

Appendix XX – Design Submittal Requirements

A1. GENERAL

- A1.1 This document provides instructions for the preparation and submission of Submittals at the 60% Design Development, 90% Design Development and Issued for Construction stage for each design package in accordance with Schedule 5 – Review Procedure.
- A1.2 The Submittals shall demonstrate how the proposed New Infrastructure meets or exceeds the Technical Requirements.
- A1.3 The intent of the 60% design Submittal is to provide the City with a detailed design that has the general configuration chosen for the major elements of the component; however, all of the detailed design and drawing production associated with those elements may not be complete. For example, for a bridge structure, all retaining wall types should be determined but the exact sizing, details, and connections may not be finalized.
- A1.4 The intent of the 90% design Submittal is to provide the City with a detailed design where all design analysis/calculations are 100% complete and Project Co is ready to commence construction activities based on the drawings recognizing there may be minor revisions required for clarity, coordination/connection with surrounding elements and components, or from Project Co's QMS (internal/external) review. As Project Co will be permitted to commence construction activities 10 Business Days after the City's receipt of the 90% design Submittal, a design submission that contains missing or incomplete information will be considered to be non-conforming.
- A1.5 The intent of the IFC Submittal is to incorporate any comments from the City's Review Procedure and that of any other reviewing stakeholders. The IFC Submittal is to also incorporate any final revisions from Project Co's QMS (internal/external) review. Any major revisions to the elements of the component should be specifically brought to the attention of the City and Project Co's QMS (internal/external) reviewers.
- A1.6 Submittals for the 60% Design Development and 90% Design Development shall include, but not be limited to, the items outlined in A2. For clarity, the 60% Design Development and 90% Design Development items are both outlined in A2. The 60% Design Development shall include all items in A2, except for those that are underlined. The 90% Design Development shall include all items in A2, including those that are underlined.
- A1.7 Submittals for the IFC Submittal will include all items from the 90% Design Development Submittal and shall include all revisions as required by the City's Review Procedure and Project Co's QMS.

A2. SUBMITTAL ITEMS

- A2.1 CN Rail Infrastructure Design Report
- A2.1.1 Prepare a CN Structures Rail Design Report which meets the design requirements set out in Schedule 18 of the Project Agreement and addresses the areas of safety, functionality/serviceability, durability/maintainability, and aesthetics. The report should be organized into the following major areas of the Project:
- (a) CN Rail Bridge over Pembina Highway and retaining wall west of Pembina Highway;
 - (b) CN Rail Bridge over Transitway at the CN Wye (CN Letellier);
 - (c) CN Rail Bridge over Transitway at the CN Wye (WC02 Spur);
 - (d) Transitway Underpass of CN Wye Tracks;

- (e) Letellier Grade Separation;
- (f) CN Letellier Rail Bridge over Bishop Grandin Boulevard and retaining wall south of Bishop Grandin Boulevard;
- (g) CN Letellier rail line relocation; and
- (h) all other Rail Work.

A2.1.2 Include a design report that includes, but is not limited to, the design decision process, criteria, assumptions, design notes, design codes, design loads, material information, material codes, and general information regarding the component and elements of the New Infrastructure for each major area described above.

A2.1.3 Include detailed design drawings prepared in accordance with formats and standards reflected in other similar City projects for each major area described above as follows:

- (a) all drawings, except the cover page, are to contain a title block including, at a minimum, the information shown in the attached title block which includes, but is not limited to:
 - (i) City of Winnipeg information;
 - (ii) drawing number;
 - (iii) City of Winnipeg drawing number;
 - (iv) sheet number, including total number of sheets;
 - (v) sheet title;
 - (vi) Project Name;
 - (vii) identification number;
 - (viii) name of major area of the Project;
 - (ix) Project Co tracking numbers, as required;
 - (x) Professional Engineer's seal(s);
 - (xi) Project Co Parties logos, as required;
 - (xii) released for construction date;
 - (xiii) QMS review, including "designed by", "drawn by", "checked by", and "approved by";
 - (xiv) benchmark information;
 - (xv) scale information;
 - (xvi) revision history of drawing;
 - (xvii) underground structures; and
 - (xviii) APEGM Certification of Authorization.
- (b) cover page showing:
 - (i) all relevant information noted in A2.1.3(a), as the title block is not required for the cover page; and
 - (ii) location plan showing site location relative to surrounding area.
- (c) drawing list showing:
 - (i) sheet number;

- (ii) sheet title; and
 - (iii) City of Winnipeg drawing number.
- (d) summary drawing showing:
 - (i) relevant design data;
 - (ii) relevant design notes;
 - (iii) material information;
 - (iv) abbreviations; and
 - (v) plan and profile legend.
- (e) general layout drawings showing:
 - (i) plan view including:
 - ◆ structure layout, including locations of any retaining walls or other major structural elements;
 - ◆ railway geometrics and alignment, including stationing;
 - ◆ underpassing Roadway(s) (including bikeway(s) or sidewalks(s)) or overpassing railway(s);
 - ◆ bridge and site drainage including locations of any deck drains;
 - ◆ working point locations and coordinates (UTM and/or local coordinates); and
 - ◆ utilities, noting any major conflicts.
 - (ii) elevation view including:
 - ◆ span(s), including layout of any retaining walls or other major structural elements;
 - ◆ underpassing Roadway(s) or overpassing railway(s);
 - ◆ railway and Roadway geometrics and profile;
 - ◆ vertical and horizontal clearances provided;
 - ◆ bridge components including substructure foundation types;
 - ◆ slope protection;
 - ◆ superstructure articulation system including layout of deck joints, expansion bearings and fixed bearings;
 - ◆ superstructure fixity information; and
 - ◆ elevations of major elements of the component.
- (f) site plan drawings showing:
 - (i) laydown area;
 - (ii) staging areas;
 - (iii) office facility locations;
 - (iv) access road(s);
 - (v) fencing limits;
 - (vi) gate locations;
 - (vii) staging plans as necessary to communicate how construction of adjacent components will be completed.

- (g) demolition drawings showing:
 - (i) extents;
 - (ii) dust, noise, vibration, and damage control/mitigation measures, especially with respect to adjacent Existing Infrastructure and Utility Infrastructure;
 - (iii) construction notes; and
 - (iv) shoring and excavation details;
- (h) utility drawings showing:
 - (i) all Utility Infrastructure within the site;
 - (ii) any major conflicts;
 - (iii) any relocations of Utility Infrastructure; and
 - (iv) any protective or mitigation measures to avoid damage to Utility Infrastructure.
- (i) geotechnical drawings showing:
 - (i) test hole logs;
 - (ii) site plan showing test hole locations;
 - (iii) expected settlements and mitigation measures;
 - (iv) relevant geotechnical testing information; and
 - (v) dewatering, reinforcement, and ground improvement information.
- (j) substructure drawings showing:
 - (i) bill of piles including layout, type, number, size, estimated length, estimated pile tip elevation, estimated total, and cut-off elevation;
 - (ii) general substructure and retaining wall dimensions and elevations;
 - (iii) working points;
 - (iv) plan and elevation of each substructure unit/tunnel/culvert;
 - (v) general bearing layout and anchor bolt layout;
 - (vi) detailed arrangement, dimensions, elevations, and cross-sections of each substructure unit/tunnel/culvert, with relation to control line;
 - (vii) detailed arrangement, dimensions, elevations, and cross-sections of each retaining wall;
 - (viii) detailed arrangement, dimensions, elevations, and cross-sections of all piles;
 - (ix) dimensions, elevations, and details of excavation, levelling pad, drainage, reinforcing, backfill materials (extents if multiple types), impervious membrane, cleanouts, and coping for MSE wall retaining walls;
 - (x) grading details including approach embankments and surrounding AT paths, Roadway(s), Transitway, and railway;
 - (xi) damp-proofing, water-proofing, and drainage piping details;
 - (xii) slope protection details;
 - (xiii) reinforcing details (shape, spacing, size, identification numbers, cover, lap locations, projections) and bar lists for each substructure unit and foundation elements;

- (xiv) vehicular and rail traffic collision protection details;
 - (xv) coating and sealing details;
 - (xvi) shoring and excavation details; and
 - (xvii) relevant design data, material information, and construction notes.
- (k) bearing drawings showing:
- (i) bearing layout including dimensions;
 - (ii) bearing types;
 - (iii) bearing cross-sections including anchor bolt details;
 - (iv) design loads and movement, including jacking information;
 - (v) temperature setting chart;
 - (vi) jacking, sole, and bearing plate dimensions and layout; and
 - (vii) relevant design data, material information, and construction notes.
- (l) superstructure (girder) drawings showing:
- (i) girder type, size, spacing, depth and number;
 - (ii) detailed girder details, types, identification, dimensions, and layout for the top and bottom flanges, web(s), stiffeners, bracing, struts, diaphragms, splices and splice plates, and cross frames;
 - (iii) detailed girder details, dimensions, and layout for trainman's walk, catwalks, and refuge bays;
 - (iv) camber diagrams (elevation view and tables);
 - (v) drainage hole size, layout, and spacing;
 - (vi) vehicular collision protection details;
 - (vii) coating and sealing details;
 - (viii) weld and connection details for all girder elements (including bearings); and
 - (ix) relevant design data, material information, and construction notes.
- (m) superstructure (deck) drawings showing:
- (i) control line information and railway geometrics information;
 - (ii) deck type and thickness;
 - (iii) detailed dimensions, layout, and shape of deck;
 - (iv) waterproofing details;
 - (v) haunch height information;
 - (vi) preliminary screed elevations (assumes girder sizes and behaviour exactly as designed);
 - (vii) curb, sidewalk, and barrier type, shape, and heights;
 - (viii) bridge handrail type, layout, dimensions;
 - (ix) deck pour lengths and key joint locations and details;
 - (x) drip-strip details;
 - (xi) reinforcing details (shape, spacing, size, identification numbers, cover, lap locations, projections) and bar lists; and

- (xii) relevant design data, material information, and construction notes.
- (n) railway drawings showing:
 - (i) railway geometrics and alignment, including stationing;
 - (ii) subgrade, sub-ballast, and ballast details, extents, and elevations;
 - (iii) rail shooflies;
 - (iv) rail realignments;
 - (v) rail turnouts, crossovers, and switches;
 - (vi) standard clearance envelope for rail traffic;
 - (vii) service roads; and
 - (viii) relevant design data, material information, and construction notes.
- (o) overhead or cantilever sign structure drawings showing:
 - (i) connection details to CN structures; and
 - (ii) relevant design data, material information, and construction notes.
- (p) environmental drawings showing:
 - (i) disturbance limits; and
 - (ii) erosion and sediment control methods, details, extents, and installation details.
- (q) aesthetics drawings;
- (r) rail crossing drawings showing:
 - (i) AT path and roadway geometry, alignment, and elevations;
 - (ii) rail crossing material; and
 - (iii) rail track geometry, alignment, and elevations.

A2.1.4 Include comprehensive construction specifications sufficiently detailed to describe the process or end result requirements for each major area described above.

A2.2 City Structures Design Report

A2.2.1 Prepare a City Structures Design Report, which meets the design requirements set out in Schedule 18 of the Project Agreement and addresses the areas of safety, functionality/serviceability, durability/maintainability, and aesthetics. The report should be organized into the following major areas of the Project:

- (a) AT Path Connection at Pembina;
- (b) Transitway Bridge over Pembina Highway;
- (c) Transitway Overpass of McGillivray Boulevard;
- (d) Transitway Bridge over Bishop Grandin Boulevard;
- (e) Pedestrian overpass structure and ramp to Investors Group Field;
- (f) all other City structures

- A2.2.2 Include a design report that includes, but not limited to, the design decision process, criteria, assumptions, design notes, design codes, design loads, material information, material codes, and general information regarding the component and elements of the New Infrastructure for each major area described above.
- A2.2.3 Include detailed design drawings prepared in accordance with formats and standards reflected in other similar City projects for each major area described above as follows:
- (a) all drawings, except the cover page, are to contain a title block including, at a minimum, the information shown in the attached title block which includes, but not limited to:
 - (i) City of Winnipeg information;
 - (ii) drawing number;
 - (iii) City of Winnipeg drawing number;
 - (iv) sheet number, including total number of sheets;
 - (v) sheet title;
 - (vi) Project Name;
 - (vii) identification number;
 - (viii) name of major area of the Project;
 - (ix) Project Co tracking numbers, as required;
 - (x) Professional Engineer's seal(s);
 - (xi) Project Co Parties logos, as required;
 - (xii) released for construction date;
 - (xiii) QMS review, including "designed by", "drawn by", "checked by", and "approved by";
 - (xiv) benchmark information;
 - (xv) scale information;
 - (xvi) revision history of drawing;
 - (xvii) underground structures; and
 - (xviii) APEGM Certification of Authorization.
 - (b) cover page showing:
 - (i) all relevant information noted in A2.2.3(a), as the title block is not required for the cover page; and
 - (ii) location plan showing site location relative to surrounding area.
 - (c) drawing list showing:
 - (i) sheet number;
 - (ii) sheet title; and
 - (iii) City of Winnipeg drawing number.
 - (d) summary drawing showing:
 - (i) relevant design data;
 - (ii) relevant design notes;

- (iii) material information;
 - (iv) abbreviations; and
 - (v) plan and profile legend.
- (e) general layout drawings showing:
- (i) plan view including:
 - ◆ structure layout, including locations of any retaining walls or other major structural elements;
 - ◆ railway geometrics and alignment, including stationing;
 - ◆ underpassing Roadway(s) (including bikeway(s) or sidewalks(s)) or overpassing railway(s);
 - ◆ bridge and site drainage including locations of any deck drains;
 - ◆ working point locations and coordinates (UTM and/or local coordinates); and
 - ◆ utilities, noting any major conflicts.
 - (ii) elevation view including:
 - ◆ span(s), including layout of any retaining walls or other major structural elements;
 - ◆ underpassing Roadway(s) or overpassing railway(s);
 - ◆ railway and Roadway geometrics and profile;
 - ◆ vertical and horizontal clearances provided;
 - ◆ bridge components including substructure foundation types;
 - ◆ slope protection;
 - ◆ superstructure articulation system including layout of deck joints, expansion bearings and fixed bearings;
 - ◆ superstructure fixity information; and
 - ◆ elevations of major elements of the component.
- (f) site plan drawings showing:
- (i) laydown area;
 - (ii) staging areas;
 - (iii) office facility locations;
 - (iv) access road(s);
 - (v) fencing limits;
 - (vi) gate locations;
 - (vii) staging plans as necessary to communicate how construction of adjacent components will be completed.
- (g) demolition drawings showing:
- (i) extents;
 - (ii) dust, noise, vibration, and damage control/mitigation measures, especially with respect to adjacent Existing Infrastructure and Utility Infrastructure;
 - (iii) construction notes; and

- (iv) shoring and excavation details:
- (h) utility drawings showing:
 - (i) all Utility Infrastructure within the site;
 - (ii) any major conflicts;
 - (iii) any relocations of Utility Infrastructure; and
 - (iv) any protective or mitigation measures to avoid damage to Utility Infrastructure.
- (i) geotechnical drawings showing:
 - (i) test hole logs;
 - (ii) site plan showing test hole locations;
 - (iii) expected settlements and mitigation measures;
 - (iv) relevant geotechnical testing information; and
 - (v) dewatering, reinforcement, and ground improvement information.
- (j) substructure drawings showing:
 - (i) bill of piles including layout, type, number, size, estimated length, estimated pile tip elevation, estimated total, and cut-off elevation;
 - (ii) general substructure and retaining wall dimensions and elevations;
 - (iii) working points;
 - (iv) plan and elevation of each substructure unit/tunnel/culvert;
 - (v) general bearing layout and anchor bolt layout;
 - (vi) detailed arrangement, dimensions, elevations, and cross-sections of each substructure unit/tunnel/culvert, with relation to control line;
 - (vii) detailed arrangement, dimensions, elevations, and cross-sections of each retaining wall;
 - (viii) detailed arrangement, dimensions, elevations, and cross-sections of all piles;
 - (ix) dimensions, elevations, and details of excavation, levelling pad, drainage, reinforcing, backfill materials (extents if multiple types), impervious membrane, cleanouts, and coping for MSE wall retaining walls;
 - (x) details of integral or semi-integral abutment system;
 - (xi) grading details including approach embankments and surrounding AT paths, Roadway(s), Transitway, and railway;
 - (xii) damp-proofing, water-proofing, and drainage piping details;
 - (xiii) slope protection details;
 - (xiv) reinforcing details (shape, spacing, size, identification numbers, cover, lap locations, projections) and bar lists for each substructure unit and foundation elements;
 - (xv) coating and sealing details;
 - (xvi) shoring and excavation details; and
 - (xvii) relevant design data, material information, and construction notes.
- (k) bearing drawings showing:

- (i) bearing layout including dimensions;
 - (ii) bearing types;
 - (iii) bearing cross-sections including anchor bolt details;
 - (iv) design loads and movement, including jacking information;
 - (v) temperature setting chart;
 - (vi) jacking, sole, and bearing plate dimensions and layout; and
 - (vii) relevant design data, material information, and construction notes.
- (l) superstructure (girder) drawings showing:
- (i) girder type, size, spacing, depth and number;
 - (ii) detailed girder details, types, identification, dimensions, and layout for the top and bottom flanges, web(s), stiffeners, bracing, struts, diaphragms, splices and splice plates, and cross frames;
 - (iii) detailed girder details, dimensions, and layout for trainman's walk, catwalks, and refuge bays;
 - (iv) camber diagrams (elevation view and tables);
 - (v) drainage hole size, layout, and spacing;
 - (vi) vehicular collision protection details;
 - (vii) coating and sealing details;
 - (viii) weld and connection details for all girder elements (including bearings); and
 - (ix) relevant design data, material information, and construction notes.
- (m) superstructure (deck) drawings showing:
- (i) control line information and railway geometrics information;
 - (ii) deck and wearing surface type and thickness;
 - (iii) detailed dimensions, layout, and shape of deck and end diaphragms;
 - (iv) waterproofing and wearing surface details;
 - (v) haunch height information;
 - (vi) preliminary screed elevations (assumes girder sizes and behaviour exactly as designed);
 - (vii) curb, sidewalk, and barrier type, shape, and heights;
 - (viii) bridge pedestrian handrail type, layout, dimensions;
 - (ix) deck pour lengths and key joint locations and details;
 - (x) drip-strip details;
 - (xi) detailed dimensions, layout, shape, and connection details for the roof/approach/transition slabs and approach roadway barriers;
 - (xii) approach guardrail type, details, dimensions, and connection details;
 - (xiii) reinforcing details (shape, spacing, size, identification numbers, cover, lap locations, projections) and bar lists; and
 - (xiv) relevant design data, material information, and construction notes.
- (n) expansion joint and barrier cover plate drawings showing:

- (i) expansion joint layout including sizes, dimensions, and elevations;
 - (ii) expansion joint types;
 - (iii) cross-sections including nelson stud details;
 - (iv) connection details to deck and barriers including mounting plates;
 - (v) design movement and temperature setting chart;
 - (vi) jacking, sole, and bearing plate dimensions and layout; and
 - (vii) relevant design data, material information, and construction notes.
- (o) overhead or cantilever sign structure drawings showing:
- (i) substructure horizontal clearance from Roadway, type and material;
 - (ii) superstructure vertical clearance, type and material;
 - (iii) foundation type, depths, dimensions and locations;
 - (iv) connection details to CN or City structures;
 - (v) barrier/guardrail details;
 - (vi) relevant design data, material information, and construction notes.
- (p) environmental drawings showing:
- (i) disturbance limits; and
 - (ii) erosion and sediment control methods, details, extents, and installation details.
- (q) aesthetics drawings;

A2.2.4 Include comprehensive construction specifications sufficiently detailed to describe the process or end result requirements for each major area described above.

A2.3 Transitway and Roadway Infrastructure Design Report

- A2.3.1 Prepare a Transitway and Roadway Infrastructure Design Report, which meets the design requirements set out in Schedule 18 of the Project Agreement and addresses the areas of safety, functionality/serviceability, durability/maintainability, and aesthetics. The report should be organized into the following major areas of the Project:
- (a) Pembina Highway Underpass and improvements;
 - (a) Transitway, Park and Ride facilities; and associated works;
 - (b) pavement design;
 - (c) AT path/universal design;
 - (d) drainage;
 - (e) U of M Southwood Lands infrastructure to support IGF Station;
 - (f) All other Transitway and Roadway Infrastructure.

- A2.3.2 Include a design report that includes, but not limited to, the design decision process, criteria, assumptions, design notes, design codes, design loads, material information, material codes, and general information regarding the component and elements of the New Infrastructure for each major area described above.
- A2.3.3 Include detailed design drawings prepared in accordance with formats and standards reflected in other similar City projects for each major area described above as follows:
- (a) all drawings, except the cover page, are to contain a title block including, at a minimum, the information shown in the attached title block which includes, but not limited to:
 - (i) City of Winnipeg information;
 - (ii) drawing number;
 - (iii) City of Winnipeg drawing number;
 - (iv) sheet number, including total number of sheets;
 - (v) sheet title;
 - (vi) Project Name;
 - (vii) identification number;
 - (viii) name of major area of the Project;
 - (ix) Project Co tracking numbers, as required;
 - (x) Professional Engineer's seal(s);
 - (xi) Project Co Parties logos, as required;
 - (xii) released for construction date;
 - (xiii) QMS review, including "designed by", "drawn by", "checked by", and "approved by";
 - (xiv) benchmark information;
 - (xv) scale information;
 - (xvi) revision history of drawing;
 - (xvii) underground structures; and
 - (xviii) APEGM Certification of Authorization.
 - (b) cover page showing:
 - (i) all relevant information noted in A2.3.3(a), as the title block is not required for the cover page; and
 - (ii) location plan showing site location relative to surrounding area.
 - (c) drawing list showing:
 - (i) sheet number;
 - (ii) sheet title; and
 - (iii) City of Winnipeg drawing number.
 - (d) summary drawing showing:
 - (i) relevant design data;
 - (ii) relevant design notes;

- (iii) material information;
 - (iv) abbreviations; and
 - (v) plan and profile legend.
- (e) general layout drawings:
- (f) site plan drawings showing:
- (i) laydown area;
 - (ii) staging areas;
 - (iii) office facility locations;
 - (iv) access road(s);
 - (v) fencing limits, as required;
 - (vi) gate locations, as required;
 - (vii) staging plans as necessary to communicate how construction of adjacent components will be completed.
- (g) utility drawings showing:
- (i) all Utility Infrastructure within the site;
 - (ii) any major conflicts;
 - (iii) any relocations of Utility Infrastructure; and
 - (iv) any protective or mitigation measures to avoid damage to Utility Infrastructure.
- (h) roadway drawings showing:
- (i) removals;
 - (ii) all significant horizontal and vertical geometric design data;
 - (iii) profile;
 - (iv) alignment;
 - (v) lane widths;
 - (vi) clearances at structures;
 - (vii) cross-sections;
 - (viii) elevations;
 - (ix) functional classification of all elements;
 - (x) design speed;
 - (xi) approximate limits of construction;
 - (xii) retaining walls, slope stabilization or other geotechnical features;
 - (xiii) underground drainage facilities;
 - (xiv) side slopes;
 - (xv) barrier locations and types used for protection of traffic;
 - (xvi) measures taken to ensure sight distances at intersections;

- (xvii) connection to side streets or city transportation routes;
- (xviii) dimensioned jointing design;
- (xix) roadway widening and traffic staging;
- (xx) curbside and median barrier systems including median treatments and end treatments;
- (xxi) pavement markings at every stage of the project;
- (xxii) roadside safety devices;
- (xxiii) provision for future roadway expansion;
- (xxiv) signals;
- (xxv) signage;
- (xxvi) lighting systems including details of pole structures and offsets;
- (xxvii) other traffic devices and/or features within the Construction Period Lands;
- (xxviii) transit shelters and bus lanes along Roadways;
- (xxix) detailed roadway element information including, but not limited to:
 - ◆ reinforced concrete;
 - ◆ plain doweled concrete;
 - ◆ asphalt pavement;
 - ◆ milling areas;
 - ◆ curb (including type and reveal height);
 - ◆ median;
 - ◆ bullnose;
 - ◆ curb ramp;
 - ◆ detectible warning tiles;
 - ◆ sidewalk;
 - ◆ monolithic curb and sidewalk;
 - ◆ manholes;
 - ◆ catch basins/pits;
 - ◆ sub-drains;
 - ◆ tree isolations;
 - ◆ geotextile fabric or grid;
 - ◆ safety median;
 - ◆ paving stone indicator strips;
 - ◆ splash strip; and
 - ◆ curb and gutter (including type and reveal height).

- (i) Municipal utility drawings showing:

- (i) combined sewer renewal works;
- (ii) pump station and pond works
- (iii) stormwater management facilities;
- (iv) storm sewers;
- (v) open ditches;
- (vi) catch basins;
- (vii) third-party drainage arrangements planned;
- (viii) sub-drainage;
- (ix) erosion control features;
- (x) an area wide drainage plan, with pre and post construction drainage patterns identified;
- (xi) all drainage connections that tie into the City's existing land drainage system;
 - (i) off-site drainage arrangements that relate directly or indirectly to the Project; and
 - (ii) protection of large diameter pipes, feedermain, and aqueducts.
- (j) Pump stations showing all items listed in Schedule 18 Section C10.6.3.
- (k) AT path/universal design drawings showing:
 - (i) pedestrian sidewalks and crossings;
 - (ii) AT Path Connection at Pembina;
 - (iii) pedestrian handrails;
 - (iv) AT paths;
 - (v) cycling lanes and crossings;
 - (vi) universal design;
 - (vii) signals;
 - (viii) signage; and
 - (ix) lighting and sightlines as they relate to personal safety.
- (l) Park and Ride facilities and parking lots showing:
 - (i) removals;
 - (ii) all significant horizontal and vertical geometric design data;
 - (iii) driving lane and stall widths;
 - (iv) cross-sections;
 - (v) elevations;
 - (vi) approximate limits of construction;
 - (vii) underground drainage facilities;
 - (viii) parking fences;
 - (ix) lighting;

- (x) line painting; and
- (xi) protection of transmission towers, as required.

A2.3.4 Include comprehensive construction specifications sufficiently detailed to describe the process or end result requirements for each major area described above.

A2.4 Transitway Stations Design Report

A2.4.1 Prepare a Transitway Stations Design Report, which meets the design requirements set out in Schedule 18 of the Project Agreement and addresses the areas of safety, functionality/serviceability, durability/maintainability, and aesthetics. The report should be organized into the following major areas of the Project:

- (a) Stations on Transitway between Jubilee Avenue and Markham Road, and to the intersection of Southpark Drive and Pembina Highway;
- (b) Stations on U of M Southwood Lands between Pembina Highway and University Crescent;
- (c) Stations within U of M Campus;
- (d) IGF Station;
- (e) all other Transitway stations.

A2.4.2 Include a design report that includes, but not limited to, the design decision process, criteria, assumptions, design notes, design codes, design loads, material information, material codes, and general information regarding the component and elements of the New Infrastructure for each major area described above.

A2.4.3 Include detailed design drawings prepared in accordance with formats and standards reflected in other similar City projects for each major area described above as follows:

- (a) all drawings, except the cover page, are to contain a title block including, at a minimum, the information shown in the attached title block which includes, but not limited to:
 - (i) City of Winnipeg information;
 - (ii) drawing number;
 - (iii) City of Winnipeg drawing number;
 - (iv) sheet number, including total number of sheets;
 - (v) sheet title;
 - (vi) Project Name;
 - (vii) identification number;
 - (viii) name of major area of the Project;
 - (ix) Project Co tracking numbers, as required;
 - (x) Professional Engineer's seal(s);
 - (xi) Project Co Parties logos, as required;
 - (xii) released for construction date;
 - (xiii) QMS review, including "designed by", "drawn by", "checked by", and "approved by";

- (xiv) benchmark information;
 - (xv) scale information;
 - (xvi) revision history of drawing;
 - (xvii) underground structures; and
 - (xviii) APEGM Certification of Authorization.
- (b) cover page showing:
- (i) all relevant information noted in A2.4.3(a), as the title block is not required for the cover page; and
 - (ii) location plan showing site location relative to surrounding area.
- (c) drawing list showing:
- (i) sheet number;
 - (ii) sheet title; and
 - (iii) City of Winnipeg drawing number.
- (d) summary drawing showing:
- (i) relevant design data;
 - (ii) relevant design notes;
 - (iii) material information;
 - (iv) abbreviations; and
 - (v) plan and profile legend.
- (e) general layout drawings;
- (f) site plan drawings showing:
- (i) laydown area;
 - (ii) staging areas;
 - (iii) office facility locations;
 - (iv) access road(s);
 - (v) fencing limits;
 - (vi) gate locations;
 - (vii) staging plans as necessary to communicate how construction of adjacent components will be completed.
- (g) utility drawings showing:
- (i) all Utility Infrastructure within the site;
 - (ii) any major conflicts;
 - (iii) any relocations of Utility Infrastructure; and
 - (iv) any protective or mitigation measures to avoid damage to Utility Infrastructure.
- (h) Transitway station drawings showing:

- (i) layout, dimensions, details, and materials for the station elements and components outlined in Schedule 18, Table 6, Section 9.4; Section 9.5.3, and Section 9.6; and
- (ii) final design for the station elements and components outlined in Schedule 18 and Section 9.4; Section 9.5.3, and Section 9.6, Table 6.

A2.4.4 Include comprehensive construction specifications sufficiently detailed to describe the process or end result requirements for each major area described above.

A2.5 Aesthetics and Landscaping Design Report

A2.5.1 Prepare an Aesthetics and Landscaping Design Report, which meets the design requirements set out in Schedule 18 of the Project Agreement and addresses the areas of safety, functionality/serviceability, durability/maintainability, and aesthetics. The report should be organized into the following major areas of the Project:

- (a) strategic plantings;
- (b) plantings at transit stations;
- (c) benches and other hardscape features along the Transitway;
- (d) features to announce important locations;
- (e) Brenda Leipsic Dog Park;
- (f) all other aesthetics and landscaping.

A2.5.2 Include a design report that includes, but not limited to, the design decision process, criteria, assumptions, design notes, design codes, design loads, material information, material codes, and general information regarding the component and elements of the New Infrastructure for each major area described above.

A2.5.3 Include detailed design drawings prepared in accordance with formats and standards reflected in other similar City projects for each major area described above as follows:

- (a) all drawings, except the cover page, are to contain a title block including, at a minimum, the information shown in the attached title block which includes, but not limited to:
 - (i) City of Winnipeg information;
 - (ii) drawing number;
 - (iii) City of Winnipeg drawing number;
 - (iv) sheet number, including total number of sheets;
 - (v) sheet title;
 - (vi) Project Name;
 - (vii) identification number;
 - (viii) name of major area of the Project;
 - (ix) Project Co tracking numbers, as required;
 - (x) Professional Engineer's seal(s);
 - (xi) Project Co Parties logos, as required;

- (xii) released for construction date;
 - (xiii) QMS review, including “designed by”, “drawn by”, “checked by”, and “approved by”;
 - (xiv) benchmark information;
 - (xv) scale information;
 - (xvi) revision history of drawing;
 - (xvii) underground structures; and
 - (xviii) APEGM Certification of Authorization.
- (b) cover page showing:
- (i) all relevant information noted in A2.5.3(a), as the title block is not required for the cover page; and
 - (ii) location plan showing site location relative to surrounding area.
- (c) drawing list showing:
- (i) sheet number;
 - (ii) sheet title; and
 - (iii) City of Winnipeg drawing number.
- (d) summary drawing showing:
- (i) relevant design data;
 - (ii) relevant design notes;
 - (iii) material information;
 - (iv) abbreviations; and
 - (v) plan and profile legend.
- (e) general layout drawings;
- (f) site plan drawings showing:
- (i) laydown area;
 - (ii) staging areas;
 - (iii) office facility locations;
 - (iv) access road(s);
 - (v) fencing limits;
 - (vi) gate locations;
 - (vii) staging plans as necessary to communicate how construction of adjacent components will be completed.
- (g) utility drawings showing:
- (i) all Utility Infrastructure within the site;
 - (ii) any major conflicts;
 - (iii) any relocations of Utility Infrastructure; and
 - (iv) any protective or mitigation measures to avoid damage to Utility Infrastructure.

(h) aesthetics and landscaping drawings showing:

- (i) summary of the approach identifying major elements to be included for each Transitway station, IGF Station, U of M Station, park and ride lots, active transportation paths, structures, tunnels, and noise attenuation walls; and
- (ii) final plan including illustrative examples of treatments at each Transitway station, IGF Station, U of M Station, park and ride lots, active transportation paths, structures, tunnels, and noise attenuation walls.

A2.5.4 Include comprehensive construction specifications sufficiently detailed to describe the process or end result requirements for each major area described above.

A2.6 Utility Infrastructure Report

A2.6.1 Prepare a Utility Infrastructure Report, which meets the design requirements set out in Schedule 18 of the Project Agreement and addresses the areas of functionality/serviceability. The report should be organized into the following major areas of the Project:

- (a) Manitoba Hydro;
- (b) MTS Allstream Inc.;
- (c) Shaw Communications Inc.;
- (d) Pembina Trails School Division;
- (e) Teraspan;
- (f) Rogers;
- (g) Bell;
- (h) Telus;
- (i) City of Winnipeg other utility work; and
- (j) all other Utility Infrastructure required to be relocated as part of the New Infrastructure, excluding municipal utilities included as outlined above.