

## SCOPE OF WORKS

THE SCOPE OF WORKS FOR ELECTRICAL SERVICES IS TO SUPPLY / INSTALL LIGHTING, EMERGENCY LIGHTING, POWER, COMMUNICATIONS AND SECURITY SYSTEMS FOR THE JUNIOR SCIENCE REFURBISHMENT AT 125 JOHN PAUL DR, DAISY HILL QLD 4127. PROVIDE A FIT FOR PURPOSE, FULLY FUNCTIONAL SYSTEM WHICH IS READY FOR USE. WORKS SHALL INCLUDE BUT ARE NOT NECESSARILY LIMITED TO:

- REMOVAL / DEMOLISHMENT OF SERVES AS NOMINATED
- MODIFICATION OF EXISTING SWITCHBOARD AND ASSOCIATED CABLING
- MODIFICATIONS AND MAKING-GOOD OF EXISTING ELECTRICAL SERVICES IN AREAS DESIGNATED ON THE DRAWINGS
- NEW/RELOCATED POWER SYSTEM AS SHOWN ON THE DRAWINGS
- PROVISION OF NEW POWER SUPPLIES FOR NEW MECHANICAL AND HYDRAULIC PLANT
- SUPPLY AND INSTALLATION OF COMMUNICATIONS SYSTEM AS PER DRAWINGS. INCLUDING NEW FLY LEADS FOR ALL FIELD OUTLETS
- NEW / MODIFICATION OF EXISTING LIGHT FITTINGS AND NEW LIGHTING CONTROLS AS SHOWN ON THE DRAWINGS
- NEW EMERGENCY LIGHTING AND EXIT SIGNAGE
- MODIFICATION OF EXISTING ACCESS CONTROL SYSTEM
- DECOMMISSIONING OF EXISTING DB-COM, RE-TERMINATE EXISTING SUBMAINS / SUBCIRCUITS CABLES TO NEW DB AS NOMINATED ON DRAWING
- TESTING AND RECERTIFICATION OF ALL EXISTING ELECTRICAL CABLING (INCLUDING WORKSTATION SOFTWIRING)
- WORKSHOP DRAWINGS, AS-INSTALLED DRAWINGS AND SCHEDULES, OPERATING AND MAINTENANCE MANUALS
- USER TRAINING AND ACCEPTANCE
- CERTIFICATION OF THE COMPLETED WORKS (CERTIFICATE OF ELECTRICAL SAFETY)AND FORM 12
- TWELVE MONTHS WARRANTY AGAINST DEFECTS ON WORK PERFORMED
- SEISMIC RESTRAINTS DESIGN, SUPPLY, INSTALLATION, CERTIFICATION AS REQUIRED PER AS1170.4 FOR ALL ELECTRICAL SERVICES
- TENDER OPTION: REPLACE OM3 FIBRE LINK BETWEEN L4 COMMS ROOM AND L16 COMMS ROOM

## STANDARD AND REGULATION

WORKS SHALL BE PERFORMED TO BEST TRADE PRACTICES BY APPROPRIATELY LICENSED PERSONNEL. ALL WORKS AND SUPPLIED EQUIPMENT SHALL COMPLY WITH AND BE IN ACCORDANCE WITH THE LATEST REVISIONS OF ALL RELEVANT CODES, STANDARDS AND GUIDELINES, INCLUDING BUT NOT LIMITED TO:

- THE NATIONAL CONSTRUCTION CODE (NCC)
- AS/NZS 3000 ELECTRICAL INSTALLATIONS - WIRING RULES
- AS/NZS 3008 ELECTRICAL INSTALLATIONS - SELECTION OF CABLES
- AS/NZS 1680 INTERIOR LIGHTING
- AS 2293 EMERGENCY ESCAPE LIGHTING AND EXIT SIGNS FOR BUILDINGS
- AS 11801 INFORMATION TECHNOLOGY
- AS/NZS IEC 61935.1 TESTING OF BALANCED COMMUNICATION CABLING IN ACCORDANCE WITH ISO/IEC 11801 - INSTALLED CABLING
- AS/CA S009 INSTALLATION REQUIREMENTS FOR CUSTOMER CABLING
- AS/CA S008 REQUIREMENTS FOR CUSTOMER CABLING PRODUCTS
- ELECTRICAL SAFETY ACT
- WORK HEALTH AND SAFETY ACT
- LOCAL ELECTRICITY SUPPLY AUTHORITY
- ANY OTHER AUTHORITY HAVING JURISDICTION OVER THE WORKS

## GENERAL

DRAWINGS AND DIMENSIONS SHOWN ARE INDICATIVE ONLY AND SHALL BE READ IN CONJUNCTION WITH THE DRAWINGS OF ALL OTHER TRADES. COORDINATE THE FINAL LOCATIONS OF ALL CABLE RUNS, PENETRATIONS, FIXTURES, FITTINGS AND THE LIKE WITH ALL OTHER TRADES INVOLVED, INCLUDING ARCHITECTURAL FURNITURE LAYOUTS AND JOINERY DETAILS.

TENDERERS ARE TO INSPECT THE SITE AND TAKE ANY OTHER MEASURES CONSIDERED NECESSARY IN ORDER TO BECOME FULLY AWARE OF THE EXISTING INSTALLATION, SITE CONDITIONS AND SCOPE OF WORK. VARIATION CLAIMS FOR UNFORSEEN DIFFICULTIES AS THE RESULT OF AN INADEQUATE INITIAL SITE INSPECTION WILL NOT BE CONSIDERED.

THESE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME OF DOCUMENTATION. WHERE ANY ANOMALIES EXIST, PROVIDE NOTIFICATION PRIOR TO COMMENCING WORKS TO ALLOW FOR RESOLUTIONS TO BE IMPLEMENTED.

WORKS AFFECTING THE CONTINUITY OF EXISTING SERVICES SHALL BE ORGANISED AT THE LEAST INCONVENIENT TIME AND CARRIED OUT SO AS TO MINIMISE THE TIME OF DISRUPTION AS MUCH AS POSSIBLE. OBTAIN AGREEMENT WITH THE AFFECTED PARTIES PRIOR TO THE WORK AND PROVIDE AT LEAST 5 WORKING DAYS NOTICE.

ALL ITEMS SHALL BE INSTALLED SQUARE AND LEVEL WITH THE BUILDING AND IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. PROVIDE TECHNICAL DATASHEETS OR SAMPLES OF ALL FITTINGS, FIXTURES, FACEPLATES AND OTHER ITEMS FOR APPROVAL BY THE PROJECT MANAGER PRIOR TO ORDERING. NEWLY SUPPLIED ITEMS ARE TO BE OF UNIFORM MAKE AND MANUFACTURE THROUGHOUT.

ALLOW FOR APPROPRIATE CLEAN UP AND REMOVAL OF ALL RUBBISH, TOOLS AND PARTS NO LONGER REQUIRED. THE SITE SHALL BE LEFT CLEAN, TIDY AND READY FOR USE BY OCCUPANTS AT THE COMPLETION OF THE WORKS.

THE ELECTRICAL SERVICES CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF ALL AUTHORITIES HAVING ANY JURISDICTION OVER THE WORKS, FOR EXAMPLE CHANGE OF CONNECTION ARRANGEMENTS, OR ACCESS REQUIREMENTS SUCH AS SCAFFOLDING OR LADDERS. THE CONTRACTOR SHALL ALLOW TO PREPARE AND SUBMIT APPLICATIONS AND PAY ANY FEES ASSOCIATED WITH ANY SUCH REQUIREMENTS AS NECESSARY.

ALL WIRING SHALL BE NEATLY CONCEALED AND CONTAINED IN APPROPRIATE CABLE MANAGEMENT SYSTEMS, MAINTAIN THE BENDING RADIUS OF ALL INSTALLED CABLING AND A MINIMUM SEGREGATION OF 150mm BETWEEN POWER AND COMMUNICATIONS/DATA CABLING AT ALL TIMES.

PROVIDE PERMANENT LABELLING FOR THE ENTIRE ELECTRICAL INSTALLATION INCLUDING ALL OUTLETS, CABLES, PORTS, FITTINGS AND FIXTURES ETC INDICATING THE ORIGINATING CIRCUIT AND DESTINATION ITEM. TYPED UPDATED SCHEDULES SHALL BE PROVIDED IN EACH DISTRIBUTION BOARD WHERE MODIFICATIONS HAVE BEEN MADE TO FINAL SUBCIRCUITS.

## GENERAL (CONT)

UNLESS SPECIFICALLY MARKED OTHERWISE THE FACEPLATE SHALL MATCH THE COLOUR OF THE ARCHITECTURAL FINISH. COORDINATE ALL FINISHES WITH ARCHITECTURAL PACKAGE.

PROVIDE ALL TEST RESULTS AND A COPY OF THE CERTIFICATE OF COMPLIANCE PRIOR TO PRACTICAL COMPLETION.

WHERE EXISTING EQUIPMENT IS TO BE RELOCATED OR REUSED, COMPLETELY TEST ALL EQUIPMENT TO ENSURE IT IS FIT FOR PURPOSE, WILL PERFORM AS SPECIFIED, AND OFFERS NO DISADVANTAGE OVER SUPPLYING A 'NEW' EQUIVALENT. EQUIPMENT NO LONGER USED SHALL BE RETURNED TO THE OWNER OR DISPOSED OF AS NOMINATED BY THE OWNER OF THE EQUIPMENT.

DURING THE 12 MONTHS DEFECTS LIABILITY PERIOD FROM THE DATE OF PRACTICAL COMPLETION, THE CONTRACTOR SHALL CARRY OUT ALL REPAIRS OR REPLACEMENTS TO DEFECTIVE EQUIPMENT AND ALLOW TO MAKE ANY NECESSARY ADJUSTMENTS TO CONTROLS ETC AT NO ADDITIONAL COST.

## PENETRATIONS

ALL PENETRATIONS MUST HAVE PRIOR APPROVAL AND SHALL BE APPROPRIATELY SEALED AND MADE GOOD TO MAINTAIN THE INTEGRITY OF THE BUILDING FABRIC, INCLUDING ANY FIRE RATING, ACOUSTIC RATING, OR WEATHERPROOFING. FIRE SEAL ALL PENETRATIONS AFTER INSTALLATION OF CABLING TO THE APPROPRIATE RATING.

THE SERVICES SUBCONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DETAILED DIMENSIONAL INFORMATION TO THE CONTRACTOR, INCLUDING SIZES AND LOCATIONS OF ALL HOLES REQUIRED.

PENETRATIONS SHALL BE FORMED BY THE CONTRACTOR (e.g. MASONRY, CONCRETE, DRYWALL PACKAGES) AND SHALL BE SIZED TO FIT THE PENETRATION.

PENETRATIONS SHALL NOT BE OVERSIZED. A MAXIMUM TOLERANCE OF 10mm BETWEEN THE SERVICE AND THE SURROUNDING PARTITION MUST BE MAINTAINED.

THE SERVICES CONTRACTOR SHALL PROVIDE ACOUSTICALLY RATED FIREBOXES (e.g. HPM 430) FOR POWER OUTLETS LOCATED IN ACOUSTICALLY CRITICAL WALLS.

THE RESPONSIBILITY FOR ACOUSTICALLY SEALING PENETRATIONS (e.g. IN DRYWALL, CEILING, PRECAST CONCRETE AND BLOCK CONSTRUCTIONS) SHALL BE PART OF EACH TRADE PACKAGE.

ACOUSTICALLY SEALING ALL SERVICES PENETRATIONS SHALL BE COORDINATED BY THE CONTRACTOR.

## WIRING AND CIRCUITING

NEWLY INSTALLED FINAL SUBCIRCUIT CONDUCTORS SHALL BE A MINIMUM 2.5mm<sup>2</sup> COPPER STRANDED TPS PROTECTED BY A MINIMUM 20A 10KA FAULT RATED 30mA EARTH-LEAKAGE CIRCUIT BREAKER WITH THE MAKE AND MODEL TO MATCH EXISTING BREAKERS, UNLESS SPECIFIED OR REQUIRED OTHERWISE.

THE FOLLOWING FORMS OF WIRING ARE ACCEPTABLE:

- CABLE FIXED TO CABLE TRAY
  - CABLES FIXED TO CATENARY WIRES WITHIN THE CEILING SPACE
  - CABLE RUN IN STEEL CONDUIT WHERE MECHANICAL PROTECTION IS REQUIRED
  - CABLES RUN IN FLAT CONDUIT WHERE CABLE ROUTE IS EMBEDDED IN PLASTER
- ALL POWER, FROM COMMUNICATIONS AND SECURITY CABLING RUN BY OTHERS, COORDINATE WITH OTHER TRADES AS REQUIRED, CABLING SHALL BE RUN SEPARATELY AND APPROPRIATELY SEGREGATED.

ALLOW TO DETERMINE THE EXTENT OF ANY EXISTING CABLING SUPPORT IN THE CEILING SPACE AND PROVIDE ADDITIONAL CABLING SUPPORT AS REQUIRED.

CIRCUITING SHALL BE CONFIGURED ON SITE IN A LOGICAL FASHION FROM THE EXISTING FLOOR DISTRIBUTION BOARD. DISTRIBUTION SCHEDULES SHALL BE UPDATED TO REFLECT ANY CHANGES AND A LAMINATED, TYPED SCHEDULE PROVIDED AT EACH DISTRIBUTION BOARD.

POWER CIRCUITING SHALL COMPLY WITH THE FOLLOWING:

- A MAXIMUM OF 14 POINTS (E.G. 7 DOUBLE OUTLETS OR 14 SINGLE OUTLETS) PER CIRCUIT
- DEDICATED INDIVIDUAL CIRCUIT FOR PERMANENTLY CONNECTED HARDWIRED EQUIPMENT
- DEDICATED INDIVIDUAL CIRCUIT FOR EACH 15A OR HIGHER RATED SOCKET OUTLET
- DEDICATED CIRCUIT FOR DESIGNATED CLEANER'S OUTLETS
- A MAXIMUM OF 6 WORKSTATIONS PER CIRCUIT

LIGHTING CIRCUITS SHALL COMPLY WITH THE FOLLOWING:

- QUANTITY OF LUMINAIRES PER CIRCUIT SHALL BE SUCH THAT THE TOTAL EARTH LEAKAGE OF THE FULL CONNECTED LOAD IS LESS THAN ONE-THIRD OF THE RCD EARTH LEAKAGE TRIP CURRENT AS PER THE RECOMMENDATIONS OF AS 3000
- QUANTITY OF LUMINAIRES PER CIRCUIT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES AND RECOMMENDATIONS
- THE CONNECTED LOAD SHALL BE LESS THAN 75% OF THE MAXIMUM CURRENT CARRYING CAPACITY RATING OF THE INSTALLED CABLE

## POWER INSTALLATION

MODIFICATIONS TO THE EXISTING POWER INSTALLATION SHALL COMPRISE OF NEW DISTRIBUTION BOARD, NEW CIRCUIT BREAKERS, WIRING, NEW OUTLETS, NEW EMERGENCY STOP PUSH BUTTONS AND LOCAL DB (PER LAB ROOM) AS SHOWN ON THE DRAWINGS.

PROVIDE RESIDUAL CURRENT PROTECTIVE DEVICES TO ALL CIRCUITS AS REQUIRED BY AS3000. ENSURE THIS COVERS ALL SOCKET AND HARDWIRED SUPPLIES INCLUDING SINGLE PHASE / THREE PHASE FOR MECHANICAL AND HYDRAULIC EQUIPMENT. RCDs SHALL BE PROVIDED ON ALL EQUIPMENT RATED UP TO AND INCLUDING 32A.

ALL POWER CONDUITS SHALL BE HD-UPVC.

TEST ALL EXISTING CIRCUITS AND OUTLETS WHICH ARE TO REMAIN TO ENSURE THEY FUNCTION AS INTENDED AND ARE FIT FOR PURPOSE. ALLOW TO MAKE GOOD OR REPLACE ANY FAULTY OR DAMAGED ITEMS.

THE CONTRACTOR SHALL ENSURE THAT ANY NEW CABLING INSTALLED COMPLIES WITH THE VOLTAGE DROP AND CURRENT CARRYING CAPACITY REQUIREMENTS OF AS/NZS 3008 IN ACCORDANCE WITH THE SPECIFIC INSTALLATION METHODS USED.

ALLOW TO BALANCE ALL PHASES ON DISTRIBUTION BOARDS.

GPOs SHALL BE INSTALLED 500mm AFFL, UNLESS SHOWN OTHERWISE.

UNLESS SPECIFICALLY MARKED OTHERWISE THE FACEPLATE SHALL MATCH THE COLOUR OF THE ARCHITECTURAL FINISH. COORDINATE ALL FINISHES WITH THE ARCHITECTURAL PACKAGE.

EARTHING FOR THE SYSTEM SHALL COMPLY WITH AS3000 AND THE REQUIREMENTS OF THE SUPPLY AUTHORITY. CLEAN ANY COATED/PAINTED SURFACES TO BARE METAL FOR EARTHING CONNECTIONS. PROVIDE EARTHING TO:

- ALL EXPOSED METAL PARTS FORMING PART OF THE INSTALLATION
- COMMUNICATIONS SYSTEM
- SKIRTING WIRING DUCT
- METAL MULLIONS OF OFFICE PARTITIONS WHICH CONTAIN SWITCHES OR OUTLETS

## COMMUNICATIONS SYSTEM INSTALLATION

ALL COMMUNICATIONS WORKS SHALL COMPLY IN FULL TO CLIENT ITC STANDARD REQUIREMENTS.

ALL COMMUNICATIONS WORKS SHALL COMPLY IN FULL WITH AUSTRALIAN STANDARDS, CLIENTS IT/TELECOMMUNICATIONS STANDARD REQUIREMENTS, THESE DRAWINGS AND ASSOCIATED SPECIFICATIONS AND MANUFACTURER REQUIREMENTS. SUPPLY, TESTING, COMMISSIONING, INSPECTION AND CERTIFICATION SHALL BE IN ACCORDANCE WITH THE ABOVE LISTED.

THE COMMUNICATIONS INSTALLATION SHALL BE A STRUCTURED CABLING SYSTEM. ALLOW TO STRIP BACK AND REMOVE ALL REDUNDANT COMMUNICATIONS CABLING AND ASSOCIATED CABLEWAYS.

EXISTING COMMUNICATIONS RACKS TO REMAIN AND RE-TERMINATE EXISTING FIBRE CABLES.

NEW TELECOMMUNICATIONS CABLING SHALL BE CATEGORY 6a HORIZONTAL CABLING TO EACH RJ-45 DATA OUTLET FROM THE COMMUNICATIONS RACK. ALLOW FOR THE PROVISION (AS REQUIRED) OF A NEW MOUNTING ACCESSORIES, ALL PATCH PANELS, TERMINATION BLOCKS, CABLE MANAGEMENT, OUTLETS, PERMANENT LABELLING AND SYSTEM TESTING AND CERTIFICATION.

DATA OUTLETS SHALL BE INSTALLED 500mm AFFL, UNLESS SHOWN OTHERWISE.

UNLESS SPECIFICALLY MARKED OTHERWISE THE FACEPLATE SHALL MATCH THE COLOUR OF THE ARCHITECTURAL FINISH. COORDINATE ALL FINISHES WITH ARCHITECTURAL PACKAGE.

TEST ALL TELECOMMUNICATIONS CABLING IN THE SYSTEM ACCORDING TO AS/NZS IEC 61935.1 AND PROVIDE A MANUFACTURER'S WARRANTY OF THE SYSTEM.

## LIGHTING INSTALLATION

COMMISSION AND TEST THE EXISTING LIGHTING INSTALLATION AND ENSURE ALL ITEMS FUNCTION CORRECTLY.

ARTIFICIAL LIGHTING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF AS/NZS 1680. ALL CONTROL SHALL COMPLY WITH THE REQUIREMENTS OF THE NCC.

ALL NEW LIGHTING SHALL INTEGRATE INTO THE BASE BUILDINGS EXISTING C-BUS LIGHTING CONTROL SYSTEM. ALLOW FOR NEW CONTROLLERS AS REQUIRED.

NEW EMERGENCY LUMINAIRE AND EXIT SIGNS AS INDICATED.

ALL NEW EMERGENCY FITTINGS SHALL BE INTEGRATED INTO THE EXISTING CELETRONICS ZONENETWORKS MONITORED SYSTEM.

TEST THE ENTIRE TENANCIES EMERGENCY LUMINAIRE SYSTEMS ACCORDING TO AS 2293.2. ALL DETAILS AND TEST RESULTS SHALL BE RECORDED IN A LOG BOOK TO BE KEPT ON SITE. ALLOW TO MAKE GOOD ANY FAULTY OR DAMAGED ITEMS.

## SECURITY (WORKS TBC BY JPC)

SUPPLY AND INSTALL A FULLY OPERATIONAL SECURITY SYSTEM INCLUDING, BUT NOT LIMITED TO ALL REQUIRED HEAD END CONTROL PANELS, EXPANDERS, DATA GATHERING POINTS, LICENSES, ETC AND ANY OTHER DEVICES/CARDS/EQUIPMENT REQUIRED TO MAKE THE SYSTEM FULLY FUNCTIONAL. PROVIDE A NEW SECURITY SYSTEM THAT INTEGRATES THE BASE BUILDING EXISTING SYSTEM (TBC).

ALL SECURITY DEVICES, EQUIPMENT, CABLING, ETC SHALL BE SUPPLIED, INSTALLED, TESTED AND COMMISSIONED IN ACCORDANCE WITH THE AUSTRALIAN STANDARDS AND ASSOCIATED SPECIFICATION. SECURITY WORKS SHALL BE CARRIED OUT BY A MANUFACTURER'S ACCREDITED CONTRACTOR. ENSURE TO FOLLOW ALL MANUFACTURER'S INSTALLATION INSTRUCTIONS.

THE USE OF MANUFACTURER SPECIFIC CABLE FOR THE INSTALLATION OF ANY OTHER MANUFACTURER'S EQUIPMENT IS NOT PERMITTED. ALL GPO'S SUPPLYING POWER TO SECURITY EQUIPMENT SHALL BE LABELED "SECURITY EQUIPMENT DO NOT TURN OFF" AND MOUNTED WITHIN 50mm, NO HIGHER OR LOWER THAN THE PANEL.

ALL GPO'S TO BE SURGE DIVERTED. SECURITY PANEL POWER CABLES SHALL BE SHORTENED AND SECURELY FIXED TO THE WALL. SECURITY PANEL ENCLOSURE CABLE CUT OUTS SHALL BE FREE FROM SHARP EDGES. PROVIDE A TRAINING CERTIFICATE SIGNED BY THE PRINCIPAL AND INSTALLER.

ALL SECURITY EQUIPMENT SHALL BE INSTALLED AND PROGRAMMED BY APPROVED CERTIFIED INSTALLERS. PROGRAM THE SYSTEM TO MEET THE CLIENT'S STAFF ACCESS REQUIREMENTS.

## DEMOLITION WORKS

DECOMMISSION AND REMOVE EXISTING SERVICES MADE REDUNDANT BY WORKS. MAKE GOOD SURROUNDING AREA OF REMOVAL IN PREPARATION FOR NEW WORKS, EG. EXISTING; REDUNDANT POWER/COMMS/SECURITY, REDUNDANT OUTLETS, REDUNDANT LIGHTING, REDUNDANT LIGHTING CONTROLS, REDUNDANT ANCILLARY SERVICES AND ALL ASSOCIATED REDUNDANT CABLING, ACCESSORIES, CONTROLS ETC. (THE SCOPE IS NOT LIMITED TO THESE MENTIONED). ELECTRICAL CONTRACTOR MUST VISIT SITE DURING THE TENDERING PERIOD AND ASCERTAIN WHAT SERVICES ARE EFFECTED BY DECOMMISSIONING. OBTAIN PERMISSION FROM ARCHITECT AND CONSULTING ENGINEER FOR REMOVAL OF EACH SERVICE PRIOR TO ANY WORKS.

## SEISMIC RESTRAINT

ALL FITTINGS, DEVICES, CONDUITS & CABLE TRAYS ETC SHALL BE DESIGNED AND SEISMICALLY RESTRAINED IN ACCORDANCE TO AS1170.4 & AS/NZS 1170.2.

RESPONSIBILITY OF DESIGN AND CERTIFICATION OF SEISMIC RESTRAINTS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

LOAD OF ON CEILING DEVICES/FIXTURES SHALL NOT EXCEED THOSE ALLOWED FOR BY THE CEILING MANUFACTURER. CONTRACTOR TO COORDINATE ALL LOADS AS REQUIRED. FIXING OF SAFETY WIRES TO LIGHT FIXTURES, DEVICES & CUSHION HEAD BOXES ETC SHALL BE IN ACCORDANCE WITH AS1170.4. CONTRACTOR TO COORDINATE ALL SAFETY WIRES ONSITE TO SUIT SITE CONDITIONS & OTHER SERVICES.

ALL FIXTURES MUST BE SUPPORTED / BRACED TO PROVIDE LATERAL/VERTICAL RESTRAINT IN ACCORDANCE WITH AS1170.4.

## TESTING AND COMMISSIONING

THE CONTRACTOR SHALL COMMISSION AND CERTIFY THE REBURNISHED BUILDING SYSTEM AFTER MODIFICATIONS HAVE BEEN COMPLETED TO ENSURE IT FUNCTIONS AS REQUIRED.

IF ANY EQUIPMENT, APPARATUS OR CABLING IS DISCOVERED TO BE DEFECTIVE DURING THE COURSE OF TESTING, THE CONTRACTOR SHALL UNDERTAKE ANY ADDITIONAL WORK REQUIRED TO RECTIFY FAULTS AND CONFIRM SATISFACTORY OPERATION OF THE SYSTEM.

ALL TEST RESULTS SHALL BE RECORDED AND COPIES OF THE RESULTS TO BE PROVIDED TO THE PRINCIPAL.

COMMISSION AND TEST THE LIGHTING INSTALLATION AND ENSURE ALL ITEMS FUNCTION CORRECTLY.

## O&M MANUALS

UPDATE OPERATION AND MAINTENANCE INSTRUCTION MANUALS FOR THE ELECTRICAL INSTALLATION WHICH INCLUDES A DESCRIPTION OF EACH INSTALLATION, ITS OPERATION AND REGULAR PREVENTATIVE MAINTENANCE ROUTINES TO BE ADOPTED, AS-INSTALLED DRAWINGS, WORKSHOP DRAWINGS, TEST CERTIFICATES, TECHNICAL DATASHEETS FOR EACH FIXTURE AND FITTING USED AND A SCHEDULE OF ALL PARTS INCLUDING SUPPLIER DETAILS.

SUBMIT THE MANUALS FOR APPROVAL TO THE PRINCIPAL. FOLLOWING APPROVAL, PROVIDE A BOUND HARDCOPY SET OF THE O&M MANUALS WITH RIGID COVERS OF PLASTIC FINISH TO WITHSTAND CONTINUAL USAGE. PROVIDE A DIGITAL COPY OF THE O&M MANUAL, INCLUDING AS-INSTALLED DRAWINGS IN DWG AND PDF FORMATS ON A DISC TO BE INCLUDED WITH THE O&M MANUAL HARDCOPY PACKAGE.

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ELECTRICAL DESIGN GROUP BRISBANE PTY LTD  
ACN 092 710 793

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USE FIGURED DIMENSIONS IN PREFERENCE TO SCALE.

ALL DIMENSIONS TO BE VERIFIED ONSITE.

**ASW**  
**ELECTRICAL**  
WIRED TO DELIVER

E: info@aswelectrical.com.au  
M: 0450 440 569  
www.aswelectrical.com.au

**ELECTRICAL DESIGN GROUP**  
ELECTRICAL BUILDING SERVICES CONSULTANTS  
BRISBANE GOLD COAST

P.O. Box 15, Sherwood Q.4075  
Phone: (07) 3278 4375  
Email: brisbane@edg.net.au  
Web: www.edg.net.au

PROJECT:

**JOHN PAUL COLLEGE  
SCIENCE CLASSES**

125 JOHN PAUL DRIVE, DAISY HILL, QUEENSLAND