

PTION	LOAD (COMBINED)		LOAD (COLD WATER)	PIPE SIZE (mm)		LOAD (HOT WATER)
JILDING (FUTURE)	120	FU	-	50	Ø	-
	120 FU	48.0 GPM		50	Ø	
FIRE PROTECTION PIPES / PRINKLER SYSTEM	CONF	(300 GPM) IRM WITH FP ENGINEER	-			-
			040 0 ODM			150 (01)

DESCRIPTION	ROOF AREA (SQ. METER)	LOAD 10 (L/15min)	PIPE (mn
TOTAL PROJECT STORM WATER LOAD	700	7,000.00	15
INV. PROPERTY LINE - REFER TO CIVIL			

DESCRIPTION	TOTAL LOAD (FU)	PIPE SIZE (mm)	
MAIN BUILDING (FUTURE)	500.00	150ø	
TOTAL PROJECT SANITARY LOAD		150 ø] -
			*



REV	DATE	DESCRIPTION
01	07/02/17	ISSUED FOR DP
02	09/03/17	RE-ISSUED FOR DP
03	21/03/17	ISSUED FOR BUILDING PERMIT

Alberto Bicol Consulting Inc. 7968 Wedgewood Street Burnaby, B.C. Canada V5E 2E8 778.998.9651 :Telephone E-Mail: albert.bicol@AlbertoBConsulting.com Project Reference No: 20161202

CONSULTANT

CONSULTANT SEAL



COPYRIGHT P.J. LOVICK ARCHITECT LTD. THIS MATERIAL IS AN INSTRUMENT OF SERVICE AND REMAINS AT ALL TIMES THE EXCLUSIVE PROPERTY OF P.J. LOVICK ARCHITECT LTD. REPRODUCTION OR RE-USE IS PROHIBITED WITHOUT THE WRITTEN CONSENT AND NAME OF P.J. LOVICK ARCHITECT LTD. INFORMATION SHOWN IS FOR USE ON THE DESIGNATED PROJECT ONLY. DRAWN BY APPROVED

RMR Langley Bypass Commercial 20670 LANGLEY BYPASS LANGLEY, BC

DRAWING







PLUMBING ROUGH-IN SCHEDULE										
TYPE	FIXTURE	SANI	TARY	CC	DLD	Н	ТС	VE	INT	REMARKS
WC	WATER CLOSET	75ø	3"	10ø	1⁄2"	-	-	40ø	1½"	DUAL FLUSH TANK
L	LAVATORY	40ø	1½"	10ø	1⁄2"	10ø	1⁄2"	30ø	1¼"	-
SK	SINK	40ø	1½"	10ø	1⁄2"	10ø	1⁄2"	30ø	1¼"	-
SH	SHOWER	50ø	2"	20ø	3⁄4"	20ø	3⁄4"	40ø	1½"	-
FD	FLOOR DRAIN	100ø	4"	-	-	-	-	-	-	C/W TRAP PRIMER
JS	JANITOR SINK	75ø	3"	10ø	1⁄2"	10ø	1⁄2"	40ø	1½"	-
NOTE:	-	-	•		•	-	•	-	•	•

REV	DATE	DESCRIPTION
01	07/02/17	ISSUED FOR DP
02	09/03/17	RE-ISSUED FOR DP
03	21/03/17	ISSUED FOR BUILDING PERMIT

Alberto Bicol Consulting Inc. 7968 Wedgewood Street Burnaby, B.C. Canada V5E 2E8 778.998.9651 :Telephone E-Mail: albert.bicol@AlbertoBConsulting.com Project Reference No: 20161202

CONSULTANT

CONSULTANT SEAL



COPYRIGHT P.J. LOVICK ARCHITECT LTD. THIS MATERIAL IS AN INSTRUMENT OF SERVICE AND REMAINS AT ALL TIMES THE EXCLUSIVE PROPERTY OF P.J. LOVICK ARCHITECT LTD. REPRODUCTION OR RE-USE IS PROHIBITED WITHOUT THE WRITTEN CONSENT AND NAME OF P.J. LOVICK ARCHITECT LTD. INFORMATION SHOWN IS FOR USE ON THE DESIGNATED PROJECT ONLY. DRAWN BY

RMR PROJECT Langley Bypass Commercial 20670 LANGLEY BYPASS LANGLEY, BC

DRAWING

ARCHITECTURAL SEAL





REV	DATE	DESCRIPTION
01	07/02/17	ISSUED FOR DP
02	09/03/17	RE-ISSUED FOR DP
03	21/03/17	ISSUED FOR BUILDING PERMIT

Alberto Bicol Consulting Inc. 7968 Wedgewood Street Burnaby, B.C. Canada V5E 2E8 778.998.9651 :Telephone E-Mail: albert.bicol@AlbertoBConsulting.com Project Reference No: 20161202

CONSULTANT

CONSULTANT SEAL



COPYRIGHT P.J. LOVICK ARCHITECT LTD. THIS MATERIAL IS AN INSTRUMENT OF SERVICE AND REMAINS AT ALL TIMES THE EXCLUSIVE PROPERTY OF P.J. LOVICK ARCHITECT LTD. REPRODUCTION OR RE-USE IS PROHIBITED WITHOUT THE WRITTEN CONSENT AND NAME OF P.J. LOVICK ARCHITECT LTD. INFORMATION SHOWN IS FOR USE ON THE DESIGNATED PROJECT ONLY. DRAWN BY APPROVED RMR

Langley Bypass Commercial 20670 LANGLEY BYPASS LANGLEY, BC

DRAWING

3-94 PROJECT NUMBER DRAWING NUMBER M-413-94 m SCALE $1^{"} = 30' - 0"$ REVISION DATE MARCH 2017 09/03/17

ROOF PLAN



DESCRIPTION	ACCESSORIES
ZURN ZN-415-B-P-VP, EPOXY COATED CAST IRON BODY AND CLAMP COLLAR, POLISHED 5" ROUND NICKEL BRONZE STRAINER HEAD AND GRATE. 3" CONNECTION.	-TRAP PRIMER AND TRAP PRIMER CONNECTION -VANDAL PROOF SCREWS
ZURN ZN-415-BF-P-M, EPOXY COATED CAST IRON BODY AND CLAMP COLLAR, POLISHED 5" ROUND NICKEL BRONZE STRAINER HEAD AND GRATE WITH 3\"x8" OVAL FUNNEL, 3" CONNECTION.	-TRAP PRIMER AND TRAP PRIMER CONNECTION -SEDIMENT BUCKET.
ZURN ZN-415-S, EPOXY COATED CAST IRON BODY AND CLAMP COLLAR, 3" HUB	-TRAP PRIMER AND TRAP PRIMER CONNECTION -SEDIMENT BUCKET
ZURN Z-121-EBC EPOXY COATED CAST IRON BODY AND CLAMP COLLAR WITH 12" INTEGRAL GRAVEL GUARD, HARDWARE AND CAST IRON DOME. 3" CONNECTION.	-ROOF SUMP RECEIVER -UNDERDECK CLAMP -WATERPROOF FLANGE -CAST IRON EXTENSION TO SUIT ROOF THICKNESS.
ZURN ZN-1315-VB, [" ENCASED NON-FREEZE HYDRANT WITH BRASS INTERIOR PARTS, GALVANIZED STEEL CASING, CHROME PLATE BRASS HEAD, STRAIGHT HOSE THREAD OUTLET, REMOVABLE KEY.	-SELF DRAINING ATMOSPHERIC VACUUM BREAKER
	DESCRIPTION ZURN ZN-415-B-P-VP, EPOXY COATED CAST IRON BODY AND CLAMP COLLAR, POLISHED 5" ROUND NICKEL BRONZE STRAINER HEAD AND GRATE. 3" CONNECTION. ZURN ZN-415-BF-P-M, EPOXY COATED CAST IRON BODY AND CLAMP COLLAR, POLISHED 5" ROUND NICKEL BRONZE STRAINER HEAD AND GRATE WITH 3\"x8" OVAL FUNNEL, 3" CONNECTION. ZURN ZN-415-S, EPOXY COATED CAST IRON BODY AND CLAMP COLLAR, 3" HUB ZURN Z-121-EBC EPOXY COATED CAST IRON BODY AND CLAMP COLLAR, 3" HUB ZURN Z-121-EBC EPOXY COATED CAST IRON BODY AND CLAMP COLLAR WITH 12" INTEGRAL GRAVEL GUARD, HARDWARE AND CAST IRON DOME. 3" CONNECTION. ZURN ZN-1315-VB, [" ENCASED NON-FREEZE HYDRANT WITH BRASS INTERIOR PARTS, GALVANIZED STEEL CASING, CHROME PLATE BRASS HEAD, STRAIGHT HOSE THREAD OUTLET, REMOVABLE KEY.

REV	DATE	DESCRIPTION
01	07/02/17	ISSUED FOR DP
02	09/03/17	RE-ISSUED FOR DP
03	21/03/17	ISSUED FOR BUILDING PERMIT

	RTU-1	RTU-2	RTU-3
	YORK ZXG06E2A1AA1B111A2	YORK ZXG06E2A1AA1B111A2	YORK ZXG06E2A1AA1B111A2
	SEE DRAWING	SEE DRAWING	SEE DRAWING
	5.0	5.0	5.0
	1,800	1,800	1,800
	32.5%	32.5%	32.5%
	1.00	1.00	1.00
W	145 / 70	145 / 70	145 / 70
LOW	116 / 56	116 / 56	116 / 56
	59.0	59.0	59.0
	63.7	63.7	63.7
	80.5/66.1	80.5/66.1	80.5/66.1
	82.6/67.1	82.6/67.1	82.6/67.1
	208/3	208/3	208/3
	-	-	-
	80%	80%	80%
	560	560	560
	-14" CURB -ECONOMIZER -PROGRAM. T-STAT C/W 50' WIRING	-14" CURB -ECONOMIZER -PROGRAM. T-STAT C/W 50' WIRING	-14" CURB -ECONOMIZER -PROGRAM. T-STAT C/W 50' WIRING

	TRIM	ACCESSORIES
ADET 9495 001 CENTRE BARRIER FREE, , TWO REAR K	AMERICAN STANDARD MODEL SEVA 1480 101 SINGLE CONTROL CENTERSET CONNECTION. WITH POP-UP DRAIN, ESCUTCHEON PLATE, WITH INTEGAL HOT LIMIT SAFTEY STOP	- P-TRAP - SHUT-OFF VALVE - ESCUTCHEON PLATE
03.100 YORKVILLE SURE-ASSISTED TED 16-1/2" BOWL NTED, BACK-OUTLET ING LEVER, COLOR CTS)		- SHUT-OFF VALVE - ESCUTCHEON PLATE - VACUUM BREAKER - SEAT

NOTE: - ALL PLUMBING FIXTURE MUST BE CONFIRMED BY THE ARCHITECTS, PROVIDE SHOP DRAWINGS FOR REVIEW WITH COLOR FINISH.

- LAVATORY, SINK, AND TOILET C/W CHROME PLATED POLISHED BRASS, HEAVY DUTY ANGLE STOP, WHEEL HANDLES,

- ALL EXPOSED P-TRAP SHALL BE CHROME PLATED, HEAVY CAST BRASS ADJUSTABLE BODY, WITH SLIP NUT, CLEANOUT, WALL

Alberto Bicol Consulting Inc. 7968 Wedgewood Street Burnaby, B.C. Canada V5E 2E8 778.998.9651 :Telephone E-Mail: albert.bicol@AlbertoBConsulting.com Project Reference No: 20161202

CONSULTANT

CONSULTANT SEAL



SERVICE AND REMAINS AT ALL TIMES THE EXCLUSIVE PROPERTY OF P.J. LOVICK ARCHITECT LTD. REPRODUCTION OR RE-USE IS PROHIBITED WITHOUT THE WRITTEN CONSENT AND NAME OF P.J. LOVICK ARCHITECT LTD. INFORMATION SHOWN IS FOR USE ON THE DESIGNATED PROJECT ONLY. APPROVED RMR

COPYRIGHT P.J. LOVICK ARCHITECT LTD. THIS MATERIAL IS AN INSTRUMENT OF

Langley Bypass Commercial 20670 LANGLEY BYPASS

LANGLEY, BC DRAWING

DETAILS AND	SCHEDULES	12-01
PROJECT NUMBER	DRAWING NUMBER	ບ
13-94	M-5	
scale 1" = 30'-0"		
MARCH 2017	revision 09/03/17	

GENERAL MECHANICAL SPECIFICATIONS

- 1. GENERAL
- 1.1 INTENT: The intent of this specification and drawings is to provide a complete and fully operating mechanical system in complete accord with applicable codes. The Mechanical Contractor shall make provisions for labour, material and equipment necessary to complete the mechanical work.
- 1.2 EXISTING CONDITIONS: Protect all existing services encountered. Arrange work to avoid shutdowns of existing services. Drawings indicate general locations of existing services. Verify exact locations of services on site prior to fabrication of work. Drawings indicate general locations of existing services. Verify exact locations of services on site prior to fabrication of work.
- 1.3 LIABILITY: Assume responsibility for laying out work and for damage caused to the Owner or others by improper execution of work. Protect finished and unfinished work from damage. Take responsibility for condition of materials and equipment supplied and protect until work is completed and accepted
- 1.4 CERTIFICATES: Give notices, obtain permits, and pay fees so work specified may be carried out. Furnish certificates, if requested, as evidence that work conforms with laws and regulations of Authorities having jurisdiction.
- 1.5 CUTTING AND PATCHING: Give locations for holes for mechanical equipment and provide sleeves required for the mechanical installations. Be responsible for cutting and patching of building structure required by work unless otherwise indicated.
- 1.6 TESTING: Test equipment and materials where required by Authorities having jurisdiction, to demonstrate proper operation.
- 1.7 GUARANTEE: Provide the Owner with a written guarantee for labour and material warranting systems and equipment furnished to remain in serviceable condition for a period of one (1) year from date of final acceptance by the Owner.
- 1.8 STANDARD OF MATERIALS AND WORKMANSHIP: Make and quality of materials used are subject to approval by the Engineer. Remove condemned materials and install suitable materials in their place. Materials shall be new and of uniform pattern throughout, where specifically identified in this specification. Workmanship shall follow the best tradition and tradesmanship. Employ only tradesmen properly licensed for work requiring tradesmen with special skill.
- 1.9 SHOP DRAWINGS: Submit 5 copies of shop drawings for HRV units, fans, air outlets, water heater and plumbing fixtures to the Engineer for review including all performance data, physical dimensions, electrical data and operating weights.
- 1.10 RECORD DRAWINGS: Keep on site an extra set of white prints and specifications, recording changes and deviations daily. Upon completion of work, submit marked-up white prints over to Consultant. Allow \$2000 for Consultant to transfer site changes to CAD files and provide Owner with two sets of white prints marked "Record Drawings".
- 1.11 MAINTENANCE MANUALS: Provide 3-8 1/2" x 11" plastic coated catalogue binders.
- 1.12 FIELD REVIEW
- 1. The Mechanical Contractor shall notify the Engineer, in writing, of start up of work, 50% completion and 100% completion for field review purposes.
- 2. Certificates required prior to substantial completion inspection for:
 - Seismic Schedule C Gas safety branch final inspection
- Plumbing final inspection Air balancing reports Maintenance Manuals
- 2. IDENTIFICATION
- 2.1 Provide identification systems for materials used in mechanical systems which require control by Workplace Hazardous Materials Information system (WHMIS) issued by Occupational Safety and Health Division of Worker's Compensation Board of British Columbia
- 2.2 Tag automatic controls, electric switches, instruments and relays with lamicoid labels with «" letters and key with control schematics. Provide lamicoid labels with «"létters on equipment and motor starters.
- 3. BALANCING 3.1 QUALITY ASSURANCE
- 1. Acceptable Balancing Firms: KD Engineering Co., Western Mechanical Services Ltd, Precision Air, Inland Technical Services, Central Interior Air Balancing Ltd, West Rockies Services and RA Bruce and Associates.
- Procedures shall be in accordance with current edition of AABC's National Standards for Field Measurement and Instrumentation, Total System Balance.
- 3.2 INSTRUMENTS: Instruments for testing and balancing of air systems shall have been calibrated within six months and verified for accuracy before start of work.
- 3.3 PROCEDURES
- 1. Data sheets required are as follows:
- Air Moving Equipment Test Sheet Exhaust Fan Test Sheet
- 2. Balance to maximum flow deviation from specified values of 10% at terminal device and 5% at equipment or mean sound level deviation of 20 db.
- 3. Permanently mark setting on valves, splitters, dampers and other adjustment devices. Take
- measurements to verify balance has not been disrupted or such disruption has been rectified. 4. At final field review, recheck random selections of data recorded in report. Recheck points or
- areas as selected and witnessed by Owner. 3.4 ACCEPTANCE
- 1. Mechanical systems shall not be considered ready for final field review until balancing results are acceptable to Consultant. If found that specified flows cannot be achieved on portions of system, actual conditions shall be reported to Consultant for consideration of corrective action before continuing balancing procedure. If report rejected, systems shall be re-balanced and new certified report submitted at no extra cost.
- 3.5 BALANCING REPORT
- 1. Submit draft copies of reports before final acceptance of project. Provide 3 copies of final report for inclusion in Operating & Maintenance Manuals.
- 2. Report shall be indexed as follows:
- Section 1 System Data (Designed, Installed and Recorded) -Air Moving Equipment (Fans)
 - -Air Heating and Cooling Equipment (Coils)
- -Air Inlets/Outlets Section 2 Drawings - Balancing Drawings
- 3.6 AIR SYSTEM PROCEDURES
- 1. Execute air systems balancing for each air system in accordance with AABC specifications and as described herein.
- 2. Make tests with supply, return and exhaust systems operating and doors and windows closed or in normal operation condition. Test and adjust blower rpm to design requirements. Test and record motor full load amps.
- 3. Make air quantity measurements in ducts by pitot tube traverse of entire cross-sectional area. Take minimum of 16 readings.
- Adjust main supply and return ducts to design flow rates. Adjust zones to design, supply and return flow rates. Test and adjust each diffuser, grille and register to within 10% of design requirements. Adjust diffusers, grilles and registers to minimize drafts.
- 5. Use volume control devices to regulate air quantities only to extent that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
- 6. Provide system schematic with required and actual air flow rates at each outlet or inlet. Identify each diffuser, grille and register as to location and area.
- 7. Record installed fan drive assemblies, fan sheaves, motor sheaves and belts. Record each installed motor manufacturer.
- 8. Complete balancing to achieve positive building pressure unless otherwise instructed. Positive pressure relative to outside pressure of 0.04"w.g. minimum and 0.07"w.g. maximum shall be achieved, measured with negligible outside wind velocity.
- 4. TESTING
- 4.1 Test equipment and material where specified or required by Authority having jurisdiction. Test in accordance with applicable portions of ASME, ASHRAE, SMACNA, NFPA, CSA and other recognized test codes.
- 4.2 Provide notice of tests to Consultant. On completion of installation, provide certification of tests with required detail. Itemize tests as to time performed and personnel responsible. Include copy of field data in Operating and Maintenance Manuals.

- 4.3 PRE
- 2
- 3.

- 4.4 PERF
- 5. VIBR
- 5.1 Prov juris Can and
- 5.2 Subm stand regist (Seis
- 5.3 INSPE Sei Subs
- 6. FIRE
- 6.1 WORK seal: CSA
- 6.2 ACCE
- 6.3 Locat
- 6.4 Work fires Colun accord
- 7. INSUL
- 7.1 Insul 90.
- 7.2 Wor dens
- 7.3 Bri avai
- 7.4 Mate mai or
- 7.5 Cor exc only
- 7.6 PIPII

ESSURE TESTS	3. <u>Finishes</u>			8.8 WATER SPECIALTIES
Piping, fixtures or equipment shall not be concealed until inspected and approved by Consultant. Carry out hydraulic tests for 8 hours. Maintain pressure. Where leakage occurs,	1. Concealed: Insulation further finish required	on concealed ductwork sho	all be left factory finished with no	1. Hose Bibbs: Provide as specified in Hose Bibb and Drain Schedule.
repair and re-test. Domestic Water Piping: Test to 1-1/2 times maximum working pressure or 150psi water	2 Mechanical Rooms: R	ectangular RE/2 Custom R	Pound RD/2 Custom	2. Water Hammer Arresters:
pressure measured at system low point.	3. Exposed Ductwork and	Plenums (in Finished Area	s): Rectangular RF/3 Premium/Custom	isolation valve on water lines connected to but not limited by the following:
minimum and 25 ft. water column maximum. Check for proper grade and obstruction by ball test.	Alternate, Round RD/3	Premium/Custom Alternate	e.	 Each fixture or group of fixtures. End of each horizontal main 3/4" and over.
Natural Gas Piping: Test as required by authority having jurisdiction.	4. Outdoor: Rectangular	RF/5 Weather Coating, Ro	und RD/5 Weather Coating.	 Other devices with solenoid valves. Size errectors as per P.D.L. Standard WH201
Low Pressure Ducts: Test for tightness such that leakage is inaudible and not detectable by feel. Should tests indicate defective work or variance with specified requirements, correct defects.	4. <u>Acoustic Lining</u> : Fibregla prevent fibre erosion, Star lining as indicated on dra	ss insulation with neoprene Idard 1502—C.2 for ductwor wings; all joints and raw ec	surface coating or matte face to k and 1502-C.1 for plenums. Acoustic Iges to be sealed.	 Size arresters as per P.D.I. Standard WHZUT. Arrester and isolation valve shall be completely accessible.
Correct leaks by re-making joints in screwed fittings, cutting out and re-welding welded joints and re-making joints in copper lines. Do not caulk.	7.8 Do not install coverings before	piping, ductwork and equipm	nent have been tested and approved.	 Back Flow Preventer Assemblies: Provide back flow preventor assemblies as specified and as required by
RFORMANCE TESTS	Ensure surface is clean and dry installation.	and that systems are oper	ating at design conditions before	local authorities
Gas fired appliances shall be subjected to operational testing established by Gas Safety Branch and pass these tests before being approved for operation. Lubricate bearings, adjust and/or replace and set direct and "V"-belt drives for proper alignment	7.9 Finish insulation neatly at hanger For exposed application finish, er For cold water piping, apply vapo	s, supports and other protr nds of insulation neatly with our barrier continuously thro	rusions. Insulate fittings and valves. n insulated material trowelled on bevel. pughout, including pipe hangers.	 Trap Seal Primers: Provide priming device and piping to nearest acceptable fixture so that device will introduce regulated amount of water into trap. Equal to Watts 200.
and tension. Calibrate and adjust thermostats, linkages and dampers. Operate and test motors for correct	8. PLUMBING			8.9 NATURAL GAS SUPPLY SYSTEM
wiring and sequences. Check overload heaters in motor starters. Fasten loose and rattling pieces of equipment to ensure quiet operation.	8.1 Provide all necessary piping mate fittings shall be in accordance w governing regulations	rial and labour for the syst ith current edition or applic	ems as shown on the drawings. Piping and cable revisions of applicable codes or	 Piping shall be in accordance with Natural Gas Installation Code CAN/CGA-B149.1- M91, BC Gas Safety Branch Code Amendments and Gas Safety Act and Regulations.
RATION ISOLATION AND SEISMIC RESTRAINT	8.2 QUALITY ASSURANCE			2. Provide CGA approved flexible metallic hose connector installed in accordance with code requirements for moveable appliances. Provide 24" section of Type K soft copper tubing
vide Vibration Isolators and Seismic Restraint systems meeting requirements of Authority having sdiction and Commentary J, Effects of Earthquakes, in Supplement to National Building Code of	 Use welders fully qualified and licensed by Provincial Authorities. <u>Gas Piping</u>: National Standard of Canada CAN1-B149.1 (latest edition), installation Code for Natural Gas Burning Appliances and Equipment. 			at connection to each appliance. Copper fittings shall be brazed with silver solder and be protected from electrolysis by brass adapters.
ada with regard to seismic forces transmitted to piping/equipment from building structure during earthquake at project location. Seismic restraint for sprinkler systems shall conform to NFPA 13 requirements of local Authorities				
nit seismic restraint system shop drawings and calculations for mechanical equipment and	3. <u>Automatic Sprinkler System</u>	<u>Piping</u> : Current edition of	f NFPA No.13, Standard for the	1. Install accessible clean-outs at traps, where required by Code and as indicated on
dard attachment methods for piping/ducting prepared and sealed by Professional Engineer stered in Province of British Columbia who specializes in design of seismic restraint system	Installation of Sprinkler Syst	ems.		arawings. 2. Clean-outs in concrete shall be adjustable type for level installation.
smic Engineer). Provide assurance letters (schedules B-1, B-2 & C) from seismic engineer.	4. <u>Domestic Water, Drainage c</u>	<u>nd Vent Piping</u> : Current P	rovincial and Municipal Codes.	3. In unfinished areas (e.g. mechanical rooms, storage rooms), floor clean-out access covers shall be round cast iron scoriated frames and plates. Zurn 7-1500. Ancon approved as
mic Engineer after completion of work. Forward copy of certification to Consultant before stantial Performance	5. All below-grade steel pipin 6. Non-specified nine joining	g shall be yellow jacketed w	vith taped and sealed joints.	equal.
STOPPING	permitted in any piping syst piping.	em covered under Division	15, with the exception of fire protection	4. In finished areas, covers shall have depressed centre to accept floor finish, Zurn ZN- 1508. Ancon approved as equal.
K INCLUDED: Furnish labour, material, equipment and services necessary to provide firestopping and smoke	p.p			5. Clean-outs on subsurface drainage system extensions shall be Zurn Z-1500 in unfinished concrete (e.g. parking, mechanical rooms), Zurn Z-1440 encased in 16" x 16" x 4" thick
s around mechanical service piping and auct penetrations through fire rated wall and floor assemblies to standard CAN4–S115–M85 and Authorities having Jurisdiction.	8.4 PIPE <u>Service</u>		Material	concrete pad in soft landscaping and Zurn Z—1502 in finished concrete or pavers. Ancon approved as equal.
EPTABLE FIRESTOPPING SYSTEMS	1. Sanitary Drainage and Vent, Ins	ide Building, Above Ground	'DWV' copper, ASTM B306Cast ServiceMaterial iron, CSA B70	 Wall clean-outs shall have chrome plated cap. Provide clamping collar and flashing on clean-outs passing through waterproofing
. <u>For Vertical Penetrations</u> : 3M Fire Barrier Penetration Sealing System, BIO-Fire Protection Ltd. Firestopping and Smoke Seals, Dow Corning Firestop Sealant.	2. Sanitary Drainage and Vent. Ins	ide Buildina. Below Ground	Cast iron, CSA B70PVC-DWV, CAN3B182	membrane. 8 11 DRAINS
. <u>For Horizontal and Poke-Through Penetrations</u> : Fyre Sleeve and Fyre Flange as manufacturer by Fyre	2. Connerf Granago and Tone, me			1. Provide drains by single manufacturer throughout.
Sleeve Industries Inc.	3. Sanitary Drainage and Vent, Ou	tside Building	Cast iron, CSA B70PVC, SDR-35 for sizes	 Drains shall be 3" unless noted otherwise. Review location of drains on Architectural drawings and confirm with
stion and extent of fire separations shall be confirmed with architectural arawings.			wire.Concrete pipe for sizes over 300 mm	Consultant that drains will be at low points on floor. Improperly located drains shall be relocated at no cost to Owner.
topping and smoke seals application. Installing Contractors shall be certified by the British mbia Insulation Contractors Association for work specified. Work shall be installed in underse with manufacture association for work specified.	4. Storm Drainage, Inside Building,	Above Ground	Cast iron, CSA B70DWV Copper, ASIM B306.	8.12 PLUMBING FIXTURES AND TRIM
radice with manufacturer's recommended installation procedures.	5. Storm Drainage, Inside Building	, Below Ground	Cast iron, CSA B/OPVC-DWV, CAN3B182.1	1. Provide plumbing fixtures with trim with required accessories a specified on drawings
JLATION	6. Domestic Water, Above Groun	d (Inside Building)	Type L hard copper for cold water and Type 'K' hard copper for hot water	2. Review millwork drawings and advise Consultant of discrepancies before ordering fixtures.
ulation thicknesses and performance shall conform to requirements of ASHRAE/IES Standard	7. Natural Gas		and recirc water for sizes up to 100 mm Steel Schedule 40	3. Install each fixture with its own trap, easily removable for servicing and cleaning. At completion thoroughly clean plumbing fixtures and equipment install wall mounted fixtures.
1-1989 (Table 9-1 Minimum Pipe Insulation, Table 9 Minimum Duct Insulation).	8 Fire Protection		Steel Schedule 10	with approved wall carriers, model to suit installation. Where fixtures or trim come in contact with wall and/or floor, make joint watertight with white silicone base non-hardening caulking
terial to project site in original, non-broken factory packaging, labeled with manufacturer's sity and thickness				compound, finished in neat manner. Attach floor mounted water closets to floor with lag screws. Lead flashing shall not hold closet in place. Provide fixed cover on handicapped water closet tank.
itish Columbia Insulation Contractors Association (BCICA) Standards Manual, latest edition, shall	Service	Material	Joint	
m part of this specification for mechanical insulation. Copy of current standard shall be ilable at site.	1. Sanitary Drainage and Vent	Cast iron	Gasket and clamp	8.13 EXECUTION
nterials and application temperatures shall be as recommended by adhesive, coating or sealer	Inside Building Above Ground	Wrought or Cast Coppor		1. Bury outside water lines to minimum of 3-0 and drainage lines to minimum of 3-0 unless noted otherwise.
poor workmanship.	2 Sanitary Drainage and Vent	Cast iron (hubless fitting) Gasket and clamp	 No pipe shall be installed in any part of wall where temperature is less than 5°C under winter design conditions.
mposite fire and smoke hazard ratings for adhesives, insulation, coatings and jackets shall not eed 25 for flame spread and 50 for smoke developed or otherwise as required by Code. Use	Inside Building Below Ground			 Upon completion, water piping systems shall be flushed with water before installation of fixtures in order to remove any foreign material in piping. Plumbing fixtures and equipment
y ULC-listed or tested recovering moterials.	3 Storm Drainage Incide	PVC-DWV	Solvent weld	shall be thoroughly cleaned and left in good operating condition.
indard 1501–A.2.	Building Above Ground	Wrought or Cast Copper	50-50 Solder	cap pipe and fittings to keep out debris during construction. Lay pipe in proper compacted bedding material; do not lay pipe when water in trench. Provide 1500psi concrete for buried
1. Insulation Thickness Schedule		5		lines within 45 deg. of footing. Grade vents so condensation will not form trap.
Piping to be Insulated Thickness	4. Storm Drainage, Inside Building Below Ground	Cast iron	Gasket and clamp	connections or hangers to prevent galvanic corrosion. Brass adapters and valves are acceptable for pipe connections.
Domestic Cold (except run-outs to individual fixtures less than 1" 12'-0" concealed in length)		PVC-DWV	Solvent weld	6. Install gas piping in open ventilated spaces. Pitch lines and provide drip legs. Paint piping exposed to outdoor elements with two coats of weather resistant primer and one (vellow) finish
Domestic Hot and Recirculation (except run-outs to individual fixtures 1" less than 12'-0" concealed in length) up to 2"	5. Domestic Water, Above Ground	Wrought Copper, Bronze	Lead free solder, brazed for	coat and identify. Gas piping larger than 2" installed within building shall be welded.
Domestic Hot and Recirculation over 2" 1.5"		Cast Bronze Ductile Iron Pipe	pipes over 2" Screwed	9. FIRE PROTECTION
Steam and Condensate 2"			Grooved mechanical	9.1 SPRINKLER SYSTEM
Rainwater Leaders 1 Heat Traced Pining 1"	6. Natural Gas	Steel, same schedule as	pipe Welded	 Sprinkler work and materials shall be in accordance with NFPA 13 and requirements of Authorities having jurisdiction. Modify existing sprinkler system to suit new layout and to ensure compliance with codes.
P-Traps in Unheated Areas 1"	7. Fire protection	Steel, same schedule as	pipe Welded	2 Relocate existing sprinkler heads as shown on the drawing(s)
2. <u>Application</u> : Hot piping – 1501–H. Cold piping – 1501–C.	9. Use long radius elbows for stee	I and cast iron water pipin	g,	3. Modify existing sprinkler system to suit new layout and to ensure compliance with codes.
3. <u>Finishes</u> : Exposed piping – PF2 Premium 2 (or 15 mil PVC jacket with solvent welds). Concealed piping – PF3 Economy. Outdoors – PF6 Weather Coating. Exposed in Parking	including grooved mechanical fittin	gs.		4. Install sprinkler heads as shown on the drawing in coordination with Architect's reflected
Areas (metal jacket) - PF4. All finishes complete with 25/50 rated PVC fitting covers.	8.6 UNIONS, FLANGES AND COUPLING 1. Size 60 mm and Under:	,5 1.033 kPa malleable iron, b	ronze to iron around joint unions for	ceiling plan and diffuser/grille locations shown on the drawings.
reflective aluminum tape as per heat trace system manufacturer's recommendations.	threaded ferrous piping, air	tested for gas service, all	bronze for copper piping.	 WATER SUPPLY: Sprinkler sub-trade shall determine available volume and pressure of
ICTWORK AND PLENUMS	2. <u>Sizes 75 mm and Over:</u> 1,033 kPa bronze slip-on t	1,033 kPa forged steel welc langes for copper piping.	ling neck flanges for ferrous piping, Gaskets shall be 1.5 mm thick	water suply from water flow test data.
Insulation	performed synthetic rubber rubber.	uonuea aspestos. Gaskets	; ior gus service shall be synthetic	9.2 PORTABLE FIRE EXTINGUISHERS
Outside and Combination Air Ducts	 <u>Flange Bolting</u>: For systen heavy hex nuts, ASTM A30 	ns up to 120°C, use carbor 7—GrB. For systems up to	n steel stud bolts, semi-flushed and 215°C, use alloy steel bolts	i. Frovide portable fire extinguishers of type and size indicated on drawings
Supply Air Ducts and Plenums Exposed in Finished Areas and Mechanical Rooffi's	ASTM A193-GrB7 and semi	-finished heavy hex nuts A	STM A194-Gr2H.	10. VENTILATION
Supply Air Ducts and Plenums Exposed to Outdoors 2"	o.7 VALVES 1. Provide valves of some mo	nufacturer throuahout wher	e possible. Valves on cold. hot and	10.1 DUCTWORK
Acoustic Duct Liners as Indicated 1" Plenums Below Roof Mounted Fans (Acoustical Lining) 1"	recirculation service shall	be rated at 125psi.	lug type with equare head	1. Ductwork shall be galvanized steel. Fabricated in accordance with recent SMACNA Duct Manuals and ASHRAE Handbooks. Ductwork shall meet the requirements of NFPA 90A and
Warm Air Exhaust Ducts in Unheated Spaces (i.e., attics, crawlspaces) 2"	2. Gus service valves shall be and removable operating s	panner for inside and outside or inside sorvice column	de service or	91 and conform to applicable codes.
2. <u>Applications</u>	3. Provide shutoff valves at e	ach fixture and as shown c	on plans.	other trades.
1 Rigid Insulation External Application: Exposed in finished areas and in mechanical rooms	4. Provide circuit balancing vo	lves as required for balanci	ing of hot water recirculation system.	3. Duct Sizes: Inside clear dimensions. For acoustically lined or internally insulated ducts,

- 7.7 DUC

URE TESTS		3. <u>Finishes</u>			8.8 WATEF	r specialties
Piping, fixtures or equipment shall not be concealed until inspected and ap Consultant. Carry out hydraulic tests for 8 hours. Maintain pressure. W	pproved by There leakage occurs,	1. Concealed: Insulation further finish required.	on concealed ductwork sha	II be left factory finished with no	1.	Hose Bibbs: Provide as specified in Ho
repair and re-test. Domestic Water Piping: Test to 1—1/2 times maximum working pressure o pressure measured at system low point.	or 150psi water	2. Mechanical Rooms: R	ectangular RF/2 Custom, Ro	ound RD/2 Custom.	2.	Water Hammer Arresters: 1. Provide 18-8 stainless steel all-
)rainage System: Test by filling with water to produce water pressure of minimum and 25 ft. water column maximum. Check for proper grade and	5 ft. water column d obstruction by ball	 Exposed Ductwork and Alternate, Round RD/3 	l Plenums (in Finished Areas Premium/Custom Alternate	:): Rectangular RF/3 Premium/Custom		isolation valve on water lines c 1. Each fixture or group o
test. latural Gas Piping: Test as required by authority having jurisdiction.		4. Outdoor: Rectangular	RF/5 Weather Coating, Rou	nd RD/5 Weather Coating.		 End of each horizontal Other devices with soler
ow Pressure Ducts: Test for tightness such that leakage is inaudible and	not detectable by feel.	4. <u>Acoustic Lining</u> : Fibregla prevent fibre erosion, Stan	ss insulation with neoprene ndard 1502—C.2 for ductwork	surface coating or matte face to and 1502—C.1 for plenums. Acoustic		 Size arresters as per P.D.I. Star Arrester and isolation valve sha
bould tests indicate defective work or variance with specified requirements Correct leaks by re-making joints in screwed fittings, cutting out and re- and re-making joints in copper lines. Do not caulk.	s, correct defects. welding welded joints	lining as indicated on drav	wings; all joints and raw edg	ges to be sealed.	3.	Back Flow Preventer Assemblies:
RMANCE TESTS		Ensure surface is clean and dry installation.	and that systems are opera	iting at design conditions before		local authorities
as fired appliances shall be subjected to operational testing established b and pass these tests before being approved for operation. ubricate bearings, adjust and/or replace and set direct and "V"-belt driv and tension	y Gas Safety Branch es for proper alignment	7.9 Finish insulation neatly at hangers For exposed application finish, en For cold water piping, apply vapo	s, supports and other protrunds of insulation neatly with our barrier continuously through	usions. Insulate fittings and valves. insulated material trowelled on bevel. ughout, including pipe hangers.	4.	 Provide vacuum breaker on dorr Trap Seal Primers: Provide priming dev that device will introduce regulated am
Calibrate and adjust thermostats, linkages and dampers. Operate and tes wiring and sequences. Check overload heaters in motor starters. Fasten	t motors for correct loose and rattling	8. PLUMBING			8.9 NATU	RAL GAS SUPPLY SYSTEM
sieces of equipment to ensure quiet operation.	,	8.1 Provide all necessary piping mater fittings shall be in accordance w governing regulations	rial and labour for the syste ith current edition or applice	ems as shown on the drawings. Piping and able revisions of applicable codes or	1.	Piping shall be in accordance with Nat M91, BC Gas Safety Branch Code Amer
ION ISOLATION AND SEISMIC RESTRAINT		8.2 QUALITY ASSURANCE			2.	Provide CGA approved flexible metallic h requirements for moveable appliances.
e Vibration Isolators and Seismic Restraint systems meeting requirements tion and Commentary J, Effects of Earthquakes, in Supplement to Nationa with regard to seismic forces transmitted to piping (equipment form built	of Authority having al Building Code of dina structure during	1. Use welders fully qualified a	nd licensed by Provincial Au	thorities.		at connection to each appliance. Cop be protected from electrolysis by brass
thquake at project location. Seismic restraint for sprinkler systems shall quirements of local Authorities.	conform to NFPA 13	2. <u>Gas Piping</u> : National Stanc Natural Gas Burning Appliand	dard of Canada CAN1-B149. ces and Equipment.	1 (latest edition), installation Code for	8.10 CLEA	AN-OUTS AND ACCESS COVERS
seismic restraint system shop drawings and calculations for mechanical e d attachment methods for piping/ducting prepared and sealed by Profess ed in Province of British Columbia who specializes in design of seismic re	quipment and ional Engineer straint system	 <u>Automatic Sprinkler System Piping</u>: Current edition of NFPA No.13, Standard for the Installation of Sprinkler Systems. 				Install accessible clean-outs at traps, o drawings.
c Engineer). Provide assurance letters (schedules $B-1$, $B-2$ & C) from se	ismic engineer.	4. Domestic Water, Drainage and Vent Piping: Current Provincial and Municipal Codes.				In unfinished areas (e.g. mechanical roo
IION AND CERTIFICATION: Seismic restraint system shall be inspected and Engineer after completion of work. Forward copy of certification to Cons Intial Performance.	certified by ultant before	5. All below-grade steel piping shall be yellow jacketed with taped and sealed joints.				equal.
OPPING		permitted in any piping syst piping.	em covered under Division 1	5, with the exception of fire protection	4.	1508. Ancon approved as equal.
ICLUDED: Furnish labour, material, equipment and services necessary to round mechanical service piping and duct penetrations through fire rated andard CAN4-S115-M85 and Authorities having Jurisdiction.	provide firestopping and smoke wall and floor assemblies to	8.4 PIPE Service		Material	Э.	concrete (e.g. parking, mechanical roor concrete pad in soft landscaping and 2 approved as equal.
ABLE FIRESTOPPING SYSTEMS		1. Sanitary Drainage and Vent, Insi	ide Building, Above Ground	'DWV' copper, ASTM B306Cast	6. 7.	Wall clean-outs shall have chrome plat Provide clamping collar and flashing on
<u>or Vertical Penetrations</u> : 3M Fire Barrier Penetration Sealing System, BIO- restopping and Smoke Seals, Dow Corning Firestop Sealant.	-Fire Protection Ltd.	2. Sanitary Drainage and Vent, Ins	ide Building, Below Ground	Cast iron, CSA B70PVC-DWV, CAN3B182	8.11 DF	membrane.
or Horizontal and Poke—Through Penetrations: Fyre Sleeve and Fyre Flangeeve Industries Inc.	ge as manufacturer by Fyre				1. 2.	Provide drains by single manufacturer thro Drains shall be 3" unless noted otherwise
n and extent of fire separations shall be confirmed with architectural draw	vings.	3. Sanitary Drainage and Vent, Ou	tside Building	Cast iron, CSA B70PVC, SDR-35 for sizes to ASTM-D3034, complete with tracer wire Concrete pipe for sizes over 300 mm	3. Co	Review location of drains on Architectural insultant that drains will be at low points of
nall be carried out by approved specialist firm, employing tradesmen exper ping and smoke seals application. Installing Contractors shall be certified a Insulation Contractors Association for work specified. Work shall be ins	ienced in by the British talled in	4. Storm Drainage, Inside Building, Above Ground Cast iron, CSA B70DWV Copper, AS		Cast iron, CSA B70DWV Copper, ASTM B306.	dro	ains shall be relocated at no cost to Uwne
ince with manufacturer's recommended installation procedures.		5. Storm Drainage, Inside Building	g, Below Ground	Cast iron, CSA B70PVC-DWV, CAN3B182.1	8.12 PLUMB 1. P	ING FIXTURES AND TRIM rovide plumbing fixtures with trim with requ
ΤΙΟΝ		6. Domestic Water, Above Groun	d (Inside Building)	Type 'L' hard copper for cold water and Type 'K' hard copper for hot water	2. R	eview millwork drawings and advise Consulto
tion thicknesses and performance shall conform to requirements of ASHRA 989 (Table 9-1 Minimum Pine Insulation, Table 9 Minimum Duct Insulation	AE/IES Standard	7. Natural Gas		and recirc water for sizes up to 100 mm Steel Schedule 40	3. Ir c	nstall each fixture with its own trap, easily ompletion, thoroughly clean plumbing fixture
shall be carried out by skilled workmen regularly engaged in this type of	work. Deliver	8. Fire Protection		Steel Schedule 10	W W C	ith approved wall carriers, model to suit in: ith wall and/or floor, make joint watertight ompound, finished in neat manner. Attach
al to project site in original, non-broken factory packaging, labeled with r 7 and thickness.	manufacturer s	8.5 FITTINGS AND JOINTS			Si	crews. Lead flashing shall not hold closet loset tank.
Columbia Insulation Contractors Association (BCICA) Standards Manual, la part of this specification for mechanical insulation. Copy of current stand the at site	atest edition, shall Iard shall be	Service	<u>Material</u>	Joint	8.13 EXECUTI	ON
ials and application temperatures shall be as recommended by adhesive, o	coating or sealer	1. Sanitary Drainage and Vent Inside Building Above Ground	Cast iron	Gasket and clamp	1. Bu n	ury outside water lines to minimum of 3'-0 oted otherwise.
acturer. Make good separations of joints or cracking or insulation due to ir workmanship.	o thermal movement	2. Sanitary Drainage and Vent	Wrought or Cast Copper Cast iron (hubless fitting)	50-50 Solder Gasket and clamp	2. No d	o pipe shall be installed in any part of wall esign conditions.
osite fire and smoke hazard ratings for adhesives, insulation, coatings and I 25 for flame spread and 50 for smoke developed or otherwise as requir	d jackets shall not ed by Code. Use	Inside Building Below Ground	PVC-DWV	Solvent weld	3. Ur fi	pon completion, water piping systems shall xtures in order to remove any foreign mate
: Mineral fibre insulation, pre-formed for piping with integral all-service	jacket,	3. Storm Drainage, Inside	Cast iron	Gasket and clamp	4. Gr	rade drainage lines minimum 2%, piping 4"
Insulation Thickness Schedule		Building Above Ground	Wrought or Cast Copper	50-50 Solder	b lii	edding material; do not lay pipe when wate nes within 45 deg. of footing. Grade vents
Piping to be Insulated	Insulation Thickness	4. Storm Drainage, Inside Building Below Ground	Cast iron	Gasket and clamp	5. Wr	nerever dissimilar metals are joined or supp onnections or hangers to prevent galvanic o
Domestic Cold (except run-outs to individual fixtures less than 12'-0" concealed in length)	1"		PVC-DWV	Solvent weld	fc 6. Ins	or pipe connections. stall gas piping in open ventilated spaces.
Domestic Hot and Recirculation (except run-outs to individual fixtures less than 12'-0" concealed in length) up to 2"	1"	5. Domestic Water, Above Ground	Wrought Copper, Bronze	Lead free solder, brazed for	e) Co	xposed to outdoor elements with two coats oat and identify. Gas piping larger than 2"
Domestic Hot and Recirculation over 2"	1.5"		Cast Bronze Ductile Iron Pipe	pipes over 2" Screwed	9. FIRE PROT	
Steam and Condensate Rainwater Leaders	2" 1"	6. Natural Gas	Steel, same schedule as	pipe Welded	9.1 SPRINKL	prinkler work and materials shall be in acco
Heat Traced Piping	1"	7. Fire protection	Steel, same schedule as	pipe Welded	A	uthorities having jurisdiction. Modify existin nsure compliance with codes.
P-Traps in Unheated Areas <u>Application</u> : Hot piping — 1501—H. Cold piping — 1501—C.	1	8. Use factory fabricated butt weld	ded fittings for welded steel	pipes	2. R	elocate existing sprinkler heads as shown o
<u>Finishes:</u> Exposed piping - PF2 Premium 2 (or 15 mil PVC jacket with Concealed piping - PF3 Economy, Outdoors - PF6 Weather Coating, Ex	solvent welds). xposed in Parkina	including grooved mechanical fitting	gs.	, ,	3. M 4. In	odity existing sprinkler system to suit new Istall sprinkler heads as shown on the draw
Areas (metal jacket) - PF4. All finishes complete with 25/50 rated PV	c fitting covers.	8.6 UNIONS, FLANGES AND COUPLING	S 1 033 kBa mallaabla iraa, br	and to iron around idint unions for	C	eiling plan and diffuser/grille locations show
reflective aluminum tape as per heat trace system manufacturer's recom	mendations.	threaded ferrous piping, air	tested for gas service, all	bronze for copper piping.	5. Pi 6. '	roviae new neaas, where indicated on the a WATER SUPPLY: Sprinkler sub-trade shall d
VORK AND PLENUMS Insulation Thickness Schedule		 Sizes 75 mm and Over: 1,033 kPa bronze slip-on f performed synthetic rubber 	1,033 kPa forged steel weldi 'langes for copper piping. G bonded asbestos. Gaskets	ng neck flanges for ferrous piping, Gaskets shall be 1.5 mm thick for gas service shall be synthetic		ater suply from water flow test data.
Ducts and Equipment to be Insulated	Insulation Thickness	rubber.	me up to 120°C upo carbon	steel stud bolts, somi-flushed and	9.2 T OKTABLI 1.	Provide portable fire extinguishers of type of
Outside and Combination Air Ducts	2"	heavy hex nuts, ASTM A307 ASTM A193-GrB7 and semi	7-GrB. For systems up to finished heavy hex nuts AS	215°C, use alloy steel bolts STM A194-Gr2H.	10. VENTILATI	ON
Supply Air Ducts and Plenums Exposed in Finished Areas and Mechanical	o"	8.7 VALVES			10.1 DUCTWO	DRK
Supply Air Ducts and Plenums Exposed to Outdoors Acoustic Duct Liners as Indicated	∠ 1" 1"	 Provide valves of same ma recirculation service shall I 	inutacturer throughout where be rated at 125psi.	e possible. Valves on cold, hot and	1. Du Mai	ctwork shall be galvanized steel. Fabricate nuals and ASHRAE Handbooks. Ductwork sl
Warm Air Exhaust Ducts in Unheated Spaces (i.e., attics, crawlspaces)	2"	 Gas service valves shall be and removable operating sp CGA approved ball values f 	e CGA approved lubricated pl panner for inside and outsid for inside service only	ug type with square head le service or	91 2 Pr	and conform to applicable codes.
Applications		3. Provide shutoff valves at e	ach fixture and as shown or	n plans.	oth	ier trades.

- 1. Rigid Insulation External Application: Exposed in finished areas and in mechanical rooms,
- ER/1 hot duct and plenum and ER/2 cold duct and plenum.
- 2. Flexible Insulation External Application: Concealed hot duct EF/1, concealed cold duct ER/2.
- 3. Duct Liner (Internal Application): Semi-rigid 1S/1, Rigid 1R/1.

3. <u>Duct Sizes</u>: Inside clear dimensions. For acoustically lined or internally insulated ducts, maintain sizes inside ducts. 4. The minimum sheet metal thickness for low pressure ducts, medium pressure 2"w.g. and 1"w.g. including fittings, access doors and other accessories, shall be in accordance with SMACNA 1985 "HVAC Duct Construction Standards - Metal and Flexible". 5. All transverse duct joints shall be sealed (Class C SMACNA) with duct sealant.

	6. Flexible ductwork shall be equal to Thermaflex Type ST.
ose Bibb and Drain Schedule.	Provide adequate sized access panels to manual dampers, equipment and fire dampers.
-welded bellows type arrester complete with connected to but not limited by the following:	8. Connect terminal units to medium pressure ducts with 12" maximum length of flexible duct. Hold in place with caulking compound and strap or clamp.
f fixtures. main 3/4" and over. noid valves.	 Connect diffusers or troffer boots to low pressure ducts with 5'-0" maximum length of flexible duct. Hold in place with caulking compound and strap or clamp.
ndard WH201.	10. Provide return air openings and/or insulated sound traps where indicated.
II be completely accessible.	11. Mechanical Contractor shall coordinate with the General Contractor to modify ceiling system, where required, to accommodate grilles and diffusers.
semblies as specified and as required by	
	10.2 AIR OUTLETS: Provide and/or relocate air outlets as specified on the drawing(s).
nestic water supply to hosebibbs.	10.3 SUPPLY/EXHAUST FANS: Provide fans in the ceiling space as specified on the
vice and piping to nearest acceptable fixture so ount of water into trap. Equal to Watts 200.	drawing(s). Fans to be ACMA rated centrifugal wheels with non-overloading power characteristic, stable pressure curve and self-aligning bearings. 10.4 ELECTRIC DUCT HEATERS.
tural Gas Installation Code CAN/CGA-B149.1- ndments and Gas Safety Act and Regulations.	1. Heating element shall be finned tube, helical coil or ni-chrome strip wire exposed directly to airstream and equipped with manual reset backup limits. Heaters shall be rated for 208/360. Elements shall be staged by sequence controller to maintain discharge air at 65°F/15°C. Coils shall be easily accessible.
hose connector installed in accordance with code Provide 24" section of Type K soft copper tubing per fittings shall be brazed with silver solder and	2. Provide necessary high limit, flow and grounding control devices, disconnects, components for automatic operation and airflow proving switch.
s adapters.	11. CONTROLS
	11.1 Acceptable controls contractors: Refer to Base Building Controls Contractor list.
where required by Code and as indicated on	11.2 THERMOSTATS: Provide new thermostats where indicated on the drawings
able type for level installation.	All thermostats shall be wall or column mounted at 60" above floor unless
oms, storage rooms), floor clean-out access covers nes and plates, Zurn Z-1500. Ancon approved as pressed centre to accept floor finish. Zurn ZN-	specifically noted otherwise. Coordinate final mounting locations with Interior Designer/Architect and Consultant on site before rough—in. 11.3 Provide a complete system of automatic controls as required including line and low voltage control wiring. Provide all components and coordinate with the electrical trade for power connections. All control wiring by Div. 15 forces.
tere entensiere chell he Zure 7 1500 is unfinished	

REV	DATE	DESCRIPTION
01	07/02/17	ISSUED FOR DP
02	09/03/17	RE-ISSUED FOR DP
03	21/03/17	ISSUED FOR BUILDING PERMIT

Alberto Bicol Consulting Inc. 7968 Wedgewood Street Burnaby, B.C. Canada V5E 2E8 778.998.9651 :Telephone E-Mail: albert.bicol@AlbertoBConsulting.com Project Reference No: 20161202

CONSULTANT

CONSULTANT SEAL



COPYRIGHT P.J. LOVICK ARCHITECT LTD. THIS MATERIAL IS AN INSTRUMENT OF SERVICE AND REMAINS AT ALL TIMES THE EXCLUSIVE PROPERTY OF P.J. LOVICK ARCHITECT LTD. REPRODUCTION OR RE-USE IS PROHIBITED WITHOUT THE WRITTEN CONSENT AND NAME OF P.J. LOVICK ARCHITECT LTD. INFORMATION SHOWN IS FOR USE ON THE DESIGNATED PROJECT ONLY. DRAWN BY APPROVED RMR

Langley Bypass Commercial 20670 LANGLEY BYPASS

LANGLEY, BC

DRAWING

PROJECT NUMBER DRAWING NUMBER M-613-94 \mathbf{m} SCALE $1^{"} = 30' - 0"$ REVISION 09/03/17 MARCH 2017

SPECIFICATION

Ō က်

where temperature is less than 5°C under winter be flushed with water before installation of erial in piping. Plumbing fixtures and equipment and larger may be graded at 1% slope. Plug or uring construction. Lay pipe in proper compacted ter in trench. Provide 1500psi concrete for buried ported, piping shall have non-conducting type corrosion. Brass adapters and valves are acceptable Pitch lines and provide drip legs. Paint piping of weather resistant primer and one (yellow) finish installed within building shall be welded.

ordance with NFPA 13 and requirements of

ting sprinkler system to suit new layout and to

layout and to ensure compliance with codes.

wing in coordination with Architect's reflected

determine available volume and pressure of

shall meet the requirements of NFPA 90A and iling spaces and heights and conflictions with