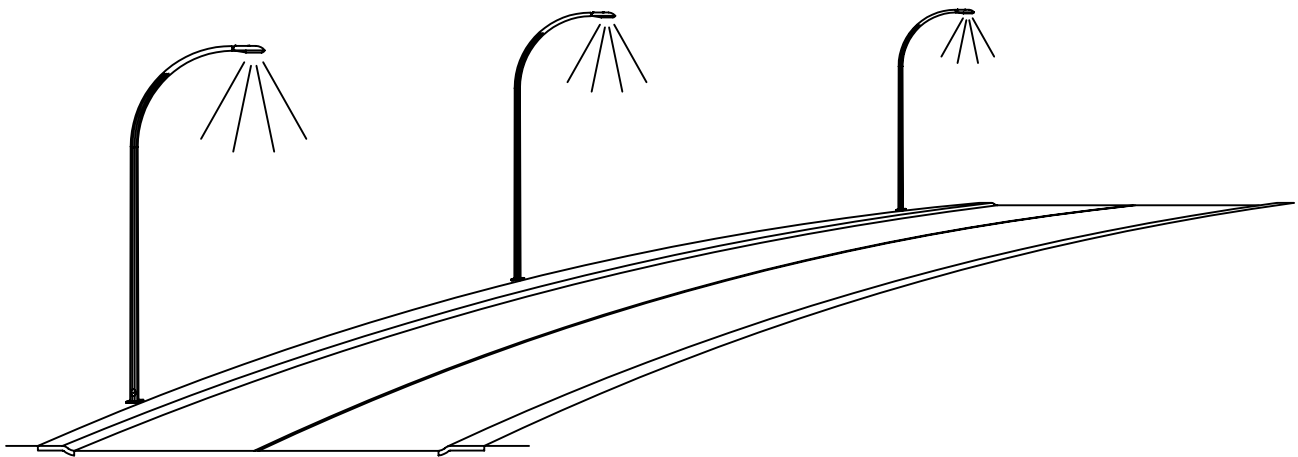




THE CITY OF

CALGARY

ROADS



STANDARD
SPECIFICATIONS
STREET LIGHTING CONSTRUCTION

2006

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THE LATEST VERSION OF THE 2006 STANDARD SPECIFICATIONS FOR STREET LIGHTING CONSTRUCTION CAN BE FOUND AT <http://www.calgary.ca/roads> UNDER THE CONTRACTORS AND CONSULTANTS PAGE.

UTILITY AND PIPELINE LOCATION NUMBERS

Prior to commencement of any work the Contractor shall contact the appropriate agencies listed below to locate the existing underground utilities and pipelines in or adjacent to the construction work site. The utility or pipeline agencies shall be contacted two working days prior to commencement of work.

FIELD LOCATION SERVICE CALLS:

ATCO)	
ENMAX POWER CORPORATION)	ALBERTA 1 st CALL
TELUS)	1-800-242-3447
CALGARY WATERWORKS)	
CALGARY WASTEWATER & DRAINAGE)	
PETROGAS PROCESSING LIMITED)	
HOME OIL COMPANY LTD)	
PETRO-CANADA (ALBERTA PRODUCTS PIPELINE))	

SHAW CABLE 250-8989
PETRO-CANADA (VALLEY PIPELINE) ... 933-4711

EXCAVATION PERMITS:

Excavation Permits shall be obtained from The City of Calgary Land Use & Mobility, 2nd Floor of the Calgary Roads Maintenance & Plants Building at 651 – 25 Ave. S.E., prior to excavation in public right of ways.

ELECTRICAL PERMITS:

Electrical Permits shall be obtained from The City of Calgary Building Regulations, 3rd Floor Municipal Building 800 MacLeod Trail SE (fax 268-3624) prior to the start of any electrical contract work.

EMERGENCY SERVICE:

If you accidentally damage the coating, scrape, sever or rupture any underground line please call the appropriate emergency number immediately.

Watch for above ground structures such as utility pedestals, power lines and hydrants that are located in roadways, lanes and private property. If they are damaged please report the incident immediately.

EMERGENCY CALLS – 24 HRS SERVICE:

ATCO GAS	245-7222
ENMAX TROUBLE LINE	514-6100
CALGARY WASTEWATER & DRAINAGE, WATERWORKS.....	DIAL 311
CALGARY ROADS TROUBLE LINE.....	DIAL 311
TELUS	DIAL 611
SHAW CABLE	250-8989
PETRO-CANADA (ALTA. PRODUCTS PIPELINE EDMONTON.....	1-800-661-5642
(VALLEY PIPELINE STETTLER).....	1-800-661-5642
HOME OIL CO. LTD.	232-5000
PETROGAS PROCESSING	266-0023

STREET LIGHTING POWER SUPPLY:

ENMAX (EPC) – Henry Bandura 514-3700

**THE CITY OF CALGARY
PLANNING & BUILDING DEPARTMENT**

**PERMIT FEE SCHEDULE
(Building, Electrical, HVAC, and Plumbing & Gas)
(Effective 1999 May 07)**

Job cost (labour and materials) up to and including \$1,000.	\$35 minimum fee Plus SCC*
--	-------------------------------

Job cost over \$1,000.	\$35 minimum fee Plus \$6 per \$1,000 Plus SCC*
------------------------	---

To calculate fees, use the following formula (rounding up to the next hundred):

$$\text{Job Cost}^{**} \div \$1,000 \times \$6 + \$35 + \text{SCC}^* = \text{Permit Fee}$$

EXAMPLE - Job Cost is \$2,050.00

$$\$2,100 \div \$1,000 \times \$6 + \$35 = \$47 + \text{SCC}^* = \text{Permit Fee}$$

***SCC (Safety Codes Council) surcharge:**

Electrical, Plumbing, and Gas permits are subject to a \$3 surcharge.
Building and HVAC permits are subject to a \$5 surcharge.

****Job Cost:**

This total includes labour and all materials (customer or contractor supplied).

350.00.00 GENERAL**350.01.00 SCOPE**

This Section covers the requirements for street lighting construction works. Notwithstanding any other specification, any deviation from these standards shall constitute non-compliance and may result in the rejection of the work.

The following most current City of Calgary standard documents shall form part of, and shall be read in conjunction with The Specifications:

- Standard General Conditions
- Standard Specifications Roads Construction
- Force Account Rates
- Worksite Temporary Traffic Control Manual
- Contractor Safety Manual
- Development Guidelines and Standard Specifications – Landscape Construction
- Design Guidelines for Subdivision Servicing
- Traffic Control Policy Manual

350.02.00 WORK REGULATIONS

All electrical work shall comply with the latest edition of the Canadian Electrical Code - Part 1. In addition, any applicable Standata as published by Alberta Municipal Affairs, Electrical Safety Codes, shall apply.

The Contractor shall also conform to all applicable regulations of Alberta Human Resources and Employment (AHRE), Occupational Health and Safety Act (OHSA).

The Contractor shall ensure compliance with OHSA General Safety Regulation 26 (1) – Overhead Power Lines.

350.02.01 PREQUALIFIED STREETLIGHT CONTRACTORS

The City of Calgary has pre-qualified electrical contractors to construct or maintain streetlighting within the City of Calgary. Only pre-qualified contractors are permitted to work on streetlighting systems that will be maintained and operated by the City. For the current list of prequalified streetlight contractors, contact Finance – Supply at 268-1843.

350.03.00 PERMITS & INSPECTIONS

A Registered Electrical Contractor under the provisions of the Electrical Safety Codes Act shall perform all electrical work. The Registered Electrical Contractor shall be licensed in The City of Calgary and shall appoint at least one Registered Representative whose qualifications shall comply with the provisions of the Electrical Safety Codes Act. The Registered Representative must have a current Master Electrician certification. The Contractor shall provide the Engineer with the name and phone number of the Registered Representative prior to starting construction.

Prior to construction the Contractor shall obtain and pay for all permits required under the provisions of the Electrical Safety Codes Act. The Contractor shall submit a copy of all permits to the Engineer prior to starting construction.

Refer to The City of Calgary, Building Regulations – Permit Fee Schedule to determine the cost of the electrical permit. The work to be included under the electrical permit shall include, but not necessarily be limited to:

- Supply and installation of luminaires, lamps and associated materials and wiring;
- Supply and installation of underground conduit, wiring and associated materials;
- Supply and installation of all service and control equipment and associated materials;
- All costs and fees related to the supply of electrical service from Enmax Power Corporation (EPC).

The Contractor shall obtain an Excavation Permit in accordance with Chapter 300 – General.

An Excavation Permit will not be required for installations in new URD subdivisions and for joint trench installations done under the 4-Party Agreement.

The designated City of Calgary, Roads, Street Lighting Inspector will inspect the installation on a regular basis during the course of the project in conjunction with the Engineer.

The City will not accept the installation until all work has been approved by the City of Calgary Electrical Safety Codes Inspector, by the Electrical Safety Branch and by the Engineer.

“Engineer” means:

- (a) the Manager, Office for Corporate Engineering, his representative or appointee, or
- (b) the Consulting Engineer or Architect engaged by the City to supervise the work, or
- (c) the Project Manager designated in the notice.

350.04.00 BASIS FOR PAYMENT

Payment for work carried out under these Specifications shall be under either:

- a) Lump Sum - no specific unit of payment for work in this category.
- b) Unit Rate - work paid for by unit, such as tonne each, square metre each, etc.

Payment under either mode of payment shall be considered full compensation for all labour, materials and equipment necessary to complete the work.

- c) Force Account - When directed by the Engineer, additional work not covered by either Lump Sum or Unit Rate shall be paid for under the Schedule of Force Account Rates.

350.05.00 ELECTRICAL ENERGY SUPPLY

The electrical energy will be supplied from the EPC secondary distribution system unless otherwise noted on the plans.

The Contractor shall advise EPC when power connection is required. The procedure for arranging for power connection can be found in Appendix F to this document. The Contractor will pay all utility connection costs.

Should the disconnection of existing power service(s) be required, the Contractor shall undertake notification to and coordination with EPC. The procedure for arranging for disconnection of existing service(s) can be found in Appendix F to this document. The Contractor shall pay all costs for the disconnection of existing service(s).

350.06.00 MATERIALS

The City at a pre-determined cost will provide those materials listed in the Special Provisions Materials Schedule to the Contractor. The Contractor shall supply all other materials necessary for the satisfactory completion of the project.

All electrical equipment and materials shall be approved in accordance with the requirements defined in the Alberta Safety Codes Council Standata, Electrical Safety Information Bulletin LEG-ECR (current revision), and shall meet the approval of the Electrical Safety Codes Inspector.

All materials shall be new and conform to the requirements of the Plans, Drawings, other Subsections of the Specifications and the Standard Specifications for Street Lighting Materials.

A copy of the Standard Specifications for Street Lighting Materials may be purchased from:

The City of Calgary
Engineering Services, Building Grades Counter,
6th Floor, Municipal Building
800 MacLeod Trail SE
Calgary, Alberta T2P 2M5
Phone (403) 268-5703

All materials contained in the Standard Specifications for Street Lighting Materials, and as listed in Appendix A to this document, shall be provided by The City at the Contractor's cost.

Where applicable, the materials specified in the Plans and Special Provisions shall be supplied in accordance with the City's "Approved Supplier and Product List." This list identifies the manufacturer, the approved product, the product model number and the product approval date, and can be found in Appendix B to this document.

Where the City provides materials, the Contractor shall assume all responsibility for:

- Correctness of type and quantity of product;
- Protection and storage of materials;
- Insurance for the full replacement value of all City supplied materials.

Where alternate materials are permitted, approval must be received from the Engineer prior to their use. The "Alternate Materials Approval" process can be found in Appendix C to this document.

350.07.00 UTILITIES

Existing utilities are generally not shown on the street lighting electrical Plans. Where utilities are shown on the Plans, their locations are approximate.

The Contractor shall ensure that all existing utilities such as power lines, fibre optic cables, telephone lines, gas and oil pipelines, sewers, water works, etc. are located and protected. The Contractor shall at all times conduct its operations in accordance with the requirements of the utility authorities having jurisdiction. In the event of any damage to utilities, the Contractor shall be held responsible for the cost of all repairs and restoration to the satisfaction of the Engineer and the Utility Authority.

All costs for locating and protection of utilities shall be considered incidental to the work.

350.08.00 EXISTING STREET LIGHTING SYSTEMS

Existing street lighting systems, which are not compliant with the Standard Specifications Street Lighting Construction 2001, are considered "grandfathered" to the City.

Where street light luminaires are installed on utility infrastructure, they shall be considered "joint use" street lighting installations. Existing and future "joint use" installations shall be owned by the City, and maintained by EPC, its designated maintenance contractor, or a pre-qualified streetlight contractor who in addition meets the following:

- a) Employs ONLY Power Linemen or Power System Electricians as defined under applicable Alberta legislation, in performing streetlight works.
- b) All workers are "Utility Employees" as defined under the AECUC, Safety Codes Act.
- c) Regardless of any designation, all workers will adhere to the limits of approach of a "Utility Employee" as defined or set out in the AECUC.
- d) All workers are "Competent" as defined under the Alberta Occupational Health and Safety Code.

350.09.00 CONSTRUCTION COMPLETION CERTIFICATE

The Engineer shall issue a Construction Completion Certificate in accordance with The City of Calgary Design Guidelines for Subdivision Servicing and The City of Calgary Design Guidelines for Streetlighting when the work has been completed.

350.10.00 MAINTENANCE PERIOD

After the issuance of the Construction Completion Certificate the Contractor shall be responsible for all works installed by it. If during the construction and maintenance period any defects become apparent in any of the utilities or improvements installed or constructed by the Contractor, the Engineer will request the Contractor to perform the repairs or replacement. If in the opinion of the Engineer, the Contractor fails to make the required repairs and replacement in a timely manner, the City may do the repairs or replacements and recover the full costs from the Contractor.

The maintenance period for streetlight installations is generally two years from the date of the Construction Completion Certificate for streetlighting, but will end only with the issuance of Final Acceptance Certificate for streetlighting.

350.11.00 FINAL ACCEPTANCE CERTIFICATE

After two years from the issuance of the Construction Completion Certificate, and after having remedied all the deficiencies, the Contractor can apply for a final inspection of the work and issuance of the Final Acceptance Certificate.

351.00.00 UNDERGROUND**351.01.00 CONCRETE BASES****351.01.01 General**

The use of the term “concrete bases” in Chapter 351.01 shall also mean “concrete spread footings” where applicable.

The Drawings make reference to concrete bases that are poured in place or precast. The City shall be the nominated supplier of all precast concrete bases at the applicable unit cost per each.

The Contractor shall supply and install all poured in place concrete bases in accordance with the latest issue of the Construction Standards. Poured-in-place concrete bases shall be constructed in the excavation and shall be in accordance with:

- Drawings 454.2002.001, 454.2002.002 and 454.2002.003;
- Drawings 454.2003.001, 454.2003.002 and 454.2003.003;
- Drawings 454.2004.001, 454.2004.002 and 454.2004.003.

Supply and installation of concrete bases shall include the following as applicable:

- Excavation, backfill and compaction;
- Supply and installation of concrete and formwork;
- Supply and installation of reinforcing steel;
- Supply and installation of conduit;
- Installation of City supplied anchor bolts and/ or rebar cages;
- Installation of City supplied precast concrete bases.

The Contractor shall check for conflicts with overhead lines prior to excavating for the placement of concrete bases. If it appears there may be an overhead conflict, as per Drawing 454.2081.001, the Contractor shall contact the Engineer for further instructions. If the Contractor installs a concrete base in a location where the pole conflicts with overhead power lines, the Contractor shall remove the pole (if it has been erected) and relocate the concrete base to a location approved by the Engineer. The Contractor shall pay all costs related to the base relocation, including costs for the removal and re-erection of the pole.

351.01.02 Excavation and Backfill for Concrete Bases

Excavations for concrete bases shall meet the requirements, but not the Quantities and Payment provisions of Chapter 304 – Utility Trench Backfill Regulations.

All excavation work shall be carried out as required to suit the specific type of concrete base being installed. Where directed by the Engineer, excavations shall be shored to avoid the cutting of pavement, sidewalks, and curb and gutter.

Base excavations shall be backfilled using suitable excavated material. Where the Engineer rules excavated material unacceptable, base excavations shall be backfilled with 25 mm Crushed Gravel as specified in Chapter 303 – Granular Material. Unacceptable materials shall be disposed of as specified in Chapter 302 - Earthwork.

Bedding and backfill material shall be placed in layers not exceeding 300mm compacted thickness and shall be compacted using a pneumatic or vibrating compactor to 97% Standard Proctor maximum density as per ASTM D-698. Layer thickness shall be reduced and moisture content of the material adjusted as required to achieve compaction. Care shall be taken not to damage conduits entering bases.

During the winter months the backfill material shall be free of snow, topsoil, frozen lumps and other deleterious materials.

All excavated and backfilled areas shall be restored to their original condition.

Asphalt restoration shall be performed in accordance with Chapter 304 – Utility Trench Backfill Regulations.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

Concrete curb and gutter restoration shall be performed in accordance with Chapter 311 – Concrete Sidewalk, Curb and Gutter.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

351.01.03 Concrete and Formwork for Concrete Bases

Concrete construction, including formwork, shall meet the requirements of Chapter 310 - Portland Cement Concrete and Chapter 311 – Concrete Sidewalk, Curb and Gutter.

Proportioning of the concrete mixes shall be the responsibility of the Contractor. The Contractor shall notify the Engineer 48 hours prior to pouring concrete for poured-in-place bases.

The concrete mix design shall meet the specifications in Chapter 310 – Portland Cement Concrete for Type 50 cement. Minimum requirements shall be as listed in Table 351-1.

Minimum compressive strength at 28 days	35 MPa
Maximum nominal aggregate size	28 mm
Maximum Water/Cement ratio by mass	0.4
Minimum Air Content	5%
Maximum Slump (prior to addition of superplasticizer)	65mm

TABLE 351-1 CONCRETE MIX

When supplying poured-in-place concrete bases, the Contractor shall have the concrete strength verified, using concrete test cylinders, prior to installing the pole structure onto the base.

The minimum number of concrete strength tests shall be one complete set per day. The Contractor shall take concrete test cylinders at the location of the pour and perform tests in accordance with Chapter 310 - Portland Cement Concrete. The Contractor must provide written confirmation of concrete test cylinder results prior to installing any pole structure on the bases. The City may perform additional tests at its own cost.

Where installations are of a fast-track nature, the Contractor may use a high-early strength concrete mix that will give the equivalent 28 day strength in seven days.

The top finished surface of a concrete base shall not vary by more than 3 mm in depth as measured across the widest surface. If this variation exceeds 3 mm, the base shall be repaired or replaced as directed by the Engineer.

The contractor shall prevent any materials or debris from entering the storm water system.

351.01.04 Reinforcing Steel for Concrete Bases

Reinforcing steel shall meet the requirements but not the payment provisions of Chapter 300 - General.

All reinforcing steel shall conform to CAN/CSA-G30.18-M400R.

The Contractor shall adjust the spacing of reinforcing steel to suit anchor bolts and conduit.

351.01.05 Anchor Bolts and Conduit for Concrete Bases

Anchor bolts and conduits shall be cast into the concrete bases.

Where an anchor bolt is damaged, it shall be repaired in accordance with Drawings 454.2009.001 & 454.2009.002. Welding of anchor bolts will not be permitted.

351.01.06 Payment for Concrete Bases

Payment for concrete bases will be at the Contract Unit Price per base.

<p>This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.</p>

The Unit Price shall include, but not necessarily be limited to, all costs of excavation (other than Type B rock, concrete and asphalt removal); supply and installation of shoring to meet OSHA requirements; formwork, concrete, reinforcing steel and conduit; supply and installation of grout and sand to fill knock-out voids in bases; installation of individual anchor bolts or anchor bolt cages; placing and compaction of backfill material; removal and disposal of

excess excavated material; and all other labour, equipment, and materials necessary to complete the installation.

Any additional costs for supplying higher strength concrete shall be borne by the Contractor.

Payment for excavation of Type B Rock material, as defined in Chapter 302, will be made on a Force Account Basis unless otherwise stated in the Special Provisions.

All costs related to shoring of excavations, when required to meet OSHA regulations, shall be borne by the Contractor. Shoring of excavations, when directed by the Engineer will be paid by Force Account unless otherwise noted.

No additional payment will be made for de-watering of excavations.

351.01.07 Base Capping

Procedure to raise the top of streetlight base to 150mm above finished grade.

1. Take before and after pictures of work area and where pole is stored.
2. Have qualified workers disconnect power and remove pole.
3. Remove about 150mm of old material. Extend carlon or HDPE to 100mm above where the new top will be.
4. Install extension bolts onto existing anchor bolts (one locking nut below and one above the coupling).
5. Adjust bolts to fit template. Tape ends of extension to protect the threads.
6. Set sonotube in place and pour concrete. Finish concrete surface; bevel the edge; make a "V" groove drain as per Type B pre-cast base. Concrete to meet current City specifications.
7. In colder months, place heater box over base and ensure it is working.
8. After proper curing time, remove sonotube and reinstall pole. Reconnect power.
9. Clean up and restore to original or better conditions.
10. Measures should be in place to prevent any material from entering the storm water system.

Contact ROADS for mudjacking procedure.

351.02.00 JUNCTION BOXES AND VAULTS**351.02.01 General**

The Contractor shall supply and install all junction boxes and vaults in accordance with the Construction Standards, and as defined in the contract Special Provisions and on the Contract Drawings.

Plastic junction boxes shall be supplied and installed in accordance with Drawing 454.2020.001.

Concrete vaults shall be supplied and installed in accordance with Drawings 454.2022.001 & 454.2022.002. Concrete vaults shall be designed to withstand 50 kN Static Loading.

The top junction boxes and vaults shall be installed so that they are flush with the finished grade.

Junction box and vault lid hold down bolts shall be coated with anti-seize lubricant.

351.02.02 Approved Products – Junction Boxes and Vaults

Manufacturers of concrete junction boxes and vaults must meet the requirements of Chapter 300.

Concrete junction box or vault suppliers wishing to seek City approval must submit shop drawings, sealed by a Structural Engineer registered with the APEGGA, to The City of Calgary, Roads, verifying that the junction box or vault submitted for approval meets the specified loading requirements. The junction box or vault shall also meet the size and functional characteristics shown on the Drawings.

351.02.03 Excavation and Backfill for Junction Boxes and Vaults

Excavations for junction boxes and vaults shall meet the requirements but not the Quantities and Payment provisions of Chapter 304 – Utility Trench Backfill Requirements.

All excavation work shall be carried out as required to suit junction boxes and vaults. Where directed by the Engineer, excavations shall be shored to avoid the cutting and/or undermining of pavement, sidewalks and curb and gutter.

Junction boxes and vaults shall be installed on a bedding of 25mm Crushed Gravel material in accordance with Chapter 303 – Granular Material.

Junction box or vault excavations shall be backfilled using suitable excavated material. Where the Engineer rules excavated material unacceptable, junction box and vault excavations shall be backfilled with 25mm Crushed Gravel as specified in Chapter 303 – Granular Material. Unacceptable materials shall be disposed of as specified in Chapter 302 - Earthwork.

Bedding and backfill material shall be placed in accordance with Chapter 304 – Utility Trench Backfill Regulations. Care shall be taken not to damage conduits.

All excavated and backfilled areas shall be restored to their original condition.

Asphalt restoration shall be performed in accordance with Chapter 304 – Utility Trench Backfill Regulations.

Concrete curb and gutter restoration shall be performed in accordance with Chapter 311 – Concrete Sidewalk, Curb and Gutter.

351.02.04 Payment for Junction Boxes and Vaults

Payment for junction boxes and vaults will be at the Contract Unit Price per junction box.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

The Unit Price shall include but not necessarily be limited to all costs of excavation (other than Type B rock, concrete and asphalt removal); supply and installation of junction box sections, lids, drain plates, adapter plates, braces and conductor support bars; supply and installation of shoring to meet OHSA requirements; 25 mm crushed gravel material below the junction box; placing and compaction of backfill material; removal and disposal of excess excavated material; and all other labour, equipment and materials necessary to complete the installation.

Payment for the excavation of Type B rock material will be made on a Force Account Basis unless otherwise noted.

All costs related to shoring of excavations, when required to meet OHSA regulations shall be borne by the Contractor. Shoring of excavations, when directed by the Engineer will be paid by Force Account unless otherwise noted.

No additional payment will be made for de-watering of excavations.

Additional drainage in junction boxes, as required by the Engineer, will be paid by Force Account.

351.03.00 CONDUIT**351.03.01 General**

The Contractor shall supply and install all conduit, with the exception of HDPE duct, in accordance with the Construction Standards, and as defined in the contract Special Provisions and on the Contract Drawings. The City provides HDPE conduit to the Contractor at a predetermined cost.

All electrical conduits shall be installed in accordance with the applicable Construction Standard Drawings and the Contract Plans and Special Provisions.

Rigid PVC (RPVC) conduit shall be unplasticized polyvinyl chloride and conform to CSA C22.2 No. 211.2. RPVC conduit shall be 1¼" (32mm) unless otherwise specified in the Drawings or Special provisions. Couplings, adapters, bends and fittings shall be unplasticized polyvinyl chloride and conform to CSA C22.2 No. 85. RPVC conduit shall be installed using CSA certified cement. Each standard length of RPVC conduit and each fitting shall bear a certification mark attesting to the applicable CSA standard. Underground conduit shall be RPVC where specifically stated in the Drawings or Special Provisions.

All HDPE conduit, provided by The City, shall be 1¼" (32mm) and shall be supplied in the quantities required for the installation on 6'-0" diameter reels. The minimum quantity of HDPE duct that The City will provide to the Contractor will be 1000m, on a single 6'-0" reel. The HDPE shall be installed continuously from pole base to pole base. Mid-run HDPE-HDPE splices will be permitted only when an approved coupler is used. All underground conduit shall be HDPE unless specifically stated otherwise in the Drawings or Special Provisions.

Rigid steel conduit (RSC) shall be hot-dipped galvanized rigid steel and conform to CSA C22.2 No. 45. Any exposed metal on conduit shall be coated with cold galvanizing compound. Above ground service conduits shall be RSC

Flexible liquid-tight non-metallic conduit (FNC) shall conform to CSA 22.2 No. 56. All joints shall be made with FNC threaded couplers, adapters or conduit fittings.

Conduit straps shall be galvanized steel single hole or double hole type, sized to suit conduit.

All empty conduits shall be proven, cleaned, have a pull string installed and shall be capped with an approved fitting. Pull string shall be polypropylene with a minimum tensile strength of 1.1 kN.

The Contractor shall layout conduit so that 90° bends are avoided. Where 90° bends cannot be avoided, in addition to the 90° bends at base entry locations, only one additional 90° bend will be allowed in each conduit run.

Conduit couplings or bell ends damaged when pulling conductors shall be replaced at the Contractor's expense. An appropriate pulling jig or method shall be used to avoid damaging conduit or fittings when pulling conductors.

351.03.02 Payment for Conduit

Payment for conduit will be at the Contract Unit Price per metre.

This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.
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The Unit Price shall include but not necessarily be limited to all costs for the supply and installation of underground conduit, fittings, cement and pull strings; and all other labour, equipment and materials necessary to complete the installation.

Payment for conduit installed above ground on poles is not included in this subsection.

351.04.00 TRENCHED CONDUIT INSTALLATION

351.04.01 General

RPVC conduits shall be installed in an open trench in accordance with Drawings 454.2025.001 & 454.2025.002, except where conduits are to be drilled or pushed under the surface.

HDPE conduits shall be installed in an open trench in accordance with Drawings 454.2025.001 & 454.2025.002, except where conduits are to be drilled or pushed under the surface.

Trenching and backfilling for the installation of conduit shall be performed in accordance with Chapter 304 – Utility Trench Backfill Regulations.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

Trenches shall be excavated with neat, uniform sides to the minimum width necessary, but not less than the minimum dimensions indicated on the drawings. Care shall be taken to prevent sloughing. Material in the floor of the trench shall be undisturbed, or if disturbed, shall be re-compacted to the requirement herein for backfill.

Trenches shall be backfilled using the excavated material except where excavated material is ruled unacceptable by the Engineer for backfill. Where new material is required, 25mm Crushed Gravel material shall be used as specified in Chapter 303 – Granular Material. Unacceptable materials shall be disposed of as specified in Chapter 302 – Earthwork.

A 150mm wide yellow plastic marker tape indicating “WARNING ELECTRICAL” shall be installed in each trench for the complete length of the trench. The location of the marker tape shall be as shown on the Construction Standard Drawings.

All excavated and backfilled areas shall be restored to their original condition.

Asphalt restoration shall be performed in accordance with Chapter 304 – Utility Trench Backfill Regulations.

Concrete curb and gutter and sidewalk restoration shall be performed in accordance with Chapter 311 – Concrete Sidewalk, Curb and Gutter.

351.04.02 Payment for Trenched Conduit Installation

Payment for trenching and backfilling for conduit installation will be at the Contract Unit Price per metre.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

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The Unit Price shall include but not necessarily be limited to all costs of excavation (other than Type B rock, concrete and asphalt removal); placing and compaction of excavated material as backfill; supply and installation of trench marker tape; removal and disposal of excess excavated material; and all other labour, equipment and materials necessary to complete the installation.

Payment for excavation of Type B rock material, as defined in Chapter 302, will be made on a Force Account Basis.

All costs related to shoring of excavations, when required to meet OHSA regulations, shall be borne by the Contractor. Shoring of excavations, when directed by the Engineer will be paid by Force Account unless otherwise noted.

No additional payment will be made for de-watering of excavations.

351.05.00 TRENCHLESS CONDUIT INSTALLATION**351.05.01 General**

Where noted on the Plans, the Contractor shall install the conduit using a suitable trenchless (horizontal drilling) technology to avoid cutting the existing pavement or sidewalk. The trenchless technology selected shall suit the site conditions.

Where pavement and sidewalk are existing, “directional drilling” trenchless technology shall be used. Otherwise, “plowing” trenchless technology will be permitted.

The Contractor shall give the Engineer a minimum of 48 hours notice prior to installing conduits.

The Contractor shall locate all underground utilities prior to installing conduits.

351.05.02 Payment for Trenchless Conduit Installation

Payment for the supply and installation of conduit using trenchless technology will be at the Contract Unit Price per metre.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

The Unit Price shall include all costs of conduit; excavation for set up; backfilling and restoration when work is complete; and all other labour, equipment and materials necessary to complete the installation.

No separate payment will be made for unsuccessful installation.

351.06.00 ASPHALT PAVEMENT RESTORATION**351.06.01 General**

Asphalt rehabilitation shall be performed in accordance with Chapter 304 – Utility Trench Backfill Regulations.

The Contractor shall use a pavement saw to cut existing asphalt unless otherwise directed by the Engineer, and shall obtain a neat, uniform cut along the edge of asphalt.

The Contractor shall adhere to the practices outlined in The City of Calgary, Best Management Practice #1, Saw Cutting Operations Rev 1 Mar. 31, 2003 during all asphalt saw cutting operations. A reference copy of this Best Standard Practice document can be found in Appendix G to these construction standards.

351.06.02 Payment for Asphalt Restoration

Payment for Asphalt Pavement for electrical work will be as follows:

Where the electrical work forms part of a paving or road construction project, measurement and payment will be made in accordance with the Payment Schedule for Roadwork.

a) Where the electrical work does not form part of a paving or road construction Project, payment shall be made in accordance with the Schedule of Quantities, except that:

- All costs of handwork shall be included;
- No separate payment shall be made for primer and tack coat and all costs of this work shall be included;
- The contractor shall make every effort and take extra caution to minimize the damage to the sidewalk and asphalt. Replacement and rehabilitation of asphalt adjacent to the pole and cabinet base is considered incidental to the work and no additional payment will be made.
- Payment for conduit trenches shall be made in tonnes of mix compacted in place but shall not exceed the theoretical quantity, which shall be calculated trench width plus 300mm (asphalt is excavated 150mm beyond the trench on both sides);
- The theoretical quantity shall be calculated as follows:

$$\text{Theoretical Quantity} = (TW + 300) * D * L * 2.65t/m^3$$
- Measurement for payment for installation of all other works shall be made in cubic metres of mix and shall be calculated from the measurements of the work.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

351.07.00 CONCRETE RESTORATION**351.07.01 General**

All concrete curbs and sidewalks shall be installed/restored in accordance with Chapter 311 – Concrete Sidewalk, Curb and Gutter.

The Contractor shall use a pavement saw to cut existing concrete unless otherwise directed by the Engineer, and shall obtain a neat, uniform cut along the edge of concrete. Concrete to be removed shall be cut to the nearest joints. Mid-slab or section sawcuts will not be permitted. The Contractor shall also prevent base gravel from sloughing and undermining the concrete.

The Contractor shall adhere to the practices outlined in The City of Calgary, Best Management Practice #1, Saw Cutting Operations Rev 1 Mar. 31, 2003 during all concrete saw cutting operations. A reference copy of this Best Standard Practice document can be found in Appendix G to these construction standards.

351.07.02 Payment for Concrete Curb and Gutter

The contractor shall make every effort and take extra caution to minimize the damage to the concrete. Replacement and rehabilitation of concrete adjacent to the pole and cabinet base is considered incidental to the work and no additional payment will be made.

Payment for the installation and/or restoration of Concrete Curb and Gutter for electrical work will be at the Contract Unit Price per lineal metre.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

The Unit Price shall include, but not necessarily be limited to, all costs of excavation; supply and installation of 25mm Crushed Gravel bedding material; supply and installation of form work, concrete and expansion joint material, removal and disposal of excess excavated material; and all other labour, equipment and materials necessary to complete the installation.

Payment for Removal of Concrete Curbs will be at the Contract Unit price per lineal metre.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

The Unit price shall include, but not necessarily be limited to, all costs for cutting, removing and disposing of existing concrete; and all other labour, equipment and materials necessary to complete the removal of concrete curbs.

351.07.03 Payment for Concrete Sidewalk and Miscellaneous Concrete

The contractor shall make every effort and take extra caution to minimize the damage to the concrete. Replacement and rehabilitation of concrete adjacent to the pole and cabinet base is considered incidental to the work and no additional payment will be made.

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Payment for removal of Concrete Sidewalk and Miscellaneous Concrete will be at the Contract Unit Price per square metre.

This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.
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The Unit Price shall include, but not necessarily be limited to, all costs for the cutting, removing and disposing of existing concrete roadway, sidewalk, etc.; and all other labour, equipment and materials necessary to complete the removal of concrete. The area for payment of concrete removal for all work will be measured.

351.08.00 SITE RESTORATION**351.08.01 General**

The contractor shall be responsible for all costs and to return all areas where work has been performed to an equal or better condition than that which existed prior to construction or as specified in the Drawings and Special Provisions. It is recommended that the contractor take site pictures before starting any work.

351.08.02 Site Clean up

The contractor shall clean up the site and dispose of all excess material, trash and other debris as work progresses. Before the job is considered to be complete, the contractor shall remove all construction material and equipment and shall clean the site and do such other work as may be necessary to leave the site occupied by them in a neat and fully restored condition.

351.08.03 Landscaped Areas

The Contractor shall be responsible for grading, loaming and seeding or sodding all landscaped areas in accordance with the current edition of The City of Calgary, Parks & Recreation Department's Development Guidelines and Standard Specifications, Landscape Construction.

All materials including loam, seeds, fertilizers and plants shall meet the Parks & Recreation Department Specification.

It is required that in areas where high foot traffic is evident, or as required in the drawings and Special Provisions, that sodding be used in place of seeding. The Contractor shall care for the sod for a minimum period of 2 weeks to allow the sod to establish roots. The Contractor shall rope off the newly seeded or sodded areas to prevent the intrusion of pedestrian traffic.

351.08.03 Payment for Site Restoration

All costs for site restoration will be considered incidental to the Work.

<p>This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.</p>

351.09.00 REMOVAL of REJECTED MATERIAL

351.09.01 General

Where excavated material is designated unacceptable for backfill by the Engineer it shall be removed from the work site and disposed of by the Contractor. The Engineer shall approve the disposal site for Rejected Excavated Material.

351.09.02 Payment for Removal of Rejected Material

Payment for the Removal of Rejected Excavated Material will be at the Contract Unit Price per cubic metre.

This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.
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The Unit Price shall include, but not necessarily be limited to, all costs of removal and disposal, and all other labour, equipment and materials necessary to complete the removal and disposal of rejected material.

352.00.0 ELECTRICAL**352.01.00 STREETLIGHT POLES****352.01.01 General**

Streetlight poles, including luminaries and lamps, shall be installed in accordance with the applicable Construction Standard Drawings for the types of poles to be installed.

All components of the streetlight poles shall be handled with care to prevent stress to the components through bending or twisting. A nylon sling shall be used to transport and erect the components. The use of steel chains as slings will not be permitted. Any damage to the components through overstress, scratching or denting shall be repaired or replaced at the Contractor's expense to the satisfaction of the Engineer.

352.01.02 Poles

The slip-fit connection between pole sections shall be assembled in accordance with the lap length specified by the pole supplier

All pole shafts shall be installed plumb. Poles shall be plumbed using shims where necessary, with a maximum of two shims per anchor bolt permitted. The use of washers to plumb poles shall not be permitted.

Where possible, all streetlight poles shall be positioned with the handhole oriented on the downstream traffic side. Otherwise, the handhole shall be positioned as defined in the Plans and Specifications.

When replacement of existing pole is required, all existing signage is to be removed from existing pole and shall be reinstalled on new pole. See 352.06.00

Poles shall not be erected until concrete bases have attained strength of 30 MPa. Pole shafts shall mount directly on concrete bases and, where necessary, shall be trued to plumb using leveling shims.

Field drilling of holes larger than 33mm (1 5/16") diameter will not be permitted unless specifically detailed on the Street Lighting Construction Standard Drawings

All wiring inside the poles shall be in accordance with the Drawing 454.2066.001.

The Contractor shall tighten all bolts and nuts to 1/3 past snug tight. "Snug-tight" is the tightness attained by a few impacts of an impact wrench or the full effort of a person using a spud wrench.

Hand hole bolts shall be coated with anti-seize lubricant.

All scratches in poles and all field-drilled holes shall be coated with cold galvanizing compound.

352.01.03 Luminaires

Luminaires shall be installed as per manufacturer's instructions or as noted on the Plans. Luminaires shall be installed in accordance with the applicable Construction Standards drawings.

Where the luminaire has a multi-tap ballast, the Contractor shall verify the service voltage and adjust the luminaire voltage tap to suite.

352.01.04 Lamps

Lamps shall be installed as per manufacturer's instructions or as noted on the Plans. Lamps shall be installed in accordance with the applicable Construction Standards drawings.

The Contractor shall permanently mark all lamps, at the time of installation, with the lamp's in-service date.

352.01.045 Recycling and Disposal of Streetlight Components

Streetlight components must be handled, stored, transported, disposed of and recycled in accordance with all applicable regulatory requirements.

Luminaires and Lamps: all removed luminaires, luminaire components and lamps must be returned to City Stores for proper management and disposal of hazardous luminaire components.

Poles: Steel and aluminum poles removed for scrap must be disposed of at one of the City approved recycling facilities:

- a) Federal Metals Inc.
9715 – 52nd Street, S.E.
Calgary, AB
- b) Calgary Metals
3415 Ogden Road, S.E.
Calgary, AB

The City of Calgary to receive credit for the recovered material.

Concrete bases; All concrete bases shall be recycled or disposed of at a suitable recycling or disposal facility.

Other Materials: the contractor shall dispose of all other materials at approved disposal facilities. Materials that can be recycled shall be recycled.

352.01.05 Payment for Streetlight Poles

Payment for the installation of streetlight poles shall be at the Contract Unit Price for each pole.

This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.
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The Unit Price shall include, but not necessarily be limited to, all costs for the supply and installation of poles, and all other labour, equipment and materials necessary to complete the installation.

352.01.06 Payment for Streetlight Luminaires

Payment for the installation of streetlight luminaires shall be at the Contract Unit Price for each luminaire.

This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.
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The Unit Price shall include, but not necessarily be limited to, all costs for the supply and installation of luminaires; supply and installation of wiring from the luminaire to the handhole at the base of the pole; connection and splicing of all wiring; supply and installation of fuse holders and fuses; and all other labour, equipment and materials necessary to complete the installation.

352.01.07 Payment for Streetlight Luminaire Lamps

Payment for the installation of lamps in streetlight luminaires shall be at the Contract Unit Price for each lamp.

This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.
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The Unit Price shall include, but not necessarily be limited to, all costs for the supply and installation of lamps; and all other labour, equipment and materials necessary to complete the installation.

352.01.08 Payment for Recycling and Disposal of Streetlight Components

All costs for the recycling and disposal of streetlight components will be considered incidental to the Work.

352.02.00 SERVICE EQUIPMENT and ELECTRICAL ENERGY SUPPLY**352.02.01 General**

Service equipment shall be installed in accordance with the applicable Construction Standard Drawings for the type of service to be installed. Service equipment shall include service, distribution, disconnect and control panels for roadway lighting systems.

Pole mounted service equipment shall be securely attached to the streetlight pole.

Freestanding specialized service equipment (e.g., service kiosks) shall be installed in accordance with the Contract Plans and Special Provisions.

352.02.02 Definition of Point of Electrical Energy Service

The point of demarcation between the Enmax Power Corporation (EPC) owned distribution system and the City owned streetlight system, termed the "point of electrical service", shall be as follows:

(a) Underground dip service from the EPC overhead distribution system:

The point of service shall be considered to be the line side termination point at the service panel main circuit breaker or the service disconnect fuses in the handhole of the first streetlight pole. The electrical service conduit from the base of the EPC service pole to the street lighting service panel shall be supplied and installed by the Contractor. The electrical service conduit on the EPC service pole and the electrical service conductors from the service pole to the main circuit breaker or the service disconnect fuses shall be supplied, installed and terminated by EPC.

Refer to drawing 454.2071.002 for installation details.

(b) Overhead drop service from the EPC overhead distribution system:

The point of service shall be considered to be the line side termination point at the service panel main circuit breaker or the service disconnect fuses in the handhole of the first streetlight pole. The electrical service conduit, service weatherhead and service conductors from the main street lighting service panel, up the streetlight pole to the weatherhead, shall be supplied and installed by the Contractor. The overhead electrical service conductors from the EPC service pole to the streetlight pole shall be supplied, installed and terminated at the weatherhead by EPC.

Refer to drawing 454.2071.005 for installation details.

(c) Underground service from Power Utility distribution transformer:

The point of service shall be considered to be the line side termination point at the service panel main circuit breaker or the service disconnect fuses in the handhole of the first streetlight pole. The electrical service conduit from the street lighting service panel to a point 1.0m from the secondary distribution connection cabinet at the EPC distribution transformer shall be supplied and installed by the Contractor. The electrical service conduit on this point to the distribution transformer shall be supplied and installed by EPC. The electrical service conductors from the service pole to the main circuit breaker or the service disconnect fuses shall be supplied, installed and terminated by EPC.

Refer to drawing 454.2071.002 for installation details.

352.02.03 Payment for Service Equipment

Payment for the installation of Service Equipment will be paid at the Lump Sum Price for that service area.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

The Lump Sum Price shall include, but not necessarily be limited to, all costs for the installation of the service and control panel, and service disconnect including the pole where a separate service pole is required; supply and installation of service wiring from the defined point of electrical energy supply including wiring between the disconnect and distribution panels; supply and installation of conduit, fittings, mounting hardware, ground wire, ground clamp, insulating clevis, grounding electrode and branch circuit wiring to the handhole at the base of the pole; and all other labour, equipment and materials necessary to complete the installation.

352.02.04 Payment for Electrical Energy Supply

Payment for the supply and connection of the Electrical Energy Supply will be paid at the Lump Sum Price for that service area.

This clause shall not apply to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.

The Lump Sum Price shall include, but not necessarily be limited to, all costs to be paid to EPC for the design, provision of all materials, equipment and labour, and connection of the electrical service. It shall include the cost of all inspections, fees and permits

352.02.05 Temporary Electrical Services

During the construction period, if temporary and/or detour lighting is required, the contractor shall all make necessary arrangements for the required temporary electrical service. The contractor will be responsible for the all costs for installation and removal of the service and for all electrical energy consumption charges for the duration of the service.

352.03.00 WIRING**352.03.01 General**

The Contractor shall supply and install wiring in accordance with the Construction Standards, as defined in the Contract Special Provisions and on the Contract Drawings and as directed by the Engineer.

All conductors shall be stranded copper, RW90 XLPE insulated unless otherwise noted in the Contract Plans and Special Provisions. Minimum conductor size shall be #8 AWG for line and neutral conductors and #12 AWG for bonding conductors, unless otherwise specified in the Contract Drawings or Special Provisions.

Conductor colour coding and labeling is required and shall be as noted on Drawing 454.2065.001. Colour coding shall meet the requirements of the Canadian Electrical Code except where specifically stated otherwise in these standards. Service and lighting feeder conductors terminated at PER lighting controllers must be colour coded as shown on drawings 454-2070-002, 454-2070-003 and 454-2070-004.

Each luminaire shall be wired separately to the handhole at the base of the pole. A separate neutral (if required) and bond conductor shall be run from each luminaire to the handhole at the base of the pole. The neutral(s) and bond conductor(s) shall be bundled with the feeder circuits.

Luminaire wiring and fusing in pole handholes shall conform to Drawing 454.2066.001.

Wiring inside round plastic junction boxes shall conform to Drawing 454.2067.001.

Wiring inside rectangular concrete junction boxes shall conform to Drawing 454.2068.001.

Wiring inside concrete vaults shall conform to Drawing 454.2069.001 & 454.2069.002.

Conductor splices shall be secured with solderless wire nut "Marrette" type connectors. Where the number and/or size of conductors exceed the capacity of the wire nut connector, split bolt connectors may be used.

All wiring shall be neatly bundled and labeled in all junction boxes, vaults, handholes at pole bases and service panels.

Sealing of connections shall be performed using one of the following methods:

- a) Each conductor shall have a wrap of self-holding tape (3M Linerless Rubber Splicing Tape, Steadfast 8 Ounce Splicing Tape, or approved alternate), and then the complete splice shall be wrapped. PVC tape shall then be applied to cover the entire splice.

- b) If conductor connections require the use of split bolts or similar style devices due to wire size or quantity, then the splice shall be completely covered with Duct Seal. The Duct Seal shall be thick enough to prevent the ends of the conductors or any portion of the split bolt from protruding through the taped connection.

Once the duct seal has been applied, the splice shall be taped with self-holding and PVC tape as described above.

All luminaires shall be bonded to the ground stud in the handhole at the base of the pole using #12 RW90. Where the luminaire voltage is 240V (line-line) and the luminaire has a CWI ballast, the Contractor shall confirm that the lamp screw shell is bonded to the pole ground stud to satisfy the requirements of CEC Section 30-314(1).

The Contractor shall confirm and, if necessary, modify ballast connections for the voltage used.

Steel junction box and vault lids shall be bonded in accordance with Drawings 454.2067.001, 454.2068.001 and 454.2069.002.

352.03.02 Payment for Wiring

Payment for the installation of Wiring shall be at the Lump Sum Price for all the underground wiring in the Work.

This clause <u>shall not apply</u> to URD shallow utilities in new subdivisions where agreements are in place for work to be done by others.
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The Lump Sum Price shall include, but not necessarily be limited to, the supply and installation of wiring located in the underground conduit system, unless otherwise noted in the Contract Drawings and Special Provisions; splices; labeling of conductors; and all other labour, equipment and materials necessary to complete the installation.

352.04.00 GALVANIZED SURFACE REPAIR

352.04.01 General

Any spots where the galvanized finish is damaged due to drilling, tapping, reaming or welding and any surface damage incurred during transportation or erection shall be refinished with cold galvanizing compound.

Cold galvanizing compound shall be Crown No. 67007 spray type (or approved alternate). The application of cold galvanizing compound shall conform to the Manufacturer's and the following:

- a) The surface shall be mechanically cleaned with a wire brush or grinder and chemically cleaned. All welding flux, paint, grease, oil, rust and other detrimental foreign material must be removed.
- b) The surface shall be completely dry and the temperature shall be over 10°C.
- c) Uniform coats shall be applied. Each coat shall be as thick as possible without causing runs on the finished surface. A minimum of two coats shall be applied.

All repairs shall be completed to the satisfaction of then Engineer.

352.04.02 Payment for Galvanized surface repair

All costs for the repair of galvanized surfaces will be considered incidental to the Work.

352.05.00 PAINTING OF EXISTING LUMINAIRE POLES**352.05.01 General**

The painting of poles shall be done in accordance with the Construction Standards, and the Contract drawings and specifications.

This specification only applies to poles owned by The City of Calgary. It does not apply to "joint use" or utility power poles.

352.05.02 Work by the Contractor

The Contractor shall be responsible for the provision of all labour, equipment, and incidental materials required to complete the following items of work:

- (a) Paint the full length of streetlight poles, excluding self-weathering Corten poles;
- (b) Remove and dispose of all anchor bolt nut covers;
- (c) Prepare the work site around poles for painting including digging to expose the pole base if required;
- (d) Remove and properly dispose of all soil, dirt and excess materials such as old paint and rust scale created during the preparation process;
- (e) Remove all streetlight pole identification decals or metal tags.
- (f) Remove and dispose of all posters or notices taped or glued to the luminaire poles;
- (g) Report to the Engineer any physical damage to the poles that may have been found. Wait for instructions from the Engineer before proceeding with the painting;
- (h) Supply all paint removal materials necessary for the performance of the work;
- (i) Supply all paint, primer, thinners, masking tapes, rollers, brushes and all other incidental materials required for the performance of the work;
- (j) Maintain a written record of each pole that is painted on a set of "As-Built" drawings;
- (k) Submit the "As-Built" drawings within a month after the completion of the work;
- (l) Provide all traffic control and temporary signing in accordance with the current edition of the City of Calgary Worksite Temporary Traffic Control Manual.

352.05.03 Work by the City

The City shall do the repair or replacement of damaged luminaire poles.

352.05.04 Materials Supplied by the City

The City will supply, in a timely manner, the following materials to the Contractor:

- (a) Drawings identifying the areas within which streetlight poles are to be painted;
- (b) Current application instructions and procedures.

352.05.05 Preparation for Painting

The Contractor shall follow the following preparation procedures:

- (a) Site preparation and inspection for damages on the equipment,
- (b) Grinding or sanding as necessary, including poster, notice and graffiti removal. Sandblasting is not permitted for surface preparation of streetlight poles.

The Contractor shall supply all necessary equipment and materials for cleaning the luminaire pole.

The Contractor shall remove the signs or equipment attached to the pole in order to properly prepare and paint the area under the clamping device. When the paint is fully dried, the Contractor shall re-attach the signs and equipment to the pole. See 352.06.00

Pole preparation and painting operations shall be done in such a manner as not to damage other properties (e.g. plants, materials and equipment not included in this contract). The Contractor shall ensure and provide adequate protection for the public at all times, during the cleaning and painting process. Paint scrapings shall be contained and removed from the work site.

Paint scrapings may contain metals such as lead. Paint scrapings must be tested for TCLP metals prior to disposal to determine if the waste is hazardous. Hazardous waste must be disposed of at an approved waste management facility. Copies of analytical results and waste disposal records must be provided to the Engineer. Arrangements may be made with the Engineer to have The City test the paint scrapings and dispose of the waste.

Where rusting, scaling, or blistering exists, the Contractor shall wire brush the area. Primer shall be applied to all areas of the pole where the cleaning process has exposed the bare metal. The minimum coat of primer shall be a minimum dry film thickness of 2-3 mils. The primer shall be applied within eight (8) hours of the surface being cleaned.

If conditions prevent the application of primer within the stated eight (8) hour period, the Contractor shall, if circumstances require or as directed by the Engineer, re-clean the metal surface to ensure no rusting has commenced before applying primer.

Surface accumulations of grease, oil, dust, dirt or oxidized paint shall be first removed. The surface shall be roughened before the finished coat of paint is applied.

The Contractor shall remove all anchor bolt nut covers and shall expose the area around the anchor nuts for cleaning prior to applying primer or paint.

Primer for previously painted poles to be used shall be General Paint 06160 Anti-corrosive Primer, Cloverdale 74024 Rustex Primer or an alternate product approved by The City. The City reserves the right to accept or reject the alternate products.

Primer for galvanized poles to be General Paint 06-020 Cementitious Primer, Cloverdale Cementitious Primer or an alternate product approved by The City. The City reserves the right to accept or reject the alternate products.

Paint for previously painted poles and galvanized to be used shall be General Paint 10-Line Marine Enamel, Cloverdale Marine Enamel Primer or an alternate product approved by The City. The City reserves the right to accept or reject the alternate products.

The Contractor shall submit paint color samples to The City for review and approval. No painting work shall commence prior to the Contractor receiving approval of the paint color from The City.

The Contractor may submit alternate painting and preparation methods. The details of the proposed methods shall be submitted with this tender for construction and evaluation. The City reserves the right to accept or reject the alternate painting and preparation methods.

352.05.06 Painting of Luminaire Poles

The Contractor shall apply paint on streetlight poles within the relative humidity and ambient temperature range in accordance with the manufacturer's recommendations.

The equipment surface shall be thoroughly dry and rust free before paint is applied. Particular attention shall be given to surface condensation.

The Contractor shall ensure correct coverage of all edges and coating applications shall be free of tears, runs, pinholes or any other paint defects. The finished coat shall have a minimum dry film thickness of 2-3 mils, shall be uniform in colour and good in appearance.

The Contractor shall provide protection for the concrete streetlight bases during the painting process to ensure that no paint accumulates on the surface of the concrete base.

Paint shall not be applied to the inside of the retaining bolt cup washer on the hand hole plate. If the bolt and cup are badly rusted, it should be reported to the Engineer for replacement.

The Contractor shall not scrape, sand or paint poles that have polyester type finish. Permission must be obtained from the Engineer to work on this type of pole.

352.05.07 Payment for Painting of Existing Luminaire Poles

Payment for the Painting of Existing Streetlight Poles the Contract Unit Price per pole.

The Unit Price shall include, but not necessarily be limited to, all costs for the supply of all paint, primer, thinners, masking tapes, rollers, brushes and all other incidental materials, preparation and painting of luminaire poles; provision of temporary traffic control; disposal of removed paint and cleaning materials; all disposal, permit and inspection costs; and all other labour, equipment and materials necessary to complete the installation.

352.06.0 SIGNAGE**352.06.01 General**

All work affecting the removal, relocation and reinstallation of traffic control devices must be in accordance with the City of Calgary Traffic Control Policy Manual and City of Calgary Sign Code Book.

352.06.02 Regulatory and Warning Signs

Regulatory Signs indicate a legally enforceable traffic regulation under the Traffic Safety Act.

Warning Signs indicate, in advance, potentially dangerous conditions to the road user.

In the case where regulatory and warning signs are to be removed and/or relocated where the streetlight pole is being permanently removed or relocated, the Contractor **must** contact Traffic Engineering (Dial 311). The Contractor shall contact Traffic Engineering a minimum of two business days in advance of the proposed work.

In the case where regulatory and warning signs are to be removed and re-installed on a streetlight pole in the same location, the Contractor shall relocate the signs in accordance with all requirements of the City of Calgary Traffic Control Policy Manual and City of Calgary Sign Code Book and shall adhere to the following:

"The replacement of regulatory signs in an expedient manner is extremely important, but in the case of STOP and YIELD signs, it is imperative that the following guidelines be followed:

- i) A portable sign is to be installed prior to the removal of the permanent sign and must remain in place until the permanent replacement installation is completed.*
- ii) The portable installations are to be inspected daily and a record of these inspections is to be forwarded to the Traffic Engineering Division.*
- iii) If the STOP or YIELD sign is in combination with any other sign, do not wait for the installation of the remaining signs, reinstall the STOP or YIELD sign as soon as possible.*

352.06.03 Information Signs

Information signs that may be mounted on streetlight poles can be of the following types:

- Guide signs;
- Highway and Street Identification signs;
- Off-Road Facility signs;
- Miscellaneous Information signs.

352.06.04 Parking Control Signs

Parking control signs that may be mounted on streetlight poles can be of the following types:

- Commercial Loading Zone signs;
- Passenger Loading Zone signs;
- Handicapped Parking Zone signs;
- Residential Parking Zone signs.

In the case where information and parking signs are to be removed and/or relocated where the streetlight pole is being permanently removed or relocated, the Contractor shall contact Traffic Engineering for authorization prior to removal and relocation (Dial 311).

In the case where information and parking signs are to be removed and re-installed on a streetlight pole in the same location, the Contractor shall relocate the signs in accordance with all requirements of the City of Calgary Traffic Control Policy Manual and City of Calgary Sign Code Book.

454.00.00 LIST OF STANDARD DRAWINGS

SHEET	DESCRIPTION	FILE NUMBER
<u>Concrete Bases</u>		
1.	Concrete Base Index	454.2001.001
2.	Type 'A' Precast Concrete Base	454.2001.002
3.	Type 'B' Round Precast Concrete Base	454.2001.003
4.	Type 'B1' Round Precast Concrete Base	454.2001.004
5.	Type 'B2' Square Precast Concrete Base	454.2001.005
6.	Type 'C' Round Precast Concrete Base	454.2001.006
7.	Type 'C1' Square Precast Concrete Base	454.2001.007
8.	Type 'D' Base Detail for 20m Steel Davit Pole	454.2002.001
9.	Anchor Bolt Template and Details for Type 'D' Base	454.2002.002
10.	Material List for Type 'D' Base	454.2002.003
11.	Type 'D1' Precast Concrete Base	454.2002.004
12.	Type 'E' Base Detail for 30m Steel High Mast Pole	454.2003.001
13.	Anchor Bolt Template and Details for Type 'E' Base	454.2003.002
14.	Material List for Type 'E' Base	454.2003.003
15.	Type 'F' Base Detail for 30m High Mast Pole	454.2004.001
16.	Anchor Bolt Template and Details for Type 'F' Base	454.2004.002
17.	Material List for Type 'F' Base	454.2004.003
18.	Luminaire Pole Attachment on Structure	454.2006.001
19.	Concrete Base for Streetlight Service Cabinet	454.2008.001
20.	Anchor Bolt Repair Procedures	454.2009.001
21.	Anchor Bolt Repair Details	454.2009.002
22.	Breakaway Base Installation Notes	454.2010.001
23.	Breakaway Base Installation Details	454.2010.002
24.	Pole Base Installation Details	454.2015.001
25.	Pole Base Installation Details	454.2015.002
26.	Type 'G' Base for 15m Davit Pole in Median Barrier	454.2016.001
27.	Type 'H' Base for 15m Davit Pole in Median Barrier	454.2016.002
<u>Junction Boxes</u>		
28.	Round Plastic Junction Box	454.2020.001
29.	Rectangular Concrete Junction Box	454.2021.001
30.	Large Concrete Junction Box (Vault)	454.2022.001
31.	Large Concrete Junction Box (Vault)	454.2022.002
32.	Junction Box at Luminaire Pole	454.2023.001
<u>Underground Conduit</u>		
33.	Underground Duct in Paved Areas	454.2025.001
34.	Underground Duct in Non-Paved Areas	454.2025.002

Decorative Luminaire Poles

35.	5m Walkway Pole Installation Details	454.2030.001
36.	5m Walkway Pole Materials List	454.2030.002
37.	5m Traditional (17 th Ave.) Pole Installation Details	454.2031.001
38.	5m Traditional (17 th Ave.) Pole Materials List	454.2031.002
39.	5m Contemporary Style Pole Installation Details	454.2032.001
40.	5m Contemporary Style Pole Materials List	454.2032.002
41.	4.6m Chinatown Style Pole Installation Details	454.2033.001
42.	4.6m Chinatown Style Pole Materials List	454.2033.002
43.	5m Inglewood Style Pole Installation Details	454.2034.001
44.	5m Inglewood Style Pole Materials List	454.2034.002
45.	5.5m Barclay Mall Style Pole Installation Details	454.2035.001
46.	5.5m Barclay Mall Style Pole Materials List	454.2035.002
47.	5.5m Kensington Style Pole Installation Details	454.2036.001
48.	5.5m Kensington Style Pole Materials List	454.2036.002
49.	8m Stephen Ave. Mall Style Pole Installation Details	454.2037.001
50.	8m Stephen Ave. Mall Style Pole Materials List	454.2037.002
51.	Roulleville Straight Style Pole Installation Details	454.2038.001
52.	Roulleville Straight Style Pole Materials List	454.2038.002
53.	6.4m Electric Ave. Style Pole Installation Details	454.2044.001
54.	6.4m Electric Ave. Style Pole Materials List	454.2044.002
55.	7m Tear Drop Louise Bridge Pole Installation Details	454.2045.001
56.	7m Tear Drop Louise Bridge Pole Materials List	454.2045.002
57.	7m Tear Drop Traditional Step Pole Installation Details	454.2046.001
58.	7m Tear Drop Traditional Step Pole Materials List	454.2046.002
59.	Elbow Drive Pole Installation Details	454.2046.003
60.	Elbow Drive Pole Materials List	454.2046.004
61.	7.8m McKenzie Towne Style Pole Installation Details	454.2047.001
62.	7.8m McKenzie Towne Style Pole Materials List	454.2047.002
63.	8.2m Straight Steel Pole Installation Details	454.2048.001
64.	8.2m Straight Steel Pole Materials List	454.2048.002

Standard Luminaire Poles

65.	9m/2.5m Single Davit Pole Installation Details	454.2050.001
66.	9m/2.5m Single Davit Pole Materials List	454.2050.002
67.	9m/2.5m Double Davit Pole Installation Details	454.2051.001
68.	9m/2.5m Double Davit Pole Materials List	454.2051.002
69.	9m Square Steel Pole Installation Details	454.2052.001
70.	9m Square Steel Pole Materials List	454.2052.002
71.	12m Round Tapered Steel Pole Installation Details	454.2053.001
72.	12m Round Tapered Steel Pole Materials List	454.2053.002
73.	12m 16 Sided Tapered Steel Pole Installation Details	454.2053.003
74.	12m 16 Sided Tapered Steel Pole Materials List	454.2053.004
75.	15m/2.5m Single Davit Pole Installation Details	454.2054.001
76.	15m/2.5m Single Davit Pole Materials List	454.2054.002
77.	15m/2.5m Double Davit Pole Installation Details	454.2055.001
78.	15m/2.5m Double Davit Pole Materials List	454.2055.002
79.	20m/2.5m Single Davit Pole Installation Details	454.2056.001
80.	20m/2.5m Single Davit Pole Materials List	454.2056.002

454-3

81.	20m/2.5m Double Davit Pole Installation Details	454.2057.001
82.	20m/2.5m Double Davit Pole Materials List	454.2057.002

High Mast Lighting Poles

83.	30m High Mast Pole Installation Details	454.2058.001
84.	30m High Mast Pole Wiring Details	454.2058.002
85.	30m High Mast Pole Wiring Details	454.2058.003
86.	30m High Mast Pole Materials List	454.2058.004
87.	30m High Mast Pole (Raise/Lower) Installation Details	454.2059.001
88.	30m High Mast Pole (Raise/Lower) Device Details	454.2059.002
89.	30m High Mast Pole Raise/Lower Wiring Details	454.2059.003
90.	30m High Mast Pole (Raise/Lower) Materials List	454.2059.004

Temporary Lighting on Wood Poles

91.	Temporary Lighting on Wood Pole Installation Details	454.2060.001
92.	Temporary Lighting on Wood Pole Materials List	454.2060.002

Electrical

93.	Single Conductor Colour Coding	454.2065.001
94.	Luminaire Wiring in Pole Handhole	454.2066.001
95.	Wiring in Round Plastic Junction Boxes	454.2067.001
96.	Wiring in Rectangular Concrete Junction Boxes	454.2068.001
97.	Wiring in Concrete Vaults	454.2069.001
98.	Wiring in Concrete Vaults	454.2069.002
99.	30A 240V 'PER' Service Relay Installation Details	454.2070.001
100.	30A 240V 'PER' Service Relay Installation Details	454.2070.002
101.	30A 240V N.O. Streetlight Service Unit Materials List & Wiring Details	454.2070.003
102.	30A 240V N.C. Streetlight Service Unit Materials List & Wiring Details	454.2070.004
103.	60A 120/240V U/G Dip Service Installation Details	454.2071.001
104.	60A 120/240V U/G Dip Service Installation Details	454.2071.002
105.	60A 120/240V U/G Dip Service Panel Mounting Details	454.2071.003
106.	60A 120/240V U/G Dip Service Panel Wiring Details	454.2071.004
107.	60A 120/240V O/H Drop Service Wiring Details	454.2071.005
108.	60A 120/240V O/H Drop Service Panel Mounting Details	454.2071.006
109.	60A 120/240V O/H Drop Service Panel Wiring Details	454.2071.007
110.	Pedestal Style Service Base	454.2072.001
111.	60A 120/240V Service Base Panel Details	454.2073.001
112.	60A 120/240V Service Base Panel Mounting Details	454.2073.002
113.	60A 120/240V Service Base Panel Mounting Details	454.2073.003
114.	100A Streetlight Service Cabinet Installation Details	454.2074.001
115.	100A 120/240V 1ph Service Cabinet Wiring Details	454.2074.002
116.	100A 120/208V 3ph Service Cabinet Wiring Details	454.2074.003
117.	100A 240/480V 1ph Service Cabinet Wiring Details	454.2074.004
118.	100A Streetlight Service Cabinet Materials List	454.2074.005
119.	Pole Mounted Receptacle	454.2080.001
120.	Minimum Clearances to Overhead Powerlines	454.2081.001

**The following drawings were missing from the index at time of publishing.
To be revised in future publications.**

4a.	Foundation Detail for 12m Aluminum Pole	507-1LBA-001
4b.	Foundation Detail for 12m Aluminum Pole Material List	507-1LBA-002
74a.	14m Pole with T-Arm Assembly Installation Details	454.2054a.003
74b.	14m Pole with T-Arm Assembly Materials List	454.2054b.004

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STREETLIGHT POLE/CONCRETE FOUNDATION INDEX

POLE TYPE	POLE B.C.D.	CONCRETE FOUNDATION												INSTALLATION DRAWINGS
		B	B1	B2	C	C1	D	D1	E	F	G	H		
5m WALKWAY (SEE NOTE 5)	254mm		●	●									454.2030.001	
5m TRADITIONAL (17th AVE.)	280mm		●	●									454.2031.001	
4.6m CHINATOWN	280mm		●	●									454.2033.001	
5.5m KENSINGTON	270mm		●	●									454.2036.001	
ROULLEVILLE STRAIGHT STEEL	267mm		●	●									454.2038.001	
6.4m ELECTRIC AVE.	280mm		●	●									454.2044.001	
7m TEAR DROP TRADITIONAL STEP	280mm	●											454.2046.001	
ELBOW DRIVE	280mm	●											454.2046.003	
7.8m McKENZIE TOWNE	280mm	●											454.2047.001	
8.2m STRAIGHT STEEL	280mm		●	●									454.2048.001	
9m/2.5m SINGLE DAVIT	280mm		●	●									454.2050.001	
9m/2.5m DOUBLE DAVIT	280mm		●	●									454.2051.001	
9m SQUARE STEEL	280mm	●											454.2052.001	
12m ROUND TAPERED STEEL	348mm				●	●							454.2053.001	
12m 16 SIDED TAPERED STEEL	348mm				●	●							454.2053.003	
14m POLE W/ T-ARM ASSEMBLY	330mm				●	●					●	●	454.2054a.003	
15m/2.5m SINGLE DAVIT	330mm				●	●					●	●	454.2054.001	
15m/2.5m DOUBLE DAVIT	330mm				●	●					●	●	454.2055.001	
20m/2.5m SINGLE DAVIT	396mm						●	●					454.2056.001	
20m/2.5m DOUBLE DAVIT	396mm						●	●					454.2057.001	
30m HIGH MAST	660mm								●				454.2058.001	
30m HIGH MAST (RAISE/LOWER)	660mm									●			454.2059.001	

NOTES:

- SEE MATERIAL STANDARDS AND SPECIFICATIONS FOR PRE-CAST BASE DETAIL DRAWINGS.
- SEE CONSTRUCTION STANDARDS AND SPECIFICATIONS FOR POURED-IN-PLACE BASE DETAILS.
- ALL BASES TO BE INSTALLED WITH A ± 150 mm PROJECTION ABOVE FINAL GRADE.
- TYPE D AND E BASES MAY, AT THE CONTRACTORS DISCRETION AND WITH THE APPROVAL OF CALGARY ROADS, BE SUPPLIED BY THE CONTRACTOR AS PRECAST BASES.
- 5m WALKWAY POLE DOES NOT MOUNT ON A CITY STANDARD PRE-CAST CONCRETE BASE. CONTRACTOR SHALL CONFIRM POLE B.C.D. AND BASE REQUIREMENTS PRIOR TO CONSTRUCTION.

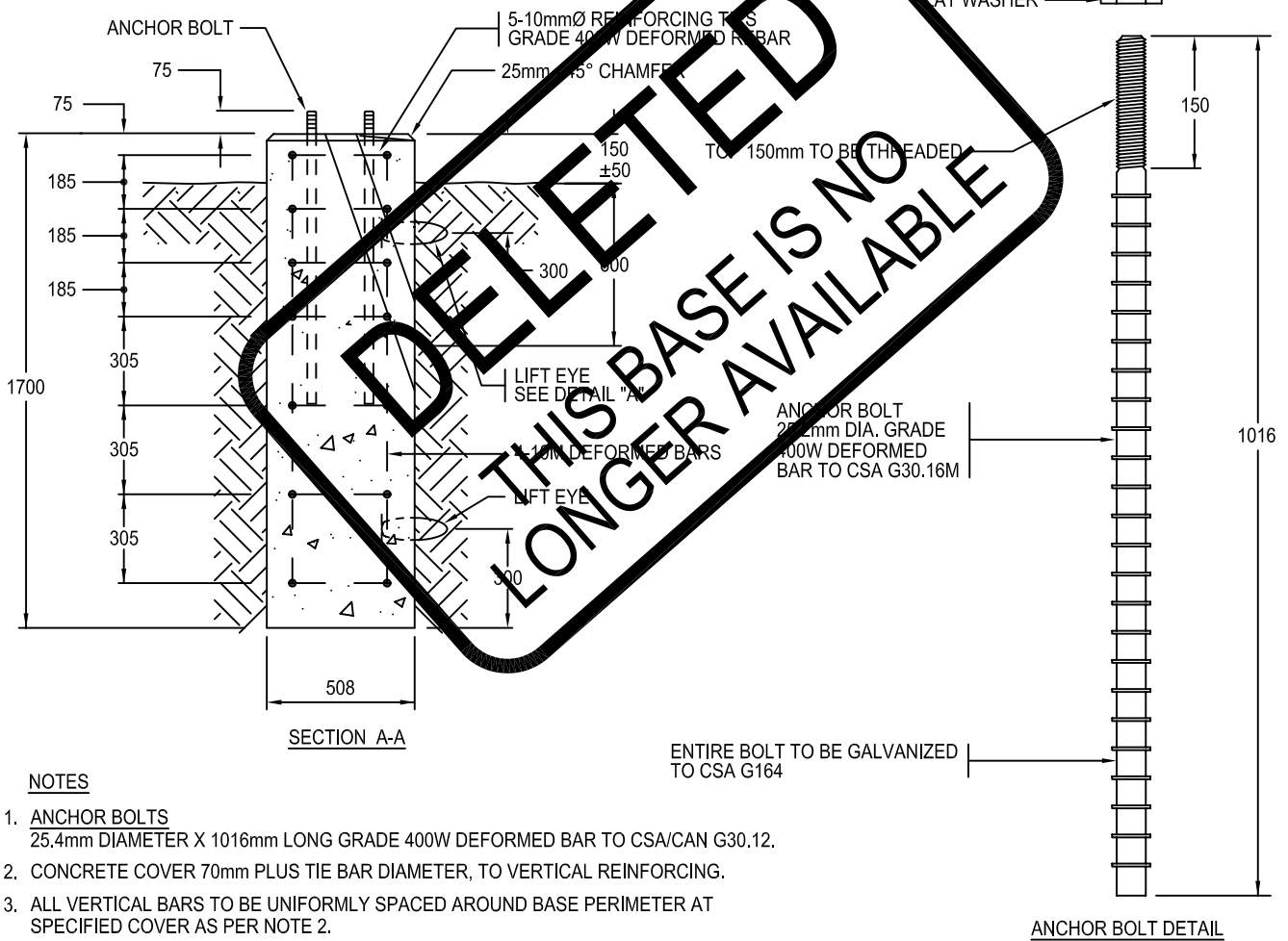
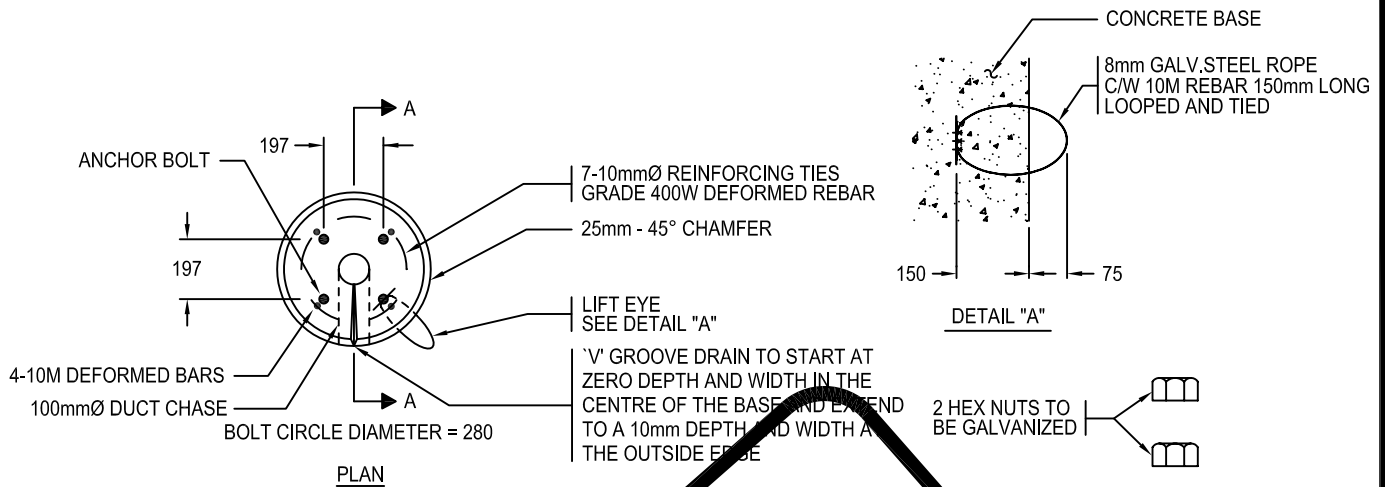
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THE CITY OF
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ROADS

CONCRETE BASE INDEX

4	2006 ISSUE UPDATE - WCE	2006-05-23				
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2001.001	4	1



NOTES

1. ANCHOR BOLTS
25.4mm DIAMETER X 1016mm LONG GRADE 400W DEFORMED BAR TO CSA/CAN G30.12.
2. CONCRETE COVER 70mm PLUS TIE BAR DIAMETER, TO VERTICAL REINFORCING.
3. ALL VERTICAL BARS TO BE UNIFORMLY SPACED AROUND BASE PERIMETER AT SPECIFIED COVER AS PER NOTE 2.

STOCK NUMBER 139574
REFERENCE SPECIFICATION 355-3F74-001

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ONLY

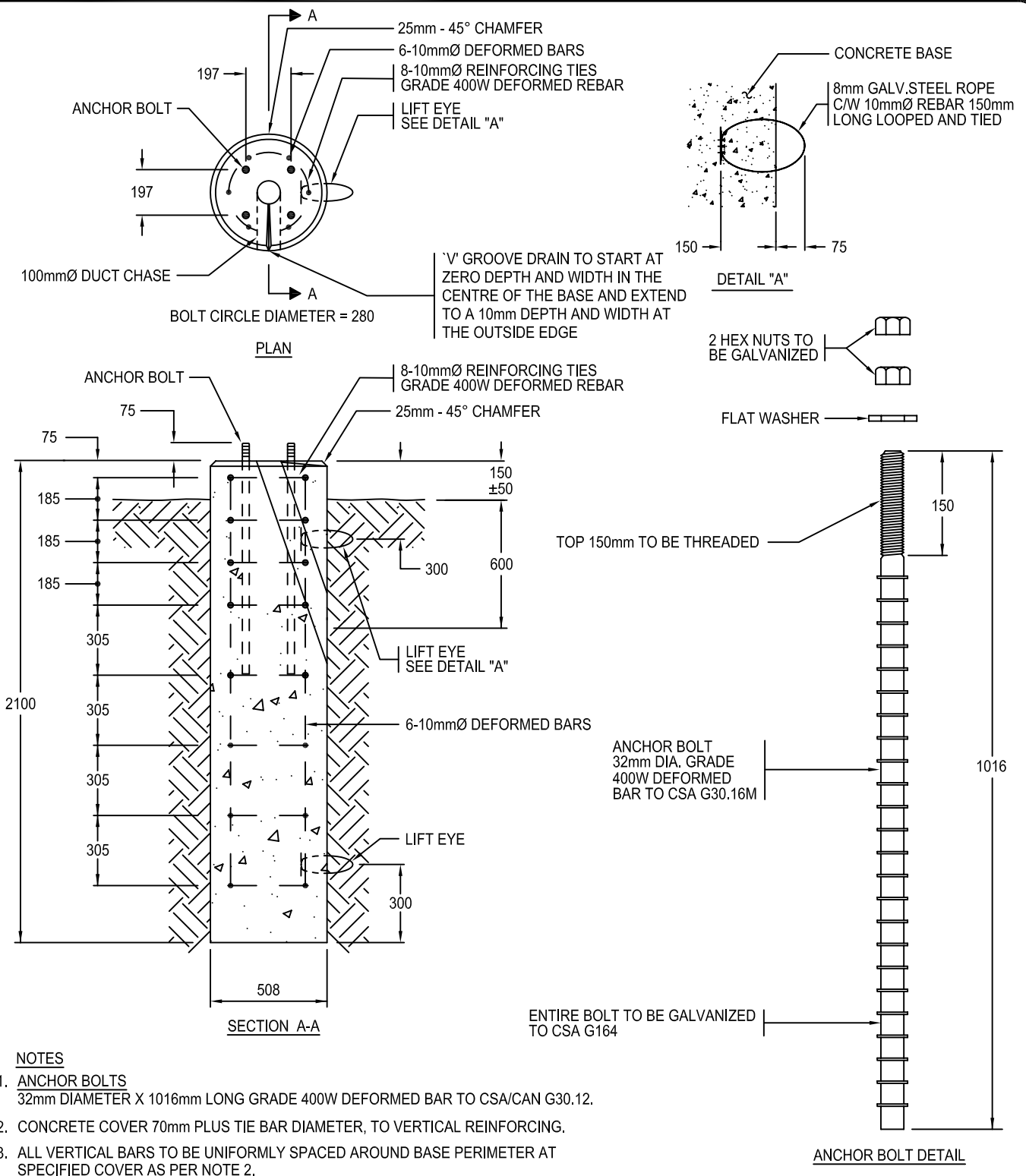


THE CITY OF
CALGARY
ROADS

2	2005 ISSUE UPDATE (INFORMATION ONLY)	2005-06-01
1	2004 ISSUE UPDATE (INFORMATION ONLY)	2004-02-13
Issue	Revision	Issue Date

TYPE 'A' PRECAST CONCRETE BASE

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2001.002	ISSUE 2	SHEET 2
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STOCK NUMBER 139575
REFERENCE SPECIFICATION 355-3F74-001

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THE CITY OF
CALGARY
ROADS

2	2005 ISSUE UPDATE (INFORMATION ONLY)	2005-06-01
1	2004 ISSUE UPDATE (INFORMATION ONLY)	2004-02-13
Issue	Revision	Issue Date

TYPE 'B' ROUND PRECAST CONCRETE BASE

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

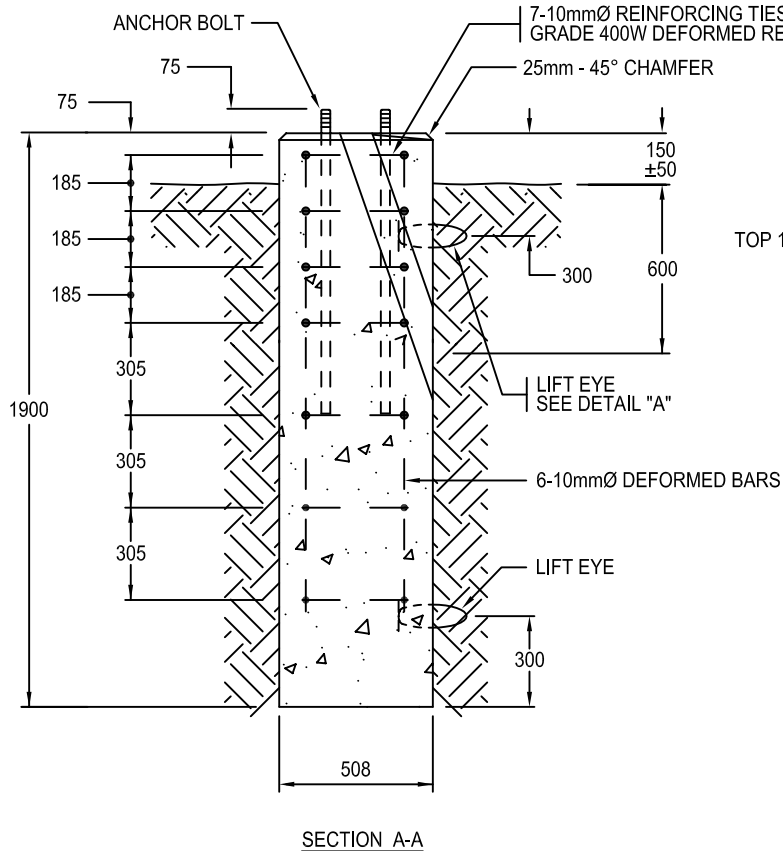
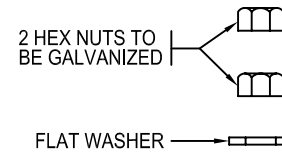
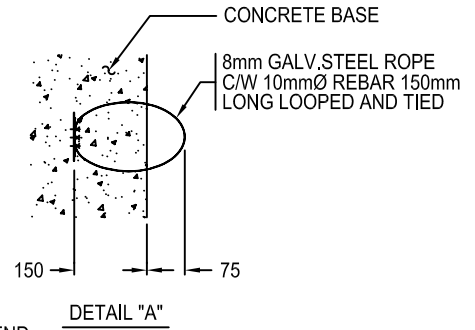
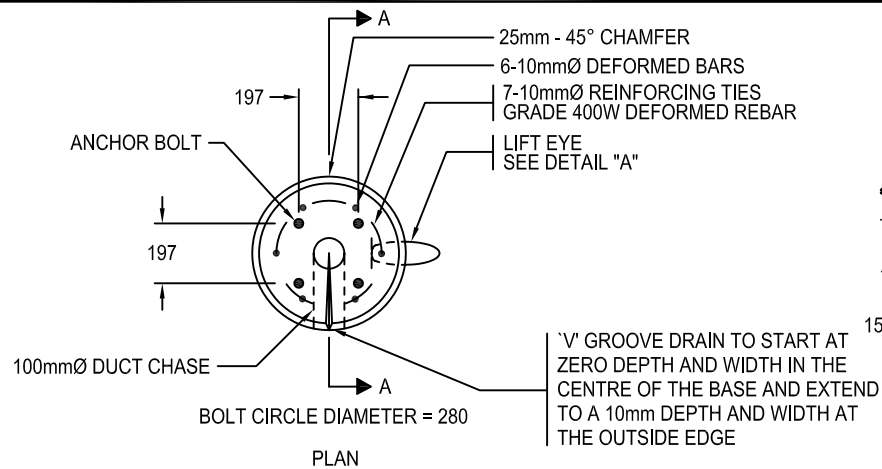
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2001.003

ISSUE
2

SHEET
3



TOP 150mm TO BE THREADED

ANCHOR BOLT
32mm DIA. GRADE
400W DEFORMED
BAR TO CSA G30.16M

ENTIRE BOLT TO BE GALVANIZED
TO CSA G164

ANCHOR BOLT DETAIL

NOTES

1. ANCHOR BOLTS
32mm DIAMETER X 1016mm LONG GRADE 400W DEFORMED BAR TO CSA/CAN G30.12.
2. CONCRETE COVER 70mm PLUS TIE BAR DIAMETER, TO VERTICAL REINFORCING.
3. ALL VERTICAL BARS TO BE UNIFORMLY SPACED AROUND BASE PERIMETER AT SPECIFIED COVER AS PER NOTE 2.

STOCK NUMBER 139578
REFERENCE SPECIFICATION 355-3F74-001

DIMENSIONS ARE MILLIMETRES
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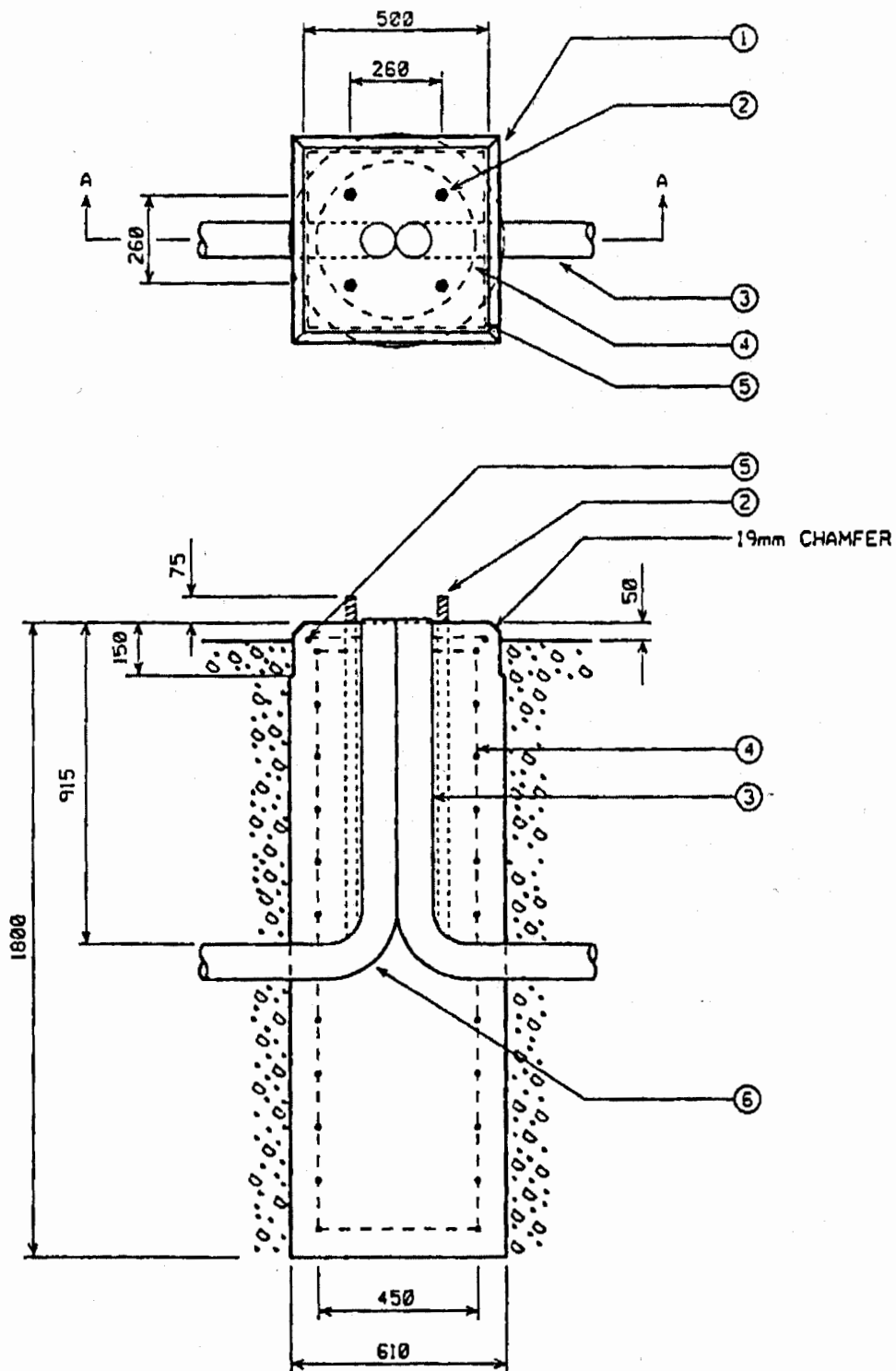


THE CITY OF
CALGARY
ROADS

2	2005 ISSUE UPDATE (INFORMATION ONLY)	2005-06-01
1	2004 ISSUE UPDATE (INFORMATION ONLY)	2004-02-13
Issue	Revision	Issue Date

TYPE 'B1' ROUND PRECAST CONCRETE BASE

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2001.004	ISSUE 2	SHEET 4
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SECTION A-A

ALL DIMENSIONS ARE IN MILLIMETRES
EXCEPT AS INDICATED.

THE CITY OF CALGARY
ELECTRIC SYSTEM

DATE	REVISIONS		ENG.	C. & M.	SAF.
E.P.B. APPR.	DATE	/ /	ISSUE DATE	/ /	
DSGN APPR. M. JAFFER	ENG. APPR. F.W. BROOKS	C. & M. APPR. J.P. CAVAR	SAFETY APPR. R.K. DIBB		
DATE 89-06-14	DATE 89-06-06	DATE 89-06-12	DATE 89-06-13		
DWN: GG	CHKD:	DSGN: J. FLOYD	CHKD:		

TITLE DOWNTOWN

FOUNDATION DETAIL FOR
12 METRE ALUMINUM POLE

SHEET 2 OF 2
SCALE: N.T.S.

FILE NO.
507-1LBA-001

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	MFG	DESCRIPTION	
1	.75m ³	N5610130003	F740	CONCRETE	30.0-MPA
2	4	SUPPLIED W/POLE	-	BOLT-ANCHOR	1-1/4X40IN-GALVANIZED
3	1	R5630020146	D772	DUCT-FRE	4IN
4	3m ²	N9520020001	F740	MESH-WIRE	6X6IN
5	1	95100300177	F740	REBAR	15m-#5-65FT-POLE
6	2	R5630020161	D772	BEND-FRE	41NX90-DEGREE
7	2m	N5640090002	F740	SONOTUBE	24IN

NOTES:

- 1) THE CONCRETE MUST HAVE A MINIMUM COMPRESSIVE STRENGTH OF 30 MPA AT 28 DAYS & 5 TO 7 PERCENT ENTRAINED AIR.
- 2) THE MESH MUST HAVE A MINIMUM OF 50mm OF CONCRETE COVERAGE.
- 3) THE MESH IS TO BE MADE FROM 10 GAUGE WIRE.
- 4) SONOTUBE IS TO BE USED AS A FORM FOR THE CONCRETE.
- 5) THE ANCHOR BOLTS ARE TO BE 31.75 IN DIAMETER & 1016 LONG FULLY GALVANIZED.
- 6) THE ANCHOR BOLTS ARE TO BE MADE FROM DEFORMED BAR CSA SPECIFICATION A-615-68. THE BOLT MUST HAVE A MINIMUM YIELD STRENGTH OF 40,000 PSI.
- 7) THE BASE IS TO BE POURED SO THAT THE TOP IS 50mm ABOVE THE SIDEWALK.
- 8) THE BOLT CIRCLE DIAMETER IS TO BE 368mm.
- 9) ITEM 5, THE REBAR MUST BE CUT OR FORMED INTO A 500 X 500mm SQUARE.

ALL DIMENSIONS ARE IN MILLIMETRES
EXCEPT AS INDICATED.

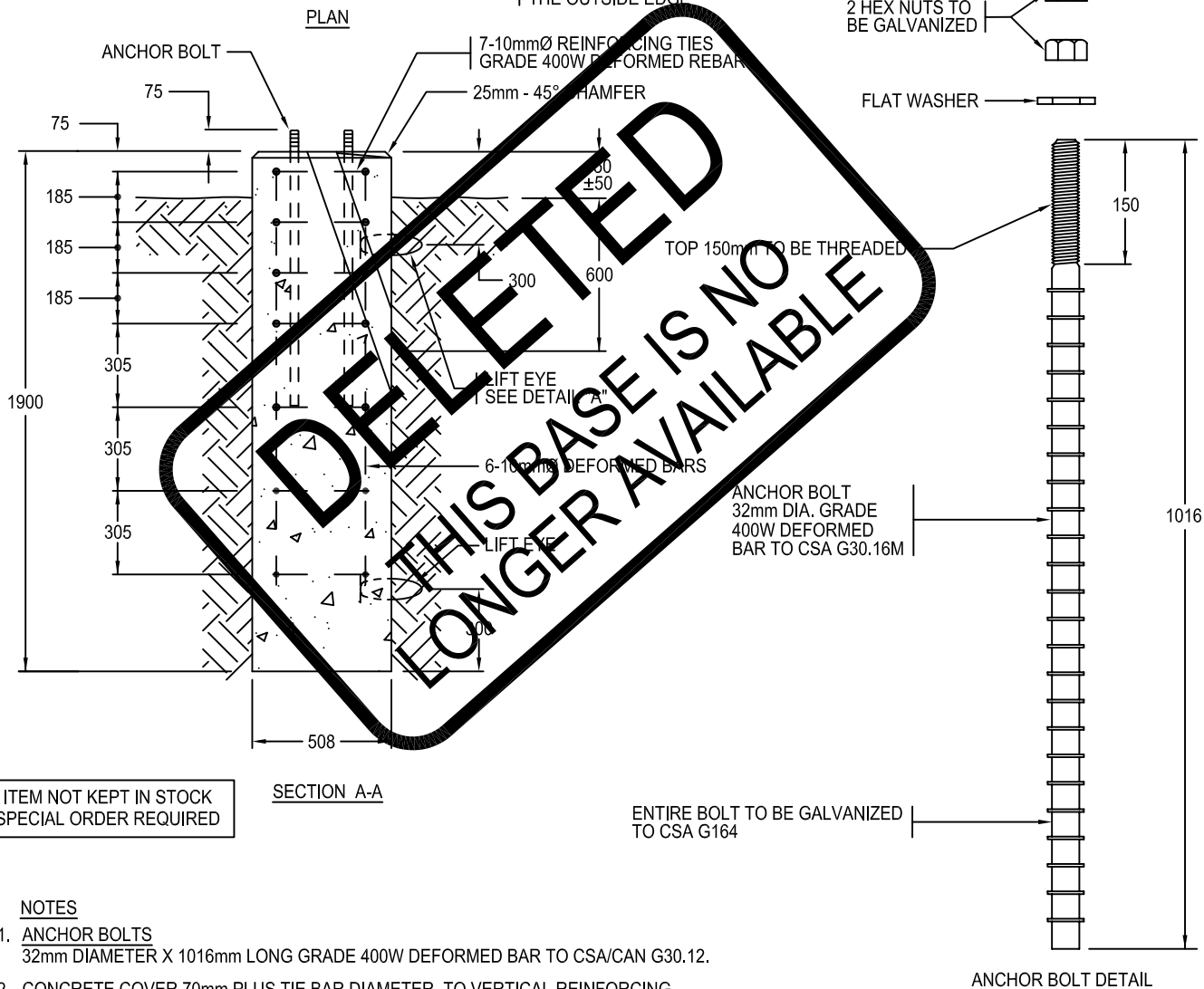
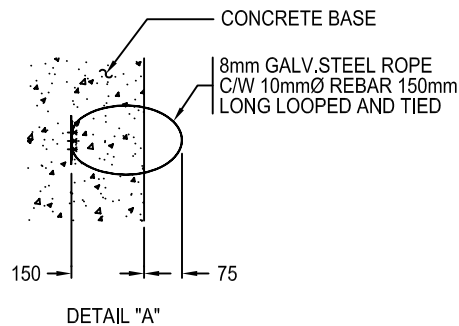
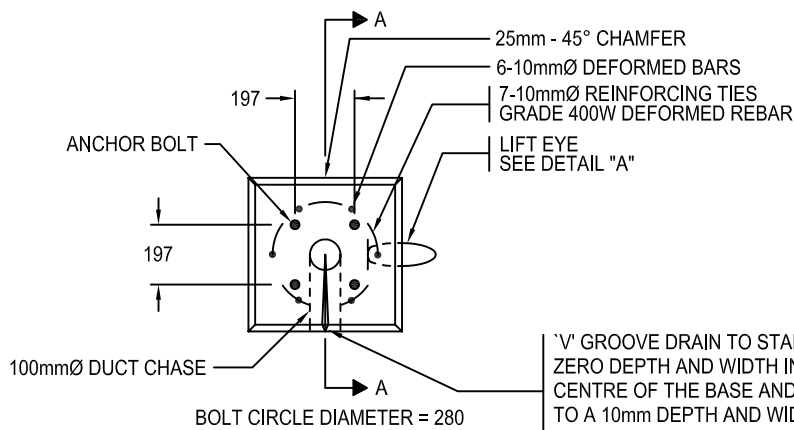
THE CITY OF CALGARY
ELECTRIC SYSTEM

DATE	REVISIONS	ENG.	C. & M.	SAF.
E.P.B. APPR.	DATE / /	ISSUE DATE / /		
DSGN APPR.	ENG. APPR.	C. & M. APPR.	SAFETY APPR.	
M. JAFFER	F.W. BROOKS	J.P. CAVAR	R.K. DIBB	
DATE 89-06-14	DATE 89-06-06	DATE 89-06-12	DATE 89-06-13	
DWN: CAS	CHKD:	DSGN: J. FLOYD	CHKD:	

TITLE
FOUNDATION DETAIL FOR
12 METRE ALUMINIUM POLE

SHEET 1 OF 2
SCALE: N.T.S.

FILE NO.
507-1LBA-001



NOTES

1. ANCHOR BOLTS
32mm DIAMETER X 1016mm LONG GRADE 400W DEFORMED BAR TO CSA/CAN G30.12.
2. CONCRETE COVER 70mm PLUS TIE BAR DIAMETER, TO VERTICAL REINFORCING.
3. ALL VERTICAL BARS TO BE UNIFORMLY SPACED AROUND BASE PERIMETER AT SPECIFIED COVER AS PER NOTE 2.

STOCK NUMBER 159907
REFERENCE SPECIFICATION 355-3F74-001

DIMENSIONS ARE MILLIMETRES
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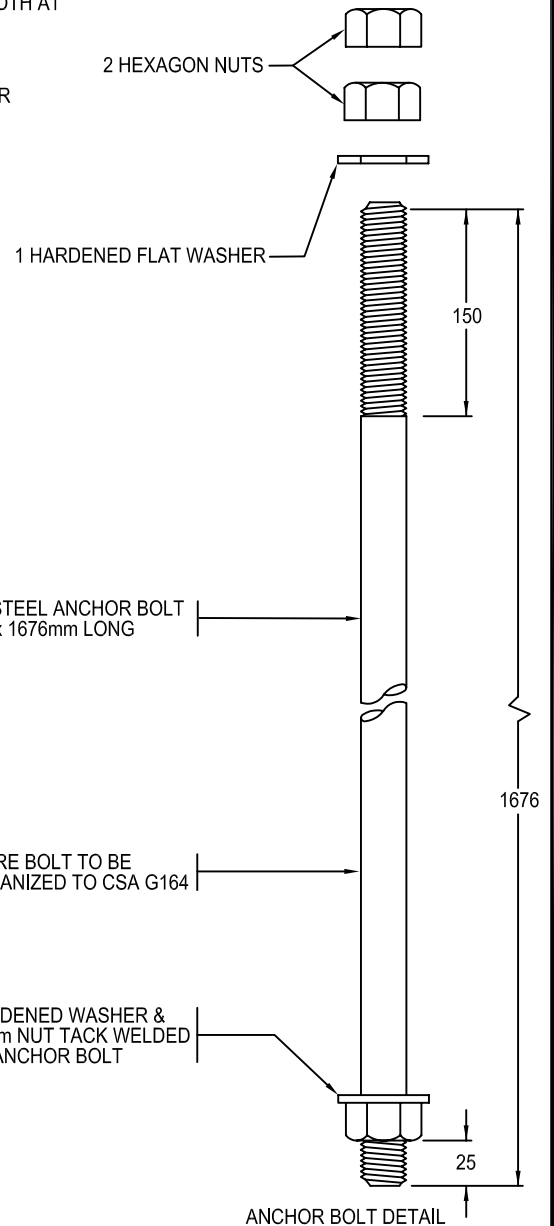
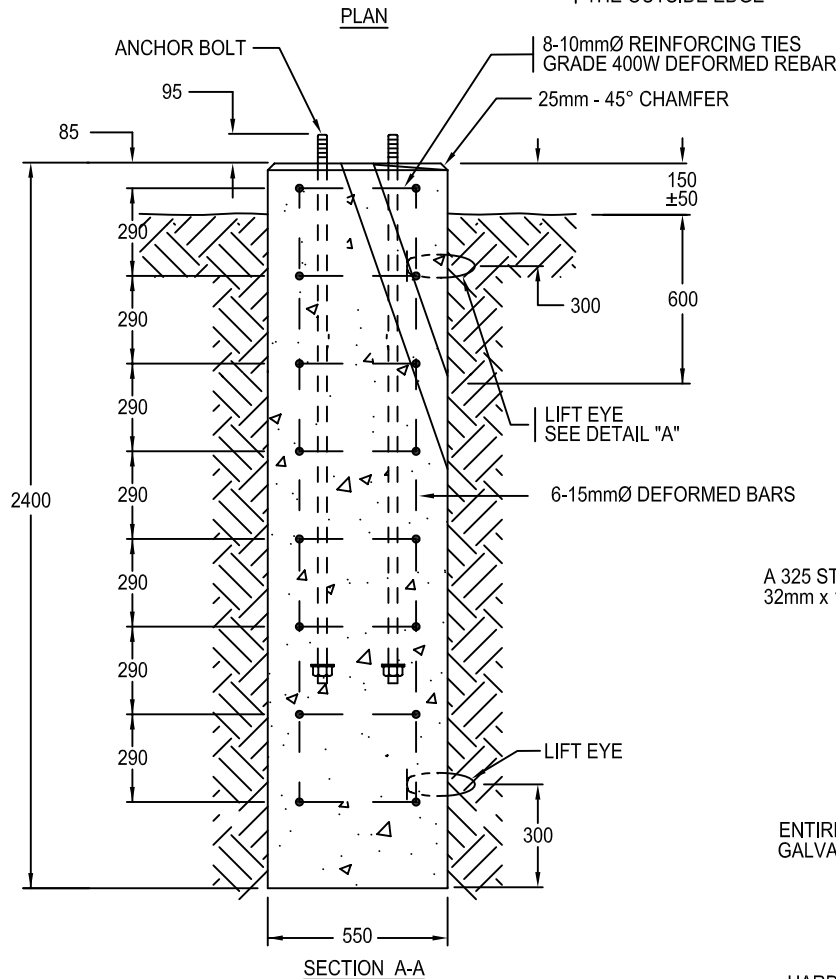
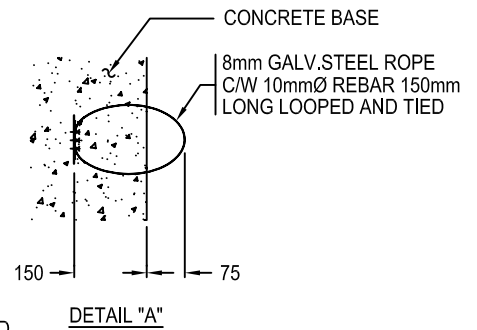
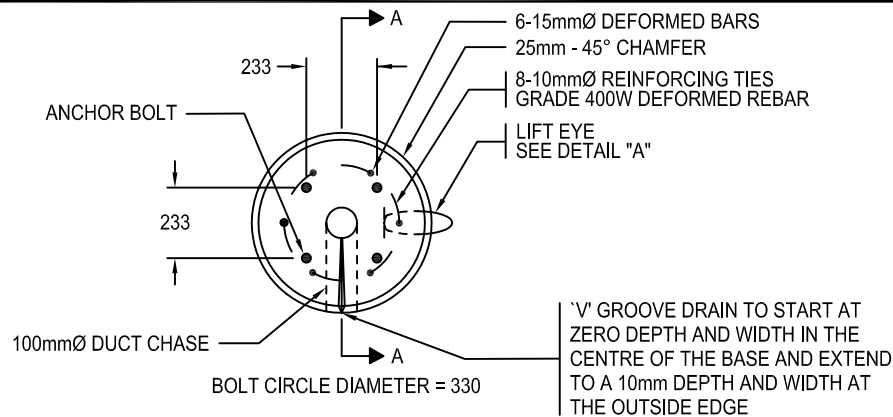


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THE CITY OF
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ROADS

1	2005 ISSUE UPDATE (INFORMATION ONLY)	2005-06-01	TYPE 'B2' SQUARE PRECAST CONCRETE BASE			
Issue	Revision	Issue Date				
Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads		DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2001.005	ISSUE 1 SHEET 5



NOTES

1. ANCHOR BOLTS
32mm DIAMETER X 1676mm LONG GRADE 400W DEFORMED BAR TO CSA/CAN G30.12.
2. CONCRETE COVER 70mm PLUS TIE BAR DIAMETER, TO VERTICAL REINFORCING.
3. ALL VERTICAL BARS TO BE UNIFORMLY SPACED AROUND BASE PERIMETER AT SPECIFIED COVER AS PER NOTE 2.

STOCK NUMBER 139576
REFERENCE SPECIFICATION 355-3F74-001

DIMENSIONS ARE MILLIMETRES
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CALGARY
ROADS

2	2005 ISSUE UPDATE (INFORMATION ONLY)	2005-06-01
1	2004 ISSUE UPDATE (INFORMATION ONLY)	2004-02-13
Issue	Revision	Issue Date

TYPE 'C' ROUND PRECAST CONCRETE BASE

Date Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

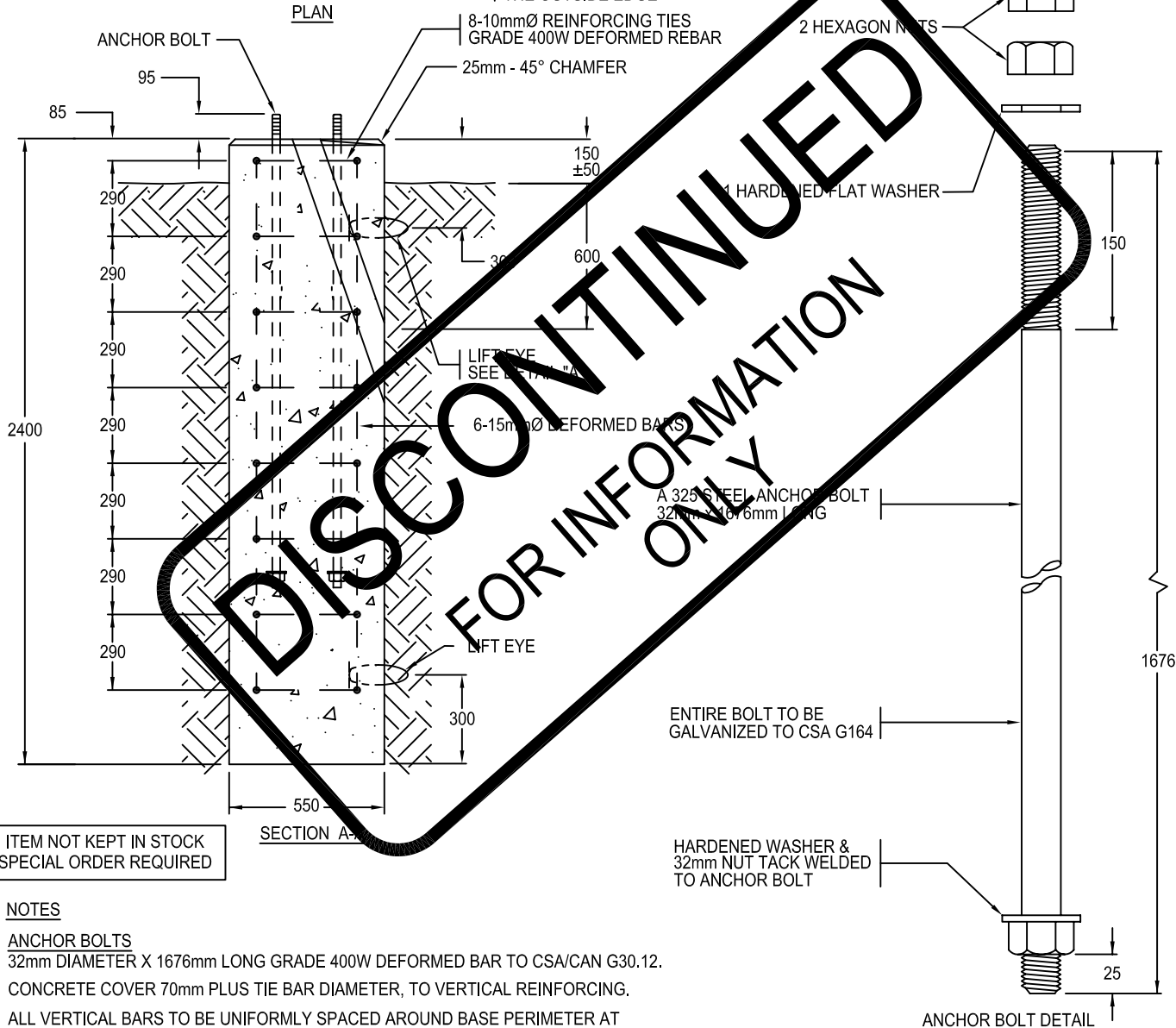
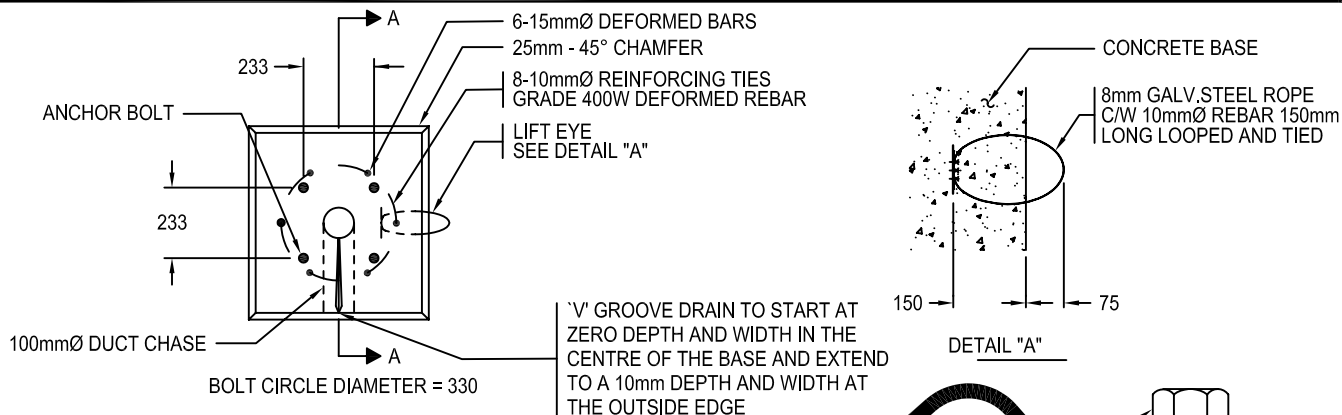
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2001.006

ISSUE
2

SHEET
6



ITEM NOT KEPT IN STOCK
SPECIAL ORDER REQUIRED

NOTES

1. ANCHOR BOLTS
32mm DIAMETER X 1676mm LONG GRADE 400W DEFORMED BAR TO CSA/CAN G30.12.
2. CONCRETE COVER 70mm PLUS TIE BAR DIAMETER, TO VERTICAL REINFORCING.
3. ALL VERTICAL BARS TO BE UNIFORMLY SPACED AROUND BASE PERIMETER AT SPECIFIED COVER AS PER NOTE 2.

STOCK NUMBER 159908
REFERENCE SPECIFICATION 355-3F74-001

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

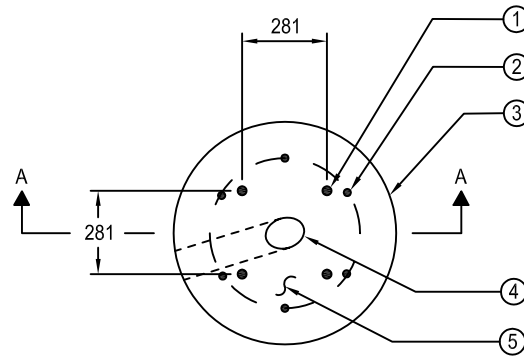


FOR INFORMATION
ONLY



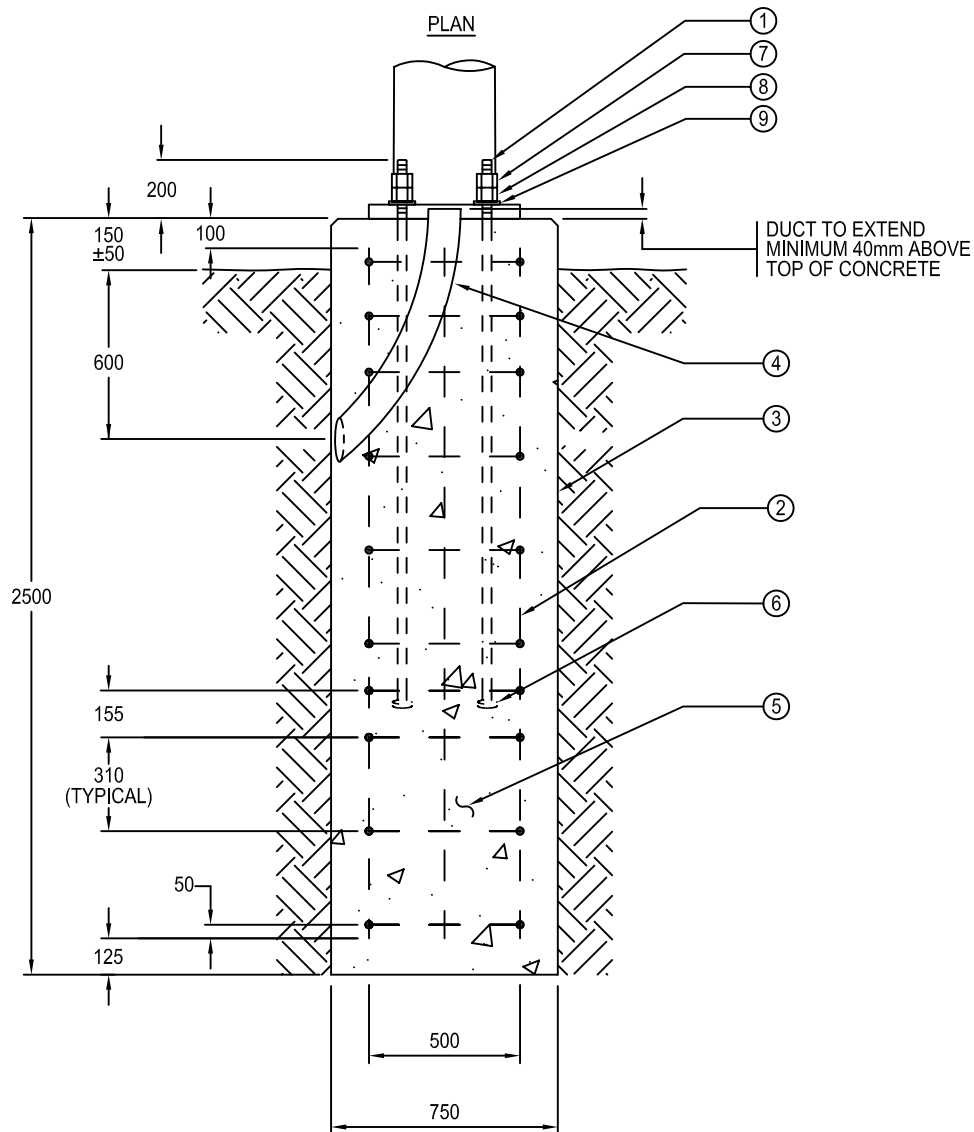
THE CITY OF
CALGARY
ROADS

1	2005 ISSUE UPDATE (INFORMATION ONLY)	2005-06-01	TYPE 'C1' SQUARE PRECAST CONCRETE BASE			
Issue	Revision	Issue Date				
Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2001.007	1	7
	For General Manager Calgary Roads					



BOLT CIRCLE DIAMETER:
396mmØ

BOLT SQUARE DIMENSION:
281mm



SECTION A-A

FOR ITEM NUMBERS REFER
TO DRAWING 454.2002.003

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

TYPE 'D' BASE DETAIL FOR 20 METRE STEEL DAVIT POLE

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

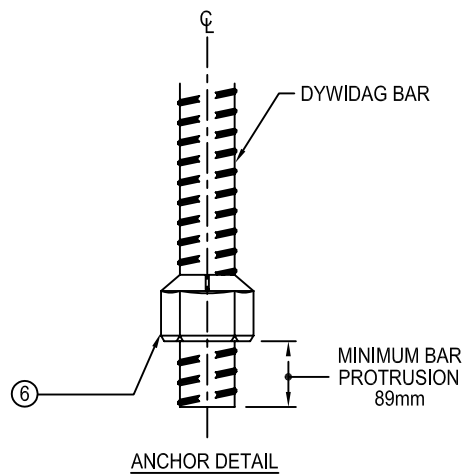
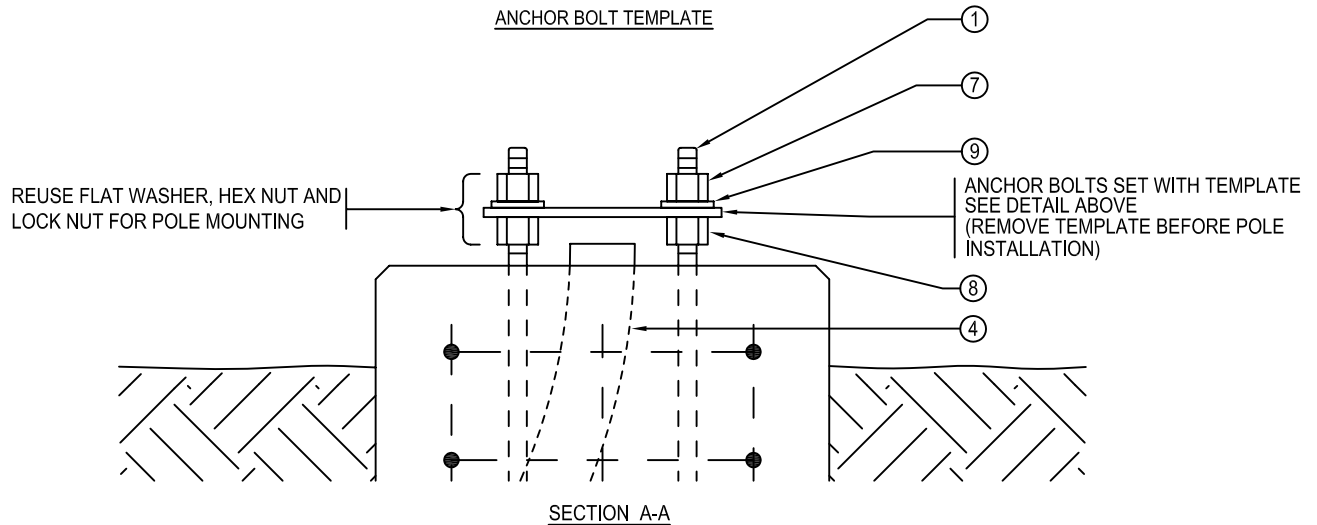
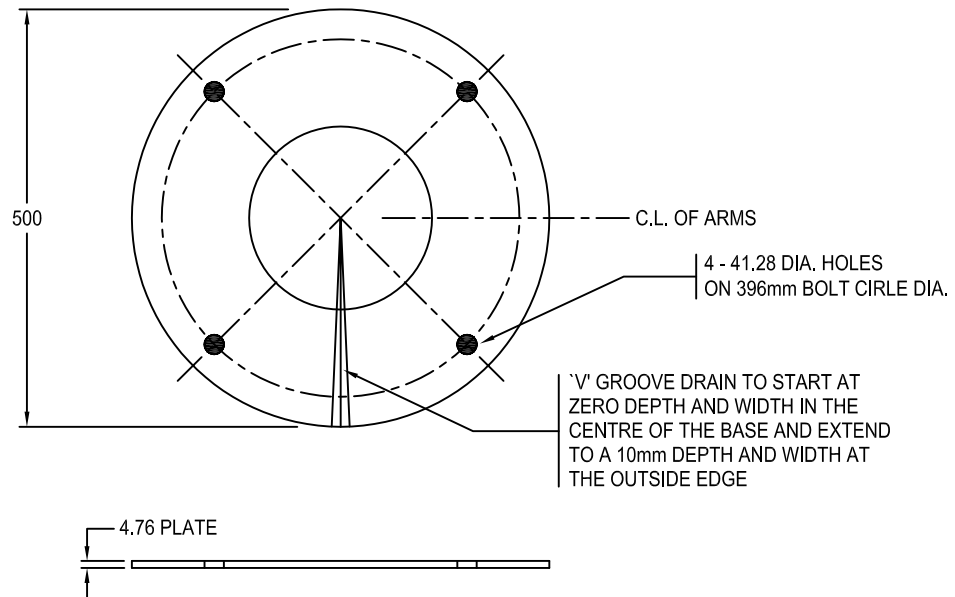
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2002.001

ISSUE
4

SHEET
8



FOR ITEM NUMBERS REFER
TO DRAWING 454.2002.003

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

ANCHOR BOLT TEMPLATE AND DETAILS FOR TYPE 'D' BASE

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

SCALE:
NOT TO SCALE

DRAWING No.
454.2002.002

ISSUE
4

SHEET
9

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	4	151019	BOLT - ANCHOR 32mmØ x 1525mm GRADE 150 DYWIDAG	ROADS
2	1	151037	REBAR CAGE	ROADS
3	1	-	SONOTUBE 760mm	CONTRACTOR
4	1	-	DUCT BEND 100mmØ	CONTRACTOR
5	1.2m	-	CONCRETE 35.0-MPA	CONTRACTOR
6	4	138510	ANCHOR NUT 32mmØ DYWIDAG	ROADS
7	4	138508	LOCK NUT 32mmØ DYWIDAG	ROADS
8	4	138509	HEX NUT 32mmØ DYWIDAG	ROADS
9	4	138584	FLAT WASHER 32mmØ DYWIDAG	ROADS

NOTES:

1. MINIMUM CONCRETE COVERAGE OVER WIRE REINFORCING STEEL SHALL BE 75mm.
2. SONOTUBE SHALL BE USED TO FORM THE TOP 600mm OF THE FOUNDATION.
FULL LENGTH ONLY REQUIRED IF UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED.
3. THE DUCT SHALL EXTEND 40mm ABOVE THE TOP OF THE FOUNDATION.
4. A 25mm WIDE CHAMFER SHALL BE TROWELLED INTO THE TOP EDGE OF THE FOUNDATION.
5. THE DUCT SHALL EXTEND FROM THE SIDE OF BASE A MINIMUM OF 150mm.
6. THE TOP OF THE FOUNDATION SHALL BE SMOOTH AND LEVEL WITHIN 3mm BETWEEN ANY TWO BOLTS.
7. THE BOLTS SHALL BE PLUMB AND SET TO THE BOLT CIRCLE DIAMETER. THE MAXIMUM DEVIATION FROM TRUE DIMENSIONS ON ANY TWO BOLTS SHALL NOT EXCEED 5mm IN TOTAL.
8. THE BOTTOM OF THE FOUNDATION SHALL BE PLACED ON UNDISTURBED OR COMPACTED SOIL.
9. USE ANCHOR BOLT TEMPLATE AS PER DETAIL ON SHEET 9.

REBAR CAGE:

1. SIX 20mm VERTICAL BARS 2275mm LONG SHALL BE EQUALLY SPACED ON 500mm DIA. CIRCLE.
2. TEN 10m TIES SHALL BE 310mm ON CENTRE EXCEPT AS SHOWN AND TACK WELDED.
3. REINFORCING STEEL SHALL BE GRADE 400 DEFORMED BARS.

CONCRETE SPECIFICATIONS:

1. THE CONCRETE SHALL MEET THE REQUIREMENT OF CHAPTER 310
- PORTLAND CEMENT CONCRETE.
2. MINIMUM COMPRESSIVE STRENGTH 35 MPA AT 28 DAYS.
MINIMUM 5-7% ENTRAINED AIR. TYPE 50 CONCRETE.

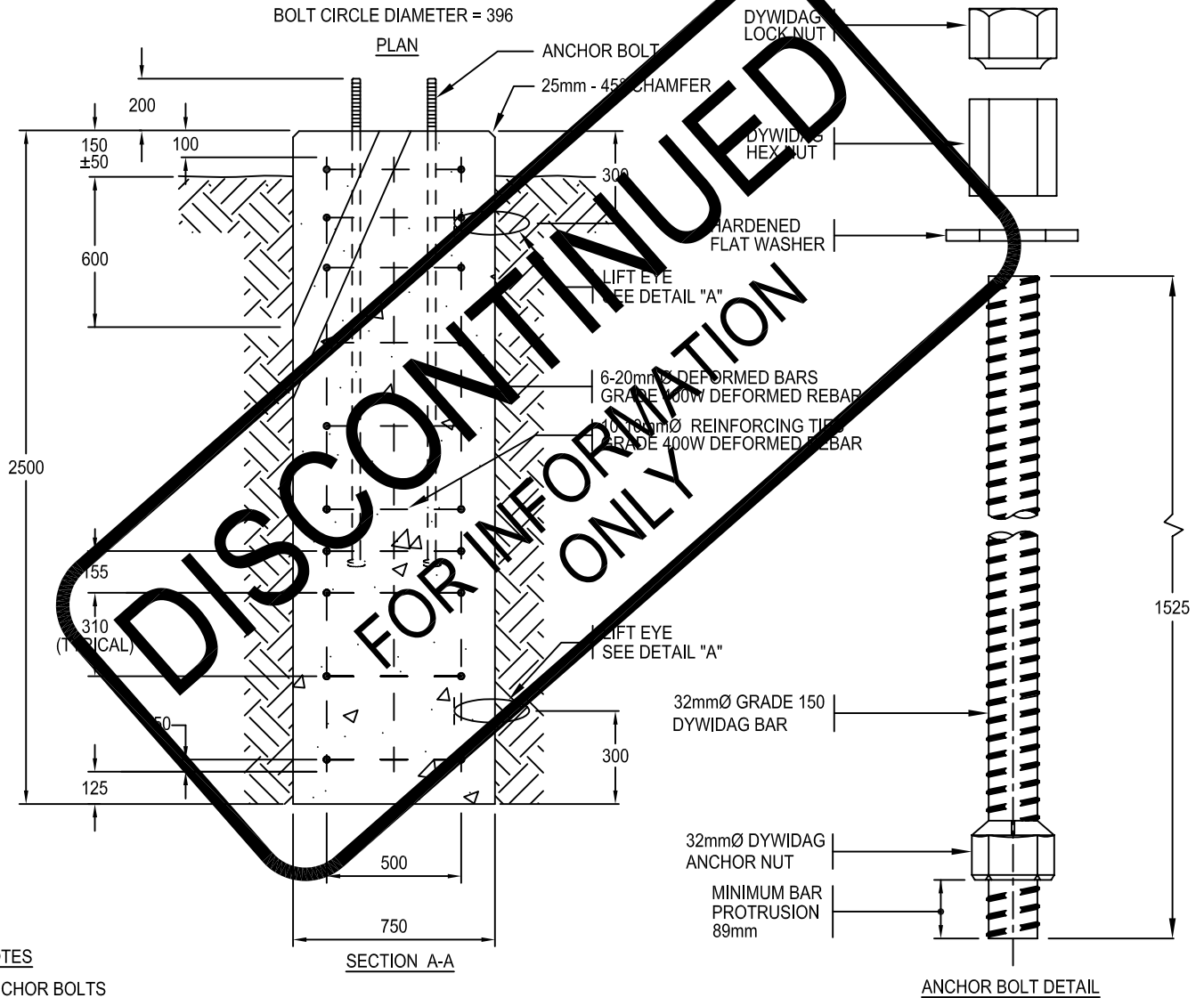
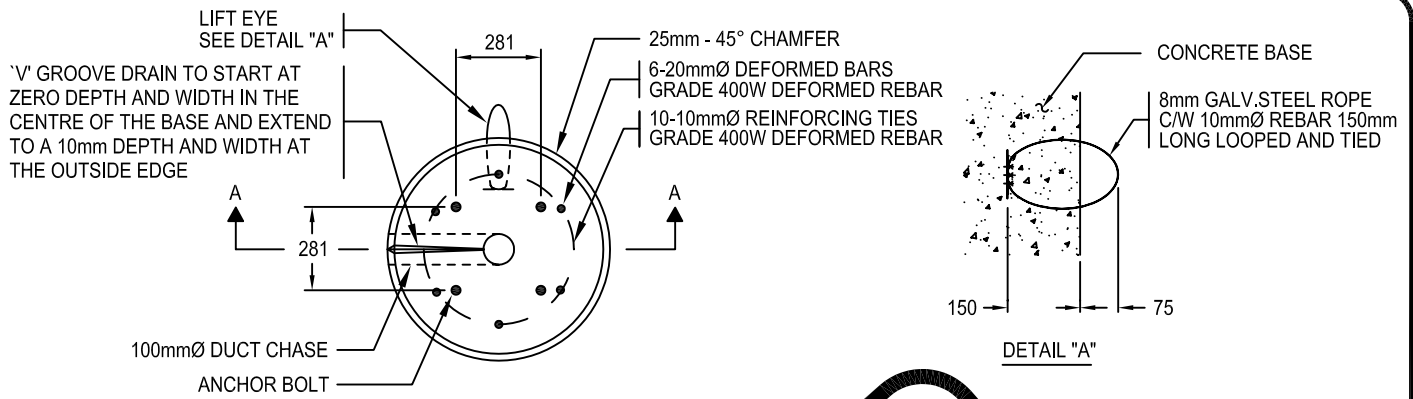
NOTE: NO WATER IS TO BE ADDED TO THE CONCRETE AT THE SITE.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15	MATERIAL LIST FOR TYPE 'D' BASE				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date		Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
		For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2002.003	4	10



NOTES

1. ANCHOR BOLTS
32mm DIAMETER X 1525mm LONG GRADE 150 DYWIDAG BAR.
2. CONCRETE COVER 70mm PLUS TIE BAR DIAMETER, TO VERTICAL REINFORCING.
3. ALL VERTICAL BARS TO BE UNIFORMLY SPACED AROUND BASE PERIMETER AT SPECIFIED COVER.

STOCK NUMBER

TBA

REFERENCE SPECIFICATION

355-3F74-001

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



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ROADS

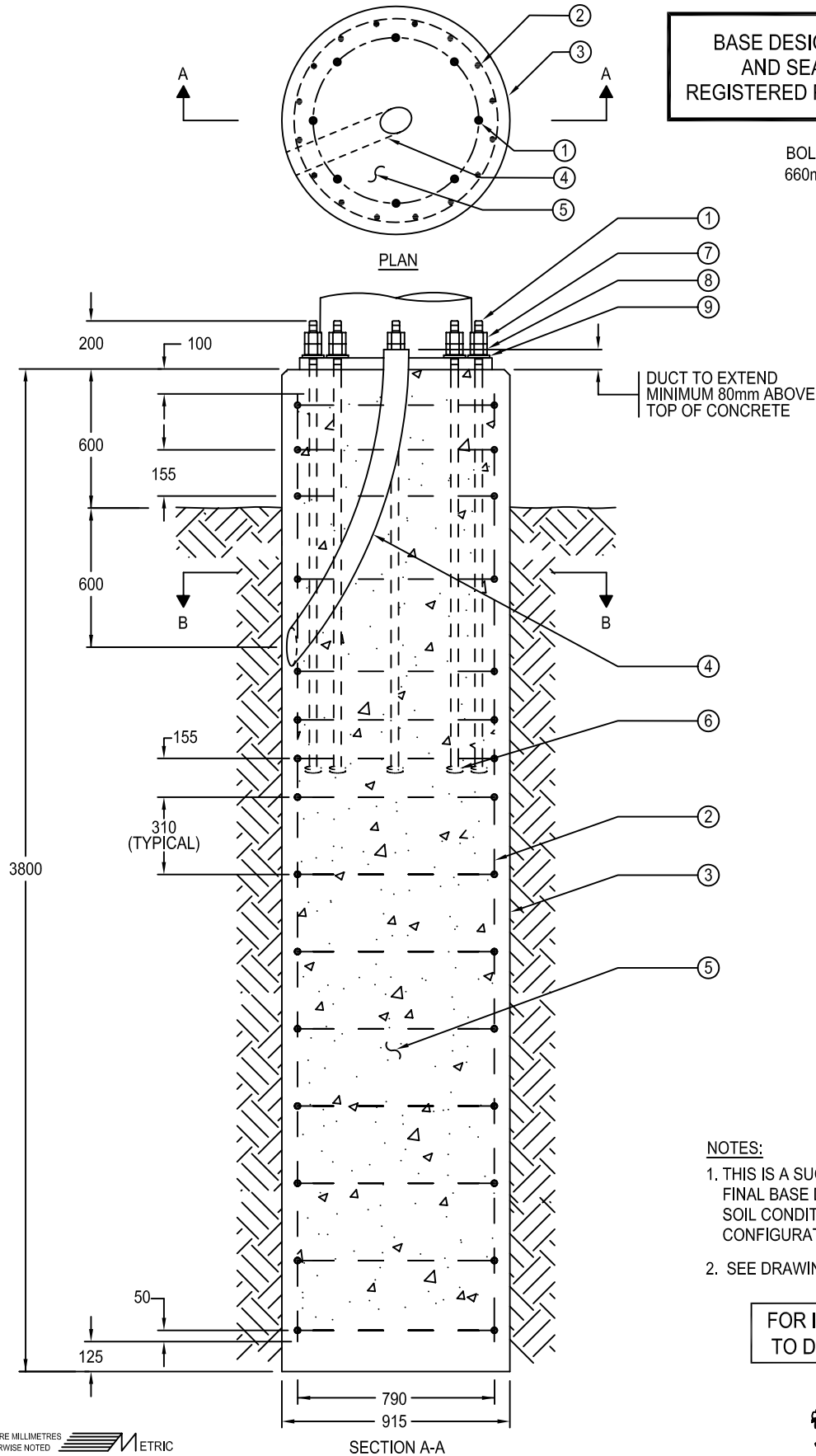
1	2005 ISSUE UPDATE	2005-06-01
Issue	Revision	Issue Date

TYPE 'D1' PRECAST CONCRETE BASE

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2002.004	1	11
	For General Manager Calgary Roads					

BASE DESIGN MUST BE REVIEWED
AND SEALED BY AN APEGGA
REGISTERED PROFESSIONAL ENGINEER

BOLT CIRCLE DIAMETER:
660mmØ



NOTES:

1. THIS IS A SUGGESTED BASE DESIGN ONLY. FINAL BASE DESIGN MUST SUIT BOTH ACTUAL SOIL CONDITIONS AND TYPE OF POLE/LUMINAIRE CONFIGURATION.
2. SEE DRAWING 454.2003.002 FOR SECTION B-B.

FOR ITEM NUMBERS REFER
TO DRAWING 454.2003.003



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ROADS

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

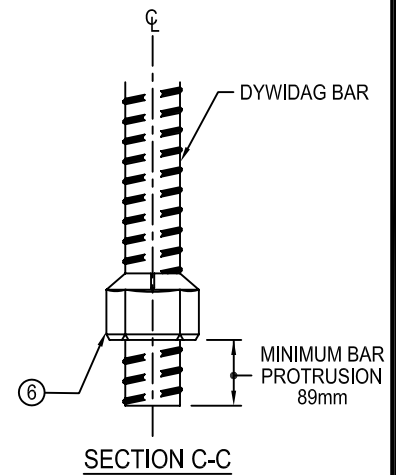
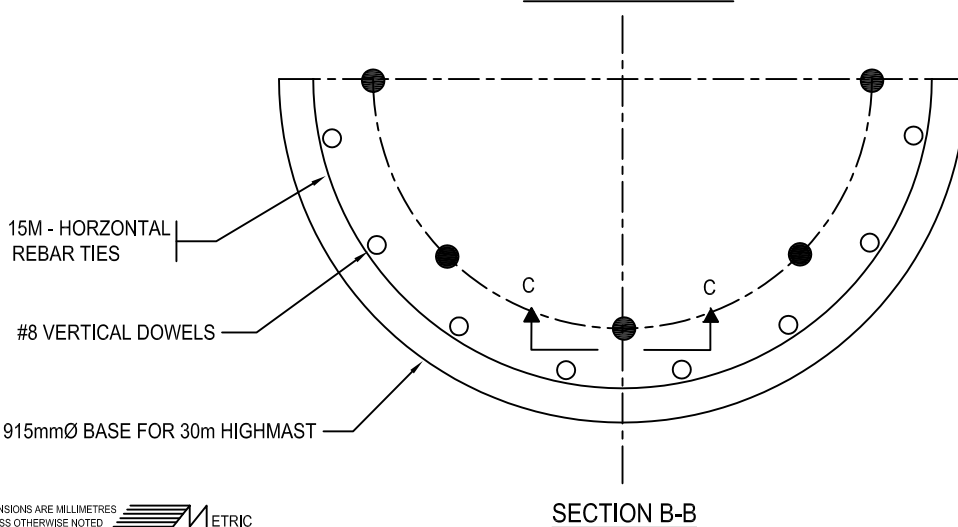
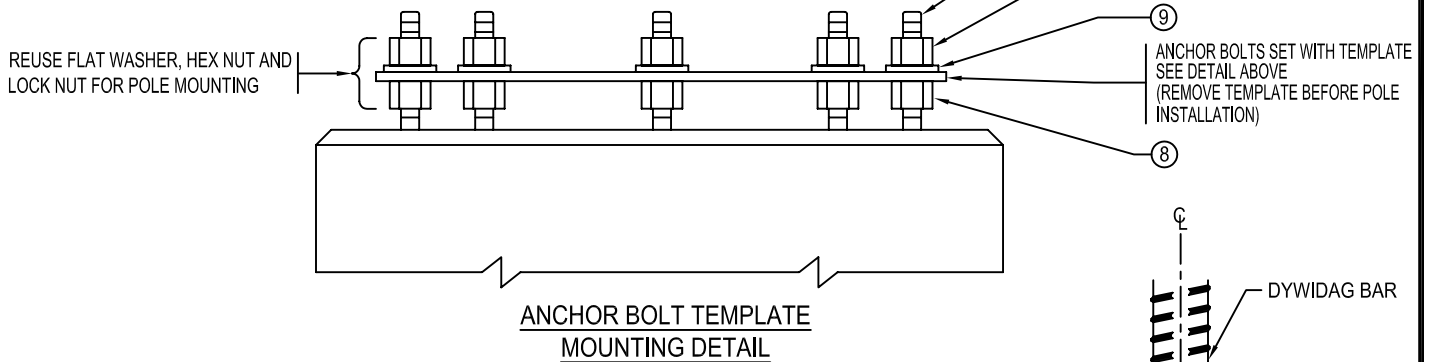
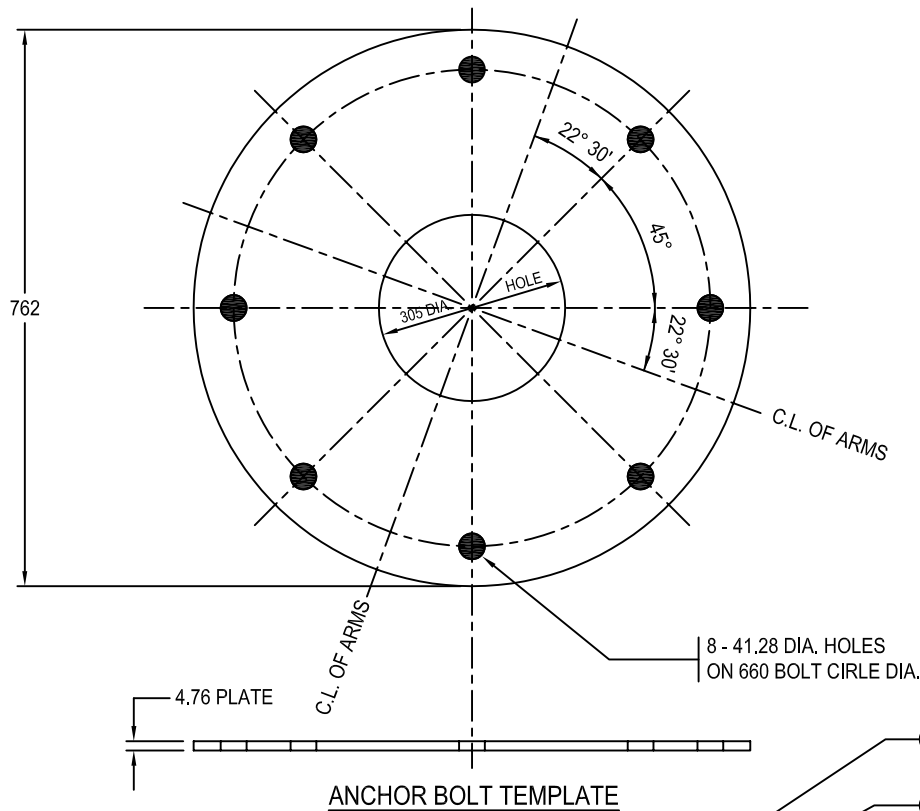


SECTION A-A

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

TYPE 'E' BASE DETAIL FOR 30 METRE STEEL HIGH MAST POLE

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2003.001	4	12
	For General Manager Calgary Roads					



FOR ITEM NUMBERS REFER TO DRAWING 454.2003.003



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ROADS

DIMENSIONS ARE MILLIMETRES
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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

ANCHOR BOLT TEMPLATE AND DETAILS FOR TYPE 'E' BASE

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2003.002	4	13
	For General Manager Calgary Roads					

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	8	151018	BOLT - ANCHOR 32mmØ x 1778mm GRADE 150 DYWIDAG	ROADS
2	-	-	REINFORCING STEEL	CONTRACTOR
3	3.8m	-	SONOTUBE 915mm	CONTRACTOR
4	1	-	DUCT BEND 100mmØ	CONTRACTOR
5	2.6m	-	CONCRETE 35.0-MPA	CONTRACTOR
6	8	138499	ANCHOR NUT 32mmØ	ROADS
7	8	138508	LOCK NUT 32mmØ	ROADS
8	8	138509	HEX NUT 32mmØ	ROADS
9	8	138584	FLAT WASHER 32mmØ	ROADS

NOTES:

1. MINIMUM CONCRETE COVERAGE OVER WIRE REINFORCING STEEL SHALL BE 75mm.
2. SONOTUBE SHALL BE USED TO FORM THE TOP 600mm OF THE FOUNDATION.
FULL LENGTH ONLY REQUIRED IF UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED.
3. THE DUCT SHALL EXTEND 80mm ABOVE THE TOP OF THE FOUNDATION.
4. A 25mm WIDE CHAMFER SHALL BE TROWELLED INTO THE TOP EDGE OF THE FOUNDATION.
5. THE DUCT SHALL EXTEND FROM THE SIDE OF BASE A MINIMUM OF 150mm.
6. THE TOP OF THE FOUNDATION SHALL BE SMOOTH AND LEVEL WITHIN 3mm BETWEEN ANY TWO BOLTS.
7. THE BOLTS SHALL BE PLUMB AND SET TO THE BOLT CIRCLE DIAMETER. THE MAXIMUM DEVIATION FROM TRUE DIMENSIONS ON ANY TWO BOLTS SHALL NOT EXCEED 5mm IN TOTAL.
8. THE BOTTOM OF THE FOUNDATION SHALL BE PLACED ON UNDISTURBED OR COMPACTED SOIL.
9. USE ANCHOR BOLT TEMPLATE AS PER DETAIL ON SHEET 13.

REINFORCING STEEL:

1. SIXTEEN # 8 VERTICAL DOWELS 3575mm LONG, EQUALLY SPACED ON 790mmØ CIRCLE.
2. FIFTEEN 15M TIES SHALL BE 310mmØ ON CENTER (EXCEPT AS SHOWN) AND TACK WELDED.
3. REINFORCING STEEL SHALL BE GRADE 400 DEFORMED BARS.

CONCRETE SPECIFICATIONS:

1. THE CONCRETE SHALL MEET THE REQUIREMENT OF CHAPTER 310
- PORTLAND CEMENT CONCRETE.
2. MINIMUM COMPRESSIVE STRENGTH 35 MPA AT 28 DAYS.
MINIMUM 5-7% ENTRAINED AIR. TYPE 50 CONCRETE.

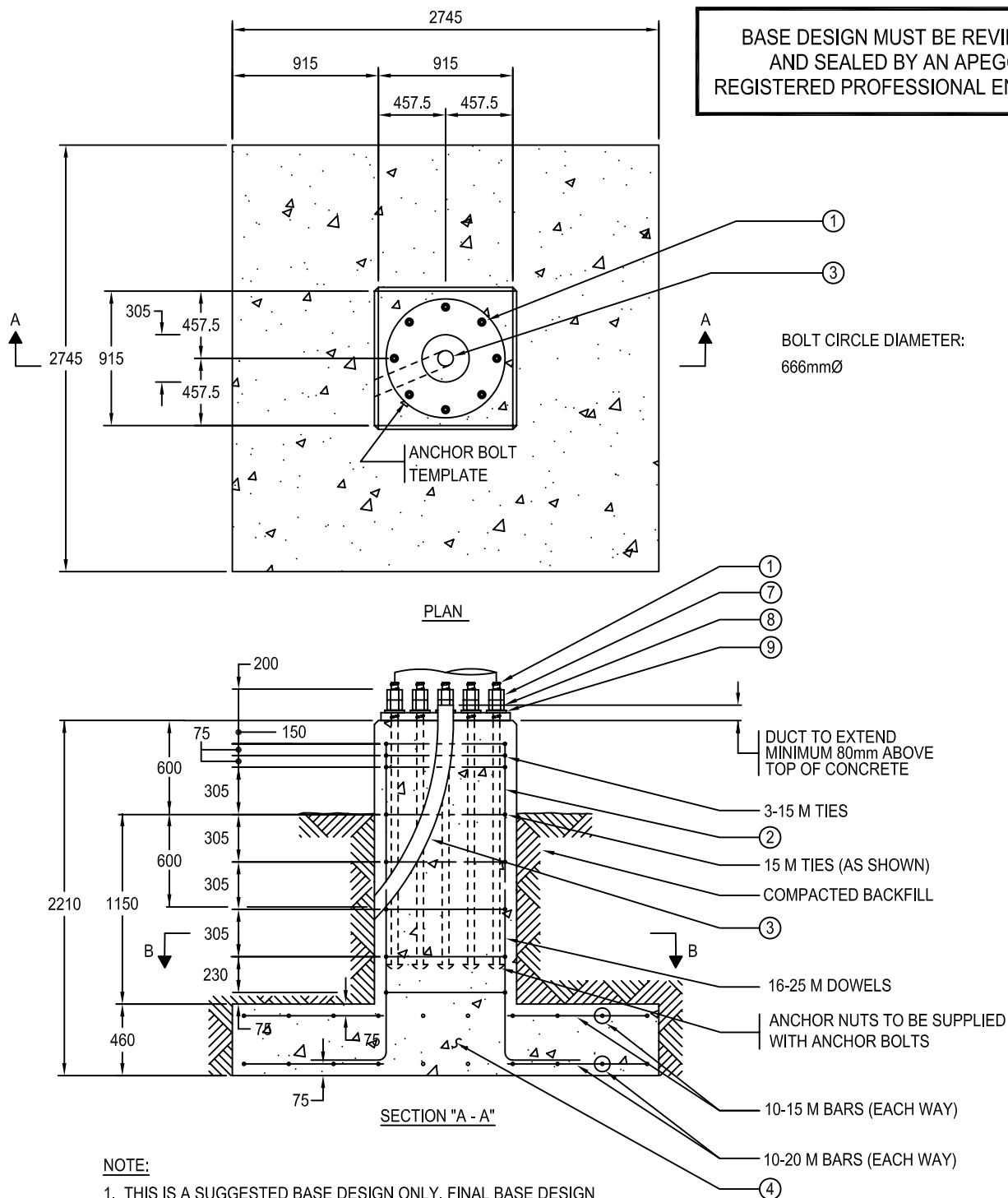
NOTE: NO WATER IS TO BE ADDED TO THE CONCRETE AT THE SITE.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	MATERIAL LIST FOR TYPE 'E' BASE							
3	2004 ISSUE UPDATE	2004-02-13								
Issue	Revision	Issue Date								
Date			Approved By			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			Original Signed by A. Andreasen			DWN: DH	NOT TO SCALE	454.2003.003	4	14
			For General Manager Calgary Roads							



DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

TYPE 'F' BASE DETAIL FOR 30 METRE STEEL HIGH MAST POLE

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

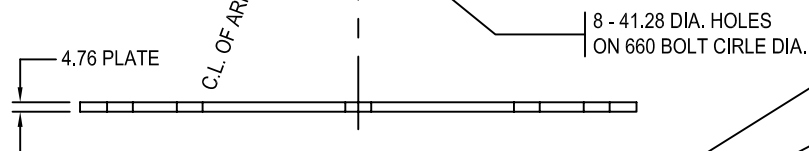
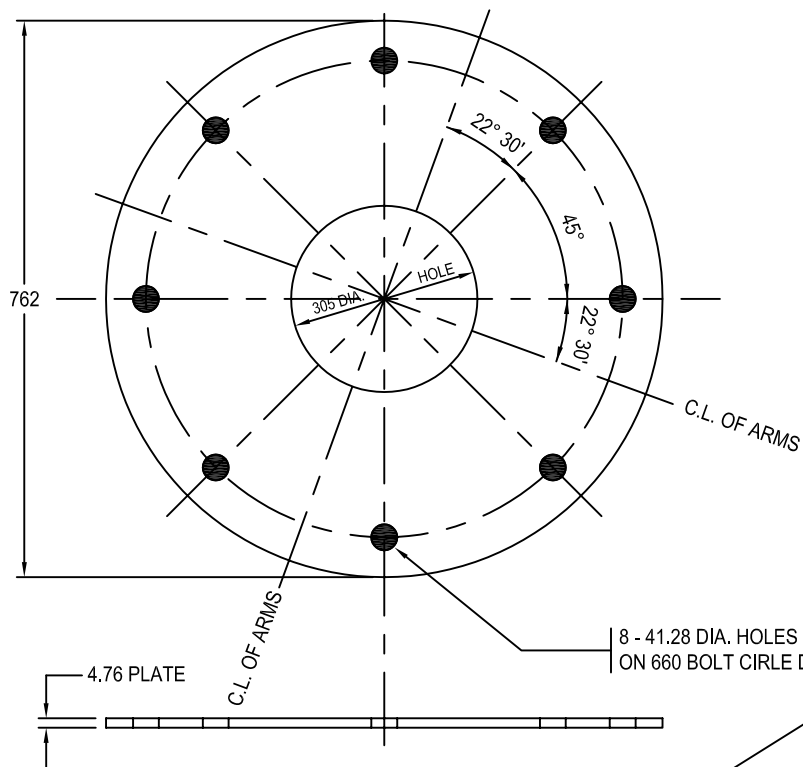
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

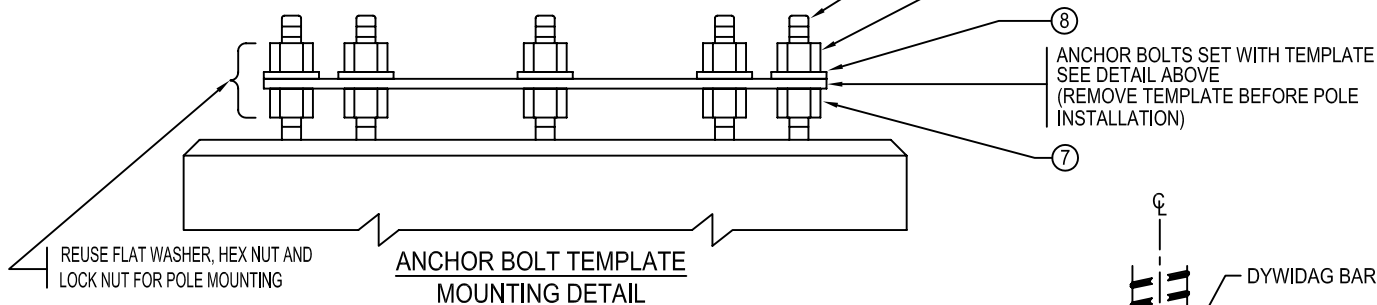
DRAWING No.
454.2004.001

ISSUE
4

SHEET
15

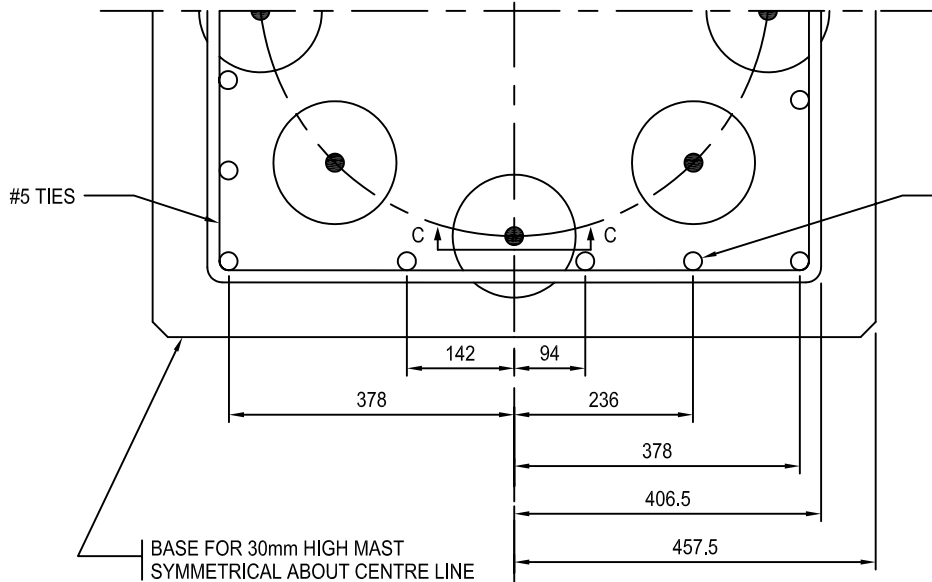


ANCHOR BOLT TEMPLATE



REUSE FLAT WASHER, HEX NUT AND LOCK NUT FOR POLE MOUNTING

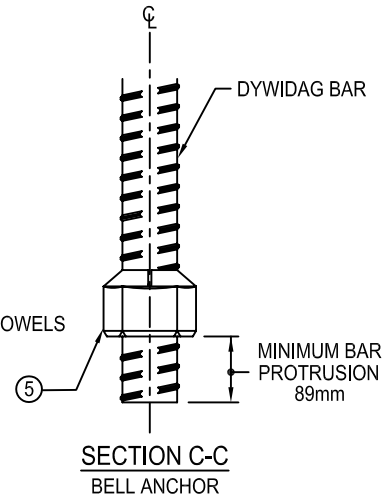
ANCHOR BOLT TEMPLATE MOUNTING DETAIL



#5 TIES

#8 DOWELS

BASE FOR 30mm HIGH MAST SYMMETRICAL ABOUT CENTRE LINE



SECTION C-C
BELL ANCHOR

FOR ITEM NUMBERS REFER TO DRAWING 454.2004.003



THE CITY OF
CALGARY
ROADS

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

SECTION B-B

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

ANCHOR BOLT TEMPLATE AND DETAILS FOR TYPE 'F' BASE

Date
Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2004.002

ISSUE
4
SHEET
16

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	4	151018	BOLT - ANCHOR 32mmØ x 1778mm GRADE 150 DYWIDAG	ROADS
2	-	-	REINFORCING STEEL	CONTRACTOR
3	1	-	DUCT BEND 100mmØ	CONTRACTOR
4	4.9m	-	CONCRETE 35.0-MPA	CONTRACTOR
5	8	138499	ANCHOR NUT 32mmØ	ROADS
6	8	138508	LOCK NUT 32mmØ	ROADS
7	8	138509	HEX NUT 32mmØ	ROADS
8	8	138584	FLAT WASHER 32mmØ	ROADS

NOTES:

1. MINIMUM CONCRETE COVERAGE OVER WIRE REINFORCING STEEL SHALL BE 75mm.
2. THE DUCT SHALL EXTEND 80mm ABOVE THE TOP OF THE FOUNDATION.
3. A 25mm WIDE CHAMFER SHALL BE TROWELLED INTO THE TOP EDGE OF THE FOUNDATION.
4. THE DUCT SHALL EXTEND FROM THE SIDE OF BASE A MINIMUM OF 150mm.
5. THE TOP OF THE FOUNDATION SHALL BE SMOOTH AND LEVEL WITHIN 3mm BETWEEN ANY TWO BOLTS.
6. THE BOLTS SHALL BE PLUMB AND SET TO THE BOLT CIRCLE DIAMETER. THE MAXIMUM DEVIATION FROM TRUE DIMENSIONS ON ANY TWO BOLTS SHALL NOT EXCEED 5mm IN TOTAL.
7. THE BOTTOM OF THE FOUNDATION SHALL BE PLACED ON UNDISTURBED SOIL.
8. USE ANCHOR BOLT TEMPLATE AS PER DETAIL ON SHEET 16.

CONCRETE SPECIFICATIONS:

1. THE CONCRETE SHALL MEET THE REQUIREMENT OF CHAPTER 310
- PORTLAND CEMENT CONCRETE.
2. MINIMUM COMPRESSIVE STRENGTH 35 MPA AT 28 DAYS. MINIMUM
5-7 % ENTRAINED AIR. TYPE 50 CONCRETE

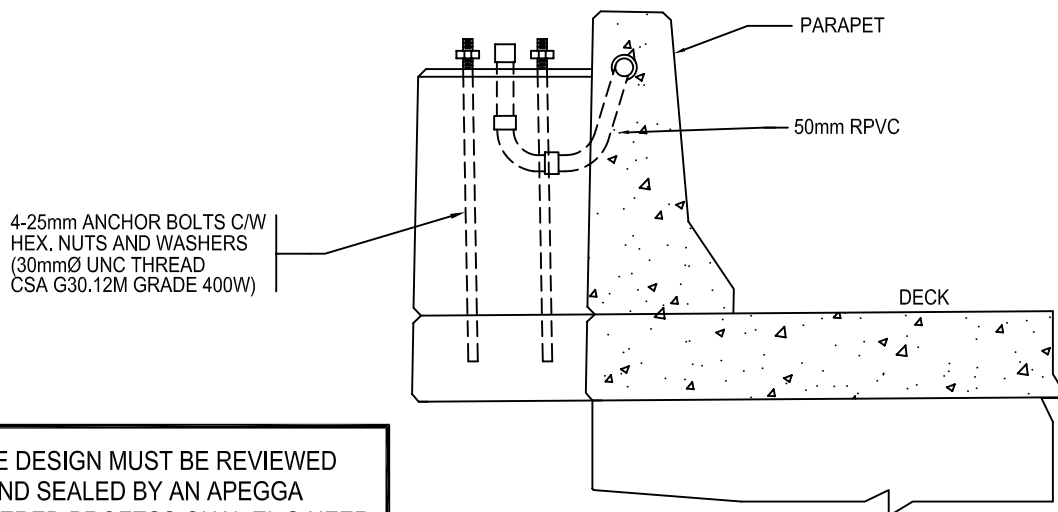
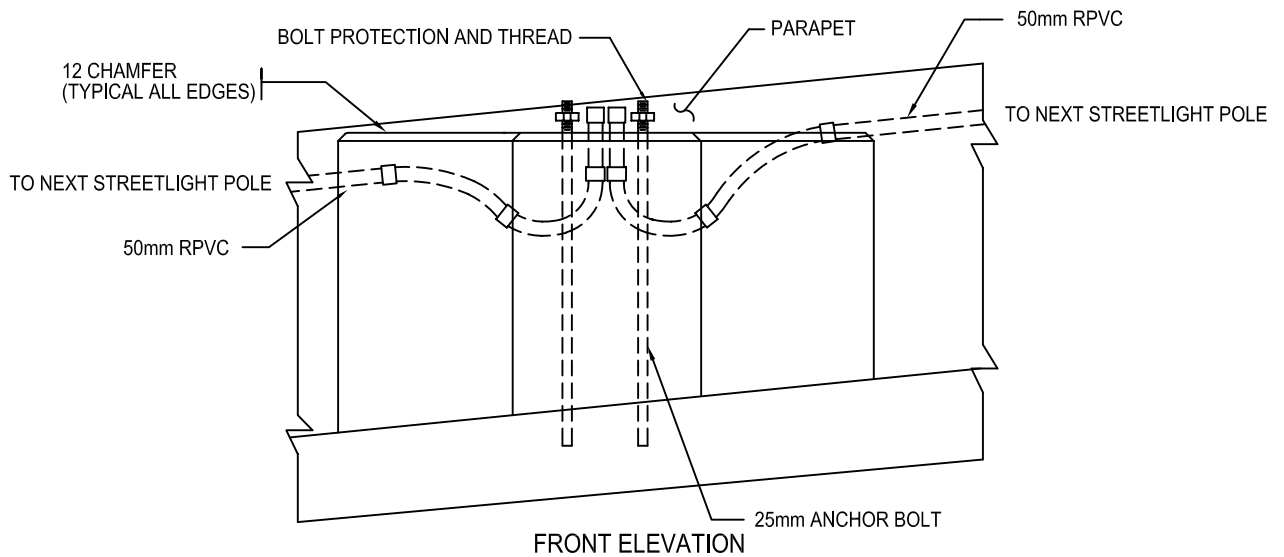
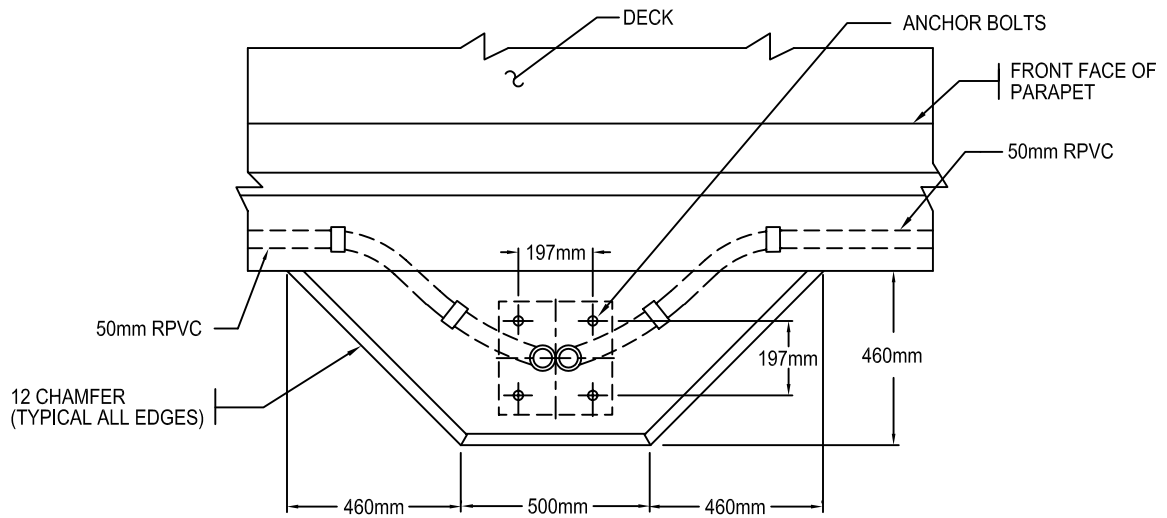
NOTE: NO WATER IS TO BE ADDED TO THE CONCRETE AT THE SITE.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



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ROADS

4	2005 ISSUE UPDATE	2005-06-01	MATERIAL LIST FOR TYPE 'F' BASE				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2004.003	4	17



BASE DESIGN MUST BE REVIEWED
AND SEALED BY AN APEGGA
REGISTERED PROFESSIONAL ENGINEER

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

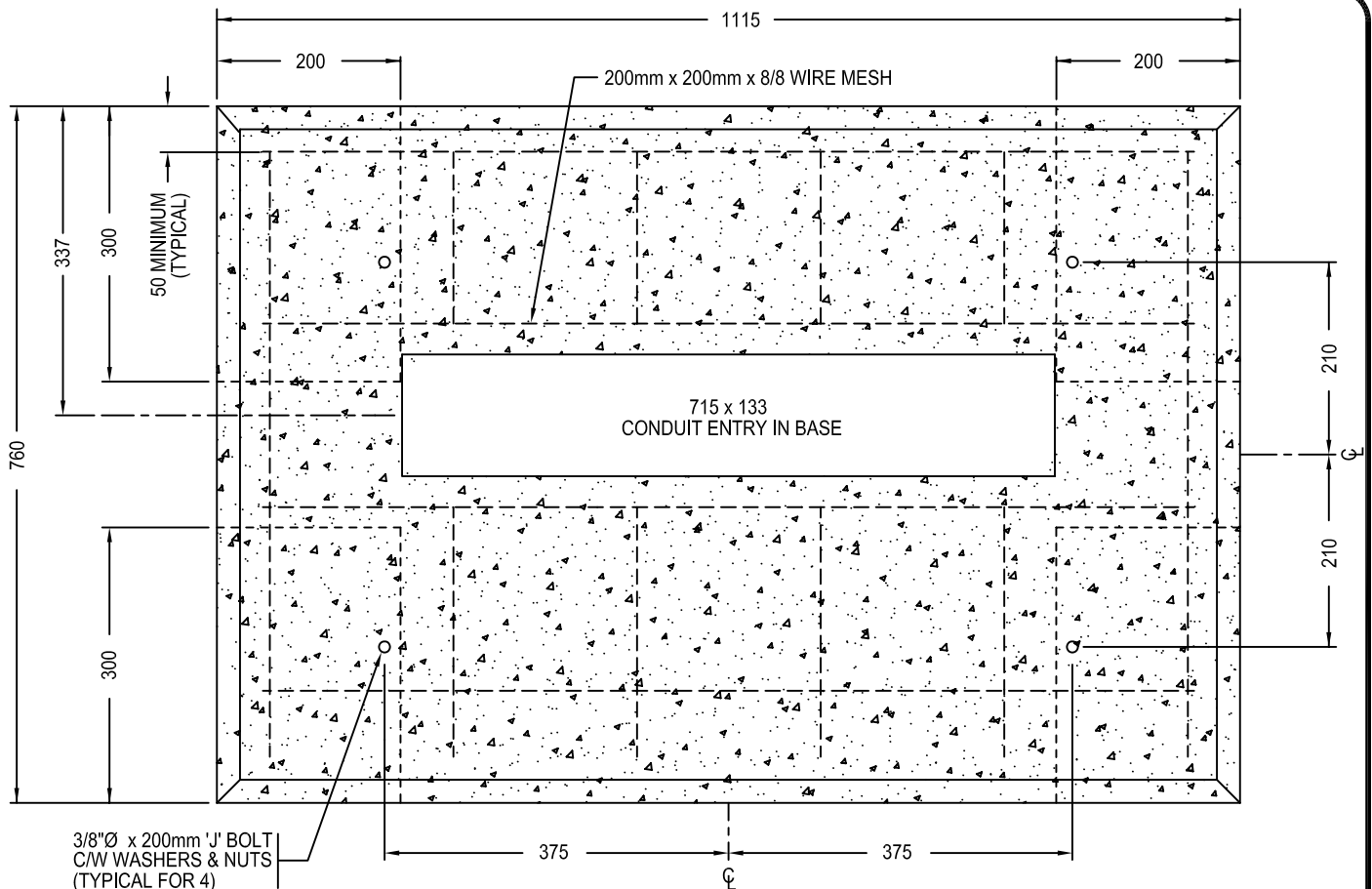


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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

LUMINAIRE POLE ATTACHMENT ON STRUCTURE

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2006.001	4	18
	For General Manager Calgary Roads					

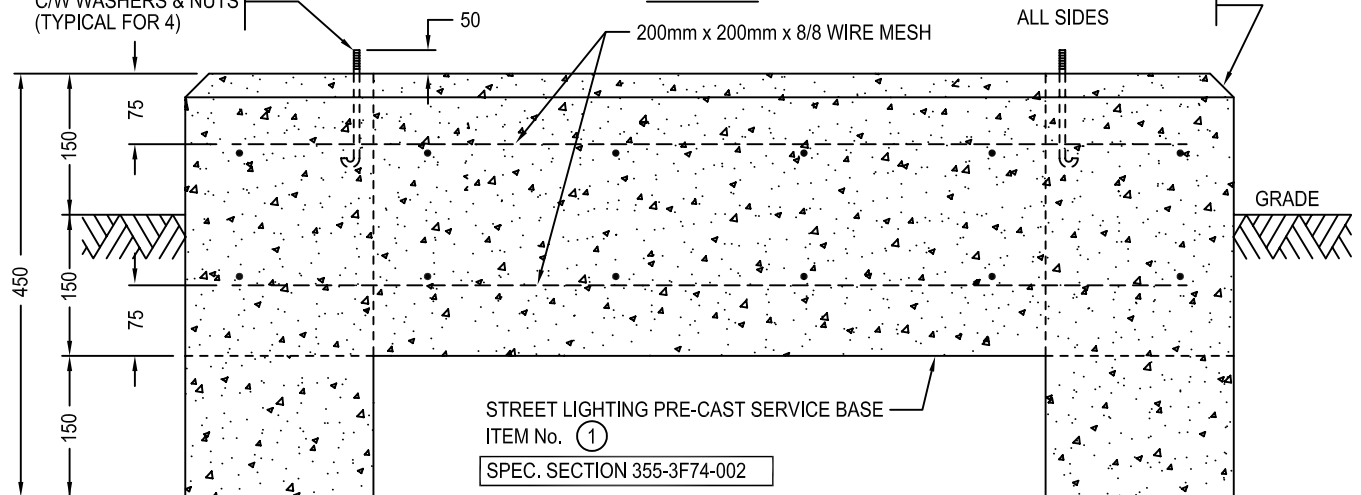


3/8"Ø x 200mm 'J' BOLT
C/W WASHERS & NUTS
(TYPICAL FOR 4)

3/8"Ø x 200mm 'J' BOLT
C/W WASHERS & NUTS
(TYPICAL FOR 4)

TOP VIEW

25mm - 45° CHAMFER
ALL SIDES



STREET LIGHTING PRE-CAST SERVICE BASE
ITEM No. ①

SPEC. SECTION 355-3F74-002

SIDE VIEW

MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	139573	STREET LIGHTING CABINET BASE	ROADS

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

**CONCRETE BASE FOR
STREETLIGHT SERVICE CABINET**

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2008.001	4	19
	For General Manager Calgary Roads					

ANCHOR BOLT REPAIR PROCEDURES

1.0 GENERAL

ANCHOR BOLT DAMAGE IS CLASSED AS THE BENDING OR STRETCHING OF THE BOLTS TO THE POINT THAT A POLE CAN NOT BE REMOVED OR INSTALLED.

2.0 REPAIR PROCEDURE

REPAIR OF ANCHOR BOLTS SHALL BE AS DETAILED ON DRAWING 454.2009.002

WHERE AN ANCHOR BOLT REQUIRES REPAIR, THE BOLT SHALL BE SAW CUT OFF AND A COUPLER INSTALLED. ANCHOR BOLT COUPLERS SHALL BE USED AS FOLLOWS:

- | | |
|----------------------------|-------------------------------|
| A) 4 ANCHOR BOLT BASE | - MAXIMUM 1 COUPLER PER BASE |
| B) 6 TO 8 ANCHOR BOLT BASE | - MAXIMUM 2 COUPLERS PER BASE |

WHERE THE NUMBER OF COUPLERS REQUIRED PER BASE EXCEEDS THE NUMBER ALLOWED, THE BASE MUST BE REPLACED.

ANY DEVIATIONS FROM THESE PROCEDURES MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

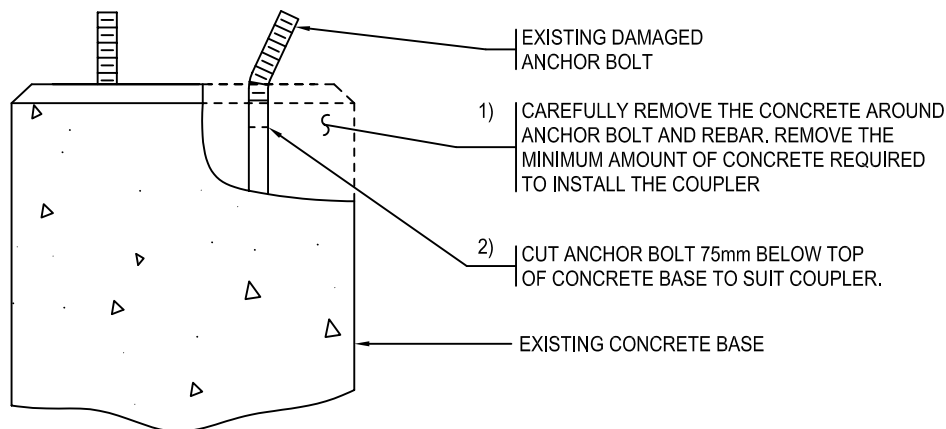


THE CITY OF
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ROADS

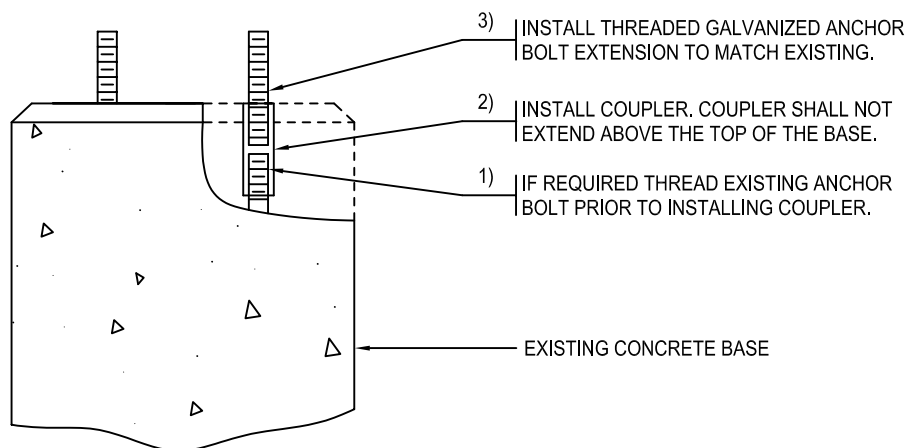
ANCHOR BOLT REPAIR PROCEDURES

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

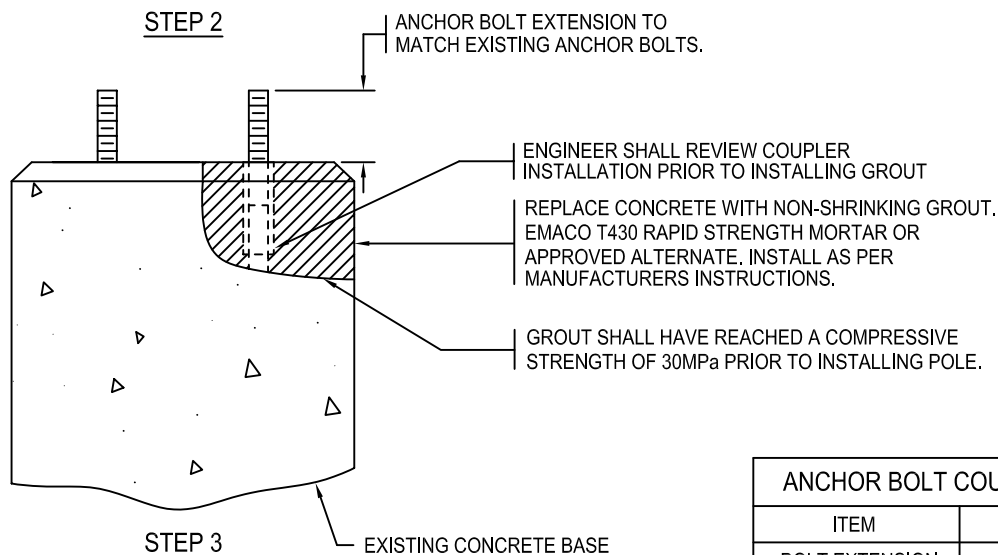
Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2009.001	4	20
	For General Manager Calgary Roads					



STEP 1



STEP 2



STEP 3

NOTES

1. SEE CONSTRUCTION STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. SEE DRAWING 454.2009.001 FOR ADDITIONAL INFORMATION.

SCALE: 1:10

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED 

ANCHOR BOLT COUPLERS (A325 & GR2)	
ITEM	STOCK NUMBER
BOLT EXTENSION	158354
COUPLER NUT	158355

ALL COUPLERS SHALL HAVE A MINIMUM OF 125% OF THE SPECIFIED ANCHOR BOLT YIELD STRENGTH



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**ANCHOR BOLT
REPAIR DETAILS**

4	2005 ISSUE UPDATE	2005-06-01	ANCHOR BOLT REPAIR DETAILS											
3	2004 ISSUE UPDATE	2004-02-13												
Issue	Revision	Issue Date												
Date			Approved By		DES: PMS		SCALE:		DRAWING No.		ISSUE		SHEET	
			Original Signed by A. Andreasen		DWN: DH		NOT TO SCALE		454.2009.002		4		21	
			For General Manager Calgary Roads											

BREAKAWAY BASE INSTALLATIONS - ALL ANCHOR BOLT SIZES

BEFORE PROCEEDING WITH THE INSTALLATION

ASCERTAIN THAT THE POLE BASE REQUIREMENTS HAVE BEEN MET AND THAT THE PROPER REACTION PLATE IS AVAILABLE. THE CONCRETE BASE MUST BE IN GOOD CONDITION, AND IT MUST BE FIRMLY BEDDED DOWN IN THE SOIL. THE HEIGHT OF THE BASE ABOVE GRADE MUST BE AT A HEIGHT SO THAT IT DOES NOT ABSORB THE IMPACT LOAD OF THE VEHICLE IN THE EVENT OF A COLLISION. THE UPPER SURFACE OF THE BASE SHOULD BE LEVEL, AND IT SHOULD EXTEND AT LEAST 3" BEYOND THE BOLT SQUARE. THE ANCHOR BOLTS MUST EXTEND NOT LESS THAN 2-1/2" BUT NOT MORE THAN 3-1/4" ABOVE THE BASE SURFACE.

PROCEDURE

1. CLEAN THE UPPER SURFACE OF THE POLE BASE, AND PLACE ON IT THE REACTION PLATE. IF A SLOTTED REACTION PLATE IS USED, IT IS RECOMMENDED THAT THE SLOT BE ORIENTED TOWARDS THE ONCOMING TRAFFIC. ENSURE THAT THE ANCHOR BOLTS DO NOT EXTEND MORE THAN 1-1/4" ABOVE THE REACTION PLATE.
2. SCREW THE COUPLER ASSEMBLY ONTO EACH ANCHOR BOLT. (ENSURE THAT THE STUD IS ENGAGED AT LEAST 1-1/2" BUT NOT MORE THAN 1-3/4" INTO THE COUPLER BEFORE LOCKING).
3. SNUG UP EACH COUPLER AGAINST THE REACTION PLATE. TIGHTEN EACH COUPLER ALTERNATELY AND INCREMENTALLY ON THE BOTTOM OF THE COUPLER, WITH APPROXIMATELY 350 FOOT POUNDS OF TORQUE.

WARNING: TIGHTENING THE COUPLER ON THE TOP HEX MAY WEAKEN THE COUPLER AT THE BREAK POINT.

4. BRING THE LEVELLING NUTS AND WASHERS INTO A LEVEL PLANE, MAKING CERTAIN THAT AT LEAST ONE LEVELLING NUT AND SPACER REMAIN IN CONTACT WITH THE LOCKING NUT.
5. PLACE THE POLE BASE PLATE OVER THE PROTRUDING STUDS, AND SECURE THE POLE WITH THE UPPER WASHERS AND RETAINING NUTS.
6. WITH THE POLE IN THE REQUIRED VERTICAL ORIENTATION, AND BEFORE THE FINAL TIGHTENING, ENSURE THAT ALL LEVELLING NUTS AND WASHERS PLUS RETAINING NUTS AND WASHERS ARE MADE SNUG AGAINST THE POLE BASE PLATE.
7. TIGHTEN THE RETAINING NUTS WITH APPROXIMATELY 350 FOOT-POUNDS OF TORQUE. THE EXTERNAL POLE SUPPORT CAN NOW BE REMOVED.
8. MAKE NECESSARY WIRE CONNECTIONS, AND INSTALL THE PROTECTIVE SHROUD.
9. IT IS RECOMMENDED THAT THE THREADED ANCHOR BOLT/COUPLER CONNECTION BE COATED WITH A RUST INHIBITING GREASE. THIS WILL HELP FACILITATE REMOVAL OF THE COUPLER WHEN IT IS NECESSARY.

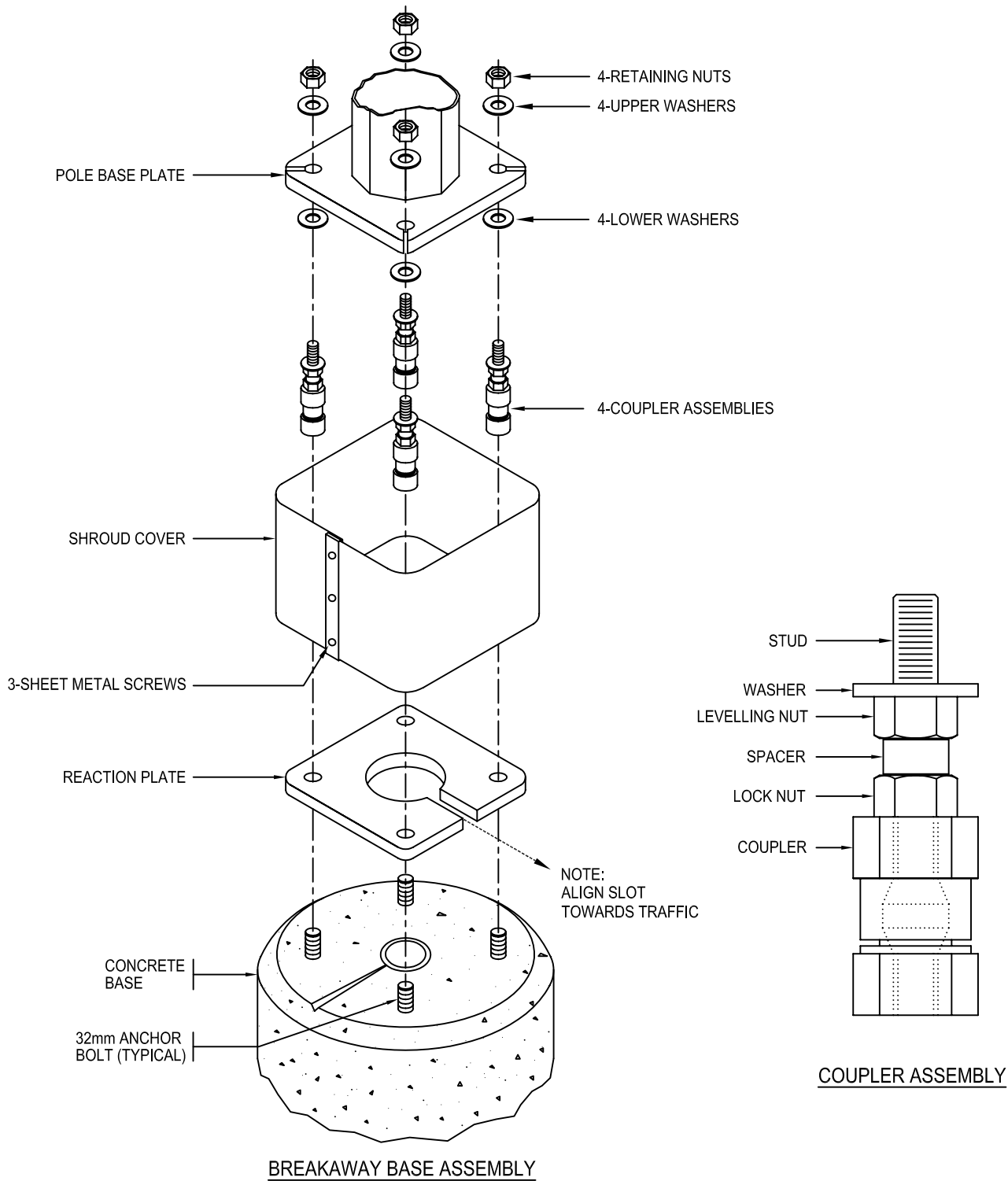
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THE CITY OF
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ROADS

BREAKAWAY BASE INSTALLATION NOTES

			BREAKAWAY BASE INSTALLATION NOTES				
1	2005 ISSUE UPDATE	2005-06-01					
Issue	Revision	Issue Date					
Date			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
Approved By			DWN: DH	NOT TO SCALE	454.2010.001	1	22
Original Signed by A. Andreasen							
For General Manager Calgary Roads							



NOTES

1. SEE CONSTRUCTION STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. SEE DRAWING 454.2010.001 FOR ADDITIONAL INFORMATION.

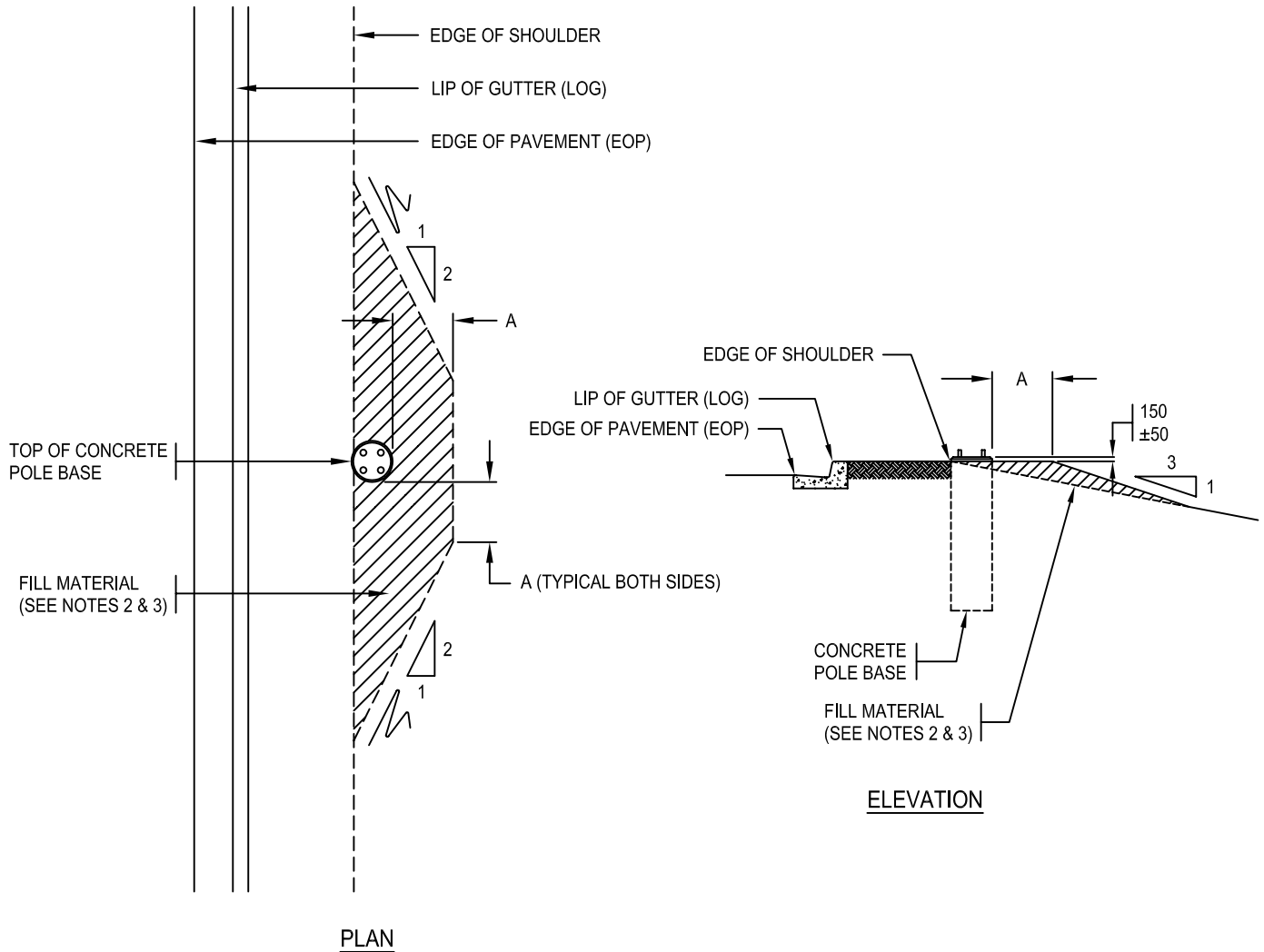
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ROADS

BREAKAWAY BASE INSTALLATION DETAILS

			BREAKAWAY BASE INSTALLATION DETAILS									
1	2005 ISSUE UPDATE	2005-06-01										
Issue	Revision	Issue Date										
Date			Approved By		DES: PMS		SCALE:		DRAWING No.		ISSUE	SHEET
			Original Signed by A. Andreasen		DWN: DH		NOT TO SCALE		454.2010.002		1	23
			For General Manager Calgary Roads									



NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.
2. FILL MATERIAL SHALL CONFORM TO SECTION 303.00.00
3. FILL MATERIAL SHALL BE SUPPLIED, INSTALLED AND FULLY COMPACTED IN ACCORDANCE WITH SECTION 304.00.00 FOR THE MINIMUM AREA ALL AROUND THE BASE AS SHOWN ABOVE.

BASE TYPES	A MIN. FILL
TYPE B, B1 & B2 CONCRETE BASES	2.1m
TYPE C & C1 CONCRETE BASES	2.4m
TYPE D & D1 CONCRETE BASES	2.5m

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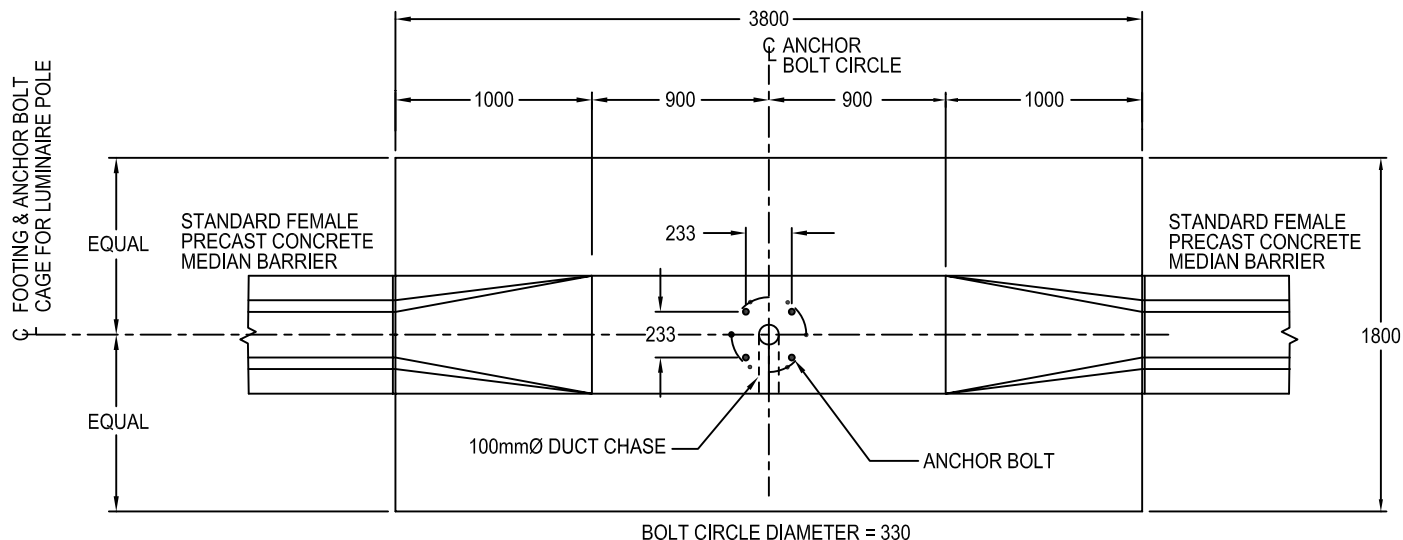


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ROADS

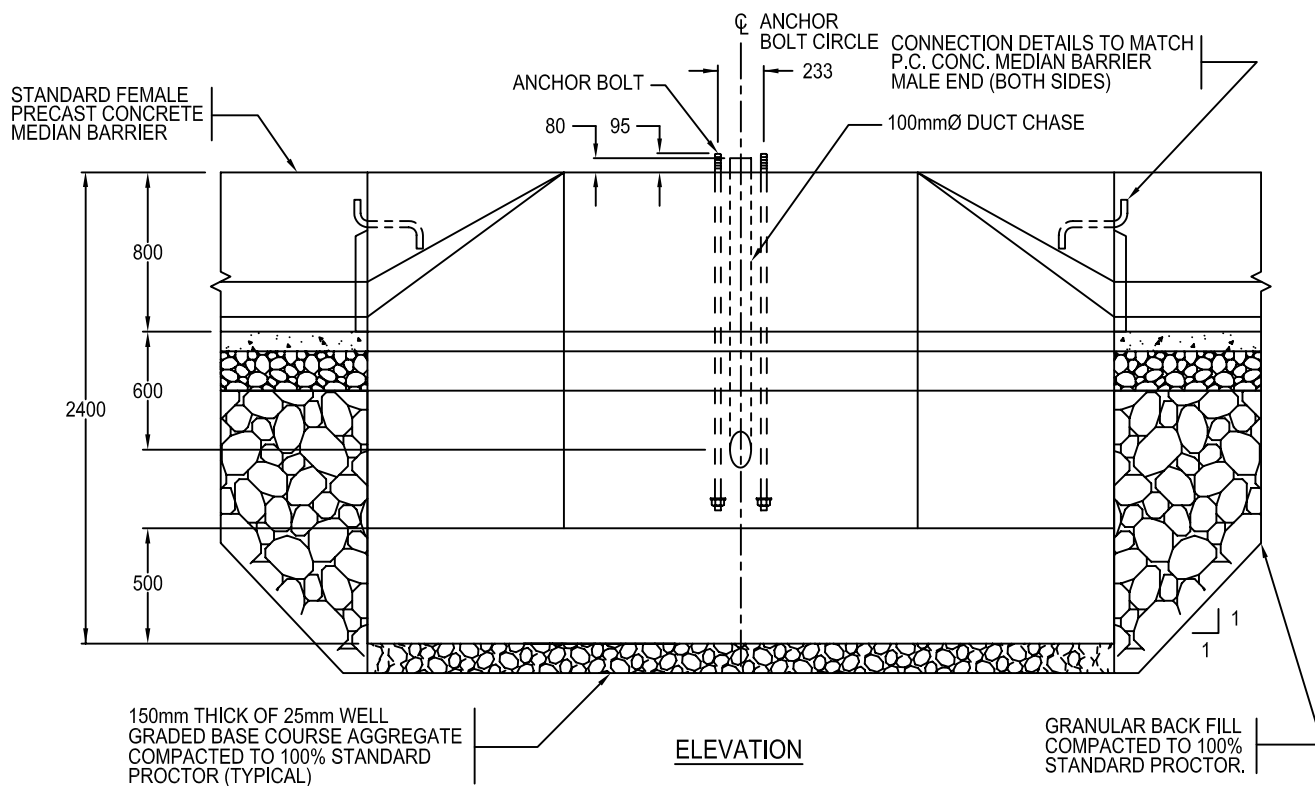
POLE BASE INSTALLATION DETAILS

4	2005 ISSUE UPDATE	2005-06-01				
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2015.001	4	24
	For General Manager Calgary Roads					

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2015.002	4	25
	For General Manager Calgary Roads					



PLAN



NOTES

1. ANCHOR BOLTS
25.4 DIAMETER X 1676mm LONG GRADE 400W DEFORMED BAR TO CSA/CAN G30.12.
2. CONCRETE COVER 70mm PLUS TIE BAR DIAMETER, TO VERTICAL REINFORCING.
3. ALL VERTICAL BARS TO BE UNIFORMLY SPACED AROUND BASE PERIMETER AT SPECIFIED COVER AS PER NOTE 2.

BASE DESIGN MUST BE REVIEWED
AND SEALED BY AN APEGGA
REGISTERED PROFESSIONAL ENGINEER

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

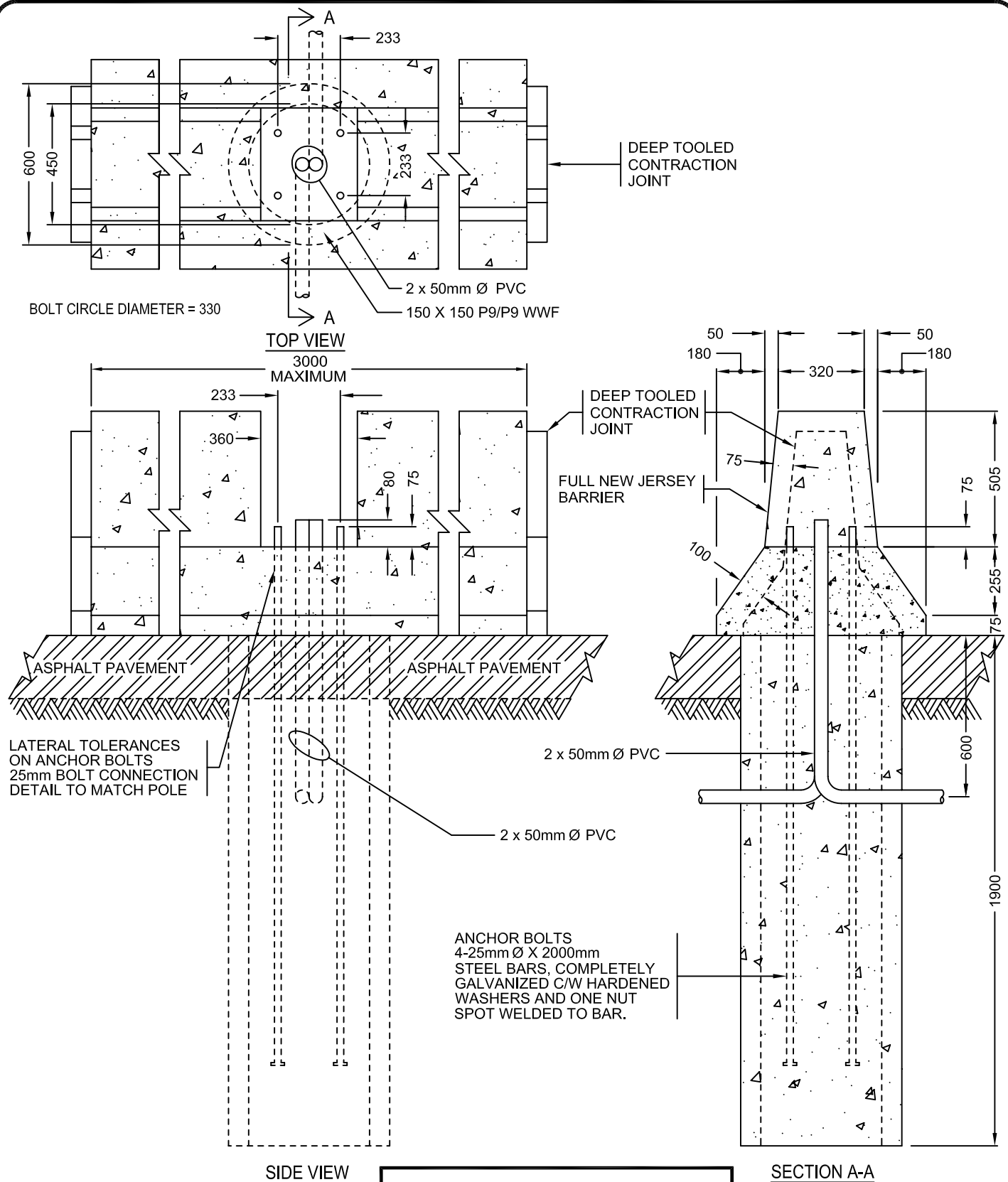


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ROADS

3	2005 ISSUE UPDATE	2005-06-01
2	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

TYPE G BASE FOR 15 METRE DAVIT POLE IN MEDIAN BARRIER

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2016.001	3	26
	For General Manager Calgary Roads					



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BASE DESIGN MUST BE REVIEWED
AND SEALED BY AN APEGGA
REGISTERED PROFESSIONAL ENGINEER

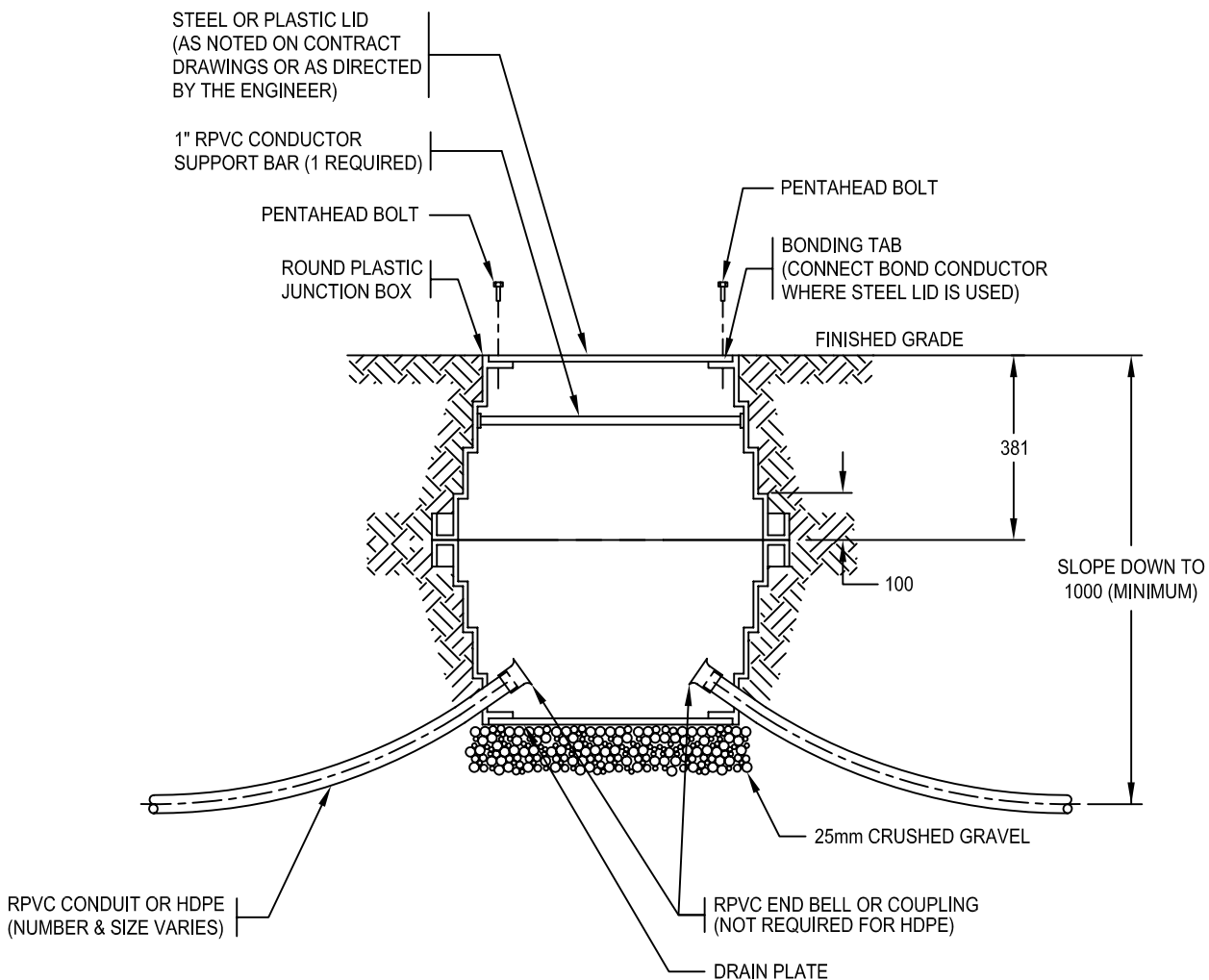


THE CITY OF
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ROADS

3	2005 ISSUE UPDATE	2005-06-01
2	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

TYPE H BASE FOR 15 METRE DAVIT POLE IN MEDIAN BARRIER

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2016.002	3	27
	For General Manager Calgary Roads					



NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.
2. INSTALL LID ON PLASTIC JUNCTION BOX BEFORE BACKFILLING, TAMPING & PAVING OPERATIONS.
3. INSTALL TOP OF JUNCTION BOX FLUSH WITH FINISHED GRADE.

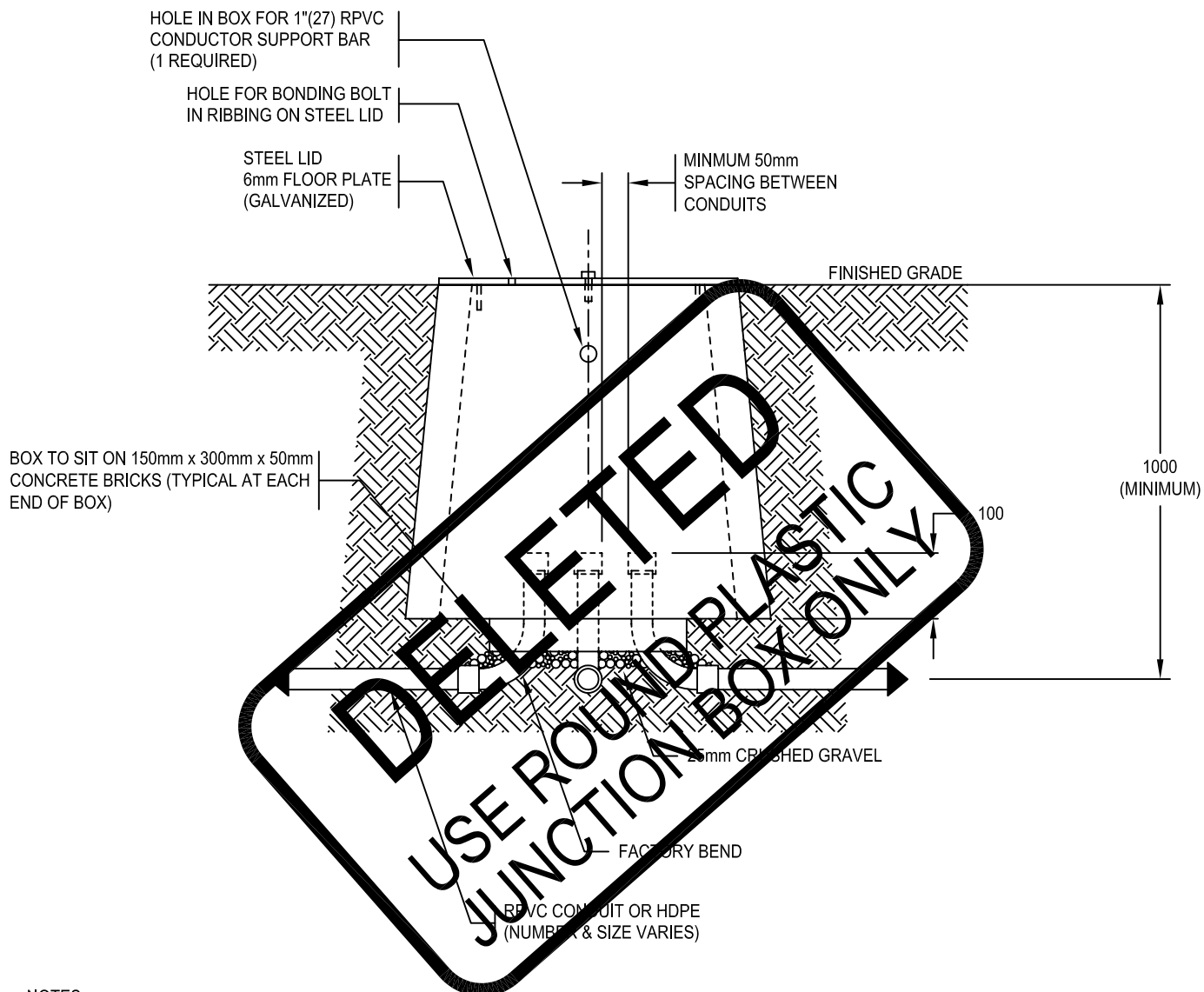
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ROADS

ROUND PLASTIC JUNCTION BOX

4	2005 ISSUE UPDATE	2005-06-01	ROUND PLASTIC JUNCTION BOX			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE
	Original Signed by A. Andreasen		DWN: DH	NOT TO SCALE	454.2020.001	4
	For General Manager Calgary Roads					SHEET 28



NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.
2. INSTALL LID ON CONCRETE JUNCTION BOX BEFORE BACKFILLING, TAMPING & PAVING OPERATIONS.
3. INSTALL TOP OF JUNCTION BOX FLUSH WITH FINISHED GRADE.

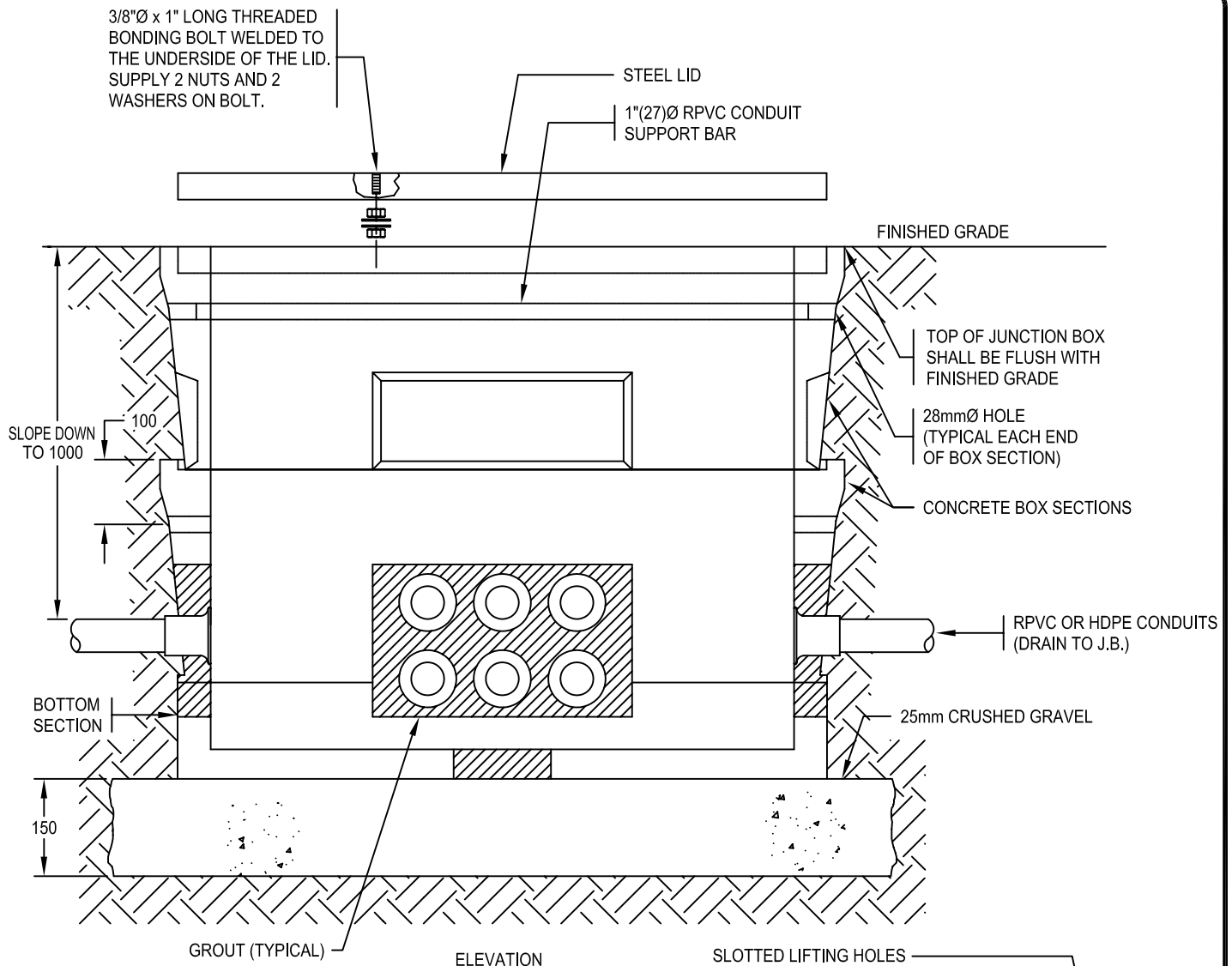
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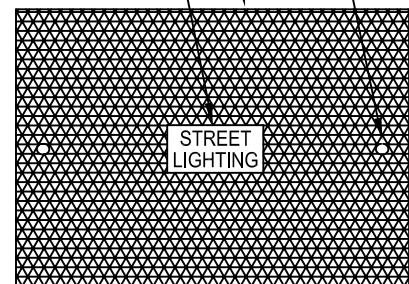
RECTANGULAR CONCRETE JUNCTION BOX

4	2005 ISSUE UPDATE	2005-06-01	RECTANGULAR CONCRETE JUNCTION BOX				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2021.001	4	29



SLOTTED LIFTING HOLES

GALVANIZED STEEL CHECKPLATE LID
 LABEL WITH 100mm HIGH LETTERS



STEEL LID

NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.
2. JUNCTION BOX SHALL BE DESIGNED FOR 5000kg STATIC LOADING.
3. VAULTS SHALL BE PRE-CAST CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 35 MPa AT 28 DAYS.

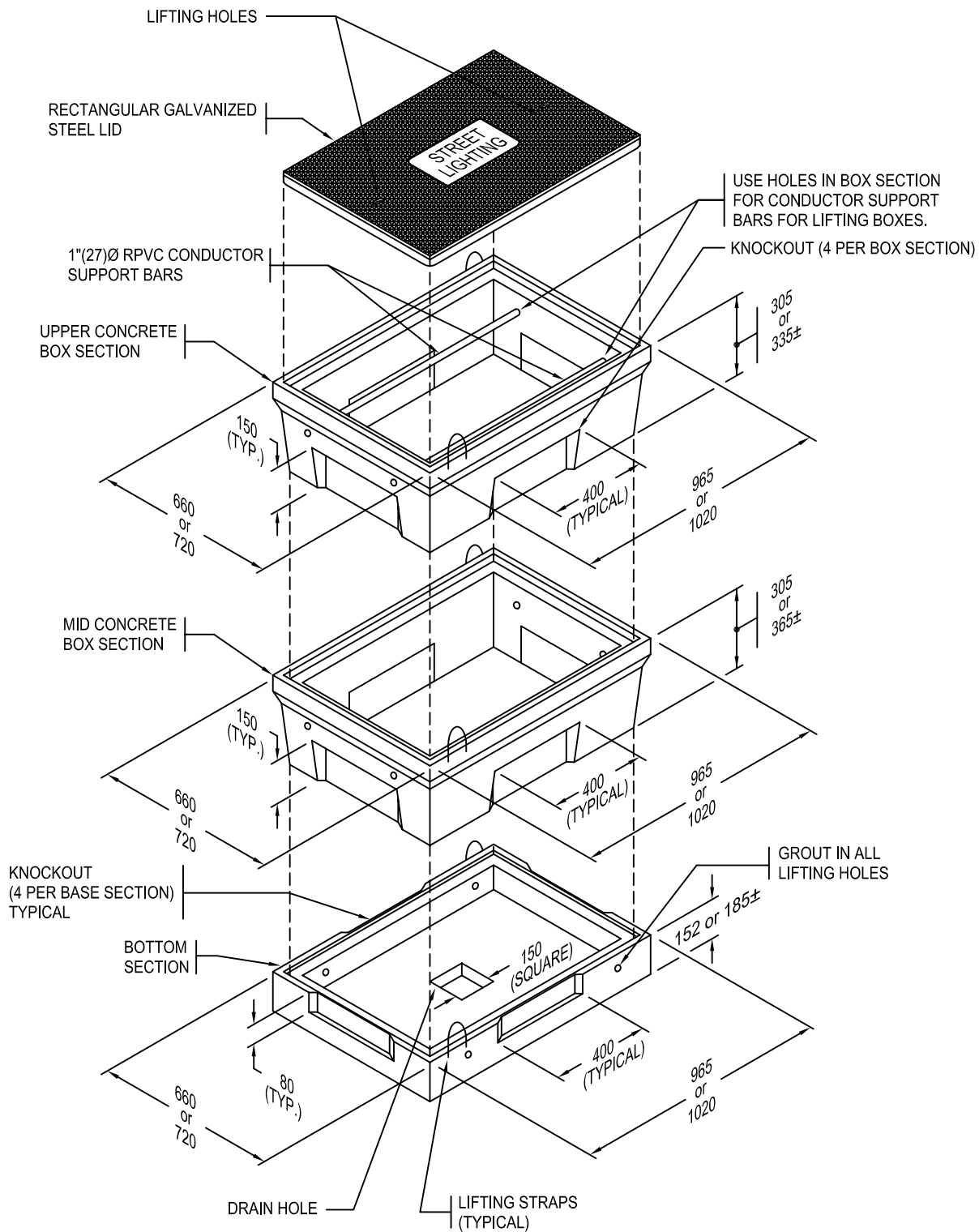
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LARGE CONCRETE JUNCTION BOX (VAULT)

4	2005 ISSUE UPDATE	2005-06-01				
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE
	Original Signed by A. Andreasen		DWN: DH	NOT TO SCALE	454.2022.001	4
	For General Manager Calgary Roads					SHEET 30



NOTES

- SEE DRAWING 454.2022.001 FOR NOTES AND ADDITIONAL DETAILS.

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LARGE CONCRETE JUNCTION BOX (VAULT)

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

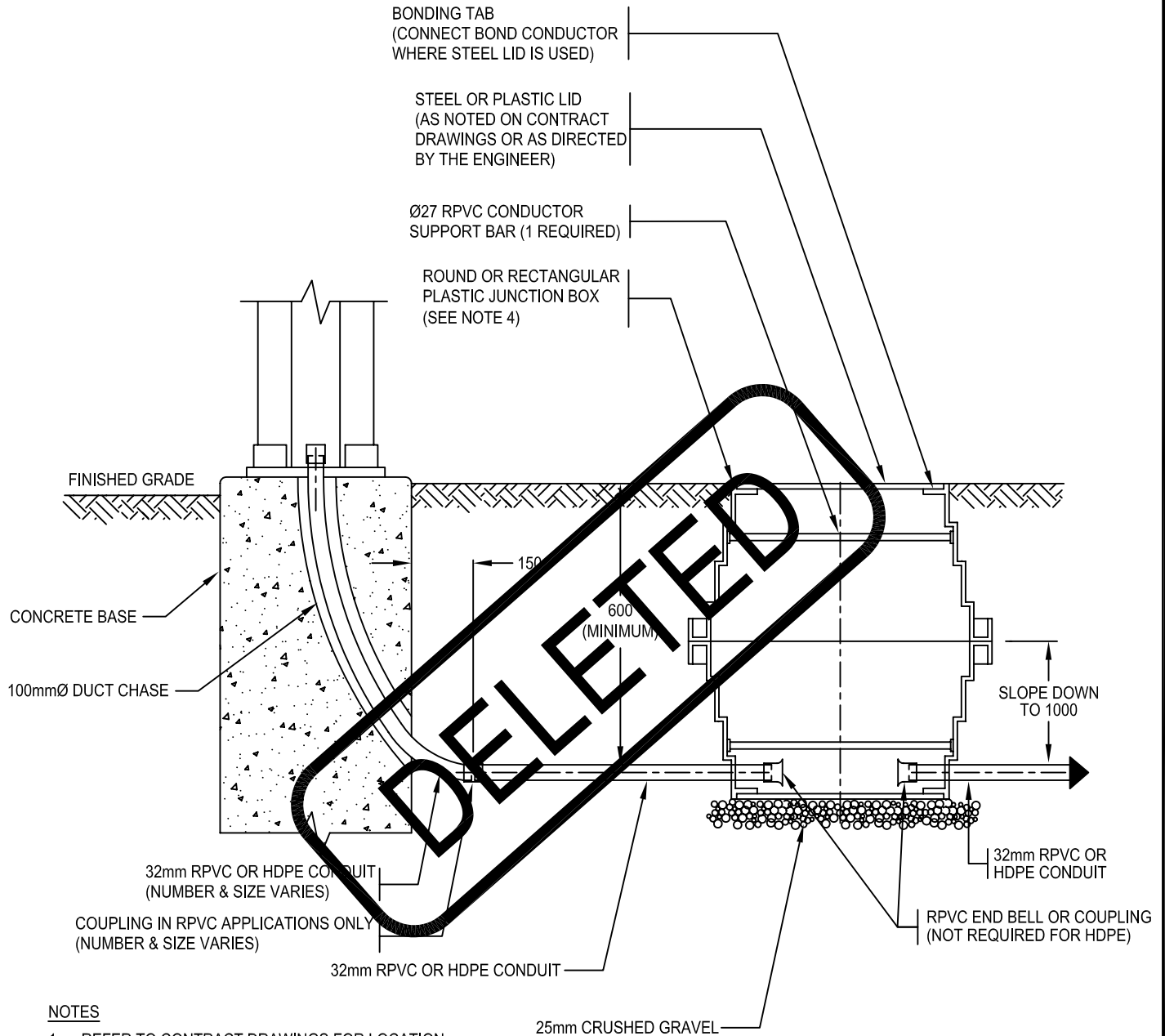
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2022.002

ISSUE
4

SHEET
31



NOTES

1. REFER TO CONTRACT DRAWINGS FOR LOCATION AND DETAILED SPECIFICATIONS.
2. INSTALL LID ON PLASTIC JUNCTION BOX BEFORE BACKFILLING, TAMPING & PAVING OPERATIONS.
3. INSTALL TOP OF JUNCTION BOX FLUSH WITH FINISHED GRADE.
4. CONCRETE JUNCTION BOX INSTALLATION SIMILAR.

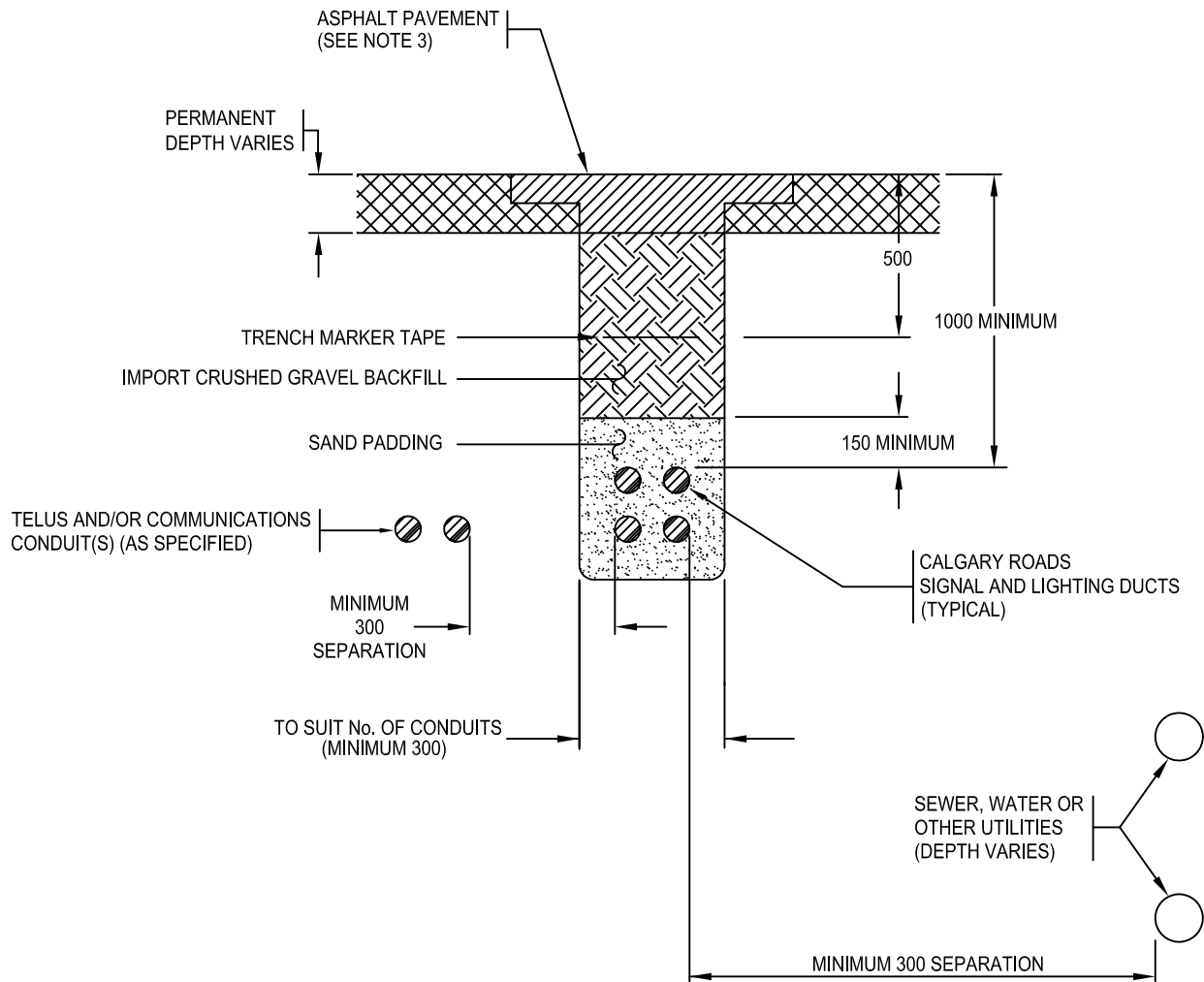
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ROADS

JUNCTION BOX AT LUMINAIRE POLE

4	2005 ISSUE UPDATE	2005-06-01	JUNCTION BOX AT LUMINAIRE POLE				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2023.001	4	32



NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.
2. PAVEMENT REMOVAL AND REPLACEMENT IN EXISTING PAVED AREAS TO BE IN ACCORDANCE WITH CHAPTER 304.00.00.
3. IF REQUIRED COMPACTION IS ACHIEVED, PERMANENT RESTORATION MAY BE UNDERTAKEN IMMEDIATELY.

THIS DRAWING IS NOT
APPLICABLE TO UDI SHALLOW
UTILITIES IN NEW SUBDIVISIONS.

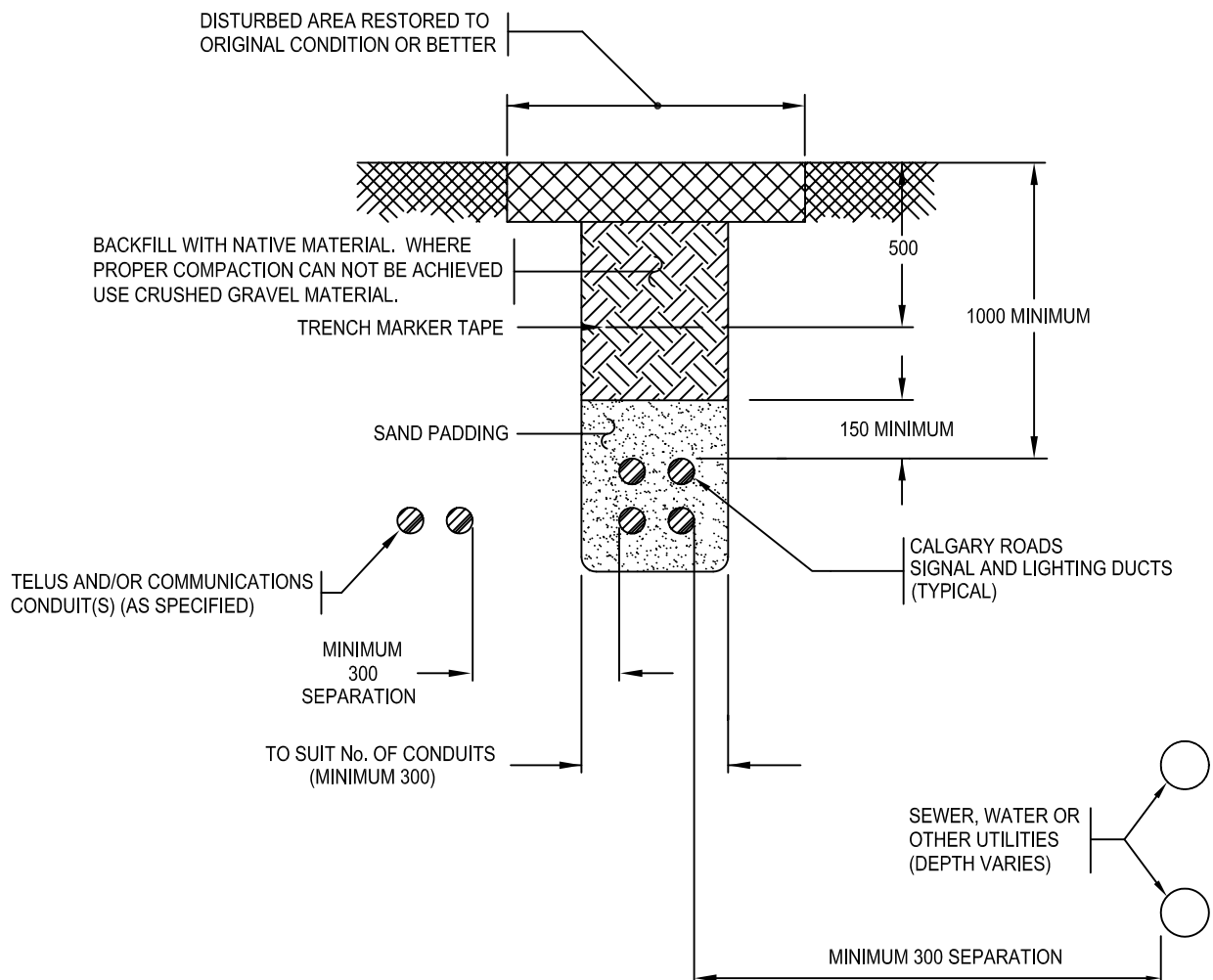
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ROADS

UNDERGROUND DUCT IN PAVED AREAS

4	2005 ISSUE UPDATE	2005-06-01				
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE
	Original Signed by A. Andreasen		DWN: DH	NOT TO SCALE	454.2025.001	4
	For General Manager Calgary Roads					SHEET 33



NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.

THIS DRAWING IS NOT APPLICABLE TO UDI SHALLOW UTILITIES IN NEW SUBDIVISIONS.

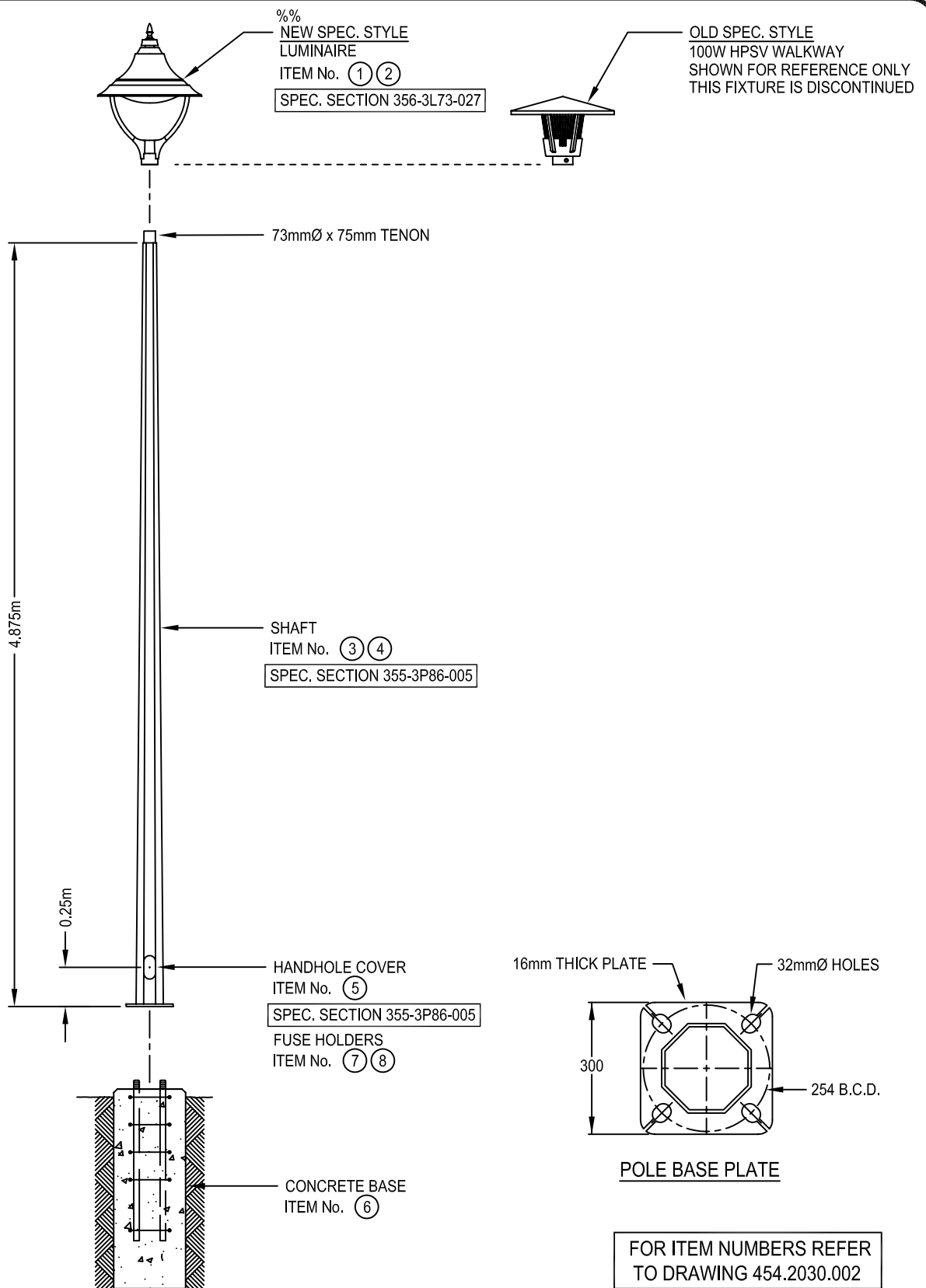
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ROADS

UNDERGROUND DUCT IN NON-PAVED AREAS

4	2005 ISSUE UPDATE	2005-06-01					
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen		DWN: DH	NOT TO SCALE	454.2025.002	4	34
	For General Manager Calgary Roads						



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5 METRE WALKWAY POLE INSTALLATION DETAILS

4	2005 ISSUE UPDATE	2005-06-01				
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE
	Original Signed by A. Andreasen		DWN: DH	NOT TO SCALE	454.2030.001	4
	For General Manager Calgary Roads					SHEET 35

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	158238	LUMINAIRE - HPSV	100W - WALKWAY (NEW SPEC. STYLE)	ROADS
2	1	143988	LAMP - HPSV	100W - CLEAR	ROADS
3	1	151239	POLE - PAINTED	5m - WALKWAY - BLACK	ROADS
4	1	151311	POLE - FIBERGLASS	5m - WALKWAY - BLACK	ROADS
5	1	N/A	COVER - HANDHOLE	(SUPPLIED W/POLE)	ROADS
6	1	N/A	CONCRETE BASE	(SEE NOTE 6)	CONTRACTOR
7	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
8	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
9					
10					
11					
12					
13					

NOTES:

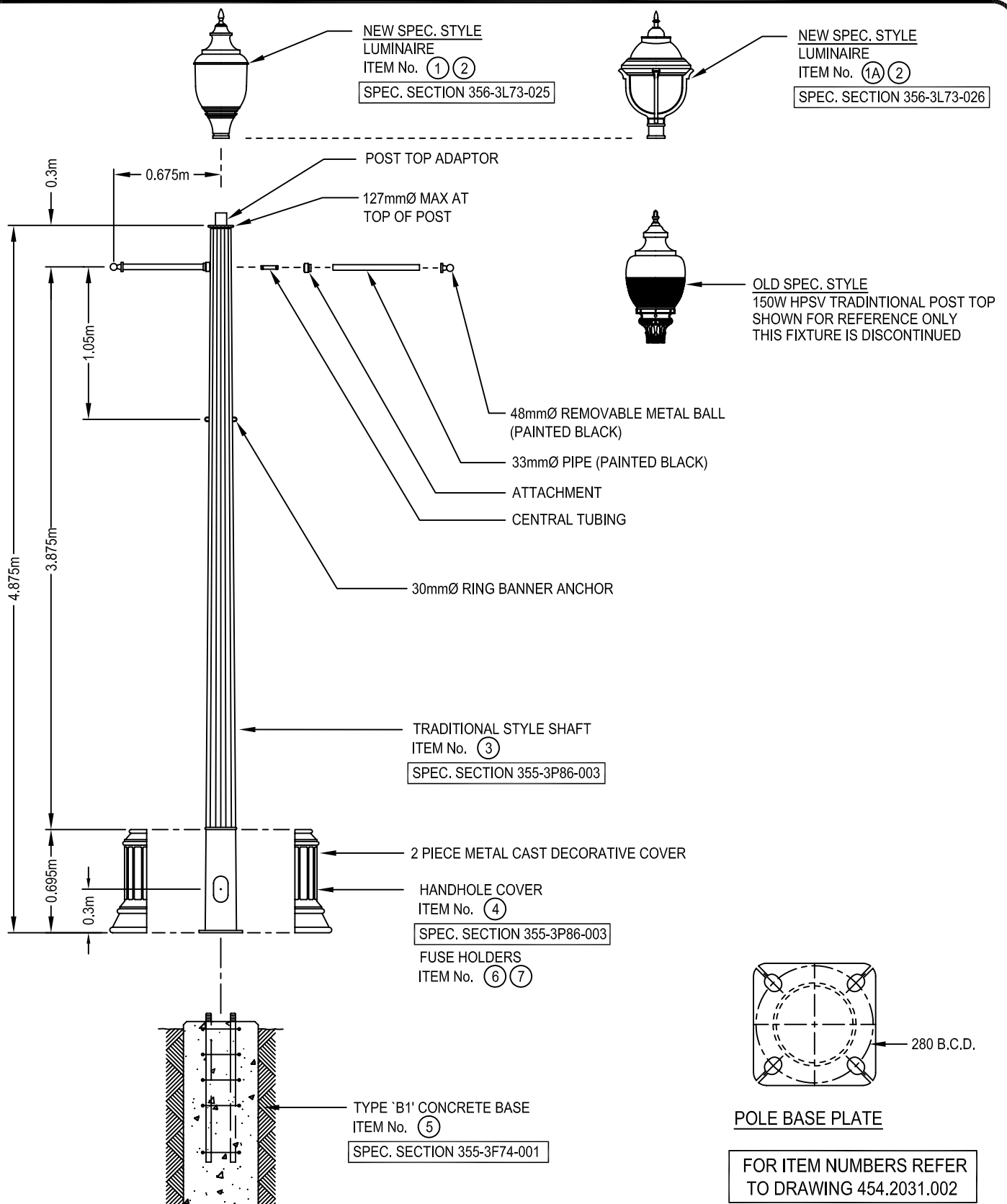
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE MAY BE SUPPLIED BY CALGARY ROADS AS EITHER PAINTED STEEL OR PAINTED FIBERGLASS.
5. "OLD SPEC. STYLE" FIXTURES ARE NO LONGER AVAILABLE.
6. CONTRACTOR SHALL SUPPLY THE BASE, EITHER PRE-CAST OR POURED IN PLACE. THE 5m WALKWAY POLE BASE CONSTRUCTION DETAILS SHALL BE THE SAME AS THE CITY STANDARD TYPE 'B1' OR 'B2' BASE, BUT WITH THE B.C.D. AS REQUIRED.

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THE CITY OF
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4	2005 ISSUE UPDATE	2005-06-01	5 METRE WALKWAY POLE MATERIALS LIST			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE
	Original Signed by A. Andreasen		DWN: DH	NOT TO SCALE	454.2030.002	4
	For General Manager Calgary Roads					SHEET 36



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

5 METRE TRADITIONAL (17th AVE.) POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2031.001	ISSUE 4	SHEET 37
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MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	158236	LUMINAIRE - HPSV	100W - TRADITIONAL POST TOP STYLE (TYPE 2)	ROADS
1A	1	158237	LUMINAIRE - HPSV	100W - LANTERN POST TOP STYLE (TYPE 3)	ROADS
2	1	143988	LAMP - HPSV	100W - CLEAR	ROADS
3	1	151252	POLE - PAINTED	5m - TRADITIONAL STYLE - BLACK	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/DECORATIVE POLE BASE COVER)	ROADS
5	1	139578	TYPE 'B1' BASE - ROUND CONCRETE PRECAST		ROADS
6	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
8					
9					
10					
11					

NOTES:

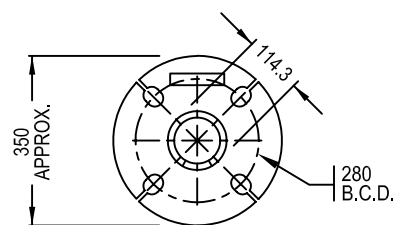
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W BASE COVER, BANNER ARMS AND BANNER ARM ANCHORS.
5. "OLD SPEC. STYLE" FIXTURES ARE NO LONGER AVAILABLE.

DIMENSIONS ARE MILLIMETRES
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	5 METRE TRADITIONAL (17th AVE.) POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE: NOT TO SCALE	DRAWING No. 454.2031.002	ISSUE 4	SHEET 38
			DWN: DH				



POLE BASE PLATE

FOR ITEM NUMBERS REFER
TO DRAWING 454.2032.002



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ROADS

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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

5 METRE CONTEMPORARY STYLE POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2032.001	ISSUE 4	SHEET 39
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MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	2	143047	LUMINAIRE - HPSV	100W - CONTEMPORARY POST TOP	ROADS
2	2	143988	LAMP - HPSV	100W - CLEAR	ROADS
3	1	151258	POLE - PAINTED	5m - CONTEMPORARY - BLACK	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/POLE)	ROADS
5	1	139575	TYPE 'B' BASE - CONCRETE PRECAST		ROADS
6	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
8					
9					
10					
11					

NOTES:

1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W BASE COVER, BANNER ARMS, BANNER ARM ATTACHMENTS, SIGNALS AND LUMINAIRE MOUNTING ARM.

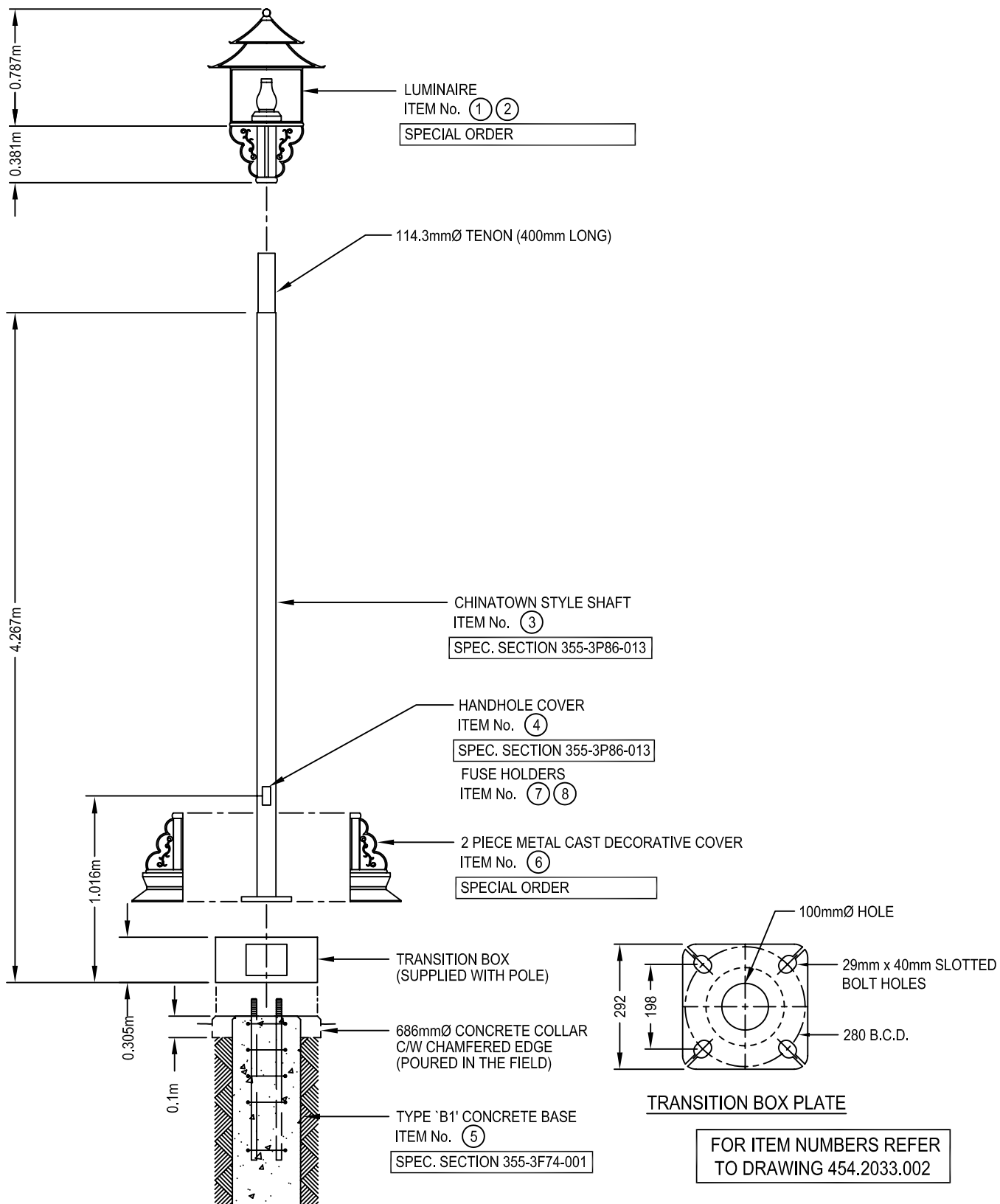
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	5 METRE CONTEMPORARY STYLE POLE MATERIALS LIST			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date			Approved By	DES: PMS	SCALE:	DRAWING No.
			Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2032.002
			For General Manager Calgary Roads			ISSUE 4
						SHEET 40



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

4.6 METRE CHINATOWN STYLE POLE INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2033.001

ISSUE
4

SHEET
41

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	143034	LUMINAIRE - MH 250W - CHINATOWN	ROADS
2	1	143984	LAMP - MH 250W - CLEAR	ROADS
3	1	151809	POLE - PAINTED 4.6m - CHINATOWN - RED	ROADS
4	1	N/A	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139578	TYPE 'B1' BASE - CONCRETE PRECAST	ROADS
6	1	N/A	METAL CAST DECORATIVE COVER (SPECIAL ORDER)	ROADS
7	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
8	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
9				
10				
11				

NOTES:

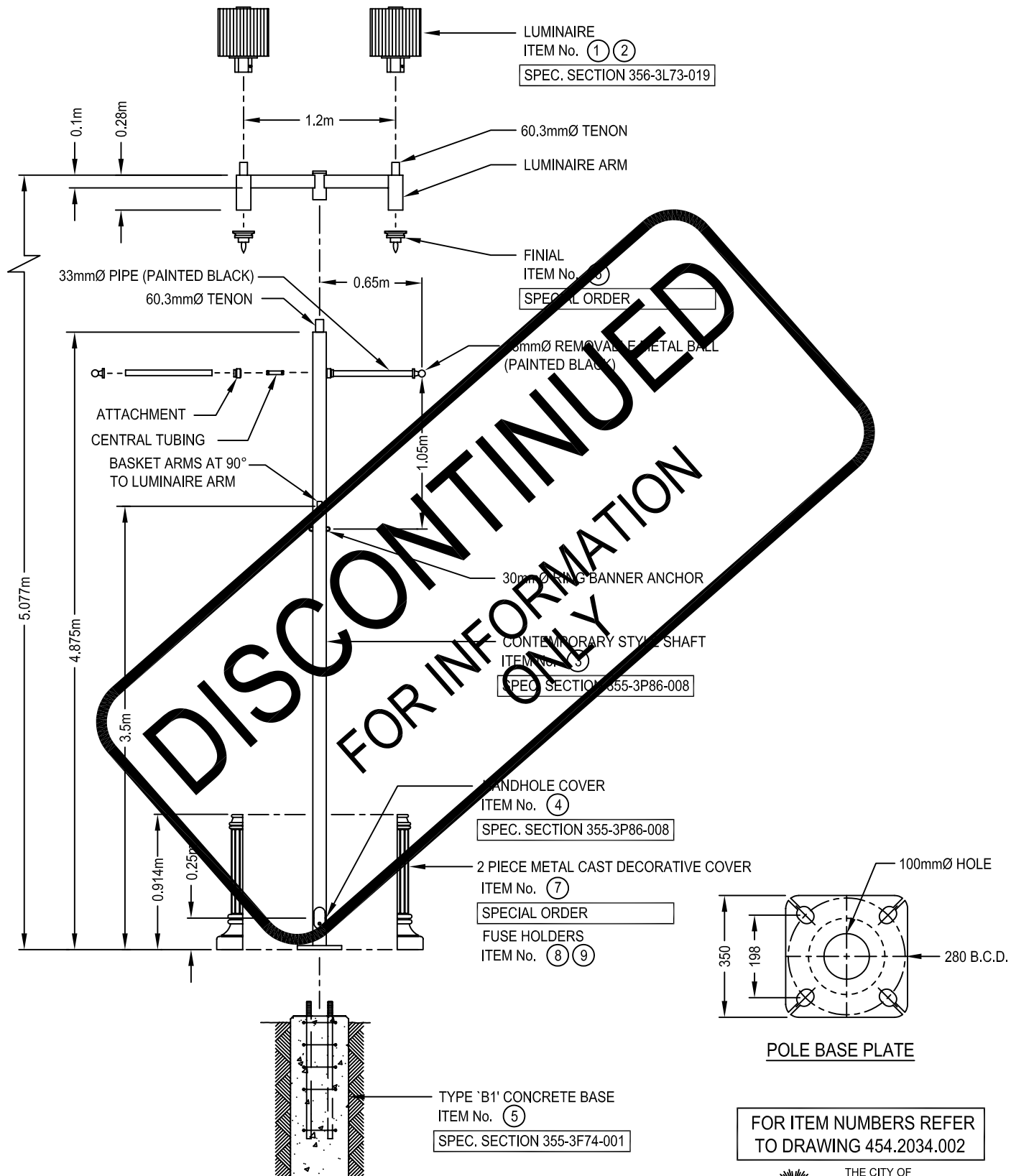
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W BASE COVER.

DIMENSIONS ARE MILLIMETRES
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THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	4.6 METRE CHINATOWN STYLE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2033.002	4	42



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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

5 METRE INGLEWOOD STYLE POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2034.001	ISSUE 4	SHEET 43
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MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	2	143047	LUMINAIRE - HPSV 100W - CONTEMPORARY POST TOP	ROADS
2	2	143988	LAMP - HPSV 100W - CLEAR	ROADS
3	1	151258	POLE - PAINTED 5m - CONTEMPORARY- BLACK	ROADS
4	1	N/A	COVER - HANDHOLE (SUPPLIED W/ DECORATIVE POLE BASE COVER)	ROADS
5	1	139578	TYPE 'B1' BASE - CONCRETE PRECAST	ROADS
6	2	N/A	FINIAL (SUPPLIED W/POLE)	ROADS
7	1	N/A	METAL CAST DECORATIVE COVER	ROADS
8	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
9	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
10				
11				

NOTES:

1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SCS 352.8-02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W BASE COVER, BASKET ARMS, BANNER ARM ATTACHMENTS, FINIALS AND LUMINAIRE MOUNTING ARMS.

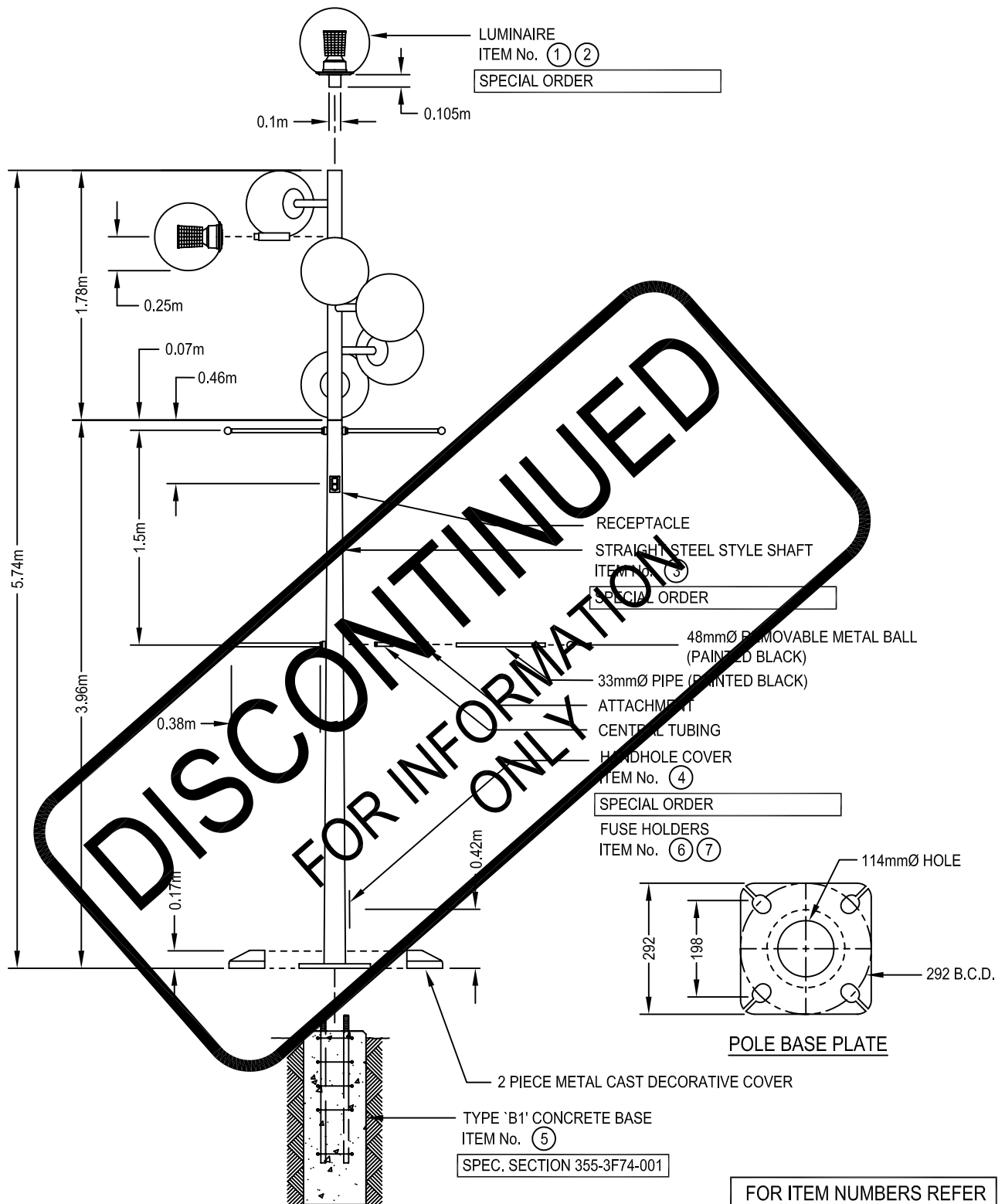
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	5 METRE INGLEWOOD STYLE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2034.002	4	44



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FOR ITEM NUMBERS REFER
TO DRAWING 454.2035.002



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

5.5 METRE BARCLAY MALL STYLE POLE INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2035.001

ISSUE
4
SHEET
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MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	7	143054	LUMINAIRE - HPSV 150W GLOBE	ROADS
2	7	143989	LAMP - HPSV 150W CLEAR	ROADS
3	1	N/A	POLE - PAINTED 5.5m - STRAIGHT STEEL	ROADS
4	1	N/A	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139578	TYPE 'B1' BASE - CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V TYPE BATT - 10A	ROADS
8				
9				
10				
11				

NOTES:

1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W BASE COVER, BANNER ARMS, BANNER ARM ATTACHMENTS & LUMINAIRE MOUNTING ARMS.

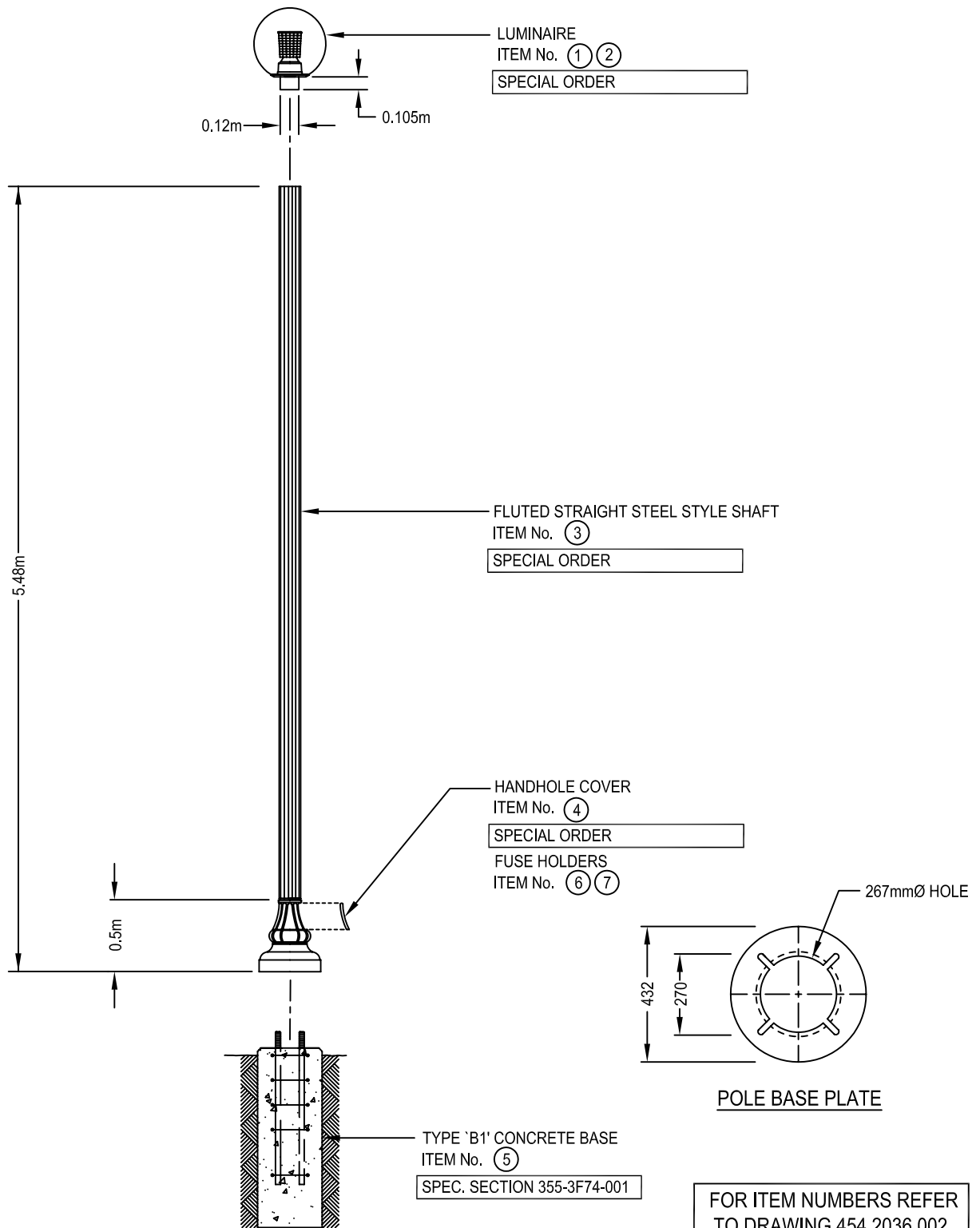
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CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01	5.5 METRE BARCLAY MALL STYLE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2035.002	4	46



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CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

5.5 METRE KENSINGTON STYLE POLE INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2036.001

ISSUE
4

SHEET
47

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	143054	LUMINAIRE - HPSV 150W GLOBE	ROADS
2	1	143989	LAMP - HPSV 150W CLEAR	ROADS
3	1	N/A	POLE - PAINTED	ROADS
4	1	N/A	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139578	TYPE 'B1' BASE - ROUND CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
8				
9				
10				
11				

NOTES:

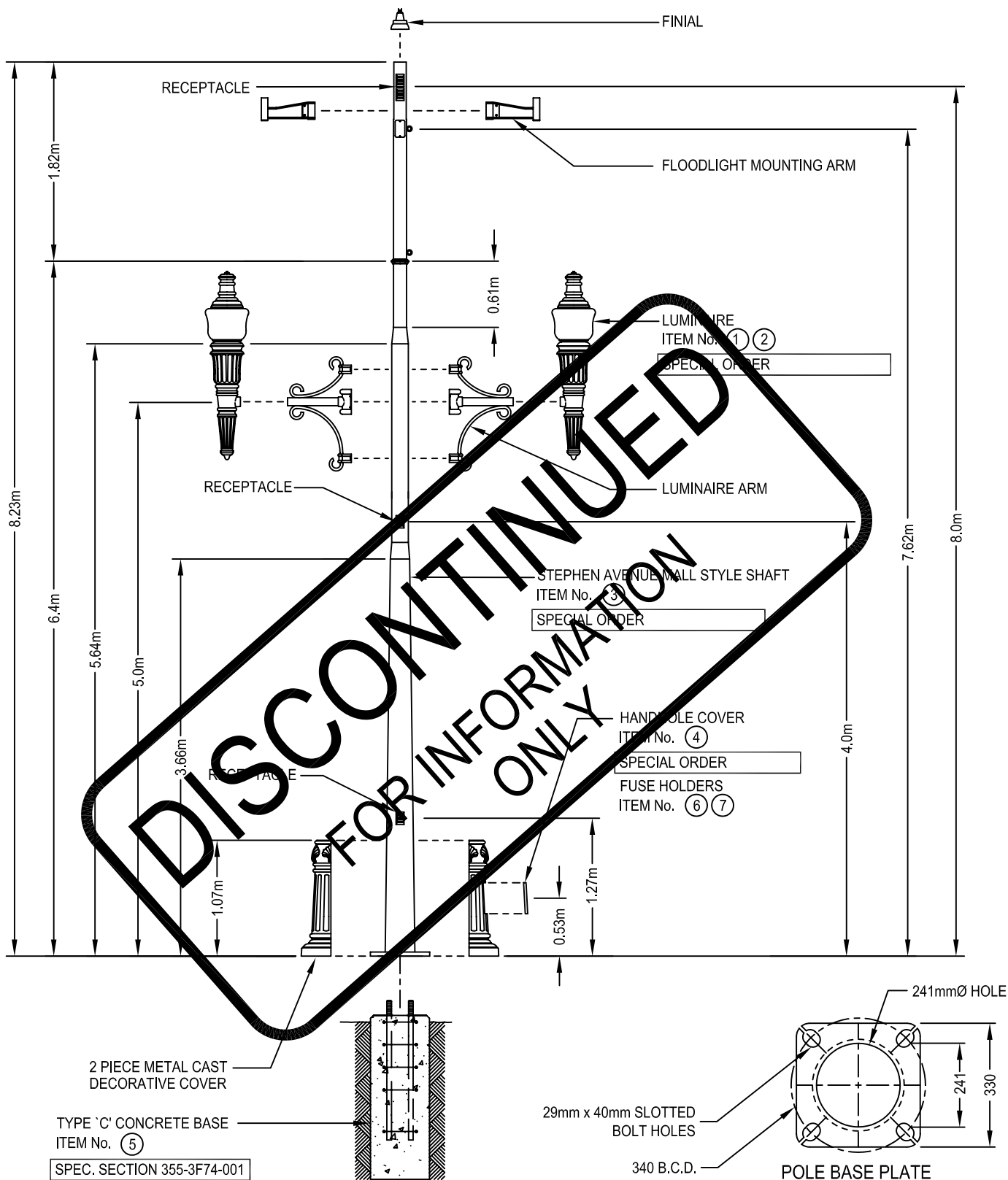
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

DIMENSIONS ARE MILLIMETRES
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	5.5 METRE KENSINGTON STYLE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE: NOT TO SCALE	DRAWING No. 454.2036.002	ISSUE 4	SHEET 48
			DWN: DH				



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TO DRAWING 454.2037.002



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

8 METRE STEPHEN AVE. MALL STYLE POLE INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2037.001

ISSUE
4

SHEET
49

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	2	N/A	LUMINAIRE - MH	250W CUSTOM	ROADS
2	2	143984	LAMP - MPSV MH	250W CLEAR	ROADS
3	1	N/A	POLE - PAINTED	8m - STEPHEN AVE. MALL STYLE	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/POLE BASE DECORATIVE COVER)	ROADS
5	1	139576	TYPE 'C' - CONCRETE PRE-CAST		ROADS
6	2	154245	FUSE HOLDER 600V	30A - IN LINE	ROADS
7	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
8					
9					
10					
11					

NOTES:

1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED TO ST. 100 SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

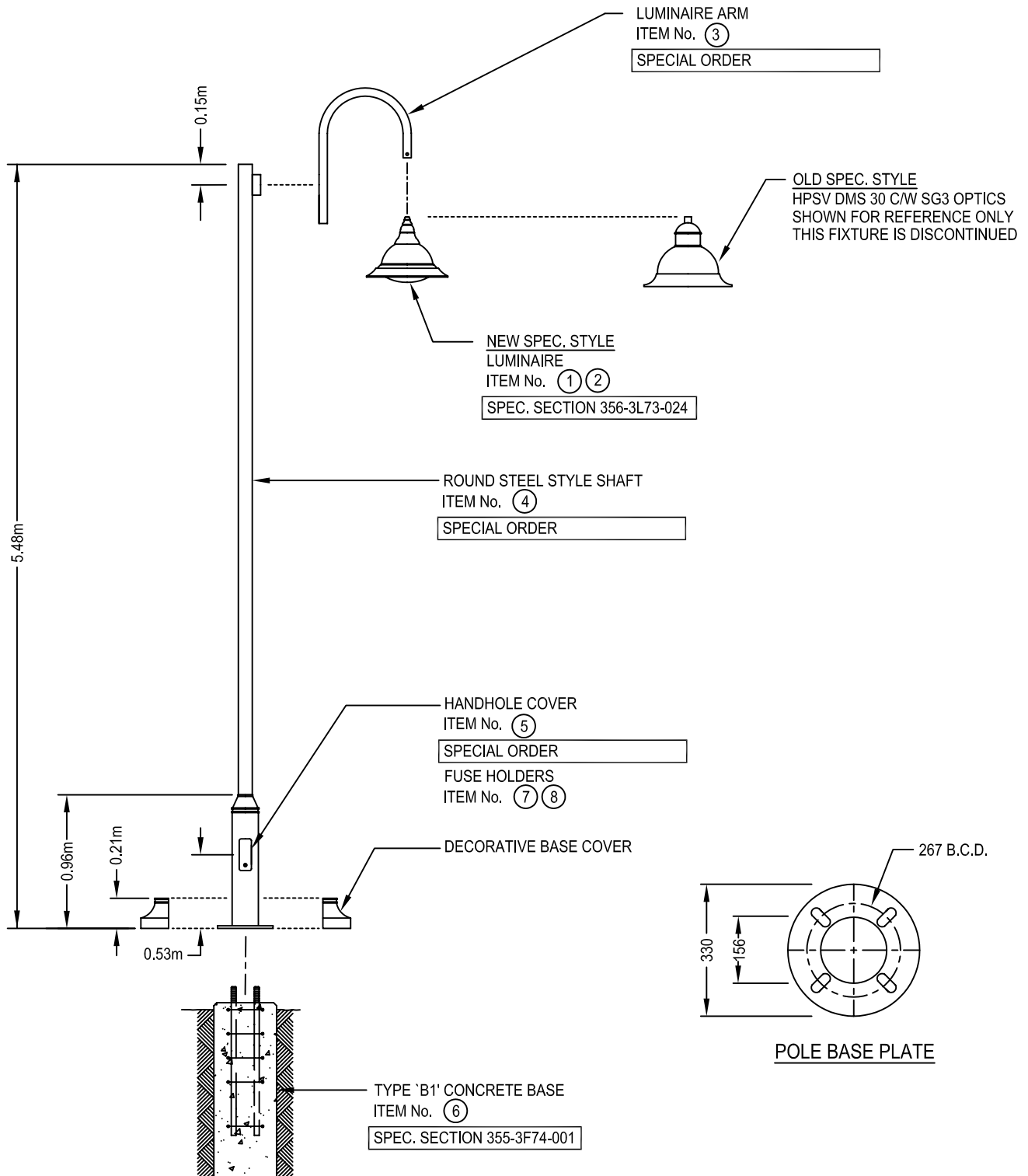
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CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01	8 METRE STEPHEN AVE. MALL STYLE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE: NOT TO SCALE	DRAWING No. 454.2037.002	ISSUE 4	SHEET 50
			DWN: DH				



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FOR ITEM NUMBERS REFER
TO DRAWING 454.2038.002



THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

ROULLEVILLE STRAIGHT STEEL STYLE POLE INSTALLATION DETAILS

Date _____ Approved By _____
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2038.001

ISSUE
4

SHEET
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MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	159355	LUMINAIRE - HPSV	100W - DOMUS CONCEPT STYLE (TYPE 1)	ROADS
2	1	143988	LAMP - HPSV	100W CLEAR	ROADS
3	1	N/A	LUMINAIRE ARM	IF MOUNTING	ROADS
4	1	N/A	POLE - PAINTED	5.5m - STRAIGHT STEEL STYLE	ROADS
5	1	N/A	COVER - HANDHOLE	(SUPPLIED W/POLE)	ROADS
6	1	139578	TYPE 'B1' BASE - CONCRETE PRECAST		ROADS
7	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
8	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
9					
10					
11					

NOTES:

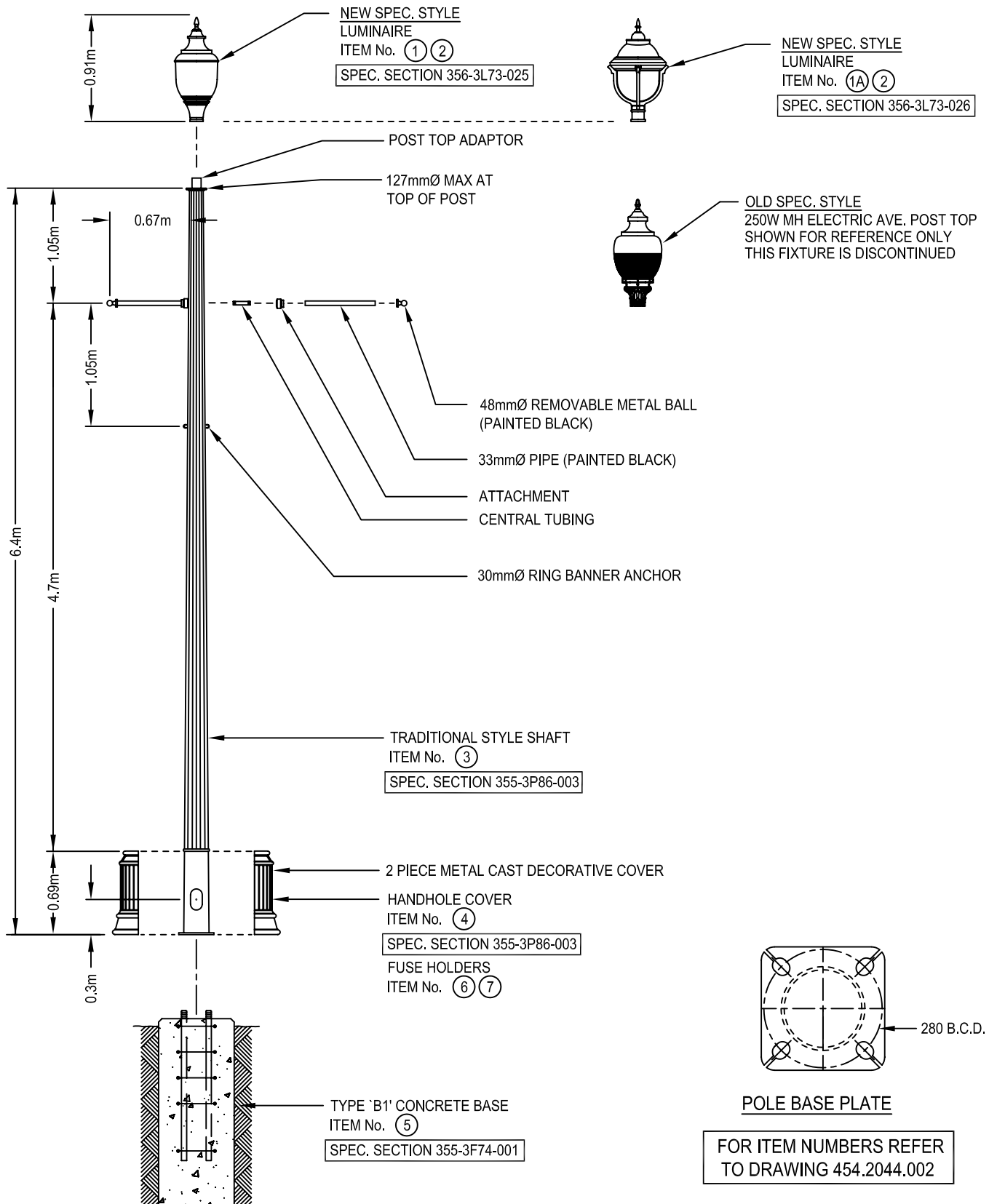
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W BASE COVER.
5. "OLD SPEC. STYLE" FIXTURES ARE NO LONGER AVAILABLE.

DIMENSIONS ARE MILLIMETRES
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	ROULLEVILLE STRAIGHT STEEL STYLE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2038.002	4	52



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

6.4 METRE ELECTRIC AVENUE STYLE POLE INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2044.001

ISSUE
4

SHEET
53

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	158236	LUMINAIRE - HPS	100W - TRADITIONAL POST TOP (TYPE 2)	ROADS
1A	1	158237	LUMINAIRE - HPS	100W - LANTERN POST TOP (TYPE 3)	ROADS
2	1	143988	LAMP - HPS	100W - CLEAR	ROADS
3	1	151285	POLE - PAINTED	6.4m - TRADITIONAL - BLACK	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/DECORATIVE POLE BASE COVER)	ROADS
5	1	139578	TYPE 'B1' BASE - CONCRETE PRECAST		ROADS
6	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
8					
9					
10					
11					

NOTES:

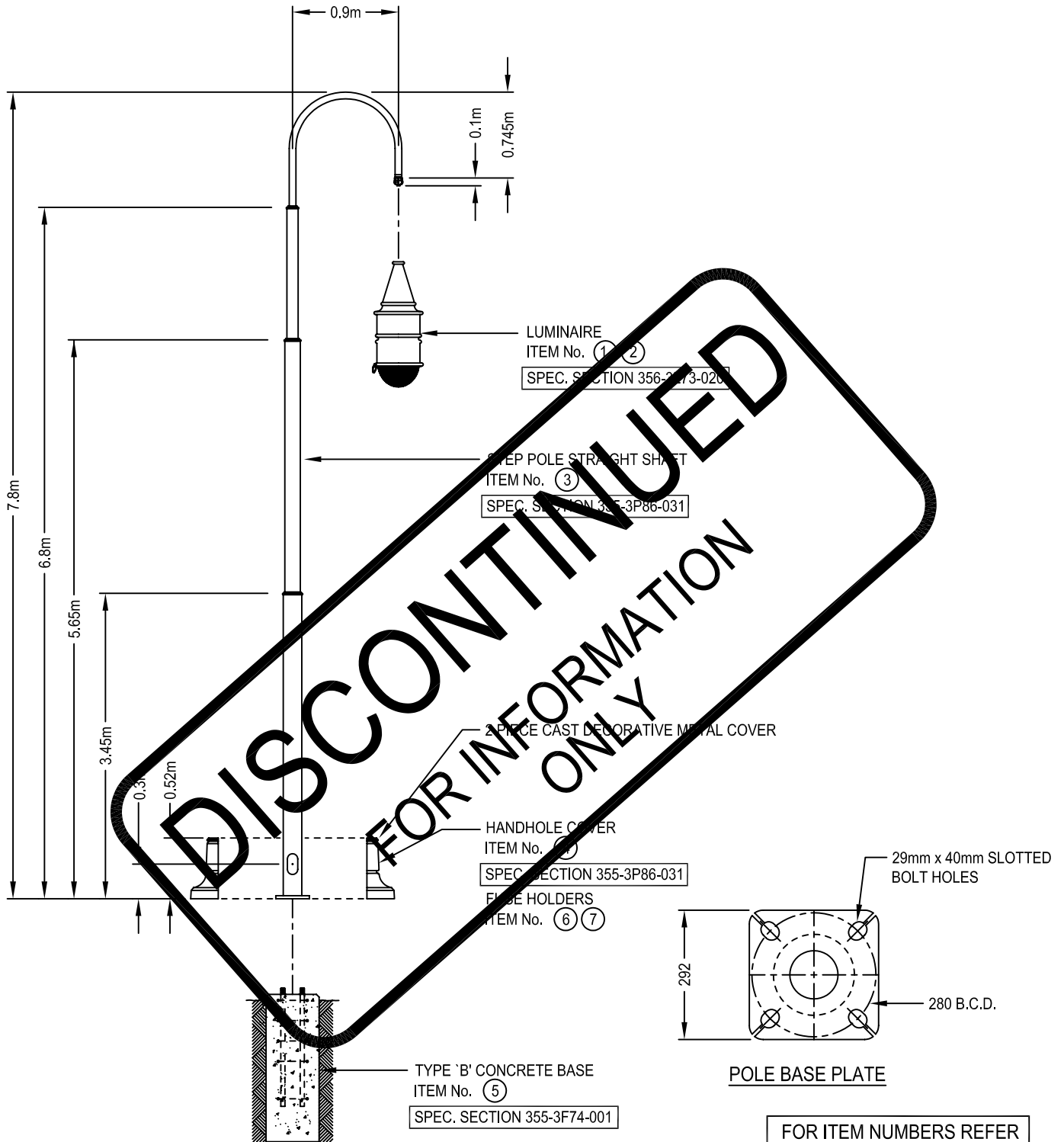
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W BASE COVER, BANNER ARMS, BANNER ARM ATTACHMENTS.
5. "OLD SPEC.STYLE" FIXTURES ARE NO LONGER AVAILABLE.

DIMENSIONS ARE MILLIMETRES
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THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	6.4 METRE ELECTRIC AVENUE STYLE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2044.002	4	54



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

7 METRE TEAR DROP LOUISE BRIDGE POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2045.001	ISSUE 4	SHEET 55
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MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	143051	LUMINAIRE - HPSV 150W - LOUISE TEAR DROP	ROADS
2	1	143989	LAMP - HPSV 150W - CLEAR	ROADS
3	1	151303	POLE - PAINTED 7m - LOUISE - BLACK	ROADS
4	1	N/A	COVER - HANDHOLE (SUPPLIED W/DECORATIVE POLE BASE COVER)	ROADS
5	1	139575	TYPE 'B' BASE - CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V TYPE BAF 10A	ROADS
8				
9				
10				
11				

NOTES:

1. NO MORE THAN 2 SHIMS SHALL BE USED IN ANY BOLT.
2. THE ANCHOR NUTS SHALL BE TORQUED TO 350 FOOT POUNDS.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W BASE COVER.

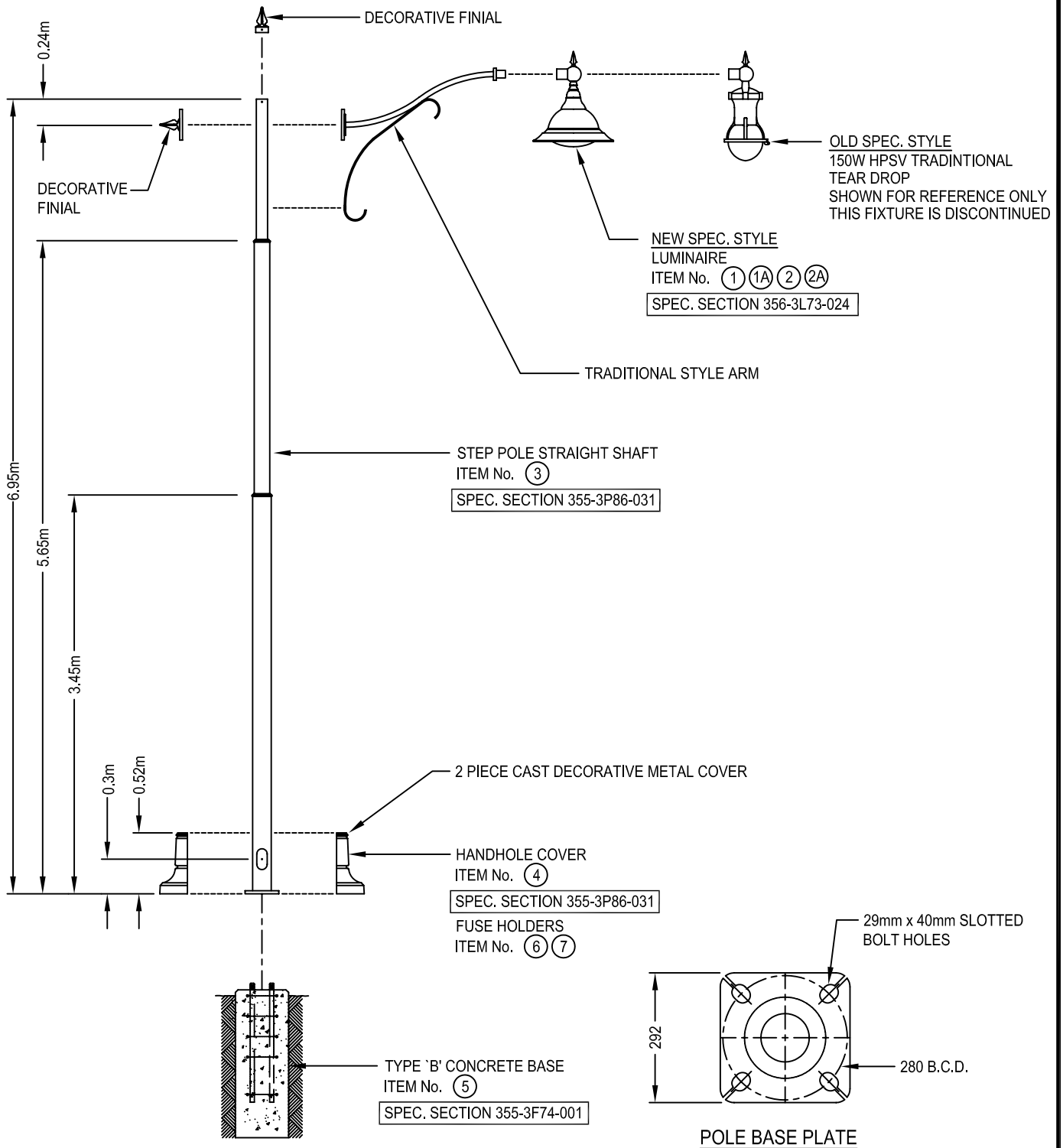
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	7 METRE TEAR DROP LOUISE BRIDGE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2045.002	4	56



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

7 METRE TEAR DROP TRADITIONAL STEP POLE INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2046.001

ISSUE
4

SHEET
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MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	159355	LUMINAIRE - HPSV	100W - DOMUS CONCEPT STYLE (TYPE 1)	ROADS
1A	1	143988	LAMP - HPSV	100W CLEAR	ROADS
2	1	159826	LUMINAIRE - HPSV	150W - DOMUS CONCEPT STYLE (TYPE 1)	ROADS
2A	1	143989	LAMP - HPSV	150W CLEAR	ROADS
3	1	151304	POLE - PAINTED	7m - STEP POLE-STRAIGHT STYLE - BLACK	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/DECORATIVE POLE BASE COVER)	ROADS
5	1	139575	TYPE 'B' BASE - CONCRETE PRECAST		ROADS
6	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
8					
9					

NOTES:

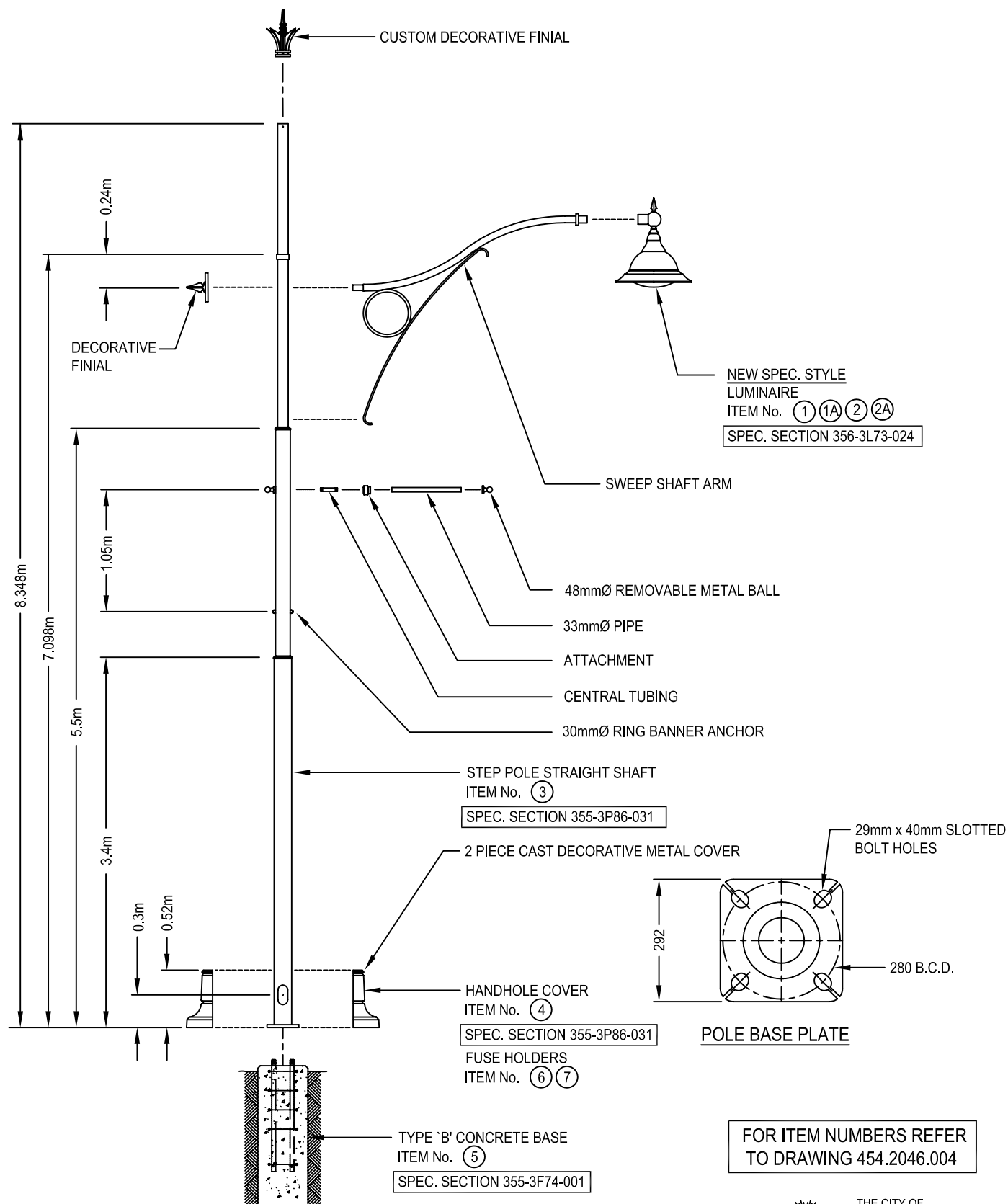
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY BOLT.
2. THE ANCHOR NUTS SHALL BE TORQUED TO 350 FOOT POUNDS.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W LUMINAIRE MOUNTING ARM , FINIALS AND BASE COVER.
5. "OLD SPEC. STYLE" FIXTURES ARE NO LONGER AVAILABLE.

DIMENSIONS ARE MILLIMETRES
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	7 METRE TEAR DROP TRADITIONAL STEP POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2046.002	4	58



FOR ITEM NUMBERS REFER
TO DRAWING 454.2046.004

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THE CITY OF
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ROADS

ELBOW DRIVE POLE INSTALLATION DETAILS

			ELBOW DRIVE POLE INSTALLATION DETAILS					
1	2005 ISSUE UPDATE	2005-06-01						
Issue	Revision	Issue Date						
Date <div>Approved By</div> <div>Original Signed by A. Andreasen</div> <div>For General Manager Calgary Roads</div>			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET	
			DWN: DH	NOT TO SCALE	454.2046.003	1	59	

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	159355	LUMINAIRE - HPSV	100W - DOMUS CONCEPT STYLE (TYPE 1)	ROADS
1A	1	143988	LAMP - HPSV	100W CLEAR	ROADS
2	1	159826	LUMINAIRE - HPSV	150W - DOMUS CONCEPT STYLE (TYPE 1)	ROADS
2A	1	143989	LAMP - HPSV	150W CLEAR	ROADS
3	1	157201	POLE - PAINTED	7m - STEP POLE-STRAIGHT STYLE - BLACK	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/DECORATIVE POLE BASE COVER)	ROADS
5	1	139575	TYPE 'B' BASE - CONCRETE PRECAST		ROADS
6	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
8					
9					
10					

NOTES:

1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY BOLT.
2. THE ANCHOR NUTS SHALL BE TORQUED TO 350 FOOT POUNDS.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W LUMINAIRE MOUNTING ARM , FINIALS AND BASE COVER.
5. "OLD SPEC. STYLE" FIXTURES ARE NO LONGER AVAILABLE.

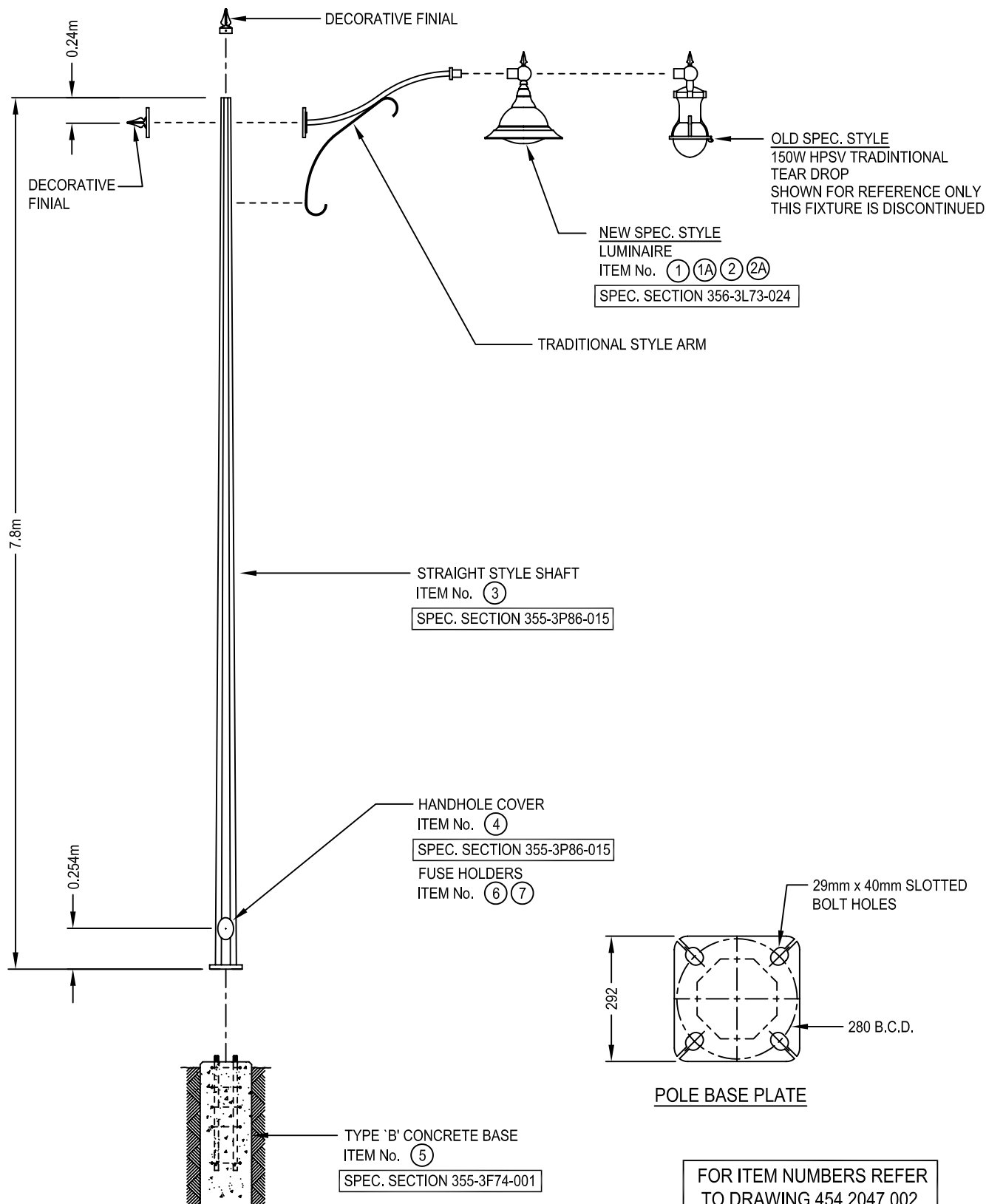
DIMENSIONS ARE MILLIMETRES
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ROADS

**ELBOW DRIVE POLE
MATERIALS LIST**

1	2005 ISSUE UPDATE	2005-06-01					
Issue	Revision	Issue Date					
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen		DWN: DH	NOT TO SCALE	454.2046.004	1	60
	For General Manager Calgary Roads						



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

7.8 METRE McKENZIE TOWNE STYLE POLE INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2047.001

ISSUE
4

SHEET
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MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	159355	LUMINAIRE - HPSV 100W - DOMUS CONCEPT STYLE (TYPE 1)	ROADS
1A	1	143988	LAMP - HPSV 100W CLEAR	ROADS
2	1	159826	LUMINAIRE - HPSV 150W - DOMUS CONCEPT STYLE (TYPE 1)	ROADS
2A	1	143989	LAMP - HPSV 150W CLEAR	ROADS
3	1	151305	POLE - PAINTED 7.8m - STRAIGHT SHAFT - BLACK	ROADS
4	1	N/A	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139575	TYPE 'B' BASE - CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
8				
9				

NOTES:

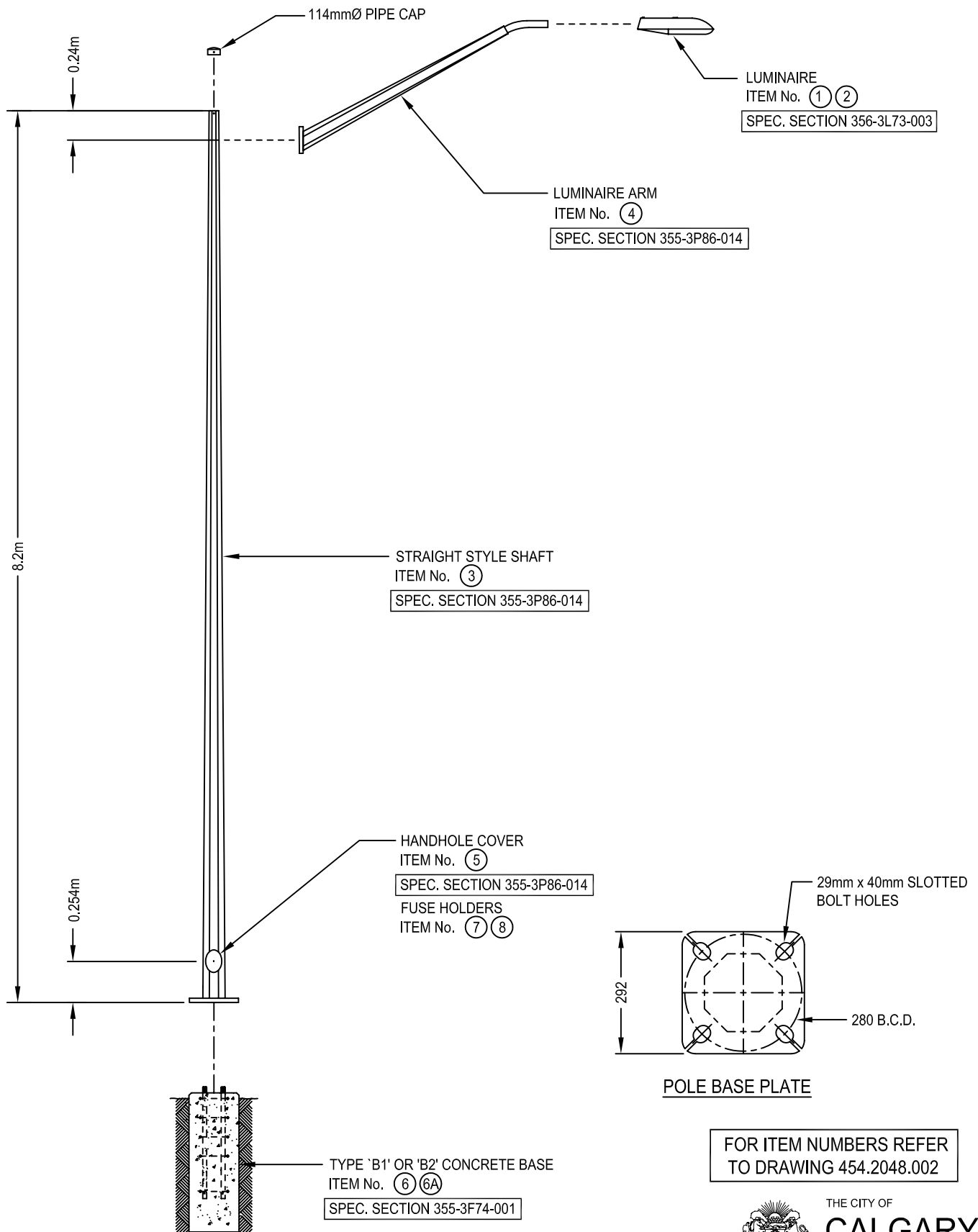
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY BOLT.
2. THE ANCHOR NUTS SHALL BE TORQUED TO 350 FOOT POUNDS.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W LUMINAIRE MOUNTING ARM AND FINIALS.
5. "OLD SPEC. STYLE" FIXTURES ARE NO LONGER AVAILABLE.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01	7.8 METRE McKENZIE TOWNE STYLE POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date <div>Approved By Original Signed by A. Andreasen For General Manager Calgary Roads</div>			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2047.002	4	62



DIMENSIONS ARE MILLIMETRES
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THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-23
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

8.2 METRE STRAIGHT STEEL POLE INSTALLATION DETAILS

Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2048.001	4	63

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	158855	LUMINAIRE - HPSV	200W - COBRAHEAD FLAT LENS	ROADS
2	1	143990	LAMP - HPSV	200W	ROADS
3	1	151267	POLE - GALVANIZED	8.2m - STRAIGHT STEEL	ROADS
4	1	151364	UPSWEPT LUMINAIRE ARM W/ MOUNTING HARDWARE		ROADS
5	1	151819	COVER - HANDHOLE	(SUPPLIED W/POLE)	ROADS
6	1	139578	TYPE 'B1' BASE - ROUND CONCRETE PRECAST		ROADS
6A	1	159907	TYPE 'B2' BASE - SQUARE CONCRETE BASE		ROADS
7	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
8	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
9					
10					

NOTES:

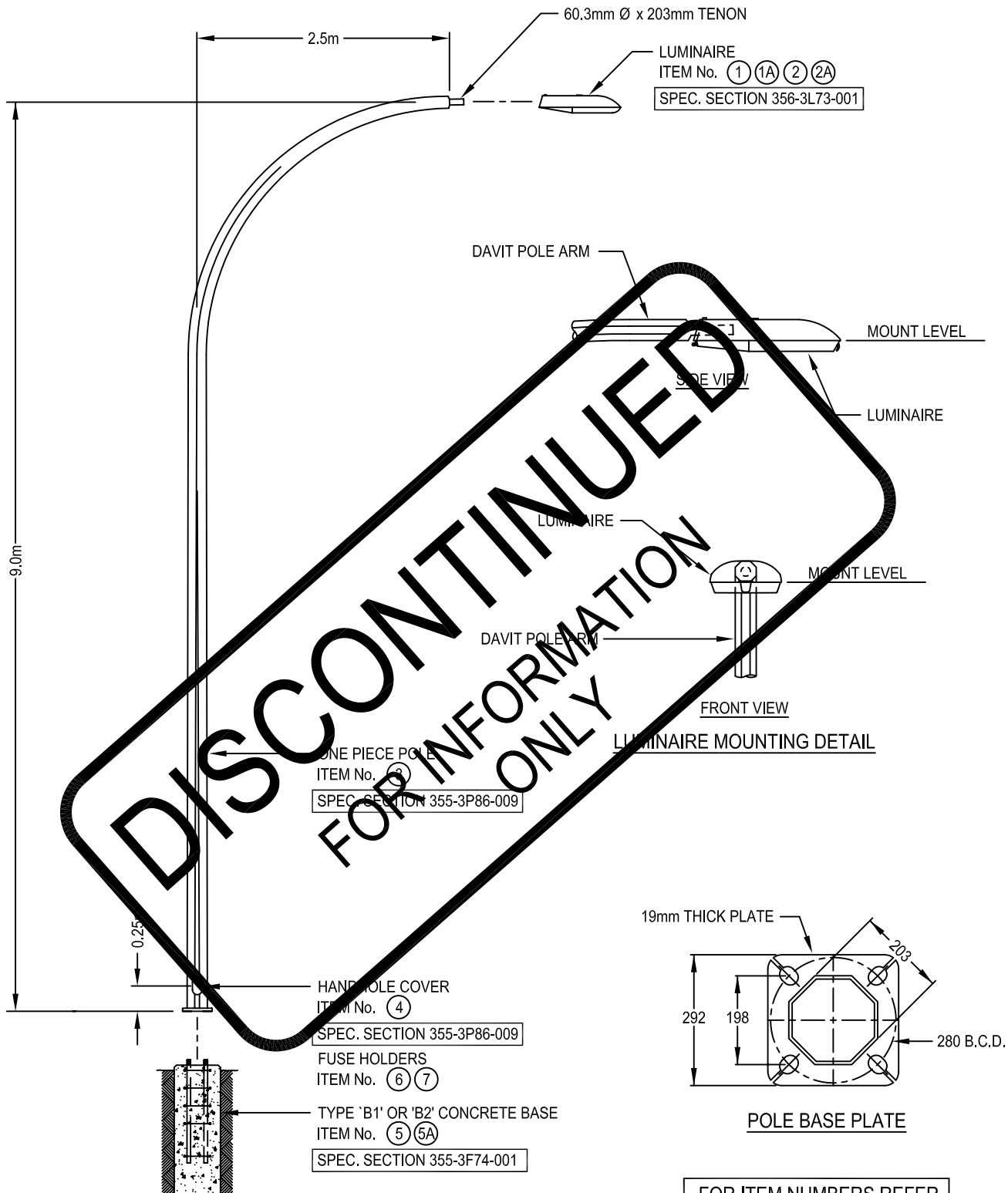
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY BOLT.
2. THE ANCHOR NUTS SHALL BE TORQUED TO 350 FOOT POUNDS.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W TOP CAP AND LUMINAIRE ARM.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-23	8.2 METRE STRAIGHT STEEL POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date		Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
		For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2048.002	4	64



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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

9m/2.5m SINGLE DAVIT POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2050.001	ISSUE 4	SHEET 65
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MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	158572	LUMINAIRE - HPSV 100W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
1A		143988	LAMP - HPSV 100W (SEE NOTE 4 BELOW)	ROADS
2	1	158573	LUMINAIRE - HPSV 150W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2A	1	143989	LAMP - HPSV 150W (SEE NOTE 4 BELOW)	ROADS
3	1	151321	POLE - GALVANIZED 9m x 2.5m - SINGLE DAVIT	ROADS
4	1	151819	COVER - HANDHOLE (SUPPLIED W/ POLE)	ROADS
5	1	139578	TYPE 'B1' BASE - ROUND CONCRETE PRECAST	ROADS
5A	1	159907	TYPE 'B2' BASE - SQUARE CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 3/4" LINE	ROADS
7	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
8				
9				
10				

NOTES:

1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 BOLTS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 100W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

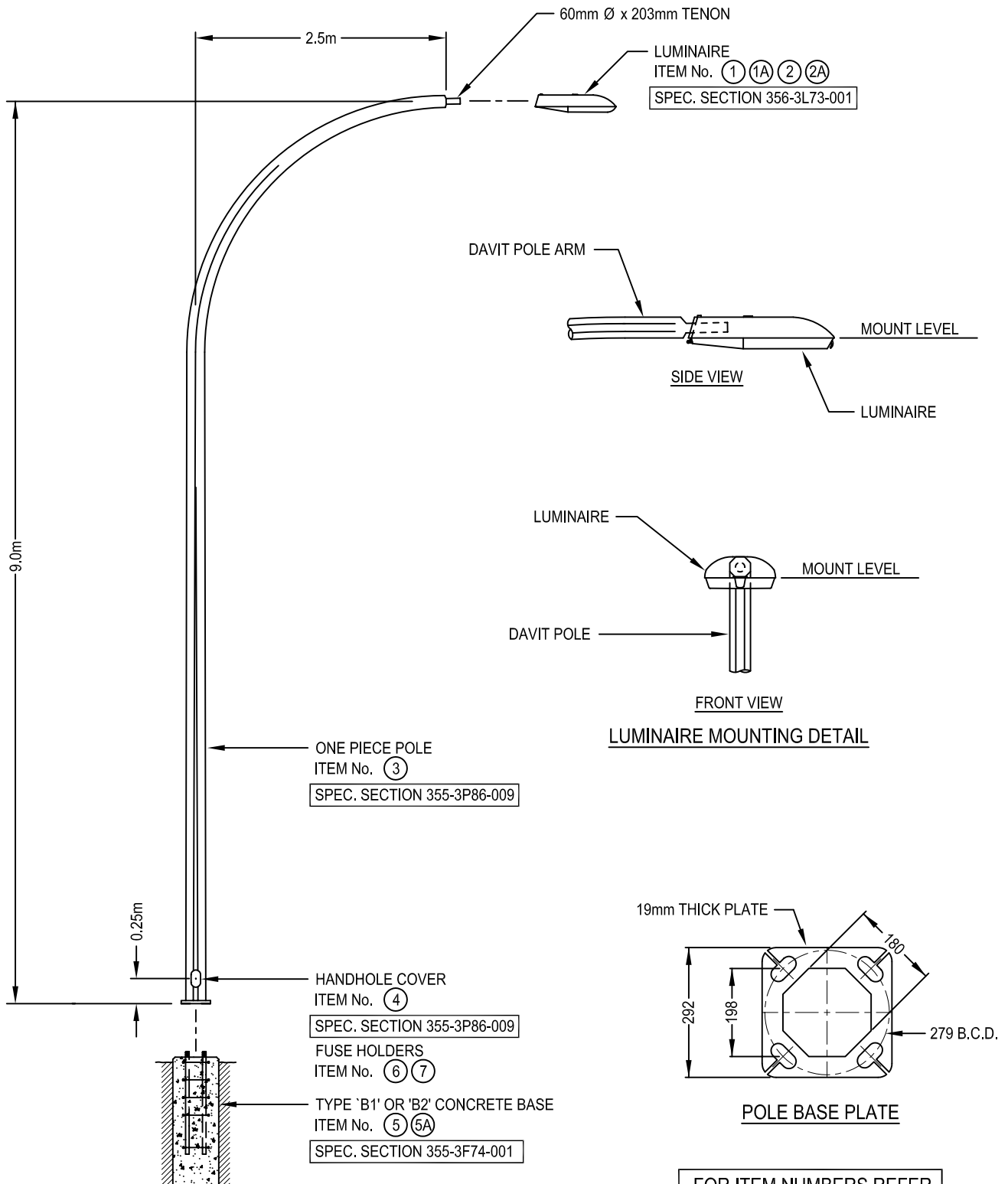
DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

9m/2.5m SINGLE DAVIT POLE MATERIALS LIST

4	2005 ISSUE UPDATE	2005-06-01	9m/2.5m SINGLE DAVIT POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2050.002	4	66



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THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

9m/2.5m SINGLE DAVIT POLE INSTALLATION DETAILS

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

SCALE:
NOT TO SCALE

DRAWING No.
454.2050.003

ISSUE
4

SHEET
65a

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	158572	LUMINAIRE - HPSV 100W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
1A	1	158573	LUMINAIRE - HPSV 150W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2	1	143988	LAMP - HPSV 100W (SEE NOTE 4 BELOW)	ROADS
2A	1	143989	LAMP - HPSV 150W (SEE NOTE 4 BELOW)	ROADS
3	1	151321	POLE - GALVANIZED 9m x 2.5m - SINGLE DAVIT	ROADS
4	1	151819	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139578	TYPE 'B1' BASE - ROUND CONCRETE PRECAST	ROADS
5A	1	159907	TYPE 'B2' BASE - SQUARE CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
8				
9				
10				

NOTES:

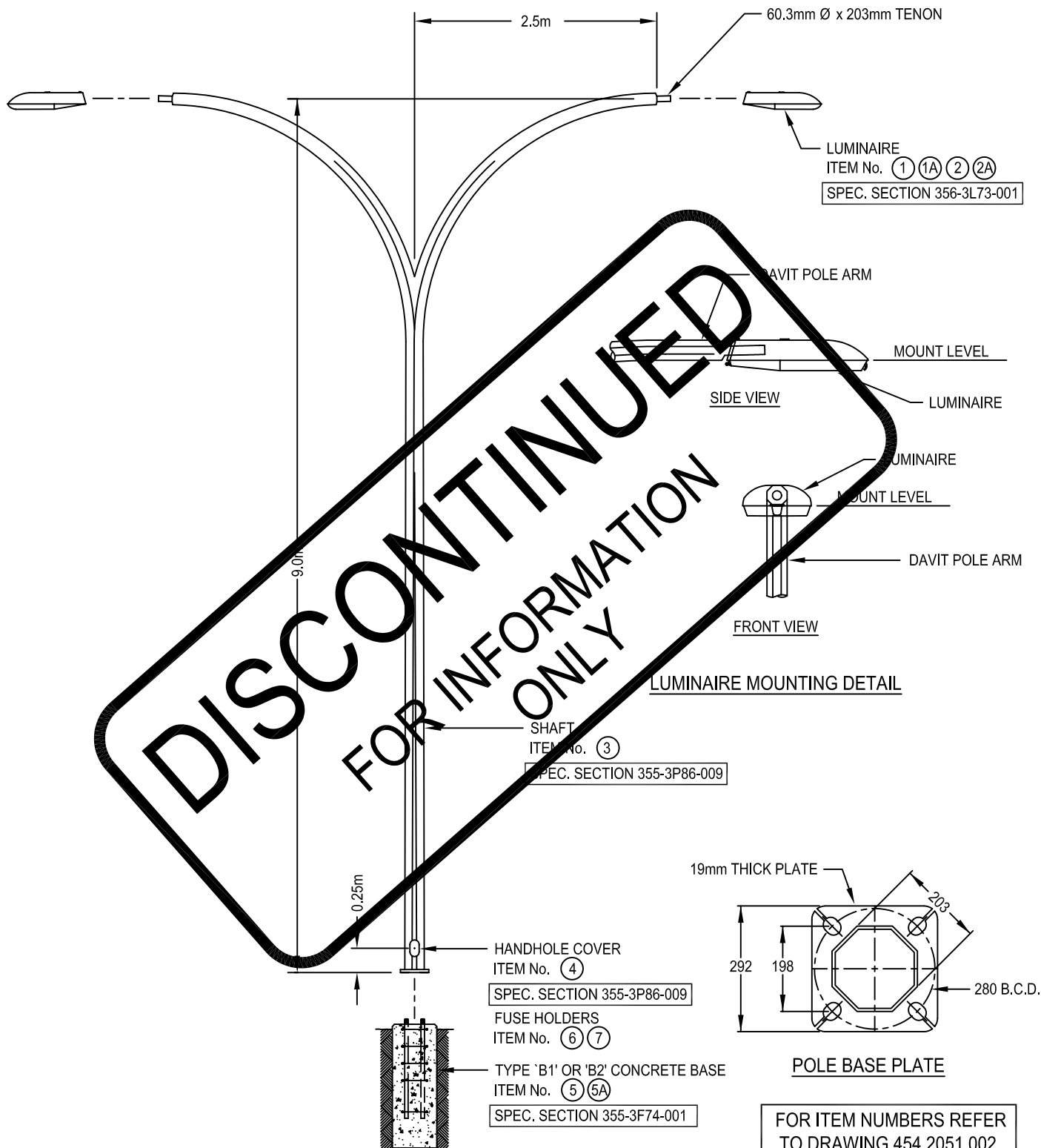
1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 100W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15	9m/2.5m SINGLE DAVIT POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date		Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
		For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2050.004	4	66a



DIMENSIONS ARE MILLIMETRES
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THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

9m/2.5m DOUBLE DAVIT POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2051.001	ISSUE 4	SHEET 67
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MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	2	158572	LUMINAIRE - HPSV 100W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
1A	2	143988	LAMP - HPSV 100W (SEE NOTE 4 BELOW)	ROADS
2	2	158573	LUMINAIRE - HPSV 150W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2A	2	143989	LAMP - HPSV 150W (SEE NOTE 4 BELOW)	ROADS
3	1	151322	POLE - GALVANIZED 9m x 2.5m DOUBLE DAVIT	ROADS
4	1	151819	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139578	TYPE 'B1' BASE - ROUND CONCRETE PRECAST	ROADS
5A	1	159907	TYPE 'B2' BASE - SQUARE CONCRETE PRECAST	ROADS
6	4	154245	FUSE HOLDER 600V 3A - IN LINE	ROADS
7	4	154247	FUSE 10A 250V TYPE RAP 10A	ROADS
8				
9				
10				

NOTES:

1. WHEN ASSEMBLED THE LOWER 3 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 100W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

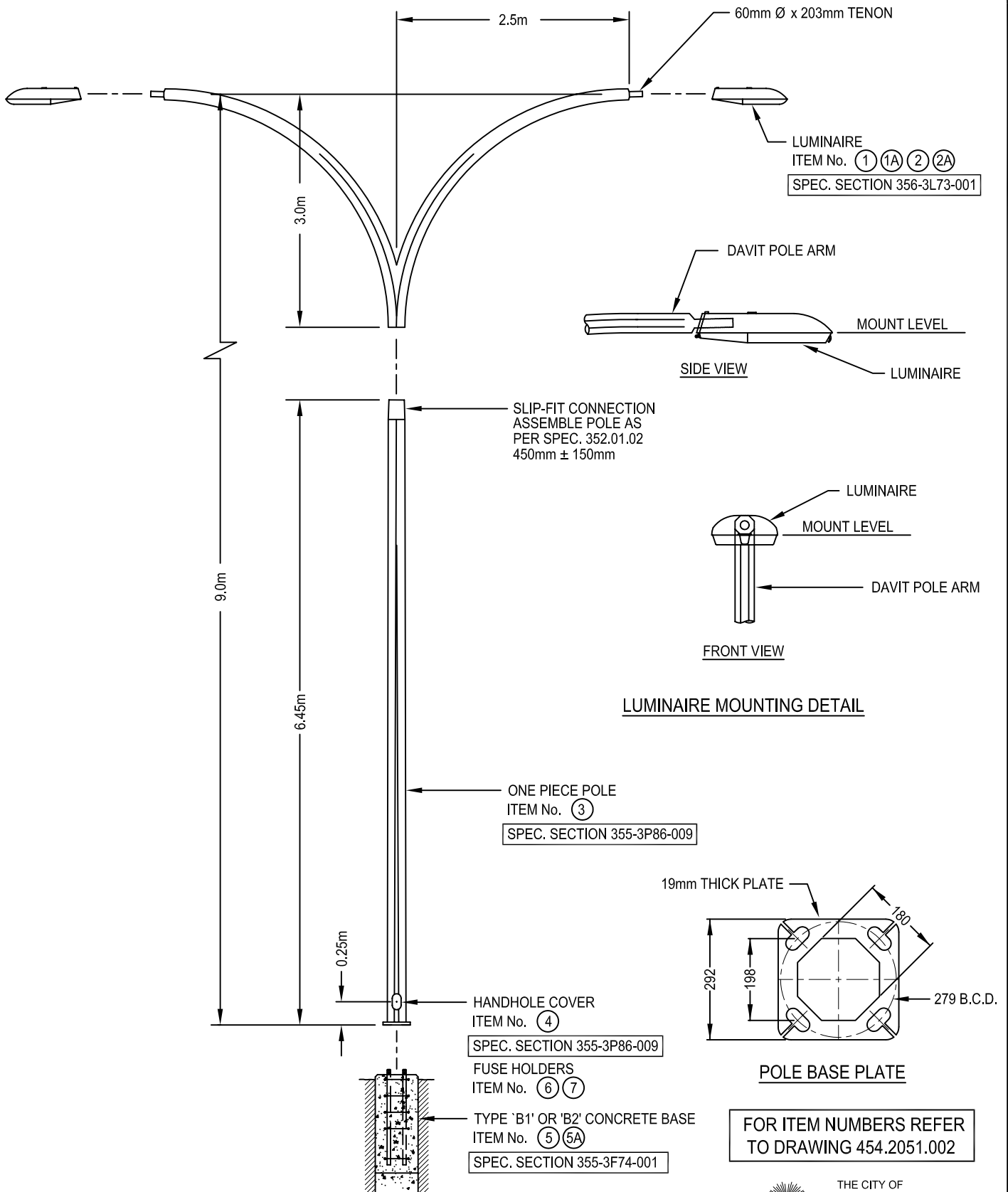
DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



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ROADS

9m/2.5m DOUBLE DAVIT POLE MATERIALS LIST

4	2005 ISSUE UPDATE	2005-06-01	9m/2.5m DOUBLE DAVIT POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2051.002	4	68



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THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

9m/2.5m DOUBLE DAVIT POLE INSTALLATION DETAILS

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

SCALE:
NOT TO SCALE

DRAWING No.
454.2051.003

ISSUE
4

SHEET
67a

MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	2	158572	LUMINAIRE - HPSV 100W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
1A	2	158573	LUMINAIRE - HPSV 150W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2	2	143988	LAMP - HPSV 100W (SEE NOTE 4 BELOW)	ROADS
2A	2	143989	LAMP - HPSV 150W (SEE NOTE 4 BELOW)	ROADS
3	1	160360	POLE - GALVANIZED 9m x 2.5m - DOUBLE DAVIT (BOTTOM)	ROADS
3A	1	160361	POLE - GALVANIZED 9m x 2.5m - DOUBLE DAVIT (TOP)	ROADS
4	1	151819	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139578	TYPE 'B1' BASE - ROUND CONCRETE PRECAST	ROADS
5A	1	159907	TYPE 'B2' BASE - SQUARE CONCRETE PRECAST	ROADS
6	4	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	4	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
8				
9				

NOTES:

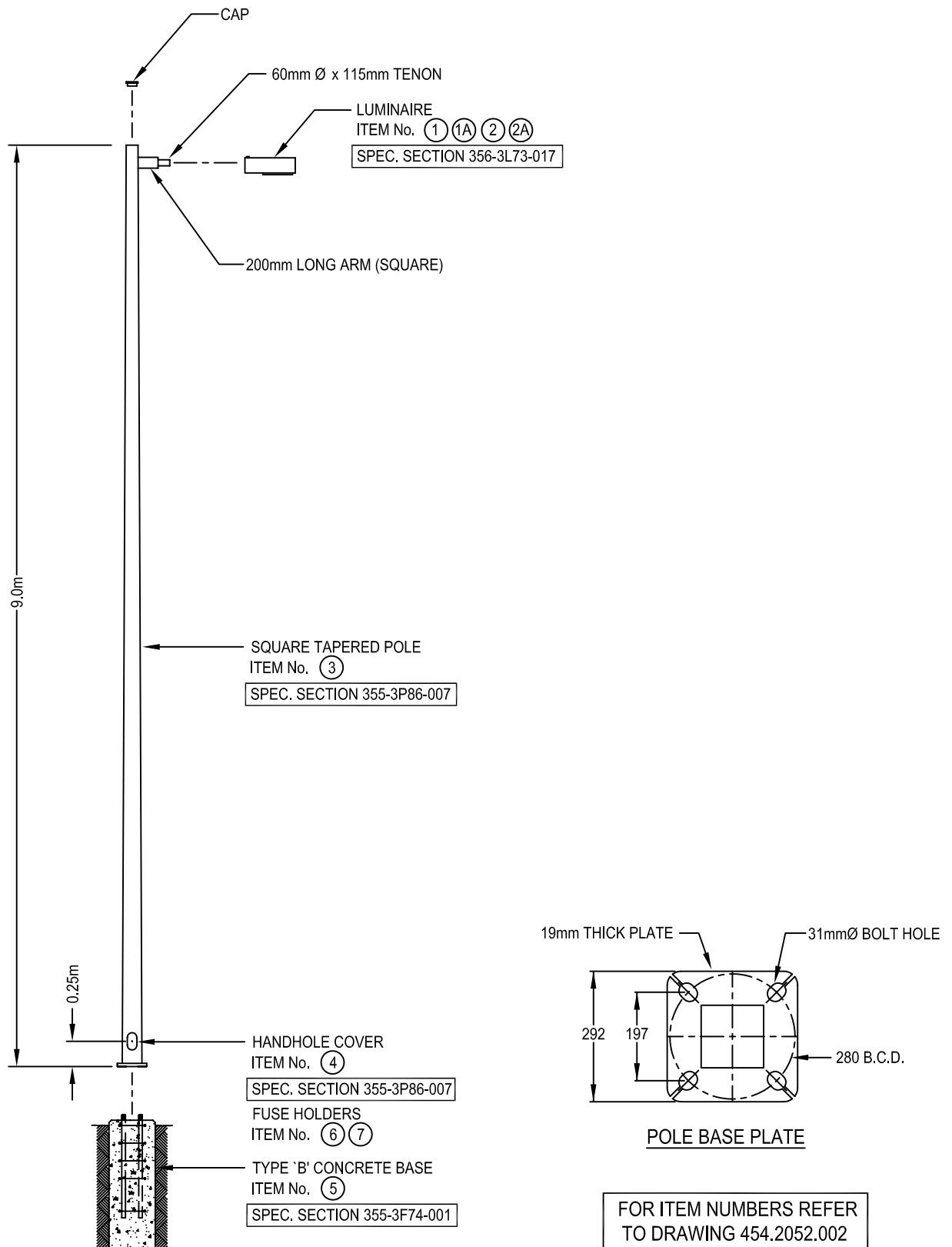
1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 100W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15	<div>9m/2.5m DOUBLE DAVIT POLE MATERIALS LIST</div>			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
For Director, Calgary Roads		DWN: BD	NOT TO SCALE	454.2051.004	4	68a



DIMENSIONS ARE MILLIMETRES
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THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

9 METRE SQUARE STEEL POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2052.001	ISSUE 4	SHEET 69
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MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	143046	LUMINAIRE - HPSV 150W - SQUARE PACK	ROADS
1A	1	143989	LAMP - HPSV 150W - CLEAR	ROADS
2	1	143039	LUMINAIRE - HPSV 250W - SQUARE PACK	ROADS
2A	1	143991	LAMP - HPSV 250W - CLEAR	ROADS
3	1	151241	POLE - PAINTED 9m - SQUARE - BLACK	ROADS
4	1	N/A	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139575	TYPE 'B' BASE - CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
8				
9				

NOTES:

1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
4. POLE IS SUPPLIED C/W TOP CAP AND LUMINAIRE ARM.

DIMENSIONS ARE MILLIMETRES
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THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	9 METRE SQUARE STEEL POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2052.002	4	70

112mmØ x 190mm TENON

LUMINAIRE
ITEM No. ① ①A ②
SPEC. SECTION 356-3L73-012

NOTE:

1. ONLY NEW ORDER 12m ROUND STEEL POLES (2003 OR LATER) WILL MOUNT ON TYPE C BASES.
2. FOR POLES SUPPLIED 2002 AND EARLIER A SPECIAL BASE IS REQUIRED.

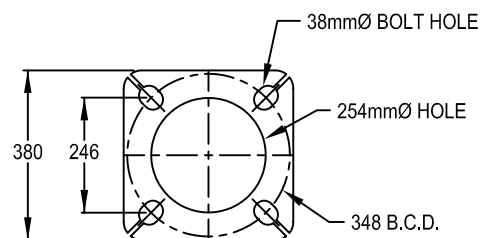
0.19m
12.2m

ROUND TAPERED POLE
ITEM No. ③
SPEC. SECTION 355-3P86-011

0.45m

HANDHOLE COVER
ITEM No. ④
SPEC. SECTION 355-3P86-011
FUSE HOLDERS
ITEM No. ⑥ ⑦

TYPE 'C' OR 'C1' CONCRETE BASE
ITEM No. ⑤ ⑤A
SPEC. SECTION 355-3F74-001



POLE BASE PLATE

FOR ITEM NUMBERS REFER
TO DRAWING 454.2053.002



THE CITY OF
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ROADS

DIMENSIONS ARE MILLIMETRES
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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

12 METRE ROUND TAPERED STEEL POLE INSTALLATION DETAILS

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2053.001	4	71
	For General Manager Calgary Roads					

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	143035	LUMINAIRE - MH	1000W - ROUND PACK (11th Ave.)	ROADS
1A	1	143048	LUMINAIRE - MH	1000W - ROUND PACK (7th Ave.)	ROADS
2	1	143986	LAMP - MH	1000W - CLEAR	ROADS
3	1	151808	POLE - GALVANIZED	12m - ROUND TAPERED	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/ POLE)	ROADS
5	1	139576	TYPE 'C' - ROUND PRECAST CONCRETE		ROADS
5A	1	159908	TYPE 'C1' - SQUARE PRECAST CONCRETE		ROADS
6	2	154245	FUSE HOLDER 600V	30A - IN LINE	ROADS
7	2	154247	FUSE 10A 250V	TYPE B/F - 10A	ROADS
8					
9					
10					

NOTES:

1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

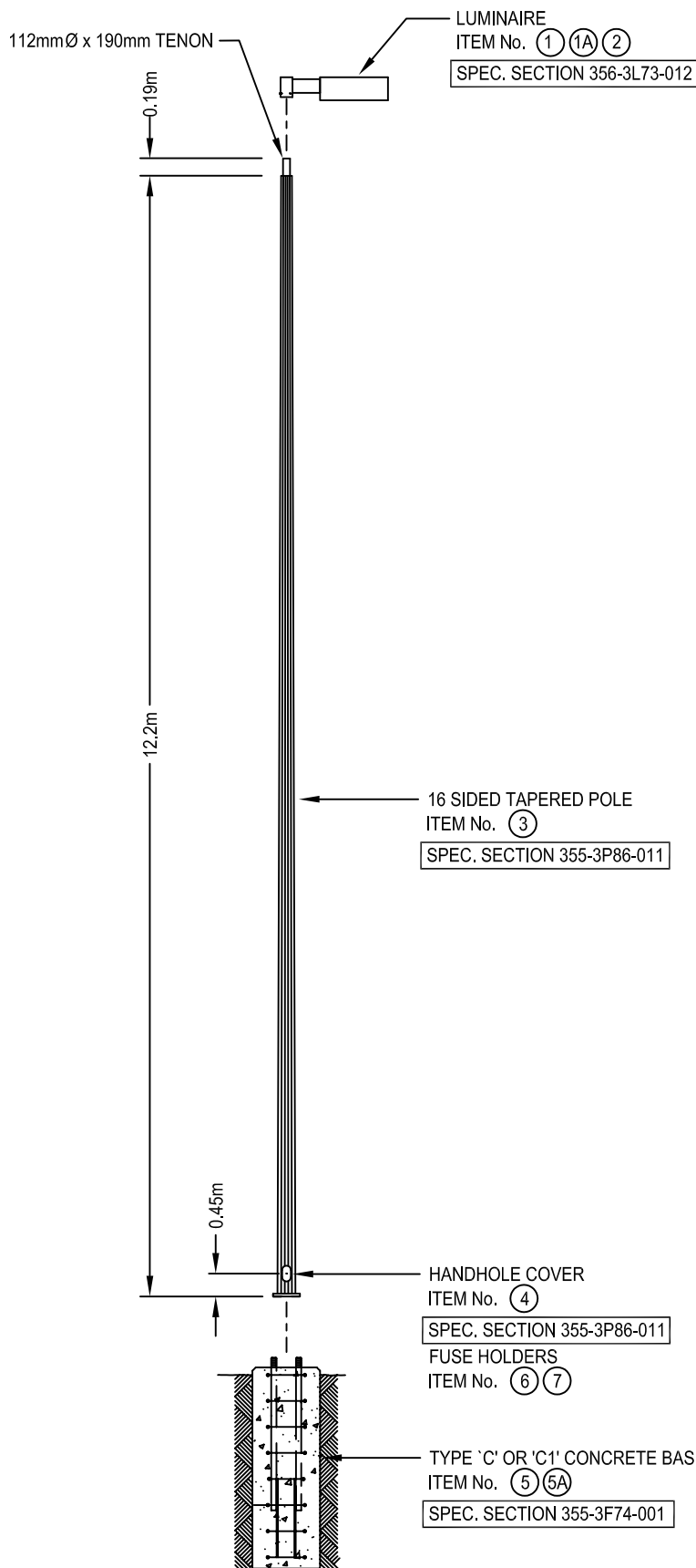
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FOR INFORMATION ONLY

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



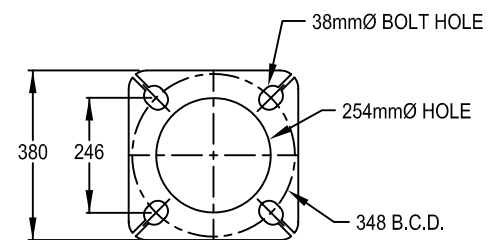
THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01	12 METRE ROUND TAPERED STEEL POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2053.002	4	72



NOTE:

1. ONLY NEW ORDER 12m 16 SIDED STEEL POLES (2003 OR LATER) WILL MOUNT ON TYPE C BASES.
2. FOR POLES SUPPLIED 2002 AND EARLIER A SPECIAL BASE IS REQUIRED.



POLE BASE PLATE

FOR ITEM NUMBERS REFER
TO DRAWING 454.2053.004



THE CITY OF
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ROADS

DIMENSIONS ARE MILLIMETRES
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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

12 METRE 16 SIDED TAPERED STEEL POLE INSTALLATION DETAILS

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2053.003	4	73
	For General Manager Calgary Roads					

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	1	143035	LUMINAIRE - MH	1000W - ROUND PACK (11th Ave.)	ROADS
1A	1	143048	LUMINAIRE - MH	1000W - ROUND PACK (7th Ave.)	ROADS
2	1	143986	LAMP - MH	1000W - CLEAR	ROADS
3	1	151808	POLE - GALVANIZED	12m - 16 SIDED TAPERED	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/POLE)	ROADS
5	1	139576	TYPE 'C' - PRECAST CONCRETE	CONFIRM WITH ROADS BEFORE ORDERING	ROADS
5A	1	159908	TYPE 'C1' BASE - SQUARE CONCRETE PRECAST	CONFIRM WITH ROADS BEFORE ORDERING	ROADS
6	2	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
8					
9					
10					

NOTES:

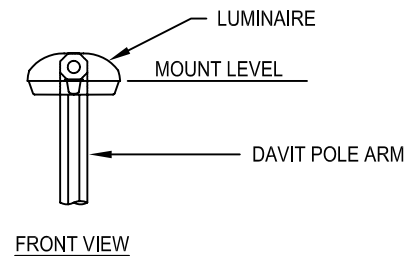
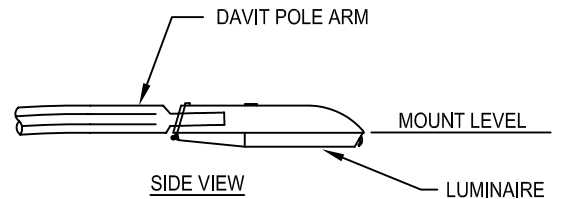
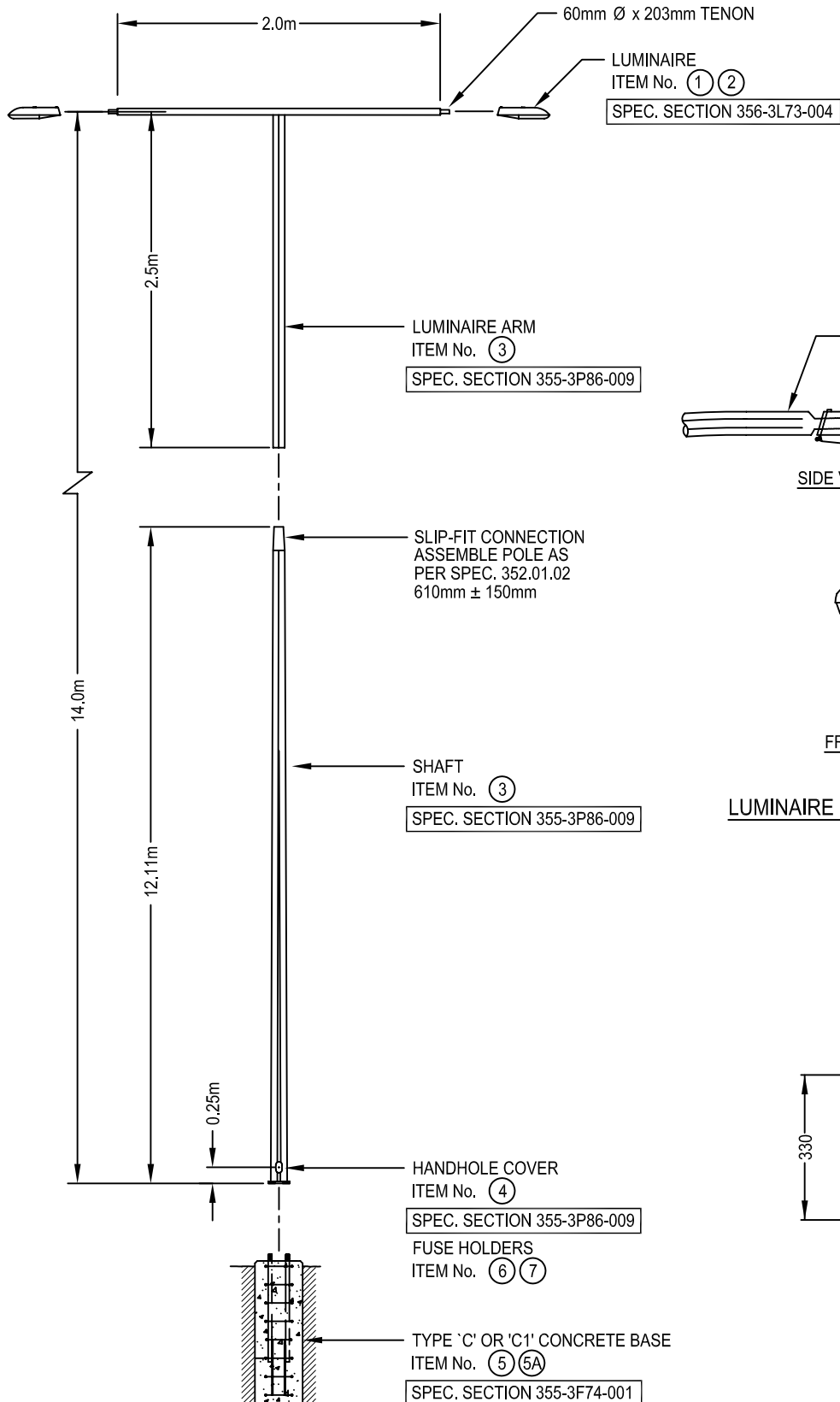
1. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
2. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
3. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

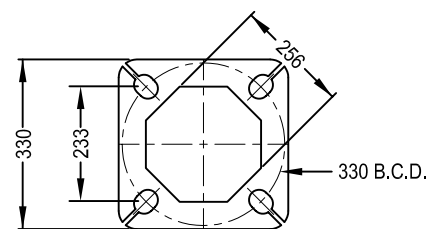


THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-23	12 METRE 16 SIDED TAPERED STEEL POLE MATERIALS LIST			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By		DES: AD	SCALE:	DRAWING No.	ISSUE
	For Director, Calgary Roads		DWN: BD	NOT TO SCALE	454.2053.004	4
						SHEET 74



LUMINAIRE MOUNTING DETAIL



POLE BASE PLATE

FOR ITEM NUMBERS REFER
TO DRAWING 454.2055.002



THE CITY OF
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ROADS

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



4	2006 ISSUE UPDATE - WCE	2006-05-15
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

14m POLE WITH T-ARM ASSEMBLY INSTALLATION DETAILS

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

SCALE:
NOT TO SCALE

DRAWING No.
454.2054a.003

ISSUE
4

SHEET
74a

MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	2	158856	LUMINAIRE - HPSV 400W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2	2	143992	LAMP - HPSV 400W - CLEAR (SEE NOTE 4 BELOW)	ROADS
3	1	160362	POLE - GALVANIZED 14m x 2.0m - DOUBLE DAVIT (BOTTOM)	ROADS
4	1	151325	POLE - GALVANIZED 14m x 2.0m - DOUBLE DAVIT (TOP)	ROADS
5	1	151819	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
6	1	139576	TYPE 'C' BASE - ROUND CONCRETE PRECAST	ROADS
6A	1	159908	TYPE 'C1' BASE - SQUARE CONCRETE PRECAST	ROADS
7	4	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
8	4	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
9				
10				

NOTES:

1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 400W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15	<h2 style="text-align: center;">14m POLE WITH T-ARM ASSEMBLY MATERIALS LIST</h2>			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2054a.004	4	74b



DIMENSIONS ARE MILLIMETRES
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ROADS

FOR ITEM NUMBERS REFER
TO DRAWING 454.2054.002

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

15m/2.5m SINGLE DAVIT POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2054.001	ISSUE 4	SHEET 75
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MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	158856	LUMINAIRE - HPSV 400W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2	1	143992	LAMP - HPSV 400W CLEAR (SEE NOTE 4 BELOW)	ROADS
3	1	151323/151324	POLE - GALVANIZED 15m x 2.5m - SINGLE DAVIT	ROADS
4	1	151819	COVER - HANDHOLE (SUPPLIED W/ POLE)	ROADS
5	1	139576	TYPE 'C' BASE - ROUND CONCRETE PRECAST	ROADS
5A	1	159908	TYPE 'C1' BASE - SQUARE CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V TYPE RAP 10A	ROADS
8				
9				
10				

NOTES:

1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 400W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.
6. POLE IS SUPPLIED C/W LUMINAIRE ARM.

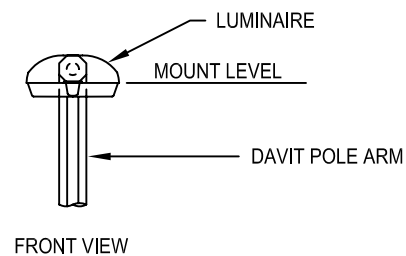
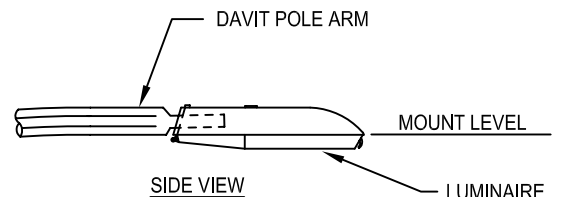
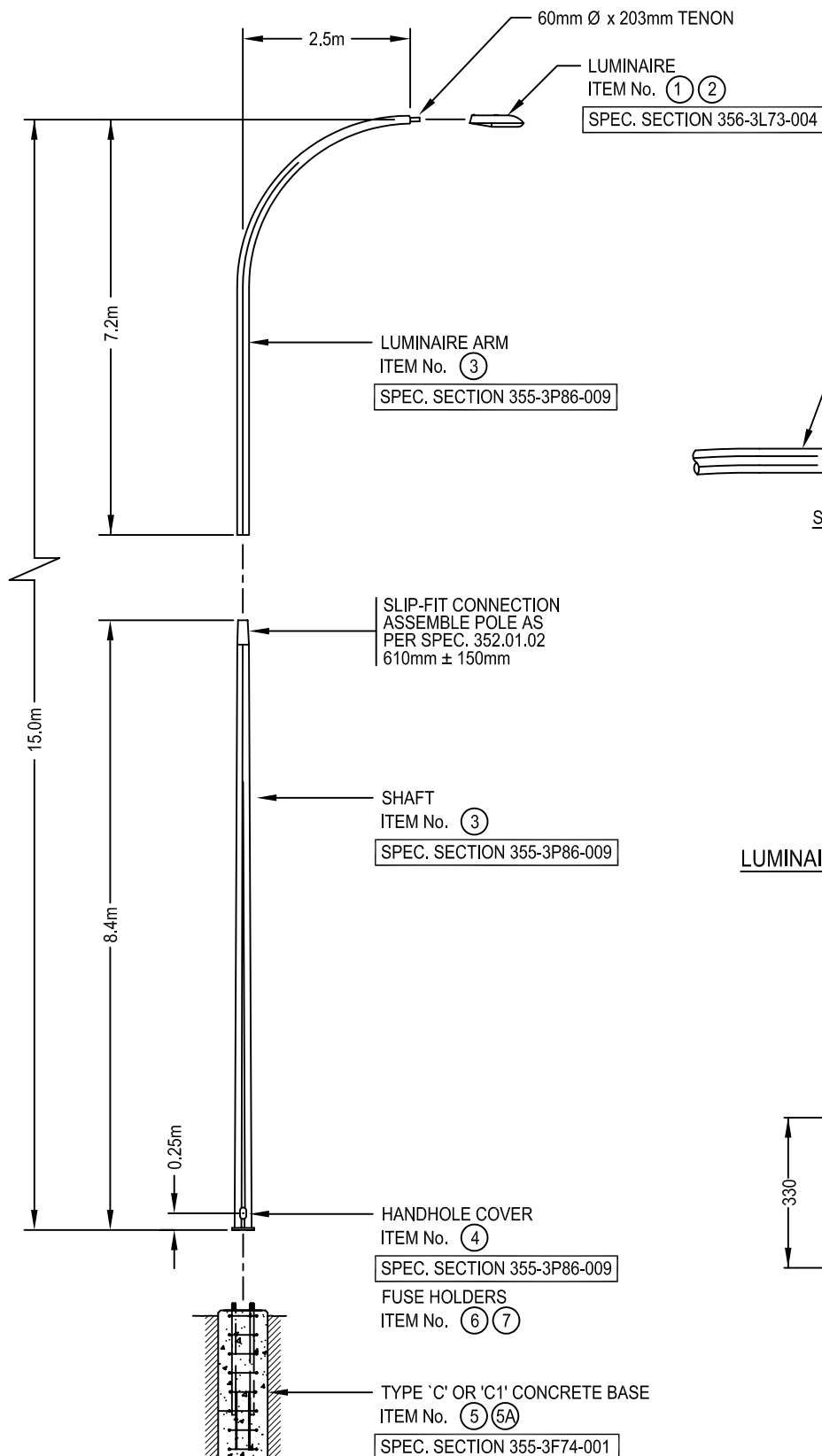
DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



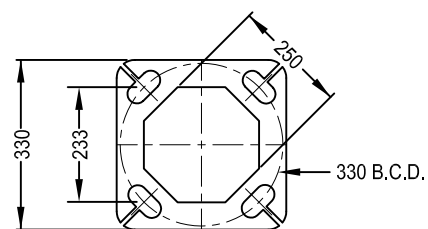
THE CITY OF
CALGARY
ROADS

15m/2.5m SINGLE DAVIT POLE MATERIALS LIST

4	2005 ISSUE UPDATE	2005-06-01	15m/2.5m SINGLE DAVIT POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
<div>Original Signed by A. Andreasen</div>			DWN: DH	NOT TO SCALE	454.2054.002	4	76
For General Manager Calgary Roads							



LUMINAIRE MOUNTING DETAIL



POLE BASE PLATE

FOR ITEM NUMBERS REFER
TO DRAWING 454.2054.002

DIMENSIONS ARE MILLIMETRES
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ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

15m/2.5m SINGLE DAVIT POLE INSTALLATION DETAILS

Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2054.003	4	75a

MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	158856	LUMINAIRE - HPSV 400W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2	1	143992	LAMP - HPSV 400W CLEAR (SEE NOTE 4 BELOW)	ROADS
3	1	151323	POLE - GALVANIZED 15m x 2.5m - SINGLE DAVIT (BOTTOM)	ROADS
4	1	151324	POLE - GALVANIZED 15m x 2.5m - SINGLE DAVIT (TOP)	ROADS
5	1	151819	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5A	1	139576	TYPE 'C' BASE - ROUND CONCRETE PRECAST	ROADS
6	1	159908	TYPE 'C1' BASE - SQUARE CONCRETE PRECAST	ROADS
7	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
8	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
9				
10				

NOTES:

1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 400W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

DIMENSIONS ARE MILLIMETRES
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THE CITY OF
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ROADS

15m/2.5m SINGLE DAVIT POLE MATERIALS LIST

4	2006 ISSUE UPDATE - WCE	2006-05-15				
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2054.004	4	76a



DIMENSIONS ARE MILLIMETRES
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THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

15m/2.5m DOUBLE DAVIT POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2055.001	ISSUE 4	SHEET 77
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MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	2	158856	LUMINAIRE - HPSV 400W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2	2	143992	LAMP - HPSV 400W - CLEAR (SEE NOTE 4 BELOW)	ROADS
3	1	151323/151325	POLE - GALVANIZED 15m x 2.5m - DOUBLE DAVIT	ROADS
4	1	151819	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
5	1	139576	TYPE 'C' BASE - ROUND CONCRETE PRECAST	ROADS
5A	1	159908	TYPE 'C1' BASE - SQUARE CONCRETE PRECAST	ROADS
6	4	154245	FUSE HOLDER 600V 100A - INLINE	ROADS
7	4	154247	FUSE 10A 250V TYPE B1F - 10A	ROADS
8				
9				
10				

NOTES:

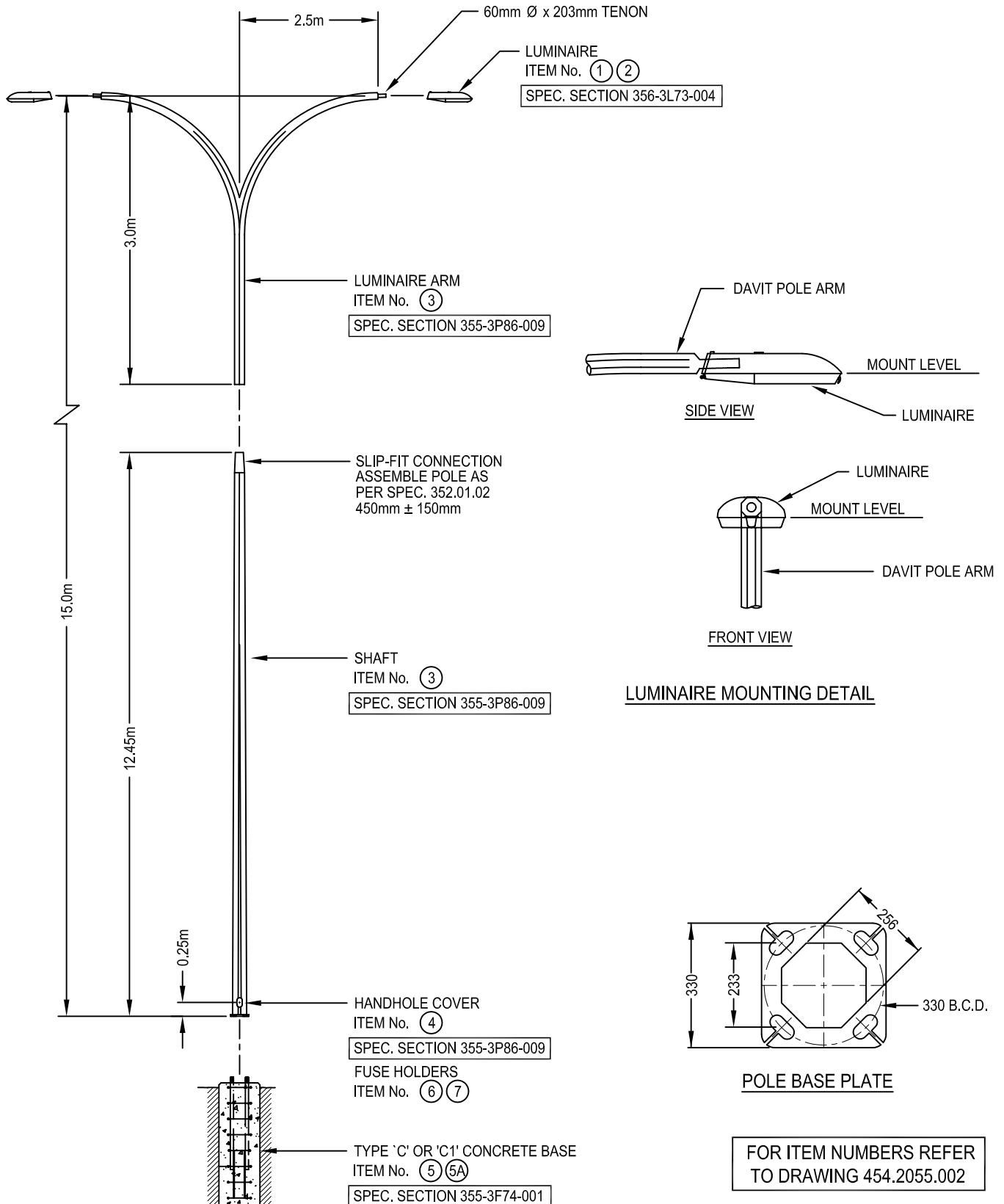
1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 400W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED WITH ANCHOR NUTS AND WASHERS.
6. POLE IS SUPPLIED WITH LUMINAIRE ARM.

DIMENSIONS ARE MILLIMETRES
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THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	15m/2.5m DOUBLE DAVIT POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2055.002	4	78



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THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

15m/2.5m DOUBLE DAVIT POLE INSTALLATION DETAILS

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

SCALE:
NOT TO SCALE

DRAWING No.
454.2055.003

ISSUE
4

SHEET
77a

MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	2	158856	LUMINAIRE - HPSV 400W - COBRAHEAD FLAT LENS (SEE NOTE 4 BELOW)	ROADS
2	2	143992	LAMP - HPSV 400W - CLEAR (SEE NOTE 4 BELOW)	ROADS
3	1	160362	POLE - GALVANIZED 15m x 2.5m - DOUBLE DAVIT (BOTTOM)	ROADS
4	1	151325	POLE - GALVANIZED 15m x 2.5m - DOUBLE DAVIT (TOP)	ROADS
5	1	151819	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
6	1	139576	TYPE 'C' BASE - ROUND CONCRETE PRECAST	ROADS
6A	1	159908	TYPE 'C1' BASE - SQUARE CONCRETE PRECAST	ROADS
7	4	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
8	4	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
9				
10				

NOTES:

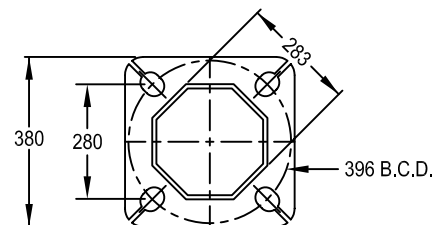
1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. 400W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
5. PRE-CAST BASE IS SUPPLIED C/W ANCHOR NUTS AND WASHERS.

DIMENSIONS ARE MILLIMETRES
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THE CITY OF
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ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15	<div>15m/2.5m DOUBLE DAVIT POLE</div> <div>MATERIALS LIST</div>			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By		DES: AD	SCALE:	DRAWING No.	ISSUE
	For Director, Calgary Roads		DWN: BD	NOT TO SCALE	454.2055.004	4
						SHEET
						78a



POLE BASE PLATE

FOR ITEM NUMBERS REFER
TO DRAWING 454.2056.002

DIMENSIONS ARE MILLIMETRES
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THE CITY OF
CALGARY
ROADS

20m/2.5m SINGLE DAVIT POLE INSTALLATION DETAILS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2056.001

ISSUE
4

SHEET
79

MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	143038	LUMINAIRE - HPSV 1000W - COBRAHEAD (SEE NOTE 5 BELOW)	ROADS
2	1	143993	LAMP - HPSV 1000W - CLEAR (SEE NOTE 5 BELOW)	ROADS
3	1	151326/156704/151327	POLE - GALVANIZED 20m x 2.5m - SINGLE DAVIT	ROADS
4	1	151819	COVER - HANDHOLE (SUPPLIED W/ POLE)	ROADS
5	1	N/A	TYPE 'D' BASE - CONCRETE POURED-IN-PLACE	CONTRACTOR
5A	1	TBA	TYPE 'D1' BASE - CONCRETE PRECAST	ROADS
6	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	2	154247	FUSE 10A 250V TYPE BAY 10A	ROADS
8				
9				
10				

NOTES:

1. WHEN ASSEMBLED THE LOWER 5 METRE OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01/02.
4. THE TOP OF THE LUMINAIRE SHALL BE LEVEL AFTER ASSEMBLY.
5. 1000W LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
6. ANCHOR BOLTS ARE SUPPLIED W/ ANCHOR NUTS, WASHERS, BELL ANCHORS AND BEVELLED NUTS.
7. POLES SUPPLIED C/W LUMINAIRE ARM.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

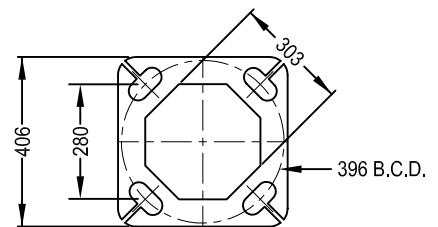
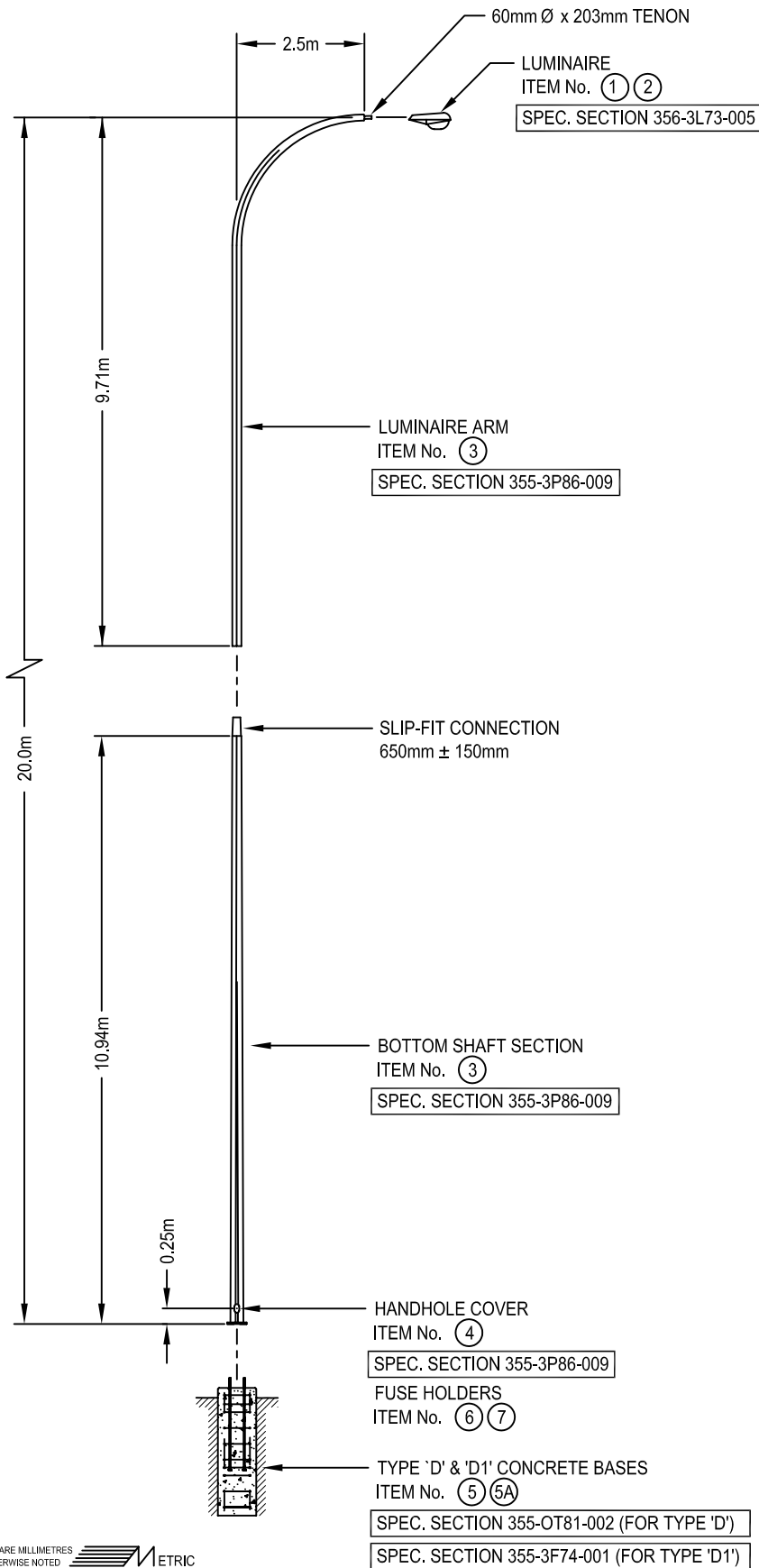


THE CITY OF
CALGARY
ROADS

20m/2.5m SINGLE DAVIT POLE MATERIALS LIST

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2056.002	4	80
	For General Manager Calgary Roads					



POLE BASE PLATE

FOR ITEM NUMBERS REFER
TO DRAWING 454.2056.002

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

20m/2.5m SINGLE DAVIT POLE INSTALLATION DETAILS

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

SCALE:
NOT TO SCALE

DRAWING No.
454.2056.003

ISSUE
4

SHEET
79a

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	143038	LUMINAIRE - HPSV 1000W - COBRAHEAD (SEE NOTE 5 BELOW)	ROADS
2	1	143993	LAMP - HPSV 1000W - CLEAR (SEE NOTE 5 BELOW)	ROADS
3	1	151326	POLE - GALVANIZED 20m x 2.5m - SINGLE DAVIT (BOTTOM)	ROADS
4	1	151327	POLE - GALVANIZED 20m x 2.5m - SINGLE DAVIT (TOP)	ROADS
5	1	151819	COVER - HANDHOLE (SUPPLIED W/POLE)	ROADS
6	1	N/A	TYPE 'D' BASE - CONCRETE POURED-IN-PLACE	CONTRACTOR
6A	1	TBA	TYPE 'D1' BASE - CONCRETE PRECAST	ROADS
7	2	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
8	2	154247	FUSE 10A 250V TYPE BAF - 10A	ROADS
9				
10				

NOTES:

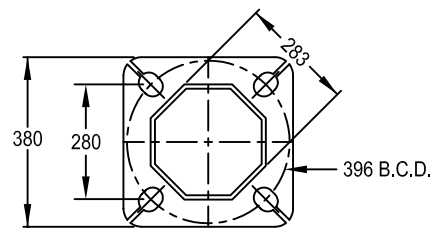
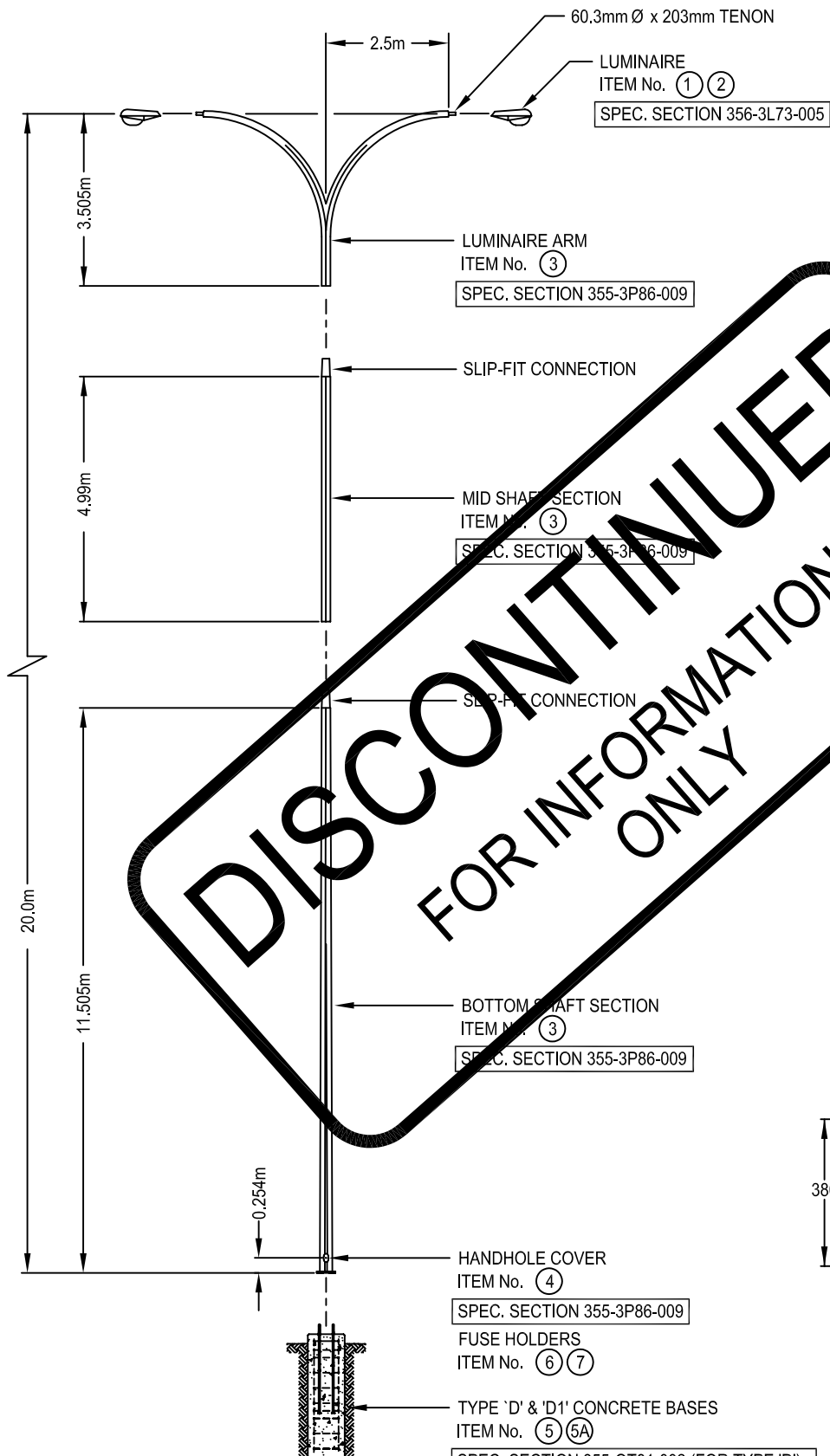
1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. THE TOP OF THE LUMINAIRE SHALL BE LEVEL AFTER ASSEMBLY.
5. 1000W LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
6. ANCHOR BOLTS ARE SUPPLIED C/W ANCHOR NUTS, WASHERS, BELL ANCHORS AND BEVELLED NUTS.

DIMENSIONS ARE MILLIMETRES
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THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15	20m/2.5m SINGLE DAVIT POLE MATERIALS LIST		
3	2004 ISSUE UPDATE	2004-02-13			
Issue	Revision	Issue Date			
Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2056.004	4
					SHEET 80a



POLE BASE PLATE

FOR ITEM NUMBERS REFER
TO DRAWING 454.2057.002



THE CITY OF
CALGARY
ROADS

DIMENSIONS ARE MILLIMETRES
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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

20m/2.5m DOUBLE DAVIT POLE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2057.001	ISSUE 4	SHEET 81
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MATERIAL LIST

ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	2	143038	LUMINAIRE - HPSV 1000W - COBRAHEAD (SEE NOTE 5 BELOW)	ROADS
2	2	143993	LAMP - HPSV 1000W - CLEAR (SEE NOTE 5 BELOW)	ROADS
3	1	151326/156704/151328	POLE - GALVANIZED 20m x 2.5m - DOUBLE DAVIT	ROADS
4	1	151819	COVER - HANDHOLE (SUPPLIED W/ POLE)	ROADS
5	1	N/A	TYPE 'D' BASE - CONCRETE POURED-IN PLACE	CONTRACTOR
5A	1	TBA	TYPE 'D1' BASE - CONCRETE PRECAST	ROADS
6	4	154245	FUSE HOLDER 600V 30A - INLINE	ROADS
7	4	154247	FUSE 10A 250V TYPE BATT - 10A	ROADS
8				
9				
10				

NOTES:

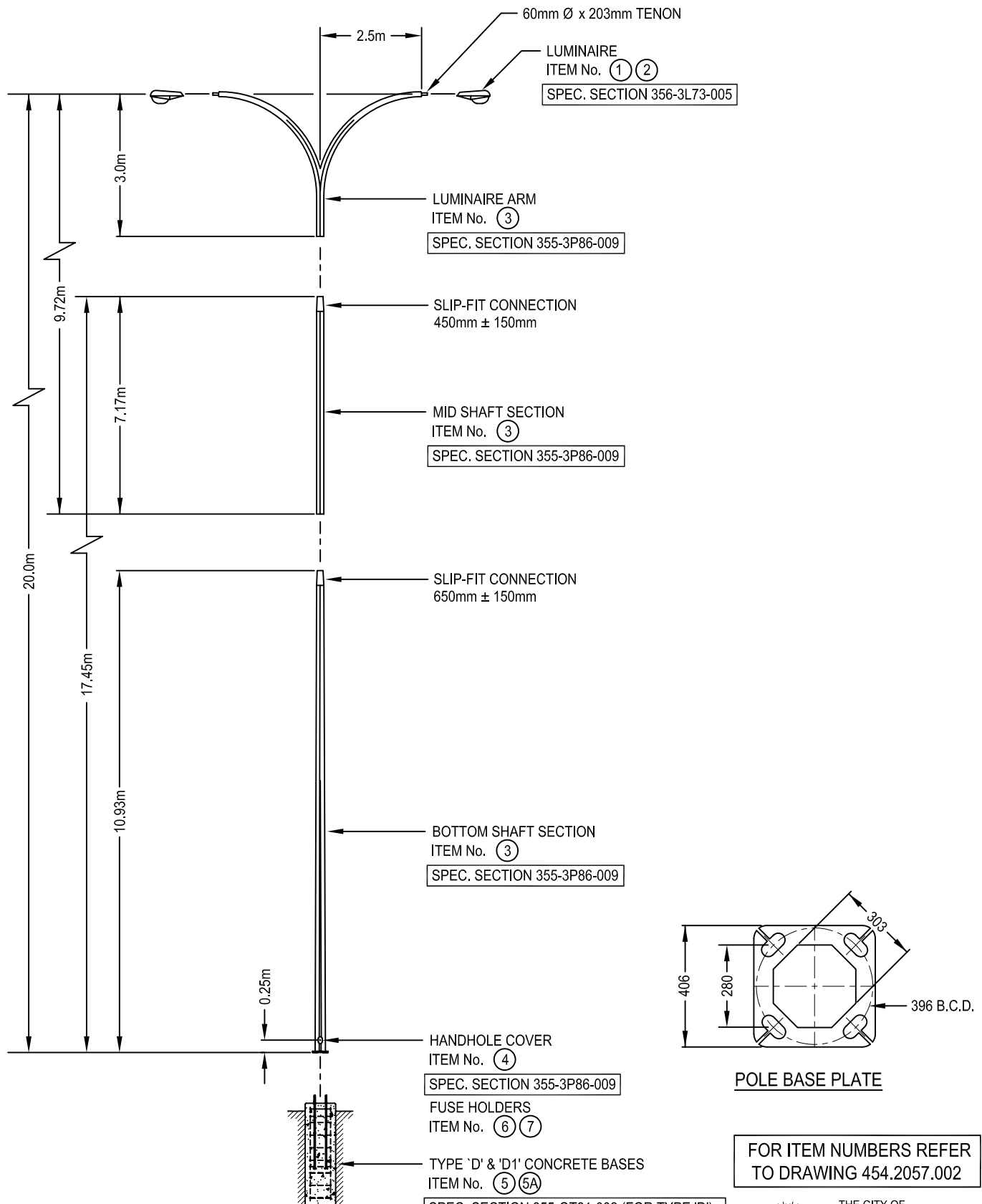
1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.04.02.
4. THE TOP OF THE LUMINAIRE SHALL BE LEVEL AFTER ASSEMBLY.
5. 1000W LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
6. ANCHOR BOLTS ARE SUPPLIED C/W ANCHOR NUTS, WASHERS, BELL ANCHORS AND BEVELED NUTS.
7. POLES SUPPLIED C/W LUMINAIRE ARM.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01	20m/2.5m DOUBLE DAVIT POLE MATERIALS LIST							
3	2004 ISSUE UPDATE	2004-02-13								
Issue	Revision	Issue Date								
Date			Approved By			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
<div>Original Signed by A. Andreasen</div>						DWN: DH	NOT TO SCALE	454.2057.002	4	82
For General Manager Calgary Roads										



DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



4	2006 ISSUE UPDATE - WCE	2006-05-15
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

20m/2.5m DOUBLE DAVIT POLE INSTALLATION DETAILS

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

SCALE:
NOT TO SCALE

DRAWING No.
454.2057.003

ISSUE
4

SHEET
81a

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	2	143038	LUMINAIRE - HPSV	1000W - COBRAHEAD (SEE NOTE 5 BELOW)	ROADS
2	2	143993	LAMP - HPSV	1000W - CLEAR (SEE NOTE 5 BELOW)	ROADS
3	1	SPECIAL ORDER	POLE - GALVANIZED	20m x 2.5m - DOUBLE DAVIT	ROADS
4	1	151819	COVER - HANDHOLE	(SUPPLIED W/POLE)	ROADS
5	1	N/A	TYPE 'D' BASE - CONCRETE POURED-IN-PLACE		CONTRACTOR
5A	1	TBA	TYPE 'D1' BASE - CONCRETE PRECAST		ROADS
6	4	154245	FUSE HOLDER 600V	30A - INLINE	ROADS
7	4	154247	FUSE 10A 250V	TYPE BAF - 10A	ROADS
8					
9					
10					

NOTES:

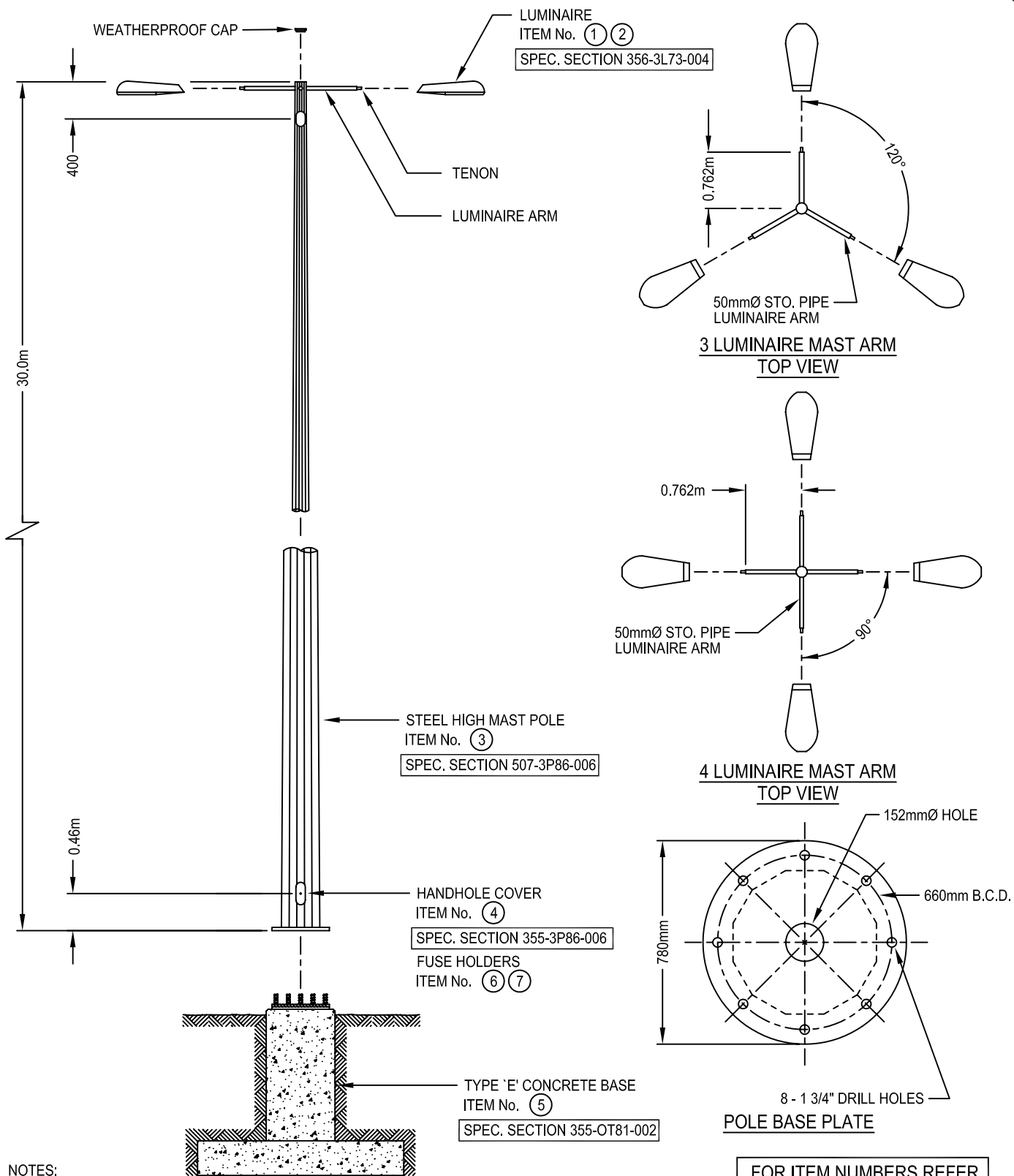
1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. THE TOP OF THE LUMINAIRE SHALL BE LEVEL AFTER ASSEMBLY.
5. 1000W LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
6. ANCHOR BOLTS ARE SUPPLIED C/W ANCHOR NUTS, WASHERS, BELL ANCHORS AND BEVELLED NUTS.
7. POLE IS SUPPLIED C/W LUMINAIRE ARM.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15	20m/2.5m DOUBLE DAVIT POLE MATERIALS LIST			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date		Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE
			DWN: BD	NOT TO SCALE	454.2057.004	4
		For Director, Calgary Roads				SHEET 82a



NOTES:

1. PLACE 26mm OF DRY PACK GROUT ON BASE PRIOR TO INSTALLING POLE.
2. THE NUT AND LOCK ASSEMBLY SHALL BE TORQUED WITH A TORQUE WRENCH TO A CAPACITY OF 275 FT-LBS.

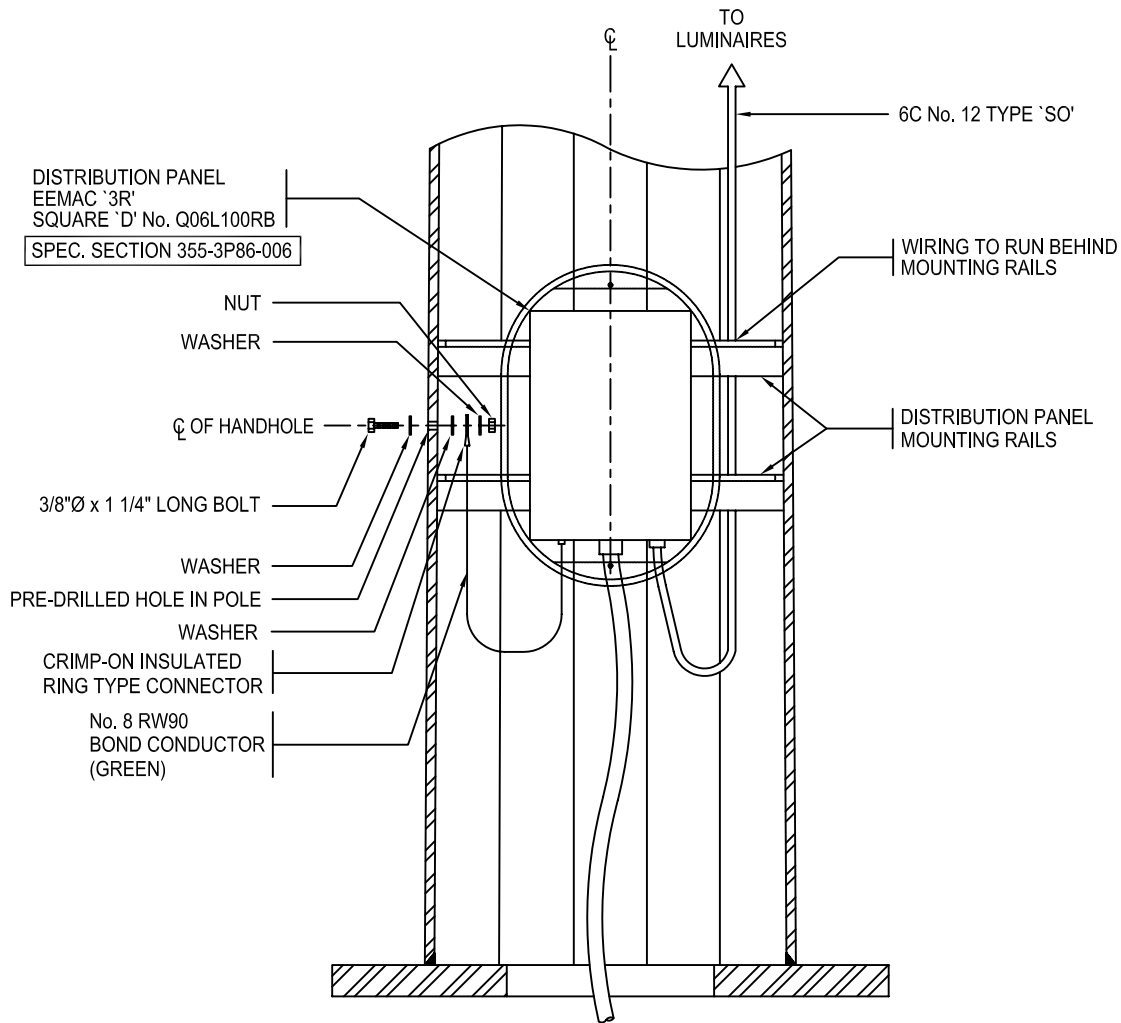
DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

30 METRE HIGH MAST POLE INSTALLATION DETAILS

4	2005 ISSUE UPDATE	2005-06-01					
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date	Approved By		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen		DWN: DH	NOT TO SCALE	454.2058.001	4	83
	For General Manager Calgary Roads						



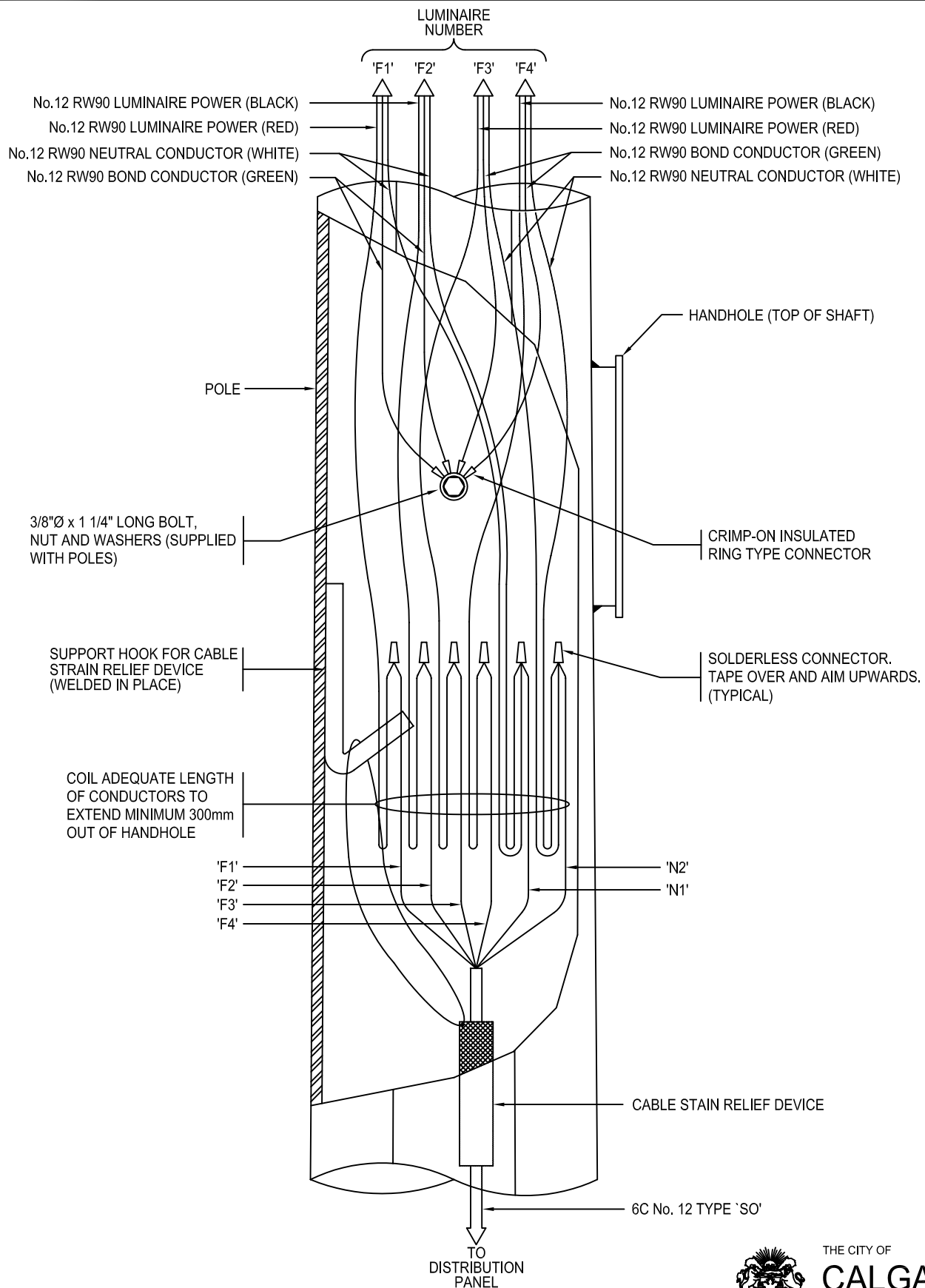
DISTRIBUTION PANEL WIRING

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2006 ISSUE UPDATE - WCE	2006-05-15	30 METRE HIGH MAST POLE WIRING DETAILS (OLD INSTALLATIONS ONLY)			
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	454.2058.002	4	84



DIMENSIONS ARE MILLIMETRES
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SHAFT TOP - LUMINAIRE WIRING



THE CITY OF
CALGARY
ROADS

30 METRE HIGH MAST POLE WIRING DETAILS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2058.003

ISSUE
4

SHEET
85

MATERIAL LIST					
ITEM	QTY	STOCK NUMBER	DESCRIPTION		SUPPLIER
1	4	158856	LUMINAIRE - HPSV	400W - COBRAHEAD (SEE NOTE 5 BELOW)	ROADS
2	4	143992	LAMP - HPSV	400W - CLEAR (SEE NOTE 5 BELOW)	ROADS
3	1	155240	POLE - GALVANIZED	30m - HIGH MAST	ROADS
4	1	N/A	COVER - HANDHOLE	(SUPPLIED W/POLE)	ROADS
5	1	N/A	TYPE 'E' BASE - CONCRETE POURED-IN-PLACE		CONTRACTOR
6	1	SPECIAL ORDER	DISTRIBUTION PANEL		ROADS
7					
8					
9					
10					
11					

NOTES:

1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.
4. THE TOP OF THE LUMINAIRE SHALL BE LEVEL AFTER ASSEMBLY.
5. 1000W FLAT LENS LUMINAIRE IS TYPICAL. REFER TO STREET LIGHTING DESIGN DRAWINGS FOR SPECIFIC LUMINAIRE TYPE & WATTAGE REQUIRED.
6. ANCHOR BOLTS ARE SUPPLIED C/W ANCHOR NUTS, WASHERS, BELL ANCHORS AND BEVELLED NUTS.
7. POLE IS SUPPLIED C/W WEATHERPROOF TOP CAP AND LUMINAIRE ARMS.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



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ROADS

4	2005 ISSUE UPDATE	2005-06-01	30 METRE HIGH MAST POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2058.004	4	86



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ROADS

4	2005 ISSUE UPDATE	2005-06-01	30 METRE HIGH MAST POLE (RAISE/LOWER) INSTALLATION DETAILS				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2059.001	4	87

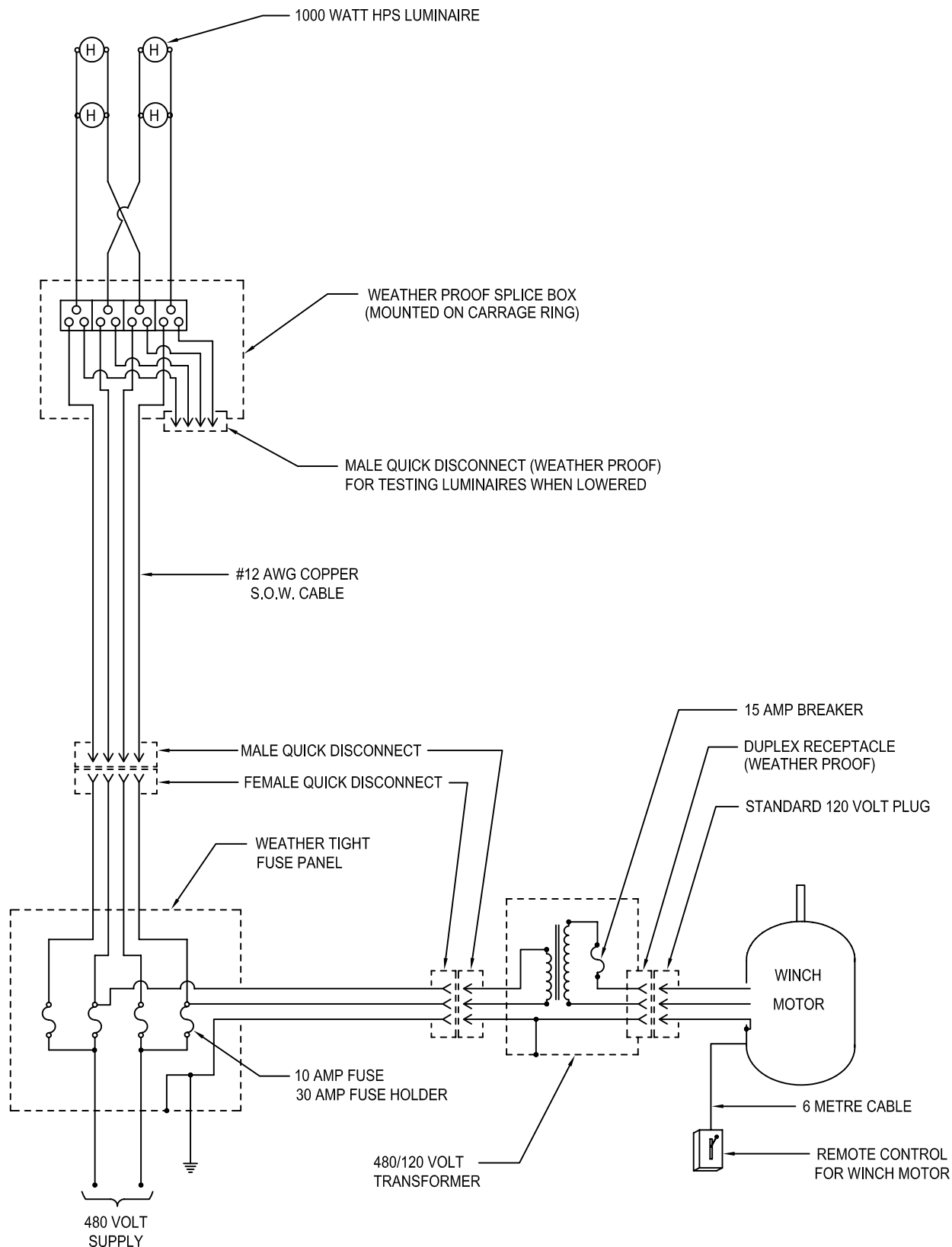
IN
PROGRESS

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED  METRIC



THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01	30 METRE HIGH MAST POLE (RAISE/LOWER) DEVICE DETAILS				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2059.002	4	88



DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

30 METRE HIGH MAST POLE (RAISE/LOWER) WIRING DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2059.003

ISSUE
4

SHEET
89

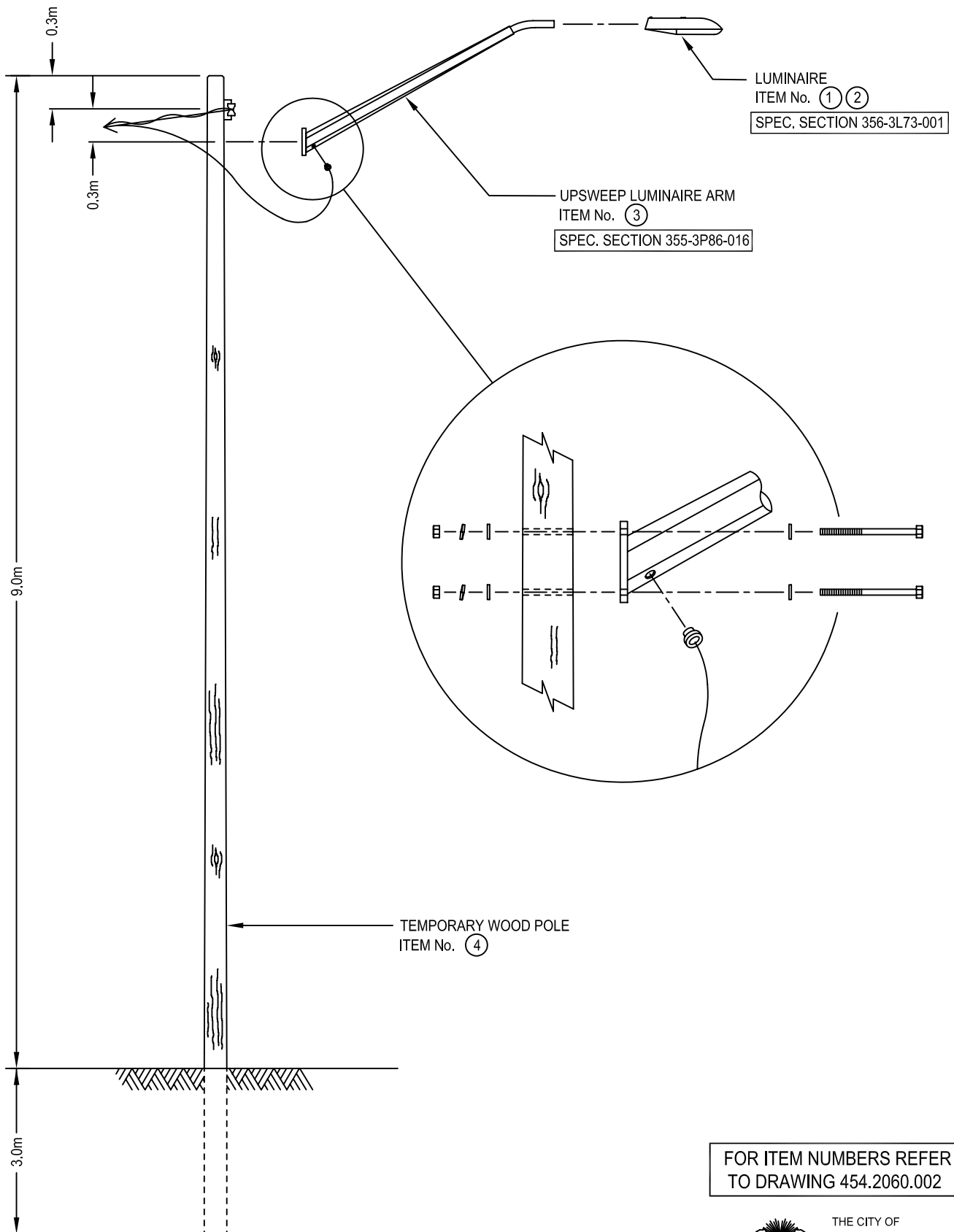
IN
PROGRESS

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED 



THE CITY OF
CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01	30 METRE HIGH MAST POLE (RAISE/LOWER) MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2059.004	4	90



DIMENSIONS ARE MILLIMETRES
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CALGARY
ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

TEMPORARY LIGHTING ON WOOD POLE INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2060.001

ISSUE
4

SHEET
91

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	158573	LUMINAIRE - HPSV 150W - COBRAHEAD FLAT LENS	ROADS
2	1	143989	LAMP - HPSV 150W	ROADS
3	1	151364	UPSWEEP LUMINAIRE ARM W/ MOUNTING HARDWARE	ROADS
4	1	N/A	WOOD POLE 12m CLASS-3	CONTRACTOR
5				
6				
7				
8				
9				
10				
11				

NOTES:

1. WHEN ASSEMBLED THE LOWER 5 METRES OF THE POLE MUST BE PLUMB.
2. NO MORE THAN 2 SHIMS SHALL BE USED ON ANY ANCHOR BOLT.
3. THE ANCHOR NUTS SHALL BE TIGHTENED AS PER SPEC. 352.01.02.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



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ROADS

4	2005 ISSUE UPDATE	2005-06-01	TEMPORARY LIGHTING ON WOOD POLE MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2060.002	4	92

I.D. TAG DESIGNATIONS	CONDUCTOR COLOUR CODING			
LUM. CCTS. (A, B, ETC.)	LUMINAIRE CIRCUITS	1Ø CIRCUITS	A and C	RED
			B and D	BLACK
		3Ø CIRCUITS	A,D and G	RED
			B,E and H	BLACK
			C,F and I	BLUE
P.E.C.	PHOTOELECTRIC CELL	SWITCH LEG	RED	
		POWER	BLACK	
—	NEUTRAL	WHITE		
—	GROUND	GREEN		

NOTES

- SEE STANDARD SPECIFICATIONS & SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.
- CONDUCTORS SHALL BE IDENTIFIED IN ALL JUNCTION BOXES AND AT ALL ACCESS POINTS. IDENTIFICATION SHALL BE MADE USING TY-RAP IDENTIFICATION TAGS (T&B TY5532 OR APPROVED ALTERNATE) INDICATING PHASES. TAGS SHALL BE CLEARLY MARKED WITH A BLACK INDELIBLE PEN.

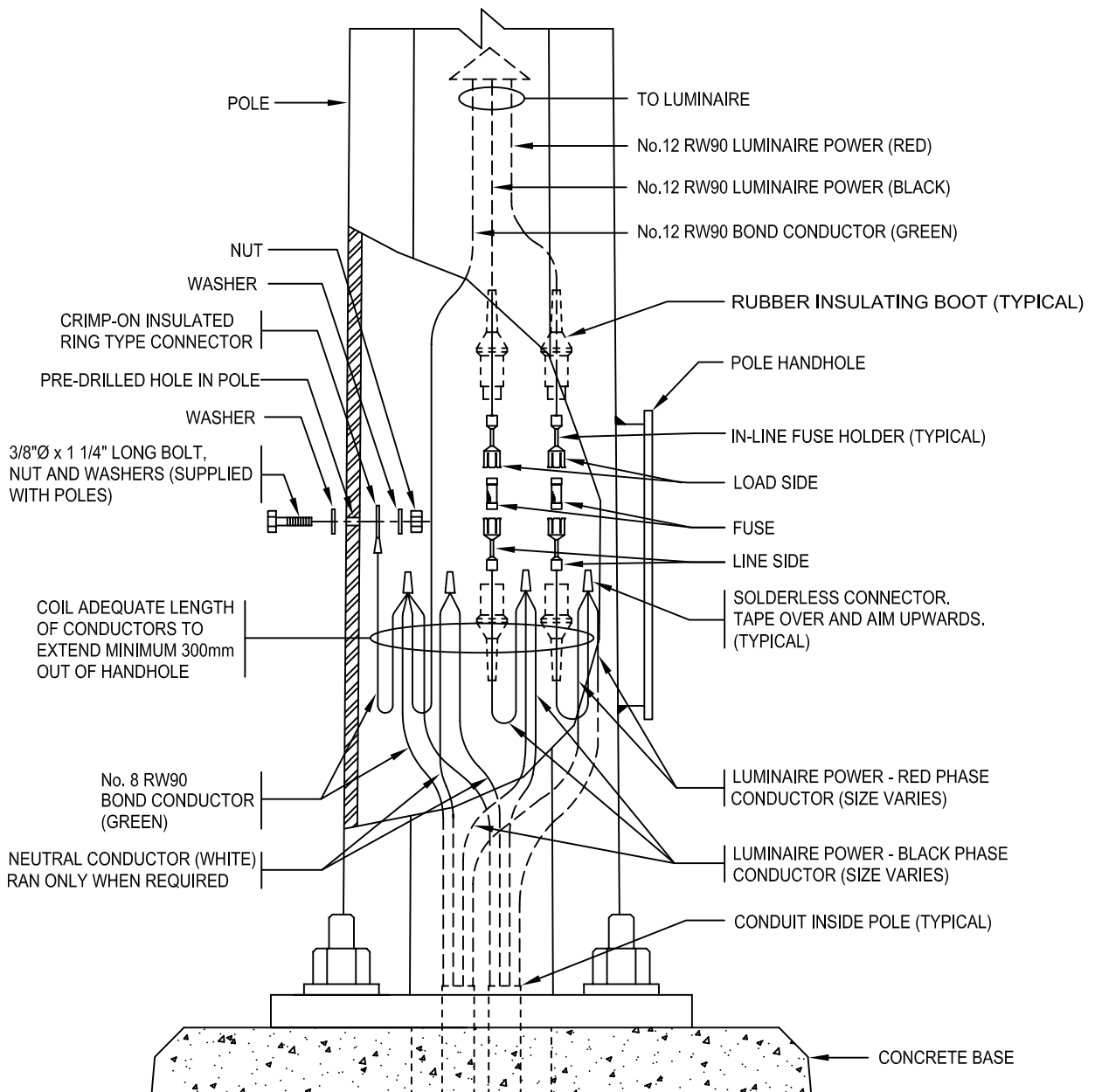
DIMENSIONS ARE MILLIMETRES
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ROADS

SINGLE CONDUCTOR COLOUR CODING

4	2005 ISSUE UPDATE	2005-06-01	SINGLE CONDUCTOR COLOUR CODING				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By Original Signed by A. Andreasen For General Manager Calgary Roads			DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2065.001	4	93



ELEVATION

NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.
2. FUSE INSTALLATION IN JUNCTION BOXES SIMILAR.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

LUMINAIRE WIRING IN POLE HANDHOLE

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

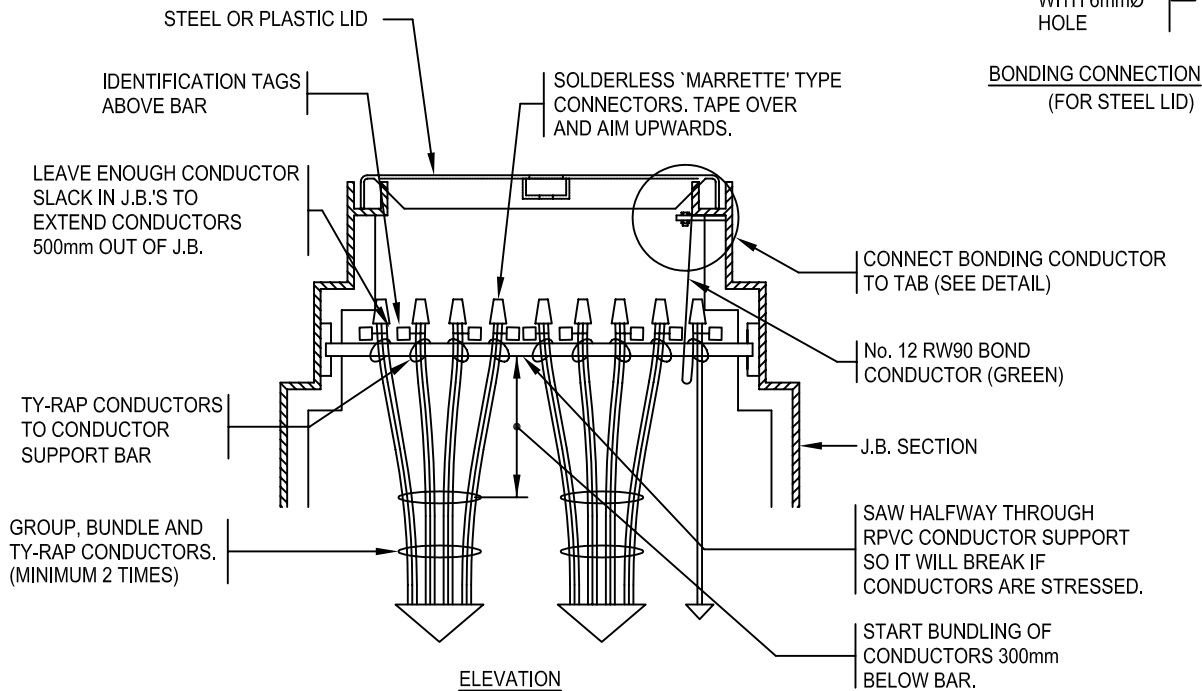
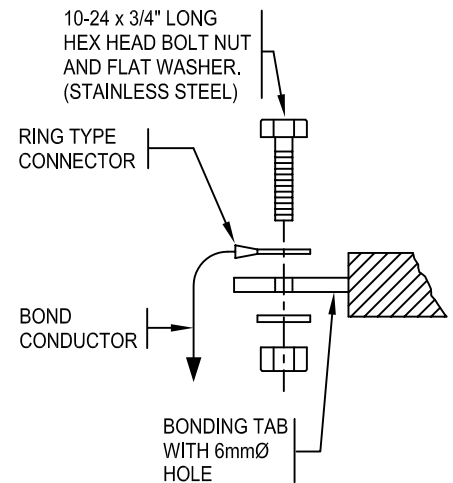
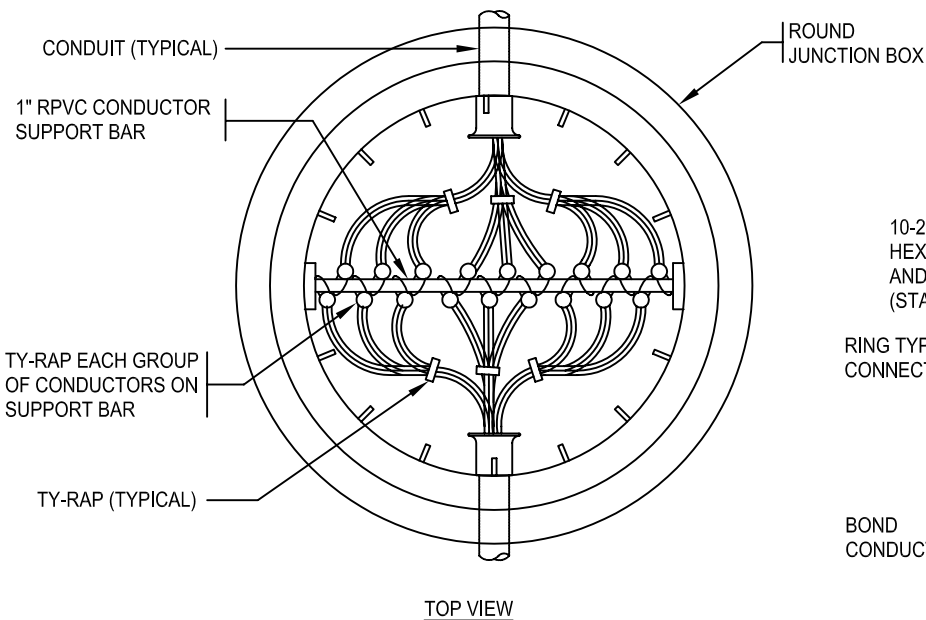
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2066.001

ISSUE
4

SHEET
94



NOTES

1. SEE STANDARD SPECIFICATIONS & SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

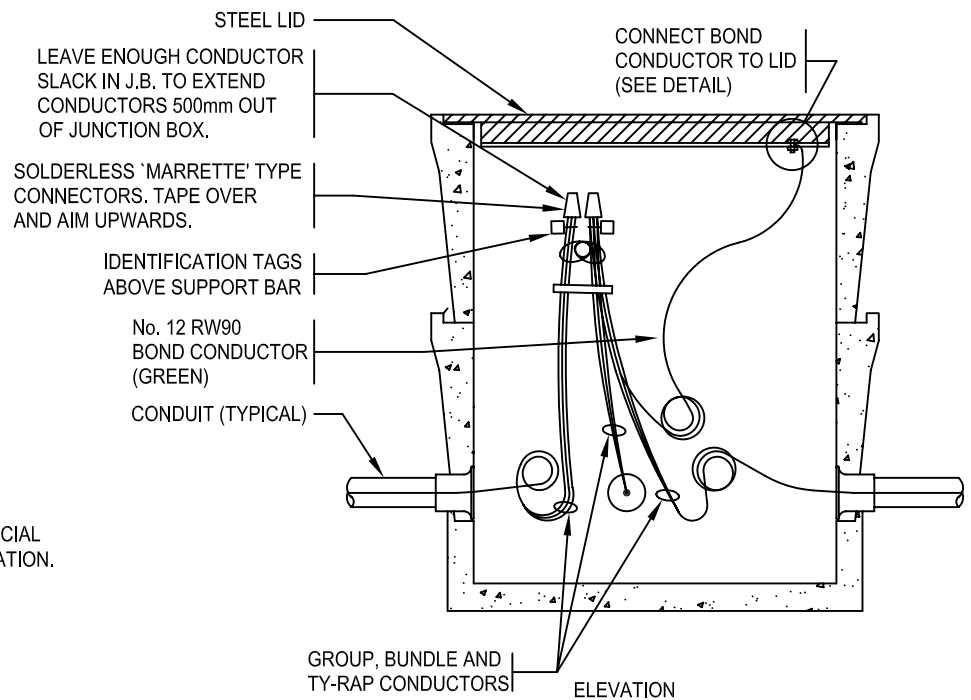
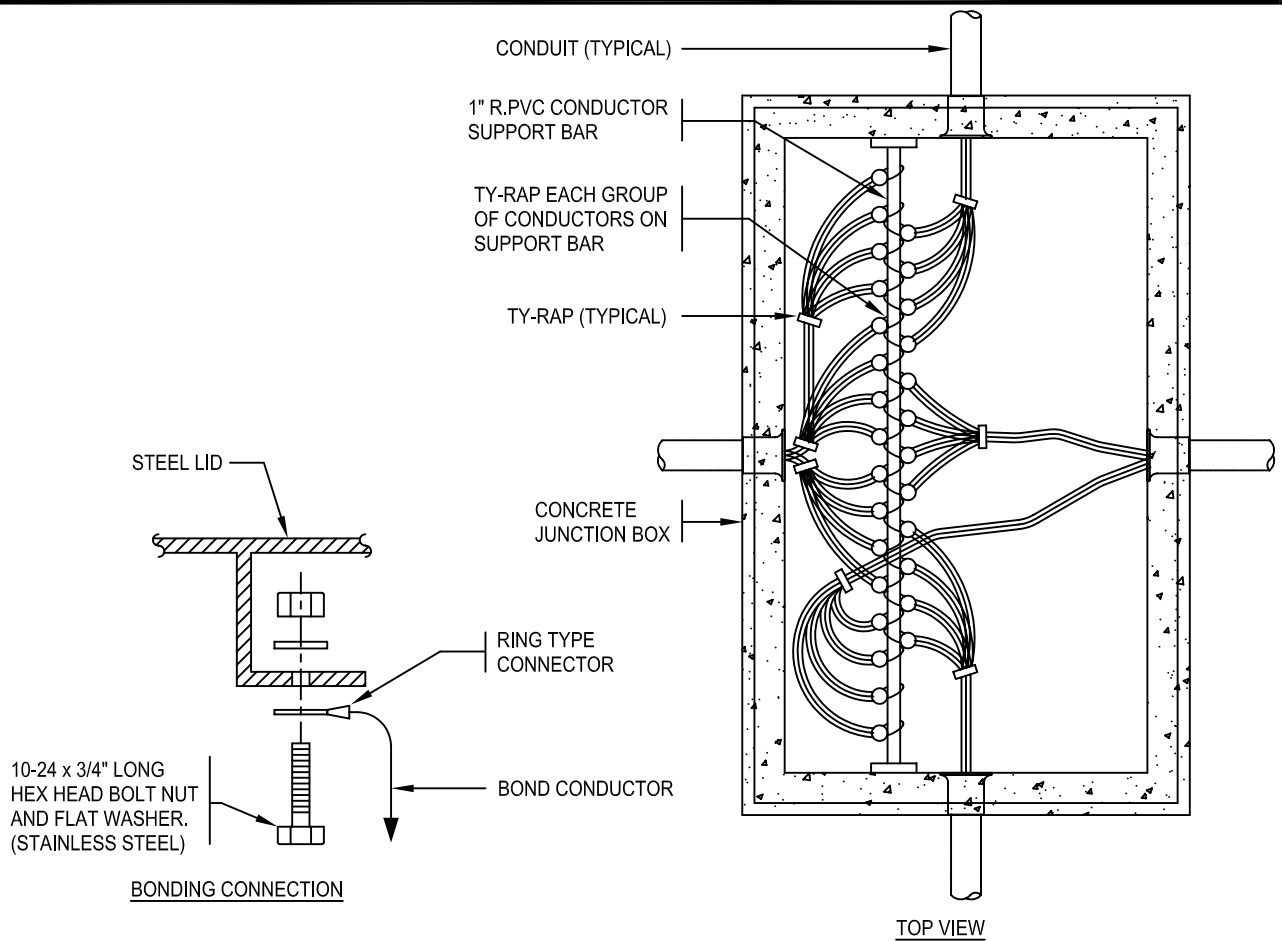
DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



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ROADS

WIRING IN ROUND PLASTIC JUNCTION BOXES

4	2005 ISSUE UPDATE	2005-06-01	WIRING IN ROUND PLASTIC JUNCTION BOXES					
3	2004 ISSUE UPDATE	2004-02-13						
Issue	Revision	Issue Date						
Date <div>Approved By Original Signed by A. Andreasen For General Manager Calgary Roads</div>			DES: PMS		SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH		NOT TO SCALE	454.2067.001	4	95



NOTES

1. SEE STANDARD SPECIFICATIONS & SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

WIRING IN RECTANGULAR CONCRETE JUNCTION BOXES

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

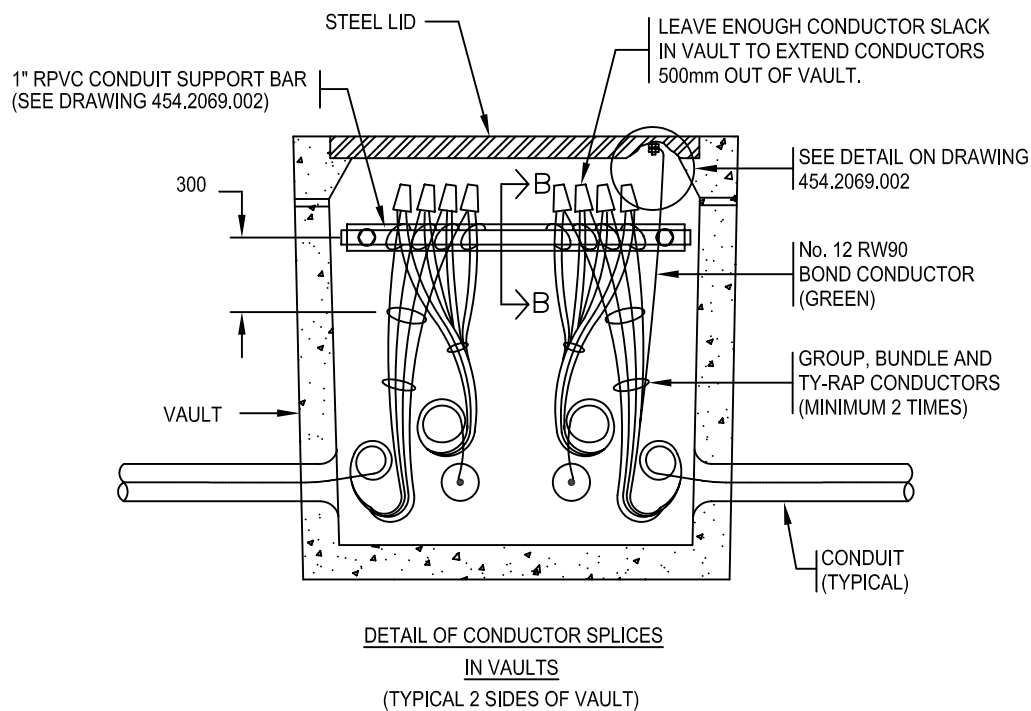
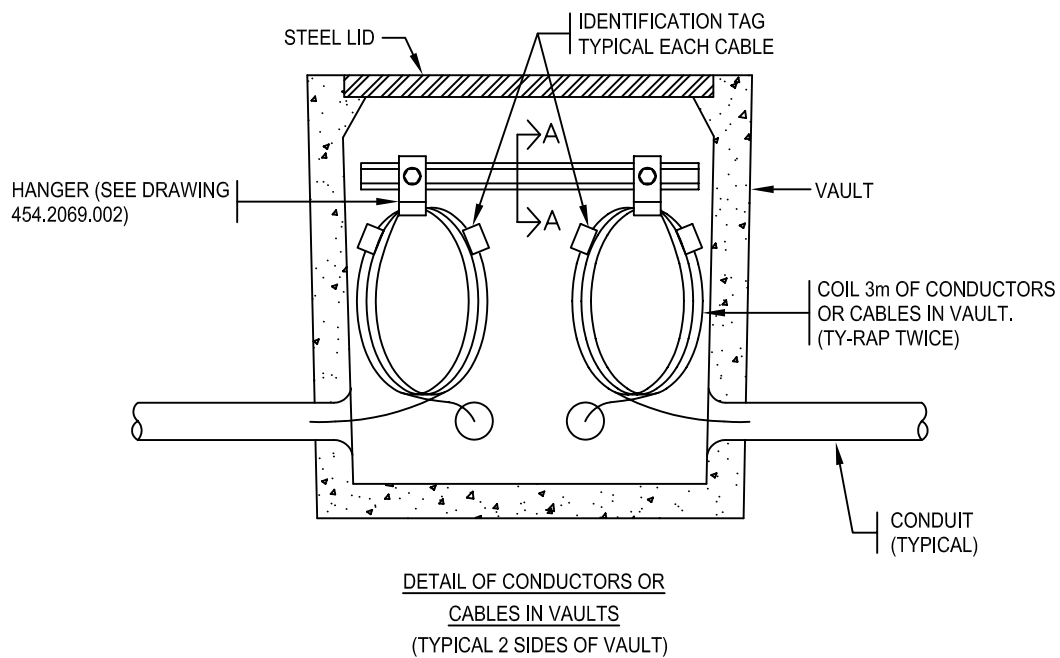
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2068.001

ISSUE
4

SHEET
96



NOTES

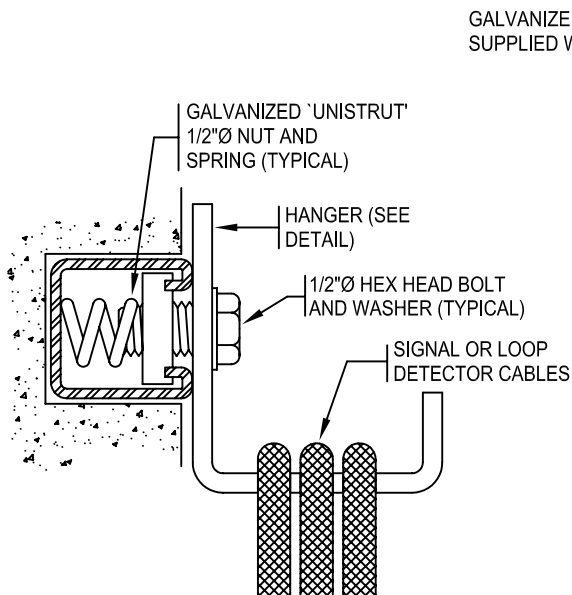
1. SEE STANDARD SPECIFICATIONS & SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.
2. SEE DRAWING 454.2069.002 FOR ADDITIONAL NOTES AND DETAILS.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED  METRIC

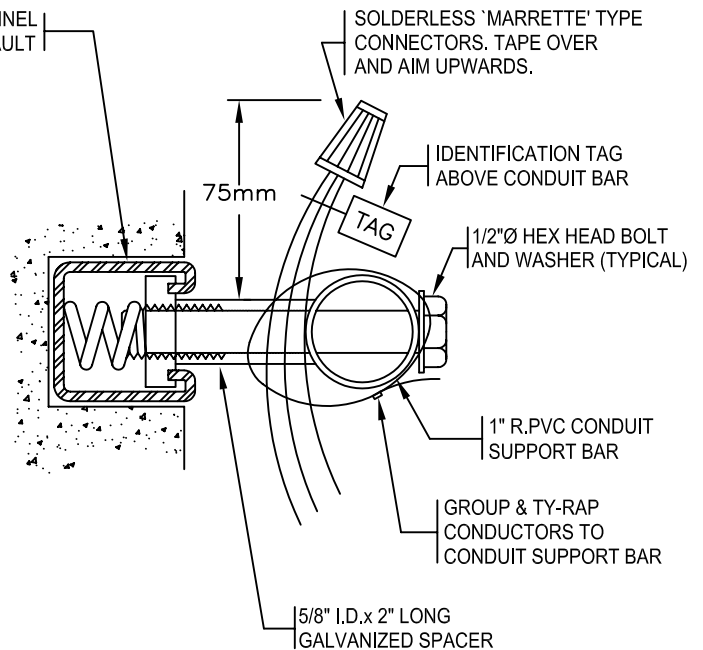


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ROADS

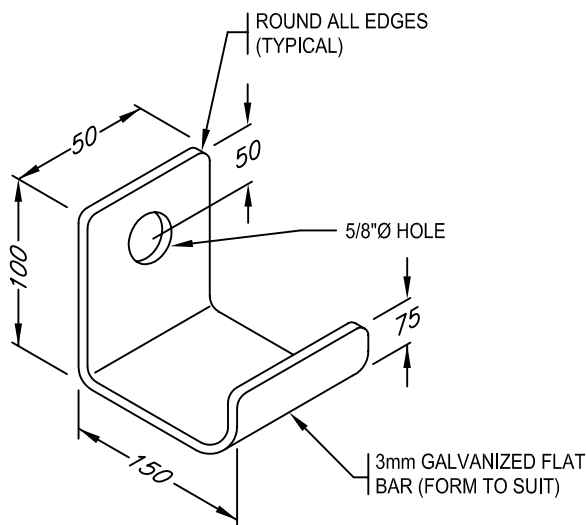
4	2005 ISSUE UPDATE	2005-06-01	WIRING IN CONCRETE VAULTS				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date	Approved By Original Signed by A. Andreassen For General Manager Calgary Roads		DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
			DWN: DH	NOT TO SCALE	454.2069.001	4	97



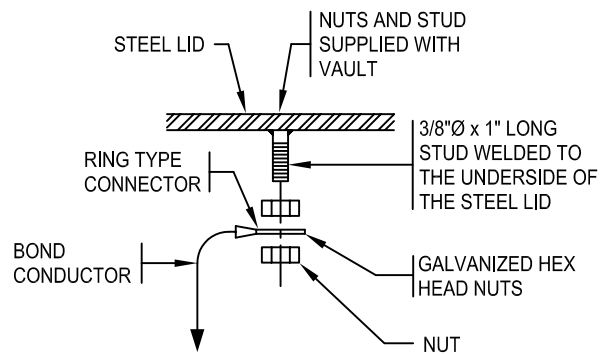
SECTION A-A



SECTION B-B



HANGER



BONDING DETAIL

NOTES

- SEE DRAWING 454.2069.001 FOR ADDITIONAL NOTES & DETAILS.
- ALL BOLTS & WASHERS SHALL BE GALVANIZED.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

WIRING IN CONCRETE VAULTS

4	2005 ISSUE UPDATE	2005-06-01				
3	2004 ISSUE UPDATE	2004-02-13				
Issue	Revision	Issue Date				
Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2069.002	4	98
	For General Manager Calgary Roads					

'PER' SERVICE RELAY
SEE DRAWING 454-2070-003
FOR N.O. INTERNAL WIRING
CONNECTIONS &
SEE DRAWING 454-2070-004
FOR N.C. INTERNAL WIRING
CONNECTIONS

ITEM No. ①

FOR N.O. SEE SPEC. SECTION 357-3R78-001
FOR N.C. SEE SPEC. SECTION 357-3R78-003

'PER' SERVICE RELAY
SEE DRAWING 454-2070-003
FOR N.O. INTERNAL WIRING
CONNECTIONS &
SEE DRAWING 454-2070-004
FOR N.C. INTERNAL WIRING
CONNECTIONS

ITEM No. ①

FOR N.O. SEE SPEC. SECTION 357-3R78-001
FOR N.C. SEE SPEC. SECTION 357-3R78-003

REFER TO WIRING DETAILS
ON DRAWING 454.2070.002

4.5m

REFER TO WIRING DETAILS
ON DRAWING 454.2070.002

DAVIT POLE INSTALLATION

REFER TO WIRING DETAILS
ON DRAWING 454.2070.002

4.5m

REFER TO WIRING DETAILS
ON DRAWING 454.2070.002

STRAIGHT POLE INSTALLATION

SERVICE RELAY MUST HAVE CSA OR EQUIVALENT
CERTIFICATION PRIOR TO INSTALLATION

FOR ITEM NUMBERS REFER
TO DRAWINGS 454.2070.003
AND 454.2070.004

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

30A 240V 'PER' SERVICE RELAY INSTALLATION DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2070.001

ISSUE
4
SHEET
99

PEC PHOTO-CONTROL (N.O. ONLY)

ITEM No. ②

SPEC. SECTION 357-3R78-001

'PER' SERVICE RELAY
SEE DRAWING 454-2070-003
FOR N.O. INTERNAL WIRING
CONNECTIONS &
SEE DRAWING 454-2070-004
FOR N.C. INTERNAL WIRING
CONNECTIONS

ITEM No. ①

FOR N.O. SEE SPEC. SECTION 357-3R78-001
FOR N.C. SEE SPEC. SECTION 357-3R78-003

3 No. 8 RW90 SERVICE
CONDUCTORS (LINE)
L1 - RED
L2 - RED
GND - GREEN

1 1/4" CLOSE NIPPLE INTO POLE
(LENGTH TO SUIT)

DRILL 1 1/2"Ø HOLE
FOR NIPPLE ENTRY

INSULATING BUSHING

2 No. 8 RW90 STREET
LIGHTING FEEDERS (LOAD)
L1 - BLACK
L2 - BLACK

TO HANDHOLE
SEE DETAIL BELOW
SERVICE RELAY MOUNTING DETAIL

3 No. 8 RW90 SERVICE
CONDUCTORS (LINE)
L1 - RED
L2 - RED
GND - GREEN

CRIMP-ON INSULATED RING TYPE
CONNECTOR (TYPICAL)

2 No. 8 RW90 STREET
LIGHTING FEEDERS (LOAD)
L1 - BLACK
L2 - BLACK

POLE

IF 3 No. 8 AND 1 No.12 USE SPLIT BOLT
IF 2 No. 8 AND 1 No.12 USE SOLDERLESS
CONNECTOR

FUSE HOLDERS WITH
30A TYPE KTK FUSES
ITEM No. ⑤⑥

3C No. 2 AI SERVICE FEEDER

CONCRETE BASE

WIRING AT HANDHOLE

NOTES

1. REFER TO CONTRACT DRAWINGS
AND DETAILED SPECIFICATIONS.
2. REFER TO DRAWING 454.2066.001 FOR
WIRING IN HANDHOLE DETAILS.

DIMENSIONS ARE MILLIMETRES
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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

30A 240V 'PER' SERVICE RELAY INSTALLATION DETAILS

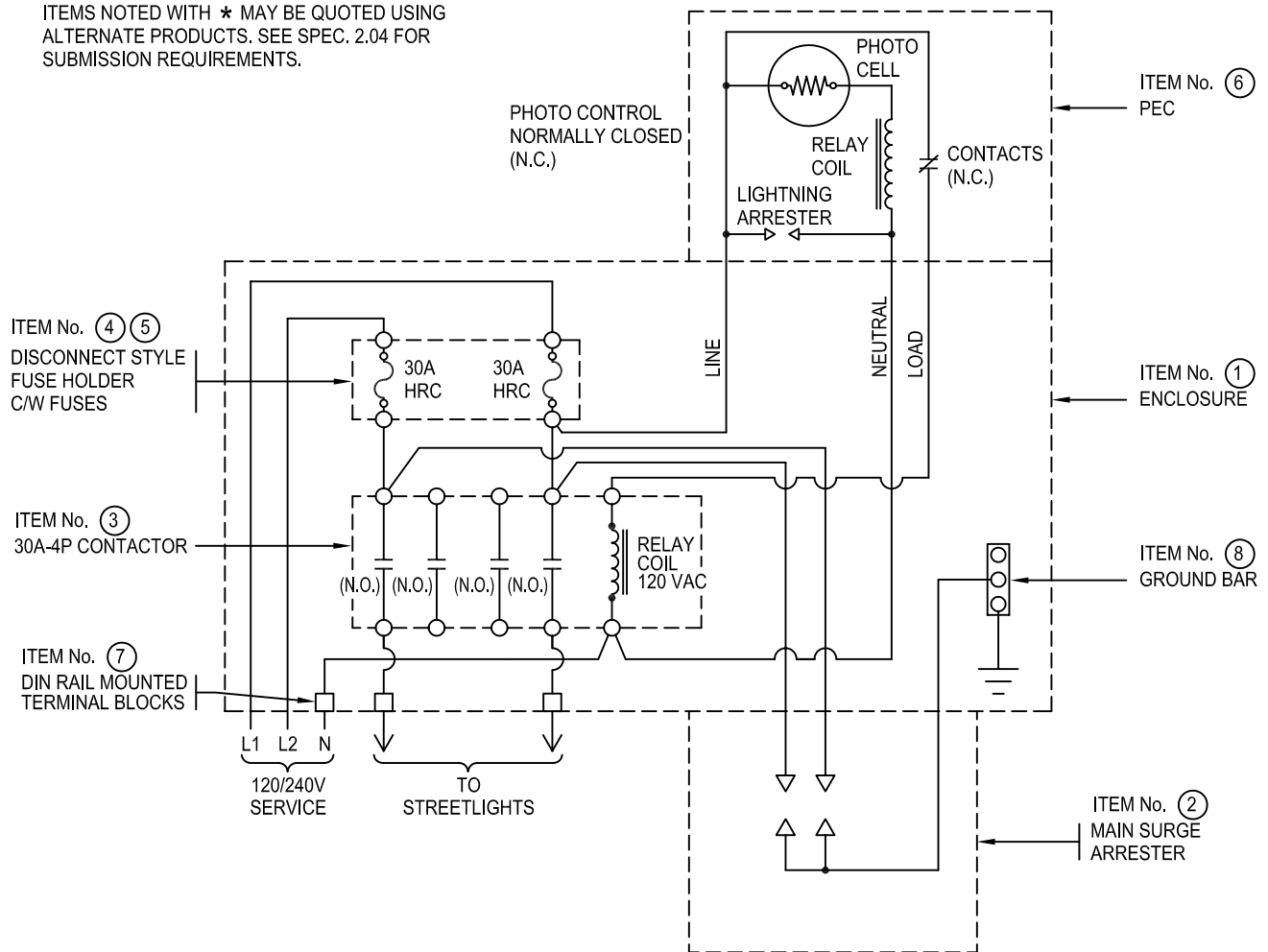
Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2070.002	ISSUE 4	SHEET 100
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MATERIAL LIST

ITEM	QTY	DESCRIPTION		CATALOGUE No.
1	1	ENCLOSURE C/W GASKETTED DOOR	EEMAC-3R ENCLOSURE [254(H) x 254(W) x 152(D)]	N/A
2	1	INTERMATIC INC. - SURGE ARRESTER	SURGE ARRESTER	AG2401C
3	1	CUTLER-HAMMER - CONTACTOR	4 POLE, 30A CONTACTOR	CN35DN4AB *
4	1	FUSETEK - FUSE HOLDER	2 POLE FUSE HOLDER	DF38-2 *
5	2	LITTELFUSE - FUSE	CCMR SERIES, 30A 600V AC	CCMR-30 *
6	1	INTERMATIC INC. - PHOTOCONTROL RECEPT.	PHOTOCELL TWIST-LOCK SOCKET	K1221
7	1	ENTRELEC TERMINAL BLOCK	18 - 6 AWG TB (3) C/W BAM END STOPS (2)	M10/10 *
8	1	GROUND BAR KIT		N/A
9	1	1" HIGH YELLOW REFLECTIVE BAND	3M DIAMOND GRADE	N/A

NOTES:

ITEMS NOTED WITH * MAY BE QUOTED USING ALTERNATE PRODUCTS. SEE SPEC. 2.04 FOR SUBMISSION REQUIREMENTS.



REFERENCE SPECIFICATION 357-3R78-001

DIMENSIONS ARE MILLIMETRES
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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

30A 240V N.O. STREETLIGHT SERVICE UNIT MATERIALS LIST AND WIRING DETAILS

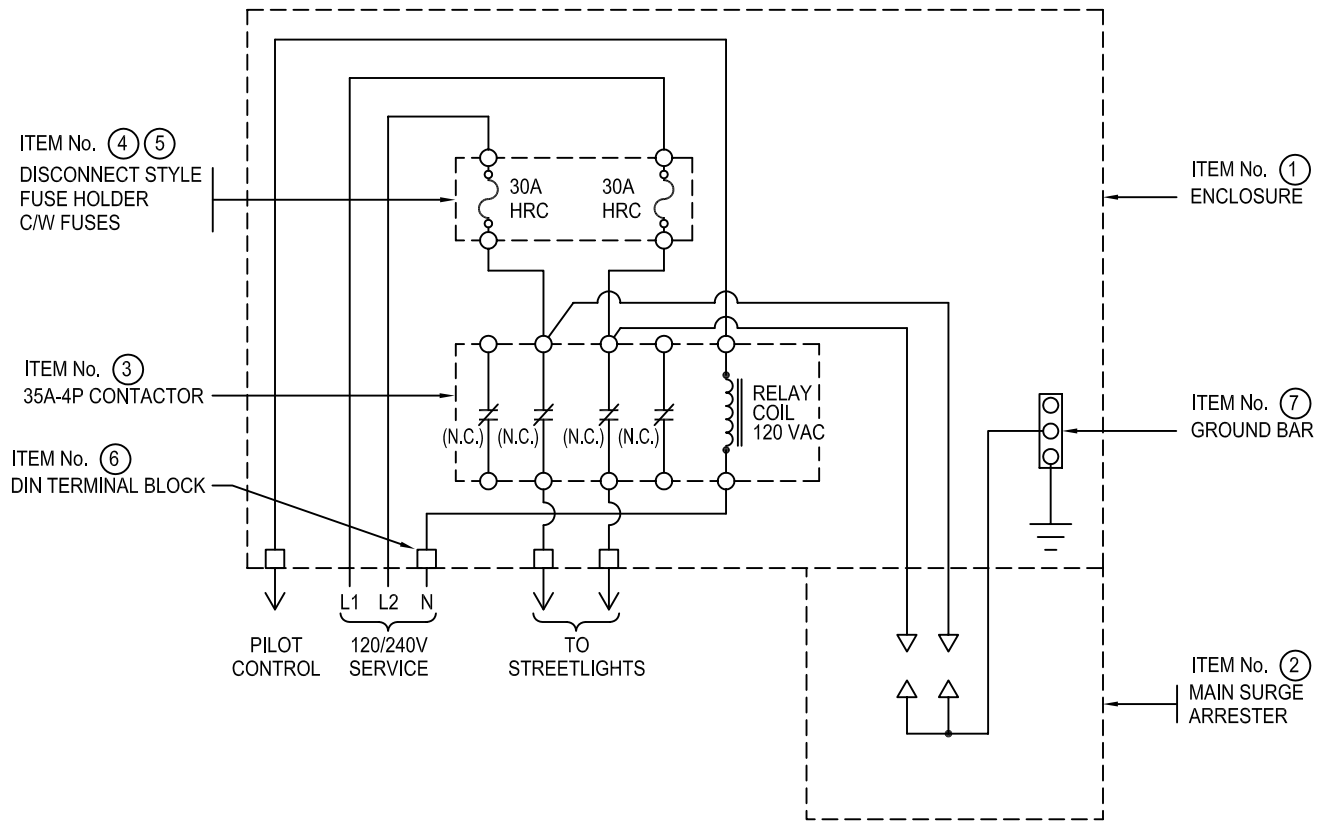
Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2070.003	4	101
	For General Manager Calgary Roads					

MATERIAL LIST

ITEM	QTY	DESCRIPTION		CATALOGUE No.
1	1	ENCLOSURE C/W GASKETTED DOOR	EEMAC-3R ENCLOSURE	N/A
2	1	INTERMATIC INC. - SURGE ARRESTER	SURGE ARRESTER	AG2401C
3	1	CUTLER-HAMMER - CONTACTOR	4 POLE, 30A CONTACTOR	C30CNM04A02AO
4	2	FUSETEK - FUSE HOLDER	2 POLE FUSE HOLDER	DF38-2 *
5	2	LITTELFUSE - FUSE	CCMR SERIES, 30A 600V AC	CCMR-30 *
6	4	ENTRELEC TERMINAL BLOCK	18 - 6 AWG TB (4) C/W BAM END STOPS (2)	M10/10 *
7	1	GROUND BAR KIT		N/A
8	1	1" HIGH YELLOW REFLECTIVE BAND	3M DIAMOND GRADE	N/A

NOTES:

ITEMS NOTED WITH * MAY BE QUOTED USING
ALTERNATE PRODUCTS. SEE SPEC. 2.04 FOR
SUBMISSION REQUIREMENTS.



REFERENCE SPECIFICATION 357-3R78-003

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED 

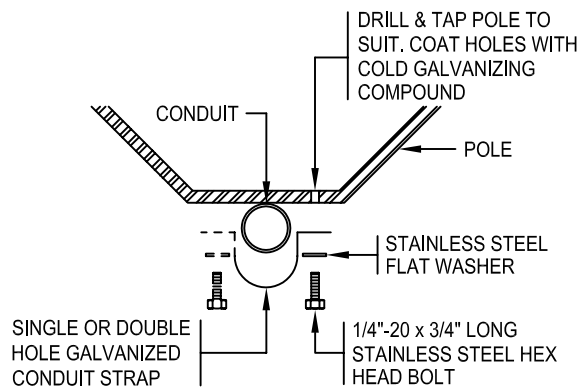


THE CITY OF
CALGARY
ROADS

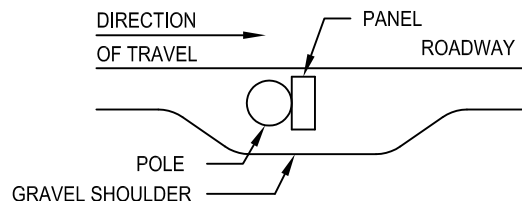
4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

30A 240V N.C. STREETLIGHT SERVICE UNIT MATERIALS LIST AND WIRING DETAILS

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2070.004	4	102
	For General Manager Calgary Roads					



CONDUIT ATTACHMENT DETAIL



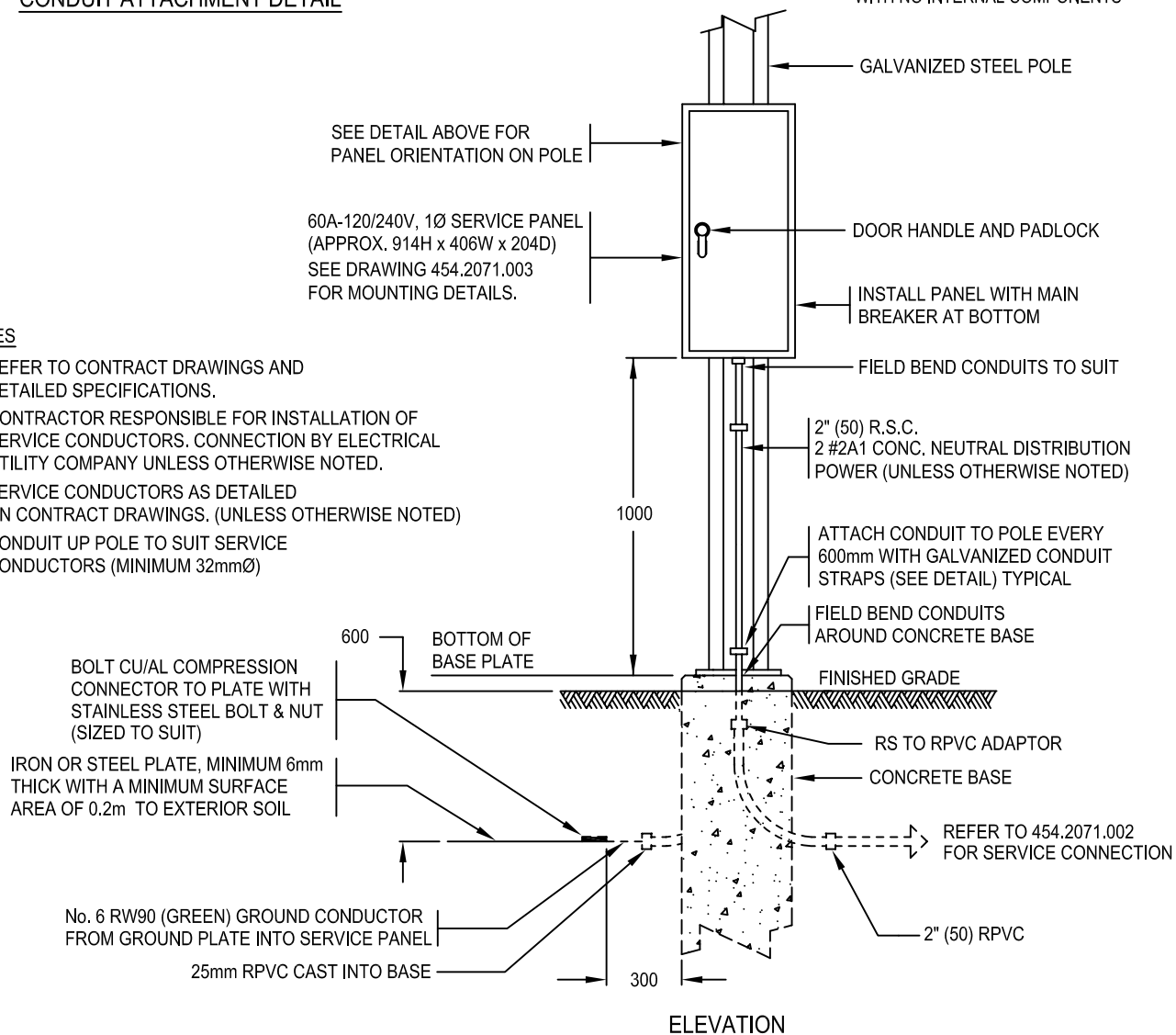
PANEL ORIENTATION PLAN

APPROXIMATE PANEL MASS
30 kg*

* WITH NO INTERNAL COMPONENTS

NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.
2. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF SERVICE CONDUCTORS. CONNECTION BY ELECTRICAL UTILITY COMPANY UNLESS OTHERWISE NOTED.
3. SERVICE CONDUCTORS AS DETAILED ON CONTRACT DRAWINGS. (UNLESS OTHERWISE NOTED)
4. CONDUIT UP POLE TO SUIT SERVICE CONDUCTORS (MINIMUM 32mmØ)



ELEVATION

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

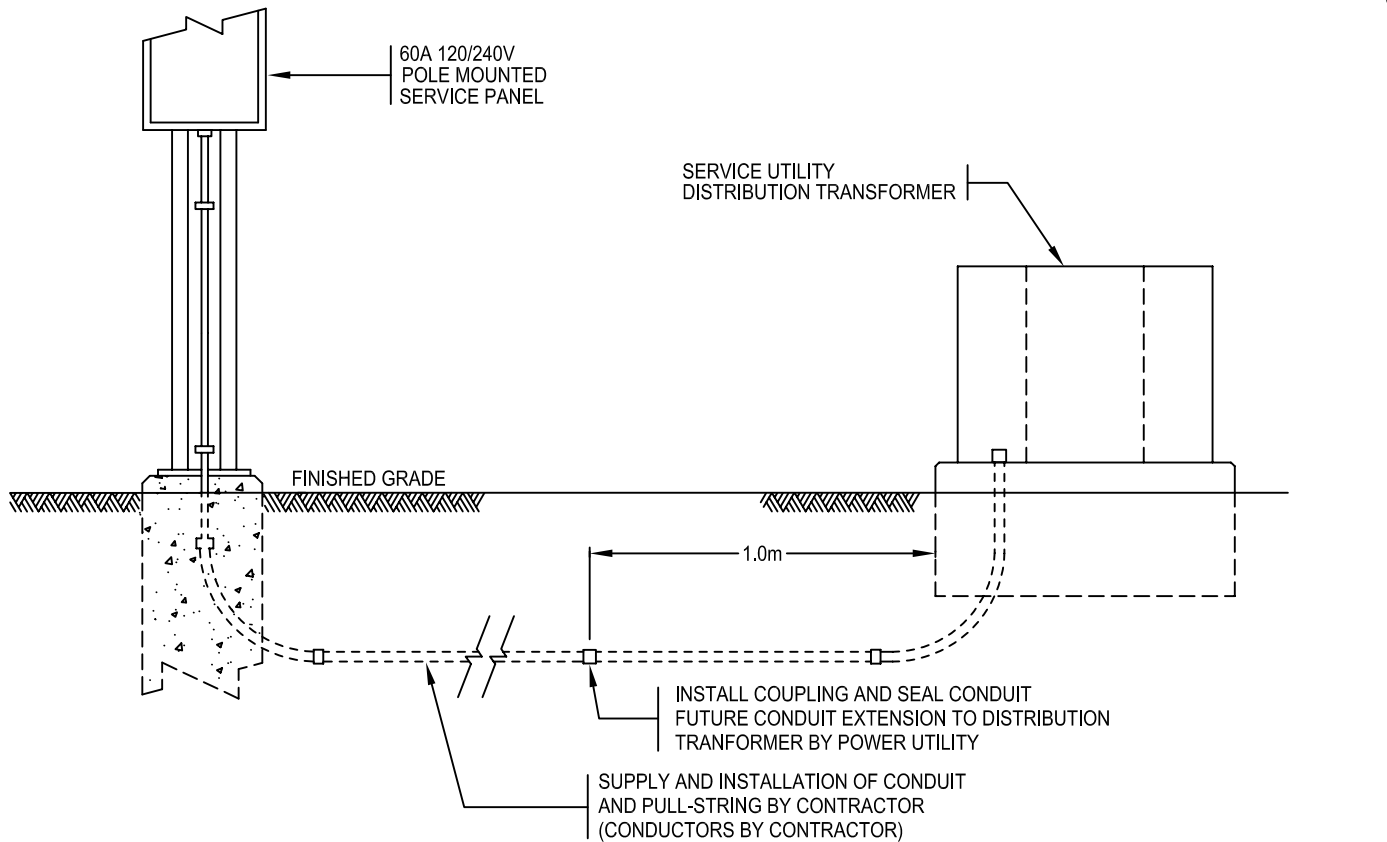


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ROADS

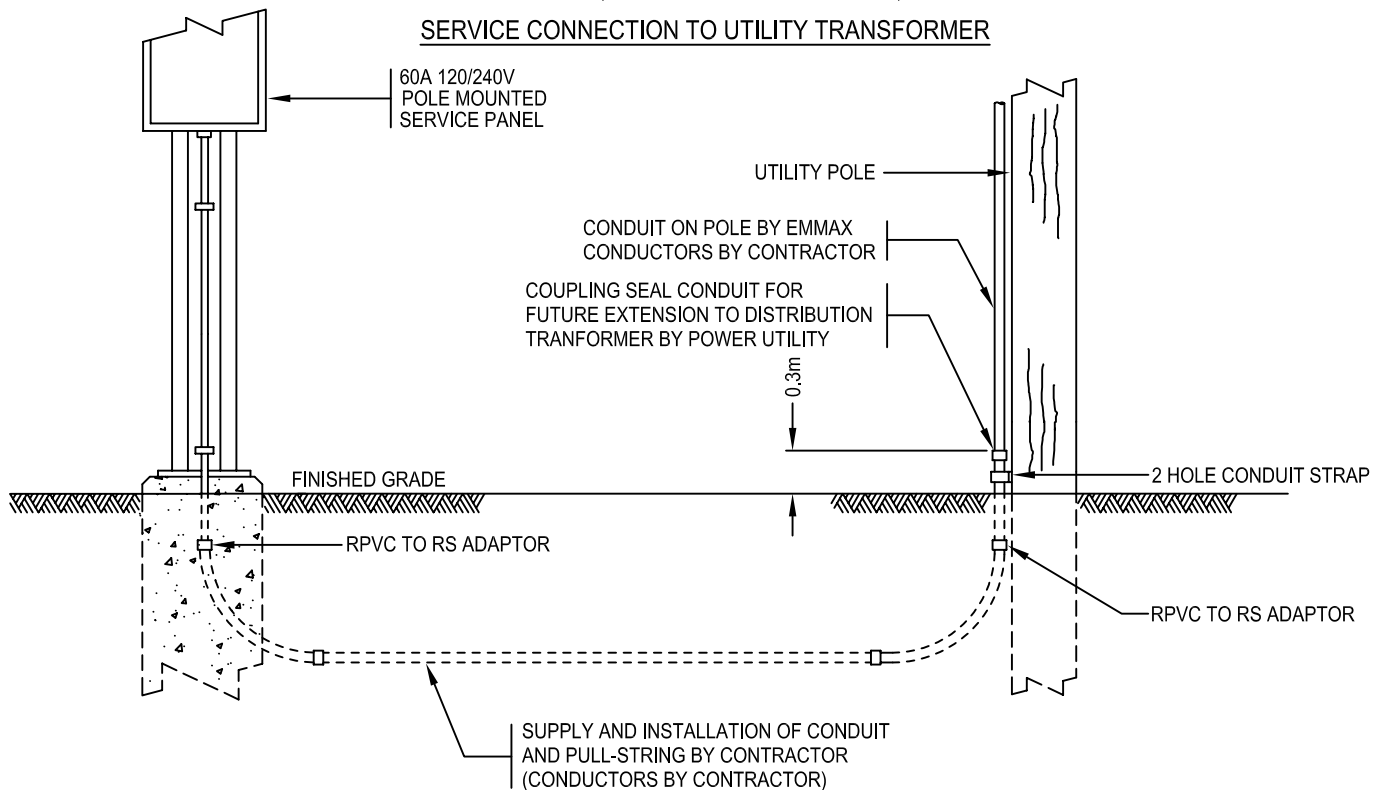
4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

60A 120/240V U/G DIP SERVICE INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2071.001	ISSUE 4	SHEET 103
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SERVICE CONNECTION TO UTILITY TRANSFORMER



SERVICE CONNECTION TO UTILITY POLE

DIMENSIONS ARE MILLIMETRES
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60A 120/240V U/G DIP SERVICE INSTALLATION DETAILS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

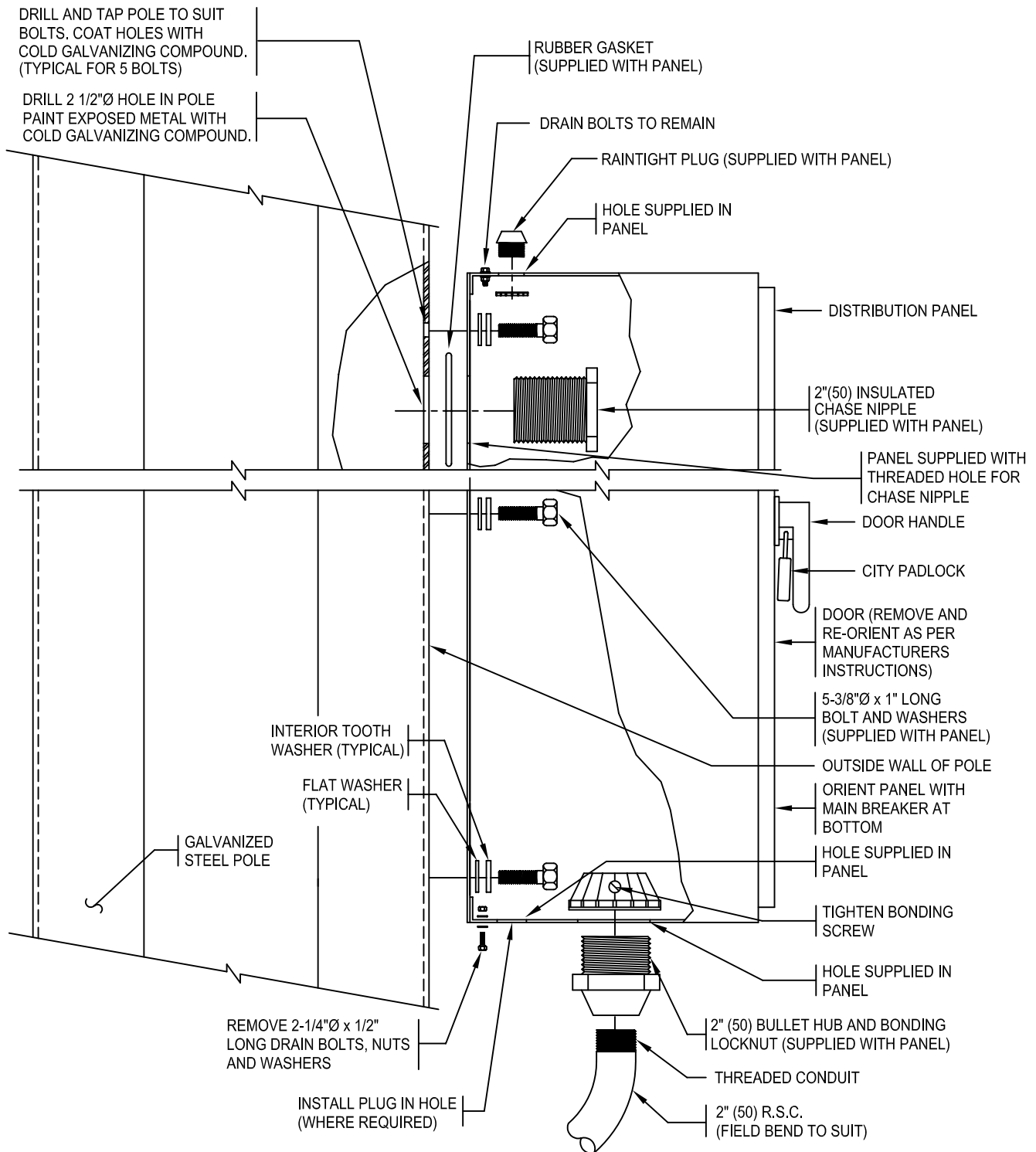
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2071.002

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104



NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.

SIDE VIEW

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

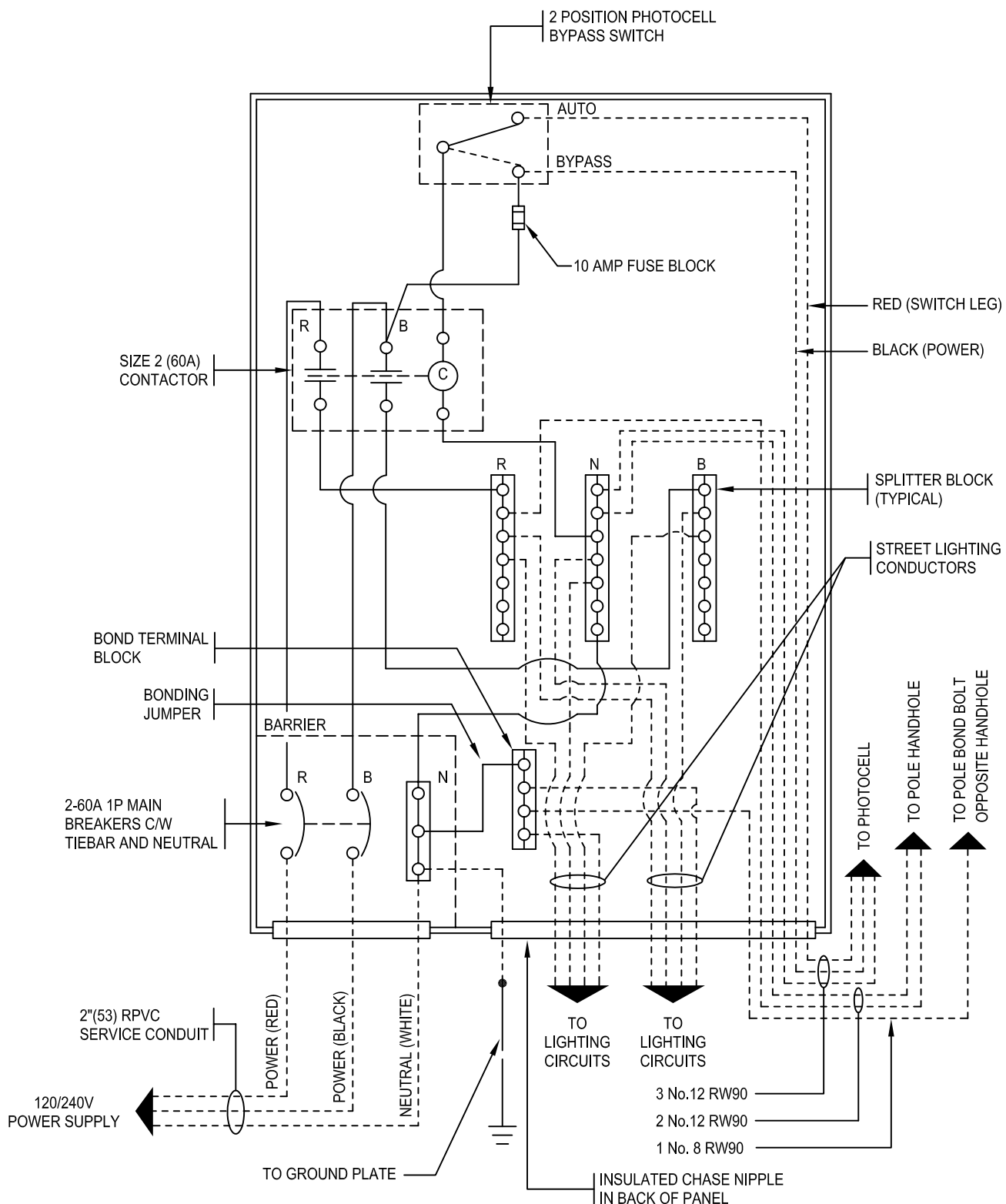


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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

60A 120/240V U/G DIP SERVICE PANEL MOUNTING DETAILS

Date	Approved By	DES: PMS	SCALE:	DRAWING No.	ISSUE	SHEET
	Original Signed by A. Andreasen	DWN: DH	NOT TO SCALE	454.2071.003	4	105
	For General Manager Calgary Roads					



----- FIELD WIRING

WIRING DIAGRAM

N.T.S.

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60A 120/240V U/G DIP SERVICE PANEL WIRING DETAILS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

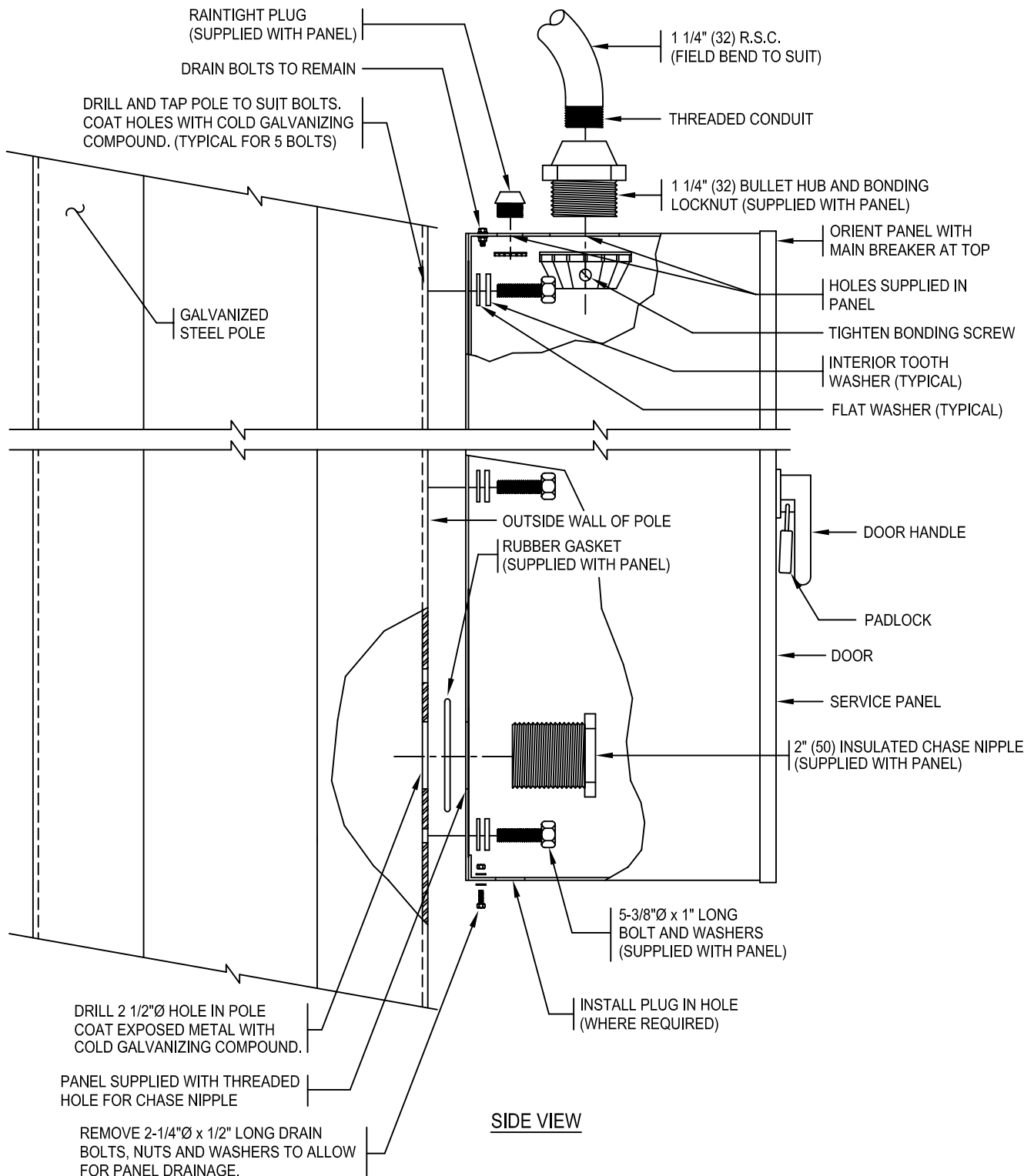
SCALE:
NOT TO SCALE

DRAWING No.
454.2071.004

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106

ISSUE	SHEET
4	107



NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.

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60A 120/240V O/H DROP SERVICE PANEL MOUNTING DETAILS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

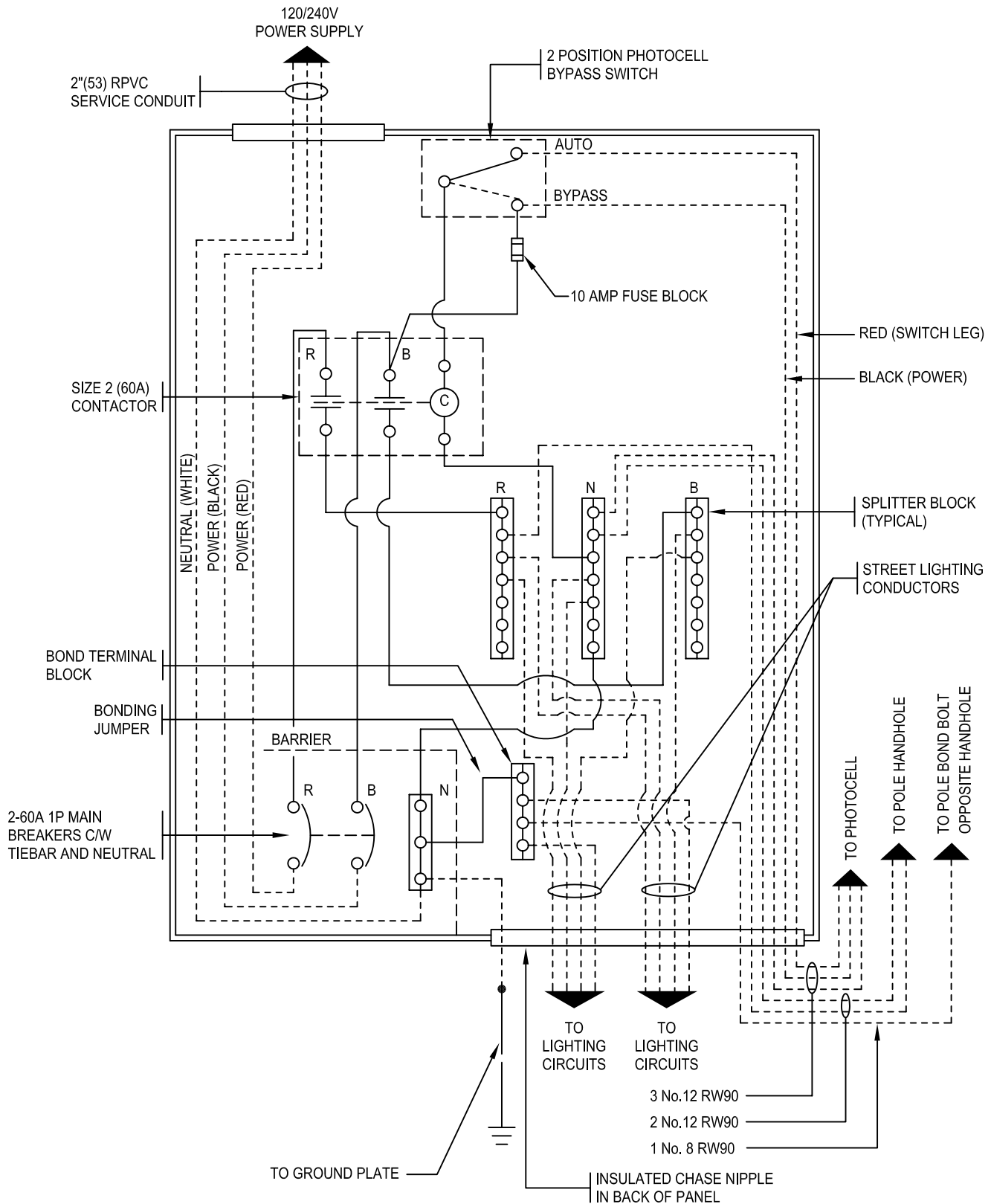
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2071.006

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DIMENSIONS ARE MILLIMETRES
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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

60A 120/240V O/H DROP SERVICE PANEL WIRING DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

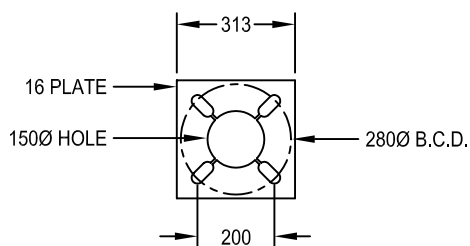
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SCALE:
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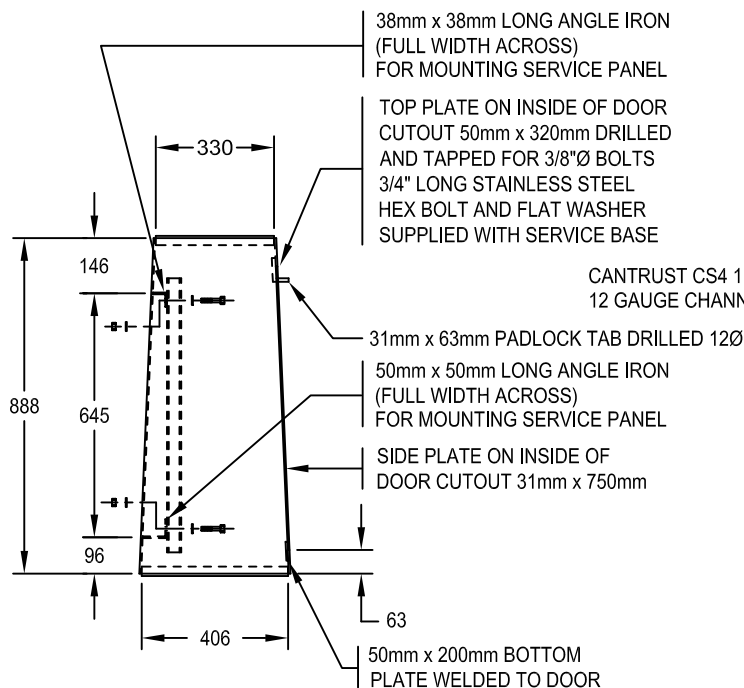
DRAWING No.
454.2071.007

ISSUE
4

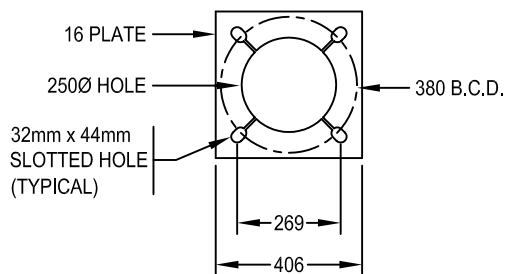
SHEET
109



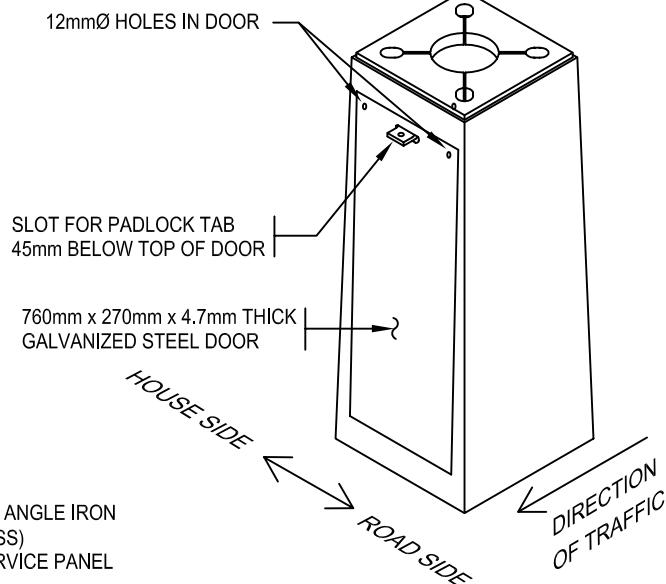
TOP VIEW



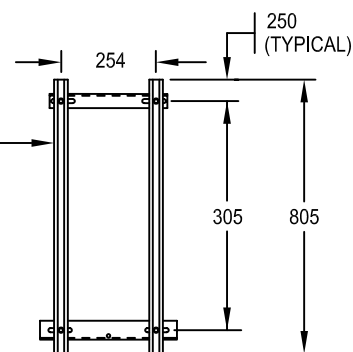
ELEVATION



BOTTOM VIEW



PICTORIAL VIEW



SERVICE PANEL SUPPORT CHANNELS

NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.
2. SERVICE BASE TO BE USED WITH 9m & 15m DAVIT POLES AND POST TOP POLES ONLY.
3. SERVICE BASE TO BE HOT DIP GALVANIZED AFTER FABRICATION.
4. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



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PEDESTAL STYLE SERVICE BASE

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

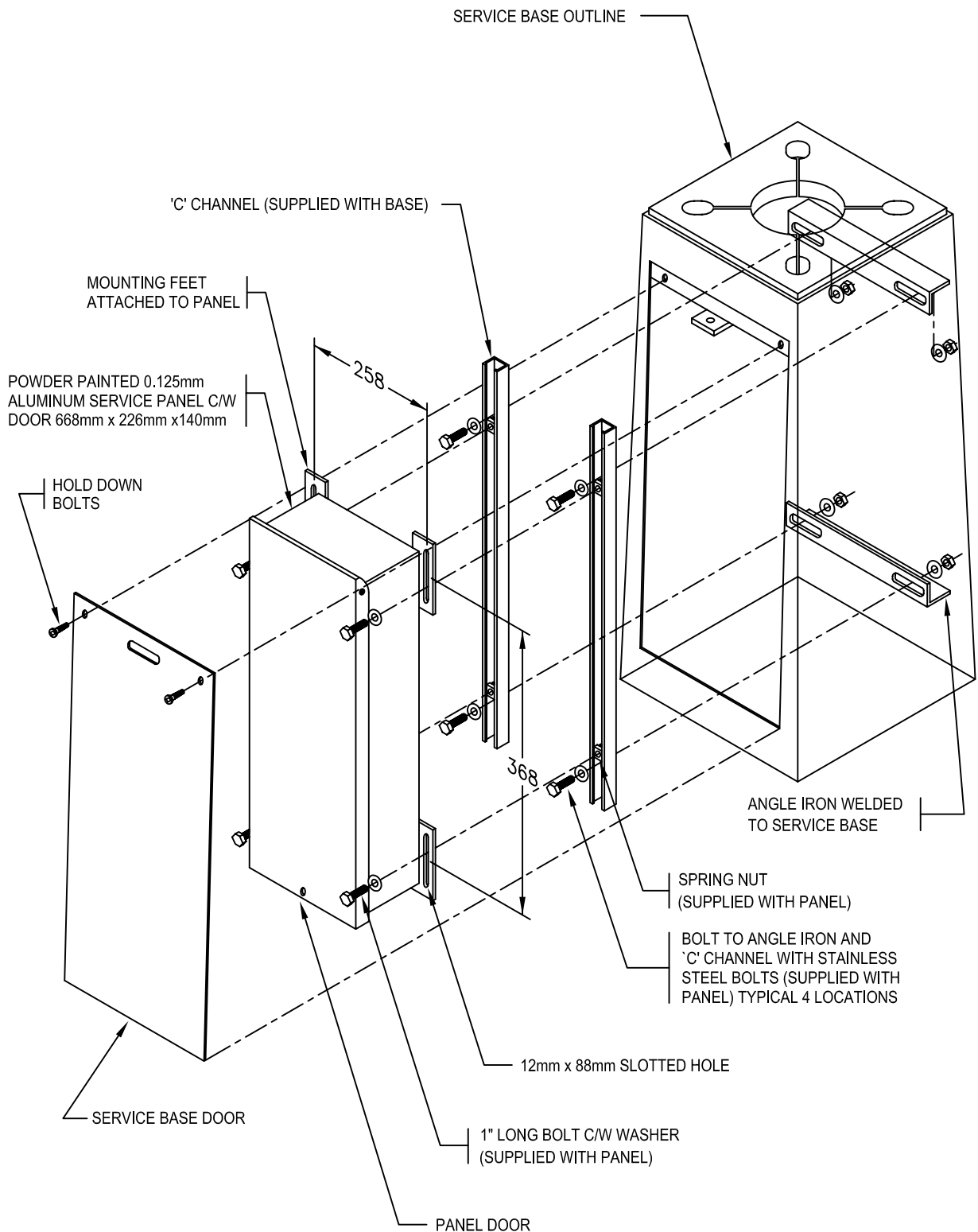
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2072.001

ISSUE
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NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



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60A 120/240V SERVICE BASE PANEL DETAILS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

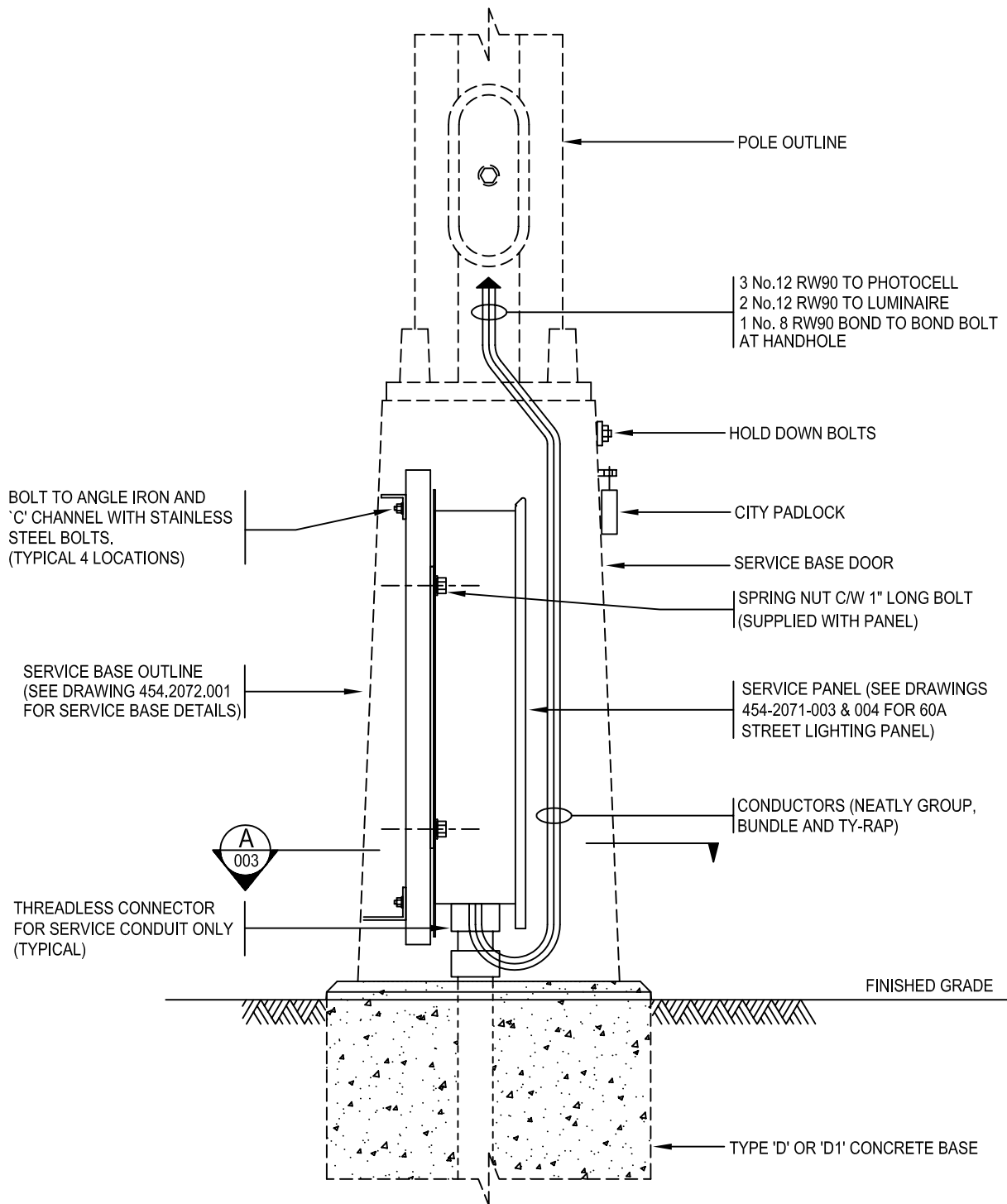
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2073.001

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4

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NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.

DIMENSIONS ARE MILLIMETRES
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60A 120/240V SERVICE BASE PANEL MOUNTING DETAILS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

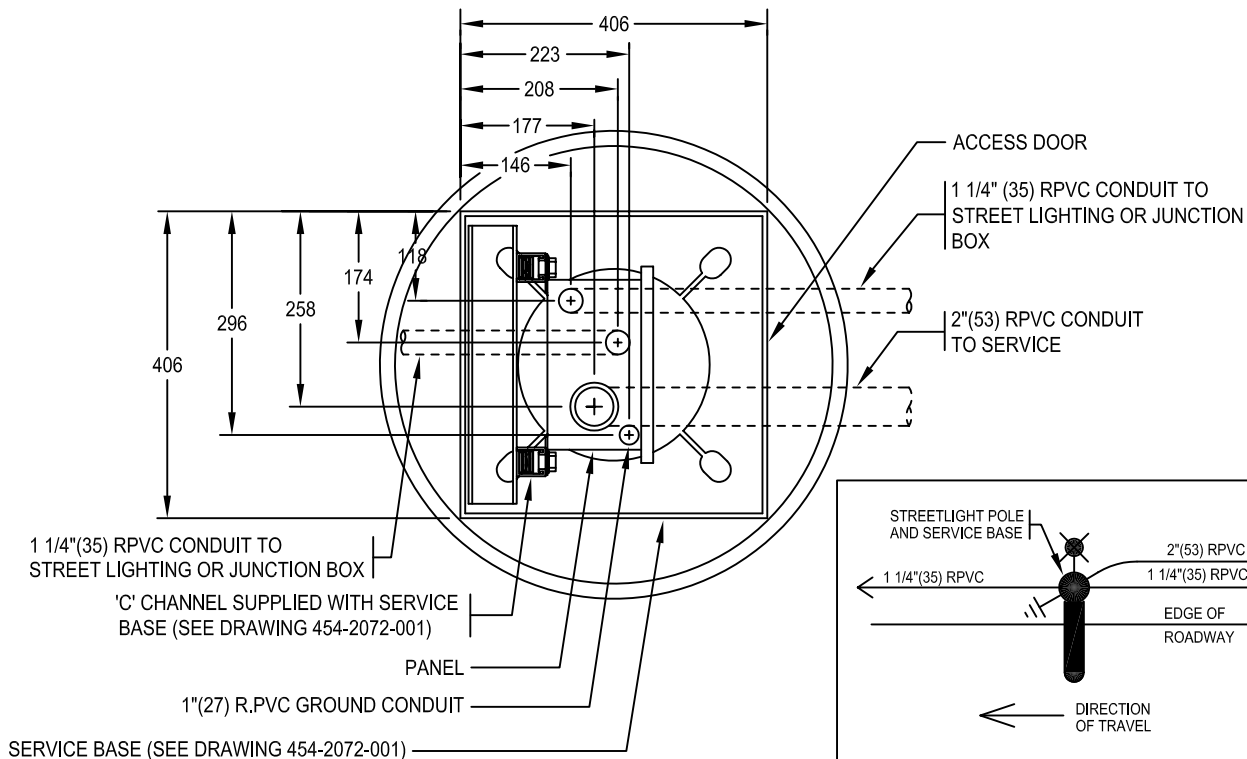
DES: PMS
DWN: DH

SCALE:
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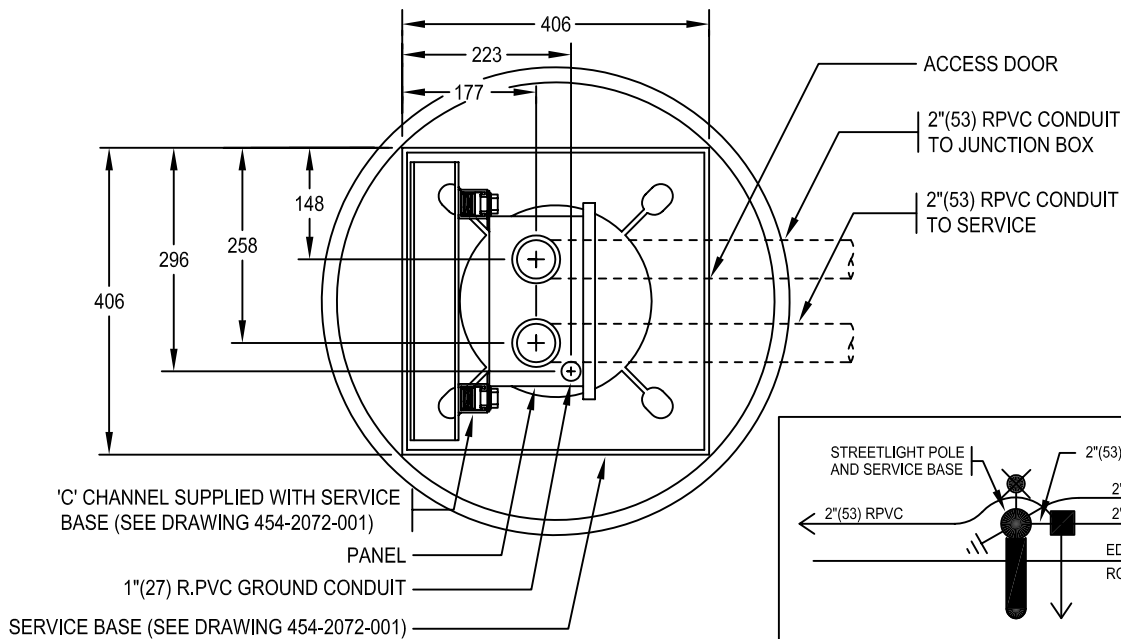
DRAWING No.
454.2073.002

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4

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SECTION A
002



SECTION A
002

NOTES

1. REFER TO CONTRACT DRAWINGS AND DETAILED SPECIFICATIONS.

DIMENSIONS ARE MILLIMETRES
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60A 120/240V SERVICE BASE PANEL MOUNTING DETAILS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

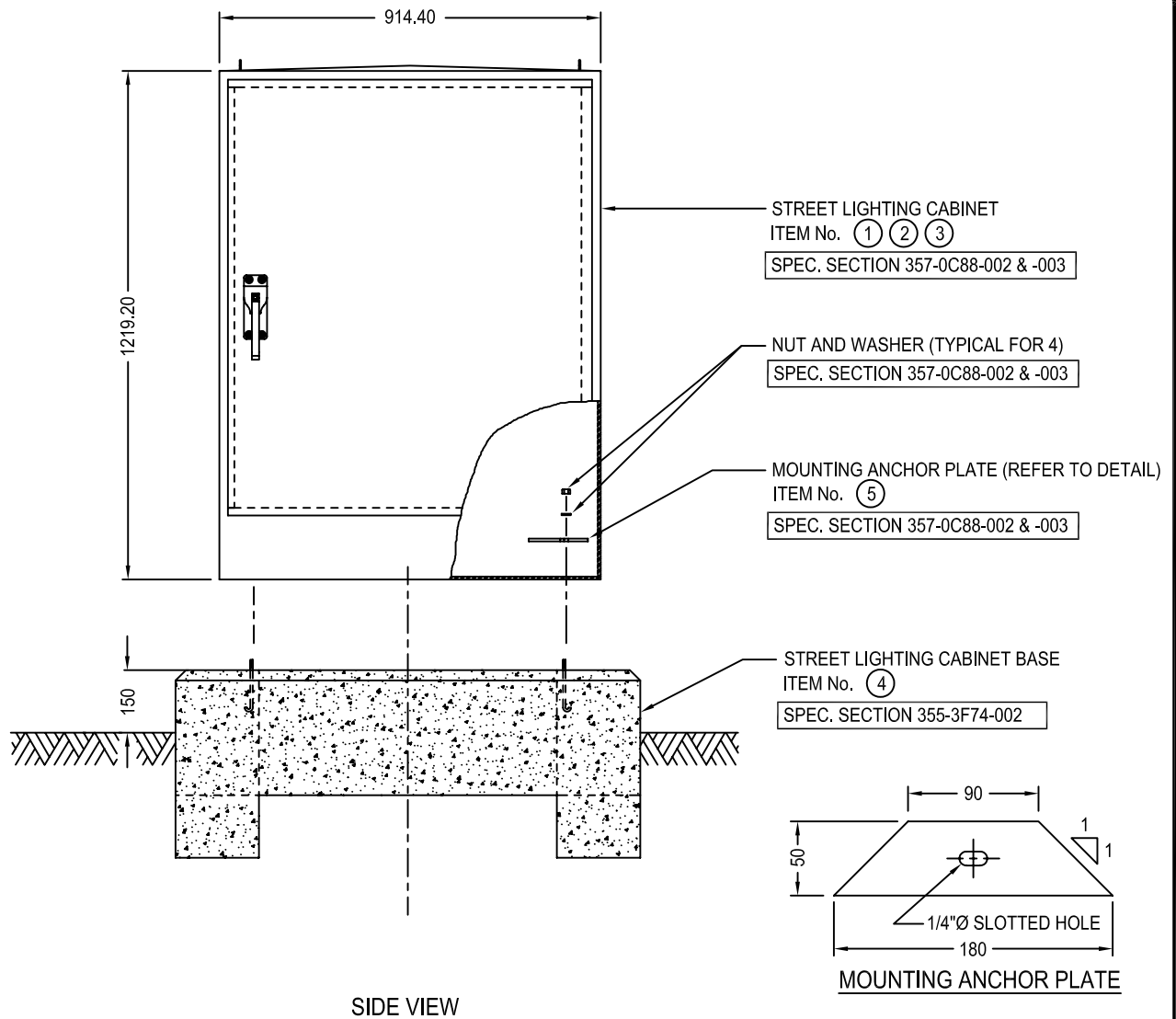
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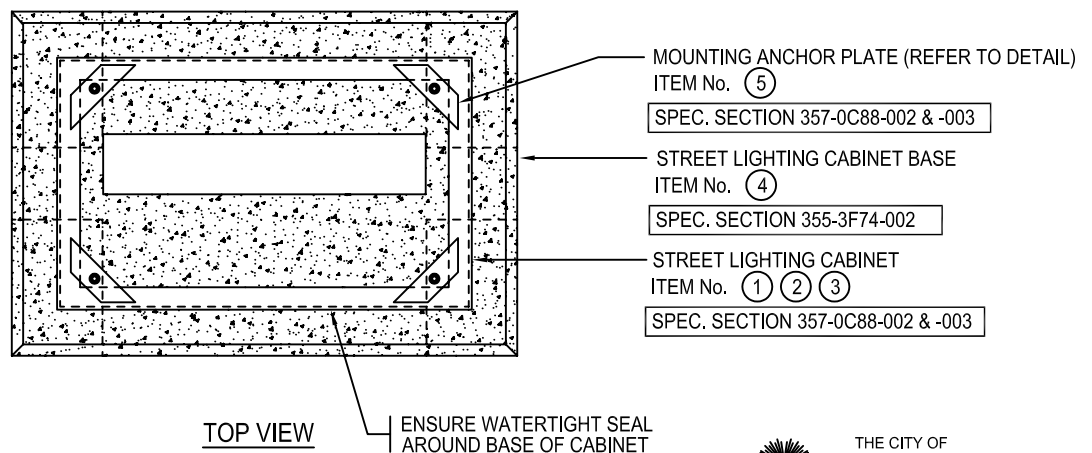
DRAWING No.
454.2073.003

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FOR ITEM NUMBERS REFER
TO DRAWING 454.2074.005



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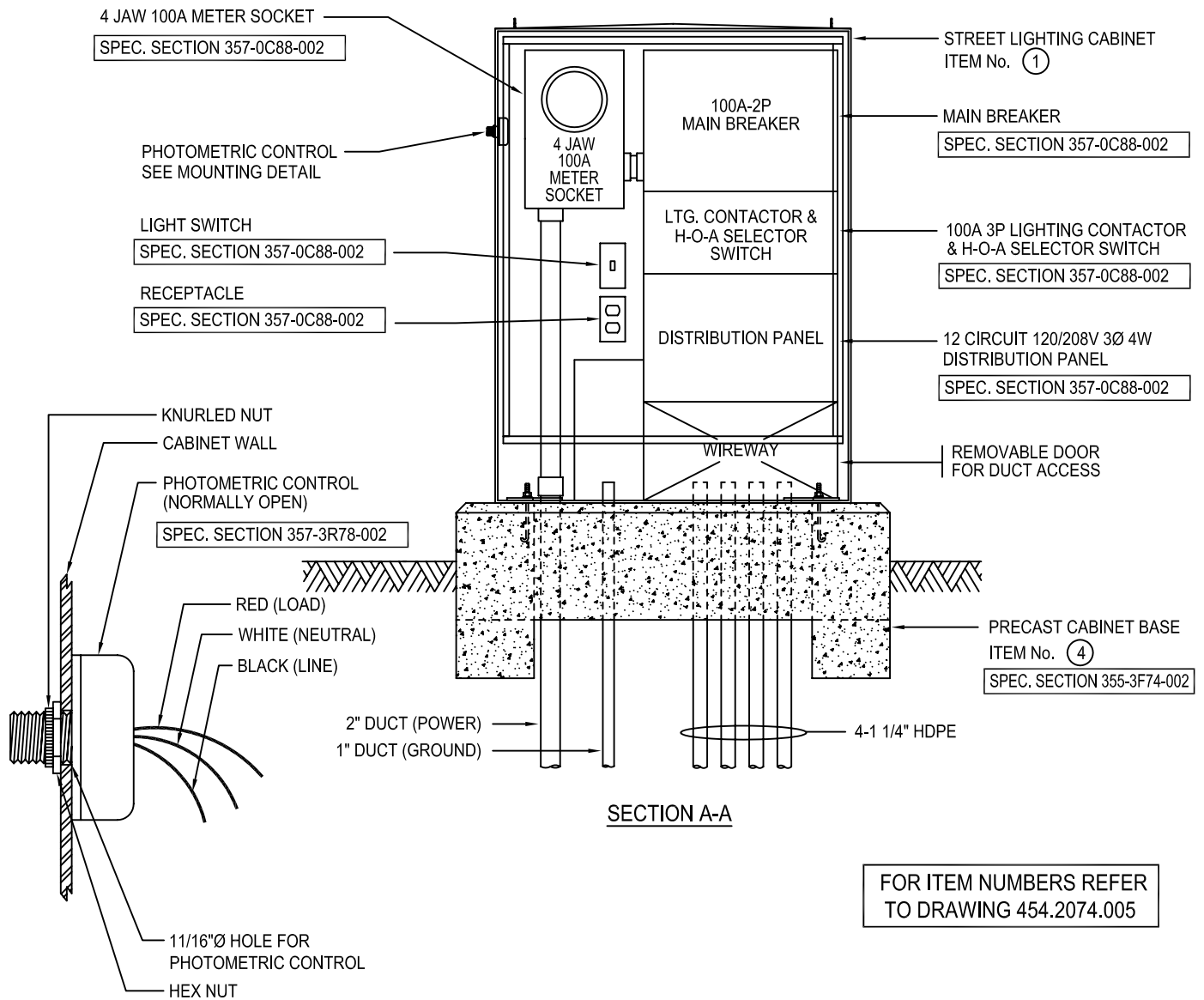


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CALGARY
ROADS

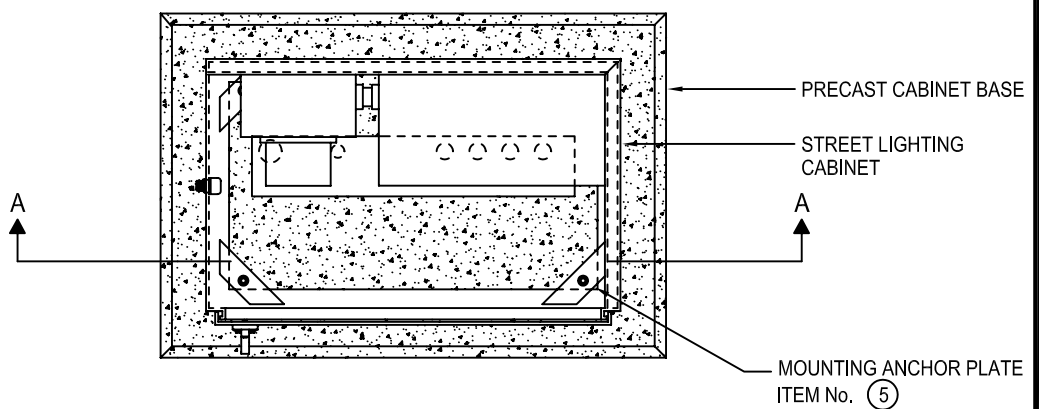
4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

100A STREETLIGHT SERVICE CABINET INSTALLATION DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2074.001	ISSUE 4	SHEET 114
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PHOTOMETRIC CONTROL MOUNTING



DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

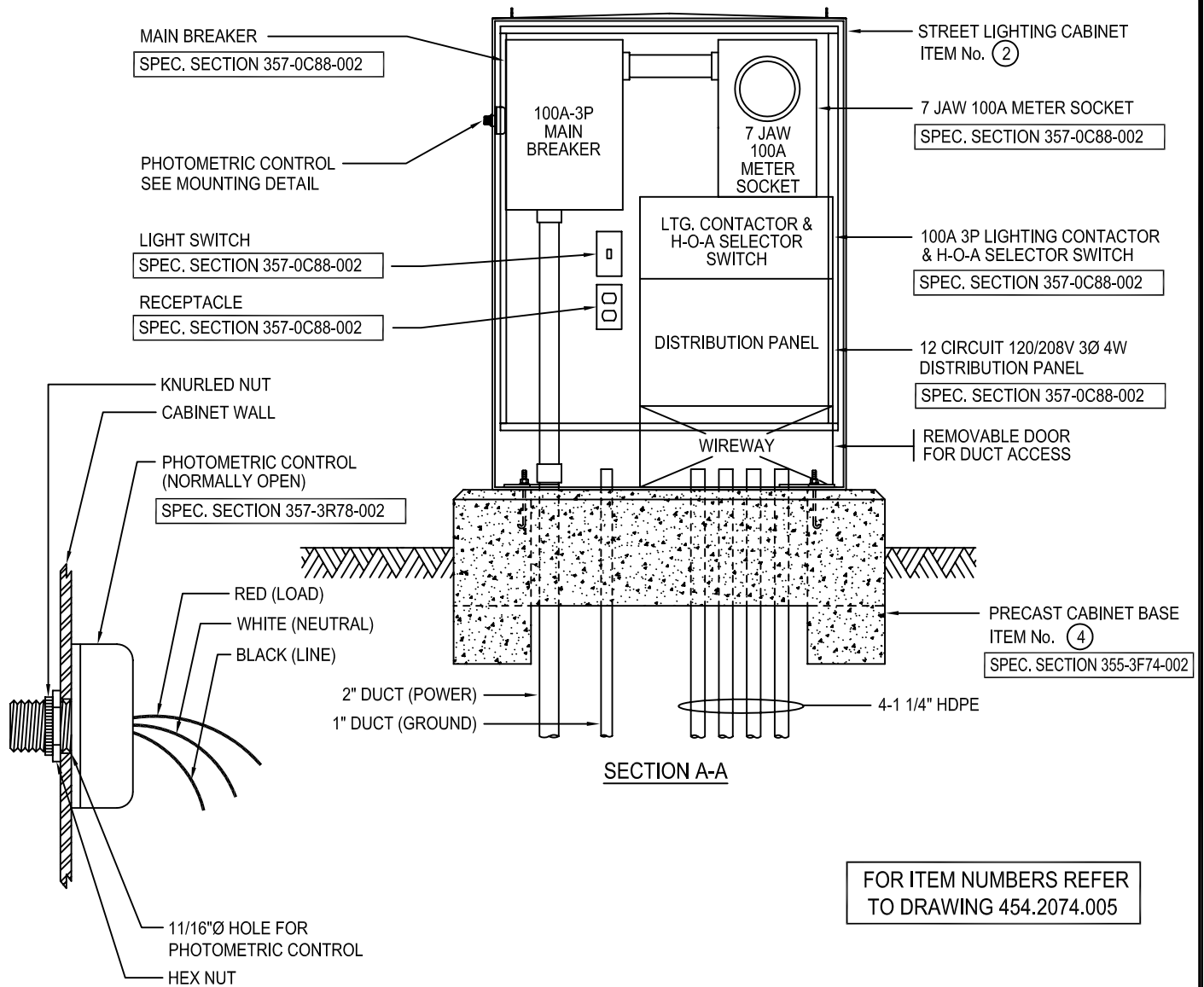


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4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

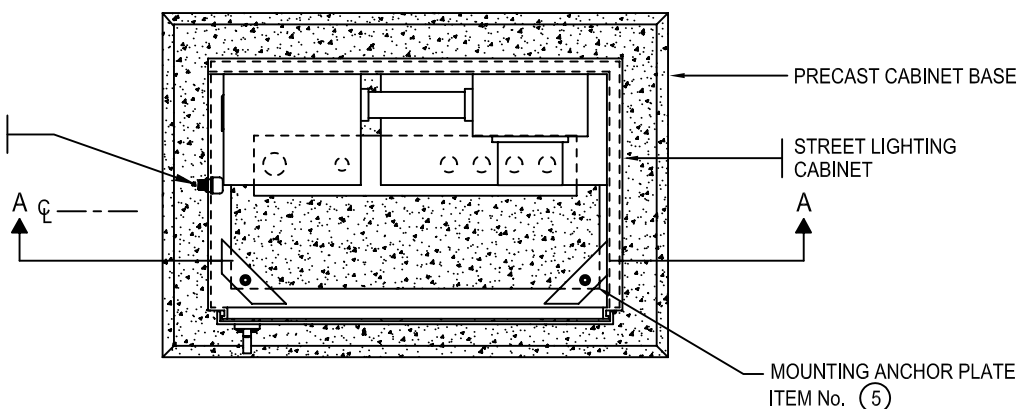
100A - 120/240V 1Ø SERVICE CABINET WIRING DETAILS

Date	Approved By Original Signed by A. Andreasen For General Manager Calgary Roads	DES: PMS DWN: DH	SCALE: NOT TO SCALE	DRAWING No. 454.2074.002	ISSUE 4	SHEET 115
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PHOTOMETRIC CONTROL MOUNTING

PHOTOELECTRIC CONTROL
SEE MOUNTING DETAIL



TOP VIEW

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

100A - 120/208V 3Ø SERVICE CABINET WIRING DETAILS

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

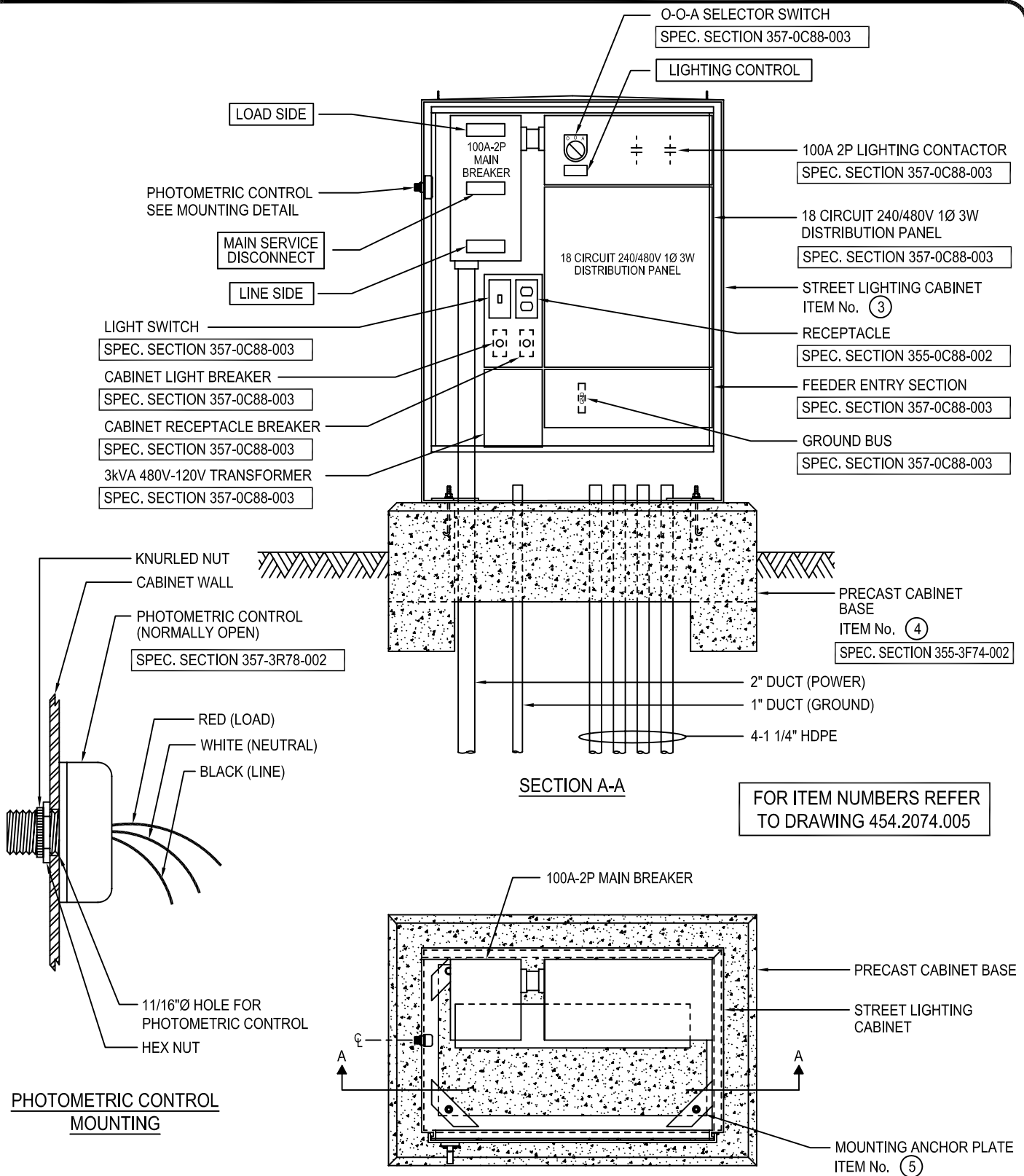
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2074.003

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DIMENSIONS ARE MILLIMETRES
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TOP VIEW



THE CITY OF
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ROADS

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

100A - 240/480V 1Ø SERVICE CABINET WIRING DETAILS

Date _____ Approved By _____
Original Signed by A. Andreasen
For General Manager Calgary Roads

DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2074.004

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4

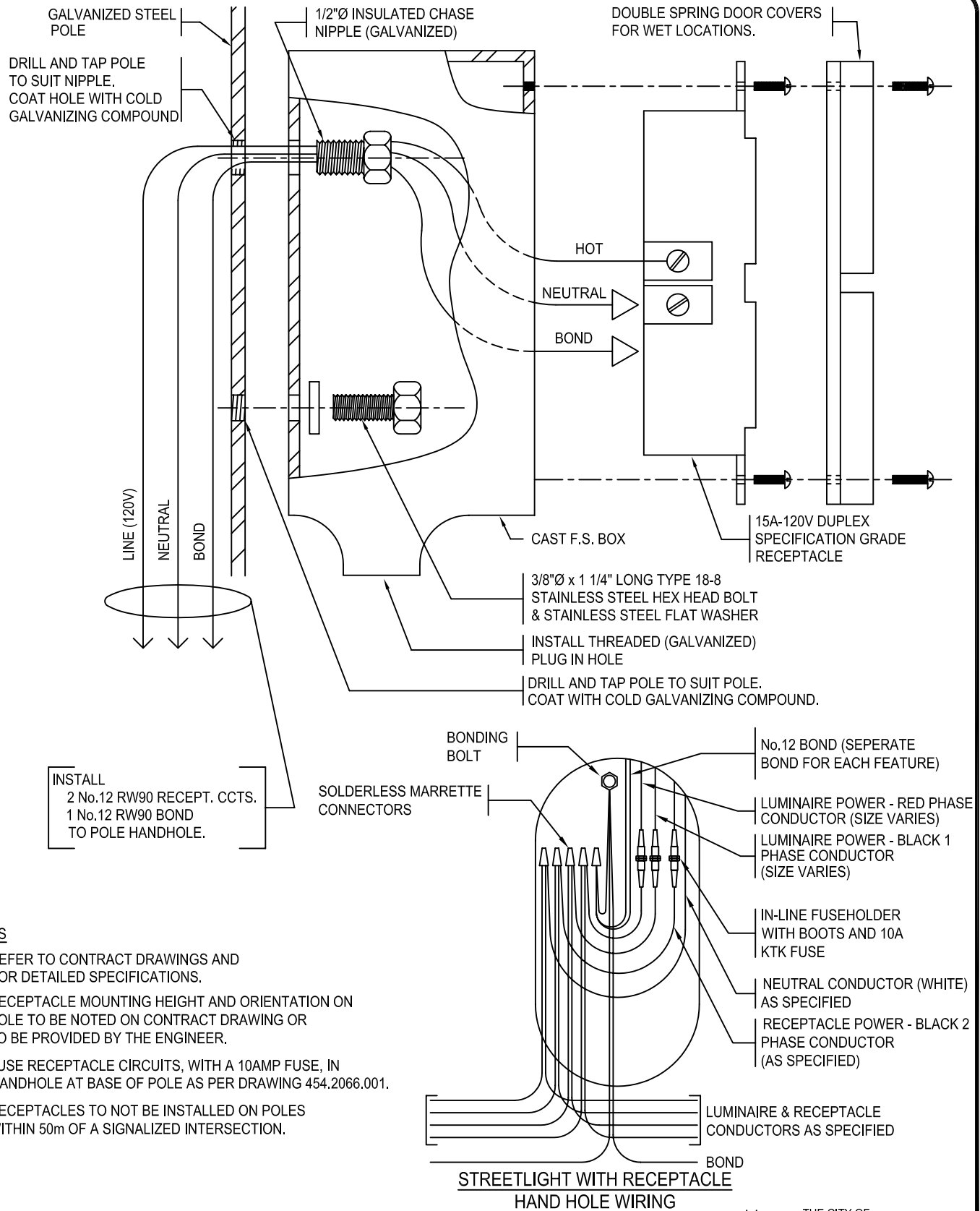
SHEET
117

MATERIAL LIST				
ITEM	QTY	STOCK NUMBER	DESCRIPTION	SUPPLIER
1	1	151350	STREET LIGHTING CABINET - 100A 120/240V 1Ø	ROADS
2	1	151350	STREET LIGHTING CABINET - 100A 120/208V 3Ø	ROADS
3	1	151350	STREET LIGHTING CABINET - 100A 240/480V 1Ø	ROADS
4	1	139573	PRECAST STREET LIGHTING CABINET BASE	ROADS
5	4	-	MOUNTING ANCHOR PLATE - SUPPLIED WITH CABINET	—
6				
7				
8				
9				
10				
11				

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED METRIC



4	2005 ISSUE UPDATE	2005-06-01	100A STREETLIGHT SERVICE CABINET MATERIALS LIST				
3	2004 ISSUE UPDATE	2004-02-13					
Issue	Revision	Issue Date					
Date _____ Approved By _____ Original Signed by A. Andreasen _____ For General Manager Calgary Roads			DES: PMS	SCALE: NOT TO SCALE	DRAWING No. 454.2074.005	ISSUE 4	SHEET 118
			DWN: DH				



NOTES

1. REFER TO CONTRACT DRAWINGS AND FOR DETAILED SPECIFICATIONS.
2. RECEPTACLE MOUNTING HEIGHT AND ORIENTATION ON POLE TO BE NOTED ON CONTRACT DRAWING OR TO BE PROVIDED BY THE ENGINEER.
3. FUSE RECEPTACLE CIRCUITS, WITH A 10AMP FUSE, IN HANDHOLE AT BASE OF POLE AS PER DRAWING 454.2066.001.
4. RECEPTACLES TO NOT BE INSTALLED ON POLES WITHIN 50m OF A SIGNALIZED INTERSECTION.

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THE CITY OF
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ROADS

POLE MOUNTED RECEPTACLE

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

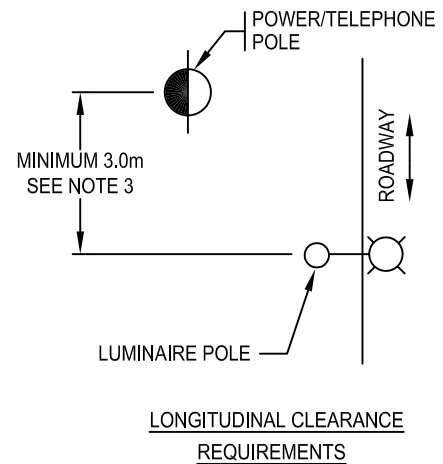
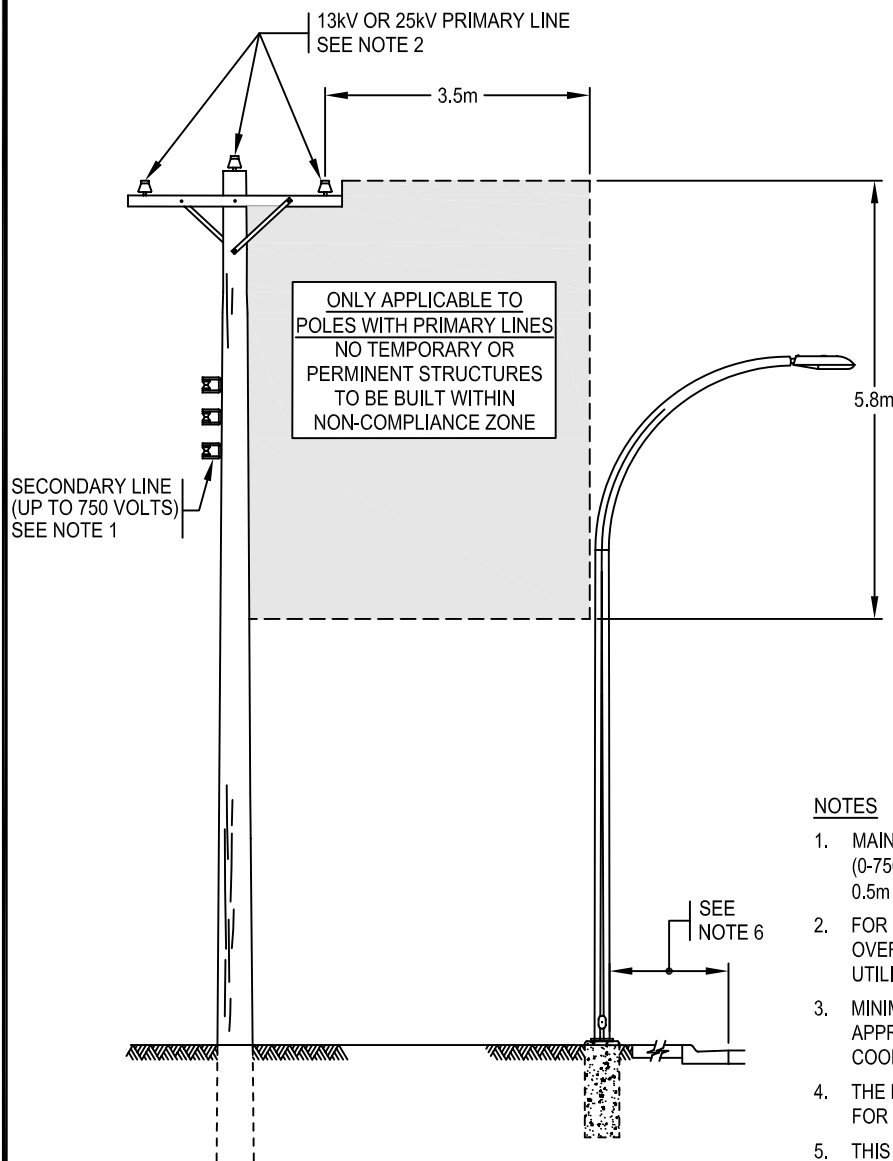
DES: PMS
DWN: DH

SCALE:
NOT TO SCALE

DRAWING No.
454.2080.001

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NOTES

1. MAINTAIN MINIMUM CLEARANCES BETWEEN SECONDARY LINES (0-750V) AND LUMINAIRE POLES OF 0.3m HORIZONTAL AND 0.5m VERTICAL.
2. FOR CLEARANCE REQUIREMENTS FROM PRIMARY LINES OVER 25kV, REFER TO AECUC TABLE No.9 OR CONTACT THE UTILITY DESIGN DEPARTMENT.
3. MINIMUM LONGITUDINAL CLEARANCE UNLESS OTHERWISE APPROVED BY CITY OF CALGARY STREET LIGHTING COORDINATOR.
4. THE DIMENSIONS ON THIS DRAWING INCLUDE ALLOWANCE FOR MAXIMUM SWING AND MAXIMUM SAG OF CONDUCTORS.
5. THIS DOCUMENT IS FOR USE AS A GUIDE ONLY. IF FURTHER CLARIFICATION IS REQUIRED, THE PERSON RESPONSIBLE FOR THE DESIGNER OF THE SUBJECT STREETLIGHTS MUST REFER TO AECUC TABLE 9 (MINIMUM DESIGN CLEARANCES FROM WIRES AND CONDUCTORS NOT ATTACHED TO BUILDINGS, SIGNS, AND SIMILAR PLANTS). CONTACT ENMAX POWER CORPORATION, PLANNING AND DESIGN FOR FURTHER DETAILS IF REQUIRED.
6. MINIMUM CLEARANCE FROM STREETLIGHT TO THE EDGE OF THE THROUGH LANE SHALL BE IN ACCORDANCE WITH THE CITY OF CALGARY DESIGN GUIDELINES FOR STREETLIGHTING.

PUBLIC SAFETY STREETLIGHT CLEARANCE

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THE CITY OF
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MINIMUM CLEARANCES TO OVERHEAD POWERLINES

4	2005 ISSUE UPDATE	2005-06-01
3	2004 ISSUE UPDATE	2004-02-13
Issue	Revision	Issue Date

Date _____ Approved By
Original Signed by A. Andreasen
For General Manager Calgary Roads

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DWN: DH

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454.2081.001

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APPENDIX A

CITY SUPPLIED MATERIALS

FOR RECEIPT OF REGULAR
EMAIL UPDATES TO THE
CITY SUPPLIED MATERIALS LIST,
PLEASE CONTACT PATRICK LEE @
phone: 403-268-4513
email: patrick.lee@calgary.ca

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STHRD04	STREETS	Active	2005-01-03	122068	Holder Fuse HRC 30amp RS32H
P01STHRD04	STREETS	Active	2004-01-02	138493	Nut Galvanized Hexagon No. 7
P01STHRD04	STREETS	Active	2004-01-02	138494	Nut Galvanized Lock No. 7
P01STHRD04	STREETS	Active	2004-01-02	138496	Nut Conv Thread Bevel Edge Galvanized Lock 1-1/4in x 1in
P01STHRD04	STREETS	Active	2004-01-02	138497	Nut Hexagon Conventional Thread Galvanized 1-1/4in x 3-1/2in
P01STHRD04	STREETS	Active	2004-01-02	138499	Nut Conventional Thread Bevel Edge Anchor 1-1/4in
P01STHRD04	STREETS	Active	2004-01-02	138504	Nut Galvanized Hexagon Anchor 1in
P01STHRD04	STREETS	Active	2004-01-02	138508	Nut Galvanized International Thread Lock 1-1/4in
P01STHRD04	STREETS	Active	2004-01-02	138509	Nut Galvanized International Thread Hexagon 1-1/4in
P01STHRD04	STREETS	Active	2004-01-02	138510	Nut Galvanized International Thread Anchor 1-1/4in
P01STHRD04	STREETS	Active	2004-01-02	138584	Washer Round Dywidag 2-3/4in x 1/8in x 1-1/4in Hole
P01STHRD04	STREETS	Active	2004-01-02	138585	Washer Plate Dywidag 1-1/4in 3in x 3in x 1in c/w 1-1/2in Hole
P01STHRD04	STREETS	Active	2005-01-03	139452	Shim Pole U Shape 2in x 1in Hole
P01STPOL04	STPOLES	Active	2005-01-03	139556	Pole Fiberglass Direct Buried 33ft
P01STHRD04	STREETS	Discontinued	2005-01-03	139568	Base Concrete Precast Streetlight Control Cabinet
P01STHRD04	STREETS	Discontinued	2004-01-02	139569	Base Concrete Precast Round 5m 16ft Pole
P01STHRD04	STREETS	Active	2005-01-03	139573	Base Concrete Precast Streetlight Control Cabinet
P01STHRD04	STREETS	Discontinued	2004-01-02	139574	Base Concrete Precast SL 1M RD PRECAST-RD-5M-1700-TYPE-A
P01STHRD04	STREETS	Active	2004-01-02	139575	Base Concrete Precast SL PRECAST-RD-12M-2100-TYPE-B
P01STHRD04	STREETS	Active	2005-01-03	139576	Base Concrete Precast SL PRECAST-RD-15M-2400-TYPE-C
P01STHRD04	STREETS	Active	2005-01-03	139578	Base Concrete Precast-RD-9M-1900-Type-B1
P01STHRD04	STREETS	Discontinued	2004-01-02	139579	Base Concrete Service Precast-RD-9M-1900-Type-B1-S
P01STHRD04	STREETS	Active	2005-01-03	139606	Duct Streetlight HDPE 1-1/4in
P01STHRD04	STREETS	Active	2005-01-03	139607	Coupler Compression PVC 1-1/4in 420-02-125

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STHRD04	STREETS	Active	2005-01-03	139949	Fuse Bussman 30amp ATQR30
P01STHRD04	STREETS	Active	2004-01-02	139950	Fuse HRC 30A NSC30
P01STHRD04	STREETS	Active	2005-01-03	139951	Fuse HRC 60A
P01STHRD04	STREETS	Active	2005-01-03	139952	Fuse HRC-I 30amp Class J
P01STHRD04	STREETS	Active	2004-01-02	139954	Fuse Little 2A-3AG
P01STHRD04	STREETS	Active	2005-01-03	139985	Fuse Fast Acting 10amp KTK10
P01STHRD04	STREETS	Active	2005-01-03	139988	Fuse BAF-2-AMP
P01STHRD04	STREETS	Active	2004-07-02	139989	Fuse Switch Block Phenolic 352
P01STHRD04	STREETS	Active	2005-01-03	139990	Fuse Switch Block End Piece Phenolic 330
P01STHRD04	STREETS	Active	2004-07-02	140120	Holder Fuse Form II 100 Amp
P01STHRD04	STREETS	Active	2004-07-02	140765	Service Unit 240V Relay Normally Open 2 Pole 30 Amp
P01STHRD04	STREETS	Active	2005-01-03	140766	Service Unit 208V Relay Normally Closed 2 Pole 30 Amp
P01STHRD04	STREETS	Active	2005-01-03	140897	Photo Control Hot Day NORMALLY-OPEN
P01STHRD04	STREETS	Active	2005-01-03	140898	Adapter Photocell Twist-Lock
P01STHRD04	STREETS	Active	2005-01-03	140899	Photo Control NORMALLY-CLOSED
P01STHRD04	STREETS	Active	2005-01-03	141208	Conduit Rigid 1-1/4in
P01STHRD04	STREETS	Active	2005-01-03	141337	Cable Grip Single Eye Kellam-073-04-1282
P01STHRD04	STREETS	Active	2005-01-03	141913	Protector Streetlight Surge Secondary
P01STLUM04	STLUMIN	Active	2004-01-02	143025	Luminaire HPSV Cobrahead 100watt M2RR10S7P1GMS2206
P01STLUM04	STLUMIN	Discontinued	2005-01-03	143026	Luminaire Walkway HPS 100W RC2 PC 120/208/240 Black CP8314
P01STLUM04	STLUMIN	Active	2005-01-03	143028	Luminaire Mercury Vapor Colonial 250watt CL1251
P01STLUM04	STLUMIN	Active	2005-01-03	143032	Luminaire HPSV Post Top Traditional 150Watt
P01STLUM04	STLUMIN	Active	2005-01-03	143033	Luminaire HPSV Cobrahead 250watt M2RR25S0P1GMS2112
P01STLUM04	STLUMIN	Active	2005-01-03	143034	Luminaire Metal Halide Chinatown c/w Pole & Shroud 250watt

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STLUM04	STLUMIN	Active	2005-01-03	143035	Luminaire Metal Halide Roundpack 11Ave 1000watt CCS29
P01STLUM04	STLUMIN	Active	2005-01-03	143036	Luminaire HPSV Expressway 400watt MV400HP24WCVGB
P01STLUM04	STLUMIN	Active	2005-01-03	143037	Luminaire HPSV Cobrahead 400watt M4RR4OS7G1GMS3309
P01STLUM04	STLUMIN	Active	2005-01-03	143038	Luminaire HPSV Cobrahead 1000watt OVL915W83E43-COC
P01STLUM04	STLUMIN	Active	2005-01-03	143039	Luminaire HPSV Square Pack 250watt CS-7252-CN9C0C
P01STLUM04	STLUMIN	Active	2005-01-03	143040	Luminaire HPSV Cobrahead 200watt OVZ20SCG2E-COC
P01STLUM04	STLUMIN	Active	2004-07-02	143041	Luminaire HPSV Ornamental Round 100watt RPI00H924BG3
P01STLUM04	STLUMIN	Active	2004-01-02	143042	Luminaire Metal Halide Quadpack 1000watt
P01STLUM04	STLUMIN	Active	2005-01-03	143043	Luminaire HPSV Cobrahead 150watt M2RR15S7P1GMS2206
P01STLUM04	STLUMIN	Active	2005-01-03	143044	Luminaire HPSV Wall Cube 250watt 553250LXL-3
P01STLUM04	STLUMIN	Discontinued	2004-07-02	143045	Luminaire HSP 100W RC3 AC 120/280/240 Black CP6112
P01STLUM04	STLUMIN	Active	2005-01-03	143046	Luminaire HPSV Square Pack 150watt CS72329-BZ-COC
P01STLUM04	STLUMIN	Active	2004-01-02	143047	Luminaire HPSV Post Top Contemporary 100watt CC-S-LY
P01STLUM04	STLUMIN	Active	2004-01-02	143048	Luminaire Metal Halide Roundpack 7Ave 1000w MAR-54-1000-208
P01STLUM04	STLUMIN	Active	2004-01-02	143049	Luminaire Metal Halide Olympic Way 175watt
P01STLUM04	STLUMIN	Active	2004-01-02	143050	Luminaire Metal Halide Post Top Traditional 250watt PD18O5
P01STLUM04	STLUMIN	Active	2005-01-03	143051	Luminaire HPSV Tear Drop Black 150watt URB15S41AL2MC0C
P01STLUM04	STLUMIN	Active	2004-01-02	143052	Luminaire HPSV Tear Drop Bridge Green 150watt
P01STLUM04	STLUMIN	Active	2005-01-03	143053	Luminaire MH Tear Drop Black 250watt 208v URC25M2OAL2MC0C
P01STLUM04	STLUMIN	Active	2005-01-03	143054	Luminaire HPSV Globe Clear 150Watt
P01STLUM04	STLUMIN	Active	2004-01-02	143056	Luminaire HPSV Flat Lens 150watt 0VH15SCV3D-Cal-Roads
P01STLUM04	STLUMIN	Active	2004-01-02	143057	Luminaire HPSV Flat Lens 400watt OVF40SCF3D-COC
P01STLUM04	STLUMIN	Active	2004-01-02	143058	Luminaire HPSV Flat Lens 200watt 0VH20V3D-C0C
P01STLUM04	STLUMIN	Active	2004-01-02	143059	Luminaire LPSV 135watt SOX240 SP213LD1MB-O2

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STLUM04	STLUMIN	Active	2005-01-03	143060	Luminaire LPSV 135watt SOX208
P01STLUM04	STLUMIN	Active	2004-01-02	143061	Luminaire HPSV Flat Lens 100watt 0VH1OSCV3D-Cal-Roads
P01STLMP04	STLAMP	Active	2004-01-02	143065	Refractor HPSV Cobrahead 250watt J904010 84060
P01STLMP04	STLAMP	Active	2004-01-02	143066	Refractor HPSV Expressway 4098A 400 Watt 4098-B-BULK
P01STLMP04	STLAMP	Active	2005-01-03	143067	Refractor HPSV Cobrahead 400watt Z364247 4066
P01STLMP04	STLAMP	Active	2004-01-02	143069	Refractor Mercury Vapor Colonial 250watt L08X2
P01STLMP04	STLAMP	Active	2004-01-02	143070	Refractor HPSV Cobrahead 250/400watt YD1438
P01STLMP04	STLAMP	Active	2004-01-02	143071	Ring Holding Metal Stylvue 1000watt L05YC2
P01STLMP04	STLAMP	Active	2004-01-02	143073	Refractor HPSV Cobrahead 1000watt 51415 3513017OO2
P01STLMP04	STLAMP	Active	2004-01-02	143074	Refractor HPSV Cobrahead 1000watt 464D472 YD326O
P01STLMP04	STLAMP	Active	2004-01-02	143075	Refractor Metalarc Stylvue L08X3 1000watt L088XT
P01STLMP04	STLAMP	Active	2005-01-03	143076	Refractor HPSV Post Top Traditional 150watt K118-EAR-11
P01STLMP04	STLAMP	Active	2005-01-03	143078	Refractor HPSV Walkway 100watt
P01STLMP04	STLAMP	Active	2005-01-03	143978	Lamp Mercury Vapor Clear 250watt H37KC250DX 12/case
P01STLMP04	STLAMP	Active	2004-01-02	143979	Lamp Mercury Vapor Clear 400watt H33CD-400 10/case
P01STLMP04	STLAMP	Active	2004-01-02	143982	Lamp Mercury Vapor White 125watt 65423-0 24/case
P01STLMP04	STLAMP	Active	2005-01-03	143983	Lamp Metal Halide Clear 175watt Universal 64471-1
P01STLMP04	STLAMP	Active	2005-01-03	143984	Lamp Metal Halide Clear 250watt Universal M250-U
P01STLMP04	STLAMP	Active	2005-01-03	143986	Lamp Metal Halide Clear 1000watt Universal 64468-0 6/case
P01STLMP04	STLAMP	Active	2004-01-02	143987	Lamp HPSV 70watt 67512-3
P01STLMP04	STLAMP	Active	2005-01-03	143988	Lamp HPSV 100watt 67514-3
P01STLMP04	STLAMP	Active	2005-01-03	143989	Lamp HPSV Clear 55volt 150watt 67516-3
P01STLMP04	STLAMP	Active	2005-01-03	143990	Lamp HPSV 200watt 67576-1 20/case
P01STLMP04	STLAMP	Active	2005-01-03	143991	Lamp HPSV Clear 250watt LU250 20/case

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STLMP04	STLAMP	Active	2005-01-03	143992	Lamp HPSV 400watt 67533-1 20/case
P01STLMP04	STLAMP	Active	2005-01-03	143993	Lamp HPSV 1000watt 67307-0 6/case
P01STLMP04	STLAMP	Active	2004-01-02	144070	Lamp LPSV SOX135
P01STHRD04	STREETS	Active	2005-01-03	147104	Primer Zinc Rich MIOZINC-MC2.8
P01STHRD04	STREETS	Active	2005-01-03	147132	Thinner Primer Zinc Chromate
P01STHRD04	STREETS	Active	2005-01-03	147201	Paint Pole Green Lustre Moisture 3.5
P01STHRD04	STREETS	Active	2004-01-02	150886	Bolt Anchor Galv GR150 Conventional Thread 1-1/4in x 60
P01STHRD04	STREETS	Active	2005-01-23	150889	Bolt Anchor Galvanized 1in x 66in
P01STHRD04	STREETS	Active	2005-01-23	150890	Bolt Anchor Galvanized 1in x 40in
P01STHRD04	STREETS	Active	2005-01-03	150891	Bolt Anchor Galvanized 1-1/4in x 40in
P01STHRD04	STREETS	Active	2005-01--3	151006	Bolt Anchor 1in x 36in-NC A193-B7
P01STHRD04	STREETS	Active	2005-01-03	151018	Bolt Anchor Galv GR150 International Thread 1-1/4in x 70
P01STHRD04	STREETS	Active	2004-07-02	151019	Bolt Anchor Galv GR150 International Thread 1-1/4in x 60
P01STHRD04	STREETS	Discontinued	2004-01-02	151023	Bolt Anchor Galv Dywidag No7 x 40in Grade 60 B07U04010
P01STHRD04	STREETS	Active	2004-01-02	151026	Rebar Steel Square Tie 15M-5-65/100FT-POLE
P01STHRD04	STREETS	Active	2004-01-02	151028	Rebar Steel Metric 15M-5-100FT-POLE 20/bundle
P01STHRD04	STREETS	Active	2004-01-02	151029	Rebar Steel Metric 20M-6-100FT-POLE 20/bundle
P01STHRD04	STREETS	Active	2004-01-02	151031	Rebar Steel Dowell 25M-8-100FT-POLE
P01STHRD04	STREETS	Active	2005-01-03	151037	Rebar Steel Cage 20M-POLE-BASE
P01STHRD04	STREETS	Active	2004-01-02	151153	Bracket Lighting Expressway 400 Watt
P01STPOL04	STPOLES	Active	2005-02-01	151241	Pole Painted Square 30ft 30FT-SQUARE
P01STPOL04	STPOLES	Discontinued	2004-01-02	151245	Pole Galvanized Double Davit 65 x 6ft
P01STPOL04	STPOLES	Active	2004-01-02	151246	Pedestal J
P01STPOL04	STPOLES	Active	2005-01-03	151252	Pole Painted Traditional 16ft 5m

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STPOL04	STPOLES	Active	2005-01-03	151258	Pole Painted Contemporary 16ft
P01STPOL04	STPOLES	Active	2004-01-02	151265	Pole Galvanized Double Davit 30 x 6ft
P01STPOL04	STPOLES	Discontinued	2004-01-02	151267	Pole Galvanized Straight 27ft
P01STHRD04	STREETS	Active	2005-01-03	151268	Adapter Base Transformer
P01STPOL04	STPOLES	Active	2004-01-02	151269	Pole Painted Olympic Way
P01STPOL04	STPOLES	Active	2004-01-02	151285	Pole Painted Traditional 21ft
P01STHRD04	STREETS	Active	2005-01-03	151301	Base Cover Decorative for 5m 16ft Traditional Pole
P01STPOL04	STPOLES	Active	2004-01-02	151303	Pole Painted Louise Bridge 7m
P01STPOL04	STPOLES	Active	2005-01-03	151304	Pole Painted Step Black 7m
P01STPOL04	STPOLES	Active	2004-12-01	151305	Pole Painted Tear Drop Straight 7.8m
P01STPOL04	STPOLES	Active	2005-01-03	151311	Pole Fiberglass Black 5m
P01STPOL04	STPOLES	Active	2004-01-02	151316	Pole Painted Step Green 7m +G487
P01STPOL04	STPOLES	Active	2004-01-02	151320	Pole Galvanized Bottom Davit Shaft 9m x 2.5m
P01STPOL04	STPOLES	Active	2004-12-01	151321	Pole Galvanized Single Davit Top Streetlight 9m x 2.5m
P01STPOL04	STPOLES	Discontinued	2004-12-01	151322	Pole Galvanized Double Davit Top Streetlight 9m x 2.5m
P01STPOL04	STPOLES	Active	2005-01-03	151323	Pole Galvanized Bottom Davit Shaft Streetlight 15m x 2.5m
P01STPOL04	STPOLES	Active	2005-01-03	151324	Pole Galvanized Single Davit Top Streetlight 15m x 2.5m
P01STPOL04	STPOLES	Discontinued	2005-01-03	151325	Pole Galvanized Double Davit Top Streetlight 15m x 2.5m
P01STPOL04	STPOLES	Active	2005-01-03	151326	Pole Galvanized Bottom Davit Shaft Streetlight 20m x 2.5m
P01STPOL04	STPOLES	Active	2005-01-03	151327	Pole Galvanized Single Davit Top Streetlight 20m x 2.5m
P01STPOL04	STPOLES	Active	2004-01-02	151328	Pole Galvanized Double Davit Top Streetlight 20m x 2.5m
P01STHRD04	STREETS	Active	2005-01-03	151350	Cabinet Control 32 x 48 x 22in
P01STHRD04	STREETS	Active	2005-01-03	151364	Upsweep Pole Steel/Wood 8FT
P01STHRD04	STREETS	Active	2005-01-03	151393	Upsweep Traditional Underbrace 2M

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STHRD04	STREETS	Active	2005-01-03	151404	Anchor Bell International Thread 1-1/4in
P01STPOL04	STPOLES	Active	2005-01-03	151808	Pole Tapered Round 12m
P01STPOL04	STPOLES	Discontinued	2004-01-02	151809	Pole Painted Chinatown Red 16ft
P01STPOL04	STPOLES	Active	2004-01-02	151814	Pole Painted Black 12ft
P01STPOL04	STPOLES	Active	2004-01-02	151815	Pole Painted Black Aluminum Ornamental 11.5ft
P01STPOL04	STPOLES	Active	2004-01-02	151816	Pole Painted Black Aluminum Ornamental 23ft
P01STHRD04	STREETS	Active	2005-01-03	151819	Cover handhole Galvanized/Aluminum Pole/Davit
P01STHRD04	STREETS	Active	2005-01-03	154245	Holder Fuse 600V Amerace 65U
P01STHRD04	STREETS	Active	2005-01-03	154247	Fuse Bussman 10amp 250volt BAF10
P01STPOL04	STPOLES	Active	2005-01-03	155240	Pole Galvanized High Mast Streetlight 30m
P01STHRD04	STREETS	Active	2005-01-03	155509	Section Top/Bottom Junction Box 25010
P01STHRD04	STREETS	Active	2005-01-03	155510	Lid Steel Junction Box 25310
P01STHRD04	STREETS	Active	2005-01-03	155511	Plate Drain Junction Box 25800
P01STHRD04	STREETS	Active	2005-01-03	155528	Box Concrete Junction c/w-Steel-Lid 9217
P01STHRD04	STREETS	Active	2005-01-03	155544	Reflector House Side-Shield
P01STHRD04	STREETS	Active	2005-01-03	155580	Base Breakaway 15m Davit 13in BCD C/W Skirts 4100
P01STHRD04	STREETS	Active	2005-01-03	155653	Paint Pole Ameron Green PSX700
P01STLUM04	STLUMIN	Active	2005-01-03	156687	Luminaire HPSV High Mast Area Cooper HMX91-S-C-V-D-W
P01STPOL04	STPOLES	Active	2005-01-03	156704	Pole Galvanized Mid Section Streetlight 20m x 2.5m
P01STPOL04	STPOLES	Active	2005-01-03	157201	Pole Painted Step Black Single Davit 8.125m
P01STPOL04	STPOLES	Active	2005-01-03	157202	Pole Painted Step Black Double Davit 8.125m
P01STLUM04	STLUMIN	Active	2005-01-03	157225	Luminaire HPSV Tear Drop Black 250watt 208V URC25S20AL2MCOC
P01STLUM04	STLUMIN	Active	2005-01-03	157327	Luminaire 100W HPS Domus Style
P01STPOL04	STPOLES	Active	2005-01-03	157396	Pole Painted Step Green 7m

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STLUM04	STLUMIN	Active	2005-01-03	157760	Luminaire HBM-310HPS-MS2-RC-240volt-CWA-GLS
P01STLUM04	STLUMIN	Active	2005-01-03	157761	Luminaire HBM-310HPS-MC2F-RC-240volt-CWA-GLS
P01STLMP04	STLAMP	Active	2005-01-03	157762	Lamp High Pressure Sodium 310watt 100volt C310S67
P01STHRD04	STREETS	Active	2005-01-03	158131	Padlock Keyed Alike Master No150
P01STLUM04	STLUMIN	Active	2005-01-03	158236	Luminaire Traditional Post Top HPS 100w
P01STLUM04	STLUMIN	Active	2005-01-03	158237	Luminaire Lantern Post Top Black CP6112-HPS100-RC3-240
P01STLUM04	STLUMIN	Active	2005-01-03	158238	Luminaire Walkway Style c/w 3in Adaptor CP8323-HPS100RC2-240
P01STHRD04	STREETS	Active	2005-01-03	158354	Anchor Rod Coupler 1in x 4in-NC
P01STHRD04	STREETS	Active	2005-01-03	158355	Nut Anchor Bolt 1in-NC
P01STHRD04	STLUMIN	Active	2005-01-03	158572	Luminaire Flat Lens Unpainted 100watt OVF-10S-CV-2D-U
P01STHRD04	STLUMIN	Active	2005-01-03	158573	Luminaire Flat Lens Cobrahead 150watt HPS AEL-115-15S-R
P01STHRD04	STLUMIN	Active	2005-01-03	158605	Luminaire HPS 480 PS-P HSF HS 750watt CCS29A3
P01STHRD04	STLAMP	Active	2005-01-03	158606	Lamp 480volt LU750
P01STHRD04	STLUMIN	Active	2005-01-03	158855	Luminaire Flat Lens Cobrahead 200watt HPS AEL-125-20S-R
P01STHRD04	STLUMIN	Active	2005-01-03	158856	Luminaire Flat Lens Cobrahead 400watt HPS AEL-115-40S-R
P01STHRD04	STREETS	Active	2005-01-03	159290	Cabinet Streetlight Service 100 Amp 240/480volt 1ph
P01STHRD04	STREETS	Active	2005-01-03	159308	Breakaway Base 9m Davit 11in BCD c/w Skirts
P01STHRD04	STLAMP	Active	2005-01-03	159333	Lamp M1000/U/BT37
P01STHRD04	STLAMP	Active	2005-01-03	159355	Refractor HPS Domus Style 100watt Lumec/114830
P01STHRD04	STLUMIN	Active	2005-03-01	158856	Luminaire 150watt HPS Domus Style
P01STLUM04	STLUMIN	Active	2004-03-09	143026R	Luminaire HPSV Walkway 100watt P17M10S7G1LMS5GR048
P01STLUM04	STLUMIN	Active	2004-01-02	143033R	Luminaire HPSV Cobrahead 250watt M2RR25S0P1GMS2112
P01STLUM04	STLUMIN	Active	2004-01-02	143034R	Luminaire Metal Halide Chinatown c/w Pole & Shroud 250 Watt

Price List ID	Family Code	Price List Status	Price List Effective Date	Item ID	Description
P01STLUM04	STLUMIN	Active	2005-01-03	143035R	Luminaire Metal Halide Roundpack 11Ave 1000watt CCS29
P01STLUM04	STLUMIN	Active	2005-01-03	143036R	Luminaire HPSV Expressway 400watt HL2AHSBG1
P01STLUM04	STLUMIN	Active	2005-01-03	143037R	Luminaire HPSV Cobrahead 400watt M4RR4OS7G1GMS3309
P01STLUM04	STLUMIN	Active	2005-01-03	143038R	Luminaire HPSV Cobrahead 1000watt 0V50100C48ARC0C
P01STLUM04	STLUMIN	Active	2005-01-03	143040R	Luminaire HPSV Cobrahead 200watt M2RR20S0P1GMS2285
P01STLUM04	STLUMIN	Active	2004-07-02	143041R	Luminaire HPSV Ornamental Round 100watt RPI00H924BG3
P01STLUM04	STLUMIN	Active	2004-07-04	143043R	Luminaire HPSV Cobrahead 150watt M2RR15S7P1GMS2206
P01STLUM04	STLUMIN	Active	2004-01-02	143047R	Luminaire HPSV Post Top Contemporary 100watt CC-S-LY
P01STLUM04	STLUMIN	Active	2005-01-03	143051R	Luminaire HPSV Tear Drop Black 150watt URB15S41AL2MC0C
P01STLUM04	STPOLES	Active	2005-07-05	160360	Pole Galvanized Double Davit Bottom Streetlight 9m x 2.5m
P01STLUM04	STPOLES	Active	2005-07-05	160361	Pole Galvanized Double Davit Top Streetlight 9m x 2.5m
P01STLUM04	STPOLES	Active	2005-07-05	160362	Pole Galvanized Double Davit Bottom Streetlight 15m x 2.5m
P01STLUM04	STPOLES	Active	2005-07-05	160363	Pole Galvanized Double Davit Middle Streetlight 15m x 2.5m
P01STLUM04	STPOLES	Active	2005-07-05	160364	Pole Galvanized Double Davit Top Streetlight 15m x 2.5m

APPENDIX B

APPROVED PRODUCTS LIST

NO CONTENT AT THIS ISSUE

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APPENDIX C

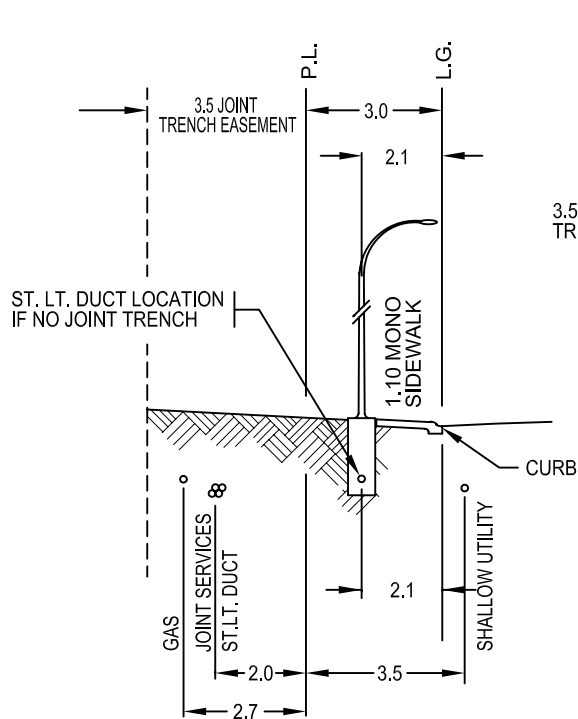
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WORK IN PROGRESS
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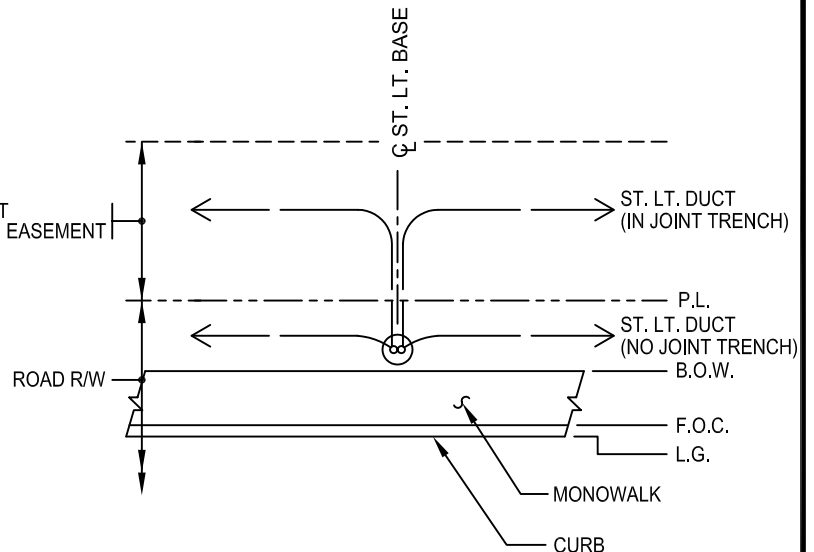
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APPENDIX D

STREETLIGHTING LINE ASSIGNMENTS

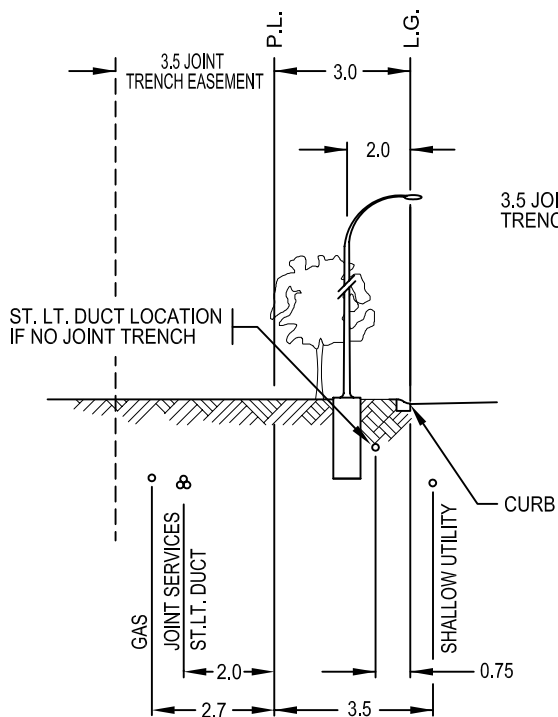


ELEVATION VIEW
NTS

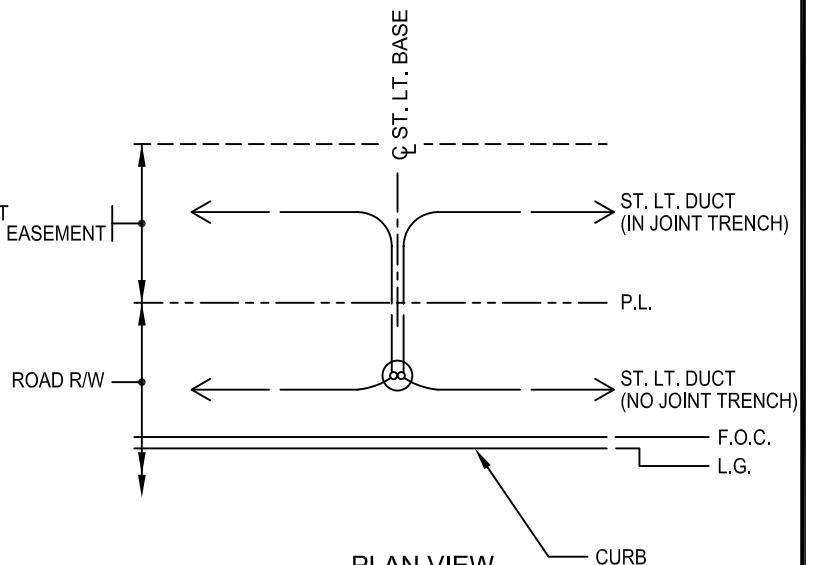


PLAN VIEW
NTS

RESIDENTIAL
15.0m R/W 9.0m PAVEMENT
WITH MONOWALK



ELEVATION VIEW
NTS



PLAN VIEW
NTS

RESIDENTIAL
15.0m R/W 9.0m PAVEMENT
NO SIDEWALK

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

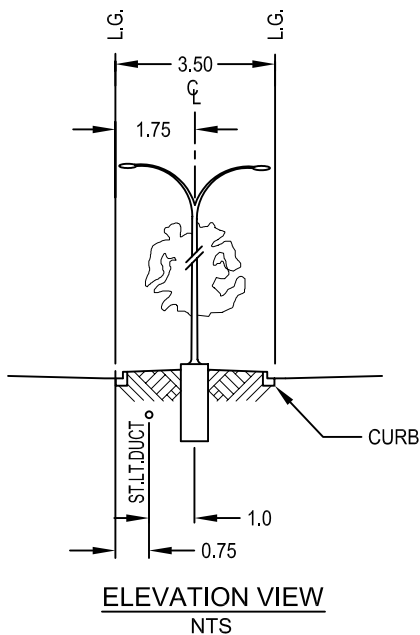


THE CITY OF
CALGARY
ROADS

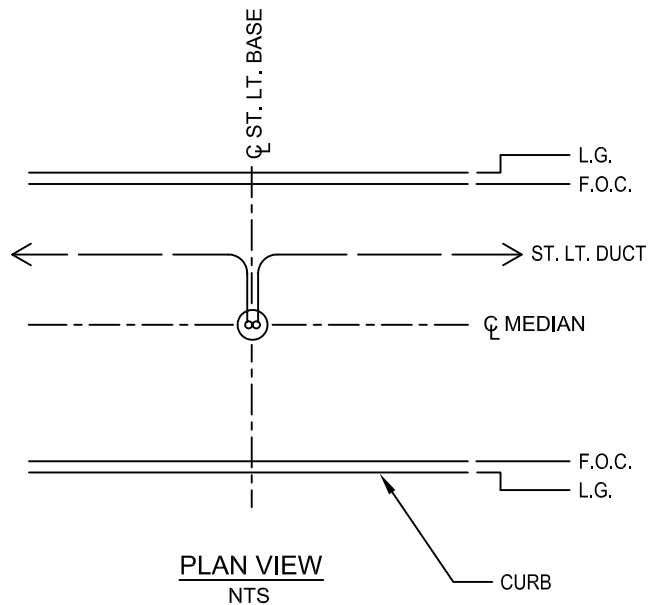
5	2006 - CONSTRUCTION SPECS. UPDATE	2006-05-15
4	2005 ISSUE - DESIGN GUIDELINES UPDATE	2005-07-26
Issue	Revision	Issue Date

ST. LT. BASE AND DUCT LOCATIONS
RESIDENTIAL

Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	APPENDIX D	5	1

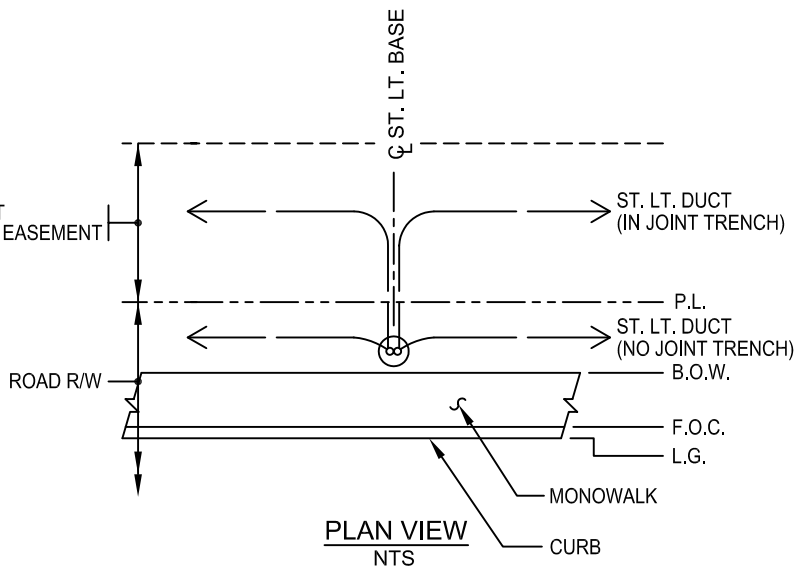
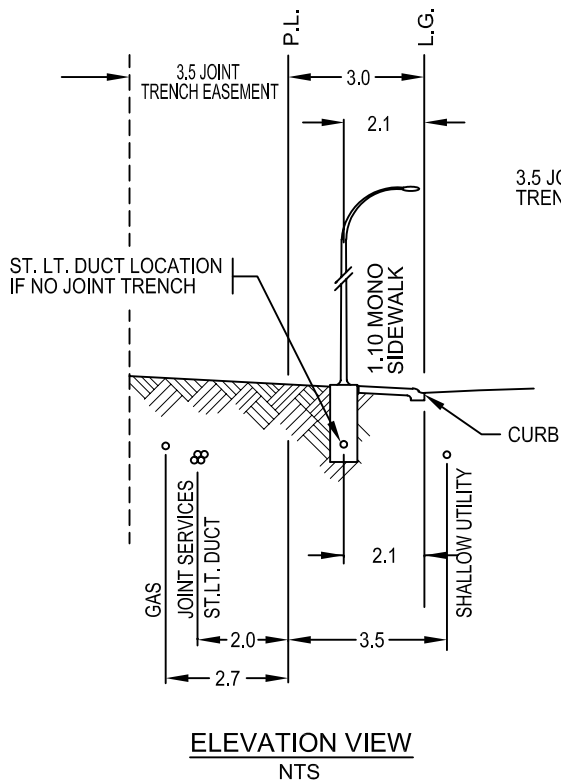


MINIMIZE NUMBER OF CROSSINGS
FOR MEDIAN LIGHTING



PREFERRED DESIGN

**RESIDENTIAL ENTRANCE STREET
WITH MEDIAN**
22.5m R/W 2 x 6.5m PAVEMENT



ALTERNATE DESIGN

**RESIDENTIAL ENTRANCE STREET
WITH MEDIAN**
22.5m R/W 2 x 6.5m PAVEMENT

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

5	2006 - CONSTRUCTION SPECS. UPDATE	2006-05-15
4	2005 ISSUE - DESIGN GUIDELINES UPDATE	2005-07-26
Issue	Revision	Issue Date

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

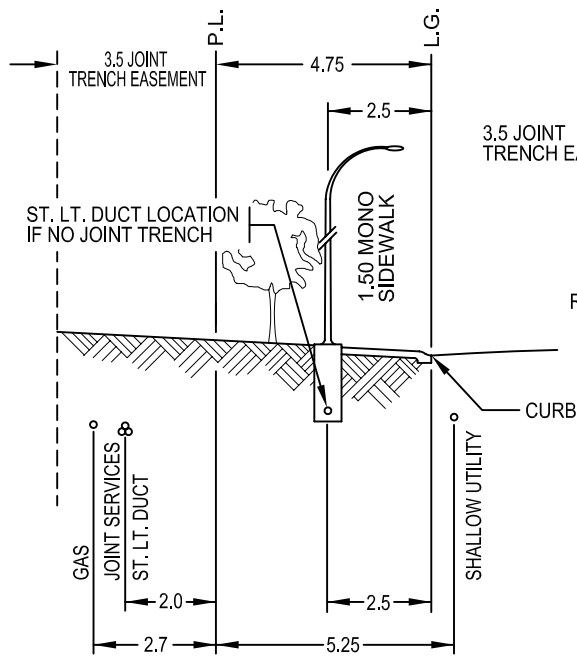
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NOT TO SCALE

DRAWING No.
APPENDIX D

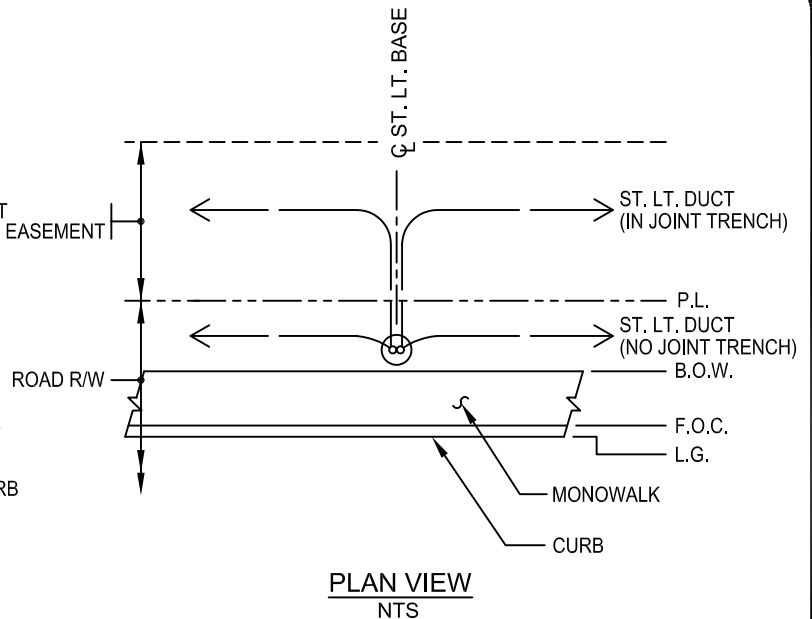
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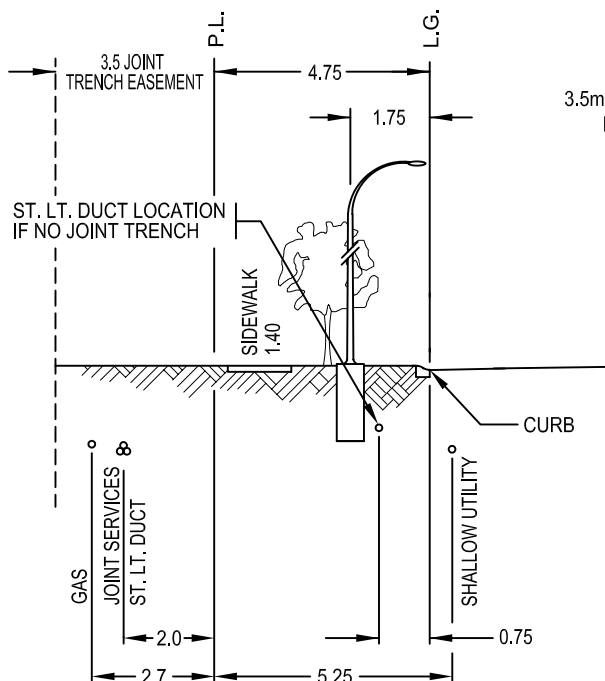
**ST.LT. BASE AND DUCT LOCATIONS
RESIDENTIAL ENTRANCE**



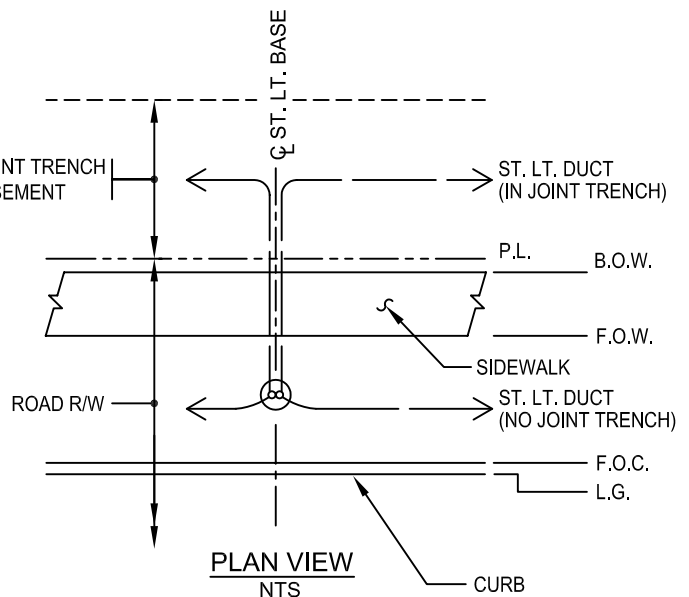
ELEVATION VIEW
NTS



COLLECTOR
19.0m R/W 9.5m PAVEMENT &
21.0m R/W 11.5m PAVEMENT
WITH MONOWALK



ELEVATION VIEW
NTS



PRIMARY COLLECTOR
23.5m R/W 14.0m PAVEMENT
WITH SEPARATE SIDEWALK CURB

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

5	2006 - CONSTRUCTION SPECS. UPDATE	2006-05-15
4	2005 ISSUE - DESIGN GUIDELINES UPDATE	2005-07-26
Issue	Revision	Issue Date

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

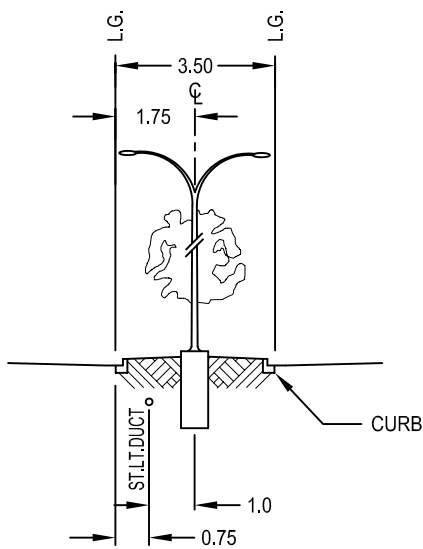
SCALE:
NOT TO SCALE

DRAWING No.
APPENDIX D

ISSUE
5

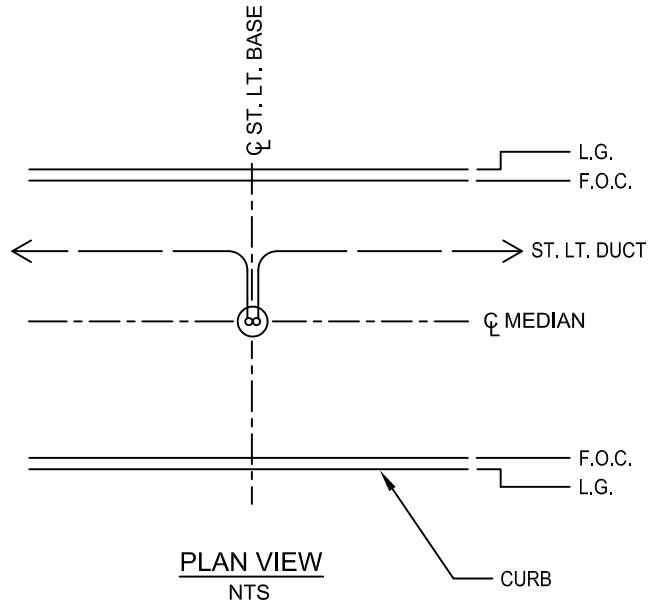
SHEET
3

ST. LT. BASE AND DUCT LOCATIONS COLLECTOR/PRIMARY COLLECTOR



ELEVATION VIEW
NTS

MINIMIZE NUMBER OF CROSSINGS
FOR MEDIAN LIGHTING

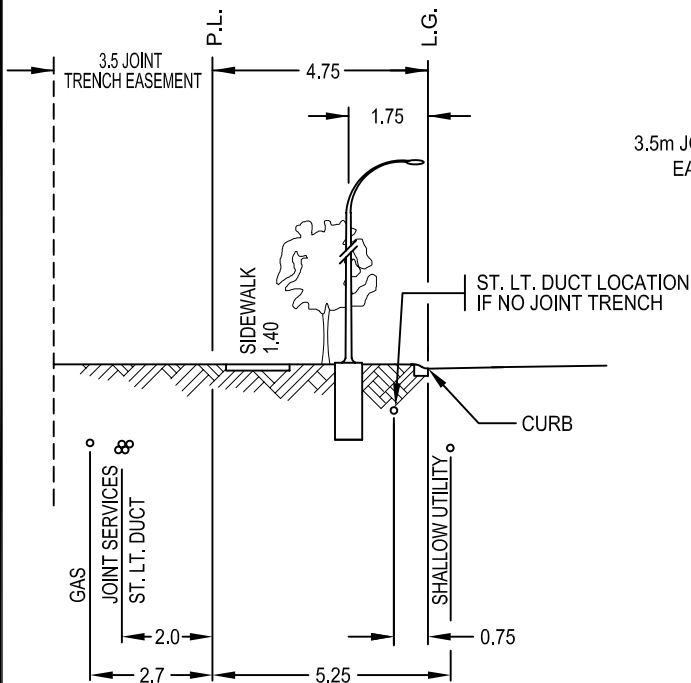


PREFERRED DESIGN

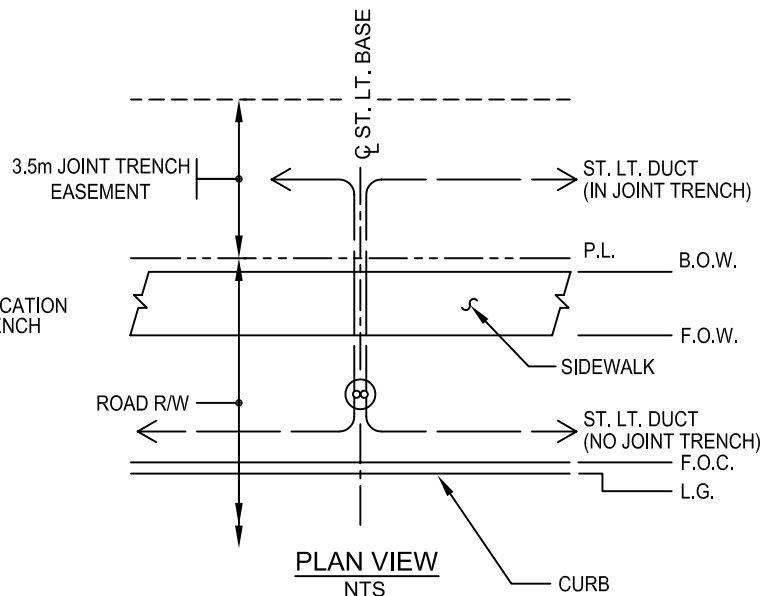
PRIMARY COLLECTOR

WITH MEDIAN

27.0m R/W 2 x 7.0m PAVEMENT



ELEVATION VIEW
NTS



ALTERNATE DESIGN

PRIMARY COLLECTOR

WITH MEDIAN

27.0m R/W 2 x 7.0m PAVEMENT

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

5	2006 - CONSTRUCTION SPECS. UPDATE	2006-05-15
4	2005 ISSUE - DESIGN GUIDELINES UPDATE	2005-07-26
Issue	Revision	Issue Date

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

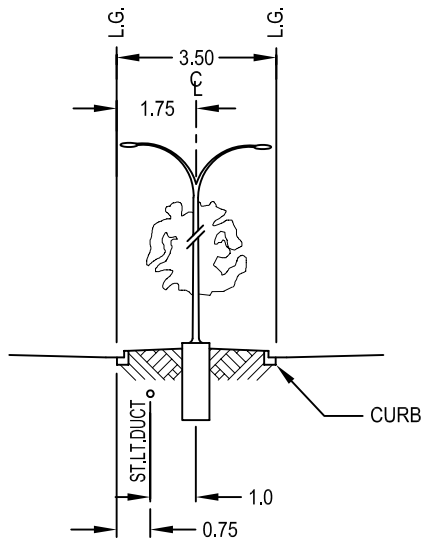
SCALE:
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DRAWING No.
APPENDIX D

ISSUE
5

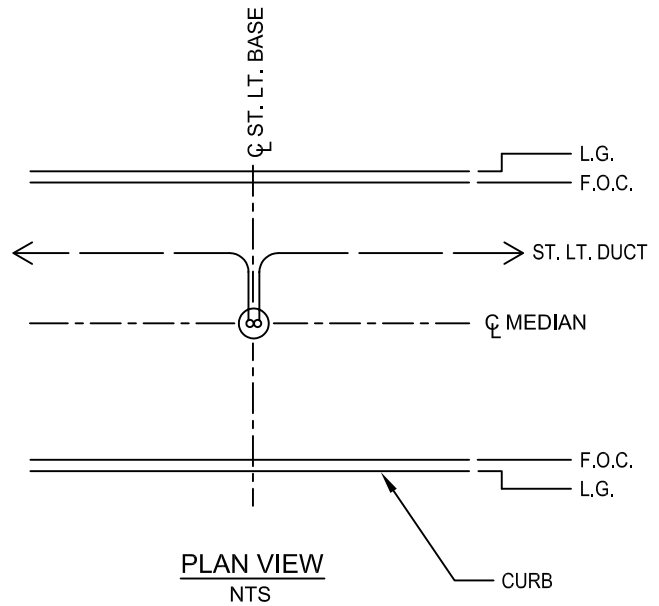
SHEET
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ST.LT. BASE AND DUCT LOCATIONS PRIMARY COLLECTOR WITH MEDIAN



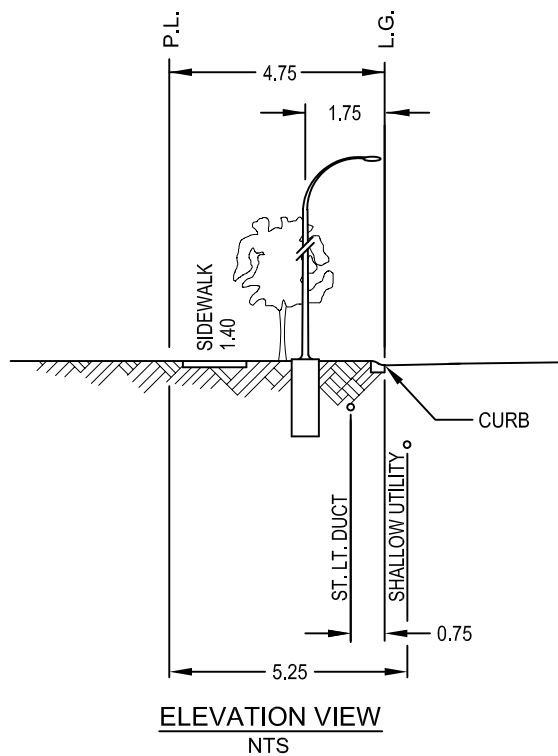
ELEVATION VIEW
NTS

MINIMIZE NUMBER OF CROSSINGS
FOR MEDIAN LIGHTING

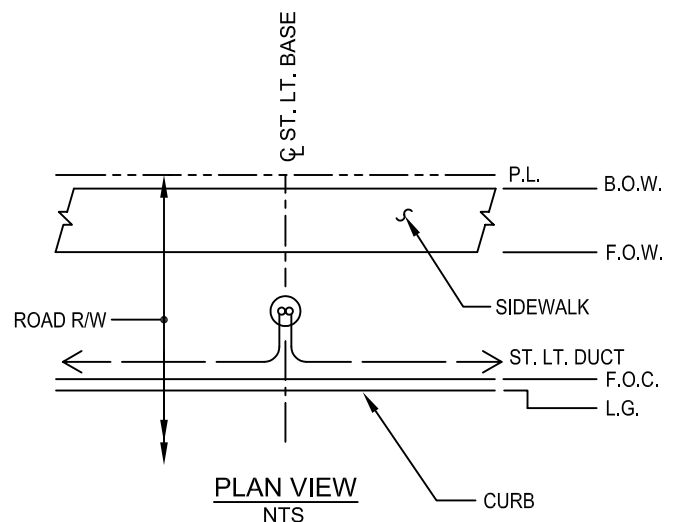


PREFERRED DESIGN

LOCAL MAJOR
27.0m R/W 2 x 7.0m PAVEMENT



ELEVATION VIEW
NTS



ALTERNATE DESIGN

LOCAL MAJOR
WITH MEDIAN
27.0m R/W 2 x 7.0m PAVEMENT

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

5	2006 - CONSTRUCTION SPECS. UPDATE	2006-05-15
4	2005 ISSUE - DESIGN GUIDELINES UPDATE	2005-07-26
Issue	Revision	Issue Date

ST.LT. BASE AND DUCT LOCATIONS LOCAL MAJOR

Date _____ Approved By _____
For Director, Calgary Roads

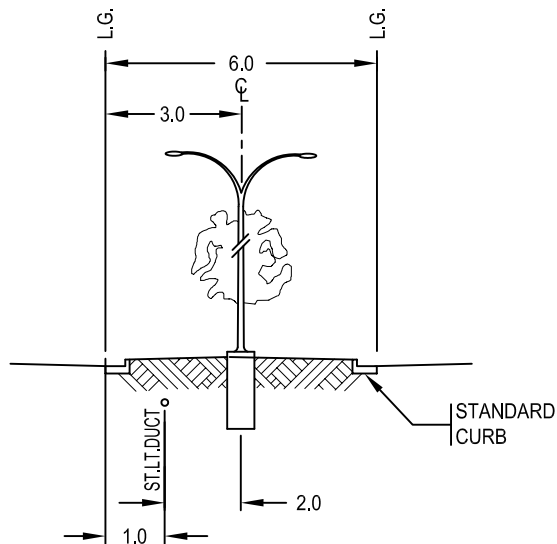
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DWN: BD

SCALE:
NOT TO SCALE

DRAWING No.
APPENDIX D

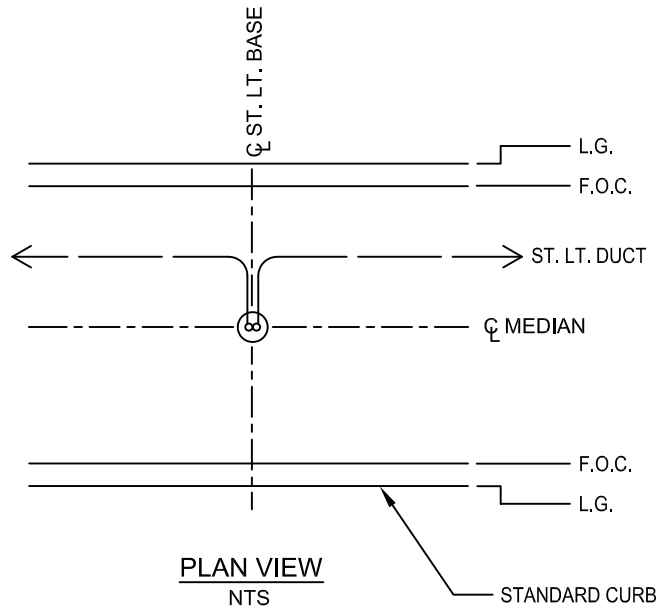
ISSUE
5

SHEET
5



ELEVATION VIEW
NTS

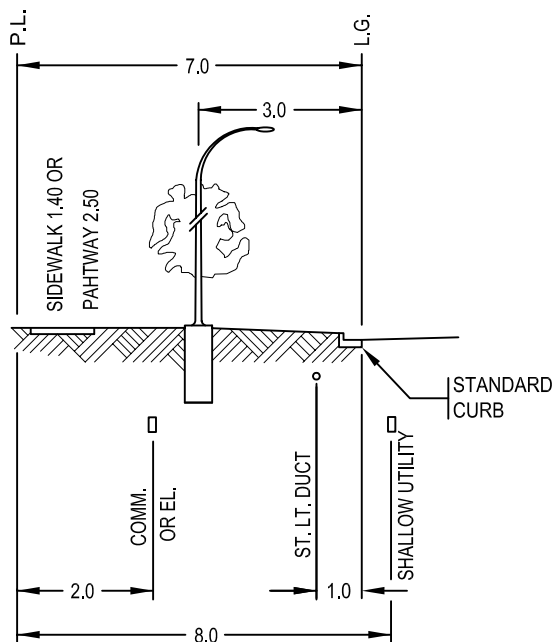
MINIMIZE NUMBER OF CROSSINGS
FOR MEDIAN LIGHTING



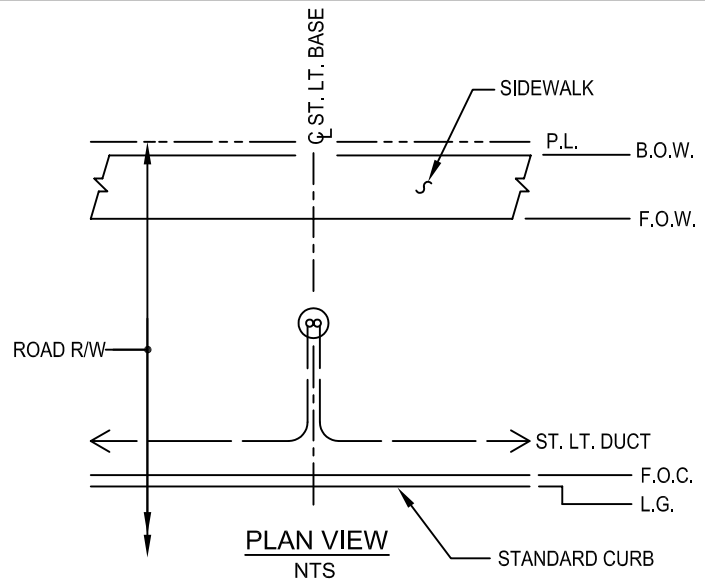
PREFERRED DESIGN

DIVIDED MAJOR

36.0m R/W 2 x 8.0m ROAD



ELEVATION VIEW
NTS



UNDIVIDED MAJOR

30.0m R/W 16.0m ROAD

DIVIDED MAJOR - ALTERNATE DESIGN

36.0m R/W 2 x 8.0m ROAD

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



THE CITY OF
CALGARY
ROADS

5	2006 - CONSTRUCTION SPECS. UPDATE	2006-05-15
4	2005 ISSUE - DESIGN GUIDELINES UPDATE	2005-07-26
Issue	Revision	Issue Date

Date _____ Approved By _____
For Director, Calgary Roads

DES: AD
DWN: BD

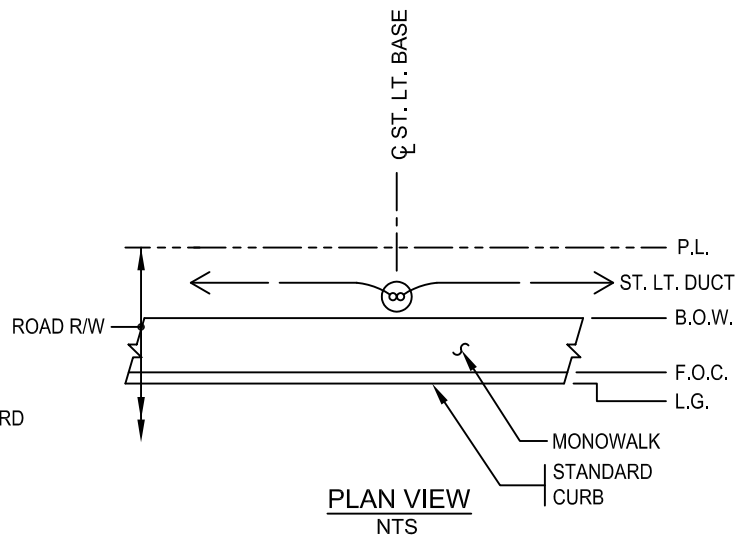
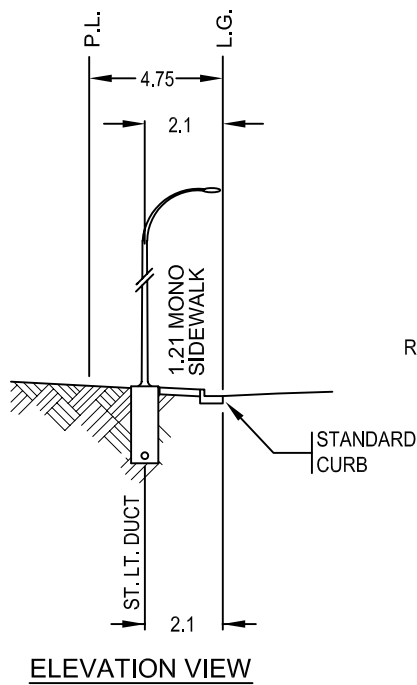
SCALE:
NOT TO SCALE

DRAWING No.
APPENDIX D

ISSUE
5

SHEET
6

ST.LT. BASE AND DUCT LOCATIONS DIVIDED AND UNDIVIDED MAJOR



INDUSTRIAL
18.0m/19.0m R/W 9.5m PAVEMENT

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED

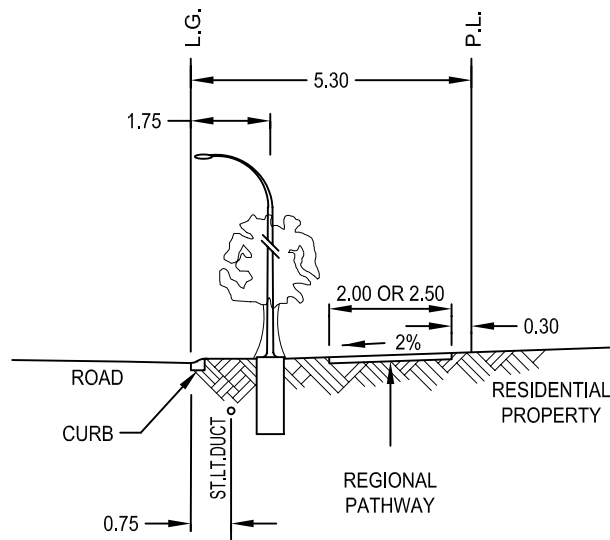


THE CITY OF
CALGARY
ROADS

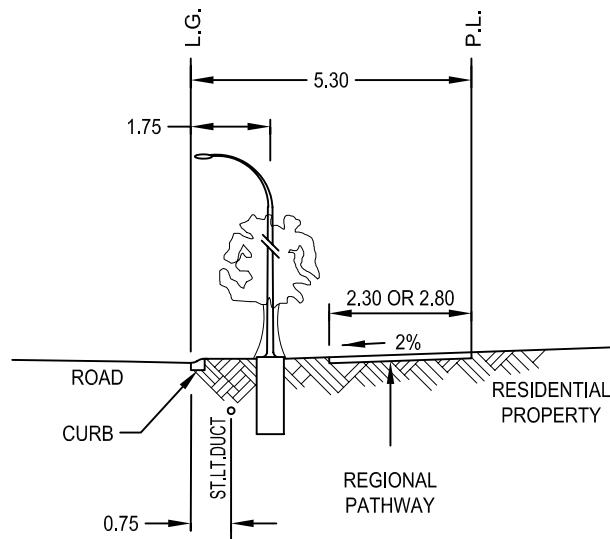
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4	2005 ISSUE - DESIGN GUIDELINES UPDATE	2005-07-26
Issue	Revision	Issue Date

ST. LT. BASE AND DUCT LOCATIONS
INDUSTRIAL

Date	Approved By	DES: AD	SCALE:	DRAWING No.	ISSUE	SHEET
	For Director, Calgary Roads	DWN: BD	NOT TO SCALE	APPENDIX D	5	7



OPTION "A"
FRONT YARD



OPTION "B"
SIDE OR REAR
YARD

DIMENSIONS ARE MILLIMETRES
UNLESS OTHERWISE NOTED



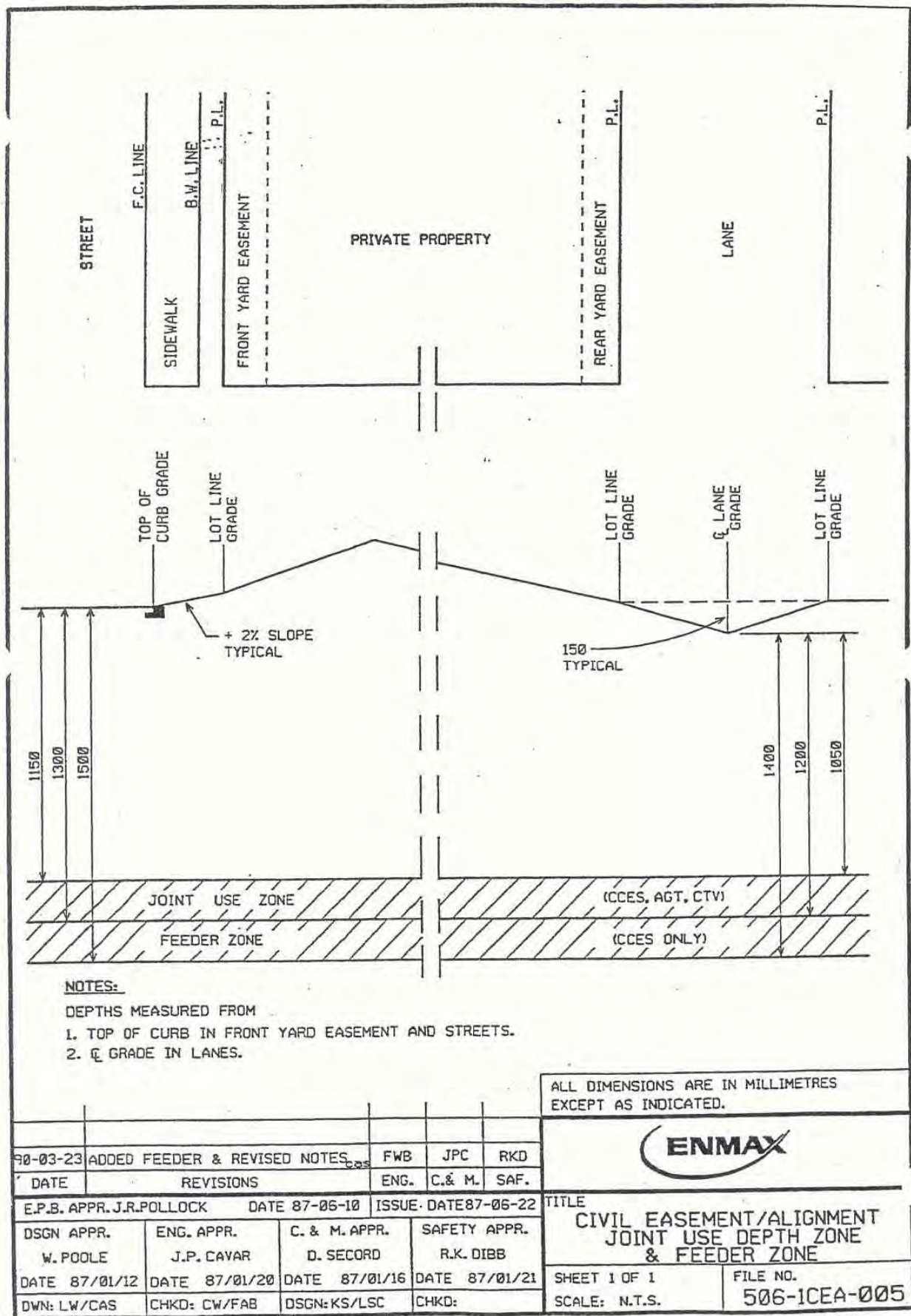
THE CITY OF
CALGARY
ROADS

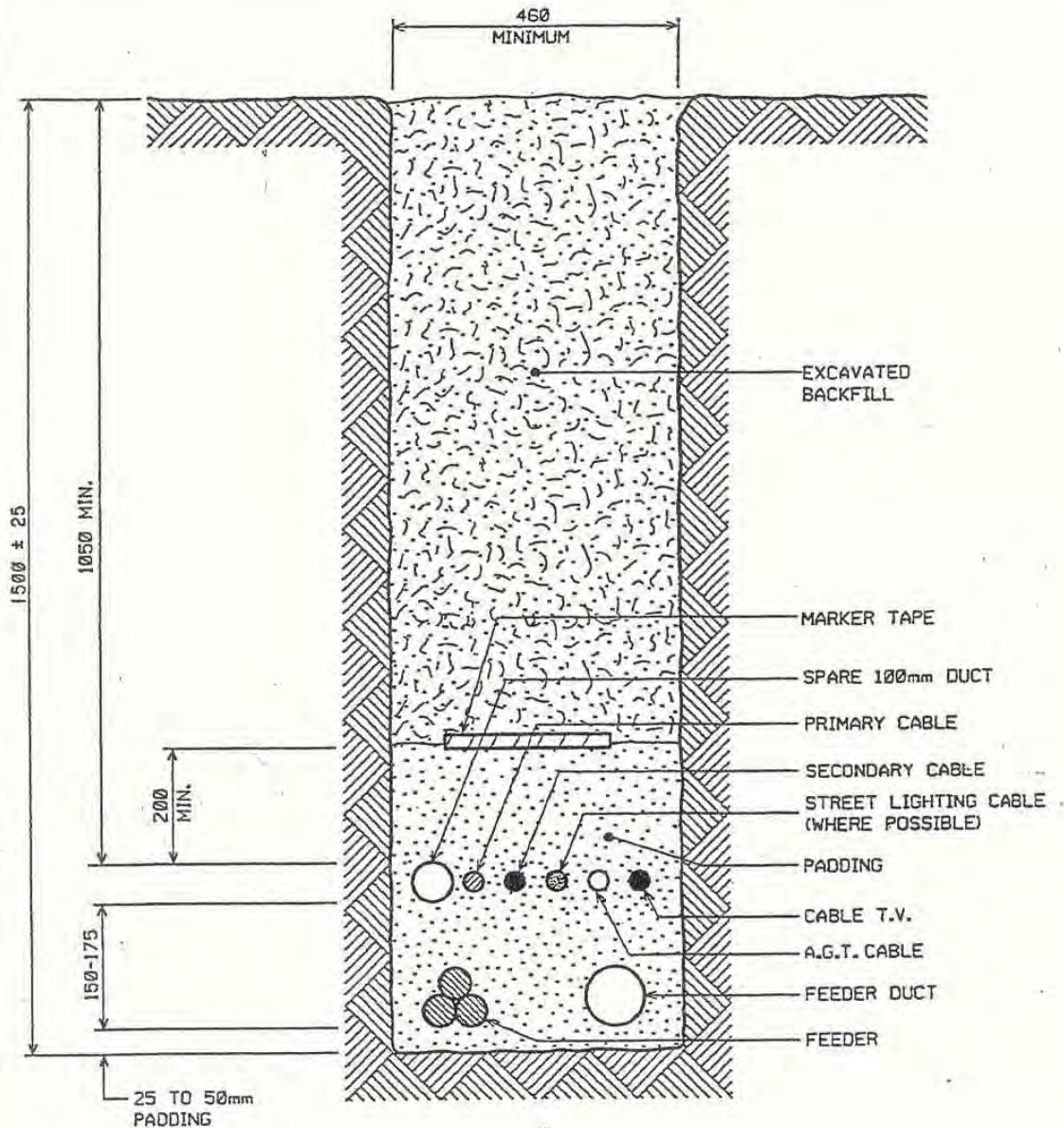
			2.0m LOCAL PATHWAY & 2.5m REGIONAL PATHWAY ON RESIDENTIAL, COLLECTOR OR LOCAL MAJOR ROADS			
5	2006 - CONSTRUCTION SPECS. UPDATE	2006-05-15				
Issue	Revision	Issue Date				
Date	Approved By	DES: BD	SCALE:	DRAWING No.	ISSUE	SHEET
For Director, Calgary Roads		DWN: BD	NOT TO SCALE	APPENDIX D	5	8


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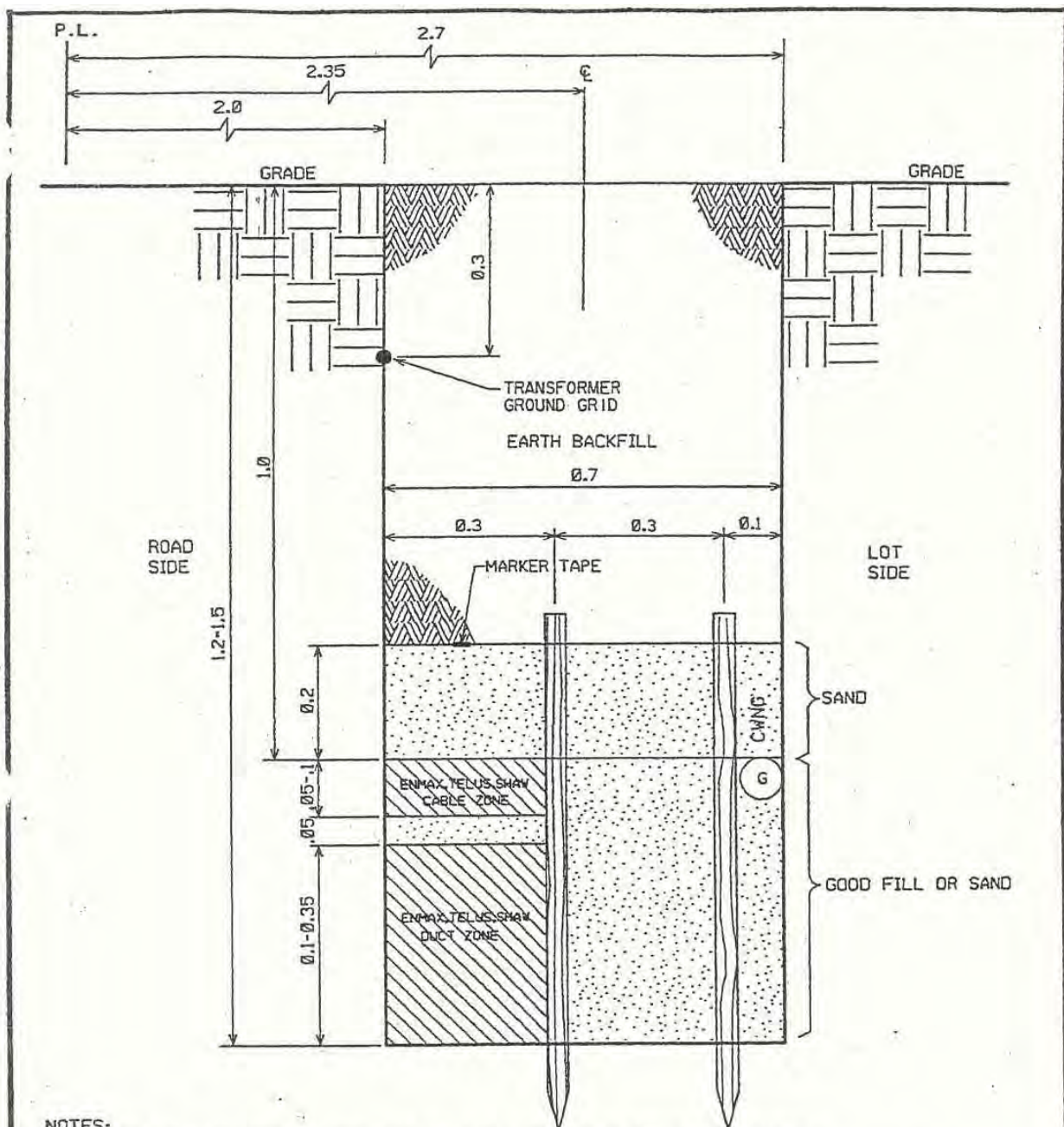
APPENDIX E

4-PARTY TRENCH REFERENCE DRAWINGS






97-03-06	DIRECT BURIED CABLE.SPARE 100mm DUCT	bs	G.L.	P.C.	ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT AS INDICATED.		
95-10-04	PRIMARY CABLE IN 50mm DUCT	rp	A.L.	J.L.			
94-06-29	REDUCED PADDING. ADDED MARKER TAPE	cf	DRC	F.W.B.			
92-12-17	REMOVED DUCT SIZE FROM DRAWING	dmb	AT/LC	F.W.B.			
DATE		REVISIONS		DSGN	APPR.		
E.P.B. APPR. J.R. POLLOCK DATE 87/06/10 ISSUE DATE 87/06/22							
DSGN APPR.		ENG. APPR.		C. & M. APPR.		SAFETY APPR.	TITLE CIVIL TRENCH/BACKFILL COMBINED URD AND FEEDER CABLES
W. POOLE		J.P. CAVAR		D. SECORD		R.K. DIBB	
DATE 87/01/12		DATE 87/01/20		DATE 87/01/16		DATE 87/01/21	
DWN: DMB		CHKD: CW/CCR		DSGN: KS		CHKD:	
				SHEET 1 OF 1 SCALE: N.T.S.		FILE NO. 506-1CTB-011	



NOTES:

- (1) ENSURE 0.3m MIN. SEPARATION BETWEEN GAS LINE AND CLOSEST DUCT/CABLE.
- (2) TRENCH DEPTH TO BE ADJUSTED DEPENDING ON NUMBER OF DUCTS/CABLES REQUIRED.
- (3) IN DUCT ZONE, THE ENMAX FEEDER CABLE IF PRESENT AND SPARE DUCT SHOULD SIT ON 25mm OF SAND PADDING AT THE BOTTOM OF THE ZONE. THERE IS NO SPECIFIC CLEARANCE REQUIRED BETWEEN THE FEEDER CABLE AND SPARE TELUS OR SHAW DUCTS.

ALL DIMENSIONS ARE IN METRES

00-01-11	ADDED NOTE 3	VRH	W.M.		
99-05-10	INCREASED SAND FILL	BJS	W.M.	P.C.	
DATE	REVISIONS	DSGN	APPR.		
DSGN APPR.: ATCO GAS	DSGN APPR.: TELUS	DSGN APPR.: SHAW	DSGN APPR.: ENMAX	TITLE	FOUR PARTY MAIN TRENCH FRONT DISTRIBUTION
ALAN DIXON	LIONEL PEEL	FRED LAU	PAUL CHUI		
DATE: 98-05-14	DATE: 98-05-27	DATE: 98-05-25	DATE: 98-05-11	SHEET 1 OF 4	FILE NO.
DWN: B.J.S.	CHKD:	DSGN:	CHKD:	SCALE: 1:10	506-1CTB-013

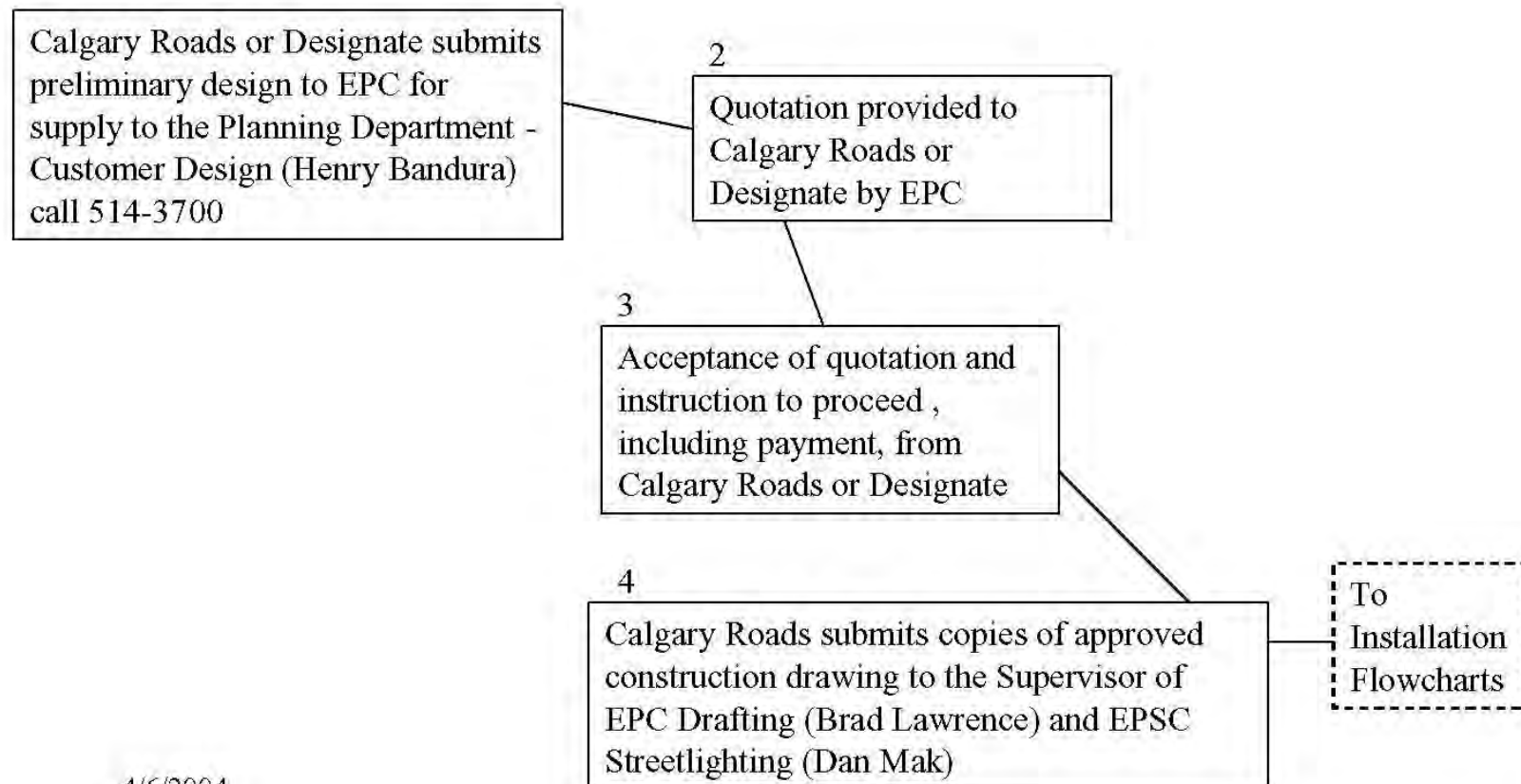
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APPENDIX F

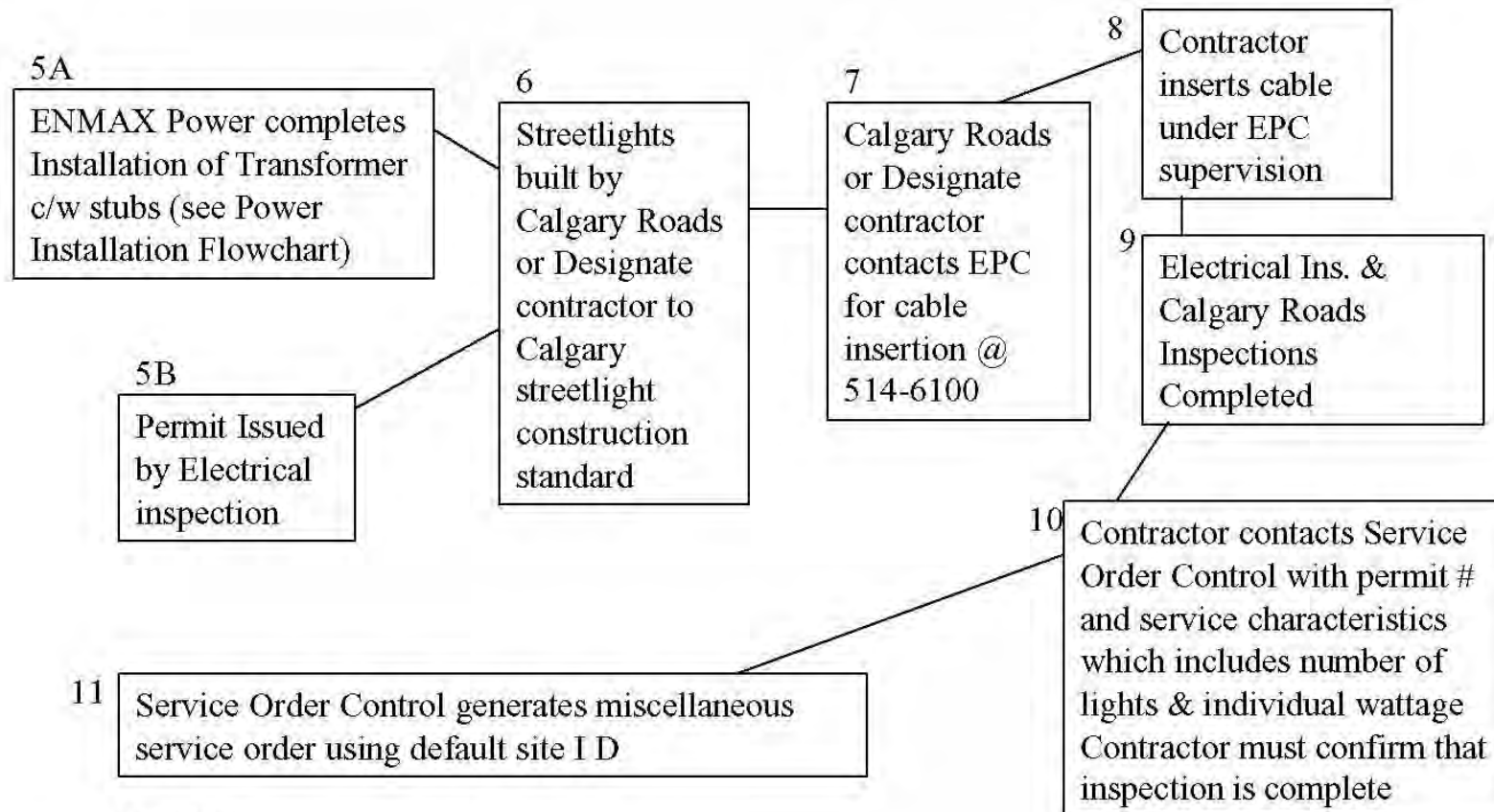
ELECTRICAL ENERGY SUPPLY PROCEDURES

Draft- Streetlight Power Installation Flowchart

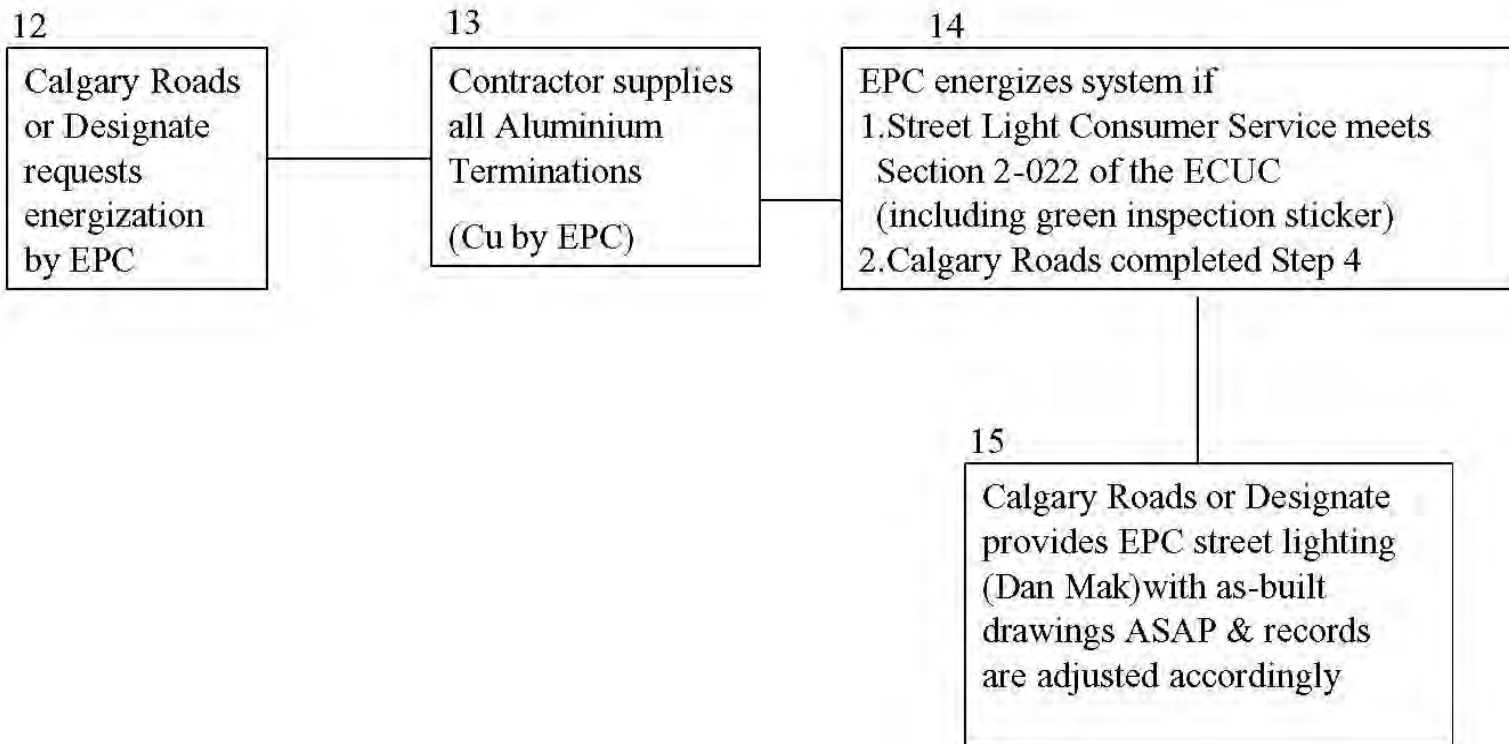
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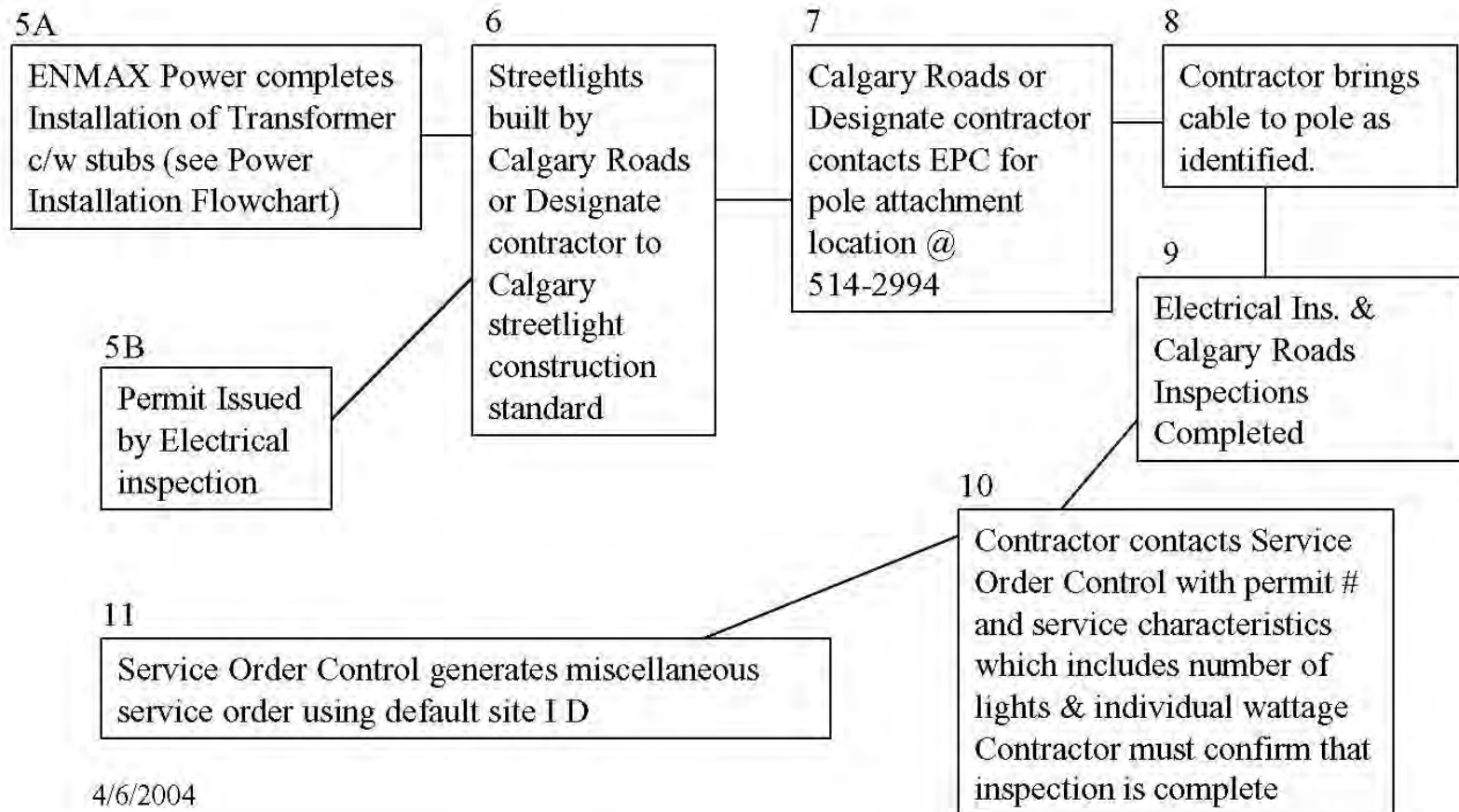
Draft - Streetlight Installations - UG Supply



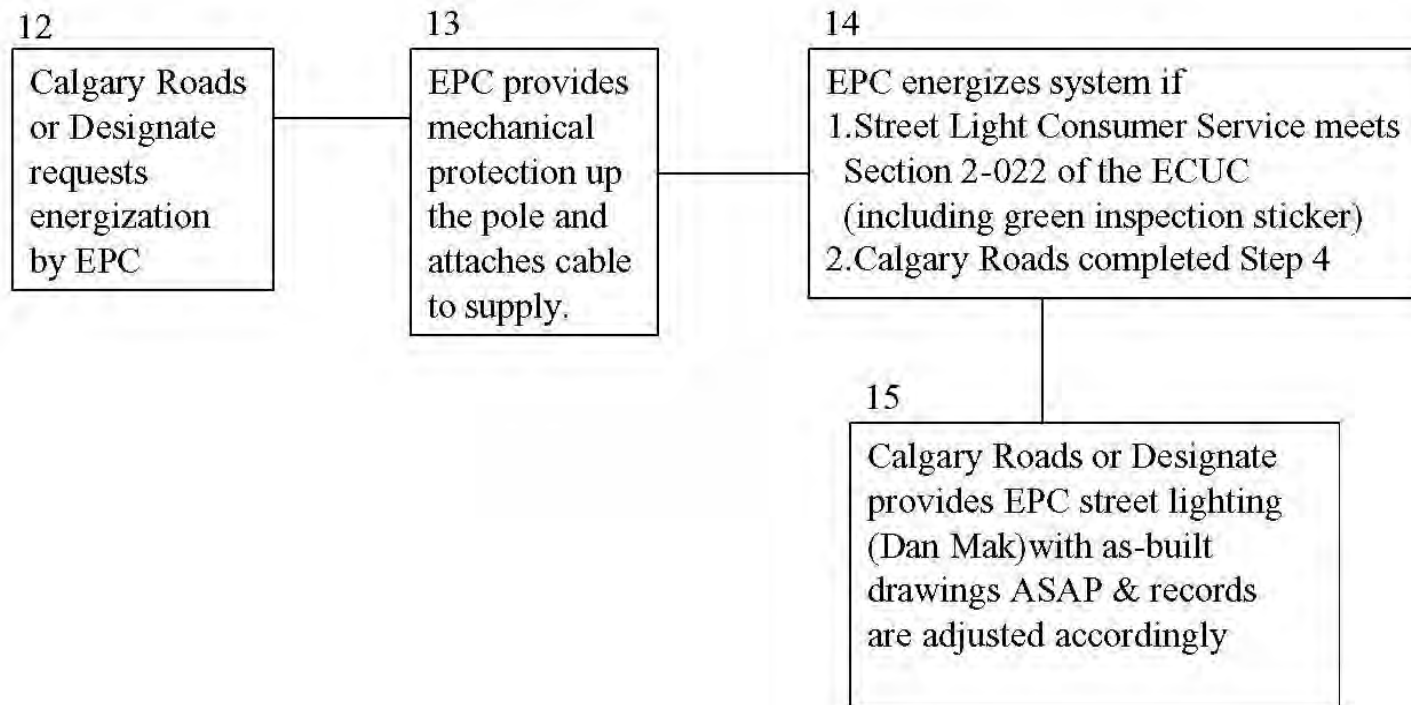
Draft - Streetlight Installations - UG Supply



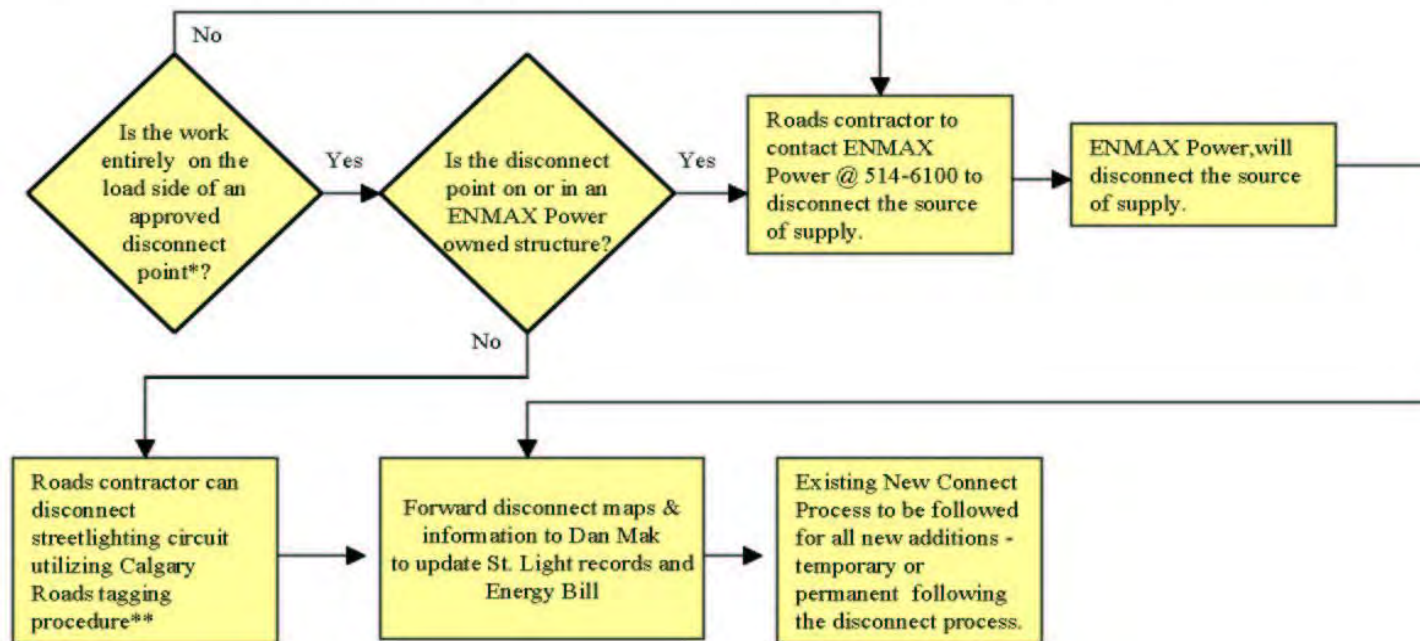
Draft - Streetlight Installations - O/H Supply



Draft - Streetlight Installations - O/H Supply



Streetlight Disconnect Process



*as approved by the Calgary Electrical Inspection Branch

** currently under development by Calgary Roads

Streetlight Installations
Clarification of Demarcation Points
ENMAX Power Corp and Calgary Roads

Scenario #1

**Overhead Electrical Supply to Overhead Streetlighting – Rack Mounted
Distribution Secondaries on Joint Use Poles**

ENMAX Power will own, operate and maintain the secondary circuit running on the poles to the point of attachment of the City's cable jumper connection for the streetlight relay. Qualified personnel will do all construction, including installation and maintenance of luminaires to ECUC standards. Demarcation point is the relay connection to rack mounted secondary conductor.

Scenario #2

**Overhead Electrical Supply to Overhead Streetlighting – Dedicated Triplex(or
equivalent) Distribution Secondaries on Joint Use Poles with Transformer In-line**

Calgary Roads will own the secondary circuit. ENMAX Power will install, operate and maintain the entire secondary circuit on the joint use poles. Qualified personnel will do all construction and maintenance to ECUC standards. Demarcation point is the secondary bushing of the overhead transformer.

Scenario #3

**Overhead Electrical Supply to Overhead Streetlighting – Dedicated Triplex (or
equivalent) Distribution Secondaries on Joint Use Poles with Transformer Off-line**

ENMAX Power will own the first service span of the secondary circuit from the transformer pole. Calgary Roads will own the remaining secondary. ENMAX Power will operate and maintain the entire secondary circuit on the joint use poles. Qualified personnel will do all construction and maintenance to ECUC standards. Demarcation point is 1 secondary span from the overhead transformer.

Scenario #4

**Overhead Electrical Supply to Overhead Streetlighting – Dedicated Triplex(or
equivalent) Distribution Secondaries to Dedicated Streetlight Poles**

ENMAX Power will own the first service span to the streetlight service pole. Calgary Roads will own, operate and maintain the remaining secondary. Qualified personnel will do all construction and maintenance after the first secondary span to the standard determined by Calgary Roads. Demarcation point is the connection point to the weatherhead at the service pole. This applies for permanent or temporary services.

Scenario #5

Overhead Electrical Supply to Underground Streetlighting

Demarcation Point is the secondary bushing of the transformer. Calgary Roads will supply and install secondary cable and duct to the base of the pole with enough additional cable to go up the pole and attach to the transformer secondary. ENMAX Power will provide mechanical protection from the base of the pole. ENMAX Power will attach the streetlight circuit to the pole and make the connection to the utility low voltage circuit or transformer.

Scenario #6

Underground Electrical Supply to Underground Streetlighting

Demarcation Point is the secondary bushing of the transformer. ENMAX Power will install stubs to transformer. Calgary Roads will supply and install secondary cable and duct to the transformer. ENMAX Power will witness the pulling of the cable into the transformer by Calgary Roads. ENMAX Power will terminate the cable)(EPC supplies copper terminations, aluminum terminations by contractor). ENMAX Power will attach the terminated cable to the secondary bushings of the transformer.

Scenario #7

Underground Electrical Supply to Overhead Streetlighting

Demarcation Point is the secondary bushing of the transformer. ENMAX Power will install stubs to the transformer. Calgary Roads will supply and install secondary cable and duct to the transformer. ENMAX Power will witness the pulling of the cable into the transformer by Calgary Roads. Calgary Roads will terminate their cable. ENMAX Power will attach the terminated cable to the secondary bushings of the transformer.

Scenario #8

Network Vault Installations

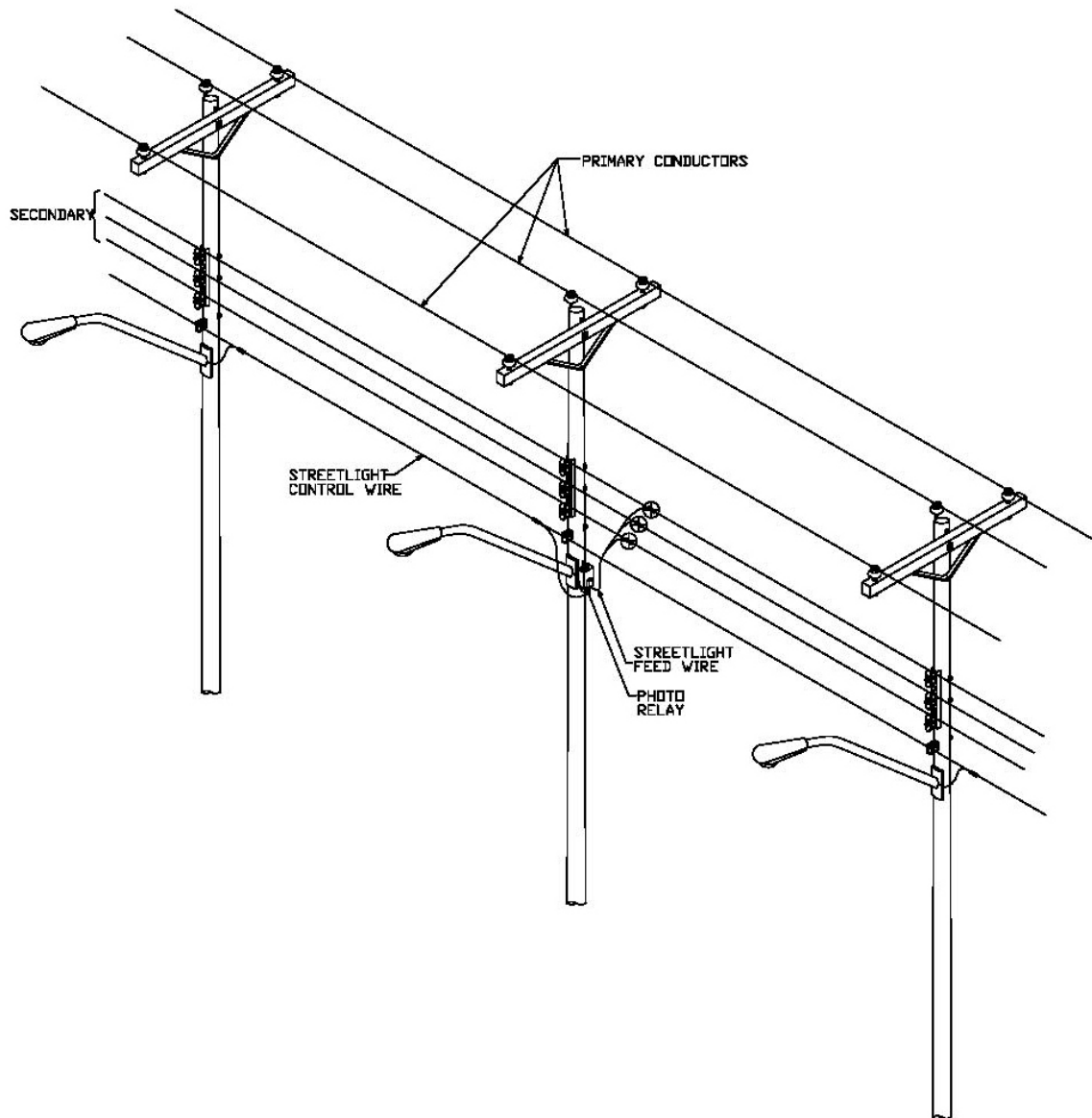
ENMAX Power will own, operate and maintain the secondary circuits in the ENMAX Power manholes or vaults to the point of attachment provided for the secondary streetlight cable which will supply the relay or secondary power source. ENMAX Power personnel will do all the construction including the installation of the secondary streetlight power cables and their connection to the ENMAX Power secondary circuits in the manholes or vaults. ENMAX Power will NOT permit the installation of relays or other auxiliary equipment within the ENMAX Power system. All streetlight secondary cable is to be supplied by the CITY and installed by ENMAX Power at the City's cost.

The demarcation point for the streetlight or City conduit is the exterior surface of the last ENMAX Power structure on the cable run. Coring of the ENMAX Power structure must be approved in advance by ENMAX Power and the work performed by ENMAX Power.


The demarcation point for the streetlighting circuit is the start of the dedicated streetlighting secondary cable. In certain cases the streetlight secondary cable may pass between ENMAX Power manholes or vaults utilizing ENMAX Power conduit. The demarcation point of the conduit is the duct which is solely occupied by streetlighting and connects at one end to a solely owned and operated City facility.

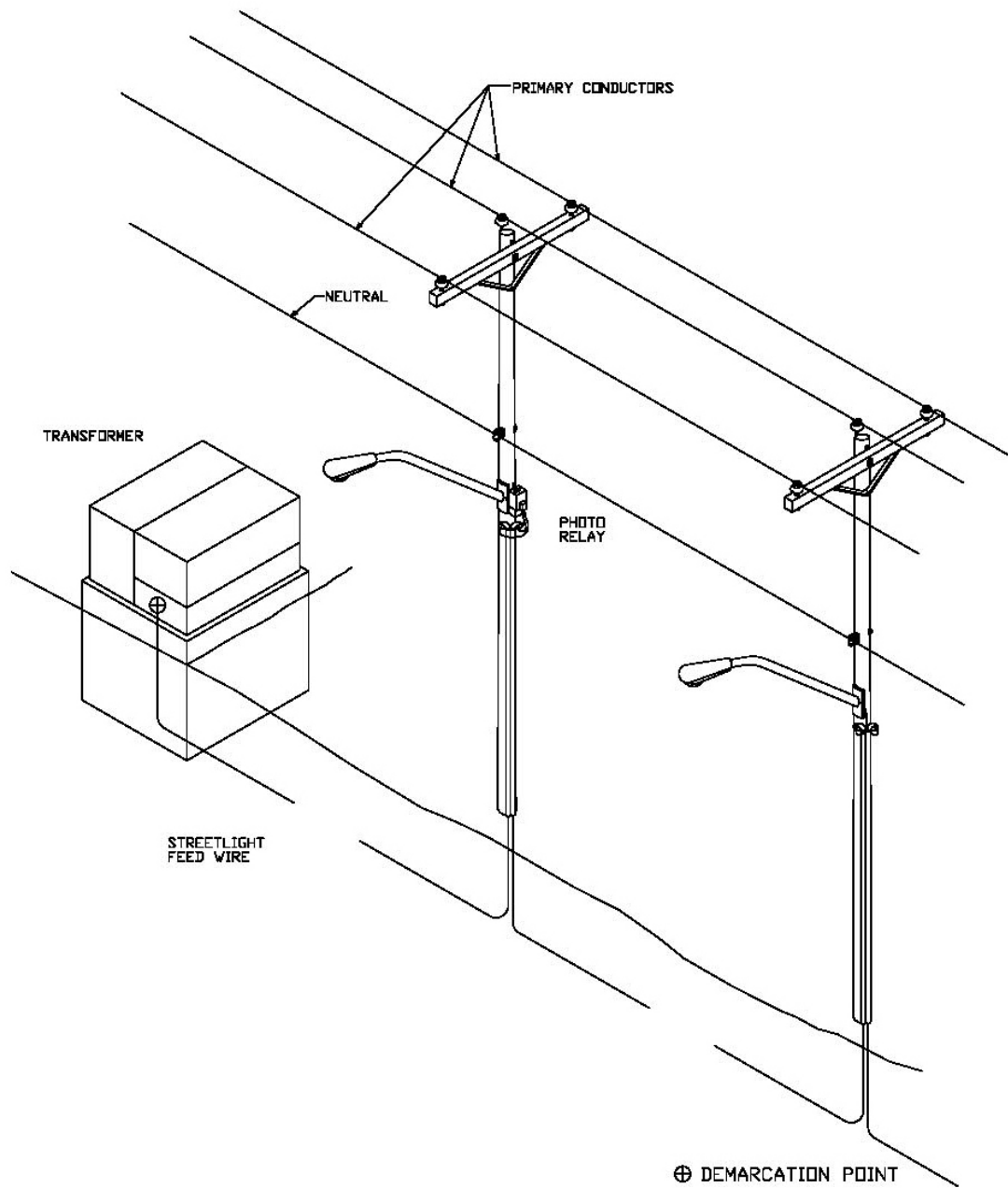
(Please note – “Secondary” / “Secondary Circuit” etc. refer to low voltage circuits operating at the utilization voltage of the streetlights)


Please refer to attached sketches.

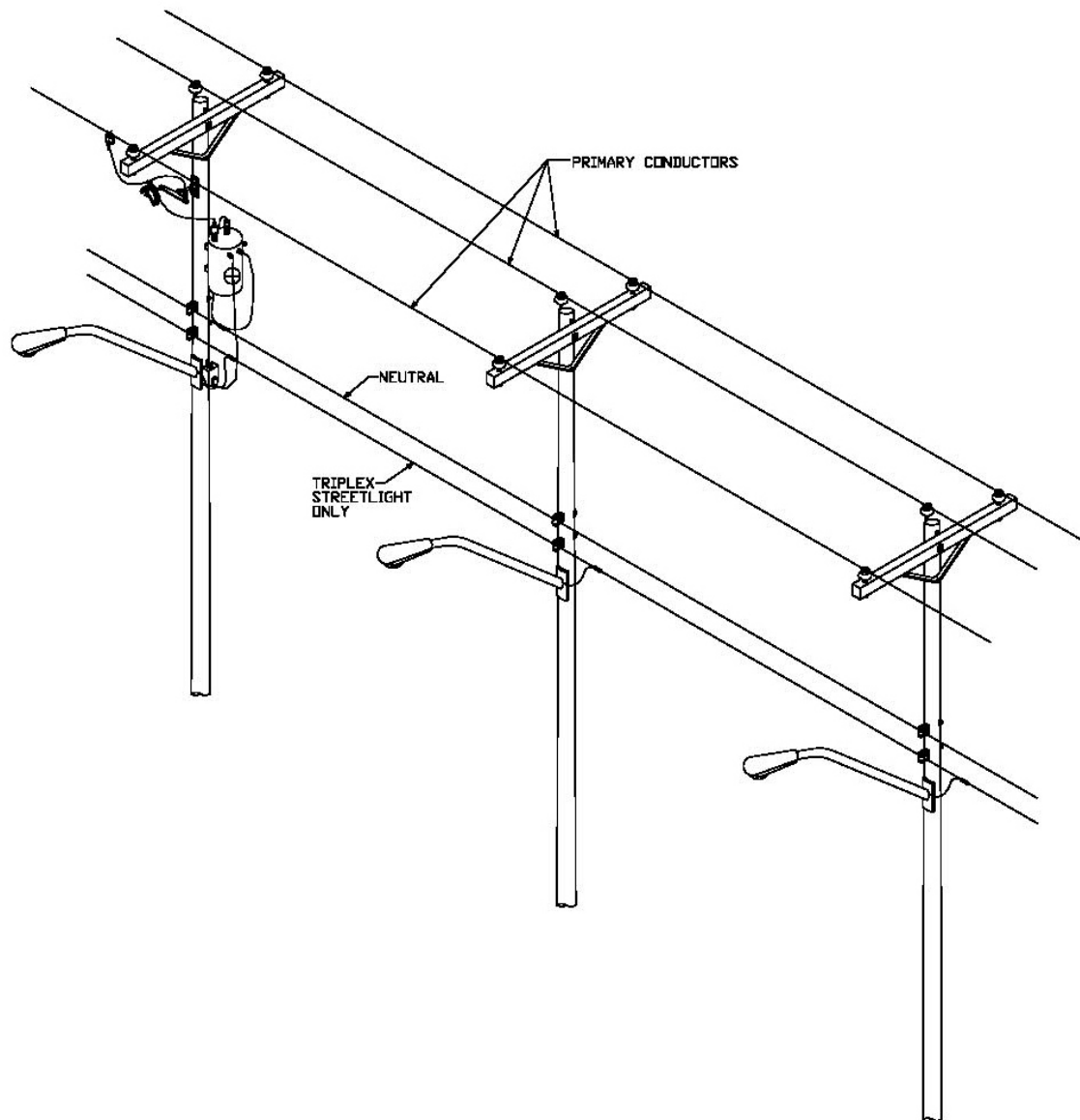


⊕ DEMARCATION POINT


					
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DATE:					TITLE
					SCENARIO #1
DWN:	B.J.S.				SHEET 1 OF 13
DATE:	01/10/24	DATE:			SCALE: N.T.S.
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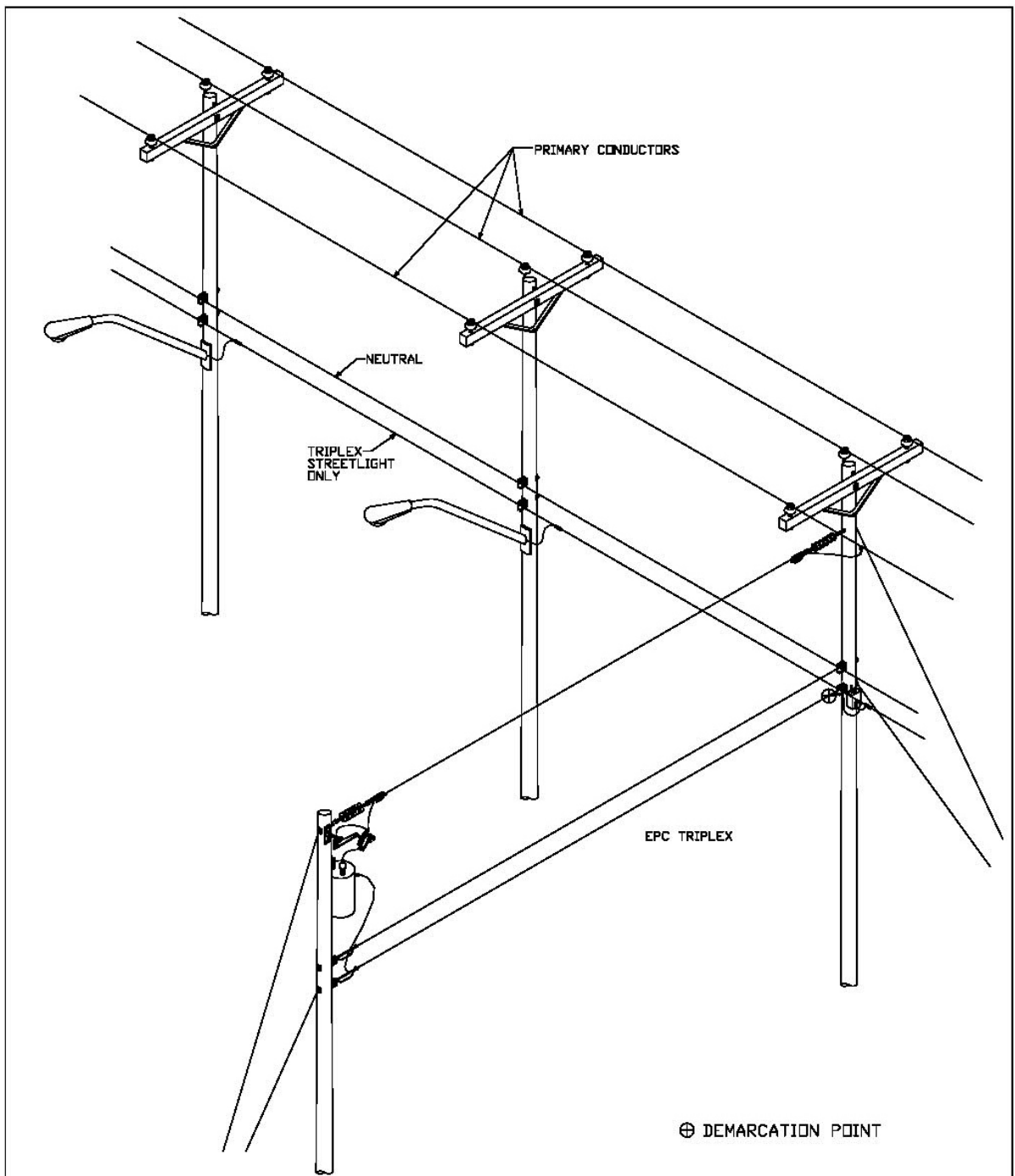



					
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DATE:	DATE:		DATE:		FILE NO. 500-1447-001
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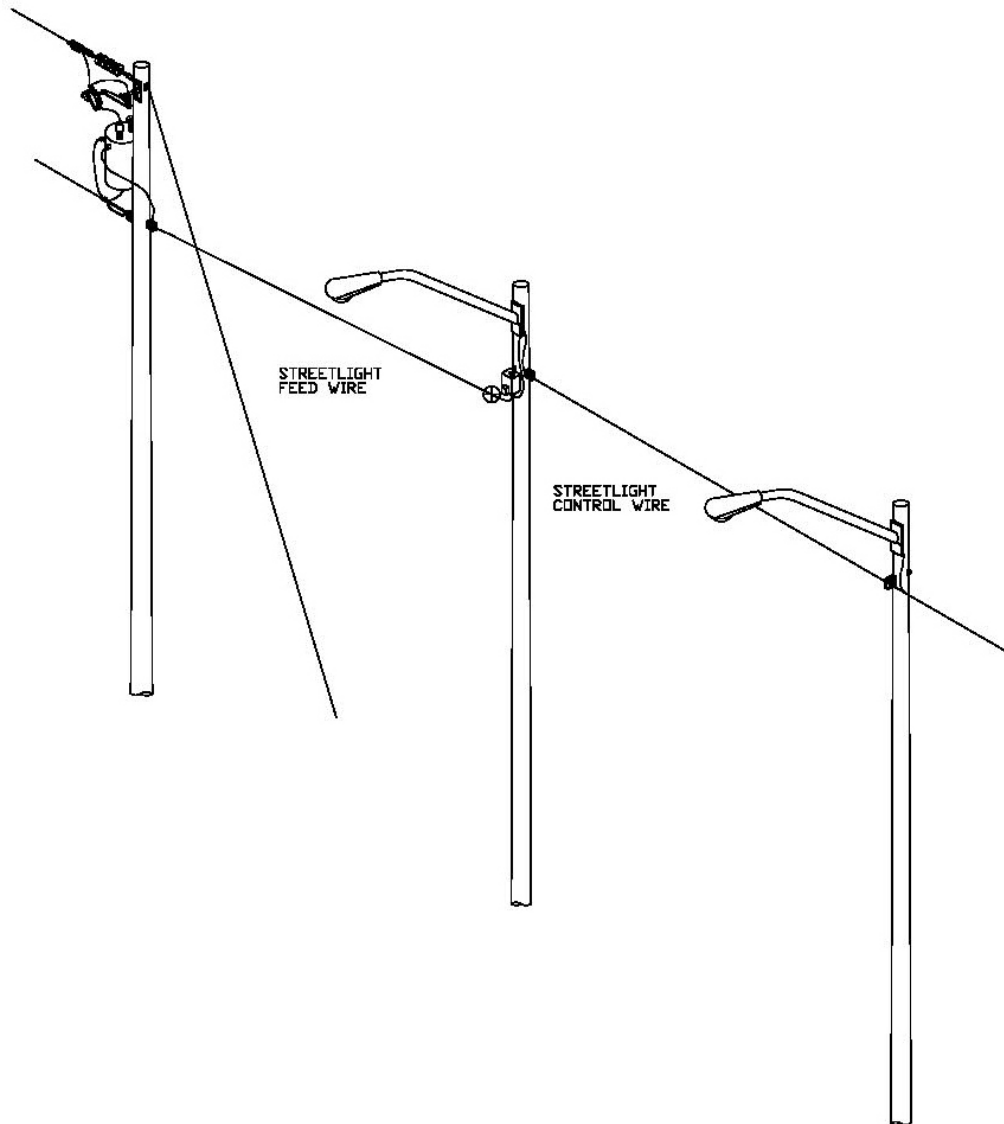


⊕ DEMARCATION POINT


					
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DATE:					SCENARIO #2
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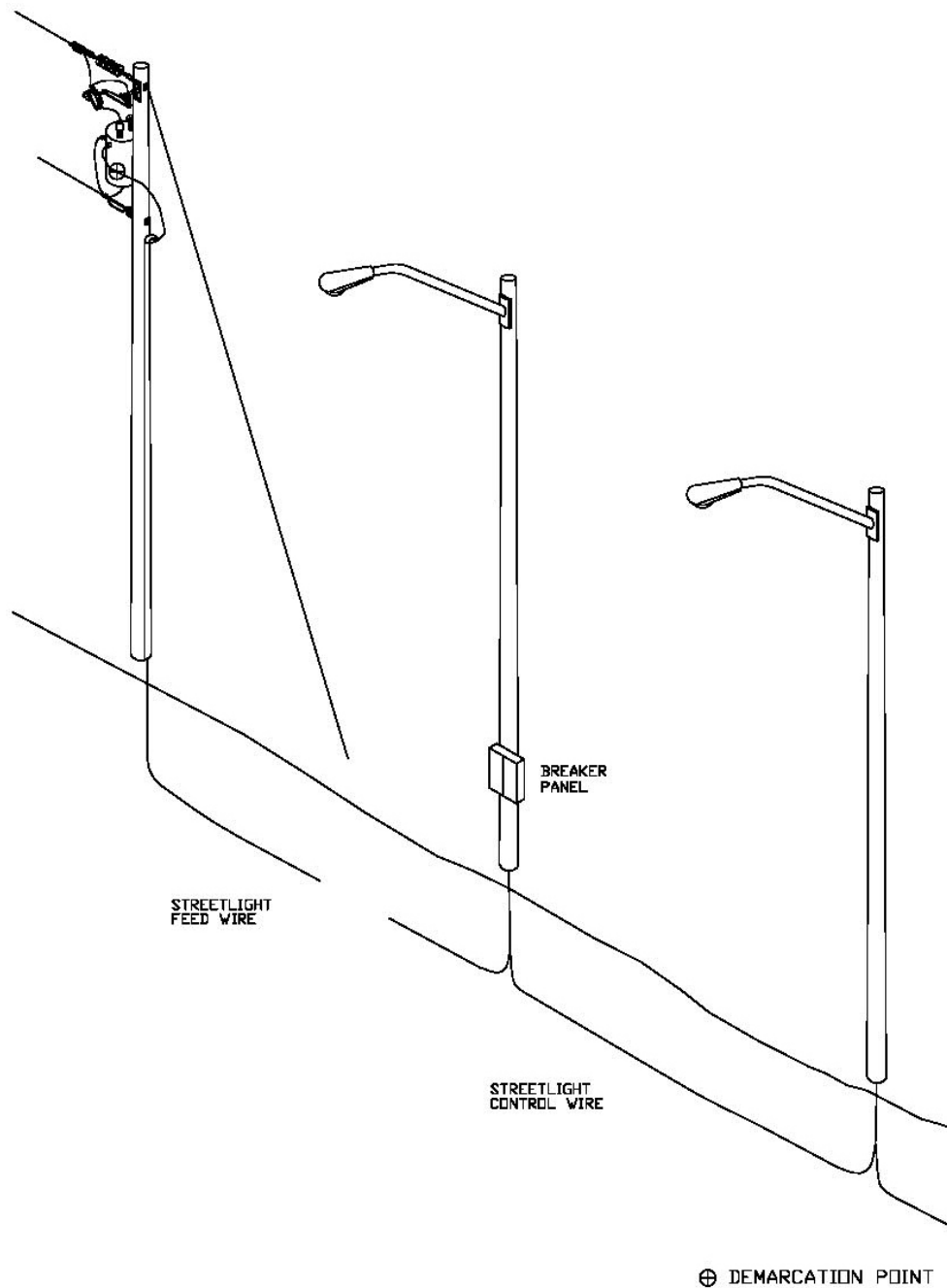



					
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DWN:					
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TITLE					
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SHEET 3 OF 13					FILE NO.
SCALE: N.T.S.					500-1447-001

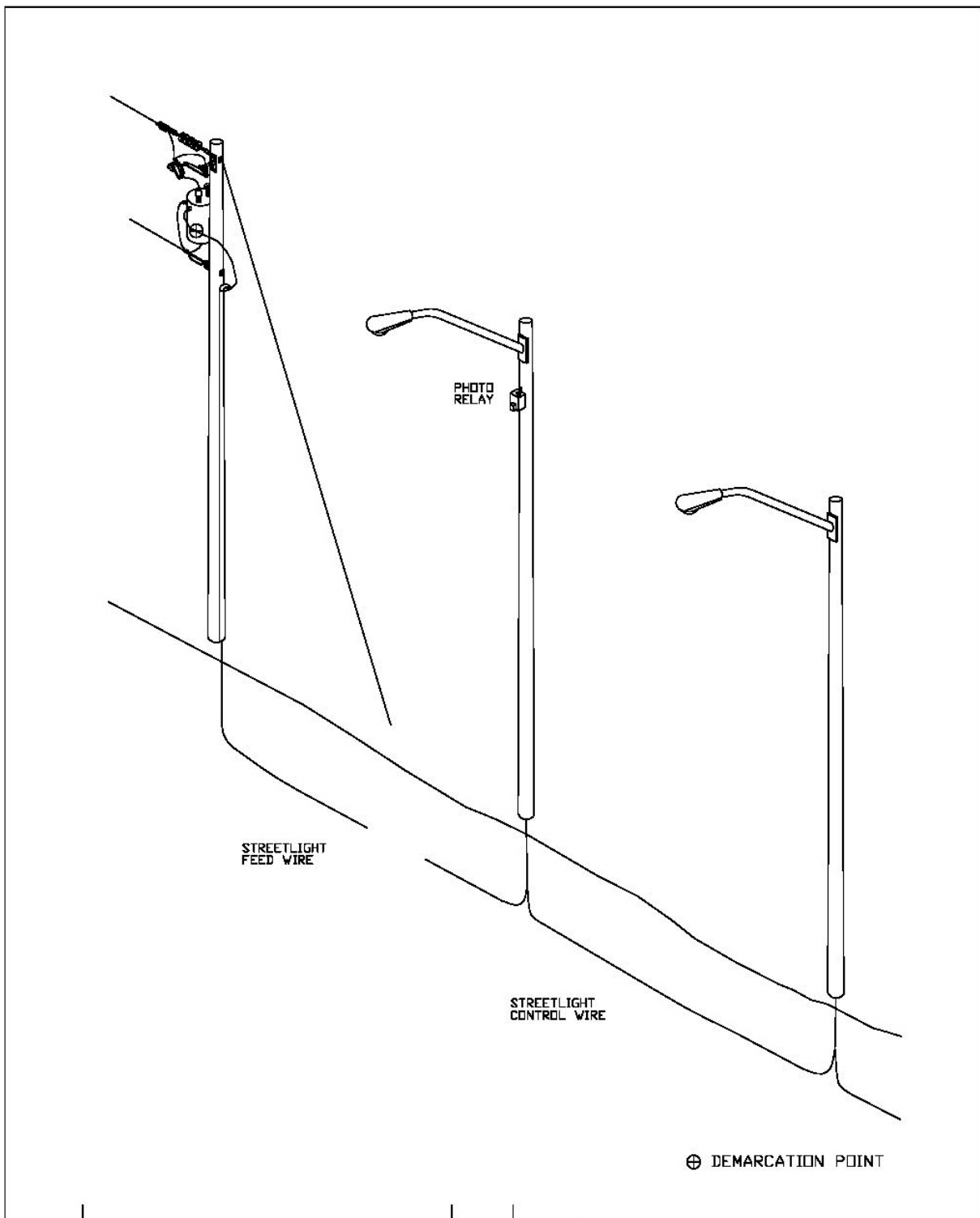



⊕ DEMARCATION POINT

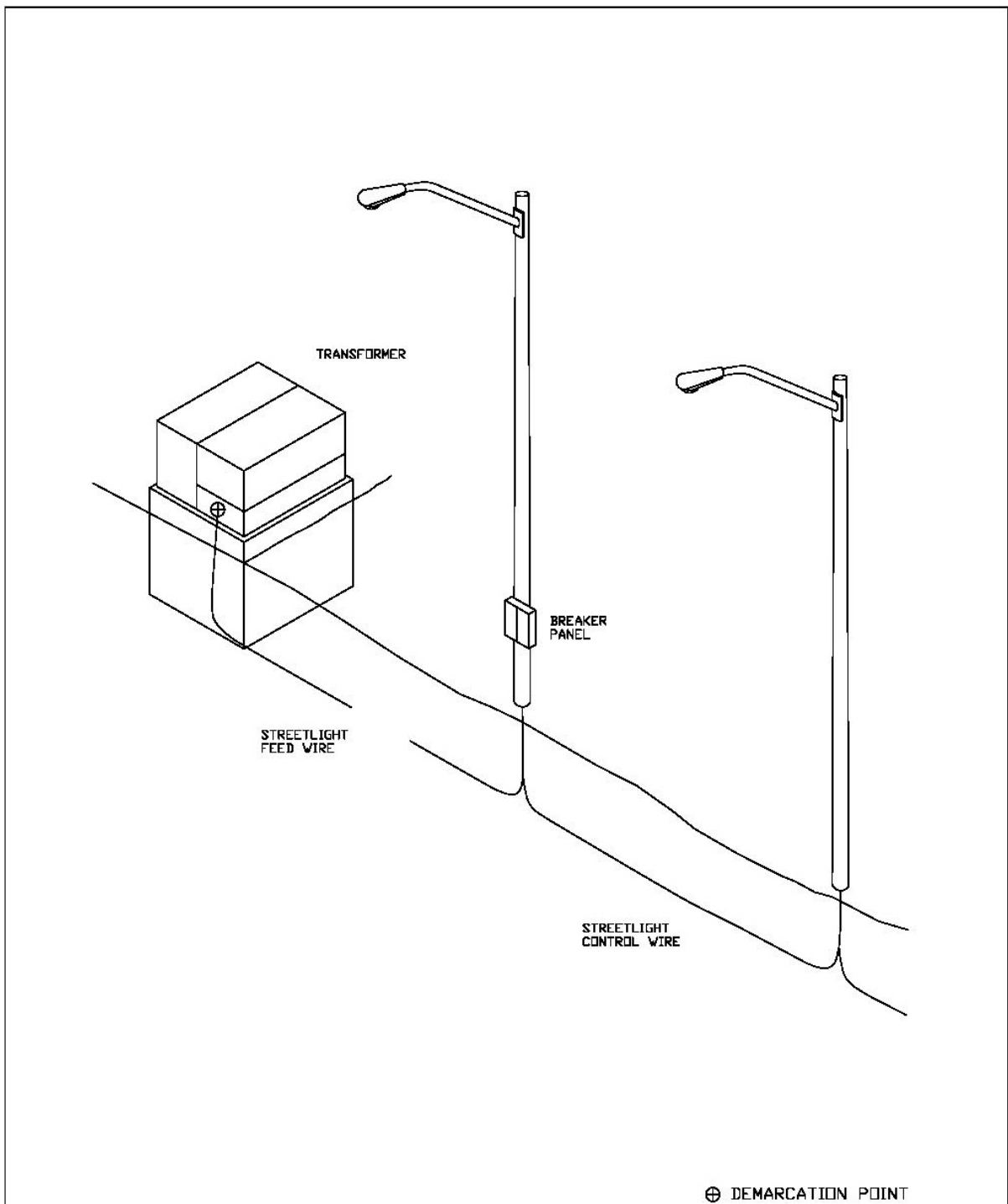
					
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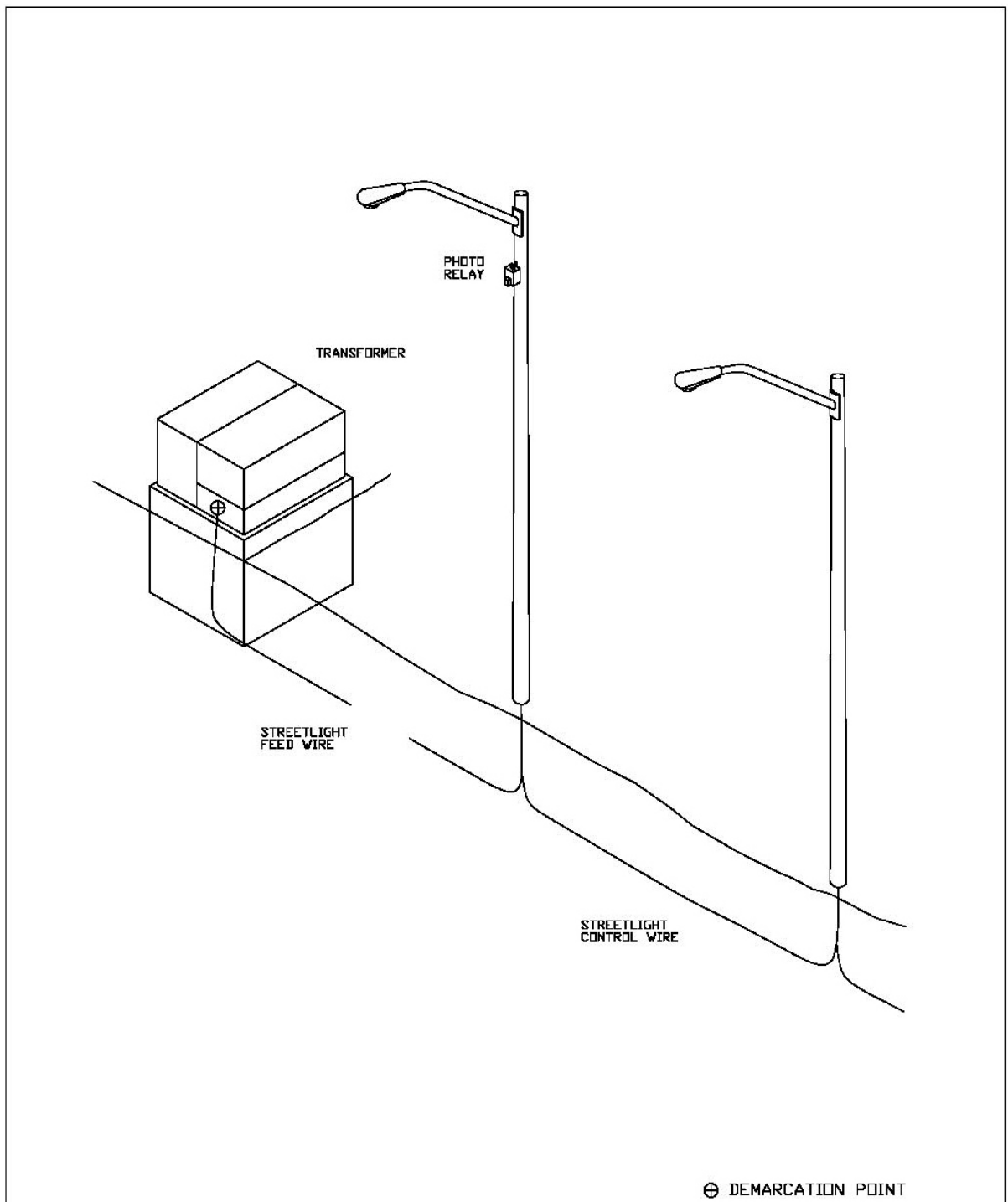
							
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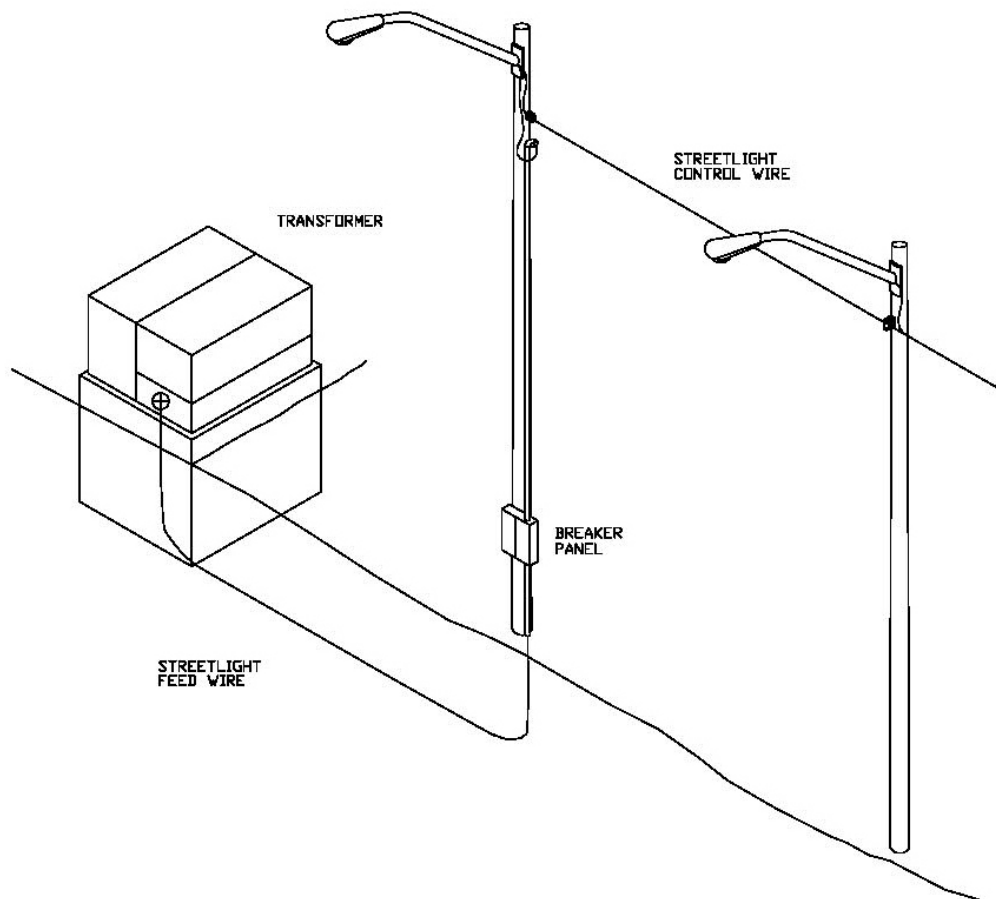


					
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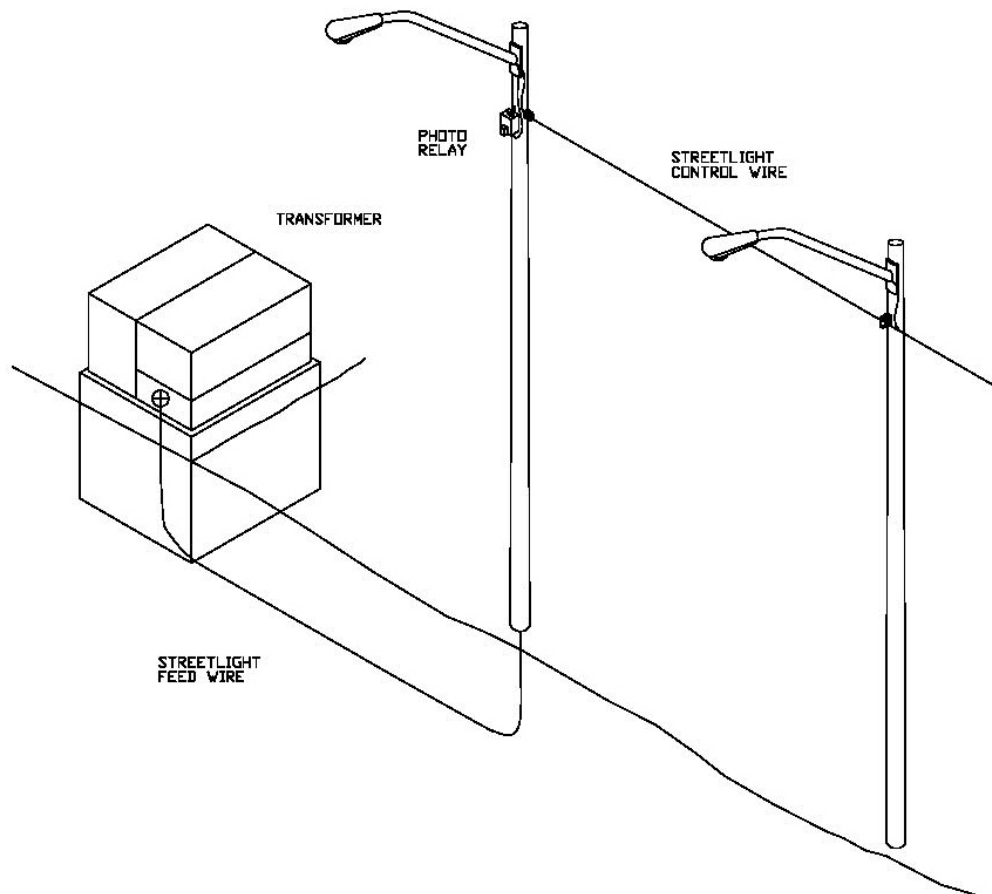
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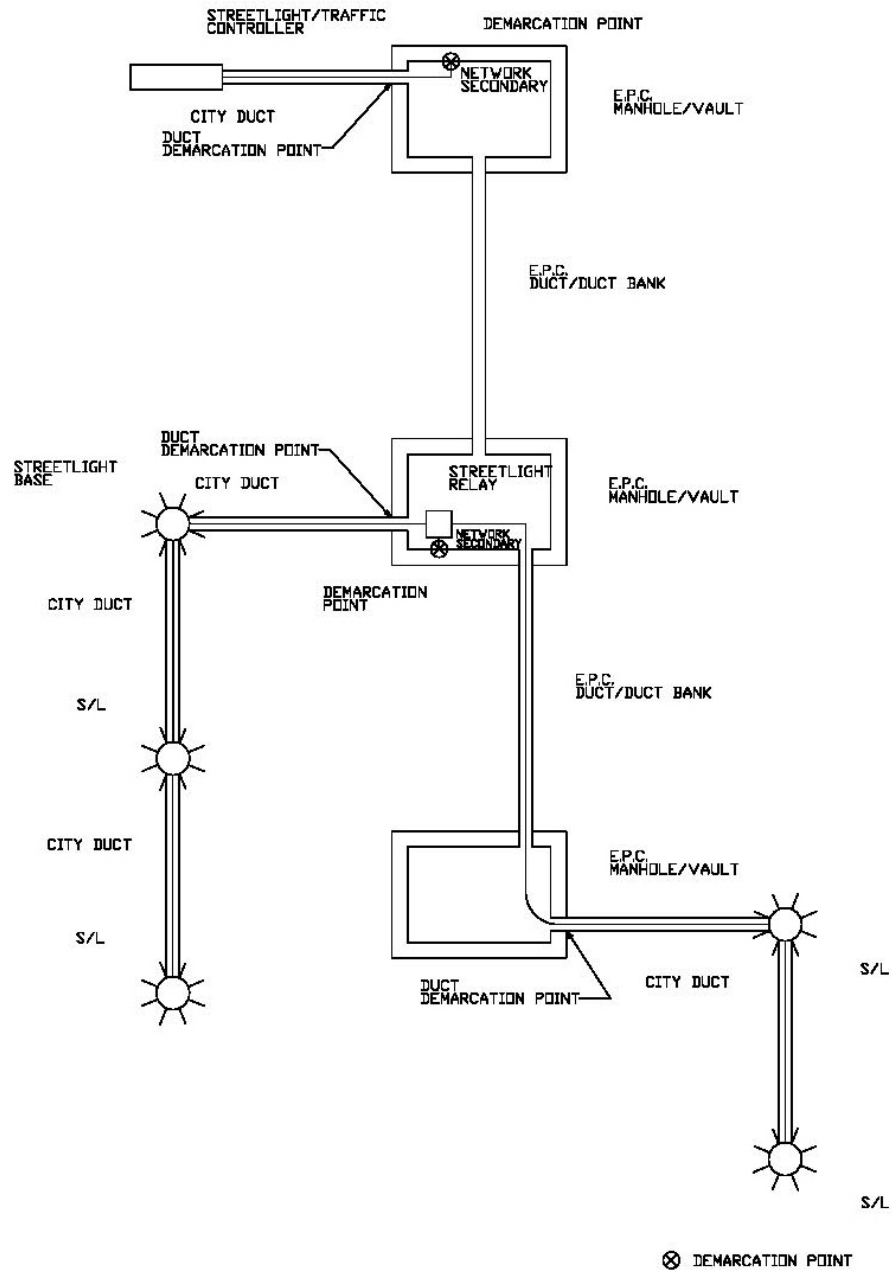
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				SHEET 11 OF 13	FILE NO.
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⊕ DEMARCATION POINT

					
DATE	REVISIONS			DSGN	APPR.
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DATE:					
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DATE:				SCENARIO #7A	
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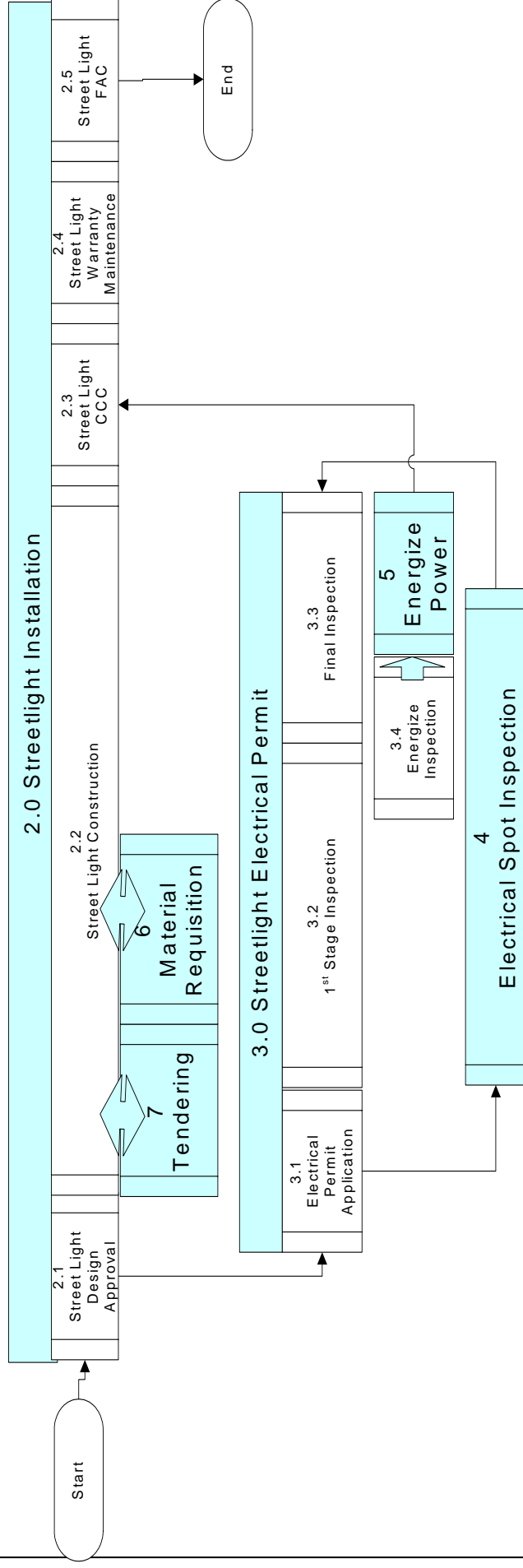


					
DATE	REVISIONS			DSGN	APPR.
DSGN		CALGARY ROADS APPR.:	ENMAX APPR.:	TITLE	
DATE					
DWN	B.J.S.			SCENARIO #8	
DATE	01/10/24	DATE:	DATE:		
				SHEET 13 OF 13	FILE NO.
				SCALE: N.T.S.	500-1447-001

APPENDIX G

STREETLIGHTING DESIGN & CONSTRUCTION PROCESS DIAGRAMS

THE CITY OF CALGARY ROADS BUSINESS UNIT ELECTRICAL STREETLIGHT INSTALLATION PROJECT PROCESS



The City of Calgary
Roads Business Unit
Asset Management Project
Business Process Improvement

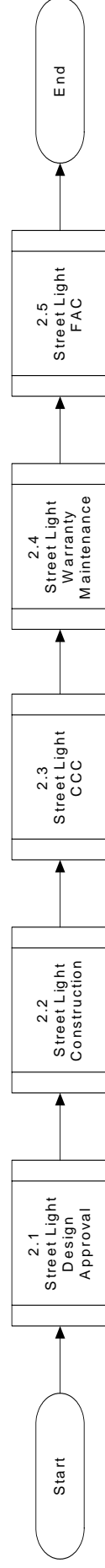
ELECTRICAL STREETLIGHT INSTALLATION PROJECT PROCESS
Revision Date: 04/03/10

THE CITY OF CALGARY

ROADS BUSINESS UNIT

ASSET MANAGEMENT PROJECT

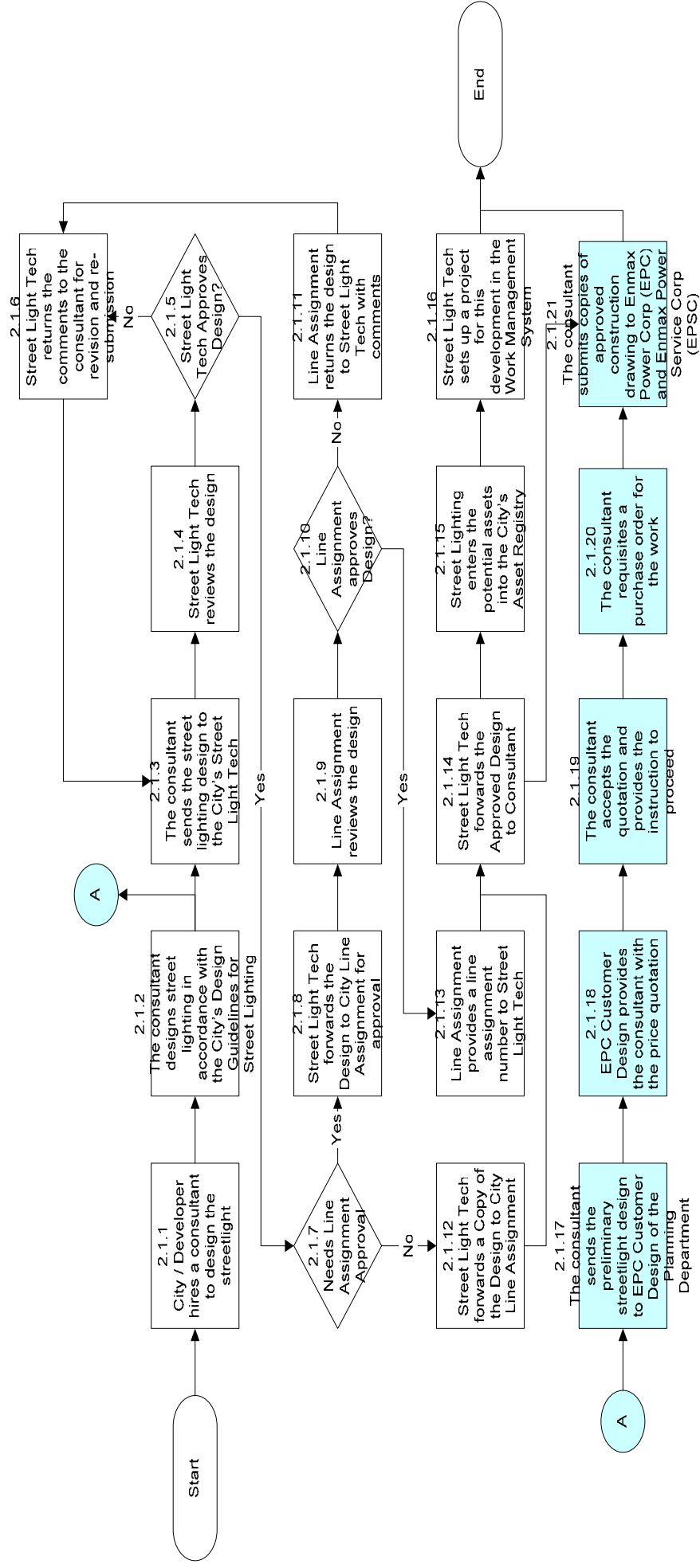
2.0 STREET LIGHT INSTALLATION PROCESS



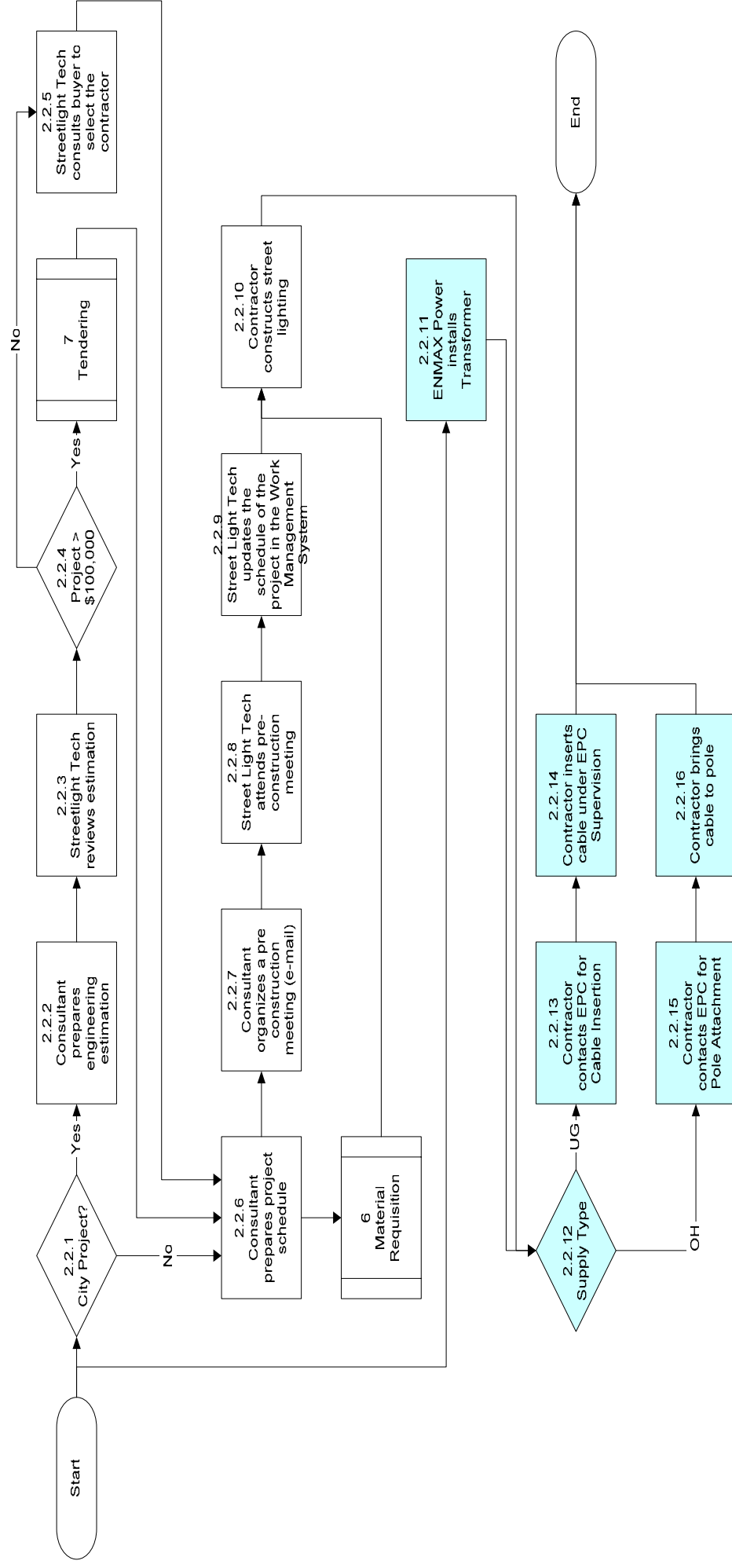
The City of Calgary
Roads Business Unit
Asset Management Project
Business Process Improvement

Streetlight Installation Process
Revision Date: 04/03/10

2.1 STREET LIGHT DESIGN APPROVAL



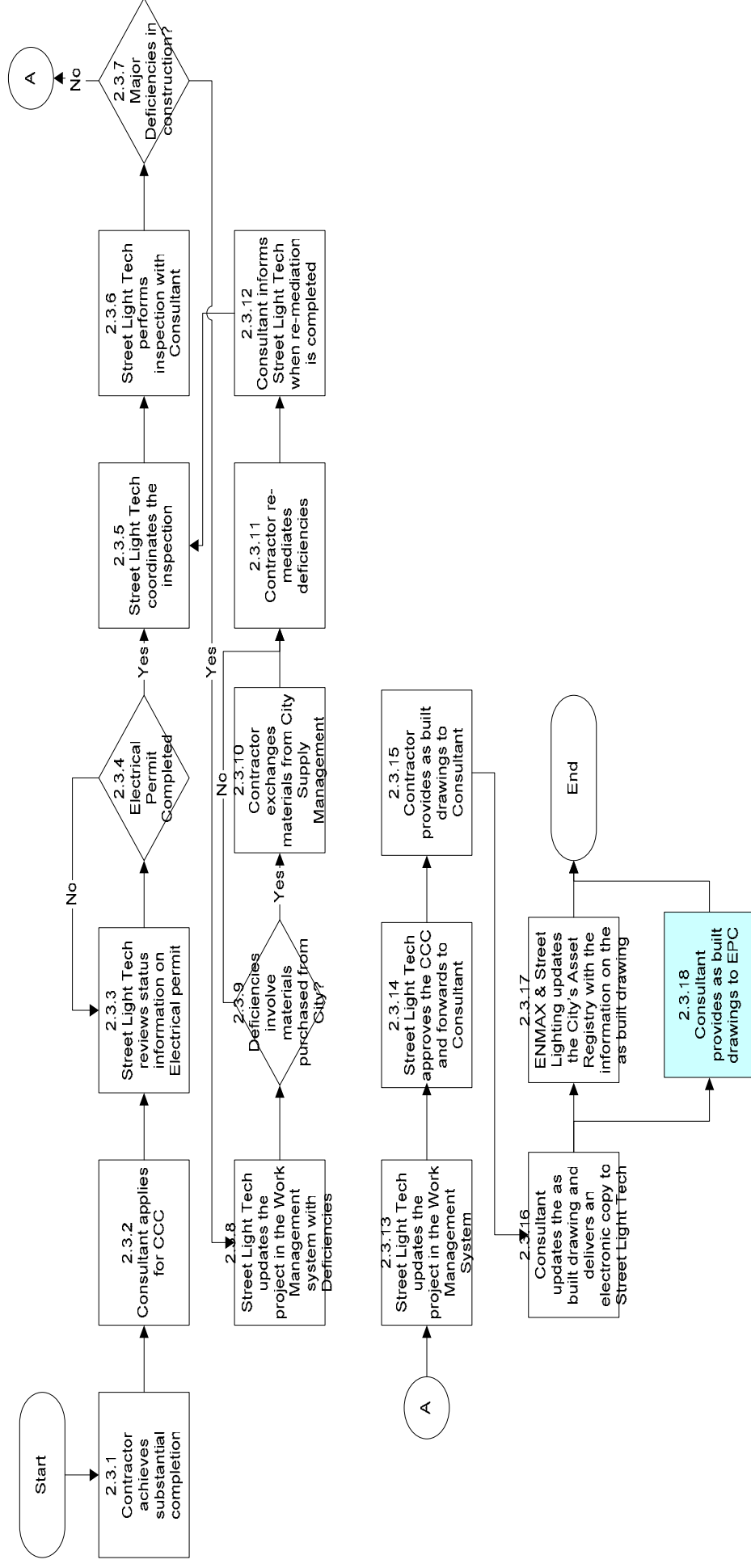
2.2 STREET LIGHT CONSTRUCTION



The City of Calgary
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Business Process Improvement

2.2 Streetlight Construction
Revision Date: 04/03/10

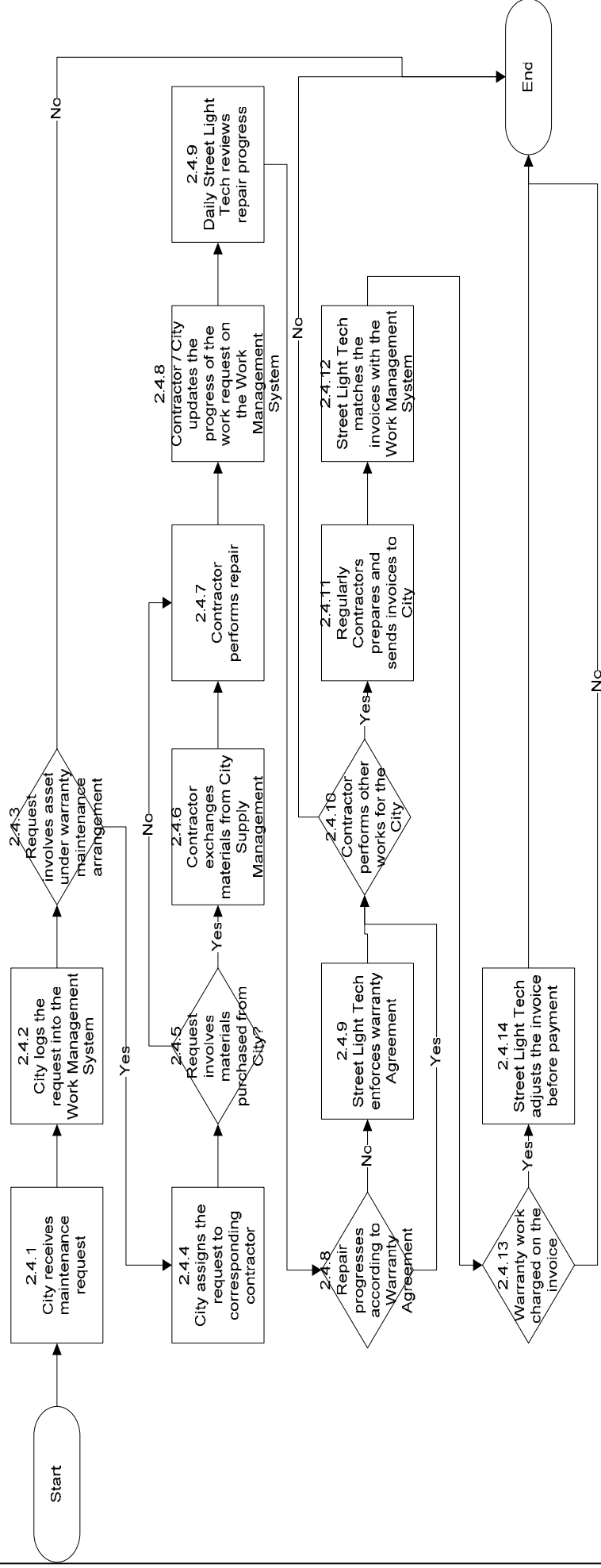
2.3 STREET LIGHT CCC



The City of Calgary
Roads Business Unit
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Business Process Improvement

2.3 Streetlight CCC
Revision Date: 04/03/10

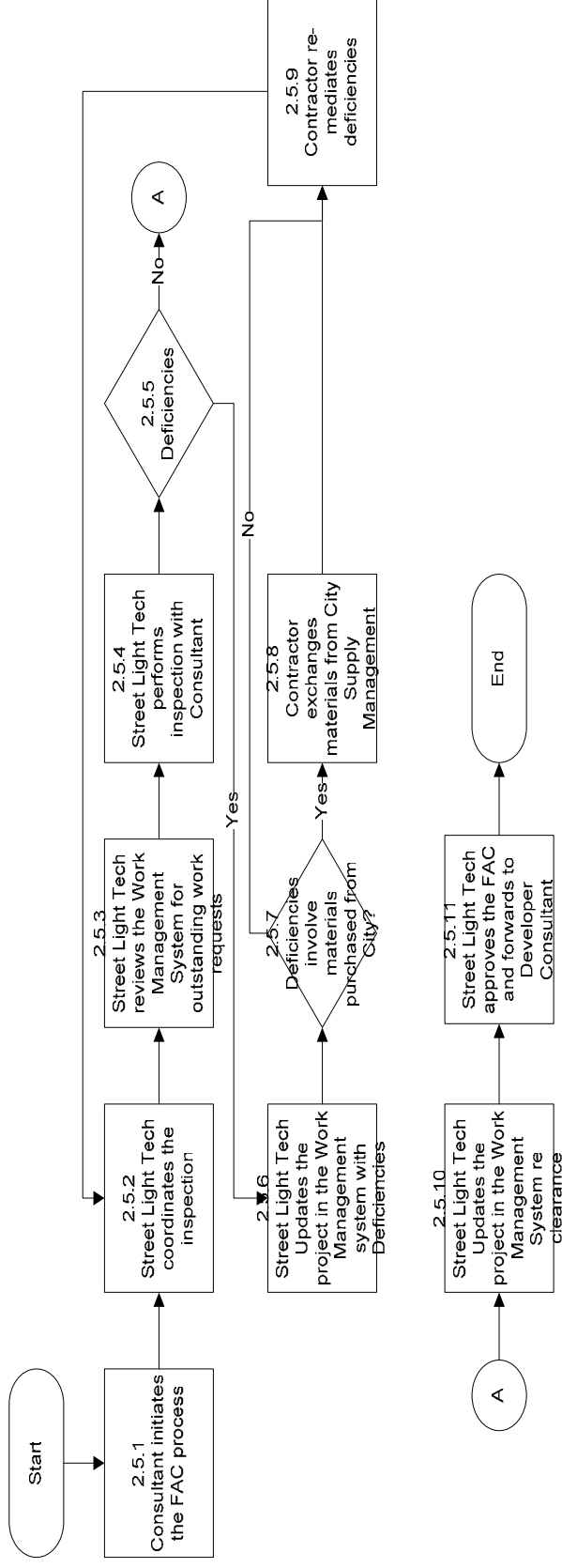
2.4 STREET LIGHT WARRANTY MAINTENANCE



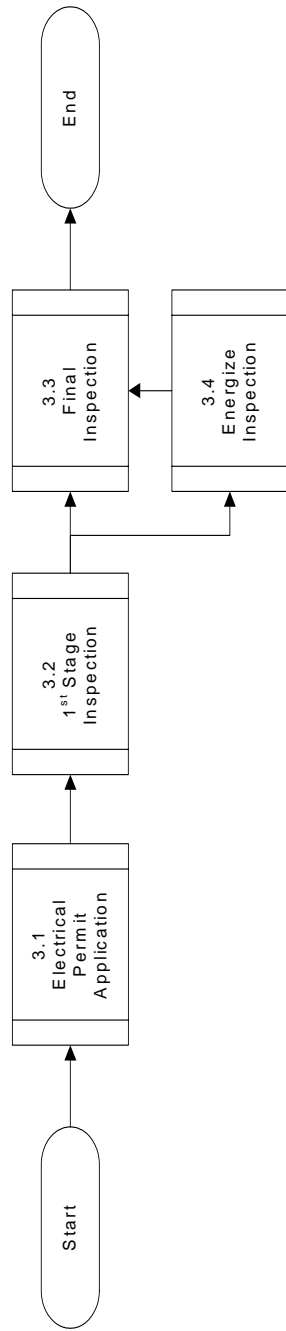
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Roads Business Unit
Asset Management Project
Business Process Improvement

2.4 Streetlight Warranty Maintenance
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2.5 STREET LIGHT FAC



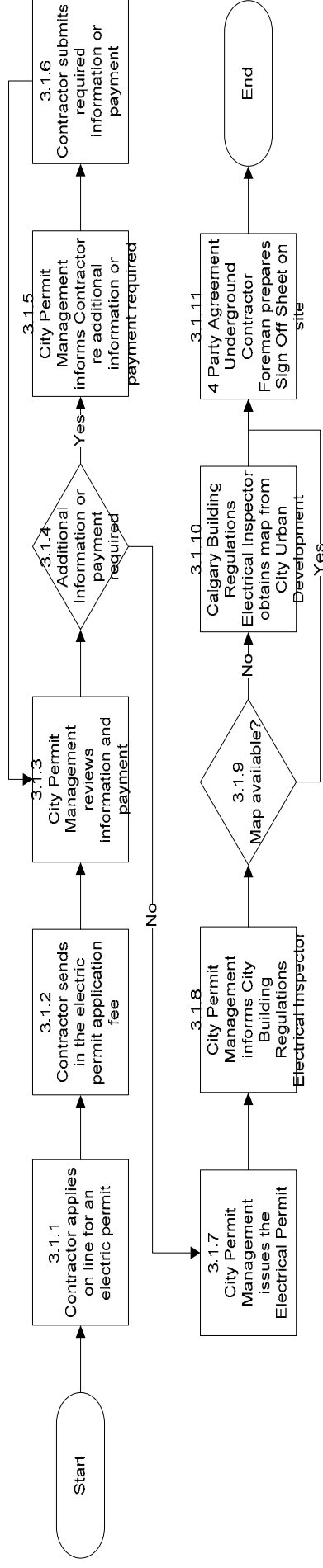
THE CITY OF CALGARY
ROADS BUSINESS UNIT
ASSET MANAGEMENT PROJECT
3.0 STREETLIGHT ELECTRICAL PERMIT



The City of Calgary
Roads Business Unit
Asset Management Project
Business Process Improvement

3.0 Streetlight Electrical Permit
Revision Date: 04/03/10

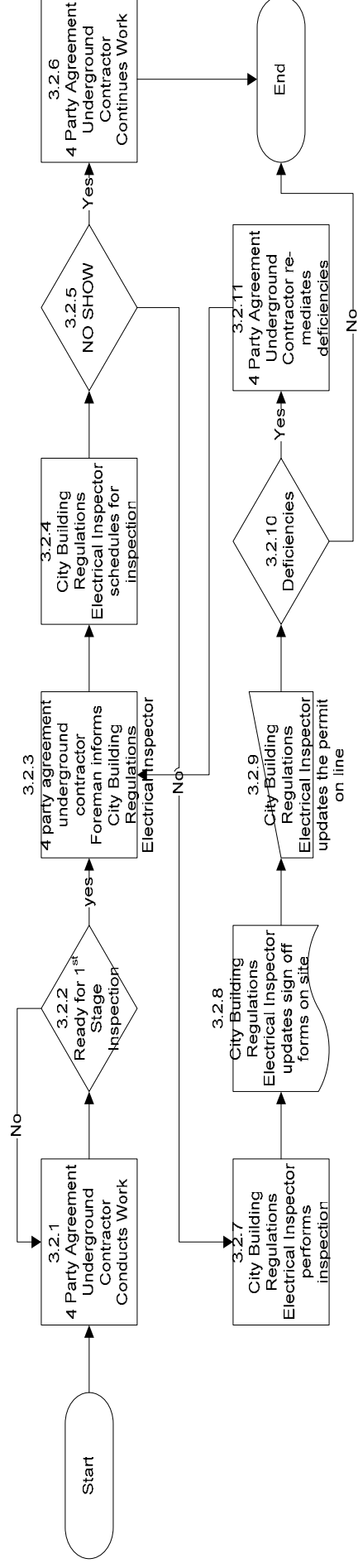
3.1 ELECTRICAL PERMIT APPLICATION



The City of Calgary
Roads Business Unit
Asset Management Project
Business Process Improvement

3.1 Electrical Permit Application
Revision Date: 04/03/10

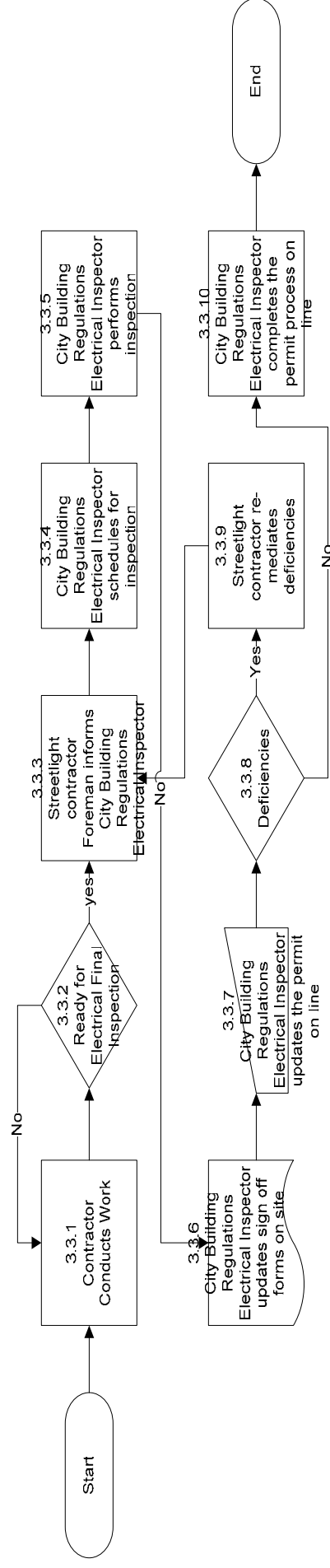
3.2 1ST STAGE INSPECTION



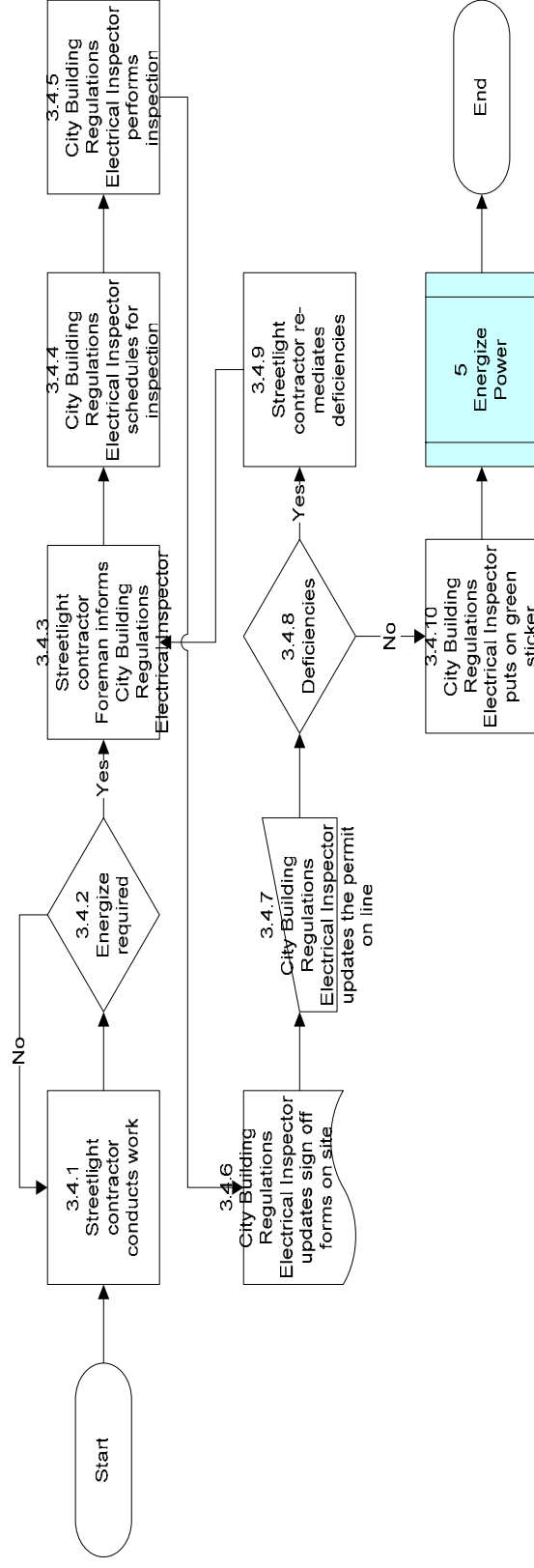
The City of Calgary
Roads Business Unit
Asset Management Project
Business Process Improvement

3.2 1st Stage Inspection
Revision Date: 04/03/10

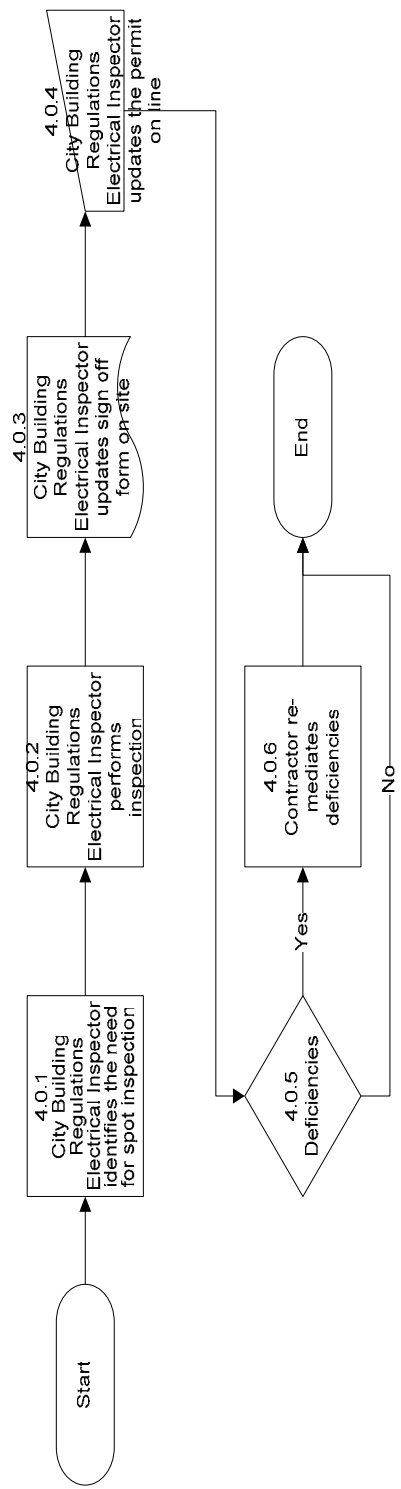
3.3 ELECTRICAL FINAL INSPECTION



3.4 ENERGIZE INSPECTION



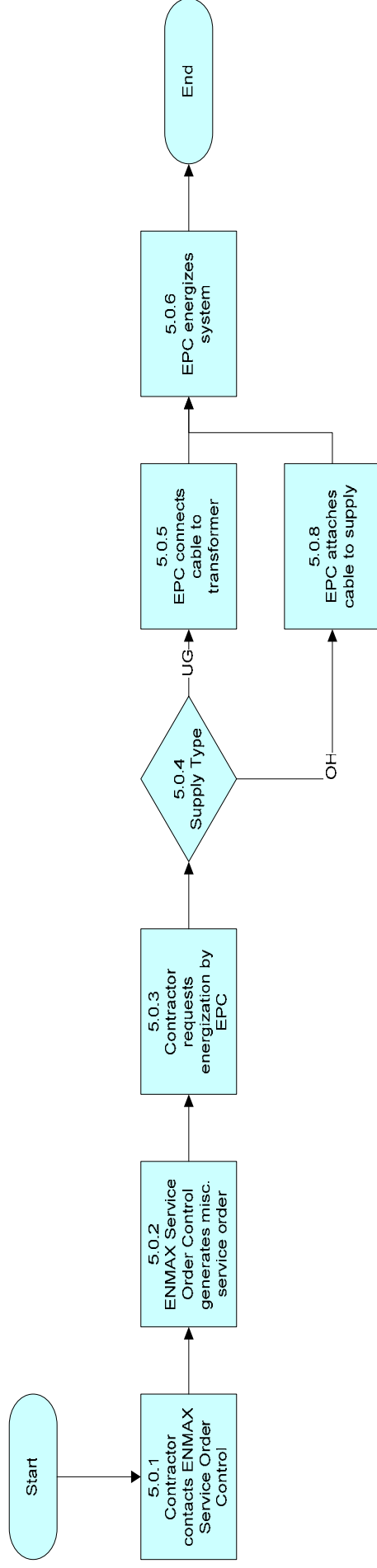
4.0 ELECTRICAL SPOT INSPECTION



The City of Calgary
Roads Business Unit
Asset Management Project
Business Process Improvement

4.0 Electrical Spot Inspection
Revision Date: 04/03/10

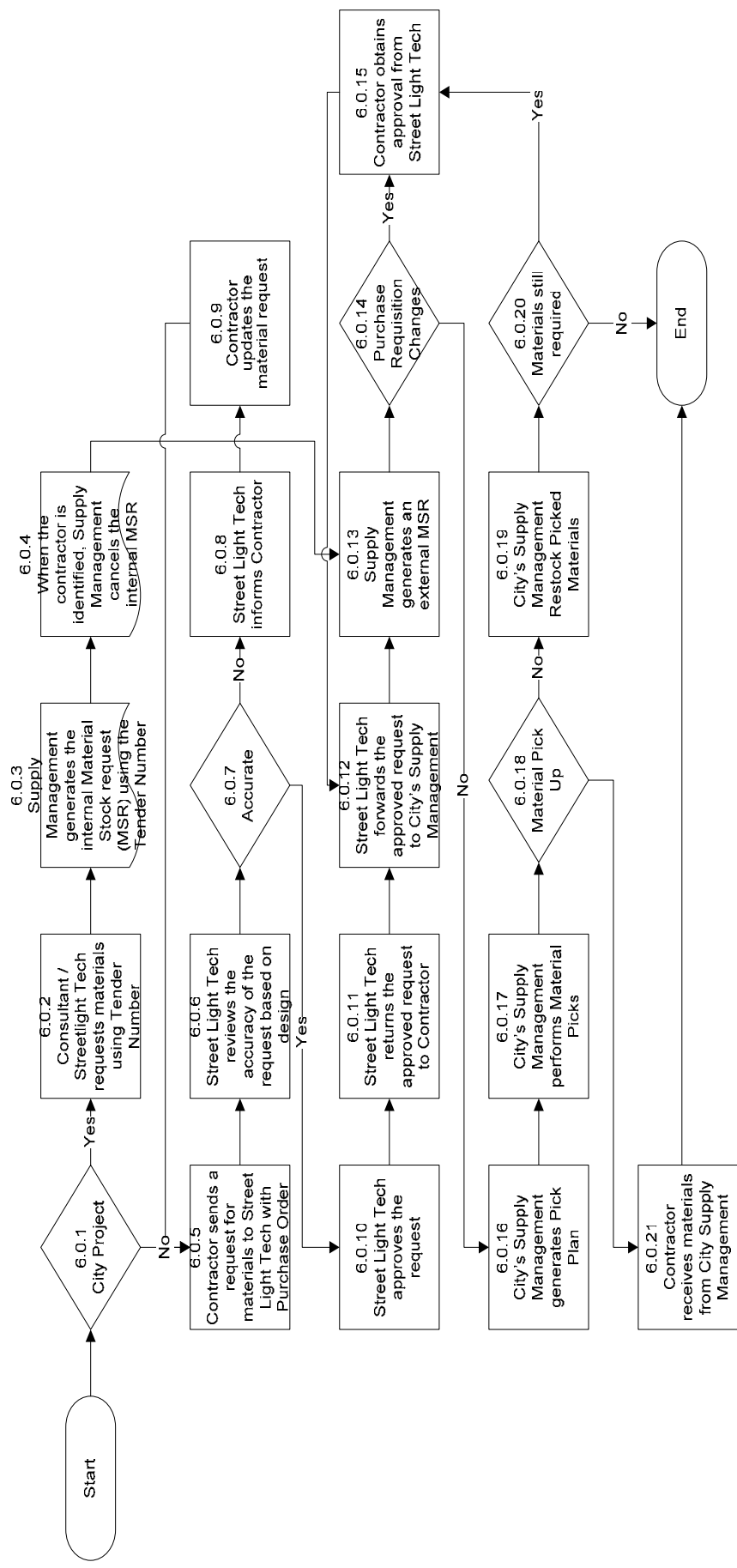
5.0 ENERGIZE POWER



The City of Calgary
Roads Business Unit
Asset Management Project
Business Process Improvement

5.0 Energize Power
Revision Date: 04/03/10

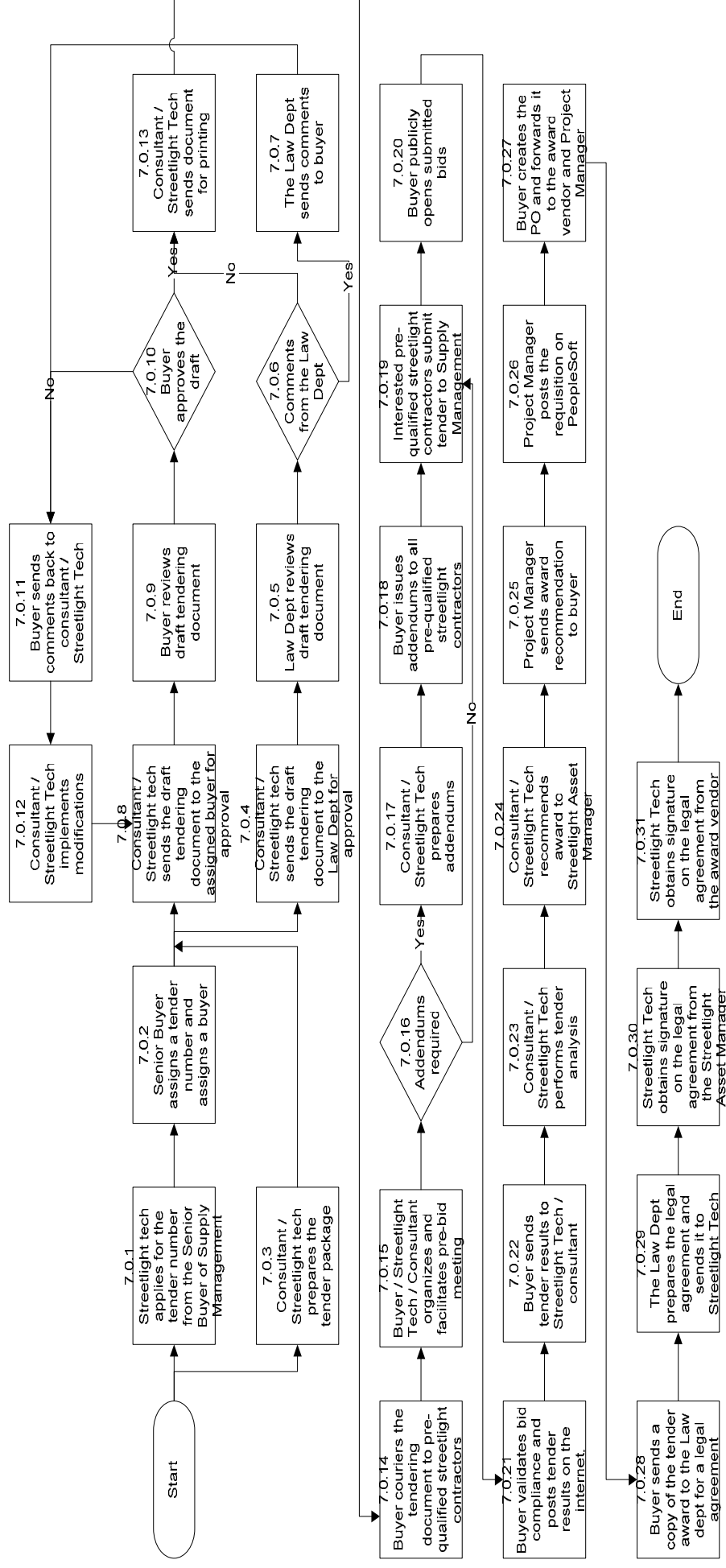
6.0 MATERIAL REQUISITION



The City of Calgary
Roads Business Unit
Asset Management Project
Business Process Improvement

6.0 Material Requisition
Revision Date: 04/03/10

7.0 Tendering



APPENDIX H

**LIST OF PRE-QUALIFIED
STREETLIGHTING CONTRACTORS**

**VALID AT TIME OF PRINTING
FOR UPDATES PLEASE CONTACT SUPPLY AT 268-1843**

List of Pre-qualified Streetlighting Contractors .
(Street Lighting Installation Pre-Qualification 04-009)

NAME OF FIRM	ADDRESS	PHONE NUMBER	FAX NUMBER	E-MAIL
ACE CONSTRUCTION COMPANY INC.	5720 – 4 St SE P.O. Box 5220, Str. A Calgary, AB T2H 1X5	(403) 253-0002	(403) 253-8861	www.aceconstruction.ca
ALLIED PROJECTS LTD.	7017 Farrell Rd SE Calgary, AB T2H OT3	(403) 543-4530	(403) 543-4540	www.alliedprojects.com
DOBBYN ELECTRICAL SERVICES LTD.	9243 – 44 St SE Calgary, AB T2C 2P7	(403) 236-8877	(403) 720-2773	www.dobbynelectric.com
ENMAX POWER SERVICES CORPORATION	Enmax Place 141 – 50 Ave SE Calgary, AB T2G 4S7	(403) 514-3956	(403) 514-2049	jcyr@enmax.com
EPCOR TECHNOLOGIES INC.	13410 St Albert Trail Edmonton, AB T5L 4P2	(780) 412-7697	(780) 412-3888	mfahner@epcor.ca
MCGREGOR CONSTRUCTION 2000 LTD.	9925 – 62 Ave Edmonton, AB T6E OE7	(780) 437-1340	(780) 435-1493	wwalker@mcgregor2000.com
CAN-TRAFFIC SERVICES LTD.	RR2 Site 17 Box 19 Cochrane, AB T4C 1A2	(403) 851-4972	(403) 851-4904	jade@can-traffic.ca
ACUTECH ELECTRIC LTD. (See Note 1 below)	Suite 916, 105-150 Crowfoot Cres. N.W. Calgary, AB T3G 3T2	(403) 241-5804	(403) 241-5224	autech@telusplanet.net

NOTES:

1. Meets general prequalification but not prime contractor status.
May be approved for jobs under \$50,000. Must be under a general contractor with prime contractor status for work exceeding \$50,000.

APPENDIX J

STREETLIGHT CONSTRUCTION SPECIFICATIONS TOLERANCES

Streetlight Construction Specifications – Tolerances

No.	WORK TO BE INSPECTED OR TESTED	REQUIREMENT/ACCEPTANCE CRITERIA	REMARKS
1.	Base location and offset	Within +/- 50mm of design location.	BW = behind walk, + 25mm to +75mm for locations with sidewalk.
2.	Base elevation	<p><u>General:</u> 150mm +/- 50mm above the final finished grade.</p> <p><u>Steep Slopes:</u> Same as above, with minimum of 50mm on the high slope side of the base.</p> <p><u>Walkways:</u> 150mm +/- 50mm above asphalt.</p>	<p>Measurement to be taken at the centerline of the foundation.</p> <p>To achieve this requirement, the low slope side may be more than 200mm.</p> <p>Base should be located against the edge of the lot line within the City right-of-way to maximize the clear width for pedestrians and cyclists.</p>
3.	Base level	Base to be level after installation. No more than 2 shims (1/16" each) per bolt permitted on each pole.	The use of washers to level the pole is not acceptable.
4.	Pole plumb	Maximum ½ degree.	
5.	Base bolts	The two bolts closest to the road shall be parallel to the curb +/- 2 degrees, unless otherwise noted on the drawings. (I.e. 87mm for a 2.5m davit).	Check that banner arms are perpendicular to the road, if applicable.
6.	Base compaction	Bottom of base excavation shall be level. All disturbed soil shall be compacted to 97% maximum density.	<p>As per the City of Calgary Roads Standard Specifications – Roads Construction 304.00.00.</p> <p>Non-compactable material such as organic soil, frozen soil, and lumpy soil are not to be used.</p>
7.	Tilting/Rotation of Luminaire	Luminaire to be level along both the short and long axis, unless otherwise noted on the drawings.	To be checked with a hand level.

APPENDIX K

BEST MANAGEMENT PRACTICE No. 1 SAW CUTTING OPERATIONS

Maintenance Best Practices



THE CITY OF CALGARY
ENGINEERING & ENVIRONMENTAL SERVICES DEPARTMENT
STREETS MAINTENANCE
STANDARD OPERATING PRACTICES

Saw Cutting

Saw cutting is performed for the Street Maintenance Division to prepare job sites for excavation, resurfacing, mudjacking or repair. Due to the potential danger involved in operating this equipment, the City of Calgary requires that all personnel are fully trained for the safe operation of the saw.

Before operating the saw, the following tasks must be performed by the saw operator:

1. Ensure that the worksite has been set up with traffic control devices, cones and barricades as required by the Worksite Temporary Traffic Control Manual.
39. Inspect the job site for all Utility Locates and compare to the Locate Slip as provided by the Foreman. **If the job site is missing a locate marking or the locates do not match the Locate Slip provided, do not attempt to saw cut. Contact the Crew Foreman immediately.**
40. Perform an equipment check, including the following items:
 - Saw blade is in good condition (i.e. Wear, cracks and stability),
 - Water pump is operating properly,
 - Water hoses, valves and fittings are in good condition,
 - Water supply tanks are full (see the note below).

NOTE: When setting up the saw at every job site, ensure that there is enough water in the water supply tanks to complete the job. **If water is required, immediately fill the water supply tanks using the Standard Operating Practice for Hydrant Operation.**

To set up the saw cutting operation:

As required, set up all curb ramps for the saw to mount the curb.

Unload the saw from the trailer, ensuring that the blade does not rub or bump against the trailer.

Position the saw so that the blade is on the same side as the excavation.

Hook up the water supply lines from the water pump to the saw.

Start the water pump.

Ensure that water is being pumped onto the saw blade.

To safely and efficiently operate the saw, observe the following practices during operation:

- **Ensure that the water supply to the blade is adequate.** If the saw runs out of water, **STOP IMMEDIATELY.** Reference the Hydrant Operation S.O.P. for filling instructions.
- **Do not "Undercut".** When the blade starts cutting through the gravel base below the asphalt or concrete surface, water will be lost for blade lubrication, and blade damage will occur.
- **Practice the proper "Step cutting" techniques.** This practice will dramatically extend the saw blade lifespan and ensure that the job is completed quickly.
- Do not leave the saw unattended while it is unloaded.
- Do not attempt to service the saw or blade while the saw motor is operating.

The following personal protective equipment is required for the safe operation of the saw:

- Safety boots
- Hard hat
- Safety vest
- Gloves
- Ear protection
- Eye or full face protection

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