

THE CITY OF EDMONTON
PROJECT AGREEMENT
VALLEY LINE WEST LRT

Schedule 3
Construction Schedule

TABLE OF CONTENTS

1. DILIGENT PERFORMANCE OF PROJECT WORK1

2. CONSTRUCTION SCHEDULE1

3. CONSTRUCTION SCHEDULE REQUIREMENTS2

4. SCHEDULE UPDATES.....4

5. RECOVERY SCHEDULE.....5

6. PUBLIC ART INTEGRATION SCHEDULE6

7. VALLEY LINE LRT STAGE 1 AND OPERATOR INTEGRATION SCHEDULE7

8. LRV INTEGRATION SCHEDULE8

9. CONFLICT BETWEEN AGREEMENT AND CONSTRUCTION SCHEDULE8

10. SITE REPORTS8

11. NON-PERFORMANCE EVENTS8

APPENDIX 3A KEY DATES9

SCHEDULE 3

CONSTRUCTION SCHEDULE

1. DILIGENT PERFORMANCE OF PROJECT WORK

Project Co shall:

- (a) commence the Project Work promptly following the Effective Date;
- (b) pursue the Project Work diligently so as to achieve each of the Key Dates listed in Appendix 3A [*Key Dates*] of this Schedule, at or before the time specified therefor, as such time may be modified from time to time in accordance with the terms of this Agreement; and
- (c) perform the Project Work in material conformity with the Construction Schedule, as it may be amended from time to time in accordance with this Agreement.

2. CONSTRUCTION SCHEDULE

2.1 Project Co shall prepare and submit to the City:

- (a) a preliminary construction schedule (the "**Preliminary Construction Schedule**") within 90 calendar days after the Effective Date, or at an alternate date accepted by the City in the Submittal Schedule and Register. This Preliminary Construction Schedule shall generally align to the draft Preliminary Construction Schedule attached at Schedule 23 [*Extracts from Proposal*] to the City's satisfaction, and comply with Section 3.1 of this Schedule, except that it is to be fully detailed for the first 270 calendar days after the Effective Date and may be detailed to Level 2 on the Work Breakdown Structure for all remaining work so long as all activities on any critical or near critical path are clearly identified; and
- (b) a comprehensive construction schedule (the "**Baseline Construction Schedule**") within 180 calendar days after the Effective Date, or at an alternate date accepted by the City in the Submittal Schedule and Register, based on the accepted Preliminary Construction Schedule and detailing all Design and Construction activities scheduled to occur until the end of the Construction Period. Project Co shall revise and resubmit to the City the Baseline Construction Schedule as required in order to achieve an 'Accepted' endorsement within 270 calendar days from the Effective Date. Once the Baseline Construction Schedule has been Accepted, such Baseline Construction Schedule shall replace the Preliminary Construction Schedule, becoming the new baseline to which all future progress, status, changes, variations, delays, accelerations and recoveries will be reported and measured against.

2.2 For the purpose of this Agreement, a reference to the "Construction Schedule" shall mean the draft Construction Schedule attached at Schedule 23 [*Extracts from Proposal*] until the Preliminary Construction Schedule, or subsequently, the Baseline Construction Schedule, or subsequently, a Recovery Schedule, has been submitted by Project Co and accepted, or deemed accepted, by the City.

3. CONSTRUCTION SCHEDULE REQUIREMENTS

3.1 The Preliminary Construction Schedule, the Baseline Construction Schedule and each Recovery Schedule shall:

- (a) be in accordance with Good Industry Practice and consistent with:
 - (i) the Project Management Body of Knowledge (PMBOK Guide) – then current edition from the Project Management Institute;
 - (ii) the Practice Standard for Scheduling – then current edition from the Project Management Institute; and
 - (iii) the American Association of Cost Engineering (AACE) International Recommended Practices – then current edition;
- (b) be resource loaded and resource levelled (at a minimum, to list the planned and actual to date man-hours and equipment hours associated with each of the activities comprising the schedule);
- (c) be of sufficient detail to successfully manage and control a project of the same nature, size and complexity of the Project, and at least be detailed to the extent of a Level 4 schedule according to AACE standards;
- (d) detail how Project Co will satisfy the Project Requirements;
- (e) be structured following the Work Breakdown Structure where all activities roll-up to the Work Breakdown Structure at Level 2 as defined in Appendix 4D [*Work Breakdown Structure*] to Schedule 4 [*Design and Construction Protocols*];
- (f) be in sufficient detail and to the level that Project Co uses to resource its week to week activities, unless otherwise agreed by the City;
- (g) be prepared using Primavera P6 scheduling software acceptable to the City and submitted to the City in its native file format. This native file shall be the same primary file used by Project Co to plan and control the work on an on-going basis and shall include as a minimum the following:
 - (i) duration: original, remaining, actual;
 - (ii) activity early start and finish dates – current and most recent baseline schedule;
 - (iii) activity late start and finish dates - current and most recent baseline schedule;
 - (iv) total float time and free float time;
 - (v) resource loading with man-hours, materials and equipment by activity;
 - (vi) identification of long lead items;
 - (vii) identification of milestone activities; and
 - (viii) all logic and precedence relationships;

- (h) include a portable document format (PDF) version of the schedule that:
 - (i) is legible when printed on 11x17 paper;
 - (ii) contains the following columns, as a minimum:
 - (A) task ID;
 - (B) task name;
 - (C) task duration;
 - (D) task start date;
 - (E) task finish date;
 - (F) task predecessors;
 - (G) task successors;
 - (H) total float; and
 - (I) horizontal bars showing the actual progress over time versus the baseline;
- (i) include unique activity identifiers for all scheduled activities;
- (j) include all Key Dates;
- (k) include all events for which a specified timeframe or deadline is identified in this Agreement, whether or not described as a “milestone” or Key Date;
- (l) identify all temporal restrictions on construction identified in this Agreement, including those identified in Schedule 10 [*Environmental Performance Requirements*];
- (m) identify the critical path and near critical paths with less than 30 calendar days total Float along with the Float associated with each;
- (n) include any City activity that has an expressly stated timeline under this Agreement;
- (o) have a separate section for each of the following schedules, integrated into the Construction Schedule (and each such schedule shall also be provided in a separate PDF from the Construction Schedule):
 - (i) the Preliminary Public Art Integration Schedule and, as applicable, the Public Art Integration Schedule for each Public Art opportunity, prepared in accordance with Section 6 [*Public Art Integration Schedule*] of this Schedule;
 - (ii) Valley Line LRT Stage 1 and Operator Integration Schedule, prepared in accordance with Section 7 [*Valley Line LRT Stage 1 and Operator Integration Schedule*] of this Schedule; and
 - (iii) LRV Integration Schedule prepared in accordance with Section 8 [*LRV Integration Schedule*] of this Schedule.

- (p) include all Utility Work once known, and coordination tasks with Public Utility Companies and Pipeline Companies, with each item including at least one predecessor and one successor task;
- (q) include all Other Works, City Works and other relevant activities once known, with each item including at least one predecessor and one successor task;
- (r) include the relevant dates with respect to the acquisition of any Additional Lands;
- (s) include details for the design, investigation, construction, testing, commissioning and related activities with respect to all Design and Construction activities to be carried out by Project Co during the Construction Period;
- (t) not extend a Key Date, including the Long Stop Date, except to reflect any extension of such date(s) agreed or otherwise determined in accordance with this Agreement;
- (u) provide for the Project Work to be commenced and pursued diligently in accordance with Section 1 [*Diligent Performance of Project Work*] of this Schedule, such that Project Co shall achieve all Key Dates;
- (v) include a single page view of the schedule with the Project track alignment on the horizontal axis, time on the vertical axis and progress of all key work activities over time on this grid (a "**Location-Time Chart**");
- (w) clearly show each material scope element making up each Work Package;
- (x) include a narrative document explaining the schedule basis and work methodology to be followed by Project Co ("**Schedule Basis**"); and
- (y) include an implementation plan that further details the Schedule Basis, which will include, as a minimum, a strategy for how the Project Work is going to be constructed, a breakdown of the Design and Construction activities into Work Packages, a description of each, including a listing of the major tasks along with the associated scheduled durations and completion dates in compliance with applicable Key Dates and other milestones. For each Work Package, Project Co shall include the estimated productivity, and direct manual work-hours and equipment hours required to complete the work for each activity. The implementation plan will also include the total estimated staffing and the total estimated work-hours grouped by month and a curve, such as an S-Curve, showing cumulative percent complete by month for both earned work manual hours and planned manual work hours.

3.2 The schedule calculation mode used within the scheduling software shall be "retained logic", unless otherwise agreed by the City.

4. SCHEDULE UPDATES

4.1 Once the Baseline Construction Schedule has been submitted, Project Co shall provide to the City, for information only, updates on the Construction Schedule on a monthly basis, by the 10th day of each month (each, a "**Schedule Update**"), together with a copy of the complete Construction Schedule in its native P6 format. Each Schedule Update shall comply with the requirements of Section 3 [*Construction Schedule Requirements*] of this Schedule, with the exception of Sections 3.1(x) and 3.1(y) which do not need to be included in the Schedule Updates. Each Schedule Update shall provide details of the performance of all Design and Construction activities performed and to be performed throughout the Construction Period.

- 4.2 Each Schedule Update shall include a Construction Schedule gantt chart comparing actual progress and projections to planned progress on each activity on the Construction Schedule.
- 4.3 Each Schedule Update shall include a complete summary of Key Dates, start and end date for each Work Package and progress to date, including an update to the S-curve actual progress graphically showing planned process and actual progress. Each Schedule Update shall include an up-to-date Location-Time Chart, at least every 6 months.
- 4.4 No Schedule Update shall amend or replace any information contained in the Accepted Construction Schedule. For greater certainty, the City shall not be deemed to have Accepted any changes to the Construction Schedule logic, relationships, durations, calendars, Key Dates or any other information, timeline or deadline which are reflected in a Schedule Update even if the Schedule Update has been deemed Accepted or endorsed as Accepted by the City.
- 4.5 Each Schedule Update shall also clearly identify all deviations (positive or negative) from the Construction Schedule, and include a narrative explanation of the cause(s) of each such deviation with particular reference to reasons behind any changes to the critical path.

5. RECOVERY SCHEDULE

5.1 If:

- (a) Project Co fails to take appropriate action to recover from delays that in the opinion of the City put Key Dates in the Construction Schedule at risk; or
- (b) Project Co's revised implementation strategy or forecast dates for future activities or staging has changed to the extent that it is no longer practical to compare a Schedule Update against the current Construction Schedule,

Project Co shall prepare and submit to the City within 60 calendar days of a written request by the City, or within an alternate time as otherwise agreed by the City in writing, a variation to the Construction Schedule (a "**Recovery Schedule**"), which details Project Co's proposed alternate methods of performing the Project Work in order to address and mitigate any actual or projected delay or increased risk of not achieving Key Dates.

5.2 The Recovery Schedule shall:

- (a) comply with the requirements of Section 3 [*Construction Schedule Requirements*] of this Schedule;
- (b) include a written recovery statement describing the variances and the actions, including acceleration measures, planned by Project Co to mitigate any variances within the shortest reasonable time;
- (c) include a summary of, and justification for, all proposed changes to Construction Schedule logic and activity durations that Project Co anticipates will be necessary to mitigate any delays. Such proposed changes shall only be included in a Recovery Schedule if the changes reflect a justifiable change in approach by Project Co to the performance of the Project Work; and
- (d) demonstrate how Project Co has co-ordinated with and minimized impacts on Other Contractors that may be affected by any variances and mitigation measures when developing and executing a Recovery Schedule.

- 5.3 Project Co shall revise and resubmit to the City the Recovery Schedule as required to establish an accepted Recovery Schedule within 60 calendar days of the first submission of that Recovery Schedule.
- 5.4 A Recovery Schedule that is endorsed 'Accepted' by the City amends the Construction Schedule as provided in that Recovery Schedule, but does not amend any Key Dates unless agreed to by the City in accordance with this Agreement.

6. PUBLIC ART INTEGRATION SCHEDULE

- 6.1 The preliminary public art integration schedule (the "**Preliminary Public Art Integration Schedule**") submitted with the Preliminary Construction Schedule shall set out a detailed art installation window or delivery window (earliest start date and date by which installation or delivery work must be completed in order to avoid impacting the critical path for the Construction) for each Public Art opportunity.
- 6.2 Where a Draft Public Art Call includes more than one Public Art opportunity for a site, Project Co shall provide a separate art installation or delivery window for each such Public Art opportunity within the Preliminary Public Art Integration Schedule, and shall provide such updated Preliminary Public Art Integration Schedule as part of the next Schedule Update.
- 6.3 Each Public Art art installation or delivery window shall provide the widest possible opportunity for installation or delivery of the applicable work of Public Art, provided that under no circumstances shall any Public Art art installation or delivery window:
- (a) commence earlier than the applicable date specified in Section 2-7 *[Public Art]* of Schedule 5 *[D&C Performance Requirements]*; or
 - (b) be shorter than the applicable period described in Section 2-7 *[Public Art]* of Schedule 5 *[D&C Performance Requirements]*.
- 6.4 The Preliminary Public Art Integration Schedule shall identify a Public Art Lead within Project Co who is responsible to work with the City and the Edmonton Arts Council on the integration of Public Art within the Project.
- 6.5 Within 30 calendar days following the submission of the Preliminary Public Art Integration Schedule, the identified Public Art Lead shall attend a meeting with the City and the Edmonton Arts Council to review the Preliminary Public Art Integration Schedule and the overall scope of the Public Art plan. Additional meetings between the Public Art Lead, the City, and the Edmonton Arts Council will follow as required in order to outline roles and responsibilities and processes for the incorporation of Public Art.
- 6.6 Project Co shall prepare and submit to the City within 30 calendar days after receipt of the applicable Public Art concept design from the City in accordance with Section 2-7 *[Public Art]* of Schedule 5 *[D&C Performance Requirements]* a comprehensive public art integration schedule (each, a "**Public Art Integration Schedule**") for each such Public Art opportunity. Each Public Art Integration Schedule shall:
- (a) clearly identify the art installation or delivery window for the applicable Public Art opportunity;

- (b) include a narrative statement specifying all information reasonably required by Project Co to permit the full and proper integration of the applicable work of Public Art into the applicable component of the Infrastructure, including:
 - (i) design information;
 - (ii) structural loading requirements;
 - (iii) installation requirements, erection plans and connection details; and
 - (iv) details of required Utility connections and other services,

along with the latest date(s) by which each piece of information is reasonably required in order to avoid impacting the critical path for the Construction, provided such date(s) shall not be less than 15 calendar days after the date on which the applicable Public Art Integration Schedule is submitted;
- (c) not advance the start and end date of the applicable Public Art art installation or delivery window to a date that is earlier than that set out in the Preliminary Public Art Integration Schedule for the applicable work of Public Art; and
- (d) not defer the start and end date of the applicable Public Art art installation or delivery window by more than 360 calendar days from that set out in the Preliminary Public Art Integration Schedule for the applicable work of Public Art, except to reflect any extension of any such dates agreed or determined in accordance with this Agreement.

6.7 Project Co shall not materially:

- (a) add to the information requested pursuant to Section 6.6 of this Schedule; or
- (b) alter any of the dates specified in an accepted Public Art Integration Schedule, without the prior acceptance of the City, which acceptance may be granted or withheld in the City's discretion.

7. VALLEY LINE LRT STAGE 1 AND OPERATOR INTEGRATION SCHEDULE

- 7.1 The Construction Schedule shall include a section dedicated to summarizing all interface milestones that impact Valley Line LRT Stage 1 or are required to successfully complete the interface between and the integration of Valley Line LRT Stage 1 and the Project. Each milestone is to have at least one work activity in the Construction Schedule as a predecessor that correctly drives when each milestone will be met. The Schedule Basis shall detail how Project Co will manage each interface milestone so as to ensure timelines are adhered to and to minimize the impact on Valley Line LRT Stage 1.
- 7.2 The Construction Schedule shall include a section dedicated to summarizing all interface milestones required to successfully coordinate, without delay, between the work performed by the Operator and the work performed by Project Co. Each milestone is to have at least one work activity in the Construction Schedule as a predecessor that drives when this milestone will be met. The Schedule Basis shall detail how Project Co will manage each interface milestone so as to ensure timelines are adhered to.
- 7.3 The two dedicated sections described in Section 7.1 and Section 7.2 of this Schedule are, collectively, the "**Valley Line LRT Stage 1 and Operator Integration Schedule**".

7.4 Project Co shall include in the Schedule Basis, and shall arrange for, the coordination with both TransEd Partners and the Operator on a monthly basis with respect to each work activity that relates to an interface milestone. Project Co shall include the results of this coordination in each Schedule Update.

8. LRV INTEGRATION SCHEDULE

8.1 The Construction Schedule shall include a section dedicated to detailing the LRV integration points (the “**LRV Integration Schedule**”), which shall:

- (a) show how Project Co’s work interfaces with Stage 2 LRV design in order to meet all Key Dates; and
- (b) show all logic interrelationships and durations for each activity leading to or following from an interface point with:
 - (i) the Stage 2 LRV design and delivery;
 - (ii) the commissioning of the Stage 2 LRVs and the Gerry Wright OMF Building B; and
 - (iii) the integrated testing of the Infrastructure.

9. CONFLICT BETWEEN AGREEMENT AND CONSTRUCTION SCHEDULE

9.1 In the event of any conflict between a timeframe or deadline specified in this Agreement (as modified from time to time in accordance with its terms) and the Construction Schedule, the timeframe or deadline specified in this Agreement (as modified from time to time in accordance with its terms) shall, unless otherwise expressly agreed by the City, in its discretion, prevail.

10. SITE REPORTS

10.1 Project Co shall keep accurate daily records of material construction site progress and resource information that demonstrates alignment with or variance from the resourcing assumptions in the Construction Schedule, as well as information related to downtime and weather, and any other relevant information and all material daily circumstances encountered on every work site where Project Work activities occur (the “**Site Reports**”).

- (a) Project Co shall submit to the City 60 days after Effective Date the proposed format and content headings for the Site Reports.
- (b) Each Site Report shall be in the accepted format and include all information reasonably requested by the City.
- (c) Project Co shall summarize all Site Report information into a Microsoft Excel spreadsheet that allows for efficient graphical representation and comparison between the monthly planned versus actual resources. Project Co shall submit this spreadsheet (in .xml format) to the City by the 10th day of each month, along with complete copies of all Site Reports from the previous month.

11. NON-PERFORMANCE EVENTS

11.1 Failure by Project Co to comply with the obligations set forth in this Schedule may constitute Non-Performance Events and may result in adjustments to the Payments, as more particularly provided in Schedule 16 [*Payment Mechanism*].

**APPENDIX 3A
KEY DATES**

Key Date	Project Agreement Reference
Target ICS Integration Ready Date	See definition in Section 1 of Schedule 1 <i>[Definitions and Interpretation]</i>
Target Phase 1 Construction Completion Date	See definition in Section 1 of Schedule 1 <i>[Definitions and Interpretation]</i>
Target Construction Completion Date	See definition in Section 1 of Schedule 1 <i>[Definitions and Interpretation]</i>
Long Stop Date	See definition in Section 1 of Schedule 1 <i>[Definitions and Interpretation]</i>
Infrastructure Performance Demonstration Completion Date	See definition in Section 1 of Schedule 1 <i>[Definitions and Interpretation]</i>

42194454.2