

Operation & Maintenance Plan for  
Coral Harbour Municipal Water  
Licence:  
Water Supply Facilities  
2021

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# 1.0 Site Description

**Date this plan was prepared:**

June 30, 2021

## 1.1 Location of the water supply and water treatment plant (WTP)

**Municipality:**

Coral Harbour

**Latitude:**

64° 08' 18" N

**Longitude:**

83° 09' 56" W

## 1.2 WTP History

**Year of commissioning the WTP:**

2016

**Design life of the WTP:**

2035



*Figure 1 Coral Harbour Water Supply and WTP Infrastructure*

## 2.0 Staff and Training

### 2.1 Staff

|               |                               |               |                 |
|---------------|-------------------------------|---------------|-----------------|
| <b>Role:</b>  | Senior Administrative Officer | <b>Name:</b>  | Leonie Pameolik |
| <b>Phone:</b> | (867) 925-8870                | <b>Email:</b> | munch@qiniq.com |

**Responsibilities:** The SAO manages the municipal staff to ensure that:

- proper operation of the water supply system is carried out
- sampling and inspections are completed
- annual reporting to the Nunavut Water Board (NWB) is prepared by the Government of Nunavut Department of Community and Government Services (GN-CGS)

|               |                |               |                     |
|---------------|----------------|---------------|---------------------|
| <b>Role:</b>  | Foreman        | <b>Name:</b>  | Darryl Nakoolak     |
| <b>Phone:</b> | (867) 925 8323 | <b>Email:</b> | foremanch@qiniq.com |

**Responsibilities:** The foreman is responsible for:

- operation and maintenance of the intake and overland pipeline from Post River to the reservoir
- annual resupply of the reservoir

|               |              |               |         |
|---------------|--------------|---------------|---------|
| <b>Role:</b>  | WTP Operator | <b>Name:</b>  | Various |
| <b>Phone:</b> | N/A          | <b>Email:</b> | N/A     |

**Responsibilities:** The WTP operators oversee that daily operation and maintenance of the treatment facility including:

- chlorine solution preparation
- sampling of treated water
- monthly and annual inspections

|               |                     |               |         |
|---------------|---------------------|---------------|---------|
| <b>Role:</b>  | Water Truck Drivers | <b>Name:</b>  | Various |
| <b>Phone:</b> | N/A                 | <b>Email:</b> | N/A     |

**Responsibilities:** The water truck drivers fill truck for distribution of drinking water to the municipality. They also record and report the quantities of delivered water.

## 2.2 Training

Training records were last updated: 2020

*Table 1 List of trainings obtained by staff*

| Staff member     | GN Small<br>Systems<br>Course       | GN Class I<br>Systems<br>Course     | Other:                   |
|------------------|-------------------------------------|-------------------------------------|--------------------------|
| Luke Eetuk       | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Darryl Nakoolak  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Bernie Uluadluak | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Daniel Kadlak    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Logan Nakoolak   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| Darcy Nakoolak   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

## 3.0 Security and Control

Access Control of to the facility:

- Perimeter fencing around the water reservoir
- Locks on gates and doors
- Signage

## 4.0 Facility Design

As built drawings for the WTP can be found in Appendix A.

## 5.0 Raw Water Sources

### 5.1 Raw Water Source

**Raw water source fill system type:** Reservoir Fill

**Alterations to the natural water source have occurred due to the WTP:**

None, water is drawn from a blasted rock 2-cell reservoir adjacent to the WTP.

#### 5.1.1 Primary Source

|   |                             |
|---|-----------------------------|
| <b>Name of primary raw water source:</b>          | Post River                  |
| <b>Type of raw water source:</b>                  | River                       |
| <b>Average annual quantity of water drawn:</b>    | 40,000 m <sup>3</sup> /year |
| <b>Maximum allowable withdrawal:</b>              | 45,000 m <sup>3</sup> /year |
| <b>Ice formation on the water source (Month):</b> | September                   |
| <b>Ice breakup on the water source (Month):</b>   | June or July                |

**Equipment:**

- Intake pipe with fish screen installed annually approximately 20 m offshore
- Skid mounted portable intake pump and diesel fuel tank
- 6-inch diameter overland ABS pipeline, approximately 1500 m in length

#### 5.1.2 Reservoir

|                                       |                       |
|---------------------------------------|-----------------------|
| <b>Total volume of the reservoir:</b> | 49,500 m <sup>3</sup> |
| <b>Number of reservoir cells:</b>     | 2                     |
| <b>Volume Cell 1:</b>                 | 33,200 m <sup>3</sup> |
| <b>Year Constructed:</b>              | 1980                  |
| <b>Volume Cell 2:</b>                 | 16,300 m <sup>3</sup> |
| <b>Year Constructed:</b>              | 1998                  |

|  |                    |
|--|--------------------|
| <b>Number of times per year the reservoir is filled:</b> | 1                  |
| <b>Number of days it takes to fill the reservoir:</b>    | Approximately 25   |
| <b>Months the reservoir is filled:</b>                   | August - September |

## 5.2 Operations

### **Overview of the operations process:**

Water is obtained from Post River once annually through an intake pump that runs for 24-hours until the reservoir cells are full. The following procedure is followed:

1. Ensure that the end of the overland pipeline at the reservoir is free and clear of debris or ice.
2. A diesel intake pump is located in the pump house at Post River, ensure that the fuel tank is full prior to starting the pump
3. Start the pump by pushing the Start button
4. To begin pumping water, turn the switch to the opposite side
5. Once running, the pump should be monitored periodically throughout the day to ensure it is operating properly
6. Once the reservoirs are filled, leaving 1 m freeboard, turn off the pump switch and turn off the pump
7. The total pumping volume should be recorded and reported in the annual report submitted to the NWB

## 5.3 Maintenance

### **Overview of the maintenance process:**

Maintenance of the intake pipe, intake pump and overland pipeline are the responsibility of the municipal staff. Inspection of the intake pipe, intake screen, intake pump, fuel tank, and overland pipeline is required each time water is pumped from the Post River. Regular oil changes and other mechanical repairs to the pump should be performed as needed. If any repairs to the overland pipe are required, they must be completed promptly.

Inspection and repair records should be brought to the Hamlet Office for filing annually. If any issues or problems are noted with the intake pipe, intake pump, fuel tank or overland pipeline, these should be communicated to the Foreman and/or SAO as soon as possible.

## 6.0 Water Treatment Process

### A brief overview of the water treatment process:

Water is drawn in from the raw water reservoir adjacent to the WTP where it undergoes:

- Pre-chlorination: Chlorine is injected prior to the filtration process.
- Cartridge Filtration: The sequence of filters is 20-micron, followed by 5-micron, followed by 1-micron cartridges.
- Chlorine Disinfection: This is accomplished using the CT concept through a 12,000 L chlorine contact pipe.

|                                   |   |
|-----------------------------------|---|
| <b>Total annual water usage:</b>  | 37,000 m <sup>3</sup>                         |
| <b>Water distribution method:</b> | Trucked                                       |
| <b>Treated water storage:</b>     | 12,000 L chlorine contact pipe within the WTP |
| <b>Rate of truck-fill:</b>        | 1000 L/min                                    |

### Operations and Maintenance:

The following documents are on site at the WTP and available from the GN-CGS upon request:

- |  |      |
|--|------|
| • Water Pump House O&M Manual Mechanical Process                 | 1313 |
| pages  |      |
| • Water Pump House O&M Manual Architecture                       | 427  |
| pages  |      |
| • Water Pump House O&M Manual Electrical, Ventilation & Plumbing | 636  |
| pages  |      |

## 7.0 Monitoring

**Regulatory Inspection:** The annual Crown Indigenous Relations and Affairs Canada (CIRNAC) inspection will take place accompanied by the licensee and/or with a licensee representative from GN-CGS. The inspection will be reviewed by a GN-CGS municipal engineer and submitted with the annual report.

*Table 2 Licence requirements related to O&M of the water supply facilities*

| Requirements  | Reported                       |
|---|--------------------------------|
| Monthly and annual quantities of fresh water obtained from all sources            | Annual report submitted to NWB |
| A summary of modifications and/or major maintenance work carried out on the WTP   | Annual report submitted to NWB |
| A list of spills and unauthorized discharges.                                     | Annual report submitted to NWB |
| A summary of any studies requested for the WTP and future planned studies planned | Annual report submitted to NWB |
| Volume of Potable Water Supply at Post River Monitoring Program Station COR-1     | Annual report submitted to NWB |

## 8.0 Modifications and Upgrades

### **Modifications or upgrades needed for the water supply facility:**

Modifications are required to the chlorination room, chlorine analyzers, heating system, and a treated water storage tank is planned to be added in the future to provide adequate supply of treated water. These modifications are planned to take place in the next 5 years and updated documentation will be provided to NWB during the design stage of these upgrades.

### **Planned modifications or upgrades:**

The municipality plans to move the pumping location upstream to a deeper more easily accessible point on Post River as indicated on Figure 1. NWB will notified prior to making this change. If this modification becomes permanent, an updated Water Supply OM plan will be submitted to NWB.

**Additional Comments or Notes**

None



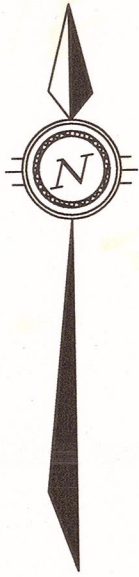
## Appendix A: As-built WTP Drawings



ISSUED FOR  
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DATE: MAY 16, 2016

PERMIT TO PRACTICE  
EXP SERVICES INC.  
Signature: *Steve Burden*  
Date: 2016-05-16  
PERMIT NUMBER: P 483  
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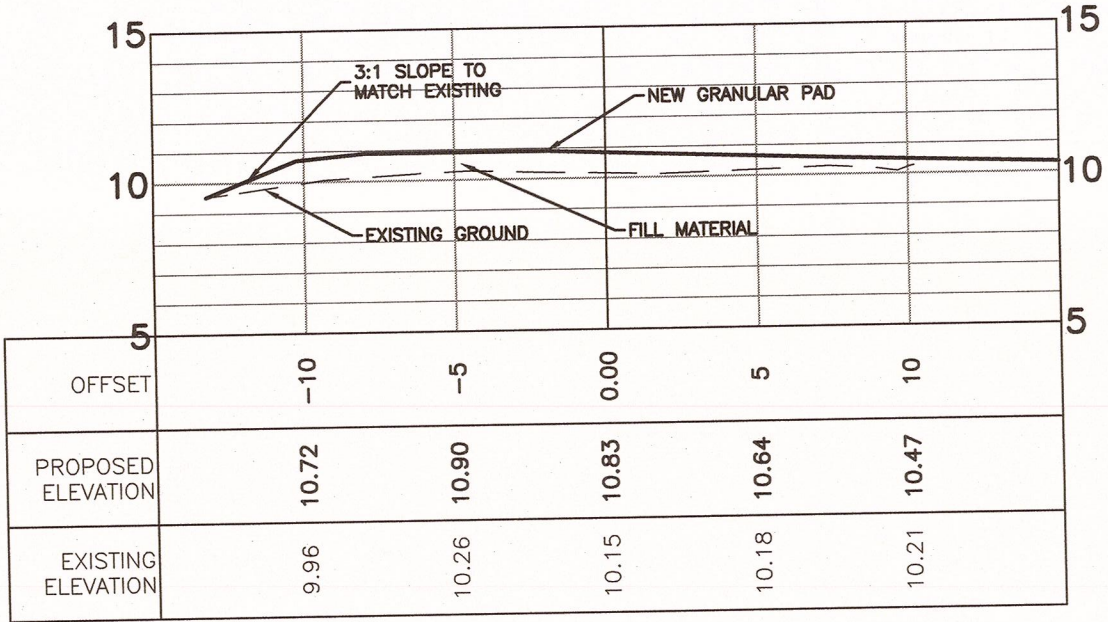
NOTES:

- CONTRACTOR TO REMOVE EXISTING CONCRETE PAD FOUNDATION AND DISPOSE OF OFF-SITE. GRANULAR BASE TO BE PLACE AND COMPACTED BENEATH PROPOSED STRUCTURE TO PROVIDE POSITIVE DRAINAGE AWAY FROM SITE.
- EXISTING ACCESS WAY TO BE RE-GRADED USING 150mm GRANULAR 'A'.
- COMPACTED GRANULAR BASE TO BE ESTABLISHED UNDER PROPOSED GRADE OF WATER INTAKE PIPES.



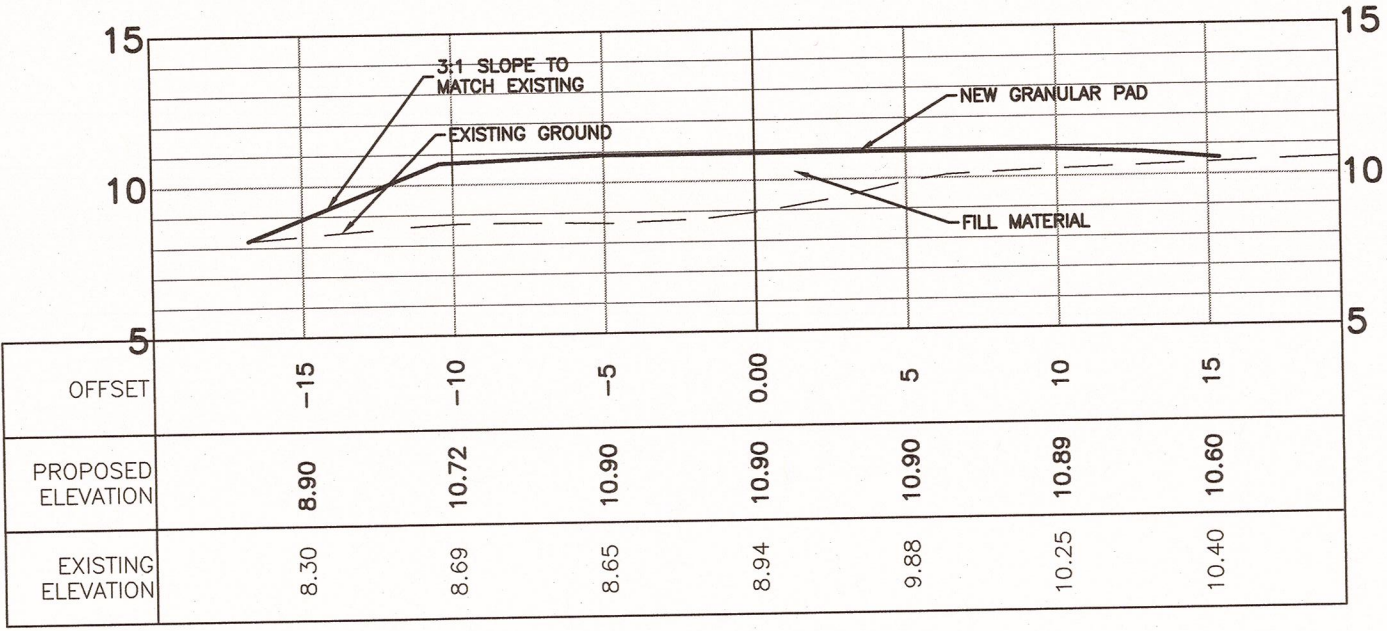
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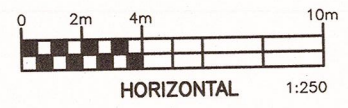
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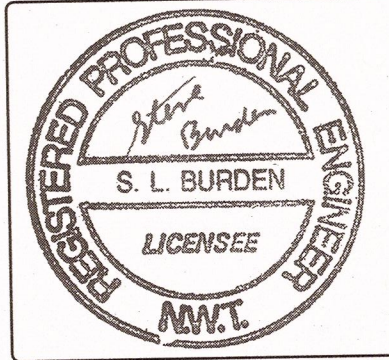


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| 2         | RE-ISSUED FOR TENDER    | 18/11/15 | MCK | SAD   |
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PROJECT  
CORAL HARBOUR, NUNAVUT  
NEW WATER PUMP HOUSE  
PROJECT: 11-3018

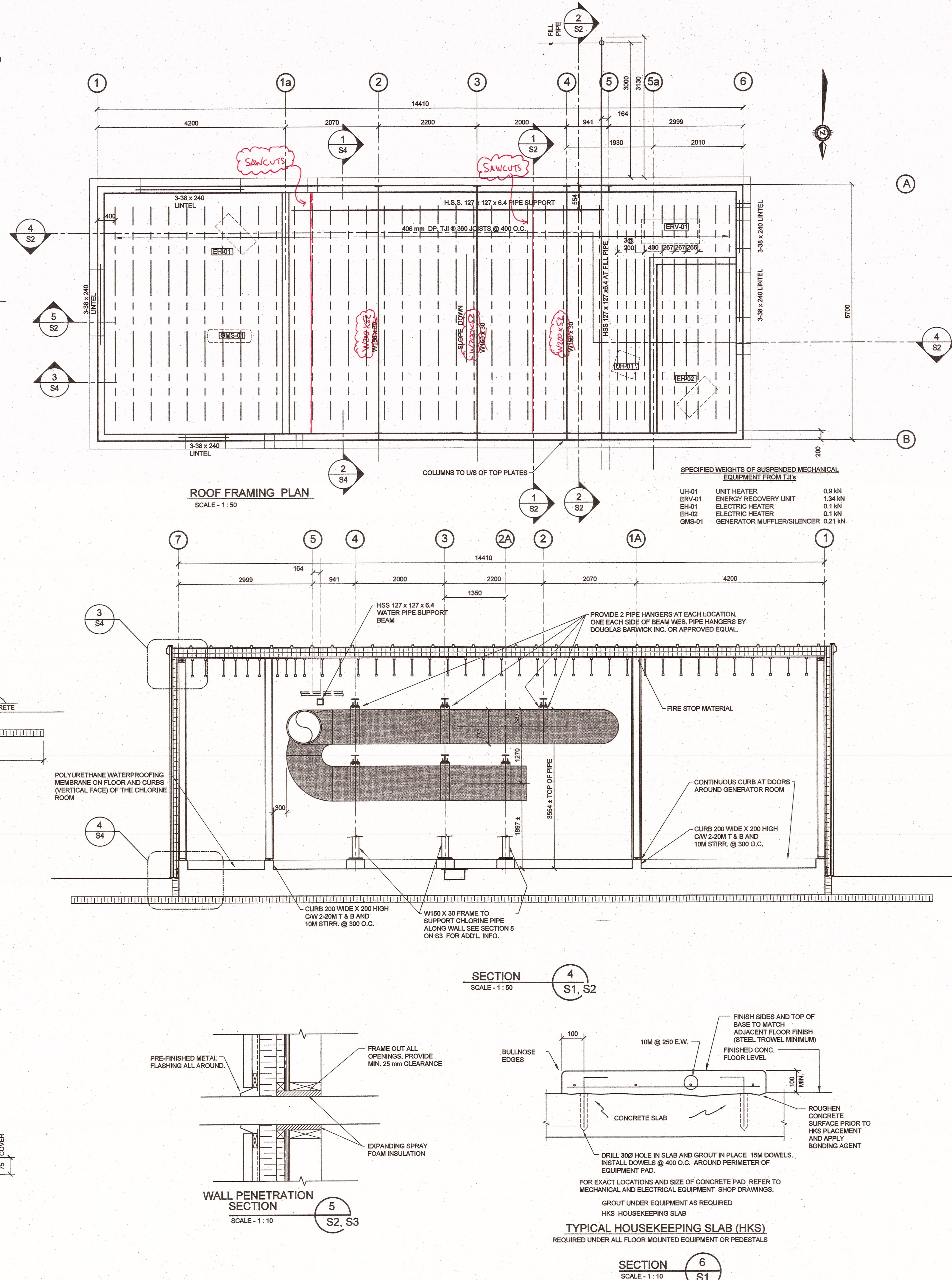
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| drawn by           | S.A.B.      | drawing no. C1            |
| checked by         | S.A.D.      |                           |
| date               | APR 2013    |                           |
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| 3                        | ISSUED FOR CONSTRUCTION | 17/05/2016 | M.N. | K.A. |
| 2                        | REISSUED FOR TENDER     | 18/11/2015 | M.N. | K.A. |
| 1                        | ISSUED FOR TENDER       | 11/12/2014 | M.N. | K.A. |
| No.                      | DESCRIPTION             | DATE       | BY   | APP  |
| <b>R E V I S I O N S</b> |                         |            |      |      |

REGISTERED PROFESSIONAL ENGINEER  
2016/05/17  
K.A. BAKER  
LICENSEE  
N.W.T.  
*[Signature]*

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Signature *Lynn A. Baker*  
Date 2016/05/17  
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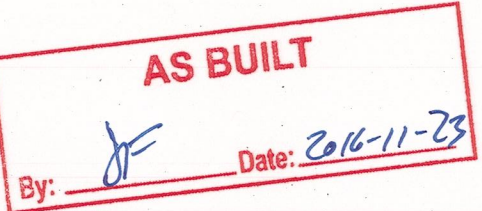
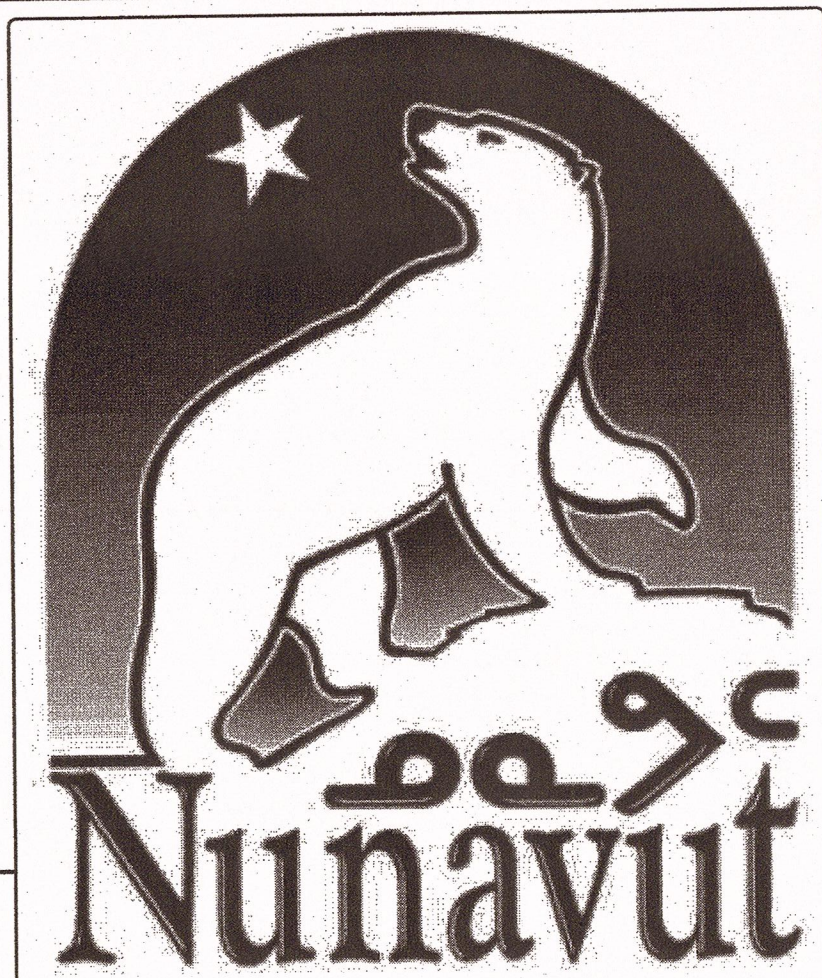
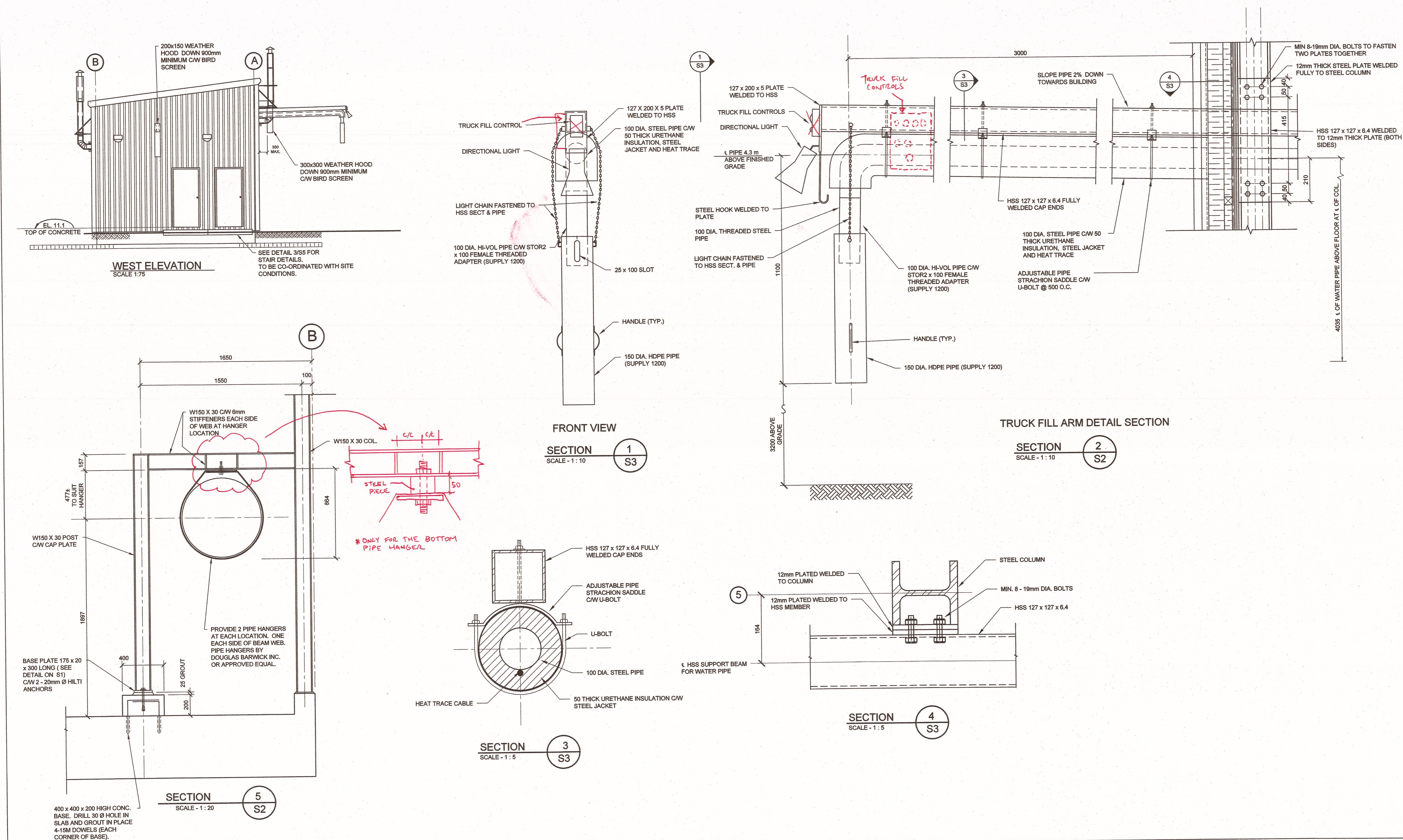
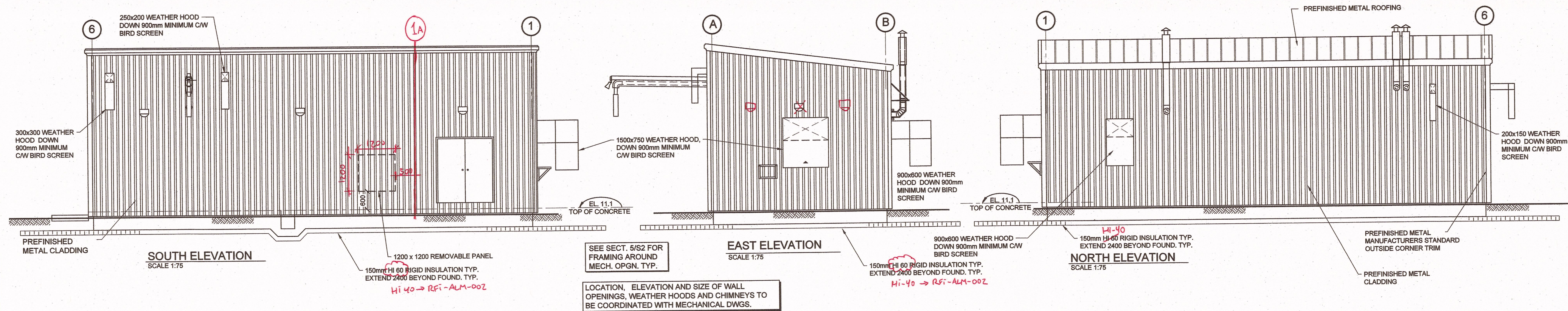
GOVERNMENT OF NUNAVUT  
DEPARTMENT OF COMMUNITY  
AND GOVERNMENT SERVICES

PROJECT: CORAL HARBOUR, NUNAVUT  
WATER TRUCK FILL STATION  
PROJECT: 11-3018

## ROOF FRAMING PLAN AND SECTIONS

|            |            |   |
|------------|------------|---|
| design by  | K.A. BAKER | project no.<br>OTT-00203694-A0<br><br>drawing no.<br><br><div style="font-size: 2em; font-weight: bold; text-align: center;">S2</div> |
| drawn by   | M. NUGENT  |   |
| checked by | K.A. BAKER |   |
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| 3   | ISSUED FOR CONSTRUCTION | 17/05/2016 | M.N. | K.A.B. |
| 2   | REISSUED FOR TENDER     | 18/11/2015 | M.N. | K.A.B. |
| 1   | ISSUED FOR TENDER       | 11/12/2014 | M.N. | K.A.B. |

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EXP SERVICES INC.

Signature: *K.A. Baker*  
Date: *2016/05/17*

PERMIT NUMBER: P483  
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DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES

PROJECT  
**CORAL HARBOUR, NUNAVUT**  
WATER TRUCK FILL STATION  
PROJECT: 11-3018

TITLE  
**BUILDING ELEVATIONS AND FILL PIPE DETAILS**

|             |            |             |                 |
|-------------|------------|-------------|-----------------|
| designed by | K.A. BAKER | project no. | OTT-00203694-A0 |
| drawn by    | M. NUGENT  | drawing no. |                 |
| checked by  | K.A. BAKER |             |                 |
| date        | NOV. 2013  |             |                 |
| scale       | AS NOTED   |             |                 |

**S3**



|            |            |   |
|------------|------------|---|
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| drawn by   | M. NUGENT  |   |
| checked by | K.A. BAKER |   |
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| scale      | AS NOTED   |   |



