BILL OF MATERIAL
MAJOR MINOR EQUIPMENT

Project Name: MCMASTER TS_NF91
Project Description: Power transformer replacement
Consulting Firm Name: THE S.M. GROUP (ONTARIO) INC.
Revision No: 00
Date: September 27th, 2018
*Contractor assumes responsibility for all parts

Item	Item ID	Suggested Manufacturer	Suggested Part No. *	Description	QTY	Remarks	REV.
1	00001	SOUTHERN STATES	TBD	115kV DISCONNECT SWITCH, Vertical break, 1200A,650/550kV BIL, 38kA, with arcing horne -C-C 3048mm b/w phases, motorise with MR180	2	For transformer T1 & T2 with same installation on structure	0
2	00002	SOUTHERN STATES	TBD	115kV DISCONNECT SWITCH, Vertical break, 1200A,550kV BIL, 38kA, with arcing horne - C-C 3048mm b/w phases, motorise with MR180	1	For tie bus A2/A3	0
3	00003	SOUTHERN STATES	TBD	115kV DISCONNECT SWITCH, Vertical break, 1200A,550kV BIL, 38kA, with arcing horne -C-C 3150mm b/w phases, motorise with MR180	2	Switch for transformer line B3 & B4 with same installation on structure	0
4	0004	ABB	Q108SB084D0H	SURGE ARRESTER,STATION CLASS,108KV,84KV MCOV, 4.5KJ/KV, 63KA, 3388MM, 2.26KNM, POLYMERIC HOUSING, ANSI/IEEE C62.11. . POLIM S STYLE. ARRESTER COMES COMPLETE WITH LINE AND GROUND TERMINALS WITH CLAMPS AND 13MM DIAMETER HARDWARE, LINE AND GROUND TERMINALS TO ACCOMMODATE CU OR AL CABLE SIZE #2 TO 1000 MCM, 3 MOUNTING SLOTS FOR 13MM DIAMETER HARDWARE, EQUALLY SPACED (120 DEG.) ON 254MM BC.	6	For Transformers T1 & T2 on primary side T1-LA & T2-LA	0
5	00005	TBD	TBD	POWER TRANSFORMER 115/13.8 kV, 30/40/50 MVA, ONAN/ONAF/ONAF, Dyn1, TRANSFORMER TO BE RELEASE BY MC MASTER TO CONTRACTOR ON SITE FREE OF CHARGE. POWER TRANSFORMER DESIGN WILL FOLLOW SPECIFICATION LABEL F1731664-0000-TS-0001	2	Transformers T1 & T2	0
6	00006	TRENCH	TBD	Neutral Reactor,15 kV,4 ohm, 2000 A continious,6000 A/15 sec , 150kV BIL between reactor terminals,250 kV to ground, 60Hz, dry type air core neutral grouning reactor	2	For transformer T1 & T2	0
7	00007	ABB	MWK 11/ 1023 / 2150	SURGE ARRESTER, STATION CLASS, 13.8KV, 11KV MCOV, 4.5KJ/KV, 63KA, 599MM LEAK, 2260NM, POLYMERIC HOUSING, ANSI/IEEE C62.11	12	Surge arrester for T1-SA2,T2-SA2 & LA	0
8	00009	EATON	TBD	STATION SERVICE TRANSFORMER 100 KVA, THREE PHASE PADMOUNTED, DELTA/Y CONNECTION, 13.8 KV /208/120V, DYn11, EQUIPPED WITH PRIMARY TAP CHANGER± 5% OFF LOAD, EQUIPPED WITH BAY O NET AND BACKUP CURRENT LIMITING FUSES, PRIMARY CONECTION WITH ELBOW LIVE FRONT NEMA 4 PAD ON THE SECONDARY. FUNCTIONNAL SPECIFICATION AS PER PS202002EN GUIDE.	2	TSS1 & TSS2	0
9	00010	TBD	TBD	E-HOUSE BUILDING, PREFABRICATED ON SITE AS PER SPECIFICATION F1731664-0000-EH-0001, THE E-HOUSE WILL BE DELIVERED ON SITE BY Mc MASTER SUPPLIER TO THE CONTRACTOR FREE OF CHARGE	1	Include Breaker T1Q & T2Q, DC batteries, AC panels, relays racks, etc…	0
10	00011	EATON	3HD326SSW	HEAVY DUTY SAFETY SWITCH, FOR TEMPORARY LOAD APPLICATIONS, SINGLE THROW, 240V, 3 WIRES, 3 POLES, 600A, FUSABLE NO NEUTRAL, NEMA 3R ENCLOSURE OUTDOOR SSTL. AS DEGASIFIER OUTLET.	1		0
11	00020	DMC POWER	GC759B004-050	CONN-GRD-SWG-OFFSET SPLIT CROSS/TEE-CU-#4/0 RUN-500kCMIL TAP	2 EA		0
12	00021	PCORE ELECTRIC INC	#63037-70	TEST TERMINAL HUBBELL, PCORE	6 EA		0
13	00022	DMC POWER	GC759B004-004	SWAGE CONNECTOR CROSS/TEE-CU-#4/0 RUN-#4/0 TAP	4 EA		0
14	00023			ADAPTOR PLATE, 3X NEMA DRILLED, ALUMINUM ALLOY AL-6101-T6 OR EQUIVALENT	6 EA	AS PER DETAIL 5 DWG:F1731664-300-EA009	0
15	00042	PREFORMED LINE PRODUCTS	BE-240-1530-6C	BALL, EYE, 5/8" SHANK, 11/16" EYE,TYPE B, 135KN UTS	42 EA		0
16	00053	PREFORMED LINE PRODUCTS	SL-240-2102-5C	LINK, STRAIN, 5/8", 35KIPS UTS	42 EA		0
17	00237	GENERAL CABLE COMPANY LTD	102097	BARE COND, ACSR, 795 KCMIL, 26/7 STRAND, DRAKE, 1490M/REEL, 68" STEEL REEL, REELS TO BE LAGGED WITH WEATHERPROOF FIBREBOARD.	AR M		0
18	00267	SLACAN INDUSTRIES INC	T558-08_MC80693N	CONNECTOR, TERMINAL, MULTIWAY JOINT SLEEVE, ALUMINIUM ALLOY, COMPRESSION, FULL TENSION, EXTERNAL TAPPERED, CONDUCTOR TERMINAL C/W A 4-HOLE (9/16" (14.3MM) DIA.) PAD TO BE USED IN CONJUNCTION WITH STEEL TERMINAL FOR DEADENDING ASC AND ACSR CONDUCTOR, FOR CONNECTION OF 795KCMIL-26/7 STRD, AND 795KCMIL-54/7 STRD ACSR CONDUCTORS.	42 EA		0
19	00269	SLACAN INDUSTRIES INC	T522-10_MC80662	CONNECTOR, TERMINAL, DEAD END, STEEL, COMPRESSION, FULL TENSION, CONDUCTOR TERMINAL C/W A 15/16" (23.8MM) DIA. HOLE, FOR DEADENDING CONNECTION OF 795KCMIL-26/7 STRD ACSR, 959.5KCMIL-54/7 STRD ACSR, AND 7 x #8 ALUMINIUM-CLAD STEEL CORE CONDUCTORS	42 EA		0
20	00298	SLACAN INDUSTRIES INC	60969LPS6_MC81568	SOCKET, CLEVIS, B/J TYPE, 3/4" BOLT, 13/16" OPEN, 9-3/8" LG.	42 EA		0
21	00318	BURNDY INC	WT24A24A	CONNECTOR, TAP JOINT, ALUMINIUM ALLOY, WELD, PIPE TO PIPE CONNECTION TEE TAP AT 90 DEGREE ANGLE, FOR CONNECTING 5" NPS ALUMINIUM BUS PIPE TAP TO 5" NPS BUS PIPE RUN	12 EA		0
22	00321	BURNDY INC	NS24A24AGS	CONNECTOR, SPLICE JOINT COUPLER, ALUMINIUM ALLOY, BLTD, PIPE TO PIPE CONNECTION, STRAIGHT, FOR CONNECTING 5" NPS ALUMINIUM BUS PIPE TO 5" NPS ALUMINIUM BUS PIPE	12 EA		0
23	00371	ANACONDA	CSA	CONDUIT, FLEX LIQUID TITE, 1", 30 M LONG PER CARTON, CSA C22.2 NO.56, 75 DEG C MAX WORKING TEMP	90 M		0
24	00384	LAPP	315214-70	INSULATOR, STATION POST, PORCELAIN, GREY, 46KV, 250KV BIL, 1092MM (43") LEAKAGE DISTANCE, 461MM (18.2") DRY ARCING DISTANCE, 559MM (22") HEIGHT, 2000LB CANTILEVER STRENGTH, 76.2MM (3") LINE AND BASE BOLT CIRCLE, TOP AND BOTTOM 4 TAPPED HOLES 1/2"-13 UNC, 1/2" HOLE DEPTH; ANSI C29.9, TR214	48 EA		0
25	00385	LAPP	3155205-70	INSULATOR, STATION POST, PORCELAIN, GREY, 15KV, 110KV BIL, 394MM (15.5") LEAKAGE DISTANCE, 194MM (7.63") DRY ARCING DISTANCE, 254MM (10") HEIGHT, 2000LB CANTILEVER STRENGTH, 76.2MM (3") LINE AND BASE/GROUND BOLT CIRCLE DIAMETER, TOP AND BOTTOM 4 TAPPED HOLES 1/2"-13 UNC, 5/8" HOLE DEPTH; ANSI C29.9, TR-205, FOR NEUTRAL USE ONLY.	2 EA		0

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26	00397	SEDIVER	N12/146	INSULATOR, SUSPENSION, GLASS, 120KN (25 KIP) SPECIFIED MECHANICAL LOAD, 146MM LENGTH, 320MM LEAKAGE DISTANCE, 125KV CRITICAL IMPULSE FLASHOVER, 80KV DRY & 50KV WET FLASHOVER, 8.8LBS WEIGHT, BALL-SOCKET WITH STANDARD COTTER KEY FITTINGS, TYPE CS-5, TYPE J HARDWARE; 6 EA INSULATORS PREASSEMBLED IN A STRING PER CRATE, H1 SPEC 7726-51080-0001-R0	336 EA		0
27	00925	CROSBY	1032634	TURNBUCKLE, CLEVIS/CLEVIS, 5/8", 12" TAKEUP, 17, 500 LB UTS LB, GALVANIZED, FF-T-791B, TYPE 1, FORM 1 - CLASS 7, CSA G164	42 EA		0
28	01359	CROSBY	1043338_CHARLES J P/N G-291-6X72	BOLT, EYE GALV, STEEL, PLAIN TYPE, 3/8" UNC THREAD SIZE, 6-1/8" LG, 2- 1/2" THREAD LG, CROSBY G291, C/W WITH HEX NUT	24 EA		0
29	02060	CROSBY	1030057	TURNBUCKLE, HOOK/HOOK, 3/8" DIA, 6" TAKEUP, 5000 LBS UTS, GALV	24 EA		0
30	02913	THOMAS & BETT	AB213HDGC	CONNECTOR, WEBBED, 90 DEG.,HEAVY DUTY FOR 1-5/8" STEEL CHANNEL SIZE 3-1/2" X 4- 1/8", 1/4" THICKNESS,9/16" DIA, HOT DIP, GALVANISED.	AR EA		0
31	02925	THOMAS & BETT	A120020HDGC	CHANNEL,41.2MMX41.2MM, 6M LG,GALV,SINGLE, STEEL,CONTINUOUS SLOT,12 GA. HOT DIP GALV, DESIGN SHALL BE SEISMICALLY QUALIFIED.	AR		0
32	02964	THOMAS & BETT	A100-1/2EGC	NUT,1/2" 13 UNC, WITH SPRING FOR 41.2 MM SQUARE STRUT CHANNEL THREAD SIZE 1/2" 13 UNC	AR EA		0
33	02965	THOMAS & BETT	C755-5A	CLAMP,CBL, PORCELAIN FOR 2-3/8" OD,	AR EA		0
34	03007	THOMAS & BETT	SPW12SFC-3	CABLE TRAY,COVER,SOLID, 300 MM WIDE, 3M LG, GALVANIZED	2 EA		0
35	03068	THOMAS & BETT	SHUF312S VO9012G	CABLE TRAY, VERTICAL OUTSIDE BEND, SOLID BOTTOM, 3-5/8" SIDERAIL,DEPTH, 12" WIDE, 90 DEGREES, 12" RADIUS, GROUNDING HOLE, HOT DIP GALVANIZED	2 EA		0
36	05798	GENERAL CABLE COMPANY LTD	102037	BARE CONDUCTOR, ALUMINUM, 4/0 AWG, 7 STRAND, ASC, OXLIP; 1500M/REEL, 40" WOODEN REEL, SPEC CAN/CSA-C61089-03	60 M		0
37	05823	NEHRING ELECTRICAL WORKS	2/0-MD-BC-19	BARE COND, COPPER, 2/0 AWG, STRANDED, 19 STRANDS, MEDIUM HARD DRAWN, ASTM B8	30 M		0
38	05824	SOUTHWIRE CANADA	F2T00602B0	BARE CONDUCTOR, COPPER, 2/0 AWG, STRANDED, 259 STRANDS, SOFT DRAWN, 20M/REEL, 12" REEL FOR BARRIE WHSE ONLY, ASTM B173 SPEC ASTM B173	15M		0
39	05826	ANIXTER	1B-404259	BARE COND, COPPER, 4/0 AWG, STRANDED, 259 STRANDS, SOFT DRAWN, ASTM B173	AR		0
40	05829	ANIXTER	71110956	BARE COND, COPPER, 1000 KCMIL, 61 STRANDS, MEDIUM HARD DRAWN, 100M/REEL, ASTM B8	122 M		0
41	05830	ANIXTER	1B-1000427	BARE COND, COPPER, 1000 KCMIL, STRANED, 427 STRANDS, SOFT DRAWN, 100M/SPOOL, ASTM B173	100 M		0
42	05838	CAMBRIDGE LEE (CANADA) LT	308976	BUS ROD,COPPER SOLID C-110, 19.05MM OD, 3.66M LONG, ASTM B187 STANDARD LENGTH 12 FEET (3.658M) :: IND_SPEC_ASTM B187	AR		
43	05882	ANIXTER	6CN-50037-02	BUILDING WIRE, 600V, CU, 500KCMIL, 1COND, TYPE RWU90, 37STRD, XLPE INS, 600V @ 90DEG C, PVC JACKET, BLK, 50M/REEL, CSA C22.2 NO.38	10 M		0
44	05884	ANIXTER	6CA-40419-02	BUILDING WIRE, 600V, COPPER, 4/0AWG, 1COND, TYPE TWU, 19STRD, PVC INS, 600V @ 60DEG C, PVC JACKET, BLK, 300M/REEL, CSA C22.2 NO.75	180 M		0
45	05997			BUILDING WIRE,1000V, COPPER,1000KCMIL,TYPE RWU90, 1CONDUCTOR,STRD, XLPE INS, 1000V @90DEG C, PVC JACKET,BLK,300M/REEL,CSA C22.2 NO.38	38 M		0
46	06183	BURNDY INC	NFXR15CG7	CONNECTOR,TERMINAL CLAMP, BOLTED, COPPER ALLOY, 1/0 AWG to 1250 KCMIL CONDUCTOR; 1/4" to 1" NPS PIPE BOLTED:	64 EA		0
47	06236	BURNDY INC	KVSU34	CONNECTOR, TAP BLTD COND TO COND, COPPER, 350 - 500 KCMIL RUN, 2/0 - 500 KCMIL TAP, PARALLEL, OH SPEC M-244-96, 30/PKG	24 EA		0
48	06247	BURNDY INC	GD1829CG1	CONNECTOR, GRD TERM CLAMP, COPPER ALLOY BODY, BLTD, NON TENSION, CONDUCTOR TO PIPE CONNECTION PARALLEL TO PIPE RUN, FOR CONNECTING 2 x 2/0 AWG SOLID-250KCMIL COPPER CONDUCTORS TO 2" IPS PIPE	15 EA		0
49	06458	BURNDY INC	UH24A5CG1	BUS SUPPORT, BOLTED INSTALLATION, ALUMINUM, SLIDE/CLAMP, 5"NPS,76.2 & 127MM BC USING 1/2" & 5/8" BOLTS RESPECTIVELY, 121 MM CENTRE HEIGHT,EQUIPPED WITH R.I. SUPPRESSORS	48 EA		0
50	06474	SEFCOR	WFTT-6764	CONNECTOR, TAP JOINT, ALUMINUM ALLOY, WELD, PIPE TO PIPE CONNECTION TEE TAP AT 90 DEGREE ANGLE, FOR CONNECTING 4" NPS ALUMINIUM BUS PIPE TAP TO 5" NPS ALUMINIUM BUS PIPE RUN	6EA		0
51	06632	BURNDY INC	WAB24ACG6	CONNECTOR, TAP, ALUMINIUM ALLOY, WELD, PIPE TO PAD CONNECTION WITH A 4- HOLE PAD FOR CONDUCTOR TAP, PAD AT 90 DEGREE ANGLE INLINE WITH BUS PIPE RUN, FOR CONNECTING 5" NPS ALUMINIUM BUS PIPE RUN TO A 4-HOLE (9/16" (14.3MM) DIA.) PAD	6 EA		0
52	06687	SEFCOR	WEB-67-AL	BUS PLUG, DRIVE INSTALLATION, ALUMINUM, 5" NPS, SCH 80, 230KV,W/O CORONA BELL AT 230KV	26 EA		0
53	06690	BURNDY INC	SLB19ACG3	BUS PLUG, DRIVE INSTALLATION, ALUMINUM, 2.5" NPS, 62.68 INNER DIA, 230KV,W/O CORONA BELL AT 230KV	10 EA		0
54	06742	SLACAN INDUSTRIES INC	GFD081TN_MC96083	CONNECTOR,GRD SPL BLTD,TINNED COPPER,PARALLEL,NON TENSION,CABLE TO BAR TYPE,300-500KCMIL STRANDED,19.05MM THICK BAR,OH M244-96	10 EA		0
55	06838	ALCAN	HT402T	CONNECTOR, TERM COMP PAD, TINNED AL, 400 KCMIL, 2X12.7 MM STUD HOLE, OH SPEC L 877	AR EA		0
56	06896	BURNDY INC	FGB4NCG3	CONNECTOR,GRD STIRRUP,BOLTED,CU WITH 4HOLE PAD, PAD TO STIRRUP, FOR 70 KA GROUNDING OF KEY HOLE EYE SCREW GROUNDING CLAMPS SUITABLE FOR BELLEVILLE WASHERS.4 HOLE PAD,25MM OD X 114MM LONG STIRRUP	64 EA		0

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57	07024	BURNDY INC	CJC26C26	CONNECTOR, GRD, C-SHAPE, COPPER, COMPRESSION, CONDUCTOR TO CONDUCTOR PARALLEL RUN AND TAP CONNECTION, FOR CONNECTING #1 AWG STRD-2/0 AWG STRD COPPER CONDUCTOR TAP TO #1 AWG STRD-2/0 AWG STRD COPPER CONDUCTOR RUN, CSA DIES REQUIRED FOR CJC SERIES	2 EA		0
58	07025	BURNDY INC	CJC29C29	CONNECTOR, GRD, C-SHAPE, COPPER, COMPRESSION, CONDUCTOR TO CONDUCTOR PARALLEL RUN AND TAP CONNECTION, FOR CONNECTING 3/0 AWG STRD-250KCMIL COPPER CONDUCTOR TAP TO 3/0 AWG STRD-250KCMIL COPPER CONDUCTOR RUN, CSA DIES REQUIRED FOR CJC SERIES:: H1_SPEC_LS-23-244-R1 : IND_SPEC_CSAC22.2 No. 41 : IND_SPEC_IEEE 837 ::	37 EA		0
59	07026	BURNDY INC	CJC34C34	CONNECTOR, GRD, C-SHAPE, COPPER, COMPRESSION, CONDUCTOR TO CONDUCTOR PARALLEL RUN AND TAP CONNECTION, FOR CONNECTING 300-500KCMIL COPPER CONDUCTOR TAP TO 300-500KCMIL COPPER CONDUCTOR RUN, CSA DIES REQUIRED FOR CJC SERIES SPEC_IEEE 837 ::	AR EA		0
60	07028	BURNDY INC	CJC34C29	CONNECTOR, GRD COMP, COPPER, C TAP, RUN 350/500 KCMIL CU STR, TAP 4/0 AWG CU STR, IEEE 837	AR EA		0
61	07097	BURNDY INC	NNT19A14AGS	CONNECTOR, TAP, ALUMINIUM ALLOY, BLTD, PIPE TO PIPE CONNECTION TEE TAP AT 90 DEGREE ANGLE TO BUS PIPE RUN, FOR CONNECTING 3/4" NPS ALUMINIUM BUS PIPE TAP TO 2-1/2" NPS ALUMINIUM BUS PIPE RUN	6 EA		0
62	07108	HUBBELL	T.B.D.	CONNECTOR, LIVE LINE CLAMP, ALUMINIUM ALLOY BODY, TIN PLATED, FOR CONNECTING CUPPER CONDUCTOR TAP OD RANGING FROM 0.204" (5.18MM) - 0.806" (20.47MM) TO CUPPER CONDUCTOR MAIN LINE OD RANGING FROM 0.25" (6.35MM) - 0.806" (20.47MM)	6 EA		0
63	07164	BURNDY INC	GB29WT9	CONNECTOR, GROUND TERMINAL BOLTED, COPPER, 2/0 AWG SOLID-250MCM COPPER CONDUCTOR TO 1-1/4" (31.75MM) THICK BAR, TIN-PLATED; CONNECTOR SEPARATES CABLE FROM BAR; OH SPEC. M244-96 SIZE-CAB-BAR, TAP-31.75MM BAR	10 EA		0
64	07171	BURNDY INC	UH19A5CG1	BUS SUPPORT, BOLTED INSTALLATION, ALUMINUM, SLIDE/CLAMP, 2.5" NPS, 76.2 & 127 MM BC USING 1/2"&5/8" BOLTS RESPECTIVELY, WITH R.I. SUPPRESSORS."	8 EA		0
65	07193	BLACKBURN	WR139	CONNECTOR,TAP COMP,PARALLEL,2-3/0 AWG RUN TO 14 SOL-8 STRD TAP	45 EA		0
66	07266	BURNDY INC	WAB19A4NCG1	CONNECTOR, TAP, ALUMINIUM ALLOY, WELD, PIPE TO PAD CONNECTION WITH A 4- HOLE PAD FOR CONDUCTOR TAP, PAD AT 90 DEGREE ANGLE INLINE WITH BUS PIPE RUN, FOR CONNECTING 2-1/2" NPS ALUMINIUM BUS PIPE RUN TO A 4-HOLE (9/16" (14.3MM) DIA.) PAD	11 EA		0
67	07300	BURNDY INC	VV3A46CG1	CONNECTOR, TERMINAL, BLTD, COPPER ALLOY, CONDUCTOR TO PAD WITH CONDUCTOR CONTACT PLATE OFF-SET TO HOLE PAD, SUITABLE FOR MOUNTING WITH BELLEVILLE WASHERS, STRAIGHT, CONDUCTOR ENTRANCE INLINE WITH A 4-HOLE PAD, FOR CONNECTING 3 x 1000-1500KCMIL COPPER CONDUCTOR TO A 4-HOLE (9/16" (14.3MM) DIA.) 3-1/2" WIDE PAD	36 EA		0
68	07421	BURNDY INC	GB34T3TN	CONNECTOR,GRD TERM BLTD,COPPER,CONDUCTOR TO BAR TYPE,FOR CONNECTION BETWEEN 300-500KCMIL CONDUCTOR AND 9.53MM THICK BA	5 EA		0
69	07447	3M	7654-S-4	TERMINAL KIT 28KV,WITH CRIMP CONN. FOR #2/AWG Cu & AERIAL CLAMP	6 EA		0
70	07476	COOPER POWER SYSTEMS	LE228CC07TCSA	ELBOW, LOADBREAK, 28KV,200A,C/W TEST POINT, 2/0	45 EA		0
71	07585	APPLETON ELECTRIC LTD	BU400	AWG compact aluminum conductor, DIA OVER INS .800-	4 EA		0
72	07686	CANLET	2006040	1.060, SPEC# ANSI/IEEE STD 386	4 EA		0
73	07710	PURSLEY	11565	CONDUIT, DUCT, 4"DIA., 10FT LONG, FOR DIRECT BURIAL OR ENCASEMENT IN CONCRETE OR MASONRY (TYPE DB2/ES2), BELL ENDS, PVC, CSA C22.2 NO. 211.2 :: IND_SPEC_CSA C22.2 NO 211.1 ::	2 EA		0
74	07940	CROUSE HINDS	LT100	CONNECTOR, FLEXIBLE METAL, LIQUID TIGHT, 1", STRAIGHT FITTING, NON- INSULATED	12 EA		0
75	08013	WESTBURNE SUPPLY	WCSS 170/35	WIRE DEV, SLEEVE,CABLE SUPPORT,WITH 12" STRAP & "D" RING,FITS CABLE TO 1.70" DIA,POLYOLEFIN MATERIAL.	6 EA		0
76	08037	COPE SUPPLY	WCSS 280/60	SLEEVE,CABLE SUPPORT WITH 12" STRAP & "D" RING, FITS CABLE TO 2.80" DIA,POLYOLEFIN MATERIAL.	18 EA		0
77	08041	ALUMAFORM	CS820	SUPPORT, FOR CABLE AND MOLDED TERMINATIONS,AL SADDLE,POLYURETHANE FOAM CUSHION EACH POSITIONER,CABLE AND MOLDED TERMINATIONS CONSISTING OF AN ALUMINUM SADDLE,POLYURETHANE FOAM CUSHION WITH PRESSURE SENSITIVE RUBBER RESIN ADHESIVE MOUNTING SURFACE AND 90 CM HELICALLY CUT POLYETHYLENE CABLE TIE. ALUMINUM SADDLE 26 CM LENGTH,CABLE CONT	24 EA		0
78	08402	LAPP	315287-70	INSULATOR, STATION POST, PORCELAIN, GREY, 115KV, 550KV BIL, 2515MM (99") LEAKAGE DISTANCE, 990MM (39") DRY ARCING DISTANCE, 1143MM (45") HEIGHT, 1700LB CANTILEVER STRENGTH, 127MM (5") LINE AND BASE BOLT CIRCLE DIAMETER, TOP AND BOTTOM 4 TAPPED HOLES 5/8"-11 UNC, 11/16" HOLE DEPTH; ANSI C29.9, TR-286	12 EA		0
79	09054	ACKLANDS-GRAINGER INC.	CRE500MLPVCCEM	ADHESIVE, PVC SOLVENT CEMENT TYPE	2 CAR		0
80	09876	3M	7656-S-4-LCT-CSA-4-1250STR	COLD SHRINK,TERMINATION KIT, CABLE 1250KCMIL 28kV, C/W CRIMP CONNECTOR WITH 4 HOLE NEMA PAD	18 EA		0
81	10138	ANIXTER	3NJ-2021	PRIMARY UNDERGROUND, 28KV, 2/0 AWG, 1 COND, CU, 19 STRD, TRXLPE INSULATION, PVC JACKET, CONC NEUTRAL, 100% INSULATION, 600 M/REEL, SPEC CSA C68.3	165 M	For TSS1 & TSS2 LV connection to the E-House	0
82	10741	BURNDY INC	GD1629CG1TN	FOR CONNECTION BETWEEN 2/0 AWG SOLID-250KCMIL STRANDED COPPER CONDUCTOR TO 1-1/4 NPS PIPE.	135 EA		0
83	10744	BURNDY INC	YC26C2	CONNECTOR, SPL COMP NON TENS, 1/0 SOL-2/0 STR RUN, 8 SOL-2 STR TAP, ORANGE, UN-INSULATED, GROUNDING	15 EA		0

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84	14142	ALMAT METAL	K61-5	ROD, GROUND, GALVANIZED STEEL, 3/4" DIA X 10' LONG, ONE PIECE :: IND_SPEC_C83.41-96::	9 EA		0
85	14789	ALCAN	ORF-11_COMPRESSION TEE TAPS	CONNECTOR,TAP COMP,TEE TAP OPEN RUN,WITH 4 HOLE PAD,795KCMIL ACSR,OH SPEC M-244 MUST BE USED ON CONDUCTORS WITH OD FROM 28.10mm to 30.20mm. CSA DIE 34.	18 EA		0
86	16173	ANIXTER	45225	BUS PIPE, ALUM, 1 NPS, 33.4MM (1.315 IN) OD, 26.6MM (1.047 IN) ID, WEIGHT 0.861 KG/M, 56% IACS, ALLOY 6101, TEMPER T6, GRADE 6101T6 :: IND_SPEC_ASTM B317	10 ft		0
87	16174	ANIXTER	45226	BUS PIPE, ALUM, 2-1/2 NPS, 73.0MM (2.87 IN) OD, 62.7MM(2.47 IN) ID, WEIGHT 2.970 KG/M, 56% IACS, ALLOY 6101, TEMPER T6, STANDARD LENGTH 7.62M (25FT), ORDER QTY MIN 25 FT LENGTH: 5 FT MIN, 45 FT MAX :: IND_SPEC_ASTM B317 GRADE 6101T6 ::	50 FT		0
88	16181	ANIXTER	45233	BUS PIPE, ALUM, 5 NPS, 141.3MM (5.56 IN) OD, 122.3MM (4.815 IN) ID, WEIGHT 10.650 KG/M, 56% IACS, ALLOY 6101, TEMPER T6, EACH PIPE TO BE PROTECTED BY 0.15 MM BLACK PLASTIC SLEEVE AND PACKAGED, MAXIMUM 3 PER CRATE, STANDARD LENGHT 7.62M (25 FT), ORDER QTY MIN 25 FT LENGTH: 5 FT MIN, 45 FT MAX (SCHEDULE 80 PIPE):: IND_SPEC_ASTM B317 GRADE 6101T6 ::	215 FT		0
89	17129	BURNDY INC	GQ2929	CONNECTOR, GRD SPLICE LOOP, COPPER ALLOY, BLTD, CONDUCTOR TO PIPE CONNECTION WITH CONDUCTOR CROSS LOOP CONNECTING TO PIPE RUN C/W U-BOLT, FOR CROSS LOOP CONNECTION OF 2/0 AWG STRD-250KCMIL COPPER CONDUCTOR TO IPS PIPE WITH DIAMETER OF 6" MAXIMUM ::	AR EA		0
90	17509	BURNDY INC	SWAB86A-44N90	CONNECTOR, TAP, ALUMINIUM ALLOY, WELD, PIPE TO PAD CONNECTION WITH A 4 HOLE PAD FOR CONDUCTOR TAP, PAD AT 90 DEGREE ANGLE TO BUS PIPE CROSS TEE TAP TO BUS PIPE RUN, FOR CONNECTING 5" NPS ALUMINIUM BUS PIPE RUN TO A 4-HOLE (9/16" (14.3MM) DIA.) 4" WIDE PAD	12 EA		0
91	17726	SYNERGY CABLES	1CXC610548YY	PRIMARY UNDERGROUND, 28KV, 1250 KCMIL, 1 COND, CU, 91 STRD, TRXLPE INSULATION, PVC JACKET, CONC NEUTRAL, 100% INSULATION, SPEC. CSA C68.5	1700 M	For T1 & T2 LV connection to the E-House	0
92	18857	BURNDY INC	KVSU28	CONNECTOR, TAP BLTD COND TO COND, CU, 1/0 - 4/0 AWG RUN, 6 - 4/0 AWG TAP, PARALLEL	135 EA		0
93	19979	SEFCOR INC	AL-1108-4B	CONNECTOR, TERMINAL, ALUMINIUM ALLOY, COMPRESSION, CONDUCTOR TO A 4-HOLE NEMA PAD CONNECTION, FOR CONNECTION OF 795KCMIL-26/7 STRD ASCR CONDUCTOR ::	60 EA		0
94	20258	SEFCOR INC	ASFF-44-4A	CONNECTOR, TERM BLTD STUD, ALUM, 4 HOLE NEMA PAD, STUD, 1 1/2 IN THREADED STUD	6 EA		0
95	20850	BURNDY INC	NAH4444N	CONNECTOR, TERMINAL, BLTD, COPPER ALLOY, CONDUCTOR TO PAD, STRAIGHT, CONDUCTOR ENTRANCE INLINE WITH A 4-HOLE PAD, FOR CONNECTING 4/0 AWG STRD-1000KCMIL COPPER CONDUCTOR TO A 4-HOLE (9/16" (14.3MM) DIA.) 4" WIDE PAD	60 EA		0
96	20965	BURNDY INC	NDR6744T12	CONNECTOR, TERMINAL, BLTD, COPPER ALLOY, CONDUCTOR TO STUD, CONDUCTOR ENTRANCE SIDE WAY AT 90 DEGREE ANGLE OR STRAIGHT INLINE WITH STUD, FOR CONNECTING #2 AWG STRD-1000KCMIL COPPER CONDUCTOR TO 1-1/2" x 12 TPI STUD ::	2 EA		0
97	21533	IPEX	IS6045	DUCT SPACER, VERTICAL LOCK WITH SLOT FOR REBARS 5 X 3 INCHES, 8 7/8" CENTER TO CENTER	426 EA		0
98	21534	IPEX	BS6045	DUCT SPACER, BASE VERTICAL LOCK WITH SLOT FOR REBARS 5 X 3 INCHES, 8 7/8" CENTER TO CENTER	213 EA		0
99	22038	BURNDY INC	SWAC94A44N	CONNECTOR, TERMINAL, PAD, WELD, ALUMINIUM ALLOY, PIPE TO PAD CONNECTION ASSEMBLY, PIPE END CENTRE-FORMED PAD C/W PIPE END PLUG INLINE WITH BUS PIPE RUN, PAD IS OFFSET FROM THE BUS PIPE RUN CENTRE LINE AND SEALS THE END OF BUS PIPE, FOR CONNECTING 5" NPS SCHEDULE 80 ALUMINIUM BUS PIPE TO A 4-HOLE (9/16" (14.3MM) DIA.) 4" WIDE PAD ::	30 EA		0
100	24561	THOMAS & BETT	AP232HDG	POST BASE, SQUARE, STEEL, HOT- DIP GALVANIZED, 6"X6", 1/4" THICK, 6 HOLES	AR EA		0
101	24642	THOMAS & BETT	SHW12PFC72	CABLE TRAY, PEAK FLANGED COVER, 12" WIDE, 72" LONG, HOT DIP GALVANIZED	4 EA		0
102	27595	THOMAS & BETT	SHW312SFCVO9012	CABLE TRAY, SOLID FLANGED COVER FOR VERTICAL OUTSIDE BEND, 3-5/8" SIDERAIL DEPTH, 12" WIDE, 90 DEGREES, 12" RADIUS, HOT DIP GALVANIZED	2 EA		0
103	27602	THOMAS & BETT	SSW-3-SSP	CABLE TRAY, SPLICE PLATE, FOR 3" SIDERAIL HEIGHT, STAINLESS STEEL, PACKAGED IN PAIRS WITH HARDWARE	2 EA		0
104	28983	PCORE ELECTRIC INC	B63056-70	CONNECTOR, DOBLE TEST, 230KV, 2000A, STUD TO PAD ATTACHMENT, 4-HOLE (9/16" (14.3MM) DIA.) PAD, FEMALE 1-1/2"-12 UNF2B x 3" LONG OF THREAD, PORCELAIN SHALL BE SKYTONE GRAY :: H1_SPEC_LS-23-244-R1 ::	6 EA		0
105	28985	THOMAS & BETT	SHW12PEC	CABLE TRAY, PEAKED END CAP, 12" WIDE, HOT DIP GALVANIZED, TRANSITION BETWEEN PEAKED COVERS TO STRAIGHT COVERS	2 EA		0
106	30949	NORTHEAST WIRE CABLE CO I	CM-2/0-259	BARE CONDUCTOR, COPPER, 2/0 AWG, STRANDED, 259 STRANDS, SOFT DRAWN	10 M		0
107	30950	NEHRING ELECTRICAL WORKS	224020000	BARE CONDUCTOR, COPPER, 4/0 AWG, STRANDED, 19 STRANDS, MEDIUM HARD DRAWN	350 M		0
108	31233	COPPERWELD	Q6C7X06A	7#6 COPPER CLAD STEEL, 183.8kcmil , DEAD SOFT ANNEALED, LOW CARBON, 40% CONDUCTIVITY, COPPER CLADDING METALLURGICALLY BONDED TO STEEL. SPEC. ASTM B910	1000 FT		0
109	31234	COPPERWELD	Q6C19X8A	19#8 COPPER CLAD STEEL, 313.7kcmil, DEAD SOFT ANNEALED, LOW CARBON, 40% CONDUCTIVITY, COPPER CLADDING METALLURGICALLY BONDED TO STEEL. SPEC. ASTM B910	2050 FT		0

BILL OF MATERIAL
MAJOR MINOR EQUIPMENT

Project Name: MCMASTER TS_NF91
Project Description: Power transformer replacement
Consulting Firm Name: THE S.M. GROUP (ONTARIO) INC.
Revision No: 00
Date: September 27th, 2018
*Contractor assumes responsibility for all parts

Item	Item ID	Suggested Manufacturer	Suggested Part No. *	Description	QTY	Remarks	REV.
110	31292	BURNDY INC	GAR8629	CONNECTOR, GRD TERM CLAMP, COPPER ALLOY BODY, BLTD, CONDUCTOR TO PIPE CONNECTION PARALLEL OR AT RIGHT ANGLE TO PIPE RUN, FOR CONNECTING 2/0 AWG SOLID-250 MCM CONDUCTOR TO 6" IPS PIPE :: H1_SPEC_LS-23-244-R1 : IND_SPEC_CSA C22.2 No. 41	1 EA		0
111	31894	BURNDY INC	YPC28R28A	CONNECTOR, TAP COMP, AL/CU 4/0- 7#6 COPPER CLAD STEEL CONDUCTOR, 0.486". installation die index Burndy Die Index D3	15 EA		0
112	32430	SEFCOR INC	SCRI-34-5	CONDUCTOR HARDWARE, BUS SUPPORT, BLTD, BRONZE, CLAMP, (4/0 TO 1000KCMIL) CU, 5" BC ::	6 EA		0
113	33904	HOLOPHANE	PLED2-10L-4K-12-UN-NA-G-L5H-BP	OUTDOOR LTG EQUIP, LUMINAIRE, 120V,98W, 9500 LUMEN LED, FOR SUBSTATION WITHOUT MOUNTING ARM, WITH PHOTOCELL. (part# PLED2-10L-4K-12-UN-NA-G- L5H-BP)	5 EA		0
114	33905	HOLOPHANE	PLED2-08L-4K-12-UN-NA-G-L5H-BP	OUTDOOR LTG EQUIP, LUMINAIRE, 120V,74W, 7500 LUMEN LED, FOR SUBSTATION, WITHOUT MOUNTING ARM, WITH PHOTOCELL.	5 EA		0
115	34042	HOLOPHANE	07233-2-GR	OUTDOOR LTG EQUIP, DOUBLE LUMINAIRE ARM FOR TWO UNIVERSAL MOUNT UNITS	5 EA		0
116	90001	DMC POWER	GC759B004-004	CONN-GRD-SWG-OFFSET SPLIT CROSS/TEE-CU-#4/0 RUN-#4/0 TAP	52 EA		0
117	90002	DMC POWER	GC759B004-030	CONN-GRD-SWG-OFFSET SPLIT CROSS/TEE-CU-#4/0 RUN-19#8 TAP	19 EA		0
118	90003	DMC POWER	GC759B002-002	CONN-GRD-SWG-OFFSET SPLIT CROSS/TEE-CU-#2/0 RUN-#2/0 TAP	30 EA		0
119	90004	DMC POWER	GC759B003-002	CONN-GRD-SWG-OFFSET SPLIT CROSS/TEE-CU-7#6 RUN-#2/0 TAP	2 EA		0
120	90005	DMC POWER	GC759B003-003	CONN-GRD-SWG-OFFSET SPLIT CROSS/TEE-CU-7#6 RUN-7#6 TAP	14 EA		0
121	90006	DMC POWER	GC759B004-750	CONN-GRD-SWG-OFFSET SPLIT TEE-CU-#4/0 RUN TO 3/4" ROD	16 EA		0
122	90007	DMC POWER	GC720B004-004	CONN-GRD-SWG-SPLICE-CU-#4/0 RUN-#4/0 TAP	5 EA		0
123	90008	DMC POWER	GC759B030-030	CONN-GRD-SWG-OFFSET SPLIT CROSS/TEE-CU-19#8 RUN-19#8 TAP	48 EA		0
124	90009	DMC POWER	GC759B030-003	CONN-GRD-SWG-OFFSET SPLIT CROSS/TEE-CU-19#8 RUN-7#6 TAP	2 EA		0
125	90010	HILTI	ITEM#2160187	ANCHOR HILTI ITEM#2160187, HAS-E-B HDG 1/2"-8", HY200 ADHESIVE, EMBEDMENT -70MM MIN.	4 EA		0
126	NEW			115kV AREA SPILL CONTAINM. PITS AND TRANSF. FOOTINGS "T1&T2" CONC. & REINF. DETAILS FOUNDATION	2 PITS 2 FTG	DRAWIING REF: F1731664-100-F003 & F004	0
127	NEW			115kV AREA FOR FW-1 TO 5 FIREWALL FOUNDATION IN THE PITS FOR "T2`` CONC. & REINF. DETAILS FOUNDATION	5	DRAWING REF: F1731664-100-F004	0
128	NEW			115/13,8kV STATION FOR FPC-1a, 1b & 2a, 2b FOUNDATION FOR POWER CABLE SUPPORTS IN THE PITS CONC. & REINF. DETAILS FOUNDATION	4	DRAWING REF: F1731664-100-F003 & F004	0
129	NEW			115/13,8kV STATION FOR FBS-1 FOUNDATION FOR BUS SUPPORT IN THE PIT "T1" CONC. & REINF. DETAILS FOUNDATION	1	DRAWING REF: REF: F1731664-100-F003	0
130	NEW			115/13,8kV STATION FOR FRE-1&2 FND FOR NEUTRAL REACTOR BUS SUPP. CONCRETE FTG.	2	DRAWING REF: REF: F1731664-100-F003 & F004	0
131	NEW			115/13,8kV STATION FOR HT-1 CAST-IN-PLACE OIL WATER SEPARATOR CONC. & REINF. DETAILS FOUNDATON	1	DRAWING REF: REF: F1731664-100-F008	0
132	NEW			115/13,8kV STATION FOR DUCT BANKS 1&2 DUCT BANKS PLAN ELEV. & SECTIONS CONC. & REINF. DETAILS FOUNDATION	2	DRAWING REF: REF: F1731664-100-F005 & F006	0
133	NEW			115/13,8kV STATION FOR SS1 & SS2 VAULTS FOR SUBSTATION SERVICE TRANSFORMER	2	BY OTHERS	0
134	NEW			115/13,8kV STATION FOR PCB-1 TO 8 E-HOUSE BLDG FOOTING CONC, & REINF. DETAILS FOUNDATION	8	DRAWING REF: F1731664-100-F002	0
135	NEW			E-HOUSE BLDG FOR PST-1&2 FRONT & REAR ENTRANCE PLATFORMS FOOTINGS CONC. & REINF. DETAILS FOUNDATION	2	DRAWING REF: F1731664-100-F002	0
136	NEW			E-HOUSE BLDG FOR PS-1 FRONT & REAR ENTRANCE PLATFORMS FOOTINGS CONC. & REINF. DETAILS FOUNDATION	1	DRAWING REF: F1731664-100-F002	0
137	NEW			E-HOUSE BLDG FOR ST-1a FRONT & REAR ENTRANCE PLATFORMS FOOTINGS CONC. & REINF. DETAILS FOUNDATION	1	DRAWING REF: F1731664-100-F002	0
138	NEW			E-HOUSE BLDG FOR ST-1b FRONT & REAR ENTRANCE PLATFORMS FOOTINGS CONC. & REINF. DETAILS FOUNDATION	1	DRAWING REF: F1731664-100-F002	0

BILL OF MATERIAL
MAJOR MINOR EQUIPMENT

Project Name: MCMASTER TS_NF91
Project Description: Power transformer replacement
Consulting Firm Name: THE S.M. GROUP (ONTARIO) INC.
Revision No: 00
Date: September 27th, 2018
*Contractor assumes responsibility for all parts

Item	Item ID	Suggested Manufacturer	Suggested Part No. *	Description	QTY	Remarks	REV.
139	NEW			115/13,8kV STATION FOR LINE POST FOOTINGS STATION FENCE & FOOTINGS CONC. & DETAILS FOUNDATION	57	DRAWING REF: F1731664-100-F007	0
140	NEW			115/13,8kV STATION FOR CORNER POST FOOTINGS STATION FENCE & FOOTINGS CONC. & DETAILS FOUNDATION	6	DRAWING REF: F1731664-100-F007	0
141	NEW			115/13,8kV STATION FOR GATE POST FOOTINGS STATION FENCE & FOOTINGS CONC. & DETAILS FOUNDATION	2	DRAWING REF: F1731664-100-F007	0
142	NEW			115/13,8kV STATION FOR HOLD BACK FOOTING STATION FENCE & FOOTINGS CONC. & DETAILS FOUNDATION	1	DRAWING REF: F1731664-100-F007	0
143	NEW			1 1/2" DIA, (38mm) A/B	20	DRAWING REF: F1731664-100-F004	0
144	NEW			1 1/4" DIA. (32mm) A/B	28	DRAWING REF: F1731664-100-F003 & F004	0
145	NEW			3/4" DIA. (19mm)	8	HILTI KB3 3/4" X8" HILTI # 378091 OR EQUAL	0
146	NEW			3/4" DIA. (19mm)	4	HILTI HSL-M20/30 2 PER EACH PST	0
147	NEW			3/4" DIA. (19mm)	4	HILTI HSL-M20/30 4 PER ST-1b	0
148	NEW			115/13,8kV STATION FOR SPC-1&2 POWER CABLE & PT/CT SUPP. IN THE PITS STEEL DETAIL STRUCTURE STEEL WEIGHT: 2779Kg	2	REF DRAWING: F1731664-200-S002	0
149	NEW			115/13,8kV STATION FOR SBS-1 INSUL. & BUS SUPP. STEEL DETAILS STRUCTURE STEEL WEIGHT: 513Kg	1	REF DRAWING: F1731664-200-S003	0
150	NEW			115/13,8kV STATION FIREWALL BETWEEN "T1&T2" PLAN, ELEVATION & SPECIFICATION	1	BY OTHERS. REF DRAWING: F1731664-200-S004	0
151	NEW			115kV AREA FOR PF-1&2 SERVICE PLATF. FOR TRANSF. STEEL DESIGN STRUCTURE STEEL WEIGHT: 444Kg	2	REF DRAWING: F1731664-200-S005	0
152	NEW			115/13,8kV STATION FOR SRE-1&2 NEUTRAL REACTOR BUS SUPP. STR STEEL DETAILS STRUCTURE STEEL WEIGHT: 345Kg	2	REF DRAWING: F1731664-200-S006	0
153	NEW			115/13,8kV STATION FOR SP-1 STEEL STAIRS & PLATF. AT PERSONAL DR. FOR DCT BLDG (1,0M ABOVE GRADE) STEEL DETAILS STRUCTURE STEEL WEIGHT: 3003	1	REF DRAWING: F1731664-200-S007, S008 & S009	0
154	NEW			115/13,8kV STATION FOR SP-2 STEEL STAIRS & PLATF. AT FRONT DR. FOR DCT BLDG (1,0M ABOVE GRADE) STEEL DETAILS STRUCTURE STEEL WEIGHT: 873Kg	1	REF DRAWING: F1731664-200-S010, S011 & S012	0
155	NEW			115/13,8kV STATION STEEL PLATE FOR PORTABLE GROUND STEEL WEIGHT: 19448	5	REF DRAWING: F1731664-200-S002	0
156	NEW			VENT PIPE,GALV,200MM DIA. X 2600MM,FOR 1800MM RISER	1	Ref: DWG: F1731664-075-CV001 Manufacturer: Wilkenson Heavy Precast Ltd	0
157	NEW			SAMPLING PORT,SS,200mm, FOR 1200 mm RISER	1	Ref: DWG: DWG: F1731664-075- CV001 Manufacturer: Wilkenson Heavy Precast Ltd	0
158	NEW			RISER AC400,PC,C/W CLADDING,1200MM	1	Ref: DWG: F1731664-075-CV001 Manufacturer: Wilkenson Heavy Precast Ltd	0
159	NEW			WIRE MESH ORIFICE COVER 304SS Weld Mesh: 150 mm dia. X 1'' x 1'' x 14 gauge (0.78) wire for T1,T2 outlet	2	Ref: DWG: DWG: F1731664-075- CV001 Manufacturer: Westlund $20.90 Lead time: 7 days	0

BILL OF MATERIAL
MAJOR MINOR EQUIPMENT

Project Name: MCMASTER TS_NF91
Project Description: Power transformer replacement
Consulting Firm Name: THE S.M. GROUP (ONTARIO) INC.
Revision No: 00
Date: September 27th, 2018
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Item	Item ID	Suggested Manufacturer	Suggested Part No. *	Description	QTY	Remarks	REV.
160	NEW			MANHOLE, WATERTIGHT, 1200mm ID, PRECAST REINF. CONC. Total **HEIGHT: 1800mm** - One mono base - One 4' riser section - One o/s flat top - One 6" manhole grade ring - One "closed" pattern manhole frame and cover OPSD 401.01 "A" - Two CS202 mastic gaskets	1	Ref: DWG: DWG: F1731664-075-CV001 Detail: D4 Manufacturer:Wilkenson Heavy Precast Estimate: $2,250.00 (price 2016) Lead Time: FOB Vendors Yard - H.S.T. is extra - Net amount due 45 days from date of pick up - F.O.B. our yard, Dundas, ON - One week minimum notice required for pickup of product - This quotation is valid for 60 days from date of issue.	0
161	NEW			INLET OUTLET PIPE, STAINLESS STEEL, VOID, CORING AND LINK SEAL (AT PLANT)	4	Ref: DWG: DWG: F1731664-075-CV001 Manufacturer: Wilkenson Heavy Precast Ltd	0
162	NEW			6" Sch10s Stainless Steel Pipe Type 304.	14	Ref: DWG: DWG: F1731664-075-CV001 MANUFACTURER: UNIFIED ALLOYES LTD PART NUMBER: 6S10304LWP	0
163	NEW			HDPE Pipe End Cap 150mm Dia., conforming to OPSS 1840, OPSD 806.02	3	Ref: DWG: DWG: F1731664-075-CV001 MANUFACTURER: ARMTEC LTD PART NUMBER: XFE0633	0
164	NEW			BOSS 2000 SOLID HDPE STORM SEWER PIPE, 150 MM DIAMETER C/W SPLIT COUPLERS, 320 KPA (PIPE COMES IN 6 METERS)	8	Ref: DWG: DWG: F1731664-075-CV001 MANUFACTURER: ARMTEC LTD PART NUMBER: XPS3156 8 pipes of 6 meters required =48 m	0
165	NEW			BOSS 2000 PERFORATED HDPE STORM SEWER PIPE, 150 MM DIAMETER C/W SPLIT COUPLERS, 320 KPA,(PIPE COMES IN 6 METERS)	23	Ref: DWG: DWG: F1731664-075-CV001 Approved Manufacturer: Armtec Limited PART NUMBER: XAP3156 23 pipes of 6 meters required =138 m	0
166	NEW			150mm Dia, 45 Deg. ELBOW, STAINLESS STEEL., SCH 10, TYPE 304	2	Ref: DWG: DWG: F1731664-075-CV001	0
167	NEW			150mm Dia, 90 Deg. ELBOW, STAINLESS STEEL., SCH 10, TYPE 304	1	Ref: DWG: DWG: F1731664-075-CV001 Manufacturer: WESTLUND INDUSTRIAL PART NUMBER:6B1L9L4LW	0
168	NEW			150mm Dia, HDPE 90 Deg Elbow	2	Ref: DWG: DWG: F1731664-075-CV001 MANUFACTURER: ARMTEC LTD PART NUMBER:XFT0824	0
169	NEW			HDPE Lateral Tee, 150 x 150 x 150-100 mm, conforming to OPSS 1840, OPSD 806.02.	1	Ref: DWG: NT35-D0S-12400-0001 Approved Manufacturer: Armtec Limited PART NUMBER: XFT0624	0
170	NEW			150mm X15mm X 150mm, STAINLESS STEEL LATERAL TEE, SCH 10, TYPE 304	1	Ref: DWG: F1731664-075-CV001 Approved Manufacturer: Unified Alloyes Ltd PART NUMBER: Estimated price: 95.00$/each	0
171	NEW			Cel-Lok Rigid Extruded Polystyrene - (2 In. x 24 In. x 96 In.) MOQ 12 EA = 1 Bundle	22	Ref: DWG: DWG: F1731664-075-CV001 Details: D3, Sections: S1 TO S4 MANUFACTURER: THE HOME DEPOT CRC PART NUMBER: INSULATION 2-24-96-STYROFOAM	0
172	NEW			PLASTIC PIPE FITTING, COUPLING, FLEXIBLE, UNIVERSAL, COMPLETE WITH STAINLESS STEEL STRAPS FOR CAST IRON/COPPER/STEEL OR PVC PIPE, 6" NPS	1	REF. DWG: DWG: F1731664-075-CV001 DETAIL: S4 MANUFACTURER: FERNCO PART NUMBER: 1056-66	0
173	NEW			Non-woven geotextile, 270R, MOQ 1 roll = 4.57 metres x 110 metres, 503 sq.m. for 1 roll	6	Ref: DWG: DWG: F1731664-075-CV001 Details: D1 & D2 MANUFACTURER:TERRAFIX GEOSYNTHETICS INC PART NUMBER: 270R	0
174	NEW			BI-AXIAL GEOGRID, TBX2500, MOQ 1 ROLL= 4.75m X 100m=475 SQ.M., 1 EACH - 1 ROLL	1	Ref: DWG: F1731664-075-CV002 MANUFACTURER: TERRAFIX PART NUMBER: TBX2500	0
175	5968	ANIXTER CANADA		ARMOURED CABLE, TECK, BARE CU, 1AWG, 4COND, STRD, XLPE INS, #6 G/W, PVC IN JACKET, FRPVC OUT JACKET, 1000V @ 90DEG C, 300M/REEL, CSA SPEC C22.	150	QTY IN METERS	0
176	5976	ANIXTER CANADA		ARMOURED CABLE, TECK, BARE CU, 2AWG, 4COND, STRD, XLPE INS, #6G/W, PVC IN JACKET, FRPVC OUT JACKET, 1000V @90DEG C, 300M/REEL, CSA SPEC C22.2 NO	25	QTY IN METERS	0

BILL OF MATERIAL
MAJOR MINOR EQUIPMENT

Project Name: MCMASTER TS_NF91
Project Description: Power transformer replacement
Consulting Firm Name: THE S.M. GROUP (ONTARIO) INC.
Revision No: 00
Date: September 27th, 2018
*Contractor assumes responsibility for all parts

Item	Item ID	Suggested Manufacturer	Suggested Part No. *	Description	QTY	Remarks	REV.
177	5979	ANIXTER CANADA		ARMOURED CABLE, TECK, BARE CU, 8AWG, 2COND, STRD, XLPE INS, #10G/W, PVC IN JACKET, FRPVC OUT JACKET, 1000V @90DEG C, 600M/REEL, CSA SPEC C22.2 N	350	QTY IN METERS	0
178	5982	ANIXTER CANADA		ARMOURED CABLE, TECK, BARE CU, 10AWG, 4COND, STRD, XLPE INS, #12G/W, PVC IN JACKET, FRPVC OUT JACKET, 600V @90DEG C, 600M/REEL, CSA SPEC C22.2 N	210	QTY IN METERS	0
179	6055	ANIXTER CANADA		ARMOURED CABLE, TECK, BARE CU, 10AWG, 2COND,STRD, XLPE INS, #12G/W, PVC IN JACKET, FRPVC OUT JACKET, 600V @90DEG C, 600M/REEL, CSA SPEC C22.2 NO.131	340	QTY IN METERS	0
180	6075	ANIXTER CANADA		ARMOURED CABLE, TECK, BARE CU, 6AWG, 2COND, STRD, XLPE INS, #8G/W, PVC IN JACKET, FRPVC OUT JACKET, 1000V @90DEG C, 600M/REEL, CSA SPEC C22.2 NO	230	QTY IN METERS	0
181	6087	ANIXTER CANADA		ARMOURED CABLE, TECK, BARE CU, 3/0AWG, 4COND, STRD, XLPE INS, #6G/W, PVC IN JACKET, FRPVC OUT JACKET, 1000V @90DEG C, 300M/REEL, CSA SPEC C22.2	15	QTY IN METERS	0
182	17019	ANIXTER CANADA		ARMOURED CABLE, TECK, BARE CU, 8AWG, 6COND, STRD, XLPE INS, #10G/W, PVC IN JACKET, FRPVC OUT JACKET, 1000V @90DEG C, CUT TO LG, CSA SPEC C22.2	15	QTY IN METERS	0
183	25897	ANIXTER CANADA		ARMOURED CABLE,TECK, BARE CU,250KCMIL, 4 CONDUCTORS,STRANDED, 1c # 4 GROUND, COND. PVC JACKET, FT4 CSA.INSULATION XLPE 1000V; RATED AS 90°C DRY AND WET AND -40°C IN ACCORDANCE WITH CSA STANDARD C22.2 NO. 131	115	QTY IN METERS	0
184	06231	ANIXTER CANADA		CONTROL CABLE, 600 V, 12 AWG, BARE COPPER, 3 CONDUCTORS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	170	QTY IN METERS	0
185	6004	ANIXTER CANADA		CONTROL CABLE, 600 V, 12 AWG, BARE COPPER, 2 CONDUCTORS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	300	QTY IN METERS	0
186	6005	ANIXTER CANADA		CONTROL CABLE, 600 V, 12 AWG, BARE COPPER, 4 CONDUCTORS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	300	QTY IN METERS	0
187	6007	ANIXTER CANADA		CONTROL CABLE, 600 V, 12 AWG, BARE COPPER, 7 CONDUCTORS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	300	QTY IN METERS	0
188	6009	ANIXTER CANADA		CONTROL CABLE, 600 V, 12 AWG, BARE COPPER, 12 CONDUCTORS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	170	QTY IN METERS	0
189	6060	ANIXTER CANADA		CONTROL CABLE, 600 V, 18 AWG, BARE COPPER, 6 PAIRS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	330	QTY IN METERS	0
190	6063	ANIXTER CANADA		CONTROL CABLE, 600 V, 16 AWG, BARE COPPER, 4 CONDUCTORS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	170	QTY IN METERS	0
191	6088	ANIXTER CANADA		CONTROL CABLE, 600 V, 18 AWG, BARE COPPER, 3 PAIRS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	460	QTY IN METERS	0
192	25683	ANIXTER CANADA		BUILDING WIRE, 300V,COPPER ,18AWG,RED, 3 CONDUCTOR. 18-3C SOL BC PVC/PVC SH AIA OVERALL-PVC-RED-JKT-OVER-AIA CSA FAS 105C 300V FT4	150	QTY IN METERS	0
193	27946	ANIXTER CANADA		CONTROL CABLE, 600 V, 10 AWG, BARE COPPER, 4 CONDUCTORS, 7 STRANDS, SHIELDED, CORRUGATED LONGITUDNALLY OVERLAPPED COPPER TAPE, FLAME RETARDENT (FR) LOW-ACID GAS (LAG) POLYVINYL CHLORIDE (PVC) INSULATION INNER AND OUTER JACKET, FT4 FLAME TEST,	170	QTY IN METERS	0

BILL OF MATERIAL
MAJOR MINOR EQUIPMENT

Project Name: MCMASTER TS_NF91
Project Description: Power transformer replacement
Consulting Firm Name: THE S.M. GROUP (ONTARIO) INC.
Revision No: 00
Date: September 27th, 2018
*Contractor assumes responsibility for all parts

Item	Item ID	Suggested Manufacturer	Suggested Part No. *	Description	QTY	Remarks	REV.
194	23520	VIRELEC LIMITED	P48-13	FUSE BOX FOR VT/CVT SECONDARY. WALL MOUNT NEMA 4X STAINLESS STEEL 304 ENCLOSURE, 20"HX16"WX10'D, SINGLE DOOR WITH PADLOCK HASP, CONTINUOUS HINGE WITH REMOVABLE HINGE PIN C/W INNER PANEL, DOOR TO BE BONDED TO ENCLOSURE WITH EXTRA FLEXIBLE #12 AWG WIRE. EQUIP FUSES, FUSE HOLDERS, TERMINAL BLOCKS, GROUND BAR AND INTERNAL WIRINGS ETC AS PER BOM SHOWN ON DRAWING; SUBMIT ACAD FORMAT DRAWING FOR APPROVAL PRIOR TO FABRICATION	4 EA		0
195	30032604	SADTEM/ Vendor: WESCO DISTRIBUTION CANADA LP	MET.CIT-N-15KV-2400/1600/800-5A-8400-120	METERING UNIT, COMBO CT/VT, OUTDOOR, DRY TYPE VOLTAGE RATIO 8400-120V, 70:1, METERING ACCURACY 0.3Y, THERMAL BURDEN 500VA, RVF 1.25 CONTINUOUS, 1.9 FOR 30 SECONDS CURRENT RATIO: 2400/1600/800:5A, 480/320/160/1, METERING ACCURACY 0.15B0.9 ON 2400/1600:5A AND 0.15B0.5 ON 800:5A, CCRF 1.33/2.0/2.0, RATED SHORT TIME THERMAL CURRENT: 40KA, RATED DYNAMIC CURRENT: 108KA. CREEPAGE DISTANCE: 1390 MM MEET CSA- C60044-1, CSA-C60044-2, AND CSA-C60044-3,	6 EA		0
196	30029736	REAL TIME SYSTEMS INC	PT/CT-BOX-RTS01	CT/PT JUNCTION BOX, NEMA 4, 16" X 16" X 6" 14 GA STEEL ENCLOSURE. DETAILS OF MATERIALS AND ASSEMBLY	2 EA		0
197	30030156	REAL TIME SYSTEMS INC	SSM-CABINET-RTS01	PRE-WIRED AND TESTED METERING CABINET ASSEMBLY FOR TWO METERS (3- ELEMENT) STATION SERVICE METERING (SSM). OUTDOOR WEATHERPROOF NEMA 4 (OR EQUIVALENT) ENCLOSURE 48"X36"X17", STEEL C/W DRIP SHIELD, DOOR STOP, 3- POINT PAD LOCKABLE HANDLE, BACK PLATE, AND THERMAL INSULATION. PRE-WIRED COMPONENTS INCLUDE TERMINAL BLOCK STRIPS (TBA, TBB, TBC, TB1, TB2), METER ADAPTOR (2), BLOCKING SWITCHES (2), DUPLEX RECEPTACLES (3), GFCI TEST RECEPTACLE (1), HEATER (1) AND THERMOSTAT (1), PHONE JACK (1), AND GROUND BAR (1).	2 EA		0