

Appendix H

Construction Coordination, Requirements & Guidelines



EXTERIOR WORKS

Process Description

Lonsdale Energy's distribution piping system (DPS) is extended to service the new development. The DPS typically consists of two below-grade pre-insulated steel pipes, two below-grade communications conduits, and specific backfill requirements.

Lonsdale Energy is responsible for extending the DPS to the development. This involves excavating the existing DPS, completing the tie-in connection, installing new piping extension, and connecting the DPS to the development (typically through the foundation wall into the P1 parkade level).

Requirements and Coordination Items

The developer's general contractor (GC) is responsible for coordinating the following items with Lonsdale Energy and any of our retained design consultants and contractors:

1. General coordination (site safety, welding requirements, water supply, temporary power, etc.).
2. Permanent water supply.
3. GFCI electrical receptacles.
4. Availability of sanitary sewer connections.
5. Coordinate installation scheduling and sequencing to ensure Lonsdale Energy has appropriate site access during construction while minimizing disruption to ongoing development activities.
6. Coring through required exterior foundation walls at DPS piping building penetration points.
7. Shotcrete removal in the areas of required coring.
8. Building waterproofing after installation of DPS pipes through the cored holes.

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9. Any protective measures deemed necessary by Lonsdale Energy and/or our retained design consultant along the pipe route. This typically includes installation of root barriers near trees, protective casing pipes in areas with high ground load areas, and other similar measures.

Meetings

The required site meetings are project-dependent, but the following are generally required:

1. Pre-design site meeting/walk-through with the GC, Lonsdale Energy and our retained mechanical consultant.
2. Pre-construction site meeting/walk-through with the GC, Lonsdale Energy and our retained mechanical contractor and consultant.
3. Construction kick-off meeting with the GC, Lonsdale Energy and our retained mechanical contractor and consultant.
4. Progress meetings through the duration of construction.

INTERIOR WORKS – DISTRIBUTION PIPING SYSTEM

Process Description

In some cases, the developer elects to locate the Energy Transfer Station (ETS) away from the DPS building entry point. When this occurs, the DPS is extended inside the building to connect to the ETS.

Requirements and Coordination Items

The developer's general contractor (GC) is responsible for coordinating the following items with Lonsdale Energy staff, our retained interior DPS consultant, and our retained interior DPS contractor:

1. General coordination (site safety, welding requirements, water supply, temporary power, etc.).

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2. Permanent water supply.
 - a. Hose bibb(s) located near the interior piping is generally sufficient.
3. GFCI electrical receptacles.
4. Availability of sanitary sewer connection.
5. Coring through any required interior walls and floors along the interior pipe routing and waterproofing and fireproofing at these cored locations after installation of the pipe.
6. Any protective measures deemed necessary by Lonsdale Energy and our retained design consultant along the interior pipe routing. This typically includes bollards, protective bars, fencing, high-visibility taping/markings, and similar measures.
7. Inspection or access openings along any parts of the interior pipe routing that are concealed behind walls or structures.
8. Electrical bonding of interior DPS pipes to the building electrical ground system. is to be coordinated with the developer's electrical designer and contractor.

Meetings

Required site meetings are project-dependent, but generally include the following:

1. Pre-design site meeting/walk-through with the GC, Lonsdale Energy and our retained mechanical consultant.
2. Pre-construction site meeting/walk-through with the GC, Lonsdale Energy and our retained mechanical contractor and consultant.
3. Construction kick-off meeting with the GC, Lonsdale Energy and our retained mechanical contractor and consultant.
4. Required progress meetings/field reviews through the duration of construction.
5. Final inspection of interior DPS scope meeting.

INTERIOR WORKS – ENERGY TRANSFER STATION

Process Description

An ETS is required to transfer heat from the Lonsdale Energy system to the building hydronic heating system. The ETS consists of a heat exchanger, piping, valves, sensors, controls, and energy metering equipment. The ETS is designed based on the nominated energy capacity, and supply and return temperatures to the building of 65°C and 43°C respectively.

For a standard ETS, construction takes approximately four weeks to complete. ETS construction commences after the installation of the DPS. This is the typical ETS construction process.

1. Heat exchanger installed on the housekeeping pad (the housekeeping pad is provided by the developer).
2. Piping, supports, valves, sensors, and gauges installed.
3. Control panel and field wiring installed.
4. Control panel connected to permanent power (permanent power is provided by the developer).
5. Energy transfer station tested and commissioned.
6. Insulation installed.
7. Heating service commenced.

Requirements and Coordination Items

The developer's general contractor is responsible for coordinating the following items with Lonsdale Energy and our retained contractors:

1. General coordination (site safety, welding requirements, water supply, temporary power, etc.).
2. Housekeeping pad for the ETS. Lonsdale Energy will provide the required size and location.

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3. Permanent power to the ETS control panel. One 120V/15A circuit with dedicated neutral.
4. Permanent water supply.
5. Hose bibb located in mechanical room is sufficient if ETS is located in shared mechanical room.
6. GFCI electrical receptacles.
7. Building demand temperature signal from the building automation system to the ETS control panel.
8. Interconnection between the building hydronic heating system and the ETS.
9. Heating startup.
10. Fence and lockable gate enclosure for the ETS (if the ETS is in a shared room).
Lonsdale Energy will provide the lock for the gate.

Meetings

The following site meetings are required at a minimum:

1. Pre-construction meeting with the GC, Lonsdale Energy, mechanical, controls and electrical contractors.
2. Construction kick-off meeting with the GC, Lonsdale Energy, mechanical contractor and Lonsdale Energy's ETS contractor.
3. Electrical coordination meeting with the GC, electrical contractor, and Lonsdale Energy's ETS contractor (electrical subcontractor).
4. ETS commissioning meeting with the GC and Lonsdale Energy.
5. ETS controls coordination meeting with the GC, controls contractor and Lonsdale Energy (for building demand temperature signal connection and commissioning).
6. ETS heating startup meeting with the GC, Lonsdale Energy, mechanical and controls contractor.

Hold Points

The following items are key hold points that must be met before further progress.

1. Prior to ETS construction
 - a. ETS housekeeping pad.

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2. Prior to building hydronic heating system and ETS interconnection
 - a. Report of building hydronic heating system flushing, cleaning and chemical treatment.
3. Prior to heating startup
 - a. Permanent electrical power to the ETS control panel.
4. Prior to ETS completion
 - a. Building demand temperature signal connection and commissioning.
 - b. ETS fence and lockable gate installation.

Heating Startup Checklist

The ETS Heating Startup Checklist, provided by Lonsdale Energy to the developer's team, is required.

BUILDING INSPECTIONS AND OCCUPANCY

Process Description

Lonsdale Energy acts on behalf of the City of North Vancouver to perform building inspections of the development's hydronic heating system during construction of the development. This can include the following systems:

- space heating
- ventilation heating
- domestic hot water
- pool heating

Lonsdale Energy will inspect the installation of the development's heating systems against the submitted building permit drawings. Lonsdale Energy inspections are required to receive an occupancy permit (interim or final).

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Requirements and Coordination Items

The developer is responsible for scheduling Lonsdale Energy inspections with the team member who conducted the permit review. Contact information for scheduling inspections is included as a condition of the issued building permit. The below inspections are required, at a minimum:

1. Progress inspection: typically around the time of framing, to inspect initial hydronic systems installation progress including manifolds and major mechanical room equipment.
2. Final inspection: conducted prior to City building inspectors final inspection.

Inspections

During inspections, a member of the mechanical contractor's team should be present to respond to any questions from Lonsdale Energy staff.

Inspection Report

The inspection report issued following the first inspection will identify any required items that must be addressed prior to receiving an occupancy permit.

Hold Points

The following items are key hold points that must be met before receiving an occupancy permit:

1. ETS space cleared of construction materials and debris from development.
2. Building-side strainer installed on common return pipe back to ETS located outside ETS room/space.
3. Key or fob provided to Lonsdale Energy for access to ETS space.
4. Heating mode lockout of any cooling-only heat pumps proven to Lonsdale Energy staff onsite.

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5. Mechanical record drawings sent to Lonsdale Energy.
6. Building Mechanical Operation Manual, that includes reference to Lonsdale Energy system, sent to Lonsdale Energy.
7. Certification letter by developer's engineer confirming that all hydronic equipment has been satisfactorily installed, balanced, and commissioned, particularly with respect to Lonsdale Energy return water temperature requirements.