METRIC A1 AEC

NOTES:

1.) NEW COMMUNICATION OUTLETS INDICATED ON EXISTING WALLS SHALL BE INSTALLED IN SURFACE RACEWAY. NEW OUTLETS TO BE MOUNTED AT HEIGHT TO MATCH EXISTING OUTLETS.

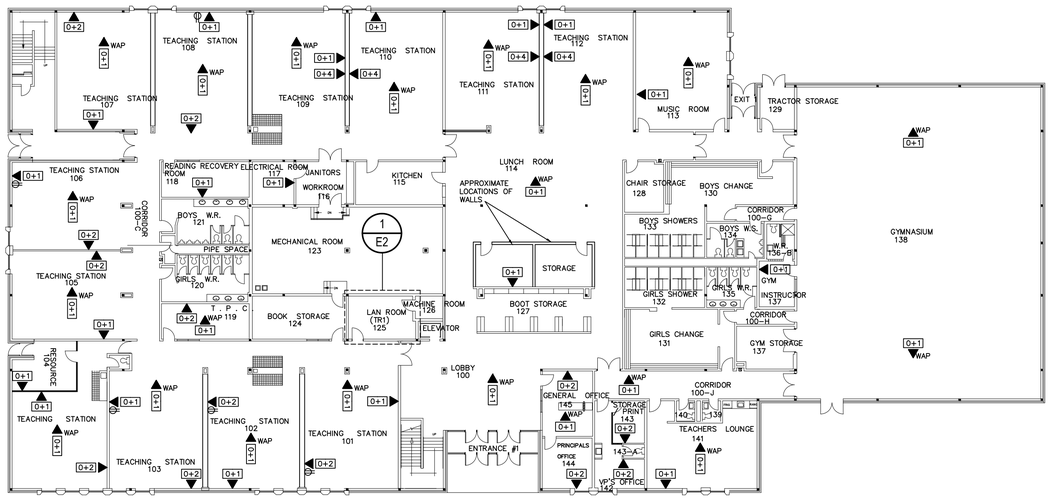
2.) NEW RECEPTACLES IN COMM ROOMS TO BE WIRED TO CIRCUITS AS INDICATED.

3.) SUPPLY AND INSTALL 53mm INNER DUCT FOR FIBER OPTIC CABLES. CABLES SUPPLIED AND INSTALLED BY SERVICE PROVIDERS.

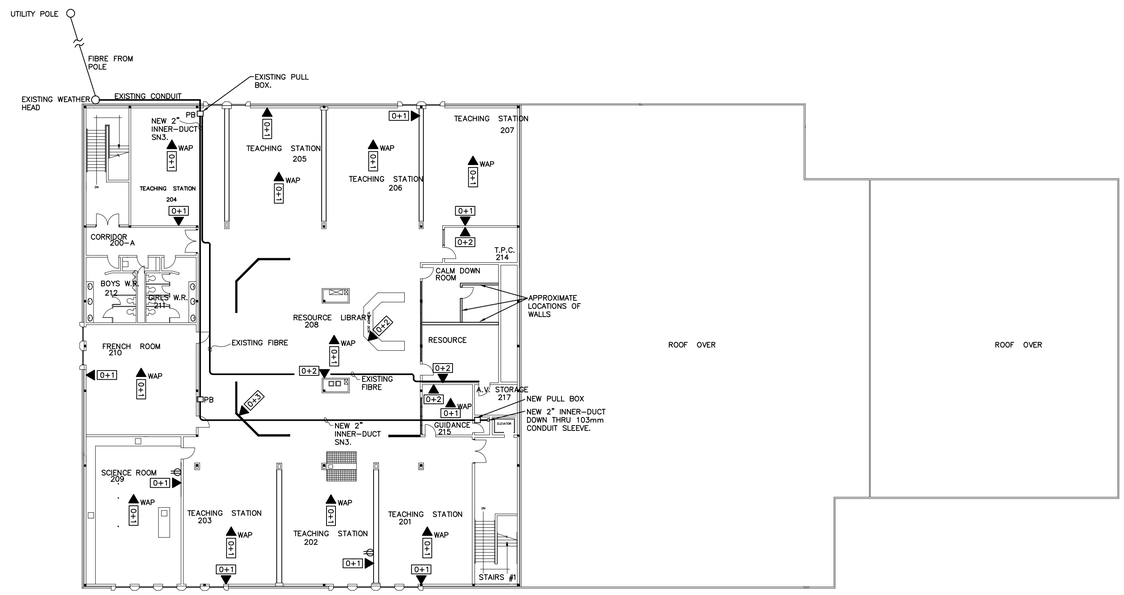
4.) CABLING MUST BE PROTECTED WITHIN WALLS.

LEGEND:

0+1	VOICE/DATA COMBINED OUTLET 1ST– NO.OF VOICE DROPS 2ND– NO.OF DATA DROPS
WAP 0+1	WIRELESS ACCESS POINT
PB	PULL BOX
	DUPLEX RECEPTACLE, 15A OR 20A, 125V.
$	SINGLE POLE TOGGLE SWITCH, 15A, 120V OR 347V AS REQUIRED.
	GROUNDING BUSBAR
	FIRE ALARM DETECTOR
	EMERGENCY LIGHT REMOTE HEAD
S	WALL MOUNT PA SPEAKER
	DIFFUSER
Ex	EXISTING
TR	TELECOMMUNICATIONS ROOM
SN	SEE NOTE
e	EXISTING DEVICE LOCATION.
er	EXISTING DEVICE LOCATION TO BE REMOVED.
re	EXISTING DEVICE LOCATION TO BE RELOCATED/REINSTALLED



1 E1 LEVEL 1 COMMUNICATIONS PLAN
SCALE : 1:250



2 E1 LEVEL 2 COMMUNICATIONS PLAN
SCALE : 1:250

PROFESSIONAL ENGINEER
JOHN P. GREENAN
No. 383
Dec 16 2015
PRINCE EDWARD ISLAND

ISSUED FOR TENDER
December 17, 2015

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A = Detail #
BB = Sheet # (Where Detail Required)
CC = Sheet # (Where Detailed)

Project Title :
Greenfield IT Consolidation

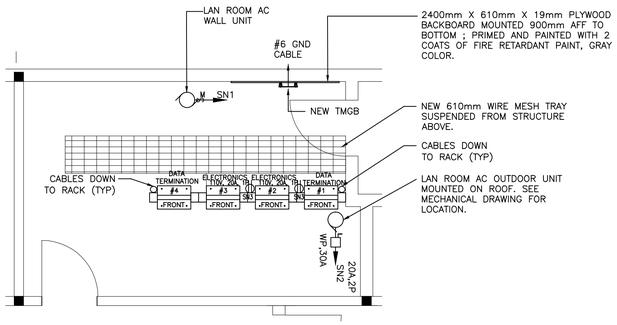
Drawing Title :
Level 1 & 2
Communications Plan

Scale : As Noted	Design By : J.P.G.
Drawn By : M.D.M.	Date : NOV 2015
Project No.: 250 - 15090	Drawing # : E1 of 3

Z:\2015\15001-15199\2015148 GREENFIELD IT CONSOLIDATION\15148 TENDER DWGS\15148-E1.DWG

839.9mm x 593.4mm 2.755' x 1.946'

METRIC A1 AEC



COMMUNICATIONS PLAN

NOTES:

1.) WIRING FROM INDOOR AC UNIT TO OUTDOOR AC UNIT BY THE MECHANICAL CONTRACTOR.

2.) WIRE POWER FOR AC UNITS TO CLOSEST AVAILABLE SOURCE WITH SUFFICIENT CAPACITY. EXACT LOCATION TO BE APPROVED BY ENGINEER ON SITE. ALLOW FOR 30m FOR EACH BRANCH CIRCUIT

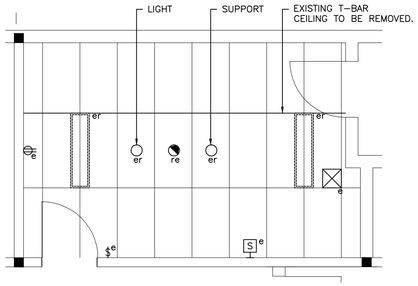
3.) WIRE 120V DUPLEX RECEPTACLE AT RACKS TO DEDICATED NEW 20A, 1P BREAKERS IN EXISTING PANEL. EXACT LOCATION TO BE APPROVED BY ENGINEER ON SITE. ALLOW FOR 30m FOR BRANCH CIRCUIT.

4.) THE HEIGHT OF THE CABLE TRAY, AC WALL UNITS, ETC... TO BE DETERMINED ON SITE DURING CONSTRUCTION IN COORDINATION WITH ITTS, TIR AND CONSULTANTS.

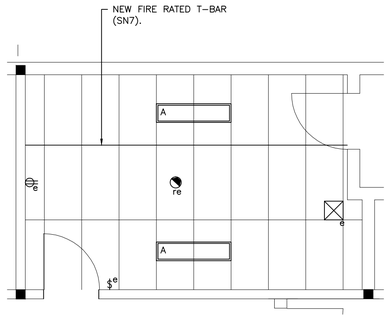
5.) THE LOCATION OF ALL AC UNITS IN COMM ROOMS TO BE COORDINATED WITH THE TIR PROJECT MANAGER AND MECHANICAL ENGINEER BEFORE ROUGH IN BEGINS.

6.) REINSTALL EXISTING SMOKE DETECTORS AND MECHANICAL DIFFUSERS IN NEW T–BAR CEILING.

7.) NEW T–BAR CEILING TO BE FIRE RATED. RAISE CEILING BY APPROXIMATELY 610mm FROM IT'S CURRENT HEIGHT. REPAIR AS REQUIRED AND PAINT WALLS BETWEEN EXISTING CEILING HEIGHT AND NEW TO MATCH EXISTING COLORS.



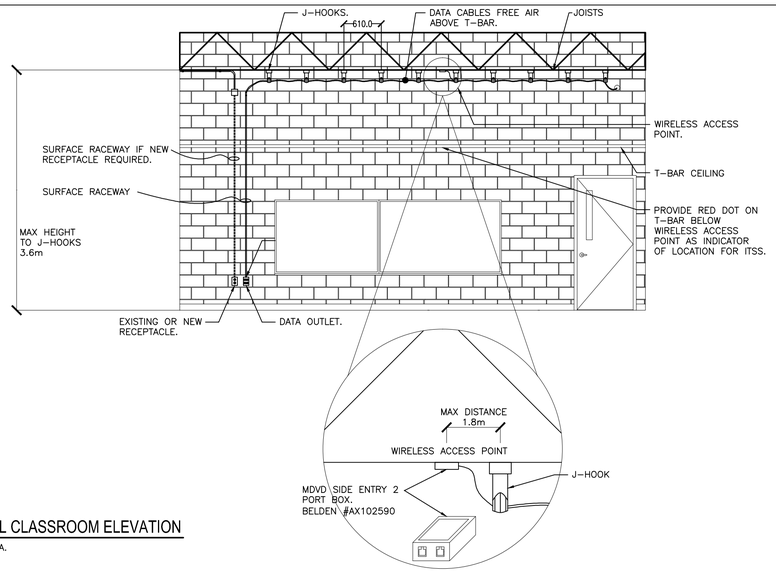
DEMO FLOOR/CEILING PLAN



NEW FLOOR/CEILING PLAN

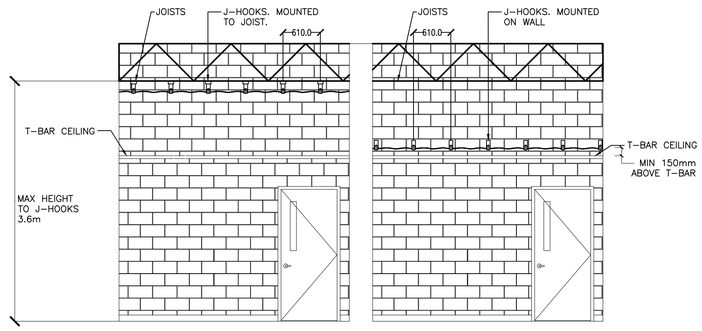
2 / E2 ENLARGED (TR1) PLANS

SCALE : 1:50



2 / E2 TYPICAL CLASSROOM ELEVATION

SCALE : NA.



3 / E2 TYPICAL CORRIDOR ELEVATION

SCALE : NA.

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A / BB | CC

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Project Title :

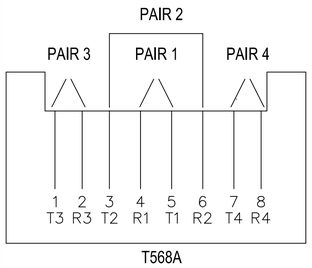
Greenfield IT Consolidation

Drawing Title :

Enlarged Communications Rooms & Details

Scale : As Noted	Design By : J.P.G.
Drawn By : M.D.M.	Date : NOV 2015
Project No.: 250 - 15090	Drawing # : E2 of 3

METRIC A1 AEC



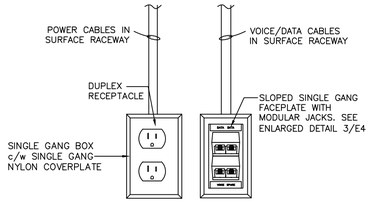
COLOR CODING:

T3 WHITE/GREEN	T1 WHITE/BLUE
R3 GREEN	R2 ORANGE
T2 WHITE/ORANGE	T4 WHITE/BROWN
R1 BLUE	R4 BROWN

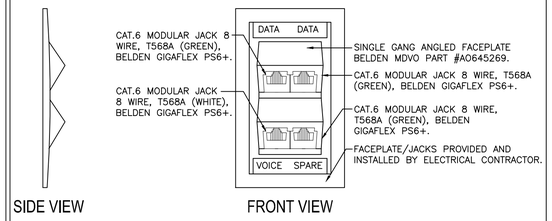
NOTE:

THE ELECTRONICS INDUSTRY ASSN. HAS DESIGNATED THE FOLLOWING PIN/PAIR ASSIGNMENTS AS THEIR PREFERRED SEQUENCE.

1 / E3 DATA JACK RJ45 TERMINATIONS
SCALE : NA.



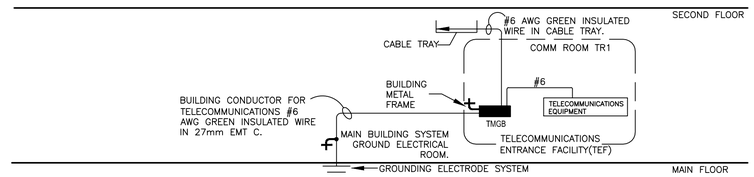
2 / E3 OUTLET DETAIL
SCALE : NA.



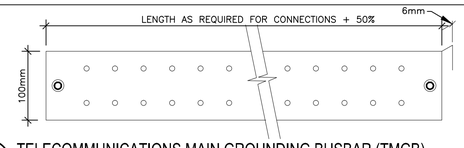
3 / E3 VOICE/DATA OUTLET DETAIL
SCALE : NA.

NOTES:

1.) CONNECT EACH TELECOMMUNICATION RACK INDIVIDUALLY TO COMM ROOM BONDING WITH #6 AWG. GREEN INSULATED WIRE.



4 / E3 COMMUNICATIONS GROUNDING AND BONDING RISER DIAGRAM
SCALE : NA.

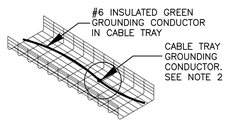


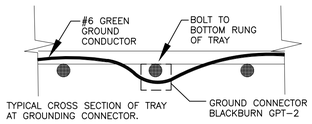
NOTES:

1.) BOLT HOLE SIZE AND SPACING AS PER NEMA STANDARDS PANDUIT OR EQUAL.

2.) TMGB GROUNDING BUS BAR WILL BE PANDUIT GB4B SERIES OR EQUAL.

5 / E3 TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB)
SCALE : NA.





NOTES

1.) #6 INSULATED GREEN BONDING CONDUCTORS TO BE IN ALL CABLE TRAYS. CONTRACTOR SHALL EXTEND ALL BONDING CONDUCTORS TO THE GROUNDING BARS IN LAN ROOMS.

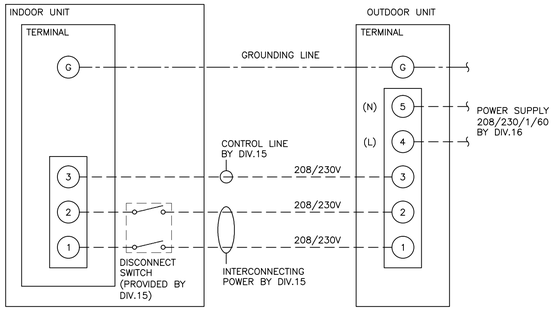
2.) AT THE POINT OF THE GROUND CONNECTORS, THE GROUNDING CONDUCTOR SHALL BE ROUTED DOWN THROUGH THE TRAY THEN THROUGH THE GROUNDING CONNECTOR AND THEN BACK UP INTO THE TRAY.

3.) ALL CABLE TRAY SHALL BE T&B, EXPRESS TRAY SERIES, ELECTRO GALVANIZED STEEL, 50mm DEEP, 50mmX100mm MESH SPACING, WIDTH INDICATED ON THE DRAWINGS.

4.) PROVIDE CABLE DROPOUTS WHERE CABLES ENTER SYSTEM FURNITURE AND DATA ROOM RACKS.

5.) BUNDLE GROUPS OF CABLES (MAXIMUM 25) THROUGHOUT THE TRAY IN A NEAT FASHION USING VELCRO WRAPS.

6 / E3 CABLE TRAY GROUNDING & BONDING DIAGRAM
SCALE : NA.



7 / E3 ELECTRICAL WIRING DETAIL
SCALE : N.T.S.

COMMUNICATION NOTES:

1.) THE SUPPLY, INSTALLATION AND TESTING OF THE VOICE/DATA SYSTEM SHALL FOLLOW THE REQUIREMENTS IN LATEST EDITION OF "GOVERNMENT OF PRINCE EDWARD ISLAND STRUCTURED CABLING STANDARDS".

2.) IN ORDER TO GUARANTEE NETWORK PERFORMANCE, A SINGLE MANUFACTURER'S "SYSTEM" OF MATCHED COMPONENTS IS REQUIRED. THE GOVERNMENT STANDARD IS BELDEN IBDN SYSTEM 4800, GIGAFLEX CATEGORY 6.

3.) ALL INSTALLERS SHALL BE FAMILIAR WITH AND FOLLOW THESE INDUSTRY STANDARD DOCUMENTS:
- ANSI/TIA/EIA-569-A (CSA T530)
- ANSI/TIA/EIA-607 (CSA T527)
- ANSI/TIA/EIA-568-B.1,B.2, B.2-1 & B.3
- ANSI/TIA/EIA-606A
- ANSI/TIA/EIA-862
- TSB-155, IEEE 802.3an

4.) THE ENTIRE SYSTEM SHALL MEET OR EXCEED THE CURRENT DAY CATEGORY 6 STANDARD SPECIFICATIONS, WHICH INCLUDES FOUR PAIR, 23 GAUGE, COPPER CABLING PERFORMANCE OF 300MHz. ONLY MATCHED COMPONENTS FROM ONE MANUFACTURE'S SYSTEM SHALL BE USED TO PROVIDE AN END-TO-END SOLUTION. PROVIDE COMPLETE SYSTEM CONSISTING OF OUTLET BOXES, COVER PLATES, PATCH PANELS, PATCH CORDS AND CABLE, etc. THE CONTRACTOR SHALL VERIFY THAT ALL SYSTEM PARTS RECEIVED MEET SPECIFICATION, PRIOR TO INSTALLATION.

5.) 4-PORT ANGLED FACE PLATES SHALL BE FOR MDVO STYLE JACKS, WITH 3 PORTS USED IN EACH INSTANCE (2 DATA, 1 TELEPHONE). THE UPPER PORTS ARE TO BE USED FOR DATA TERMINATIONS AND THE LOWER FOR VOICE, UNLESS OTHERWISE STATED. THE MDVO JACKS IN ANGLED FACE PLATES ARE TO BE INSTALLED AS DESIGNED BY THE MANUFACTURER, WHICH IN THIS CASE HAS THE PRINTING INVERTED. THIS ALLOWS THE RELEASE TAB ON THE DATA CABLE TO BE FACING UPWARDS, MAKING IT EASIER TO REMOVE FROM THE JACK.

6.) EACH HORIZONTAL CABLE, DATA OUTLET AND PATCH PANEL PORT SHALL BEAR THE SAME IDENTIFYING NUMBER. THE NUMBERING SCHEME FOR THE BUILDING DATA OUTLETS SHALL BE ASSIGNED IN A LOGICAL, SEQUENTIAL MANNER. NUMBERING ON THE PLATES SHALL BE VIEWABLE FROM BOTH IN FRONT AND ABOVE. A CONTRACTOR MUST ASSIGN THESE JACK NUMBERS ON THE FLOOR PLANS, PRIOR TO PULLING IN ANY CABLE.

7.) PATCH PANELS SHALL BE BELDEN CATEGORY 6 FLEX, FOR GIGAFLEX MDVO STYLE JACKS, FOR MOUNTING IN 19 INCH FLOOR MOUNTED RACK. PANELS TO BE A MATCHED COMPONENTS OF THE CABLING SYSTEM BEING INSTALLED; 24-PORT ONE RACK UNIT HIGH; 48-PORT TWO RACK UNITS HIGH. ALLOW FOR 25% SPARES.

8.) PATCH CORDS SHALL BE CATEGORY 6 BELDEN GIGAFLEX. TWO PATCH CORDS REQUIRED FOR EACH DATA LINE. CABLE JACKET AND BOOTS TO MATCH SYSTEM COLOR CODE:
-"GREEN" JACKET AND BOOTS FOR BELDEN/CDT GIGAFLEX SYSTEM
-"BLUE OR GREY" JACKET AND BOOTS FOR STANDARD CAT5 UTP CABLE

a.) STANDARD PATCH CORD LENGTHS ARE TO NOT TO EXCEED 10 FEET. CORDS OF UP TO 25' MAY BE USED TEMPORARILY IF IT CAN BE SHOWN THAT THE TOTAL ELECTRICAL LENGTH OF THE CONNECTION TO THE SWITCH REMAINS UNDER 100 FEET (30m), UNTIL SUCH TIME AS ADDITIONAL RUNS CAN BE INSTALLED.

9.) CONTRACTOR TO SUPPLY PATCH CORDS AT BOTH THE MAIN DATA RACK AND IN THE INDIVIDUAL ROOMS. NUMBER OF PATCH CORDS REQUIRED SHALL BE DETERMINED BY THE NUMBER OF DATA OUTLETS SHOWN ON THE DRAWINGS. PATCH CORD LENGTH REQUIRED IN THESE AMOUNTS:
- 4 FEET (1.2M), 70% OF TOTAL COUNT.
- 7 FEET (2.1M), 20% OF TOTAL COUNT
- 10 FEET (3M), 10% OF TOTAL COUNT.

10.) THE INSTALLER SHALL BE RESPONSIBLE FOR PROVIDING TO IT SHARED SERVICES:
-A MAP OF THE DATA OUTLET NUMBERING AND CABLE PATHWAYS ON A COPY OF THE BUILDING FLOOR PLAN(S).
- TEST RESULTS FOR EACH CHANNEL WITH A LEVEL IV METER, USING THE STANDARD SPECIFICATIONS FOR CATEGORY 6.

11.) ALL CABLE TERMINATIONS SHALL BE INSTALLED AND TESTED TO THE T-568A WIRING STANDARD.

12.) THE CONTRACTOR SHALL GUARANTEE THAT ALL ASPECTS OF THEIR INSTALLATION SHALL BE FREE FROM DEFECTS, AND SHALL WARRANTY WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF INSPECTION AND ACCEPTANCE BY THE REPRESENTATIVE OF PROVINCIAL TREASURY, IT SHARED SERVICES. THE CONTRACTOR SHALL ASSUME ALL COSTS ASSOCIATED WITH REPAIR OR REPLACEMENT; ANY FORM OF CABLE TRAUMA WILL BE CONSIDERED A DEFECT AND SHALL REQUIRE REPLACEMENT.

13.) CATEGORY 6 DATA CABLING SHALL MEET OR EXCEED SPECIFICATIONS FOR CATEGORY 6, BE 4 PAIR, 23 AWG, WITH FT4 RATED INSULATION. ACCEPTED SYSTEMS ARE COLOR-CODED TO UNIQUELY IDENTIFY THE INDIVIDUAL SYSTEM HORIZONTAL CABLING. FOR CABLING:
- GREEN BELDEN/CDT (NORDX) SYSTEM (4812LX)
- BLUE STANDARD CAT5 UTP CABLE
- WHITE ALL TELEPHONE COPPER CABLE

CABLING FOR TELEPHONE SHALL BE OF CATEGORY 6 TYPE (BELDEN 2412)

14.) IF AN INSTALLED BASE OF A MANUFACTURER'S CATEGORY 5E OR 6 SYSTEM IS ALREADY INSTALLED, CONSULT WITH THE IT SHARED SERVICES REPRESENTATIVE FOR THE SPECIFICATION OF PRODUCT TO BE INSTALLED. IF THERE ARE ANY DEFICIENCIES, ANOMALIES, LINK LENGTH ISSUES, DESIGN FLAWS, FIT UP PROBLEMS REGARDING TO THE STRUCTURED CABLING SYSTEM, THE CONTRACTOR SHALL CONTACT THE IT SHARED SERVICES REPRESENTATIVE FOR CLARIFICATION AND/OR RESOLUTION, BEFORE PROCEEDING.

15.) ALL CAT6 T-568A MDVO'S SHALL BEAR THE FOLLOWING COLORS FOR EASE OF IDENTIFICATION, IN THE EVENT OF THEIR USAGE:
-GREEN BELDEN/CDT (NORDX) CAT6 GIGAFLEX DATA JACKS.
-BLUE REGULAR CAT5 DATA JACKS.
-WHITE VOICE CABLE TERMINATION JACKS GIGAFLEX.
-BLACK FAX CABLE TERMINATION JACKS GIGAFLEX.

16.) PATCH PANELS SHALL ONLY BE MOUNTED IN IT SHARED SERVICES APPROVED EQUIPMENT RACKING DEVICE(S). THIS SHALL BE IN ACCORDANCE WITH THE ATTACHED RACK OR CABINET PACKAGE DOCUMENTS. NO SUBSTITUTIONS.

17.) ATTACHMENT OF PANELS AND DEVICES TO SPECIFIED RACKS AND CABINETS SHALL USE ONLY 10-32 ROBERTSON RACK MOUNTING SCREWS; ACCEPTED - MIDDLE ATLANTIC PART # HS.

18.) THE INSTALLER SHALL LEAVE A MINIMUM OF 12" (300mm) OF EXCESS UTP CABLE ON THE DATA OUTLET TERMINATION TO FACILITATE FUTURE RE-TERMINATION. THE EXCESS CABLE IS TO BE STORED IN A SWEEPING "S" PATTERN, COILS ARE NOT PERMITTED.

19.) THE INSTALLER SHALL LEAVE A MINIMUM OF 10 FEET (3 METERS) OF EXCESS UTP CABLE ON THE PATCH PANEL END TO FACILITATE FUTURE REPOSITIONING OF PANELS ON THE RACK UNIT. THE EXCESS CABLE IS TO BE STORED IN A SWEEPING "S" PATTERN; COILS ARE NOT PERMITTED.

20.) WHERE APPLICABLE, THE REAR OUTSIDE OF VERTICAL CABLE MANAGEMENT TROUGHS SHALL BE USED TO CONTROL CABLES ATTACHING TO THE RACKING UNIT. THIS SHALL BE IN ACCORDANCE WITH A DOCUMENT SUPPLIED TO THE INSTALLER, DETAILING THE TYPE AND CONFIGURATION OF SUCH DEVICE.

21.) WHERE PHYSICAL SECURITY IS OF CONCERN, ALL NETWORK CABLES SHALL BE ENCLOSED IN CONTINUOUS CONDUIT FROM THE WORKSTATION OUTLET TO THE SECURE TELECOMMUNICATIONS ROOM. THE CONDUIT SHALL BE OF SUFFICIENT SIZE TO MEET THE MAXIMUM FORTY (40) PERCENT FILL RATIO AND TURN RADIUS SPECIFICATIONS.

22.) HORIZONTAL CABLING SHALL BE INSTALLED TO THE MANUFACTURER'S SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO, THE MINIMUM BEND RADIUS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER BUNDLING (WITH VELCRO WRAPS) AND HANDLING OF ALL CABLES (WITH CABLE TRAYS, CADDY FASTENERS AND/OR "J" HOOKS) BETWEEN THE TELECOMMUNICATION CLOSETS AND THE WORKSTATION MDVOS, IN COMMON PATHWAYS (ABOVE CORRIDORS); THE "HOME RUN" METHOD IS NOT PERMITTED. CABLE BUNDLES SHOULD BE SUPPORTED AT 2 FOOT INTERVALS. ALL J-HOOKS IN CORRIDORS SHALL ALL BE CADDY CAT64 OR EQUAL (SIZED FOR 185 CAT6 CABLES). BRANCH OFFS FROM MAIN CORRIDOR OR CABLE RUNS WITHIN ROOMS BETWEEN 1 AND 5 CAT 6 CABLES SHALL USE CADDY CAT12 J-HOOKS, RUNS BETWEEN 6 AND 16 SHALL USE CADDY CAT21 J-HOOKS AND BETWEEN 17 AND 25 SHALL USE CADDY CAT32 J-HOOKS. ALL CABLE RUNS MORE THAN 25 SHALL USE CADDY CAT64 J HOOKS. CABLES WILL NOT BE LAID ON OR SUPPORTED DIRECTLY BY THE STEEL JOISTS. NEW CABLES WILL NOT BE INSTALLED WITH EXISTING CABLES IN EXISTING J-HOOKS OR BUNDLED OR FASTENED TO ANY EXISTING CABLES.

23.) EACH WORKSTATION OUTLET PLATE SHALL BE CONFIGURED WITH A MINIMUM OF 2 DATA DROPS PLUS TELEPHONE SERVICE IF REQUIRED. DATA DROPS SHALL ONLY BE USED TO DELIVER DATA SERVICES AND SHALL NOT BE USED FOR ANY OTHER SERVICE TO THE WORKSTATION.

24.) INSTALLER SHALL BE TRAINED BY THE MANUFACTURER OF THE CABLING SYSTEM BEING INSTALLED, FOLLOWING METHODS DEMONSTRATED IN THAT TRAINING, AND SHALL POSSESS A VALID CERTIFICATE OF COMPLETION FROM THE MANUFACTURER FOR THE COURSES TAKEN. TRAINING MUST HAVE BEEN TAKEN WITHIN THE PREVIOUS THREE (3) YEARS, TO BE CONSIDERED "VALID". CERTIFICATES MUST BE MADE AVAILABLE TO THE IT SHARED SERVICES REPRESENTATIVE FOR REVIEW, UPON REQUEST.

25.) BEFORE DEVIATING FROM THESE METHODS, CONTACT THE DEPARTMENT OF PROVINCIAL TREASURY IT SHARED SERVICES REPRESENTATIVE.

26.) BELDEN IBDN SYSTEM 4800 COMPONENTS INCLUDE:
-4812 005 1000 GIGAFLEX 4812, 4 PAIR, 23 AWG, CMR, CAT6, GREEN, 1000ft.
-AX101070 CAT6+MODULAR JACKS, FOR DATA
-C601105004 BELDEN GIGAFLEX PS6+ PATCH CABLES 4 FEET (1.2M), GREEN
-C601105007 BELDEN GIGAFLEX PS6+ PATCH CABLES 7 FEET (2.1M), GREEN
-C601105010 BELDEN GIGAFLEX PS6+ PATCH CABLES 10 FEET (3M), GREEN
-AX101458 FLEX PATCH PANEL, 2U, 48-PORT, BLACK
-A0645269 MDVO ANGLED ENTRY FACEPLATE

27.) FLOOR MOUNTED RELAY RACKS PROVIDED BY ITSS, INSTALLED BY THIS CONTRACTOR.

28.) ACCEPTABLE CONDUIT RUNS
- ACHIEVE THE BEST DIRECT ROUTE (E.G., USUALLY PARALLEL TO BUILDING LINES) WITH NO BEND GREATER THAN 90 DEGREES OR AN AGGREGATE OF BENDS IN EXCESS OF 180 DEGREES BETWEEN PULL POINTS OR PULL BOXES.
- NO CONTINUOUS SECTIONS LONGER THAN 30.5 M (100 FT).
- BE BONDED TO GROUND ON ONE OR BOTH ENDS IN ACCORDANCE WITH NATIONAL OR LOCAL REQUIREMENTS.
- WITHSTAND THE ENVIRONMENT TO WHICH THEY WILL BE EXPOSED.
- FOR RUNS THAT TOTAL MORE THAN 30.5 M (100 FT) IN LENGTH, PULL POINTS OR PULL BOXES SHOULD BE INSERTED SO THAT NO SEGMENT BETWEEN POINTS/BOXES EXCEEDS THE 30.5 M (100 FT) LIMIT.

29.) CONDUIT CAPACITY
- CABLE CAPACITY OF HORIZONTAL PATHWAY CONDUITS THAT HAVE NO MORE THAN TWO 90 DEGREE BENDS (180 DEGREES TOTAL) AND ARE NO LONGER THAN 30.5m (100ft). THE TABLE SHOWS THE CONDUIT FILL RATIO GUIDELINES FOR HORIZONTAL CABLES: HOWEVER, THE NUMBER OF CABLES THAT CAN BE INSTALLED IS ACTUALLY LIMITED BY THE ALLOWED MAXIMUM PULLING TENSIONS OF THE CABLES. MAXIMUM CONDUIT FILL RATIO IS 40%.

		CABLE OUTSIDE DIAMETER mm(in)							
INSIDE DIAMETER (mm)	TRADE SIZE	3.3 (0.13)	4.6 (0.18)	5.6 (0.22)	6.1 (0.24)	7.4 (0.29)	7.9 (0.31)	9.4 (0.37)	13.5 (0.53)
16	1/2	1	1	0	0	0	0	0	0
21	3/4	6	5	4	3	2	2	1	0
27	1	8	8	7	6	3	3	2	1
35	1-1/4	16	14	12	10	6	4	3	1
41	1-1/2	20	18	16	15	7	6	4	2
50	2	30	26	22	20	14	12	7	4
63	2-1/2	45	40	36	30	17	14	12	6
78	3	70	60	50	40	20	20	17	7
91	3-1/2	-	-	-	-	-	-	22	12
100	4	-	-	-	-	-	-	30	14

30.) MAXIMUM CATEGORY 6 CABLE LENGTHS APPLY TO ALL HORIZONTAL DISTRIBUTION CABLES; FROM THE HORIZONTAL CROSS-CONNECT (PATCH PANEL) TO THE TELECOMMUNICATIONS OUTLET (WORKSTATIION END), MAXIMUM CABLE LENGTH IS 90 METERS, (295 FEET) INCLUDING SLACK REQUIREMENTS. BAS HORIZONTAL LINK LENGTHS ARE ALSO LIMITED TO 90 METERS, INDEPENDENT OF THE MEDIA TYPE.

31.) ALL CABLE SHALL RUN PARALLEL, OR PERPENDICULAR TO CORRIDORS TO PRESERVE NEATNESS AND TO MINIMIZE INTERFERENCE WITH STRUCTURES, MOUNTED ABOVE THE DROP CEILINGS, CORRIDOR CROSSOVERS SHALL BE MINIMIZED.

32.) CABLE RUNS SHALL BE FREE OF TENSION AT BOTH ENDS, AS WELL AS OVER THE LENGTH OF THE RUN. THE CABLE SHALL BE WIRED IN A SINGLE PLANE ABOVE THE SUSPENDED CEILING AND NOT DRAPED OVER DUCTS, BEAMS, OR PIPES.

33.) CABLE RUNS SHALL BE FREE FROM BRIDGES, TAPS, OR SPLICES FROM THE USER INTERFACE (I.E. WALL PLATE) TO THE DISTRIBUTION FRAME. CABLES SHALL BE ROUTED SUCH AS TO MAINTAIN THE FOLLOWING MINIMUM DISTANCES FROM POWER SOURCES:
-12 INCHES (300mm) FROM POWER LINES OF 2KVA OR LESS (FOR EXAMPLE; LIGHTING OR DUPLEX RECEPTACLES).
-12 INCHES (300mm) FROM FLUORESCENT LIGHTING.
-36 INCHES (900mm) FROM POWER LINES 5KVA OR GREATER. (FOR EXAMPLE; ELECTRIC RANGE)
-40 INCHES (1000mm) FROM TRANSFORMERS OR MOTORS.

34.) DURING INSTALLATION THIS CONTRACTOR SHALL ON AN ON-GOING BASIS MAINTAIN RELEVANT, ACCURATE AND COMPREHENSIBLE RECORDS OF ALL TERMINATIONS, WIRING AND INTERCONNECTIONS.

35.) CONTRACTOR WILL PROVIDE:
A. COPPER CABLING AND COPPER ACCESSORIES (I.E. JACKS).
B. COPPER CABLE TERMINATION.
C. PATCH PANELS

36.) CONTRACTOR TO CONTACT ITSS PRIOR TO RACK POPULATION.

37.) LABEL NEW DATA DROPS STARTING WITH NUMBERS AS REQUIRED BY ITSS.

38.) ALL WORKSTATION OUTLET PLATES MUST HAVE THE ADDITIONAL LABEL OF "TR1", "TR2", ETC. SEPARATE FROM THE DATA JACK NUMBER.

39.) THERE SHALL BE SEPARATE PATCH PANELS FOR EACH FLOOR IN COMMUNICATION ROOMS THAT SERVE MORE THAN ONE FLOOR.

40.) IN TR1 PROVIDE FIVES(5) PATCH PANELS.

8 / E3 VOICE/DATA COMMUNICATIONS SPECIFICATIONS
SCALE : NA.

PROFESSIONAL ENGINEER
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No. 383
PRINCE EDWARD ISLAND
Dec 16, 2015

ISSUED FOR TENDER
December 17, 2015

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A / BB CC
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BB = Sheet # (Where Detail Required)
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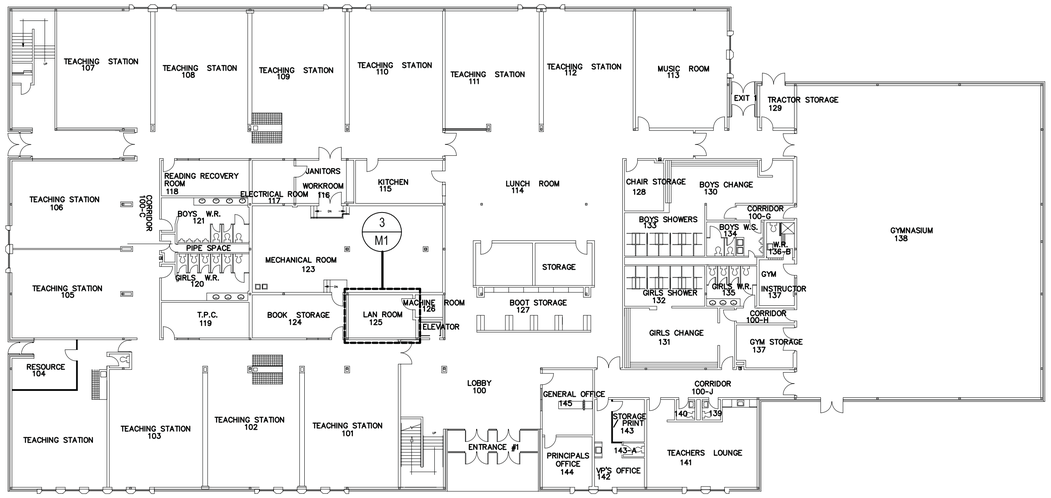
Project Title :
Greenfield IT Consolidation

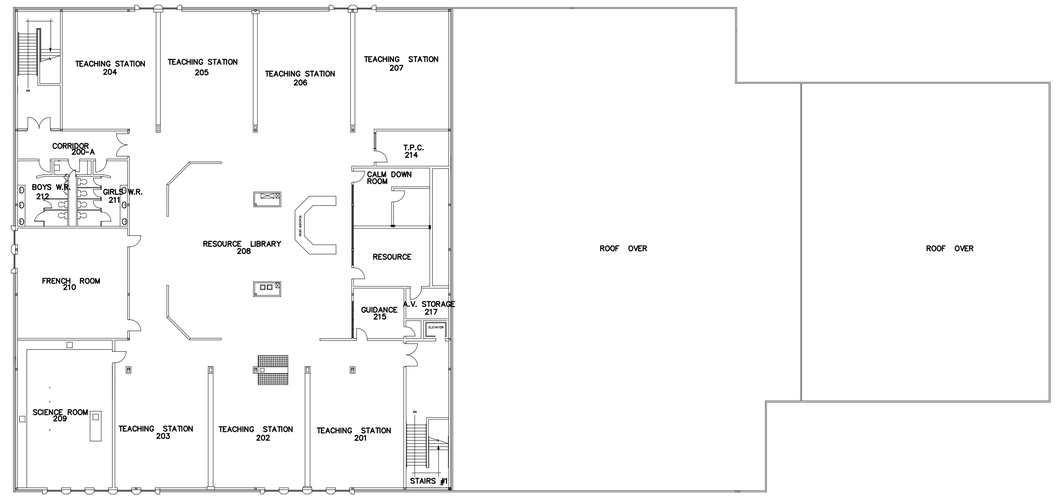
Drawing Title :
Communications Details & Specifications

Scale : As Noted	Design By : J.P.G.
Drawn By : M.D.M.	Date : NOV 2015
Project No.: 250 - 15090	Drawing # : E3 of 3

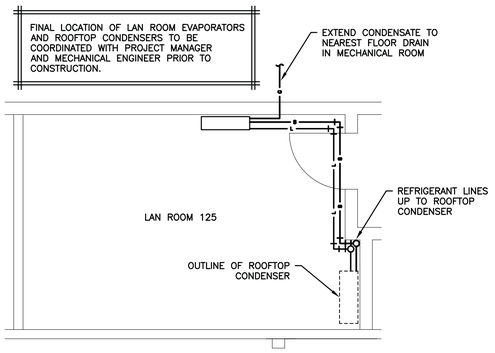
METRIC A1.AEC



1 / M1 LEVEL 1 KEY PLAN
SCALE : 1:250



2 / M1 LEVEL 2 KEY PLAN
SCALE : 1:250

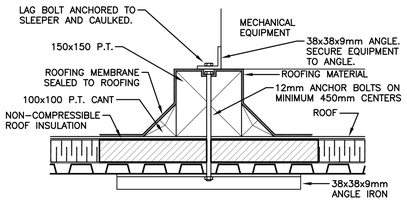


3 / M1 LAN ROOM
SCALE : 1:50

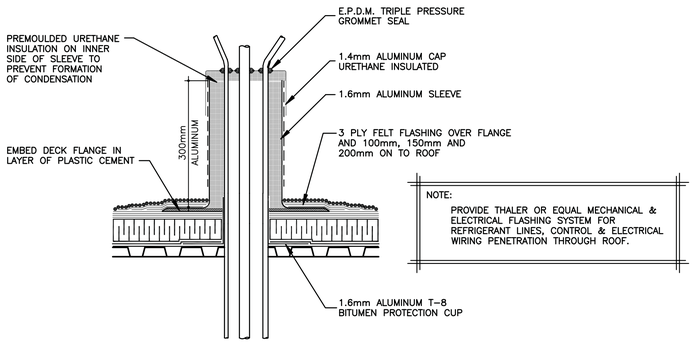
NOTE:

EQUIPMENT TO BE SUPPORTED BY AT LEAST 2 SLEEPERS AND CONDENSER SUPPORTS ANCHORED TO SLEEPERS WITH LAG BOLTS AND CAULKED.

SLEEPERS TO BE SEALED WITH ROOF MATERIALS.



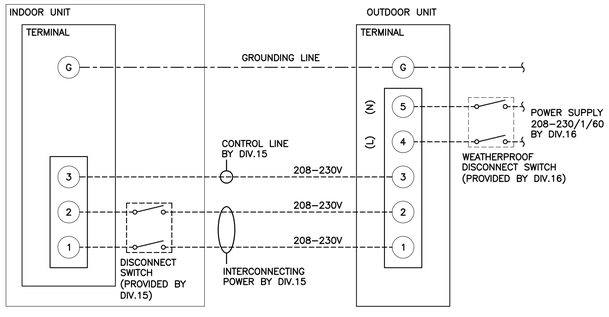
4 / M1 SLEEPER DETAIL
SCALE : N.T.S.



NOTE:

PROVIDE THALER OR EQUAL MECHANICAL & ELECTRICAL FLASHING SYSTEM FOR REFRIGERANT LINES, CONTROL & ELECTRICAL WIRING PENETRATION THROUGH ROOF.

5 / M1 ROOF PIPING PENETRATION DETAIL
SCALE : N.T.S.



6 / M1 ELECTRICAL WIRING DETAIL
SCALE : N.T.S.

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Project Title :
Greenfield IT Consolidation

Drawing Title :
MAIN FLOOR LAYOUTS AND DETAILS

Scale : As Noted	Design By : J.D.M.
Drawn By : J.D.A.	Date : DEC 16 2015
Project No.: (15-251) 250-15090	Drawing # : M1 of 2

839.9mm x 593.4mm 2.755' x 1.946'

METRIC A1 AEC

1.0 GENERAL:

1.1 GENERAL CONDITIONS:
ALL CONTRACT GENERAL CONDITIONS APPLY TO THIS SECTION.

1.2 SCOPE OF WORK:
THE WORK INCLUDED SHALL INCLUDE THE FURNISHING OF ALL LABOR, MATERIALS, EQUIPMENT, PLANT TOOLS AND SERVICES NECESSARY FOR THE INSTALLATION OF THE MECHANICAL SYSTEMS AS INDICATED.

1.3 SITE VISITS:
BEFORE COMMENCING WORK VISIT SITE AND VERIFY THAT REQUIREMENTS OF PLANS AND SPECIFICATIONS ARE CONSISTENT WITH SITE CONDITIONS.

ADVISE THE ENGINEER IN WRITING OF ANY DISCREPANCIES OR CONFLICTS.

NO ALLOWANCE SHALL BE MADE FOR FAILURE TO INCLUDE ITEMS WHICH A THOROUGH INVESTIGATION WOULD HAVE SHOWN TO BE REQUIRED.

BIDDERS SHOULD NOTE THAT THIS PROJECT IS A RENOVATION OF AN EXISTING BUILDING AND NO ATTEMPT HAS BEEN MADE TO SHOW ALL EXISTING CONDITIONS. EACH BIDDER IS RESPONSIBLE TO DETERMINE THE EXTENT OF THEIR WORK INVOLVED IN TYING INTO EXISTING SYSTEMS OR RE-ROUTING HIS WORK AROUND OBSTRUCTIONS.

1.4 THE MECHANICAL DRAWINGS ARE DIAGRAMMATIC, INTENDED TO SHOW GENERAL ARRANGEMENT AND SIZES OF SYSTEM COMPONENTS, AND SHALL NOT BE SCALED. THE ARCHITECTURAL AND STRUCTURAL DRAWINGS, AND EXISTING CONDITIONS SHALL GOVERN SPACE CONSTRAINTS, ACTUAL CONNECTION ARRANGEMENTS, DIMENSIONS AND FINISHES.

CONTRACTOR SHALL VISIT THE PROJECT SITE, THOROUGHLY INVESTIGATE AND BE FAMILIAR WITH ALL EXISTING CONDITIONS WHICH WILL AFFECT THEIR WORK.

THE EQUIPMENT LOCATIONS SHOWN ARE APPROXIMATE AND MUST BE SIZED AS PER SITE SPECIFIC REQUIREMENTS AND APPROVED BY OWNER.

ALL OFFSETS AND FITTINGS WHICH WILL BE NECESSARY TO ACCOMPLISH THE FINISHED INSTALLATION SHALL BE PROVIDED AT NO ADDITIONAL COST OR INCREASE IN THE CONTRACT. ALL EQUIPMENT AND MATERIALS SHALL BE NEW UNLESS NOTED OR SPECIFIED OTHERWISE.

PROTECT ALL EQUIPMENT AND MATERIALS FROM DAMAGE. PROVISIONS SHALL BE MADE TO PREVENT NOISE AND VIBRATION.

1.5 REFERENCE STANDARDS AND REGULATIONS:
.1 ALL WORK SHALL BE IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND REGULATIONS IN THE EVENT OF A CONFLICT THE MORE STRINGENT REQUIREMENT SHALL BE MET.

- NATIONAL BUILDING CODE OF CANADA (2010)
- REGULATIONS OF PROVINCIAL DEPARTMENT OF LABOUR
- REGULATIONS OF PROVINCIAL DEPARTMENT OF HEALTH
- REGULATIONS OF PROVINCIAL DEPARTMENT OF THE ENVIRONMENT
- REQUIREMENTS OF PROVINCIAL FIRE MARSHALL
- REQUIREMENTS OF MUNICIPAL FIRE AUTHORITY

1.6 PERMITS AND TESTING:
.1 CONTRACTOR SHALL OBTAIN AND PAY FOR ANY PERMITS REQUIRED BY LOCAL CODES AND REGULATIONS AND ARRANGE FOR INSPECTIONS.

.2 ANY ADDITIONAL MATERIALS OR LABOUR REQUIRED TO CONFORM TO ANY OF THE REGULATIONS OF REFERENCED STANDARDS SHALL BE FURNISHED UNDER THE CONTRACT WITH NO ADDITIONAL COST TO THE OWNER.

.3 TEST SYSTEMS IN ACCORDANCE WITH THE REQUIREMENTS OF THE REFERENCED STANDARDS, REGULATIONS AND AUTHORITIES HAVING JURISDICTION (AHJ).

1.7 QUALIFICATIONS:
.1 EXECUTION OF THE WORK SHALL BE BY LICENSED CONTRACTOR CERTIFIED FOR THE INSTALLATION OF SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL CODES AND REGULATIONS.

1.8 SHOP DRAWINGS:
CONTRACTOR TO SUBMIT MINIMUM SIX (6) SETS OF SHOP DRAWINGS FOR REVIEW.

1.9 CUTTING AND PATCHING:
.1 THIS SECTION INCLUDES ALL CUTTING AND PATCHING IN THE EXISTING BUILDING NECESSARY FOR THE INSTALLATION OF NEW SYSTEMS.

.2 ALL PATCHING IS TO BE DONE WITH NEW MATERIALS TO MATCH THE ADJACENT SURFACES.

.3 REFINISH ALL SURFACES TO MATCH ADJACENT FINISHES.

.4 SUBMIT WRITTEN REQUESTS IN ADVANCE OF CUTTING OR ALTERNATION WHICH AFFECTS:
.1 STRUCTURAL INTEGRITY OF ANY ELEMENT OF PROJECT.
.2 INTEGRITY OF WEATHER-EXPOSED OR MOISTURE-RESISTANT ELEMENTS.
.3 EFFICIENCY, MAINTENANCE, OR SAFETY OF ANY OPERATIONAL ELEMENT.
.4 VISUAL QUALITY OF SIGHT-EXPOSED ELEMENTS.
.5 WORK OF OWNER OR SEPARATE CONTRACTOR.

.5 INSPECT EXISTING CONDITIONS, INCLUDING ELEMENTS SUBJECT TO DAMAGE OR MOVEMENT DURING CUTTING AND PATCHING.
.1 AFTER UNCOVERING, INSPECT CONDITIONS AFFECTING PERFORMANCE OF WORK.
.2 BEGINNING OF CUTTING OR PATCHING MEANS ACCEPTANCE FOR EXISTING CONDITIONS.

.6 WHERE WORK INVOLVES CONNECTING TO EXISTING SERVICES, CARRY OUT WORK AT TIMES DIRECTED BY GOVERNING AUTHORITIES, WITH MINIMUM DISTURBANCE TO OTHER SITE OCCUPANTS.
.1 BEFORE COMMENCING WORK, ESTABLISH LOCATION AND EXTENT OF SERVICE LINES IN AREA OF WORK.
.2 SUBMIT SCHEDULE TO AND OBTAIN APPROVAL FROM CONSULTANT FOR ANY SHUT-DOWN OR CLOSURE OF ACTIVE SERVICE OR FACILITY. ADHERE TO APPROVED SCHEDULE AND PROVIDE NOTICE TO AFFECTED PARTIES.

.7 REMOVE AND REPLACE DEFECTIVE AND NON-CONFORMING WORK.

.8 PROVIDE OPENINGS IN NON-STRUCTURAL ELEMENTS OF WORK FOR PENETRATIONS OF MECHANICAL AND ELECTRICAL WORK.

.9 CUTTING, FITTING AND PATCHING REQUIRED TO PROPERLY ACCOMMODATE THE WORK OF DIVISION 15 AND DIVISION 16 SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

.10 PERFORM WORK TO AVOID DAMAGE TO OTHER WORK.

.11 CUT RIGID MATERIALS USING ELECTRIC POWER SAW OR CORE DRILL. PNEUMATIC, GASOLINE/DIESEL POWERED, OR IMPACT TOOLS ARE NOT ALLOWED.

.12 OBTAIN CONSULTANT'S APPROVAL BEFORE CUTTING, BORING OR SLEEVING LOAD-BEARING MEMBERS.

.13 PERFORM ALL CUTTING AND PATCHING IN ACCORDANCE WITH ACCEPTED INDUSTRY STANDARDS.

.14 REMOVE AND DISPOSE OF ALL MATERIALS REMOVED IN THE CUTTING PROCESS IMMEDIATELY AFTER GENERATING.

.15 TAKE CARE TO AVOID DAMAGE TO ANY BUILDING SYSTEM.

.16 ALL OPENINGS TO BE MADE WITH CLEAN EDGES. PATCH COMPLETELY AROUND PIPES AND DUCTS WHERE THEY PASS THROUGH OPENINGS.

.17 ANY OPENINGS IN FIRE RATED WALLS OR FLOORS WILL BE COMPLETED SEALED WITH FIRE RATED MATERIAL.

.18 FIT WORK AIRTIGHT TO PIPES, SLEEVES, DUCTS, CONDUIT AND OTHER PENETRATIONS THROUGH SURFACES.

.19 REFINISH SURFACES TO MATCH ADJACENT FINISHES; FOR CONTINUOUS SURFACES REFINISH TO NEAREST INTERSECTION; FOR AN ASSEMBLY, REFINISH ENTIRE UNIT.

1.10 INSTALLATION AND COMMISSIONING OF EQUIPMENT:
MANUFACTURER'S INSTRUCTIONS SHALL BE MADE AVAILABLE TO BOTH THE INSTALLING TRADESMEN AND THE ON-SITE INSPECTOR PRIOR TO INSTALLATION OF EQUIPMENT, THESE INSTRUCTIONS ARE TO BE READ, UNDERSTOOD AND CLOSELY FOLLOWED. FAILURE TO ABIDE BY THIS REQUIREMENT WILL PROVIDE JUSTIFICATION FOR THE ENGINEER TO REQUIRE REMOVAL AND RE-INSTALLATION.

ENSURE THAT ALL SAFETY DEVICES AND OTHER SIGNIFICANT ACCESSORIES ARE IN PLACE AND OPERABLE BEFORE STARTING MAJOR PIECES OF EQUIPMENT. AS PART OF THE COMMISSIONING PROCESS ACCESSORIES ARE TO BE CHECKED, CALIBRATED AND ADJUSTED AS NECESSARY TO ENSURE SAFE OPERATION.

FOLLOW MANUFACTURER'S INSTRUCTIONS IN DETAIL IN ESTABLISHING COMMISSIONING PROCEDURE.

1.11 PENETRATION OF FIRE SEPARATIONS:
.1 WHERE PIPES OR DUCTS PASS THROUGH WALLS OR FLOORS WHICH PROVIDE FIRE SEPARATIONS, DIV. 15 SHALL SEAL AROUND OPENINGS WITH ULC CLASSIFIED FIRE STOP MATERIAL IN ACCORDANCE WITH ULC LISTING INSTALLATION DETAILS. MATERIAL SHALL PROVIDE A FIRE RATING EQUAL TO THAT OF THE SEPARATION WHICH HAS BEEN PENETRATED.

.2 SUBMIT MATERIAL SHOP DRAWINGS AND ALL ULC LISTED INSTALLATION DETAILS FOR ALL PENETRATIONS APPLICABLE TO PROJECT.

.3 ACCEPTABLE PRODUCTS:
DOW CORNING FIRE STOP SYSTEM, 3M FIRE BARRIER PENETRATION, BIO-FIRE BIOTHERM OR BIO-K10 (SUPPLIED BY WORMALD).

1.12 DEMONSTRATION OF COMPLETE SYSTEMS:
AT THE CONCLUSION OF THE JOB, THE CONTRACTOR SHALL REVIEW AND DEMONSTRATE TO THE OWNER ALL EQUIPMENT AND THEIR RESPECTIVE FUNCTIONS AND OPERATION. SUCH DEMONSTRATION SHALL BE PROVIDED FOR SUCH REASONABLE PERIODS OF TIME AS THE COMPLEXITY OF THE JOB WARRANTS, AND AS APPROVED BY THE ENGINEER. SUCH REVIEW AND DEMONSTRATION SHALL BE MADE BY AN AUTHORIZED REPRESENTATIVE OF THE CONTRACTOR, FULLY KNOWLEDGEABLE OF THE PROJECT, ITS INSTALLATION AND OPERATION.

PROVIDE THE ENGINEER WITH A SCHEDULE OF SYSTEM DEMONSTRATION AT LEAST TWO (2) WEEKS PRIOR TO DEMONSTRATION.

1.13 FINAL REVIEW:
PRIOR TO SUBSTANTIAL COMPLETION AND FINAL REVIEW OF THE PROJECT, CONTRACTOR WILL INSPECT THE PROJECT, PROVIDE A MECHANICAL DEFICIENCY LIST. PROVIDE CONFIRMATION THAT ALL ITEMS ON THE LIST HAVE BEEN CORRECTED AND PROVIDE THE OPERATION AND MAINTENANCE MANUALS. PROVIDE THE RECORD DRAWINGS AND PROVIDE THE DEMONSTRATION OF THE COMPLETE MECHANICAL SYSTEMS.

ALL OF THE ABOVE MUST BE COMPLETED PRIOR TO THE FINAL INSPECTION BY THE ENGINEER AND SUBSTANTIAL COMPLETION OF THE MECHANICAL SYSTEMS.

1.14 OPERATION AND MAINTENANCE MANUALS:
CONTRACTOR TO PROVIDE MAINTENANCE MANUALS FOR ALL EQUIPMENT INSTALLED. THREE (3) COPIES ORGANIZED IN 8 1/2" X 11" BINDERS TO BE PROVIDED.

1.15 RECORD DRAWINGS:
CONTRACTOR TO PROVIDE AS-BUILT RECORD DRAWINGS.

1.16 GUARANTEE:
THE CONTRACTOR SHALL GUARANTEE ALL HIS WORK FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR AFTER SUBSTANTIAL COMPLETION OF SUCH WORK BY THE OWNER AND SHALL MAKE GOOD ALL DEFECTS OTHER THAN NORMAL WEAR AND TEAR DURING THE LIFE OF THE GUARANTEE.

THE CONTRACTOR SHALL GUARANTEE ALL WORK AND EQUIPMENT SUPPLIED BY HIM TO WORK SATISFACTORILY AND TO ACCOMPLISH THE WORK FOR WHICH IT WAS INSTALLED DURING THE LIFE OF THE ABOVE GUARANTEE. AT ANY TIME DURING THIS PERIOD, HE SHALL MAKE ANY NECESSARY CHANGES AND ADJUSTMENTS, OR REPLACEMENTS, TO ACCOMPLISH THIS AT HIS OWN EXPENSE.

2.0 PLUMBING:

2.1 GENERAL:
ALL WORK TO BE COMPLETED IN ACCORDANCE WITH NBC, CPC, AND AUTHORITIES HAVING JURISDICTION.

2.2 PIPING:
.1 ABOVE GROUND SANITARY DRAINAGE & VENT PIPING 50MM AND SMALLER
.1 PIPE: – DWV COPPER CONFORMING TO ASTM B306.
.2 FITTINGS: – WROUGHT COPPER OR CAST BRASS.
.3 JOINTS: – 50/50 SOLDERED, SCREWED AT FIXTURES.

3.0 HVAC:

3.1 LAN ROOM AIR CONDITIONERS:
.1 INDOOR UNIT
FUJITSU MODEL ASU18CL40
NOMINAL CAPACITY: 1.5 TONS
AIRFLOW: 550 CFM
ELECTRICS: 208-230V, 1 PH. MINIMAL DRAW

UNIT TO BE COMPLETE WITH WALL MOUNTED WIRELESS REMOTE CONTROLLER.
INDOOR UNIT IN LAN ROOMS TO BE COMPLETE WITH CONDENSATE PUMPS.

.2 OUTDOOR UNIT
FUJITSU MODEL AOU18CL40
NOMINAL CAPACITY: 1.5 TONS
ELECTRICS: 208-230V, 1 PH. FUSE: 20 AMPS
LOW AMBIENT KIT FOR OPERATION TO -40°F

.3 PROVIDE SUITABLE REFRIGERATION PIPING BETWEEN INDOOR AND OUTDOOR UNITS.

.4 PROVIDE CONDENSATE PIPING TO NEAREST INDIRECT DRAIN.

4.0 AUTOMATIC CONTROLS:

4.1 GENERAL:
ALL CONTROL WIRING REGARDLESS OF VOLTAGE REQUIRED FOR THE OPERATION OF THE MECHANICAL SYSTEMS SHALL BE PROVIDED BY THIS CONTRACTOR UNLESS OTHERWISE INDICATED. WIRING SHALL INSTALLED IN CONDUIT IN ACCORDANCE WITH THE REQUIREMENTS OF DIVISION 16-ELECTRICAL AND INSTALLED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE. GENERALLY, ALL CONTROLS WILL BE LOW VOLTAGE (50V AND BELOW). CONTROLS CONTRACTOR SHALL PROVIDE CONTROL DAMPERS, ACTUATORS, CONTROL VALVES, THERMOSTATS, RELAYS, SWITCHES, TIMERS, TRANSFORMERS, SENSORS, ETC. AS REQUIRED TO COMPLETE CONTROLS SYSTEM AS INDICATED OR REQUIRED.

4.2 THERMOSTATS:
.1 LAN ROOM A/C UNITS – THERMOSTAT PROVIDED WITH UNIT.

4.3 SEQUENCE OF OPERATION:
.1 A SPACE TEMPERATURE SENSOR TO BE INSTALLED AND CONNECTED TO EMCS SYSTEM TO PROVIDE ALARM IF SPACE TEMPERATURE RISES ABOVE SET POINT.
LAN ROOM A/C UNIT TO MAINTAIN SET POINT THROUGH STANDALONE THERMOSTAT PROVIDED WITH UNIT.

4.4 INSTRUCTION AND TRAINING:
TRAINING IN THE OPERATION OF THE SYSTEM SHALL BE PROVIDED. DETAILED INSTRUCTIONS AND TRAINING SHALL BE PROVIDED TO DESIGNATED TECHNICAL PERSONNEL TO ENABLE THEM TO BECOME FULLY CONVERSANT WITH SYSTEMS.

REGISTERED PROFESSIONAL ENGINEER
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Scale : As Noted	Design By : J.D.M.
Drawn By : J.D.A.	Date : DEC 16 2015
Project No.: (15-251) 250-15090	Drawing # : M2 of 2