A1 SIZE – 594mm x 841mm

FIRE PROTECTION SYMBOLS

1. SYMBOLS INDICATED HERE AND NOT USED IN THE CONTRACT DOCUMENTS DO NOT APPLY TO THIS PROJECT. ADDITIONAL SYMBOLS MAY BE INDICATED IN THE CONTRACT DOCUMENTS.
2. NEW WORK IS SHOWN WITH SOLID HEAVY LINES.

ABBREVIATIONS

ACC	–	ACCESS
ADJ	–	ADJUSTABLE
AFF	–	ABOVE FINISHED FLOOR
ALT	–	ALTERNATE
AP	–	ACCESS PANEL
APPROX	–	APPROXIMATE
ARCH	–	ARCHITECTURAL
ASSY	–	ASSEMBLY
BLDG	–	BUILDING
BOT	–	BOTTOM
BTWN	–	BETWEEN
CFCI	–	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
CL	–	CENTERLINE
CLG	–	CEILING
CMU	–	CONCRETE MASONRY UNIT
CONN	–	CONNECTION/CONNECT
CONTR	–	CONTRACTOR
CORR	–	CORRIDOR
D	–	DRAIN LINE
DET	–	DETAIL
DIA	–	DIAMETER
DIM	–	DIMENSION
DN	–	DOWN
DWG	–	DRAWING
EA	–	EACH
ELEV	–	ELEVATION
EQUIP	–	EQUIPMENT
ETR	–	EXISTING TO REMAIN
EXT	–	EXTERIOR
FLR	–	FLOOR
FPM	–	FEET PER MINUTE
FT	–	FEET
FTG	–	FOOTING
GA	–	GAUGE
GAL	–	GALLON
GALV	–	GALVANIZED
GPM	–	GALLONS PER MINUTE
HP	–	HORSEPOWER/HIGH POINT
ID	–	INSIDE DIAMETER
IN	–	INCHES
KV	–	KILOVOLT
KW	–	KILOWATTS
KWH	–	KILOWATT HOURS
L	–	LENGTH
LBS	–	POUNDS
LTG	–	LIGHTING
MAX	–	MAXIMUM
MEZZ	–	MEZZANINE
MFR	–	MANUFACTURER
MISC	–	MISCELLANEOUS
MTD	–	MOUNTED
MTG	–	MOUNTING
NO	–	NUMBER
NOM	–	NOMINAL
NPT	–	NATIONAL PIPE THREAD
NTS	–	NOT TO SCALE
OC	–	ON CENTER
OD	–	OUTSIDE DIAMETER
OFCI	–	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	–	OWNER FURNISHED OWNER INSTALLED
Ø	–	PHASE
PLBG	–	PLUMBING
PRESS	–	PRESSURE
PRV	–	PRESSURE REDUCING VALVE
PSF	–	POUNDS PER SQUARE FOOT
PSI	–	POUNDS PER SQUARE INCH
PSIG	–	POUNDS PER SQUARE INCH GAUGE
RAD	–	RADIUS
REC	–	RECESSED
REQD	–	REQUIRED
RI	–	ROUGH-IN
RPM	–	REVOLUTIONS PER MINUTE
RV	–	RELIEF VALVE
SCH	–	SCHEDULE
SHT	–	SHEET
SPL	–	SPRINKLER LINE
SPEC	–	SPECIFICATION
SP	–	SPRINKLER
SQ	–	SQUARE
STRU	–	STRUCTURAL/STRUCTURE
TEMP	–	TEMPERATURE
TYP		TYPICAL
UNO	–	UNLESS NOTED OTHERWISE
VDC	–	VOLTS DIRECT CURRENT
W	–	WIDTH
W/	–	WITH
W/O	–	WITHOUT

GENERAL SYMBOLS

- F — FIRE SUPPLY
- SP — SPRINKLER PIPE
- ELBOW DOWN
- ELBOW UP
- TEE DOWN
- TEE UP
- PIPING CONNECTION
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- SHUT-OFF VALVE
- SHUT-OFF VALVE (VERTICAL)
- TS — SHUT-OFF VALVE WITH TAMPER SWITCH
- BUTTERFLY VALVE
- CHECK VALVE
- DOUBLE CHECK BACKFLOW PREVENTER (DCBP)
- F — FLOW SWITCH
- PIPE CAP OR FLUSHING CONNECTION
- AUTOMATIC BALL DRAIN DEVICE
- APPROXIMATE HANGER LOCATION
- POST INDICATOR VALVE
- INSPECTOR'S TEST ASSEMBLY
- HYDRAULIC CALCULATION DESIGN AREA
- INSPECTOR'S TEST AND DRAIN ASSEMBLY
- UNION
- UPRIGHT SPRINKLER
- PENDENT SPRINKLER
- DRY PENDANT SPRINKLER
- RECESSED SPRINKLER
- SIDEWALL SPRINKLER
- DRY SIDEWALL SPRINKLER
- TEST HEADER
- FDC — FREE-STANDING FDC
- ALARM CHECK VALVE ASSEMBLY
- FOUR-WAY BRACING
- LONGITUDINAL BRACING
- LATERAL BRACING
- NS — NO SPRINKLER
- XX — NODE NUMBER
- F — FLOW SWITCH

GENERAL NOTES

1. THE INTENT AND EXTENT OF THE FIRE SUPPRESSION DESIGN IS AS ILLUSTRATED, BUT IS DIAGRAMMATIC. CONTRACTOR SHALL PREPARE FABRICATION DRAWINGS TO BE APPROVED BY ENGINEER.
2. DO NOT SCALE DRAWINGS TO DETERMINE DIMENSIONS. ALL DIMENSIONS ARE IN MILLIMETERS.
3. DRAWINGS INDICATE DESIGN INTENT AND GENERAL ROUTING OF FIRE AND SPRINKLER PIPING. CONTRACTOR IS RESPONSIBLE FOR ADDITIONAL OFFSETS, FITTINGS, RISER NIPPLES, ETC. TO COORDINATE PIPING LAYOUT WITH STRUCTURAL, DUCTWORK, PIPING, CONDUIT, ETC. CONTRACTOR IS ALSO RESPONSIBLE TO INDICATE ADDITIONAL FITTINGS FOR FLUSHING OF THE PIPING SYSTEM.
4. DRAWINGS INDICATE GENERAL LOCATION OF SPRINKLER HEADS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADDITIONAL SPRINKLER HEADS TO MEET CODE REQUIREMENTS.

   THE FOLLOWING CODES AND STANDARDS SHALL APPLY:
   *NFPA 10 – PORTABLE FIRE EXTINGUISHER 2013 EDITION
   *NFPA 13 – FIRE SPRINKLERS, 2013 EDITION
   *NFPA 24 – FIRE SERVICE MAINS 2013 EDITION
   *NFPA 30 – FLAMMABLE AND COMBUSTIBLE LIQUID CODE
   *NFPA 90A – STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATION SYSTEMS
   *NFPA 90B – STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR CONDITIONING SYSTEMS
   *NFPA 101 – LIFE SAFETY CODE, 2012 EDITION
   * MANITOBA FIRE CODE (2012 EDITION)
   * NATIONAL FIRE CODE OF CANADA (2010 EDITION)
   * NATIONAL BUILDING CODE OF CANADA, VOLUMES I & II (2010 EDITION)
5. SPRINKLER PIPING SHALL BE SIZED USING HYDRAULIC CALCULATIONS. DENSITY AND AREA OF APPLICATION SHALL BE PER NFPA 13, AND AS INDICATED BELOW.
6. ADHERE TO AND OBTAIN ALL PERMITS, LICENSES AND ALL GOVERNMENT REQUIREMENTS.
7. FIRE STOP ALL FIRE SUPPRESSION OR FIRE SAFETY PIPE PENETRATIONS OF SMOKE/FIRE WALLS/SLAB. FIRE STOPPING SHALL BE OF A U.L. LISTED OR FM APPROVED ASSEMBLY NOT LESS THAN THE FIRE RATING OF THE WALL OR SLAB BEING PENETRATED.
8. SPRINKLER SYSTEM SHALL BE DESIGNED FOR A MAXIMUM WORKING PRESSURE OF 175 psi. MAXIMUM VELOCITY SHALL BE 20 FPS.
9. SPRINKLER PIPING SHALL BE SCHEDULE 40 BLACK STEEL WITH MECHANICAL COUPLINGS. REFER TO SPECIFICATIONS FOR VALVES AND FITTINGS. ALL SPRINKLER PIPE AND FITTINGS SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.
10. ALL SPRINKLER PIPE AND FITTINGS SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED. DRAINS INCLUDING AUXILIARY DRAINS SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13; 8.16.2.5.
11. INSPECTOR'S TEST CONNECTIONS SHALL BE PROVIDED FOR THE SYSTEMS SO THAT THE WATER FLOW SWITCHES FOR THE SYSTEMS CAN BE TESTED. TEST CONNECTIONS SHALL HAVE A SMOOTH BORE CORROSION RESISTANT ORIFICE, GIVING A FLOW EQUIVALENT TO ONE SPRINKLER OF SMALLEST ORIFICE. THE OUTLET AND DRAIN VALVE SHALL BE IN AN ACCESSIBLE LOCATION AND PIPED TO THE EXTERIOR.
12. HANGER LOCATIONS SHOWN ARE DIAGRAMMATIC. MEANS OF HANGING AND HANGER SPACING SHALL BE PER NFPA 13, AND COORDINATE WITH BUILDING SUPPLIER.
13. ALL CONTROL VALVES AND FLOW SWITCHES FOR THE FIRE SPRINKLER SYSTEM TO BE ELECTRONICALLY SUPERVISED AND MONITORED BY AN APPROVED CENTRAL STATION. MONITORING DEVICES AND WIRING TO BE PROVIDED/PERFORMED AND TESTED BY DIV. 28.
14. ALL CONTROL, DRAIN AND TEST CONNECTION VALVES SHALL BE PROVIDED WITH PERMANENTLY MARKED WEATHERPROOF METAL OR RIGID PLASTIC IDENTIFICATION SIGNS. THE SIGN SHALL BE SECURED WITH CORROSION-RESISTANT WIRE, CHAIN, OR OTHER APPROVED MEANS.
15. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES, VERIFY DIMENSIONS, CONDITIONS AND LAYOUT AT JOB SITE PRIOR TO FABRICATION OF MATERIAL AND PROVIDE ANY ADDITIONAL MATERIAL OR MODIFICATIONS TO FURNISH A COMPLETE AND OPERABLE SPRINKLER SYSTEM TO MEET THE REQUIRED CODES.
16. CONTRACTOR SHALL PERFORM FIRE HYDRANT FLOW TEST PER NFPA 291 AND PROVIDE RESULTS PRIOR TO THE PREPARATION OF SHOP DRAWINGS.
17. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN AND LAYOUT OF SPRINKLER SYSTEM IN ACCORDANCE WITH REQUIREMENTS OF SPECIFICATION 21 13 13, WET PIPE SPRINKLER SYSTEM, FIRE PROTECTION. CONTRACTOR SHALL SUBMIT COMPLETE SHOP DRAWINGS, MATERIAL DATA, HYDRAULIC CALCULATIONS, AND FLOW TEST RESULTS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING FABRICATION AND INSTALLATION.
18. ALL MATERIALS SHALL BE U.L. LISTED AND/OR FM APPROVED.
19. NO SPRINKLER PIPING SHALL BE INSTALLED PASSING THROUGH ELECTRICAL ROOMS OR OVER ELECTRICAL PANELS/EQUIPMENT WHICH SERVES OTHER AREAS. ONLY DEDICATED BRANCH SPRINKLER PIPING WILL BE ALLOWED WITHIN EACH OF THE SPACES INDICATED ABOVE. COORDINATE THE LOCATION OF ALL PIPING WITH ELECTRICAL EQUIPMENT AND OTHER TRADES AND ADJUST AS NECESSARY.

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FIRE PROTECTION SYMBOLS

FIRE PROTECTION REQUIREMENTS

DESCRIPTION / HAZARD	LH	OH1	OH2	EH1
APPLICATION AREA	TOILETS, CORRIDORS, STAIRS, ETC	JAN CLOSET, ETC	SMALL STORAGE, MECH RM, ETC	CHEMICAL STORAGE
DESIGN DENSITY	0.10 GPM/SF (4.075 LPM/SQ METER)	0.15 GPM/SF (6.112 LPM/SQ METER)	0.20 GPM/SF (8.149 LPM/SQ METER)	0.30 GPM/SF (12.224 LPM/SQ METER)
DISCHARGE TIME SPRINKLER TYPE	60 MIN QUICK RESPONSE TYPE	60 MIN QUICK RESPONSE TYPE	60 MIN QUICK RESPONSE TYPE	90 MIN QUICK RESPONSE TYPE
COVERAGE PER SPRINKLER	225 SF (20.90 SQ METERS)	130 SF (9.29 SQ METER)	130 SF (12.07 SQ METER)	100 SF (9.29 SQ METER)
HOSE STREAM	250 GPM (946 LPM)	250 GPM (946 LPM)	250 GPM (946 LPM)	500 GPM (1893 LPM)
DESIGN AREA (NOTE 1, 2 & 3)	1,500 SF (140 SQ METER)	1,500 SF (140 SQ METER)	1,500 SF (140 SQ METER)	2,500 SF (232 SQ METER)
SPRINKLER TEMP RATING	ORDINARY TEMPERATURE RATING	ORDINARY TEMPERATURE RATING	ORDINARY TEMPERATURE RATING	ORDINARY TEMPERATURE RATING
SPACE BETWEEN SPRINKLERS	15 FT MAX (4.57 M)	15 FT MAX (4.57 M)	13 FT MAX (3.96 M)	10 FT MAX (3.96 M)
FLOOR AREA THROUGH ONE RISER	52,000 SF/SYSTEM (4,830 SQ METERS)	52,000 SF/SYSTEM (4,830 SQ METERS)	52,000 SF/SYSTEM (4,830 SQ METERS)	40,000 SF/SYSTEM (3,716 SQ METERS)
K-FACTOR OF SPRINKLER NOZZLE	5.6 (80)	8.0 (115)	8.0 (115)	8.0 (115)
"C" FACTOR	120	120	120	120

NOTE: 1. DESIGN AREA MAY BE REDUCED PER NFPA 13, 11.2.3.2.3 IF QUICK RESPONSE SPRINKLERS ARE USED THROUGHOUT FACILITY.
2. DESIGN AREA SHALL BE INCREASED 30% WHEN THE CEILING/ROOF SLOPE IS GREATER THAN 2 IN 12.

APEGM
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No. 1441

NO.	REVISIONS	DATE	DESIGN	CHECK
00	ISSUED FOR CONSTRUCTION – 976-2016	2017/04/05	B.S.	J.C.

CH2MHILL. SNC·LAVALIN KGS GROUP

DESIGNED BY: T. TRAN	CHECKED BY: C. OSBERG
DRAWN BY: K. FONG	APPROVED BY: H.T. FREIHAMMER
SCALE: NTS	ISSUED FOR CONSTRUCTION BY: J. SHUMKA
DATE: 2017/04/05	DATE: 2017/04/05
CONSULTANT NO.: 474248	

ENGINEER'S SEAL
PROVINCE OF MANITOBA – REGISTERED PROFESSIONAL ENGINEER – T.T. TRAN – Member 40578 – Apr 13/17

Winnipeg
THE CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT

BUILDNG MECHANICAL
SEWPCC UPGRADING/EXPANSION PROJECT
FIRE PROTECTION
LEGEND, ABBREVIATIONS AND GENERAL NOTES

CITY DRAWING NUMBER	SHEET	REV.	SIZE
1-0102-MAAA-A001	003	00	A1

PLOT DATE: 2017\03\30
FILE NAME: 1-0102-MAAA-A001-003.dgn