

## DIVISION 1500C

## 15100 - GENERAL PRESCRIPTIONS

- ALL WORKS TO BE CONFORM TO NATIONAL SPECIFICATIONS.
- REFER TO LANDSCAPE DESIGNING OFFICIAL.
- THE CONTRACTOR SHALL COMPLY WITH ALL LATEST RELEVANT CODES AND REGULATIONS HAVING JURISDICTION.
- CONTRACTOR SHALL OBTAIN ALL NECESSARY MATERIALS AND CERTIFICATES. ALL DRAWINGS APPROVED BY THE ARCHITECT AND ALL INSPECTION COSTS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION.
- CONTRACTOR SHALL PROVIDE ALL LABORERS AND NEW MATERIALS FOR THE COMPLETE INSTALLATION OF THE SYSTEM AS SHOWN ON THE DRAWINGS. EXCEPT THAT COMPLETE INSTALLATION MEETS THE APPROVAL OF ALL AUTHORITIES HAVING JURISDICTION AND ARE IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS.
- DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED AS ADDITIONAL TO THOSE OF ARCHITECT AND ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
- GENERAL REQUIREMENTS CONTAINED IN ARCHITECT'S DOCUMENTS ARE TO BE CONSIDERED AS PART OF THE CONTRACT. CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
- CONTRACTOR SHALL VACUUM-FLAME-PROTECT ALL CONCRETE.
- CONTRACTOR SHALL HAVE A SIGN IN ORDER TO IDENTIFY THE MAIN CONTRACTOR.
- CONTRACTOR SHALL PROVIDE THE DRAWINGS TO THE ARCHITECTS (ENGINEERS, ETC.) NO LATER THAN TWO DAYS TO THE AVOIDANCE OF LOCAL CONDITIONS WILL BE CONSIDERED BY THE OWNER.
- EXTRACTOR, PILING, EQUIPMENT AND ACCESSORIES ARE SHOWN SCHEMATICALLY. NO DIMENSION SHALL BE SHOWN ON THE DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DIMENSIONS MARKED ON THE DRAWINGS.
- CONTRACTOR SHALL MAKE ALL CHECKING AND ADJUSTMENTS NECESSARY TO COMPLY WITH THE INTENT OF DOCUMENTS
- THE DRAWINGS SHOW THE APPROXIMATE LOCATION OF THE EQUIPMENT. EACH SUBCONTRACTOR SHALL VERIFY EACH LOCATION BEFORE INSTALLATION.
- COORDINATE ALL SUBCONTRACTORS WORK BEFORE STARTING THE WORK. NO EXTRA COST WILL BE ALLOWED FOR THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DIMENSIONS MARKED ON THE DRAWINGS.
- ANY CONFLICT BETWEEN SUBCONTRACTORS CONCERNING POSITION OF INSTALLATION OF PILING CONDUITS, ETC. SHALL BE SUBMITTED TO THE ENGINEER WHOSE DECISION SHALL BE FINAL AND BINDING. NO EXTRA COST.
- EACH SECTION SHALL PROTECT HIS WORK AGAINST ANY DAMAGE FROM ANY SOURCE SUCH AS EARTH OR CRASH DURING THE EXECUTION OF THE WORKS. UNTIL FINAL APPROVAL IS OBTAINED.
- ALL MATERIALS AND EQUIPMENT STORED ON THE JOB PREMISES SHALL BE PROPERLY PROTECTED AGAINST DAMAGE CAUSED BY THE WORK OF OTHERS.
- AT THE END OF EACH WORKING DAY, ALL OPENINGS IN CONDUITS AND EQUIPMENT SHALL BE PROPERLY PROTECTED.
- CONTRACTOR SHALL COMPLETE THE WORK IN EVERY DETAIL. EVEN THOUGH NOT SHOWN ON DRAWINGS OR CALLED FOR IN THIS SPECIFICATION BUT NECESSARY TO GIVE A COMPLETE AND ORDERLY FINISH.
- ALL RUBBISHES AND GARBAGES SHALL BE REMOVED FROM THE JOB SITE AT THE END OF EACH WORKDAY. AT THE CONTRACT COMPLETION, ALL TOOLS AND EQUIPMENT SHALL BE REMOVED AND THE EQUIPMENT SHALL BE LEFT IN PLACE.
- EACH SUBCONTRACTOR SHALL GUARANTEE HIS WORK FOR ONE YEAR AFTER DATE OF FINAL ACCEPTANCE BY ARCHITECT.
- CONTRACTOR SHALL REPAIR OR REPLACE AT HIS OWN EXPENSE, ALL DEFECTS SHOWING DURING GUARANTEE PERIOD. AND THIS, WITHIN 48 HOURS FROM FINAL ACCEPTANCE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE WORK. CONTRACTOR SHALL PROVIDE A (5) YEARS WARRANTY PERIOD COVERING CORROSION.
- EACH SUBCONTRACTOR SHALL PAY ALL APPLICABLE FEDERAL, PROVINCIAL AND MUNICIPAL TAXES, ON LABOR AND MATERIAL INCLUDED IN CONTRACT.
- BURDEN OF THE TAXES OF THE SUBCONTRACTORS FOR EACH PRICE EQUIPMENT AND MATERIAL TO BE PROVIDED AND INSTALLED.
- UPON COMPLETION OF CONTRACT, SUBCONTRACTOR SHALL SUPPLY INSTRUCTION MANUALS, CONSTRUCTION AND MAINTENANCE MANUALS TO THE OWNER IN HIS COUNTRY.
- INSTRUCTION MANUALS SHALL BE SUPPLIED IN LOCAL LANGUAGE IN THREE (3) COPIES. THAT IS, ONE FOR THE ARCHITECT AND TWO (2) COPIES FOR THE OWNER.
- INSTRUCTION MANUALS SHALL INCLUDE:
- ALL GUARANTEES ON EQUIPMENT AND INSTALLATIONS.
  - TESTING AND REPAIR OF ALL EQUIPMENT.
  - OPERATION AND MAINTENANCE MANUALS.
  - SPRINKLER AND EQUIPMENT CERTIFICATE AND TEST RESULTS AS PER PAFS.
- PROPOSED SHALL BE BASED ON SUBCONTRACTOR'S EQUIPMENT AND MATERIALS ONLY.
- REQUEST FOR EQUIVALENCE SHALL INCLUDE THE NAME OF THE MANUFACTURER OR TRADE MARK. WORKMAN IN COST HAS TO BE APPROVED BY THE ENGINEER AND OWNER.
- REQUESTS OF EQUIVALENCE SHALL BE MADE BY CONCERNED SUBCONTRACTOR ONLY.
- REQUESTS FOR EQUIVALENCE SHALL BE MADE BY CONCERNED SUBCONTRACTOR ONLY.
- THIS REQUESTS SHALL BE PRESENTED WITH FOLLOWING DOCUMENTS:
- SPECIFIED PROCEEDS BY ORIGINAL TENDERS  - PROPOSED EQUIPMENT BY RECEIVED TENDERS  - REQUEST JUSTIFICATION  - EQUIVALENCE PROOF
- COST OF ANY CHANGE REQUIRED TO OTHER TRADES AS A RESULT OF SUBSTITUTION OF EQUIPMENT, SHALL BE INCLUDED IN THE SUBCONTRACTORS PROPOSAL. CALLING FOR THE SUBSTITUTION, EVEN IF THE EQUIPMENT IS MORE POWERFUL THAN THE ONE ORDERED FOR THE WORK. IT SHALL BE ACCEPTED.
- EACH SUBCONTRACTOR INVOLVED SHALL MAKE SURE THAT NO SIGNIFICANT INTERFERENCE OF EXISTING SERVICE OR/AND ALL NECESSARY TEMPORARY WORK TO DO SO SHALL BE INCLUDED IN THE PROPOSAL OF THE OWNER.
- ALL WORKS AFFECTING OTHERS' TENANTS' OPERATIONS SHALL BE DONE DURING NIGHT OR WEEKENDS.
- DETACHMENT AUTHORITY FROM BUILDING BEFORE DRILLING ANY HOLE IN CEILINGS, SLABS, WALLS, OR CONCRETE SHALL BE OBTAINED FROM THE ARCHITECT.
- ALL CUTTING, PAINTING, PAINTING AND WATERPROOFING IN WALLS AND SLABS, SHALL BE MADE BY THE GENERAL CONTRACTOR.
- ALL REPAIRS AND REPAIRS TO DOORS, FIRE RETARDING ACCESS DOORS IN WALLS AND CEILINGS, SHALL BE SUPPLIED BY THE CONCERNED SUBCONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE WORK TO ALL EQUIPMENT REQUIRING MAINTENANCE. THE SUBCONTRACTOR SHALL DETERMINE THE LOCATION IN COORDINATION WITH THE ARCHITECT.
- CONTRACTOR SHALL PROTECT EACH SECTION SHALL CARRY DEMOLITION WORK AS CALLED FOR IN THE DRAWINGS OR ORIGINALLY SPECIFIED IN THE DRAWINGS.
- UNLESS OTHERWISE INDICATED, ALL EXISTING MECHANICAL MATERIALS, EQUIPMENT, ACCESSORIES, ETC. REMOVED AND NOT REUSED, SHALL BE HANDLED BACK TO THE LANDLORD.
- AT THE END OF THE WORK, REMOVE TWO COPIES OF THE FINAL DRAWINGS.
- EACH PRODUCT, SYSTEM OR EQUIPMENT SHALL BE INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS.
- DRAWINGS AND SPECIFICATIONS SHOW SUBSTANTIALLY THE WORK TO BE DONE. WORK TO BE CARRIED OUT AS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONDITION AND SHALL BE INCLUDED IN THE PROPOSAL. EVEN IF NOT SPECIFICALLY SHOWN OR

## 15200 - PLUMBING

- THE MECHANICAL, ELECTRICAL AND GENERAL CONDITIONS INCLUDED IN SECTION 15100 APPLY TO SECTION 15200 PLUMBING.
2. SCOPE OF WORK
- WORK INCLUDES ALL GENERAL LABOR, SUPPLY AND INSTALLATION OF ALL MATERIALS AND EQUIPMENT REQUIRED FOR THE PLUMBING WORK DESCRIBED IN DRAWINGS AND SPECIFICATIONS
3. WORK FLOORS OTHER THAN BEING LIMITED TO
- CONNECTION OF DOWNSPOUTS BEING CONNECTED TO EXISTING FLOOR DRAINS, FUNNEL DRAINS ETC.
- START-UP, COMBUSTION AND TESTS OF SYSTEMS
- CONNECTION OF DOWNSPOUTS TO DISCONNECTED TO EXISTING ALL DOMESTIC HOT WATER NETWORK
4. PIPING AND FITTINGS
- 1.1 UNDERGROUND LOW PRESSURE DOMESTIC WATER PIPING, 7" OR LESS, COPPER ASTM-B88, TYPE "L"
- FITTINGS:
- TEES, REDUCERS, ADAPTATORS AND COUPLINGS, SAME MANUFACTURER AS FITTINGS "WRO"
- JOINTS:
- SILV-B SOLDER
- 1.2 LOW PRESSURE ABOVE GROUND DOMESTIC WATER PIPING, 7" OR LESS, COPPER ASTM-B88, TYPE "L"
- FITTINGS:
- TEES, REDUCERS, ADAPTATORS AND COUPLINGS, SAME MANUFACTURER AS FITTINGS "WRO"
- JOINTS:
- SILV-B SOLDER
- 4.3 NATURAL GAS PIPING
- NA
- 4.4 WATER HAMMER ARRESTERS
- SUPPLY AND INSTALL WATER HAMMER ARRESTERS ON DOMESTIC COLD AND HOT WATER PIPING.
- INSTALLERS SHALL HAVE SUFFICIENT VOLUME OF AIR TO DISPLACE THE CALCULATED COLD WATER GENERATED IN THE PIPING SYSTEM AND SHALL BE EFFECTIVE WHEN INSTALLED PROPERLY, HORIZONTAL OR ON AN ANGLE BETWEEN THE ARRESTERS AND THE APPROVED FOR INSTALLATION WITH AN ELASTOMERIC SEALING REQUIRED.
- WATER HAMMER ARRESTERS SHALL BE ANASTASIS 101-2004 CERTIFIED AND SHALL BE SIZED AND PLACED PER MANUFACTURERS INSTRUCTIONS.
- 4.5 HOT WATER AND CHILLED WATER SYSTEMS
- NA
- 4.6 UNDERGROUND SANITARY DRAINAGE PIPING
- PVC SDR-28
- CAST IRON 4000 HULESS PIPE (M) FROM BRIBBY-STROKE WITH HULESS, COUPLINGS CAST IRON 4000 STAINLESS STEEL, SHIELD AND CLAMP ASSEMBLY, AND AN ELASTOMERIC SEALING ASSEMBLY
- DWV COPPER PIPE ASTM B306 WITH POLISHED BRASS FITTINGS OR FORGED COPPER CASTING B306, WITH POLISHED BRASS FITTINGS AND POLISHED BRASS FITTINGS
- 2" AND MORE: COPPER DWV OR SYSTEM DRAINAGE PIPING
- 7" OR MORE: COPPER DWV OR SYSTEM DRAINAGE PIPING
- 2" OR LESS: COPPER DWV OR SYSTEM DRAINAGE PIPING
- 2" AND MORE: COPPER DWV OR SYSTEM DRAINAGE PIPING
- DWV-12 AND LESS: DWV COPPER PIPE ASTM B306 WITH POLISHED BRASS FITTINGS OR FORGED COPPER CASTING B306, WITH POLISHED BRASS FITTINGS AND POLISHED BRASS FITTINGS
- 2" AND MORE: COPPER DWV OR SYSTEM DRAINAGE PIPING (M) FROM BRIBBY-STROKE WITH HULESS, COUPLINGS CAST IRON 4000 STAINLESS STEEL, SHIELD AND CLAMP ASSEMBLY, AND AN ELASTOMERIC SEALING ASSEMBLY
- SYSTEM IS (DWV) PIPE SHALL BE CERTIFIED ACCORDING TO CSA B181.12 STANDARDS. FURTHERMORE, WHEN INSTALLED IN A PREPARED BUILDING, IT SHALL BE INSTALLED CONFORMING TO CAN/CSA-15.2 STANDARDS AND SHALL BEAR THE ULC LABEL, INDICATING THE FLAME PROPAGATION INDEX ON EACH ELEMENT OF PIPING.
- FIRE ARRESTOR DEVICE
- FIRE ARRESTOR DEVICE SHALL BE INSTALLED WHEN PROVIDED CROSSING A FIRE STOP OR PENETRATION OR VERTICAL SURFACE. DEVICE SHALL BE CERTIFIED ACCORDING TO CAN-5110 AND TESTED FOR A DIFFERENTIAL PRESSURE OF 60 PSIA
- PLENUM CEILING
- PLENUM CEILING IN CEILING SPACE (PLENUM) USED AS AN AIR RETURN, SHALL BE PEX (PEX-DWV) HAVING A SMOKE DENSITY OF 30 (OR LESS)
- MECHANICAL SHAFTS
- PLASTIC PIPING IS NOT ALLOWED IN MECHANICAL SHAFTS
5. PROVIDE CLAND OUTS ON ALL DRAINAGE PIPING, WHEREVER THERE IS POSSIBILITY OF OBSTRUCT AT THE BOTTOM OF ALL STACKS, AT EACH CHANGE IN DIRECTION, HORIZONTAL RUNS OVER 10 FEET AND AT ALL LOCATIONS REQUIRING BY MUNICIPAL AND PROVINCE CODES OR AS SHOWN ON DRAWINGS.
6. PIPE SUPPORTS AND ANCHORS
- PIPE SUPPORTS AND ANCHORS TO BE MADE OF STRUCTURAL STEEL, AND BUILT UP SO AS TO ALLOW FOR EXPANSION AND CONTRACTION OF THE PIPE.
- MEANS OF BOLT-CLAMPED PIPES RESTING ON THE CONCRETE OR FLOOR SLAB OR ATTACHED TO THE CONCRETE OR FLOOR SLAB FOR EXPANSION AND CONTRACTION OF THE PIPE, AND ANCHORS SHALL BE PROVIDED WHERE NECESSARY OR REQUIRED, THE PLUMBING SUBCONTRACTOR SHALL PROVIDE THE MEANS FOR EACH LOCATION WHERE PIPES RUN THROUGH SLABS, PROVIDE CALKED JOINT ANCHORS TO ASSURE WATER TIGHT PERMANENT PENETRATION, PIPE SLEEVES ARE LEFT IN PLACE PERMANENTLY.
7. DIELECTRIC COUPLINGS
- PROVIDE DIELECTRIC COUPLINGS WHEREVER JOINTING DISSIMILAR METALS
8. INSULATION
- 8.1 FLEXIBLE MINERAL GLASS FIBER WITH INTERNAL VULCANIZING BARBER COVERINGS AND REEL STRONGING BARBER, DESIGNED FOR PIPING
- PRODUCT : ALLEY / MANSON
- THICKNESS : 3/4" (20mm)
- LOCATION:
- UNDER COLD WATER PIPING UP OVERALL LENGTH
- DOMESTIC HOT WATER PIPING UP OVERALL LENGTH

- 8.2 FLEXIBLE MINERAL GLASS FIBER FOR PIPING, WITH VAPOR BARRIER COVERING AND FINISH MATERIAL  
PRODUCT : ALLEY-WRAP FSK / MANSON  
THICKNESS : 1" (25mm)  
LOCATION :  
. ON ALL PLUMBING VENT PIPING FOR A LENGTH OF 15 FEET (4.5m) FROM THE ROOF
- 8.3 FLEXIBLE MINERAL GLASS FIBER FOR PIPING, WITH VAPOR BARRIER (APT) AND SELF-STICK BIND  
PRODUCT : ALLEY-K / MANSON  
THICKNESS : 1" (25mm)  
LOCATION :  
N/A

## 15500 - VENTILATION - AIR CONDITIONING

- 1) MECHANICAL, ELECTRICAL, AND GENERAL CONDITIONS INCLUDED IN SECTION 15100 APPLY TO SECTION 15000 VENTILATION
- 2) SCOPE OF WORK  
WORK INCLUDES GENERAL LABOR, SUPPLY AND INSTALLATION OF ALL MATERIALS AND EQUIPMENTS REQUIRED FOR THE VENTILATION WORK. DESCRIBED IN DRAWINGS AND SPECIFICATIONS  
WORK INCLUDED WITHOUT CHARGE TO THE TENANT:  
VENTILATION AIR COORDINATION AND CONTROL SYSTEMS  
VENTILATION DUCTWORK COMPLETE WITH ALL RELATED ACCESSORIES, SUCH AS GRILLES, FLEXIBLE DUCTWORK, AIR HANDLING UNITS, AIR FILTERS, EXHAUST FANS, EXHAUST DAMPERS, STARTERS, COUPLERS, ETC.,  
ALL ACUSTIC TREATMENTS AND VIBRATION CONTROLS  
THERMAL AND ACUSTIC INSULATION OF CONDUTS AND EQUIPMENTS WHEN REQUIRED  
CONNECTION TO EXISTING AIR SYSTEMS  
START UP, BALANCING AND TESTS OF SYSTEMS  
ALL NECESSARY STEPS TO MAKE THE VENTILATION WORK COMPLETE AND IN PERFECT CORRECTING TO THE SATISFACTION OF ENGINEER WITHOUT EXTRA COST  
AIR BALANCING FOR ALL SYSTEMS INCLUDING BALANCING REPORT TO THE ENGINEER
- 3) HVAC UNITS SHALL BE CHECKED BY THE TENANT'S VENTILATION SUBCONTRACTOR AND HE SHALL REPORT TO THE ENGINEER WORKS WHICH ARE NOT BEING UNITED TO:  
BALL BEARING LUBRICATION  
COILS CLEANING AND PURGING  
FANS (REPLACE BELT, LUBRICATION IF REQUIRED)  
REFURB FILTER WASH  
CHECK REFRIGERANT CHARGE  
PERFORM FLAME TUNE  
SYSTEMS STARTUP AND TEST  
SUPPLY AIR BALANCING REPORT TO OWNER AND TENANT  
CHECK REFRIGERANT CONTROL

- MATERIALS**
- DUCTWORK AND CASINGS CONSTRUCTION SHALL BE MANUFACTURED ACCORDING TO THE RULES OF THE ARI AND THE RECOMMENDATIONS OF ASHRAE AND SMACNA LATEST STANDARDS.
- WHERE GOING TROUGH WALLS, FLOOR AND ROOF, REFRIGERATION DUCTWORK WITH PROFILES, ANGLES, ELBOWS, TEES, COUPLERS, UNITS, ETC. SHALL BE FABRICATED WITH CENTRAL LINE RADII OF 1.5 TIMES THE WIDTH OF DUCT OR PROVIDED WITH DIRECTIONAL VAINES TO PREVENT AIR FLOW OBSTRUCTION. DUCTWORK SHALL BE SUPPORTED BY HANGERS ALLOWED AT CONNECTIONS OF EQUIPMENT. CONTRACTOR TO SUPPLY HIS OWN SHOP DRAWINGS BEFORE STARTING DUCTWORK FABRICATION AND SHALL PROCEED TO VERIFY DIMENSIONS AT EACH JOINT ON DRAWINGS, AND PROCEED TO ALL CHANGES IN DIMENSIONS AND ROUTING IF NECESSARY. CARE MUST BE TAKEN NOT TO AUGMENT THE PRESSURE DROP.
- FOR DUCTS WITH ACUSTIC LINING, DIMENSIONS SHALL BE AUGMENTED DIMENSIONS SHOWN ON DRAWINGS ARE "FREE AREA" DIMENSIONS AND AUGMENTED DIMENSIONS ARE TO COMPENSATE THE THICKNESS OF LINING. CONTRACTOR SHALL SUPPLY AT LEAST ONE COPY OF SHOP DRAWINGS TO THE ARCHITECT FOR REVIEW AND APPROVAL FOR CONSTRUCTION PURPOSES. CONDUITS TO BE AIRTIGHT AND SHALL NOT BE THE CAUSE OF NOISE GENERATION.

- RECTANGULAR DUCTWORK  
EXCEPT IF MENTIONED OTHERWISE ON DRAWINGS, ALL RECTANGULAR DUCTWORK AND CONNECTION TO DAMPERS, FANS, ETC., SHALL BE MADE OF GALVANIZED SHEET METAL, RECTANGULAR DUCTS SHALL BE SUPPORTED BY AN HORIZONTAL ANGLE IRON SUPPORTED AT EACH END BY 1/4" MIN. THREADED RODS, PERFORATED BAND IRON IS NOT PERMITTED.

DIMENSIONS	SHEET/METAL THICKNESS (mm/U.S.G.A.)	TYPE JOINT	* height (in)	distance between the reinforcements (in)	REINFORCING ANGLE (mm)	
mm (in)					CENTER	ENDS
< 300 (1 - 12)	0,561 (22)	DRIVE SLIP	*	2400 (94)	-	-
350 to 570 (14 to 30)	0,701 (24)	**	25 (1)	1470 (46)	-	-
600 to 1350 (24 to 54)	0,863 (34)	** *	35 (1-1/2)	1170 (45)	-	-
1400 to 1500 (56 to 60)	1,206 (20)	**	35 (1-1/2)	1140 (45)	35 X 35 X 3	-
1550 to 2150 (62 to 86)	1,406 (20)	** *	35 (1-1/2)	1140 (45)	35 X 35 X 3	35 X 35 X 3
2200 AND MORE (86 AND MORE)	1,311 (20)	** *	35 (1-1/2)	1140 (45)	55 X 55 X 3	35 X 35 X 3

## ROUND DUCTWORK

EXCEPT IF OTHERWISE NOTED ON DRAWINGS, ALL CIRCULAR DUCTWORK SHALL BE GALVANIZED SHEET METAL FABRICATED. SPIRAL WOUND WITH MECHANICAL JOINTS. INTERIOR OF CONDUIT TO BE PERFECT SMOOTH. GAUGES SHALL BE AS FOLLOWS.

DIAMETERS	STANDARD U.S.G.A.
3 to 8 inches	26
9 to 22 inches	24
24 to 36 inches	22

- 8) THE VENTILATION SUBSTRUCTURE SHALL VERIFY AND REPAIR THE EXISTING DUCTS INDICATED ON DRAWINGS, INCLUDING ACOUSTICAL AND THERMAL INSULATION.
- 9) SUPPORTS, ANCHORS, BARS AND SLEEVES
- 9.1) ALL CONCRETE ELEMENTS AND REINFORCEMENT SHALL BE PERMANENTLY SUSPENDED BY MEANS OF GALV. ROD ELEMENTS AND TRENDED STEEL RODS, CONFORMING TO SMACNA AND ASHRAE STANDARDS.
- 9.2) ALL CONCRETE ELEMENTS SHALL BE PROTECTED BY A MINIMUM OF 1" OF POLYURETHANE INSULATION EQUIPMENT TO BE INSTALLED ON A CONCRETE PAD, AT LEAST TO PROTECT CONCRETE THROUGHOUT THE ENTIRE LIFETIME OF THE PROJECT. THERE SHALL BE SUFFICIENT SLAB TO PERMIT FASANA TO EXPAND DURING AND INCLUDING LOADING.
- 10) FIRE DAMPERS
- 10.1) SUPPLY AND INSTALL WHERE SHOWN ON DRAWINGS AND IN GENERAL, EVERYWHERE PERMITTED BY THE CODES AND STANDARDS. FIRE DAMPERS SHALL BE APPROVED FOR 15-MINUTE FIRE RESISTANCE. CERTIFY THERMAL NOTE: FUSIBLE LINK TO 160°F. FOR DUCTS HAVING LESS THAN 20" X 12" IN DIMENSIONS, THE FUSIBLE LINK SHALL BE 1/2" IN LENGTH. FOR DUCTS HAVING MORE THAN 20" X 12" IN DIMENSIONS, THE FUSIBLE LINK SHALL BE 1" IN LENGTH.
- 10.2) METAL SLEEVES, FOR DUCTS HAVING DIMENSIONS OVER 20" X 12" USE 1/4" THICK ANGLE.
- 11) MOTORIZED DAMPERS (MD)
- 11.1) SUPPLY AND INSTALL MOTORIZED DAMPERS WHERE SHOWN ON DRAWINGS.
- 11.2) FRAME AND DOUBLE WALL BLADES TO BE EXTRUDED ALUMINUM.
- 11.3) DAMPER FRAME SHALL BE 1/2" THICK.
- 11.4) BLADES ARE PARALLEL TYPE.
- 11.5) BLADES ARE DOUBLE WALL.
- 11.6) INSTALLATION IN PER MANUFACTURER RECOMMENDATIONS
- 12) SEAL/TIGHTENING
- 12.1) SEAL/TIGHTENING SHALL BE DONE IN ACCORDANCE WITH PERMANENTLY SUSPENDED DAMPERS.
- 12.2) SUPPLY AND INSTALL SEAL/TIGHTENED MOTORIZED DAMPERS WHERE SHOWN ON DRAWINGS.
- 12.3) DAMPER FRAME SHALL BE 1/2" THICK.
- 12.4) DAMPER BLADES SHALL BE 1/2" THICK.
- 12.5) DAMPERS TO BE POLYURETHANE INSULATED AND OPERATION FROM 40°F - 150°F.
- 12.6) BLADES ARE OPPOSITE BLADE TYPE.
- 12.7) INSTALLATION IN PER MANUFACTURER RECOMMENDATIONS

## 15500 - VENTILATION - AIR CONDITIONING

1. **FLEXIBLE DUCTS**  
FLEXIBLE DUCTS SHALL BE FIBERGLASS, DIFFUSERS AND TERMINAL UNITS, SHALL BE ALUMINUM 1/8" THICK. TYPICAL LOOK TYPE IS MANUFACTURED BY FLOMASTER, LENGTH 10' MIN. NO ADHESIVES.  
ADHESIVE: ALUMINUM FIBER CEMENT ADHESIVE. ADHESIVE SHALL BE APPLIED TO DIFFUSERS, CONDUIT AND TERMINAL UNITS BE MADE AIRTIGHT BY MEANS OF 3M MULTIPURPOSE SEALANT.
2. **ACCESSORIES FOR SYSTEM BALANCING**  
ON TOP OF THOSE SHOWN ON DRAWINGS, SUPPLY AT EACH BRANCH CONNECTION IN SUPPLY DUCT AN ISOLATED SHUTTING DAMPER TO ADJUST THE FLOW OF AIR. EACH DAMPER TO ATTACHED TO DUCT BY MEANS OF A HINGE ON THE UPSTREAM SIDE, THE DOWNSTREAM SIDE OF THE DAMPER SHALL BE PROVIDED WITH A FLANGE OF 3/8" STEEL HOLE AND APPROPRIATE MEANS OF LOCKING DAMPER IN PLACE (IRMA-LOCK - FARR)
3. **ACCESS DAMPERS**  
SUPPLY AND INTAKE ACCESS DOORS WHERE SHOWN ON DRAWINGS AND IN GENERAL, EVERYWHERE WHERE NECESSARY TO ACCESS EQUIPMENT OR ACCESSORIES FOR MAINTENANCE OF SAME, DOORS HAVING DIMENSIONS OF 16" X 16" OR MORE, SHALL BE EQUIPPED WITH HANDLES AND INFLATING DEVICE TO RAISE ENOUGH (12" OR MORE) TO PERMIT MAINTENANCE TO BE MADE PROPERLY. INGENS WHEN INSTALLED ON AN INSULATED DUCT, DOORS TO BE ISOLATED DOWEL WALLED, ACCESS DOORS CENTER HOLE AND GALVANIZED STEEL WITH FOUR CLOSING LATCHES, DOORS TO BE MADE AIRTIGHT BY MEANS OF PROPER NEOPRENE GASKET.
4. **LOUVERS**  
SUPPLY INTAKE FRESH AIR AND EXHAUST LOUVERS AS REQUIRED, SUBTRACTOR TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION OUTSIDE WALL, INCLUDING WATERPROOFING, INSULATION, AND FINISHES. EXHAUST LOUVERS TO BE 16" X 16" WITH 1/2" ALUMINUM ELEMENTS, WELDED ASSEMBLY, FOUR HOLES (4" FINISH) WITH 4/8" TILT BLADES. ACCESS DOORS TO BE 16" X 16" WITH 1/2" ALUMINUM ELEMENTS, WELDED ASSEMBLY, WITH 2" FINISHING WITH NO HOLES, LOUVERS TO BE "NORMA 500" FINISHED AFTER ASSEMBLY AT THE FACTORY COLOR TO BE SELECTED BY ARCHITECT.
5. **ACQUISITION, INSTALLATION**  
FLAME TREATED HEAT CURSED RESIN BONDED GLASS FIBER, SURFACE OF THE LINING EXPOSED TO AIR FLOW SHALL BE COVERED WITH BLACK MATTER BOUNDED TO GLASS FIBER MEAN THE THERMAL RESISTANCE TO BE 0.07. THE COEFFICIENT OF ABSORPTION OF 0.01. INSTALL Lining ACCORDING TO LATEST MANUFACTURER'S RECOMMENDATIONS, WHILE TACKING INTO THERMAL THE AIR SPEED REDUCE TO 10% OF THE DESIGN SPEED. THE AIR FLOW SHALL BE BY MEANS OF THE INITIAL TEST STAIKED ALL AROUND, TO PREVENT POSSIBLE TACK-UP.
6. **PROTECTIVE SUSPENSION HANGING**  
THICKNESS: 1" LOST  
SYSTEMS: 1"  
LOCATION: 1"  
1) RTU-1/RTU-11/RTU-11/RTU-12  
2) CONNECT TO THE AIR VENTILATION / AIR CONDITIONING / HEATING UNIT, 10' LENGTH FOR SUPPLY AND RETURN.
7. **THERMAL INSULATION**  
16.1 GLASS FIBER FLEXIBLE DUCT SPECIFIC FOR DUCTWORK, INTEGRAL VAPOR BARRIER.  
THICKNESS: 1"  
SYSTEMS: 1"  
LOCATION: 1"  
1) RTU-1/RTU-11/RTU-12  
2) EXHAUST DUCTWORK, 10' FEET FROM ROOF
8. **ROOF PANELS GLASS FIBER INSULATION, DENSITY 48KG/M<sup>3</sup> WITH INTEGRAL VAPOR BARRIER, COVER WITH COPPER**  
THICKNESS: 2"  
SYSTEMS: NA  
LOCATION: NA

- 19) VENTILATION / AIR CONDITIONING / HEATING SYSTEMS  
SEE DESCRIPTION ON DRAWINGS
- 20) GRILLES AND DIFFUSERS  
GRILLES AND DIFFUSERS TO CONFORM TO DIMENSIONS AND TYPES SHOWN ON DRAWINGS,  
NO DIMENSION CHANGE SHALL BE MADE WITHOUT AUTHORIZATION OF THE ENGINEER.  
SUBCONTRACTOR TO COORDINATE ROUTING OF DUCTWORK AND LOCATION OF GRILLES AND  
DIFFUSERS BEFORE INSTALLATION OF SAME. WHICH FINAL LOCATION SHALL BE DETERMINED ON  
SITE AFTER EXACT LOCATION OF UPPER FLOOR DRAINAGE PIPING AND OF LIGHTING FIXTURES  
HAS BEEN FROZEN. DOUR GRILLES TO BE SUPPLIED AND INSTALLED BY THIS CONTRACTOR.  
SEE GRILLES AND DIFFUSERS SCHEDULE ON DRAWINGS.

[illegible]

ARCHITECT

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**CLIENT**

## BESTSELLER

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SEAL

	C. KALLIS
	DRAWN
	C. KALLIS
	CHECKED
	S. LAROUCHE
	APPROVED
	S. SIRARD

PROJEC

PROJECT  
POLO PARK - CF 1485

PORTAGE AVENUE  
WINNIPEG, MANITOBA,  
R3G 0W4  
C.R.U. NO.: 304 & 305

**TITLE**

## MECHANICAL SPECIFICATIONS

DATE	SCALE
NOVEMBER 2015	NO SCALE
PROJECT	DRAWING No
15-583	M-3