



**UBC Energy and Water Services**

6130 Agronomy Road  
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## **UBC Energy and Water Services Design Review Information Package**

This package contains information useful to consultants and contractors. It contains a description of the development processes that involve UBC Energy and Water Services (EWS – formerly UBC Utilities), and a checklist of our requirements. All required forms, including those referred to in this package can be found at the Energy & Water website: <http://www.energy.ubc.ca/community-services/contractors-developers/> unless other URL's are provided.

Standards and details are found at the Technical Guidelines website:

Home: [www.technicalguidelines.ubc.ca](http://www.technicalguidelines.ubc.ca), Governing Overview:

[http://www.technicalguidelines.ubc.ca/technical/gov\\_overview\\_index.html](http://www.technicalguidelines.ubc.ca/technical/gov_overview_index.html),

or utilities-specific information is mostly found in Division 33:

[http://www.technicalguidelines.ubc.ca/technical/divisional\\_specs.html#DIV33](http://www.technicalguidelines.ubc.ca/technical/divisional_specs.html#DIV33) and

Division 26: [http://www.technicalguidelines.ubc.ca/technical/divisional\\_specs.html#DIV26](http://www.technicalguidelines.ubc.ca/technical/divisional_specs.html#DIV26)

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- Electrical /steam /water/gas meter interconnection details
- Requirements for Energization of Unit Substations at UBC
- Requirements for Energization of Low Voltage Electrical Services at UBC



## Energy & Water Services Approval Conditions for the Development Review Committee

It is recognized that detailed servicing information necessary to determine utility services is not always available at the time of issuing a development permit. The development permit approval by the Energy & Water Services Director, Engineering & Utilities, is subject to the following conditions concerning utility services:

1. The project electrical and mechanical engineers, when selected, are to obtain existing servicing available and meet with EWS staff to determine the service locations, utility conflicts, and metering requirements.
2. Utility service designs for all buildings are to meet applicable code requirements. All utility services and academic buildings are to be built to the UBC Technical Guidelines. Exemptions from the UBC Technical Guidelines for utility service requirements can only be granted by UBC EWS.
3. Before tender, UBC EWS are to review the main mechanical and electrical service and meter designs for utility compliance and protection requirements. Any significant material or equipment changes after tender which do not comply with UBC Technical Guidelines are to be approved by UBC EWS **before** purchase.
4. UBC EWS will be procuring the necessary utility meters for natural gas, water and hot water (district energy), upon receipt of a purchase order from the developer or project. The developer or project will also pay appropriate service costs. The purchase order is to be provided in advance of meter delivery and service installation.
5. Temporary construction services (electricity, gas and water) are to be paid for by the project. Co-ordination with UBC EWS to install temporary services is required.



**UBC Energy and Water Services Development/Building or SLP  
Permit Approval and Construction Support Services**

**Development Permit Approval by UBC EWS (for design consultants  
and project managers)**

**SUBMIT:**

1. Preliminary Utility Service Connection Application form
2. Utility servicing plan
3. Any related existing utility relocation plan (preliminary).

**SLP/Building Permit Approval by UBC EWS (for design consultants  
and project managers)**

***Demolition Permits***

***A Demolition Plan for Existing Utilities*** is required to ensure that:

1. the existing water, gas, and hot water services are capped off at the mains
2. the existing sanitary and storm services are capped off outside the construction site
3. the existing electrical service is to be disconnected as per UBC standard

A plan for existing utility system shut down shall be submitted to EWS for approval prior to commencement of demolition and excavation.

***Excavation Permits***

***An Excavation Plan*** is required to ensure that:

1. excavation drawings show all existing utility infrastructure that is immediately around the site
2. soil anchors are not being driven into adjacent utility infrastructure
3. utility lines being removed are to be capped and removed properly and any dangers are pointed out
4. if any infrastructure in the driveway area needs to be protected from heavy equipment

***An Erosion and Sediment Control Plan*** is required for all construction activities where the soil is disturbed and sediment or construction related wastes may be discharged into the UBC storm sewer system. UBC EWS will check the plan to ensure that proper temporary and permanent erosion and sediment control features as required are to be constructed or installed. Design standards must meet the City of Vancouver's Bulletins 2002-002-EV and 2002-003-EV or latest revision thereof. **UBC Campus & Community Planning will grant the final sign off for the Erosion and Sediment Control Plan.**



### ***Foundation Permits***

All proposed civil, mechanical plumbing, electrical, hot water, gas, architectural, and landscape design drawings should be submitted to EWS for review to ensure that any comments provided to the consultants have been incorporated and any other issues that may have arisen have been resolved. The minimum required design information on the design drawings shall include the civil and mechanical plumbing design for the underground portion of the project up to grade.

A ***Service Connection Application*** is required to be submitted for any connection to a utility service as defined in the UBC Technical Guidelines in Division 33 and 26.

Of particular importance at this time are the water, gas, electrical, storm, and sanitary, or hot water service piping designs since these service lines go in as part of the foundation.

### ***Full Building Permits***

At this stage the full set of design drawings are reviewed by EWS and all utility related issues have been resolved. If the project goes directly for full building permit (usually smaller jobs), the above drawings are reviewed and a Service Connection Application is submitted if there are net increases of utility loads.



## UBC Energy & Water Services Development Support Services (for general contractors and project managers)

### Temporary Utility Service Supply

An application for temporary utility service supply shall be submitted to EWS. For a temporary service supply of over 30 days, a Utility Service Agreement shall be signed by the general contractor.

#### ***Temporary Electrical Service***

EWS electrical supervisor will find the most suitable temporary electrical construction service for the project. The cost and energy usage will be billed to the general contractor. BC Hydro may also be able to supply construction services in some areas.

#### ***Temporary Water Service***

A ***Temporary Water Connection Permit for Construction*** shall be submitted to EWS. EWS staff will coordinate with the contractor to install a water meter and backflow preventer on the service connection.

A large user (with a projected use of more than 50 cubic meters per day) shall also submit the ***Utility Service Connection Application Form*** in order to decide the water load as required.

### Permanent Utility Service Supply

#### ***Electric Service Connection***

EWS electrical crews will install, commission and energize the primary cables to the indoor vault or pad mount transformer (PMT) switchgear (or electrical contractor at EWS full discretion). The electrical contractor will install, commission and ready the vault or PMT for energization. The contractor will provide all meters and metering accessories (CT's & PT's) required by UBC Technical Guidelines. EWS electrical will verify the metering installation.

The contractor will ensure all EWS energization requirements are fulfilled along with any consultant sign off and provincial electrical approval. EWS will energize the high voltage vault or PMT along with the electrical contractor by a mutually agreeable date. The second high voltage feeder (if required) will be energized at the discretion of EWS electrical and as UBC operations require to ensure reliability of the distribution system. All electrical consumption during construction (for all electrical services) will be billed to the general contractor until a handover date has been determined.

#### ***Water, Natural Gas, and Hot Water Services***

EWS will decide the size of the meter based on the information on the ***Service Connection Application Form*** as provided by the design consultants. Once the project has provided a purchase order, EWS will procure the water, natural gas, and



hot water meters and either oversee or install the service to ensure it is suitable. Meters are charged to the project. Once these meters are in service, the usage is billed to the general contractor while the building is under construction. We supply these meters to meet our meter standard requirements.

## Utility Pipe Installation, Testing Inspection, Final Grading

Upon completion of all utility pipe laying and related infrastructure and before backfilling, the contractor shall notify for inspection the UBC EWS Mechanical Utilities Engineer (Fax: 604-822-8833) & Manager, Electrical Utilities (Fax: 604-822-8833) and EWS Head Plumber or Head Steam Fitter (Fax: 604-822-4416). Notification for inspection shall be provided minimum 24 hours in advance. UBC Energy & Water Services' Mechanical Utilities Engineer requires one set of red line drawings, within 60 days from backfill or prior to system activation, whichever comes first.

The contractor shall also notify the UBC EWS Mechanical Utilities Engineer and EWS Head Plumber or Head Steam Fitter 24 hours in advance of the testing as required in the UBC Technical Guidelines for utility pipe installation. All tests will be performed in the presence of the EWS inspector.

The Site Superintendent shall notify the EWS Mechanical Utilities Engineer at completion of final grading a minimum of 48 hours in advance, in order to arrange a final walkthrough. Any utilities assets found to be buried must be exposed and raised to final grade before the Occupancy Permit will be issued.

## Service Shut Down and Activation

For all service shut down requests, see link to online request form on following Check List pages. For service activations, complete and submit a Utility Service Activation Request form, found on the energy.ubc.ca website (see page 1 of this document).

### ***Building Turnover***

When the building is finished and partially or completely turned over to UBC or a strata council, the site Superintendent will contact UBC EWS and complete and submit a ***Building Turnover Information for Utilities form***. We will then stop billing the general contractor. A final read of meters will be done to ensure proper billing. If there is a partial turnover we bill a percentage of the utilities until the building is completely turned over.

### ***Project Completion***

UBC Energy & Water Services requires Record drawings of underground services from the consultant to update the university record maps, meter records, and other maps to reflect the actual installed infrastructure. The requirements for submission to the Records Department are as per the UBC Technical Guidelines:

[http://www.technicalguidelines.ubc.ca/technical/divisional\\_specs.html#Div01](http://www.technicalguidelines.ubc.ca/technical/divisional_specs.html#Div01)

- see Section 01 78 39.



## The Utilities Design and Construction Standard Check List

### *Design and Drawing Approval Standards*

- ❑ Utility Preliminary Service Connection Application Form
- ❑ Utility Service Connection Application Form
- ❑ Demarcation point of UBC Energy & Water Services' service
- ❑ UBC Monuments Plan (All dimensions and units as shown on the drawings from utility services outside of building up to UBC Utilities Demarcation point shall be in SI units). See UBC Technical Guidelines Div. 1 Section 01 78 39.
- ❑ Utility pipe trench backfill detail refer to MMCD G4 (for District Energy pipe trench information please contact EWS).

#### Water

- ❑ Water entry detail
- ❑ Water station detail
- ❑ Water meter installation details
- ❑ Fire hydrant and isolation valve connection detail
- ❑ Water blow-down chamber detail refer to MMCD W9
- ❑ Disinfect Water main Breaks (see attached).

#### Gas

- ❑ Permit of BC Gas Safety Authority
- ❑ Natural gas meter installation detail
- ❑ PE gas valve box detail (see attached)
- ❑ Gas meter slab detail refer to FortisBC Gas standards
- ❑ Procedure – Gas Service Install (see attached).

#### Hot Water (District Energy)

- ❑ Permit of regulatory authority
- ❑ District Energy meter installation details
- ❑ District Energy supply/return piping trench detail (under review, contact UBC EWS)
- ❑ Electrical ductbank clearances to steam/hot water distribution line detail
- ❑ C23/C23A cast iron manhole frame and cover detail (see attached).

#### Storm and Sanitary

- ❑ UBC rainfall IDF curves  
(visit [http://climate.weather.gc.ca/prods\\_servs/engineering\\_e.html](http://climate.weather.gc.ca/prods_servs/engineering_e.html))
- ❑ Storm & sanitary manhole and connection details refer to MMCD S1, S2, and S3
- ❑ Oil interceptor installation details refer to City of Burnaby's standard or Vortechs model (see attached)
- ❑ C20 cast iron manhole frame and cover detail (see attached)

- ❑ Letter of request for pumping sanitary or storm to UBC sanitary or storm sewer system.



#### Electricity

- ❑ Concrete encased ductbank detail
- ❑ Direct buried conduit detail
- ❑ Clearance to other utility services (see steam - attached)
- ❑ Electrical manhole standards
- ❑ High voltage conductor installation detail
- ❑ Electrical metering standards
- ❑ Electrical / steam/ water meter interconnection details (see attached)

#### ***Temporary or Construction Utility Supply***

- ❑ Utility Services Agreement
- ❑ Permit for fire hydrant use (maximum 30 day use only)  
(<http://planning.ubc.ca/vancouver/planning/application-forms-documents/>)
- ❑ Application for a Temporary Water Connection Permit for Construction
- ❑ UBC Service Connection Application Form

#### ***Service Disconnection and Activation***

- ❑ UBC Service Shutdown Request  
(<http://www.buildingoperations.ubc.ca/resources/policies-procedures-forms/>)
- ❑ Utilities Manhole Entry Permit
- ❑ Utility Service Activation Request
- ❑ Requirement for Energization of Unit Substations at UBC
- ❑ Requirements for Energization of Low Voltage Electrical Services at UBC


#### ***Building Turnover***

- ❑ Building Turnover Information for Utilities form

**Most design standard documents mentioned in this package can be downloaded from the Technical Guidelines website, Divisions 33 and 26:**  
[http://www.technicalguidelines.ubc.ca/technical/divisional\\_specs.html](http://www.technicalguidelines.ubc.ca/technical/divisional_specs.html)

**Energy & Water Services' forms, agreements, applications, requests and permits can be accessed from:** <http://www.energy.ubc.ca/community-services/contractors-developers/>



<b>The University of British Columbia Land and Building Services</b>		<b>Emergency Repairs DISINFECTION METHODS FOR WATERMAIN BREAKS</b>
<b>Work Procedure</b>		
<b>Prepared by:</b> Jenny Liu, Mechanical Utilities Engineer	<b>Approved by:</b> 	<b>Issue Date:</b> May, 2007  <b>Replaces:</b>

1.0 Policy:

This policy summarizes the procedures regarding sanitary practices and disinfection methods during repairs of watermain breaks and is to be followed by all Utilities personnel.

2.0 Definition:

This policy applies to any watermain break or damage to the water distribution system that exposes the system to any potential contamination.

3.0 Objective:

This procedure is required to provide for the protection of the water distribution from contamination during emergency repairs. The procedures explained below are based on AWWA Standard C651-92 (Disinfecting Water Mains), Ontario Ministry of the Environment Bulletin 65-W-4 (Chlorination of Potable Water Supplies), and the 1994 City of Vancouver Standard specifications.

4.0 Procedure:

4.1 Repairs with no groundwater entry into the watermain:

These typically consist of cracked mains (“broken backs”), which are repaired with clamping devices. If the main remains full of pressurized water and some positive outflow from the break is always maintained (the valves are left cracked), it is generally assumed that groundwater or other contamination will not enter the main. Under these circumstances, the only disinfection that is required is to clean and swab (with 6% chlorine solution) the area to be repaired, and swab the repair clamp before applying it. No bacterial test is required.

If, however, a positive water flow out of the pipe is not maintained at least until the trench water is pumped down below the pipe invert, these conditions cannot be considered to have been met, and more complete disinfection and testing is required.

4.2 Repairs subject to groundwater contamination of the watermain:

In these cases a larger break or blowout has occurred, or it has been impossible to maintain continual outflow from the watermain, or pump the trench water level down below the pipe before completely shutting off the water. Groundwater will have entered the broken main. If sewage contamination or other health hazards are not suspected, these cases require disinfection and bacterial testing of the repair, but the results of the bacterial tests are not required before the main is put back into service.

Groundwater contamination must be minimized as much as possible. The trench should be excavated below the main and kept pumped out once repairs begin. Trench walls and floor should be sprayed with 6% chlorine solution to reduce the chance of further contamination from the trench. Valves feeding each side of the break should be left cracked open. Any groundwater and debris in the main must be flushed or cleaned out before installing repair pieces.

All repair pieces must be swabbed or sprayed with 6% chlorine solution (household strength bleach) before installation.

Bacterial tests are required for these repairs. The water sample must be collected from the repaired section of pipe immediately before backfilling the trench. This will generally require that the repaired section be tapped to create a sampling location. A second sample should be collected from a nearby service or hosebib, to act as a “source” sample for comparison. As for watermain construction, these samples must be taken to a lab for total and fecal coliform analysis.

The watermain will be put back into service after repairs are completed and the watermain has been chlorinated. The bacterial tests are intended primarily to function as confirmation that sanitary practices were effective, however if they come back positive (coliforms are present) then further disinfection and testing will be required. If fecal coliforms are detected, that section of watermain must be shut down until disinfection and successful retesting is completed. The strategy for any cases with positive test results must be discussed with the Mechanical Engineer if and when they occur.

Chlorination of the watermain may require the excavation and tapping of the watermain at each end of the block where the break has occurred to facilitate the chlorination of the watermain. Disinfection of the watermain requires a minimum concentration of 200 mg/l for a retention time of two hours. At the end of this time, the chlorine residual (free chlorine concentration) must be a minimum of 100 mg/l.

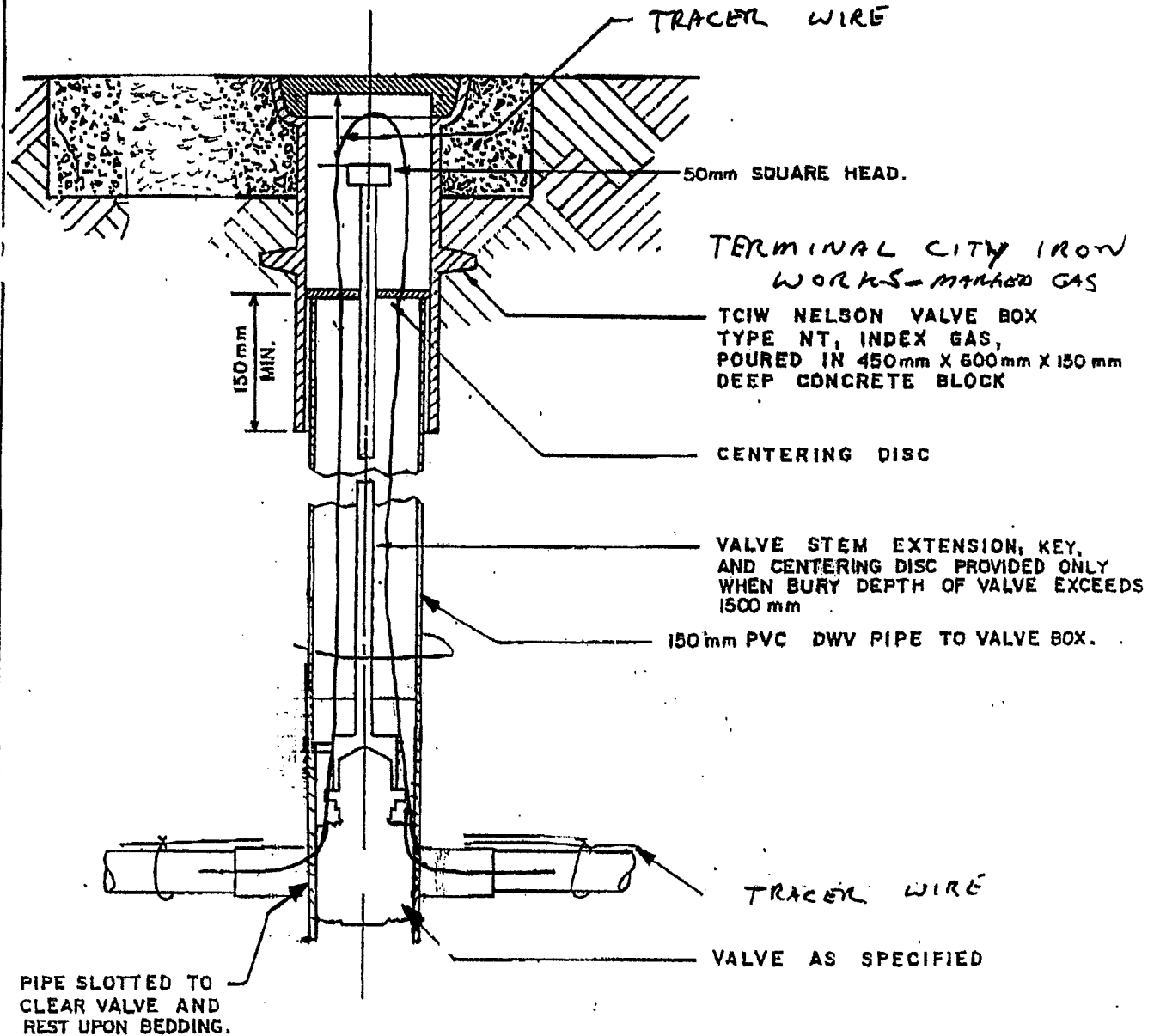
If this is not met, re-chlorination must take place. After chlorination, the repaired section of watermain must be flushed (into a sanitary sewer) until the chlorine residual is less than 1 mg/l.

Individual services should also be flushed to remove chlorine that may have entered.

#### 4.3 Repairs subject to wastewater and other gross contamination of the watermain:

In any case where a watermain break has been accompanied by a broken sanitary sewer main or sewer service, or when other contaminants that are suspected health concerns may have entered the watermain, the procedures for Case 2 shall be followed, except that **THE WATERMAIN MUST NOT BE PUT BACK INTO SERVICE UNTIL SUCCESSFUL COLIFORM TEST RESULTS (undetectable total and fecal coliforms) HAVE BEEN OBTAINED.** These cases may require the provision of temporary water services to customers, and will cause public relation difficulties, thus the Mechanical Engineer should be consulted when they occur.

U. B. C. UTILITIES



DETAIL OF GAS VALVE BOX FOR PLASTIC VALVES.

1	SEPT. '87	NCR SERVICE BOX ADDED	<i>[Signature]</i>
NO.	DATE	REVISIONS	BY

DEPT. OF PHYSICAL PLANT THE UNIVERSITY OF BRITISH COLUMBIA	DATE MAY '96	DETAIL OF GAS VALVE BOX	STANDARD NO.
	DRAWN (J.E.L.)		6-1.
	APP'D.		



**UBC Energy and Water Services**

6130 Agronomy Road  
Vancouver, B.C., Canada V6T 1Z3

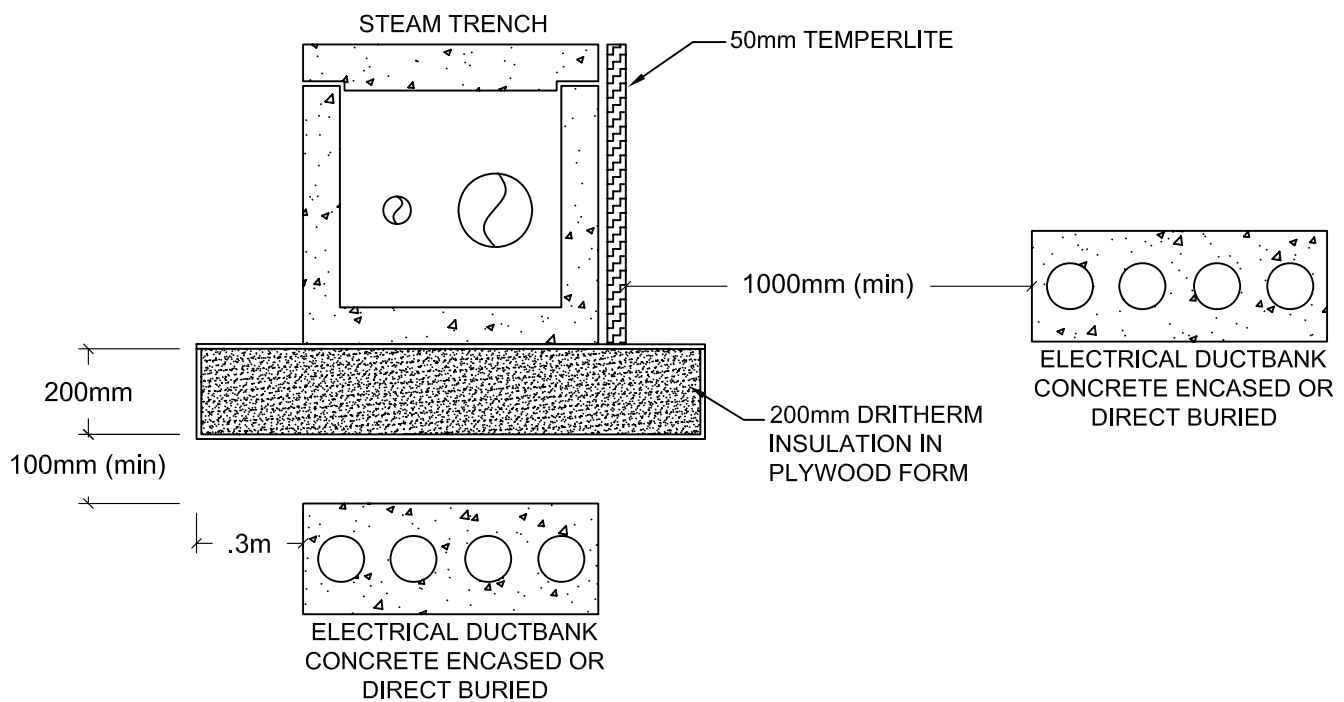
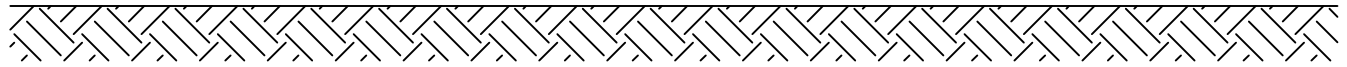
Tel: (604) 822-9445 Fax: (604) 822-8833

**Procedure for Installing New Gas Service at UBC**

1. Application must be made for a Natural Gas Service Connection as per UBC Technical Guidelines, Division 33, Section 330010: Underground Utility Services. A Utility Service Connection Application form must be completed and returned to UBC Energy & Water Services (EWS, formerly UBC Utilities) along with a copy of the design drawing. The application form can be found at:  
[www.energy.ubc.ca/community-services/contractors-developers/](http://www.energy.ubc.ca/community-services/contractors-developers/) .
2. The design must be approved by UBC EWS and must follow UBC Technical Guidelines, Division 33, Section 315100:  
[http://www.technicalguidelines.ubc.ca/technical/divisional\\_specs.html](http://www.technicalguidelines.ubc.ca/technical/divisional_specs.html)
3. The design drawing will include:
  - Current base map (obtain from UBC's Facilities & Capital Planning - Records Department (604) 822-9570).
  - Pipe profile, including final grade. If final grade is unknown it is FortisBC or Contractor's responsibility to consult with civil designer to obtain final grade.
  - Other existing utility services and required separations. Each service should have its own line weight and/or colour.
  - Any removed or abandoned services (noted as such)
  - Tie-in details. Top tapping is not allowed at UBC. All tie-ins must be done with side tapping.
  - Gas meter location, including pad details if pad mounted and details of enclosure or other meter protection. This must be provided by the party responsible for designing gas service to the building.
  - Isolating valves must be provided on each service connection and located directly at the tie-in location. The valve shall not be installed in a potentially inaccessible place, such as a parking stall.
4. Once design is approved, a gas permit form from the Gas Safety Authority and a UBC Excavation Permit must be obtained.
5. Warning tape is to be provided at 300 mm below finished grade level.
6. A top tracer wire shall be attached to underground polyethylene pipe.



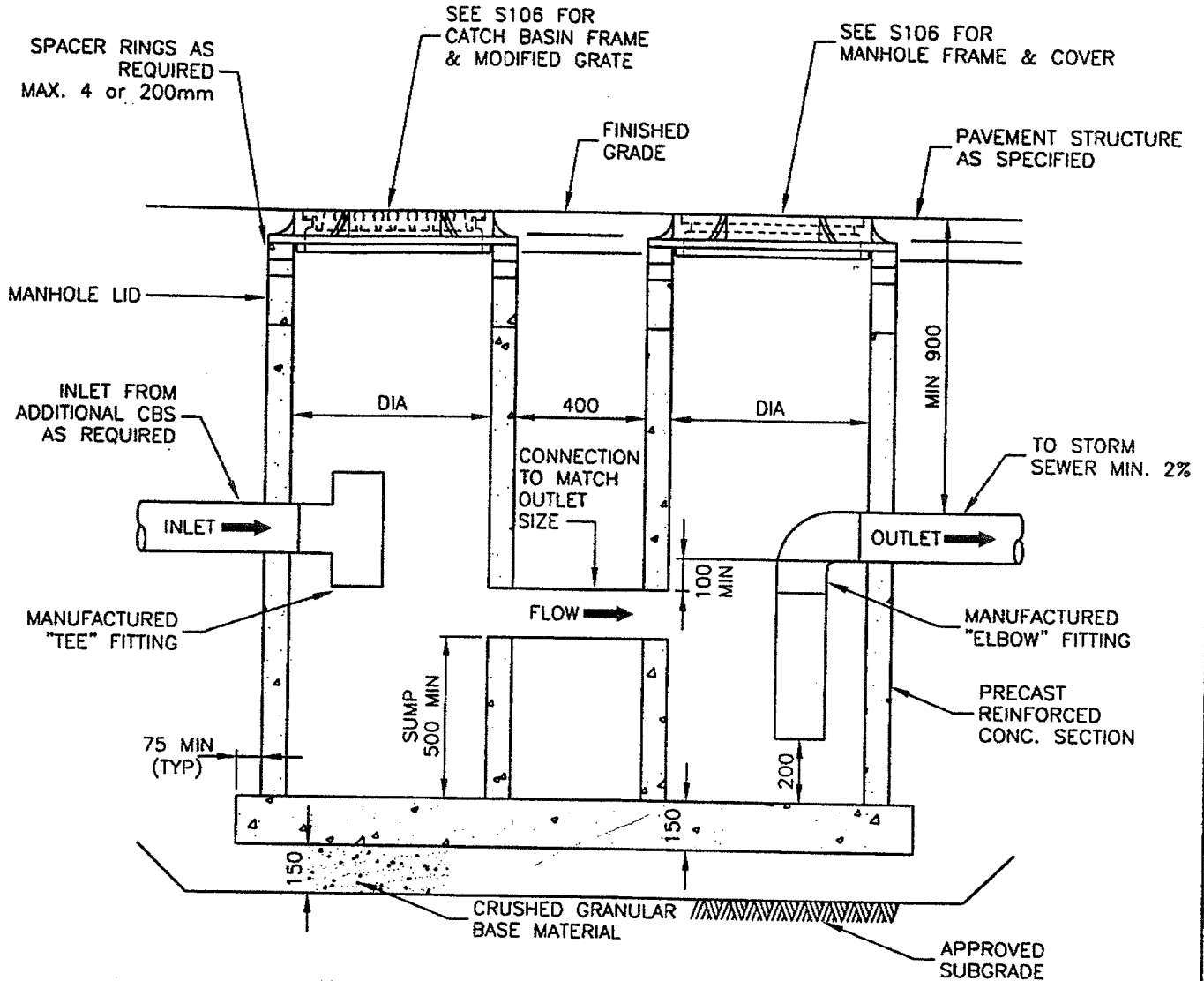
7. Continuity of the existing cathodic protection system shall be maintained when any additions or replacements are undertaken.
8. Once the applicable permits are approved and record drawings obtained, the Contractor (or in-house crew) performing construction is responsible for locating all underground services as per Master Municipal Construction Documents (MMCD) standards. Specifically, MMCD (2000 edition) Section 4.3.4. Furthermore, WCB standards including Part 20, Section 20.79 shall be strictly followed. For more information go to:  
[http://www.technicalguidelines.ubc.ca/technical/gov\\_overview\\_index.html](http://www.technicalguidelines.ubc.ca/technical/gov_overview_index.html)
9. Once locations have been discerned, UBC EWS staff will support if required, by verifying locations, condition, and features of existing services, no charge (604) 822-5986.
10. 48 hours notice must be provided to the EWS Head Plumber if a shut down is required. The UBC Service Shutdown Request form must be completed and returned to the Facilities Manager at least two weeks prior to the date the shutdown is required. The form can be found at:  
<http://www.buildingoperations.ubc.ca/resources/policies-procedures-forms/>
11. The contractor on site must have Issued for Construction drawings and present them on request of inspector. Failure to produce will result in an immediate work stoppage.
12. A leakage test of a newly installed gas service must be performed with a UBC EWS inspector present. Please call the Assistant Civil Engineer 604-822-0450 or Mechanical Utilities Engineer 604-822-3274.
13. Prior to backfill, all new services shall be inspected by EWS's inspector. EWS requires one set of red line drawings submitted within 60 days of backfill.
14. Energizing of new services can only be done by Utilities Plumbers. No gas valves shall be operated by contractors.
15. Contractor will provide mark up drawings to the designer. The designer is required to provide record drawings: one set hard copy to UBC EWS and one set hard copy and one digital copy to Facilities & Capital Planning's Records Section within 60 days of completion. For Autocad and Record drawing requirements, please see:  
[http://www.technicalguidelines.ubc.ca/technical/divisional\\_specs.html#Div01](http://www.technicalguidelines.ubc.ca/technical/divisional_specs.html#Div01) section 017839.



NOTES:

1. ALL MEASUREMENTS ARE BASED ON THE STEAM DISTRIBUTION CONCEALED WITHIN CONCRETE TRENCH.
2. FOR DIRECT BURIED STEAM DISTRIBUTION PIPING REFER TO BC HYDRO CIVIL STANDARD ES 54 H4 (sh 1-3).
3. IN ALL CASES, ELECTRICAL DUCTBANK SHALL NOT RUN PARALLEL TO STEAM TRENCH FOR LONGER THAN 10m.
4. IN ALL CASES, ELECTRICAL DUCTBANK SHALL NOT RUN DIRECTLY ABOVE STEAM LINES EXCEPT AT CROSSINGS.
5. DRITHERM PRODUCT AVAILABLE FROM:
  - BURNABY INSULATION SUPPLIES  
5970 BERESFORD ST.  
BURNABY, BC  
604-430-6981





MAXIMUM PAVED PARKING AREA	BARREL DIA	OUTLET SIZE
600m <sup>2</sup>	24" 600mm $\phi$	150mm $\phi$
1750m <sup>2</sup>	30" 750mm $\phi$	150mm $\phi$
3700m <sup>2</sup>	36" 900mm $\phi$	200mm $\phi$

**NOTES:**

1. GROUT TO SEAL PIPE OPENING, LIFTING HOLES, SECTION AND SPACER RINGS, INSIDE AND OUT
2. CONCRETE ENCASE PIPES WITH LESS THAN 900mm COVER
3. DOUBLE MANHOLE LIDS MAY BE USED WHERE INTERCEPTOR IS NOT INSTALLED IN A PARKING AREA
4. PRECAST UNIT MAY BE USED PROVIDING IT MEETS THE MIN. CAPACITY REQUIREMENTS. AS APPROVED BY CONSTRUCTION ENGINEER.
5. MANHOLE LID SECTION MAY BE OMITTED FOR 600mm $\phi$  BARRELS
6. USE 150x150x3 WWF IN CONCRETE SLAB WHEN THE SLAB LENGTH EXCEEDS 2m

NO.	DATE	REVISION	APP'D	BY

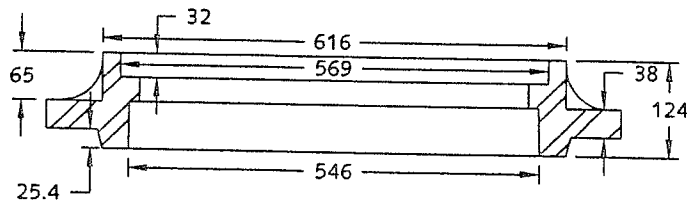
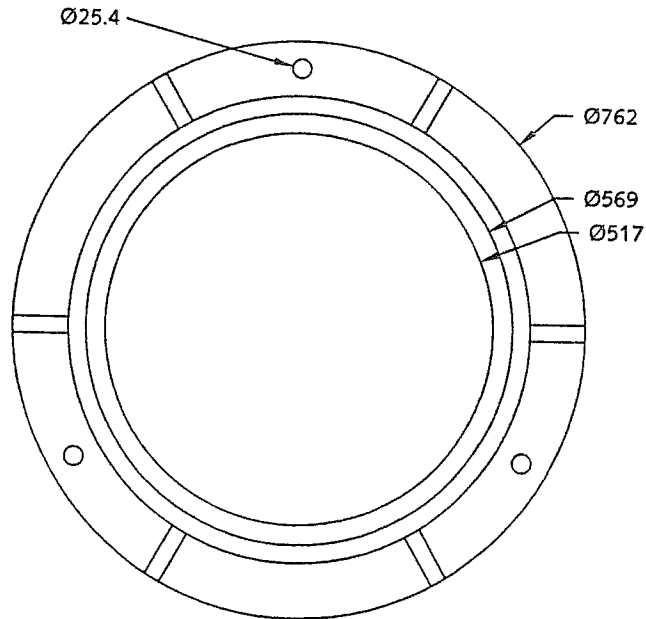
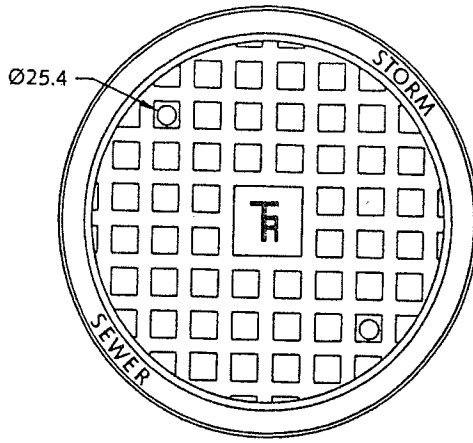


**OIL INTERCEPTOR INSTALLATION**

DRAWN BY: HLOUIE SCALE: N.T.S.  
 APPR'V'D BY: *[Signature]* DATE: 99-02-08

**BBY- S119**





Notes:

1. Mat'l: ASTM A46 class 25 grey iron.
2. Finish: bituminous dip.
3. Rated for highways H20 loading.
4. Weight: cover = 60 kgs, frame = 70 kgs.



The LANGLEY CONCRETE Group of Companies

DESCRIPTION:

C-20 Frame & Covers

*sanitary + storm*

DRAWN BY:

JAO

ORIGIN:

LC&T

SCALE:

1:10

DRAWING NO:

DATE:

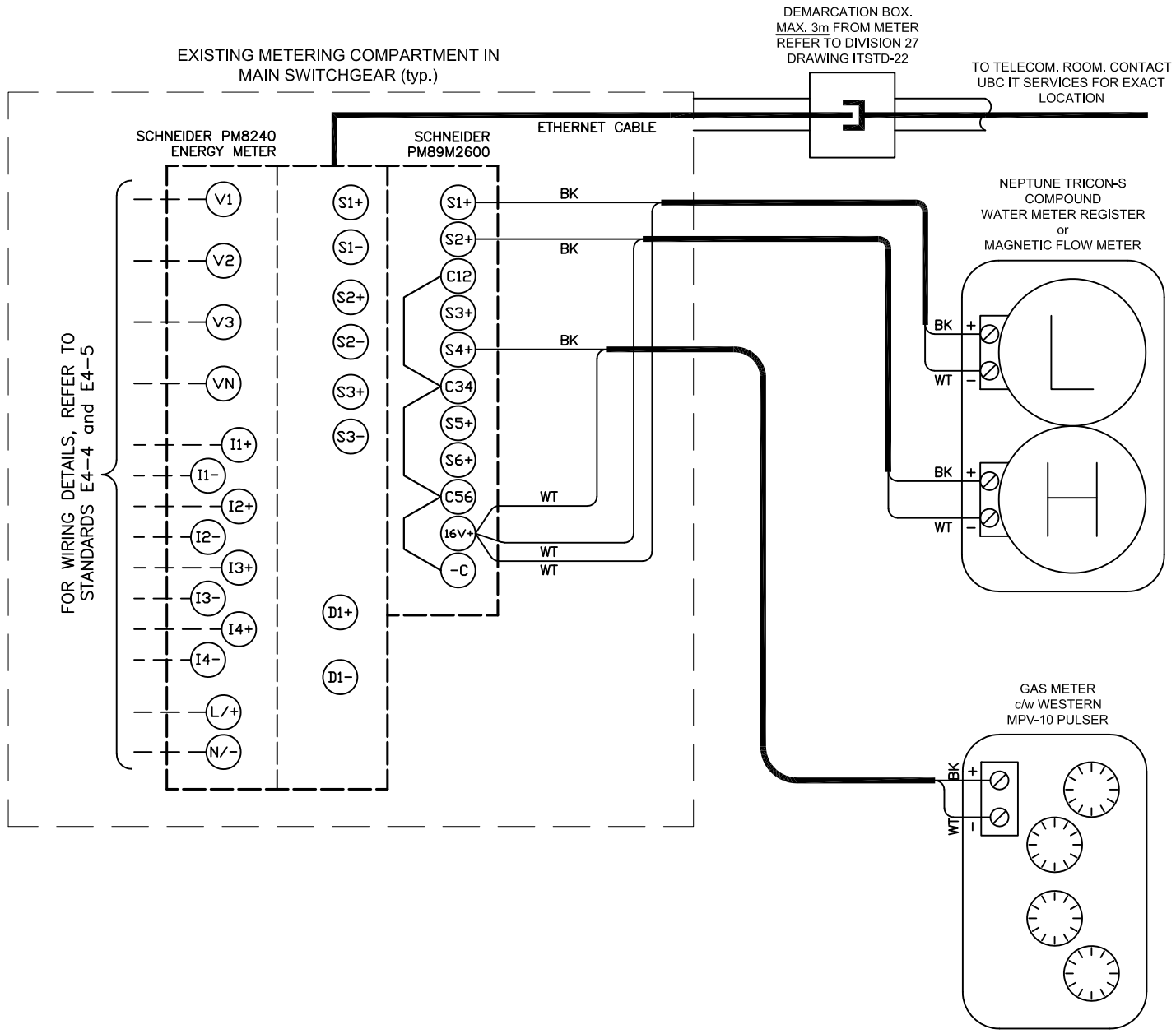
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LANGLEY (604)533-1656

VICTORIA (250) 478-9581

ABBOTSFORD (604) 850-5000



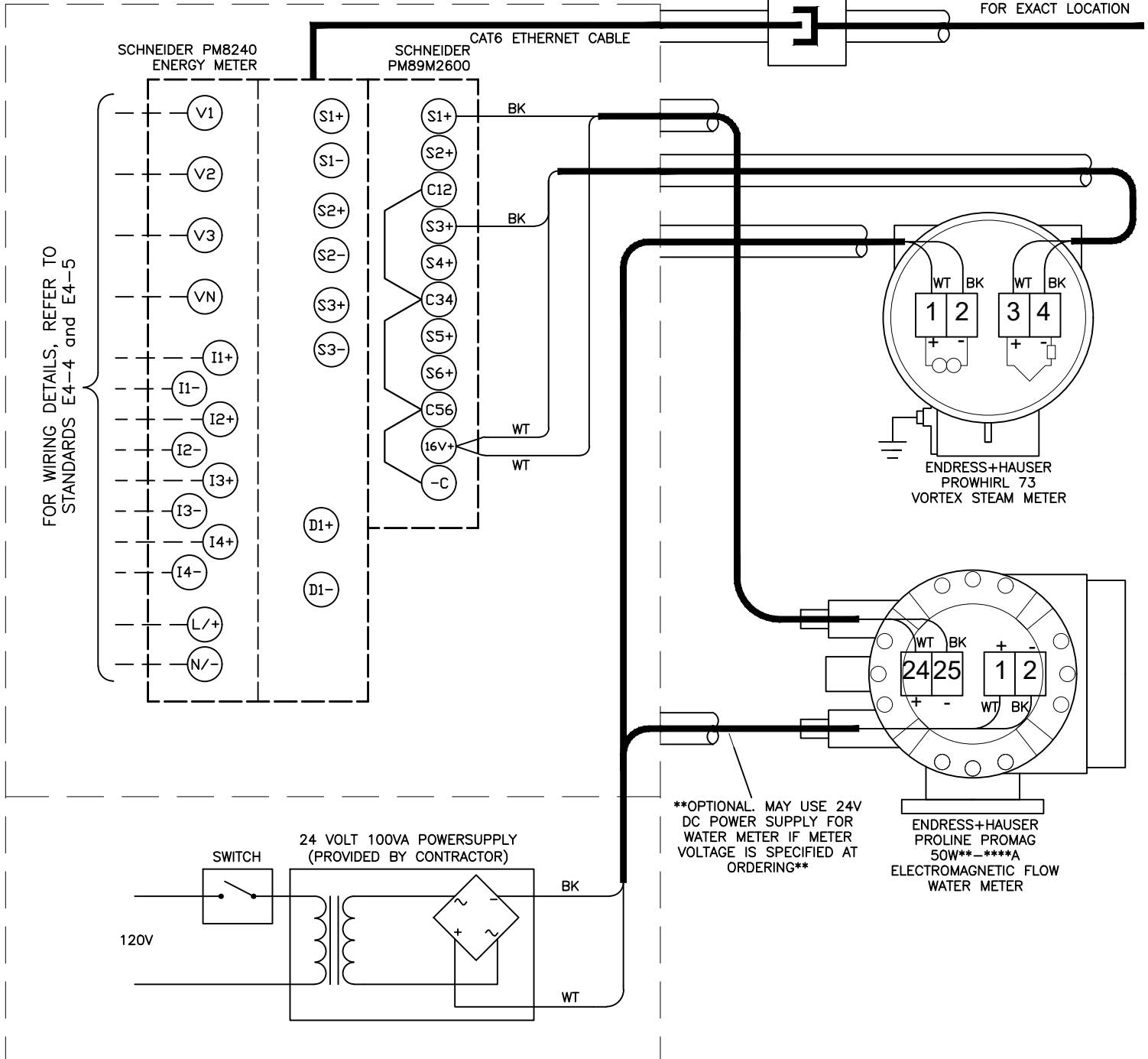
FOR WIRING DETAILS, REFER TO STANDARDS E4-4 and E4-5

- NOTES:**
- All cables to be run in approved raceway between terminations.
  - All cables shall be minimum #18-3 shielded.
  - All shields to be grounded at PM8240 meter end only.
  - Programming and commissioning PM8240 meters shall be done by UBC Energy & Water Services.
  - All field wiring shall be checked for correct polarity and continuity.

EXISTING METERING COMPARTMENT IN  
MAIN SWITCHGEAR (typ.)

DEMARICATION BOX  
MAX. 7m FROM METER

TO TELECOM. ROOM.  
CONTACT UBC IT SERVICES  
FOR EXACT LOCATION



FOR WIRING DETAILS, REFER TO  
STANDARDS E4-4 and E4-5

\*\*OPTIONAL. MAY USE 24V  
DC POWER SUPPLY FOR  
WATER METER IF METER  
VOLTAGE IS SPECIFIED AT  
ORDERING\*\*

- NOTES:**
- All cables to be run in approved raceway between terminations.
  - All cables shall be #18-2 (or 18-3 as req.) Belden 9318 or equivalent.
  - All shields to be grounded at PM8240 meter end only.
  - 24 volt DC power supply shall be provided as part of installation. Mount DC power supply within main electric metering section or as close as practical.
  - Programming and commissioning of PM8240 meters shall be done by UBC Utilities. Commissioning of Endress+Hauser meters may be done by the contractor.
  - All field wiring shall be checked for correct polarity and continuity.

# THE UNIVERSITY OF BRITISH COLUMBIA



**UBC Energy & Water Services**  
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Vancouver, BC Canada V6T 1Z3

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## Requirements for Energization of Unit Substations at UBC

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The following documentation is required prior to the energization of any unit substation at the University of British Columbia. Furthermore, all HV cabling must be completed & ready for the final connection to the University's power system. In conjunction with these requirements Service Shutdown & Service Connection Permit applications must be submitted & approved in advance as per the general contract documents.

### **Required Documentation or Conditions for Energizing Unit Substation:**

1.  Provide the Coordination Curves for the substation protection.
2.  Provide a copy of Manufacturer's Shop Drawings for the unit substation and distribution; including all protection and secondary metering wiring.
3.  Provide a copy of the approved FINAL PROVINCIAL ELECTRICAL INSPECTION CERTIFICATE for the substation.
4.  Provide a copy of the COMMISSIONING REPORT for the Unit Substation.
5.  Provide a copy of the test results for the GROUND RESISTANCE TEST MEASUREMENTS for the ground grid in the main electrical room (location of Unit substation).
6.  Provide a copy of the Seismic Engineer's certificate of approval.
7.  Provide a copy of the test results for the new HV CABLES & SPLICE KITS installed.
8.  The unit substation & the entire main electrical room must be clean & clear of debris.
9.  The entire unit substation must be completely closed with all the covers & doors bolted closed.
10.  Provide the consulting electrical engineer's recommendation to energize the substation.
11.  UBC Energy & Water Services may require, for reasons of worker safety, that all major sub-distribution feeder cables have been pulled and prepared for termination within the main distribution centre.

Prior to energization, all required documentation must be sent to UBC Energy & Water Services.

Indicates documentation received or conditions met

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## Requirements for Energization of Low Voltage Electrical Services at UBC

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The following documentation is required prior to the energization of any low voltage (less than 750 volts) electrical service at the University of British Columbia. Furthermore, all cabling must be completed & ready for the final connection to any point within the University's power system. In conjunction with these requirements, Service Shutdown & Service Connection Permit applications must be submitted & approved in advance as per the general contract documents.

### **Required Documentation or Conditions for Energizing Low Voltage Electrical Services:**

1.  Provide the Coordination Curves for the distribution centre protection (if applicable).
2.  Provide a copy of Manufacturer's Shop Drawings for the distribution centre, including layout of all protection and secondary metering wiring (if included).
3.  Provide a copy of cable megger tests between all phases and between phase and ground.
4.  Provide a copy of the approved FINAL PROVINCIAL ELECTRICAL INSPECTION CERTIFICATE for the distribution centre.
5.  The entire main electrical room must be clean & clear of debris.
6.  The entire distribution centre must be completely closed with all the covers & doors bolted closed.
7.  Provide the consulting electrical engineer's recommendation to energize the substation.
8.  UBC Energy & Water Services may require, for reasons of worker safety, that all major sub-distribution feeder cables have been pulled and prepared for termination within the main distribution centre.

Prior to energization, all required documentation must be sent to UBC Energy & Water Services.

Indicates documentation received or conditions met