Public Works and Government Services Canada

MERX I.D. No. EZ899-161037/ B

SPECIFICATIONS
For
Fort Rodd Hill National Historic Site
Exterior Lighting Additions
Victoria, BC
Project No. R.073922.001 August 2015

APPROVED BY:

Regional Manager, A&E Services — Date: Dec 21/2015

Construction Safety Coordinator — Date: 2015-06-20

TENDER:

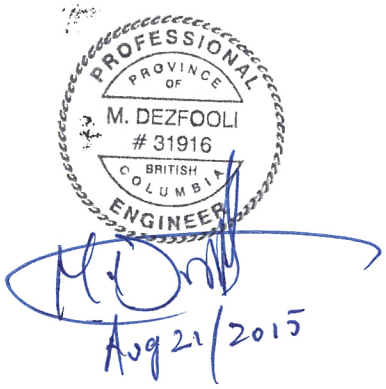
Project Manager — Date: 15/03/21

Division 33 – Utilities

Appendices

Drawing List

CONSULTANTS – SEAL & SIGNATURE

Discipline	**Seal / Signature / Date**
Electrical (Prime)	

END OF SECTION

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises of exterior lighting additions to the Fisgard Lighthouse and Fort Rodd Hill, and further identified as:

Exterior Lighting Additions, Fort Rodd Hill National Historic Site
Victoria, B.C.
PWGSC Project No. R.073922.001

.2 Perform all work in accordance with National Building Code of Canada (NBC) 2005, WorkSafeBC/Workers' Compensation Board (WCB) Regulations and these Contract Documents. Where there is a conflict between Contract Documents and referenced standards, the most stringent will be applied.

1.2 CONTRACT METHOD

.1 Construct the Work under a single lump sum fixed price contract. Mobilization and demobilization, preparatory works and operations for all items under the Contract, including but not limited to those necessary for the aforementioned tasks and those indicated on the drawings shall be considered incidental to the work performed under the Contract. The lump sum payment shall constitute full compensation for furnishing all plant, labour, materials and equipment and performing any associated quality control, reports, environmental protection and meeting safety requirements.

1.3 WORK SEQUENCE

.1 Co-ordinate with progress schedule described in Section 01 32 17 - Construction Progress Schedule.

1.4 USE OF SITE

.1 Limit use of premises for Work, for storage and for access to allow for continuous use of site by public and Parks Canada Staff.

.2 Co-ordinate use of premises under direction of the Departmental Representative.

.3 Assume full responsibility for protection and safekeeping of Products under this Contract.

.4 Do not use any other part of property unless approved in writing by the Departmental Representative.

.5 Store materials and equipment only where directed by the Departmental Representative. Obtain and pay for use of additional storage and work areas if required.

.6 Protect environment in accordance with requirements described in Section 01 35 43 - Environmental Procedures.

.7 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.8 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work.

.9 Condition of existing work at completion of operations to be equal to or better than that which existed before new work started.

.10 Provide necessary protection and hoarding to prevent unauthorized entry into areas of work at all times by staff and public.

.11 Inform the Departmental Representative 3 working days prior to performing work inside any building. Entry into areas of work will be by authorized personnel only and must be delineated during execution of work.

.12 The contractor can have unlimited access to the site from 7:00 am to 10:00 am. The site is open to the public from 10:00 am to 17:00 pm. For the daily period from 10:00 am to 17:00 pm, the Departmental Representative will work with the Contractor so that both public access and construction can occur at the site. This will mean that some portions of the work that interferes with the public access (specifically movement on the walkway connection from Fort Rodd Hill to Fisgard Lighthouse and in the immediate vicinity of entrance to any buildings) may have to occur from 7:00 am to 10:00 am or the contractor can implement other measures to ensure public safety with approval of the Departmental Representative and the site. For most of the work the contractor may cordon the work area so that the public cannot go into the work area.

1.5 REQUIREMENTS FOR OCCUPIED BUILDINGS

.1 Adjacent portions of building and property will remain in use during Work.

.2 Co-operate with the Departmental Representative by scheduling operations to minimize conflict and to facilitate continuous use of building. Do not impede, restrict or obstruct use of building or adjacent portions of property.

.3 Do work in a manner that will minimize creation of noise that would disturb day-to-day operation of building and adjacent property.

.4 Locate stationary noise generating equipment as far away as practical from occupied parts of building, or where directed by the Departmental Representative.

.5 Co-ordinate with the Departmental Representative for necessary shutdown of services affecting occupied parts of building and adjacent property where serviced from building. Provide 72 hours of notice prior to shutdown. Minimize occurrences and durations of shutdowns.

.6 Co-ordinate with the Departmental Representative to ensure that construction activities do not compromise security of building.

.7 Ensure that construction activities do not compromise other active systems within the building.

1.6 SMOKING POLICY

.1 Smoking is NOT permitted on this site.

1.7 PROJECT MEETINGS

.1 The Departmental Representative will arrange project meetings and assume responsibility for setting times, recording and distributing minutes.

1.8 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDINGS

.1 Execute work with least possible interference or disturbance to building occupants, public and normal use of premises. Arrange with the Departmental Representative to facilitate execution of work.

.2 Where security has been reduced by work of Contract, provide temporary means to maintain security.

.3 Provide temporary dust screens, barriers, warning signs in locations where renovation and alteration work is adjacent to areas used by public or government staff.

.4 Protect adjacent surfaces. Make good or replace damaged surfaces and equipment to satisfaction of the Departmental Representative, at no cost to Contract.

.5 Provide barricade warning tape to mark perimeter of work area, as directed by the Departmental Representative.

1.9 ADDITIONAL DRAWINGS

.1 The Departmental Representative may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 CODES

.1 Perform work to CURRENT Codes, Construction Standards and Bylaws, including Amendments up to the TENDER closing date.

1.2 DESCRIPTION OF WORK

.1 Work under this Contract covers addition of Exterior Lighting for Fort Rodd Hill and Fisgard Lighthouse located at 603 Fort Rodd Hill Road, Victoria, BC.

.2 Work to be performed under this contract for addition of exterior lighting includes, but is not limited to, the following items covered further in the Contract documents:

.1 Fisgard Lighthouse
- .1 Lighting of facade of Lighthouse Tower, Caretakers house, Brick Storehouse building (washroom facility) and Boathouse building.
- .2 Lighting of staircase to Caretaker house.
- .3 All new luminaires shall be high efficiency LED type and dimmable to achieve lighting levels suitable for each natural or architectural feature.
- .4 All new luminaires shall be suitable for harsh marine environment.

.2 Fort Rodd Hill
- .1 Lighting of various buildings, walls, landscape and rockeries as indicated on the drawings to highlight building facades, trees and natural rock walls.
- .2 All new luminaires except for in-ground solar markers shall be high efficiency LED type and dimmable to achieve lighting levels suitable for each natural or architectural feature.
- .3 In-ground solar markers as indicated on the drawings.
- .4 All new luminaires shall be suitable for harsh marine environment.

.3 Federal Heritage Classification
- .1 Fort Rodd National Historic Site including all buildings located within the site is classified as Federal Heritage. As such, Contractor shall be careful to the maximum possible extent to prevent any damage to existing surfaces. Wiring installation within the buildings shall make the most use of existing openings in walls and any new penetrations in walls shall be reviewed with Departmental Representative prior to starting installation. Routing of all new U/G wiring installations shall be reviewed with Departmental Representative prior to any excavation.

.4 Luminaires
- .1 Luminaires supplied by PWGSC:
  1. As noted in Luminaire Schedule on drawings and in other sections of specifications, some of the luminaires – c/w associated power supplies where applicable – that are utilized in this project will be supplied by PWGSC. These luminaires are all new in their original packaging and are stored in Sinclair Centre Building at 757 West Hastings in Vancouver.
  2. Immediately after award of Contract, Contactor is to make arrangements with PWGSC to receive these luminaires and deliver to project site for use by Contractor.

3. Contractor is to check physical condition of all PWGSC supplied luminaires prior to shipment to the site in the presence of Departmental Representative and list possible damages to any of the luminaires.
4. Contractor shall take possession of all PWGSC supplied luminaires after receiving them and shall be responsible for safe delivery of luminaires to the site and storage of them prior to use. Pay all costs associated with delivery and insurance during delivery.
5. Detail information for PWGSC supplied luminaires and associated power supplies, where applicable, is included in Appendix 'A' of this specification (reviewed shop drawings for Sinclair Centre project and relevant pictures). Contractor is to review this information prior to bid submittal, contact suppliers of luminaires, obtain any additional information required for installation and wiring of luminaires and include in bid submittal any additional parts including but not limited to those specifically indicated on the drawings that may be required for a complete and operational lighting system as intended.
6. Contact information for PWGSC supplied luminaires:
   - SPI Luminaires supplied by MAC's II Agencies: Mark Sheldrick, Tel: 604-540-6646
   - Lumenpulse luminaires supplied by Lightworks : Darren Luce, Tel: 604-215-7721
   - BK Luminaires supplied by SLS Lighting: Alex Rozenberg, Tel: 604-874-2226

.2 Luminaires supplied by Contractor:
1. Refer to luminaire schedule on the drawings. Include power supplies, dimmers, low voltage transformers etc as required for a complete operational lighting system.

.5 Underground wiring installation

.1 Install underground conduit and wiring as required and detailed on the drawings. Confirm routing of all new U/G wiring installations with Departmental Representative prior to any excavation. Re-instate all surfaces to match existing conditions after completion of work.

.6 Luminaire concrete pad and enclosures

Provide concrete pad and protective enclosure for luminaires mounted on the ground as detailed on the drawings. Enclosure to be made of marine grade aluminum suitable for installation in salt air environment. Provide a sample for review by Departmental Representative prior to fabrication.

.7 Lighting control system

.1 Provide lighting control panels c/w with all necessary devices for scheduling and dimming of all luminaires installed under this project and as detailed in other parts of this specifications and on drawings. Contractor shall be responsible for all necessary programming of lighting control panels as directed by Departmental Representative and bear all the cost for programming.

.8 Lighting control systems commissioning and final aiming of luminaires

.1 Final aiming of all luminaires installed under this project will be scheduled to be done at dark in presence of Departmental Representative. Allow for all expenses including labour, material and equipment for this work to be performed in three (3) consecutive nights.

.2 Commissioning of lighting control system including but not limited to final adjustments to programming, dimming and scheduling of lighting control panels will be done at the same time as aiming of the luminaires noted in the above. An authorized representative of lighting control panel supplier with expertise in programming of the system shall be available during final commissioning and all expenses related to this shall be borne by the Contractor.

.9 "Green" requirements:

.1 Adhere to waste reduction requirement of Section 01 74 19 – Construction/Demolition Waste Management and Disposal for re-use or recycling of waste materials, thus diverting materials from landfill

1.3 CONTRACT DOCUMENTS

.1 Contract documents, drawings and specifications are intended to complement each other and to provide for and include everything necessary for completion of work.

.2 Drawings are, in general, diagrammatic and are intended to indicate scope and general arrangement of work.

1.4 DIVISION OF SPECIFICATIONS

.1 Specifications are subdivided in accordance with current 6-digit National Master Specifications System.

.2 A division may consist of the work of more than one subcontractor. Responsibility for determining which subcontractor provides the labour, material, equipment and services required to complete the work rests solely with the Contractor.

.3 In the event of discrepancies or conflicts when interpreting the drawings and specifications, the specifications govern.

1.5 TIME OF COMPLETION

.1 Commence work immediately upon official notification of acceptance of offer and complete all contract work within twenty-two (22) weeks after contract award.

1.6 WORK RESTRICTIONS

.1 Use of Site and Facilities.

.1 Execute work with least possible interference or disturbance to the normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated. Refer to article 1.7 Construction Progress Schedule below for work that must be done during "off hours".

.2 Do not disrupt existing services to Fort Rodd National Historic Site.

.3 Where security is reduced by work, provide temporary means to maintain security.

.4 Maintain fire access/control.

.5 Provide own sanitary facilities. Keep facilities clean.

.6 Parking: maximum 10 vehicles permitted at compound only.

.2 Special Scheduling Requirements.

.1 Carry out work during "regular hours", Monday to Friday from 07:00 to 20:00 hours and from 08:00 to 18:00 hours on Saturdays, Sundays and statutory holidays.

.2 Give the Departmental Representative 48 hours notice for work to be carried out during "off hours".

.3 Delivery of materials not permitted on Saturdays, Sundays and statutory holidays.

.4 Schedule and execute work with least possible interference and disturbance to the normal use of the National Historic Site and as follows:

.1 Accommodate site staff's intermittent use of premises during the Work.

.2 Special Events:

.1 Site has itinerary of special events throughout the summer.

.2 Departmental Representative to provide schedule of events.

.3 Allow for interruptions of the Work by special events.

.3 Overnight Visitors:

.1 Be aware that Site has areas for overnight tent camping.

1.7 CONSTRUCTION PROGRESS SCHEDULE

.1 Carry on work as follows:

.1 Within 10 working days after Contract award, provide "phasing bar chart" and schedule showing anticipated progress stages and final completion of work within time period required by Contract documents. Indicate following:

.1 Submission of shop drawings, product data, MSDS sheets and samples.

.2 Commencement and completion of work of each section of specifications or trade for each phase as outlined.

.3 Final completion date within time period required by Contract documents.

.2 Do not change approved Schedule - without notifying Departmental Representative.

.3 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.

1.8 COST BREAKDOWN

.1 Before submitting the first progress claim, submit a breakdown of Contract lump sum prices in detail as directed by Departmental Representative and aggregating Contract price.

1.9 CODES, BYLAWS, STANDARDS

.1 Perform work in accordance with Canadian Electrical Code Part 1, 2015 Edition and other relevant Codes, Construction Standards and/or any other Code or Bylaw of local application.

.2 Comply with applicable local bylaws, rules and regulations enforced at location concerned.

.3 Meet or exceed requirements of Contract documents, specified standards, codes and referenced documents.

.4 In any case of conflict or discrepancy, the most stringent requirements will apply.

1.10 DOCUMENTS REQUIRED

.1 Maintain 1 copy each of following at job site:
- .1 Contract drawings.
- .2 Contract specifications.
- .3 Addenda to Contract documents.
- .4 Copy of approved work schedule.
- .5 Reviewed/approved shop drawings.
- .6 Change orders.
- .7 Other modifications to Contract.
- .8 Field test reports.
- .9 Reviewed samples.
- .10 Manufacturer installation and application instructions.
- .11 One set of record drawings and specifications for record purposes.
- .12 Current construction standards of workmanship listed in technical Sections.
- .13 Contractor's Company Health and Safety and the Site Specific Safety Plans.
- .14 Site safety plan
- .15 Permits
- .16 WHMIS documents

1.11 REGULATORY REQUIREMENTS

.1 Building permit submission is not required. Obtain and pay for any other Permits, Certificates, Licenses that may be required by regulatory municipal, provincial or federal authorities to complete the work.

.2 Provide inspection authorities with plans and information required for issue of acceptance certificates.

.3 Furnish inspection certificates in evidence that work installed conforms with requirements of authority having jurisdiction.

1.12 TAXES

.1 Pay all taxes properly levied by law (including Federal, Provincial and Municipal).

1.13 CONTRACTOR USE OF SITE

.1 Use of site:
- .1 Adjacent portions of site will remain occupied during work.
- .2 Co-ordinate use of site under direction of Departmental Representative to minimize disruption of occupied building and public used portions of site.

.2 Perform work in accordance with Contract documents. Ensure that work is carried out in accordance with phasing where applicable.

.3 Do not unreasonably encumber site with material or equipment.

1.14 EXAMINATION

.1 Examine site and be familiar and conversant with existing conditions likely to affect work.

1.15 EXISTING SERVICES

.1 Where work involves breaking into or connecting to existing services, carry out work at times approved by Departmental Representative to minimize inconvenience to existing facilities that are to remain occupied during work.

1.16 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and in accordance with manufacturer recommendations for safety, access and maintenance.

.3 Inform Departmental Representative of impending installation and obtain his approval for actual locations.

.4 Submit field drawings or shop drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.17 SETTING OUT OF WORK

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Provide devices needed to lay out and construct work.

.3 Supply such devices as templates required to facilitate Departmental Representative's inspection of work.

1.18 QUALITY OF WORK

.1 Ensure that quality workmanship is performed through use of skilled trade workers, under

supervision of qualified journeyman.

.2 Workmanship, erection methods and procedures to meet minimum standards set out in specifications, drawings and applicable codes and standards.

.3 In cases of dispute, decisions as to standard or quality of work rest solely with Departmental Representative, whose decision is final.

1.19 WORKS CO-ORDINATION

.1 Co-ordinate work of sub-trades

.1 Designate one person to be responsible for review of contract documents and shop drawings and managing co-ordination of Work.

.2 Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.

.1 Provide each subcontractor with complete plans and specifications for Contract, to assist them in planning and carrying out their respective work.

.2 Develop co-ordination drawings when required, illustrating potential interference between work of various trades and distribute to affected parties.

.1 Pay particular close attention to overhead work above ceilings and within or near to building structural elements.

.2 Identify on co-ordination drawings, building elements, service lines, rough-in points and indicate location services entrance to site.

.3 Facilitate meeting and review co-ordination drawings. Ensure that subcontractors agree and sign off on drawings.

.4 Publish minutes of each meeting.

.5 Plan and co-ordinate work in such a way to minimize quantity of service line offsets.

.6 Submit copy of co-ordination drawings and meeting minutes to Departmental Representative for information purposes.

.3 Submit shop drawings and order of prefabricated equipment or rebuilt components only after co-ordination meeting for such items has taken place.

.4 Work co-ordination:

.1 Ensure co-operation between trades in order to facilitate general progress of Work and avoid situations of spatial interference.

.2 Ensure that each trade provides all other trades reasonable opportunity for completion of Work and in such a way as to prevent unnecessary delays, cutting, patching and removal or replacement of completed work.

.3 Ensure disputes between subcontractors are resolved.

.5 Departmental Representative is not responsible for, or accountable for extra costs incurred as a result of Contractor's failure to co-ordinate Work.

1.20 APPROVAL OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

.1 In accordance with Section 01 33 00 – Submittal Procedures, submit requested shop drawings, product data, MSDS sheets and samples indicated in each technical Section.

.2 Allow sufficient time for following:

.1 Review of product data.

.2 Approval of shop drawings.
.3 Review of re-submission.
.4 Ordering of approved material and/or products.

1.21 PROJECT MEETINGS

.1 Administrative.

.1 Schedule and administer construction project meetings throughout the progress of the Work.
.2 Prepare agenda for meetings.
.3 Preside at meetings.
.4 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
.5 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and Departmental Representative.
.6 Representative of Contractor, Subcontractor attending meetings will be qualified and authorized to act on behalf of party each represents.

.2 Start-up Meeting.

.1 Convene start-up meeting maximum 1 week after official award of contract. Key contractor personnel, contractor site supervisor, Departmental Representative, Parks Representatives to attend.
.2 Establish time and location of meeting and notify parties concerned minimum 7 days before meeting.
.3 Verify project requirements. Agenda to include:
.1 Schedule of Work: in accordance with Article 1.7.
.2 Schedule of submission of shop drawings, samples, mock-ups. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
.3 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00- Construction Facilities.
.4 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and Article 1.25 Site Security below.
.5 Proposed changes, procedures, approvals required, administrative requirements.
.6 As-built/Record drawings in accordance with Section 01 78 30 - Closeout Submittals and Article 1.23 below.
.7 Maintenance manuals in accordance with Section 01 78 30 - Closeout Submittals.
.8 Take-over procedures, acceptance, warranties in accordance with Section 01 78 30 - Closeout Submittals below.
.9 Monthly progress claims, administrative procedures, photographs, hold backs.
.10 Appointment of inspection and testing agencies or firms.
.11 Insurances, transcript of policies.

.3 Site Review by Departmental Representatives.

.1 Provide access at all times for site visits, site review by Departmental Representatives.

.2

.4 Regular Project Meetings.

.1 Hold project meetings every 2 weeks.

.2 Key contractor personnel, contractor site supervisor, Departmental Representative, Parks Representatives to attend.

.3 Notify parties minimum 3 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 4 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Use of Site, Safety and Security

.4 Field observations, Site Reviews,

.5 Review of delivery schedules.

.6 Upcoming work and any Revisions to construction schedule.

.7 Review of submittal schedules: expedite as required.

.8 Review of any proposed changes for affect on construction schedule and on completion date.

1.22 TESTING AND INSPECTION

.1 Particular requirements for inspection and testing to be carried out by testing service or laboratory approved by Departmental Representative are specified in following sections:

.1 Section 26 05 01 – Common Work Results - Electrical
.2 Section 26 24 17 – Panelboards Breaker Type
.3 Section 26 24 18 – Portable Power Distribution
.4 Section 26 50 00 – Lighting.

.3 Where tests or inspections by designated testing laboratory reveal work is not in accordance with Contract requirements, Contractor will pay costs for additional tests or inspections as Departmental Representative may require to verify acceptability of correct work.

.4 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Departmental Representative.

.5 Contractor to pay for test.

1.23 RECORD DOCUMENTS

.1 The Departmental Representative will provide 8 sets of drawings and 4 sets of

specifications and PDF files, including 2 sets of drawings and specification and original AutoCAD files for "as-built" purposes.

.2 Keep one set of current white prints of all contract drawings and all addenda, revisions, clarifications, change orders, and reviewed shop drawings in the site office; and have them available at all times for inspection by the Consultant.

.3 As the work progresses, maintain accurate records to show all deviations from the Contract documents. Note on as-built specifications, drawings and shop drawings as changes occur.

.4 Provide accurate as-built drawings by a qualified professional surveyor identifying the various elements shown on the drawings in the requested format.

.5 At completion of the Work, transfer all deviations, including those called up by addenda, revisions, clarifications, shop drawings and change order, to a set of Issued for Construction drawings. Submit for review the 'red-marked' as-built set to the Departmental Representative in hard copy with contractor's review stamp and date confirming that the set submitted are a true record of "as-built" information. After acceptance of 'red-marked' as built set by Departmental Representative, Contractor is to proceed with preparation of CAD as-built drawings.

.6 Refer to Section 01 78 00 – Close-out Submittals.

1.24 CLEANING

.1 Daily conduct cleaning and disposal operations. Comply with local ordinances and anti-pollution laws.

.2 Ensure clean-up of work areas each day after completion of work.

.3 Clean interior building areas when ready to receive finish painting and continue cleaning on an as-needed basis until building is sufficiently completed or ready for occupancy.

.4 Clean exterior building areas.
- .1 Remove dirt and other disfiguration from exterior surfaces including roof and roof gutters.
- .2 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .3 Sweep and wash clean paved areas and all pavement parking/storage areas used by Contractor to remove all traces of construction spillage, stains and residue. Do not blast dirty water onto adjacent buildings and site features.

.5 In preparation for interim and final inspections:
- .1 Examine all sight-exposed interior and exterior surfaced and concealed spaces.
- .2 Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from sight-exposed interior and exterior finished surfaces, including glass and other polished surfaces.

.6 Use cleaning materials and methods in accordance with instructions of manufacturer of surface to be cleaned.

1.25 SITE SECURITY

.1 Departmental Representative will provide key for Main Gate access.

.1 Ensure Main Gate is locked after 17:30 hours and when daily work is completed.

.2 Be responsible for construction yard and work area security.

.3 Ensure construction zone and access to the National Historic Site is secure against entry when the work site is closed.

1.26 RELICS AND ANTIQUITIES

.1 Relics and antiquities and items of historical or scientific interest that are found during construction shall remain property of Department. Protect such articles and request directives from Departmental Representative.

.2 Give immediate notice to Departmental Representative if evidence of archeological finds are encountered during excavation/construction, and await Departmental Representative's written instructions before proceeding with work in this area.

.3 For all excavation work, retain services of an Archeologist to be present at all times during excavation activities.

.4 Provide proof of all the mandatory criteria for the Archeologist outlived below:

.1 Proof that the Archeologist conducting this work his at one time held a BC Heritage Conservation permit from BC Archaeology Branch in his/her own name.

.2 Proof that the Archeologist conducting this work has completed a Bachelor of Art degree in archeology, or anthropology with a specialty in archeology.

.3 Examples of work conducted in BC in the last five (5) years.

.4 Obtain and pay for any permits, if required by jurisdiction and recommended by RPCA. Send copy of approvals, permits and reports to Departmental Representative.

.5 Allow for site monitoring of First Nation, retain representative of First Nation if required, in parallel with the monitoring of the Archeologist.

1.27 DUST CONTROL

.1 Provide temporary dust tight screens or partitions to localize dust generating activities and for protection of workers, finished areas of work, adjacent areas and public.

1.28 ENVIRONMENTAL PROTECTION

.1 Prevent extraneous materials from contaminating air beyond construction area, by providing temporary enclosures during work.

.2 Do not dispose of waste or volatile materials into water courses, storm or sanitary sewers.

.3 Ensure proper disposal procedures in accordance with all applicable provincial regulations.

1.29 ADDITIONAL DRAWINGS

.1 Departmental Representative may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract documents.

.2 Upon request, Departmental Representative may furnish up to a maximum of 10 sets of Contract documents for use by Contractor at no additional cost. Should more than 10 sets of documents be required Departmental Representative will provide them at additional cost.

1.30 BUILDING SMOKING ENVIRONMENT

.1 Do not smoke within building.

1.31 SYSTEM OF MEASUREMENT

.1 Metric system of measurement (SI) will be employed on this Contract.

1.32 SITE VISIT

.1 The bidding Contractors are strongly encouraged to visit the site prior to bid submittal to examine closely any local and existing conditions likely to affect the cost of work.

.2 Arrangement for site visit will be made with PWGSC during tender period.

.3 The bidding Contractors are expected to examine the site in detail to determine the specific work required to complete the Contract.

1.33 SUBMISSION OF TENDER

.1 Submission of tender is deemed to be confirmation of the fact that the Tenderer has analysed the Contract documents and inspected the site and is fully conversant with all conditions.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SCHEDULES REQUIRED

.1 Submit schedules as follows.

- .1 Construction progress schedule.
- .2 Submittal schedule for shop drawings and product data.
- .3 Product delivery schedule.

1.2 FORMAT

.1 Prepare schedule in form of horizontal bar chart (GANTT).

.2 Provide a separate bar for each major item of work, trade or operation.

.3 Provide horizontal time scale identifying first work day of each week.

.4 Format for listings: chronological order of start of each item of work.

.5 Identification of listings: by Specification subjects or system descriptions.

1.3 SUBMISSION

.1 Submit initial schedule within 1 working days after award of Contract.

.2 Submit minimum of 3 copies to be retained by the Departmental Representative.

.3 The Departmental Representative will review schedule and return review copy within 7 working days after receipt.

.4 Re-submit finalized schedule within 3 working days after return of review copy.

.5 Submit revised progress schedule with each application for payment.

.6 Distribute copies of revised schedule to:

- .1 Subcontractors.
- .2 Other concerned parties.

.7 Instruct recipients to report to Contractor within 5 working days, any problems anticipated by timetable shown in schedule.

1.4 SCHEDULING

.1 Include complete sequence of construction activities.

.2 Include dates for commencement and completion of each major element of construction as follows.

.3 Show projected percentage of completion of each item as of first day of week.

.4 Indicate progress of each activity to date of submission schedule.

.5 Show changes occurring since previous submission of schedule:

.1 Major changes in scope.
.2 Activities modified since previous submission.
.3 Revised projections of progress and completion.
.4 Other identifiable changes.

.6 Provide a narrative report to define:

.1 Problem areas, anticipated delays and impact on schedule.
.2 Corrective action recommended and its effect.

1.5 PROGRESS REPORTS

.1 Maintain accurate record of the progress of the Work. Submit progress reports at times requested by the Departmental Representative.

.2 Include in reports dates of commencement and percentage of work completed for different parts of the Work.

1.6 STAFFING AND OVERTIME

.1 Cease work at any particular point and transfer workers to other designated points, when so directed, should the Departmental Representative judge it necessary to expedite the Work.

.2 Should the Work fail to progress according to the approved progress schedule, work such additional time (including weekends and holidays), employ additional workers, or both, as may be required to bring the Work back on schedule, at no additional cost to Contract.

1.7 SUBMITTALS SCHEDULE

.1 Include schedule for submitting shop drawings, product data and samples.

.2 Indicate dates for submitting, review time, re-submission time, last date for meeting fabrication schedule.

.3 Include dates when reviewed submittals will be required from the Departmental Representative.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 APPROVALS

.1 Approval of shop drawings and samples: refer to Section 01 11 55 - General Instructions.

2.1 GENERAL

.1 This Section specifies general requirements and procedures for Contractor's submissions of shop drawings, product data, samples and other requested submittals to Departmental Representative for review. Additional specific requirements for submissions are specified in individual technical sections.

.2 Present shop drawings, product data and samples in SI Metric units.

.3 Where items or information is not produced in SI Metric units, converted values are acceptable.

.4 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submissions.

.5 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract documents and stating reasons for deviations.

.6 Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Departmental Representative's review of submission unless Departmental Representative gives written acceptance of specific deviations.

.7 Make any changes in submissions which Departmental Representative may require consistent with Contract documents and resubmit as directed by Departmental Representative.

.8 Notify Departmental Representative in writing, when resubmitting, of any revisions other than those requested by Departmental Representative.

.9 Do not proceed with work until relevant submissions are reviewed and approved by Departmental Representative.

3.1 SUBMISSION REQUIREMENTS

.1 Co-ordinate each submission with requirements of work and Contract documents. Individual submissions will not be reviewed until all related information is available.

.2 Allow 10 working days for Departmental Representative's review of each submission, unless noted otherwise.

.3 Accompany submissions with transmittal letter, in duplicate, containing:
- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.4 Submissions to include:
- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract documents.

.5 Details of appropriate portions of work as applicable.
- .1 Fabrication.
- .2 Layout, showing dimensions (including identified field dimensions and clearances).
- .3 Setting or erection details.
- .4 Capacities.
- .5 Performance characteristics.
- .6 Standards.
- .7 Operating weight.
- .8 Wiring diagrams.
- .9 Single line and schematic diagrams.
- .10 Relationship to adjacent work.

.6 After Departmental Representative's review, distribute copies.

4.1 SHOP DRAWINGS

.1 Shop drawings: original drawings or modified standard drawings provided by Contractor to illustrate details of portion of work which are specific to project requirements.

.2 Maximum sheet size: 850 x 1050 mm.

.3 Submit 6 prints of shop drawings for each requirement requested in specification sections and/or as requested by Departmental Representative.

.4 Cross-reference shop drawing information to applicable portions of Contract documents.

5.1 SHOP DRAWINGS REVIEW

.1 Review of shop drawings by Department Representative is for the sole purpose of ascertaining conformance with the general concept.

.2 This review will not mean the Department Representative approves detail design inherent in shop drawings, responsibility for which remains with Contractor submitting same.

.3 This review will not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract documents.

.4 Without restricting the generality of the foregoing, Contractor is responsible for:
- .1 Dimensions to be confirmed and correlated at job site.
- .2 Information that pertains solely to fabrication processes or to techniques of construction and installation.

.3 Co-ordination of work of all sub-trades.

6.1 PRODUCT DATA

.1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other specified information.

.2 Delete information not applicable to project.

.3 Supplement standard information to provide details applicable to project.

.4 Cross-reference product data information to applicable portions of Contract documents.

.5 Submit 6 copies of product data.

7.1 SAMPLES

.1 Samples: examples of materials, equipment, quality, finishes and workmanship.

.2 Where colour, pattern or texture is a criterion, submit a full range of samples.

.3 Reviewed and accepted samples will become standard of workmanship and material against which installed work will be verified.

8.1 PROGRESS SCHEDULE

.1 Submit work schedule and cost breakdown as required in Section 01 11 55 - General Instructions.

9.1 SUSTAINABLE (GREEN) REQUIREMENTS SUBMITTALS

.1 Provide submittals to show compliance with waste management and disposal requirements in accordance with Section 01 74 19 – Construction/Demolition Waste Management and Disposal.

.2 Submit 6 copies of documentation.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Government of Canada:
- .1 Canada Labour Code - Part II
- .2 Canada Occupational Health and Safety Regulations.

.2 National Building Code of Canada (NBC) 2010:
- .1 Division B, Safety Measures at Construction and Demolition Sites.

.3 Canadian Standards Association (CSA) as amended:
- .1 CSA Z797-2009 Code of Practice for Access Scaffold.
- .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes.
- .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.

.4 Fire Protection Engineering Services, HRSDC:
- .1 FCC No. 301, Standard for Construction Operations.
- .2 FCC No. 302, Standard for Welding and Cutting.

.5 American National Standards Institute (ANSI):
- .1 ANSI/ASSE A10.3-2006, American National Standard - Construction and Demolition Operations- Safety Requirements for Powder-Actuated Fastening Systems.

.6 Province of British Columbia:
- .1 Workers' Compensation Act Part 3-Occupational Health and Safety.
- .2 Occupational Health and Safety Regulation.

1.2 RELATED SECTIONS

.1	Construction Progress Schedule	Section 01 32 17
.2	Submittal Procedures	Section 01 33 00
.3	Temporary Facilities	Section 01 51 00
.4	Temporary Barriers and Enclosures	Section 01 56 00
.5	Asbestos Abatement Intermediated Precautions	Section 02 82 00.02
.6	Lead Base Paint Abatement Intermediate Precautions	Section 02 83 11

1.3 WORKERS' COMPENSATION BOARD COVERAGE

.1 Comply fully with Workers' Compensation Act, regulations and orders made pursuant thereto and any amendments up to completion of work.

.2 Maintain Workers' Compensation Board coverage during term of Contract, until and including date that Certificate of Final Completion is issued.

1.4 COMPLIANCE WITH REGULATIONS

.1 PWGSC may terminate Contract without liability to PWGSC where Contractor, in the opinion of PWGSC, refuses to comply with a requirement of Workers' Compensation Act or Occupational Health and Safety Regulations.

.2 It is Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform work as required by Workers' Compensation Act or Occupational Health and Safety Regulations.

1.5 SUBMITTALS

.1 Submit to Departmental Representative submittals listed for review, in accordance with Section 01 33 00 – Submittal Procedures.

.2 Work effected by submittal will not proceed until review is complete.

.3 Submit following:
- .1 Health and Safety Plan for Company and a site specific health and safety plan.
- .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .3 Copies of incident and accident reports.
- .4 Complete set of Material Safety Data Sheets (MSDS) and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
- .5 Emergency Procedures.

.4 Departmental Representative will review Contractor's site-specific project Health and Safety Plan and emergency procedures and provide comments to Contractor within 5 working days after receipt of plan. Revise plan as appropriate and re-submit to Departmental Representative.

.5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work and submit additional certifications for any new site personnel to Departmental Representative.

.6 Submission of Health and Safety Plan and any revised version to Departmental Representative is for information and reference purposes only. It will not:
- .1 Be construed to imply approval by Departmental Representative.
- .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
- .3 Relieve Contractor of his legal obligations for provision of health and safety on project.

1.6 RESPONSIBILITY

.1 Assume responsibility as Prime Contractor for work under this Contract

.2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.3 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial and local statutes, regulations and ordinances and with site-specific Health and Safety Plan.

1.7 HEALTH AND SAFETY CO-ORDINATOR

.1 Health and Safety Co-ordinator must:
- .1 Be responsible for completing all health and safety training and ensuring that personnel that do not successfully complete required training are not permitted to enter site to perform work.

.2 Be responsible for implementing, daily enforcing and monitoring site-specific Health and Safety Plan.

.3 Be on site during execution of work.

1.8 GENERAL CONDITIONS

.1 Provide safety barricades and lights around work site as required to provide safe working environment for workers and protection for pedestrian and vehicular traffic.

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of work site.
- .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel and temporary lighting as required.
- .2 Secure site at night time as deemed necessary to protect site against entry.

1.9 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:
- .1 Energized electrical services.
- .2 Working from heights.
- .3 Working in the open exposed to high winds and precipitation.

1.10 REGULATORY REQUIREMENTS

.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

.2 In event of conflict between any provision of above authorities, the most stringent provision will apply. Should dispute arise in determining the most stringent requirement, the Departmental Representative will advise on course of action to be followed.

1.11 WORK PERMITS

.1 Obtain speciality permit(s) related to project before start of work.

1.12 FILING OF NOTICE

.1 Complete and submit Notice of Project as required by Provincial authorities.

.2 Provide copies of all notices to Departmental Representative.

1.13 HEALTH AND SAFETY PLAN

.1 Conduct site-specific hazard assessment based on review of Contract documents, required work and project site. Identify known and potential health risks and safety hazards.

.2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including but not limited to following:

- .1 Primary requirements:
  - .1 Contractor's safety policy.
  - .2 Identification of applicable compliance obligations.
  - .3 Definition of responsibilities for project safety/organization chart for project.
  - .4 General safety rules for project.
  - .5 Job-specific safe work, procedures.
  - .6 Inspection policy and procedures.
  - .7 Incident reporting and investigation policy and procedures.
  - .8 Occupational Health and Safety.
  - .9 Occupational Health and Safety meetings.
  - .10 Occupational Health and Safety communications and record keeping procedures.
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of work.
- .3 List hazardous materials to be brought on site as required by work.
- .4 Indicate engineering and administrative control measures to be implemented at site for managing identified risks and hazards.
- .5 Identify personal protective equipment (PPE) to be used by workers.
- .6 Identify personnel and alternates responsible for site safety and health.
- .7 Identify personnel training requirements and training plan, including site orientation for new workers.

.3 Develop plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in plan.

.4 Revise and update Health and Safety Plan as required and re-submit to Departmental Representative.

.5 Departmental Representative's review: review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) will not relieve Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.14 EMERGENCY PROCEDURES

.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:

- .1 Designated personnel from own company.
- .2 Regulatory agencies applicable to work and as per legislated regulations.

.3 Local emergency resources.
.4 Departmental Representative.

.2 Include following provisions in emergency procedures:
.1 Notify workers and first-aid attendant, of nature and location of emergency.
.2 Evacuate all workers safely.
.3 Check and confirm safe evacuation of all workers.
.4 Notify fire department or other emergency responders.
.5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond workplace.
.6 Notify Departmental Representative.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:
.1 Work at high angles.
.2 Work in confined spaces or where there is risk of entrapment.
.3 Work with hazardous substances.
.4 Underground work.
.5 Work on, over, under and adjacent to water.
.6 Workplaces where there are persons who require physical assistance to be moved.

.4 Design and mark emergency exit routes to provide quick and unimpeded exit.

.5 Revise and update emergency procedures as required and re-submit to Departmental Representative.

1.15 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Departmental Representative and in accordance with Canada Labour Code.

.2 Where use of hazardous and toxic products cannot be avoided:
.1 Advise Departmental Representative beforehand of product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 33 00 - Shop Drawings, Product Data and Samples.
.2 In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left building.
.3 Provide adequate means of ventilation in accordance with Section 01 51 00 - Temporary Utilities.

1.16 ELECTRICAL SAFETY REQUIREMENTS

.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.
.1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.
.2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.17 ELECTRICAL LOCKOUT

.1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.

.2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by Departmental Representative.

.3 Keep documents and lockout tags at site and list in log book for full duration of Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

1.18 OVERLOADING

.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.19 FALSE WORK

.1 Design and construct falsework in accordance with CSA S269.1.

1.20 SCAFFOLDING

.1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with Z797-2009 Code of Practice for Access Scaffold and B.C. Occupational Health and Safety Regulations.

1.21 CONFINED SPACES

.1 Carry out work in confined spaces in compliance with Provincial regulations.

1.22 POWDER-ACTUATED DEVICES

.1 Use powder-actuated devices in accordance with ANSI/ASSE A10.3 only after receipt of written permission from Departmental Representative.

1.23 FIRE SAFETY AND HOT WORK

.1 Obtain Departmental Representative's authorization before welding, cutting or any other hot work operations can be carried out on site.

.2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

1.24 FIRE SAFETY REQUIREMENTS

.1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC-approved, sealed containers and remove from site on daily basis.

.2 Handle, store, use and dispose of inflammable and combustible materials in accordance with the National Fire Code of Canada.

1.25 FIRE PROTECTION AND ALARM SYSTEMS

.1 Fire protection and alarm systems not to be:
- .1 Obstructed.
- .2 Shut off.
- .3 Left inactive at the end of a working day or shift.

.2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

.3 Be responsible/liable for costs incurred from fire department, building owner and tenants, resulting from false alarms.

1.26 UNFORSEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of work, immediately stop work and advise Departmental Representative verbally and in writing.

1.27 POSTED DOCUMENTS

.1 Post legible versions of following documents on site:
- .1 Health and Safety Plan.
- .2 Sequence of work.
- .3 Emergency procedures.
- .4 Site drawing showing project layout, location(s) of first-aid station(s), evacuation route and marshalling station and emergency transportation provisions.
- .5 Notice of Project.
- .6 Floor plans or site plans.
- .7 Notice as to where a copy of Workers' Compensation Act and Regulations are available on work site for review by employees and workers.
- .8 Workplace Hazardous Materials Information System (WHMIS) documents.
- .9 Material Safety Data Sheets (MSDS).
- .10 List of names of Joint Health and Safety Committee members or Health and Safety Representative, as applicable.
  - .1 Name of "qualified co-ordinator" responsible for co-ordination of health and safety activities in accordance with Section 118 of Workers' Compensation Act.

.2 Post all Material Safety Data Sheets (MSDS) on site, in common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.

.3 Postings to be protected from weather and be visible from street or exterior of principal construction site shelter provided for workers and equipment, or as approved by

Departmental Representative.

1.28 MEETINGS

.1 Attend health and safety pre-construction meeting and all subsequent meetings called by Departmental Representative.

1.29 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

.3 Departmental Representative may issue "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. General Contractor will be responsible for costs arising from such "stop work order".

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 01 74 11 – Cleaning

.3 Section 01 74 19 – Construction/Demolition Waste Management and Disposal

.4 Section 31 71 75 – Underground Civil Work – Electrical

1.2 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

.3 Soil: includes unconsolidated mineral or organic material; fill; and sediment deposited on land.

1.3 FIRES

.1 Fires and burning of rubbish on site not permitted.

1.4 DISPOSAL OF WASTES

.1 Do not discard or dispose of rubbish and waste materials on site unless approved by the Departmental Representative.

.2 Construction wastes must be stored securely and disposed of properly at an approved off-site location.

.3 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.5 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing deleterious substances into waterways, sewer or drainage systems.

.3 Control disposal or runoff of water from excavations, pits, trenches, stockpiled materials and roadways containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Do not dump excavated fill, waste material or debris in waterways.

1.7 POLLUTION CONTROL

.1 Install and maintain temporary erosion and sediment control structures, as required, to ensure that deleterious substances do not enter waterways, sewers and stormwater systems.

.2 Protect the roadways from tracking mud, soil and debris throughout the work. Clean the roads as required to maintain a clean worksite.

.3 Control emissions from equipment and plant to local authorities' emission requirements.

.4 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.

.5 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

1.8 SPILLS OR RELEASE OF DELETERIOUS SUBSTANCES

.1 Spills can happen at any time during construction, and there are specific times when the risk is higher such as during the use of paints, corrosive protective coatings, wood preservatives and while working with concrete. Sawdust and wood shavings may enter the marine environment from cutting and drilling during repairs. Potential spills of deleterious substances could result in contamination of the local marine environment, which is a potential violation under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act.

.2 Measures to be implemented to prevent, control, or mitigate spills or release of deleterious substances:

- .1 Emergency response procedure for spills of deleterious substances must be in place. In the event of a spill, the Contractor shall immediately implement the appropriate protocols. In the event of a Level I spill (easily contained and cleaned) the contractor will provide spill response and notify the Departmental Representative that a spill has occurred. In the event that there is a Level II spill (spill that cannot be easily contained or cleaned up), the Contractor shall call 911.
- .2 Response equipment is to be on site at all times (i.e. spill kits) and workers trained in their location and use. The resources on hand must be sufficient to respond effectively and expediently to any spill that could occur onsite.
- .3 All construction equipment brought onto the site will be clean and properly maintained.
- .4 Equipment fuelling or lubricating shall occur in a designated area >30m from the marine environment with proper controls to prevent the release of deleterious substances and shall be conducted away from any surface water drains or collection points.
- .5 Any equipment remaining on site overnight shall have appropriately placed drip pans.
- .6 The Contractor shall take due care to ensure no deleterious materials including sediment-laden runoff leave the worksite, or enter any surface water or storm water or sanitary sewer at or near the worksite.

.7 Concrete wash water from cast-in-place concrete works (within the first 72hrs) shall not enter any surface water or storm water or sanitary sewer at or near the worksite. Concrete pouring should not be performed if significant precipitation events are expected within 72 hours.

.8 The Contractor shall ensure that no sawdust or shavings enter the marine environment. In the event that sawdust and shavings enter the marine environment, they shall be collected promptly and disposed of appropriately.

.9 The rinse, cleaning water or solvents for glues, paints, wood preservatives and other potentially harmful or toxic substances shall be controlled so as to prevent leakage, loss of discharge into the storm drain system or into the marine environment.

.10 Prevent discharges containing asphalt, grout, concrete or other waste materials from reaching storm drains or the marine environment. This includes, but is not limited to:

.1 Minimizing the washing of sand or gravel from new asphalt, debris from drilling or cutting or other materials into storm drains and the marine environment by sweeping.

.2 Application of fog seals, tack coats or other coatings, if required, during periods when rainfall is unlikely to occur during application.

.3 Cleaning equipment off site.

.4 Protection of drainage structures with filter fences if required.

1.9 HAZARDOUS MATERIALS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

.2 Store hazardous or toxic substances in a designated area.

.3 Manage transport and dispose of hazardous materials in an approved legal manner in accordance with hazardous waste regulations.

.4 Provide the Departmental Representative with waste manifest for disposal of hazardous materials.

1.10 SOIL MANAGEMENT

.1 All soil to be removed from the site must be characterized through representative sampling and analysis prior to removal and disposal. All analytical results will be reviewed by the Departmental representative prior to removal of any material from the site. When applicable, soil shall be disposed in permitted facilities in accordance with applicable legislation. All stockpiled soils must be covered at all times.

.2 The Contractor shall arrange for testing of the soil.

.3 Testing and sampling must be done by a independent testing agency accredited according to the Standards Council of Canada, the Canadian Association of Laboratory Accreditation Inc. (ISO/IEC 17025), and British Columbia Ministry of Environment.

.4 Sampling protocol shall be implemented on anticipated volumes as per BC guidelines.

.5 All samples are to be tested at a minimum for Metals, PAH and Hydrocarbons.

.6 The contractor shall ensure all samples are analyzed in accordance with the British Columbia Environmental Laboratory Manual, 2009 Edition prepared by the BC Ministry of Environment.

.7 Test results are to be compared to the BC Contaminated Sites Regulations (CSR).

.8 Contractor is to submit to the Departmental representative a professional report, for review, with laboratory results, analysis and recommendations for disposal.

.9 The Departmental Representative will review all sampling results and will approve the disposal option based on the level of contamination found.

.10 Contaminated soil removed from the site shall be transported and disposed in accordance with all applicable legislation.

.11 All stockpiled materials shall be:

.1 placed on an impermeable surface.
.2 covered with 6-mil poly during precipitation events.
.3 covered with 6 mil poly at the end of each work day,
.4 covered with 6 mil poly when not in use.

.12 The Contractor shall minimize cross-contamination and mixing of individual stockpiles. Individual stockpiles are to be no larger than $50m^3$ in size.

.13 Contractor shall provide suitable equipment at the stockpile site to pile soil into individual stockpiles and for site maintenance.

.14 All stockpiled areas shall be reinstated to original condition or better.

1.11 IMPORT OF FILL MATERIAL

.1 FILL CHARACTERIZATION AND DOCUMENTATION

.1 All imported fill material, regardless of type, shall be tested for the level of contamination prior to arrival on-site.
.2 Environmental characterization of fill material must be conducted in accordance with the British Columbia, Ministry of Environment, Technical Guidance Document #1 – Site Characterization and Confirmation Testing.
.3 Only fill material passing the CCME Residential/Parkland (RL/PL) Land Usage Soil Quality Guidelines will be acceptable for use on Crown land.
.4 The contractor shall submit documented proof to the Departmental Representative that all imported material for this project meets CCME Residential/Parkland (RL/PL) Land Usage Soil Quality Guidelines prior to fill being brought to site.
.5 Documented proof shall be in the form of a signed cover letter and signed test analysis results, from an independent testing firm accredited according to the Standards Council of Canada, the Canadian Association of Laboratory Accreditation Inc. (ISO/IEC 17025), and British Columbia Ministry of Environment.
.6 The cover letter shall:
.1 clearly state that all imported material meets the stated guidelines,
.2 include the name and location of all material sources,
.3 identify the nature of current and historic activities conducted at the

source.

.7 The test analysis reports shall:

.1 clearly show the test results for each type of material tested and compared against the CCME Residential/Parkland (RL/PL) Land Usage Soil Quality Guidelines, in an easily-read tabular format.

.2 Include tests results conducted within 3 months of the date of submittal.

.3 include the name and location of all material sources.

.8 All material brought to the site that does not meet the CCME RL/PL Guidelines will be removed from the property immediately at the contractors cost.

1.12 ARCHAEOLOGICAL RESOURCES

.1 Archaeological features may potentially be discovered and disturbed at the site during excavation and/or building construction. Prior to excavation, site supervisors and excavation operators shall attend a 1 hour on-site archaeological briefing.

.2 If archaeological deposits are discovered during the project, work shall stop immediately and the Departmental Representative shall immediately be notified.

.3 Archaeologically significant material, if found on the property, remains the property of the Crown and shall not be removed from the site.

.4 Refer to Article 1.26 in Section 01 11 55 – General Instructions for information related to retaining services of a registered Archeologist during excavation.

1.13 SITE RESTORATION

.1 Disturbed areas shall be seeded at the end of the project to prevent erosion and to stabilize the soil.

1.14 NOTIFICATION

.1 The Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection Plan, Erosion and Sediment Control Plan or Soil Management Plan.

.2 Contractor: after receipt of such notice, inform the Departmental Representative of proposed corrective action and take such action for approval by the Departmental Representative.

.3 The Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

.1 CSA C22.1 Canadian Electrical Code Part1, 2015 edition.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

.3 WorkSafe BC/WCB Regulations, Canada Labour Code Part II, Canada Occupational Safety and Health Regulations.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 INSPECTION

.1 Be responsible for quality control during execution of Work.

.2 Allow the Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by the Departmental Representative's instructions, or law of Place of Work.

.4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.5 The Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Canada will pay cost of examination and replacement.

1.2 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.3 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by the Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of the Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, the Departmental Representative may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by the Departmental Representative.

1.4 REPORTS

.1 Submit 3 copies of inspection and test reports to the Departmental Representative.

.2 Provide copies to Subcontractor of work being inspected or tested, manufacturer or

fabricator of material being inspected or tested.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.2 DE-WATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

.2 Conform to sediment and erosion control requirements described in Section 01 35 43 - Environmental Procedures and 01 52 00 - Construction Facilities.

1.3 WATER SUPPLY

.1 Potable water is available for construction use at no cost. Departmental Representative will determine delivery points.

.2 Exercise conservation whenever using water supply. Do not leave water running unattended.

.3 Provide all equipment and temporary hoses to bring these services to work, at no additional cost to Contract.

1.4 TEMPORARY POWER AND LIGHT

.1 Electric power is available for construction purposes at no cost at limited locations.

.2 Departmental Representative will determine delivery points and quantitative limits. Departmental Representative's written permission is required before any connection is made. Connect to existing power supply in accordance with Canadian Electrical Code.

.3 Provide and maintain temporary lighting throughout project, if required to work after dark.

.4 Provide all equipment and temporary lines to bring these services to work, at no additional cost to Contract.

.5 Supply of temporary services by Departmental Representative is subject to Departmental Representative's requirements and may be discontinued at any time without notice, without acceptance of any liability for damage or delay caused by such withdrawal of temporary services.

.6 Exercise conservation whenever using temporary electrical power supply.

1.5 TEMPORARY COMMUNICATION

.1 Provide, maintain and pay for temporary telephone and fax communications necessary for own use and for communicating with Departmental Representative during Work. Advise Departmental Representative of telephone and fax numbers immediately upon installation

.2 Provide, maintain and pay for temporary e-mail and data communications necessary for

own use and for communicating with Departmental Representative during Work. Advise Departmental Representative of contact information immediately upon installation.

1.7 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

.2 Conform to site fire plan where in effect.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International).
.1 CAN/CSA-Z321-96(R2006), Signs and Symbols for the Workplace.

1.3 SCAFFOLDING

.1 Provide and maintain scaffolding, ladders and platforms required for performance of Work.

1.4 HOISTING

.1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.

.2 Hoists to be operated by certified operators.

1.5 SITE STORAGE/LOADING

.1 Confine work and operations of employees to areas defined by Contract Documents unless directed otherwise in writing by Departmental Representative. Do not unreasonably encumber premises with products.

1.6 CONSTRUCTION PARKING

.1 Arrange parking in areas directed by Departmental Representative.

.2 Existing roads may be used for access to project site. Maintain construction parking area clean and free of construction-related debris, spillage and soiling.

.3 Make good damage resulting from Contractor's use of parking areas and roads at no cost to Contract.

1.7 SECURITY

.1 Refer to Section 01 11 55 - General Instructions for conditions governing site security and access.

1.8 SITE OFFICE

.1 Provide and maintain site office at own expense during performance of Work. Maintain in clean condition. Equip with lighting, heat and adequate fresh air ventilation.

.2 Arrange and equip office to allow for proper filing and examination of Contract Documents and regulatory documents.

.3 Equip office with adequate first aid facilities to requirements of governing authorities.

.4 Locate within work area.

1.9 EQUIPMENT, TOOL, MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, locking storage for tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds.

.3 Locate within work area in a manner to cause least interference with work activities.

1.10 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

.3 Locate within work area in a manner to cause least interference with work activities.

1.11 CONSTRUCTION SIGNAGE

.1 Provide project identification sign as directed by the Departmental Representative after award of contract.

1.12 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water run-off and airborne dust to adjacent properties and walkways.

.2 Inspect, repair and maintain erosion and sedimentation control measures during construction.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.2 HOARDING

.1 Provide plywood hoarding around work area to enclose activities and material storage. Alter and modify as required to accommodate Work.

.2 Provide barriers around trees and plants. Protect from damage by equipment and construction procedures.

1.3 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished openings.

.2 Design enclosures to withstand wind pressure and snow loading.

1.4 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.5 PROTECTION OF PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred at no additional cost to Contract.

1.6 PROTECTION OF BUILDING FINISHES

.1 Provide protection for existing finished building surfaces and equipment during performance of Work.

.2 Provide necessary screens, covers, pads and hoardings.

.3 Be responsible for damage incurred due to lack of or improper protection, at no additional cost to Contract.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 PRODUCTS/MATERIAL AND EQUIPMENT

.1 Use NEW products/material and equipment unless otherwise specified. Term "products" is referred to throughout specifications.

.2 Use products of one (1) manufacturer for material and equipment of same type or classification unless otherwise specified.

.3 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.4 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer instructions. Departmental Representative will designate which document is to be followed.

.5 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur.
- .1 Prevent electrolytic action between dissimilar metals.
- .2 Use non-corrosive fasteners, anchors and spacers for securing exterior work.

.6 Fastenings which cause spalling or cracking are not acceptable.

.7 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.8 Use heavy hexagon heads, semi-finished unless otherwise specified.

.9 Bolts may not project more than 1 diameter beyond nuts.

.10 Types of washers as follows:
- .1 Plain type washers: use on equipment and sheet metal.
- .2 Soft gasket lock type washers: use where vibrations occur.
- .3 Resilient washers: use with stainless steel items and fasteners.
- .4 FRP fibre reinforced plastic washers: use with FRP items and fabrications.

.11 Deliver, store and maintain packaged material and equipment with manufacturer seals and labels intact.

.12 Prevent damage, adulteration and soiling of products during delivery, handling and storage. Immediately remove rejected products from site.

.13 Store products in accordance with supplier instructions.

.14 Touch up damaged factory finished surfaces to Departmental Representative's satisfaction:
- .1 Use primer or enamel to match original.
- .2 Do not paint over nameplates.

1.2 QUALITY OF PRODUCTS

.1 Products, materials and equipment (referred to as products) incorporated into work to be new, not damaged or defective and of best quality (compatible with specifications) for

purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products will be rejected regardless of previous inspections.
- .1 Inspection does not relieve responsibility, but is precaution against oversight or error.
- .2 Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Retain purchase orders, invoices and other documents to prove that all products utilized in this Contract meet requirements of specifications. Produce documents when requested by Departmental Representative.

.4 Should any dispute arise as to quality or fitness of products, the decision rests strictly with Departmental Representative based upon requirements of Contract documents.

.5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY OF PRODUCTS

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items.

.2 If delays in supply of products are foreseeable, notify Departmental Representative of such in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of work.

.3 In event of failure to notify Departmental Representative at start of work and should it subsequently appear that work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in either Contract price or Contract time.

1.4 MANUFACTURER INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer instructions.
- .1 Do not rely on labels or enclosures provided with products.
- .2 Obtain written instructions directly from manufacturer.

.2 Notify Departmental Representative in writing of conflicts between specifications and manufacturer instructions so that Departmental Representative may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in either Contract price or Contract time.

1.5 CONTRACTOR'S OPTIONS FOR SELECTION OF PRODUCTS FOR TENDERING

.1 Products are specified by "Prescriptive" specifications: select any product meeting or exceeding specifications.

.2 Products specified under "Acceptable Products" (used for complex Mechanical or Electrical Systems): select any one of the indicated manufacturers, or any other manufacturer meeting or exceeding Prescriptive specifications and indicated Products.

.3 Products specified by performance and referenced standard: select any product meeting or exceeding referenced standard.

.4 Products specified to meet particular design requirements or to match existing materials: use only material specified Approved Product. Alternative products may be considered provided full technical data is received in writing by Departmental Representative in accordance with "Special Instructions to Tenderers".

.5 When products are specified by referenced standard or by Performance specifications, upon request of Departmental Representative obtain from manufacturer and independent laboratory report showing that product meets or exceeds specified requirements.

1.6 SUBSTITUTION AFTER CONTRACT AWARD

.1 No substitutions are permitted without prior written approval of Departmental Representative.

.2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and proposed substitution.

.3 Proposals will be considered by Departmental Representative if:
- .1 products selected by tenderer from those specified are not available;
- .2 delivery date of products selected from those specified would unduly delay completion of Contract, or
- .3 alternative product to that specified, which is brought to attention of Departmental Representative is considered by Departmental Representative as equivalent to product specified and will result in a credit to Contract amount.

.4 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as result of substitution.

.5 Amounts of all credits arising from approval of substitutions will be determined by Departmental Representative and Contract price will be reduced accordingly.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SUBMITTALS

.1 Submit written request in advance of cutting or alteration which affects any of following.

- .1 Structural integrity of any part of Project.
- .2 Efficiency, maintenance or safety of any operational element.
- .3 Visual qualities of sight-exposed elements.
- .4 Interior and exterior building finishes.

.2 The structures are designated heritage in status. Due care must be taken to not alter or damage any portions of the buildings deemed heritage.

1.2 INCLUDE IN REQUEST:

.1 Identification of Project.

.2 Location and description of affected Work.

.3 Statement on necessity for cutting or alteration.

.4 Description of proposed Work and products to be used.

.5 Alternatives to cutting and patching.

.6 Effect on work of Other Contractor.

.7 Written permission of affected Other Contractor.

.8 Date and time work will be executed.

1.3 MATERIALS

.1 Required for original installation.

1.4 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Cover adjacent surfaces and finishes with clean and dry drop sheets, kraft paper, cardboard or other suitable coverings during minor demolition.

1.5 EXECUTION

.1 Execute cutting, fitting and patching required to perform work. Perform minor demolition required for alterations with care not to damage adjacent construction, fittings, fixtures, surfaces and finishes scheduled to remain.

.2 Obtain Departmental Representative's approval before cutting, boring or sleeving load-bearing members

.3 Fit several parts together, to integrate with other work.

.4 Uncover work to install ill-timed work, at no cost to Contract.

.5 Remove and replace defective and non-conforming work, at no cost to Contract.

.6 Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing. Make cuts with clean, true, smooth edges.

.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Restore work with new products in accordance with requirements of Contract Documents.

.9 Include cost of making good all surfaces, substrates and work disturbed by removal of existing work and by installation of new work.

1.6 MATCHING TO EXISTING WORK

.1 Make new work in existing areas and all alteration/renovation work match in every respect similar items in existing areas.

.2 Use new materials to match existing items. Where perfect matches cannot be made as to quality, texture, colour and pattern remove existing materials and replace with new materials of comparable quality selected by the Departmental Representative, to extent directed by the Departmental Representative.

.3 Execute Work carefully wherever existing work is being re-used. Make repairs to such reused items after re-installation to properly restore them. Where proper restoration is impractical, such items will be rejected and replaced to the Departmental Representative's approval.

.4 After removal of reusable items, carefully patch and repair original location.

.5 Wherever existing work is being altered to make way for new work, perform such cutting and patching neatly and make finished installations equal to quality and appearance.

.6 Where new work is a continuation or an extension of existing work take care to blend both together with complete regard to appearance. Obvious joints and visible patches not acceptable.

1.7 SETTING OUT OF WORK

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Provide devices needed to lay out and construct work.

.3 Supply such devices as straight edges and templates required to facilitate the Departmental Representative's inspection of work.

.4 Review layouts with the Departmental Representative prior to commencement of work.

1.8 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform the Departmental Representative of impending installation and obtain his approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by the Departmental Representative.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by the Departmental Representative. Refer to Section 01 35 43 - Environmental Procedures for additional requirements.

.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.4 Provide on-site containers for collection of waste materials and debris. Locate where directed by the Departmental Representative.

.5 Provide and use clearly marked separate bins for recycling wherever facilities are available. Refer to Section 01 74 19 - Construction/Demolition Waste Management and Disposal for additional requirements.

.6 Remove waste material and debris from site and deposit in waste containers at end of each working day.

.7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.8 Use only cleaning materials recommended by manufacturer of surface to be cleaned and as recommended by cleaning material manufacturer.

.9 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 FINAL CLEANING

.1 When Work is substantially completed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris.

.3 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Remove stains, spots, marks and dirt from decorative work, electrical/mechanical fixtures, furniture fitments; walls, floors and ceilings.

.6 Clean lighting reflectors, lenses and other lighting surfaces.

.7 Vacuum clean and dust room interiors.

.8 Sweep and power wash pavement around building and all pavement parking/storage

areas used by Contractor to remove all traces of construction spillage, stains and residue. Do not blast dirty water onto adjacent buildings and site features.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Refer to every technical section for waste management and disposal requirements.

1.2 DEFINITIONS

.1 Waste Reduction Workplan: written report which addresses opportunities for reduction, re-use or recycling of materials.

.2 Materials Source Separation Program: consists of series of ongoing activities to separate re-usable and recyclable waste material into material categories from other types of waste at point of generation.

1.3 MATERIALS SOURCE SEPARATION

.1 Before project start-up, prepare Materials Source Separation Program. Provide separate containers for re-usable and/or recyclable materials of following:

- .1 Construction waste: including but not limited to following types.
  - .1 Uncontaminated packaging (wood, metal banding, cardboard, paper, plastic wrappings, polystyrene).
  - .2 Wood pallets (recycle or return to shipper).
  - .3 Metals (pipe, conduit, ducting, wiring, miscellaneous cuttings)
  - .4 Wood (uncontaminated).
  - .5 Paint, solvent, oil.
  - .6 Other materials as indicated in technical sections.
- .2 Administration/worker waste (uncontaminated): including but not limited to following types.
  - .1 Paper, cardboard.
  - .2 Plastic containers and lids marked types 1 through 6.
  - .3 Glass and aluminum drink containers (recycle or return to vendor).

.2 Implement Materials Source Separation Program for waste generated on project in compliance with approved methods and as approved by Departmental Representative.

.3 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.4 Locate separated materials in areas which minimize material damage.

1.4 DIVERSION OF MATERIALS

.1 Create list of materials to be separated from general waste stream and stockpiled in separate containers, to approval of Departmental Representative and consistent with applicable fire regulations.

- .1 Mark containers.
- .2 Provide instruction on disposal practices.

1.5 STORAGE, HANDLING AND APPLICATION

.1 Do work in compliance with Waste Reduction Workplan.

.2 Handle waste materials not re-used, salvaged, or recycled in accordance with appropriate regulations and codes.

.3 Materials in separated condition: collect, handle, store on site and transport off-site to approved and authorized recycling facility.

.4 Materials must be immediately separated into required categories for re-use or recycling.

.5 Unless specified otherwise, materials for removal become Contractor's property.

.6 On-site sale of salvaged/recyclable material is not permitted.

.7 On-site burning of material is not permitted.

.8 Provide Departmental Representative with receipts indicating quantity of material delivered to landfill.

.9 Provide Departmental Representative with receipts indicating quantity and type of materials sent for recycling.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

1.0 General

1.1 SECTION INCLUDES

.1 Administrative procedures preceding preliminary and final inspections of Work.

1.2 RELATED SECTIONS

.1 Section 01 78 00 - Closeout Submittals.

1.3 REVIEW AND DECLARATION

.1 Contractor's review: Contractor and all Subcontractors shall conduct a thorough review of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

- .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's review and that corrections have been made.
- .2 Request Departmental Representative's review.
- .3 Departmental Representative's Review: Departmental Representative and Contractor will perform review of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .4 Completion: submit written certificate that following have been performed:
  - .1 Work has been completed and reviewed for compliance with Contract Documents.
  - .2 Defects have been corrected and deficiencies have been completed.
  - .3 Equipment and systems have been tested, adjusted, and balanced and are fully operational.
  - .4 Certificates required by authorities having jurisdiction.
  - .5 Commissioning of all systems: Final commissioning reports have been submitted to the Departmental Representative.
  - .6 Operation of systems have been demonstrated to Owner's personnel.
  - .7 Work is complete and ready for Final Review.

.2 Submit required forms as described in General Conditions and Standard Acquisition Contract Clause (SACC) manual.

Part 1 Products

1.1 NOT USED

Part 2 Execution

2.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1	Quality Control	Section 01 45 00
.2	Closeout Procedures	Section 01 77 00
.3	Demonstration and Training	Section 01 79 00

1.2 SUBMISSION

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 Copy will be returned after final inspection, with Departmental Representative's comments.

.3 Revise content of documents as required prior to final submittal.

.4 Two weeks prior to Completion of the Work, submit to the Departmental Representative, four final copies of operating and maintenance manuals in English.

.5 An electronic copy Interactive Operating and Maintenance Manual System is required as specified under clause 1.3. Provide 4 sets of the Electronic Interactive Operating and Maintenance Manual System to the Departmental Representative.

.6 Hard copies of the Operating and Maintenance Manual System is required as specified under clause 1.4. Provide 4 sets of the Hard Copy Interactive Operating and Maintenance Manual System to the Departmental Representative.

.7 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work. Refer to individual specification sections for all extra parts, materials, fixtures and equipment required.

.8 If requested, furnish evidence as to type, source and quality of products provided.

.9 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.10 Pay costs of transportation.

.11 Certificate of Completion.

1.3 INTERACTIVE OPERATING AND MAINTENANCE MANUAL SYSTEM

.1 In addition to the printed copies, submit provide an Interactive Operating and Maintenance Manual System as specified herein.

.2 System Description and Requirements

.1 All as constructed drawings and operation and maintenance (O&M) manuals listed under the Scope of Work shall be converted, where necessary, into Portable Data File (PDF) format for viewing using the Adobe Acrobat Reader.

.2 Documentation storage and retrieval system shall be structured based on a database framework with direct links to the appropriate PDF files. Documents retrieval and viewing shall be executed through a menu driven approach.

.3 Program shall be capable of storing separately and independently data of multiple buildings and shall be expandable for addition of new buildings and systems.

.4 Data of each building shall be accessible by the input of either the building name or building number as defined by the Departmental Representative.

.5 O&M data and as constructed drawings shall be classified by their corresponding disciplines whichever applicable, including:

.1 Architectural
.2 Mechanical
.3 Electrical
.4 Structural
.5 Civil
.6 Data & Communication
.7 BSCS
.8 Under each discipline, data shall be grouped into the following four major categories:

.1 Basic Documents

.1 'Basic Documents' shall, according to the type of services or disciplines, include the full contents of each hard copy of the O&M manuals with the addition of Miscellaneous Maintenance Reports and Records, or as defined by the user. In general the following shall be included unless specifically excluded by the Departmental Representative:

.1 Introduction
.2 Consultant/Contractor/Suppliers List
.3 System Description
.4 Maintenance and Lubrication Schedules
.5 Testing and Commissioning (T&C) Reports
.6 Misc. Reports
.7 Specifications
.8 Equipment and/or point schedules as identified in the hard copy documents
.9 Others as stipulated by the Departmental Representative

.2 All Basic Documents PDF files shall be enhanced with appropriate bookmarks to facilitate searching of information within the document or linking to other relevant documents for references.

.2 'As-Constructed' Drawings

.1 'As-Constructed' drawings shall be converted from the original electronic files, such as CAD, into PDF format. If only the hard copies of the 'as constructed' drawings are available, they shall be scanned and saved in PDF format. PDF files of the 'As-Constructed' drawings shall be enhanced with the following bookmarks to zoom into legible views on the computer screen as a minimum:

.1 Drawing Number and Title
.2 Drawing Notes
.3 Major Equipment Locations
.4 Cross-links to other related drawings
.5 Revisions

.3 System Data
- .1 Building systems shall be identified by their services, disciplines, function, nature and specific scope. System data shall be classified into the following categories:
  - .1 System Description
  - .2 Schematic (where applicable)
  - .3 Equipment List
- .2 Provide hot key buttons, where applicable, for direct access to drawings/data referenced on the schematics. The same shall be applied to listed equipment for direct links to the corresponding equipment data.

.4 Equipment Data
- .1 Equipment data shall be classified into the following categories:
  - .1 Equipment submittals
  - .2 T&C Report
  - .3 Maintenance Data
  - .4 Maintenance Records
  - .5 Photos
- .2 Provide a summary screen to list all equipment classified under a specific system. On the summary screen, provide direct links to the corresponding equipment data under each category with addition links to the relevant 'As Constructed' drawings.

.6 The system shall be executed by Professional Engineers with a minimum of 10 years post qualification experience in the field of Building Services Engineering.

.7 The Contractor shall provide a minimum of 3 past job references as proven record of similar undertakings.

.8 The Contractor shall provide a demonstration of the system to the Departmental Representative to provide verification that the requirements of the specification are fulfilled.

1.4 FORMAT HARD COPY MANUALS

.1 Organize data in the form of an instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: Manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in .dwg format on CD.

1.5 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;

- .1 date of submission;
- .2 names, addresses, and telephone and fax numbers of Contractor, Subcontractors, Suppliers with name of responsible parties;
- .3 schedule of products and systems, indexed to content of volume.
- .4 copy of hardware schedule and paint schedules, complete with the actual manufacturer, supplier and identification names and numbers.
- .5 all extended guarantees, warranties, maintenance bonds, certificates, letters of guarantees, registration cards, as called for in the various sections of the specification.
- .6 complete set of all final reviewed shop drawings.
- .7 certificates of inspection by authorities having jurisdiction.
- .8 test reports and certificates as applicable.
- .9 complete set of as constructed drawings.

.2 For each product or system:

- .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

.6 Training: Refer to Section 01 79 00 - Demonstration and Training.

1.6 'AS CONSTRUCTED' DRAWINGS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site one record copy of:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Change Orders and other modifications to the Contract.
- .5 Reviewed shop drawings, product data, and samples.
- .6 Field test records.
- .7 Inspection certificates.
- .8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

.6 Mark changes as work progresses and as changes occur. Transfer information weekly to reproducibles, revising reproducibles to show work as actually installed. Use different colour waterproof ink for each service.

.7 Prior to start of Testing, Adjusting and Balancing for HVAC, finalize production of as-built drawings. Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (Date).

.8 Provide an electronic copy of as constructed drawings in CAD format including .ctb files and 4 complete sets of hard copies as part of closeout submittals.

1.7 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of black line opaque drawings, provided by Departmental Representative.

.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

- .1 Measured depths of elements of foundation in relation to finish first floor datum.
- .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
- .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
- .4 Field changes of dimension and detail.
- .5 Changes made by change orders.
- .6 Details not on original Contract Drawings.
- .7 References to related shop drawings and modifications.

.5 Specifications: legibly mark each item to record actual construction, including:

- .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
- .2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.8 EQUIPMENT AND SYSTEMS

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

- .1 Operation data to include:
  - .1 Control schematics for systems including environmental controls.
  - .2 Description of systems and their controls.

.3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
.4 Operation instruction for systems and component.
.5 Description of actions to be taken in event of equipment failure.
.6 Valves schedule and flow diagram.
.7 Colour coding chart.

.2 Maintenance data to include:
.1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
.2 Data to include schedules of tasks, frequency, tools required and task time.
.3 Description of plumbing specialties and accessories, giving manufacturer's name, type, model, year, capacity. List of recommended spare parts.

.3 Performance data to include:
.1 Equipment performance verification test results.
.2 Special performance data as specified.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control and 01 91 13 - Commissioning.

.15 Additional requirements: As specified in individual specification sections.

1.9 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.10 SPARE PARTS

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.11 MAINTENANCE MATERIALS

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in the Operating and Maintenance Manuals.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.12 SPECIAL TOOLS

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

1.13 STORAGE, HANDLING AND PROTECTION

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.14 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers within ten days after completion of the applicable item of work.

.4 Except for items put into use with Departmental Representative's permission; leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Parks Canada personnel two weeks prior to date of substantial performance.

.2 Departmental Representative will provide list of Parks Canada personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.

.3 Preparation:
- .1 Verify conditions for demonstration and instructions comply with requirements.
- .2 Verify designated personnel are present.
- .3 Ensure equipment has been inspected and put into operation in accordance with Division.
- .4 Ensure testing, adjusting, and balancing has been performed in accordance with Section 23 08 00 Commissioning of Mechanical Systems.

.4 Demonstration and Instructions:
- .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at agreed upon times, at the equipment location.
- .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
- .3 Review contents of manual in detail to explain aspects of operation and maintenance.
- .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

.5 Time Allocated for Instructions: ensure adequate amount of time required for instruction of each item of equipment or system: allow for a minimum of 8 hours.

1.2 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative's approval.

.3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

.4 Give time and date of each demonstration, with list of persons present.

.5 Provide electronic & hard copies (Refer to Section 01 78 00 Closeout Submittals) of completed operation and maintenance manuals for use in demonstrations and instructions.

1.3 QUALITY ASSURANCE

.1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
- .1 Instruct Departmental Representative's personnel.
- .2 Provide written report that demonstration and instructions have been completed.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

1.0 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 03 30 00 – Cast-in Place Concrete

.3 Section 31 23 10 – Excavating, Trenching and Backfilling

1.2 MEASURMENT PROCEDURES

.1 No additional payment for concrete reinforcing.

1.3 REFERENCES

.1 American Concrete Institute (ACI)

.1 SP-66, ACI Detailing Manual 2004.

.1 ACI 315, Details and Detailing of Concrete Reinforcement.

.2 ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.

.2 American Society for Testing and Materials International (ASTM)

.1 ASTM A 143/A 143M, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

.2 ASTM A 185/A 185M, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

.3 ASTM A 497/A 497M, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.

.4 ASTM A 775/A 775M, Standard Specification for Epoxy-Coated Reinforcing Steel Bars.

.5 ASTM A 325-06, Standard Specification for structural bolts, steel, heat treated 120/105 ksi minimum tensile strength.

.3 Canadian Standards Association (CSA International)

.1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CAN/CSA-A23.3, Design of Concrete Structures.

.3 CSA-G30.18, Carbon Steel Bars for Concrete Reinforcement.

.4 CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.5 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

.6 CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction.

.7 CAN/CSA- S16-01, Limit State Design of Steel Structures.

.8 CAN/CSA- 186-M1990, Welding of Reinforcing Bars in Reinforced Concrete Construction.

.9 CSA- W59-03, welded Steel Construction (Metal Arc Welding).

.4 Reinforcing Steel Institute of Canada (RSIC)

.1 RSIC, Reinforcing Steel Manual of Standard Practice.

.5 National Building Code of Canada 2010.

1.4 SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Prepare reinforcement drawings in accordance with ACI 315.

.3 Submit drawings including placing of reinforcement stamped and signed by professional engineer registered or licensed in the Province of British Columbia, Canada.

.1 Bar bending details.

.2 Lists.

.3 Quantities of reinforcement.

.4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings.

.4 Detail lap lengths and bar development lengths to CAN/CSA-A23.3.

.5 When Chromate solution is used as replacement for galvanizing non-prestressed reinforcement, provide product description for review by Departmental Representative prior to its use.

.6 Quality Assurance: in accordance with Section 01 45 00 – Quality Control.

.1 Mill Test Report: upon request, provide departmental Representative with certified copy of mill test report of reinforcing steel.

.2 Upon request, submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

2.0 Products

2.1 MATERIALS

.1 Substitute different size bars only if permitted in writing by Departmental Representative.

.2 Reinforcing steel: billet steel, grade as specified on contract drawings,, deformed bars to CSA-G30.18, unless indicated otherwise.

.3 Reinforcing steel: weldable low alloy steel deformed bars to CSA-G30.18.

.4 Cold-drawn annealed steel wire ties: to CSA G30.3.

.5 Deformed steel wire for concrete reinforcement: to CSA G30.14.

.6 Welded deformed steel wire fabric: to CSA G30.15.

.1 Provide in flat sheets only.

.7 Epoxy coating of non-prestresed reinforcement: to ASTM A 775/A 775M.

.8 Galvanizing of non-prestressed reinforcement: to CAN/CSA-G164, minimum zinc coating 610 g/m^2.

.1 Protect galvanized reinforcing steel with chromate treatment to prevent reaction with Portland cement paste.

.2 If chromate treatment is carried out immediately after galvanizing, soak steel in aqueous solution containing minimum 0.2% by weight sodium dichromate or 0.2% chromic acid.

.1 Temperature of solution equal to or greater than 32 degrees and galvanized steels immersed for minimum 20 seconds.

.3 If galvanized steels are at ambient temperature, add sulphuric acid as bonding agent at concentration of 0.5% to 1%.

.1 In this case, no restriction applies to temperature of solution.

.4 Chromate solution sold for this purpose may replace solution described above, provided it is of equivalent effectiveness.

.1 Provide product description as described elsewhere in the specifications.

.9 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.

.10 Mechanical splices: subject to approval of Departmental Representative.

.11 Plain round bars: to CSA-G40.20/G40.21.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CSA-A23.1 and ACI 315.

.1 ACI 315R unless indicated otherwise.

.2 Obtain Departmental Representative's approval for locations of reinforcement splices other than those shown on placing drawings.

.3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.

.4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY AND CONTROL

.1 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis.

.2 Upon request, inform Departmental Representative of proposed source of material to be supplied.

3.0 Execution

3.1 PREPARATION

.1 Galvanizing to include chromate treatment.

.1 Duration of treatment to be 1 hour per 25 mm of bar diameter.

.2 Conduct bending tests to verify galvanized bar fragility in accordance with ASTM A 143/A 143M.

3.2 FIELD BENDING

.1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.

.2 When field bending is authorized, bend without heat, applying slow and steady pressure.

.3 Replace bars, which develop cracks or splits.

3.3 PLACING REINFORCING

.1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.

.2 Use plain round bars as slip dowels in concrete.

.1 Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint.

.2 When paint is dry, apply thick, even film of mineral lubricating grease.

.3 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.

.4 Ensure cover to reinforcement is maintained during concrete pour.

.5 Protect coated portions of bars with covering during transportation and handling.

.6 All exposed edges of concrete to be chamfered 19mm.

3.4 FIELD TOUCH-UP

.1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcing steel with compatible finish to provide continuous coating.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.

.1 Leave Work Area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

.3 Waste Management:

.1 Separate waste materials for reuse and recycling where possible in accordance with Section 01 74 21 – Construction Waste Management and Disposal and Section 01 35 43 – Environmental Procedures.

.2 Store and dispose of hazardous or toxic materials in accordance with Section 01 35 33 – Health and Safety and Section 02 61 33 – Hazardous Materials.

END OF SECTION

1.0 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures

.2 Section 03 20 00 – Concrete Reinforcing

.3 Section 31 23 10 – Excavating, Trenching and Backfilling

1.2 MEASURMENT PROCEDURES

.1 No additional payment for cast-in-place concrete or for costs associated with quality control testing and reporting.

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM A 185/A 185M, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

.2 ASTM C 260, Standard Specification for Air-Entraining Admixtures for Concrete.

.3 ASTM C 309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

.4 ASTM C 494/C 494M, Standard Specification for Chemical Admixtures for Concrete.

.5 ASTM D 260, Standard Specification for Boiled Linseed Oil.

.6 ASTM D 1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

.7 ASTM D 1752, Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-19.24, Multicomponent, Chemical-Curing Sealing Compound.

.3 Canadian Standards Association (CSA International)

.1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.4 National Building Code of Canada, 2010.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Shop Drawings:

.1 Submit placing drawings prepared in accordance with plans to clearly show size, shape, location and necessary details of reinforcing.

.2 Submit drawings showing formwork and falsework design to CSA A23.1/A23.2.

.3 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of British Columbia, Canada.

.3 At least four (4) weeks prior to beginning Work, inform Departmental Representative of source of fly ash.

.1 Do no change source of fly ash without written approval of Departmental Representative.

.4 Provide testing results for review by Departmental Representative and do not proceed without written approval when deviations from mix design parameters are found.

.5 Concrete hauling time: provide for review by Departmental Representative deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.

1.5 QUALITY ASSURANCE

.1 Provide to Departmental Representative, four (4) weeks minimum prior to starting concrete work, valid and recognized certificate from plant delivering concrete.

.1 Quality Control Plan: provide written report to Departmental Representative verifying compliance that concrete in place meets performance requirements.

1.6 DELIVERTY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:

.1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.

.1 Do not modify maximum time limit without receipt of prior written agreement from Departmental Representative] and concrete producer as described in CSA A23.1/A23.2.

.2 Deviations to be submitted for review by the Departmental Representative.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

.3 Packaging Waste Management: remove for reuse and/or return of pallets, crates, padding, and packaging materials in accordance with Section 01 74 21 – Construction Waste Management and Disposal.

2.0 Products

2.1 MATERIALS

.1 Cement: to CSA A3001.

.2 Hydraulic cement: to CSA A3001.

.3 Water: to CSA A23.1/A23.2.

.4 Reinforcing bars: to CAN/CSA-G30.18, Grade 400

.5 Welded steel wire fabric: to ASTM A 185.

.6 Other concrete materials to CSA A23.1/A23.2.

2.2 MIXES

.1 To meet Departmental Representative's performance criteria to CSA A23.1/A23.2.

.1 Provide 28-day compressive strength of 28MPa.

.2 Exposure class appropriate to the climatic conditions present at the site.

.2 Provide quality management plan to ensure verification of concrete quality to specified performance.

3.0 Execution

3.1 PREPARATION

.1 Provide Departmental Representative 24 hours notice before each concrete pour.

.2 Place concrete reinforcing in accordance with Section 03 20 00 – Concrete Reinforcing.

.3 During concreting operations:

.1 Development of cold joints not allowed.

.2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.

.4 Protect previous work from staining.

.5 Clean and remove stains prior to application of concrete finishes.

3.2 INSTALLATION/APPLICATION

.1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.

3.3 FINISHES

.1 Equipment pads: provide smooth trowelled surface.

.2 Pavements, walks, curbs and exposed site concrete:

.1 Screed to plane surfaces and use wood floats.

.2 Provide round edges and joint spacings using standard tools.

.3 Trowel smooth to provide lightly brushed non-slip finish.

3.4 CONTROL JOINTS

.1 Cut control joints in slabs on grade at locations indicated, to CSA A23.1/A23.2 and install specified joint sealer/filler.

3.5 CURING

.1 Use curing compounds compatible with applied finish on concrete surfaces free of bonding agents and to CSA A23.1/A23.2.

3.6 FIELD QUALITY CONTROL

.1 Concrete testing: to CSA A23.1/A23.2 by testing laboratory designated and paid for by the Contractor.

3.7 CLEANING

.1 Clean in accordance with Section 01 74 11 – Cleaning.

.2 Use trigger operated spray nozzles for water hoses.

.3 Designate cleaning areas for tools to limit water use and runoff.

.4 Cleaning of concrete equipment to be done in accordance with Section 01 35 43 – Environmental Procedures.

.5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Construction Waste Management and Disposal.

.6 Do no dispose of unused admixtures and additive materials into sewer systems, into lakes, streams onto ground or in other location where it will pose health or environmental hazard.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

.1 Section includes preparation for repainting and painting:

- .1 Wood window sash, frames & sills;
- .2 All exterior woodwork and other surfaces, affected by work in this contract;
- .3 Masonry window sills of Lighthouse;
- .4 Brick walls of Storehouse;
- .5 Ironwork – hinges & hardware;
- .6 Guardrails and exterior stairs.
- .7 Conduits;
- .8 New mounting brackets and flashing to match adjacent surfaces.

1.2 RELATED SECTIONS

.1 Section 01 11 00 – Summary of Work.

.2 Section 01 33 00 – Submittal Procedures.

.3 Section 01 45 00 – Quality Control.

.4 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.5 Section 01 78 00 – Closeout Submittals.

1.3 REFERENCES

.1 National Parks Service, Preservation Technical Services, Preservation Brief #10 – Exterior Paint Problems on Historic Woodwork, K.D. Weeks & D.W. Look (1982) – Paint removal procedures. www.cr.nps.gov/hps/tps/briefs.

.2 Canadian General Standards Board 85.100 – 93, Painting (CGSB).

.3 Architectural Painting Specifications Manual, Master Painters Institute (MPI)

.4 Systems and Specifications Manual, SSPC Painting Manual, Volume Two, Society for Protective Coatings (SSPC).

.5 American Architectural Manufacturer's Association (AAMA) 2605-98 Specifications for Powder Coating.

.6 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.7 Health Canada/Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

1.4 MOCK-UP

.1 Undertake mock-up of paint removal techniques and finish application in accordance with Section 01 45 00 – Quality Control.

1.5 WORKMANSHIP

.1 All painting work to be carried out by qualified personnel and to job specifications.

.2 Contractor shall have a minimum of five years proven satisfactory experience with powder coat painting. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.3 Conform to latest MPI and AAMA requirements for painting work, including preparation and priming.

1.6 SOURCE QUALITY CONTROL

.1 Retain purchase orders, invoices and other documents to prove that all material used in this contract meets requirements of the specifications and produce when requested by Engineer.

.2 Materials shall be in accordance with AAMA 2605-98, CGSB and MPI 'Approved Product' listing.

1.7 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.2 Provide Engineer with samples of finish applied to a section of appropriate substrate.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver and store materials in manufacturer's original containers, sealed, with labels intact.

.3 Indicate on containers or wrappings:

- .1 Manufacturer's name and address.
- .2 Type of paint.
- .3 Compliance with applicable standard.
- .4 Colour number in accordance with established colour schedule.

.4 Remove damaged, opened and rejected materials from site.

.5 Provide and maintain dry, temperature controlled, weatherproof, secure storage.

.6 Observe manufacturer's recommendations for storage and handling.

.7 Store materials and supplies away from heat generating devices.

.8 Store materials and equipment in a well-ventilated area with temperature range 20 to 30C.

1.9 EXISTING CONDITIONS

.1 Investigate structural problems related to safe execution of the preparation procedures for painting and report unsatisfactory conditions to Departmental Representative before beginning work.

.2 Report to Departmental Representative conditions of deteriorated materials found during preparation, not previously disclosed.

.3 Assume existing paint layers contain lead paint. Appropriate personal protective equipment must be utilized. Submit procedures according to Section 01 35 33 – Health and Safety Requirements.

1.10 ENVIRONMENTAL REQUIREMENTS

.1 Substrate and ambient air temperature must be within limits prescribed by manufacturer.

1.11 PROTECTION

.1 Protect adjacent building surfaces from the activities of the Work.

.2 Protect exterior of structure from markings and other damage. Protect completed work. Use non-staining coverings.

.3 Protect environment against affects or residue from the Work.

1.12 SCHEDULING OF WORK

.1 Submit work schedule for various stages of painting for approval by Departmental Representative.

.2 Take measures necessary to complete work within approved scheduled time. Change in schedule must be approved by Departmental Representative.

.3 Co-ordinate execution with other work at site.

1.13 ALTERNATIVES

.1 Products conforming with this specification must be identified in writing by contractor for approval by Departmental Representative.

.2 Changing manufacturer's brands, sources of supply of painting materials from those previously approved must be approved by Departmental Representative.

.3 Request for alternative approval must be submitted in writing and be accompanied by full literature and recommendations from manufacturers concerned.

1.14 PAINT CONDITION DEFINITIONS

.1 P1:

.1 No paint removal required.

.2 Condition includes dirt, soot, grime removal. Scrub using trisodium phosphate (TSP) solution with warm water (follow package direction) and rinsing with clean water.

.3 Condition may include mildew removal.

.1 Sterilize surface by scrubbing with bleach solution of 4oz household bleach, 4 oz TSP and 4 litres warm water for light mildew.

.2 Heavy mildew, use double the proportion of bleach and TSP to water.

.3 Work into cracks and crevasses ensuring good coverage to affected area. Leave for 20 minutes before thoroughly rinsing with clean water. Allow to dry completely.

.4 Caution: bleach and TSP are corrosive. Wear appropriate PPE and protect shrubbery in area from direct contact with solution.

.4 Sanding to remove sheen from old paint and prepare surface for new paint finish.

.2 P2:

.1 Limited paint removal.

.2 Condition includes crazing, intercoat peeling, solvent blistering and wrinkling.

.3 Procedures include – manual scraping and sanding. Some mechanical means may be appropriate.

.3 P3:

.1 Complete paint removal.

.2 Condition includes peeling and cracking to bare wood.

.3 Procedures include – manual scraping, mechanical sanding, chemical or heat methods.

.4 Where removal area abuts sound paint layers, the paint layers are to be 'feathered' until the transition blends with the surrounding surface.

.4 General Caution: The preparation methods suggest the use of chemicals material or equipment that can be harmful to the applicator, the environment or other persons in the immediate area. The product MSDS (Material Safety Data Sheet) and application data must be referred to for safe handling, use, control, disposal, etc. Persons using such equipment, products and or procedures must be familiar with their proper handling and safe use.

Part 2 Products

2.1 MATERIALS

.1 Paint removal, where required for the preparation of window rehabilitation or repainting procedures:

.1 Commercially available chemical stripping solutions formulated for the type of paint to be stripped, types that will not harm or stain existing surfaces. (Methylene chloride based strippers are not acceptable). Acceptable products:

.1 Paint and Stain Remover & Wood Lightner Neutralizer by The Sansin Corporation.

.2 Super Bio Strip by Canadian Building Restoration Products Inc.

.2 Thermal methods:

.1 Infrared heat, Acceptable product: 'Silent Paint Remover'.

.2 Electric heat plates or heat guns.

.2 Materials for each coating formulae to be Premium products of a single manufacturer.

.3 Materials to be as specified. Those not specifically indicated, but required to undertake the work such as thinners, etc are to be 'top of the line' quality products.

2.2 TOOLS AND EQUIPMENT

.1 Departmental Representative will determine areas where power and pressure wash tools or equipment may be used for both preparing and finishing or substrate.

.2 Tools and Equipment: Contractor shall supply all required safety equipment (face masks, respirators, coveralls, etc.), drop cloths, tools for paint removal, scaffolds, ladders and any other necessary equipment to undertake the work, and will keep in good operating condition.

2.3 MIXING FINISH

.1 Finish to be ready for application by brush or roller when received.

.2 Add thinners for brush or roller application only with prior approval of Departmental Representative.

.3 Mix finish in full containers up to 25 litres capacity by vibrator shaker method.

.4 Mix finish in full containers up to 5 litres by propeller mixer method.

.5 Do not mix or keep finish in suspension by means of an air stream under stain surface.

2.4 PROPORTIONS

.1 Obtain approval, of Departmental Representative to substitute finish or Qualified Product List.

2.5 PAINTING SCHEDULE

.1 Exterior wood surfaces: Exterior Alkyd.

- .1 Exterior Alkyd Wood Primer: 1 coat to MPI system.
  - .1 Acceptable products: General paint – Exterior Alkyd Primer; ICI – Prep-N-Prime Exterior Alkyd Primecoat; Benjamin Moore – Exterior Wood Alkyd Stain Primer.
- .2 Exterior Alkyd Semi-Gloss: 2 coats to MPI System.
  - .1 Acceptable products: General Paint – House & Trim Enamel; ICI – Devguard Alkyd Gloss Ebaken; Benjamin Moore – Int/Ext Alkyd Gloss Enamel.

.2 Exterior Masonry Surfaces:

- .1 Alkai Resistant Primer – 1 coat.
  - .1 Acceptable products: General Paint – Exterior Flat Latex; Benjamin Moore – Latex Flat Paint; ICI – CIL Ext Acrylic Flat.
- .2 Exterior Latex Alkali resistant with mildewcide – 1 coat.
  - .1 Acceptable products: General Paint – Exterior Flat Latex; Benjamin Moore – Latex Flat paint; ICI – CIL Ext Acrylic Flat.

.3 Metal – Fabrications:

- .1 Alkyd enamel primer – 1 coat.
  - .1 Acceptable products: General Paint – Marine Primer; ICI – Int/Ext R/O Alkyd ; Metal primer.
- .2 Alkyd Exterior – gloss, 2 coats.

.1 Acceptable products: General Paint – House & Trim Enamel; ICI – Int/Ext Alkyd Gloss Enamel Urethane.

.4 Metal – Powder Coating:

.1 Primer – 1 coat, Acceptable product: Tiger Drylac Canada 069-7000 for aluminum and 069-90500 for steel, 3 mil thickness.

.2 Finish – 1 coat, TGIC – free polyester electrostatic powder coating, 4 mil thickness.

.5 Exterior Wood Siding:

.1 Exterior Alkyd Wood Primer: 1 coat to MPI System

.1 Acceptable products: General Paint – Exterior Alkyd Primer, ICI – Prep-N-Prime Exterior Alkyd; Primecoat; Benjamin Moore – Exterior Wood Alkyd Primer.

.2 Solid Colour Stain – 2 coats.

.1 Acceptable products: Benjamin Moore – Exterior Alkyd Solid Colour Stain; General Paint – Woodcraft, Solid Colour Oil Stain; ICI – Woodpride, Ext solid Hide Stain.

2.6 COLOURS

.1 Colours are to match existing as found on site, or as provide by Departmental Representative.

.2 Departmental Representative to confirm colour match from Contractor submitted draw downs.

.3 All ramp railing posts, railings, mesh and frames shall be black matte powder coated finish.

Part 3 Execution

3.1 PREPARATION FOR TASKS

.1 Ensure that workers are informed of safety rules.

.2 Ensure that safety measures have been taken each day before any job is started.

.3 Verify that equipment meets safety standards.

.4 Encourage workers to report hazards in their work.

.5 Place safety devices and signs near work area as indicated or directed.

3.2 STRIPPING OF PAINT

.1 To avoid glass breakage, strip existing paint from sash of existing windows and glazed assemblies after all glass panes have been removed (refer to Section 08 03 21).

.2 Strip existing paint using heat or chemical solutions, to soften the paint, in conjunction with scraping.

.3 When using heat technique in conjunction with scraping:

.1 Use a purpose made heating gun with a heating element and a fan which blows the heat onto the surface or a heat plate. (Plate for flat surfaces and heat fun for other surfaces).

.2 Lift (remove) paint without scorching or damaging wood.

.4 Ensure heat is not too high (range less than 370°C) to prevent the formation of lead fumes.

.5 When using chemical solutions (strippers), in conjunction with other methods:

.1 Do not use methylene chloride strippers.

.2 Apply and use strippers in strict accordance with manufacturer's direction.

.3 Leave stripper on surface only long enough to bubble and lift paint.

.4 After paint has been removed, neutralize the chemicals and wash surface to remove trace elements that can deteriorate new finishes.

.6 Do not use heat technique together with strippers. Solvents are highly volatile and the combination of heat and solvent could result in fire.

.7 As paint is softened (heated) or dissolved (stripper), remove it using scrappers and putty knives. Use screwdriver, nails or dentist tools when working on fine details. As a final step in paint removal, go over entire surface with steel wool.

.8 Do not strip existing paint using propane torches.

.9 Orbital sanders and sanding blocks may only be used on larger flat surfaces which do not have fine details, use fine sandpaper at all times.

.10 After stripping is complete, wash surfaces with water or solvent to remove any remaining chemicals.

3.3 SURFACE PREPARATION

.1 Prepare wood surfaces exposed to normally moist mountain atmosphere to CGSB 85.100-93.

.2 Prepare masonry surfaces by removing all loose, peeling paint, using hand methods – bristle or soft wire brushes.

.3 Prepare metal by lightly sandblasting prior to painting.

.4 Clean all surfaces with TSP solution and bristle brushes. Natural bristle for wood surfaces. Rinse with clean water.

.5 Where required, on wood surfaces use scrapers and sandpaper to achieve a paintable surface.

.6 Refer to Window and Door Schedules for paint conditions.

.7 Prime all bare wood with exterior alkyd primer.

3.4 FIELD QUALITY CONTROL

.1 Examine surface for adequate preparation.

.2 Check all materials for correctness.

.3 Inspect during application for correct procedures.

3.5 APPLICATION GENERAL

.1 After correct surface preparation, first coat of finish should be applied with shortest possible delay. Premature contamination from dust is then prevented.

.2 Apply finish in accordance with good trade practice using suitable equipment.

.3 Apply and cure coating uniform in thickness, sheen, colour, and texture, and free of defects detrimental to appearance of performance. Defects include brush marks, streaks, laps, heavy stippling, pile up of paints, and skipped or missed areas.

.4 Apply each coat at proper consistency. Method of application and uniform coats of specified film thickness be in agreement with finish manufacturer and CGSB 85.100-93.

.5 Keep edges of finish adjoining other finished surfaces clean and sharp with no overlapping.

.6 Finish products specified are intended to cover surfaces satisfactorily when applied in accordance with the manufacturer's directions.

.7 Use same brand of finish for priming, intermediate, and finish coats.

.8 Allow each coat of finish to dry before a following coat is applied, unless directed otherwise by manufacturer.

.9 Apply finish by brush. Spray may be permitted where advantageous, subject to Departmental Representative's approval. Follow airless spray application with back rolling.

.10 At glass panes, overlap finish onto glass to provide a moisture tight seal at glazing putty edge. When putty has dried sufficiently, scrape paint off glass up to glazing putty edge, using care not to scratch or damage putty.

3.6 PROTECTION AND CLEANING

.1 Fully mask and protect adjacent areas if employing spray equipment.

.2 Protect areas where paint has been applied until fully dried. Smears and splatters to be removed immediately, using compatible solvent.

.3 During progress of work, keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.

.4 On completion of specified work, remove surplus materials, tools, equipment, and debris on work area. Leave clean and tidy to complete satisfaction of Department Representative.

END OF SECTION

Part 1 General

1.1 PROJECT DESCRIPTION

.1 This project is an exterior lighting addition and the provision of a portable power distribution system for Fisgard Lighthouse and Fort Rodd Hill located at the Fort Rodd Hill National Historic Site in Victoria, BC.

.2 See the specifications for schedule specifics and include in tender for any overtime or abnormal shift required to complete the project to meet this schedule.

.3 Building structures are heritage designated. The Contractor is to exert due care not to alter or damage heritage features of these buildings.

1.2 GENERAL

.1 The general conditions and general requirements together with all amendments and supplements contained in the General Specifications shall form an integral part of the electrical specification and will be made part of this contract.

.2 Reference to "Electrical Divisions" shall mean all sections of Division 26 in the standard format and/or Divisions 26, 27, 28, 33, 34, and 48 in the Master Format or the Canadian Master Specifications.

.3 The word "Provide" shall mean "Supply and Install" the products and services specified. "As Indicated" means that the item(s) specified are shown on the drawings.

.4 Confirm with the plans and specifications the extent and nature of the work and how it will affect the electrical work. Include in the tender sum for any complications or additional work described therein.

.5 Review structural plans for limitations of penetrations or inclusions of electrical equipment. In the tender sum, allow for avoiding critical areas with electrical equipment.

.6 Review existing record plans and site conditions for limitations of penetrations or inclusions of electrical equipment. In tender sum, allow for avoiding critical areas with electrical equipment.

.7 Comply with the requirements of the General Contract, and coordinate the installation with all other trades on site.

.8 Confirm on-site the exact location of equipment, outlets, and fixtures and the location of outlets for equipment supplied by other trades.

1.3 WORK INCLUDED

.1 This work shall include the supply and installation of all the necessary materials and apparatus for complete operating systems as indicated on the plans or mentioned in this specification, with the exception of materials or apparatus specifically mentioned to be omitted or to be supplied by Departmental Representative.

.2 Items obviously necessary, or reasonably implied, to complete the work to be included as if shown on drawings and noted in the specifications.

.3 All materials, tools, appliances, scaffolding, apparatus and labour necessary for the

execution, erection and completion of the systems described herein shall be furnished. This includes providing lighting and power for own work.

.1 This contract shall include, but is not confined to, the following scope of work:

.1 All electrically related civil works, trenching, backfilling, resurfacing
.2 Underground ducts, wiring and concrete encasement
.3 Luminaires, concerte bases and marine grade aluminium enclosures
.4 Pole mounted luminaires and concrete bases.
.5 Power distribution equipment
.6 Power connections and outlets
.7 Surface wireways, wiring and cables
.8 Lighting system
.9 Lighting controls including dimming
.10 Portable power distribution panel and receptacles
.11 Special receptacle for portable power plug-in

Breakdown the progress draws in at least the above noted items to allow adequate review.

.2 Complete all electrical connections to equipment and accessories pertaining to this contract and leave all in operating condition to the Departmental Representative's.

.3 Remove all existing electrical equipment and material made redundant by this contract or in conflict with work to be carried out. Reroute, reinstall or replace existing electrical material that becomes necessary due to work carried out by this contract so a complete working electrical system will be retained in all areas affected by this installation.

.4 Include all necessary cutting, patching, sealing and painting required to complete the work.

1.4 DRAWINGS AND SPECIFICATIONS

.1 The drawings and specifications complement each other and what is called for by one is binding as if called for by both. If there is any doubt as to meaning or true intent due to a discrepancy between the electrical drawings and specifications, and all other contract documents, obtain written ruling from the Departmental Representative prior to tender closing. **Failing this, the most expensive alternative is to be allowed for.**

.2 The plans show the approximate location of outlets and apparatus but the right is reserved to make such changes in location as may be necessary to meet the needs of construction in any way. No extra will be allowed for such changes to any piece of electrical equipment unless the distance exceeds 3 meters, or if the relocation is required after initial installation is complete.

.3 It is imperative that the contractor visit the site and completely familiarize himself as to the work to be undertaken.

1.5 CODES AND STANDARDS

.1 Do complete installation in accordance with CSA C22.1 (The Canadian Electrical Code) 2015 edition, except where specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1, except where specified otherwise.

1.6 CARE, OPERATION AND START-UP

.1 Instruct the Departmental Representative in the operation, care and maintenance of systems, system equipment and components.

.2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.

.3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

1.7 VOLTAGE RATINGS

.1 Operating voltages: to CAN3-C235.

.2 Equipment, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.8 PERMITS, FEES AND INSPECTION

.1 Submit to Electrical Inspection Department and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.

.2 Pay associated fees.

.3 Departmental Representative will provide drawings and specifications required by Electrical Inspection Department and Supply Authority at no cost.

.4 Notify Departmental Representative of changes required by Electrical Inspection Department prior to making changes.

.5 Furnish Certificates of Acceptance from Electrical Inspection Department on completion of work to Department Representative.

.6 Any electrical material and/or equipment supplied by any contractor or sub-contractor for installation on this project must bear evidence of CSA approval or special CSA certification acceptable to the Electrical Inspection Authority

.7 Fees will cover all routine inspections by the Provincial Electrical Inspector. Any fees for follow-up inspections found to be necessary by the Provincial Electrical Inspectors as a result of incorrect work shall be borne by this contractor without any cost to the Departmental Representative.

.8 Furnish to Departmental Representative on completion of work Certificates of Acceptance from Electrical Inspection Department.

1.9 MATERIALS AND EQUIPMENT

.1 Provide materials and equipment in accordance with Section 01 61 00 - Common Product Requirements.

.2 Equipment and material to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Electrical Inspection Authority.

.3 Factory assemble control panels and component assemblies.

1.10 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates as follows:

.2 Nameplates:

.1 Lamicoid 3 mm thick plastic engraving sheet white face, black core, mechanically attached with self adhesive material

NAMEPLATE SIZES:

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

.3 Labels:

.1 Embossed plastic labels with [6] mm high letters unless specified otherwise.

.4 Wording on nameplates to be approved by Departmental Representative prior to manufacture.

.5 Allow for average of twenty-five (25) letters per nameplate.

.6 Identification to be English and French.

.7 Use one nameplate for both languages.

.8 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

.9 Identify equipment with Size 3 labels engraved "ASSET INVENTORY No. [___]". Number as and if directed by the Departmental Representative.

.10 Disconnects, starters and contactors: indicate equipment being controlled and voltage.

.11 Terminal cabinets and pull boxes: indicate system and voltage.

.12 Transformers: indicate capacity, primary and secondary voltages.

1.11 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.

.2 Maintain phase sequence and colour coding throughout.

.3 Colour code: to CSA C22.1 2009 edition.

.4 Use colour coded wires in communication cables, matched throughout system.

1.12 CONDUIT AND CABLE IDENTIFICATION

.1 Colour code conduits, boxes and metallic sheathed cables .

.2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor.

.3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

	Prime	Auxiliary
up to 250 V	Yellow	

1.13 WIRING TERMINATIONS

.1 Lugs, terminals, screws used for termination of wiring to be suitable for copper conductors.

1.14 MANUFACTURERS AND CSA LABELS

.1 Visible and legible, after equipment is installed.

1.15 LOCATION OF OUTLET

.1 Locate portable power outlet inside brick storehouse building as indicated.

.2 Mount outlet at 900mm above floor level.

1.16 LOAD BALANCE

.1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance. Adjust branch circuit connections as required to obtain best balance of current between phases and record changes.

.2 Submit, at completion of work, report listing phase and neutral currents on panelboards operating under normal load. State hour and date on which each load was measured, and voltage at time of test.

1.17 CONDUIT AND CABLE INSTALLATION

.1 Install conduit in concealed spaces inside the caretaker's house.

.2 Inside lighthouse tower, surface mount conduit and paint to match wall colour.

1.18 SUBSTITUTIONS

.1 Unless otherwise noted on the plans or specifications, substitutions may be approved by the Departmental Representative, if requested by the contractor or by equipment suppliers, for items specified by the manufacturer.

.2 Requests for approval of such substitutions shall be submitted at least five (5) working days prior to the tender closing date.

.3 Complete description and data sheets of proposed substitution shall accompany the application and supplier must be prepared to submit samples for approval on short notice.

.4 Proposed substitutions must be at least of equal quality to that of the specified item. The

manufacturer's specification of the specified item shall apply for comparison if no other clause of this specification applies. The decision of the Departmental Representative to accept or reject shall be final.

.5 Off-the-shelf items such as standard boxes and EMT, which are specified by description only or indicated on the drawings without any manufacturer, model, type or catalogue number, do not require approval prior to the tender closing date.

.6 Submit list of alternates used within one week after acceptance of tender.

1.19 PROTECTION OF EQUIPMENT

.1 This contractor shall provide and ensure maximum protection of electrical equipment on the site. Electrical equipment, including existing electrical equipment, shall be kept clean and dry at all times and caution shall be taken to ensure no mechanical damage is done to the equipment. Equipment shall not be delivered to the site until it can be stored safely or placed in final position and the space is clean.

1.20 DAMAGES

.1 If the finish of electrical equipment is damaged either when received or during installation, have such equipment completely refinished and restored to its original condition at no cost to the Departmental Representative.

.2 Irreparably damaged equipment shall be replaced at no cost to the Departmental Representative.

1.21 SHOP DRAWINGS

.1 Prior to manufacture of any item made specifically for this job, submit detailed drawings of the item through the Departmental Representative.

.2 Submit shop drawings, product data and samples indicating details of construction, dimensions, capacities, weights and electrical performance characteristics of equipment or material.

.3 Where applicable, include wiring and schematic diagrams.

.4 Shop drawings must be received by the Departmental Representative at a date early enough to permit reasonable study prior to approval and manufacture or to permit alterations where necessary. Late submissions of shop drawings will be sufficient reason for a stoppage of construction pending approval, or removal and replacement of any unsatisfactory item at the contractor's expense.

.5 Shop drawings are required for all electrical items and specifically:

- .1 Portable power distribution equipment
- .2 Disconnect switches
- .3 Luminaires and lamps and power supplies
- .4 Lighting controls
- .5 Specialty receptacle outlet
- .6 Luminaires poles
- .7 Cabling
- .8 Luminaire enclosures

1.22 CUTTING AND PATCHING

.1 This contractor is responsible for all cutting or blocking out required to install electrical equipment.

.2 If this contractor makes excessive cuts or does not coordinate work so that finished work requires cutting or patching, then this contractor shall pay for all patching to original condition.

.3 Any dispute resulting from this shall be referred to the Departmental Representative for decision.

.4 Prior to any major cutting of walls or floor, review the proposed location, size and method with the Departmental Representative. This includes notification when cutting or coring into any fire rated construction.

1.23 PROTECTION

.1 Protect exposed live equipment during construction for personnel safety.

.2 Shield and mark live parts "LIVE 120 VOLTS", or with appropriate voltage.

.3 Arrange for installation of temporary doors for rooms containing electrical distribution equipment. Keep these doors locked except when under direct supervision of electrician.

1.24 INSPECTIONS AND TESTS

.1 Notify the Departmental Representative and authorities having jurisdiction at least five (5) working days in advance when the installations will be ready for inspection or testing.

.2 Test reports, signed by all attending authorities, shall be submitted to the Departmental Representative after successful completion of an inspection or test.

.3 Conduct all tests in a thorough and complete manner to the satisfaction of the Departmental Representative and pay for any fees incurred to complete tests.

.4 Furnish the Departmental Representative with a copy of Certificate of Inspection from B.C. Electrical Safety Branch indicating that all work has been satisfactorily completed and issued prior to final connection.

1.25 CLEAN UP

.1 Vacuum clean all new raceways and any electrical equipment. Ensure that no debris or spare parts are left in any electrical equipment.

.2 Any scrap material shall be removed from the site and disposed of by the Contractor.

.3 At time of final cleaning, clean lighting reflectors, lenses and other lighting surfaces that have been exposed to construction dust and dirt.

1.26 SURPLUS MATERIALS

.1 All material removed from existing site and not being reused in this contract shall be properly disposed of at an appropriate recycling and disposal facility.

1.27 OPERATING AND MAINTENANCE MANUALS

.1 Submit **four sets** of operating and maintenance manuals for equipment or as requested by the general section of the contract. Include descriptive and technical data, all shop drawings, operating procedures, routine and preventative maintenance, wiring diagrams, spare parts lists, warranties, service companies, suppliers for replacement parts, test results, electrical inspection authority certificate and contract guarantee.

.2 Submit documentation in accordance with Section 01 78 30 – Closeout Submittals.

.3 Submit one copy for approval by Departmental Representative prior to assembly of final sets.

1.28 DEMONSTRATION OF SYSTEMS

.1 Instruct Departmental Representative and operating personnel in the operation, care, and maintenance of equipment.

1.29 GUARANTEE

.1 Within a period of one year from the date of final acceptance of work, replace or repair at own expense any defect in workmanship or material. Reused material shall be operating satisfactorily at the time of final acceptance but subsequent failures are not the responsibility of this contractor.

.2 Warranties for equipment having more than one year guarantee shall be made out to PWGSC, and copies shall be provided in the maintenance manuals.

.3 Maintenance from manufacturer and contractor of all equipment shall be included for first year, including all lamps.

1.30 PAINTING

.1 Arrange and pay for the painting of the devices and surface noted in these specifications and on drawings, in particular:

.1 Exposed conduits.
.2 Luminaire brackets
.3 Metal flashings

.2 Painting shall be to match colour and finish of adjacent walls, with at least two coats of sprayed enamel paint to the satisfaction of the Departmental Representative.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 This Section of the Specification is to be read, coordinated and implemented in conjunction with all other parts of the Contract Documents.

1.2 REGULATORY REQUIREMENTS

.1 Restraints shall meet the requirements of the latest edition of the British Columbia Building Code and amendments.

.2 The Seismic Engineer shall be able to provide a proof of professional insurance and the related practice credentials, upon request. The Seismic Engineer shall be familiar with the BC Building Code requirements.

.3 The Contractors Seismic Engineer shall submit original signed BC Building Code "Letters of Assurance" "Schedules B, and C-B" to the Departmental Representative.

.4 The above requirements shall not restrict or supplant the requirements of any local bylaws, codes, or other certified agencies which may have jurisdiction over all or part of the installation.

1.3 SCOPE

.1 It is the responsibility of equipment manufacturers to design their equipment so that the strength and anchorage of internal components of the equipment exceeds the force level used to restrain and anchor the unit itself to the supporting structure.

.2 Manufacturer's shop drawings to be submitted with seismic information on equipment structure, bracing and internal components and as required.

.3 Provide restraint on all equipment and machinery, which is part of the building electrical services and systems, to prevent injury or hazard to persons and equipment in and around the structure. Restrain all such equipment in its normal position in the event of an earthquake.

.4 The total electrical seismic restraint design and field review and inspection will be by a B.C. registered Professional Structural Engineer who specializes in the restraint of building elements. Contractor to allow for coordination, provision of seismic restraints, as well as all costs for the services of the Seismic Restraint Engineer. This Engineer, herein referred to as the Seismic Engineer, will provide normal engineering functions as they pertain to seismic restraint of electrical installations.

.5 The Contractor shall be aware of, and comply with, all current seismic restraining requirements and make provision for those that may come into effect during construction of the project. Make proper allowance for such conditions in the tender.

.6 The Seismic Engineer shall provide detailed seismic restraint installation shop drawings to the Contractor. Copies of the shop drawings to be included in the final project manual.

.7 Provide seismic restraints on all equipment, and/or installations or assemblies, which are suspended, pendant, shelf mounted, freestanding and/or bolted to the building structure or support slabs.

.8 The Seismic Engineer shall provide inspections during and after installation. The

Contractor shall correct any deficiencies noted without additional cost to the contract.

.9 Include all costs associated with the Seismic installation and certification in the base tender.

1.4 SHOP DRAWINGS & SUBMITTALS

.1 Submit shop drawings of all seismic restraint systems including details of attachment to the structure, either tested in an independent testing laboratory or approved by the Seismic Engineer.

.2 Submit all the proposed types and locations of inserts or connection points to the building structure or support slabs. Follow the directions and recommendations of the Seismic Engineer.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 GENERAL

.1 All seismic restraints systems shall conform to local authority having jurisdiction and all applicable code requirements.

3.2 CONDUITS

.1 Provide restraint installation information and details on conduit and equipment as indicated below:

.2 Vertical Conduit:

.1 Attachment - Secure vertical conduit at sufficiently close intervals to keep the conduit in alignment and carry the weight of the conduits and wiring. Stacks shall be supported at their bases and, if over 2 stories in height, at each floor by approved metal floor clamps.

.2 At vertical conduit risers, wherever possible, support the weight of the riser, at a point or points above the center of gravity of the riser. Provide lateral guides at the top and bottom of the riser, and at intermediate points not to exceed 9.2 m o.c.

.3 Riser joints shall be braced or stabilized between floors.

.3 Horizontal Conduits:

.1 Supports - Horizontal conduit shall be supported at sufficiently close intervals to keep it in alignment and prevent sagging.

.2 EMT tubing - tubing shall be supported at approximately 1.2 m intervals for tubing.

.4 Provide transverse bracing at 12.2 m o.c. maximum unless otherwise noted. Provide bracing at all 90° bend assemblies, and pull box locations.

.5 Provide longitudinal bracing at 24.4 m o.c. maximum unless otherwise noted.

.6 Do not brace conduit runs against each other. Use separate support and restraint system.

.7 Support all conduits in accordance with the capability of the pipe to resist seismic load requirements indicated.

.8 A conduit system shall not be braced to dissimilar parts of a building or two dissimilar building systems that may respond in a different mode during an earthquake. Examples: wall and a roof; solid concrete wall and a metal deck with lightweight concrete fill.

.9 It is the responsibility of the contractor to ascertain that an appropriate size restraint device be selected for each individual piece of equipment. Submit details on shop drawings. Review with Seismic Engineer and submit shop drawings to Departmental Representative for their reference.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for wire and box connectors.

1.2 RELATED SECTIONS

.1 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CAN/CSA-C22.2No.18-98, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.

.2 CSA C22.2No.65-[93(R1999)], Wire Connectors.

.2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)

.1 EEMAC 1Y-2, 1961 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).

.3 National Electrical Manufacturers Association (NEMA)

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Divert unused wiring materials from landfill to metal recycling facility as approved by the Departmental Representative.

Part 2 Products

2.1 MATERIALS

.1 Pressure type wire connectors to: CSA C22.2No.65, with current carrying parts of copper sized to fit copper conductors as required.

.2 Fixture type splicing connectors to: CSA C22.2No.65, with current carrying parts of copper alloy sized to fit copper conductors 10 AWG or less.

.3 Bushing stud connectors: to EEMAC 1Y-2to consist of:

.1 Connector body and stud clamp for stranded copper conductors.

.2 Clamp for stranded copper conductors

.3 Stud clamp bolts.

.4 Sized for conductors as indicated.

.4 Clamps or connectors for armoured cable, aluminum sheathed cable flexible conduit, as required to: CAN/CSA-C22.2No.18.

Part 3 Execution

3.1 INSTALLATION

.1 Remove insulation carefully from ends of conductors and:

.1 Apply coat of zinc joint compound on aluminum conductors prior to installation of connectors.

.2 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2No.65.

.3 Install fixture type connectors and tighten. Replace insulating cap.

.4 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

1.2 REFERENCES

.1 CSA C22.2 No .0.3-96, Test Methods for Electrical Wires and Cables.

.2 CAN/CSA-C22.2 No. 131-M89(R1994), Type TECK 90 Cable.

1.3 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

.3 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products

2.1 BUILDING WIRES

.1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.

.2 Copper conductors: size as indicated, with 1000 V insulation of chemically cross-linked thermosetting polyethylene material rated RW90.

2.2 TECK CABLE

.1 Cable: to CAN/CSA-C22.2 No. 131.

.2 Conductors:

.1 Grounding conductor: copper.

.2 Circuit conductors: copper, size as indicated.

.3 Insulation:

.1 Chemically cross-linked thermosetting polyethylene rated type RW90, 1000 V.

.4 Inner jacket: polyvinyl chloride material.

.5 Armour: interlocking aluminum.

.6 Overall covering: polyvinyl chloride material.

.7 Fastenings:

.1 One hole steel straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.

.2 Channel type supports for two or more cables at 3000 mm centers.

.3 Threaded rods: 6 mm dia. to support suspended channels.

.8 Connectors:

.1 Watertight, approved for TECK cable.

2.3 LIGHTING POWER AND CONTROL CABLING

.1 2C #16AWG cable for power

1. Solid copper conductors with PVC insulation and PVC overall jacket
2. UL listed and CSA certified for indoor and outdoor use and water resistant
3. UV and weather resistant
4. Operating temperature: -40°C to +105°C
5. FT4 rated
6. Voltage rating: 300V

.2 2C #14AWG cable for power

1. Solid copper conductors with PVC insulation and PVC overall jacket
2. UL listed and CSA certified for indoor and outdoor use and water resistant
3. UV and weather resistant
4. Operating temperature: -40°C to +105°C
5. FT4 rated
6. Voltage rating: 300V

.3 2C #14AWG cable for dimming signal

1. Stranded (7x22) TC-tinned copper conductors
2. Beldfoil (100% coverage) + TC braid shield (85% coverage)
3. UL listed and CSA certified for indoor and outdoor use and water resistant
4. UV and weather resistant
5. Operating temperature: -40°C to +105°C
6. FT4 rated

7. Voltage rating: 300V

.4 5C #16AWG cable for power and dimming signal

1. Stranded (26x30) TC-tinned copper conductors
2. UL listed and CSA certified for indoor and outdoor use and water resistant
3. UV and weather resistant
4. Operating temperature: -40°C to +105°C
5. FT4 rated
6. Voltage rating: 300V

Part 3 Execution

3.1 INSTALLATION OF BUILDING WIRES AND LIGHTING CABLING

.1 Install wiring as follows:

.1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

.2 In trenches in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

.3 In surface and lighting fixture raceways in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

3.2 INSTALLATION OF TECK CABLE 0 -1000 V

.1 Install cables.

.1 Group cables wherever possible on channels.

.2 Terminate cables in accordance with Section 26 05 20- Wire and Box Connectors - 0 - 1000 V.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Section 26 05 00 - Common Work Results - Electrical.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)

.1 ANSI/IEEE 837-1989(R1996), Qualifying Permanent Connections Used in Substation Grounding.

.2 Canadian Standards Association, (CSA International)

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility as approved by the Departmental Representative.

.5 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products

2.1 EQUIPMENT

.1 Grounding conductors: bare stranded copper, soft annealed, size as indicated.

.2 Insulated grounding conductors: green, type RW90.

.3 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:

.1 Grounding and bonding bushings.
.2 Protective type clamps.
.3 Bolted type conductor connectors.
.4 Thermit welded type conductor connectors.
.5 Bonding jumpers, straps.
.6 Pressure wire connectors.

Part 3 Execution

3.1 INSTALLATION GENERAL

.1 Install complete permanent, continuous grounding system including, conductors, connectors, accessories.

.2 Install connectors in accordance with manufacturer's instructions.

.3 Protect exposed grounding conductors from mechanical injury.

.4 Use mechanical connectors for grounding connections to equipment provided with lugs.

.5 Soldered joints not permitted.

.6 Install bonding wire for flexible conduit, connected at both ends to grounding bushing, solderless lug, clamp or cup washer and screw. Neatly cleat bonding wire to exterior of flexible conduit.

.7 Install flexible ground straps for bus duct enclosure joints, where such bonding is not inherently provided with equipment.

.8 Install separate ground conductor to outdoor lighting standards and underground wiring.

3.2 EQUIPMENT GROUNDING

.1 Install grounding connections to typical equipment included in, but not necessarily limited to following list. Control panels, distribution panels, outdoor lighting, and receptacles.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of Departmental Representative and local authority having jurisdiction over installation.

.3 Perform tests before energizing electrical system.

.4 Disconnect ground fault indicator during tests.

END OF SECTION

Part 1 General

1.1 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data for cabinets in accordance with Section 01 33 00 - Submittal Procedures.

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

.3 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products

2.1 JUNCTION AND PULL BOXES

.1 Welded steel construction with screw-on flat covers for surface mounting.

.2 Welded steel construction with hinged lockable cover where indicated on the drawings.

.3 Covers with 25 mm minimum extension all around, for flush-mounted pull and junction boxes.

2.2 EXTERIOR JUNCTION BOXES

.1 All exterior junction boxes shall be rigid PVC type NEMA4X.

Part 3 Execution

3.1 JUNCTION, PULL BOXES AND CABINETS INSTALLATION

.1 Install pull boxes in inconspicuous but accessible locations.

.2 Only main junction and pull boxes are indicated. Install pull boxes so as not to exceed 30 m of conduit run between pull boxes.

3.2 IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results - Electrical.

.2 Install size 2 identification labels indicating system name voltage and phase.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 CSA C22.1-2015, Canadian Electrical Code, Part 1.

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

Part 2 Products

2.1 OUTLET AND CONDUIT BOXES GENERAL

.1 Size boxes in accordance with CSA C22.1.

.2 102 mm square or larger outlet boxes as required for special devices.

.3 Gang boxes where wiring devices are grouped.

.4 Blank cover plates for boxes without wiring devices.

.5 120 V outlet boxes for 120 V switching devices.

.6 Combination boxes with barriers where outlets for more than one system are grouped.

2.2 SHEET STEEL OUTLET BOXES

.1 Electro-galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 102 x 54 x 48 mm.

.2 102 mm square or octagonal outlet boxes for lighting fixture outlets.

2.3 MASONRY BOXES

.1 Electro-galvanized steel masonry single and multi gang boxes for devices surface mounted in exposed block walls.

2.4 CONDUIT BOXES

.1 Cast FS or FD aluminum boxes with factory-threaded hubs and mounting feet for surface wiring of switches and receptacle.

2.5 FITTINGS - GENERAL

.1 Bushing and connectors with nylon insulated throats.

.2 Knock-out fillers to prevent entry of debris.

.3 Conduit outlet bodies for conduit up to 32 mm and pull boxes for larger conduits.

.4 Double locknuts and insulated bushings on sheet metal boxes.

Part 3 Execution

3.1 INSTALLATION

.1 Support boxes independently of connecting conduits.

.2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.

.3 Provide correct size of openings in boxes for conduit, and armoured cable connections. Reducing washers are not allowed.

.4 All surface mounted boxes shall be FS or FD.

.5 Provide typewritten labels on boxes to identify source panel and circuit numbers.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA)

- .1 CAN/CSA C22.2 No. 18-98, Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware.
- .2 CSA C22.2 No. 56-1977(R1999), Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
- .3 CSA C22.2 No. 83-M1985(R1999), Electrical Metallic Tubing.
- .4 CSA C22.2 No. 211.2-M1984(R1999), Rigid PVC (Unplasticized) Conduit.

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

.4 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

Part 2 Products

2.1 CONDUITS

.1 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.

.2 Rigid PVC conduit: to CSA C22.2 No. 211.2.

.3 Flexible metal conduit: to CSA C22.2 No. 56, aluminum.

2.2 CONDUIT FASTENINGS

.1 One hole steel straps to secure surface conduits 50 mm and smaller. Two hole steel straps for conduits larger than 50 mm.

.2 Beam clamps to secure conduits to exposed steel work.

.3 Channel type supports for two or more conduits at 1.2 m oc.

2.3 CONDUIT FITTINGS

.1 Fittings: manufactured for use with conduit specified. Coating: same as conduit. All fittings to be steel.

.2 Factory "ells" where 90E bends are required for 25 mm and larger conduits.

.3 Watertight connectors and couplings for EMT. Set-screws are not acceptable.

2.4 FISH CORD

.1 Polypropylene.

Part 3 Execution

3.1 INSTALLATION

.1 Conceal conduits in caretaker's house and Break Storehouse bldg.

.2 Surface mount conduits where noted on the drawings.

.3 Use rigid PVC underground and surface mounted where exposed to exterior elements.

.4 Use electrical metallic tubing (EMT) inside structures.

.5 Use liquid tight corrosion resistant flexible metal conduit where noted on the drawings and where underground mounting is not viable due to presence of rocks.

.6 Minimum conduit size for lighting and power circuits: 21 mm.

.7 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.8 Mechanically bend steel conduit over 21 mm dia.

.9 Install fish cord in empty conduits.

.10 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.

.11 Dry conduits out before installing wire.

3.2 SURFACE CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Group conduits wherever possible on surface channels.

.3 Do not pass conduits through structural members except as indicated.

3.3 CONCEALED CONDUITS

.1 Run parallel or perpendicular to building lines.

3.4 CONDUITS UNDERGROUND

.1 Slope conduits to provide drainage.

.2 Waterproof joints (PVC excepted) with heavy coat of bituminous paint.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Section 33 71 75 – Underground Civil Work – Electrical.

.3 Section 26 05 00 - Common Work Results - Electrical.

1.2 REFERENCES

.1 Canadian Standards Association, (CSA International)

.2 Insulated Cable Engineers Association, Inc. (ICEA)

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Reefer to Section 26 05 01 - Common Work Results - Electrical.

Part 2 Products

2.1 MARKERS

.1 Provide metal tracer backed plastic marker tape in trenches above ductbanks as indicated.

Part 3 Execution

3.1 CABLE INSTALLATION IN DUCTS

.1 Install cables as indicated in ducts.

.1 Do not pull spliced cables inside ducts.

.2 Install multiple cables in duct simultaneously.

.3 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.

.4 Before pulling cable into ducts and until cables are properly terminated, seal ends of lead covered cables with wiping solder; seal ends of non-leaded cables with moisture seal tape.

.5 After installation of cables, seal duct ends with duct sealing compound.

.6 Provide pull string in all ducts for future use.

3.2 FIELD QUALITY CONTROL

.1 Perform tests of each type of cable and system

.2 Remove and replace entire length of cable if cable fails to meet any of test criteria.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results - Electrical.

1.2 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CSA C22.2 No.184.1-96, Solid-State Dimming Controls (Bi-national standard with UL 1472).

1.3 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit product data sheets for lighting control equipment. Include product characteristics, performance criteria, physical size, limitations and finish.

.3 Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence, cleaning procedures and wiring instructions.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal, and with Waste Reduction Workplan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

.4 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

.5 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products

2.1 DESCRIPTION

.1 Provide standalone self-contained lighting control systems designed to operate all exterior lighting loads installed under this project. In general, lighting control panels shall consist of modular relay controller with relays, astronomical time clock, touch-screen scheduler, dimming control module providing source and sink 0-10VDC control signals from the same module, analog to DMX converter when required, and programmable switches, as well as their associated wiring. Control modules shall be all plug-in type.

2.2 PRODUCT DATA

.1 Modular Relay Lighting Control Panel shall be UL; cUL listed and consist of the following:

1. Tub: NEMA 1 enclosure sized to accept relays and associated control modules as required.

2. Interior: shall have mounting clips to allow installing and removing of the plug-in control modules. Relays shall attach to control modules using a single plug-in connector.

.2 Plug-in control modules shall allow creating application specific panel configuration. Each module shall have address switches and LED indicators for: network traffic, module status and address conflict.

1. Relay Control Module:
   .1 Relay control module shall be installed in the lighting control panel and shall control up to 6 relays per module. Relay modules shall have two available configurations with or without switch inputs. Provide the correct model based on individual relay control requirement. Switch inputs shall allow for 2 or 3-wires momentary or maintained contacts. Each input shall control the associated relay.

2. Dimming Control Module:
   .1 Dimming control module shall be installed in the lighting control panel and shall have a minimum of four analog inputs and four 0-10V dimming outputs. A single input shall allow controlling multiple outputs with programmable offsets. Dimming outputs shall also be configurable to operate as scenes controlled by astronomical time clock / touch-screen scheduler or programmable switches. Dimming module shall provide power to relay modules and field devices.

3. Astronomical Time Clock / Touch-Screen Scheduler:
   .1 Astronomical time clock / touch-screen scheduler shall be installed in the lighting control panel. The scheduler shall allow system programming; scheduling and troubleshooting using a password protected colored touch-screen. Screen displays shall be intuitive and provide relay/group status, dimming output levels and shall allow controlling any object connected to the control panel (relay, group, and dimming channel).

4. Analog-to-DMX Module:
   .1 Analog-to-DMX converter shall respond to 0-10VDC commands sourced from dimming module and convert to DMX 512 output levels for the associated DMX controlled fixtures. Note that DMX controlled fixtures in a load group shall be wired in daisy chain format and the last device shall have a DMX termination resistor.
   .2 Analog-to-DMX converter shall provide conversion of up to twenty-four (24) discrete 0-10 volt DC input signals to a DMX512 serial digital output. The starting DMX channel shall be user-selectable and shall be able to choose how the analog inputs shall interact with an auxiliary DMX input stream. Each module shall optionally be able to record up to 24 presets

5. Programmable Switch:
   1. Programmable switch shall connect to panel using CAT5 cable. The soft touch programmable switch station shall be field configurable for 1, 2, 4 or 8-buttons using the touch-screen programmer. Switches shall mount in a standard single gang box, using Decora type faceplate. The switch face shall be transparent, allowing changing the switch color by replacing the label and the cover, without the need to remove the switch from the system. Each switch button shall be individually programmed to control any number of relays in the network and/or dimming channels. Each button shall have a two-color LED, indicating: RED for ON, no indication for OFF and GREEN for MIXED state.

2. Each two buttons of the programmable switch shall be programmed as 'ON' and 'Off' override switches for each dimming zone controlled by the lighting control panel. Provide label for each button indicating the dimming zone that is controlled.
3. Programmable switch, if installed outside of the lighting control panel shall have a transparent lockable cover.

2.3 SYSTEM DESCRIPTION

.1 Each panel is a self-contained system, using astronomical time sequence to operate lighting loads as indicated on electrical drawings. The touch-screen scheduler shall be able to provide minimum 8 schedules to control any lighting load or groups of loads in the lighting system. It shall also be able to provide astronomical clock information calculating sunrise and sunset times based on UTC and location. The touch-screen scheduler doubles as a user interface to configure, edit and operate all attached devices, and shall support the following operating scenarios:

1. Flick warning before lights are scheduled off or the override time expires. Flick warning shall be enabled / disabled for individual relays.
2. Time delay – programmable from 1 minute to 24 hours.
3. Astronomical time clock functions with programmable offset for sunrise and sunset.
4. Zones either for dimming channels or step dimming using relays.
5. Preset scenes that will change lighting levels for each dimming zone automatically based on programmed scenes such as dusk, dark, pre and post curfew settings and according to season and astronomic time of day. Departmental Representative will provide information for programming of preset scenes.
6. Programmable scenes – each programmable input or network switch shall allow creating ON/OFF and dimming scenes including multiple relays and dimming channels.
7. Shall provide 8 individual schedules, with 7 week days and 32 special events. Special events shall allow programming one-time events, re-occurring events or block events.

Part 3 Execution

3.1 INSTALLATION

.1 Install lighting control panels in accordance with manufacturer's instructions.

.2 Connect lighting loads to each lighting control panel

3.2 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical.

.2 Demonstrate that control system is installed as indicated and as recommended by the manufacturer.

.3 Commissioning of lighting control system including but not limited to final adjustments to programming, dimming and scheduling of lighting control panels will be done at the same time as aiming of the luminaires noted in Section 25 50 00. An authorized representative of lighting control panel supplier with expertise in programming of the system shall be

available during final commissioning and all expenses related to this shall be borne by the Contractor.

.4 Allow for a minimum of four (4) hours of training to Parks Canada staff to demonstrate and train the operation of lighting control system to a group of 3 people.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for standard bolt-on breaker type for existing panelboard.

1.2 RELATED SECTIONS

.1 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Section 26 05 00 - Common Work Results - Electrical.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.2 No.29 latest edition, Panelboards and Enclosed Panelboards.

Part 2 Products

2.1 EXISTING PANELBOARDS

.1 Almost all existing panelboards are Stab-loc or Square-D type.

.1 Supply and install breakers for new circuits as indicated.

.2 New breakers shall match existing manufacturer.

.3 New breakers for portable power panel receptacle (one fed from Brick Storehouse panel and one fed from Belmont Battery building panel) to be GFCI protected.

2.2 NEW PANELBOARDS

.1 Panelboards: to CSA C22.2 No.29 and product of one manufacturer.

.2 120/240 V panelboard: bus and breakers rated for 10 kA (symmetrical) interrupting capacity unless noted otherwise on drawings.

.3 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.

.4 Panelboards: mains, main breaker, number of circuits, and number and size of branch circuit breakers as indicated.

.5 Two keys for each panelboard and key panelboards alike.

.6 Copper bus with neutral of same ampere rating as mains.

.7 Mains: suitable for bolt-on breakers. Plug-in breakers are not acceptable.

.8 Trim with concealed front bolts and hinges.

.9 Trim and door finish: baked grey enamel.

.10 Lockable door.

.11 CSA Approved.

2.3 BREAKERS

.1 Breakers: to Section 26 28 21 – Moulded Case Circuit Breakers.

.2 Breakers with thermal magnetic tripping in panelboards except as indicated otherwise.

.3 Main breaker when noted on drawings: separately mounted on top or bottom of panelboard to suit cable entry. When mounted vertically, down position should open the breaker.

2.4 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.

.2 Provide a complete circuit directory with typewritten legend showing location and load of each circuit (existing and new).

.3 Update circuit directory in all existing panelboards affected by the work of this contract.

Part 3 Execution

3.1 INSTALLATION

.1 Install new breakers in existing panels in accordance with Manufacturer's recommendations.

.2 Connect loads to circuits.

.3 Connect neutral conductors to common neutral bus.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for a portable power distribution panel complete with branch circuit breakers, receptacles, enclosure, weatherproof faceplates, support frame with wheels and plug-in cord.

1.2 RELATED SECTIONS

.1 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Section 26 05 00 - Common Work Results – Electrical

.3 Section 26 14 17 – Panelboards Breaker Type

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.2 No.29 latest edition, Panelboards and Enclosed Panelboards.

Part 2 Products

2.1 PANELBOARD

.1 Panelboard shall be rated minimum 100 amps, 120/240 volts, single phase, 3 wire complete with branch circuit breakers as follows:

.1 One 60A-2P Main circuit breaker;
.2 Six 15A-1P GFCI breakers;
.3 Two 30A-2P GFCI breakers.

2.2 BREAKERS

.1 Breakers with thermal and magnetic tripping and GFCI protection for all branch circuits.

2.3 ENCLOSURE

.1 Provide a complete support structure with wheels and a panelboard in a NEMA4X weatherproof enclosure.

.2 Enclosure shall be constructed of marine grade stainless steel with a sealed lockable hinged door(s).

2.4 PLUG-IN CORD

.1 Portable power distribution unit shall have a 6 metre long SO 60A rated 3-wire cable with 60 amp 120/208 volt 1 phase 3-wire twist-lock plug.

2.5 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results - Electrical.

.2 Provide lamicoid labels on enclosure for ALL receptacles indicating circuit number and receptacle outlet amperage.

2.6 RECEPTACLES

.1 Portable power distribution system shall be equipped with receptacles as follows:

.1 Six 15A, 120V weatherproof duplex receptacles

.2 Two 30A, 120/208 volt 1 phase 4-pole weatherproof receptacles.

2.7 EQUIPMENT LABELLING

.1 The portable power distribution unit shall be manufactured by a CSA approved manufacturer and shall bear a CSA label.

Part 3 Execution

3.1 DELIVERY AND TEST

.1 Procure and deliver portable power distribution unit to site.

.2 Prior to turning over to Departmental Representative, test all branch breakers and receptacles for correct wiring and connection.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 03 30 00 – Cast-In-Place Concrete

.2 Section 28 05 28 – Grounding and bonding

.3 Section 26 05 25 – Seismic Restraints

1.2 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures. Shop drawings shall be detailed indicating all components and physical dimension for each.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 Construction/Demolition Waste Management And Disposal.

.2 Collect and separate plastic paper packaging and corrugated cardboard in accordance with Waste Management Plan.

2 Products

2.1 EXTERIOR LIGHTING CONTROL KIOSKS

.1 Lighting control kiosk shall be suitably sized to accommodate all electrical components housed within. The dimensions shown on the drawing are approximate only. Final kiosk dimension shall be determined by the manufacturer of the kiosk prior to fabrication.

.2 EEMAC 3R construction with slanted roof and rain gutter all around.

.3 All interior and exterior panels shall be fabricated from #5052 marine grade aluminum.

.4 Interior mounting pans shall be removable and suitable for drilling and tapping in order to mount internal components.

.5 Doors shall be marine grade aluminum, fully gasketted, 3-point latching with padlocking means and shall have bullet-style hinges with grease fittings.

.6 The kiosk shall be sufficiently braced and supported to form a rigid, free-standing structure and shall be equipped with lifting lugs.

.7 The entire kiosk enclosure shall be capable of withstanding maximum impact force of 86 MN/m2 area without rupture of material.

.8 The exterior walls and ceiling shall be fully insulated with high density polystyrene board with foil facing. "Soft" polystyrene batting or Styrofoam board will not be accepted. All insulation joints and exposed edges shall be neatly covered with foil tape.

.9 The metal base of the kiosk shall raise the bottom of the doors at least 100mm above the concrete pad.

.10 The kiosk shall be shall be sweep blasted with aluminum oxide or glass bead media, covered with 2.0-3.0 mils of zinc-free powder primer coat, followed by 3.0-4.0 mils of powder top coat. The finish shall be free of thickness variations, poor adhesion, "orange peel", blistering, pinholes, craters, powder puffs, drips, color variations, clouding or grainy/way flow. The kiosk exterior shall be RAL #6005 "Moss Green" color. The interior mounting pans shall be white color.

Minimum acceptable standards for primer and top coats:
Primer coat: Tiger Drylac #69-70000
Top coat: Tiger Drylac – Series 38.

.11 Identify all components within the kiosk with engraved 3-ply lamicoid nameplate, white with black lettering.

.12 Neoprene gasketting shall be installed between the kiosk base and the concrete pad and caulked all around the outside perimeter.

2.2 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 – Common Work Results - Electrical.

.2 Nameplate for each kiosk size 4 engraved as indicated.

3 Execution

3.1 INSTALLATION

.1 Mount all equipment in lighting control kiosk.

.2 Mount kiosk on concrete pad and connect to grounding. The kiosk shall be seismically anchored to the concrete pad in accordance with section 26 05 25 – Seismic Restraints.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Switches, receptacles, wiring devices, cover plates and their installation.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.3 Section 26 05 00 - Common Work Results - Electrical.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

- .1 CSA-C22.2 No.42-99(R2002), General Use Receptacles, Attachment Plugs and Similar Devices.
- .2 CSA-C22.2 No.42.1-00, Cover Plates for Flush-Mounted Wiring Devices (Bi-national standard, with UL 514D).
- .3 CSA-C22.2 No.55-M1986(July 2001), Special Use Switches.
- .4 CSA-C22.2 No.111-00, General-Use Snap Switches (Bi-national standard, with UL 20, twelfth edition).

1.4 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Departmental Representative.

Part 2 Products

2.1 RECEPTACLES

.1 Duplex receptacles, CSA type 5-15 R, 125 V, 15 A, U ground, to: CSA-C22.2 No.42 with following features:

- .1 Ivory urea moulded housing.
- .2 Suitable for No. 10 AWG for back and side wiring.
- .3 Break-off links for use as split receptacles.
- .4 Eight back wired entrances, four side wiring screws.
- .5 Triple wipe contacts and rivetted grounding contacts.

.2 Portable power single receptacles CSA type L14-30 R, 125/250 V, 30 A, twist-lock with following features:

- .1 Ivory urea moulded housing.
- .2 Suitable for No. 8 AWG for back and side wiring.

.3 Receptacles of one manufacturer throughout project.

2.2 SWITCHES

.1 15 A, 120 V single pole, double pole, three-way, four-way switches to: CSA-C22.2, No.55 and CSA – C22.2, No.111.

.2 Manually-operated general purpose AC switches with following features:

- .1 Specification grade.
- .2 Terminal holes approved for No. 10 AWG wire.
- .3 Silver alloy contacts.
- .4 Urea molded housing.
- .5 Suitable for back and side wiring.
- .6 Ivory toggle.

.3 Provide lock-out device for all ON and OFF override switches in lighting control cabinets.

2.3 SPECIAL WIRING DEVICES

.1 Special wiring devices:

- .1 Receptacle for Portable Power Distribution:
  - .1 Single receptacle, 125/250V, CSA type L14-60R, twist-lock with the following features:
    - .1 Ivory urea moulded housing.
    - .2 Suitable for No. 6 AWG for side wiring.

2.4 COVER PLATES

.1 Cover plates for wiring devices to: CSA-C22.2 No.42.1.

.2 Cover plates from one manufacturer throughout project.

.3 Sheet steel utility box cover for wiring devices installed in surface-mounted utility boxes.

.4 Stainless steel.

.5 Cast cover plates for wiring devices mounted in surface-mounted FS or FD type conduit boxes.

.6 Weatherproof double lift spring-loaded cast aluminum cover plates, complete with gaskets for duplex receptacles mounted to portable power distribution system.

.7 Weatherproof spring-loaded cast aluminum cover plates complete with gaskets for single receptacles mounted to portable power distribution system.

Part 3 Execution

3.1 INSTALLATION

.1 Receptacles:

.1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.

.2 Mount receptacles at height in accordance with Section 26 05 01 - Common Work Results – Electrical.

.2 Cover plates:

.1 Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.

.2 Install suitable common cover plates where wiring devices are grouped.

.3 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.3 Section 01 45 00 - Quality Control.

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit complete digital photometric data prepared by independent testing laboratory for luminaires where specified, for approval by the Departmental Representative.

.3 Photometric data to include: Digital IES photometric file.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

1.4 INTENT

.1 Provide lighting fixtures and accessories as listed in the Luminaire Schedule on drawings.

.2 Ground all lighting equipment to grounding system.

.3 Fixtures of the same or similar type shall be supplied by the same manufacturer.

.4 The Luminaires' standards specified the minimum acceptable standards. All manufacturers which meet the quality and performance of the standard luminaires are allowed to bid on this project. (Note: review of any proposed luminaire in lieu of the minimum acceptable product as noted will be done after tender closing not during tender and as such, proposals for luminaires other than those noted as minimum acceptable standard will not be accepted for review during tender.). It is the responsibility of the contractor to provide documentation that any proposed luminaire meets or exceeds the quality and performance of the luminaire specified as minimum acceptable and provide point to point calculation as part of the shop drawings documentation submittals.

Part 2 Products

2.1 GENERAL

.1 Except for those luminaires that are supplied by PWGSC to be used by the contractor (luminaire types 'C2A', 'L1', L2', 'L3', 'L4', 'L5', 'L6', 'L8', 'L9' and 'L10'), provide lighting fixtures new and complete with all mounting accessories, junction boxes, trims, frames, and lamps and power supplies.

.2 All luminaires except for flexible luminaire type 'C', mounting accessories, back boxes shall be cast aluminum.

.3 Refer to drawings for luminaire schedule.

2.2 LED DRIVERS

.1 LED drivers shall be CSA approved.

.2 LED driver shall be suitable for the application of the specified LED lamps.

2.3 LAMPS

.1 Provide and install lamps in all fixtures in the project.

.2 All lamps shall be LED type with wattage as indicated in lighting fixture schedule.

2.4 LUMINAIRES

.1 Luminaires supplied and installed by electrical contractor

1. All luminaires shall comply with CSA Standard C22.2 No.9-1968. Accessories and components shall comply with relevant CSA Standards applicable to accessory or components.

2. All luminaires shall be suitable for salt water spray environment and shall be marine grade corrosion resistant.

3. Refer to luminaire schedule on the drawings. Include power supplies, dimmers, low voltage transformers etc as required for a complete operational lighting system.

.2 Luminaires supplied by PWGS and installed by electrical contractor

1. As noted in Luminaire schedule on drawings and in other sections of specifications, luminaire types 'C2A', 'L1', L2', 'L3', 'L4', 'L5', 'L6', 'L8', 'L9', 'L10' with quantities as indicated and c/w associated power supplies where applicable – will be supplied by PWGSC for use by Contractor. These luminaires are all new in their original packaging and are stored in Sinclair Centre Building at 757 West Hastings in Vancouver.
2. Immediately after award of Contract, Contactor is to make arrangements with PWGSC to receive these luminaires and deliver to project site for use by Contractor.
3. Contractor is to check physical condition of all PWGSC supplied luminaires prior to shipment to the site in the presence of Departmental Representative and list possible damages to any of the luminaires.
4. Contractor shall take possession of all PWGSC supplied luminaires after receiving them and shall be responsible for safe delivery of luminaires to the site and storage of them prior to use. Pay all costs associated with delivery and insurance during delivery.
5. Detail information for PWGSC supplied luminaires and associated power supplies, where applicable, is included in Appendix 'A' of this specification (reviewed shop drawings for Sinclair Centre project and relevant pictures). Contractor is to review this information prior to bid submittal, contact suppliers of luminaires, obtain any additional information required for installation and wiring of luminaires and include

in bid submittal any additional parts including but not limited to those specifically indicated on the drawings that may be required for a complete and operational lighting system as intended.

6. Contact information for PWGSC supplied luminaires:
   - SPI Luminaires supplied by MAC's II Agencies:
     Mark Sheldrick, Tel: 604-540-6646
   - Lumenpulse luminaires supplied by Lightworks :
     Darren Luce, Tel: 604-215-7721
   - BK Luminaires supplied by SLS Lighting:
     Alex Rozenberg,Tel: 604-874-2226

2.5 LUMINAIRE SCHEDULE

.1 It is the responsibility of the Contractor to ensure that all lighting fixtures carried in his bid include all features as specified in the Schedule. The contractor is responsible for all cutting, patching, painting and mounting hardware for luminaires and must make necessary adjustments as required for alternate products used at no additional cost to the contract.

.2 Submit sample luminaire for all new luminaires complete with all specified options, mounting hardware and finishes for the Departmental Representative's review before ordering product. Contractor to allow the cost of sample submission and returning the luminaires.

Part 3 EXECUTION

3.1 INSTALLATION AND SUPPORTS

.1 Provide complete and proper support for all fixtures, fixture hangers, etc., for proper support of outlet boxes and fixture hanger assemblies.

.2 Support fixtures as shown on the drawings, level, plumb and true with the structure and other equipment in a horizontal or vertical position as intended. Wall or side bracket mounted fixture housings shall be rigidly installed and adjusted to give a neat flush fit to the surface on which it is mounted.

.3 All hangers, supports, fastenings or accessory fittings shall be protected against corrosion. Care shall be taken during the installation to assure that insulation and corrosion protection is not damaged.

.4 Metal inserts, expansion bolts or toggle bolts in concrete slabs for stems which do not carry wiring must be accurately located in relation to the outlet boxes, to allow perfect alignment and spacing of suspension stems.

.5 All fasteners and inserts are to be marine grade corrosion resistant.

.6 Install fixture lenses as late as possible to protect from dirt and dust. Remove and clean or replace lenses to the satisfaction of the Departmental Representative.

.7 Supply and install the required concrete bases to support the bollard luminaires.

3.2 TESTING AND COMMISSIONING

.1 Final aiming of all luminaires installed under this project will be scheduled to be done at dark in three (3) consecutive nights in presence of Departmental Representative. Allow for all expenses including labour, material and equipment for this work.

3.3 SPARES

.1 Forward spare luminaire with quantities as listed below to the Departmental Representative as spares prior to substantial completion:

.1 Type 'A' luminaire, 1 spares
.2 Type 'D' luminaire c/w leader cable, 1 spare
.3 Type 'D-A' luminaire c/w leader cable, 2 spares
.4 Type 'D-B' luminaire c/w leader cable, 2 spares
.5 Type 'F' luminaire c/w leader cable, 2 spares
.6 Type 'K' luminaire, 2 spares
.7 Type 'S' solar light, 10 sapres

END OF SECTION

Part 1 General

1.1 SCOPE

.1 This section covers rock removal. Rock removal is to be achieved by rock cutting or other approved method of removal to complete the work indicated on plans.

.2 The contractor is responsible for repair to all asphalt, landscape, fencing, structures and equipment caused by rock removal, at no additional cost to the Departmental Representative.

.3 Rock removal includes removal, loading, transportation and disposal of rock materials.

1.2 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements and with manufacturer's written instructions.

.2 Packaging Waste Management: remove for reuse and return of pallets, creates, padding, and packaging materials in accordance with Section 01 74 19 – Construction/Demolition and Wast Management and Disposal.

1.3 QUALITY ASSURANCE

.1 Vibration Control:

.1 Reduce ground vibrations to avoid damage to structures or reaming rock mass.

.2 In general, vibration from rock removal activity not to exceed 12.5mm/s at building surrounding the blasting site.

.3 Blasting not permitted.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 ROCK REMOVAL

.1 Co-ordinate this Section with Section 01 35 33 – Health and Safety Requirements.

.2 Remove rock to alignments, profiles, and cross sections as indicated. Load, transport and dispose of materials.

.3 Do rock cutting operations in accordance with local and provincial codes and requirements of authority having jurisdiction.

.1 Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize overbreak, and to avoid damage to adjacent structures.

.4 Excavate rock to horizontal surfaces with slope not to exceed 4h:1v.

.5 Prepare rock surfaces which are to be bonded to concrete, by scaling, pressure washing

and broom cleaning surfaces.

.6 Cut trenches to widths as indicated.

.7 Remove boulders and fragments which may slide or roll into excavated areas.

.8 Correct unauthorized rock removal at no extra cost, in accordance with Section 33 71 75 – Underground Civil Work – Electrical

3.2 CLEANING

.1 Clean in accordance with Section 01 74 11 – Cleaning

.2 Rock Disposal

.1 Dispose of surplus removed rock in accordance with Section 01 74 19 – Construction/Demolition Waste Management and Disposal.

.3 Wast Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

3.3 PROTECTION

.1 Prevent damage to surrounding and injury to persons in accordance with Section 01 56 00 – Temporary Barriers and Enclosures. Post guards, sound warnings, and display signs during rock removal activity.

END OF SECTION

PART 1 GENERAL

1.1 Section Includes

.1 Definitions
.2 Related Sections
.3 Measurement for Payment
.4 References
.5 Requirements of Regulatory Agencies
.6 Waste Management and Disposal
.7 Existing Conditions
.8 Quality Assurance
.9 Materials
.10 Site Preparation
.11 Preparation and Protection
.12 Stripping of Topsoil
.13 Stockpiling
.14 Cofferdams, Shoring, Bracing and Underpinning
.15 Dewatering and Heave Protection
.16 Excavating
.17 Bedding and Surround of Underground Services
.18 Backfilling
.19 Restoration

1.2 Definitions

.1 Topsoil:
  .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
  .2 Material reasonably free from mineral subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25mm in any direction.
.2 Stripping Excavation: excavation of topsoil covering original ground.
.3 Rock Excavation: excavation of:
  .1 Material from solid masses of igneous, sedimentary or metamorphic rock which, prior to removal, was integral with parent mass. Material that cannot be ripped with reasonable effort from Caterpillar D9L or equivalent to be considered integral with parent mass.
  .2 Boulder or rock fragments measuring in volume one cubic metre or more.
.4 Common Excavation: excavation of materials that are not Rock Excavation, Granular Backfill Excavation or Stripping Excavation.
.5 Granular Backfill: granular material excavated from designated areas and meets specified gradation and material requirements and will be incorporated into the embankment.
.6 Waste material: material other than Stripping Excavation that is unsuitable for embankment construction or material surplus to requirements.
.7 Borrow material: material obtained from areas outside right-of-way and required for construction of embankments or for other portions of work.

1.3 Related Sections

.1 Section 01 33 00 – Submittal Procedures
.2 Section 01 35 43 Environmental Protection
.3 Section 01 74 21 – Waste Management and Disposal
.4 Section 31 23 16.26 – Rock Removal

1.4 Measurement For Payment

.1 Payment for excavation, trenching and backfilling required for this work is included in the lump sum prices in this Contract. No separate measurement for

payment will be made.

.2 Contractor to repair portions of roadway or grass damaged (intentionally or not) during construction to Departmental Representative's approval.

1.5 References

.1 ASTM C136-06 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
.2 ASTM C117-04 Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
.3 ASTM D4318-10 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
.4 ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3) (600 kN-m/m^3).
.5 Current CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric Series
.6 ASTM D422-63(2002) , Standard Test Method for Particle-Size Analysis of Soils.

1.6 Requirements of Regulatory Agencies

.1 Adhere to regulations of Authority having jurisdiction if blasting is required.

1.7 Waste Management and Disposal

.1 Dispose of waste materials in accordance with Section 01 74 21 – Waste Management and Disposal and the Waste Management Workplan.

1.8 Existing Conditions

.1 Buried Services:
  .1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
  .2 Before commencing work verify location of buried services on and adjacent to site.
  .3 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before proceeding.
  .4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
  .5 Record location of maintained, re-routed and abandoned underground lines.
.2 Existing buildings and surface features:
  .1 Conduct with Departmental Representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.
  .2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair to approval of Departmental Representative.
  .3 Where required for excavation, cut roots or branches as approved by Departmental Representative.

1.9 Quality Assurance

.1 Engage services of qualified Professional Engineer who is registered or licensed in Province of British Columbia in which Work is to be carried out to design and inspect shoring and bracing required for Work if required by applicable legislation.
.2 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.
.3 At least 2 weeks prior to performing Excavation, Trenching or Backfilling Work, Contractor to provide Departmental Representative with a Construction

Sequence for the Work. Do not proceed with the Work until approval has been received from the Departmental Representative.

PART 2 PRODUCTS

2.1 Materials

.1 Type 1 and Type 2 fill: properties to the following requirements:
- .1 Crushed, pit run or screened stone, gravel or sand.
- .2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2.
- .3 Table

Sieve Designation (mm)	%Passing Type 1	%Passing Type 2
75		
50		
37.5		
25	100	
19	80 - 100	
12.5	-	100
9.5	50 - 85	91 - 100
4.75	35 – 70	83 - 100
2.36	25 - 50	73 - 94
1.18	15 - 35	57 - 80
0.600		33 - 60
0.300	5 - 20	10 - 37
0.180	-	4 - 18
0.075	0 - 5	0 - 5

.2 Type 3 fill: selected material from excavation or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75mm, cinders, ashes, sods, refuse or other deleterious materials.

PART 3 EXECUTION

3.1 Site Preparation

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
.2 Cut pavement, sidewalks or curbing neatly along limits of proposed excavation in order that surface my break evenly and cleanly.

3.2 Preparation and Protection

.1 Protect existing features in accordance with the specifications and applicable local regulations.
.2 Keep excavations clean, free of standing water, and loose soil.
.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Departmental Representative's approval.
.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
.5 Protect buried services that are required to remain undisturbed.

3.3 Stripping of Topsoil

.1 Commence Stripping Excavation as directed by Departmental Representative..
.2 Strip to depths directed by Departmental representative.
.3 Stockpile in locations directed by Departmental representative.
.4 Dispose of unused stripped topsoil as directed by Departmental Representative.
.5 Spread stripped topsoil on completion of excavation and backfill construction.

3.4 Stockpiling

.1 Stockpile fill materials in areas designated by Departmental Representative.
.2 Stockpile granular materials in manner to prevent segregation.
.3 Protect fill materials from contamination.
.4 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.5 Cofferdams, Shoring, Bracing and Underpinning

.1 Construct temporary Works to depths, heights, and at locations as required to protect existing structures, embankment slopes, roadways, etc. If required, temporary works are to be designed and stamped by a Professional Engineer registered in the Province of British Columbia.
.2 During backfill operation:
  .1 Unless otherwise as indicated or as directed by Departmental Representative, remove sheeting and shoring from excavations.
  .2 Do not remove bracing until backfilling has reached respective levels of such bracing.
  .3 Pull sheeting in increments that will ensure compacted backfill is maintained at an elevation at least 500mm above toe of sheeting.
.3 When sheeting is required to remain in place, cut off tops at elevations as indicated.

3.6 Dewatering and Heave Protection

.1 Keep excavations free of water while Work is in progress.
.2 Submit for Departmental Representative's review details of proposed dewatering or heave prevention methods, such as dikes, well points, and sheet pile cut-offs, if required.
.3 Avoid excavation below groundwater table if quick condition or heave is likely to occur. Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
.4 Protect open excavations against flooding and damage due to surface run-off.
.5 Dispose of water in accordance with Section 01 35 43 Environmental Protection and in manner not detrimental to Public and private property or any portion of Work completed or under construction.
.6 Provide silt fences, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to water courses or drainage areas.

3.7 Excavating

.1 Excavate to lines, grades, elevations and dimensions as indicated on the drawings or as required.
.2 Excavation work to be as minimal as possible.
.3 Excavation must not interfere with capacities of adjacent foundations and roadways. It is the Contractor's responsibility to determine if any temporary works are required to maintain stabilities during construction.
.4 Do not disturb soil within branch spread of trees or shrubs that are to remain.
  .1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
.5 For trench excavation, unless otherwise authorized by Departmental Representative in writing, do not excavate more than 30m of trench in advance of installation operations and do not leave open more than 15m at end of day's operation.
.6 Keep excavated and stockpiled materials safe distance away from edge of trench.
.7 Restrict vehicle operations directly adjacent to open trenches.
.8 Dispose of surplus and unsuitable excavated material in approved location off

site.

.9 Do not obstruct flow of surface drainage or natural watercourses.

.10 Earth bottoms of excavation to be undisturbed soil or rock, level, free from loose, soft or organic matter.

.11 Notify Departmental Representative when bottom of excavation is reached.

.12 Obtain Departmental Representative's approval of completed excavation.

.13 Correct unauthorized over-excavation as follows:

.1 Fill with Type 2 fill material compacted to not less than 95% of corrected Standard Proctor maximum dry density.

.14 Hand trim, make firm and remove loose material and debris from excavations.

.1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

.2 Clean out rock seams and fill with concrete mortar or grout to approval of Departmental Representative.

3.8 Bedding and Surround of Underground Services

.1 Place and compact Type 2 fill material for bedding and 75 mm above ducts.

.2 Place bedding and surround material in unfrozen conditions.

3.9 Backfilling

.1 Use Type 2 fill material for granular backfill to the elevations indicated elsewhere.

.2 Do not proceed with backfilling operations until Departmental Representative has inspected and approved the installation.

.3 Areas to be backfilled to be free from debris, snow, ice, water and frozen material.

.4 Do not use backfill material which is frozen or contains ice, snow or debris.

.5 Place backfill material in uniform layers not exceeding 150mm compacted thickness up to grades indicated.

.6 Compact each layer to minimum 95% maximum dry density before placing succeeding layer.

.7 Add water or dry as required to bring moisture content of materials to level required to achieve specified compaction.

.8 Place warning Wood plank and plastic marker tape as indicated elsewhere.

3.1 Restoration

.1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 19 – Construction/Demolition Waste Management and Disposal, trim slopes, surfaces and correct defects as directed by Departmental Representative.

.2 Place topsoil as directed by Departmental Representative.

.3 Reinstate lawns to elevations which existed before excavation.

.4 Reinstate pavements, sidewalks and curbing disturbed by excavation to thickness, structure and elevation which existed before excavation.

.5 Clean and reinstate areas affected by Work as directed by Departmental Representative.

END OF SECTION

Part 1 General

1.1 SCOPE

.1 Supply and install all underground civil work required for electrical installation as necessary for this project. The civil work shall include but not be limited to:

- .1 Trenching and excavation.
- .2 Conduit and duct installation - see Section 26 05 34 – Conduits, Conduit Fastening and Conduit Fittings.
- .3 Sand bedding and back filling.
- .4 Repairing existing grade finish.

.2 Provide a complete system for the distribution of electric power service from the point of supply to the utilization equipment.

.3 Provide electrical services to site lighting.

.4 Provide underground ducts, protection and encasements as indicated on drawings.

.5 Conduit for site lighting is drawn diagrammatically. Conduit to be routed in an orderly manner and where practical, shall maintain a minimum of 3m clear of existing vegetation.

.6 Underground conduit and duct routing location to be clearly documented on the "Record Drawings" with set back dimensions from key fixed points on site.

.7 Prior to commencing excavation work, locate all existing underground services in the area of work and protect existing underground services from damage. Repair damages to existing underground services at no additional cost to the Departmental Representative.

1.2 PROTECTION OF EXISTING FEATURES

.1 Existing buried utilities, services, and structures are indicated for guidance only, and information shown is not guaranteed, accurate or complete.

.2 Confirm exact locations and state of underground services prior to excavation by use of electronic testers.

.3 Include costs of any relocations required.

.4 Determine with the Departmental Representative, surface features to be protected, retained or restored.

1.3 CLEARANCES AND DEPTHS OF RACEWAYS

.1 Unless specifically stated on plans, the following clearances are to be maintained between new underground raceways, and existing underground services.

- .1 Between communication and power raceways:
  - .1 in concrete encasement - 75mm
  - .2 direct buried raceway - 300mm

.2 Depth of raceways shall be as indicated on plans.

1.4 SHORING AND BRACING

.1 Install shoring and bracing to comply with applicable local regulation, and workers' compensation board standards.

1.5 TRAFFIC PROVISIONS

.1 Provide and maintain roadways, walkways and any detours required due to this work.

.2 Obtain prior approval for any detours from the Departmental Representative.

.3 Provide temporary access over excavation as soon as possible, and at all times not under active construction, such as steel plates over trenches in roadways.

1.6 CODES AND STANDARDS

.1 Do complete installation in accordance with CSA C22.1-2009 latest edition, except where specified otherwise.

.2 Do overhead and underground systems in accordance with CSA C22.3 No.1 latest edition, except where specified otherwise.

.3 Concrete form work in accordance with CAN3-A23-1ST latest issue.

.4 Concrete in accordance with CAN3-A23.152 latest issue.

.5 Portland cement: to CAN3-A5-M latest issue.

Part 2 Products

2.1 BACKFILL MATERIAL

.1 Sand shall mean screened pit material, free of all organic material. Screen shall eliminate all stones over 5mm in diameter and any sharp debris.

.2 Selective granular material shall mean material found in excavation or obtained from a gravel pit, that excludes rubble, hard packed clays, sharp objects or rock that could cut duct or cable, and be free of all stones over 50mm in diameter.

.3 Native material, shall mean material found on site, excluding material that would deteriorate over time, for example wood scraps or rubble, and stones over 300mm in diameter.

.4 Crushed rock and drain rock shall be as obtained from reputable gravel pit, clean of rubble and fines.

CONCRETE MIX AND ENCASEMENT

.5 Type 10 Portland cement, min. compressive strength 20 mpa at 28 days, slump 50-75mm at point of discharge, nominal coarse aggregate.

.6 Provide concrete encasement of ductbank under roadway section, as indicated.

2.2 DUCTS AND CONDUIT

.1 See Section 26 05 34 - Conduits, Conduit Fastening and Conduit Fittings.

Part 3 Execution

3.1 CONCRETE DUCT BANK INSTALLATION

.1 Install concrete encased underground duct banks as indicated on plans.

.2 Compaction shall be to a minimum as noted in the following subsections, except if under a roadway. Under roadway it must also meet the requirements of the Departmental Representative as noted in the plans and specifications.

.3 Build duct bank on undisturbed soil or on well compacted selective granular fill not less than 150mm thick, compacted to 95% of maximum proctor dry density.

.4 Open trench completely between in-ground junction boxes to be connected before ducts are laid and ensure that no obstructions will necessitate change in grade of ducts.

.5 Install ducts with a minimum slope of 1 to 400 toward in-ground junction box.

.6 Make transpositions, offsets and changes in direction using 5 degree bend sections. Do not exceed a total of 20 degrees with duct offset.

.7 Use flush mounted bell ends at all duct terminations including junction boxes.

.8 Use conduit to duct adapters when connecting to conduits.

.9 Cut, ream and taper end of ducts in field in accordance with manufacturer's recommendations, so that the installed duct bell ends are fully equal to factory-made ends.

.10 Allow concrete to attain 50% of its specified strength before backfilling.

.11 Use metal anchors, ties and trench jacks as required to secure ducts and prevent moving during pouring of concrete. Tie ducts to spacers with tie wraps or other non-metallic material. No wood spacers or anchors will be allowed in the duct bank pour.

.12 Clean ducts before laying. Cap ends of ducts during construction and after installation to prevent entrance of foreign materials.

.13 Place concrete down sides of duct bank filling space under and around ducts. Rod concrete with flat bar between vertical rows filling voids. Avoid concrete vibrators coming in contact with ducts or conduits.

.14 Install traceable metallic backed warning tapes over each conduit run.

.15 A 300 mm minimum separation of well tamped material, must be maintained between different direct buried services unless noted otherwise

.16 Care shall be taken not to alter or remove, without consent of the Departmental Representative, any structure crossing or running parallel to the excavation.

.17 Pull through each duct a mandrel not less than 300 mm long and of a diameter 6 mm less than internal diameter of duct, followed by stiff bristle brush to remove sand, earth and other

foreign matter. Pull stiff bristle brush through each duct immediately before pulling-in cables.

3.2 DUCT BANK INSTALLATION

.1 Install underground duct banks as indicated on plans.

.2 Compaction shall be to a minimum as noted in the following subsections, except if under a roadway. Under roadway it must also meet the requirements of the Departmental Representative as noted in the plans and specifications.

.3 Build duct banks on undisturbed soil or on well compacted selective granular fill not less than 150mm thick, compacted to 95% of maximum proctor dry density.

.4 Open trench completely between manholes to be connected before ducts are laid and ensure that no obstructions will necessitate change in grade of ducts.

.5 Install ducts with a minimum slope of 1 to 400 toward in-ground junction boxes.

.6 Make transpositions, offsets and changes in direction using 5 degree bend sections. Do not exceed a total of 20 degrees with duct offset.

.7 Use flush mounted bell ends at all duct terminations including in-ground junction boxes.

.8 Use conduit to duct adapters when connecting to conduits.

.9 Cut, ream and taper end of ducts in field in accordance with manufacturer's recommendations so that the installed duct bell ends are fully equal to factory-made ends.

.10 Clean ducts before laying. Cap ends of ducts during construction and after installation to prevent entrance of foreign materials.

.11 Install traceable metallic backed warning tapes (yellow) over each conduit run.

3.3 LUMINAIRE BASES

.1 Compact fill around light base to 95% of maximum proctor dry density, adjusting street light base to be true vertical.

.2 If native soil cannot be compacted to the necessary density, replace with coarse crushed rock for the full extent of the excavated area of the pole base and/or increase pole base dimensions as instructed by professional civil engineer.

3.4 MARKERS

.1 Traceable metallic backed warning tape shall be laid side by side continuously over the top of the duct and cable runs, such that any digging over top of the ducts will encounter a warning tape.

3.5 SITE LIGHTING

.1 Install all site lighting and concrete bases. Mark out all trenches.

3.6 EXISTING SERVICES

.1 Protect all existing services encountered.

.2 Before starting the trenching, locate and expose any utility lines crossing the duct route and ensure that these lines are not damaged in the course of trenching operations. The Contractor is responsible for all damage caused by negligence.

.3 Provide temporary bridges for the passage of traffic over any trenches where necessary. Provide temporary crossings at walkways in order to maintain all existing accessways and provide barriers, signs and lights as required.

3.7 PULL ROPE

.1 In each duct install pull rope continuous throughout each duct run with 3m spare rope at each end.

3.8 INSPECTIONS

.1 Advise the Departmental Representative giving minimum three working days notice so that he may inspect ducts prior to placing and be present during placement of concrete and clean-out.

3.9 TESTS

.1 The compaction density shall be verified by an independent testing agency proficient in this type of testing. Include in tender for this service.

END OF SECTION

APPENDIX 'A'

Shop Drawings for Luminaire Types 'C2A', 'L1', L2', 'L3', 'L4', 'L5', 'L6', 'L8', 'L9' and 'L10'

Supplied by PWGSC / Installed by Contractor

SPECIFICATION SHEET

lumenfacade™

STAND ALONE - PROJECTOR
WHITE & STATIC COLORS

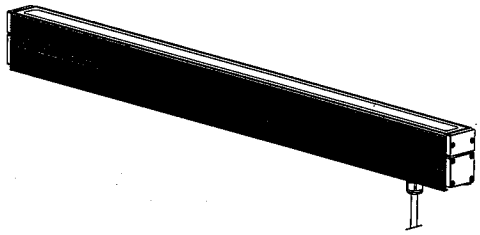
Client: _____

Project name: Sinclair Centre

Order #: _____

Type: C2A Qty: 5

FEATURES AND BENEFITS



Physical :

- Low copper content extruded aluminum housing
- Available in 1', 2', 3' or 4' sections
- Electro-statically applied polyester powder coat finish
- Machined aluminum end caps and silicone gaskets
- Stainless steel hardware
- Standard straight leader cable output, bottom feed
- Clear tempered glass
- 10° x 10°, 10° x 60°, 30° x 60° or 60° x 60° optics
- IP66
- Corrosion-resistant option for marine environments
- Meets 3G ANSI C136.31 Vibration standard for bridge applications

Performance :

- Minimum 1fc (10.7 lux) @ 129 feet (39.3m) distance (4000K, 4' unit, 10° x 60° optic, HO version)
- 2,929 delivered lumens and 16,765 candelas at nadir (4000K, 4' unit, 10° x 60° optic, HO version)
- CRI values: 85+ (2700K), 80+ (3000K), 78+ (4000K)
- Lumen maintenance 120,000 hrs [L70 @ 25°C]
- Lumen measurements comply with LM - 79 - 08 standard
- Resolution per foot or per fixture (see page 6)
- Operating temperatures: -25° C to 50° C [-13F to 122F]

Electrical :

- Line voltage luminaire for 120 to 277V
- Power & Data in 1 cable (#16-5)
- Up to 64 feet with a single power feed (HO version, non dimming)
- 5W/ft version meets ASHRAE standards for linear lighting on building facades
- Standard 10ft /3m cord
- 8.5W/ft (15.25W/ft HO version)
- Dimming options: 0-10 volt, DMX, DALI, Lumentalk, or Lutron® EcoSystem® enabled

RoHS

lumentalk EcoSystem. Enabled

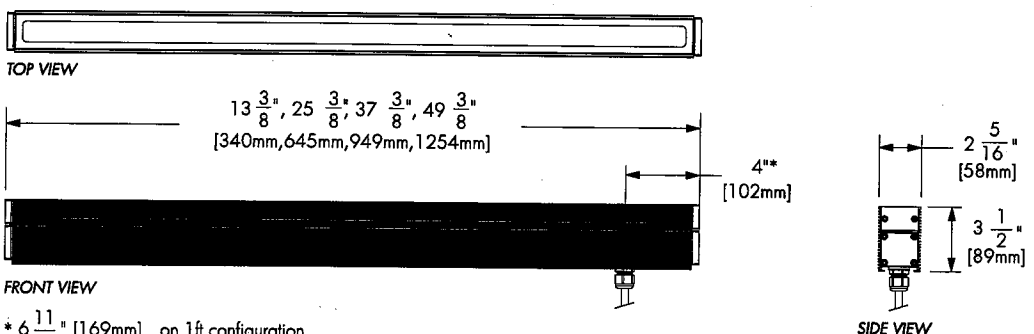
Wiring detail

American Color Code

WIRE COLOR	*/ USE*
GREEN	*GROUND*
WHITE	*NEUTRAL*
BLACK	*LIVE 120-277V*
RED	*0-10V / DATA +*
ORANGE	*0-10V / DATA -*

CE Color Code

WIRE COLOR	*/ USE*
GREEN/YELLOW	*GROUND*
BLUE	*NEUTRAL*
BROWN	*LIVE 120-277V*
BLACK	*0-10V / DATA +*
GRAY	*0-10V / DATA -*



* 6 11/16" [169mm] on 1ft configuration

5 year warranty

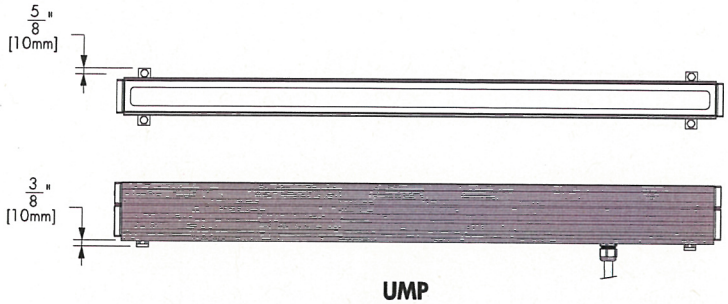
Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

2013.09.19
EM - R29

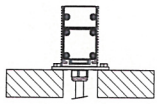
lumenpulse™
Sustainable architectural LED lighting systems

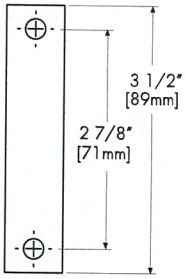
SPECIFICATION SHEET

MOUNTING OPTIONS

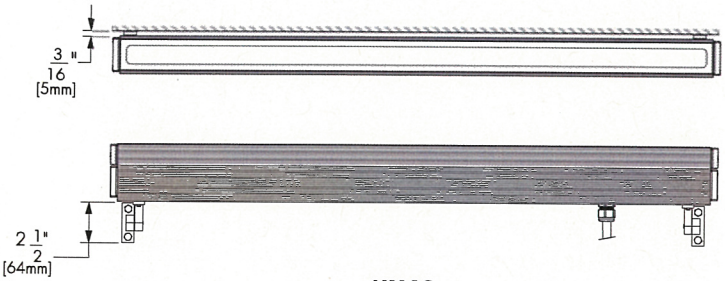


UMP
Fixed Mounting

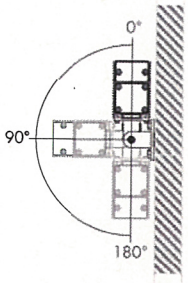


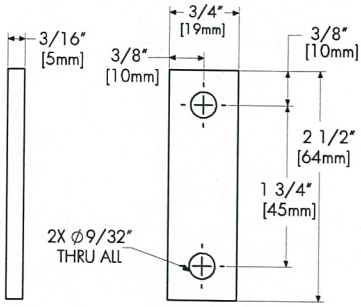


UMP
Mounting Hole Pattern

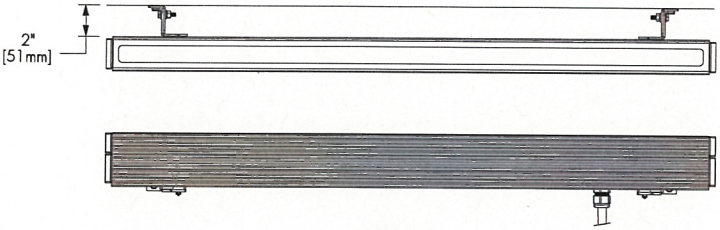


UMAS
Universal Adjustable Mounting

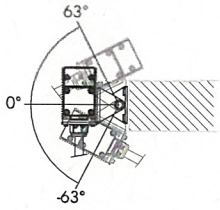


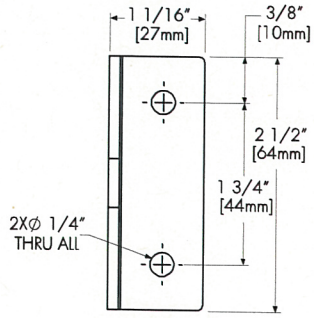


UMAS
Mounting Hole Pattern

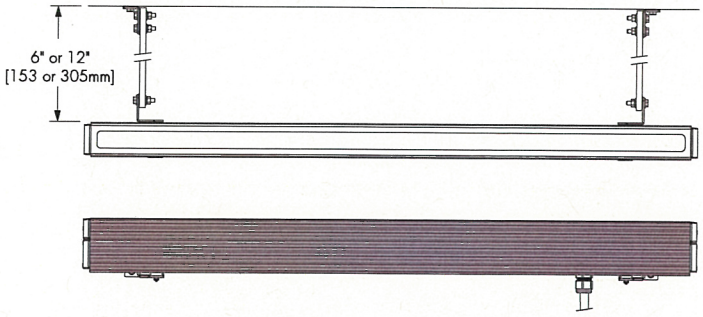


WAM2
Adjustable Wall Mounting

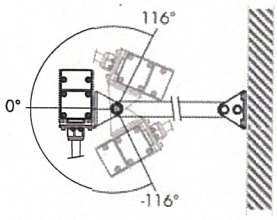




WAM
Mounting Hole Pattern



WAM6 & WAM12
Adjustable Extended Arm Mounting

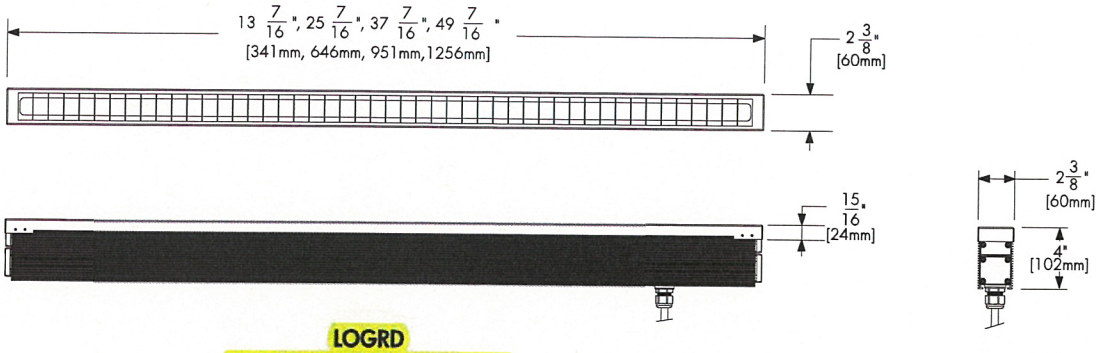


Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com **www.lumenpulse.com**

2013.09.19
EM - R29

lumenpulse™
Sustainable architectural LED lighting systems

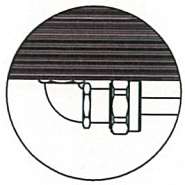
LOUVER ACCESSORY INSTALLATION DETAIL



LOGRD
Radial Louver for Lumenfacade
(See page 4 for ordering code)

OPTION

A - 90° angle cord output
bottom feed



Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com **www.lumenpulse.com**

2013.09.19
EM - R29

lumenpulse™
Sustainable architectural LED lighting systems

ACCESSORIES

Order separately

Control Systems:

LTO Lumentouch is a wall mount DMX 512 controller keypad

LCU Lumencue is a USB / mini SD DMX 512 controller

LID LumenID is a diagnostic and addressing DMX 512 controller.
It must be specified on all DMX applications.
Refer to LID specification sheet for details.

LTN Lumentone is a simple pre-programmed DMX 512 controller
with a push button rotary dial and live feedback.

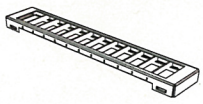
CBOX :

iCBOX-__V-__-__ Interior DMX 512 data box.
Data input and output, M20 provision holes with plugs.
Voltage input and output, M20 provision holes with plugs.
Up to six outputs to fixtures, M20 provision holes with plugs.
Please specify desired input voltage and finish.
Refer to iCBOX specification sheet for details.

CBOX-__V-__-__ DMX 512 data box.
Data input and output, M20 provision holes with plugs.
Voltage input and output, M20 provision holes with plugs.
Up to six outputs to fixtures, M20 provision holes with plugs.
Please specify desired input voltage and finish.
Refer to CBOX specification sheet for details.

Radial Louver :

LOGRD 4 ~~2~~-BK Radial louver for Lumenfacade.



1. Please specify desired nominal length: 1', 2', 3' or 4'.
2. Please specify finish as BK - Black SandText
   (Custom color available on request, please specify as CC together with RAL color : _____)

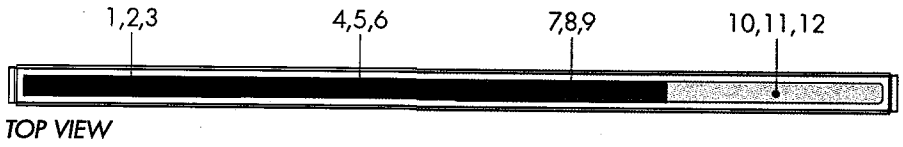
Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com **www.lumenpulse.com**

lumenpulse™
Sustainable architectural LED lighting systems

RESOLUTION DETAILS
APPLICABLE FOR DMX DIMMING OPTION ONLY

DMX 1FT - Resolution per foot: each foot is addressed independently (recommended for most installations).

DMX ADDRESSES:

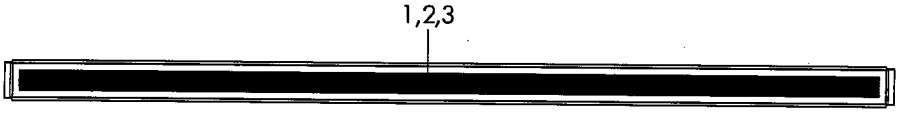


TOP VIEW

LOGP 48 inches

DMX 1FX - Resolution per fixture: each fixture is addressed independently

DMX ADDRESSES:



TOP VIEW

LOGP 48 inches

*Warning: resolution is a factory setting and cannot be changed in the field.

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com **www.lumenpulse.com**

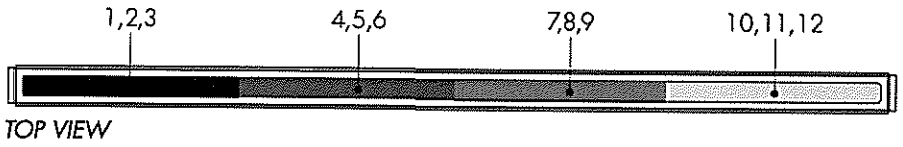
lumenpulse

Sustainable architectural LED lighting systems

RESOLUTION DETAILS
APPLICABLE FOR DMX DIMMING OPTION ONLY

DMX 1FT - Resolution per foot: each foot is addressed independently (recommended for most installations).

DMX ADDRESSES:

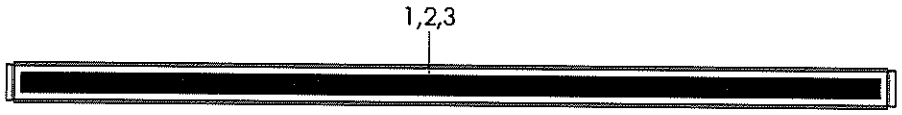


TOP VIEW

LOGP 48 inches

DMX 1FX - Resolution per fixture: each fixture is addressed independently

DMX ADDRESSES:



TOP VIEW

LOGP 48 inches

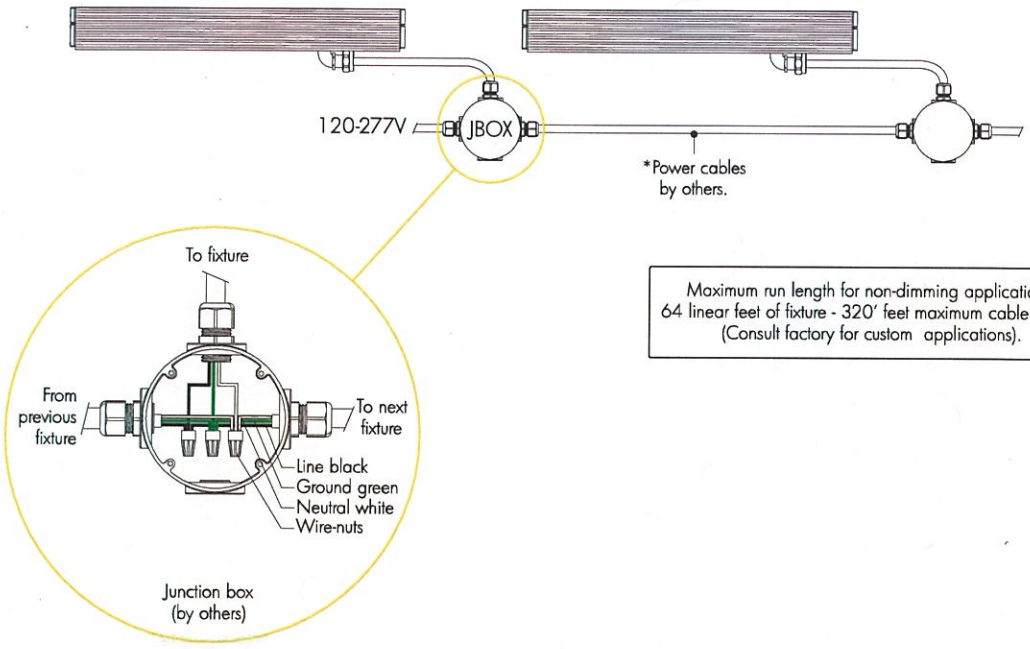
*Warning: resolution is a factory setting and cannot be changed in the field.

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

lumenpulse™
Sustainable architectural LED lighting systems

TYPICAL WIRING DIAGRAMS

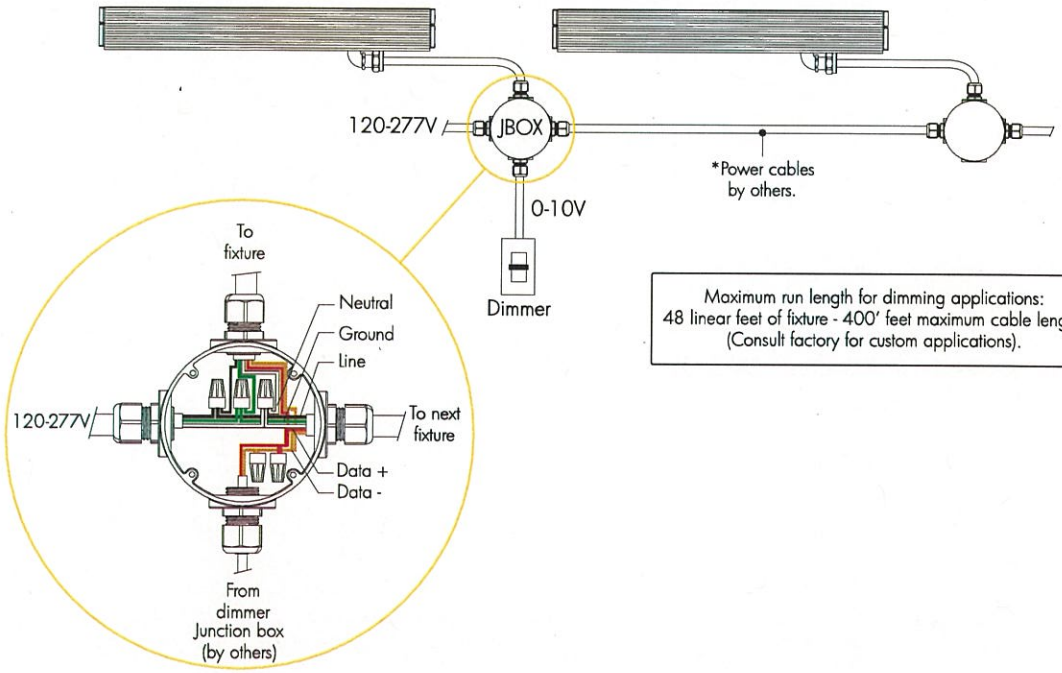
Non-Dimming or Lumentalk Dimming Version



Maximum run length for non-dimming applications:
64 linear feet of fixture - 320' feet maximum cable length.
(Consult factory for custom applications).

Dimming Version (0-10V)

10% minimum dimming value



Maximum run length for dimming applications:
48 linear feet of fixture - 400' feet maximum cable length.
(Consult factory for custom applications).

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com **www.lumenpulse.com**

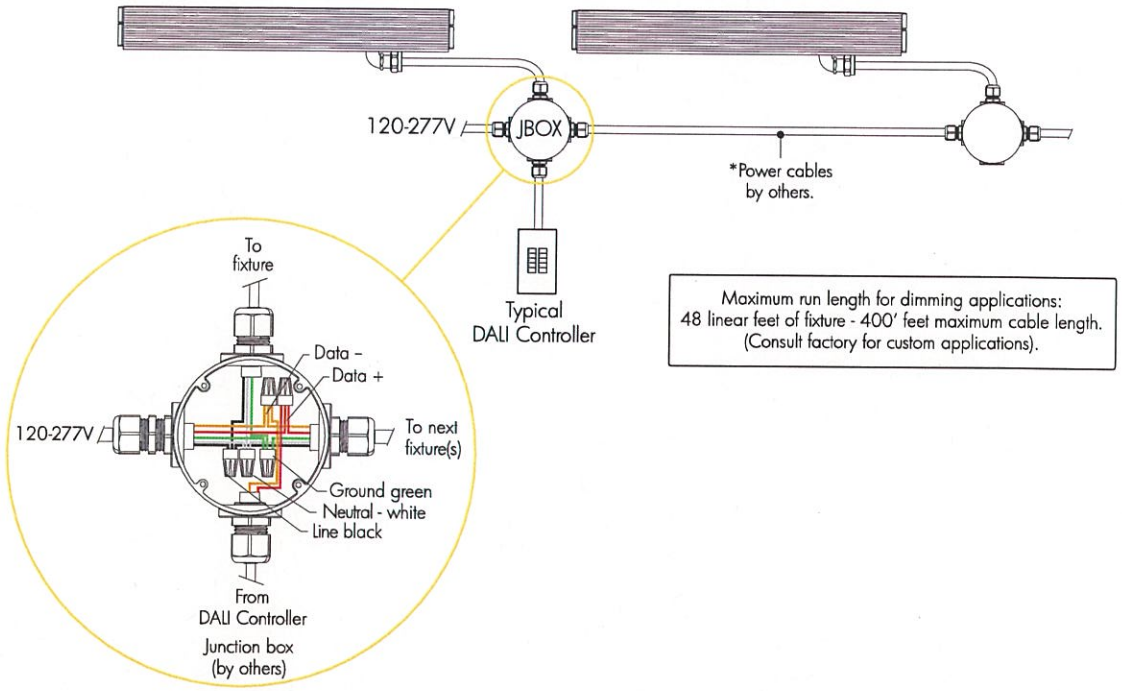
2013.09.19
EM - R29

lumenpulse™
Sustainable architectural LED lighting systems

TYPICAL WIRING DIAGRAMS - continued

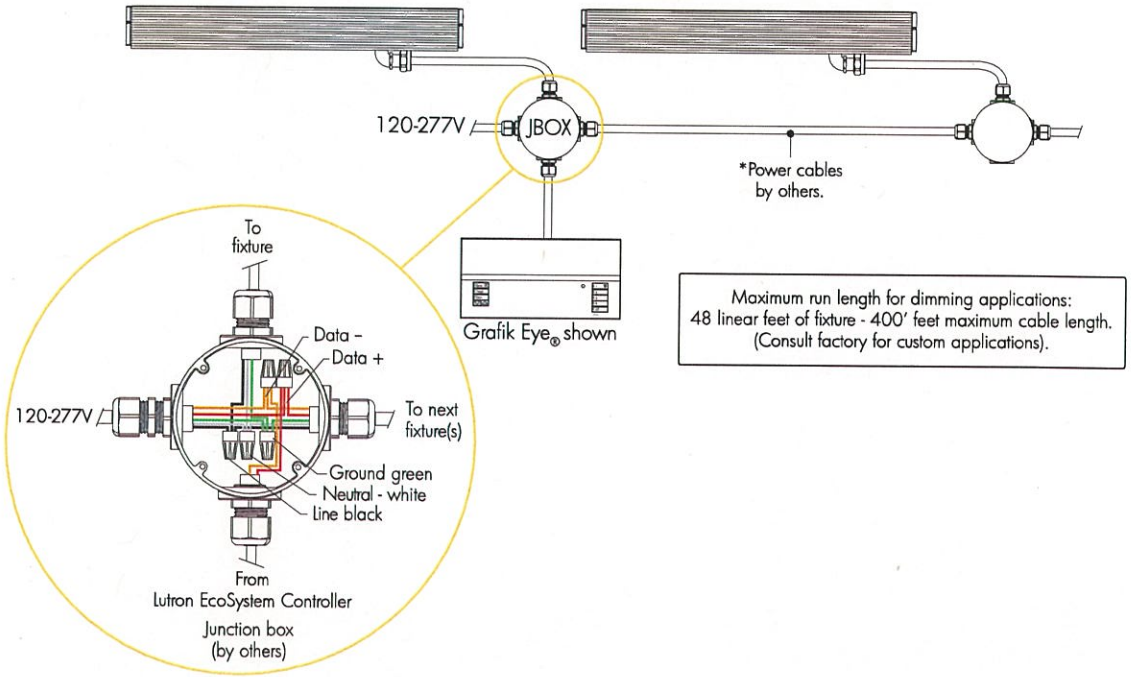
Dimming Version (DALI)

1% minimum dimming value



Dimming Version (EcoSystem®)

1% minimum dimming value



Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

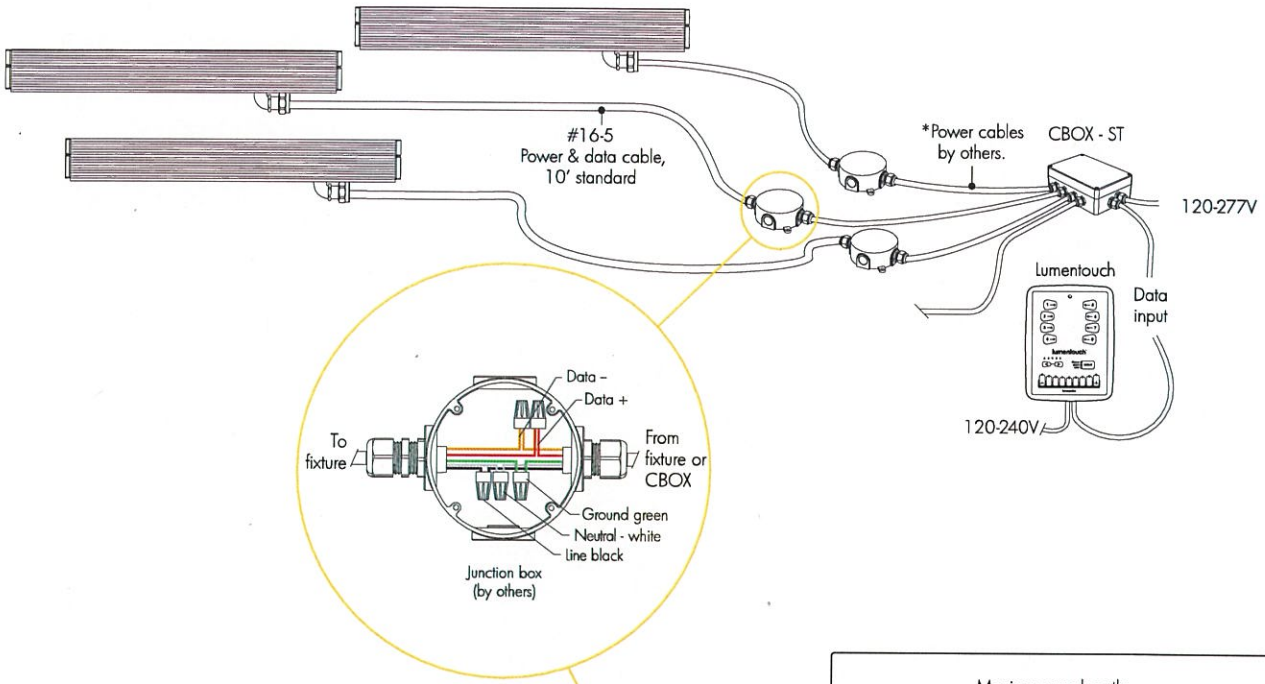
2013.09.19
EM - R29

lumenpulse™
Sustainable architectural LED lighting systems

TYPICAL WIRING DIAGRAMS - continued

DMX Dimming Version (Star layout)

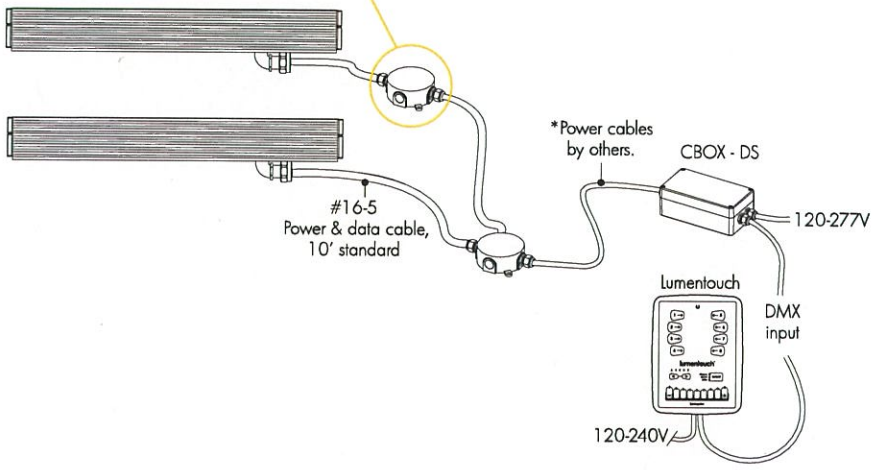
1% minimum dimming value



Maximum run length:
64 linear feet of fixture - 320' feet maximum cable length.
(Consult factory for custom applications).

DMX Dimming Version (Daisy Chain Layout)

1% minimum dimming value



Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com **www.lumenpulse.com**

2013.09.19
EM - R29

lumenpulse™
Sustainable architectural LED lighting systems

SPECIFICATION SHEET

lumenfacade™

STAND ALONE - PROJECTOR
WHITE & STATIC COLORS

HOW TO ORDER

LOGP HO	120	24	30	30x60	TBD	SI	DIM	
Housing	Voltage	Length	Colors and color temperatures	Optic	Mounting Option	Finish	Dimming	Option
1	2	3	4	5	6	7	8	9

1

Housing:

LOGP ASHRAE - Lumenfacade™ Stand Alone Projector, 5W/ft ASHRAE compliant

LOGP RO - Lumenfacade™ Stand Alone Projector, Regular Output, 8.5W/ft

LOGP HO - Lumenfacade™ Stand Alone Projector, High Output, 15.25W/ft

2

Voltage:

120 - 120 volts
208 - 208 volts
240 - 240 volts
277 - 277 volts

3

Length:

12 - 13 3/8 inches (340mm) (2 kg/4.5 lbs)
24 - 25 3/8 inches (645mm) (3.17 kg/7 lbs)
36 - 37 3/8 inches (949mm) (4.75 kg/10.5 lbs)
48 - 49 3/8 inches (1254mm) (6.35 kg/14 lbs)

4

Colors and Color temperatures:

27K - 2700K
30K - 3000K
35K- 3500K
40K - 4000K
RD - Red
GR - Green
BL - Blue

REVIEWED, EXCEPT FOR MOUNTING

5

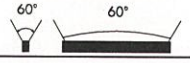
Optics:

10x10 - 10° x 10°
*For best results use with HO fixtures at a 6-inch (15cm) setback from surface. Contact factory for application support.

10x60 - 10° x 60°

30x60 - 30° x 60°

60x60 - 60° x 60°



6

Mounting Option:

MOUTNING TO BE DETERMINED

UMP - Fixed Mounting
(Suitable to use when **3GV** option is specified)
UMAS - Universal Adjustable Mounting
(Suitable to use when **3GV** option is specified)
WAM2 - Adjustable Wall Mounting 2"
WAM6 - Adjustable Extended Arm Mounting 6"
WAM12 - Adjustable Extended Arm Mounting 12"

7

Finish:

SI - Silver SandText
BK - Black SandText
WH - White
CC - Custom (please specify RAL color)

8

Dimming:

NO - No Dimming
LT - Lumentalk Dimming
1% minimum dimming value
DIM - 0-10V Dimming option
10% minimum dimming value
DMX 1FT - DMX Dimming option, resolution per foot
1% minimum dimming value
DMX 1FX - DMX Dimming option, resolution per fixture
1% minimum dimming value
DALI - DALI Dimming option
1% minimum dimm
ES - Lutron® EcoSys
1% minimum dimm

9

Option:

A - 90° angle corc
CRC - Corrosion-re
3GV - 3G ANSI C
N.B. Available witl
only.

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed
☒ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
2013 11 15
Date .....
By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com **www.lumenpulse.com**

2013.09.19
EM-R29

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
EEG 11110 L26.8WA-24V-[AN04]
3500K SMA PSN 10FT CORD
Notes:

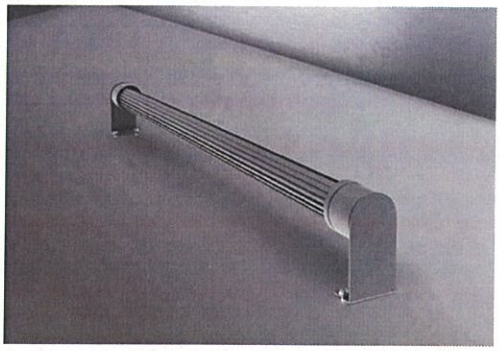
Type:
L1
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

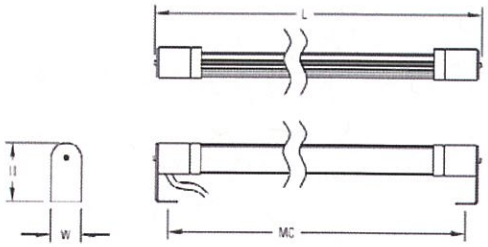
SPI SPECIFICATION SHEET

JOB NAME _____ TYPE _____

ECHO ROUND 1.5 EXTERIOR GROUND
EEG11110



WET
IP66



Echo Round 1.5 is a durable exterior IP66 rated linear LED fixture. Echo's patents pending opticals enable tremendous flexibility offering wall washing and wall grazing, as well as asymmetric lighting solutions.

Dimensions

W	L	H	MC
1.6 in	28.2 in	3.0 in	26.9 in
4.1 cm	71.6 cm	7.6 cm	68.3 cm

Weight

Hanging weight: 25.0 lb (11.4 kg).

TO BE REVIEWED BY
ELECTRICAL
ENGINEER

Features

- SMA optical package utilizes a diffuse frosted lens to provide photometric distribution.
- SMB optical package utilizes an optically clear lens to maximize photometric output and efficiency.
- IP66 rated fixture per International Electrotechnical Commission (IEC) certifies fixture as dust-tight and protected against powerful water jets.
- Versatile design allows fixture to be mounted in any orientation.
- Extruded aluminum construction provides durable protection for internal components and is recyclable.
- Locks in desired orientation for precise fixture alignment.
- Anodized finish provides optimal thermal effectiveness and durable corrosion protection.
- Asymmetric and multiple symmetric optics allow increased light control and distribute light into a space exactly where it is needed.

Technical Notes

Construction
- Optical grade clear acrylic lens optimizes performance.

Electrical
- SPI uses strict quality guidelines in LED selection to ensure the White LED's we use meet or exceed ANSI Binning Standards (ANSI C78.733).
- ETL listed to UL standards (US and Canada) for ground mounting and use in wet locations.
- Remote 24V DC power supply required.
- 36" lead length standard.
- Fixtures over 58 watts may have multiple power cords. Contact factory for specifics.

Finish
- Available in anodized finish only.

Lamping/lamp
- L70 life = 50,000 + hours.

Additional Documents

LED Power Supplies (24V DC)
(http://www.specSPI.com/ImageLibrary/Public/Documents/5647.pdf)
Color Chart (http://www.specSPI.com/PDFs/SPI_Color_Chart.pdf)

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed
☒ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
NOV 7, 2013
Date .....
By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
EEG 11110 L26.8WA-24V-[AN04]
3500K SMA PSN 10FT CORD

Notes:

Type:
L1

MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI SPECIFICATION SHEET

MODEL NUMBER	LAMPING	FINISH	LAMP OPTIONS	OPTIONS

Not all options are available in all configurations, consult factory for details.

Lamping	Photometry
L8.0WA-24V	White 8.0W HD LED Module
L13.6WA-24V	White 13.6W HD LED Module
L26.8WA-24V	White 26.8W HD LED Module
A16.8W-24V	Amber 16.8W LED Module 590nm
B16.8W-24V	Blue 16.8W LED Module 470nm
G16.8W-24V	Green 16.8W LED Module 525nm
R16.8W-24V	Red 16.8W LED Module 620nm
C36.2W-24V	RGB 36.2W LED Module

[1] Forward Throw not Available on Color LED

Lamp Options	
3000K	3000K Ccts
3500K	3500K Ccts
4500K	4500K Ccts
F	Fusing

Options	
FT [1]	Led-forward Throw
SMA	Led-symmetric 60 Degree Beam - 120 Degree Spread
SMB	Led-symmetric 30 Degree Beam - 60 Degree Spread
PS03	86.4 Available Output Watts/24V Wet Location Power Supply
PSN	Power Supply Not Included

Metal and Plated Finishes

AN04 Anodized Satin Aluminum (Clear)	AN08 Black Anodized

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed

☒ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6640

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875-PS13-VOLT-PSE-MOD-DMX
Notes:

Type:
L1
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI ADVENT STILE SPECIFICATION SHEET

Components
Power Supply
CPS 10875

JOB NAME	TYPE
MODEL NO.	
LAMP	

Determine the maximum fixture wattage per circuit by adding the wattage of each fixture together and choose an LED power supply that has an available output wattage greater than the total wattage of the fixtures.

Model Number/Style	Select LED Power Supply	Select Input Voltage
CPS 10875		

Not all options are available in all configurations, consult factory for details.

LED POWER SUPPLY	DETAILS	AVAILABLE OUTPUT WATTS	RATED OUTPUT WATTS	INPUT VOLTAGE	OUTPUT VOLTAGE	DESCRIPTION
PS01		67.5W	75W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS03		86.4W	96W	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS04	(2)PS01	67.5W X2	75W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS05	(2)PS03	86.4W X2	96W X2	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS07	(4)PS03	86.4W X4	96W X4	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS08	(4)PS01	67.5W X4	75W X4	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS09		72.0W/CH	80W/CH	120-240V AC	24V DC	WET LOCATION LISTED, CLASS 2 (3) 80W OUTPUTS, IP66 RATED, 120-240/CH3
PS13		86.4W	96W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*
PS14	(2)PS13	86.4W X2	96W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*

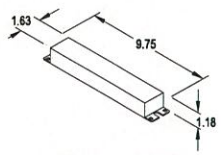
See CPS11411 for RGB and DMX interface options.
*Dimmable

LED Specification Notes

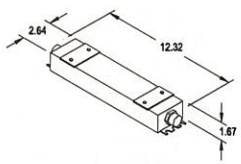
- LED power supplies ordered separately from LED fixtures.
- Multiple fixtures may be connected to one LED power supply to create a circuit.
- Total fixture wattage should not exceed 90% of power supply rating. Use Available Output Wattage.
- Power Supplies are not shipped with an enclosure. PSE option will include a Damp Power Supply Enclosure.

Power Supply Dimensions

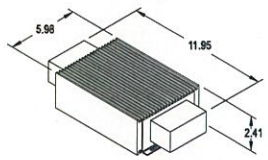
* Have lead wires with a direct conduit connection.



75W/24 PS01 | 96W/24 PS13



96W/24WL* PS03



240W/24WL* PS09

Remote Wiring Requirements

- Low voltage circuits are limited by current capacity and voltage drops through conductors.
- Determine the appropriate cable following the Maximum Cable Length table provided.
- All fixtures and circuit branches are to be wired in parallel (positive to positive, negative to negative).
- Install and connect LED power supply to fixtures in accordance with NEC and local regulations.

Maximum Cable Length (ft)

WIRE AWG		18	16
24V DC	75W	24'	38'
24V DC	96W	19'	30'

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875-PS13-VOLT-PSE-MOD-DMX
Notes:

Type:
L1
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: NOV 7/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI ADVENT STILE SPECIFICATION SHEET

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed
☒ Reviewed as modified ☐ Revise and Re-submit

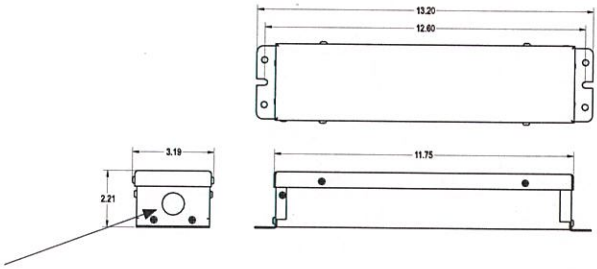
Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Components
Power Supply
CPS 10875

TLS: *CPS10875-PS13-VOLT-PSE MOD*
= Power supply enclosure to be wet location rated.

Enclosures for Power Supplies

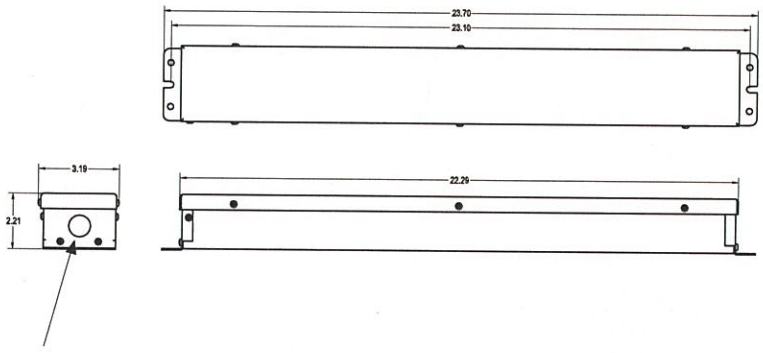


KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS04
(1) PS14

USE (4) ENCLOSURES FOR SUPPLIES:
(1) PS08

USE WITH SUPPLIES:
(1) PS01
(1) PS13
(1) DIM
(1) RGB DIM
(1) RGB SEQ
(1) RGB DMX



KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE WITH SUPPLIES:
(1) PS04
(1) PS14

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS08

CAN ACCEPT UP TO THE FOLLOWING SUPPLIES, OR A COMBINATION OF THEM:
(2) PS01
(2) PS13
(2) DIM
(2) RGB DIM
(2) RGB SEQ
(2) RGB DMX

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.	Job Name:	Catalog Number:	Type:
100-1851 Brigantine Drive Coquitlam, B.C. V3K 7B4 t: 604-540-6646 or 1-877-511-6227 f: 60[illegible]	SINCLAIR CENTRE ATRIUM RENOVATION	CPS10875-PS13-VOLT-PSE-MOD-DMX Notes:	L1 MACS-LTG-13-3135

PRO-CAN
CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

OPTOTRONIC®

Electronic 24V DC LED Power Supplies

LED CREATING TOMORROW

OPTOTRONIC power supplies are compact and electronically stabilized. The wide range of input voltage, on select models, from 100 to 277 VAC enables worldwide use on single-phase AC power lines. These supplies are available with 24VDC outputs. OPTOTRONIC power supplies are protected against open circuit, short circuit, overload and overheating conditions. They meet the highest industry standards.

Key Features & Benefits

- Damp and wet rated designs available for use in outdoor applications
- Wide input voltage range: 100-277V AC (select models)
- Broad ambient temperature range for use in extreme application conditions
- Electronically stabilized output voltage with low line ripple
- Integrated dimming (select models)
- Short circuit, overload and overheat protection for sustained performance
- High power factor and efficiency
- Compact enclosures for variety of applications and fixture designs
- UL Class 2 output for safe operation
- Exceptional line and load regulation

Product Offering

Ordering Abbreviation	Output Wattage	Output Voltage
OT6W/24V/120V	6	24
OT17W/24V/UNV	17	24
OT20W/24V/120-240V/SQ	20	24
OT30/120/24CORD	30	24
OT50W/24V/120V/LP	50	24
OT75W/24V/UNV	75	24
OT96W/24V/UNV	96	24
OT96W/24V/UNV/DIM*	96	24
OT96W/24V/UNV/JBX	96	24
OT240W/3X24V/120-240V/JBX	240	24

LED power supplies compatible with: 24V LED Modules
*Dimmable

Application Information

Applications

- Ambience lighting inside furniture
- Backlighting
- Compact installations
- Effect lighting
- General lighting
- Low & medium power applications
- Panel lighting
- Path and roadway marking
- Signs
- Step and seat marking
- Wall washing

TO BE REVIEWED BY ELECTRICAL ENGINEER

Specifications and Certifications

OT6, OT17, OT20, OT75, OT96, OT96DIM: UL 1310, UL48 Recognized for US & Canada Class 2 Unit

OT50: UL1310 Recognized for US & Canada Class 2 Unit

OT96 (NAED 51626) & OT240 (NAED 51627): UL48 Listed for US & Canada Class 2 Unit

OT30: ETL listed and conforms to UL1310

OT6, OT75 are CSA approved

RoHS compliant. This light source meets restrictions on hazardous substances.

FCC 47CFR Part 15 compliant

SEE THE WORLD IN A NEW LIGHT SYLVANIA

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6636 or 1-877-511-6227
f: 604-540-6660

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875-PS13-VOLT-PSE-MOD-DMX
Notes:

Type:
L1
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
Per ProCan 10/22/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

Specification Data

Fixture Description:	Type
Project/Job:	
SYLVANIA lamp:	
SYLVANIA ballast:	
Notes:	

Ordering Information

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage (VDC)	Output Power Range (W)	Max. Line Ripple (V)	UL/ETL File #	Location Rating
51503	OT6W/24V/120V	120	0.11	0.55	7.1	24.0±0.5	0.9-6	±0.2V	E258264	Damp
51622	OT17W/24V/UNV*	120 277	0.19 0.10	0.92	21	24.0±0.5	0.8-17	±1.0V	E220096	Damp
51512	OT20W/24V/120-240V/SQ	120 240	0.38 0.19	0.5	23	24.0±1.0	0.9-20	±0.2V	E258264	Dry
51521	OT30/120/24CORD	120	0.63	0.5	38	24.0±1.0	1-30	±1.5V	3137489	Dry
51598	OT50W/24V/120V/LP	120	0.47	0.99	56	24.0±0.5	0.9-50	±0.2V	E248522	Dry
51514[3]	OT75W/24V/UNV	120 277	0.76 0.33	0.99	90	24.0±0.5	0.9-75	±0.2V	E258264	Damp
51522[4]	OT96W/24V/UNV	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	E320395	Damp
51626	OT96W/24V/UNV/JBX	120 277	0.91 0.39	0.99	108	24.0±0.5	0.8-96	±1.0V	E320395 UL Listed	Wet[2]
51627	OT240W/3X24V/120-240V/JBX	120 240	2.39 1.19	0.99	285	24.0±0.5	0.8-240	±1.0V	E320395 UL Listed	Wet[2]

*7W is the minimum output power required when operating at the 277V input voltage.

Dimmable Power Supply

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage Range (VDC)	Output Power Range (W)	Max. Line Ripple (V)	Dimming Mode	Dimming Control	Dimming Range	UL File #	Location Rating
51520	OT96W/24V/UNV/DIM	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	PWM	0-10V DC	10 –100%	E320395	Damp

Notes:

1. All power supplies can be remote mounted up to 32 feet. Although it is possible to exceed the remote mounting distance, the installer and/or end user must take precautions to prevent and/or test the effects of EMI (electromagnetic interference).
2. Use wiring rated and marked PLTC, CL3R, and "sun resistant"
3. 51514 replaces 51513 (OT75/120/24), which is discontinued
4. 51522 replaces 51510, which is discontinued

Ordering Guide

OT	240W	/	3x24V	/	120-240	/	JBX
OPTOTRONIC®	Output Wattage		Output Voltage		Input Voltage		Junction Box

Minimum and Maximum Ratings

Parameter	Power Supply	Values
Input Voltage Range (Min/Max)	OT6	90-132 VAC
	OT20 and OT240	108-254 VAC
	OT30 and OT50	108-132 VAC
	OT17, OT75 and OT96	108-305 VAC
Input Frequency		50/60Hz
Ambient Temperature Range	OT6, OT20 and OT50	-20°C through +50°C
	OT30, OT96	-20°C through +40°C
	OT75	-25°C through +60°C
	OT17, OT96JBX and OT240	-30°C through +70°C (2% de-rating per °C from 50°C)
Max. Case Temperature	OT30	45°C
	OT6, OT50	70°C
	OT20, OT96	75°C
	OT17, OT75, OT96JBX and OT240	90°C

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875-PS13-VOLT-PSE-MOD-DMX
Notes:

Type:
L1
MACS-LTG-13-3135

PRO-CAN
CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/22/13

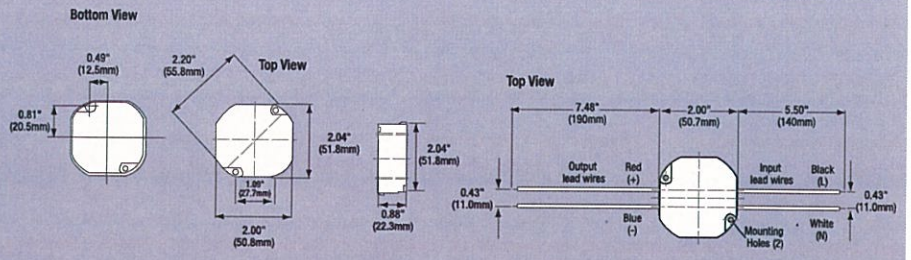
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams

OT6 Case:

Packaging:
Quantity: 20 pieces/carton
Weight: 0.16 lbs each (approx.)
3.72 lbs/carton

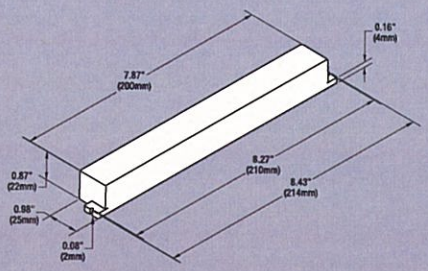
Wiring: Leads only (no connectors)
Input: (18AWG wire)
Output: (18AWG wire)



OT17 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.36 lbs each (approx.)
18.3 lbs/carton

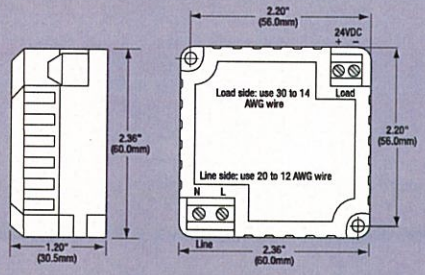
Wiring: Leads only (no connectors)
Input: 6" (18AWG wire) black & white wires
Output: 6" (18AWG wire) gray+ and black– wires



OT20 Case:

Packaging:
Quantity: 30 pieces/carton
Weight: 0.21 lbs each (approx.)
6.30 lbs/carton

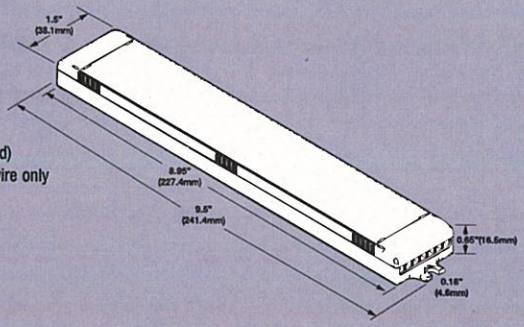
Wiring: Connectors only (No leads provided)
Use solid or stranded copper wire only



OT50 Case:

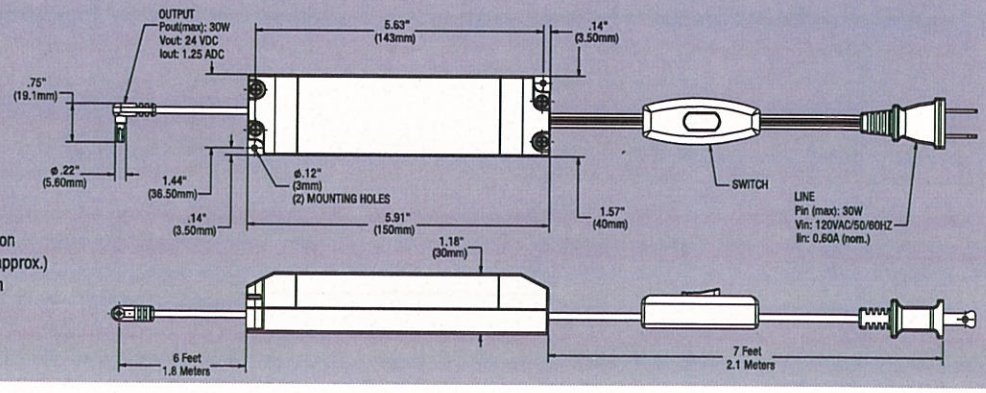
Packaging:
Quantity: 20 pieces/carton
Weight: 0.4 lbs each (approx.)
8.5 lbs/carton

Wiring: Connectors only (No leads provided)
Use 14-22AWG solid or stranded copper wire only



OT30 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.63 lbs each (approx.)
31.77 lbs/carton



ECS050R14

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD. 100-1851 Brigantine Drive Coquitlam, B.C. V3K 7B4 t: 604-540-6646 or 1-877-511-6227	**Job Name:** SINCLAIR CENTRE ATRIUM RENOVATION	**Catalog Number:** CPS10875-PS13-VOLT-PSE-MOD-DMX Notes:	**Type:** **L1** MACS-LTG-13-3135

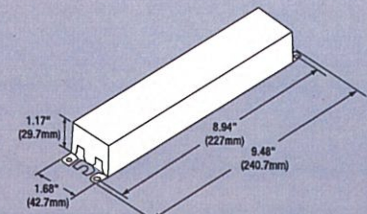
PRO-CAN
CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

Assembly and Wiring Diagrams (continued)

OT75 & OT96 Case:

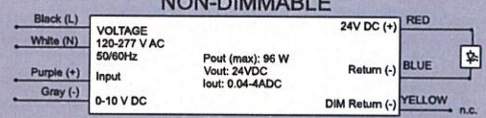
Packaging:
Quantity: 10 pieces/carton
Weight: 1.35 lbs each (approx.)
14 lbs/carton

Wiring: Leads only (no connectors)
AC Input: 9" (18AWG wire) black & white wires
Output: 9" (18AWG wire) red+ & blue– wires

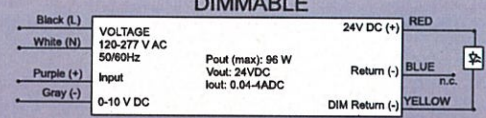


OT96DIM only:
DIM Input: 9" (18AWG wire) gray & purple
DIM Output: 9" (18AWG wire) yellow

NON-DIMMABLE



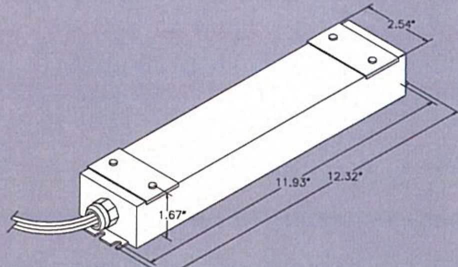
DIMMABLE



OT96JBX Case (Wet Rated):

Packaging:
Quantity: 16 pieces/carton
Weight: 2 lbs each (approx.)
33 lbs/carton

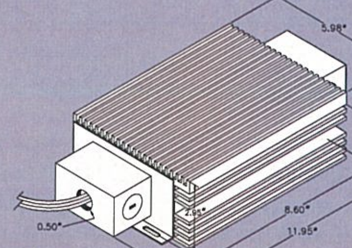
Wiring: Leads only (2.76" 18AWG wire)
Input: black (L), white (N), & green/yellow (GRD) wires with a UL Listed, 1/2" metallic fitting
Output: gray (+) & black (–) with a UL Listed, 1/2" plastic fitting

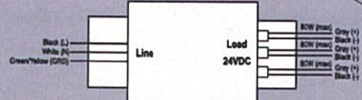


OT240 Case:

Packaging:
Quantity: 5 pieces/carton
Weight: 11 lbs each (approx.)
53 lbs/carton

Wiring: Leads only (6.9" 18AWG wire)





Warranty

OPTOTRONIC® Products are covered by our LED Module, OPTOTRONIC Power Supply or Control Warranty. For additional details, refer to the latest version of the warranty available at www.sylvania.com/LED.

TO BE REVIEWED BY ELECTRICAL ENGINEER

United States
OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923

Trade
Phone: 1-800-255-5042
Fax: 1-800-255-5043

National Accounts
Phone: 1-800-562-4671
Fax: 1-800-562-4674

OEM/Special Markets
Phone: 1-800-762-7191
Fax: 1-800-762-7192

Display/Optic
Phone: 1-888-677-2627
Fax: 1-800-762-7192

SYLVANIA Lighting Services
Phone: 1-800-323-0572
Fax: 1-800-537-0784

Canada
OSRAM SYLVANIA LTD.
2001 Drew Road
Mississauga, ON L5S 1S4

Trade
Phone: 1-800-263-2852
Fax: 1-800-667-6772

OEM/Special Markets/Display/Optic
Phone: 1-800-265-2852
Fax: 1-800-667-6772

SYLVANIA Lighting Services
Phone: 1-800-663-4268
Fax: 1-866-239-1278

Mexico
OSRAM MEXICO
Headquarters
Tultitlan/Edo de Mexico
011-52-55-58-99-18-50

www.sylvania.com

the system solution®

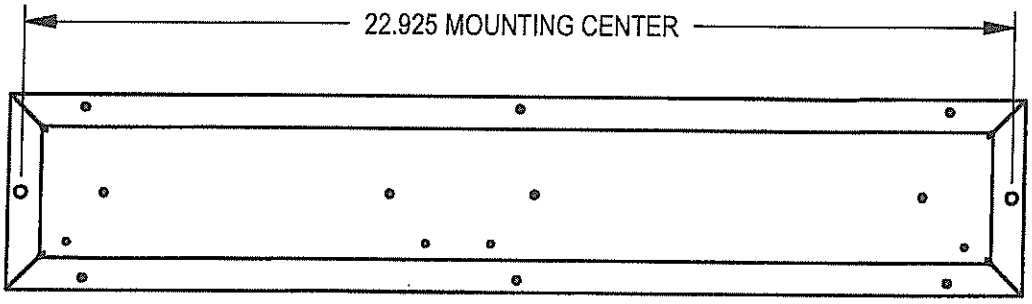
IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

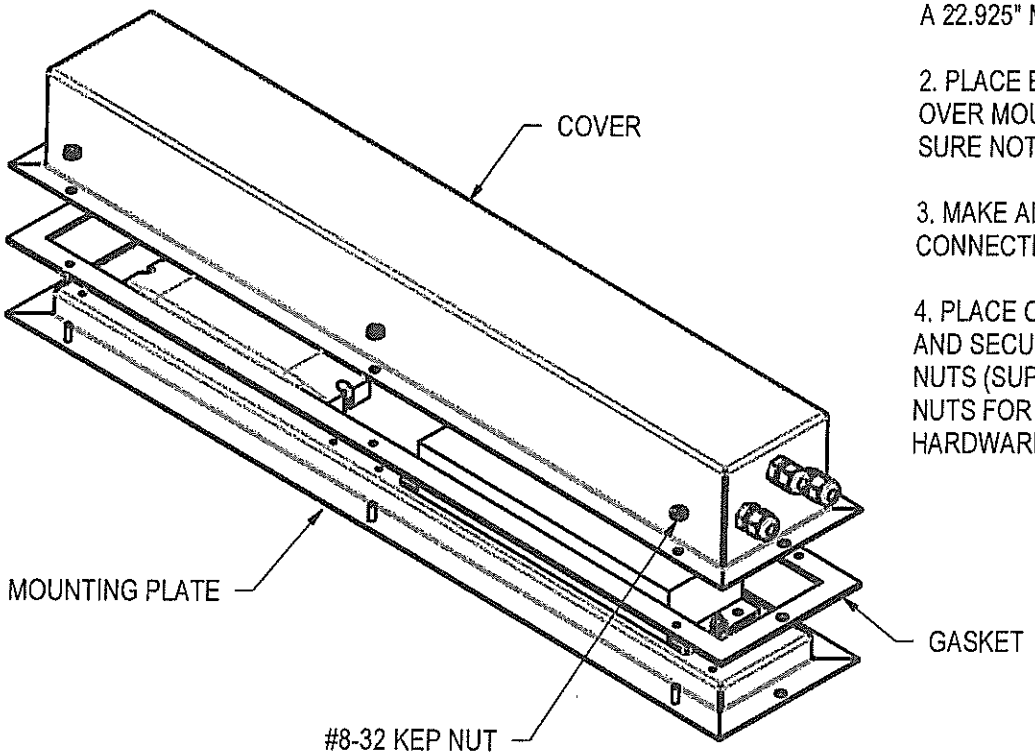
WARNING: Risk of fire and electrical shock. This product is to be installed by a qualified electrician only.

CAUTION: When using electrical equipment, basic safety precautions should always be followed including the following: Read all instructions carefully before installation and save for future use. Make sure installation and all connections are in accordance with National Electrical Code and any local regulations. To avoid possible electrical shock, be sure that power supply is turned off before installing or servicing this fixture. Servicing should be performed by qualified service personnel.

These instructions do not claim to cover all details or variations. When additional information is desired, please contact your SPI representative.

CPS10875 MOD144568





1. INSERT MOUNTING PLATE OVER 0.250 DIA. MOUNTING HARDWARE (BY OTHERS), WITH A 22.925" MOUNTING CENTER.

2. PLACE ENCLOSURE GASKET OVER MOUNTING PLATE, BE SURE NOT TO DAMAGE GASKET.

3. MAKE ALL ELECTRICAL CONNECTIONS PER NEC CODE.

4. PLACE COVER OVER GASKET AND SECURE WITH (6) #8-32 KEP NUTS (SUPPLIED) AND 0.250 DIA. NUTS FOR MOUTNING HARDWARE.

04/29/2014
IS84720X

IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

WARNING: Risk of fire and electrical shock. This product is to be installed by a qualified electrician only.

CAUTION: When using electrical equipment, basic safety precautions should always be followed including the following: Read all instructions carefully before installation and save for future use. Make sure installation and all connections are in accordance with National Electrical Code and any local regulations. To avoid possible electrical shock, be sure that power supply is turned off before installing or servicing this fixture. Servicing should be performed by qualified service personnel.

These instructions do not claim to cover all details or variations. When additional information is desired, please contact your SPI representative.

REMOTE CLASS II POWER SUPPLY - WIRING INSTRUCTIONS

LED WIRING REQUIREMENTS

>LED CLASS 2 POWER SUPPLY ORDERED SEPARATELY FROM FIXTURE. SEE RECOMMENDED POWER SUPPLY INFORMATION BELOW. CONSULT FACTORY FOR ORDERING INFORMATION.

CAUTION: FIXTURE MUST BE CONNECTED TO A CLASS 2 POWER UNIT. FAILURE TO USE A CLASS 2 POWER UNIT VOIDS WARRANTY AND UL LISTING.

>MULTIPLE FIXTURES MAY BE CONNECTED TO ONE LED POWER SUPPLY TO CREATE A CIRCUIT.

>THE VOLTAGES OF ALL FIXTURES ON THE SAME CIRCUIT MUST BE THE SAME AS THE POWER SUPPLY OUTPUT VOLTAGE.

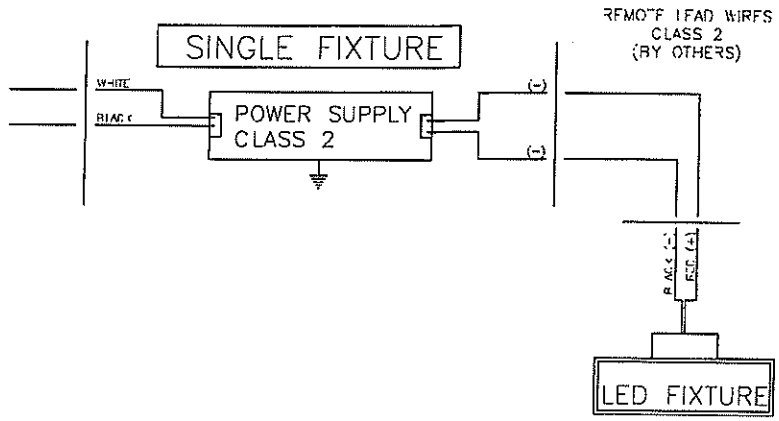
>CONSULT FACTORY FOR LED DIMMING, RGB, AND DMX INTERFACE.

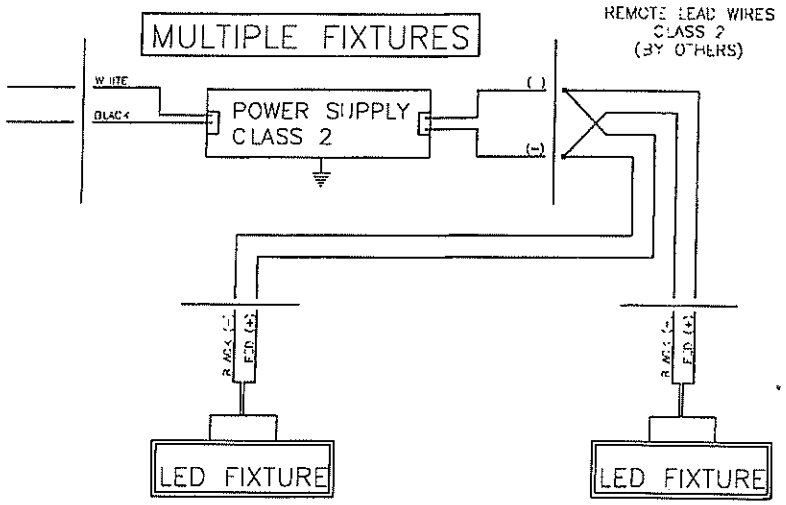
>LOW VOLTAGE CIRCUITS ARE LIMITED BY CURRENT CAPACITY AND VOLTAGE DROPS THROUGH CONDUCTORS.

>DETERMINE THE APPROPRIATE CABLE FOLLOWING THE MAXIMUM CABLE LENGTH AS DEFINED ON INDIVIDUAL POWER SUPPLY SPEC SHEETS.

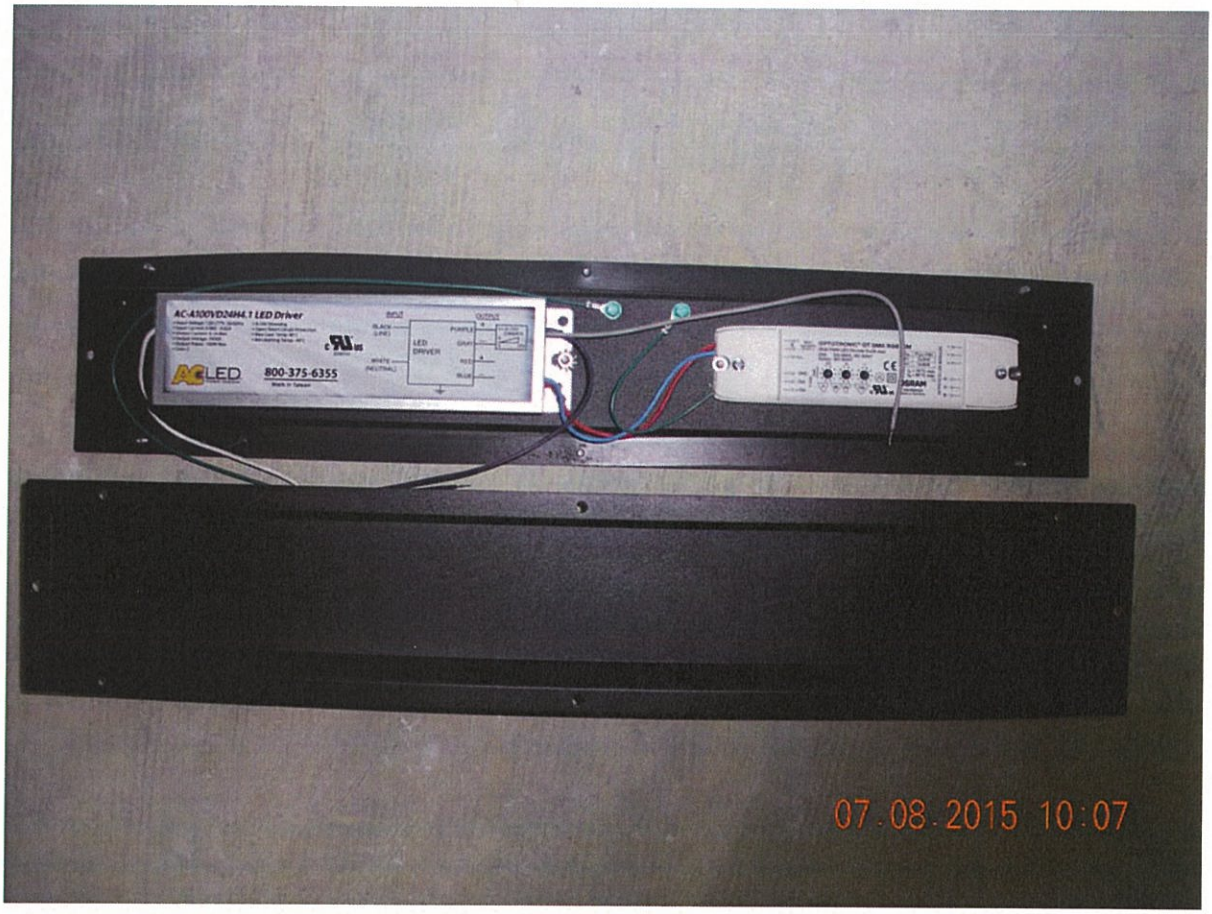
>ALL FIXTURES AND CIRCUIT BRANCHES TO BE WIRED IN PARALLEL.

>INSTALL AND CONNECT LED POWER SUPPLIES IN ACCORDANCE WITH NEC, ARTICLE 725, AND ANY LOCAL REGULATIONS AND CODES.





5/30/14
IS59584X



'L1' Luminaire Power Supply with Cover Removed.

APPROVAL DRAWING

lumenbeam™

XLARGE
WHITE & STATIC COLORS
SPL001223

Client: LIGHTWORKS

Project name: LP2012-04611-SINCLAIR CENTRE VANCOUVER

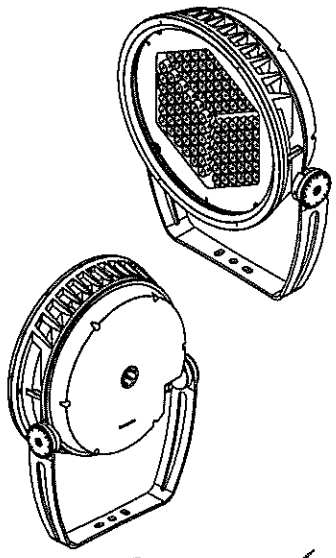
Order #:

Type: L10 Qty: 4

FEATURES AND BENEFITS

Physical :

- Low copper content high pressure die-cast aluminum housing
- Stainless steel hardware
- Silicone sealing devices
- Clear tempered glass
- Dual chamber design for heat management and ease of maintenance
- Electro-statically applied polyester powder coat finish
- 16.33 kg / 36 lbs
- EPA: Front = 2.75 sq. ft./ 0.26 sq. m. Side = 1.17 sq. ft./ 0.12 sq. m.
- IP66
- Corrosion-resistant option for marine environments



Performance :

- Minimum 1fc (10.7 lux) @ 564 feet (172m) distance (4000K, 6° optic)
- 7,818 delivered lumens and 318,392 candelas at nadir (4000K, 6° optic)
- 6°, 10°, 20° or 40°, Elliptical distribution on 10° and 40° optic
- CRI value: 78+
- Lumen maintenance 120,000 hrs [L70 @ 25°C]
- Resolution per board or per fixture
- Lumen measurements comply with LM - 79 - 08 standard
- Operating temperatures: -25° C to 50° C [-13F to 122F]

Electrical :

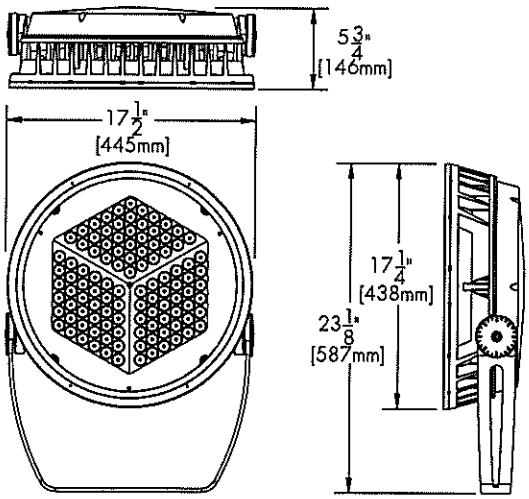
- Line voltage luminaire for 120 to 277V
- Power and data in 1 cable, 3ft/1 m cord (#16-5)
- 140 watts
- 0-10 volt , DMX, DALI or Lumentalk dimming options

c UL us CE RoHS

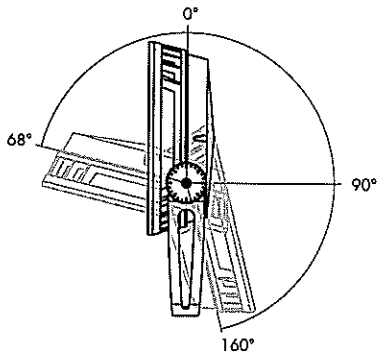
lumen pulse

Wiring detail

WIRE COLOR	*/ USE*
GREEN	*GROUND*
WHITE	*NEUTRAL*
BLACK	*LIVE 120-277V*
RED	*0-10V / DATA +*
ORANGE	*0-10V / DATA -*



Standard Yoke (as shown, included)



Standard Yoke Mounting
Adjustable Pivot Limits
(Adjustable in 6 degree increments)

5 year warranty

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P.514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

2013.03.12
EM - RO

lumenpulse
Sustainable architectural LED lighting systems

APPROVAL DRAWING

lumenbeam™

XLARGE
WHITE & STATIC COLORS
SPL001223

HOW TO ORDER

LBX	120	40K	VN/VN/VN	***	SI	DMX 1FX	CRC	SPL001223
Housing	Voltage	Colors and color temperatures	Board 1/ Board 2/ Board 3 Optic	Optical Option	Finish	Dimming	Option	Special
1	2	3	4	5	6	7	8	9

1 Housing:

LBX - Lumenbeam™ XLarge

2 Voltage:

120 - 120 volts
208 - 208 volts
240 - 240 volts
277 - 277 volts

3 Colors and Color temperatures:

27K - 2700K
30K - 3000K
35K - 3500K
40K - 4000K
57K - 5700K
RD - Red
GR - Green
BL - Blue

REVIEWED, EXCEPT FOR MOUNTING, TO BE CONFIRMED BY ENGINEER. CRITICAL DIMENSIONS TO BE SITE CONFIRMED

4 Optic (Please specify for each board):

VN - Very Narrow 6°

NS - Narrow Spot 10°

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed
☒ Reviewed as modified ☐ Revise and Re-submit

Project Number: SINCLAIR CENTER 2013 11 15

Date .....

By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

5 Optical Option:

LSLH - Linear Spread Lens Horizontal distribution
LSLV - Linear Spread Lens Vertical distribution

***NOTE:
3 @ LSLH
1 @ LSLV

*Factory installed. See Optical Accessories for field adjustable spread lens.

6 Finish:

SI - Silver SandText
BK - Black SandText
WH - White
CC - Custom (please specify RAL color)

7 Dimming:

NO - No Dimming
LT - Lumentalk (1% minimum dimming value)
DIM - 0-10V Dimming option (10% minimum dimming value)
DMX 1BD - DMX Dimming option, resolution per board (9 addresses per fixture) (1% minimum dimming value)
DMX 1FX - DMX Dimming option, resolution per fixture (3 addresses per fixture) (1% minimum dimming value)
DALI - DALI Dimming option (1% minimum dimming value)

8 Option:

SY - Short Yoke
CRC - Corrosion-resistant Coating

9 Special:

SPL001223 - Custom horizontal wall mounting bracket for 4x Lumenbeam XLarge fixtures.

(Quebec) Canada H3K 1G6 1.877.937.3003 P.514.937.3003 F. 514.937.6289
lumenpulse.com www.lumenpulse.com

lumenpulse™
Sustainable architectural LED lighting systems

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6636 or 1-877-511-6227
f: 604-540-6699

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
ERG11574 [142708] L20.1WA 120-277V [BSS] 3500K PW DBB PSN
Notes:

Type:
L2
MACS-LTG-13-3135

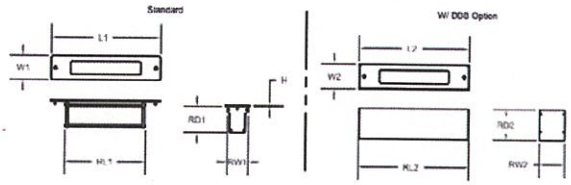
PRO-CAN
CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/25/13

SPI SPECIFICATION SHEET

JOB NAME _____ TYPE _____

ECHO EFFECT IN-GRADE GROUND
ERG11574

WET
IP67



The Echo Exterior Recessed In-Ground (also Poured Concrete), fixture is a fully recessed, IP67 Rated rectilinear fixture for wall wash applications. A reflector is designed using premium materials to direct the light up the wall as intended, and minimize glare from behind the fixture. Stainless Steel faceplate options and tempered glass show off the quality and how rugged this fixture really is. Various outputs, sizes and mounting orientations allow maximum flexibility in your design.

Dimensions

L1	H	RW1	RD1	RL1	W1
~~24.0 in~~	0.2 in	2.4 in	3.0 in	20.7 in	2.8 in
61.0 cm	0.5 cm	6.1 cm	7.6 cm	52.6 cm	7.1 cm

Weight

Consult Factory.

TO BE REVIEWED BY ELECTRICAL ENGINEER

FIXTURE LENGTH SHALL BE 1220/48", MANUFACTURER SHALL PROVIDE DIMENSIONED DRAWING FOR FIXTURE AND HOUSING

Features

- Aluminum construction provides durable protection for internal components and is recyclable.
- Cast aluminum end caps protect internal components and are recyclable.
- Recessed Housing has Anodized finish providing optimal thermal effectiveness and durable corrosion protection.
- External fasteners are flush mounted, providing a clean design.
- Stainless steel external fasteners will not rust or corrode.
- Premium 95% reflective aluminum is utilized in the highly-efficient and effective reflector design.
- Tempered glass lens protects fixture lamp engine.
- Standard thermoset polyester powder coat paint provides durable protection in a palette of color options. Custom colors available upon request.
- Optically engineered, precision LED optics control light distribution and direct light where it is needed.
- IP67 rated fixture per International Electrotechnical Commission (IEC) certifies fixture as dust-tight and protected against temporary immersion.
- Drive over tested to withstand toque and shear loading per IEC60598-2-13.
- Drive over tested to withstand a static load in excess of 2750 lbs. (1250 kg) per IEC60598-2-13.

Technical Notes

Electrical

- 36" lead length standard.
- SPI uses strict quality guidelines in LED selection to ensure the White LED's we use meet or exceed ANSI Binning Standards (ANSI C78.733).
- Remote 24V LED, Class II power supply required. Can be ordered as fixture required choice, separately (see CPS 10875) or by others.
- ETL listed to UL standards (US and Canada) for recessed grou and use in wet locations.
- ETL listed to UL standards (US and Canada) for poured concrete applications and use in wet locations.

Mounting

- Capable of 1/2 IP conduit connection.

Additional Documents

Color Chart (http://www.specSPI.com/PDFs/SPI_Color_Chart.pdf)

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed
☐ Reviewed as modified ☒ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-66

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
ERG11574 [142708] L20.1WA 120-277V [BSS] 3500K PW DBB PSN

Notes:

Type:
L2
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI SPECIFICATION SHEET

MODEL NUMBER	LAMPING	FINISH	LAMP OPTIONS	OPTIONS

Not all options are available in all configurations, consult factory for details.

Lamping		Photometry
L6.0WA-24V	White 6.0W HD LED Module	ECHO EFFECT ZIP
L10.2WA-24V	White 10.2W HD LED Module	
L20.1WA-24V	White 20.1W HD LED Module	

[1] Dimensions for DBB Option - L2 = 24.2in. RW2 = 2.9in. RD2 = 3.5in. RL2 = 24.2in. W2 = 2.9in.

Lamp Options	
3000K	3000K Ccts
3500K	3500K Ccts
4500K	4500K Ccts

Options	
PWF	Plane Wash Frosted
PW	Plane Wash
SME	Symmetric
DBB [1]	Direct Burial Box
PS03	86.4 Available Output Watts/24V Wet Location Power Supply
PSN	Power Supply Not Included

Painted Finishes

PT01	SuperWhite	PT07	Light Taupe	PT13	Warm Gray	PT19	Blue	PT29	Red Brass	PT42	Sky Blue	PT48	Brass
PT02	White	PT08	Medium Taupe	PT14	Light Gray	PT20	Dark Green	PT31	Medium Bronze	PT43	Teal	PT49	Bronze
PT03	Morning Light	PT09	Medium Gray	PT15	Sage	PT21	Pearl White	PT32	Dark Bronze	PT44	Green		
PT04	Warm White	PT10	Dark Gray	PT16	Spruce	PT22	Platinum	PT33	Dark Blue	PT45	Purple		
PT05	Putty	PT11	Black	PT17	Red	PT27	Deep Copper	PT40	Yellow	PT46	Aluminum		
PT06	Warm Beige	PT12	Dark Chocolate	PT18	Deep Red	PT28	Dark Stainless	PT41	Orange	PT47	Deep Red Brass		

Metal and Plated Finishes

BSS	Brushed Stainless Streel

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed

☒ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6646

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L2
MACS-LTG-13-3135

SPI ADVENT STILE SPECIFICATION SHEET

Components
Power Supply
CPS 10875

JOB NAME	TYPE
MODEL NO.	
LAMP	

Determine the maximum fixture wattage per circuit by adding the wattage of each fixture together and choose an LED power supply that has an available output wattage greater than the total wattage of the fixtures.

Model Number/Style	Select LED Power Supply	Select Input Voltage
CPS 10875		

Not all options are available in all configurations, consult factory for details.

LED POWER SUPPLY	DETAILS	AVAILABLE OUTPUT WATTS	RATED OUTPUT WATTS	INPUT VOLTAGE	OUTPUT VOLTAGE	DESCRIPTION
PS01		67.5W	75W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS03		86.4W	96W	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS04	(2)PS01	67.5W X2	75W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS05	(2)PS03	86.4W X2	96W X2	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS07	(4)PS03	86.4W X4	96W X4	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS08	(4)PS01	67.5W X4	75W X4	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS09		72.0W/CH	80W/CH	120-240V AC	24V DC	WET LOCATION LISTED, CLASS 2 (3) 80W OUTPUTS, IP66 RATED, 120-240/CH3
PS13		86.4W	96W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*
PS14	(2)PS13	86.4W X2	96W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*

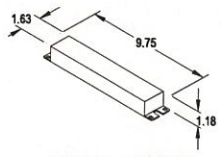
See CPS11411 for RGB and DMX interface options.
*Dimmable

LED Specification Notes

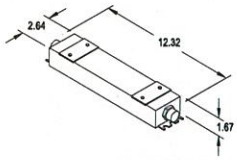
- LED power supplies ordered separately from LED fixtures.
- Multiple fixtures may be connected to one LED power supply to create a circuit.
- Total fixture wattage should not exceed 90% of power supply rating. Use Available Output Wattage.
- Power Supplies are not shipped with an enclosure. PSE option will include a Damp Power Supply Enclosure.

Power Supply Dimensions

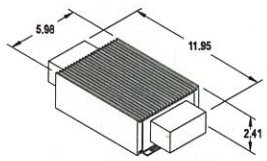
* Have lead wires with a direct conduit connection.



75W/24 PS01 | 96W/24 PS13



96W/24WL* PS03



240W/24WL* PS09

Remote Wiring Requirements

- Low voltage circuits are limited by current capacity and voltage drops through conductors.
- Determine the appropriate cable following the Maximum Cable Length table provided.
- All fixtures and circuit branches are to be wired in parallel (positive to positive, negative to negative).
- Install and connect LED power supply to fixtures in accordance with NEC and local regulations.

Maximum Cable Length (ft)

WIRE AWG		18	16
24V DC	75W	24'	38'
24V DC	96W	19'	30'

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6602 www.macsii.com

Job Name:	**Catalog Number:**	**Type:**
SINCLAIR CENTRE ATRIUM RENOVATION	CPS10875 [142707] PS03 120V PSE Notes:	**L2** MACS-LTG-13-3135

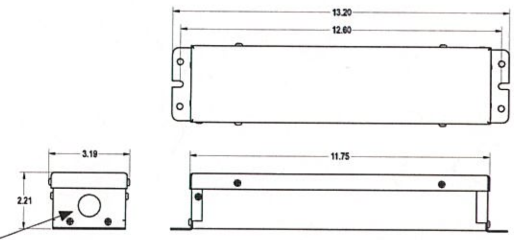
PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI ADVENT STILE SPECIFICATION SHEET

Components Power Supply **CPS 10875**	JOB NAME	TYPE
	MODEL NO.	
	LAMP	

Enclosures for Power Supplies

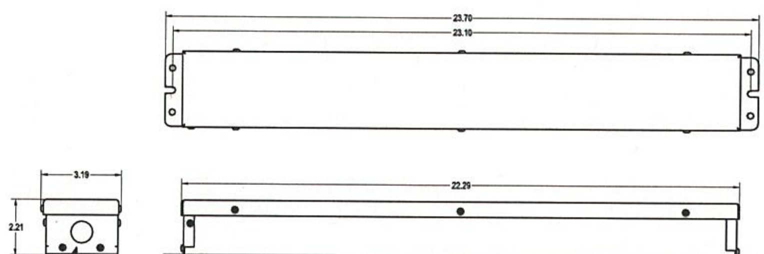


KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS04
(1) PS14

USE (4) ENCLOSURES FOR SUPPLIES:
(1) PS08

USE WITH SUPPLIES:
(1) PS01
(1) PS13
(1) DIM
(1) RGB DIM
(1) RGB SEQ
(1) RGB DMX



KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE WITH SUPPLIES:
(1) PS04
(1) PS14

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS08

CAN ACCEPT UP TO THE FOLLOWING SUPPLIES, OR A COMBINATION OF THEM:
(2) PS01
(2) PS13
(2) DIM
(2) RGB DIM
(2) RGB SEQ
(2) RGB DMX

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6649

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L2
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
Date: 10/23/13

www.sylvania.com

OPTOTRONIC®

Electronic 24V DC LED Power Supplies

LED CREATING TOMORROW

OPTOTRONIC power supplies are compact and electronically stabilized. The wide range of input voltage, on select models, from 100 to 277 VAC enables worldwide use on single-phase AC power lines. These supplies are available with 24VDC outputs. OPTOTRONIC power supplies are protected against open circuit, short circuit, overload and overheating conditions. They meet the highest industry standards.

Key Features & Benefits

- Damp and wet rated designs available for use in outdoor applications
- Wide Input voltage range: 100-277V AC (select models)
- Broad ambient temperature range for use in extreme application conditions
- Electronically stabilized output voltage with low line ripple
- Integrated dimming (select models)
- Short circuit, overload and overheat protection for sustained performance
- High power factor and efficiency
- Compact enclosures for variety of applications and fixture designs
- UL Class 2 output for safe operation
- Exceptional line and load regulation

Product Offering

Ordering Abbreviation	Output Wattage	Output Voltage
OT6W/24V/120V	6	24
OT17W/24V/UNV	17	24
OT20W/24V/120-240V/SQ	20	24
OT30/120/24CORD	30	24
OT50W/24V/120V/LP	50	24
OT75W/24V/UNV	75	24
OT96W/24V/UNV	96	24
OT96W/24V/UNV/DIM*	96	24
OT96W/24V/UNV/JBX	96	24
OT240W/3X24V/120-240V/JBX	240	24

LED power supplies compatible with: 24V LED Modules
*Dimmable

Application Information

Applications

- Ambience lighting inside furniture
- Backlighting
- Compact installations
- Effect lighting
- General lighting
- Low & medium power applications
- Panel lighting
- Path and roadway marking
- Signs
- Step and seat marking
- Wall washing

TO BE REVIEWED BY ELECTRICAL ENGINEER

Specifications and Certifications

c UL us — OT6, OT17, OT20, OT75, OT96, OT96DIM: UL 1310, UL48 Recognized for US & Canada Class 2 Unit
OT50: UL1310 Recognized for US & Canada Class 2 Unit

c UL us LISTED — OT96 (NAED 51626) & OT240 (NAED 51627): UL48 Listed for US & Canada Class 2 Unit

c ETL us — OT30: ETL listed and conforms to UL1310

C SP US — OT6, OT75 are CSA approved

RoHS compliant
This light source meets restrictions on hazardous substances.

FCC 47CFR Part 15 compliant

SEE THE WORLD IN A NEW LIGHT SYLVANIA

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name: SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number: CPS10875 [142707] PS03 120V PSE

Notes:

Type: L2

MACS-LTG-13-3135

TO BE REVIEWED BY ELECTRICAL ENGINEER

Specification Data

Fixture Description:	Type
Project/Job:	
SYLVANIA lamp:	
SYLVANIA ballast:	
Notes:	

Ordering Information

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage (VDC)	Output Power Range (W)	Max. Line Ripple (V)	UL/ETL File #	Location Rating
51503	OT6W/24V/120V	120	0.11	0.55	7.1	24.0±0.5	0.9-6	±0.2V	E258264	Damp
51622	OT17W/24V/UNV*	120 277	0.19 0.10	0.92	21	24.0±0.5	0.8-17	±1.0V	E220096	Damp
51512	OT20W/24V/120-240V/SQ	120 240	0.38 0.19	0.5	23	24.0±1.0	0.9-20	±0.2V	E258264	Dry
51521	OT30/120/24CORD	120	0.63	0.5	38	24.0±1.0	1-30	±1.5V	3137489	Dry
51598	OT50W/24V/120V/LP	120	0.47	0.99	56	24.0±0.5	0.9-50	±0.2V	E248522	Dry
51514[3]	OT75W/24V/UNV	120 277	0.76 0.33	0.99	90	24.0±0.5	0.9-75	±0.2V	E258264	Damp
51522[4]	OT96W/24V/UNV	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	E320395	Damp
51626	OT96W/24V/UNV/JBX	120 277	0.91 0.39	0.99	108	24.0±0.5	0.8-96	±1.0V	E320395 UL Listed	Wet[2]
51627	OT240W/3X24V/120-240V/JBX	120 240	2.39 1.19	0.99	285	24.0±0.5	0.8-240	±1.0V	E320395 UL Listed	Wet[2]

*7W is the minimum output power required when operating at the 277V input voltage.

Dimmable Power Supply

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage Range (VDC)	Output Power Range (W)	Max. Line Ripple (V)	Dimming Mode	Dimming Control	Dimming Range	UL File #	Location Rating
51520	OT96W/24V/UNV/DIM	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	PWM	0-10V DC	10 –100%	E320395	Damp

Notes:

1. All power supplies can be remote mounted up to 32 feet. Although it is possible to exceed the remote mounting distance, the installer and/or end user must take precautions to prevent and/or test the effects of EMI (electromagnetic interference).
2. Use wiring rated and marked PLTC, CL3R, and "sun resistant"
3. 51514 replaces 51513 (OT75/120/24), which is discontinued
4. 51522 replaces 51510, which is discontinued

Ordering Guide

OT	240W	/	3x24V	/	120-240	/	JBX
OPTOTRONIC®	Output Wattage		Output Voltage		Input Voltage		Junction Box

Minimum and Maximum Ratings

Parameter	Power Supply	Values
Input Voltage Range (Min/Max)	OT6	90-132 VAC
	OT20 and OT240	108-254 VAC
	OT30 and OT50	108-132 VAC
	OT17, OT75 and OT96	108-305 VAC
Input Frequency		50/60Hz
Ambient Temperature Range	OT6, OT20 and OT50	-20°C through +50°C
	OT30, OT96	-20°C through +40°C
	OT75	-25°C through +60°C
	OT17, OT96JBX and OT240	-30°C through +70°C (2% de-rating per °C from 50°C)
Max. Case Temperature	OT30	45°C
	OT6, OT50	70°C
	OT20, OT96	75°C
	OT17, OT75, OT96JBX and OT240	90°C

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L2
MACS-LTG-13-3135

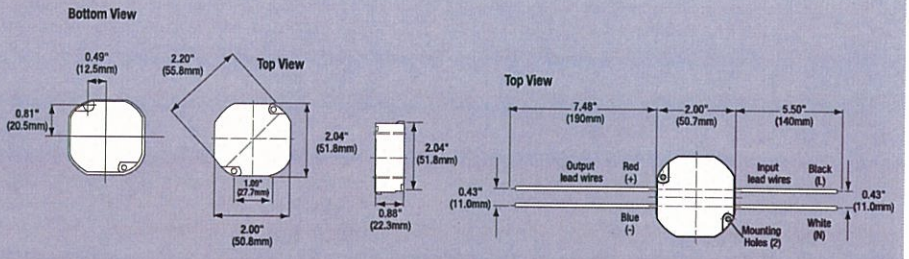
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams

OT6 Case:

Packaging:
Quantity: 20 pieces/carton
Weight: 0.16 lbs each (approx.)
3.72 lbs/carton

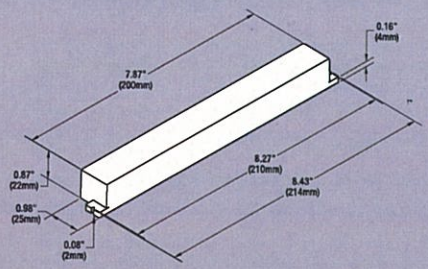
Wiring: Leads only (no connectors)
Input: (18AWG wire)
Output: (18AWG wire)



OT17 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.36 lbs each (approx.)
18.3 lbs/carton

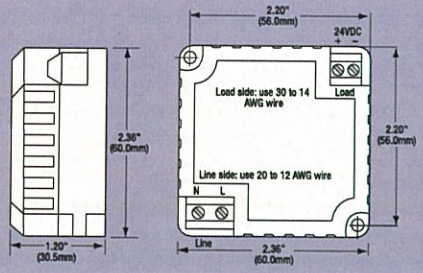
Wiring: Leads only (no connectors)
Input: 6" (18AWG wire) black & white wires
Output: 6" (18AWG wire) gray+ and black– wires



OT20 Case:

Packaging:
Quantity: 30 pieces/carton
Weight: 0.21 lbs each (approx.)
6.30 lbs/carton

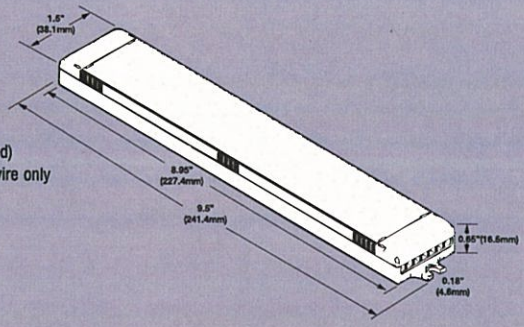
Wiring: Connectors only (No leads provided)
Use solid or stranded copper wire only



OT50 Case:

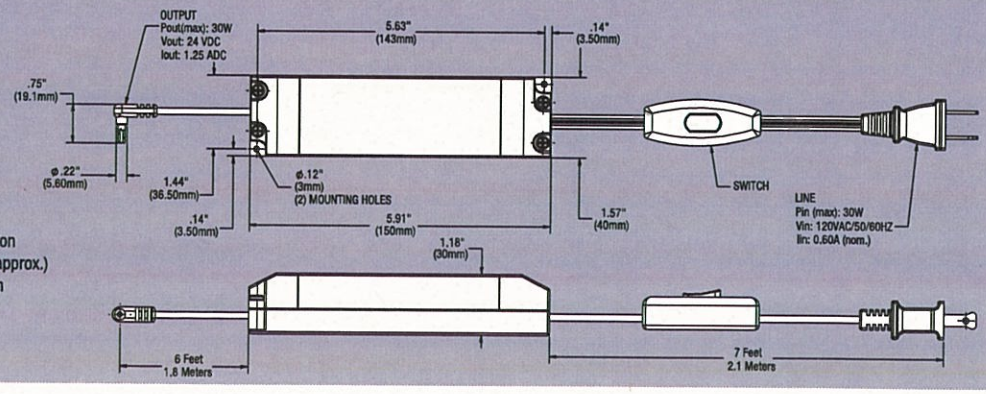
Packaging:
Quantity: 20 pieces/carton
Weight: 0.4 lbs each (approx.)
8.5 lbs/carton

Wiring: Connectors only (No leads provided)
Use 14-22AWG solid or stranded copper wire only



OT30 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.63 lbs each (approx.)
31.77 lbs/carton



ECS050R14

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L2
MACS-LTG-13-3135

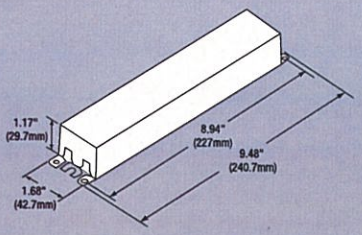
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams (continued)

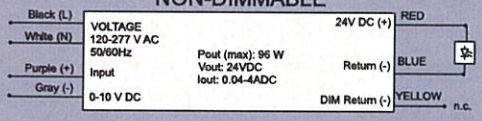
OT75 & OT96 Case:

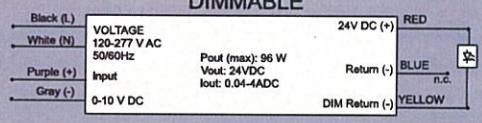
Packaging:
Quantity: 10 pieces/carton
Weight: 1.35 lbs each (approx.)
14 lbs/carton

Wiring: Leads only (no connectors)
AC Input: 9" (18AWG wire) black & white wires
Output: 9" (18AWG wire) red+ & blue– wires



OT96DIM only:
DIM Input: 9" (18AWG wire) gray & purple
DIM Output: 9" (18AWG wire) yellow

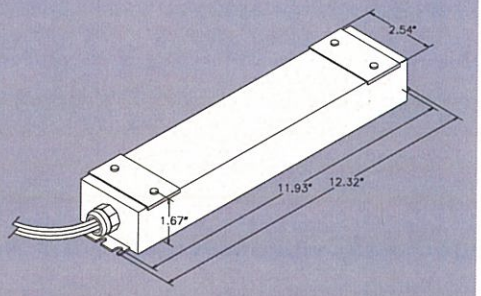




OT96JBX Case (Wet Rated):

Packaging:
Quantity: 16 pieces/carton
Weight: 2 lbs each (approx.)
33 lbs/carton

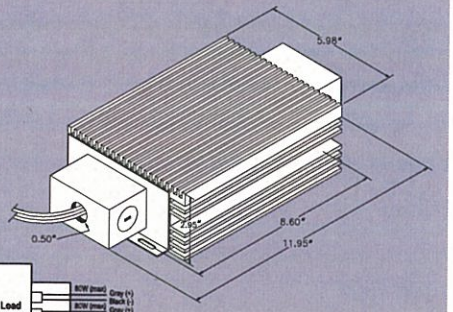
Wiring: Leads only (2.76" 18AWG wire)
Input: black (L), white (N), & green/yellow (GRD) wires with a UL Listed, 1/2" metallic fitting
Output: gray (+) & black (–) with a UL Listed, 1/2" plastic fitting

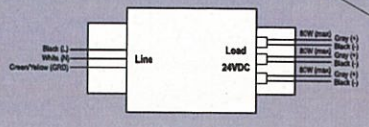


OT240 Case:

Packaging:
Quantity: 5 pieces/carton
Weight: 11 lbs each (approx.)
53 lbs/carton

Wiring: Leads only (6.9" 18AWG wire)





Warranty

OPTOTRONIC® Products are covered by our LED Module, OPTOTRONIC Power Supply or Control Warranty. For additional details, refer to the latest version of the warranty available at www.sylvania.com/LED.

United States
OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923

Trade
Phone: 1-800-255-5042
Fax: 1-800-255-5043

National Accounts
Phone: 1-800-562-4671
Fax: 1-800-562-4674

OEM/Special Markets
Phone: 1-800-762-7191
Fax: 1-800-762-7192

Display/Optic
Phone: 1-888-677-2627
Fax: 1-800-762-7192

SYLVANIA Lighting Services
Phone: 1-800-323-0572
Fax: 1-800-537-0784

Canada
OSRAM SYLVANIA LTD.
2001 Drew Road
Mississauga, ON L5S 1S4

Trade
Phone: 1-800-263-2852
Fax: 1-800-667-6772

OEM/Special Markets/Display/Optic
Phone: 1-800-265-2852
Fax: 1-800-667-6772

SYLVANIA Lighting Services
Phone: 1-800-663-4268
Fax: 1-866-239-1278

Mexico
OSRAM MEXICO
Headquarters
Tultitlan/Edo de Mexico
011-52-55-58-99-18-50

ECS050R14

the system solution®

www.sylvania.com

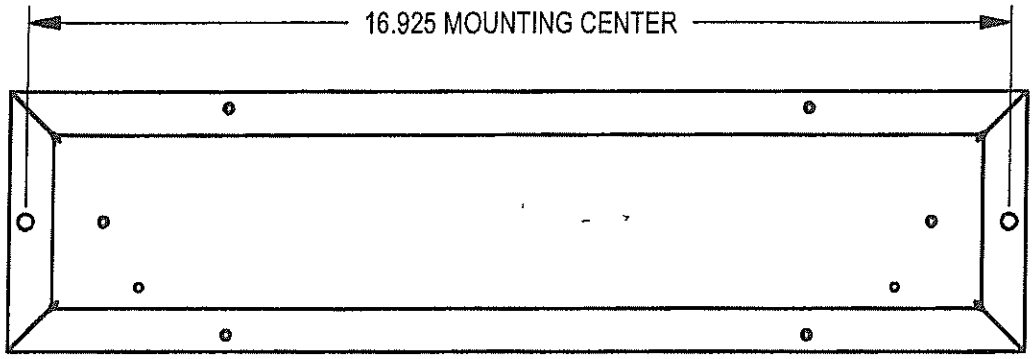
IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

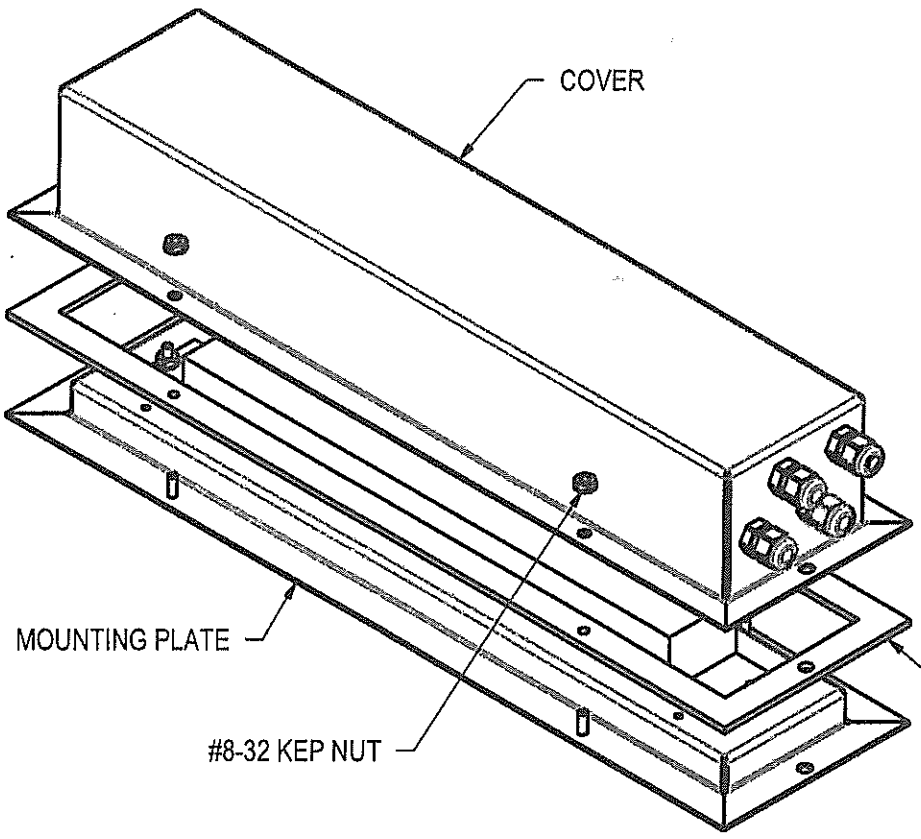
WARNING: Risk of fire and electrical shock. This product is to be installed by a qualified electrician only.

CAUTION: When using electrical equipment, basic safety precautions should always be followed including the following: Read all instructions carefully before installation and save for future use. Make sure installation and all connections are in accordance with National Electrical Code and any local regulations. To avoid possible electrical shock, be sure that power supply is turned off before installing or servicing this fixture. Servicing should be performed by qualified service personnel.

These instructions do not claim to cover all details or variations. When additional information is desired, please contact your SPI representative.

CPS10875 MOD142707





1. INSERT MOUNTING PLATE OVER 0.250 DIA. MOUNTING HARDWARE (BY OTHERS), WITH A 16.925" MOUNTING CENTER.

2. PLACE ENCLOSURE GASKET OVER MOUNTING PLATE, BE SURE NOT TO DAMAGE GASKET.

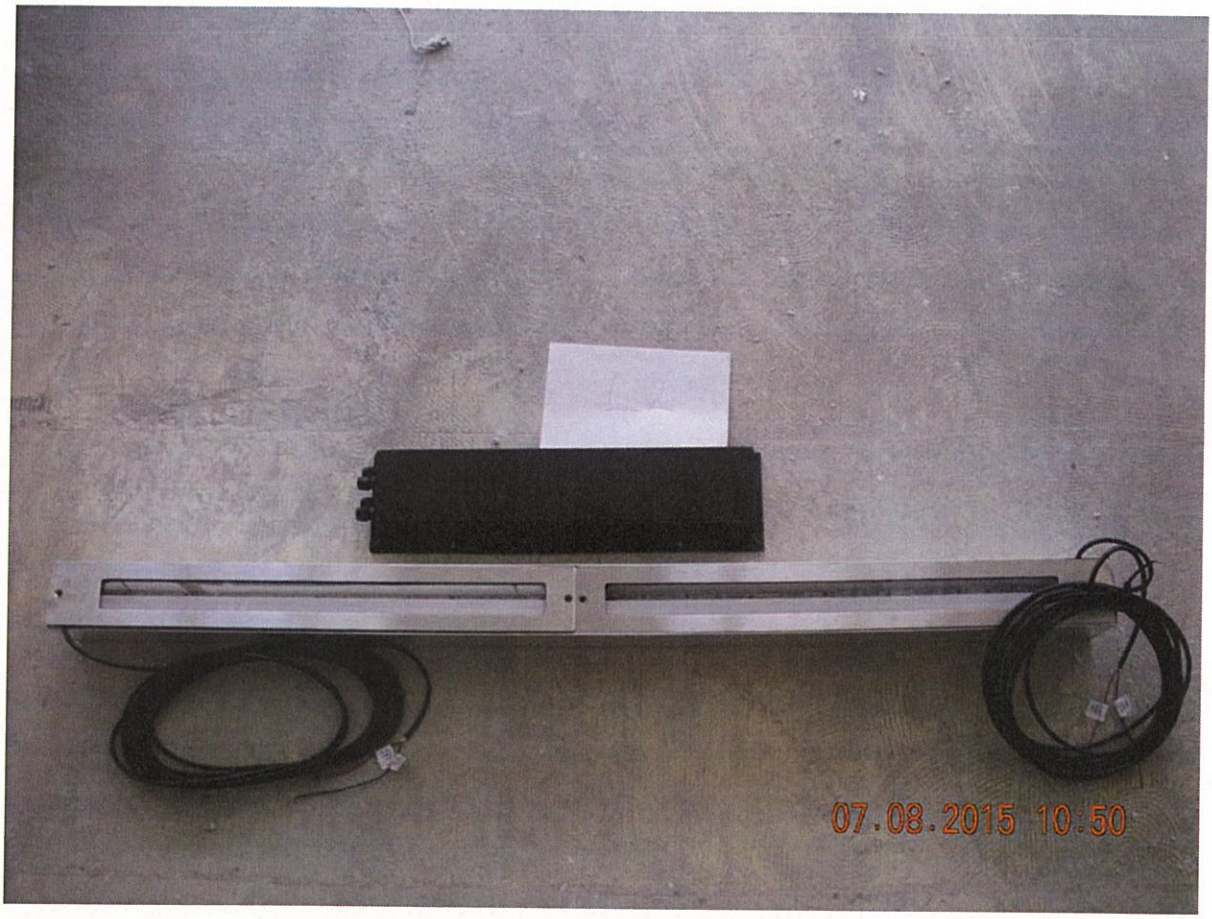
3. MAKE ALL ELECTRICAL CONNECTIONS PER NEC CODE.

4. PLACE COVER OVER GASKET AND SECURE WITH (4) #8-32 KEP NUTS (SUPPLIED) AND 0.250 DIA. NUTS FOR MOUTNING HARDWARE.

04/29/2014
IS84719X

'L2' Luminaire Power Supply with Cover Removed.

DBB Box for 'L2' Luminaire



'L2' Luminaire in DBB Box and Power Supply

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6660

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
ERG11573 [142709] L13.4WA 120-277 [BSS] 3500K PW DBB PSN
Notes:

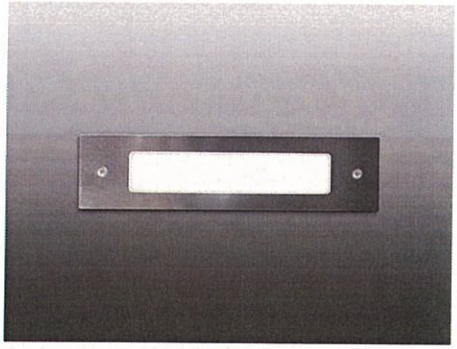
Type:
L3
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/29/13

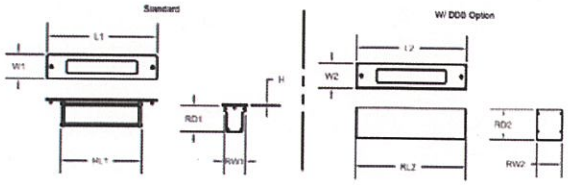
SPI SPECIFICATION SHEET

JOB NAME _____ TYPE _____

ECHO EFFECT IN-GRADE GROUND
ERG11573



WET
IP67



The Echo Exterior Recessed In-Ground (also Poured Concrete), fixture is a fully recessed, IP67 Rated rectilinear fixture for wall wash applications. A reflector is designed using premium materials to direct the light up the wall as intended, and minimize glare from behind the fixture. Stainless Steel faceplate options and temper glass show off the quality and how rugged this fixture really is. Various outputs, sizes and mounting orientations allow maximum flexibility in your design.

915MM/ 36"

TO BE REVIEWED BY ELECTRICAL ENGINEER

Dimensions

L1	H	RW1	RD1	RL1	W1
~~18.4 in~~	0.2 in	2.4 in	3.0 in	15.1 in	2.8 in
46.7 cm	0.5 cm	6.1 cm	7.6 cm	38.4 cm	7.1 cm

Weight

Consult Factory.

FIXTURE LENGTH SHALL BE 915/36", MANUFACTURER SHALL PROVIDE DIMENSIONED DRAWING FOR FIXTURE AND HOUSING

Features

- Aluminum construction provides durable protection for internal components and is recyclable.
- Cast aluminum end caps protect internal components and are recyclable.
- Recessed Housing has Anodized finish providing optimal thermal effectiveness and durable corrosion protection.
- External fasteners are flush mounted, providing a clean design.
- Stainless steel external fasteners will not rust or corrode.
- Premium 95% reflective aluminum is utilized in the highly-efficient and effective reflector design.
- Tempered glass lens protects fixture lamp engine.
- Standard thermoset polyester powder coat paint provides durable protection in a palette of color options. Custom colors available upon request.
- Optically engineered, precision LED optics control light distribution and direct light where it is needed.
- IP67 rated fixture per International Electrotechnical Commission (IEC) certifies fixture as dust-tight and protected against temporary immersion.
- Drive over tested to withstand toque and shear loading per IEC60598-2-13.
- Drive over tested to withstand a static load in excess of 2750 lbs. (1250 kg) per IEC60598-2-13.

Technical Notes

Electrical

- 36" lead length standard.
- SPI uses strict quality guidelines in LED selection to ensure the White LED's we use meet or exceed ANSI Binning Standards (ANSI C78.733).
- Remote 24V LED, Class II power supply required. Can be ordered as fixture required choice, separately (see CPS 10875) or by others.
- ETL listed to UL standards (US and Canada) for recessed ground and use in wet locations.
- ETL listed to UL standards (US and Canada) for poured concrete applications and use in wet locations.

Mounting

- Capable of 1/2 IP conduit connection.

Additional Documents

Color Chart (http://www.specSPI.com/PDFs/SPI_Color_Chart.pdf)

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed
☐ Reviewed as modified ☒ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By _____

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-66[illegible] e: [illegible]@macsii.com

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
ERG11573 [142709] L13.4WA 120-277 [BSS] 3500K PW DBB PSN

Notes:

Type:
L3
MACS-LTG-13-3135

PRO-CAN
CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

SPI SPECIFICATION SHEET

MODEL NUMBER	LAMPING	FINISH	LAMP OPTIONS	OPTIONS

Not all options are available in all configurations, consult factory for details.

Lamping		Photometry
L4.0WA-24V	White 4.0W HD LED Module	ECHO EFFECT ZIP
L6.8WA-24V	White 6.8W HD LED Module	
L13.4WA-24V	White 13.4W HD LED Module	
C18.1W-24V	RGB 18.1W LED Module	ECHO EFFECT ZIP

Lamp Options	
3000K	3000K Ccts
3500K	3500K Ccts
4500K	4500K Ccts

Options	
PWF	Plane Wash Frosted
SME	Symmetric
DBB [1]	Direct Burial Box
PW	Plane Wash Optical
PS03	86.4 Available Output Watts/24V Wet Location Power Supply
PSN	Power Supply Not Included

[1] Dimensions for DBB Option - L2 = 18.6in. RW2 = 2.9in. RD2 = 3.5in. RL2 = 18.6in. W2 = 2.9in.

Painted Finishes

PT01	SuperWhite	PT07	Light Taupe	PT13	Warm Gray	PT19	Blue	PT29	Red Brass	PT42	Sky Blue	PT48	Brass
PT02	White	PT08	Medium Taupe	PT14	Light Gray	PT20	Dark Green	PT31	Medium Bronze	PT43	Teal	PT49	Bronze
PT03	Morning Light	PT09	Medium Gray	PT15	Sage	PT21	Pearl White	PT32	Dark Bronze	PT44	Green		
PT04	Warm White	PT10	Dark Gray	PT16	Spruce	PT22	Platinum	PT33	Dark Blue	PT45	Purple		
PT05	Putty	PT11	Black	PT17	Red	PT27	Deep Copper	PT40	Yellow	PT46	Aluminum		
PT06	Warm Beige	PT12	Dark Chocolate	PT18	Deep Red	PT28	Dark Stainless	PT41	Orange	PT47	Deep Red Brass		

Metal and Plated Finishes

BSS	Brushed Stainless Streel

TO BE REVIEWED BY
ELECTRICAL
ENGINEER

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L3
MACS-LTG-13-3135

SPI ADVENT STILE SPECIFICATION SHEET

Components
Power Supply
CPS 10875

JOB NAME	TYPE
MODEL NO.	
LAMP	

Determine the maximum fixture wattage per circuit by adding the wattage of each fixture together and choose an LED power supply that has an available output wattage greater than the total wattage of the fixtures.

Model Number/Style	Select LED Power Supply	Select Input Voltage
CPS 10875		

Not all options are available in all configurations, consult factory for details.

LED POWER SUPPLY	DETAILS	AVAILABLE OUTPUT WATTS	RATED OUTPUT WATTS	INPUT VOLTAGE	OUTPUT VOLTAGE	DESCRIPTION
PS01		67.5W	75W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS03		86.4W	96W	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS04	(2)PS01	67.5W X2	75W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS05	(2)PS03	86.4W X2	96W X2	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS07	(4)PS03	86.4W X4	96W X4	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS08	(4)PS01	67.5W X4	75W X4	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS09		72.0W/CH	80W/CH	120-240V AC	24V DC	WET LOCATION LISTED, CLASS 2 (3) 80W OUTPUTS, IP66 RATED, 120-240/CH3
PS13		86.4W	96W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*
PS14	(2)PS13	86.4W X2	96W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*

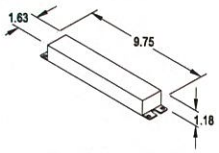
See CPS11411 for RGB and DMX interface options.
*Dimmable

LED Specification Notes

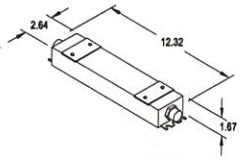
- LED power supplies ordered separately from LED fixtures.
- Multiple fixtures may be connected to one LED power supply to create a circuit.
- Total fixture wattage should not exceed 90% of power supply rating. Use Available Output Wattage.
- Power Supplies are not shipped with an enclosure. PSE option will include a Damp Power Supply Enclosure.

Power Supply Dimensions

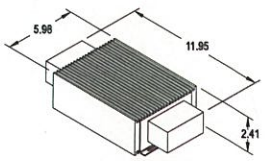
* Have lead wires with a direct conduit connection.



75W/24 | 96W/24
PS01 | PS13



96W/24WL*
PS03



240W/24WL*
PS09

Remote Wiring Requirements

- Low voltage circuits are limited by current capacity and voltage drops through conductors.
- Determine the appropriate cable following the Maximum Cable Length table provided.
- All fixtures and circuit branches are to be wired in parallel (positive to positive, negative to negative).
- Install and connect LED power supply to fixtures in accordance with NEC and local regulations.

Maximum Cable Length (ft)

WIRE AWG		18	16
24V DC	75W	24'	38'
24V DC	96W	19'	30'

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647 e: [illegible]

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L3
MACS-LTG-13-3135

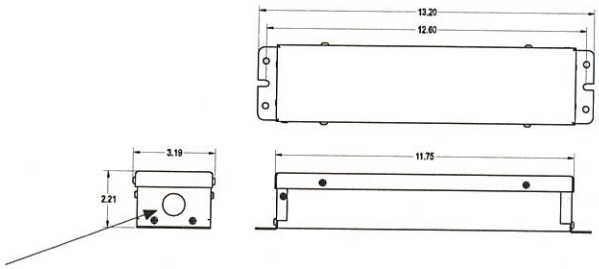
TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI ADVENT STILE SPECIFICATION SHEET

Components
Power Supply
CPS 10875

JOB NAME	TYPE
MODEL NO.	
LAMP	

Enclosures for Power Supplies

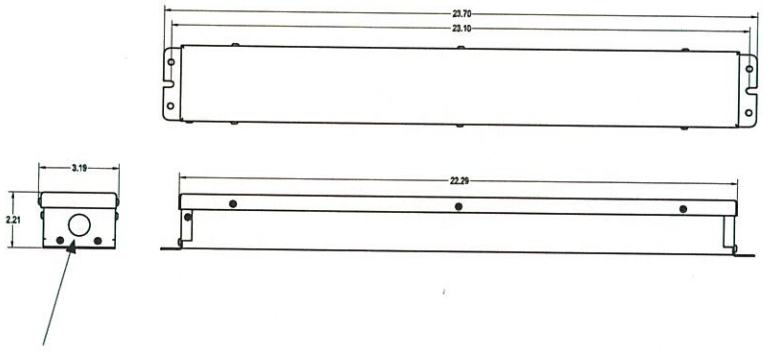


KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS04
(1) PS14

USE (4) ENCLOSURES FOR SUPPLIES:
(1) PS08

USE WITH SUPPLIES:
(1) PS01
(1) PS13
(1) DIM
(1) RGB DIM
(1) RGB SEQ
(1) RGB DMX



KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE WITH SUPPLIES:
(1) PS04
(1) PS14

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS08

CAN ACCEPT UP TO THE FOLLOWING SUPPLIES, OR A COMBINATION OF THEM:
(2) PS01
(2) PS13
(2) DIM
(2) RGB DIM
(2) RGB SEQ
(2) RGB DMX

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L3
MACS-LTG-13-3135

TO BE REVIEWED BY ELECTRICAL ENGINEER

www.sylvania.com

OPTOTRONIC®
Electronic 24V DC LED Power Supplies

LED CREATING TOMORROW

OPTOTRONIC power supplies are compact and electronically stabilized. The wide range of input voltage, on select models, from 100 to 277 VAC enables worldwide use on single-phase AC power lines. These supplies are available with 24VDC outputs. OPTOTRONIC power supplies are protected against open circuit, short circuit, overload and overheating conditions. They meet the highest industry standards.

Key Features & Benefits

- Damp and wet rated designs available for use in outdoor applications
- Wide Input voltage range: 100-277V AC (select models)
- Broad ambient temperature range for use in extreme application conditions
- Electronically stabilized output voltage with low line ripple
- Integrated dimming (select models)
- Short circuit, overload and overheat protection for sustained performance
- High power factor and efficiency
- Compact enclosures for variety of applications and fixture designs
- UL Class 2 output for safe operation
- Exceptional line and load regulation

Product Offering

Ordering Abbreviation	Output Wattage	Output Voltage
OT6W/24V/120V	6	24
OT17W/24V/UNV	17	24
OT20W/24V/120-240V/SQ	20	24
OT30/120/24CORD	30	24
OT50W/24V/120V/LP	50	24
OT75W/24V/UNV	75	24
OT96W/24V/UNV	96	24
OT96W/24V/UNV/DIM*	96	24
OT96W/24V/UNV/JBX	96	24
OT240W/3X24V/120-240V/JBX	240	24

LED power supplies compatible with: 24V LED Modules
*Dimmable

Application Information

Applications

- Ambience lighting inside furniture
- Backlighting
- Compact installations
- Effect lighting
- General lighting
- Low & medium power applications
- Panel lighting
- Path and roadway marking
- Signs
- Step and seat marking
- Wall washing

Specifications and Certifications

c UL us — OT6, OT17, OT20, OT75, OT96, OT96DIM: UL 1310, UL48 Recognized for US & Canada Class 2 Unit
OT50: UL1310 Recognized for US & Canada Class 2 Unit

c UL us LISTED — OT96 (NAED 51626) & OT240 (NAED 51627): UL48 Listed for US & Canada Class 2 Unit

c ETL us — OT30: ETL listed and conforms to UL1310

C SP US — OT6, OT75 are CSA approved

RoHS compliant
This light source meets restrictions on hazardous substances.

FCC 47CFR Part 15 compliant

SEE THE WORLD IN A NEW LIGHT SYLVANIA

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6649

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L3
MACS-LTG-13-3135

TO BE REVIEWED BY ELECTRICAL ENGINEER

Specification Data

Fixture Description:	Type
Project/Job:	
SYLVANIA lamp:	
SYLVANIA ballast:	
Notes:	

Ordering Information

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage (VDC)	Output Power Range (W)	Max. Line Ripple (V)	UL/ETL File #	Location Rating
51503	OT6W/24V/120V	120	0.11	0.55	7.1	24.0±0.5	0.9-6	±0.2V	E258264	Damp
51622	OT17W/24V/UNV*	120 277	0.19 0.10	0.92	21	24.0±0.5	0.8-17	±1.0V	E220096	Damp
51512	OT20W/24V/120-240V/SQ	120 240	0.38 0.19	0.5	23	24.0±1.0	0.9-20	±0.2V	E258264	Dry
51521	OT30/120/24CORD	120	0.63	0.5	38	24.0±1.0	1-30	±1.5V	3137489	Dry
51598	OT50W/24V/120V/LP	120	0.47	0.99	56	24.0±0.5	0.9-50	±0.2V	E248522	Dry
51514[3]	OT75W/24V/UNV	120 277	0.76 0.33	0.99	90	24.0±0.5	0.9-75	±0.2V	E258264	Damp
51522[4]	OT96W/24V/UNV	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	E320395	Damp
51626	OT96W/24V/UNV/JBX	120 277	0.91 0.39	0.99	108	24.0±0.5	0.8-96	±1.0V	E320395 UL Listed	Wet[2]
51627	OT240W/3X24V/120-240V/JBX	120 240	2.39 1.19	0.99	285	24.0±0.5	0.8-240	±1.0V	E320395 UL Listed	Wet[2]

*7W is the minimum output power required when operating at the 277V input voltage.

Dimmable Power Supply

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage Range (VDC)	Output Power Range (W)	Max. Line Ripple (V)	Dimming Mode	Dimming Control	Dimming Range	UL File #	Location Rating
51520	OT96W/24V/UNV/DIM	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	PWM	0-10V DC	10 –100%	E320395	Damp

Notes:

1. All power supplies can be remote mounted up to 32 feet. Although it is possible to exceed the remote mounting distance, the installer and/or end user must take precautions to prevent and/or test the effects of EMI (electromagnetic interference).
2. Use wiring rated and marked PLTC, CL3R, and "sun resistant"
3. 51514 replaces 51513 (OT75/120/24), which is discontinued
4. 51522 replaces 51510, which is discontinued

Ordering Guide

OT	240W	/	3x24V	/	120-240	/	JBX
OPTOTRONIC®	Output Wattage		Output Voltage		Input Voltage		Junction Box

Minimum and Maximum Ratings

Parameter	Power Supply	Values
Input Voltage Range (Min/Max)	OT6	90-132 VAC
	OT20 and OT240	108-254 VAC
	OT30 and OT50	108-132 VAC
	OT17, OT75 and OT96	108-305 VAC
Input Frequency		50/60Hz
Ambient Temperature Range	OT6, OT20 and OT50	-20°C through +50°C
	OT30, OT96	-20°C through +40°C
	OT75	-25°C through +60°C
	OT17, OT96JBX and OT240	-30°C through +70°C (2% de-rating per °C from 50°C)
Max. Case Temperature	OT30	45°C
	OT6, OT50	70°C
	OT20, OT96	75°C
	OT17, OT75, OT96JBX and OT240	90°C

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L3
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 2022-11-13

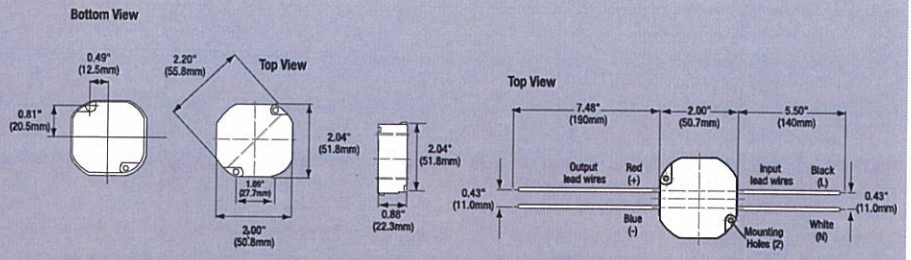
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams

OT6 Case:

Packaging:
Quantity: 20 pieces/carton
Weight: 0.16 lbs each (approx.)
3.72 lbs/carton

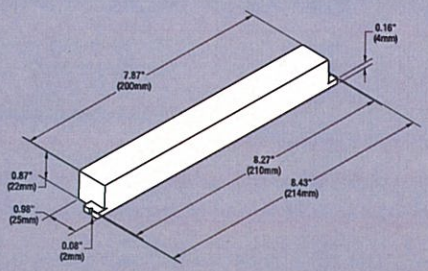
Wiring: Leads only (no connectors)
Input: (18AWG wire)
Output: (18AWG wire)



OT17 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.36 lbs each (approx.)
18.3 lbs/carton

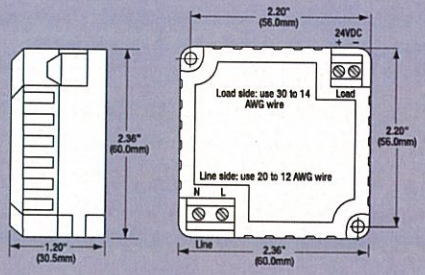
Wiring: Leads only (no connectors)
Input: 6" (18AWG wire) black & white wires
Output: 6" (18AWG wire) gray+ and black– wires



OT20 Case:

Packaging:
Quantity: 30 pieces/carton
Weight: 0.21 lbs each (approx.)
6.30 lbs/carton

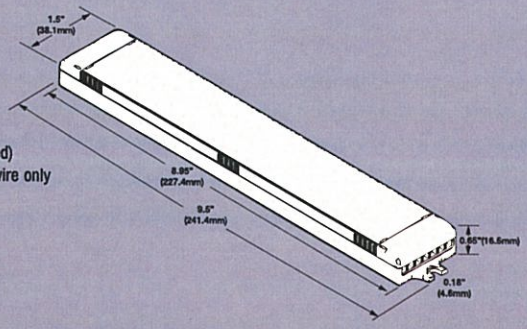
Wiring: Connectors only (No leads provided)
Use solid or stranded copper wire only



OT50 Case:

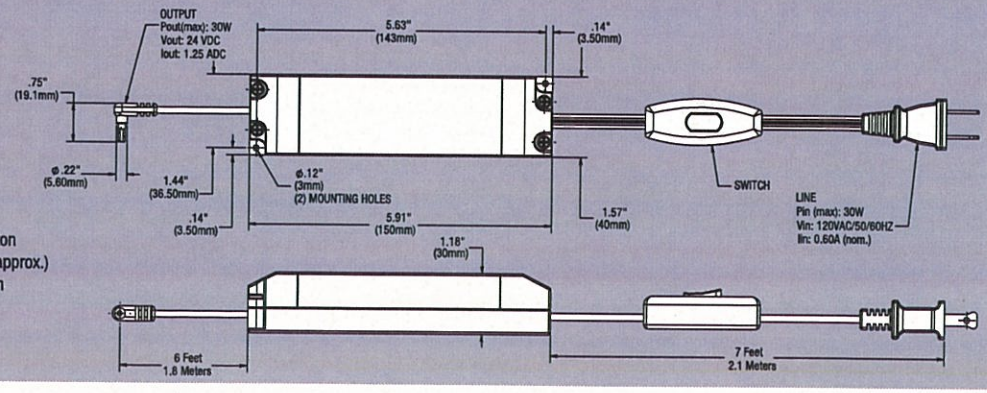
Packaging:
Quantity: 20 pieces/carton
Weight: 0.4 lbs each (approx.)
8.5 lbs/carton

Wiring: Connectors only (No leads provided)
Use 14-22AWG solid or stranded copper wire only



OT30 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.63 lbs each (approx.)
31.77 lbs/carton



ECS050R14

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L3
MACS-LTG-13-3135

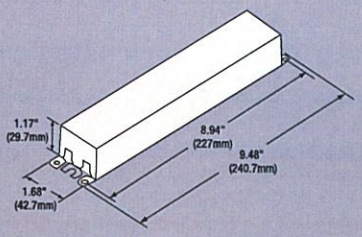
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams (continued)

OT75 & OT96 Case:

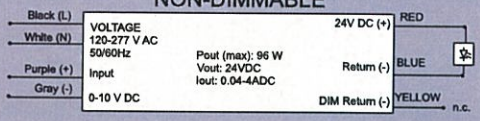
Packaging:
Quantity: 10 pieces/carton
Weight: 1.35 lbs each (approx.)
14 lbs/carton

Wiring: Leads only (no connectors)
AC Input: 9" (18AWG wire) black & white wires
Output: 9" (18AWG wire) red+ & blue– wires

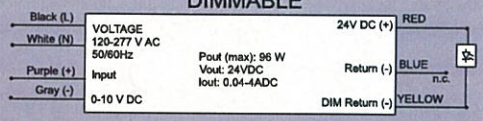


OT96DIM only:
DIM Input: 9" (18AWG wire) gray & purple
DIM Output: 9" (18AWG wire) yellow

NON-DIMMABLE



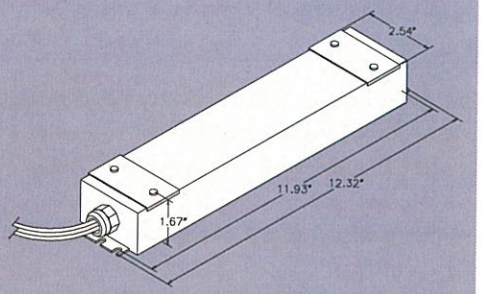
DIMMABLE



OT96JBX Case (Wet Rated):

Packaging:
Quantity: 16 pieces/carton
Weight: 2 lbs each (approx.)
33 lbs/carton

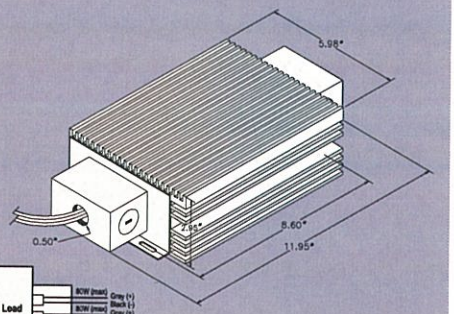
Wiring: Leads only (2.76" 18AWG wire)
Input: black (L), white (N), & green/yellow (GRD) wires with a UL Listed, 1/2" metallic fitting
Output: gray (+) & black (–) with a UL Listed, 1/2" plastic fitting

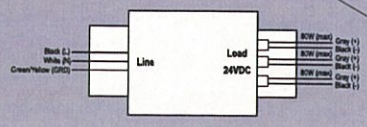


OT240 Case:

Packaging:
Quantity: 5 pieces/carton
Weight: 11 lbs each (approx.)
53 lbs/carton

Wiring: Leads only (6.9" 18AWG wire)





Warranty

OPTOTRONIC® Products are covered by our LED Module, OPTOTRONIC Power Supply or Control Warranty. For additional details, refer to the latest version of the warranty available at www.sylvania.com/LED.

United States
OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923

Trade
Phone: 1-800-255-5042
Fax: 1-800-255-5043

National Accounts
Phone: 1-800-562-4671
Fax: 1-800-562-4674

OEM/Special Markets
Phone: 1-800-762-7191
Fax: 1-800-762-7192

Display/Optic
Phone: 1-888-677-2627
Fax: 1-800-762-7192

SYLVANIA Lighting Services
Phone: 1-800-323-0572
Fax: 1-800-537-0784

Canada
OSRAM SYLVANIA LTD.
2001 Drew Road
Mississauga, ON L5S 1S4

Trade
Phone: 1-800-263-2852
Fax: 1-800-667-6772

OEM/Special Markets/Display/Optic
Phone: 1-800-265-2852
Fax: 1-800-667-6772

SYLVANIA Lighting Services
Phone: 1-800-663-4268
Fax: 1-866-239-1278

Mexico
OSRAM MEXICO
Headquarters
Tultitlan/Edo de Mexico
011-52-55-58-99-18-50

www.sylvania.com

ECS050R14

the system solution®

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
EEG 11109 L13.4WA-24V-[AN04]
4500K FT PSN 20FT CORD
Notes:

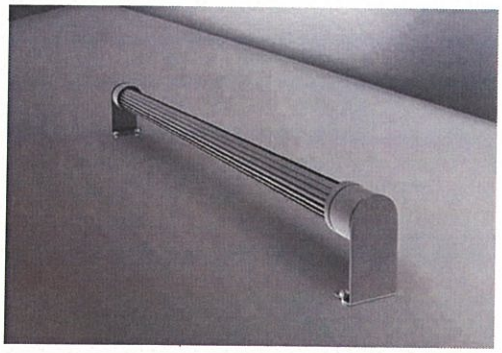
Type:
L4
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

SPI SPECIFICATION SHEET

JOB NAME _____ TYPE _____

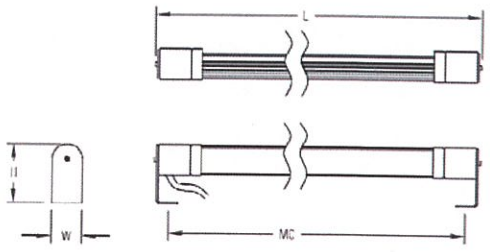
ECHO ROUND 1.5 EXTERIOR GROUND
EEG11109



WET
IP66

Echo Round 1.5 is a durable exterior IP66 rated linear LED fixture. Echo's patents pending opticals enable tremendous flexibility offering wall washing and wall grazing, as well as asymmetric lighting solutions.

TO BE REVIEWED BY ELECTRICAL ENGINEER



Dimensions

W	L	H	MC
1.6 in	16.4 in	3.0 in	15.2 in
4.1 cm	41.7 cm	7.6 cm	38.6 cm

Weight

Hanging weight: 25.0 lb (11.4 kg).

Features

- SMA optical package utilizes a diffuse frosted lens to provide photometric distribution.
- SMB optical package utilizes an optically clear lens to maximize photometric output and efficiency.
- IP66 rated fixture per International Electrotechnical Commission (IEC) certifies fixture as dust-tight and protected against powerful water jets.
- Versatile design allows fixture to be mounted in any orientation.
- Extruded aluminum construction provides durable protection for internal components and is recyclable.
- Locks in desired orientation for precise fixture alignment.
- Anodized finish provides optimal thermal effectiveness and durable corrosion protection.
- Asymmetric and multiple symmetric optics allow increased light control and distribute light into a space exactly where it is needed.

Technical Notes

Construction
- Optical grade clear acrylic lens optimizes performance.

Electrical
- ETL listed to UL standards (US and Canada) for ground mounting and use in wet locations.
- SPI uses strict quality guidelines in LED selection to ensure the White LED's we use meet or exceed ANSI Binning Standards (ANSI C78.733).
- Remote 24V DC power supply required.
- 36" lead length standard.
- Fixtures over 58 watts may have multiple power cords. Contact factory for specifics.

Finish
- Available in anodized finish only.

Lamping/lamp
- L70 life = 50,000 + hours.

Additional Documents

LED Power Supplies (24V DC)
(http://www.specSPI.com/ImageLibrary/Public/Documents/5647.pdf)
Color Chart (http://www.specSPI.com/PDFs/SPI_Color_Chart.pdf)

TOTAL LIGHTING SOLUTIONS INC.

☒ Reviewed ☐ Not Reviewed
☐ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date ....NOV 7, 2013
By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
EEG 11109 L13.4WA-24V-[AN04]
4500K FT PSN 20FT CORD
Notes:

Type:
L4
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI SPECIFICATION SHEET

MODEL NUMBER	LAMPING	FINISH	LAMP OPTIONS	OPTIONS

Not all options are available in all configurations, consult factory for details.

Lamping	Photometry
L4.0WA-24V	White 4.0W HD LED Module
L6.8WA-24V	White 6.8W HD LED Module
L13.4WA-24V	White 13.4W HD LED Module
A8.4W-24V	Amber 8.4W LED Module 590nm
B8.4W-24V	Blue 8.4W LED Module 470nm
G8.4W-24V	Green 8.4W LED Module 525nm
R8.4W-24V	Red 8.4W LED Module 620nm
C18.1W-24V	RGB 18.1W LED Module

[1] Forward Throw not Available on Color LED

Lamp Options	
3000K	3000K Ccts
3500K	3500K Ccts
4500K	4500K Ccts
F	Fusing

Options	
FT [1]	Led-forward Throw
SMA	Led-symmetric 60 Degree Beam - 120 Degree Spread
SMB	Led-symmetric 30 Degree Beam - 60 Degree Spread
PS03	86.4 Available Output Watts/24V Wet Location Power Supply
PSN	Power Supply Not Included

Metal and Plated Finishes

AN04 Anodized Satin Aluminum (Clear)	AN08 Black Anodized

TOTAL LIGHTING SOLUTIONS INC.

☒ Reviewed ☐ Not Reviewed

☐ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name: SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number: CPS10875 [142707] PS03 120V PSE

Notes:

Type: L4

MACS-LTG-13-3135

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI ADVENT STILE SPECIFICATION SHEET

Components
Power Supply
CPS 10875

JOB NAME | TYPE

MODEL NO.

LAMP

Determine the maximum fixture wattage per circuit by adding the wattage of each fixture together and choose an LED power supply that has an available output wattage greater than the total wattage of the fixtures.

Model Number/Style	Select LED Power Supply	Select Input Voltage
CPS 10875		

Not all options are available in all configurations, consult factory for details.

LED POWER SUPPLY	DETAILS	AVAILABLE OUTPUT WATTS	RATED OUTPUT WATTS	INPUT VOLTAGE	OUTPUT VOLTAGE	DESCRIPTION
PS01		67.5W	75W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS03		86.4W	96W	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS04	(2)PS01	67.5W X2	75W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS05	(2)PS03	86.4W X2	96W X2	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS07	(4)PS03	86.4W X4	96W X4	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS08	(4)PS01	67.5W X4	75W X4	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS09		72.0W/CH	80W/CH	120-240V AC	24V DC	WET LOCATION LISTED, CLASS 2 (3) 80W OUTPUTS, IP66 RATED, 120-240/CH3
PS13		86.4W	96W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*
PS14	(2)PS13	86.4W X2	96W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*

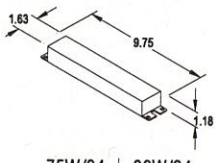
See CPS11411 for RGB and DMX interface options.
*Dimmable

LED Specification Notes

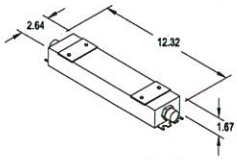
- LED power supplies ordered separately from LED fixtures.
- Multiple fixtures may be connected to one LED power supply to create a circuit.
- Total fixture wattage should not exceed 90% of power supply rating. Use Available Output Wattage.
- Power Supplies are not shipped with an enclosure. PSE option will include a Damp Power Supply Enclosure.

Power Supply Dimensions

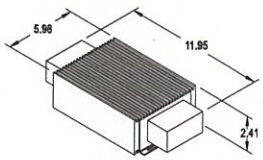
* Have lead wires with a direct conduit connection.



75W/24 PS01 | 96W/24 PS13



96W/24WL* PS03



240W/24WL* PS09

Remote Wiring Requirements

- Low voltage circuits are limited by current capacity and voltage drops through conductors.
- Determine the appropriate cable following the Maximum Cable Length table provided.
- All fixtures and circuit branches are to be wired in parallel (positive to positive, negative to negative).
- Install and connect LED power supply to fixtures in accordance with NEC and local regulations.

Maximum Cable Length (ft)

WIRE AWG		18	16
24V DC	75W	24'	38'
24V DC	96W	19'	30'

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6650

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L4
MACS-LTG-13-3135

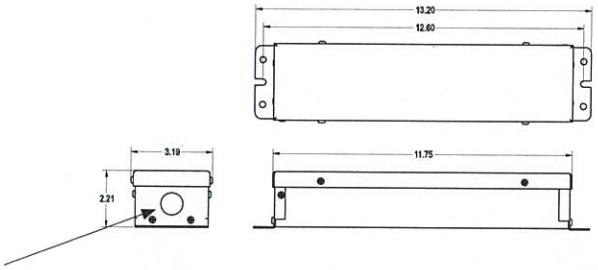
TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI ADVENT STILE SPECIFICATION SHEET

Components
Power Supply
CPS 10875

JOB NAME | TYPE
MODEL NO.
LAMP

Enclosures for Power Supplies

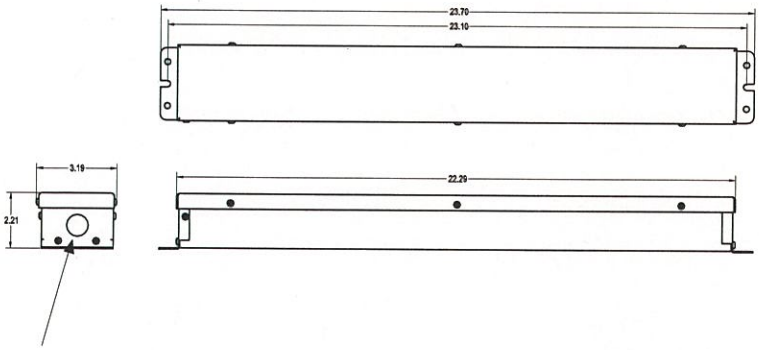


KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS04
(1) PS14

USE (4) ENCLOSURES FOR SUPPLIES:
(1) PS08

USE WITH SUPPLIES:
(1) PS01
(1) PS13
(1) DIM
(1) RGB DIM
(1) RGB SEQ
(1) RGB DMX



KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE WITH SUPPLIES:
(1) PS04
(1) PS14

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS08

CAN ACCEPT UP TO THE FOLLOWING SUPPLIES, OR A COMBINATION OF THEM:
(2) PS01
(2) PS13
(2) DIM
(2) RGB DIM
(2) RGB SEQ
(2) RGB DMX

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L4
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

www.sylvania.com

OPTOTRONIC®
Electronic 24V DC LED Power Supplies

LED CREATING TOMORROW

OPTOTRONIC power supplies are compact and electronically stabilized. The wide range of input voltage, on select models, from 100 to 277 VAC enables worldwide use on single-phase AC power lines. These supplies are available with 24VDC outputs. OPTOTRONIC power supplies are protected against open circuit, short circuit, overload and overheating conditions. They meet the highest industry standards.

Key Features & Benefits

- Damp and wet rated designs available for use in outdoor applications
- Wide Input voltage range: 100-277V AC (select models)
- Broad ambient temperature range for use in extreme application conditions
- Electronically stabilized output voltage with low line ripple
- Integrated dimming (select models)
- Short circuit, overload and overheat protection for sustained performance
- High power factor and efficiency
- Compact enclosures for variety of applications and fixture designs
- UL Class 2 output for safe operation
- Exceptional line and load regulation

Product Offering

Ordering Abbreviation	Output Wattage	Output Voltage
OT6W/24V/120V	6	24
OT17W/24V/UNV	17	24
OT20W/24V/120-240V/SQ	20	24
OT30/120/24CORD	30	24
OT50W/24V/120V/LP	50	24
OT75W/24V/UNV	75	24
OT96W/24V/UNV	96	24
OT96W/24V/UNV/DIM*	96	24
OT96W/24V/UNV/JBX	96	24
OT240W/3X24V/120-240V/JBX	240	24

LED power supplies compatible with: 24V LED Modules
*Dimmable

Application Information

Applications

- Ambience lighting inside furniture
- Backlighting
- Compact installations
- Effect lighting
- General lighting
- Low & medium power applications
- Panel lighting
- Path and roadway marking
- Signs
- Step and seat marking
- Wall washing

Specifications and Certifications

OT6, OT17, OT20, OT75, OT96, OT96DIM: UL 1310, UL48 Recognized for US & Canada Class 2 Unit
OT50: UL1310 Recognized for US & Canada Class 2 Unit

LISTED
OT96 (NAED 51626) & OT240 (NAED 51627): UL48 Listed for US & Canada Class 2 Unit

OT30: ETL listed and conforms to UL1310

OT6, OT75 are CSA approved

RoHS compliant
This light source meets restrictions on hazardous substances.

FCC 47CFR Part 15 compliant

SEE THE WORLD IN A NEW LIGHT SYLVANIA

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6640

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L4
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP

NOT REVIEWED
By ProCan
10/23/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

Specification Data

Fixture Description:	Type
Project/Job:	
SYLVANIA lamp:	
SYLVANIA ballast:	
Notes:	

Ordering Information

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage (VDC)	Output Power Range (W)	Max. Line Ripple (V)	UL/ETL File #	Location Rating
51503	OT6W/24V/120V	120	0.11	0.55	7.1	24.0±0.5	0.9-6	±0.2V	E258264	Damp
51622	OT17W/24V/UNV*	120 277	0.19 0.10	0.92	21	24.0±0.5	0.8-17	±1.0V	E220096	Damp
51512	OT20W/24V/120-240V/SQ	120 240	0.38 0.19	0.5	23	24.0±1.0	0.9-20	±0.2V	E258264	Dry
51521	OT30/120/24CORD	120	0.63	0.5	38	24.0±1.0	1-30	±1.5V	3137489	Dry
51598	OT50W/24V/120V/LP	120	0.47	0.99	56	24.0±0.5	0.9-50	±0.2V	E248522	Dry
51514[3]	OT75W/24V/UNV	120 277	0.76 0.33	0.99	90	24.0±0.5	0.9-75	±0.2V	E258264	Damp
51522[4]	OT96W/24V/UNV	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	E320395	Damp
51626	OT96W/24V/UNV/JBX	120 277	0.91 0.39	0.99	108	24.0±0.5	0.8-96	±1.0V	E320395 UL Listed	Wet[2]
51627	OT240W/3X24V/120-240V/JBX	120 240	2.39 1.19	0.99	285	24.0±0.5	0.8-240	±1.0V	E320395 UL Listed	Wet[2]

*7W is the minimum output power required when operating at the 277V input voltage.

Dimmable Power Supply

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage Range (VDC)	Output Power Range (W)	Max. Line Ripple (V)	Dimming Mode	Dimming Control	Dimming Range	UL File #	Location Rating
51520	OT96W/24V/UNV/DIM	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	PWM	0-10V DC	10 –100%	E320395	Damp

Notes:

1. All power supplies can be remote mounted up to 32 feet. Although it is possible to exceed the remote mounting distance, the installer and/or end user must take precautions to prevent and/or test the effects of EMI (electromagnetic interference).
2. Use wiring rated and marked PLTC, CL3R, and "sun resistant"
3. 51514 replaces 51513 (OT75/120/24), which is discontinued
4. 51522 replaces 51510, which is discontinued

Ordering Guide

OT	240W	/	3x24V	/	120-240	/	JBX
OPTOTRONIC®	Output Wattage		Output Voltage		Input Voltage		Junction Box

Minimum and Maximum Ratings

Parameter	Power Supply	Values
Input Voltage Range (Min/Max)	OT6	90-132 VAC
	OT20 and OT240	108-254 VAC
	OT30 and OT50	108-132 VAC
	OT17, OT75 and OT96	108-305 VAC
Input Frequency		50/60Hz
Ambient Temperature Range	OT6, OT20 and OT50	-20°C through +50°C
	OT30, OT96	-20°C through +40°C
	OT75	-25°C through +60°C
	OT17, OT96JBX and OT240	-30°C through +70°C (2% de-rating per °C from 50°C)
Max. Case Temperature	OT30	45°C
	OT6, OT50	70°C
	OT20, OT96	75°C
	OT17, OT75, OT96JBX and OT240	90°C

Submitted by MAC'S II AGENCIES

MII
MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L4
MACS-LTG-13-3135

PRO-CAN
CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/25/13

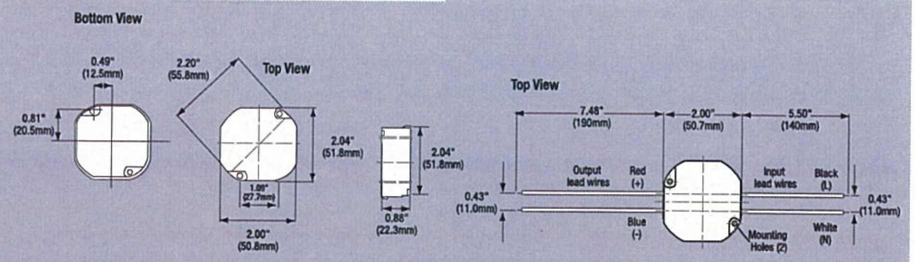
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams

OT6 Case:

Packaging:
Quantity: 20 pieces/carton
Weight: 0.16 lbs each (approx.)
3.72 lbs/carton

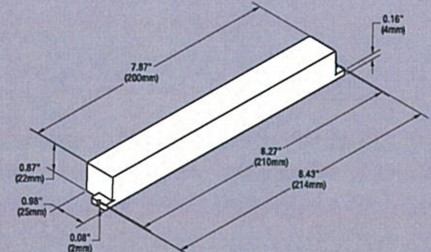
Wiring: Leads only (no connectors)
Input: (18AWG wire)
Output: (18AWG wire)



OT17 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.36 lbs each (approx.)
18.3 lbs/carton

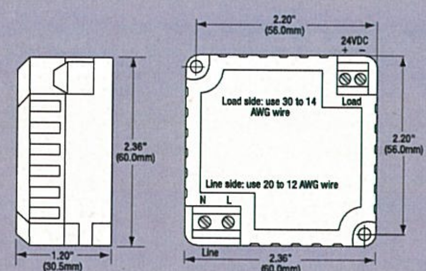
Wiring: Leads only (no connectors)
Input: 6" (18AWG wire) black & white wires
Output: 6" (18AWG wire) gray+ and black– wires



OT20 Case:

Packaging:
Quantity: 30 pieces/carton
Weight: 0.21 lbs each (approx.)
6.30 lbs/carton

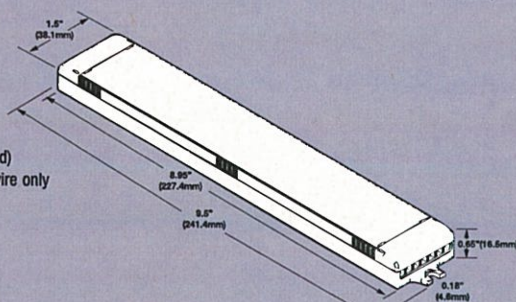
Wiring: Connectors only (No leads provided)
Use solid or stranded copper wire only



OT50 Case:

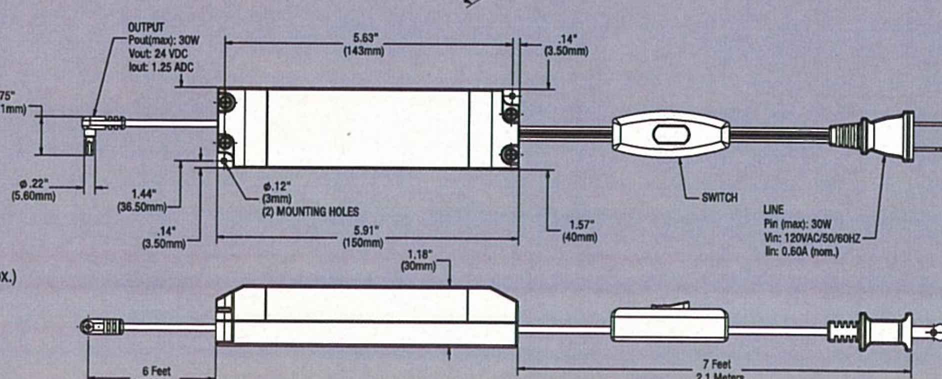
Packaging:
Quantity: 20 pieces/carton
Weight: 0.4 lbs each (approx.)
8.5 lbs/carton

Wiring: Connectors only (No leads provided)
Use 14-22AWG solid or stranded copper wire only



OT30 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.63 lbs each (approx.)
31.77 lbs/carton



ECS050R14

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L4
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/29/13

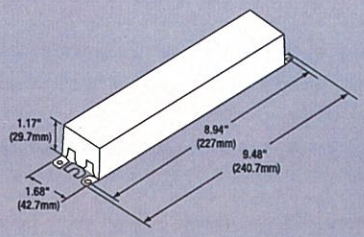
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams (continued)

OT75 & OT96 Case:

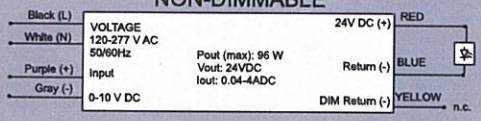
Packaging:
Quantity: 10 pieces/carton
Weight: 1.35 lbs each (approx.)
14 lbs/carton

Wiring: Leads only (no connectors)
AC Input: 9" (18AWG wire) black & white wires
Output: 9" (18AWG wire) red+ & blue– wires

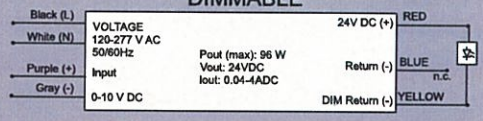


OT96DIM only:
DIM Input: 9" (18AWG wire) gray & purple
DIM Output: 9" (18AWG wire) yellow

NON-DIMMABLE



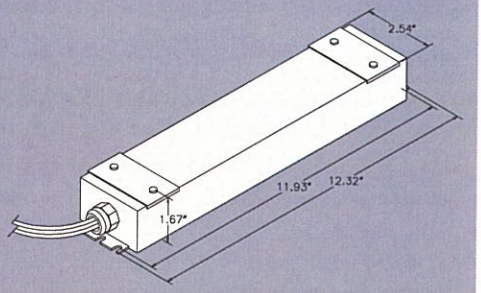
DIMMABLE



OT96JBX Case (Wet Rated):

Packaging:
Quantity: 16 pieces/carton
Weight: 2 lbs each (approx.)
33 lbs/carton

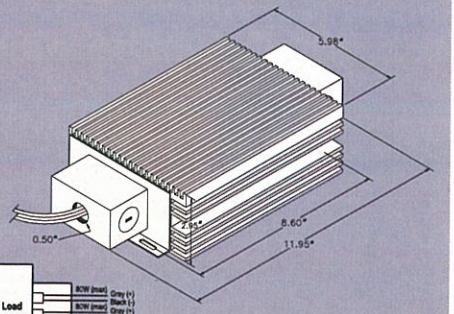
Wiring: Leads only (2.76" 18AWG wire)
Input: black (L), white (N), & green/yellow (GRD) wires with a UL Listed, 1/2" metallic fitting
Output: gray (+) & black (–) with a UL Listed, 1/2" plastic fitting

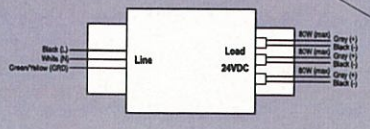


OT240 Case:

Packaging:
Quantity: 5 pieces/carton
Weight: 11 lbs each (approx.)
53 lbs/carton

Wiring: Leads only (6.9" 18AWG wire)





Warranty

OPTOTRONIC® Products are covered by our LED Module, OPTOTRONIC Power Supply or Control Warranty. For additional details, refer to the latest version of the warranty available at www.sylvania.com/LED.

United States
OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923

Trade
Phone: 1-800-255-5042
Fax: 1-800-255-5043

National Accounts
Phone: 1-800-562-4671
Fax: 1-800-562-4674

OEM/Special Markets
Phone: 1-800-762-7191
Fax: 1-800-762-7192

Display/Optic
Phone: 1-888-677-2627
Fax: 1-800-762-7192

SYLVANIA Lighting Services
Phone: 1-800-323-0572
Fax: 1-800-537-0784

Canada
OSRAM SYLVANIA LTD.
2001 Drew Road
Mississauga, ON L5S 1S4

Trade
Phone: 1-800-263-2852
Fax: 1-800-667-6772

OEM/Special Markets/Display/Optic
Phone: 1-800-265-2852
Fax: 1-800-667-6772

SYLVANIA Lighting Services
Phone: 1-800-663-4268
Fax: 1-866-239-1278

Mexico
OSRAM MEXICO
Headquarters
Tultitlan/Edo de Mexico
011-52-55-58-99-18-50

www.sylvania.com

the system solution®

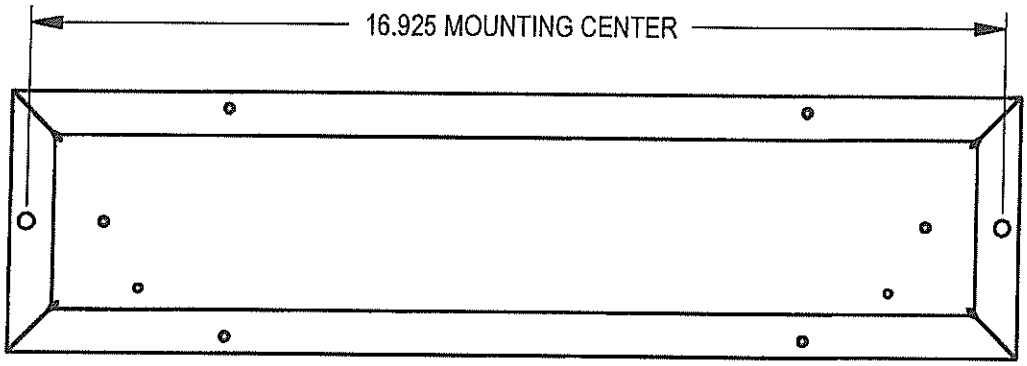
IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

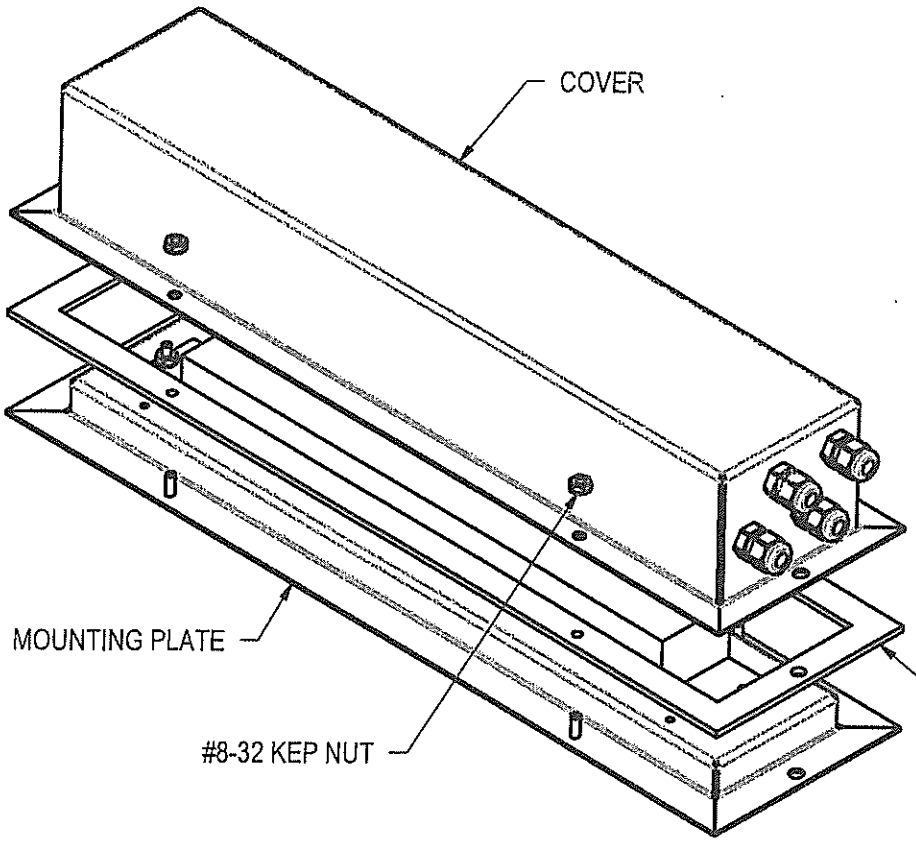
WARNING: Risk of fire and electrical shock. This product is to be installed by a qualified electrician only.

CAUTION: When using electrical equipment, basic safety precautions should always be followed including the following: Read all instructions carefully before installation and save for future use. Make sure installation and all connections are in accordance with National Electrical Code and any local regulations. To avoid possible electrical shock, be sure that power supply is turned off before installing or servicing this fixture. Servicing should be performed by qualified service personnel.

These instructions do not claim to cover all details or variations. When additional information is desired, please contact your SPI representative.

CPS10875 MOD142707





1. INSERT MOUNTING PLATE OVER 0.250 DIA. MOUNTING HARDWARE (BY OTHERS), WITH A 16.925" MOUNTING CENTER.

2. PLACE ENCLOSURE GASKET OVER MOUNTING PLATE, BE SURE NOT TO DAMAGE GASKET.

3. MAKE ALL ELECTRICAL CONNECTIONS PER NEC CODE.

4. PLACE COVER OVER GASKET AND SECURE WITH (4) #8-32 KEP NUTS (SUPPLIED) AND 0.250 DIA. NUTS FOR MOUTNING HARDWARE.

04/29/2014
IS84719X

IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

WARNING: Risk of fire and electrical shock. This product is to be installed by a qualified electrician only.

CAUTION: When using electrical equipment, basic safety precautions should always be followed including the following: Read all instructions carefully before installation and save for future use. Make sure installation and all connections are in accordance with National Electrical Code and any local regulations. To avoid possible electrical shock, be sure that power supply is turned off before installing or servicing this fixture. Servicing should be performed by qualified service personnel.

These instructions do not claim to cover all details or variations. When additional information is desired, please contact your SPI representative.

REMOTE CLASS II POWER SUPPLY - WIRING INSTRUCTIONS

LED WIRING REQUIREMENTS

>LED CLASS 2 POWER SUPPLY ORDERED SEPARATELY FROM FIXTURE. SEE RECOMMENDED POWER SUPPLY INFORMATION BELOW. CONSULT FACTORY FOR ORDERING INFORMATION.

CAUTION: FIXTURE MUST BE CONNECTED TO A CLASS 2 POWER UNIT. FAILURE TO USE A CLASS 2 POWER UNIT VOIDS WARRANTY AND UL LISTING.

>MULTIPLE FIXTURES MAY BE CONNECTED TO ONE LED POWER SUPPLY TO CREATE A CIRCUIT.

>THE VOLTAGES OF ALL FIXTURES ON THE SAME CIRCUIT MUST BE THE SAME AS THE POWER SUPPLY OUTPUT VOLTAGE.

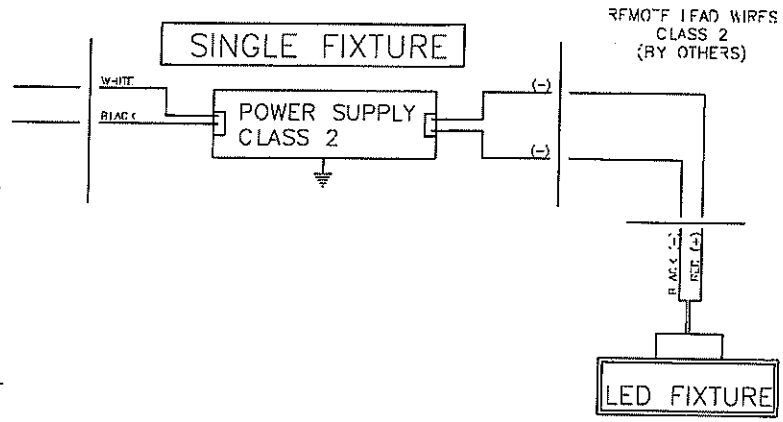
>CONSULT FACTORY FOR LED DIMMING, RGB, AND DMX INTERFACE.

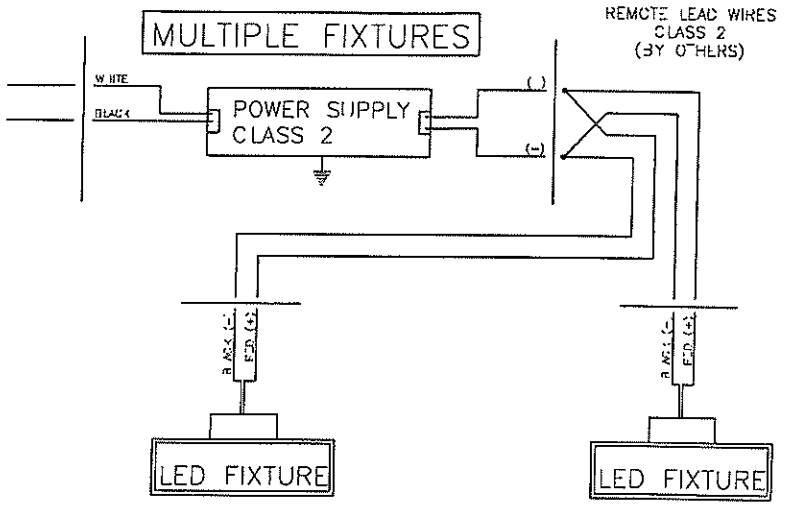
>LOW VOLTAGE CIRCUITS ARE LIMITED BY CURRENT CAPACITY AND VOLTAGE DROPS THROUGH CONDUCTORS.

>DETERMINE THE APPROPRIATE CABLE FOLLOWING THE MAXIMUM CABLE LENGTH AS DEFINED ON INDIVIDUAL POWER SUPPLY SPEC SHEETS.

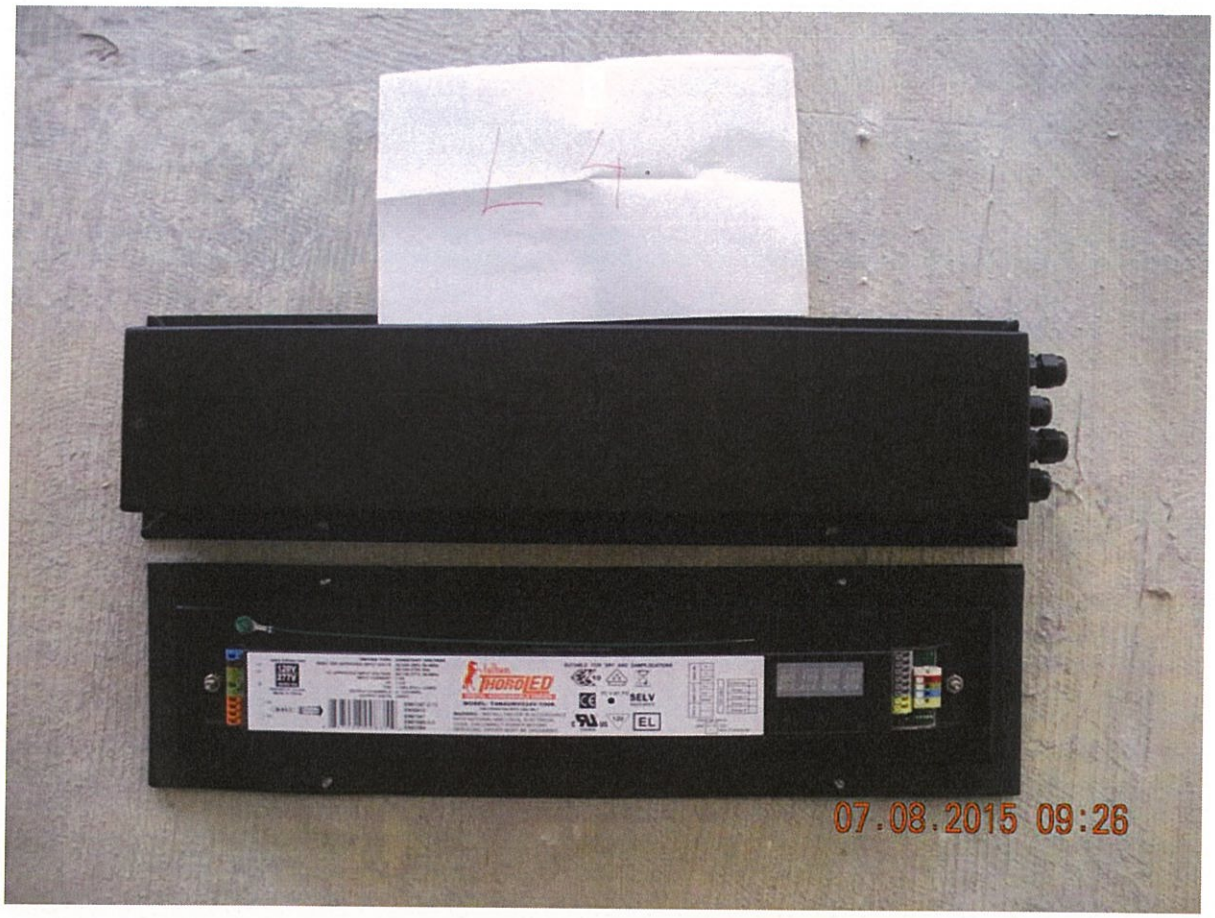
>ALL FIXTURES AND CIRCUIT BRANCHES TO BE WIRED IN PARALLEL.

>INSTALL AND CONNECT LED POWER SUPPLIES IN ACCORDANCE WITH NEC, ARTICLE 725, AND ANY LOCAL REGULATIONS AND CODES.





5/30/14
IS59584X



'L4' Luminaire Power Supply with Cover Removed

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
EEG 11110 L26.8WA-24V-[AN04]
3500K SMA PSN 20FT CORD
Notes:

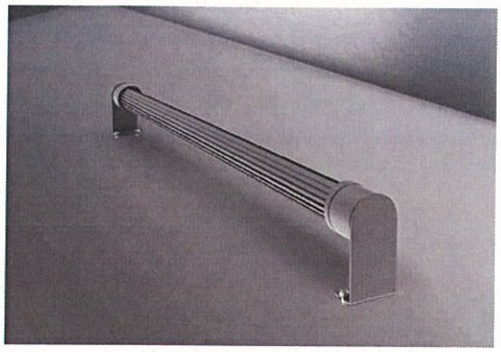
Type:
L5
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/25/13

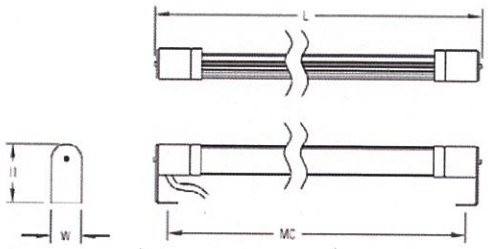
SPI SPECIFICATION SHEET

JOB NAME _____ TYPE _____

ECHO ROUND 1.5 EXTERIOR GROUND
EEG11110



WET
IP66



Echo Round 1.5 is a durable exterior IP66 rated linear LED fixture. Echo's patents pending opticals enable tremendous flexibility offering wall washing and wall grazing, as well as asymmetric lighting solutions.

TO BE REVIEWED BY ELECTRICAL ENGINEER

Dimensions

W	L	H	MC
1.6 in	28.2 in	3.0 in	26.9 in
4.1 cm	71.6 cm	7.6 cm	68.3 cm

Weight

Hanging weight: 25.0 lb (11.4 kg).

Features

- SMA optical package utilizes a diffuse frosted lens to provide photometric distribution.
- SMB optical package utilizes an optically clear lens to maximize photometric output and efficiency.
- IP66 rated fixture per International Electrotechnical Commission (IEC) certifies fixture as dust-tight and protected against powerful water jets.
- Versatile design allows fixture to be mounted in any orientation.
- Extruded aluminum construction provides durable protection for internal components and is recyclable.
- Locks in desired orientation for precise fixture alignment.
- Anodized finish provides optimal thermal effectiveness and durable corrosion protection.
- Asymmetric and multiple symmetric optics allow increased light control and distribute light into a space exactly where it is needed.

Technical Notes

Construction
- Optical grade clear acrylic lens optimizes performance.

Electrical
- SPI uses strict quality guidelines in LED selection to ensure the White LED's we use meet or exceed ANSI Binning Standards (ANSI C78.733).
- ETL listed to UL standards (US and Canada) for ground mounting and use in wet locations.
- Remote 24V DC power supply required.
- 36" lead length standard.
- Fixtures over 58 watts may have multiple power cords. Contact factory for specifics.

Finish
- Available in anodized finish only.

Lamping/lamp
- L70 life = 50,000 + hours.

Additional Documents

LED Power Supplies (24V DC)
(http://www.specSPI.com/ImageLibrary/Public/Documents/5647.pdf)
Color Chart (http://www.specSPI.com/PDFs/SPI_Color_Chart.pdf)

TOTAL LIGHTING SOLUTIONS INC.

☒ Reviewed ☐ Not Reviewed
☐ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By _____

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
EEG 11110 L26.8WA-24V-[AN04]
3500K SMA PSN 20FT CORD
Notes:

Type:
L5
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 10/23/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI SPECIFICATION SHEET

MODEL NUMBER	LAMPING	FINISH	LAMP OPTIONS	OPTIONS

Not all options are available in all configurations, consult factory for details.

Lamping	Photometry
L8.0WA-24V	White 8.0W HD LED Module
L13.6WA-24V	White 13.6W HD LED Module
L26.8WA-24V	White 26.8W HD LED Module
A16.8W-24V	Amber 16.8W LED Module 590nm
B16.8W-24V	Blue 16.8W LED Module 470nm
G16.8W-24V	Green 16.8W LED Module 525nm
R16.8W-24V	Red 16.8W LED Module 620nm
C36.2W-24V	RGB 36.2W LED Module

[1] Forward Throw not Available on Color LED

Lamp Options	
3000K	3000K Ccts
3500K	3500K Ccts
4500K	4500K Ccts
F	Fusing

Options	
FT [1]	Led-forward Throw
SMA	Led-symmetric 60 Degree Beam - 120 Degree Spread
SMB	Led-symmetric 30 Degree Beam - 60 Degree Spread
PS03	86.4 Available Output Watts/24V Wet Location Power Supply
PSN	Power Supply Not Included

Metal and Plated Finishes

AN04 Anodized Satin Aluminum (Clear)	AN08 Black Anodized

TOTAL LIGHTING SOLUTIONS INC.

☒ Reviewed ☐ Not Reviewed

☐ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name: SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number: CPS10875 [142707] PS03 120V PSE
Notes:

Type: L5
MACS-LTG-13-3135

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI ADVENT STILE SPECIFICATION SHEET

Components
Power Supply
CPS 10875

JOB NAME	TYPE
MODEL NO.	
LAMP	

Determine the maximum fixture wattage per circuit by adding the wattage of each fixture together and choose an LED power supply that has an available output wattage greater than the total wattage of the fixtures.

Model Number/Style	Select LED Power Supply	Select Input Voltage
CPS 10875		

Not all options are available in all configurations, consult factory for details.

LED POWER SUPPLY	DETAILS	AVAILABLE OUTPUT WATTS	RATED OUTPUT WATTS	INPUT VOLTAGE	OUTPUT VOLTAGE	DESCRIPTION
PS01		67.5W	75W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS03		86.4W	96W	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS04	(2)PS01	67.5W X2	75W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS05	(2)PS03	86.4W X2	96W X2	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS07	(4)PS03	86.4W X4	96W X4	120-277V AC	24V DC	WET LOCATION LISTED, CLASS 2 IP66 RATED 120-277
PS08	(4)PS01	67.5W X4	75W X4	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277
PS09		72.0W/CH	80W/CH	120-240V AC	24V DC	WET LOCATION LISTED, CLASS 2 (3) 80W OUTPUTS, IP66 RATED, 120-240/CH3
PS13		86.4W	96W	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*
PS14	(2)PS13	86.4W X2	96W X2	120-277V AC	24V DC	DAMP LOCATION RECOGNIZED, CLASS 2 120-277, DIM*

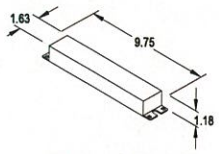
See CPS11411 for RGB and DMX interface options.
*Dimmable

LED Specification Notes

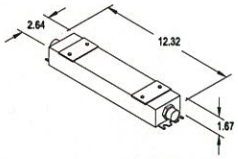
- LED power supplies ordered separately from LED fixtures.
- Multiple fixtures may be connected to one LED power supply to create a circuit.
- Total fixture wattage should not exceed 90% of power supply rating. Use Available Output Wattage.
- Power Supplies are not shipped with an enclosure. PSE option will include a Damp Power Supply Enclosure.

Power Supply Dimensions

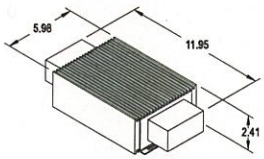
* Have lead wires with a direct conduit connection.



75W/24 | 96W/24
PS01 | PS13



96W/24WL*
PS03



240W/24WL*
PS09

Remote Wiring Requirements

- Low voltage circuits are limited by current capacity and voltage drops through conductors.
- Determine the appropriate cable following the Maximum Cable Length table provided.
- All fixtures and circuit branches are to be wired in parallel (positive to positive, negative to negative).
- Install and connect LED power supply to fixtures in accordance with NEC and local regulations.

Maximum Cable Length (ft)

WIRE AWG		18	16
24V DC	75W	24'	38'
24V DC	96W	19'	30'

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227

Job Name: SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number: CPS10875 [142707] PS03 120V PSE

Notes:

Type: L5

MACS-LTG-13-3135

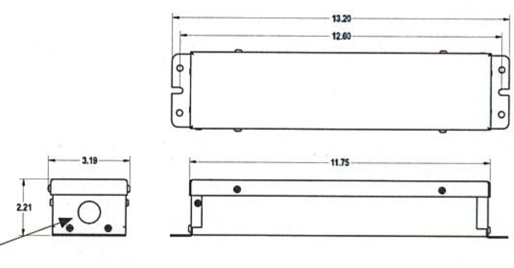
PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan

TO BE REVIEWED BY ELECTRICAL ENGINEER

SPI ADVENT STILE SPECIFICATION SHEET

Components Power Supply **CPS 10875**	JOB NAME	TYPE
	MODEL NO.	
	LAMP	

Enclosures for Power Supplies

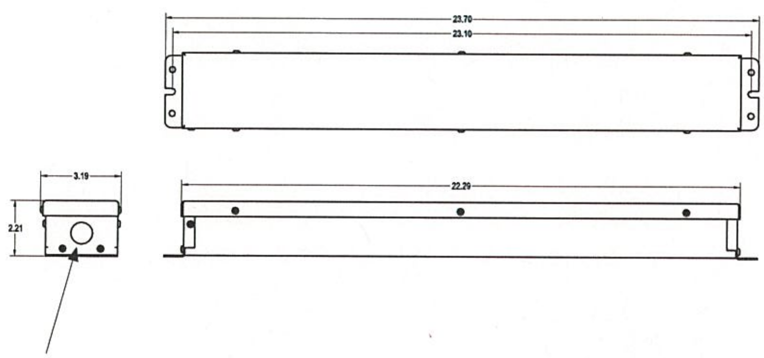


KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS04
(1) PS14

USE (4) ENCLOSURES FOR SUPPLIES:
(1) PS08

USE WITH SUPPLIES:
(1) PS01
(1) PS13
(1) DIM
(1) RGB DIM
(1) RGB SEQ
(1) RGB DMX



KNOCK-OUT FOR 1/2 TRADE CONDUIT
1 each side
2 total

USE WITH SUPPLIES:
(1) PS04
(1) PS14

USE (2) ENCLOSURES FOR SUPPLIES:
(1) PS08

CAN ACCEPT UP TO THE FOLLOWING SUPPLIES, OR A COMBINATION OF THEM:
(2) PS01
(2) PS13
(2) DIM
(2) RGB DIM
(2) RGB SEQ
(2) RGB DMX

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6649

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L5
MACS-LTG-13-3135

www.sylvania.com

OPTOTRONIC®

Electronic 24V DC LED Power Supplies

LED CREATING TOMORROW

OPTOTRONIC power supplies are compact and electronically stabilized. The wide range of input voltage, on select models, from 100 to 277 VAC enables worldwide use on single-phase AC power lines. These supplies are available with 24VDC outputs. OPTOTRONIC power supplies are protected against open circuit, short circuit, overload and overheating conditions. They meet the highest industry standards.

Key Features & Benefits

- Damp and wet rated designs available for use in outdoor applications
- Wide Input voltage range: 100-277V AC (select models)
- Broad ambient temperature range for use in extreme application conditions
- Electronically stabilized output voltage with low line ripple
- Integrated dimming (select models)
- Short circuit, overload and overheat protection for sustained performance
- High power factor and efficiency
- Compact enclosures for variety of applications and fixture designs
- UL Class 2 output for safe operation
- Exceptional line and load regulation

Product Offering

Ordering Abbreviation	Output Wattage	Output Voltage
OT6W/24V/120V	6	24
OT17W/24V/UNV	17	24
OT20W/24V/120-240V/SQ	20	24
OT30/120/24CORD	30	24
OT50W/24V/120V/LP	50	24
OT75W/24V/UNV	75	24
OT96W/24V/UNV	96	24
OT96W/24V/UNV/DIM*	96	24
OT96W/24V/UNV/JBX	96	24
OT240W/3X24V/120-240V/JBX	240	24

LED power supplies compatible with: 24V LED Modules
*Dimmable

Application Information

Applications

- Ambience lighting inside furniture
- Backlighting
- Compact installations
- Effect lighting
- General lighting
- Low & medium power applications
- Panel lighting
- Path and roadway marking
- Signs
- Step and seat marking
- Wall washing

Specifications and Certifications

c UL us — OT6, OT17, OT20, OT75, OT96, OT96DIM: UL 1310, UL48 Recognized for US & Canada Class 2 Unit
OT50: UL1310 Recognized for US & Canada Class 2 Unit

c UL us LISTED — OT96 (NAED 51626) & OT240 (NAED 51627): UL48 Listed for US & Canada Class 2 Unit

c ETL us — OT30: ETL listed and conforms to UL1310

c SA us — OT6, OT75 are CSA approved

RoHS compliant
This light source meets restrictions on hazardous substances.

FCC 47CFR Part 15 compliant

SEE THE WORLD IN A NEW LIGHT SYLVANIA

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-530-6646 or 1-877-511-6227
f: 60[illegible]

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L5
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP

NOT REVIEWED
Date Received
10/23/13

TO BE REVIEWED BY ELECTRICAL ENGINEER

Specification Data

Fixture Description:	Type
Project/Job:	
SYLVANIA lamp:	
SYLVANIA ballast:	
Notes:	

Ordering Information

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage (VDC)	Output Power Range (W)	Max. Line Ripple (V)	UL/ETL File #	Location Rating
51503	OT6W/24V/120V	120	0.11	0.55	7.1	24.0±0.5	0.9-6	±0.2V	E258264	Damp
51622	OT17W/24V/UNV*	120 277	0.19 0.10	0.92	21	24.0±0.5	0.8-17	±1.0V	E220096	Damp
51512	OT20W/24V/120-240V/SQ	120 240	0.38 0.19	0.5	23	24.0±1.0	0.9-20	±0.2V	E258264	Dry
51521	OT30/120/24CORD	120	0.63	0.5	38	24.0±1.0	1-30	±1.5V	3137489	Dry
51598	OT50W/24V/120V/LP	120	0.47	0.99	56	24.0±0.5	0.9-50	±0.2V	E248522	Dry
51514[3]	OT75W/24V/UNV	120 277	0.76 0.33	0.99	90	24.0±0.5	0.9-75	±0.2V	E258264	Damp
51522[4]	OT96W/24V/UNV	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	E320395	Damp
51626	OT96W/24V/UNV/JBX	120 277	0.91 0.39	0.99	108	24.0±0.5	0.8-96	±1.0V	E320395 UL Listed	Wet[2]
51627	OT240W/3X24V/120-240V/JBX	120 240	2.39 1.19	0.99	285	24.0±0.5	0.8-240	±1.0V	E320395 UL Listed	Wet[2]

*7W is the minimum output power required when operating at the 277V input voltage.

Dimmable Power Supply

Item Number	Ordering Abbreviation	Nominal Input Voltage (V)	Nominal Input Current (A)	Power Factor	Nominal Input Power (W)	Output Voltage Range (VDC)	Output Power Range (W)	Max. Line Ripple (V)	Dimming Mode	Dimming Control	Dimming Range	UL File #	Location Rating
51520	OT96W/24V/UNV/DIM	120 277	0.97 0.39	0.9	107	24.0±0.25	1-96	±1.0V	PWM	0-10V DC	10 –100%	E320395	Damp

Notes:

1. All power supplies can be remote mounted up to 32 feet. Although it is possible to exceed the remote mounting distance, the installer and/or end user must take precautions to prevent and/or test the effects of EMI (electromagnetic interference).
2. Use wiring rated and marked PLTC, CL3R, and "sun resistant"
3. 51514 replaces 51513 (OT75/120/24), which is discontinued
4. 51522 replaces 51510, which is discontinued

Ordering Guide

OT	240W	/	3x24V	/	120-240	/	JBX
OPTOTRONIC®	Output Wattage		Output Voltage		Input Voltage		Junction Box

Minimum and Maximum Ratings

Parameter	Power Supply	Values
Input Voltage Range (Min/Max)	OT6	90-132 VAC
	OT20 and OT240	108-254 VAC
	OT30 and OT50	108-132 VAC
	OT17, OT75 and OT96	108-305 VAC
Input Frequency		50/60Hz
Ambient Temperature Range	OT6, OT20 and OT50	-20°C through +50°C
	OT30, OT96	-20°C through +40°C
	OT75	-25°C through +60°C
	OT17, OT96JBX and OT240	-30°C through +70°C (2% de-rating per °C from 50°C)
Max. Case Temperature	OT30	45°C
	OT6, OT50	70°C
	OT20, OT96	75°C
	OT17, OT75, OT96JBX and OT240	90°C

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 604-540-6647

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L5
MACS-LTG-13-3135

PRO-CAN CONSTRUCTION GROUP
NOT REVIEWED
By: ProCan
Date: 20/05/13

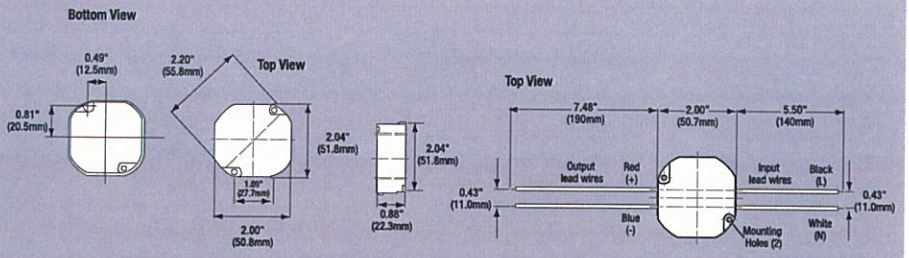
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams

OT6 Case:

Packaging:
Quantity: 20 pieces/carton
Weight: 0.16 lbs each (approx.)
3.72 lbs/carton

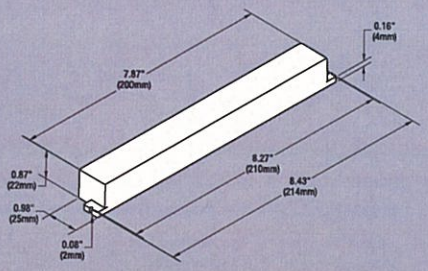
Wiring: Leads only (no connectors)
Input: (18AWG wire)
Output: (18AWG wire)



OT17 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.36 lbs each (approx.)
18.3 lbs/carton

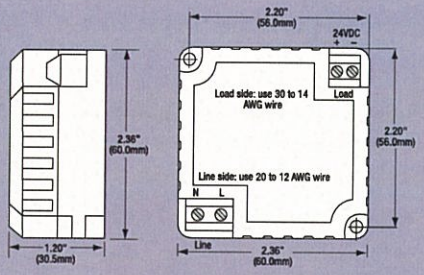
Wiring: Leads only (no connectors)
Input: 6" (18AWG wire) black & white wires
Output: 6" (18AWG wire) gray+ and black– wires



OT20 Case:

Packaging:
Quantity: 30 pieces/carton
Weight: 0.21 lbs each (approx.)
6.30 lbs/carton

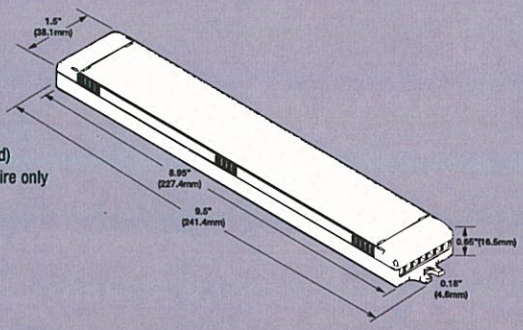
Wiring: Connectors only (No leads provided)
Use solid or stranded copper wire only



OT50 Case:

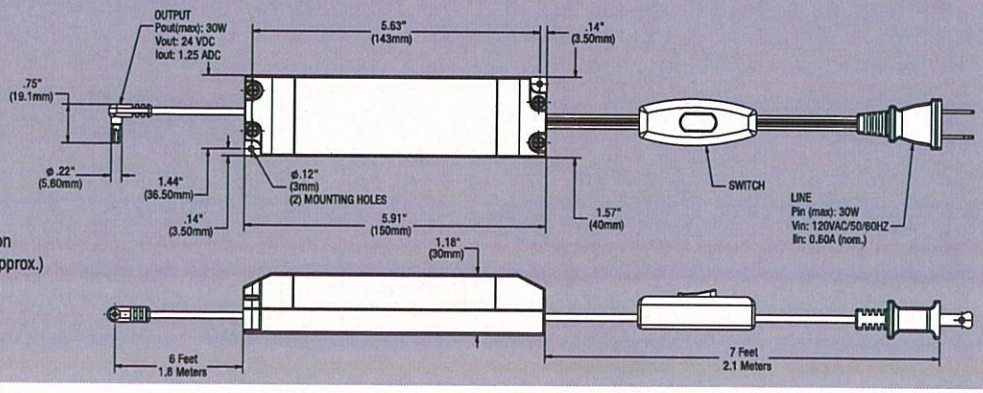
Packaging:
Quantity: 20 pieces/carton
Weight: 0.4 lbs each (approx.)
8.5 lbs/carton

Wiring: Connectors only (No leads provided)
Use 14-22AWG solid or stranded copper wire only



OT30 Case:

Packaging:
Quantity: 50 pieces/carton
Weight: 0.63 lbs each (approx.)
31.77 lbs/carton



ECS050R14

Submitted by MAC'S II AGENCIES

MAC'S II AGENCIES LTD.
100-1851 Brigantine Drive
Coquitlam, B.C. V3K 7B4
t: 604-540-6646 or 1-877-511-6227
f: 60[illegible]

Job Name:
SINCLAIR CENTRE ATRIUM RENOVATION

Catalog Number:
CPS10875 [142707] PS03 120V PSE
Notes:

Type:
L5
MACS-LTG-13-3135

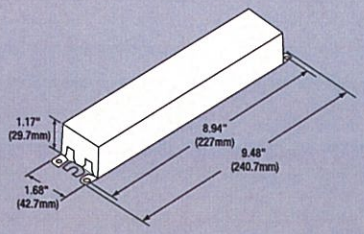
TO BE REVIEWED BY ELECTRICAL ENGINEER

Assembly and Wiring Diagrams (continued)

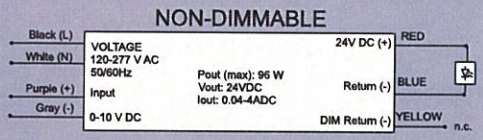
OT75 & OT96 Case:

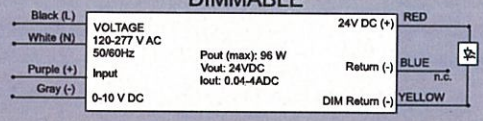
Packaging:
Quantity: 10 pieces/carton
Weight: 1.35 lbs each (approx.)
14 lbs/carton

Wiring: Leads only (no connectors)
AC Input: 9" (18AWG wire) black & white wires
Output: 9" (18AWG wire) red+ & blue– wires



OT96DIM only:
DIM Input: 9" (18AWG wire) gray & purple
DIM Output: 9" (18AWG wire) yellow

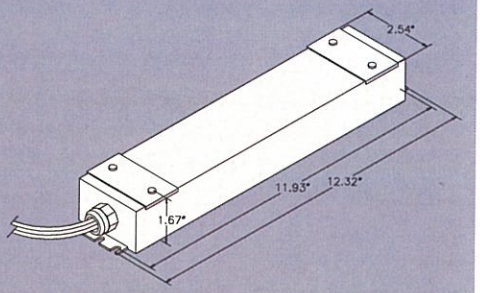




OT96JBX Case (Wet Rated):

Packaging:
Quantity: 16 pieces/carton
Weight: 2 lbs each (approx.)
33 lbs/carton

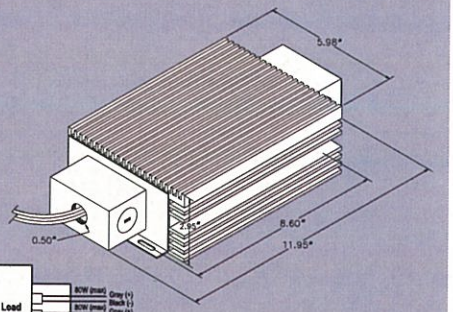
Wiring: Leads only (2.76" 18AWG wire)
Input: black (L), white (N), & green/yellow (GRD) wires with a UL Listed, 1/2" metallic fitting
Output: gray (+) & black (–) with a UL Listed, 1/2" plastic fitting

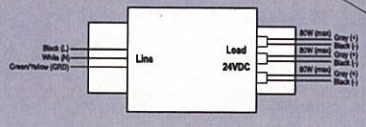


OT240 Case:

Packaging:
Quantity: 5 pieces/carton
Weight: 11 lbs each (approx.)
53 lbs/carton

Wiring: Leads only (6.9" 18AWG wire)





Warranty

OPTOTRONIC® Products are covered by our LED Module, OPTOTRONIC Power Supply or Control Warranty. For additional details, refer to the latest version of the warranty available at www.sylvania.com/LED.

United States
OSRAM SYLVANIA
100 Endicott Street
Danvers, MA 01923

Trade
Phone: 1-800-255-5042
Fax: 1-800-255-5043

National Accounts
Phone: 1-800-562-4671
Fax: 1-800-562-4674

OEM/Special Markets
Phone: 1-800-762-7191
Fax: 1-800-762-7192

Display/Optic
Phone: 1-888-677-2627
Fax: 1-800-762-7192

SYLVANIA Lighting Services
Phone: 1-800-323-0572
Fax: 1-800-537-0784

Canada
OSRAM SYLVANIA LTD.
2001 Drew Road
Mississauga, ON L5S 1S4

Trade
Phone: 1-800-263-2852
Fax: 1-800-667-6772

OEM/Special Markets/Display/Optic
Phone: 1-800-265-2852
Fax: 1-800-667-6772

SYLVANIA Lighting Services
Phone: 1-800-663-4268
Fax: 1-866-239-1278

Mexico
OSRAM MEXICO
Headquarters
Tultitlan/Edo de Mexico
011-52-55-58-99-18-50

www.sylvania.com

ECS050R14

the system solution®

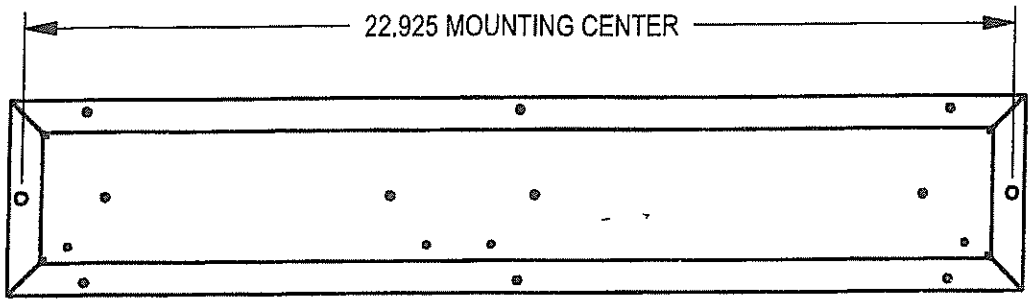
IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

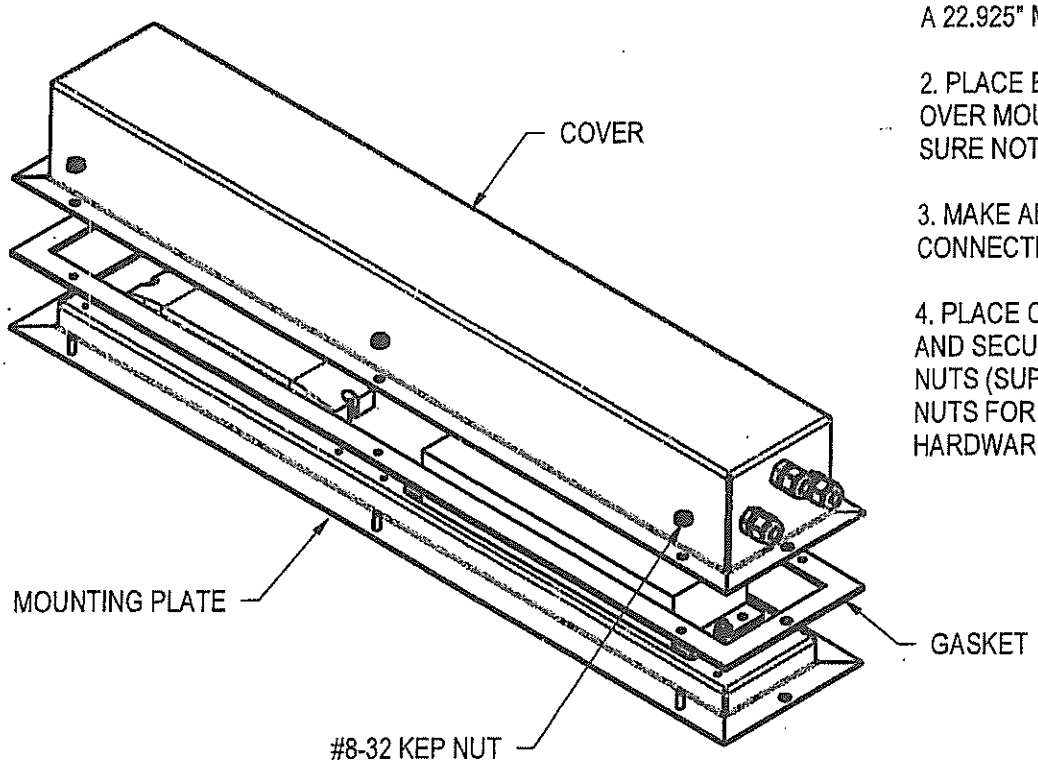
WARNING: Risk of fire and electrical shock. This product is to be installed by a qualified electrician only.

CAUTION: When using electrical equipment, basic safety precautions should always be followed including the following: Read all instructions carefully before installation and save for future use. Make sure installation and all connections are in accordance with National Electrical Code and any local regulations. To avoid possible electrical shock, be sure that power supply is turned off before installing or servicing this fixture. Servicing should be performed by qualified service personnel.

These instructions do not claim to cover all details or variations. When additional information is desired, please contact your SPI representative.

CPS10875 MOD144568





1. INSERT MOUNTING PLATE OVER 0.250 DIA. MOUNTING HARDWARE (BY OTHERS), WITH A 22.925" MOUNTING CENTER.

2. PLACE ENCLOSURE GASKET OVER MOUNTING PLATE, BE SURE NOT TO DAMAGE GASKET.

3. MAKE ALL ELECTRICAL CONNECTIONS PER NEC CODE.

4. PLACE COVER OVER GASKET AND SECURE WITH (6) #8-32 KEP NUTS (SUPPLIED) AND 0.250 DIA. NUTS FOR MOUTNING HARDWARE.

04/29/2014
IS84720X

IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

WARNING: Risk of fire and electrical shock. This product is to be installed by a qualified electrician only.

CAUTION: When using electrical equipment, basic safety precautions should always be followed including the following: Read all instructions carefully before installation and save for future use. Make sure installation and all connections are in accordance with National Electrical Code and any local regulations. To avoid possible electrical shock, be sure that power supply is turned off before installing or servicing this fixture. Servicing should be performed by qualified service personnel.

These instructions do not claim to cover all details or variations. When additional information is desired, please contact your SPI representative.

REMOTE CLASS II POWER SUPPLY - WIRING INSTRUCTIONS

LED WIRING REQUIREMENTS

>LED CLASS 2 POWER SUPPLY ORDERED SEPARATELY FROM FIXTURE. SEE RECOMMENDED POWER SUPPLY INFORMATION BELOW. CONSULT FACTORY FOR ORDERING INFORMATION.

CAUTION: FIXTURE MUST BE CONNECTED TO A CLASS 2 POWER UNIT. FAILURE TO USE A CLASS 2 POWER UNIT VOIDS WARRANTY AND UL LISTING.

>MULTIPLE FIXTURES MAY BE CONNECTED TO ONE LED POWER SUPPLY TO CREATE A CIRCUIT.

>THE VOLTAGES OF ALL FIXTURES ON THE SAME CIRCUIT MUST BE THE SAME AS THE POWER SUPPLY OUTPUT VOLTAGE.

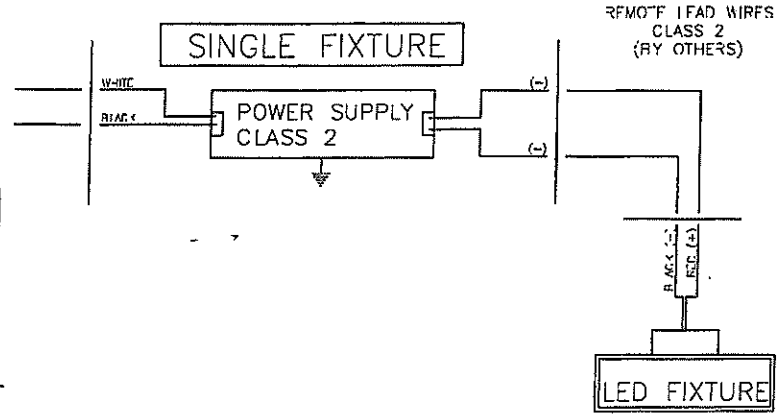
>CONSULT FACTORY FOR LED DIMMING, RGB, AND DMX INTERFACE.

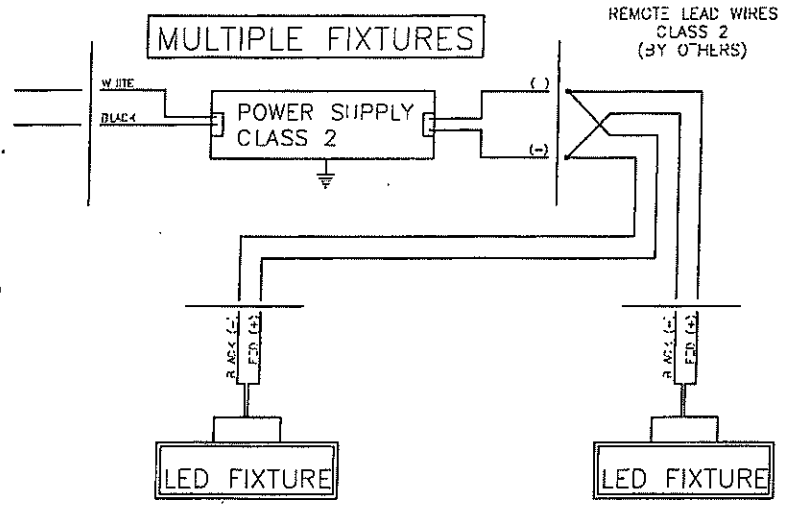
>LOW VOLTAGE CIRCUITS ARE LIMITED BY CURRENT CAPACITY AND VOLTAGE DROPS THROUGH CONDUCTORS.

>DETERMINE THE APPROPRIATE CABLE FOLLOWING THE MAXIMUM CABLE LENGTH AS DEFINED ON INDIVIDUAL POWER SUPPLY SPEC SHEETS.

>ALL FIXTURES AND CIRCUIT BRANCHES TO BE WIRED IN PARALLEL.

>INSTALL AND CONNECT LED POWER SUPPLIES IN ACCORDANCE WITH NEC, ARTICLE 725, AND ANY LOCAL REGULATIONS AND CODES.





5/30/14
IS59584X


L5
AC-A100VD24NH-T LED Driver
800-375-6355
LED DRIVER
07.08.2015 09:51

SPECIFICATION SHEET

lumenbeam™

MEDIUM
WHITE & STATIC COLORS

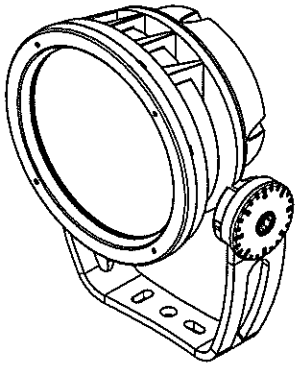
Client: _____

Project name: Sinclair Centre

Order #: _____

Type: L6 Qty: 6

FEATURES AND BENEFITS



Physical :

- Low copper content high pressure die-cast aluminum housing
- Heavy aluminum formed yoke (standard yoke included)
- Stainless steel hardware
- Silicone sealing devices
- Clear tempered glass
- Dual chamber design for heat management and ease of maintenance
- Electro-statically applied polyester powder coat finish
- 3.05 kg / 6.7 lbs
- EPA: Front = 0.46 sq. ft./0.042 sq. m. Side = 0.37 sq. ft./ 0.034 sq. m.
- IP66
- Corrosion-resistant option for marine environments

Performance :

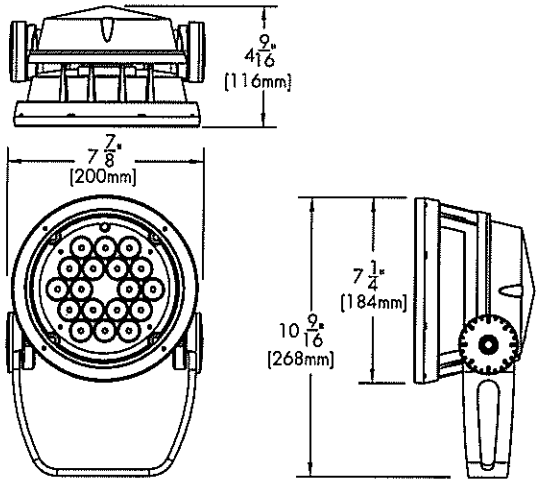
- Minimum 1fc (10.7 lux) @ 238 feet (72.5m) distance (4000K, 6° optic)
- 1,400 delivered lumens and 56,521 candelas at nadir (4000K, 6° optic)
- 6°, 10°, 20°, 40° or 60° optics available
- CRI value: 78+
- Lumen maintenance 120,000 hrs [L70 @ 25°C]
- Lumen measurements comply with LM - 79 - 08 standard
- Operating temperatures: -25° C to 50° C [-13F to 122F]

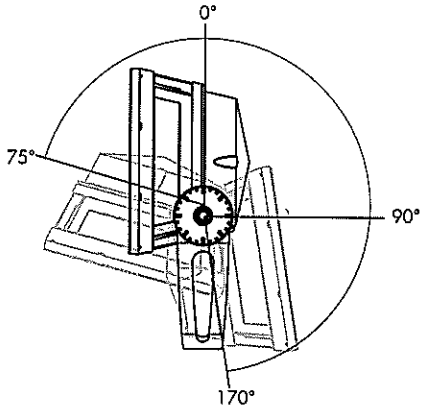
Electrical :

- Line voltage luminaire for 120 to 277V
- Power and data in 1 cable, 3ft/1 m cord (#16-5)
- 28 watts
- 0-10 volt, DMX or DALI dimming options

Wiring detail

WIRE COLOR	/ USE
GREEN	GROUND
WHITE	NEUTRAL
BLACK	LIVE 120-277V
RED	0-10V / DATA +
ORANGE	0-10V / DATA -





Standard Yoke Mounting
Adjustable pivot limits

5 year warranty

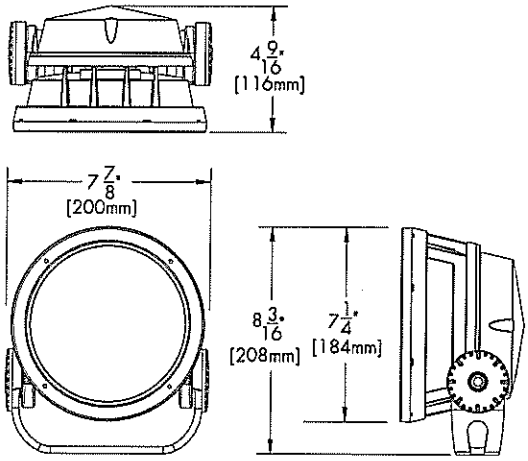
Standard Yoke (as shown, included)

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

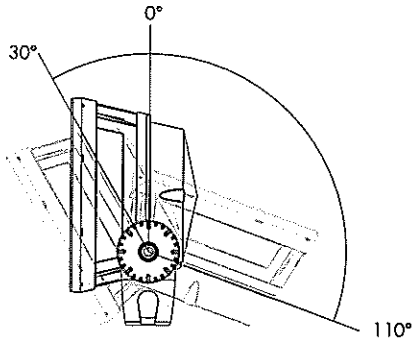
2013.07.12
EM - R18

lumenpulse™
Sustainable architectural LED lighting systems

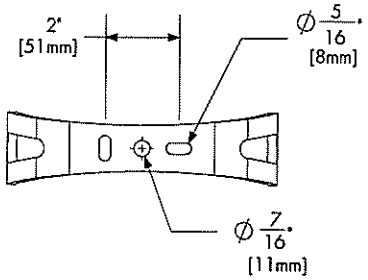
MOUNTING OPTION



SY
Short Yoke Mounting

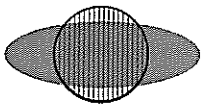


Short Yoke mounting
adjustable pivot limits

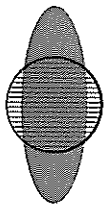


Standard and Short Yoke mounting
holes pattern

OPTICAL OPTIONS
***Factory installed**



LSLH
Linear Spread Lens
Horizontal distribution
(not adjustable on site)



LSLV
Linear Spread Lens
Vertical distribution
(not adjustable on site)

*See photometric section for optical performance data using the spread lens.

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

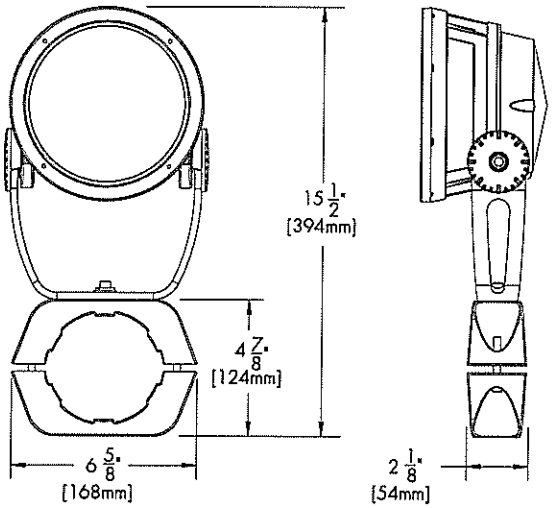
2013.07.12
EM - R18

lumenpulse™
Sustainable architectural LED lighting systems

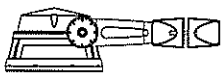
ACCESSORIES

Order separately

Mounting Accessories



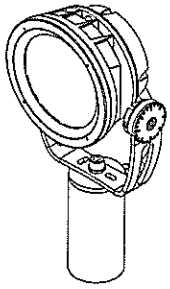
PM
Round Pole Mounting Accessory
*Consult factory for square pole section



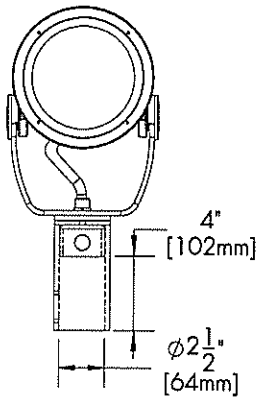
PM4-1, PM4.5-1, PM5-1
Round Pole Mounting accessory
single fixture

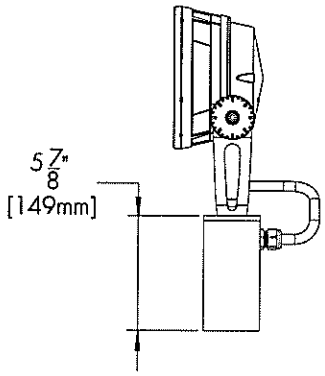
PM4-2, PM4.5-2, PM5-2
Round Pole Mounting accessory
twin fixtures

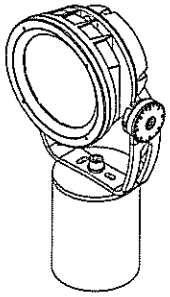
When **PM4-2, PM4.5-2 or PM5-2** are specified, one bracket assembly is supplied per 2 fixtures unless otherwise specified.



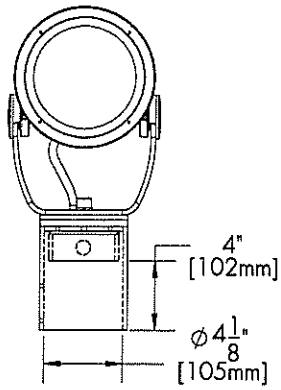
TN2
Tenon adapter
to fit on 2 3/8" O.D. tenon

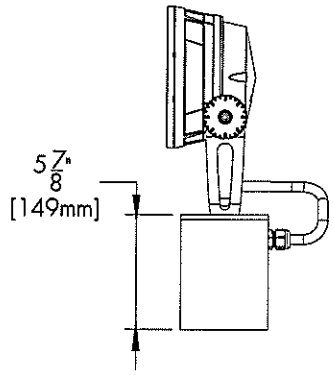






TN4
Tenon adapter
to fit on 4" O.D. tenon





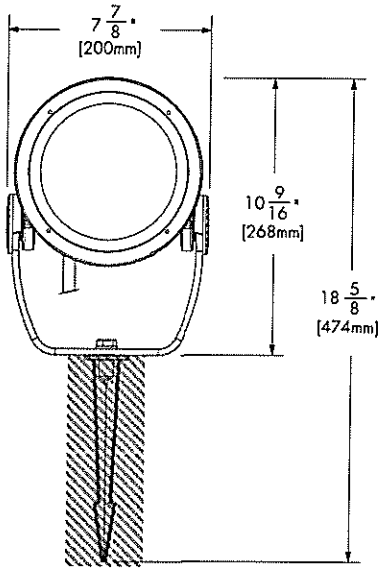
Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 T. 877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

2013.07.12
EM - R18

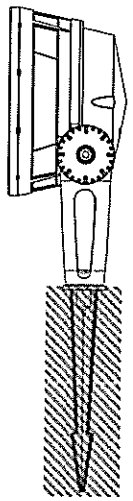
lumenpulse™
Sustainable architectural LED lighting systems

ACCESSORIES
Order separately

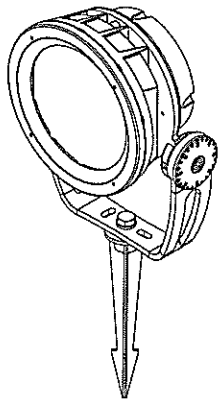
Mounting Accessories



FRONT VIEW



SIDE VIEW



SK
Stake Mounting

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

2013.07.12
EM - R18

lumenpulse
Sustainable architectural LED lighting systems

ACCESSORIES

Order separately

Optical Accessories:

LBM-SN-SI-BK
*Interior surface painted black.

Snoot accessory. Please specify desired exterior finish :
SI - Silver SandText
BKM - Matte black
WH - White
CC - Custom, please specify RAL color

LBM-SNW-___-BK
*Interior surface painted black.

Snoot Wide accessory. Please specify desired exterior finish :
SI - Silver SandText
BKM - Matte black
WH - White
CC - Custom, please specify RAL color

LBM-VS-___-BK
*Interior surface painted black.

Visor accessory. Please specify desired exterior finish :
SI - Silver SandText
BKM - Matte black
WH - White
CC - Custom, please specify RAL color

LBM-WG-___

Wire Guard accessory. Please specify desired exterior finish :
SI - Silver SandText
BKM - Matte black
WH - White
CC - Custom, please specify RAL color

LBM-LSLA-___

Linear Spread Lens Adjustable accessory. Please specify desired exterior finish :
SI - Silver SandText
BKM - Matte black
WH - White
CC - Custom, please specify RAL color

Accessory combinations:

+	Snoot	Snoot Wide	Visor	Wire Guard
Snoot	NO	NO	NO	YES
Visor	NO	NO	NO	YES
Linear Spread Lens Adjustable	YES	YES	YES	NO

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

lumenpulse™
Sustainable architectural LED lighting systems

ACCESSORIES - continued from page 4
Order separately

Control Systems:

LTO Lumentouch is a wall mount DMX 512 controller keypad

LCU Lumencue is a USB / mini SD DMX 512 controller

LID LumenID is a diagnostic and addressing DMX 512 controller.
It must be specified on all DMX applications.
Refer to LID specification sheet for details.

LTN Lumentone is a simple pre-programmed DMX 512 controller
with a push button rotary dial and live feedback.

CBOX :

iCBOX-__V-__-__ Interior DMX 512 data box.
Data input and output, M20 provision holes with plugs.
Voltage input and output, M20 provision holes with plugs.
Up to six outputs to fixtures, M20 provision holes with plugs.
Please specify desired input voltage and finish.
Refer to iCBOX specification sheet for details.

CBOX-__V-__-__ DMX 512 data box.
Data input and output, M20 provision holes with plugs.
Voltage input and output, M20 provision holes with plugs.
Up to six outputs to fixtures, M20 provision holes with plugs.
Please specify desired input voltage and finish.
Refer to CBOX specification sheet for details.

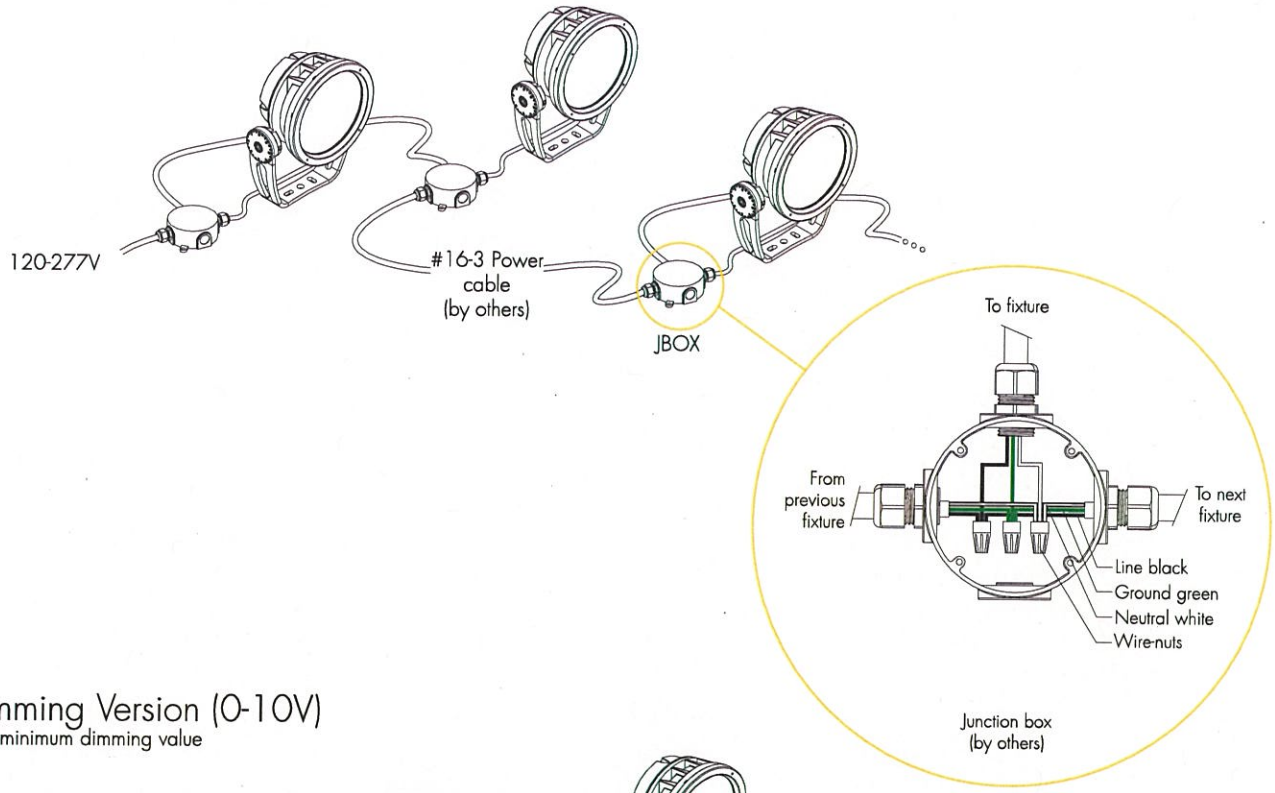
Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

2013.07.12
EM - R18

lumenpulse™
Sustainable architectural LED lighting systems

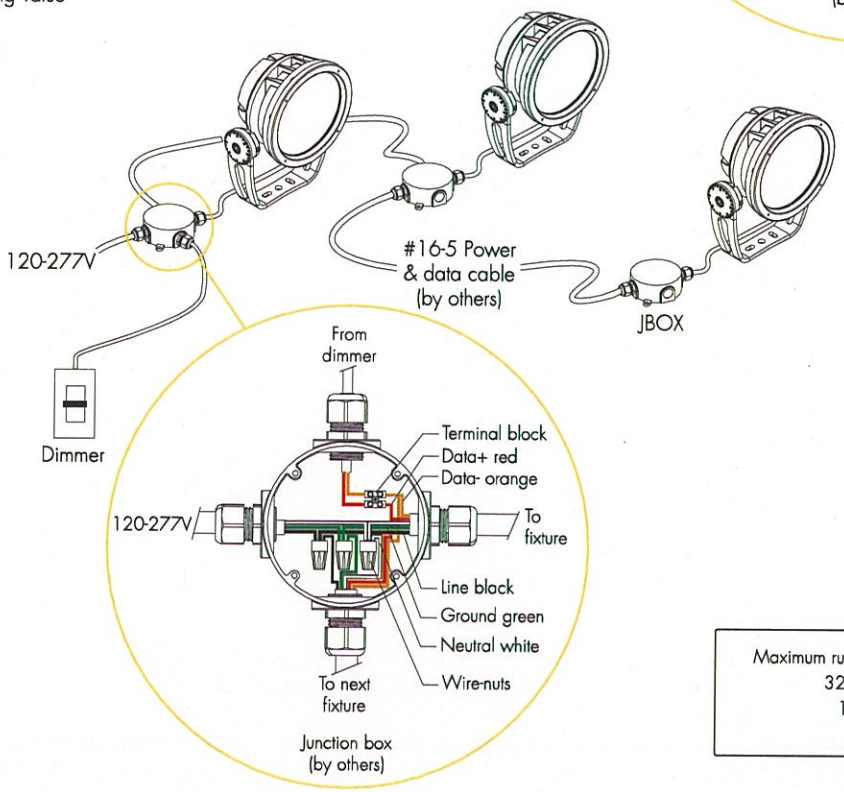
TYPICAL WIRING DIAGRAMS

Non-Dimming Version



Dimming Version (0-10V)

10% minimum dimming value



Maximum run length by 15A circuit @ 120V:
32 LBM (16AWG cable),
10' on center spacing
325' cable length

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

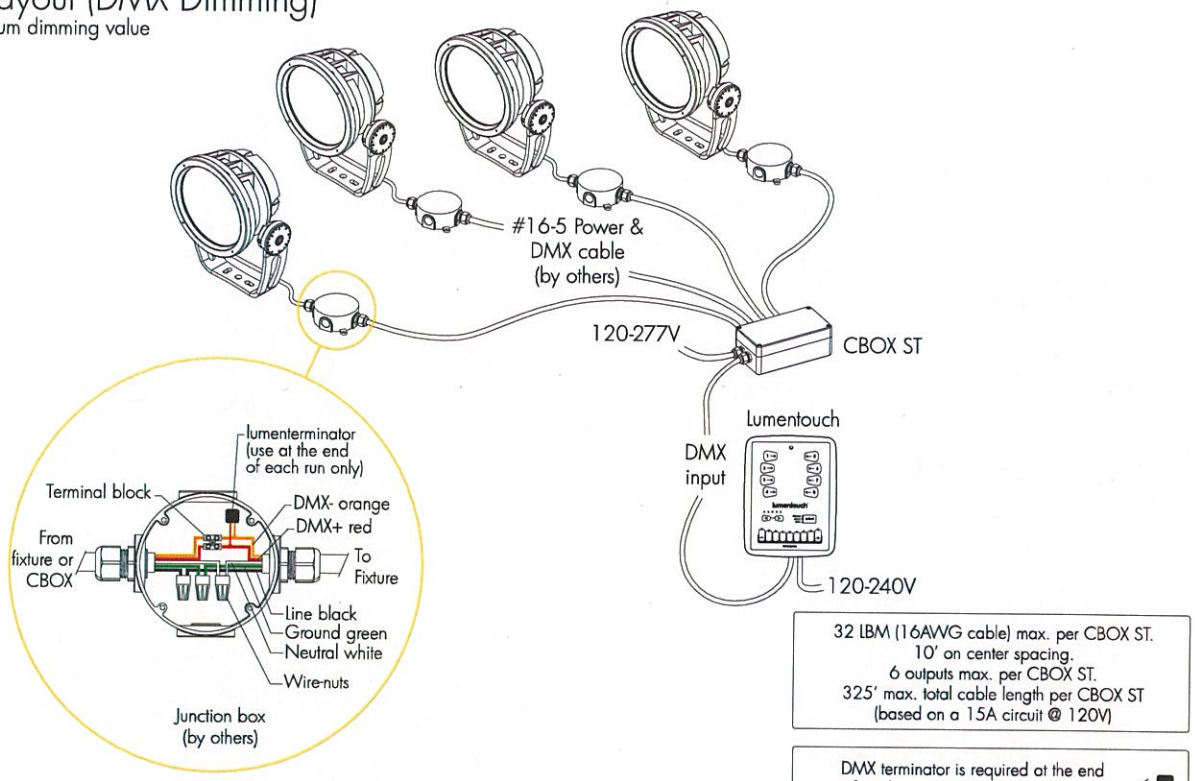
2013.07.12
EM - R18

lumenpulse™

Sustainable architectural LED lighting systems

TYPICAL WIRING DIAGRAMS - continued from page 6

Star Layout (DMX Dimming)
1% minimum dimming value

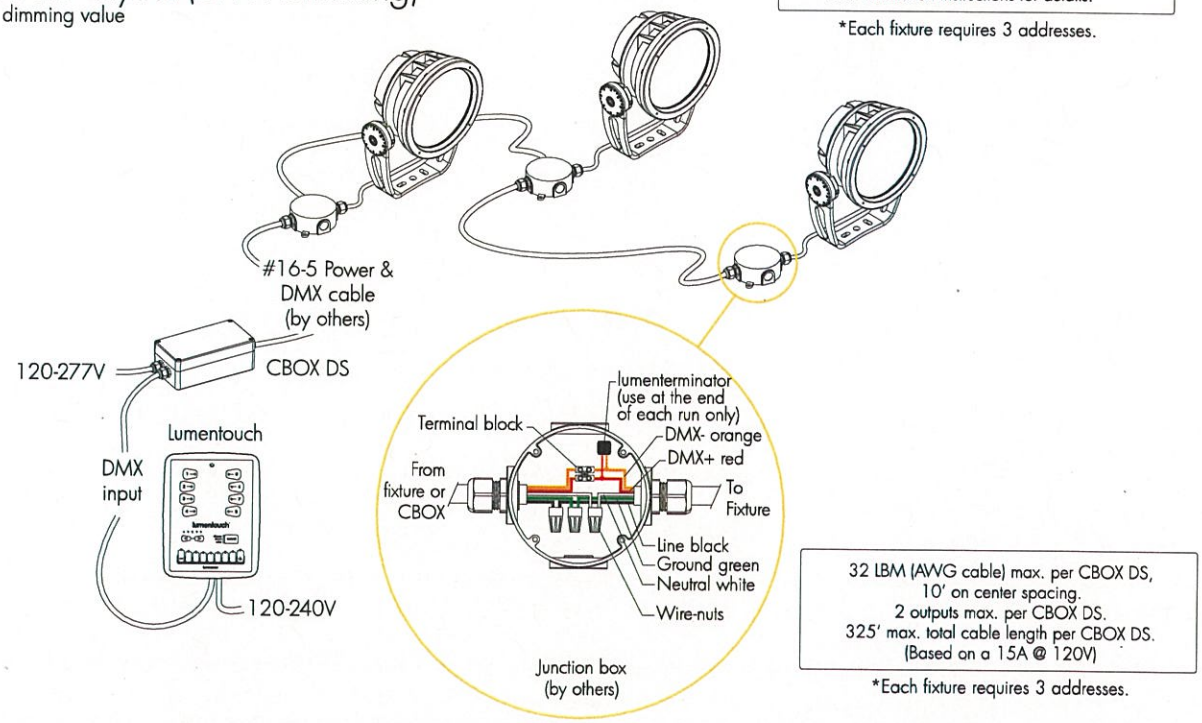


32 LBM (16AWG cable) max. per CBOX ST.
10' on center spacing.
6 outputs max. per CBOX ST.
325' max. total cable length per CBOX ST
(based on a 15A circuit @ 120V)

DMX terminator is required at the end of each run to maintain data integrity.
(2x) DMX lumenterminator included per CBOX DS
(6x) DMX lumenterminator included per CBOX ST
See installation instructions for details.

*Each fixture requires 3 addresses.

Daisy Chain Layout (DMX Dimming)
1% minimum dimming value



32 LBM (AWG cable) max. per CBOX DS,
10' on center spacing.
2 outputs max. per CBOX DS.
325' max. total cable length per CBOX DS.
(Based on a 15A @ 120V)

*Each fixture requires 3 addresses.

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

2013.07.12
EM - R18

lumenpulse™
Sustainable architectural LED lighting systems

SPECIFICATION SHEET

lumenbeam™

MEDIUM
WHITE & STATIC COLORS

HOW TO ORDER

LBM	120	30K	NS		SI	DMX	CRC
Housing	Voltage	Colors and color temperatures	Optic	Optical Option	Finish	Dimming	Option
1	2	3	4	5	6	7	8

c/w LBM-SN-SI-BK

1 Housing:

LBM - Lumenbeam™ Medium

2 Voltage:

120 - 120 volts
208 - 208 volts
220/240 - 220 to 240 volts
277 - 277 volts

3 Colors and Color temperatures:

27K - 2700K
30K - 3000K
35K - 3500K
40K - 4000K
57K - 5700K
RD - Red
GR - Green
BL - Blue

4 Optic:

VN - Very Narrow 6°
NS - Narrow Spot 10°
NF - Narrow Flood 20°
FL - Flood 40°
WFL - Wide Flood 60°

5 Optical Option:

LSLH - Linear Spread Lens Horizontal distribution
LSLV - Linear Spread Lens Vertical distribution

*Factory installed. See Optical Accessories for field adjustable spread lens.

6 Finish:

SI - Silver SandText
BK - Black SandText
WH - White
CC - Custom (please specify RAL color)

7 Dimming:

DIM - 0-10V Dimming option (10% minimum dimming value)
DMX - DMX Dimming option (1% minimum dimming value)
DALI - DALI Dimming option (1% minimum dimming value)
NO - No Dimming

8 Option:

SY - Short Yoke
CRC - Corrosion-resistant Co

FIXTURE TO BE PROVIDED WITH 10' LONG LEADER CABLE
MOUNTING TO BE SPECIFIED BY ENGINEER. CONTRACTOR TO PROVIDE CONCRETE PAD OR SIMILAR, TO PREVENT FIXTURE FROM MOVING

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed
☒ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date ... 2013 11 15
By .....

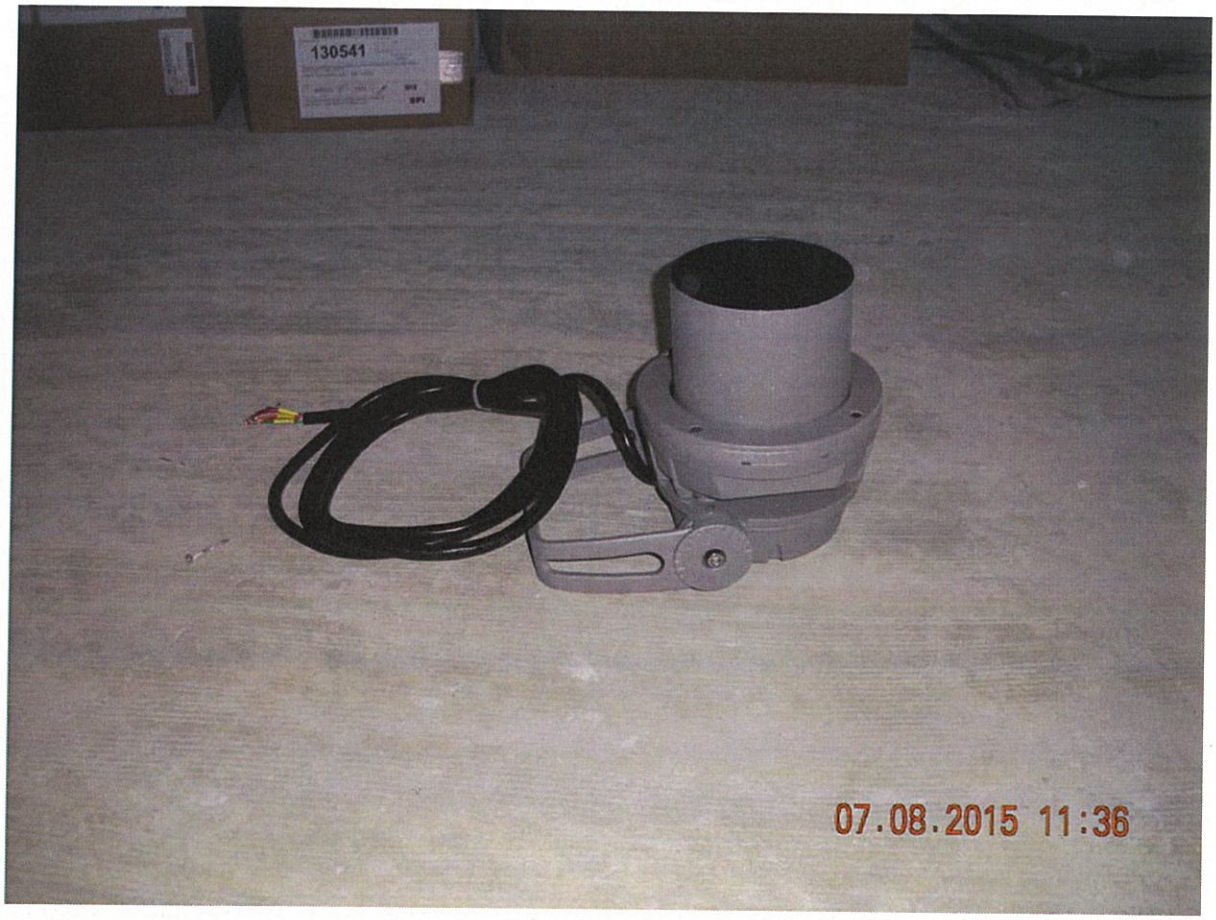
Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P. 514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

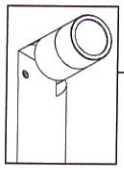
2013.07.12
EM - R18

lum

Sustainable ar



Typical 'L6' Luminaire



ArtiStar™ BKSSL SOLID STATE LIGHTING
Remote Transformer

the power of dimming with adjust-e-lume® TECHNOLOGY

ARTISTAR™

PROJECT:	SINCLAIR CENTRE
TYPE:	L8
CATALOG NUMBER:	AR-LED-RM-e22-SP-A9-BZW-12-A-6-WM
SOURCE:	12 = Soft Focus Lens
NOTES:	REMOTE MAGNETIC TRANSFORMER(S) BY OTHERS

CATALOG NUMBER LOGIC

	[ ]	AR	LED	RM	e22	SP	A9	BZW	12	[ ]	A	6	WM
Example	S	AR	LED	RM	e23	NSP	A7	MAC	12	11	B	6	WM

Material
Blank - Aluminum B - Brass S - Stainless Steel

Series
AR - ArtiStar™

Source
LED - 'e' Technology with Integral Dimming Driver (25W min. load when dimmed)
**Requires magnetic Low Voltage dimmer*

Housing
RM - Remote Transformer

LED Type
e36 - 8WLED/2.7K e23 - 8WLED/4K e25 - 8WLED/Green e27 - 8WLED/Amber
e22 - 8WLED/3K e24 - 8WLED/Red e26 - 8WLED/Blue

Optics*
NSP - Narrow Spot (Red Indicator) MFL - Medium Flood (Yellow Indicator)
SP - Spot (Green Indicator) WFL - Wide Flood (Blue Indicator)

Adjust-e-Lume® Output Intensity** *(Choose factory setting)*
A9 (Standard), A8, A7, A6, A5, A4, A3, A2, A1
***Please see Adjust-e-Lume® photometry to determine desired intensity.*

Finish

Aluminum Finish

Powder Coat Color	Satin	Wrinkle
Bronze	BZP	BZW
Black	BLP	BLW
White (Gloss)	WHP	WHW
Aluminum	SAP	—
Verde	—	VER

Brass Finish

Machined	MAC
Polished	POL
Mitique™	MIT

Stainless Finish

Machined	MAC
Polished	POL
Brushed	BRU *Interior use only.*

Premium Fi

ABP	Antique Brass Powder	CMG	Cascade M		
AMG	Aleutian Mountain Granite	CRI	Cracked Ice	SDS	Sonoran Desert Sandstone
AQW	Antique White	CRM	Cream	SMG	Sierra Mountain Granite
BCM	Black Chrome	HUG	Hunter Green	TXF	Textured Forest
BGE	Beige	MDS	Mojave Desert Sandstone	WCP	Weathered Copper
BPP	Brown Patina Powder	NBP	Natural Brass Powder	WIR	Weathered Iron
CAP	Clear Anodized Powder	OCP	Old Copper		

Also available in RAL Finishes See submittal SUB-1439-00

Lens Type
12 - Soft Focus Lens 13 - Rectilinear Lens

Shielding
11 - Honeycomb Baffle

Cap Style
A - 45° B - 90° C - Flush D - 45° less Weep Hole *(Interior Use Only)* E - 90° less Weep Hole *(Interior Use Only)*

Base Height
3 - 3" with Anchor Base 12 - 12" with Anchor Base 24 - 24" with Anchor Base
18 - 18" with Anchor Base

Option
PP - Power Pipe™ option with 18" Stake
SF - Stability Flange *(for use with Power Pipe™)*
WM - Wall or ceiling Mount with 5" dia. canopy**
*** Base height limited to 6" max. with brass and stainless steel fixtures*

TOTAL LIGHTING SOLUTIONS INC.
☐ Reviewed ☐ Not Reviewed
☒ Reviewed as modified ☐ Revise and Re-submit
Project Number: SINCLAIR CENTER
Date NOV 7, 2013
By .....
Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

DRIVER DATA

Input Volts	InRush Current	Dimmable	Operation Ambient Temperature
12VAC/DC 50/60Hz	<1A (non-dimmed)	Magnetic Low Voltage Dimmer	-10°F-130°F

LM79 DATA

BK No.	CCT (Typ.)	Input Watts (Typ.)	CRI (Typ.)
e36	2700K	8.4	90
e22	3100K	8.4	90
e23	4100K	8.4	75
e24	Red (627nm)	7.9	~
e25	Green (530nm)	8.4	~
e26	Blue (470nm)	8.4	~
e27	Amber (590nm)	7.9	~

L70 DATA

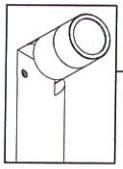
Minimum Rated Life (hrs.) 70% of initial lumens (L_{70})
50,000
50,000
50,000
50,000
50,000
50,000
50,000

*OPTICAL DATA

Beam Type	Angle	Visual Indicator
Narrow Spot	14°	Red Dot
Spot	18°	Green Dot
Medium Flood	25°	Yellow Dot
Wide Flood	36°	Blue Dot

B-K LIGHTING
40429 Brickyard Drive • Madera, CA 93636 • USA
559.438.5800 • FAX 559.438.5900
www.bklighting.com • info@bklighting.com

SUBMITTAL DATE 8-21-13
DRAWING NUMBER SUB001107



ArtiStar™
BKSSL SOLID STATE LIGHTING
Remote Transformer

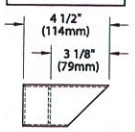
the power of dimming with adjust-e-lume® TECHNOLOGY

ARTISTAR™

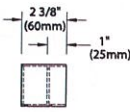
PROJECT:	SINCLAIR CENTRE
TYPE:	L8

ANCHOR BASE STANDARD MOUNT

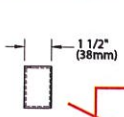
"A/D" CAP



"B/E" CAP

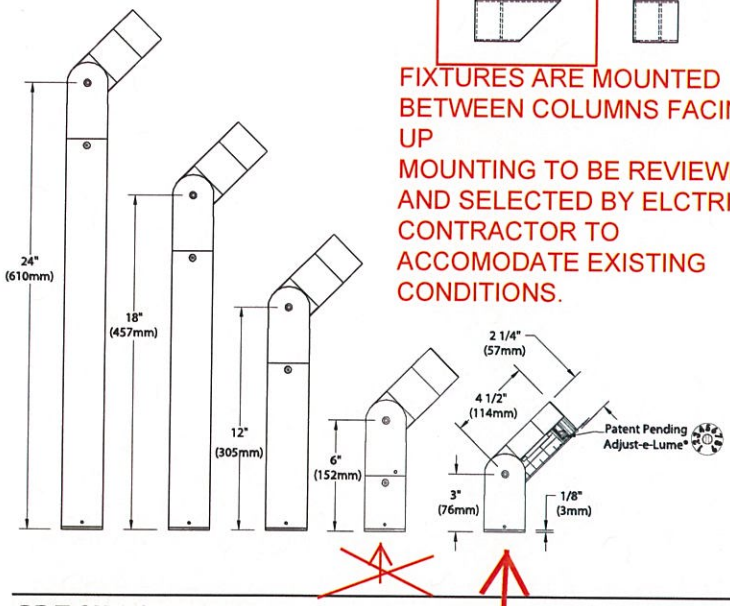


"C" CAP

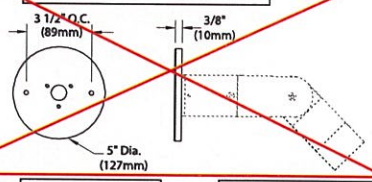


STANDARD BASE

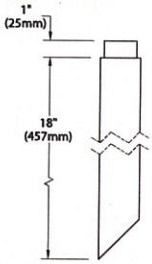
FIXTURES ARE MOUNTED BETWEEN COLUMNS FACING UP
MOUNTING TO BE REVIEWED AND SELECTED BY ELCTRICAL CONTRACTOR TO ACCOMODATE EXISTING CONDITIONS.



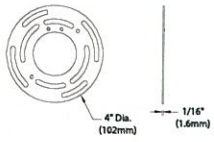
WALL MOUNT CANOPY



POWER PIPE



UNIVERSAL RING



All dimensions indicated on this submittal are nominal.
Contact Technical Sales if you require more stringent specifications.

SPECIFICATIONS

GreenSource Initiative™
Metal and packaging components are made from recycled materials. Manufactured using renewable solar energy, produced onsite. Returnable to manufacturer at end of life to ensure cradle-to-cradle handling. Packaging contains no chlorofluorocarbons (CFC's). Use of this product may qualify for GreenSource efficacy and recycling rebate(s). Consult www.bklighting.com/greensource for program requirements.

Materials
Furnished in Copper-Free Aluminum (Type 6061-T6), Brass (Type 360) or Stainless Steel (Type 304).

Body
Fully machined from solid billet. Unibody design provides enclosed, water-proof wireway and integral heat sink for maximum component life. Integral knuckle for maximum mechanical strength. High temperature, silicone 'O' Ring provides water-tight seal.

Knuckle
'Aim and Lock' knuckle is comprised of two components. The first is integral to the body and features an interior, machined taper. The second is machined from solid billet and features a second, reverse angle taper. The resultant mechanical taper-lock allows a full 180° vertical adjustment without the use of serrated teeth, which inherently limit aiming. High temperature, silicone 'O' Ring provides water-tight seal and compressive resistance to maintain fixture position. Design withstands 73 lb. static load prior to movement to ensure decades of optical alignment. Biaxial source control with 360° horizontal rotation in addition to vertical adjustment.

Cap
Fully machined. Accommodates [1] lens or louver media. Choose from 45° cutoff ('A' or 'D'), 1" deep bezel with 90° cutoff ('B' or 'E'), or flush lens ('C') cap styles. 'A' and 'B' caps include weep-hole for water and debris drainage. 'D' and 'E' caps exclude weep-hole and are for interior use only.

Lens
Shock resistant, tempered, glass lens is factory adhered to fixture cap and provides hermetically sealed optical compartment. Specify soft focus (#12) or rectilinear (#13) lens.

BKSSL™
Integrated solid state system with 'e' technology is scalable for field upgrade. Modular design with electrical quick disconnects permit field maintenance. High power, forward throw source complies with ANSI C78.377 binning requirements. Exceeds ENERGY STAR® lumen maintenance requirements. LM-80 certified components. Integral dimming driver. Minimum 50,000 hour rated life at 70% of initial lumens (L70). BKSSL technology provides long life, significant energy reduction and exceptional thermal management.

Integral, constant current driver. 12VAC/VDC input. 50/60Hz. Proprietary input control scheme achieves power factor correction and eliminates inrush current. Output, over-voltage, open-circuit, and short circuit protected. Inrush current limited to <1A (non-dimming). Conforms to Safety Std. C22.2 No. 250.13-12.

Line dimmable. For use with low voltage dimmer with dedicated neutral conductor. Minimum 25 watt load required for dimming.

Optics
Interchangeable OPTIKIT™ modules permit field changes to optical distribution. Color-coded for easy reference: Narrow Spot (NSP) = Red. Spot (SP) = Green. Medium Flood (MFL) = Yellow. Wide Flood (WFL) = Blue.

Adjust-e-Lume® (Pat. Pending)
Integral electronics allows dynamic lumen response at the individual fixture. Indexed (100% to 25% nom.) lumen output. Maintains output at desired level or may be changed as conditions require. Specify factory preset output intensity.

Installation
Available for installation in three distinct mounting conditions:

Anchor Base (Standard)
Machined anchor base with 7/8"dia. slip conduit hole and [3] 3/16" dia. anchor bolt holes (hardware by others).

Power Pipe™ (Optional)
Provides a clean transition from wiring system to fixture. Schedule 80, 18" PVC housing for direct burial into soil or concrete. Machined 2-1/4" dia. cap for fixture mounting. Stainless steel hardware. Optional 6" diameter, molded stability flange, which simplifies installation and projects into substrate to reinforce housing stability.

Wall Mount Canopy (Optional)
Optional 5" dia. machined canopy permits mounting to junction box (gasket by others). 6" maximum base height for canopy-mounted brass or stainless steel fixture.

Remote Transformer
For use with 12VAC BKSSL remote transformer.

Wiring
Teflon® coated, 18AWG, 600V, 250° C rated and certified to UL 1659 standard.

Hardware
Tamper-resistant, stainless steel hardware. Knuckle vertical aiming screw is additionally black oxide treated for additional corrosion resistance.

Finish
StarGuard®, our exclusive RoHs compliant, 15 stage chromate-free process cleans and conversion coats aluminum components prior to application of Class 'A' TGIC polyester powder coating. Brass components are available in powder coat or handcrafted metal finish. Stainless steel components are available in handcrafted metal finish. (Brushed finish for interior use only).

Warranty
5 year limited warranty.

Certification and Listing
ITL tested to IESNA LM-79. Lighting Facts Registration per USDOE (www.lightingfacts.com). ETL Listed to ANSI/UL Standard 1838 and UL Standard 8750. Certified to CAN/CSA Standard C22.2 No. 9. RoHs compliant. Suitable for indoor or outdoor use. Suitable for use in wet locations. Suitable for installation within 4' of the ground. IP66 Rated. Made in USA.

ETL Intertek · USA · lighting facts · RoHS

*Teflon is a registered trademark of DuPont Corporation.
*Energy Star is a registered trademark of the United States Environmental Protection Agency.

adjust-e-lume® TECHNOLOGY

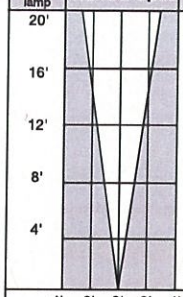
Photometry for use with e36 **2.7K**

Select OptiKit™ for desired distribution

RED	Narrow Spot (NSP)
GREEN	Spot (SP)
YELLOW	Medium Flood (MFL)
BLUE	Wide Flood (WFL)

Set adjust-e-lume™ Dial to desired output

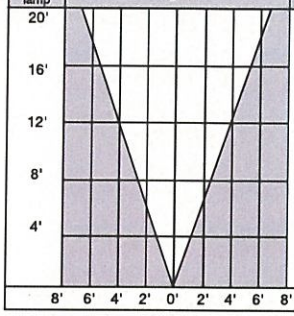
Narrow Spot



Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	2.4	3.1	5.0	6.3	7.6	8.9	9.2	9.3	9.3
16'	3.8	4.9	7.9	9.9	11.9	13.9	14.3	14.6	14.6
12'	6.7	8.6	14.0	17.6	21.2	24.7	25.5	25.9	25.9
8'	15.1	19.4	31.4	39.7	47.6	55.5	57.3	58.3	58.3
4'	60.4	77.7	125.8	158.6	190.4	222.1	229.2	233.0	233.2

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

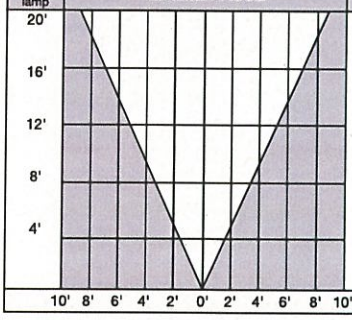
Spot



Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	1.6	2.1	3.3	4.3	5.3	5.9	6.1	6.3	6.3
16'	2.6	3.3	5.2	6.7	8.2	9.3	9.6	9.8	9.9
12'	4.5	5.8	9.3	12.0	14.7	16.5	17.0	17.5	17.5
8'	10.2	13.0	20.9	26.9	33.0	37.0	38.3	39.4	39.4
4'	40.9	52.1	83.4	107.8	131.9	148.1	153.1	157.5	157.8

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

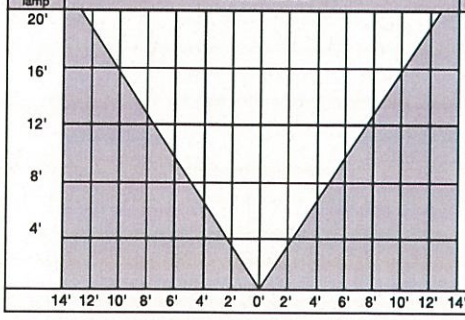
Medium Flood



Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	0.9	1.3	2.0	2.5	3.1	3.4	3.6	3.6	3.6
16'	1.5	2.0	3.1	3.9	4.8	5.4	5.6	5.6	5.7
12'	2.6	3.6	5.5	6.9	8.6	9.5	9.9	9.9	10.1
8'	5.9	8.0	12.3	15.5	19.3	21.5	22.2	22.4	22.6
4'	23.6	32.1	49.3	62.2	77.1	85.8	88.9	89.5	90.5

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Wide Flood



Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	0.4	0.6	0.9	1.1	1.4	1.6	1.6	1.7	1.7
16'	0.7	0.9	1.4	1.8	2.1	2.5	2.6	2.6	2.6
12'	1.2	1.6	2.5	3.2	3.8	4.4	4.6	4.7	4.7
8'	2.7	3.7	5.6	7.2	8.6	10.0	10.3	10.5	10.6
4'	10.9	14.8	22.3	28.6	34.3	39.9	41.1	42.2	42.3

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

B-K LIGHTING

40429 Brickyard Drive • Madera, California 93636 • 559.438.5800
www.bklighting.com • www.adjust-e-lume.com • www.bkssl.com

adjust-e-lume® TECHNOLOGY

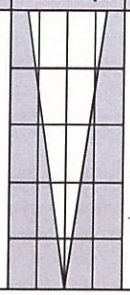
Photometry for use with e22 **3K**

Select OptiKit™ for desired distribution

RED	Narrow Spot (NSP)
GREEN	Spot (SP)
YELLOW	Medium Flood (MFL)
BLUE	Wide Flood (WFL)

Set adjust-e-lume™ Dial to desired output

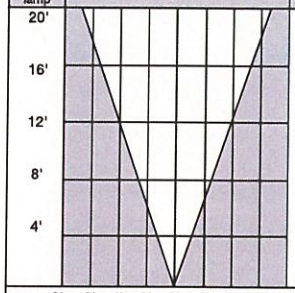
Narrow Spot



Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	2.4	2.9	4.9	6.1	7.3	8.8	9.1	9.3	9.3
16'	3.8	4.6	7.6	9.6	11.4	13.8	14.3	14.5	14.6
12'	6.7	8.2	13.5	17.0	20.3	24.5	25.4	25.7	25.9
8'	15.1	18.4	30.3	38.2	45.8	55.2	57.0	57.9	58.2
4'	60.3	73.6	121.3	152.8	183.1	220.9	228.2	231.6	232.8

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

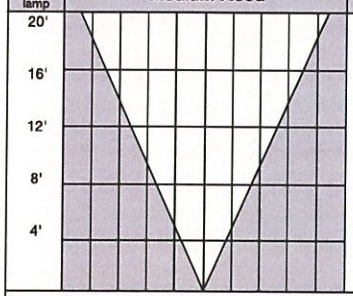
Spot



Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	1.6	2.1	3.1	4.1	4.9	6.0	6.1	6.2	6.3
16'	2.5	3.3	4.9	6.4	7.6	9.3	9.6	9.8	9.9
12'	4.5	5.9	8.7	11.4	13.5	16.6	17.0	17.3	17.5
8'	10.2	13.2	19.5	25.6	30.5	37.3	38.3	39.0	39.4
4'	40.6	52.7	78.1	102.3	121.9	149.1	153.1	156.0	157.8

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

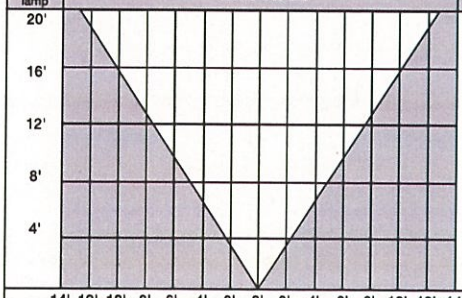
Medium Flood



Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	1.0	1.2	1.9	2.4	2.9	3.4	3.5	3.6	3.7
16'	1.5	1.8	2.9	3.8	4.6	5.3	5.4	5.7	5.8
12'	2.6	3.3	5.2	6.7	8.1	9.5	9.6	10.1	10.2
8'	6.0	7.4	11.8	15.0	18.3	21.3	21.6	22.8	23.0
4'	23.8	29.5	47.0	60.2	73.3	85.1	86.4	91.2	92.2

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Wide Flood



Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	0.4	0.5	0.9	1.1	1.3	1.6	1.7	1.7	1.7
16'	0.7	0.8	1.4	1.7	2.0	2.4	2.6	2.7	2.7
12'	1.2	1.5	2.5	3.0	3.5	4.3	4.7	4.7	4.7
8'	2.8	3.4	5.5	6.7	7.9	9.8	10.5	10.7	10.7
4'	11.1	13.4	22.2	26.8	31.7	39.0	41.9	42.6	42.7

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

TOTAL LIGHTING SOLUTIONS INC.

☒ Reviewed ☐ Not Reviewed

☐ Reviewed as modified ☐ Revise and Re-submit

Project Number:
SINCLAIR CENTER
Date NOV 7, 2013
By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

B-K LIGHTING

40429 Brickyard Drive • Madera, California 93636 • 559.438.5800
www.bklighting.com • www.adjust-e-lume.com • www.bkssl.com

adjust-e-lume® TECHNOLOGY

Photometry for use with e23 4K

Select OptiKit™ for desired distribution

RED	Narrow Spot (NSP)
GREEN	Spot (SP)
YELLOW	Medium Flood (MFL)
BLUE	Wide Flood (WFL)

Set adjust-e-lume™ Dial to desired output

Narrow Spot

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	2.7	3.7	5.5	6.9	8.5	10.1	10.4	10.6	10.6
16'	4.3	5.7	8.7	10.8	13.3	15.7	16.2	16.5	16.5
12'	7.6	10.2	15.4	19.2	23.6	27.9	28.8	29.3	29.4
8'	17.1	23.0	34.7	43.2	53.0	62.8	64.8	66.0	66.1
4'	68.6	91.9	138.6	172.9	212.1	251.3	259.2	263.8	264.3

4' 2' 0' 2' 4'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Spot

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	1.9	2.4	3.7	4.8	6.0	6.8	7.1	7.1	7.1
16'	2.9	3.7	5.9	7.4	9.4	10.6	11.0	11.1	11.2
12'	5.2	6.6	10.4	13.2	16.7	18.9	19.6	19.8	19.8
8'	11.8	14.9	23.4	29.7	37.6	42.5	44.1	44.6	44.6
4'	47.0	59.6	93.6	118.9	150.3	170.1	176.3	178.3	178.6

8' 6' 4' 2' 0' 2' 4' 6' 8'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Medium Flood

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	1.1	1.4	2.2	2.8	3.3	3.8	4.0	4.1	4.1
16'	1.7	2.1	3.4	4.3	5.1	5.9	6.3	6.4	6.4
12'	3.0	3.8	6.1	7.7	9.1	10.5	11.2	11.3	11.4
8'	6.7	8.5	13.8	17.3	20.5	23.7	25.2	25.4	25.6
4'	26.9	34.2	55.0	69.3	81.9	94.7	100.6	101.6	102.4

10' 8' 6' 4' 2' 0' 2' 4' 6' 8' 10'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Wide Flood

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	0.5	0.6	1.0	1.2	1.4	1.7	1.8	1.8	1.8
16'	0.8	1.0	1.5	1.8	2.2	2.7	2.8	2.8	2.9
12'	1.3	1.8	2.7	3.3	3.9	4.7	4.9	5.0	5.1
8'	3.0	4.0	6.0	7.3	8.8	10.7	11.1	11.3	11.4
4'	12.0	15.9	23.9	29.3	35.1	42.6	44.4	45.1	45.7

14' 12' 10' 8' 6' 4' 2' 0' 2' 4' 6' 8' 10' 12' 14'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

B-K LIGHTING
40429 Brickyard Drive • Madera, California 93636 • 559.438.5800
www.bklighting.com • www.adjust-e-lume.com • www.bkssl.com

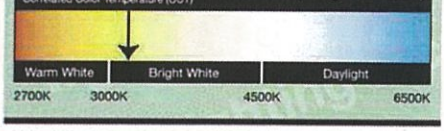
Arti-Star™ - RM Spot

lighting facts℠

A Program of the U.S. DOE

Light Output (Lumens)	**253**
Watts	**8.2**
Lumens per Watt (Efficacy)	**30**
Color Accuracy Color Rendering Index (CRI)	**83**

Light Color Correlated Color Temperature (CCT) **3182 (Bright White)**



All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: GCXV-RTRLYL
Model Number: AR-LED-RM-e22-SP-12-C
Type: Other

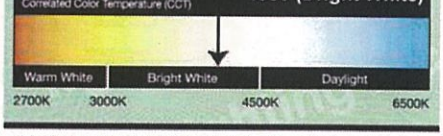
Arti-Star™ - RM-Spot

lighting facts℠

A Program of the U.S. DOE

Light Output (Lumens)	**354**
Watts	**8.1**
Lumens per Watt (Efficacy)	**43**
Color Accuracy Color Rendering Index (CRI)	**68**

Light Color Correlated Color Temperature (CCT) **4080 (Bright White)**



All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: GCXV-QT2RZV
Model Number: AR-LED-RM-e23-SP-12-C
Type: Other

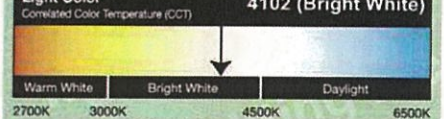
Arti-Star™ - RM Narrow Spot

lighting facts℠

A Program of the U.S. DOE

Light Output (Lumens)	**365**
Watts	**8.2**
Lumens per Watt (Efficacy)	**44**
Color Accuracy Color Rendering Index (CRI)	**68**

Light Color Correlated Color Temperature (CCT) **4102 (Bright White)**



All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: GCXV-5H4BSY
Model Number: AR-LED-RM-e23-NSP-12-C
Type: Other

Arti-Star™ RM - Med. Flood Rectilinear

lighting facts℠

A Program of the U.S. DOE

Light Output (Lumens)	**299**
Watts	**8.5**
Lumens per Watt (Efficacy)	**35**
Color Accuracy Color Rendering Index (CRI)	**66**

Light Color Correlated Color Temperature (CCT) **4022 (Bright White)**

All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: GCXV-EKVSHP
Model Number: AR-LED-RM-e23-MFL-13-C
Type: Other

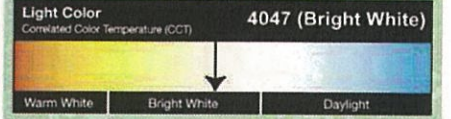
Arti-Star™ - RM - Med. Flood

lighting facts℠

A Program of the U.S. DOE

Light Output (Lumens)	**346**
Watts	**8.2**
Lumens per Watt (Efficacy)	**42**
Color Accuracy Color Rendering Index (CRI)	**68**

Light Color Correlated Color Temperature (CCT) **4047 (Bright White)**



All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: GCXV-PVE6B5
Model Number: AR-LED-RM-e23-MFL-12-C
Type: Other

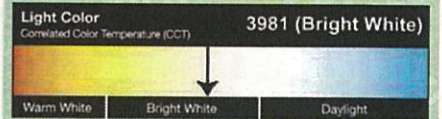
Arti-Star™ - RM W. Flood

lighting facts℠

A Program of the U.S. DOE

Light Output (Lumens)	**345**
Watts	**8.3**
Lumens per Watt (Efficacy)	**41**
Color Accuracy Color Rendering Index (CRI)	**67**

Light Color Correlated Color Temperature (CCT) **3981 (Bright White)**

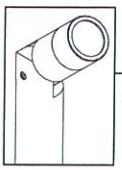


All results are according to IESNA LM-79-2008: *Approved Method for the Electrical and Photometric Testing of Solid-State Lighting*. The U.S. Department of Energy (DOE) verifies product test data and results.

Visit www.lightingfacts.com for the *Label Reference Guide*.

Registration Number: GCXV-Y17BD7
Model Number: AR-LED-RM-e23-WFL-12-C
Type: Other

Typical 'L8' Luminaire



ArtiStar™
B-K SOLID STATE LIGHTING
Remote Transformer

the power of dimming with adjust-e-lume® TECHNOLOGY

ARTISTAR™

PROJECT:	SINCLAIR CENTRE
TYPE:	L9
CATALOG NUMBER:	AR-LED-RM-e22-WFL-A9-BZW-12-C-6-WM
SOURCE:	12 = Soft Focus Lens
NOTES:	REMOTE MAGNETIC TRANSFORMER(S) BY OTHERS

CATALOG NUMBER LOGIC

	AR	LED	RM	e22	WFL	A9	BZW	12		C	6	WM
Example	S - AR - LED - RM - e23 - NSP - A7 - MAC - 12 - 11 - B - 6 - WM												

Material
Blank - Aluminum B - Brass S - Stainless Steel

Series
AR - ArtiStar™

Source
LED - 'e' Technology with Integral Dimming Driver (25W min. load when dimmed)
*Requires magnetic Low Voltage dimmer

Housing
RM - Remote Transformer

LED Type
e36 - 8WLED/2.7K e23 - 8WLED/4K e25 - 8WLED/Green e27 - 8WLED/Amber
e22 - 8WLED/3K e24 - 8WLED/Red e26 - 8WLED/Blue

Optics*
NSP - Narrow Spot (Red Indicator) MFL - Medium Flood (Yellow Indicator)
SP - Spot (Green Indicator) WFL - Wide Flood (Blue Indicator)

Adjust-e-Lume® Output Intensity** (Choose factory setting)
A9 (Standard), A8, A7, A6, A5, A4, A3, A2, A1
**Please see Adjust-e-Lume® photometry to determine desired intensity.

Finish

Aluminum Finish

Powder Coat Color	Satin	Wrinkle
Bronze	BZP	BZW
Black	BLP	BLW
White (Gloss)	WHP	WHW
Aluminum	SAP	—
Verde	—	VER

Brass Finish

Machined	MAC
Polished	POL
Mitique™	MIT

Stainless Finish

Machined	MAC
Polished	POL
Brushed	BRU (Interior use only.)

Premium Finish

ABP	Antique Brass Powder	CMG	Cascade Mountain Granite	RMG	Rocky Mountain Granite
AMG	Aleutian Mountain Granite	CRI	Cracked Ice	SDS	Sonoran Desert Sandstone
AQW	Antique White	CRM	Cream	SMG	Sierra Mountain Granite
BCM	Black Chrome	HUG	Hunter Green	TXF	Textured Forest
BGE	Beige	MDS	Mojave Desert Sandstone	WCP	Weathered Copper
BPP	Brown Patina Powder	NBP	Natural Brass Powder	WIR	Weathered Iron
CAP	Clear Anodized Powder	OCP	Old Copper		Also available in RAL Finishes See submittal SUB-1439-00

Lens Type
12 - Soft Focus Lens 13 - Rectilinear Lens

Shielding
11 - Honeycomb Baffle

Cap Style
A - 45° B - 90° C - Flush D - 45° less Weep (Interior Use On

Base Height
3 - 3" with Anchor Base 12 - 12" with Anchor Base
6 - 6" with Anchor Base 18 - 18" with Anchor Base

Option
PP - Power Pipe™ option with 18" Stake
SF - Stability Flange (for use with Power Pipe™)
WM - Wall or ceiling Mount with 5" dia. canopy**
** Base height limited to 6" max. with brass and stainless steel fixtures

TOTAL LIGHTING SOLUTIONS INC.
☐ Reviewed ☐ Not Reviewed
☒ Reviewed as modified ☐ Revise and Re-submit
Project Number: SINCLAIR CENTER
Date ....NOV 7, 2013
By .....
Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

FIXTURES ARE MOUNTED TO CATWALK IN THE CLOCK TOWER. ELECTRICAL CONTRACTOR TO SELECT MOUNTING TO SUIT EXISTING CONDITIONS

DRIVER DATA

Input Volts	InRush Current	Dimmable	Operation Ambient Temperature
12VAC/DC 50/60Hz	<1A (non-dimmed)	Magnetic Low Voltage Dimmer	-10°F-130°F

LM79 DATA

BK No.	CCT (Typ.)	Input Watts (Typ.)	CRI (Typ.)
e36	2700K	8.4	90
e22	3100K	8.4	90
e23	4100K	8.4	75
e24	Red (627nm)	7.9	~
e25	Green (530nm)	8.4	~
e26	Blue (470nm)	8.4	~
e27	Amber (590nm)	7.9	~

L70 DATA

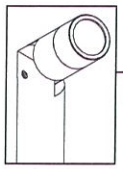
Minimum Rated Life (hrs.) 70% of initial lumens (L_{70})
50,000
50,000
50,000
50,000
50,000
50,000
50,000

*OPTICAL DATA

Beam Type	Angle	Visual Indicator
Narrow Spot	14°	Red Dot
Spot	18°	Green Dot
Medium Flood	25°	Yellow Dot
Wide Flood	36°	Blue Dot

B-K LIGHTING
40429 Brickyard Drive • Madera, CA 93636 • USA
559.438.5800 • FAX 559.438.5900
www.bklighting.com • info@bklighting.com

SUBMITTAL DATE 8-21-13
DRAWING NUMBER SUB001107

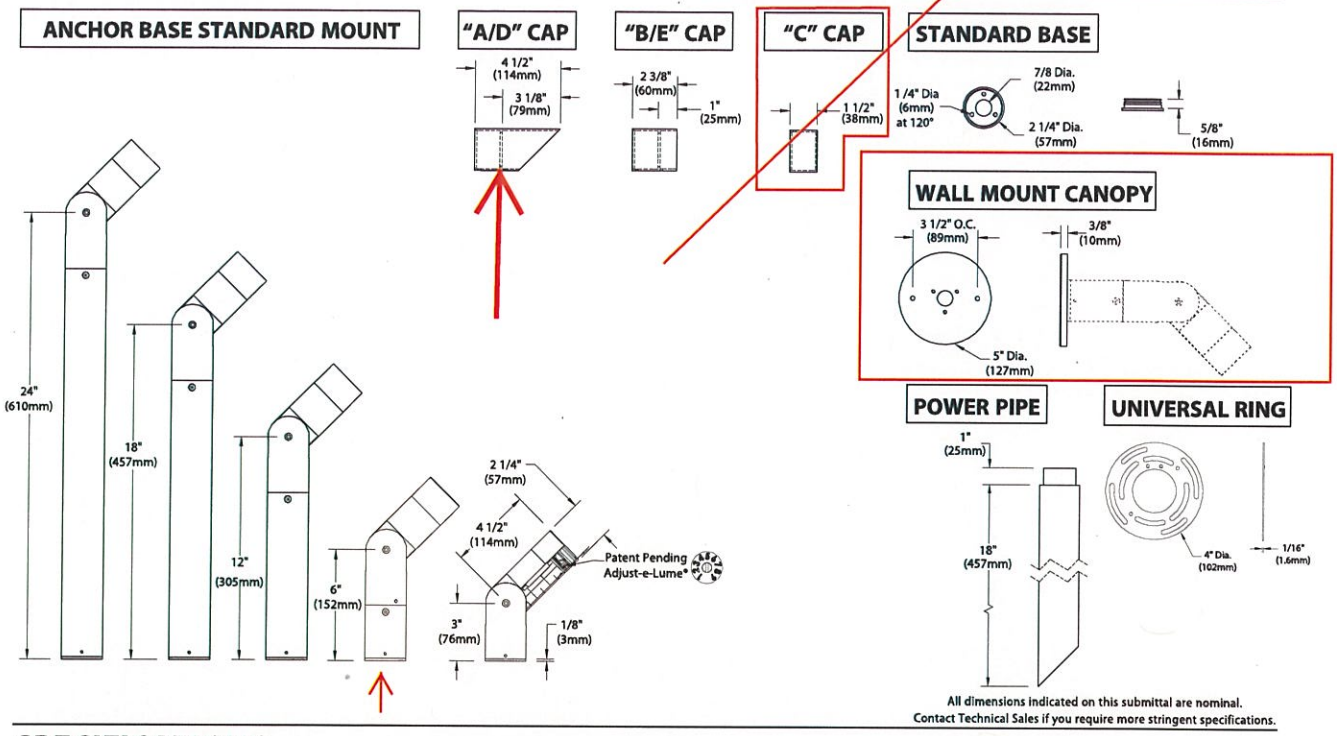


ArtiStar™
BKSSL SOLID STATE LIGHTING
Remote Transformer

the power of dimming with adjust-e-lume® TECHNOLOGY

ARTISTAR™

PROJECT:	SINCLAIR CENTRE
TYPE:	L9



All dimensions indicated on this submittal are nominal.
Contact Technical Sales if you require more stringent specifications.

SPECIFICATIONS

GreenSource Initiative™
Metal and packaging components are made from recycled materials. Manufactured using renewable solar energy, produced onsite. Returnable to manufacturer at end of life to ensure cradle-to-cradle handling. Contains no chlorofluorocarbons (CFC's). Use of [illegible] for GreenSource efficacy and rec[illegible] www.bklighting.com/greensource f[illegible]

Materials
Furnished in Copper-Free Aluminu[illegible] (Type 360) or Stainless Steel (Type 3[illegible]

Body
Fully machined from solid billet. Unibody design provides enclosed, water-proof wireway and integral heat sink for maximum component life. Integral knuckle for maximum mechanical strength. High temperature, silicone 'O' Ring provides water-tight seal.

Knuckle
'Aim and Lock' knuckle is comprised of two components. The first is integral to the body and features an interior, machined taper. The second is machined from solid billet and features a second, reverse angle taper. The resultant mechanical taper-lock allows a full 180° vertical adjustment without the use of serrated teeth, which inherently limit aiming. High temperature, silicone 'O' Ring provides water-tight seal and compressive resistance to maintain fixture position. Design withstands 73 lb. static load prior to movement to ensure decades of optical alignment. Biaxial source control with 360° horizontal rotation in addition to vertical adjustment.

Cap
Fully machined. Accommodates [1] lens or louver media. Choose from 45° cutoff ('A' or 'D'), 1" deep bezel with 90° cutoff ('B' or 'E'), or flush lens ('C') cap styles. 'A' and 'B' caps include weep-hole for water and debris drainage. 'D' and 'E' caps exclude weep-hole and are for interior use only.

Lens
Shock resistant, tempered, glass lens is factory adhered to fixture cap and provides hermetically sealed optical compartment. Specify soft focus (#12) or rectilinear (#13) lens.

BKSSL™
Integrated solid state system with 'e' technology is scalable for field upgrade. Modular design with electrical quick disconnects permit field maintenance. High power, forward throw source complies with ANSI C78.377 binning [illegible]ice [illegible]ng [illegible]ens [illegible]gy

FIXTURES ARE MOUNTED TO CATWALK IN THE CLOCK TOWER. ELECTRICAL CONTRACTOR TO SELECT MOUNTING TO SUIT EXISTING CONDITIONS

[illegible]Hz.
[illegible]tor correction and eliminates inrush current. Output, over-voltage, open-circuit, and short circuit protected. Inrush current limited to <1A (non-dimming). Conforms to Safety Std. C22.2 No. 250.13-12.

Line dimmable. For use with low voltage dimmer with dedicated neutral conductor. Minimum 25 watt load required for dimming.

Optics
Interchangeable OPTIKIT™ modules permit field changes to optical distribution. Color-coded for easy reference: Narrow Spot (NSP) = Red. Spot (SP) = Green. Medium Flood (MFL) = Yellow. Wide Flood (WFL) = Blue.

Adjust-e-Lume® (Pat. Pending)
Integral electronics allows dynamic lumen response at the individual fixture. Indexed (100% to 25% nom.) lumen output. Maintains output at desired level or may be changed as conditions require. Specify factory preset *output intensity.*

Installation
Available for installation in three distinct mounting conditions:

Anchor Base (Standard)
Machined anchor base with 7/8"dia. slip conduit hole and [3] 3/16" dia. anchor bolt holes (hardware by others).

Power Pipe™ (Optional)
Provides a clean transition from wiring system to fixture. Schedule 80, 18" PVC housing for direct burial into soil or concrete. Machined 2-1/4" dia. cap for fixture mounting. Stainless steel hardware. Optional 6" diameter, molded stability flange, which simplifies installation and projects into substrate to reinforce housing stability.

Wall Mount Canopy (Optional)
Optional 5" dia. machined canopy permits mounting to junction box (gasket by others). 6" maximum base height for canopy-[illegible]

Remote
For use [illegible]er.

Wiring
Teflon® [illegible]ied to UL 1659 sta[illegible]

Hardwa[illegible]
Tamper-[illegible]e vertical aiming s[illegible]dditional corrosio[illegible]

Finish
StarGua[illegible]hromate-free pr[illegible]uminum compor[illegible]polyester powder coat or [illegible]powder are avai[illegible]ponents interior [illegible]finish for

TOTAL LIGHTING SOLUTIONS INC.
☐ Reviewed ☐ Not Reviewed
☒ Reviewed as modified ☐ Revise and Re-submit
Project Number: SINCLAIR CENTER
Date ..... NOV 7, 2013
By .....
Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

Warranty
5 year limited warranty.

Certification and Listing
ITL tested to IESNA LM-79. Lighting Facts Registration per USDOE (www.lightingfacts.com). ETL Listed to ANSI/UL Standard 1838 and UL Standard 8750. Certified to CAN/CSA Standard C22.2 No. 9. RoHs compliant. Suitable for indoor or outdoor use. Suitable for use in wet locations. Suitable for installation within 4' of the ground. IP66 Rated. Made in USA.

Intertek USA lighting facts RoHS

*Teflon is a registered trademark of DuPont Corporation.
*Energy Star is a registered trademark of the United States Environmental Protection Agency.

B-K LIGHTING
40429 Brickyard Drive • Madera, CA 93636 • USA
559.438.5800 • FAX 559.438.5900
www.bklighting.com • info@bklighting.com

SUBMITTAL DATE	DRAWING NUMBER
8-21-13	SUB001107

adjust-e-lume® TECHNOLOGY

Photometry for use with e36 **2.7K**

Select OptiKit™ for desired distribution

RED	Narrow Spot (NSP)
GREEN	Spot (SP)
YELLOW	Medium Flood (MFL)
BLUE	Wide Flood (WFL)

Set adjust-e-lume™ Dial to desired output

Narrow Spot

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	2.4	3.1	5.0	6.3	7.6	8.9	9.2	9.3	9.3
16'	3.8	4.9	7.9	9.9	11.9	13.9	14.3	14.6	14.6
12'	6.7	8.6	14.0	17.6	21.2	24.7	25.5	25.9	25.9
8'	15.1	19.4	31.4	39.7	47.6	55.5	57.3	58.3	58.3
4'	60.4	77.7	125.8	158.6	190.4	222.1	229.2	233.0	233.2

4' 2' 0' 2' 4'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Spot

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	1.6	2.1	3.3	4.3	5.3	5.9	6.1	6.3	6.3
16'	2.6	3.3	5.2	6.7	8.2	9.3	9.6	9.8	9.9
12'	4.5	5.8	9.3	12.0	14.7	16.5	17.0	17.5	17.5
8'	10.2	13.0	20.9	26.9	33.0	37.0	38.3	39.4	39.4
4'	40.9	52.1	83.4	107.8	131.9	148.1	153.1	157.5	157.8

8' 6' 4' 2' 0' 2' 4' 6' 8'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Medium Flood

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	0.9	1.3	2.0	2.5	3.1	3.4	3.6	3.6	3.6
16'	1.5	2.0	3.1	3.9	4.8	5.4	5.6	5.6	5.7
12'	2.6	3.6	5.5	6.9	8.6	9.5	9.9	9.9	10.1
8'	5.9	8.0	12.3	15.5	19.3	21.5	22.2	22.4	22.6
4'	23.6	32.1	49.3	62.2	77.1	85.8	88.9	89.5	90.5

10' 8' 6' 4' 2' 0' 2' 4' 6' 8' 10'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Wide Flood

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	0.4	0.6	0.9	1.1	1.4	1.6	1.6	1.7	1.7
16'	0.7	0.9	1.4	1.8	2.1	2.5	2.6	2.6	2.6
12'	1.2	1.6	2.5	3.2	3.8	4.4	4.6	4.7	4.7
8'	2.7	3.7	5.6	7.2	8.6	10.0	10.3	10.5	10.6
4'	10.9	14.8	22.3	28.6	34.3	39.9	41.1	42.2	42.3

14' 12' 10' 8' 6' 4' 2' 0' 2' 4' 6' 8' 10' 12' 14'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

B-K LIGHTING

40429 Brickyard Drive • Madera, California 93636 • 559.438.5800
www.bklighting.com • www.adjust-e-lume.com • www.bkssl.com

adjust-e-lume® TECHNOLOGY

Photometry for use with e22 **3K**

Select OptiKit™ for desired distribution

RED	Narrow Spot (NSP)
GREEN	Spot (SP)
YELLOW	Medium Flood (MFL)
BLUE	Wide Flood (WFL)

Set adjust-e-lume™ Dial to desired output

Narrow Spot

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	2.4	2.9	4.9	6.1	7.3	8.8	9.1	9.3	9.3
16'	3.8	4.6	7.6	9.6	11.4	13.8	14.3	14.5	14.6
12'	6.7	8.2	13.5	17.0	20.3	24.5	25.4	25.7	25.9
8'	15.1	18.4	30.3	38.2	45.8	55.2	57.0	57.9	58.2
4'	60.3	73.6	121.3	152.8	183.1	220.9	228.2	231.6	232.8

4' 2' 0' 2' 4'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Spot

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8
20'	1.6	2.1	3.1	4.[illegible]	4.9	6.0	6.1	6.2
16'	2.5	3.3	4.9	6.4	7.6	9.3	9.6	9.8
12'	4.5	5.9	8.7	11.4	13.5	16.6	17.0	17.3
8'	10.2	13.2	19.5	25.6	30.5	37.3	38.3	39.0
4'	40.6	52.7	78.1	102.3	121.9	149.1	153.1	156.0

8' 6' 4' 2' 0' 2' 4' 6' 8'

Note: If using No. 11 honeycomb baffle multiply footcandle v

Medium Flood

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7		
20'	1.0	1.2	1.9	2.4	2.9	3.4	3.5		
16'	1.5	1.8	2.9	3.8	4.6	5.3	5.4		
12'	2.6	3.3	5.2	6.7	8.1	9.5	9.6		
8'	6.0	7.4	11.8	15.0	18.3	21.3	21.[illegible]		
4'	23.8	29.5	47.0	60.2	73.3	85.1	86.4	91.2	92.2

10' 8' 6' 4' 2' 0' 2' 4' 6' 8' 10'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Wide Flood

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	0.4	0.5	0.9	1.1	1.3	1.6	1.7	1.7	1.7
16'	0.7	0.8	1.4	1.7	2.0	2.4	2.6	2.7	2.7
12'	1.2	1.5	2.5	3.0	3.5	4.3	4.7	4.7	4.7
8'	2.8	3.4	5.5	6.7	7.9	9.8	10.5	10.7	10.7
4'	11.1	13.4	22.2	26.8	31.7	39.0	41.9	42.6	42.7

14' 12' 10' 8' 6' 4' 2' 0' 2' 4' 6' 8' 10' 12' 14'

Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

TOTAL LIGHTING SOLUTIONS INC.

☒ Reviewed ☐ Not Reviewed

☐ Reviewed as modified ☐ Revise and Re-submit

Project Number:

SINCLAIR CENTER
NOV 7, 2013

Date .....

By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

B-K LIGHTING

40429 Brickyard Drive • Madera, California 93636 • 559.438.5800
www.bklighting.com • www.adjust-e-lume.com • www.bkssl.com

adjust-e-lume® TECHNOLOGY

Photometry for use with e23 4K

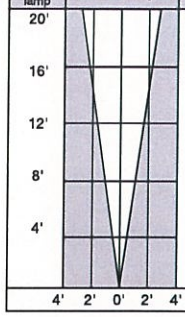
Select OptiKit™ for desired distribution

RED	Narrow Spot (NSP)
GREEN	Spot (SP)
YELLOW	Medium Flood (MFL)
BLUE	Wide Flood (WFL)

Set adjust-e-lume™ Dial to desired output

Narrow Spot

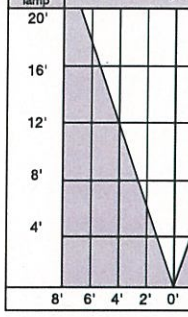
Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	2.7	3.7	5.5	6.9	8.5	10.1	10.4	10.6	10.6
16'	4.3	5.7	8.7	10.8	13.3	15.7	16.2	16.5	16.5
12'	7.6	10.2	15.4	19.2	23.6	27.9	28.8	29.3	29.4
8'	17.1	23.0	34.7	43.2	53.0	62.8	64.8	66.0	66.1
4'	68.6	91.9	138.6	172.9	212.1	251.3	259.2	263.8	264.3



Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Spot

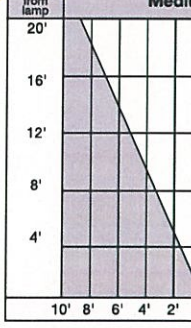
Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	1.9	2.4	3.7	4.8	6.0	6.8	7.1	7.1	7.1
16'	2.9	3.7	5.9	7.4	9.4	10.6	11.0	11.1	11.2
12'	5.2	6.6	10.4	13.2	16.7	18.9	19.6	19.8	19.8
8'	11.8	14.9	23.4	29.7	37.6	42.5	44.1	44.6	44.6
4'	47.0	59.6	93.6	118.9	150.3	170.1	176.3	178.3	178.6



Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Medium Flood

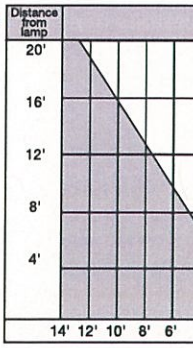
Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	1.1	1.4	2.2	2.8	3.3	3.8	4.0	4.1	4.1
16'	1.7	2.1	3.4	4.3	5.1	5.9	6.3	6.4	6.4
12'	3.0	3.8	6.1	7.7	9.1	10.5	11.2	11.3	11.4
8'	6.7	8.5	13.8	17.3	20.5	23.7	25.2	25.4	25.6
4'	26.9	34.2	55.0	69.3	81.9	94.7	100.6	101.6	102.4



Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

Wide Flood

Distance from lamp	Adjust-e-Lume™ Setting 1	2	3	4	5	6	7	8	9
20'	0.5	0.6	1.0	1.2	1.4	1.7	1.8	1.8	1.8
16'	0.8	1.0	1.5	1.8	2.2	2.7	2.8	2.8	2.9
12'	1.3	1.8	2.7	3.3	3.9	4.7	4.9	5.0	5.1
8'	3.0	4.0	6.0	7.3	8.8	10.7	11.1	11.3	11.4
4'	12.0	15.9	23.9	29.3	35.1	42.6	44.4	45.1	45.7



Note: If using No. 11 honeycomb baffle multiply footcandle values by .80

B-K LIGHTING
40429 Brickyard Drive • Madera, California 93636 • 559.438.5800
www.bklighting.com • www.adjust-e-lume.com • www.bkssl.com

Typical 'L9' Luminaire

APPROVAL DRAWING

lumenbeam™

XLARGE
WHITE & STATIC COLORS
SPL001223

Client: LIGHTWORKS

Project name: LP2012-04611-SINCLAIR CENTRE VANCOUVER

Order #:

Type: L10 Qty: 4

FEATURES AND BENEFITS

Physical :

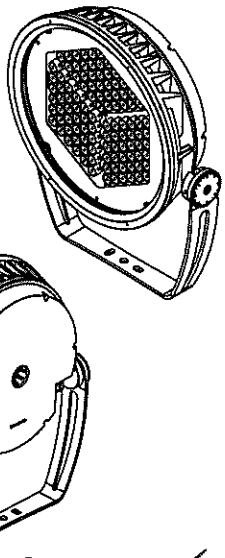
- Low copper content high pressure die-cast aluminum housing
- Stainless steel hardware
- Silicone sealing devices
- Clear tempered glass
- Dual chamber design for heat management and ease of maintenance
- Electro-statically applied polyester powder coat finish
- 16.33 kg / 36 lbs
- EPA: Front = 2.75 sq. ft./ 0.26 sq. m. Side = 1.17 sq. ft./ 0.12 sq. m.
- IP66
- Corrosion-resistant option for marine environments

Performance :

- Minimum 1fc (10.7 lux) @ 564 feet (172m) distance (4000K, 6° optic)
- 7,818 delivered lumens and 318,392 candelas at nadir (4000K, 6° optic)
- 6°, 10°, 20° or 40°, Elliptical distribution on 10° and 40° optic
- CRI value: 78+
- Lumen maintenance 120,000 hrs [L70 @ 25°C]
- Resolution per board or per fixture
- Lumen measurements comply with LM - 79 - 08 standard
- Operating temperatures: -25° C to 50° C [-13F to 122F]

Electrical :

- Line voltage luminaire for 120 to 277V
- Power and data in 1 cable, 3ft/1 m cord (#16-5)
- 140 watts
- 0-10 volt , DMX, DALI or Lumentalk dimming options

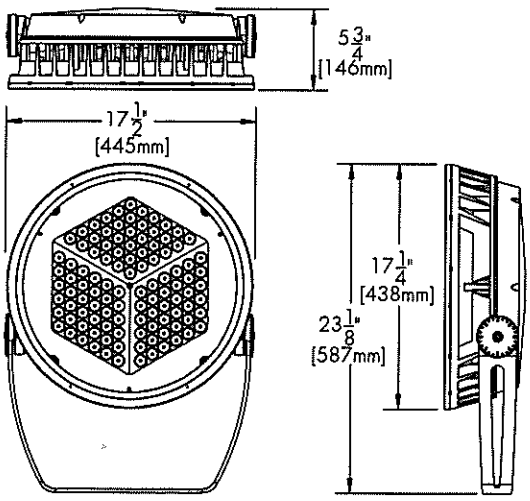


c UL us CE RoHS

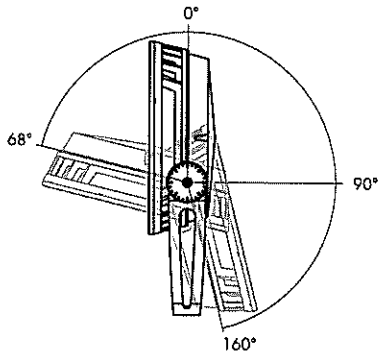
lumentalk

Wiring detail

WIRE COLOR	*/ USE*
GREEN	*GROUND*
WHITE	*NEUTRAL*
BLACK	*LIVE 120-277V*
RED	*0-10V / DATA +*
ORANGE	*0-10V / DATA -*



Standard Yoke (as shown, included)



Standard Yoke Mounting
Adjustable Pivot Limits
(Adjustable in 6 degree increments)

5 year warranty

Lumenpulse, 1751 Richardson, Suite 1505, Montreal (Quebec) Canada H3K 1G6 1.877.937.3003 P.514.937.3003 F. 514.937.6289
info@lumenpulse.com www.lumenpulse.com

2013.03.12
EM - R0

lumenpulse
Sustainable architectural LED lighting systems

APPROVAL DRAWING

lumenbeam™

XLARGE
WHITE & STATIC COLORS
SPL001223

HOW TO ORDER

LBX	120	40K	VN/VN/VN	***	SI	DMX 1FX	CRC	SPL001223
Housing	Voltage	Colors and color temperatures	Board 1/ Board 2/ Board 3 Optic	Optical Option	Finish	Dimming	Option	Special
1	2	3	4	5	6	7	8	9

1

Housing:

LBX - lumenbeam™ XLarge

2

Voltage:

120 - 120 volts
208 - 208 volts
240 - 240 volts
277 - 277 volts

3

Colors and Color temperatures:

27K - 2700K
30K - 3000K
35K - 3500K
40K - 4000K
57K - 5700K
RD - Red
GR - Green
BL - Blue

REVIEWED, EXCEPT FOR MOUNTING, TO BE CONFIRMED BY ENGINEER. CRITICAL DIMENSIONS TO BE SITE CONFIRMED

4

Optic (Please specity for each board):

VN - Very Narrow 6°

NS - Narrow Spot 10°

TOTAL LIGHTING SOLUTIONS INC.

☐ Reviewed ☐ Not Reviewed

☒ Reviewed as modified ☐ Revise and Re-submit

Project Number: SINCLAIR CENTER 2013 11 15

Date .....

By .....

Reviewed only as to general conformity with the design concept. This does not warrant or represent that the information contained on this drawing is either accurate or complete. Sole responsibility for correct design, details and dimensions shall remain with the party submitting the drawing

5

Optical Option:

LSLH - Linear Spread Lens Horizontal distribution
LSLV - Linear Spread Lens Vertical distribution

***NOTE:
3 @ LSLH
1 @ LSLV

*Factory installed. See Optical Accessories for field adjustable spread lens.

6

Finish:

SI - Silver SandText
BK - Black SandText
WH - White
CC - Custom (please specify RAL color)

7

Dimming:

NO - No Dimming
LT - Lumentalk (1% minimum dimming value)
DIM - 0-10V Dimming option (10% minimum dimming value)
DMX 1BD - DMX Dimming option, resolution per board (9 addresses per fixture) (1% minimum dimming value)
DMX 1FX - DMX Dimming option, resolution per fixture (3 addresses per fixture) (1% minimum dimming value)
DALI - DALI Dimming option (1% minimum dimming value)

8

Option:

SY - Short Yoke
CRC - Corrosion-resistant Coating

9

Special:

SPL001223 - Custom horizontal wall mounting bracket for 4x Lumenbeam XLarge fixtures.

(Quebec) Canada H3K 1G6 1.877.937.3003 P.514.937.3003 F. 514.937.6289
lumenpulse.com www.lumenpulse.com

lumenpulse™
Sustainable architectural LED lighting systems

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL
NATIONAL HISTORIC SITE
VICTORIA, BC

PR. # R.073922.001

LIST OF DRAWINGS

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. DEZFOOLI
31915
09/21/2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS
FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

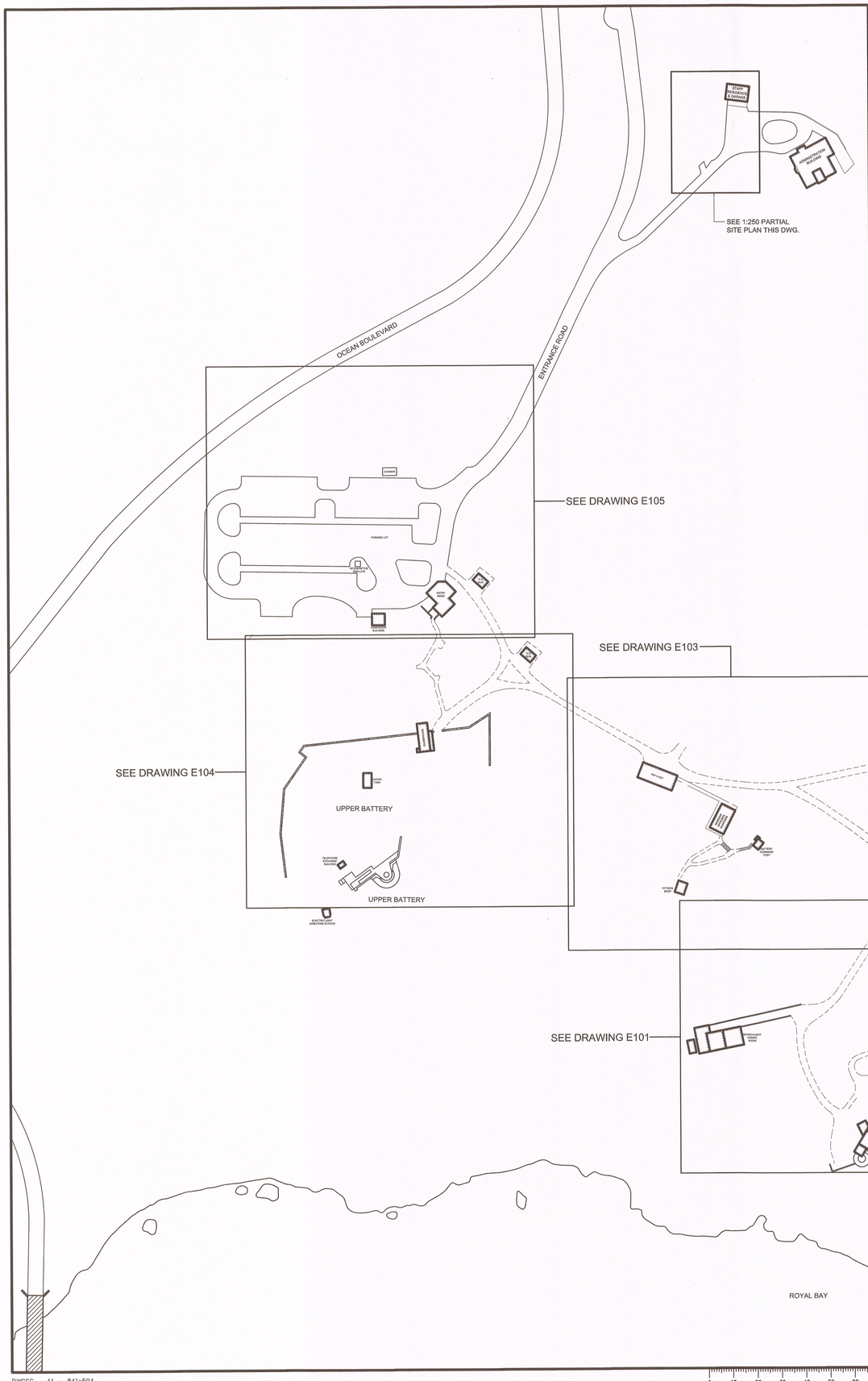
PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

TITLE PAGE

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E000 OF	1

DM5XXXXXX



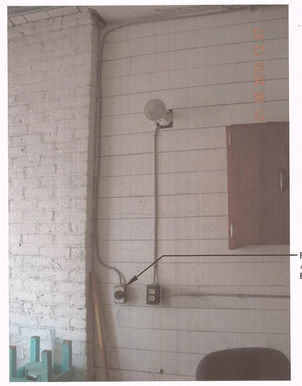


PHOTO #1

REMOVE EXISTING RECEPTACLE AND EXTEND WIRING TO THE EXISTING POLE AS INDICATED

EXISTING WIRING
EXISTING RECEPTACLE
NEW CONDUIT & WIRING OR CABLE
'LB' FITTING
EXISTING PANEL
STAFF RESIDENCE & GARAGE BLDG.
NEW 2#10 AWG + GR. IN 19mm RPVC
'LB' FITTING
APPROXIMATE LOCATION OF EXISTING 16mm U/G WATER LINE. SEE NOTE 3
EXISTING POLE WITH BROKEN LUMINAIRE SEE NOTES

PARTIAL SITE PLAN
SCALE 1:250

PHOTO #2

NOTES:

1. REPLACE EXISTING BROKEN LUMINAIRE ON THE POLE WITH A NEW LUMINAIRE SIMILAR TO THE EXISTING AND TO FIT THE EXISTING POLE. EXISTING BROKEN LUMINAIRE IS BELIEVED TO BE COPPER 'WBG' SERIES C/W PHOTOCELL OR SIMILAR. LAMP WATTAGE AND TYPE TO BE SAME AS EXISTING.
2. POWER TO THE EXISTING POLE USED TO BE PROVIDED FROM AN OVERHEAD LINE THAT HAS BEEN DISCONNECTED. PROVIDE A NEW FEEDER TO THIS POLE (AND DOWNSTREAM POLES) FROM THE ADJACENT GARAGE BUILDING. REMOVE THE EXISTING RECEPTACLE AND USE AS A JUNCTION BOX. EXTEND THE EXISTING WIRING TO THE BASE OF THE POLES AS INDICATED TO RE-FEED THIS POLE AND OTHER DOWNSTREAM POLES. INSTALL NEW WIRING FROM POLE BASE TO THE NEW LUMINAIRE.
3. DIG CAREFULLY IN THE AREA AROUND THE POLE TO ENSURE THAT EXISTING U/G WATER LINE IS NOT DAMAGED.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. DEZFOOLI # 31918
May 21/2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

SITE PLAN

SCALE 1:1000

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E100 OF	1

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX

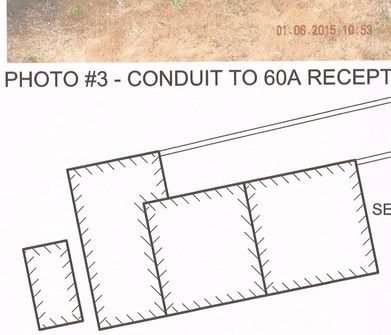
NEW CONDUIT & LB FITTINGS FOR NEW 60A RECEPTACLE

EXISTING DAMAGED CONDUIT TO EXISTING 'LB' FITTING BESIDE PANEL ON OTHER SIDE OF WALL. SEE PHOTO #9 BELOW

PHOTO #1 - CONDUIT TO 60A RECEPT.

PHOTO #2 - CONDUIT TO 60A RECEPT.

PHOTO #3 - CONDUIT TO 60A RECEPT.



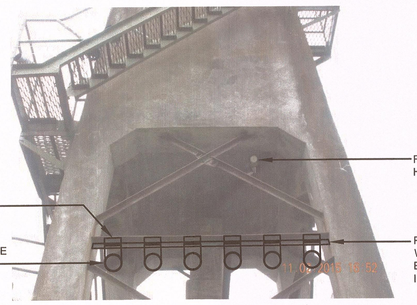


PHOTO #4 - TOWER

REPLACE EXISTING 40 CCT. PANEL WITH NEW PANEL C/W 200A MAIN BREAKER. PROVIDE BREAKERS IN NEW PANEL SAME SIZE AS EXISTING. THERE ARE 8 BREAKERS IN EXISTING PANEL. IN ADDITION, PROVIDE TWO 15A/1P AND ONE 60A/2P BREAKER FOR NEW OUTDOOR RECEPTACLE. PROVIDE A STAINLESS STEEL DRIP SHIELD ABOVE THE NEW PANEL. MAKE ALL NECESSARY CO-ORDINATIONS WITH BC HYDRO FOR DISCONNECTION & CONNECTION OF NEW PANEL. ALLOW FOR ALL BC HYDRO FEES

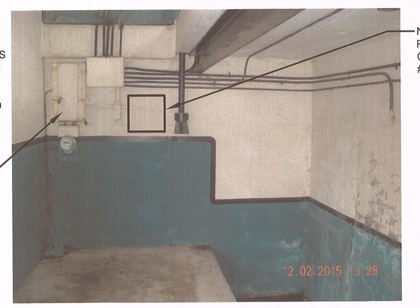
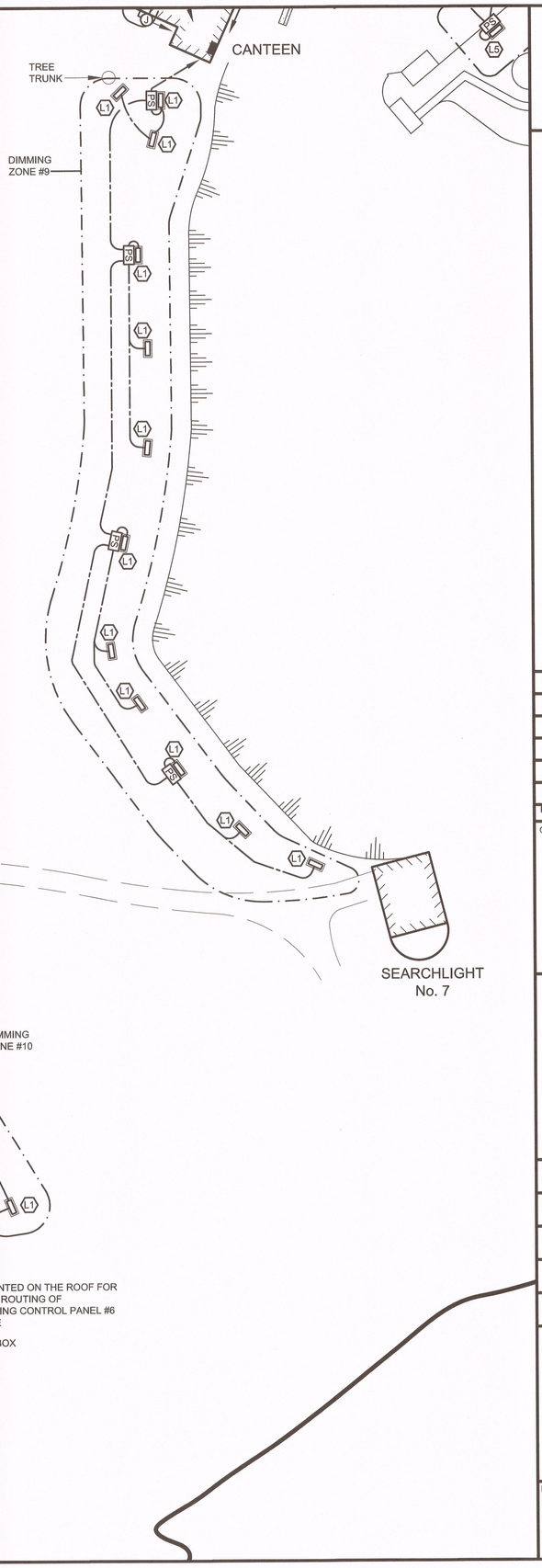


PHOTO #5 - BELMONT BATTERY PANEL

ALL WIRING TO BE INSTALLED UNDERGROUND IN CONDUITS EXCEPT WHERE NOTED OTHERWISE SEE TYPICAL TRENCH DETAIL ON DRAWING E206



0 10 20 30 40 50 60 70 80 90 100mm

PWGSC – A1 – 841x594

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
M. DEZFOOLI
31916
Aug 21/2015

5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26
Revision/ Revision	Description/Description	Date/Date

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

PARTIAL SITE PLAN - BELMONT BATTERY, SEARCHLIGHT No.7, AND CANTEEN

SCALE 1:200

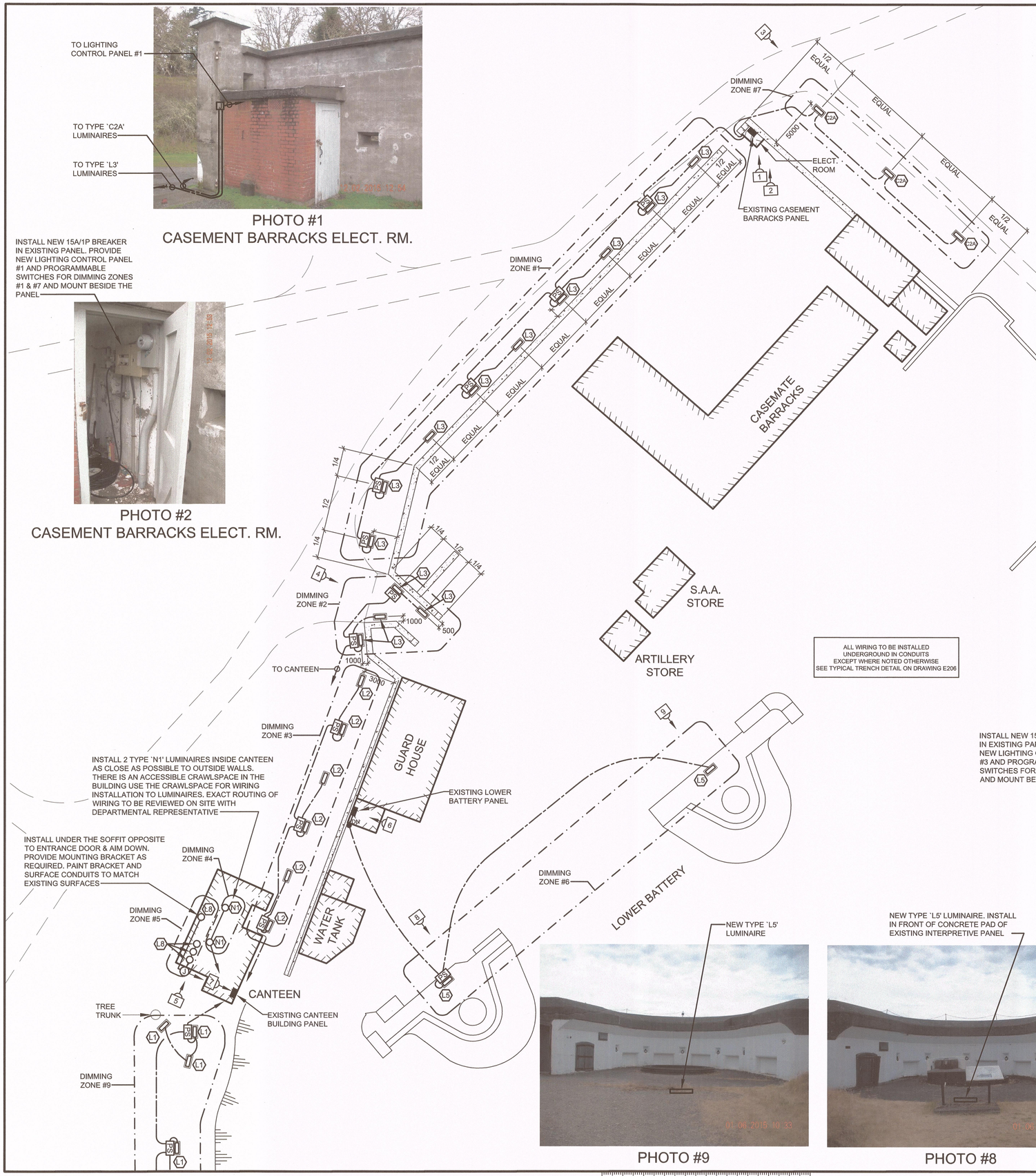
Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E101 OF	1

DM5XXXXXX

PHOTO #1
CASEMENT BARRACKS ELECT. RM.

INSTALL NEW 15A/1P BREAKER IN EXISTING PANEL. PROVIDE NEW LIGHTING CONTROL PANEL #1 AND PROGRAMMABLE SWITCHES FOR DIMMING ZONES #1 & #7 AND MOUNT BESIDE THE PANEL

PHOTO #2
CASEMENT BARRACKS ELECT. RM.



ALL WIRING TO BE INSTALLED UNDERGROUND IN CONDUITS EXCEPT WHERE NOTED OTHERWISE SEE TYPICAL TRENCH DETAIL ON DRAWING E206

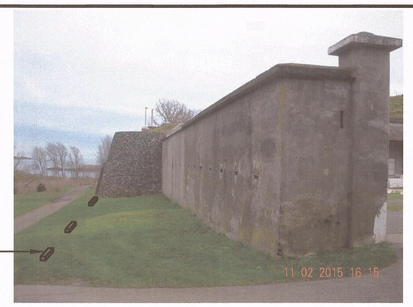


PHOTO #3 - BARRACKS ENTRANCE
NEW TYPE `C2A' LUMINAIRE (TYPICAL)

PHOTO #4 - GUARD HOUSE ENTRANCE
NEW TYPE `L3' LUMINAIRE (TYPICAL)

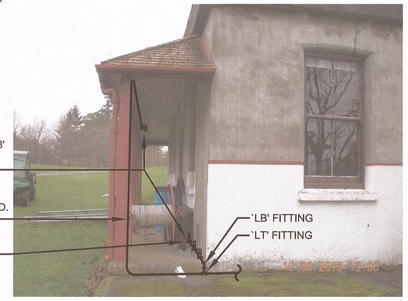


PHOTO #5 - CANTEEN

INSTALL NEW 15A/1P BREAKER IN EXISTING PANEL. PROVIDE NEW LIGHTING CONTROL PANEL #3 AND PROGRAMMABLE SWITCHES FOR ZONES #6 AND MOUNT BESIDE THE PANEL

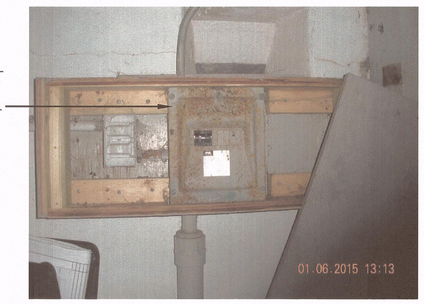


PHOTO #6 - LOWER BATTERY PANEL

PHOTO #9

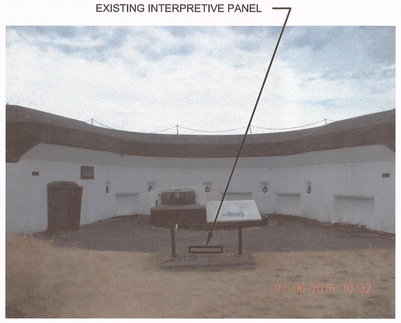


PHOTO #8

INSTALL NEW 15A/1P BREAKER IN EXISTING PANEL. PROVIDE NEW LIGHTING CONTROL PANEL #2 AND NEW 300x300mm LOCKABLE CABINET PROGRAMMABLE SWITCHES, DIMMERS, BYPASS SWITCHE, AND DMX CONTROLLERS FOR DIMMING ZONES #2, #3, #4, #5 & #9 AND MOUNT BESIDE THE PANEL

PHOTO #7- CANTEEN BLDG. PANEL

0 10 20 30 40 50 60 70 80 90 100mm

PWGSC – A1 – 841x594

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
M. DEZFOOLI
31916
May 21/2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

PARTIAL SITE PLAN - CASEMENT BARRACKS, LOWER BATTERY, AND CANTEEN

SCALE 1:200

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E102 OF	1

DM5XXXXXX

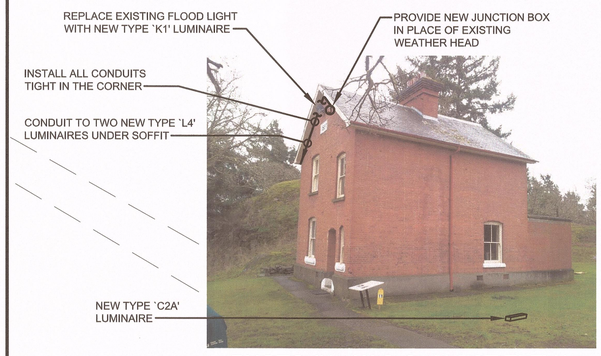


PHOTO #1 - W.O.Q. (WEST ELEV.)

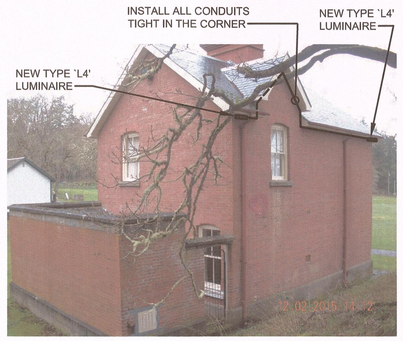


PHOTO #2 - W.O.Q. (EAST ELEV.)

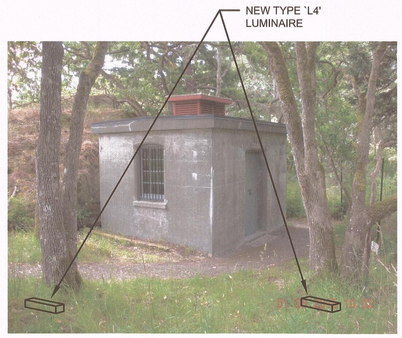
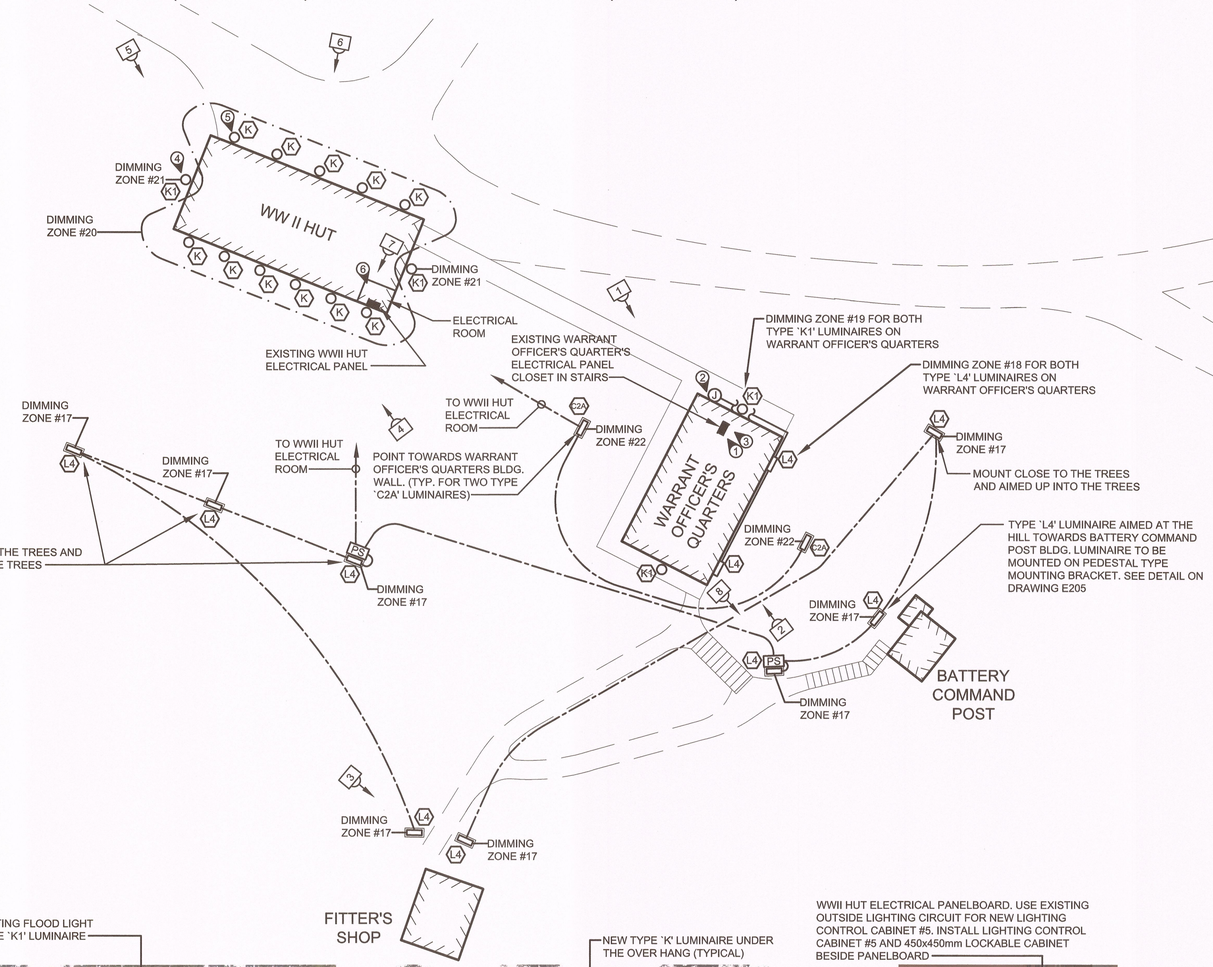


PHOTO #3 - FITTERS SHOP

PHOTO #4 - WWII HUT (SOUTH ELEV.)



KEY NOTES

1. ELECTRICAL PANEL FOR WARRANT OFFICER'S QUARTERS IS LOCATED IN A CLOSET IN STAIRS AND CIRCUIT #9 IS CURRENTLY USED FOR THE TWO EXISTING FLOOD LIGHTS ON THE FRONT AND BACK OF THE BUILDING. ELECTRICAL CONTRACTOR TO CONFIRM. USE THE SAME CIRCUITS TO FEED NEW TYPE `K' AND `L4' LUMINAIRES.
2. THERE IS AN EXISTING ABANDONED WEATHER HEAD WITH THE OTHER END OF THE CONDUIT IN THE ELECTRICAL CLOSET ABOVE THE PANEL. REMOVE ABANDONED WIRING FROM THE CONDUIT AND USE THE CONDUIT TO INSTALL NEW CABLING TO TWO NEW TYPE `L4' LUMINAIRES.
3. INSTALL LIGHTING CONTROL PANEL #4 AND 150x150mm LOCKABLE CABINET FOR PROGRAMMABLE SWITCHES AND DIMMER IN EXISTING ELECTRICAL CLOSET. INSTALL POWER SUPPLY FOR NEW TYPE `L4' LUMINAIRES IN THE SAME CLOSET.
4. REPLACE EXISTING FLOOD LIGHT WITH NEW TYPE `K1' LUMINAIRE. USE THE SAME CIRCUIT TO FEED ALL OTHER NEW TYPE `K' AND `K1' LUMINAIRES SHOWN ON OUTSIDE OF THE WWII HUT BUILDING. ALL WIRING TO NEW TYPE `K' AND `K1' LUMINAIRES TO BE INSTALLED IN ACCESSIBLE ATTIC SPACE.
5. INSTALL ALL NEW TYPE `K' LUMINAIRES UNDER THE OVERHANG AS FAR AWAY FROM THE FACADE AS POSSIBLE. INSTALL A WOODEN SUPPORT UNDER THE OVERHANG TO MAKE A FLAT SURFACE FOR MOUNTING OF THE LUMINAIRE. PAINT THE WOODEN SUPPORT TO MATCH SURROUNDING SURFACES.
6. INSTALL NEW LIGHTING CONTROL CABINET #5 AND 450x450mm LOCKABLE CABINET FOR PROGRAMMABLE SWITCHES, DIMMER AND POWER SUPPLIES FOR TYPE `K' AND `K1' LUMINAIRES FOR DIMMING ZONES #17, #20, #21, AND #22 BESIDE EXISTING WWII HUT PANELBOARD

ALL WIRING TO BE INSTALLED UNDERGROUND IN CONDUITS EXCEPT WHERE NOTED OTHERWISE SEE TYPICAL TRENCH DETAIL ON DRAWING E206

PHOTO #5 - WWII HUT (WEST ELEV.)

PHOTO #6 - WWII HUT (NORTH ELEV.)

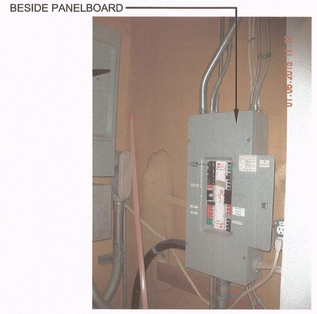


PHOTO #7 - WWII HUT PANELBOARD

PHOTO #8 - STAIRCASE

0 10 20 30 40 50 60 70 80 90 100mm

PWGSC – A1 – 841x594

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. DEZFOOLI # 31916 — Aug 21/2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

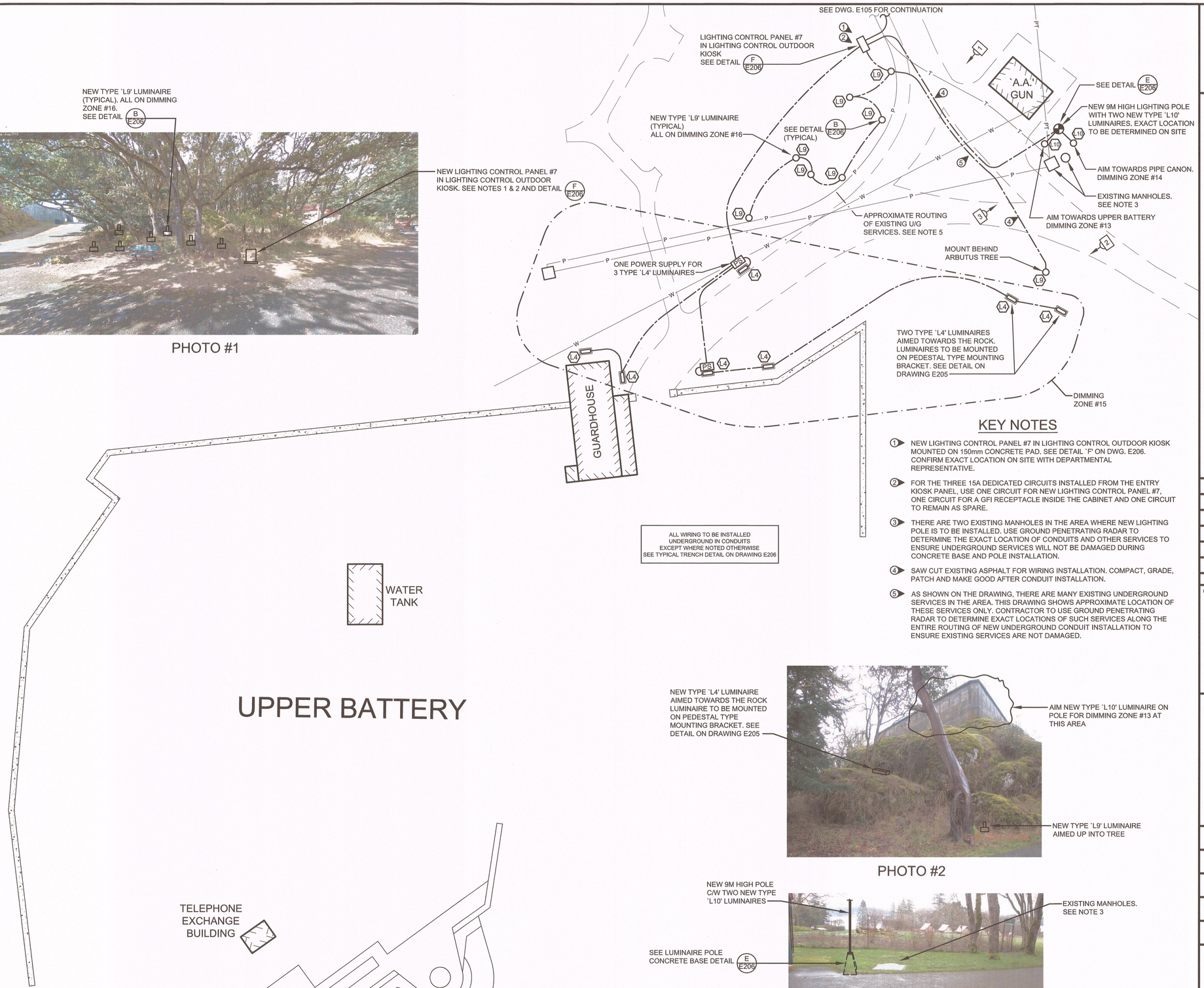
PARTIAL SITE PLAN - WWII HUT, WARRANT OFFICER'S QUARTERS, FITTER'S SHOP, AND BATTERY COMMAND POST

SCALE 1:200

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E103 OF	1

DM5XXXXXX

PHOTO #1



ALL WIRING TO BE INSTALLED UNDERGROUND IN CONDUITS EXCEPT WHERE NOTED OTHERWISE SEE TYPICAL TRENCH DETAIL ON DRAWING E206

KEY NOTES

1. NEW LIGHTING CONTROL PANEL #7 IN LIGHTING CONTROL OUTDOOR KIOSK MOUNTED ON 150mm CONCRETE PAD. SEE DETAIL 'F' ON DWG. E206. CONFIRM EXACT LOCATION ON SITE WITH DEPARTMENTAL REPRESENTATIVE.
2. FOR THE THREE 15A DEDICATED CIRCUITS INSTALLED FROM THE ENTRY KIOSK PANEL, USE ONE CIRCUIT FOR NEW LIGHTING CONTROL PANEL #7, ONE CIRCUIT FOR A GFI RECEPTACLE INSIDE THE CABINET AND ONE CIRCUIT TO REMAIN AS SPARE.
3. THERE ARE TWO EXISTING MANHOLES IN THE AREA WHERE NEW LIGHTING POLE IS TO BE INSTALLED. USE GROUND PENETRATING RADAR TO DETERMINE THE EXACT LOCATION OF CONDUITS AND OTHER SERVICES TO ENSURE UNDERGROUND SERVICES WILL NOT BE DAMAGED DURING CONCRETE BASE AND POLE INSTALLATION.
4. SAW CUT EXISTING ASPHALT FOR WIRING INSTALLATION. COMPACT, GRADE, PATCH AND MAKE GOOD AFTER CONDUIT INSTALLATION.
5. AS SHOWN ON THE DRAWING, THERE ARE MANY EXISTING UNDERGROUND SERVICES IN THE AREA. THIS DRAWING SHOWS APPROXIMATE LOCATION OF THESE SERVICES ONLY. CONTRACTOR TO USE GROUND PENETRATING RADAR TO DETERMINE EXACT LOCATIONS OF SUCH SERVICES ALONG THE ENTIRE ROUTING OF NEW UNDERGROUND CONDUIT INSTALLATION TO ENSURE EXISTING SERVICES ARE NOT DAMAGED.

PHOTO #2

PHOTO #3

UPPER BATTERY

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. DEZFOOLI # 31916 — 21/2015

5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26
Revision/ Revision	Description/Description	Date/Date

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

PARTIAL SITE PLAN - UPPER BATTERY

SCALE 1:200

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E104 OF	1

DM5XXXXXX

PHOTO #1 - INTERPRETIVE DISPLAYS

PHOTO #2 - WASHROOM BUILDING

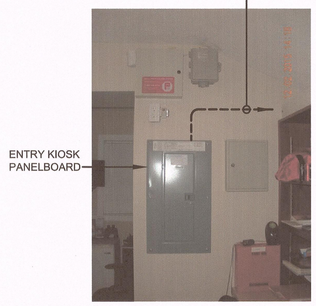


PHOTO #3 - ENTRY KIOSK PANELBOARD

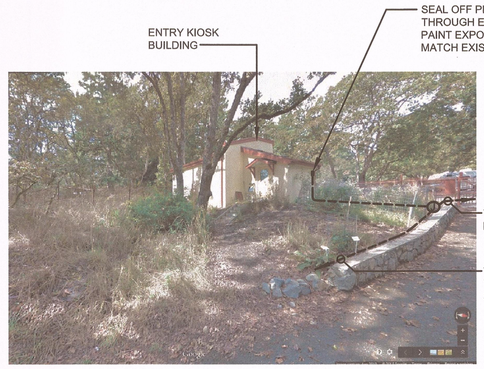
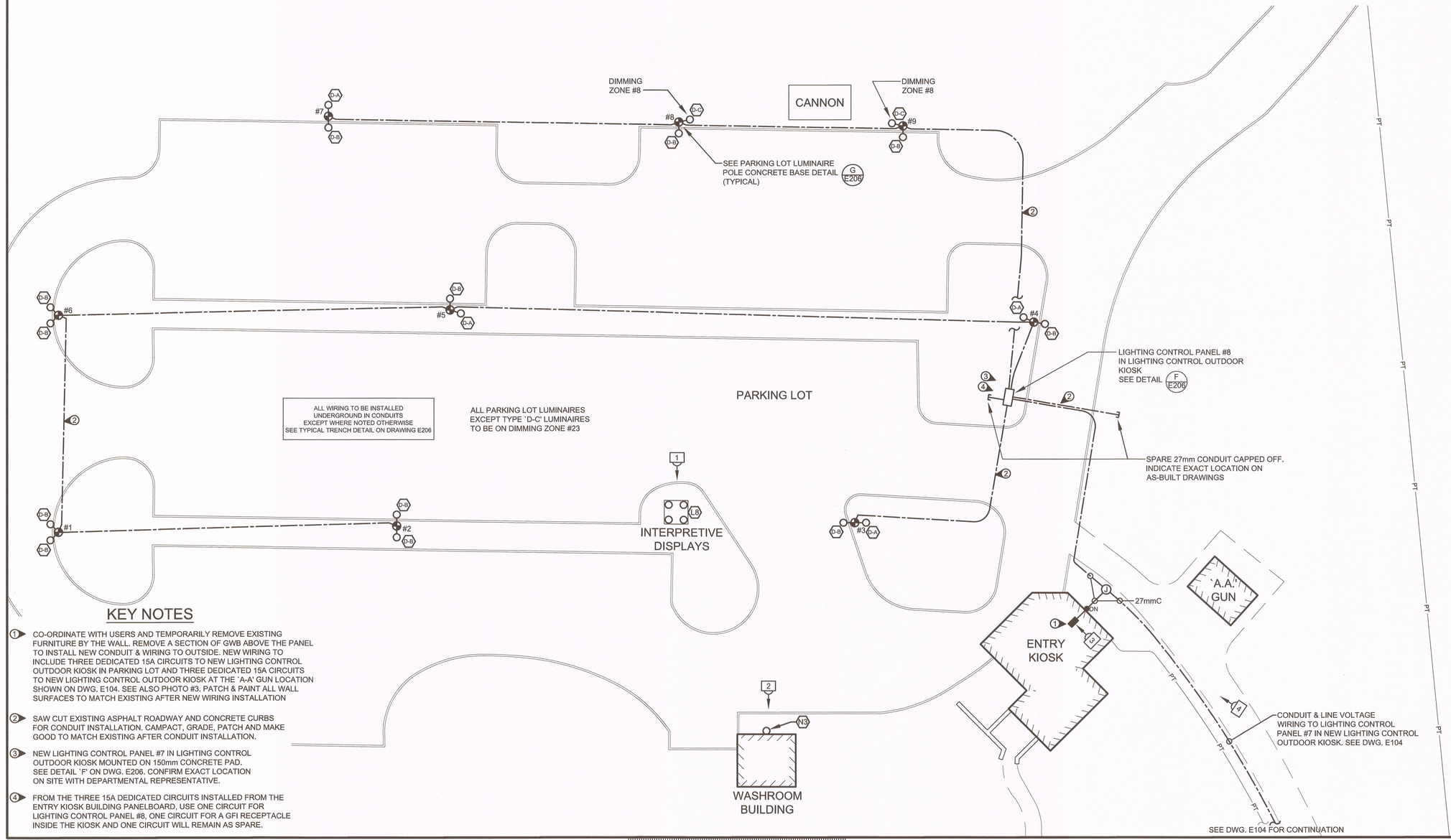


PHOTO #4 - ENTRY KIOSK BUILDING



KEY NOTES

1. CO-ORDINATE WITH USERS AND TEMPORARILY REMOVE EXISTING FURNITURE BY THE WALL. REMOVE A SECTION OF GWB ABOVE THE PANEL TO INSTALL NEW CONDUIT & WIRING TO OUTSIDE. NEW WIRING TO INCLUDE THREE DEDICATED 15A CIRCUITS TO NEW LIGHTING CONTROL OUTDOOR KIOSK IN PARKING LOT AND THREE DEDICATED 15A CIRCUITS TO NEW LIGHTING CONTROL OUTDOOR KIOSK AT THE `A-A' GUN LOCATION SHOWN ON DWG. E104. SEE ALSO PHOTO #3. PATCH & PAINT ALL WALL SURFACES TO MATCH EXISTING AFTER NEW WIRING INSTALLATION
2. SAW CUT EXISTING ASPHALT ROADWAY AND CONCRETE CURBS FOR CONDUIT INSTALLATION. CAMPACT, GRADE, PATCH AND MAKE GOOD TO MATCH EXISTING AFTER CONDUIT INSTALLATION.
3. NEW LIGHTING CONTROL PANEL #7 IN LIGHTING CONTROL OUTDOOR KIOSK MOUNTED ON 150mm CONCRETE PAD. SEE DETAIL `F' ON DWG. E206. CONFIRM EXACT LOCATION ON SITE WITH DEPARTMENTAL REPRESENTATIVE.
4. FROM THE THREE 15A DEDICATED CIRCUITS INSTALLED FROM THE ENTRY KIOSK BUILDING PANELBOARD, USE ONE CIRCUIT FOR LIGHTING CONTROL PANEL #8, ONE CIRCUIT FOR A GFI RECEPTACLE INSIDE THE KIOSK AND ONE CIRCUIT WILL REMAIN AS SPARE.

PWGSC – A1 – 841x594

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
M. DEZFOOLI
31965
Aug 21/2015

Revision/Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

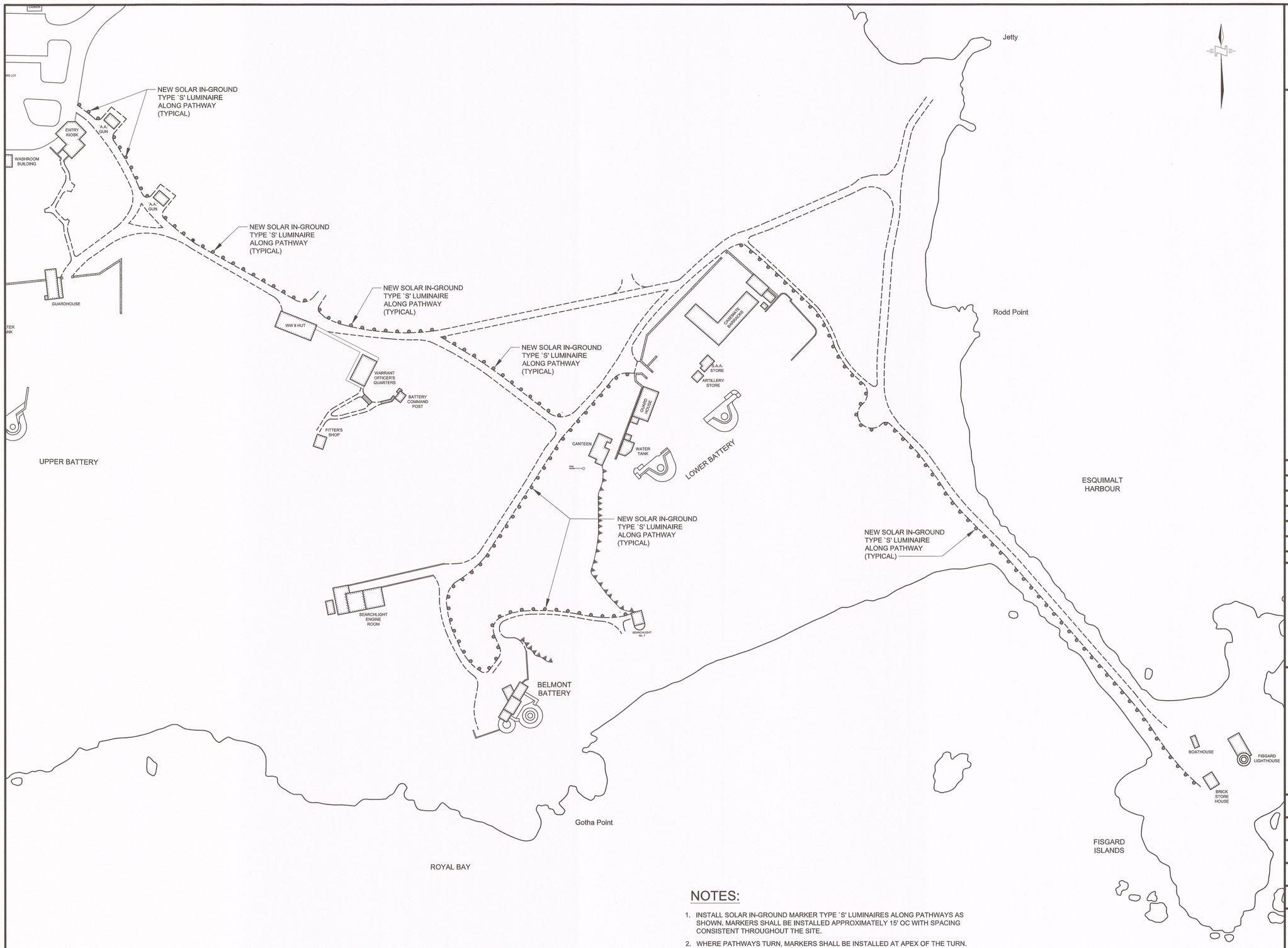
Drawing title/Titre du dessin

PARTIAL SITE PLAN - PARKING LOT

SCALE 1:200

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E105 OF	1

DM5XXXXXX



NOTES:

1. INSTALL SOLAR IN-GROUND MARKER TYPE 'S' LUMINAIRES ALONG PATHWAYS AS SHOWN. MARKERS SHALL BE INSTALLED APPROXIMATELY 15' OC WITH SPACING CONSISTENT THROUGHOUT THE SITE.
2. WHERE PATHWAYS TURN, MARKERS SHALL BE INSTALLED AT APEX OF THE TURN.
3. SEE ALSO TYPE 'S' LUMINAIRE DESCRIPTION ON DRAWING E200.

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — M. DEZFOOLI # 31916
Aug 21/2015

Revision/Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

SITE PATHWAY LIGHTING PLAN

SCALE 1:750

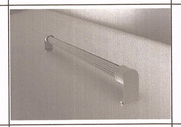
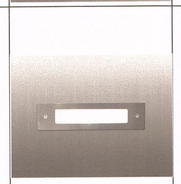
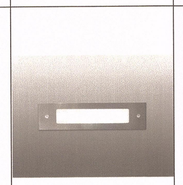
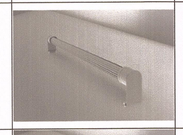
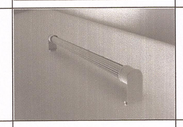
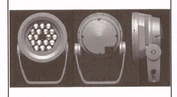
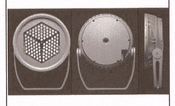
Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E106 OF	1

PWGSC – A1 – 841x594

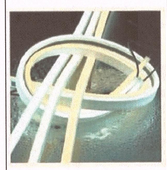
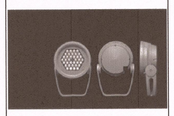
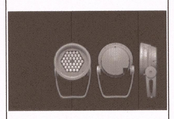
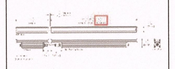
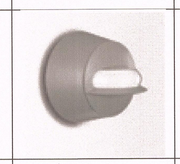
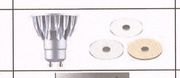
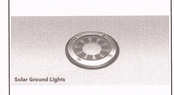
0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX

LUMINAIRES SUPPLIED BY PWGSC AND INSTALLED BY CONTRACTOR

TYPE	QUANTITY	DETAIL	LIGHT SOURCE	DESCRIPTION
`C2A'	AVAILABLE - 5 REQUIRED - 5		LED AS NOTED	LUMENPULSE LUMENFACADE - LOGP HO 120 48 30K 30x60 WAM12 SI DIM c/w 10' LONG, 5C#16 LEADER CABLE NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC. 2. INSTALL LUMINAIRE SURFACE MOUNTED ON CONCRETE PAD INSIDE THE ENCLOSURE AND AIMING AT THE SUBJECT. 3. CUT AND SHORTEN THE LENGTH OF ADJUSTABLE ARM. CONFIRM EXACT LENGTH ON SITE.
`L1'	AVAILABLE - 17 REQUIRED - 17		LED AS NOTED	SPI LIGHTING - EEG-11110 L26.8WA-24V AN04 3500K SMA PSN c/w 10' LONG, 2C#18 LEADER CABLE AND CPS10875(144568) PS03 120V PSE DIMMABLE POWER SUPPLY (ONE POWER SUPPLY FOR MAXIMUM OF 3 LUMINAIRES) NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC 2. INSTALL LUMINAIRE SURFACE MOUNTED ON CONCRETE PAD INSIDE THE ENCLOSURE AND AIMING AT THE SUBJECT.
`L2'	AVAILABLE - 6 REQUIRED - 6		LED AS NOTED	SPI LIGHTING - START & END ERG 11574 [142708] L20.1WA-24V 120-277V [BSS] 3500K PW DBB PSN c/w 20' LONG, 2C#18 LEADER CABLE AND CPS10875 (142707) PS03 120V PSE DIMMABLE POWER SUPPLY (ONE POWER SUPPLY FOR MAXIMUM OF 2 LUMINAIRES) NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC 2. ONE `START' AND ONE `END' ERG LUMINAIRE TO BE INSTALLED IN ONE DBB BOX TO MAKE ONE 1160mm LONG `L2' LUMINAIRE. 3. PROVIDE TWO ADJUSTABLE BRACKETS FOR EACH DBB BOX FOR FIXING IT TO THE CONCRETE PAD AND TO PROVIDE ADJUSTABILITY FOR AIMING OF THE LUMINAIRE. REFER TO DRAWINGS FOR DETAILS 4. INSTALL LUMINAIRE c/w NEW BRACKETS SURFACE MOUNTED ON CONCRETE PAD INSIDE THE ENCLOSURE AND AIMING AT THE SUBJECT. 5. PROVIDE NEW CONTINUOUS RUBBER GASKET AROUND TOP OF DBB BOXES WHERE EACH `START' LUMINAIRE AND `END' LUMINAIRE FASTEN TO THE BOX. 6. DRILL FOUR 7mm HOLES IN THE BOTTOM OF EACH DBB BOX TO PROVIDE DRAINAGE OF BOX.
`L3'	AVAILABLE - 13 REQUIRED - 13		LED AS NOTED	SPI LIGHTING - START & END ERG 11573 [142709] L13.4WA-24V 120-277V [BSS] 3500K PW DBB PSN c/w 20' LONG, 2C#18 LEADER CABLE AND CPS10875 (142707) PS03 120V PSE DIMMABLE POWER SUPPLY (ONE POWER SUPPLY FOR MAXIMUM OF 2 LUMINAIRES) NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC. LUMINAIRE IS SIMILAR TO `L2' EXCEPT SHORTER 2. ONE `START' AND ONE `END' ERG LUMINAIRE TO BE INSTALLED IN ONE DBB BOX TO MAKE ONE 880mm LONG `L3' LUMINAIRE. 3. PROVIDE TWO ADJUSTABLE BRACKETS FOR EACH DBB BOX FOR FIXING IT TO THE CONCRETE PAD AND TO PROVIDE ADJUSTABILITY FOR AIMING OF THE LUMINAIRE. REFER TO DRAWINGS FOR DETAILS 4. INSTALL LUMINAIRE c/w WITH NEW BRACKETS SURFACE MOUNTED ON CONCRETE PAD INSIDE THE ENCLOSURE AND AIMING AT THE SUBJECT. 5. PROVIDE NEW CONTINUOUS RUBBER GASKET AROUND TOP OF DBB BOXES WHERE EACH `START' LUMINAIRE AND `END' LUMINAIRE FASTEN TO THE BOX. 6. DRILL FOUR 7mm HOLES IN THE BOTTOM OF EACH DBB BOX TO PROVIDE DRAINAGE OF BOX.
`L4'	AVAILABLE - 17 REQUIRED - 17		LED AS NOTED	SPI LIGHTING - EEG-11109 L13.4WA-24V AN04 4500K SMA PSN c/w 20' LONG, 2C#18 LEADER CABLE AND CPS10875(142707) PS03 120V PSE DIMMABLE POWER SUPPLY (ONE POWER SUPPLY FOR MAXIMUM OF 4 LUMINAIRES) NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC 2. INSTALL LUMINAIRE SURFACE MOUNTED ON CONCRETE PAD INSIDE THE ENCLOSURE AND AIMING AT THE SUBJECT (EXCEPT FOR TWO LUMINAIRES MOUNTED TO UNDERSIDE OF SOFFIT OF WARRANT OFFICER'S QUARTERS AS SHOWN ON DRAWING E103)
`L5'	AVAILABLE - 4 REQUIRED - 4		LED AS NOTED	SPI LIGHTING - EEG-11110 L26.8WA-24V AN04 3500K SMA PSN c/w 20' LONG, 2C#18 LEADER CABLE AND CPS10875(144568) PS03 120V PSE DIMMABLE POWER SUPPLY (ONE POWER SUPPLY FOR MAXIMUM OF 3 LUMINAIRES) NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC 2. INSTALL LUMINAIRE SURFACE MOUNTED ON CONCRETE PAD INSIDE THE ENCLOSURE AND AIMING AT THE SUBJECT.
`L6'	AVAILABLE - 6 REQUIRED - 6		LED AS NOTED	LUMENPULSE LUMENBEAM - LBM 120 30K NS SI DMX CRC c/w 10' LONG, 5C#16 LEADER CABLE AND LBM-SN-SI-BK NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC. 2. PROVIDE UNISTRUT SUPPORT FOR LUMINAIRE INSTALLATION. REFER TO DRAWINGS. 3. PROVIDE LUMENPULSE CBX-DS LINEAR LENSES FOR NEW LUMINAIRES. REFER TO DRAWINGS.
`L8'	AVAILABLE - 12 REQUIRED - 12		LED AS NOTED	BK LIGHTING - AR LED RM E22 SP A9 SAP 12 A 3 NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC. 2. CONTACT MANUFACTURER AND PROVIDE 5" DIAMETER CANOPY (WAM) WITH ALUMINUM FINISH (SAP) FOR EACH LUMINAIRE. 3. PROVIDE REMOTE ELECTRONIC TRANSFORMER AND DIMMER FOR EACH GROUP OF LUMINAIRES.
`L9'	AVAILABLE - 8 REQUIRED - 8		LED AS NOTED	BK LIGHTING - AR LED RM E22 WFL A9 BZW 12 B 3 WM NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC. 2. PROVIDE REMOTE ELECTRONIC TRANSFORMER AND DIMMER FOR EACH GROUP OF LUMINAIRES.
`L10'	AVAILABLE - 4 REQUIRED - 3		LED AS NOTED	LUMENPULSE LUMENBEAM - LBX 120 40K VN/VN/VN (3 LUMINAIRES WITH LSLH LENSES AND ONE LUMINAIRE WITH LSLV LENS) SI DMX 1FX CRC c/w 10' LONG, 5C#16 LEADER CABLE. NOTES: 1. REFER TO APPENDIX `A' OF SPECIFICATIONS FOR DETAILED INFORMATION RELATED TO LUMINAIRES, POWER SUPPLIES, ETC. THAT WILL BE SUPPLIED BY PWGSC. 2. FOR LUMINAIRE AT BELMONT BATTERY, PROVIDE ONE LUMENPULSE TN2 TENON ADAPTER AND ONE CREE WM-2L-SV TENON FOR MOUNTING ON THE ROOF. EXACT LOCATION TO BE DETERMINED ON SITE. 3. FOR POLE MOUNTED LUMINAIRES IN UPPER BATTERY AREA. REFER TO DETAIL `E' ON DRAWING E206 FOR MOUNTING ACCESSORIES REQUIRED FOR POLE MOUNTING OF LUMINAIRES. 4. THE TWO `TYPE L10' LUMINAIRES THAT ARE SUPPLIED BY PWGSC AND THAT ARE TO BE INSTALLED ON THE 8.5 METER POLE IN THE UPPER BATTERY AREA HAVE A 10-FOOT LONG, 5C LEADER CABLE ATTACHED TO THEM. CONTRACTOR SHALL SHIP THE TWO `L10' LUMINAIRES TO THE MANUFACTURER. MANUFACTURER TO REPLACE THE 5C LEADER CABLE WITH NEW LEADER CABLE IN ORDER TO MAINTAIN IP66 RATING OF LUMINAIRE/LEADER CABLE ASSEMBLY. CABLE LENGTH TO BE OF SUFFICIENT LENGTH TO EXTEND DOWN POLE TO HANDHOLE LOCATION. CONTRACTOR SHALL PAY ALL COSTS ASSOCIATED WITH REPLACING CABLE AND ALL SHIPPING COSTS. 5. PROVIDE LUMENPULSE CBX-DS FOR NEW LUMINAIRES. REFER TO DRAWINGS.

LUMINAIRES SUPPLIED AND INSTALLED BY CONTRACTOR

TYPE	DETAIL	LIGHT SOURCE	DESCRIPTION
`A'		3 x 2.5W WARM WHITE 2700K LED	**DESCRIPTION:** SURFACE MOUNTED LED PUCK LIGHT LUMINAIRE. APPROXIMATELY 120mm DIAMETER AND 20mm DEEP. MATTE CLEAR ANODIZED FINISHED. COMPLETE WITH PLUG-IN TRANSFORMER AND 3m LONG PLUG-IN CORD **BALLASTS/POWER SUPPLIES:** INTEGRAL LED POWER SUPPLY WITH 3m LONG CORD **NOTES/INSTRUCTIONS:** SURFACE MOUNT LUMINAIRES IN CENTER OF LIGHTHOUSE AND CENTERED ON WINDOW SILLS USING JUNCTION BOX AND AIM UPWARD. **MINIMUM ACCEPTABLE STANDARDS:** MP LIGHTING L131-7-W27S-60-A-MA
`C'		6W PER LINEAR METRE OF LUMINAIRE WARM WHITE 2900K LED	**DESCRIPTION:** FORWARD EMITTING LINEAR FLEXIBLE LUMINAIRE MOUNTED TO UNDERSIDE OF HANDRAIL STRUCTURE, AROUND BRICK STOREHOUSE BUILDING, AND AROUND TOP OF LIGHTHOUSE. LUMINAIRE TO BE IP67 RATED, CORROSION RESISTANT, SUITABLE FOR WET LOCATIONS AND MARINE ENVIRONMENT. CUSTOM LENGTH TO SUIT THE LENGTH REQUIRED. TO BE PROVIDED WITH JUMPER WIRES FOR LINKING LUMINAIRES AND POWER SUPPLIES SIZED BY THE MANUFACTURER TO SUIT THE APPLIED LOAD FOR EACH FIXTURE RUN. LUMINAIRE TO BE MOUNTED UTILIZING "U" SHAPED MOUNTING CHANNEL RECOMMENDED BY THE MANUFACTURER. BEND TOLERANCE 15cm RADIUS. USE SEPARATE RUNS OTHER SIDE OF TIGHT CORNERS. **BALLASTS/POWER SUPPLIES:** REMOTE DIMMABLE LED POWER SUPPLY 2900K, IP 67. **NOTES/INSTRUCTIONS:** SURFACE MOUNT SELF ADHESIVE LUMINAIRES INSIDE OF U-CHANNEL AS NOTED ON THE DRAWINGS. LOCATE AND INSTALL POWER SUPPLY INSIDE THE BUILDING OR OUTSIDE IN WP BOXES. PROVIDE LOW VOLTAGE WIRING IN CONDUIT TO POWER SUPPLY. **MINIMUM ACCEPTABLE STANDARDS:** VARIO-LED FLEX VENUS W824 TV IP67, 10000049 MOUNTING CHANNEL. LEADER CABLE LENGTH TO ACCOMMODATE THE DISTANCE BETWEEN POWER SUPPLY AND LUMINAIRE.
`D'		50 WATT WARM WHITE 3000K LED	**DESCRIPTION:** 257 DIA x 121 DEEP x 378 HIGH INCLUDING YOKE BRACKET. LED, 10 x 10 OPTICS. NARROW SPOT 10 DEG DISTRIBUTION. IP66 RATED WITH LOW COPPER CONTENT ALUMINUM HOUSING WITH SILVER FINISH AND COMPLETE WITH A CORROSION RESISTANT COATING AND CLEAR TEMPERED GLASS LENS. SURFACE MOUNTED. COMPLETE WITH 120V INTEGRAL 0-10V DIMMABLE DRIVER AND VISOR ACCESSORY. **BALLASTS/POWER SUPPLIES:** INTEGRAL LED POWER SUPPLY. **NOTES/INSTRUCTIONS:** MOUNT LUMINAIRE ON THE BRACKET CANTILEVERED FROM LIGHTHOUSE TOWER. **MINIMUM ACCEPTABLE STANDARDS:** LUMINAIRE TO BE OF SAME SHAPE AND QUALITY AS TYPES `L6' AND `L10' LUMINAIRES SUPPLIED BY PWGSC. LUMENPULSE LUMENBEAM, LBL-120-30K-NS-LSLV-SI-DIM-CRC, C/W 10' LEADER CABLE - LBL-VS-SI-BK.
`D-A' `D-B' `D-C'		50 WATT WARM WHITE 5700K LED	**DESCRIPTION:** 257 DIA x 121 DEEP x 378 HIGH INCLUDING YOKE BRACKET. LED, 10 x 10 OPTICS. IP 66 RATED WITH LOW COPPER CONTENT ALUMINUM HOUSING WITH SILVER FINISH AND COMPLETE WITH A CORROSION RESISTANT COATING AND CLEAR TEMPERED GLASS LENS. POLE MOUNTED, WITH LIGHTING DISTRIBUTION, OPTICAL AND POLE ACCESSORIES AS NOTED BELOW. **BALLASTS/POWER SUPPLIES:** INTEGRAL LED DIMMABLE POWER SUPPLY. **NOTES/INSTRUCTIONS:** MOUNT LUMINAIRE ON POLE ACCESSORY SUPPLIED BY LUMINAIRE MANUFACTURER. **MINIMUM ACCEPTABLE STANDARDS:** 1. LUMINAIRE TO BE OF SAME SHAPE AND QUALITY AS TYPES `L6' AND `L10' LUMINAIRES SUPPLIED BY PWGSC, 2. **LUMINAIRE TYPE `D-A':** LUMENPULSE LUMENBEAM, LBL-120-57K-WFL-SI-DIM-CRC c/w LEADER CABLE TO REACH BASE OF A 16' HIGH POLE. OPTICAL ACCESSORY: LBL-SNW-SI-BK. 3. **LUMINAIRE TYPE `D-B':** LUMENPULSE LUMENBEAM, LBL-120-57K-NS-LSLV-SI-DIM-CRC c/w LEADER CABLE TO REACH BASE OF A 16' HIGH POLE. OPTICAL ACCESSORY: LBL-SN-SI-BK 4. **LUMINAIRE TYPE `D-C':** LUMENPULSE LUMENBEAM, LBL-120-57K-WFL-LSLH-SI-DIM-CRC c/w LEADER CABLE TO REACH BASE OF A 16' HIGH POLE. OPTICAL ACCESSORY: LBL-SNW-SI-BK AND LBL-LSLA-SI. 5. MOUNTING ACCESSORY: LUMINAIRES SHALL BE SUPPLIED WITH A TOTAL OF 9 PM5-2 POLE ACCESSORIES, ROUND POLE BRACKET ASSEMBLY FOR TWIN LUMINAIRES. EACH LUMINAIRE/YOKE ASSEMBLY TO BE ABLE TO BE ROTATED 180°.
`F'		5W PER LINEAR FOOT OF FIXTURE WARM WHITE 2700K LED 10x60 DEGREE BEAM SPREAD	**DESCRIPTION:** LINEAR LED WALL GRAZER LUMINAIRE SURFACE MOUNTED TO CARE TAKER'S HOUSE SOFFIT. LUMINAIRE TO BE CONSTRUCTED OF 6616 ALUMINUM, IP65 RATED, CORROSION RESISTANT AND SUITABLE FOR MARINE ENVIRONMENT. PROVIDE REMOTE POWER SUPPLIES IN ATTIC SPACE. LUMINAIRES TO BE PROVIDED WITH CABLE LEADS TO POWER SUPPPLIES AND JUMPER CABLES. 24V. **BALLASTS/POWER SUPPLIES:** DIMMABLE LED DRIVER REMOTE MOUNTED INSIDE CARETAKER'S HOUSE ATTIC SPACE. **NOTES/INSTRUCTIONS:** FASTEN ADJUSTABLE MOUNTING BRACKETS TO RAFTERS USING 3mm DIAMETER x 25mm LONG 616SS STAINLESS STEEL SCREWS, SEAL PENETRATIONS WITH EXTERIOR GRADE PAINTABLE CAULKING. **MINIMUM ACCEPTABLE STANDARDS:** LUMENFACADE LOGR ASHRAE 24-48-27K-10x60-UMPR-WH-DIM-CRC-LOGRRD48. POWER SUPPLY TO ACCOMMODATE QUANTITY OF LUMINAIRES FED FROM THE UNIT. LEADER CABLE LENGTH TO ACCOMMODATE THE DISTANCE BETWEEN POWER SUPPLY AND LUMINAIRE, MINIMUM 25' LEADER CABLE.
`K'		4.3W WARM WHITE 3000K LED	**DESCRIPTION:** EXTERIOR RATED LED WALLWASHER, COMPLETE WITH LOW VOLTAGE WIRE LEADS TO POWER SUPPLY AND REMOTE POWER SUPPLIES WITH ENCLOSURE. MAXIMUM 3 FIXTURES PER POWER SUPPLY. **BALLASTS/POWER SUPPLIES:** DIMMABLE REMOTE POWER SUPPLY. **NOTES/INSTRUCTIONS:** SURFACE MOUNT LUMINAIRES BETWEEN RAFTERS WITH SURFACE MOUNTED JUNCTION BOX. PROVIDE MOUNTING BRACKET FOR MOUNTING LUMINAIRE HORIZONTAL. **MINIMUM ACCEPTABLE STANDARDS:** IGUZZINI CAT# TRICK BU21, POWER SUPPLY CAT# 9907, ENCLOSURE CAT# BZ33.
`K1'		3.8W, LED	WALL MOUNTED DIMMABLE LUMINAIRE BACKLIGHTING FACADE. IGUZZINI - TEE B869-120-15, COMPLETE WITH CIRCULAR MOUNTING PLATE I5631
`N1'		SORRA BRILLIANT, 7.5W, 2700K LED GU10	GENERIC SURFACE MOUNTED DIMMABLE MONOPOINT WITH 120V GU10 SOCKET, AND DIE-CAST ALUMINUM LAMPHEAD FOR MOUNTING OVER TOP OF SURFACE MOUNTED JUNCTION BOX. SORRA 16A-0710D-827-03 LED LAMP AND CCT SHIFT AND FLAT TOP ACCESSORIES. ACCESSORIES: FLAT TOP 36° x 36° AC-FR-3636-00, CCT SHIFTER 1/2 AC-CC-002-00.
`N3'		8W, LED	WALL MOUNTED DOWNLIGHT, REPLACEMENT FOR WALLPACK ON PUBLIC WASHROOM IN PARKING LOT. LUMARK XTORIA-N-PC1
`S'		WARM WHITE LED SOLAR PANEL	**DESCRIPTION:** SOLAR LED IN-GROUND MARKER LUMINAIRE SUITABLE FOR INSTALLATION IN CONCRETE. NOMINAL 140mm DIAMETER AND 65mm DEEP. HOUSING MADE OF CAST ALUMINUM c/w ANTI-THEFT ANCHOR PLATE, ANTI-SKID REINFORCED GLASS LENS, BRUSHED STAINLESS STEEL RIM AND WARM WHITE LED. FULL CHARGE TIME OF 6 HOURS UNDER DIRECT SUNLIGHT AND 9-12 HOURS UNDER OVERCAST SKIES. OPERATION TIME OF 12 HOURS WHEN FULLY CHARGED UNDER DIRECT SUNLIGHT AND 4-8 HOURS WHEN PARTIALLY CHARGED UNDER OVERCAST SKIES. **NOTES/INSTRUCTIONS:** PROVIDE 12" DIAMETER OR 12" SQUARE IN-GROUND CONCRETE BASE FOR EACH LUMINAIRE. BASE SHALL BE INSTALLED SO THAT THE EDGE OF THE BASE IS 6" AWAY FROM THE PATHWAYS FLUSH WITH GROUND. DURING CONCRETE POUR BLOCK OUT LUMINAIRE HOUSINGS WITH STYROFOAM FILLERS SUPPLIED WITH LUMINAIRES BY THE MANUFACTURER. FOLLOW MANUFACTURER'S INSTALLATION GUIDE. MAINTAIN CONSISTENT 15' SPACING BETWEEN LUMINAIRES THROUGHOUT THE PATHWAY. **MINIMUM ACCEPTABLE STANDARDS:** METEOR CAT# SH220C-WW-B-H.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. DEZFOOLI
31916
Aug 27/2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

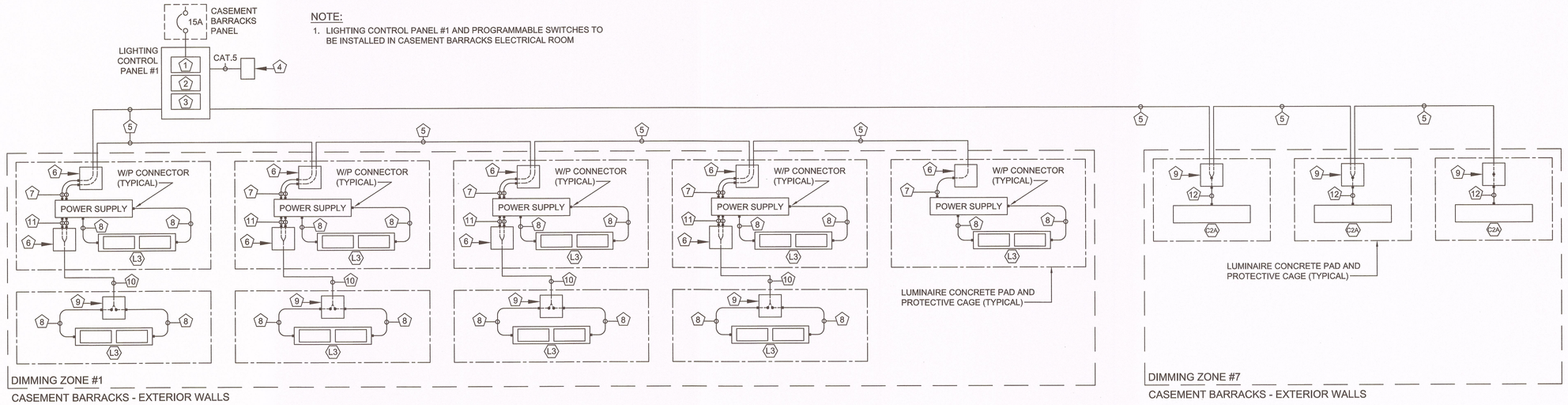
LUMINAIRE SCHEDULE

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E200 OF	1

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

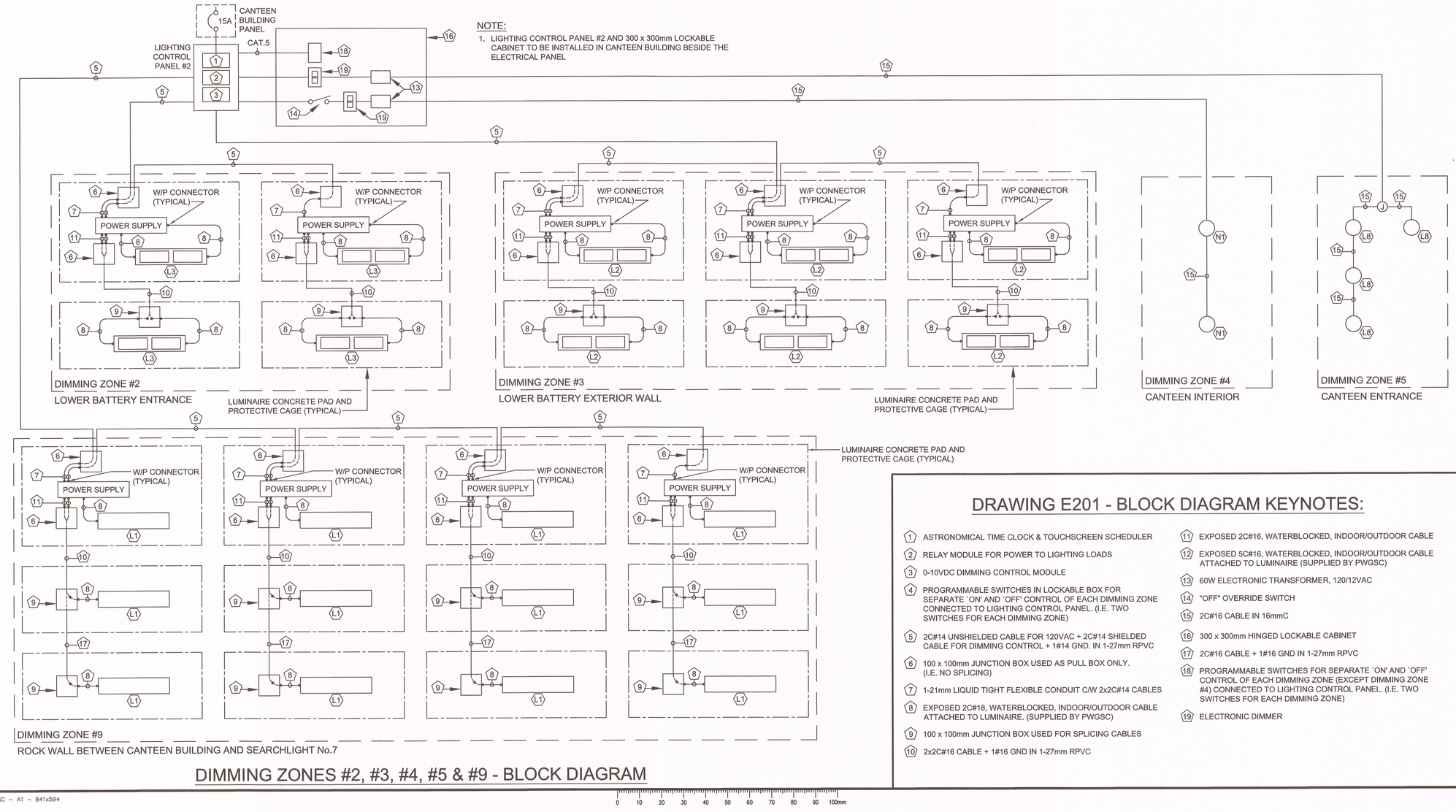
DM5XXXXXX



NOTE:

1. LIGHTING CONTROL PANEL #1 AND PROGRAMMABLE SWITCHES TO BE INSTALLED IN CASEMENT BARRACKS ELECTRICAL ROOM

DIMMING ZONES #1 & #7 - BLOCK DIAGRAM



NOTE:

1. LIGHTING CONTROL PANEL #2 AND 300 x 300mm LOCKABLE CABINET TO BE INSTALLED IN CANTEEN BUILDING BESIDE THE ELECTRICAL PANEL

DIMMING ZONES #2, #3, #4, #5 & #9 - BLOCK DIAGRAM

DRAWING E201 - BLOCK DIAGRAM KEYNOTES:

1. ASTRONOMICAL TIME CLOCK & TOUCHSCREEN SCHEDULER
2. RELAY MODULE FOR POWER TO LIGHTING LOADS
3. 0-10VDC DIMMING CONTROL MODULE
4. PROGRAMMABLE SWITCHES IN LOCKABLE BOX FOR SEPARATE 'ON' AND 'OFF' CONTROL OF EACH DIMMING ZONE CONNECTED TO LIGHTING CONTROL PANEL. (I.E. TWO SWITCHES FOR EACH DIMMING ZONE)
5. 2C#14 UNSHIELDED CABLE FOR 120VAC + 2C#14 SHIELDED CABLE FOR DIMMING CONTROL + 1#14 GND. IN 1-27mm RPVC
6. 100 x 100mm JUNCTION BOX USED AS PULL BOX ONLY. (I.E. NO SPLICING)
7. 1-21mm LIQUID TIGHT FLEXIBLE CONDUIT C/W 2x2C#14 CABLES
8. EXPOSED 2C#18, WATERBLOCKED, INDOOR/OUTDOOR CABLE ATTACHED TO LUMINAIRE. (SUPPLIED BY PWGSC)
9. 100 x 100mm JUNCTION BOX USED FOR SPLICING CABLES
10. 2x2C#16 CABLE + 1#16 GND IN 1-27mm RPVC
11. EXPOSED 2C#16, WATERBLOCKED, INDOOR/OUTDOOR CABLE
12. EXPOSED 5C#16, WATERBLOCKED, INDOOR/OUTDOOR CABLE ATTACHED TO LUMINAIRE (SUPPLIED BY PWGSC)
13. 60W ELECTRONIC TRANSFORMER, 120/12VAC
14. "OFF" OVERRIDE SWITCH
15. 2C#16 CABLE IN 16mmC
16. 300 x 300mm HINGED LOCKABLE CABINET
17. 2C#16 CABLE + 1#16 GND IN 1-27mm RPVC
18. PROGRAMMABLE SWITCHES FOR SEPARATE 'ON' AND 'OFF' CONTROL OF EACH DIMMING ZONE (EXCEPT DIMMING ZONE #4) CONNECTED TO LIGHTING CONTROL PANEL. (I.E. TWO SWITCHES FOR EACH DIMMING ZONE)
19. ELECTRONIC DIMMER

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. DEZFOOLI
31926
Aug 21 / 2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

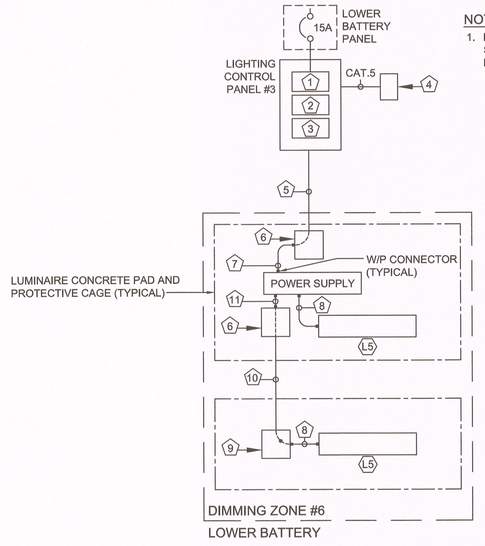
DIMMING ZONE BLOCK DIAGRAMS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E201 OF	1

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

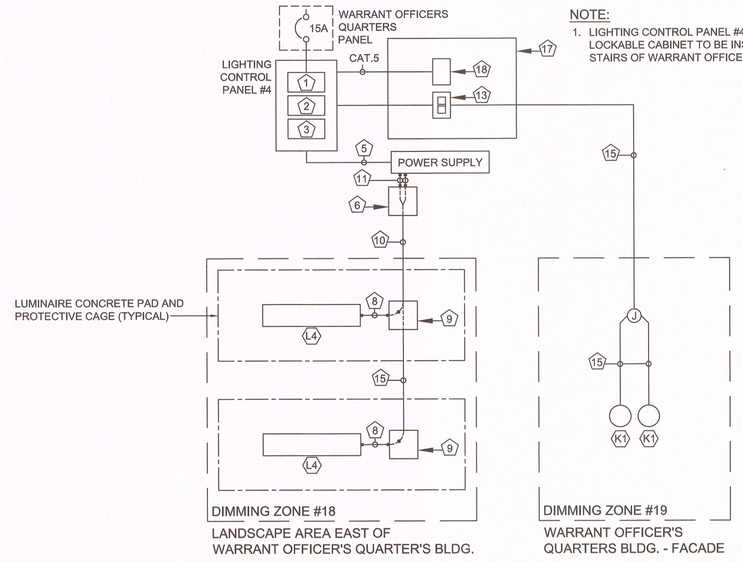
DM5XXXXXX



NOTE:

1. LIGHTING CONTROL PANEL #3 AND PROGRAMMABLE SWITCHES TO BE INSTALLED BESIDE THE ELECTRICAL PANEL IN THE GUARD HOUSE AREA

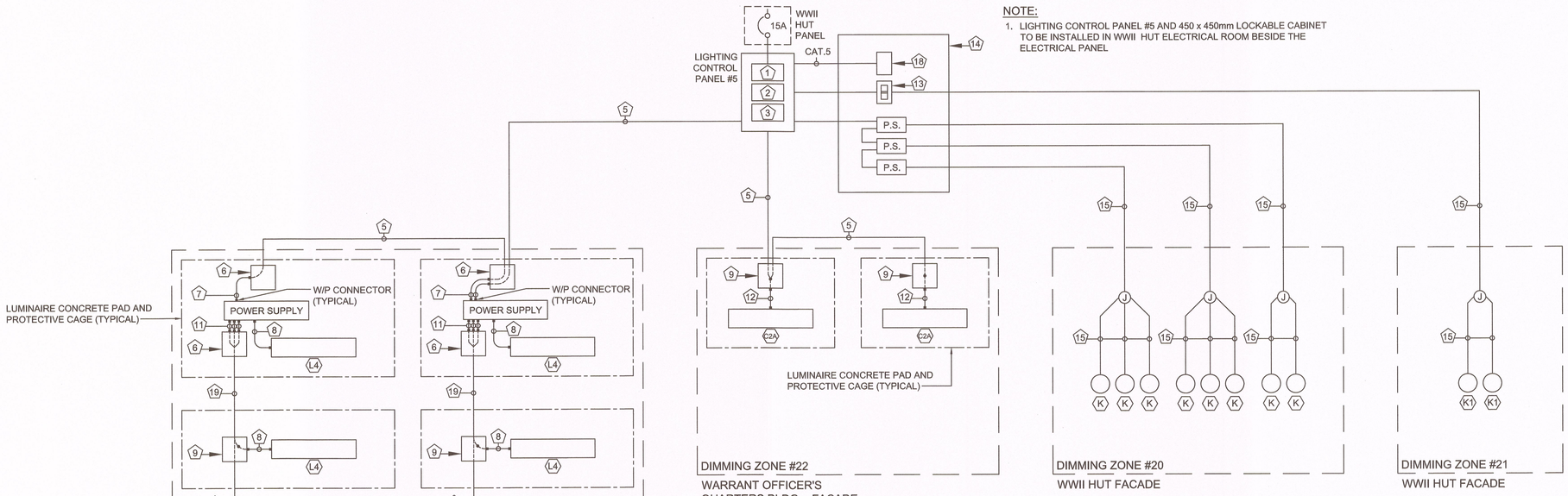
DIMMING ZONE #6 - BLOCK DIAGRAM



NOTE:

1. LIGHTING CONTROL PANEL #4, POWER SUPPLY AND 150 x 150mm LOCKABLE CABINET TO BE INSTALLED IN ELECTRICAL CLOSET IN STAIRS OF WARRANT OFFICER'S QUARTERS BUILDING

DIMMING ZONES #18 & #19 - BLOCK DIAGRAM



NOTE:

1. LIGHTING CONTROL PANEL #5 AND 450 x 450mm LOCKABLE CABINET TO BE INSTALLED IN WWII HUT ELECTRICAL ROOM BESIDE THE ELECTRICAL PANEL

DIMMING ZONES #17, #20, #21 & #22 - BLOCK DIAGRAM

DRAWING E202 - BLOCK DIAGRAM KEYNOTES:

1. ASTRONOMICAL TIME CLOCK & TOUCHSCREEN SCHEDULER
2. RELAY MODULE FOR POWER TO LIGHTING LOADS
3. 0-10VDC DIMMING CONTROL MODULE
4. PROGRAMMABLE SWITCH IN LOCKABLE BOX FOR SEPARATE 'ON' AND 'OFF' CONTROL OF EACH DIMMING ZONE CONNECTED TO LIGHTING CONTROL PANEL. (I.E. TWO SWITCHES FOR EACH DIMMING ZONE)
5. 2C#14 UNSHIELDED CABLE FOR 120VAC + 2C#14 SHIELDED CABLE FOR DIMMING CONTROL + 1#14 GND. IN 1-27mm RPVC
6. 100 x 100mm JUNCTION BOX USED AS PULL BOX ONLY. (I.E. NO SPLICING)
7. 1-21mm LIQUID TIGHT FLEXIBLE CONDUIT C/W 2x2C#14 CABLES
8. EXPOSED 2C#18, WATERBLOCKED, INDOOR/OUTDOOR CABLE ATTACHED TO LUMINAIRE. (SUPPLIED BY PWGSC)
9. 100 x 100mm JUNCTION BOX USED FOR SPLICING CABLES
10. 2x2C#16 CABLE + 1#16 GND IN 1-27mm RPVC
11. EXPOSED 2C#16, WATERBLOCKED, INDOOR/OUTDOOR CABLE
12. EXPOSED 5C#16, WATERBLOCKED, INDOOR/OUTDOOR CABLE ATTACHED TO LUMINAIRE (SUPPLIED BY PWGSC)
13. ELECTRONIC DIMMER
14. 450 x 450mm LOCKABLE CABINET
15. 2C#16 CABLE + 1#16 GND IN 16mmC
16. 2C#16 CABLE + 1#16 GND IN 1-27mm RPVC
17. 150 x 150mm LOCKABLE CABINET
18. PROGRAMMABLE SWITCHES FOR SEPARATE 'ON' AND 'OFF' CONTROL OF EACH DIMMING ZONE CONNECTED TO LIGHTING CONTROL PANEL. (I.E. TWO SWITCHES FOR EACH DIMMING ZONE)
19. 3x2C#16 CABLE + 1#16 GND IN 1-27mm RPVC

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — M. DEZFOOLI #31916

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

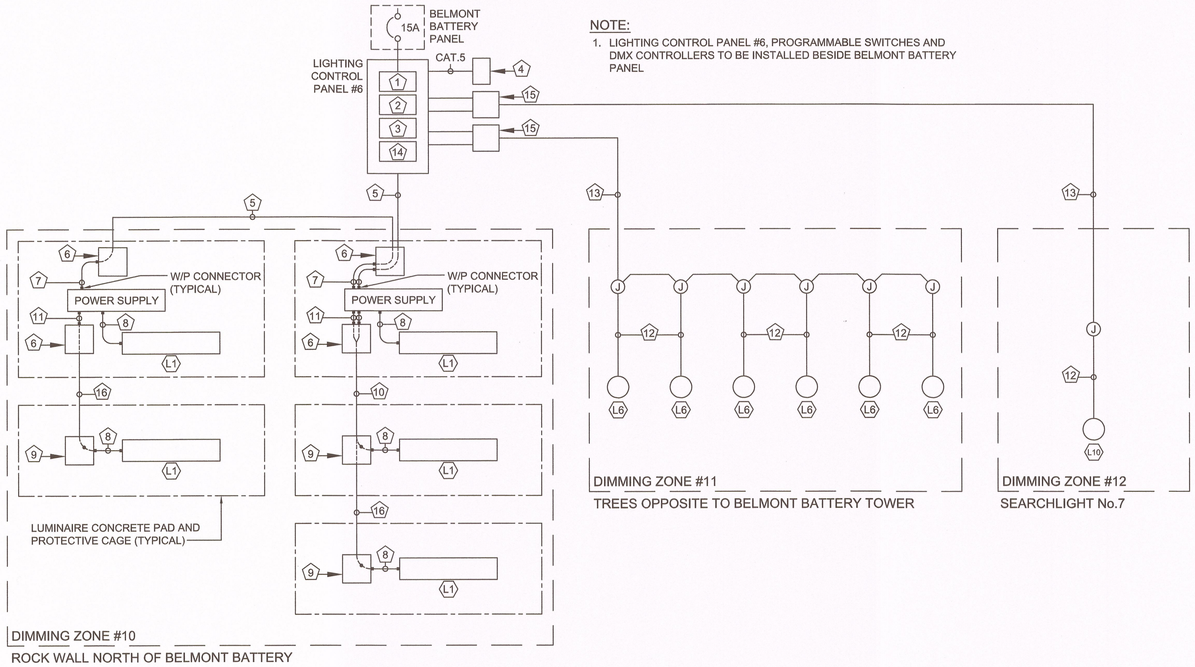
DIMMING ZONE BLOCK DIAGRAMS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E202 OF	1

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

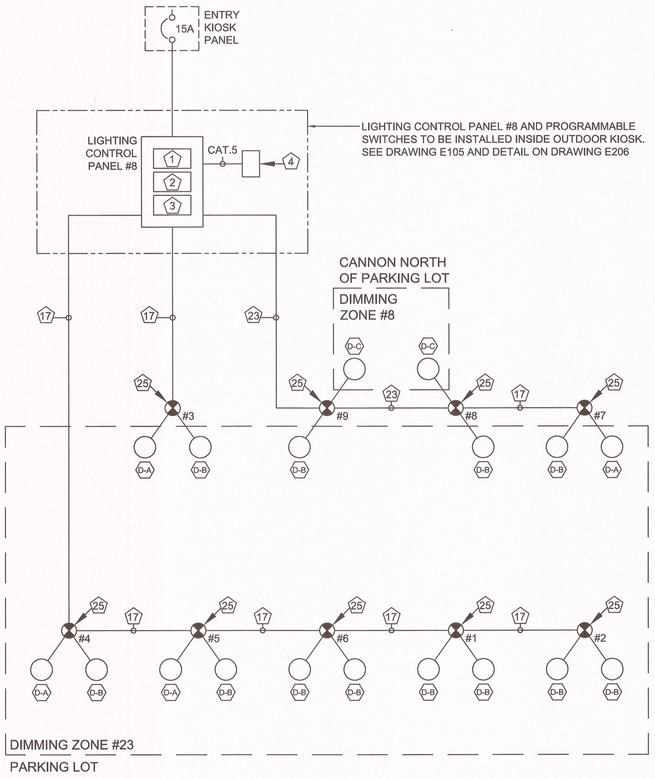
DM5XXXXXX



NOTE:

1. LIGHTING CONTROL PANEL #6, PROGRAMMABLE SWITCHES AND DMX CONTROLLERS TO BE INSTALLED BESIDE BELMONT BATTERY PANEL

DIMMING ZONES #10, #11 & #12 - BLOCK DIAGRAM



DIMMING ZONES #8 & #23 - BLOCK DIAGRAM

DIMMING ZONES #13, #14, #15 & #16 - BLOCK DIAGRAM

DRAWING E203 - BLOCK DIAGRAM KEYNOTES:

1. ASTRONOMICAL TIME CLOCK & TOUCHSCREEN SCHEDULER
2. RELAY MODULE FOR POWER TO LIGHTING LOADS
3. 0-10VDC DIMMING CONTROL MODULE
4. PROGRAMMABLE SWITCHES IN LOCKABLE BOX FOR SEPARATE `ON' AND `OFF' CONTROL OF EACH DIMMING ZONE CONNECTED TO LIGHTING CONTROL PANEL. (I.E. TWO SWITCHES FOR EACH DIMMING ZONE)
5. 2C#14 UNSHIELDED CABLE FOR 120VAC + 2C#14 SHIELDED CABLE FOR DIMMING CONTROL + 1#14 GND. IN 1-27mm RPVC
6. 100 x 100mm JUNCTION BOX USED AS PULL BOX ONLY. (I.E. NO SPLICING)
7. 1-21mm LIQUID TIGHT FLEXIBLE CONDUIT C/W 2x2C#14 CABLES
8. EXPOSED 2C#18, WATERBLOCKED, INDOOR/OUTDOOR CABLE ATTACHED TO LUMINAIRE. (SUPPLIED BY PWGSC)
9. 100 x 100mm JUNCTION BOX USED FOR SPLICING CABLES
10. 2x2C#16 CABLE + 1#16 GND IN 1-27mm RPVC
11. EXPOSED 2C#16, WATERBLOCKED, INDOOR/OUTDOOR CABLE
12. EXPOSED 5C#16, WATERBLOCKED, INDOOR/OUTDOOR CABLE ATTACHED TO LUMINAIRE (SUPPLIED BY PWGSC)
13. 5C#16 CABLE IN 1-27mm RGS CONDUIT
14. `DMX 512' CONTROL INTERFACE
15. `LUMENPULSE CBX-DS' DMX CONTROLLER. ALLOW FOR TWO `CBX-DS' CONTROLLERS AS SHOWN. CONTACT `LUMENPULSE' REPRESENTATIVE AND CONFIRM IF ONE `CBX-DS' CONTROLLER COULD BE USED IN LIEU OF TWO `CBX-DS' CONTROLLERS. CONFIRM ALL WIRING REQUIREMENTS FROM LIGHTING CONTROL PANEL TO `CBX' WITH `LUMENPULSE' REPRESENTATIVE
16. 2C#16 CABLE + 1#16 GND IN 1-27mm RPVC
17. 5C#16 CABLE + 1#16 GND IN 1-27mm RPVC
18. POLE BASE OF POLE FOR TYPE `L10' LUMINAIRE ON DIMMING ZONE #13 AND TYPE `L10' LUMINAIRE ON DIMMING ZONE #14. (BOTH LUMINAIRES MOUNTED ON SAME POLE AS INDICATED ON DRAWING E104)
19. PWGSC SUPPLIED `L10' LUMINAIRES HAVE A 10-FOOT LONG, 5C LEADER CABLE ATTACHED TO THEM. CONTRACTOR SHALL SHIP THE `L10' LUMINAIRES TO THE MANUFACTURER. MANUFACTURER TO REPLACE THE 5C LEADER CABLE WITH NEW LEADER CABLE IN ORDER TO MAINTAIN IP66 RATING OF LUMINAIRE /LEADER CABLE ASSEMBLY. CABLE LENGTH TO BE OF SUFFICIENT LENGTH TO EXTEND DOWN POLE TO HANDHOLE LOCATION. CONTRACTOR SHALL PAY ALL COSTS ASSOCIATED WITH REPLACING CABLE AND ALL SHIPPING COSTS.
20. ELECTRONIC DIMMER
21. 100W ELECTRONIC TRANSFORMER, 120/12VAC
22. JUNCTION BOX FLUSH WITH CONCRETE BASE. SEE MOUNTING DETAIL ON DRAWING E206
23. 2x5C#16 CABLE + 1#16 GND IN 1-21mm RPVC
24. 3x2C#16 CABLE + 1#16 GND IN 1-21mm RPVC
25. POLE BASE

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — M. DEZFOOLI # 31816 — Aug 21/2015

5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26
Revision/ Revision	Description/Description	Date/Date

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

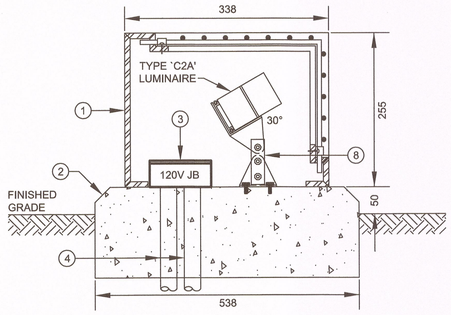
DIMMING ZONE BLOCK DIAGRAMS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E203 OF	1

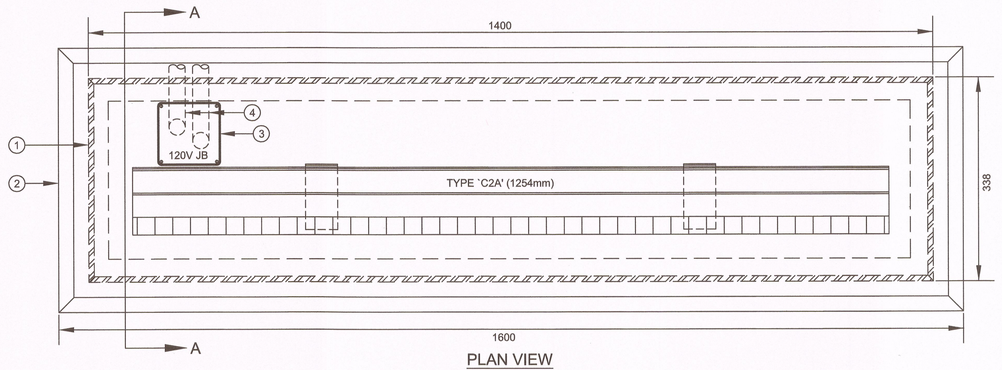
PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX



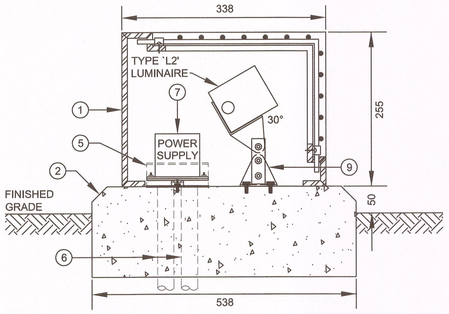
SECTION `A-A'



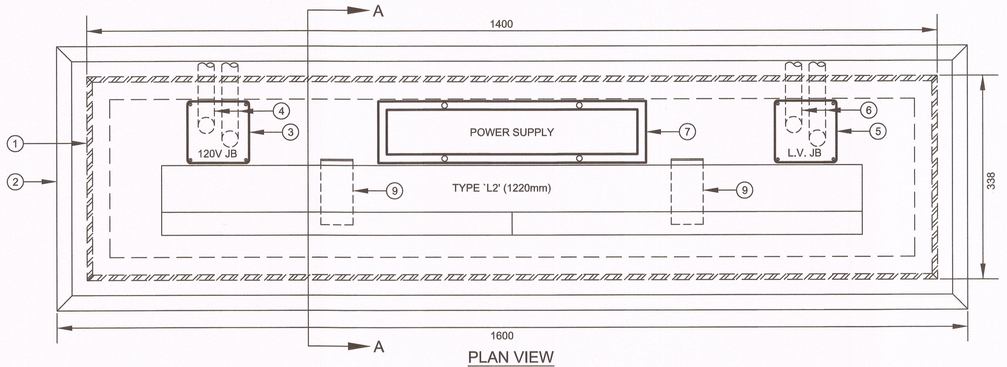
PLAN VIEW

TYPE `C2A' MOUNTING DETAIL

SCALE 1:5



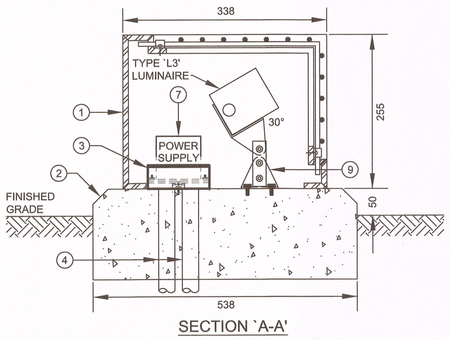
SECTION `A-A'



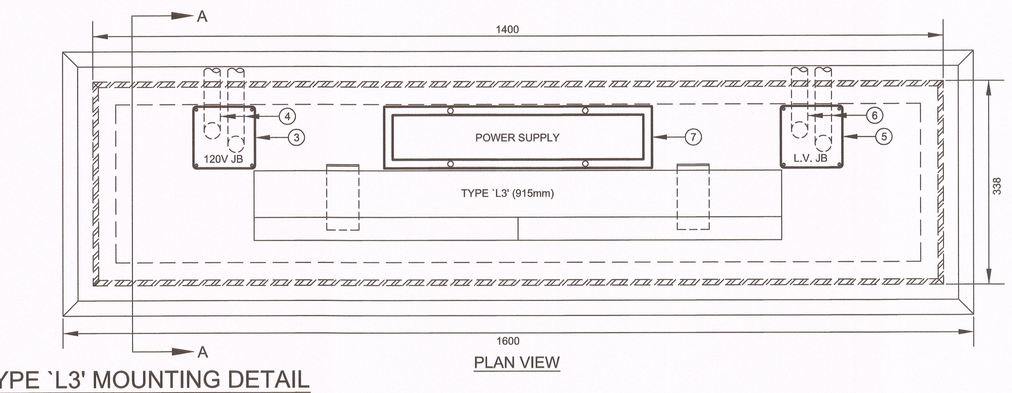
PLAN VIEW

TYPE `L2' MOUNTING DETAIL

SCALE 1:5



SECTION `A-A'



PLAN VIEW

TYPE `L3' MOUNTING DETAIL

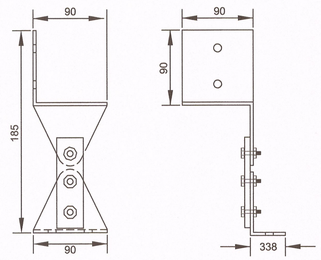
SCALE 1:5

NOTES:

1. ALL MOUNTING HARDWARE (I.E. NUTS, BOLTS, WASHERS, ETC.) TO FASTEN ENCLOSURES, JUNCTION BOXES, POWER SUPPLIES, UNISTRUT ETC. TO BE STAINLESS STEEL.

DRAWING E204 - KEYNOTES:

1. PROVIDE LUMINAIRE PROTECTIVE ENCLOSURE FASTENED TO CONCRETE BASE. SEE DETAIL `A' ON DRAWING E206. DIMENSIONS OF ENCLOSURES INDICATED.
2. PROVIDE 150mm HIGH CONCRETE PAD. CONCRETE PAD TO BE REINFORCED WITH 10M BARS SPACED 150mm APART BOTH DIRECTIONS. CHAMFER ALL EDGES OF BASE
3. PROVIDE W/P RPVC 100mm SQUARE JUNCTION BOX FASTENED TO CONCRETE BASE AS REQUIRED FOR 120V WIRING AND DIMMING CONTROL WIRING. REFER TO DIMMING ZONE BLOCK DIAGRAMS FOR CONCRETE BASES REQUIRING 120V JUNCTION BOXES
4. 120V WIRING AND DIMMER CONTROL WIRING IN RPVC CONDUIT AS PER DIMMING ZONE BLOCK DIAGRAMS
5. PROVIDE W/P RPVC 100mm SQUARE JUNCTION BOX FASTENED TO CONCRETE BASE AS REQUIRED FOR L.V. WIRING AND DIMMING CONTROL WIRING. REFER TO DIMMING ZONE BLOCK DIAGRAMS FOR CONCRETE BASES REQUIRING L.V. JUNCTION BOXES
6. L.V. WIRING AND DIMMER CONTROL WIRING IN RPVC CONDUIT AS PER DIMMING ZONE BLOCK DIAGRAMS
7. LUMINAIRE POWER SUPPLY. PROVIDE 21mm (W) x 10mm (H) UNISTRUT AND FASTEN POWER SUPPLY TO UNISTRUT USING CADDY-CLIPS. FASTEN UNISTRUT TO CONCRETE BASE. LENGTH OF UNISTRUT TO SUIT LENGTH OF POWER SUPPLY
8. CUT AND SHORTEN LENGTH OF ADJUSTABLE ARM ON MOUNTING BRACKET. CONFIRM EXACT LENGTH ON SITE. FASTEN MOUNTING BRACKET TO CONCRETE PAD. MOUNTING BRACKETS SUPPLIED BY PWGSC
9. PROVIDE NEW ADJUSTABLE MOUNTING MOUNTING BRACKET AS PER DETAIL BELOW ON THIS DRAWING. FASTEN TO CONCRETE BASE



SIDE VIEW FRONT VIEW

1. MOUNTING BRACKET TO CONSTRUCTED OF 5mm MARINE GRADE ALUMINUM.

TYPE `L2' & `L3' MOUNTING BRACKET DETAIL

SCALE N.T.S.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. DEZFOOLI
31916
Aug 21, 2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

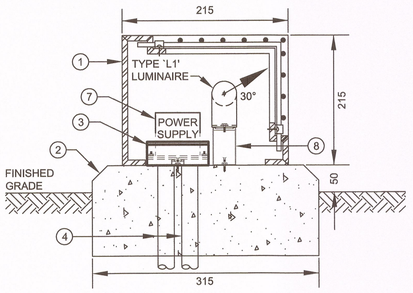
LUMINAIRE MOUNTING DETAILS

Project No./No. du projet	Sheet/ Feuille	Revision no./ La Révision no.
R.073922.001	E204 OF	1

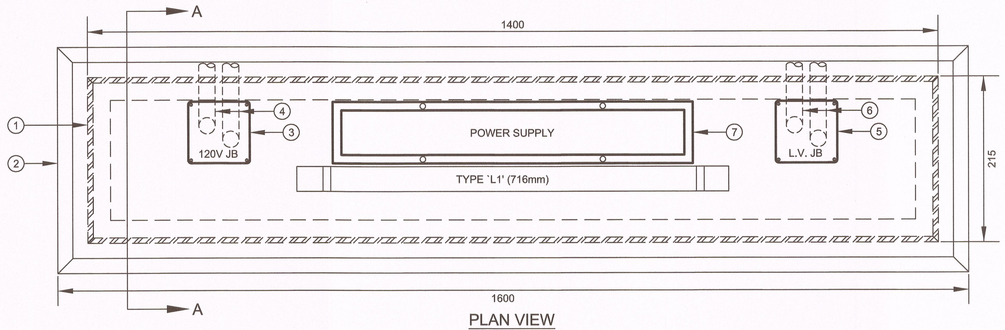
PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX



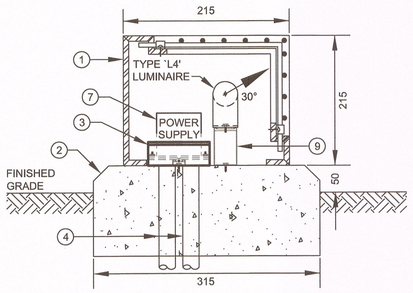
SECTION `A-A'



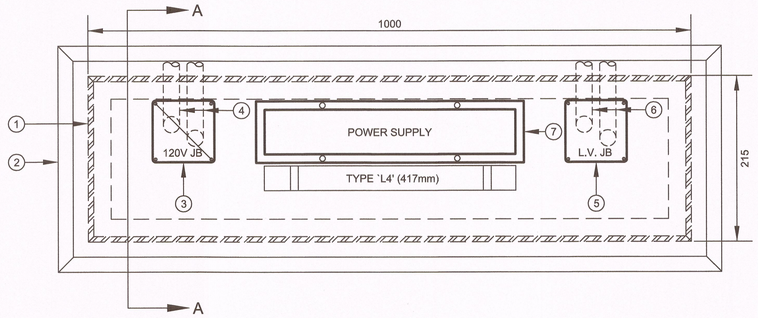
PLAN VIEW

TYPE `L1' MOUNTING DETAIL

SCALE 1:5

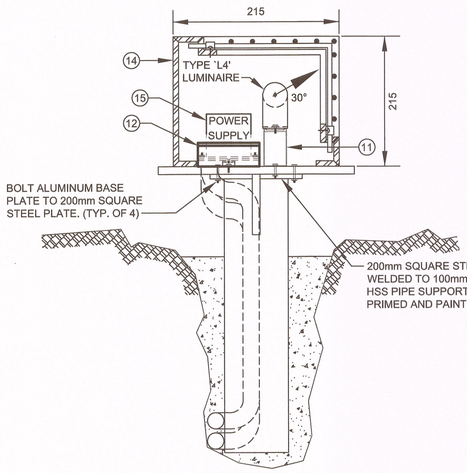


SECTION `A-A'

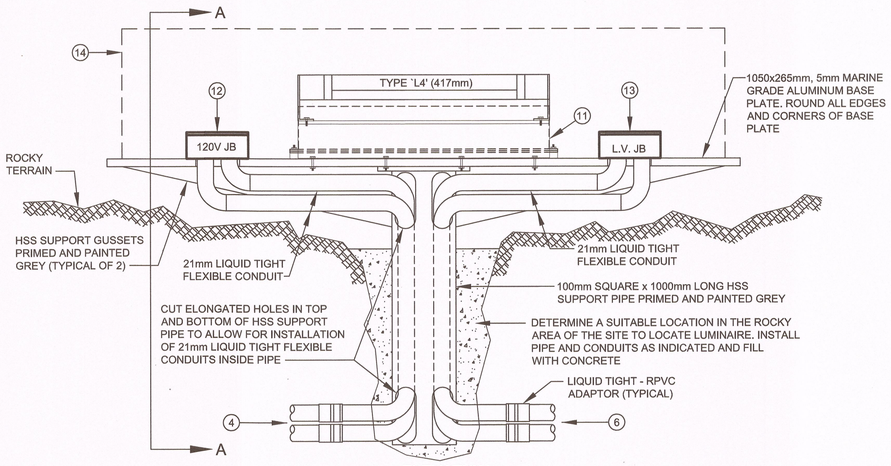


TYPE `L4' MOUNTING DETAIL

SCALE 1:5



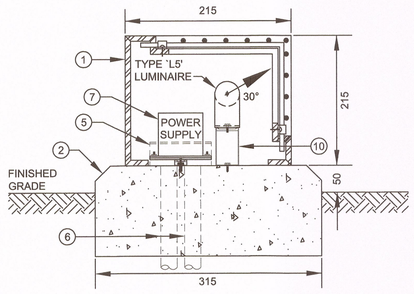
SECTION `A-A'



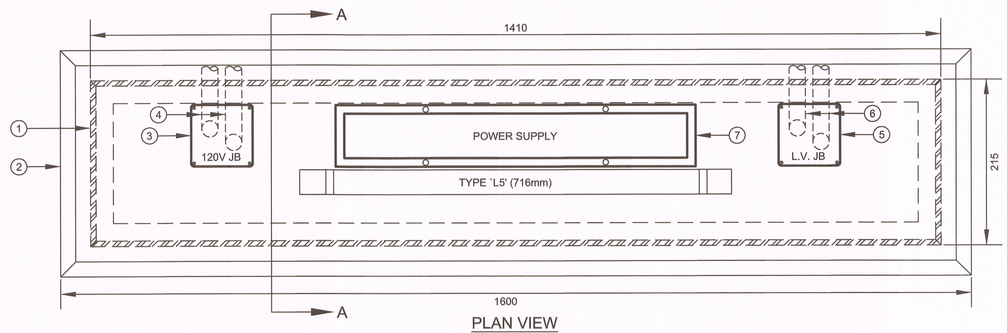
ELEVATION

TYPE `L4' "PEDESTAL" MOUNTING DETAIL (TYPICAL FOR 3 LOCATIONS)

SCALE 1:5



SECTION `A-A'



PLAN VIEW

TYPE `L5' MOUNTING DETAIL

SCALE 1:5

NOTES:

1. ALL MOUNTING HARDWARE (I.E. NUTS, BOLTS, WASHERS, ETC.) TO FASTEN ENCLOSURES, JUNCTION BOXES, POWER SUPPLIES, UNISTRUT ETC. TO BE STAINLESS STEEL.

DRAWING E205 - KEYNOTES:

1. PROVIDE LUMINAIRE PROTECTIVE ENCLOSURE FASTENED TO CONCRETE BASE. SEE DETAIL `A' ON DRAWING E206. DIMENSIONS OF ENCLOSURES INDICATED.
2. PROVIDE 150mm HIGH CONCRETE PAD. CONCRETE PAD TO BE REINFORCED WITH 10M BARS SPACED 150mm APART BOTH DIRECTIONS. CHAMFER ALL EDGES OF BASE
3. PROVIDE W/P RPVC 100mm SQUARE JUNCTION BOX FASTENED TO CONCRETE BASE AS REQUIRED FOR 120V WIRING AND DIMMING CONTROL WIRING. REFER TO DIMMING ZONE BLOCK DIAGRAMS FOR CONCRETE BASES REQUIRING 120V JUNCTION BOXES
4. 120V WIRING AND DIMMER CONTROL WIRING IN RPVC CONDUIT AS PER DIMMING ZONE BLOCK DIAGRAMS
5. PROVIDE W/P RPVC 100mm SQUARE JUNCTION BOX FASTENED TO CONCRETE BASE AS REQUIRED FOR L.V. WIRING AND DIMMING CONTROL WIRING. REFER TO DIMMING ZONE BLOCK DIAGRAMS FOR CONCRETE BASES REQUIRING L.V. JUNCTION BOXES
6. L.V. WIRING AND DIMMER CONTROL WIRING IN RPVC CONDUIT AS PER DIMMING ZONE BLOCK DIAGRAMS
7. LUMINAIRE POWER SUPPLY. PROVIDE 21mm (W) x 10mm (H) UNISTRUT AND FASTEN POWER SUPPLY TO UNISTRUT USING CADDY-CLIPS. FASTEN UNISTRUT TO CONCRETE BASE. LENGTH OF UNISTRUT TO SUIT LENGTH OF POWER SUPPLY
8. PROVIDE 41mm (W) x 62mm (H) UNISTRUT AND FASTEN TYPE `L1' LUMINAIRE TO THE UNISTRUT USING CADDY-CLIPS. FASTEN UNITSTRUT TO CONCRETE BASE. LENGTH OF UNISTRUT TO BE 750mm.
9. PROVIDE 41mm (W) x 62mm (H) UNISTRUT AND FASTEN TYPE `L4' LUMINAIRE TO THE UNISTRUT USING CADDY-CLIPS. FASTEN UNITSTRUT TO CONCRETE BASE. LENGTH OF UNISTRUT TO BE 450mm.
10. PROVIDE 41mm (W) x 62mm (H) UNISTRUT AND FASTEN TYPE `L5' LUMINAIRE TO THE UNISTRUT USING CADDY-CLIPS. FASTEN UNITSTRUT TO CONCRETE BASE. LENGTH OF UNISTRUT TO BE 750mm.
11. PROVIDE 41mm (W) x 62mm (H) UNISTRUT AND FASTEN TYPE `L5' LUMINAIRE TO THE UNISTRUT USING CADDY-CLIPS. FASTEN UNITSTRUT TO ALUMINUM BASE PLATE. LENGTH OF UNISTRUT TO BE 750mm.
12. PROVIDE W/P RPVC 100mm SQUARE JUNCTION BOX FASTENED TO ALUMINUM BASE PLATE AS REQUIRED FOR 120V WIRING AND DIMMING CONTROL WIRING. REFER TO DIMMING ZONE BLOCK DIAGRAMS FOR CONCRETE BASES REQUIRING 120V JUNCTION BOXES
13. PROVIDE W/P RPVC 100mm SQUARE JUNCTION BOX FASTENED TO ALUMINUM BASE PLATE AS REQUIRED FOR L.V. WIRING AND DIMMING CONTROL WIRING. REFER TO DIMMING ZONE BLOCK DIAGRAMS FOR CONCRETE BASES REQUIRING L.V. JUNCTION BOXES
14. PROVIDE LUMINAIRE PROTECTIVE ENCLOSURE FASTENED TO ALUMINUM BASE PLATE. SEE DETAIL `A' ON DRAWING E206. DIMENSIONS OF ENCLOSURE INDICATED.
15. LUMINAIRE POWER SUPPLY. PROVIDE 21mm (W) x 10mm (H) UNISTRUT AND FASTEN POWER SUPPLY TO UNISTRUT USING CADDY-CLIPS. FASTEN UNISTRUT TO ALUMINUM BASE PLATE LENGTH OF UNISTRUT TO SUIT LENGTH OF POWER SUPPLY

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — M. DEZFOOLI # 31916
Aug 21/2015

5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26
Revision/ Révision	Description/Description	Date/Date

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

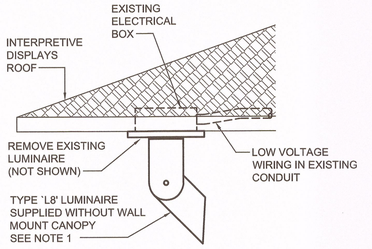
LUMINAIRE MOUNTING DETAILS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E205 OF	1

PWGSC – A1 – 841x594

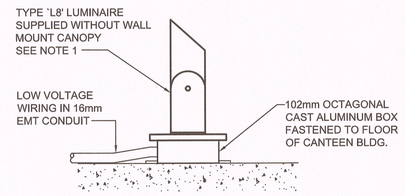
0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX

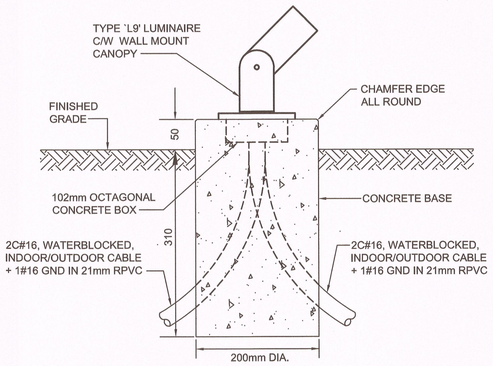


MOUNTING DETAIL (C / E105)
SCALE: N.T.S.

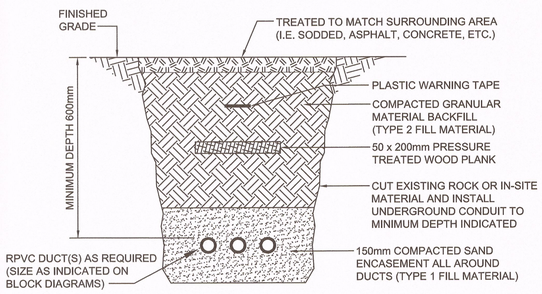
NOTES:
1. CONTRACTOR SHALL CONTACT FIXTURE MANUFACTURER AND PURCHASE SUITABLE WALL/CEILING MOUNT CANOPY COMPATIBLE WITH FIXTURE SUPPLIED.



MOUNTING DETAIL (D / E102)
SCALE: N.T.S.

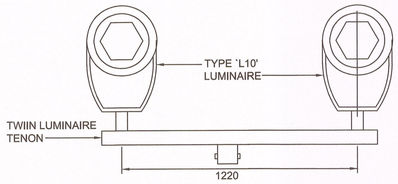


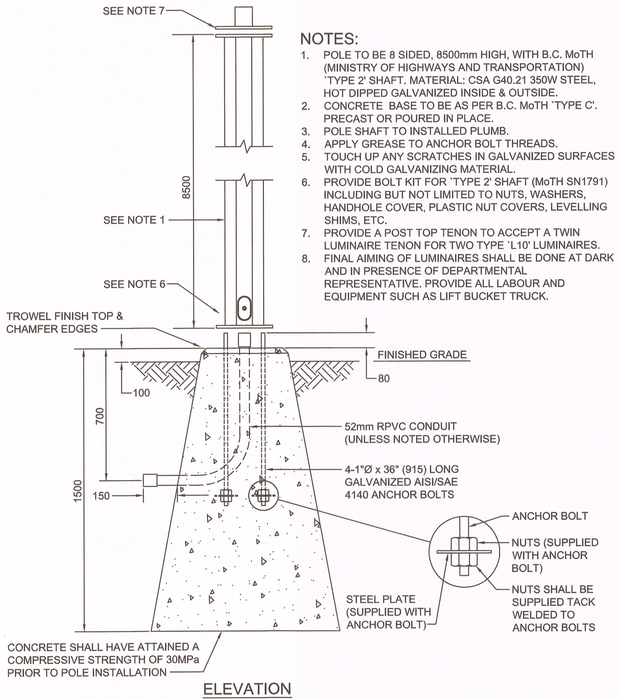
MOUNTING DETAIL (B / E104)
SCALE: N.T.S.



NOTE:
1. INSTALLATION TO BE IN ACCORDANCE WITH CEC 12-012(3), AND APPROVED BY DEPARTMENTAL REPRESENTATIVE.
2. REFER TO SPECIFICATION SECTION 31 23 33.01 FOR FILL MATERIAL TYPES.

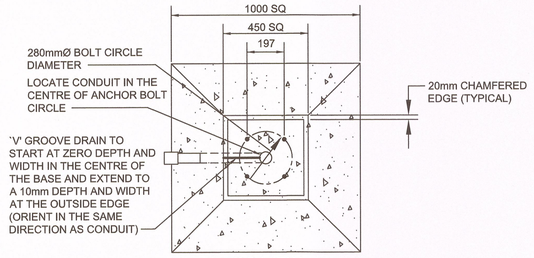
TYPICAL TRENCH DETAIL
SCALE: N.T.S.





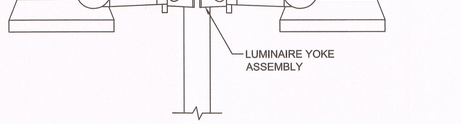
NOTES:
1. POLE TO BE 8 SIDED, 8500mm HIGH, WITH B.C. MoTH (MINISTRY OF HIGHWAYS AND TRANSPORTATION) `TYPE 2' SHAFT. MATERIAL: CSA G40.21 350W STEEL, HOT DIPPED GALVANIZED INSIDE & OUTSIDE.
2. CONCRETE BASE TO BE AS PER B.C. MoTH `TYPE C'. PRECAST OR POURED IN PLACE.
3. POLE SHAFT TO INSTALLED PLUMB.
4. APPLY GREASE TO ANCHOR BOLT THREADS.
5. TOUCH UP ANY SCRATCHES IN GALVANIZED SURFACES WITH COLD GALVANIZING MATERIAL.
6. PROVIDE BOLT KIT FOR `TYPE 2' SHAFT (MoTH SN1791) INCLUDING BUT NOT LIMITED TO NUTS, WASHERS, HANDHOLE COVER, PLASTIC NUT COVERS, LEVELLING SHIMS, ETC.
7. PROVIDE A POST TOP TENON TO ACCEPT A TWIN LUMINAIRE TENON FOR TWO TYPE `L10' LUMINAIRES.
8. FINAL AIMING OF LUMINAIRES SHALL BE DONE AT DARK AND IN PRESENCE OF DEPARTMENTAL REPRESENTATIVE. PROVIDE ALL LABOUR AND EQUIPMENT SUCH AS LIFT BUCKET TRUCK.

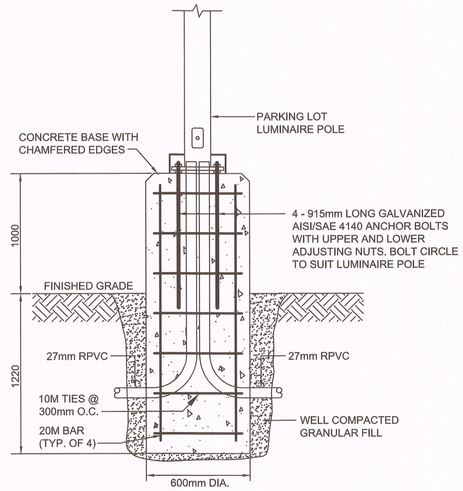
ELEVATION



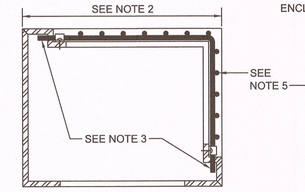
TOP VIEW

`L10' LUMINAIRE POLE AND CONCRETE BASE DETAIL (E / E104)
SCALE: N.T.S.

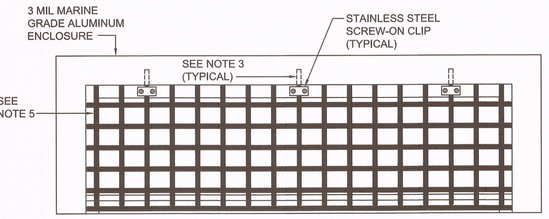




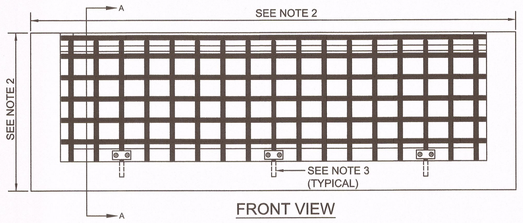
PARKING LOT LUMINAIRE POLE AND CONCRETE BASE DETAIL (G / E105)
SCALE: N.T.S.



SECTION `A-A'



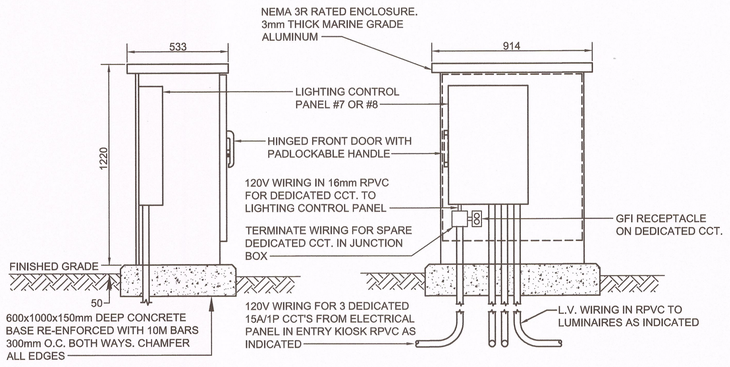
TOP VIEW



FRONT VIEW

NOTES
1. ENCLOSURE TO BE CONSTRUCTED OF 3mm MARINE GRADE ALUMINUM.
2. DIMENSIONS TO SUIT LUMINAIRE INSTALLED IN ENCLOSURE. SEE DETAILS ON DRAWINGS E204 & E205.
3. 3 STRANDS OF WIRE MESH TO EXTEND INTO HOLES DRILLED INTO ENCLOSURE ON FRONT AND TOP OF ENCLOSURE.
4. ROUND OFF ALL EDGES AND CORNERS OF ENCLOSURE.
5. PRE-CRIMPED, FLAT TOP WOVEN, HEAVY DUTY, 316 STAINLESS STEEL WIRE MESH. 2mm MESH DIAMETER AND 20mm APERTURE TO PROVIDE 85% OR MORE TOTAL OPENING AREA.
6. SUBMIT SHOP DRAWINGS OF ALL ENCLOSURES FOR DEPARTMENTAL REPRESENTATIVE REVIEW.
7. MANUFACTURER A COMPLETED SAMPLE OF ONE ENCLOSURE FOR TYPE `C2A' LUMINAIRE FOR REVIEW BY DEPARTMENTAL REPRESENTATIVE PRIOR MANUFACTURING REMAINDER OF ENCLSOURES.
8. PROVIDE 2 COMPLETE SPARE ENCLOSURES FOR EACH TYPE OF LUMINAIRE (TYPES `C2A', `L1', `L2', `L3', `L4' AND `L5')

TYPICAL PROTECTIVE ENCLOSURE DETAIL (A / E204, A / E205)
SCALE: N.T.S.



SIDE VIEW FRONT VIEW

LIGHTING CONTROL OUTDOOR KIOSK DETAIL (F / E104, F / E105)
SCALE: N.T.S.

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. DEZFOOLI # 31916
Aug 21, 2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

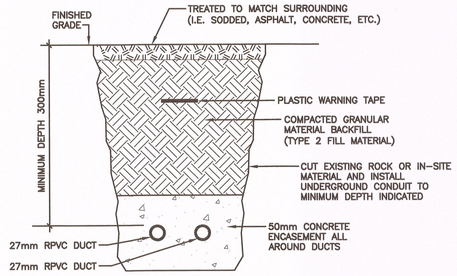
DETAILS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E206 OF	1

PWGSC – A1 – 841x594

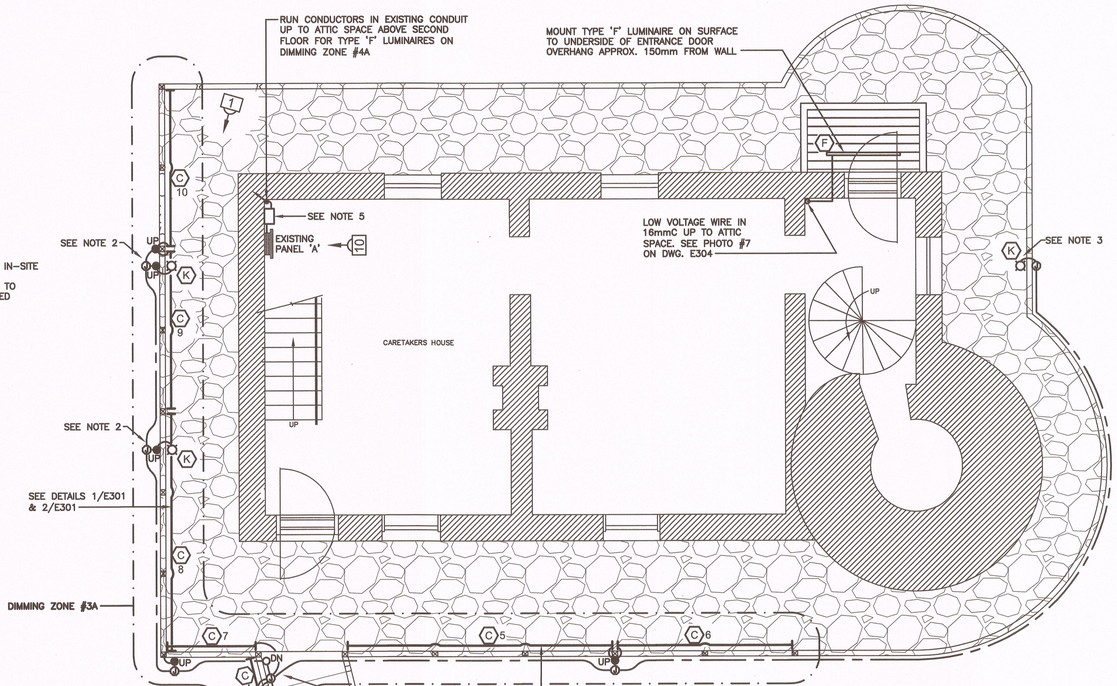
0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX



NOTE:
1. INSTALLATION TO BE IN ACCORDANCE WITH CEC 12-012(3) AND APPROVED BY DEPARTMENTAL REPRESENTATIVE.
2. REFER TO SPECIFICATION SECTION 31 23 33.01 FOR FILL MATERIAL TYPES.

1 / E300 TYPICAL TRENCH DETAIL
NOT TO SCALE



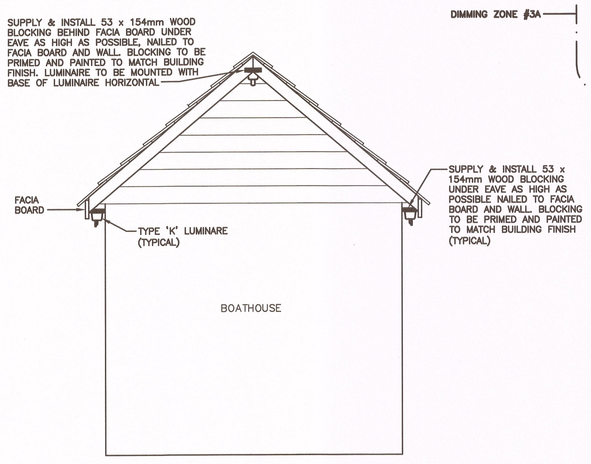
LEGEND OF SYMBOLS	
	CONTINUOUS FLEXIBLE LED LIGHTING
	LINEAR LED LUMINAIRE
	SPOT OR FLOOD LIGHT
	SURFACE MOUNTED LUMINAIRE
J	JUNCTION BOX
	60A-2P 120/208, 1PH, TWIST-LOCK RECEPTACLE
	DUPLEX GFCI RECEPTACLE
	PANELBOARD
	DISCONNECT SWITCH
WP	MEANS WEATHERPROOF DEVICE

NOTES:
1. PROVIDE NEW LIGHTING CONTROL PANEL #9 AND 450x450mm LOCKABLE CABINET FOR PROGRAMMABLE SWITCHES & POWER SUPPLIES FOR BOATHOUSE, BRICK STOREHOUSE AND HANDRAIL LIGHTING. SEE ALSO BLOCK DIAGRAM FOR DIMMING ZONES #1A, #2A, #3A, & #7A ON DWG. E305.
2. TYPE 'K' LUMINAIRE ON DIMMING ZONE #7A. MOUNT LUMINAIRE ON TOP OF RAILING.
3. TYPE 'K' LUMINAIRE ON DIMMING ZONE #7A. EXACT MOUNTING LOCATION TO BE DETERMINED ON SITE.
4. PROVIDE 60A/2P BRANCH CIRCUIT BREAKER IN EXISTING PANEL 'B' FOR NEW TWISTLOCK RECEPTACLE IN BRICK STOREHOUSE BUILDING.
5. PROVIDE NEW LIGHTING CONTROL CABINET #10 AND PROGRAMMABLE SWITCHES FOR TYPE 'F' LUMINAIRES ON DIMMING ZONE #4A AND CONNECT TO SPARE 15A/1P BREAKER IN PANEL 'A'. SEE ALSO BLOCK DIAGRAM FOR DIMMING ZONE #4A ON DWG. E305. RUN CIRCUIT CONDUCTORS IN EXISTING CONDUIT FROM PANEL 'A' TO ATTIC SPACE.
6. ALL CONDUIT AND WIRE INSIDE THE CARETAKERS HOUSE IS TO BE CONCEALED, EXCEPT WHERE SHOWN SURFACE MOUNTED. PRIOR TO ROUGH-IN, CONFIRM LOCATION OF ALL SURFACE MOUNTED CONDUITS WITH THE DEPARTMENTAL REPRESENTATIVE.
7. CONTRACTOR IS TO CONFIRM AND COORDINATE LENGTH OF EACH SECTION OF LUMINAIRE TYPE 'C' WITH SUPPLIER PRIOR TO ORDERING.
8. REPAIR ANY DAMAGE CAUSED BY THIS CONTRACTOR OR ITS SUBTRADES TO HISTORIC BUILDINGS AND INFRASTRUCTURE TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
9. PRIOR TO ROUGH-IN, REVIEW MOUNTING LOCATION FOR CABINET FOR TYPE 'C' LUMINAIRE POWER SUPPLIES AND 60A RECEPTACLE INSIDE BRICK STOREHOUSE WITH DEPARTMENTAL REPRESENTATIVE. LOCATE AS DIRECTED.

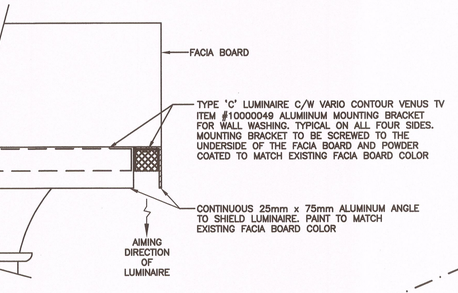
APPROX. LENGTHS REQUIRED FOR TYPE 'C' LUMINAIRES:

C1	5020mm	C5	4300mm	C9	2600mm
C2	2200mm	C6	3000mm	C10	2700mm
C3	5000mm	C7	1700mm	C11	4500mm
C4	600mm	C8	4200mm	C12	3300mm
				C13	3700mm (SEE DWG. E301)

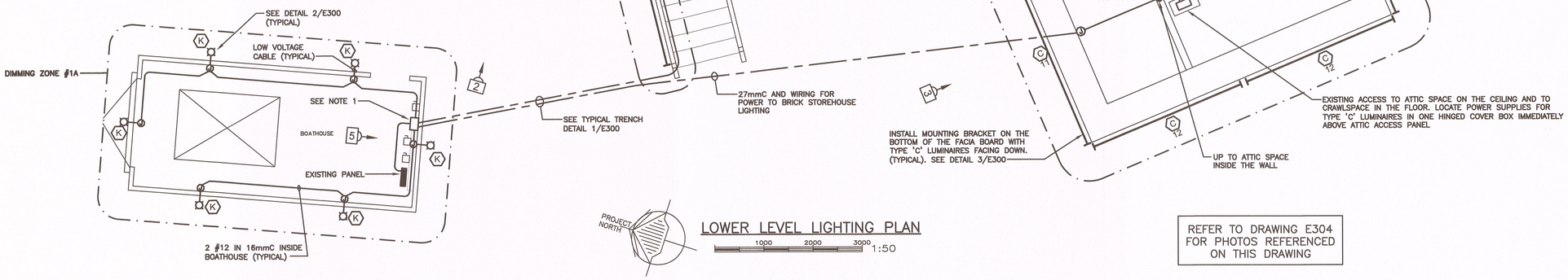
NOTES:
1. ALL MEASUREMENTS NOTED IN THE ABOVE TABLE ARE APPROXIMATE ONLY. CONTRACTOR IS FULLY RESPONSIBLE TO FIELD MEASURE THE LENGTH FOR EACH SECTION PRIOR TO ORDERING. LUMINAIRE LENGTHS CANNOT BE MODIFIED IN THE FIELD.
2. MAXIMUM LENGTH FOR A SINGLE SECTION IS 5026mm, 6W/METER.
3. MULTIPLE SECTIONS CAN HOMERUN TO A SINGLE DRIVER. MAXIMUM 90W FOR A 100W DRIVER.



2 / E300 TYPE 'K' LUMINAIRE MOUNTING DETAIL BOATHOUSE BUILDING
NOT TO SCALE



3 / E300 TYPE 'C' LUMINAIRE MTG. DETAIL BRICK STOREHOUSE
NOT TO SCALE



PROJECT NORTH

LOWER LEVEL LIGHTING PLAN
1000 2000 3000 1:50

REFER TO DRAWING E304 FOR PHOTOS REFERENCED ON THIS DRAWING

0 10 20 30 40 50 60 70 80 90 100mm

PWGSC – A1 – 841x594

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. DEZFOOLI # 31916 CONTRACTOR
Aug 21 / 2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

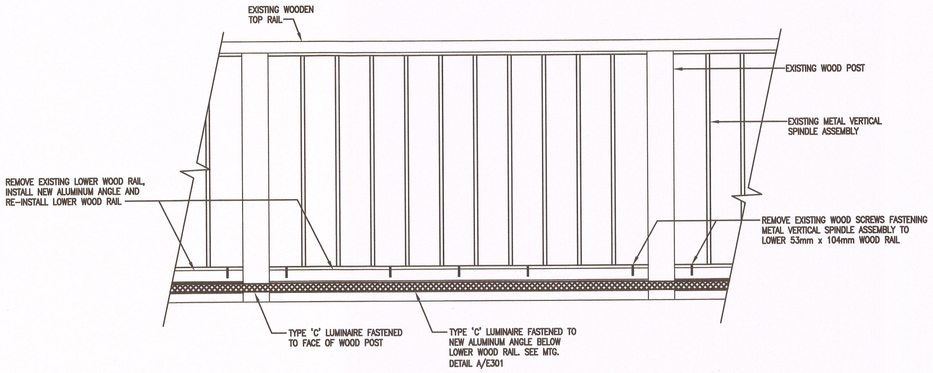
Drawing title/Titre du dessin

FISGARD LIGHTHOUSE

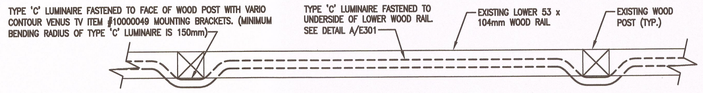
LOWER LEVEL EXTERIOR LIGHTING LAYOUT, LEGEND OF SYMBOLS AND DETAILS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E300 OF	1

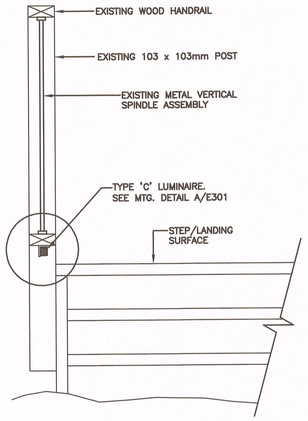
DM5XXXXXX



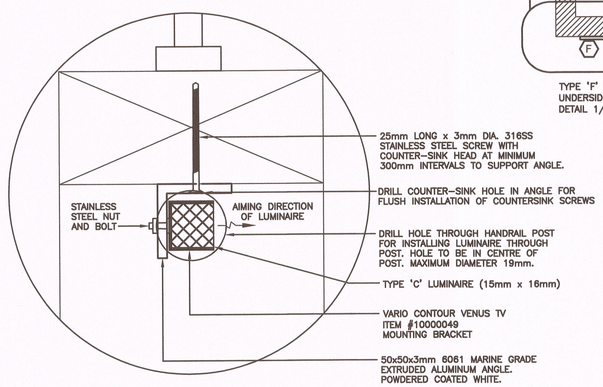
1 E300 LIGHTHOUSE HANDRAIL LIGHTING ELEVATION
NOT TO SCALE



2 E300 LIGHTHOUSE HANDRAIL LIGHTING PLAN VIEW
NOT TO SCALE



3 E300 STAIR HANDRAIL LIGHTING CROSS SECTION
NOT TO SCALE

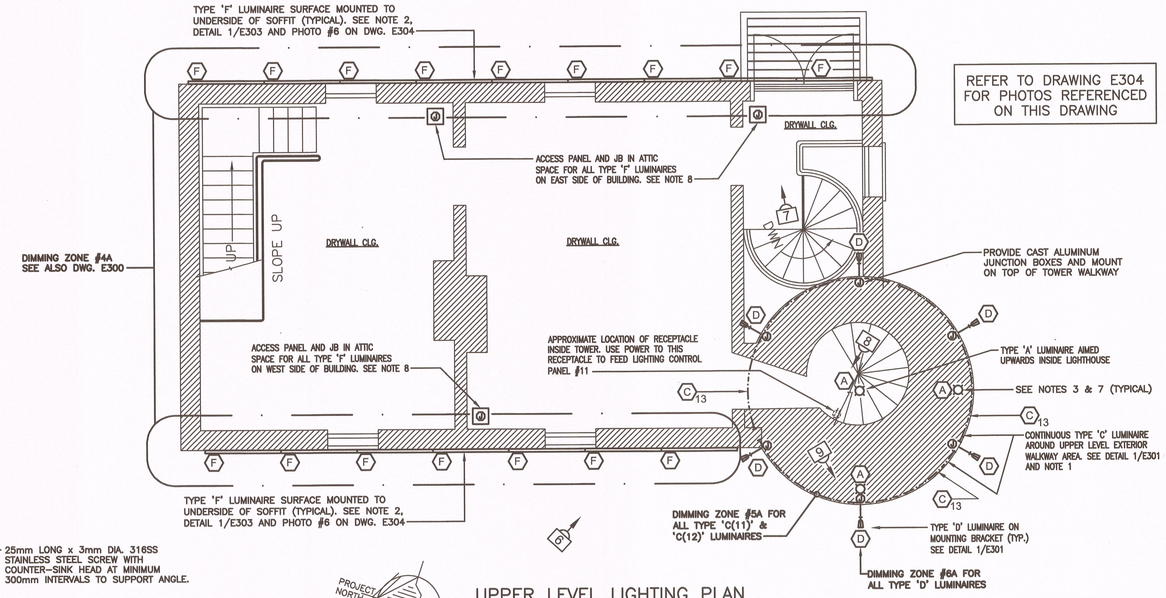


A E301 TYPE 'C' LUMINAIRE MOUNTING DETAIL
NOT TO SCALE

NOTES:

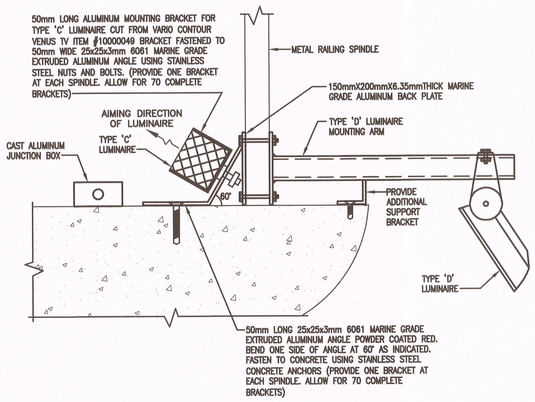
1. INSTALL POWER SUPPLIES FOR TYPE 'C' FLEXIBLE LUMINAIRES INSIDE 300x300mm LOCKABLE CABINET AND PROTECT LOW VOLTAGE WIRING FROM CABINET TO LUMINAIRE. (E.G. INSTALL IN EMT CONDUIT)
2. MOUNT TYPE 'F' LUMINAIRE SURFACE MOUNTED ONTO UNDERSIDE OF SOFFIT. SEE PHOTO #6 ON DWG. E304. LOCATE LUMINAIRE DRIVERS IN ATTIC SPACE AND RUN LOW VOLTAGE CABLES THROUGH ATTIC VENTILATION SCREEN INTO ATTIC SPACE. NEW LIGHTING CIRCUIT FROM EXISTING PANEL 'A' SHALL RUN IN EXISTING CONDUIT FROM PANEL 'A' TO ATTIC.
3. SURFACE MOUNT TYPE 'A' LUMINAIRE ONTO BOTTOM OF WINDOW SILL AIMED UPWARDS.
4. CONTRACTOR SHALL SEAL ALL CONDUIT OR CABLING PENETRATIONS THROUGH WALL WITH SEALANT AND PROVIDE TOUCH-UP PAINT MATCHING EXISTING BUILDING COLOURS.
5. USE EXISTING CONDUIT FROM EXISTING PANEL 'A' TO ATTIC SPACE FOR RUNNING NEW EXTERIOR LIGHTING BRANCH CIRCUIT WIRING.
6. ALL LUMINAIRES PROVIDED FOR THIS PROJECT MUST BE MARINE GRADE CORROSION RESISTANT SUITABLE FOR SALT AIR ENVIRONMENTS.
7. MOUNT LUMINAIRE TYPE 'A' OVERTOP OF A JUNCTION BOX FIXED TO EXISTING SURFACE. INSTALL A JB AT EACH LUMINAIRE AND RUN TECK CABLE FROM TOP OF TOWER DOWN TO THE JB's. INSTALL A SHORT PIECE OF LOW VOLTAGE CABLE FROM EACH JB TO THE LUMINAIRE.
8. ALL WIRING INSIDE THE BUILDING, NOT INCLUDING THE LIGHTHOUSE TOWER, SHALL BE INSTALLED CONCEAL EXCEPT WHERE SURFACE INSTALLATION IS SPECIFICALLY PERMITTED. CUT, PATCH AND PAINT EXISTING DRYWALL CEILINGS AS REQUIRED FOR CONCEALED WIRING INSTALLATION. ACCESS PANELS WHERE SHOWN ON THE DRAWINGS IS TO BE 300x300. INSTALL 'J' MOLD AROUND ACCESS PANELS AND 13mm DRYWALL PANEL COVER ABOVE. PAINT TO MATCH EXISTING SURROUNDING SURFACE. LOCATE POWER SUPPLIES AT LOCATIONS TO ACCOMMODATE CABLE LENGTH AND POWER SUPPLIES THAT ARE SUPPLIED WITH THE LUMINAIRES.

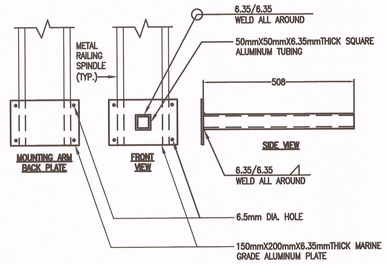
REFER TO DRAWING E304 FOR PHOTOS REFERENCED ON THIS DRAWING



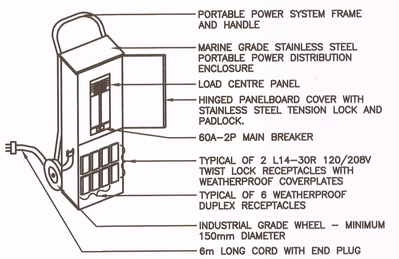
PROJECT NORTH

UPPER LEVEL LIGHTING PLAN
1000 2000 3000 1:50





TYPE 'D' LUMINAIRE MOUNTING ARM DETAIL



PORTABLE POWER DISTRIBUTION NOTES:

1. PROVIDE 6m LONG 4#6 Cu SO CABLE WITH CSA L14-60R, 60A PLUG, 120/250 VOLT RATED, 1 PHASE, 3 POLE TO MATCH RECEPTACLE INSIDE THE BRICK STOREHOUSE.
2. PORTABLE POWER DISTRIBUTION TO BE WEATHERPROOF CSA TYPE 3R ENCLOSURE, 120/208 VOLT, 1 PHASE PANEL WITH 60A-2P MAIN BREAKER, 6x15A 1 POLE GFCI BREAKERS, 2x30A 2 POLE GFCI BREAKERS. ALL BREAKERS TO BE BOLT-ON.
3. POWER DISTRIBUTION TO HAVE INTEGRAL 6x15A WEATHERPROOF DUPLEX RECEPTACLE OUTLETS AND 2x30A L14-30R 120/250 VOLT RATED, 1 PHASE WEATHERPROOF RECEPTACLE OUTLETS.
4. PROVIDE 4 KEYS AND PADLOCK FOR PANEL HINGED COVER. TURN OVER TO DEPARTMENTAL REPRESENTATIVE.
5. COMPLETE UNIT TO BEAR A CSA LABEL.
6. ALL METALS AND HARDWARE TO BE MARINE GRADE STAINLESS STEEL.
7. ALL CABLES AND BUS TO BE COPPER.
8. PROVIDE LAMICOID WITH CIRCUIT NUMBER FOR EACH RECEPTACLE.
9. THE PORTABLE PANEL AND COMPONENTS TO BE FACTORY WIRED AND SHOP TESTED. CABINET TO BE MINIMUM 14 GA. MARINE GRADE STAINLESS STEEL POWDER COATED RED COMPLETE WITH DRIP CAP.
10. PROVIDE TYPEWRITTEN DIRECTORY CARD ON LAMINATED PAPER.

4 E300 PORTABLE POWER PANEL DETAIL
NOT TO SCALE

NOTES:

1. POWDER COAT PAINT MOUNTING ARMS, JUNCTION BOXES AND BACK PLATE RED TO MATCH THE EXISTING HAND RAILS AT THE TOP OF THE LIGHTHOUSE.
2. ALL FABRICATIONS MUST BE MARINE GRADE ALUMINUM.
3. MAKE NECESSARY ADJUSTMENT TO MOUNTING ARM NECESSARY TO ACCOMMODATE ALTERNATE FIXTURES WHICH MAY PROVIDED AT NO ADDITIONAL COST TO THE CONTRACT.
4. PRIOR TO ORDERING TYPE 'C' LUMINAIRE, OBTAIN AN ACCURATE MEASUREMENT OF TOP OF TOWER PERIMETER AND PROVIDE INFORMATION TO SUPPLIER. FLEXIBLE FIXTURE MUST PROVIDE CONTINUOUS ILLUMINATION AROUND ENTIRE PERIMETER.
5. ALL MOUNTING BOLTS TO BE 316 MARINE GRADE STAINLESS STEEL.

1 E301 MOUNTING DETAIL TYPE 'C' AND 'D' LUMINAIRES
NOT TO SCALE

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. DEZFOOLI # 31916
Aug 21/2015

5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26
Revision/ Revision	Description/Description	Date/Date

Client/client
PARKS CANADA

Project title/Titre du projet
EXTERIOR LIGHTING ADDITIONS
FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin
FISGARD LIGHTHOUSE

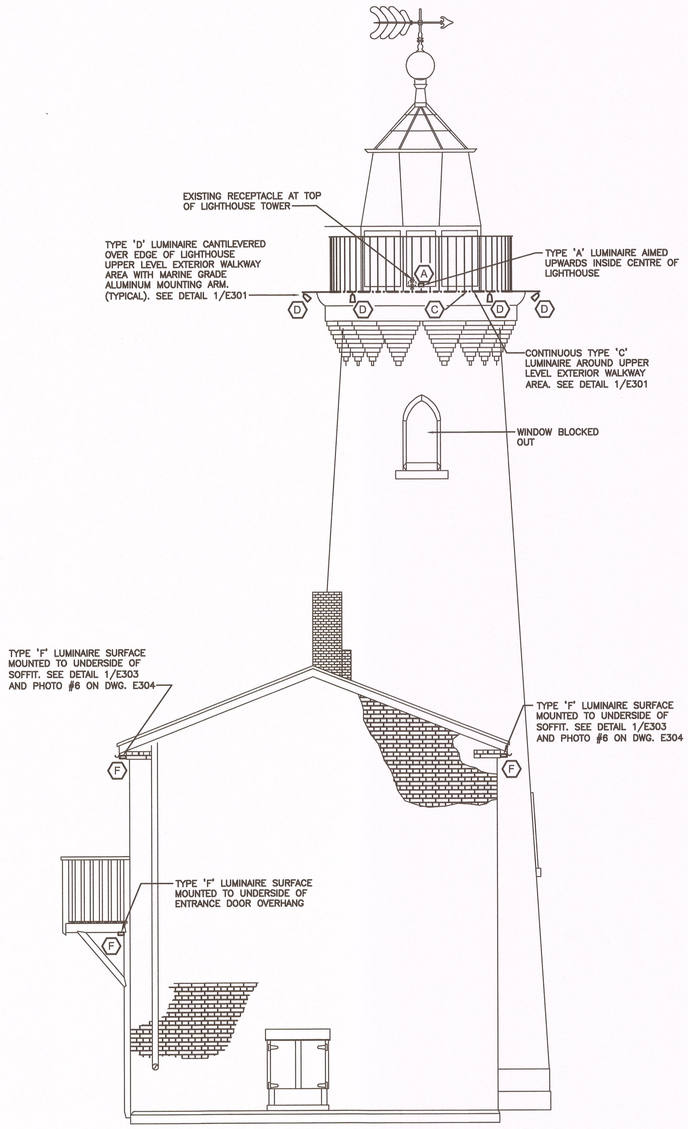
UPPER LEVEL EXTERIOR LIGHTING LAYOUT, DETAILS AND PORTABLE POWER DISTRIBUTION PANEL DETAIL

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E301 OF	1

PWGSC – A1 – 841x594

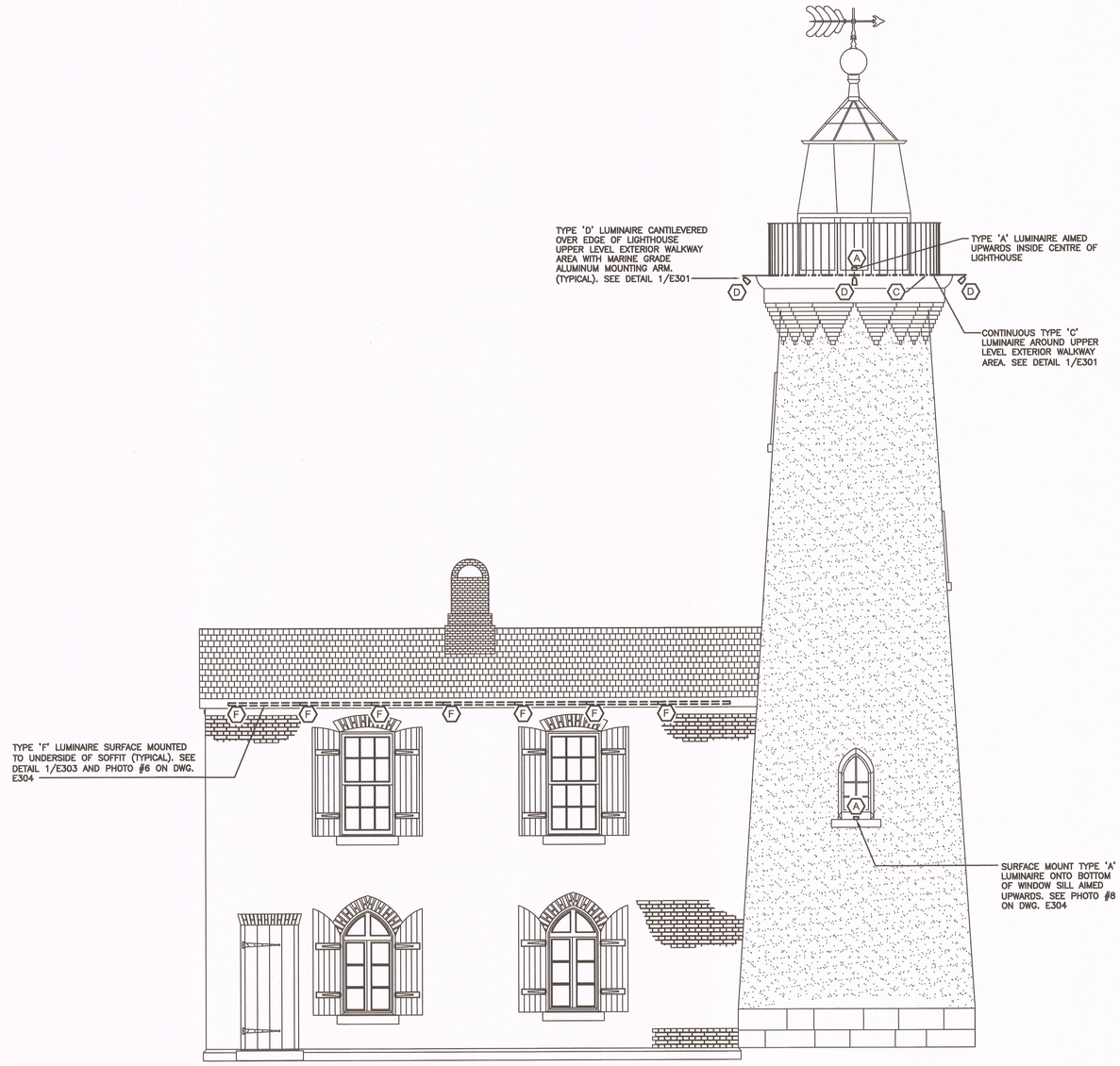
0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX



NORTH ELEVATION
EXTERIOR LIGHTING

1000 2000 3000 1:50



EAST ELEVATION
EXTERIOR LIGHTING

1000 2000 3000 1:50

0 10 20 30 40 50 60 70 80 90 100mm

PWGSC – A1 – 841x594

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF B.C. M. DEZFOOLI # 31916
Aug 21, 2015

5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26
Revision/ Revision	Description/Description	Date/Date

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

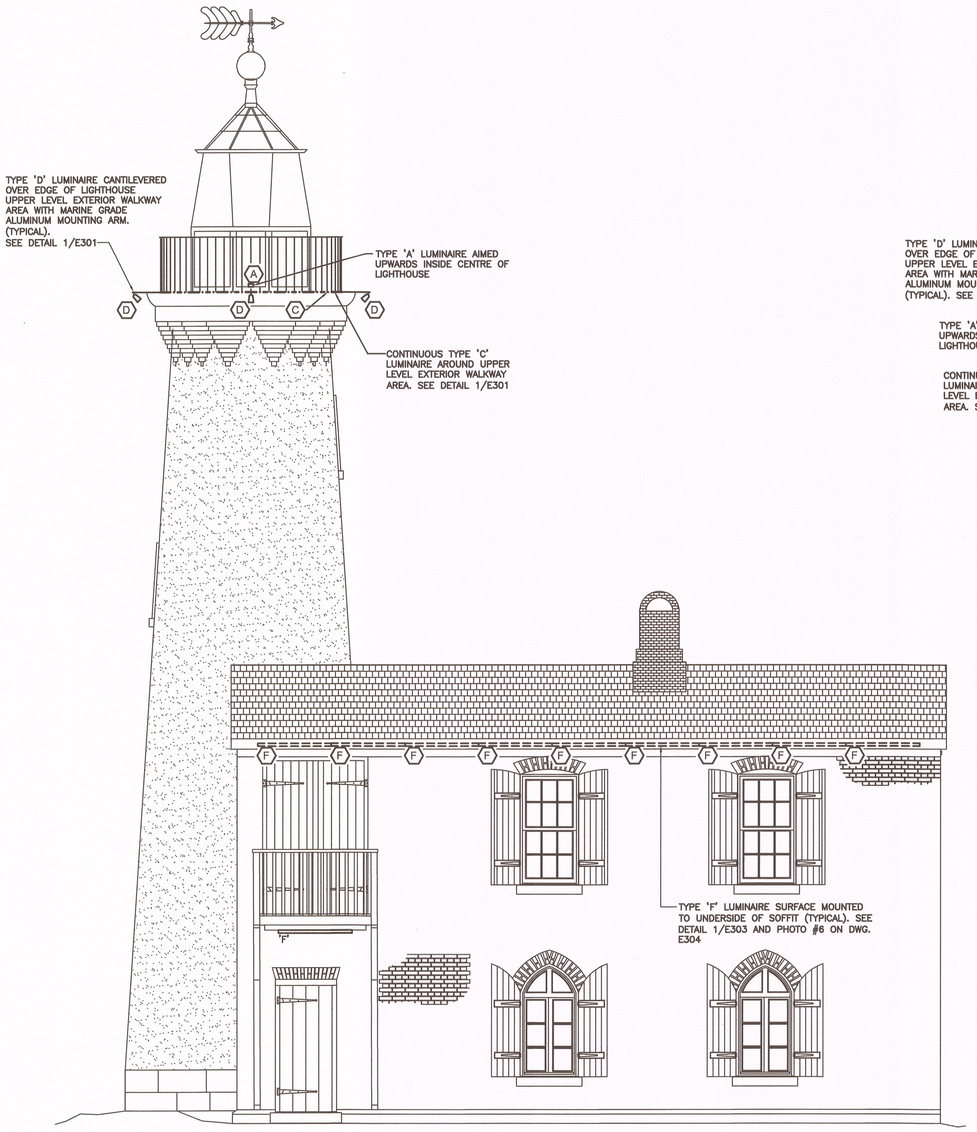
Drawing title/Titre du dessin

FISGARD LIGHTHOUSE

EXTERIOR LIGHTING NORTH-WEST ELEVATIONS AND MOUNTING DETAILS

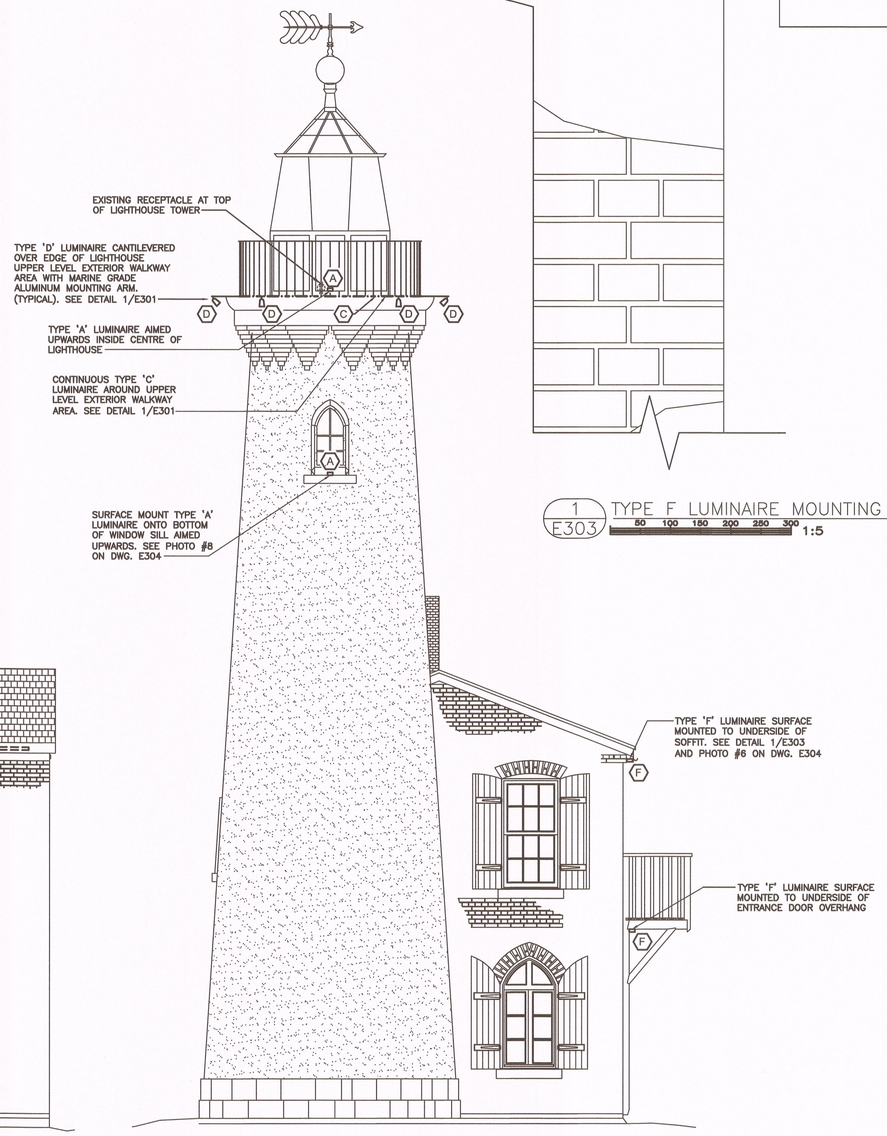
Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E302 OF	1

DM5XXXXXX



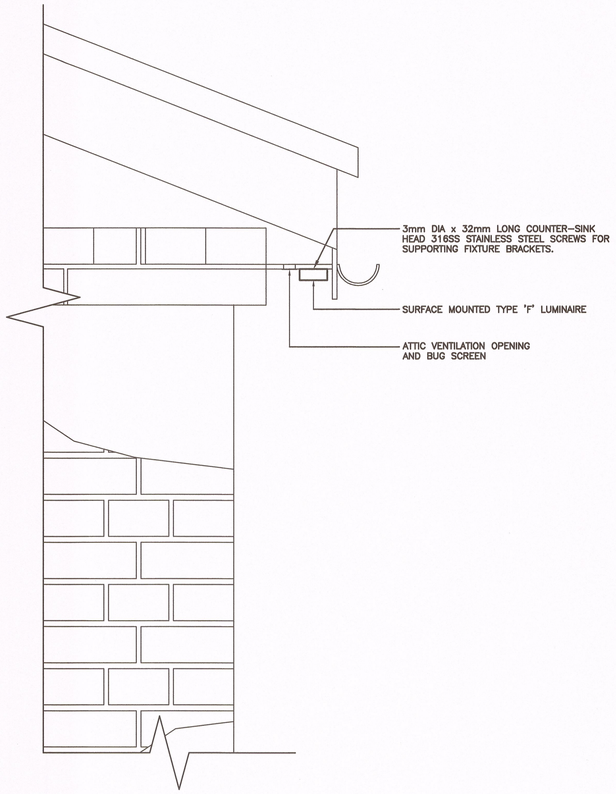
EAST ELEVATION
EXTERIOR LIGHTING

1000 2000 3000 1:50



SOUTH ELEVATION
EXTERIOR LIGHTING

1000 2000 3000 1:50



1 E303 TYPE F LUMINAIRE MOUNTING DETAIL

50 100 150 200 250 300 1:5

NOTES:

1. MOUNT TYPE 'A' LUMINAIRES WITH DOUBLE SIDED TAPE ON TOP OF WINDOW SILL.

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. DEZFOOLI 31916

Aug 21/2015

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

FISGARD LIGHTHOUSE

EXTERIOR LIGHTING SOUTH-EAST ELEVATIONS AND SOFFIT MOUNTING DETAIL

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E303 OF	1

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX

PHOTO #1

PHOTO #2

PHOTO #3

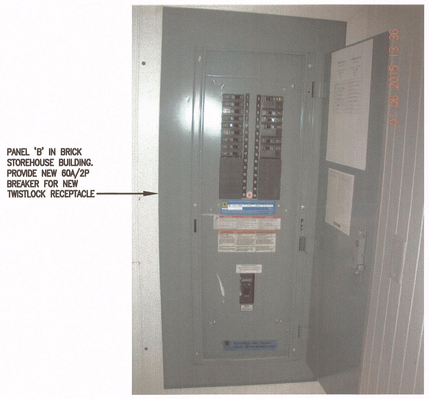


PHOTO #4

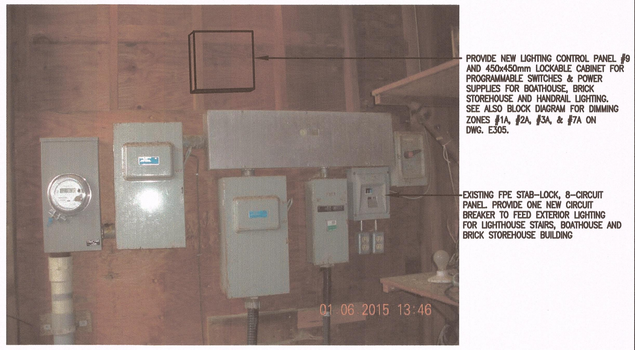


PHOTO #5

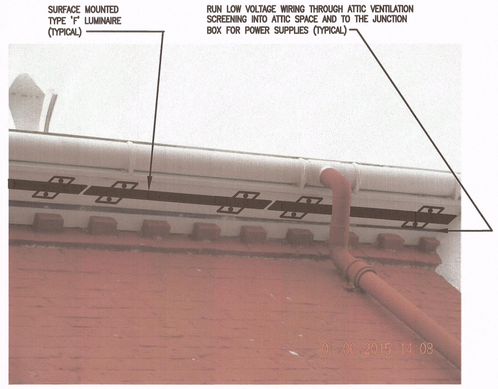


PHOTO #6

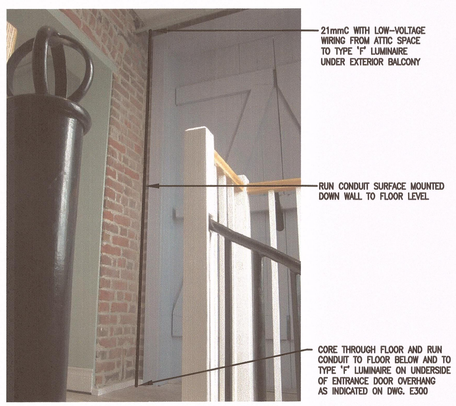
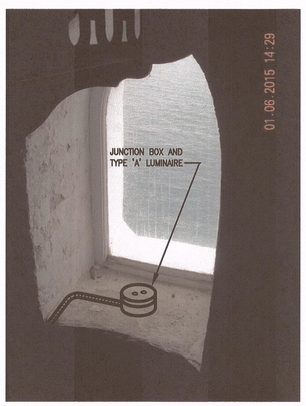


PHOTO #7

PHOTO #8



TOWER WINDOW

PHOTO #9

PHOTO #10

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

M. DEZFOOLI # 31999 PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
Nov 21 2015

5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26
Revision/ Revision	Description/Description	Date/Date

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

FISGARD LIGHTHOUSE

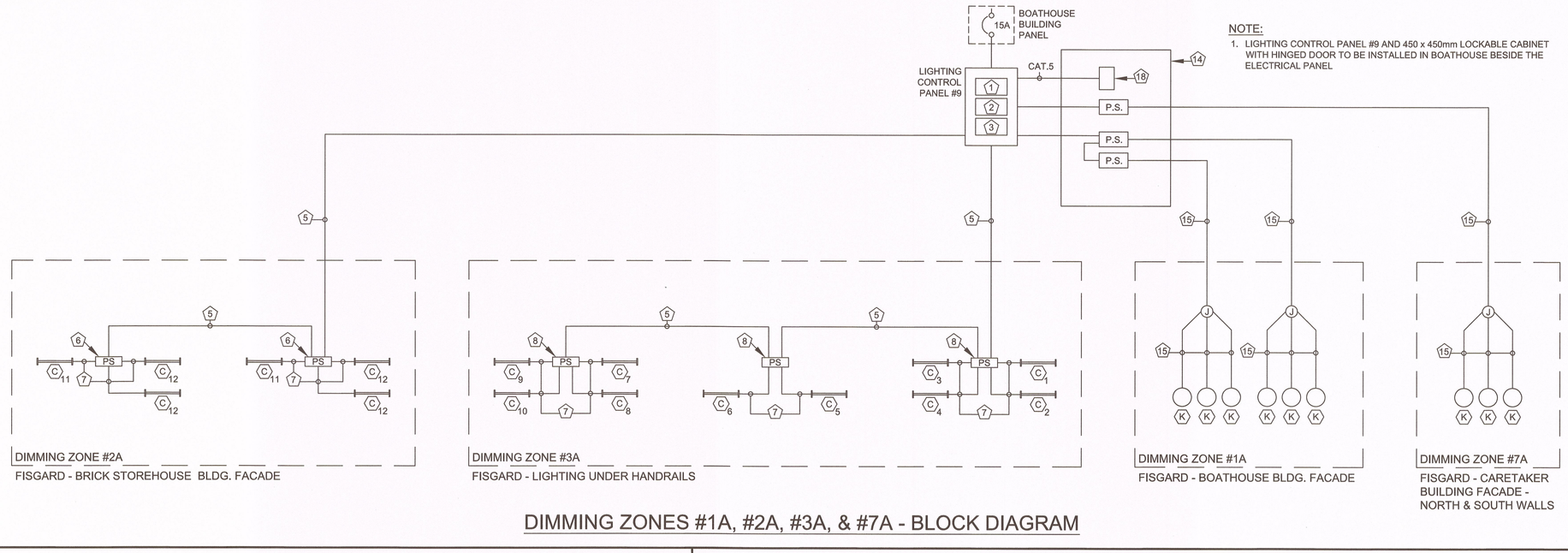
EXTERIOR LIGHTING MOUNTING DETAILS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E304 OF	1

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

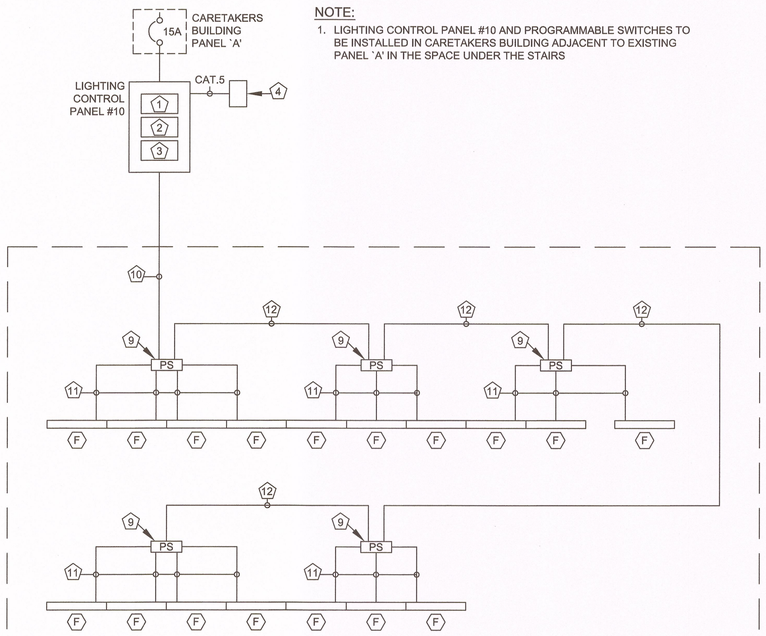
DM5XXXXXX



NOTE:

1. LIGHTING CONTROL PANEL #9 AND 450 x 450mm LOCKABLE CABINET WITH HINGED DOOR TO BE INSTALLED IN BOATHOUSE BESIDE THE ELECTRICAL PANEL

DIMMING ZONES #1A, #2A, #3A, & #7A - BLOCK DIAGRAM



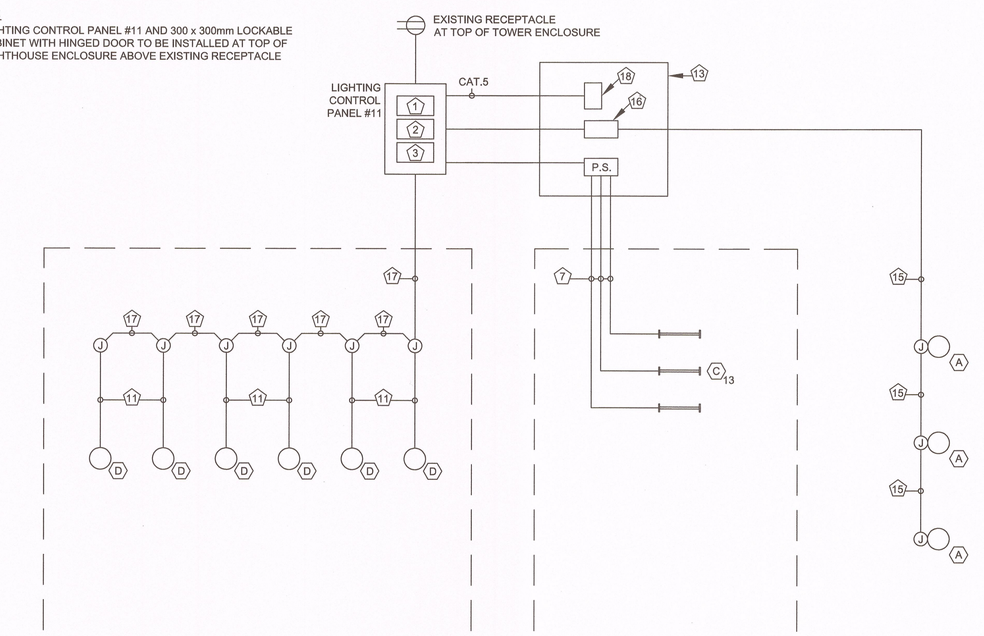
NOTE:

1. LIGHTING CONTROL PANEL #10 AND PROGRAMMABLE SWITCHES TO BE INSTALLED IN CARETAKERS BUILDING ADJACENT TO EXISTING PANEL 'A' IN THE SPACE UNDER THE STAIRS

DIMMING ZONES #4A - BLOCK DIAGRAM

NOTE:

1. LIGHTING CONTROL PANEL #11 AND 300 x 300mm LOCKABLE CABINET WITH HINGED DOOR TO BE INSTALLED AT TOP OF LIGHTHOUSE ENCLOSURE ABOVE EXISTING RECEPTACLE



DIMMING ZONES #5A & #6A - BLOCK DIAGRAM

DRAWING E305 - BLOCK DIAGRAM KEYNOTES:

1. ASTRONOMICAL TIME CLOCK & TOUCHSCREEN SCHEDULER
2. RELAY MODULE FOR POWER TO LIGHTING LOADS
3. 0-10VDC DIMMING CONTROL MODULE
4. PROGRAMMABLE SWITCH IN LOCKABLE BOX FOR SEPARATE 'ON' AND 'OFF' CONTROL OF EACH DIMMING ZONE CONNECTED TO LIGHTING CONTROL PANEL. (I.E. TWO SWITCHES FOR EACH DIMMING ZONE)
5. 2C#14 UNSHIELDED CABLE FOR 120VAC + 2C#14 SHIELDED CABLE FOR DIMMING CONTROL + 1#14 GND. IN 1-27mm RPVC
6. INSTALL IN LOCKABLE ENCLOSURE IN BRICK STOREHOUSE ATTIC
7. AS PER LUMINAIRE MANUFACTURER'S INSTRUCTIONS
8. IN WEATHERPROOF LOCKABLE ENCLOSURE UNDER THE STAIRS TO CARETAKERS BUILDING
9. IN LOCKABLE ENCLOSURE IN CARETAKERS BUILDING ATTIC
10. 2C#14 UNSHIELDED CABLE FOR 120VAC + 2C#14 SHIELDED CABLE FOR DIMMING CONTROL IN EXISTING CONDUITS FROM ELECTRICAL CLOSET TO ATTIC SPACE
11. 5C#16 LEADER CABLE TO BE SUPPLIED WITH LUMINAIRE. CONFIRM LENGTH
12. 2C#14 UNSHIELDED CABLE FOR 120VAC + 2C#14 SHIELDED CABLE FOR DIMMING CONTROL
13. 300 x 300mm LOCKABLE CABINET WITH HINGED DOOR
14. 450 x 450mm LOCKABLE CABINET WITH HINGED DOOR
15. 2C#16 CABLE + 1#16 GND IN 16mmC
16. 60W ELECTRONIC TRANSFORMER 120/12VAC
17. 5C#16 CABLE TO MATCH LEADER CABLES
18. PROGRAMMABLE SWITCHES FOR SEPARATE 'ON' AND 'OFF' CONTROL OF EACH DIMMING ZONE CONNECTED TO LIGHTING CONTROL PANEL. (I.E. TWO SWITCHES FOR EACH DIMMING ZONE)

PWGSC – A1 – 841x594

0 10 20 30 40 50 60 70 80 90 100mm

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — M. DEZFOOLI # 31916 — Aug 21 2015

5		
4		
3		
2		
1	ISSUED FOR TENDER	15/08/21
0	ISSUED FOR 95% REVIEW	15/06/26
Revision/ Révision	Description/Description	Date/Date

Client/client

PARKS CANADA

Project title/Titre du projet

EXTERIOR LIGHTING ADDITIONS

FORT RODD HILL NATIONAL HISTORIC SITE VICTORIA, BC

Consultant Signature Box Only
N/A

Designed by/Concept par
M. DEZFOOLI

Drawn by/Dessine par
T. JEREB

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

FISGARD LIGHTHOUSE

DIMMING ZONE BLOCK DIAGRAMS

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.073922.001	E305 OF	1

DM5XXXXXX