

AGENDA
SPECIAL OPEN COMMITTEE OF THE WHOLE MEETING
BOARD ROOM, 411 DUNSMUIR STREET, NANAIMO, BC
THURSDAY, 2013-MAY-16, AT 1:30 P.M.

CHAIR: MAYOR RUTTAN

1. **CALL THE REGULAR MEETING OF COUNCIL TO ORDER:**

2. **INTRODUCTION OF LATE ITEMS:**

3. **ADOPTION OF AGENDA:**

4. **PRESENTATIONS:**

- (a) Mr. B. Prokopenko, Senior Manager of Engineering to provide a PowerPoint Presentation regarding amendments to the Manual of Engineering Standards and Specifications.

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[Note: An updated copy of the Manual of Engineering Standards and Specifications Amendment Record is attached.]

5. **OTHER BUSINESS:**

6. **QUESTION PERIOD:** *(Agenda Items Only)*

7. **ADJOURNMENT:**

ACTING MAYOR: COUNCILLOR PATTJE

2013-APR-29 to 2013-JUN-09

**ALL AMENDMENTS INCLUDED IN THE MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS
JUNE 2013 EDITION**

**CITY OF NANAIMO
MANUAL OF ENGINEERING STANDARDS AND SPECIFICATIONS
AMENDMENT RECORD**

Manual Revision # 10

Revision Date: June 2013

The June 2013 Edition of the Manual of Engineering Standards and Specifications (MoESS) was re-printed in its entirety due to formatting, consistency and technical changes.

The footer has been revised to represents this revision 'June 2013 Edition'. This represents the most current edition of the manual.

In addition to the footer, the manual text continues to include the revision date in (BOLD ITALICS) at the end of the paragraph affected by the technical amendment. This represents the technical amendments that are incorporated into the MoESS for this revision year.

The standard drawings all include a footer that reads;

Engineering Standards and Specifications
June 2013 Edition

Each Manual holder is responsible for determining implementation dates of the Manual of Engineering Standards and Specifications revisions. Therefore, manual holders are cautioned about immediately discarding superseded and cancelled standards.

MoESS classifications Index (Type)

h = housekeeping revisions to the document

t = technical revisions to the document

e = technical revisions that pertain to / or aid in the protection of the environment

d = technical revisions that affect development or are for improvements to increase information for the development community

The Manual of Engineering Standards and Specifications is revised as follows:

Type	Sub Type	Sub Type	Superseded / Added / Cancelled / Removed Title Page	Page Revised / New Insert / New Dwg No. Title Page	Section No. / Dwg No. Affected Title Page	Remarks
h						Updated to June 2013.
h			Superseded	All	Contents and Introduction	Section 8.0 title changed from Curbs And Sidewalks to Curbs, Sidewalks and Walkways. Also Section 9.0 title changed from Streets to Streets, Traffic Signs and Markings. Appendix additions were added to the table of contents. Addition of identifier footer.
h			-	3	Request for Changes to the Standards	Added Clause .3 to the section. 'Requests for change include red lined mark-ups of the written specifications or standard drawings that are relevant to the suggested change.'
h			-	4	Amendments to Standards	Clause .1 and .2 revised to read three years instead of every year and added the interim amendment postings and the webpage reference.

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Type	Sub Type	Sub Type	Superseded / Added / Cancelled / Removed	Page Revised / New Insert / New Dwg No.	Section No. / Dwg No. Affected	Remarks
h			Superseded	All	1.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
h			-	1-3	1.01	General Requirements: Revised AutoCAD software year from 2004 to 2012 for the DXF or DWG format. Revised the minimum height of lettering for proposed work to be 2.5mm from 2.25mm. Revised requirement of Plan and Profile drawings to all be a horizontal scale of 1:250 with the exception of 1:500 for signage/pavement and single utility drawings.
h			-	1-5	1.02	Site Plan and Key Plan: Revised cleanout structure to be 'temporary cleanout' in clause 1.02.2(c) and (d).
h			-	1-6	1.04	Roads: Added 'existing elevation tie-in points and' to 1.04.1 for labelling requirements.
h			-	1-7	1.05	Storm and Sanitary Sewers: Added 'temporary' to cleanouts in 1.05.2. Added clause 1.05.16. 'The design flow rate and return period shall be noted on each storm drawing.'
t			-	1-9	1.07	Ornamental Street Lighting, Traffic Control Signals, Hydro, Phone, Gas and Cablevision Fibre Optics (Commercial and Private): Added '...the location of the power source...' to clause 1.07.1(d).
t			-	1-9	1.08	Signage and Pavement Markings: Revised 1.08.1 to read the full name of MUTCD. Removed the scale option of 1:1000 from clause 1.08.2.
t	d		-	1-12	1.12	Design Submissions for City of Nanaimo Capital Projects: Removed reference to deleted drawing G-5G in clause 1.12.2, G-5H in clause 1.12.4, G-5J in clause 1.12.5, G-5K in clause 1.12.6 and removed clause 1.12.8 for the requirement to include a copy of the CAD Standards Checker Report. Added 'temporary' to cleanouts in 1.12.2(e).
t	h		-	1-14	1.13	Asbuilt Submissions: Revised AutoCAD software year from 2004 to 2012 in clause 1.13.4. Added reference to 1.17 in 1.13.6. Revised 1.13.6(e) to include reference to the required In Service Date Block and reference to G-4. In clause 1.13.10 revised to suit the heading of Appendix E. In clause 1.13.11 revised to suit the heading of Appendix F1. Removed clause 1.13.21 for the requirement to include a copy of the CAD Standards Checker Report.
t	d		Added	1-17	1.17	Added new section 1.17 General for GIS Requirements.
h			-	1-19	1.20	Computer Aided Drafting Standards: Revised clause 1.20.2 to request Civil 3D '2012 version or newer'. Removed clause 1.20.4 'A CAD Standards Checker program to aid in producing drawings to City Standards is available on the City website.'

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h			-	1-19	1.21	Revised title from Prototype Drawings to Template Drawings. Revised clause 1.21.1 and clause 1.21.2 to suit name change. Revised name of template drawing to newest version available C3D 2009 CON.DWT
h			-	1-19	1.22	Co-ordinate System: Revised the software to be Civil 3D rather than Land Desktop Drawing set-up for the most current version.
t	d		-	1-19	1.23	Layer naming Conventions: Removed clauses 1.23.2(f), 1.23.2(g) and revised 1.23.3 to remove the CAD Checker requirements in the document.
t	d		-	1-20	1.24	Drawing Organization: Removed clause 1.24.3 and 1.24.4 reference to use the attribute tables in G-13, G-14 and G-15 and the requirement to produce digital Civil 3D pipe works tables. Added reference to labelling conforming to the section 1.17 GIS requirements and examples.
t			-	1-20	1.25	Base Plan Preparation: Added 'All entities shall be drawn at 1:1 in model space' to clause 1.25.1. Revised clause 1.25.2 'DTM' to 'surface' and added 'If utilizing survey databases, survey figure lines are acceptable.' Revised clause 1.25.4 text style options table. Added 'temporary' to cleanouts in 1.25.3.
t	d		-	1-21	1.26	Standard Symbols and Abbreviations: Removed clause 1.26.5 'Refer to the NCS CAD Checker for list of standard symbols.'
h			-	1-21	1.30	Survey Standards: Revised software version to be Autodesk Civil 3D instead of either Civil 3D or Land Desktop. Removed 'Consultants can either use CON standard field descriptions or make a copy of the description key file and modify it to reference a different field description standard.' from clause 1.30.3. Removed clause 1.30.4.
t	d		-	1-22	1.31	Standard Files Provided to Consultants: Revised template drawing names. Removed 'City of Nanaimo CAD Standards Checker software.' Added clause 1.31.2 to contact the Engineering Projects Division for most current version of templates.
t			-	G-2	G-2	Standard Symbols and Abbreviations Sheet 1: Revised Edge of Pavement, Catchbasin, Ditch or Swale, Water Valve, Fire Hydrant, Inspection Chamber (SSIC or SDIC), Junction Box, Meter, Flushout, Temporary Cleanout and Top of Bank.
t			-	G-2A	G-2A	Standard Symbols and Abbreviations Sheets 2: Revised Monument.
t			-	G-3	G-3	Standard Materials and Hatch Patterns: Revised Proposed Asphalt Pavement and Existing Asphalt Pavement.
t			-	G-4	G-4	Standard Drawing Symbols Library: Revised EX-WPRV, PR-WPRV, PR-FO, EX-THRUST BLK, BASE-EL, NORTH, NOTE: AS-CONSTRUCTED-REVIEW
h			Removed	-	G-5G	Sample Drawing Proposed Sanitary Sewer, Storm Drain & Watermain 50% Submission.
h			Removed	-	G-5H	Sample Drawing Proposed Sanitary Sewer, Storm Drain & Watermain 95% Submission.

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h			Removed	-	G-5J	Sample Drawing Proposed Road 50% Submission.
h			Removed	-	G-5K	Sample Drawing Proposed Road 95% Submission.
t			-	G-8	G-8	Survey Code Descriptions Sheet 1: Revised symbol code for anchor pole, building corner (commercial), bollard, ditch, edge of water, fence and headwall.
t			-	G-8A	G-8A	Survey Code Descriptions Sheet 2: Revised symbol code for stop bar, storm inspection chamber, sanitary inspection chamber, tree drip line, 2 tree close - drip line, 3 tree close-drip line and 4 tree close - drip line.
h			Removed	-	G-15	Utility Tables - Sheet 3 Storm Drain Pipe & Node Table
h			Removed	-	G-16	Utility Tables - Sheet 2 Sanitary Pipe & Node Table
h			Removed	-	G-13	Utilities Tables - Sheet 1 Water Pipe, Node and Valve Tables
h			Superseded	All	2.00	Entire section is superseded in MoESS due to updating and formatting of the information and the update of the identifier footer.
h			-	2-19	2.04	Article 35. Injury or Damage to Persons or Property: Revised 'Workers' Compensation Board' to 'WorkSafeBC'
h			-	2-23	2.05	Revised Article 41 to reference the correct name for Article 16 -Suspension of Work by Owner.
h			Superseded	All	3.00	Entire section is superseded in MoESS due to updating and formatting of the information and the update of the identifier footer.
h			-	3-7	3.01A	Reference: Revised list to include ASTM updates.
h			Added	3-12	3.01B	Added new section for reference guide.
h			-	3-16	3.10	WorkSafeBC: Revised section to conform with latest regulations and refer to WorkSafeBC requirements.
h			Superseded	All	4.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
h			-	4-3	4.01	Scope: Revised to reference the Approved Product List.
h			-	4-3	4.03	Trench Excavation: Removed and incorporated with Section 4.07 Trench Excavation.
t			-	4-3	4.04	Precutting Paved Surfaces: Revised to include reference to new Standard Drawing T-4B (Pavement Restoration – Asphalt Cutting for a Manhole) and to reference Section 4.28 Pavement Restoration.
t			-	4-4	4.05	Site Preparation: Revised to remove specification for re-using sod.
h			-	4-5	4.07	Trench Excavation: Revised to incorporate Section 4.03.
h			-	4-5	4.07A	Common Excavation: Added section 4.03 to incorporate specifications within Section 4.0
h			-	4-5	4.07B	Rock Excavation: Added to incorporate Section 4.03, 4.07 and 4.08.
h			-	4-6	4.08	Rock Excavation: Removed specifications that were incorporated into Section 4.07B.

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h			-	4-9	4.16	Casing Pipes: Revised to include approval of City Engineer.
t			-	4-11	4.18	Trench Dams: Removed clause 4.18.6 'If approved by the Engineer clay trench dams shall be installed in 150 mm lifts, compacted to 95% Modified Proctor Density and at the locations shown on the drawings or as directed by the Engineer.
t	d		-	4-11	4.19	Backfill and Compaction: Revised clauses 4.19.1(a) and (b), 4.19.2(d), 4.19.3(a) and 4.19.3(c) so the preferred material is Imported Granular Fill with the option of Approved Native Fill.
h			-	4-13	4.21	Concrete: Revised to reference the Section 11.31 Concrete
h			-	4-13	4.22	Road Sub-Base Gravel Course: Revised to reference Section 9.29.
h			-	4-13	4.22A	Road Base Gravel Course: Revised to reference Section 9.30.
t			-	4-17	4.28	Pavement Restoration: Revised 4.28.1 to explain when construction options shall be used. Added 4.28.2 to reference drawing T-4B.
h			-	4-18	4.29	Final Cutting Paved Surfaces: Revised to reference Section 4.28.
t	d		-	T-1	T-1	Trench Details: Revised to label preferred imported granular fill material.
t	d		-	T-2	T-2	Sanitary & Storm Sewer in Common Trench: Revised to label preferred imported granular fill material.
h			-	T-4	T-4	Pavement Restoration - Type 1: Added to heading '(Asphalt Thickness < 75mm)'
h			-	T-4A	T-4A	Pavement Restoration - Type 2: Added to heading '(75mm Minimum Thickness)'
t			Added	T-4B	-	Pavement Restoration Asphalt Cutting for a Manhole: Added for construction options.
t			-	T-7	T-7	Typical Location of Service Connections to Residential Vacant Lots: Added the capped utilities to be boxed.
h			-	T-8	T-8	Trench Dams - Type 1 For all Utility Mains: Revised drawing to define location of filter cloth and pipe specifications.
h			-	T-8A	T-8A	Trench Dams - Type 2 For Storm Sewer Mains: Revised drawing to define location of filter cloth and pipe specifications.
h			-	T-10	T-10	Private Utilities Underground Electrical Typical Service Box Location: Revised drawing to show relation of offsets accurately.
h			Superseded	All	5.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
t	d		-	5-4	5.01A	Water Demand: Revised Design Criteria to clarify fire flow design and demand requirements.
t			-	5-5	5.02	Water Pressure: Revised design criteria to read at peak 'hour'
t			-	5-6	5.05	Water Distribution Piping: Revised to require looping in the distribution system.
h			-	5-6	5.07	Hydrants: Revised to clarify the requirement for two gate valves at a hydrant assembly complete with required location.

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h			-	5-7	5.08	Valves: Revised design criteria to include a maximum pipe size of 300mm in which a gate valve shall be used and the requirement for a butterfly valve to be used for mains larger than 300mm diameter. Moved from Specifications.
t			-	5-8	5.09	Fittings: Revised pressure to be 1034 kPa rather than 860 kPa as a case for thrust calculations.
h			-	5-8	5.10	Watermain Location, Depth and Grade: Revised title for clarity and revised specification to read minimum depth rather than nominal depth
h			-	5-9	5.11	Pressure Reducing Stations: Added 'static' to pressure for clarity in the design criteria and added 'black damp-proofed' to the specification of a tar coated exterior wall
h			-	5-10	5.12	Booster Pump Stations: Added 'black damp-proofed' to 5.12.1(i).
t	d		-	5-10	5.13.1	Meter Chambers: Added ... 'for services 50mm in diameter or less.' to clause 5.13.1(a) and added 5.13.1(b) 'a statutory right-of-way on private property for services larger than 50mm in diameter. Chamber shall be as close to property line as possible.'
t	d		-	5-11	5.13.5	Meter Chambers: Revised clause 5.13.5(e) to require the new W-11 Meter Chamber (Vault) as the preferred construction practise with W-11A and W-11B as other chamber type options. Added clause 5.13.5(f) 'Chambers either vaults or manholes that contain valves, flushouts, meters or other appurtenances shall allow for adequate room for maintenance including headroom and side room. Access openings must be suitable for removing valves and equipment.'
t	d		-	5-11	5.13.6	Meter Chambers: Added '... In the absence of the flow rate, the diameter of the meter shall be used for the bypass diameter.'
t	d		Added	5-11	5.13.7	Meter Chambers: Added clause 5.13.7 to require a double check valve for backflow prevention when no backflow prevention is provided downstream of the fire/domestic water meter.
h			-	5-12	5.14	Air Valves and Fittings: Revised to read Combination air release valves.
h			-	5-12	5.15	Flushouts: Revised Section 9.0 title in clause.
h			-	5-12	5.16	Floor Drain Assembly Chamber Design: Revised name to include 'Chamber Design' and added clause 5.16.1 'The chamber is to be designed to include a drain to a storm sewer or ditch.'
h			-	5-15	5.22.5	Water Main Pipe - High Density Polyethylene (HDPE) Pipe: Removed part of clause 5.22.5(c) it was moved into the design section. Added reference to the design criteria Section 5.05.
h			-	5-16	5.24	Water Main Valves: Removed clause 5.24.1 and clause 5.24.2 and referred to design Section 5.05. These clauses are the specifications regarding the size requirements to use a gate valve or butterfly valve and the requirement to use thrust blocking or restraints.

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h			-	5-18	5.25	Water Main Valve Boxes: Revised 5.25.1 to read 'MR' instead of 'Robar' and in clause 5.25.3 revised so that all risers both in travelled and untravelled area need to be DR18 PVC pipe.
t			-	5-21	5.30.5	Water Service Connections - Meter Service Boxes, Box, Extensions and Lids: Revised so that plastic meter service boxes may be used in existing landscaped areas and not in any existing, proposed or future driveway locations.
h			-	5-24	5.34	Meter Chamber: Added references to installation section. Removed the hot-dip galvanized steel option from 5.30.5 manhole steps leaving the aluminum alloy as the primary material to be used. Removed reference to cleanouts in 5.34.8.
h			-	5-26	5.41	Pipe Alignment, Grade and Depth of Cover: Added clause 5.41.5 reference to the design criteria section.
h			-	5-27	5.47	Joint Restraint: Added reference to drawing W-8 for concrete thrust blocking and '...as directed by the Engineer.' for thrust restraints on the construction drawings. In clause 5.47.2 added '...drawings or as otherwise indicated on the construction drawings.'
t			-	5-30	5.56.3	Water Service Connection Installation: Revised clause 5.56.3(i) to require the marker to be pressure treated wood that would extend 600mm above ground rather than 300mm.
h			-	5-31	5.58.7	Meter Chamber: Revised clause 5.58.7 to require o-ring gasket installation at the joints between the barrels and cement mortar between the top riser and the cover slab. Added 5.58.7(e) to refer to the specifications section.
h			-	5-32	5.58.11	Meter Chamber - Frames and Covers: revised clause 5.58.11(b)(ii) to have a maximum variance of 6mm lower than the finished pavement.
t			-	5-32	5.58.11	Meter Chamber - Frames and Covers: Revised clause 5.58.11(c) so that steel manhole riser rings are only used in easements and not in low traffic area.
t	d		-	5-35	Table W-1	Design Fire Flow by Land Use Zone: revised to incorporate the new calculated hydrant fire flows for the current land use zoning from Bylaw 4500
h			-	W-1	W-1	Water Service Connection Detail (19mm to 50mm): Revised to show dimension for drain rock bedding and cover over the meter box.
h			-	W-2A	W-2A	Above Ground Flushout Detail c/w Thrust Block and Optional Restrained Method: Added reference to restrainer method detail if flushout is restrained. Revised 65mm dia. brass nipple to be 150mm long instead of 100mm. Clarified 25mm dia. drain rock.
h			-	W-2B	W-2B	Below Ground Flushout Detail c/w Thrust Block and Optional Restrained Method: Added reference to restrainer method detail if flushout is restrained. Revised 65dia brass nipple to be 150mm long instead of 100mm. Clarified 25dia drain rock. Added 'c/w thrust block and optional restrained method' to title.

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h			-	W-4	W-4	Air Release Valve Assembly and Chamber for 150mm - 300mm Main: Labelled 12mm dia. ball drain valve and 90degree elbow. Added Note 4.
h			-	W-10	W-10	Standard Plastic Meter Box (For 19mm to 25mm)(Special Applications Only): Added 'Special Applications Only' to the title.
h			-	W-10A	W-10A	Standard Concrete Meter Box - Type 37 (For 19mm to 25mm): Added cross section A-A to the drawing.
h			-	W-10B	W-10B	Standard Concrete Meter Box - Type 66 (For 38mm to 50mm): Added cross section A-A to the drawing.
t	d		Added	W-11	-	Precast Vault Meter Chamber: Added new drawing to document.
t	d		-	W-11A	W-11A	Precast Circular Manhole Meter Chamber: Removed galvanized material reference from ladder rungs/steps, changed the gravel base from 100mm to 50mm, revised label of rubber manhole seal ring to flexible sealant material.
h			-	W-11B	W-11B	Precast Vault Meter Chamber (Manhole Access): Revised title and changed drawing number.
t	d		Added	W-13	-	Fire/Domestic Water Meter Piping Layout (100dia -250dia): New drawing
h			-	W-14	W-14	Domestic Water Meters Piping Layout (100dia - 250dia): Revised to show rectangular box
h			-	W-14A	W-14A	Domestic Water Meters Piping Layout (38dia and 50dia): Revised to add note to refer to W-10B for meter box details.
h			-	W-15	W-15	Detector Check Fire Line Service Piping Layout (100dia-250dia): Revised range from 150mm dia. to include 100mm dia., and revised to show rectangular meter box.
h			-	W-16	W-16	Gate Valve and Valve Nut Extensions: Revised Note 1 specification of C1150 pipe to DR18 pipe.
h			Superseded	All	6.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
t			-	6-4	6.01A.4	Sewage Flows: In cases where populations are greater than 1000 a approved sanitary sewer model shall be used.
t			-	6-4	6.01A.5	Peak Inflow and Infiltration (I&I): Clause 6.01A.5(b) was removed and clause 6.01A.5(a) was revised to reference both existing areas and new development areas.
h			-	6-5	6.01A.7	Clause revised to reference title of Appendix H1 - Sanitary Sewer Flow Analysis - Calculation Sheet.
t			-	6-6	6.03	Hydraulics: Replaced 'lateral' with 'gravity' for terminology. Revised clause 6.03.2 to clarify the goal to achieve a minimum daily self-cleansing velocity of 0.75m/s. Added clause 6.03.4 'Design of gravity sewers to flow at less than 70% of diameter. Added clause 6.03.6 for the minimum grade of gravity sewers to achieve 0.75m/s.

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t			-	6-7	6.04.1	Piping Depths: Replaced 'lateral' with 'gravity' for terminology. Added 'Unless otherwise approved by the City Engineer, the maximum cover depth is 4.5m.
h			-	6-7	6.04.3	Piping Location of Sewers: Replaced 'lateral' with 'gravity' for terminology.
h			-	6-8	6.04.4	Piping Service Connection Lengths, Grade and Alignment: Revised title and specification clause to remove the use of cleanouts.
t	d		-	6-8	6.04A	Manholes: Removed the specification to use cleanouts at the upstream end of a gravity sewer.
h			-	6-16	6.23	Joints: Combined specifications from clause (e) and Installation 6.46 regarding material for flanged joints and bolts.
t			-	6-17	6.24.1	Service Junctions - Concrete Pipe: Revised to add additional service stub orientation for concrete pipe.
h			-	6-17	6.24.1	Service Junctions - Concrete Pipe: Removed installation clauses that were moved into the Installation portion of the manual.
h			-	6-17	6.24.2	Service Junctions - PVC (Smooth Profile): Removed installation clauses that were moved into the Installation portion of the manual.
h			-	6-17	6.24.3	Service Junctions - PVC Pipe (Ribbed Profile): Added specification that ribbed pipe shall only be used if repairing an existing ribbed pipe section.
h			-	6-17	6.24.4	Service Junctions - High Density Polyethylene (HDPE) Pipe (Smooth Profile): Removed installation clause (b) that was moved into the Installation portion of the manual. Added clause to reference the installation section 6.48.
h			-	6-18	6.24.5	Service Junctions - High Density Polyethylene (HDPE) Pipe (Open Profile): Added clause to reference the installation section 6.48.
h			-	6-18	6.25A	Precast Manhole Bases: Removed the requirement that factory precast manhole bases require approval by the City Engineer. Added reference to the Installation section.
h			-	6-18	6.27	Manhole Covers and Frames: Removed clauses .7 and moved it into Installation section and added reference to 6.53.
h			-	6-19	6.28	Manhole Steps: Remove the option of hot-dip galvanized 19mm diameter rolled steel as a material used for the ladder. Also removed clauses .2 and .3 and moved them into the Installation section and added reference to section 6.54.
t			-	6-19	6.31	Precast Concrete Grade Ring: Removed clause 6.31.2, where bricks may be used instead of concrete grade rings at the discretion of the Engineer.
t	d		-	6-19	6.32	Temporary Cleanout Frames and Covers: Revised heading to add 'Temporary' and added clause 6.32.1.
h			-	6-19	6.33	Pipe and Fittings for Drop Manhole Structures: Revised name to remove reference to cleanouts. Also added a reference to the installation specifications.
h			-	6-20	6.35	Manhole Lid Markers: Revised to add that galvanized steel shall be used for the markers. Also revised specification and title to incorporate temporary cleanouts.

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t			-	6-20	6.37	Pumping Stations: Added clause 6.37.6 'All pumps shall be a minimum of 5hp.' Revised clause 6.37.12 to reference the correct title. Added clause 6.37.13 to reference the installation section. Removed clause 'Hot dip galvanized steel products will only be accepted when a comparable aluminum or stainless steel product is not available.'
h			-	6-22	6.42A	Force Main Installation: Revised reference title within clause 6.42A.2 to be Section 5.47 - Pipe Restraint.
h			-	6-23	6.46	Fittings and Joints: Removed clause and moved it into Specifications 6.23. Added reference to Specification section.
t			-	6-24	6.48	Service Connection Junctions: Added and revised installations for connections in concrete pipe, PVC smooth profile and HDPE smooth profile.
h			-	6-26	6.49A	Manhole Concrete Bases: Revised to include the use of rubber manhole adapter rings. Also added reference to specifications section of document.
t			-	6-26	6.50	Manhole Channeling: Added installation requirement that channel shall be constructed to have a minimum 0.3m straight section in the bench prior to change in direction.
h			-	2-26	6.51	Precast Manhole Sections: Revised to include the use of rubber manhole adapter rings. Added reference to specification section.
h			-	6-27	6.53	Frames and Covers: Revised installations to reduce use of steel riser rings to easements only and provided a maximum depth variance for the covers to be 6mm. Also added reference to the specifications section of the document.
h			-	6-27	6.54	Manhole Steps: Revised to be in conformance with the latest WorkSafeBC Regulations.
t	d		-	6-28	6.57	Temporary Cleanouts: Revised title to include temporary as well as the specification.
h			-	6-28	6.58A	Pumping Stations: Added reference to the specification and design criteria sections of the document.
t			-	6-29	6.59.3	Service Connection Installation - Sanitary Sewer Service Connection Installation: Revised to include specifications for a pressure treated wooden marker stake to be showing 600mm above ground for service locations. Also revised for the stake to be unpainted rather than painted yellow.
t			-	6-29	6.60	Cleaning and Flushing: Revised to incorporate the latest contract requirements. Added a 24 hour maximum timeframe between cleaning and video inspection of pipe.
t			-	6-33	6.64	Video Inspecting Mains and Service Connections: Revised to incorporate the latest contract requirements including the video inspection of service leads. Title was revised to include service connections.

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t			-	6-35	6.67	Pipe Video and Manhole Condition Report Format: Revised to incorporate the latest contract requirements including items list of report requirements.
t			-	S-1	S-1	Sanitary Manhole Benching Details: Added the 300mm straight channel length on the drawing details.
t			-	S-2	S-2	Typical Sanitary Manhole Details for Mains to 375mm - Standard Precast Type: Added WorksafeBC reference, revised concrete base to remove the keyed base. Added option of the rubber manhole seal rings.
t	d		-	S-3	S-3	Typical Drop Sanitary Manhole Details Standard Precast Type For Sewers 375mm dia. or Less & Over 1.35m in Depth: Revised concrete encasement to be reduced to 50mm below the top of the pipe elbow, and require the use of drain rock for the remaining fill up to 75mm above the top of the inflow pipe.
t			-	S-3A	S-3A	Inside Drop Manhole Detail for 200dia. Sewers: Revised concrete base to remove the keyed base.
h			-	S-4	S-4	Sanitary Manhole Platform Detail: Added WorksafeBC reference for the ladder spacing distance.
t			-	S-5	S-5	Sanitary Standard Service Connection: Added 'pressure treated' to wooden stake note and added 600mm dimension line for height of stake.
t			-	S-6	S-6	Sanitary Riser Service Connection: Added 'pressure treated' to wooden stake note and added 600mm dimension line for height of stake.
t			-	S-7	S-7	Commercial Areas Sanitary Service Connection Detail Riser and Non Riser Types: Added detail heading 'Connection to an Existing Service' Revised drawing to show an eccentric reducer and revised label to suit.
h			-	S-8	S-8	Detail of Sanitary Service Box & Inspection Assembly Installation in Untraveled Areas: Added reference to drawings S-5, S-6 and S-7.
h			-	S-8A	S-8A	Detail of Sanitary Service Box & Inspection Assembly Installation in Paved Lanes and High Traffic Areas: Added reference to drawings S-5, S-6 and S-7.
t	d			S-12	S-12	Sanitary Cleanout Structure: Revised title and content so that cleanouts are a temporary item. Also removed the Type 1 in the title.
t	d		Removed	-	S-13	Sanitary Cleanout Structure Type 2: Removed from manual.
h			-	S-14	S-14	Sanitary Manhole Lid Marker: Revised title to add 'temporary' to 'cleanout'. Revised notes and labels as well.
h			-	S-19	S-19	Standard Concrete Sanitary Service Box (For Twin Service): Remove extension detail. Removed dimension options for Top detail and added the 425mm dimension line for the Bottom detail.
h			-	S-20	S-20	Standard Concrete Sanitary Service Box (For Single Service): Remove extension detail. Removed dimension options for Top detail and Bottom detail.
h			Superseded	All	7.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.

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h			-	7-4	7.02	Land Use: Revised reference name from 'Official Regional District Settlement Plans' to 'Community' plans.
t	e	d	-	7-5	7.03.3	Hydrology - Minor System - Rainfall Runoff Calculation Method: Revised the design criteria to require modelling programs to be used when a natural or man made storage is required or existing.
t	e	d	-	7-5	7.03.4	Hydrology - Major System - Rainfall Runoff Calculation Method: Revised the design criteria to require major system design flows to be determined using the rational method when no storage is required or existing and the total tributary area is less than 25 hectares.
t			-	7-7	7.06	Pipe Design Details: Revised Grades and Velocity design criteria and included a maximum velocity. Also revised Service Connection Lengths, Manholes, and Perforated Drains to incorporate the removal of cleanouts from the manual. Manholes were also revised to include design criteria for hydraulic losses. Revised Inlet and Outlet Structures to include conformance to WorkSafeBC requirements.
h			-	7-21	7.22B	Joints: Added stainless steel preference to fittings for HDPE smooth profile pipe.
t			-	7-21	7.23	Service Junctions: Revisions in concrete, PVC (smooth profile) and HDPE (smooth profile). Moved installation requirement into installation section. Added additional stub orientation specifications and references to the installation sections.
h			-	7-22	7.24	Perforated Drains: Revised the format of the table in clause 7.24.4.
h			-	7-23	7.25A	Precast Manhole Sections: Added reference to specification section.
h			-	7-23	7.25B	Precast Manhole Bases: Revised to remove the approval of the City Engineer to use precast manhole bases.
h			-	7-23	7.25D	Manhole Covers and Frames: Revised to include reference to installation section. Removed clause 7.25D.7 'The inside of the manhole frame shall be painted green with an enamel rust paint in accordance with the manufacturer's specifications' and moved to the installation section.
h			-	7-24	7.25E	Manhole Steps: Revised requirements for aluminium alloy steps only and included reference to installation section.
h			-	7-24	7.27	Precast Concrete Grade Ring: Revised to remove redundancy between the specification and installation sections.
t	d		-	7-24	7.28	Temporary Cleanout Frames and Covers: Revised heading to add 'Temporary' and added clause 7.28.1.
h			-	7-24	7.29	Pipe and Fittings for Drop Manhole Structures: Revised name to remove reference to cleanouts. Also added a reference to the installation specifications.
h			-	7-26	7.35A	Culverts: Added specification that ribbed PVC pipe shall only be used for driveway culverts.

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h			-	7-27	7.37	Manhole Lid Markers: Revised to add that galvanized steel shall be used for the markers. Also revised specification and title to add temporary to cleanouts.
h			-	7-28	7.40A	Pipe Alignment and Grade: Revised to format table.
h			-	7-29	7.46.2	Fittings and Joints - High Density Polyethylene (HDPE) Pipe (Smooth Profile): Revised to incorporate material preference of stainless steel with isolation washers and added reference to specifications section.
h			-	7-30	7.48	Service Connection Junctions for concrete pipe, PVC (smooth profile), HDPE (smooth profile): Revised requirements for the connections in concrete pipe, PVC smooth profile and HDPE smooth profile. Added reference clauses for the specification sections.
t			-	7-32	7.50	Manhole Channeling: Added installation requirement that channel shall be constructed to have a minimum 0.3m straight section in the bench prior to change in direction.
h			-	7-32	7.51	Precast Manhole Sections: Revised to include the use of rubber manhole adapter rings. Added reference to specifications section.
h			-	7-32	7.52	Precast Manhole Bases: Revised to include the use of rubber manhole adapter rings. Added reference to specifications section.
h			-	7-33	7.54	Frames and Covers: Revised installations to reduce use of steel riser rings to easements only and provided a maximum depth variance for the covers to be 6mm. Also added reference to the specifications section of the document. Added 'The inside of the manhole frame shall be painted green with an enamel rust paint in accordance with the manufacturer's specifications' that was moved from the
h			-	7-33	7.55	Manhole Steps: Revised to be in conformance with the latest WorksafeBC regulations. Added clause 7.55.3 'All steps shall be complete with approved polyethylene anchor insulating sleeves and installed in 25mm to 26mm diameter precast or drilled holes in a manhole section.' Added clause 7.55.4 reference to specifications section.
h			-	7-34	7.56	Drop Manhole Structures: Revised title to include 'Manhole'
t	d		-	7-34	7.58	Temporary Cleanouts: Revised title to include temporary as well as the specification.
t			-	7-35	7.61	Service Connection Installation - Storm Sewer Service Connection Installation: Revised to include specifications for a pressure treated wooden marker stake to be showing 600mm above ground for service locations.
t			-	7-36	7.62A	Cleaning and Flushing: Revised to incorporate the latest contract requirements. Added clause 7.62A.9 for a 24 hour maximum timeframe between cleaning and video inspection of pipe. Added clause 7.62A.10 to ensure that all environmental concerns are in accordance with current BC Ministry of Environment and Department of Fisheries and Oceans Standards.

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t			-	7-37	7.63	Video Inspecting Mains: Revised to incorporate the latest contract requirements including the video inspection of service leads.
h			-	7-39	7.67	Perforated Drains: Revised to install manholes rather than cleanouts.
t			-	7-40	7.70	Pipe Video and Manhole Condition Report Format: Revised to incorporate the latest contract requirements.
h			-	ST-1	ST-1	Curb Type Catch Basin for Formed Curbs Type 1 & Type 2: Removed brick as a material option to be used instead of precast concrete grade rings.
t			Added	ST-1A	-	Curb Type Catch Basin for Formed Curbs Type 1 and Type 2 (600mm x 600mm): New drawing added to manual.
t			Added	ST-1B	-	Curb Type Catch Basin for Formed Curb Type 3: Revised 2009 ST-1A dwg to suit construction practises.
h			-	ST-2	ST-2	Boulevard Drainage Catchbasin Type 4 for 250mm dia. & 300mm dia. Pipe: Added note 'CB lead shall be reduced at the discretion of the City Engineer.' Added labelling of concrete shims.
h			-	ST-2A	ST-2A	Lawn Basin Type 5 for 150mm dia. Pipe: Revised hatch for the compacted base of drain rock.
t			Added	ST-2B	-	Lawn Basin Type 5A (300mm dia. Barrel): Added to manual for additional smaller catchbasin option.
h			-	ST-3	ST-3	Cast-In-Place Concrete Headwalls for Pipe Inlets Type 1 (300 dia. - 1200dia.): Added '500 min' dimension line for the grates horizontal distance.
h			-	ST-3A	ST-3A	Cast-In-Place Concrete Headwalls for Pipe Outlets Type 1 (300 dia. - 1200dia.): Added '500 min' dimension line for the grates horizontal distance.
h			-	ST-4	ST-4	Precast Concrete Headwalls for Pipe Inlet and Outlets Type 2 (300 dia. - 1200 dia.): Added '500 min' dimension line for the grates horizontal distance.
t	e	d	-	ST-7	ST-7	Rainfall Curves: Revised to include the most current curves based on rainfall data from 1980 to 2005 from Environment Canada.
t			-	ST-14	ST-14	Storm Manhole Benching Details: Added the 300mm straight channel length on the drawing details.
h			-	ST-15	ST-15	Typical Storm Manhole Details for Mains to 375mm - Standard Precast Type: Added WorksafeBC reference, revised concrete base to remove the keyed base. Added option of the rubber manhole seal rings.
t	d		-	ST-16	ST-16	Typical Drop Storm Manhole Details Standard Precast Type For Sewers 375mm dia. or Less & Over 1.35m in Depth: Revised concrete encasement to be reduced to 50mm below the top of the pipe elbow, and require the use of drain rock for the remaining fill up to 75mm above the top of the inflow pipe.
h			-	ST-17	ST-17	Storm Manhole Platform Detail: Added WorksafeBC reference for the ladder spacing distance.

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t			-	ST-18	ST-18	Storm Standard Service Connection: Added 'pressure treated' to wooden stake note and added 600mm dimension line for height of stake.
t			-	ST-19	ST-19	Storm Riser Service Connection: Added 'pressure treated' to wooden stake note and added 600mm dimension line for height of stake.
t			-	ST-20	ST-20	Commercial Areas Storm Service Connection Detail Riser and Non Riser Types: Added detail heading 'Connection to an Existing Service'. Revised drawing to show an eccentric reducer and revised label to suit.
h			-	ST-21	ST-21	Detail of Storm Service Box & Inspection Assembly Installation in Untraveled Areas: Added reference to drawings ST-18, ST-19, ST-20.
h			-	ST-21A	ST-21A	Detail of Storm Service Box & Inspection Assembly Installation in Paved Lanes and High traffic Areas: Added reference to drawings ST-18, ST-19, ST-20.
t	d		-	ST-24	ST-24	Storm Cleanout Structure: Revised title and content so that cleanouts are a temporary item. Also removed the Type 1 in the title.
t	d		Removed	-	ST-25	Storm Cleanout Structure Type 2: Removed from manual.
h			-	ST-26	ST-26	Storm Manhole and Lid Marker: Revised title to add 'temporary' to 'cleanout'. Revised notes and labels as well.
h			-	ST-29	ST-29	Standard Concrete Storm Service Box (For Twin Service): Removed extension detail. Removed dimension options for Top detail and added the 425mm dimension line for the Bottom detail.
h			-	ST-30	ST-30	Standard Concrete Storm Service Box (For Single Service): Remove extension detail. Removed dimension options for Top detail and Bottom detail.
h			Superseded	All	8.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
h			-	8-4	8.01	Right-Of-Way and Pavement Widths: Revised to show a minimum 6.0m walkway right-of-way unless otherwise approved by the City Engineer.
t	d		-	8-5	8.02	Curbs – General: Revised curb requirements for the installation of non-mountable curbs only except for curbs in a cul-de-sac bulb and where directed by the City Engineer. Also revised curve radius preferences for curb extensions complete with reference to the new curb extension detail drawing.
t			-	8-5	8.03	Walkway Vehicle Barricades: Added telescoping bollards to the options for barriers and removed the collapsible bollards from criteria.
h			-	8-5	8.04	Driveway and Lane Crossing: Added criteria requirement that driveway and lane crossings shall not exceed a crossfall of 8.3%.
h			-	8-6	8.05	Standard Longitudinal Grade: Revised to give options for designing within the longitudinal grade parameters.

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t			-	8-6	8.06	Sidewalk and Walkway Cross fall Grade: Added reference to the new drawing created for driveway crossings where boulevard is between the sidewalk and road.
t			-	8-6	8.07	Sidewalk and Walkway Thickness: Revised criteria to include a load bearing base under the sidewalk panel 1.5m wide for driveway crossings.
h			-	8-7	8.10	Sidewalks in Cull-De-Sacs: Revised formatting for Section 9.0 title change.
t			-	8-8	8.12	Stairways: Revised heading title for future addition of wooden stairs. Revised minimum distance of barriers to be 1.5m from last stair rather than 1.2m.
t	d		Added	8-8	8.14	Bus Stop /Pullout Configurations: Added section to the manual.
h			-	8-9	8.21	Concrete: Revised heading to read Curb and Sidewalk Concrete.
t			-	8-10	8.24	Curb and Sidewalk Isolation Joints: Revised requirements for the material used around poles.
h			-	8-10	8.32	Forms: Revised to refer to Section 11.0 Form Release Agent. Reduce redundancy.
h			Removed	8-12	8.37	Rough Cedar Planks: Removed section from the manual. Revised title to 'Not Used'.
h			Removed	8-12	8.38	Nails: Removed section from the manual. Revised title to 'Not Used'.
h			-	8-13	8.45	Placing Concrete: Clause 8.45.4 was bolded for importance.
t	d		-	8-15	8.49	Curb and Sidewalk Contraction Joints: Revised to incorporate construction practises for wider sidewalks.
t			-	8-15	8.50	Curb and Sidewalk Isolation Joints: Revised requirements for the material used around poles.
h			Removed	8-17	8.59	Rough Cedar Plank Curbing: Section was removed from the manual. Revised title to 'Not Used'.
t	d		-	CS-1	CS-1	Non-Mountable Monolithic Curb & Gutter Construction: Added note 5. Added dimensions for reverse curb option.
t	d		Added	CS-1A	-	Valley Curb and Flat Curb: Added drawing to manual for construction options.
t	d		-	CS-4	CS-4	Mountable Monolithic Curb & Gutter: Added notes 1 and 5. Added 12mm dimension line for reverse curb option.
h			-	CS-4A	CS-4A	Interim Road Standard Curb Types: Removed Monolithic Asphalt Curb detail drawing.
t	d		-	CS-5	CS-5	Typical Sidewalk and Driveway Crossing Type 1: Added 1.5m panel with a 150mm thick crush gravel base.
t	d		-	CS-5A	CS-5A	Typical Sidewalk and Driveway Crossing Type 2: Added 1.5m panel with a 150mm thick crush gravel base.
t	d		Added	CS-5B	-	Typical Sidewalk and Driveway Crossing Type 3: Added new drawing to provide construction options for sidewalks where there is a boulevard.
h			-	CS-6	CS-6	Typical Sidewalk Construction and Finishing Details: Added note 7 to refer to installation specifications and revised note 1 to reference new drawing CS-5B.

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t	d		Removed	-	CS-7	Pedestrian Sidewalk Ramp For Non-Mountable Curb: Removed from manual and replaced with CS-7A and CS-7B.
t	d		Added	CS-7A	CS-7	Pedestrian Sidewalk Ramp For Non-Mountable Curb Single: Added to manual to provide more construction applications.
t	d		Added	CS-7B	CS-7	Pedestrian Sidewalk Ramp For Non-Mountable Curb Double: Added to manual to provide more construction applications.
t	d		-	CS-8	CS-8	Island Pedestrian Crosswalk Ramp: Revised to provide more construction details.
t	d		Added	CS-9	-	Curb Extension Detail: Added to manual to provide construction details.
t	d		Added	CS-10A	-	Urban Hard Surface Walkway: Added to manual from the PRC Trailway Guidelines to provide construction details.
t	d		Added	CS-10B	-	Urban Soft Surface Walkway: Added to manual from the PRC Trailway Guidelines to provide construction details.
t	d		Added	CS-10C	CS-9	Parkway Connector Walkway replaced Walkway in 6.0m Right-of-Way drawing. Revised based on the PRC Trailway Guidelines to provide further construction details.
h			Removed	-	CS-11	Gateway Barrier for Walkways (Detail): Removed from manual.
h			Removed	-	CS-12	Gateway Barrier for Walkways (Location): Removed from manual.
h			-	CS-12	CS-13	Asphalt Curb: Drawing re-numbered for 2013 revision.
h			-	CS-13	CS-14	Walkway Barrier: Drawing re-numbered for 2013 revision.
t			-	CS-13	CS-14	Walkway Barrier: Dimension between baffles increased from 1200mm to 1500mm.
h			-	CS-14	CS-15	Removable Barrier Post: Drawing re-numbered for 2013 revision.
t	d		-	CS-15	CS-19	Fire Lane Telescoping Bollard: New drawing replaced Fire Lane Collapsible Bollard drawing.
h			-	CS-16	CS-16	Concrete Stairway and Landing: Added 'Concrete' to drawing title.
h			-	CS-16A	CS-17	Concrete Stairway: Drawing re-numbered for 2013 revision.
h			-	CS-18	CS-18	Sidewalk Handrail: Added concrete hatching to drawing.
t	d		Added	CS-19	-	Wood Rail Fence: DSD drawing added to the manual to provide additional construction details.
t	d		Added	CS-20	-	Bus Stop Configuration for Raised Sidewalk: Drawing added to manual to provide additional construction details.
t	d		Added	CS-21	-	Bus Stop Configuration for Paved Shoulder: Drawing added to manual to provide additional construction details.
h			Superseded	All	9.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
t	d		-	9-4	9.01	Scope: Revised to add new scope for Section 9.0 that includes approval from City Engineer of design criteria prior to design stage.

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h			-	9-4	9.02	Minimum Width of Right-Of-Way: Revised to add 'unless otherwise approved by the City Engineer'
t	d		-	9-4	9.03	Minimum Width of Pavement: Revised to Urban Local and Rural Local width of pavement to conform to the Standard Drawings. Also added approval from City Engineer.
t			-	9-9	9.12	Access Driveways: Revised to add requirements to extend paving to right-of-way.
t			-	9-10	9.15	Street Markings: Removed clause 9.15.2 and added reference to Section 8.38 and accordance with City of Nanaimo Traffic and Highway Installation Guidelines.
t	d		-	9-10	9.16	Temporary Turn-A-Rounds: Revised title to Temporary Turn-A-Rounds to clarify the item and referred to new standard drawings R7-CU5 and R7-U6.
h			-	9-13	9.29	Road Sub-Base Gravel Course: Revised title and formatted the table.
h			-	9-13	9.30	Road base Gravel Course: Revised title and formatted the table.
t			-	9-14	9.31	Reclaimed Asphalt Product: Revised reference title and specification to read Minimum RAP content shall be 10%.
h			-	9-15	9.35	Traffic Signs: Revised section to refer to the most current edition of the Motor Vehicle Act.
h			-	9-15	9.38	Street Markings: Removed installation standards for section and moved reference to the Installation section.
h			-	9-17	9.43	Roadway Construction Conditions: Revised title for clarity.
h			-	9-22	9.61	Street Name and Traffic Signs: Revised to add reference to the sign standard drawings that were moved from Section 10.0 to Section 9.0.
h			-	9-22	9.62	Street Markings: Revised to reference street marking specifications.
h			-	R1-XS1	R1-XS1	Urban Arterial (Four Lanes): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
h			-	R1-XS2	R1-XS2	Urban Arterial (Five Lanes): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
h			-	R2-XS1	R2-XS1	Major Collector (Four Lanes): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
h			-	R2-XS2	R2-XS2	Major Collector (Five Lanes): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
t	d		-	R3-XS1	R3-XS1	Minor Collector (Two Lanes): Added designated labels for the dimensioned lanes.
t	d		Added	-	R3-XS2	Minor Collector (Two Lanes, Turn Lane): Added new drawing to manual for additional reference.
h			-	R4-XS1	R4-XS1	Commercial (Two Lanes and Parking): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.

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h			-	R5-XS1	R5-XS1	Industrial (Two Lanes and Parking): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
h			-	R6-XS1	R6-XS1	Neighbourhood Collector (Two Lanes and Parking): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
h			-	R7-XS1	R7-XS1	Urban Local: Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
h			-	R7-XS3	R7-XS3	Urban Local (Low Volume): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
h			-	R7-XS4	R7-XS4	Urban Local (Low Volume in Existing 20.0m R/W): Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
h			-	R7-XS5	R7-XS5	Rural Local: Added 0.70m shoulder dimension with a 1:1.5 cut/fill slope.
t			-	R9-XS1	R9-XS1	Half Road Section: Revised Minimum pavement width from 6.0m to 7.5m
t			-	R12-ME1	R12-ME1	Raised Center Median: Removed '(River Rock)' from title and from the standard drawing. Replaced with exposed aggregate concrete to suit current construction practise.
h			-	R4-CU1	R4-CU1	Commercial Offset Cul-de-Sac: Added return curve radius dimension line.
h			-	R4-CU2	R4-CU2	Commercial Standard Cul-de-Sac: Added return curve radius dimension line.
h			-	R5-CU1	R5-CU1	Industrial Offset Cul-de-Sac: Added return curve radius dimension line.
h			-	R5-CU2	R5-CU2	Industrial Standard Cul-de-Sac: Added return curve radius dimension line.
h			-	R7-CU1	R7-CU1	Urban Local Offset Cul-de-Sac: Added return curve radius dimension line.
h			-	R7-CU2	R7-CU2	Urban Local Standard Cul-de-Sac: Added return curve radius dimension line.
t	d		Added	R7-CU5	-	Temporary Turnaround Standard: New Drawing to provide construction details.
t	d		Added	R7-CU6	-	Temporary Turnaround Offset: New Drawing to provide construction details.
t	d		Added	RT-1	-	City of Nanaimo Custom Garbage Truck Turning Template: New Drawing to provide design reference.
t	d		Added	RT-2	-	City of Nanaimo Custom Fire Truck Turning Template: New Drawing to provide design reference.
t			Added	R-S1	E-1.12	Perforated Steel Base for Signs: New drawing to reference current construction requirements.
t			Added	R-S2	-	Round Stock Sign Base Detail in Concrete: New drawing to reference current construction requirements.
t			Added	R-S3	-	Round Stock Sign Base Detail in Pavers: New drawing to reference current construction requirements.
h			Added	R-S4	E-11.1	Signs on Perforated Steel Tubing Sheet 1: Moved from Section 10.0. Added reference to Std Dwg R-S1.
h			Added	R-S5	E-11.2	Signs on Perforated Steel Tubing Sheet 2: Moved from Section 10.0. Added reference to Std Dwg R-S1 and removed the use of bolts and washers and replaced with the use of rivets.

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h			Added	R-S6	E-11.2A	Standard Traffic Sign Installation Details: Moved from Section 10.0. Added reference to Std Dwg R-S1 and revised maximum height dimension from 2000mm to 2180mm and the use of 25mm rivets to 50mm.
h			Added	R-S7	E-11.3	Signs on Steel Poles Sheet 1: Moved from Section 10.0.
h			Added	R-S8	E-11.4	Signs on Steel Poles Sheet 2: Moved from Section 10.0.
h			Superseded	All	10.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
t	e		-	10-5	10.01	Roadway Lighting: Revised the Lux level from 6 to 4 in Urban and Rural Local Streets. Revised the clause include the northing, easting and elevation of hydro pole.
h			-	10-12	10.06	Service Equipment: Revised to refer to the Standard Drawing.
h			-	10-12	10.08	Median Signage and Post Mounted Flashers: Section was removed from MoESS signage and moved to Section 9.0. Title changed to 'Not Used'.
h			-	10-13	10.20	Scope: Specifications pertaining to street names signs removed and moved in Section 9.0.
h			-	10-14	10.23	Junction Boxes: Revised to include reference to Standard Drawing E-3.3.
t	e		-	10-15	10.28	Traffic and Pedestrian Signal Heads and Lamps: Revised to specify LED instead of 150W incandescent Lamps.
h			-	10-17	10.34	Conductor Tags: Revised wording from pan to pen.
t			-	10-18	10.39	Luminaries: Revised to specify either glass or polycarbonate refractors.
h			-	10-18	10.40	Service Panels: Revised to reference Standard Drawings E-5.18, E-1.18A, E-1.18B or E-1.18C.
h			Removed	10-19	10.46	Extruded Aluminium Signs: Section was removed from MoESS. Title changed to 'Not Used'.
t			-	10-20	10.48	Siren Pre-Emption System: Revised to specify sound based detectors rather than digital.
h			-	10-21	10.64	Electrical Power Supply: Added reference to the BC Hydro Street Light Information Management System and sample forms within Appendix J.
h			-	10-22	10.66	Concrete Bases: Revised to change reference to Standard Drawing to E-1.14.
t			-	10-24	10.72	Audible Signals: Added reference that tones and decibel levels must meet the recommendations outlined by the CNIB.
h			-	E-1.1	E-1.1	Base Index: Revised title to remove 'Concrete'. Revised to reference drawings in section 9.0.
t			Added	E-1.2A	-	Type D & D1 Sonotube Precast or Cast-In-Place Concrete Bases: New Drawing added to manual.
t			Added	E-1.4A	-	Type C & Type C1 Trapezoidal Shape Concrete Bases with Irrigation: New drawing added to manual.

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t			-	E-1.10	E-1.10	Anchor Bolt Cage for Type S Poles: Revised to incorporate material list for S poles rather than 6 & 7 poles.
h			Removed	-	E-1.12	Precast Concrete Base for Signs: Moved to Section 9.0.
t			-	E-1.13	E-1.13	Pole Base Installation Details: Added 50mm minimum dimension and changed the grade from level to 2%.
t			-	E-5.7	E-5.7	Signal Pole (Type S Shaft) Installation Details: Replaced Type 6 drawing details with Type S.
t			-	E-5.8	E-5.8	Signal Pole (Type S Shaft) Installation Details: Replaced Type 6 drawing details with Type S.
t			Removed	-	E-5.9	Signal Pole (Highways Type 7 Shaft): Removed from manual. Type S replaces Type 7.
t			Removed	-	E-5.10	Signal Pole (Highways Type 7 Shaft): Removed from manual. Type S replaces Type 7.
t			Added	E-5.18A	-	Pole Mounted Service Panel: New drawing added to manual.
t			Added	E-5.18B	-	100A - Overhead Drop Service Installation Details: New drawing added to manual.
t			Added	E-5.18C	-	100A - Overhead Drop Service Installation Details: New drawing added to manual.
t			-	E-5.19	E-5.19	Pole Accessories: Revised to include Security 4x7 Hand hole Cover Kit detail.
h			-	E-9.1	E-9.1	Underground Dip Service: Corrected labelling of 'Electrical Utility Company'
h			-	E-10.3	E-10.3	Typical 60A Street Lighting Wiring Diagram (For Use in Service Base): Revised title of drawing.
h			-	E-10.4	E-10.4	Typical 100A Traffic Signal/Street Lighting/Wiring Diagram (For Use in Service Base): Revised title of drawing.
h			Removed	-	E-11.1	Signs on Perforated Steel Tubing Sheet 1: Removed from Section 10.0 and moved to Section 9.0.
h			Removed	-	E-11.2	Signs on Perforated Steel Tubing Sheet 2: Removed from Section 10.0 and moved to Section 9.0.
h			Removed	-	E-11.2A	Interim Standard Traffic Sign Installation Details: Removed from Section 10.0 and moved to Section 9.0.
h			Removed	-	E-11.3	Signs on Steel Poles Sheet 1: Removed from Section 10.0 and moved to Section 9.0.
h			Removed	-	E-11.4	Signs on Steel Poles Sheet 2: Removed from Section 10.0 and moved to Section 9.0.
h			Superseded	All	11.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.

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h			-	11-4	11.31	Concrete: Revised to reference the revised section title for 8.21 Curb and Sidewalk Concrete.
h			-	11-7	11.43	Formwork: Revised section to reference WorkSafe BC rather than Worker's Compensation Board.
h			-	11-10	11.55	Mixing, Placing and Compacting: Removed redundancy within the installation criteria.
h			Superseded	All	12.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
t			-	12-9	12.47	Placement: Revised to include installation temperature requirements for bottom and top lift.
h			Superseded	All	13.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
h			-	13-3	13.02	Roadway and Sidewalk Design: Revised to reference revised Section 9.0 and Section 8.0 titles.
h			-	13-3	13.03	Edge Restraints: Revised to preferred use of non-mountable curb. Revised to reference revised Section 8.0 title.
h			-	13-3	13.04	Thickness of Concrete Pavers: Revised to reference revised Section 8.0 title.
t			-	13-5	13.10	Standard Unit Paving Edges: Added criteria that reference the new drawings.
h			-	13-6	13.20	Scope: Revised to reference revised Section 8.0 title.
h			-	13-7	13.30	Concrete: Revised to reference revised Section 8.0 title.
h			-	13-8	13.32	Select Granular Sub-Base: Revised to reference revised section title.
h			-	13-8	13.33	Base Materials: Revised to reference revised section title.
h			-	13-9	13.40	General: Revised to reference revised section title.
h			-	13-9	13.43	Subgrade, Base, and Sub-base Preparation: Revised to reference revised section title.
h			-	13-9	13.46	Edge Restraints: Revised to reference revised section title.
t	d		-	13-10	13.48	Concrete Pavers: Revised specification so that a minimum joint spacing is not required.
h			-	BP-2	BP-2	Base Paving Details Flexible, Semi-Rigid & Rigid Base: Revised title from 'Paving Details'
t	d		Added	BP-3	-	Standard Unit Paving Edge Details for Planting Curb and Asphalt/Concrete Grade Beam Edge: Added drawing to manual.
t	d		Added	BP-4	-	Standard Unit Paving Edge Details for Asphalt Edge and Grass Edge: Added drawing to manual.

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h			Superseded	All	14.00	Entire section, including written specifications and standard drawings, are superseded in MoESS due to updating and formatting of the requirements and the update of the identifier footer.
t	e	d	-	14-5	14.01	Scope: Revised to incorporate the criterion by the Urban Forest Management Strategy.
t	e	d	-	14-7	14.04	Minimum Landscape Area Dimensions and Maximum Grades: Revised the minimum width of boulevards for tree plantings from 2.0m to 1.85m.
t	e		-	14-7	14.05	Plant Material Selection: Revised seeded slopes from 3:1 to 4:1. Revised tree species for Part 1 and Part 4.
t			-	14-11	14.07A	Structural Soils: Added new section to note approval from City Engineer is required when using structural soils.
t	e	d	-	14-11	14.08	General Irrigation Requirements: Revised to incorporate additional construction details.
h			-	14-13	14.12	Reference Standards: Revised to update listings.
t	e	d	-	14-14	14.14	Soil Sample and Testing: Revised to include requirements for testing on-site soils prior to landscape work tender.
t	e		-	14-15	14.15	Top Soil for Grass Areas: Revised to remove gravel as an acceptable top soil.
t			-	14-15	14.16	Un-amended Top Soil: Revised minimum pH from 4.5 to 5.5.
t	e		-	14-16	14.17	Sub-Soil: Revised to add protection specifications for the material and listings of regulations.
t	e	d	Added	14-17	14.17A	Growing Medium Properties: Added new section.
t	e		-	14-20	14.18	'A Horizon' Soil Mix: Revised to add additional specifications.
t	e		-	14-21	14.19	Peat Moss: Revised to include specification of soil amendments.
t	e		-	14-21	14.20	Manure: Revised to include mushroom manure to requirements.
t	e		-	14-21	14.21	Compacted Leaf or Wood Wastes: Revised to add additional requirements.
t			-	14-22	14.22	Fertilizers: Revised the parameters for types of dry fertilizers that are acceptable and added additional specifications for this section.
h			Removed	14-22	14.23	Bone meal: Removed from the manual. Revised title to 'Not Used'
t			-	14-22	14.24	Lime: Added requirements to limit dolomite lime.
t	e		-	14-23	14.26	Plant Materials: Revised specifications to incorporate the additional construction details.
h			-	14-24	14.27	Sod: Added Requirement for City Engineer's approval to clause 14.27.2
t	e		-	14-24	14.28	Grass and Wildflower Seed Mixtures: Revised to add references to the legislative acts, required certifications of seed mixes and lists of noxious and invasive species.
t	e		-	14-26	14.29	Mulch: Revised to update to incorporate additional construction details.
t	d		-	14-26	14.30	Planting Accessories: Revised to remove the use of concrete tree grates and use only metal tree grates instead, complete with specifications.

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t			-	14-27	14.31A	Structural Soils: Added new section to note approval from City Engineer is required when using structural soils.
t			-	14-27	14.32	Irrigation Scope: Revised to incorporate additional construction details.
t			-	14-28	14.34	Irrigation Standards: Revised to incorporate additional construction details and required certifications.
t			-	14-30	14.44	Irrigation Valves: Revised to clarify size requirements for valves.
t			-	14-30	14.46	Irrigation Casing Sleeves: Revised to add specifications for minimum and maximum depths of irrigation sleeves.
t			-	14-30	14.47	Controllers: Revised to add preference to materials.
t			-	14-31	14.50	Backflow Prevention Device: Revised to add specification for testing.
t			-	14-31	14.51	24 Volt Control Wiring: Added specification parameters for wiring.
t	e		-	14-33	14.56	Shipping, Storage and On-site Handling of Plant Materials: Revised to incorporate additional construction details.
h			-	14-34	14.57	Pre-Planting Inspections: Revised Engineer to be City Engineer for notifications and acceptance from the appropriate City delegate.
t	e		-	14-34	14.58	Excavation: Revised to incorporate additional construction details and add installation parameters.
t	e		-	14-36	14.59	Tree Planting: Revised to allow for sloping roughened sides on the tree pit to promote standard tree health.
t	e		-	14-38	14.60	Shrub and Ground Cover Planting: Revised to incorporate additional construction details.
h			-	14-38	14.61	Pruning: Revised Engineer to City Engineer for approval on pruning.
t			-	14-39	14.62	Cutting, Shipping and On-site Handling of Sod: Revised and added installation requirements for handling sod.
t			-	14-40	14.64	Laying of Sod: Revised time allowance for testing to be 3 weeks prior to application of fertilizers rather than 1 week. Revised Engineer to City Engineer for approvals and notifications regarding sod.
h			-	14-41	14.65	Sodding Inspections: Revised Engineer to City Engineer for notifications.
h			-	14-42	14.68	Seeding: Revised Engineer to City Engineer for approval regarding seeding.
h			-	14-42	14.69	Mechanical Dry Seeding: Added imperial depth for reference to water penetration. Revised Engineer to City Engineer for approvals.
h			-	14-42	14.70	Hydroseeding: Revised Engineer to City Engineer for pre-approvals for hydroseeding fine grass area.
h			-	14-43	14.72A	Structural Soils: Added new section to note approval from City Engineer is required when using structural soils.
h			-	14-43	14.73	Existing Conditions: Revised to clarify paved roadway areas for required sleeve installation.

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t	d		-	14-44	14.75	Workmanship: Revised to add any construction changes to the as-built drawings.
h			-	14-44	14.76	Excavation and Trenching: Revised Engineer to City Engineer for approvals.
h			-	14-45	14.78	Pipe Line Assembly and Installation: Revised to add parameters for installation.
h			-	14-45	14.79	Valves and Control Wiring: Revised wiring installation requirements to include valve box.
h			-	14-46	14.82	Hydrostatic Tests: Revised Engineer to City Engineer for approvals, notifications and presence requests.
t	e	d	-	14-48	14.87	Landscape Maintenance Scope: Revised to add definitions of the moderate level of maintenance required. Added best practise list.
h			-	14-49	14.88	Reference Standards: Removed listings and referenced 14.12.
t			-	14-49	14.89	Qualifications and Workmanship: Revised and added to the list of required qualifications for workmanship.
t	e		-	14-49	14.90	Protection: Revised to include protection against fertilizers.
t	e		-	14-50	14.91	Handling and Storage of Chemicals: Revised and added parameters for safety when handling and storing chemicals.
h			-	14-50	14.93	End of Maintenance Period: Revised to notify City Engineer.
t			-	14-51	14.96	Water: Revised to add separate agreement option.
t	e	d	-	14-51	14.98	Trees, Shrubs, and Ground Covers: Removed Saphora from clause 14.98.1(g). Revised Engineer to City Engineer for approvals and notifications.
t	e	d	-	14-52	14.99	Fine Grass Areas: Revised to reference the current edition of the BC Landscape Standard. Revised Engineer to City Engineer for acceptance.
t	e	d	-	14-53	14.100	Rough Grass and Wildflower: Revised to add reference to noxious and invasive plant species.
t	e	d	-	P-1	P-1	Tree Planting Root Zone Volume: Revised drawing to have a minimum boulevard width of 1.85m. Remove Tree Planting with 4 cu.m Root Zone detail. Revised 20cu.m root zone to have a minimum of 7m length along the boulevard and 6m minimum for 10 cu.m root zone.
t	e	d	-	P-2	P-2	Tree Planting in Grass Boulevard: Revised drawing to suit current best practises.
t	e		-	P-4	P-4	Shrub Planting in Median: Removed river rock median and replaced it with an exposed aggregate concrete.
t	e		-	P-5	P-5	Tree Planting in Concrete Sidewalk: Revised the title from 'Tree in Pavement Type 1' and incorporated the current construction practises into the detail.
t	e	d	-	P-6	P-6	Tree Grate Plan View: Revised to incorporate the metal tree grate and removed all references to the concrete tree grate.
t	e	d	-	P-7	P-7	Tree Planting in Unit Paving Surface: Revised drawing to replace the concrete tree grate with a metal tree grate and adding a plan and section detail of the metal tree grate.

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h			-	I-1	I-1	Irrigation Backflow Preventer & Point of Connection: Revised no.8 of the material list and added note 2 and 3.
h			-	I-3	I-3	Valve Box Schematic Piping Configuration at Valve Cluster: Revised detail for formatting.
t			-	I-4	I-4	Shrub Riser Spray Head: Revised title from 'Typical Spray Head' and replaced the detail.
t			-	I-5	I-5	Popup Spray Head Turf Rotary Head: Revised title from Drip System at Tree and replace detail.
h			-	I-6	I-6	In-Line Drip Assembly and Layout: Revised drawing fitting to suit installation current practises.
h			-	I-7	I-7	Irrigation Controller Cabinet Details: Added note 1 and 7 to drawing.
t			Added	I-8	-	Quick Coupler Valve Detail: Added new drawing to manual.
t			Added	I-9	-	Electric Valve Detail: Added new drawing to manual.
h			Superseded	All	Appendices	All Appendices are superseded in MoESS due the revision of the identifier footer.
h			-	Appendix A	Appendix A	Revision Request Summary Sheet for the Manual of Engineering Standards and Specifications: Revised to incorporate Revision No. and submission date.
t	e	d	-	Appendix D	Appendix D	Minimum Required Statutory Right-of-Way and Temporary Working Easement Widths For Underground Services Through Private Property: Revised requirements generally to increase the width to allow for maintenance with minimum width changed to 4.0m from 3.0m.
t	e		-	Appendix E	Appendix E	Substantial Completion Statistics Record Utilities & Works for Development forms: Added a storm detention and rock/block wall and revised cleanout to be temporary cleanout. Revised format of forms and tables including a total box for each sub-type.
h			-	Appendix G1	Appendix G1	Certification of Design: Revised year from 19__ to 20__.
h			-	Appendix G2	Appendix G2	Certification of Installed Works: Revised year from 19__ to 20__. Also Added '(Date of Certification)' under the Dated entry of the form.
h			-	Appendix G3	Appendix G3	Certification of Street Light Installation: Revised year from 19__ to 20__.
t			Added	Appendix I	-	City of Nanaimo's Field Handbook of General Signs: Appendix was added to manual for reference.
h			Added	Appendix J	-	SAMPLE - BC Hydro SLIM Connection Form - Appendix was added to manual for reference.
t	d		Added	Appendix K	-	City of Nanaimo's GIS Attribute Tables: Appendix was added to manual for reference and supplement for Section 1.0.