



Ontario Provincial Standards Unit
301 St. Paul St., 2nd Floor North
St. Catharines, ON L2R 7R4

REVISION INFORMATION SHEET

ONTARIO PROVINCIAL STANDARDS FOR ROADS AND PUBLIC WORKS

VOLUME 3 MUNICIPAL AND PROVINCIAL COMMON DRAWINGS FOR ROADS, BARRIERS, DRAINAGE, SANITARY SEWERS, WATERMAINS, AND STRUCTURES

MANUAL REVISION #71

April 2017

UPDATING ONTARIO PROVINCIAL STANDARDS FOR YOUR USE

Each roads and public works owner (Owner) is responsible for determining implementation dates and directions for use of Ontario Provincial Standards; therefore, manual holders are cautioned about immediately discarding superseded and cancelled standards.

ACCESSING AND OBTAINING ONTARIO PROVINCIAL STANDARDS

The Ontario Provincial Standards for Roads and Public Works (OPS) manuals and the latest published updates for each of the eight OPS manuals are available as follows:

- Available electronically on the OPS/MTO website. Online access to the current, updated, and archived standards; indexes; OPS User Notes; and publication Revision Information Sheets are available free of charge at the site.
(<http://www.rags.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage>)
- The eight OPS manuals of standards are also available for free as well in a single PDF format on the website.

A link to the Ontario Provincial Standards on the MTO Library website is available on the OPS website (www.ops.on.ca). Also on this site under News and Activities are notices for updates and changes in OPS.

Questions should be directed by email to Ontario.Prov.Standards@ontario.ca

WAITING TO HEAR FROM YOU

If you have a suggestion to revise a standard or you have a standard that works in your ministry, municipality, or area, send it to the Head, OPS Administration, for review and possible inclusion into the Ontario Provincial Standards.

THIS MANUAL IS REVISED AS FOLLOWS:

Index Pages Volume 3

Please remove the entire index and replace with the attached revised index.

Standard Drawings Volume 3

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
		912.314	0	“GUIDE RAIL SYSTEM, STEEL BEAM, TRANSITION FROM TYPE M TO EXISTING STEEL BEAM GUIDE RAIL, INSTALLATION” This is a New Drawing.
		922.165	0	“ENERGY ATTENUATOR, END TREATMENT, STEEL BEAM ENERGY ATTENUATING TERMINAL, MASH SOFTSTOP TERMINAL SYSTEM, INSTALLATION” This is a New Drawing.
		922.186	0	“ENERGY ATTENUATOR, END TREATMENT, STEEL BEAM ENERGY ATTENUATING TERMINAL, MASH SEQUENTIAL KINKING TERMINAL SYSTEM, INSTALLATION” This is a New Drawing.

MANUAL REVISION RECORD

Municipal and Provincial Common

Volume 3 – Drawings for Roads, Barriers, Drainage, Sanitary Sewers, Watermains, and Structures

This record should remain in the manual at all times. Revisions are numbered sequentially. This sheet should be filled in after each revision has been placed into the manual. It will quickly indicate to users whether the contents of the manual are up-to-date.

REVISION NUMBER	REVISION DATE	ENTERED BY	REVISION NUMBER	DATE	ENTERED BY
51	APRIL 2005	Included in new manuals	77		
52	NOV 2005	Included in new manuals	78		
53	NOV 2006	Included in new manuals	79		
54	APRIL 2007	Included in new manuals	80		
55	NOV 2007	Included in new manuals	81		
56	APRIL 2008	Included in new manuals	82		
57	NOV 2008	Included in new manuals	83		
58	NOV 2009	Included in new manuals	84		
59	APRIL 2010	Included in new manuals	85		
60	NOV 2010	Included in new manuals	86		
61	APRIL 2011	Included in new manuals	87		
62	NOV 2011	Included in new manuals	88		
63	NOV 2012	Included in new manuals	89		
64	APRIL 2013	Included in new manuals	90		
65	NOV 2013	Included in new manuals	91		
66	NOV 2014	Included in new manuals	92		
67	APRIL 2015	Included in new manuals	93		
68	NOV 2015	Included in new manuals	94		
69	APRIL 2016	Included in new manuals	95		
70	NOV 2016	Included in new manuals	96		
71	APRIL 2017	Included in new manuals	97		
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DATE	OPSD NO.	REV.	TITLE
DIVISION 100 - ABBREVIATIONS			
2010 11	100.010	4	Abbreviations, General A-C
2006 11	100.011	1	Abbreviations, General D-J
2009 11	100.012	2	Abbreviations, General L-R
2009 11	100.013	4	Abbreviations, General S-W
2006 11	100.050	1	Abbreviations, Building Descriptions
2006 11	100.060	1	Abbreviations, Geotechnical
2006 11	101.010	1	Topography Plan Features, Monument Features
2006 11	101.011	1	Topography Plan Features, Ground Features
2006 11	101.012	1	Topography Plan Features, Road Features
2006 11	101.013	1	Topography Plan Features, Barrier and Vegetation Features
2006 11	101.014	1	Topography Plan Features, Utility Features
2006 11	101.015	1	Topography Plan Features, Drainage Features
2006 11	101.016	1	Topography Plan Features, Miscellaneous Features
2008 11	101.017	3	Topography Plan Features, Right-of-Way Features
2006 11	102.010	1	Removals, Legend
2006 11	103.010	1	New Construction, Legend 1
2008 04	103.011	2	New Construction, Legend 2
2007 11	104.010	0	Miscellaneous Symbols
DIVISION 200 - GRADING			
2009 11	200.010	2	Earth/Shale Grading, Undivided Rural
2009 11	200.020	2	Earth/Shale Grading, Divided Rural
2009 11	201.010	2	Rock Grading, Undivided Rural
2009 11	201.020	2	Rock Grading, Divided Rural



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DATE	OPSD NO.	REV.	TITLE
2016 11	202.010	3	Slope Flattening Using Surplus Excavated Material On Earth or Rock Embankment
2013 11	202.020	3	Drainage Gap for Slope Flattening on Rock or Granular Embankment
2016 11	202.030	6	Roadway Widening for Eccentric Loader Terminal System and Transitions
2016 11	202.031	1	Roadway Widening for Steel Beam Energy Attenuating Terminal Approach End
2016 11	202.032	1	Roadway Widening for Steel Beam Energy Attenuating Terminal Leaving End and Constrained Approach End
2016 11	202.033	1	Roadway Widening, Single Sided Energy Attenuating Terminals, Approach End
2010 11	203.010	3	Embankments Over Swamp, New Construction
2010 11	203.020	3	Embankments Over Swamp, Existing Slope Excavated to 1H:1V
2010 11	203.030	3	Embankments Over Swamp, Existing Slopes Maintained
2010 11	203.040	3	Embankments Over Swamp at Pipe Culvert ≤ 1500 mm
2015 11	204.010	3	Boulder Treatment, Cut Sections - Subgrade
2016 11	205.010	3	Transition Treatment, Earth Cut to Earth Fill
2016 11	205.020	3	Transition Treatment, Rock Cut to Rock Fill
2016 11	205.030	3	Transition Treatment, Rock Cut to Earth Fill
2016 11	205.040	3	Transition Treatment, Earth Fill to Rock Fill and Earth Fill to Granular Fill
2016 11	205.050	3	Transition Treatment, Rock Cut to Earth Cut
2014 11	205.060	3	Frost Heave Treatment
2009 11	206.010	1	Granular Courses, Undivided Rural
2009 11	206.020	1	Granular Courses, Divided Rural
2008 11	206.050	1	Subdrain Pipe, Connection and Outlet, Rural
2016 11	207.010	3	Concrete Pavement on Open Graded Drainage Layer, Divided Highway
2016 11	207.020	3	Composite Pavement on Open Graded Drainage Layer, Divided Highway



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DATE	OPSD NO.	REV.	TITLE
2016 11	207.030	2	Concrete and Composite Pavement on Open Graded Drainage Layer, Urban Section
2016 11	207.041	4	Subdrain Pipe, Open Graded Drainage Layer, Hot Mix Asphalt, Concrete, or Composite Pavement
2016 11	207.044	5	Subdrain Pipe, Connection and Outlet, Open Graded Drainage Layer
2013 11	208.010	3	Benching of Earth Slopes
2009 11	209.010	1	Rural Pavement Widening
2009 11	209.011	2	Rural Pavement Widening, Curb with Gutter
2016 11	209.020	3	Widening Existing Rock Cut with Grade Rise
2010 11	210.010	1	Tangent Shoulders, Rural
2010 11	210.020	1	Superelevated Shoulders, Rural
2016 11	210.070	4	Granular Sealing
2010 11	211.010	2	Partially Paved Shoulders, Existing Pavement Maintained
2010 11	211.020	2	Partially Paved Shoulders, Existing Pavement Resurfaced
2009 11	212.010	1	Resurfacing with Crossfall Correction with Hot Mix Asphalt, Tangent Section
2009 11	212.020	1	Resurfacing with Crossfall Correction with Hot Mix Asphalt, Superelevated Section
2009 11	212.030	1	Resurfacing, Existing Crossfall Maintained
83 12 01	213.01	0	Pavement Widening On Curves, Widening On Both Sides of Curve With or Without Spirals
83 12 01	213.02	0	Pavement Widening on Curves, Widening on Inside of Curves With or Without Spirals
2016 11	214.010	2	Single-Lane Ramp Grading for Asphalt Pavement with Granular Base and Shoulder
2016 11	214.020	2	Single-Lane Ramp Grading for Asphalt Pavement with Granular Base and Asphalt Shoulder
2016 11	214.030	3	Single-Lane Ramp Grading for Asphalt Pavement with Granular Base, Asphalt Shoulder, and Curb with Gutter
2016 11	215.010	2	Two-Lane Ramp Grading for Asphalt Pavement with Granular Base and Asphalt Shoulder



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2016 11	215.020	2	Two-Lane Ramp Grading for Asphalt Pavement with Granular Base, Asphalt Shoulder, and Curb with Gutter for Tangent Section
2016 11	215.030	3	Two-Lane Ramp Grading for Asphalt Pavement with Granular Base, Asphalt Shoulder, and Curb with Gutter for Superelevated Section
2006 11	216.010	1	Boulevard Treatments, Urban Section
2008 11	216.020	1	Hot Mix, Concrete, and Composite Pavement On Granular Base, Urban Section
2008 11	216.021	2	Subdrain Pipe, Connection and Outlet, Urban
2011 11	217.050	2	Access to Hydrant Across Ditch
2011 11	217.060	2	Utility Pole Setting Depth at Ditch Locations
2015 11	219.100	2	Light-Duty Straw Bale Barrier
2015 11	219.110	2	Light-Duty Silt Fence Barrier
2015 11	219.120	0	Light-Duty Fibre Roll Barrier
2015 11	219.130	2	Heavy-Duty Silt Fence Barrier
2015 11	219.131	0	Heavy-Duty Wire-Backed Silt Fence Barrier
2015 11	219.150	2	Sandbag Barrier
2015 11	219.160	0	Fibre Roll Grade Breaks
2015 11	219.180	2	Straw Bale Flow Check Dam
2015 11	219.191	0	Fibre Roll Flow Check Dam
2015 11	219.200	2	Sandbag Flow Check Dam
2015 11	219.210	2	Temporary Rock Flow Check Dam, V-Ditch
2015 11	219.211	2	Temporary Rock Flow Check Dam, Flat Bottom Ditch
2015 11	219.220	2	Sediment Trap In Ditch
2015 11	219.230	4	Temporary Slope Drain for Sediment Trap
2015 11	219.231	1	Temporary Berm Barrier for Slope Drain
2015 11	219.240	2	Sediment Trap for Dewatering



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DATE	OPSD NO.	REV.	TITLE
2015 11	219.260	2	Turbidity Curtain
2015 11	219.261	2	Turbidity Curtain, Seam Detail
2007 11	220.010	0	Barrier for Tree Protection
2000 11	221.010	0	Temporary Water Passage System, Culvert in Watercourse
2000 11	221.020	0	Temporary Water Passage System, Pumping and Piping
2000 11	221.030	0	Temporary Water Passage System, Temporary Channel or Culvert Outside Watercourse
2000 11	221.040	0	Temporary Waterbody Crossing, Fill and Culvert
2000 11	221.050	0	Temporary Waterbody Crossing, Ford
2014 11	222.010	1	Rootwad Structures for Waterbody Banks
2013 11	222.020	0	Large Woody Debris for Waterbody Banks
2013 11	222.030	0	Stone Lunkers
2013 11	222.040	0	Wood Lunkers
2014 11	222.050	0	Riffles on Streambeds
2014 11	222.060	0	Pools in Streambeds
2014 11	222.070	0	Rocky Ramps on Streambeds
2014 11	222.080	0	Low Flow Channel

DIVISION 300 - ENTRANCES

2011 11	300.010	2	Side Road Intersection, Fill
2011 11	300.020	2	Side Road Intersection, Cut
2010 11	301.010	2	Rural Entrances to Roads on Fill
2010 11	301.020	2	Rural Entrances to Roads in Earth Cut
2010 11	301.030	2	Rural Entrance, Rock Cut
2015 11	302.010	2	Median Crossovers for Service and Emergency Vehicles



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DATE	OPSD NO.	REV.	TITLE
2009 11	304.010	1	Shoulder Treatment, Sideroad Intersections
2015 11	310.010	2	Concrete Sidewalk
2015 11	310.020	2	Concrete Sidewalk Adjacent to Curb and Gutter
2015 11	310.030	1	Concrete Sidewalk Ramps at Signalized Intersections
2015 11	310.031	0	Concrete Sidewalk Ramps At Signalized Intersections With Intersecting Crosswalks
2015 11	310.033	0	Concrete Sidewalk Ramps At Unsignalized Intersections
2015 11	310.039	0	Concrete Sidewalk Ramps Tactile Walking Surface Indicators Component
2015 11	310.040	2	Utility Isolation in Concrete Sidewalks
2015 11	310.050	2	Concrete Sidewalk Driveway Entrance Details
2015 11	310.060	2	Joint Detail for Concrete Pedestrian Crosswalk at Signalized and All-Way Stop Controlled Intersections
2009 11	350.010	1	Urban Industrial, Commercial, and Apartment Entrances
2009 11	351.010	1	Urban Residential Entrance

DIVISION 400 - FRAMES AND GRATES

2013 11	400.001	1	Hoisting Hook Rib for Cast Iron Frames for Catch Basins, Maintenance Holes, and Valve Chambers
2013 11	400.010	2	Cast Iron, Square Frame with Square Overflow Type Dished Grate for Catch Basins, Herring Bone Openings
2013 11	400.020	2	Cast Iron, Square Frame with Square Flat Grate for Catch Basins, Herring Bone Openings
2013 11	400.021	0	Cast Iron, Square Frame for Curb Inlet Overflow
2013 11	400.030	2	Cast Iron, Square Frame with Square V Grate for Catch Basins, Herring Bone Openings
2013 11	400.040	2	Cast Iron, One-Piece Frame and Flat Square Grate for Temporary Installation, Herring Bone Openings
2014 11	400.070	5	Cast Iron, Raised Square Frame with Circular Flat Grate for Catch Basins, Herring Bone Openings
2016 04	400.080	3	Cast Iron, Side Inlet for Catch Basins



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DATE	OPSD NO.	REV.	TITLE
2013 11	400.081	2	Cast Iron, Curb Inlet Frame with Two-Piece Raised Cover for Catch Basins Out of Roadway
2014 11	400.082	4	Cast Iron, Raised Curb Inlet Frame with Cover for Catch Basins Out of Roadway
2013 11	400.090	2	Cast Iron, Curb Inlet Overflow for Catch Basins
2013 11	400.100	2	Cast Iron, Square Frame with Square Flat Grate for Catch Basins, Perforated Openings
2013 11	400.110	2	Cast Iron, Square Frame with Square Overflow Type Flat Grate for Catch Basins, Perforated Openings
2013 11	400.120	2	Cast Iron, Square Frame with Birdcage Grate for Catch Basins
2013 11	401.010	3	Cast Iron, Square Frame with Circular Closed or Open Cover for Maintenance Holes
2013 11	401.020	3	Cast Iron, Circular Frame with Circular 745 mm Cover for Maintenance Holes
2013 11	401.030	3	Cast Iron, Square Frame with Circular Watertight Cover for Maintenance Holes
2015 04	401.040	4	Cast Iron, Raised Square Frame with Circular Closed or Open Cover for Maintenance Holes
2015 04	401.050	4	Cast Iron, Raised Square Frame with Circular Watertight Cover for Maintenance Holes
2013 11	401.060	3	Cast Iron, Circular Locking Cover for Maintenance Holes
2014 11	401.080	0	Cast Iron, Curb inlet Fish Type Cover for Catch Basins Out of Roadway
2015 11	401.081	1	Cast Iron, Square Frame Fish Type Cover
2014 11	402.010	3	Cast Iron, Square Frame with Circular Cover and Plug for Valve Chambers
2014 11	402.011	3	Cast Iron, Square Frame with Vented Circular Cover and Plug for Valve Chambers
2015 04	402.020	4	Cast Iron, Raised Square Frame with Circular Cover and Plug for Valve Chambers
2015 04	402.021	3	Cast Iron, Raised Square Frame with Vented Circular Cover and Plug for Valve Chambers
2014 11	402.030	4	Cast Iron, Rectangular Frame with Two-Piece Cover for Meter and Valve Chambers
2013 11	403.010	2	Galvanized Steel, Honey Comb Grating for Ditch Inlets



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2012 11	403.011	0	Raised Bar Grate for Ditch Inlet, 600 x 600 mm
2012 11	404.010	1	Aluminum Safety Platform and Ladder for Rectangular Precast Concrete Valve Chambers
2013 11	404.020	3	Aluminum Safety Platform for Circular Maintenance Holes
2013 11	404.021	2	Aluminum Safety Platform for 1500 mm Diameter Circular Maintenance Holes with Drop Pipe
2013 11	404.022	2	Aluminum Safety Platform for 1800 mm Diameter Circular Maintenance Holes with Drop Pipe
2013 11	405.010	3	Maintenance Hole Steps, Hollow
2013 11	405.020	3	Maintenance Hole Steps, Solid
2013 11	406.010	2	Aluminum Ladder for Maintenance Holes
DIVISION 500 - PAVING			
2009 11	500.010	0	Turning Basins for Terminated Rural Roadways
2009 11	500.020	0	Turning Basins for Terminated Urban Roadways, Residential
2009 11	500.030	0	Turning Basins for Terminated Urban Roadways, Industrial and Commercial
2010 11	501.010	1	Bus Bays
2009 11	502.010	1	Access Lanes for Rear Lots
2011 11	503.010	1	Concrete Ripple Strip
2012 11	504.010	1	Raised Traffic Island
2009 11	506.010	1	Hot Mix Resurfacing Treatment at Structure Approaches
2015 11	508.010	2	Routing and Sealing Cracks Up to 20 mm Width in Asphalt Pavement
2008 11	508.020	2	Sealing or Resealing of Joints and Cracks in Concrete Pavement and Concrete Base
2013 11	509.010	2	Pavement Reinstatement for Utility Cuts



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2010 11	514.010	1	Extruded Expanded Polystyrene Frost Heave Treatment, 25 mm Thickness
2010 11	514.020	1	Extruded Expanded Polystyrene Frost Heave Treatment, 40 mm Thickness
2008 11	551.010	1	Concrete and Composite Pavement Joint Spacing
2008 11	551.020	1	Concrete and Composite Pavement Joint Layout at Converging or Diverging Lanes
2008 11	551.030	2	Concrete and Composite Pavement Skewed Joint Layout at Intersections
2008 11	551.031	2	Concrete and Composite Pavement Right Angle Joint Layout at Intersections
2008 11	551.032	2	Concrete and Composite Pavement Utility Isolation
2008 11	552.010	1	Concrete Pavement Joint Details
2008 11	552.020	1	Composite Pavement Joint Details
2008 11	552.050	2	Load Transfer Device, Skewed Contraction Joint, Concrete or Composite Pavement
2008 11	552.051	2	Load Transfer Device, Right Angle Contraction Joint, Concrete or Composite Pavement
2008 11	552.060	2	Load Transfer Device, Skewed Expansion Joint, Concrete or Composite Pavement
2008 11	552.061	2	Load Transfer Device, Right Angle Expansion Joint, Concrete or Composite Pavement
2008 11	553.010	1	Concrete Pavement in Gore Areas
2008 11	553.020	1	Composite Pavement in Gore Areas
2008 11	554.010	1	Concrete Pavement Shoulder Terminal
2008 11	554.020	1	Composite Pavement Shoulder Terminal
2008 11	555.010	1	Concrete Pavement Approach Treatment to Hot Mix and Composite Pavements and Structure Approaches
2008 11	555.020	1	Composite Pavement Approach Treatment to Hot Mix and Concrete Pavements and Structure Approaches
2010 11	560.010	5	Composite or Exposed Concrete Pavements, Full Depth Concrete Slab Repair Layout
2010 11	560.020	2	Exposed Concrete Pavement, Full Depth Concrete Slab Repair, Joint Details



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2008 11	560.025	0	Concrete Pavement and Concrete Base, Cross-Stitching Longitudinal Cracks
2010 11	560.030	1	Composite Pavement, Full Depth Concrete Slab Repair, Joint Details
2010 11	560.040	1	Partial Depth Repairs in Concrete Pavement
2016 11	561.010	2	Interlocking Concrete Pavers on Granular Base
2016 11	561.020	2	Interlocking Concrete Pavers on Concrete or Asphalt Base
2016 11	561.030	2	Interlocking Concrete Pavers for Retrofit Crosswalk Installation
DIVISION 600 - CURBS AND GUTTERS			
2012 11	600.010	2	Concrete Barrier Curb with Wide Gutter
2012 11	600.020	2	Concrete Semi-Mountable Curb with Wide Gutter
2012 11	600.030	2	Concrete Mountable Curb with Wide Gutter
2012 11	600.040	2	Concrete Barrier Curb with Standard Gutter
2012 11	600.060	2	Concrete Semi-Mountable Curb with Standard Gutter
2012 11	600.070	2	Concrete Barrier Curb with Standard Gutter, Two Stage Construction
2012 11	600.080	2	Concrete Barrier Curb with Narrow Gutter
2012 11	600.090	2	Concrete Semi-Mountable Curb with Narrow Gutter
2012 11	600.100	2	Concrete Mountable Curb with Narrow Gutter
2012 11	600.110	2	Concrete Barrier Curb
2013 11	601.010	2	Asphalt Curb and Asphalt Curb with Gutter
2012 11	603.020	2	Precast Concrete Curb
2012 11	604.010	2	90° Concrete Outlet for Concrete Curb with Gutter
2013 11	604.020	2	90° Asphalt Outlet for Asphalt Curb with Gutter
2012 11	605.010	2	45° Concrete Outlet for Concrete Curb with Gutter
2013 11	605.020	2	30° and 45° Asphalt Outlets for Asphalt Curb with Gutter



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2012 11	605.030	2	45° Concrete Outlet for Concrete Curb with Gutter at End of Run
2013 11	605.040	2	Asphalt Spillways
2012 11	606.010	2	600 mm Radius Barrier Bullnose
2012 11	606.020	2	600 mm Radius Mountable Bullnose
2012 11	606.030	2	800 mm Radius Bullnose, Curb with Gutter Twin Inlet
2012 11	607.010	2	Over 600 mm Radius Mountable Bullnose
2012 11	607.020	2	Over 600 mm Radius Barrier Bullnose
2012 11	608.010	2	Method of Termination for Concrete Curb with Gutter
2009 11	610.010	1	Catch Basin Frame with Grate Installation at Curb with Gutter
2006 11	610.020	2	Catch Basin Frame with Grate Shoulder Installation at Concrete Barrier
2009 11	610.030	1	Frame with Grate Installation for Inlet Type Catch Basins

DIVISION 700 - CATCH BASINS AND MANHOLES

2014 11	701.010	5	Precast Concrete Maintenance Hole, 1200 mm Diameter
2014 11	701.011	5	Precast Concrete Maintenance Hole, 1500 mm Diameter
2014 11	701.012	5	Precast Concrete Maintenance Hole, 1800 mm Diameter
2014 11	701.013	5	Precast Concrete Maintenance Hole, 2400 mm Diameter
2014 11	701.014	4	Precast Concrete Maintenance Hole, 3000 mm Diameter
2014 11	701.015	4	Precast Concrete Maintenance Hole, 3600 mm Diameter
2014 11	701.021	4	Maintenance Hole Benching and Pipe Opening Alternatives
2014 11	701.030	4	Precast Concrete Maintenance Hole Components, 1200 mm Diameter, Tapered Top and Flat Cap
2014 11	701.031	2	Precast Concrete Maintenance Hole Components, 1200 mm Diameter, Riser and Monolithic Base



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2014 11	701.032	2	Precast Concrete Maintenance Hole Components, 1200 mm Diameter, Base Slab
2014 11	701.040	4	Precast Concrete Maintenance Hole Components, 1500 mm Diameter, Transition Cone and Slabs
2014 11	701.041	2	Precast Concrete Maintenance Hole Components, 1500 mm Diameter, Riser and Bases
2014 11	701.050	4	Precast Concrete Maintenance Hole Components, 1800 mm Diameter, Transition Slabs
2014 11	701.051	2	Precast Concrete Maintenance Hole Components, 1800 mm Diameter, Riser and Base Slab
2014 11	701.060	4	Precast Concrete Maintenance Hole Components, 2400 mm Diameter, Transition Slab
2014 11	701.061	2	Precast Concrete Maintenance Hole Components, 2400 mm Diameter, Riser and Base Slab
2014 11	701.070	3	Precast Concrete Maintenance Hole Components, 3000 mm Diameter, Transition Slab
2014 11	701.071	2	Precast Concrete Maintenance Hole Components, 3000 mm Diameter, Riser and Base Slab
2014 11	701.080	3	Precast Concrete Maintenance Hole Components, 3600 mm Diameter, Transition Slab
2014 11	701.081	2	Precast Concrete Maintenance Hole Components, 3600 mm Diameter, Riser and Base Slab
2010 11	701.100	2	Frost Strap Installation
2014 11	702.040	3	Precast Concrete Ditch Inlet Maintenance Hole - Type A, 1200 x 1200 mm
2014 11	702.050	3	Precast Concrete Ditch Inlet Maintenance Hole - Type B, 1200 x 1200 mm
2014 11	703.011	2	Precast Concrete Single Inlet Flat Cap, 1500 mm Diameter
2014 11	703.012	2	Precast Concrete Single Inlet Flat Cap, 1800 mm Diameter
2014 11	703.013	2	Precast Concrete Single Inlet Flat Cap, 2400 mm Diameter
2014 11	703.014	2	Precast Concrete Single Inlet Flat Cap, 3000 mm Diameter
2014 11	703.015	2	Precast Concrete Single Inlet Flat Cap, 3600 mm Diameter



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DATE	OPSD NO.	REV.	TITLE
2014 11	703.021	2	Precast Concrete Twin Inlet Flat Cap, 1500 mm Diameter
2014 11	703.022	2	Precast Concrete Twin Inlet Flat Cap, 1800 mm Diameter
2014 11	703.023	2	Precast Concrete Twin Inlet Flat Cap, 2400 mm Diameter
2014 11	703.024	2	Precast Concrete Twin Inlet Flat Cap, 3000 mm Diameter
2014 11	704.010	3	Precast Concrete Adjustment Units for Maintenance Holes, Catch Basins, and Valve Chambers
2008 11	704.011	1	High Density Polyethylene Adjustment Units for Maintenance Holes, Catch Basins, and Valve Chambers
2013 04	704.012	0	Expanded Polystyrene (EPS) Adjustment Units for maintenance Holes, Catch Basins, and Valve Chambers
2014 11	705.001	0	Concrete Catch Basin Apron, Mountable Curb with Wide Gutter
2014 11	705.002	0	Concrete Catch Basin Apron, Barrier Curb with Standard Gutter
2014 11	705.010	3	Precast Concrete Catch Basin, 600 x 600 mm
2014 11	705.020	3	Precast Concrete Twin Inlet Catch Basin, 600 x 1450 mm
2014 11	705.030	3	Precast Concrete Ditch Inlet, 600 x 600 mm
2014 11	705.040	3	Precast Concrete Ditch Inlets, 600 x 1200 mm
2014 11	706.010	3	Precast Concrete Ditch Inlets, 600 x 1200 mm with 1500 mm Diameter Flat Cap
2014 11	706.020	3	Precast Concrete Ditch Inlets, 600 x 1200 mm with 1800 mm Diameter Flat Cap
2014 11	706.030	3	Precast Concrete Ditch Inlet - Type A, 600 x 1200 mm with 2400 mm Diameter Flat Cap
2014 11	706.031	2	Precast Concrete Ditch Inlet - Type B, 600 x 1200 mm with 2400 mm Diameter Flat Cap
2014 11	706.040	3	Precast Concrete Ditch Inlet - Type A, 600 x 1200 mm with 3000 mm Diameter Flat Cap
2014 11	706.041	2	Precast Concrete Ditch Inlet - Type B, 600 x 1200 mm with 3000 mm Diameter Flat Cap



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DATE	OPSD NO.	REV.	TITLE
2014 11	707.010	3	Precast Concrete Maintenance Hole Manufactured Tee
2016 11	708.010	3	Catch Basin Connection for Rigid Main Pipe Sewer
2016 11	708.020	4	Support for Pipe at Catch Basin or Maintenance Hole
2016 11	708.030	3	Catch Basin Connection for Flexible Main Pipe Sewer
2013 11	710.010	3	Capping Existing Structures, Maximum 4.0 m Cover

DIVISION 800 - CULVERTS AND DRAINS

2012 11	800.010	2	Concrete Pipe Culvert and Sewer Extensions Using Corrugated Steel Pipe, Temporary Conditions
2012 11	800.011	2	Concrete Rigid Frame Box and Open Culvert Extensions Using Corrugated Steel Pipe, Temporary Conditions
2012 11	801.010	2	Cut End Finish Circular Pipe and Pipe-Arch, Corrugated Steel Pipe
2012 11	801.020	1	End Section Details, Corrugated Steel Pipe
2012 11	801.030	2	Bevel Details, Circular and Pipe-Arch Structural Plate, Corrugated Steel Pipe
2012 11	801.040	2	Culvert and Sewer Safety Slope End Treatment Notes and Tables
2012 11	801.041	2	Culvert and Sewer Safety Slope End Treatment, Assembly Details
2012 11	801.042	2	Culvert and Sewer Safety Slope End Treatment, Connection Details
2012 11	801.043	2	Culvert and Sewer Safety Slope End Treatment, Installation Details
2014 11	802.010	3	Flexible Pipe Embedment and Backfill, Earth Excavation
2014 11	802.013	3	Flexible Pipe Embedment and Backfill, Rock Excavation
2014 11	802.014	3	Flexible Pipe Embedment in Embankment, Original Ground: Earth or Rock
2015 11	802.020	3	Flexible Pipe Arch Embedment and Backfill, Earth Excavation
2015 11	802.023	3	Flexible Pipe Arch Embedment and Backfill, Rock Excavation



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2015 11	802.024	3	Flexible Pipe Arch Embedment in Embankment, Original Ground: Earth or Rock
2015 11	802.030	3	Rigid Pipe Bedding, Cover, and Backfill, Type 1 or 2 Soil - Earth Excavation
2015 11	802.031	3	Rigid Pipe Bedding, Cover, and Backfill, Type 3 Soil - Earth Excavation
2015 11	802.032	3	Rigid Pipe Bedding, Cover, and Backfill, Type 4 Soil - Earth Excavation
2015 11	802.033	3	Rigid Pipe Bedding, Cover, and Backfill, Rock Excavation
2015 11	802.034	3	Rigid Pipe Bedding and Cover in Embankment, Original Ground: Earth or Rock
2015 11	802.050	3	Horizontal Elliptical Rigid Pipe Bedding, Cover, and Backfill, Type 1 or 2 Soil - Earth Excavation
2015 11	802.051	3	Horizontal Elliptical Rigid Pipe Bedding, Cover, and Backfill, Type 3 Soil - Earth Excavation
2015 11	802.052	3	Horizontal Elliptical Rigid Pipe Bedding, Cover, and Backfill, Type 4 Soil - Earth Excavation
2015 11	802.053	3	Horizontal Elliptical Rigid Pipe Bedding, Cover, and Backfill, Rock Excavation
2015 11	802.054	3	Horizontal Elliptical Rigid Pipe Bedding and Cover in Embankment, Original Ground: Earth or Rock
2016 11	802.095	2	Clay Seal for Pipe Trenches
2015 11	803.010	3	Backfill and Cover for Concrete Culverts with Spans Less Than or Equal to 3.0 m
2015 11	803.030	3	Frost Treatment - Pipe Culverts, Frost Penetration Line Below Bedding Grade
2015 11	803.031	4	Frost Treatment - Pipe Culverts, Frost Penetration Line Between Top of Pipe and Bedding Grade
2006 11	804.030	1	Concrete Headwall for Pipe Less Than 900 mm Diameter
2006 11	804.040	0	Concrete Headwall for Sewer or Culvert Pipe Outlet
2013 11	804.050	1	Grating for Concrete Endwall
2014 11	805.010	2	Height of Fill Table, Round Corrugated Steel Pipe and Structural Plate Corrugated Steel Pipe
2014 11	805.020	2	Height of Fill Table, Corrugated Steel Pipe-Arch and Structural Plate Corrugated Steel Pipe-Arch



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DATE	OPSD NO.	REV.	TITLE
2014 11	805.030	2	Height of Fill Table, Spiral Rib Round Pipe
2014 11	805.040	2	Height of Fill Table, Spiral Rib Pipe-Arch
2014 11	806.020	2	Height of Fill Table, Dual Wall Corrugated Polyethylene Gravity Sewer Pipe, 320 kPa and RSC 160
2014 11	806.021	2	Height of Fill Table, Closed Profile Wall Polyethylene Pipe, RSC 160 and RSC 250
2014 11	806.022	2	Height of Fill Table, Dual Wall Corrugated Polyethylene Gravity Sewer Pipe, RSC 100 and RSC 160
2014 11	806.023	0	Height of Fill Table, Solid Wall Polyethylene Pipe, SDR 32.5
2013 11	806.030	0	Height of Fill Table, Dual and Triple Wall Corrugated Polypropylene Gravity Sewer Pipe, 320 kPa
2015 11	806.040	3	Height of Fill Table, Polyvinyl Chloride Gravity Sewer Pipe, 210, 320, and 625 kPa
2014 11	806.060	1	Height of Fill Table, Polyvinyl Chloride Pressure Pipe for Different Dimension Ratios
2015 11	807.010	3	Height of Fill Table, Reinforced Concrete Pipe - Confined Trench, Class 50-D, 65-D, 100-D, and 140-D
2015 11	807.030	3	Height of Fill Table, Reinforced Concrete Pipe - Embankment, Class 50-D, 65-D, 100-D, and 140-D
2015 11	807.040	2	Height of Fill Table, Non-Reinforced Concrete Pipe, Class 3
2015 11	807.050	3	Height of Fill Table, Horizontal Elliptical Concrete Pipe, Class HE-A, HE-I, HE-II, HE-III, and HE-IV
2013 11	809.010	3	Perforated Pipe Subdrain in Granular Trench Main Storm Sewer Connection to Drainage Structure
2013 11	810.010	2	General Rip-Rap Layout for Sewer and Culvert Outlets
2013 11	810.020	2	General Rip-Rap Layout for Ditch Inlets
2006 11	812.010	0	Cut Off Wall for Structural Plate Pipe Arch and Circular CSP

DIVISION 900 - FENCING, GUIDE RAILS

2015 11	911.130	1	Guide Rail System, Concrete Barrier, Cast-In-Place, Type A, Installation
2015 11	911.131	1	Guide Rail System, Concrete Barrier, Cast-In-Place, Type C, Installation



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2015 11	911.132	1	Guide Rail System, Concrete Barrier, Cast-In-Place, Tall Wall, Installation
2015 11	911.134	1	Guide Rail System, Concrete Barrier, Installation - Median Concrete Barrier to Structure
2015 11	911.135	0	Guide Rail System, Concrete Roadside Barrier, Cast-In-Place Or Slipformed, Installation
2013 11	911.140	1	Guide Rail System, Concrete Barrier, Precast I-Lock Connection, Installation - Temporary and Permanent
2013 11	911.143	1	Guide Rail System, Concrete Barrier, Precast I-Lock Connection, Type TW, Installation - Permanent
2013 11	911.150	0	Guide Rail System, Concrete Barrier, Type J Connection, 4m Length, Installation - Temporary
2013 11	911.151	0	Guide Rail System, Concrete Barrier, Type J Connection, 6m Length, Installation - Temporary
2013 11	911.160	0	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary 1
2013 11	911.161	0	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary 2
2013 11	911.162	0	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary Restraint System, Pinned to Asphalt Pavement
2013 11	911.163	0	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary Restraint System, Strapped to Concrete
2013 11	911.164	0	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary Restraint System, Strapped to Concrete with Asphalt Surface
2013 11	911.167	0	Guide Rail System, Concrete Barrier, Type m Connection, Installation - Temporary Restraint System, Bolted Through Concrete
2013 11	911.168	0	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary Restraint System, Bolted Through Concrete with Asphalt Surface
2014 11	911.170	1	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary Restraint System, Transition to Pinned TCB



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DATE	OPSD NO.	REV.	TITLE
2014 11	911.171	1	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary Restraint System, Transition to Strapped TCB
2014 11	911.172	1	Guide Rail system, Concrete Barrier, Type M Connection, Installation - Temporary Restraint System, Transition to Bolted TCB
2015 11	911.173	1	Guide Rail System, Concrete Barrier, Type M Connection, Installation - Temporary Restraint System, Transition to Permanent Concrete Barrier
2015 11	911.174	1	Guide Rail System, Concrete Barrier, Type M Connection, Component - Thrie Beam Transition
2013 11	911.180	0	Guide Rail System, Concrete Barrier, Type T Connection, 4.0m Length, Installation - Temporary
2013 11	911.181	0	Guide Rail System, concrete Barrier, Type T Connection, 6.0m Length, Installation - Temporary
2015 11	911.230	1	Guide Rail System, Concrete Barrier, Median End Treatment Installation
2014 11	911.232	1	Guide Rail System, Concrete Barrier, Energy Attenuator, Installation - Temporary
2001 11	911.330	0	Guide Rail System, Concrete Barrier, Temporary Transition Installation - Rail Method, Concrete Barrier to Temporary Concrete Barrier
2013 11	911.340	0	Guide Rail System, Concrete Barrier, Temporary Concrete Barrier Transition, Installation - Temporary
2015 11	911.380	1	Guide Rail System, Concrete Barrier, Permanent Transition, Installation at Piers and Poles
2015 11	911.381	2	Guide Rail System, Concrete Barrier, Permanent Transition Installation, Roadside Concrete Barrier to Structure
2015 11	911.382	1	Guide Rail System, Concrete Barrier, Dowel Connection Detail
2015 11	911.383	0	Guide Rail System, Concrete Barrier, Permanent Transition Installation At Lighting Pole And Sign Support Footings



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2015 11	911.430	1	Guide Rail System, Concrete Barrier, Temporary - Leaving End Treatment, Installation – Divided Highway
2016 11	912.101	3	Guide Rail System, Steel Beam, Rail, Component
2016 11	912.102	2	Guide Rail System, Steel Beam, Channel, Component
2016 11	912.103	2	Guide Rail System, Steel Beam, Plastic Offset Blocks, Component
2016 11	912.104	3	Guide Rail System, Steel Beam, Steel Post with Wooden Offset Block, Component
2016 11	912.105	2	Guide Rail System, Steel Beam, Base Plate, Component
2016 11	912.123	0	Guide Rail System, Steel Beam, Type M Rail – 476mm Hole Spacing, Component
2016 04	912.124	0	Guide Rail System, Steel Beam, Type M Transition Rail, Component
2016 04	912.125	0	Guide Rail System, Steel Beam, Type M Rail, Component
2016 04	912.127	0	Guide Rail System, Steel Beam, M20 Steel Post with Offset Block, Component
2016 11	912.128	0	Guide Rail System, Steel Beam, Type M30 Steel Post With Offset Block, Component
2016 11	912.129	0	Guide Rail System, Steel Beam, 30cm Polymer Offset Block – P-Block, Component
2016 11	912.130	3	Guide Rail System, Steel Beam, Steel Post with Wooden Offset Block Assembly, Installation - Single Rail
2016 11	912.135	1	Guide Rail System, Steel Beam, Steel Post with Steel Offset Block Assembly, Adjustment - Single Rail
2010 11	912.140	2	Guide Rail System, Steel Beam, Wooden Post Assembly, Installation - Single Rail
2010 11	912.141	2	Guide Rail System, Steel Beam, Wooden Post Assembly, Installation - Double Rail
2016 11	912.145	1	Guide Rail System, Steel Beam, Wooden Post Assembly, Adjustment - Single Rail



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DATE	OPSD NO.	REV.	TITLE
2016 11	912.185	0	Guide Rail System, Steel Beam, Type M20, Installation
2016 11	912.186	0	Guide Rail System, Steel Beam, Type M20 – Adjacent To 2H:1V Slope Installation – Rail At Shoulder
2016 11	912.188	0	Guide Rail System, Steel Beam, Type M20 – Adjacent To Concrete Curb, Installation
2016 11	912.189	0	Guide Rail System, Steel Beam, Type M30 – Adjacent To Sidewalk, Installation
2010 11	912.235	1	Guide Rail System, Steel Beam, Leaving End Treatment, Installation
2016 11	912.245	0	Guide Rail System, Steel Beam, Type M – 7.62m Long Span Treatment, Installation
2016 11	912.246	0	Guide Rail System, Steel Beam, Type M – 5.71m Long Span Treatment, Installation
2016 11	912.255	0	Guide Rail System, Steel Beam, Type M20 AND M30 Leaving End Treatment, Installation
2016 11	912.256	0	Guide Rail System, Steel Beam, Type M Leaving End Treatment, Component – Rail, Terminal Section And Post Anchor Detail
2017 04	912.314	0	Guide Rail System, Steel Beam, Transition From Type M to Existing Steel Beam Guide Rail, Installation
2016 11	912.315	0	Guide Rail System, Steel Beam, Transition From Type M To Steel Beam Guide Rail With Channel For Structure Connection, Installation
2016 11	912.316	0	Guide Rail System, Steel Beam, Type M Reduced Deflection Treatment, Installation
2002 11	912.330	1	Guide Rail System, Steel Beam, Temporary Transition Installation - Rail Method, Single Steel Beam to Temporary Concrete Barrier
2002 11	912.331	1	Guide Rail System, Steel Beam, Temporary Transition Installation, Single Steel Beam to Temporary Concrete Barrier



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2008 11	912.380	1	Guide Rail System, Steel Beam, Permanent Transition Installation, Channel Termination, Median
2009 11	912.382	3	Guide Rail System, Steel Beam, Permanent Transition Installation, Steel Beam With Eccentric Loader to 3 Cable, Divided and Undivided Highway
2010 11	912.401	1	Guide Rail System, Steel Beam, Structure Connection, Component - Rail and Channel
2010 11	912.430	3	Guide Rail System, Steel Beam, Structure Connection
2008 11	912.480	2	Guide Rail System, Steel Beam, Permanent Connection Installation, Single Steel Beam to Concrete Barrier
2008 11	912.481	2	Guide Rail System, Steel Beam, Permanent Connection Installation, Double Steel Beam to Concrete Barrier
2016 11	912.530	2	Guide Rail System, Steel Beam, Structure Approach Treatment, Installation - Rural Highway
2008 11	913.101	1	Guide Rail System, Cable, Component - Cable Fittings
2008 11	913.102	1	Guide Rail System, Cable, Component - Concrete Anchor Blocks
2008 11	913.103	1	Guide Rail System, Cable, Component - Wooden Post Base Plate
2008 11	913.130	1	Guide Rail System, Cable, Installation - Shoulder
2014 11	913.131	0	Guide Rail System, Cable, Installation - Entrances and Intersecting Roads
2013 11	913.135	0	Guide Rail System, Cable, Adjustment - Shoulder
2016 11	921.101	2	Energy Attenuator, General, Installation - Granular Approach Pad, Median
2011 11	922.131	2	Energy Attenuator, Crash Cushion, QuadTrend System, Installation - Concrete Barrier
2011 11	922.133	2	Energy Attenuator, Crash Cushion, QuadTrend System, Installation - Concrete Pad and Rear Cable Anchor Block



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2016 04	922.161	0	Energy Attenuator, End Treatment, Steel Beam Energy Attenuating Terminal, Soft Top Terminal System Installation
2017 04	922.165	0	Energy Attenuator, End Treatment, Steel Beam Energy Attenuating Terminal, Mash Softstop Terminal System, Installation
2016 04	922.170	0	Energy Attenuator, End Treatment, Steel Beam Energy Attenuating Terminal, X-Lite Tangent Terminal System With Steel Posts, Installation
2010 11	922.180	2	Energy Attenuator, End Treatment, Steel Beam Energy Attenuating Terminal, Sequential Kinking Terminal System with Wooden Posts, Installation
2010 11	922.181	2	Energy Attenuator, End Treatment, Steel Beam Energy Attenuating Terminal, Sequential Kinking Terminal System with Steel Posts, Installation
2017 04	922.186	0	Energy Attenuator, End Treatment, Steel Beam Energy Attenuating Terminal, Mash Sequential Kinking Terminal System, Installation
2013 11	922.330	3	Energy Attenuator, End Treatment, Crash-Cushion Attenuating Terminal (CAT-350) System, Assembly
2013 11	922.401	2	Energy Attenuator, End Treatment, Eccentric Loader Terminal System, Component - Loader Assembly
2013 11	922.402	2	Energy Attenuator, End Treatment, Eccentric Loader Terminal System, Component - Rail and Cable Attachment
2013 11	922.410	2	Energy Attenuator, End Treatment, Eccentric Loader Terminal System, Assembly - Loader Detail
2013 11	922.430	7	Energy Attenuator, End Treatment, Eccentric Loader Terminal System, Installation - Layout and Post
2010 11	922.530	5	Energy Attenuator, End Treatment, Steel Beam Energy Attenuating Terminal, Extruder Terminal System with Wooden Posts, Installation
2010 11	922.532	2	Energy Attenuator, End Treatment, Steel Beam Energy Attenuating Terminal, Extruder Terminal System with Steel Posts, Installation



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2011 11	923.001	3	Energy Attenuator, Crash Cushion, Narrow Systems, Component - Reinforced Concrete Pad
2016 11	923.002	1	Energy Attenuator, Crash Cushion, Component - Anchor Assembly
2011 11	923.004	0	Energy Attenuator, Crash Cushion, Wide Systems, Component - Reinforced Concrete Pad
2011 11	923.005	0	Energy Attenuator, Crash Cushion, Extra Wide Systems, Component - Reinforced Concrete Pad
2015 11	923.006	0	Energy Attenuator, Crash Cushion, Quadguard Super Wide System, Component – Reinforced Concrete Pad
2016 11	923.010	0	Energy Attenuator, Crash Cushion, Narrow Systems, Component – Reinforced Precast Concrete Pad for Permanent Installation
2016 11	923.011	0	Energy Attenuator, Crash Cushion, Component – Reinforced Precast Concrete Pad for Modified Temporary Concrete Barrier
2011 11	923.180	1	Energy Attenuator, Crash Cushion, QuadGuard System, Installation - Temporary, Unidirectional
2011 11	923.181	1	Energy Attenuator, Crash Cushion, QuadGuard System, Installation - Temporary, Bidirectional
2011 11	923.182	1	Energy Attenuator, Crash Cushion, QuadGuard System, Installation - Permanent, Unidirectional
2011 11	923.183	1	Energy Attenuator, Crash Cushion, QuadGuard System, Installation - Permanent, Bidirectional
2011 11	923.184	0	Energy Attenuator, Crash Cushion, QuadGuard Wide System, Installation - Temporary, Unidirectional
2011 11	923.185	0	Energy Attenuator, Crash Cushion, QuadGuard Wide System, Installation - Temporary, Bidirectional
2011 11	923.186	0	Energy Attenuator, Crash Cushion, QuadGuard Wide System, Installation - Permanent, Unidirectional
2011 11	923.187	0	Energy Attenuator, Crash Cushion, QuadGuard Wide System, Installation - Permanent, Bidirectional
2011 11	923.188	0	Energy Attenuator, Crash Cushion, QuadGuard Extra Wide System, Installation - Temporary, Unidirectional
2011 11	923.189	0	Energy Attenuator, Crash Cushion, QuadGuard Extra Wide System, Installation - Temporary, Bidirectional
2011 11	923.190	0	Energy Attenuator, Crash Cushion, QuadGuard Extra Wide System, Installation - Permanent, Unidirectional



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2011 11	923.191	0	Energy Attenuator, Crash Cushion, QuadGuard Extra Wide System, Installation - Permanent, Bidirectional
2015 11	923.192	0	Energy Attenuator, Crash Cushion, Quadguard Super Wide System, Installation – Temporary, Unidirectional
2015 11	923.193	0	Energy Attenuator, Crash Cushion, Quadguard Super Wide System, Installation – Temporary, Bidirectional
2015 11	923.194	0	Energy Attenuator, Crash Cushion, Quadguard Super Wide System, Installation – Permanent Unidirectional
2015 11	923.195	0	Energy Attenuator, Crash Cushion, Quadguard Super Wide System, Installation – Permanent Bidirectional
2013 11	923.201	2	Energy Attenuator, Crash Cushion, Connecticut Impact Attenuation System, Component - Steel Cylinder
2013 11	923.202	2	Energy Attenuator, Crash Cushion, Connecticut Impact Attenuation System, Component - Polyethylene Lid
2013 11	923.204	2	Energy Attenuator, Crash Cushion, Connecticut Impact Attenuation System, Component - Concrete Backwall
2013 11	923.242	2	Energy Attenuator, Crash Cushion, Connecticut Impact Attenuation System, Installation
2013 11	923.244	1	Energy Attenuator, Crash Cushion, Connecticut Impact Attenuation System, Installation - Long Median Hazard
2013 11	923.245	2	Energy Attenuator, Crash Cushion, Connecticut Impact Attenuation System, Installation - Short Median Hazard
2011 11	923.280	1	Energy Attenuator, Crash Cushion, TRACC System, Installation - Temporary, Unidirectional
2011 11	923.281	1	Energy Attenuator, Crash Cushion, TRACC System, Installation - Temporary, Bidirectional
2011 11	923.282	1	Energy Attenuator, Crash Cushion, TRACC System, Installation - Permanent, Unidirectional
2011 11	923.283	1	Energy Attenuator, Crash Cushion, TRACC System, Installation - Permanent, Bidirectional
2011 11	923.380	1	Energy Attenuator, Crash Cushion, TAU II System, Installation - Temporary, Unidirectional
2011 11	923.381	1	Energy Attenuator, Crash Cushion, TAU II System, Installation - Temporary, Bidirectional
2011 11	923.382	1	Energy Attenuator, Crash Cushion, TAU II System, Installation - Permanent, Unidirectional



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DATE	OPSD NO.	REV.	TITLE
2011 11	923.383	1	Energy Attenuator, Crash Cushion, TAU II System, Installation - Permanent, Bidirectional
2011 11	923.384	0	Energy Attenuator, Crash Cushion, TAU II Wide System, Installation - Temporary, Unidirectional
2011 11	923.385	0	Energy Attenuator, Crash Cushion, TAU II Wide System, Installation - Temporary, Bidirectional
2011 11	923.386	0	Energy Attenuator, Crash Cushion, TAU II Wide System, Installation - Permanent, Unidirectional
2011 11	923.387	0	Energy Attenuator, Crash Cushion, TAU II Wide System, Installation - Permanent, Bidirectional
2011 11	923.388	0	Energy Attenuator, Crash Cushion, TAU II Extra Wide System - TL-2, Installation - Temporary, Unidirectional
2011 11	923.389	0	Energy Attenuator, Crash Cushion, TAU II Extra Wide System - TL-2, Installation - Temporary, Bidirectional
2011 11	923.390	0	Energy Attenuator, Crash Cushion, TAU II Extra Wide System - TL-3, Installation - Temporary, Unidirectional
2011 11	923.391	0	Energy Attenuator, Crash Cushion, TAU II Extra Wide System - TL-3, Installation - Temporary, Bidirectional
2011 11	923.392	0	Energy Attenuator, Crash Cushion, TAU II Extra Wide System - TL-2, Installation - Permanent, Unidirectional
2011 11	923.393	0	Energy Attenuator, Crash Cushion, TAU II Extra Wide System - TL-2, Installation - Permanent, Bidirectional
2011 11	923.394	0	Energy Attenuator, Crash Cushion, TAU II Extra Wide System - TL-3, Installation - Permanent, Unidirectional
2011 11	923.395	0	Energy Attenuator, Crash Cushion, TAU II Extra Wide System - TL-3, Installation - Permanent, Bidirectional
2010 11	923.480	0	Energy Attenuator, Crash Cushion, Smart System, Installation - Temporary, Unidirectional
2010 11	923.481	0	Energy Attenuator, Crash Cushion, Smart System, Installation - Temporary, Bidirectional
2010 11	923.482	0	Energy Attenuator, Crash Cushion, Smart System, Installation - Permanent, Unidirectional
2010 11	923.483	0	Energy Attenuator, Crash Cushion, Smart System, Installation - Permanent, Bidirectional
2011 11	923.530	1	Energy Attenuator, Crash Cushion, Box Beam Bursting Energy Absorbing Terminal, Installation - Layout
2011 11	923.531	1	Energy Attenuator, Crash Cushion, Box Beam Bursting Energy Absorbing Terminal, Installation - Impact Head and Post



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DATE	OPSD NO.	REV.	TITLE
2016 11	924.131	1	Energy Attenuator, Crash Cushion, ABSORB 350 System, Installation - Temporary Concrete Barrier
2016 11	924.135	2	Energy Attenuator, Crash Cushion, ACZ-350 System, Installation - Temporary Concrete Barrier
2016 11	924.141	0	Energy Attenuator, Crash Cushion, ACZ-350 System, Installation - Temporary Concrete Barrier
2013 11	925.010	0	Guide Rail System, Thrie Beam, Component – Rail
2013 11	925.030	0	Guide Rail System, Thrie Beam, Component - Terminal Connector
2016 11	971.101	4	Fence, Highway, In Earth, Shale, Loose Rock, Or Friable Rock, Installation
2016 11	971.102	2	Fence, Highway, In Solid Rock, Installation
2016 11	971.103	0	Fence, Highway, Installation Details
2012 11	972.101	2	Fence, Chain-Link, Component - Barbed Wire
2012 11	972.102	2	Fence, Chain-Link, Component - Gate
2012 11	972.130	2	Fence, Chain-Link, Installation - Roadway
2012 11	972.131	2	Fence, Chain-Link, Installation - Concrete Barrier
2012 11	972.132	0	Fence, Chain-Link, Details and Table
2016 11	973.130	0	Fence, Steel Beam, Barricade, installation
2009 11	980.101	2	Pedestrian Barricade, Installation
2009 11	982.101	1	Splash Guard, Pedestrian, Installation
2014 11	984.101	1	Post Mounted Delineator, Installation
2016 11	984.105	0	Flexible Delineator Post, Installation – temporary and Permanent
2010 11	984.201	0	Energy Attenuator, End Treatment, Delineation, Installation - Approach End
2010 11	984.202	0	Energy Attenuator, End Treatment, Delineation, Installation - Leaving End
2010 11	984.203	0	Energy Attenuator, Crash Cushion, Delineation, Installation - Temporary



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DATE	OPSD NO.	REV.	TITLE
2010 11	984.204	0	Energy Attenuator, Crash Cushion, Delineation, Installation - Permanent
2013 11	984.205	0	Energy Attenuator, Crash Cushion, Connecticut Impact Attenuation System, Delineation, Installation - Permanent
2013 11	985.110	0	Small Sign Support System, Single Breakaway Wooden Post, 89x89mm, 89x140mm, 140x140mm, and 140x148mm, Installation - Single Post Assembly
2013 11	985.210	0	Small Sign Support System, Double Breakaway Wooden Post, 89x89mm and 89x140mm, Installation - Double Post Assembly
2013 11	985.220	0	Small Sign Support System, Double Breakaway Wooden Post, 140x140mm and 140x184mm, Installation - Double Post Assembly
2013 11	987.101	0	Small Sign Support System, Lap Splice Rib-Bak Breakaway System, Components
2013 11	987.110	0	Small Sign Support, Lap Splice Rib-Bak Breakaway System, Installation - Single Post Assembly
2013 11	987.210	0	Small Sign Support System, Lap Splice Rib-Bak Breakaway System, Installation - Double Post Assembly
2013 11	987.310	0	Small Sign Support System, Lap Splice Rib-Bak Breakaway System, Installation - Triple Post Assembly
2013 11	989.110	0	Small Sign Support System, Sqr-Loc Perforated Steel Square Sign Post System, Installation - Single Post Assembly
2013 11	989.210	0	Small Sign Support System, Sqr-Loc Perforated Steel Square Post System, Installation - Double Post
2014 11	990.110	1	Small Sign Support System, Non-Breakaway U-Flange Post, Installation - Single Post Assembly
2014 11	991.130	3	Expanded Metal Anti-Glare Screen, Installation - Concrete Barrier
2014 11	991.131	3	Expanded Metal Anti-Glare Screen, Installation - Steel Beam Guide Rail with Wooden Post
2012 11	991.132	2	Expanded Metal Anti-Glare Screen, Installation - Chain-Link Fence

DIVISION 1000 - SANITARY SEWERS

2016 11	1003.010	3	Cast-in-Place Maintenance Hole Drop Structure Tee
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DATE	OPSD NO.	REV.	TITLE
2016 11	1003.020	3	Cast-in-Place Maintenance Hole Drop Structure Wye
2016 11	1003.030	4	Internal Drop Structure for Existing Maintenance Hole
2016 11	1003.031	3	Internal Drop Structure for New Maintenance Hole
2016 11	1006.010	3	Sewer Service Connections for Main Pipe Sewer

DIVISION 1100 - WATERMAINS

2014 11	1100.010	3	Cast-in-Place Chamber for Valves Up to 350 mm Diameter
2014 11	1100.011	2	Piping Layout for Butterfly and Gate Valves Up to 350 mm Diameter in Cast-in-Place Chambers
2015 11	1101.010	4	Precast Valve Chamber, 1200 mm and 1500 mm Diameter
2013 11	1101.012	2	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 1800 x 2400 mm Components
2013 11	1101.013	2	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 1800 x 2400 mm, Riser and Base
2013 11	1101.014	2	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 1800 x 2400 mm, Thrust Blocks
2013 11	1101.015	2	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 1800 x 2400 mm, Chimney and Cap
2013 11	1101.016	2	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 2400 x 3000 mm Components
2013 11	1101.017	2	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 2400 x 3000 mm Riser and Base
2013 11	1101.018	3	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 2400 x 3000 mm Thrust Blocks
2013 11	1101.019	2	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 2400 x 3000 mm Chimney and Cap
2013 11	1101.020	3	Valve Operator
2013 11	1101.030	0	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 3000 x 3000 mm Components
2013 11	1101.031	0	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 3000 x 3000 mm Riser and Base



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DATE	OPSD NO.	REV.	TITLE
2013 11	1101.032	0	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 3000 x 3000 mm Thrust Blocks
2013 11	1101.033	0	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 3000 x 3000 mm Chimney and Cap
2013 11	1101.040	0	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 3600 x 3000 mm Components
2013 11	1101.041	1	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 3600 x 3000 mm Riser and Base
2013 11	1101.042	0	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 3600 x 3000 mm Thrust Blocks
2013 11	1101.043	0	Precast Concrete Valve Chamber with Poured-in-Place Thrust Blocks, 3600 x 3000 mm Chimney and Cap
2013 11	1103.010	2	Concrete Thrust Blocks for Tees, Plugs, and Horizontal Bends
2013 11	1103.020	3	Concrete Thrust Blocks for Vertical Bends
2013 11	1103.021	0	Dimension Tables for Concrete Thrust Blocks for Vertical ends
2013 11	1104.010	3	Water Service Connection, 19 and 25 mm Diameter Sizes
2013 11	1104.020	2	Water Service Connection, 32, 38, and 50 mm Diameter Sizes
2013 11	1104.030	2	Blow Off Installation
2013 11	1105.010	2	Hydrant Installation
2014 11	1107.010	2	Piping Layout for Water Meters 50 mm and Smaller in Chambers
2014 11	1107.020	2	Piping Layout for Water Meters 75 to 250 mm in Chambers with By-Pass
2014 11	1107.030	2	Piping Layout for Water Meters in Building with By-Pass
2013 11	1108.010	2	Cast-in-Place Water Meter Chamber for 75 to 250 mm Meters
2015 11	1109.010	2	Cathodic Protection for Metallic Watermain Systems
2015 11	1109.011	2	Cathodic Protection for PVC Watermain Systems
2015 11	1109.012	1	Cathodic Protection of Existing Metallic Watermains, Exposed Service or Pipe Method



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DATE	OPSD NO.	REV.	TITLE
2015 11	1109.013	1	Anode Installation Over Pipe Method for Existing Metallic Watermains
2015 11	1109.014	1	Horizontal Anode Bank at Service
2015 11	1109.015	1	Vertical Anode Bank at Service
2015 11	1109.025	1	Waterproofing of Splices
2015 11	1109.030	0	Insulation For Sewers And Watermains In Shallow Trenches
DIVISION 3000 - STRUCTURES			
2010 11	3000.100	2	Foundation, Piles, Steel H-Pile Driving Shoe
2010 11	3000.150	1	Foundation, Piles, Steel H-Pile Splice
2010 11	3000.201	1	Foundation, Piles, Steel HP 310 Oslo Point
2010 11	3001.100	1	Foundation, Piles, Steel Tube Pile Driving Shoe
2010 11	3001.150	1	Foundation, Piles, Steel Tube Pile Splice
2010 11	3002.200	1	Foundation, Piles, Steel Sheet Pile Anchorage
2010 11	3003.100	1	Foundation, Piles, Wooden Pile Driving Shoe
2010 11	3003.150	1	Foundation, Piles, Wooden Pile Head Protection
2010 11	3090.100	1	Foundation, Frost Penetration Depths for Northern Ontario
2010 11	3090.101	1	Foundation, Frost Penetration Depths for Southern Ontario
2010 11	3101.150	1	Walls, Abutment, Backfill, Minimum Granular Requirement
2010 11	3101.200	1	Walls, Abutment, Backfill, Rock
2010 11	3102.100	1	Walls, Abutment, Backfill Drain
2010 11	3120.100	2	Walls, Retaining, Concrete Toe Wall
2010 11	3121.150	1	Walls, Retaining, Backfill, Minimum Granular Requirement
2011 04	3190.100	2	Walls, Retaining and Abutment, Wall Drain
2011 11	3290.100	1	Piers, Cutwater Assembly



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DATE	OPSD NO.	REV.	TITLE
2010 11	3310.100	1	Deck, Girders, Concrete, Method of Obtaining Screed Elevations
2011 11	3310.150	1	Deck, Girders, Concrete, Positive Moment Connection at Piers
2010 11	3311.100	1	Deck, Girders, Steel, Method of Obtaining Screed Elevations
2015 11	3311.900	2	Deck, Girders, Steel Box, Access Hatch
2011 11	3329.100	1	Deck, Reinforcement, Supports for Reinforcing Steel for Slab Depths 300 mm or Less
2011 11	3329.101	1	Deck, Reinforcement, Supports for Reinforcing Steel for Slab Depths Greater Than 300 mm
2011 11	3332.100	1	Deck, Round Voids, Form Supports and Tie-Downs
2010 11	3333.100	1	Deck, Round Voids, Drains
2010 11	3333.101	1	Deck, Trapezoid Void, Drains
2011 11	3339.100	1	Deck, Voids, Access Hatch for Concrete Bridges, Assembly
2011 11	3339.101	1	Deck, Voids, Access Hatch for Concrete Bridges, Installation
2014 11	3340.100	2	Deck, Drains with Downspout
2014 11	3340.102	2	Deck, Drains with Sloped Downspout
2012 11	3340.150	2	Deck, Drains with Transverse Bar Openings
2012 11	3340.153	2	Deck, Drains, Median with Transverse Bar Openings
2012 11	3340.200	2	Deck, Drains with Downspout Modification for Addition of Asphalt to Existing Structure
2012 11	3340.201	2	Deck, Drains, with Sloped Downspout Modification for Addition of Asphalt to Existing Structure
2012 11	3340.250	2	Deck, Drains, with Transverse or Longitudinal Bar Openings, Modification for Addition of Asphalt to Existing Structure
2012 11	3349.100	2	Deck, Drains, Drainage of New Deck Below Asphalt Wearing Surface
2012 11	3349.101	2	Deck, Drains, Drainage of Existing Deck Below Asphalt Wearing Surface
2016 04	3360.100	2	Deck, Light Pole Bases, Structures with Barrier Walls

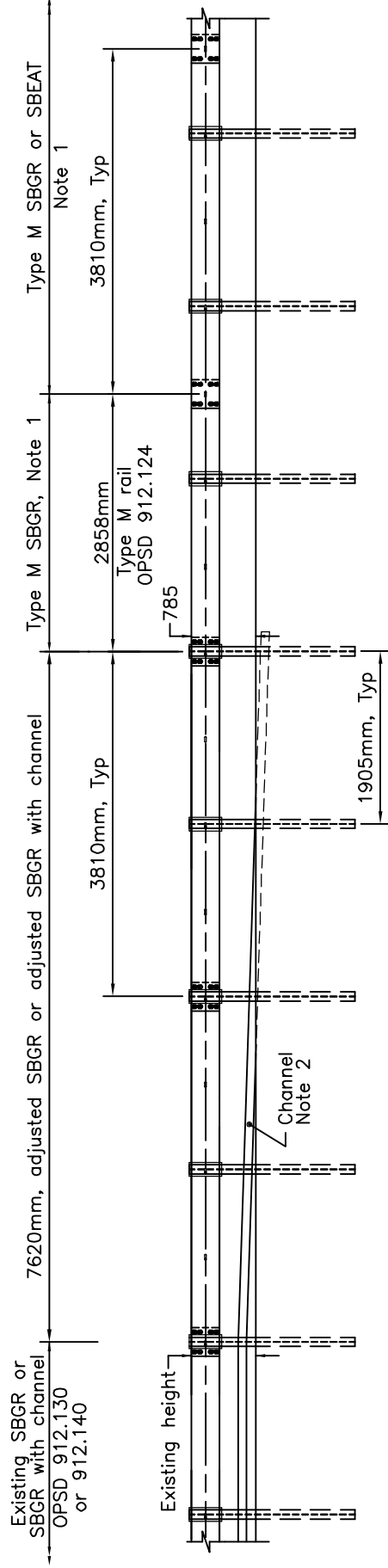


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DATE	OPSD NO.	REV.	TITLE
2016 04	3360.200	2	Deck, Light Pole Bases, Structures with Parapet Walls
2008 11	3370.100	2	Deck, Waterproofing Hot Applied Asphalt Membrane with Protection Board
2008 11	3370.101	2	Deck, Waterproofing Hot Applied Asphalt Membrane at Active Cracks Greater Than 2 mm Wide and Construction Joints
2012 11	3390.100	2	Deck, Drip Channel
2005 11	3390.150	0	Falsework Clearance to Traffic Lanes
2010 11	3419.100	1	Barriers and Railings, Steel Beam, Guide Rail and Channel Anchorage
2010 11	3419.150	1	Barriers and Railings, Steel, Single Railing Anchorage
2010 11	3419.155	1	Barriers and Railings, Steel, Double Railing Anchorage
2012 11	3900.100	1	Utilities, Duct Location
2011 11	3900.150	1	Utilities, Duct Termination at Bridge Approaches
2015 11	3920.100	0	Precast Reinforced Concrete Box Culvert With Height Of Fill $\geq 0.6\text{m}$
2016 04	3920.110	1	Precast Reinforced Concrete Box Culvert With Height Of Fill $< 0.6\text{m}$
2010 11	3940.150	2	Figures in Concrete, Warning Message, Layout
2010 11	3940.151	2	Figures in Concrete, Warning Message, Letters
2013 11	3941.200	2	Figures in Concrete, Site Number and Date, Layout
2011 11	3950.100	1	Joints, Concrete Expansion and Construction on Structure



ELEVATION

NOTES:

- 1 Type M SBGR includes Type M20 and Type M30.
- 2 When transitioning to existing SBGR with channel, the height of the channel shall be adjusted and terminated over a length of 7.62m.
- A Mounting height to top of steel beam measured vertically at face of rail.
- B All dimensions are in millimetres unless otherwise shown.

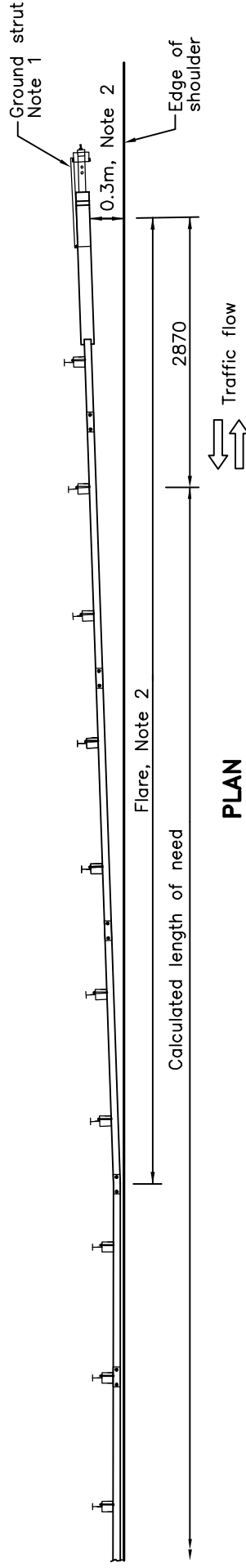
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GUIDE RAIL SYSTEM, STEEL BEAM
TRANSITION FROM TYPE M TO EXISTING
STEEL BEAM GUIDE RAIL
INSTALLATION

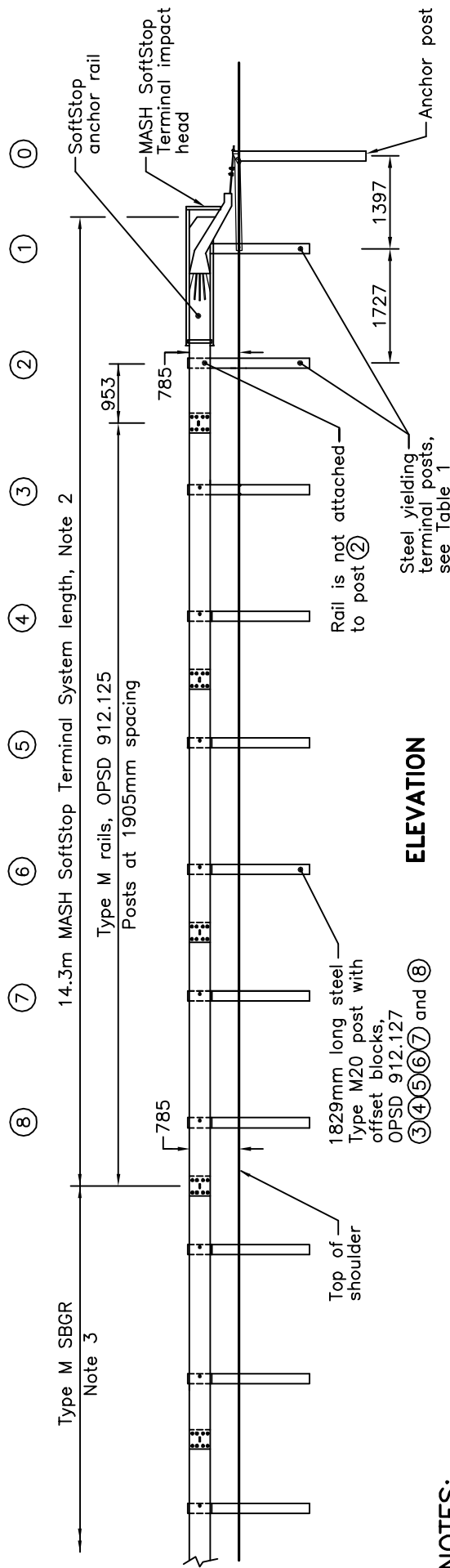
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OPSD 912.314



PLAN



ELEVATION

Table 1	
Steel Yielding Terminal Post	
Post	Length (m)
1	1.46
2	1.83

NOTES:

- 1 This OPSD shows right shoulder installation. The MASH SoftStop Terminal shall be inverted for left shoulder installation.
- 2 The system length shall be installed in a straight line at a 50:1 flare rate, or parallel to roadway when specified.
- 3 Type M SBGR includes Type M20 and Type M30.
- A Delineation shall be according to OPSD 984.201 and 984.202.
- B The system depicted here is a proprietary product.
- C System configuration meets AASHTO MASH TL-3.
- D This OPSD shall be read in conjunction with OPSD 202.031 or 202.032 as specified.
- E All dimensions are in millimetres unless otherwise shown.

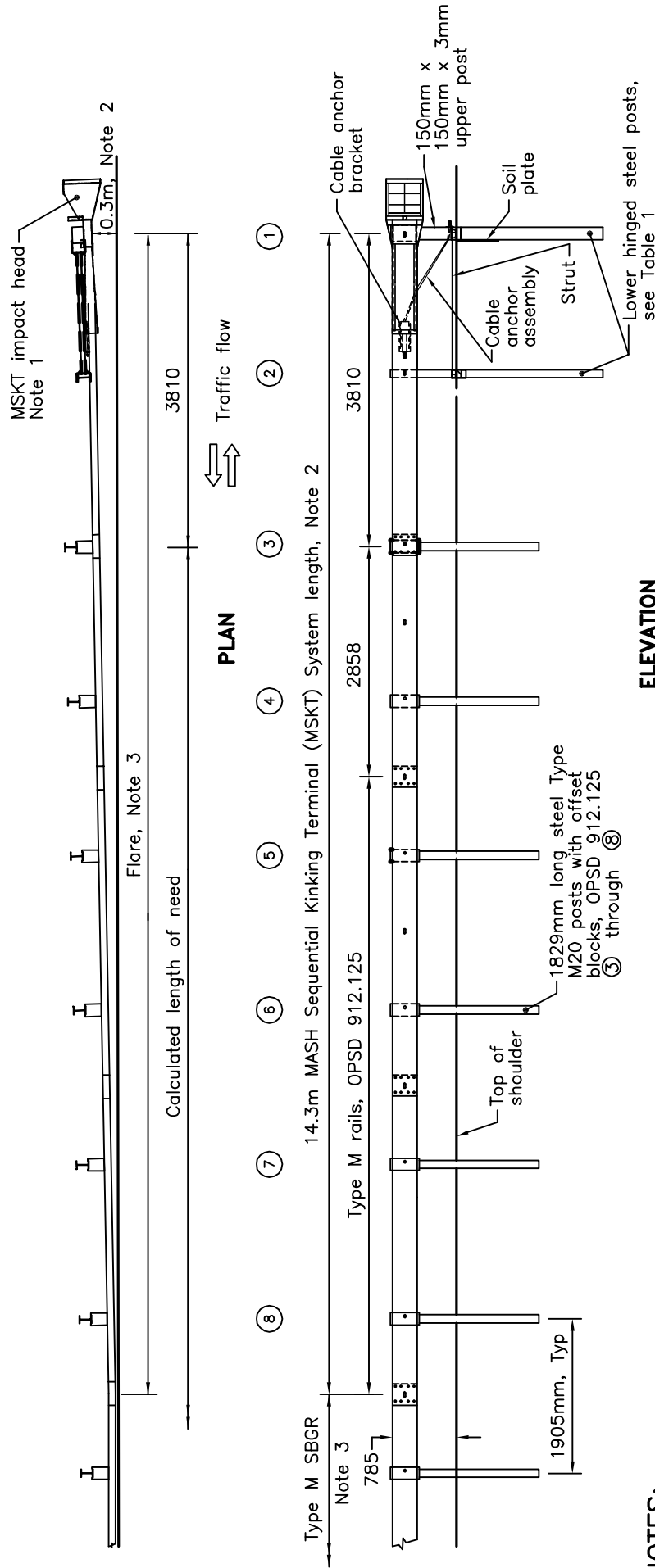
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ENERGY ATTENUATOR, END TREATMENT STEEL BEAM ENERGY ATTENUATING TERMINAL MASH SOFTSTOP TERMINAL SYSTEM INSTALLATION

OPSD 922.165



ELEVATION

NOTES:

- 1 This OPSD shows right shoulder installation. The MSKT shall be inverted for left shoulder installation.
- 2 The system length shall be installed in a straight line at a 50:1 flare rate or parallel to roadway when specified
- 3 Type M SBGR includes Type M20 and Type M30.
- 4 Imperial size steel sections referenced.
- A Delineation shall be according to OPSD 984.201 and 984.202.
- B The system depicted here is a proprietary product.
- C System configuration meets AASHTO MASH TL-3.
- D This OPSD shall be read in conjunction with OPSD 202.031 or 202.032 as specified.
- E All dimensions are in millimetres unless otherwise shown.

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**ENERGY ATTENUATOR, END TREATMENT
STEEL BEAM ENERGY ATTENUATING TERMINAL
MASH SEQUENTIAL KINKING
TERMINAL SYSTEM – INSTALLATION**

OPSD 922.186

