CONSTRUCTION DRAWINGS
FOR
BENGAL GRILL RESTAURANT
SURREY, BC

ISSUED FOR PERMIT
SEPTEMBER 18, 2017

PROJECT TEAM

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SHEET INDEX

REV	DATE	DRAWN	CHECK	APPR	DESCRIPTION
0	2017-09-18	OW	CG	CG	ISSUED FOR PERMIT

PROFESSIONAL SEAL

PROFESSIONAL SEAL AFFIXED ABOVE SHALL APPLY ONLY TO REV(s) 0

NET-ZERO ENGINEERING

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CLIENT NAME:	MUHAMMAD MOLLA	LOCATION:	SURREY, BC
PROJECT NAME:	BENGAL GRILL RESTAURANT	DRAWING SCALE:	NOT TO SCALE
PROJECT ID:	17001	SHEET NUMBER:	1 OF 10

TITLE:
GENERAL
COVER SHEET

DRAWING NUMBER: 17001-G01

REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET-ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001-G01.DWG

1. GENERAL NOTES

1.1 REQUIRED CODES FOR CONSTRUCTION:

1.1.1. NFPA 10 – STANDARD FOR PORTABLE FIRE EXTINGUISHERS

1.1.2. NFPA 17A – STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS

1.1.3. NFPA 96 (2017) – STANDARD FOR VENTILATION CONTROL AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS

1.1.4. BC BUILDING CODE (2012)

1.1.5. BC PLUMBING CODE (2012)

1.1.6. ULC/ORD–C1254.6–1995 – TESTING OF RESTAURANT COOKING AREA FIRE EXTINGUISHING SYSTEM UNITS

1.1.7. CSA B149.1–15 – NATURAL GAS AND PROPANE INSTALLATION CODE

1.1.8. CAN/ULC–S662–09 – STANDARD FOR FACTORY BUILT GREASE DUCTS

1.1.9. SMACNA 1650 – SEISMIC RESTRAINT MANUAL GUIDELINES FOR MECHANICAL SYSTEMS

1.1.10. SMACNA 1767 – KITCHEN VENTILATION SYSTEMS AND FOOD SERVICE EQUIPMENT FABRICATION AND INSTALLATION GUIDELINES

1.1.11. SMACNA 1780 – HVAC SYSTEMS TESTING ADJUSTING AND BALANCING

1.1.12. SMACNA 1966 – HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE

1.2 CONTRACT DOCUMENTS ARE DIAGRAMMATIC ONLY. DRAWINGS SHOW APPROXIMATE DIMENSIONS AND ARE TO BE FIELD VERIFIED BY THE INSTALLATION CONTRACTOR. THEY ARE TO ESTABLISH SCOPE, MATERIAL, AND QUALITY. THEY ARE NOT DETAILED INSTALLATION DRAWINGS. MINOR DETAILS ARE USUALLY NOT SHOWN OR SPECIFIED AND ANY INCIDENTAL ACCESSORIES REQUIRED FOR PROPER INSTALLATION SHALL BE INCLUDED IN THE WORK.

1.3 THE RESTAURANT OWNER HAS PROCURED PREVIOUSLY USED EQUIPMENT. THE INSTALLATION CONTRACTOR WILL TAKE NOTE OF THIS EQUIPMENT AND ENSURE ALL CONNECTION SIZES AND SUPPLY PRESSURE REQUIREMENTS ARE MET TO PROVIDE A WORKING SYSTEM UPON COMPLETION OF THE WORK.

1.4 FOLLOW MANUFACTURER'S RECOMMENDED INSTALLATION DETAILS AND PROCEDURES FOR ALL EQUIPMENT TO BE INSTALLED IN THE SCOPE OF WORK. PROVIDE ALL NECESSARY EQUIPMENT, ACCESSORIES, COMPONENTS, AND LABOR AS REQUIRED TO COMPLETE THE INSTALLATION AND MAKE EACH SYSTEM FULLY FUNCTIONAL.

1.5 NOTIFY THE ENGINEER IN WRITING PRIOR TO CLOSE OF TENDER IF ANY DISCREPANCY IS FOUND ON THE DRAWINGS OR SPECIFICATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO COMPLETE INSTALLATION OF FULLY FUNCTIONAL SYSTEMS PER DESIGN INTENT AT NO ADDITIONAL COSTS.

1.6 DEVICES SUPPLIED AND INSTALLED ON SITE SHALL BE AS INDICATED WITHIN THE DRAWINGS UNLESS AN ALTERNATE IS SELECTED THAT MEETS OR EXCEEDS THE PERFORMANCE CRITERIA CONTAINED WITHIN THE CONTRACT DOCUMENTS.

1.7 PROVIDE ELECTRONIC PDF COPY OF SHOP DRAWINGS TO THE ENGINEER, WHICH HAVE BEEN REVIEWED AND APPROVED BY THE GENERAL CONTRACTOR, PRIOR TO PURCHASE OF EQUIPMENT OR MATERIALS.

1.8 KEEP UP TO DATE REDLINE MARK–UPS OF AS–BUILT DRAWINGS ON–SITE. AT CONCLUSION OF THE PROJECT, SUBMIT MARK–UPS TO THE ENGINEER FOR TRANSFER TO DIGITAL FORMAT.

1.9 ASSUME FULL RESPONSIBILITY FOR LAYING OUT THE WORK AND FOR ANY DAMAGE CAUSED TO THE OWNER'S PROPERTY OR OTHER TRADES BY IMPROPER LOCATION, OR CARRYING OUT OF THE WORK.

1.10 ARRANGE WORK IN CO–OPERATION WITH OTHER TRADES IN THE BUILDING IN SUCH A MANNER AS NOT TO INTERFERE WITH OTHER WORK BEING CARRIED OUT ON–SITE AND PLACES WHERE ELECTRICAL EQUIPMENT IS BEING INSTALLED ALONG WITH MECHANICAL SYSTEMS. CO–OPERATE WITH THE OTHER TRADES TO GET ALL EQUIPMENT, CONDUIT PIPES, DUCTS, ETC. INSTALLED TO BEST ADVANTAGE.

2. GENERAL SCOPE AND COORDINATION

2.1 PERFORM A THOROUGH SITE AUDIT OF THE EXISTING SYSTEMS INCLUDING, BUT NOT LIMITED TO, EXISTING EQUIPMENT SIZE/LOCATION, DUCT SIZE/LOCATION, PLUMBING PIPE SIZE/LOCATION PRIOR TO ORDERING MATERIAL AND COMMENCING WORK. VERIFY ALL EXISTING SERVICES THAT ARE BEING EXTENDED/RECONNECTED. VERIFY ROUTING OF ALL PROPOSED NEW SERVICES. REPORT TO THE ENGINEER ANY DISCREPANCIES BETWEEN THE DRAWINGS AND SITE CONDITIONS. DETERMINE EXACT DIMENSIONS AND OTHER RESTRICTIVE CONDITIONS ON SITE, NOT FROM DRAWINGS.

2.2 REPORT TO THE ENGINEER ANY NON–CODE COMPLIANT INSTALLATIONS.

2.3 COORDINATE WITH ALL TRADES TO DETERMINE INSTALLATION FEASIBILITY AND CLEARANCE REQUIREMENTS PRIOR TO COMMENCING WORK. REVIEW MECHANICAL AND ELECTRICAL DRAWINGS TO BECOME FAMILIAR WITH ALL APPURTENANT COMPONENTS. ISSUES WITH INSTALLATION DUE TO LACK OF COORDINATION WILL RESULT IN THE INSTALLATION CONTRACTOR HAVING TO RELOCATE NEWLY INSTALLED ITEMS AT THE CONTRACTORS OWN COST.

2.4 COORDINATE ALL CORE DRILLING LOCATIONS AND CHECK FOR EMBEDDED SERVICES WITH THE OWNER.

2.5 PIPE SLEEVES SHALL BE PROVIDED FOR ALL PIPE THROUGH WALLS AND FLOORS. SLEEVE SHALL BE STANDARD WEIGHT STEEL PIPE WITH SMOOTH EDGE. FLOOR SLEEVE SHALL EXTEND ABOVE FINISHED FLOOR BY 50MM MINIMUM. SEAL WATER TIGHT.

2.6 SITE UTILITY TIE–IN: COORINATE WITH OWNER AND ENGINEER TO INTERRUPT, RE–ROUTE AND/OR CONNECT TO WATER, PROCESS DRAIN, NATURAL GAS, AND ELECTRICAL SYSTEMS WITH MINIMUAL INTERRUPTIONS.

2.7 HIGH–STANDARD, UNIFORM, AND CONSISTENT WORKMANSHIP IS EXPECTED THROUGHOUT THE PROJECT. REMOVE AND REINSTALL SUB–STANDARD INSTALLATIONS AS PER THE DISCRETION OF THE CITY INSPECTOR, ENGINEER, AND OWNER.

2.8 PROTECT ALL EXISTING INSTALLATIONS AND SYSTEMS. REPAIR ANY DAMAGES CAUSED BY ALL INSTALLATION CONTRACTOR TRADES.

2.9 DISPOSE OF ANY REMOVED EXISTING MECHANICAL ITEMS THAT ARE NOT WANTED BY THE OWNER.

3. FIRE SUPPRESSION SYSTEM AND KITCHEN EXHAUST FAN INTERLOCKS

3.1 THE INSTALLATION CONTRACTOR SHALL PROVIDE AN ANSUL R102 FIRE SUPPRESSION SYSTEM FOR INTEGRATION INTO THE KITCHEN EXHAUST HOOD.

3.2 THE INSTALLATION CONTRACTOR SHALL CERTIFY TO CITY OF SURREY BUILDING INSPECTOR THAT THE INSTALLATION COMPLIES WITH ULC/ORD–C1254.6–1995, NFPA 96 (2017) AND NFPA 17A (2017).

3.3 THE SYSTEM SHALL BE CONNECTED AND ANNUNCIATED AS A SEPARATE ZONE FIRE ALARM.

3.4 THE EXHAUST FAN SHALL BE PROVIDED WITH A MEANS SO THAT THE FAN IS ACTIVATED WHEN ANY HEAT–PRODUCING COOKING APPLIANCE UNDER THE HOOD IS TURNED ON.

3.5 IN THE EVENT OF AUTOMATIC FIRE DETECTION OR MANUAL PULL STATION ACTIVATION, THE FIRE SUPPRESSION SYSTEM SHALL:

3.5.1 ACTIVATE THE FIRE ALARM SYSTEM.

3.5.2 ACTIVATE AN AUDIBLE ALARM AND VISUAL INDICATOR.

3.5.3 AUTOMATICALLY SHUT OFF NATURAL GAS TO ALL KITCHEN APPLIANCES.

3.5.4 SHUT OFF ALL ELECTRIC POWER TO ELECTRICAL OUTLETS UNDER THE HOOD.

3.5.5 SHUT OFF THE MAKE–UP AIR UNIT WHILE CONTINUING TO LET THE KITCHEN EXHAUST FAN OPERATE.

3.6 ELECTRICAL CONNECTIONS FROM THE FIRE SUPPRESSION AND ANNUNCIATOR PANEL SHALL BE CERTIFIED BY A QUALIFIED AGENCY.

3.7 A PORTABLE CLASS K FIRE EXTINGUISHER SHALL BE PROVIDED WITH IN A 30FT TRAVEL DISTANCE TO COMMERCIAL COOKING EQUIPMENT.

3.8 PORTABLE FIRE EXTINGUISHERS SHALL BE PROVIDED FOR OTHER HAZARDS IN KITCHEN AREAS AND SHALL BE SELECTED AND INSTALLED IN ACCORDANCE WITH NFPA 10.

3.9 CARBON DIOXIDE–TYPE EXTINGUISHERS SHALL NOT BE PERMITTED.

4. SUPPLY DUCTWORK AND GREASE DUCTING

4.1 ALL DUCTWORK SHALL BE GALVANIZED.

4.2 PROVIDE DUCTWORK IN ACCORDANCE WITH ALL APPLICABLE CODES INCLUDING, BUT NOT LIMITED TO THE LATEST SMACNA, ASHRAE STANDARDS, NFPA 96 (2017) AND LOCAL SEISMIC ZONE REQUIREMENTS.DUCTS SHALL BE CONSTRUCTED TO MATCH PRESSURE RATING OF SPECIFIED EQUIPMENT. COORDINATE ALL INTERFACES WITH ALL OTHER TRADES PRIOR TO INSTALLATION.

4.3 SEAL ALL SUPPLY DUCTWORK TRANVERSE JOINTS IN SUPPLY DUCTWORK WITH TWO COATS OF HEAVY BRUSH–ON HIGH VELOCITY DUCT SEALER (BAKELITE 530–09 OR EQUIVALENT) TO ACHIEVE LESS THAN 5% AIR LEAKAGE. SOFT ELASTOMER BUTYL GASKET WITH ADHESIVE BACKING IS ACCEPTABLE FOR FLANGED JOINTS. DUCT TAPE IS NOT ACCEPTABLE.

4.4 KITCHEN HOOD EXHAUST DUCTS (GREASE DUCTS SERVING TYPE I HOODS) SHALL BE FACTORY FABRICATED. INSTALLATION CONTRACTOR SHALL PROVIDE A FACTORY BUILT GREASE DUCTS THAT COMPLIES WITH ULC–S662–09 AND LISTED FOR ZERO CLEARANCE TO COMBUSTIBLES WITH A 2HR FIRE RESISTANCE RATING. THE DUCT SYSTEM SHALL BE DOUBLE WALL CONSTRUCTION WITH HIGH TEMPERATURE BLANKET INSULATION BETWEEN INNER AND OUTER WALLS. PROVIDE ALL TRANSITIONS, SUPPORTS, FITTINGS, CLEAN–OUTS, AND MATERIALS FOR A COMPLETE DUCT SYSTEM FROM THE KITCHEN HOOD TO EXHAUST FAN. ACCEPTABLE SUPPLIERS/DISTRIBUTERS ARE "FAST KITCHEN HOODS", "CAPTIVEAIRE", "ICC – INDUSTRIAL CHIMNEY COMPANY (VIA PRICE INDUSTRIES)" OR EQUIVALENT.

4.5 INSTALLATION CONTRACTOR TO INSTALL FACTORY BUILT GREASE DUCT IN STRICT COMPLIANCE WITH MANUFACTURER INSTRUCTIONS.

4.6 NO FLEXIBLE CONNECTORS OR WIRING OF ANY KIND SHALL BE CONNECTED TO THE GREASE DUCTWORK.

5. PIPING

5.1 POTABLE WATER AND DRAINAGE PIPING MATERIALS AND JOINTS SHALL BE COMPLIANT WITH SECTION 2.2 AND 2.3 OF THE BC PLUMBING CODE (2012)

5.2 NATURAL GAS MATERIALS AND JOINTS SHALL BE COMPLAINT WITH CSA B149.1–15 – NATURAL GAS AND PROPANE INSTALLATION CODE.

6. DUCT / PIPE SUPPORTS, PIPE EXPANSION, AND HANGERS

6.1 EQUIPMENT, DUCT AND PIPING SHALL BE SUPPORTED AND RESTRAINED.

6.2 POTABLE WATER AND DRAINAGE PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH SECTION 2.3 OF THE BC PLUMBING CODE (2012).

6.3 NATURAL GAS PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH CDA B149.1–15 – NATURAL GAS AND PROPANE INSTALLATION CODE.

6.4 DUCTS SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF SMACNA 1966 – CHAPTER 5.

6.5 ALL PIPING SHALL BE INSTALLED SO THAT IT WILL IN NO WAY BE STRAINED OR DISTORTED BY EXPANSION AND CONTRACTION. ANCHORS SHALL BE PROVIDED WHEREVER NECESSARY TO PROTECT EQUIPMENT AND CONTROL DIRECTION OF PIPE MOVEMENT. PIPE GUIDES SHALL BE PROVIDED AT EACH SIDE OF EACH EXPANSION JOINT.

6.6 PROVIDE ALL HANGERS, ANCHORS, BRACKETS AND MISCELLANEOUS SUPPORTS AS REQUIRED FOR THE INSTALLATION OF DUCTWORK, PIPING AND EQUIPMENT. SUPPORTS, HANGERS, AND BRACKETS SHALL BE ATTACHED TO WALLS, CEILINGS AND FLOORS IN AN APPROVED SUBSTANTIAL MANNER. ALL HANGER SUPPORTS FOR EQUIPMENT SHALL BE SET IN STRUCTURAL MEMBERS OF THE BUILDING. ALL HANGERS SHALL BE CAPABLE OF VERTICAL ADJUSTMENT AFTER PIPE IS ERECTED. PIPE SHALL NOT BE HUNG FROM OTHER PIPE.

6.7 ALL INSULATED PIPE 50 MM AND LARGER SHALL BE FITTED WITH INSULATION PROTECTION SADDLES, OR INSULATION PROTECTION SHIELDS.

6.8 ON ALL PIPES WITH VAPOURSEAL INSULATION, THE HANGER SHALL FIT OUTSIDE THE INSULATION.

7. INSULATION

7.1 INSULATION SHALL BE:

7.1.2 S/A DUCTS: 25MM, INTERNAL

7.1.3 EXPOSED S/A DUCTS INSIDE BUILDING: NO INSULATION

7.1.4 EXPOSED S/A DUCTS OUTSIDE OF BUILDING: 25MM THICK INTERNAL INSULATION IS REQUIRED.

7.1.5 S/A DUCTS FROM ANY AIR HANDLING EQUIPMENT AND FANS: 1" (25MM) THICK, MINUMUM 4.5M LENGTH FROM EQUIPMENT, INTERNAL.

7.1.6 HOT WATER PIPES LESS THAN 38MM DIA: 40MM THICK.

7.1.7 HOT WATER PIPES 38MM AND UP: 50MM THICK.

7.2 INTERNAL INSULATION SHALL BE FIBREGLASS WITH NEOPRENE COATING. SEAL ALL CUT EDGES WITH BAKELITE 200–32 OR EQUIVALENT TO ENSURE FIBREGLASS DOES NOT COME IN CONTACT WITH AIR STREAM.

8. MECHANICAL EQUIPMENT INTERCONNECTS

8.1 FIELD VERIFY PRECISE LOCATION, ELEVATION, AND ARRANGEMENT OF CONNECTIONS OF ALL NEW DUCTING/PIPING WITH EXISTING DUCTING/PIPING BASED ON FIELD CONDITIONS, INCLUDING EXPOSING EXISTING DUCTING/PIPING PRIOR TO FABRICATION OF NEW DUCTING/PIPING.

8.2 PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVE CLOSURES, ROTATE FITTINGS, DEFLECT JOINTS, AND MODIFY EXISTING DUCTING AND PIPING AS REQUIRED TO MAKE CONNECTIONS, INCLUDING AN ADJUSTMENT FOR AN OFFSET IN CENTERLINE ELEVATIONS BETWEEN PIPING.

8.3 DESIGN, SELECT, LOCATE, AND PROVIDE PIPING SUPPORTS, EXPANSION JOINS, PIPE GUIDES, AND ANCHORS REQUIRED FOR FINAL PIPING LAYOUT. TYPICAL DETAILS AND ACCEPTABLE ATTACHMENTS SHOWN ON THE DRAWINGS ARE PROVIDED ONLY FOR GENERAL GUIDANCE.

8.4 LOW POINTS IN PIPING SYSTEMS SHALL BE PROVIDED WITH DRAIN VALVES AND HIGH POINTS PROVIDED WITH AUTOMATIC AIR VENTS.

8.5 PROVIDE TEMPORARY PLUGS BEFORE MAKING CONNECTIONS, WHEN APPLICABLE.

8.6 PROVIDE PNEUMATIC AND HYDRO–TEST PORTS AND PLUGS WHERE REQUIRED TO FACILITATE PRESSURE TESTING REQUIREMENTS OF ALL NEW PIPING (IF APPLICABLE).

9. SEISMIC BRACING

9.1 PROVIDE SEISMIC RESTRAINT ON ALL PIPEWORK, DUCTS, AND EQUIPMENT IN ACCORDANCE WITH THE LATEST BC BUILDING CODE (2012), AND THE GUIDELINES FOR SEISMIC RESTRAINT OF HVAC AND PIPING SYSTEMS AS PREPARED BY SMACNA AND THE PLUMBING PIPING INSTITUTE COUNCIL.

10. FIRE STOPPING

10.1 FIRE–STOP ALL NEW AND EXISTING PIPE PENETRATIONS THROUGH FLOORS AND WALLS, DESIGNED AS FIRE AND/OR SMOKE SEPARATIONS, AS REQUIRED.

10.2 FIRE–STOPPING MATERIALS TO MEET ULC CAN4–S115.

10.3 PREPARATION OF SURFACES AND INSTALLATION OF FIRE–STOPPING MATERIALS SHALL BE CARRIED OUT AS PER THE MANUFACTURER'S INSTRUCTIONS.

11. ALTERNATIVE EQUIPMENT AND MATERIALS

11.1 ALTERNATIVE/SUBSTITUTION OF EQUIPMENT AND PRODUCTS OTHER THAN SPECIFIED MAY BE PROPOSED.

11.2 THE PERFORMANCE OF ANY ALTERNATE EQUIPMENT PROPOSED AS EQUAL SHALL NOT DEVIATE FROM THE STATED CAPACITIES, FLUID FLOW RATES, HEAT TRANSFER RATES, SOUND POWER (WHEN SPECIFIED) ETC.

11.3 ELECTRICAL VOLTAGE AND PHASE MUST BE AS SPECIFIED. AMP DRAW MUST NOT EXCEED SPECIFIED.

11.4 CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR EXAMINING THE AVAILABLE INSTALLATION SPACE AND ACCESS REQUIREMENTS OF THE PROPOSED ALTERNATIVES.

11.5 ACCEPTANCE OF ALTERNATIVE EQUIPMENT SHALL BE AT THE DISCRETION OF THE CONSULTANT AND WILL ONLY OCCUR AFTER REVIEW OF SUBMITTED SHOP DRAWINGS.COORDINATE, ASSUME RESPONSIBILITY, AND PAY FOR ALL ADDITIONAL INSTALLATION COSTS INCURRED BY ALL OTHER TRADES RESULTING FROM ALTERNATES AND/OR SUBSTITUTES.

11.6 MAKE REVISIONS TO RECORD DRAWINGS INCORPORATING ALTERNATES AND/OR SUBSTITUTES AND ALL RELATED CHANGES.

12. AIR BALANCING

12.1. INSTALLATION CONTRACTOR SHALL ENSURE ALL HVAC EQUIPMENT AND DUCTING IS BALANCED. IF THE INSTALLATION CONTRACTOR WISHES TO SUBCONTRACT THIS WORK, AVAILABLE EXTERNAL AGENCIES INCLUDE K.D. ENGINERING AND WESTERN MECHANICAL.

12.2. USE BALANCING PROCEDURES IN ACCORDANCE WITH NEBB, SMACNA, AND ASHRAE STANDARDS.

12.3. PROVIDE CALIBRATION HISTORIES OF EACH INSTRUMENT USED FOR BALANCING. RECALIBRATION OR USE OF OTHER INSTRUMENTS MAY BE REQUESTED WHEN ACCURACY OF READINGS IS QUESTIONABLE.

12.4. AIR BALANCING TO INCLUDE CHANGING BELT/SHEAVE/PULLEY OF NEW AND EXISTING BELT DRIVE AHU/MAU UNITS AND EXHAUST FANS.

12.5. ALL AIR FLOW RATES TO BE BALANCED WITH A TOLERANCE OF +/– 5%. THE INSTALLATION CONTRACTOR SHALL ISSUE A REPORT AND CERTIFICATE COVERING THE FOLLOWING:

12.5.1. MOTOR MANUFACTURER, NAMEPLATE, AND ACTUAL MOTOR KW/VOLT/AMP LOADING.

12.5.2. SPECIFIED AND MEASURED S/A AND O/A FLOW RATES.

12.5.3. SPECIFIED AND ACTUAL FAN INLET AND DISCHARGE ESP.

12.5.4. HVAC UNIT BELT/SHEAVE/PULLEY SIZES.

12.5.5. S/A TEMPERATURE AT DIFFUSER FARTHEST FROM THE HVAC UNIT IN FULL HEATING MODES.

12.5.6. SUPPORTING SCHEMATIC DIAGRAM OF HVAC UNITS, DUCTS, DIFFUSERS, CIRCUIT BALANCING VALVES ETC.

12.6. MAKE ANY CORRECTIONS AS REQUIRED BY THE BALANCING AGENCY.

12.7. PROVIDE COPIES OF THE BALANCING REPORTS IN EACH O/M MANUAL PRODUCED BY THE INSTALLATION CONTRACTOR.

13. INSPECTION, TESTING, COMMISSIONING, CLOSE–OUT DOCUMENTATION, AND GENERAL SYSTEM ACCEPTANCE

13.1. THE INSTALLATION CONTRACTOR SHALL TEST, AS A MINIMUM, THE FOLLOWING:

13.1.1. ALL POTABLE WATER SYSTEMS AS SPECIFIED IN SECTION 2.3.7.2 OF THE BC PLUMBING CODE (2012).

13.1.2. ALL DRAINAGE AND VENTING SYSTEMS AS SPECIFIED IN SECTION 2.3.6 OF THE BC PLUMBING CODE (2012).

13.1.3. FANS.

13.1.4. FIRE SUPPRESSION SYSTEM.

13.1.5. POWER TO ALL EQUIPMENT.

13.1.6. ALL INTERLOCKS.

13.1.7. PRESSURIZED DUCTWORK FOR SEAL INTEGRITY.

13.2. THE PLUMBING PERMIT HOLDER SHALL REQUEST AND PAY THE REQUIRED FEES TO SCHEDULE THE REQUIRED PLUMBING INSPECTIONS WITH THE CITY OF SURREY AT THE APPROPRIATE STAGES OF PROJECT COMPLETION.

13.3. THE INSTALLATION CONTRACTOR SHALL KEEP AN ACCURATE SET OF AS–BUILT DRAWINGS. ON COMPLETION OF THE WORK, ONE PRINT OF EACH OF THE CONTRACT DRAWINGS WHICH ARE APPLICABLE SHALL BE NEATLY AND CLEARLY MARKED IN COLOR TO SHOW ALL VARIATIONS BETWEEN THE WORK ACTUALLY PROVIDED AND THAT INDICATED ON THE CONTRACT DRAWINGS.

13.4. PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, SUBMIT THE FOLLOWING INFORMATION FOR REVIEW AND APPROVAL:

13.4.1. OPERATING AND MAINTENANCE MANUALS.

13.4.2. TESTING AND BALANCING REPORTS WITH A SUMMARY OF QUALIFICATIONS OF THE TAB ENGINEER.

13.4.3. AS–BUILT DRAWINGS

13.5. SUBSTANTIAL COMPLETION AND FINAL INSPECTION OF ALL TESTS NOTED ABOVE MUST BE COMPLETED PRIOR TO A WRITTEN INSPECTION REQUEST. PROVIDE A MINIMUM OF 72 HOURS OF PRIOR NOTICE.

13.6. CLEANING AND REMOVAL OF DEMOLISHED AND/OR SCRAP MATERIAL FROM SITE SHALL BE PROVIDED BY THE INSTALLATION CONTRACTOR. LEAVE SITE IN BROOM CLEAN CONDITION.

13.7. INSTALLATION CONTRACTOR SHALL ENSURE THE FOLLOWING:

13.7.1. FILTERS IN PLACE AND CLEAN.

13.7.2. DUCT SYSTEMS CLEAN.

13.7.3. ACCESS DOORS, INSTALLED, CLOSED.

13.8. ALL WORKMANSHIP AND MATERIALS SHALL BE GUARANTEED TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF SUBSTANTIAL COMPLETION AND CONTRACTORS SHALL MAKE GOOD, WITHOUT ADDITIONAL COSTS TO THE OWNER, ANY DEFECTS WHICH MAY APPEAR IN THAT PERIOD. MANUFACTURER'S WARRANTIES EXTENDING BEYOND ONE (1) YEAR SHALL BE PROCESSED AND TURNED OVER TO THE OWNER.

14. OPERATING AND MAINTENANCE MANUALS

14.1. PRIOR TO COMPLETION OF THE PROJECT, THE INSTALLATION CONTRACTOR SHALL THREE (3) HARDBACKED LOOSELEF TYPE BINDERS, IDENTIFIED WITH THE NAME OF THE PROJECT. THE INSTALLATION CONTRACTOR SHALL HAVE THESE BINDERS AVAILABLE FOR THE CITY INSPECTOR, ENGINEER, AND BUILDING OWNER

14.2. THE FOLLOWING ITEMS AND OTHER ADDITIONAL PERTINENT DATA FOR EACH ITEM OF EQUIPMENT SHALL BE INCLUDED:

14.2.1. NAME OF MANUFACTURER

14.2.2. NAME, ADDRESS, AND TELEPHONE NUMBER OF NEAREST MANUFACTURERS REPRESENTATIVE.

14.2.3. COPY OF THE LATEST APPROVED SHOP DRAWINGS

14.2.4. MANUFACTURER'S OPERATING AND MAINTENANCE MANUAL.

14.2.5. PART NUMBERS FOR ALL REPLACEABLE ITEMS.

14.2.6. SERIAL NUMBERS FOR ALL PRINCIPAL ITEMS OF EQUIPMENT.

14.2.7. CONTROL DIAGRAM AND SEQUENCE OF OPERATIONS.

14.2.8. MANUFACTURER'S WRITTEN GUARANTEE THAT EXTEND BEYOND THE INSTALLATION CONTRACTOR'S ONE YEAR GUARANTEE.

14.3. THE OPERATING AND MAINTENANCE MANUALS SHALL BE CONSIDERED AS PART OF THE FINAL INSPECTION AND THEY SHALL BE SUBMITTED FOR REVIEW AND APPROVAL AT LEAST 7 DAYS PRIOR TO REQUEST FOR FINAL INSPECTION.

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PROFESSIONAL SEAL

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NET–ZERO ENGINEERING
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TITLE:

MECHANICAL
GENERAL NOTES

DRAWING NUMBER: 17001–M01

REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET–ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001–M01.DWG

MAKE-UP AIR UNIT SCHEDULE

TAG	MODEL	BLOWER	DESIGN CFM	ESP.	HP	B.H.P.	VOLT	PHASE	FLA	WEIGHT (LBS)	SONES	EAT (DB) (°F)	LAT (DB) (°F)	BURNER TYPE	INPUT BTUH	OUTPUT BTUH	BURNER EFFICIENCY (%)	GAS TYPE	HEATING SET-POINT (°F)
MAU-1	FKH2-IBT-600-300-300-G15	G15-PB	3700	0.50	2.00	1.71	208	3	5.9	1156	11.9	24	104	INDIRECT-FIRED	440448	352358	80.00	NATURAL GAS	65

INCLUDED OPTIONS:

1 INLET PRESSURE GUAGE, 0-35" IN WC
2 MANIFOLD PRESSURE GUAGE, 0-10IN WC, 2 FURNACES
3 MOTORIZED BACKDRAFT DAMPER
4 STANDARD ELECTRICAL CONNECTION (MAIN AND CONTROL PANEL) FOR STANDING POWER
5 SIDE DISCHARGE FAN
6 ROOF CURB

FAN SCHEDULE

TAG	MODEL	TYPE	DESIGN CFM	ESP.	HP	B.H.P.	VOLT	PHASE	FLA	WEIGHT (LBS)	SONES
EF-1	BI-18RM RM CCW	UTILITY	3700	1.50"	2.00	1.65	208	3	-	172	32.6
EF-2	VARIOUS	WASHROOM	80	-	-	-	120	1	-	-	2.00

EF-1 INCLUDED OPTIONS:

1 NEMA 3X DISCONNECT SWITCH
2 VIBRATION ISOLATION - SPRING (OUTDOOR)
3 VCAP (PREVENTS RAIN FROM ENTERING UNIT)
4 RESTAURANT MODEL - SUPPLIED WITH 2" FAN HOUSING DRAIN AND GREASE TRAY/TRAP
5 16 GUAGE OR HEAVIER CONSTRUCTION WITH POLETHYLENE POWDER COAT

HOOD SCHEDULE

HOOD NO.	MODEL	HOOD TYPE	DESIGN CFM	L	W	H	ESP.	DUCT COLLAR SIZE	WEIGHT (LBS)	MATERIALS OF CONSTRUCTION
1	LP-SSH (FAST KITCHEN HOODS)	TYPE 1	3700	120"	51"	12/20"	0.60"	2 X 16"	205	18G 430SS

EXHAUST HOOD INCLUDED OPTIONS:

1 EXHAUST DUCT COLLARS
2 STAINLESS STEEL GREASE COLLECTOR / DRIP PAN
3 GALVANIZED STEEL BAFFLES, ULC LISTED
4 HANGER BRACKETS
5 INCANDESCENT LIGHTS, ULC LISTED. QTY 2.
6 JUNCTION BOX FOR LIGHTING
7 6" STAINLESS STEEL SPACER INTEGRATED INTO HOOD, NON-APPARENT, NON-INSULATED
8 PRE-PIPED FOR AN ANSUL R102 FIRE SUPPRESSION SYSTEM
9 STAINLESS STEEL END SKIRTS

DIFFUSER SCHEDULE

TAG	MAKE / MODEL	CEILING MODULE	DESIGN CFM	INLET SIZE	NC	THROW 2-WAY	THROW 3-WAY	THROW 4-WAY
SD-1	PRICE - PDN	24x12	150	6" Ø	22.00	-	6-8-11	5-7-9
SD-2	PRICE - LDLT	24x6	100	6" Ø	19.00	10-15-30	-	-

HOT WATER TANK SCHEDULE

TANK NO.	MODEL	MAKE	BTUH	TANK CAPACITY	RECOVERY RATE @ 140°F	INLET SIZE (NPT)	OUTLET SIZE (NPT)	MIN / MAX GAS SUPPLY PRESSURE (IN	VOLTS	PHASE	FLA	VENT DIA	WEIGHT (LBS)
1	BTRC-154 (NATURAL GAS)	AO SMITH	154,000	81 USG	107 GPH	1.50"	1.50"	4.50 / 13.80	120	1	3.0	6" Ø	470

HOT WATER TANK INCLUDED OPTIONS:

1 POWER VENTILATOR
2 CSA RATED RELIEF VALVE FACTORY INSTALLED

GREASE INTERCEPTOR SCHEDULE

GI NO.	MAKE/MODEL	CAPACITY	GREASE CAPACITY (LBS)	PIPE SIZE	L	W	H	NO. OF LIDS	WEIGHT (LBS)
1	WADE 5200-150	150 GPM	300	4.00"	61.00"	39.00"	38.00"	3	700

REV	DATE	DRAWN	CHECK	APPR	DESCRIPTION
0	2017-09-18	OW	CG	CG	ISSUED FOR PERMIT

PROFESSIONAL SEAL

PROFESSIONAL SEAL AFFIXED ABOVE SHALL APPLY ONLY TO REV(s) 0

NET-ZERO ENGINEERING
PHONE NUMBER: +1 (778) 873-1167

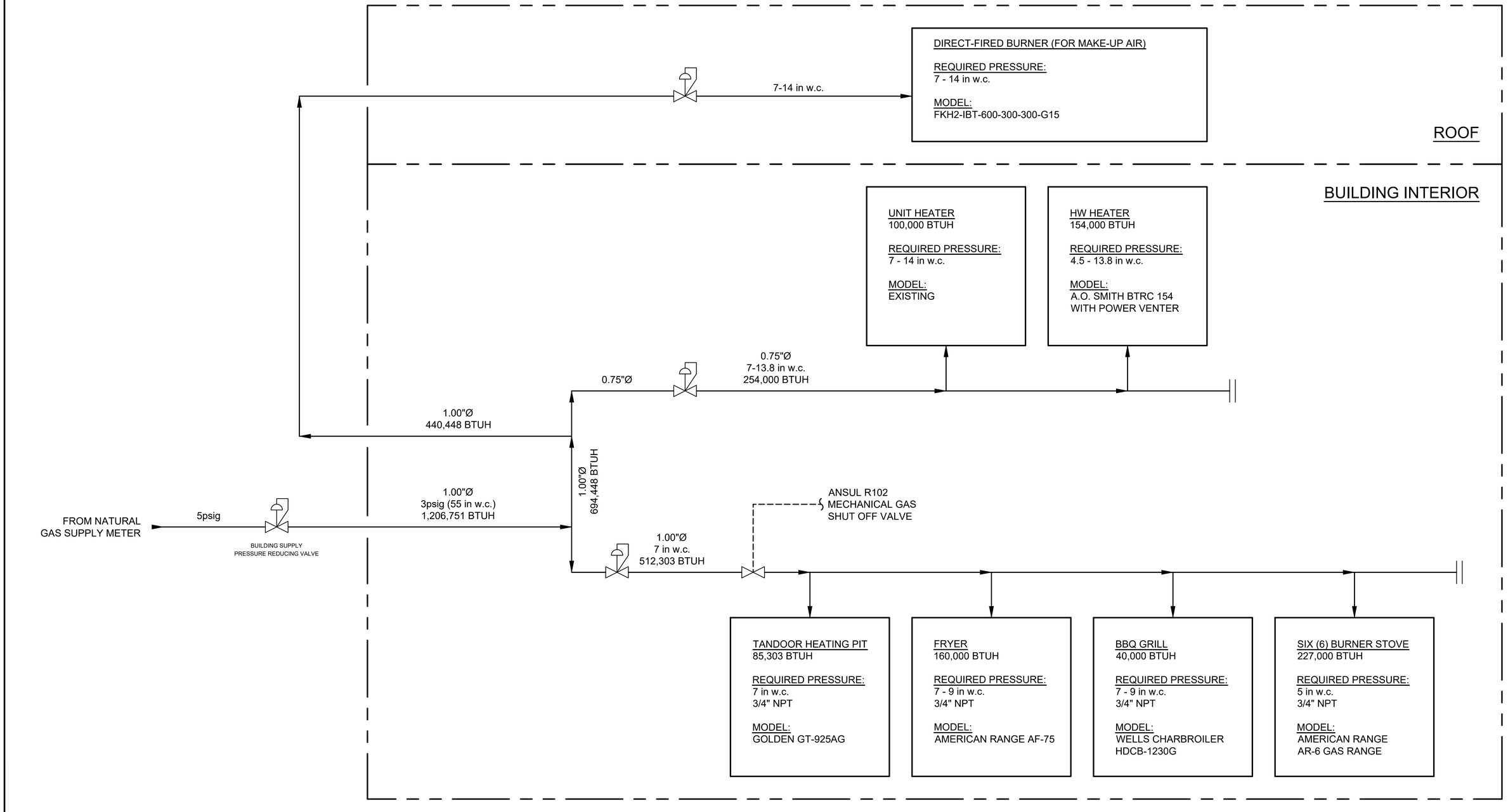
CLIENT NAME: MUHAMMAD MOLLA
LOCATION: SURREY, BC
PROJECT NAME: BENGAL GRILL RESTAURANT
DRAWING SCALE: NOT TO SCALE
PROJECT ID: 17001
SHEET NUMBER: 3 OF 10

TITLE:

MECHANICAL EQUIPMENT SCHEDULE

DRAWING NUMBER: 17001-M02
REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET-ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001-M02.DWG



REV	DATE	DRAWN	CHECK	APPR	DESCRIPTION
0	2017–09–18	OW	CG	CG	ISSUED FOR PERMIT

PROFESSIONAL SEAL

PROFESSIONAL SEAL
AFFIXED ABOVE SHALL APPLY ONLY TO REV(s) 0

NET-ZERO ENGINEERING
PHONE NUMBER: +1 (778) 873–1167

CLIENT NAME:	MUHAMMAD MOLLA	LOCATION:	SURREY, BC
PROJECT NAME:	BENGAL GRILL RESTAURANT	DRAWING SCALE:	NOT TO SCALE
PROJECT ID:	17001	SHEET NUMBER:	4 OF 10

TITLE:

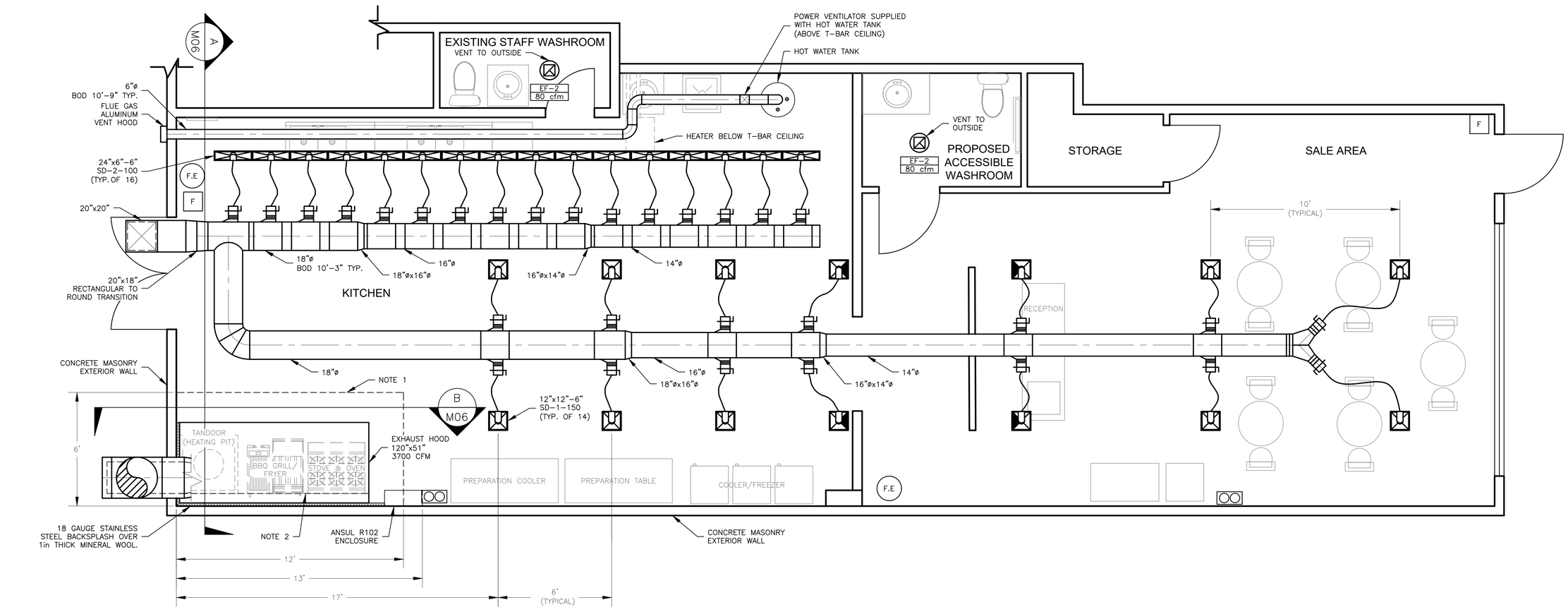
MECHANICAL
FUEL GAS SYSTEM DIAGRAM

DRAWING NUMBER: 17001–M03

REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET–ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001–M03.DWG

NOTES:
1. T–BAR CEILING TO BE REMOVED AROUND EXHAUST HOOD.
2. 6" STAINLESS STEEL SPACER INTEGRATED TO THE HOOD TO PROVIDE SUFFICIENT CLEARANCE FOR FACTORY BUILT GREASE DUCT.



PLAN VIEW

LEGEND:

- F — PROPOSED MANUAL PULL STATION/ FIRE ALARM
- PROPOSED EMERGENCY LIGHT
- F.E — PROPOSED FIRE EXTINGUISHER
- WATER CLOSET EXHAUST FAN
- SUPPLY AIR–DOWN
- REDUCER
- FLEXIBLE DUCT
- BALANCING DAMPER
- 4–WAY SUPPLY DIFFUSER
- 3–WAY SUPPLY DIFFUSER
- LINEAR SLOT DIFFUSER

REV	DATE	DRAWN	CHECK	APPR	DESCRIPTION
0	2017–09–18	OW	CG	CG	ISSUED FOR PERMIT

PROFESSIONAL SEAL

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NET-ZERO ENGINEERING
PHONE NUMBER: +1 (778) 873–1167

CLIENT NAME:	MUHAMMAD MOLLA	LOCATION:	SURREY, BC
PROJECT NAME:	BENGAL GRILL RESTAURANT	DRAWING SCALE:	3/8"=1'–0"
PROJECT ID:	17001	SHEET NUMBER:	5 OF 10

TITLE:

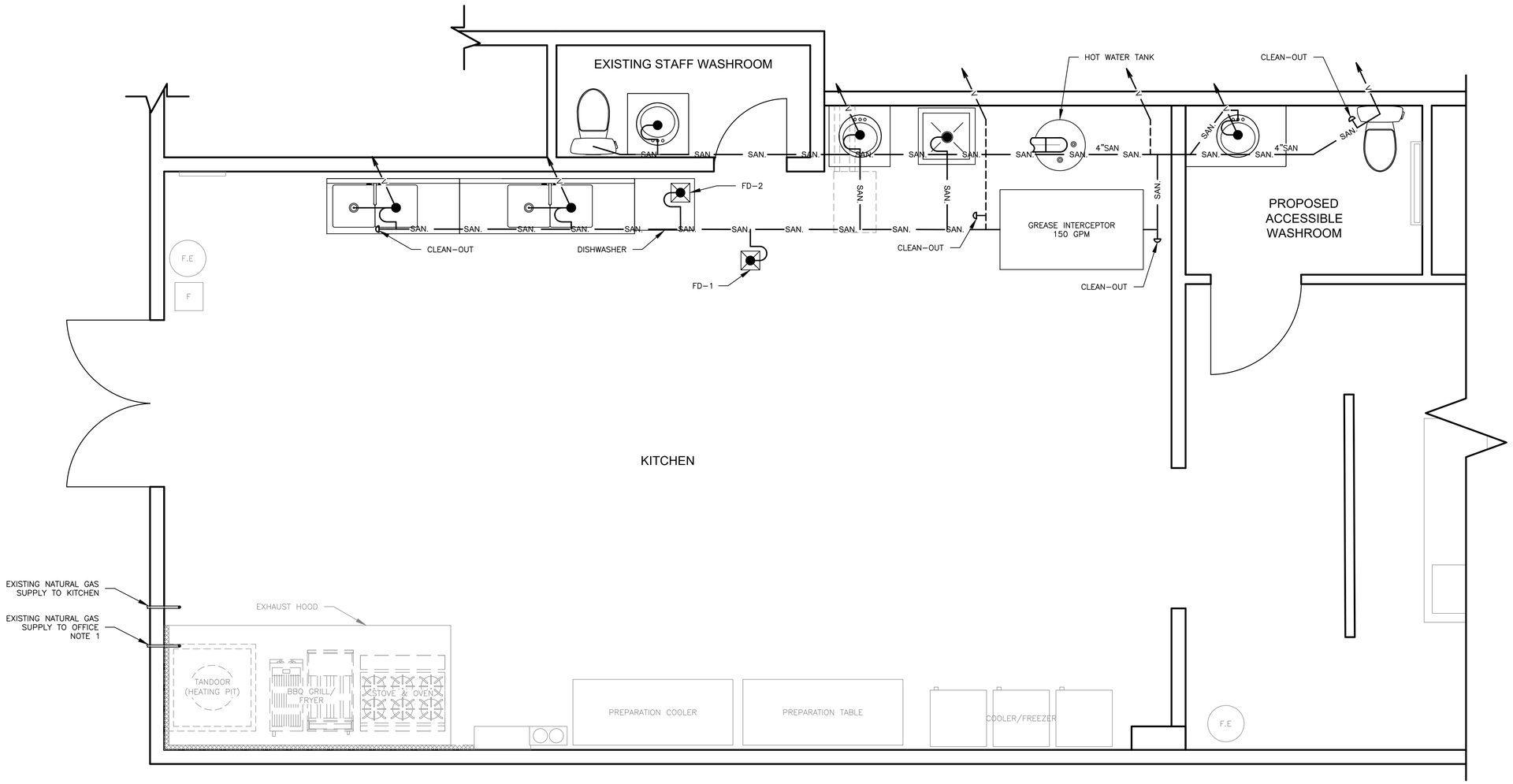
MECHANICAL
VENTILATION PLAN

DRAWING NUMBER: 17001–M04

REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET–ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001–M04.DWG

NOTES:
1. NATURAL GAS LINE TO BE DEMOLISHED AND RE-ROUTED TO THE OFFICE (2ND FLOOR), TO ACCOMMODATE EXHAUST HOOD.



PLAN VIEW

REV	DATE	DRAWN	CHECK	APPR	DESCRIPTION
0	2017-09-18	OW	CG	CG	ISSUED FOR PERMIT

PROFESSIONAL SEAL

PROFESSIONAL SEAL AFFIXED ABOVE SHALL APPLY ONLY TO REV(s) | 0

NET-ZERO ENGINEERING
PHONE NUMBER: +1 (778) 873-1167

CLIENT NAME:	MUHAMMAD MOLLA	LOCATION:	SURREY, BC
PROJECT NAME:	BENGAL GRILL RESTAURANT	DRAWING SCALE:	1/2"=1'-0"
PROJECT ID:	17001	SHEET NUMBER:	6 OF 10

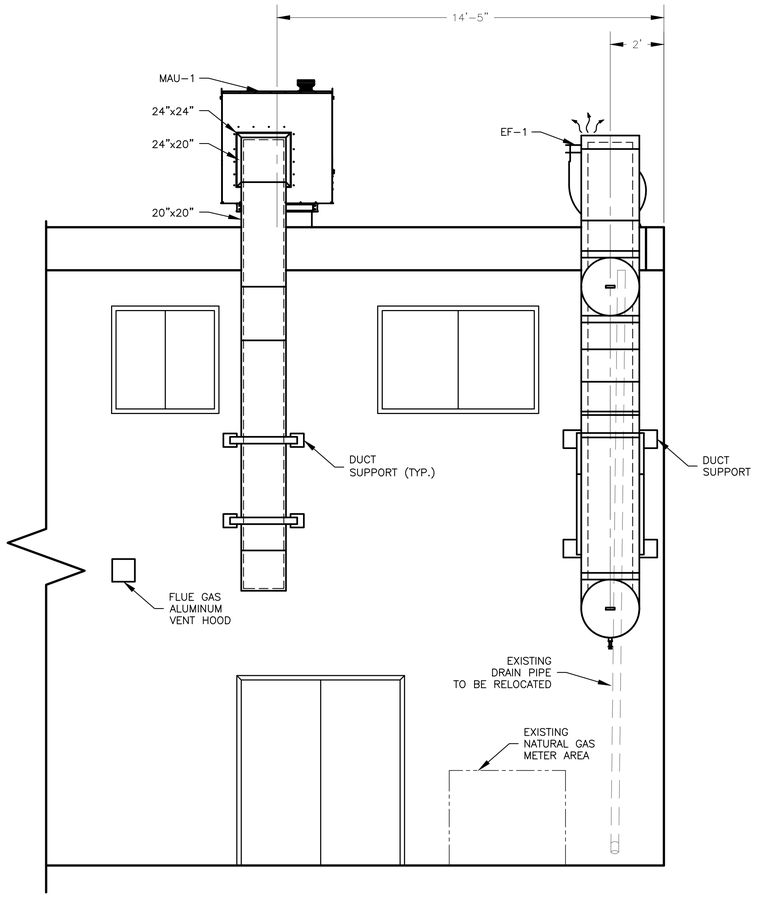
TITLE:
MECHANICAL
PLUMBING PLAN

DRAWING NUMBER: 17001-M05
REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET-ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001-M05.DWG

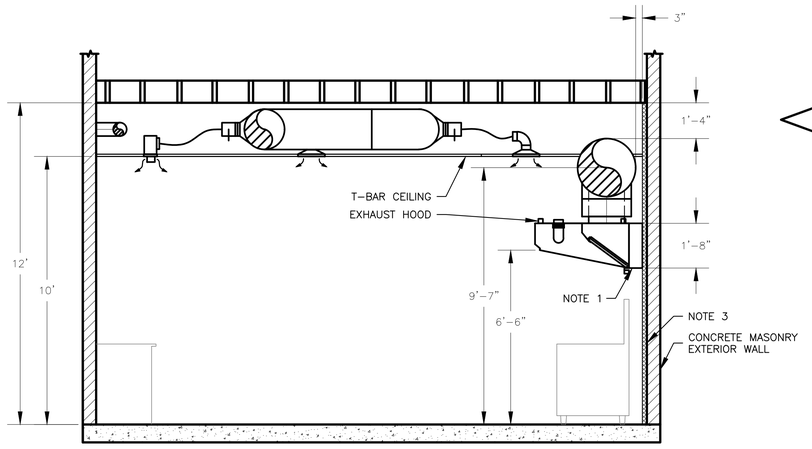
NOTES:

1. 6" STAINLESS STEEL SPACER INTEGRATED TO THE HOOD TO PROVIDE SUFFICIENT CLEARANCE FOR FACTORY BUILT GREASE DUCT.
2. 1.5" NPT DRAIN SHALL BE FURNISHED WITH MALE THREAD–END NIPPLE. FEMALE THREAD–END HOSE TO BE CONNECTED FOR CLEAN–OUT.
3. 18 GAUGE STAINLESS STEEL BACKSPLASH OVER 1in MINERAL WOOL INSULATION (FINISHED FLOOR TO CEILING).
4. ANSUL R102 MANUAL PULL STATION TO BE MOUNTED 42"–48" ABOVE FINISHED FLOOR.



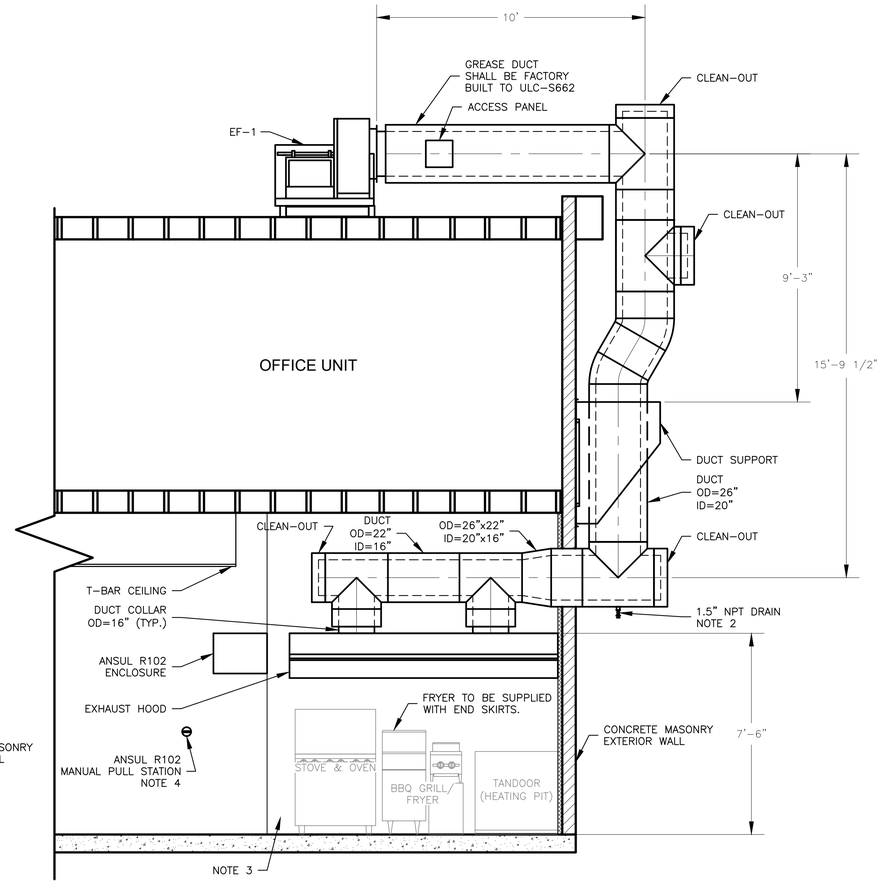
REAR BUILDING DETAIL

SCALE: 3/8"=1'–0"



SECTION A

SCALE: 3/8"=1'–0"



SECTION B

SCALE: 3/8"=1'–0"

REV	DATE	DRAWN	CHECK	APPR	DESCRIPTION
0	2017–09–18	OW	CG	CG	ISSUED FOR PERMIT

PROFESSIONAL SEAL

PROFESSIONAL SEAL AFFIXED ABOVE SHALL APPLY ONLY TO REV(s) 0

NET–ZERO ENGINEERING
PHONE NUMBER: +1 (778) 873–1167

CLIENT NAME:	MUHAMMAD MOLLA	LOCATION:	SURREY, BC
PROJECT NAME:	BENGAL GRILL RESTAURANT	DRAWING SCALE:	AS NOTED
PROJECT ID:	17001	SHEET NUMBER:	7 OF 10

TITLE:

MECHANICAL
REAR BUILDING DETAIL AND SECTIONS

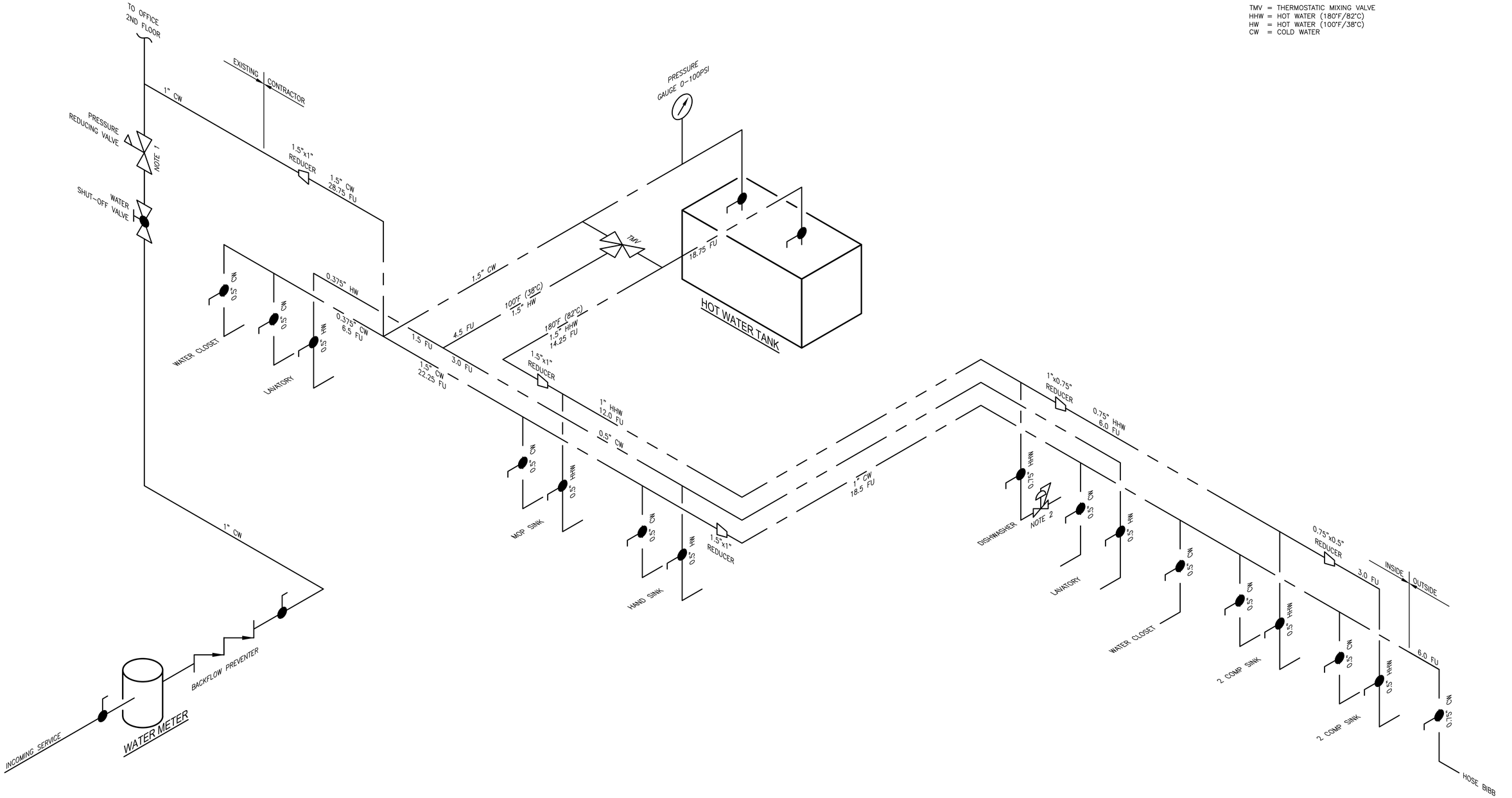
DRAWING NUMBER:	REVISION:
17001–M06	0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET–ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001–M06.DWG

NOTES:

1. MINIMUM PRESSURE REDUCING VALVE SET-POINT SHALL BE 40PSIG. CURRENT PRESSURE REDUCING VALVE SET-POINT REPORTED AS 60PSIG.
2. PRV NOT SUPPLIED WITH DISHWASHER. CONTRACTOR TO SUPPLY. PRV SET POINT SHALL BE 30PSIG. INSTALLATION CONTRACTOR TO CONFIRM SET-POINT.

TMV = THERMOSTATIC MIXING VALVE
HHW = HOT WATER (180°F/82°C)
HW = HOT WATER (100°F/38°C)
CW = COLD WATER



REV	DATE	DRAWN	CHECK	APPR	DESCRIPTION
0	2017-09-18	OW	CG	CG	ISSUED FOR PERMIT

PROFESSIONAL SEAL

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NET-ZERO ENGINEERING

PHONE NUMBER: +1 (778) 873-1167

CLIENT NAME:	MUHAMMAD MOLLA	LOCATION:	SURREY, BC
PROJECT NAME:	BENGAL GRILL RESTAURANT	DRAWING SCALE:	NOT TO SCALE
PROJECT ID:	17001	SHEET NUMBER:	8 OF 10

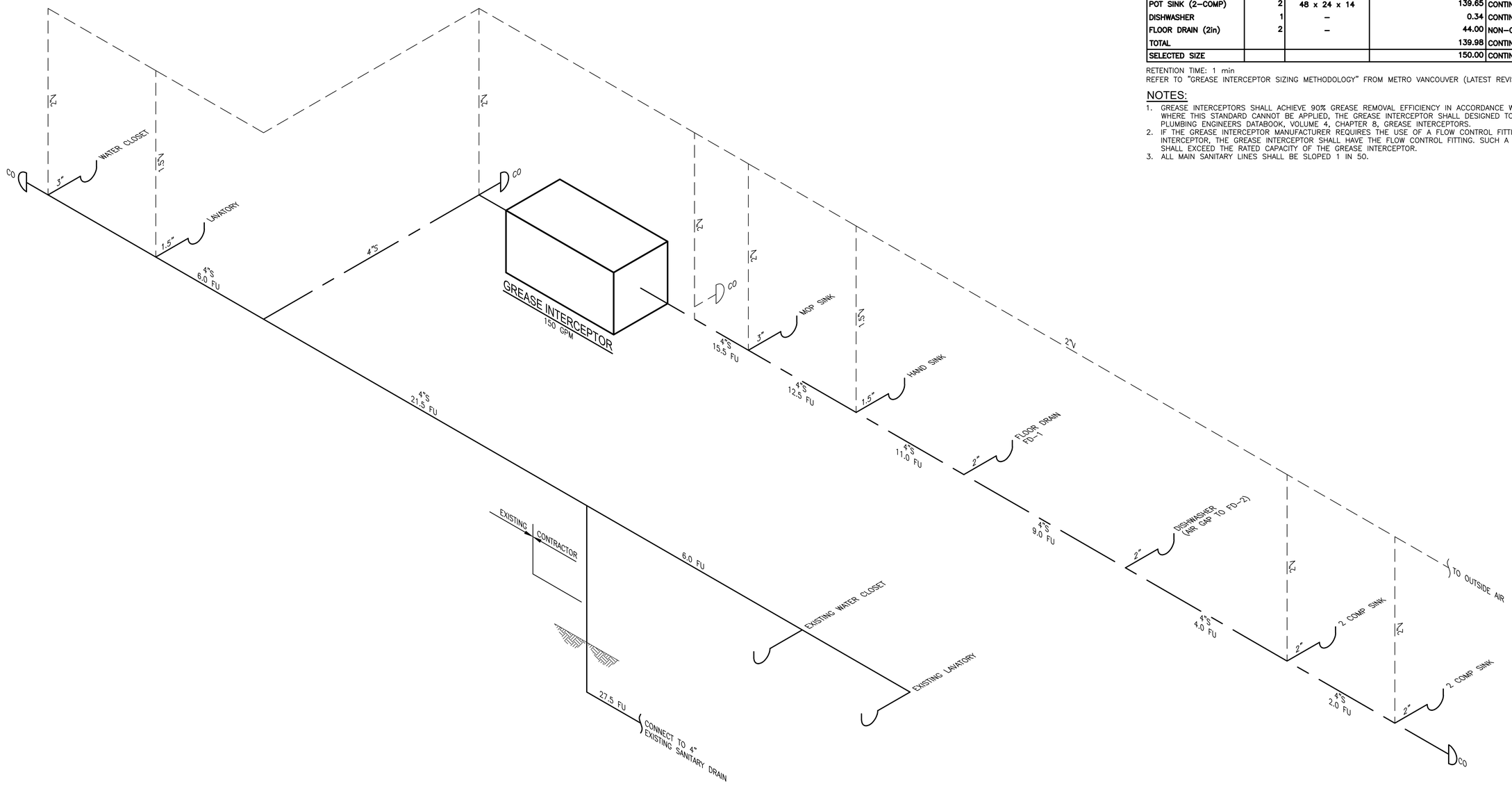
TITLE:

MECHANICAL
WATER ISOMETRIC DIAGRAM

DRAWING NUMBER: 17001-M07

REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET-ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001-M07.DWG



GREASE INTERCEPTOR SIZING

FIXTURE	QTY	L x D x H (in)	TOTAL FLOW (GPM)	FLOW FREQUENCY
KITCHEN HAND SINK	1	14 x 10 x 5.5	3.33	NON-CONTINUOUS
MOP SINK	1	35 x 27 x 18	73.64	NON-CONTINUOUS
POT SINK (2-COMP)	2	48 x 24 x 14	139.65	CONTINUOUS
DISHWASHER	1	–	0.34	CONTINUOUS
FLOOR DRAIN (2in)	2	–	44.00	NON-CONTINUOUS
TOTAL			139.98	CONTINUOUS
SELECTED SIZE			150.00	CONTINUOUS

RETENTION TIME: 1 min
REFER TO "GREASE INTERCEPTOR SIZING METHODOLOGY" FROM METRO VANCOUVER (LATEST REVISION AUGUST 11, 2015)

NOTES:

1. GREASE INTERCEPTORS SHALL ACHIEVE 90% GREASE REMOVAL EFFICIENCY IN ACCORDANCE WITH CSA B481.2. WHERE THIS STANDARD CANNOT BE APPLIED, THE GREASE INTERCEPTOR SHALL DESIGNED TO AMERICAN SOCIETY OF PLUMBING ENGINEERS DATABOOK, VOLUME 4, CHAPTER 8, GREASE INTERCEPTORS.
2. IF THE GREASE INTERCEPTOR MANUFACTURER REQUIRES THE USE OF A FLOW CONTROL FITTING WITH THE GREASE INTERCEPTOR, THE GREASE INTERCEPTOR SHALL HAVE THE FLOW CONTROL FITTING. SUCH A FLOW CONTROL FITTING SHALL EXCEED THE RATED CAPACITY OF THE GREASE INTERCEPTOR.
3. ALL MAIN SANITARY LINES SHALL BE SLOPED 1 IN 50.

REV	DATE	DRAWN	CHECK	APPR	DESCRIPTION
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PROFESSIONAL SEAL

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NET-ZERO ENGINEERING
PHONE NUMBER: +1 (778) 873-1167

CLIENT NAME: MUHAMMAD MOLLA
PROJECT NAME: BENGAL GRILL RESTAURANT
PROJECT ID: 17001
LOCATION: SURREY, BC
DRAWING SCALE: NOT TO SCALE
SHEET NUMBER: 9 OF 10

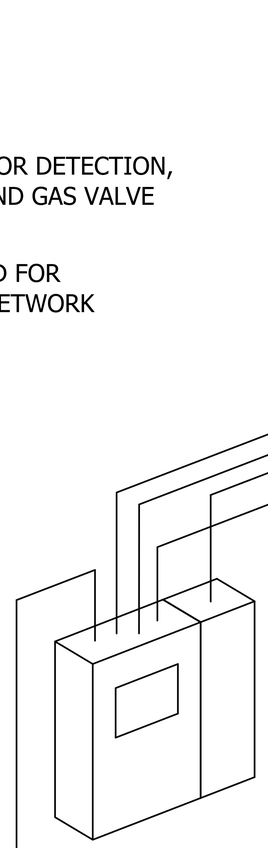
TITLE:
MECHANICAL
SANITARY ISOMETRIC DIAGRAM

DRAWING NUMBER: 17001-M08
REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET-ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001-M08.DWG

1/2" EMT USED FOR DETECTION,
PULL STATION AND GAS VALVE

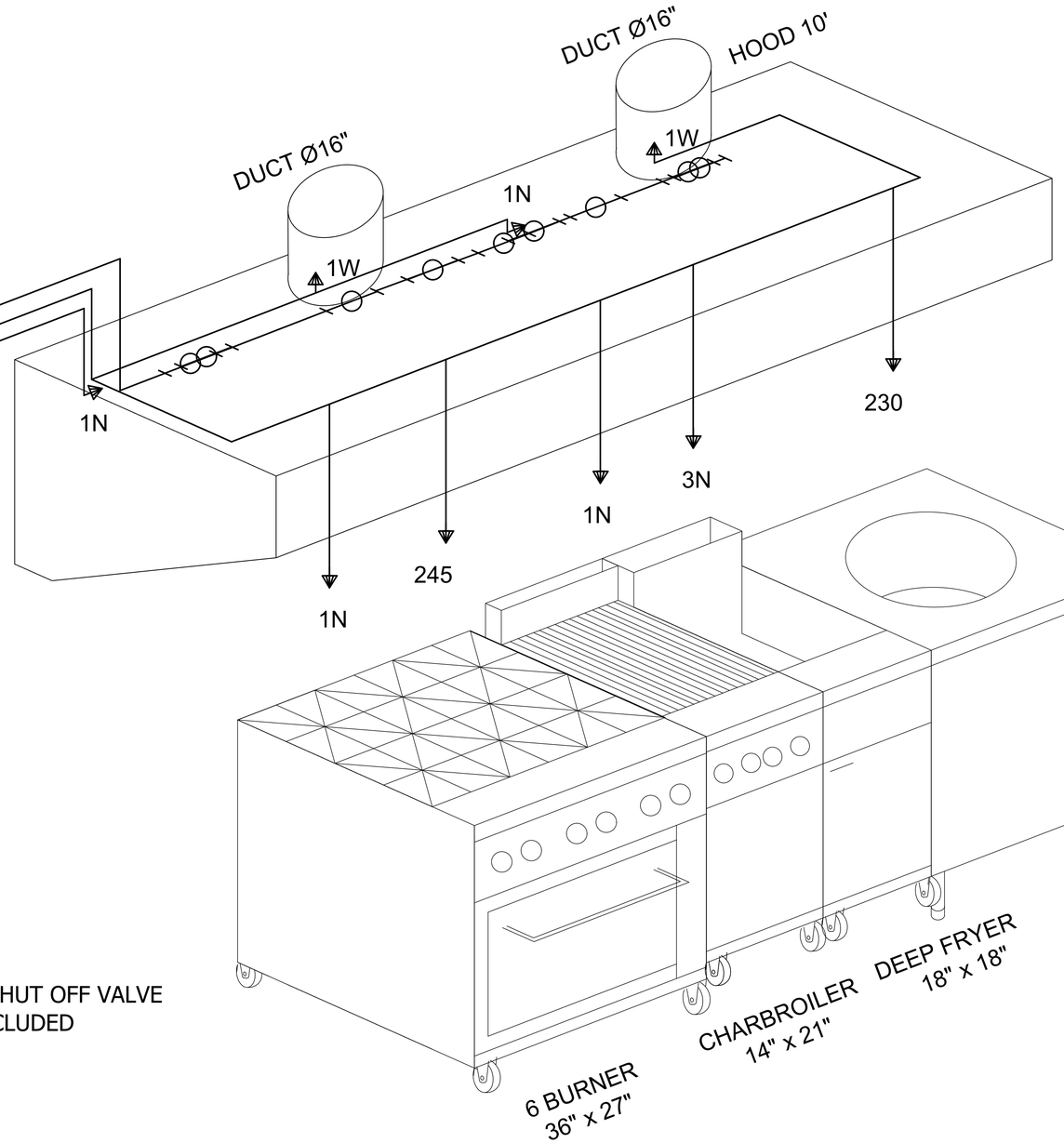
3/8" PIPING USED FOR
DISTRIBUTION NETWORK



ANSUL R-102

REMOTE PULL STATION

MECHANICAL GAS SHUT OFF VALVE
3/4" GAS VALVE INCLUDED



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PROFESSIONAL SEAL

PROFESSIONAL SEAL
AFFIXED ABOVE SHALL APPLY ONLY TO REV(s) | 0

NET-ZERO ENGINEERING

PHONE NUMBER: +1 (778) 873–1167

CLIENT NAME:	MUHAMMAD MOLLA	LOCATION:	SURREY, BC
PROJECT NAME:	BENGAL GRILL RESTAURANT	DRAWING SCALE:	NOT TO SCALE
PROJECT ID:	17001	SHEET NUMBER:	10 OF 10

TITLE:

MECHANICAL
FIRE SUPPRESSION SYSTEM DIAGRAM

DRAWING NUMBER: 17001–M09

REVISION: 0

FILE NAME: C:\USERS\ORTHUR\DESKTOP\NET–ZERO ENGINEERING\PROJECTS\17001\DRAWINGS\17001–M09.DWG