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# MUNICIPAL DEVELOPMENT STANDARDS

**CHANGE LOG – MARCH 2014 TO SEPTEMBER  
2020**

October 2020

Planning & Engineering

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## CHANGE LOG

This document summarizes the changes made from the March 2014 version of the Municipal Development Standards (MDS). Section numbers in **bold** are referenced to the version released in 2020, all others are referenced to the March 2014 revision. Many section numbers will have changed in the 2020 version of the MDS, refer to the table of contents for each section for the revised numbers.

### General:

- All references to the City's departments or representatives have been changed to "the City", unless explicitly referring to an individual; and
- Updated references to Standard Drawings to specify which drawings, where applicable.

### Section 1.1 Foreword:

- Added that the MDS represents the minimum requirements acceptable to the City and are not meant to limit creativity and innovation in design.

### Section 1.2.1 Municipal Development Standards:

- Added that the MDS also applies to construction.

### Section 1.4 Definitions:

- Removed all references to Rural Residential;
- Removed Canada Post mailboxes from definition of Municipal Improvements;
- Removed definition of Foreman;
- Removed definition of Engineer;
- Changed Rural services definition to be City owned water and sewage, with storm runoff going to ditches;
- Changed Redline Drawings definition to allow for annotations to be handwritten;
- Changed Commercial/Industrial definition to match that of the Land Use Bylaw;
- Added City departments, employees and representatives to the definition of City;
- Added definition for Erosion and Sedimentation Control Plan;
- Added definition for Landscape Architect;
- Added definition for Professional Engineer;
- Added definition for Qualified Person; and
- Expanded definitions of Construction Completion Certificate and Final Acceptance Certificate.

### Section 1.5 Reference Materials:

- Added Stormwater Management Guidelines for the Province of Alberta, City of Edmonton's Erosion and Sedimentation Control Guidelines & Field Manual, Alberta Transportation's Traffic Accommodation in Work Zones and the Master Plans to the reference material list; and
- Updated referenced WSA design standards.

### Renamed Section 1.6 to Local Authority Freedom of Information and Protection of Privacy Act

- Changed references to the Saskatchewan *Freedom of Information and Protection of Privacy Act* to the *Local Authority Freedom of Information and Protection of Privacy Act (LAFOIP)*.

### Section 2.1 General:

- Moved reference to the Land Use Bylaw to Section **11**;
- Added reference to the City's Master Plans;
- Added the requirement for new developments within a neighbourhood to be in compliance with the Area Structure Plan and Outline Plan. Deviations must be justified prior to approval, and may require an amendment to the ASP or OP. If there is no ASP or OP, the Developer must prepare one as per the City's current ASP Policy;
- Added the content of Section 2.3.7 Reference Standards;
- Added the responsibility of the Developer to be familiar with the City's approved plans, policies and processes;
- Added the requirement for construction of new water mains and/or sewage mains to be in compliance with the requirements of the Saskatchewan Environmental Code

- Added identification of Development Agreement and Development Permit level developments, and identified the section applicable to Development Permits; and
- Changed the name of the land development guideline document to the Municipal Planning Process: A Community Guide.

Section 2.2.1 Detailed Engineering Drawings, Specifications and Landscape Plans:

- Added the requirement for subdivision application to be conditionally approved prior to approval of detailed engineering drawings;
- Added the requirement for an Erosion and Sedimentation Control Plan to be submitted as part of approvals;
- Removed the requirement for CAD drawings to be submitted at the approval stage;
- Removed the requirement for physical/hard copy submissions;
- Changed Engineering Drawings to detailed design drawings;
- Changed Landscape Consultant to Landscape Architect, and requirement to stamped;
- Removed the requirement to supply tender documents;
- Changed Permit to Construct to Acceptance of Notification;
- Added the requirement to submit asphalt and concrete mix designs prior to construction;
- Added the content of Section 2.3.6 Requirements for Geotechnical Reports;
- Clarified a Certificate of Compliance is required for design submissions; and
- Moved CAD drawing requirements to Section **2.3.2**.

Section 2.2.2 Approval by the City:

- Clarified that Engineering approval of design drawings does not constitute approval to commence construction;
- Design changes in subsequent submissions must now be identified in a letter, not highlighted in yellow; and
- Reference to red line changes removed for clarity.

Deleted Section 2.2.3 Review Costs.

Section 2.2.4 Design Revisions after Approval:

- Added a requirement for a Certificate of Compliance to accompany revision submissions, unless there is a deviation from the Standards;
- Removed the requirement for physical/hard copies of the drawings; and
- Added that the Engineer may waive the requirement for revision drawings of the changes are deemed minor.

Section 2.2.6 Approval to Construct from the Water Security Agency of Saskatchewan renamed and renumbered to **2.2.5** Compliance with The Saskatchewan Environmental Code and updated to reflect the requirements of the Environmental Code. Added subsections **2.2.5.1** Acceptance of Notification, **2.2.5.2** Reporting Requirements, **2.2.5.3** Certification of Design and Commissioning, and **2.2.5.4** Required Records.

Removed Section 2.2.9 Acts, Bylaws and Standards and added to Section 1.5.

Section 2.3.2 Responsibility for Existing Structures and Utilities renumbered to Section **2.4.10.2**

Section 2.3.3 Format for Engineering Drawings:

- Specified CAD format drawings pertaining to Municipal Improvements must conform to the current version of the City of Lloydminster Municipal Civil 3D and AutoCAD Standards, and that key items are highlighted in the following sections;
- Clarified PDF format drawings must be generated using AutoCAD's "DWG to PDF" function; and
- Updated sub-sections 2.3.3.1 Coordinate System/Survey Control and 2.3.2.2 Standard Files/Templates to reflect the wording in the CAD standards.

Section 2.3.4 Drawing Standards:

- Removed sub-sections 2.3.4.3 Layer Naming Convention and Master Layer Listing, 2.3.4.4 Standard Symbol Library, 2.3.4.5 Text Styles, 2.3.4.6 Page/Layout Naming, 2.3.4.7 Acceptable Project Drawing Workflow, 2.3.4.8 Plot Style, and 2.3.4.10 Manhole, Catch Basin, Hydrant and Valve Numbering.

Section 2.3.4.2 Sheet Sizes/Title Blocks:

- Identified A1 as the standard sheet size for drawing submissions.

Section 2.3.5.1 Cover Page:

- Added the requirement to include the City's project number and notification number(s) from the WSA.

Section 2.3.5.3 Site Plan:

- Added the requirement to include the notification number(s) from the WSA; and
- Added the requirement to show any existing vegetation, furniture or amenities that are to remain.

Section 2.3.5.4 Storm Water Management Plan:

- Added the requirement for pipe data to include the percentage of pipe capacity utilized by the design flows;
- Clarified the hydraulic grade line for the Major System is the from the 1:100 year storm; and
- Added that the required information can be shown on more than one drawing.

Section 2.3.5.5 Water-Sanitary-Storm Plan/Profiles:

- Added the requirement that chainage on a single street must be continuous across multiple plan and profile drawings, if they are required.

Added Section **2.3.4.5** Sanitary Servicing Plan:

- Added the requirement to include the notification number from the WSA; and
- Added a sanitary servicing plan to the required drawings, showing the design and calculations of the sanitary sewer system.

Added Section **2.3.4.6** Water Servicing Plan:

- Added the requirement to include the notification number from the WSA; and
- Added a water servicing plan to the required drawings, showing the design and calculations of the water distribution system.

Section 2.3.5.6 Surface Works (Transportation) and Lot Grading Drawings:

- Added requirement for a Grade Slip drawing for each lot at time of application for Development Permits to be issued for the subdivision, and detailed what the Grade Slip drawings will contain; and
- Added explanation that the minimum garage slab elevation is calculated by adding 0.36 metres to the design elevation of the adjacent property corner.

Section 2.3.5.7 renamed to Traffic Control Plan;

Section 2.3.5.8 Landscaping:

- Added 1:200 and 1:250 as permitted drawing scales; and
- Expanded the requirements for landscaping drawings.

Section 2.3.5.9 Details:

- Added the requirement to include relevant Standard Drawings in the Issued for Construction drawing set.

Removed Section 2.3.6 Requirements for Geotechnical Reports and added to Section 2.2.1.

Removed Section 2.3.7 Reference Standards and added to Section 2.1.

Section 2.4.1 Occupational Health and Safety:

- Removed requirement for Developer to follow the City's Safety Management System.

Section 2.4.2 Project Supervision:

- Changed responsibility of the Consultant to provide adequate supervision during construction and to be on site at all times during installation of lot services to the Developer.

Section 2.4.3 Right-of-Way Documents:

- Added that the right of way alignment and approvals can be contained within the Development Agreement.

Section 2.4.4 Construction Approval:

- Added receipt of required documents, requirement for written approval from the City and compliance with the conditions of the DA, removed the payment of a security deposit;
- Added the requirement for a copy of the approved drawings and specifications to be maintained at the construction site during the installation of Municipal Improvements; and
- Added that the approved construction drawings do not need to include design data (e.g. calculations)

Section 2.4.5 Construction Commencement Notice:

- Required notice for construction commencement reduced to one (1) week.

Section 2.4.6 Stockpile Locations renumbered to **2.4.7** and:

- Section renamed to Stockpile Locations and Site Stripping; and
- Added allowance for stripping and rough grading to commence prior to subdivision approval, under a Development Permit.

Section 2.4.7 Barricades, Guards and Safety Provisions renumbered to **2.4.9**.

Section 2.4.8 Erosion and Sedimentation Control:

- Added the requirement for developers to submit an ESC plan for review by the City as part of the detailed design and referred to Section **5.8** for details.

Section 2.4.9.1 Approvals:

- Clarified Excavation Permits are obtained from Planning & Development; and
- Clarified permits must be obtained five working days prior to work commencing.

Section 2.4.9.3 Utility Disruption:

- Added Water Services to be contacted in emergency situations.

Added Section **2.4.10.5** Traffic Accommodation Strategy:

- Added the requirement to submit a Traffic Accommodation Strategy to Engineering Services for review and approval a minimum of 15 working days before commencement of construction for work on collectors or arterials.

Added Section **2.4.10.6** Utility Connections:

- Added the requirement for a representative of Engineering Services to be present to witness and inspect all connection to City mains.

Section 2.4.10 Temporary Water:

- Clarified it is the Developer's responsibility to provide and maintain temporary water services.

Section 2.4.11 Pre-Construction Meetings renumbered to **2.4.5** and:

- Removed the requirement for the City to be invited to subsequent progress meetings.

Section 2.4.13 Survey Monument Control:

- Changed the requirement of the Developer to extend the survey network to pay the fees associated with the City arranging the work; and
- Changed minimum spacing of survey control markers to be 800 metres.

Added Section **2.4.14** Dewatering Operations:

- Added the requirement for the Wastewater Collection Supervisor to be contacted prior to commencing pumping;
- Added the requirement to receive approval from the Saskatchewan WSA or Alberta Environment and Parks prior to dewatering an existing body of water.

Section 2.5 Construction Completion Certificate and Final Acceptance Certificate Inspections:

- Added requirement to submit a completed Pre-Inspection Checklist with the inspection request, which must be in writing;
- Added requirement for FAC inspections to be arranged at least one week in advance, and no more than thirty days prior to the end of the warranty period;
- Added clarification that the Engineering Consultant is responsible to certify general conformance to the approved drawings; and
- Added requirement for Developer to ensure that any surfaces or appurtenances to be inspected have been cleaned prior to inspection.

Added Sections **2.5.1** Underground Construction, **2.5.2** Surface Works, and **2.5.3** Landscaping, detailing inspection requirements and typical items inspected for each.

Section 2.6.1 Underground Construction:

- Clarified certification of work being completed as per the drawings and MDS is the Construction Completion Certificate;
- Removed the requirement for physical/hard copies of the submissions;
- Added requirement for as-built survey files and as-built worksheet to be submitted; and
- Added requirement for video inspection results to be submitted.

Section 2.6.2 Surface Construction:

- Clarified certification of work being completed as per the drawings and MDS is the Construction Completion Certificate;
- Removed the requirement for physical/hard copies of the submissions; and
- Added requirement for as-built survey files and as-built worksheet to be submitted.

Section 2.6.3 Landscape Construction:

- Expanded the section to describe the acceptance process for landscaped areas.

Section 2.6.4 As-built Bill of Materials:

- Changed submission requirement from Final Acceptance to Construction Completion; and
- Added the requirement for a digital spreadsheet to be submitted.

Renamed Section 2.6.6 Additional Information to Record (As-Built) Drawings:

- Added commercial/industrial service stubs to items to be included;
- Clarified dimensions are to be referenced to property lines; and
- Added the requirement that the Engineering Consultant initial the drawings, to verify they have been reviewed.

Section 2.6.7 As-built Survey:

- Added requirement for the City's point codes to be used in the submitted file.

Section 2.6.8 Lateral Service Cards:

- Clarified section applies to service stubs, and that the templates are available as identified in Section **2.3.2.2**.

Removed Sections 2.6.9 Drawings and 2.6.10 Dimensions and incorporated into Section 2.6.6.

Section 2.7 Construction Completion Certificate:

- Changed “Bonding” to “Security” and “Landscape” to “Landscape Architect”.

Section 2.8 Warranty Period:

- Defined the timelines in which significant defects must be repaired and added allowance for the City to have repairs done in an emergency.

Section 2.9 Final Acceptance Certificate:

- Moved the submission requirement for as-built survey files, as-built worksheets, and video inspection results to the CCC stage;
- Removed the requirement for physical/hard copies of the submissions, except O&M manuals;
- Removed the requirement for a Certificate of Compliance; and
- Clarified Record Drawings are as-built and must be initialled, not stamped, by the Engineering Consultant.

Section 2.10 Building Permits renamed to Development Permits and:

- Changed Building Permits to Development permits; and
- Added Grade Slips and the final design drawings for the Lot Grading to the submission requirements for Development Permits to be issued in the subdivision.

Section 3.2 Traffic & Transportation:

- Clarified that designs be consistent with the current version of the Transportation Master Plan; and
- Removed description of the factors affecting roadway capacity and safety.

Section 3.3.2 Arterial Road:

- Removed freeways as a connecting roadway type.

Section 3.3.3 Collector Road:

- Added restriction that no driveways will be permitted on collector roadways, unless it can be demonstrated that the roadway will carry less than 4000 vehicles per day under the ultimate condition.

Section 3.3.5 Angle Parking:

- Added that angle parking may be permitted in redevelopment areas where it is shown to be advantageous but would need to follow the standards deviation process.

Table 3.1 Road Classifications and Geometric Guidelines:

- Updated to reflect changes in Standard Drawings and moved into Appendix **3A**.

Added Section 3.4 Traffic Impact Assessment:

- Details when a traffic impact assessment will be required, and the standards to follow in its creation.

Section 3.4 Pavement Structures:

- Changed to reference Section 2.2.1 for geotechnical report requirements;
- Added recycled asphalt pavement as an alternative to aggregate;
- Increased minimum asphalt thickness to 120 mm unless the geotechnical report indicates otherwise;
- Clarified the second lift of asphalt should be placed no more than 30 days prior to expiry of the warranty period; and
- Added that the final lift must be placed prior to Final Acceptance.

Section 3.5.1 General:

- Added requirement for road construction to follow the specifications in Appendices **3B** and **3C**.

Section 3.5.2 Temporary Roads and Access:

- Clarified approval for temporary roads, accesses and detours are part of the TAS.

Section 3.5.3 Dust Control, Street Cleaning and Snow Removal:

- Added reference to Erosion and Sedimentation Control Plan when ensuring silt and debris cannot enter catch basins within new development areas; and
- Added reference to Section **11.9.1**, where the developers of adjacent lots also have responsibility to keep infrastructure free of debris.

Section 3.5.4 Maintenance of Existing Utilities:

- Added the requirement to restore a disturbed road surface or concrete within four weeks of subsurface work being complete.

Replaced Section 3.6.2 Concrete with Sections **3.7.2.1** Concrete Design and **3.7.2.2** Deficiencies:

- Added requirement for concrete mix designs to be submitted to Engineering Services for review a minimum of 14 days prior to initial concrete placement;
- Removed the requirement for concrete to achieve 20 mPa within 7 days;
- Changed slump to be 50-110 mm for hand placed concrete and 10-40 mm for extruded; and
- Added rejection thresholds for deficient concrete.

Replaced Section 3.6.3 Asphalt with Sections **3.7.3.1** Pavement Design and **3.7.3.2** Deficiencies:

- Content of Section 3.6.3 moved to Appendix **3B.3**; and
- Refers to Appendix **3B.1** for minimum specifications for the design of asphalt pavement structure, and details rejection thresholds for deficient asphalt.

Section 3.8 Roadway Illumination:

- Clarified that street light plans should be prepared in conformance with TAC guidelines;
- Added requirement to include tie-in points to existing roadways in the illumination design;
- Add requirement for street light cables to be installed underground where possible, and crossings of roadways or driveways to be placed in conduit; and
- Removed requirement for internal park illumination.

Section 3.9 Sound Abatement:

- Added the requirement for noise attenuation fencing along with berms;
- Added railways to the list of features adjacent to a development that will trigger the need for a noise study;
- Referenced landscaping standards for fencing requirements; and
- Allowed for alternative sound barrier fences to be proposed.

Section 3.11 Lanes:

- Reduced maximum length of a lane between streets to be 175 m from any one point to a connection to the street;
- Reduced minimum grade to 0.8%; and
- Removed maximum length of drainage requirement.

Section 3.12 Cul-de-sacs:

- Added garbage collection vehicles in the turning movements that must be permitted by the cul-de-sac; and
- Removed requirement for catch basins on islands.

Section 3.13 Intersections:

- Added a minimum curb return radius of 7.0 m in residential areas where parking is permitted in the curb lane of both roadways.

Renumbered Section 3.14 Approaches and Driveways to **11.7.1.4**.



Renumbered Section 3.14.1 Residential Driveways to **11.7.1.4.1** and:

- Removed manholes and catch basins from structures that must be clear of driveways;
- Added reference to a maximum preferred driveway slope of 8.3%, with slopes in excess of 10.0% requiring approval from Engineering Services (Section **11.7.1.1**);
- Added a requirement for shared spaces between driveways to convey drainage to the street; and
- Added a restriction on driveways on collectors unless the volumes are less than 4000 vehicles per day.

Renumbered Section 3.14.2 Commercial/Industrial Driveways to **11.7.1.4.2** and:

- Renamed to Commercial/Industrial Approaches; and
- Added the requirement for forms to be inspected prior to pouring where curb and gutter are removed.

Renamed Section 3.15 to Walkway Systems.

Section 3.15.2 Trails:

- Added that a sidewalk on one side of a collector or industrial/commercial roadway may be replaced with a trail and must be placed on one side of an arterial roadway.

Added Section **3.16** Roundabouts:

- Details for the design parameters for roundabouts.

Added Section **3.17** Speed Controls for New Residential Neighbourhoods:

- Added requirements for speed control measures on new residential roadways.

Added Appendices **3B.1** Placing, **3B.2** Temperature, **3B.3** Testing and Inspection, and **3B.4** Finishing:

- Details minimum specifications for the placement of concrete.

Added Appendices **3C.1** Pavement Design, **3C.1.1** Aggregates, **3C.1.2** Mineral Filler, **3C.1.3** Bituminous Binder, and **3C.1.4** Asphalt Mix:

- Provides detailed design specifications for asphalt mix design.

Added Appendix **3C.2** Road base and Subgrade Preparation:

- Details minimum specifications for the preparation of the road base and subgrade.

Added Appendix **3C.3** Asphalt Placement:

- Details minimum specifications for the placement of asphalt; and
- Changed the requirement for second lift of asphalt to be placed after the expiry of the warranty to that it should be placed prior.

Section 4.2 Design Flow:

- Added that the design must be in accordance with the Sewage Works Design Standard; and
- Added that the Consultant must provide a statement that the receiving system is of sufficient capacity to convey the increased flows.

Section 4.2.1 Domestic Contribution:

- Changed average contribution to 320 L/c/d; and
- Changed minimum peak factor to 2.5.

Section 4.2.2 Commercial/Industrial/Institutional Contribution:

- Removed maximum peaking factor.

Renamed Section 4.2.3 Infiltration to Infiltration & Inflow:

- Added the requirement if a manhole must be located within a sag, or is placed in a grassed area, it must feature a watertight cover; and

- Added the requirement for an exfiltration test if there is evidence of water entering the pipe, the area features a high water table, or when environmental issues are a concern. A minimum of 10% of pipes will be tested.

#### Section 4.3 Pipe Flow Formula:

- Added the preference that designs utilize gravity flow where possible.

#### Section 4.6 Minimum Pipe Grade:

- Increased the minimum slopes for curved sewers to match the requirements of the provincial design standards; and
- Added that these slopes do not need to be met if the Consultant provides calculations to demonstrate they aren't required to achieve self-cleansing velocity.

#### Section 4.7 Minimum Depth of Cover:

- Minimum cover increased to 3.0 metres to top of pipe; and
- Added the requirement to install insulation if it is not possible to meet the minimum depth.

#### Section 4.8 Manhole Spacing:

- Added the requirement that manholes be provided at all junctions;
- Changed the pipe sizes for minimum manhole spacing.

#### Section 4.9 Curved Sewers:

- Added that joint deflection must be greater than a 60 m radius.

#### Section 4.10 Hydraulic Losses Across Manholes:

- Added requirement for a smooth transition between inverts, and that extreme changes in elevation will be avoided;
- Increased the minimum drop for straight runs across manholes to 20 mm;
- Increased drop for deflections from 45° to 90° to 60 mm; and
- Added design parameters for drop structures in manholes.

#### Section 4.11 Pipe Location:

- Added the requirement that where possible watermains should cross above sewer mains;
- Added a reference to the pipe crossing support standard drawing; and
- Increased the minimum vertical clearance when the watermain is passing under the sewer to 0.6 m.

#### Section 4.12 Service Connections:

- Clarified minimum service grade from main to property line for single family residential is 2.0%;
- Moved items specific to servicing within the property to Section **11.7.3.2**;
- Added that service stubs must extend 2.0 m past the shallow utility easement;
- Added the preference that in-line tees are to be used for service connections to PVC mains 300 mm or smaller, otherwise saddles are to be used, and concrete mains will require the use of inserted tees;
- Changed inspection risers to be for multifamily developments only. Inspection manholes added for commercial/industrial; and
- Added requirement for metal driveway boxes to be used for inspection risers in hard surfaces.

#### Section 4.14 Materials and Specifications:

- Added details of pipe selection parameters, including soil characteristics and loading, and bedding selection; and
- Added the requirement for joining of dissimilar materials to be made by means of manholes.

#### Section 4.14.1 Gravity Sewers:

- Changed PVC to be smooth wall, maximum SDR 35;
- Changed Reinforced Concrete to be 65D minimum from Class 3 minimum;
- Allowed for concrete pipe smaller than 900 mm to be used if economical; and
- Added Steel Reinforced PE pipe as an acceptable material.

Section 4.14.2 Force mains:

- Changed applicable standards applying to force mains.

Section 4.14.3 Manholes:

- Clarified manhole size selection based on pipe size as per Standard Drawings;
- Added that manholes for pipes 1050 mm inside diameter or larger will use a t-riser manhole;
- Added requirement for buoyancy calculations for manholes that have half or more of their vertical depth below the water table;
- Added requirement for manholes to be large enough to accommodate the maximum intersection pipe size, and minimum wall length between pipes;
- Added requirement for manholes to be large enough for inspection and maintenance;
- Added requirement for manholes in roadways to use F80 frames and logo covers; and
- Added requirement for watertight manhole covers to be 600 mm cast iron covers with Lifespan frame assemblies, as manufactured by Hamilton Kent.

Section 4.14.4 Bedding Materials:

- Added consideration of the analysis of pipe loading and/or soil conditions in bedding selection;
- Added the requirement to supply any calculations and design rationale to the City if special bedding or construction techniques are required, and clearly identify the areas in the drawings; and
- Expanded Table 4.5 to include bedding stone and washed rock, updated gradation of bedding sand.

Added Appendices **4A.1** Pipe Installation, **4A1.1** Bedding, **4A1.2** Pipe, **4A.2** Manhole Installation, and **4A.3** Testing and Inspection:

- Specifications for the installation of sanitary sewer pipes and manholes, and the related testing requirements.

Section 5 Storm Drainage Systems:

- Section 5 has been re-structured and expanded. Most of the section numbers have changed.

Added Section **5.1.1** Objectives:

- Identified that the design release rate of any lot is 1.5 L/s/ha for the 1:5 year design storm as per the Stormwater Master Plan, and that discharge must conform to the City's Sewer Use Bylaw, thus erosion and sedimentation control measures must be in place.

Added Section **5.2** Submissions and Approvals:

- Added Erosion and Sedimentation Control Plans to submission requirements;
- Added requirement for SWMF in Alberta to be approved by Alberta Environment; and
- Added list of regulatory requirements.

Added Section **5.3.2** Parametric Representation of IDF Curves:

- Added formula and tabulated "a b c" values to calculate rainfall intensities.

Renamed Section 5.4 Major Systems to Major System Design:

- Added pipe systems downstream of stormwater management facilities to the Major System.

Section 5.5.1 Rational Formula:

- Updated Table 5.1 for rainfall intensity values.

Section 5.5.2 Hydrograph Methods:

- Removed provision for computer modelling for areas smaller than 50 ha; and
- Moved storage or detention facility requirements to Section **5.6.2**.

Section 5.7 Rate of Precipitation:

- Added that the combination of inlet time and pipe travel time will be combined to produce the time of concentration.

Section 5.8 Site and Lot Grading:

- Moved elements specific to single lot grading to Section **11.7.1.1**;
- Added requirement for design slopes to be a minimum of 2% and higher where possible; and
- Clarified split drainage is only permitted where City property is at both the front and back.

Section 5.9 Use of Swales:

- Added the requirement for a multi-lot swale to contain the 1:5 year event, and the easement to contain a 1:100 year event, with the supporting calculations required. If this swale's discharge would cross a walkway, it must be intercepted by a catch basin.

Section 5.10 Storm Services:

- Moved portions specific to services within a single lot to Section **11.7.3.3**;
- Added the requirement for service stubs to extend 4.0 m past property line of 2.0 m past the shallow utility easement, whichever is further; and
- Added the preference that in-line tees are to be used for service connections to PVC mains 300 mm or smaller, otherwise saddles are to be used, and concrete and Ultra-rib mains will require the use of inserted tees.

Section 5.12.1 Storm Sewers and Open Channels:

- Added the preference that designs utilize no more than 85% of the pipe's maximum capacity, and that gravity flow be used where possible.

Section 5.12.2 Culverts:

- Changed the maximum elevation of the water in a 100 year event to allow for a freeboard of 0.5 m to the edge of asphalt of the adjacent roadway.

Section 5.13 Pipe Location:

- Added the requirement that, where possible, water mains should cross above sewer mains; and
- Increased the vertical clearance between water mains under sewer mains to 0.6m.

Section 5.15 Minimum Pipe Diameter:

- Set minimum residential storm service size to be 100 mm, and commercial/industrial services to be 150 mm to buildings only or 300 to catch basins.

Renamed Section 5.18 Manholes to Hydraulic Losses Across Manholes:

- Added that generally obverts of upstream and downstream pipes should match;
- Increased minimum drop of a straight run across a manhole to be 20 mm; and
- Added that with drop structures manhole shafts should be sized to allow at least 1.0 m clear space.

Section 5.16 Minimum Velocity and Grade:

- Clarified minimum design mean velocity is 0.9 m/s;
- Removed reference to mean velocities below 0.6 m/s, since 0.9 is the minimum; and
- Increased minimum pipe grades to reflect the minimum velocity.

Section 5.17 Curved Sewers:

- Added a maximum joint deflection of greater than a 60 m radius; and
- Increased minimum pipe grades to reflect the minimum velocity.

Section 5.18 Manholes:

- Increased drops across straight runs to 20 mm and across deflections of 45° to 90° to 60 mm.

Section 5.19 Manhole Spacing:

- Added that manholes are required at all junctions.

Section 5.20 Catch Basins:

- Moved items specific to construction to Appendix **5A.2**;
- Clarified maximum distance to the first catch basin is measured from the high point;
- Clarified leads must be PVC, not open profile PVC;
- Clarified minimum lead size of 300 mm for F-51 or DK-7 covers;
- Changed allowable application of off roadway locations for F-39 Round Top catch basins to have locking covers
- Added the requirement for trash grates on ditch/channel inlet catch basins; and
- Added F-50 shallow frames with TF-GL locking grates for use in parks or grassed areas.

Section 5.21 Culverts and Drainage:

- Added details of culvert wall thickness requirements based on size.

Table 5.4 Acceptable Pipe Materials:

- Clarified open profile PVC is Ultra-Rib or KorFlo, minimum size changed to 300 mm;
- Replaced ASTM D3034 with CAN/CSA BB182.2; and
- Added Steel Reinforced PE as an acceptable pipe material.

Section 5.22.2 Manholes:

- Moved items specific to construction to Appendix **5A.2**;
- Clarified manhole sizing based on pipe size as per Standard Drawings;
- Added requirement for buoyancy calculations for manholes that have half or more of their vertical depth below the water table;
- Added the requirement for manholes for pipes 1050 mm and larger to use a t-riser manhole;
- Added requirement for manholes to be large enough to accommodate the maximum intersection pipe size, and minimum wall length between pipes;
- Added requirement for manholes to be large enough for inspection and maintenance;
- Added requirement for manholes in roadways to use F80 frames and logo covers; and
- Added requirement for manholes in grassed areas to use F-39 frames and locking covers.

Section 5.22.3 Bedding Material:

- Changed to follow the design parameters in Section 4.14.4.

Renamed Section 5.23 Major Systems to Stormwater Management and Storage Facilities:

- Added requirement to size storage and detention facilities based on the most critical rainfall event and to meet water quality targets; and
- Referenced Appendices for design parameters and design storm values.

Section 5.23.1 Design – Wet Ponds:

- Moved reference to privately owned ponds to Section **11.7.3.3.3**;
- Added the requirement that there be a minimum freeboard of 0.3m from HWL to the elevation of adjacent property lines;
- Added requirement for a forebay;
- Increased maximum fluctuation between NWL and HWL from 1.5 m to 2.0 m;
- Added requirement for pond sizing to achieve a 24h detention time and 85% removal of TSS;
- Added minimum depth requirement of 2.0 m or a calculated depth based on catchment and imperviousness. Stated a preferred depth of 3.0 m where practical;
- Added requirement for emergency overland drainage to be designed to convey water at a minimum rate of 1.0 m<sup>3</sup>/s and have erosion controls in place to withstand those flows;
- Added requirement for inlets and outlets to be located to maximize detention time;
- Clarified invert of inlets and outlets must be 1.2m below NWL;
- Added requirement for invert of inlets and outlets to be 100 mm above bottom;
- Changed maximum slopes around the pond;
- Added requirements for vegetation to be established at the pond's edge to discourage direct contact with the water;

- Added requirement for construction of maintenance access to outlet control structure, inlet structures and forebays;
- Removed requirement to install a buffer strip between NWL and 1:25 year flood level;
- Removed the requirement to have additional freeboard to contain the maximum historical event;
- Removed the requirement for a supplementary water supply to be incorporated to maintain minimum water levels; and
- Changed the requirement for the HWL to be set below basement footings to adjacent property lines to be above HWL +0.3 m.

Section 5.23.2 Design – Dry Ponds:

- Clarified orientation of outlet and inlet grates.

Section 5.23.3 Design Wetlands:

- Renamed to Constructed Wetlands; and
- Added the requirement to comply with Saskatoon's Wetland Design Guidelines.

Renamed 5.23.6 Pond Boundary Control and Use to SWMF Boundary Control and Use:

- Clarified the lot containing the stormwater management facility must be sufficiently sized to wholly contain the 1:100 year design event; and
- Changed reference of an Outline Plan to an Area Structure Plan.

Section 5.23.7 Site Acquisition and Financing of Construction

- Changed references to ponds to SWMF;
- Added reference to Area Structure Plans; and
- Removed earth balancing instructions.

Section 5.23.8 Legal Liability and Safety:

- Changed reference to water contact from being forbidden to being discouraged; and
- Added the City will specify the locations of the signs, and reference to the Standard Drawings.

Section 5.24 Drainage Parkways and Erosion Control:

- Renamed to Water Quality Considerations;
- Added requirement to comply with the Sewer Use Bylaw; and
- Added details for Erosion and Sedimentation Control.

Added Appendices **5A.1** Pipe Installation, **5A1.1** Bedding, **5A1.2** Pipe, **5A.2** Manhole Installation, and **5A.3** Testing and Inspection:

- Specifications for the installation of storm sewer pipes and manholes, and the related testing requirements.

Added Appendices **5B.1** 4 Hour Chicago (Modified) Design Storm, **5B.2** 24 Hour Huff Distribution, and **5B.3** IDF Curves:

- Rainfall intensity tables for design storms.

Added Appendix **5C** Stormwater Storage Design:

- Detailed design parameters for stormwater management facilities.

Section 6 Water Distribution Systems:

- Petroguard Petrolatum paste and tape have been added as an approved alternative to Denso.

Section 6.2 Design Flow:

- Updated reference to provincial design standard;
- Design parameters and fire flow requirements updated as per Master Plan; and
- Removed reference to sprinkler systems.

Section 6.3 Design Computations:

- Design parameters updated as per Master Plan.

Section 6.4 Minimum Main Pipe Diameter:

- Allowed for water mains providing service to single family residential without fire hydrants to be 150 mm.

Section 6.5 Dead Ends:

- Allowed for water main to be reduced to 150 mm after the last hydrant tee on a dead end main; and
- Changed the requirement to remove the temporary blow-off from after disinfection and flushing is complete to when the next stage of construction occurs.

Section 6.6 Pipe Location:

- Added requirement that where at all possible, water mains should cross above sewer mains; and
- Added separation requirements.

Section 6.7 Minimum Depth of Cover:

- Added requirement for insulation to be installed if minimum depth cannot be achieved.

Section 6.8 Valving:

- Changed valve location from intersections and at the projection of property lines to adjacent to hydrants.

Section 6.9 Hydrant Location:

- Updated the name of the hydrant spacing guideline document; and
- Added catch basins to setbacks.

Section 6.10 Service Connection:

- Moved portions specific to servicing within the property to Section **11.7.3.4**;
- Moved portions specific to construction to Appendix **6A**; and
- Increased the separation from 50 mm water services to 0.3 m.

Section 6.13 Disinfection and Flushing:

- Moved construction-specific portions to Appendix **6A**.

Moved Section 6.14 Hydrostatic Pressure Testing to Appendix **6A**.

Section 6.15 Materials:

- Added reference to applicable AWWA, CSA and NSF/ANSI standards for water distribution and service materials.

Section 6.15.3 Cathodic Protection:

- Changed non-steel metallic to metallic;
- Changed ASTM reference to latest version; and
- Moved construction-specific portions to Appendix **6A**.

Section 6.15.6 Fire Hydrant:

- Moved construction-specific portions to Appendix **6A**;
- Added requirement that no hydrant be connected downstream of a water meter;
- Removed minimum length of 300 mm for the spool piece;
- Added that the breakaway flange must be located immediately below the body flange;
- Added requirement that rod coupling be located within 50 mm of the breakaway flange;
- Added requirement for the ground flange to be the breakaway and located 50 mm above final grade;
- Added requirement for all buried flanges and bolts to be wrapped in Denso or Petroguard Petrolatum tape and that when doing so the drain holes must be unobstructed; and
- Added requirement to paint the letters “ND” on hydrants with plugged drain holes.

Section 6.15.7 Gate Valves:

- Moved construction-specific portions to Appendix **6A**.

Section 6.15.8 Service Connections:

- Removed copper as an approved material for service pipes; and
- Specified flexible pipe for services up to 50 mm, otherwise PVC is required.

Section 6.16 Approved Materials:

- Removed copper as an approved material for service pipes; and
- Added Royal as an approved manufacturer for PVC water pipe.

Section 7.2.1 Location of Utilities:

- Added restriction for alignments to not be under road surfaces except for crossings;
- Added requirement for crossings to be perpendicular to the road centreline;
- Added that alignments should not be under sidewalks unless no other location is feasible, and if so must be a depth of 1.5-1.8 m; and
- Added the requirement for structures to be installed a minimum of 1.5m clear of any driveway, approach, or apron.

Section 7.2.2 Separation from Other Utilities:

- Added a minimum 2.0 m separation laterally from surface structures, with 3.0 m preferred; and
- Added a separation of 1.2 m from any City fibre optic line, and the requirement for hydro-vac exposure prior to work commencing.

Section 7.2.3 Compaction of Trenches:

- Changed requirement for roadway surface restoration from 2 weeks to 4 weeks.

Added Section **7.2.5** Design Drawings:

- Lists criteria for design drawings to be submitted to the City, including indication of total length of the proposed installation; and
- Provides a link to the City's interactive GIS map to determine the locations of municipal infrastructure.

Renamed Section 8.1 General to Landscaping Requirements and:

- Added the classifications and requirements for development of various sizes of park space; and
- Added subsections **8.1.1** Grade, Loam, Seed or Sod, **8.1.2** Planting of Trees and Shrubs, **8.1.3** Park Amenities, **8.1.4** Fencing, **8.1.5** Enhanced Amenities, **8.1.6** Utility Corridors and Public/Municipal Utility Parcels.

Moved Section 8.2.1 Hard Landscape Drawings to Section **2.3.4.10** and:

- Added garbage cans and playground equipment to layout plans.

Moved Section 8.2.2 Soft Landscaping to Section **2.3.4.10** and:

- Added the requirement for plantings to conform to the City's planting recommendations; and
- Removed the requirement to indicate method of transport for plantings.

Section 8.3 Rough Grading:

- Changed tolerance for rough grading to match the thickness of topsoil needed.

Section 8.4 Topsoil:

- Added a depth of excavation for perennial beds; and
- Added a tolerance of 50 mm for finished grade elevation.

Sections 8.5 Seeding, 8.6 Hydroseeding, and 8.7 Sodding:

- Clarified areas designated as grassed must be 100% covered, and that there be no thin areas with less than 75% growth larger than 3 m<sup>2</sup>; and



- Added that areas with unsatisfactory growth must be remediated, with the areas reviewed after one growing season to assess whether sufficient growth and germination has taken place prior to acceptance.

Moved Section 8.8 Plant Material into Section **8.1.2**.

Moved Section 8.9 Uniform Fencing into Section **8.1.4**.

Section 9.1 General:

- Removed the requirement for a quality control plan to be submitted prior to work commencing.

Section 9.4 Roll Testing/Proof Rolling:

- Corrected nomenclature of subgrade and base;
- Clarified loading requirements for the truck used for a proof roll;
- Clarified sufficient passes are needed to cover the entire surface; and
- Changed Inspector to City representative.

Section 9.5 Testing – Sanitary Sewers renamed to Testing – Gravity Sewers

- Expanded description of testing requirements.

Added Section **9.5.1** Visual Inspection:

- Describes items checked during a visual inspection.

Section 9.5.1 Video Inspection Test renumbered to Section **9.5.2** and:

- Added restriction on flushing new lines into existing manholes;
- Added pipe size limit of 900 mm for use of CCTV; and
- Changed requirement for submission at FAC to CCC.

Added Section **9.5.2.1** Pipe Walk-Through:

- Specified pipes larger than 900 mm must be visually inspected by a certified operator unless otherwise approved.

Added Section **9.5.3** Exfiltration Test:

- Details of leakage testing, and criteria which must be fulfilled prior to testing.

Added Section **9.5.4** Deviation from Line:

- Details of acceptable horizontal deviation from the designated alignment of pipes.

Added Section **9.5.5** Deflection Test:

- Details of when a deflection test would be required, acceptable deflection in pipes and testing requirements.

Section 9.5.2 Testing of Forcemains renumbered to Section **9.6**.

Section 9.6 Testing – Storm Sewers incorporated into Section 9.5.

Section 9.7.1.2 Pressure Testing HDPE Pipe:

- Set test duration to be 3 hours.

Section 9.7.2 Flushing and Disinfection:

- Added requirement for flushing velocities to conform to AWWA C651 and be coordinated with Water Services.

Added Section **9.8** Verification of Gutter Flow:

- Details of procedure for the testing of gutters to verify they convey surface flows.

Section 10.4 Abandoned Service Connections:

- Added allowance for main stops to be turned off and left in place on PVC mains;

- Added allowance and specifications for abandoned service tees to be plugged instead of removed; and
- Added requirement for service abandonments to be inspected by the City.

#### Added Section 11 Single Lots (Development Permits)

- Information for development on single lots, generally governed by Development Permits, including submission requirements, design parameters, and construction requirements.

#### Standard Drawings:

- All drawings have been adjusted to be dimensioned in millimetres unless otherwise noted;
- Section 1 cross-section drawings have all been updated to conform to the updated Table 3.1, and no longer feature a parabolic crown. Minimum and maximum crossfall have been identified. Curb type has been identified. Added granular base under walkways;
- 1-104 added a concrete swale to the bottom of the lane;
- Added 1-106 Typical Residential Cul-de-sac;
- Added 1-107 Typical Industrial/Commercial Cul-de-sac;
- 1-200 removed leaders for asphalt and granular base, replaced with “pavement structure”. Added minimum and maximum crossfall. Added the requirement for erosion control measures within the ditches;
- 1-201 renamed to Industrial / Commercial Approaches (Rural), added minimum depth of cover over culvert;
- 1-202 removed leaders for asphalt and granular base, replaced with “pavement structure”. Added note to narrow ditch bottom as required;
- 1-203 added note referring to bollard standard drawing, adjusted valve location;
- 1-204 added hatching to asphalt, changed granular base thickness to match surrounding structure;
- 1-300 added edge of pavement lines to intersection location;
- 1-301 adjusted details to show u-channel as well as round pipe pole installation, changed pipe diameter to 60mm;
- Added 1-303 Hand Applied Markings;
- Added 1-400 Gutter and butt Joint Milling;
- Added 1-500 Roundabout Cross-Section;
- Added 1-501 Roundabout Plan View and Landscaping Zones;
- Section 2 wick drain location changed to lowest point of subgrade;
- Section 2 changed dimensions of reverse curbs so that the thickness of the gutter pan is not reduced;
- Section 2 changed contraction joint intervals of curbs to be 3.0 m from 5.0 m;
- 2-100 clarified rebar required in replacement over service trenches;
- 2-101 renamed to Standard 200 mm Curb with 250 mm Gutter, clarified rebar required in replacement over service trenches;
- 2-102 renamed to Rolled Face Curb and Gutter, moved wick drain location to rear of curb
- 2-103 moved wick drain location to rear of curb, clarified rebar required in replacement over service trenches;
- 2-104 changed minimum width to be 1.0 m, corrected “entrapment” to “entrainment”;
- 2-105 renamed to Rolled Face Curb, Gutter, and Monolithic Sidewalk, clarified subgrade must be compacted, clarified rebar required in replacement over service trenches;
- 2-106 renamed to Straight Face Curb, Gutter, and Monolithic Sidewalk, moved wick drain to rear of curb, clarified rebar required in replacement over service trenches;
- 2-107 clarified rebar required in replacement over service trenches;
- 2-108 added sand under unit pavers, added granular base and wick drain under curb, corrected “entrapment” to “entrainment”;
- 2-109 identified acceptable crossfall to be 2.0-4.0%, adjusted linework to match required dimensions, specified contraction joint locations, added rebar requirements;
- 2-109, 2-110, 2-200 set thickness of granular base to 150 mm;
- 2-110 adjusted linework to match required dimensions, specified contraction joint locations, added rebar requirements;
- Added 2-111 Residential Apron Crossing Mono Sidewalk;
- Added 2-112 Residential Apron Crossing Separate Sidewalk;
- Added 2-113 Trench Drain;

- 2-200 removed Types A1 and C ramps. Added Type B2 ramp for boulevards less than 2 m in width;
- 2-201 clarified dropped gutter lip to match first lift of asphalt, added requirement to remove and replace when top lift is placed
- 2-202 added notes from 2-201;
- 2-203 added bevelled end to median, added concrete strength requirements;
- 2-204 added CC stamp can be a service box cap, allowed for missed stamp to have "CC" ground in;
- Added 2-205 Concrete Drainage Swale (Roadway);
- Section 3 clarified maximum distance from top step to rim of 600 mm;
- 3-100, 3-101, 3-102, 3-103 added requirements for buoyancy calculations;
- Added 3-104 Perched Manhole;
- Added 3-105 Manhole Penetrations and Design;
- 3-200 renamed to Non-Floating Manhole Frame Adjustment Detail;
- 3-202 specified logo covers for F-80 frames;
- Added 3-203 F-80 Manhole Adjustment Detail;
- Added 3-204 TF-80LSAN Sanitary Sewer Cover (City Logo);
- Added 3-205 TF-80LSTM Storm Sewer Cover (City Logo);
- Added 3-206 Watertight Manhole Cover;
- Added 3-208 F-39 Frame and Locking Cover;
- Added 3-300 Typical Pipe Section Exfiltration Test
- 4-100 changed % SPD under roads in zone A to be 98%, and maximum lift thickness to be 300;
- 4-101 Added requirements for width of insulation and installation in an "inverted U" configuration;
- Added 4-102 Insulation Requirements Crossing Pipe Open to Atmosphere;
- 4-200 corrected thickness of sand above the pipe to be 300 mm, removed Class B-1 bedding, set depth of bedding below pipe to be 150 mm, added clarification bedding design required for pipes larger than 600 mm;
- 5-200 increased length of wick drain into CB to 100 mm;
- 5-301 renamed to Metal Culvert;
- 5-304 renamed to Rock Rip-Rap Detail for Metal Culverts or Open Channels;
- Added 5-400 Inlet/Outlet Indicator Post Detail;
- Added 5-401 Stormwater Storage Wetland Sign;
- Added 5-402 Stormwater Storage Pond Sign;
- Added 5-403 Stormwater Storage Facility Sign;
- Added 5-404 Stormwater Storage Channel Sign;
- Added 5-405 Stormwater Storage Site Sign Details;
- Added 5-406 Typical Notice Sign;
- Added 5-500 Typical Stormwater Storage Pond;
- Added 5-500 Typical Stormwater Storage Pond Forebay;
- Section 6 all anodes have a 2m lead;
- Section 6 all bolts below the surface to be wrapped in Denso or Petroguard Petrolatum tape;
- Section 6 all cad welds to be covered by Denso or Petroguard Petrolatum tape;
- 6-100 clarified distance from surface to stone guard is top of nut;
- 6-101 valve box cover to be flush with the surface in boulevards, green spaces and concrete sidewalks, adjusted dimension from surface to top of stone guard nut;
- 6-102 breakaway flange specified to be above ground, extension length as required, rod coupling to be within 50 mm of breakaway flange, minimum distance between hydrant and valve increased to 0.75m;
- 6-200 caps to be installed flush with finished ground, threaded nipple replaced with 2" quick connect;
- 6-201 added stone guard, clarified dimension from stone guard to surface is from finished surface to top of nut;
- Added 6-304 Poured Concrete Thrust Blocks for Dead-Ends in Disturbed Soil;
- 6-400, 6-401 added 3 litres of water to be poured on anode following placement to activate, anode leads to be 2m in length;
- 6-401 renamed to Typical Anode Installation for Metallic Fittings used with PVC Water Mains;
- Section 7 specified saddles only to be used for new connections to existing mains larger than 300 mm, allowed for Inserta-tees to be used in place of saddles;

- 7-101 changed to Residential Lateral Service Detail, increased horizontal distance between services to 300 mm, added union on water line;
- 7-102 changed to Multi-family Service Detail with Storm Service;
- 7-103 changed to Multi-family Service Detail;
- Added 7-104 Commercial Service Detail with Storm Service;
- Added 7-105 Commercial Service Detail;
- Added 7-106 Service Connection Details for Sewer Manhole in Cul-de-sac;
- 7-200, 7-201, 7-300, 7-301 increased spacing between services to 300 mm;
- 7-200, 7-201, 7-202, 7-203, 7-300, 7-301 added that the City takes no responsibility for construction or maintenance of services beyond the property line;
- 7-200 renamed to Residential Non-Riser Type Sanitary Service Connection;
- 7-202 changed to Multi-family Sanitary Inspection Chamber, added requirement for inspection risers in hard surfaces to use a metal driveway box as a cover;
- Added 7-203 Commercial/industrial Sanitary Inspection Manhole;
- Added 7-204 Metal Driveway Box;
- 7-300 renamed to Residential Non-Riser Type Storm Service Connection;
- 7-301 renamed to Residential Riser Type Storm Service Connection;
- 7-400 renamed to Residential Water Service Connection, added that service box to be adjusted to be set flush with the finished surface in boulevards or concrete driveways, added a union 4 m from curb stop;
- Added 7-402 Service Box;
- 8-100, 8-101, 8-102 added responsibility for establishing and maintaining lot grading and drainage is the responsibility of the property owner;
- 8-100, 8-101 changed garage slab elevation note to be minimum garage slab elevation;
- Added 8-102 Shared Drainage Between Lots;
- Added 8-103 Concrete Between Driveways;
- 8-200 renamed to Concrete Drainage Swale (Landscaping);
- Added 9-101 Root Barrier Section and Elevation;
- Added 9-102 Trail Seating Node;
- Added 9-103 Nature Trail;
- Added 9-104 Play Safe Sign 18 Months to 5 Years;
- Added 9-105 Play Safe Sign 5 Years to 12 Years;
- 9-200 adjusted distance from property line to fence;
- 9-201 adjusted distance from property line to fence;
- 9-202 adjusted bollard spacing;
- 9-203 renumbered 1-204, renamed 150 mm Steel Roadway Bollard and adjusted to be within road structure;
- Added 9-203 150 mm Steel Landscaping Bollard;
- Added 9-204 Single Traffic Control Gate;
- Added 9-205 Paired Traffic Control Gates;
- Added 9-206 Steel Pipe Gate;
- Added 9-207 Chain Link Maintenance Gate;
- Added 9-208 Wooden post and 3 Rail Fence;
- Added 9-209 Noise Attenuation Fence;
- Added 9-301 Typical Berm;
- Added 9-302 Wire Basket Tree Spade Planting Tree Staking & Mulching;
- Added 9-303 Typical Container Planting;
- Added 9-304 Typical Vault Planting;
- Added 9-305 Planting Bed Cross-Section;
- Added 9-400 Typical Park Bench;
- Added 9-401 Typical Picnic Table;
- Added 9-402 Garbage Receptacle; and
- Added 9-403 Dog Waste Bag Dispenser.