

CONSTRUCTION MANAGEMENT PLAN | JANUARY 7, 2016

# 602-620 KING STREET WEST

SUBMITTED TO:

Allied Properties REIT

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## 1.0 General Requirements

- 1.1 The Owner is proposing to construct a multi-storey mid-rise office, retail and residential building that will sit atop a multi-storeypodium.

Allied Properties Real Estate Investment Trust (REIT)  
520 King Street West, Suite 300  
Toronto, Ontario  
M5V 1L7  
Mr. Hugh Clark – Vice President, Development

- 1.2 The program and directives that are listed below are designed to govern the day-to-day construction activities of the Construction Manager in association with the demolition of the existing site, and, the construction of a new mixed use building located at 602-620 King Street West.

EllisDon Corporation  
1004 Middlegate Road, Suite 1000  
Mississauga, Ontario  
L4Y 1M4  
Mr. Kieran Hawe – Vice President, Toronto Area Manager

- 1.3 In concert with the City, a reconfiguration of the road and sidewalk is required to the North and South of the property – Adelaide Street West and King Street West. The intent is to keep full time access to Waterloo Terrace and Adelaide Place.
- 1.4 Construction Traffic including a Haul Route will be regulated by City by-laws through the Downtown Core Area. There will be no bulk parking on-site for construction trades.
- 1.5 Noise Standards – Vehicles or equipment operating in connection with the construction of any building is prohibited during certain periods, including after 7:00 p.m. and before 7:00 a.m. Monday to Friday, 7:00 p.m. to 9:00 a.m. on Saturday, and all day on Sunday or and statutory holidays.

- 1.6 The official mobilization date is **April 1, 2016**.

| <u>Start Date</u>                   | <u>Substantially Complete</u>     | <u>Totally Complete</u>           |
|-------------------------------------|-----------------------------------|-----------------------------------|
| Office Tower - <b>April 1, 2016</b> | 25 months - <b>April 17, 2018</b> | 27 months - <b>June 12, 2018</b>  |
| Resid. Tower - <b>April 1, 2018</b> | 25 months - <b>June 8, 2018</b>   | 27 months - <b>August 3, 2018</b> |

## 602 - 620 King Street West – Allied Properties REIT

### 2.0 Site Logistics

- 2.1 We have determined that two tower cranes and two twin-cab man and material hoists will be required for the construction of the office tower and residential building. Truck access for material drop-off will be located at the north and east sides of the site. A temporary reconfiguration of the road and sidewalk is required to the North and South of the property – Adelaide Street West and King Street West. The intent is to keep full time access to Waterloo Terrace and Adelaide Place. Covered hoardings have been shown where required in order to protect the health and safety of the public.
- 2.2 Construction Access/Pickup Entering Points / Laydown Areas - Our approach for the construction access and crane pick up points will be to temporarily reconfigure Adelaide and King street during the construction work. Both locations will serve as entry and exit points during construction. Including but not limited to the main crane delivery areas for concrete, rebar, and other large items. Construction deliveries will be routed primarily from the North side which is coming from Adelaide Street West and could exit back to the same street.
- 2.3 This strategy will minimize impact to traffic on King Street West and enable laneway access to the CRU on the Northwest side of existing 602 King StreetWest.
- 2.4 Craneage - Two hammerhead tower cranes, between 40-60 meter radii and minimum tip capacity of 5000kg, will be erected; one crane at each tower for site coverage. Their locations are shown in the Logistics Plan # KSW-LOG-01. Both cranes will be erected and is assembled using mobiles cranes.
- 2.5 Public Protection - EllisDon will provide a covered hoarding over the alley of the existing restaurant adjacent to the Commercial new building in order to maintain the current access from that side since it falls within the 4.5 meter distance between the construction and public use facility based on the Ministry of Labor rules and regulations of the public safety. Also, pedestrian covered walkway will be provided at King Street and Adelaide Street.
- 2.6 Man and Material Hoists - Double-cab rack & pinion man and material hoists will be installed at the north tower (The Residential) and south tower (The Commercial). These hoists have been located at the west of each tower to better utilize the available space at the ground floor level after completing the parking levels. Deliveries will use the internal route entering from Adelaide Street and exiting from Portland Street.

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- 2.7 Temporary Facilities - a. Sanitation - Temporary portable sanitation facilities will be provided on every five floors of the building, to be regularly serviced with pump trucks. b. Garbage Handling - EllisDon will manage the garbage disposal and recycling process including the coordination of boxes on site, the sorting of materials and any necessary record documentation required for environmental purposes. Also, garbage will be mitigated by using reusable containers and pallets in lieu of cardboard.
- 2.8 Permits - In accordance with the construction sequencing and scheduling, the following permits have been identified: Zoning and Site Plan Approval, Shoring and Excavation Permit, Substructure to Grade Permit, Superstructure Permit, Full Building Permit.
- 2.8.1 EllisDon will assist and facilitate the approvals process in order to ensure the project schedule is not compromised and that construction starts on time.
- 2.9 Shoring – We have included for a caisson wall in accordance with an initial concept design by Terraprobe. We will continue to meet with shoring sub-contractors to receive input and feedback with respect to constructability, cost and schedule.

### 3.0 Safety and Security

- 3.1 Zero Tolerance - EllisDon is dedicated to ensuring that the safest possible conditions exist on our projects. We have implemented a program of Zero Tolerance; that is, EllisDon will not tolerate any unsafe acts or conditions. If such unsafe acts or conditions exist, they may result in removal from site and/or termination.
- 3.2 Internal Responsibility System - The Occupational Health and Safety Act supports every worker's right to a safe and healthy workplace. The duty and responsibility for creating and maintaining a safe and healthy workplace falls on every person in the workplace. Whether you are a senior officer or the newest worker hired, everyone has a personal and shared responsibility for working together, cooperatively to prevent occupational injuries and illnesses. The ultimate objective of the IRS (Internal Responsibility System) is to ensure everyone integrates health and safety into all aspects of their work.
- 3.3 It is EllisDon's policy to work in the spirit of consultation and cooperation with our employees, subtrades, and occupational health and safety committees for the purpose of ensuring the Provincial Acts and Regulations, and EllisDon Safety Program, are complied with to meet the highest possible standards. We will create the safest possible work environment. Safety and production are not mutually exclusive. Safe production is the cornerstone of EllisDon's safety culture.
- 3.4 Alcohol & Drug Policy - Non-prescription drugs or alcohol will not be permitted on the jobsite. Any employee reporting for work in the possession of, or under the influence of, drugs or alcohol will be refused work and is liable to be terminated.
- 3.5 The Verbal, Written & Gone Policy - EllisDon has a progressive warning policy for offenders of the Occupational Health & Safety Act and Regulations and/or the EllisDon Safety Policy.
- 3.5.1 1. The first warning is verbal, but recorded as to date and infraction.
  - 3.5.2 2. The second warning is in writing, a copy of which will be sent to your supervisor and kept on file.
  - 3.5.3 3. A third infraction may result in immediate dismissal from site.
  - 3.5.4 EllisDon reserves the right to remove any worker or subtrade at any time who is in contravention of the

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- 3.6 Hazard Assessment Policy - EllisDon's belief is that through proper planning hazards can be identified and eliminated/controlled.
- 3.7 Pre-Job Safety Assessments (PSA) are a required element of an effective safety program.
- 3.8 Personal Protective Equipment Policy - Personal Protective Equipment is intended to be used as a last resort for worker protection. Where PPE is the planned hazard control method, the employer shall ensure that its workers are properly equipped and trained.

### 4.0 Noise, Dust and Vibration Control

Noise Pollution Control - Noise and vibration control involves implementing measures to minimize the level, duration, and impact of noise and vibration resulting from construction activity for both construction workers, and for the public at large, in communities adjacent to construction sites. Noise and vibration can be controlled at the source, or by interrupting the pathway of sound waves, or by lessening impacts to receptors (i.e. the community within hearing range).

#### 4.1 Dust and Vibration Control

- 4.1.1 Dilapidation survey - A dilapidation survey will be undertaken for adjacent structures and services. The Owner will engage a consultant to provide a report and provide monitoring during the construction.
- 4.1.2 Dust & Mud Control - A mud mat will be installed near appropriate construction Gate (s) before trucks re-enter City Streets during excavation. Trucks will be cleaned of mud, as necessary, prior to leaving the site.
- 4.1.3 Street flushing and sweeping will be provided as needed and to the satisfaction of the City.

Air Quality Control - Air quality control during construction involves the maintenance of high standards of air cleanliness for the safety, comfort, and well-being of construction workers and other personnel, and prevention of contaminants from compromising the air quality for future occupants.

#### 4.2 Emissions & Air Quality Control – EllisDon will implement a Construction Air Quality/Dust Control program, when necessary, to minimize the effects of the construction activities on air quality. Below is a list of management practices that will be employed on site on an as needed basis:

- 4.2.1 Monitoring of dust and dust control within the active work areas.
- 4.2.2 If needed, silt fencing shall be used to prevent erosion and silt from entering catch basins or from migrating onto adjacent properties or streets.
- 4.2.3 Use of water spray, as appropriate, during any building demolitions and excavation, until slab on grade is poured.
- 4.2.4 Existing or new catch basins shall be protected from sediment.
- 4.2.5 Inspection and cleaning of catch basins on a regular basis.
- 4.2.6 A street sweeping procedure will be developed to keep roadways that will remain open to the public clean from excessive dirt build-up from construction

## Construction Management Plan

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- vehicles and that is proportionate to the level of construction activities and trucking offsite.
- 4.2.7 Windscreens atop construction fences of durable mesh material or other effective material shall be used along areas bordering adjacent properties or public streets and sidewalks.
  - 4.2.8 Minimize the free drop height of excavated or aggregate material during earthwork operations such as that with a front-end loader, clamshell bucket or backhoe.
  - 4.2.9 Ensuring the proper secure of tarp covers on truck cargos during transport of earth or debris. All such trucks shall be four sided and shall be covered prior to leaving the site.
- 4.3 Noise – All construction activity on the site shall be conducted in compliance with Chapter 591 City of Toronto Municipal Code.
- 4.3.1 EllisDon will work to minimize any excessive noise impacts. And will employ the following best management practices on site and make every effort to prevent nuisance noise conditions:
  - 4.3.2 Work will comply with noise by-laws.
  - 4.3.3 The use of truck and equipment mufflers, including periodic inspections to ensure proper operation.
  - 4.3.4 Low-pitch back-up alarms.
  - 4.3.5 Limited truck or equipment idling.
  - 4.3.6 Smooth surfaces, except for the mud mat, on construction site and public ways to minimize unnecessary noise from potholes or irregularities.
- 4.4 Vibration - A consultant engineering firm will be engaged to monitor vibration at regular intervals throughout shoring, excavation stages of construction and during other occasions where heavy vibrations may be expected.

## **5.0 Traffic Management**

- 5.1 Traffic - A preliminary plan, covering the excavation and structural phase of construction which address gate locations for construction traffic into the Project, temporary construction fence locations at the perimeter of the job site, logistics within the job site.
- 5.2 Delivery Times & Loading Areas - Deliveries will only be allowed as mentioned above. In addition, there will be no queuing, marshalling, or storage of construction trucks in the surrounding neighbourhoods.
- 5.3 Police Detail - Police details, if required, will be provided. Alternatively, a 'flagman' maybe engaged, when required in lieu of Police, to coordinate traffic and delivery of materials and equipment.

### 6.0 Environmental Management

Waste Management - Land clearing, excavation, construction, renovation, demolition, and related office activities produce substantial volumes of waste material that must be disposed of in an environmentally responsible manner. Waste management involves Waste Projection (pre-estimating waste), and developing site and office-specific Waste Reduction Work Plans to maximize the amount of non-hazardous waste to be diverted from landfill through material separation. Some projects also involve hazardous waste, requiring proper removal, handling, and disposal.

- 6.1 The trade vendors acknowledge and agree that when it enters onto the premises, under the care, custody and control of EllisDon that:
  - 6.1.1 They shall comply with all the terms and conditions of the Environmental Policies as stated herein.
  - 6.1.2 Them and each of their respective subcontractors or suppliers, while performing the work on the Project Site, shall comply with relevant statutes, regulations, by-laws and directives of competent Federal, Provincial or Local authorities having jurisdiction in matters of ecological protection and environmental control of soil, water and air.
  - 6.1.3 All terms and conditions of the Environmental policies of EllisDon shall form part of any subcontract which the Subcontractor enters into for the performance of any work covered by the applicable contracts with the Contractor and the Subcontractor shall be responsible to ensure that all of their subcontractors are aware of and comply with such Environmental Policies.
  - 6.1.4 Specifically with regard to the reporting and notification requirements any and all incidents of spilled, released or discharged contaminants shall be reported immediately to the appropriate regulatory authorities as well as to EllisDon and Allied REIT. Any and all spilled, released or discharged contaminants will be cleaned up immediately and the area remediated as necessary. With all proper precautionary measures such as spill control, containment and decontamination to counter any environmental or health hazards associated with such a spill, release or discharge.
  - 6.1.5 All material and equipment brought onto site will be used and stored according to good and workmanlike practices and in accordance with all applicable legislative requirements and EllisDon Safety Policy.
  - 6.1.6 Materials and rubbish resulting from work under this subcontract are to be kept to a minimum and cleared away daily. The discarding of waste and the dumping of any and all material including pollutants at the project site is strictly prohibited.

- 6.1.7 All waste separation and reduction as required by Acts and/or Regulations applicable within the province having jurisdiction, and/or Bylaws applicable within the region or municipality having jurisdiction.
- 6.1.8 All employees must have been recently and appropriately trained to handle and dispose of any hazardous material while on the Project Site, including the use of proper waste manifest records and reporting systems under Federal, Provincial and Local laws.
- 6.1.9 Express written authorization of the Ministry of the Environment and Energy and other applicable authorities is required prior to any off-site removal or disposal of any hazardous waste. Hazardous waste materials shall only be taken to a facility approved expressly by the Ministry of the Environment and Energy and other authorities having jurisdiction in these matters.
- 6.1.10 All fill will be clean, non-contaminated and meets any applicable guidelines set out by the applicable authorities.

## 7. EMERGENCY PREPAREDNESS PLAN ("EPP")

### 7.1 General

The following emergency plan will identify means of alerting and reporting an emergency, identifying, contacting, and evacuating workers and public in an emergency situation. This plan also provides the framework for the pre-planning of a task specific rescue plan, damage mitigation, identification of the cause of an incident and taking corrective action.

The goal of the emergency preparedness plan is to provide workers with the procedures that they will be required to follow in the event that there is an emergency on the construction site, or in the event that the site must be locked down due to an emergency in a specific area within or adjacent to the construction site. By providing workers with the plan in advance and ensuring that the plan is reviewed and understood by the workers, The Construction Manager can reduce/mitigate injury to workers and the public and damage to neighbouring infrastructure.

### 7.2 Emergency Preparedness Plan

Each worker on site will undergo site orientation for an overview of the Contractor Safety Management Program and specifically the sites plan of alerting workers in case of an emergency as well as evacuation routes, meeting point, worker census and any additional measures for general public safety. The evacuation plan may change throughout construction due to the various stages of work. The Joint Health and Safety Committee will be established on site to monitor and update workers on any changes to the Emergency Plan. During the site orientation all workers will be instructed to call 911 in the event of an emergency and alert the Construction Manager Site Superintendent as soon as possible to allow consideration for site evacuation.

### 7.3 Prevention and Plan Testing/Review

Prevention through pre-planning is the single largest factor to avoiding or mitigating injury or damage

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resulting from an incident on site. The creation of a job specific Job Hazard Analysis ("JHA") for activities of high risk of injury or damage is enforced through the joint health and safety committee on site. Each JHA can identify hazards or potential causes of incidents in each step of the operation, provide a rating system for the severity of the risk, and identify solutions to eliminate or control these hazards. A JHA is recommended for the following activities:

- 1) Equipment startup
- 2) Working on live equipment
- 3) Hoisting large equipment
- 4) Working at heights
- 5) Working near live utilities
- 6) Demolition

### 7.4 Working Near a Utility:

Prior to any underground work, contractors will take out independent utility locates for all utilities in the area and have them renewed every 30 days. The project team will coordinate the removal, relocation, disconnection, capping of any services that are found to be within the Project's property line boundaries in preparation for construction

activities. The CM will vacuum excavate any utilities that are shown on the utility locates to fall outside the Property line or utilities that fall within one meter from any shoring drilling operations. This process of "daylighting" any nearby utility service will confirm the service location with the utility locates and allow the utility to be surveyed to confirm no conflicts exist between the Project structure or its incoming utility services. Should the utility service run parallel to the Project and fall within one meter, the daylighting process will be done along several points along the service to ensure the utility does not "jog any closer to the Project.

Due to the proximity of Communication, Hydro, Gas, Water, Sanitary utilities to the Project, additional precautions and an Emergency Preparedness Plan is required prior to commencing the work. The Emergency Preparedness Plan will vary as each utility will pose its unique constraints. Therefore risks can be identified through a job specific Job Hazard Analysis.

All excavation/ underground drilling workers working near a utility will be required to have completed or be aware of the Job Hazard Analysis requirements for each utility, the work will be closely monitored by the CM. The CM's Site Superintendent will be informed of contact information to each utility as well as be prepared to contact 911 for any emergencies.

#### Gas Utility

Enbridge gas is to be contacted for any underground work scheduled within a one meter distance from a gas line prior to the commencement of work. Any gas line section that falls within this threshold will be vacuum excavated in order to identify the exact location of the line for visual confirmation or as directed by Enbridge. Enbridge's emergency hotline will be posted on the site's safety board so that Enbridge can be notified immediately in the case of any damage to an existing gas line for gas shutoff. During shoring operations a steel plate is to be placed between the gas line and the drilling location to prevent any lateral movement from the drill rig.

#### Communication Utilities

All shoring and excavation work is being completed away from telecommunication lines. Communication lines that fall within 1m of drill locations will be exposed using a Hydrovac and protected using steel plates and steel liners as required. During landscaping where existing sidewalks must be removed in preparation for new landscape

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## ***Construction Management Plan***

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work, utility locates will be called for to ensure the depths of any telecom lines are respected and avoided.

### **Water/Sanitary Utilities**

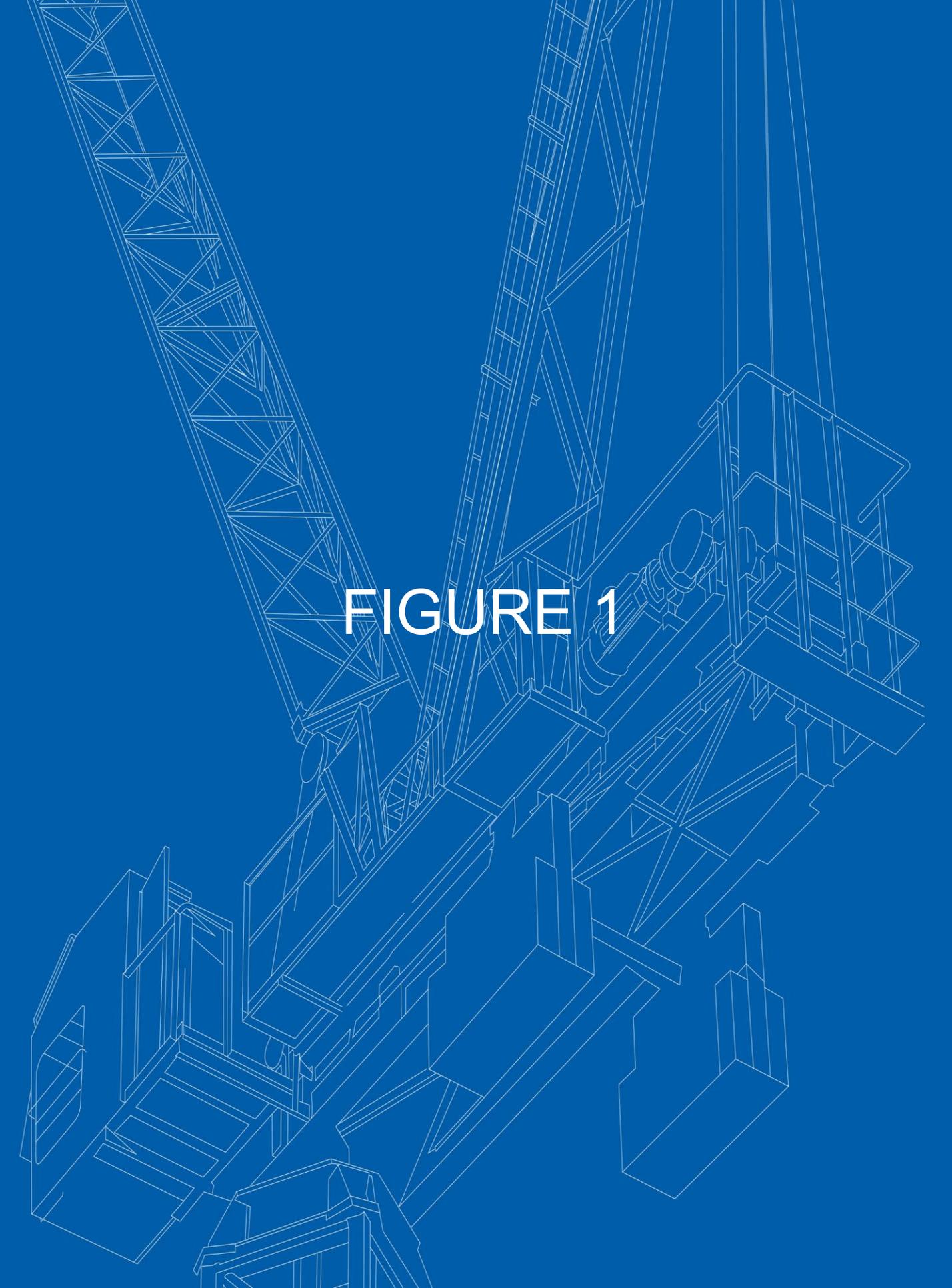
There are no Water or Sanitary mains that will fall within the project. Utility connections will be completed by municipal contractors.

### **Hydro Utility**

Overhead hydro wires are present along Bathurst St. and Lake Shore Blvd. All Hydro manholes (inside and outside boundaries) have been laid out via survey on existing shoring drawings where they appear to be within a one meter distance of any planned excavation or drilling work. The manholes and any ductbanks that are located within the one meter threshold will be hydro-excavated for visual confirmation of location. Any excavation or drilling around these sensitive areas will be done so with Toronto Hydro's prior knowledge. A full JHA will be completed for this work to further detail risks, and a mitigation and response plan.

### **7.5 Precautions for Concrete Placing**

The site will be left in a safe condition at the end of each day with no part in danger of toppling or falling on the structure. Also a daily inspection of material will occur to ensure that all material is fastened down to prevent it from being blown around due to high winds.



**FIGURE 1**



**Figure 1: Site Plan and Neighbouring Structures**

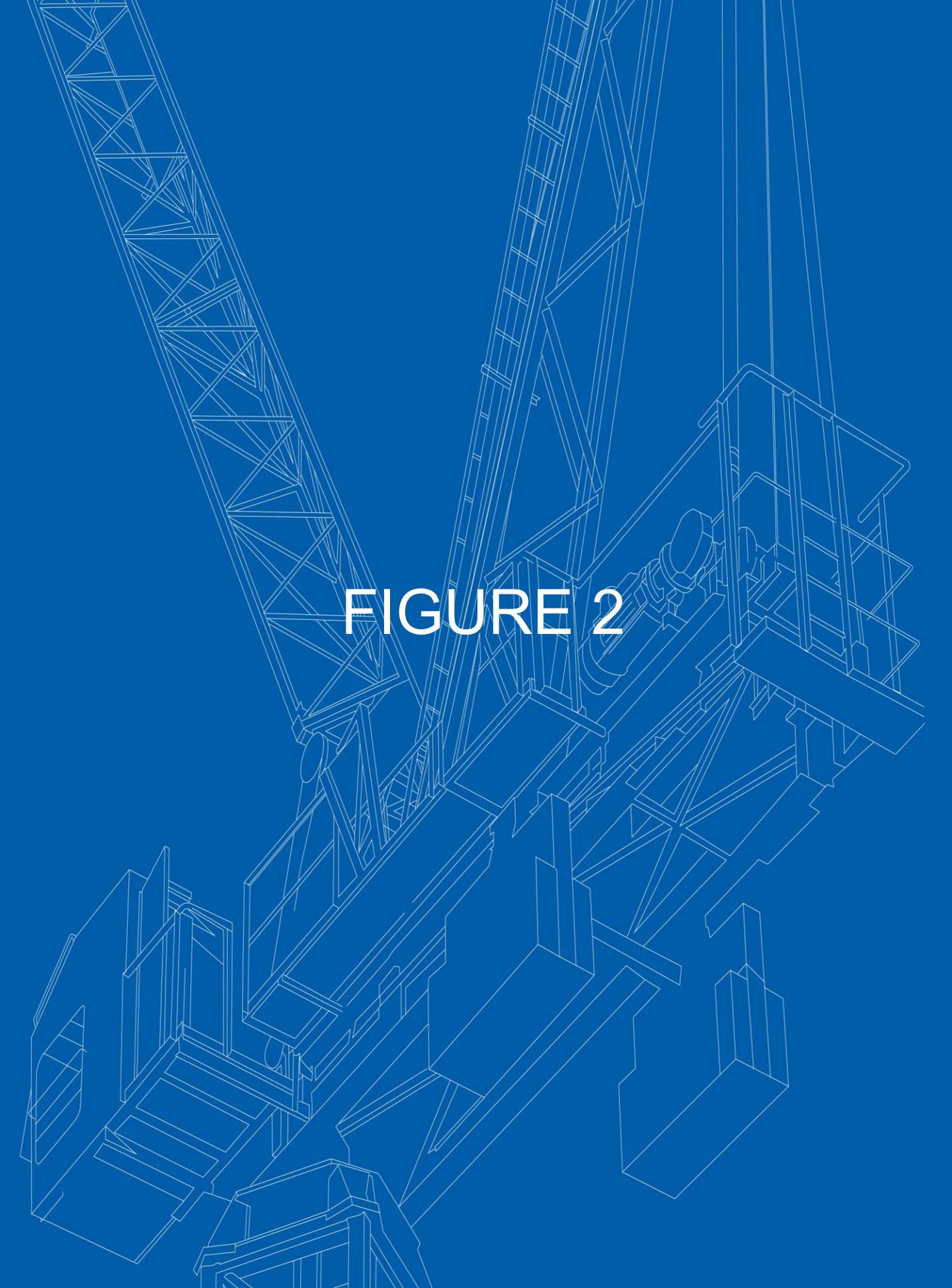
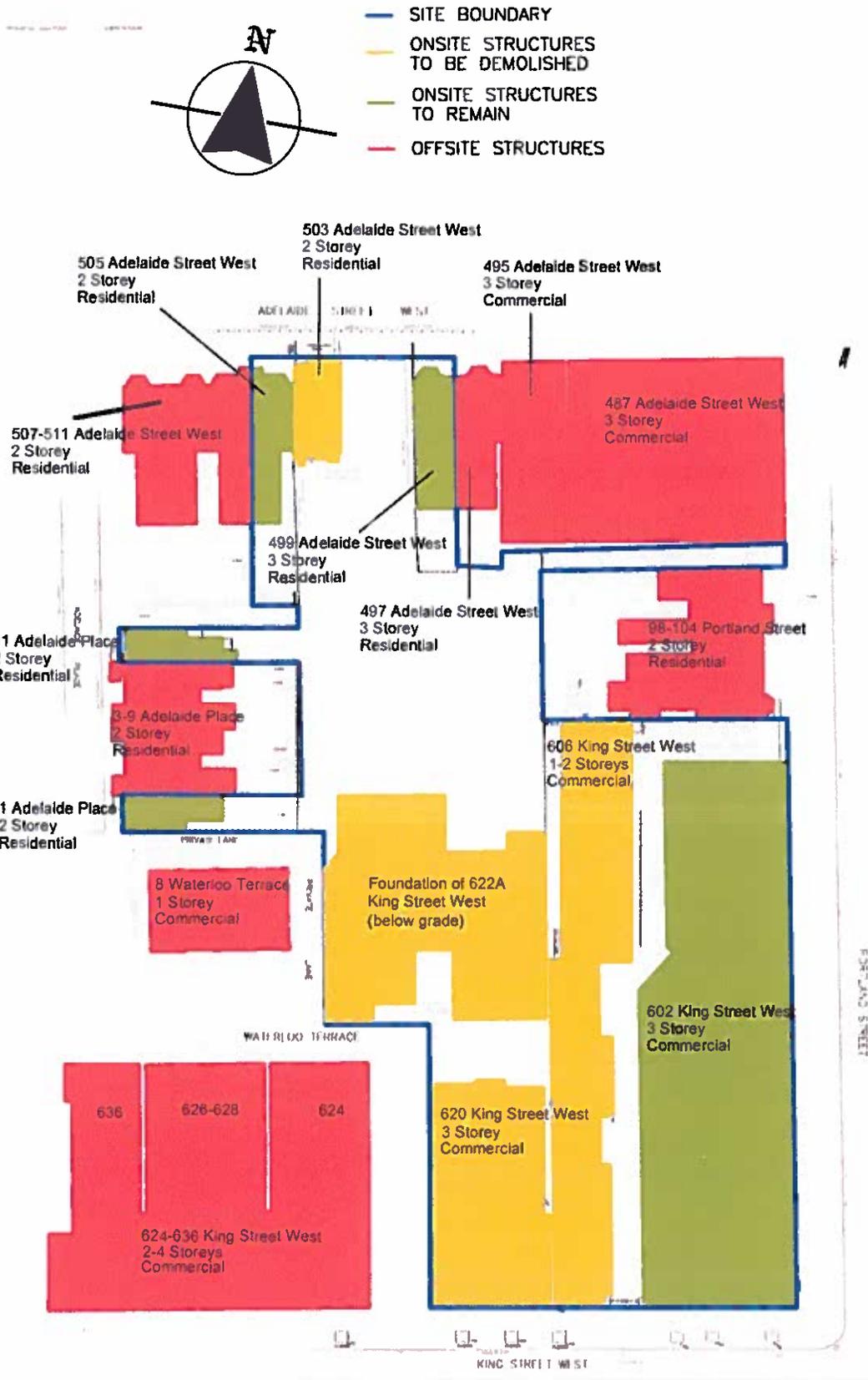


FIGURE 2



**Figure 2: Demolition Plan**

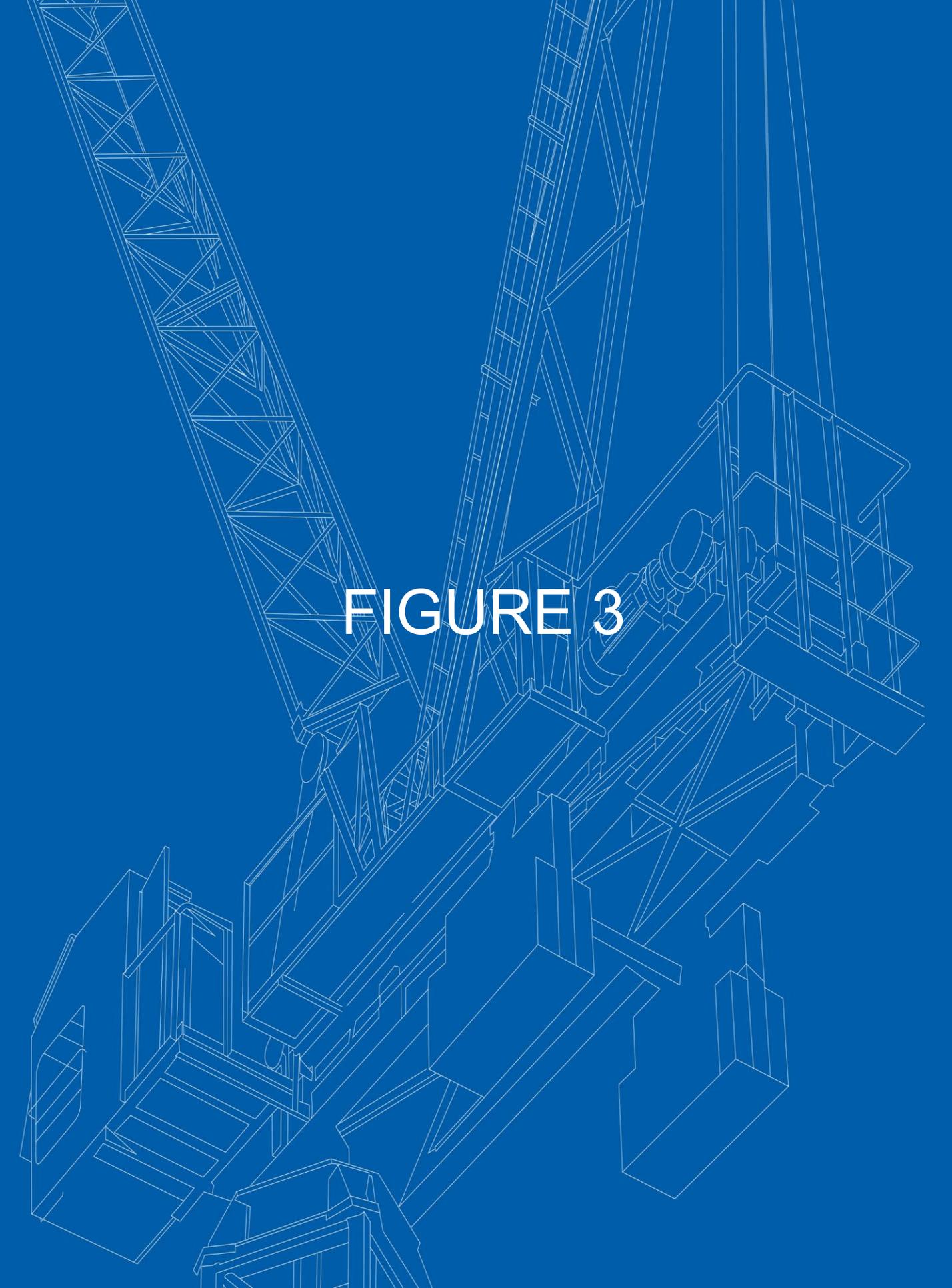
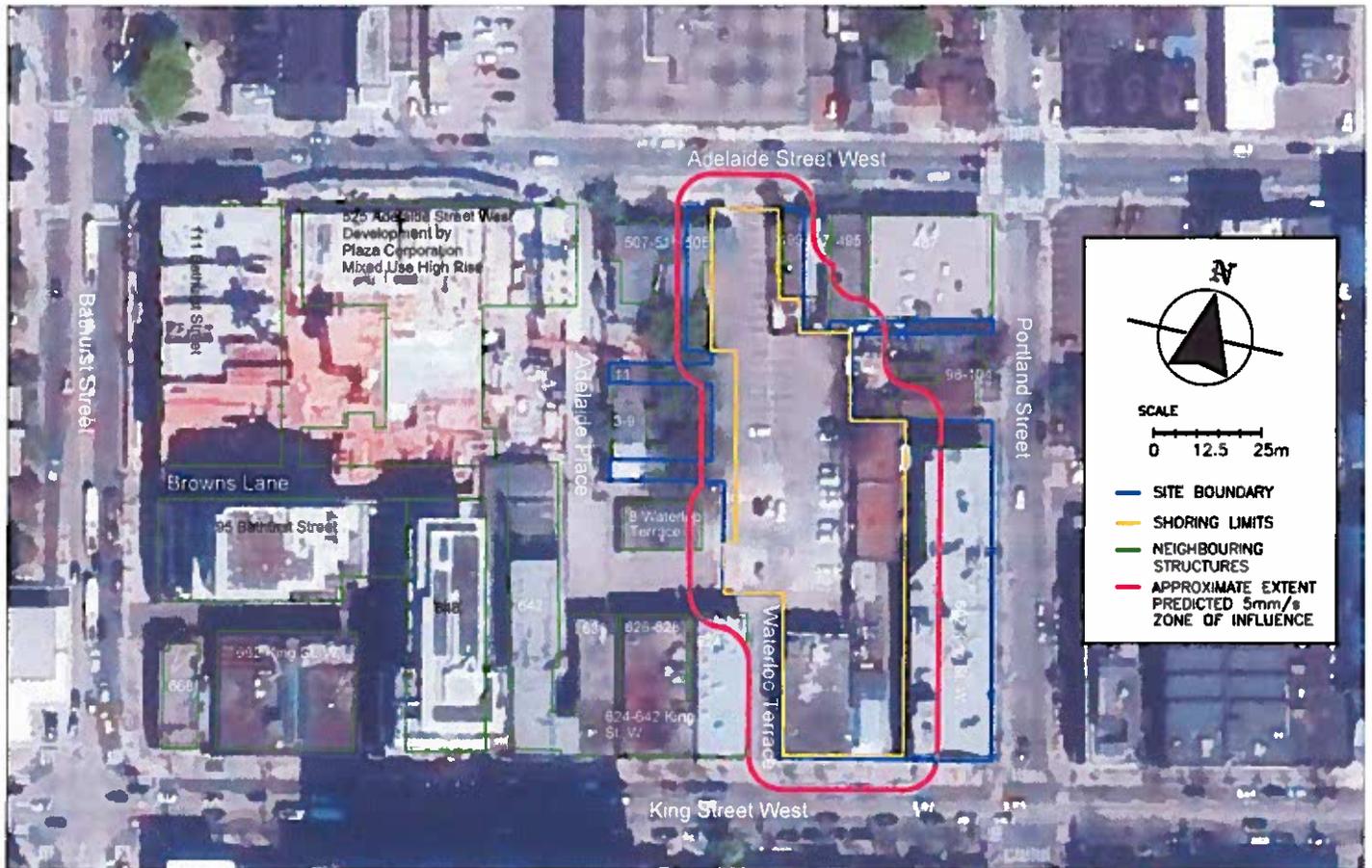
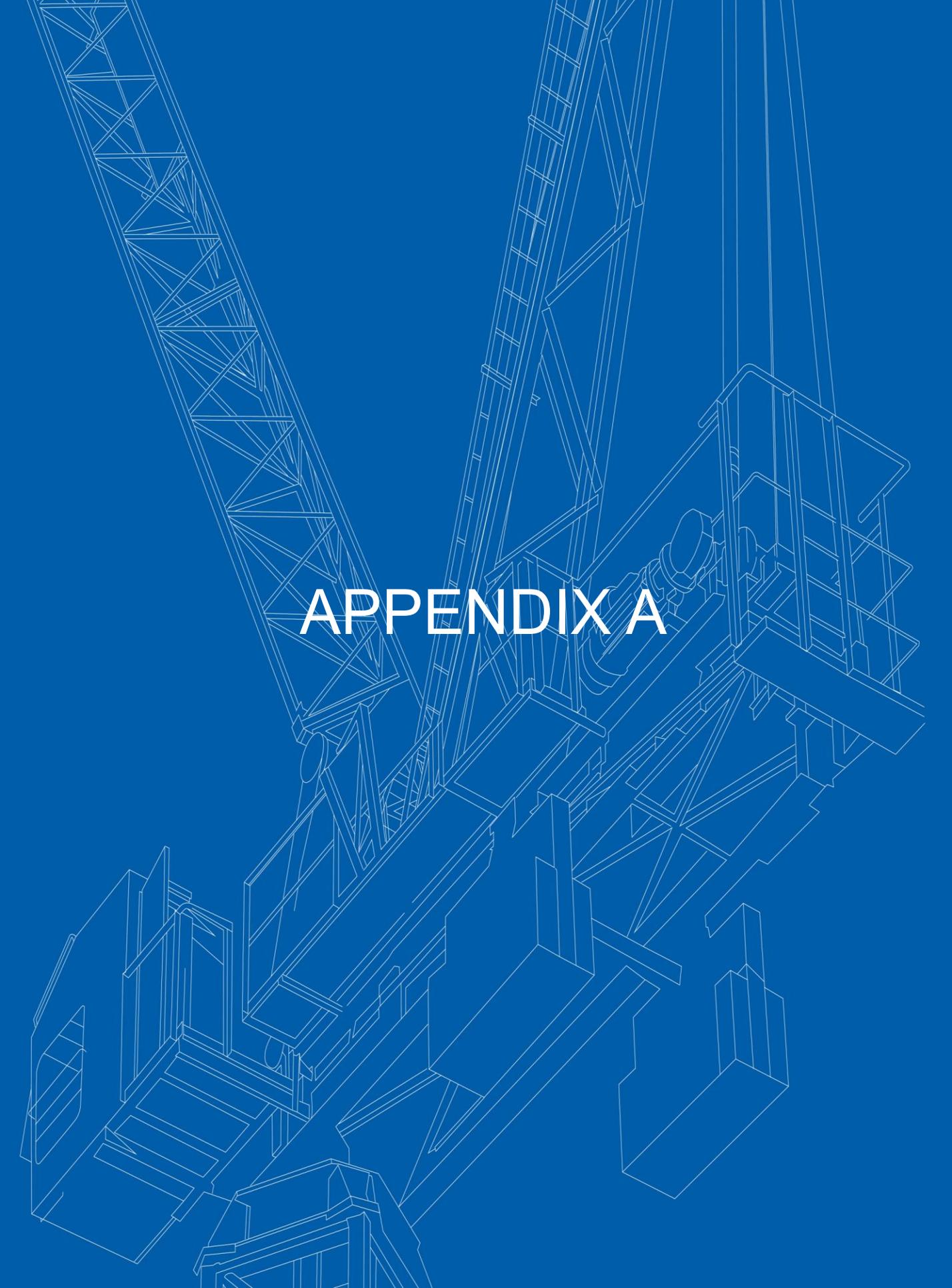


FIGURE 3



**Figure 3: Approximate Zone of Influence**



# APPENDIX A

## APPENDIX A – DEVELOPMENT OF CRITERIA

Criteria for vibration impact used in this review are taken from the City of Toronto By-Law, but are supplemented with other criteria used for similar purposes. Source vibration levels are based on measurement data from our files, and published references.

### Criteria for Structural Damage

Similar criteria, specifically intended to safeguard against cosmetic structural damage to buildings, are available in German standard, DIN 4150, and Swiss standard, SN 640 312. Cosmetic damage generally refers to cracking of the plaster or paint, or the aggravation of existing crack damage. These criteria are summarized in Table A1, and are appropriate to supplement the City By-Law criteria.

**Table A1: German and Swiss Standards Based on Building Type**

| Type of Structure                   | DIN 4150                      |                | SN 640 312                    |                |
|-------------------------------------|-------------------------------|----------------|-------------------------------|----------------|
|                                     | Peak Particle Velocity [mm/s] | Frequency [Hz] | Peak Particle Velocity [mm/s] | Frequency [Hz] |
| Commercial and Industrial Buildings | 20                            | <10            | 12                            | 10 – 30        |
| Residences                          | 5                             | <10            | 5                             | 10 – 30        |
| Sensitive Buildings                 | 3                             | <10            | 3                             | 10 – 30        |

### Development of Cautionary Criteria

In the higher frequency range, the City By-Law criteria are close to the other standards, at least for concrete industrial buildings. However, cautionary criteria are recommended for use in monitoring, which include a factor of safety, beyond which greater care should be taken in proceeding with construction activities to ensure that the prohibited vibration levels are not exceeded.

Based on the City of Toronto’s prohibited vibration limits and the data summarized in Table A1, a 5 mm/s criterion is considered to be an appropriate cautionary limit for most residential structures. For commercial or industrial buildings, the smallest vibration level prohibited by the By-Law (8 mm/s) is typically deemed appropriate as a cautionary limit.

Although listing or designating a structure as a heritage building does not necessarily indicate that the building is more sensitive to vibration than its neighbours, heritage-designated and heritage-listed structures are often assigned lower criteria due to their importance or other reasons. Thus, it is often prudent to assign a lower cautionary limit for these structures.

In general, robust below-grade industrial structures such as piping and catch basins, hydro and phone vaults installed in soil, tunnels, etc., can withstand comparatively high vibration levels. Typical criteria for typical pipes, electrical cables and telecommunication services are higher than those provided by the City, and can be as high as 50 mm/s. Thus, there is often greater danger from direct impact to these structures, or pressure from soil densification during the installation of materials, rather than from vibration transmitted through the ground. As a cautionary criterion, the smallest vibration level prohibited by the By-Law (8 mm/s) is generally deemed appropriate for any buried services around the site. Where utilities provide their own vibration limits for a specific project, those limits should be used, as applicable. No such information has been provided.

Background vibration at the site was measured on December 3, 2015, at grade, in the middle of the existing parking lot, 24 m north of the south façade of 8 Waterloo Terrace, and 11 m north of King Street West in between 606 and 602 King Street West. The measured peak vector sum vibration velocity is shown in Figure A1. Background vibration was found to be low, and includes effects from the street cars along King Street West approximately 65 m and 17 m away from each measurement location respectively. The measurements do not indicate that typical vibration criteria are inappropriate in this case.

Figure A1: Background Vibration At Grade, Middle of Existing Parking Lot, 24 m North of South facade of 8 Waterloo Terrace  
Measurements Conducted by HGC Engineering, December 3, 2015

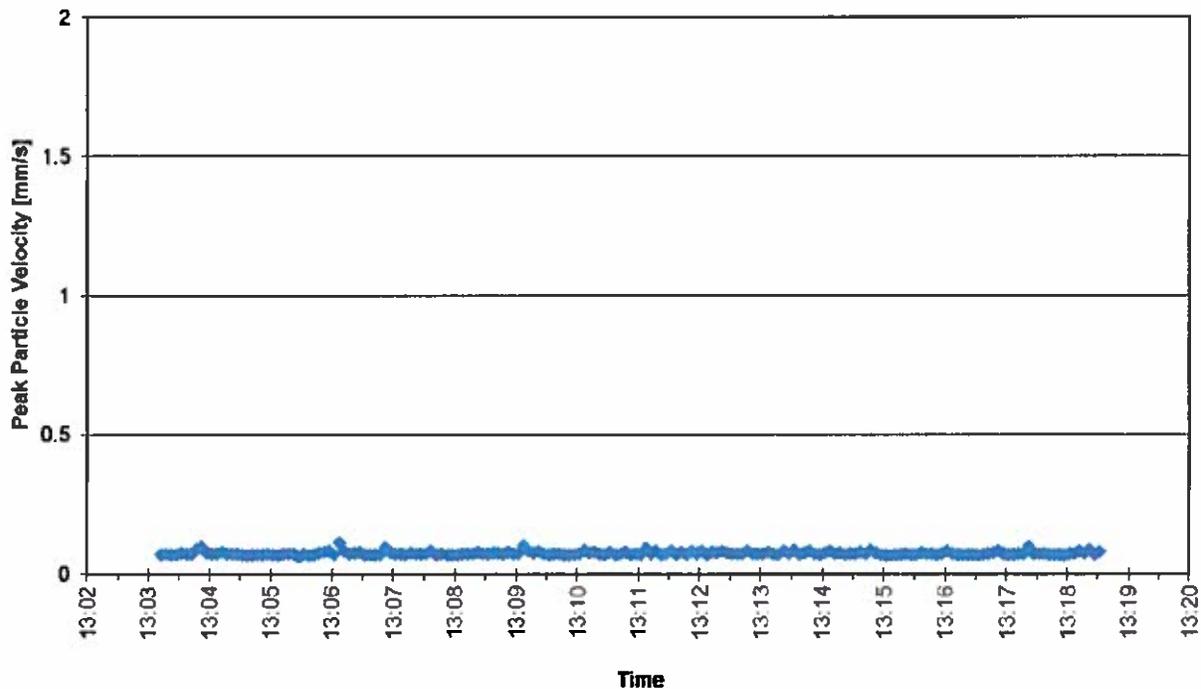
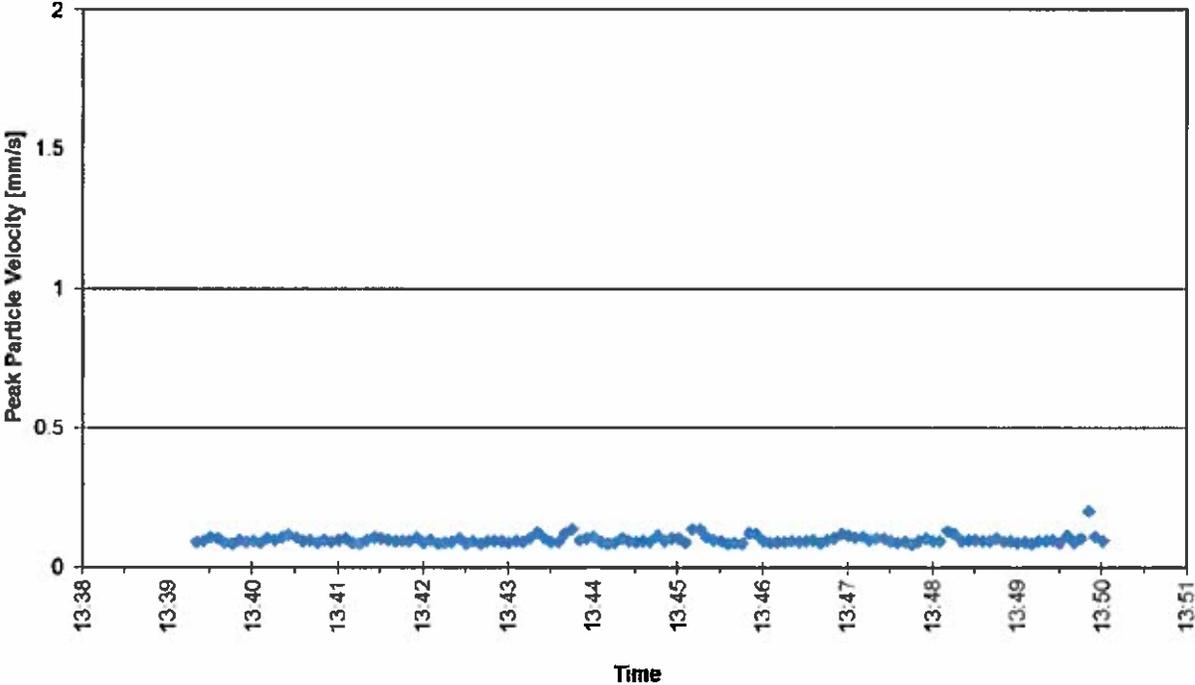
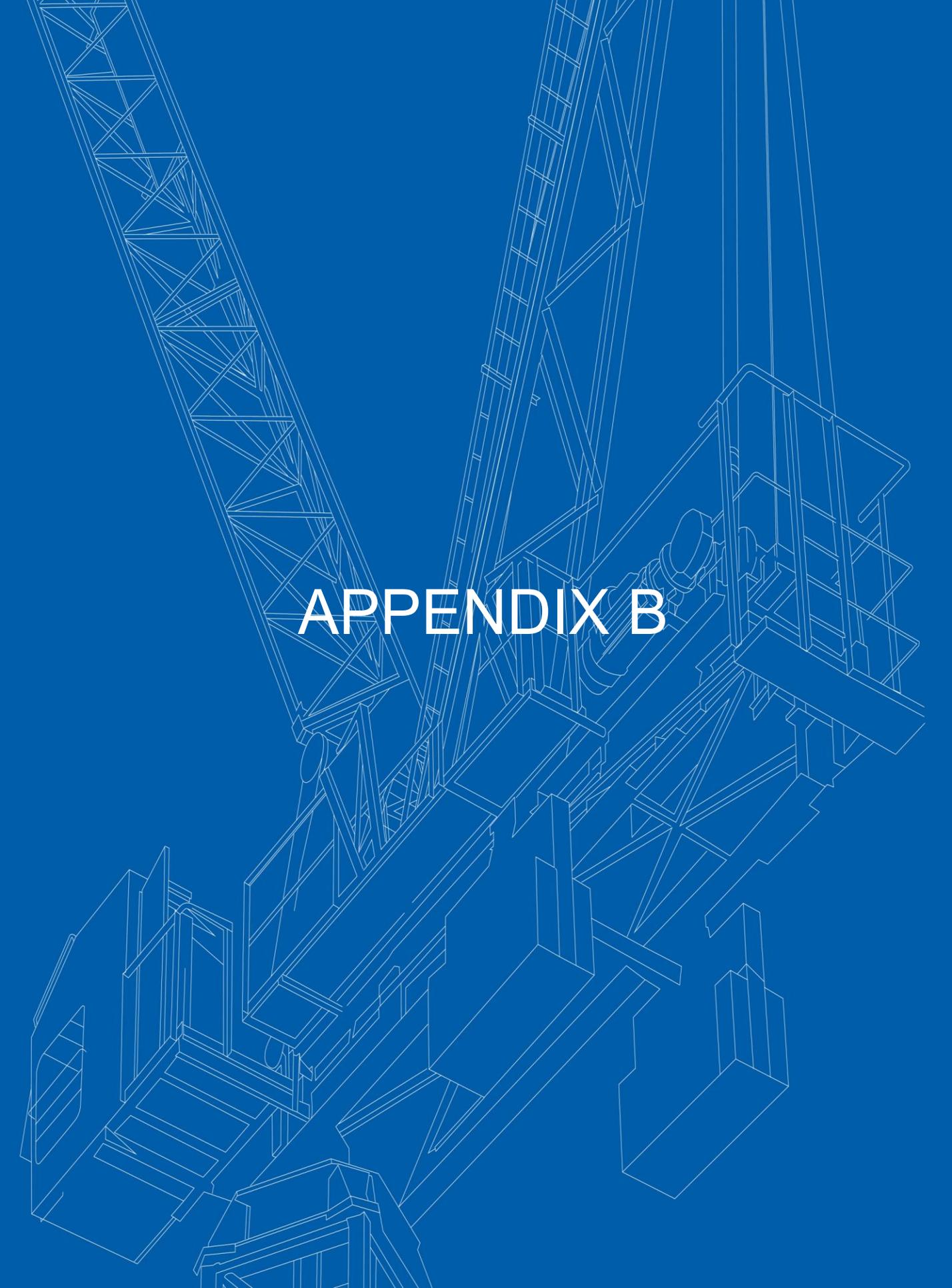


Figure A2: Background Vibration At Grade,  
3 m West of 602 King Street, 11 m North of King Street West pavement edge  
Measurements Conducted by HGC Engineering, December 3, 2015





# APPENDIX B

December 11, 2015

**Hugh Clark**  
**Allied Properties REIT**  
520 King Street West, Suite 300  
Toronto, ON, M5V 1L7

by email: [hclark@alliedreit.com](mailto:hclark@alliedreit.com)

**Re: Assessment of Construction Vibration Potential, and City of Toronto By-law 514-2008,  
602-620 King Street West, Toronto**

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Dear Mr. Clark,

As requested, HGC Engineering has reviewed the materials provided to us pertaining to the proposed mixed-use development to be located at 602-620 King Street West in Toronto. This review includes the demolition of the existing buildings at 606 King Street West, 620 King Street West, and 503 Adelaide Street West, and the subsequent shoring and excavation for new construction on the site. This assessment is an estimate of the potential for construction related vibration at the neighbouring structures.

Under City of Toronto By-Law number 514-2008 and the related Vibration Control Form, where a construction project has a potential for vibration impact at off-site structures, a preliminary vibration assessment must be undertaken, identifying a Zone of Influence (ZOI). Where there are buildings within the ZOI, a vibration monitoring plan must be developed. This report is intended to meet these requirements. The By-Law also requires supplementary preconstruction condition surveys of surrounding structures and/or the development of communications protocols for discussions with adjacent building owners for structures within the ZOI, but these will be provided by others as necessary, and are not discussed further in this report.

HGC Engineering visited the site on December 3, 2015 to better understand the area geometry and surrounding land uses. Relevant documentation for the site and the proposed project were reviewed, as follows:

- A geotechnical report prepared by Terraprobe Inc., dated November 4, 2015;
- Excavation and shoring drawings prepared by Terraprobe Inc., dated October 6, 2015, "Issued for Permit";

- Selected architectural drawings prepared by Hariri Pontarini Architects, dated July 10, 2015, “Issued for Site Plan Approval”;
- A demolition plan prepared by Hariri Pontarini Architects, dated November 16, 2015, “Demolition Tender”;
- Selected structural drawings prepared by Read Jones Christoffersen Consulting Engineering, dated August 11, 2015, “100% DD Costing”.

Additional information relating to the project and the plans for construction were obtained through discussions with project staff.

## **1 PROJECT DESCRIPTION AND SURROUNDING STRUCTURES**

The 602-620 King Street West development involves the development of a 13 storey commercial office building and a 15 storey residential building on the properties identified by municipal addresses 602-620 King Street West and 501-505 Adelaide Street West. Three levels of underground parking will also be constructed as part of the development.

As shown in Figure 1, the development area encompasses a large portion of the block formed by Adelaide Street West to the north, Portland Street to the east, King Street West, and Adelaide Place to the west, but a variety of buildings within this area are not part of the development, and will remain.

Figure 1 illustrates boundary of the area which is part of the development site as a blue line, and the area to be excavated is illustrated as a yellow line. Green or magenta lines illustrate surrounding buildings which will remain, most of which are not part of the development site.

Figure 2 provides additional information about the various existing buildings on the site. On the figure, buildings illustrated in yellow are to be demolished, green buildings are within the development site but will remain, and red buildings are adjacent to the site, and are not part of the development. The buildings to be demolished are 606 King Street West, 620 King Street West and 503 Adelaide Street West. An existing foundation for a former building at 622A King Street West will also be removed. The buildings at 602 King Street West, 1 Adelaide Place, 11 Adelaide Place, 499 Adelaide Street West, and 505 Adelaide Street West are part of the project and are to remain. Offsite buildings which will be adjacent to or near portions of the development are 624-636 King Street West, 8 Waterloo Terrace, 3-9 Adelaide Place, 507-511 Adelaide Street West, 487-497 Adelaide Street West and 98-104 Portland Street. The majority of the area within the buildings described above is currently paved and being used as an at-grade parking lot.

To accommodate the new development, the existing at-grade parking lot and existing buildings at 606 King Street West, 620 King Street West, and 503 Adelaide Street West will be demolished.

Directly to the north of the development site is Adelaide Street West. On the opposite side of Adelaide Street West is a four storey commercial building (530 Adelaide Street West), and three

storey mixed use properties at 504-514 Adelaide Street West. The south façade of the closest building will be approximately 17 metres from the closest demolition or shoring activities.

To the east of the project site are existing buildings which front onto Adelaide Street West and Portland Street. One of the closest such building to the development site is 497 Adelaide Street West, one half of a semi-detached residential building, the other half of which (499 Adelaide Street West), is part of the development site but will remain. New shoring will be installed about 1.5 metres from 497 Adelaide Street West.

To the east of these buildings is a two-storey commercial building (495 Adelaide Street West), a three storey commercial building (487 Adelaide Street West), and a block of two-storey residential townhouses (98-102 Portland Street). New shoring will be installed about 5 metres from 495 Adelaide Street West, and about 1 metre from the closest portion of the townhouses at 98-102 Portland Street West. Demolition of 606 King Street West will occur about two metres from the closest portion of the townhomes.

The building at 602 King Street West is part of the project, and is also immediately east of planned demolition and shoring activities.

On the opposite side (the east side) of Portland Street are existing at grade parking lots and commercial buildings varying in height from 2-5 stories. The closest of these buildings will be about 40 metres from the closest demolition or shoring activities.

To the south of the development is King Street West. On the opposite side of King Street West the closest commercial properties are between 1 and 2 stories. A one storey residential dwelling is also located in this area. The closest building on the south side of King Street West to the site will be about 24 metres from the closest demolition or shoring activity.

To the west of the development are a variety of existing buildings. On the opposite side of a narrow laneway, Waterloo Terrace, are the commercial buildings at 624, 626-628, 636 and 642 King Street West. The closest of these buildings, 624 King Street West, is approximately 5 metres from the closest planned demolition or shoring activity. A one storey commercial building at 8 Waterloo Terrace is also located approximately 5 metres away, on the opposite side of another laneway.

The block of two storey residential townhouses at 1-11 Adelaide Place are also located west of the site, and the closest of these will be about 14 metres from the closest planned demolition or shoring activities. Numbers 1 and 11 Adelaide Place are part of the development site, however Numbers 3 to 9 are not.

Another block of townhouses, 505-511 Adelaide Street West is also located on the west side of the site, the closest of which (505 Adelaide Street West) is part of the development site and will remain, but the other homes are not. The closest of the offsite homes will be approximately 5 metres from the closest activities.

Further to the west is a high-rise residential building which is currently under construction. This building will be more than 30 metres from the closest shoring or demolition activities.



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VIBRATION

There are numerous properties in the immediate area that are listed in the City of Toronto online database of heritage properties, the closest of which are identified in Figure 1 with magenta outlines. Properties listed in the online database that are within 50 metres of the project site are: 582, 590, 590A, and 600-606 King Street West; 473, 497, 499, 505, 507, 509 and 511 Adelaide Street West; and 1-11 Adelaide Place. 602 King Street, 1 Adelaide Place, 11 Adelaide Place, 505 Adelaide Street West and 499 Adelaide Street West are all located on the project site and are to remain as upon completion of the project. The closest offsite heritage buildings are 497 Adelaide Street West, 507 Adelaide Street West and 3-9 Adelaide Place. All of these buildings are adjoined to the onsite heritage buildings, but are approximately 1 metre, 5 metres, and 11 metres from the shoring/excavation activities respectively.

The shoring drawings for the site indicate that the ground at the site is relatively flat, sloping from approximately 89 metres above sea level on the north side of the site down to about 87 metres on the south.

The top of the lowest parking level will be at an elevation of approximately 78 metres, or about 11 metres below grade. The majority of the foundations under the new structures will be of conventional spread or strip footings, with raft foundations being used in a few areas.

The geotechnical information for the project is based on eight boreholes drilled on the property. The boreholes were drilled up to a maximum depth of approximately 14 metres below grade. The geotechnical report for the site indicates a top layer of asphalt, interlocking stone/pavers, or concrete at the ground surface. Below this lies an earth fill to a depth of about 1 or 2 metres overlying cohesive glacial till to depths of about 11 to 14 metres. Bedrock of the Georgian formation was found below the glacial till and hard limestone layers are anticipated within this layer. The fill layer is expected to contain debris including bricks, cinder and concrete. Cobbles, boulders and other erratic rock may be encountered during excavation.

Ground water was observed at depths of about 2 to 9 metres below grade. A dewatering system may be required during the excavation process.

## 2 DEMOLITION, SHORING, EXCAVATION & OTHER ACTIVITIES

Demolition of the parking lot, commercial buildings at 606 and 620 King Street West, and the residential building at 503 Adelaide place will be completed before the larger construction project begins. The removal of these buildings will include breaking up of masonry work, concrete slabs, and structural steel. It is assumed that work will be conducted using typical equipment: an excavator with claw, bucket, and hoe-ram, attachments, front end loaders, etc.

Following demolition shoring work will begin. The preliminary shoring drawings indicate that excavation on the site will be retained by a continuous caisson wall system secured with two row of tiebacks and corner bracing. The deepest piles for the shoring wall will be approximately 16 metres below the existing grade and will be placed into the bedrock.

The shoring limit for the project site is irregularly shaped and is shown in the attached shoring drawing.



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NOISE



VIBRATION

The shoring caissons will be concrete, poured into drilled caisson holes, and reinforced with steel piles where required. Tracked drill equipment will be used for drilling. No impact or vibratory pile driving, or vibratory sheet pile installation is anticipated at any stage of the project. Based on the geotechnical report temporary steel caisson liners are anticipated to be required during shoring work, and it is understood that Bauer-type drill rigs capable of twisting rather than vibrating liners in and out will be used. Caissons for the shoring wall are indicated to be 1000 mm in diameter.

The structural drawings indicate that a large portion of the site will be excavated to approximately 11 metres below grade to accommodate three underground levels of parking. Footings will be excavated approximately 1 metre further. Since groundwater was found at shallower depths, excavation below the water table is expected.

No significant at-grade compaction of soils is anticipated.

### 3 BY-LAW REQUIREMENTS AND CRITERIA

#### 3.1 Criteria of the City of Toronto By-Law

City of Toronto By-Law 514-2008 came into force on July 26, 2008. The By-Law has a number of important requirements, as follows:

- a) Construction vibrations exceeding certain values are prohibited.
- b) A “Zone of Influence” must be established, which is the area inside of which construction vibrations exceeding 5 mm/s may occur.
- c) A “Vibration Control Form” must be prepared and submitted.
- d) A vibration monitoring programme must be developed.
- e) Where buildings or structures are identified inside the Zone of Influence, various consultation, inspection, and communications protocols and processes are required. These requirements are not addressed further in this report.

This report is intended to contain information required by the By-Law and is to be submitted to the City as part of the building permit application process.

Vibration can be defined in terms of particle displacement, velocity, or acceleration. The three descriptors are related by the vibration amplitude and by the frequency of oscillation. For vibration affecting structures, the use of velocity units is common. The vibration level is quantified either in terms of the root-mean-squared (RMS) level or the peak level. In this letter, vibration is consistently described in terms of peak particle velocity, in units of mm/s. Vibration frequency is described in units of cycles-per-second or Hertz (Hz).

The specific vibration criteria cited in the By-Law are shown in Table 1. HGC Engineering interprets the requirements of the By-Law and these criteria to apply at neighbouring structures, and not necessarily at the property line.

**Table 1: City of Toronto By-Law  
 “Prohibited Construction Vibrations”**

| Frequency [Hz] | Peak Particle Velocity (PPV) [mm/s] |
|----------------|-------------------------------------|
| Less than 4    | 8                                   |
| From 4 to 10   | 15                                  |
| More than 10   | 25                                  |

### 3.2 Development of Cautionary Criteria

The By-Law indicates that in some cases, more stringent criteria may be appropriate, but leaves the identification of these cases, and the selection of the appropriate criteria to the Professional Engineers associated with the project.

Cautionary vibration limits are recommended for use in monitoring, which include a factor of safety, beyond which greater care should be taken in proceeding with construction activities to ensure that the prohibited vibration levels are not exceeded. A discussion of the derivation of the cautionary criteria recommended in this report is attached as Appendix A, and these recommended limits are summarized in Table 2.

**Table 2: Suggested Cautionary Vibration Criteria**

| Structure   | Peak Particle Velocity [mm/s] | Frequency [Hz] |
|---|-------------------------------|----------------|
| Heritage-Listed / Designated or Sensitive Residential Buildings | 3                             | Any            |
| Residential Buildings   | 5                             | Any            |
| Industrial, Commercial Buildings                                | 8                             | Any            |
| Other Buried Services and Tunnels                               | 8                             | Any            |

### 3.3 Other Considerations

Another aspect of ground-borne vibration is radiated noise. When the frequency of the vibration is high, above about 30 Hz, it has the potential to be transmitted into adjacent buildings and radiated by the building surfaces as audible noise. This is most likely to be a factor when work is done on hard materials such as bedrock, which is anticipated for this project.

The City of Toronto's criteria are similar to various national and international criteria for cosmetic structural damage to structures. However, criteria for annoyance are more stringent than for structural damage. Because of this, and because the By-Law does not mention vibration-radiated noise, it should be noted that the By-Law does not require imperceptible (or inaudible) vibration levels at adjacent facilities or residences.

## 4 PREDICTIONS AND DISCUSSION

Vibration propagation through soil is highly dependent on the soil type, the density of the soil, the soil profile, etc., and exactly predicting vibration propagation is very difficult. This is compounded by the fact that it is difficult to predict ahead of time both what equipment might be used on a given day and, importantly, how aggressively it might be used by a given operator. Thus, comparing vibration data from one site or reference to the subject site is an approximate exercise only, and the predicted levels in this letter are likewise only approximate.

There is generally some probability that demolition will encounter large or hard unforeseen obstacles such as hidden structural elements, thick slabs, etc., or that some elements will break off in larger sections before they can be broken into smaller pieces. At times, such occurrences can result in unanticipated vibration levels.

Nonetheless, there are a number of published references which cite typical vibration levels due to various types of construction activities. The Zone of Influence boundary described below is based in part on such references, including publications of the International Society of Explosives Engineers (ISEE) and the United States Federal Transit Administration (FTA). In addition, HGC Engineering has amassed a large quantity of vibration data measured during similar demolition, shoring and excavation activities in the City of Toronto. Using data taken from similar projects, HGC Engineering has established the typical Zone of Influence, based on the City's definition.

Comments appropriate to the various structures of interest around the site are provided below, and the predicted vibration impacts are summarized in Table 3.

### 4.1 Estimated Zone of Influence

Demolition of the buildings located at 606 and 620 King Street West will occur approximately 5 metres from 624 King Street West and approximately 2 metres from portions of 98 Portland Street, buildings which are not part of the development site, and also approximately 4 metres from 602 King Street West, which is part of the development site and will remain. The demolition of the building at 503 Adelaide Street West will occur adjacent immediately adjacent to 505 Adelaide Street West, which is part of the development and will remain, and approximately 6 metres from the offsite property at 507 Adelaide Street West. Demolition of the existing foundation of the former 622A King Street West building will occur approximately 5 metres from the existing offsite buildings at 8 Waterloo Terrace and 624 King Street West.

Because of these close distances to other buildings, demolition will need to be undertaken with care to minimize the risk of unplanned damage, and to minimize ground borne vibration. During demolition, falling debris can create significant vibration at adjacent properties. Piecemeal



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VIBRATION

demolition using a grappling claw or similar equipment can keep the size of pieces falling to the ground small. By contrast, using only a bucket excavation to topple a wall or allowing a large slab to fall as one piece can produce significantly higher vibration. These latter activities should be avoided. The use of heavy hoe-ram equipment close to adjacent buildings, particularly when demolishing at-grade or below-grade structures can lead to high vibration levels. At times, special equipment for saw cutting or grinding may be required to reduce offsite vibration.

Appropriate care will be required when working close to remaining buildings. Based on past experience, careful demolition is unlikely to result in ground-borne vibration exceeding 5 mm/s in nearby buildings beyond a distance of about 8 metres.

Following demolition, the shoring and excavation process will begin. The installation of shoring on this site will use no impact or vibratory techniques such as pile driving. Published references and our own experience suggest that typical anticipated shoring operations such as drilling, placement of steel columns, pouring of concrete, movement of equipment, etc. is unlikely to result in vibration levels exceeding that identified above.

Past experience indicates that the greatest vibration impacts affecting nearby buildings during typical shoring and excavation operations often occurs when shoring walls or adjacent structures are being trimmed or scraped with an excavator bucket or other excavator attachments, or when demolishing buried obstructions near adjacent buildings. Experience indicates that excavation is unlikely to result in vibration levels exceeding that identified above.

However, care is still required, particularly if large buried obstructions or hard rock layers are encountered near to adjacent offsite buildings. Percussive demolition in such cases can result in higher vibration levels. At times, special equipment for saw cutting or grinding of large buried concrete masses or slabs can be necessary to minimize offsite vibration impact. Care is always necessary when operating in close proximity to other buildings, structures, or buried services.

Considering all the above, a typical Zone of Influence is predicted, based on the City stipulated level of 5 mm/s, on the assumption that care will be observed in the demolition, shoring and excavation process. This Zone of Influence extends 8 metres beyond the work boundary. The ZOI is shown in Figure 1 as a thick red line. The shoring perimeter is shown in blue, and other neighbouring buildings are indicated in green.

Comments specific to the various properties affected by this ZOI are provided below.

## 4.2 Adjacent and Nearby Buildings and Structures

The Zone of Influence extends beyond the legal boundaries of the site, and onto the offsite properties of 487, 495, 497, and 507 Adelaide Street West, 98 and 100 Portland Street, 624 King Street West, and 8 Waterloo Terrace, 3-9 Adelaide Place. Under the By-Law, preconstruction consultation with all property owners and occupants within the Zone of Influence is required.

The Zone of Influence also extends into the offsite buildings at 487, 495, 497, and 507 Adelaide Street West, 98-104 Portland Street, 624 King Street West and 8 Waterloo Terrace. Under the By-

Law, preconstruction condition surveys for these buildings are required, and vibration monitoring is also required.

The buildings at 499 and 505 Adelaide Street West, 602 King Street West, 1 and 11 Adelaide Place are also partially within the Zone of Influence, and while these buildings will remain after the construction, they are part of the development site. The applicability of the By-Law to buildings which are part of the project or site is not clear, and it is our assumption that in such situations the By-Law provisions do not strictly apply. Nevertheless, care is still appropriate, and due to the heritage status of 499 and 505 Adelaide Street West, preconstruction condition surveys and vibration monitoring may still be considered for due-diligence purposes.

Further details regarding the recommended vibration monitoring plan are provided in Section 5 and Section 6, below.

### 4.3 Other Considerations

Care must be taken when operating near municipal infrastructure and other buried services. Ground-borne vibration from typical construction activities is unlikely to pose much risk, however direct mechanical damage is a potential concern, as is pressure from soil densification from materials installed into the soil at very close distances.

### 4.4 Summary of Predicted Off-Site Vibration

**Table 3: Predicted Off-Site Construction Vibration Level at Nearby Buildings**

| Building  | Assumed Closest Distance to Nearest Activity [m] | Approximate PPV Vibration Due to Predictable Activities Described Above [mm/s] | Cautionary Criteria [mm/s] |
|---|--|--|----------------------------|
| 507 Adelaide Street West, 2 storey residential townhouse                                  | 5  | 9  | 3                          |
| 505 Adelaide Street West, 2 storey residential townhouse part of the development property | <1   | *  | 3                          |
| 499 Adelaide Street West, 3 storey residential townhouse part of the development property | 1  | *  | 3                          |
| 497 Adelaide Street West, 3 storey residential townhouse                                  | 1  | *  | 3                          |
| 495 Adelaide Street West, 2 storey commercial building                                    | 4  | 11   | 8                          |

|  |    |   |         |
|--|----|---|---------|
| 487 Adelaide Street West, 3 storey commercial building                                   | 6  | 7 | 8       |
| 98 Portland Street, 2 storey residential townhouses                                      | 1  | * | 5       |
| 602 King Street West, 3 storey commercial building part of the development property      | <1 | * | 8       |
| Commercial buildings south of King Street West   | 24 | 1 | 8       |
| Buildings north of Adelaide Street West  | 17 | 2 | various |
| 624 King Street West, commercial building  | 5  | 9 | 8       |
| 8 Waterloo Terrace, 1 storey commercial building   | 5  | 9 | 8       |
| 5-9 Adelaide Place, 2 storey residential townhouses                                      | 14 | 3 | 3       |
| 1 and 11 Adelaide Place, 2 storey residential townhomes part of the development property | 14 | 3 | 3       |

\*vibration exceeding the cautionary limits is possible at times; care will be required when operating close to this structure.

## 5 VIBRATION MONITORING

The Zone of Influence extends into the offsite buildings at 487, 495, 497, and 507 Adelaide Street West, 98-104 Portland Street, 624 King Street West and 8 Waterloo Terrace. Under the By-Law, vibration monitoring is required.

The offsite buildings at 499 and 505 Adelaide Street West, 602 King Street West, 1 and 11 Adelaide Place are also partially within the Zone of Influence, and while these buildings will remain after the construction, they are part of the development site.

There will always be considerable variation in the vibration produced by construction activities, and corresponding uncertainty in this type of review. Thus, a program involving both automated vibration monitoring and short-term attended vibration measurements at the start of key construction activities is recommended to verify the assumptions and conclusions of this assessment. Automated vibration monitoring has the virtue of capturing vibration during unanticipated events, and no scheduling is required to capture vibration data during planned or unplanned activities. Attended measurements have the virtues of providing immediate feedback on a more reliable basis than automated monitoring, being easily relocated so that the likely worst-case area at any given time can

be addressed, and being able to assess vibration rapidly at a number of locations. As well, specific techniques can be verified for their impact to confirm if alternate methods are required.

In this case, automated vibration monitoring should be provided at several of the closest buildings, and attended measurements should be undertaken at appropriate times near the adjacent buildings including those inside the Zone and also other nearby buildings during the start of various activities near those locations. If alternative methods are employed, attended vibration measurements are also recommended at the start of those activities.

In addition to the attended measurements, long-term unattended vibration monitoring within the Zone of Influence should be undertaken; specific recommendations are provided below in section 6.

## 6 CONCLUSIONS AND RECOMMENDATIONS

1. In accordance with the requirements of the City of Toronto By-Law, the Zone of Influence for the activities at 602-620 King Street West extends approximately 8 meters from the work areas. Outside of this ZOI, the peak particle velocity levels due to construction activities are expected to be less than 5 mm/s.
2. The Zone of Influence extends beyond the legal boundaries of the site, and onto the offsite properties of 487, 495, 497, and 507 Adelaide Street West, 98 and 100 Portland Street, 624 King Street West, and 8 Waterloo Terrace, 3-9 Adelaide Place. Under the By-Law, preconstruction consultation with all property owners and occupants within the Zone of Influence is required.
3. The Zone of Influence also extends into the offsite buildings at 487, 495, 497, and 507 Adelaide Street West, 98-104 Portland Street, 624 King Street West and 8 Waterloo Terrace. Under the By-Law, preconstruction condition surveys for these buildings are required, and vibration monitoring is also required.
4. The buildings at 499 and 505 Adelaide Street West, 602 King Street West, 1 and 11 Adelaide Place are also partially within the Zone of Influence, and while these buildings will remain after the construction, they are part of the development site. The applicability of the By-Law to these buildings is not clear, but it is held that the By-Law requirements do not strictly apply to these buildings.
5. Under the By-Law, vibration monitoring is required. To meet this requirement, it is recommended that automated vibration monitors be deployed in a representative sample of the surrounding buildings. The use of at least four vibration monitors is recommended as follows:

One monitor is recommended in one of the buildings near the shoring boundary at the northeast corner of the site, possibly in 499 Adelaide Street West. Although this building is part of the development site it is one of the closest buildings in this area to the shoring boundary, and it has heritage status.



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One monitor is recommended for 98 Portland Street a townhouse that will be very close to both demolition and shoring activities.

One monitor is recommended for 8 Waterloo Terrace to represent the buildings near the southwest corner of the site, all of which will be separated from the site by a narrow laneway. 8 Waterloo Terrace will be close to both demolition and shoring activities.

One monitor is recommended for the heritage townhomes at the northwest corner of the site. Placing the monitor in 505 Adelaide Street West, the closest of the townhomes is recommended although it is part of the development, since this will be closest to both demolition and shoring activities.

The monitors should be installed indoors, fixed in place to a wall or floor slab near the construction activities or sensitive equipment. It is generally important to locate monitors in affected buildings at locations where vibration caused by activities within the building is low. However, access restrictions can force other options to be used; the final selection of monitor locations will need to be made at the time of deployment.

The automated monitors should be deployed at least a few days prior to the beginning of any substantial work on the site to provide baseline weekday vibration data. The monitors should be equipped with wireless modems and configured to automatically notify site personnel in the event of vibration exceeding the relevant cautionary limit. The monitors should be downloaded regularly and the data reviewed, until all substantial demolition and excavation work is complete in the area. The monitors should be configured to produce an ongoing record of peak particle velocities and corresponding dominant frequencies of vibration. Correctly calibrated instrumentation should be used throughout.

6. At the start of activities with the potential for vibration impact, including major demolition activities, shoring, excavation etc., attended vibration measurements should be conducted to verify the assumptions of this study. Attended measurements should be made around the site on nearby structures and buildings, as appropriate and practical. Extensive measurements are not required, provided that the measurements are sufficient to obtain a representative sample, and that the levels are acceptable.

Should significant use of major percussive and vibratory techniques become necessary (i.e. hoerams for demolition of the building or foundation, vibratory soil compaction, etc.), additional attended measurements of vibration should be performed at the start of this work to ensure that it can be undertaken in compliance with the By-Law.

Should existing heavy foundation elements such as heavy raft slabs or heavy buried obstructions be found near adjacent buildings, special consideration should be given to their removal. Removal should only proceed after precautions specific to vibration have been made.

If excessive vibration levels were to be found, modifications to the demolition or construction techniques, potentially utilizing lighter or smaller equipment or less aggressive usage would be required.



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7. The City will require a general review of construction vibration during the work at the site. Regular site visits and vibration spot-checks should form part of the general review process.
8. Additional attended measurements should be provided in the event of vibration-related complaints being received from the owners of the neighbouring buildings.
9. Once excavation is substantially complete, a final report should be prepared summarizing all vibration measurements made during construction.

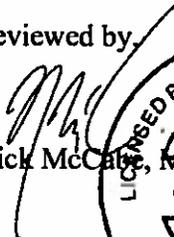
We trust the above is sufficient for your current purposes. If we can be of further assistance, please call.

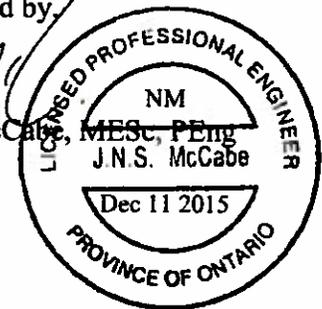
Yours truly,

**Howe Gastmeier Chapnik Limited**

  
Graeme Milligan

Reviewed by,

  
Nick McCabe, M.Eng., P.Eng.



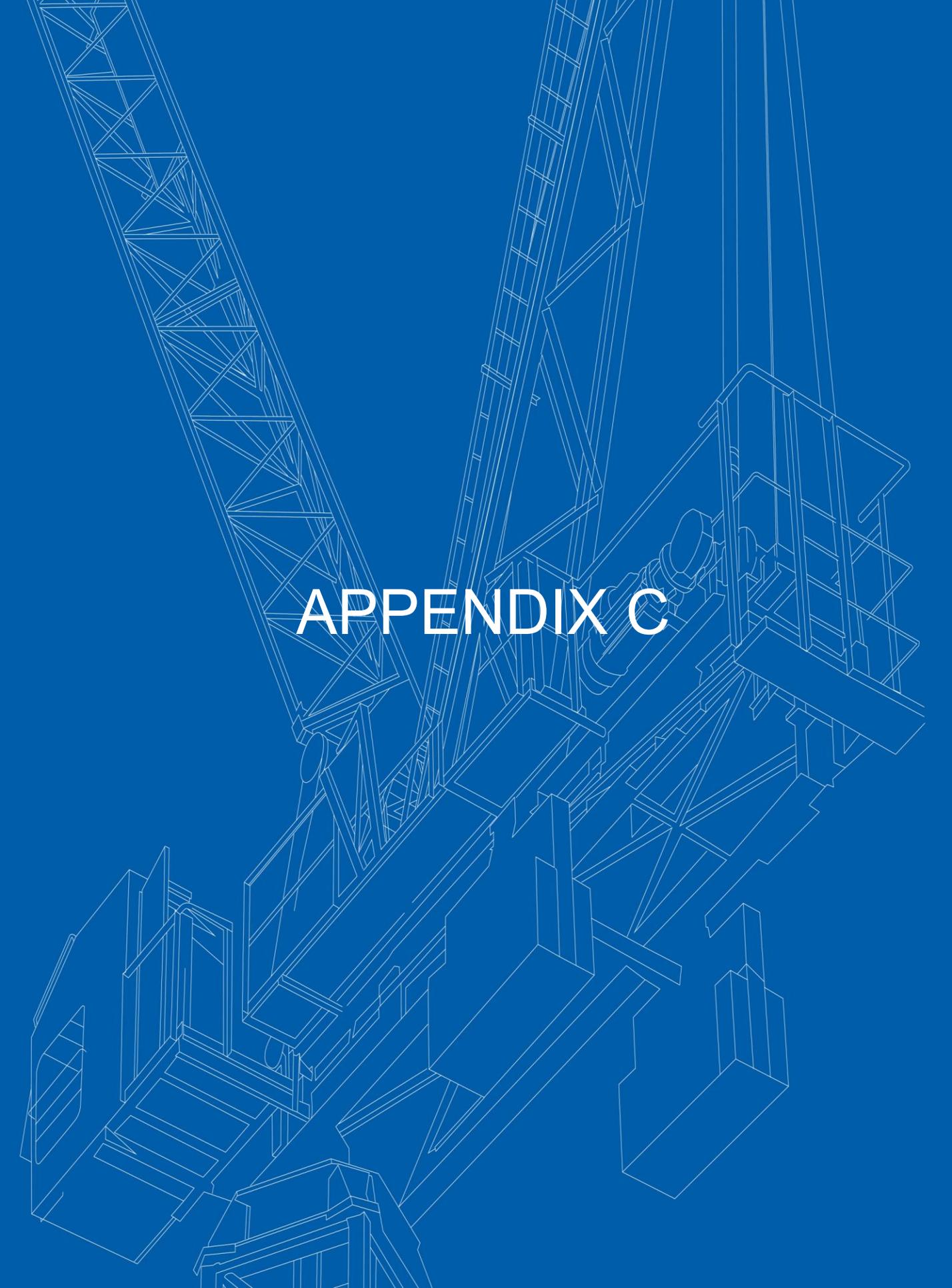
ACOUSTICS



NOISE



VIBRATION



# APPENDIX C

This information sheet has been prepared to assist individuals to complete building and demolition permit applications with minimal delay. City of Toronto Municipal Code, Chapter 363 provides that permit applications are to be accompanied by plans, specifications and documentation which will be considered by the Chief Building Official in determining whether a permit will be issued.

The City of Toronto is seeking to minimize the adverse effects on adjacent buildings and structures from construction and demolition. This form is not required for Part 9 residential building as defined in the Building Code, unless otherwise requested by the Code Examiner.

Pursuant to the City of Toronto Municipal Code, Chapter 363 a building or demolition permit application will be considered incomplete if the application is not accompanied by answers to the following questions:

### A. Vibration Control

|  |                              |                             |
|--|------------------------------|-----------------------------|
| Will the proposed construction activity include any of the following:  |                              |                             |
| 1. Blasting  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. Deep foundations  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. Drilled caissons  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Large scale soil compaction   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. Construction within the water table   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 6. Any other construction activity or method that has the potential to cause vibrations which may have impact on buildings or structures outside of the construction site that is the subject of this permit application | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

If the answer to any of questions 1 to 6 is **YES**, the applicant shall undertake the following:

### B. Preliminary Study (required by Chapter 363)

**Submitted**

|  |                              |
|--|------------------------------|
| 7. Plan showing the construction site, adjacent lands, buildings, and zone of influence (prepared by a Professional Engineer)* | <input type="checkbox"/> Yes |
| 8. Existence within the zone of influence of any buildings that have been designated under the Ontario Heritage Act*           | <input type="checkbox"/> Yes |
| 9. General review commitment certificate by a P.Eng. responsible for vibration control and letter of undertaking by owner      | <input type="checkbox"/> Yes |

### C. Pre-Construction Consultation

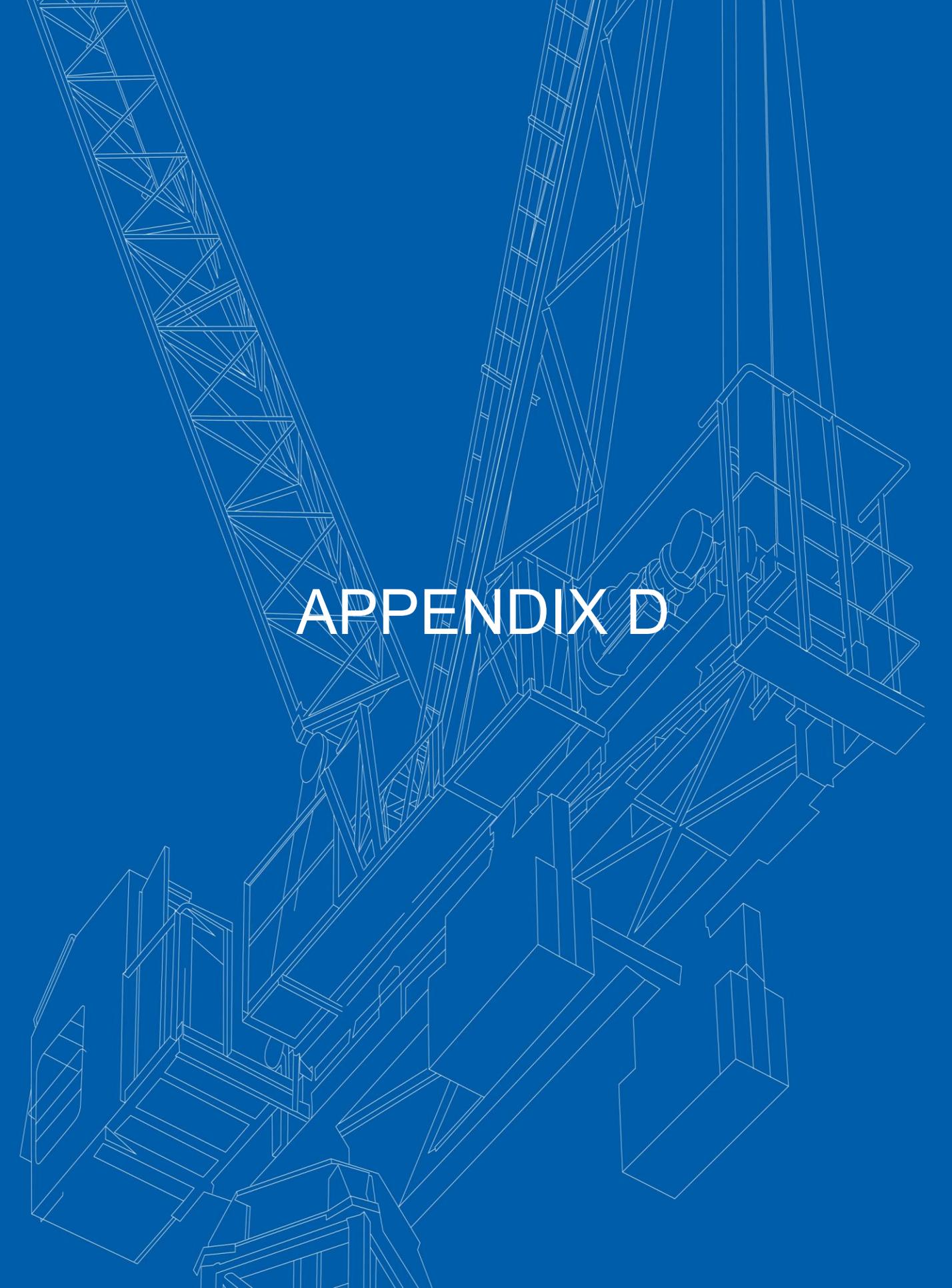
|  |  |                              |
|--|--|------------------------------|
| In accordance with Municipal Code 363-3.6, if the zone of influence will extend beyond the legal boundaries of the construction site that is the subject of the permit application, the applicant shall carry out a pre-construction meeting with all property owners and occupants within the zone of influence, advising of the possibility of construction and/or demolition vibrations and the provisions of By-law 514-2008, Section D. |  |                              |
| 10. Will the projected zone of influence be extended beyond the legal boundaries of the construction site?   | <input type="checkbox"/> Yes             | <input type="checkbox"/> No  |
| 11. In the event that the projected zone of influence will extend beyond the legal boundaries of the construction site, the required report has been received from professional engineer addressing matters outlined in 514-2008 D(2) including:   |  |                              |
| • Pre-construction survey consultation   | <input type="checkbox"/> Yes             |                              |
| • Pre-construction measurement of background vibrations  | <input checked="" type="checkbox"/> Yes* | <input type="checkbox"/> Yes |
| • Pre-construction inspection of adjacent buildings and structures within the zone of influence  | <input type="checkbox"/> Yes             |                              |
| • Identification of mitigation measures  | <input checked="" type="checkbox"/> Yes* |                              |
| • Monitoring program   | <input checked="" type="checkbox"/> Yes* |                              |

Continue on next page.

\* REFER TO HGC ENGINEERING  
REPORT DATED DECEMBER 11, 2015

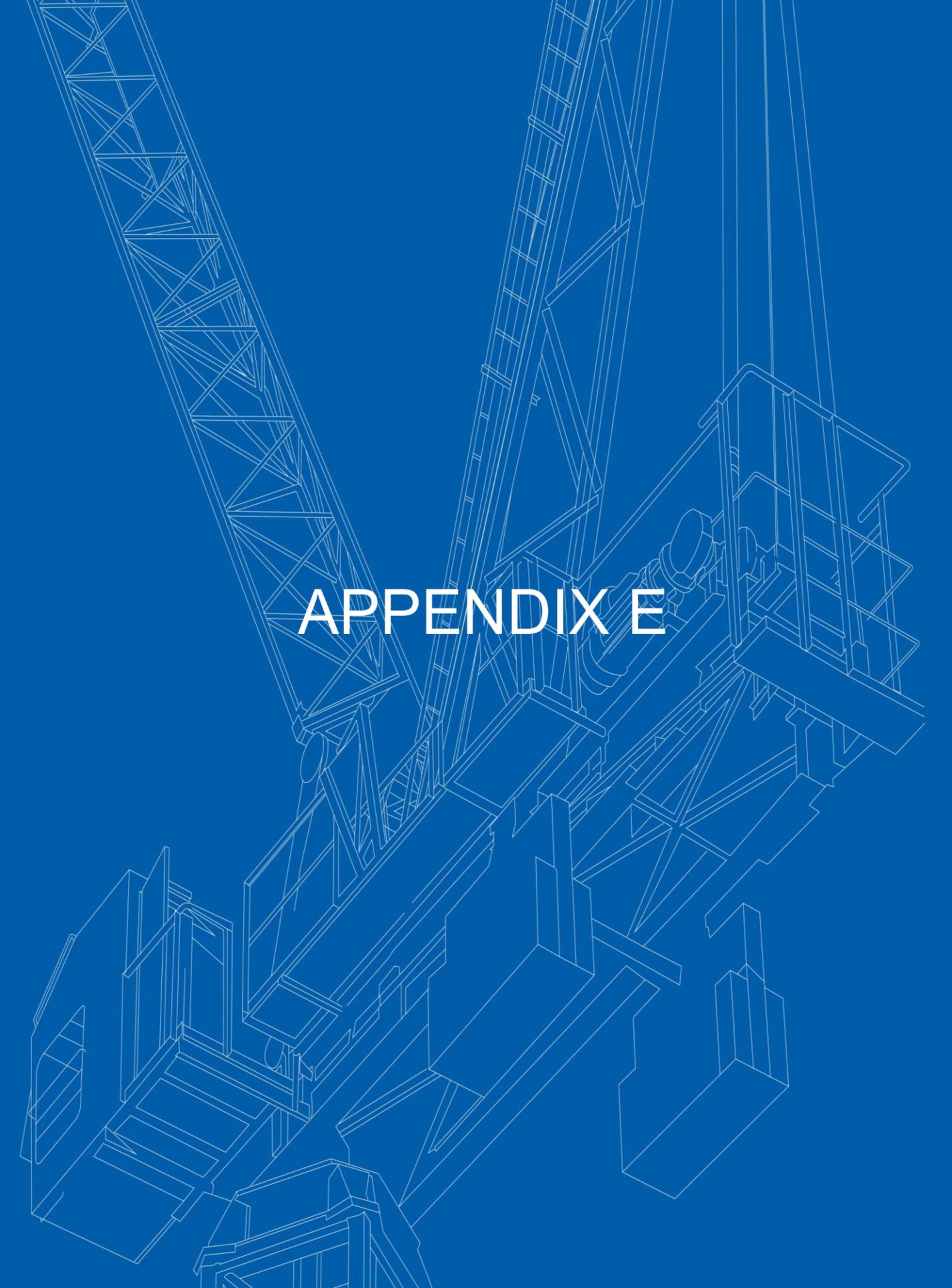
**Applicant Declaration**

|   |             |                   |
|---|-------------|-------------------|
| Address of Construction and/or Demolition   |             |                   |
| Street No.  | Street Name | Postal Code       |
| First Name<br>I,  |             | Last Name         |
| <p><b>do hereby declare:</b><br/>(confirm the following by checking off <b>each</b> box)</p> <p><input type="checkbox"/> that I am the owner/authorized agent of the owner named in the above application for a permit.</p> <p><input type="checkbox"/> that the information supplied by me in the application and in the materials filed by me with the application is correct.</p> <p>If the answer to <b>any</b> of questions in Section A is <b>YES:</b></p> <p><input type="checkbox"/> that I will ensure that monitoring of vibrations levels during construction is in accordance with the monitoring program submitted with the application for a permit</p> <p><input type="checkbox"/> that I understand the requirements of City of Toronto By-law 514-2008 with respect to the public communications and complaint protocol, including the provisions for notice to the ward councillor, owners and occupants of properties within the zone of influence one week before the commencement of construction and/or demolition activity that may cause vibrations.</p> <p>If the answer to <b>all</b> of questions in Section A is <b>NO:</b></p> <p><input type="checkbox"/> that I understand that if a construction activity that was not identified on this form is proposed or commenced, or if a nearby heritage building could be adversely affected, I shall comply with the requirements of Municipal Code 363-3.6, where in the opinion of the Chief Building Official the construction activity may contribute to excessive vibrations.</p> <p><b>And I hereby certify conscientiously believing the above is correct.</b></p> |             |                   |
| Signature   | Print Name  | Date (yyyy-mm-dd) |
| Building or Demolition Permit Application No.   |             |                   |



# APPENDIX D





# APPENDIX E



# 602-620 King West - King Portland Development

| Activity ID  | Activity Name   | Original Duration | Start     | Finish      | 2014                                      |   |   |   |   |   |   |   |   |   |   |   | 2015 |   |   |   |   |   |   |   |   |   |   |   | 2016 |   |   |   |   |   |   |   |   |   |   |   | 2017 |   |   |   |   |   |   |   |   |   |   |   | 2018 |   |   |   |   |   |   |   |  |  |  |  |
|--|---|-------------------|-----------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|---|---|---|---|---|---|------|---|---|---|---|---|---|---|--|--|--|--|
|  |   |                   |           |             | M   | J | J | A | S | O | N | D | J | F | M | A | M    | J | J | A | S | O | N | D | J | F | M | A | M    | J | J | A | S | O | N | D | J | F | M | A | M    | J | J | A | S | O | N | D | J | F | M | A | M    | J | J | A | S | O | N | D |  |  |  |  |
| <b>602-620 King West - King &amp; Portland Development</b> |   |                   |           |             | [Gantt bar from 02-Jun-14 A to 03-Aug-18] |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| <b>PROJECT SUMMARY &amp; MILESTONES</b>                    |   |                   |           |             | [Gantt bar from 02-Jun-14 A to 03-Aug-18] |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| <b>Pre-Construction Milestones</b>                         |   |                   |           |             | [Gantt bar from 02-Jun-14 A to 10-Jan-17] |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-PRE-1000  | Design & Construction Doc's   | 510               | 02-Jun-14 | 10-Jun-16   | [Gantt bar from 02-Jun-14 to 10-Jun-16]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-PRE-1010  | CM Proposal for Preconstruction Services Submitted                        | 0                 |           | 07-Aug-14 A | [Milestone diamond at 07-Aug-14 A]        |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-PRE-1020  | Zoning Bylaw Application (ZBA) and Site Plan Application (SPA)- Submitted | 0                 |           | 31-Aug-15 A | [Milestone diamond at 31-Aug-15 A]        |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-PRE-1040  | Tendering   | 284               | 23-Nov-15 | 10-Jan-17   | [Gantt bar from 23-Nov-15 to 10-Jan-17]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| <b>Construction Milestones</b>                             |   |                   |           |             | [Gantt bar from 17-Mar-16 to 03-Aug-18]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| <b>Cranes and Hoisting Equipment</b>                       |   |                   |           |             | [Gantt bar from 14-Oct-16 to 22-Jan-18]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| OFF-CR-1030  | Crane #1 in Operation (Calendar Days)- Office                             | 441               | 14-Oct-16 | 28-Dec-17   | [Gantt bar from 14-Oct-16 to 28-Dec-17]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| RES-CR-1030  | Crane #2 in Operation (Calendar Days)- Residential                        | 452               | 21-Oct-16 | 15-Jan-18   | [Gantt bar from 21-Oct-16 to 15-Jan-18]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| RES-MM-1010  | M&M Hoist in Operation (Calendar Days)- Residential                       | 274               | 14-Apr-17 | 12-Jan-18   | [Gantt bar from 14-Apr-17 to 12-Jan-18]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| OFF-MM-1010  | M&M Hoist in Operation for (Calendar Days)- Office                        | 279               | 19-Apr-17 | 22-Jan-18   | [Gantt bar from 19-Apr-17 to 22-Jan-18]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| <b>Substructure</b>  |   |                   |           |             | [Gantt bar from 17-Mar-16 to 28-Feb-17]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-SUB-1050  | Mobilization - Start  | 0                 | 17-Mar-16 |             | [Milestone diamond at 17-Mar-16]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-SUB-1060  | Demo & Construction - Start   | 0                 | 01-Apr-16 |             | [Milestone diamond at 01-Apr-16]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-SUB-1070  | Shoring/ Excavation - Start   | 0                 | 06-May-16 |             | [Milestone diamond at 06-May-16]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-SUB-1080  | Substructure - Start  | 0                 | 21-Oct-16 |             | [Milestone diamond at 21-Oct-16]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-SUB-1090  | Substructure - Complete   | 0                 |           | 28-Feb-17   | [Milestone diamond at 28-Feb-17]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| <b>Office Building</b>                                     |   |                   |           |             | [Gantt bar from 01-Mar-17 to 12-Jun-18]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-OFF-1100  | Superstructure - Start  | 0                 | 01-Mar-17 |             | [Milestone diamond at 01-Mar-17]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-OFF-1110  | Superstructure - Complete   | 0                 |           | 01-Aug-17   | [Milestone diamond at 01-Aug-17]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-OFF-1120  | Building Enclosed (Excluding M&M Hoist Bay)                               | 0                 |           | 17-Oct-17   | [Milestone diamond at 17-Oct-17]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-OFF-1130  | Substantial Completion  | 0                 |           | 17-Apr-18   | [Milestone diamond at 17-Apr-18]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-OFF-1140  | Total Completion  | 0                 |           | 12-Jun-18   | [Milestone diamond at 12-Jun-18]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| <b>Residential Building</b>                                |   |                   |           |             | [Gantt bar from 01-Mar-17 to 03-Aug-18]   |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-RES-1150  | Superstructure - Start  | 0                 | 01-Mar-17 |             | [Milestone diamond at 01-Mar-17]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |
| SM-RES-1160  | Superstructure - Complete   | 0                 |           | 18-Aug-17   | [Milestone diamond at 18-Aug-17]          |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |   |   |   |   |      |   |   |   |   |   |   |   |  |  |  |  |

- Actual Work
- Remaining Work
- Critical Remaining Work
- Level of Effort
- Actual Level of Effort
- Milestone
- WBS Summary

## 602-620 King West - King Portland Development

| Date | Revision | Checked | Approved |
|------|----------|---------|----------|
|      |          |         |          |
|      |          |         |          |
|      |          |         |          |
|      |          |         |          |















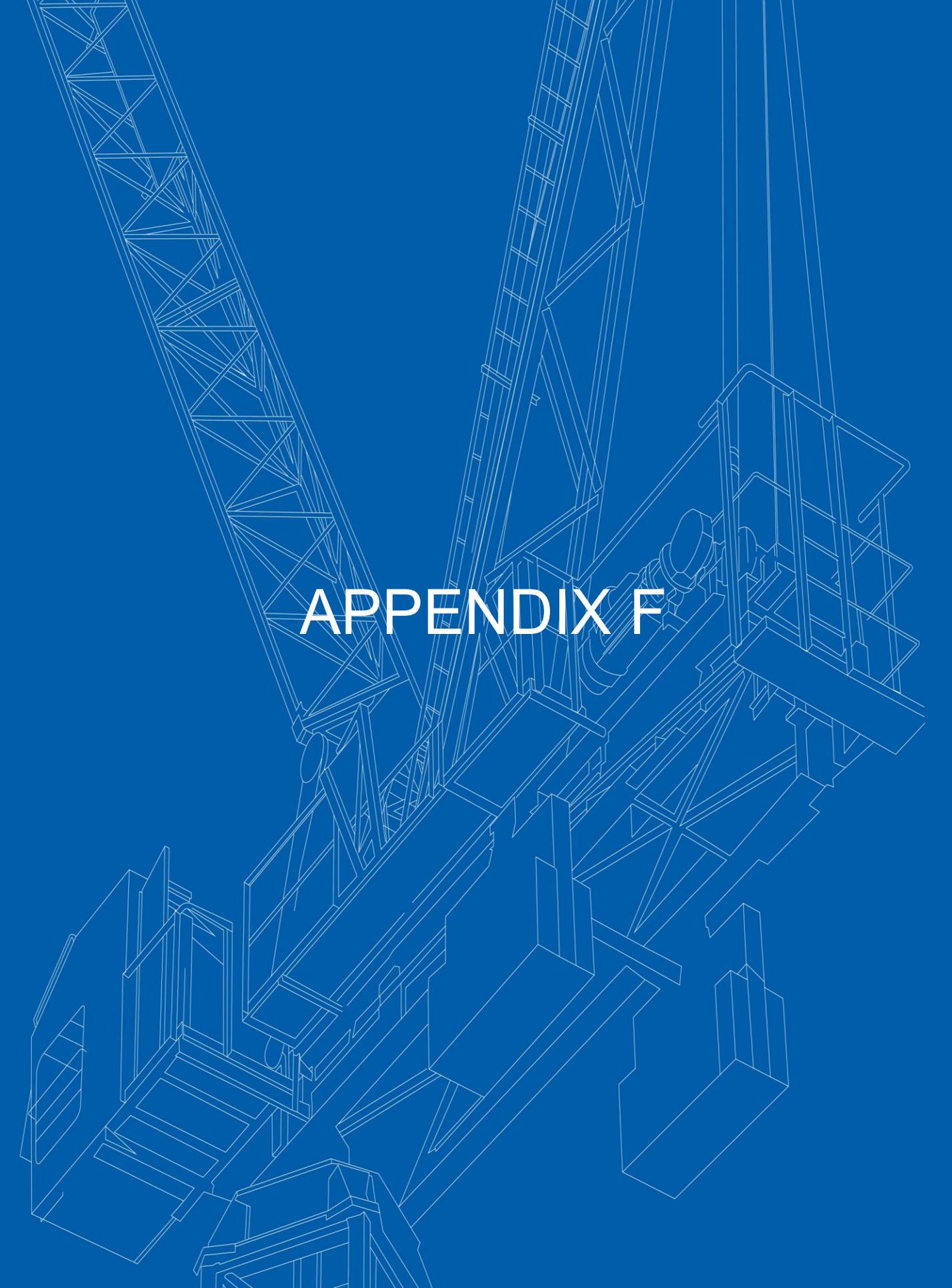






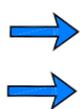






# APPENDIX F

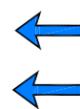
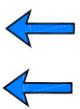
ADELAIDE STREET WEST



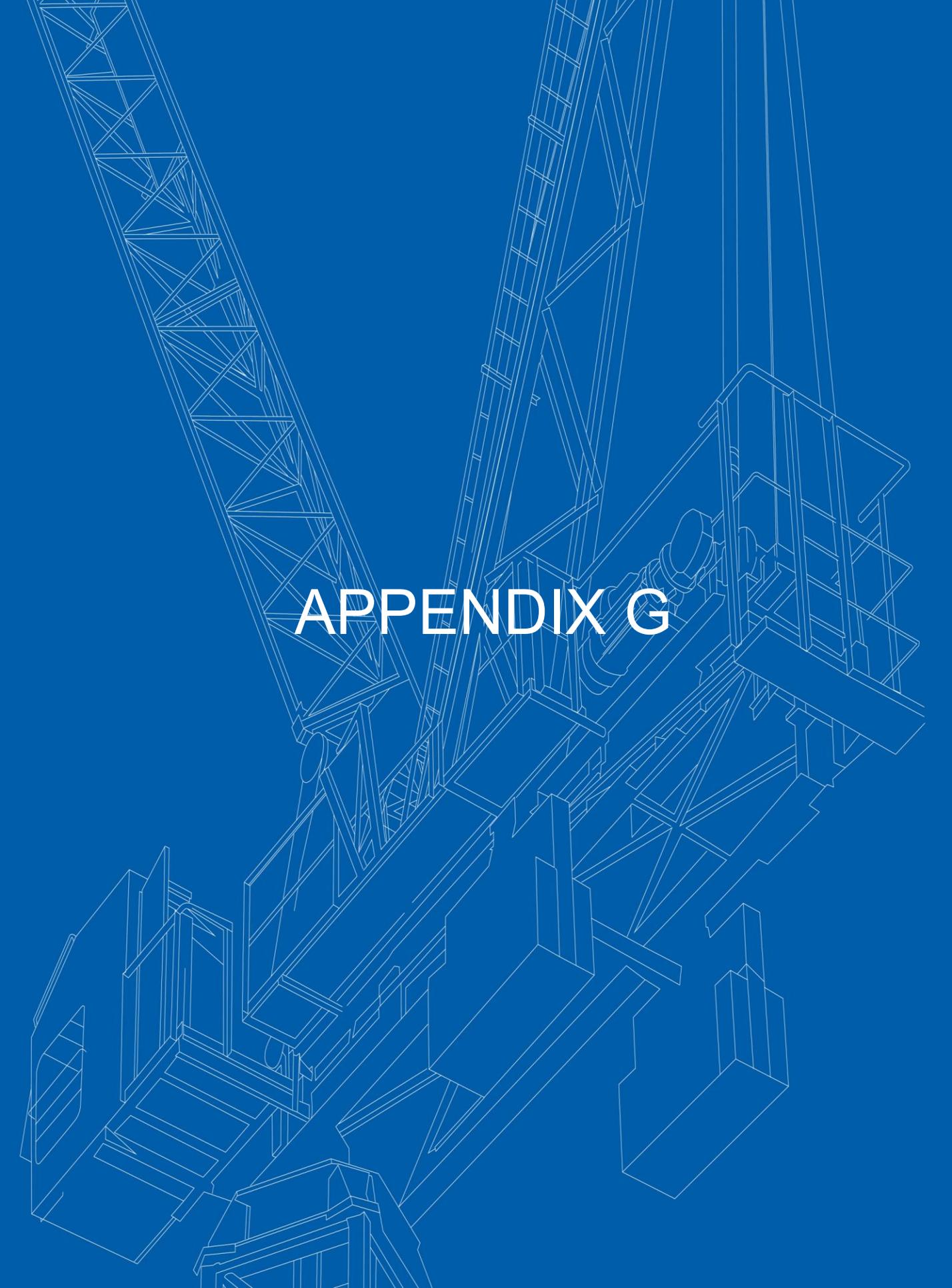
ADELAIDE PLACE

WATERLOO TERRACE

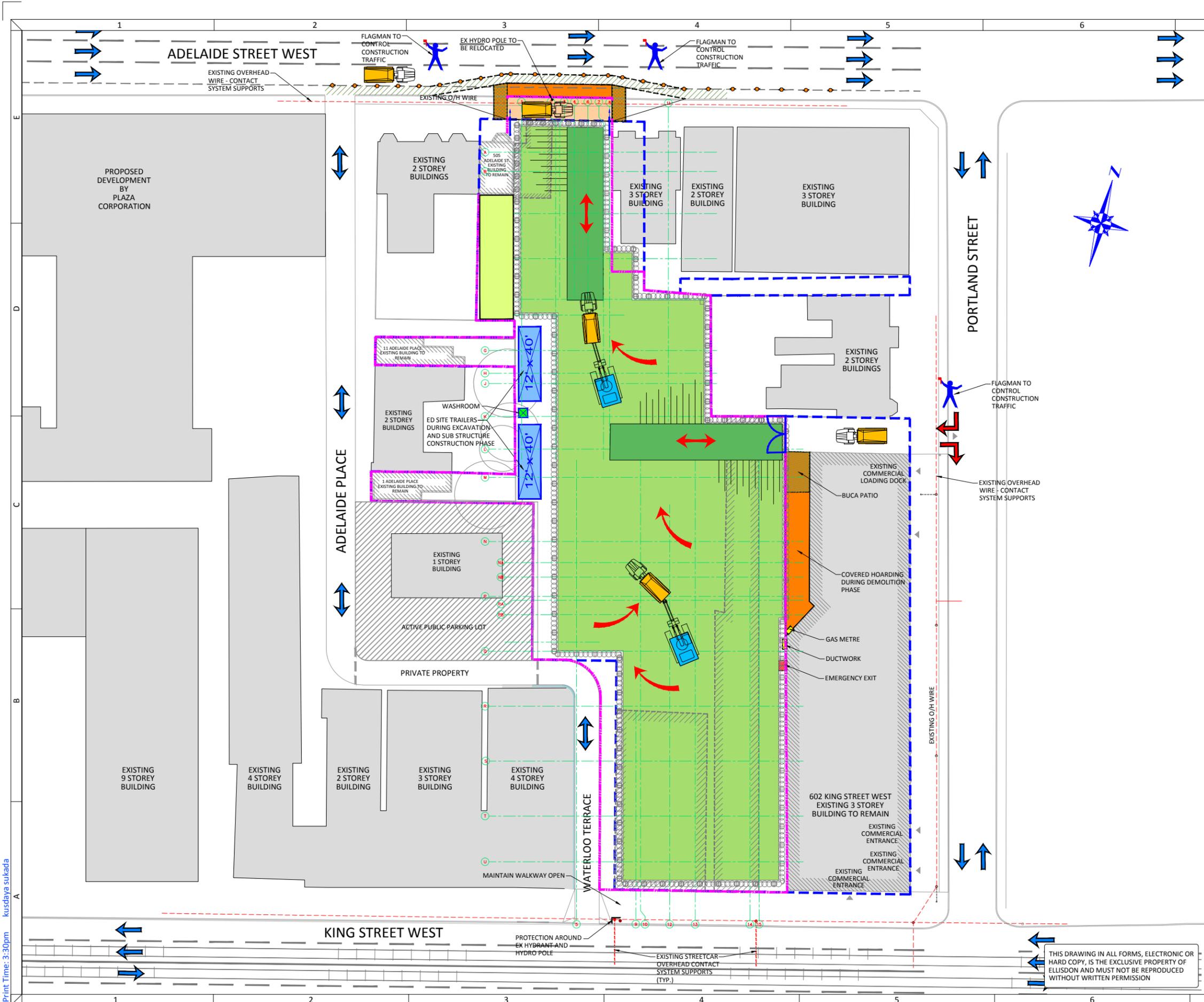
KING STREET WEST



EXISTING STREETCAR OVERHEAD CONTACT SYSTEM SUPPORTS (TYP.)



# APPENDIX G



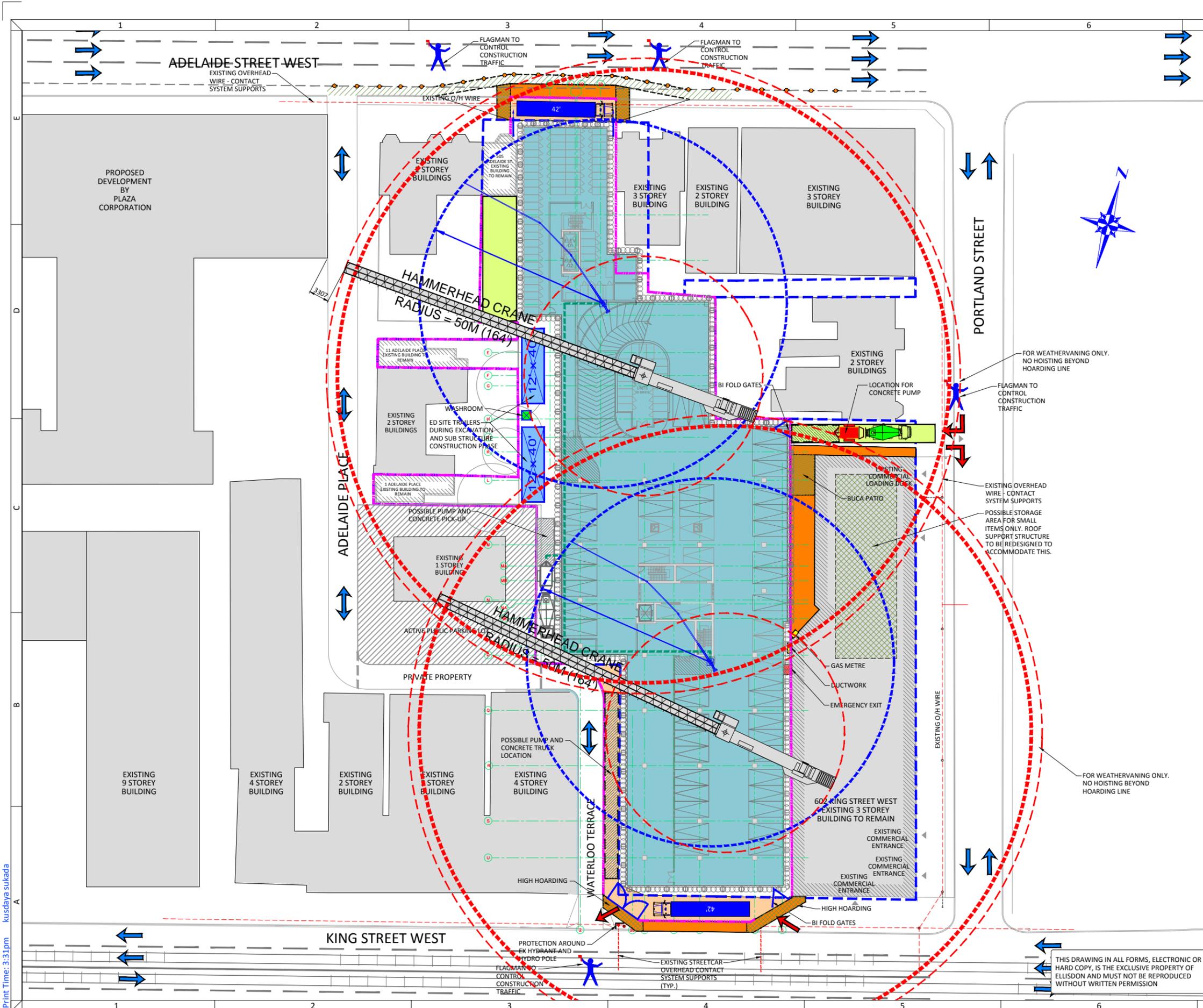
- LEGEND:**
- EXISTING STRUCTURES
  - CONSTRUCTION ACCESS
  - COVERED HOARDING
  - EXCAVATION AREA
  - RAMPS
  - LAYDOWN AREA
  - CONSTRUCTION HOARDING
  - PROPERTY LINE
  - SLIDING GATES
  - SWING GATES
  - CONSTRUCTION TRAFFIC
  - PUBLIC TRAFFIC

| No. | DATE | DESCRIPTION | BY |
|-----|------|-------------|----|
|     |      |             |    |
|     |      |             |    |

|   |  |  |   |
|---|--|--|---|
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| <p>PROJECT NAME:<br/><b>602-620 King St. W</b></p>          |  | <p>DRAWING TITLE:<br/><b>Site Logistics<br/>Excavation and Shoring</b></p>   |   |
| <p>Toronto, Ontario<br/>Canada</p>                          |  | <p>DATE: 2016JANUARY13<br/>JOB NUMBER: 70162</p>   | <p>SCALE: NTS<br/>DRAWING NUMBER: KSW-LOG-01<br/>REV: 0</p> |

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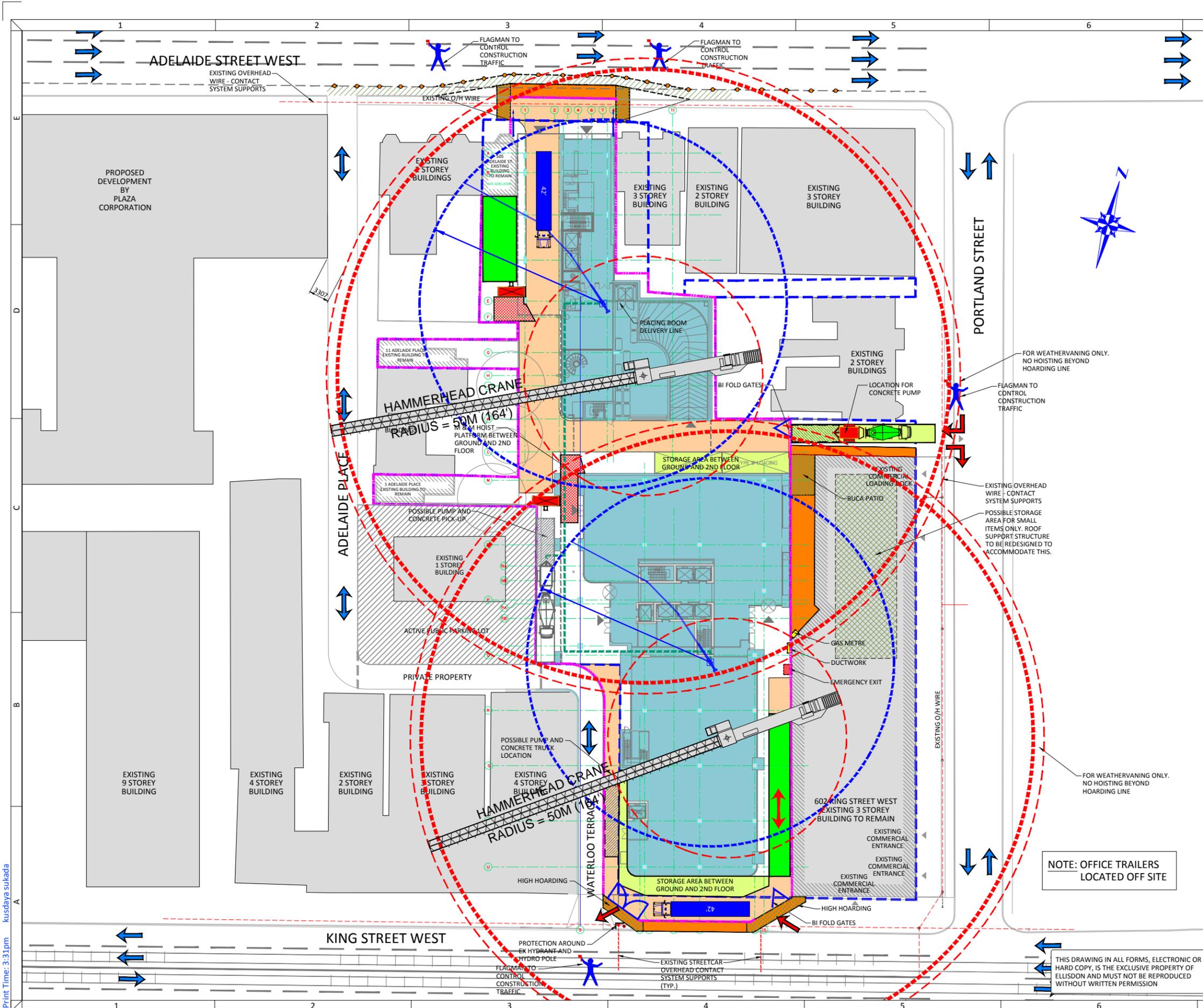


- LEGEND:**
- EXISTING STRUCTURES
  - NEW STRUCTURE
  - CONSTRUCTION ACCESS
  - COVERED HOARDING
  - CRANE PICKUP AREA
  - LAYDOWN AREA
  - CRANE (TYPE AND CAPACITY)
  - CONSTRUCTION HOARDING
  - PROPERTY LINE
  - SLIDING GATES
  - SWING GATES
  - CONSTRUCTION TRAFFIC
  - PUBLIC TRAFFIC
  - PLACING BOOM DELIVERY LINE

| No. | DATE | DESCRIPTION | BY |
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|     |      |             |    |
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|---|--|
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| <p>PROJECT NAME:<br/><b>602-620 King St. W</b></p>  | <p>DRAWING TITLE:<br/><b>Site Logistics<br/>Substructure Construction</b></p>  |
| <p>DATE: 2016JANUARY13 SCALE: NTS DRAWN BY: YL</p>  | <p>JOB NUMBER: 70162 DRAWING NUMBER: KSW-LOG-02 REV: 0</p>   |
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- LEGEND:**
- EXISTING STRUCTURES
  - NEW STRUCTURE (COMMERCIAL)
  - NEW STRUCTURE (RESIDENTIAL)
  - CONSTRUCTION ACCESS
  - COVERED HOARDING
  - CRANE PICKUP AREA
  - LAYDOWN AREA
  - CRANE ( TYPE AND CAPACITY)
  - CONSTRUCTION HOARDING
  - PROPERTY LINE
  - SLIDING GATES
  - SWING GATES
  - CONSTRUCTION TRAFFIC
  - PUBLIC TRAFFIC
  - MAN AND MATERIAL HOIST
  - PLACING BOOM DELIVERY LINE



| No. | DATE | DESCRIPTION | BY |
|-----|------|-------------|----|
|     |      |             |    |
|     |      |             |    |

|   |  |   |  |
|---|--|---|--|
|   |  | CONSTRUCTION SCIENCES<br>ENGINEERING SERVICES GROUP<br>1004 Middlegate Road, Suite 1000<br>Mississauga, Ontario, L4Y 4B8<br>CANADA<br>Tel: 905-896-8900 Fax: 905-803-6346<br>www.ellisdon.com |  |
| PROJECT NAME:<br><b>602-620 King St. W</b>    |  | DRAWING TITLE:<br><b>Site Logistics<br/>         Superstructure Construction</b>  |  |
| DATE: 2016 JANUARY 13 SCALE: NTS DRAWN BY: YL |  | JOB NUMBER: 70162 DRAWING NUMBER: KSW-LOG-03 REV: 0   |  |
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