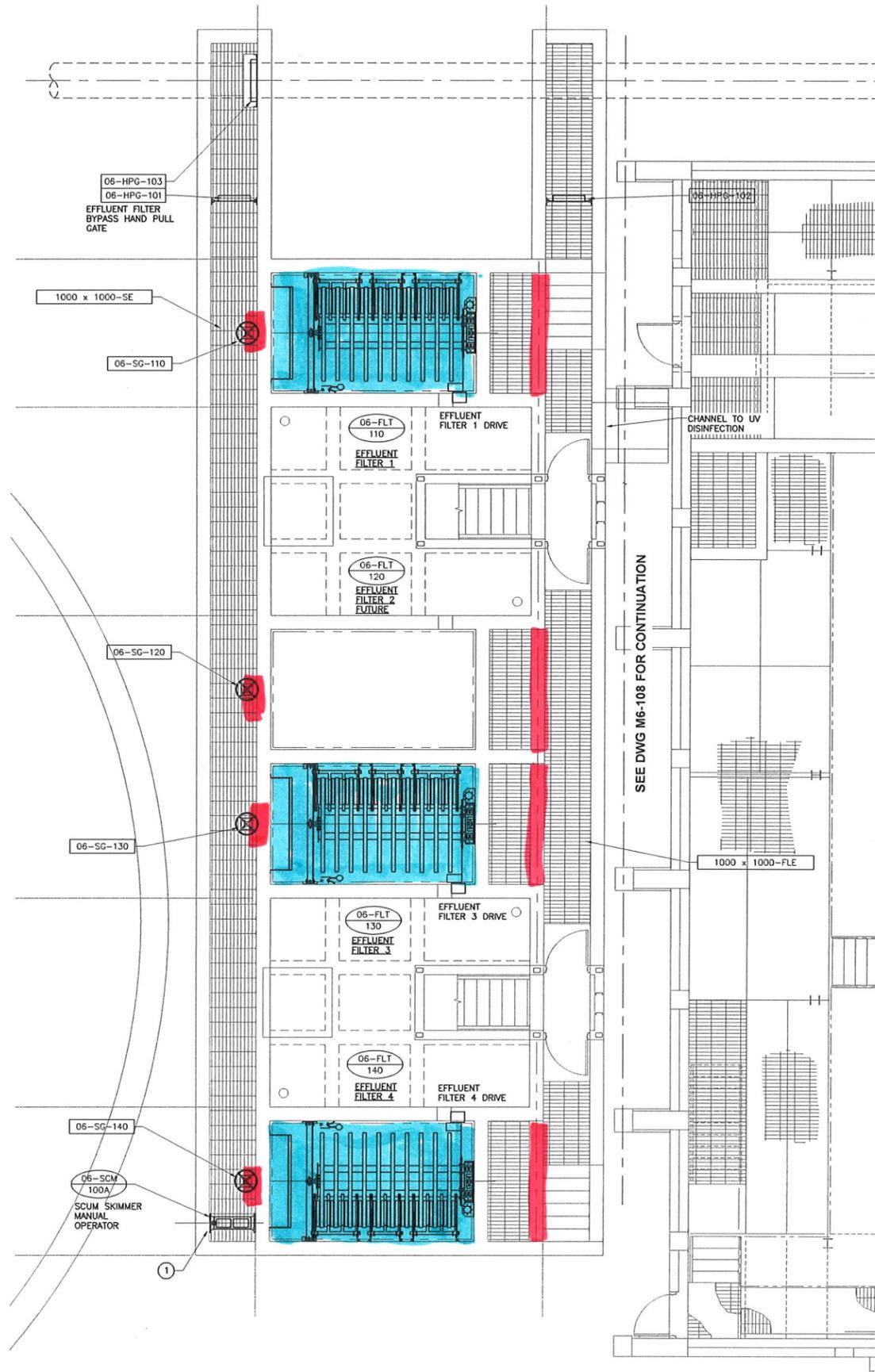
TOOLS:
 Ventilator
 GFI
 Gas Detector
 Cell Phone
 Uni-Hoist or Tripod
 2 Safety Winches
 2 Fall protection Body Harnesses
 2 way radios

MATERIALS:

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



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KEY NOTES

- ① REFER TO SCUM SKIMMER DETAILS ON DRAWING M6-104.

— Work Area
 — Isolation

MAIN LEVEL PLAN
 SCALE 1:60

NOTICE:
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				2	RECORD DRAWING

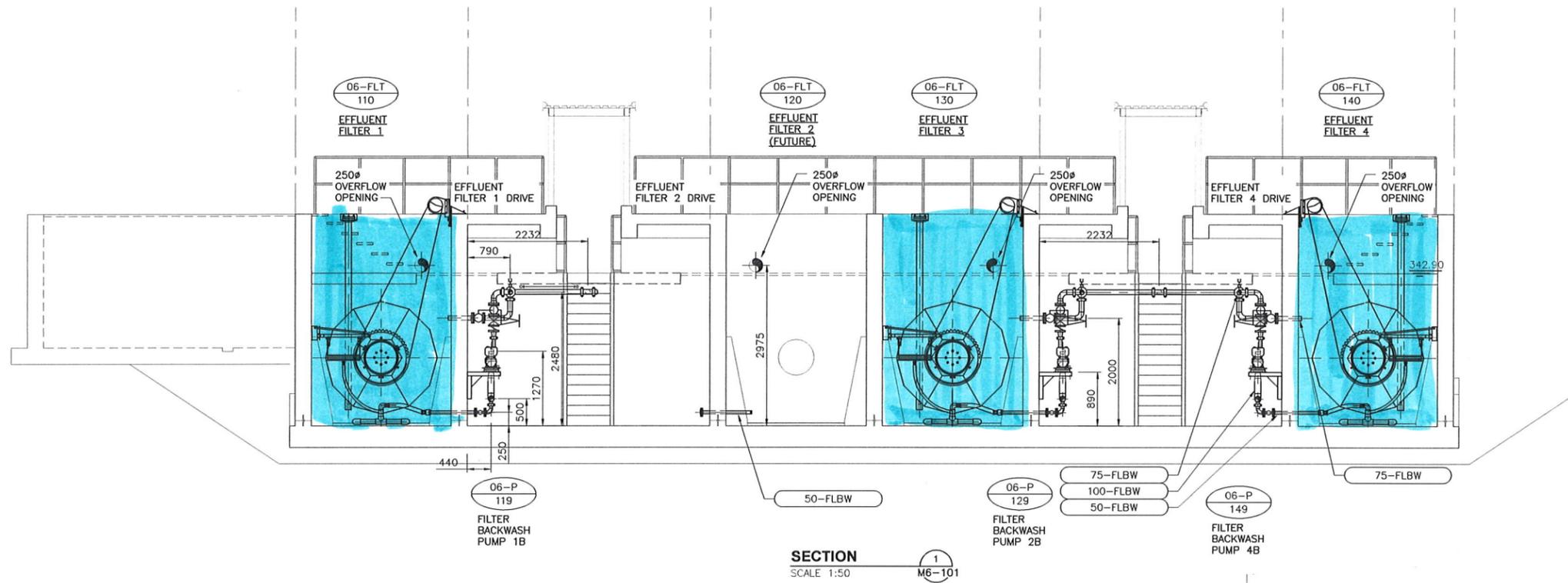


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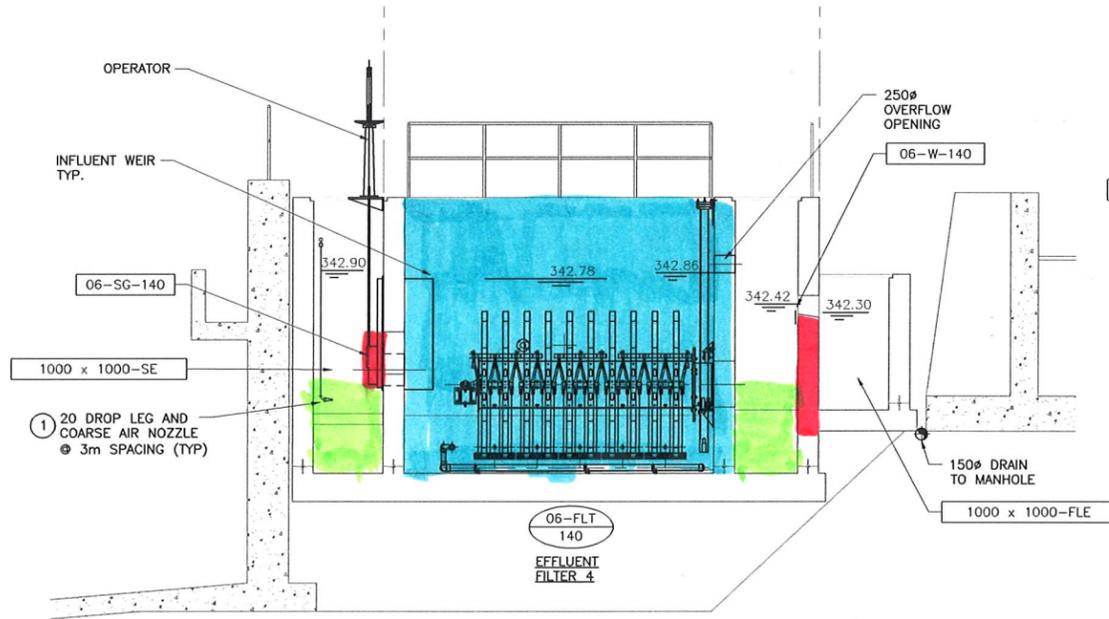
**CITY OF PENTICTON
 AWWTP UPGRADE
 PENTICTON, B.C.**
 PROCESS MECHANICAL
 EFFLUENT FILTERS
 GENERAL ARRANGEMENT - MAIN LEVEL

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DRAWING NO.	M6-102

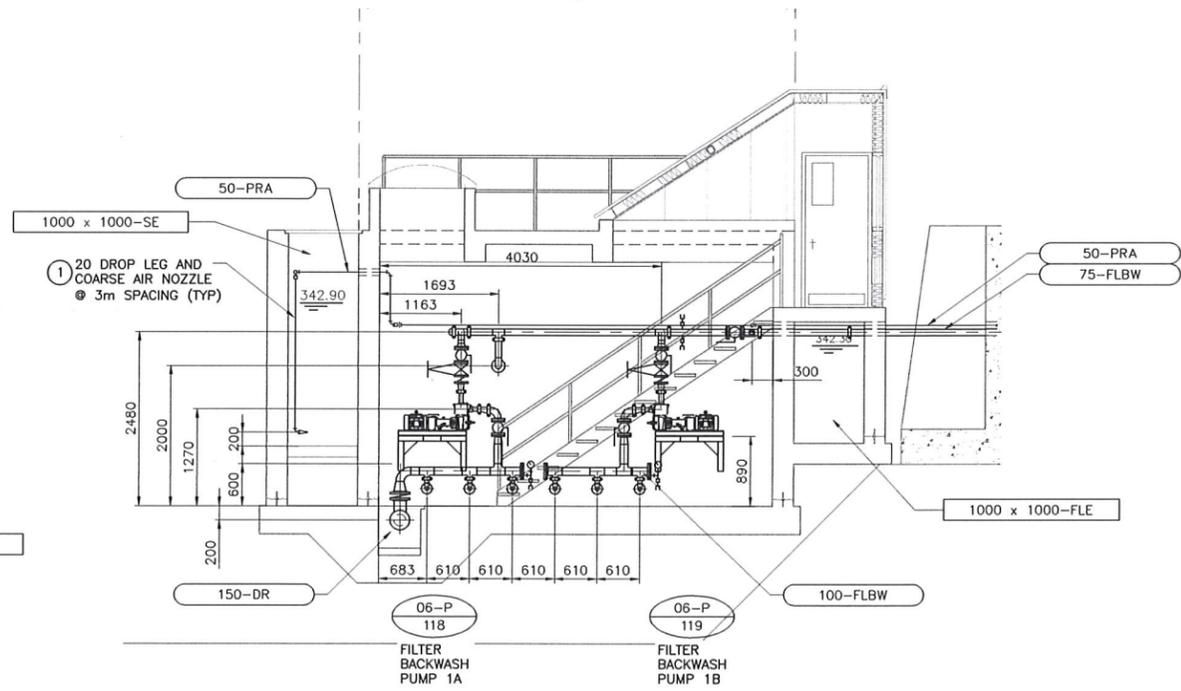
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SECTION 1
 SCALE 1:50
 M6-101



SECTION 2
 SCALE 1:50
 M6-101



SECTION 3
 SCALE 1:50
 M6-101

— Monitor levels

— Isolation

— Work Area

KEY NOTES

- 1 INSTALL 20Ø STAINLESS STEEL DOP LEGS AND 20Ø TIDEFLEX COARSE DIFFUSERS.

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APP BY:	LN	2009/05/25
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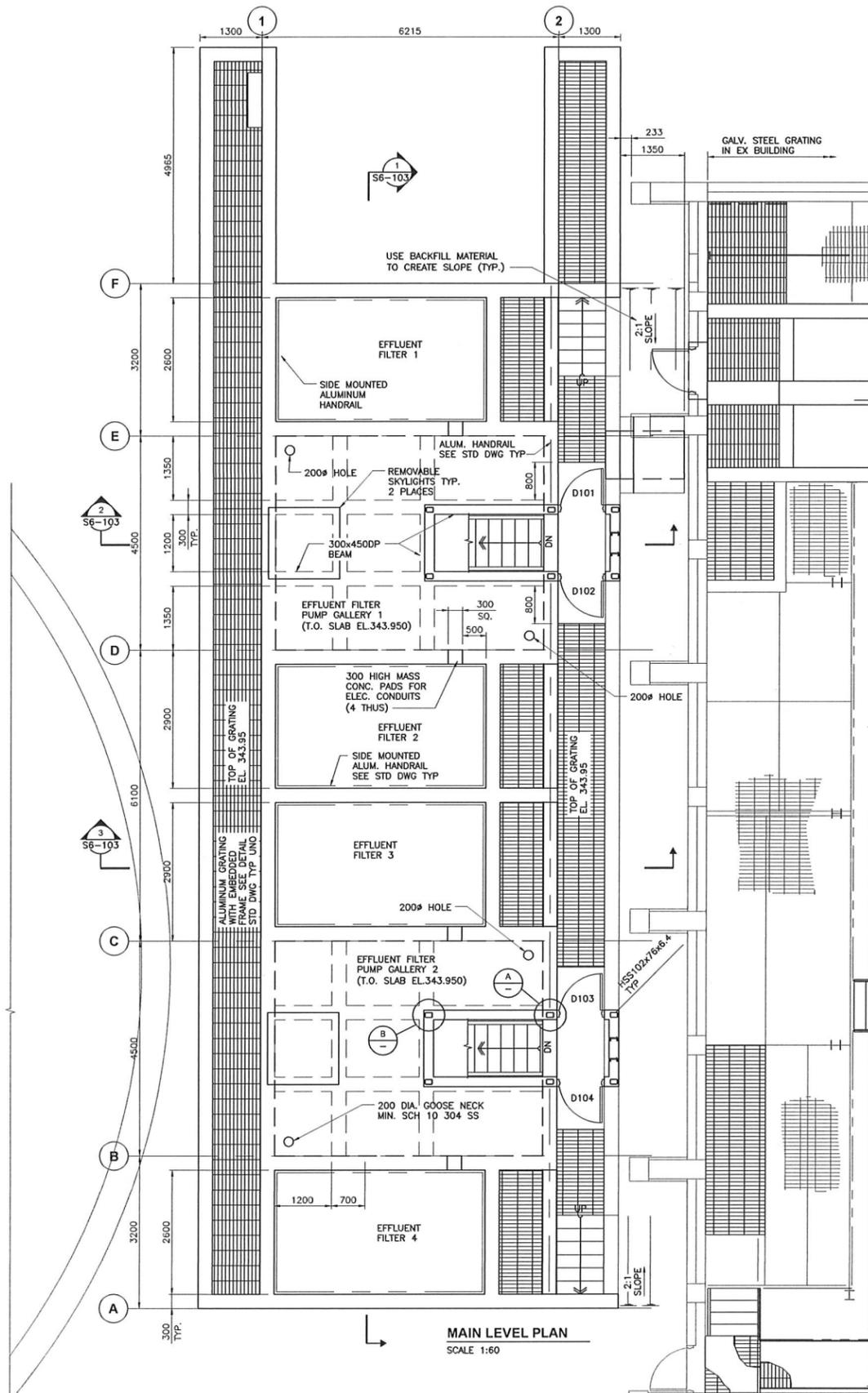


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CITY OF PENTICON
 AWWTP UPGRADE
 PENTICON, B.C.
 PROCESS MECHANICAL
 EFFLUENT FILTERS
 SECTIONS AND DETAILS

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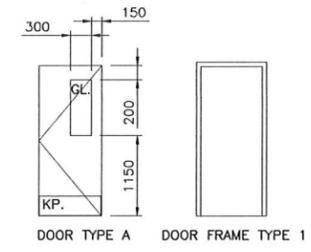


MAIN LEVEL PLAN
 SCALE 1:60

DOOR SCHEDULE										
DOOR NUMBER	DOOR							FRAME		
	SIZE	TYPE	MAT.	FINISH	CORE	LABEL	GL'G	MAT.	TYPE	FINISH
D101	900x2150	A	S	PAINT	HC		LAM	PS	1	PAINT
D102	900x2150	A	S	PAINT	HC		LAM	PS	1	PAINT
D103	900x2150	A	S	PAINT	HC		LAM	PS	1	PAINT
D104	900x2150	A	S	PAINT	HC		LAM	PS	1	PAINT

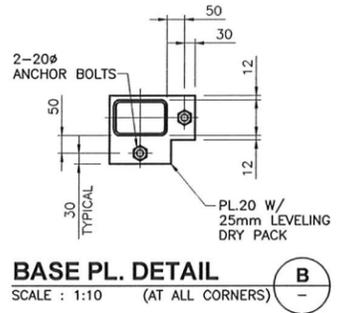
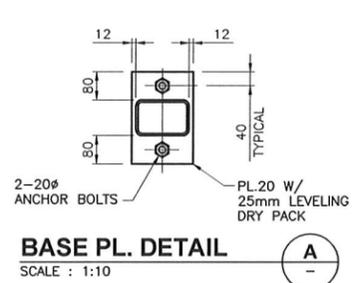
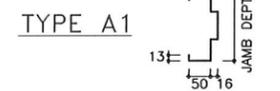
DOOR SCHEDULE													
DOOR NUMBER	HARDWARE								REMARKS				
	PASSAGE SET	LOCK/SET	PRIVACY SET	PANIC SET	DEAD-BOLT	FLUSH-BOLTS	CLOSER	PUSH PULL	KICK-PLATE	WITH STRIP SWEEP THRESHOLD OVERHEAD STOP	CHAIN-STOP	TOTAL HINGES	
D101		•			•	•	•			•	•	3	INSULATED
D102		•			•	•	•			•	•	3	INSULATED
D103		•			•	•	•			•	•	3	INSULATED
D104		•			•	•	•			•	•	3	INSULATED

- GENERAL NOTES DOOR**
- DOORS TO BE 45mm THK UNLESS NOTED OTHERWISE.
 - RATED FRAMES TO BE MIN. 16 GAUGE THK.
 - CO-ORDINATE WITH MECHANICAL SUB TRADE TO IDENTIFY DOORS WITH GRILLS AND /OR UNDER-CUTS.
 - PRESSED STEEL (PS) DOOR TO BE PAINTED UNLESS NOTED OTHERWISE.
 - SIDELIGHT GLAZING (GL.) TO CONFIRM TO BCBC
 - NUMBERS IN "LABEL" COLUMN REFER TO THE FIRE PROTECTION RATING OF THE OPENING IN MINUTES LABEL TO INCLUDE DOOR AND FRAME.
 - EXTERIOR HOLLOW CORE DOORS TO BE INSULATED.

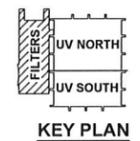


FRAME PROFILES

- NOTES:**
- ALL PRESSED STEEL FRAMES IN CONCRETE BLOCK TO BE CENTERED UNLESS OTHERWISE DETAILED.



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 2009/08/31
 2009/05/25

RECORD DRAWING
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THE CITY OF
Penticton

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CITY OF PENTICTON
 AWWTP UPGRADE
 PENTICTON, B.C.

STRUCTURAL
 EFFLUENT FILTERS
 MAIN LEVEL PLAN

PROJECT START DATE (M/Y)
 APRIL 2008

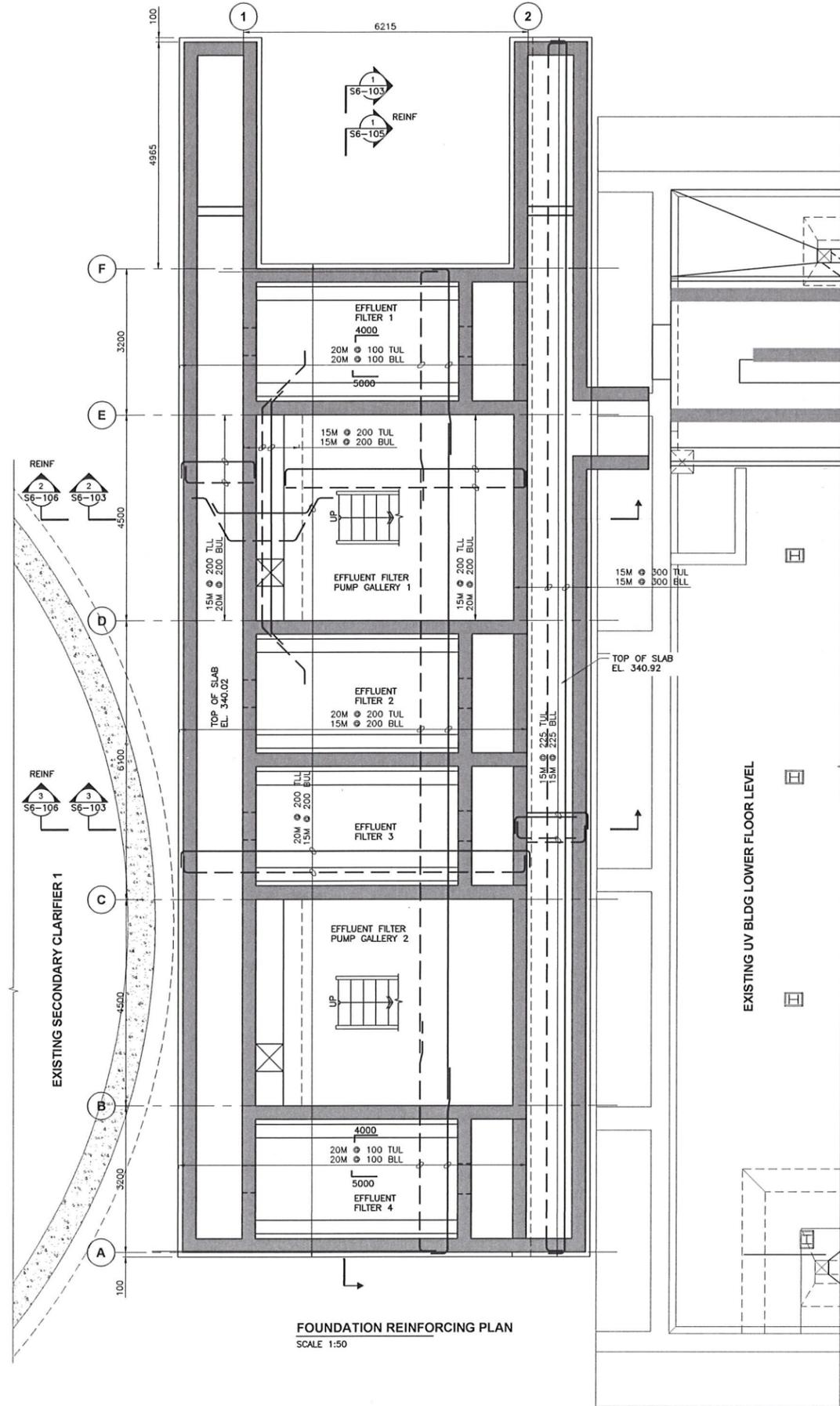
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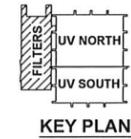
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FOUNDATION REINFORCING PLAN
 SCALE 1:50

NOTICE:
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CITY OF PENTICTON AWWTP UPGRADE PENTICTON, B.C.		PREPARED FOR: AECOM Suite 201, 3275 LAKESHORE ROAD, KELOWNA, BC, CANADA V1W 3S9 250-762-3727			
STRUCTURAL EFFLUENT FILTERS LOWER LEVEL REINFORCING PLAN		DRN BY: GV	DES BY: SO	CHK BY: HL	APP BY: KM
PROJECT START DATE (M/Y) APRIL 2008		2012/09/09	2012/09/09	2012/09/09	2012/09/09
PROJECT NO. 102949		2	2	1	0
FILENAME 102949-S6-104.dwg		RECORD DRAWING	RECORD DRAWING	ISSUED FOR CONSTRUCTION	ISSUED FOR TENDER
SHEET NO.		1	1	0	0
DRAWING NO.		REV	REV	REV	REV
S6-104		DRN	CHK	DRN	CHK
		DESCRIPTION			

SERIES 20

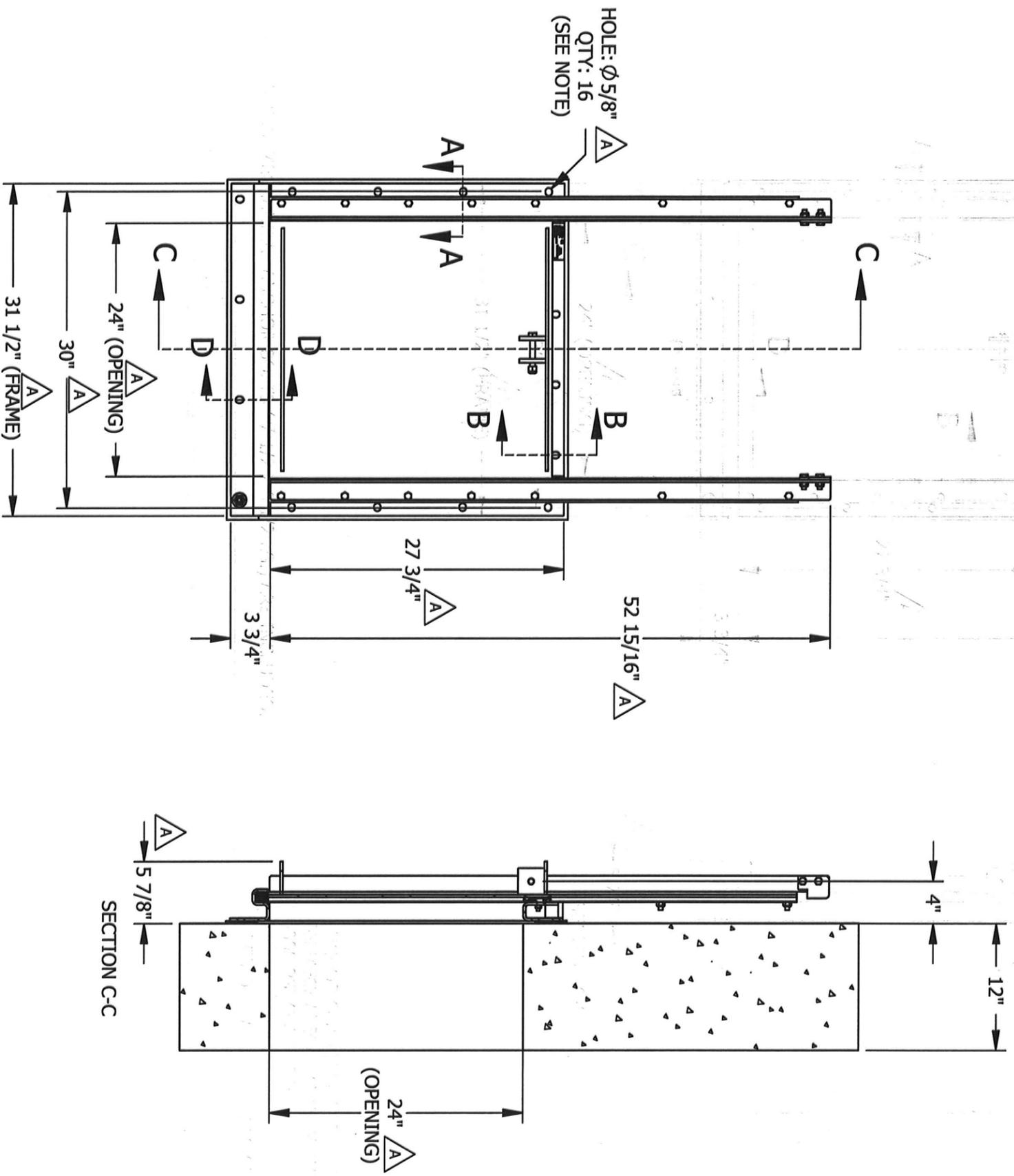
STAINLESS STEEL
SLICE GATES
FLOW CONTROL SLICE GATES



Fontaine

MODEL: 204 - 24 x 24 - B - CW 
MATERIAL: 304L S.S.
QTY: 4

IDENTIFICATION: INFLUENT CHANNEL



NOTE: 304 S.S. MECHANICAL ANCHOR BOLTS (Ø 1/2 X 5 1/2 LG.) ARE INCLUDED.

ANCHOR QUANTITY IS BASED
ON MECHANICAL ANCHOR WITH
4000 PSI CONCRETE.

Drawing is not to scale
All dimensions are in inches.



Tolerances: ±1/8

011

REVISION: A
DRAWING No.: 5091460-011
PAGE: 2009-05-27

SERIES 20

STAINLESS STEEL SLICE GATES FLOW CONTROL SLICE GATES



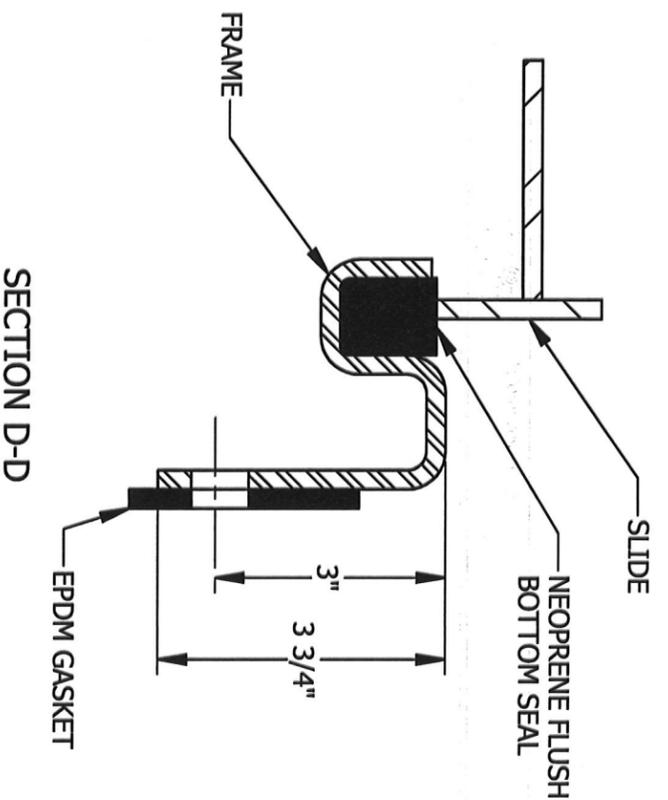
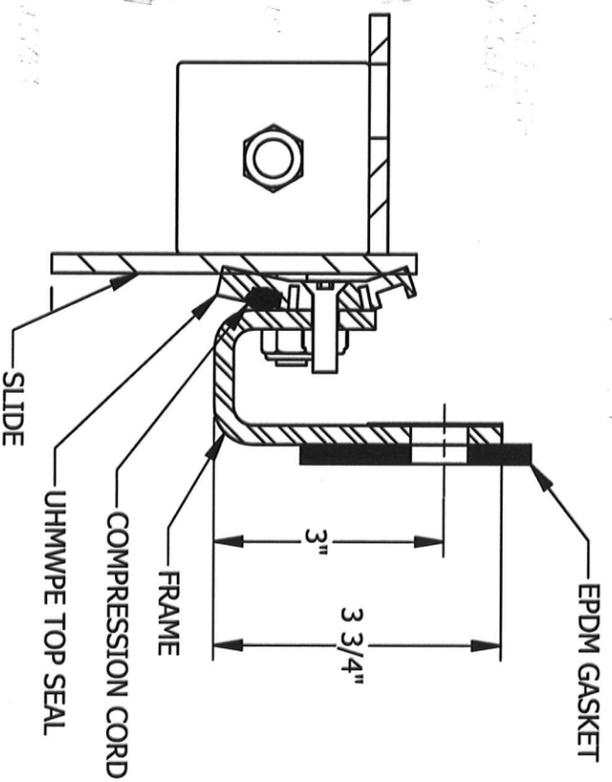
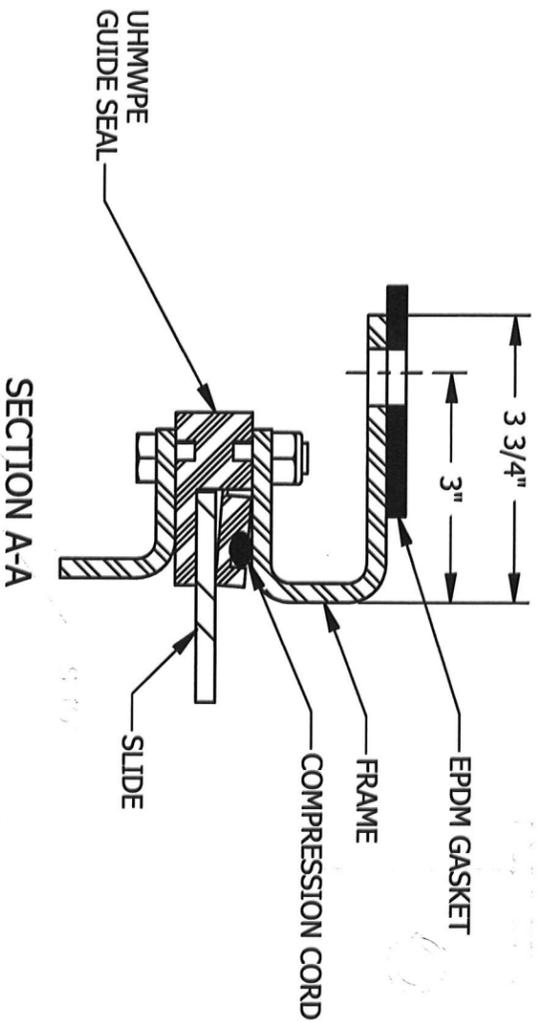
Fontaine

MODEL: 204 - 24 x 24 - B - CW 

MATERIAL: 304L S.S.

QTY: 4

IDENTIFICATION: INFLUENT CHANNEL



Drawing is not to scale
All dimensions are in inches.



Tolerances: $\pm 1/8$

011

REVISION: A	2009-05-27
DRAWING No.: 5091460-011-DET	PAGE:

LIFTING STEM



Fontaine

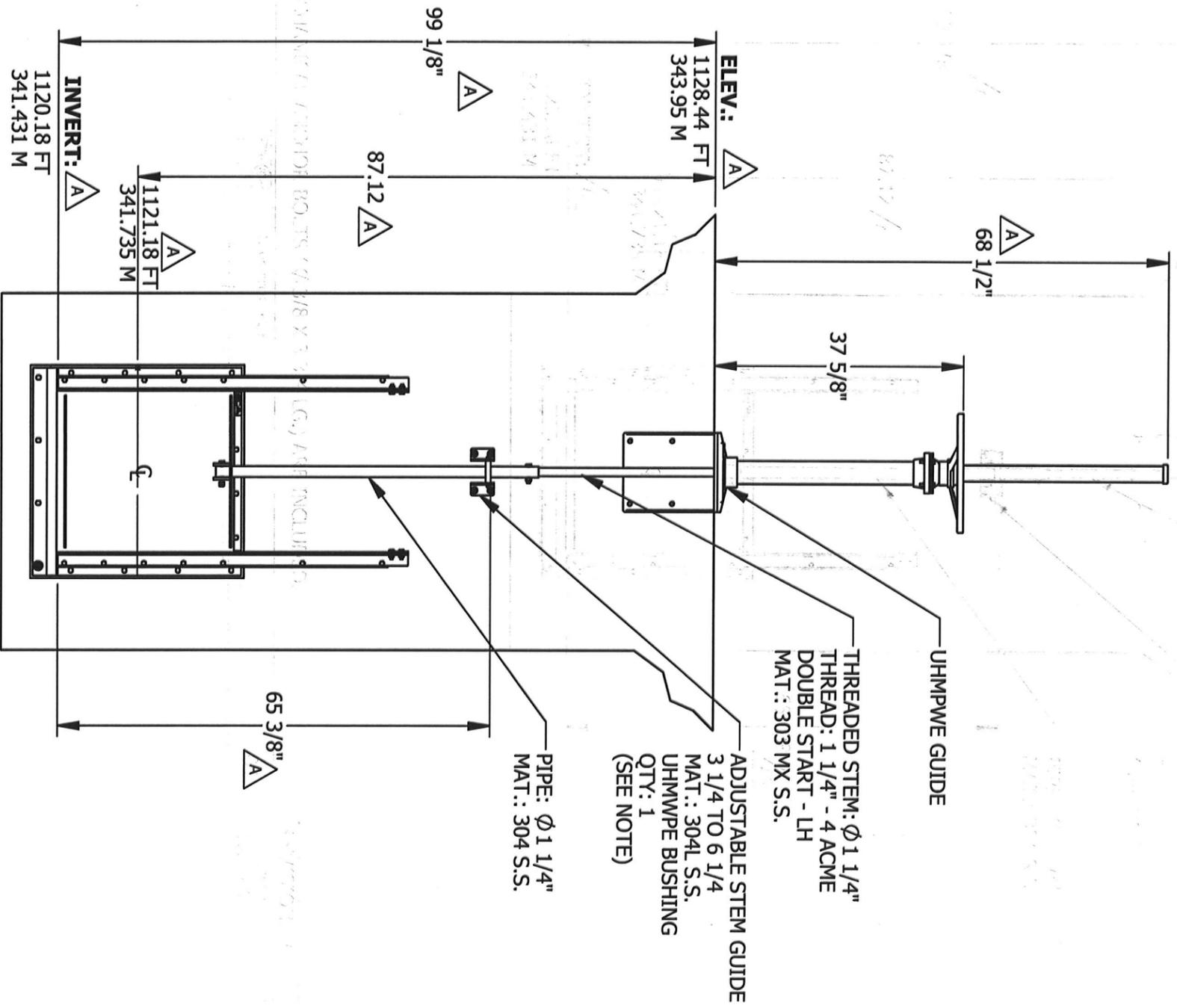
MODEL: 204 - 24 X 24 - B - CW/A

MATERIAL: 304L S.S.

QTY: 4

IDENTIFICATION: INFLUENT CHANNEL

TYPE RS1 - RISING STEM



NOTE: 304 S.S. MECHANICAL ANCHOR BOLTS (ϕ 3/8 X 3 3/4 LG.) ARE INCLUDED.

Drawing is not to scale
All dimensions are in inches.



Tolerances: \pm 1/8

013

REVISION: A	DRAWING No.: 5091460-013	PAGE: 2009-05-27
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STEM PROTECTOR WITH COVER
V.I. TRAIL, P.V.C.
COMES WITH SELF-ADHESIVE MYLAR RULER
WITH IN/FT GRADUATIONS

OPERATING EQUIPMENT



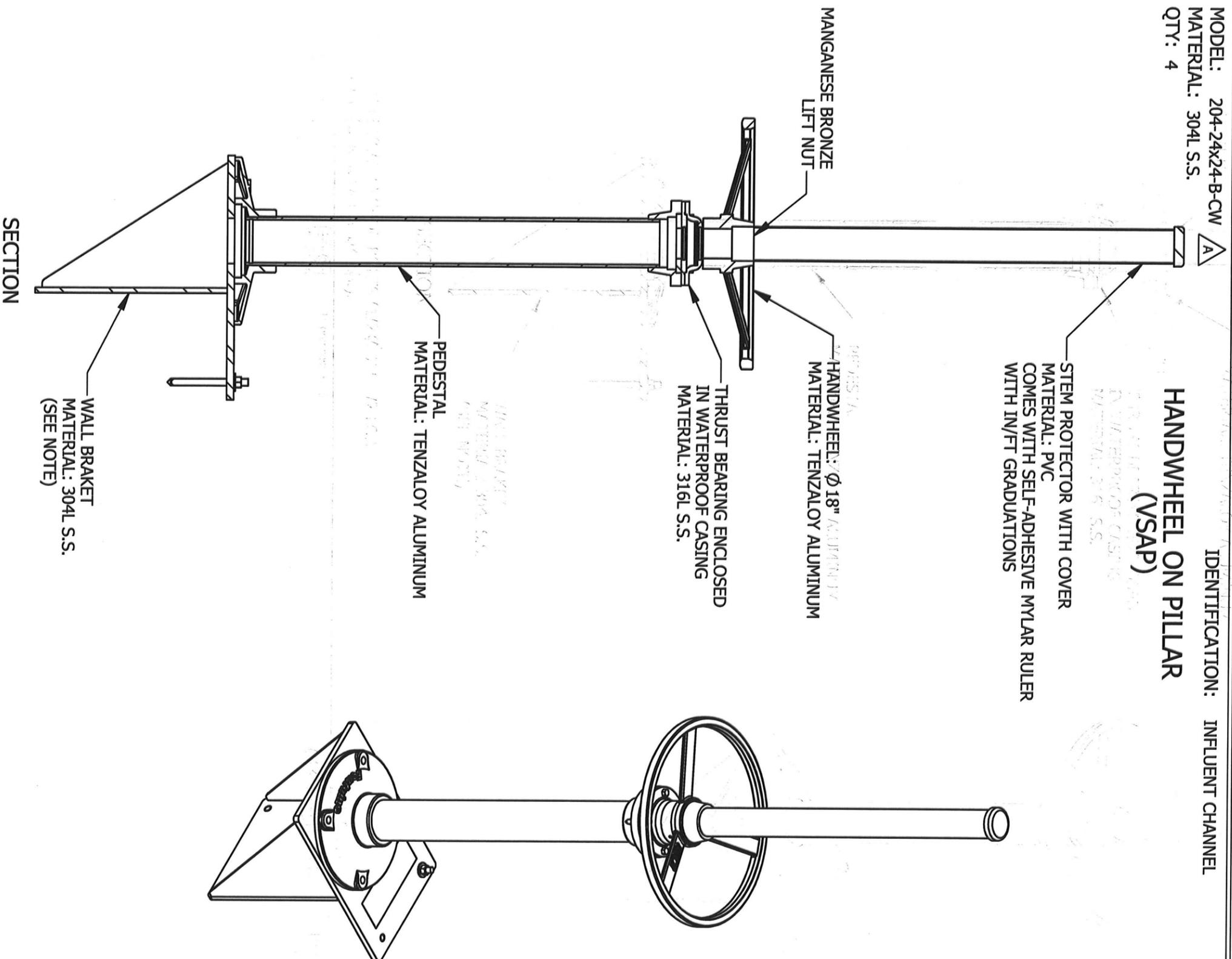
Fontaine

IDENTIFICATION: INFLUENT CHANNEL

MODEL: 204-24x24-B-CW
MATERIAL: 304L S.S.
QTY: 4

HANDWHEEL ON PILLAR
(VSAP)

STEM PROTECTOR WITH COVER
MATERIAL: PVC
COMES WITH SELF-ADHESIVE MYLAR RULER
WITH IN/FT GRADUATIONS



NOTE: 304 S.S. CHEMICAL ANCHOR BOLTS (1/2 Ø X 5 1/2 LG.) ARE INCLUDED (CARTRIDGE 4 1/4 LG.).

Drawing is not to scale
All dimensions are in inches.



Tolerances: ±1/8

014

REVISION: A
DRAWING No.: 5091460-014

PAGE: 2009-05-27