

CLIENT:



FORT MALDEN SERVICE BUILDING

Addition 100 Laird Ave, Amherstburg, Ontario

Issued for TENDER :

Nov 23, 2016



LOCATION PLAN SCALE N.T.S

DRAW	ING LEGEND:
A0.1	COVER PAGE
A1.0	OVERALL SITE PLAN AND ASSEMBLIES
A1.1	GROUND FLOOR DEMOLITION PLAN
A1.2	ROOF PLAN
A1.3	ELEVATIONS
A1.4	BUILDING SECTIONS
A1.5	PLAN AND SECTION DETAILS
A1.6	INTERIOR ELEVATIONS & MILLWORK
A1.7	SCHEDULES
S1.1	STRUCTURAL NOTES
S1.2	TYPICAL DETAILS
S1.3	FOUNDATION PLAN
S1.4	FRAMING PLAN
M0	DRAWING LIST AND LEGENDS
M1	NEW HVAC – PLAN
M2	NEW PLUMBING & FIRE PROTECTION – PLAN
M3	MECHANICAL SPECIFICATION
M4	MECHANICAL SPECIFICATION
M5	MECHANICAL SCHEDULES
M6	MECHANICAL DETAILS

ITEM	ON	ITARIO BUI	LDING CO	DDE DATA		PART 3	5	OBC/	NBC REF	ERENCE					Ι	
	PROJECT DESC	RIPTION:			ONSTRUCTION			2.1.1				ARC	HITEC	TURE	E 4	49
			E OF USE		ATION								605-75 WATE CAMBRIDGE ONTARIO	R ST N. CANADA N1R 7L6		
2. 3.	BUILDING AREA	(sq. m) EXIS	STING: <u>219.5 -</u>	sq.m_NEW: _/	Ά		.2 sq.m	3.1.2.1.((1)			TEL: 226-7	765-0800 FAX: 519-740-6	104 ARCHITECTU	RE49.COM	/1
4.	GROSS AREA (sq.m) EXIS	STING: <u>219.5</u>	sq.m_NEW: _2	86.7 sq.m	_TOTAL: <u>506</u> .	.2 sq.m	1.1.3.2								
5. 6.	NUMBER OF ST	OREYS ABO	OVE GRADE:	1	BELOW	GRADE: <u>0</u>		1.1.3.2	& 3.2.1.1							
7.	NUMBER OF ST	REETS/ ACCESS	ROUTES: <u>1</u>					3.2.2.10) & 3.2.5.5							
8.	BUILDING CLAS	SIFICATION: <u>3.2.</u>	2.76					3.2.2.76	3							
9.	Sprinkler sys	item proposed			Building Ent only			?? 3.2.1.5	_							
				NOT R	j of roof r <i>i</i> Equired	ATING		3.2.2.17	,							
10. 11.	STANDPIPE REG	OUIRED:						3.2.9								
12.	WATER SERVICE	:/ SUPPLY IS AI	DEQUATE	YES				5.2.4								
13.	HIGH BUILDING			YES	NO NO			3.2.6								
14.	PERMITTED CON ACTUAL CONST	ISTRUCTION RUCTION	🔀 сомі 🔀 сомі	Bustible Bustible	NON-C	Xombustible Xombustible		??								
15.	MEZZANINE(S)	AREA sq.ft: N/	/A					3.2.1.1.((3)–(8)							
16.	occupant loa Basement:	D BASED ON OCCUPANC	X sq.m Y <u>: N/A</u>	n / Person Lo	DESIGN (of Building Pers	ONS	3.1.1.6						.0	ASS	0-
	FIRST FLOOR: SECOND FLOOR THIRD FLOOR:	OCCUPANC OCCUPANC OCCUPANC	Y <u>: 24</u> Y <u>: N/A</u> Y <u>: N/A</u>	LC LC	AD: <u>24</u> AD: <u>-</u> AD: <u>-</u>	PERS PERS PERS PERS	ons ons ons							APPIC	OF	CIAT
17.	BARRIER-FREE	X	YES [NO IF NO	EXPLAIN: ??			3.8							CHITE	
18.	HAZARDOUS SU	IBSTANCES	YES D	K NO BLIES I	LIST	ed design n	0. OR	3.3.1.2.	(1) & 3.3.1.1	9(1)						
13.	REQUIRED FIRE RESISTANCE RATING	FLOORS:	rr (Hours) N/A Hou	JRS	DES -	SCRIPTION (S	G—2)		& 3.2.1.	.4					JCENCE 7807	
	(FRR)	ROOF: MEZZANINE:	N/A HOU N/A HOU	JRS JRS	-									******	*******	
		FRR	OF SUPPORTI	NG	LIST	ed design n Scription (S	0. OR G-2)	4			\vdash					
		FLOORS: ROOF: I	N/A HOU N/A HOU	JRS JRS	-											
20.	Spatial separ	MEZZANINE: 1 ATION - CONS	N/A HOU TRUCTION OF	URS EXTERIOR W	– NLLS			3.2.3			3	11/23/16	ISSUED FOR TEN		F	RF
	WALL EBF)F L.D.	L/H OR	PERMITTED MAX. %	PROPOSED % OF	FRR	LISTED DESIGN OR	COMB.	COMB. CONST.	NON-COMB	2	11/07/16	ISSUED FOR 95	% REVIEW M	<u> </u>	RE
	(sq.m) NORTH N/A) ("")	H/L -	OPENINGS -	OPENINGS -	(100K3)	DESCRIPTION -	-	CLADDING	-	1	10/17/16	ISSUED FOR REV	VIEW M	F	RE
	EAST N/A SOUTH N/A	-	-	-	-	-	-	-	-	-	NO	DATE	DESCRIPTION	N Dr	awn by	/ Approved
21.	WEST N/A	-	-	-	-	-	-	-	-	-			REVISIO		essine p	ar Approuve
	NUMBERS OF P	ERSONS OF EAC	H SEX L	LOAD: 14*	MALE: 7	FEMAL	E: 7	* 22 PER PERSONS 3.7.2.2.2	SONS FOR 0 FOR GARAGE - REDUCE L	FFICE, 2 E, N.B.C .OAD BY 10			<u>I(LVISIO</u>			
	MIN NUMBERS (OF WC'S OF EAC	h sex		MALE: I	FEMAL		=14			1	AA	Detail number	А	Nume	ro de detail
	$ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $ $		2-16mm 38x140 W 140mm E A/V BAR 2-16mm 2hr F.R.R EXTEND V 16mm TY 38x140 W 140mm E 16mm TY 1hr F.R.R BLY: SHINGLES ICE AND 19mm EX 200mm E 19mm W	TYPE X G. WOOD STUD BATT INSUL RIER TYPE X G. ULC U301 WALL ASSE WALL ASSE WOOD STUD BATT INSUL ULC W302 WATER SHI (TERIOR SH USS BATT INSUL DOD FURRII	W.B. S © 400m ATION W.B. MBLY TO U B. S © 400m ATION B. 2 ELD (OVER EATHING ATION (R5 NG © 400r	m O.C. J/S OF DI m O.C. R ENTIRE I 0) nm O.C	eck Roof)				P/ Si Ty Ty	ARKS CANADA OUTHWESTERN ONT	s Parks Canada ada Canada ARIO FIELD UNIT	+		
			13mm G.	W.B.												
													MALUE	IN		
E	1.0	PROJEC	CT INFO	ORMATIC	ON AND	SCHE	DULES				/	ADDITI	ON			
Ē	1.1 1 2	GROUN			ER ANI	D SYST	EMS					• • • •				
E	1.3	RISER	AND DI	ETAILS	IIING						Dr	awing title /	Titre du dessin			
E	2.0 2.1	SPECIFI SPECIFI	ICATION	NS IS								VFRA	LL SIT	F PI	ΔN	
-	100												CCEME		./~\ `	
C	100	PROPO	ALS AN SED A[ND SEDI DDITION		SCERU: TON	SION CC	NIRO	_ PLAN	1	/	AND A				
											Pla Dr Fi R	ot Scale / Echelle 1:50 rawn by/ D MF. eld Recordi eleve—Tem N/A pproved by /	e essine par ing by / noin par Approuve par	 (Date)9/20 Date \/A Date	0/16
											Cł Pro P	k⊑ hecked by/ V RE ject No./ No. c RO000812	'erifie par du projet Asse	(I (et No.	09/20 Date 09/20 Shee Feuil	0/16 0/16 t No./ le No.







	ARC	HITEC 605-75 WATE CAMBRIDGE ONTARIO 35-0800 FAX: 519-740-6	TUR R ST N. CANADA N1R 7 104 JARCHITEC		
2	11/23/16	ISSUED FOR TEN	IDER	MF	RE
1	10/17/16	ISSUED FOR REV	/IEW	MF	RE
NO.	DATE	DESCRIPTION	1	Drawn by Dessine par	Approved Approuve
		<u>REVISIO</u>	<u>NS</u>		
	A L B B S inear dimen nillimeters	Sheet number Sions in Di er	mension 1 millime	A Numero B Sur feuil s lineaire etres	de detail le numero es
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Dra 1	wing Re No./	No. du Dessin			.5

<u>W1</u>

D6

DOO	R AND FRAME SC	CHED	ULE-	- GR	OUND	FLO	OR				
DOOR	DOO	R				FR	AME				
NO.	DOOR SIZE	TYPE	MATL	FIN.	GLASS	TYPE	FIN.	MAT.	GLASS	RATING	KEMARKS
101a	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
101b	3050 x 2150 x 35mm	D4	НМ	PAINT	NONE	D4	PAINT	Н.М.	-	-	INSULATED COILED OVERHEAD DOOR
102a	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
102b	3660 x 2150 x 35mm	D5	НМ	PAINT	NONE	D5	PAINT	Н.М.	-	-	INSULATED COILED OVERHEAD DOOR
103	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
104	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
105	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	90 min	-
106	NOT USED										
107	915 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	45 min	-
108a	2 – 1065 x 2150 x 45mm	D2	НМ	PAINT	NONE	D2	PAINT	Н.М.	-	-	PROVIDE REMOVABLE ASTRAGAL
108b	2 – 1065 x 2150 x 45mm	D3	НМ	PAINT	NONE	D3	PAINT	Н.М.	-	-	PROVIDE REMOVABLE ASTRAGAL
109	NOT USED										
110	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
111	2 – 610 x 2150 x 45mm	D6	WD	PAINT	NONE	D6	PAINT	Н.М.	-	-	-
112	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
113	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
114	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	_	-

DOO	R AND FRAME SC	CHED	ULE-	- GR	OUND	FLO	OR				
DOOR	DOO	R				FR	AME				
NO.	DOOR SIZE	TYPE	MATL	FIN.	GLASS	TYPE	FIN.	MAT.	GLASS	RATING	REMARKS
101a	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	H.M.	-	-	-
101b	3050 x 2150 x 35mm	D4	НМ	PAINT	NONE	D4	PAINT	Н.М.	-	-	INSULATED COILED OVERHEAD DOOR
102a	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
102b	3660 x 2150 x 35mm	D5	НМ	PAINT	NONE	D5	PAINT	Н.М.	-	-	INSULATED COILED OVERHEAD DOOR
103	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
104	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
105	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	90 min	-
106	NOT USED										
107	915 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	45 min	-
108a	2 – 1065 x 2150 x 45mm	D2	НМ	PAINT	NONE	D2	PAINT	Н.М.	-	-	PROVIDE REMOVABLE ASTRAGAL
108b	2 – 1065 x 2150 x 45mm	D3	НМ	PAINT	NONE	D3	PAINT	Н.М.	-	-	PROVIDE REMOVABLE ASTRAGAL
109	NOT USED										
110	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
111	2 – 610 x 2150 x 45mm	D6	WD	PAINT	NONE	D6	PAINT	Н.М.	-	-	-
112	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
113	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-
114	1065 x 2150 x 45mm	D1	НМ	PAINT	NONE	D1	PAINT	Н.М.	-	-	-

NO.	ROOM NAME		FLOOR	BASE		WA	LLS			CEILING	COMMENTS
					NORTH	EAST	SOUTH	WEST			
101	VEHICLE	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
	BAY #4	FINISH	HARDENER/ SEALER	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	PAINT	
		COLOUR	-	RB 1	P 1	P 1	P 1	P 1	HEIGHT	2710	
102		MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	WALL TO OFFICE TO BE 2HR F.R.R FIRE CAULK AND SEAL ALL
		FINISH	HARDENER/ SEALER	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	PAINT	PENETRATIONS
		COLOUR	-	RB 1	P 1	P 1	P 1	P 1	HEIGHT	2710	
103	STORAGE	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	SV1	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	C1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	
104	QUIET ROOM	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	CARPET	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	CP 1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	
105	OPEN OFFICE	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	CARPET	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	CP 1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	
106	KITCHENETTE	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	SV1	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	C1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	
107	MECH ROOM	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	WALLS TO BE 1HR F.R.R. FIRE CAU AND SEAL ALL PENETRATIONS
		FINISH	SV1	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	C1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	
108	VESTIBULE	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	SV1	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	C1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	
109	OPEN OFFICE	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	CARPET	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	CP 1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	
110	MANAGERS	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	CARPET	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	CP 1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	
111	CLOSET	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	CARPET	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	CP 1	RB 1	P 1	P 1	P 1	P 1	HEIGHT	2710	
112	B.F. UNISEX	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
	WASHKOOM	FINISH	SV1	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	C1	RB 1	P 1	P 1	P 1	P 1	HEIGHT	2710	
113	B.F. UNISEX	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
	MASHRUUM	FINISH	SV1	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	ļ
		COLOUR	C1	RB 1	P 1	P 1	P 1	P 1	HEIGHT	2710	
114	CORRIDOR	MATERIAL	CONC.		G.W.B.	G.W.B.	G.W.B.	G.W.B.	MATERIAL	G.W.B	
		FINISH	CARPET	RUBBER BASE	PAINT	PAINT	PAINT	PAINT	FINISH	-	
		COLOUR	CP 1	RB 1	P 1	P 1	P 1	P 2	HEIGHT	2710	1

SVI — SHEET VINYL C1 — SHEET VINYL COLOUR #1 CP 1 — CARPET COLOUR 1 P1 — PAINT COLOUR 1 P2 — PAINT COLOUR 2 RB1 — RUBBER BASE TYPE 1

LEGEND OF ABBREVIATIONS

3.0

3	ANCHOR BOLT
FB	ASPHALT IMPREGNATED FIBREBOARD
UM T	
RCH	ARCHITECTURAL
) :W	STEEL PIPE BOLLARD BOTTOM FACH WAY
М	BOTTOM
L	BOTTOM LOWER LAYER BOTTOM UPPER LAYER
K	BLOCK
MB	BRACKE I BENDING MOMENT BAR
	BOTH SIDES
RG	BASE OR BEARING PLATE BEARING
NT	CANTILEVER
	CLEAR
)	CENTRE TO CENTRE
DL	COLUMN
ONC DNST.IT	
DNSTR	CONSTRUCTION
ONT S	CONTINUOUS CUT TO SUIT
v	COMPLETE WITH
BL	DOUBLE
SL ^	DIAGONAL
ч	DEAD LOAD
M	DIMENSION
VG	DRAWING
	EACH
V	EACH WAY
EV IBED	ELEVATION
)	EQUAL
C CT	EXISTING
XP JT	EXPANSION JOINT
DNCRETE	COMPRESSIVE STRENGTH OF
F	FACTORED COMPRESSIVE FORCE
N F.E.	FOUNDATION FINISH FLOOR ELEVATION
N	FINISH
R IC	FLOOR FULL MOMENT CONNECTION
G	FOOTING
1	GAUGE
ALV	GALVANIZED
:F {	HORIZONTAL EACH FACE HOOK EACH END
F	HORIZONTAL INSIDE FACE
)F	HORIZONTAL OUTSIDE FACE
)R E	HORIZONTAL
Λ	HOLLOW METAL
s S	HIGH POINT HOLLOW STRUCTURAL STEEL
	INSIDE TO INSIDE
г	INSIDE
SUL	INSULATION
а	KILONEWTON KILOPASCAI
-	SINGLE ANGLE
	DOUBLE ANGLE LIVE LOAD
H	LONG LEG HORIZONTAL
V	LONG LEG VERTICAL
	METRE
n	MILLIMETRE
Pa	MEGAPASCAL
	FACTORED MOMENT
N SC	MINIMUM MISCELLANEOUS
BC	NATIONAL BUILDING CODE OF CANAD
ж С	NO COLUMN BELOW NOT IN CONTACT
S	NOT TO SCALE
).)	ON CENTERS OUTSIDE TO OUTSIDE
SC	ONTARIO BUILDING CODE
, 1	OVERHEAD
PN	OPENING PLATE
	PRESSED STEEL
′C	PRESSURE TREATED POLYVINYL CHLORIDF
ND	RADIUS
INF	RIGHT END REINFORCING
W O'D	
2Q" D)	REQUIRED REINFORCED CONCRETE
)F	STEPPED DOWN FOOTING
	STEPPED FOOTING
S.	STAINLESS STEEL
ÎR	STIRRUP
M NG	SIMILAR SLAB ON GRADE
)L	SUPERIMPOSED DEAD LOAD
	THICKNESS TOP
	TOP OF
,c L	TOP LOWER LAYER
RE	
ν∟ Έ	TYPICAL
MP	
10	UNLESS NOTED OTHERWISE
S F	UNDERSIDE VERTICAL EACH FACE
RT	VERTICAL
	FACTORED SHEAR FORCE
т	
	STRUCTURAL TEE
WF WM	STRUCTURAL TEE WELDED WIRE FABRIC WELDED WIRE MESH
WF WM	STRUCTURAL TEE WELDED WIRE FABRIC WELDED WIRE MESH
WF WM	WELDED WIRE FABRIC WELDED WIRE MESH

GENERAL NOTES					STRUCTURAL CONCRET	E NOTES				
THIS DRAWING IS TO BE READ IN CONJUN		HE PROJECT SPEC	NFICATIONS.		GENERAL NOTES					
NOTIFY CONSULTANT IF ANY DISCREPANC ALL WORK IS TO CONFORM WITH LATEST	EDITION OF TH	D BETWEEN THESE	NOTES AND THE SPECIFICATIONS. H ALL APPLICABLE CODES AND BYLAWS.	1.0	THE CONCRETE STRENGTH NOTED IS	O BE THE COMPRESSIVE	E STRENGTH OF	CONCRETE IN PLACE AT 28 D/	AYS.	
CONTRACTOR MUST SEEK CLARIFICATION	N IN WRITING F	RACT DRAWINGS		2.0	MATERIALS					
AND ELECTRICAL DRAWINGS AND REPOR	T DESCREPAN	CIES TO THE ENGI	NEER. REFER TO THE ARCHITECTURAL AND OTHER DRAWINGS FOR	1.0	NOMINAL SIZE OF COARSE AGGREGAT	E = 20mm				
PRIOR APPROVAL BEFORE INSTALLING OF	PENINGS AND SLE	SLEEVES WHICH A	RE NOT SHOWN ON THE STRUCTURAL DRAWINGS.		LOCATIONS AND/ OR MEMBERS	COMPRESSIVE STRENGTH	SLUMP	ENTRAINED AIR LOCATION / %	CLASS OF EXPOSURE	ТҮРЕ
AND CHAMFER NOT SHOWN ON STRUCTURAL		S.			INTERIOR SLAB ON GRADE	25 MPa.	75 ± 25	NOT REQUIRED	N	10
THE CONTRACTOR WILL FACILITATE ALL N	MATERIAL TES	TING REQUIRED BY	Y THE ARCHITECT AND ENGINEER, OWNER TO COVER COST AND GENERAL		ALL FOOTINGS	30 MPa.	75 ± 25	NOT REQUIRED	N	10
NATIONAL HISTORIC SITE - EXISTING FEAT	URES: THE PR	ROJECT IS LOCATE	D IN A NATIONAL HISTORIC SITE OF CANADA, THEREFORE, IT IS ESSENTIAL		FOUNDATION WALLS	30 MPa.	75 ± 25	4 - 7%	F-2	10
FINAL PRODUCT SHALL BE OF A QUALITY	STANDARD. CO	ONTRACT LIMITS S	HALL BE STRICTLY ADHERED TO AND CONTRACTOR IS TO TAKE SPECIAL ATTICES THE DEPARTMENTAL REPRESENTATIVE OR DESIGNATE IS TO RE		ALL EXTERIOR CONCRETE INCLUDING SIDEWALKS AND SLABS	35 MPa.	75 ± 25	5 - 8%	C-2	10
NOTIFIED IMMEDIATELY IF ANY HISTORIC	OR NATURAL F	RESOURCES ARE L	OCATED DURING CONSTRUCTION.	2.0	BONDING AGENT RECOMMENDED PRO	DUCT 'CPD' CONCENTRA	TED LATEX CON	CRETE ADHESIVE BY 'CPD'. OR	APPROVED EQUIVAL	ENT. APPLIED STRIC
EXCAVATION, BACKFILI	_ AND EX	XCAVATIO	Ν		TO MANUFACTURER'S RECOMMENDAT	ONS, UNLESS OTHERWIS	SE NOTED ON TH	IE DRAWINGS.		
FXCAVATION			_		EXECUTION					
IT IS THE SOLE RESPONSIBILITY OF THE C	ONTRACTOR	TO ENSURE THAT A	ALL WORK COMPLIES WITH GOVERNING SAFETY STANDARDS.	1.0 2.0	NOTIFY THE CONSULTANT 48 HOURS P CONSTRUCT FORMWORK, SHORING AN	RIOR TO PLACING CONCI	RETE. SIGN CODE AND	CSA-A23.1		
CONFIRM LOCATION OF ALL SUBGRADE S	ERVICES PRIC	R TO COMMENCIN	IG SITE WORK. LETED BEFORE ANY EXCAVATION COMMENCES, CARE SHALL BE EXERCISED	3.0 4.0	USE FORM LINERS FOR EXPOSED CON THREE CONCRETE TEST CYLINDERS A	CRETE ABOVE GRADE.	ALL BE TAKEN FO	OR EVERY 100 cm OF EACH OF	CLASS OF CONCRET	E PLACED OR FOR EA
DURING EXCAVATION TO AVOID DAMAGE TO ANY OF THESE OCCURS. THE CONSUL	TO EXISTING U TANT SHALL B	JNDERGROUND PI	PES, STRUCTURES, DUCTS, POWER AND GROUNDING CABLES. IF DAMAGE DIATELY.	5.0	DAY OF CONCRETE PLACEMENT IF THE WATER-CEMENT RATIO SHALL CONFO	ATTER IS LESS THAN 2 RM TO CSA-A23.1. MAXIM	3.0 cm TESTING UM SLUMP FOR	SHALL BE PERFORMED IN ACC ALL CONCRETE SHALL BE 75m	m, ±25mm PRIOR TO	A23.2 LATEST EDITION THE ADDITION OF AN
THE CONTRACTOR SHALL MONITOR EXCA COURSE OF EXCAVATION, BACKFILLING A	VATION SLOP	ES ADJACENT TO S	STRUCTURES, ROADS AND UNDERGROUND UTILITIES THROUGH THE CTOR SHALL BE PREPARED AT ALL TIMES TO TAKE PREVENTATIVE OR	6.0	USE VIBRATORS FOR PLACEMENT OF (CONCRETE. DO NOT PLAC	CE CONCRETE F	OR SLABS IF CHANCE OF RAIN	IS FORECASTED TO I	BE MORE THAN 30%
REMEDIAL ACTIONS. (E.G. UNDERPINNING THE CONTRACTOR SHALL INSTALL AND M	OF EXISTING	STRUCTURES AND) FOUNDATIONS. ERS, FENCING, GUARD RAILS AND LIGHTING AS REQUIRED FOR THE WORK.	7.0	FOR COLD WEATHER CONCRETING, AL		SHALL BE REMO	OVED FROM FORMWORK AND	THE TEMPERATURE C	
ANY RE-ESTABLISHMENT OF DESIGN GRA STRUCTURAL FILL TO ACHIEVE THE ALLO	DES DUE TO C	OVER EXCAVATION DESIGN BEARING P	S MUST BE DONE USING LEAN CONCRETE OR WITH COMPACTED RESSURES. AT NO COST TO THE OWNER.		30°C WHEN DEPOSITED. CONCRETE SH	IALL BE ENCLOSED AND	THIS AREA HAVE	E A TEMPERATURE OF NOT LES	SS THAN 10°C FOR 3 I	DAYS AND 5°C FOR A
EXCAVATE ALL TOPSOIL, ORGANIC MATER BURIED ARTIFACTS. THE REMAINS AND EV	RIAL, ASPHALT	, LOOSE AND UNS	UITABLE FILL TO THE APPROVAL OF THE CONSULTANT. AND PEOPLES, AND ANY OBJECTS OF HISTORIC VALUE AND WORTH REMAIN	8.0 9.0	NO MECHANICAL SLEEVES OR HOLES /			ERS, GRADE BEAMS, PILE CAP	S, FOOTINGS OR TIE	BEAMS.
THE PROPERTY OF THE CROWN. ANY AND DEPARTMENTAL REPRESENTATIVE OR DE	O ALL SUCH OE	BJECTS SHALL BE	PROTECTED AND IMMEDIATELY BROUGHT TO THE KNOWLEDGE OF THE	9.0 11.0	ALL INTERSECTION OF FOOTINGS, BON	D BEAMS AND WALLS, W	TH THE SAME S	IZE AND SPACING AS THE HOP	RIZONTAL REINFORCI	NG.
BACKFILI				12.0 13.0	SAW CUTS JOINT FILLER: USE CEMENT					r
THE BACKFILL SHALL NOT BE PLACED IN A	A FROZEN STA	TE OR MIXED WITH	SNOW, BOTH THE NATURAL SUBSOIL AND COMPACTED BACKFILL MUST BE	14.0	PROVIDE KEYS ON FOOTINGS AT THE I	VTERSECTION OF CONC	RETE PLACEMEN	IT. KEYS SHALL ONLY BE USE	D AFTER APPROVAL (DF THE STRUCTURAL
PROTECTED FROM FROST. NO BACKFILL S	SHALL BE PLA	CED ON FROZEN G	ROUND. ALL MATERIALS WITHIN THE AREA DAMAGED BY FROST ACTION ND AND GRAVEL. AT NO COST TO THE OWNER	15.0 16.0	DROP TOP OF GRADE BEAMS AND FOU PROVIDE 10 MIL VAPOUR BARRIER UNI	NDATION WALLS 150mm	AT ALL OPENING	GS.(TYP)		
ALL BACKFILL SHALL BE FREE OF ANY OR PLACE BACKFILL SIMULTANEOUSLY ON BO	GANIC MATER	IALS OR CLAYS. WALLS. GRADE BE	EAMS AND BURIED STRUCTURES TO AVOID UNBALANCED LOADING.	17.0 19.0	CONCRETE FINISHES AS PER ARCHITE SHIFT REINFORCING TO CLEAR ANCHO	CTURAL DRAWINGS. R BOLTS AND EMBEDDEI	D ITEMS. CUTTIN	NG OR WELDING OF REINFORC	ING BARS IS NOT PE	RMITTED.
BASE FOR SLABS ON GRADE SHALL INCLU	JDE A MINIMUN	I OF 150mm OF GR	ANULAR 'A'.	19.0 20.0	NO ALUMINUM SHALL BE EMBEDDED IN EXPOSED SURFACES OF EMBEDDED S	THE CONCRETE.	ACCORDING TO	STRUCTURAL STEEL PROTEC	TIVE COATING NOTES	. ANCHOR BOLTS. NU
COMPACTION				21.0	WASHERS AND SURFACES IN CONTAC PROVIDE 20mmx20mm CHAMFER AT AL	WITH CONCRETE SHALI	BE UNPAINTED	DI DGES UNLESS NOTED OTHER	WISE.	, -
STRUCTURAL ENGINEERED FILL SHALL BE PLACED IN LIFTS AND COMPACTED TO A D	E PLACED AS F DENSITY NOT L	PER THE GEOTECH ESS THAN 100% S	NICAL REPORT PREPARED BY LANDTEK LIMITED. FILL ELSEWHERE IS TO BE TANDARD PROCTOR DRY DENSITY (SPDD) FOR GRANULAR 'A' AND 98% SPDD	22.0	FOR FLOOR FINISH, REFER TO ARCHIT	ECTURAL.				
FOR GRANULAR 'B'. ALL BACKFILL MATERIAL SHALL BE COMP.	ACTED IMMED	IATELY AFTER PLA	CING. FILL SHALL BE COMPACTED AND SHAPED TO ENSURE DRAINAGE							
AWAY FROM THE WORK AREA, BEFORE T THE MAXIMUM LIFT THICKNESS SHALL BE	HE END OF AN NO GREATER	Y SHIFT. THAN 300mm FOR	GRANULAR 'B' AND 200mm FOR GRANULAR 'A' MATERIAL.							
EACH LIFT SHALL BE TESTED FOR COMPA	CTION.				REINFORCING NOTES	5				
					MATERIALS					
				1.0 2.0	REINFORCING STEEL SHALL BE NEW, TIE WIRE TO BE 16 GAUGE OR HEAVIE	DEFORMED BILLET-STEE R ANNEALED WIRE.	L BARS TO CSA	STANDARD G30.18, LATEST ED	ITION, GRADE 400R.	
				3.0	WELDED WIRE FABRIC SHALL BE NEW	FLAT SHEETS TO CSA S	TANDARD G30.5.	PROVIDE 150mm MINIMUM LA	PS ALL SIDES.	
LIMIT STATES (SLS) SHALL BE 120 kPa (250	E LIMIT STATE: 10 psi).	S (ULS) SHALL BE	180 KPa (3,750 pst) ON NATIVE UNDISTURBED MATERIAL AND AT SERVICE		EXECUTION					
	SI IRMIT	ται ς		1.0 2.0	PERFORM CONCRETE REINFORCING	VORK IN ACCORDANCE V CEMENT SHALL BE AS FO	VITH CSA A23.3 L LLOWS:	ATEST EDITION.		
	OODIVIT				A) CAST AGAINST EARTH AND PERMA B) EXPOSED TO EARTH OR WEATHER:	NENTLY EXPOSED TO EA	RTH:	75mm		
ONTARIO, INCLUDING CONNECTION DETA	ILS, CLEARLY	NDICATING PROFI	STERED PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF LES, SIZES, SPACING AND LOCATIONS OF ALL STRUCTURAL MEMBERS,		-SLABS AND WALLS 20M OR SM -TIES, STIRRUPS AND SPIRALS	IALLER		40mm 40mm		
BRACING, CAMBERS AND LOADS.				3.0	BEFORE PLACING ENSURE REINFORC	ING IS CLEAN, FREE OF L	OOSE SCALE, DI	IRT, OR OTHER FOREIGN COA	TING WHICH WOULD F	REDUCE THE BOND
	SHOP	DRAWING SUBMIT	TALS	4.0	TO CONCRETE ALL LAP SPLICE LENGTHS TO BE CLAS	S B(1.3 x ld), WHERE ld =	TENSION DEVEL	OPMENT LENGTH, UNLESS OT	HERWISE NOTED.	
CONCRETE MIX DESIGN	REQ'D	ENG. STAMP	NOTES	5.0 6.0	ALL SPLICES TO BE STAGGERED. ALL LONGITUDNAL BARS TO HAVE ST	NDARD 90° HOOKS AT E	NDS UNLESS OT	HERWISE NOTED.		
REINFORCING STEEL	\checkmark				REBAR LAP & A					
ENGINEERED ROOF FRAMING SYSTEM	 ✓ 	✓			REINFOR	CED CONCRETE				
					ONLY FOR: 35 MPa CONCRETE; N	ORMAL WEIGHT, 400 MP	a REBAR			
	MATERIAL	TESTING AND INS	PECTION		BAR SIZE LAP LENGTH (mm) A	NCHORAGE (mm) BE	END DIA. (mm)			
ITEM SOIL BEARING CAPACITY	REQ'D	BY GEOTECH			10M 470	360 510	70			
FOUNDATION SUBGRADE	· · ✓	BY GEOTECH	NICAL ENGINEER		20M 810	620	120			
SOIL COMPACTION	\checkmark	BY GEOTECH	NICAL ENGINEER							
CONCRETE COMP. TEST CONCRETE AIR ENTRAINMENT				7.0	SHOP DRAWINGS SHALL BE SUBMITT	ED FOR REVIEW PRIOR T	O FABRICATION	OF REINFORCEMENT.		
CONCRETE SLUMP	, •				STRUCTURAL TIMBER					
STRUCTURAL STEEL INSPECTION										
FOUNDATION NOTES					GENERAL NOTES					
FOOTING FLEVATIONS GIVEN ON THE STE		WINGS ARE FOR	ASSUMED DESIGN CONDITIONS IF ACTUAL SOIL CONDITIONS VARY FROM	1.0 2.0	STRUCTURAL TIMBER TO BE DESIGNE STRUCTURAL TIMBER TO BE DESIGNE	D FOR THE LOADS SHOV D BY SUPPLIER.	VN ON DRAWING	SS.		
THOSE ASSUMED WRITTEN DIRECTIONS N PLACE FOOTINGS ON SOUND OF FAN AND	MUST BE OBTA	INED FROM THE E	NGINEER BEFORE PROCEEDING WITH THE WORK.	3.0 4.0	UNLESS OTHERWISE NOTED DEFLECT SHOP DRAWINGS TO BE STAMPED BY	ION SHALL NOT EXCEED PROFESSIONAL ENGINE	ER LICENSED IN	I ONTARIO.		
AND OTHER DEBRIS. FOUNDATION BEARING	NG AREA TO B		GEOTECHNICAL ENGINEER AND TO BE PROTECTED FROM COLLECTION OF		MATERIALS					
ENGINEER'S RECOMMENDATIONS.			TO EXCAVATION, PLACING CONCRETE AND BACKEILLING	1.0	ALL LUMBER SHALL CONFORM TO LAT	EST NLGA STANDARD G		FOR CANADIAN LUMBER		
FOOTINGS SUBJECT TO FROST ACTION DI SUFFICIENT TO PREVENT FREFZING FNS	URING CONST	RUCTION SHALL BI	E PROTECTED BY A MINIMUM OF 1500 OF EARTH OR ITS EQUIVALENT MINIMUM) FROST COVER TO FINISHED EXTERIOR GRADE	2.0 3.0	ALL LUMBER SHALL BE KILN DRIED SF PLYWOOD TO CSA 0151-09 SPRUCE PL	F CONSTRUCTION GRAD	ADE	I U UƏA U-00		
THE LINE OF SLOPE BETWEEN ADJACENT	FOOTINGS OF	R EXCAVATIONS O	R LONG STEP DOWN FOOTINGS SHALL NOT EXCEED A RISE OF 5 IN A RISE OF	4.0	NAILS, SPIKES, STAPLES AND SCREW	SHALL BE TU CSA-086-0	19			

6.0 IN ALL AREAS OF ENGINEERED FILL, CONTRACTOR SHALL PROCEED IN ACCORDANCE WITH THE METHODS OUTLINED IN THE SOILS REPORT BY PETO MACCALLUM LTD. FULL TIME SUPERVISION BY A REPRESENTATIVE FROM GEOTECHNICAL ENGINEER IS REQUIRED DURING PLACEMENT OF ENGINEERED FILL.

UNLESS SHOWN OTHERWISE, CENTER FOOTINGS UNDER FOUNDATIN AND WALLS. DOWELSS SHALL BE PLACED BEFORE CONCRETE IS PLACED. TEMPLATES SHALL BE USED TO ENSURE CORRECT PLACEMENT OF ANCHORS AND DOWELS. 4.0 GLULAMS SHALL BE D.FIR-L,24f-EX STRESS GRADE OR BETTER SELECT ARCHITECTURAL FINISH. FOOTING ELEVATION, IF SHOWN, ARE FOR BIDDING PURPOSES ONLY, ARE NOT FINAL AND MAY VARY ACCORDING OT SITE CONDITIONS OR AS REQUIRED BY SERVICES. ALL FOOTINGS MUST BEAR ON SOIL APPROVED BY GEOTECTNICAL ENGINEER.

CONSTRUCTION JOINTS

CONSTRUCTION JOINTS SHALL BE DESIGNED AND LOCATED SO AS NOT TO IMPAIR THE STRENGTH OF THE STRUCTURE. IF CONSTRUCTION JOINTS ARE 8.0 ALL JOISTS SHALL BE COMPLETE WITH HOLD DOWN CLIPS AT ALL WALLS OR BEARING POINTS. NOT SPECIFICALLY LOCATED AND THERE IS ANY DOUBT CONCERNING THE LOCATION, THE CONTRACTOR MUST CONSULT WITH THE ENGINEER. 9.0 WHERE CONSTRUCTION JOINT IS TO BE MADE, THE SURFACE OF THE SET CONCRETE SHALL BE THOROUGHLY CLEANED OF FOREIGN MATTER AND LAITANCE, SATURATED WITH WATER AND LEFT IN A DAMP CONDITION WITH NO FREE WATER ON THE SURFACE IMMEDIATELY BEFORE PLACING ADJACENT CONCRETE. REINFORCING STEEL PROJECTING THROUGH A JOINT SHALL BE CLEANED OF LOOSE FLAKEY RUST, MUD, OIL, DRIED CONCRETE OR OTHER COATINGS 11.0 JOISTS AT BEARING POINTS SHALL RECEIVE 38x89 CROSS BRACING FULL HEIGHT, BETWEEN THE BEARING POINT AND THE TOP CHORD

WHICH WOULD DESTROY OR REDUCE THE BOND. CONSTRUCTION JOINTS OTHER THAN THOSE SHOWN ON THE DRAWINGS WILL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.

RUCTURAL CONCRETE NOTES

RAL NOTES

LOCATIONS AND/ OR MEMBERS	COMPRESSIVE STRENGTH	SLUMP	ENTRAINED AIR LOCATION / %	CLASS OF EXPOSURE	TYP
INTERIOR SLAB ON GRADE	25 MPa.	75 ± 25	NOT REQUIRED	Ν	10
ALL FOOTINGS	30 MPa.	75 ± 25	NOT REQUIRED	Ν	10
REINFORCED FOUNDATION WALLS	30 MPa.	75 ± 25	4 - 7%	F-2	10
ALL EXTERIOR CONCRETE CLUDING SIDEWALKS AND SLABS	35 MPa.	75 ± 25	5 - 8%	C-2	10

EINFORCING NOTES

REBAR LAP	& ANCHORAGE SCHEI	DULE				
REIN	FORCED CONCRETE					
35 MPa CONCRET	55 MPa CONCRETE; NORMAL WEIGHT, 400 MPa REBAR					
LAP LENGTH (mm)	ANCHORAGE (mm)	BEND DIA. (mm)				
470	360	70				
660	510	100				
810	620	120				

1.0

20

5.0

60

ANY SUBSTITUTION OF SPECIES, GRADE OR GROUP MUST BE APPROVED BY THE ENGINEER PRIOR TO THE COMMENCING OF WORK. ALL CUTS IN PRESSURE TREATED WOOD SHALL BE TREATED WITH OIL BASED PRESERVATIVE. ALL WOOD BASE PLATES TO BE PWF GRADE PRESSURE TREATED LUMBER AT MASONRY OR CONCRETE WALLS.

ALL EXPOSED FASTENERS SHALL BE CUT AND TRIMMED AS REQUIRED TO PROVIDE ARCHITECTURALLY ACCEPTABLE CONNECTIONS WITH A MAXIMUM PROJECTION OF 12mm BEYOND THE NUT. FINISH ALL FASTENERS AND PLATES PER ARCHITECTURAL SPECIFICATIONS. PROVIDE DOUBLE WOOD STUDS @ EACH OPENING EDGE UNLESS OTHERWISE NOTED 7.0 CONTRACTOR SHALL PROVIDE HOLDOWN CONNECTORS AND BRIDGING ON WOOD JOISTS AND SUBMIT SHOP DRAWINGS FOR REVIEW

BY CONSULTANT. ALL JOISTS ARE TO CONFORM TO PART 4 OF THE ONTARIO BUILDING CODE.

10.0 TRUSSES AT ALL GABLE ENDS OF ROOF SHALL RECEIVE 38x89 WOOD CROSS BRACING, SET AT APPROXIMATELY 45°, FRAMED INTO JOIST DIAGONALS FROM THE WALL OR LOWER ROOF LINE UP TO THE UPPER ROOF LINE, AND LOCATED AT EACH BEARING POINT AND

AT MAXIMUM 3000 o.c.

AT MAXIMUM 10,000 o.c. 12.0 USE RECESSED PLATES AND RECESSED BOLT CONNECTIONS FOR GLULAMS.

LIMITATIONS AND ASSUMPTIONS

IT IS POSSIBLE THAT UNEXPECTED CONDITIONS MAY BE ENCOUNTERED THAT HAS NOT BEEN EXPLORED WITHIN THE SCOPE OF THIS PROJECT. SHOULD SUCH AN EVENT OCCUR, WSP SHOULD BE NOTIFIED IN ORDER THAT WE MAY DETERMINE IF MODIFICATIONS TO OUR CONCLUSIONS ARE NECESSARY.

DESIGN IN	FORMA	ATION AN	D LO	ADING
) BUILDING (CODE 2012. PAR	Т 4.	
A. CLIMACTIC DESIGN DATA (WIN	DSOR)	0-	_	0.00.1-D-
SNOW LOAD		SS	=	0.80 KPa
		Sr - 1/10	=	0.40 KPa
WIND PRESSURE		q 1/10 = 1/50	=	0.30 KPa
		0 1/00	-	0.47 KPa
SEISMIC DATA		Sa(0.2)	=	0.15
		Sa(0.5)	=	0.085
		Sa(1.0)	=	0.045
		Sa(2.0)	=	0.014
		PGA	=	0.073
B. BUILDING IMPORTANCE CATEG	JORY		=	NORMAL
C. SEISMIC INFORMATION				
IMPORTANCE FACTOR		IE	=	1.0
STRUCTURAL CONFIGUR	ATION	_	=	REGULAR
FUNDAMENTAL LATERAL	PERIOD	Та	=	0.11 SECONDS
SITE CLASSIFICATION			=	D
ACCELERATION COEFFIC	CIENT	Fa	=	2.1
VELOCITY COEFFICIENT		Fv	=	2.1
SEISMIC HAZARD INDEX		IE Fa S(0.2)	=	0.32
DESIGN METHOD			=	EQUIVALENT STATUS FORCE METHOD
SFRS			=	BRACE FRAME (UPPER) SHEAR WALLS (LOWER)
		Rd	=	2.0
		Ro	=	1.7
D. WIND	RESTRICTI	ONS	=	15m - MAX BUILDING HEIGHT
IMPORTANCE FACTOR		lw ULS	=	1.0
		lw SLS	=	0.75
INTERNAL PRESSURE CA	TEGORY		=	2
THE STRUCTURE HAS BE THE PROCEDURE DESCR CANADA (NBCC) STRUCT <u>UNFACTORED WIND UPLI</u> REFER TO FRAMIN	EN DESIGNE IBED IN THE URAL COMM FT LOADS K G PLANS FO	ED TO RESIST W E OBC 2012 AND I IENTARY I. Pa (PSF): R UNFACTORED	IND FOR NATIONA WIND UI	CES IN ACCORDANCE WITH L BUILDING CODE OF PLIFT LOADS.
E. SNOW				
IMPORTANCE FACTOR		Is ULS	=	1.0
		Is SLS	=	0.9
		S	=	la[Sa(CbCwCsCa)+Sr]
		S	=	1.04 kPa
REFER TO PLANS FOR AF THE ROOF STRUCTURE F ADDITIONAL WATER LOA THE DESIGN.	REAS AND M HAS BEEN DI DS (STORM '	AGNITUDE OF BI ESIGNED CONFC WATER RETENT	uilt up : Drming ⁻ Ion) hav	SNOW LOADS. TO OBC 4.1.6.4(3). 'E NOT BEEN INCLUDED IN
			=	0.27 kPa
			-	0.00 kPa
			-	
			_	
			_	0.10 KF a 0.02 kDa
			_	
	DRIW	ALL (ZLATERS)		0.10 KPa
				0.01 KFa (10.17 pSI)
ADDITIONAL DEAD LOAD LOADS FOR: A. PIPES IN EXCES	ALLOWANCI S OF 75mm (E SHALL BE INCL 3") IN DIAMETER	UDED IN	ADDITION TO THE ABOVE
B. ROOF TOP MECH	HANICAL UNI	ITS		

GUARDS DESIGN LOADS: TO OBC 4.1.5.15 HANDRAIL DESIGN LOADS: TO OBC 3.4.8.4.(9).

ARC	HITECTU	RE 49
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	B. D. FREHOURGER 100107123	
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1. WALLS ARE DESIGNED ASSUMING BOTH FACES ARE FORMED. IN ALL CASES BOTH FACES MUST BE FORMED.

NOTE: 1. CLEAN EXISTING CONCRETE SURFACE BEFORE PLACING CONCRETE. NEW CONCRETE TO BE CAST AGAINST EXISTING FOUNDATION WALL.

TYPICAL CONNECTION FROM EXISTING FOOTING TO PROPOSED

SEALANT 13mm WIDE x13mm DEEP CONCRETE WALL OR PAD 'DUOFLEX S.L.' BY SIKA 13Ø POLYETHYLENE 13mm ASPHALT IMPREGNATED FOAM BACKER ROD FIBRE BOARD · ` A ▶ ' ⊳ TYPICAL ISOLATION JOINT DETAIL U.N.O. $\left(8 \right)$ S1.2 SCALE: N. T. S.

IOWN	
	EXCAVATION AND BACKFILL SHALL BE CARRIED OUT ACCORDING TO GEOTECHNICAL REPORT.
1	DEPTH OF FOOTING SHALL BE IN ACCORDANCE WITH MINIMUM FROST DEPTH REQUIREMENTS IN GEOTECHNICA REPORT

D. FREIBURGE 100107123 ISSUED FOR TENDER 11/23/16 EM RF 10/17/16 RF ISSUED FOR REVIEW EM Drawn by Approved DESCRIPTION NO. DATE Dessine par Approuve

ARCHITECTURE 49

605-75 WATER ST N. CAMBRIDGE ONTARIO CANADA N1R 7L6

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B Sur feuille numero Linear dimensions in Dimensions lineaires millimeters en millimetres

Canada

Parcs Canada

A Numero de detail

Canadä

PARKS CANADA SOUTHWESTERN ONTARIO FIELD UNIT

Type of Record / Type d'enregistrement

Project title / Titre du projet

FORT MALDEN ADDITION

Drawing title / Titre du dessin

FOUNDATION PLAN

Plot Scale / Echelle NTS Drawn by/ Dessine par Date ΕM 10/17/16 Field Recording by / Date Releve-Temoin par N/A N/A Approved by / Approuve par Date ΒF 10/17/16 Checked by/ Verifie par Date BF 10/17/16 Project No./ No. du projet |Asset No. Sheet No./ Feuille No. PR0000812 Drawing Re No./No. du Dessin \smile

- 4. SHOP DRAWINGS ARE TO BE APPROVED BEFORE FRAMING BEGINS.
- LOAD PLUS THE DEAD LOAD.

- SPECIFIED DESIGN LOADS: Code: Location: Importance Factor Snow Loads (Ss) Associated Rain L Dead Load (UPPEI Wind Loads q 1/10 q 1/50 SEISMIC DESIGN Sa (0.20) Sa (0.50) Sa (1.00) Sa (2.00)

PGA

COL C1 C2 C3

CO
COLUN
C1 & C
C3

SHEAR WALL SCHEDULE				
MARK	INTERIOR	EXTERIOR		
SW1	5/8 GYPSUM w/ 8 EDGE FASTENING	¹ / ₂ " PLYWOOD w/ 6" EDGE FASTENING & 12" INTERIOR FASTENING		
SW2	⁵ 8" GYPSUM w/ 8" EDGE FASTENING	¹ / ₂ " PLYWOOD w/ 6" EDGE FASTENING & 12" INTERIOR FASTENING		
NOTE: 1. PROVIDE SOLID BLOCKING AT ALL PANEL JOISTS NOT LOCATED AT A STUD. 2. EXTERIOR SIDE OF SW2 IS GARAGE SIDE.				

ROOF DESIGN NOTES (Commercial Design)

1. DESIGN SHALL BE IN ACCORDANCE WITH PART 4 OF THE ONTARIO BUILDING CODE 2012 AND SHALL TAKE INTO ACCOUNT ALL DEAD LOADS PLUS THE DESIGN SNOW, SEISMIC AND WIND LOADS (INCLUDING UPLIFT).

2. THE ENGINEERED ROOF SYSTEM SHALL COMPLY WITH THE REQUIREMENTS OF CAN/CSA/086-14 3. SHOP DRAWINGS OF ENGINEERED MEMBERS SHALL BE SUBMITTED BEARING THE SEAL AND SIGNATURE OF THE REGISTERED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR DESIGN.

5. MOISTURE CONTENT OF ALL LUMBER 38 MM OR LESS IN THICKNESS SHALL NOT EXCEED 19%. ALL TRUSS MATERIAL SHALL BE STAMPED S DRY.

6. ROOF CONSTRUCTION IS AS NOTED ON THE DRAWINGS AS PREFABRICATED ROOF JOISTS. 7. FACTORED DESIGN LOAD SHALL BE BASED ON THE SPECIFIED DESIGN SNOW, RAIN, WIND AND LIVE

8. ALL ROOF MEMBERS TO BE SIZED AND DETAILED ON THE SUPPLIERS SHOP DRAWINGS.

9. TEMPORARY BRACING OF MEMBERS DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR. AT NO TIME DURING CONSTRUCTION SHALL THE LOADS EXCEED THE DESIGN LOADING. 10. NO HOLES SHALL BE DRILLED IN THE MEMBERS IN THE FIELD.

11. CONNECT ALL ROOF JOISTS TO WALL PLATES OR OTHER BEAMS WITH SIMPSON CONNECTORS AS INDICATED ON PLAN. (FABRICATOR MAY SUBSTITUTE ALTERNATIVE CONNECTORS WITH AT LEAST THE SAME UPLIFT CAPACITY).

12. ROOF JOISTS SHALL NOT BEAR INTERIOR WALLS UNLESS INDICATED ON DRAWINGS.

13. ALL EXTERIOR WALLS TO BE 2" x 6" @ 16" o.c.

14. ALL INTERIOR LOAD BEARING WALLS TO BE (SHOWN 2000) ARE TO BE 2" x 6" @ 16" o.c. 15. SEE TRUSS FRAMING PLAN FOR ALL UPLIFT TIES

	=	OBC 2012
	=	WINDSOR, ONTARIO
r (ls)	=	NORMAL
	=	0.8 kPa
.oad (Sr)	=	0.40 kPa
ER)	=	0.87 kPa
	=	0.36 kPa
	=	0.47 kPa
N:		
	=	0.150
	=	0.085
	=	0.045
	=	0.014
	=	0.073

ΓE	EL SCHEDULE
	2-2" x 8"
	3-2" x 10"
	3-1 ³ / ₄ " x 9 ¹ / ₄ "
	2-2" x 6"

l	JMN SCHEDULE	
	2-2" x 6"	
	3.0" x 6"	

	5-1/4" x 5-1/4"
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INECTIONS				
ΛN	TOP	BOTTOM		
2	TOE NAIL	TOE NAIL		
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	HVAC SYMBOLS		
SYMBOL	DESCRIPTION		
	RETURN AIR DUCT UP		
	RETURN AIR DUCT DOWN		
[22]	RETURN AIR DUCT FROM BELOW		
M	EXHAUST AIR DUCT UP		
	EXHAUST AIR DUCT DOWN		
[23]	EXHAUST AIR DUCT FROM BELOW		
⊠	EXHAUST AIR GRILLE		
0	ROUND DUCT/PIPE UP		
0	ROUND DUCT/PIPE DOWN		
<u>S</u>	ROUND DUCT/PIPE FROM BELOW		
	ROUND DUCT TAKE-OFF FROM RECTANGULAR DUCT		
	RECTANGULAR DUCT TAKE-OFF FROM RECTANGULAR DUCT		
	AIRFLOW / PIPE FLOW DIRECTION		
4	AIRFLOW DIRECTION		
	AIRFLOW DIRECTION		
•	AIRFLOW DIRECTION		
200x100	NEW DUCT (DIMENSION SHOWN)		
X	RECTANGULAR SUPPLY AIR DIFFUSER		
\bigcirc			
2 -+-	RETURN AIR GRILLE		
	EXHAUST/RETURN AIR GRILLE		
	SUPPLY AIR REGISTER/GRILLE		
<u>+</u>	25mm INTERNALLY ACOUSTICALLY LINED DUCT		
· ·///////////////////////////////////	FLEXIBLE DUCT (SIZE TO MATCH DIFFUSER NECK SIZE) - 3.0m LONG MAXIMUM OR AS SPECIFIED (WHICHEVER IS SHORTER)		
	FLEXIBLE CONNECTION		
	VAV BOX c/w SILENCER		
	- VAV CONTROLLER (LEFT OR RIGHT SIDE - REFER TO DRAWINGS)		
	- SUPPLY AIR FLOW (CFM)		
5 5	CONTROL WIRING		
 ش ^{115V}	LINE VOLTAGE THERMOSTAT		
	ELECTRIC CABINET HEATER		
	WALL FIN HEATER - 48" DENOTES FINNED LENGTH AND 5.6 DENOTES HEAT		
WF-48" = 5.6 A.D.	OUTPUT IN KW ACCESS DOOR		
₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹	RETURN AIR OPENING IN WALL ABOVE FINISHED CEILING		
	DOOR GRILLE FOR TRANSFER AIR		
OED CTE	CONNECT TO EXISTING		
OED CTE SA	OPEN-ENDED DUCT CONNECT TO EXISTING SUPPLY AIR AIR FLOW DIRECTION		
	OPEN-ENDED DUCT CONNECT TO EXISTING SUPPLY AIR AIR FLOW DIRECTION		
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PLUMBING SYMBOLS		MECHANICAL DRAWING LIST		
SYMBOL	DESCRIPTION	DRAWING NO.	DESCRIPTION	
\$	EXISTING PIPE	M-0	DRAWING LIST & LEGENDS	
	EXISTING PIPING REMOVED	M-1	NEW HVAC - PLAN	
SAN• —	SANITARY DRAIN (ABOVE FLOOR LEVEL)	M-2	NEW PLUMBING & FIRE PROTECTION - PLAN	
 SAN 	SANITARY DRAIN (UNDERGROUND OR BELOW FLOOR SLAB)	M-3	MECHANICAL SPECIFICATION I	
ST	STORM DRAIN (ABOVE FLOOR LEVEL)	M-4	MECHANICAL SPECIFICATION II	
 ST 	STORM DRAIN (UNDERGROUND OR BELOW FLOOR LEVEL)	- M-5	MECHANICAL EQUIPMENT SCHEDULES	
SLOPE@#%	PITCH (INDICATES SLOPE)	- M-6	MECHANICAL DETAILS	
	CONDENSATE DRAIN	-		
	SANITARY VENT			
G	NATURAL GAS (WITH GAS PRESSURE INDICATED: "wc, 2#, 5# ETC.)			
— ———————————————————————————————————	GAS VENT			
	DOMESTIC COLD WATER			
	DOMESTIC HOT WATER			
	DOMESTIC HOT WATER RECIRCULATION	-		
ب	PIPE DOWN			
<u>ب</u>	PIPE UP	-		
	ISOLATING VALVE			
ØFD	FLOOR DRAIN			
◎ ^{FFD}	FUNNEL FLOOR DRAIN			
OHD	HUB DRAIN			
CTE	CONNECT TO EXISTING			
XX-1)	DENOTES TYPE OF FIXTURE AS PER SPECIFICATION (TYPICAL FOR EACH PLUMBING FIXTURE)			
	CATCH BASIN			
	TRENCH DRAIN c/w FRAME			
он НВ	HOSE BIBB			
OH NFHB	NON-FREEZE HOSE-BIBB			
<u>و</u>	P-TRAP			
-l co	CLEANOUT (END OF PIPE)			
b CO	CLEANOUT (GRADE OR FLOOR LEVEL)]		
BFP	BACKFLOW PREVENTER]		
	BACK WATER VALVE (DRAINAGE)]		
,G,	GAS METER]		
MH	MANHOLE]		

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1. GENERAL

- 1.1. BASE BUILDING STANDARDS AND SPECIFICATIONS SHALL BE THE BASIS FOR THIS CONSTRUCTION.
- 1.2. MEET THE REQUIREMENTS OF PCA (CZ) DESIGN CRITERIA AND CONSTRUCTION MANUAL.
- 1.3. ALL WORK AND EQUIPMENT PROVIDED SHALL BE IN COMPLIANCE WITH GOVERNING AUTHORITIES AND APPLICABLE CODES. WHE MUNICIPAL CODES AND REGULATIONS ARE AT VARIANCE WITH THE DRAWINGS AND/OR SPECIFICATIONS, THE MORE STRINGENT
- 1.5. CONTACT <u>CONSULTANT</u> <u>48 HOURS</u> BEFORE REINSTALLATION OF CEILINGS TO PERFORM A FINAL REVIEW.

1.4. COMPLY WITH THE GENERAL CONTRACTOR'S CONSTRUCTION SCHEDULE.

- DRAWINGS ARE TO BE CONSIDERED DIAGRAMMATICAL ONLY AND DO NOT SHOW ALL THE MECHANICAL, ELECTRICAL, STRUCTUR 1.6. DOCUMENTS AND VISIT SITE TO DETERMINE AND REVIEW EXISTING SITE CONDITIONS THAT WILL OR MAY AFFECT WORK, AND INC POINTS OF DISCONNECTION AND RECONNECTION SHOWN ARE FOR GENERAL INTENT ONLY. PROVIDE, OFFSETS, FITTINGS, TRAN A RESULT OF OBSTRUCTIONS AND OTHER ARCHITECTURAL AND STRUCTURAL DETAILS BUT NOT SHOWN ON DRAWINGS. VERIF PIPING ARE TO BE LOCATED. FAILURE TO DO SO WILL NOT BE GROUNDS FOR ADDITIONAL COSTS. UPON FINDING DISCREPANCIES DOUBT AS TO THEIR MEANING OR INTENT, IMMEDIATELY NOTIFY CONSULTANT, IN WRITING, BEFORE SUBMITTING BID.
- 1.7. BEFORE ANY EQUIPMENT IS ROUGHED IN, DETERMINE ITS INTENDED LOCATION FROM THE DRAWINGS AND COORDINATE ITS FINA STRUCTURAL CONDITIONS. IF IT IS NOT SHOWN ON THE DRAWINGS, VERIFY FINAL LOCATION ON SITE. LOCATIONS OF NEW AND EX LOCATIONS OF EQUIPMENT AND MATERIALS SHOWN MAY BE ALTERED, WHEN REVIEWED BY CONSULTANT, TO MEET REQUIREMENT EQUIPMENT OR SYSTEMS BEING INSTALLED, AND OF BUILDING, ALL AT NO ADDITIONAL COST TO CONTRACT. ENSURE THAT ALL FOR MAINTENANCE - FAILURE TO DO SO WILL NOT BE GROUNDS FOR ADDITIONAL COSTS. CONCEAL ALL SERVICES IN WALLS, CE STATED.
- 1.8. OBTAIN PERMITS FROM THE MUNICIPALITY AND UTILITIES TO COMPLETE YOUR WORK. UPON COMPLETION OF YOUR WORK, SUPP CONSULTANT INSPECTION CERTIFICATES FROM GOVERNING AUTHORITIES TO CERTIFY THAT THE INSTALLED WORK MEETS THE I GOVERNING AUTHORITIES. PAY FOR (INCLUDING ALL SALES TAXES) ALL PERMITS, FORMS, AND INSPECTIONS REQUIRED.
- 1.9. WHEN DISCREPANCY EXISTS WITHIN DRAWINGS AND/OR SPECIFICATION, INCLUDE MOST COSTLY ARRANGEMENT TO TAKE PREC 1.10. SUPPLY ALL LABOUR, MATERIALS, TOOLS, SERVICES, EQUIPMENT, TRANSPORTATION, AND TESTING REQUIRED FOR THE SUPPLY.
- INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
- 1.11. PROVIDE ALL CUTTING, PATCHING, FLASHING WORK, AND CLEAN-UP OF FLOORS, WALLS, AND CEILINGS REQUIRED FOR THE WORK.
- 1.12. ALL MATERIALS IN CEILING SPACE SHALL CONFORM TO ONTARIO BUILDING CODE SECTION #3.6.4.3.
- 1.13. IDENTIFY ALL EQUIPMENT, DUCTS, VALVES, PIPES, ETC. TO BASE BUILDING STANDARDS.
- 1.14. SUPPLY ALL ACCESS DOORS/PANELS IN CEILINGS OR WALLS WHERE REQUIRED FOR ACCESS TO MECHANICAL EQUIPMENT THAT REQUIRES MAINTENANCE (BALANCING DAMPERS, FIRE DAMPERS, VALVES, FILTERS, FAN COILS, VAV BOX CONTROLS, ETC.), FOR INSTALLATION BY GENERAL TRADES. CONTRACTOR SHALL MINIMIZE QUANTITY OF ACCESS PANELS/DOORS BY GROUPING TOGETHER BALANCING DAMPERS AND VALVES - COORDINATE WITH ALL TRADES TO MINIMIZE ACCESS DOOR/PANELS REQUIREMENTS. EQUIPMENT REQUIRING ACCESS SHALL BE CLEARLY IDENTIFIED BY PROJECT MANAGER AND BASE BUILDING OPERATOR BEFORE DRYWALL CEILING/WALL INSTALLATION. ACCESS DOORS/PANELS SHALL BE MILCOR OR LEHAGE OR EQUIVALENT, AND MUST BE COMPATIBLE WITH CEILING/WALL TYPE AND FINISH. FINISH SHALL SUIT ARCHITECT'S/INTERIOR DESIGNER'S REQUIREMENTS. PROVIDE 1-1/2 HOUR FIRE RATED DOOR/PANEL WHERE REQUIRED. COORDINATE ACCESS DOOR/PANEL LOCATIONS AND SIZES WITH OWNER/LANDLORD, BASE BUILDING OPERATOR, ARCHITECT/INTERIOR DESIGNER, AND PROJECT MANAGER. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS.
- 1.15. PROVIDE FLASHING AND COUNTER FLASHING FOR EXTERIOR PENETRATIONS OR WATERPROOFED FLOORS.
- 1.16. COORDINATE WITH ALL TRADES INSTALLING EQUIPMENT WHICH MAY AFFECT THE MECHANICAL WORK AND ARRANGE THE WORK IN PROPER RELATION WITH EQUIPMENT INSTALLED UNDER ALL DIVISIONS OF THE CONTRACT.
- 1.17. FOR THE PRODUCTION OF AS-BUILT DOCUMENTS, OBTAIN ACAD DRAWING FILES AND WSP/MMM GROUP "CTB" FILE (FOR PLOTTING CORRECT LINE THICKNESS). WHEN WORK BEGINS ON SITE, MAINTAIN THE "AS-BUILT" WHITE PRINTS AT THE SITE FOR PERIODIC INSPECTION BY THE MECHANICAL CONSULTANT THROUGHOUT THE DURATION OF THE WORK. PAY PARTICULAR ATTENTION TO ACCURATELY DIMENSIONING THE LOCATION OF ALL CONCEALED SERVICES TERMINATED FOR FUTURE, ALL BURIED WORK AND SERVICES, AND CONCEALED WORK. CLEARLY AND ACCURATELY MARK-UP ALL CHANGES AND DEVIATIONS FROM THE ROUTING OF PIPING AND DUCTWORK AND LOCATIONS OF EQUIPMENT SHOWN ON THE CONTRACT DRAWINGS. CHANGES AND DEVIATIONS INCLUDE THOSE MADE BY ADDENDA, CHANGE ORDERS, AND SITE INSTRUCTIONS. BEFORE APPLYING FOR A CERTIFICATE OF COMPLETION. UPDATE AUTOCAD DISK SET(S) IN ACCORDANCE WITH THE MARKED UP "AS-BUILT" WHITE PRINTS. SUBMIT THE "AS-BUILT" SITE DRAWING WHITE PRINTS. WHITE PRINTS PRODUCED FROM THE DISK SET(S), AND DRAWING DISK SET(S) USING WSP/MMM GROUP "CTB" FILE TO THE MECHANICAL CONSULTANT FOR REVIEW. UPON COMPLETION OF THE WORK, SUBMIT THE COMPLETED "AS-BUILT" DRAWINGS (PLOTTED WITH WSP/MMM GROUP "CTB" FILE FOR CORRECT LINE THICKNESS), TRANSPARENCIES, AUTOCAD FILES, AND BUILDING INSPECTION DEPARTMENT'S FINAL CERTIFICATE OF APPROVAL TO THE MECHANICAL CONSULTANT AND OWNER/LANDLORD. "AS-BUILT" DRAWINGS SHALL CONTAIN THE CONTRACTOR'S NAME AND DATE. FAILURE TO PLOT DRAWINGS WITH THE CORRECT LINE THICKNESS WILL RESULT IN REJECTION
- 1.18. ARRANGE AND SCHEDULE ALL WORK IN A MANNER WHICH WILL NOT INTERFERE WITH NORMAL OPERATION OF THE EXISTING BUILDING. ALL SHUTDOWNS OF ANY PORTION OF EXISTING BASE BUILDING SYSTEMS SHALL BE PERFORMED BY THE OWNER'S/LANDLORD'S BUILDING OPERATIONS STAFF AND/OR COORDINATED WITH THE OWNER/LANDLORD FOR TIME AND DURATION OF INTERRUPTIONS
- 1.19. ENSURE MANUFACTURER'S INSTALLATION RECOMMENDATIONS AND INSTRUCTIONS ARE FOLLOWED UNLESS OTHERWISE NOTED HEREIN OR ON THE DRAWINGS, UNLESS SUCH INSTRUCTIONS AND RECOMMENDATIONS CONTRADICT GOVERNING CODES AND REGULATIONS.
- 1.20. WHERE STANDARDS OF THE WORK ARE SPECIFIED OR IMPLIED AND THE WORK DOES NOT COMPLY WITH THE PERFORMANCE SPECIFIED OR IMPLIED, SUCH DEFICIENCY SHALL BE CORRECTED AS DIRECTED BY THE MECHANICAL CONSULTANT. ANY SUBSEQUENT TESTING TO VERIFY PERFORMANCE SHALL BE DONE AT THE CONTRACTOR'S EXPENSE. ANY CHARGES FOR THE OWNER'S/LANDLORD'S STAFF, THE MECHANICAL CONSULTANT OR OTHER PERSONNEL RELATED TO SUCH RETESTING, SHALL ALSO BE AT THE CONTRACTOR'S FXPENSE
- 1.21. INCLUDE COST OF PREMIUM TIME IN TENDER PRICE FOR WORK DURING NIGHTS, WEEKENDS, OR OTHER TIME OUTSIDE NORMAL WORKING HOURS NECESSARY TO MAINTAIN ALL MECHANICAL SERVICES IN OPERATION. NOTE THAT OWNER/LANDLORD WILL CONTINUE TO OPERATE DURING OFFICE HOURS, THEREFORE CERTAIN AREAS/WORK WILL BE RESTRICTED TO IRREGULAR HOURS. ALL WORK IN ADJACENT TENANT'S SPACE AND IN CEILING SPACE BELOW SHALL BE DONE AFTER NORMAL OFFICE HOURS AND COORDINATED WITH PROJECT MANAGER, OWNER/LANDLORD, AND ADJACENT TENANT.
- 1.22. PROVIDE ELECTRONIC (PDF) COPIES OF PROPER SHOP DRAWINGS OF ALL SPECIFIED PRODUCTS AND SUBMIT FOR APPROVAL TO THE ARCHITECT/INTERIOR DESIGNER AND MECHANICAL CONSULTANT, FOLLOWING REVIEW AND APPROVAL BY CONTRACTOR (PROVIDE REVIEW STAMP). EQUIVALENT EQUIPMENT MAY BE PROPOSED BEFORE COMMENCEMENT OF WORK PROVIDING THE QUALITY AND PERFORMANCE CHARACTERISTICS ARE EQUAL OR BETTER TO THE SPECIFIED PRODUCTS. THE USE OF EQUIVALENT FOUR MENT IS SUBJECT TO THE APPROVAL OF THE MECHANICAL CONSULTANT AND ARCHITECT/INTERIOR DESIGNER, AND ON SATISFACTORY SUBMISSION OF DETAILED SHOP DRAWINGS. ALLOW ONE (1) WEEK FOR MECHANICAL CONSULTANT'S REVIEW. INCLUDE ONE (1) SET OF APPROVED SHOP DRAWINGS WITH OPERATION AND MAINTENANCE MANUAL (SEE BELOW). APPLICABLE MECHANICAL EQUIPMENT SHALL BE SELECTED TO MEET ENERGY EFFICIENCY REQUIREMENTS OF ANSI/ASHRAE/IES 90.1. ENERGY STANDARDS FOR BUILDINGS, SHOP DRAWINGS/PRODUCT DATA SUBMITTALS FOR SUCH EQUIPMENT MUST INDICATE COMPLIANCE WITH THIS STANDARD OR THEY WILL BE RETURNED FOR CORRECTION AND RE-SUBMITTAL.
- 1.23. FOLLOWING IS TO BE READ IN CONJUNCTION WITH WORDING ON CONSULTANT'S SHOP DRAWING REVIEW STAMP APPLIED TO EACH AND EVERY SHOP DRAWING OR PRODUCT DATA SHEET SUBMITTED: "THIS REVIEW BY CONSULTANT IS FOR SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH GENERAL DESIGN CONCEPT. THIS REVIEW DOES NOT MEAN THAT CONSULTANT APPROVES DETAIL DESIGN INHERENT IN SHOP DRAWINGS. RESPONSIBILITY FOR WHICH REMAINS WITH CONTRACTOR. CONSULTANT'S REVIEW DOES NOT RELIEVE CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN SHOP DRAWINGS OR OF CONTRACTOR'S RESPONSIBILITY FOR MEETING REQUIREMENTS OF CONTRACT DOCUMENTS. BE RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED AT JOB SITE. FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION AND INSTALLATION, AND FOR COORDINATION OF WORK OF SUB-TRADES."
- 1.24. IN ALL AREAS REQUIRING TRENCHING OR CORE DRILLING THROUGH EXISTING FLOOR SLAB FOR PLUMBING SERVICES, ALLOW FOR ALL NECESSARY RADIOGRAPHY TO LOCATE HIDDEN ELECTRICAL SERVICES, STRUCTURAL REINFORCING, ETC., AND INCLUDE ALL COSTS IN TENDER PRICE. COORDINATE THIS WORK WITH THE OWNER/LANDLORD AND/OR TENANT COORDINATOR REGARDING SCHEDULING, AND ADHERE TO THE OWNER'S/LANDLORD'S REQUIREMENTS. SUBMIT CORE DRILLING PLAN TO BASE BUILDING STRUCTURAL ENGINEER FOR THEIR REVIEW. OBTAIN WRITTEN APPROVAL FROM STRUCTURAL ENGINEER AND LANDLORD BEFORE COMMENCING WORK.
- 1.25. PROVIDE PCA (CZ) A WRITTEN WARRANTY OF MINIMUM ONE (1) YEAR FOR THE COMPLETE MECHANICAL INSTALLATION FROM DATE OF ACCEPTANCE, INCLUDING ALL LABOUR, MATERIALS, AND EQUIPMENT IN THIS CONTRACT. REPAIR AND/OR REPLACE DEFECTS WHICH APPEAR IN YOUR WORK WITHIN THE WARRANTY PERIOD, ORDINARY WEAR AND TEAR AND WILLFUL DAMAGE BY OR CARELESSNESS OF THE OWNER'S STAFF OR AGENTS EXCEPTED, WITHOUT ADDITIONAL EXPENSE TO THE OWNER. WHERE SUCH DEFECTS OCCUR, BE RESPONSIBLE FOR ALL COSTS INCURRED IN MAKING DEFECTIVE WORK GOOD, INCLUDING REPAIR OR REPLACEMENT OF BUILDING FINISHES, OTHER MATERIALS, OR DAMAGE TO OTHER EQUIPMENT CAUSED BY SUCH DEFECTS, OR BY SUBSEQUENT REPLACEMENT AND REPAIRS.
- 1.26. PROVIDE THREE (3) OPERATING AND MAINTENANCE MANUALS (3 HARD COPIES & 1 DIGITAL COPY) CONTAINING AS-BUILT DRAWINGS, APPROVED SHOP DRAWINGS, AIR AND WATER BALANCING REPORTS, EQUIPMENT DATA SHEETS, WRITTEN WARRANTY, NFPA-13 INSTALLATION CONFORMANCE LETTER, OPERATING INSTRUCTIONS, MAINTENANCE PROCEDURES, FIRE STOPPING COMPLETENESS LETTER, TEST REPORTS, AND CONTACT LIST OF CONTRACTORS AND SUPPLIERS (WITH PHONE NUMBERS) TO THE LANDLORD/OWNER. MANUALS SHALL BE IN A THREE-RING BINDER SEPARATED WITH DIVIDERS IN APPROPRIATE SECTIONS. BEFORE PROVIDING LANDLORD/OWNER WITH BINDERS, SUBMIT ELECTRONIC COPY (PDF) OF COMPLETE PACKAGE TO MECHANICAL CONSULTANT FOR REVIEW. MAKE ALL CORRECTIONS REQUESTED BY MECHANICAL CONSULTANT AND RESUBMIT COMPLETE PACKAGE FOR REVIEW
- 1.27. CHANGE NOTICE QUOTATIONS FOR EXTRA OR DELETED WORK SHALL BE SUBMITTED COMPLETE WITH ITEMIZED COST BREAKDOWN OF LABOUR AND MATERIALS. FAILURE TO PROVIDE WILL RESULT IN REJECTION. ALL MECHANICAL CHANGE NOTICES SHALL BE PRICED IN ACCORDANCE WITH "MECHANICAL CONTRACTORS ASSOCIATION" AND "ALL PRICER", LESS 25% DISCOUNT FOR LABOUR COST. COST OF SITE SUPERINTENDENT SHALL NOT EXCEED 10% OF TOTAL HOURS OF LABOUR ESTIMATED FOR CHANGE OR REVISION. ALLOWABLE MAXIMUM PERCENTAGES FOR OVERHEAD AND PROFIT SHALL BE 7% AND 5% RESPECTIVELY.
- 1.28. TEMPORARY 1" THICK FILTERS SHALL BE PROVIDED AT ALL BASE BUILDING RETURN AIR OPENINGS WHICH REMAIN OPERATIONAL DURING CONSTRUCTION, AND SHALL BE REPLACED WEEKLY. REMOVE UPON CONSTRUCTION COMPLETION. UPON COMPLETION OF WORK, INFORM BUILDING MAINTENANCE THAT ALL BASE BUILDING HVAC EQUIPMENT ON FLOOR SHOULD HAVE FILTERS REPLACED.
- 1.29. PROVIDE INDEPENDENT SUPPORT FOR ALL COMPONENTS OF THE INSTALLATION.
- 1.30. PROVIDE START-UP SERVICES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION FOR THE NEW/RELOCATED EQUIPMENT SPECIFIED.
- 1.31. WHERE REQUIRED, ALL CONTROL WORK, WIRING, DEVICES, ETC., SHALL BE PROVIDED BY THE OWNER'S/LANDLORD'S APPROVED CONTRACTOR AND PAID FOR UNDER THIS CONTRACT.

		WIRING (LINE VOLTAGE) SHALL BE INSTALLED BY THE ELECTRICAL CONTRACTOR; ALL CONTROL WIRING (LOW VOLTAGE) SHA
RE GOVERNING FEDERAL, PROVINCIAL, AND	1.33.	FOR THE COMPLIANCE/SUBSTANTIAL COMPLETION LETTER, SUBMIT THE FOLLOWING APPLICABLE ELECTRONIC DOCUMENTS AIR AND WATER BALANCING REPORT, NFPA-13 INSTALLATION CONFORMANCE LETTER, WARRANTY, FIRE STOPPING COMPLET INSPECTOR'S CERTIFICATE, BACKFLOW DEVICE TEST REPORT, AND PERMIT NUMBER.
REQUIREMENT WILL APPLY.	2.	PLUMBING SYSTEMS:
	2.1.	ALL DOMESTIC WATER PIPING SHALL BE TYPE "L" COPPER CERTIFIED TO ASTM B42, WITH CAST BRASS OR WROUGHT COPPER TIN-ANTIMONY SOLDER. PRESSURE TEST ALL LINES IN ACCORDANCE TO LOCAL CODES BEFORE APPLYING INSULATION.
AL AND CONSTRUCTION DETAILS. C AREFULLY EXAMINE CLUDE FOR SUCH CONDITIONS IN BID PRICE. ALL NSFORMATIONS, AND SIMILAR PRODUCTS REQUIRED AS	2.2.	DOMESTIC WATER SOFT COPPER PIPING, WHERE NOTED ON DRAWINGS, SHALL BE TYPE "L" SOFT COPPER CERTIFIED TO AST IN A CONTINUOUS COIL OF PROPER LENGTH WITH NO JOINTS (IF POSSIBLE). WHERE REQUIRED, JOINTS SHALL BE COMPRESS
Y ALL SPACES IN WHICH EQUIPMENT, DUCTWORK, AND S IN, OR OMISSIONS FROM DOCUMENTS, OR HAVING	2.3.	ALL SANITARY DRAINS AND MAIN VENT STACKS SHALL BE CAST IRON (DWV) TO CAN/CSA B70, COMPLETE WITH MJ JOINTS. BR DRAINS UNDER 3" (75mm) AND CONDENSATE DRAINS MAY BE HARD TEMPERED COPPER DRAINAGE TUBE (DWV) TO ASTM B306 B16.23. PROVIDE TYPE "L" COPPER DRAIN PIPING FOR URINAL DRAIN PIPING FROM URINAL DRAIN OUTLET TO CAST IRON DRAI DRAIN PIPING.
AL LOCATION WITH NEW AND EXISTING SERVICES AND EXISTING SERVICES ARE APPROXIMATE ONLY. INTS OF FOLIDEMENT AND/OR MATERIALS, OTHER	2.4.	VERIFY EXISTING LOCATIONS AND INVERT ELEVATIONS FOR SANITARY DRAINS ON SITE BEFORE COMMENCEMENT OF WORK.
EQUIPMENT (NEW AND EXISTING) IS FULLY ACCESSIBLE EILING SPACE, AND FLOOR SPACE UNLESS OTHERWISE	2.5.	UNLESS OTHERWISE NOTED, SLOPE HORIZONTAL DRAINAGE PIPING 3"Ø (75mm) AND SMALLER AT 2% SLOPE, AND PIPING LAR DRAWINGS.
PLY AND TURN OVER TO THE MECHANICAL REQUIREMENTS OF THE RULES AND REGULATIONS OF	2.6.	PROVIDE CLEANOUTS SUITABLE IN ALL RESPECTS FOR THE INTENDED APPLICATION WHERE SHOWN ON THE DRAWINGS OR V (100mm) AND SMALLER SHALL BE SAME SIZE AS PIPE, OTHER CLEANOUTS SHALL BE A MINIMUM 4" (100mm).
EDENCE.	2.7.	PROVIDE ISOLATING GLOBE VALVES ON MAIN AND/OR BRANCH LINES, AND AT ALL EQUIPMENT OR FIXTURES SERVED WITH HO SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED. MAKE AND MODEL SHALL BE IN A SPECIFICATIONS, UNLESS NOTED OTHERWISE.
AND INSTALLATION TO COMPLETE THE WORK	2.8.	PROVIDE BACKFLOW PREVENTORS TO EQUIPMENT CONNECTIONS c/w DRAIN TO NEAREST FUNNEL DRAIN. BACKFLOW PREVE REQUIREMENTS, WITH MOUNTING HEIGHT 30" (750mm) TO 50" (1250mm) A.F.F.

PROVIDE DI-ELECTRIC COUPLINGS/UNIONS WHERE COPPER PIPING CONNECTS TO FERROUS METAL AND PLUMBING EQUIPMENT SUCH AS STEEL STORAGE TANKS, PRVS, AND/OR 2.9. STEEL, BLACK IRON, CAST IRON, OR GALVANIZED IRON PIPING.

- 2.10. CHECK AND VERIFY LOCATION OF EXISTING MECHANICAL AND ELECTRICAL INTERFERENCES IN CEILING SPACE OF FLOOR BELOW INCLUDING STRUCTURAL FLOOR SLAB IN ALL AREAS REQUIRING CORE DRILLING AND/OR CUTTING OF FLOOR SLAB.
- 2.11. FINAL LOCATION OF ALL NEW PLUMBING FIXTURES SHALL BE COORDINATED ON SITE WITH ALL TRADES. REFER TO ARCHITECTURAL DRAWINGS AND DETAILS FOR EXACT LOCATION OF PLUMBING FIXTURES. ALL PLUMBING FIXTURES SHALL BE PIPED COMPLETE WITH ALL NECESSARY APPURTENANCES, SUCH AS VENTS, SANITARY, HOT AND COLD WATER CONNECTIONS. ETC
- 2.12. INSTALL ALL COMPONENTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 2.13. INSTALL SHOCK ARRESTORS ON HOT AND COLD WATER PIPING SERVING FIXTURES OR EQUIPMENT EQUIPPED WITH QUICK CLOSING VALVES. 2.14. PLUMBING FIXTURES INCLUDING DOMESTIC HOT WATER HEATERS SHALL BE NEW, OF FIRST QUALITY, IN PERFECT CONDITION, AND INSTALLED IN BEST WORKMANLIKE MANNER. VERIFY PLUMBING FIXTURE QUANTITIES AND LOCATIONS WITH ARCHITECT'S/INTERIOR DESIGNER'S DRAWINGS.
- 2.15. PROVIDE ELECTRIC TRAP SEAL PRIMER SIMILAR TO PPP-SURFACE MOUNTED, FOR ALL NEW FLOOR DRAINS, FUNNEL FLOOR DRAINS, AND HUB DRAINS.
- 2.16. EXPOSED PIPING AND FITTINGS WITHIN WASHROOMS SHALL BE CHROME PLATED. PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPING PASSING THROUGH FINISHED SURFACES AND MILLWORK
- 2.17. PROVIDE REMOVABLE, FLEXIBLE, REUSABLE, WHITE MOULDED PLASTIC INSULATION KITS FOR BARRIER-FREE LAVATORY DRAIN PIPING AND POTABLE WATER SUPPLIES EXPOSED UNDER NEW BARRIER FREE LAVATORIES. ACCEPTABLE PRODUCTS ARE: 2.17.1. Truebo "Lav-Guard 2" E-Z Series
 - 2.17.2. Zeston "SNAP-TRAP" 2.17.3. McGuire Manufacturing Co. Inc. "ProWrap"
- 2.18. ALL PIPES, STORM PIPES, AND SANITARY PIPES LOCATED IN PARKING GARAGE AND UNHEATED AREAS SHALL BE HEAT TRACED c/w INSULATION AS SPECIFIED. ACCEPTABLE MANUFACTURER: RAYCHEM XL HEAT-TRACING, OR EQUIVALENT.
- 2.19. PROVIDE INDEPENDENT SUPPORTS EVERY 6'-0" (1800mm) MINIMUM FOR 1" (25mm) OR LESS COPPER PIPING, AND EVERY 8'-0" (2400mm) MINIMUM FOR COPPER PIPING 1-1/2"Ø (40mm) AND LARGER. PROVIDE INDEPENDENT SUPPORTS EVERY 8'-0" (2400mm) MINIMUM FOR ALL CAST IRON PIPING. REFER TO BASE BUILDING TENANT DESIGN MANUAL, AND USE WHICHEVER REQUIREMENT IS MORE STRINGENT.
- 2.20. WHERE DOMESTIC PIPING CONNECTIONS ARE REQUIRED TO EXISTING DOMESTIC WATER PIPING AND NO PROVISIONS ARE AVAILABLE, PROVIDE "FREEZING" AS REQUIRED USING BASE BUILDING STANDARDS - MECHANICAL CONTRACTOR SHALL VISIT THE SITE TO ASCERTAIN REQUIREMENTS BEFORE SUBMITTING PRICE. WHEN REQUIRED, OBTAIN WRITTEN APPROVAL FROM LANDLORD BEFORE COMMENCEMENT OF THIS WORK. COORDINATE SCHEDULING OF THIS WORK WITH PROJECT MANAGER, BUILDING MANAGER, AND BUILDING OPERATOR. SUBMIT SHOP DRAWINGS FOR "FREEZING" KIT AND IMPLEMENT LANDLORD APPROVED PROCEDURES AND MANUFACTURER'S RECOMMENDATIONS.
- 3. HVAC SYSTEM:
- 3.1. ALL NEW MATERIALS AND EQUIPMENT SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH BASE BUILDING STANDARDS.
- 3.2. ALL DUCTWORK AND HANGERS SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST ASHRAE AND SMACNA RECOMMENDATIONS AND STANDARDS
- 3.3. SEAL ALL JOINTS IN LOW AND MEDIUM PRESSURE DUCTWORK WITH TRANSCONTINENTAL MP DUCT SEALER.
- RECTANGULAR OR SQUARE GALVANIZED STEEL DUCTWORK SHALL BE PRIME LOCK FORMING QUALITY TO ASTM A525M, SATIN COATED FINISH ON DUCTWORK TO BE PAINTED, G60 COATING ON ALL OTHER DUCTWORK, WITH METAL GAUGES IN ACCORDANCE WITH PUBLISHED SMACNA "HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE" TO SUIT THE DUCT CONFIGURATION AND CLASSIFICATION.
- PROVIDE FLEXIBLE CONNECTORS BETWEEN ALL FANS AND ADJACENT DUCTWORK CONSISTING OF A PREASSEMBLED UNIT WITH 3" (75mm) LONG GALVANIZED DUCT CONNECTOR AND 3.5. 6" (150mm) WIDE HEAVY FIBERGLASS FABRIC WITH ELASTOMER COATING, DURO DYNE "DUROLON" OR EQUIVALENT.
- 3.6. FLEXIBLE DUCTWORK SHALL BE ALUMINUM SPIRAL WOUND CLASS ONE ULC APPROVED, FLEXMASTER "TRIPLE LOCK" OR EQUIVALENT. SECURE TO RIGID DUCT AND AT NECKS OF DIFFUSERS USING GEAR CLAMPS AND SEAL AIR TIGHT WITH DUCT SEALER. FLEXIBLE DUCTS SERVING DIFFUSERS SHALL BE INSTALLED AS ONE CONTINUOUS PIECE AND SHALL NOT EXCEED 8'-0" (2400mm), REMAINDER OF DUCT BRANCH SHALL BE ROUND RIGID DUCT. FLEXIBLE DUCTS SHALL BE OF DIAMETER EQUAL TO DIFFUSER NECK SIZE OR AS NOTED OTHERWISE.
- 3.7. PROVIDE RIGID ROUND DUCT TO ALL SUPPLY AIR DIFFUSERS INSTALLED IN DRYWALL CEILINGS.
- 3.8. PROVIDE A MINIMUM LENGTH OF THREE (3) DIAMETERS OF STRAIGHT RIGID DUCT TO A MAXIMUM LENGTH OF 4'-0" (1200mm) AT THE INLET OF EACH VAV TERMINAL UNIT.
- AIR TRANSFER DUCTS SHALL BE PROVIDED WHEREVER REQUIRED TO ENSURE ADEQUATE RETURN AIR AND/OR SMOKE EXHAUST AIR IN CEILING SPACE BACK TO RETURN AIR, 3.9. GENERAL EXHAUST AIR, AND SMOKE EXHAUST AIR OPENINGS. WHERE THERE IS A MULTI-TENANT CORRIDOR, ENSURE THAT TRANSFER AIR DUCTS ARE NOT INSTALLED IN CORRIDOR WALLS - REPORT TO MECHANICAL CONSULTANT OF ANY EXISTING TRANSFER AIR DUCTS FOUND BETWEEN THE RENOVATED SPACE AND THE MULTI-TENANT CORRIDOR. IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND CONFIRM AIR TRANSFER PROVISIONS WITH THE GENERAL TRADES.
- 3.10. AIR TRANSFER OPENINGS INDICATED WITHOUT DUCT (BAFFLE OPENINGS AND/OR DOOR UNDERCUTS) SHALL BE THIS CONTRACTOR'S RESPONSIBILITY. COORDINATE AND CONFIRM PROVISIONS WITH GENERAL TRADES.
- 3.11. NEW SUPPLY AIR DIFFUSERS/REGISTERS AND RETURN/EXHAUST AIR GRILLES SHALL MATCH BASE BUILDING OR BE OF TYPE AS INDICATED ON DRAWINGS. COORDINATE FINAL LOCATION WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS. RELOCATE AND REUSE EXISTING DIFFUSERS AND GRILLES WHERE POSSIBLE OR WHERE INDICATED ON PLANS.
- 3.12. PROVIDE BALANCING DAMPERS FOR ALL NEW DUCTWORK WITH SUITABLE MEANS OF CEILING ACCESS FOR BALANCING, AND VOLUME DAMPERS FOR ALL NEW SUPPLY AIR DIFFUSERS AND REGISTERS.
- 3.13. TEST, BALANCE, AND ADJUST AIR SYSTEMS TO OBTAIN THE DESIGN AIR QUANTITIES (±10%). MARK THE FINAL BALANCE POSITION ON ALL BALANCING DAMPERS AND ADJUSTABLE AIR TURNING DEVICES.
- 3.14. SUBMIT ELECTRONIC (PDF) COPY OF AIR TESTING AND BALANCING REPORTS TO THE MECHANICAL CONSULTANT, PCA (CZ). INDICATE ALL TEST RESULTS INCLUDING MAXIMUM AND MINIMUM AIR FLOW OF EACH DIFFUSER, SPACE THERMOSTAT SETTING, AIR VELOCITY, CLOSEST AND FURTHEST OUTLET SUPPLY AIR TEMPERATURES, DEFICIENCY SUMMARY, AND ROOM TEMPERATURES FOR ALL AIR SYSTEMS. THIS WORK SHALL BE PERFORMED BY THE OWNER'S/LANDLORD'S TESTING AND BALANCING CONTRACTOR OR BY A CONTRACTOR APPROVED BY THE OWNER/LANDLORD, AND COST SHALL BE INCLUDED UNDER THIS CONTRACT. BALANCING CONTRACTOR SHALL BE A MEMBER OF AABC OR NEBC. PROVIDE SIX (6) ADDITIONAL HOURS OF BALANCING WORK THAT SHALL BE PERFORMED AFTER THE TENANT HAS MOVED IN (MINIMUM 1 MONTH) FOR "COMFORT BALANCING."
- 3.15. BEFORE INSTALLATION, OBTAIN ARCHITECT'S/INTERIOR DESIGNER'S APPROVAL ON LOCATION OF ALL REGISTERS, DIFFUSERS, AIR TROFFERS, THERMOSTATS, ACCESS PANELS, ETC. 3.16. PROVIDE FIRE DAMPERS WHERE SHOWN ON DRAWINGS AND/OR WHERE REQUIRED BY LOCAL AUTHORITIES AND/OR APPLICABLE CODES IN DUCT SECTIONS c/w APPROVED ACCESS
- DOORS. FIRE DAMPERS SHALL BE ULC APPROVED, FABRICATED AND INSTALLED IN ACCORDANCE WITH NFPA 90A, CUA 90-1, AND LOCAL BYLAWS.

4. CONTROLS:

ARCHITECTURE | 49 605-75 WATER ST N. CAMBRIDGE ONTARIO CANADA N1R 7L6 TEL: 226-765-0800 | FAX: 519-740-6104 | ARCHITECTURE49.COM MMM Group Limite 582 Lancaster St W Kitchener, ON N2K 1M3 t 519-743-877 IMM GROUP f. 519-743-8778 www.mmm.ca 100218222 ISSUED FOR TENDER 3 | 11/23/16 AR MH ISSUED FOR 95% REVIEW MH 2 | 11/07/16 10/21/16 ISSUED FOR 50% REVIEW MH Drawn by |Approve NO. DATE DESCRIPTION |Dessine par|Approuve <u>REVISIONS</u> A Detail number Α A Numero de deta B Sur feuille numero B Sheet number Linear dimensions in Dimensions lineaires millimeters en millimetres Parcs Canada PARKS CANADA SOUTHWESTERN ONTARIO FIELD UNIT Type of Record / Type d'enregistrement Project title / Titre du projet FORT MALDEN ADDITION Drawing title / Titre du dessin MECHANICAL SPECIFICATION Plot Scale / Echelle 1:50 Drawn by/ Dessine par Date MH 10/13/16 Field Recording by / Date Releve—Temoin par NN//AA N/A Approved by / Approuve par Date 10/13/16 Checked by/ Verifie par Date SA 10/13/16 Project No./ No. du projet |Asset No. Sheet No./ Feuille No. PR0000812

Drawing Re No./No. du Dessin

M-3

- 4.1. ALL CONTROL WIRING SHALL BE CARRIED OUT BY DIV.15; POWER WIRING SHALL BE BY DIV.16. THE CONTROL SYSTEM SHALL AND FULLY FUNCTIONAL. DEMONSTRATE TO THE MECHANICAL CONSULTANT ON COMPLETION OF WORK.
- 4.2. ALL CONTROLS WORK SHALL BE PERFORMED BY THE OWNER'S/LANDLORD'S CONTROLS CONTRACTOR OR A CONTRACTOR /
- 4.3. MOUNTING HEIGHT OF ADJUSTABLE THERMOSTATS LOCATED IN A BARRIER-FREE PATH OF TRAVEL SHALL BE 3'-11" (1200mi ADJUSTABLE THERMOSTATS NOT LOCATED IN A BARRIER-FREE PATH OF TRAVEL (SUCH AS MECHANICAL ROOMS, ELECTRIC CODE), NON-ADJUSTABLE THERMOSTATS, AND TEMPERATURE SENSORS SHALL BE MOUNTED 5'-0" (1500mm) FROM FINISHED ARCHITECT/INTERIOR DESIGNER BEFORE ROUGHING-IN. DO NOT INSTALL IN VICINITY OF ELECTRICAL LIGHTING DIMMERS OF PRINTERS, TELEVISIONS, VENDING MACHINES ETC. DO NOT INSTALL HIDDEN BEHIND CABINETS OR FURNITURE

4.4. <u>BY-PASS BOXES:</u>

4.4.1. ELECTRIC ACTUATOR:

- ELECTRONIC CONTROL PACKAGE UTILIZES A DIRECT COUPLED, TRI-STATE FLOATING ACTUATOR OPERATING ON 24 4.4.1.1. 35 LB-IN TORQUE
- 4.4.1.2. MAGNETIC COUPLING PREVENTS STALL OF THE MOTOR WHEN AN END STOP IS REACHED
- 4.4.1.3. MINIMUM POSITION SET SCREW FOR FIELD ADJUSTMENT OF MINIMUM AIR VOLUME
- 4.4.1.4. LOW POWER CONSUMPTION (2.0 WATTS)
- 4.4.2. ELECTRONIC CONTROL PACKAGES:
 - 4.4.2.1. CONTROL SEQUENCE 2500 COOLING:
 - SEQUENCE OF CONTROL:
 - ON A RISE IN ROOM TEMPERATURE, THE THERMOSTAT ENERGIZES THE ACTUATOR. THE ACTUATOR SLOW TO INCREASE THE COLD AIR TO THE ROOM.
 - ON A FALL IN ROOM TEMPERATURE, THE THERMOSTAT REVERSES THE ABOVE ACTION. THE ACTUATOR SI
 - DECREASE THE COLD AIR TO THE ROOM.
 - 4.4.2.2. CONTROL SEQUENCE 2501 COOLING WITH REHEAT OR PERIMETER HEATING:
 - SEQUENCE OF CONTROL:
 - ON A RISE IN ROOM TEMPERATURE, THE THERMOSTAT ENERGIZES THE ACTUATOR. THE ACTUATOR SLOW TO INCREASE THE COLD AIR TO THE ROOM.
 - ON A FALL IN ROOM TEMPERATURE, THE THERMOSTAT REVERSES THE ABOVE ACTION. THE ACTUATOR S DECREASE THE COLD AIR TO THE ROOM.
 - IF THE ROOM TEMPERATURE CONTINUES TO FALL, THE THERMOSTAT ACTIVATES, AS THE CASE MAY BE, PERIMETER HEATING.
 - 4.4.2.3. CONTROL SEQUENCE 2502 HEATING WITH PERIMETER HEATING:
 - SEQUENCE OF CONTROL:
 - HEATING MODE: ON A FALL IN ROOM TEMPERATURE, THE THERMOSTAT ENERGIZES THE ACTUATOR. THE A CLOCKWISE TO OPEN, INCREASING THE HOT AIR TO THE ROOM.
 - IF THE ROOM TEMPERATURE CONTINUES TO FALL, THE THERMOSTAT ACTIVATES THE CONTROL RELAY OI REVERSE WILL HAPPEN IF ROOM TEMPERATURE RISES.

5. INSULATION

- 5.1. UNLESS OTHERWISE NOTED, ALL INSULATION MATERIALS MUST MEET REQUIREMENTS OF NFPA 90A AND MUST HAVE A FIRE SPREAD AND 50 FOR SMOKE DEVELOPED WHEN TESTED IN ACCORDANCE WITH CAN/ULC S102.
- 5.2. UNLESS OTHERWISE SPECIFIED, THERMAL PERFORMANCE OF INSULATION IS TO MEET OR EXCEED VALUES GIVEN IN TABLES HEATING AND HOT WATER SYSTEMS AND MINIMUM PIPING INSULATION THICKNESS COOLING SYSTEMS, AS STATED IN ANSI/A ONTARIO BUILDING CODE.
- 5.3. FIBERGLASS PIPE INSULATION FOR DOMESTIC HOT AND COLD WATER PIPING TO 2" (50mm) DIAMETER:
 - 5.3.1. JOHNS-MANVILLE "MICRO LOK", RIGID, MOULDED, SECTIONAL FIBERGLASS PIPE INSULATION WITH A FACTORY APPL SENSITIVE, LONGITUDINAL LAP SEALING SYSTEM. SECURE THE LAP OF THE INSULATION JACKET IN ACCORDANCE W TOGETHER ADJOINING SECTIONS OF THE INSULATION AND COVER THE BUTT JOINTS WITH STRIPS OF VAPOUR BAR ADHESIVE, INSULATE ELBOWS, VALVES AND SIMILAR FITTINGS WITH FACTORY FORMED FIBERGLASS INSULATION O SECTION INSULATION. LAMINATE IN PLACE WITH ADHESIVE AND SECURE WITH TWINE. APPLY A SKIM COAT OF INSUL OVERLAPPED 50% AND SET IN ADHESIVE, AND APPLY A COAT OF FINISHING CEMENT WITH A SMOOTH FINISH OR, INS SYSTEM "SMOKE LESS" 50/50 RATED PVC FITTING COVERS.
 - 5.3.2. AT EACH PIPE HANGER LOCATION (PIPE SUPPORTED WITHOUT ROLLER HANGER), PROVIDE A 6" (150mm) LENGTH OF SECTIONAL, CELLULAR GLASS PIPE INSULATION INSTEAD SPECIFIED FIBERGLASS INSULATION, WHERE INSULATED F THICKNESS OF ADJACENT FIBERGLASS PIPE INSULATIONS'S VAPOUR BARRIER JACKET OVERLAPPED A MINIMUM OF PLACE WITH ADHESIVE. PROVIDE GRINNELL CORPORATION FIG. NO. 167, OR EQUAL, GALVANIZED CARBON STEEL IN
 - 5.3.3. FILL PIPE SADDLE VOID WITH FIBERGLASS INSULATION.
 - 5.3.4. PROVIDE 1" (25mm) INSULATION TO 3" (75mm) AND LESS DOMESTIC COLD WATER, 1-1/4" (32mm) OR LESS DOMESTIC H WATER, 3" (75mm) OR LESS CHILLED WATER, 3" (75mm) OR LESS CONDENSER WATER, ALL HORIZONTAL SANITARY AN DRAINAGE PIPE. PROVIDE 1-1/2" INSULATION TO 4" (100mm) OR LARGER DOMESTIC COLD WATER, 1-1/2" (40mm) OR LA BUILDING HEATING WATER, 4" (100mm) OR LARGER CHILLED WATER, 4" (100mm) OR LARGER CONDENSER WATER, 4" CHILLED DOMESTIC COLD WATER PIPING FROM REMOTE CHILLER TO DRINKING FOUNTAIN/DISPENSER. PROVIDE 2" (HEATING WATER, AND ALL PIPING WITH HEAT TRACING LOCATED IN UNHEATED AREAS. PROVIDE 1/2" (15mm) THICK
 - 5.3.5. PROVIDE ALL LABOUR, MATERIALS, PRODUCTS, EQUIPMENT, AND SERVICES TO SUPPLY AND INSTALL THERMAL INSI MECHANICAL WORK AS INDICATED ON THE DRAWINGS AND SPECIFIED IN THIS SECTION OF THESE SPECIFICATIONS.
 - 5.3.6. MAINTAIN AMBIENT TEMPERATURES AND CONDITIONS REQUIRED BY MANUFACTURERS OF ADHESIVES, MASTICS, AN
 - 5.3.7. INSULATION MATERIALS MUST BE MANUFACTURED AT FACILITIES CERTIFIED AND REGISTERED WITH AN APPROVED STANDARD.
 - 5.3.8. ALL INSULATION PERTAINING TO DIVISION 15 SHALL BE CARRIED OUT BY ONE FIRM SPECIALIZING IN INSULATION WO MANUFACTURERS.
 - 5.3.9. ON HOT PIPING APPLICATIONS, HOLD INSULATION IN PLACE WITH FLARE TYPE STAPLES (OUTWARD CLINCH). 5.3.10. ON COLD PIPING APPLICATIONS, APPLY VAPOUR BARRIER JACKET OVER INSULATION AND SEAL LONGITUDINAL AND BAKELITE 230-39 ADHESIVE. SEAL ALL PIPE TERMINATIONS, INCLUDING FITTINGS, WALL PENETRATIONS, AND PIPE S WATER SYSTEMS, PROVIDE VAPOUR SEAL PIPE TERMINATIONS EVERY FOUR (4) PIPE SECTIONS.
 - 5.3.11. APPLY PIPE INSULATION OVER 1-1/2" (40mm) THICKNESS IN TWO (2) LAYERS WITH JOINTS STAGGERED.
 - 5.3.12. INSULATE FITTINGS WITH FABRICATED MITERED OR PREFORMED SECTIONS OF SPECIFIED INSULATION.
 - 5.3.13. INSULATE OVER FLANGES AND MECHANICAL COUPLINGS WITH SPECIFIED INSULATION AND THICKNESS, SIZED TO SI INSULATION AND ADJOINING PIPE INSULATION WITH SIMILAR MATERIAL.
 - 5.3.14. INSULATE VALVES AND INLINE COMPONENTS WITH FLEXIBLE INSULATION (3/4 LBS/CU.FT DENSITY) COMPRESSED NC SPECIFIED THICKNESS WITH APPROVED ASBESTOS FREE FINISHING CEMENT.
 - 5.3.15. UNDER ALL HANGERS USED ON CHILLED WATER AND DOMESTIC COLD WATER, PROVIDE AN INSERT BETWEEN SUPP LARGER.
- 5.4. DUCTWORK INSULATION:
 - 5.4.1. JOHNS-MANVILLE "800 SERIES SPIN GLASS FSK", RIGID FIBERGLASS INSULATION WITH A FACTORY APPLIED, FIBERGI PAPER (FSK) VAPOUR BARRIER FACING.
 - 5.4.2. JOHNS-MANVILLE "MICROLITE FSK", FLEXIBLE BLANKET TYPE FIBERGLASS INSULATION WITH A FACTORY APPLIED, I KRAFT PAPER (FSK) VAPOUR BARRIER FACING. INSULATION FOR CASINGS, PLENUMS AND EXPOSED RECTANGULAR RECTANGULAR DUCTWORK SHALL BE BLANKET TYPE.
 - 5.4.3. SECURELY BUTT TOGETHER ADJOINING SECTIONS OF INSULATION, SECURED IN PLACE WITH FULL COVERAGE OF ADHESIVE ON ALL SURFACES. IN ADDITION TO ADHESIVE, ON VERTICAL AND SUSPENDED SURFACES, SECURE INSULATION WITH PINS WELDED TO THE DUCTWORK ON 12" (300mm) TO 18" (450mm) CENTERS WITH THE INSULATION APPLIED OVERTOP OF PINS AND SECURED WITH CLIPS. ENSURE THAT THE INSULATION DOES NOT SAG OR BULGE.

L BE SUPPLIED AND INSTALLED COMPLETE IN ALL RESPECT		5.4.4. MAKE JOINTS IN VAPOUR BARRIER FACINGS WITH 3" (75mm) WIDE OVERLAPPING STRIPS OF INSULATION VAPOUR BARRIER FACING SECURED WITH A FULL COVERAGE OF ADHESIVE.
APPROVED BY THE OWNER/LANDLORD.		5.4.5. REQUIREMENTS: NEW SUPPLY AIR DUCTWORK, AS REQUIRED (EXCLUDING FLEXIBLE DUCTWORK): 1-1/2" (40mm) THICK;
m) FROM FINISHED FLOOR TO TOP OF THERMOSTAT.		EXHAUST DISCHARGE DUCTWORK FOR A DISTANCE OF 10' FROM EXTERIOR PENETRATION: 2" (50mm) THICK; OUTSIDE AIR DUCTWORK, COMPLETE 2" (50mm) THICK;
CAL ROOMS ETC. AS LISTED IN THE ONTARIO BUILDING D FLOOR. COORDINATE FINAL LOCATIONS WITH		EXHAUST PLENUMS WITHIN THE 10' DISTANCE: 2" (50mm) THICK; PANELS BEHIND UNUSED SECTIONS OF LOUVRE AND ALL DUCTWORK OUTSIDE OF BUILDING OR EXPOSED TO WEATHER: 2" (50mm) THICK INSULATION.
R HEAT GENERATING EQUIPMENT SUCH AS PHOTOCOPIERS,		5.4.6. NOTE: DO NOT INSULATE DUCTWORK EXPOSED IN AREA IT SERVES.
		5.4.7. JOHNS-MANVILLE, "LINACOUSTIC PERMACOTE HP", 1" (25mm) THICK ACOUSTIC LINING MATERIAL MEETING NFPA 90A AND ASTM C1071, G21 AND G22 REQUIREMENTS, NOT SUPPORTING MICROBIAL GROWTH AND FLAME SPREAD AND SMOKE DEVELOPED FIRE HAZARD RATINGS OF CAN4_S102, CONSISTING OF A BONDED FIBERGLASS MAT COATED ON THE INSIDE (AIR SIDE) FACE WITH A BLACK FIRE RESISTANT COATING."
4 VAC SUPPLY. STANDARD FEATURES INCLUDE:	5.5.	INSULATION FINISH:
		5.5.1. COVER EXPOSED PIPE AND DUCTWORK INSULATION WITH S. FATTAL ULC APPROVED "THERMOCANVAS" SECURED WITH A FULL 100% COVERING COAT OF WATERPROOF
		5.5.2 PROVIDE INSULATION WITH A MINIMUM THERMAL RESISTANCE OF 0.25 BTU IN/(HR_SQ FT °F) MEAN TEMPERATURE
		5.5.3. APPLY VAPOUR BARRIER OVER INSULATION ON COLD TEMPERATURE DUCTWORK.
		5.5.4. DUCTWORK LINED WITH ACOUSTIC INSULATION 1" (25mm) OR MORE IN THICKNESS NEED NOT BE EXTERNALLY INSULATED.
		5.5.5. PROTECT THE WORK OF THIS TRADE FROM BEING DEFACED BY OTHER TRADES. MAKE GOOD ANY DAMAGE AND LEAVE IN PERFECT CONDITION, READY FOR FINAL PAINTING.
		5.5.6. APPLY INSULATION OVER CLEAN DRY SURFACES, FIRMLY BUTTING ALL SECTIONS TOGETHER.
		5.5.7. MAKE GOOD INSULATION AT NEW INSULATION WORK INTERFACES.
WLY ROTATES THE DAMPER SHAFT COUNTER-CLOCKWISE	6.	FIRE STOPPING & SMOKE SEAL:
SLOWLY ROTATES THE DAMPER SHAFT CLOCKWISE TO	6.1.	AT LEAST 4 WEEKS BEFORE WORK COMMENCING, SUBMIT A SAMPLE OF EACH TYPE OF FIRESTOP AND SMOKE SEAL SYSTEM IN APPLIED FORM, FOR APPROVAL. IDENTIFY EACH SYSTEM WITH MANUFACTURER'S NAME AND TYPE, ULC DESIGNATION, AND PROPOSED USE. AFTER SAMPLES ARE REVIEWED, WORK IS TO CONFORM TO REVIEWED SAMPLES.
	6.2.	SUBMIT A PRODUCT DATA SHEET AND A WHIMIS SHEET FOR EACH FIRESTOPPING AND SMOKE SEAL PRODUCT. SUBMIT FOR REVIEW, FULL COMPANY NAME AND EXPERIENCE OF PROPOSED FIRESTOPPING AND SMOKE SEAL SYSTEM APPLICATOR. SUBMIT A LETTER OF PROPER FIRESTOPPING AND SMOKE SEAL CERTIFICATION AS SPECIFIED IN PART 3 OF
WLY ROTATES THE DAMPER SHAFT COUNTER-CLOCKWISE	6.3.	THIS SECTION. APPLICATOR IS TO HAVE A MINIMUM OF 3 YEARS OF SUCCESSFUL EXPERIENCE ON PROJECTS OF SIMILAR SIZE AND COMPLEXITY, AND APPLICATOR'S QUALIFICATIONS ARE TO BE
		REVIEWED BY CONSULTANT.
SLOWLY RUTATES THE DAMPER SHAFT CLOCKWISE TO	6.4.	COMPLY WITH FIRESTOPPING AND SMOKE SEAL PRODUCT MANUFACTURER'S RECOMMENDATIONS REGARDING SUITABLE ENVIRONMENT CONDITIONS FOR PRODUCT INSTALLATION.
THE CONTROL RELAY OF THE HEATING COIL OR THE	6.5.	FIRESTOPPING AND SMOKE SEAL SYSTEM MATERIALS SHALL BE ASBESTOS-FREE ELASTOMERIC MATERIALS TESTED, LISTED AND LABELLED BY ULC IN ACCORDANCE WITH ULC S115 AND ULC S101 FOR INSTALLATION IN ULC DESIGNATED FIRESTOPPING AND SMOKE SEAL SYSTEMS TO PROVIDE A POSITIVE FIRE, WATER AND SMOKE SEAL, AND A FIRE-RESISTANCE RATING (FLAME, HOSE STREAM AND TEMPERATURE) NOT LESS THAN FIRE RESISTANCE RATING OF SURROUNDING FIRE RATED CONSTRUCTION.
	6.6.	MATERIALS ARE TO BE COMPATIBLE WITH ABUTTING DISSIMILAR MATERIALS AND FINISHES AND COMPLETE WITH PRIMERS, DAMMING AND BACK-UP MATERIALS, SUPPORTS, AND ANCHORING DEVICES IN ACCORDANCE WITH FIRESTOPPING MANUFACTURER'S RECOMMENDATIONS AND ULC TESTED ASSEMBLY.
ACTUATORS SLOWLY ROTATES THE DAMPER SHAFT	6.7.	PIPE INSULATION FORMING PART OF A FIRE AND SMOKE SEAL ASSEMBLY IS SPECIFIED IN SECTION ENTITLED MECHANICAL INSULATION.
	7.	FIRE PROTECTION:
I THE ELECTRIC BASEBOARD HEATER.	7.1.	ALL FIRE PROTECTION WORK SHALL BE TO THE APPROVAL OF THE OWNER'S/LANDLORD'S INSURANCE UNDERWRITER AND CONFORM TO THE BASE BUILDING SPECIFICATIONS, NATIONAL FIRE PROTECTION ASSOCIATION, ONTARIO BUILDING CODE, AND ALL GOVERNING AUTHORITIES.
	7.2.	PROVIDE NEW FIRE EXTINGUISHERS WHERE SHOWN ON PLANS OR AS REQUIRED BY CODE, IN FULL ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL FIRE MARSHAL'S AND FIRE DEPARTMENT'S OFFICE. EXTINGUISHERS SHALL MATCH EXISTING BASE BUILDING STANDARDS. VERIFY HOSE LENGTH BEFORE ORDERING AND INSTALLATION.
E HAZARD RATING OF NOT MORE THAN 25 FOR FLAME	7.3.	UNLESS OTHERWISE SHOWN OR SPECIFIED IN CONTRACT DOCUMENTS, LOCATE FIRE EXTINGUISHER CABINETS SO THAT THE CENTERLINE IS APPROXIMATELY 1.2 M (4') ABOVE THE FINISHED FLOOR.
S ENTITLED MINIMUM PIPING INSULATION THICKNESS ASHRAE/IES STANDARD 90 1 VERSION REFERENCED IN THE	7.4.	LOCATE PORTABLE FIRE EXTINGUISHERS GREATER THAN 5kg SO THAT THE TOP IS NO MORE THAN 1.1 M (44") ABOVE THE FINISHED FLOOR.
	7.5.	LOCATE PORTABLE FIRE EXTINGUISHERS LESS THAN 5kg SO THAT THE TOP IS NO MORE THAN 1.4 M (56") ABOVE THE FINISHED FLOOR.
	8.	GAS PIPING & FITTINGS:
LIED "AP T PLUS" VAPOUR BARRIER JACKET WITH PRESSURE WITH MANUFACTURER'S INSTRUCTIONS. FIRMLY BUTT	8.1.	ALL MATERIAL AND INSTALLATION SHALL COMPLY TO LATEST CSA B149.1 "NATURAL GAS AND PROPANE" INSTALLATION CODE.
REIR JACKET MATERIAL SECURED IN PLACE WITH OF A THICKNESS AND INSULATION VALUE EQUAL TO THAT OF	8.2.	CONTRACTOR TO ARRANGE AND PAY FOR ALL PERMITS REQUIRED FOR NATURAL GAS INSTALLATION.
ISTEAD OF THE CEMENT AND CLOTH TAPE, APPLY SURE FIT	8.3.	CONTRACTOR TO MAKE ALL ARRANGEMENTS AND PROVISIONS WITH LOCAL GAS COMPANY FOE NEW INCOMING GAS MAINS, NEW METER, AND REGULATOR.
F PITTSBURGH CORNING "FOAMGLAS" MOULDED, PIPE IS "COLD PIPE", WRAP INSULATION WITH DOUBLE	8.4.	EXPOSED SCREWED PIPING NPS 1/2" (15mm) TO 2" (50mm) SHALL BE STEEL PIPE TO ASTM A53, SCHEDULE 40 ERW OR CW BLACK CARBON STEEL. JOINING MATERIAL FOR SCREWED FITTINGS SHALL BE PULVERIZED LEAD PASTE. STEEL PIPE SCREWED FITTINGS SHALL BE MALLEABLE IRON, CLASS 150. UNIONS SHALL BE MALLEABLE IRON, CLASS 250 BRASS TO IRON GROUND SEAT, TO ASTM A47M. NIPPLES SHALL BE SCHEDULE 40 TO ASTM A53.
F 1" (25mm) ON ADJACENT INSULATION AND SECURED IN NSULATION PROTECTION SHIELD TO MSS SP 69.	8.5.	VALVE SHALL BE PROVINCIAL CODE APPROVED, CLASS 175 SEMI-STEEL BODY, LUBRICATED PLUG TYPE WITH LEVEL OPERATION FOR NPS 6" (150mm) AND SMALLER.
	8.6.	SLOPE GAS PIPING DOWN IN DIRECTION OF FLOW TO LOW POINTS. INSTALL DRIP LEGS AT ALL LOW POINTS IN PIPING SYSTEM AND AT EACH CONNECTION TO EQUIPMENT.
HOT WATER, 1-1/4" (32mm) OR LESS TEMPERED DOMESTIC	8.7.	TEST SYSTEM IN ACCORDANCE WITH CAN/CGA B149, PURGE AFTER PRESSURE TEST IN ACCORDANCE WITH CAN/CGA B149 AND PAINT ENTIRE NEW GAS PIPING YELLOW IN ACCORDANCE WITH LATEST GAS UTILIZATION CODE.
ARGER DOMESTIC HOT WATER, 1-1/4" (32mm) OR LESS	8.8.	COMPLETED INSTALLATION TO BE CERTIFIED BY REPRESENTATIVE OF LOCAL GAS COMPANY.
(50mm) INSULATION TO 1-1/2" (42mm) OR LARGER BUILDING INSULATION TO ALL CONDENSATE DRAINS.	9.	REFRIGERANT ACR TUBING (SPLIT A/C SYSTEMS):
SULATION, VAPOUR BARRIERS, AND FINISHES FOR	9.1.	NEW REFRIGERANT TUBING SHALL BE TYPE "ACR" SEAMLESS COPPER TUBING WITH WROUGHT COPPER FITTINGS AND SILVER BRAZED JOINTS.
	9.2.	DESIGN AND INSTALLATION SHALL CONFORM TO CSA STANDARD B52, ONTARIO BUILDING CODE, AIR CONDITIONING AND REFRIGERANT INSTITUTE, AND EQUIPMENT MANUFACTURER'S
ND INSULATING CEMENTS.		
J REGISTRAR TO CONFORM TO ISO 9000 QUALITY	9.3.	SELECT TUBING, FITTINGS, AND COMPONENTS TO SUIT SYSTEM OPERATING AND TEST PRESSURES.
ORK. DO NOT MIX SIMILAR PRODUCTS OF MULTIPLE	9.4.	ALL ELBOW FITTINGS SHALL BE LONG RADIUS TYPE.
	9.6	PROVIDE PERMANENT GUARDS AS REQUIRED TO PROTECT TUBING AND FITTINGS FROM DAMAGE
O CIRCUMFERENTIAL LAPS WITH CHILDERS CP82 OR	9.7.	SLOPE HORIZONTAL RUNS SLOPED TOWARDS THE COMPRESSOR AT A RATE OF 1/2" PER FOOT (15mm PER 300mm). SUPPORT LINES AT INTERVALS OF NOT MORE THAN 8'-0" (2400mm)
SUPPORTS WITH VAPOUR BARRIER MASTIC. FOR CHILLED	9.8.	WITH SUITABLE ANCHORS. USE RUBBER GROMMETS BETWEEN TUBING AND CLAMPS TO PREVENT LINE CHAFING. WHERE VERTICAL RUNS OF MORE THAN 5'-0" (1500mm) OCCUR IN A SUCTION LINE, IT SHALL ENTER AT THE TOP OF THE NEXT HORIZONTAL SECTION. ARRANGE PIPING SO REFRIGERANT OR OIL CANNOT DRAIN FROM SUCTION LINE INTO COIL.
	9.9.	KEEP TUBING RUNS AND NUMBER OF ELBOWS AND FITTINGS TO A MINIMUM.
SUIT FLANGE DIAMETERS. FILL SPACES BETWEEN	9.10.	USE FLEXIBLE METAL HOSE WHERE REQUIRED TO REDUCE TUBING VIBRATION.
OT MORE THAN 50% OF ORIGINAL THICKNESS, BUILD UP TO	9.11.	TUBING TO REMOTE CONDENSING UNITS SHALL INCLUDE SHUT OFF VALVES.
C	9.12.	ENSURE TUBING IS DEHYDRATED, TESTED, ADEQUATELY CHARGED, AND GAS TIGHT.
PORT SHIELD AND PIPING FOR PIPING 1-1/2" (40mm) OR	9.13.	FOR ALL ACR TUBING, FLEXIBLE FOAM ELASTOMERIC IS TO BE CLOSED CELL, SLEEVE TYPE, LONGITUDINALLY SPLIT SELF-SEAL, FOAMED PLASTIC PIPE INSULATION WITH A WATER VAPOUR TRANSMISSION RATING OF 0.10 IN ACCORDANCE WITH ASTM E96, PROCEDURE B, AND REQUIRED INSTALLATION ACCESSORIES. ACCEPTABLE PRODUCTS ARE: .1 ARMACELL AP/ARMAFLEX SS; 2 IK INSULATION GROUP K-FLEX "IS" SELE-SEAL DIDE INSULATION
GLASS REINFORCED FOIL AND FLAME RETARDANT KRAFT	0.44	
FIBERGLASS REINFORCED, FOIL AND FLAME RETARDANT	9.14.	WATER-TIGHT WEATHER-PROOF INSTALLATION. INSULATE FITTINGS WITH BLANKET TYPE GLASS FIBRE INSULATION OF A THICKNESS AND INSULATING VALUE EQUAL TO THE SECTIONAL INSULATION AND SECURED IN PLACE WITH ADHESIVE AND WIRE. JACKET FITTINGS WITH MANUFACTURED ALUMINIUM FITTING COVERS SEALED WATER-TIGHT.
R DUCTWORK SHALL BE RIGID BOARD TYPE. CONCEALED	9.15.	INSTALL FLEXIBLE ELASTOMERIC PIPE INSULATION IN STRICT ACCORDANCE WITH MANUFACTURER'S PUBLISHED INSTRUCTIONS TO SUIT THE APPLICATION, AND USING ADHESIVE, JOINT SEALANTS AND FINISH TO PRODUCE A WATER-TIGHT INSTALLATION. INSULATE REFRIGERANT SUCTION AND HOT GAS WITH 1" (25mm) FLEXIBLE ELASTOMERIC PIPE INSULATION.

9.16. FOR AIR CONDITIONING SYSTEMS WITH OVER 5 TONS OF COOLING CAPACITY, SUBMIT ALL REQUIRED REGISTRATION FORMS, DOCUMENTS, AND FEES TO TSSA. PROVIDE ALL WORK AND DOCUMENTS REQUIRED AS REQUIRED BY TSSA UNTIL WORK COMPLETION.

					PLUMB	ING FIX	TURE S		Ξ
	30L		MFG AND	SEI	RVICE A	ND SIZ	E (DIAN	IETER)	
TAG	SYM	DESCRIPTION	MODEL	DRAIN	VENT	DCW	DHW	ELEC.	REMARKS
L-1	Ŀ.	STAFF WASHROOMS, BARRIER-FREE, WALL HUNG, MANUAL FAUCET,	AMERICAN STANDARD UNIVERSAL ACCESS #9141.011	32MM (1 ¹ / ₄ "Ø)	32MM (1 ¹ / ₄ "Ø)	13MM (¹ / ₂ "Ø)	13MM (¹ / ₂ "Ø)	MANUAL	AMERICAN STANDARD WHEELCHAIR #9141.011 BASIN, 3 HOLES, 4" (102 MM) CENTER, 509 MM X 686 MM X 168 MM (20-1/16" X 27" X 6-5/8") HIGH, VITREOUS CHINA, FOR CARRIER WITH CONCEALED ARMS, FRONT OVERFLOW, FAUCET LEDGE. AMERICAN STANDARD CERAMIX #2000.100.002 SINGLE HANDLE FAUCET, 4" (102 MM) CENTERSET, BRASS, 4.6 LPM (1.215 GPM) AERATOR OUTLET, 117 MM (4-5/8") PROJECTION REACH, MET/ LEVER HANDLE, ADJUSTABLE HOT LIMIT SAFETY STOP. LAWLER #TMM-1070, BELOW DECK MECHANICAL WATE MIXING VALVE, BRONZE BODY, TEMPERATURE ADJUSTING DIAL, 10 MM (3/8") INLETS AND OUTLET COMPRESSION FITTINGS, HIGH TEMPERATURE THERMOSTATIC LIMIT STOP, SHUT-OFF WITH AUTOMATIC RESI WHEN TEMPERATURE EXCEEDS 120 °F (48.8 °C), INTEGRAL CHECKS, OFFER TEMPERATURE RANGE FROM FULL COLD THROUGH 46 °C (114.8 °F). AMERICAN STANDARD #7723.018.C OFFSET OPEN GRID DRAIN, CHROME PLATED CAST BRASS BODY, 32 MM (1-1/4") TAILPIECE. PROVIDE FAUCET SUPPLIES, CHROME PLATED FINISH AI METAL CONSTRUCTION, LIGHT DUTY RESIDENTIAL ANGLE STOPS, ESCUTCHEONS AND FLEXIBLE METAL RISERS, LOW LEAD. PROVIDE P-TRAP, CHROME PLATED, ADJUSTABLE ALL METAL CONSTRUCTION, 32 MM (1-1/4") SIZE AND ESCUTCHEON. MCGUIRE PROWRAP #PW2000WC SANITARY COVERING VANDAL-RESISTANT, FLEXIBLE SEAMLESS MOULDED CLOSED-CELL PVC RESIN, FORMULATED WITH ANTI-MICROBIAL ADDITIVE TO LIMIT THE GROWTH OF FUNGUS AND BACTERIA, TO EXPOSED PIPING (TO PROTECT AGAINST HEAT/CONTUSIONS) AS PEF LOCAL CODES. WATTS #WCA-411-WC, BASIN CARRIER, CONCEALED ARMS, WALL FLANGES TO ATTACH TO BACKING PLATE SECURED IN WALL WITH LOCKING DEVICE AND LEVELLING SCREWS, HEAVY GAUGE STEEL UPRIGHTS WITH INTEGRAL WELDED FEET. FOR ONE UNIT: 102 MM (4") FOR TWO TO SIX UNITS IN A ROW: 152 MM (6") FINISHED METAL STUD WALL TO BACK OF PIPE SPACE.
WC-1	لح	STAFF WASHROOMS, BARRIERFREE FLOOR MOUNTED MANUAL FLASH TANK	AMERICAN STANDARD CADET PRO #215AA.154.020	100MM (4"Ø)	50mm (2"Ø)	13mm (¹ / ₂ "Ø)	-	MANUAL	AMERICAN STANDARD CADET PRO RIGHT HEIGHT ELONGATED #215AA.154.020 TOILET, 419 MM HIGH, WHITE VITREOUS CHINA WITH EVERCLEAN ANTIMICROBIAL SURFACE WHICH INHIBITS THE GROWTH OF STAIN AND ODOR CAUSING BACTERIA MOLD AND MILDEW, FLOOR MOUNTED, CADET FLUSHING SYSTEM WITH POWERWASH RIM SIPHON FLUSHING SYSTEM WHICH SCRUBS BOWL WITH EVERY FLUSH, 4.8 L (1.28 US GAL) PER FLUSH, RAISED SANITARY BAR AND FOUR (4) POINTS TANK STABILIZATION, 229 MM X 203 MM (9" X 8") WATER SURFACE, TWO (2) PIECE, 'SPEED CONNECT' TANK ASSEMBLY, LINED TANK, OVERSIZED 76 MM (3") FLUSH VALVE WITH FLAPPER, METAL SHANK FILL VALVE, 305 MM (12") ROUGH-IN, ELONGATED BOWL, 54 MN (2-1/8") FULLY GLAZED INTERNAL TRAPWAY, FLOOR OUTLET, BOLT CAPS. CENTOCO #820STS.001 TOILET SEAT EXTRA HEAVY DUTY, FOR ELONGATED BOWL, OPEN FRONT, WHITE SOLID PLASTIC, WITH COVER, STAINLESS STEEL CHECK HINGES, METAL FLAT WASHERS STAINLESS STEEL POSTS AND NUTS. PROVIDE TOILET SUPPLY, CHROME PLATED FINISH ALL METAL CONSTRUCTION, LIGHT DUTY RESIDENTIAL ANGLE STOPS, PIPE NIPPLE, ESCUTCHEON AND FLEXIBLE METAL RISER. PROVIDE FLOOR FLANGE, (SAME MATERIAL AS THE CONNECTING PIPE DRAIN), WITH ALL BRASS BOLTS AND WITH RUBBER GASKET.
KS-1		COUNTERTOP MOUNT SINK - SINGLE HANDLE FAUCET BELOW DECK MECHANICAL WATER MIXING VALVE	FRANKE COMMERCIAL #LBS6808	32MM (1 ¹ / ₄ "Ø)	32MM (1 ¹ / ₄ "Ø)	13MM (¹ / ₂ "Ø)	13MM (2 ⁺ Ø)	MANUAL	FRANKE COMMERCIAL #LBS6808-1/1 SINGLE BOWL COUNTERTOP MOUNT SINK, 1 HOLE, 508 MM (20") WIDE X 521 MM (20-1/2") LONG X 203 MM (8") HIGH DEEP, COUNTER MOUNTED, BACKLEDGE, GRADE 18 20 GA. (0.9 MM) TYPE 302 STAINLESS STEEL, SELF-RIMMING, SATIN FINISH RIM AND BOWLS, MOUNTIN KIT PROVIDED, FULLY UNDERCOATED TO REDUCE CONDENSATION AND RESONANCE, FACTORY APPLIED RIM SEAL, 3-1/2" (89 MM) CRUMB CUP WASTE ASSEMBLY WITH 1-1/2" (38 MM) TAILPIECE. AMERICAN STANDARD COLONY SOFT #4175.300.002 SINGLE HANDLE FAUCET, POLISHED CHROME FINISH, CENTER HOLE ONLY, 47 MM WASHERLESS CERAMIC DISC VALVE, 8.3 LPM (2.2 GPM) SPRAY ASSEMBLY, BRASS SWING SPOUT, 227 MM (8-15/16") PROJECTION REACH, METAL LEVER HANDLE, PULL-DOWN SPRAY WITH ADJUSTABLE SPRAY PATTERN AND PAUSE FEATURE. LAWLER #TMM-1070, BELOW DECK MECHANICAL WATER MIXING VALVE, BRONZE BODY, TEMPERATURE ADJUSTING DIAL, MM (3/8") INLETS AND OUTLET COMPRESSION FITTINGS, HIGH TEMPERATURE THERMOSTATIC LIMIT STOP, SHUT-OFF WITH AUTOMATIC RESET WHEN TEMPERATURE EXCEEDS 120 °F (48.8 °C), INTEGRAI CHECKS, OFFER TEMPERATURE RANGE FROM FULL COLD THROUGH 46 °C (114.8 °F). NOTE : PROVIDI TEE, ADAPTORS AND FLEX. COPPER TUBING TO SUIT INSTALLATION. PROVIDE TEMPERED WATER TC HOT SIDE OF FAUCET. PROVIDE FAUCET SUPPLIES, CHROME PLATED FINISH ALL METAL CONSTRUCTION, LIGHT DUTY RESIDENTIAL ANGLE STOPS, ESCUTCHEONS AND FLEXIBLE METAL RISERS, LOW LEAD. PROVIDE P-TRAP, ADJUSTABLE ALL METAL CONSTRUCTION, 38 MM (1-1/2") SIZE, AND ESCUTCHEON
FD-1		FLOOR DRAIN, FINISHED AREA, ROUND STRAINER	WATTS, MODEL #FD-100-C-7-A6-1	AS PER DWG	-	-	-	-	WATTS #FD-100-C-7-A6-1 FLOOR DRAIN - EPOXY COATED, CAST IRON BODY, REVERSIBLE FLASHING CLAMP WITH PRIMARY AND SECONDARY WEEPHOLES, TRAP PRIMER CONNECTION WITH PLUG, NO H OUTLET. 6" (152 MM) DIAMETER NICKEL BRONZE, ADJUSTABLE ROUND STRAINER.
FD-2		FLOOR DRAIN, UNFINISHED AREA, ROUND STRAINER	WATTS, MODEL #FD-100-C-7-A6-1-G-50	AS PER DWG	-	-	-	-	WATTS #FD-100-C-7-A6-1-G-50 FLOOR DRAIN - EPOXY COATED, CAST IRON BODY, REVERSIBLE FLASHING CLAMP WITH PRIMARY AND SECONDARY WEEPHOLES, TRAP PRIMER CONNECTION WITH PLUG, NO HUB OUTLET. 6" (152 MM) DIAMETER NICKEL BRONZE, ADJUSTABLE ROUND STRAINER, 4" X (102 MM X 229 MM) OVAL CAST IRON FUNNEL.
со		ADJUSTABLE FLOOR CLEANOUT	WATTS MODEL #CO-260	AS PER DWG	-	-	-	-	WATTS #CO-260 CLEANOUT - EPOXY COATED, CAST IRON BODY, REMOVABLE, GAS TIGHT, GASKETED BRASS PLUG, 8" (203 MM) ROUND, ADJUSTABLE GASKETED, HEAVY DUTY DUCTILE IRON COVER, NO F OUTLET.
TPD-1		TRAP SEAL PRIMER ,WALL MOUNTED, ELECTRONIC, FLUSH MOUNT CABINET, MAX 12 TRAPS	PRECISION PLUMBING PRODUCT MODEL #PT-12	-	-	13MM (<u>1</u> 2 "Ø)	-	-	P.P.P #PT-12 TRAP SEAL PRIMER, FLUSH MOUNTED CABINET WITH KEY LOCK FIRE RATED SS ACCESS DOOR ACTIVATED BY A 20 MM (3/4") NORMALLY CLOSED 110V SOLENOID VALVE, DESIGNED TO INTERFACE WITH LOW VOLTAGE ENERGY MANAGEMENT SYSTEMS CONTROL, 20MM (3/4")DIAMETER CONNECTION ANTI-SIPHON ATMOSPHERIC VACUUM BREAKER. PRESET 24HR ADJUSTABLE TIMFR

	SCHEDULE OF GRILLES & DIFFUSERS							
TYPE	SERVICE	MANUFACTURER	SIZE	MODEL NO.	VOLUME CONTROL	FINISH	DESCRIPTION	
А	CEILING SUPPLY	EH PRICE	300x300	SCDA	YES	B-12	4 CONE, STEEL	
В	CEILING RETURN	EH PRICE	300x300	80	YES	B-12	ALUMINUM	
С	EXHAUST	EH PRICE	150x150	80	NO	B-12	ALUMINUM	

NOTES:

1. ALL DIFFUSER AND GRILLE FRAMES SHALL SUIT CEILING CONSTRUCTION.

2. ALL DAMPERS SHALL BE OF THE SAME MATERIAL AS THE DIFFUSER OR GRILLE.

3. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING CONSTRUCTION.

1. MULTI-PORT, IN SHOT BURNERS

2. HEAVY GAUGE ALUMINIZED STEEL HEAT EXCHANGER

- 4. DIFFUSERS / GRILLES IN DRYWALL CEILING TO HAVE ADAPTER FRAME OF THE SAME MATERIAL AS DIFFUSERS / GRILLES.
- 6. ALUMINUM LINEAR BAR GRILLE, 125mm WIDE, LENGTH TO MEASURE ON SITE. PENCIL PROOF, SUITABLE FOR NEW MILLWORK.

5. GRILLE AND DIFFUSER COLOUR TO SUIT ARCHITECTURAL DIRECTION.

SCHEDULE OF FURNACE SUPPLY FAN COMBUSTION FAN HEATING ELECTRICAL BASIS OF DESIGN TAG SUPPLY MOTOR MOTOR STAGE 1 STAGE 2 AIR POWER SPEED POWER FLUE
 INPUT
 OUTPUT
 INPUT
 OUTPUT
 (mm)

 _(kW)
 _(kW)
 _(kW)
 _(kW)
 V/Ø/Hz MCA MOCP TYPE (L/S) (kW) (RPM) (W) MANUFACTURER MODEL 0.75 3,000 15 AHU-1 TRANE TUD2C100A9V5VB GAS 19 15.2 29.3 23.1 100Ø 943 115/1/60 14.9 20

NOTES:

3. LOW ENERGY POWER VENT BLOWER FOR GAS DISCHARGE

5. MULTISPEED, DIRECT DRIVE BLOWER

ERV SCHEDULE BASIS OF DESIGN OUTSIDE AIR SIDE EXHAUST SIDE SERVING TEMP PRESSURE PRESSURE UNIT TAG TEMP AIR FLOW AIR FLOW LOCATION AREAS/ SENSIBLE RECOVERY MANUFACTURER DROP DROP POWER POWER FLA MODEL ROOMS EFFICIENCY L/s °C Ра L/s °C Ра W % W TRANE ERV-1 M-1 WASHROOM SHR3205RD 94.3 21.1 150 75.5 -16.7 200 168 67 300 2.5 120/1/60 NOTES: 1. ALUMINUM HEAT RECOVERY CORE 4. 4 FANS, BACKWARD CURVED BLADES EXPANDED POLYSTYRENE 7. (4) WASHABLE ELECTROSTATIC FILTERS 2. SEPARATE DEFROST CYCLE OUTLET 5. 24 Ga GALVANIZED STEEL 3. DUAL ACCESS DOORS 6. CABINET FULLY INSULATED WITH 25mm HIGH DENSITY

4. DUAL SOLENOID COMBINATION GAS VALVE AND REGULATOR

6. THERMOSTAT.

- - MOTOR

MARKS

L COUNTERTOP MOUNT SINK, 1 HOLE, 508 MM (20") DEEP, COUNTER MOUNTED, BACKLEDGE, GRADE 18-10 -RIMMING, SATIN FINISH RIM AND BOWLS, MOUNTING E CONDENSATION AND RESONANCE, FACTORY ASTE ASSEMBLY WITH 1-1/2" (38 MM) TAILPIECE. 02 SINGLE HANDLE FAUCET, POLISHED CHROME S CERAMIC DISC VALVE, 8.3 LPM (2.2 GPM) SPRAY 6") PROJECTION REACH, METAL LEVER HANDLE, ATTERN AND PAUSE FEATURE. LAWLER #TMM-1070, E, BRONZE BODY, TEMPERATURE ADJUSTING DIAL, 10 TINGS, HIGH TEMPERATURE THERMOSTATIC LIMIT TEMPERATURE EXCEEDS 120 °F (48.8 °C), INTEGRAL JLL COLD THROUGH 46 °C (114.8 °F). NOTE : PROVIDE SUIT INSTALLATION. PROVIDE TEMPERED WATER TO S, CHROME PLATED FINISH ALL METAL E STOPS, ESCUTCHEONS AND FLEXIBLE METAL LE ALL METAL CONSTRUCTION, 38 MM (1-1/2") SIZE,

COATED, CAST IRON BODY, REVERSIBLE FLASHING OLES, TRAP PRIMER CONNECTION WITH PLUG, NO HUB ADJUSTABLE ROUND STRAINER.

DXY COATED, CAST IRON BODY, REVERSIBLE RY WEEPHOLES, TRAP PRIMER CONNECTION WITH ICKEL BRONZE, ADJUSTABLE ROUND STRAINER, 4" X 9"

ST IRON BODY, REMOVABLE, GAS TIGHT, GASKETED, ASKETED, HEAVY DUTY DUCTILE IRON COVER, NO HUB

REMARKS	
1,2,3,4,5	
1,2,3,4,5	
1,2,3,5	

SCHEDULE OF ELECTRICDOMESTIC HOT WATER HEA STORAGE DIMENSIONS RECOVERY ELEMENT WATTAGE TANK VOLTAGE STORAGE INPUT TAG QTY LOCATION CAPACITY CAPACITY CAPACITY Ø x H (LITRES) (mm) MODEL NO. TEMP. (KW) (LPH) V/Ø/Hz UPPER LOWER DHWT-1 1 M-2 DEL-6 362 x 394 60°C 1500 1500 1.5 23 120/1/60 23

NOTES: 1. DISCONNECT SWITCH

2. RECOVERY CAPACITY BASED ON 30°C

TEMPERATURE RISE

4. REFER TO SPECIFICATION FOR ADDITIONAL

3. PROVIDE SUITABLE RELIEF VALVE

REQUIREMENTS

GAS UNIT HEATER SCHEDULE BASIS OF DESIGN ELECTRICAL OUTPUT AIRFLOW WEIGHT CAPACITY UNIT TAG LOCATION TYPE POWER VOLT/PH/HZ L/S KG MANUFACTURER MODEL (kW) (W) GAS 5.9 193 140 120/1/60 1,2 M-1 REZNOR В 42 UH-1 NOTES:

1. THERMOSTAT 2. CEILING MOUNTED

					ELECTRIC	CABINE	TUNIT	HEATER SCH	EDULE	
		BASIS OF DESIGN			OUTPUT	AIRFLOW	ELECTRICAL		WEIGHT	
UNIT TAG	LOCATION	MANUFACTURER	MODEL	ТҮРЕ	CAPACITY (kW)	L/S	POWER (W)	VOLT/PH/HZ	KG	
CUH-1	M-1	STELPRO	WF1501	ELECTRIC	1.5	35	1500	120/1/60	2.7	1, 2, 3, 4
NOTES: 1. WALL MC 2. THERMO	DUNTED	3. WHITE 4. EPOX	E COLOR Y POLYESTER		ТАС	5. THE AUT	RMAL PRO OMATIC RE	TECTION WITH SET		
		FINISH	4			6. HIGH	I QUALITY I	NICHROME ELEM	ENT	

					ELE	ECTRIC B	ASEBOA	ARD HEA	TER SCHEDU	JLE
		BASIS OF DES		OUTPUT	LENGTH	WIDTH	ELECTRICAL		WEIGHT	
UNIT TAG	LOCATION	MANUFACTURER	MODEL	ТҮРЕ	CAPACITY (W/m)	(mm)	(mm)	POWER (W)	VOLT/PH/HZ	KG
BB-1	M-1	STELPRO	BAL0301W	ELECTRIC	492	732	66	300	120/1/60	3
NOTES:								-		
1. FLOOR M	IOUNTED	3. WHIT	E COLOR			5. TH			VITH	7. C
2. BUILT IN	THERMOSTAT	4. EPOX COAT	Y POLYESTER FINISH	R POWDER		6. SIN STI	IGLE TUBUI	LAR, STAIN HED ELEME	LESS ENT	

						AIR CON	DITIONING UNI	T SCHE	DULE	
			BASIS OF DESIGN		CAPACITY			ELECTRICA		CTRICAL
UNIT TAG	LUCATION	SERVICE	MANUFACTURER	MODEL	kW	REFRIGERANT TIPE	UNIT SEEK	MOCP	MCA .	FLA
AC-1	M-1	-	TRANE	4TTR7060	17.5	R-410A 18		60	41	1.3
NOTES:										
1. WEATHE	R PROOF DIS	SCONNECT SWIT	TCH 4. HIGH	& LOW PRESSUR	E CONTROLS	7. HIGH PR	RESSURE SWITCH		9.	CENTR
2. MIN 100m	nm CURB		5. CON	DENSER FAN SWI	ТСН	8. COMPRI	ESSOR HIGH TEMPER	ATURE &		
3. PROGRA	MMABLE THE	ERMOSTAT	6. COM	PRESSOR CONTA	CTOR SWITCH	TRESSO	RETROTECTION			

			BY-PASS TE	RMINAL UNIT SCHEDUL	.E
		BASIS OF E	DESIGN	AIRF	LOW
BOX TAG	SIZE		MODEL	MINIMUM	
	0.11	MANOTACTORER	MODEL	L/S	
6	6	EH PRICE	LGB	47	
NOTES:					

1. BY-PASS BOX TO C/W ELECTRONIC CONTROLLER. CONTROLS CONTRACTOR TO COORDINATE SEQUENCE OF OPERATION WITH THE MECHANICAL DRAWING

2. BY-PASS BOX TO C/W ROUND BY-PASS COLLAR

3. BY-PASS BOX TO C/W A 914mm (3') SOUND ATTENUATOR

REMARKS

1 TO 6

ELECTRICAL WEIGHT V/ PH / HZ KG REMARKS 36 1 to 7

ATERS	
REMARKS	
REFER TO NOTES	CAMBRIDGE ONTARIO CANADA N1R 7L6 TEL: 226-765-0800 FAX: 519-740-6104 ARCHITECTURE49.COM
	MMM Group Limited
	582 Lancaster St W Kitchener, ON N2K 1M3 t. 519-743-8777 f. 519-743-8778
	-
REMARKS	
	SED PROFESSIONAL SE
	S. ANSARI-ABYANEH TO 100218222
, 5, 6	Boundary Charles
	VCE OF OIL
	3 11/23/16 ISSUED FOR TENDER MH AB
	2 11/07/16 ISSUED FOR 95% MH AB
REMARKS	I IU/21/16 ISSUED FOR 50% MH AB NO. DATE DESCRIPTION Drawn by Approved Dessine nor Approved
2, 3, 4, 5, 6, 7, 8	
OORDINATE WITH ELECTRICAL IV-16 FOR POWER	A Detail number A Numero de detail
	B B Sheet number B Sur feuille numero
	Linear dimensions in Dimensions lineaires millimeters en millimetres
WEIGHT REMARKS V/ PH / HZ KG	Parcs Parks
230/1/60 141 1 to 5	Canada Canada
	Canadä
MAXIMUM REMARKS	PARKS CANADA SOUTHWESTERN ONTARIO FIELD UNIT
189 1, 2	Type of Record /
GS AND WITH THE MANUFACTURER.	Type d'enregistrement
	Project title / Titre du projet
	FORT MALDEN
	ADDITION
	Drawing title / Titre du dessin
	MECHANICAL
	JUILDULLJ
	Plot Scale / Echelle
	Drawn by/ Dessine par Date
	MH 10/13/16 Field Recording by / Data
	Releve—Temoin par N/A N/A
	Approved by / Approuve parDateAB10/13/16
	Checked by/ Verifie par Date
	Project No./ No. du projet Asset No. Sheet No./
	PRO000812 Drawing Re No /No du Dessin N/ _ 5

	S	CHEDULE OF LUMINAIRES	
TYPE	BASE SPECIFIED MANUFACTURER & CATALOGUE NUMBER	LUMINAIRE DESCRIPTION	ACCEPTABLE MANUFACTURERS
A1	LITHONIA LED CAT# 2TLX4-48L-FW-A12- EZ1-LP840	2'X'4 SURFACE MOUNTED LED LUMINAIRE C/W A HINGED AND LATCHED STEEL LENS FRAME WITH A PRISM DESIGN #12 LENS DIFFUSER SUITABLE FOR INSTALLATION ON GYPSUM CEILINGS. 4800 LUMEN PACKAGE	METALUX (COOPER) VISIONEERING STANPRO PHILIPS
A2	LITHONIA LED CAT# 1TLX4-32L-FW-A12- EZ1-LP840	1'X'4 SURFACE MOUNTED LED LUMINAIRE C/W A HINGED AND LATCHED STEEL LENS FRAME WITH A PRISM DESIGN #12 LENS DIFFUSER SUITABLE FOR INSTALLATION ON GYPSUM CEILINGS. 3200 LUMEN PACKAGE	METALUX (COOPER) VISIONEERING STANPRO PHILIPS
В	PHILIPS DAY-BRITE FLUXSTREAM CAT# LF4FR6040UDZT	COLD ROLLED STEEL HOUSING LED SUSPENDED STRIP WITH WHITE ACRYLIC COATING AND ACRYLIC LENS. LUMINARIE OUTPUT TO BE MINIMUM 6000 LUMENS AND SUITABLE FOR USE AS CHAIN MOUNTED.	METALUX (COOPER) VISIONEERING STANPRO LITHONIA
С	PHILIPS DAY-BRITE CUBELITE CAT# CSW48-4740USZTZO	COLD ROLLED STEEL HOUSING LED WALL CUBE WITH WHITE ACRYLIC ENAMEL COATING AND OPAL LENS. LUMINARIE OUTPUT TO BE MINIMUM 4500 LUMENS AND SUITABLE FOR USE WITH OCCUPANCY SENSORS.	METALUX (COOPER) VISIONEERING STANPRO LITHONIA
D1	PHILIPS CAT# LWLLED1C5K120PCBBZ	DIE CAST ALUMINUM LED WALL LIGHT WITH POLYCARBONATE LENS AND INTEGRAL PHOTOCELL FOR DUSK TO DAWN OPERATION AND MOUNTS TO A STANDARD 4" JUNCTION BOX. BRONZE IN COLOUR.	METALUX (COOPER) VISIONEERING STANPRO LITHONIA
D2	PHILIPS CAT# 313-LED-1670-4K-120 -PCB-P	DIE CAST ALUMINUM LED WALL LIGHT WITH GLASS REFRACTER AND INTEGRAL PHOTOCELL FOR DUSK TO DAWN OPERATION AND MOUNTS TO A STANDARD 4" JUNCTION BOX. BRONZE IN COLOUR.	METALUX (COOPER) VISIONEERING STANPRO LITHONIA
E1	EMERGILITE CAT# 12ESL36-2-LG	WHITE STEEL CABINET WITH ACCESS TO COMPONENTS VIA REMOVABLE FRONT COVER AND COMPLETE WITH TEST SWITCH AND TWO 4W-12V LED MR16 HEADS.	STANPRO LUMACELL BEGHELLI
X1	EMERGILITE CAT# EP-1-W-I	WHITE THERMOPLASTIC PICTOGRAM EXIT SIGN, SINGLE FACED, UNIVERSAL MOUNTING, SELF POWERED.	STANPRO LUMACELL BEGHELLI
		1	I

	POWER SYMBOLS		
SYMBOL	DESCRIPTION	SYMBOL	
Φ *	DUPLEX U-GROUND 15A, 125 VOLT, 2 POLE, 3 WIRE GROUNDING RECEPTACLE MOUNTED 12" (300 mm) ABOVE FINISHED LEVEL, UNLESS OTHERWISE NOTED. "*" WHERE SHOWN, DENOTES CONNECTION TO EMERGENCY POWER.	F.A.C.P	RECESSED
WP GFI IG C	"WP" WHERE SHOWN, DENOTES DEVICE MOUNTED IN WEATHERPROOF F.S. BOX WITH WEATHERPROOF COVER "GFI" WHERE SHOWN, DENOTES GROUND FAULT INTERRUPTER TYPE DUPLEX RECEPTACLE "IG" WHERE SHOWN, DENOTES ISOLATED GROUND "C" WHERE SHOWN, DENOTES DEVICE IS CEILING MOUNTED	F.A.A.	RECESSED
•	SIMILAR TO ABOVE, EXCEPT TAMPERPROOF TYPE RECEPTACLE.		FIRE ALARM
Ø	SIMILAR TO ABOVE, BUT MOUNTED APPROXIMATELY 3'-6" (1050 mm) ABOVE FINISHED FLOOR LEVEL OR ABOVE COUNTER, UNLESS OTHERWISE NOTED.		SIMILAR TC
\$	TWO DUPLEX U-GROUND 15A, 125 VOLT, 2 POLE, 3 WIRE GROUNDING RECEPTACLE MOUNTED 12" (300 mm) ABOVE FINISHED LEVEL IN COMMON FACEPLATE. UNLESS OTHERWISE NOTED.	CG WG EX	"CG" WHER "WG" WHEF "EX" WHER
Ø	SIMILAR TO ABOVE, BUT MOUNTED APPROXIMATELY 3'-6" (1050 mm) ABOVE FINISHED FLOOR LEVEL OR	A BG K	"A" WHERE "BG" WHER "K" WHERE
•	15/20A, 125V, DUPLEX U-GROUND RECEPTACLE (5-20R), MOUNTED 12" (300mm) ABOVE FINISHED FLOOR LEVEL,	ML	"ML" WHER
Ø	SIMILAR TO ABOVE, BUT MOUNTED APPROXIMATELY 3'-6" (1050 mm) ABOVE FINISHED FLOOR LEVEL OR	₽+	RATED AT
			PRODUCTS
			UNLESS O
			COMBINAT CEILING. U
<u> </u>			
		SYMBOL	
PP	SINGLE SURFACE MOUNTED PANELBOARD,	F	2'X4' FLUOF
	"PP" DENOTES POWER PANEL, "LP" DENOTES LIGHTING AND POWER PANEL,	3A-1-R1	INDICATES
<u>↓</u>	SINGLE RECESSED MOUNTED PANELBOARD, "PP" DENOTES POWER PANEL, "I D" DENOTES LICUTING AND DOMED DANEL		1'X4' FLUOF
	"LP" DENOTES LIGHTING AND POWER PANEL		SIMILAR TO
J	JUNCTION BOX		STRIP FLUC
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER INTEGRALLY MOUNTED IN PANELBOARD.	\$\$,\$\$	ONE, TWO, UNLESS OT
		R P 3	"K" WHERE "P" WHERE "3" WHERE
IM	FLUSH OR SURFACE MOUNTED OUTLET BOX c/w DIRECT CONNECTION TO EQUIPMENT "IM" WHERE SHOWN, DENOTES CONNECTION FOR ICE MACHINE	4 DS T	"4" WHERE "DS" WHER "T" WHERE
FS DL PDS	"FS" WHERE SHOWN, DENOTES CONNECTION FOR FIRE SHUTTER, FIRE SHUTTER TO BE ACTIVATED BY FIRE ALARM PANEL "DL" WHERE SHOWN, DENOTES CONNECTION TO TRUCK DOCK LEVELER "PDS" WHERE SHOWN, DENOTES CONNECTION TO PNEUMATIC TRUCK DOCK DOOR SEAL	LV MD	"LV" WHERE "MD" WHER
LT BC	"LT" WHERE SHOWN, DENOTES CONNECTION TO LIFT TABLE "BC" WHERE SHOWN, DENOTES CONNECTION TO BATTERY CHARGER	↓ ŴP	EXIT LIGHT WEATHERF
D WP	FLUSH-MOUNTED PUSHBUTTON MOUNTED 4'-0" (1.2 m) ABOVE FINISHED FLOOR LEVEL.	w₽₫	EXIT LIGHT WEATHERF
EPO	"EPO" WHERE SHOWN, DENOTES EMERGENCY POWER OFF.		EMERGENO
	SURFACE RACEWAY		EMERGENCY
6	MOTOR	F2	REMOTE SIN
 	DISCONNECT SWITCH UNLESS NOTED OTHERWISE		REMOTE D
		E2	SPECIFICAT
			SPECIFICAT
<u>له</u> م			OCCUPANO
		р Ц	"P" DENOTE "U" DENOTE
	MOTOR c/w STARTER	C R	"C" DENOTE "R" DENOTE
	MOTOR c/w STARTER AND DISCONNECT SWITCH		LINE VOLTA
HD	HAND DRYER OR HAIR DRYER		٦
ф UH	UNIT HEATER PROVIDED	SYMBOL	DESCRIPT
EUH	ELECTRIC UNIT HEATER	E	EXISTING I
FFH	FORCE FLOW HEATER		
EFFH	ELECTRIC FORCE FLOW HEATER	₽Ф	EXISTING I MAINTAIN (
	SECURITY SYMBOLS		EXISTING
SYMBOL	DESCRIPTION		CONNECT
DA	EMPTY BACKBOX FOR FUTURE SECURITY SYSTEM DOOR ALARM CONTACTS, RECESSED IN DOOR AND FRAME.		EXISTING I
MD	EMPTY BACKBOX FOR FUTURE SECURITY SYSTEM MOTION DETECTOR.		EXISTING I
CR	EMPTY BACKBOX FOR FUTURE SECURITY SYSTEM CARD READER OUTLET.		OR NEW CI
GB MD	EMPTY BACKBOX FOR FUTURE SECURITY SYSTEM COMBINATION GLASS BREAK/MOTION DETECTOR.		EXISTING I RECONNEC
ES	CONNECTION TO ELECTRIC STRIKE. STRIKE PROVIDED BY DOOR HARDWARE SUPPLIER.		
	COMMUNICATIONS SYMBOLS		
SYMBOL	DESCRIPTION		
	EMPTY BACKBOX FOR FUTURE DATA SIGNAL OUTLET, MOUNTED 12" (300 mm) ABOVE FINISHED		
x	EMPTY BACKBOX FOR FUTURE DATA SIGNAL OUTLET, MOUNTED 4' (1.2M) ABOVE FINISHED FLOOR	DWG No.	DES
▼	LEVEL, C/W 4" (100mm) OUTLET BOX AND BLANK STAINLESS STEEL FACEPLATE.	E1.0 E1.1	ELE
	FLOOK. MINIMUM 4"(100mm) SQUARE BOX C/W PLASTER RING AND FACEPLATE.	E1.2 E1.3 E2.0	ELE ELE ELF(
	EMPTY BACKBOX FOR FUTURE PUBLIC ADDRESS SPEAKER 'CS' WHERE NOTED INCLUDES PUBLIC	E2.1	ELEC
	ADDRESS SPEAKER COMPLETE WITH INTEGRAL CALL SWITCH.		
G	DATTERT OPERATED GLOCK SUPPLIED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR.		

Exercise Inter Exercise	_
ED OR SURFACE VOLNEED FRE ALARMA MAUNICATION PANEL. MAR PALLSTATION MUMITEL OF (1200, ADVC FINISHED RECOR LEVEL UNLESS OTHERWEE NOTED. TO ARRAYS, SUGPEY TO ARRAYS, SUGPEY THE SERVICE, DEVICES ON ALLARY CONTACTS FOR MOULCOR. TO ARRAYS, SUGPEY THE SERVICE, DEVICES ON ALLARY CONTACTS FOR MOULCOR. THE SERVICE DEVICES ON ALLARY CONTACTS FOR MOULCOR. THE SERVICE DEVICES ON ALLARY CONTACTS FOR MOULCOR. THE SERVICE DEVICES ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON ALLARY CONTACTS FOR MOULCOR. THE ALMAN DEVICES DEVICE ON THE DEVICE ALMAN DEVICES THE ALMAN DEVICES OF EALLE SHARED DEVICES THE ALMAN DEVICES DEVICE ON THE DEVICES ALMAN DEVICES OF EALLE SHARED DEVICES THE ALMAN DEVICES DEVICES ALMAN DEVICES OF EALLES. TO ALMAN DEVICES DEVICES ALMAN DEVICES DEVICES ALMAN DEVICES OF EALLES. TO ALMAN DEVICES DEVICES ALMAN DEVICES DEVICES ALMAN DEVICES OF EALLES. TO ALMAN DEVICES ALMAN DEVICES DEVICES ALMAN DEVICES OF EALLES. TO ALMAN DEVICES DEVICES ALMAN DEVICES DEVICES ALMAN DEVICES OF EALLES. TO ALMAN DEVICES DEVICES ALMAN DEVICES OF EALLES. TO ALMAN DEVICES DEVICES ALMAN DEVICES ON THE DEVICES ON ALMAN DEVICES OF EALLES. TO ALMAN DEVICES ALMAN DEVICES ON THE DEVICES ALMAN DEVICES ON ALMAN DEVICES ON THE DEVICES ON THE DEVICES ON THE DEVICES ON THE DEVICES ALMAN DEVICES ON ALMAN DEVICES ON THE DEVICES ON ALMAN DEVICES ON THE DEVICES ON THE DEVICES ON ALMAN DEVICES ON THE DEVICES ON THE DEVICES ON ALMAN DEVICES ON THE DEVICES ON TH	MOUNTED FIRE ALARM CONTROL PANEL.
ED OR BIRRING COUNTED HER A JARK AND	
HARPAULS STATUCK INCLATED 4 4 ⁽¹ /LEW), ASOVE PINSHED PLOOR LEVEL UNLESS OTHERWISE HOTED. 17 OADDRY, BADYES STRUCK ON YIELS ON Y	MOUNTED FIRE ALARM ANNUNCIATOR PANEL.
DUADOUT, DUA	IN MOUNTED 4'-0" (1200) ABOVE FINISHED FLOOR LEVEL UNLESS OTHERWISE NOTED.
AT LO HEAT DETECTOR 164" (B. 20) RATE OF INSE AND FIXED TEMPERATURE TYPE 158" (B. 20) AT 200 FT (22M) (COVENDE. TS OF COMPARISON DETECTOR FINOTO ELECTING COLLING MOUNTED TYPE. A 200 FT (22M) (COVENDE. STOTHERWISE NOTED. 147 WHERE NOTED DENTE MINH HORN ATOM REPLANDING PAPPROXIMATELY 12" (200 mm) BELOW FINISHED LIGHTING SYMBOLS DESCRIPTION DESCRIPT	:PT NOTES DEVICE c/w CLEAR GUARD. :NOTES DEVICE c/w WIRE GUARD. NOTES EXPLOSION PROOF, DTES DEVICE c/w AUXILIARY CONTACTS FOR CONNECTION TO MAG-LOCK ELEVATOR CONTRO NOTES "BREAK GLASS" TYPE DTES DEVICE c/w KEY RESET :NOTES DEVICE c/w AUXILIARY CONTACTS FOR MAG-LOCK
TS OF COMULTION RETECTOR PHOTO ELECTRIC COLLING MOUNTED TYPE. ARM BELL, MOUNTED APPROXIMATELY 12' (2007) BELOW FINGHED CELING. STOTHERWARKS NOTED. Y'L MINERE NOTED DENOTE IMP HORM. WITCH PER ALARM-POP AND STRODE LIGHT. MOUNTED APPROXIMATELY 12' (2007) BELOW FINSHED DESCRIPTION DESC	ECTOR 15°F (8.3°C) RATE OF RISE AND FIXED TEMPERATURE TYPE $135°F^{2}(57°C)^{2}$ 2m) COVERAGE.
AMM BELL MOUNTED APPROXIMATELY 12/ DOWN INSURE DELLING AMM BELL MOUNTED APPROXIMATELY 12/ DOWN INSURE DELLING DESCRIPTION INFORME ALLANDAME LETTER YF MOLO TED LEWTE MAIL HORN ESCRIPTION GREESCART LUMINARE, LETTER YF MOLO TED LUMINARE TYPE AS PER LUMINARE SCHEDULE. 34-H1 ESCRIPTION GREESCART LUMINARE, LETTER YF MOLO TED LUMINARE TYPE AS PER LUMINARE SCHEDULE. 34-H1 ESCRIPTION GREESCART LUMINARE, LETTER YF MOLO TED LUMINARE TYPE AS PER LUMINARE SCHEDULE. TO ADOVE BUT FLUGRESCART WALLERCART LUMINARE TYPE AS PER LUMINARE SCHEDULE. TO ADOVE BUT FLUGRESCART WALLERCART LUMINARE TYPE AS PER LUMINARE SCHEDULE. TO ADOVE BUT FLUGRESCART WALLERCART LUMINARE TYPE AS PER LUMINARE SCHEDULE. TO ADOVE BUT FLUGRESCART WALLERCART LUMINARE TYPE AS PER LUMINARE SCHEDULE. TO PROVE SCHEDUS SCHEDUS TO DOLE TOOLE SWITCH MOUNTED 4-01(12m) ASSNE FINISHED FLOOR LEW THE SCHEDUS BUTCH. TO ADOVE BUT FLUGRESCART WALLERCART LUMINARE TYPE AS PER LUMINARE SCHEDULE. TO THERE WAS PORTED TOOL SWITCH TOOL SENTING MOUNTED 4-01(12m) ASSNE FINISHED FLOOR LEW THE SCHEDUS BUTCH. THE SCHEDUS BUTCH AND THE SCHEDUS SWITCH AND MOUNTED 4-01(12m) ASSNE FINISHED FLOOR LEW THE SCHEDUS BUTCH. THE SCHEDUS BUTCH AND THE SCHEDUS SWITCH AND MOUNTED 4-01(12m) ASSNE FINISHED FLOOR MOUNTED THE SCHEDUS BUTCH. THE SCHEDUS BUTCH AND THE SCHEDUS SWITCH AND MOUNTED 4-01(12m) ASSNE FINISHED FLOOR TO THE THE SCHEDUS BUTCH. THE SCHEDUS BUTCH AND THE SCHEDUS SWITCH AND MERE SHOWN OR REQURED. TWP DENOTES THE SCHEDUS BUTCH AND THE SCHEDUS SWITCH AND AND THE SCHEDUS SW	ION DETECTOR PHOTO ELECTRIC CEILING MOUNTED TYPE.
In the second provide the second sec	JNTED APPROXIMATELY 12" (300mm) BELOW FINISHED CEILING. IOTED. "M" WHERE NOTED DENOTE MINI HORN.
LIGHTING SYMBOLS DESCRIPTION	RM HORN AND STROBE LIGHT, MOUNTED APPROXIMATELY 12" (300mm) BELOW FINISHED
DESCRIPTION DESCRIPTION DESCRIPTION ESCRIPTION SEGNATION SEGN	LIGHTING SYMBOLS
IDEESCENT LUMINARE LETTER "PLACATES LUMINARE TYPE AS PER LUMINARE SCHEDULE 3A-1-R1 ES ALL LUMINARES CONRECTED TO PANEL 3A OMOUT 1, HELAY 1. IDRESCENT LUMINARE, LETTER "PLINICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. TO ABOVE BUT PLIORESCENT WALL BRACKET LUMINARE TYPE AS PER LUMINARE SCHEDULE. TO THEE AND POUR CANCILLETTER "PLINICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. NO THEE AND POUR CANCILLETTER "PLINICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. NO THEE AND POUR CANCILLETTER "PLINICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. NO THEE AND POUR CANCILLETTER "PLINICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. NO THEE AND POUR CANCILLETTER "PLINICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. NO THEE SOMON DEVICES SWITCH AND PLIOT LIGHT RE SHOWN, DEVICES DOOR SWITCH RE SHOWN, DEVICES DOOR SWITCH RE SHOWN, DEVICES DOOR SWITCH RE SHOWN, DEVICES DAVIN THE SWITCH AND RECTIONAL ARROWS WHERE SHOWN OR RECURED. "MP" DENOTES REPROOF TYPE. SHOWN DEVICES DAVING LIGHTS CONNECTED TO EMERGENCY PATTERY PACK. REPERT TO SHOWN DEVICES. SHOWN DEVICES TO EXTERN REPORTED TO EMERGENCY PATTERY PACK. REPERT TO SHOWN DEVICES. SHOWN DEVICES TO EXTERNATION FOR DETAILS. "EX' DENOTES REMOTE BATTERY HEADS FED FROM BATTERY UNIT "EX'. DUAL HEAD EMERGENCY LIGHTS CONNECTED TO EMERGENCY PATTERY PACK. REPERT TO SHOWN SENSOR - VALLING SCONTED TO TO EMERGENCY PATTERY PACK. REPERT TO SHOWN SENSOR - VALLING SCONTED TO TO EMERGENCY PATTERY PACK. REPERT TO SHOWN SENSOR - VALLING MEDITES REMOTE BATTERY HEADS FED FROM BATTERY UNIT "EX'. DUAL HEAD EMERGENCY LIGHTS CONNECTED TO EMERGENCY PATTERY PACK. REPERT TO SHOWN SENSOR - VALLING RECENT REMOTE BATTERY HEADS FED FROM BATTERY UNIT "EX'. STONS FOR DETAILS." SEV DENOTES REMOTE BATTERY HEADS FED FROM BATTERY UNIT "EX'. SHOWN DEN	 I
ORESCENT LUMINARE, LETTER *PINDICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. 10 ASOVE BUT FLUORESCENT WALL BRACKET LUMINARE. LUDRESCENT LUMINARE, LETTER *PINDICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. 10 THESE AND FORD RUMA LINE VIOLINGE TOGALE SWITCH MOUNTED 4-0° (1.2n) ABOVE FINSHED FLOOR LEV PORTHERING PORTHERING AND DIVERTIGHT TO INDICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. 10 THESE SWITCH AND DIVERSION AND LINE VIOLINGE TOGALE SWITCH MOUNTED 4-0° (1.2n) ABOVE FINSHED FLOOR LEV PORTHERING PORTHERING SWITCH 11 REISOND, DENOTES SWITCH WITCH 12 REISOND, DENOTES SWITCH WITCH 13 REISOND, DENOTES DOOR SWITCH 14 REISOND, DENOTES DOOR SWITCH 15 REISOND, DENOTES REMOTE BATTERY HEADS FED FORM BATTERY UNIT *2? 15 DUAL HEAD EMERGENCY LUGHTS CONNECTED TO EMERGENCY BATTERY PACK. REFER TO 15 RUTCH SWITCH AT DEALES *2? DENOTES REMOTE BATTERY HEADS FED FORM BATTERY UNIT *2? 15 DUAL HEAD EMERGENCY LUGHTS CONNECTED TO EMERGENCY BATTERY PACK. REFER TO 15 RUTCH DEFALS. *2? DENOTES REMOTE BATTERY HEADS FED FORM BATTERY UNIT *2? 15 DUAL HEAD EMERGENCY LUGHTS CONNECTED TO EMERGENCY BATTERY PACK. REFER TO 15 RUTCH DEFALS. *2? DENOTES REMOTE BATTERY HEADS FED FORM BATTERY UNIT *2? 15 DUAL HEAD EMERGENCY LUGHTS CONNECTED TO EMERGENCY BATTERY PACK. REFER TO 15 RUTCH DEFALS. *2? DENOTES REMOTE BATTERY HEADS FED FORM BATTERY UNIT *2? 15 RUTCH DEFALS. *2? DENOTES REMOTE BATTERY HEADS FED FORM BATTERY UNIT *2? 15 RUTCH DEFALS. *2? DENOTES REMOTE BATTERY HEADS FED FORM BATTERY UNIT *2? 15 RU	INAIRE, LETTER "F" INDICATES LUMINAIRE TYPE AS PER LUMINAIRE SCHEDULE. 3A-1-R1 ES CONNECTED TO PANEL 3A, CIRCUIT 1, RELAY 1.
In a down but fluorescent wall bracket luminare. UDRESCENT Luminare, LETTER TF INDICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. NOT THERE ADD FOUR CONS LINE VOLTAGE TO LUMINARE TYPE AS PER LUMINARE SCHEDULE. NOT THERE SCHOOL PORTION OF SMALL AND FOUR CONS OF SMALL AND FOUR CONSTICUTION OF SMALL AND FOUR CONSTICUTION OF SMALL AND FOUR TO LUMIT RE SHOWN, DENOTES DOWN SMITCH RESCENT LUMINARE, COMPLETE SMITCH RESCENT LUMINARE, COMPLETE SMITCH RESCENT LUMINARE, COMPLETE RESCENTER, LEXER DE NOTITIES REMOTE BATTERY HEADS FED FROM BATTERY UNIT FEZ. DUAL HEAD DERREGNEVY LIGHTS CONNECTED TO EMERGENCY SMITTERY PACK, REFER TO RATIONS FOR DETAILS. "E-Z' DENOTES REMOTE BATTERY HEADS FED FROM BATTERY UNIT FEZ. DUAL HEAD DERREGNEVY LIGHTS CONNECTED TO EMERGENCY SMITTERY PACK, REFER TO RATIONS FOR DETAILS. "E-Z' DENOTES REMOTE BATTERY HEADS FED FROM BATTERY UNIT FEZ. DUAL HEAD DERREGNEVY LIGHTS CONNECTED TO EMERGENCY SMITTERY PACK, REFER TO RATIONS FOR DETAILS. "E-Z' DENOTES REMOTE BATTERY HEADS FED FROM BATTERY	NAIRE, LETTER "F" INDICATES LUMINAIRE TYPE AS PER LUMINAIRE SCHEDULE.
LUGRESCENT LUMINARE, LETTER 'P' INDICATES LUMINARE TYPE AS PER LUMINARE SCHEDULE. IN THREE AND FOUR OWNS LINE VOLTAGE TOGGLE SWITCH MOUNTED 4-0° (1.2m) ABOVE FINISHED FLOOR LEVE OTHER MAY ROTED. IN SHOWL BOTOESS SWITCH IN SHOWL BOTOESS SWITCH IN SHOWL BOTOESS HAVEN SWITCH IN SHOWL DEVOITS DAVIES THE SWITCH IN SHOWL DEVOITS DEVOIE COUPPEDE WITH OTHER SHOWL OR REQUIRED. "WP'DENOTES IN SHOWL DEVOITS DEVOIE COUPEED WITH DIRECTIONAL ARROWS WHERE SHOWN OR REQUIRED. "WP'DENOTES IN THE SHOWL DEVOITS DEVOIE COUPPEDE WITH DIRECTIONAL ARROWS WHERE SHOWN OR REQUIRED. "WP'DENOTES IN THE SHOWL DEVOITS DEVOIE COUPPEDE WITH DIRECTIONAL ARROWS WHERE SHOWN OR REQUIRED. "WP'DENOTES IN THE SHOWL DEVOITS DEVOIE COUPEED WITH DIRECTIONAL ARROWS WHERE SHOWN OR REQUIRED. "WP'DENOTES IN THE SHOWL DEVOITS DEVOIE COUPEED WITH DIRECTIONAL ARROWS WHERE SHOWN OR REQUIRED. "WP'DENOTES IN THE SHOWL DEVOID SUMMET DE WITH DIRECTIONAL ARROWS WHERE SHOWN OR REQUIRED. "WP'DENOTES IN THE SHOWL DEVOID SUMMET DE WITH DIRECTIONAL ARROWS WHERE SHOWN OR REQUIRED. "WP'DENOTES IN THE SHOWL DEVOID SUMMET DE WITH DIRECTIONAL ARROWS WHERE SHOWN OR REQUIRED. "WP'DENOTES IN THE SHOWL DEVOID SUMMET DE WITH THE DEVOID SUMMET AND HEAT END IN THE SHOWL DEVICED. IN THE AND DERREGENCY LIGHTS CONNECTED TO DEMERGENCY BATTERY PACK, REFER TO INTON SFOR DETALS. "E2'DENOTES REMOTE BATTERY HEADS FED FROM BATTERY UNIT "E2'. INCY SENSOR - CELING MOUNTED WCY SENSOR - CELING MOUNTED WCY SENSOR - CELING MOUNTED WCY SENSOR - CELING MOUNTED WCY SENSOR - WELL MOUNTED INTEG INTRA LUMIT INTEG IN THA REAMEST DEVOID SETWED SWITCH AND FIXTURE THERMOSTAT AND HEATER, ETC. DEMANLARY RELAY(S) INTEG INTRA LUMIT INTEG INTRA LUMIT INTEG INTRA LUMIT INTEG INTRA LUMIT INTEG INTO MET INTEG INTO MET INTEG INTRA LUMIT INTEG INTRA LUMIT INTEG INTRA LUMIT INTEG INTRA LUMIT INTEG INTEG INTEG INTEG INTEG INTEG INTEGRER AND RECONNECTED TO EXISTING INTEG INTRA LUMIT INTEG INTEG INTEG INTEGRER INTEGRER INTEGRER INTEGRER INTEGRER INTO AND INTEGRER INTEGRER INTEGRER I	LUORESCENT WALL BRACKET LUMINAIRE.
NO, THERE AND FOUR CANGE LINE VOLTAGE TOGGLE SWITCH MOUNTED 4-01 (1.2m) ABOVE FINISHED PLOOR LEVE RE SHOWN, DENOTES WITCH AND PLOT LINET RE SHOWN, DENOTES SWITCH AND PLOT LINET RE SHOWN, DENOTES SWITCH AND PLOT LINET RE SHOWN, DENOTES SWITCH AND PLOT LINET RE SHOWN, DENOTES AVAY SWITCH REN SHOWN, DENOTES MANUAL TIME SWITCH REN SHOWN, DENOTES LOW QUITAGE SWITCH REN SHOWN, DENOTES SWITCH AND FRENZEN PLANCE. REN SHOWN, DENOTES SWITCH AND FRENZEN LEVELY PLANCE, REFER TO SWITCH SHOWN AND AND RENCE TO TO BENERGENCY BATTERY DACK, REFER TO SATIONS FOR DETAILS. "E2' DENOTES REMOTE BATTERY HEADS FED FROM BATTERY UNIT "E2'. TOTAGE OUTROL VIAIT SWITCH SANGE RENCE CONTROL ONNECTION DERVERING VIAITED WICY SENSON - VALLI MOUNTED WICY SENSON - VALLI MOUNTED WICY SENSON - VALLI MOUNTED SWITCH AND RENCETED. RENOVE ALL EXISTING WIRING, CONDUIT, ETC. BACK TO ITS SOURCE. INFOLUTION INTO TO SER RENCE AND FRANCE AND FRATTERY THERE FTC. DEMOLITIENT SWITCH AND FRATERO GITEM TO BE RELOCATED. EXTEND EXISTING WIRING IN CONDUIT TO NEW LOCATION AND CT COMPLETE. GITEM TO BE REPLACED BY A NEW FRUTURE OR DEVICE AND RECONNECTED TO EXISTING GITEM TO BE REPLACED BY A NEW FRUTURE OR DEVICE AND RECONNECTED TO EXISTING GITEM TO BE REPLACED BY A NEW FRUTURE OR DEVICE AND RECONNECTED TO EXISTING GITEM TO BE REPLACED BY A NEW FRUTURE OR D	MINAIRE, LETTER "F" INDICATES LUMINAIRE TYPE AS PER LUMINAIRE SCHEDULE.
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LOAD	DESCRIPTI	ON				BREAKERS	6						BREAKERS LOAD DESCRIPTION		RIPTION					
AREA SERVED	REC	TOTAL LOAD	FEEDER/ CONDUIT	L/B	GFI	OTHER	15A 2P	15A 1P	CCT No.	PH	CCT No.	15A 1P	15A 2P	OTHER	GFI	L/B	FEEDER/ CONDUIT	TOTAL LOAD	REC	AREA SERVED
'AHU-1'		750	2#12+G					х	1	A	2									'AC-1'
'DHWT-1'		1500	2#12+G			20A-1P			3	В	4			60A-2P			2#6+G	17500		'AC-1'
'UH-1' x 2'		260	2#12+G					х	5	A	6			20A-1P			2#12+G	600	1	PRINTER REC.
KITCHEN REC	2	600	2#12+G			20A-1P			7	В	8			20A-1P			2#12+G	600	2	KITCHEN REC.
FRIDGE	1	750	2#12+G					x	9	A	10	х					2#12+G	600	2	WASHROOM REC.
GARAGE DOOR OPENERS		1000	2#12+G					х	11	В	12	x					2#12+G	900	3	OFFICE REC.
GARAGE REC.	3	900	2#12+G			20A-1P			13	A	14	x					2#12+G	1000	2	OFFICE REC.
GARAGE REC.	3	1200	2#12+G			20A-1P			15	В	16	х					2#12+G	600	2	EXTERIOR REC.
CLEANING REC.	3	1200	2#12+G			20A-1P			17	A	18	х					2#12+G	1000	2	OFFICE REC.
STORAGE REC.	4	1000	2#12+G					х	19	В	20	х					2#12+G	1000	2	OFFICE REC.
									21	A	22	х					2#12+G	1000	2	OFFICE REC.
'CUH-1'		1500	2#12+G			20A-1P			23	В	24	х					2#12+G	1000	2	OFFICE REC.
'CUH-1'		1500	2#12+G			20A-1P			25	A	26	х					2#12+G	300		'ERV-1'
'CUH-1'		1500	2#12+G			20A-1P			27	В	28	х					2#12+G	900		EXTERIOR LIGHTING
'BB-1'		600	2#12+G			20A-1P			29	A	30	х					2#12+G	900		OFFICE LIGHTING
'BB-1'		900	2#12+G			20A-1P			31	В	32	x					2#12+G	900		OFFICE LIGHTING
'BB-1'		1200	2#12+G			20A-1P			33	A	34	x					2#12+G	300		GARAGE LIGHTING

NEW XX CIRCUIT PANELBOARD ('PANEL C')

x	DETAIL OF PICTOGRAM
E1.3	N.T.S.

ELECTRICAL WORK SPECIFICATION

- GENERAL
- 1.1 SUPPLY LABOUR, TOOLS, SERVICES AND EQUIPMENT, AND PROVIDE PRODUCTS AND MATERIALS REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH THIS SPECIFICATION AND DRAWINGS. COMPLY WITH LAWS, REGULATIONS, AND CODES OF AUTHORITIES HAVING JURISDICTION. CONFORM TO REQUIREMENTS OF CONTRACT DOCUMENTS OF DIVISIONS 00 AND 01 AND REQUIREMENTS HEREIN SPECIFIED WHICH ARE SUPPLEMENTARY TO THOSE REQUIREMENTS. PERFORM WORK IN ACCORDANCE WITH LOCAL APPLICABLE GOVERNING CODES AND AUTHORITIES INCLUDING ONTARIO BUILDING CODE (OBC), ONTARIO ELECTRICAL SAFETY CODE (OESC) AND ISSUED BULLETINS AND SUPPLEMENTARY STANDARDS.
- 1.2 WHERE CODES AND/OR REQUIREMENTS CONFLICT, OR THERE IS DISCREPANCY IN DOCUMENTS, INCLUDE FOR MORE STRINGENT AND COSTLY REQUIREMENTS FOR PRICING. ADVISE CONSULTANT AND OBTAIN CLARIFICATION PRIOR TO STARTING WORK. WHERE PROJECT PHASING IS REQUIRED, REFER TO DIVISION 01 DOCUMENTS AND/OR ON DRAWINGS. IN PHASES/AREAS OF WORK THAT WORK HAS BEEN COMPLETED AND WHICH IS TO BE TURNED OVER TO OWNER, ENSURE THAT INSTALLED SYSTEMS/EQUIPMENT ARE TESTED, COMMISSIONED AND VERIFIED TO BE IN PROPER WORKING ORDER PRIOR TO TURN OVER TO OWNER. 1.4 COMPLY WITH EQUIPMENT MANUFACTURER'S INSTALLATION RECOMMENDATIONS AND INSTRUCTIONS UNLESS OTHERWISE NOTED HEREIN OR 'ON DRAWINGS, OR UNLESS SUCH INSTRUCTIONS AND RECOMMENDATIONS CONTRADICT GOVERNING CODES AND
- REGULATIONS
- VERIFY PERFORMANCE TO BE PROVIDED AT CONTRACTOR'S EXPENSE. ANY CHARGES FOR OWNER'S STAFF, CONSULTANT OR OTHER PERSONNEL RELATED TO SUCH RETESTING, TO BE AT CONTRACTOR'S EXPENSE. 1.6 FOR COMPLIANCE/SUBSTANTIAL COMPLETION LETTER, SUBMIT FOLLOWING APPLICABLE ELECTRONIC DOCUMENTS (PDFS) AS ONE COMPLETE PACKAGE: FIRE ALARM VERIFICATION REPORT WITH SOUND PRESSURE READINGS (MIN. 5 READINGS AT DIFFERENT LOCATIONS) AND CERTIFICATE
- .2 EQUIPMENT DATA SHEETS;
- .3 EQUIPMENT TESTING REPORTS:
- .4 WARRANTIES
- .5 ESA INSPECTION CERTIFICATE .6 PERMIT NUMBERS
- .7 AS-BUILT DRAWINGS
- .8 CONFIRMATION THAT DEFICIENCIES WERE RECTIFIED.
- 1.7 ELECTRICAL ENCLOSURES IN CLIMATE CONTROLLED AREAS TO BE UNLESS OTHERWISE NOTED, TYPICALLY MINIMUM NEMA 1 TYPE WITH ADDITIONAL SPRINKLER PROTECTION FEATURES OF DRIP SHIELD WHEN SURFACE MOUNTED, GASKETTING AND 9 PROVISIONS FOR MISCELLANEOUS SYSTEM ROUGH-INS VENTILATION LOUVRES DESIGNED TO PREVENT EGRESS OF WATER SPRAY ONTO LIVE COMPONENTS.
- 1.8 PRIOR TO SUBMITTING BID, CAREFULLY EXAMINE CONDITIONS AT SITE WHICH WILL OR MAY AFFECT WORK, DRAWINGS, AND BECOME FAMILIAR WITH BUILDING CONSTRUCTION, FINISHES AND OTHER WORK ASSOCIATED WITH WORK IN ORDER THAT BID INCLUDES FOR EVERYTHING NECESSARY FOR COMPLETION OF WORK. 1.9 BEFORE ANY EQUIPMENT IS ROUGHED IN, DETERMINE ITS INTENDED LOCATION FROM DRAWINGS AND COORDINATE FINAL LOCATIONS WITH SERVICES AND STRUCTURAL CONDITIONS. IF IT IS NOT SHOWN ON DRAWINGS, VERIFY FINAL LOCATION ON SITE. LOCATIONS OF SERVICES ON DRAWINGS ARE APPROXIMATE ONLY. REVIEW WITH CONSULTANT AND COORDINATE WITH RESPECTIVE TRADES TO ENSURE THAT EQUIPMENT IS FULLY ACCESSIBLE FOR MAINTENANCE. FAILURE TO DO SO WILL NOT BE GROUNDS FOR ADDITIONAL COSTS. PROPERLY PLAN AND COORDINATE EXACT LOCATIONS AND ROUTING OF SERVICES PRIOR TO INSTALLATION TO AVOID OBSTRUCTIONS TO OTHER SERVICES AND EQUIPMENT REQUIRING ACCESS CONCEAL SERVICES IN WALLS,
- CEILING SPACE AND FLOOR SPACE UNLESS OTHERWISE NOTED. 1.10 MAKE APPLICATION FOR, PAY FOR AND OBTAIN, PERMITS AND INSPECTION CERTIFICATES TO COMPLETE WORK IS COMPLETE, SUPPLY AND TURN OVER INSPECTION CERTIFICATES FROM GOVERNING AUTHORITIES INCLUDING ESA, TO CONSULTANT. PAY FEES AND CHARGES LEVIED BY MUNICIPALITY AND OTHER GOVERNING AUTHORITIES FOR PERMITS, INSPECTIONS, AND CERTIFICATES. RETAIN COPY OF SUCH PERMITS AND CERTIFICATES, ETC., ON JOB SITE. WHERE WORK INVOLVES
- ELECTROMAGNETIC LOCK WORK. PROVIDE PERMITS AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION. 1.11 COORDINATE WORK WITH WORK OF EACH TRADE TO ENSURE PROPER AND COMPLETE INSTALLATION. NOTIFY TRADES CONCERNED OF REQUIREMENT FOR OPENINGS, SLEEVES, INSERTS AND OTHER HARDWARE NECESSARY IN COORDINATION OF WORK, AND, WHERE WORK IS INTEGRATED WITH WORK OF OTHER TRADES OR IS INSTALLED IN CLOSE PROXIMITY WITH WORK OF OTHER TRADES, CAREFULLY COORDINATE WORK PRIOR TO AND DURING INSTALLATION.
- 1.12 PROPERLY PLAN, COORDINATE AND ESTABLISH EXACT LOCATIONS AND ROUTING OF SERVICES WITH AFFECTED TRADES PRIOR TO INSTALLATION SUCH THAT THEY CLEAR EACH OTHER AS WELL AS ANY OBSTRUCTIONS. GENERALLY, PIPING REQUIRING UNIFORM PITCH IS GIVEN RIGHT OF WAY, WITH OTHER SERVICES LOCATED AND ARRANGED TO SUIT. 1.13 SCHEDULE WORK WHICH MAY CAUSE NOISE DISTURBANCES AT TIMES APPROVED BY OWNER AND REVIEWED WITH CONSULTANT. COORDINATE WORK WITH TRADES TO MINIMIZE NOISE DISTURBANCES.
- 1.14 DURING CONSTRUCTION, KEEP SITE REASONABLY CLEAR OF RUBBISH AND WASTE MATERIAL RESULTING FROM WORK ON DAILY BASIS, AFTER COMPLETION OF WORK, REMOVE RUBBISH AND DEBRIS FROM SITE, ARRANGE AND PAY FOR REPAIR OF DAMAGES CAUSED AND LEAVE PREMISES AND WORK IN GOOD ORDER. 1.15 PROTECT AND STORE EQUIPMENT AND MATERIALS ON SITE FROM DAMAGE. BE RESPONSIBLE FOR SAFE STORAGE OF EQUIPMENT AND GOODS TO BE RELOCATED AND REPAIR OR REPLACE DAMAGED EQUIPMENT AND GOODS AT DISCRETION OF OWNER.
- 1.16 ALLOW CONSULTANT ACCESS TO WORK. NOTIFY CONSULTANT AT AGREED UPON TIMES OF STAGES OF WORK. 1.17 WHERE STANDARDS OF WORK ARE SPECIFIED OR IMPLIED AND WORK DOES NOT COMPLY WITH PERFORMANCE SPECIFIED OR IMPLIED, CORRECT SUCH DEFICIENCY AS DIRECTED BY CONSULTANT. INCLUDE ANY SUBSEQUENT TESTING TO VERIFY
- PERFORMANCE. ANY CHARGES FOR OWNER'S STAFF, CONSULTANT, OR OTHER PERSONNEL RELATED TO SUCH RETESTING TO ALSO BE AT EXPENSE OF CONTRACTOR. 1.18 PRODUCTS LISTED AND/OR SPECIFIED ON CONTRACT DOCUMENTS ARE SELECTED TO ESTABLISH DESIGN STANDARDS. IN MOST CASES, ACCEPTABLE MANUFACTURERS ARE LISTED, BASE YOUR BID PRICE ON BASE SPECIFIED PRODUCTS OR PRODUCTS 11.1 PROVIDE CONDUCTORS. CONDUCTORS TO BE COPPER UNLESS OTHERWISE APPROVED BY OWNER AND REVIEWED WITH CONSULTANT. REFER TO DRAWINGS FOR SIZING OF CONDUCTORS. GENERALLY, CONDUCTOR SIZES ARE INDICATED ON DRAWINGS. SUPPLIED FROM ACCEPTABLE MANUFACTURERS, ENSURE PRODUCTS SUPPLIED FROM MANUFACTURERS OTHER THAN BASE SPECIFIED MANUFACTURERS ARE EQUIVALENT TO SPECIFIED PRODUCTS. CHANGES TO MANUFACTURERS OF PRODUCTS MAY BE SUCH SIZES ARE MINIMUM REQUIREMENTS AND MUST BE INCREASED TO SUIT LENGTH OF RUN AND VOLTAGE DROP IN ACCORDANCE WITH SCHEDULE OBTAINED FROM CONSULTANT. SIZE CONDUCTORS NOT SIZED ON DRAWINGS IN ACCORDANCE WITH OESC. PROPOSED TO CONSULTANT FOR ACCEPTANCE PRIOR TO CLOSING OF BIDS, LISTING IN EACH CASE CORRESPONDING CREDIT. CONSULTANT HAS SOLE DISCRETION IN ACCEPTING ANY PROPOSED SUBSTITUTION. INCLUDE IN BID PRICE ANY ADDITIONAL COSTS PROVIDE CABLE SUPPORT SYSTEM ACCESSORIES WHICH ARE NOT SPECIFIED HEREIN OR SHOWN ON DRAWINGS BUT ARE REQUIRED FOR PROPER INSTALLATION. FOR CHANGES TO ASSOCIATED OR ADJACENT WORK RESULTING FROM PROVISION OF PRODUCTS SUPPLIED BY MANUFACTURER OTHER THAN BASE SPECIFIED MANUFACTURER. ANY PROPOSED CHANGES INITIATED BY CONTRACTOR AFTER AWARD OF CONTRACT MAY BE CONSIDERED BY CONSULTANT AT CONSULTANT'S DISCRETION, WITH COSTS FOR SUCH CHANGES IF ACCEPTED BY OWNER, AND COSTS OF SUCH REVIEW BY CONSULTANT TO BE PAID FOR BY CONTRACTOR. 11.2 INTERIOR CONDUCTORS: "RW90" CSA CERTIFIED, SINGLE COPPER CONDUCTOR TO CSA C22.2 NO. 38, 600 VOLTS, MAXIMUM 90°C CONDUCTOR TEMPERATURE, MINUS 40°C MINIMUM INSTALLATION TEMPERATURE, X-LINK POLYETHYLENE INSULATION, COLOUR 1.19 UNLESS OTHERWISE NOTED IN DIVISION 01, WARRANT WORK TO BE IN STRICT ACCORDANCE WITH CONTRACT DOCUMENTS AND FREE FROM DEFECTS FOR 1 YEAR PERIOD FROM DATE OF WRITTEN ACCEPTANCE BY CONSULTANT. REPAIR AND/OR REPLACE CODFD
- ANY SUCH DEFECTS WHICH APPEAR IN WORK WITHIN WARRANTY PERIOD, ORDINARY WEAR AND TEAR AND WILFUL DAMAGE BY, OR CARELESSNESS OF OWNER'S STAFF OR AGENTS EXCEPTED, WITHOUT ADDITIONAL EXPENSE TO OWNER. WHERE SUCH DEFECTS OCCUR, BE RESPONSIBLE FOR COSTS INCURRED IN MAKING DEFECTIVE WORK GOOD, INCLUDES REPAIR OR REPLACEMENT OF BUILDING FINISHES, OTHER MATERIALS, OR DAMAGE TO OTHER EQUIPMENT CAUSED BY SUCH DEFECTS. OR BY SUBSEQUENT REPLACEMENT OR REPAIRS. INTERRUPTIONS TO AND SHUT DOWNS OF EXISTING SERVICES AND SYSTEMS
- 2.1 COORDINATE AND PERFORM SHUT DOWNS AND INTERRUPTIONS TO EXISTING SYSTEMS AND SERVICES AT TIMES ACCEPTABLE TO OWNER. OBTAIN WRITTEN APPROVAL MINIMUM 5 WORKING DAYS IN ADVANCE OF SHUT DOWN OR INTERRUPTION. INCLUDE FOR PREMIUM TIME TO PERFORM WORK DURING NIGHTS WEEKENDS OR OTHER TIME OUTSIDE OF NORMAL WORKING HOURS AS NECESSARY TO MAINTAIN SERVICES IN OPERATION OR WITH MINIMUM INTERRUPTIONS AND TO COMPLY WITH OWNER'S REQUIREMENTS. PERFORM WORK ASSOCIATED WITH SHUT DOWNS AND INTERRUPTIONS AS CONTINUOUS OPERATIONS TO MINIMIZE SHUT DOWN TIME AND TO REINSTATE SYSTEMS AS SOON AS POSSIBLE, AND, PRIOR TO SHUT DOWN, ENSURE MATERIALS AND LABOUR REQUIRED TO COMPLETE WORK FOR WHICH SHUT DOWN IS REQUIRED ARE AVAILABLE AT SITE. CUTTING, PATCHING AND CORE DRILLING
- 3.1 PROVIDE CUTTING, PATCHING AND CORE DRILLING OF BUILDING REQUIRED FOR INSTALLATION OF WORK. PERFORM CUTTING IN NEAT AND TRUE FASHION, WITH PROPER TOOLS AND EQUIPMENT TO OWNER'S APPROVAL. PATCH SURFACES TO EXACTLY MATCH EXISTING FINISHES. UTILIZE TRADESMEN SKILLED IN PARTICULAR TRADE OR APPLICATION WORKED ON TO OWNER'S APPROVAL.
- 3.2 IN FIRE RATED CONSTRUCTION, PACK AND SEAL VOID BETWEEN OPENING AND CONDUIT FOR LENGTH OF OPENING WITH ASBESTOS FREE ELASTOMERIC AND INTUMESCENT ULC LISTED AND LABELLED MATERIALS. INSTALL FIRESTOP AND SMOKE SEAL MATERIALS IN ACCORDANCE TO ULC CERTIFICATION, OBC AND MANUFACTURER'S REQUIREMENTS TO PROVIDE FIRESTOP RATINGS OF OPENINGS IN ACCORDANCE WITH GOVERNING BUILDING CODE REQUIREMENTS. SUBMIT WITH SHOP DRAWINGS. SPECIFIC ULC DESIGNATED NUMBER FOR EACH APPLICATION AND WHIMIS SHEET. PROVIDE FM GLOBAL APPROVED PRODUCTS WHERE REQUIRED BY OWNER. ACCEPTABLE MANUFACTURERS ARE 3M, SPECIFIED TECHNOLOGIES, TREMCO, HILTI, AND TYCO FIRE STOP SYSTEMS
- 3.3 FOR EXTERIOR AND/OR UNDERGROUND PENETRATIONS, PROVIDE WATERPROOF, WEATHER-TIGHT, FIRE RATED MATERIALS IN COMPLIANCE WITH LOCAL GOVERNING AUTHORITY AND CODE REQUIREMENTS TO SEAL OPENINGS. 3.4 COMPLY WITH PRODUCT MANUFACTURER'S RECOMMENDATIONS FOR PRODUCT THAT SUITS EACH SPECIFIC INSTALLATION. TYPICALLY PRODUCT TO BE CONSISTENT MANUFACTURER THROUGHOUT BUILDING AS COORDINATED WITH GENERAL CONTRACTOR.
- COMPLY WITH OWNER'S FM GLOBAL INSURANCE AS APPLICABLE, OR OTHER REQUIREMENTS CONFIRMED WITH OWNER. 3.5 DO NOT CUT OR DRILL EXISTING WORK WITHOUT PRIOR OWNER'S APPROVAL AND REVIEW WITH CONSULTANT. IN CONSULTATION WITH OWNER AND BY USE OF NON-DESTRUCTIVE RADAR SCANNING, DETERMINE PRESENCE OF EXISTING SERVICES AND REINFORCING RODS CONCEALED BEHIND SURFACE TO BE CUT. ENSURE THAT AREAS OF BOTH SIDES OF SURFACE BEING CUT ARE PROTECTED FROM DEBRIS. BE RESPONSIBLE FOR DAMAGE DONE TO EXISTING BUILDING AND SERVICES CAUSED BY CUTTING OR DRILLING. IF RADAR SCANNING IS NOT PERMITTED BY OWNER, CAREFULLY HAND CHISEL TO EXPOSE RE-BAR AND BURIED SERVICES AND CHISEL OUT REQUIRED OPENINGS.
- 4 DISCONNECTION, REMOVAL AND RELOCATION WORK
- DISCONNECT AND REMOVE ITEMS OF EXISTING OBSOLETE ELECTRICAL WORK. RELOCATE REQUIRED DEVICES AS REQUIRED FOR WORK AND TO ACCOMMODATE WORK OF OTHER DIVISIONS. WHERE LUMINAIRES, SWITCHES, RECEPTACLES, AND OTHER DEVICES AND/OR EQUIPMENT IS REMOVED, DISCONNECT AT POINT OF ELECTRICAL SUPPLY, REMOVE OBSOLETE WIRING AND CONDUIT UP TO SOURCE, UNLESS OTHERWISE NOTED, AND MAKE SYSTEM SAFE TO OWNER'S SATISFACTION. REMOVE OBSOLETE 13 RECEPTACLES, SWITCHES AND FACEPLATES CONDUIT/RACEWAYS IN ACCESSIBLE CEILING SPACES, EXPOSED LOCATIONS, ETC. WHERE EXISTING OBSOLETE CONDUIT AND SIMILAR RACEWAY MATERIAL CANNOT BE REMOVED, SUCH AS EMBEDDED IN CONCRETE, CUT BACK AND CAP OBSOLETE CONDUIT ND RACEWAYS. REFER TO SPECIFIC NOTES ON DRAWING
- 4.2 WHEN EXISTING CIRCUITS ARE BEING DISCONNECTED, MAINTAIN SUPERVISION OF AREA TO ENSURE THAT SUCH CIRCUITS DO NOT AFFECT ESSENTIAL EXISTING CIRCUITS BEING RETAINED
- 4.3 REFER TO ARCHITECTURAL DRAWINGS WHICH DEFINE EXTENT OF AREAS BEING DEMOLISHED IN EXISTING BUILDING. REVIEW DRAWINGS AND SITE AND INCLUDE FOR DEMOLITION AND/OR RENOVATION OF SERVICES AS REQUIRED TO ACCOMMODATE ALTERATIONS DETAILED. 4.4 UNLESS OTHERWISE NOTED, TAKE POSSESSION OF OBSOLETE MATERIALS WHICH ARE REMOVED AND ARE NOT TO BE RELOCATED OR REUSED AS DIRECTED BY OWNER. REMOVE FROM SITE AND PROPERLY DISPOSE. OBTAIN FROM OWNER, LIST OF EXISTING
- ELECTRICAL ITEMS WHICH ARE TO BE REMOVED AND TURNED OVER TO OWNER. SAID ITEMS ARE TO REMAIN PROPERTY OF OWNER. 4.5 WHERE EXISTING SERVICES PASS THROUGH OR ARE IN AREA TO SERVE ITEMS WHICH ARE TO REMAIN, MAINTAIN SERVICES. REROUTE EXISTING SERVICES CONCEALED BEHIND EXISTING FINISHES AND WHICH BECOME EXPOSED DURING RENOVATION WORK, SO AS TO BE CONCEALED BEHIND NEW OR EXISTING FINISHES. CONFIRM WITH OWNER SERVICES WHICH ARE TO BE KEPT IN SERVICE AND OPERATIONAL
- 4.6 REVISE PANELBOARD DIRECTORIES ACCORDINGLY, IF AFFECTED BY ANY RENOVATION, DISCONNECTION OR REMOVAL OF WORK. USE OWNER'S ACTUAL ROOM NAMES/NUMBERS.
- 4.7 PROTECT EXISTING DEVICES BEING RELOCATED OR DELETED TO ENSURE THAT THEY ARE NOT DAMAGED. TEST SUCH DEVICES PRIOR TO DISCONNECTION AND DE-ENERGIZATION. TO ENSURE THAT EACH DEVICE IS IN PROPER WORKING CONDITION. ENSURE THAT MOTORS ARE IN PROPER ROTATION DIRECTION. EXAMINE EACH DEVICES FOR DAMAGE. REPORT DEVICES NOT WORKING OR WITH DAMAGE TO CONSULTANT PRIOR TO INITIATING ANY WORK. IT WILL BE ASSUMED THAT DEVICES ARE IN PROPER WORKING ORDER AND GOOD CONDITION IF NOT REPORTED. 48 PROVIDE JUNCTION BOXES OUTLET BOXES WIRING PLATES ETC. AS NECESSARY FOR COMPLETE RELOCATION OF DEVICES CLEAN RELOCATED OR TEMPORARY REMOVED DEVICES AND EQUIPMENT AND ENSURE THAT THEY ARE IN GOOD OPERATING.
- CONDITION BEFORE BEING REINSTALLED. WHERE EXISTING LUMINAIRES ARE RELOCATED, CLEAN LUMINAIRES AND INSPECT FOR DAMAGE. RELAMP RELOCATED LUMINAIRES. REPORT DEFECTS OR DAMAGES TO CONSULTANT. DO NOT SPLICE CONDUCTORS WITHOUT CONSENT OF CONSULTANT. UTILIZE JUNCTION BOXES AND TERMINAL DEVICES FOR PROPER EXTENSION OF CIRCUITS WHERE APPROVED. OTHERWISE REPLACE CIRCUITS WITH HOME RUN CONTINUOUS RUN OF SUITABLE LENGTHS. 4.9 PROVIDE BLANK COVERPLATES ON EXISTING OBSOLETE BOXES WHICH ARE TO REMAIN IN POSITION.
- 4.10 AFTER INSTALLATION IS COMPLETE, TEST PARTS OF RE-USED OR RELOCATED ELECTRICAL EQUIPMENT AND CORRECT FAULTS AND GROUNDS. INCLUDE FOR FIRE ALARM VERIFICATION COMPANY TO VERIFY ANY RELOCATED DEVICES AND DOWNSTREAM AFFECTED DEVICES, AND VERIFY SYSTEM AS REQUIRED BY LOCAL FIRE AUTHORITY TO SUIT ACTUAL RELOCATION WORK, FOR OTHER EXISTING SYSTEMS, ENGAGE MANUFACTURERS AUTHORIZED REPRESENTATIVE OR OWNER'S SYSTEM MAINTENANCE. CONTRACTOR, TO INSPECT AND VERIFY RELOCATED DEVICES. COORDINATE AND CONFIRM EXACT REQUIREMENTS WITH OWNER AND/ REVIEW WITH CONSULTANT. ANY FIRE ALARM, LIFE SAFETY OR COMMUNICATION SYSTEM DEVICE THAT HAS BEEN WORKED ON OR RELOCATED. TO BE TESTED. VERIFIED. AND CERTIFIED BY MANUFACTURER'S AUTHORIZED TECHNICIAN AFTER COMPLETION OF WORK. INCLUDE FOR SUCH WORK
- 4.11 INTERIOR, EXTERIOR OR UNDERGROUND ELECTRICAL SERVICES (INCLUDING AUXILIARY SERVICES, TELEPHONE, FIRE ALARM, P.A. SYSTEM, ETC.) TO OPERATING PARTS OF BUILDING ARE TO BE MAINTAINED OPERATION AND TO THAT EFFECT, NECESSARY WORK MAY HAVE TO BE CARRIED OUT DURING NON-REGULAR BUSINESS HOURS, AT NO ADDITIONAL COST TO THIS PROJECT. EXISTING RISERS ARE TO BE MAINTAINED IN SERVICE AS REQUIRED TO FEED OTHER AREAS OF BUILDING. DO NOT INTERRUPT ANY SERVICES WITHOUT PRIOR WRITTEN APPROVAL FROM OWNER AND REVIEW WITH CONSULTANT. SUBMIT FORMAL REQUESTS TO CONSULTANT OUTLINING IN DETAIL REQUIREMENTS OF PROPOSAL AND WAIT FOR INSTRUCTIONS FROM CONSULTANT. 4.12 BE PRESENT WHEN ADDITIONAL DOORS OR OPENINGS ARE BEING CUT INTO EXISTING WALLS AND CEILINGS. SHOULD ANY DAMAGE OCCUR TO ELECTRICAL SYSTEM. RESTORE SYSTEM TO A SAFE AND SOUND CONDITION
- 4.13 WHERE REFERENCES ARE MADE ON DRAWINGS THAT EXISTING RECEPTACLES. ETC., BE EXTENDED AND/OR RELOCATED TO SUIT NEW CONSTRUCTION, RECEPTACLES, ETC., ARE TO BE TESTED AND IF FOUND DEFECTIVE, BE REPLACED, CRACKED OR BROKEN COVERPLATES ARE TO BE REPLACED. FINISHES TO MATCH EXISTING SUBJECT TO REVIEW WITH CONSULTANT. 4.14 BE RESPONSIBLE FOR DISCONNECTING POWER SUPPLY TO BRANCH CIRCUITS CONTROLLING LIGHTING, RECEPTACLES, PANELS, MECHANICAL EQUIPMENT, ETC., FOR SAFE REMOVAL OF EQUIPMENT, CONDUIT, WIRING, BOXES, ETC., AFFECTED BY DEMOLITION.
- 4.15 CLOSE OPENINGS IN BOXES, PANELS, ETC., THAT RESULT FROM REMOVAL OF EQUIPMENT, CONDUIT, WIRING, FIXTURES, ETC. CLOSE OPENINGS IN PROPER MANNER AND PROPERLY TERMINATE AND INSULATE CABLES TO RESTORE SYSTEM TO SAFE OPERATING CONDITION. TO OWNER'S SATISFACTION. 4.16 BE PRESENT AND SUPERVISE REMOVAL OF ELECTRICAL EQUIPMENT AND DEVICES. DURING DEMOLITION OF CEILINGS, WALLS, FLOORS, ETC. EXISTING EQUIPMENT WHICH IS NOT TO BE RELOCATED BUT INTERFERES WITH DEMOLITION, ARE TO BE
- TEMPORARILY RELOCATED UNTIL DEMOLITION WORK IS COMPLETED. SERVICES TO TEMPORARILY RELOCATED EQUIPMENT ARE TO BE MAINTAINED AT ALL TIMES. 4 17 DELETE EXISTING SYSTEM DEVICES AS NOTED INCLUDE FOR DISCONNECTING AND DECOMMISSIONING OF DELETED DEVICES REMOVAL OF OBSOLETE BOXES. WIRING AND CONDULT PATCHING AND MAKING GOOD SURFACES AS COORDINATED WITH GENERAL TRADES CONTRACTOR: ENGAGING OWNER'S EXISTING RESPECTIVE SYSTEM VENDORS TO DECOMMISSION DEVICES, RE-PROGRAM EXISTING SYSTEM TO SUIT RENOVATIONS WORK, TEST AND VERIFY OPERATION OF EXISTING SYSTEM IS IN PROPER
- ORDER AFTER SYSTEM CHANGES; TURN OVER DELETED DEVICES TO OWNER IF REQUESTED BY OWNER; AND PROPER DISPOSAL OF MATERIALS NOT WANTED BY OWNER. 4.18 REMOVE AND RE-INSTALL EXISTING CEILING TILES AS REQUIRED TO PERFORM WORK, PRIOR TO REMOVAL, INSPECT TILES FOR DAMAGE AND REPORT ANY TO OWNER AND CONSULTANT, REMOVE AND REINSTALL ELECTRICAL DEVICES/LUMINAIRES AS REQUIRED FOR INSTALLATION OF WORK. SECURE LOOSE CABLING, DEVICES AND LUMINAIRES TO CEILING SLAB. AFTER WORK HAS BEEN COMPLETED AND SUCCESSFULLY TESTED AND INSPECTED, RE-INSTALL CEILING TILES TO EXISTING STANDARDS. REPLACE TILES AND GRID MEMBERS DAMAGED DURING WORK. PATCH AND MAKE GOOD (INCLUDING PAINTING) SURFACES TO MATCH EXISTING. COMPLY WITH APPLICABLE GOVERNING AUTHORITY REQUIREMENTS WITH REGARDS TO CEILING WORK IN SPECIAL AREAS
- 4.19 CHECK LUMINAIRES TO BE DELETED FOR PCB BALLASTS. DISCONNECT AND REMOVE SUCH BALLASTS. INCLUDE COSTS FOR COMPANY SPECIALIZED IN SUCH HAZARDOUS MATERIALS TO REMOVE AND DISPOSE SUCH MATERIALS OFF-SITE IN COMPLIANCE WITH MINISTRY OF ENVIRONMENT, MINISTRY OF TRANSPORT AND ANY OTHER GOVERNING AUTHORITY REGULATIONS.
- 5 HAZARDOUS MATERIALS
- 5.1 IF AT ANY TIME DURING COURSE OF WORK HAZARDOUS MATERIALS ARE ENCOUNTERED OR SUSPECTED, CEASE WORK IN AREA IN QUESTION AND IMMEDIATELY REPORT TO CONSULTANT AND COMPLY WITH REGULATIONS OF LOCAL GOVERNING AUTHORITIES. DO NOT RESUME WORK IN AFFECTED AREA WITHOUT APPROVAL FROM OWNER AND REVIEW WITH CONSULTANT.
- 5.2 PROPERLY REMOVE AND DISPOSE OFFSITE MATERIALS CONTAINING HAZARDOUS MATERIALS IN ACCORDANCE WITH LOCAL GOVERNING AUTHORITY REGULATIONS. USE SPECIALTY FIRMS LICENSED BY LOCAL AUTHORITIES AS REQUIRED TO HANDLE SUCH MATERIALS AND TO ENSURE PROPER DISPOSAL TO MINISTRY APPROVED SITES. SUBMIT TO CONSULTANT COPIES OF PERMITS AND/OR APPROVALS.
- 6 RECORD DRAWINGS (AS-BUILTS)
- 6.1 DRAWINGS FOR THIS PROJECT HAVE BEEN PREPARED ON AUTOCAD RELEASE VERSION OF SOFTWARE REVIEWED WITH CONSULTANT. COPIES OF DRAWINGS ON DISKS FOR USE IN PREPARING "AS-BUILTS" MAY BE PURCHASED FROM CONSULTANT AT COST OF \$25 CDN. PLUS HST PER DRAWING
- 6.2 WHEN WORK BEGINS AT SITE, CLEARLY AND ACCURATELY MARK ON BOUND SET OF WHITE PRINTS OF CONTRACT DRAWINGS. ON DAILY BASIS, CHANGES AND DEVIATIONS FROM ROUTING OF AND LOCATIONS OF EQUIPMENT SHOWN ON CONTRACT DRAWINGS. CHANGES AND DEVIATIONS INCLUDING THOSE MADE BY ADDENDA. CHANGE ORDERS, AND SITE INSTRUCTIONS, AND CHANGES AND DEVIATIONS INDICATED ON SUPPLEMENTAL DRAWINGS ISSUED WITH ADDENDA. CHANGE ORDERS, AND SITE INSTRUCTIONS, AND CHANGES AND DEVIATIONS INDICATED ON SUPPLEMENTAL DRAWINGS ISSUED WITH ADDENDA. CHANGE ORDERS, AND SITE INSTRUCTIONS, AND CHANGES AND DEVIATIONS INDICATED ON SUPPLEMENTAL DRAWINGS ISSUED WITH ADDENDA. CHANGE ORDERS, AND SITE INSTRUCTIONS, AND CHANGES AND DEVIATIONS INDICATED ON SUPPLEMENTAL DRAWINGS ISSUED WITH ADDENDA. CHANGE ORDERS, AND SITE INSTRUCTIONS, AND CHANGES AND DEVIATIONS INDICATED ON SUPPLEMENTAL DRAWINGS ISSUED WITH ADDENDA. CHANGE ORDERS, AND SITE INSTRUCTIONS, AND CHANGES AND DEVIATIONS INDICATED ON SUPPLEMENTAL DRAWINGS ISSUED WITH ADDENDA. MAINTAIN "AS-BUILT" WHITF PRINTS AT SITE FOR PERIODIC INSPECTION BY CONSULTANT THROUGHOUT DURATION OF WORK. PAY PARTICULAR ATTENTION TO ACCURATELY DIMENSIONING LOCATION OF CONCEALED SERVICES TERMINATED FOR FUTURE EXTENSION, BURIED WORK AND SERVICES, AND WORK CONCEALED WITHIN BUILDING IN INACCESSIBLE LOCATIONS. LOCATE AND IDENTIFY FIRE ALARM DEVICES WITH ADDRESSES, AS APPLICABLE. 6.3 WHEN WORK ENDS AT SITE. UPDATE A COMPUTER FILE COPY OF CONTRACT DOCUMENT DRAWING SET SO THAT IT REFLECTS DEVIATIONS FROM ORIGINAL CONTRACT DOCUMENT DRAWINGS, THUS FORMING A TRUE "AS-BUILT" DRAWING DISK SET. PROVIDE
- SET OF PRINTS OF CONTRACT DRAWINGS PRODUCED FROM TRUE "AS-BUILT" DRAWING SET. SUBMIT "AS-BUILT" DRAWING ELECTRONIC FILES WITH WHITE PRINTS AND CAD PRODUCED "AS-BUILT" PRINTS TO CONSULTANT, SUBMITTED DRAWINGS TO BE OF SAME QUALITY AS ORIGINAL CONTRACT DOCUMENT DRAWINGS. 6.4 UPDATE ONSITE DISTRIBUTION RISER DIAGRAMS POSTED IN ELECTRICAL ROOMS.
- 7 SHOP DRAWINGS AND OPERATING/MAINTENANCE INSTRUCTION MANUALS
- 7.1 SUBMIT SHOP DRAWINGS FOR PRODUCTS. PROPERLY IDENTIFY SHOP DRAWINGS FOR REVIEW AND SHOW IN DETAIL EQUIPMENT AND MATERIALS. ENDORSE EACH DRAWING; INCLUDE COMPANY NAME AND SUBMITTAL DATE. 7.2 PROVIDE OPERATING AND MAINTENANCE (O&M) INSTRUCTION MANUALS AS INDEXED, IDENTIFIED HARD COVER 3 RING BINDERS COMPLETE WITH
- .1 TITLE SHEET AND LIST OF CONTENTS
- .2 A COPY OF EACH "REVIEWED" SHOP DRAWING: .3 EXPLANATIONS OF OPERATING PRINCIPLES AND SEQUENCES;

PART LISTS WITH NUMBERS;

RECOMMEND MAINTENANCE PRACTICES AND PRECAUTIONS; COPIES OF INSPECTION CERTIFICATES ISSUED BY GOVERNING AUTHORITIES;

WIRING AND CONNECTION DIAGRAMS

- .8 COPIES OF ADDITIONAL AND REVISED PANELBOARD DIRECTORIES.
- 7.3 PROVIDE MINIMUM 2 SETS OF MANUALS UNLESS OTHERWISE DIRECTED IN DIVISION 01. REVIEW EXACT QUANTITY AND METHOD OF SUBMISSION WITH CONSULTANT. REVIEW BY CONSULTANT DOES NOT MEAN APPROVAL OF DETAIL DESIGN INHERENT IN SHOP DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS IN SHOP DRAWINGS. 7.4 UNLESS OTHERWISE DIRECTED BY CONSULTANT, SUBMIT SHOP DRAWINGS IN ELECTRONIC FORM. UNLESS OTHERWISE DIRECTED BY CONSULTANT ADDITIONALLY INCLUDE ELECTRONIC PDF COPIES OF MANUALS LOADED ON TO USB FLASH DRIVE.
- 8 GENERAL CONDUIT AND CONDUCTOR INSTALLATION REQUIREMENTS
- 1.5 WHERE STANDARDS OF WORK ARE SPECIFIED OR IMPLIED AND WORK DOES NOT COMPLY WITH PERFORMANCE SPECIFIED OR IMPLIED, CORRECT SUCH DEFICIENCY AS DIRECTED BY CONSULTANT OR GOVERNING AUTHORITIES. PLAN AND COORDINATE LOCATIONS AND ROUTING OF SERVICES, NOT COMPLY WITH PERFORMANCE SPECIFIED OR IMPLIED, CORRECT SUCH DEFICIENCY AS DIRECTED BY CONSULTANT OR GOVERNING AUTHORITY. ANY SUBSEQUENT TESTING TO 8.1 INSTALL CONDUCTORS CONCEALED TO DEGREE MADE POSSIBLE BY FINISHES AND PROVIDE INSTALLATIONS IN ACCORDANCE WITH OESC AND LOCAL GOVERNING AUTHORITY. ANY SUBSEQUENT TESTING TO 8.1 INSTALL CONDUCTORS CONCEALED TO DEGREE MADE POSSIBLE BY FINISHES AND PROVIDE INSTALLATIONS IN ACCORDANCE WITH OESC AND LOCAL GOVERNING AUTHORITY. ANY SUBSEQUENT TESTING TO 8.1 INSTALL CONDUCTORS CONCEALED TO DEGREE MADE POSSIBLE BY FINISHES AND PROVIDE INSTALLATIONS IN ACCORDANCE WITH OESC AND LOCAL GOVERNING AUTHORITY. ANY SUBSEQUENT TESTING TO 8.1 INSTALL CONDUCTORS CONCEALED TO DEGREE MADE POSSIBLE BY FINISHES AND PROVIDE INSTALLATIONS IN ACCORDANCE WITH OESC AND LOCAL GOVERNING AUTHORITY. ANY SUBSEQUENT TESTING TO 8.1 INSTALL CONDUCTORS CONCEALED TO DEGREE MADE POSSIBLE BY FINISHES AND PROVIDE INSTALLATIONS IN ACCORDANCE WITH OESC AND LOCAL GOVERNING AUTHORITY. WITH TRADES PRIOR TO INSTALLATION. IN AREAS WHERE MULTIPLICITY OF SERVICES OCCURS, PREPARE DETAIL DRAWINGS AND SUBMIT TO CONSULTANT PRIOR TO START OF AFFECTED WORK. 8.2 WHERE CONDUIT AND/OR CONDUCTORS ARE EXPOSED, ARRANGE SAME TO AVOID INTERFERENCE WITH OTHER WORK AND PARALLEL TO BUILDING LINES. WHERE HORIZONTAL CONDUITS AND/OR CONDUCTORS ARE EXPOSED, INSTALL AS HIGH AS POSSIBLE DO NOT INSTALL CONDUIT AND/OR CONDUCTORS WITHIN 150 MM OF "HOT" PIPES OR EQUIPMENT UNLESS CONDUIT AND/OR CONDUCTORS ARE ASSOCIATED WITH EQUIPMENT. INDEPENDENTLY RUN CONDUCTORS MUST BE SUPPORTED FROM
 - CEILING/WALL STRUCTURE. NOT FROM CEILING HANGERS. DUCTWORK. PIPING. CABLE TRAYS. ETC. 8.3 IDENTIFY CONDUIT RUNS. (I.E.: TAG BOTH ENDS OF CONDUIT RUNS)
 - 8.4 AT NO EXTRA COST. ALLOW FOR FINAL RELOCATIONS OF DEVICES UP TO 3 M TO SUIT FINAL COORDINATED DEVICE LOCATIONS. PRIOR TO INSTALLATION OF WALL COVERINGS. 8.5 GENERALLY, CONDUCTORS AND CONDUIT ARE SIZED ON DRAWINGS, BUT IN ABSENCE OF DIRECTION IN TYPE AND SIZING, TYPE AND SIZE AND PROVIDE REQUIRED QUANTITY IN ACCORDANCE WITH INTENDED APPLICATION, TO APPLICABLE OESC REQUIREMENTS. SIZES WHERE SHOWN, ARE MINIMUM SIZES AND IS NOT TO BE REDUCED UNLESS APPROVED BY OWNER AND REVIEWED WITH CONSULTANT 8.6 WHERE RECEPTACLE TYPE DEVICES ARE LOCATED IN EXISTING FLOORS AND/OR WHERE FEEDS ARE REQUIRED TO FURNITURE SYSTEMS IN OPEN SPACES, AND WHERE CHASING OF FLOOR SLAB TO RUN CONDUIT IS NOT ACCEPTABLE TO OWNER, PROVIDE "POKE-THRU" ASSEMBLY INSTALLED THROUGH FLOOR AND FEED FROM CONDUIT RUNS PROVIDED IN CEILING SPACE OF FLOOR BELOW.
 - 8.7 CONDUCTORS IN PLENUM SPACES AND IN RAISED FLOOR AREAS TO COMPLY WITH OBC AND OESC REQUIREMENTS WITH REGARDS TO FLAME AND SMOKE TEST.

 - 9.1 PROVIDE COMPLETE SYSTEM OF CONDUITS, OUTLET BOXES, JUNCTION BOXES, FACEPLATES AND SLEEVES (IF REQUIRED) AND FIRE RETARDANT PLYWOOD BACKBOARD TO ACCOMMODATE EXTENSION OF EXISTING SYSTEM BY SYSTEMS INSTALLERS WHO WILL PROVIDE EQUIPMENT AND WIRING. PROVIDE BLANK TYPE FACEPLATES. 9.2 PROVIDE CONDUIT AS REQUIRED. PROVIDE PULLBOXES IN CONDUIT RUNS LONGER THAN 30 M OR HAVING MORE THAN 2, 90 DEGREE BENDS. PULLBOX SIZES ARE NOT TO BE LESS THAN 8 TIMES ENTERING CONDUIT IN LENGTH. LEAVE CONDUITS FREE AND
 - CLEAR OF OBSTRUCTIONS AND TERMINATE AS REQUIRED. EQUIP TERMINATIONS WITH BUSHINGS AND CLEARLY IDENTIFY EACH RUN. PROVIDE FISH WIRES IN EMPTY CONDUIT. FOR NETWORK CABLING SYSTEMS, BOXES, CONDUITS, AND BENDING RADII TO CONFORM TO EIA/TIA 569 STANDARDS FOR INSTALLATION OF CATEGORY RATING OF CABLING. UNLESS OTHERWISE NOTED, CONDUITS TO BE MINIMUM 20 MM DIAMETER AND INCREASED TO SUIT MAXIMUM CABLE FILL REQUIREMENTS. 9.3 CONFIRM EXACT REQUIREMENTS AND LOCATIONS OF EQUIPMENT WITH RESPECTIVE SYSTEM /EQUIPMENT INSTALLERS AND REVIEW WITH CONSULTANT PRIOR TO ROUGHING IN.

10 CONDUIT

- 10.1 PROVIDE CONDUIT FOR CONDUCTORS. INTERIOR CONDUIT TO BE EMT (THINWALL) GALVANIZED, ELECTRICAL METALLIC TUBING TO CSA C22.2 NO. 83, COMPLETE WITH FACTORY MADE BENDS WHERE SITE BENDING IS NOT POSSIBLE, AND JOINTS AND TERMINATIONS MADE WITH SET SCREW TYPE CONNECTORS FOR SHORT BRANCH CIRCUIT CONNECTORS TO MOTORIZED FOUIPMENT AND TRANSFORMERS (MINIMUM LENGTH 450 MM, MAXIMUM LENGTH 600 MM, WITH 180 DEGREE LOOP WHERE POSSIBLE) GALVANIZED STEEL FLEXIBLE FLUID TIGHT METALLIC CONDUIT TO CSA C22.2 NO. 56. COMPLETE WITH IDEAL "STEEL TOUGH" LIQUID TIGHT FLEXIBLE CONDUIT CONNECTORS AT TERMINATIONS. FOR EXTERIOR EXPOSED CONDUIT. AND FOR INTERIOR CONDUIT. GREATER THAN 50 MM DIAMETER AND FOR SURFACE MOUNTED CONDUIT AT HEIGHT LESS THAN 1200 MM. PROVIDE RIGID GALVANIZED STEEL TO CSA C22.2 NO. 45 COMPLETE WITH FITTINGS. CONNECTORS. AND RIGID COUPLINGS.
- 10.2 FOR RUNNING UNDERGROUND, OR IN CONCRETE SLABS, PROVIDE CSA APPROVED, RIGID PVC CONDUIT COMPLETE WITH COUPLINGS, EXPANSION JOINTS, ELBOWS, ETC., AS REQUIRED. 10.3 SUPPORT AND SECURE CONDUIT AT SPACING IN ACCORDANCE WITH CODE REQUIREMENTS BY MEANS OF GALVANIZED PIPE STRAPS, CONDUIT CLIPS, RING BOLT TYPE HANGERS, OR BY OTHER PROPER MANUFACTURED DEVICES. PROVIDE CONDUIT FITTINGS CONSTRUCTED OF SAME MATERIALS AS CONDUIT AND SUITABLE FOR APPLICATION. SQUARE AND PROPERLY REAM ENDS OF SITE CUT CONDUIT. GENERALLY, CONDUIT IS SIZED ON DRAWINGS, SIZE CONDUIT NOT SIZED ON DRAWINGS IN ACCORDANCE WITH
- CODE. FOR CONTROL AND COMMUNICATION CONDUCTORS, SIZE CONDUIT AS NOTED BUT INCREASED TO SUFFICIENTLY ACCOMMODATE HOME RUN CONDUCTORS. BEND CONDUIT AT FULL CONDUIT DIAMETER WITH NO KINKING AND NO FLAKING OR CRACKING OF FINISHES.

11 CONDUCTORS

- 11.3 UNDERGROUND CONDUCTORS: "RWU90" CSA CERTIFIED, SINGLE COPPER CONDUCTOR TO CSA C22.2 NO. 38, 1000 VOLTS, MAXIMUM 90°C CONDUCTOR TEMPERATURE, MINUS 40°C MINIMUM INSTALLATION TEMPERATURE, EXTRA THICKNESS X-LINK POLYETHYLENE INSULATION SUITABLE FOR WET AND BURIED INSTALLATIONS. COLOUR CODED.
- 11.4 CONDUCTORS IN ACCESSIBLE SUSPENDED CEILING SPACES, IN STUD WALL CONSTRUCTION TO SUSPENDED CEILING SPACES, MAY BE "BX" TYPE, AC 90 FLEXIBLE ARMOURED CABLE WITH "RW 90" COPPER CONDUCTORS (MAXIMUM 6 M RUN PERMITTED), AND WITH BARE COPPER GROUND CONDUCTOR. "BX" TO COMPLY WITH CSA C22.2 NO. 51 (BULLETIN NO. 994). PROVIDE PROPER SQUEEZE TYPE CONNECTORS AND PLASTIC ANTI SHORT BUSHINGS AT TERMINATIONS. SUPPORT "BX" IN CEILING SPACES AND IN STUD WALL CONSTRUCTION WITH STEEL 2 HOLE CABLE STRAPS TO "CODE" REQUIREMENTS. RUN BX PERPENDICULAR AND PARALLEL TO BUILDING LINES. 11.5 CONDUCTORS UP TO AND INCLUDING NO. 10 AWG TO BE SOLID. CONDUCTORS IN SIZES LARGER THAN NO. 10 AWG TO BE STRANDED. PROVIDE CONDUCTORS CONSTRUCTED OF 98% CONDUCTIVE COPPER AND APPROVED FOR 600 V. DO NOT USE
- CONDUCTORS SMALLER THAN NO. 12 AWG UNLESS OTHERWISE NOTED. 11.6 PROVIDE IDI ELECTRIC "IDEAL" NO. 451, NO. 452 AND NO. 453 "WING NUT" CSA CERTIFIED 600V RATED PRESSURE TYPE CONNECTORS. 11.7 COLOUR CODE CONDUCTORS IN ACCORDANCE WITH CODE, THROUGHOUT TO IDENTIFY PHASES, NEUTRALS AND GROUND BY MEANS OF SELF-LAMINATING COLOURED TAPE, COLOURED CONDUCTOR INSULATION, OR PROPERLY SECURED COLOURED PLASTIC
- 11.8 WHEN PULLING WIRES INTO CONDUIT, USE IDI ELECTRIC "IDEAL YELLOW 77" LUBRICANT. ENSURE WIRES ARE KEPT STRAIGHT AND ARE NOT TWISTED OR ABRAISED.
- 12 OUTLET BOXES, PULLBOXES AND JUNCTION BOXES
- 12.1 PROVIDE CSA APPROVED STAMPED GALVANIZED STEEL ELECTRICAL BOXES FOR EACH LUMINAIRE, DEVICE AND OTHER PRODUCT FOR WIRING TERMINATIONS AS REQUIRED. REFER TO DRAWINGS FOR TYPICAL LOCATIONS OF OUTLETS. CONFIRM EXACT LOCATIONS PRIOR TO ROUGHING IN. BOXES FOR RIGID STEEL CONDUITS TO BE CAST FS/FD TYPES. PROVIDE PVC BOXES FOR PVC CONDUIT SYSTEMS. 12.2 PROVIDE PULLBOXES AND JUNCTION BOXES WHEREVER NECESSARY TO FACILITATE CONDUCTOR/CONDUIT INSTALLATIONS. GENERALLY, PROVIDE CONDUIT RUNS EXCEEDING 30 M IN LENGTH, OR WITH MORE THAN 2, 90-DEGREE BENDS WITH PULLBOX
- INSTALLED AT CONVENIENT AND SUITABLE INTERMEDIATE ACCESSIBLE LOCATION. PROVIDE JUNCTION BOXES AND PULLBOXES SIZED IN ACCORDANCE WITH CODE TO SUIT NUMBER AND SIZE OF CONDUITS AND CONDUCTORS. BOXES TO BE GALVANIZED OR PRIME COATED PLATE STEEL COMPLETE WITH SCREW ON OR HINGED COVERS AND KNOCKOUTS. BOXES MUST BE ACCESSIBLE AFTER WORK IS COMPLETE. 12.3 SIZE, ARRANGEMENT AND TYPE OF BOXES TO BE SUITABLE FOR APPLICATION. PROVIDE BLANK COVERPLATES ON EXISTING OBSOLETE BOXES, WHICH ARE TO REMAIN. CLEARLY IDENTIFY MAIN PULL OR JUNCTION BOXES BY PAINTING COVERS IN ACCORDANCE WITH FOLLOWING COLOUR SCHEDULE:
- .1 LIGHTING YELLOW; NORMAL POWER - BLUE;
- .3 ESSENTIAL POWER ORANGE .4 FIRE ALARM - RED.
- 13.1 FOR GENERAL AREAS PROVIDE HUBBELL CANADA HBI 1221 SERIES CSA APPROVED EXTRA HEAVY DUTY INDUSTRIAL GRADE AC QUIET ACTION NYLON TOGGLE TYPE 20A 120 277V SWITCHES AND HBI 5262 EXTRA HEAVY DUTY SPECIFICATION GRADE PREMIUM QUALITY, NYLON BODY CONSTRUCTION, DUPLEX, 15A 125V, 3W GROUNDING RECEPTACLES, DEVICES TO BE BACK AND SIDE WIRED, PROVIDE STAINLESS STEEL TYPE OR IMPACT RESISTANT THERMOPLASTIC FACEPLATES WITH MATCHING SCREWS. AS PER EXISTING STANDARDS AS REVIEWED WITH CONSULTANT.
- 13.2 FOR PUBLIC SPACES OR OTHER AREAS WHERE DESIGNER DEVICES ARE REQUIRED: PROVIDE HUBBELL DS120 SERIES, "STYLE LINE", CSA APPROVED, SPECIFICATION GRADE, ROCKER TYPE, 20A, 120 277V DECORATIVE TYPE SWITCHES AND "STYLE LINE" SPECIFICATION GRADE HBL2152 SERIES, DUPLEX NYLON CONSTRUCTION, 15A 125V, 3W DECORATIVE RECEPTACLES. DEVICES TO BE BACK AND SIDE WIRED. PROVIDE IMPACT RESISTANT THERMOPLASTIC FACEPLATES WITH MATCHING SCREWS. 13.3 WHERE REQUIRED, PROVIDE HUBBELL NO. GFR5262 WEATHER RESISTANT SERIES, 15A 125V, ULC LISTED, CLASS A, GROUP ONE, 2 POLE, 3W, IVORY COLOURED, SPECIFICATION GRADE, GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE, COMPLETE WITH STAINLESS STEEL FACEPLATES AND MATCHING SCREWS.
- 13.4 IDENTIFY CIRCUIT NUMBERS ON RECEPTACLE DESIGNATED LABELLING SPACES. PROVIDE PERMANENTLY LABELLED, SELF-ADHESIVE, IDENTIFICATION TAPE ON OUTSIDE OF EACH DEVICE OUTLET, IDENTIFYING LOCATION FROM WHERE EACH DEVICE IS FED. 13.5 CONFIRM TYPE, NUMBER OF WAY, NUMBER OF POLES, AND FINISHES OF DEVICES WITH CONSULTANT PRIOR TO ORDERING. SUBMIT SAMPLES AND FINISHES FOR CONSULTANT'S REVIEW. RECEPTACLES CONNECTED TO ESSENTIAL POWER CIRCUITS TO BE RED
- COLOUR 13.6 ACCEPTABLE MANUFACTURERS INCLUDE LEGRAND P&S, COOPER ARROW HART AND LEVITON.

14 ACCESS DOORS

- 14.1 PROVIDE MINIMUM NO. 12 GAUGE PRIME COAT PAINTED STEEL FLUSH ACCESS DOORS, EACH COMPLETE WITH A HEAVY FRAME AND ANCHOR, HEAVY DUTY RUST RESISTANT CONCEALED HINGES, POSITIVE LOCKING SCREWDRIVER LOCK, AND MOUNTING AND FINISHING PROVISIONS TO SUIT PARTICULAR CONSTRUCTION IN WHICH IT IS INSTALLED. ACCESS DOORS TYPICALLY STANDARD SIZE AND TO SUIT CONCEALED WORK FOR WHICH THEY ARE SUPPLIED BUT NOT BE LESS THAN 600 MM X 600 MM. ACCESS DOORS IN FIRE RATED CEILINGS, WALLS, PARTITIONS, STRUCTURES, ETC., TO BE ULC LISTED AND LABELLED AND OF A RATING TO MAINTAIN FIRE SEPARATION INTEGRITY. 14.2 WHERE ACCESS DOORS ARE LOCATED IN SURFACES WHERE SPECIAL FINISHES ARE REQUIRED, PROVIDE RECESSED DOOR TYPE CAPABLE OF ACCEPTING FINISH IN WHICH THEY ARE TO BE INSTALLED SO AS TO MAINTAIN FINAL BUILDING SURFACE
- APPEARANCE THROUGHOUT 14.3 SUPPLY ACCESS DOORS TO GIVE ACCESS TO JUNCTION BOXES, PULLBOXES, CONDUCTOR/BUS JOINTS AND OTHER SIMILAR ELECTRICAL WORK WHICH MAY NEED MAINTENANCE OR REPAIR BUT WHICH IS CONCEALED IN INACCESSIBLE CONSTRUCTION.
- 14.4 BEFORE COMMENCING INSTALLATION OF WORK, PREPARE ON SET OF REFLECTED CEILING PLANS, COMPLETE LAYOUTS OF REQUIRED CEILING ACCESS DOORS. SUBMIT FOR CONSULTANT'S REVIEW, LAYOUTS SHOWING EXACT SIZES AND LOCATIONS. LOCATE AND ARRANGE WORK TO SUIT. COORDINATE SUCH THAT MECHANICAL AND ELECTRICAL SERVICES CAN BE ACCESSED AT SAME LOCATION WHERE POSSIBLE. 14.5 ACCESS DOORS TO BE INSTALLED BY TRADE RESPONSIBLE FOR PARTICULAR TYPE OF CONSTRUCTION IN WHICH DOORS ARE REQUIRED. SUPPLY ACCESS DOORS TO TRADE INSTALLING SAME AT PROPER TIME.
- 14.6 CONFIRM EXACT DIMENSIONS PRIOR TO ORDERING. CONFIRM FINISHES WITH CONSULTANT.
- 15 FASTENING AND SECURING HARDWARE
- 15.1 PROVIDE PROPER FASTENERS, HANGERS AND SIMILAR HARDWARE REQUIRED FOR CONDUIT, CONDUCTORS AND EQUIPMENT. DO NOT USE EXPLOSIVE POWDER ACTUATED FASTENERS WITHOUT WRITTEN APPROVAL FROM OWNER AND REVIEW WITH CONSULTANT, UNDER NO CIRCUMSTANCES USE CEILING SUSPENSION HANGERS OR GRIDS FOR SUSPENSION OF CONDUIT AND CONDUCTORS 15.2 PROVIDE VELCRO TIE WRAPS FOR BUNDLING AND SECURING CABLES. DO NOT OVER TIGHTEN. PROVIDE FT6/CMP RATED WRAPS IN PLENUM TYPE SPACES AS PER LOCAL BUILDING CODE REQUIREMENTS.

16 IDENTIFICATION NAMEPLATES

- 16.1 FOR EACH PIECE OF ELECTRICAL DISTRIBUTION EQUIPMENT FROM ELECTRICAL SOURCE OF SUPPLY UP TO AND INCLUDING PANELBOARDS. AND OTHER SYSTEMS CONTROL CABINETS AND ASSOCIATED ENCLOSURES. PROVIDE ENGRAVED LAMACOID IDENTIFICATION NAMEPLATES SECURED TO APPARATUS WITH STAINLESS STEEL SCREWS, WORDING TO INDICATE SOURCE OF ELECTRICAL SUPPLY AND SIZED TO SUIT EQUIPMENT FOR WHICH IT IS PROVIDED. REVIEW EXACT NAMEPLATE SIZES, NOMENCLATURE, DESIGNATIONS, AND PRINT SIZES WITH CONSULTANT PRIOR TO MANUFACTURE. 17 SYSTEM BACKBOARDS
- 17.1 FSC (FOREST STEWARDSHIP COUNCIL), G1S CONSTRUCTION GRADE FIR PLYWOOD, FLAME RETARDANT PRIME COAT PAINTED ON EXPOSED SURFACES, MINIMUM 20 MM THICK, AS SIZED ON DRAWINGS AND WITH FLAME SPREAD RATING IN ACCORDANCE WITH OBC REQUIREMENTS
- 17.2 PROVIDE SPECIFIED TERMINAL BACKBOARDS FOR MOUNTING EQUIPMENT. SECURELY WALL MOUNT EACH BACKBOARD IN LOCATIONS AS REQUIRED. ENSURE THAT BACKBOARDS ARE SIZED TO SUFFICIENTLY PROVIDE ADEQUATE TERMINAL SPACE FOR EACH SYSTEM AS REQUIRED PLUS 20% SPARE. 18 FUSES
- 18.1 PROVIDE COMPLETE SET OF FUSES FOR EACH FUSIBLE DISCONNECT OR SIMILAR FUSIBLE EQUIPMENT. FUSES TO BE FORM I, CLASS "J" HRC FUSES FOR CONSTANT RUNNING EQUIPMENT, AND FORM II, CLASS "C" FUSES FOR MOTOR EQUIPMENT THAT CYCLES "ON" AND "OFF". FUSES TO COMPLY WITH LATEST EDITION OF CSA C22.2 NO.248. ACCEPTABLE MANUFACTURERS ARE MERSEN, ENGLISH ELECTRIC AND BUSSMAN. 19 DISCONNECT SWITCHES
- 19.1 PROVIDE EATON DISCONNECT SWITCHES, HEAVY DUTY, CSA APPROVED, FRONT OPERATED TYPE. FUSIBLE UNITS TO BE COMPLETE WITH FUSE CLIPS SUITABLE FOR HRC FUSES, UNLESS OTHERWISE NOTED. IN CLIMATE CONTROLLED AREAS, ENCLOSURES TO BE NEMA 3R. AMP RATING, NUMBER OF POLES AND FUSE REQUIREMENTS ARE AS INDICATED ON DRAWINGS. ACCEPTABLE MANUFACTURERS INCLUDE SIEMENS AND SCHNEIDER.
- 20 CIRCUIT BREAKERS FOR EXISTING PANELBOARDS 20.1 PROVIDE BREAKERS IN EXISTING PANELBOARDS OF TYPE, QUALITY AND STANDARDS TO MATCH EXISTING DEVICES. CONFIRM REQUIREMENTS ON SITE PRIOR TO ORDERING. BREAKERS TO BE FULL HEIGHT MODULES. PROVIDE MODIFICATIONS TO PANELBOARDS TO ACCOMMODATE BREAKERS AND FEEDER INSTALLATIONS. PROVIDE REPLACEMENT BRANCH CIRCUIT DIRECTORY CARDS, NEATLY TYPEWRITTEN TO INCORPORATE ADDITIONAL AND EXISTING CONNECTED LOADS, TO CONSULTANT'S DIRECTIONS. DIRECTORIES TO USE OWNER'S ACTUAL ROOM NAMES/NUMBERS AND NOT CONTRACT DRAWINGS NAMES/NUMBERS. PROVIDE ENGRAVED LAMACOID NAMEPLATES FOR DISTRIBUTION PANELBOARD. 21 BRANCH CIRCUIT PANELBOARDS
- 21.1 PROVIDE EATON TYPE "POW R LINE 1" FACTORY ASSEMBLED DEAD FRONT PANELBOARDS, 120/208V, 3 PHASE, 4 WIRE, MANUFACTURED TO CSA STANDARD C22.2 NO. 29 AND OESC, AND DESIGNED FOR AN INTERRUPTING CAPACITY OF 10 KA SYMMETRICAL AT 208V. UNLESS OTHERWISE NOTED.
- 21.2 INSTALL PANELBOARDS WHERE REQUIRED, COMPLETE WITH: NEMA 1 ENCLOSURE CONSTRUCTED OF GALVANIZED STEEL AND WHERE SURFACE MOUNTED FINISHED WITH GREY ACRYLIC ENAMEL;
- TRIM FOR RECESSED OR SURFACE WALL MOUNTING, STEEL DOORS COMPLETE WITH CONCEALED FASTENERS, CONCEALED HINGE, CHROME PLATED DOOR LATCH AND KEYED ALIKE LOCK WITH KEY, STEEL FRAME HOLDER AND CIRCUIT DIRECTORY BACK OF DOOR, AND MYLAR CIRCUIT BREAKER IDENTIFICATION STRIPS; FACTORY FINISHED WITH GREY ACRYLIC ENAMEL;
- FACTORY PAINTED DRIP SHIELD FOR SURFACE MOUNTED PANELBOARDS;
- ELECTRICAL GRADE COPPER PHASE, NEUTRAL AND COPPER BUSSING; BOLT ON FULL HEIGHT MODULE MOULDED CASE CIRCUIT BREAKERS;
- MAIN BREAKER AND GREEN POWER "ON" INDICATOR LIGHT, WHERE SCHEDULED:
- 200% CAPACITY NEUTRALS FOR PANEL BOARDS AS SCHEDULED
- PROVIDE DOUBLE LUGGING TO EXISTING PANELBOARDS AS REQUIRED
- 21.3 SUPPORT CABINET INDEPENDENT OF CONNECTING CONDUIT. TURN OVER TO CONSULTANT, PRIOR TO APPLICATION FOR SUBSTANTIAL PERFORMANCE OF WORK, QUANTITY OF 2 PANELBOARD CABINET KEYS PER PANELBOARD. IDENTIFY PANELBOARD BREAKERS IN PERMANENT MANNER, AND COMPLETE TYPED CIRCUIT DIRECTORY TO OWNER'S APPROVAL
- 21.4 ACCEPTABLE MANUFACTURERS INCLUDE SIEMENS AND SCHNEIDER.

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- 22 GROUNDING AND BONDING
- 22.1 PROVIDE COMPLETE SYSTEM OF GROUNDING AND BONDING, WHICH COMPLIES, WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION FOR ELECTRICAL WORK, INCLUDING REQUIRED GROUNDING SECTIONS OF OESC. CONNECT GROUNDING CONDUCTORS TO EXISTING BUILDING GROUND SYSTEM. PROVIDE SEPARATE INSULATED GROUND WIRE FOR EACH ISOLATED GROUND CIRCUIT. MAKE BURIED OR IN SLAB GROUND CONNECTIONS WITH ERICO CADWELD TYPE WELDED COPPER CONNECTIONS
- OR BURNDY HYGROUND COMPRESSION CONNECTORS. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE. CONDUCTORS GREATER THAN 400 A TO BE PROVIDED WITH MINIMUM 3/0 AWG GROUND CONDUCTOR. 22.2 PROVIDE TELECOMMUNICATIONS GROUNDING BUSBAR (MINIMUM 300MM X 50MM X 9MM) MOUNTED WITH STANDOFF INSULATORS ON WALLS OF LAN CLOSETS. BUSBAR TO INCLUDE MINIMUM 8-DRILLED HOLES. CONNECT TO EQUIPMENT WITH GROUND CONDUCTORS AS REQUIRED. PROVIDE GROUNDING AND BONDING OF LAN CLOSETS TO REQUIREMENTS OF ANSI/EIA/TIA-607
- 23 CONNECTIONS FOR MECHANICAL, OWNER'S, ETC., EQUIPMENT
- 23.1 PROVIDE REQUIRED ELECTRICAL AND COMMUNICATIONS CONNECTIONS TO APPARATUS SUPPLIED BY MECHANICAL DIVISION, OWNER AND AS PART OF OTHER DIVISIONS. PERFORM ELECTRICAL WORK FOR EQUIPMENT SCHEDULED ON DRAWINGS. MECHANICAL DIVISION CONTRACTOR WILL SUPPLY STARTERS FOR MOTORIZED APPARATUS SUPPLIED BY THEM AND WILL PROVIDE LAMACOID IDENTIFICATION THROUGHOUT.
- 23.2 COORDINATE WITH TRADES OF OTHER DIVISIONS TO ENSURE PROVISION OF PROPER ELECTRICAL AND COMMUNICATIONS REQUIREMENTS. UNLESS OTHERWISE NOTED OR DIRECTED BY CONSULTANT, PROVIDE INTERCONNECT WIRING BETWEEN REMOTE OPERATOR DEVICES/CONTROLLERS AND FOUIPMENT BEING CONTROLLED BY OPERATOR DEVICES WHETHER OR NOT SUCH DEVICES ARE SUPPLIED BY FLECTRICAL DIVISION PROVIDE DISCONNECT SWITCHES, RECEPTACLES AND OTHER REQUIRED WIRING AND CONNECTION ACCESSORIES. PROVIDE DATA CABLING AND JACKS EXTENDING FROM COMMUNICATIONS PORTS TO LAN CLOSET TELECOM EQUIPMENT. COORDINATE WORK WITH SUPPLIERS OF EQUIPMENT TO BE PROVIDED WITH CONNECTIONS AND WITH STRUCTURED CABLING SYSTEM VENDOR.
- 23.3 BE RESPONSIBLE FOR: .1 COMPLETE INSTALLATION AND CONNECTION OF STARTERS AND PROVIDE "LINE" AND "LOAD" POWER CONNECTIONS AND INTERLOCKING AS REQUIRED;
- .2 PROVIDE MOTOR STARTER PANELS CONSISTING OF NO. 14 GAUGE STEEL BOLTED PANELS SIZED TO ACCOMMODATE STARTERS AS REQUIRED AND SUITABLE SPLITTER;
- .3 UNLESS OTHERWISE NOTED OR SHOWN ON DRAWINGS, MOUNT 1 PHASE STARTERS ADJACENT TO EQUIPMENT THEY SERVE AND CONNECT COMPLETE;
- .4 COORDINATE FEEDER ENTRIES TO STARTERS AND STARTER ASSEMBLIES WITH MECHANICAL DIVISION: .5 PROVIDE ADDITIONAL DISCONNECT SWITCHES (COMPLETE WITH IDENTIFICATION) DETAILED ON DRAWINGS, REQUIRED BY CODE, OR FOR APPARATUS WHICH CANNOT BE SEEN FROM ITS STARTER OR IS IN EXCESS OF 9 M (30') FROM ITS STARTER; .6 PROVIDE INTERLOCK WIRING INDICATED ON DRAWINGS AND AS REQUIRED AND AS COORDINATED WITH MECHANICAL DIVISION CONTRACTOR;
- .7 CONNECT REQUIRED CIRCUITS TO MOTOR STARTER PANEL SO AS TO BALANCE ACTUAL LOADS (WATTAGE).
- 24 LUMINAIRES
- 24.1 INCLUDE WITH SHOP DRAWING SUBMISSIONS, PHOTOMETRIC DATA, LAMP AND BALLAST/DRIVER INFORMATION FOR EACH LUMINAIRE. PHOTOMETRIC DATA TO INCLUDE: TOTAL INPUT WATTS, CANDLEPOWER SUMMARY, CANDELA DISTRIBUTION ZONAL LUMEN SUMMARY, LUMINAIRE EFFICIENCY, CIE TYPE, COEFFICIENT OF UTILIZATION, LAMP TYPE AND LUMEN RATING IN ACCORDANCE WITH IESNA TESTING PROCEDURES.
- 24.2 PROVIDE LUMINAIRES AS NOTED COMPLETE WITH LED LAMPS AND DRIVERS WITH FEATURES AS FOLLOWS: .1 CSA APPROVED, ULC LISTED AND LABELLED;
- .2 OPERATING TEMPERATURE RANGE THROUGH -20°C TO 50°C
- .3 SPECIFICATION STANDARDS TO MEET REQUIREMENTS OF IES LM 79 AND LM-80;
- .4 BE 100% COMPATIBLE WITH CONNECTED DIMMER CONTROLS TO PROVIDE DIMMING DOWN TO 5%; 5 LEDS TO BE SELECTED FROM SAME COLOUR BIN SIZE FOR CONSISTENCY IN CHROMATICITY AND MEET ANSI C78 377A AS A MINIMUM:
- .6 GENERALLY, COLOUR TEMPERATURE RANGE TO BE FROM 2700 K TO 6500 K; SPECIFIC TEMPERATURE REQUIREMENTS TO BE IDENTIFIED ON SCHEDULE OF LUMINAIRES;
- .7 MINIMUM CRI OF 80;
- .8 RATED LIFE (BASED ON 70% LUMEN DEPRECIATION LEVEL) FROM 50,000 TO 70,000 HOURS. .9 OPERATE FROM 60 HZ INPUT SOURCE OF 120 VAC WITH SUSTAINED VARIATIONS OF ± 10% (VOLTAGE AND FREQUENCY) WITH NO DAMAGE TO DRIVER;
- .10 OUTPUT REGULATED TO ±5% ACROSS LOAD RANGE;
- .11 POWER FACTOR GREATER THAN 0.90; .12 TOTAL HARMONIC DISTORTION LESS THAN 20%;
- .13 CLASS A SOUND RATING;
- 14 COMPLY WITH ANSI C62 41 CATEGORY A FOR TRANSIENT PROTECTION .15 ACCEPTABLE MANUFACTURERS AS RECOMMENDED BY LUMINAIRE MANUFACTURERS
- 24.3 THOROUGHLY REVIEW CEILING TYPES. FINISHES AND CONSTRUCTION DETAILS WITH OWNER BEFORE PLACING LUMINAIRE ORDERS AND ENSURE REQUIRED MOUNTING ASSEMBLIES. RINGS AND SIMILAR FEATURES ARE INCLUDED. INCLUDE FOR ASSEMBLY WORK OF OTHER TRADES TO ENSURE NECESSARY RECESSING DEPTHS AND MOUNTING SPACES ARE PROVIDED. INSTALL LUMINAIRES IN ACCORDANCE WITH APPLICABLE ARCHITECTURAL REFLECTED CEILING PLANS AND/OR WALL ELEVATIONS. CONFIRM TRAYS. ETC.
- 24.4 CONNECT LUMINAIRES TO CIRCUITS AND NEW AND/OR EXISTING LIGHTING CONTROL EQUIPMENT AS REQUIRED. DO NOT OVERLOAD CIRCUITS BEYOND BALLAST MANUFACTURER'S RECOMMENDATIONS. 24.5 ENSURE THAT PRODUCTS ARE COMPATIBLE WITH EACH OTHER FOR DIMMING APPLICATIONS AND ENSURE PERFORMANCE LEVELS ACCEPTABLE TO CONSULTANT. UNLESS OTHERWISE NOTED, LIGHTING TO BE DIMMED FROM 100% DOWN TO 5%.
- 25 LOW VOLTAGE RELAYS/CONTACTORS
- 25.1 SPECIFICATION GRADE, HEAVY DUTY, 24V, 30A/20A RATED, 14 KAI, RELAYS SUITABLE FOR CONNECTED LOADS; RELAYS TO BE CAPABLE OF INDIVIDUAL ON/OFF CONTROL VIA LOW VOLTAGE SWITCH OR OCCUPANCY SENSOR; 25.2 MAGNETIC, FULL VOLTAGE CONTACTORS, SUITABLE FOR APPLICATIONS;
- 25.3 ELECTRICAL ENCLOSURES/ BOXES SUITABLE FOR HOUSING COMPONENTS.
- 26 OCCUPANCY SENSORS
- 26.1 PROVIDE LEGRAND-WATTSTOPPER INC., CSA APPROVED DEVICES TO PROVIDE AUTOMATIC CONTROL OF LIGHTING WITH FOLLOWING COMPONENTS:
- .1 POWER AND SLAVE PACKS: LOW VOLTAGE OR LINE VOLTAGE OPERATION TO SUIT SPECIFIC APPLICATIONS
- .2 DUAL TECHNOLOGY OCCUPANCY SENSORS;
- .3 OVERRIDE SWITCHES TO BE WALL MOUNTING IN SINGLE GANG RECESSED OUTLET BOXES; .4 DAY LIGHT SENSORS TO BE PROVIDED WHERE REQUIRED FOR DIMMING OR CONTROLLING LIGHTS IN AREAS OF WINDOWS AND ATRIUMS/SKY LIGHTS;
- .5 MOUNTING HARDWARE AND ANCILLARY DEVICES AS REQUIRED; .6 WIRING OF TYPE IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S REQUIREMENTS AND APPLICABLE LOCAL GOVERNING CODES AND STANDARDS.
- 26.2 DUAL TECHNOLOGY TYPE SENSORS AS FOLLOWS:
- .1 COMBINATION PASSIVE INFRARED AND ULTRASONIC TECHNOLOGIES:
- .2 WHEN BOTH PIR AND ULTRASONIC TECHNOLOGIES DETECT OCCUPANCY, LIGHTS TURN ON AUTOMATICALLY; ONCE LIGHTS ARE ON, DETECTION BY EITHER TECHNOLOGY HOLDS LIGHTS ON UNTIL OCCUPANCY IS NO LONGER DETECTED AND TIME DELAY ELAPSES:
- .3 360° LENS AREA COVERAGE, EXTENDING OUT UP TO 6 M AND AREA OF 92.9 M2;
- 4 LOW PROFILE CEILING MOUNTING DESIGN: INTEGRAL LIGHT SENSOR
- .5 ADJUSTABLE SENSITIVITY AND DIGITAL TIME DELAY; WALK-THROUGH MODE; LED INDICATION OF OCCUPANCY DETECTION .6 ISOLATED RELAY FOR INTERCONNECTION TO AUXILIARY CONTROL SYSTEMS WHERE REQUIRED.
- 26.3 FOR APPLICATIONS IN WASHROOMS AND SMALL STORAGE ROOMS: WALL MOUNTED DUAL TECHNOLOGY SENSORS AS FOLLOWS:
- .1 WALL SWITCH SENSOR TURNS LIGHTS OFF AND ON BASED ON OCCUPANCY.
- .2 FACTORY DEFAULT OPERATION IS FOR MANUAL-ON MODE, SO THAT USERS TURN LIGHT ON ONLY WHEN NEEDED;
- .3 VARIETY OF CONTROL OPTIONS INCLUDING AUTO-ON OPERATION, WALK-THROUGH AND TEST MODE; ADDITIONAL SETTINGS ALLOW CHOICE OF WHICH SENSING TECHNOLOGIES HOLD ON OR RETRIGGER LIGHTING; .4 COLOUR MATCHED LENS AND LOW PROFILE DESIGN;
- .5 WIDE DISPERSION LENS AREA COVERAGE, EXTENDING OUT UP TO 10 M AND AREA OF 37 M2; .6 INFRARED AND ULTRASONIC TECHNOLOGIES;
- .7 ADJUSTABLE TIME DELAYS AND SENSITIVITY; MANUAL PUSHBUTTON OPERATION (OVERRIDE). 26.4 EXACT TYPE OF OCCUPANCY SENSORS AND TYPE OF LENSES TO BE VERIFIED BY MANUFACTURER/SUPPLIER TO ENSURE PROPER COVERAGE IN SENSED AREAS ONLY, AND COMPATIBILITY TO INTERCONNECTED SYSTEMS. CONFIRM WITH RESPECTIVE
- MANUFACTURERS.
- 26.5 PROVIDE, LOCATE, AND AIM APPROPRIATE SENSORS IN CORRECT LOCATION REQUIRED FOR COMPLETE AND PROPER VOLUMETRIC COVERAGE WITHIN RANGE OF COVERAGE OF CONTROLLED AREAS PER MANUFACTURER'S RECOMMENDATIONS. ADJUST SENSITIVITY AND TIME DELAYS TO SUIT
- 26.6 ACCEPTABLE MANUFACTURERS INCLUDE HUBBELL, PHILIPS, SENSOR SWITCH; AND LEVITON.
- 27 EMERGENCY LIGHTING BATTERY UNITS
- 27.1 PROVIDE EMERGI-LITE 12V DC, "ESL" SERIES LONG LIFE (10 YEAR) SEALED LEAD, BATTERY UNITS. UNITS. SHALL BE COMPLETE WITH AUTO-DIAGNOSTIC CONTROLLER, SOLID STATE CHARGER, AC LINE CORD AND PLUG SET, NO. 18 GAUGE STEEL CABINET AND INEGRAL 12V/6W LED ADJUSTABLE LAMP HEADS. UNLESS OTHERWISE NOTED, REMOTE SURFACE LAMP HEADS TO BE DISTINCTION DESIGNER SERIES TYPE EF150, 12V/6W MR16 LED SURFACE MOUNTED SINGLE/DUAL LAMP HEADS AND RECESSED UNITS TO BE DISTINCTION DESIGNER SERIES TYPE EFR. 12V/6W MR16 LED RECESSED ADJUSTABLE RING TYPE. CONNECT COMPLETE, BACK TO BATTERY UNIT. CHARGER TO RESTORE BATTERIES TO FULL CHARGE WITHIN 12 HOURS. SYSTEM TO HAVE OBC REQUIRED DURATION OF OUTPUT CAPACITY FOR LOAD OF SYSTEM (BUT MINIMUM 30 MINUTES).
- 27.2 MOUNT UNIT IN AREA AS REQUIRED AND PLUG UNIT INTO ADJACENT RECEPTACLE. PROVIDE REMOTE LAMPHEADS WHERE REQUIRED AND PROVIDE WIRING IN CONDUIT TO BATTERY UNIT. CONFIRM EXACT LOCATIONS. SIZE CIRCUIT WIRING IN ACCORDANCE
- WITH MANUFACTURER'S REQUIREMENTS FOR VOLTAGE DROP PROTECTION. TEST, CHECK, AND ADJUST AS REQUIRED. 27.3 INCLUDE FOR MANUFACTURER TO PROVIDE TESTING OF SYSTEM AND MEASUREMENT OF LIGHT LEVELS TO OBTAIN LOCAL INSPECTION APPROVALS AND PERMITS. MANUFACTURER'S AUTHORIZED TECHNICIAN TO PREPARE AND PROVIDE SIGNED TEST REPORT VERIFYING THAT SYSTEM IS PROPERLY WORKING AND THAT LIGHT LEVELS MEET LOCAL CODE REQUIREMENTS. INCLUDE REQUIRED TEST MEASUREMENTS IN REPORT AND SUBMIT TO CONSULTANT. 27.4 ACCEPTABLE MANUFACTURERS INCLUDE LUMACELL, AIMLITE AND BEGHELLI.
- 28 LOW VOLTAGE LIGHTING CONTROL COMPONENTS
- 28.1 PROVIDE LEGRAND-WATT STOPPER, CSA APPROVED, ULC LISTED AND LABELLED, FACTORY PREWIRED, ASSEMBLED AND TESTED PANELS FOR CONTROL OF LOW VOLTAGE LIGHTING, AS FOLLOWS: .1 NEMA 1 ENCLOSURE WITH SPRINKLER PROTECTION, ENAMEL PAINTED STEEL TUB, INTERIOR MOUNTING PANEL, WITH RESTRICTED ACCESS TO LINE VOLTAGE SIDE AND WITH HINGED KEY LOCKABLE SURFACE OR FLUSH MOUNTING COVER AND IDENTIFICATION CARD:
- 2 SIZED SUITABLE FOR UP TO 48 RELAYS AND 6 CONTACTORS, AS REQUIRED:
- .3 INTELLIGENCE BOARDS WITH AUTOMATION CONTROL CARD, NETWORK CLOCK, GROUP/CHANNEL/PATTERN CONTROL CARD, PHOTO CONTROL MODULE, BMS INTERFACE, AS REQUIRED; .4 SPECIFICATION GRADE, HEAVY DUTY, 24V, 30A/20A RATED, 14 KAI, RELAYS SUITABLE FOR ELECTRONIC BALLASTS AND OTHER CONNECTED LOADS; RELAYS SHALL BE CAPABLE OF INDIVIDUAL ON/OFF CONTROL VIA LOW VOLTAGE SWITCH OR OCCUPANCY SENSOR;
- .5 DIN RAIL MOUNTED CONTACTORS, 4 POLE, NO/NC AS REQUIRED, COMPATIBLE WITH AND RATED FOR LOADS;
- .6 MULTI-VOLTAGE POWER SUPPLY OF CAPACITY TO POWER CONNECTED DEVICES AND RECTIFIERS AS REQUIRED;
- .7 24 V, MOMENTARY CONTACT IVORY PUSHBUTTON TYPE SWITCHES COMPLETE WITH PILOT LIGHTS; .8 TYPE 302 STAINLESS STEEL WALL PLATES, NUMBER OF GANG AS REQUIRED, SUITABLE FOR SWITCHES SPECIFIED AND COMPLETE WITH MOUNTING BRACKETS AND MATCHING SCREWS. CONFIRM FINISHES WITH CONSULTANT; .9 SEPARATION WHERE PANEL HAS MORE THAN ONE POWER SOURCE;
- .10 WIRING OF TYPE IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S REQUIREMENTS AND APPLICABLE LOCAL GOVERNING CODES AND STANDARDS.
- 28.2 SYSTEM MANUFACTURER TO REVIEW SYSTEM REQUIREMENTS AND SYSTEMS BEING INTEGRATED AND PROVIDE NECESSARY COMPONENTS TO SUIT. 28.3 FLUSH WALL MOUNT LOW VOLTAGE SWITCHES COMPLETE WITH MOUNTING BRACKETS AND STAINLESS STEEL FACEPLATES. INSTALL PANELS ADJACENT TO LIGHTING LOAD PANELBOARD. PROVIDE DRIP SHIELDS FOR SURFACE MOUNTED PANELS. IDENTIFY
- CIRCUITS. CHECK COMPONENTS CONNECTIONS, TEST OPERATION, AND ADJUST OR REPAIR AS REQUIRED.
- 28.4 INSTALL REQUIRED SYSTEM WIRING IN CONDUIT. PROVIDE REQUIRED POWER WIRING, AND COMMUNICATIONS AND CONTROL WIRING INTERCONNECTIONS BETWEEN PANELS. 28.5 ACCEPTABLE MANUFACTURERS MAY INCLUDE DOUGLAS, GE, LEVITON AND PHILIPS, SUBJECT TO CONSULTANT'S APPROVAL.
- 29 OUTSIDE LIGHTING CONTROL COMPONENTS
- 29.1 ELECTRONIC TIME SWITCHES: INTERMATIC INC., ET700C SERIES, CSA APPROVED, PROGRAMMABLE, 7 DAY, SURFACE WALL MOUNTED, ELECTRONIC TIME SWITCH WITH 28 SET POINTS PER DAY, NICAD BATTERIES FOR CONTINUOUS POWER TO PROGRAMMING AUTOMATIC CHARGER AND NEMA 1 ENCLOSURE WITH LOCKABLE HINGED DOOR. PROVIDE SURGE SUPPRESSOR AS REQUIRED. UNITS LOCATED IN NON-CLIMATE CONTROLLED AREAS SHALL INCLUDE NEMA 3R ENCLOSURES. EXACT MODEL MUST SUIT INTENDED APPLICATION OF LOADS BEING CONTROLLED.
- 29.2 INTERMATIC INC. K4100 SERIES, CSA APPROVED, 120V, WEATHER PROOF, HERMETICALLY SEALED, CADMIUM SULPHIDE, PHOTOCELL COMPLETE WITH COLOUR CODED LEADS, ADJUSTABLE LIGHT LEVEL SLIDE. SWIVEL, THREADED PIPE STEM AND HEAVY DUTY DIE CAST HOUSING. SYSTEM PROVIDED SUCH THAT LOAD REMAINS ON IF CELL FAILS AND SHALL INCLUDE THERMAL INERTIA TIME DELAY.
- 29.3 PROVIDE TIME SWITCH AND PHOTOCELL IN LOCATIONS AS REQUIRED. CONFIRM LOCATIONS PRIOR TO ROUGHING IN. CONNECT PHOTOCELL AND TIME SWITCH TO CONTACTOR, AND TO PANELBOARD CONTROLLING OUTSIDE LIGHTING. WHEN WORK IS COMPLETE, TEST SYSTEM AND ADJUST. PHOTOCELL SHALL SWITCH DESIGNATED OUTSIDE LIGHTING ON AND TIME SWITCH SHALL SWITCH LIGHTING OFF. 29.4 ACCEPTABLE MANUFACTURERS OF TIME SWITCH AND PHOTO CELL INCLUDE TORK CANADA AND PARAGON ELECTRIC.
- 30 EXISTING FIRE ALARM SYSTEM WORK
- 30.1 ENGAGE EXISTING FIRE ALARM SYSTEM VENDOR AS APPROVED BY OWNER, TO PROVIDE SYSTEM WORK. DISCONNECT, RELOCATE, AND RECONNECT REQUIRED DEVICES. WORK TO BE AN EXTENSION OF EXISTING SYSTEM. PROVIDE ADDITIONAL DEVICES, CONDUCTORS IN CONDUIT AND END OF LINE RESISTORS. PROVIDE ULC LISTED DEVICES TO MATCH EXISTING DEVICES AND BE COMPLETELY COMPATIBLE WITH EXISTING SYSTEM. PERFORM WORK IN ACCORDANCE WITH LATEST EDITION OF CAN/ULC S524. SEQUENCE OF OPERATION OF NEW WORK TO FUNCTION AS PER EXISTING SYSTEM. UNLESS OTHERWISE NOTED, CONNECT ADDITIONAL DEVICES TO EXISTING ZONES SERVING AREA, AS PER SYSTEM MANUFACTURER'S INSTRUCTIONS, TO EXISTING STANDARDS AND AS APPROVED BY LOCAL FIRE AUTHORITY. PROVIDE WIRING OF MINIMUM NO. 16 AWG IN CONDUIT AND AS PER OESC REQUIREMENTS. RUN ALARM INITIATING CIRCUITS IN SEPARATE CONDUITS FROM ALARM SIGNALLING CIRCUITS.

30.2 PROVIDE ADDITIONAL DEVICES OF TYPE TO SUIT APPLICATIONS AS RECOMMENDED BY SYSTEM SUPPLIER. INCLUDE REQUIRED ACCESSORIES FOR PROPER OPERATION AND INSTALLATION. RE-PROGRAM SYSTEM TO ACCOMMODATE ADDITIONS AND MODIFICATIONS. RE-BURN SOFTWARE AS REQUIRED BY LOCAL FIRE AUTHORITY. MODIFY ANNUNCIATORS AS REQUIRED TO INCORPORATE REVISIONS AND ADDITIONS. PROVIDE AUDIBLE DEVICES AND ADJUST TO SOUND AT LEVELS AS PER LOCAL FIRE AUTHORITY REQUIREMENTS. PROVIDE ADDITIONAL DEVICES AS REQUIRED TO ACHIEVE SOUND LEVEL STANDARDS. 30.3 DURING WORK TO EXISTING FIRE ALARM SYSTEM TIME AND DURATION OF INTERRUPTION TO BE APPROVED BY OWNER AND ONLY ONE ZONE TO BE INTERRUPTED AT ANY ONE TIME. IN AREAS WHERE RENOVATION WORK REQUIRES SHUTDOWN OF ANY PART OF FIRE ALARM PROTECTION SYSTEM, PROVIDE MANUAL FIRE ALARM PROTECTION (FIRE WARDEN) BY MEANS OF SUPERVISING AREA AS APPROVED BY GOVERNING AUTHORITIES. AT NO TIME SHALL FIRE ALARM SYSTEM OR ANY ONE ZONE BE LEFT INOPERATIVE OVERNIGHT. PROVIDE REQUIRED BYPASS WIRING AND TEMPORARY WIRING AS MAY BE REQUIRED TO MAINTAIN ENTIRE FIRE ALARM SYSTEM OPERATIVE DURING CONSTRUCTION AND ALTERATIONS.

30.4 COVER EXISTING DETECTORS TO PROTECT FROM DEMOLITION/CONSTRUCTION DUST. REMOVE COVERS WHEN ALTERNATIVE FIRE ALARM PROTECTION IN AREA IS NOT AVAILABLE OVERNIGH 30.5 WHERE APPLICABLE, PROVIDE FIRE ALARM PULL STATION AT LOCATIONS OF ELECTROMAGNETICALLY LOCKED DOORS. PULL STATIONS SHALL BE C/W AUXILIARY CONTACTS FOR CONNECTIONS TO SECURITY SYSTEM TO RELEASE MAGLOCKS UPON FIRE ALARM SYSTEM AND PULL STATION ACTIVATION. PROVIDE WIRING AND CONDUIT AND REQUIRED INTERCONNECTIONS TO SECURITY SYSTEM. CO-ORDINATE WORK WITH SECURITY SYSTEM CONTRACTOR. OBTAIN REQUIRED CERTIFICATE OF APPROVAL WORK FOR MAGLOCKS FROM RESPECTIVE AUTHORITY HAVING JURISDICTION. PROVIDE OBC COMPLIANT MESSAGE SIGNAGE WITH "PULL STATION FOR EMERGENCY EXIT", ADJACENT PULL STATION. 30.6 COORDINATE WORK WITH MECHANICAL DIVISION WITH REGARDS TO INTERCONNECTIONS TO AIR HANDLING SYSTEMS, FIRE SUPPRESSION SYSTEMS, SUPERVISORY VALVES, AND FLOW SWITCHES, BUILDING AUTOMATION SYSTEM, ETC. PERFORM SUCH

INTERCONNECTIONS TO STANDARDS OF EXISTING SYSTEMS AND DOCUMENT IN SHOP DRAWINGS. 30.7 WHEN FIRE ALARM SYSTEM WORK IS COMPLETE AND READY FOR ACCEPTANCE EXISTING SYSTEM MANUFACTURER/VENDOR TO INSPECT, TEST, VERIFY AND CERTIFY WORK AND EQUIPMENT, INCLUDING INITIATING DEVICES, SIGNALLING DEVICES, CONTROL DEVICES AND WIRING

30.8 TEST AND VERIFY THAT AUDIBLE SIGNALS ARE AT LEVELS ACCEPTABLE TO LOCAL FIRE AUTHORITY AND THAT BATTERIES ARE OF SUFFICIENT CAPACITY AS PER OBC. PROVIDE CERTIFICATE OF LIABILITY INSURANCE REGISTERED FOR THIS PROJECT TO SHOW SATISFACTORY PROOF OF MANUFACTURER'S LIABILITY COVERAGE FOR BOTH HIS PRODUCT AND PERSONNEL. CONDUCT WORK IN ACCORDANCE WITH LATEST EDITIONS OF CAN/ULC \$536 AND \$537. TESTS TO BE CONDUCTED IN PRESENCE OF OWNER AND/OR CONSULTANT. PROVIDE TO CONSULTANT MINIMUM ONE HARD COPY AND ELECTRONIC COPY OF TEST REPORT WITH DETAILED SCHEDULES OF TESTED DEVICES. REPORTS SHALL BE SIGNED BY AUTHORIZED CERTIFIED TESTING TECHNICIAN. DIGITAL COPY OF REPORT TO BE PROVIDED IN COMPATIBLE FORMAT CONFIRMED WITH CONSULTANT. 30.9 OBTAIN FROM LOCAL FIRE AUTHORITY, APPROVAL CERTIFICATE AND SUBMIT TO CONSULTANT WITH REPORTS.

30.10 EMPLOY TECHNICIANS CERTIFIED BY CANADIAN FIRE ALARM ASSOCIATION AND/OR ONTARIO FIRE MARSHALL AS APPLICABLE AND TO REQUIREMENTS OF ONTARIO FIRE CODE.

31 EXCAVATION AND BACKFILL 31.1 PROVIDE EXCAVATION, BACKFILL, AND RELATED WORK REQUIRED FOR YOUR WORK. PERFORM SUCH WORK IN ACCORDANCE WITH REQUIREMENTS OF DIVISION 02, EXCEPT AS MODIFIED BY THIS ARTICLE. OBTAIN A COPY OF SOIL TEST REPORT FROM CONSULTANT. ARRANGE FOR LOCATES BY LOCAL UTILITIES OF AREAS OF WORK.

- 31.2 GRADE BOTTOM OF EXCAVATION AS REQUIRED. ENSURE THAT SLOPING OF CONDUIT/DUCT IS SUFFICIENT TO PREVENT POOLING OF WATER WITHIN CONDUIT/DUCT. PROVIDE SUITABLE DRAINAGE. 31.3 IN FIRM, UNDISTURBED SOIL, LAY SERVICES DIRECTLY ON SOIL. BACKFILL EXCESS EXCAVATION WITH 13,790 KPA CONCRETE. 31.4 PREPARE NEW BEDDING UNDER SERVICE IN UNSTABLE SOIL, IN FILL, AND IN CASES WHERE BEDDING HAS BEEN REMOVED IN EARLIER EXCAVATION, PARTICULARLY NEAR PERIMETER WALLS OF BUILDINGS, AND AT MANHOLES AND CATCH BASINS. COMPACT TO
- MAXIMUM POSSIBLE DENSITY AND SUPPORT SERVICE BY MEANS OF 200 MM THICK CONCRETE CRADLES SPANNING FULL LENGTH BETWEEN FIRM SUPPORTS. ADDITIONAL REQUIREMENTS MAY BE DETAILED ON DRAWINGS. 31.5 WHERE EXCAVATION IS NECESSARY IN PROXIMITY TO AND BELOW LEVEL OF ANY FOOTING, BACKFILL WITH 13,790 KPA CONCRETE TO LEVEL OF HIGHEST ADJACENT FOOTING. PROXIMITY IS DETERMINED BY ANGLE OF REPOSE AS ESTABLISHED BY CONSULTANT.
- 31.6 DO NOT OPEN TRENCHES AHEAD OF INSTALLATION OF SERVICES AND BACKFILLING MORE THAN WEATHER WILL PERMIT. BREAK UP ROCKS AND BOULDERS AND REMOVE BY DRILLING AND WEDGING. DO NOT USE BLASTING UNLESS SPECIFICALLY APPROVED BY OWNER AND REVIEWED WITH CONSULTANT.
- 31.7 BEFORE BACKFILLING, OBTAIN APPROVAL FROM CONSULTANT, LOCAL UTILITY, AND/OR AUTHORITY HAVING JURISDICTION, AS REQUIRED. FAILURE TO OBTAIN SUCH APPROVALS AND ALLOW FOR INSPECTION OF WORK PRIOR TO COVERING, WILL RESULT IN RE-EXCAVATING AND BACKFILLING AT NO EXTRA COST TO OWNER. REMOVE SHORING DURING BACKFILLING.
- 31.8 BACKFILL TRENCHES WITHIN BUILDING WITH CLEAN SHARP SAND IN INDIVIDUAL LAYERS OF MAXIMUM 150 MM THICKNESS, COMPACTED TO A DENSITY OF 100% STANDARD PROCTOR. HAND COMPACT FIRST LAYERS UP TO COMPACTED LEVEL OF 300 MM ABOVE TOP OF SERVICE. HAND OR MACHINE COMPACT BALANCES UP TO GRADE USING COMPACTOR EQUIPMENT.
- 31.9 BACKFILL TRENCHES OUTSIDE BUILDING (NOT UNDER ROADS, PARKING LOTS OR TRAFFIC AREAS), UP TO A COMPACTED LEVEL OF 450 MM ABOVE SERVICE WITH GRANULAR "A" MATERIAL, HAND COMPACTED TO A DENSITY OF 95% STANDARD PROCTOR. BACKFILL BALANCE WITH 150 MM LAYERS OF APPROVED EXCAVATED MATERIAL; COMPACTED TO 95% STANDARD PROCTOR DENSITY USING APPROVED EQUIPMENT. 31.10 BACKFILL TRENCHES OUTSIDE BUILDING UNDER ROADS, PARKING LOTS OR TRAFFIC AREAS WITH GRANULAR "A" MATERIAL IN LAYERS NOT EXCEEDING 150 MM THICKNESS, COMPACTED TO 100% PROCTOR DENSITY UP TO GRADE LEVEL. ASPHALT TOPPINGS
- WITHIN PARKING LOT SHALL BE RESPONSIBILITY OF OTHERS. SURFACE TOPPINGS BEYOND PARKING LOT SHALL BE PROVIDED AS PART OF THIS DIVISION AND SHALL MATCH EXISTING TOPPINGS. ENSURE THAT TOPPINGS ARE ROLLED SMOOTH AND FLUSH TO ADJOINING SURFACES.
- 31.11 FILL DEPRESSIONS TO CORRECT GRADE LEVEL WITH APPROPRIATE MATERIAL, AFTER AN ADEQUATE PERIOD HAS PASSED TO REVEAL ANY SETTLEMENT. USE MAXIMUM POSSIBLE COMPACTION. PAY COSTS REQUIRED TO MAKE GOOD DAMAGES CAUSED BY SETTI EMENT 31.12 STORE AND DISPOSE OF EXCAVATED MATERIALS AS FOLLOWS:
- .1 DURING PROGRESS OF CONTRACT, PLACE MATERIAL AS DIRECTED IN SUCH A MANNER THAT A MINIMUM OF DAMAGE OR DISFIGUREMENT OF EXISTING GROUND WILL RESULT AND MATERIAL WILL NOT IN ANY WAY IMPEDE PROGRESS OF WORK; .2 SEPARATELY PLACE SURPLUS TOPSOIL AND SUBSOIL AS DIRECTED, LEAVE SITE CLEAN AND UNENCUMBERED.
- 31.13 PROVIDE PUMPING AS REQUIRED TO KEEP EXCAVATIONS FREE OF WATER.

MOUNTING AND ADJUSTING OF LUMINAIRES, COMPLETE WITH WIRING, CONNECTIONS, HANGERS, ALIGNERS, BOX COVERS, AND ACCESSORIES FOR COMPLETE, SAFE, FULLY OPERATION WITH CONSULTANT, OWNER, MUNICIPALITY, AND UTILITIES PRESENCE, IF ANY, OF EXISTING UNDERGROUND SERVICES AT SITE. LOCATE SUCH SERVICES AND MARK OUT SAME. ENSURE THAT TRADES CONCERNED ARE AWARE OF THEIR PRESENCE. OBTAIN AND REVIEW ANY SURVEY REPORTS AVAILABLE FROM OWNER OR CONSULTANT. LUMINAIRE LOCATIONS PRIOR TO ROUGHING IN. REVIEW LAMP COLOUR TEMPERATURES WITH CONSULTANT/OWNER PRIOR TO CEILING HANGERS, DUCTWORK, PIPING, CABLE 31.15 BE RESPONSIBLE FOR ANY DAMAGE DONE TO EXCAVATION WORK COMMENCING. 31.16 INVERTS AND LOCATIONS OF EXISTING SITE SERVICES MAY HAVE BEEN SITE SURVEYED AND APPROXIMATE LOCATION MAY BE SHOWN ON DRAWINGS. HOWEVER, ACCURACY IN QUANTITIES AND LOCATIONS IS NOT TO BE TAKEN AS COMPLETE OR ACCURATE. BE RESPONSIBLE FOR CONFIRMING THAT INVERTS AND LOCATIONS IF SHOWN ARE CORRECT, PRIOR TO COMMENCING EXCAVATION. WHERE DISCREPANCIES ARE FOUND, IMMEDIATELY INFORM CONSULTANT, AND AWAIT A DIRECTION. 31.17 WHERE WORK FALLS UNDER JURISDICTION OF LOCAL UTILITIES, CONFIRM REQUIREMENTS WITH LOCAL UTILITIES AND COMPLY WITH RESPECTIVE UTILITY REQUIREMENTS.

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GENERAL NOTES:

- 1. ELEVATIONS ARE NOT GEODETIC. ELEVATIONS ARE DERIVED FROM ASSUMED ELEVATION OF 105.000 ON
- CONTROL POINT 100.
- 2. CONTRACTOR TO VERIFY LOCATION OF ALL BURIED UTILITIES AND SERVICES PRIOR TO THE START OF CONSTRUCTION.
- 3. ALL BURIED PLANT SHALL BE PROTECTED AND MAINTAINED DURING CONSTRUCTION.
- 4. ALL DISTURBED AREAS TO BE REINSTATED TO MATCH
- EXISTING OR AS SPECIFIED. 5. ALL GRASSED AREAS TO BE REINSTATED WITH 100mm TOPSOIL AND SOD (UNLESS NOTED OTHERWISE).
- 6. CONTRACTOR TO IMPLEMENT DUST MITIGATING MEASURES TO PREVENT BLOWING DUST AND DEBRIS.
- 7. ALL EXISTING TREES TO BE PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE STATED.
- 8. ALL UNITS IN METRES UNLESS NOTED OTHERWISE. 9. EXISTING TOPOGRAPHIC INFORMATION WAS OBTAINED
- BY D. SCHEERER, CET., OF WSP ON SEPTEMBER 15, 2016.

Control Points						
Point Number	Elevation	North	East	Description		
100	105.000	500.000	500.000	CP 100		
101	105.288	469.330	499.615	CP 101		
102	105.132	478.140	467.377	CP 102		
103	104.904	511.302	465.371	CP 103		
104	104.899	509.528	453.097	CP 104		

PARKS CANADA SOUTHWESTERN ONTARIO FIELD UNIT (CZ)

Type of Record / Type d'enregistrement

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104	104.899	509.528	453.097	CP 104		

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SOUTHWESTERN ONTARIO FIELD UNIT (CZ)

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