



Ontario Provincial Standards
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REVISION INFORMATION SHEET

ONTARIO PROVINCIAL STANDARDS FOR ROADS AND PUBLIC WORKS

VOLUME 4 MUNICIPAL AND PROVINCIAL COMMON DRAWINGS FOR ELECTRICAL WORK

MANUAL REVISION #34

NOVEMBER 2016

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for use of Ontario Provincial Standards; therefore, manual holders are cautioned about immediately discarding superseded and cancelled standards.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>)
- Hard-copy format available from Publications Ontario by telephone at 1-800-668-9938 or online. Updates and OPS manuals are available for a cost-recovery fee.
(www.publications.serviceontario.ca)
- The eight OPS manuals of standards are available on one CD in PDF format. The OPS drawings published in Volumes 3 and 4 are available in AutoCAD format on a separate CD. These CDs are available from Publications Ontario or by telephone at 1-800-668-9938 or online for a cost-recovery fee. The updates are not available on CDs as an update package.
(www.publications.serviceontario.ca)

At the Publications Ontario web page, you can type "Ontario Provincial Standards," "OPS," "OPSS," or "OPSD" in the search box, and all related products for the Ontario Provincial Standards will be listed, click on the item you wish to purchase, add the item to your cart, then follow the instructions to complete your order. If trying to order an OPS product online from Publications Ontario and it is shown as Out of Stock, you can backorder the product by telephone at 1-800-668-9938.

In order to receive the Municipal Engineers Association (MEA) purchase price, MEA members should visit the MEA website (www.municipalengineers.on.ca/) for the MEA Publications Ontario order form for hard-copy manuals and CDs.

MTO employees should contact Simon Leung, Account Representative at Publications Ontario, by email (simon.leung@ontario.ca) to set up an account in order to receive the MTO purchase price for technical publications, including the Ontario Provincial Standards.

Links to Publications Ontario and the Ontario Provincial Standards on the MTO Library website are 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.

YOU SHOULD REGISTER YOUR OPS MANUALS AND CDs

Users of OPS do not receive notices of OPS updates as they had in the past. Methods of notification from Publications Ontario for the future are being investigated, and you will be informed of them as they become available. In the interim, an email will be sent to OPS users who have registered their OPS manuals and CDs with OPS.

Owners of OPS manuals, who have not yet done so, are requested to register their OPS hard-copy manuals and CDs with Ontario.Prov.Standards@ontario.ca. The registration form and submission instructions are available on the OPS website (www.ops.on.ca), Miscellaneous Info, OPS Forms.

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 4

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

Standard Drawings Volume 4

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
2011.701	2	2011.701	3	“GENERAL SYMBOLS, TRAFFIC ACTUATION DEVICES” See Summary of Revisions.
2130.010	0	2130.010	1	“SUPPLY CONTROL CABINET INSTALLATION, OVERHEAD SERVICES, TOP ENTRY METERING” Meter base and access fitting shown on elevation view.
2130.011	0	2130.011	1	“SUPPLY CONTROL CABINET INSTALLATION, UNDERGROUND SERVICES, BOTTOM ENTRY METERING” Distance from top of pole to photoelectric controller added and meter base shown in elevation view.
2130.012	0	2130.012	1	“SUPPLY CONTROL CABINET INSTALLATION, OVERHEAD SERVICES, BOTTOM ENTRY METERING” Location of photoelectric controller revised and meter base shown in elevation view.
		2130.013	0	“SUPPLY CONTROL CABINET INSTALLATION, UNDERGROUND SERVICES, TOP ENTRY METERING” This is a NEW Drawing. The MTO representative recommended converting MTOD 2130.013 (December 2014) into OPSD 2130.013.
2200.070	0	2200.070	1	“POLE FOOTING IN EARTH FOR CAST-IN-PLACE CONCRETE BARRIER” See Summary of Revisions.

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
2200.080	0	2200.080	1	“POLE FOOTING IN ROCK FOR CAST-IN-PLACE CONCRETE BARRIER” Anchorage plate moved to top of concrete barrier.
2210.020	1			“INSTALLATION OF DIRECT BURIED POLES IN SLOPES” OPSD Cancelled. Drawing does not add any useful information.
2210.030	0	2210.030	1	“HIGH MAST LIGHTING POLE, APRON” This drawing has been reaffirmed with no changes to technical information.
2218.010	0	2218.010	1	“HIGH MAST LIGHTING POLE, ANCHORAGE ASSEMBLY PLACEMENT” This drawing has been reaffirmed with no changes to technical information.
2225.010	0	2225.010	1	“CONCRETE LIGHTING POLE, DIRECT BURIED” This drawing has been reaffirmed with no changes to technical information.
2228.010	0	2228.010	1	“METAL LIGHTING POLE, BASE MOUNTED” This drawing has been reaffirmed with no changes to technical information.
2232.010	0	2232.010	1	“SECTIONAL STEEL POLE WITH BRACKETS, LUMINAIRE AND TRAFFIC SIGNAL HEAD” This drawing has been reaffirmed with no changes to technical information.
2250.01	5	2250.010	0	“ALUMINUM TAPERED ELLIPTICAL BRACKETS ON METAL AND CONCRETE POLES, MOUNTING DETAILS” This drawing has been reaffirmed with no changes to technical information. Changed revision number to zero to reflect updating the number of old 2250.01 to 2250.010.

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
2305.020	1	2305.020	2	“UNDERPASS LUMINAIRES, WALL MOUNTED INSTALLATION” Note 1 revised to specify stainless steel expansion anchors and hexagonal head machine bolts.
2310.010	0	2310.010	1	“UNDERPASS LUMINAIRE, CEILING MOUNTED INSTALLATION WITH BRACKET” See Summary of Revisions.
2310.020	1	2310.020	2	“T BRACKET FOR CEILING MOUNTED UNDERPASS LUMINAIRE” Note A revised to specify ASTM A123 for galvanizing requirements.
2310.030	0	2310.030	1	“WEDGE MOUNTING BRACKET FOR UNDERPASS LUMINAIRE” See Summary of Revisions.
2310.040	0	2310.040	1	“SUPPORT BRACKET FOR COLUMN MOUNTED UNDERPASS LUMINAIRE” See Summary of Revisions.
2315.010	0	2315.010	1	“UNDERPASS LUMINAIRE, WIRING DETAIL” This drawing has been reaffirmed with no changes to technical information.
2418.010	1	2418.010	2	“1.8M AND 2.7M STEEL TRUSS BRACKET FOR STEEL POLES” This drawing has been reaffirmed with no changes to technical information.
2421.010	0	2421.010	1	“LAMP WATTAGE LABEL FOR LUMINAIRE” This drawing has been reaffirmed with no changes to technical information.

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
		2440.051	0	“SUPPLY CONTROL CABINET ASSEMBLY TYPE 1 AND 2, BARRIER DETAILS” This is a New Drawing. The MTO representative recommended converting MTOD 2440.051 (February 2004) into OPSD 2440.051.
2450.010	0			“HIGH MAST LIGHTING 25, 30, AND 35m OCTAGONAL POLE WITH DOUBLE BASE PLATE” OPSD Cancelled. These poles were designed for a specific footing. Going forward, high mast lighting poles should have a single base plate according to the most recent published standards.
2450.011	0	2450.011	1	“HIGH MAST LIGHTING POLE, 25, 30, AND 35m 8-SIDED POLE” See Summary of Revisions.
2450.020	0			“HIGH MAST LIGHTING 40 AND 45m OCTAGONAL POLE WITH DOUBLE BASE PLATE” OPSD Cancelled. These poles were designed for a specific footing. Going forward, high mast lighting poles should have a single base plate according to the most recent published standards.
2450.021	0	2450.021	1	“HIGH MAST LIGHTING POLE, 40 AND 45m 12-SIDED POLE” See Summary of Revisions.
2452.010	0			“HIGH MAST LIGHTING 25, 30, AND 35m ROUND POLE WITH DOUBLE BASE PLATE” OPSD Cancelled. These poles were designed for a specific footing. Going forward, high mast lighting poles should have a single base plate according to the most recent published standards.

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
2452.020	0			“HIGH MAST LIGHTING 40 AND 45m ROUND POLE WITH DOUBLE BASE PLATE” OPSD Cancelled. These poles were designed for a specific footing. Going forward, high mast lighting poles should have a single base plate according to the most recent published standards.
2453.000	0	2453.000	1	“HIGH MAST LIGHTING POLE, LUMINAIRE AND HANDHOLE ORIENTATION” See Summary of Revisions.
		2453.001	0	“HIGH MAST LIGHTING POLE, LUMINAIRE AND HANDHOLE ORIENTATION FOR MEDIAN MOUNTED POLES” This is a new drawing. The MTO representative recommended converting MTOD 2453.021 (February 2004) into OPSD 2453.001.
2453.010	0	2453.010	1	“HIGH MAST LIGHTING POLE, CABLE HOLDER AND STORAGE HOOK DETAILS” See Summary of Revisions.
2453.020	0	2453.020	1	“HIGH MAST LIGHTING POLE, HANDHOLE COVER HINGES, LATCHES, AND PADLOCK” Note 1, weather stripping requirements added.
2453.050	0	2453.050	1	“HIGH MAST LIGHTING POLE, NAMEPLATE DETAILS” POLE HEIGHT added to nameplate.
2453.060	0	2453.060	1	“HIGH MAST LIGHTING POLE, FLOOD LIGHT LUMINAIRE MOUNTING DETAILS” This drawing has been reaffirmed with no changes to technical information.

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
2453.070	1	2453.070	2	“HIGH MAST LIGHTING POLE, LUMINAIRE SUPPORT RING” See Summary of Revisions.
2453.080	1	2453.080	2	“HIGH MAST LIGHTING POLE, HEAD FRAME AND RING ASSEMBLY” See Summary of Revisions.
2453.090	0	2453.090	1	“HIGH MAST LIGHTING POLE, SHROUD” This drawing has been reaffirmed with no changes to technical information.
2453.091	0	2453.091	1	“HIGH MAST LIGHTING POLE, SHROUD DETAILS” This drawing has been reaffirmed with no changes to technical information.
2453.140	0	2453.140	1	“HIGH MAST LIGHTING POLE, INTERNAL DRIVE RAISING AND LOWERING EQUIPMENT – LIST OF COMPONENTS” ID No. 2, 5, 6, 22, 23, and 24; part descriptions revised.
2453.150	0	2453.150	1	“HIGH MAST LIGHTING POLE, INTERNAL DRIVE RAISING AND LOWERING EQUIPMENT – LAYOUT” See Summary of Revisions.
2453.160	0			“HIGH MAST LIGHTING POLE, INTERNAL MOTOR AND WINCH DETAILS ” OPSD Cancelled. Information on drawing is already shown on OPSD 2453.150.
2453.170	0	2453.170	1	“HIGH MAST LIGHTING POLE, INTERNAL DRIVE WIRING DIAGRAM, 347/600V, 3-PHASE ” See Summary of Revisions.

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
2453.180	0	2453.180	1	“HIGH MAST LIGHTING POLE, INTERNAL DRIVE WIRING DIAGRAM ” See Summary of Revisions.
2453.190	0	2453.190	1	“HIGH MAST LIGHTING POLE, EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT – LIST OF COMPONENTS ” See Summary of Revisions.
2453.200	0	2453.200	1	“HIGH MAST LIGHTING POLE, ” EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT – LAYOUT” See Summary of Revisions.
2453.210	0	2453.210	1	“HIGH MAST LIGHTING POLE, EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT, WIRING DIAGRAM” W revised to N for neutral.
2453.220	0	2453.220	1	“HIGH MAST LIGHTING POLE, EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT, 120/240V, 1 PHASE, WIRING DIAGRAM” W revised to N for neutral.
2454.010	0			“HIGH MAST LIGHTING POLE, DOUBLE BASE PLATE DETAILS” OPSD Cancelled. These double base plates were designed for a specific footing. Going forward, high mast lighting poles should have a single base plate according to the most recent published standards.
2456.010	0			“HIGH MAST LIGHTING POLE, ANCHORAGE ASSEMBLY DETAILS FOR DOUBLE BASE PLATE” OPSD Cancelled. These double base plates were designed for a specific footing. Going forward, high mast lighting poles should have a single base plate according to the most recent published standards.

Superseded/Cancelled (Remove)		Revised/New (Insert)		Remarks
OPSD	Revision	OPSD	Revision	
2456.011	0	2456.011	1	“HIGH MAST LIGHTING POLE, ANCHORAGE ASSEMBLY DETAILS” This drawing has been reaffirmed with no changes to technical information.
		2555.010	0	“FLEXIBLE UTILITY MARKER” This is a new drawing. The MTO representative recommended converting MTOD 2555.010 (October 2008) into OPSD 2555.010.

SUMMARY OF REVISIONS TO OPSD 2011.701

GENERAL SYMBOLS, TRAFFIC ACTUATION DEVICES

- Existing description for non-intrusive traffic sensor revised to be generic.
- Non-intrusive detection zone and non-loop in-pavement detector symbols added.

SUMMARY OF REVISIONS TO OPSD 2200.070

POLE FOOTING IN EARTH FOR CAST-IN-PLACE CONCRETE BARRIER

- Anchorage plate moved to top of concrete barrier.
- Section A-A, depth of duct revised from 500 mm to 450 mm min.
- Section B-B, wobble joint and concrete encasement deleted.
- Existing Note 3 deleted. Other notes reordered.
- Existing Note 4 revised.

SUMMARY OF REVISIONS TO OPSD 2310.010

UNDERPASS LUMINAIRE, CEILING MOUNTED INSTALLATION WITH T BRACKET

- Anchors revised from metal to stainless steel.
- Machine bolts revised to be 65 mm long with hexagonal heads.
- Reinforcing bars labelled.

SUMMARY OF REVISIONS TO OPSD 2310.030

WEDGE MOUNTING BRACKET FOR UNDERPASS LUMINAIRE

- Bracket length and width dimensions revised to varies.
- Mounting holes added and size of holes revised.
- Existing Section B-B deleted.
- Note A, galvanizing requirements revised to ASTM A123.

SUMMARY OF REVISIONS TO OPSD 2310.040

SUPPORT BRACKET FOR COLUMN MOUNTED UNDERPASS LUMINAIRE

- Section A-A view, anchors revised from metal to stainless steel and machine bolts revised from 30 to 65 mm long.
- Front view, hole diameter revised from 11 to 13 mm.
- Note A, galvanizing requirements revised to ASTM A123.

SUMMARY OF REVISIONS TO OPSD 2450.011

HIGH MAST LIGHTING POLE, 25, 30, AND 35m 8-SIDED POLE

- Elevation, flat bar specified for ground stud and 42 mm pipe deleted.
- Section A-A, flat bar specified for ground stud.
- Section B-B, welding requirements revised.
- Section C-C, hole diameter revised from 52 to 57 mm.
- Detail B, back up bar deleted and welding requirements revised.
- Detail C added.
- Note A, reference to OPSD 2453.020 added.

SUMMARY OF REVISIONS TO OPSD 2450.021

HIGH MAST LIGHTING POLE, 40 AND 45m 12-SIDED POLE

- Elevation, flat bar specified for ground stud and 42 mm pipe deleted.
- Section A-A, flat bar specified for ground stud.
- Section B-B, welding requirements revised.
- Section C-C, hole diameter revised from 52 to 57 mm.
- Detail B, back up bar deleted and welding requirements revised.
- Detail C added.
- Note A, reference to OPSD 2453.020 added.

SUMMARY OF REVISIONS TO OPSD 2453.000

HIGH MAST LIGHTING POLE, LUMINAIRE AND HANDHOLE ORIENTATION

- New Note 2 added.
- Existing Note A deleted. Order notes reordered.

SUMMARY OF REVISIONS TO OPSD 2453.010

HIGH MAST LIGHTING POLE, CABLE HOLDER AND STORAGE HOOK DETAILS

- Elevation, 42 mm pipe and Teck cable clamp deleted.
- Section A-A, Teck cable clamp deleted.

SUMMARY OF REVISIONS TO OPSD 2453.070

HIGH MAST LIGHTING POLE, LUMINAIRE SUPPORT RING

- Plan view; tenon arm length revised from 710mm max to 760mm max, junction box revised from EEMAC 4X to NEMA 4X stainless steel, and tenon mounting bracket thickness added.
- Section A-A view; installation of retaining screws and pop rivets reversed, width of tenon mounting bracket added, and locknut and double nut with plain washer labelled and dimensioned.
- Elevation view; hole diameter specified and bolt location dimensioned.
- New Notes A and B added. Other note reordered.

SUMMARY OF REVISIONS TO OPSD 2453.080

HIGH MAST LIGHTING POLE, HEAD FRAME AND RING ASSEMBLY

- Junction box revised from EEMAC 4X to NEMA 4X stainless steel.
- Allen head set screws, slip fitter, and galvanized gusset plate deleted.
- Rubber roller length revised from 150mm to 150mm min.

SUMMARY OF REVISIONS TO OPSD 2453.150

HIGH MAST LIGHTING POLE, INTERNAL DRIVE RAISING AND LOWERING EQUIPMENT – LAYOUT

- PHASE A, PHASE B, and PHASE C revised to L1, L2, and L3; respectively.
- ID No. 15, additional strain relief connectors added.
- W revised to N for neutral.
- New Note 1 added.
- Note A, reference to OPSD 2453.160 deleted.

SUMMARY OF REVISIONS TO OPSD 2453.170

HIGH MAST LIGHTING POLE, INTERNAL DRIVE WIRING DIAGRAM, 347/600V, 3-PHASE

- Titles revised.
- W revised to N for neutral.
- Raising and lowering wiring revised.
- Raising and lowering push buttons and box labelled.
- Main power female connector and motor control male connector added.

SUMMARY OF REVISIONS TO OPSD 2453.180

HIGH MAST LIGHTING POLE, INTERNAL DRIVE WIRING DIAGRAM, 120/240V, 1-PHASE

- Titles revised.
- W revised to N for neutral.
- Raising and lowering wiring revised.
- Raising and lowering push buttons and box labelled.
- Main power female connector and motor control male connector added.

SUMMARY OF REVISIONS TO OPSD 2453.190

HIGH MAST LIGHTING POLE, EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT – LIST OF COMPONENTS

- Existing ID No. 4 deleted. Other numbers reordered.
- ID No. 3, 4, 15, 16, and 17; part descriptions revised.

SUMMARY OF REVISIONS TO OPSD 2453.200

HIGH MAST LIGHTING POLE, EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT – LAYOUT

- ID Nos. revised to reflect renumbering in OPSD 2453.190.
- PHASE A, PHASE B, and PHASE C revised to L1, L2, and L3; respectively.
- W revised to N for neutral.

MANUAL REVISION RECORD

Municipal and Provincial Common

Volume 4 – Drawings for Electrical

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
19	NOV 2004	Included in new manuals	45		
20	NOV 2005	Included in new manuals	46		
21	NOV 2006	Included in new manuals	47		
22	APRIL 2007	Included in new manuals	48		
23	NOV 2007	Included in new manuals	49		
24	NOV 2008	Included in new manuals	50		
25	APR 2009	Included in new manuals	51		
26	NOV 2009	Included in new manuals	52		
27	APR 2010	Included in new manuals	53		
28	NOV 2010	Included in new manuals	54		
29	NOV 2011	Included in new manuals	55		
30	NOV 2012	Included in new manuals	56		
31	NOV 2013	Included in new manuals	57		
32	NOV 2014	Included in new manuals	58		
33	NOV 2015	Included in new manuals	59		
34	NOV 2016	Included in new manuals	60		
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DATE	OPSD NO.	REV.	TITLE
DIVISION 2000 - ABBREVIATIONS			
2009 11	2000.001	0	Abbreviations, General
2009 11	2011.101	0	General Symbols, Ducts and Cables
2009 11	2011.201	0	General Symbols, Maintenance Holes, Junction Boxes, Pads, and Footings
2009 11	2011.401	0	General Symbols, Poles and Guying
2009 11	2011.501	0	General Symbols, Power Supply Equipment
2013 11	2011.601	1	General Symbols, Control Equipment
2016 11	2011.701	3	General Symbols, Traffic Actuation Devices
2009 11	2012.101	0	Highway Lighting Symbols, Luminaires
2009 11	2013.101	0	Electrical Traffic Control Symbols, Traffic Control Devices
2009 11	2013.201	0	Electrical Traffic Control Symbols, Traffic Signal Displays
2009 11	2014.101	0	Wiring Symbols, Wiring Diagrams 1
2009 11	2014.102	0	Wiring Symbols, Wiring Diagrams 2
2009 11	2015.201	0	Advanced Traffic Management Symbols, Universal Traffic Management System, Equipment Identifier 1
2009 11	2015.202	0	Advanced Traffic Management Symbols, Universal Traffic Management System, Equipment Identifier 2
2009 11	2015.301	0	Advanced Traffic Management Symbols, Layout Drawings
2009 11	2015.302	0	Advanced Traffic Management Symbols, Wiring Diagrams
2009 11	2016.301	0	Communications Symbols, Fibre Optic Communications Schematic 1
2009 11	2016.302	0	Communications Symbols, Fibre Optic Communications Schematic 2
DIVISION 2100 - UNDERGROUND WORK, ETC.			
2013 11	2100.010	0	Cable Installation in Trenches
2013 11	2100.050	0	Cable and Duct Protection and Marking
2015 11	2100.06	2	Rigid Ducts Encased in Concrete



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**VOLUME 4 INDEX
MUNICIPAL AND PROVINCIAL COMMON
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DATE	OPSD NO.	REV.	TITLE
2013 11	2101.01	1	Duct Installation in Trenches
2013 11	2101.020	0	Extension of Existing Rigid Ducts Encased in Concrete
2013 11	2102.01	1	Underground Rigid Duct Connection at Concrete Structure
2015 11	2102.020	0	Underground Rigid Duct Connection at Concrete Structure Without Expansion Joint
2015 11	2103.010	0	Rigid Duct Termination for High Voltage Cables at Utility Poles
2015 11	2103.02	1	Duct Installation Profiles
2015 11	2103.030	1	Rigid Duct Installation in Existing Paved Area, Unshrinkable Backfill Method
2015 11	2103.040	0	Rigid Duct Installation in Existing Paved Area - Granular Backfill Method
2015 11	2103.050	0	Duct Installation at Utility Crossings
2015 11	2103.060	0	Augering Pits for Subsurface Installation of Ducts and Encasements
92 12 15	2104.01	-	Re Ducts Surface Mounted on Structures
2015 11	2111.020	1	Electrical Maintenance Hole - Precast Concrete - 600 x 1450 mm
2015 11	2111.030	1	Electrical Maintenance Hole - Precast Concrete - 1200 mm Dia.
2015 11	2111.040	1	Electrical Maintenance Hole - Precast Concrete - 1200 x 1650 mm
2015 11	2111.050	1	Electrical Maintenance Hole - Precast Concrete - 1800 x 2400 mm
2009 11	2112.01	2	Electrical Handhole, Precast Concrete with Cover, 300 mm Dia.
2009 11	2112.02	2	Electrical Handhole, Precast Concrete with Cover, 460 mm Dia.
2004 11	2112.030	0	Electrical Handhole Precast Concrete - 675 mm Dia.
2004 11	2112.040	0	Electrical Handhole Precast Concrete - 600 x 600 mm
2009 11	2112.05	1	Electrical Handhole, Precast Concrete with Cover, 300 x 500 mm
2004 11	2113.010	0	Electrical Handhole, Non and Semi-Concrete, General Requirements



DATE	OPSD NO.	REV.	TITLE
2013 11	2116.01	1	Drainage Facilities for Electrical Maintenance Holes
2013 11	2116.02	1	Electrical Maintenance Hole, Drains to Drainage Pockets, Embankment Outlets, and Ditches
2013 11	2116.03	1	Electrical Maintenance Hole, Drains to Storm Sewer Systems
2013 11	2117.01	2	Electrical Maintenance Holes, General Installation Requirements
2013 11	2117.02	3	Electrical Handholes, General Installation Requirements
2009 11	2118.010	0	Electrical Chamber Installation in Median
2009 11	2118.020	0	Electrical Chamber Installation in Slope
2013 11	2123.01	1	Electrical Maintenance Holes, Entry of Direct Buried Ducts
2013 11	2123.02	1	Electrical Maintenance Holes, Entry of Encased Ducts
2013 11	2123.03	2	Electrical Handholes, Entry of Direct Buried and Encased Ducts
2010 11	2126.010	2	Distribution Assembly, Concrete Pad and Ducts, Plan and Section A-A
2010 11	2126.020	2	Distribution Assembly, Concrete Pad and Ducts, Section B-B
2016 11	2130.010	1	Supply Control Cabinet Installation Overhead Services, Top Entry Metering
2016 11	2130.011	1	Supply Control Cabinet Installation, Underground Services, Bottom Entry Metering
2016 11	2130.012	1	Supply Control Cabinet Installation, Overhead Services, Bottom Entry Metering
2016 11	2130.013	0	Supply Control Cabinet Installation, Underground Services, Bottom Entry Metering
DIVISION 2200 - FOUNDATIONS, ETC.			
2012 11	2200.01	2	Concrete Footing for Base Mounted Lighting and Signal Poles
2010 11	2200.011	0	Raised Concrete Footing for Base Mounted Lighting Poles
2013 11	2200.02	1	Concrete Foundation for Direct Buried Lighting Poles Where Rock is Encountered
2012 11	2200.03	2	Concrete Foundation for Base Mounted Lighting Poles Where Rock is Encountered



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DATE	OPSD NO.	REV.	TITLE
2014 11	2200.04	2	Concrete Footing and Anchorage Assembly for 3.3 m Base Mounted Metal Pole
2014 11	2200.041	0	Concrete Footing for 1.5 m Base Mounted Pedestrian Push Button Pole
2016 11	2200.070	1	Pole Footing in Earth for Cast-In-Place Concrete Barrier
2016 11	2200.080	1	Pole Footing in Rock for Cast-In-Place Concrete Barrier
2013 11	2210.010	0	Local Grading at Pole Foundations
2016 11	2210.030	1	High Mast Lighting Pole, Apron
2015 11	2215.02	4	Anchorage Assembly for Lighting and Signal Poles
2015 11	2215.025	0	Anchorage Assembly for Heavy Class Steel Pole and Sectional Steel Pole
2014 11	2215.03	4	Pole Mounting Details for Base Mounted Metal Pole
2015 11	2216.010	2	Anchorage Assembly for Pole Footing in Concrete Barrier
2016 11	2218.010	1	High Mast Lighting Pole Anchorage Assembly Placement
2010 11	2220.01	1	Pole Handhole Locations
2016 11	2225.010	1	Concrete Lighting Pole, Direct Buried
2016 11	2228.010	1	Metal Lighting Pole, Base Mounted
2016 11	2232.010	1	Sectional Steel Pole with Brackets, Luminaire, and Traffic Signal Head
2012 11	2235.01	2	Pole Guying Details
2013 11	2236.010	0	Wooden Pole and Anchorage Settings in Solid Rock 1
2013 11	2236.020	0	Wooden Pole and Anchorage Settings in Solid Rock 2
2010 11	2238.01	1	Wooden Pole in Earth
2013 11	2239.010	0	Cribbing for Wood Poles in Muskeg
2013 11	2239.020	0	Log Anchor for Guy in Muskeg
2006 11	2240.01	2	Wood Pole with Elliptical Bracket, Overhead and Underground Circuits



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DATE	OPSD NO.	REV.	TITLE
2013 11	2242.01	1	Wooden Pole with Neutral Supported Cable
2013 11	2242.02	2	Wooden Poles with Aerial Signal Cables Lashed on Messenger
2004 11	2245.01	2	Installation of Aerial Cable Systems
2011 11	2245.020	1	Minimum Vertical Clearances for Aerial Cable Systems
2016 11	2250.010	0	Aluminum Tapered Elliptical Brackets on Metal and Concrete Poles, Mounting Details
2013 11	2255.010	1	Pole Wiring Diagram - 120V System
2013 11	2255.020	1	Pole Wiring Diagram - 120/240V System
2013 11	2255.030	1	Pole Wiring Diagram - 347/600V System
2013 11	2255.040	1	Pole Wiring Diagram, Lighting Pole on Bridge Structure

DIVISION 2300 - WORK ON STRUCTURE

2013 11	2300.010	1	Rigid PVC Junction Box, Type P1
2013 11	2300.020	1	Rigid PVC Junction Box, Type P2
2013 11	2300.030	1	Rigid PVC Junction Box, Type P4
2010 11	2302.010	1	Embedded Work Detail for Rigid PVC Junction Box, Type P3-1, for Use in Concrete Barrier Wall
2013 11	2302.020	0	Expansion and Deflection Fitting Assembly for 50 and 75 mm Rigid Ducts
2013 11	2302.040	1	Embedded Work in Structure, New Jersey Type Concrete Barrier Wall
2014 11	2302.045	0	Embedded Work in Structure, Parapet Wall
2016 11	2305.020	2	Underpass Luminaires Wall Mounted Installation
2016 11	2310.010	1	Underpass Luminaire Ceiling Mounted Installation with Tee Bracket
2016 11	2310.020	2	Tee Bracket for Ceiling Mounted Underpass Luminaire
2016 11	2310.030	1	Wedge Mounting Bracket for Underpass Luminaire
2016 11	2310.040	1	Support Bracket for Column Mounted Underpass Luminaire
2016 11	2315.010	1	Underpass Luminaire, Wiring Detail



DATE	OPSD NO.	REV.	TITLE
DIVISION 2400 - PURCHASING STANDARDS			
2013 11	2400.000	2	Distribution Assembly Legend
2010 11	2400.010	2	Distribution Assembly, Cabinet
2008 11	2400.020	1	Distribution Assembly, Equipment Layout
2013 11	2400.030	2	Distribution Assembly Wiring Schematic
2008 11	2400.100	0	Warning Signs for Electrical Equipment
2010 11	2400.101	0	Warning Signs Outside Electrical Equipment
2012 11	2410.01	3	Spun Concrete Pole
2012 11	2410.020	0	18.3 m Spun Concrete Pole for TV Camera Mounting
2015 11	2414.010	0	3.3m Aluminum and Sectional Steel Poles, Base Mounted
93 12 15	2415.010	-	Steel Pole - Base Mounting
2010 11	2415.011	0	Steel Pole, Base Mounted Without Gussets
93 12 15	2416.010	-	Steel Pole - Concrete Barrier Mounting
2010 11	2416.011	0	Steel Pole, Concrete Barrier Base Mounted Without Gussets
2016 11	2418.010	2	1.8 m and 2.7 m Steel Truss Bracket for Steel Poles
2007 04	2420.01	4	1.8 m and 2.7 m Aluminum Tapered Elliptical Bracket
2016 11	2421.010	1	Lamp Wattage Label for Luminaire
2010 11	2428.01	3	Frangible Bases
2010 11	2432.010	1	Aluminum Pole - Base Mounted
2014 11	2440.010	1	Supply Control Cabinet Assembly Type 1, 120/240V, 100A, 1-Phase, 3-Wire
2014 11	2440.020	1	Supply Control Cabinet Assembly Type 2, 120/208V, 100A, 3-Phase, 4-Wire
2014 11	2440.021	0	Supply Control Cabinet Assembly Type 2, 347/600V, 100A, 3-Phase, 4-Wire
2014 11	2440.030	1	Supply Control Cabinet Assembly Type 1 and 2, Enclosure
2014 11	2440.040	1	Pole Mounting Bracket for Supply Control Cabinet Assembly



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DATE	OPSD NO.	REV.	TITLE
2014 11	2440.050	1	Supply Control Cabinet Assembly Type 1 and 2, Dead Front Panels
2016 11	2440.051	0	Supply Control Cabinet Assembly Type 1 and 2, Barrier Details
2014 11	2440.060	1	Supply Control Cabinet Assembly Type 1 and 2, 3-Point Door Latch
2014 11	2440.061	0	Supply control Cabinet Assembly Type 1, 2, and 3, 3-Point Stainless Steel Door Handle
2014 11	2441.000	1	Supply Control Cabinet Assembly Type 3, 120/240V, 100A, 1-Phase, 3-Wire
2014 11	2441.010	1	Supply Control Cabinet Assembly Type 3, Enclosure
2014 11	2441.020	1	Supply Control Cabinet Assembly Type 3, Dead Front Panels
2014 11	2441.030	0	Supply Control Cabinet Assembly Type 3, 3-Point Door Latch
2015 11	2442.010	0	Duct Hanger
2016 11	2450.011	1	High Mast Lighting Pole, 25, 30, and 35 m 8-Sided Pole
2016 11	2450.021	1	High Mast Lighting Pole, 40 and 45 m 12-Sided Pole
2016 11	2453.000	1	High Mast Lighting Pole, Luminaire and Handhole Orientation
2016 11	2453.001	0	High Mast Lighting Pole, Luminaire and Handhole Orientation for Median Mounted Poles
2016 11	2453.010	1	High Mast Lighting Pole, Cable Holder, and Storage Hook Details
2016 11	2453.020	1	High Mast Lighting Pole, Handhole Cover Hinges, Latches, and Padlock
2016 11	2453.050	1	High Mast Lighting Pole, Nameplate Details



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DATE	OPSD NO.	REV.	TITLE
2016 11	2453.060	1	High Mast Lighting Pole, Flood Light Luminaire Mounting Details
2016 11	2453.070	2	High Mast Lighting Pole, Luminaire Support Ring
2016 11	2453.080	2	High Mast Lighting Pole, Head Frame and Ring Assembly
2016 11	2453.090	1	High Mast Lighting Pole, Luminaire Shroud
2016 11	2453.091	1	High Mast Lighting Pole, Luminaire Shroud Details
2016 11	2453.140	1	High Mast Lighting Pole, Internal Drive Raising and Lowering Equipment - List of Components
2016 11	2453.150	1	High Mast Lighting Pole, Internal Drive Raising and Lowering Equipment - Layout
2016 11	2453.170	1	High Mast Lighting Pole, Internal Drive Raising and Lowering Equipment, 347/600V, 3-Phase, Wiring Diagram
2016 11	2453.180	1	High Mast Lighting Pole, Internal Drive Raising and Lowering Equipment, 120/240V, 1-Phase, Wiring Diagram
2016 11	2453.190	1	High Mast Lighting Pole, External Drive Raising and Lowering Equipment - List of Components
2016 11	2453.200	1	High Mast Lighting Pole, External Drive Raising and Lowering Equipment - Layout
2016 11	2453.210	1	High Mast Lighting Pole, External Drive Raising and Lowering Equipment, 347/600V, 3-Phase, Wiring Diagram
2016 11	2453.220	1	High Mast Lighting Pole, External Drive Raising and Lowering Equipment, 120/240V, 1-Phase, Wiring Diagram
2016 11	2456.011	1	High Mast Lighting Pole Anchorage Assembly Details
DIVISION 2500 - TRAFFIC SIGNALS			
2011 11	2500.010	1	600 mm Signal Arm and Signal Head
2009 11	2500.020	1	600 mm Signal Arm Attachment to Poles
2011 11	2501.01	2	Single Member Arm and Signal Head
2011 11	2501.02	2	Aluminum Single Member Arm Attachment Details
2007 11	2502.010	0	Traffic Signal, Adjustable Mid-Section Hanger



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DATE	OPSD NO.	REV.	TITLE
2007 11	2502.011	0	Traffic Signal, Dual-End Hanger
2014 11	2505.010	1	Traffic Signal, Pedestrian Head and Push Button Mounted on Pole
2011 11	2508.010	0	Traffic Signal, Sectional Steel Poles with Primary and Secondary Signal Heads for Ramp Metering
2012 11	2510.010	0	Pole Mounted Controller Cabinet
2011 11	2510.020	0	Mounting Bracket for Pole Mounted Controller Cabinet
2012 11	2514.010	0	Controller Cabinet on Pad
2012 11	2514.020	0	Concrete Pad for Controller Cabinet
2012 11	2516.102	0	Traffic Data Collection, Data Station, Traffic Counting Station Type 2
2012 11	2518.101	0	Prefabricated Detector Loop
2012 11	2518.102	0	Traffic Data Collection, Detector Loops, Heavy Duty Rubber
2012 11	2520.010	0	Loop Detector Installation Details I
2012 11	2520.02	4	Loop Detector Installation Details II
2007 11	2522.010	0	Traffic Signal, Cushion Hanger
2009 11	2524.01	1	Traffic Signal, Double Arm Bracket
2012 11	2526.01	1	Traffic Signal Bracket for Mounting Pedestrian Instruction Sign on Pole
2010 11	2528.01	2	Traffic Signal Equipment, Pole Wiring Diagram
2015 11	2529.010	1	Signal Wiring for Pedestrian Facilities
2012 11	2529.020	0	Signal Wiring Using 4/C Cable Connected Radially, 2 Phase
2012 11	2529.030	0	Signal Wiring Using 12/C Cable Tapped, 2 to 8 Phase
2012 11	2529.040	0	Signal Wiring Using 4/C and 12/C Cable Tapped, 2 to 8 Phase
2012 11	2529.050	0	Signal Wiring Using 4/C Cable Connected Radially, 2 to 8 Phase
2012 11	2529.060	0	Signal Wiring Using 4/C Cable Connected Radially, and 12/C Cable Tapped, 2 to 8 Phase
2012 11	2529.070	0	Signal Wiring Using 19/C Cable Tapped, 2 to 8 Phase



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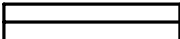
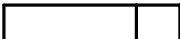
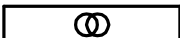
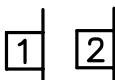
DATE	OPSD NO.	REV.	TITLE
2012 11	2529.080	0	Signal Wiring Using 7/C Cable Connected Radially T-Intersection, 2 to 3 Phase
2012 11	2529.090	0	Signal Wiring Using 4/C Cable Connected Radially T-Intersection, 2 Phase
2013 11	2530.01	1	Splices for Traffic Signal Cable and Extra Low Voltage Cable
2015 11	2536.010	2	Flasher Beacons for Roadway Sign and Downlight and Wiring Diagram
2015 11	2536.030	0	Solar Powered LED Flasher Beacon and Wiring Diagram for Roadway Sign, Base Mounted Pole
2015 11	2536.032	0	Solar Powered LED Flasher Beacon and Wiring Diagram for Roadway Sign, Direct Buried Pole
2013 11	2540.01	4	Aerial Traffic Signal Installation
2013 11	2540.02	2	Aerial Flasher Beacon Installation
2013 11	2540.030	0	Aerial Suspension Mounting Bracket, Signal Heads and Flashing Beacons
2009 11	2540.100	0	Aerial Suspension Mounting Bracket, Emergency Pre-Emption Unit
2012 11	2545.01	1	PVC Junction Box for Signal Cable Splicing
2014 11	2547.010	1	Traffic Signal and Illumination Grounding System
2011 11	2552.01	2	Traffic Signal System Equipment on Wooden or Concrete Poles, Overhead Wiring Installation
2011 11	2554.010	0	Traffic Signal System Equipment on Wooden or Concrete Poles, Underground Wiring Installation
2016 11	2555.010	0	Flexible Utility Markers
2014 11	2558.000	0	Pole for Accessible Pedestrian Signal Push Button

DIVISION 26 - SIGN LIGHTING

CURRENTLY NO DRAWINGS

DIVISION 29 – ADVANCED TRAFFIC MANAGEMENT SYSTEM (ATMS)

2015 11	2902.322	0	Advanced Traffic Management System, Supply Control Cabinet, 120V, 100A, 1-Phase, 3 Wire
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	LD2	simple loop detector with identification code
	LD3	duplex loop detector with identification code
	LD4	powerhead loop detector with identification code
	NID1	non-intrusive detection zone with identification code
	NLP2	non-loop in-pavement detector with identification code
	LD5	diamond loop detector with identification code
		numbers shown within loops indicate loop numbers in a set
	EV1	emergency vehicle pre-emption with identification code
	MD1	non-intrusive sensor with identification code
		micro loop detector, number shown inside loop indicates loop number in a set
	PB1	accessible pedestrian push button and direction arrow with identification code
	VD1	video camera or video camera detector with identification code
		multi-leg detection camera
 or 		red light camera

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Nov 2016

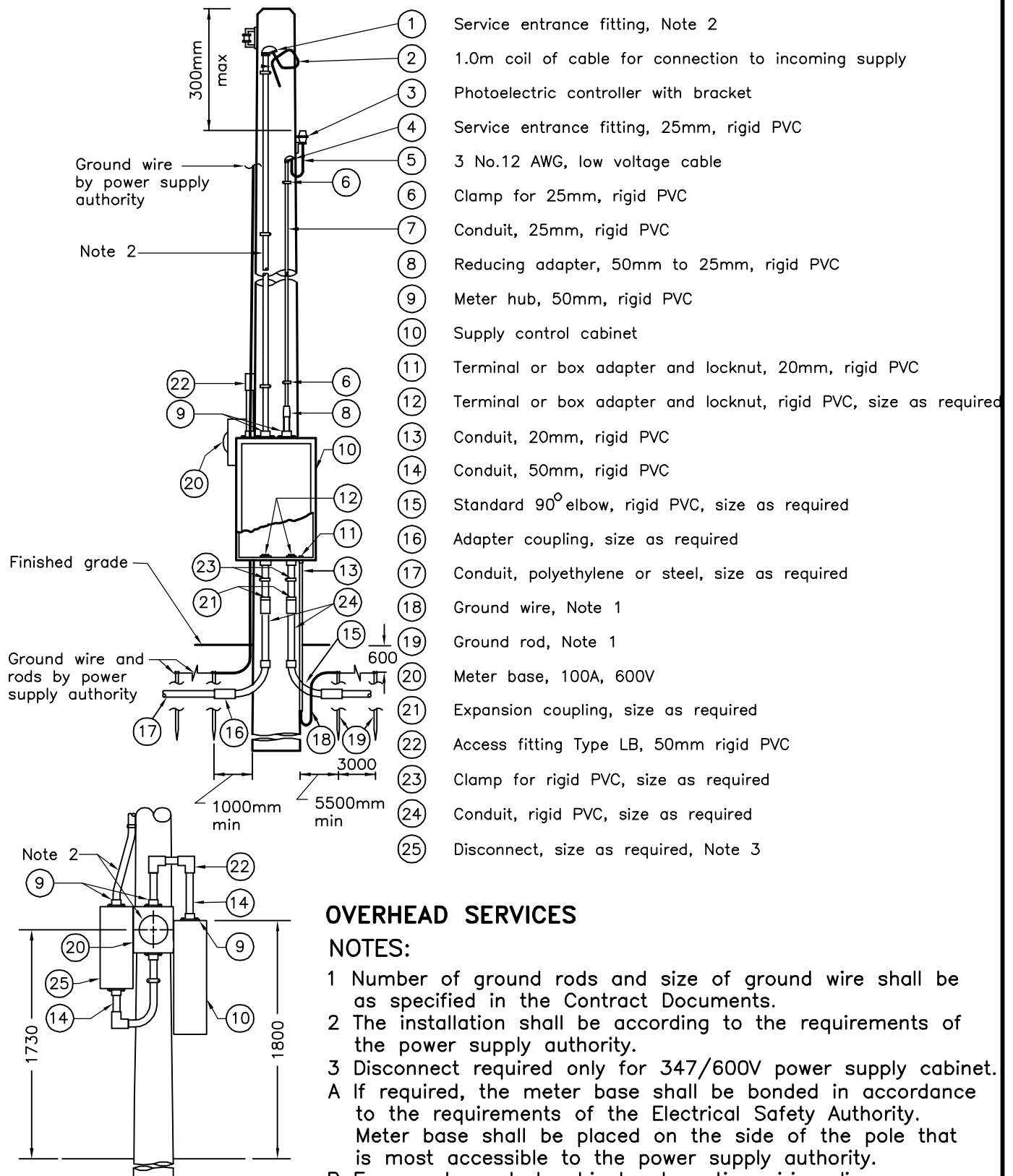
Rev 3

GENERAL SYMBOLS

TRAFFIC ACTUATION DEVICES



OPSD 2011.701



DETAIL OF METER BASE

OVERHEAD SERVICES

NOTES:

- 1 Number of ground rods and size of ground wire shall be as specified in the Contract Documents.
- 2 The installation shall be according to the requirements of the power supply authority.
- 3 Disconnect required only for 347/600V power supply cabinet.
- A If required, the meter base shall be bonded in accordance to the requirements of the Electrical Safety Authority. Meter base shall be placed on the side of the pole that is most accessible to the power supply authority.
- B For supply control cabinet schematics wiring diagram see OPSD 2440.010 and 2440.020.
- C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

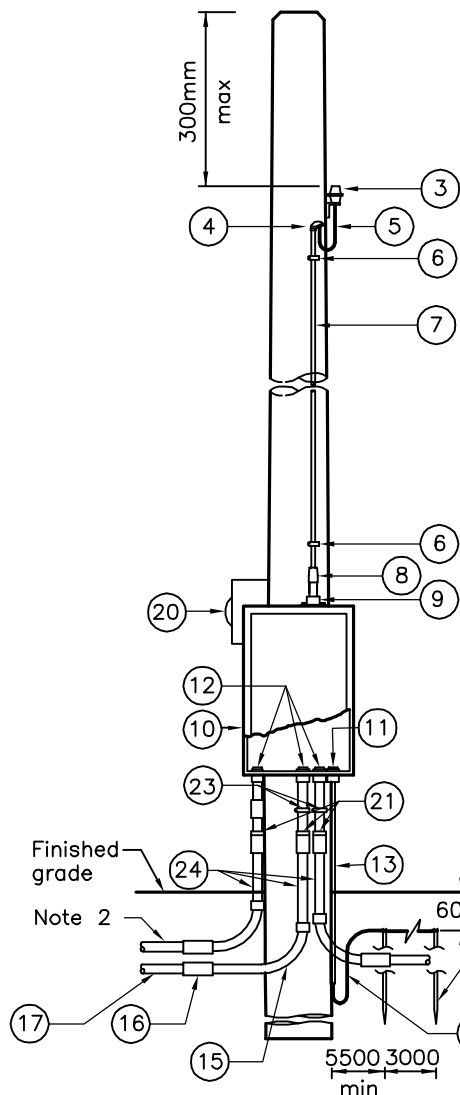
Nov 2016

Rev 1

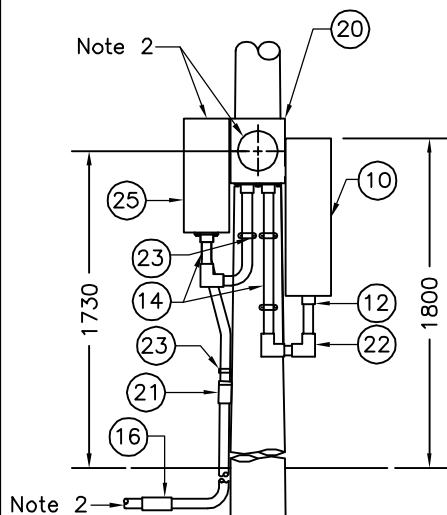
**SUPPLY CONTROL CABINET INSTALLATION
OVERHEAD SERVICES
TOP ENTRY METERING**

OPSD 2130.010





- ① Service entrance fitting, Note 2 (Not Used)
- ② 1.0m coil of cable for connection to incoming supply (Not Used)
- ③ Photoelectric controller with bracket
- ④ Service entrance fitting, 25mm, rigid PVC
- ⑤ 3 No.12 AWG, low voltage cable
- ⑥ Clamp for 25mm, rigid PVC
- ⑦ Conduit, 25mm, rigid PVC
- ⑧ Reducing adapter, 50mm to 25mm, rigid PVC
- ⑨ Meter hub, 50mm, rigid PVC
- ⑩ Supply control cabinet
- ⑪ Terminal or box adapter and locknut, 20mm, rigid PVC
- ⑫ Terminal or box adapter and locknut, rigid PVC, size as required
- ⑬ Conduit, 20mm, rigid PVC
- ⑭ Conduit, 50mm, rigid PVC
- ⑮ Standard 90° elbow, rigid PVC, size as required
- ⑯ Adapter coupling, size as required
- ⑰ Conduit polyethylene or steel, size as required
- ⑱ Ground wire, Note 1
- ⑲ Ground rod, Note 1
- ⑳ Meter base, 100A, 600V
- ㉑ Expansion coupling, size as required
- ㉒ Access fitting Type LB, 50mm rigid PVC
- ㉓ Clamp for 50mm, rigid PVC
- ㉔ Conduit, rigid PVC, size as required
- ㉕ Disconnect, size as required, Note 3



DETAIL OF METER BASE

UNDERGROUND SERVICES

NOTES:

- 1 Number of ground rods and size of ground wire shall be as specified in the Contract Documents.
- 2 The installation shall be according to the requirements of the power supply authority.
- 3 Disconnect required only for 347/600V power supply cabinet.
- A If required, the meter base shall be bonded in accordance to the requirements of the Electrical Safety Authority. Meter base shall be placed on the side of the pole that is most accessible to the power supply authority.
- B For supply control cabinet schematics wiring diagram see OPSD 2440.010 and 2440.020.
- C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

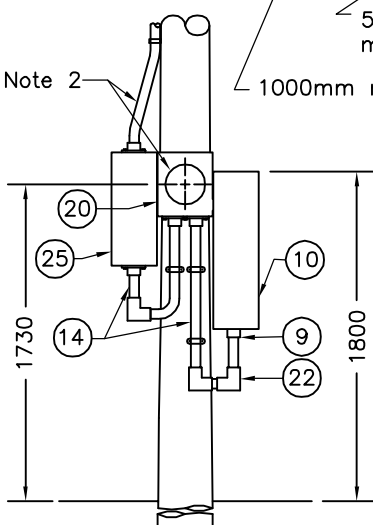
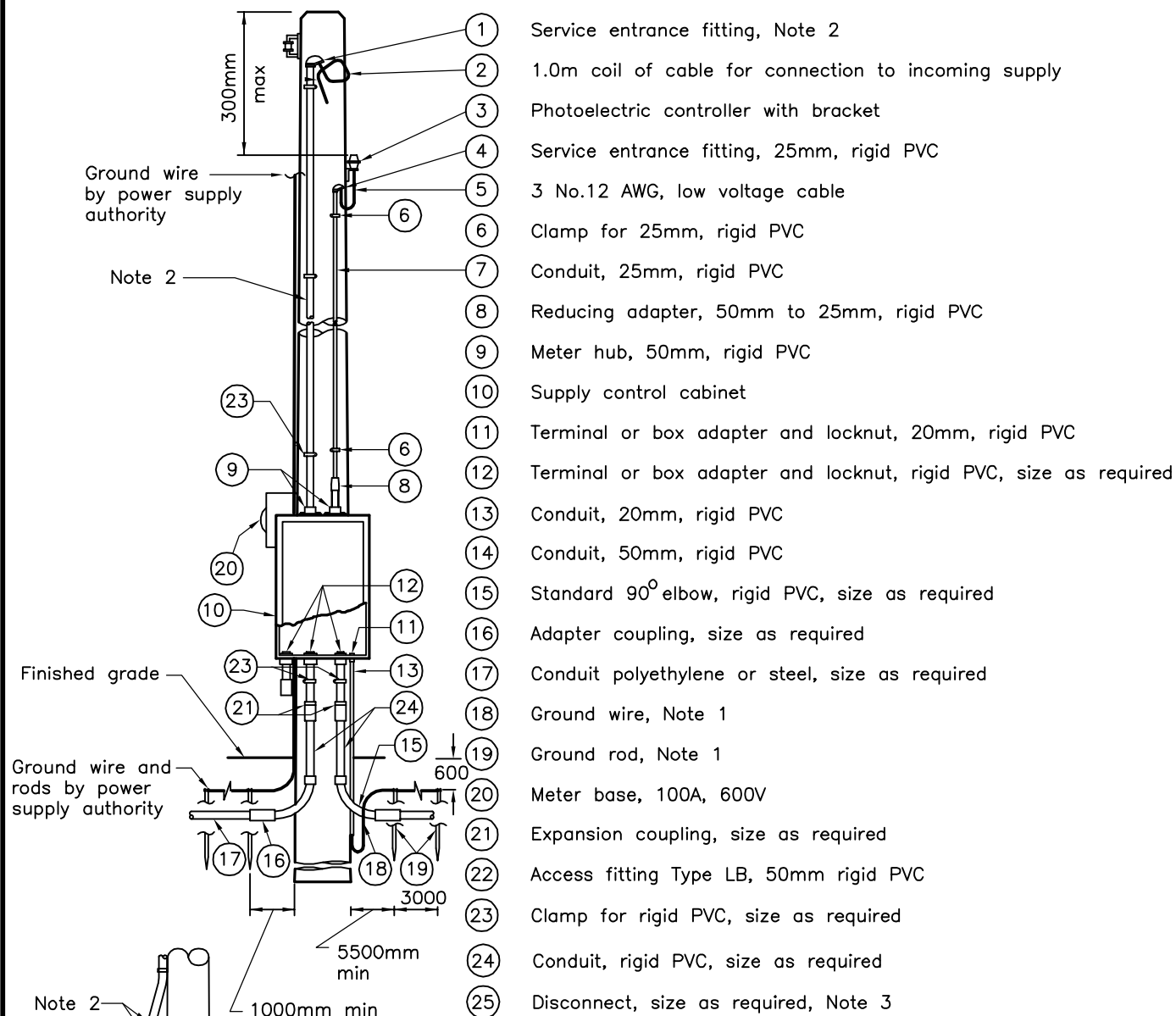
Nov 2016

Rev 1

**SUPPLY CONTROL CABINET INSTALLATION
UNDERGROUND SERVICES
BOTTOM ENTRY METERING**

OPSD 2130.011





DETAIL OF METER BASE

OVERHEAD SERVICES

NOTES:

- 1 Number of ground rods and size of ground wire shall be as specified in the Contract Documents.
- 2 The installation shall be according to the requirements of the power supply authority.
- 3 Disconnect required only for 347/600V power supply cabinet.
- A If required, the meter base shall be bonded in accordance to the requirements of the Electrical Safety Authority. Meter base shall be placed on the side of the pole that is most accessible to the power supply authority.
- B For supply control cabinet schematics wiring diagram see OPSD 2440.010 and 2440.020.
- C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

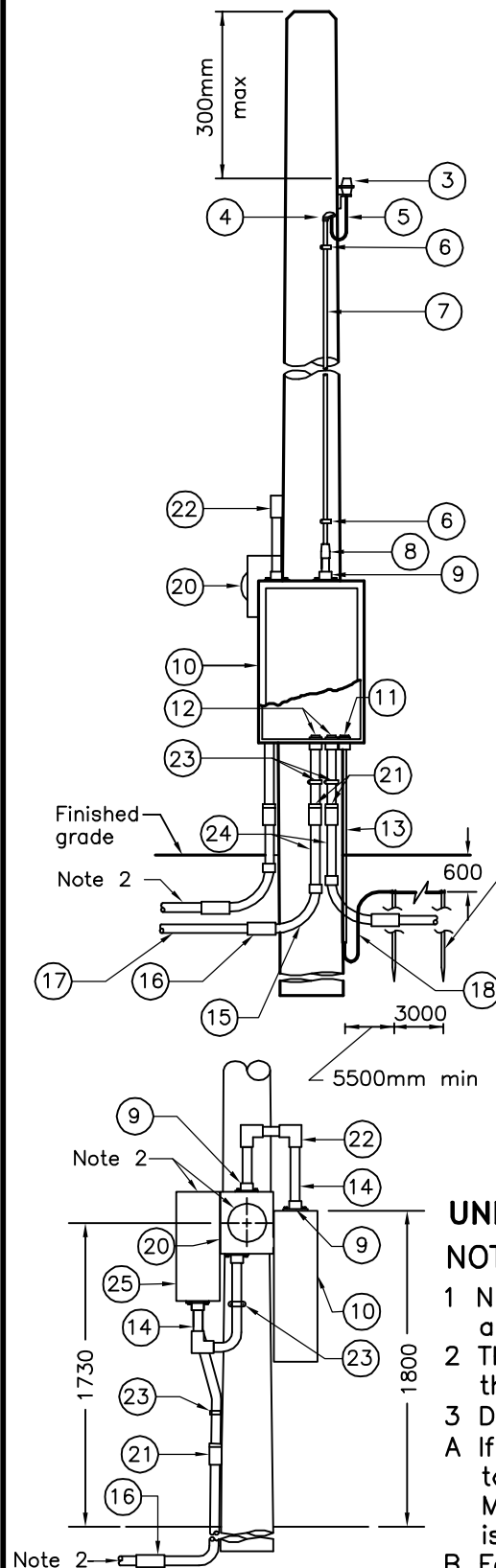
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SUPPLY CONTROL CABINET INSTALLATION
OVERHEAD SERVICES
BOTTOM ENTRY METERING

OPSD 2130.012





- ① Service entrance fitting, Note 2 (Not Used)
- ② 1.0m coil of cable for connection to incoming supply (Not Used)
- ③ Photoelectric controller with bracket
- ④ Service entrance fitting, 25mm, rigid PVC
- ⑤ 3 No.12 AWG, low voltage cable
- ⑥ Clamp for 25mm, rigid PVC
- ⑦ Conduit, 25mm, rigid PVC
- ⑧ Reducing adapter, 50mm to 25mm, rigid PVC
- ⑨ Meter hub, 50mm, rigid PVC
- ⑩ Supply control cabinet
- ⑪ Terminal or box adapter and locknut, 20mm, rigid PVC
- ⑫ Terminal or box adapter and locknut, rigid PVC, size as required
- ⑬ Conduit, 20mm, rigid PVC
- ⑭ Conduit, 50mm, rigid PVC
- ⑮ Standard 90° elbow, rigid PVC, size as required
- ⑯ Adapter coupling, size as required
- ⑰ Conduit polyethylene or steel, size as required
- ⑱ Ground wire, Note 1
- ⑲ Ground rod, Note 1
- ⑳ Meter base, 100A, 600V
- ㉑ Expansion coupling, size as required
- ㉒ Access fitting Type LB, 50mm rigid PVC
- ㉓ Clamp for 50mm, rigid PVC
- ㉔ Conduit, rigid PVC, size as required
- ㉕ Disconnect, size as required, Note 3

UNDERGROUND SERVICES

NOTES:

- 1 Number of ground rods and size of ground wire shall be as specified in the Contract Documents.
- 2 The installation shall be according to the requirements of the power supply authority.
- 3 Disconnect required only for 347/600V power supply cabinet.
- A If required, the meter base shall be bonded in accordance to the requirements of the Electrical Safety Authority. Meter base shall be placed on the side of the pole that is most accessible to the power supply authority.
- B For supply control cabinet schematics wiring diagram see OPSD 2440.010 and 2440.020.
- C All dimensions are in millimetres unless otherwise shown.

DETAIL OF METER BASE

ONTARIO PROVINCIAL STANDARD DRAWING

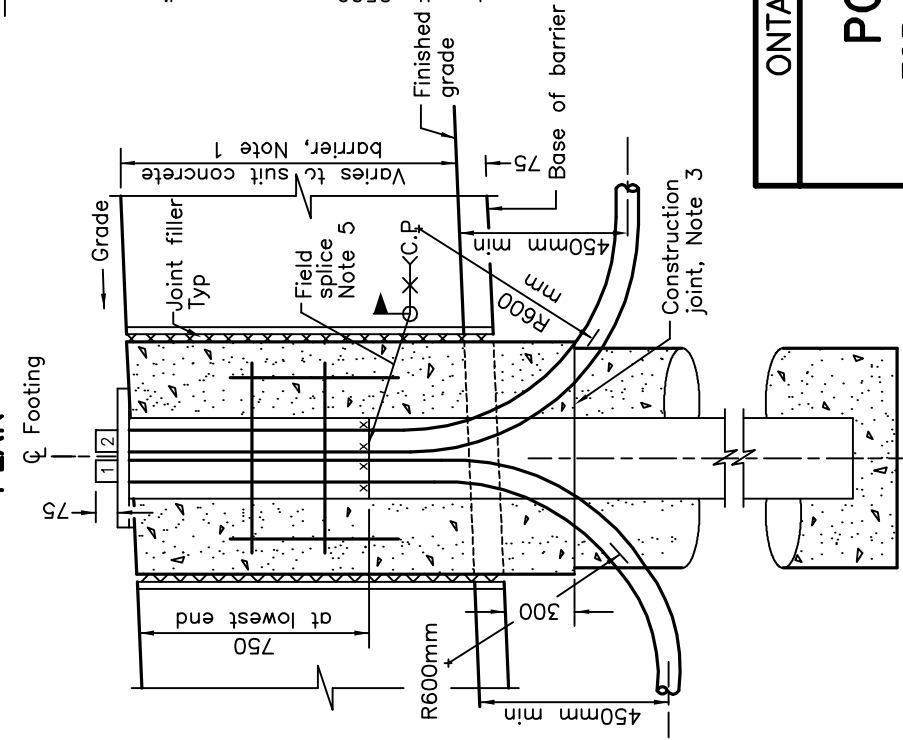
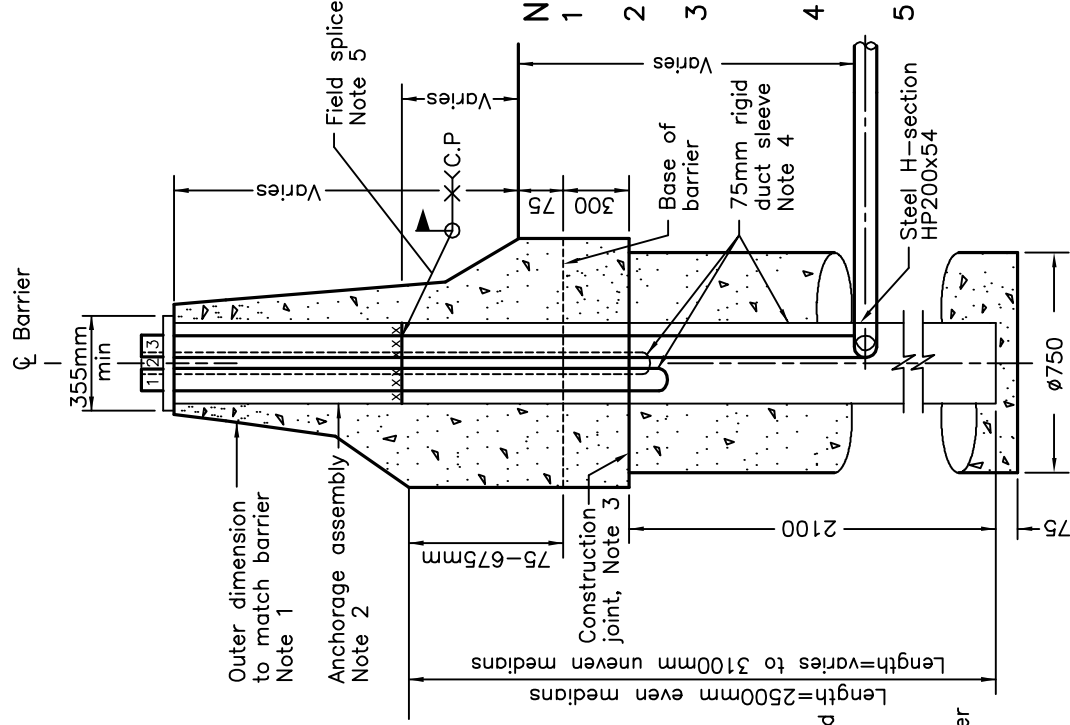
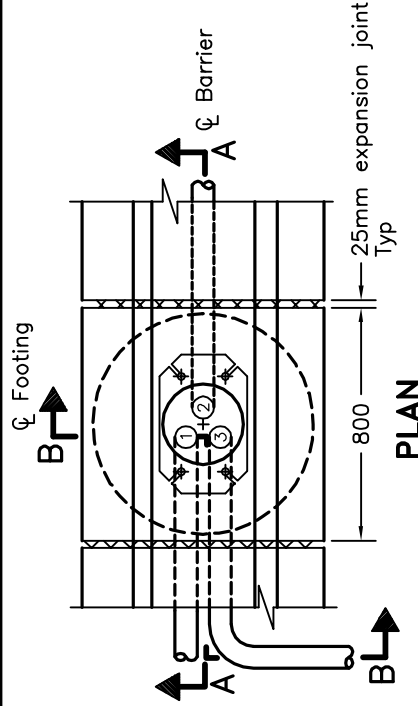
Nov 2016

Rev 0

SUPPLY CONTROL CABINET INSTALLATION
UNDERGROUND SERVICES
TOP ENTRY METERING

OPSD 2130.013





NOTES:

- 1 Concrete barrier shall be according to OPSD 911.131.
- 2 Anchorage assembly shall be according to OPSD 2216.010.
- 3 The upper portion of the footing may be poured with the barrier using a suitable box-out for the top opening.
- 4 Minimum of two sleeves required for each concrete footing. Three sleeves as specified.
- 5 The field splice is optional. Welding shall be according to CSA W59. Where construction staging allows the H-section should be supplied continuous with the H-section of the anchorage assembly.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

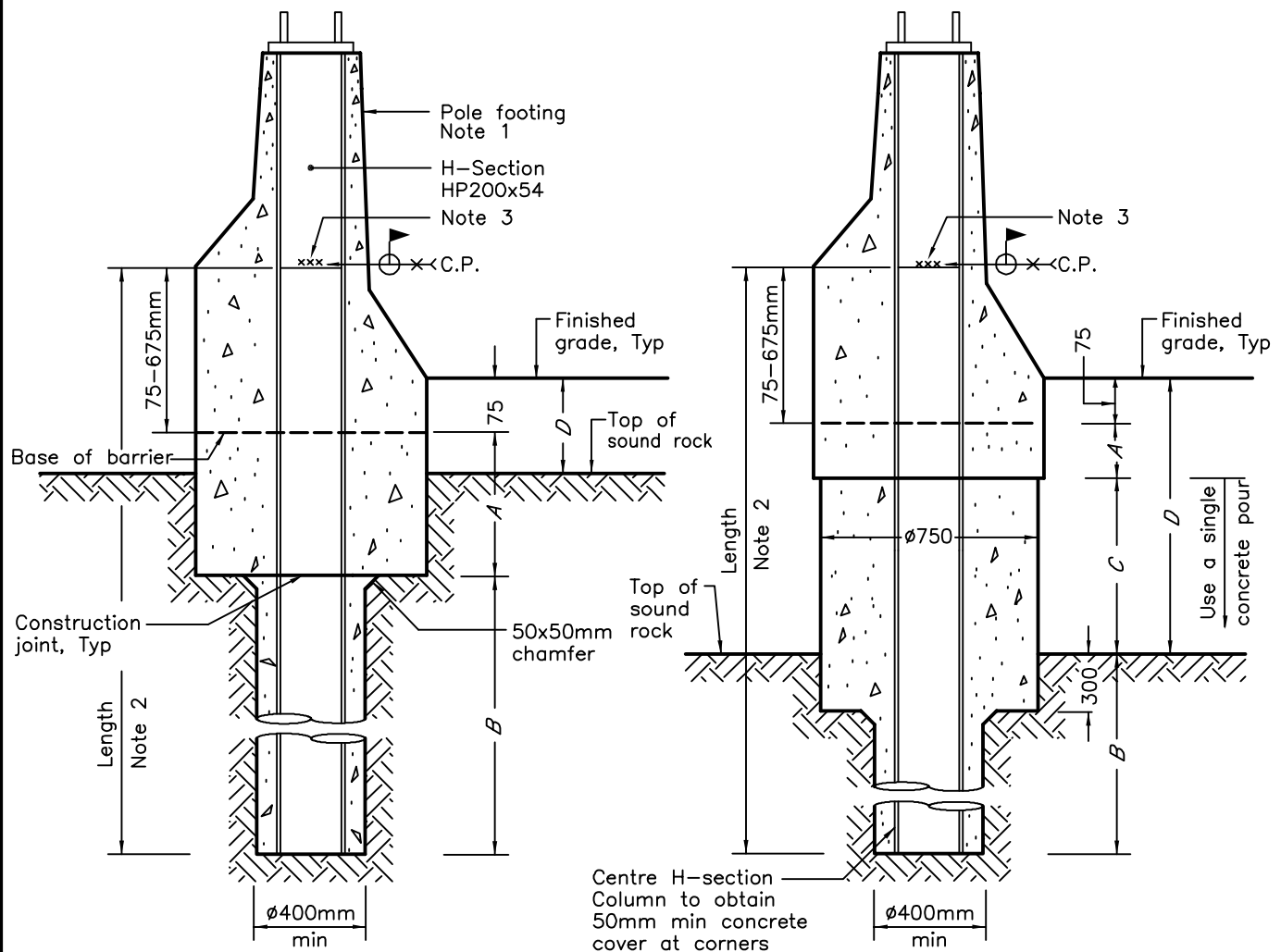
Nov 2016 Rev 1



POLE FOOTING IN EARTH FOR CAST-IN-PLACE CONCRETE BARRIER

SECTION A-A

OPSD 2200.070



DEPTH TO SOUND ROCK = 0 TO 1199mm

DEPTH TO SOUND ROCK = 1200 TO 2100mm

NOTES:

- Details shown are for modifications required to the normal footing for installation in rock. For all other details, refer to OPSD 2200.070.
 - Lengths are indicated for C or C-1 barriers. Rock excavation depth *B* shall correspond to the H-section lengths as shown.
 - The field splice is optional. Welding shall be according to CSA W59. Where construction staging allows, the H-section should be supplied continuous with the H-section of the anchorage assembly.
- A C and C-1 are barrier types. Refer to OPSD 911.131.
- B All dimensions are in millimetres unless otherwise shown.

DIMENSION	DEPTH TO SOUND ROCK <i>D</i> mm							
	0	300	600	900	1200	1500	1800	2100
Depth <i>A</i>	300	600	900	1100	300	300	200	200
Depth <i>B</i>	C	1400	1100	800	600	600	900	600
	C-1	2000	1700	1400	1200	1200	1500	1200
Depth <i>C</i>	n/a	n/a	n/a	n/a	800	1100	1500	1800
Length	C	1875	1875	1875	1875	2475	2475	2475
	C-1	2475	2475	2475	2475	2475	3075	3075

ONTARIO PROVINCIAL STANDARD DRAWING

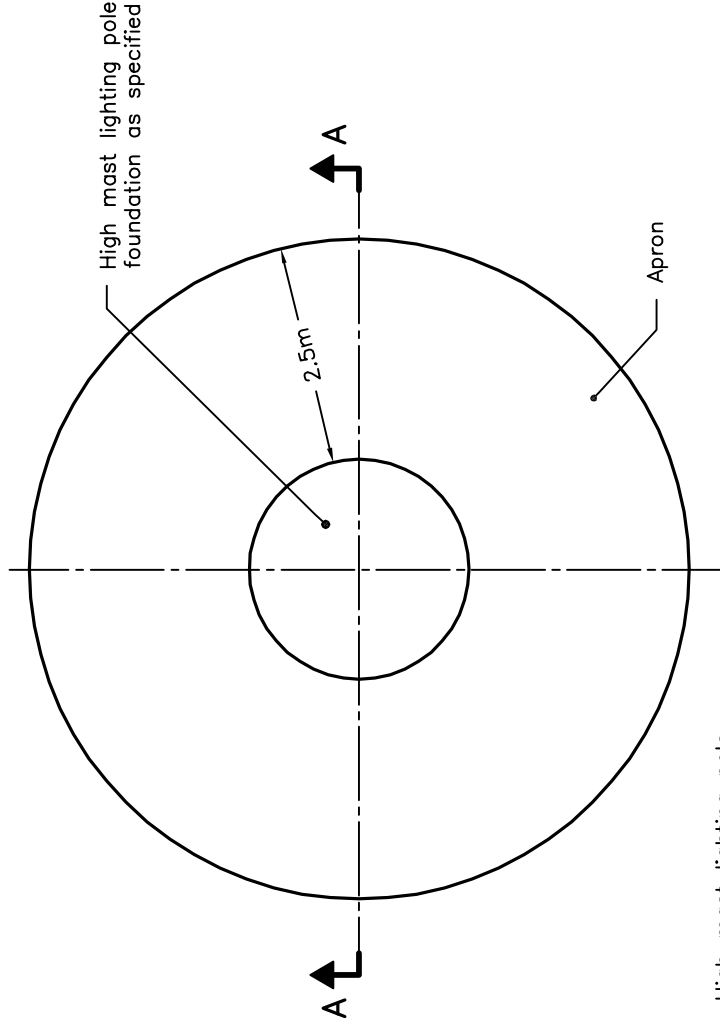
Nov 2016

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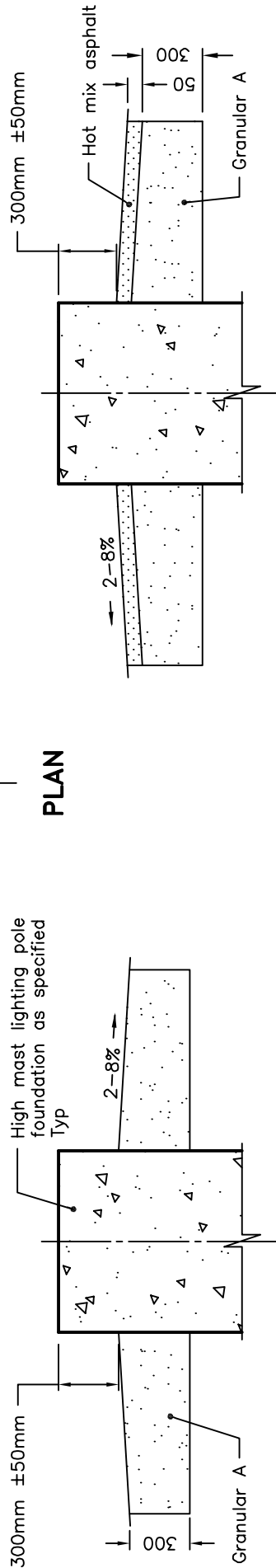
POLE FOOTING IN ROCK
FOR CAST-IN-PLACE CONCRETE BARRIER



OPSD 2200.080



PLAN



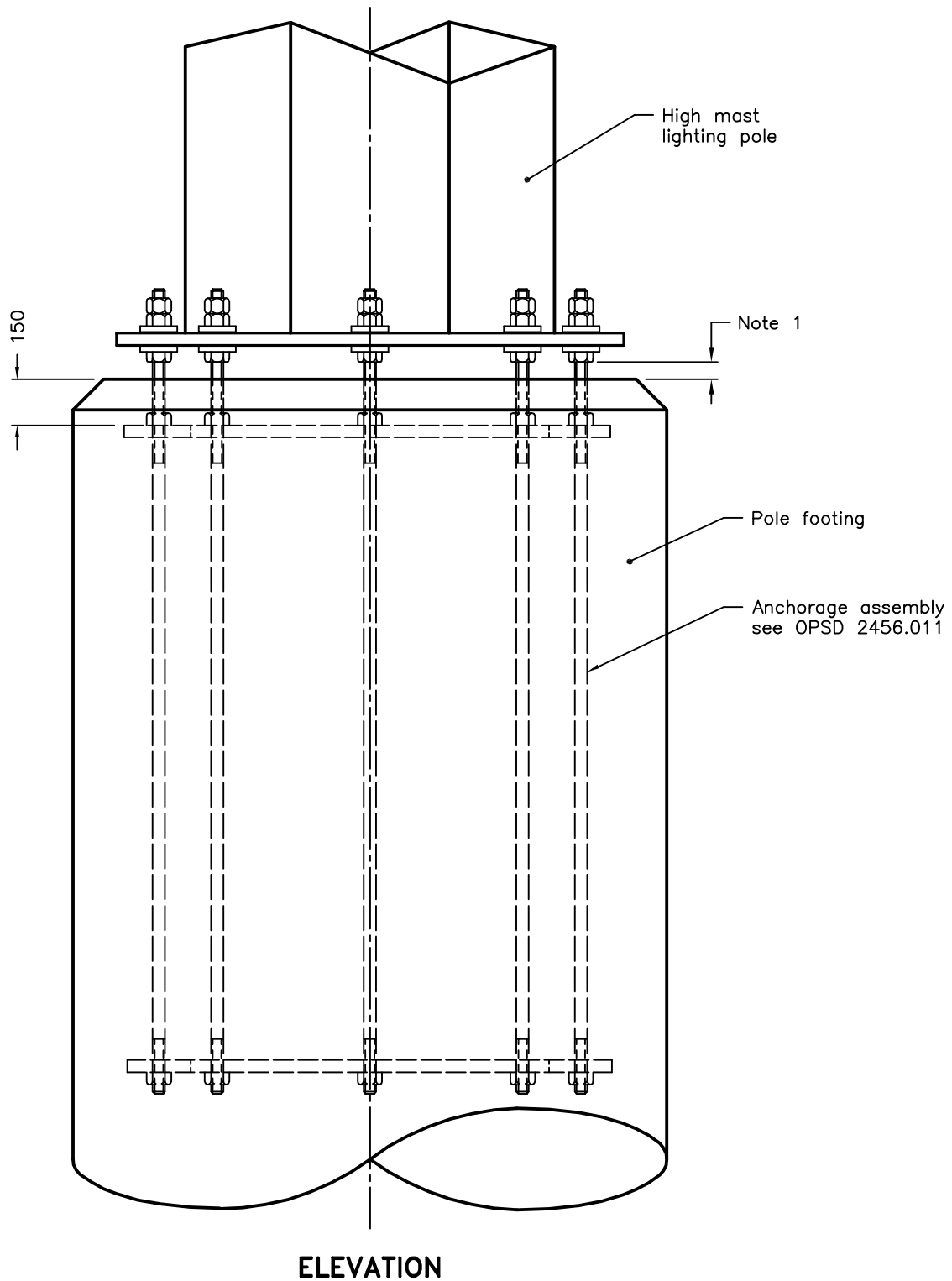
SECTION A-A
ASPHALT APRON
WHEN SPECIFIED

SECTION A-A
GRANULAR APRON

NOTE:
A All dimensions are in millimetres
unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev 1
HIGH MAST LIGHTING POLE APRON			
		OPSD 2210.030	





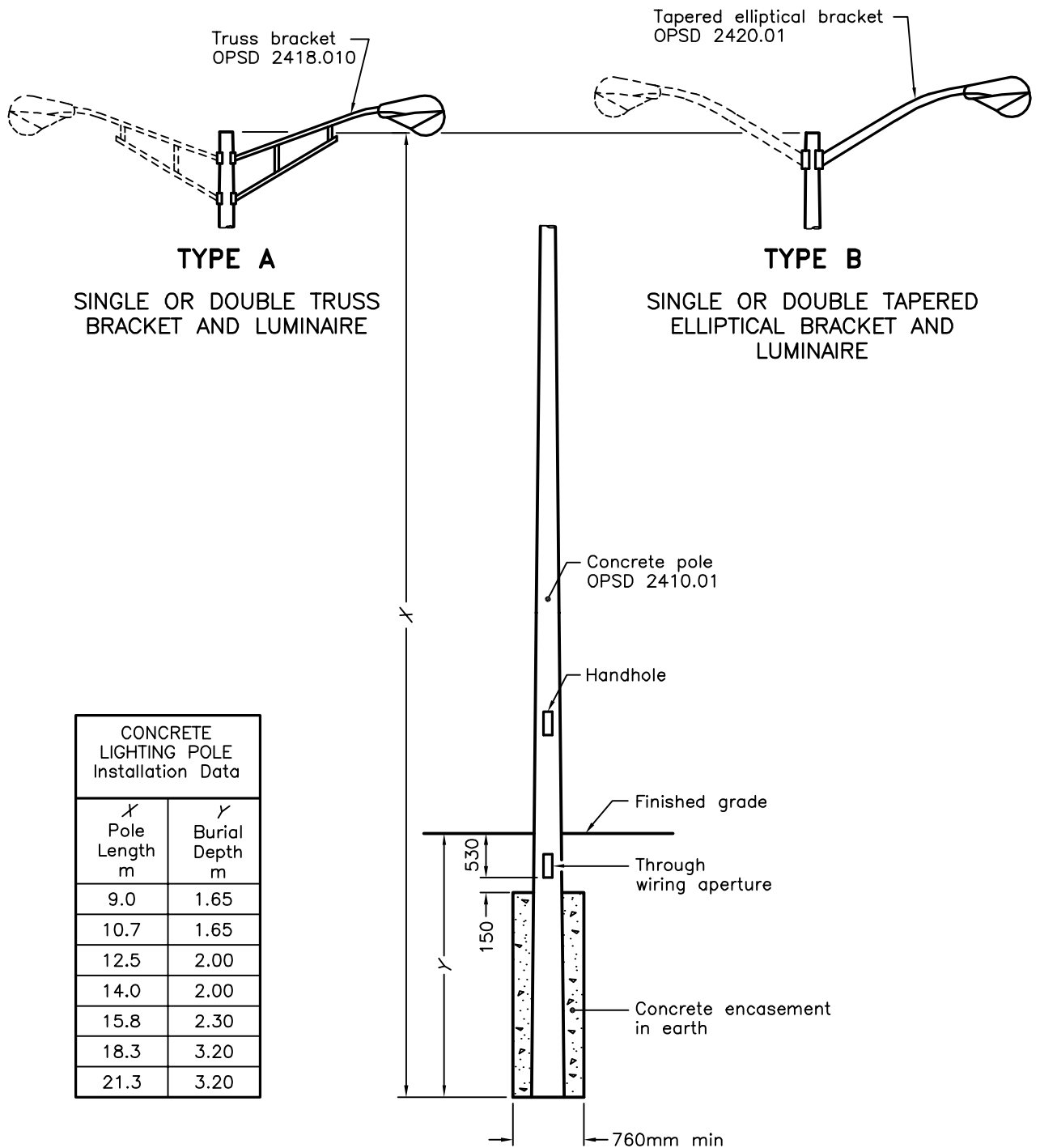
NOTES:

1 Distance from the underside of the nut to the top of the pole footing shall be 50mm $\pm$ 10mm.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	1	
HIGH MAST LIGHTING POLE ANCHORAGE ASSEMBLY PLACEMENT		-----			

		OPSD 2218.010			



NOTES:

A For installation in rock, this OPSD shall be read in conjunction with OPSD 2200.02.

B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

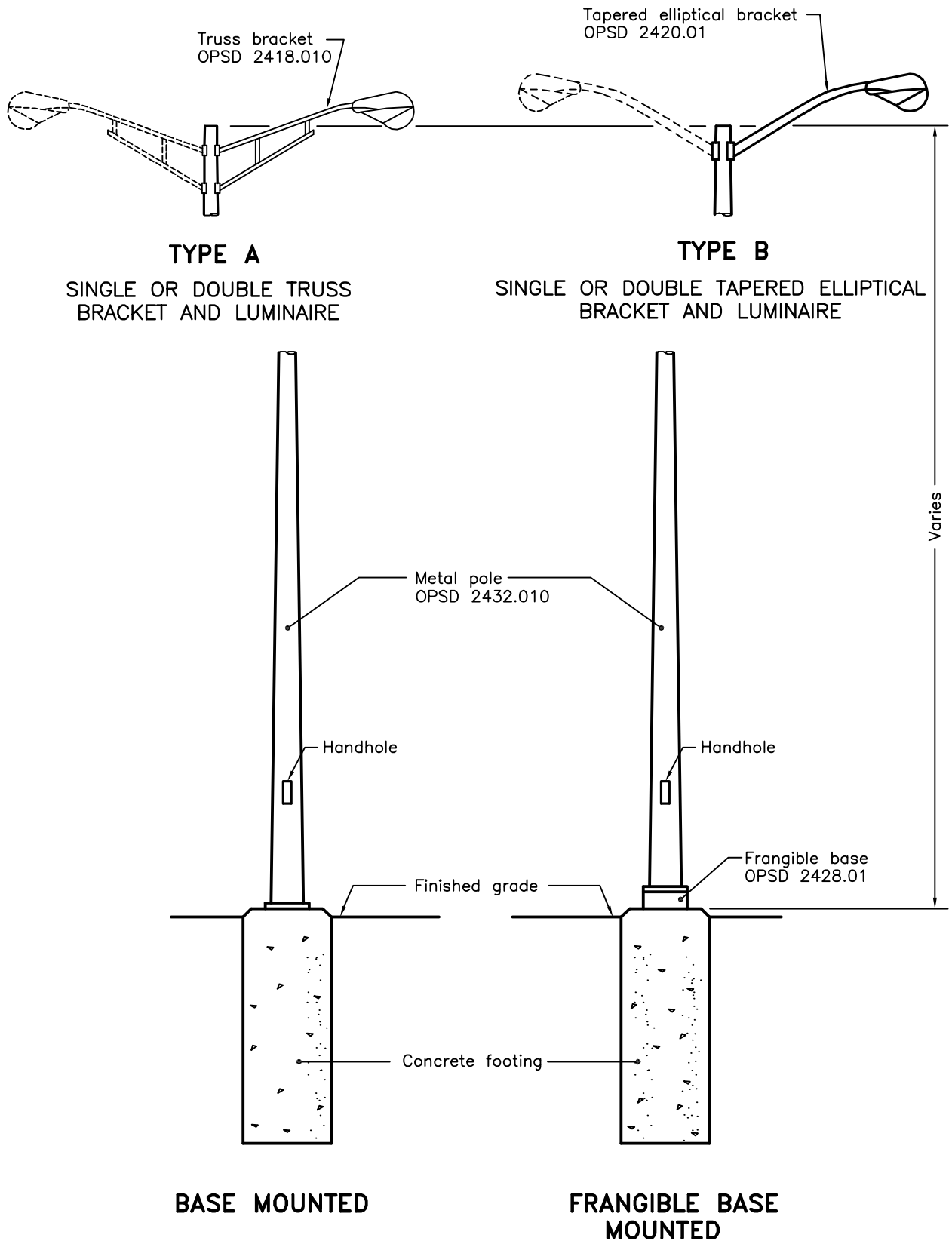
Nov 2016

Rev 1

**CONCRETE LIGHTING POLE
DIRECT BURIED**



OPSD 2225.010



ONTARIO PROVINCIAL STANDARD DRAWING

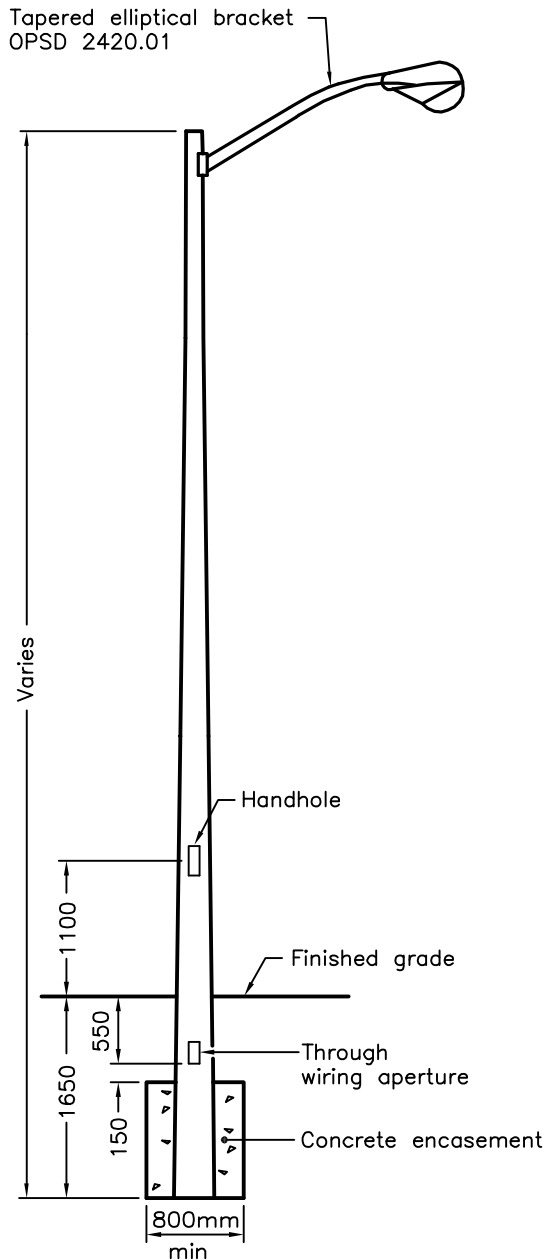
Nov 2016

Rev 1

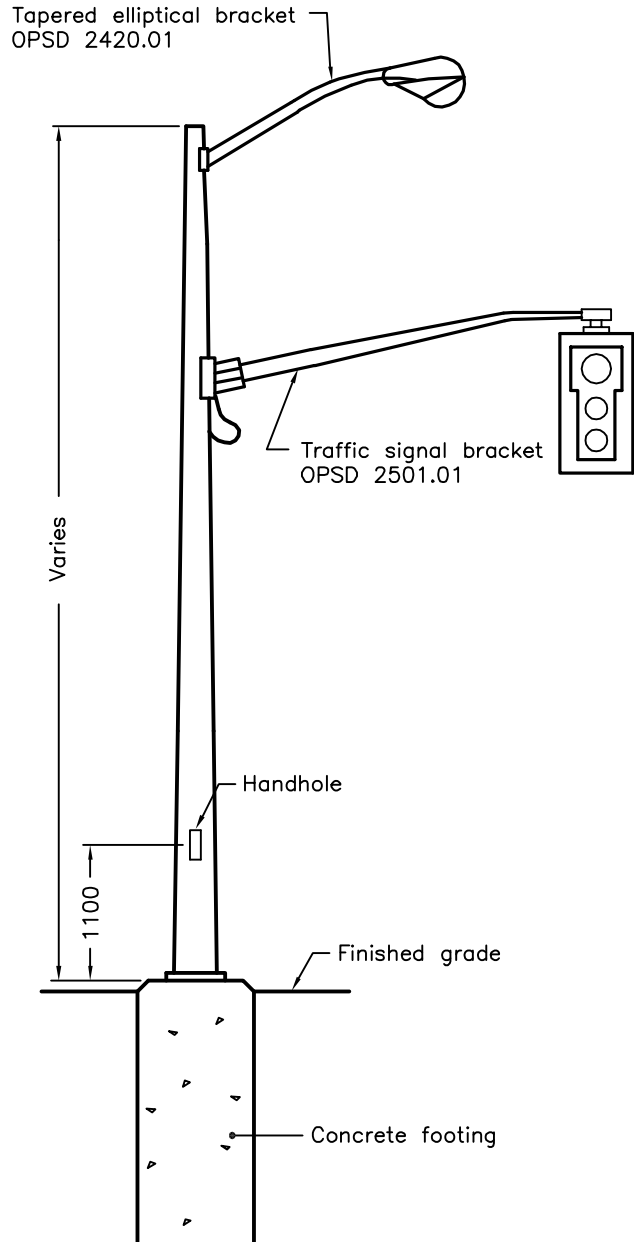
**METAL LIGHTING POLE
BASE MOUNTED**



OPSD 2228.010



DIRECT BURIED



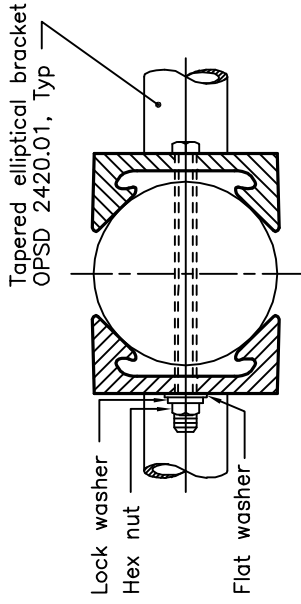
BASE MOUNTED

NOTES:

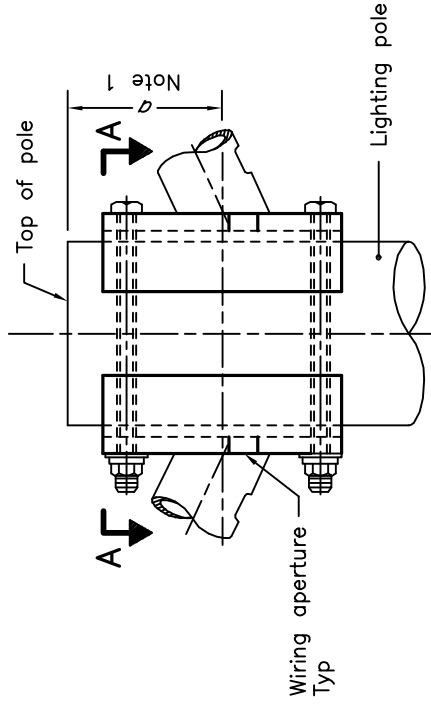
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	1	
SECTIONAL STEEL POLE WITH BRACKETS, LUMINAIRE, AND TRAFFIC SIGNAL HEAD		-----			

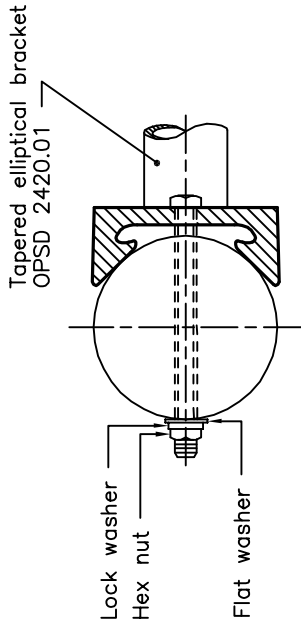
		OPSD 2232.010			



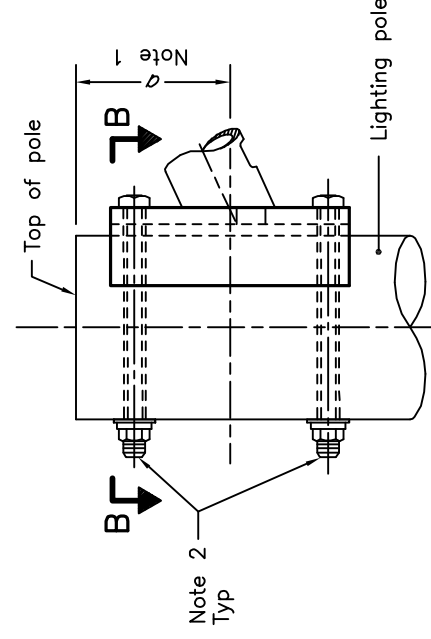
SECTION A-A



DOUBLE BRACKET



SECTION B-B



SINGLE BRACKET

NOTES:

- 1 For sectional steel poles, dimension $\sigma=300\text{mm}$.
For all other metal poles and concrete poles, dimension $\sigma=230\text{mm}$.
- 2 16mm diameter galvanized steel square head bolt. Bolt length to suit pole.

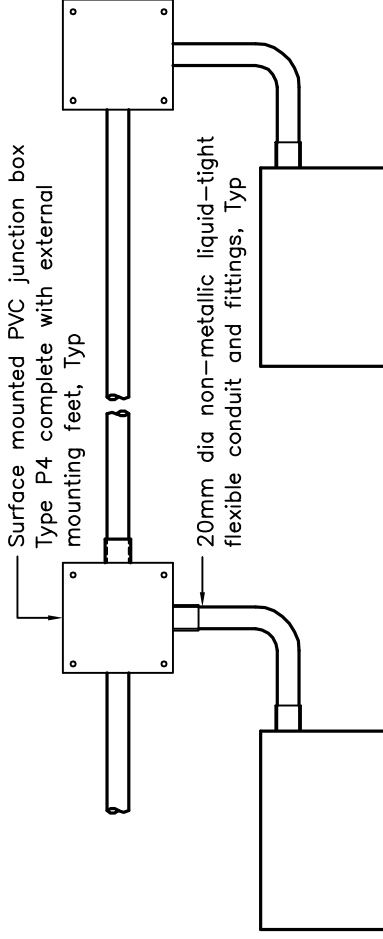
ONTARIO PROVINCIAL STANDARD DRAWING

**ALUMINUM TAPERED ELLIPTICAL BRACKETS
ON METAL AND CONCRETE POLES
MOUNTING DETAILS**

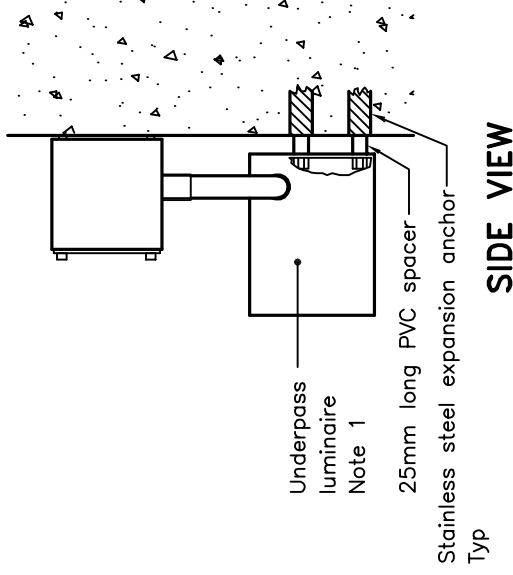
Nov 2016 Rev 0



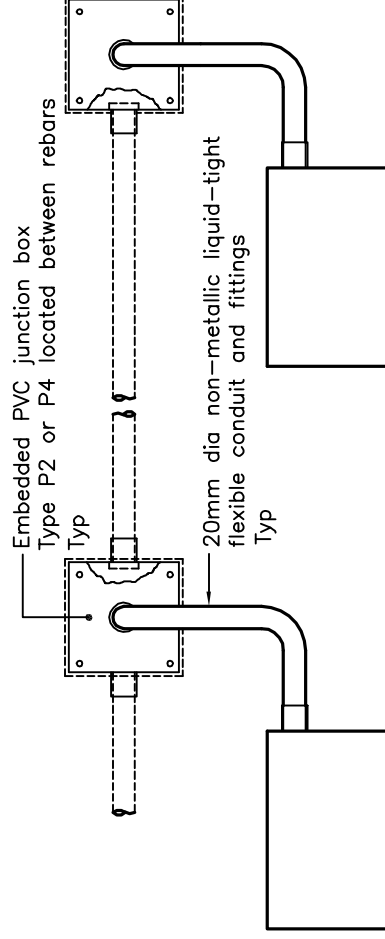
OPSD 2250.010



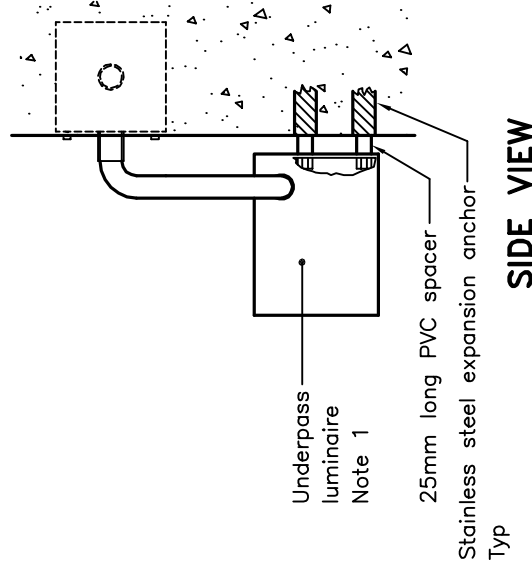
FRONT VIEW
SURFACE MOUNTED DUCTS AND JUNCTION BOXES



SIDE VIEW



FRONT VIEW
EMBEDDED DUCTS AND JUNCTION BOXES



SIDE VIEW

NOTES:

- 1 Luminaires shall be mounted on concrete surface by drilling and inserting stainless steel expansion anchors and securing the luminaires with 10mm dia x 65mm long stainless steel hexagonal head machine bolts.

A All dimensions are in millimetres unless otherwise shown.

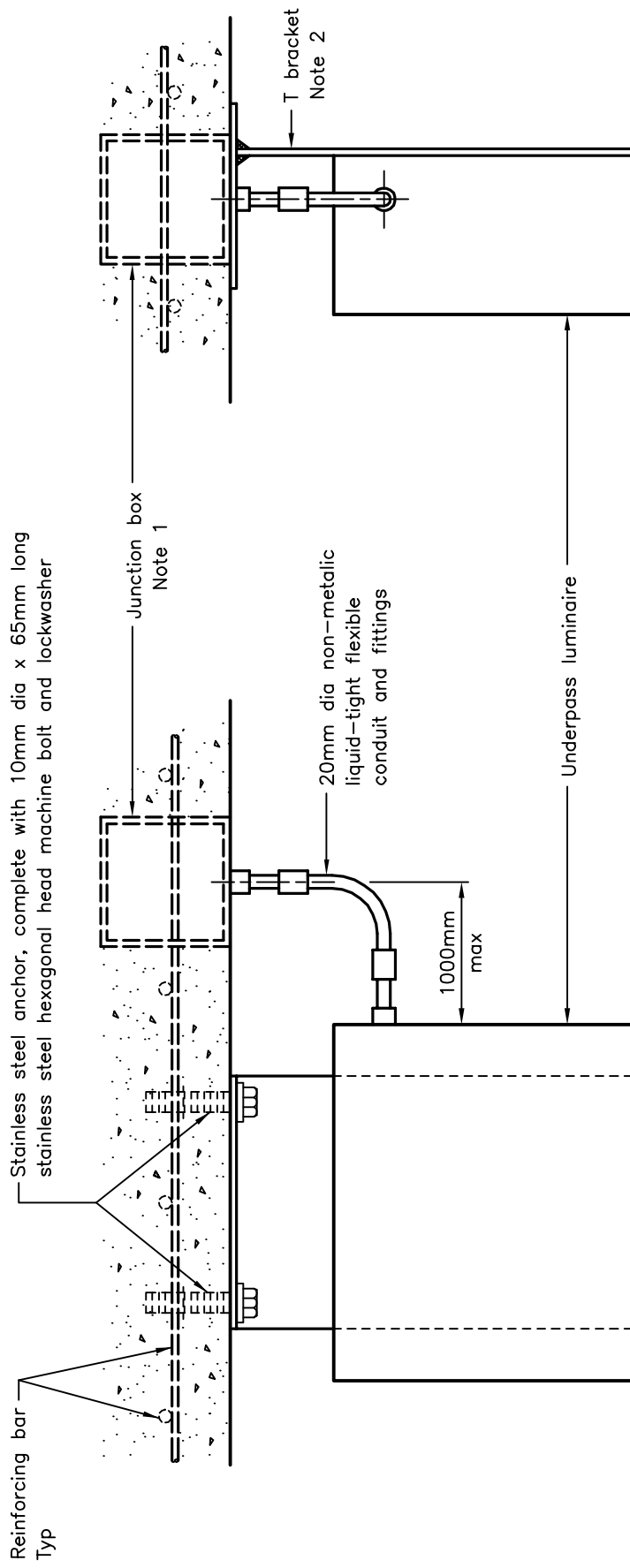
ONTARIO PROVINCIAL STANDARD DRAWING

UNDERPASS LUMINAIRES
WALL MOUNTED INSTALLATION

Nov 2016 Rev 2



OPSD 2305.020



FRONT VIEW

SIDE VIEW

NOTES:

- 1 Junction box may be Type P4, surface mounted, or Type P2 or P4, embedded.
- 2 If ceiling of structure is not flat, T bracket shall be attached to the ceiling using a wedge mounting bracket as shown in OPD 2310.030.
- A This OPD shall be read in conjunction with OPD 2310.020.
- B Stainless steel hexagonal head machine bolts of a size to suit luminaire mounting holes, nuts, and lockwashers shall be used to mount luminaire to bracket.
- C Conduit entry into the luminaire may vary.
- D All dimensions are in millimetres unless otherwise shown.

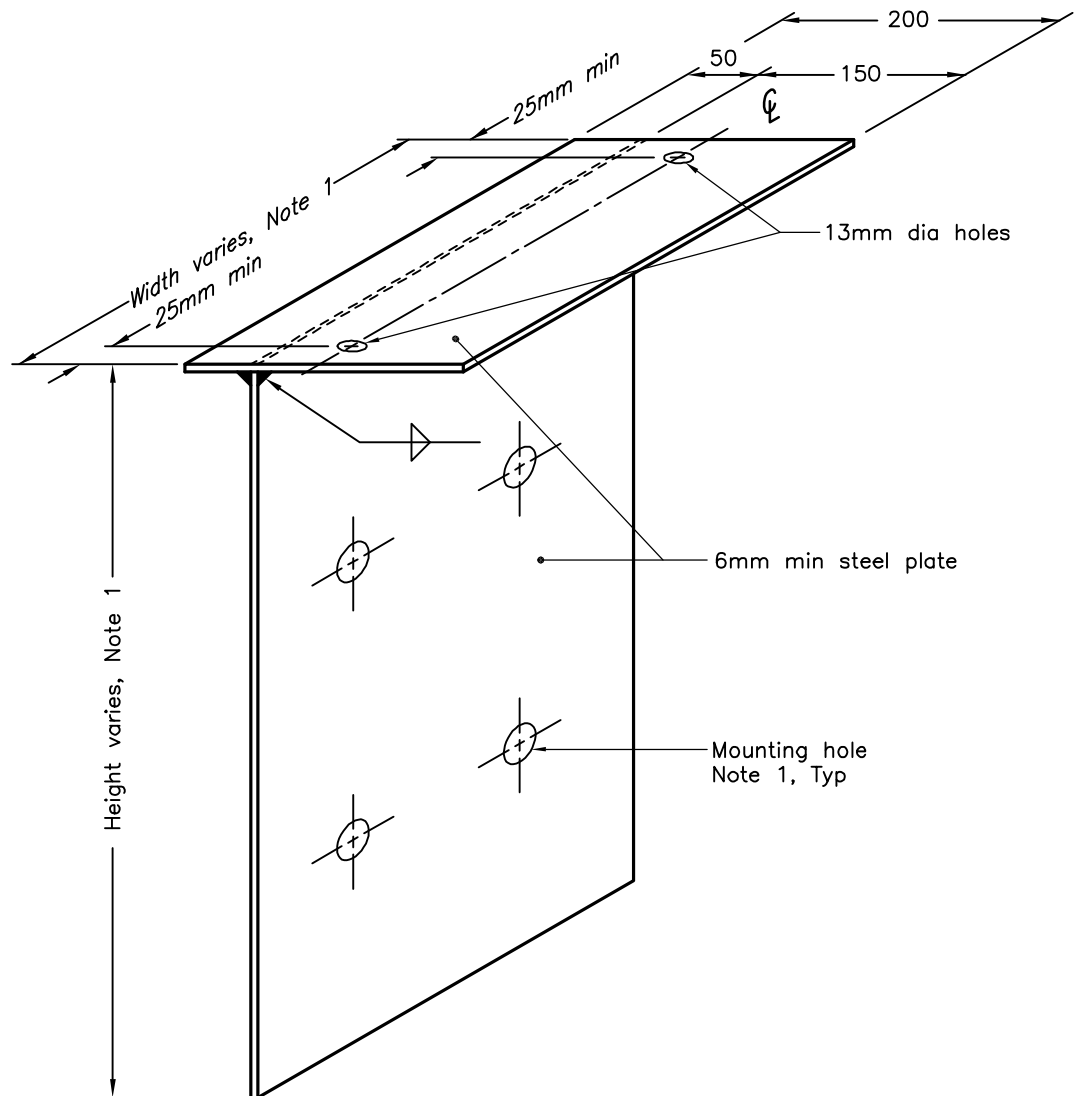
ONTARIO PROVINCIAL STANDARD DRAWING

UNDERPASS LUMINAIRE CEILING MOUNTED INSTALLATION WITH T BRACKET

Nov 2016 Rev 1



OPSD 2310.010



NOTES:

- 1 The width, height, mounting holes, and wiring aperture of the bracket shall suit the luminaire and fittings for conduit entry and shall be suitable to accommodate the opening of the luminaire door.
- A Bracket shall be stainless steel when attached to atmospheric corrosion resistant structural steel components. For all other applications, brackets shall be stainless steel or hot dip galvanized steel according to ASTM A123.
- B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2016

Rev 2

T BRACKET FOR
CEILING MOUNTED UNDERPASS LUMINAIRE

OPSD 2310.020



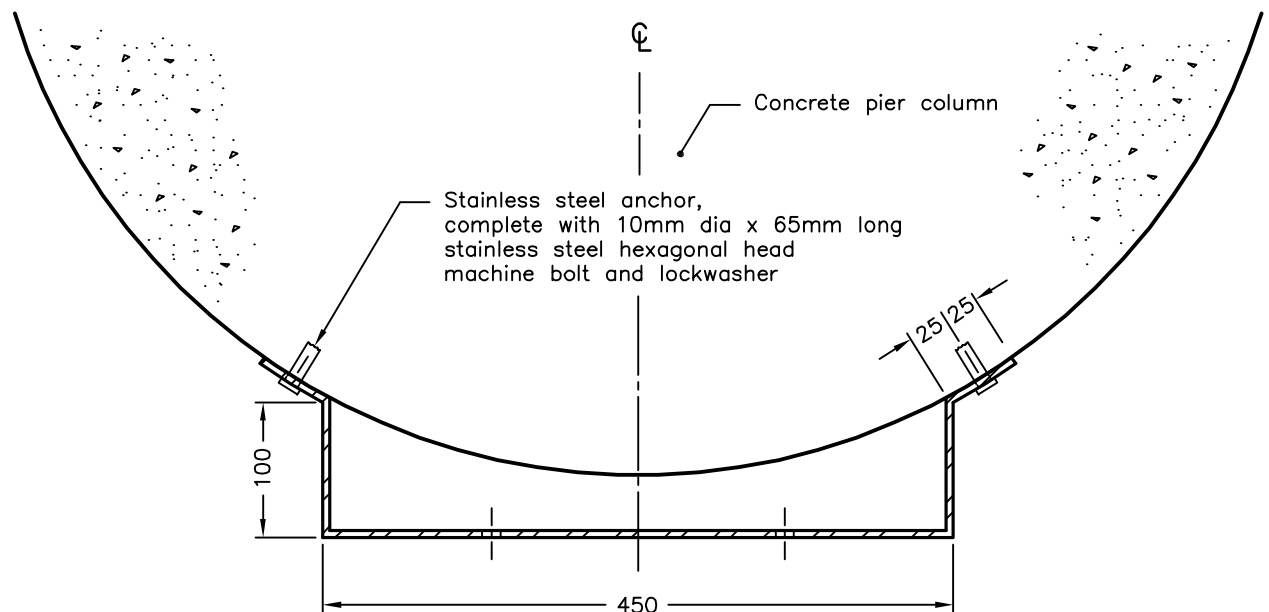


- 1 Holes shall suit mounting holes of the T bracket.
- 2 Angle of attachment for wedge mounting bracket shall be formed to suit structure.
- 3 Holes for mounting wedge bracket to structure.

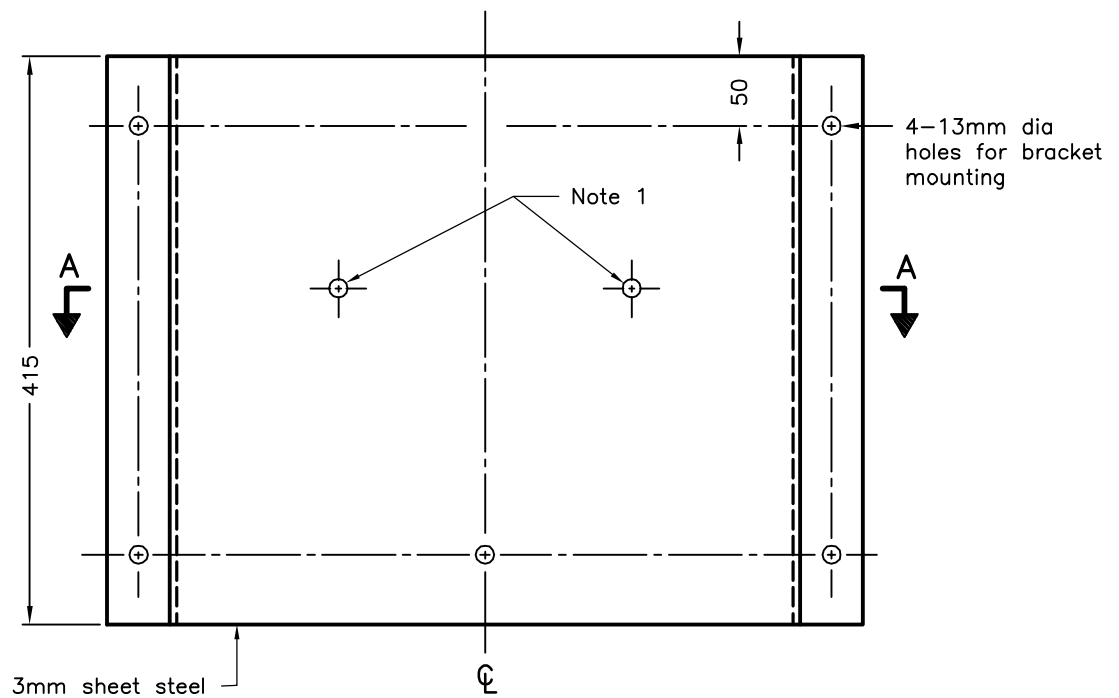
A Bracket shall be hot dip galvanized according to ASTM A123 after fabrication.

B All dimensions are in millimetres unless otherwise shown.





SECTION A-A



FRONT

NOTES:

1 Holes in bracket shall suit luminaires mounting holes.

A Bracket shall be hot dip galvanized according to ASTM A123 after fabrication.

B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

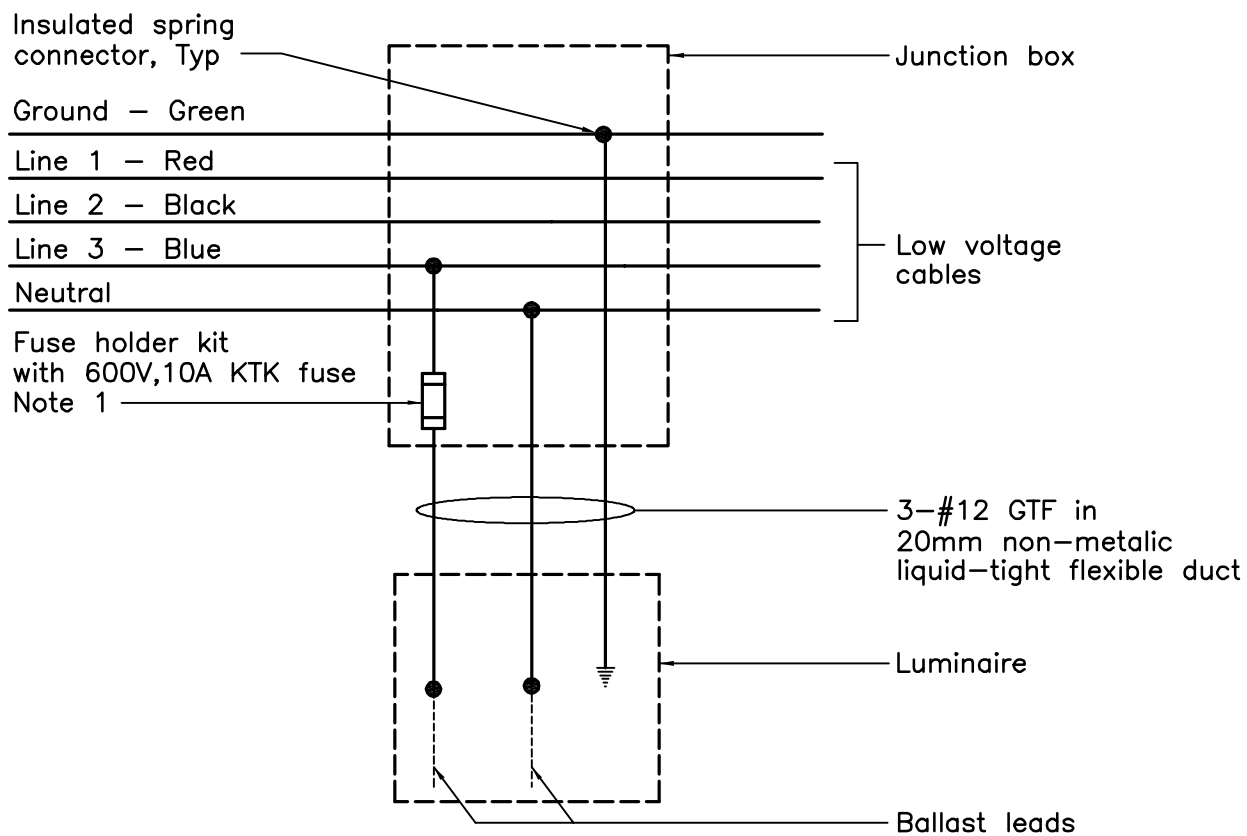
Nov 2016

Rev 1

SUPPORT BRACKET
FOR COLUMN MOUNTED
UNDERPASS LUMINAIRE



OPSD 2310.040



NOTE:

1 Fuse holder kit may be located inside the luminaire.

ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2016

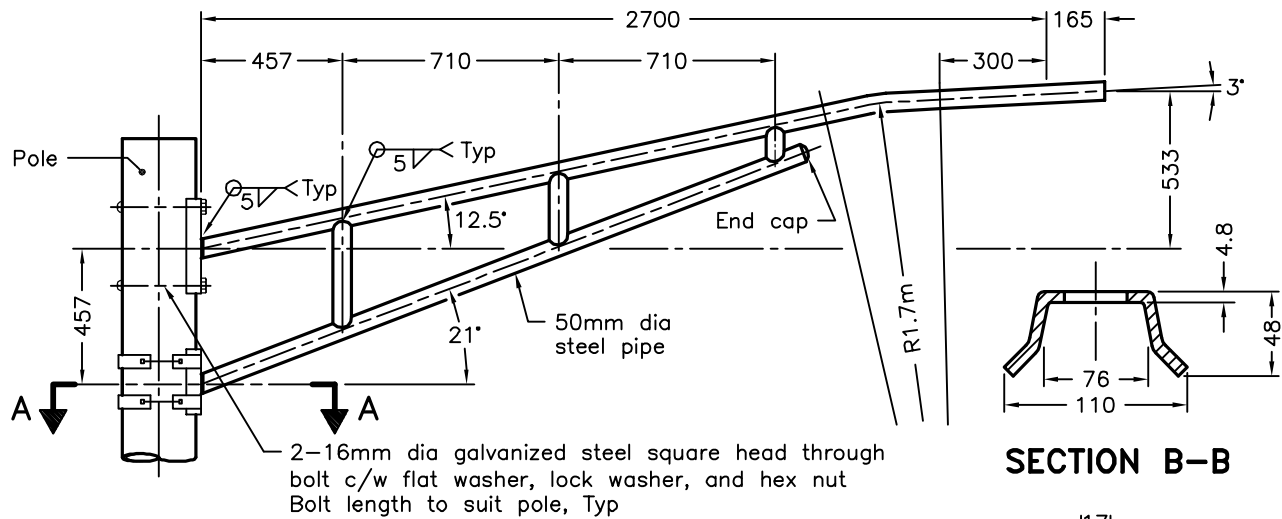
Rev

1

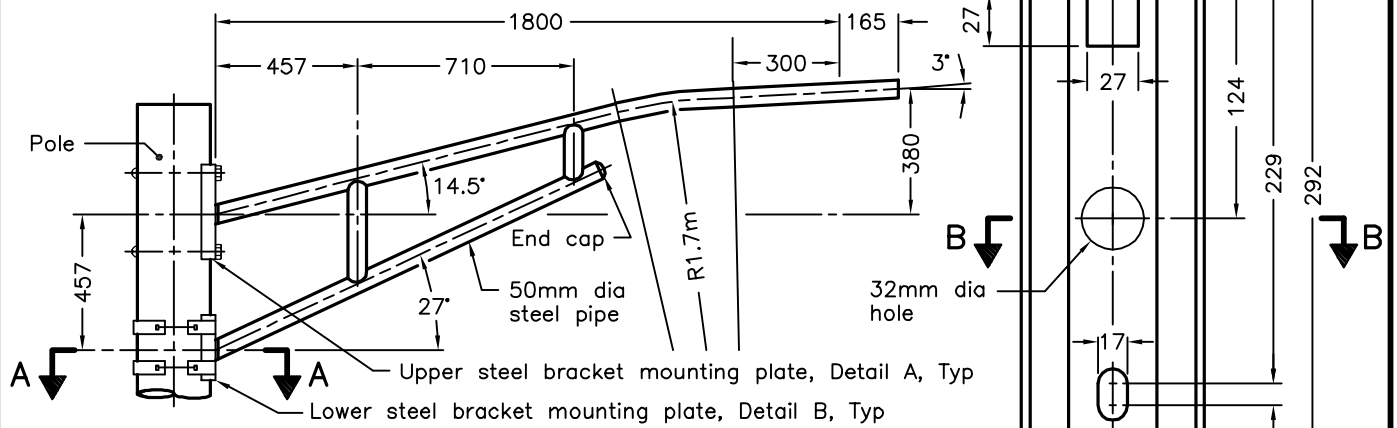
**UNDERPASS LUMINAIRE
WIRING DETAIL**



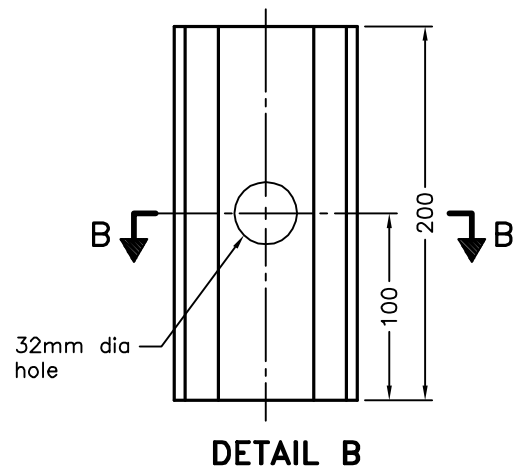
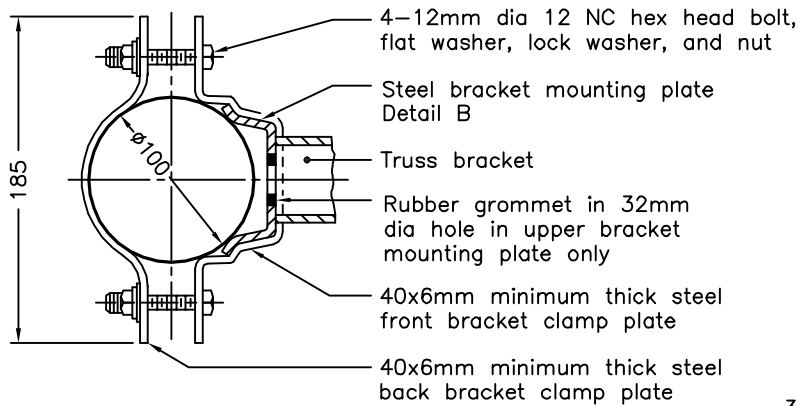
OPSD 2315.010



2.7m STEEL TRUSS BRACKET



1.8m STEEL TRUSS BRACKET



NOTES:

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

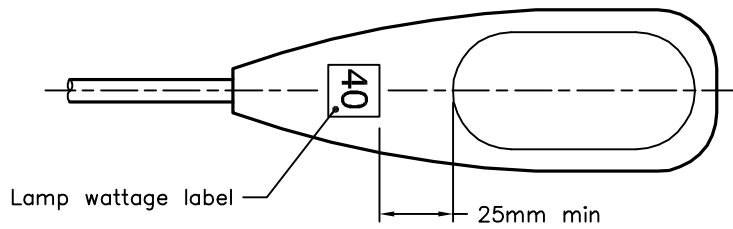
Nov 2016

Rev 2

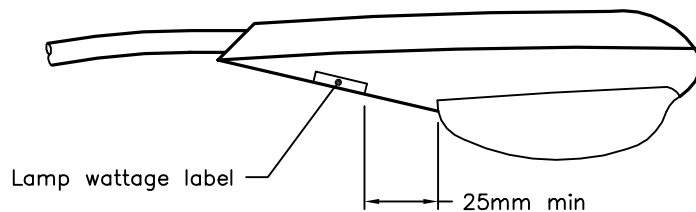
**1.8m AND 2.7m
STEEL TRUSS BRACKET
FOR STEEL POLES**

OPSD 2418.010

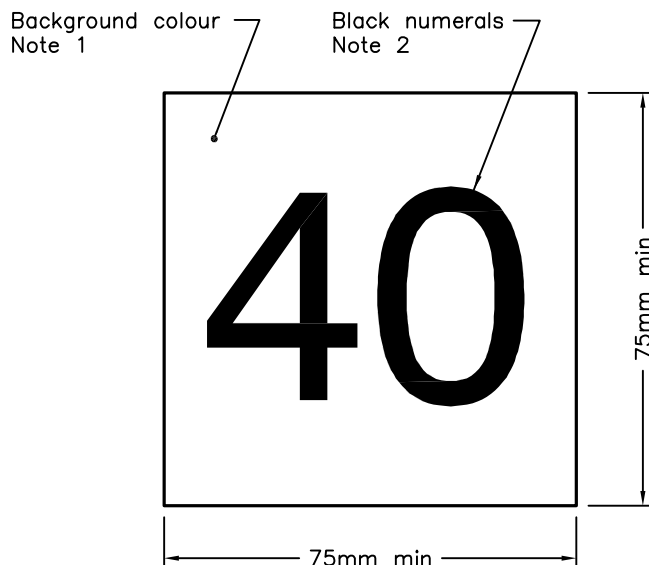




BOTTOM VIEW



SIDE VIEW



LABEL DIMENSIONS

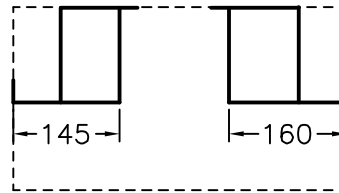
TYPICAL LAMP WATTAGE CODES	
IDENTIFYING NUMERAL	LAMP WATTAGE
7	70 W
10	100 W
15	150 W
25	250 W
35	350 W
40	400 W

NOTES:

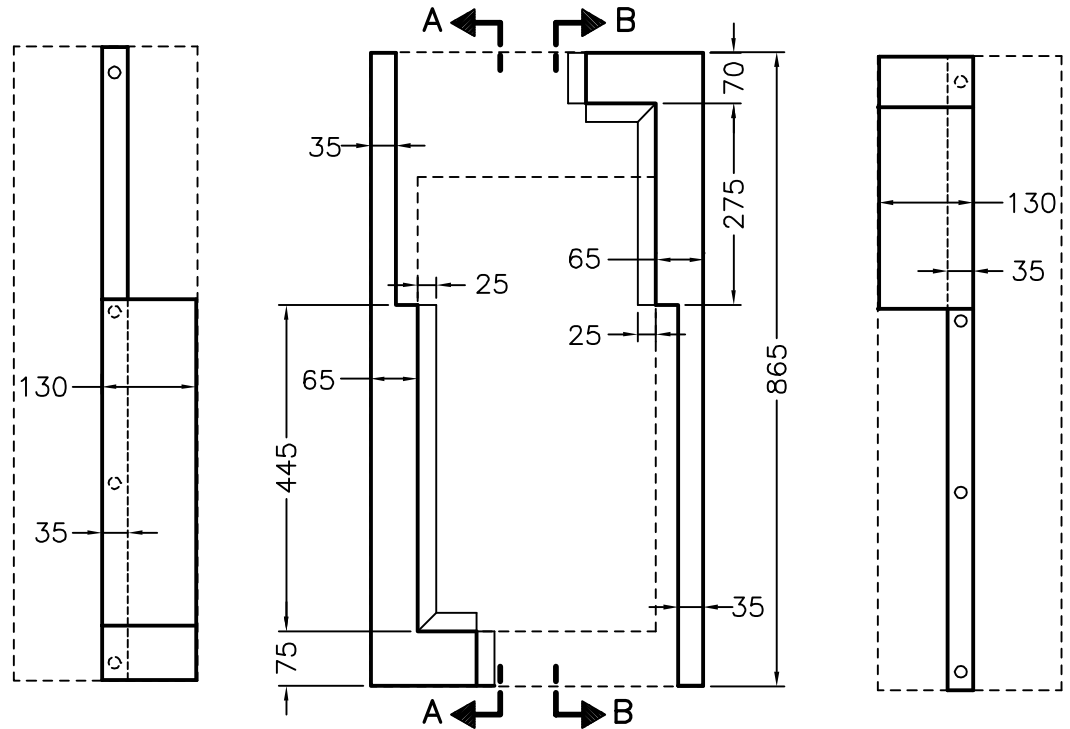
- 1 A gold background shall be used for high pressure sodium and fluorescent red background for the metal halide labels. Labels shall be made using high visibility reflective sheeting.
 - 2 All numerals on the labels shall be black and made from 9mm wide line and numerals shall be minimum of 50mm high.
- A Do not cover manufacturer's label.
 B Labels shall be the peel and stick type.
 C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	1	
LAMP WATTAGE LABEL FOR LUMINAIRE		-----			

		OPSD 2421.010			



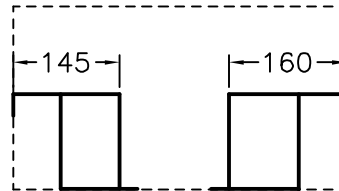
TOP VIEW



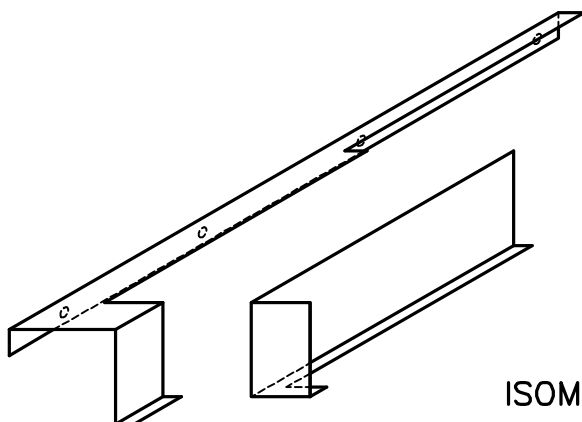
SECTION A-A

FRONT VIEW

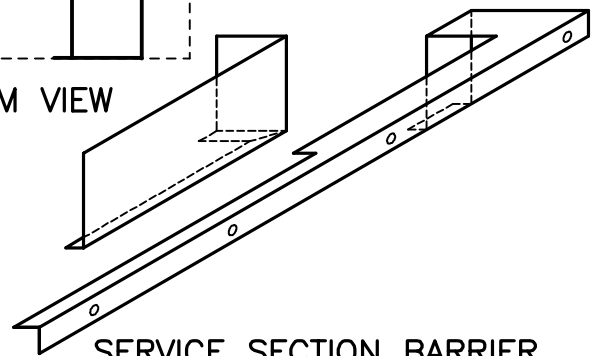
SECTION B-B



BOTTOM VIEW



ISOMETRIC VIEW



SERVICE SECTION BARRIER

BRANCH CIRCUIT SECTION BARRIER

NOTES:

- A All dimensions are shown for guidance only. Dimensions shall be modified as necessary to meet the requirements of the Ontario Electrical Safety Code.
- B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2016

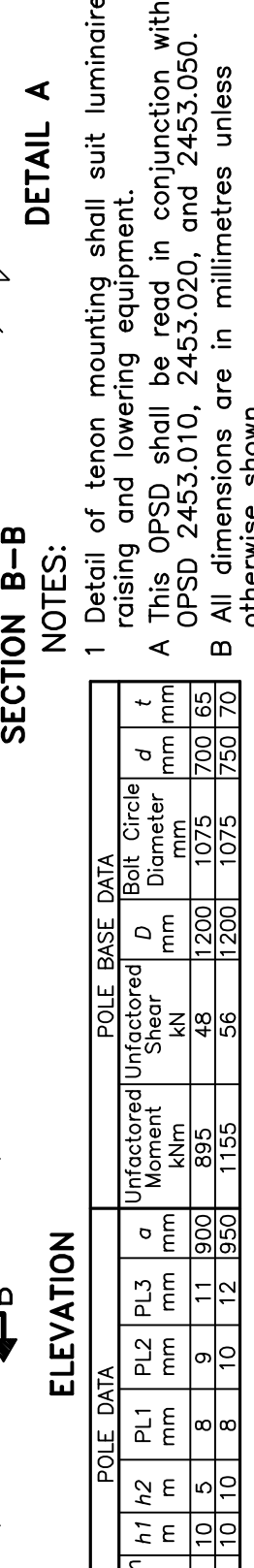
Rev 0

**SUPPLY CONTROL CABINET
ASSEMBLY TYPE 1 AND 2**

BARRIER DETAILS



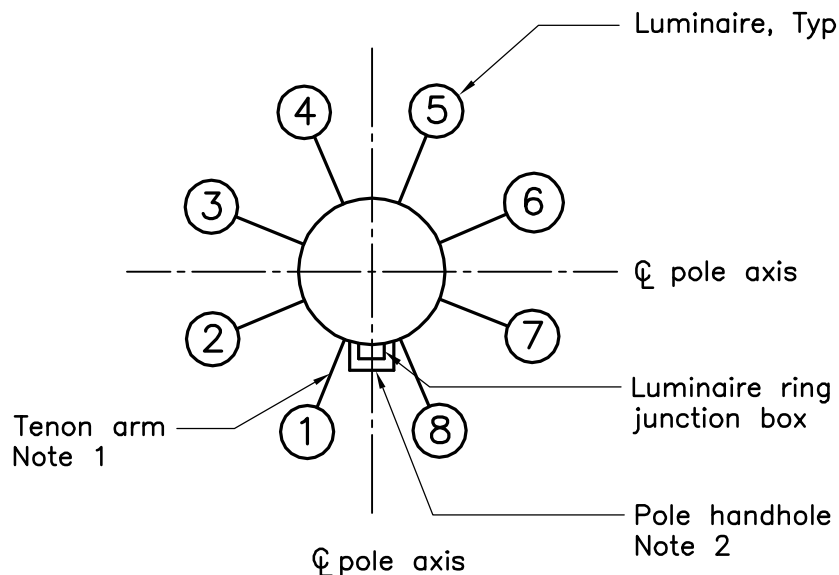
OPSD 2440.051



POLE DATA							POLE BASE DATA					
Length <i>H</i> m	<i>h</i> 1 m	<i>h</i> 2 m	PL1 mm	PL2 mm	PL3 mm	σ mm	Unfactored Moment kNm	Unfactored Shear kN	<i>D</i> mm	Bolt Circle Diameter mm	<i>d</i> mm	<i>t</i> mm
40	10	5	8	9	11	900	895	48	1200	1075	700	65
45	10	8	8	10	12	950	1155	56	1200	1075	750	70

JOINT	FINAL FORCE OF ASSEMBLY
J-1	41kN
J-2	68kN
J-3	97kN

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 1	
	HIGH MAST LIGHTING POLE 40 AND 45m 12-SIDED POLE		



NOTES:

- 1 Tenon arm brackets shall be drilled and assembled so that luminaire No. 1 is always located to the left of the pole handhole and luminaire ring junction box.
 - 2 The handhole shall be located such that the operator of the raising and lowering system can safely stand in front of the handhole and be able to look into the pole handhole while standing a minimum of 10 metres away from the pole.
- A All luminaire tenon arms shall be spaced equally on the ring.
 B Only one luminaire shall be mounted on each tenon arm.

ONTARIO PROVINCIAL STANDARD DRAWING

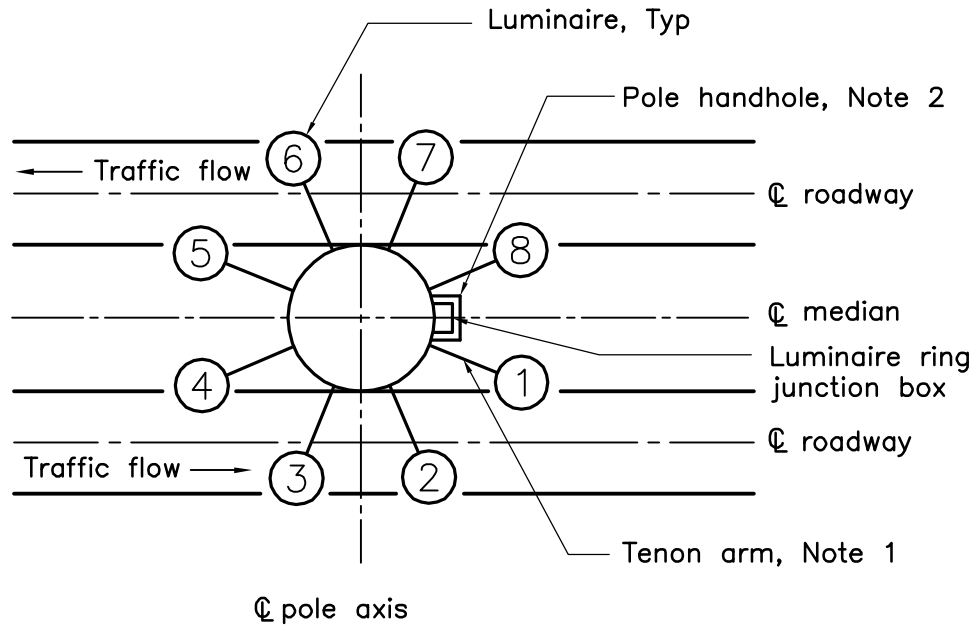
Nov 2016

Rev 1

**HIGH MAST LIGHTING POLE
LUMINAIRE AND HANDHOLE ORIENTATION**



OPSD 2453.000

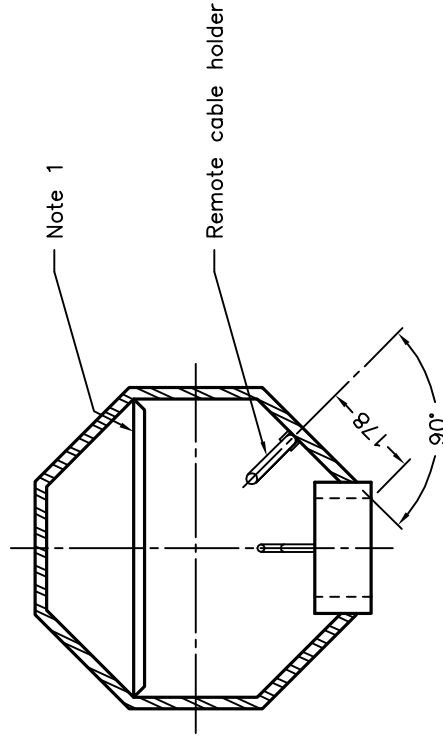


NOTES:

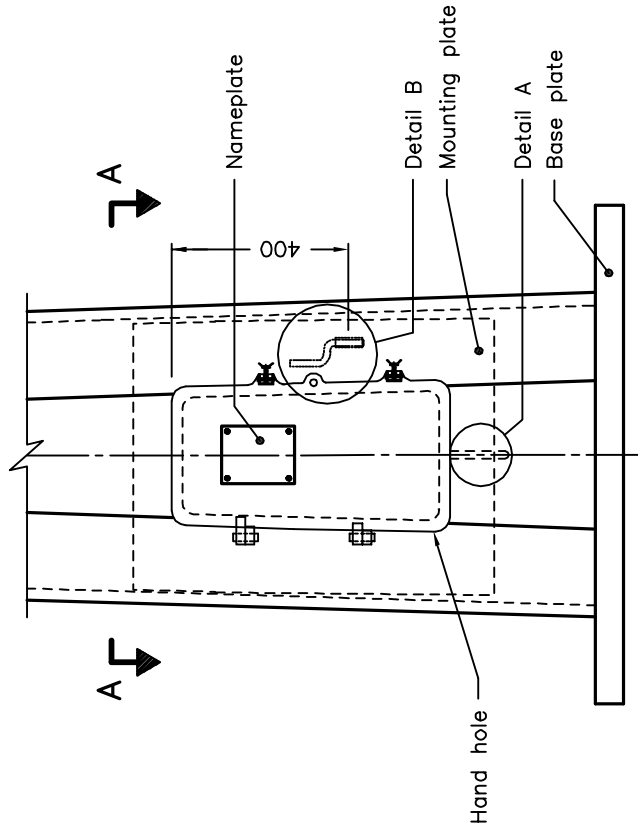
- 1 Tenon arm brackets shall be drilled and assembled so that luminaire No. 1 is always located to the left of the pole handhole and luminaire ring junction box.
- 2 The handhole shall be located such that the operator of the raising and lowering system can safely stand in front of the handhole and be able to look into the pole handhole while standing a minimum of 10 metres away from the pole.
- A All luminaire tenon arms shall be spaced equally on the ring.
- B Only one luminaire shall be mounted on each tenon arm.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	0	
HIGH MAST LIGHTING POLE LUMINAIRE AND HANDHOLE ORIENTATION FOR MEDIAN MOUNTED POLES		-----			

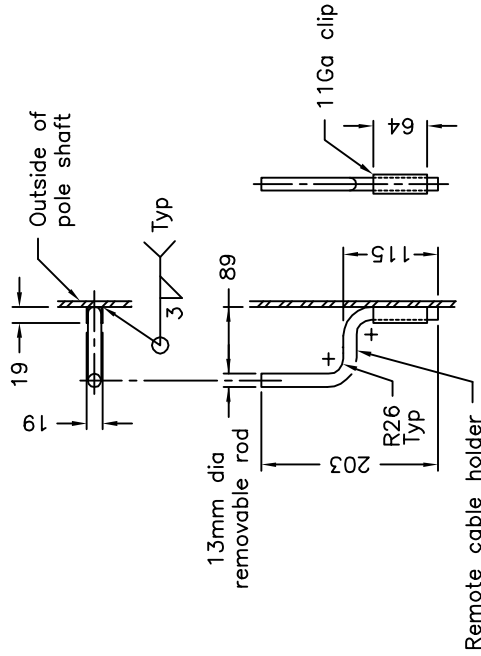
		OPSD 2453.001			



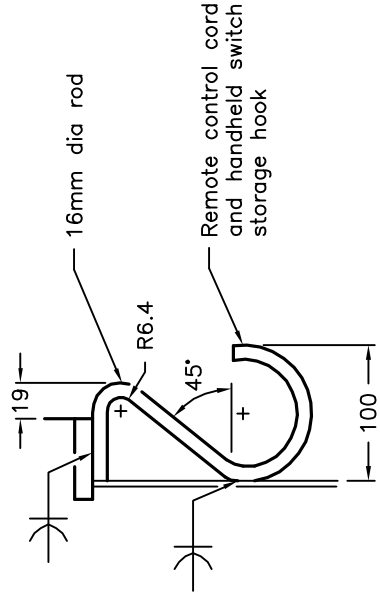
SECTION A-A



ELEVATION



DETAIL B



DETAIL A

NOTES:

- 1 Mounting plate location varies based on pole length.
- A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

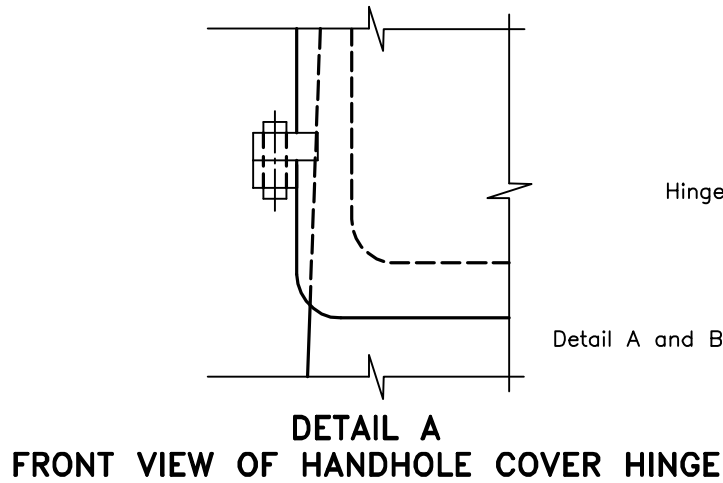
HIGH MAST LIGHTING POLE

CABLE HOLDER AND STORAGE HOOK DETAILS

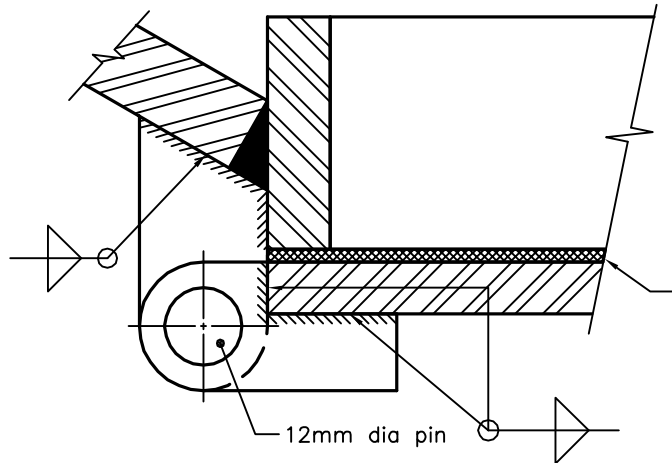
Nov 2016 Rev 1



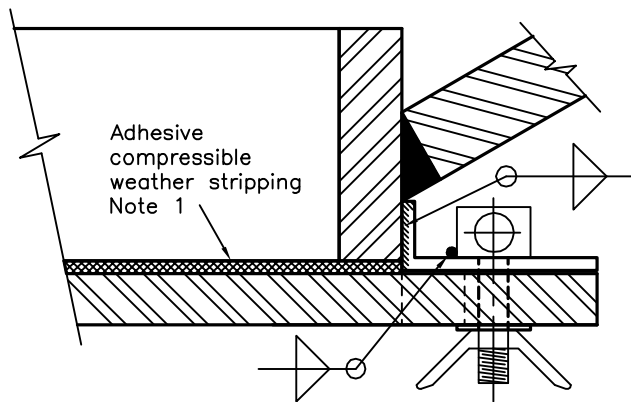
OPSD 2453.010



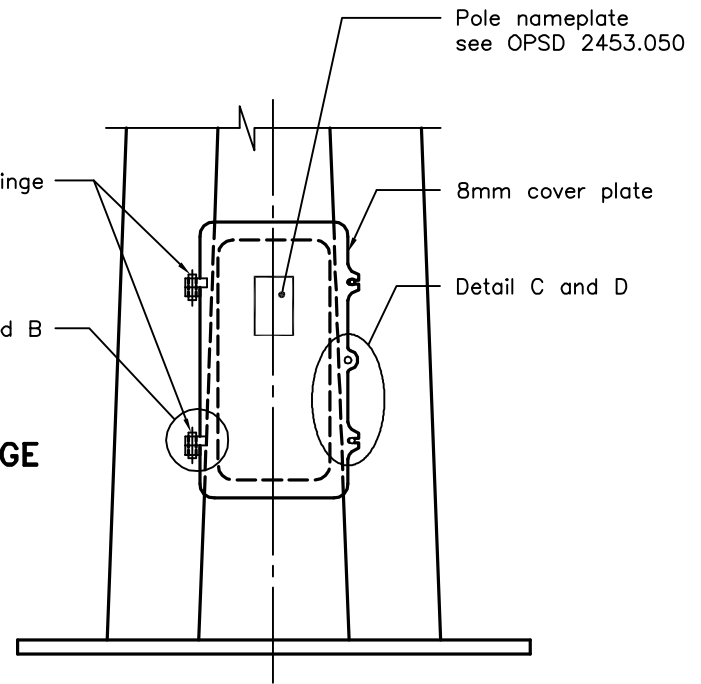
DETAIL A
FRONT VIEW OF HANDHOLE COVER HINGE



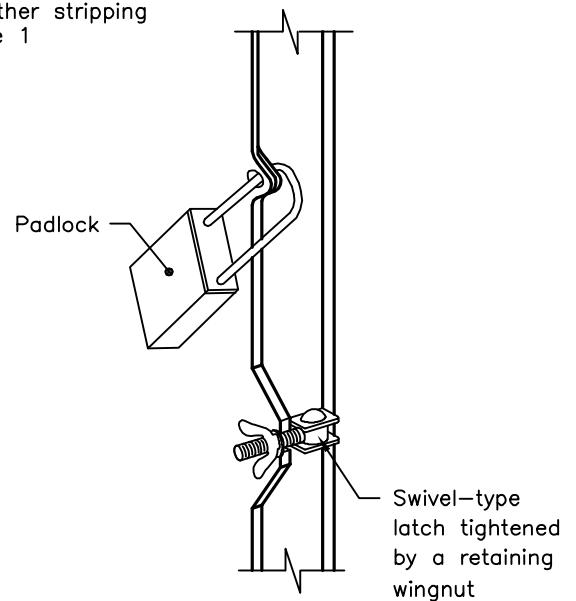
DETAIL B
TOP VIEW OF HANDHOLE COVER HINGE



DETAIL D
TOP VIEW OF HANDHOLE COVER LATCH



ELEVATION



DETAIL C
HANDHOLE COVER LATCH AND PADLOCK

NOTES:

1 Weather stripping shall be 50mm minimum wide and shall be securely attached around the complete edge of the pole handhole opening.

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev 1	
HIGH MAST LIGHTING POLE HANDHOLE COVER HINGES, LATCHES, AND PADLOCK	_____ _____	_____ _____	

OPSD 2453.020

150

200

POLE No. _____

POLE HEIGHT _____

CONTRACT No. _____

POLE MANUFACTURER _____

DATE OF MANUFACTURE _____

LUMINAIRE MANUFACTURER _____

LUMINAIRE DISTRIBUTION TYPE _____

LOWERING DEVICE MANUFACTURER _____

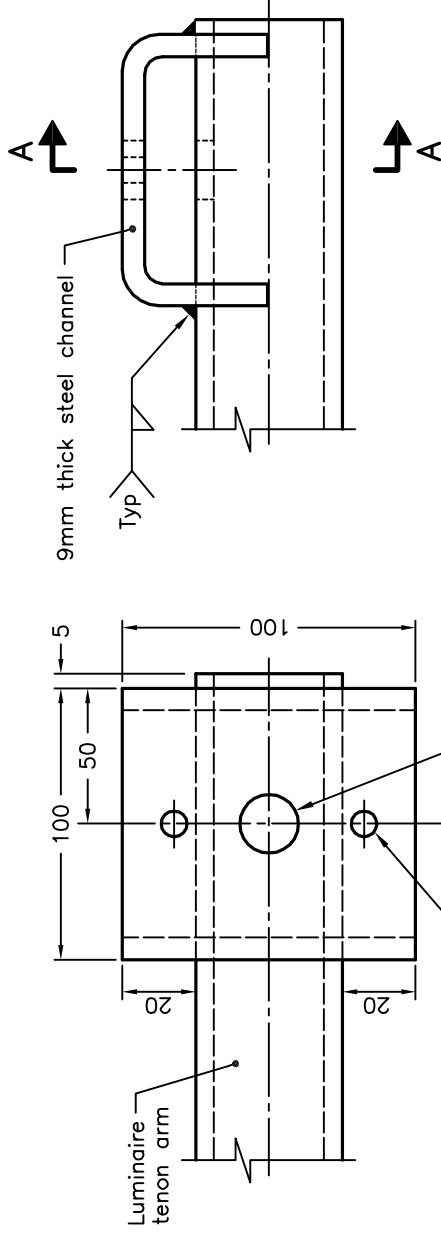
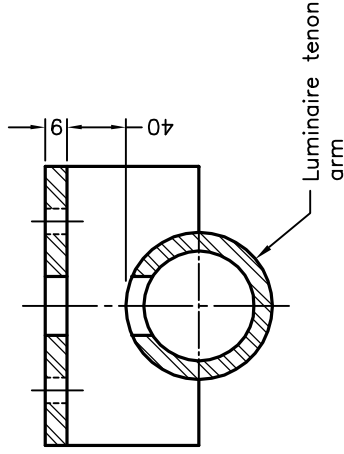
12mm
Typ

12mm
Typ

NOTES:

- A Nameplate shall be stainless steel, 4mm thick.
- B Nameplate shall be supplied with a 4mm neoprane or rubber backing and shall be riveted to the hand hole cover.
- C All lettering including fill-in information shall be engraved and painted black. Letter height shall be a minimum of 4mm.
- D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	1	
HIGH MAST LIGHTING POLE NAMEPLATE DETAILS					
		OPSD 2453.050			

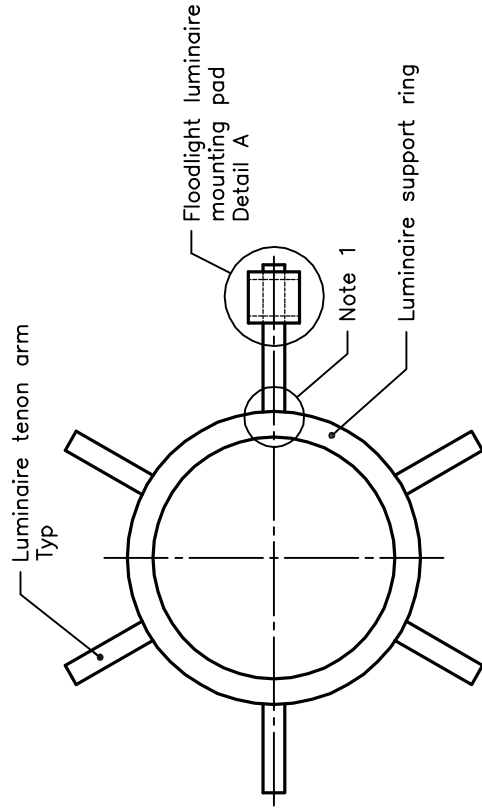


SECTION A-A

PLAN

ELEVATION

DETAIL A



NOTES:

- 1 For luminaire support ring details see OPSD 2453.070.
- 2 Hole to be drilled to match floodlight mounting requirements.
- A Orientation, number of luminaire tenon arms, and pads required as specified.
- B All dimensions are in millimetres unless otherwise shown.

PLAN

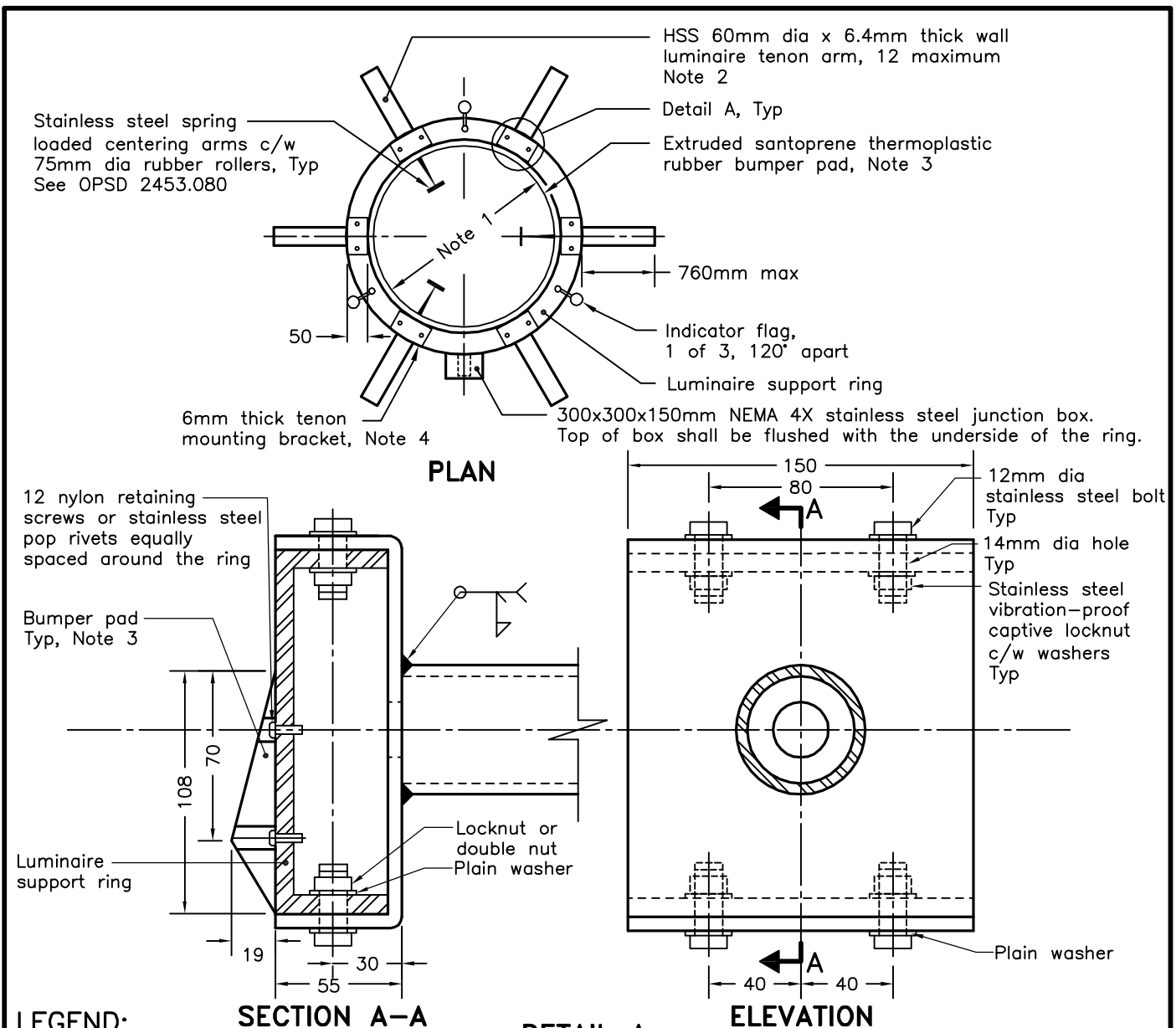
ONTARIO PROVINCIAL STANDARD DRAWING

HIGH MAST LIGHTING POLE
FLOOD LIGHT LUMINAIRE
MOUNTING DETAILS

Nov 2016 Rev 1



OPSD 2453.060



LEGEND:

HSS - Hollow Structural Section

NEMA - National Equipment Manufacturers Association

NOTES:

- 1 The inner diameter of the ring shall be suitable for the maximum pole diameter specified. A minimum clearance of 100mm from the bumper pad to the pole surface shall be provided all around the pole when the ring is in the lowest position.
- 2 Orientation and number of luminaire arms as specified.
- 3 Dimensions and bumper shape shown are typical. Bumper pads shall be glued and fastened to the ring such that the screws or rivets do not come in contact with the pole surface.
- 4 Tenon mounting bracket shall be manufactured to fit the exact radius of the lowering ring. The mounting plate shall not be abruptly bent or notched.
- A All steel shall be grade 300W or 350W. Assembly shall be hot dip galvanized after fabrication with fraying surfaces subsequently wire brushed.
- B All bolts shall be stainless steel ASTM F593 with $F_u > 690$ MPa.
- C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2016

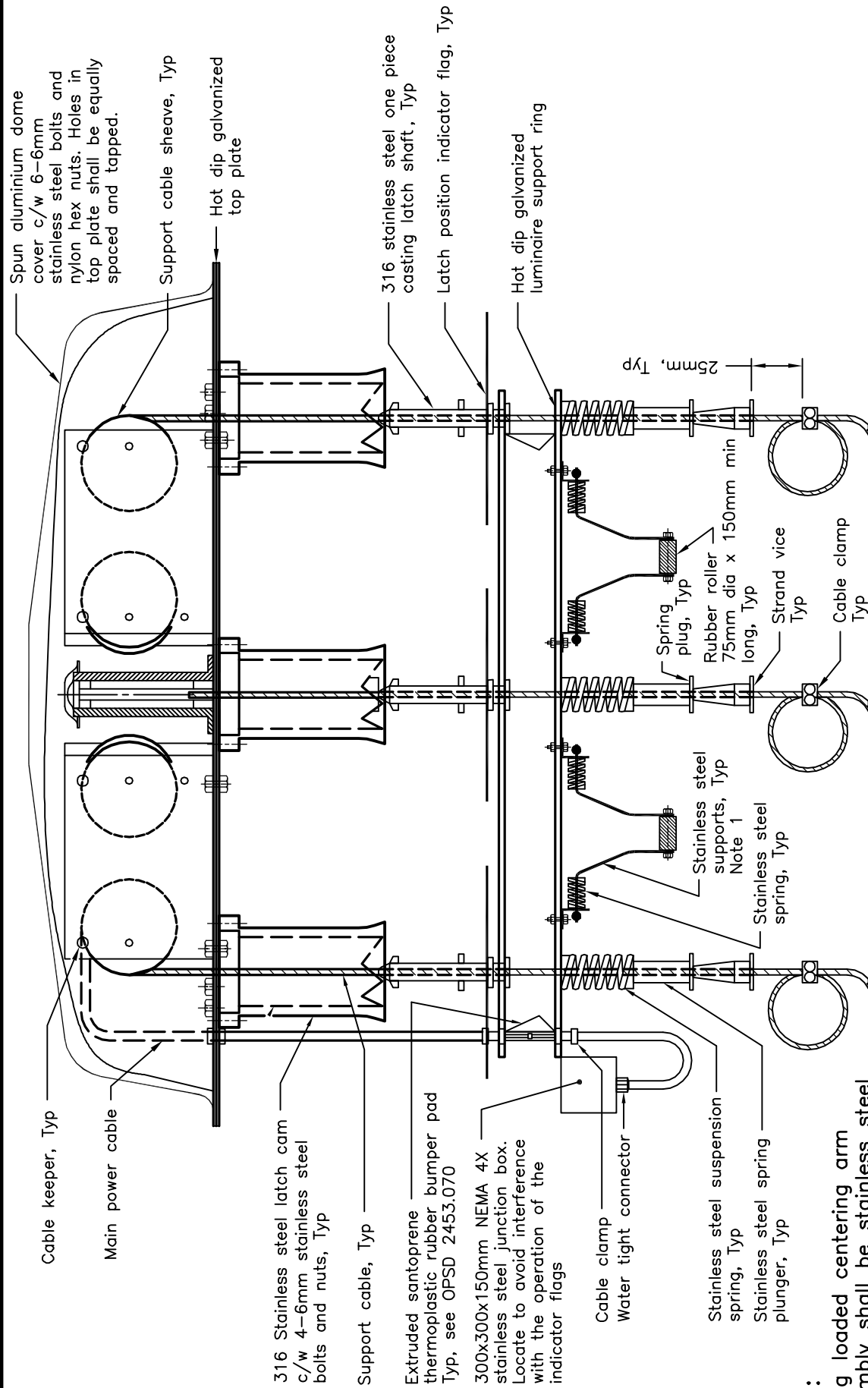
Rev 2

HIGH MAST LIGHTING POLE

LUMINAIRE SUPPORT RING



OPSD 2453.070



NOTES:

- 1 Spring loaded centering arm assembly shall be stainless steel c/w 75mm dia x 150mm long rubber roller. Three equally spaced arms are required per ring.
- A All mounting hardware shall be stainless steel.
- B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

HIGH MAST LIGHTING POLE

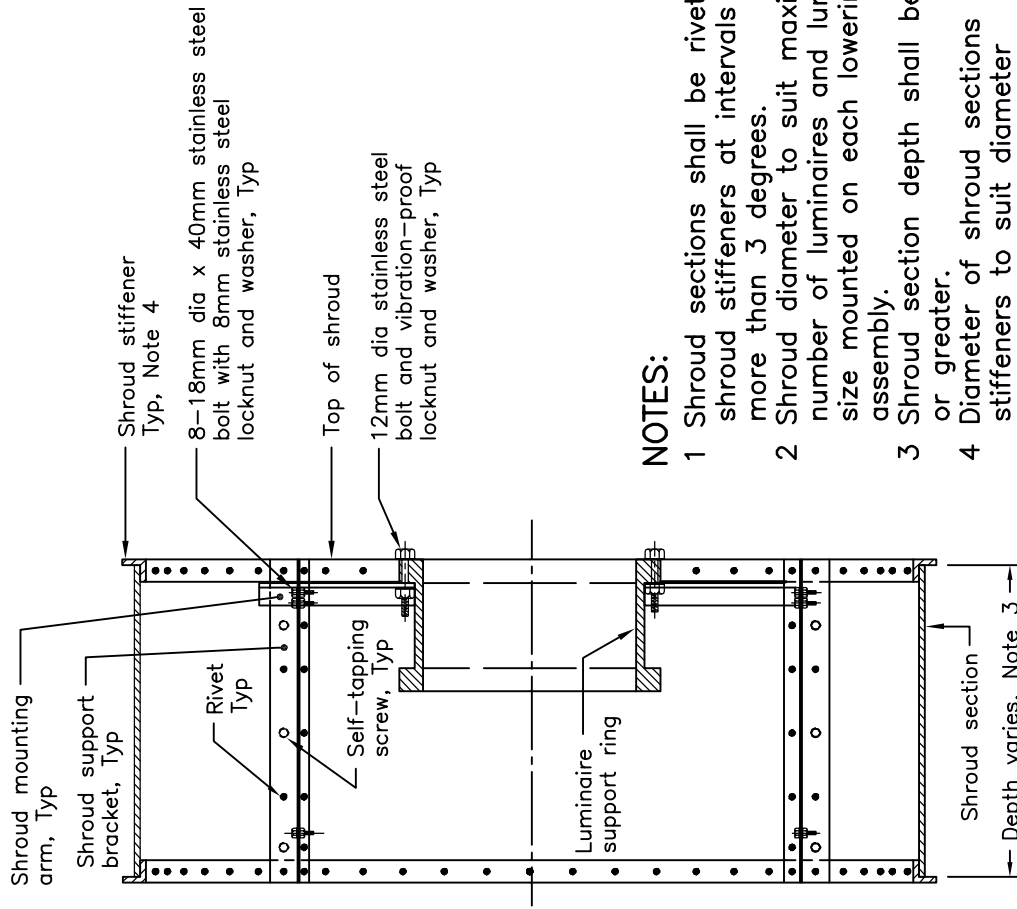
HEAD FRAME AND RING ASSEMBLY

Nov 2016

Rev 2

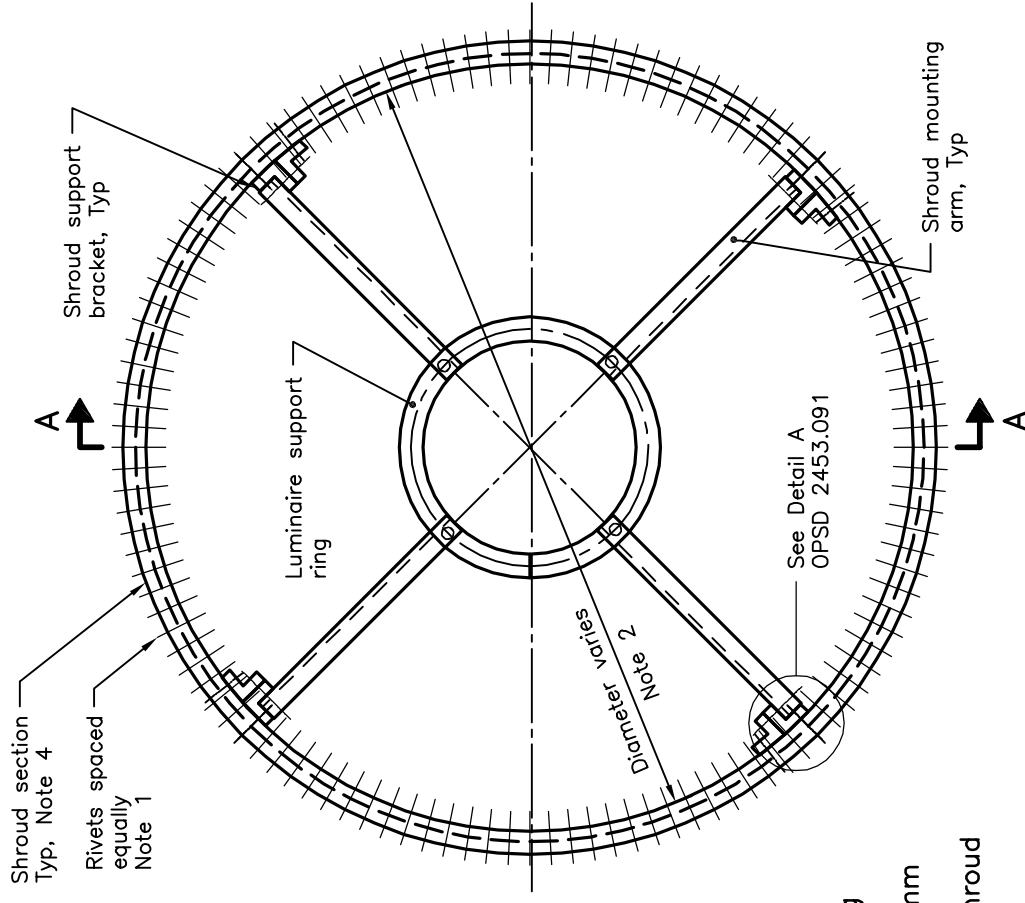


OPSD 2453.080



NOTES:

- 1 Shroud sections shall be riveted to shroud stiffeners at intervals of no more than 3 degrees.
 - 2 Shroud diameter to suit maximum number of luminaires and luminaire size mounted on each lowering ring assembly.
 - 3 Shroud section depth shall be 600mm or greater.
 - 4 Diameter of shroud sections and shroud stiffeners to suit diameter of shroud assembly.
- A All dimensions are in millimetres unless otherwise shown.



SECTION A-A

PLAN SHROUD ASSEMBLY

ONTARIO PROVINCIAL STANDARD DRAWING

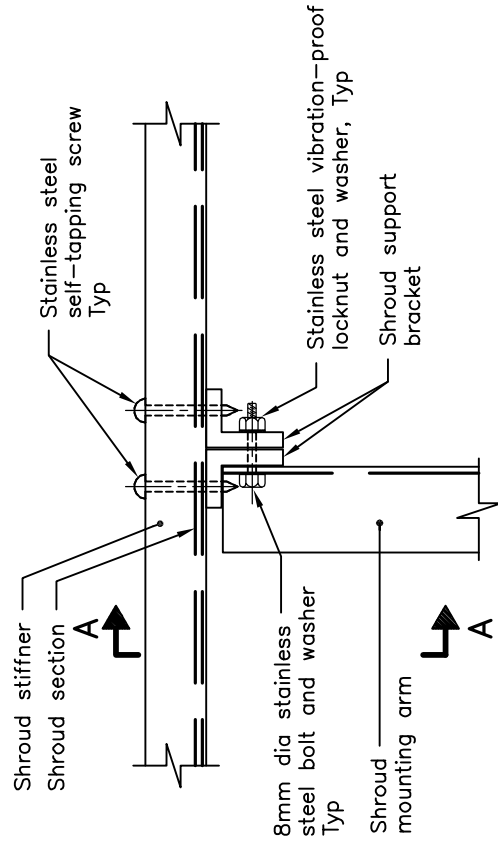
Nov 2016 Rev 1



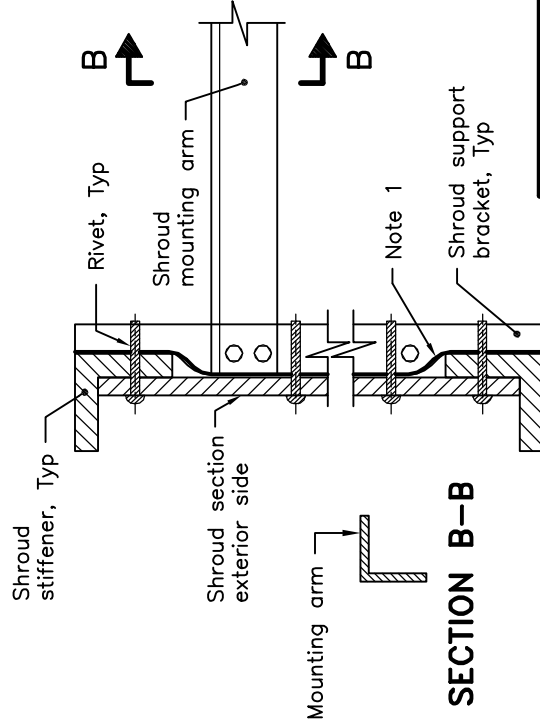
HIGH MAST LIGHTING POLE

SHROUD

OPSPD 2453.090

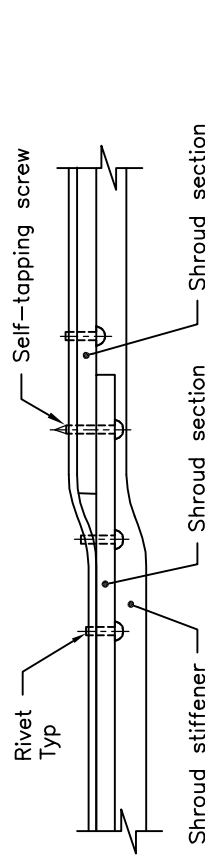


DETAIL A
ATTACHMENT OF SHROUD MOUNTING ARM
TO SHROUD SUPPORT BRACKET

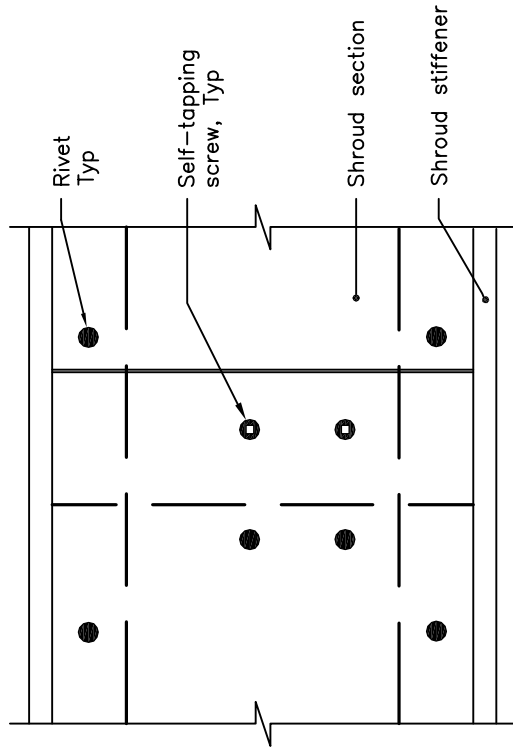


SECTION B-B

SECTION A-A



PLAN



ELEVATION

SHROUD SECTION OVERLAP

NOTES:

- 1 Bend shroud support bracket at top and bottom shroud stiffener.
- A Length of shroud support bracket to suit shroud assembly depth.
- B Length of mounting arm to suit diameter of shroud assembly.
- C Shroud sections shall be overlapped midway between shroud support brackets and shall be held in place by self-tapping screws.
- D This OPSP shall be read in conjunction with OPSP 2453.090.
- E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

HIGH MAST LIGHTING POLE

SHROUD DETAILS

Nov 2016 Rev 1



OPSD 2453.091

ID No.	QTY	PART DESCRIPTION
①	1	GALVANIZED STEEL WINCH AND EQUIPMENT MOUNTING PLATE
②	1	MOTOR AND GEAR REDUCER ASSEMBLY, VOLTAGE _____, HP _____
③	1	TORQUE LIMITER
④	1	JUNCTION BOX
⑤	1	WINCH WITH DRUM ASSEMBLY
⑥	1	NEUTRAL AND GROUND TERMINAL
⑦	1	MOTOR CONTROLLER
⑧	3	MOTOR STARTER OVERLOAD PROTECTION (HEATER)
⑨	1	____V / 30V MAX CONTROL XFMR
⑩	3	SINGLE POLE BREAKER, _____ A, _____V
⑪	1	THREE POLE BREAKER, _____ A, _____V
⑫	1	BREAKER BOX
⑬	1	BREAKER MOUNTING BRACKET
⑭	2	STRAIN RELIEF CONNECTOR
⑮	4	90° STRAIN RELIEF CONNECTOR
⑯	4	O-RING
⑰	4	LOCKNUT
⑱	1	PUSH BUTTON SWITCH AND PENDANT
⑲	1	OVERLOAD RESET BUTTON
⑳	1	BREAKER BOX COVER PLATE, SHOWN DETACHED
㉑	1	ADHESIVE LABEL: "CATALOGUE NUMBER"
㉒	1	ADHESIVE LABEL: "L1 (RED)"
㉓	1	ADHESIVE LABEL: "L2 (BLACK)"
㉔	1	ADHESIVE LABEL: "L3 (BLUE)"
㉕	1	ADHESIVE LABEL: "MAIN BREAKER"
㉖	1	BREAKER BOX COVER DOOR

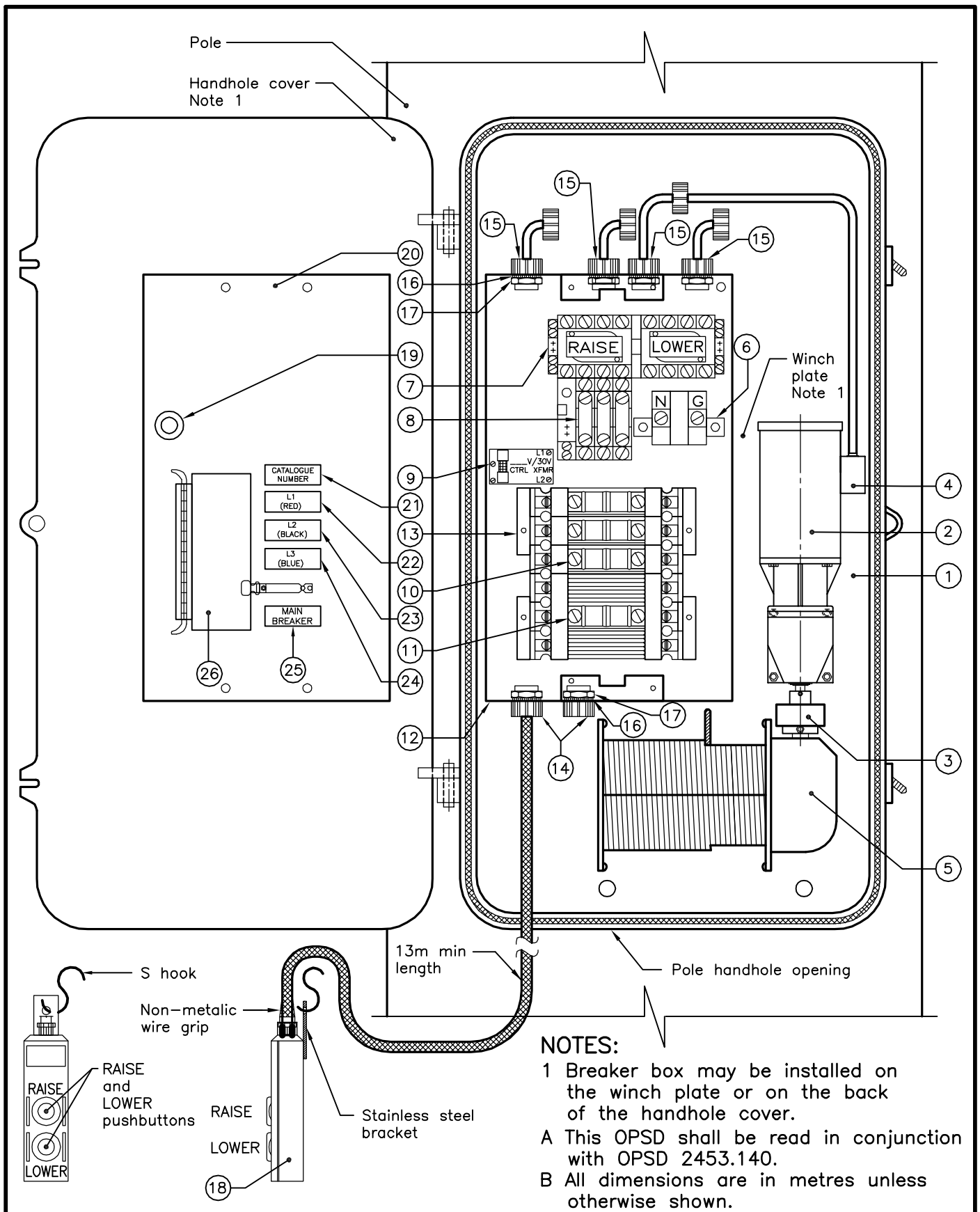
NOTES:

A Voltages, amperages, and horsepower ratings as specified.

B This OPSD shall be read in conjunction with OPSD 2453.150.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	1	
HIGH MAST LIGHTING POLE INTERNAL DRIVE RAISING AND LOWERING EQUIPMENT—LIST OF COMPONENTS		_____			

		OPSD 2453.140			



ONTARIO PROVINCIAL STANDARD DRAWING

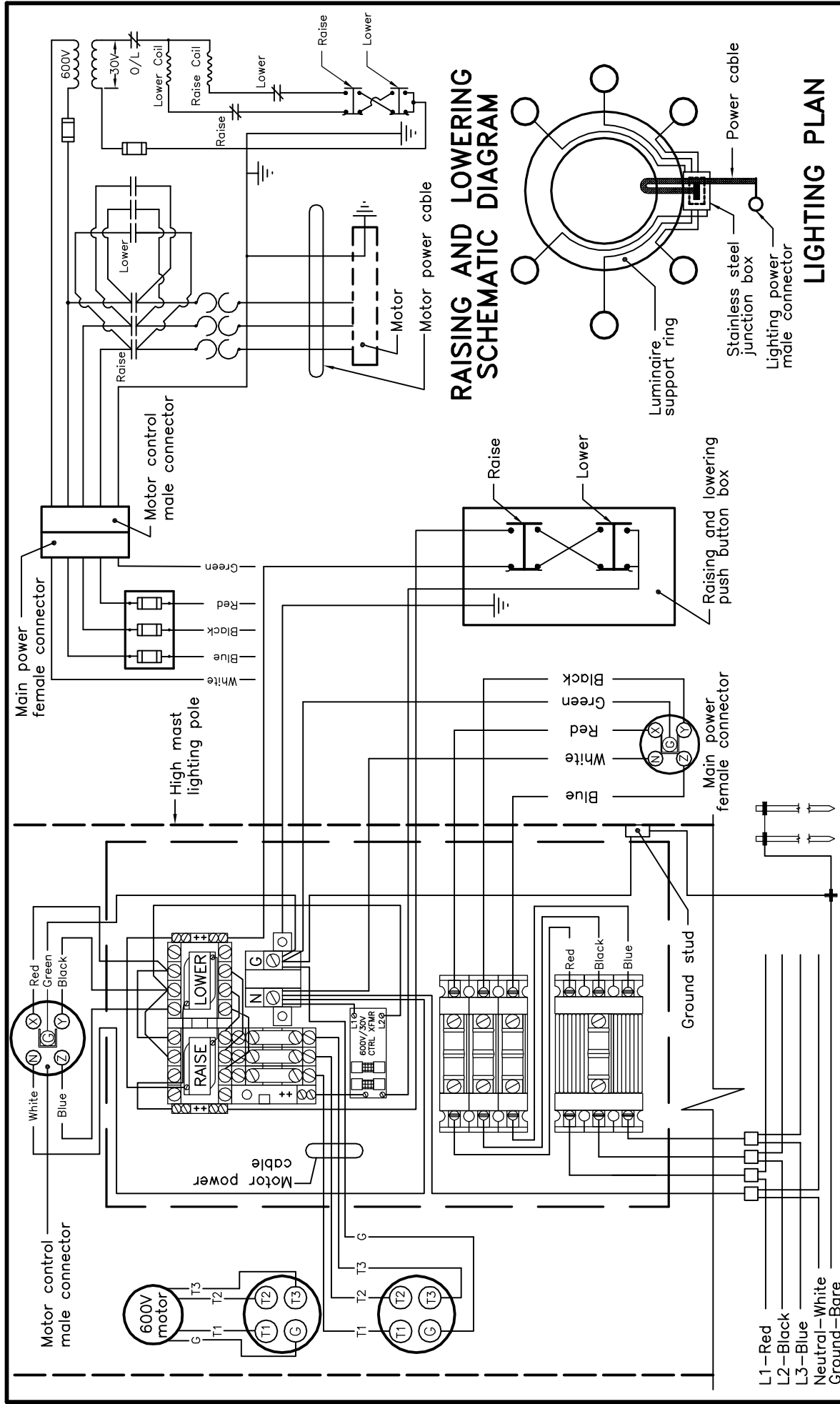
Nov 2016

Rev 1

HIGH MAST LIGHTING POLE
INTERNAL DRIVE RAISING AND LOWERING
EQUIPMENT-LAYOUT

OPSD 2453.150





RAISING AND LOWERING SCHEMATIC DIAGRAM

LIGHTING PLAN

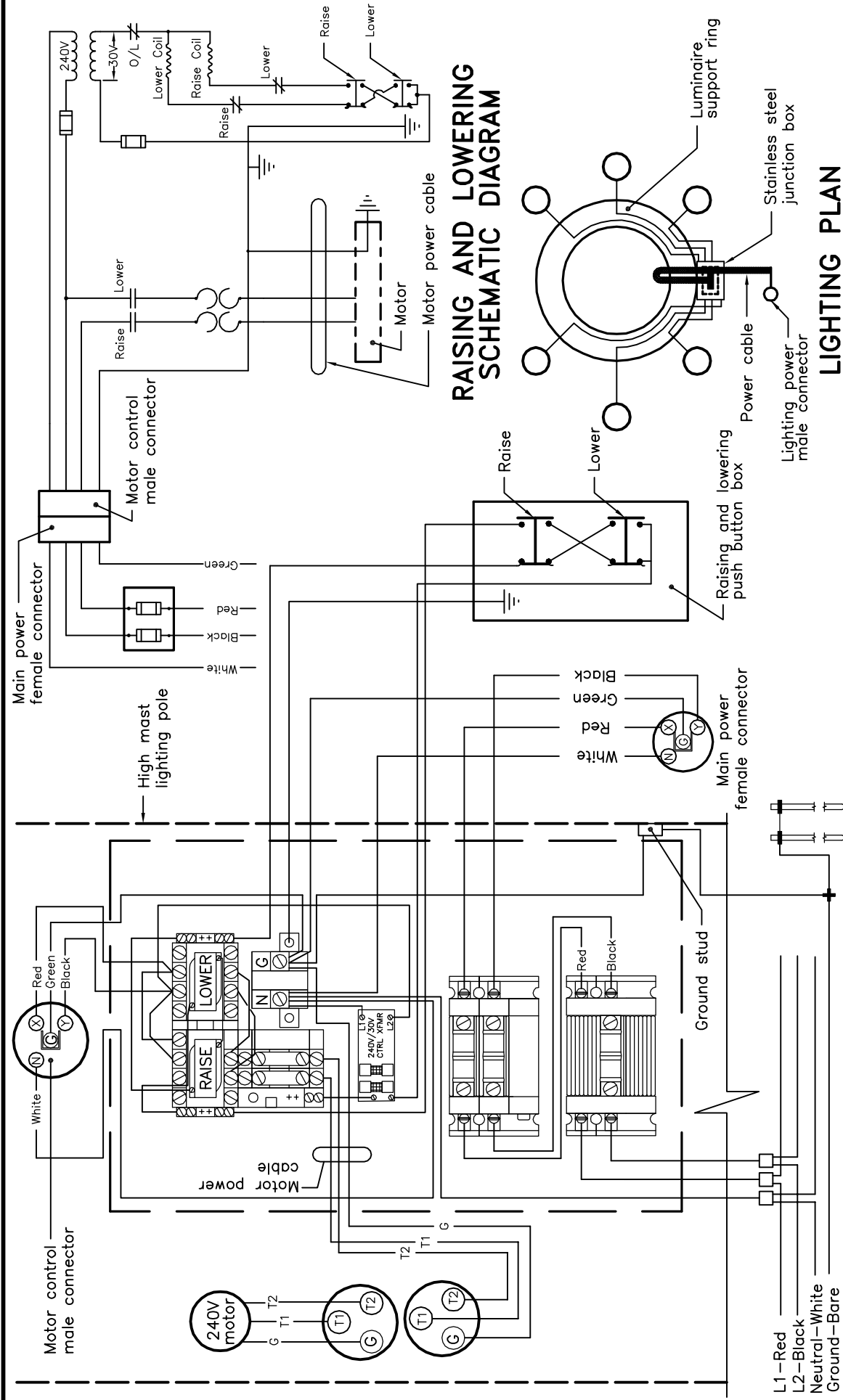
NOTE:
A Male and female connectors for the motor shall be uniquely keyed to prevent mating with other connectors.

OPSD 2453.170

ONTARIO PROVINCIAL STANDARD DRAWING

HIGH MAST LIGHTING POLE
INTERNAL DRIVE WIRING DIAGRAM
347/600V, 3-PHASE

Nov 2016 Rev 1



ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2016 Rev 1



HIGH MAST LIGHTING POLE
INTERNAL DRIVE WIRING DIAGRAM
120/240V, 1-PHASE

OPSD 2453.180

NOTE:

A Male and female connectors for the motor shall be uniquely keyed to prevent mating with other connectors.

ID No.	QTY	PART DESCRIPTION
①	1	GALVANIZED STEEL WINCH AND EQUIPMENT MOUNTING PLATE
②	1	ZINC ELECTROPLATED STEEL DRIVE SUPPORT ASSEMBLY
③	1	WINCH WITH DRUM ASSEMBLY
④	1	NEUTRAL AND GROUND TERMINAL
⑤	3	SINGLE POLE BREAKER, _____ A, _____ V
⑥	1	THREE POLE BREAKER, _____ A, _____ V
⑦	1	BREAKER BOX
⑧	1	BREAKER MOUNTING BRACKET
⑨	1	STRAIN RELIEF CONNECTOR
⑩	1	O-RING
⑪	1	LOCKNUT
⑫	1	WIRE CONNECTOR
⑬	1	BREAKER BOX COVER PLATE, SHOWN DETACHED
⑭	1	ADHESIVE LABEL: "CATALOGUE NUMBER"
⑮	1	ADHESIVE LABEL: "L1 (RED)"
⑯	1	ADHESIVE LABEL: "L2 (BLACK)"
⑰	1	ADHESIVE LABEL: "L3 (BLUE)"
⑱	1	ADHESIVE LABEL: "MAIN BREAKER"
⑲	1	BREAKER BOX COVER DOOR
⑳	1	CONNECTOR, FEMALE TYPE, BLUE CASING, POLYESTER HOUSING, FIBRE REINFORCED _____ V, _____ A, _____ W, NEMA 3R

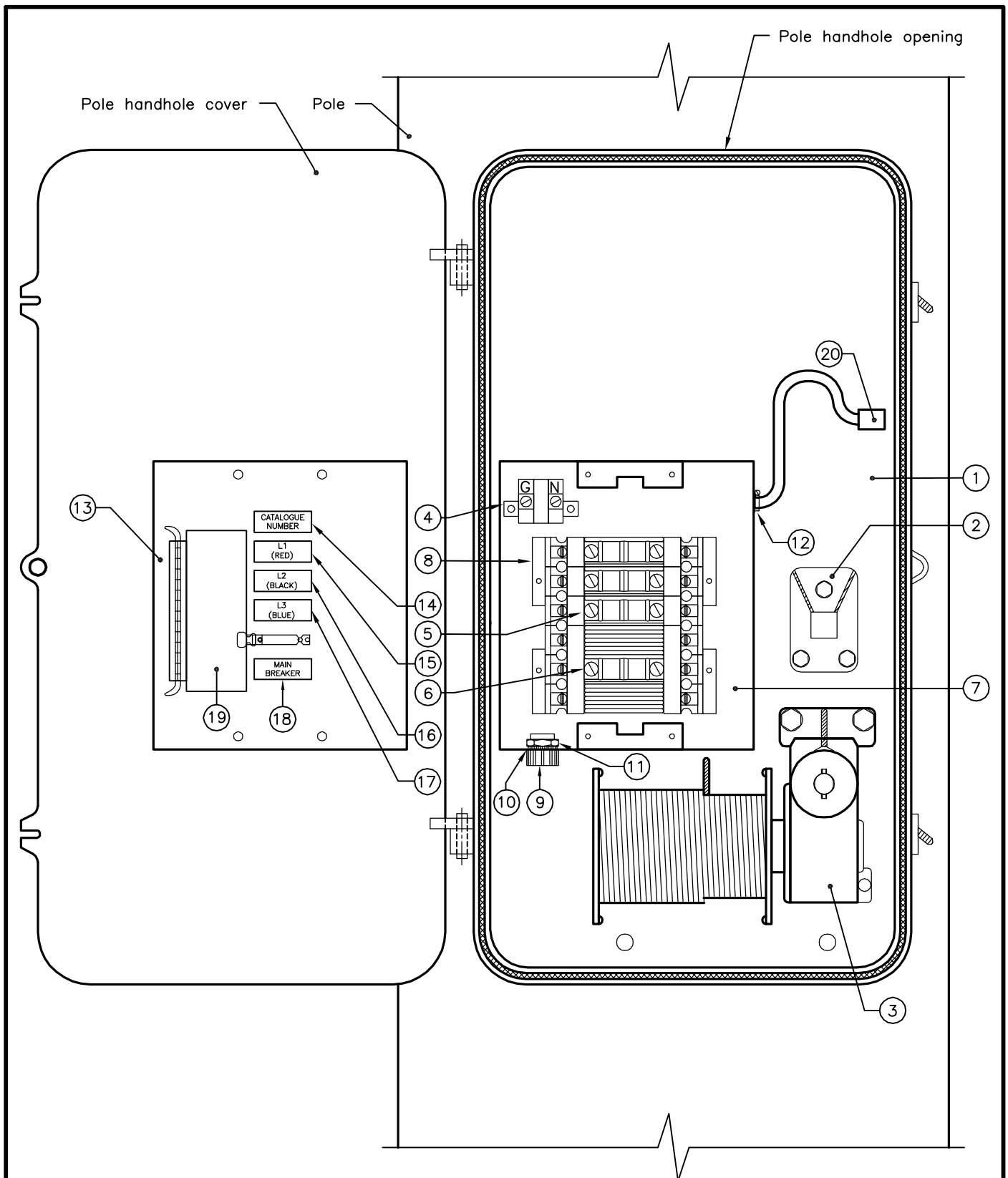
NOTES:

A Voltages, amperages, and wattages as specified.

B This OPSD shall be read in conjunction with OPSD 2453.200.

ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	1	
HIGH MAST LIGHTING POLE EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT—LIST OF COMPONENTS		_____			

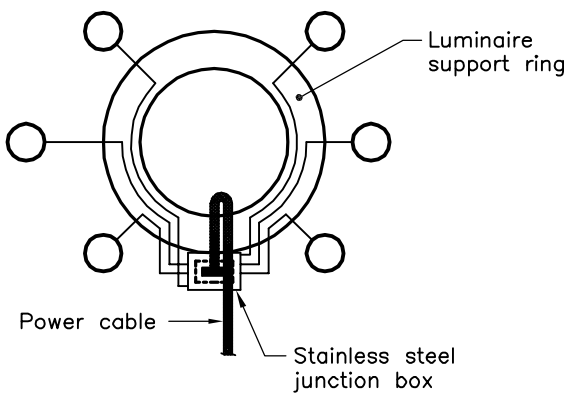
		OPSD 2453.190			



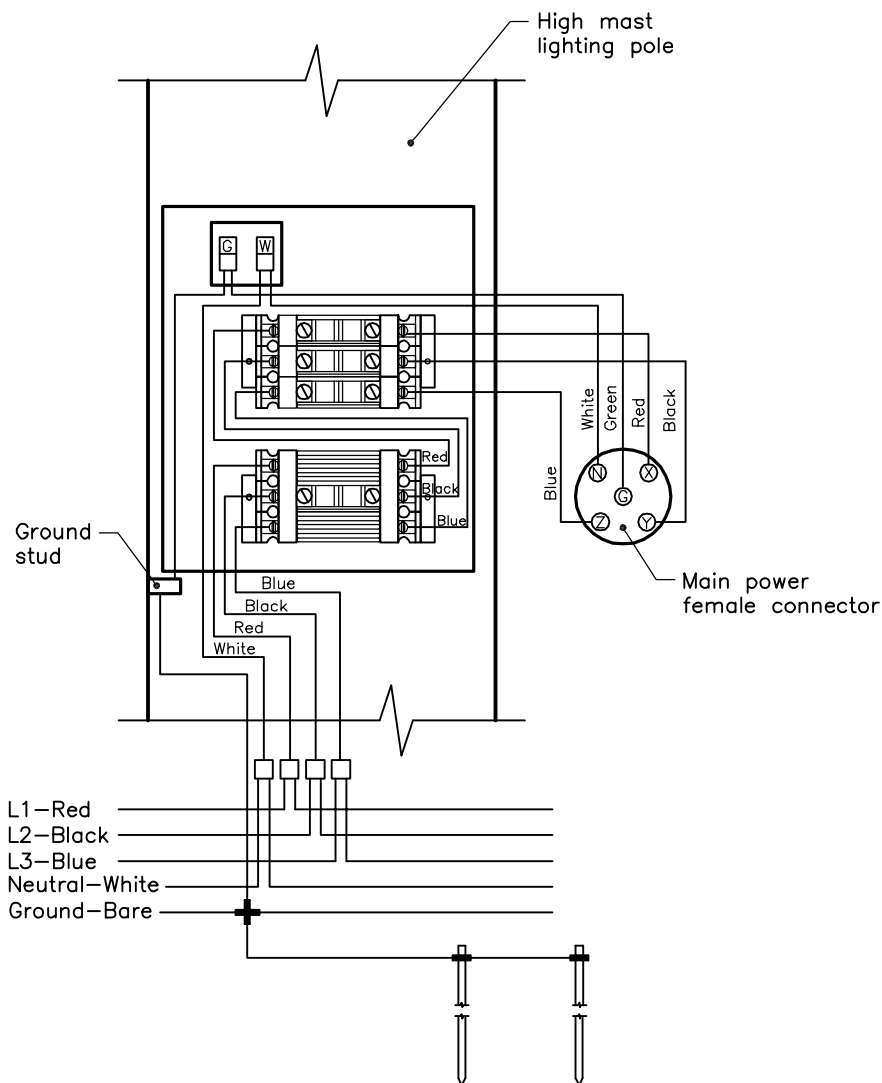
NOTES:

A This OPSD shall be read in conjunction with OPSD 2453.190.

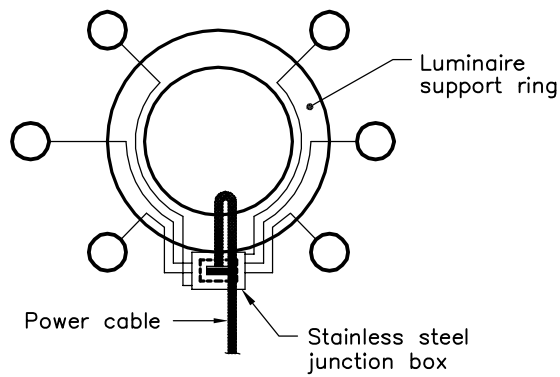
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2016	Rev	1	
HIGH MAST LIGHTING POLE EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT-LAYOUT	----- -----			
	OPSD 2453.200			



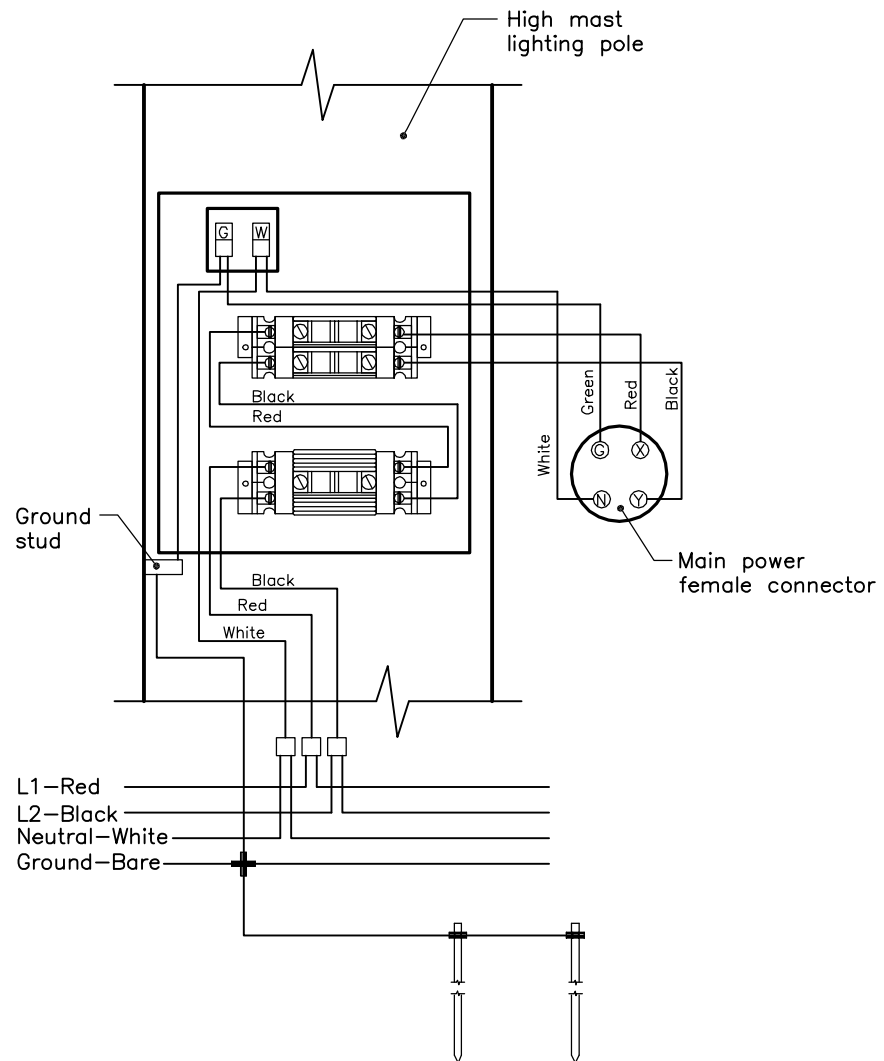
PLAN



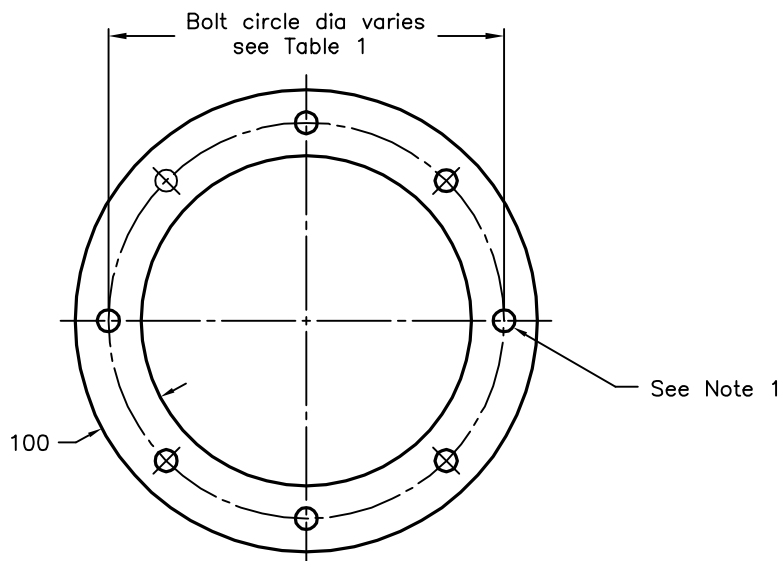
ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	1	
HIGH MAST LIGHTING POLE EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT 347/600V, 3-PHASE WIRING DIAGRAM		----- ----- -----			
		OPSD 2453.210			



PLAN



ONTARIO PROVINCIAL STANDARD DRAWING		Nov 2016	Rev	1	
HIGH MAST LIGHTING POLE EXTERNAL DRIVE RAISING AND LOWERING EQUIPMENT 120/240V, 1-PHASE WIRING DIAGRAM		----- ----- -----			
		OPSD 2453.220			



METAL PLATE DETAIL

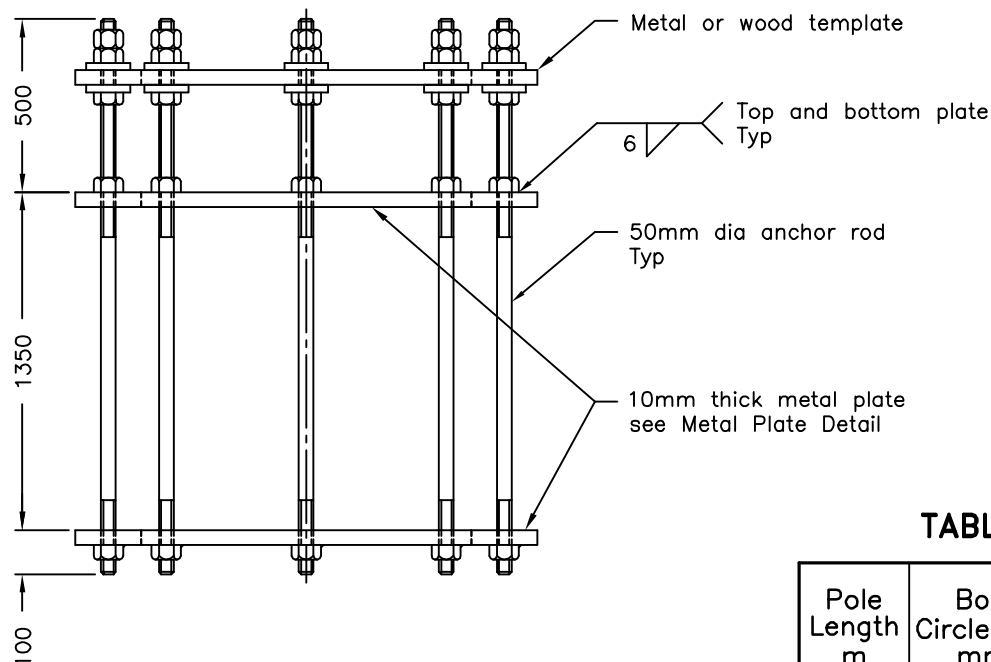


TABLE 1

Pole Length m	Bolt Circle Dia mm	No. of Anchor Rods
25	750	8
30	850	8
35	950	8
40	1075	12
45	1075	12

NOTES:

- 1 Number of anchor rod holes varies, see Table 1.
- A Anchor rods shall be equally spaced.
- B All nuts, anchor rods, metal plates, and washers of the assembly shall be galvanized.
- C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2016

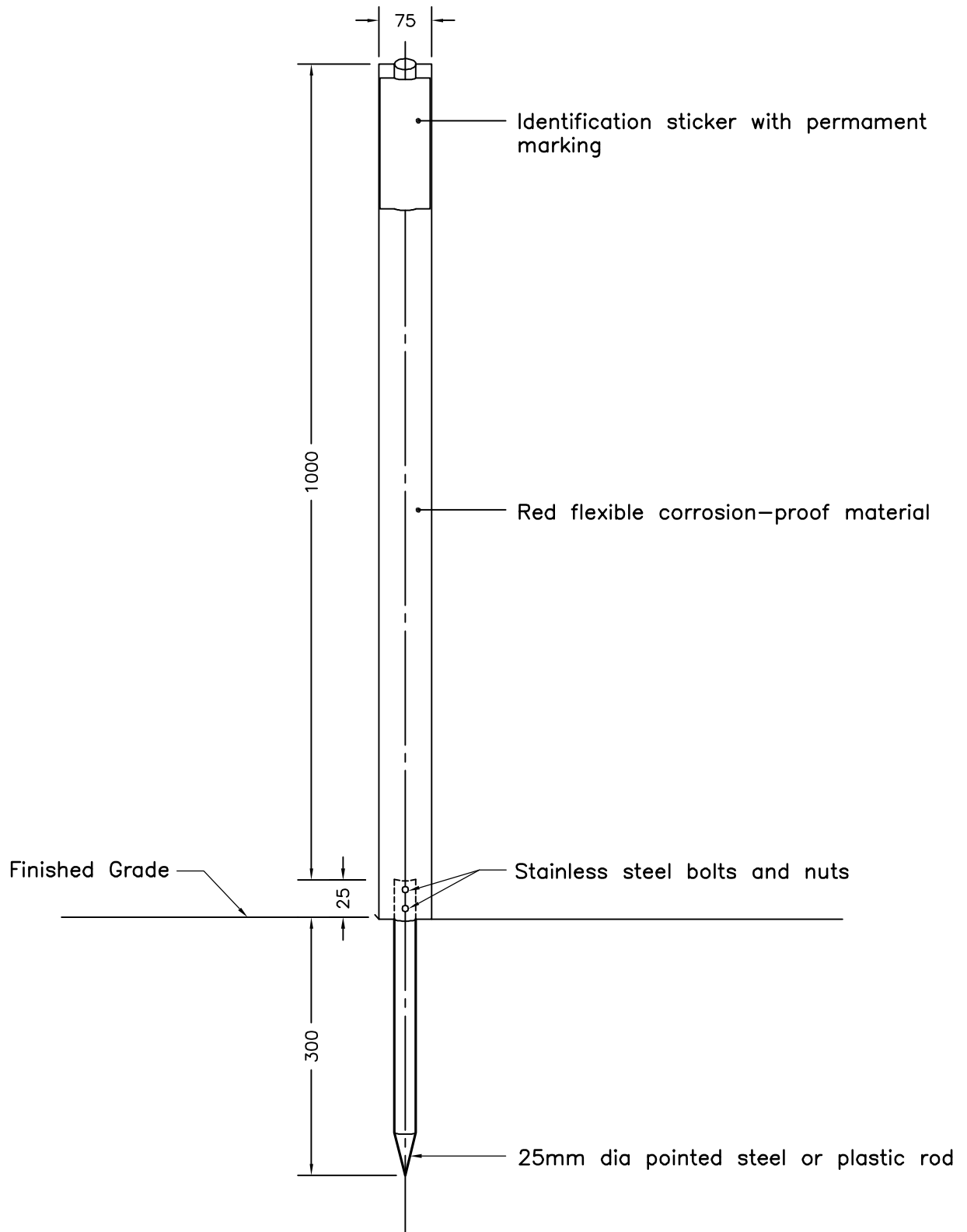
Rev 1

HIGH MAST LIGHTING POLE

ANCHORAGE ASSEMBLY DETAILS



OPSD 2456.011



NOTES:

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING

Nov 2016

Rev 0

FLEXIBLE UTILITY MARKER



OPSD 2555.010

