



Section 9

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9 UTILITIES

9.1 General Requirements

This manual has been prepared to provide the Town, consulting engineers, contractors, developers, utility providers and the general public with a common reference to ensure the consistent application of utility design in the Town.

The information provided is not intended to hinder innovation and is rooted on meeting performance requirements over the lifecycle of the infrastructure. The Proponent shall provide justification for any deviation from the criteria and requirements set out in this manual, and approval will be granted at the Town's discretion.

9.2 Other Reference Documents

All utilities shall be designed and constructed in accordance with the latest versions of this manual as well as other industry standards and best practices, including but not limited to:

- Ontario Regional Common Ground Alliance (ORCGA)
- Ontario Provincial Standard Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD) prepared by the Ministry of Transportation (MTO)
- Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data (ASCE 38-02) prepared by ASCE

9.3 Industry Standards and Specifications

All utilities materials and components shall comply with the most recent version of all applicable current industry standards and specifications for quality management and quality control, including but not limited to the following:

- Electrical Safety Authority (ESA)
- Canadian Standards Association (CSA)
- Other Applicable Acts and Legislations

This manual does not supersede, nor replace any legislation governing the design and construction of utility infrastructure. The Proponent shall be fully familiar with the latest version of these legislative requirements when carrying out design and construction of linear projects, such as:

- Canadian Electrical Code
- Ontario Electrical Safety Code
- Ontario Underground Infrastructure Notification Systems Act (ON1Call)

- Technical Standards & Safety Authority (TSSA)
- Accessibility for Ontarians with Disability Act (AODA)

9.4 Town of Tillsonburg Permits and Approvals

Utility agencies shall apply and secure all necessary permits and approvals from the Town prior to commencement of any works within the R.O.W.

Necessary Town approvals include but are not limited to the following:

- Municipal Consent
- Encroachment Permit
- Tillsonburg Hydro Inc. (If applicable)
- Other Applicable County of Oxford Approvals (Within County R.O.W.)

Proponents shall follow the appropriate procedures with each of the above listed permits and approvals.

All new utility infrastructure projects/installations to be constructed within Town R.O.W. will require a Municipal Consent approval from the Town for each Utility prior to installation.

9.5 Long Point Region Conservation Authority Permits and Approvals

Utility agencies shall apply and/or secure all necessary permits and approvals from the Long Point Region Conservation Authority (LPRCA) for any installations within LPRCA jurisdiction/regulating area, as applicable.

9.6 Composite Utility Plans

To ensure that conflicts are avoided among utilities, street trees, municipal services and driveways, the Proponent shall prepare a Composite Utility Plan (CUP) for all new subdivision developments.

The CUP shall indicate the location of all underground services and utilities.

9.7 Minimum Cover

The minimum depth of cover shall be 1.2m for underground utilities within Town R.O.W. and shall be measured from the street surface to the top of the installed duct or conduit, as per OPSD 2103.02.

When attempting to locate existing underground utilities, it must not be assumed that all utilities are at standard depth.

9.8 Alignment

In preserving the Town R.O.W. for present and future use, the Town coordinates its efforts to minimize the amount, while maximizing the efficient use, of underground space occupied by each utility.

All efforts shall be made when replacing existing or installing new infrastructure to be in accordance with the Standard Drawings in this manual and the Typical Cross-sections.

Alignments selected for proposed utility installations shall adhere to the following conditions:

- Alignment and location of any new plant should coincide and match with that of the existing plant if possible
- Alignments must be parallel or perpendicular to street property lines
- When installing underground services to the same customer, those services running in parallel alignments are required to share a common trench
- Joint trench details must be clearly illustrated on utility company drawings
- When abandoning a plant, the alignment should replace or be placed immediately adjacent to the existing plant
- A continuous alignment for the length of the installation is preferred
- New and existing plant will occupy one utility corridor per street
- Requirements for abandoning of structures and duct banks shall be at the discretion of the Town
- Abandon of structures and duct banks at the discretion of the Town

All efforts should be made to locate service connections and appurtenances out of the driveway. Final decision will be at the final approval/discretion of the Town.

The Town recognizes that existing utilities located within the R.O.W. may present obstacles in satisfying the conditions in this section. If a utility company has any concerns when selecting an alignment, the utility designer, in consultation with the Developer's Consulting Engineer, shall submit an alternate alignment for review and approval by the Town.

9.9 Utility Clearances

Standard utility clearances between underground utilities have been established to minimize conflict and ensure a safe work zone exists around each utility's equipment.

Any exceptions to this clearance will require approval from the Town and the affected utility or utilities.

Sewer and watermain construction often requires deep excavations with wider trenches to allow for extra shoring and safe working room.

With the added concern of shallower utilities collapsing into deeper sewer trenches, the Town places restrictive requirements on utilities, requiring a minimum horizontal clearance of 1.5m from all watermains including hydrants and 2.0m from sewer main lines. In addition, the Town reserves the right to require additional clearance under special circumstances.

All efforts shall be made when replacing existing or installing new infrastructure to be in accordance with the Typical Cross-sections Standard Drawings.

Table 1 represents the minimum clear separation between public utilities and municipal sewer and water services. The trench detail contained in this manual identifies separation within joint trenches.

Table 1. Minimum Clearances from Utilities

Condition	Clearance Required (m)
Minimum distance below ditch inverts (m)	0.90
Minimum vertical distance from Town/County-owned infrastructure (m)	0.60
Minimum horizontal distance from Town/County-owned infrastructure (hydrants, chambers, etc.) (m)	1.5
Minimum horizontal distance from Town/County-owned infrastructure (watermain) (m)	1.50
Minimum horizontal distance from Town/County-owned infrastructure (sanitary and storm sewers) (m)	2.00

9.10 Separation from Trees

To protect the longevity of R.O.W. trees, the following separation requirements shall be followed.

For clearance with existing street trees, the placement of vaults and other structures or the installation by open cut shall maintain the greater distance of:

- 1.5m measured at breast height (TBH) (1.4m high) from the main trunk
- Six times the tree trunk diameter (measured at breast height) from the main trunk of the tree at breast height from street trees

If utilities within developed areas are being installed within these clearances, the Contractor shall have a certified arborist inspect the tree and recommend installation methods (trenchless, air spade, etc.) that would minimize the health impacts.

9.11 Underground Structures

Underground structures shall be in accordance with OPSS, OPSD and the individual Utility Standards, latest versions.

The Town's primary concerns focus on the location of these structures within the R.O.W., capacity for adjustment and drainage provisions.

9.11.1 Location of Structures

To preserve utility corridor space for present and future needs, the Town requires that installation of precast structures:

- Have the longer side of the equipment aligned parallel to the property line
- Preferred location is to align the structure directly over top of a utility
- Maintain a minimum clearance from face of curb of 15.0m from street intersections. This requirement assists with ease of access and adequate visibility for vehicle traffic during maintenance activities
- Preferably, be located in the boulevard or curb lane of the roadway, so as to minimize disruptions during construction and maintenance activities
- Are not permitted within a lane entrance or intersection curb return areas

9.12 Surface Structures

The following sections detail loading and placement criteria of surface structures, including vaults and non-standard maintenance holes.

9.12.1 Loading Criteria

The Town requires that all structures are constructed in accordance with the latest version of industry standards for the suitable application.

9.12.2 Placement Criteria

Clearance shall be maintained near standard pedestrian sidewalk ramps / curb cuts so as not to block access during maintenance.

Alongside the aforementioned loading criteria, surface structures shall comply with the separation distances for utility vaults and structures as per Table 2.

Table 2. Minimum Clearances for Utility Vaults and Structures

Condition	Minimum Clearance (m)
Street Furniture	1.0
Fire Hydrants	1.5
Valves or Manhole Structures	1.5
Traffic Poles	1.0
Entrances	1.0
Awnings, Building Overhands, and Canopies	2.0
Other Utilities	Standard Clearances

9.12.3 Surface Criteria

The following shall apply to structures that are installed at surface:

- The maximum gap permitted for all grates shall be 13mm
- A minimum allowance for a 100mm vertical adjustment of the equipment is required to accommodate changes to street grade and settling
- Equipment must be located within the existing utility alignments and/or corridors and will not be permitted where proposed placement may inhibit the use of a future corridor or limit optimum use of such space

9.13 Poles and Anchors

The following section details the Town's design requirements for utility poles and anchors.

9.13.1 Location of Poles

When the relocation of an existing pole or addition of a new pole is required, the Proponent shall refer to the following criteria regarding pole locations. Noting that existing conditions will generally restrict available locations, best efforts shall be made to conform to the design requirements below.

Generally, pole locations shall be:

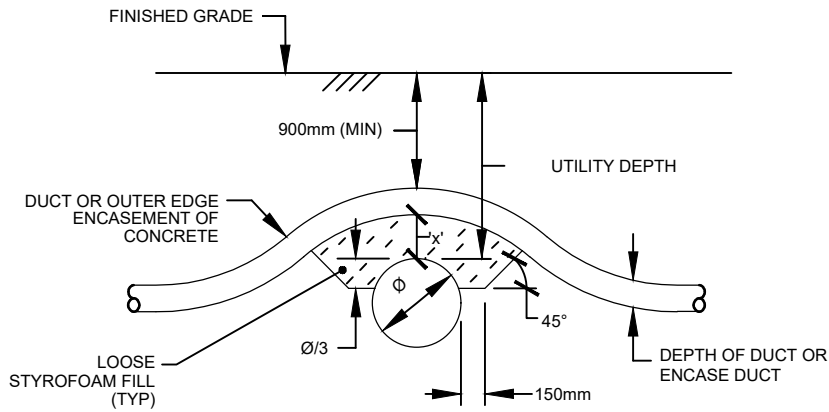
- At lot lines or projected lot lines

- A minimum 1.0m clear of vehicular crossings, fire hydrant, catch basins, and midblock crosswalks

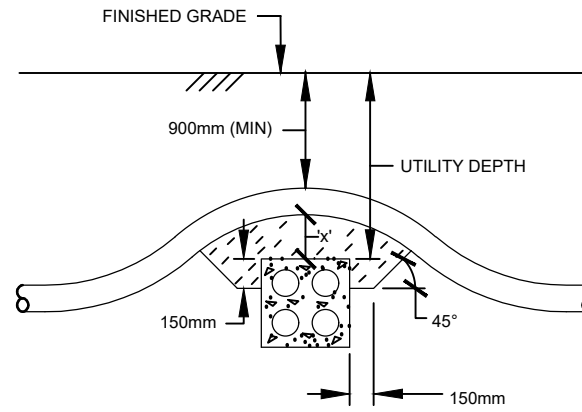
9.13.2 Down Guy and Anchor

Placement of down guys and anchors shall maintain access to existing sidewalks, walkways, entrances and driveways without altering traveled routes or clearances. Distance from either side of the sidewalks shall be 1.0m.

A sidewalk guy must be installed with the anchor at a maximum distance of 0.3m (or as otherwise approved by the Town) from property line. The down guy and anchors (including extensions) shall conform to current AODA regulations and not impact pedestrian traffic on the sidewalk including providing a vertical clearance of 3.0m for any extensions over a sidewalk.



CROSSING OVER UTILITY

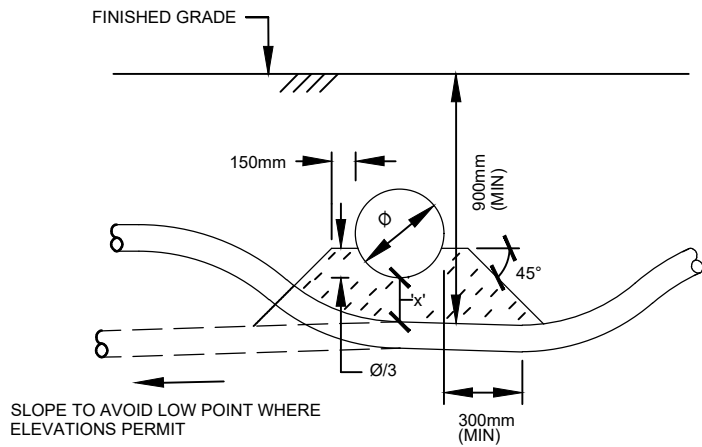


CROSSING OVER CONCRETE ENCASED UTILITY

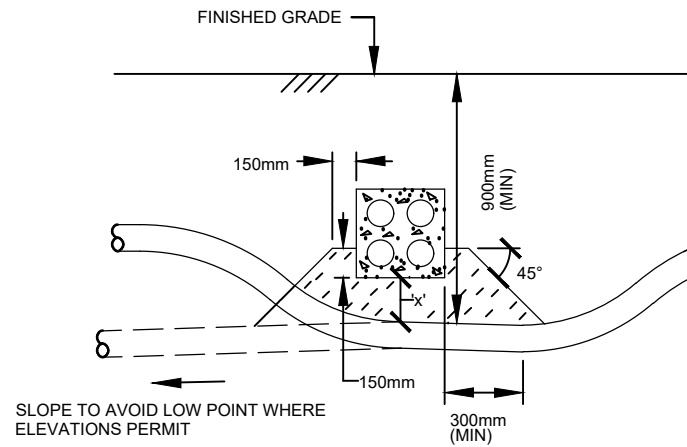
NOTES:

1. TRENCH WIDTHS AS PER OCCUPATIONAL HEALTH AND SAFETY ACT. UTILITY SUPPORTED IN PLACE WHERE REQUIRED.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
3. THE REQUIRED MINIMUM CLEARANCE 'X' BETWEEN THE UTILITY AND THE DUCTS OR CONCRETE ENCASEMENT IS:

DUCTS (DIRECT BURIED OR ENCASED)	100mm
ALL OTHER PIPES	500mm
HIGH VOLTAGE CABLES	1000mm
ALL OTHER CABLES	300mm



CROSSING UNDER UTILITY



CROSSING UNDER CONCRETE ENCASED UTILITY



STANDARD DETAIL

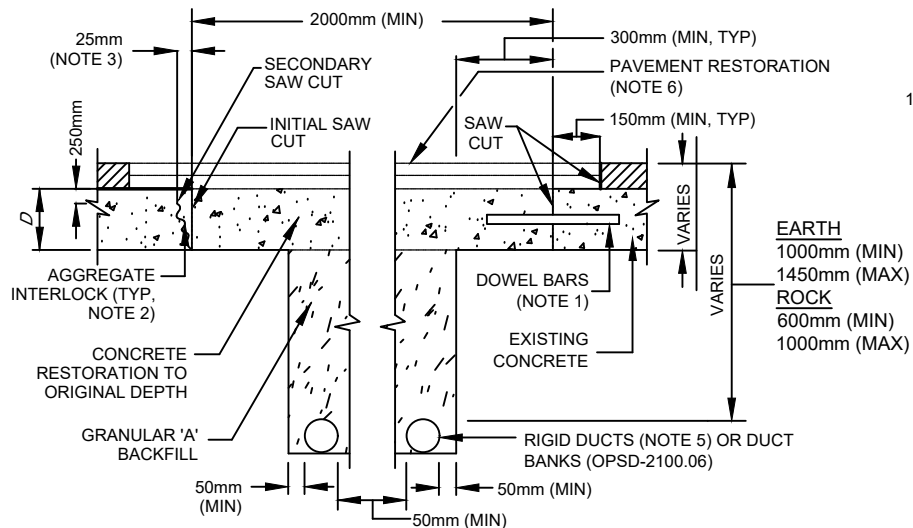
ROADWAY LIGHTING DUCT INSTALLATION AT UTILITY CROSSING

APPROVED

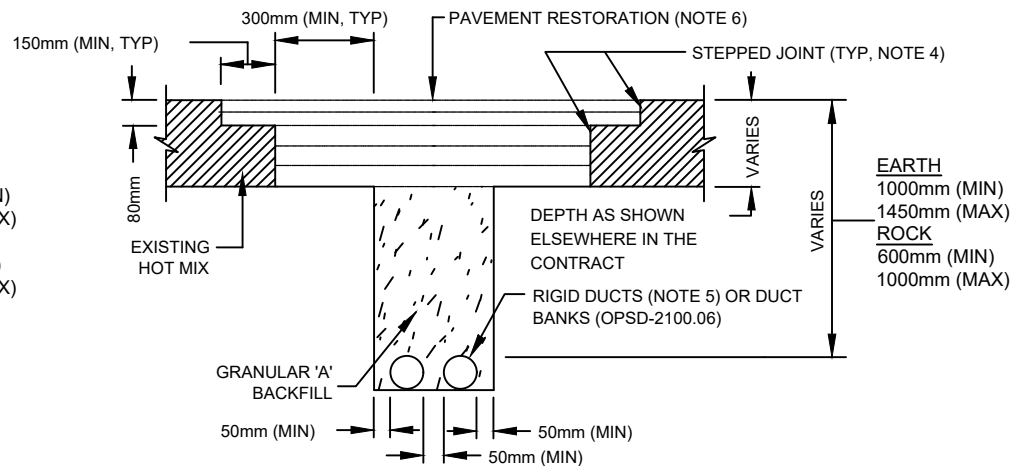
MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: DEC 2021
SCALE: N.T.S.

TSD-900



UNDOWELLED TREATMENT (NOTE 2) DOWELLED TREATMENT (NOTE 1)
COMPOSITE OR CONCRETE PAVEMENT



BITUMINOUS PAVEMENT

NOTES:

1. DOWELLED TREATMENT IS ONLY REQUIRED IN EXISTING CONCRETE PAVEMENT OR CONCRETE BASE WHICH CONTAIN LOAD TRANSFER DEVICES. DOWELS SHALL BE 32mm DIA, 450mm LONG, EPOXY COATED, INSTALLED AT 300mm INTERVALS AT MID DEPTH OF THE CONCRETE SLAB, IN PLANE TO THE PAVEMENT SURFACE, PARALLEL TO THE CENTRE LINE OF THE ROAD AND SET 225mm IN 35mm HOLES WITH EPOXY GROUT.
2. UNOWELLED TREATMENT IS ONLY REQUIRED IN EXISTING CONCRETE PAVEMENT OR CONCRETE BASE WHICH IS CONSTRUCTED WITHOUT LOAD TRANSFER DEVICES AT JOINTS. AGGREGATE INTERLOCK IS CREATED BY CHIPPING THE VERTICAL CONCRETE FACE WITH A LIGHT 15kg MAXIMUM PNEUMATIC HAMMER.
3. THE INITIAL SAW CUT SHALL BE FULL DEPTH. THE SECONDARY SAW CUT SHALL BE 1/4 OF EXISTING PAVEMENT DEPTH WITH 25mm OF CHIPPING FOR AGGREGATE INTERLOCK.
4. WHERE EXISTING PAVEMENT DEPTH IS BETWEEN 80mm AND 120mm, THE 150mm WIDE STEPPED JOINT SHALL BE 40mm DEEP. BITUMINOUS PAVEMENT RESTORATION TO MATCH EXISTING TYPE UNLESS OTHERWISE SPECIFIED. THE SURFACE AND TOP BINDER COURSES SHALL BE PLACED IN 40mm LIFTS, WITH OTHER LIFTS PLACED AT 80mm MAXIMUM.
6. ALL VOIDS BELOW THE PAVEMENT STRUCTURE TO BE REINSTATED AS PER TSD's.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

**ROADWAY LIGHTING DUCT
 INSTALLATION IN EXISTING
 PAVED AREA**

APPROVED

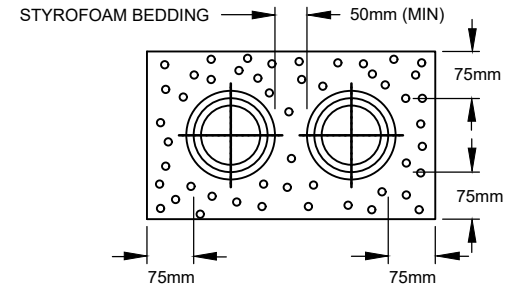
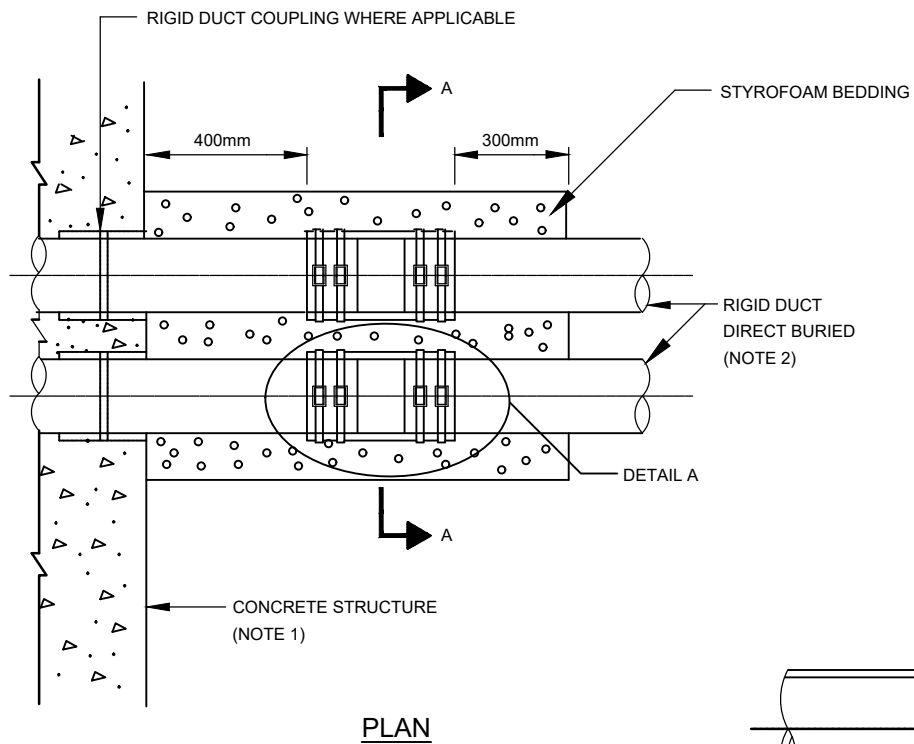
MANAGER OF ENGINEERING DATE

DIRECTOR OF OPERATIONS DATE

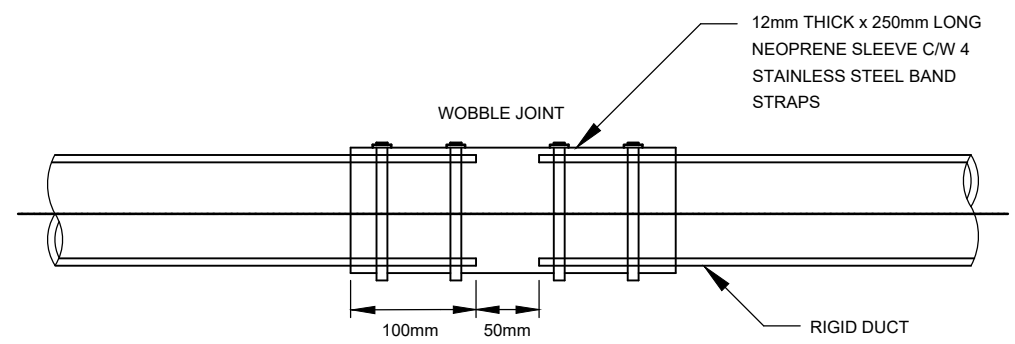
REVISION No. DATE: DEC 2021

SCALE: N.T.S.

TSD-901



SECTION A-A



DETAIL A

NOTES:

1. CONCRETE STRUCTURES INCLUDE BRIDGE STRUCTURE, CONCRETE FOOTING, ELECTRICAL MAINTENANCE HOLE, CONCRETE DUCT BANK, CONCRETE VAULT, ETC.
2. FOR NUMBER, SIZES AND ORIENTATION OF DUCTS REFER TO CONTRACT DRAWINGS.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

UNDERGROUND RIGID DUCT CONNECTION AT CONCRETE STRUCTURE

APPROVED

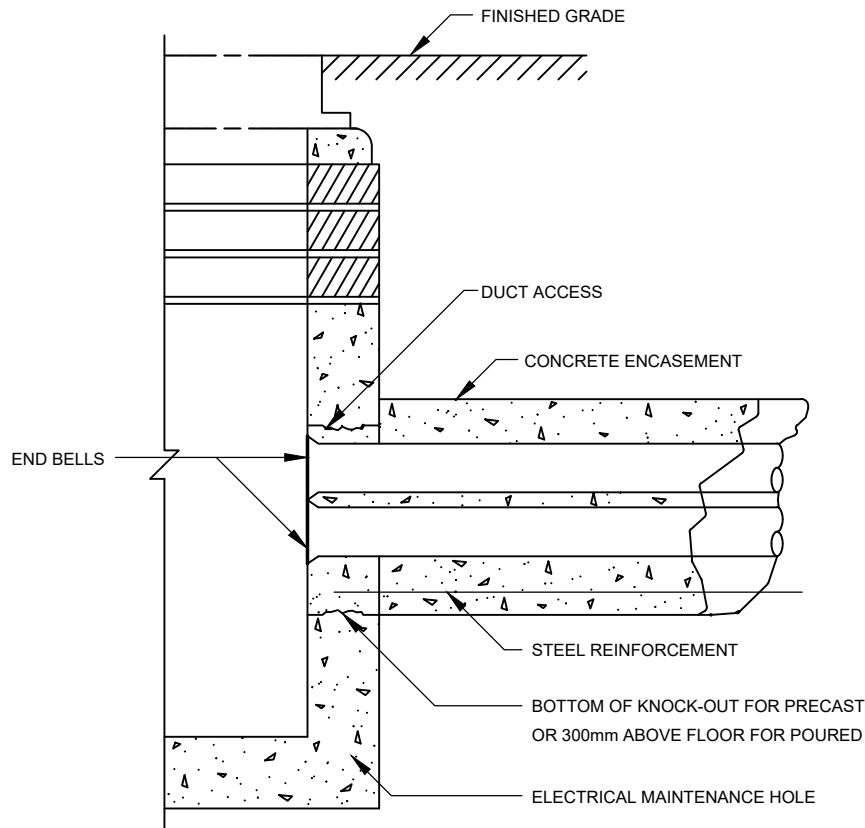
MANAGER OF ENGINEERING DATE

DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020

SCALE: N.T.S.

TSD-902



CONCRETE ENCASED RIGID DUCTS

NOTES:

1. GROUT TO BE PLACED FULL DEPTH, FLUSH WITH BOTH WALLS.
2. GROUT TO BE PLACED WITHIN STEEL PIPE, AROUND ALL DUCTS, TO A MINIMUM DEPTH OF 75mm.
3. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

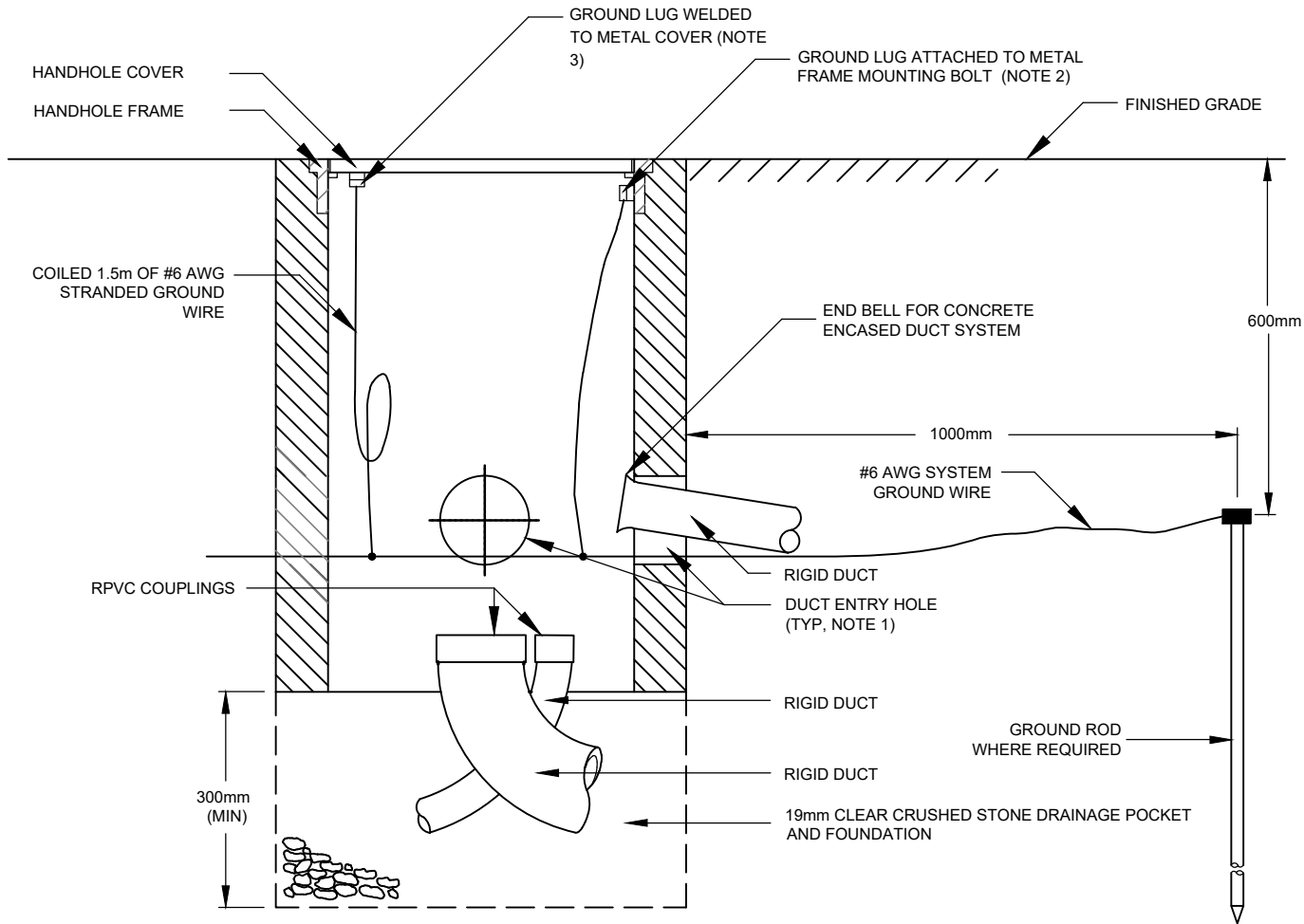
ELECTRICAL VAULT ENTRY OF ENCASED DUCTS

APPROVED

MANAGER OF ENGINEERING DATE
 DIRECTOR OF OPERATIONS DATE

REVISION No.	DATE: MARCH 2020
	SCALE: N.T.S.

TSD-903



NOTES:

1. FOR DUCT ENTRY DETAILS SEE TSD-905.
2. FOR HANDHOLES WITH METAL FRAMES, GROUND WIRE SHALL BE ATTACHED TO FRAME USING A GROUND LUG SUITABLE FOR #6 AWG STRANDED COPPER WIRE.
3. FOR HANDHOLES WITH METAL COVERS AND NON METALLIC FRAMES, THE GROUND WIRE SHALL BE ATTACHED TO THE HANDHOLE COVER USING A GROUND LUG SUITABLE FOR #6 AWG COPPER WIRE.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

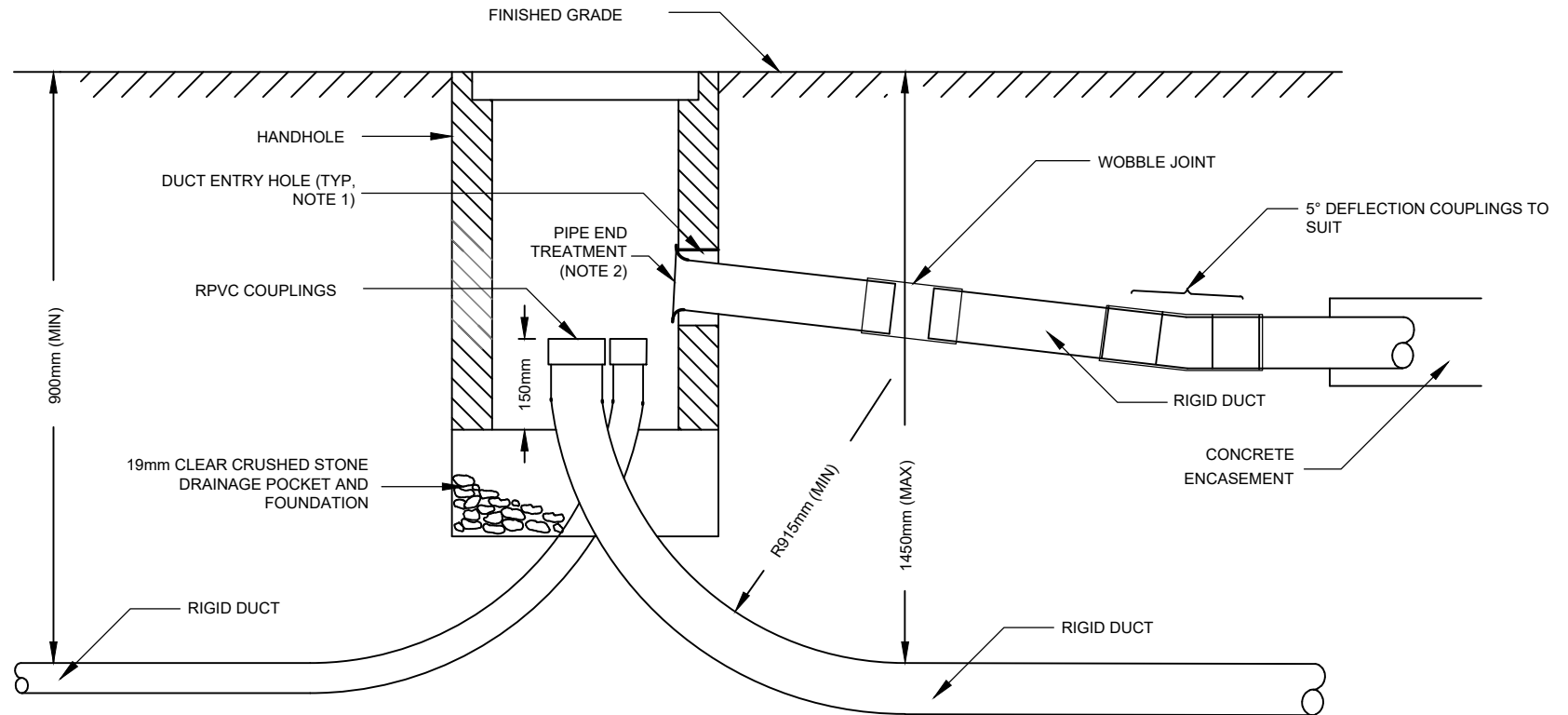
ELECTRICAL HANDHOLES GENERAL INSTALLATION REQUIREMENTS

APPROVED

MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020
SCALE: N.T.S.

TSD-904



NOTES:

1. DUCT ENTRY HOLES TO BE FILLED WITH GROUT, FULL DEPTH, FLUSH WITH BOTH WALLS.
2. RIGID DUCTS TERMINATING IN MAINTENANCE HOLES, HANDHOLES, OR OTHER PERMANENT OPENINGS OF UNDERGROUND SYSTEMS SHALL BE PROVIDED WITH AN END BELL. RIGID DUCTS ENTERING THE BOTTOM OF HANDHOLES SHALL BE FITTED WITH RPVC COUPLING.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

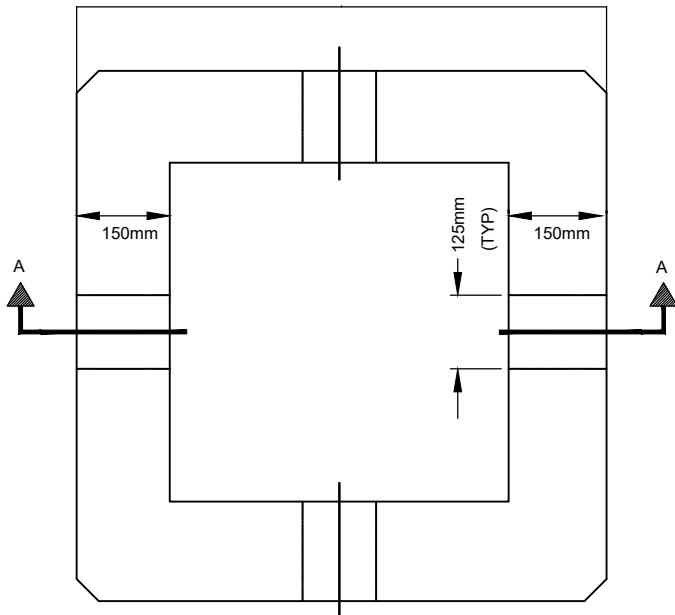
ELECTRICAL HANDHOLES ENTRY OF DIRECT BURIED ENCASED DUCTS

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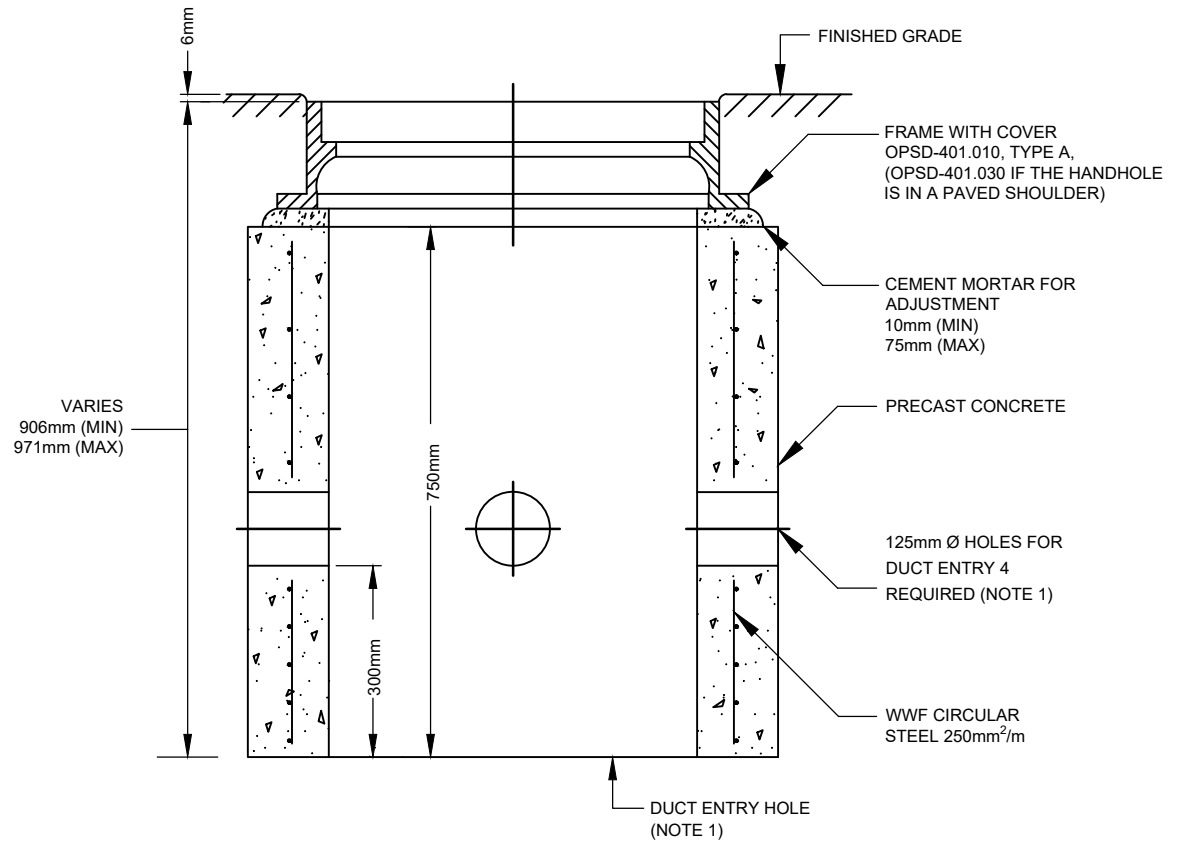
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REVISION No.	DATE: MARCH 2020
	SCALE: N.T.S.

TSD-905



PLAN



SECTION A-A

NOTES:

1. FOR DUCT INSTALLATION DETAILS SEE TSD-905.
2. FOR GENERAL INSTALLATION DETAILS SEE TSD-904.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

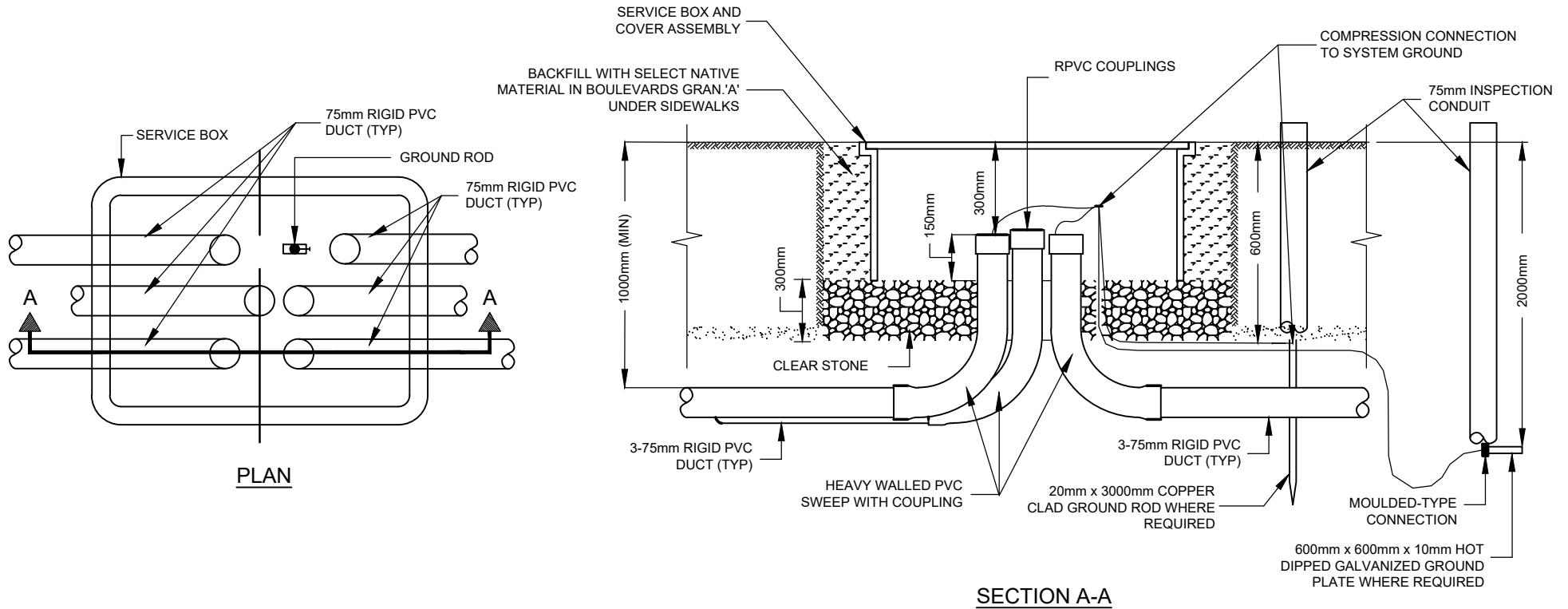
**ELECTRICAL HANDHOLE
PRECAST CONCRETE
600mm x 600mm**

APPROVED

MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020
SCALE: N.T.S.

TSD-906



NOTES:

1. TOP OF SERVICE BOX SHALL BE LEVEL TO CONFORM TO FINISHED GRADE.
2. ALL DUCTS USED IN OPEN CUT INSTALLATION TO BE HEAVY WALLED PVC CONDUITS.
3. END OF ALL DUCTS MUST BE TEMPORARILY CAPPED UNTIL WIRES PULLED.
4. BACKFILL UNDER ROAD AND IN ISLAND TO BE GRANULAR 'A' COMPACTED TO 98% SPMD.
5. BACKFILL IN BOULEVARD TO BE SELECTED EXCAVATED MATERIAL AS SPECIFIED IN SPECIFICATIONS.
6. ALL DUCTS MUST BE FREE AND CLEAR OF ALL DEBRIS AND OBSTRUCTIONS (DIRT, STONE, ETC).
7. CONTRACTOR TO SUPPLY AND PLACE 5mm POLYPROPYLENE FISH ROPE IN ALL DUCTS.
8. CONTRACTOR TO SUPPLY AND INSTALL GROUND ROD/PLATE AND CONNECTOR IN ALL NEW SERVICE BOXES WHERE INDICATED IN CONTRACT.
9. END OF ALL DUCTS MUST HAVE RPVC COUPLINGS INSTALLED.
10. 75mm INSPECTION CONDUIT REQUIRED FOR GROUND ROD/PLATE CONNECTION OUTSIDE OF HANDHOLE.
11. SERVICE BOXES AND COVERS SHALL MEET ANSI/SCTE77-2007 TIER 15 LOAD RATING. 11.

SERVICE BOXES & COVERS					
		SYNERTECTH		QUAZITE	
SIZE (mm)		BOX	COVER	BOX	COVER
330X610	TYPE I	S1324B18FA	S1324HBBOA	PT1324BA18	PT1324HAOO46
432X762	TYPE II	S1730B18FA	S1730HBBOA	PT1730BA18	PT1730HAOO46



STANDARD DETAIL

PREFABRICATED SERVICE BOX ASSEMBLIES

APPROVED

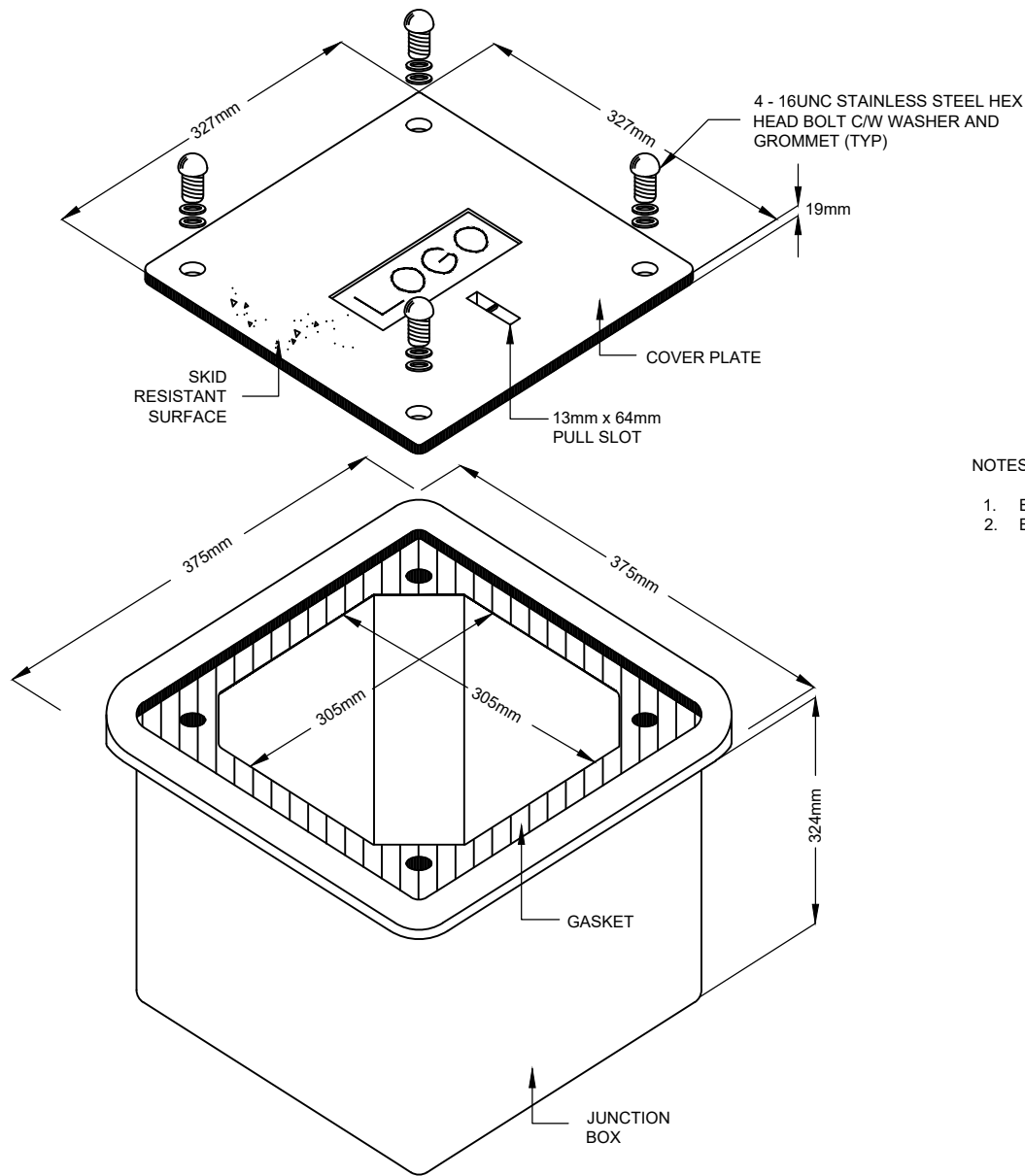
MANAGER OF ENGINEERING DATE

DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020

SCALE: N.T.S.

TSD-907



4 - 16UNC STAINLESS STEEL HEX HEAD BOLT C/W WASHER AND GROMMET (TYP)

NOTES:

1. BOXES SHALL BE STACKABLE CONCRETE COMPOSITE TYPE ONLY.
2. BOXES AND COVER SHALL MEET ANSI/SCTE 77-2007 TIER 15 LOAD RATING.

BOXES (STACKABLE)	
DESCRIPTION	PART No.
NO Base	PC1212BA12

COVERS (BLACK UNLESS LOGO SPECIFIED)	
DESCRIPTION	PART No.
C/W 4 Bolts	PC1212HA0046



STANDARD DETAIL

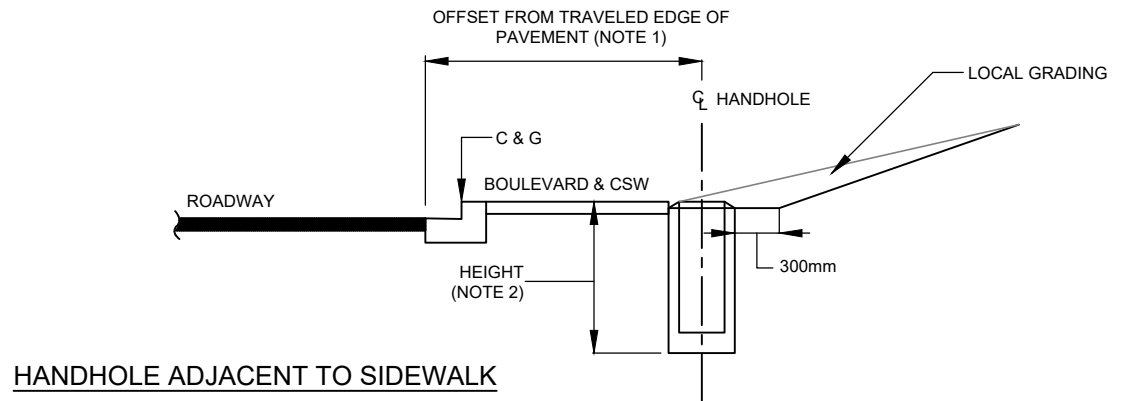
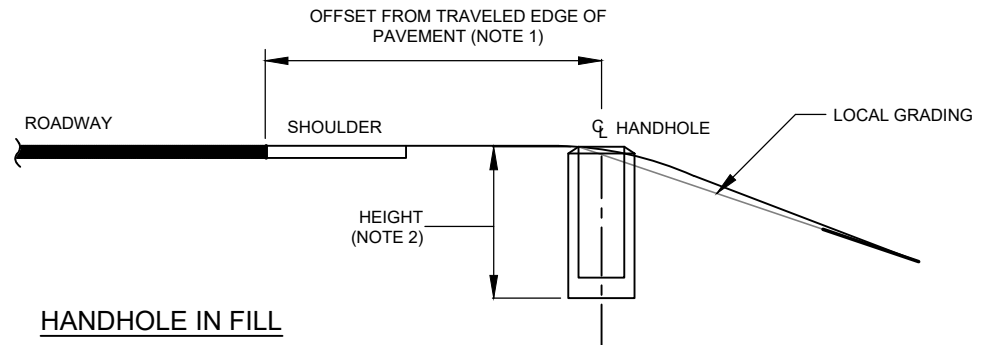
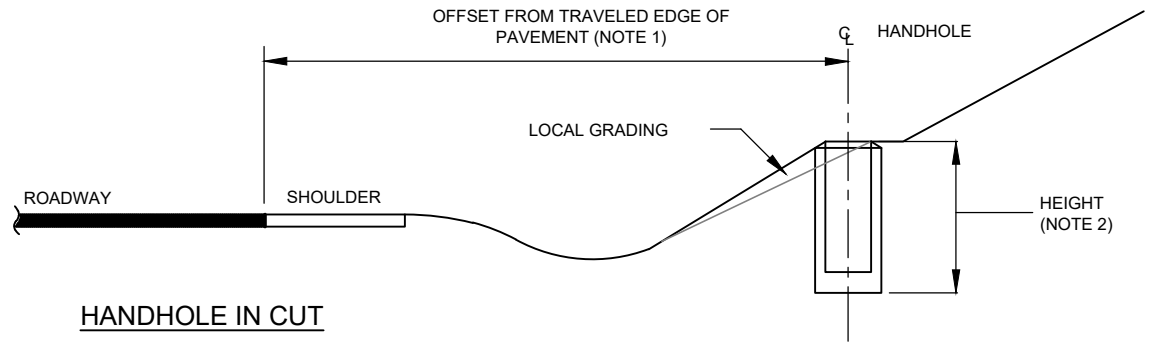
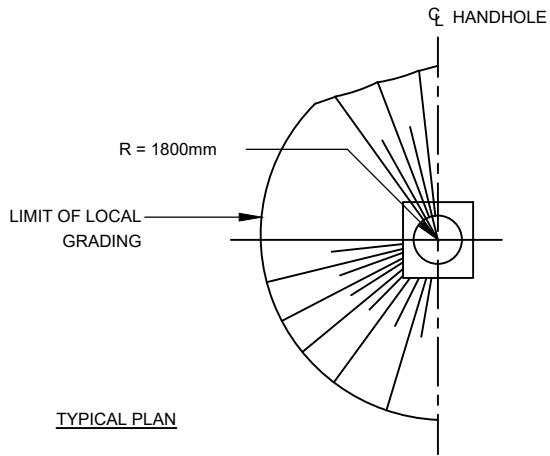
TYPICAL LOOP AND STREET LIGHTING JUNCTION BOX

APPROVED

MANAGER OF ENGINEERING DATE
 DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020
 SCALE: N.T.S.

TSD-908



NOTES:

1. FOR OFFSET AND BURIAL DEPTH, SEE CONTRACT DRAWINGS.
2. TOP ELEVATION OF HANDHOLE SHALL BE MEASURED FROM THE HIGHEST GRADE ELEVATION.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

**ELECTRICAL HANDHOLE
INSTALLATION IN SLOPE**

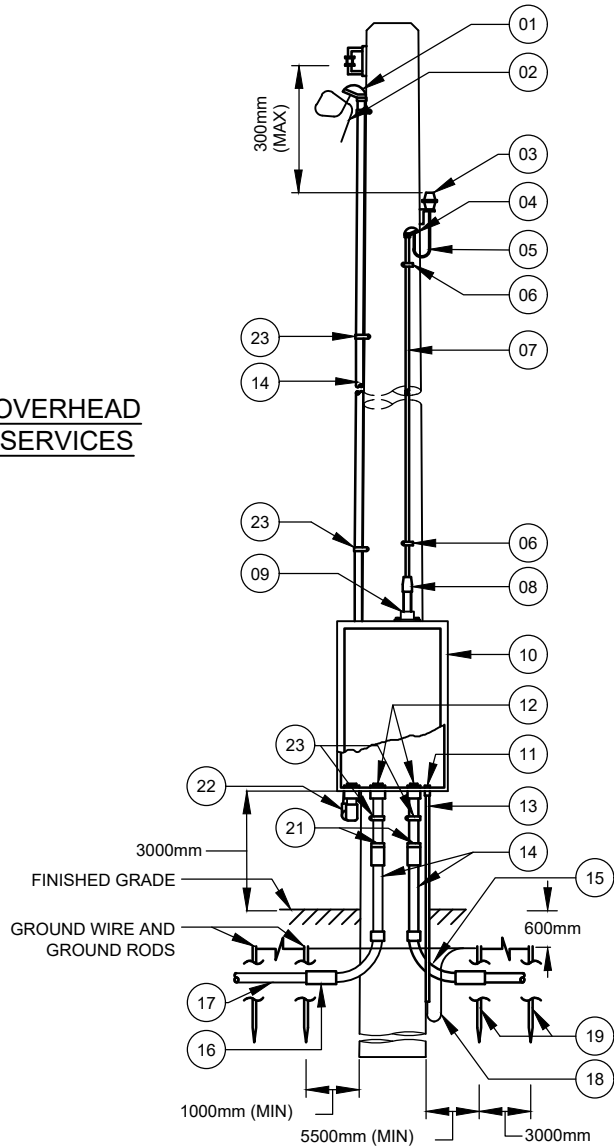
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MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020
SCALE: N.T.S.

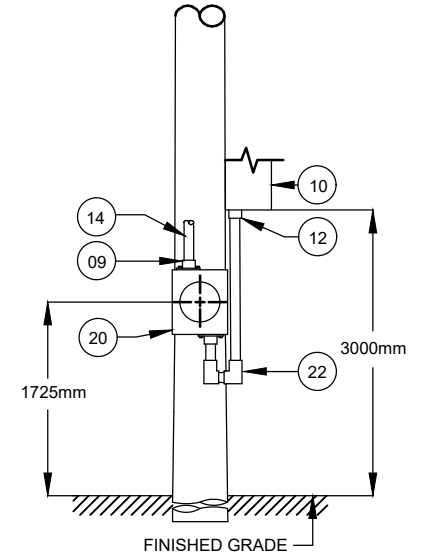
TSD-909

OVERHEAD SERVICES



COMPONENT LIST

- 01 SERVICE ENTRANCE FITTING, 50mm, RIGID PVC
- 02 1000mm COIL OF CABLE FOR CONNECTION TO INCOMING SUPPLY
- 03 PHOTOELECTRIC CONTROLLER WITH BRACKET
- 04 SERVICE ENTRANCE FITTING, 25mm, RIGID PVC
- 05 3 NO. 12 AWG, LOW VOLTAGE CABLE
- 06 CLAMP FOR, 25mm, RIGID PVC
- 07 CONDUIT, 25mm, RIGID PVC
- 08 REDUCING ADAPTER, 50mm TO 25mm, RIGID PVC
- 09 METER HUB, 50mm, RIGID PVC
- 10 SUPPLY CONTROL CABINET
- 11 TERMINAL ADAPTER AND LOCKNUT, 20mm, RIGID PVC
- 12 TERMINAL ADAPTER AND LOCKNUT, 50mm, RIGID PVC
- 13 CONDUIT, 20mm, RIGID PVC
- 14 CONDUIT, 50mm, RIGID PVC
- 15 STANDARD 90° ELBOW, 50MM, RIGID PVC
- 16 ADAPTER COUPLING, 50mm
- 17 CONDUIT, 50mm, POLYETHYLENE OR STEEL AS INDICATED
- 18 GROUND WIRE, NOTE 1
- 19 GROUND ROD, NOTE 1
- 20 METER BASE, 100A, 600V
- 21 EXPANSION COUPLING.
- 22 ACCESS FITTING TYPE LB, 50mm RIGID PVC
- 23 CLAMP FOR, 50mm, RIGID PVC



DETAIL OF METER BASE

NOTES:

1. NUMBER OF GROUND RODS AND SIZE OF GROUND WIRE SHALL BE AS INDICATED IN THE CONTRACT.
2. THE METER BASE (IF REQUIRED) SHALL BE BONDED IN CONFORMANCE WITH THE REQUIREMENTS OF THE ELECTRICAL SAFETY AUTHORITY. METER BASE SHALL BE PLACED ON THE SIDE OF THE POLE THAT IS MOST ACCESSIBLE TO THE SUPPLY AUTHORITY.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

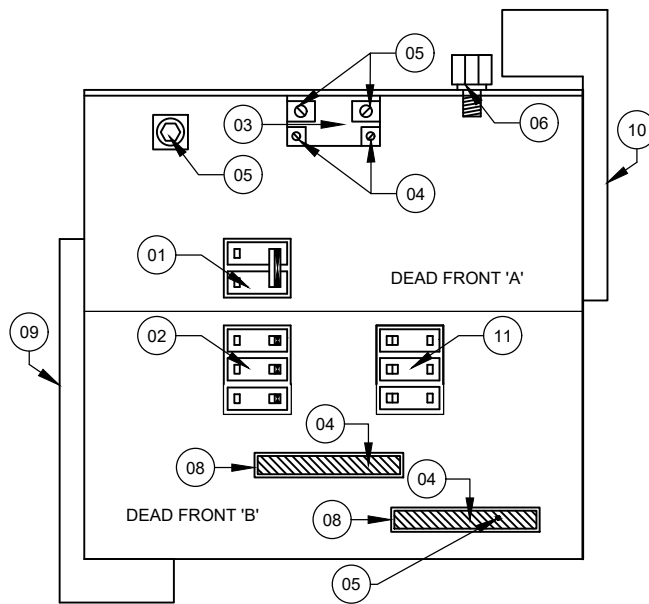
**SUPPLY CONTROL CABINET
INSTALLATION OVERHEAD
SERVICES BOTTOM ENTRY**

APPROVED

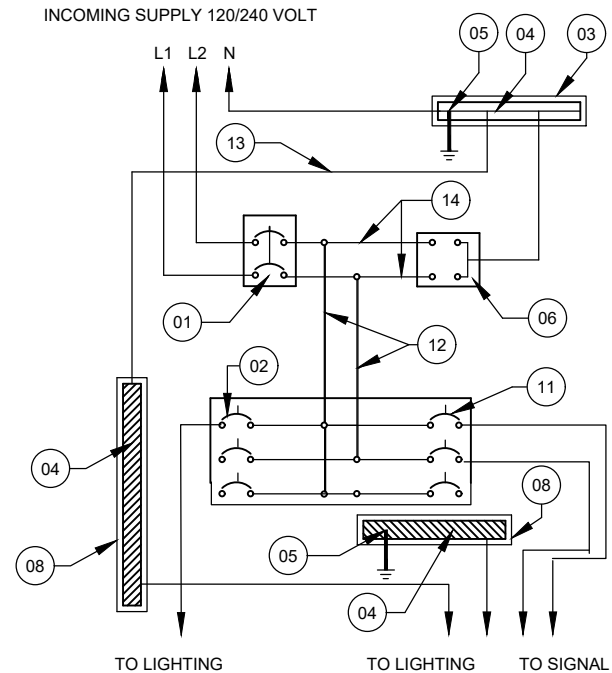
.....
MANAGER OF ENGINEERING DATE
.....
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020
SCALE: N.T.S.

TSD-910








EQUIPMENT LAYOUT



SCHEMATIC WIRING DIAGRAM

LEGEND

-  DENOTES TERMINAL CONNECTION.
-  DENOTES #6 AWG RWU90 WIRE.
-  DENOTES #12 AWG RWU90 WIRE.
-  DENOTES FIELD WIRING (SIZES ARE INDICATED ELSEWHERE ON THE CONTRACT DRAWINGS).
-  GROUND LINK.

ELECTRICAL EQUIPMENT LIST

- 01 MAIN CIRCUIT BREAKER, 240V, 100A, 2-POLE.
- 02 BRANCH CIRCUIT BREAKERS, 120/240V, 35A, 1-POLE.
- 03 SOLID NEUTRAL ASSEMBLY, 100A MIN. AMPACITY.
- 04 GROUND LUG FOR #6 AWG STRANDED COPPER GROUND WIRE.
- 05 GROUND LUG FOR #2/0 AWG STRANDED COPPER GROUND WIRE.
- 06 SECONDARY LIGHTNING ARRESTER, 650V, 2-POLE.
- 07 DRIP SHIELD.
- 08 LOCATE SECONDARY NEUTRAL AND GROUND BARS ACCORDING TO CSA AND PROJECT REQUIREMENTS.
- 09 PRIMARY BARRIER.
- 10 SECONDARY BARRIER.
- 11 BRANCH BREAKER, 240V, 60A, 1 POLE.
- 12 COPPER BUS BAR.
- 13 #6 AWG RWU90 WIRE.
- 14 #12 AWG RWU90 WIRE.



STANDARD DETAIL

**LS3M SUPPLY CONTROL CABINET
ASSEMBLY TYPE 3M 120/240V,
100A, 1-PHASE, 3-WIRE**

APPROVED

MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020
SCALE: N.T.S.

TSD-911

BILL OF MATERIALS				
ITEM NO.	QTY.	DESCRIPTION	MANUFACTURER	PART NO.
01	1	MAIN BREAKER 100A 2P	SQ.D	QO2100
02	5	BRANCH BREAKERS 35A 1POLE	SQ.D	QO135
11	1	BRANCH BREAKER 60A 1 POLE	SQ.D	QO160
03	1	SOLID NEUTRAL ASSEMBLY 100A MIN.	SQ.D	CH200SN
04	1	GROUND LUG FOR #6 COPPER WIRE		
05	1	GROUND LUG FOR #2/0 COPPER	T&B	ADR 25-21
06	1	SECONDARY LIGHTING ARRESTER	GE	9L15ECB001
07	1	DRIP SHIELD	B&M	CUSTOM

NOTES:

1. TYPE 3M NAMEPLATE SEE DETAIL BELOW.
2. PANEL IS SERVICE ENTRANCE READY.

(MANUFACTURER) TYPE 3M 100 AMP 120/240 VOLT (DATE OF MANUFACTURE)
--

NAMEPLATE SAMPLE



STANDARD DETAIL

LS3M SUPPLY CONTROL
 CABINET ASSEMBLY TYPE 3M
 EQUIPMENT LIST

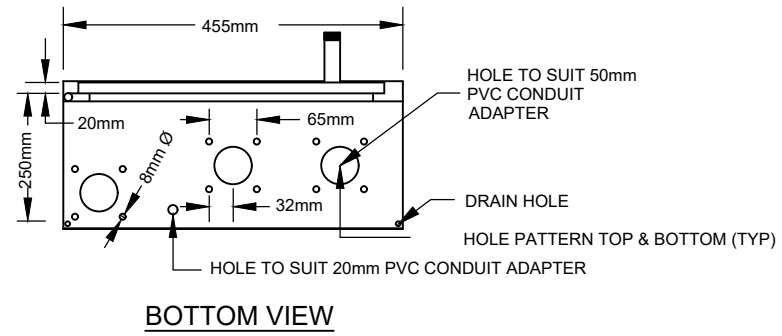
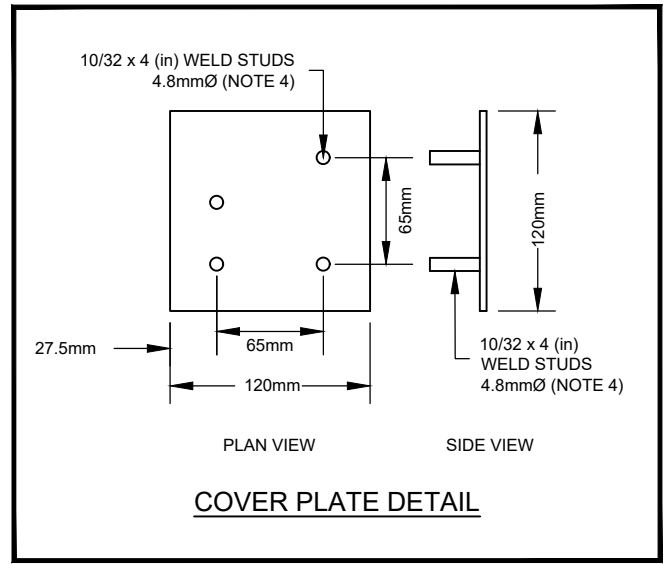
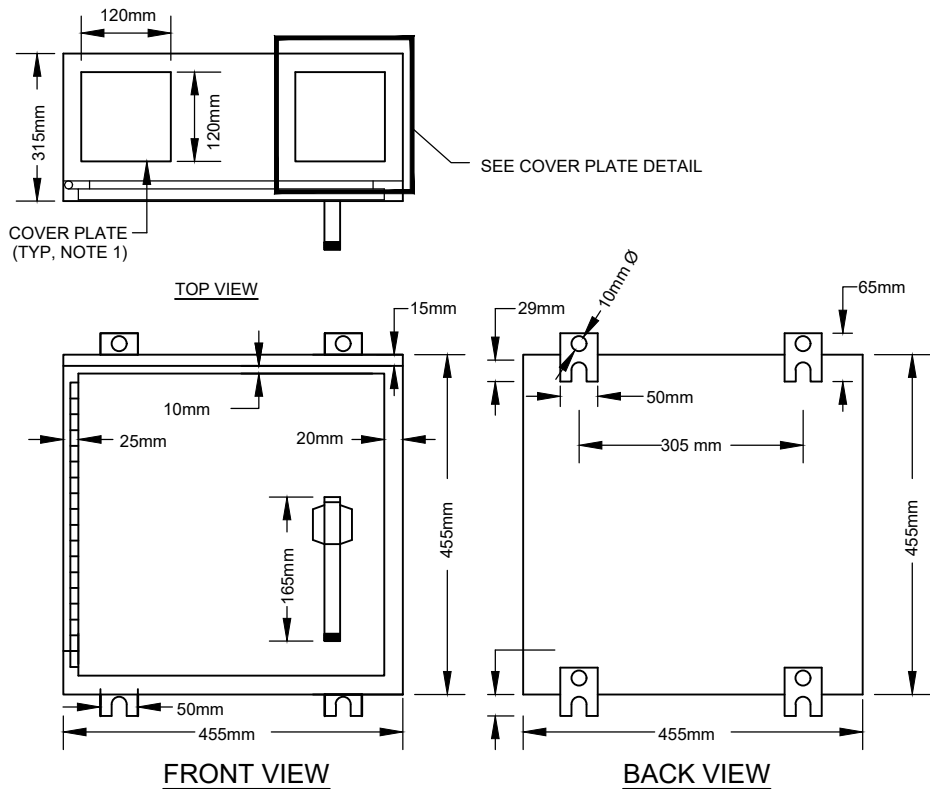
APPROVED

.....
 MANAGER OF ENGINEERING DATE

 DIRECTOR OF OPERATIONS DATE

REVISION No.	DATE: MARCH 2020
	SCALE: N.T.S.

TSD-912



NOTES:

1. ALL PLATES SHALL BE THE SAME SIZE.
2. BOLT AND HOLE PATTERN TO SUIT METER HUB.
3. GROUND STUD SHALL BE COMPLETE WITH WASHERS AND NUTS.
4. COVER PLATE STUDS SHALL BE COMPLETE WITH WASHERS AND NUTS.
5. ALL DIMENSIONS ARE IN MILLIMETRES WITH TOLERANCES $\pm 3\text{mm}$ UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

LS3M SUPPLY CONTROL
CABINET ASSEMBLY TYPE 3M
ENCLOSURE

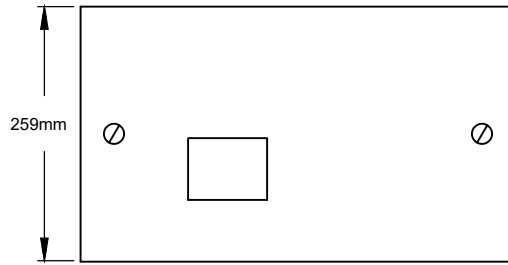
APPROVED

MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

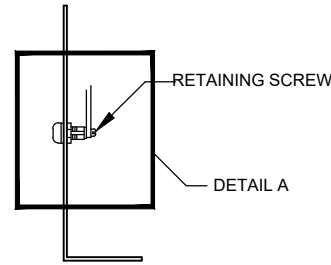
REVISION No. DATE: MARCH 2020
SCALE: N.T.S.

TSD-913

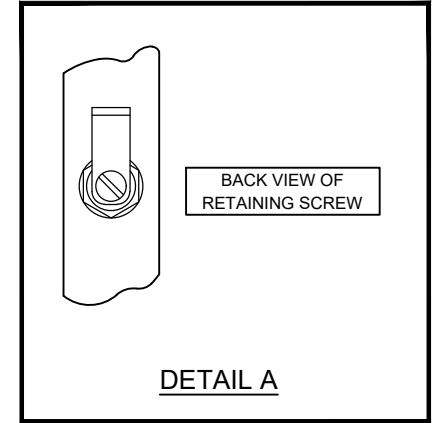
DEAD FRONT A



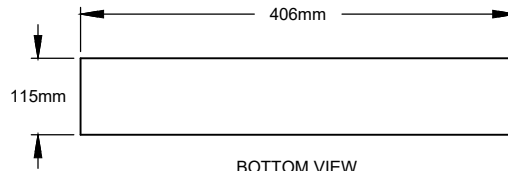
FRONT VIEW



SIDE VIEW

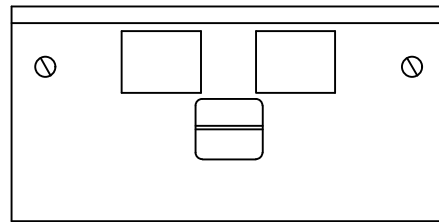


DETAIL A

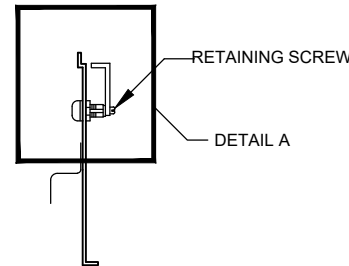


BOTTOM VIEW

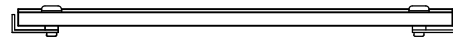
DEAD FRONT B



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES WITH TOLERANCES $\pm 3\text{mm}$ UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

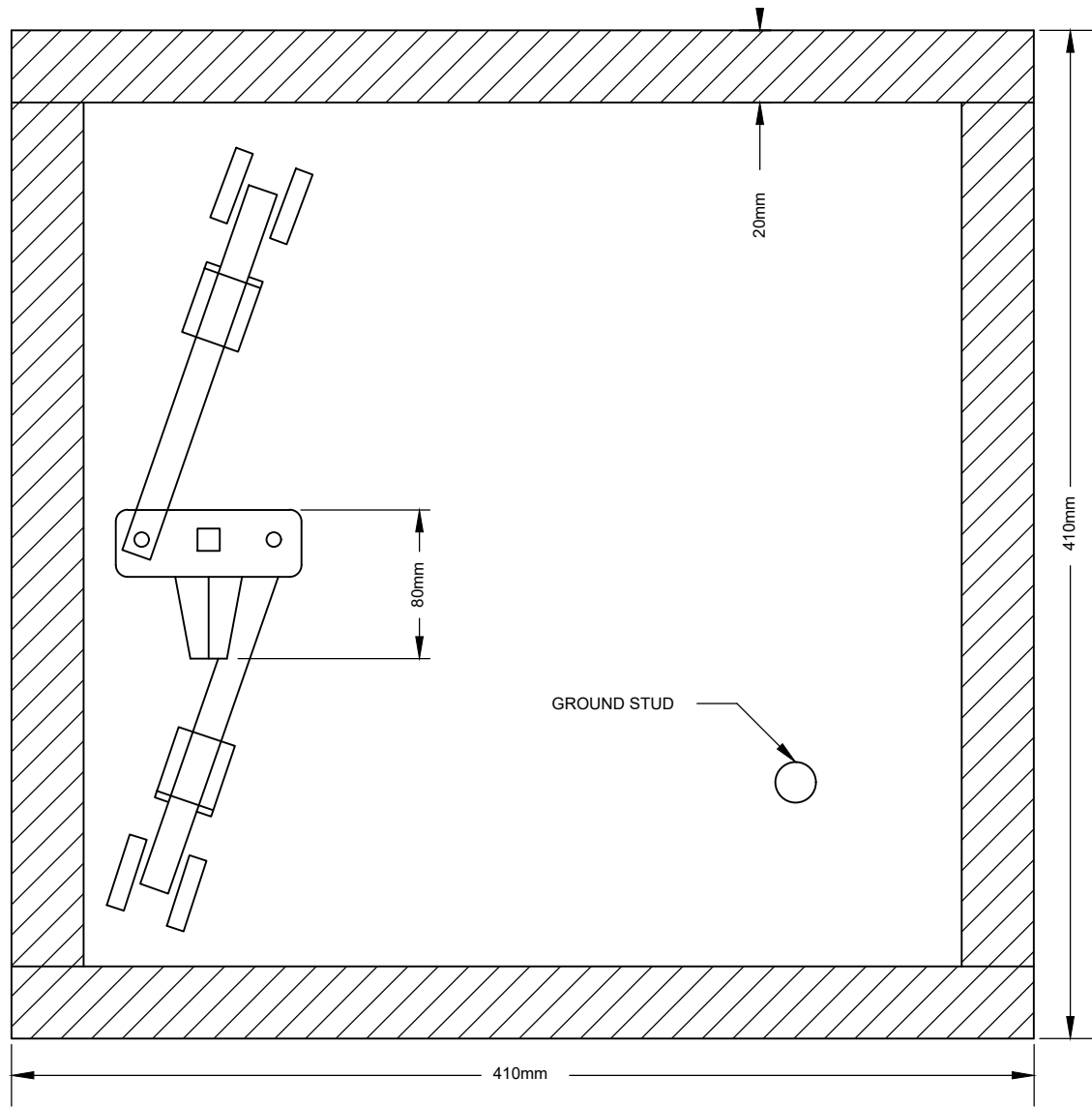
LS3M SUPPLY CONTROL
CABINET ASSEMBLY TYPE 3M
DEAD FRONT PANEL

APPROVED

MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020
SCALE: N.T.S.

TSD-914



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES WITH TOLERANCES $\pm 3\text{mm}$ UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

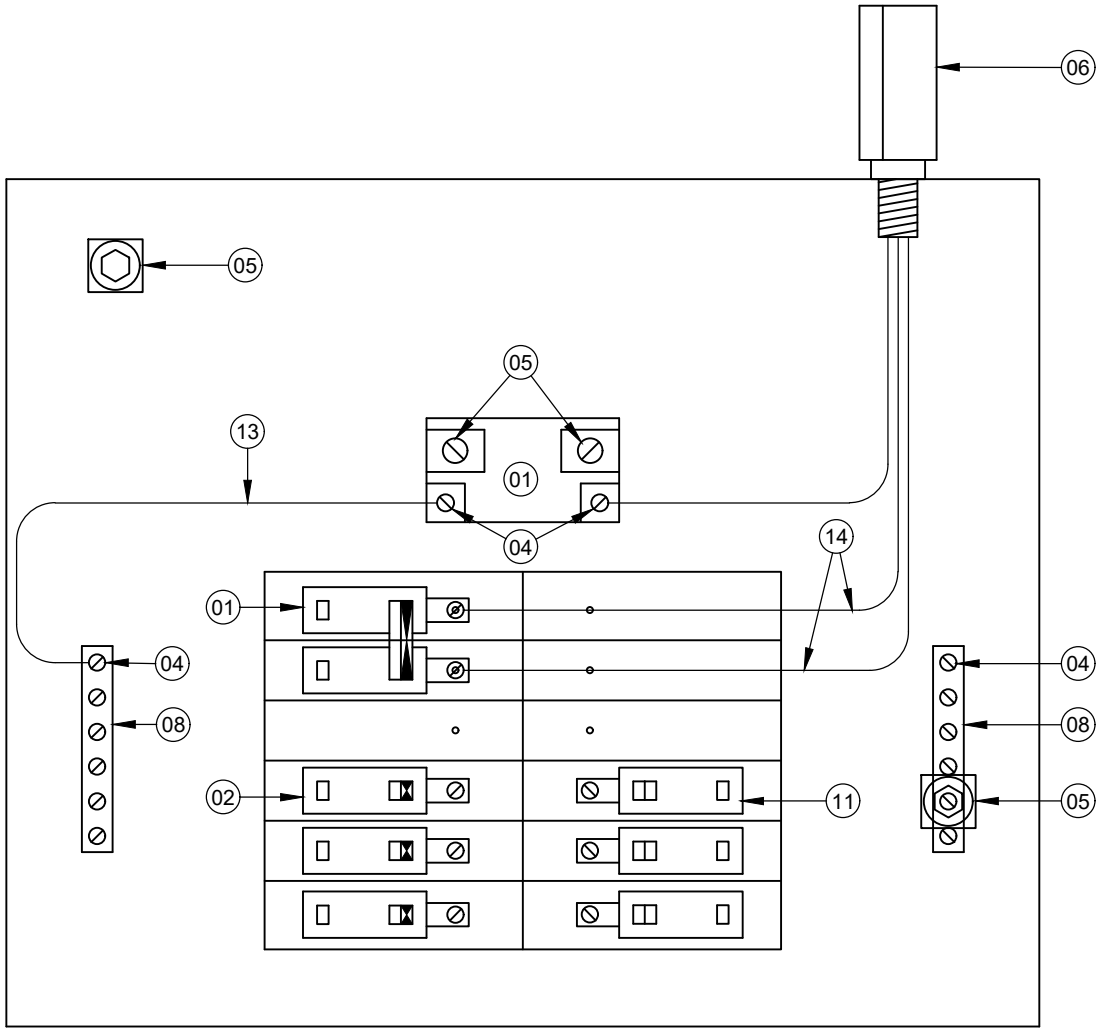
**LS3M SUPPLY CONTROL
CABINET ASSEMBLY TYPE 3M
DEAD DOOR LATCH**

APPROVED

MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No.	DATE: MARCH 2020
	SCALE: N.T.S.

TSD-915



ELECTRICAL EQUIPMENT LIST

- 01 MAIN CIRCUIT BREAKER, 240V, 100A, 2-POLE.
- 02 BRANCH CIRCUIT BREAKERS, 120/240V, 35A, 1-POLE.
- 04 GROUND LUG FOR #6 AWG STRANDED COPPER GROUND WIRE.
- 05 GROUND LUG FOR #2/0 AWG STRANDED COPPER GROUND WIRE.
- 06 SECONDARY LIGHTNING ARRESTER, 650V, 2-POLE.
- 08 LOCATE SECONDARY NEUTRAL AND GROUND BARS ACCORDING TO CSA AND PROJECT REQUIREMENTS..
- 11 BRANCH BREAKER, 240V, 60A, 1 POLE.
- 13 #6 AWG RWU90 WIRE.
- 14 #12 AWG RWU90 WIRE.



STANDARD DETAIL

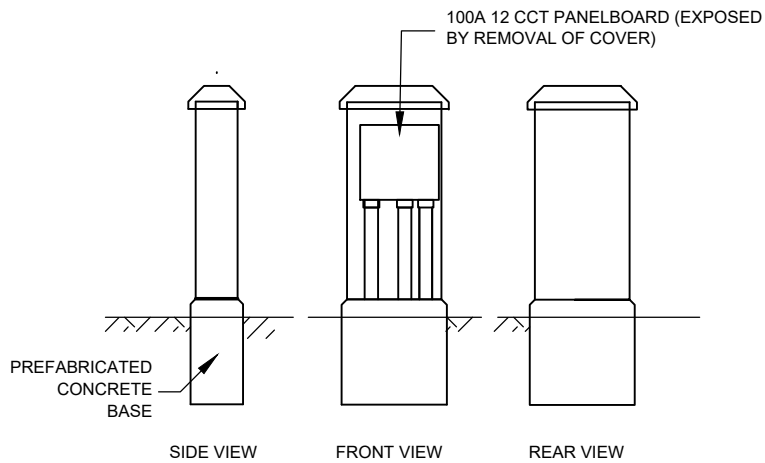
LS3M SUPPLY CONTROL
CABINET ASSEMBLY TYPE 3M
INSTRUMENT LAYOUT

APPROVED

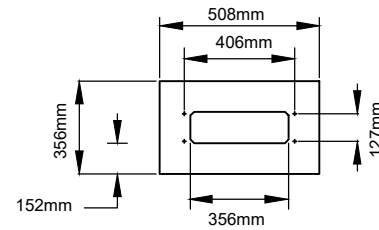
MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020
SCALE: N.T.S.

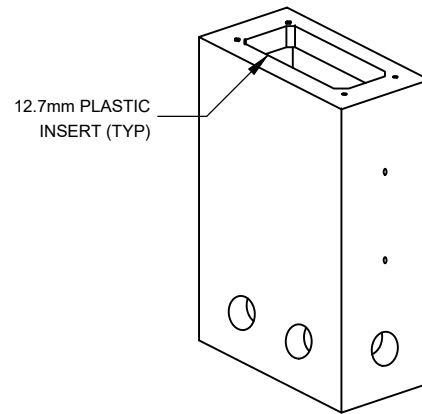
TSD-916



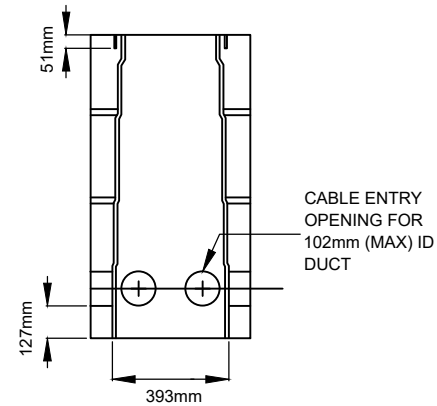
42" PEDESTAL



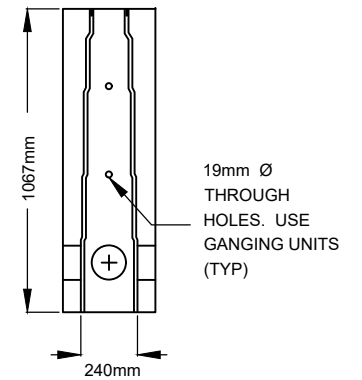
TOP VIEW



ISOMETRIC VIEW



FRONT VIEW



SIDE VIEW

CONCRETE BASE

NOTES:

1. POWER SUPPLY PEDESTAL ASSEMBLY (PEDESTAL SOLUTIONS INC.) OR APPROVED EQUIVALENT.
2. PREFABRICATED CONCRETE BASE (BY BROOKLYN CONCRETE, MODEL BCP 20PED) OR APPROVED EQUIVALENT.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

**POWER SUPPLY (42")
PEDESTAL AND BASE
ASSEMBLY**

APPROVED

MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: DEC 2021
SCALE: N.T.S.

TSD-917

DIMENSION "c"
(NOTE 1)

OCTAGONAL POLE CAP

230mm

DIMENSION "a"
(NOTE 1)

230mm

460mm

DIMENSION "b"
(NOTE 1)

POLE

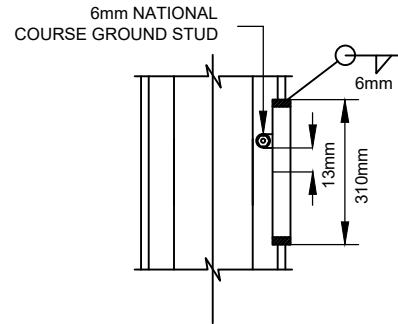
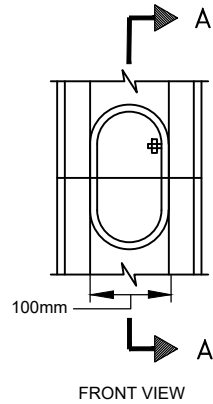
11 GAUGE GALVANIZED
OCTAGONAL STEEL TRAFFIC
SIGNAL POLE SEE
FABRICATION DATA.

OCTAGONAL POLE

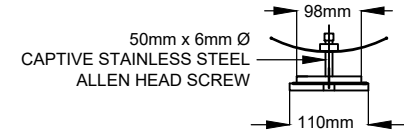
HANDHOLE DETAIL 'A'
COVER DETAIL 'B'

BASE PLATE

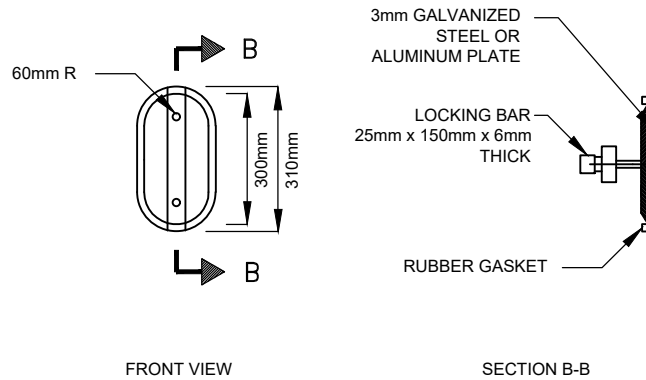
DIMENSION "b"
(NOTE 1)



HAND HOLE DETAIL 'A'



FABRICATION DATA			
POLE TYPE	POLE LENGTH "a" m	BOTTOM OUT. Ø "b" mm	TOP OUT. Ø "c" mm
PEDESTAL		206	206
8520	6.1	184	100
8524	7.3	184	100
8535	10.7	254	100
8545	13.7	254	100



HAND HOLE COVER DETAIL 'B'

NOTES:

1. THE DIAMETER SHALL BE MEASURED ACROSS THE FLATS.
2. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SHOWN.



STANDARD DETAIL

GALVANIZED OCTAGONAL
STEEL POLE, BASE MOUNTED

APPROVED

MANAGER OF ENGINEERING DATE
DIRECTOR OF OPERATIONS DATE

REVISION No. DATE: MARCH 2020

SCALE: N.T.S.

TSD-918