

	PUBLIC WORKS STANDARD DRAWING		STD. DWG. NUMBER 2-0-2
	REVISION TRACKING		
	LAST REV. DATE: MAY 2025		

	Drawing Number	Standard Drawing Title/Description	Revision Number	Revision Date	Revisions or Modifications
Section 2-0	2-0-1	General Notes and References	-	March 2017	
			1	Nov. 2019	Format revised, revisions to precast concrete notes, deleted dwg list revised
	2-0-2	Revision Tracking	-	Nov. 2019	New standard drawing added
			1	Aug. 2020	Revisions added for August 2020
				May 2025	Revisions added for May 2025
Section 2-1	2-1-1	Precast Maintenance Hole (1200mm Diameter) – DELETED	-	May 2014	Deleted
	2-1-2	Precast Maintenance Hole (1500mm and 1800mm Diameter) - DELETED	-	May 2014	Deleted
	2-1-3	Precast Maintenance Hole Tees – DELETED	-	May 2014	Deleted
	2-1-4	Maintenance Hole Benching Details - DELETED	-	May 2009	Deleted
	2-1-5	Maintenance Hole Drop Structure External Assembly - DELETED	-	May 2009	Deleted
	2-1-6	Maintenance Hole Drop Structure Internal Assembly- Existing MH Only - DELETED	-	September 2006	Deleted
	2-1-7	Maintenance Hole Venting Details - DELETED	-	May 2009	Deleted
Section 2-2	2-2-1	Safety Platform for 1200mm Diameter Precast Maintenance Hole – DELETED	-	December 2013	Deleted
	2-2-2	Standard Heavy Duty Frame and Cover – DELETED	-	May 2009	Deleted
	2-2-3	Water Tight Maintenance Hole Frame and Cover – DELETED	-	May 2009	Deleted
	2-2-3A	Detail of Anchoring Method For Water Tight Maintenance Hole – DELETED	-	May 2009	Deleted
	2-2-3B	Detail of Anchoring Method For Water Tight Maintenance Hole – DELETED	-	May 2009	Deleted
	2-2-4	Standard Maintenance Hole Steps Aluminum – DELETED	-	May 2009	Deleted
Section 2-3	2-3-1	Bedding And Cover Details For Sewers	-	March 2017	
			1	Nov. 2019	Revised format, title and notes, insulation modified and added rock/shale detail with insulation on both sides of trench, added U-fill bedding detail
			2	Aug. 2020	General note added for bedding details applicable for municipal services
	2-3-2	Bentonite Trench Plug Detail	-	Nov. 2019	New detail added November 2019
Section 2-4	2-4-0	Permitted Sanitary Service Connections and General Notes	-	Nov. 2019	New detail added November 2019
			1	Aug. 2020	Chamber sizing comments revised for pipe seal requirement, general notes revised, connection chart headings revised
	2-4-1	Service Connections For Rigid Pipe Residential Low to Medium Density – DELETED	-	March 2017	Deleted
	2-4-2	Service Connections For Flexible Pipe (Single Residential Dwelling Including Semi-Detached)	-	March 2017	
			1	Nov. 2019	Format and notes revised, slope revised, separate detail for vertical riser and long radius sweep riser added
			2	Aug. 2020	Revised title, general notes revised, service lateral notes revised
	2-4-3	Service Connections For Industrial, Commercial, Institutional, or Multi-Residential Units	-	March 2017	
			1	Nov. 2019	Revised title, format and notes, slope revised, MH details updated as per section 2-5 revisions
			2	Aug. 2020	Revised title, general notes revised, conventional boot connector removed and flexible watertight seal added at M.H.
	2-4-4	New Residential Development Connections	-	March 2017	
			1	Nov. 2019	Format and notes revised, slope revised
			2	Aug. 2020	Revised title, general notes revised, water service revised
	2-4-5	Grinder Pump To Low Pressure Sanitary Sewer Service - DELETED	-	March 2017	Deleted
	2-4-6	Grinder Pump To Low Pressure Sanitary Sewer Within The Road Allowance - DELETED	-	March 2017	Deleted
	2-4-7A	Service Connections For Grinder Pump Forcemain To Gravity Sewer Detail For Single Residential Service	-	March 2017	
			1	Nov. 2019	Revised title, format and notes, added inspection chamber, control valve and support, insulation reference notes added
			2	Aug. 2020	Title revised, conventional boot connector removed and flexible watertight seal added at M.H., revised location of M.H., test tee added, general notes revised
	2-4-7B	Service Connections For Grinder Pump Forcemain To Gravity Sewer Detail For Multi-Residential Or Industrial, Commercial, Institutional	-	Aug. 2020	New detail added August 2020
	2-4-8	Sanitary Mainline Sewer Connection For Large Scale Development To Existing Regional Infrastructure	-	Nov. 2019	New detail added November 2019
			1	Aug. 2020	Revised title, general notes, conventional boot connector removed and flexible watertight seal added at M.H.

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Section 2-5	2-5-1	General Notes For Precast Maintenance Holes	-	March 2017	
			1	Nov. 2019	Minor note revisions, reference to Access Industrial removed
			2	Aug. 2020	Note 6 added for non pressure vs pressure design, note 15 and 16 deleted and subsequent numbering revised, PVC & Rigid pipe conventional boot connector notes revised for flexible watertight seal requirements, reference to std. dwg. numbers revised. Note 9 revised to remove external frost strap reference. Notes 12 & 13 revised for anchors not penetrating entire wall thickness
	2-5-2	Typical Precast Circular Maintenance Hole Details (1200mm - 3000mm)	-	March 2017	
			1	Nov. 2019	Frame and cover revised to circular style, revised MIC protection note
			2	Aug. 2020	Conventional boot connector removed and flexible watertight seal added, note added for non pressure design, note added for reference for pipe to MH sizing std 2-5-21
	2-5-3	Typical 1200mm Diameter Precast Circular Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frame and cover revised to circular style, frost straps revised, ladder splice added, single top step added
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, note added for non pressure design, maximum pipe size note replaced with reference for pipe to MH sizing std 2-5-21, reference to std. dwg. numbers revised
	2-5-4	Typical 1500mm Diameter Precast Circular Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frame and cover revised to circular style, frost straps revised, ladder splice added, single top step added
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, note added for non pressure design, maximum pipe size note replaced with reference for pipe to MH sizing std 2-5-21, reference to std. dwg. numbers revised
	2-5-5	Typical 1800mm Diameter Precast Circular Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frame and cover revised to circular style, frost straps revised, ladder splice added, single top step added
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, note added for non pressure design, maximum pipe size note replaced with reference for pipe to MH sizing std 2-5-21, reference to std. dwg. numbers revised
	2-5-6	Typical 2400mm Diameter Precast Circular Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frame and cover revised to circular style, frost straps revised, ladder splice added, single top step added
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, note added for non pressure design, maximum pipe size note replaced with reference for pipe to MH sizing std 2-5-21, reference to std. dwg. numbers revised
	2-5-7	Typical Lined Or Coated Precast Circular Maintenance Hole Details (HDPE or Other)	-	March 2017	
			1	Nov. 2019	Revised title, frost straps revised, ladder splice and single top step added, general liner and alternate coating notes added
			2	Aug. 2020	Note added for non pressure design, note added for reference for pipe to MH sizing std 2-5-21, reference to std. dwg. numbers revised
	2-5-9	Typical Precast Rectangular Chamber Details For Large Diameter Sanitary Sewers	-	March 2017	
			1	Nov. 2019	Frame and cover revised to circular style, revised MIC protection note, minor note revisions
			2	Aug. 2020	Conventional boot connector removed and flexible watertight seal added, note added for non pressure design, note added for reference for pipe to MH sizing std 2-5-21, added pressure design reference to ACI code 350-06
	2-5-10	Typical 1800mm x 2400mm Diameter Precast Rectangular Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frame and cover revised to circular style, frost straps revised, ladder splice added, single top step added, minor note revisions
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, conventional boot connector removed and flexible watertight seal added, note added for non pressure design, maximum pipe size note replaced with reference for pipe to MH sizing std 2-5-21, pipe sizes removed, reference to std. dwg. numbers revised, added pressure design reference to ACI code 350-06
	2-5-11	Typical 2400mm x 3000mm Diameter Precast Rectangular Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frame and cover revised to circular style, frost straps revised, ladder splice added, single top step added, minor note revisions
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, conventional boot connector removed and flexible watertight seal added, note added for non pressure design, maximum pipe size note replaced with reference for pipe to MH sizing std 2-5-21, pipe sizes removed, reference to std. dwg. numbers revised, added pressure design reference to ACI code 350-06
	2-5-12	Typical Safety Landing Platform Configurations For Precast Rectangular Chambers	-	March 2017	
			1	Nov. 2019	Section title revised, general note revisions
	2-5-13	Standard Frame And Cover System Details	-	March 2017	
			1	Nov. 2019	Ladder splice added, single top step added, note on mechanical anchors added, anchor bolts removed, added tapered composite adjustment units, premium construction grade adhesive anchoring note added
	2-5-14	Integrated Frame And Cover System Details	-	March 2017	
			1	Nov. 2019	Shims added below adjustment unit, ladder splice added, single top step added, note added for std drawing approval, not permitted use on arterial or collector roads note added
			2	Aug. 2020	Removed suspension and added note 3 for approval of use

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	2-5-15	Typical Flexible Pipe Wall Connection Details	-	March 2017	
			1	Nov. 2019	Wall opening note revised, grouting note revised
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, conventional boot connector removed and flexible watertight seal added, revised note and limit of sanded end on pipe and revised grouting notes to suit seals, note added for non pressure design, note added for reference for pipe to MH sizing std 2-5-21, added enlarged connection detail
	2-5-16	Typical Rigid Or Semi-Rigid Pipe Wall Connection Details	-	March 2017	
			1	Nov. 2019	Section A-A removed, minor note revisions, wall opening note revised, grouting note revised
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, conventional boot connector removed and flexible watertight seal added, revised grouting notes to suit seals, note added for non pressure design, note added for reference for pipe to MH sizing std 2-5-21, added enlarged connection detail
	2-5-17	Typical Ribbed PVC Pipe Wall Connection Details - DELETED	-	March 2017	Deleted
	2-5-18	Typical Maintenance Hole Details For Doghouse Installation Over Existing Sewers	-	Nov. 2019	New detail added November 2019
			1	Aug. 2020	Revised notes on grouting and coating at doghouse wall opening
	2-5-20	Maintenance Hole Benching Details	-	March 2017	
			1	Nov. 2019	Minor note revisions, revised ladder
			2	Aug. 2020	Conventional boot connector removed and flexible watertight seal added at M.H., note added for reference for pipe to MH sizing std 2-5-21, revised pipe penetration distance into MH, schematic diagrams revised to show pipes, revised minimum drop note
	2-5-21	Pipe Size Reference For Precast Maintenance Holes	-	March 2017	
			1	Nov. 2019	Title block format revised
			2	Aug. 2020	Revised title block format, title revised, removed chamber and pipe sizing diagrams and replaced with sizing tables for flexible pipe, rigid or semi rigid pipe, rectangular precast notes added, general notes revised
	2-5-22	Maintenance Hole Venting Details	-	March 2017	
			1	Nov. 2019	Ladder splice added, single top step added, cross-reference notes added
			2	Aug. 2020	Wall opening note revised for flexible watertight seal requirements, conventional boot connector removed and flexible watertight seal added, revised note for sanded end on pipe and grouting to suit seals
	2-5-23	Typical Frost Strap Details - DELETED	-	March 2017	Deleted and moved to section 2-6
	2-5-24	Sanitary Chamber Marking Post - DELETED	-	March 2017	Deleted and moved to section 2-6
	2-5-25	Waterproofing Details	-	March 2017	
			1	Nov. 2019	Title revised, frost straps revised, ladder splice added, anchor bolts removed, minor note revisions, added tapered composite adjustment units, premium construction grade adhesive anchoring note added
	2-5-26	Maintenance Hole Drop Structure External Assembly	-	March 2017	
			1	Nov. 2019	Minor note revisions, cross-reference notes added
			2	Aug. 2020	Conventional boot connector removed and flexible watertight seal added at M.H., note added for external drop structures typical for new sanitary sewer system construction
			3	May 2024	noted that min drop to be 200mm dia
	2-5-27	Maintenance Hole Drop Structure Internal Assembly	-	March 2017	
			1	Nov. 2019	Title revised, existing exterior use only notes revised, notes revised, minimum 1800 dia. added, SS strap anchor notes revised.
			2	Aug. 2020	Conventional boot connector removed and flexible watertight seal added at M.H., note added for internal drop structures typical for connection to existing sanitary sewer systems
			3	May 2024	noted that min drop to be 200mm dia

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Section 2-6	2-6-1	Heavy Duty 660mm Circular Frame And Cover	-	March 2017	
			1	Nov. 2019	Added general note for referencing preferred 745mm frame & cover as per 2-6-2
			2	Oct 2023	changed 25mm requirement of "sanitary" to 50mm . Add OPSS 1850 ref. removed "sewer" from cover casting and center "sanitary"
			3	Dec 2023	Remove "REFER TO OPSD 401.020 OR STANDARD DRAWING 2-6-2". from note block.
	2-6-2	Heavy Duty 745mm Circular Frame And Cover With Inflow Dish Option	-	March 2017	
			1	Nov. 2019	Added 25mm diameter drilled holes in frame for anchoring, revised diameter of optional cover, minor note revisions
	2-6-3	Standard Heavy Duty Frame and Cover with Inflow Dish Option - DELETED	-	March 2017	Deleted
	2-6-4	Heavy Duty Water Tight Frame And Cover	-	March 2017	
	2-6-5	Integrated Frame And Cover System With Inflow Dish Option	-	March 2017	
			1	Nov. 2019	Suspended
			2	Aug. 2020	Removed suspension and added notes for approval of use
	2-6-6	High Density Rubber Frame And Cover System With Optional Adjustment Units	-	March 2017	
			1	Nov. 2019	Revised general notes, optional extension ring removed, added tapered adjustment unit detail
	2-6-7	Detail Of Anchoring Method For Maintenance Hole With Adhesive	-	March 2017	
			1	Nov. 2019	Title revised, threaded rod deleted and notes revised, added tapered composite adjustment units
	2-6-8	Detail of Anchoring Method for Water Tight Maintenance Hole with Aluminum, Stainless Steel OR Galvanized Strap - DELETED	-	March 2017	Deleted
	2-6-9	FRP Ladder Details (Typical)	-	March 2017	
			1	Nov. 2019	Title revised, splice detail removed
			2	Aug. 2020	Revised general notes 8 & 9 for anchor inserts
	2-6-10	Aluminum Ladder Details	-	March 2017	
			1	Nov. 2019	Title revised with typical removed, minor note revisions
	2-6-11	Step Details	-	March 2017	
			1	Nov. 2019	Title revised, PCCP revised to AWWA C300 Series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-6-12	Portable FRP Ladder Details	-	March 2017	
			1	Nov. 2019	General notes revised
	2-6-13	Typical 1200 Or 1500 Diameter FRP Safety Landing Details	-	March 2017	
			1	Nov. 2019	General notes revised
			2	Aug. 2020	Conventional boot connector removed and flexible watertight seal added at M.H., revised general notes 13 & 14 for anchor inserts
	2-6-14	Typical 1200 Or 1500 Diameter Aluminum Safety Landing Details	-	March 2017	
			1	Nov. 2019	General notes revised
			2	Aug. 2020	Conventional boot connector removed and flexible watertight seal added at M.H., revised general notes 13 & 14 for anchor inserts
	2-6-15	Typical Safety Landing Platform Configurations	-	March 2017	
			1	Nov. 2019	General notes revised, minor note revisions and FRP references within details removed
			2	Aug. 2020	Revised general notes 13 & 14 for anchor inserts
	2-6-16	Typical Frost Strap Details For Precast Maintenance Holes	-	Nov. 2019	Existing Std Dwg moved from Section 2-5, Title revised, revised angle brackets to flat strap, gussets removed, insert and hole dia. notes revised
	2-6-17	Sanitary Chamber Marking Post	-	Nov. 2019	Existing Std Dwg moved from Section 2-5, Region logo updated on sticker
				May 2025	New info sticker designed with expected dimentions added. Approved by initials modified. Drawn by updated

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Section 2-7	2-7-1	General Notes For AWWA C30X Service (CPP) Maintenance Holes	-	March 2017	
			1	Nov. 2019	Title revised, revised notes on FRP platforms & ladders, notes on factory anchoring inserts, added connection notes, revised pipe specifications to AWWA C300 series, note added for typical sizes and configurations
			2	Aug. 2020	Added note 25 for pressure design reference to ACI code 350-06, Revised AWWA C300 series to C30X series, and title revised
	2-7-2	Typical 1200mm Diameter CPP Maintenance Hole Details With 600mm Diameter Pipe	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder splice added, single top step added, note for alternate flat cap added,revised insert anchoring notes, added joint diapering and grouting note, minor note revisions, PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-3	Typical 1500mm Diameter CPP Maintenance Hole Details With 750mm Diameter Pipe	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder splice added, single top step added, note for alternate flat cap added,revised insert anchoring notes, added joint diapering and grouting note, minor note revisions, PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-4	Typical 1800mm Diameter CPP Maintenance Hole Details With 1050mm Diameter Pipe	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder splice added, single top step added, note for alternate flat cap added,revised insert anchoring notes, added joint diapering and grouting note, minor note revisions, PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-5	Typical 2400mm Diameter CPP Maintenance Hole Details With 1350mm Diameter Pipe	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder splice added, single top step added, note for alternate flat cap added,revised insert anchoring notes, added joint diapering and grouting note, minor note revisions, PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-6	Typical 1500mm Diameter CPP Tangent Tee Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder splice added, single top step added, note for alternate flat cap added,revised insert anchoring notes, added joint diapering and grouting note, minor note revisions, PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-7	Typical 1800mm Diameter CPP Tangent Tee Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder splice added, single top step added, note for alternate flat cap added,revised insert anchoring notes, added joint diapering and grouting note, minor note revisions, PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-8	Typical 2400mm Diameter CPP Tangent Tee Maintenance Hole Details	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder splice added, single top step added, note for alternate flat cap added, PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-9	CPP To Precast Concrete Riser Transition Detail	-	March 2017	
			1	Nov. 2019	Frost straps revised, anchor insert note revised, PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series, revised reference numbers to standard drawings
	2-7-10	CPP Anchor Detail For Ladder Or Safety Landings	-	March 2017	
			1	Nov. 2019	PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-11	Maximum Sizes For CPP Maintenance Holes	-	March 2017	
			1	Nov. 2019	PCCP revised to AWWA C300 series
			2	Aug. 2020	Revised AWWA C300 series to C30X series
	2-7-12	Typical AWWA C30X Series (CPP) Trunk Sewer With Pre-Service Outlet (CPP) For Future Service Connection	-	Nov. 2019	New detail added November 2019
			1	Aug. 2020	Revised AWWA C300 series to C30X series and title revised
	2-8-1	General Notes For Existing Maintenance Holes	-	March 2017	
			1	Nov. 2019	General notes revised
	2-8-2	Typical Existing Precast Maintenance Hole Joint Repair Option - No Excavation	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder revised, single top step added, approved materials revised, minor note revisions
	2-8-3	Typical Existing Precast Maintenance Hole Liner or Coating Repair Option - No Excavation	-	March 2017	
			1	Nov. 2019	Frost straps revised, ladder revised, single top step added, approved materials revised, minor note revisions
	2-8-4	High Density Rubber Frame And Cover System With Partial Excavation	-	March 2017	
			1	Nov. 2019	Revised existing grade position, extension riser removed, minor note revisions
	2-8-5	High Density Rubber Frame And Cover System And Composite Grade Adjustment Units With Partial Excavation	-	March 2017	
			1	Nov. 2019	Revised existing grade position, extension riser removed, minor note revisions, added tapered composite adjustment units
			-	March 2017	

	Drawing Number	Standard Drawing Title/Description	Revision Number	Revision Date	Revisions or Modifications
Section 2-8	2-8-6	Standard Frame And Cover System And Precast Grade Adjustment Units With Partial Excavation	1	Nov. 2019	Added approved grout material, minor note revisions, anchor bolts removed, added tapered composite adjustment units, premium construction grade adhesive anchoring note added
	2-8-7	Integrated Frame And Cover System With Excavation To M.H. Top Riser Section	-	March 2017	
			1	Nov. 2019	Shims added below adjustment unit, single top step added, not permitted use on arterial or collector roads note added
			2	Aug. 2020	Removed suspension and added note 3 for approval of use
	2-8-8	Existing Adjustment Unit Repair (Mechanical) With No Excavation	-	March 2017	
			1	Nov. 2019	Title revised, added approved grout material, minor note revisions
	2-8-9	Existing Adjustment Unit Repair (Lining) With No Excavation	-	March 2017	
			1	Nov. 2019	Title revised, added approved grout material, minor note revisions
	2-8-10	Typical Existing Maintenance Hole Base Section Internal Repair With No Excavation	-	March 2017	
			1	Nov. 2019	Minor note revisions
	2-8-11	Cast-In-Place Transition Section From Existing Square Maintenance Hole To Circular Section With Frame And Cover Replacement	-	March 2017	
			1	Nov. 2019	Ladder revised, single top step added, minor note revisions