Transportation Association of Canada

Guide to Utility Coordination on Public-Private Partnership (P3) Projects

November 2021

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The goal of this guide is to improve utility coordination on public-private partnership (P3) projects in Canada for the benefit of both public and private utility agencies.

The guide is a template that can be referred to by both public and private agencies in developing a utility coordination process for P3 projects. For agencies with an existing process, it represents a best practices document that can help ensure key aspects are covered and consistent practices are followed. For agencies without an existing process, it represents a seed document for a manual that addresses their specific situation.

The guide includes two main components: the main body and a flow chart. The flow chart summarizes the utility coordination process for P3 projects, covering the major components of Planning, Request for Proposal (RFP) Documentation Preparation, In-Market Design, Project Implementation, and Post-Construction. The main body complements the flow chart and offers additional detail on each project phase.</td><td>Keywords

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Ce guide a pour but d'améliorer la coordination des services publics dans le cadre des projets de partenariat public-privé (PPP) au Canada afin de faciliter la tâche des organismes de services publics et privés.

Le guide est un modèle que les organismes publics et privés peuvent consulter pour élaborer un processus de coordination des services publics pour les projets de PPP. Pour les organismes disposant d'un processus existant, il représente un document de meilleures pratiques assurant la mise en place des aspects clés et le respect de pratiques cohérentes. Pour les agences sans processus existant, il s'agit d'un document de base pouvant servir de modèle pour la production d'un manuel adapté à leur propre situation.

Le guide comprend deux éléments principaux : le corps du texte et l'organigramme. L'organigramme résume le processus de coordination des services publics pour les projets de PPP; il couvre les principales composantes de la planification, la préparation des documents de demande de propositions (DP), l'établissement et les règles du marché, la mise en œuvre du projet et l'après-construction. Le corps du texte complète l'organigramme et fournit de l'information détaillée sur chaque phase du projet.</td><td>Mots-clès

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Executive summary

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The guide is a template that can be referred to by both public and private agencies in developing a utility coordination process for P3 projects. For agencies with an existing process, it represents a best practices document that can help ensure key aspects are covered and consistent practices are followed. For agencies without an existing process, it represents a seed document for a manual that addresses their specific situation.

The guide includes two main components: the main body and a flow chart. The flow chart summarizes the utility coordination process for P3 projects, covering the major components of Planning, Request for Proposal (RFP) Documentation Preparation, In-Market Design, Project Implementation, and Post-Construction. The main body complements the flow chart and offers additional detail on each project phase.

Résumé

Ce guide a pour but d'améliorer la coordination des services publics dans le cadre des projets de partenariat public-privé (PPP) au Canada afin de faciliter la tâche des organismes de services publics et privés.

Le guide est un modèle que les organismes publics et privés peuvent consulter pour élaborer un processus de coordination des services publics pour les projets de PPP. Pour les organismes disposant d'un processus existant, il représente un document de meilleures pratiques assurant la mise en place des aspects clés et le respect de pratiques cohérentes. Pour les agences sans processus existant, il s'agit d'un document de base pouvant servir de modèle pour la production d'un manuel adapté à leur propre situation.

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1. Introduction

1.1 Purpose

Canadian right-of-way (ROW) owners manage the placement of infrastructure within the ROW in order to provide a wide variety of services to the public. As demands for the use of the public ROW increase, the ROW becomes increasingly crowded and complex. Public-private partnership (P3) projects can quickly become inefficient and costly without proper utility coordination.

The objective of this guide is to help P3 project stakeholders develop an efficient and consistent process for coordination utility relocations, when required. Once coordination becomes more standardized, project delivery efficiencies are expected to improve.

This guide is not a policy, standard, specification or regulation. Rather, it is a "best practices" guide that focuses on tasks involved in the utility coordination process, developed from a review of current practices across North America. It is not region-specific and does not cover all possible scenarios. Instead, it is a starting point for Project Owners, ROW Owners and Utility Agencies to define their own processes by adding information specific to their own jurisdictions.

1.2 Overview

Although this guide can be used by anyone to relocate public and private utilities, it is specifically aimed at the following audiences involved in P3 projects:

- Project Owners – giving them a road map on how to best implement utility coordination on the project
- ROW Owners – allowing them to learn from the best practices and procedures of different parties, and to implement a process that will be readily accepted and adopted by utility agencies
- Utility Agencies – providing a consistent process to follow when working with Project and ROW Owners
- Consulting Engineers practicing in the related field
- Contractors bidding on and implementing P3 projects
- Students and others who are training to enter the construction industry

Coordination between Project Owners, ROW Owners and Utility Agencies is an integral factor in P3 project planning, design and construction, to accommodate utilities efficiently and minimize delays throughout by enabling early identification and resolution of issues that may create confusion, complexity, delay and unnecessary costs.

Use of this guide will benefit all P3 stakeholders:

- For Project Owners it can minimize costs and conflicts, maintain schedules and manage risk
- For ROW Owners it can minimize staff costs, identify process changes, manage risk and reduce traffic impacts
- For Utility Agencies it can minimize costs, protect the integrity of infrastructure, and manage risk
- For the public it can save taxpayer dollars, improve safety, and reduce impacts on pedestrians, cyclists, vehicle users and adjacent landowners and businesses

This guide provides:

- A brief overview of the roles and responsibilities of various stakeholders
- A general description of the laws, rules, regulators and regulations in the Canadian construction environment
- A flow chart illustrating the coordination steps required to successfully navigate from the Planning Phase of a project to the final Post-Construction Phase
- An in-depth description of each phase found on the flow chart

The guide does not reference the legal right of utilities to use or occupy ROWs, or the financial responsibility involved in the adjustment or relocation of utilities within ROWs.

2. Roles and responsibilities

2.1 General

The key to successful utility coordination is a team approach to each P3 project, with each "player" having a role in completing their portion of the project. This guide is organized to describe the key steps in the utility coordination process with the specific players responsible for completing each step. This section outlines some of the key players involved in utility coordination, and their roles and responsibilities.

2.2 Project Owner

The Project Owner is the entity or agency that typically funds the project or has the responsibility to secure the funding. The Project Owner can be a single sponsor or a group of sponsors, and is responsible for outlining the scope of the P3 project, the preparation of procurement and implementation documents, setting up agreements with key parties, and providing oversight from beginning to completion.

2.3 Row Owner

The ROW Owner is defined as a federal/provincial ministry, a municipal corporation, a railway authority, a board, a commission or other body having control of the construction, improvement, alteration, maintenance or repair of a highway/road. On P3 projects, the ROW Owner should have an internal Utility Coordinator (UC) assigned to the project. The ROW Owner may be the Project Owner or form part of the Project Owner team. If the ROW Owner is not the Project Owner, they will act as a Regulatory Agency.

2.4 Utility Coordinator (UC)

The Utility Coordinator (UC) is the competent person(s) on a project team responsible for coordination of all phases (Planning, RFP Document Preparation, In-Market Design, Project Implementation and Post-Construction) of the utility relocations. P3 projects typically include complex utility relocations and require several UCs. A competent UC will have sufficient experience and technical background to handle the complexities of P3 projects.

The project owner may choose to have an agent with utility experience of their technical advisor/construction operations (TA/CO) team as their lead UC. The successful proponent (Project Co) will also assign their own lead UCs to a project, specifically during Project Implementation and Post-Construction Phases, but may also choose to include a lead UC during the In-Market Phase (depending

on complexity). Often, Utility Agencies may also assign their own UCs to a project to protect their own interests during the project. The roles and responsibilities mentioned in this guide refer to the lead UC.

2.5 Designer

The Designer is defined as a person(s) who plans the form, look or workings of the P3 project at the various stages, typically by drawing it in detail. Who owns the role and responsibilities of Designer depends on the phase of the project.

During the planning, RFP documentation preparation, and the first portion (up to RFP award) of the In-Market Design phases of a typical P3 project, the Designer's role and responsibilities usually lie with the Technical Advisor (TA) and/or the Owner's Engineers (OE). P3 projects could have a TA and an OE, a TA only or an OE only. When there is a TA and an OE in the initial phases, the TA typically is the Designer and the OE would perform the design review for the Project Owner.

The Design-Build teams (Proponents) bidding the project will further their designs during the early part of the In-Market Design phase.

Upon award of the RFP, the Designer role and responsibilities are then transferred to the successful proponent (Project Co). The Project Co Designer is responsible for the project's detailed design, which may also include any other utility related aspects. It is vital to the success of the project that the Designer communicates with the Project Owner, ROW Owner, and Utility Agencies to facilitate the project at all phases of the design.

2.6 Utility Agencies

Utility Agencies are the owners of public or private utility infrastructure. In many cases, the Project Owner can also be the Utility Agency (i.e. for municipal infrastructure such as water mains and sewers) and the ROW Owner.

Utility Agencies are responsible for allocating proper resources (design and construction) to the project, providing accurate records of their existing infrastructure, reviewing plans, participating in design and construction meetings, submitting relocation plans and schedules, and coordinating their relocation work with the Designer, UCs and ROW Owners. Their involvement will vary from project to project, depending on the potential impacts to their infrastructure.

2.7 Other authorities

Several other authorities may be involved with the utility coordination for the project, such as federal and provincial ministries (e.g. environment or transportation), local conservation authorities, utility regulatory authorities (e.g. Electrical Safety Association), and non-utility agencies (e.g. railway and airport authorities).

These authorities typically regulate specific public interests, geographical areas or interest groups. They provide valuable input to ensure the projects are being completed in accordance with all relevant laws, rules and/or regulations.

2.8 Project Co

Project Co's role is to fulfill all the requirements as identified in the project agreement, during the Implementation Phase of the P3 Project, including utility coordination from the Implementation Phase onward.

3. Laws, rules and regulations

3.1 General

All work completed must be done in accordance with federal, provincial and local laws and regulations, and applicable industry standards. These may vary from location to location. Therefore, it is vital that all parties are familiar with and understand the laws and regulations of their local area. Depending on funding mechanisms for certain projects, different orders of government or other authorities may be involved.

3.2 Federal laws and regulations

Federal laws and regulations are applicable across the country and are typically high in the hierarchy of applicable laws and regulations. Examples of federal bodies would be the Canadian Radio-television and Telecommunications Commission, the Canadian Energy Regulator, and Industry Canada.

3.3 Provincial laws and regulations

Provincial laws and regulations are applicable within specific provinces. Examples of regulators that create laws and regulations are provincial transportation, environment and labour ministries.

3.4 Local municipal laws and regulations

Local bylaws and regulations are applicable within specific municipalities or selected geographical areas. An example would be local conservation authorities who may mandate the requirements for utility placement within local environmentally sensitive areas, such as wetlands. Municipal bylaws may dictate specific guidelines related to construction of utility infrastructure.

Existing ROW Owners/Utility Agency agreements may, in some cases be leveraged by the P3 project.

It is important to understand the order of precedence as well as the applicability of these laws and regulations for each particular area.

3.5 Industry standards

Utility Owners, through legal requirements and standard design practices, are required to meet specific technical standards in the design and construction of their infrastructure as it applies to their respective industry or sector. Examples of these standards and codes include CSA's Z662 Oil and Gas Pipelines series of standards, and the Canadian Electrical Code. It is important to note that these industry standards and codes must be followed and cannot be deviated from.

Based upon risk and maintenance assessments, many Utility Agencies have developed their own internal standards, which may demand higher standards than those specified within legislated codes and technical standards. As internal corporate standards are a reflection of the operational requirements and risk tolerance of a Utility Owner, they must be considered in the design of any utility conflict mitigation. It should not be expected that a Utility Agency will reduce their design standards and practices solely to reduce the cost of a particular conflict mitigation measure.

4. Planning Phase

4.1 General

For P3 projects, utility relocation may be a significant factor in selecting a preferred plan for eventual construction. Due to the accelerated nature of these projects, even minor utility conflicts can result in significant costs and schedule impacts. Early engagement of Utility Agencies in the project will allow each utility to fit the project into their planning cycles. This way, it can be properly resourced.

Any work that will affect, or be affected by, existing and planned utilities, form a major part of the project's utility coordination. Utility Agencies can anticipate requests for information on existing facilities, and their long-term plans over many kilometres of transportation corridor or within an urban lot. The quality of information used for this level of planning will vary, and the guiding principle should be to make decisions based on the best information available.

The Planning Phase, sometimes referred to as the Environmental Assessment (EA) or functional planning phase (FPP), is the process in which options are analyzed to address a particular need or problem. The Designer reviews all available options and then provides a recommendation to the Project Owner of the preferred construction option.

For some projects, confirming whether the project will proceed as a P3 might not happen during the Planning Phase. This guide only discusses the case where it is confirmed. For the remainder of this chapter, the term "project" refers to the Planning Phase only, and not the project's Construction Phase.

The major players involved in the Planning Phase are:

- The Project Owner
- The ROW Owner
- The Project Owner's Utility Coordinator (UC)
- The Planning Consultant (Designer)
- Representatives from all Utility Agencies and other authorities that may be affected by the construction contract

The UC would be responsible for ensuring that project tasks related to utilities are completed at the appropriate time and within budget.

4.2 Planning start-up

Planning begins once the Project Owner determines if in-house staff, a procured Planning Consultant, or both, will complete the Planning Phase. The Project Owner must assign the role of Lead UC to either in-house staff or the Planning Consultant. Upon selection of the Lead UC, the project team determines the scope of the future construction project, develops, a preliminary construction schedule, and a review of which stakeholders (including Utility Agencies) need to be consulted during the Planning Phase.

Outcomes of these discussions may include:

- The type of procurement model that is required
- The number of proponent teams required
- Requirements for each proponent
- Identifying the project limits for the construction project and the utility impacts associated with the project
- Tentative timeline that construction and utility relocations require (allowing the Utility Agencies to evaluate their own internal plans for future development, and how they will be affected by the project's construction timelines)

4.3 Identifying utilities in the existing corridor (Part 1)

The Project Owner, possibly through their OE or TA, is responsible to develop an up-to-date base plan of the general construction project area. The UC would be responsible to ensure that the base plan is adequate for the requirements of utility coordination.

This base plan is then forwarded to all impacted Utility Agencies (private and public), with a request for each utility to provide their up to date plans. These plans display the Utility Agency's current records indicating where infrastructure is located within the study area. This information, along with survey data, would be a basis for some of the Quality Level D and C (QL-D, QL-C) information for the project. Additional investigations, either Quality Level B and/or A (QL-B, QL-A), may also be completed in key areas to improve the quality of the utility information. It is important that Utility Agencies flag any existing or planned critical/vital infrastructure and known abandoned infrastructure, within the project's study area (see Appendix D – SUE Quality Levels).

The American Society of Civil Engineers (ASCE) Standard 38-02 defines the process used to complete Subsurface Utility Engineering (SUE) investigations that can be utilized to identify underground infrastructure. The 38-02 standard establishes quality levels for underground utility information so that all parties can evaluate the accuracy and reliability of the data.

The base plan should be updated on a regular basis for each of the planned alignments within the project.

The UC should also create a preliminary Utility Conflict Matrix that lists potential utility conflicts and pertinent information about the utilities (See Appendix C – Sample of Utility Conflict Matrix).

4.4 Early consultation with Utility Agencies

Utility coordination is only one of the many factors considered in the Planning Phase. The Planning Consultant does the preliminary planning analysis according to the ROW Owner's standard procedures and requirements. This usually considers present and future land use, alignment or cross-sectional alternatives, and impacts on current and future vehicular and/or pedestrian traffic.

A best practice is to hold a project kick-off meeting, chaired by the UC, with representatives from the Utility Agencies that potentially will be affected by the construction project. At the kick-off meeting, the Planning Consultant should advise utilities that the project will be procured as a P3. The Project Owner, UC, and Planning Consultant team are introduced and expectations are clarified (i.e. specific requirements associated with a P3, project scope, project deliverables, milestone delivery dates, and potential utility conflicts).

Individual meetings to discuss the implications of any critical/vital infrastructure within the project's study area may be requested by any Utility Agency, UC or the Planning Consultant.

Following the initial meeting and submission of information from the utilities, the UC may request preliminary high-level cost estimates from each Utility Agency for the anticipated utility relocation work for the project when some or all of those costs may be borne by the ROW Owner. It may be necessary to do additional consultation with specific Utility Agencies about various options under consideration, including redesign options to avoid relocations, especially if utility relocations or removals could seriously affect construction scheduling or budget restraints.

For example, Utility Agencies may require several years to relocate high-tension electrical towers or electrical transmission lines prior to the start of construction. Decisions can be made to complete this work in advance of awarding the project to the Project Co. Typically, this would be identified as Enabling Works.

The Planning Consultant should review all utility issues with the UC and, once complete, the Project Owner would be presented with options for construction. The Project Owner will choose which of these options to proceed with, informing the Planning Consultant to complete the required planning report.

Non-disclosure agreements should be completed between the Utility Agency and the Project Owner to protect confidential and proprietary information while ensuring the two parties can transfer information between each other.

It is recommended for the Project Owner and Utility Agency to complete a draft Utility Participation Agreement, which outlines what is required of the Utility Agency and Project Owner prior to the signing of the Project Agreement. The agreement should contain, but should not be limited to, the following items:

- Utility Agency Work – an agreement as to how Enabling Works will be completed, sometimes referring to a separate Enabling Works Agreement
- Utility Agency Services – an agreement regarding the Utility Agencies' participation in the RFP process
- Committee – the establishment of a committee to resolve emerging problems, develop proposed solutions and for dispute resolution
- Meeting with Proponents – the Project Owner's requirements regarding contact between Utility Agencies and Proponents, specifically outlining no direct contact between the two parties
- Relocation Services Agreement – an agreement regarding the need for, and development of, a Relocation Services Agreement between the Utility Agency and a Project Co

If Enabling Works are contemplated on the Project, it is further recommended for the Project Owner and Utility Agency to complete a draft Enabling Works Agreement. This agreement outlines what is required of the Utility Agency and Project Owner for completion of Enabling Works on the Project. The agreement may contain, but should not be limited to the following items:

- Requested Utility Agency Work – an agreement regarding the requirements of both the Project Owner and the Utility Agency prior to commencement of Enabling Works
- Payment – an agreement regarding funding for Enabling Works

4.5 Creation of preferred alignment base plan

At the completion of the Planning Phase, the Planning Consultant will create a base plan for the preferred alignment, for the proposed project improvements, that will form the foundation for future detailed design.

At the completion of the Planning Phase the following utility information should be known:

- Existing utility information
- Potential future utility infrastructure (if known)
- Possible utility relocations of critical/vital utility infrastructure

4.6 Flow chart task boxes - Planning Phase

The following section should be read in conjunction with the flow chart in Appendix A. It provides further valuable commentary and description about the tasks at each stage of the utility coordination process. Each section is aligned with the corresponding numbered box on the flow chart.

1.1 Project Owner

- Procures a Planning Consultant
- Selects a Utility Coordinator (UC)
- Determines and assigns role of Lead UC

Because P3 projects are complex construction projects, the Project Owner may choose to hire a consulting firm(s) to act as a TA and/or an OE. The TA and/or the OE will assign a person to act as the UC.

1.2 Planning Consultant/UC

- Selects a UC for the project if different from the Project Owner's UC
- Follows the ROW Owner's normal process for construction planning studies, including analysis of how utilities located in or near the future construction project will affect work
- UC procures and manages a Subsurface Utility Engineering (SUE) investigation to a quality level required for the project's Planning Phase (for the subsurface utility data collection guideline, refer to American Society of Civil Engineers Standard 38)

- UC sends notification to utility agencies informing them of the planning design project, explaining the scope of the project and potentially identifying that the project will or may be a P3
- Planning Consultant and UC attend a kick-off meeting with Utility Agencies
- Planning Consultant explains the scope of the functional planning study
- UC requests confirmation of utility facilities along each alignment alternative
- UC identifies critical/vital utility infrastructure within the project limits they feel may pose a potential risk to the budget, schedule or safety on the project
- UC provides base plans to the Utility Agencies and informs them that they are preliminary and may be potentially altered by the eventual proponent
- UC requests high-level cost estimates and a schedule of utility relocations of critical/vital infrastructure

1.3 Utility Agencies

- After receipt of the notification and the base plan, review the base plan drawings sent by the UC and forward the requested mark-up drawings in a reasonable time span to the UC
- Display existing critical/vital infrastructure in the study area on the mark-up drawings
- May request a meeting with the Designer and UC to discuss any issues related to the existing and future critical/vital infrastructure
- If known, inform the UC of potential future infrastructure projects in the study area
- Provide high-level cost estimate (when applicable) and schedule to relocate the critical/vital infrastructure based on the scope provided by the UC
- Aid in the development of draft Utility Participation Agreement between each Utility Agency and the Project Owner, for utility participation during the RFP Documentation Preparation Phase and the In-Market Design Phase
- Aid in the development of draft Enabling Works Agreement between each Utility Agency and the Project Owner, where required.
- Sign Non-Disclosure Agreements with the Project Owner (when applicable)
- Aid in the development of draft Utility Staffing Agreements

1.4 Planning Consultant/UC

- UC reviews the completeness of all information received from the Utility Agencies, requests additional information if required, and follows up to ensure this information is received
- Planning Consultant conducts additional SUE investigations (if required). SUE drawings should be prepared following the ASCE 38-02 guideline
- UC forwards the utility information (mark-ups, critical/vital infrastructure) to the Designer who updates the information on the base plans
- UC assesses utility impacts/conflicts and evaluates alternatives, taking into account any project impacts that may be caused by utility relocations

- UC completes the Utility Risk Assessment, which identifies the utilities to be relocated or protected, and any potential early works that are recommended to be undertaken due to cost and/or schedule implications
- Planning Consultant assesses environmental impacts
- Planning Consultant develops a preferred plan
- UC identifies any ROW requirements for utility relocations, and if applicable shares that information with the Planning Consultant's property acquisition lead
- Planning Consultant finalizes the Planning report and obtains the proper regulating authority's approval for the report

1.5 Project Owner

- Receives and reviews the Approved Planning Report
- Identifies and potentially starts the procurement process for ROW requirements
- Confirms that the P3 Procurement Model will be used, and identifies the frameworks that will be followed
- Develops the draft Utility Participation Agreement between the Utility Agency and Project Owner for utility participation during the RFP Documentation Preparation Phase and the In-Market Design Phase
- Develops the draft Enabling Works Agreement between Utility Agency and Project Owner, where required
- Executes Non-Disclosure Agreements as required
- Develops draft Utility Staffing Agreements

5. Request for Proposal (RFP) Documentation Preparation Phase

5.1 General

The Request for Proposal (RFP) Documentation Preparation Phase occurs when the OE or TA prepare the documents that will form the final RFP document. Documents that may be included in the RFP are:

- Project Specific Output Specifications (PSOS)
- Project Agreement (PA)
- Reference Concept Design (RCD)
- Utility Agreements (project specific)
- Utility Risk Management Documents (e.g. RCD Utility Conflict Matrix, Proposed Utility Conceptual Designs, Preliminary Utility Designs, Composite Utility Plan (CUP), Conceptual Utility Coordination Plan (CUCP), Utility Baseline Document (UBD), Utility Work Responsibility Matrix)

The RFP is the cornerstone of a future bonding document. It is the contract between the Project Owner and Project Co. It is critical the RFP documents be customized to suit the specific needs of the P3 project.

5.2 Shortlist proponents (RFQ process)

Once the OE and/or TA have been chosen, one of their initial tasks is to prepare a Request for Qualification (RFQ) to filter all interested parties to a shortlist of proponents. A manageable number of proponents on the shortlist is typically three to five, depending on the size and complexity of the assignment. One of the objectives of the RFQ process is to identify firms that are both technically and financially capable to deliver the P3 project, and to demonstrate invited firms are free of any conflicts of interest.

5.3 Identifying utilities in the existing corridor (Part 2)

The OE and/or TA conduct additional SUE investigations to a quality level required for the Project's In-Market Design Phase. The SUE investigation should be performed in accordance with ASCE 38-02 principles, allowing the proponents to identify the existing utility plant and to assess any utility conflicts with the project works. The level of the SUE investigation will range from Quality D to Quality A. The SUE information plays a significant role for the proponent's estimating purposes. As part of the SUE investigation, Utility Agencies (UA) must send their mark-up drawings. The OE or TA updates the base plan with the information from the SUE investigation.

5.4 Notification to Utility Agencies

In this stage, Utility Agencies are notified by the Project Owner/TA/OE of the project scope of work and tentative construction schedules. Utility Agencies are provided a draft copy of the Work Responsibility Matrix and are asked to indicate which work will be self-performed and which work Project Co can perform on their behalf.

5.5 Utility Agency Agreements

The Project Owner and Utility Agency should have come to an agreement regarding the Utility Participation Agreement and the Enabling Works Agreement by this stage. Both parties should proceed to have the agreements executed.

It is recommended that the Project Owner and each Utility Agency complete a draft Relocation Services Agreement, which outlines what is required of the Utility Agency and Project Co during the Implementation Stage of the Project. The agreement should contain, but should not be limited to, the following items:

- Project Co responsibilities indicating what the Utility Agency expects the Project Co to do for them; this is usually based on the tasks required of the Project Co through the Work Responsibility Matrix
- Treatment of betterments
- Treatment of new customer connections required during the project timeframe
- Utility Agency responsibilities, indicating what the Project Co can expect of them during the project; this is usually based on the tasks required through the Work Responsibility Matrix
- Costs indicating who is responsible for different costs on the project, and payment terms

It is recommended for the Project Owner and Utility Agency to develop and execute a Utility Staffing Agreement, which provides the ability for the Utility Agency to add extra staff dedicated to the project, should it be required. This Utility Staffing Agreement should be completed with enough time to ensure that staff are hired and trained in time for the stage that dedicated staff members are required.

5.6 Reference Concept Design (RCD)

The RCD is a design prepared by the TA/OE that shows a conceptual project design including a proof of concept for utility relocations.

Utilizing the updated base plan and preliminary utility designs from the Utility Agencies, when available, the TA/OE furthers the development of the RCD. The TA/OE, in consultation with the Utility Agencies, identifies utility work that is required and/or beneficial to the Project Owner's schedule, to begin or be completed prior to the award of the RFP. For the purpose of this guide, this type of utility work will be referred to as Enabling Work. The RCD allows the Project Owner and Utility Agencies to assess utility impacts and conflicts and to show the most preferred relocation alternatives. The RCD is a tool to be used to discuss a conceptual utility coordination plan. This will determine high-level scope, cost (when

applicable), and schedule for all utility relocations – as well as a utility risk assessment for the work to occur during the Project Co phase.

The UC should provide the draft RCD to the Utility Agencies for review. Utility Agencies should identify the following:

- Conflicts and potential treatment options
- Property requirements associated with the potential treatment options
- Additional SUE requirements associated with the potential treatment options

There is typically a significant amount of time spent in design coordination in this stage and Utility Agencies will be required to attend Utility Working Group meetings to discuss and work through treatment options.

The TA/OE and Project Owners must determine when to begin property acquisition to support the RCD. The property acquisitions should begin close to the end of the RCD development, but with enough time to ensure that all lands will be available when the successful proponent is expected to begin construction. If property is not available upon start of construction, the Project Owners may receive delay claims from the Project Co for not providing all lands at the time of construction.

If possible, this is the time for Utility Agencies to submit proposed betterments to the TA/OE and Project Owners. Between the TA/OE and Project Owners, a future cost for Project Co to perform the betterments should be estimated and provided to the Utility Agencies. Utility Agencies then review the estimated costs and determine if the betterments are feasible. UAs then inform the TA/OE and Project Owners of all feasible betterments for addition to the PSOS.

5.7 RCS Utility Conflict Matrix

As mentioned, the RCD is a tool used by the TA/OE/Project Owner and Utility Agencies to assess utility impacts and conflicts. This assessment is to be presented in a matrix form, describing details of the potential utility conflicts (e.g. type of utility, utility size, length of conflic). The utility conflict assessment is supported by various levels of SUE investigations dependent on scope and complexity of the project. If a utility is identified to be in conflict with project works, based on a horizontal alignment (QD-D through QL-B), further SUE QL-A investigations may need to be performed to verify whether it is a conflict. (See Appendix B for a sample of a typical Utility Conflict Matrix.)

The UC would then provide the Utility Conflict Matrix to the Utility Agencies for review. Utility Agencies verify potential conflicts, identify additional conflicts as needed and propose potential treatment options to the UC. This is usually completed in conjunction with the review of the RCD.

5.8 Conceptual Utility Coordination Plan (CUCP)

The CUCP is a process and a document to provide proof of concept for utility relocations for the P3 project. The RCD, preliminary and conceptual utility designs and the Utility Conflict Matrix assist in determining the CUCP for the project. One major outcome is identifying which utility relocations will be deemed Enabling Work and which will be Project Co's responsibility. Collaboration of Utility Agencies is

critical in the determination of when utility relocations will occur. The CUCP is the key document for utility discussions with proponents during the In-Market Design Phase, at Commercial Confidential Meetings (CCM) and to respond any queries from the proponents via Request for Information (RFI) forms.

5.9 Utility Risk Management Documents

Utility Risk Management Documents are additional documents that may be required to manage the utility risk on P3 projects. They may include CUP, Utility Work Responsibility Matrix, UBD, and Utility Relocation Cash Allowance.

A CUP is prepared by the OE or TA and depicts existing utility locations, based on the SUE information, proposed utility relocation designs, existing topographic survey information, and the RCD information. The CUP document is a critical UC tool designed for use throughout the P3 project to identify utility conflicts and the review of proposed utility relocation designs. The CUP is a living document that should be updated by the OE or TA as well as by Project Co after project award. (See Appendix C for a sample of a typical Composite Utility Plan.)

The Utility Work Responsibility Matrix is a document that identifies all the tasks associated in the relocation of a utility for each Utility Agency. It also specifies who can perform the task. If it is self-performing work (i.e. the task can only be performed by the Utility Agency), Project Co can perform the task or Project Co can subcontract the work to a Utility Agency approved list. The Utility Work Responsibility Matrix aids in determining Enabling Works and the proponent's understanding of their risk in the utility coordination process. (See Appendix C for a sample of a typical Utility Work Responsibility Matrix.)

UBD

A UBD identifies utility self-performing work tasks to be backstopped (i.e. guaranteed by the owner) by the P3 Project Owner. The document outlines the locations, description, costs and durations associated with each backstopped utility task. Tasks that require more time and/or cost than what was defined in the UBD are typically cost-shared as specified in the RFP. Utility Agencies' input is mandatory if the UBD is to be an effective document. This document is developed by the OE or TA. (See Appendix C for a sample of a typical Utility Baseline Document.)

Utility Relocation Cash Allowance

A Utility Relocation Cash Allowance assigns a predetermined cash amount that the proponents would carry in their bids. The cash allowance can be for the entire utility relocation or for only specific utility relocations. The UA's input is critical in the determination of a cash allowance.

For other supporting background documentation from Utility Agencies and the UC such as SUE reports, utility standards, concurrent projects within the Project Co area, preliminary utility designs, preliminary utility costs and schedules, ROW Owner's utility permitting processes and utility agreements (if required) should be made available to the proponents.

During this stage, the TA/OE/Project Owner, with the help of Utility Agencies, further refines the PSOS and PA documents with respect to utility relocation activities.

5.10 Flow chart task boxes - Request for Proposal (RFP) Documentation Preparation Phase

The following section is to be read in conjunction with the flow chart in Appendix A. It provides valuable commentary and description regarding the tasks at each stage of the Utility Coordination Process. Each section is aligned with the corresponding numbered box on the flow chart.

2.1 Project Owner

- Procures TA/CO and/or OE
- Shortlists proponents through RFQ
- Begins property acquisitions

2.2 TA/CO UC

- Reviews Planning Report
- Conducts additional SUE investigation to a quality level required for the project's In-Market Design Phase
- Updates base plan from information from SUE investigation
- Sends notification to Utility Agencies with the scope of work and tentative construction schedules
- Provides project limits, and CAD base plans from the final planning report (with known utility facilities plotted) to Utility Agencies
- Requests mark-up plans to confirm location of utility facilities from Utility Agencies
- Develops RCD
- Creates and updates CUP
- Assesses utility impacts/conflicts and evaluates alternatives
- Assesses environmental impacts
- Develops CUCP
- Verifies ROW property requirements
- Develops utility risk management tools (e.g. UBD, Cash Allowance)
- Develops Project Specific Output Specification (PSOS) with Utility Agencies input
- Defines Enabling Works associated with utilities
- Meets with utilities to discuss RCD and CUCP development and determine scope, cost, schedule, self-performing works, and identifies and negotiates required agreements
- Reviews draft Relocation Services Agreement between Utility Agency and Project Co
- Prepares crossing agreement and Cost Allocation Responsibilities agreement (if required)

2.3 Utility Agencies

- Review draft RCD and CUCP and identifies conflicts and potential treatment options
- Initiate and/or participate in Enabling Works design and construction
- Provide marked up plans showing existing facilities
- Provide high level estimate and schedule
- Provide proposed betterments
- Provide additional SUE requirements
- Participate in Utility Working Group meetings
- Determine Utility Work Responsibility Matrix
- Execute Enabling Works Agreement between Utility Agency and Project Owner where required
- Develop draft Relocation Services Agreement between Utility Agency and Project Co
- Execute Utility Participation Agreement between Utility Agency and Project Owner for utility participation during RFP Documentation Preparation Phase and In-Market Design Phase
- Commence property acquisitions requirements as outlined in the Enabling Works Agreements
- Identify property requirements for utility relocations for the RFP
- Execute (if applicable) Utility Staffing Agreements

2.4 TA/CO UC

- Receives responses from Utility Agencies
- Finalizes RFP that contains the RCD and PSOS documents
- Initiates and/or participates in Enabling Works design and construction
- Performs utility relocation risk assessments for Enabling Works
- Reviews Utility Agency property requirements
- Performs or contracts additional SUE
- Reviews utility proposed betterments and provides recommendation to Project Owner

2.5 Project Owner

- OE/Project Owner reviews, accepts and issues RFP
- Signs Utility Cost Allocation Responsibilities Agreements (if required)
- Begins property acquisitions for Utility Agency requirements as outlined in the RFP agreement
- Reviews draft Relocation Services Agreement between Utility Agencies and Project Co
- Develops and executes Utility Staffing Agreements (if applicable)

6. In-Market Design Phase

6.1 General

The In-Market Design Phase (also known as Bid Phase) includes all tasks associated with delivering the project from RCD to a preliminary design for proponent estimation purposes.

The utility coordination process during the In-Market Design Phase is the responsibility of the TA and OE.

- The UC determines the utility responsibilities assigned to the future P3 developer/Project Co. In order to facilitate contact between the TA/OE/Project Owner and the proponents, each party should appoint a lead Utility Coordinator (UC). For simplicity purposes in this section, it is assumed that one Utility Coordinator (UC) is appointed.
- The TA/OE's UC facilitates the inclusion of specific utility requirements and standards in PSOS and/or in the dataroom background information and coordinates the Utility Agencies' responses and requests.
- Prior to and during the In-Market Phase, the TA/OE's UC is in continuous coordination with the Project Owner, other third parties (e.g. regional/municipal authorities, transit authorities), Utility Agencies and the proponent's UC.
- As part of that coordination, the Project Owner, through the TA/OE UC, responds to Requests for Information (RFI) from the proponents, including those regarding utility coordination.
- The TA/OE also coordinates Commercial Confidential Meetings (CCM) with the Project Owner, third party agencies, proponents and Utility Agencies.
- The TA supplies to the proponents the documentation outlined in the RFP Documentation Preparation Phase. These documents help the proponents to provide a comprehensive response to the RFP, from the technical, scheduling and costing aspect. The more explicit the RFP is, in respect to the inclusion of utility relocation elements, the greater benefit to the Project Owner and TA/OE, as they can select from a number of a fully estimated proponent solutions.

Betterments

An important aspect of the utility work to be completed for the project is betterments. During the In-Market Phase, the utility company should continue the process of determining what betterments will be completed to meet future needs through the project corridor. Project Owner and the Utility Agency should agree upon betterment costs prior to the inclusion of the betterments in the Project Agreement. Once costs are agreed upon, the Project Owner will include the betterments in the scope of work within the Project Agreement. Any changes to the post Project Agreement betterments may have costs and schedule impact implications.

Commercial confidential meetings (CCM)

CCMs give the proponents the opportunity to put forward all their questions and concerns regarding utility aspects of the project. They can be scheduled with all utility related stakeholders and a proponent in attendance or individual meetings with each utility and proponent. The proponent's agenda, questions and presentations should be sent to the Owner/TA/OE at least two weeks in advance (i.e. 10 business days) to ensure the TA/OE/Owner have sufficient time to review and analyse the proponent's questions and concerns prior to the CCM.

Additional meetings beyond the CCMs between the TA/OE, Project Owner and the Utility Agencies will occur throughout the In-Market Phase to further manage the utility risk on the P3 project (e.g. review the RCD, PSOS sections associated with utilities, obtaining standards, costs and scheduling, development of the CUCP, betterments, planned relocations). These meetings can also help to clarify the roles, responsibilities and expectations of all involved stakeholders affected by the project works.

6.2 Proponents' preliminary design

In the In-Market Phase, in addition to a preliminary design, the proponents are invited to submit an organizational chart showing the various project roles, including a Utility Coordinator (UC). The complexity and the type of project delivery method can influence how the UC is chosen.

As part of the Project Owner's information package, the RFP documents are forwarded to the proponents for their review and to advance their preliminary designs. In addition, other information, such as utility standards, any preliminary utility designs, third-party projects, responsibility matrix, utility conflict matrix, costing and scheduling information, to name a few, are sent as background documents. The proponents should ensure that their preliminary designs are compliant with RFP prescriptions, while respecting utility standards.

PSOS and utility standards should be aligned, giving no room for contradictions, misinterpretations or discrepancies. In such a case, where both areas contradict and the proponent is not sure which documents governs the design, the proponent should raise a clarification note through RFI process.

Early in the review of the RFP documents, the proponents are encouraged to identify to the TA/OE further SUE investigations at key locations to allow the TA/OE to screen, prioritize and perform the additional SUE investigation. In addition, the proponents may decide to perform SUE at their own cost during the In-Market Phase.

CUCP

In addition, during the In-Market Phase, the proponents update the already-developed CUCP by the TA/OE and ensure compliance with PSOS. The updated CUCP should include a comprehensive approach to communication with Utility Agencies and other stakeholders, such as businesses, institutional buildings and property owners, among others. In addition, the CUCP should provide approaches on how to manage service interruption, supplying service to meet project needs, responding to Utility Agencies' operational constraints and how to mitigate impacts on project works due to utility relocations to name a few. As part of the CUCP, the proponents should also identify and request further property requirements prior to financial close.

6.3 Identifying utilities in the existing corridor (Part 3)

During the In-Market Phase, it is the proponents' responsibility to provide an approach of how to identify the existing utility infrastructure along the project corridor.

As part of the methods and means of information to help identify existing utilities – both buried and overhead – the proponents should use the information available as background documents. The information is to be provided by the TA/OE, including record information for private and public utilities, RCD Utility Matrix, SUE reports provided by TA/OE, RCD designs, preliminary utility designs from UA, visual inspection and survey information. Since SUE can be a multi-phase study, it is critical to commence SUE investigations early in the Planning Phase to ensure the information is available to the proponents prior to the In-Market Phase.

Existing utility identification for the proponents' scope of work is crucial. For estimating activities, the proponents may choose to use information coming from hired sub-contractors or sub-consultants. If additional SUE is required, the proponents can either use the service of specialized firms or request additional investigations to the TA/OE, depending on the RFP prescriptions.

In fact, the proponents should be responsible for identifying the existing features and locations of all utilities within the limits of construction, for coordinating any required utility relocations, and all the utility relocation and/or protection work necessary to accommodate utility coordination for the P3 project.

6.4 Utility Conflict Matrix

Starting with the RCD Utility Conflict Matrix, the proponent's UC prepares a Utility Conflict Matrix based on their RFP submission design.

As the proponents are evolving their designs, including their Utility Conflict Matrix and CUCP, a cross-reference and review against the RCD Utility Conflict Matrix and the updated designs is recommended. The proponents' UC can also review the assumptions, thresholds and criteria used in the RCD to define why a specific utility is in potential conflict. The process can give the proponents the ability to seek value-engineering solutions, while being compliant with the RFP and Utility Agencies requirements, and can provide a better price estimating for bidding purposes.

Depending on the information previously provided by the TA/OE, the proponents can either base their Utility Conflict Matrix on the RCD, or provide their own Utility Conflict Matrix. Given the tight timelines during the In-Market Phase, it is common for the proponents to update the RCD matrix, tailoring it to the proponent's updated CUCP and project designs.

A Utility Relocation Matrix, an extension of the Utility Conflict Matrix, would be prepared. The Utility Relocation Matrix tracks the utility conflicts that require relocation to accommodate the P3 project

6.5 Conceptual Utility Coordination Plan (CUCP) advancement

The proponent's CUCP evolves as the overall design matures to a level where the proponent is able to provide an estimated price and schedule. Information available to the proponents can provide them with the actual locations and condition of existing utility infrastructure to complete the utility work.

The CUCP includes not only the identification, but also assumptions, criteria, considerations, documentation and communication approaches with Utility Agencies in order to better suit the Utility Agencies' operational constraints. The CUCP will also store a log of communication with the project stakeholders, which should be available to the proponents during the In-Market Phase (Utility Agencies', TA, OE, municipalities and third-party project owners).

The RFP defines the communication protocols to be followed during the In-Market Phase.

6.6 Owner/utility enabling work design and construction

The Utility Agencies' work closely with the TA/OE in providing preliminary designs that can be used to create the RCDs and allow the bidders to price and schedule the utility relocation work.

Depending on the complexity of the project, some utility relocations will not fall into Project Co's scope of work and will be completed as Enabling Works. These utility relocations could be completed prior to the start of project construction or at a defined date during project construction. While Enabling Works are beneficial to meet the P3 project's overall schedule, they can also create some challenges to the proponent's design by potentially limiting a proponent's ability to innovate, and may create operational constrain prohibiting access to the area of utility relocation enabling work until the work is performed

Utility Agencies should provide any further property requirements to the Project Owners if found during further development of designs, and Project Owners should continue property acquisition to satisfy the land requirement for the Project.

6.7 RFP submission and award

The In-Market Design Phase ends with the technical and financial submission from all the proponents to the Project Owner. The TA/OE evaluates each proposal against the Project Specifications Operating Specifications (PSOS), design and construction submittals and milestones (PA), and technical documentation and drawings as per the RFP, while making sure the solutions proposed by the proponents are consistent with Utility Agencies' standards and best practices.

During this stage, the Project Owner awards the P3 Contract based on both technical and financial considerations.

6.8 Flow chart task boxes – In-Market Design Phase

The following section is to be read in conjunction with the flow chart in Appendix A. It provides further valuable commentary and description about the tasks at each stage of the Utility Coordination Process. Each section is aligned with the corresponding numbered box on the flow chart.

3.1 Project Owner

- TA coordinates meeting with Project Owner, OE and the proponent's utility coordination team to review RCD and PSOS associated with utilities, as well as the CUCP
- TA coordinates Commercial Confidential meetings with the owner, proponents and Utility Agencies
- Continues Enabling Works design and construction

3.2 RFP proponents

- Select UC
- Advance preliminary design
- Identify further SUE investigations (to be performed by proponents or TA/CO)
- Advance CUCP
- Identify and request further property requirements

3.3 Utility Agency

- Attends meetings and responds to proponent's questions
- Continues utility Enabling Works
- Finalizes baseline costs and scheduling for self-performing utility relocation works
- Provides timely responses to Requests for Information (RFIs) from Proponents
- Provides further property requirements, if known

3.4 RFP proponents

- Finalize Utility Coordination (UC) Plan
- Submit proposal to Owner

3.5 Project Owner

- Receives and reviews proposals and awards contract

7. Project Implementation Phase

7.1 General

The Project Implementation Phase includes all tasks associated with delivering the project from contract award through to completion of construction. The Utility Agencies develop their relocation designs and construction in close coordination with Project Co's UC team. This section will outline the tasks and processes necessary to successfully execute, monitor and control the design and construction of the utility relocations. The Project Co's UC is responsible for ensuring all tasks are completed on schedule and all processes are adhered to.

The Project Co should enter into Relocation Services Agreements with Utility Agencies at this stage.

7.2 Utility coordination team and meetings

One of the initial tasks of utility coordination, once Project Co has been selected, is the development of the Project Co and TA/CO UC teams. Typical roles on these teams are UC Lead, UCs (senior, intermediate and junior) and CAD Technician. The UC Lead is responsible for the delivery of their utility coordination tasks that are described later in this section. Project Co becomes the overall Project UC at this stage.

UC on P3 projects requires close collaboration and frequent communication between the UC teams and the Utility Agencies. The following are some typical UC meeting types:

- UC kick-off meeting
- Regular individual UC meetings with Utility Agencies
  - Detailed design development and permit review
  - Construction coordination and status update
  - Financial administration updates
- Ad hoc joint UC meetings with Utility Agencies
- Senior management utility engagement meetings

7.3 Identifying utilities in the existing corridor (Part 4)

Project Co is to implement a SUE investigation, including Quality Level-B (QL-B) and Quality Level-A (QL-A) within the project limits. This is to augment the SUE information supplied in the previous phases to verify the location of the existing underground utilities. This ensures greater certainty in the accuracy of the underground infrastructure.

Additional SUE investigations based on the needs of the Utility Agencies are to be completed by Project Co. Project Co's UC is responsible for the implementation of a SUE investigation, the quality level of the investigation, and reporting the SUE investigation results to the appropriate stakeholders.

7.4 Project Co Preliminary Design

It is the responsibility of Project Co, in coordination with their UC and input from all Utility Agencies impacted by the project, to advance and complete the preliminary design to a 30% level. Project Co would be required to:

- Update all base plan drawings with information provided by each Utility Agency
- Advance and update SUE investigation provided in the In-Market Phase, in consultation with each Utility Agency, to ensure all required information is obtained to begin, advance and complete Detailed Design
- Create and regularly update the Utility Coordination Plan for each Utility Agency (as required throughout the process)
- Depending on the Work Responsibility Matrix, coordinate and provide Preliminary Design Plans to each Utility Agency, as well as provide regular updates as required. These Preliminary Design Plans will include, but are not limited to, confirmed alignment in the corridor, logical sequencing for constructability between all utility works and conflict resolution updates in the field
- Create a Utility Conflict Matrix that would be maintained and updated regularly to ensure design and construction is completed on time
- Coordinate meetings as required with each individual Utility Agency and/or groups of Utility Agencies affected

It is vital that all Utility Agencies understand the needs of the project and are engaged throughout the Preliminary Design process.

Project Co shall submit all base plan drawings to each Utility Agency and obtain comprehensive input for the design development. It is also extremely important for each Utility Agency to review, identify and request additional SUE investigation data required to complete their designs early in the process to ensure no information is missing or inaccurate during the Detailed Design phase. This is to avoid major delays or disruptions to project schedule.

All construction methodologies should also be identified during the Preliminary Design phase and any limitations or constructability issues should be identified by the Utility Agency and addressed accordingly.

Further property requirements, created by Project Co's preliminary design, should be provided to the Project Owner to perform land acquisition.

Once the Preliminary Design phase has been completed by Project Co and approved by the Project Owner, in consultation with the Utility Agencies, the information can be provided to each Utility Agency to begin their Detailed Design.

7.5 Project Co Detailed Design

Project Co continues to advance the development of the Detailed Design. The first stage is to complete the Detailed Design to a level that is sufficient for the utility companies to initiate their respective

Detailed Designs for the relocation work. This stage of the project is referred to as the Enhanced Design level. The Enhanced Design develops key disciplines of the project's detailed design to ensure that they are proven and so the utilities can rely on data with limited probability of significant change.

To support the development of the Enhanced Design, Project Co will continue an extensive SUE program working in consultation with the Utility Agencies to identify their SUE needs.

Key elements of Enhanced Design include:

- SUE investigation
- Property finalized
- Topographic survey complete
- Storm, sanitary and water main design complete
- Grades +/- 100mm
- Streetscape design footprint complete
- Traffic signals & Illumination design complete
- Vertical profiles populated with all subsurface infrastructure
- Field Conflict Identification
- Retaining wall design complete

Once the Enhanced Design is approved, Project Co will distribute the designs to the Utility Agencies and receive their signoff that all data is sufficient for them to begin their design.

Following the issuance of the Enhanced Design, Project Co will continue to develop the project's Detailed Design through the 60%, 90% and Issued for Construction (IFC) stages. As the design is advanced, Project Co will work closely with the Utility Agencies and provide updates of any specific design changes and share the revised drawings.

Project Co should continue with regular utility coordination meetings throughout the Detailed Design stage.

7.6 Utility relocation design and construction

In a perfect world, all utility relocations would be designed and constructed prior to the commencement of Project Co's construction. Typically, P3 projects do not lend themselves for this to occur. The utility relocations on P3 projects tend to be too large and complicated to complete them all prior to the required Project Co construction start date.

The Project Co UC, working in conjunction with the Utility Agencies, finalizes the Utility Coordination Plan (UCP) that prioritizes who, where and when utility relocation projects will occur within the project limits. The aim is to complete as many utility relocation projects as possible prior to Project Co commencing construction. The UCP shall also describe what utility projects will occur during and post Project Co construction. Great thought and care must put into coordinating utility relocations occurring simultaneously with other utility relocations and Project Co work to manage the constructor issue in the field.

Once the UCP is finalized, the Utility Agencies have the priority sequencing to develop their relocation designs. Working closely with Project Co and at times other Utility Agencies, each utility relocation design is finalized and accepted by Project Co, TA/CO and the ROW Owner.

To finalize the relocation design, Project Co will be required to supply the Utility Agencies with their design information (i.e. profiles and cross sections populated with existing and proposed utility infrastructure).

The Utility Agency makes a formal submission to the ROW Owner for approval for each design. It should be noted that some ROW Owners review and approval processes may not meet the timing needs required for a P3 project. An example would be a large Public Utility Coordination Committee (PUCC) approval process.

The PUCC approval process tends to take months for an application to be reviewed and approved. It is recommended that discussions for a streamlined PUCC process with the ROW Owner occur prior to the initial utility application for PUCC approval is submitted. Simultaneously, the Utility Agency will submit to other regulating authorities to obtain their permits if required.

Upon receiving the approval permit from the ROW Owner, Project Co shall update the CUP with the proposed utility alignments. It is essential that the CUP is updated as relocation design approvals are received to ensure that future relocation design reviews will be vetted against the most current information.

For a Utility Agency to begin the relocation construction, all construction dependencies must be finalized. Typical construction dependencies are:

- ROW Owner utility design approval and road occupancy permits (if applicable) issued
- All other authority permits (e.g. railroad permits, environmental permits) issued
- Purchase Order issued to Utility Agency
- Land acquisition complete

Corridor Management Plan (CMP)

Due to the nature of P3 projects, there will be several contractors working within the project limits simultaneously. To ensure the Project Owner is not viewed as the “Constructor” in the eyes of the labour regulating body, Project Co, working in consultation with the Utility Agencies, should develop a Corridor Management Plan (CMP). The CMP would ensure that time and space is managed as multiple contractors work within the project limits. A strategy for the CMP is to have the Utility Agencies’ contractors work as a subcontractor to Project Co. This strategy is very beneficial in managing the time and space issue.

With all the construction dependencies in place – and an acceptable CMP is developed – the Utility Agencies begin relocation construction. The relocated utility installation must be installed within tight tolerances to the approved vertical and horizontal alignments – especially in older, congested road corridors.

In addition to the tight installation tolerances, it is critical that acceptable trench backfill be utilized and that minimum compaction requirements are obtained. To ensure installation tolerances are adhered to,

acceptable backfill material is used and minimum compaction is obtained. A quality assurance/quality control (QA/QC) program is prepared by TA/CO in consultation with Project Co and the Utility Agencies, which may follow federal, provincial or other recognized industry standards. TA/CO performs QA against the utility contractor's QC plan during the utility relocation construction.

"As-Built"

Once the relocation construction is completed the Utility Agency should prepare their "As-Built" drawings. The "As-Built" drawings should meet CSA S250 quality requirements. The Utility Agency should forward the "As-Built" information to Project Co as soon as possible. Project Co shall update the CUP by revising the proposed information to the "As-Built" information.

It is typical in P3 projects that unknown field conflicts will occur. To ensure the resolution of these conflicts, all appropriate stakeholders must be involved in developing an Unknown Conflict Resolution process prior to any construction starting. The next section discusses this process further.

7.7 Unknown Conflict Resolution

Project Co and/or Utility Agencies will communicate any unknown conflicts encountered in the field to the UC immediately. The UC will implement the project's Unknown Conflict Resolution process to mitigate the conflict. The field conflict resolution process should include input from all relevant stakeholders. The UC is responsible for keeping written records of all decisions made during this process.

Project Co and/or Utility Agencies will notify the UC at the first indication of a delay to their relocation schedule due to the unknown conflict. The UC reviews the impact of the delay on the overall Utility Relocation Coordination Plan. If necessary, the UC schedules a meeting between the ROW Owner and Project Co and/or Utility Agencies to review all options (e.g. additional crews, working overtime) to mitigate the delay to the schedule. The UC is responsible for keeping written record of meeting decisions.

7.8 Project Co Construction Phase

Once the Utility Agencies have received all the required data and complete their Detailed Design, Project Co must then coordinate pre-construction meetings. It is the responsibility of Project Co to manage all construction in the field by all Utility Agencies, as well as all concurrent project construction (if required), to ensure all work is completed in a logical sequence and adheres to all safety regulations.

Project Co would work with each Utility Agency to obtain realistic timelines to complete their relocation work, taking into account all sequencing and constructability issues. Working closely with Project Co's UC, each Utility Agency would then be required to apply for all required permits from the applicable ROW Owner prior to commencing construction for their relocations.

During the Construction Phase, each Utility Agency would be required to notify Project Co's UC of the completion of their relocation work, provide invoices and supporting documentation for all work completed to the party required (Project Co and/or Project Owner) for payment, as well as provide CSA S250 quality "As-Built" drawings to UC and Project Owner/ROW Owner for their records. Utility

Agencies should have a well-established “as-built” process, and resources to provide “as-built” records within a week after completion of their relocation work. Project Co and Project Owner/ROW Owner would then be responsibility to review and update their records with the “As-Built” data provided.

When the Utility Agency completes their relocation, all invoices and backup documentation provided would be compared and reviewed against the final estimates provided by the Utility Agency during the Design and Construction phase to ensure all costs are correct and reasonable. If these costs are incorrect or deemed unreasonable, the TA/CO UC will resolve the cost conflicts and revised invoices will be issued by the Utility Agency. If there are no issues with the costs and backup documentation provided by the Utility Agency, TA/CO UC will recommend payment to ROW Owner for their review and issuance of payment.

7.9 Scope change process

The scope of the utility relocation can be altered by the ROW Owner (i.e. late project design changes) and/or by the Utility Agencies (i.e. additional operational or capacity needs) or due to unknown site conditions (e.g. poor soil conditions, unknown conflicts). The UC schedules scope change meetings between the ROW Owner and the Utility Agency as required. All scope changes to the utility relocation shall be agreed to in writing prior to the Utility Agency completing the additional work. The UC is responsible for keeping written records of signed scope changes.

Significant scope changes may necessitate resubmission of the utility plans for approval. In other cases, submission of “As-Built” plans may be sufficient, depending on the ROW Owner’s requirements.

7.10 Flow chart task boxes – Project Implementation Phase

The following section is to be read in conjunction with the flow chart in Appendix A. It provides further valuable commentary and description about the tasks at each stage of the Utility Coordination Process. Each section is aligned with the corresponding numbered box on the Flow Chart.

4.1 Project Owner

- Completes property acquisitions and forwards applicable documentation to Project Co and Utility Agency

4.2 Project Co/UC

- Assembles a UC team
- Updates base plan drawings with new information provided by the Utility Agencies and from completed Enabling Works
- Develops and implements a comprehensive SUE investigation (i.e. verifies all existing subsurface infrastructures to SUE QL-B) and performs test pits (SUE QL-A) at potential conflict points and critical areas
- Completes the Preliminary Design initiated through the In-Market Phase

- Advances the CUP and uses it to recommend utility alignments based on applicable standard and criteria (e.g. minimum clearances, off-sets etc.), utility relocation sequencing, and preliminary utility relocation schedule based on utility alignments
- Advances UCP
- Forwards Preliminary Design plans, CUP and preliminary relocation schedule to Utility Agencies
- Schedules reoccurring utility coordination meetings with all stakeholders

4.3 TA/CO

- Attends and participates in all UC meeting providing technical oversight
- Provides UC oversight/compliance with PSOS
- Performs QA against the utility contractor's QC plan
- Tracks and monitors the utility coordination process ensuring that deliverables and schedules are compliant

4.4 Utility Agencies

- Depending on Work Responsibility Matrix, review/complete preliminary design plans, CUP and preliminary relocation schedule and provide comments such as identifying additional potential conflicts, line assignments, additional test pit locations, design and construction durations, network constraints, property requirements, additional resourcing, construction methodology, and so on
- Attend reoccurring utility coordination meetings
- Enter into agreements with Project Co

4.5 Project Co/UC

- Completes SUE investigation to facilitate the projects and utility relocation Detailed Designs
- Advances Detailed Design plans to an Enhanced Detailed Design level that facilitates the start of utility relocation Detailed Design
- Submits and obtains Public Utilities Coordination Committee (PUCC) approvals, if required
- Finalizes the Utility Coordination Plan
- Conducts the final design review meeting
- Holds utility construction coordination/scheduling meetings
- Completes Issued for Construction (IFC) Detailed Design Plans
- Continues scheduling reoccurring utility coordination meetings
- Issues Purchase Order when Project Co owns the utility risk
- Works with all parties to resolve utility relocation issues, including clearing corridor conflicts to facilitate utility relocations
- Coordinates contractor's time and space to manage the "Constructor" issue
- Provides further property requirements to Project Owner/ROW Owner, if caused by Project Co CUP changes

- Enters into agreements with Utility Agencies

4.6 TA/CO

- Attends and participates in all UC meetings, providing technical oversight
- Provides UC oversight/compliance with PSOS
- Tracks and monitors the utility coordination process, ensuring that deliverables and schedules are compliant

4.7 Utility Agencies

- Finalize the designs for utility relocations
- Identify additional property requirements (if applicable)
- Provide the final estimate and construction schedule
- Obtain approvals/permits from road and other authorities
- Submit and obtain PUCC approvals (if applicable)
- Sign crossing agreement(s) and Cost Allocation Responsibilities agreement with ROW Owner
- Conduct internal utility construction/scheduling meeting
- Attend reoccurring utility coordination meetings

4.8 Project Owner/ROW Owner

- Signs crossing agreements (as required)
- Signs other agreements with Utility Agencies (as required)
- Grants utility relocation approval and road occupancy permits (if applicable)
- Identifies relocation completion date
- Completes Project Co request for additional land acquisition

4.9 Project Co/UC

- Completes Project Co-owned utility relocations
- Holds Pre-Construction Meeting
- Obtains additional ROW Owner permits (if applicable)
- Completes utility relocations prior to the tendering of road contract
- Notifies UC of completion of utility relocation
- Submits invoices and supporting documentation
- Forwards CSA S250 quality “As-Built” drawings after relocation to TA/CO

4.10 Utility Agencies

- Obtain additional ROW Owner permits (if applicable)
- Hold Pre-Construction Meeting
- Complete self-performing utility relocation prior to the start of project construction

- Notify UC of completion of utility relocation
- Submit invoices and supporting documentation
- Forward CSA S250 quality “As-Built” drawings after relocation to Project Co and TA/CO

4.11 Project Co/UC

- Holds Project Construction Pre-Construction Meeting
- Coordinates remaining utility relocations with the Utility Agencies (if applicable)
- Completes or inspects project construction

4.12 Utility Agencies

- Complete and/or inspect utility relocation during the project construction (if applicable)
- Notify UC of completion of utility relocation
- Submit invoices and supporting documentation
- Complete post construction utility relocation (if required)
- Submit CSA S250 quality “As-Built” drawings of utility facilities to UC

4.13 TA/CO UC

- Reviews invoices and compares to original estimate
- Prepares payment recommendation to ROW Owner
- Resolves cost conflicts with Utility Agencies
- Reviews and forwards “As-Built” drawings of utility facilities to ROW Owner

4.14 Project Owner/ROW Owner

- Receives “As-Built” drawings and updates comprehensive record keeping
- Makes payments based on UC’s recommendations
- Issues permits and agreements (if applicable)

8. Post-Construction Phase

8.1 General

The Post-Construction Phase focuses on how the new road corridor will be managed with respect to utilities. Depending on the type of P3 model used, the post-construction tasks vary. For the purpose of this document, this guide discusses a Design/Build/Finance/Operate (DBFO) P3 model.

8.2 Project Co responsibilities

Once the Project has completed, under a DBFO P3 model, Project Co is responsible for the operations and maintenance of the corridor. This could vary greatly depending on project. It could include all tasks necessary to operate transit facilities, toll roads, hospitals, or government institutions, to name just a few.

With respect to utility activities, Project Co would play a role in future permitting applications and One Call locates, if contractually responsible for municipal infrastructure, within the project limits. What role Project Co plays in these functions can vary from province to province and municipality to municipality.

8.3 Flow chart task boxes – Post-Construction Phase

The following section is to be read in conjunction with the flow chart in Appendix A. It provides further valuable commentary and description about the tasks at each stage of the Utility Coordination Process. Each section is aligned with the corresponding numbered box on the Flow Chart.

4.1 Designer

- Operations and maintenance functions
- Future permitting
- One Call locates (if they own a utility facility)

Appendix A: Flow chart task boxes

P3 PROJECT UTILITY COORDINATION PROCESS MAP

Owners/Utility Enabling Work Design

Proponents Preliminary Design

Project Co. Preliminary Design

Project Co.Detailed Design

Owners/Utility Enabling Work Construction

Utility Relocation Design and Construction

Project Construction

1.1 Project Owner
- Owner procures Planning Consultant
- Selects Utility Coordinator (UC)
- Determines and assigns role of lead UC

1.2 Planning Consultant/UC
- Selects UC (if required)
- Conducts a Subsurface Utility Engineering (SUE) investigation to a quality level required for the project's Planning Phase (for subsurface utility data collection guideline refer to American Society of Civil Engineers Standard 38)
- Sends notification to utility companies
- Explains the scope of the functional planning study
- Requests confirmation of utility facilities along each alignment alternative
- Identifies critical/vital utility infrastructure
- Provides base plans
- Requests high level cost estimates and schedule of utility relocation of critical/vital infrastructure

1.3 Utility Agency
- Reviews base plans
- Provides marked-up plans showing utility facilities and identifying critical/vital infrastructure in the project limits.
- Requests meeting as needed.
- Provides high level cost estimates and schedule of utility relocation for the critical/vital infrastructure.
- Identifies potential future utility infrastructure in project limits
- Helps draft Utility Participation Agreement
- Helps draft Enabling Works Agreement
- Signs Non-Disclosure Agreements
- Helps draft Utility Staffing Agreements

1.4 Planning Consultant/UC
- Reviews for completeness of information
- Conducts additional investigation (if required)
- Plots information on Plans
- Assesses utility impacts/conflicts and evaluate alternatives
- Completes Utility Risk Assessment
- Assesses environmental impacts
- Develops recommended plan
- Determines right-of-way requirement
- Finalizes Planning Report
- Files Planning Report for Approval

1.5 Project Owner
- Owner receives Approved Planning Report
- Identifies right-of-way requirements
- Owner chooses P3 Procurement Model
- Develops draft Utility Participation Agreements
- Develops draft Enabling Works Agreements
- Signs Non-Disclosure Agreements
- Develops draft Utility Staffing Agreements

2.1 Project Owner
- Owner procures Owner Engineer (OE) and/or Technical Advisor/ Construction Oversight (TA/CO)
- Owner shortlists proponents through RFQ
- Commences property acquisitions

2.2 TA/CO
- Reviews Planning Report
- Conducts additional SUE investigation to a quality level required for the project's In Market Design Phase
- Updates base plan from information from SUE investigation
- Sends notification to utility agencies with the scope of work and tentative construction schedules
- Provides project limits , CAD base plans from the final planning report, with known utility facilities plotted, to utility agencies.
- Requests mark up plans to confirm location of utility facilities from utility agencies
- Develops Reference Concept Design (RCD)
- Assesses utility impacts/conflicts & evaluates alternatives
- Assesses environmental Impacts
- Develops Conceptual Utility Coordination Plan (CUCP)
- Verifies ROW property requirements
- Develops Project Specific Output Specification (PSOS)
- Defines Enabling Works associated with utilities
- Meets with utilities to discuss RCD and CUCP development and determine scope, cost, schedule, self performing works and identifies and negotiates required agreements
- Prepares crossing agreement and Cost Allocation Responsibilities agreement (if required)

2.3 Utility Agency
- Reviews draft RCD and CUCP
- Initiates and/or participates in Enabling Works design and construction
- Provides marked up plans showing existing facilities
- Provides high level estimate and schedule
- Known Betterments
- • Reviews draft RCD and CUCP and identifies conflicts and potential treatment options
- Initiates and/or participates in Enabling Works design and construction
- Provides marked up plans showing existing facilities
- Provides high level estimate and schedule
- Provides known betterments
- Provides property requirements
- Provides additional SUE requirements
- Participates in Utility Working Group meetings
- Determines utility work responsibility Matrix
- Develops draft agreement between Utility Agency and Project Co
- Executes Utility Participation Agreement between Utility Agency and Project Owner for utility participation during RFP Documentation Preparation Phase and In-Market Design Phase
- Execute Preparatory Activities Agreement (or Enabling Works Agreement?) between Utility Agency and Project Owner where required
- Commences property acquisitions for utility agency requirements as outlined in the RFP agreement
- Develop and execute (if applicable) Utility Staffing Agreements

2.5 Project Owner
- Owner Engineer/Owner reviews, accepts and issues RFP
- Signs Utility Cost Allocation Responsibilities Agreements(if required)
- Commences property acquisitions for utility agency requirements as outlined in the RFP agreement
- Reviews draft agreement between Utility Agencies and Project Co
- Develop and execute Utility Staffing Agreements (if applicable)

2.4 TA/CO
- Receives utility agencies responses
- Finalizes Request For Proposals (RFP) that contains the RCD and PSOS documents
- Initiates and/or participates in Enabling Works design and construction
- Performs utility relocation risk assessments for Enabling Works
- Reviews Utility Agency property requirements
- Performs or contracts additional SUE
- Reviews utility betterments

3.1 TA/CO
- TA coordinates meeting with Owner, OE and proponents utility coordination team to review RCD and PSOS associated with utilities as well as the CUCP
- TA coordinates Commercial Confidential meetings with the owner, proponents and utility agencies
- Continues Enabling Works design and construction

3.2 RFP Proponents
- Proponents select UC
- Advance preliminary design
- Identifies further SUE investigations (to be performed by proponents or TA/CO)
- Advances CUCP
- Identifies and requests further property requirements

3.3 Utility Agency
- Attends meetings and responds to proponents questions
- Continues utility Enabling Works
- Finalizes baseline costs and scheduling for self performing utility relocation works
- Provides timely responses to Requests for Information (RFI's) from Proponents
- Provides further property requirements, if known

3.4 RFP Proponents
- Finalizes Utility Coordination (UC) Plan
- Submit proposal to the Owner

3.5 Project Owner
- Owner receives and reviews proposals and awards contract

4.1 Project Owner
- Property acquisitions completed

4.2 Project Co./UC
- Project Co. selects UC
- Updates base plan drawings from information from utilities agencies
- Advances SUE investigation i.e. verify all existing sewer inverts, identifies test pit locations (SUE QL-A) requirements
- Completes Preliminary Design
- Advances Utility Coordination Plan
- Forwards Preliminary Design plans and utility coordination plan to utility agencies.
- Schedules reoccurring utility coordination meetings

4.3 TA/CO
- Attends all UC meetings
- Provides UC oversight
- Tracks and monitors UC Plan

4.4 Utility Agency
- Reviews preliminary design plans and provide comments
- Depending on Work Responsibility Matrix reviews/completes preliminary design plans, CUP and preliminary relocation schedule and provides comments
- Attends reoccurring utility coordination meeting
- Enter into agreements with Project Co.

4.5 Project Co./UC
- Completes SUE investigation to facilitate the projects and utility relocation detailed designs
- Advances detail design plans to an Enhanced Detailed Design level that facilitates the commencement of utility relocation detail design
- Submits and obtains Public Utilities Coordination Committee (PUCC) approvals (if required)
- Finalizes Utility Coordination Plan
- Conducts final design review meeting
- Holds utility construction coordination/scheduling meeting
- Completes Issued For Construction (IFC) detailed design Plans
- Continues scheduling reoccurring utility coordination meetings
- Issues Purchase Order when Project Co. owns the utility risk
- Works with all parties to resolve utility relocation issues including clearing corridor conflicts to facilitate utility relocations
- Coordinates contractor's time and space to manage the "Constructor" issue
- Provides further property requirements to Project Owner / ROW Owner, if caused by Project Co CUP changes
- Enter into agreements with Utility Agencies

4.6 TA/CO
- Attends all UC meetings
- Provides UC oversight
- Tracks and monitors UC Plan

4.7 Utility Agency
- Finalizes design for utility relocation
- Identifies additional property requirements (if applicable)
- Provides final estimate and construction schedule
- Obtains approvals/permits from road and other authorities.
- Submits and obtains PUCC approvals (if applicable)
- Signs crossing agreement and Cost Allocation Responsibilities agreement with Road Authority
- Conducts internal utility construction/scheduling meeting
- Attend reoccurring utility coordination meetings

4.8 Project Owner/ROW Owner
- Signs crossing agreements (if required)
- Signs other agreements with utility agencies as required
- Grants utility relocation approval and Road Occupancy Permits
- Identifies relocation completion date
- Completes Project Co request for additional land acquisition

4.9 Project Co./UC
- Completes Project Co. owned utility relocations
- Holds Pre-Construction Meeting
- Obtains additional Road Authority Permits (if applicable)
- Completes utility relocation prior to the tendering of road contract
- Notifies UC of completion of utility relocation
- Submits invoices & supporting documentation
- Forwards CSA S250 quality "As Built" drawings after relocation to TA/CO

4.10 Utility Agency
- Holds Pre-Construction Meeting
- Obtains additional Road Authority Permits (if applicable)
- Completes self performing utility relocation prior to the start of project construction
- Notifies UC of completion of utility relocation
- Submits invoices & supporting documentation
- Forwards CSA S250 quality "As Built" drawings after relocation to Project Co. and TA/CO

4.11 Project Co./UC
- Holds Project Construction Pre-Construction Meeting
- Coordinates remaining utility relocations with the utility agencies (if applicable)
- Completes and inspects project construction

4.12 Utility Agency
- Completes utility relocation during the project construction (if applicable)
- Notifies UC of completion of utility relocation
- Submits invoices & supporting documentation
- Completes post construction utility relocation (if required)
- Submits CSA S250 quality "as-built" drawings of utility facilities to UC

4.13 TA/CO UC
- Reviews invoices and compares to original estimate
- Prepares payment recommendation to Road Authority
- Resolves cost conflicts with Utility Agencies
- Reviews and forwards "as-built" drawings of utility facilities to Road Authority

4.14 Project Owner/Road Authority
- Receives "As Built" drawings and updates comprehensive record keeping
- Makes payments based on UC's recommendations
- Issues permits and agreements (if applicable)

5.1 Project Co.
- Operations and Maintenance Functions
- Future permitting
- One Call locates

LEGEND

- Action by Project Owner/ Road Authority
- Action by Planning Consultant
- Action by Technical Advisor/Construction Oversight
- Action by Utility Agency
- Action by Project Proponents
- Action by Project Co.

Appendix B: Sample Utility Conflict Matrix

Modified: 10/09/2015

Work Packages

A=cable, B = pedestals,

PC = protect during construction

CONFLICT MATRIX

No longer a conflict based on SUE

Stationing : 00+ 000 to 00 + 000																			
CONFLICT #	UTILITY	Item	LOCATION	STA. (Start)	STA. (Finish)	Size (mm)	Depth to top	Depth to bottom	Conflict Cause	Comments	Probability of Move/ Replacement/Adj ustment	Recommended	Work Package	Work Package Description	Designer	Builder	Design Time	Build Time	Design Schedule	Build Schedule
Bell Canada - Telecom																				
Power Stream - Hydro																				
Enbridge Gas																				

Appendix C: Utility risk management documents

Utility Responsibility Matrix

Project Name
UTILITY WORK RESPONSIBILITY MATRIX

By Project Co
By Utility Company Approved Consultant/Contractor/Supplier Project Co directed
By Utility Company
Shared Work

LITY COMPANY

COMPANY	DESIGN				SUPPLY OF MATERIALS			CONSTRUCTION				INSPECTION
	Civil Existing Breakout, Support, Re-instate	Civil New Conduit Structure, Manholes, Pipelines, Regulator Stations	Cable, Network and Splicing	Design Approval	Manholes* - Frame and Cover, Cable Racks	Cable and Utility Equipment	Civil Materials**	**Civil Existing** Breakout, Support, Re-instate	Civil New Conduit Structure, Manholes, Pipelines, Regulator Stations	Cable Pulling	Splicing	Inspection
<Company Name>												
<Company Name>												
<Company Name>												
<Company Name>												
<Company Name>												
<Company Name>												
<Company Name>												
<Company Name>												
<Company Name>												

LITY COMPANY (CONTINUED)

COMPANY	DESIGN					SUPPLY OF MATERIALS						CONSTRUCTION						INSPECTION
	Overhead Underground Civil	Obtaining Easements & Properties	SUE Investigation & Survey	Field Investigation of Energized Equipment	Design Approval	Supply of Material Specifications	Submission of Material Quotations, Specifications, and Test Reports	Material Approval	Civil Infrastructure	Underground & Overhead Electrical Equipment	Overhead Electrical Equipment	Overhead Underground Civil	Generators	Programming & Commissioning of Switchgears	Pole Holes	Disconnect Reconnect Isolation Energize (Plant)	Final Restoration	Inspection
<Company Name>																		
<Company Name>																		

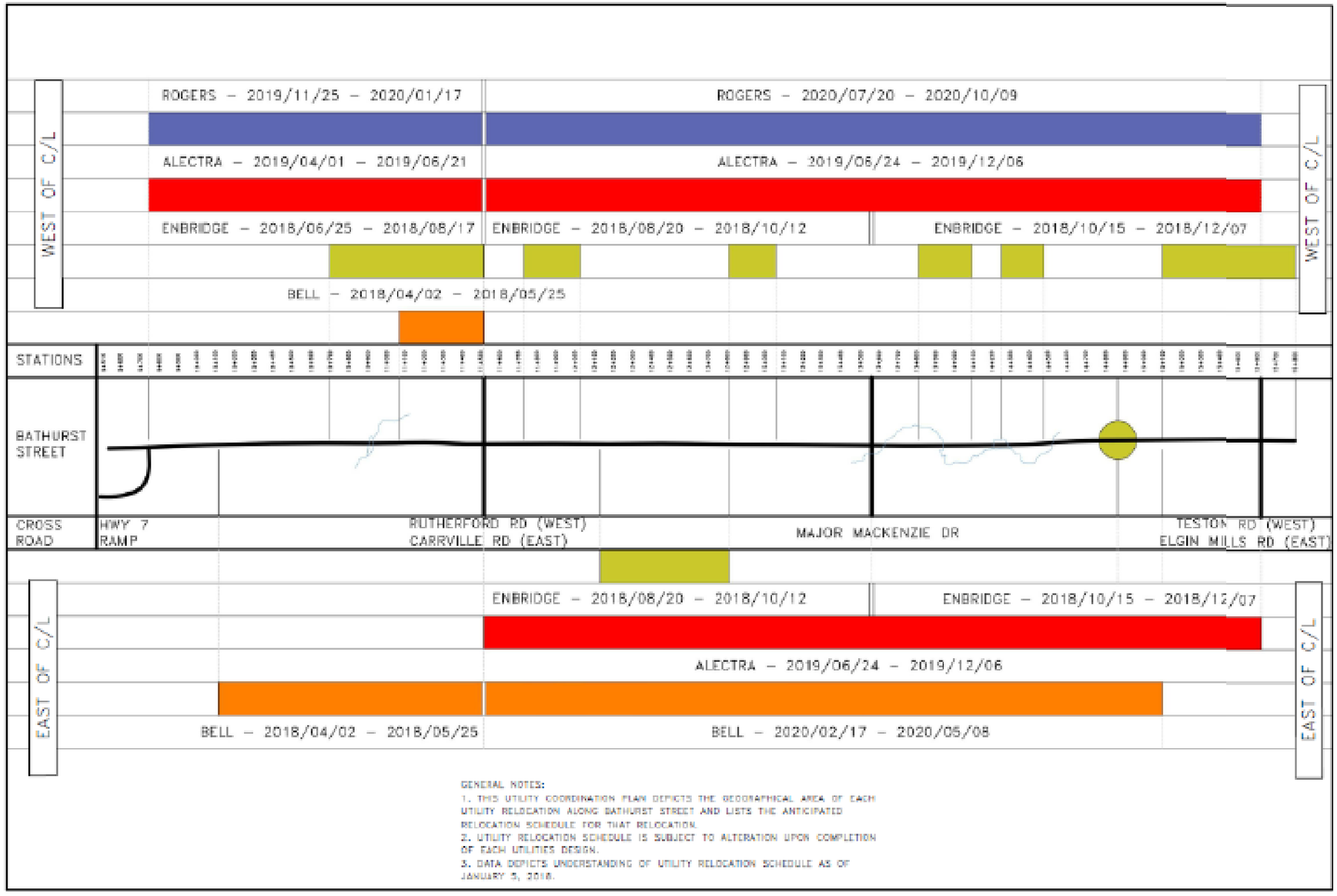
ILITY COMPANY

COMPANY	DESIGN				SUPPLY OF MATERIALS			CONSTRUCTION				INSPECTION
	Civil Existing Breakout, Support, Re-instate	**Civil New** Conduit Structure, Manholes	Cable, Network and Splicing	Design Approval	Manholes* - Frame and Cover	Cable and Utility Equipment	Civil Materials	**Civil Existing** Breakout, Support, Re-instate	**Civil New** Conduit Structure, Manholes	Cable Pulling	Splicing	Inspection
<Company Name>												
<Company Name>												
<Company Name>												

Utility Baseline Document

Utility Baseline Document						
Utility Company Name:						
Project	**Utility**	**Project Activity**	**Utility Design Deliverable**	**Duration (Business Days)**	**Advanced Notice (Business Days)**	**Requirements and Constraints**

Utility Coordination Plan



Appendix D: SUE Quality Levels

This information is used with permission from the American Society of Civil Engineers and is excerpted from:

American Society of Civil Engineers. 2002. *CI/ASCE 38-02: Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*. Reston, VA: American Society of Civil Engineers.

5.0 UTILITY QUALITY LEVEL ATTRIBUTES

5.1 Quality Level D

Typical tasks by the engineer leading to utility Quality Level D are:

5.1.1 Conduct utility records research to assist in identifying utility owners that may have facilities on or be affected by the project. Sources of information may include, but are not limited to (project- and scope-dependent):

- Utility section of the state Department of Transportation or other public agency
- One-call notification centre
- Public Service Commission or similar organization
- County Clerk's office
- Landowner
- Internet or computer database search Visual site inspection
- Utility owners

5.1.2 Collect applicable Utility Agencies records. Applicable records may include:

- Previous construction plans in area conduit maps
- Direct-buried cable records
- Distribution maps
- Transmission maps
- Service record cards
- "As-Built" and record drawings
- Field notes
- County, city, Utility Agency or other geographic information system databases
- Circuit diagrams
- Oral histories

5.1.3 Review records for:

- Indications of additional available records
- Duplicate information and credibility of such duplicate information

- Need for clarifications by utility owners

5.1.4 Develop utility composite drawing or equivalent. The engineer should also make professional judgments regarding the validity and location of topographic features on records versus current topographic features (when available) and conflicting references of utilities. And the engineer should indicate quality levels; utility type and/or ownership; date of depiction; accuracy of depicted appurtenances (quality level C vs. quality level D); end points of any utility data; active, abandoned, or out- of-service status; size; condition; number of jointly buried cables; and encasement.

5.2 Quality Level C

Typical tasks by the engineer leading to utility Quality Level C are:

5.2.1 Perform tasks as described for Quality Level D. Quality Level C and D tasks do not necessarily need to be performed in any prescriptive order.

5.2.2 Identify surface features on the topographic plan and ground surface that are surface appurtenances of existing subsurface utilities.

5.2.3 Survey such features if the features have not already surveyed by a registered professional. If previously surveyed, check survey accuracy and completeness for applicability with the existing project.

5.2.4 Correlate applicable utility records to these surveyed features, taking into account the geometries and indications on the records of these surface features.

5.2.5 Determine when records and features do not agree and resolve discrepancies. This may be accomplished by depiction of a utility line at Quality Level D, effectively bypassing or disregarding (but still depicting) a surveyed structure of unknown origin. Additional resolution may result from consultation with utility owners.

5.3 Quality Level B

Typical tasks by the engineer leading to utility Quality Level B are:

5.3.1 Perform tasks as described for Quality Level C. Quality Level C and B tasks do not necessarily need to be performed in any prescriptive order. It may be more cost effective to perform some quality level B tasks before and/or in conjunction with Quality Level C or D tasks.

5.3.2 Select an appropriate suite of surface geophysical methods (see the Appendix for discussions of methods, relative merits, and relative costs) to search for utilities within the project limits or to perform a utility trace for a particular utility system.

5.3.3 Apply appropriate surface geophysics to search for utilities within the project limits, or trace a particular utility system if the scope of investigation is limited.

5.3.4 Interpret the surface geophysics. Depending on the methods, this may be performed in the field or in the office.

5.3.5 Mark the indications of utilities on the ground surface for subsequent survey. Local utility owners, agencies, and/or one-call statutes may dictate, or suggest, the markings' colors, sizes, and/or other labeling. Care should be taken to differentiate markings placed on the ground for design purposes from those placed on the ground for damage prevention purposes. (Note: If a particular surface

geophysical method allows for field data collection or storage for future computer downloading and evaluation, if a utility search technique that allows for comprehensive area coverage is used, and if a survey grid or line is laid out that allows for future correlations of surface geophysical data to points depicted on a map, then ground markings may be unnecessary.)

5.3.6 Survey all markings that indicate the presence of a subsurface utility. This survey should be to the accuracies and precision dictated by the project's survey control.

5.3.7 Depict all designated utilities. These utility depictions may follow the general guideline as presented in Section 6.0. Depiction is usually accomplished via computer-aided design and drafting or manual plotting methods onto plan sheets, into geographic information systems databases, or onto other appropriate documents. Quality Level B data should be reproducible by surface geophysics at any point of their depiction.

5.3.8 Correlate the designated utilities' depictions with utility records and/or surveyed appurtenances to identify utilities that may exist but were not able to be designated.

5.3.9 Resolve differences between designated utilities and utility records and surveyed appurtenances. This may take the form of additional surface geophysical searches or depiction of designated or non-designated utilities at a lower quality level. It may take the form of an upgrade at appropriate points to quality level A information.

Situations require judgment that a designated utility and a utility of record are actually identical, even if not interpreted as geographically coincident.

5.3.10 Recommend to the Project Owner additional measures to resolve differences if they still exist. Such recommendations may include additional or different surface geophysical methods, exploratory excavation, or an upgrade to quality level A data.

5.4 Quality Level A

Typical tasks by the engineer leading to utility Quality Level A are:

5.4.1 Perform tasks as described for Quality Level B at the appropriate project location. Quality Level B, C, and D tasks do not necessarily need to be performed in any prescriptive order.

5.4.2 Select an appropriate method of gathering data that will achieve the accuracies and precision required by the project. These accuracies are currently typically set to 15-mm vertical and to applicable horizontal survey and mapping accuracy as defined by the project owner. Exposure and survey of the utility at each specific location where quality level A data are obtained are currently necessary.

5.4.3 Excavate test holes exposing the utility to be measured in such a manner that protects the integrity of the utility to be measured. Exposure is typically performed via minimally intrusive excavation. In some cases, data gathering during utility construction may eliminate the need for excavation of the utility, as it is already exposed.

5.4.4 Comply with applicable utility damage prevention laws, permits, and specifications, and coordinate with utility and other inspectors, as required.

5.4.5 Determine:

- the horizontal and vertical location of the top and/or bottom of the utility referenced to the project survey datum;
- (b) the elevation of the existing grade over the utility at a test hole referenced to the project survey datum;
- (c) the outside diameter of the utility and configuration of non-encased, multi-conduit systems; (d) the utility structure material composition, when reasonably ascertainable;
- (e) the benchmarks and/or project survey datum used to determine elevations;
- (f) the paving thickness and type, where applicable;
- (g) the general soil type and site conditions; and
- (h) such other pertinent information as is reasonably ascertainable from each test hole site.

5.4.6 Resolve differences between depicted Quality Level A data and other quality levels. This may take the form of additional surface geophysical searches or a depiction of adjacent or nearby data points at a lower quality level. It may require that utilities already depicted at Quality Level B, C, or D should be re-depicted to coincide with the more accurate Quality Level A data. It may take the form of additional upgrades at appropriate points to Quality Level A information.

Appendix E: Glossary

"As-Built" Plan: a representation of the as-constructed situation showing the position and features of components as actually put in place.

Base Plan: a topographical survey plan depicting the existing conditions (surface and subsurface) within the project limits.

Betterments: utility upgrades made to existing infrastructure constructed as part of the utility relocations for a project.

Composite Utility Plan (CUP): a plan which depicts existing utility locations, based on the SUE information, proposed utility relocation designs, existing topographic survey information and the Reference Concept Design (RCD) information.

Conceptual Utility Coordination Plan (CUCP): a process and a document to provide a proof of concept for utility relocations on the Project.

Corridor Management Plan (CMP): a document which ensures that time and space is managed as multiple contractors work within the project limits.

Enabling Works: also known as Preparatory Activities or Early Works, Enabling Works are design and/or construction tasks that are completed before the Project Owner awards a contract to a Project Co.

Enabling Works Agreement: outlines the agreed upon requirements between the Utility Agency and the Project Owner for any Enabling Works required for the Project

Mark-Up Drawings: a plan view drawing supplied by the Utility Agnecy reflecting the location of subsurface infrastructure within the requested limits.

Non-Disclosure Agreement: agreements between two parties that protect confidential and proprietary information while ensuring two parties can transfer information between each other.

Owner's Engineer (OE): (also known as Client's Engineer) is a representative of the Project Owner which role is in place to protect the Project Owners' interests by ensuring all parties are adhering to the various agreements established for the Project.

Planning Consultant: a consultant team hired by the Project Owner during the Planning Phase of a P3 Project, if the Project Owner requires the services. The Planning Consultant may become the Technical Advisor/Construction Oversight (TA/CO) when the Project moves into the RFP Documentation Preparation Phase.

Project Agreement (PA): a legally binding agreement between the Project Owner and Project Co that describes all aspects of the project that Project Co must adhere to.

Project Owner: municipal, provincial or federal agency or agencies acting as the Public portion of the Public-Private Partnership model. The Project Owner requires that the project be completed and has the funding to have it paid for over the term of the P3 agreement.

Project Specific Output Specifications (PSOS): a document that defines the Project Owner's functional requirements for the proposed P3 project. Proponents use this document for the project designs and costs. It forms part of the Project Agreement (PA).

Public-Private Partnership (P3): a form of alternative service delivery that involves a formal collaborative arrangement between the public and private sector.

Quality Assurance (QA): a program for the systematic monitoring and evaluation of the various aspects of a project, service, or facility to ensure standards of quality are being met.

Quality Control (QC): the activity of checking goods as they are produced to ensure the final products reasonably meet the minimum requirement.

Reference Concept Design (RCD): shows a conceptual project design, including a proof of concept for utility relocations. The intent is for Project Co to enhance or modify the design as required.

Relocation Services Agreement: outlines the agreed upon requirements between the Utility Agency and the Project Co during the Implementation Phase.

Right-Of-Way (ROW): the right to make a way over a piece of land, usually to and from another piece of land. A Right-Of-Way is a type of easement granted or reserved over the land for transportation purposes. This can be for a highway, public footpath, railway and canal, as well as for electrical transmission lines, oil and gas pipelines.

Road Geometrics: engineering concerned with the positioning of physical roadway elements according to standards and constraints. The basic objectives in geometric design are to optimize efficiency and safety while minimizing cost and environmental damage.

ROW Owner: the authority with the legal right to the Right-Of-Way lands responsible for the maintenance or expansion of existing services within the Right-Of-Way.

Subsurface Utility Engineering (SUE): a branch of engineering practice involving classifying and reducing the uncertainty of the presence and location of underground utility infrastructure by delivering data about that infrastructure (e.g. reports and utility mapping at appropriate Utility Quality Levels), and using this data for purposes including utility coordination, utility relocation design and coordination, utility condition assessment, communication of utility data to concerned parties, utility relocation cost estimates, implementation of utility accommodation policies, and utility design.

Utility Agencies: public and private utility companies, agencies, or municipal or provincial departments that include utility owners that own and operate water, gas distribution, sewer, telecommunication, power, district energy, steam, or other systems that provide services to customers.

Utility Baseline Document (UBD): a document which identifies utility self-performing work tasks that will be backstopped (guaranteed) by the Project Owner. The document outlines the locations, description, costs and durations associated with each backstopped utility task.

Utility Conflict Matrix: a document which describes the details of potential utility conflicts (type of utility, utility size, length of conflict, etc. See Appendix B for a sample.

Utility Coordination Plan (UCP): upon Project Co taking over the Project, the CUCP is changed into the UCP. The UCP prioritizes who and where and when utility relocation projects will occur within the project limits.

Utility Participation Agreement: outlines the agreed-upon requirements between the Utility Agency and the Project Owner prior to the signing of the Project Agreement

Utility Staffing Agreement: outlines the agreed upon staffing requirements between the Utility Agency and the Project Owner for all stages of the Project.

Utility Work Responsibility Matrix: a document that identifies all the tasks associated in the relocation of each utility and who is responsible for completing each task. See Appendix C for a sample.

Appendix F: Supporting references

1. Public Utilities Management Subcommittee. 2016. *Guideline for the Coordination of Utility Relocations*. Ottawa, ON: Transportation Association of Canada.
2. American Society of Civil Engineers. 2002. *CI/ASCE 38-02: Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*. Reston, VA: American Society of Civil Engineers.
3. Canadian Standards Association. 2011. *CSA S250-11: Mapping of Underground Utility Structures*. Toronto, ON: Canadian Standards Association.

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