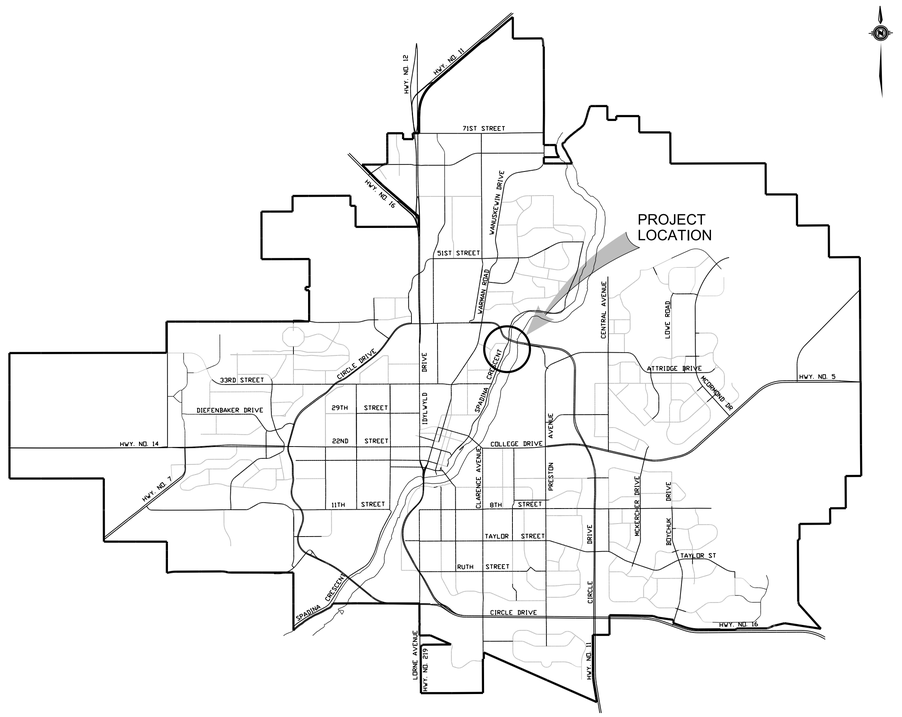
City of
Saskatoon
Utilities & Environment Department
Saskatoon Water - Water Treatment

SPADINA LIFT STATION REPLACEMENT

CONTRACT NO.
30% DETAILED DESIGN DRAWINGS
JANUARY 2021



LOCATION MAP
NTS

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2	30% DETAILED DESIGN	2021-01-29	CS
1	PRELIMINARY DESIGN	2020-12-04	CS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
GENERAL
COVER SHEET

CONSULTANT DRAWING NO. 761-1916-001

SCALE:

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

DRAWING INDEX

SPADINA LIFT STATION REPLACEMENT
DRAWING LIST

DRAWING NUMBER	LOCATION/ AREA	DRAWING TYPE	DRAWING TITLE
		General	
761-1916-001	SPADINA LIFT STATION REPLACEMENT	GENERAL	COVER SHEET
761-1916-002	SPADINA LIFT STATION REPLACEMENT	GENERAL	DRAWING INDEX
		Civil	
761-1916-100	SPADINA LIFT STATION REPLACEMENT	GENERAL	LEGENDS, ABBREVIATIONS, AND GENERAL NOTES
761-1916-101	SPADINA LIFT STATION REPLACEMENT	GENERAL	CONTRACTOR LAYDOWN AREA
761-1916-102	SPADINA LIFT STATION REPLACEMENT	PLAN	EXISTING UTILITIES AND GRADING
761-1916-103	SPADINA LIFT STATION REPLACEMENT	PLAN	SITE CLEARANCE AND DEMOLITION
761-1916-105	SPADINA LIFT STATION REPLACEMENT	PLAN	SITE GRADING AND PAVING
761-1916-106	SPADINA LIFT STATION REPLACEMENT	DETAILS	SITE GRADING AND PAVING
761-1916-107	SPADINA LIFT STATION REPLACEMENT	PLAN	YARD PIPING AND UTILITIES
761-1916-108	SPADINA LIFT STATION REPLACEMENT	PLAN	LANDSCAPING
761-1916-110	SPADINA LIFT STATION REPLACEMENT	DETAILS	MISCELLANEOUS DETAILS (1)
761-1916-111	SPADINA LIFT STATION REPLACEMENT	DETAILS	MISCELLANEOUS DETAILS (2)
		Architectural	
761-1916-200	SPADINA LIFT STATION REPLACEMENT	GENERAL	LEGENDS, ABBREVIATIONS, AND GENERAL NOTES
761-1916-203	SPADINA LIFT STATION REPLACEMENT	PLAN	BUILDING CODE ANALYSIS, SITE PLAN AND EBF AREA
761-1916-204	SPADINA LIFT STATION REPLACEMENT	PLAN	BASEMENT LOWER LEVEL
761-1916-205	SPADINA LIFT STATION REPLACEMENT	PLAN	BASEMENT UPPER LEVEL
761-1916-206	SPADINA LIFT STATION REPLACEMENT	PLAN	GROUND FLOOR
761-1916-207	SPADINA LIFT STATION REPLACEMENT	PLAN	ROOF
761-1916-210	SPADINA LIFT STATION REPLACEMENT	SECTION	BUILDING SECTIONS
761-1916-211	SPADINA LIFT STATION REPLACEMENT	ELEVATIONS	BUILDING ELEVATIONS (1)
761-1916-212	SPADINA LIFT STATION REPLACEMENT	ELEVATIONS	BUILDING ELEVATIONS (2)
761-1916-213	SPADINA LIFT STATION REPLACEMENT	PLAN	STAIR PLAN AND SECTION
761-1916-215	SPADINA LIFT STATION REPLACEMENT	DETAILS	BUILDING ENVELOPE DETAILS (1)
761-1916-217	SPADINA LIFT STATION REPLACEMENT	DETAILS	PENETRATION
761-1916-218	SPADINA LIFT STATION REPLACEMENT	DETAILS	ROOFING DETAILS
761-1916-219	SPADINA LIFT STATION REPLACEMENT	DETAILS	WALL ASSEMBLY DETAILS
761-1916-221	SPADINA LIFT STATION REPLACEMENT	SCHEDULES	DOOR, HARDWARE, AND WINDOW SCHEDULE
		Structural	
761-1916-300	SPADINA LIFT STATION REPLACEMENT	GENERAL	LEGENDS, ABBREVIATIONS, AND GENERAL NOTES (1)
761-1916-301	SPADINA LIFT STATION REPLACEMENT	GENERAL	LEGENDS, ABBREVIATIONS, AND GENERAL NOTES (2)
761-1916-302	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (1)
761-1916-303	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (2)
761-1916-304	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (3)
761-1916-305	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (4)
761-1916-306	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (5)
761-1916-307	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (6)
761-1916-308	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (7)
761-1916-309	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (8)
761-1916-310	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (9)
761-1916-311	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (10)
761-1916-312	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (11)
761-1916-313	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (12)
761-1916-314	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (13)
761-1916-315	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (14)
761-1916-320	SPADINA LIFT STATION REPLACEMENT	PLAN	BASEMENT LOWER LEVEL
761-1916-321	SPADINA LIFT STATION REPLACEMENT	PLAN	BASEMENT UPPER LEVEL
761-1916-322	SPADINA LIFT STATION REPLACEMENT	PLAN	GROUND FLOOR
761-1916-323	SPADINA LIFT STATION REPLACEMENT	PLAN	ROOF
761-1916-326	SPADINA LIFT STATION REPLACEMENT	SECTION	SECTION A
761-1916-327	SPADINA LIFT STATION REPLACEMENT	SECTION	SECTION B
761-1916-328	SPADINA LIFT STATION REPLACEMENT	SECTION	SECTIONS C&D
761-1916-330	SPADINA LIFT STATION REPLACEMENT	DETAILS	STAIR

SPADINA LIFT STATION REPLACEMENT
DRAWING LIST

DRAWING NUMBER	LOCATION/ AREA	DRAWING TYPE	DRAWING TITLE
		Process	
761-1916-400	SPADINA LIFT STATION REPLACEMENT	GENERAL	LEGENDS, ABBREVIATIONS, AND GENERAL NOTES
761-1916-401	SPADINA LIFT STATION REPLACEMENT	GENERAL	INSTRUMENTATION AND CONTROL SYMBOLS
761-1916-402	SPADINA LIFT STATION REPLACEMENT	GENERAL	PIPING ARRANGEMENT GUIDELINES
761-1916-403	SPADINA LIFT STATION REPLACEMENT	GENERAL	WALL AND FLOOR PENETRATION NOTES
761-1916-404	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (1)
761-1916-405	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (2)
761-1916-410	SPADINA LIFT STATION REPLACEMENT	GENERAL	HYDRAULIC PROFILE
761-1916-411	SPADINA LIFT STATION REPLACEMENT	P&ID	RAW SEWAGE PUMPS
761-1916-412	SPADINA LIFT STATION REPLACEMENT	P&ID	DIESEL GENERATOR
761-1916-413	SPADINA LIFT STATION REPLACEMENT	P&ID	GAS DETECTION + ALARMING
761-1916-414	SPADINA LIFT STATION REPLACEMENT	P&ID	PROCESS SUMP
761-1916-420	SPADINA LIFT STATION REPLACEMENT	PLAN	BASEMENT LOWER LEVEL
761-1916-421	SPADINA LIFT STATION REPLACEMENT	PLAN	BASEMENT UPPER LEVEL
761-1916-425	SPADINA LIFT STATION REPLACEMENT	SECTION	SECTION A
761-1916-426	SPADINA LIFT STATION REPLACEMENT	SECTION	SECTION B
761-1916-430	SPADINA LIFT STATION REPLACEMENT	3D ISOMETRIC VIEW	DRY WELL UPPER LEVEL
761-1916-431	SPADINA LIFT STATION REPLACEMENT	3D ISOMETRIC VIEW	DRY WELL LOWER LEVEL
761-1916-432	SPADINA LIFT STATION REPLACEMENT	3D ISOMETRIC VIEW	WET WELL
		Mechanical	
761-1916-500	SPADINA LIFT STATION REPLACEMENT	GENERAL	LEGEND, ABBREVIATIONS, AND GENERAL NOTES
761-1916-501	SPADINA LIFT STATION REPLACEMENT	GENERAL	HVAC & PLUMBING LEGEND AND SYMBOLS
761-1916-502	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (1)
761-1916-503	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (2)
761-1916-504	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (3)
761-1916-505	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (4)
761-1916-510	SPADINA LIFT STATION REPLACEMENT	SCHEMATIC	HVAC
761-1916-511	SPADINA LIFT STATION REPLACEMENT	SCHEMATIC	DOMESTIC/ POTABLE WATER
761-1916-512	SPADINA LIFT STATION REPLACEMENT	SCHEMATIC	NATURAL GAS
761-1916-514	SPADINA LIFT STATION REPLACEMENT	PLAN	HVAC BASEMENT LOWER LEVEL
761-1916-515	SPADINA LIFT STATION REPLACEMENT	PLAN	HVAC BASEMENT UPPER LEVEL
761-1916-516	SPADINA LIFT STATION REPLACEMENT	PLAN	HVAC GROUND FLOOR
761-1916-517	SPADINA LIFT STATION REPLACEMENT	PLAN	PLUMBING & DRAINAGE LOWER LEVEL
761-1916-518	SPADINA LIFT STATION REPLACEMENT	PLAN	PLUMBING & DRAINAGE GROUND FLOOR
761-1916-525	SPADINA LIFT STATION REPLACEMENT	3D ISOMETRIC VIEWS	HVAC & PLUMBING
761-1916-526	SPADINA LIFT STATION REPLACEMENT	3D ISOMETRIC VIEWS	FLOOR AND ROOF DRAINAGE SYSTEM
		Electrical	
761-1916-600	SPADINA LIFT STATION REPLACEMENT	GENERAL	LEGENDS, ABBREVIATIONS, AND GENERAL NOTES
761-1916-601	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (1)
761-1916-602	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (2)
761-1916-603	SPADINA LIFT STATION REPLACEMENT	GENERAL	STANDARD DETAILS (3)
761-1916-606	SPADINA LIFT STATION REPLACEMENT	SINGLE LINE DIAGRAM	SINGLE LINE DIAGRAM
761-1916-610	SPADINA LIFT STATION REPLACEMENT	PLAN	AREA CLASSIFICATIONS
761-1916-616	SPADINA LIFT STATION REPLACEMENT	PLAN	ELECTRICAL ROOM PLAN AND ELEVATION
		Instrumentation & Control	
761-1916-700	SPADINA LIFT STATION REPLACEMENT	GENERAL	NETWORK ARCHITECTURE

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2	30% DETAILED DESIGN	2021-01-29	CS
1	PRELIMINARY DESIGN	2020-12-04	CS
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SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
GENERAL
DRAWING INDEX

CONSULTANT DRAWING NO. 761-1916-002

SCALE:

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

ABBREVIATIONS

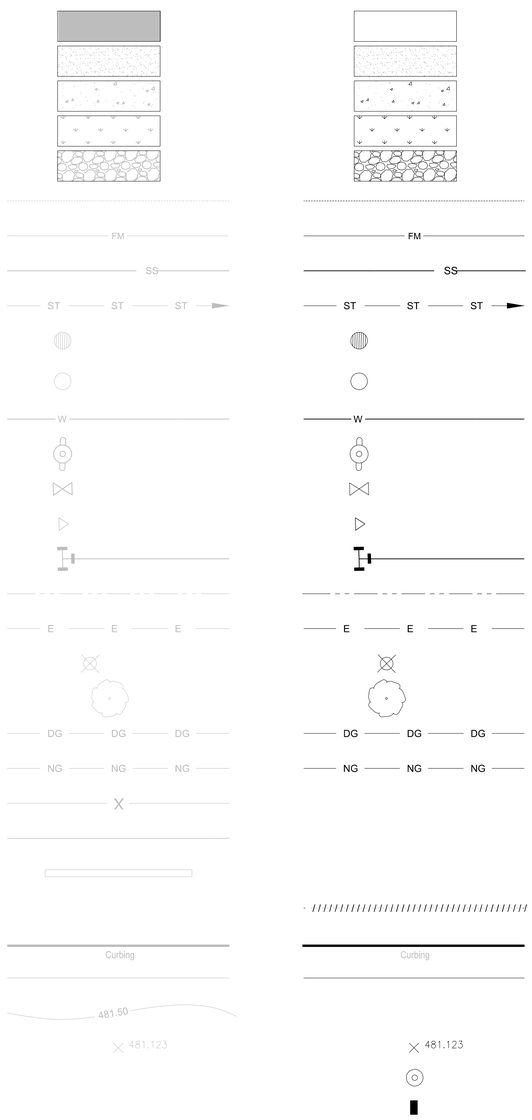
ABD	ABANDONED
C&G	STANDARD CURB AND GUTTER
REV C&G	REVERSE CURB AND GUTTER
CB	CATCH BASIN
CoS STD SPEC.	CITY OF SASKATOON STANDARD SPECIFICATIONS AND DRAWINGS FOR ROADWAYS AND WATER & SEWER CONSTRUCTION, 2019
CSP	CORRUGATED STEEL PIPE
DG	DIGESTER GAS
DI	DUCTILE IRON
DIA	DIAMETER
E / ELEC	ELECTRICAL
EP	EDGE OF PAVEMENT
EX	EXISTING
FM	FORCEMAIN
HDPE	HIGH DENSITY POLYETHYLENE PIPE
INV	INVERT
MH	MANHOLE
NG	NATURAL GAS
PVC	POLYVINYL CHLORIDE PIPE
SS	SANITARY SEWER
ST	STORM SEWER
T	TELEPHONE
T.O.A.	TOP OF ASPHALT
T.O.C.	TOP OF CURB / TOP OF CONCRETE
T.O.D.	TOP OF DECK
T.O.W.	TOP OF SIDEWALK
W	WATER

GENERAL NOTES:

1. ALL PIPE SIZES ARE IN MILLIMETERS AND ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ALL COORDINATES AND DISTANCES ARE BASED ON UTM COORDINATE SYSTEM, ZONE 13N (NAD 83), CORRECTION FACTOR 0.999675897.
3. UNLESS OTHERWISE SPECIFIED, ANY EXISTING SURFACE, FACILITIES AND UTILITIES DISTURBED BY CONSTRUCTION TO BE REINSTATED TO ORIGINAL CONDITIONS.
4. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
5. THERE MAY BE UTILITIES NOT SHOWN ON THE DRAWINGS. FURTHERMORE, LOCATION AND SIZES OF EXISTING UTILITIES AND FACILITIES ARE APPROXIMATE. CONTRACTOR TO INVESTIGATE AND CONFIRM EXACT LOCATIONS OF UTILITIES PRIOR TO CONSTRUCTION

LEGEND

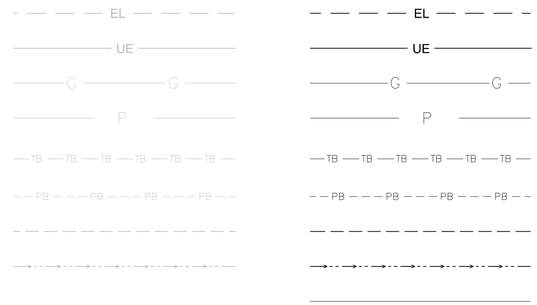
EXISTING / NEW



BUILDINGS AND ABOVE-GROUND STRUCTURES
ASPHALT PAVEMENT
CONCRETE
GRASS
GRAVEL
TUNNELS AND UNDEGROUND STRUCTURES
FORCEMAIN
SANITARY SEWER
STORM SEWER
GRATED TOP MANHOLE (GTMH)
MANHOLE (SOLID COVER)
WATERMAIN
HYDRANTS
VALVES
REDUCER
TEES
IRRIGATION LINES
ELECTRICAL LINE
LIGHTING POLES
TREES
DIGESTER GAS
NATURAL GAS
FENCE
TELEPHONE
CULVERTS
REMOVALS AND ABANDONMENTS
CURB
EDGE OF PAVEMENT
ELEVATIONS CONTOUR
ELEVATION
BOLLARD
CATCHBASIN (CB)

LEGEND

EXISTING / NEW



EASEMENT LINE
UNDEGROUND POWER LINE
NATURAL GAS LINE
ELECTRICAL DUCT/ DUCT BANK
TELEPHONE BURIED
POWER BURIED
SUBDRAIN
SWALE
AREA OF SURVEY

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1	30% DETAILED DESIGN	2021-01-29	MD
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
CIVIL
LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

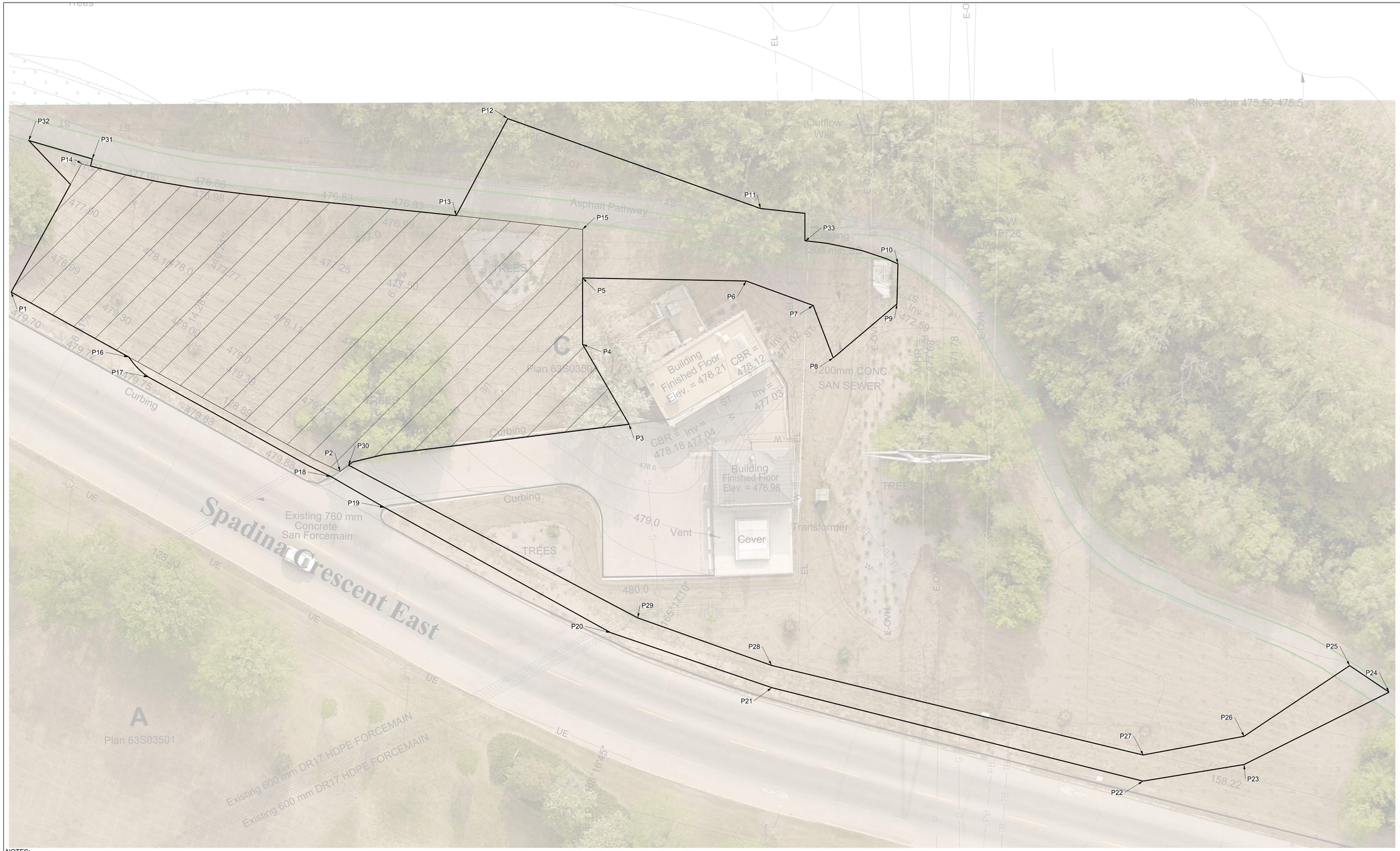
CONSULTANT DRAWING NO. 761-1916-100

SCALE: N.T.S

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



POINTS COORDINATES

NO.	NORTHING	EASTING
P1	5779243.684	387980.572
P2	5779199.830	387956.663
P3	5779161.305	387962.951
P4	5779167.506	387973.611
P5	5779167.506	387982.453
P6	5779145.686	387982.038
P7	5779137.290	387978.956
P8	5779134.086	387971.797
P9	5779125.597	387978.993
P10	5779125.463	387984.3720
P11	5779143.781	387991.724
P12	5779177.475	388003.712
P13	5779184.358	387990.784
P14	5779234.266	387997.681
P15	5779167.506	387988.939
P16	5779228.006	387971.921
P17	5779225.380	387969.249
P18	5779201.029	387955.965
P19	5779193.884	387951.837
P20	5779163.744	387935.159
P21	5779142.268	387927.838
P22	5779092.782	387915.369
P23	5779079.309	387917.581
P24	5779059.968	387927.234
P25	5779059.968	387927.234
P26	5779079.309	387921.351
P27	5779092.782	387918.860
P28	5779142.286	387930.798
P29	5779160.128	387937.133
P30	5779198.721	387957.507
P31	5779232.866	387998.333
P32	5779241.347	388000.767
P33	5779137.865	387987.429

LEGEND:

CONTRACTOR LAYDOWN AREA

CONSTRUCTION BOUNDARY

NOTES:

1. PROTECT EXISTING PATHWAY AND USERS IN ACCORDANCE WITH PROVINCIAL AND MUNICIPAL HEALTH AND SAFETY REGULATIONS

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SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
CIVIL
GENERAL
CONTRACTOR LAYDOWN AREA

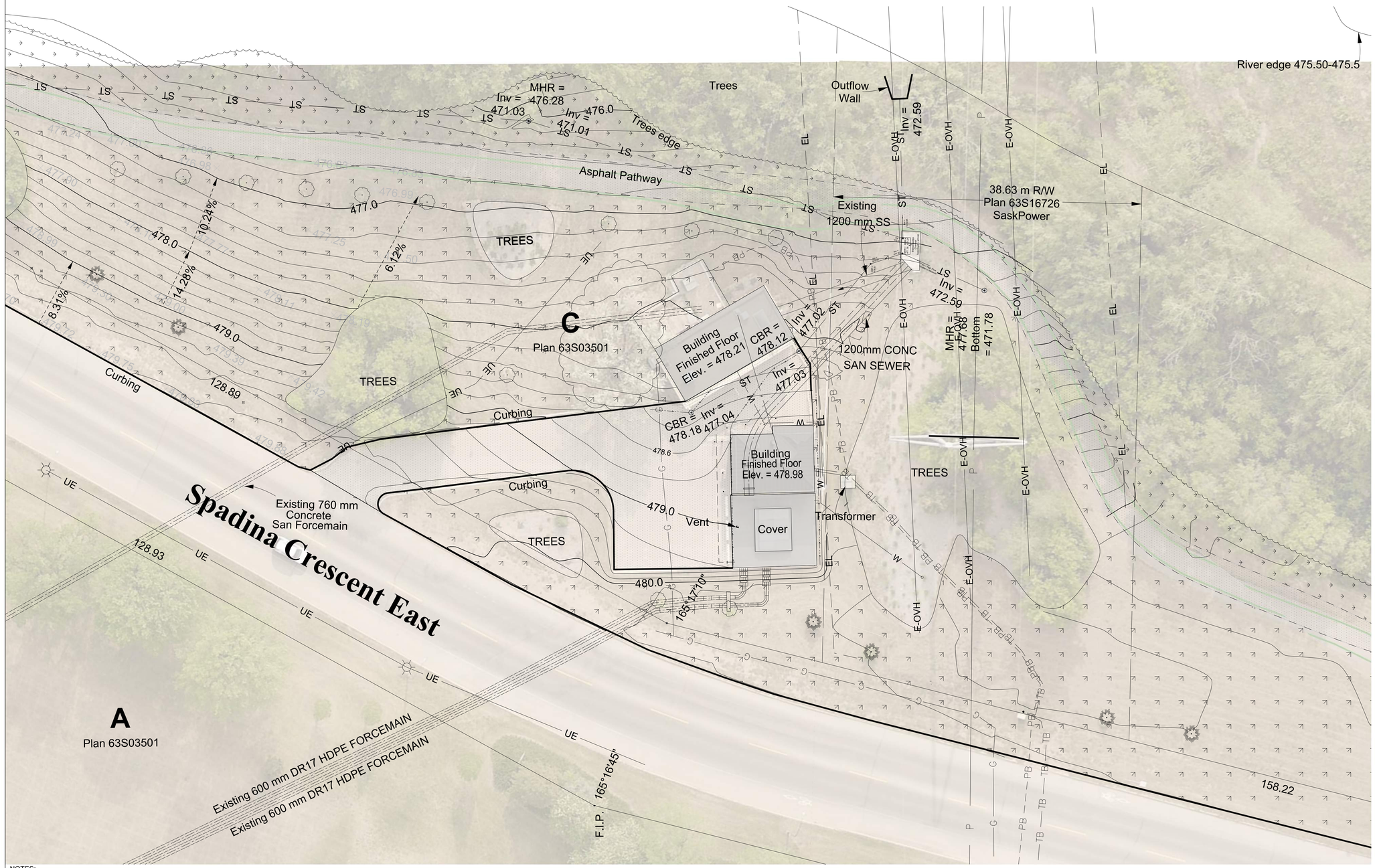
CONSULTANT DRAWING NO. 761-1916-101

SCALE: 1:250

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES:

1. CONTRACTOR SHALL VERIFY ALL EXISTING GRADES AND LOCATION/DEPTH OF UTILITIES PRIOR TO COMMENCING CONSTRUCTION.

	PLAN DESCRIPTION/REVISION	DATE	BY
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SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
CIVIL
PLAN
EXISTING UTILITIES AND GRADING

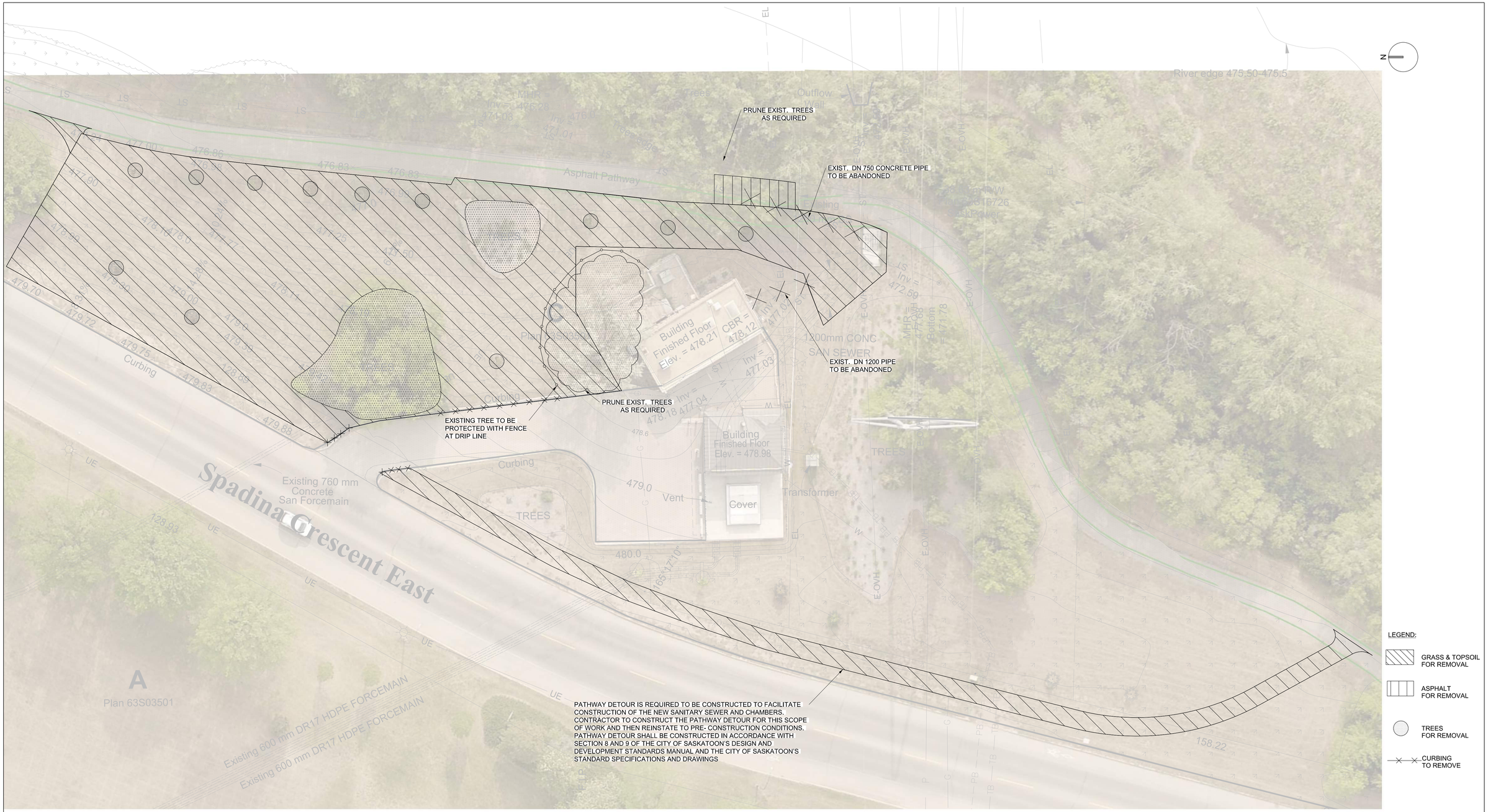
CONSULTANT DRAWING NO. 761-1916-102

SCALE: 1:250

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES:

1. SECTION OF EXISTING SANITARY SEWER THAT WILL BE ABANDONED SHALL BE FILLED WITH LOW. STRENGHT (3MPa) CONCRETE AFTER THE NEW LIFT STATION IS SUCCESSFULLY COMMISSIONED

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
CIVIL
PLAN
SITE CLEARANCE AND DEMOLITION

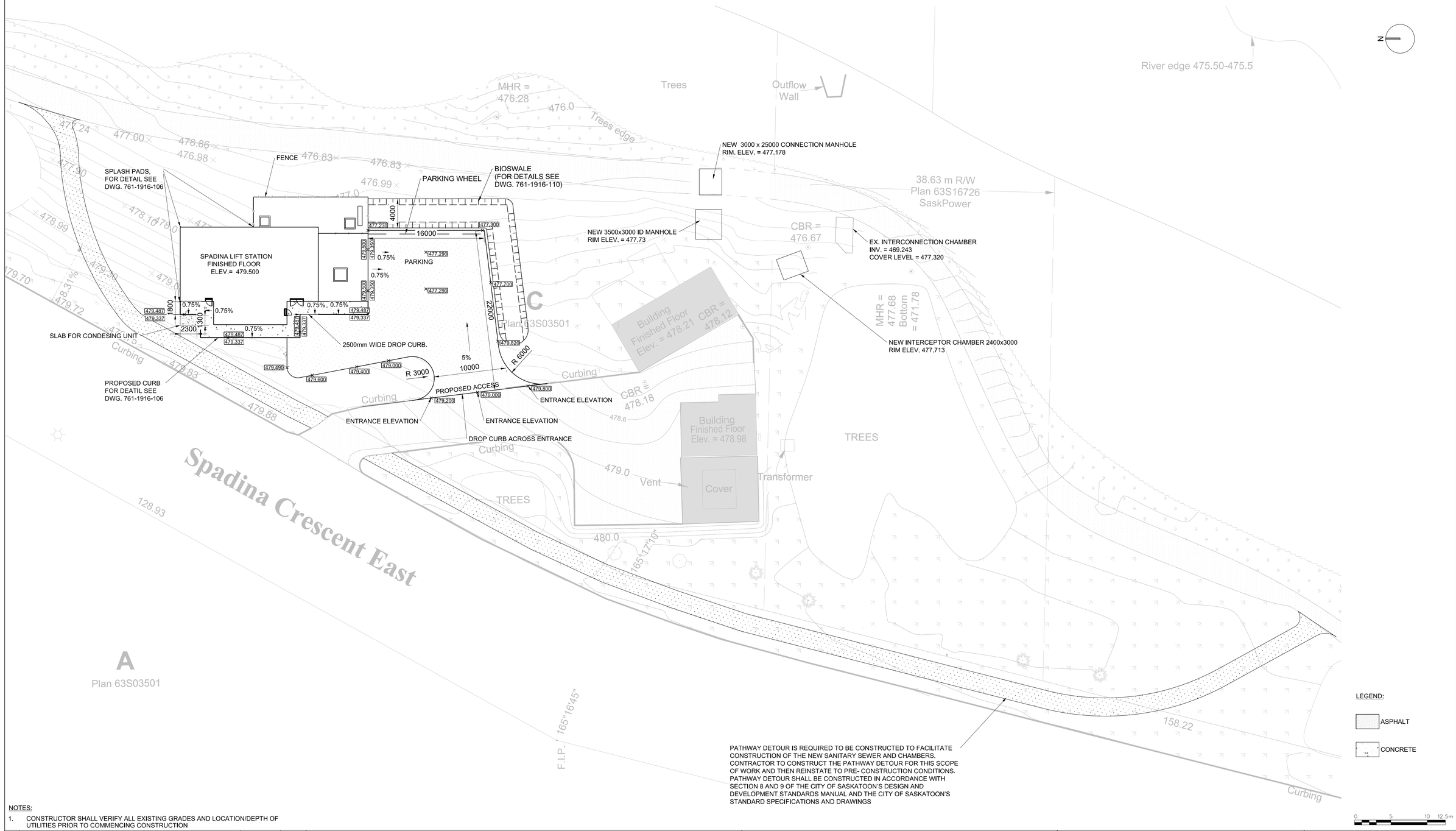
CONSULTANT DRAWING NO. 761-1916-103

SCALE: 1:250

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



PATHWAY DETOUR IS REQUIRED TO BE CONSTRUCTED TO FACILITATE CONSTRUCTION OF THE NEW SANITARY SEWER AND CHAMBERS. CONTRACTOR TO CONSTRUCT THE PATHWAY DETOUR FOR THIS SCOPE OF WORK AND THEN REINSTATE TO PRE- CONSTRUCTION CONDITIONS. PATHWAY DETOUR SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 8 AND 9 OF THE CITY OF SASKATOON'S DESIGN AND DEVELOPMENT STANDARDS MANUAL AND THE CITY OF SASKATOON'S STANDARD SPECIFICATIONS AND DRAWINGS

LEGEND:

ASPHALT

CONCRETE

0 5 10 12.5m

NOTES:

1. CONSTRUCTOR SHALL VERIFY ALL EXISTING GRADES AND LOCATION/DEPTH OF UTILITIES PRIOR TO COMMENCING CONSTRUCTION

	PLAN DESCRIPTION/REVISION	DATE	BY
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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

CIVIL
PLAN
SITE GRADING AND PAVING

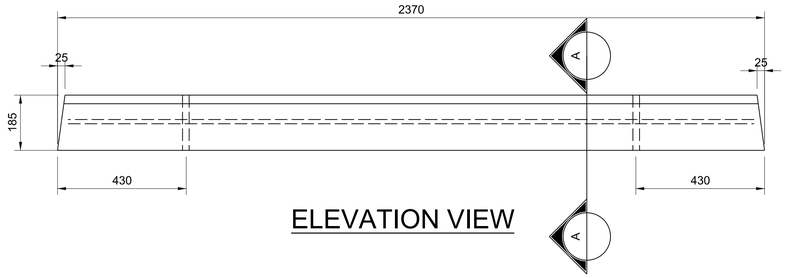
CONSULTANT DRAWING NO. 761-1916-105

SCALE: 1:250

COS FILE NO.

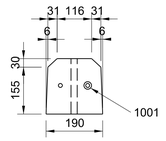
COS CONTRACT NO.

COS DRAWING NO.



ELEVATION VIEW

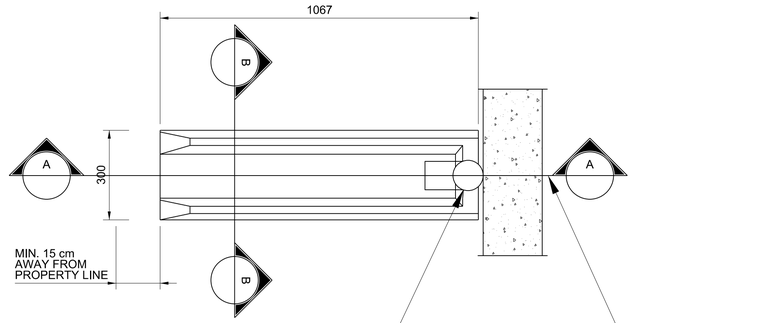
NOTE:
- CONCRETE, 35MPa
- MASS, 185 kg (410 lbs)
- 2 ANCHORING PINS INCLUDED (15M x 400 LG.)



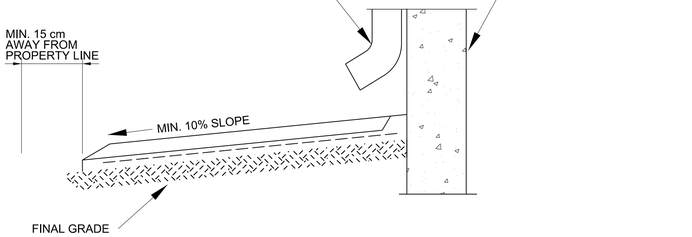
SECTION A-A

1 PRE-CAST PARKING WHEEL STOP

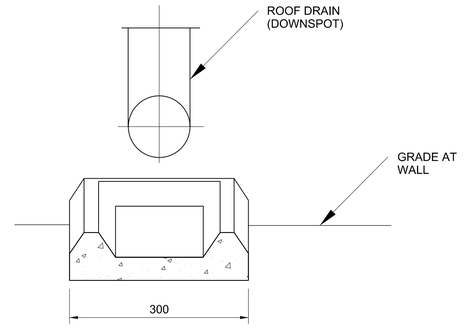
NTS



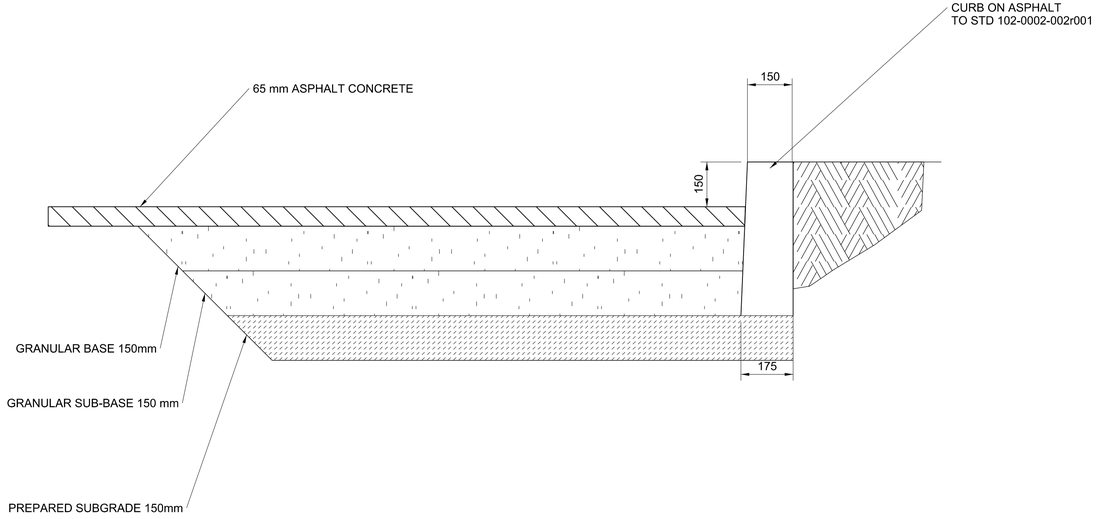
PLAN VIEW



SECTION A-A



SECTION B-B



2 CROSS SECTION PAVEMENT

NTS

3 1067 mm x 300 mm CONCRETE SPLASH PAD DETAIL

NTS

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1	30% DETAIL DESIGN	2021-01-29	MD	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
CIVIL
DETAILS
SITE GRADING AND PAVING

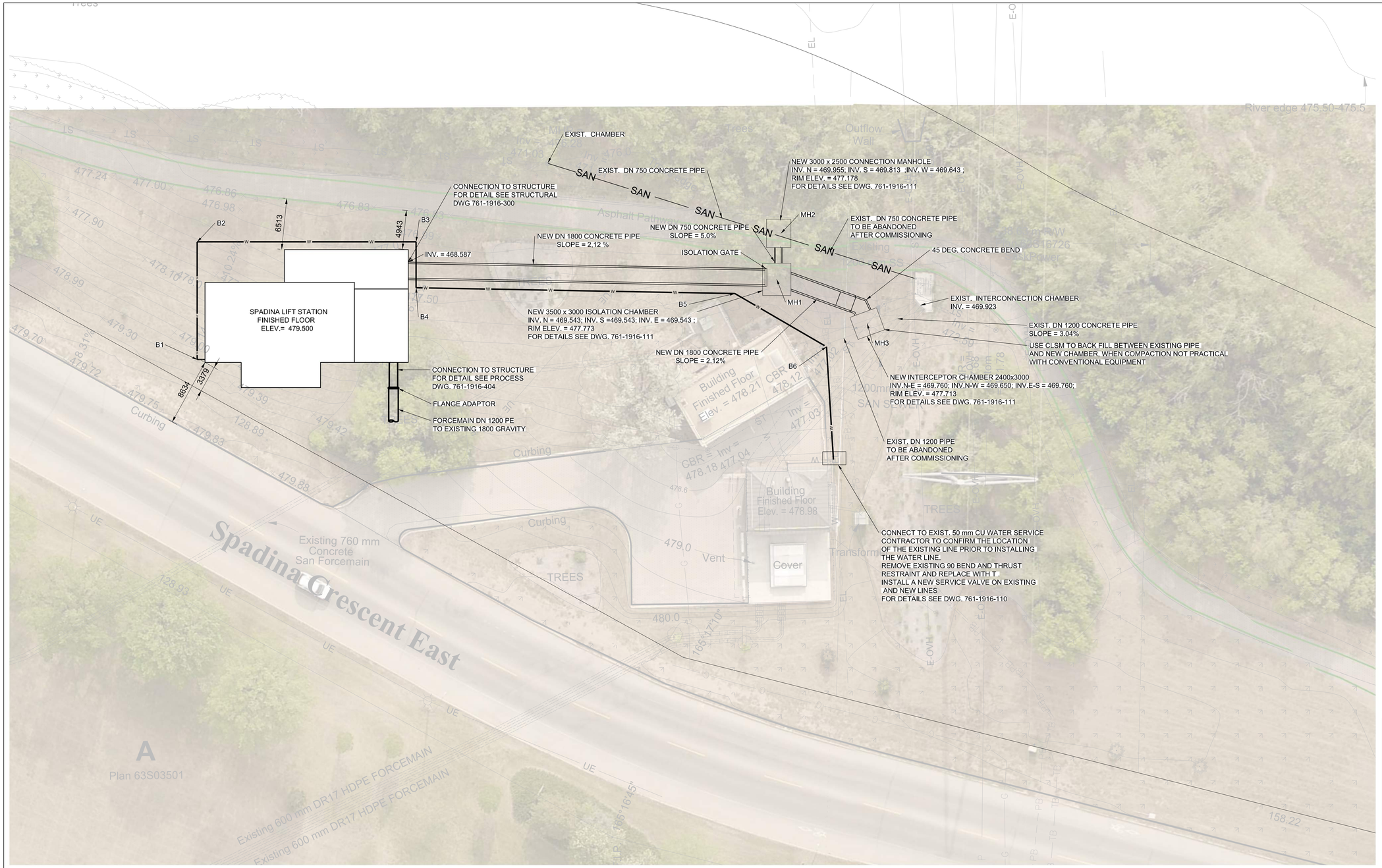
CONSULTANT DRAWING NO. 761-1916-106

SCALE: 1:250

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



POINTS COORDINATES

NO.	NORTHING	EASTING
MH1	5779146.3441	387983.9792
MH2	5779145.8231	387989.8219
MH3	5779134.8303	387978.3666
B1	5779220.0831	387973.7747
B2	5779220.0831	387988.7512
B3	5779192.2336	387988.7512
B4	5779192.2336	387982.9072
B5	5779151.6718	387982.1708
B6	5779140.0162	387975.4019

NOTE:
COORDINATES (MH1-MH3) ARE TO
THE CENTER OF MANHOLES

NOTES:

1. PROTECT EXISTING PATHWAY AND USERS IN ACCORDANCE WITH PROVINCIAL AND MUNICIPAL HEALTH AND SAFETY REGULATIONS
2. ABANDONED SECTIONS OF SANITARY SEWER SHALL BE FILLED WITH LOW STRENGHT (3 MPA) CONCRETE FOLLOWING COMMISSIONING OF THE LIFT STATION
3. RCP PIPE TO BE AS PER CSA A257.2 100D CLASS 1 INSTALLATION

LEGEND:

AREA OF SURVEY

0 5 10 12.5m

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2	30% DETAILED DESIGN	2021-01-29	MD
1	PRELIMINARY DESIGN	2020-12-04	MD
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
CIVIL
PLAN
YARD PIPING AND UTILITIES

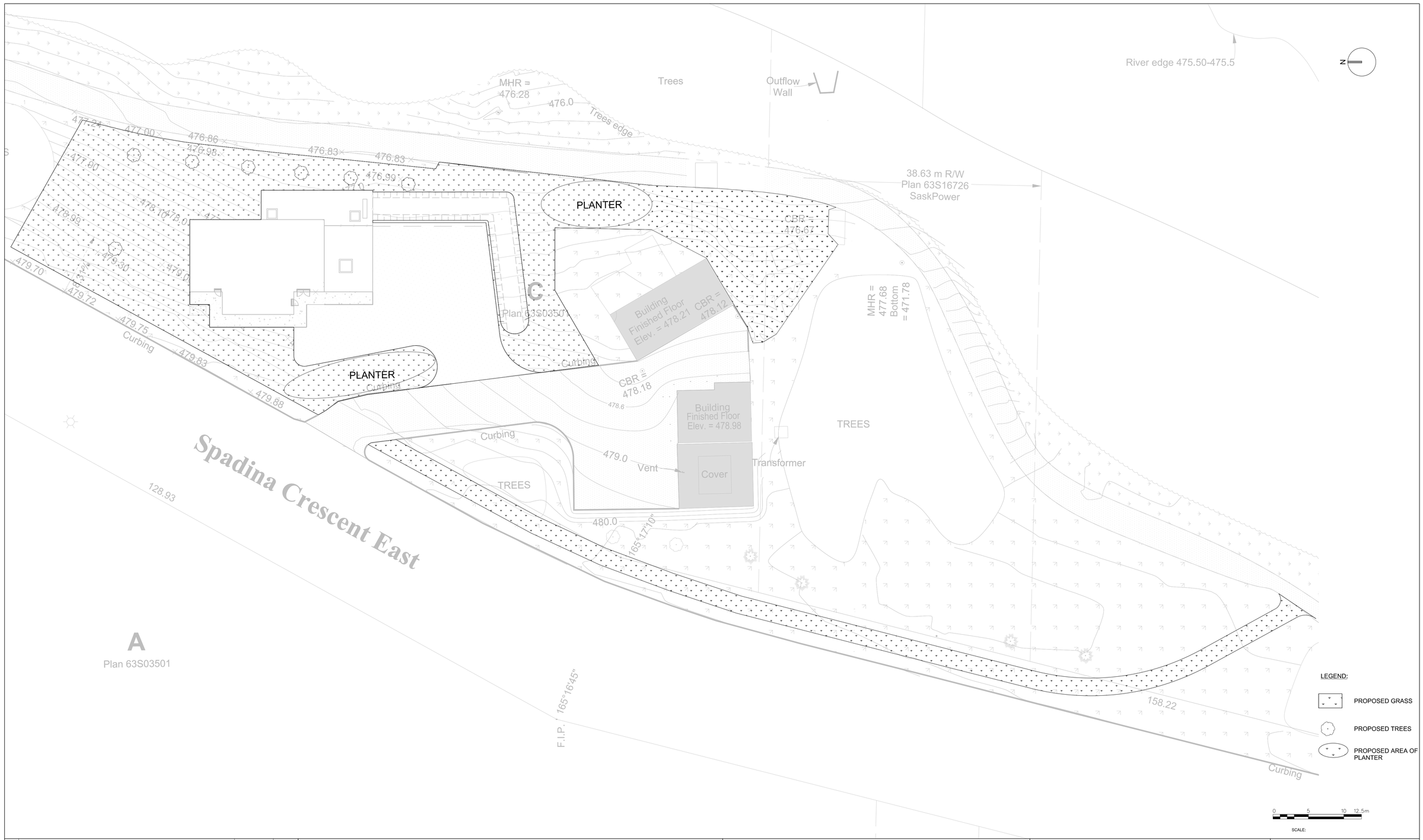
CONSULTANT DRAWING NO. 761-1916-107

SCALE: 1:250

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



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1	30% DETAILED DESIGN	2021-01-29	MD	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

CIVIL
PLAN
LANDSCAPING

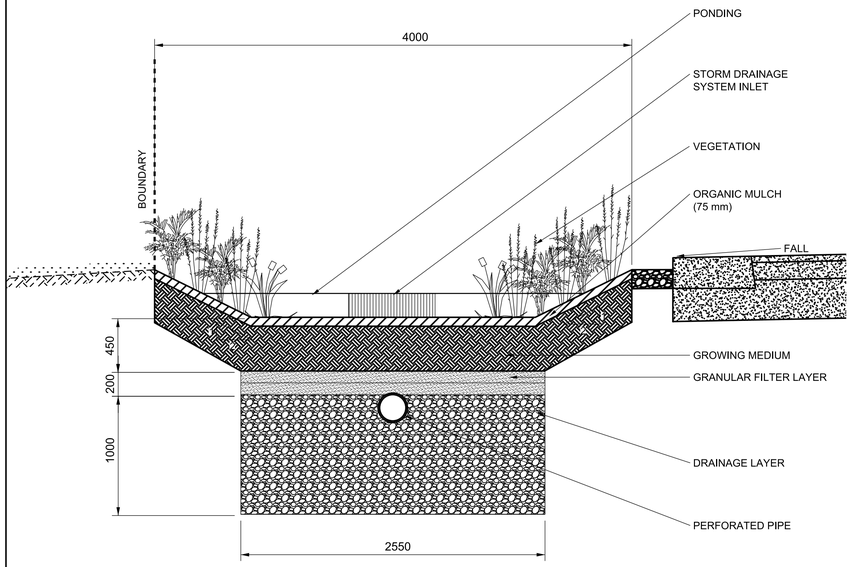
CONSULTANT DRAWING NO. 761-1916-108

SCALE: 1:250

COS FILE NO.

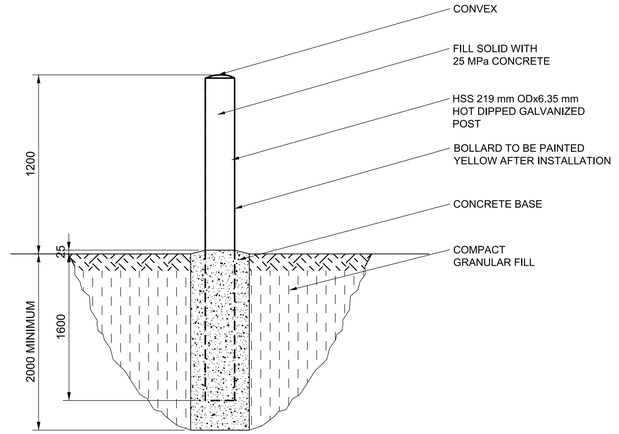
COS CONTRACT NO.

COS DRAWING NO.



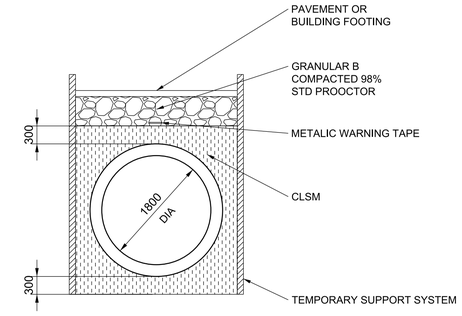
1 BIORETENTION SECTION PARKING LOT

1:25



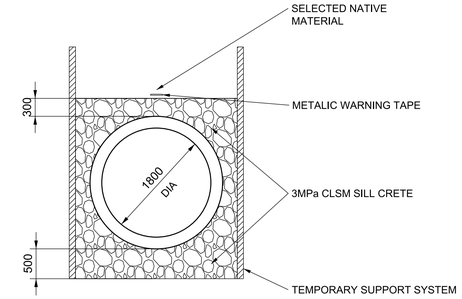
2 BOLLARD DETAIL

NTS



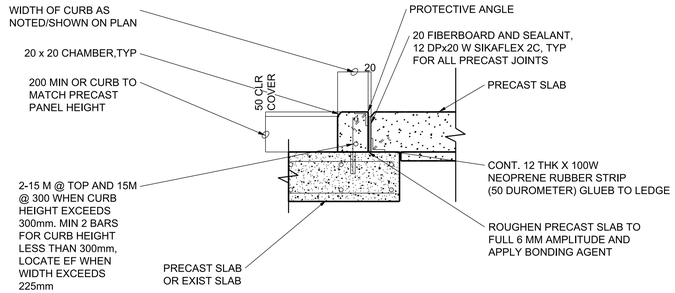
UNDER PAVEMENT TYP 1

NTS



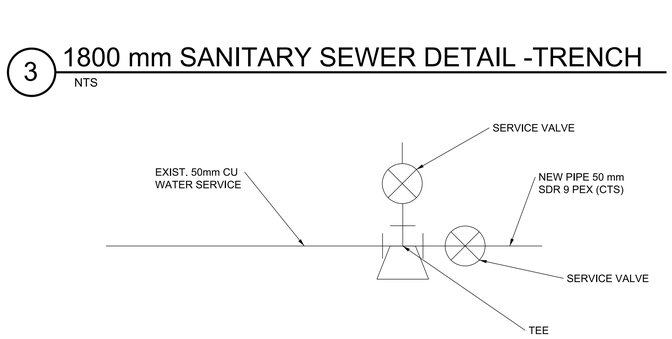
UNDER LANDSCAPE AREA TYP 2

NTS



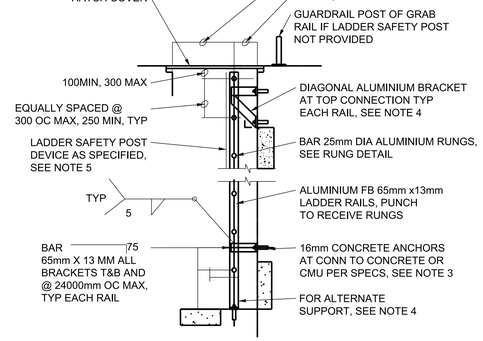
7 CAST IN PLACE CURB

NTS



4 CONNECTION TO EXIST. 50 mm WATER SERVICE

NTS



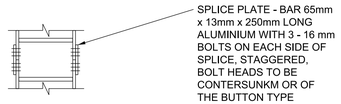
NOTES:

1. PROVIDE PROTECTION FOR ALUMINIUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.
2. AT CONTRACTOR'S OPTION, PRE ENGINEERED PIPE LADDER AS SPECIFIED MAY BE USED IN LIEU OF FLAT BAR LADDERS.
3. PROVIDE SST CONCRETE ANCHORS LOCATED BELOW MAXIMUM WATER SURFACE.
4. FOR INTERIOR, DRY AREAS, EXTEND, RAILS AND BEND 3" AT FLOOR. SECURE WITH 5/8" CONCRETE ANCHORS. DIAGONAL ALUMINIUM BRACKET NOT REQUIRED IF ALTERNATE SUPPORT PROVIDED.
5. FOR TYPE "A" PROVIDE LADDER SAFETY POST

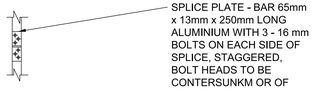
5 ALUMINIUM LADER

NTS

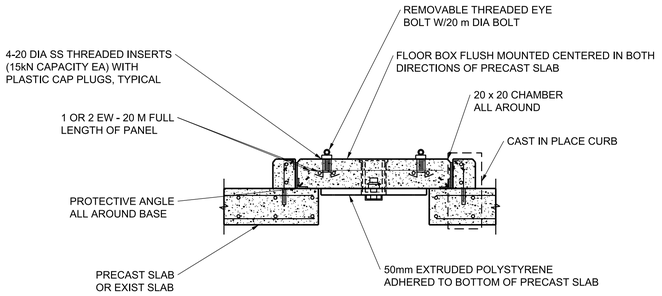
RUNG DETAIL



FRONT ELEVATION



SIDE ELEVATION



6 PRE-CAST SLAB

NTS

NOTES:

1. SST SEALED FLOOR BOX TO BE CONTRACTOR SUPPLIED AND SHALL BE TRUMBULL MODEL 367-4621 OR ACCEPTED EQUAL. LID TO C/W VALVE TAG.
2. OVERSIZE PRECAST SLAB TO ALLOW FOR FIELD LOCATION OF SLAB.
3. CENTER PRECAST PANEL OVER PLANETARY GEAR.

3 1800 mm SANITARY SEWER DETAIL -TRENCH

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1	30% DETAILED DESIGN	2021-01-29	MD
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

CIVIL
DETAILS
MISCELLANEOUS DETAILS (1)

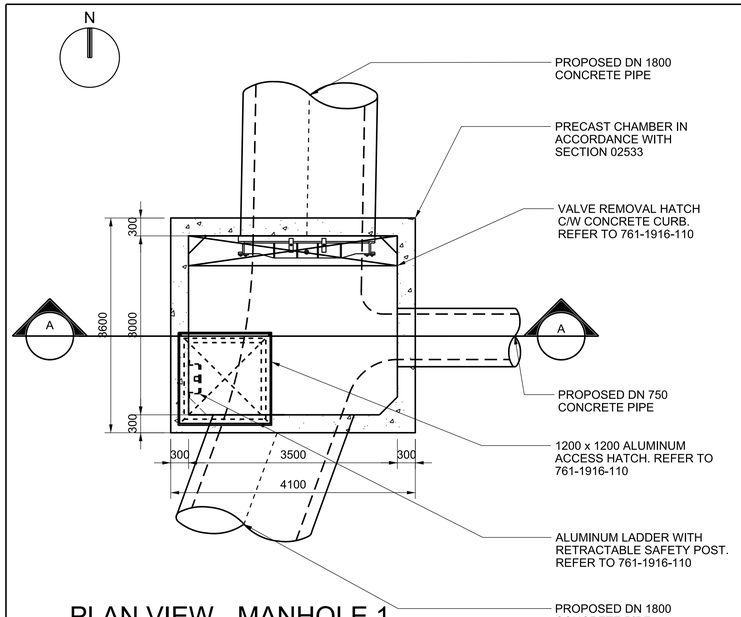
CONSULTANT DRAWING NO. 761-1916-110

SCALE: NTS

COS FILE NO.

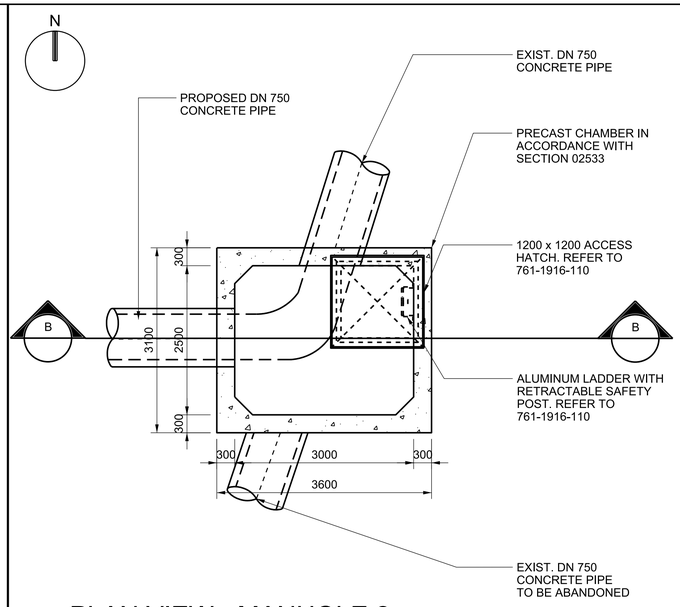
COS CONTRACT NO.

COS DRAWING NO.



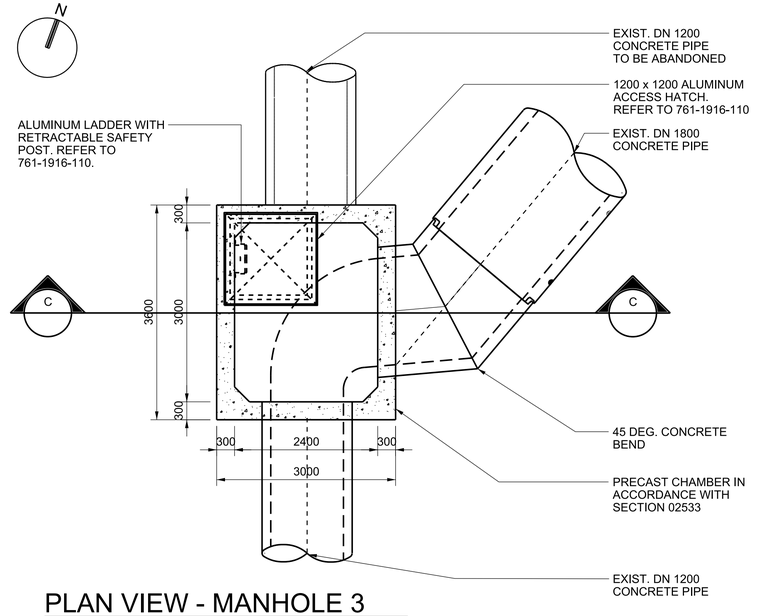
PLAN VIEW - MANHOLE 1

NTS



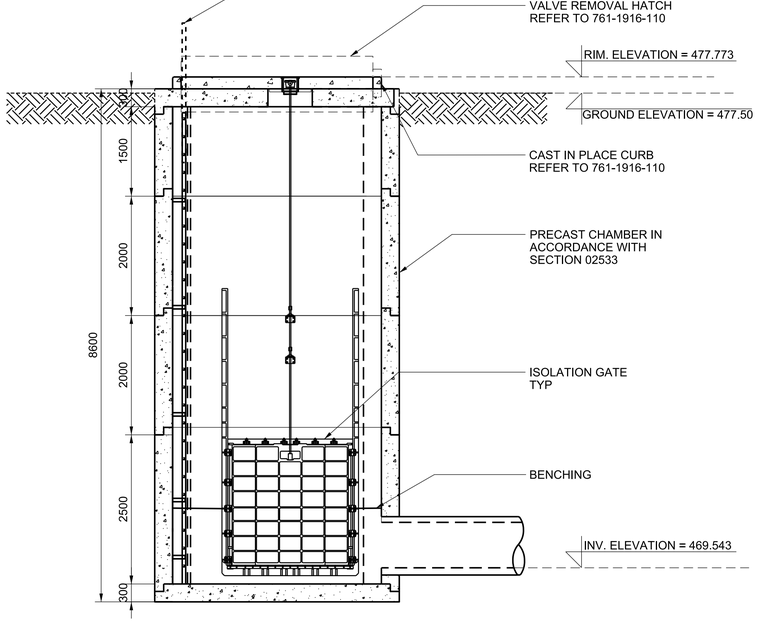
PLAN VIEW - MANHOLE 2

NTS



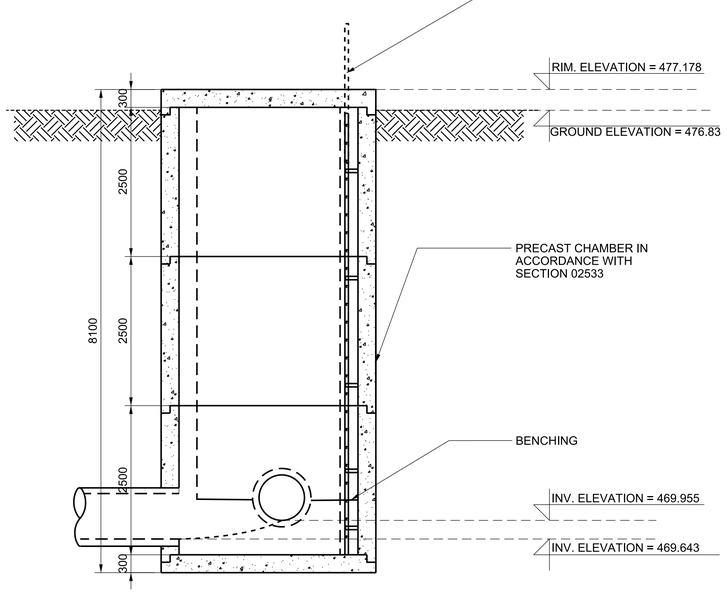
PLAN VIEW - MANHOLE 3

NTS



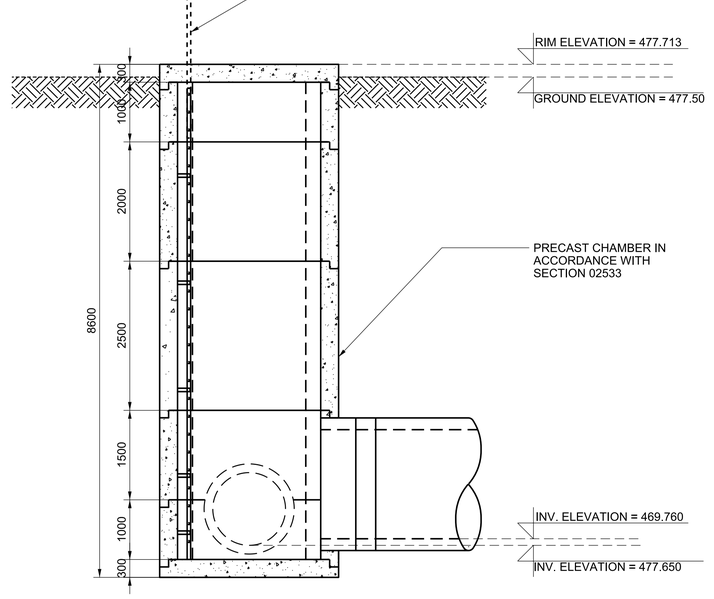
A SECTION A-A

NTS



B SECTION B-B

NTS



C SECTION C-C

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1	30% DETAILED DESIGN	2021-01-29	MD
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

CIVIL
DETAILS
MISCELLANEOUS DETAILS (2)

CONSULTANT DRAWING NO. 761-1916-111

SCALE: NTS

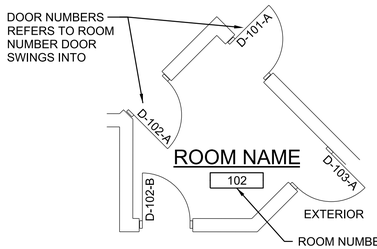
COS FILE NO.

COS CONTRACT NO.

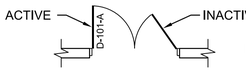
COS DRAWING NO.

ARCHITECTURAL LEGEND

ROOM NAME & NUMBER

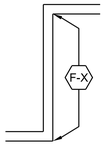


ROOM NUMBER AND DOOR NUMBER INDICATORS (AS SHOWN IN PLAN)



INDICATES PAIR OF DOORS

WALL TYPE INDICATOR

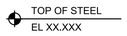


FINISH TYPE INDICATOR
FINISH TYPE 'X' AS LISTED
ARROWS INDICATE EXTENT OF FINISH

FINISH INDICATOR IS USED TO DENOTE EXTENT OF ACCENT FINISHES OR DISTINGUISH MULTIPLE FINISHES WITHIN ONE SPACE.
REFER TO ROOM FINISHE SCHEDULE FOR ALL ROOM FINISHES

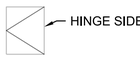
⊗ 110.500

SPOT ELEVATION INDICATOR (IN METERS)

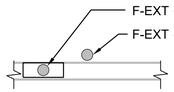


ELEVATION DATUM (IN METERS)

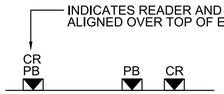
DIRECTION OF SLOPE DOWN



HATCH SWING INDICATOR

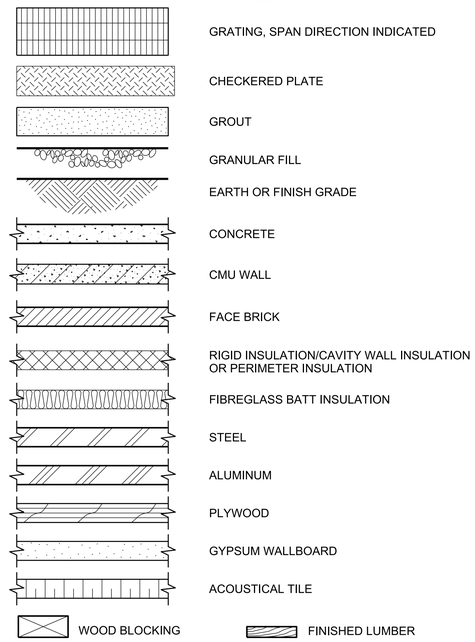


FIRE EXTINGUISHERS

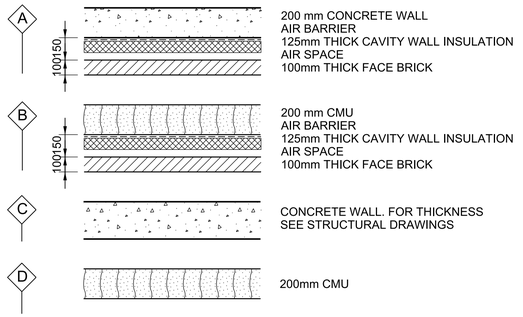


CARD-ACCESS READER (CR)
OR
AUTOMATIC PUSH BUTTON (PB)

ARCHITECTURAL MATERIAL SYMBOLS



WALL TYPES LEGEND



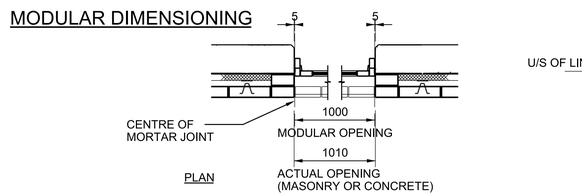
ROOF TYPES LEGEND

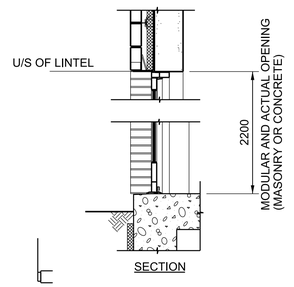
R1 PERFORMED METAL ROOFING ASSEMBLY:
- METAL ROOFING PANELS
- UNDERLAYMENT
- 150mm THICK MINERAL WOOL INSULATION
- VAPOUR RETARDANT
- PLYWOOD DECK SHEATHING
- STRUCT STEEL DECK

GENERAL ARCHITECTURAL NOTES

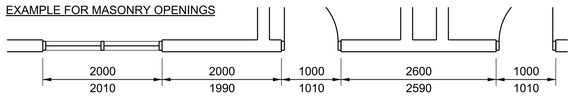
1. DIMENSIONS, ELEVATIONS AND DETAILS OF EXISTING BUILDING(S) OR STRUCTURES ARE PROVIDED BY OTHERS. VERIFY ALL INFORMATION ON SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. DO NOT MEASURE OR SCALE DRAWINGS.
3. FOR LOCATION OF EQUIPMENT BASES , SEE BUILDING SERVICES , ELECTRICAL , PROCESS AND STRUCTURAL DRAWINGS. CARRY FLOOR FINISHES UP AND OVER EQUIPMENT BASES TO SUIT EQUIPMENT SUPPLIED.
4. FOR LOCATION OF ADDITIONAL ROOF PENETRATIONS (SUCH AS VENTS CONDUITS ETC.) SEE BUILDING SERVICES , ELECTRICAL , PROCESS DRAWINGS AND SPECIFICATIONS.
5. REFER TO BUILDING SERVICES , ELECTRICAL AND PROCESS DRAWINGS FOR ADDITIONAL PENETRATIONS IN MASONRY WALLS. PROVIDE LINTELS OVER ALL OPENINGS AS DETAILED. DESIGN LINTELS AS PER REQUIREMENT OF THE NATIONAL BUILDING CODE (2010).
6. ALL STEEL LINTELS AND/OR BENT PLATES ARE TO BE HOT DIPPED GALVANIZED, UNLESS NOTED OTHERWISE, WITH MINIMUM 200 mm BEARING AT EACH END. PROVIDE BOND BREAKER ON FULL BEARING SURFACE UNDER LOOSE LINTELS.
7. PROVIDE INSULATED ALUMINUM BLANK OFF PANELS BEHIND UNUSED PORTIONS OF LOUVERS (SEE HVAC AND LOUVER SCHEDULES FOR EXTENT AND LOCATION)
8. UNLESS OTHERWISE INDICATED, PLAN DIMENSIONS ARE TO COLUMN GRID ON CENTERLINES, NOMINAL SURFACE OF MASONRY, FACE OF STUDS AND FACE OF CONCRETE WALLS.
9. "FLOOR LINE" REFERS TO TOP OF CONCRETE SLABS. FINISH FLOORING IS INSTALLED ABOVE THE FLOOR LINE. FOR DEPRESSED FLOORS AND CURBS, SEE STRUCTURAL DRAWINGS.
10. REPETITIVE FEATURES ARE NOT DRAWN IN THEIR ENTIRETY AND SHALL BE COMPLETELY PROVIDED AS IF DRAWN IN FULL.
11. WHERE DOOR IS LOCATED NEAR CORNER OF ROOM AND IS NOT LOCATED BY DIMENSION ON PLAN OR DETAILS, LOCATE 150 mm FROM FACE OF WALL TO EDGE OF ROUGH OPENING AT CONCRETE WALLS, AND 200 mm AT MASONRY WALLS.
12. LINE OF EXISTING GRADES, AS SHOWN ON THE BUILDING ELEVATIONS AND SECTIONS ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE, OR ON THE SECTION END EXCEPT AS NOTED.
13. VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT PROVIDED IN THIS CONTRACT, OR BY OTHERS.
14. DOORS ILLUSTRATED IN BUILDING SECTION AND INTERIOR ELEVATIONS ARE SHOWN IN GENERAL. REFER TO DOOR AND HARDWARE SCHEDULE FOR DOOR TYPE, GLAZING, AND HARDWARE.
15. FOR ABBREVIATIONS, SEE GENERAL ABBREVIATION DRAWING.
16. FOR BELOW GRADE WATERPROOFING, SEE STRUCTURAL AND ARCHITECTURAL DRAWINGS.

MODULAR DIMENSIONING





EXAMPLE FOR MASONRY OPENINGS



MODULAR DIMENSIONING PHILOSOPHY

UNLESS OTHERWISE NOTED:
ALL DIMENSIONS ON DRAWINGS ARE INDICATED AS MODULAR.

EXAMPLE:
FOR HORIZONTAL OPENINGS, IF AN OPENING IS DIMENSIONED AS 1000, THE ACTUAL OPENING IS 1010, TO COMPENSATE FOR ADDITIONAL 10mm MORTAR JOINT. THE CONCRETE OPENING WOULD ALSO BE 1010.

VERTICAL OPENINGS FOR CMU OR CONCRETE (MODULAR AND ACTUAL) ARE SIMILAR, THAT IS, A MODULAR OPENING OF 2200 IS ACTUALLY 2200.

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1	30% DETAILED DESIGN	2021-01-29	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ARCHITECTURAL
GENERAL
LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

CONSULTANT DRAWING NO. 761-1916-200

SCALE: AS SHOWN

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

NATIONAL BUILDING CODE MATRIX (2015)

SPADINA LIFT STATION
PUMPING STATION & CONTROL BUILDING

ITEM			NBC REFERENCE (REFERENCES ARE TO DIVISION B UNLESS NOTED [A] FOR DIVISION A OR [C] FOR DIVISON C
1.	PROJECT DESCRIPTION:	☒ NEW ☐ ADDITION ☐ ALTERATION ☐ CHANGE OF USE ☒ PART 3, 1.3.3.1–.3 [A] ☐ PART 11, 11.1 – 11.4	
2.	MAJOR OCCUPANCY(S):	GROUP F, DIVISION 3, LOW HAZARD INDUSTRIAL	3.1.2.1.(1)

3. BUILDING AREA:	EXISTING	NEW	TOTAL		1.1.3.2
AREA –	220	220	220	SQ.M.	

4. GROSS AREA:	EXISTING	NEW	TOTAL		1.1.3.2
BASEMENT 1 –	220	220	220	SQ.M.	
BASEMENT 2 –	220	220	220	SQ.M.	
MAIN –	220	220	220	SQ.M.	
TOTAL	660	660	660	SQ.M.	

5. NUMBER OF STOREYS: ABOVE GRADE: ONE BELOW GRADE: TWO 3.2.1.1 & 1.4.1.2 [A]

6. NUMBER OF STREETS/FIRE FIGHTER ACCESS: ONE 3.2.2.10 & 3.2.5

7. BUILDING CLASSIFICATION: GROUP F DIVISION 3 3.2.2.83

8. SPRINKLER SYSTEM PROPOSED: ☐ ENTIRE BUILDING ☐ BASEMENT ONLY ☐ IN LIEU OF ROOF RATING ☒ NOT REQUIRED — 3.2.2.83

9. STANDPIPE: PROVIDED: ☐ YES ☒ NO — 3.2.5.8

10. FIRE ALARM REQUIRED: ☐ YES ☒ NO PROVIDED: ☐ YES ☒ NO — 3.2.4

11. WATER SERVICE/ SUPPLY IS ADEQUATE: ☐ YES ☐ NO N/A — 3.2.5.7

12. HIGH BUILDING: ☐ YES ☒ NO — 3.2.6

13. PERMITTED CONST.: ☐ COMBUSTIBLE ☐ NON–COMBUSTIBLE ☒ BOTH — 3.2.2.83
ACTUAL CONSTRUCTION: ☐ COMBUSTIBLE ☒ NON–COMBUSTIBLE ☐ BOTH

14. MEZZANINE(S) AREA: N/A SQ.M. 3.2.1.1(3)–(8)

15. OCCUPANT LOAD BASED ON: ☐ SQ.M./PERSON ☒ BUILDING DESIGN 3.1.17
(OCCASIONAL VISITS BY OPERATIONS AND MAINTENANCE STAFF 4 PERSONS MAX.)

16. BARRIER–FREE DESIGN: ☐ YES ☒ NO 3.8.2.1
(DUE TO HAZARDOUS SUBSTANCE AND OPERATION CARRIED OUT IN THE FACILITY. COMPLIANCE WITH THE REQUIREMENTS OF SECTION 3.8 IS IMPRACTICABLE)

17. HAZARDOUS SUBSTANCES: ☐ YES ☒ NO 3.3.1.2 & 3.3.1.20

18. REQUIRED FIRE RESISTANCE RATINGS (FRR): 3.2.2.83 & 3.2.1.4

		FRR (HRS)	NBC REF.			FRR (HRS)	NBC REF.
HORIZONTAL ASSEMBLIES	FLOORS	NOT REQD.	3.2.2.83 (NON–COMBUSTIBLE)	SUPPORTING ASSEMBLIES	FLOORS	NOT REQD.	3.2.2.83 (NON–COMBUSTIBLE)
	ROOF	NOT REQD.	3.2.2.83 (NON–COMBUSTIBLE)		ROOF	NOT REQD.	3.2.2.83 (NON–COMBUSTIBLE)
	MEZZ.	NOT REQD.	3.2.2.83 (NON–COMBUSTIBLE)		MEZZ.	NOT REQD.	3.2.2.83 (NON–COMBUSTIBLE)

19. SPATIAL SEPARATION – CONSTRUCTION OF EXTERIOR WALLS: 3.2.3

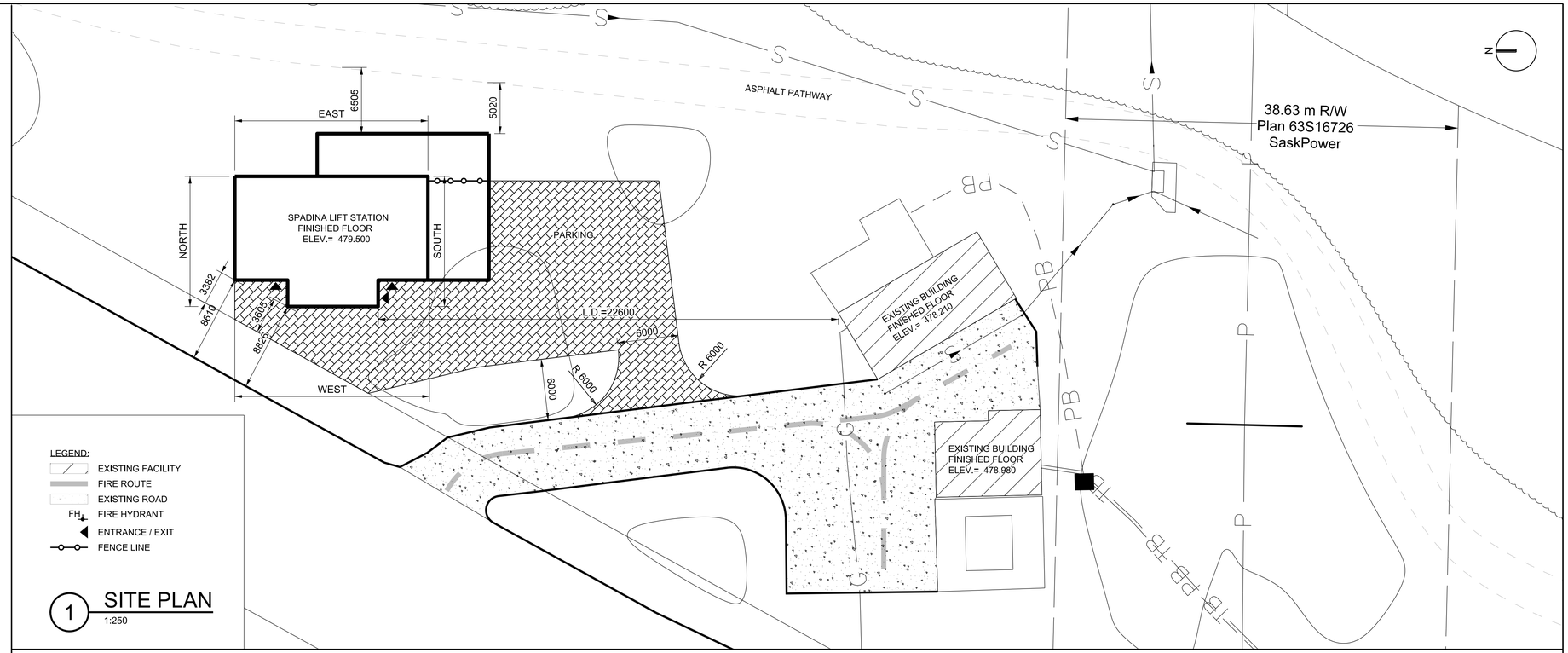
	EBF AREA (SQ.M.)	LD (M)	L/H OR H/L	PERMITTED MAX% OF OPNGS	PROPOSED % OF OPNGS	FRR (HRS)	FRR PROVIDED (HRS)	CONSTR. TYPE	CLADDING TYPE
NORTH	N/A	N/A	3:1–10:1		N/A			NON–COMB.	
SOUTH	N/A	22.6	3:1–10:1		20.4			NON–COMB.	
EAST	N/A	N/A	3:1–10:1		17.6			NON–COMB.	
WEST	N/A	N/A	3:1–10:1		13.4			NON–COMB.	

20. FIRE RATED SEPARATIONS:

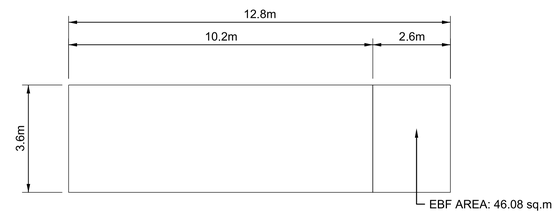
AREA	FIRE SEPARATION REQUIRED (HRS)	NBC REF.	AREA	FIRE SEPARATION REQUIRED (HRS)	NBC REF.
STAIRS	1HR	3.4.4.1	GEN ROOM	2HR	3.6.2.8
ELECT ROOM	1HR	3.6.2.1			
MECH ROOM	1HR	3.6.2.1			

21. FIRE WALL SEPARATION: 3.1.10.1 & 3.1.10.2

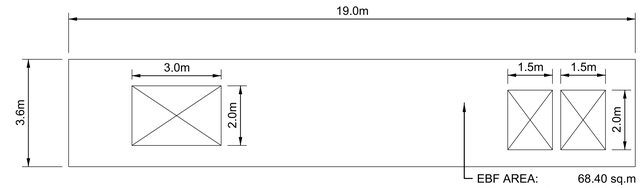
22. POST–DISASTER: ☒ YES ☐ NO 1.4.1.2



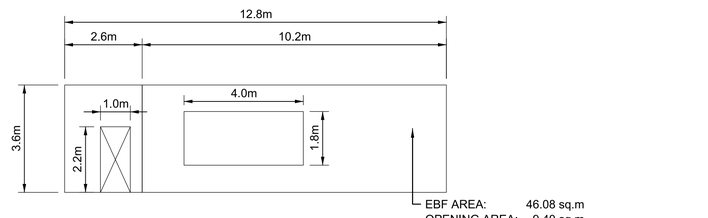
1 SITE PLAN
1:250



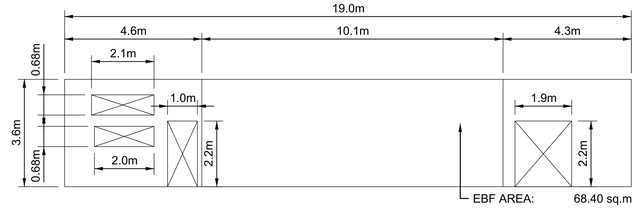
2 EBF NORTH ELEVATION
1:100



3 EBF EAST ELEVATION
1:100



4 EBF SOUTH ELEVATION
1:100



5 EBF WEST ELEVATION
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2	30% DETAILED DESIGN	2021-01-29	FS
1	PRELIMINARY DESIGN	2020-12-04	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

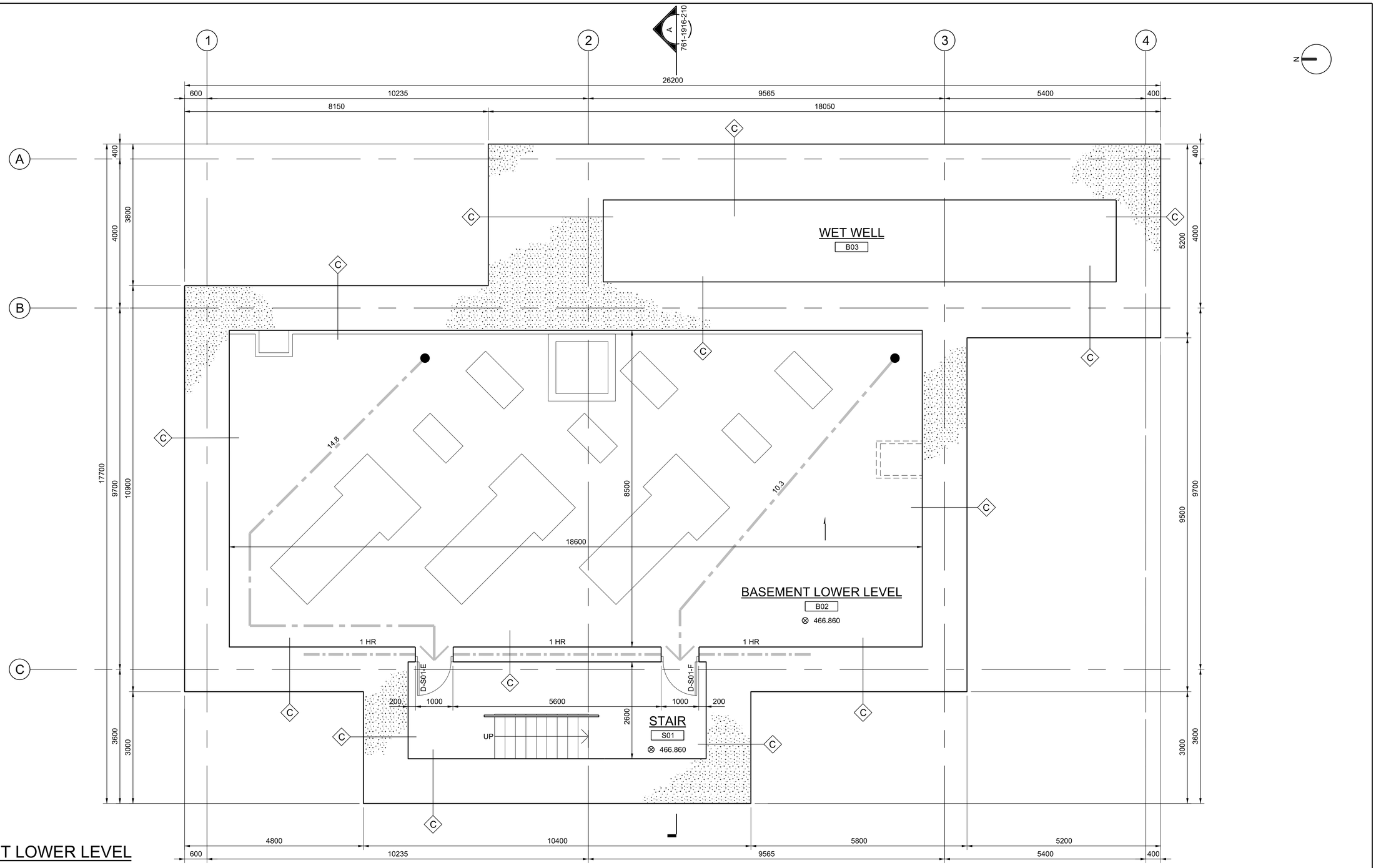
Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ARCHITECTURAL
PLAN
BUILDING CODE ANALYSIS, SITE PLAN AND EBF AREA

CONSULTANT DRAWING NO. 761-1916-203

SCALE: AS SHOWN
COS FILE NO.
COS CONTRACT NO.
COS DRAWING NO.



BASEMENT LOWER LEVEL

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2	30% DETAILED DESIGN	2021-01-29	FS	
1	PRELIMINARY DESIGN	2020-12-04	FS	
	PLAN DESCRIPTION/REVISION	DATE	BY	

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL
PLAN
BASEMENT LOWER LEVEL

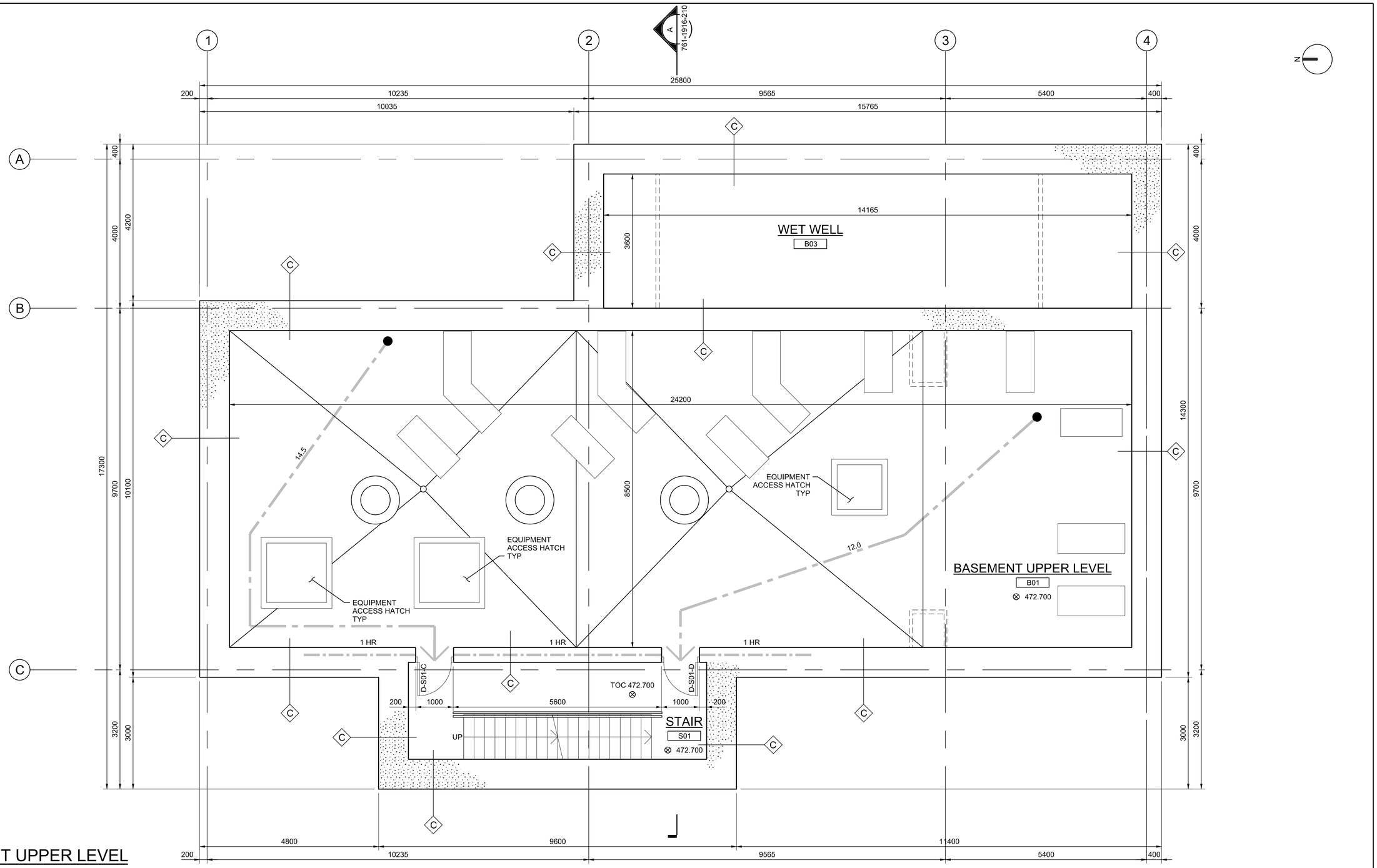
CONSULTANT DRAWING NO. 761-1916-204

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



BASEMENT UPPER LEVEL

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2	30% DETAILED DESIGN	2021-01-29	FS
1	PRELIMINARY DESIGN	2020-12-04	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ARCHITECTURAL
PLAN
BASEMENT UPPER LEVEL

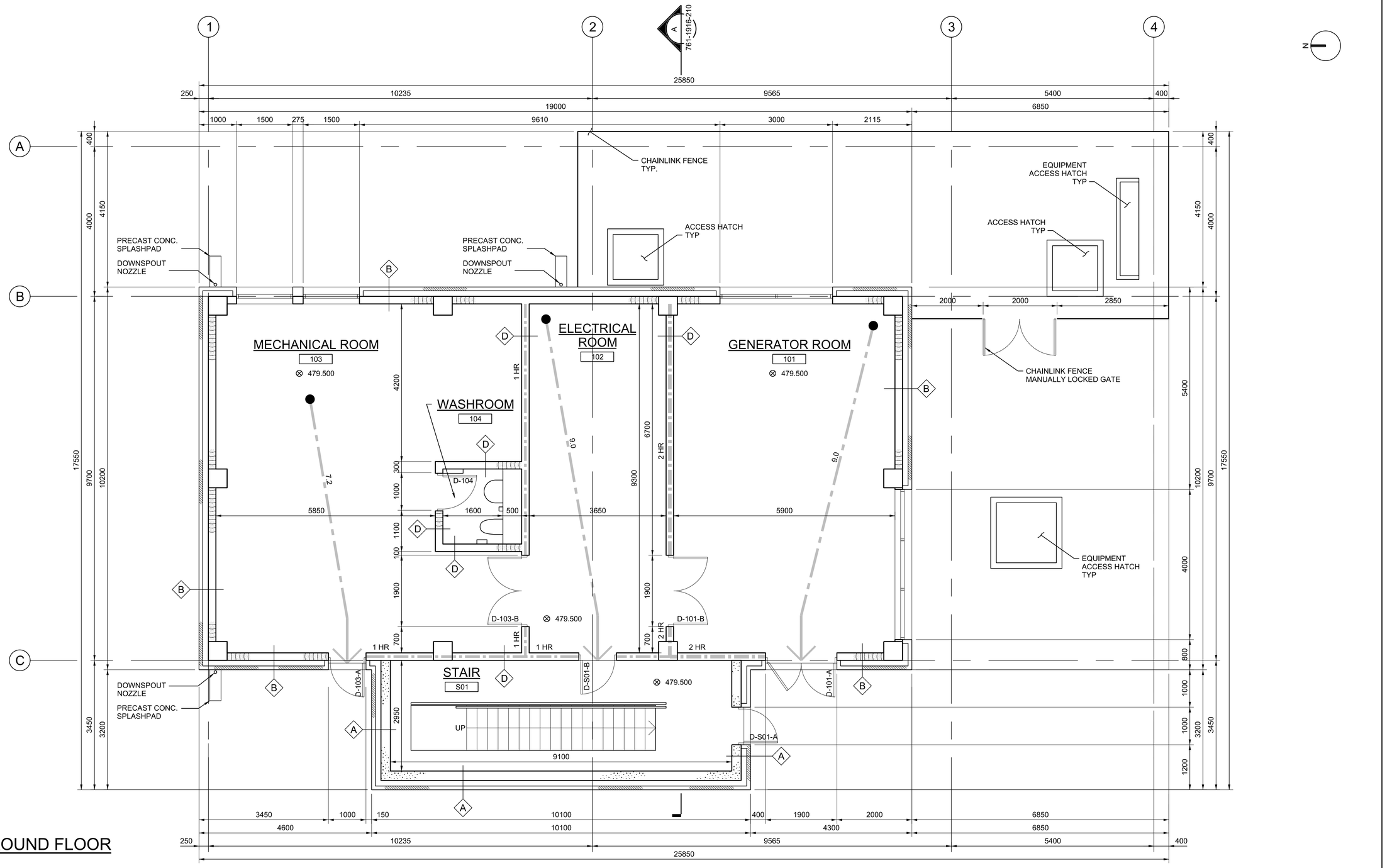
CONSULTANT DRAWING NO. 761-1916-205

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



GROUND FLOOR
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2	30% DETAILED DESIGN	2021-01-29	FS
1	PRELIMINARY DESIGN	2020-12-04	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ARCHITECTURAL
PLAN
GROUND FLOOR

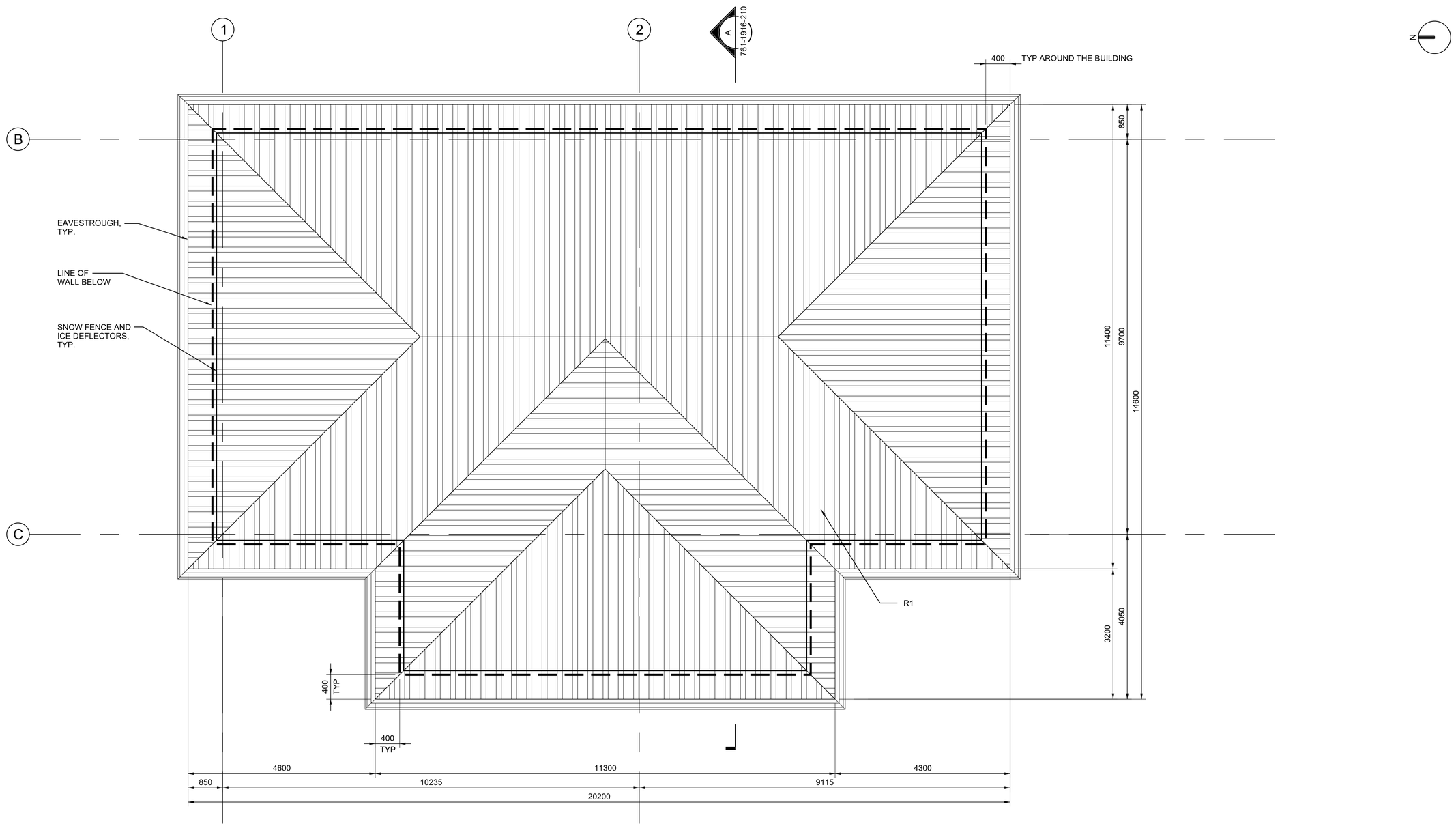
CONSULTANT DRAWING NO. 761-1916-206

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



ROOF

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2	30% DETAILED DESIGN	2021-01-29	FS
1	PRELIMINARY DESIGN	2020-12-04	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ARCHITECTURAL
PLAN
ROOF

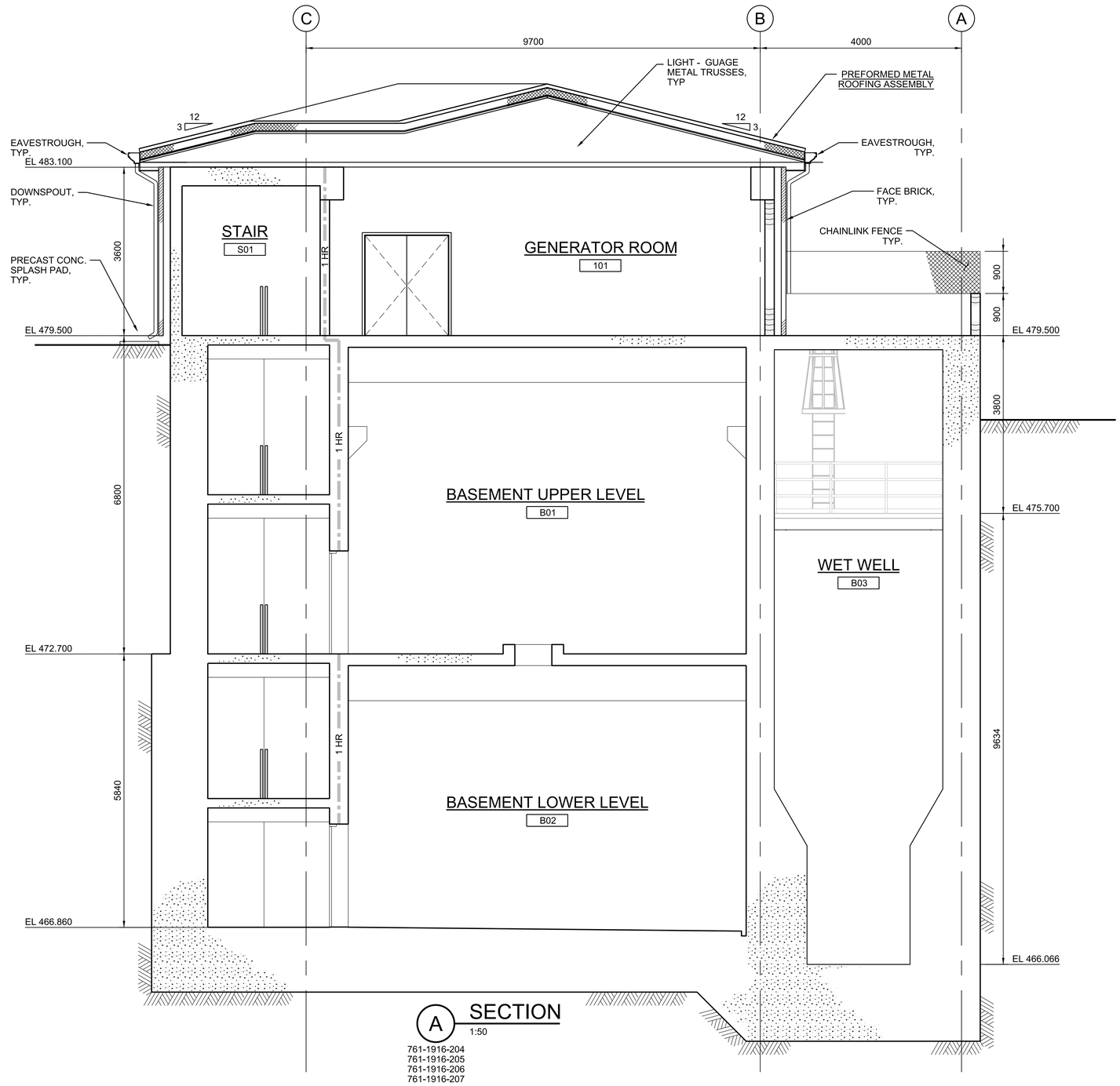
CONSULTANT DRAWING NO. 761-1916-207

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



A SECTION
1:50

761-1916-204
761-1916-205
761-1916-206
761-1916-207

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2	30% DETAILED DESIGN	2021-01-29	FS	
1	PRELIMINARY DESIGN	2020-12-04	FS	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL
SECTION
BUILDING SECTIONS

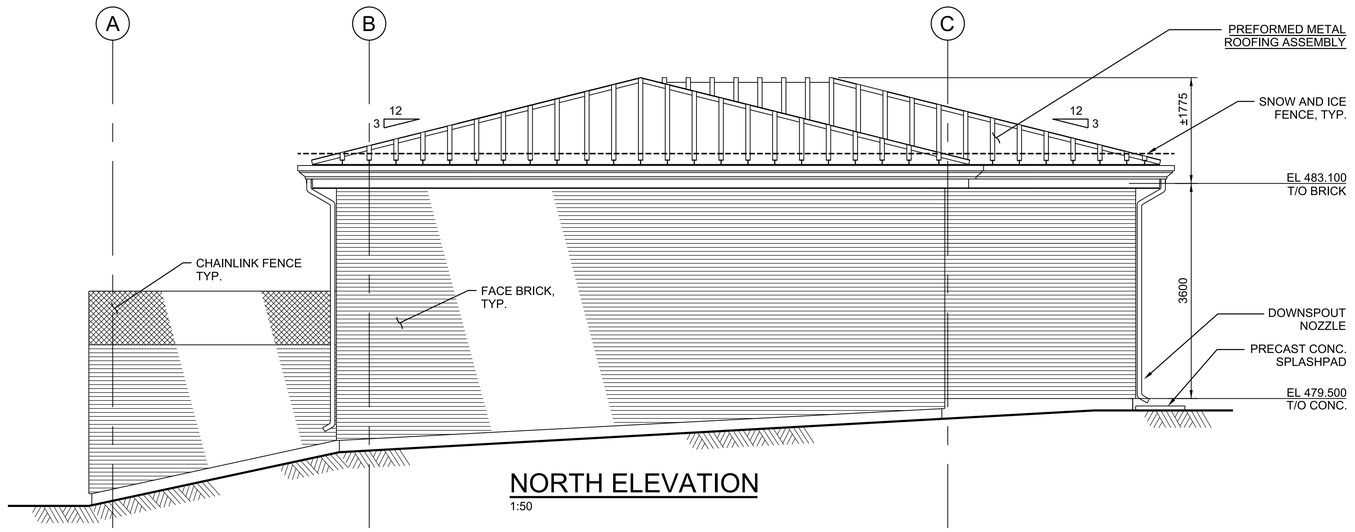
CONSULTANT DRAWING NO. 761-1916-210

SCALE: 1:50

COS FILE NO.

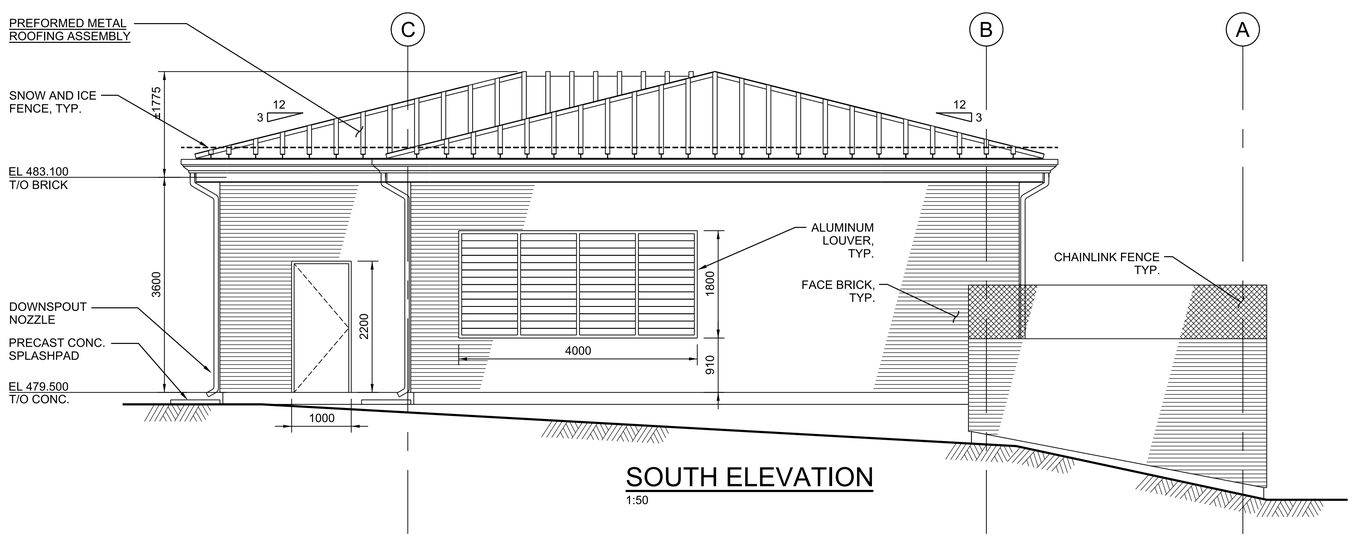
COS CONTRACT NO.

COS DRAWING NO.



NORTH ELEVATION

1:50



SOUTH ELEVATION

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1	30% DETAILED DESIGN	2021-01-29	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon

Utilities & Environment Department

Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL

ELEVATIONS

BUILDING ELEVATIONS (1)

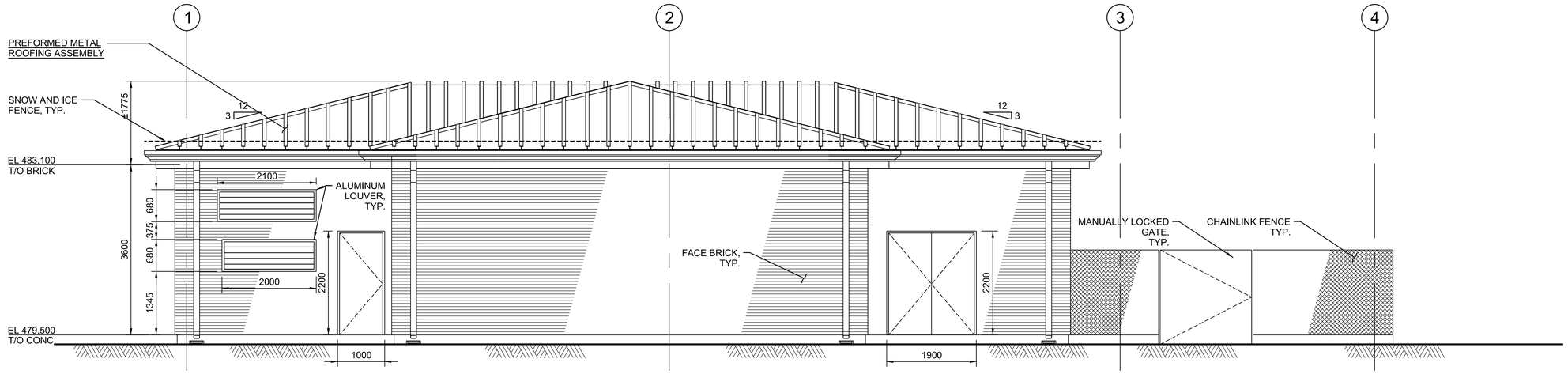
CONSULTANT DRAWING NO. 761-1916-211

SCALE: 1:50

COS FILE NO.

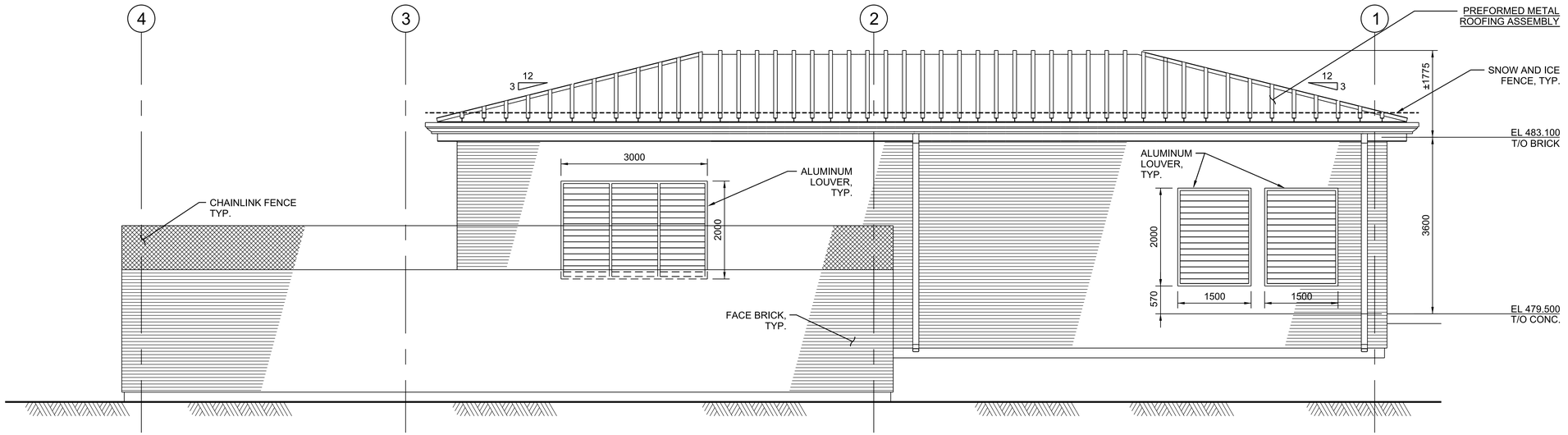
COS CONTRACT NO.

COS DRAWING NO.



WEST ELEVATION

1:50



EAST ELEVATION

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1	30% DETAILED DESIGN	2021-01-29	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL
ELEVATIONS
BUILDING ELEVATIONS (2)

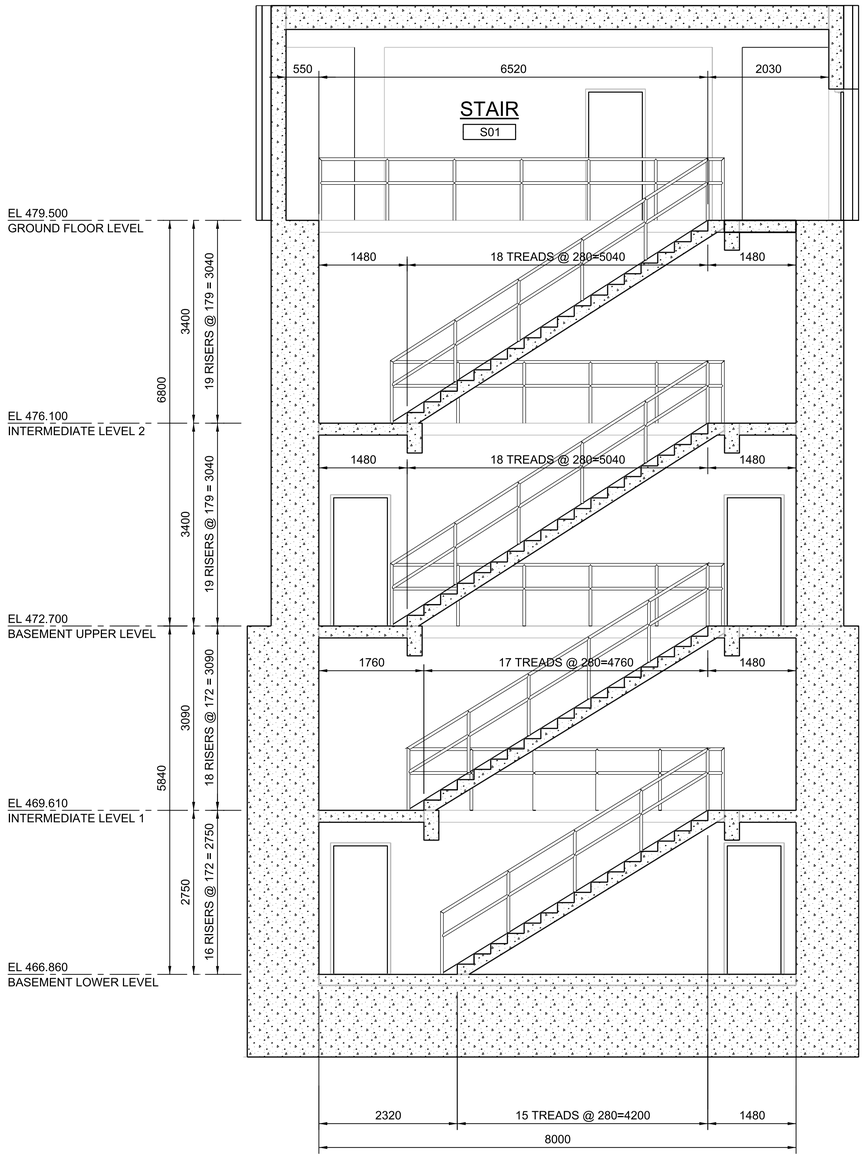
CONSULTANT DRAWING NO. 761-1916-212

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

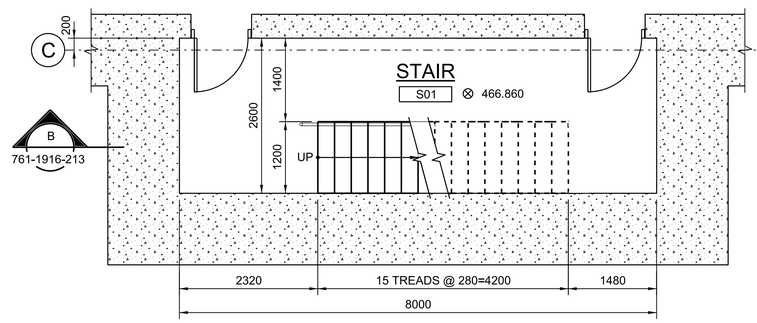
COS DRAWING NO.



B
761-1916-213

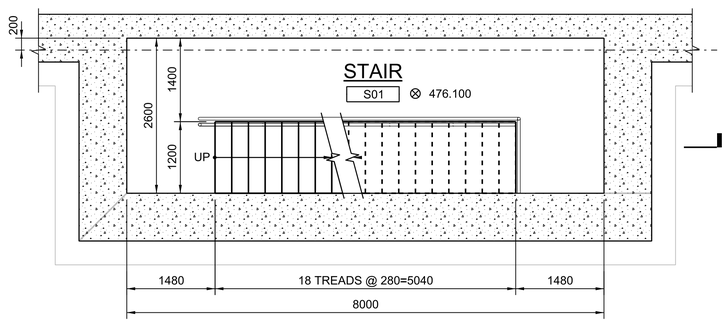
STAIR SECTION

1:50



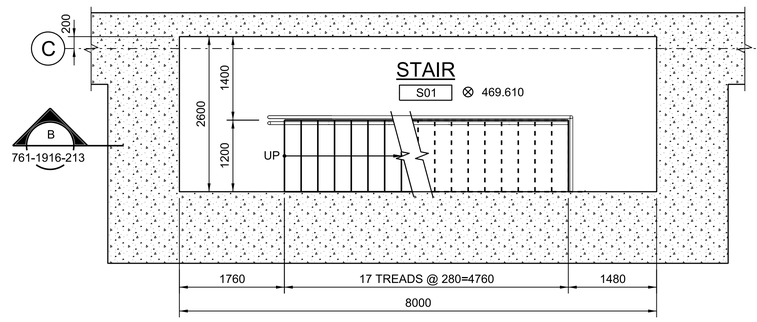
STAIR - BASEMENT LOWER LEVEL

1:50



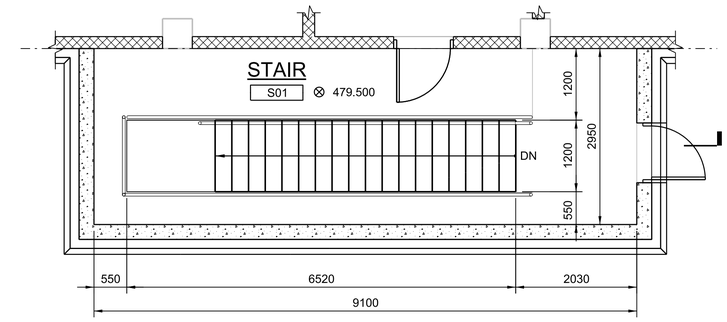
STAIR - INTERMEDIATE LEVEL 2

1:50



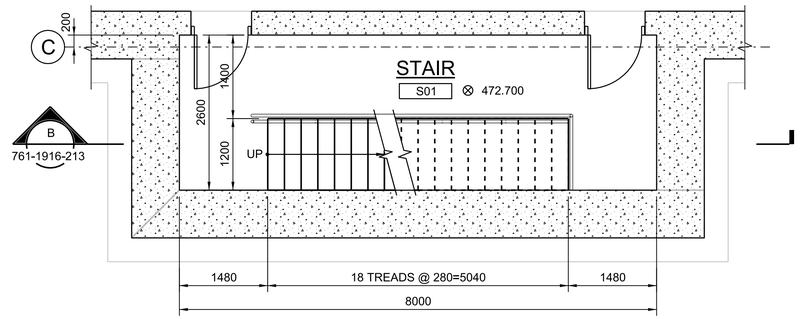
STAIR - INTERMEDIATE LEVEL 1

1:50



STAIR - GROUND FLOOR

1:50



STAIR - BASEMENT UPPER LEVEL

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1	30% DETAILED DESIGN	2021-01-29	FS	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL
PLAN
STAIR PLAN AND SECTION

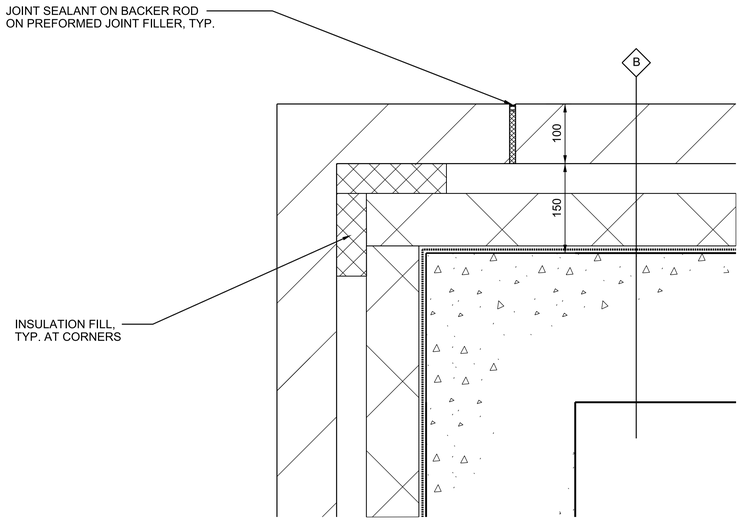
CONSULTANT DRAWING NO. 761-1916-213

SCALE: 1:50

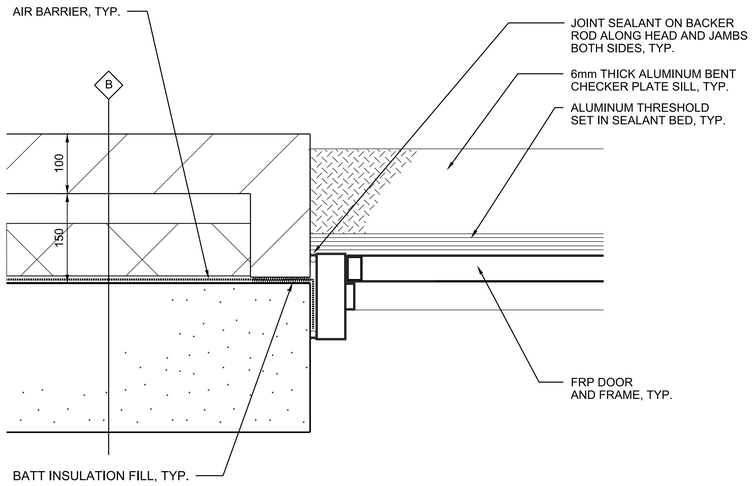
COS FILE NO.

COS CONTRACT NO.

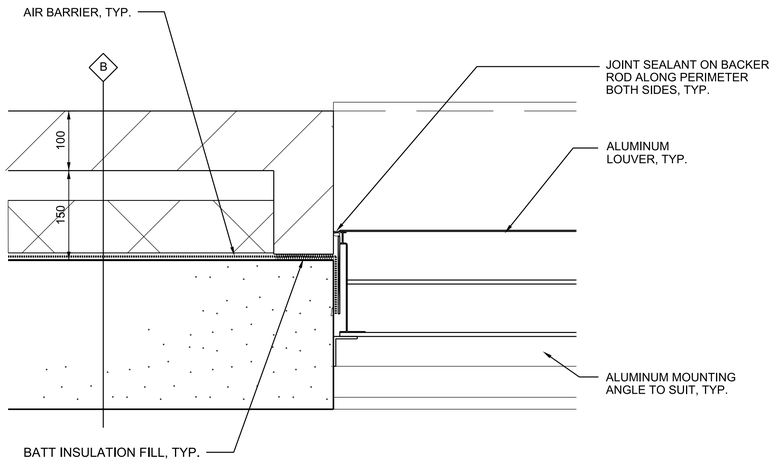
COS DRAWING NO.



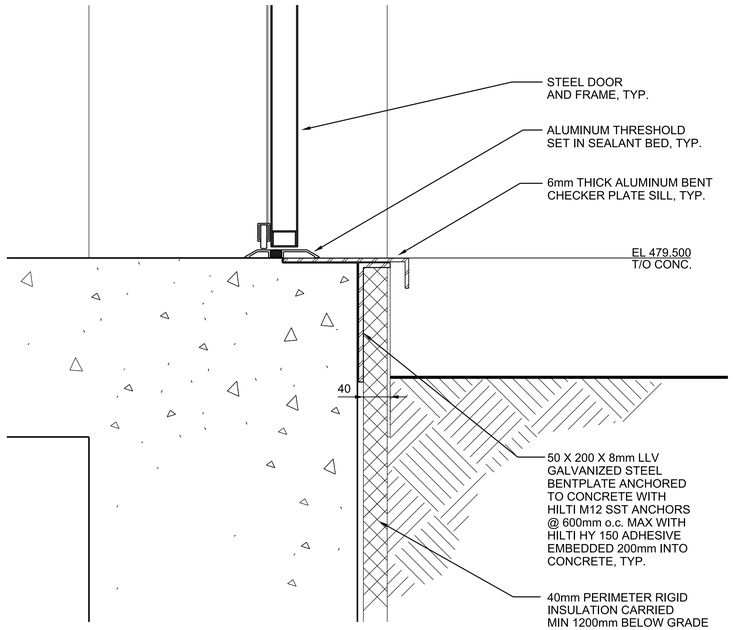
1 PLAN DETAIL - TYPICAL CORNER
1:5



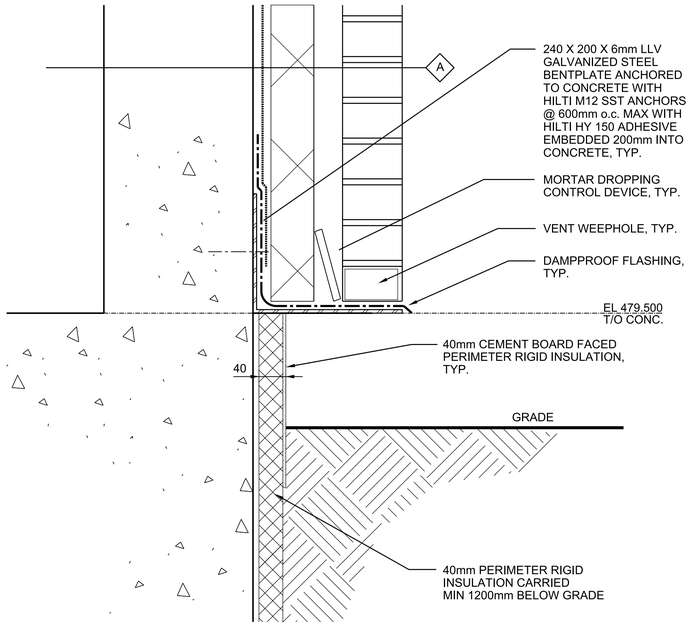
2 PLAN DETAIL - AT EXTERIOR DOOR
1:5



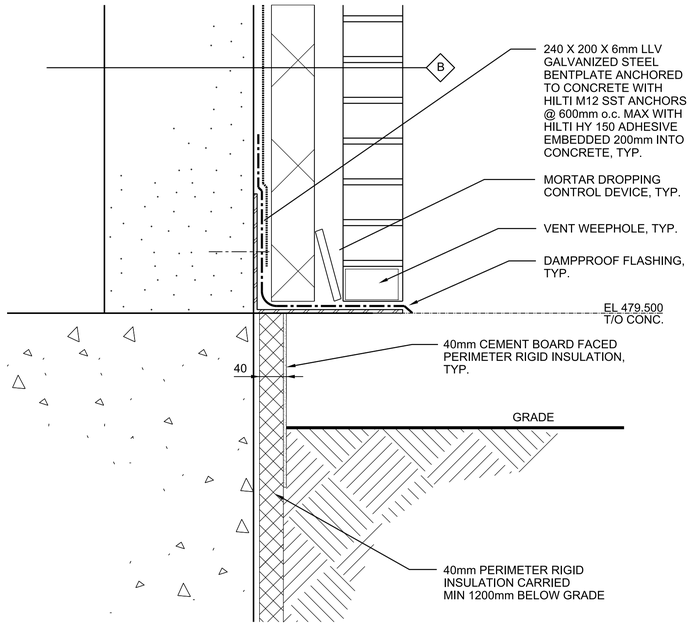
3 PLAN DETAIL - AT LOUVER
1:5



4 DETAIL - AT DOOR SILL
1:5



5 DETAIL - TYPICAL WALL BASE
1:5



6 DETAIL - TYPICAL WALL BASE
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1	30% DETAILED DESIGN	2021-01-29	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL
DETAILS
BUILDING ENVELOPE DETAILS

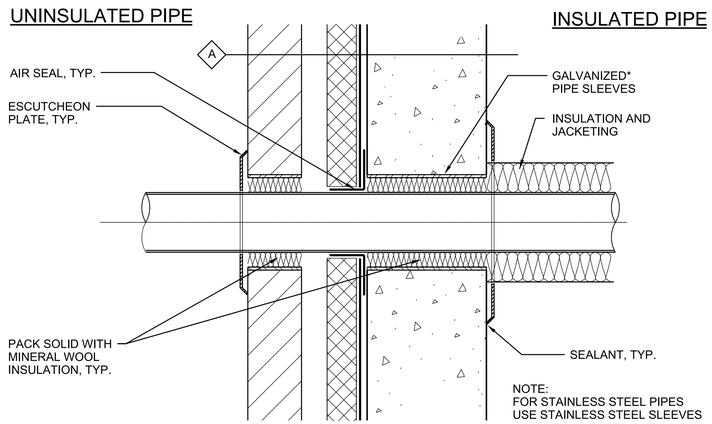
CONSULTANT DRAWING NO. 761-1916-215

SCALE: 1:50

COS FILE NO.

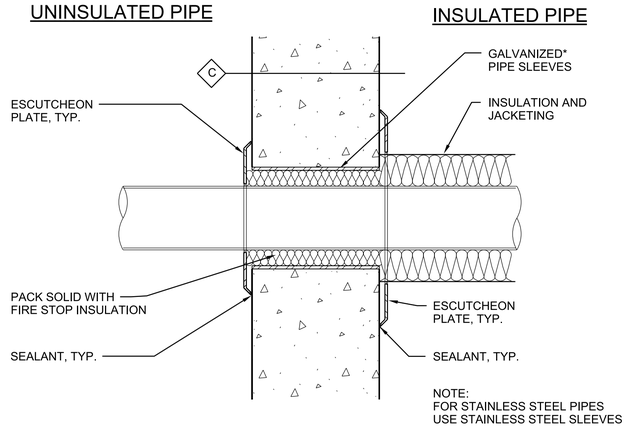
COS CONTRACT NO.

COS DRAWING NO.



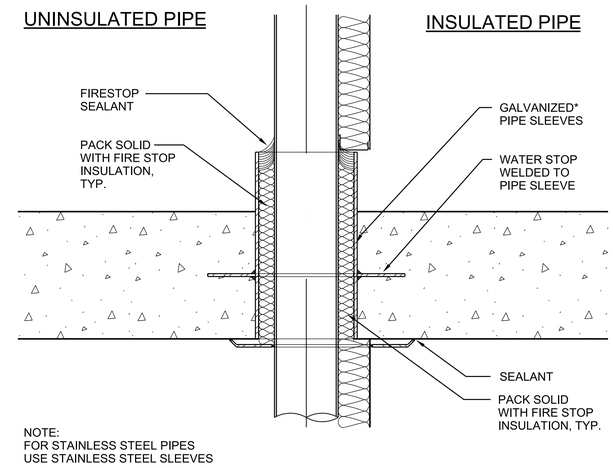
1 TYPICAL DETAIL - PIPE PENETRATION EXTERIOR WALL (ABOVE GRADE)

1:5



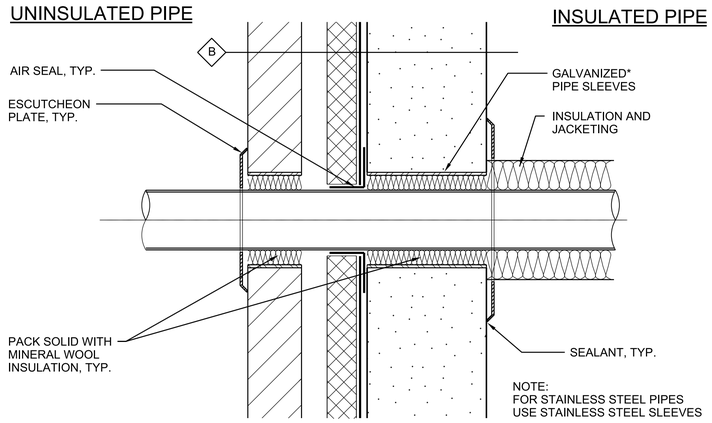
2 TYPICAL DETAIL - PIPE PENETRATION INTERIOR WALL (ABOVE GRADE)

1:5



3 TYPICAL DETAIL - PIPE / DUCT THROUGH FLOOR SLAB

1:5



4 TYPICAL DETAIL - PIPE PENETRATION EXTERIOR WALL (ABOVE GRADE)

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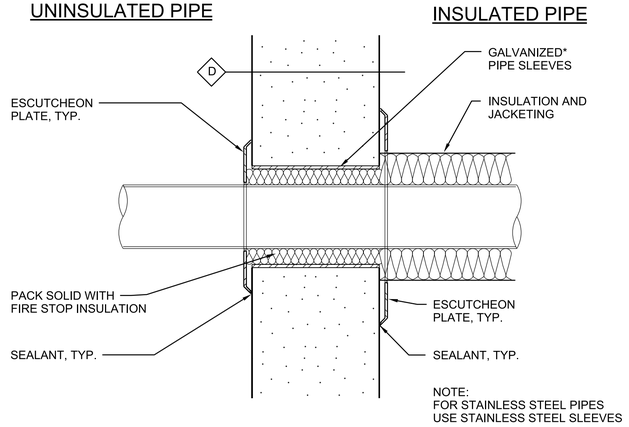

5 TYPICAL DETAIL - PIPE PENETRATION INTERIOR WALL (ABOVE GRADE)

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1	30% DETAILED DESIGN	2021-01-29	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL
DETAILS
PENETRATION

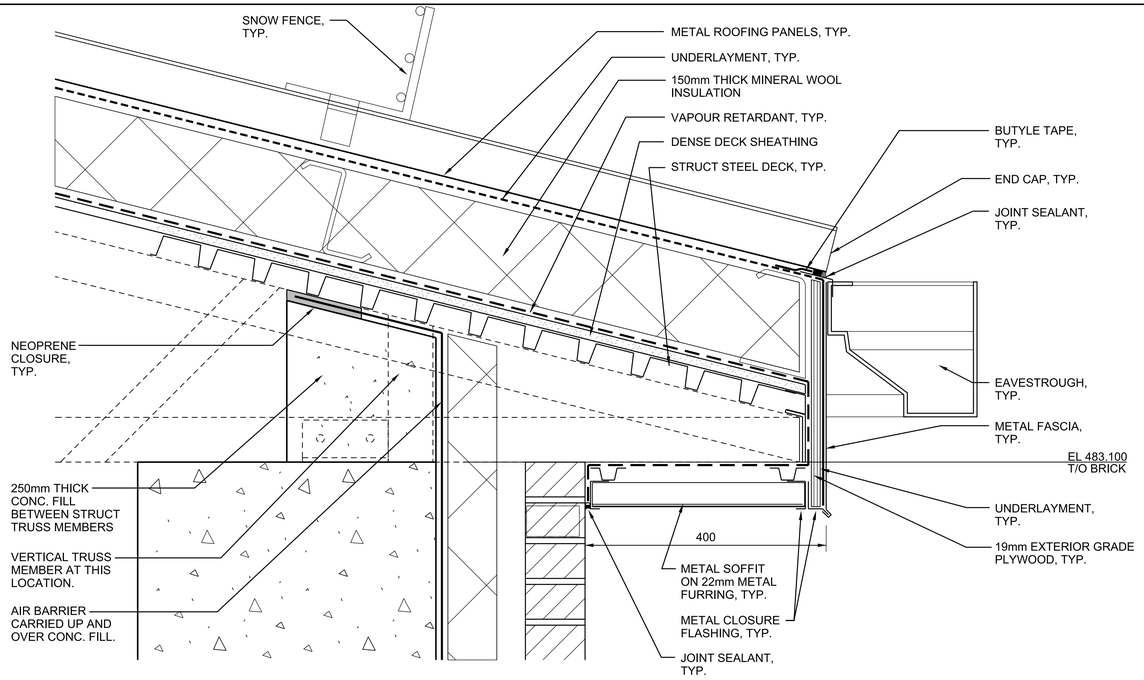
CONSULTANT DRAWING NO. 761-1916-217

SCALE: AS SHOWN

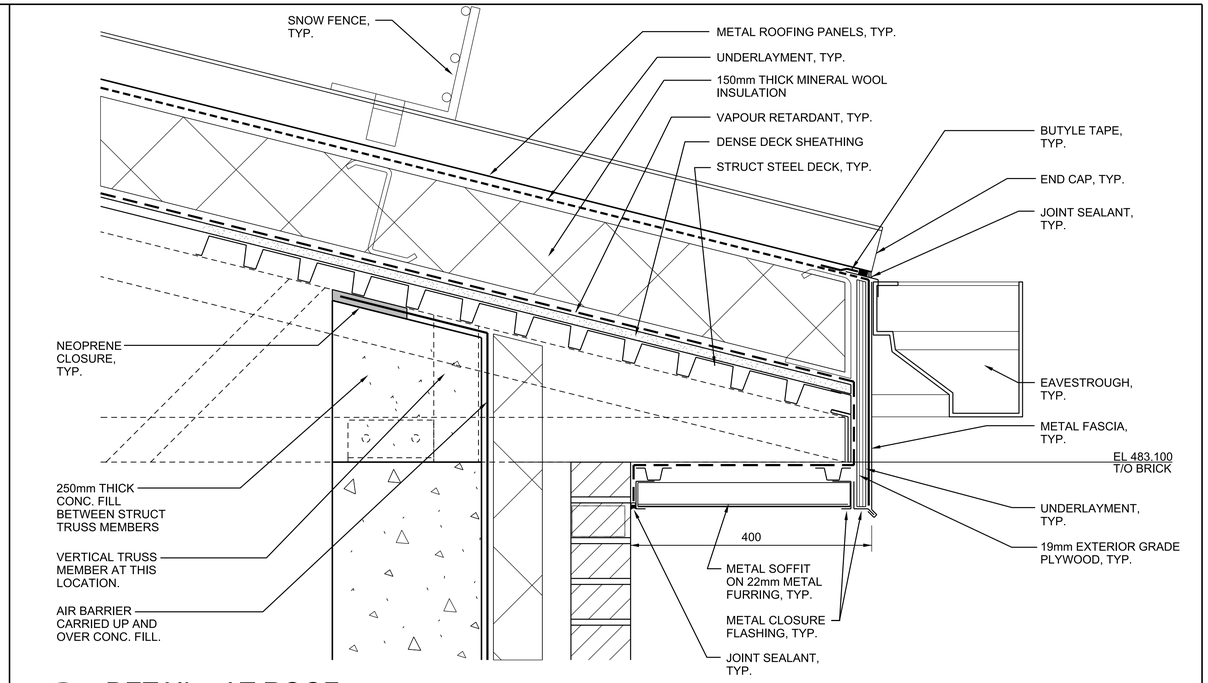
COS FILE NO.

COS CONTRACT NO.

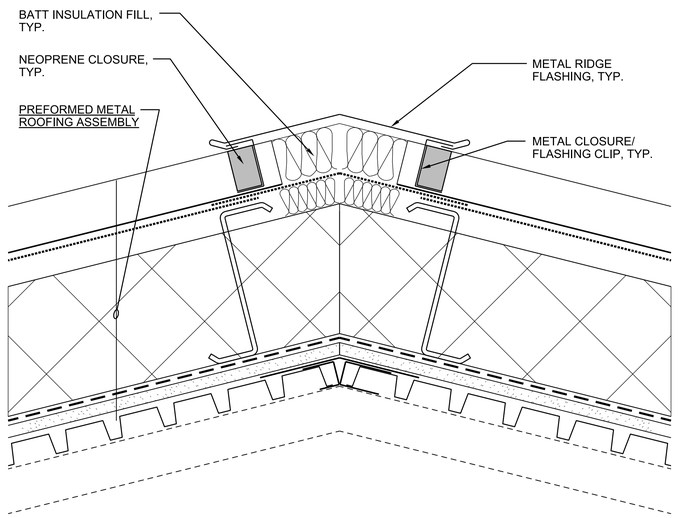
COS DRAWING NO.



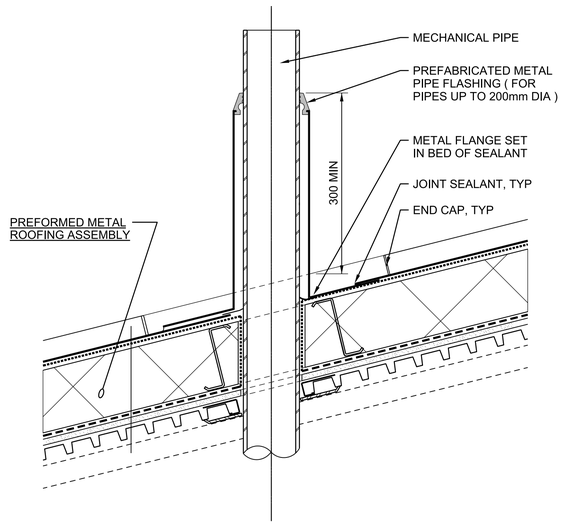
1 DETAIL - AT ROOF
1:5



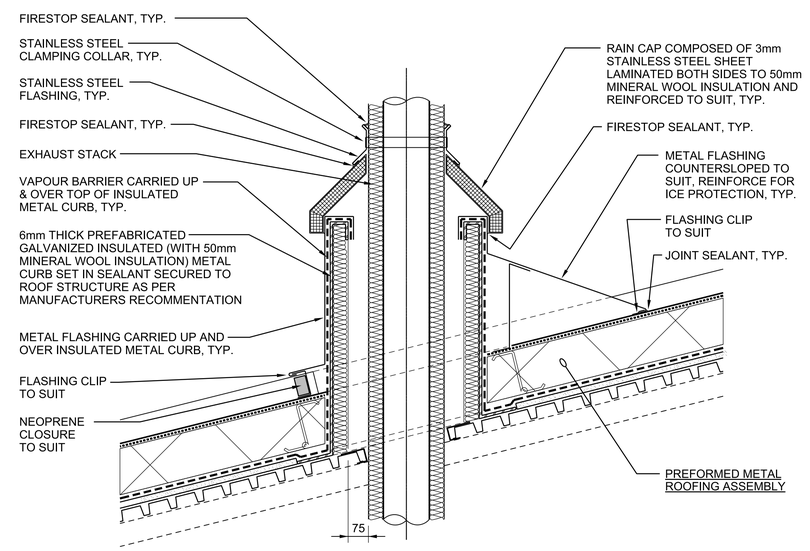
2 DETAIL - AT ROOF
1:5



3 TYPICAL DETAIL - AT ROOF RIDGE
1:5



4 TYPICAL DETAIL - PIPE THROUGH ROOF UP TO 200mm DIA
1:10



5 TYPICAL DETAIL - EXHAUST STACK THROUGH ROOF
1:10

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1	30% DETAILED DESIGN	2021-01-29	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

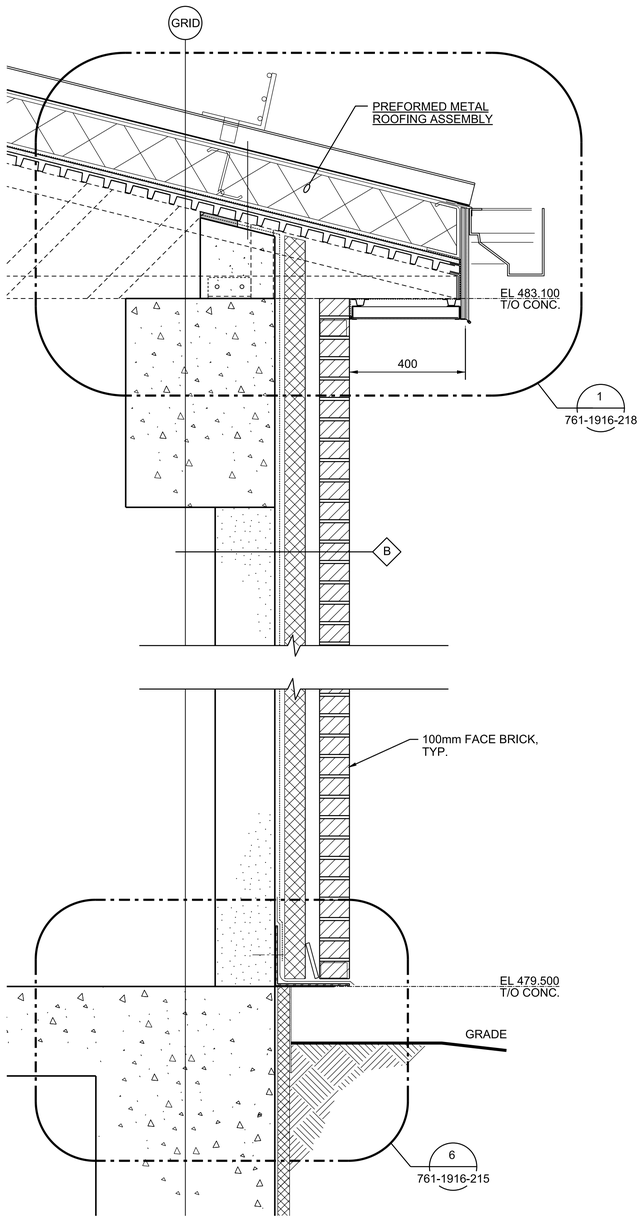
Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ARCHITECTURAL
DETAILS
ROOFING DETAILS

CONSULTANT DRAWING NO. 761-1916-218

SCALE: AS SHOWN
COS FILE NO.
COS CONTRACT NO.
COS DRAWING NO.



1 SECTION DETAIL
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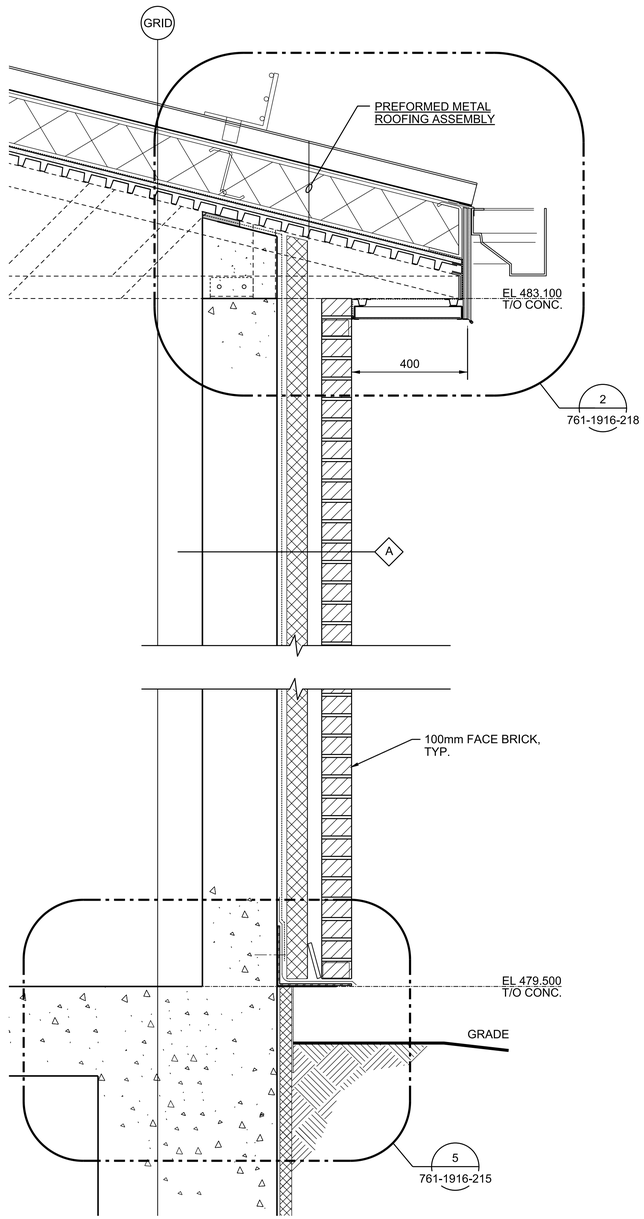

2 SECTION DETAIL
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3 SECTION DETAIL
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1	30% DETAILED DESIGN	2021-01-29	FS

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL
DETAILS
WALL ASSEMBLY DETAILS

CONSULTANT DRAWING NO. 761-1916-219

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR MATERIAL	FLOOR FINISH	BASE MATERIAL	BASE FINISH	NORTH WALL MATERIAL	NORTH WALL FINISH	SOUTH WALL MATERIAL	SOUTH WALL FINISH	EAST WALL MATERIAL	EAST WALL FINISH	WEST WALL MATERIAL	WEST WALL FINISH	CEILING MATERIAL	CEILING FINISH	REMARKS
BASEMENT																
S01	STAIR	CONC	SEAL*	CONC	SEAL	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	* ABRASIVE NOSING INSERTS TO ALL TREADS AND LANDINGS
B01	BASEMENT UPPER LEVEL	CONC	SEAL	CONC	SEAL	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	
B02	BASEMENT LOWER LEVEL	CONC	SEAL	CONC	SEAL	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	
B03	WET WELL	CONC	SEAL	CONC	SEAL	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	
GROUND FLOOR																
S01	STAIR	CONC	SEAL*	CONC	SEAL	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	CONC	PNT	* ABRASIVE NOSING INSERTS TO ALL TREADS AND LANDINGS
101	GENERATOR ROOM	CONC	CRC*	CONC	SEAL (200mm H)	CMU	PNT	CMU	PNT	CMU	PNT	CMU	PNT	CMU	PNT	* APPLY ALSO TO CONTAINMENT AREAS AND CARRY UP ON CONC PAD SIDE
102	ELECTRICAL ROOM	CONC	SEAL	CONC	SEAL (200mm H)	CMU	PNT	CMU	PNT	CMU	PNT	CMU	PNT	CMU	PNT	
103	MECHANICAL ROOM	CONC	SEAL	CONC	SEAL (200mm H)	CMU	PNT	CMU	PNT	CMU	PNT	CMU	PNT	CMU	PNT	
104	WASHROOM	CONC	SEAL	CONC	TILE (200mm H)	CMU	PNT	CMU	PNT	CMU	PNT	CMU	PNT	CMU	PNT	

LEGEND AND ABBREVIATIONS

ACT =	ACOUSTIC COMPOSITE TILE
CH =	CONCRETE HARDENER
CONC =	CONCRETE
CMU =	CONC MASONRY UNIT
CRC	CHEMICAL RESISTANT COATINGS
CS =	COLOURED SEALER
FCTY =	FACTORY FINISH
TILE =	CERAMIC TILE
P/CAST =	PRECAST CONCRETE
PNT =	PAINTED
SC =	SEAMLESS COATING
SEAL =	CONCRETE FLOOR SEALER
U/S STRUCT =	UNDERSIDE OF STRUCTURE

GENERAL NOTES:

1. FLOOR FINISH TO EXTEND UP AND OVER CONC CURBS AND EQUIPMENT BASES.
2. FLOOR FINISH TO EXTEND UP VERTICAL CONC WALL BASE MINIMUM 200mm
3. FINISH U/S OF LANDINGS, STAIRS AND EXPOSED CONCRETE SURFACES WITH LIGHT GREY SEALER.

DOOR AND HARDWARE SCHEDULE

BUILDING	LOCATION	DOOR NO.	FROM ROOM NO.	TO ROOM NO.	DOOR DATA: DOOR SIZE	ULC LABEL (HRS)	DOOR: DOOR TYPE	MATERIAL	FINISH	GLASS		FRAME: FRAME TYPE	MATERIAL	FINISH	HARDWARE: HINGE	LOCKSET	EXIT DEVICE - ACTIVE LEAF	EXIT DEVICE - INACTIVE LEAF	CLOSER - PUSH SIDE BOTH LEAFS	CLOSER - PULL SIDE BOTH LEAFS	BOLTS - INACTIVE LEAF	KICKPLATE (BOTH SIDES)	THRESHOLD	AUTOMATIC DOOR BOTTOM	PUSH/PULL HANDLE	WEATHERSTRIPPING	POWER SUPPLY	ELECTRIC STRIKE	SECURITY SYSTEM CONTROL	REMARKS
SPADINA LIFT STATION BYPASS BUILDING	BASEMENT	D-S01-C	S01	B01	900 x 2150	-	D1	STL	PNT	-	-	F1	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	-	-	-	-	-
		D-S01-D	S01	B01	900 x 2150	-	D1	STL	PNT	-	-	F1	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	-	-	-	-	-
		D-S01-E	S01	B02	900 x 2150	-	D1	STL	PNT	-	-	F1	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	-	-	-	-	-
		D-S01-F	S01	B02	900 x 2150	-	D1	STL	PNT	-	-	F1	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	-	-	-	-	-
	GROUND FLOOR	D-S01-A	S01	EXTERIOR	900 x 2150	-	D1	STL	PNT	-	-	F1	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	W1	-	-	-	-
		D-S01-B	102	S01	900 x 2150	-	D1	STL	PNT	-	-	F1	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	-	-	-	-	-
		D-101-A	101	EXTERIOR	1800 x 2150	-	D2	STL	PNT	-	-	F2	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	W1	-	-	-	-
		D-101-B	102	101	1800 x 2150	-	D2	STL	PNT	-	-	F2	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	-	-	-	-	-
		D-103-B	102	103	1800 x 2150	-	D2	STL	PNT	-	-	F2	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	-	-	-	-	-
		D-103-A	103	EXTERIOR	900 x 2150	-	D1	STL	PNT	-	-	F1	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	W1	PS	ES	CR	-
		D-104	103	104	900 x 2150	-	D1	STL	PNT	-	-	F1	STL	PNT	H1	L1	-	-	C5	-	-	K1	T3	A1	P1	-	-	-	-	-

GENERAL NOTES

1. PROVIDE DOOR HARDWARE ON BOTH LEAFS IN PAIRS OF DOORS UNLESS NOTED OTHERWISE.
2. PROVIDE KICKPLATES ON BOTH SIDES OF DOORS UNLESS NOTED OTHERWISE.
3. EXTERIOR DOOR FOR THE GENERATOR ROOM SHOULD BE DOUBLE LEAFED. ONE ACTIVE LEAF AND ONE INACTIVE.
4. EXTERIOR DOOR INTO MECHANICAL ROOM CAN BE SINGLE LEAFED W/ CARD SWIPE ACCESS. THIS IS THE ONLY ELECTRIFIED ACCESS DOOR IN THE FACILITY.
5. PROVIDE DOUBLE DOORS BETWEEN MECHANICAL, ELECTRICAL, AND GENERATOR ROOMS. ONE ACTIVE LEAF AND ONE INACTIVE. NO LOCKET REQUIRED, JUST A HANDLE AND CLOSER.

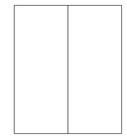
REMARKS

LEGEND AND ABBREVIATIONS

AL	ALUMINUM	PS	POWER SUPPLY
FCTY	FACTORY FINISH	CR	CARD READER
FRP	FIBRE-REINFORCED PLASTIC	ES	ELECTRIC STRIKE
STL	STEEL	PNT	PAINTED

DOOR TYPES

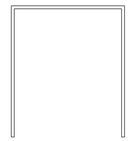
D1



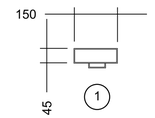
D2

FRAME TYPES

F1



F2



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2	30% DETAILED DESIGN	2021-01-29	FS
1	PRELIMINARY DESIGN	2020-01-05	FS
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ARCHITECTURAL
SCHEDULES
DOOR, HARDWARE, AND WINDOW SCHEDULE

CONSULTANT DRAWING NO. 761-1916-221

SCALE: AS SHOWN

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

DESIGN NOTES

GENERAL

1. ALL CODES REFERENCED ARE TO BE THE LATEST VERSION AT THE DATE OF ISSUE.
2. DESIGN IS BASED ON THE NATIONAL BUILDING CODE OF CANADA NBCC 2015.
3. READ THESE DESIGN NOTES IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS.
4. OBTAIN ENGINEER'S APPROVAL BEFORE CUTTING, BORING, OR SLEEVING LOAD-BEARING MEMBERS UNLESS NOTED OTHERWISE.
5. THE STRUCTURAL DRAWINGS ARE FOR THE COMPLETED PROJECT. STABILITY OF THE EXISTING AND/OR NEW STRUCTURE DURING CONSTRUCTION REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.
6. REFER TO PROCESS, ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR SMALL OPENINGS, SLEEVES, RECESSES, DEPRESSIONS, SUMPS, TRENCHES, CURBS, HOUSEKEEPING PADS, EQUIPMENT BASES, AND SLOPES NOT INDICATED ON THE STRUCTURAL DRAWINGS.
7. OPENINGS AND SLEEVES INDICATED ON THE STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY. COORDINATE ALL OPENING LOCATIONS AND DIMENSIONS WITH THE APPROPRIATE CONSULTANT AND THE SUB-CONTRACTOR PRIOR TO CONSTRUCTION.
8. REVIEW ALL DRAWINGS AND CHECK DIMENSIONS PRIOR TO IMPLEMENTING THE WORK. REPORT ANY DISCREPANCIES TO THE CONSULTANT FOR CLARIFICATION BEFORE PROCEEDING.
9. COORDINATE PLACEMENT AND LOCATION OF ITEMS BY SUBSEQUENT TRADES. RELEVANT TRADES SHALL REVIEW PRIOR TO ERECTION AND/OR INSTALLATION.
10. NOTIFY THE ENGINEER A MIN. OF 24 HOURS PRIOR TO ANY REQUIRED SITE REVIEWS.

EXISTING STRUCTURES

1. THE STRUCTURAL DESIGN IS BASED ON INFORMATION GATHERED FROM THE RECORD DRAWINGS AND FROM LIMITED VISUAL OBSERVATIONS ON SITE.
2. VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS ON SITE PRIOR TO IMPLEMENTING AFFECTED WORK.
3. NOTIFY THE CONSULTANT OF ANY SITE CONDITIONS THAT DIFFER FROM THE CONTRACT DOCUMENTS OR THE RECORD DRAWINGS.
4. SHORE AND UNDERPIN EXCAVATIONS AS REQUIRED TO PREVENT DISTURBANCE TO ADJACENT STRUCTURES, STREETS, SIDEWALKS AND UTILITIES.

DESIGN LOADS

1. UNLESS NOTED OTHERWISE, THE LOADS NOTED IN TABLES AND ON DRAWINGS ARE UNFACTORED.
2. CLIMATIC INFORMATION — REFER TO CLIMATIC INFORMATION TABLE
3. SITE INFORMATION — REFER TO SITE INFORMATION TABLE
4. DESIGN LOADS — REFER TO DESIGN LOADS TABLE
5. CONSTRUCTION LOADS SHALL NOT EXCEED THE LOADS NOTED ON THE DRAWINGS.
6. RAIN PONDING LOADS HAVE BEEN CALCULATED BASED ON ROOF SLOPES, PARAPETS, AND SCUPPERS ASSUMING THAT DRAINS ARE ACCIDENTALLY PLUGGED FOR A PERIOD OF 24 HOURS.

DELEGATED DESIGN

1. PORTIONS OF THE DETAILED DESIGN ARE DELEGATED TO THE CONTRACTOR. RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF SASKATHEWAN TO COMPLETE THE DESIGN.
2. SUBMIT SHOP DRAWINGS FOR COMPONENTS REQUIRING DELEGATED DESIGN UNDER THE SEAL AND SIGNATURE OF THE ENGINEER RESPONSIBLE FOR THE DESIGN.
3. THE FOLLOWING COMPONENTS REQUIRE DELEGATED DESIGN:
   - 3.1. MORTAR, GROUT, AND CONCRETE MIX DESIGNS
   - 3.2. STRUCTURAL STEEL CONNECTIONS
   - 3.3. CAST-IN-PLACE CONCRETE PILES
   - 3.4. PRECAST STRUCTURAL COMPONENTS
4. THE ENGINEER RESPONSIBLE FOR THE DESIGN IS ALSO RESPONSIBLE FOR REVIEW OF FABRICATION AND INSTALLATION OF THE COMPONENTS. UPON COMPLETION OF THE WORK, CERTIFY IN WRITING TO THE CONSULTANT THAT SUCH REVIEW HAS BEEN COMPLETED.
5. REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS.

CAST-IN-PLACE REINFORCED CONCRETE

1. CONCRETE MATERIALS, QUALITY, MIXING, PLACING, FORMWORK AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-A23.1.
2. SUPPLY CONTROLLED CONCRETE IN ACCORDANCE WITH CSA-A23.1 WITH PROPERTIES NOTED IN CAST IN PLACE CONCRETE SPECIFICATIONS.
3. USE TYPE OF CEMENT FOR ALL CONCRETE AS NOTED IN CONTROLLED CONCRETE TABLE IN CAST-IN-PLACE SPECIFICATIONS.
4. LIMIT Ca0 CONTENT IN FLY ASH TO LESS THAN 12% FOR CONCRETE WITH EXPOSURE CLASSES S-1, S-2, AND S-3.
5. NOTIFY CONSULTANT 24 HOURS PRIOR TO CONCRETE POURS TO ALLOW FOR REVIEW OF REINFORCEMENT.
6. DO NOT USE ADMIXTURES CONTAINING CALCIUM CHLORIDE.
7. FOR FLOOR SLABS, DESIGN THE CONCRETE MIX WITH AGGREGATE GRADING AND WATER TO CEMENTING MATERIALS RATIO TO MINIMIZE SHRINKAGE.
8. FIELD AND LABORATORY TESTING OF CONCRETE TO BE COMPLETED BY A THIRD PARTY TESTING AND INSPECTION AGENCY. TESTING AGENCY SHALL BE CERTIFIED TO CSA-A283 AND TESTING TO BE COMPLETED IN ACCORDANCE WITH CSA-A23.2.

CONCRETE REINFORCEMENT

1. REINFORCEMENT STEEL TO CONFORM TO CSA-G30.18 GRADE 400, FOR STRAIGHT BARS ONLY
2. REINFORCEMENT STEEL FOR WELDED AND BENT REINFORCING BARS TO CONFORM TO CSA-G30.18 GRADE 400W.
3. DO NOT WELD REINFORCEMENT UNLESS APPROVED IN WRITING BY THE ENGINEER. REINFORCEMENT TO BE WELDED TO CONFORM TO CSA-G30.18, GRADE 400W. WELDING ONLY PERMITTED BY AN ORGANIZATION CERTIFIED TO CSA-W186.
4. NOTIFY THE ENGINEER PRIOR TO CONCRETE PLACEMENT TO ALLOW FOR REVIEW OF REINFORCEMENT.
5. SUBMIT SHOP DRAWINGS AND DETAILS FOR ALL REINFORCEMENT FOR REVIEW PRIOR TO FABRICATION.
6. CLEAR CONCRETE COVER TO REINFORCEMENT – REFER TO CLEAR CONCRETE COVER TO REINFORCEMENT TABLE.
7. STANDARD END HOOK LENGTHS FOR REINFORCEMENT – REFER TO STANDARD END HOOKS TABLE.
8. REINFORCEMENT SPLICES – REFER TO REINFORCEMENT SPLICES TABLE.
   - 8.1 WHERE SPLICES ARE INDICATED ON THE DRAWINGS, SUCH DIMENSIONS SHALL APPLY.
   - 8.2 WHERE THE DRAWINGS INDICATE TENSION OR COMPRESSION SPLICES, IT SHALL BE AS INDICATED IN REINFORCEMENT SPLICES TABLE.
   - 8.3 WHERE NO SPLICE OR SPLICE TYPE IS INDICATED ON THESE DRAWINGS, IT SHALL BE A TENSION SPLICE EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION SPLICE.
9. EMBEDMENT OF DOWELS – REFER TO REINFORCEMENT SPLICES TABLE
   - 9.1 WHERE EMBEDMENT IS DIMENSIONED ON THE DRAWINGS, SUCH DIMENSIONS SHALL APPLY.
   - 9.2 WHERE THE DRAWINGS INDICATE TENSION OR COMPRESSION EMBEDMENT, IT SHALL BE AS NOTED IN THE REINFORCEMENT SPLICES TABLE.
   - 9.3 WHERE NO EMBEDMENT OR EMBEDMENT TYPE IS INDICATED ON THESE DRAWINGS, IT SHALL BE A TENSION EMBEDMENT EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION EMBEDMENT.
10. WELDED WIRE MESH TO CONFORM TO ASTM A497/A497M.
11. SIDEWALKS AND SMALL SLABS TO BE REINFORCED WITH 10M AT 300 mm ON CENTRE UNLESS NOTED OTHERWISE.
12. DO NOT CUT REINFORCEMENT AT OPENINGS WHERE IT CAN BE SPREAD CONTINUOUS AROUND OPENING.
13. ALL REINFORCEMENT TO BE SUPPORTED AT 1000mm MAXIMUM SPACING.

CONCRETE FORMWORK

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CAN/CSA-S269.3.
2. PROVIDE VOID FORM BELOW ALL STRUCTURAL SLABS AT GRADE, WALLS, GRADE BEAMS, PILE CAP, AND WHERE SHOWN ON THE DRAWINGS PRIOR TO INSTALLATION OF REINFORCEMENT.
3. LEAVE FORMS IN PLACE OR PROVIDE SHORING FOR ALL SLABS, BEAMS, AND GIRDERS. SEE "CONCRETE FORMS" SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
4. REFER TO SPECIFICATIONS AND ARCHITECTURAL DRAWINGS FOR CHAMFERS ON CORNERS FOR BEAMS, COLUMNS, AND WALLS.

JOINTS

1. EXPANSION JOINTS (EJ):
   - 1.1 PROVIDE EXPANSION JOINTS ONLY AS SHOWN ON DRAWINGS.
   - 1.2 INSTALL CONTINUOUS WATERSTOP ENSURING COMPLETELY SEALED, CLOSED LOOPS.
   - 1.3 INSTALL 12 mm MINIMUM GAP WITH RESILIENT JOINT FILLER.
   - 1.4 GRIND OR TOOL ALL JOINT CORNERS OF SURFACES EXPOSED TO TRAFFIC OR VIEW TO DIMENSIONS SHOWN OR AS RECOMMENDED BY THE SEALANT MANUFACTURER.
   - 1.5 INSTALL JOINT SEALANT(S).
2. CONSTRUCTION JOINTS (CJ):
   - 2.1 PROVIDE CONSTRUCTION JOINTS WHERE SHOWN ON DRAWINGS OR AS APPROVED IN WRITING BY THE ENGINEER AFTER COMPLETE SUBMISSION OF DETAILS AND LOCATIONS.
   - 2.2 CJ OR CJ100 MEANS 100% REINFORCEMENT EXTENDS THROUGH CONSTRUCTION JOINT.
   - 2.3 CJ50 MEANS 50% REINFORCEMENT EXTENDS THROUGH CONSTRUCTION JOINT.
   - 2.4 INSTALL CONTINUOUS WATERSTOP WHERE SHOWN.
   - 2.5 ROUGHEN CONCRETE SURFACE TO EXPOSE SOUND COARSE AGGREGATE BY WATER SPRAY AND BRUSHING BEFORE CONCRETE HARDENS OR BY SANDBLASTING.
   - 2.6 DAMPEN SURFACE PRIOR TO SECOND PLACEMENT OF CONCRETE.
   - 2.7 APPLY EPOXY BONDING AGENT WHERE NOTED.

STRUCTURAL STEEL

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-S16 AND THE CISC CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL.
2. STEEL TO BE FABRICATED AND ERECTED BY A SHOP CERTIFIED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA-W47.1, DIVISION 1 OR 2.1 ONLY.
3. SUBMIT SHOP DRAWINGS SHOWING ALL STRUCTURAL STEEL MEMBERS FOR REVIEW PRIOR TO FABRICATION. WELDING TO CONFORM TO CSA-W59.
4. SHOP GALVANIZING TO CONFORM TO ASTM A123.
5. ALL EXPOSED WELDS TO BE CONTINUOUS. GRIND ALL EXPOSED WELDS SMOOTH, INCLUDING PAINTED STEEL.
6. SUPPLY STEEL WITH PROPERTIES NOTED IN STEEL GRADES TABLE.
7. SHEAR STUD CONNECTORS TO CONFORM TO ASTM-A108 AND SHALL BE APPLIED BY ELECTRICAL RESISTANCE WELDING ONLY.
8. CONNECTIONS NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED AND DETAILED BY A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE PROVINCE OF SASKATHEWAN AT THE STEEL FABRICATOR'S EXPENSE.
9. UNLESS NOTED OTHERWISE, DESIGN CONNECTIONS FOR NON-COMPOSITE BEAMS FOR A FACTORED SHEAR FORCE EQUAL TO 67% OF THE TOTAL BEAM LOAD TABULATED IN THE CISC HANDBOOK OF STEEL CONSTRUCTION.
10. UNLESS NOTED OTHERWISE, DESIGN MOMENT CONNECTIONS FOR NON-COMPOSITE BEAMS FOR A FACTORED MOMENT EQUAL TO THE FULL MOMENT CAPACITY OF THE SMALLER MEMBER JOINED.
11. DESIGN BRACE CONNECTIONS FOR THE LOADS SHOWN ON THE DRAWINGS.
12. PROVIDE A MINIMUM OF 2 BOLTS IN BOLTED CONNECTIONS.
13. ALL BOLTED CONNECTIONS TO USE SNUG-TIGHTENED HIGH-STRENGTH BOLTS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
14. PROVIDE 10 mm PLATE STIFFENERS EACH SIDE OF BEAM WHERE AT ALL BEARING CONNECTIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
15. DO NOT SPLICE MATERIAL WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. WHERE GRANTED A COMPLETE NON-DESTRUCTIVE EXAMINATION WILL BE MANDATORY AND PAID FOR BY THE SUB-CONTRACTOR.
16. PROVIDE 10 mm WEEP HOLES AT TOP AND BOTTOM OF ALL HSS COLUMNS.
17. ALL GROUT UNDER BEARING PLATES AND BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK TYPE WITH MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 30 MPa, INSTALLED IN ACCORDANCE WITH THE SPECIFICATION AND MANUFACTURER'S RECOMMENDATIONS. PROVIDE GROUT WEEP HOLES IN COLUMN BASE PLATES WHERE SHOWN.
18. SQUARE CUT OR FULL STRENGTH WELD ALL COLUMNS AT BASE PLATES AND AT TOP WHERE BEARING UNDER CONTINUOUS BEAMS.
19. REFER TO SPECIFICATIONS FOR FINISHING.
20. TOUCH-UP FIELD WELDS, CONNECTIONS AND ABRASIONS TO MATCH THE SHOP PRIMER.
21. SHOP AND FIELD INSPECTION OF STEEL FABRICATION AND ERECTION TO BE COMPLETED BY A THIRD PARTY TESTING AND INSPECTION AGENCY APPROVED BY AND RESPONSIBLE TO THE ENGINEER. TESTING AGENCY SHALL BE CERTIFIED TO CSA-W178. TESTING PAID FOR BY OWNER.

MASONRY

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-S304.1 AND CAN/CSA-A371.
2. CONCRETE BLOCK TO CONFORM TO CAN/CSA-A165 WITH A MINIMUM COMPRESSIVE STRENGTH OF 15 MPa BASED ON THE NET CROSS-SECTIONAL AREA OF THE UNITS WITH VOIDS.
3. FILL CELLS CONTAINING VERTICAL REINFORCEMENT WITH CONCRETE DESIGNATED AS MASONRY WALL REINFORCEMENT TABLE. SITE MIXING OF CONCRETE NOT PERMITTED FOR EXTERIOR OR LOAD-BEARING WALLS.
4. PUDDLE OR VIBRATE MASONRY COREFILL IN LIFTS NOT EXCEEDING 1200 mm.
5. FORM HORIZONTAL JOINTS BY STOPPING POUR 40 mm BELOW THE TOP OF UNIT.
6. USE ONLY TYPE S MORTAR CONFORMING TO CSA-A179. DO NOT USE MASONRY CEMENT. USE PORTLAND CEMENT AND LIME ONLY.
7. PROVIDE CLEAN-OUT OPENINGS AT THE BOTTOM OF EACH LIFT FOR ALL CELLS BEING FILLED. THE INSIDE OF THE CELL IS TO BE FREE FROM DEBRIS AND OBSTRUCTION.
8. HORIZONTAL JOINT REINFORCEMENT TO CONFORM TO ASTM A185/A185M. PROVIDE CONTINUOUS REINFORCEMENT CONSISTING OF 5 GAUGE DIAMETER WIRE LADDER TYPE REINFORCEMENT WITH WELDED CROSS-TIES AT EVERY SECOND COURSE.
9. ALTERNATE HORIZONTAL JOINT REINFORCING TO BOND ADJOINING WALLS.
10. MASONRY WALLS TO BE RUNNING BOND UNLESS NOTED OTHERWISE.
11. EXTEND VERTICAL REINFORCEMENT TO WITHIN 50 mm OF TOP OF WALLS.
12. PROVIDE VERTICAL DOWELS INTO SUPPORTING CONCRETE TO MATCH BLOCK WALL REINFORCEMENT.
13. PROVIDE 400 mm DEEP BOND BEAMS REINFORCED WITH 2-15M TOP AND BOTTOM AT THE TOPS OF ALL WALLS AND AT 1200 mm VERTICAL SPACING. USE SPECIAL BOND BEAM UNITS TO PROVIDE CONTINUITY OF HORIZONTAL REINFORCEMENT. LAP SPLICE 800 mm MINIMUM. PROVIDE CORNER BARS AT WALL INTERSECTIONS.
14. PROVIDE VERTICAL REINFORCEMENT AS NOTED IN MASONRY WALL REINFORCEMENT TABLE UNLESS NOTED OTHERWISE ON DRAWINGS. PROVIDE ADDITIONAL COREFILLS WITH DESIGNATED REINFORCEMENT AT ENDS OF WALLS, WALL INTERSECTIONS, CORNERS, AND EACH SIDE OF WINDOW OPENING, DOOR OPENINGS, AND CONTROL JOINTS.
15. PROVIDE MASONRY LINTELS ABOVE OPENINGS AS NOTED IN MASONRY LINTEL REINFORCEMENT TABLE. USE 400 mm DEEP LINTEL BLOCKS FOR 2 COURSE LINTELS. USE A 400 mm DEEP LINTEL BLOCK WITH AN UPSIDE DOWN BOND BEAM BLOCK ON TOP FOR 3 COURSE LINTELS. LINTELS TO CONTINUE MINIMUM 400 mm PAST EACH SIDE OF OPENINGS. BLOCK VOIDS BELOW BEARING ENDS TO BE CORE FILLED AND REINFORCED WITH 2 – 15M BARS VERTICALLY EXTENDING INTO LINTELS UNLESS NOTED OTHERWISE.
16. REINFORCEMENT SPLICES – REFER TO MASONRY LAP SPLICES TABLE.
17. INSTALL VERTICAL CONTROL JOINTS AT 9000 mm MAX. LOCATE JOINTS AT LATERAL SUPPORTS PROVIDED BY COLUMNS, PILASTERS, CORNERS, AND INTERSECTING WALLS.

WATERSTOPS

1. INSTALL WATERSTOPS IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. THE MANUFACTURER IS TO REVIEW AND APPROVE ALL INSTALLATION PROCEDURES AND ENSURE CORRECT INSTALLATION.
3. INSTALL CONTINUOUS WATERSTOP ENSURING COMPLETELY SEALED, CLOSED LOOPS WHERE REQUIRED.
4. PROVIDE PREFABRICATED JUNCTIONS SUPPLIED BY THE MANUFACTURER AT ALL JOINTS EXCEPT STRAIGHT BUTT JOINTS. USE APPROVED BUTT WELDS TO COMPLETELY SEAL JOINTS.
5. SECURELY FASTEN IN PLACE. TIE ONLY AT EDGES ENSURING INTERIOR PORTIONS OF WATERSTOP ARE NOT DAMAGED OR PUNCTURED. ENSURE 50 mm MINIMUM CLEARANCE AROUND ALL WATERSTOPS.
6. INSTALL WATERSTOP WHERE SHOWN ON DRAWINGS AND TYPICALLY IN THE FOLLOWING CONDITIONS:
   AT CONSTRUCTION JOINTS (CJ) OF:
   - 6.1 ALL BASE SLABS INCLUDING SUMPS AND TRENCHES.
   - 6.2 ALL STRUCTURAL SLABS-ON-GRADE.
   - 6.3 ALL BASE SLABS TO WALLS OF DRY AREAS (PUMPHOUSES, TUNNELS, BASEMENTS, SUMPS AND TRENCHES).
   - 6.4 ALL WALLS OF DRY AREAS WITH HIGH GROUNDWATER BEHIND, EXTEND 1000 mm ABOVE HIGH WATER LEVEL.
   - 6.5 ALL WALLS OF LIQUID RETAINING STRUCTURES AS INDICATED ON THE DRAWINGS. EXTEND 1000 mm ABOVE HIGH LIQUID LEVEL.
   - 6.6 ALL SUSPENDED SLABS OF DRY AREAS WITH LIQUID RETAINING STRUCTURES OVER.
7. ALL WATERSTOPS TO BE INSTALLED IN SUCH A MANNER TO MAKE CJ OR EJ MEET LEAKAGE REQUIREMENTS AND AS PER MANUFACTURER RECOMMENDATIONS.

STRUCTURAL ALUMINUM

1. DESIGN OF ALUMINUM STRUCTURES TO BE IN ACCORDANCE WITH CSA-S157, STRENGTH DESIGN IN ALUMINUM
2. DETAILING, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE "ALUMINUM DESIGN MANUAL" AND THE "ALUMINUM CONSTRUCTION MANUAL"
3. ROLLED AND EXTRUDED SECTIONS - ASTM 6061-T6 (Fy=240 MPa).
4. BOLTS - USE STAINLESS STEEL BOLTS ASTM A325.
5. ALL HOLES FOR BOLTS SHALL BE EQUAL TO BOLT DIAMETER PLUS 1.6MM UNO.
6. FABRICATOR TO BE CERTIFIED AS DIVISION (1) OR (2.1) COMPANY UNDER CSA W47.2.
7. SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION.
8. ALL ALUMINUM IN CONTACT WITH CONCRETE, INCLUDING ANCHORS, TO BE PAINTED WITH TWO COATS OF ALKALI-RESISTANT PAINT.

PIPE SUPPORTS

1. DESIGN ALL PIPING SUPPORT SYSTEMS PER SPECIFICATIONS, REFER TO DIVISION 15.

PRECAST

1. DESIGN PRECAST COMPONENTS PER SPECIFICATIONS. REFER TO DIVISION 3.

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1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
LEGENDS, ABBREVIATIONS AND GENERAL NOTES (1)

CONSULTANT DRAWING NO. 761-1916-300

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

CLIMATIC INFORMATION

READ IN CONJUNCTION WITH THE DESIGN NOTES SECTION IN THE DESIGN NOTES

SNOW LOAD (1/50) Ss	1.7 kPa
SNOW LOAD (1/50) Sr	0.1 kPa
HOURLY WIND PRESSURE (1/10)	0.33 kPa
HOURLY WIND PRESSURE (1/50)	0.43 kPa
SEISMIC RESPONSE, Sa (0.2)	0.057
SEISMIC RESPONSE, Sa (0.5)	0.037
SEISMIC RESPONSE, Sa (1.0)	0.021
SEISMIC RESPONSE, Sa (2.0)	0.0089
SEISMIC RESPONSE, Sa (5.0)	0.0019
SEISMIC RESPONSE, Sa (10.0)	0.0010
SEISMIC RESPONSE, PGA	0.033
SEISMIC RESPONSE, PGV	0.025

SITE INFORMATION

READ IN CONJUNCTION WITH THE DESIGN LOADS SECTION IN THE DESIGN NOTES

IMPORTANCE CATEGORY	POST-DISASTER
WIND EXPOSURE TYPE	OPEN TERRAIN
INTERNAL PRESSURE CATEGORY (REFER TO DWGS)	2 OR 3
FOUNDATION SITE CLASS	D

DESIGN LOADS (UNO ON DWGS)

READ IN CONJUNCTION WITH THE DESIGN LOADS SECTION IN THE DESIGN NOTES

SITE (SITE AND TRUCK ACCESS AREAS)	
LIVE LOAD	12,5 kPa
TRUCK LOAD WITHIN 1000mm OF ANY STRUCTURE	CL625
ROOFS AT OR BELOW GRADE	
SUPERIMPOSED DEAD LOAD	1.7 kPa
LIVE LOAD	12 kPa OR AS NOTED ON DWGS
CONCENTRATED LOAD	54 kN
EARTH (MAXIMUM SOIL COVERING AS SHOWN ON DRAWINGS)	22 kN/m³
TRUCK LOAD ON TUNNEL ROOF SLAB	CL625
FLOORS (PROCESS AREAS)	
SUPERIMPOSED DEAD LOAD	20 kPa
LIVE LOAD	15 kPa OR AS NOTED ON DWGS
CONCENTRATED LOAD (IN ADDITION TO EQUIPMENT)	9.0 kN
STAIRS , CATWALKS, GRATINGS AND COVERS	
SUPERIMPOSED DEAD LOAD	2.0 kPa
LIVE LOAD	5 kPa
CONCENTRATED LOAD	9.0 kN
ROOFS	
SUPERIMPOSED DEAD LOAD	3.5 kPa
SNOW LOAD (INCLUDING SNOW ACCUMULATION)	3.0 kPa
LIVE LOAD	2.5 kPa
LIQUID RETAINING STRUCTURES	
LIQUID UNIT WEIGHT	10 kN/m³
GROUND WATER	
AVERAGE SEASONAL HIGH LEVEL	469.5m

FORCE MODIFICATION FACTORS

READ IN CONJUNCTION WITH THE FOUNDATIONS SECTION IN THE DESIGN NOTES

LATERAL LOAD RESISTANCE SYSTEM	MODIFICATION FACTOR	
	DUCTILITY RELATED R_D	OVERSTRENGTH RELATED R_O
STEEL CROSS BRACING STEEL MOMENT FRAMES	2.0	1.3
CONCRETE SHEAR WALLS	2.0	1.4
CONCRETE MOMENT FRAME	2.5	1.4

CLEAR CONCRETE COVER TO REINFORCEMENT

READ IN CONJUNCTION WITH THE CONCRETE REINFORCEMENT SECTION OF THE DESIGN NOTES

LOCATION	COVER
CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	75mm
FACES IN CONTACT WITH SEWAGE AND SEWAGE VAPOUR	75mm
EXPOSED TO WATER	50mm
MAIN FLOOR AND BELOW GRADE	50mm
INTERIOR BEAMS AND COLUMNS (NOT EXPOSED TO SOIL OR WATER) TO TIES OR STIRRUPS	40mm
INTERIOR SLAB AND WALLS (EXCEPT AS NOTED BELOW)	40mm
RATIO OF COVER TO NOMINAL BAR DIAMETER	2.0
RATIO OF COVER TO NOMINAL MAXIMUM AGGREGATE SIZE	2.0
NOTE: THE GREATEST COVER REQUIRED FOR ANY ELEMENT SHALL GOVERN	

STANDARD END HOOKS (FOR GRADE 400 REINF)

READ IN CONJUNCTION WITH THE CONCRETE REINFORCEMENT SECTION IN THE DESIGN NOTES

BAR SIZE	10M	15M	20M	25M	30M	35M	45M	55M
90° HOOK LENGTH	180	260	310	400	510	640	790	1020
180° HOOK LENGTH	140	180	210	280	390	550	670	860

TYPICAL U/N OTHERWISE ON DRAWINGS

REINFORCEMENT SPLICES

READ IN CONJUNCTION WITH THE CONCRETE REINFORCEMENT SECTION IN THE DESIGN NOTES

BAR SIZE	COMPRESSION SPLICE (mm)	TENSION SPLICE	
		VERTICAL OR BOTTOM HORIZONTAL BARS	TOP HORIZONTAL BARS *
		UNCOATED BARS	UNCOATED BARS
10M	300	400	500
15M	450	550	750
20M	600	700	900
25M	750	1100	1400
30M	900	1300	1700
35M	1025	1550	2000

NOTE 1 THIS TABLE IS BASED ON NORMAL WEIGHT CONCRETE f'c = 35 MPa AND ON REINFORCING STEEL fy = 400 MPa

NOTE 2 * TOP BARS ARE DEFINED AS HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 300mm OF CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.

NOTE 3 FOR STANDARD EMBEDMENT DEPTH INTO CONCRETE, DIVIDE BASIC TENSION LAP SPLICE NUMBER BY 1.3.

METALS

READ IN CONJUNCTION WITH THE STRUCTURAL STEEL SECTION IN THE DESIGN NOTES

MEMBER TYPE	GRADE
ROLLED W-SHAPES, TEES	CAN/CSA G40.21 350W OR ASTM A992 GRADE 50
WELDED WIDE FLANGE	CAN/CSA G40.21 350W
HOLLOW STRUCTURAL SECTIONS	CAN/CSA G40.21 350W CLASS C
OTHER STRUCTURAL SECTIONS AND PLATES	CAN/CSA G40.21 300W
BOLTS	HOT DIP GALVANIZED ASTM A325
CAST-IN-PLACE ANCHOR BOLTS AND DRILLED ANCHORS	ASTM F593, STAINLESS STEEL TYPE 316
HEADED STUD ANCHORS	ASTM A108
ALUMINUM SECTIONS	ASTM 6061-T6
FASTENERS FOR STRUCTURAL ALUMINUM AND FRP COMPONENTS	ASTM F593, STAINLESS STEEL TYPE 316

MASONRY WALL REINFORCEMENT

READ IN CONJUNCTION WITH THE MASONRY SECTION IN THE DESIGN NOTES

WALL TYPE	VERTICAL REINFORCING
LOAD BEARING WALL	1-20M @ 800 MAX (100% COREFILLED)
NON LOAD BEARING EXTERIOR WALL	1-20M @ 800 MAX
NON LOAD BEARING PARTITION WALL	1-15M @ 800 MAX

MASONRY REINFORCEMENT LAP SPLICES

READ IN CONJUNCTION WITH THE MASONRY SECTION IN THE DESIGN NOTES

BAR SIZE	LAP SPLICES (mm)
10M	450
15M	600
20M	900

STANDARD STRUCTURAL DRAWING ABBREVIATIONS

A.B. or A.BOLT	ANCHOR BOLT	MISC	MISCELLANEOUS
A.I.F.	ASPHALT IMPREGNATED FIBRE BOARD	N.D. BARS	NELSON DEFORMED BARS
		N.I.C.	NOT IN CONTRACT
ABT	ABOUT	N.S	NEAR SIDE or NELSON STUD
ABUT	ABUTMENT	N.T.S.	NOT TO SCALE
ADDL or ADD'L	ADDITIONAL	NO or #	NUMBER
ALUM	ALUMINUM	O.C.or O/C	ON CENTRE
APPROX or	APPROXIMATELY	O.D.	OUTSIDE DIAMETER
ARCH	ARCHITECT	O.F.	OUTSIDE FACE
ARND	AROUND	OPNG	OPENING
B or BOT	BOTTOM	OPP	OPPOSITE
B.U.	BUILT UP	OWSJ	OPEN WEB STEEL JOIST
BLK	BLOCK	P.L.	PROPERTY LINE
BLL	BOTTOM LOWER LAYER	P/C	PRECAST
BM	BEAM	P/T	POST TENSIONED
BRG	BEARING	PERIM	PERIMETER
BTWN	BETWEEN	PERP	PERPENDICULAR
BUL	BOTTOM UPPER LAYER	PKG	PACKAGE
C.B.	CATCH BASIN	PL.	PLATE
C.I.P.	CAST IN PLACE	PLY	PLYWOOD
C.J.	CONSTRUCTION JOINT	PROJ	PROJECT
C.L. or ℄	CENTRE LINE	PTD	PAINTED
C/C	CENTRE TO CENTRE	R or RAD	RADIUS
C/W	COMPLETE WITH	RECT	RECTANGULAR
COL	COLUMN	R.D.	ROOF DRAIN
CONC	CONCRETE	R/W	REINFORCED WITH
CONN	CONNECTION	REINF	REINFORCING
CONT	CONTINUOUS	REM	REMAINDER
D or DP	DEPTH	REQ'D	REQUIRED
DIA or Ø	DIAMETER	S.J	SAWCUT JOINT
DIAG	DIAGONAL	S.O.G	SLAB ON GRADE
DO or do	DITTO	S.SL	STAINLESS STEEL
DWG	DRAWING	SIM	SIMILAR
DWL	DOWEL	SPMDD	STANDARD PROCTOR MAXIMUM DRY DENSITY
E.E.	EACH END		
E.F.	EACH FACE	SQ	SQUARE
E.J.	EXPANSION JOINT	SST	SIMPSON STRONG TIE
E.S.	EACH SIDE	STIFF	STIFFENER
E.W.	EACH WAY	STIR	STIRRUP
EL or ELEV	ELEVATION	SYM	SYMETRICAL
ELECT	ELECTRICAL	T	TOP
EQ	EQUAL	T & B	TOP & BOTTOM
EQ. SPCS.	EQUAL SPACES	T.O.	TOP OF
EXIST	EXISTING	T/F EL.	TOP OF FOOTING ELEVATION
EXT	EXTERIOR	THK	THICK
F.S.	FAR SIDE	TLL	TOP LOWER LAYER
F.T.S.	FULL TENSION SPLICE	TUL	TOP UPPER LAYER
FDN	FOUNDATION	TYP	TYPICAL
FL.	FLAT PLATE	U/N or UNO	UNLESS NOTED OTHERWISE
FTG	FOOTING	U/S	UNDERSIDE
GA	GAUGE	VERT	VERTICAL
GALV	GALVANIVED	W	WIDE or WIDTH or WITH
GR BM	GRADE BEAM	W.P.	WORKING POINT
H1E	HOOK ONE END	WWM	WELDED WIRE MESH
H2E	HOOK TWO ENDS		
H or HT	HIGH OR HEIGHT		
H.D. GALV	HOT DIPPED GALVANIZED		
H.R.	HANDRAIL		
HOR	HORIZONTA;L		
I.C	IN CENTRE		
I.D.	INSIDE DIAMETER		
I.F.	INSIDE FACE		
INCL	INCLUDING		
INSUL	INSULATION		
INT	INTERIOR		
LG	LONG		
LOC	LOCATION		
LONGIT	LONGITUDINAL		
M.H	MANHOLE		
M.S	MILD STEEL		
MAX	MAXIMUM		
MECH	MECHANICAL		
MEZZ	MEZZANINE		
MIN	MINIMUM		

	PLAN DESCRIPTION/REVISION	DATE	BY
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1	30% DETAILED DESIGN	2021-01-29	LM

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
GENERAL
LEGENDS, ABBREVIATIONS AND GENERAL NOTES (2)

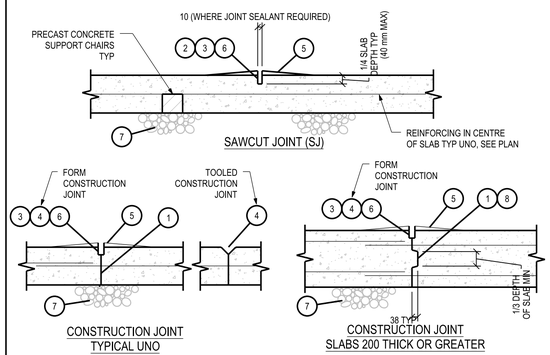
CONSULTANT DRAWING NO. 761-1916-301

SCALE: NTS

COS FILE NO.

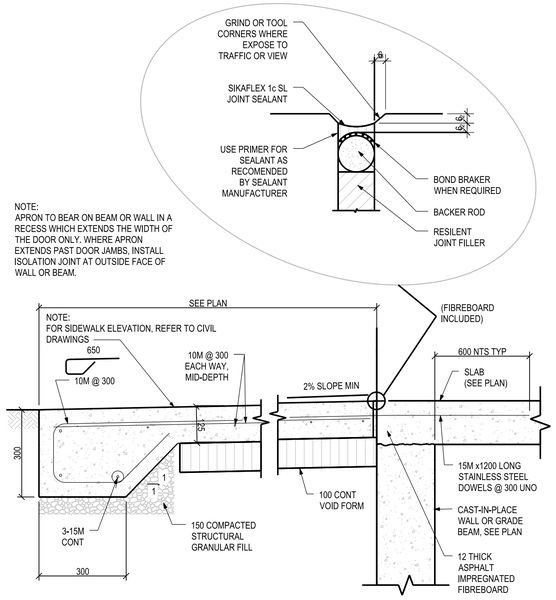
COS CONTRACT NO.

COS DRAWING NO.

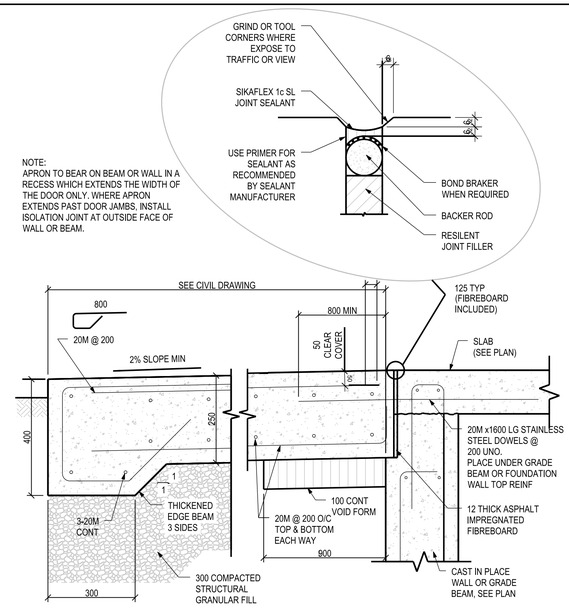


1. PROVIDE CONSTRUCTION JOINT AS SHOWN & AT LOCATIONS SHOWN ON DRAWINGS. DO NOT EXCEED 24 m O/C. CONSTRUCTION JOINT MAY BE LOCATED AT SAWCUT JOINT LOCATIONS.
2. PROVIDE SAWCUT JOINT AS SHOWN & AT LOCATIONS SHOWN ON DRAWINGS. DO NOT EXCEED 4.5 m O/C. CUT SAWCUT JOINTS A MAXIMUM OF 24 HRS AFTER PLACING SLAB.
3. CONSTRUCTION JOINT AND SAWCUT JOINTS PATTERNS MUST BE COORDINATED WITH CERAMIC, QUARRY TILE (OR SIMILAR FINISH) PATTERN JOINTS.
4. TOOL OR FORM ALL CONSTRUCTION JOINTS ON EXPOSED SLAB ON GRADE CONCRETE FLOORS.
5. GRIND LEVEL ALL UNEVEN SURFACES AT THE EDGE OF CONSTRUCTION JOINTS AND SAWCUT JOINTS TO WITHIN SPECIFIED TOLERANCES.
6. JOINT SEALANT REQUIRED FOR ALL EXPOSED FLOORS, AND FOR FLOORS WITH CERAMIC TILE, QUARRY TILE, VINYL ASBESTOS TILE AND OTHER SIMILAR FINISHES WITH JOINT PATTERNS THROUGH THE FINISH. JOINT SEALANT NOT REQUIRED WITH CARPET FINISH.
7. SUBGRADE PER SPECIFICATIONS.
8. CONTINUOUS KEY.

1 SLAB ON GRADE CONTROL JOINTS
NTS



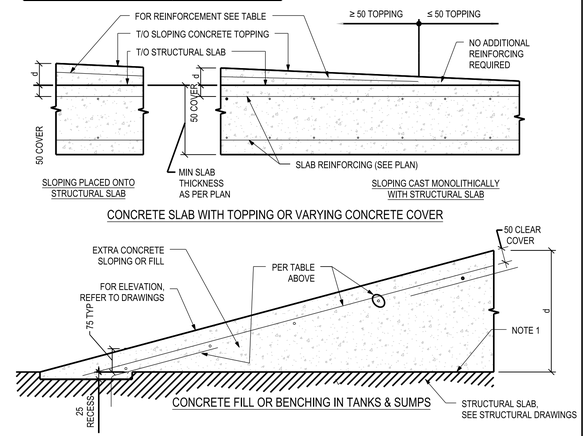
2 TYPICAL APRON SLAB AT MANDOOR DETAIL
NTS



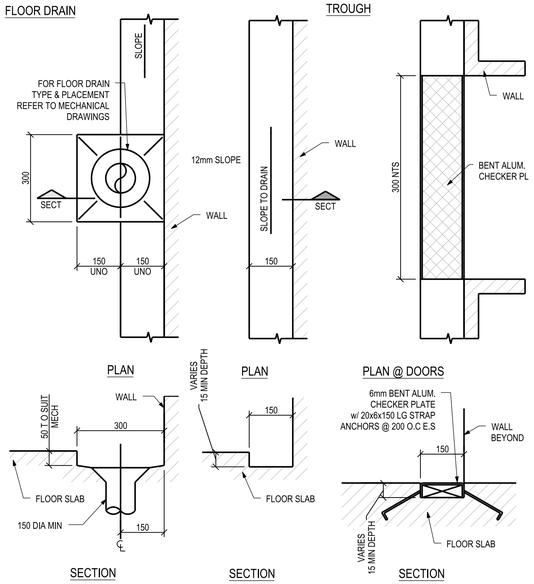
3 TYPICAL APRON SLAB AT VEHICLE DOOR DETAIL
NTS

REINFORCEMENT TABLE	
PROVIDE 0.3% OF (d x 1m) REINFORCEMENT STEEL AREA, BUT NOT LESS THAN:	
REINFORCING	TOPPING THICKNESS (d)
150x150x35x35 WWM OR 10M @ 300 EACH WAY	d ≥ 75 mm
10M @ 200 EACH WAY	d ≥ 165 mm
15M @ 200 EACH WAY	d = 330 mm
20M @ 200 EACH WAY	d > 330 mm

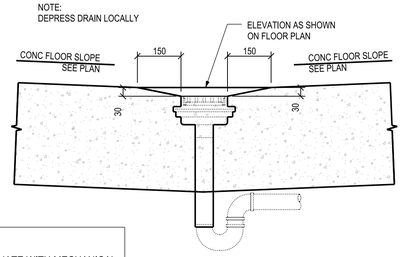
NOTES:
1) PLACE CONCRETE TOPPING OVER THOROUGHLY CLEANED DEGREASED AND ROUGHENED SURFACES. SEE SPECIFICATIONS FOR PLACING TOPPING.
2) CONTINUE JOINTS FROM UNDERLYING SLAB TO TOP OF CONCRETE TOPPING.



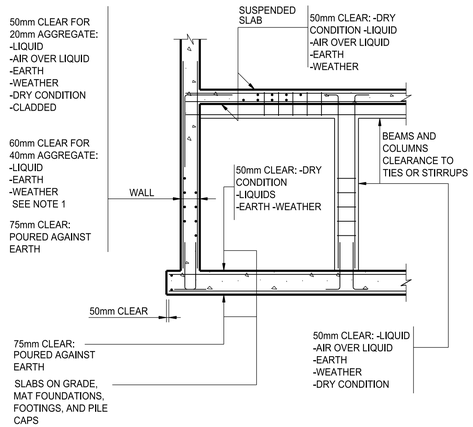
4 TYPICAL REINFORCEMENT IN SLOPED CONCRETE TOPPING OR FILL DETAIL
NTS



5 CONCRETE TOPPING OR FILL DETAIL
NTS

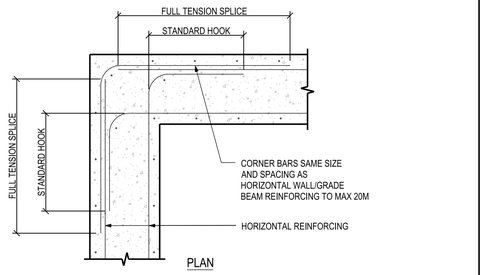


6 TYPICAL AREA FLOOR DRAIN DETAIL
NTS



NOTES:
1. PROVIDE 50mm CLEARANCE ON FACE EXPOSED TO DRY CONDITION.
2. SPECIFIED COVER WILL PROVIDE MINIMUM 2 HOUR FIRE RATING.
2. PROVIDE 75 mm COVER TO REINFORCEMENT ON INTERIOR WALLS, SLABS AND BEAMS IN SLUDGE TANKS.

7 CONCRETE COVER TO REINFORCING
NTS



8 TYPICAL REINFORCEMENT AT CORNER WALL/GRADE BEAM INTERSECTION
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1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (1)

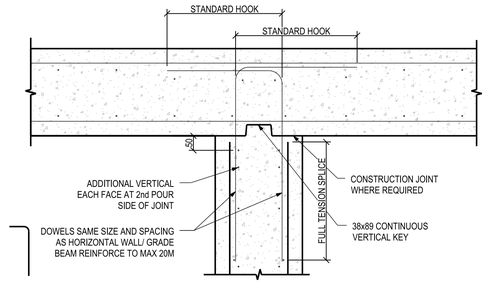
CONSULTANT DRAWING NO. 761-1916-302

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

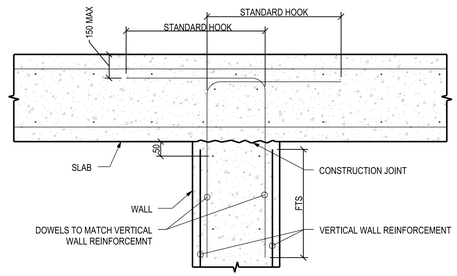
COS DRAWING NO.



PLAN

9 TYPICAL REINFORCEMENT AT WALL/GRADE BEAM INTERSECTION

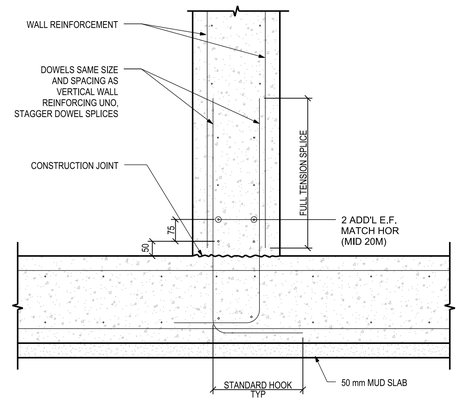
NTS (NON-WATER RETAINING STRUCTURES)



VERTICAL SECTION

10 TYPICAL REINFORCEMENT AT WALL TO SLAB INTERSECTION

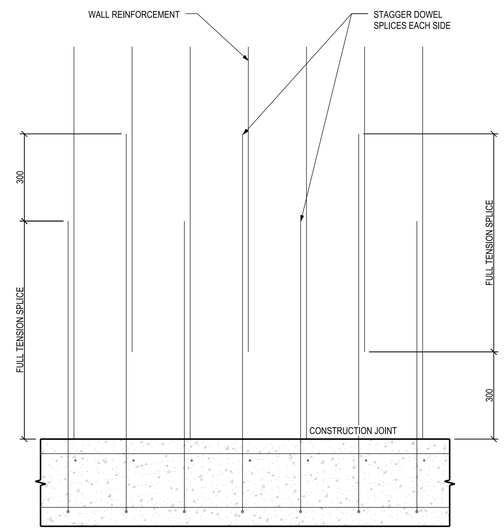
NTS (NON-WATER RETAINING STRUCTURES)



VERTICAL SECTION

11 TYPICAL REINFORCEMENT AT WALL TO SLAB INTERSECTION

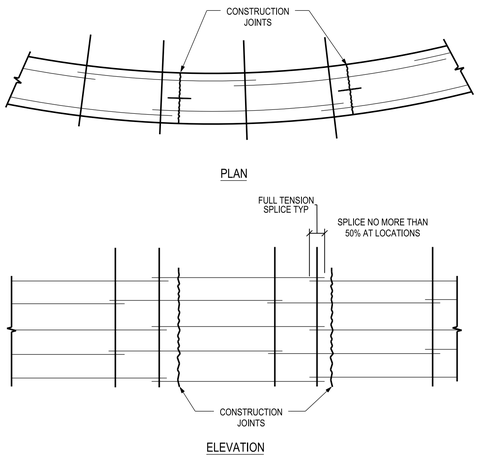
NTS (NON-WATER RETAINING STRUCTURES)



ELEVATION VIEW

12 TYPICAL SLAB TO WALL STAGGERED VERTICAL SPLICING DETAIL

NTS

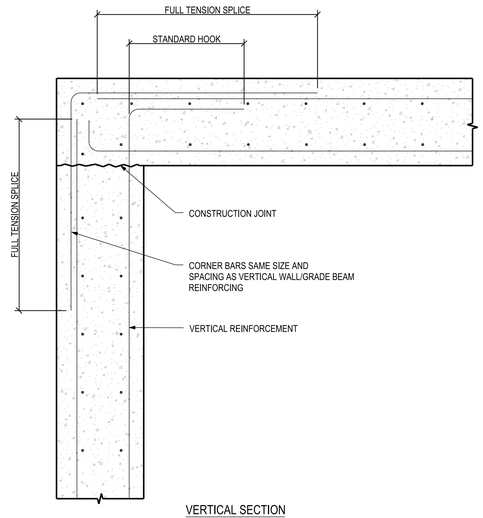


PLAN

ELEVATION

13 TYPICAL CIRCULAR TANK WALL HORIZONTAL SPLICING DETAIL

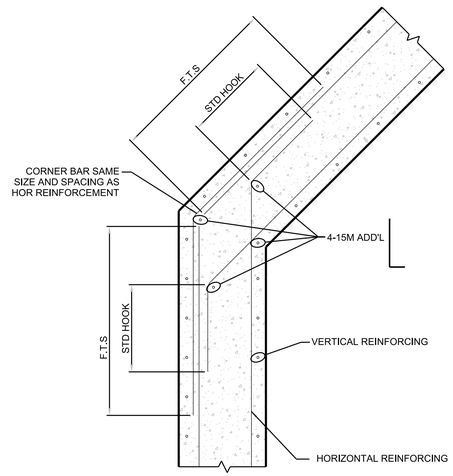
NTS



VERTICAL SECTION

14 TYPICAL REINFORCEMENT AT EXTERIOR WALL TO SUSPENDED SLAB

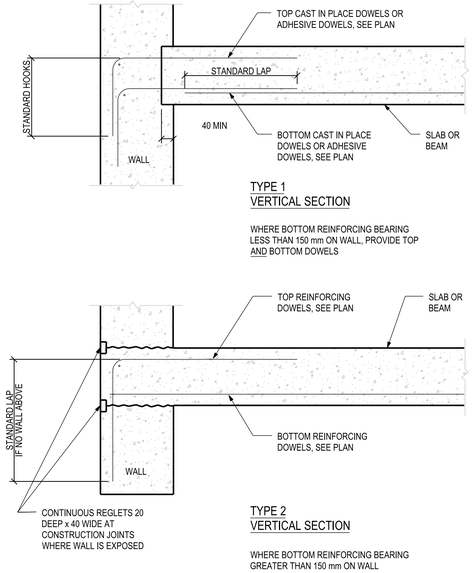
NTS



(TANKS, CHANNELS & DRY AREAS)

15 TYPICAL REINFORCEMENT AT WALL TO WALL CORNERS

NTS



TYPE 1
VERTICAL SECTION

WHERE BOTTOM REINFORCING BEARING
LESS THAN 150 mm ON WALL, PROVIDE TOP
AND BOTTOM DOWELS

TYPE 2
VERTICAL SECTION

WHERE BOTTOM REINFORCING BEARING
GREATER THAN 150 mm ON WALL

16 TYPICAL CAST IN PLACE SLAB OR BEAM TO WALL CONNECTION

NTS

11			
10			
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4			
3			
2			
1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (2)

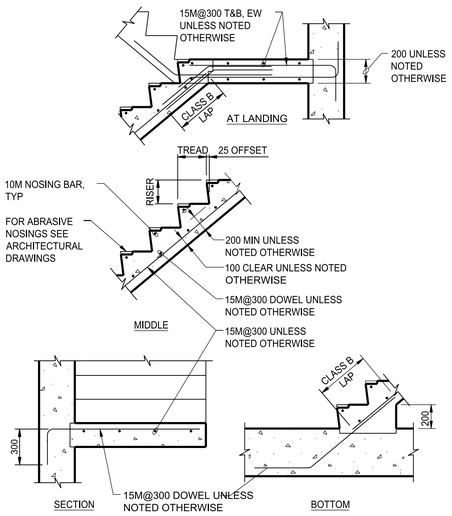
CONSULTANT DRAWING NO. 761-1916-303

SCALE: NTS

COS FILE NO.

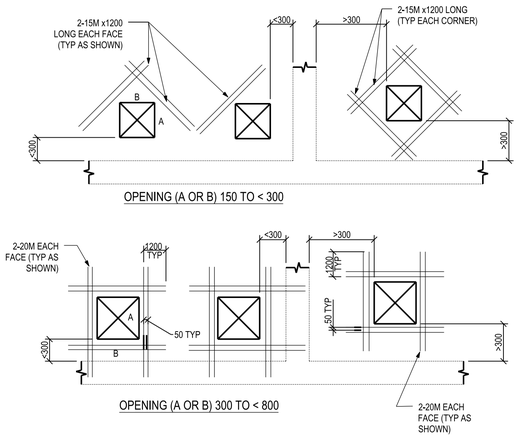
COS CONTRACT NO.

COS DRAWING NO.



17 TYPICAL CONCRETE STAIR REINFORCING

NTS

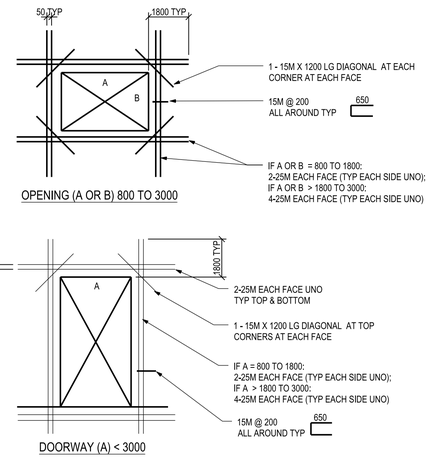


NOTES:

1. NUMBER OF REINFORCING BARS TO BE CUT AT OPENING TO BE KEPT TO A MINIMUM.
2. REINFORCING BARS TO BE KEPT 50 mm CLEAR OF OPENING.
3. CIRCULAR OPENINGS TO BE TREATED IN SAME MANNER AS RECTANGULAR UNLESS OTHERWISE DETAILED.
4. PROVIDE STANDARD HOOKS ON ADDITIONAL REINFORCING WHERE IT IS NOT POSSIBLE TO INSTALL REINFORCING WITH REQUIRED LENGTH.

18 TYPICAL ADDITIONAL REINFORCING AROUND OPENINGS IN CONCRETE SLABS AND WALLS

NTS

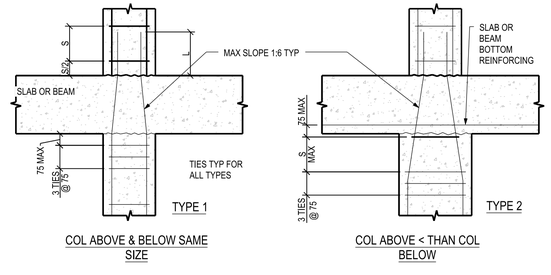


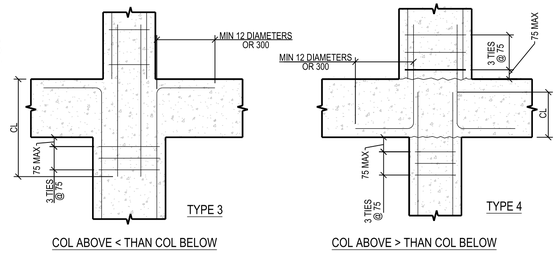
NOTES:

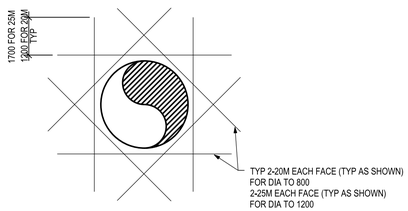
1. THE NUMBER OF REINFORCING BARS TO BE CUT AT OPENING TO BE KEPT AT A MINIMUM.
2. REINFORCING BARS TO BE KEPT 50 mm CLEAR OF OPENING.
3. CIRCULAR OPENINGS TO BE TREATED IN SAME MANNER AS RECTANGULAR UNLESS NOTED OTHERWISE.
4. PROVIDE STANDARD HOOKS ON ADDITIONAL REINFORCING WHERE IT IS NOT POSSIBLE TO INSTALL REINFORCING WITH REQUIRED LENGTH.

19 TYPICAL ADDITIONAL REINFORCING AROUND OPENINGS IN CONCRETE WALLS

NTS







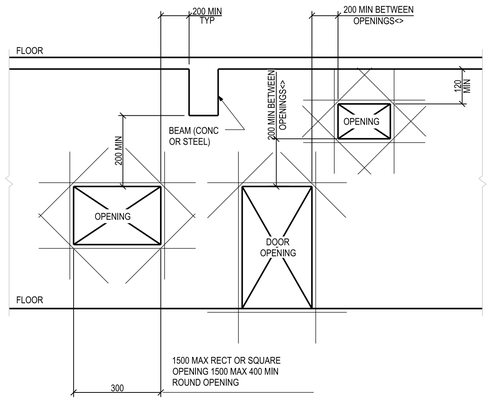
PIPE DIA 300 TO 1200

NOTES:

1. NUMBER OF REINFORCING BARS TO BE CUT AT OPENING TO BE KEPT TO A MINIMUM.
2. REINFORCING BARS TO BE KEPT 75 mm CLEAR OF OPENING.
3. PROVIDE STANDARD HOOKS ON ADDITIONAL REINFORCING WHERE IT IS NOT POSSIBLE TO INSTALL REINFORCING WITH REQUIRED LENGTH.

20 TYPICAL ADDITIONAL REINFORCING AROUND PIPES IN CONCRETE SLABS AND WALLS

NTS

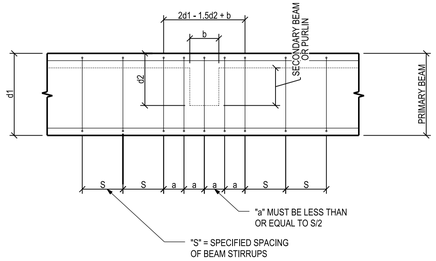


NOTES:

1. FOR OPENINGS LARGER THAN INDICATED, OR NOT SPECIFICALLY DETAILED ELSEWHERE, REINFORCING MUST BE APPROVED IN WRITING BY ENGINEER.
2. REFER TO ARCHITECTURAL & MECHANICAL DRAWINGS FOR DIMENSIONS & LOCATIONS FOR ALL OPENINGS NOT SPECIFICALLY DETAILED ON STRUCTURAL DRAWINGS.

21 TYPICAL CONCRETE WALL OPENING LIMITATIONS

NTS



ELEVATION

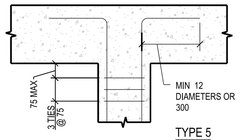
NOTE:

THIS DETAIL IS NOT APPLICABLE IF BEAM INTERSECTION IS OVER A SUPPORT

22 TYPICAL ADDITIONAL STIRRUPS AT UNSUPPORTED BEAM INTERSECTIONS (UNO)

NTS

NOTE:
1. ALL SPLICES NOTED `L' ARE TO BE CLASS B SPLICE LENGTHS.
2. ALL SPLICES NOTED `CL' ARE TO BE STANDARD EMBEDMENT LENGTH SEE TYPICAL REINFORCING DETAILS FOR BUILDINGS.
3. ALL REINFORCEMENT WHICH EXCEEDS 4 % OF COLUMN AREA MUST EXTEND FULL HEIGHT WITH NO SPLICE (ALTERNATE: USE APPROVED MECH SPLICE).



23 TYPICAL COLUMN SPLICE DETAILS

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1	30% DETAILED DESIGN	2021-01-29	LM	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
GENERAL
STANDARD DETAILS (3)

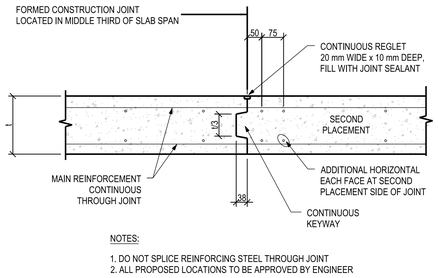
CONSULTANT DRAWING NO. 761-1916-304

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



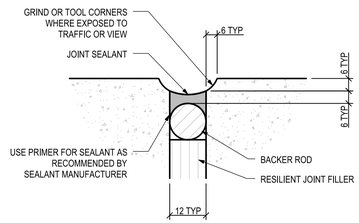
NOTES:

1. DO NOT SPLICE REINFORCING STEEL THROUGH JOINT
2. ALL PROPOSED LOCATIONS TO BE APPROVED BY ENGINEER

24 TYPICAL CONSTRUCTION JOINT IN STRUCTURAL SLAB

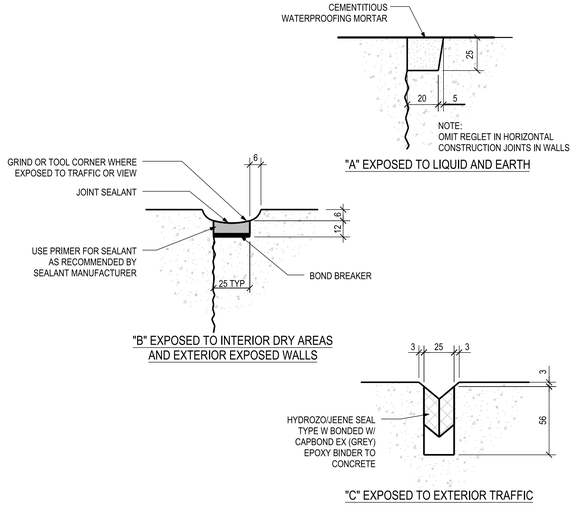
NTS

(NON-WATER RETAINING STRUCTURES)



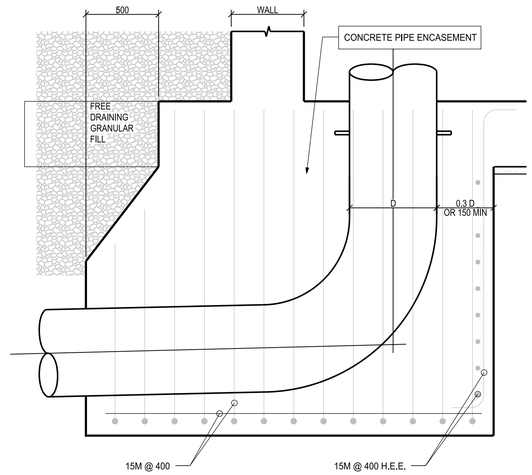
25 TYPICAL JOINT AND SEALANT DETAIL FOR ISOLATION JOINTS

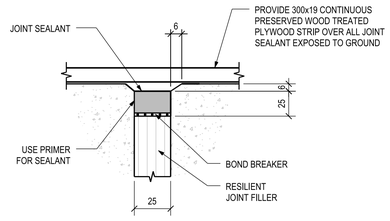
NTS



26 TYPICAL REGLET AND SEALANT DETAILS FOR CONSTRUCTION JOINTS FOR WALLS AND SLABS

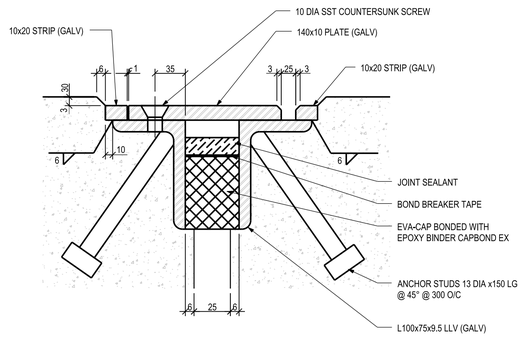
NTS





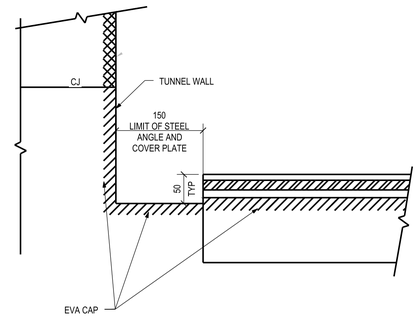
27 TYPICAL EXPANSION JOINT FOR WALLS AND FLOORS

NTS



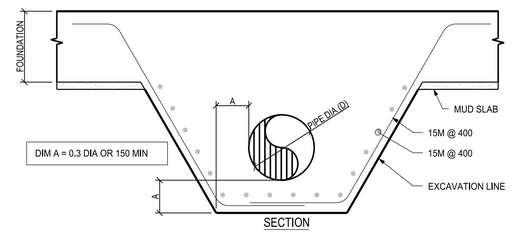
28 TYPICAL EXPANSION JOINT DETAIL EXPOSED TO VEHICULAR TRAFFIC

NTS



29 TYPICAL INSTALLATION DETAIL OF EXPANSION JOINT IN BASE SLAB WITH TROUGH

NTS



30 TYPICAL INSTALLATION DETAIL OF EXPANSION JOINT PIPE OR CONDUIT ENCASEMENT DETAIL

NTS

APPLICABLE TO BOTH WALLS AND SLABS ON GRADE
(USE VERTICAL SIDES FOR SUSPENDED SLABS)

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1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
GENERAL
STANDARD DETAILS (4)

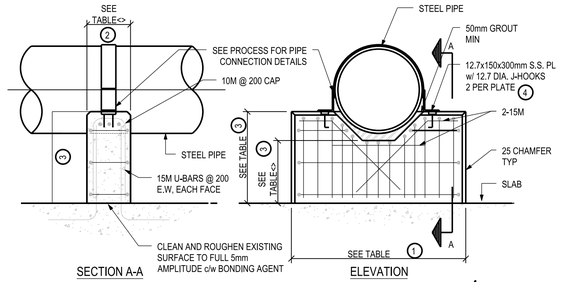
CONSULTANT DRAWING NO. 761-1916-305

SCALE: NTS

COS FILE NO.

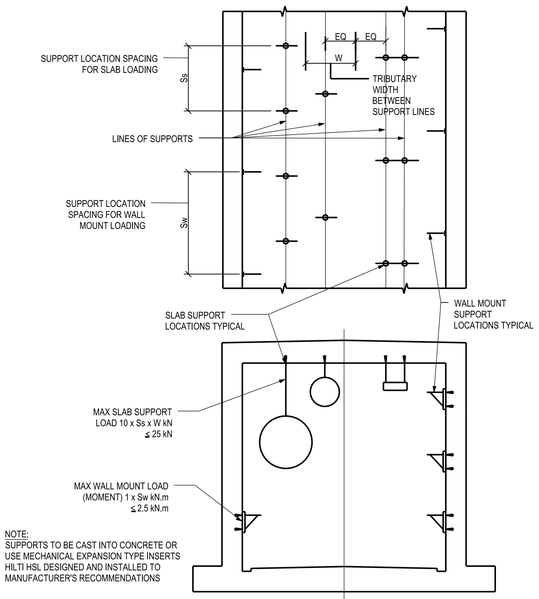
COS CONTRACT NO.

COS DRAWING NO.



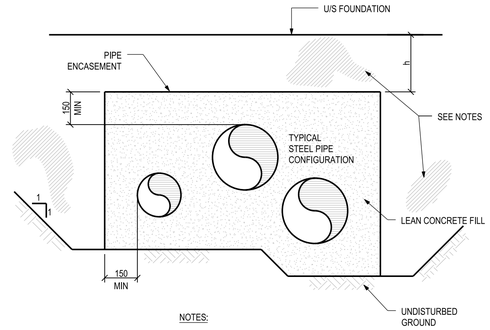
NOMINAL PIPE SIZE	CONCRETE				
	LENGTH (1)	WIDTH (2)	HEIGHT MIN (3)	HEIGHT MIN (3)	"J" HOOK SIZE (4)
150	700	400	380	486	200
200	750	400	380	486	200
250	800	400	380	486	200
300	850	400	380	486	200
350	900	400	380	486	200
400	900	450	380	486	292
500	1000	450	380	516	343
600	1150	600	380	545	394
650	1150	600	380	558	419
700	1300	600	380	587	470
800	1450	750	380	617	521
850	1450	750	380	632	546
1000	1650	750	380	677	622
1150	1800	800	380	721	698

31 TYPICAL PIPE SUPPORT DETAIL
NTS



NOTE:
SUPPORTS TO BE CAST INTO CONCRETE OR USE MECHANICAL EXPANSION TYPE INSERTS HILTI HSL DESIGNED AND INSTALLED TO MANUFACTURER'S RECOMMENDATIONS

32 TYPICAL ALLOWABLE LOADING ON CONCRETE SLABS AND WALLS
NTS

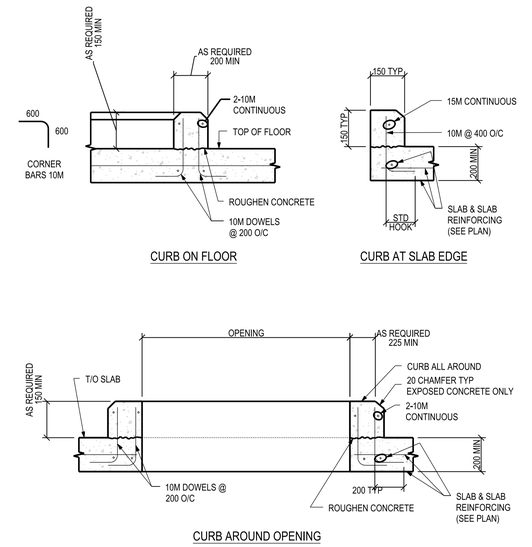


NOTES:

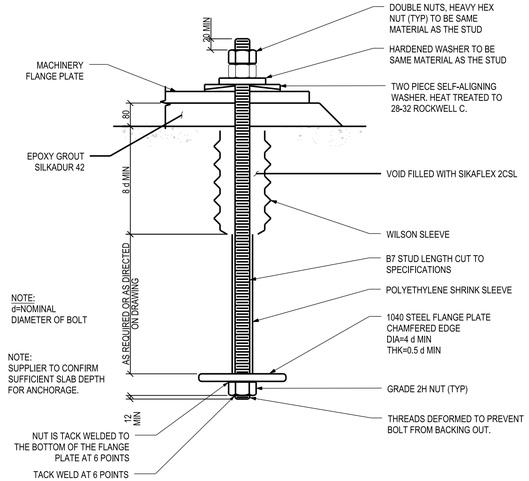
1. FOR h < 600:
FILL SPACE ABOVE AND EACH SIDE OF ENCASEMENT WITH LEAN CONCRETE FILL TO UNDERSIDE OF FOUNDATION. UNO REFER TO STRUCT DWGS.

2. FOR h > 600:
FILL SPACE ABOVE AND EACH SIDE OF ENCASEMENT WITH TYPE 1 BACKFILL AND COMPACT TO 100% STANDARD PROCTOR DENSITY UNO REFER TO STRUCT DWGS.

33 TYPICAL CONCRETE ENCASEMENT FOR PIPES <300Ø (UNDER FOUNDATIONS)
NTS



34 TYPICAL CONCRETE CURB REINFORCING DETAILS
NTS

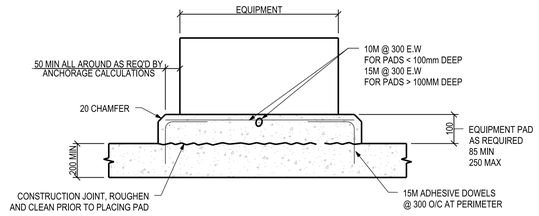


NOTE:
d=NOMINAL DIAMETER OF BOLT

NOTE:
SUPPLIER TO CONFIRM SUFFICIENT SLAB DEPTH FOR ANCHORAGE.

ANCHOR BOLT NOTES:
A) USE ANCHOR BOLTS AND NUTS OF GRADE B7 TO ASTM A193 AND A194 FOR VIBRATING MACHINERY, MOTORS AND PUMPS.
B) FOR BUILDING STRUCTURES NOT IN CONTACT WITH WATER AND NOT EXPOSED TO MOIST ENVIRONMENTS USE CAST IN PLACE ANCHOR BOLTS TO ASTM F1554 GRADE 36 OR A325M.
C) FOR ANCHOR BOLTS OTHER THAN A) AND B) USE S.S 316 BOLTS AND NUTS TO ASTM A193 AND ASTM A194. BOLTS CAN BE EITHER CAST IN PLACE OR GROUTED WITH EITHER HILTI HIT HY200 OR HILTI HVA ADHESIVE ANCHORING SYSTEM.

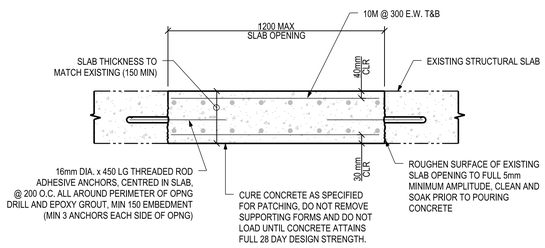
35 TYPICAL ANCHOR BOLT FOR VIBRATING MACHINERY DETAIL
NTS



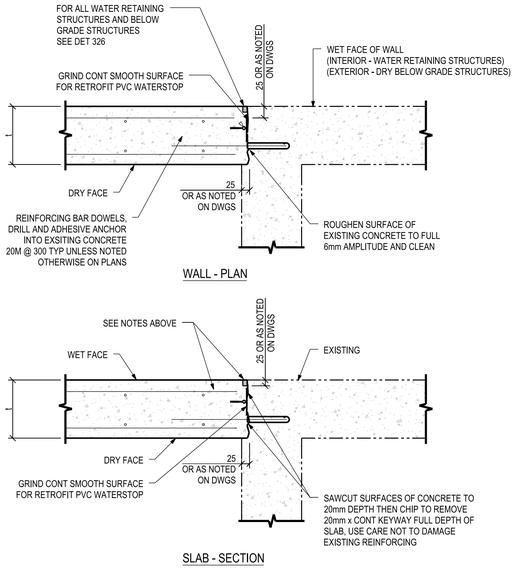
NOTES:

1. WHEN ANCHORAGE OF EQUIPMENT TO PAD IS REQUIRED, USE CONCRETE ANCHORS.
2. SPECIFIED CONCRETE PADS FOR ELECTRICAL EQUIPMENT SHALL BE 85mm DEEP, UNLESS NOTED OTHERWISE.

36 TYPICAL HOUSEKEEPING PAD FOR EQUIPMENT TYPE E
NTS



37 EXISTING SLAB OPENING REPAIR
NTS



38 CONNECTION OF NEW CONC TO EXISTING
NTS

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1	30% DETAILED DESIGN	2021-01-29	LM	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (5)

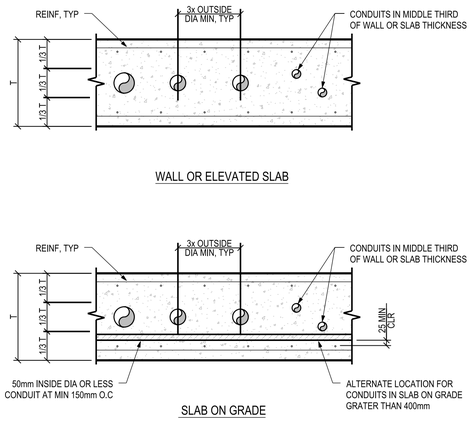
CONSULTANT DRAWING NO. 761-1916-306

SCALE: NTS

COS FILE NO.

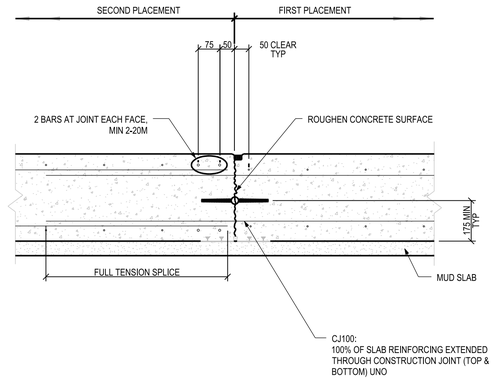
COS CONTRACT NO.

COS DRAWING NO.



NOTES:
1. AT EXIT OR ENTRY TO SLAB, REINFORCE OPENINGS CREATED BY MULTIPLE CONDUITS PER DET
2. FOR SHORT SECTIONS OF ELEMENTS, SUCH AS WALL PIERS, PLACE CONDUITS AS DIRECTED BY ENGINEER.

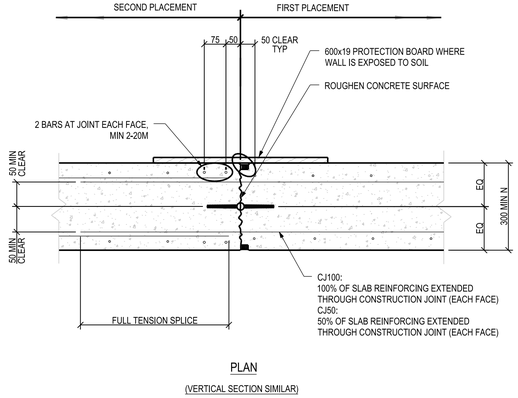
39 CONDUIT IN STRUCTURAL CONCRETE
NTS



NOTE:

REFER TO DRAWINGS FOR ACTUAL DIMENSIONS AND REINFORCEMENT

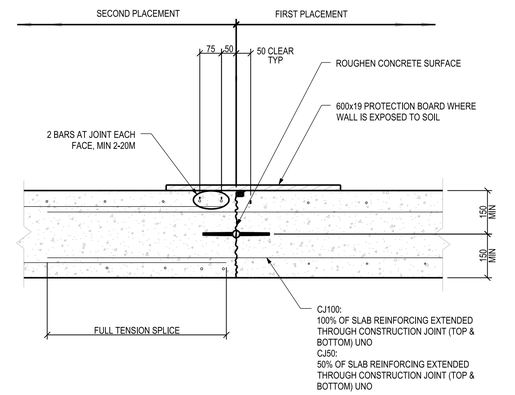
40 TYPICAL VERTICAL CONSTRUCTION JOINT FOR BASE SLAB AND FOOTINGS
NTS (WATER RETAINING STRUCTURES)



NOTE:

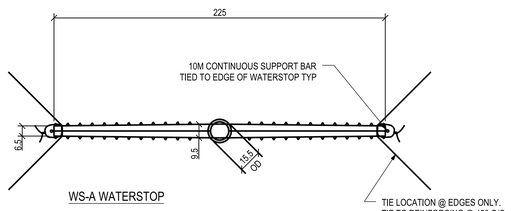
NO REGLETS AND SEALANTS FOR HORIZONTAL CONSTRUCTION JOINT

41 TYPICAL HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS FOR CONCRETE WALLS
NTS (WATER RETAINING STRUCTURES)

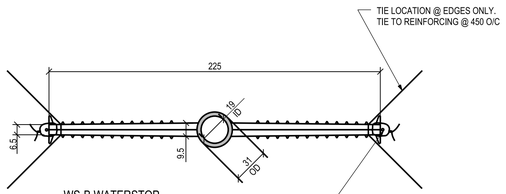


LOCATE JOINTS AT 1/3 SPAN, UNO.

42 TYPICAL CONSTRUCTION JOINT FOR SUSPENDED SLAB AND BEAM
NTS (WATER RETAINING STRUCTURES)

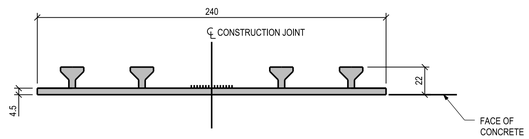


TYPICAL AT HORIZONTAL & VERTICAL CONSTRUCTION AND CONTROL JOINTS

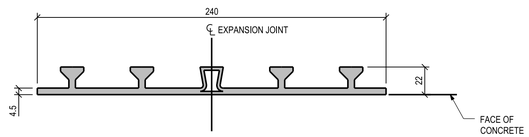


TYPICAL AT HORIZONTAL & VERTICAL EXPANSION JOINTS & CJ50

43 TYPICAL WATERSTOP DETAILS
NTS

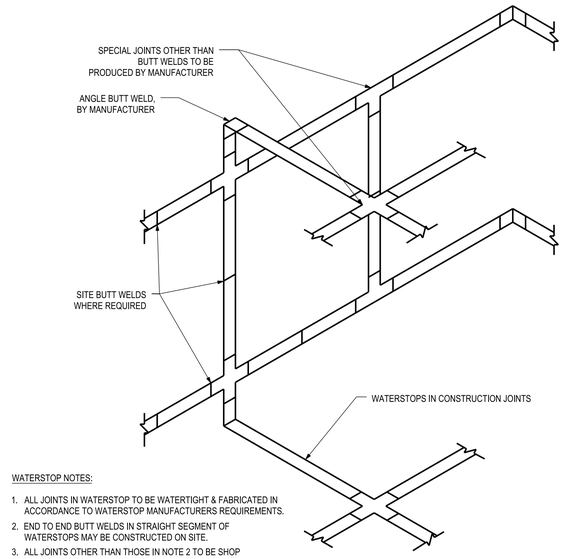


TYPICAL AT HORIZONTAL & VERTICAL CONSTRUCTION JOINTS



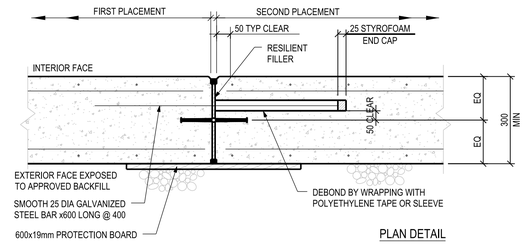
TYPICAL AT HORIZONTAL & VERTICAL EXPANSION JOINTS

44 TYPICAL EXTERIOR WATERSTOP DETAILS
NTS



WATERSTOP NOTES:
1. ALL JOINTS IN WATERSTOP TO BE WATERTIGHT & FABRICATED IN ACCORDANCE TO WATERSTOP MANUFACTURERS REQUIREMENTS.
2. END TO END BUTT WELDS IN STRAIGHT SEGMENT OF WATERSTOPS MAY BE CONSTRUCTED ON SITE.
3. ALL JOINTS OTHER THAN THOSE IN NOTE 2 TO BE SHOP MADE BY THE WATERSTOP MANUFACTURER.

45 TYPICAL WATERSTOP SPLICING DETAIL
NTS



46 TYPICAL EXPANSION JOINT FOR CONCRETE WALLS
NTS

11				
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1	30% DETAILED DESIGN	2021-01-29	LM	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (6)

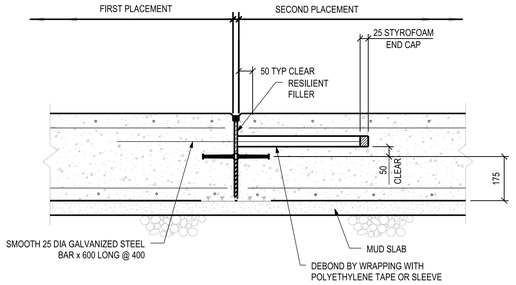
CONSULTANT DRAWING NO. 761-1916-307

SCALE: NTS

COS FILE NO.

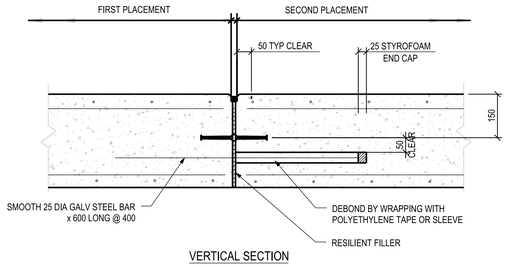
COS CONTRACT NO.

COS DRAWING NO.



47 TYPICAL VERTICAL EXPANSION JOINT FOR BASE SLAB AND FOOTINGS

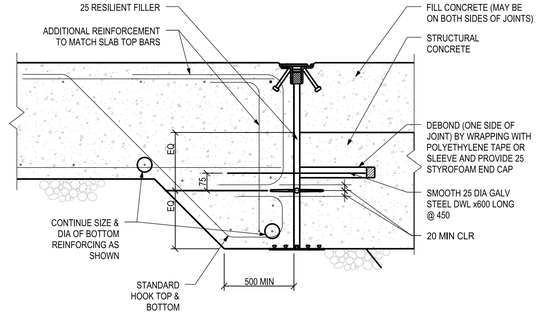
NTS



VERTICAL SECTION

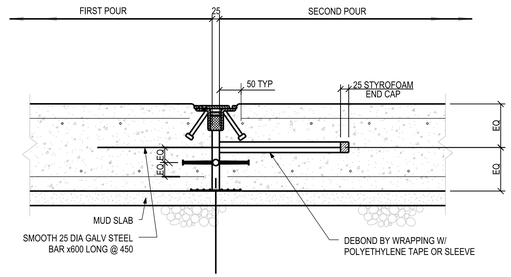
48 TYPICAL VERTICAL EXPANSION JOINT FOR SUSPENDED SLABS NOT EXPOSED TO TRAFFIC

NTS



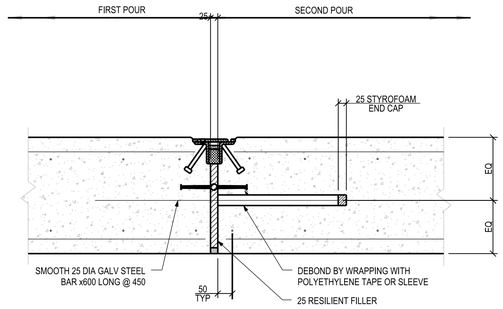
49 TYPICAL EXPANSION JOINTS FOR BASE SLABS WITH DIFFERENT THICKNESSES

NTS



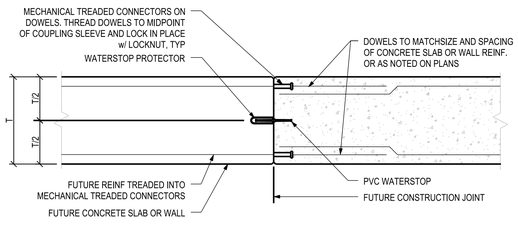
50 TYPICAL EXPANSION JOINT FOR TUNNEL BASE SLABS

NTS



51 TYPICAL EXPANSION JOINT FOR ROOF SLABS OVER TUNNELS WITH VEHICLE TRAFFIC

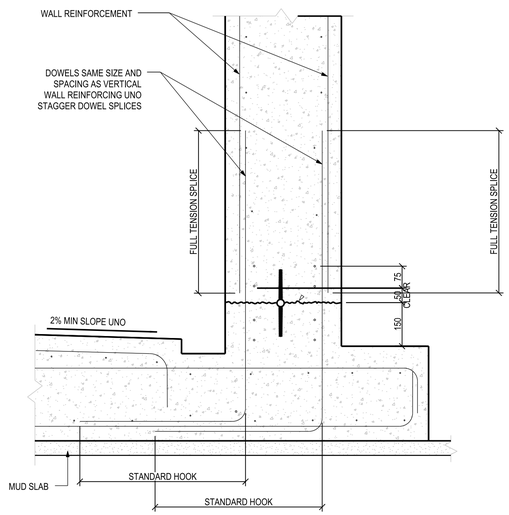
NTS



NOTES:
1. DETAILS SHOWN ARE APPICABLE FOR FUTURE EXPANSION AT A CONSTRUCTION JOINT
2. PROVIDE PROTECTIVE INSERTS FOR THREADED CONNECTORS

52 WALL OR SLAB FUTURE CONSTRUCTION

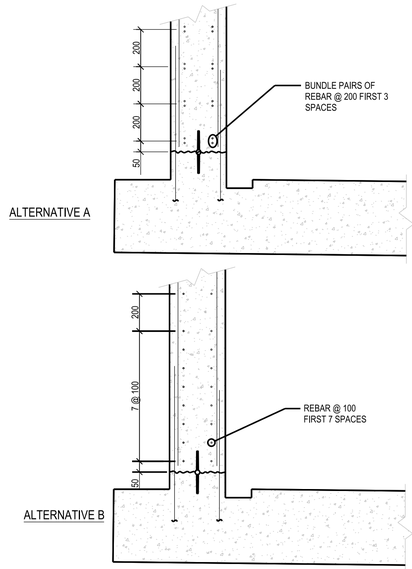
NTS



SECTION

53 TYPICAL PUMPHOUSE AND TUNNELS BASE SLAB TO EXTERIOR WALL DETAIL

NTS



54 TYPICAL REINFORCEMENT AT BASE SLAB TO WALL DETAIL

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1	30% DETAILED DESIGN	2021-01-29	LM	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
GENERAL
STANDARD DETAILS (7)

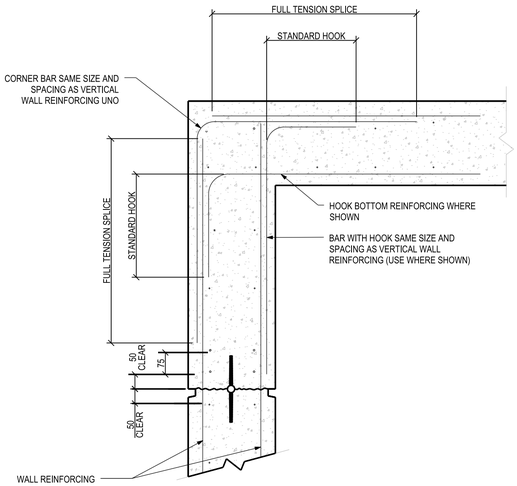
CONSULTANT DRAWING NO. 761-1916-308

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



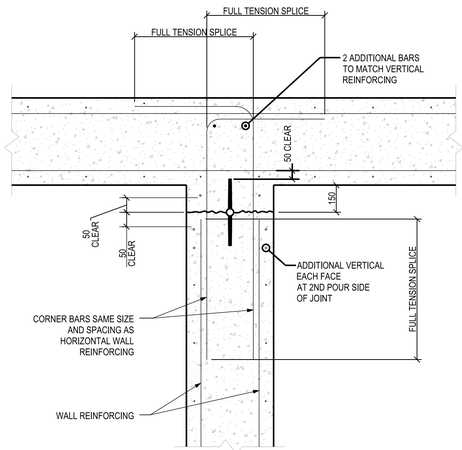
NOTE:

PLACE REINFORCING AS SHOWN UNO ON STRUCTURAL DRAWINGS

PLAN

55 TYPICAL EXTERIOR WALL TO INTERSECTION DETAIL

NTS (WATER RETAINING STRUCTURES)



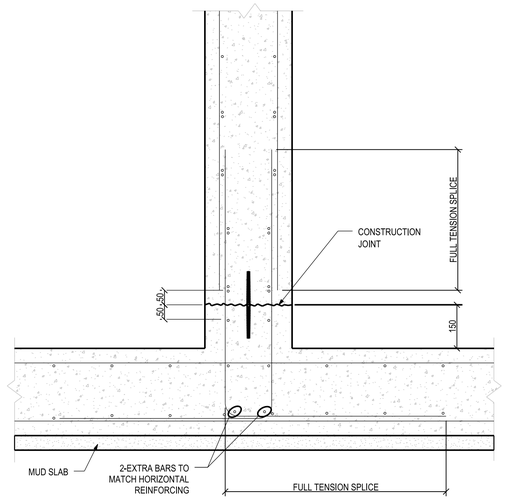
NOTE:

WHERE CONSTRUCTION JOINT IS NOT REQUIRED, MAKE HORIZONTAL BAR CONTINUOUS (NO SPLICE)

PLAN

56 TYPICAL CONCRETE WALL 'TEE' INTERSECTION DETAIL

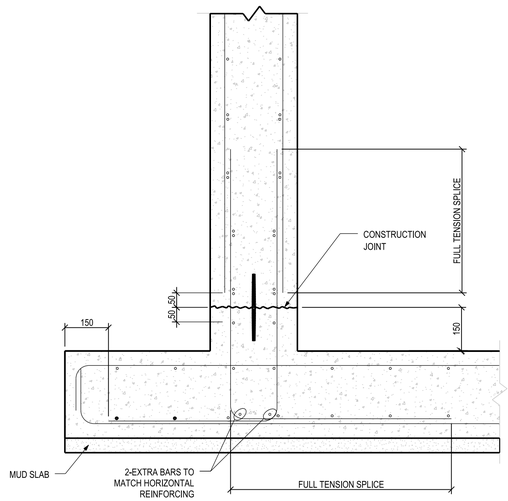
NTS (WATER RETAINING STRUCTURES)



VERTICAL SECTION

57 TYPICAL REINFORCEMENT AT BASE SLAB TO INTERIOR WALL DETAIL

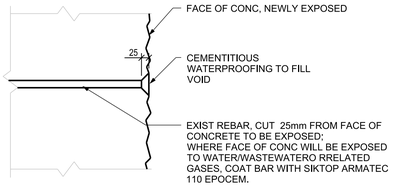
NTS (WATER RETAINING STRUCTURES)



VERTICAL SECTION

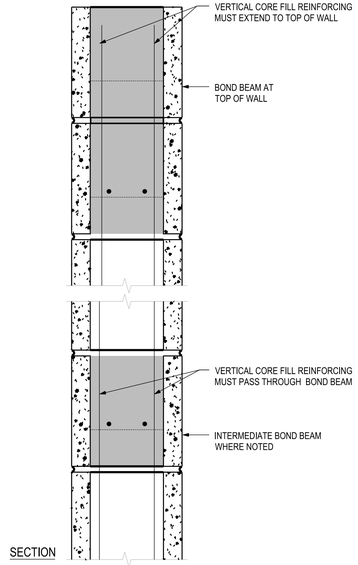
58 TYPICAL REINFORCEMENT AT BASE SLAB TO EXTERIOR WALL DETAIL

NTS (WATER RETAINING STRUCTURES)



59 EXISTING CUT REBAR REPAIR DETAIL

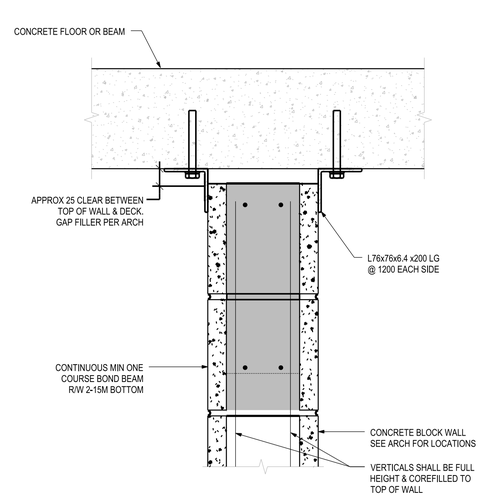
NTS



SECTION

60 TYPICAL HORIZONTAL BOND BEAMS IN CONCRETE BLOCK WALL

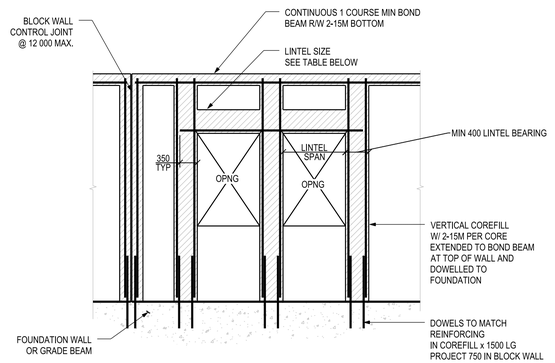
NTS



SECTION

61 TYPICAL LATERAL SUPPORT FOR NON LOAD BEARING CONCRETE BLOCK WALL AT CONCRETE SLAB OR BEAM

NTS



ELEVATION

LINTEL SCHEDULE (TYPICAL UNO) *		
SPAN	LINTEL SIZE	REINFORCEMENT
UP TO 1200	200 DEEP	2-15M BOT
1201 TO 1950	400 DEEP	2-20M BOT
1951 TO 3000	600 DEEP	2-20M BOT, 1-15M TOP 10M @ 400 STIR

* NOTE: NO CONCENTRATED LOADS ALLOWED

62 TYPICAL LOAD BEARING CONCRETE BLOCK WALL REINFORCING

NTS

	PLAN DESCRIPTION/REVISION	DATE	BY
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1	30% DETAILED DESIGN	2021-01-29	LM

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Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
GENERAL
STANDARD DETAILS (8)

CONSULTANT DRAWING NO. 761-1916-309

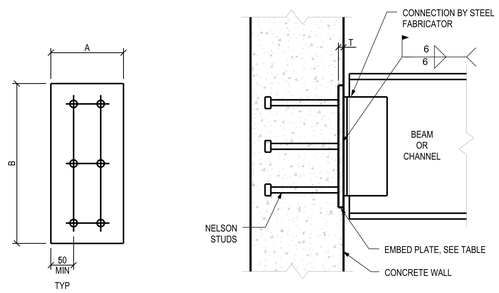
SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

EMBED PLATE SIZES				
PLATE TYPE	BEAM SIZE	EMBED PLATE	NELSON STUDS	N.STUDS SPACING
EP-1	W610 W530	A= 350 B= 900 T= 19	10-22 DIA x200LG	HOR=250 VERT=200
EP-2	W460 W410	A= 300 B= 625 T= 19	8-19 DIA x200LG	HOR=200 VERT=175
EP-3	W360 W310	A= 250 B= 400 T= 16	6-16 DIA x200LG	HOR=150 VERT=150
EP-4	W250 OR SMALLER	A= 250 B= 350 T= 13	4-12 DIA x150LG	HOR=100 VERT=250

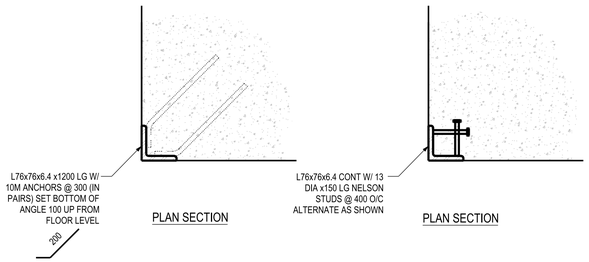


EMBED PLATE DETAIL

SECTION

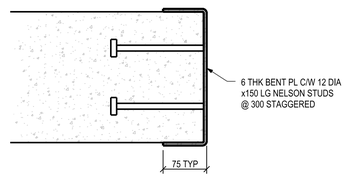
63 TYPICAL STEEL BEAM OR CHANNEL TO CONCRETE WALL CONNECTION

NTS



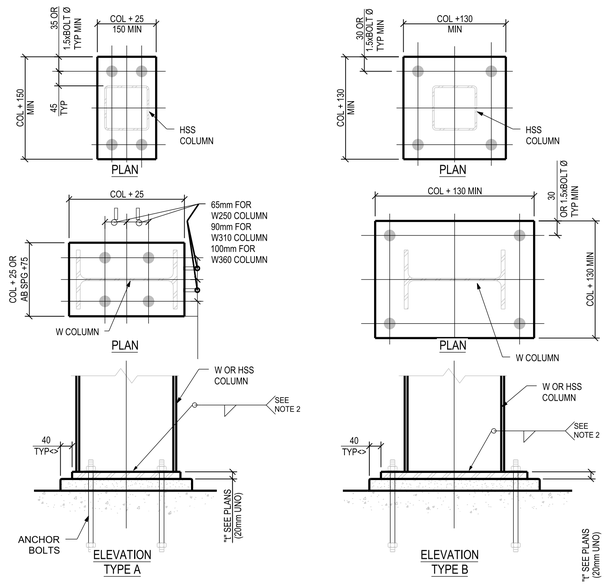
64 TYPICAL PROTECTION FOR CORNER OF CONCRETE COLUMN OR WALL

NTS



65 TYPICAL STEEL PLATE AT OVERHEAD DOORS

NTS

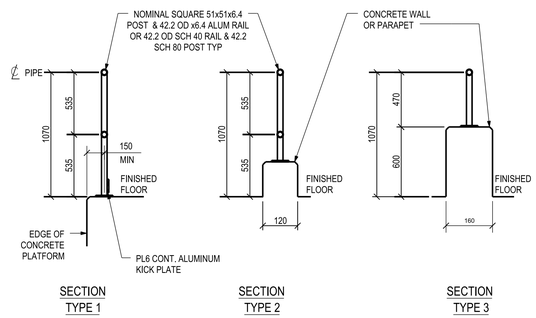


NOTES:

1. UNLESS OTHERWISE NOTED, ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED 20mm DIA x REQUIRED WITH LEVELING NUTS AND 300mm MIN EMBEDMENT AND BASEPLATES SHALL BE CENTERED ON COLUMN.
2. WELD SIZE SHALL BE DETERMINED BY THE THICKEST MEMBER JOINED; MINIMUM WELD SIZE SHALL BE 5mm FILLET FOR MATERIAL THICKNESSES UP TO AND INCLUDING 15mm, 6mm FILLET FOR THICKNESSES OVER 15mm TO 20mm, AND 8mm FILLET FOR MATERIAL THICKNESS OVER 20mm. ALL WELDS SHALL BE SINGLE-PASS WELDS.

67 COLUMN BASE - STEEL

NTS



68 TYPICAL ALUMINUM OR STEEL GUARD RAIL ON CONCRETE PLATFORM

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1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

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Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (9)

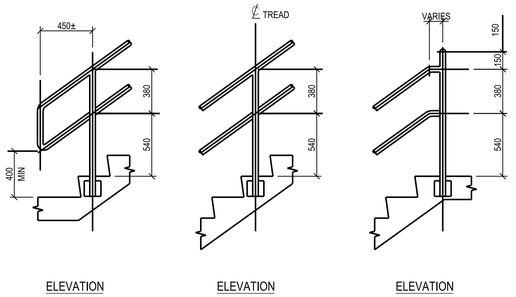
CONSULTANT DRAWING NO. 761-1916-310

SCALE: NTS

COS FILE NO.

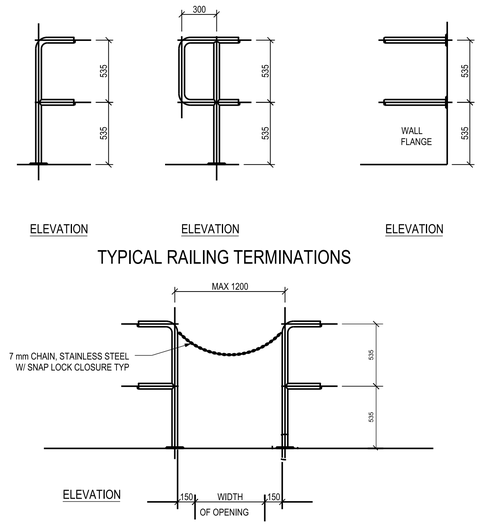
COS CONTRACT NO.

COS DRAWING NO.



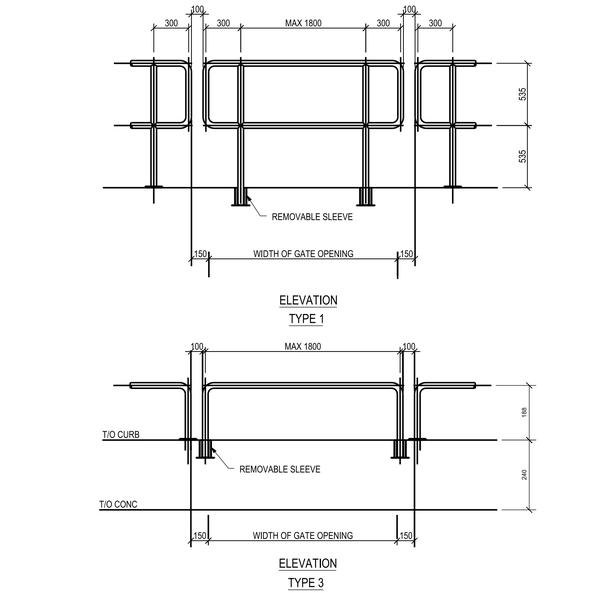
69 TYPICAL ALUMINUM OR STEEL RAILING ON CONCRETE STAIR

NTS



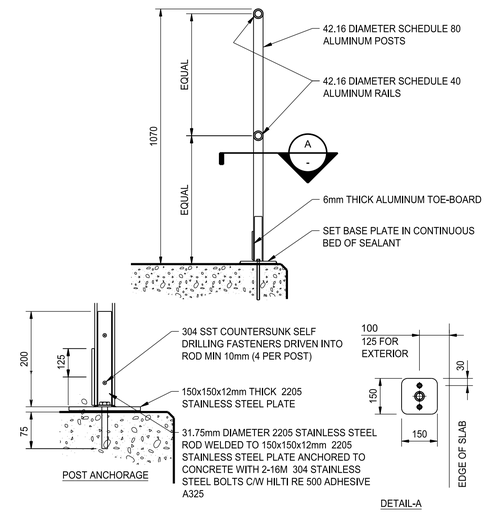
70 TYPICAL RAILING TERMINATION / TYPICAL SAFETY CHAIN OPENING

NTS



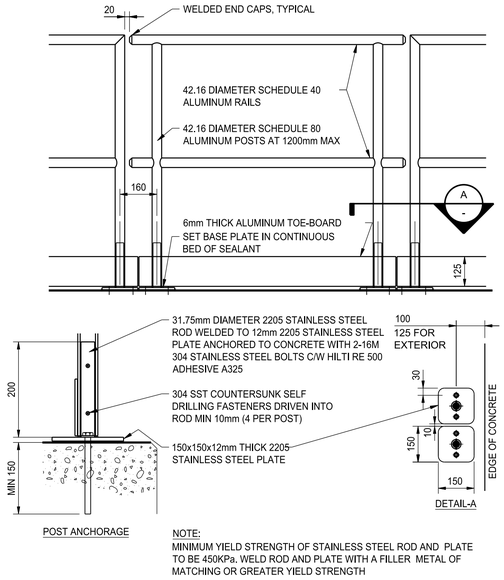
71 TYPICAL REMOVABLE HANDRAIL SECTION

NTS



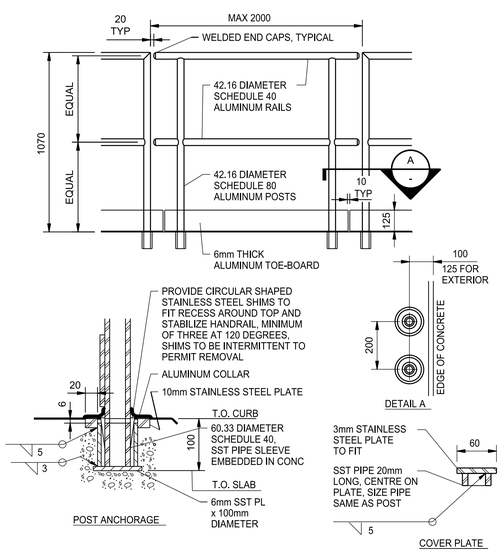
72 POST ANCHORAGE - SURFACE MOUNTED GUARD

NTS



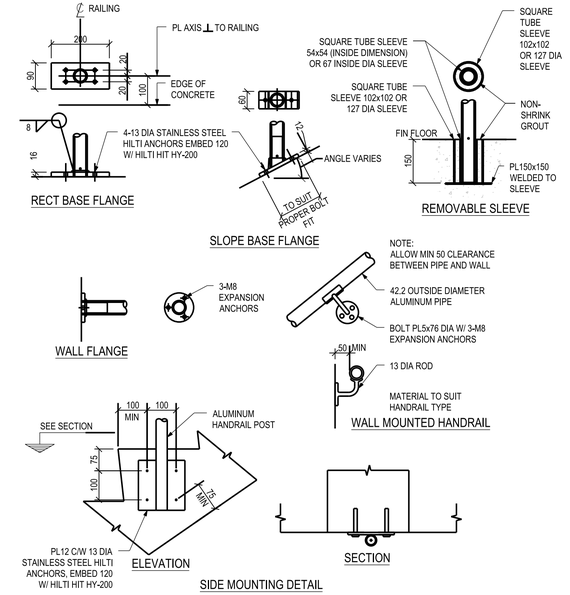
73 POST ANCHORAGE -REMOVABLE ALUMINUM GUARD (SURFACE MOUNTED)

NTS



74 POST ANCHORAGE -REMOVABLE ALUMINUM GUARD (EMBEDDED)

NTS

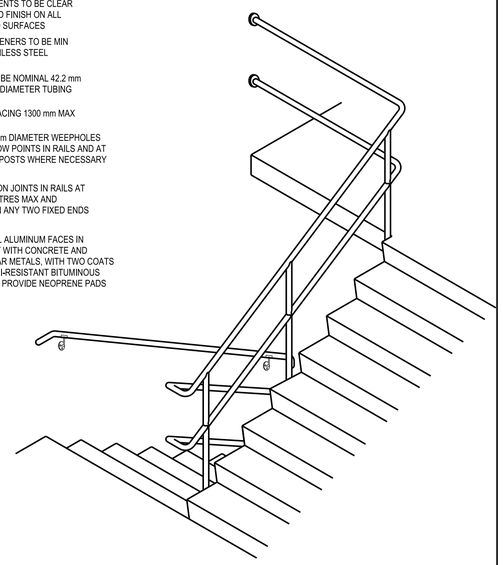


75 TYPICAL ALUMINUM RAILING CONNECTION DETAILS TO CONCRETE

NTS

NOTES

1. ALL ALUMINUM RAILING COMPONENTS TO BE CLEAR ANODIZED FINISH ON ALL EXPOSED SURFACES
2. ALL FASTENERS TO BE MIN 316 STAINLESS STEEL
3. RAILS TO BE NOMINAL 42.2 mm OUTSIDE DIAMETER TUBING
4. POST SPACING 1300 mm MAX
5. DRILL 8 mm DIAMETER WEEPHOLES AT ALL LOW POINTS IN RAILS AND AT BASE OF POSTS WHERE NECESSARY
6. EXPANSION JOINTS IN RAILS AT 12 M CENTRES MAX AND BETWEEN ANY TWO FIXED ENDS
7. PAINT ALL ALUMINUM FACES IN CONTACT WITH CONCRETE AND DISSIMILAR METALS, WITH TWO COATS OF ALKALI-RESISTANT BITUMINOUS PAINT OR PROVIDE NEOPRENE PADS



76 TYPICAL ALUMINUM RAILING ARRANGEMENT

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1	30% DETAILED DESIGN	2021-01-29	LM	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (10)

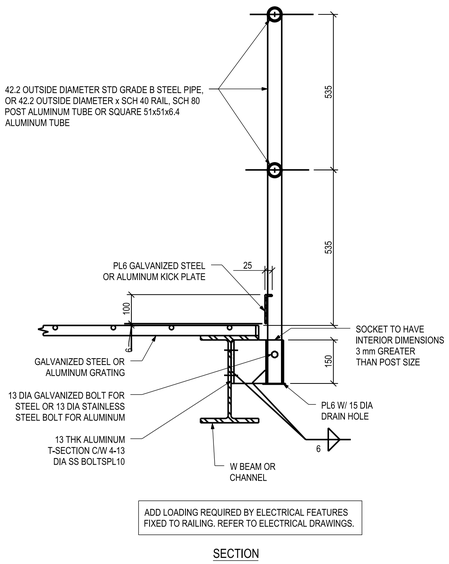
CONSULTANT DRAWING NO. 761-1916-311

SCALE: NTS

COS FILE NO.

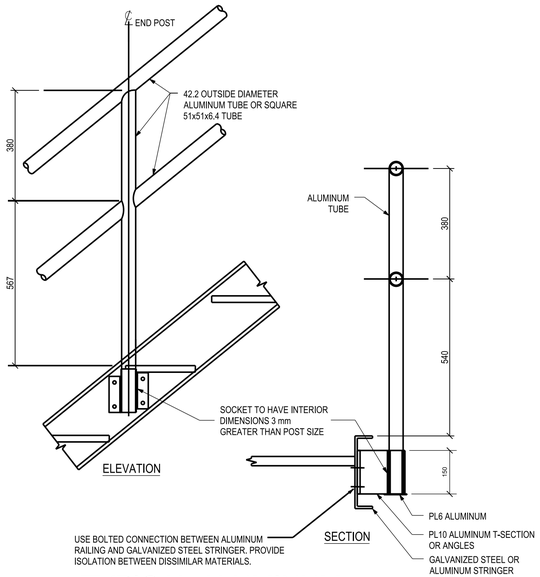
COS CONTRACT NO.

COS DRAWING NO.



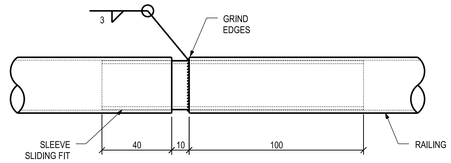
77 TYPICAL STEEL OR ALUMINUM HANDRAIL ON PLATFORM

NTS



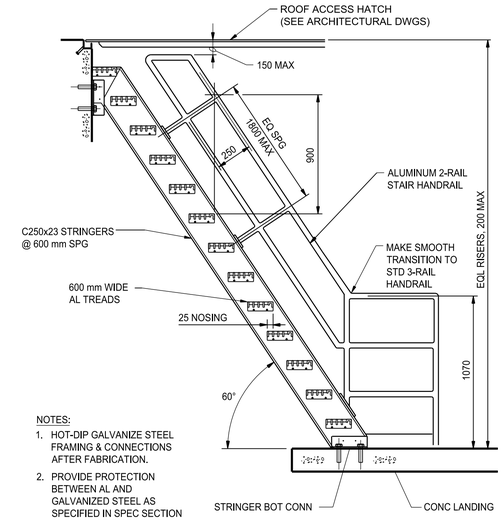
78 TYPICAL ALUMINUM HANDRAIL CONNECTION TO ALUMINUM OR STEEL STAIR

NTS



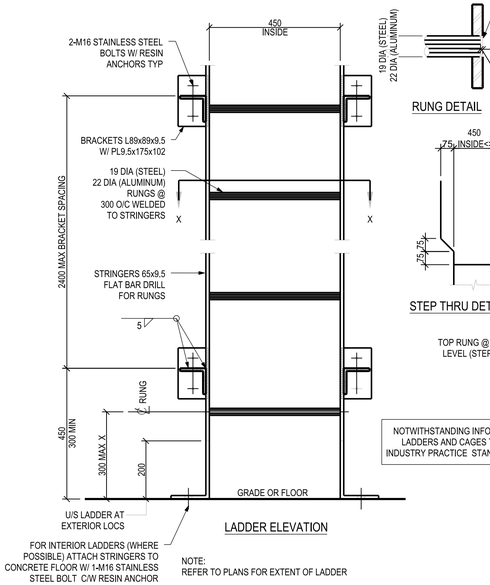
79 TYPICAL HANDRAIL EXPANSION JOINT

NTS



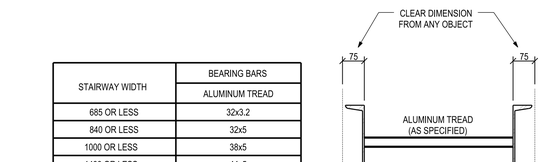
80 SHIPS LADDER

NTS



81 TYPICAL STEEL OR ALUMINUM LADDER DETAILS

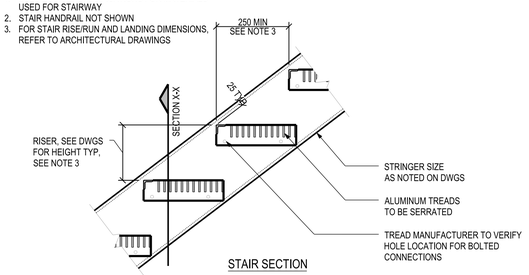
NTS



STAIRWAY WIDTH	BEARING BARS
	ALUMINUM TREAD
685 OR LESS	32x3.2
840 OR LESS	32x5
1000 OR LESS	38x5
1400 OR LESS	44x5

NOTES:

1. SEE PLAN AND SPECIFICATIONS FOR MATERIALS USED FOR STAIRWAY
2. STAIR HANDRAIL NOT SHOWN
3. FOR STAIR RISE/RUN AND LANDING DIMENSIONS, REFER TO ARCHITECTURAL DRAWINGS



82 TYPICAL OPEN ALUMINUM STAIR DETAIL

NTS

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1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (11)

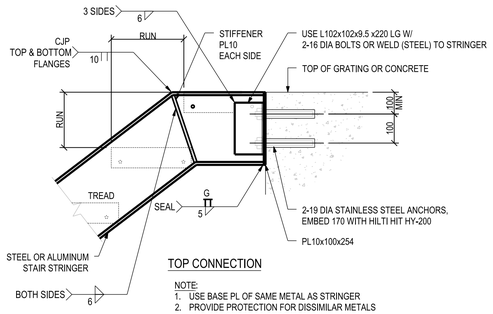
CONSULTANT DRAWING NO. 761-1916-312

SCALE: NTS

COS FILE NO.

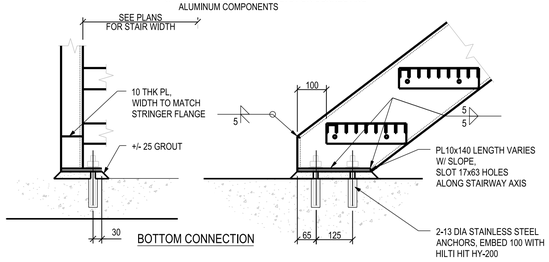
COS CONTRACT NO.

COS DRAWING NO.



TOP CONNECTION

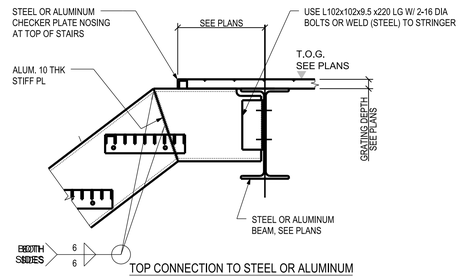
NOTE:
1. USE BASE PL OF SAME METAL AS STRINGER
2. PROVIDE PROTECTION FOR DISSIMILAR METALS AND CONCRETE AS SPECIFIED
3. STAIR HANDRAIL NOT SHOWN
4. USE STAINLESS STEEL BOLTS FOR CONNECTING ALUMINUM COMPONENTS



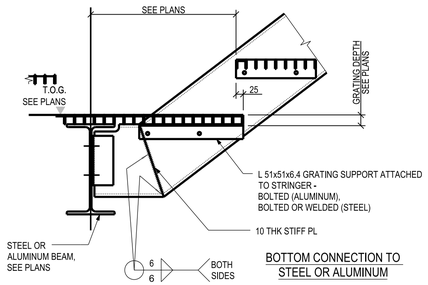
BOTTOM CONNECTION

83 TYPICAL STAIR TOP AND BOTTOM CONNECTION DETAILS (ALUMINUM OR STEEL)

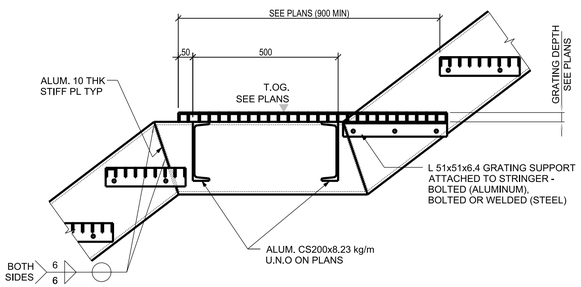
NTS



TOP CONNECTION TO STEEL OR ALUMINUM

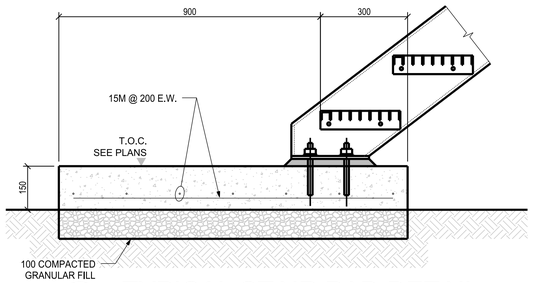


BOTTOM CONNECTION TO STEEL OR ALUMINUM



84 INTERMEDIATE LANDING DETAIL

NTS



85 TYPICAL STAIR PAD DETAIL

NTS

NOTES FOR ALUMINUM STAIRS

1. ALL MATERIAL TO BE ALUMINUM UNLESS OTHERWISE NOTED ON THE DRAWINGS.
2. FASTENERS TO BE STAINLESS STEEL. ADHESIVE ANCHORS DO NOT USE MECHANICAL ANCHORS
3. ALL ALUMINUM MATERIAL IN CONTACT WITH CONCRETE OR DISSIMILAR METALS, INCLUDING ANCHORS TO BE PAINTED WITH TWO COATS OF ALKALI-RESISTANT BITUMINOUS PAINT OR PROVIDE NEOPRENE ISOLATION PADS.
4. SEE DRAWING P01A-S021 FOR GRATING NOTES AND DETAILS.

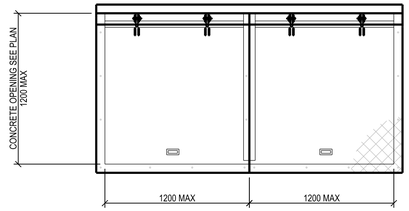
86 TYPICAL ALUMINUM STAIR NOTES

NTS

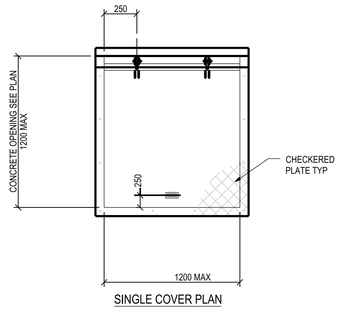
1. ALL MATERIAL TO BE ALUMINUM, STEEL OR FRP AS NOTED ON DRAWINGS.
2. FASTENERS TO BE STAINLESS STEEL.
3. ALL ALUMINUM MATERIAL IN CONTACT WITH CONCRETE, INCLUDING ANCHORS TO BE PAINTED WITH TWO COATS OF ALKALI-RESISTANT BITUMINOUS PAINT.
4. ALL STEEL MATERIAL TO BE GALVANIZED.
5. ISOLATE ALUMINUM FROM STEEL MATERIAL WITH NEOPRENE MEMBRANE WHERE CONTACT CANNOT BE AVOIDED.
6. GRATING AND CHECKERED PLATE TO BE DESIGNED FOR LIVE LOADS NOTED IN STRUCTURAL GENERAL NOTES. STIFFEN CHECKER PLATE WITH GRATING OR STIFFENERS WHERE REQUIRED.
7. STIFFEN COVERS OR GRATING AROUND ALL PIPE PENETRATIONS AS REQUIRED.
8. ENSURE COMPLETE AIR TIGHT SEAL FOR ALL SEALED COVERS.
9. PROVIDE CHAINS, HOOKS AND/OR EYES TO SECURE COVERS IN VERTICAL POSITION WHEN OPENED.
10. MATCH DRILL ALL BOLTED COVERS TO FRAME AT FABRICATION.
11. FIELD MEASURE ALL DIMENSIONS REQUIRED FOR GRATING FABRICATION.
12. DESIGN AND SUPPLY FRP GRATING DURADEK* BY STRONGWELL OR APPROVED EQUAL C/W BONDED 3.2mm THK SAFPLATE WITH GRITTED SURFACE WHERE SPECIFIED ON DRAWINGS. SEE STD DET 5K23. PROVIDE DROP HANDLE WITH SEALED ENCLOSURE - DETAIL SIMILAR TO STD DET 541 FOR ALL FRP GRATING WITH BONDED PLATE SEALED COVERS.

87 TYPICAL COVER & GRATING NOTES

NTS



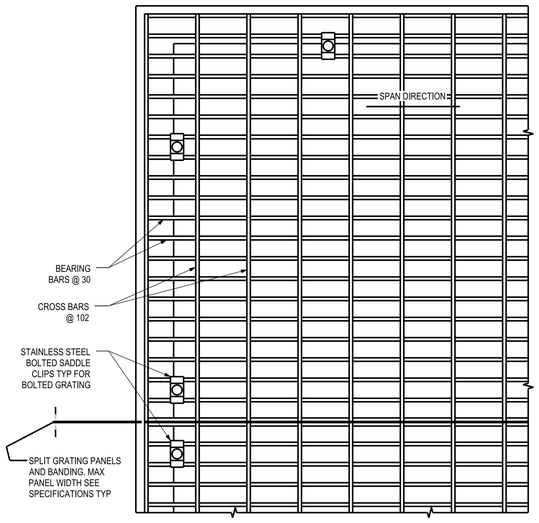
DOUBLE COVER PLAN



SINGLE COVER PLAN

88 TYPICAL SEALED COVERS - BOLTED

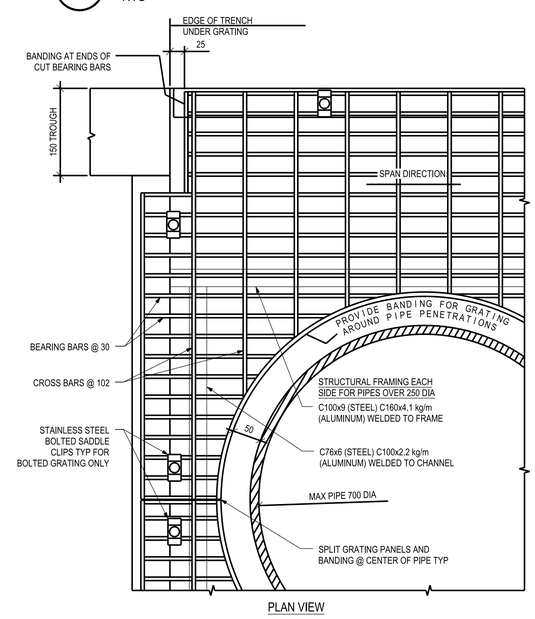
NTS



PLAN VIEW

89 TYPICAL GRATING COVERS - BOLTED & UNBOLTED

NTS



PLAN VIEW

90 TYPICAL GRATING COVERS AT TRENCHES

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1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (12)

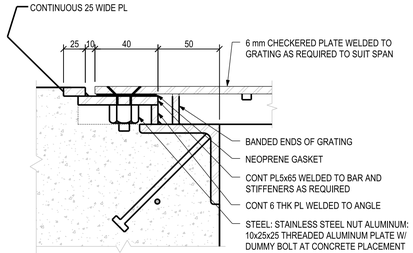
CONSULTANT DRAWING NO. 761-1916-313

SCALE: NTS

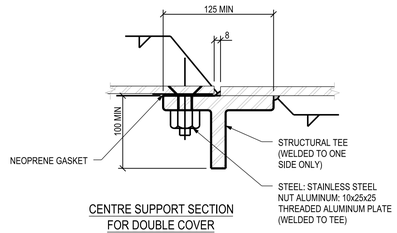
COS FILE NO.

COS CONTRACT NO.

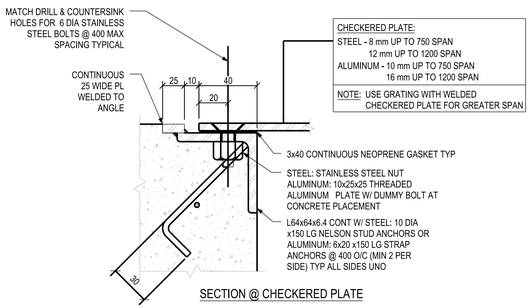
COS DRAWING NO.



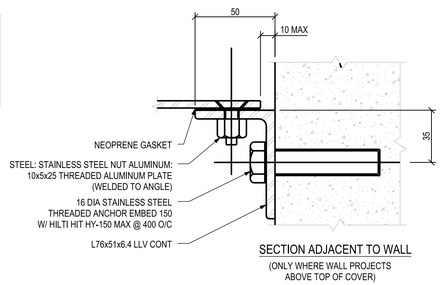
SECTION @ GRATING COVER



CENTRE SUPPORT SECTION FOR DOUBLE COVER

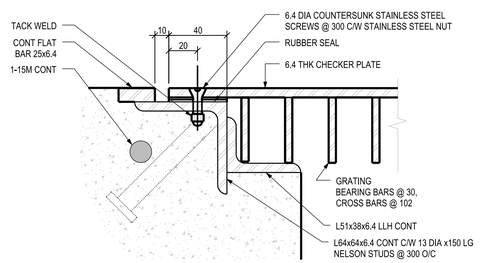


SECTION @ CHECKERED PLATE

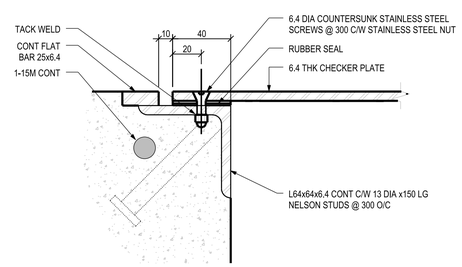


SECTION ADJACENT TO WALL
(ONLY WHERE WALL PROJECTS ABOVE TOP OF COVER)

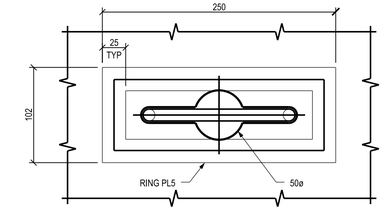
91 TYPICAL SEALED COVERS & FRAMES - BOLTED
NTS



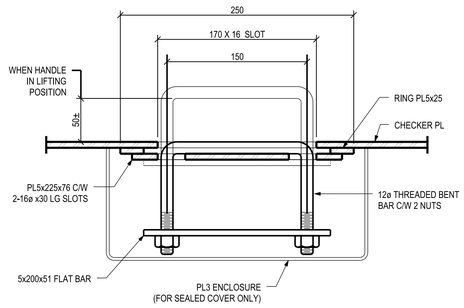
92 TYPICAL SEALED COVER EDGE SUPPORT DETAIL
NTS



93 TYPICAL SEALED COVER EDGE SUPPORT DETAIL
NTS

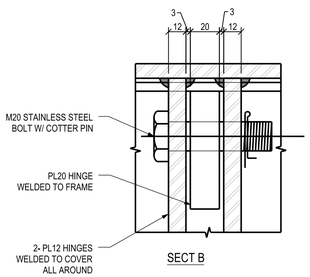


PLAN

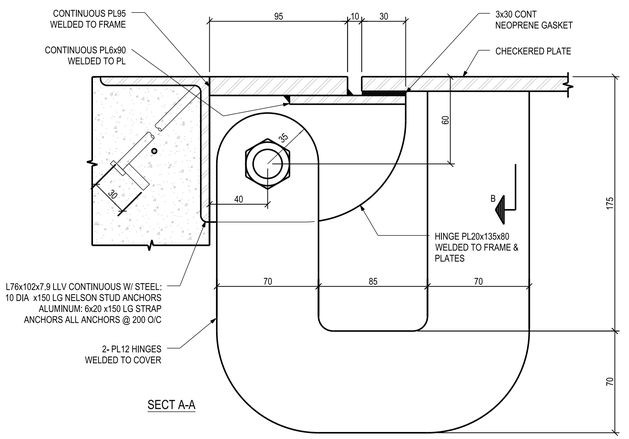


SECTION

94 TYPICAL DROP HANDLE DETAIL
NTS

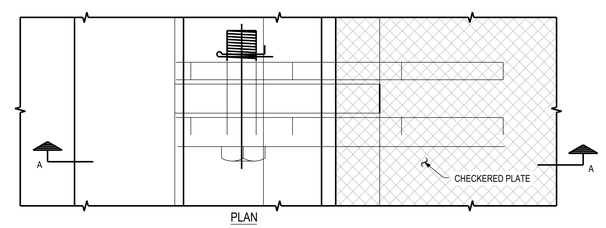


SECT B

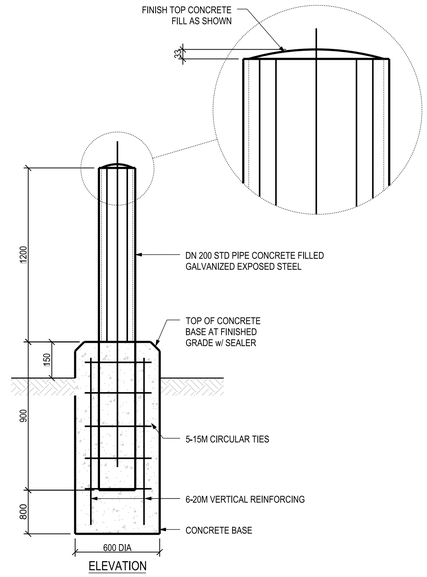


SECT A-D

95 TYPICAL HINGE DETAIL - SEALED COVER
NTS



PLAN



ELEVATION

96 TYPICAL SELF SUPPORTED BOLLARD DETAIL
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1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (13)

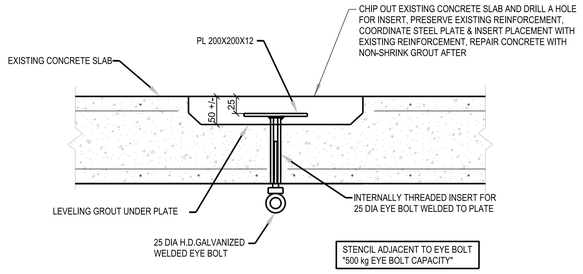
CONSULTANT DRAWING NO. 761-1916-314

SCALE: NTS

COS FILE NO.

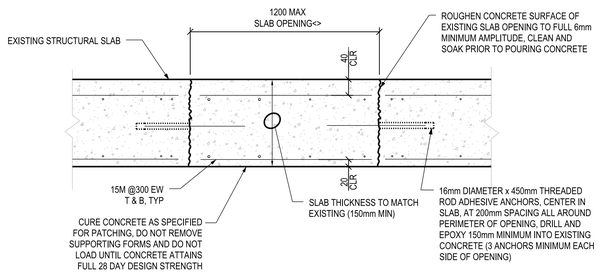
COS CONTRACT NO.

COS DRAWING NO.



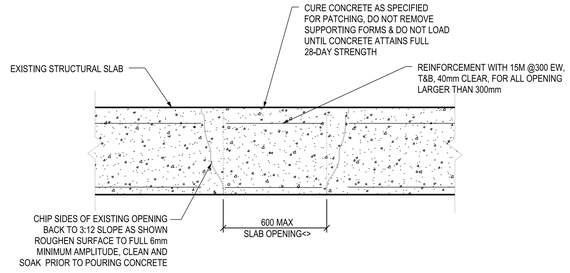
97 LIFTING EYE BOLT DETAIL INSTALLED INTO EXISTING CONCRETE

NTS



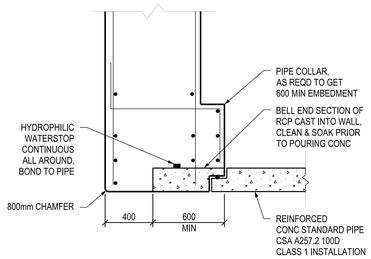
98 ROOF PENETRATION PATCHING - MAX 1200 OPENING

NTS



99 ROOF PENETRATION PATCHING - MAX 600 OPENING

NTS



100 WALL PENETRATION - RCP

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1	30% DETAILED DESIGN	2021-01-29	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
GENERAL
STANDARD DETAILS (14)

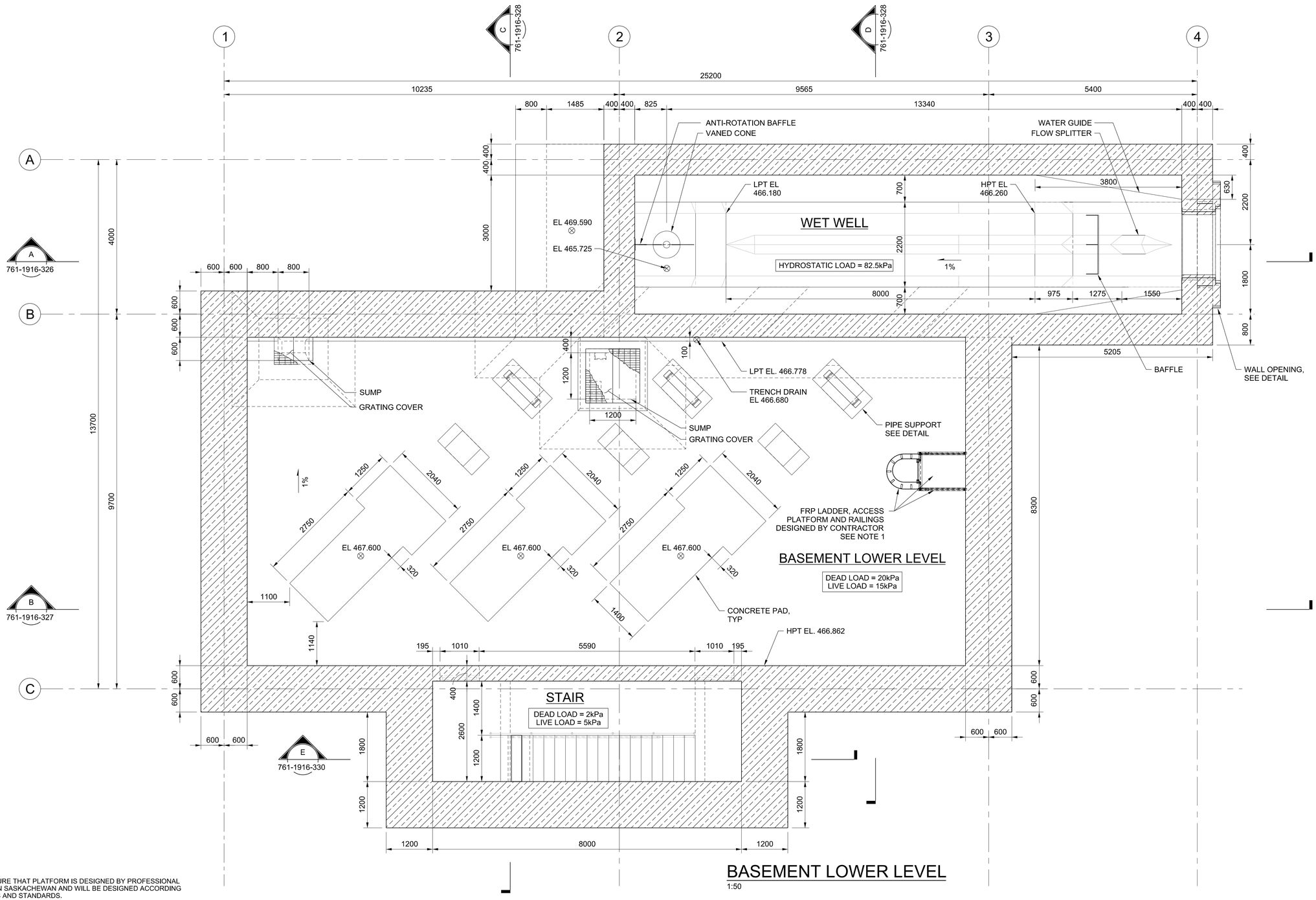
CONSULTANT DRAWING NO. 761-1916-315

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTE:

1. CONTRACTOR TO ENSURE THAT PLATFORM IS DESIGNED BY PROFESSIONAL ENGINEER LICENCED IN SASKACHEWAN AND WILL BE DESIGNED ACCORDING TO APPLICABLE CODES AND STANDARDS.

BASEMENT LOWER LEVEL

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2	30% DETAILED DESIGN	2021-01-29	LM
1	PRELIMINARY DESIGN	2020-12-04	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
PLAN
BASEMENT LOWER LEVEL

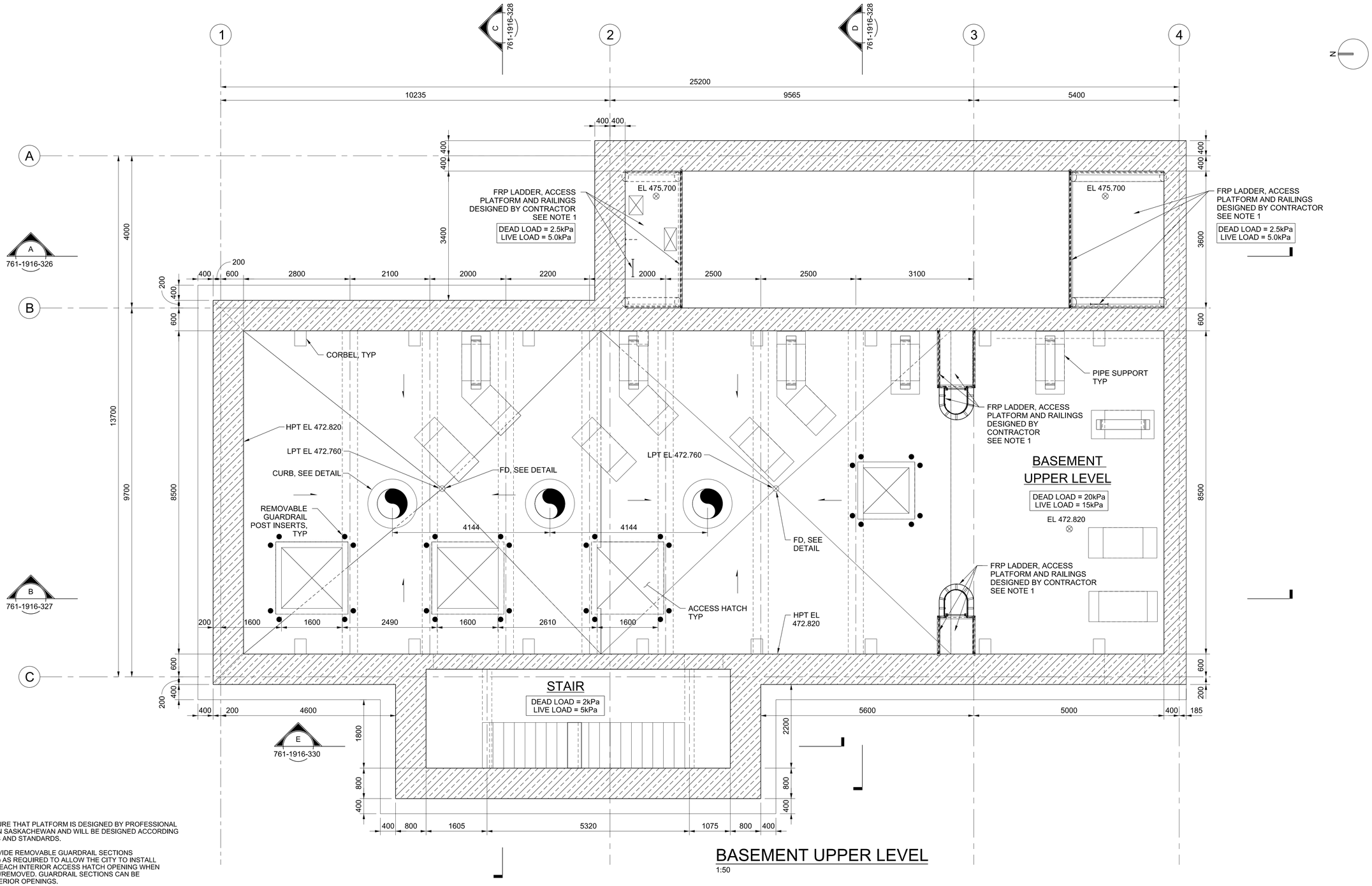
CONSULTANT DRAWING NO. 761-1916-320

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES;

1. CONTRACTOR TO ENSURE THAT PLATFORM IS DESIGNED BY PROFESSIONAL ENGINEER LICENCED IN SASKACHEWAN AND WILL BE DESIGNED ACCORDING TO APPLICABLE CODES AND STANDARDS.
2. CONTRACTOR TO PROVIDE REMOVABLE GUARDRAIL SECTIONS (C/W BASE KICK PLATE) AS REQUIRED TO ALLOW THE CITY TO INSTALL GUARDRAILS AROUND EACH INTERIOR ACCESS HATCH OPENING WHEN THE HATCH IS OPENED/REMOVED. GUARDRAIL SECTIONS CAN BE SHARED BETWEEN INTERIOR OPENINGS.

BASEMENT UPPER LEVEL

1:50

	PLAN DESCRIPTION/REVISION	DATE	BY
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2	30% DETAILED DESIGN	2021-01-29	LM
1	PRELIMINARY DESIGN	2020-12-04	LM

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
PLAN
BASEMENT UPPER LEVEL

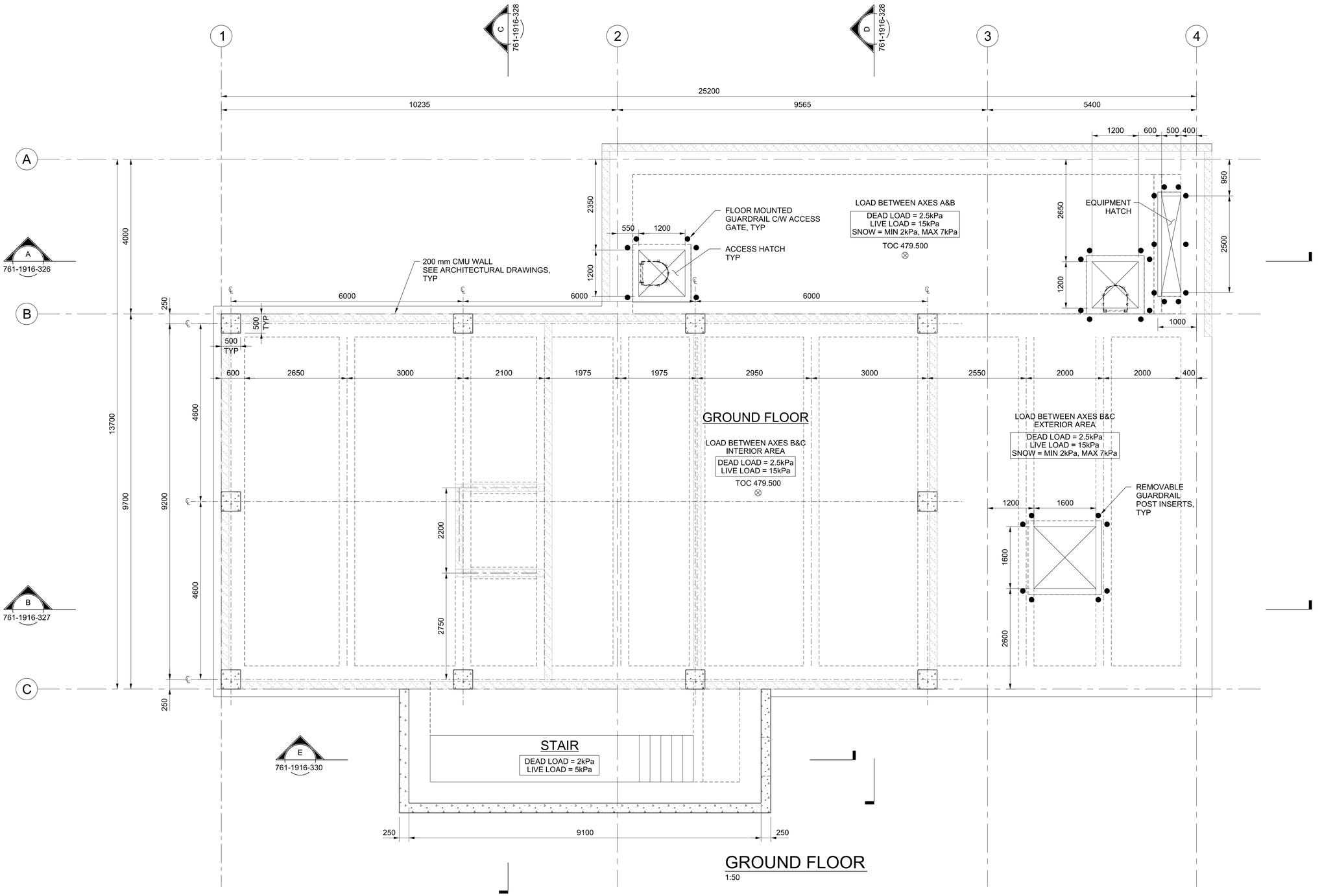
CONSULTANT DRAWING NO. 761-1916-321

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



GROUND FLOOR
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2	30% DETAILED DESIGN	2021-01-29	LM
1	PRELIMINARY DESIGN	2020-12-04	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
PLAN
GROUND FLOOR

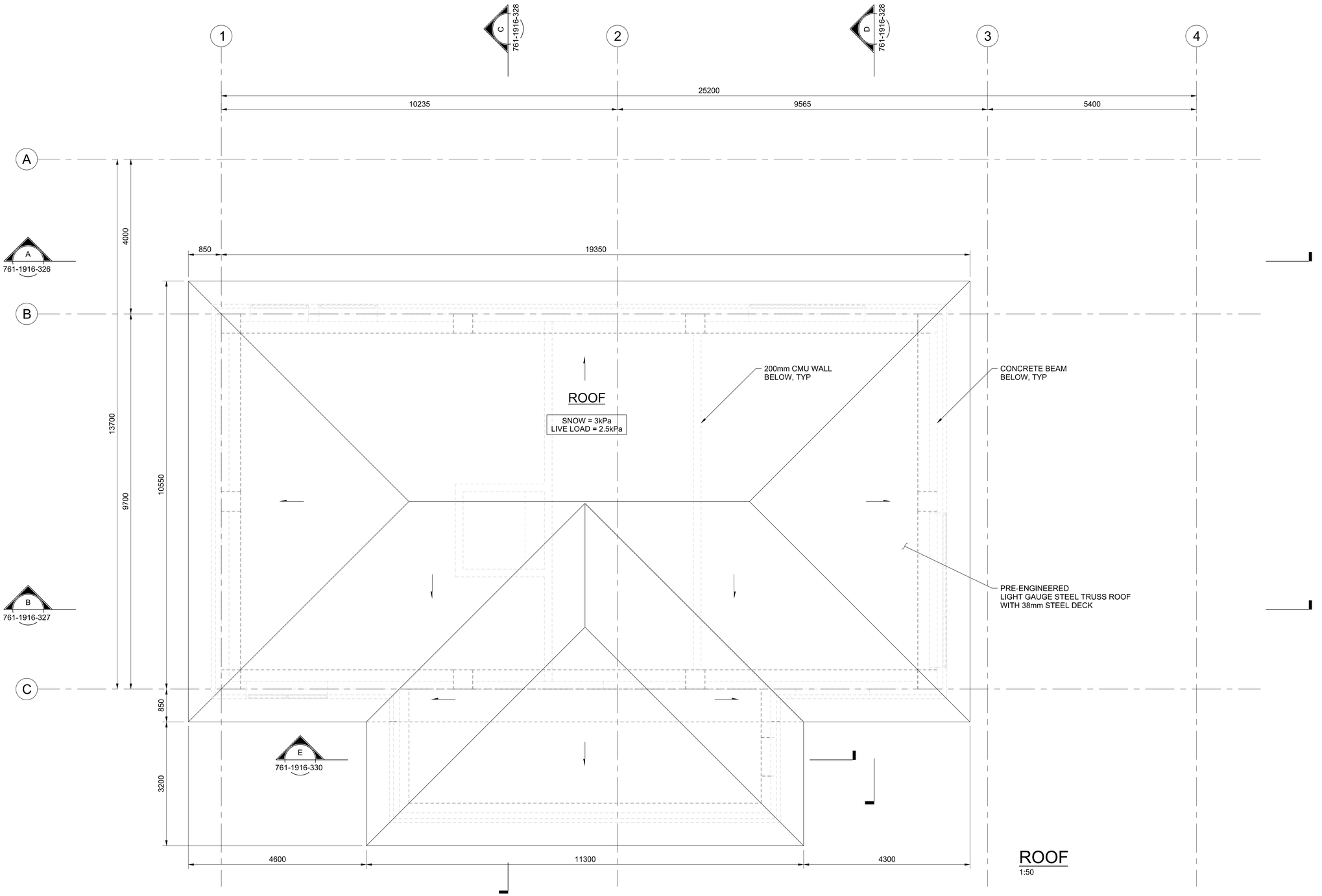
CONSULTANT DRAWING NO. 761-1916-322

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



ROOF
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2	30% DETAILED DESIGN	2021-01-29	LM
1	PRELIMINARY DESIGN	2020-12-04	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

STRUCTURAL
PLAN
ROOF

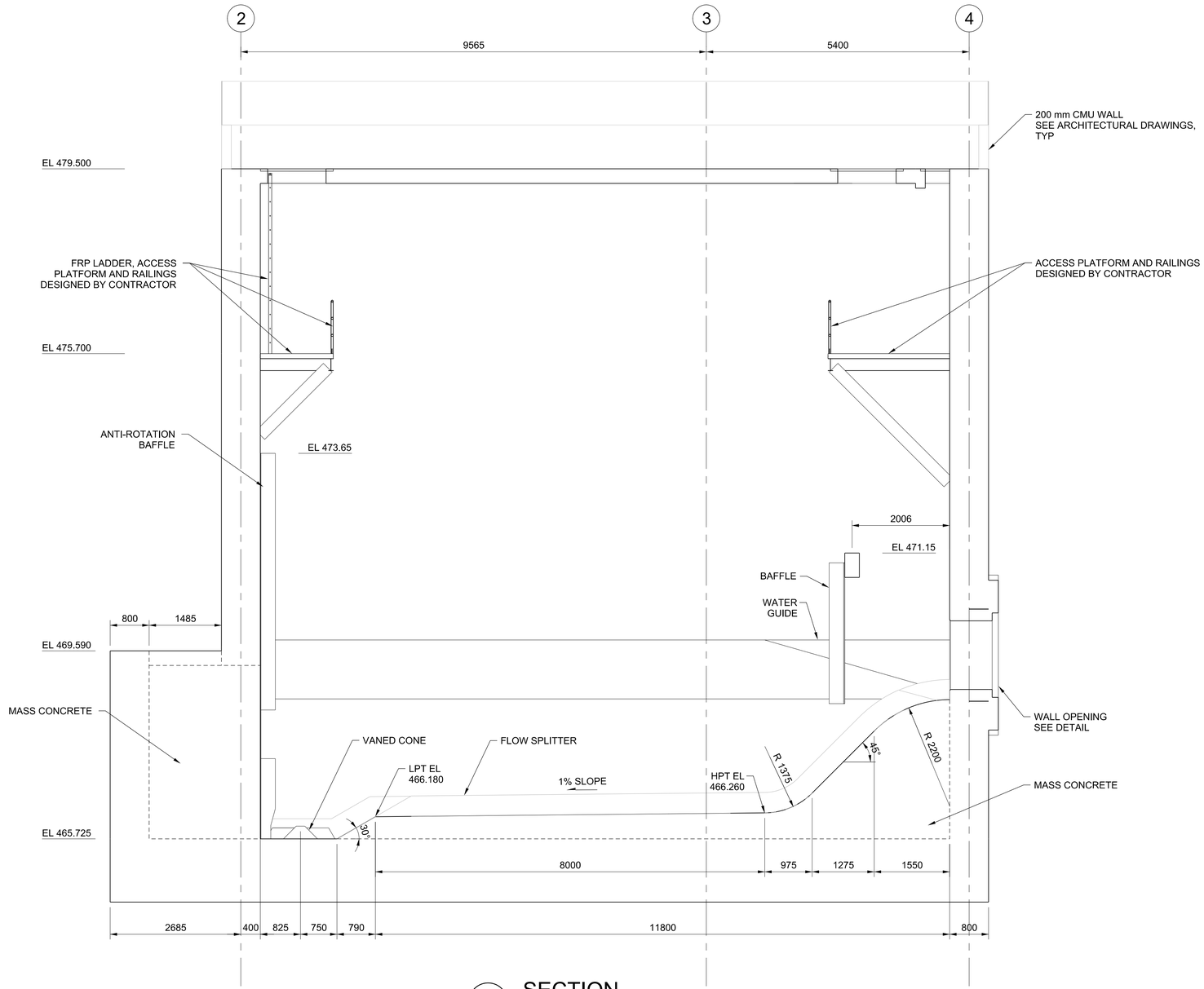
CONSULTANT DRAWING NO. 761-1916-323

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



A SECTION
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761-1916-321
761-1916-322
761-1916-323

	PLAN DESCRIPTION/REVISION	DATE	BY
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2	30% DETAILED DESIGN	2021-01-29	LM
1	PRELIMINARY DESIGN	2020-12-04	LM

SEALS & STAMPS

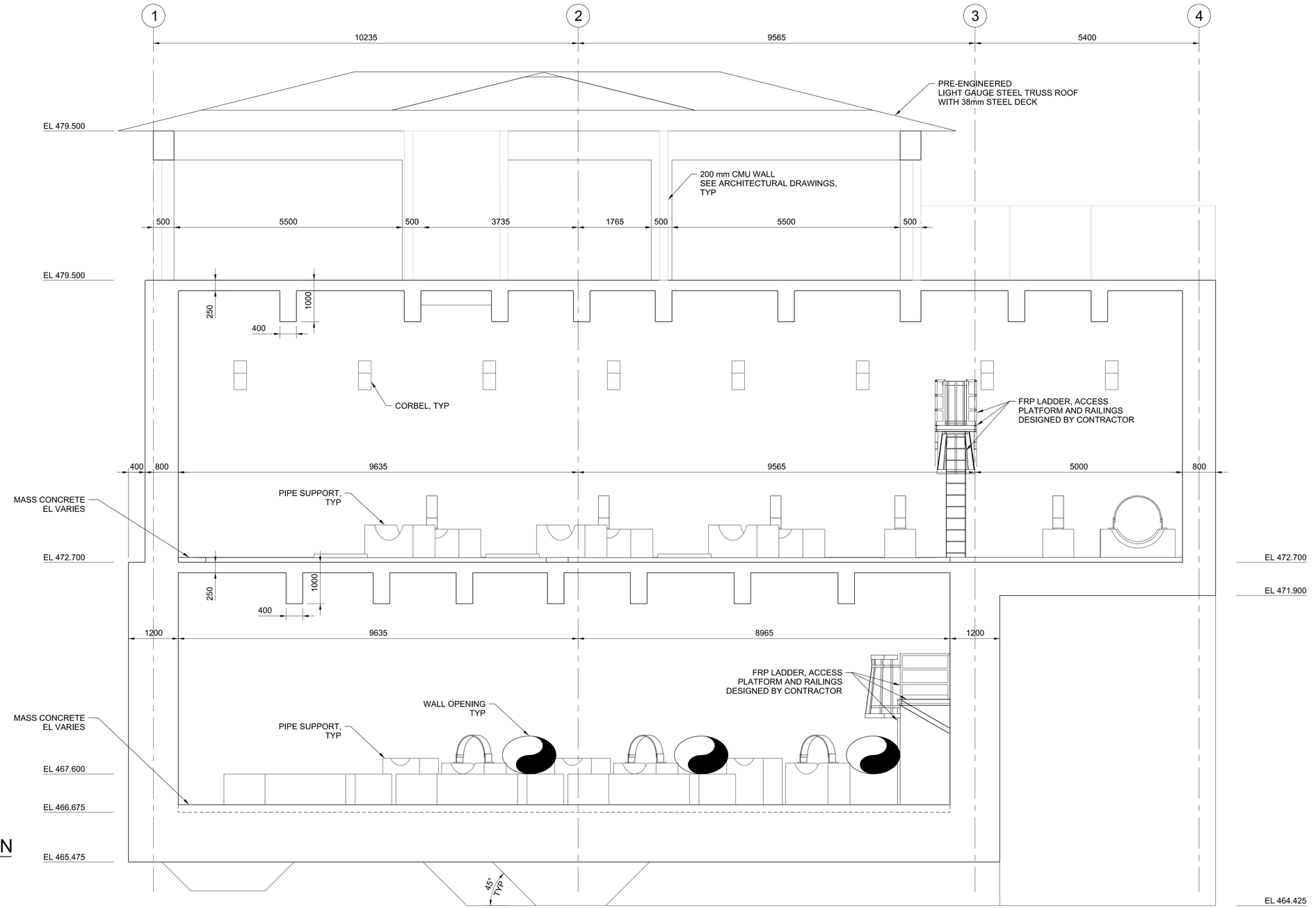
Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
SECTION
SECTION A

CONSULTANT DRAWING NO. 761-1916-326

SCALE: 1:50
COS FILE NO.
COS CONTRACT NO.
COS DRAWING NO.



B SECTION
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2	30% DETAILED DESIGN	2021-01-29	LM
1	PRELIMINARY DESIGN	2020-12-04	LM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
SECTION
SECTION B

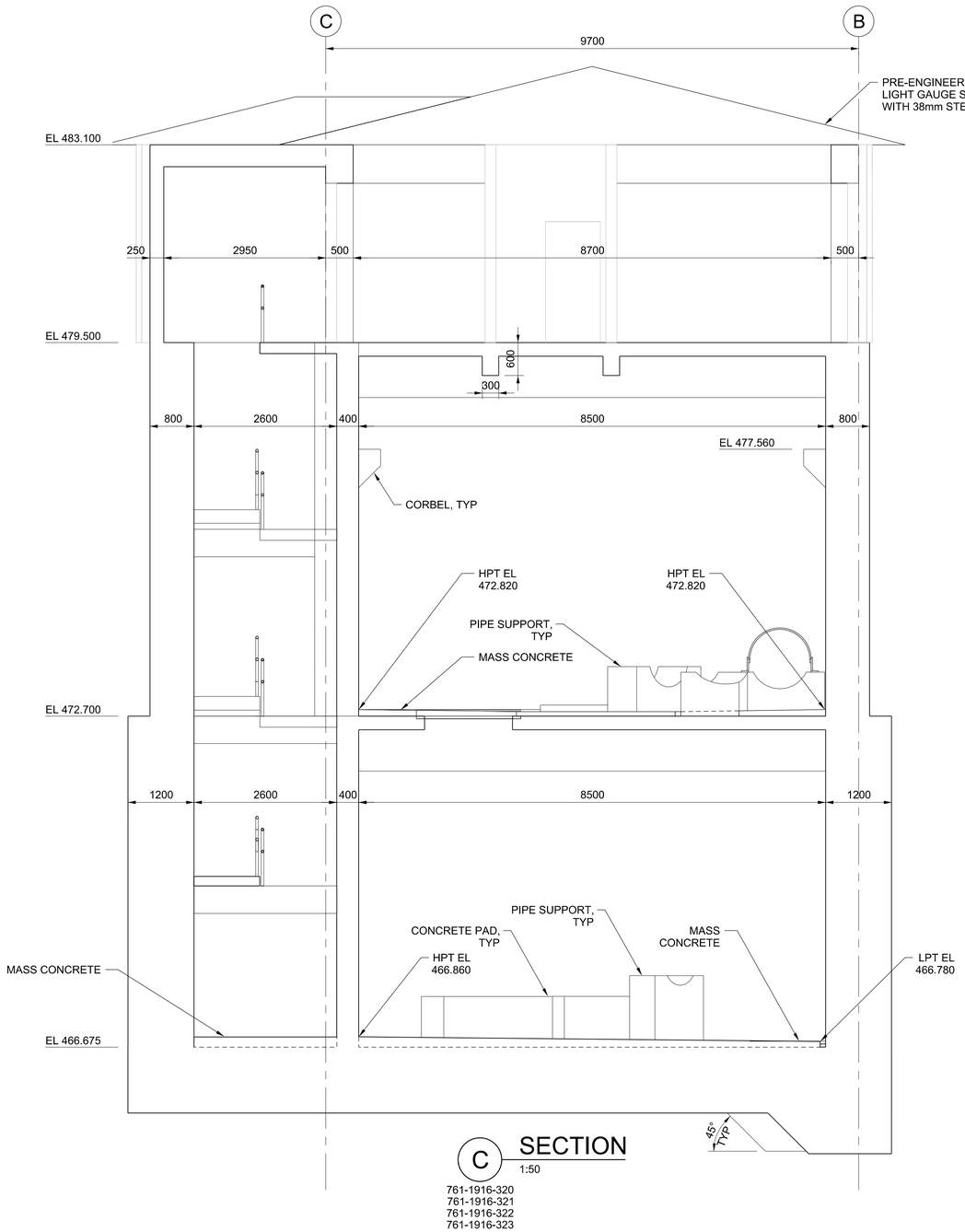
CONSULTANT DRAWING NO. 761-1916-327

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



C SECTION
1:50

761-1916-320
761-1916-321
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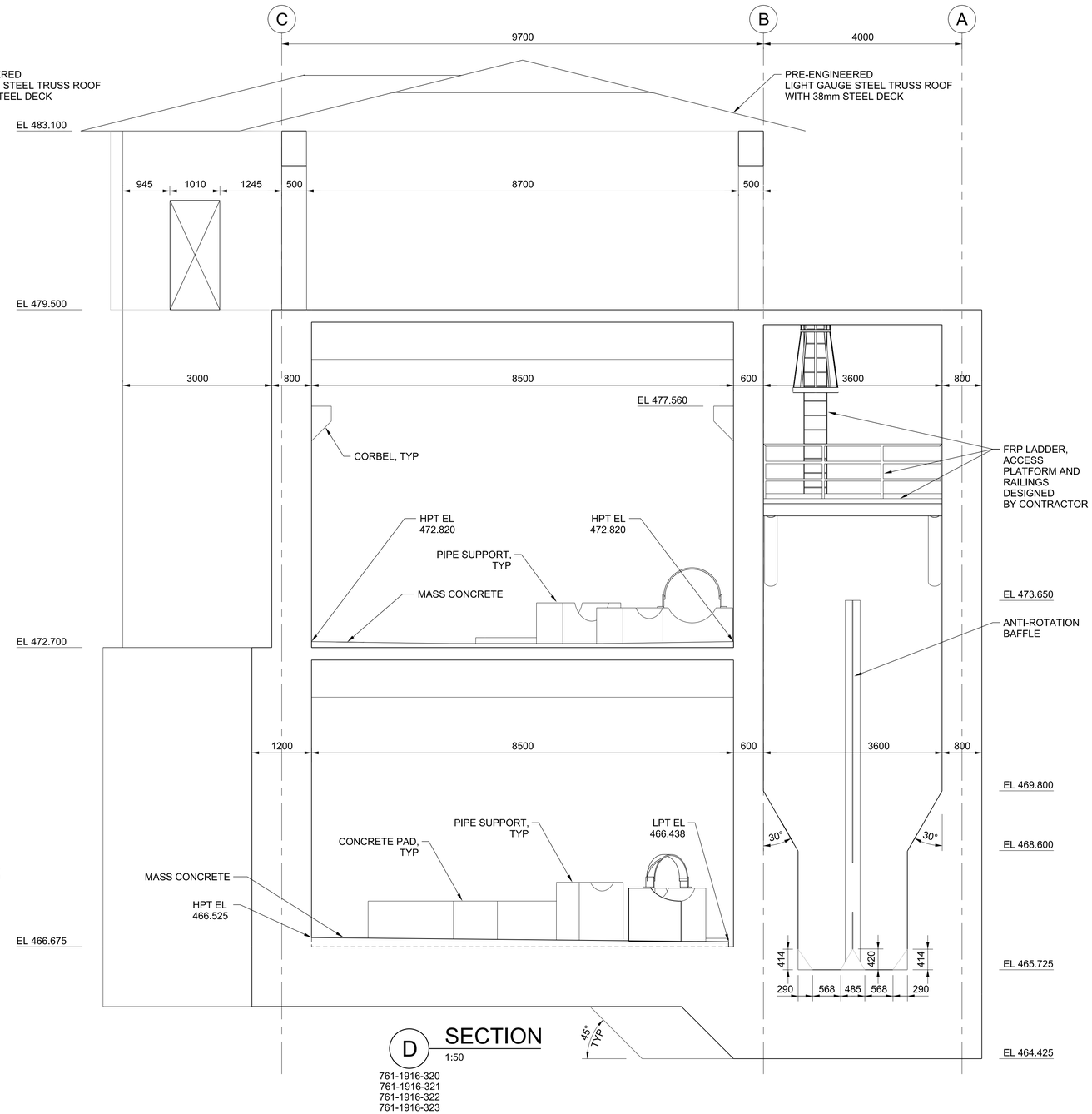
761-1916-323



D SECTION
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761-1916-323

	PLAN DESCRIPTION/REVISION	DATE	BY
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2	30% DETAILED DESIGN	2021-01-29	LM
1	PRELIMINARY DESIGN	2020-12-04	LM

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
SECTION
SECTIONS C&D

CONSULTANT DRAWING NO. 761-1916-328

SCALE: 1:50

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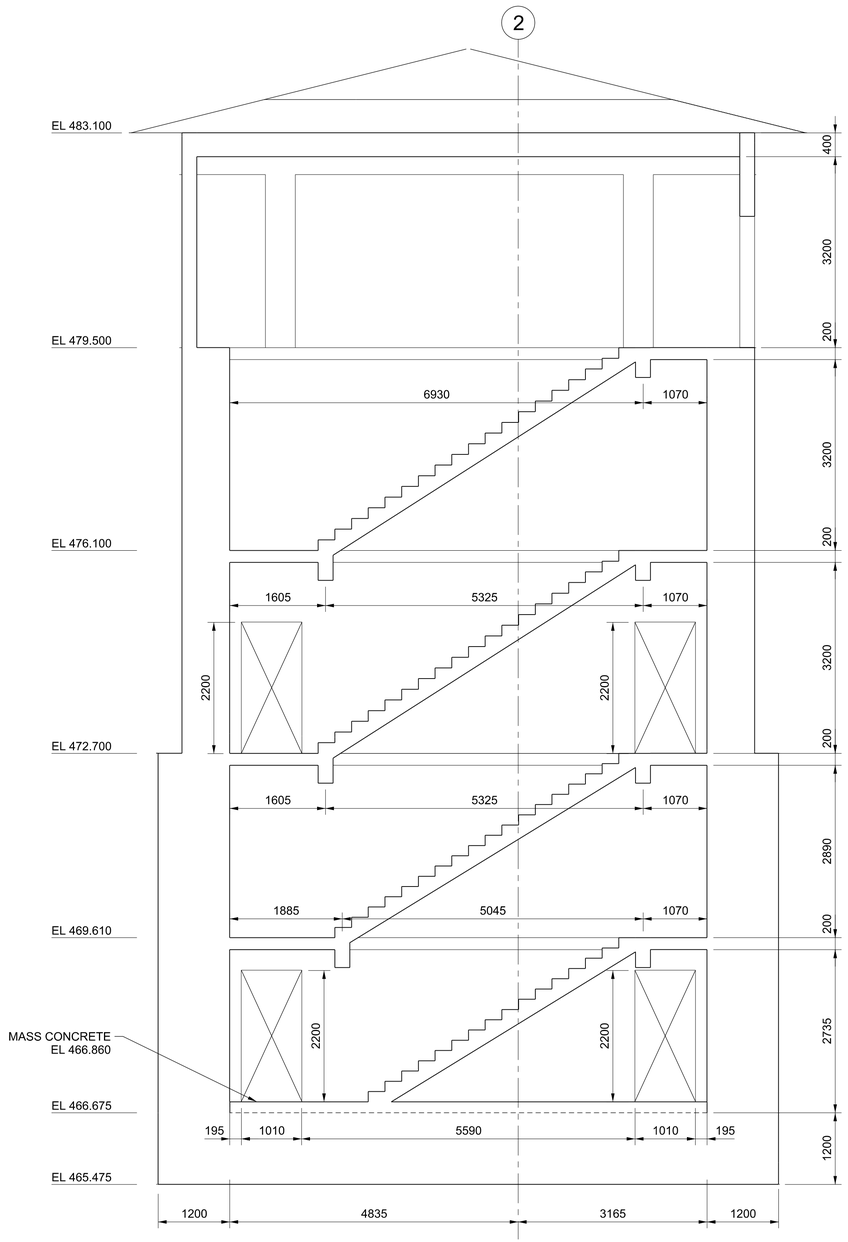
COS CONTRACT NO.

COS DRAWING NO.



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Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
STRUCTURAL
DETAILS
STAIR

CONSULTANT DRAWING NO. 761-1916-330

SCALE: 1:50

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COS CONTRACT NO.

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PROCESS ABBREVIATIONS

ABBREVIATION	DESCRIPTION
CL	CENTER LINE
DR	DRAIN
DWG	DRAWING
EL	ELEVATION
EXIST	EXISTING
QS	SUMP
RS	RAW SEWAGE
T	TON
TYP	TYPICAL
CONC	CONCRETE
DI	DUCTILE IRON

EQUIPMENT ABBREVIATIONS

ABBREVIATION	DESCRIPTION
GN	GENERATOR
MH	BRIDGE CRAIN
QP	SUMP PUMP
TP	RAW SEWAGE PUMP
VFD	VARIABLE FREQUENCY DRIVE

VALVE PREFIXES LEGEND

ABBREVIATION	DESCRIPTION
BV	BYPASS VALVE
CV	CHECK VALVE
DV	DISCHARGE VALVE
IV	ISOLATING VALVE
MV	MECHANICAL CONTROL VALVE
SV	SUCTION VALVE

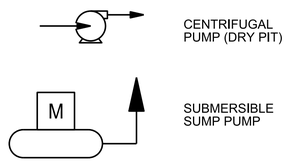
PIPE MATERIAL LEGEND

ABBREVIATION	DESCRIPTION
CI	CAST IRON
HDPE	POLYETHYLENE
SS	STAINLESS STEEL

GENERAL PIPING NOTES

1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
2. SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
3. LOCATION AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN IS ONLY APPROXIMATE. FINAL SUPPORT REQUIREMENTS SHALL BE DETERMINED IN THE FIELD AND REVIEWED BY THE ENGINEER PRIOR TO INSTALLATION. MAXIMUM SPACING SHALL BE AS SPECIFIED.
4. ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL.
5. ALL FLEXIBLE CONNECTORS, COUPLINGS OR FLANGED COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST TIES, BLOCKS, OR ANCHORS, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
6. SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE DRAWINGS, WHEREVER APPLICABLE. NOT ALL OF THE VARIOUS PIPING COMPONENTS ARE NECESSARILY USED IN THE PROJECT.
7. NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS IS ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
8. WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.
9. EXISTING PIPE AND EQUIPMENT IS SHOWN LIGHT-LINED AND/OR SCREENED AND IS NOTED AS EXISTING. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY-LINED.
10. REFER TO PROCESS, P&ID AND ELECTRICAL DRAWINGS TO RECEIVE COMPLETE PROCESS MECHANICAL SYSTEM INFORMATION. IN CASE OF INCONSISTENCIES, PROCESS DRAWING TAKE PRECEDENCE.

EQUIPMENT



CENTRIFUGAL PUMP (DRY PIT)

SUBMERSIBLE SUMP PUMP

VALVES

GATE

BALL

KNIFE GATE

ACTUATORS

ACTUATOR

SOLENOID

MOTOR

ADJUSTABLE SPEED CONTROLLER (ELEC)

CONNECTORS

SINGLE FLANGE

DOUBLE FLANGE

BLIND FLANGE

SCREWED CAP

WELDED CAP

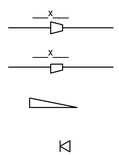
UNION

FEMALE HOSE CONNECTION

HOSE COUPLING

FLANGED TRI-CLAMP FITTING

FITTINGS



CONCENTRIC REDUCER

ECCENTRIC REDUCER

PIPELINE SLOPE

PIPE PLUG

INLINE PIPE COMP.

FLEX PIPE CONNECTOR

FLEXIBLE HOSE

WATER LEVEL

PID LINES and ARROWS

PRIMARY PROCESS LINE

SECONDARY PROCESS LINE

EXISTING PROCESS LINE

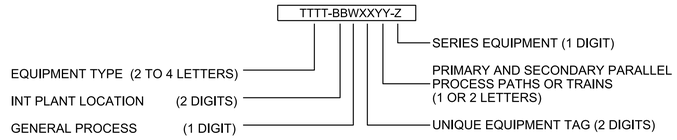
SIGNAL LINE

SOFTWARE LINK SIGNAL LINE

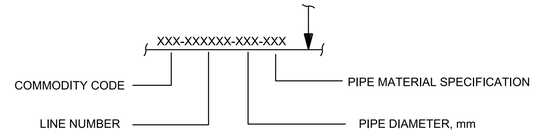
PROCESS FLOW DIAGRAM

SIGNAL ARROW

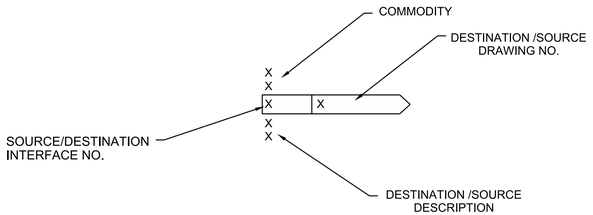
SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS



LINE LABEL



PID INTERFACE



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	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
GENERAL
LEGENDS, ABBREVIATIONS AND GENERAL NOTES

CONSULTANT DRAWING NO. 761-1916-400

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

INSTRUMENT IDENTIFICATION

INSTRUMENT IDENTIFICATION LETTERS TABLE

LETTER	FIRST-LETTER		SUCCEEDING-LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	READOUT OR PASSIVE FUNCTION	READOUT OR PASSIVE FUNCTION
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
C	USER'S CHOICE (*)			CONTROL	
D	DENSITY (S.G.)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT, SENSOR		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE (*)		GLASS, GAUGE VIEWING DEVICE	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTI VARIABLE		MULTI FUNCTION	MULTI FUNCTION	MULTI FUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (*)	X AXIS	UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

TABLE BASED ON THE INSTRUMENTATION, SYSTEMS, AND AUTOMATION SOCIETY (ISA) STANDARD.

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.
(*) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT.

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS

FIELD MOUNTED

REAR-OF-PANEL MOUNTED (OPERATOR INACCESSIBLE)

PANEL MOUNTED (OPERATOR ACCESSIBLE)

MCC MOUNTED

COMPUTER FUNCTION

PLC FUNCTION

SHARED DISPLAY, SHARED CONTROL

TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

EXAMPLE

CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

SPECIAL CASES

ON AND OFF EVENT LIGHTS

STOP-START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).

ACCESSORY DEVICES

A	ALARM
C	CONTROLLER
I	INDICATOR
R	RECORDER
S	SWITCH
T	TRANSMITTER
X	UNCLASSIFIED

EXAMPLE

TRANSMITTER AS AN ACCESSORY TO A FLOW ELEMENT

ON-OFF HAND SWITCH, MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE).

LINE LEGEND

PRIMARY PROCESS (CLOSED CONDUIT, DASHED LINE INDICATES ALTERNATE FLOW STREAM)

SECONDARY PROCESS

BYPASS PROCESS

PROCESS (OPEN CHANNEL)

PNEUMATIC SIGNAL

FILLED SYSTEM SIGNAL

HYDRAULIC SYSTEM SIGNAL

FUTURE EQUIPMENT/LINE

PACKAGED SYSTEM

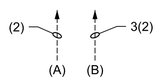
PREPURCHASE PACKAGED SYSTEM

ETHERNET I/O

DEVICENET I/O

WIRED I/O

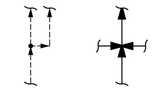
PARALLELING LINES



(A) TOTAL OF 2 SIGNALS

(B) 3 TYPICAL SETS OF 2 SIGNALS EACH. TOTAL OF 6 SIGNALS.

CONNECTING LINES



NON-CONNECTING LINES

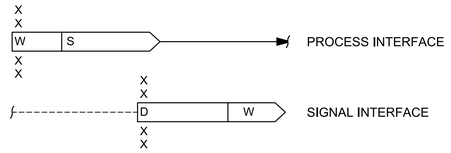
ABBREVIATIONS & LETTER SYMBOLS

AC	ALTERNATING CURRENT
AM	AUTO-MANUAL
CAM	COMPUTER-AUTO-MANUAL
CCS	CENTRAL CONTROL SYSTEM
CP-X	CONTROL PANEL NO. X
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU	DISTRIBUTED CONTROL UNIT
FR	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
ISR	INTRINSICALLY SAFE RELAY
LEL	LOWER EXPLOSIVE LIMIT
LR	LOCAL-REMOTE
MA	MANUAL-AUTO
MC	MODULATE-CLOSE
MCC-X	MOTOR CONTROL CENTER NO. X
OC	OPEN-CLOSE(D)
OCA	OPEN-CLOSE-AUTO
OCR	OPEN-CLOSE-REMOTE
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
PLC	PROGRAMMABLE LOGIC CONTROLLER
RIO	REMOTE I/O UNIT
RTU-X	REMOTE TELEMETRY UNIT NO. X
SS	START-STOP

PLC / SCADA SIGNAL CODES

CD	CLOSED STATUS
CE	CLOSE COMMAND
MN	RUNNING STATUS
OD	OPENED STATUS
ON	OPEN COMMAND
SC	SPEED SET POINT
SI	SPEED FEEDBACK
XA	FAULT STATUS
YC	RUN COMMAND
YN	REMOTE / AUTO MODE
ZC	POSITION SET POINT
ZI	POSITION FEEDBACK

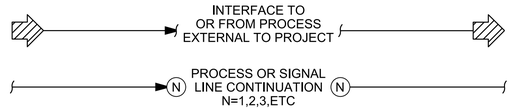
INTERFACE SYMBOLS



W SOURCE UNIT PROCESS LETTER

D DESTINATION DRAWING NO.

S SOURCE DRAWING NO.



EQUIPMENT TAGGING

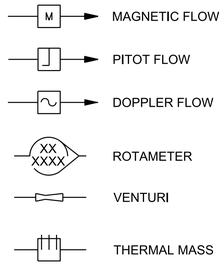
AA- TTTT- BB W XX YY- Z

- Z — SERIES EQUIPMENT
- YY — PARALLEL PROCESS OR TRAIN
- XX — EQUIPMENT NO.
- W — GENERAL PROCESS (3 OR 5 OR 6 OR 8)
- BB — INTERNAL PLANT LOCATION (19)
- TTTT — INSTRUMENT / EQUIPMENT CODE
- AA — PLANT (LS)

NOTE:

REFER TO THE CITY OF SASKATOON'S INSTRUMENTATION AND EQUIPMENT TAGGING AND STANDARDS POLICY W10-04 FOR MORE INFORMATION.

FLOWMETERS



MAGNETIC FLOW

PITOT FLOW

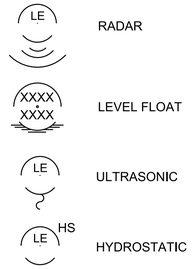
DOPPLER FLOW

ROTAMETER

VENTURI

THERMAL MASS

LEVEL INSTRUMENTS



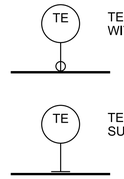
RADAR

LEVEL FLOAT

ULTRASONIC

HYDROSTATIC

TEMPERATURE



TEMPERATURE ELEMENT WITH WELL

TEMPERATURE ELEMENT SURFACE MOUNT

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1	30% DETAILED DESIGN	2021-01-29	RN
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SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

PROCESS
GENERAL
INSTRUMENTATION AND CONTROL SYMBOLS

CONSULTANT DRAWING NO. 761-1916-401

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

PIPING ARRANGEMENT GUIDELINES

1. GENERAL

1.1 FIELD CHECK ALL EXISTING STRUCTURES, EQUIPMENT, PIPING AND APPURTENANCES FOR COMPLETENESS OF DETAIL, LOCATION DIMENSIONS, ETC. PRIOR TO CONSTRUCTION.

1.2 FIELD CHECK NEW PIPING ROUTING, VALVE LOCATIONS ETC. FOR INTERFERENCE AND COORDINATE WITH OTHER TRADES WHERE REQUIRED. REVIEW ANY LOCAL ADJUSTMENTS WITH ENGINEER PRIOR TO STARTING WORK. USE STANDARD FITTINGS WHENEVER POSSIBLE.

1.3 ARRANGE PIPING IN STRAIGHT LINES, PARALLEL TO WALLS AND OTHER STRUCTURES, WITH A MINIMUM OF BENDS AND FITTINGS.

1.4 NO MITRE BENDS OR JOINTS.

1.5 PROVIDE FLANGES, UNIONS, COUPLINGS, OR OTHER CONNECTIONS THAT CAN BE READILY DISASSEMBLED AT THE INTERVALS SPECIFIED TO PROVIDE FOR DISASSEMBLY.

1.6 ARRANGE PIPING INLETS AND OUTLETS FROM EQUIPMENT SO THAT EQUIPMENT CAN BE REMOVED WHEN NECESSARY FOR REPLACEMENT OR MAINTENANCE WITHOUT DISRUPTING PIPE INSTALLATION. TO THE DEGREE POSSIBLE, DO NOT RUN PIPING OVER EQUIPMENT WHERE IT MAY INTERFERE WITH LIFTING.

1.7 PROVIDE CLEANOUTS AT INDICATED LOCATIONS AND AT INTERVALS ON PIPING SPECIFIED. PROVIDE A DRAIN CONNECTION AT ALL LOW POINTS AND AN AIR RELEASE VALVE CONNECTION AT HIGH POINTS.

1.8 GENERALLY ARRANGE PIPING SO THAT THERE IS A MINIMUM OF 0.75 METRE CLEAR AROUND EQUIPMENT ON TWO SIDES AND 1.5 METRES ON ONE SIDE. PROVIDE ADDITIONAL SPACE AS REQUIRED FOR SPECIAL EQUIPMENT WHERE THIS SPACE IS NECESSARY TO REMOVE EQUIPMENT PARTS (PERISTALTIC OR PROGRESSIVE CAVITY PUMPS, BOILERS, HEAT EXCHANGERS, ETC.).

1.9 ARRANGE SO THAT FIELD WELDS AND OTHER JOINTS ARE AT LEAST 200 mm FROM SUPPORTS, WALLS, OR OTHER STRUCTURAL ELEMENTS THAT OBSTRUCT WORK ON THE PIPELINE.

1.10 AT WALL PENETRATIONS, EXTEND PIPE A MINIMUM OF 150 mm FROM THE WALL TO ALLOW THE JOINT TO BE MADE.

1.11 DESIGN ALL PIPING SUPPORT SYSTEMS PER TECHNICAL SPECIFICATIONS.REFER TO DIVISION 15.

1.12 PROVIDE CLEARANCES BETWEEN PIPES ACCORDING TO THE FOLLOWING GUIDELINES:

- 1.12.1 MINIMUM DISTANCE BETWEEN PIPE EXTERIOR (INCLUDING INSULATION) WHERE NEITHER PIPE IS FLANGED OR VICTAULIC COUPLED - 75 mm.
- 1.12.2 MINIMUM DISTANCE BETWEEN PIPE EXTERIOR WHERE ONE OR BOTH PIPES ARE VICTAULIC COUPLED - 50 mm PLUS THE OFFSET DISTANCE OF LARGEST PIPE VICTAULIC COUPLING.
- 1.12.3 MINIMUM DISTANCE BETWEEN PIPE EXTERIOR WHEN PIPE IS FLANGED - 50 mm PLUS THE OFFSET DISTANCE OF THE FLANGE ON THE LARGEST PIPE.
- 1.12.4 INCREASE THIS DISTANCE AS NECESSARY WHERE JUMPOVERS OR RUNUNDERS ARE USED.

1.13 ENSURE THAT LOWEST POINT OF CROSSING PIPES IS SET AT AN ELEVATION AT LEAST 75 mm ABOVE EXTERIOR WALL OF LOWER PIPE IF NOT FLANGED OR VICTAULIC COUPLED, 50 mm ABOVE TOP OF FLANGE IF FLANGED, OR 50 mm ABOVE TOP OF VICTAULIC COUPLING IF JOINED USING THIS METHOD.

1.14 PLACE ISOLATION VALVES IN HORIZONTAL RUNS WHENEVER POSSIBLE.

1.15 ALWAYS PLACE SWING CHECK VALVES ON HORIZONTAL PIPE RUNS. BALL CHECK VALVES SHOULD BE PLACED IN VERTICAL RUNS.

1.16 LOCATE VALVES WITHIN 1.8 METRES OF OPERATING FLOOR WHENEVER POSSIBLE. WHEN LOCATING VALVES IN TRENCH, PROVIDE VALVE STEM EXTENSIONS TO OPERATING FLOOR LEVEL AND TERMINATE IN OPERATING HATCH. WHEN LOCATING VALVES ABOVE 1.8 METRE HEIGHT, PROVIDE CHAIN OPERATOR. EXTEND CHAIN TO 1200 mm ABOVE FLOOR LEVEL AND DRAPE OUT OF WAY OF TRAFFIC. DO NOT USE CHAIN OPERATOR ON VALVES 75 mm OR SMALLER.

1.17 WHERE VALVES MUST BE USED TO ISOLATE A LINE IN THE EVENT OF A FIRE OR OTHER SAFETY INCIDENT, LOCATE CLOSE TO AN AREA ACCESS POINT.

1.18 PROVIDE ACCESS FOR LIFTING EQUIPMENT FOR LARGE VALVES OVER 50 KG.

1.19 ARRANGE PIPING AND VALVES OR OTHER APPURTENANCES SO THAT THE UPSTREAM OR DOWNSTREAM PIPING HAS SUFFICIENT PLAY TO ENABLE THE VALVES OR APPURTENANCES TO BE EASILY REMOVED.

1.20 PROVIDED COVER PLATES FOR ALL OPENINGS IN WALLS OR FLOORS LEFT AFTER REMOVAL OF EQUIPMENT PER PROCESS STANDARD DETAILS.

1.21 VERIFY ALL PENETRATIONS THROUGH CHANNELS OR WALLS PRIOR TO ANY CORING.

1.22 ALL ANCHOR BOLTS STAINLESS STEEL.

1.23 ADHESIVE ANCHOR BOLT SYSTEM, HILTI HVA OR APPROVED EQUAL.

1.24 AFTER REMOVAL OF EQUIPMENT, APPURTENANCES, ETC. OR MAKING NEW CUTS OR HOLES IN EXISTING CONCRETE STRUCTURES, REFINISH CONCRETE SURFACES, FILL IN OLD BOLT HOLES ETC. PER STRUCTURAL STANDARD DETAILS.

2. PIPING AND EQUIPMENT DRAINS AND VENTS

2.1 PROVIDE CLEANOUTS AT INDICATED LOCATIONS AND AT INTERVALS ON PIPING SPECIFIED. PROVIDE A DRAIN CONNECTION AT ALL LOW POINTS AND A VENT CONNECTION AT HIGH POINTS.

2.2 PROVIDE DRAINS ON PIPING AT LOW POINTS, BETWEEN ISOLATION VALVES, AND AS INDICATED ON THE DRAWINGS, TO ENABLE PIPING SECTIONS TO BE DRAINED.

2.3 PROVIDE VENTS ON PIPING AT HIGH POINTS AND BETWEEN ISOLATION VALVES TO ALLOW FOR MANUAL AIR RELIEF.

2.4 ENSURE ALL PROCESS AND INSTRUMENTATION DRAIN TO FLOOR DRAIN OR TRENCH DRAIN.

3. PIPING FLUSHING CONNECTIONS

3.1 PROVIDE FLUSHING CONNECTIONS ON ALL PIPING.

3.2 LOCATE FLUSHING CONNECTIONS ADJACENT TO ALL ISOLATION VALVES, ON DEAD END BRANCHES, AT TEES AND 90 DEGREE ELBOWS, AND AT INTERMEDIATE LOCATIONS WHICH LIMIT THE DISTANCE BETWEEN FLUSHING CONNECTIONS TO LESS THAN 30 METRES.

3.3 LOCATE FLUSHING CONNECTIONS ON SIDE OR TOP OF PIPE FOR HORIZONTAL RUNS. FOR VERTICAL RUNS LOCATE FLUSHING CONNECTION AT LOWEST POINT IN ELEVATION.

3.4 FOR PUMP INSTALLATIONS LOCATE FLUSHING CONNECTIONS AT PUMP SUCTION AND DISCHARGE, AND ON PIPE RUN BETWEEN CHECK VALVE AND PUMP DISCHARGE VALVE.

3.5 REFER TO PLAN AND SECTION DRAWINGS FOR FLUSHING LOCATIONS. CONTRACTOR TO FIELD LOCATE ADDITIONAL FLUSHING CONNECTIONS AS REQUIRED BY THESE GUIDELINES.

4. PIPING DISASSEMBLY

4.1 PROVIDE FLANGES, UNIONS, VICTAULICS, COUPLINGS, OR OTHER CONNECTIONS THAT CAN BE READILY DISASSEMBLED AT THE INTERVALS SPECIFIED TO PROVIDE FOR DISASSEMBLY.

4.2 ARRANGE PIPING AND VALVES OR OTHER APPURTENANCES SO THAT THE UPSTREAM OR DOWNSTREAM PIPING HAS SUFFICIENT PLAY TO ENABLE THE VALVES OR APPURTENANCES TO BE EASILY REMOVED.

4.3 LOCATE VICTAULIC COUPLING ACCORDING TO SPECIFICATIONS OR AS SPECIFICALLY IDENTIFIED IN THE PROCESS DRAWINGS.

5. EQUIPMENT DRAINS

5.1 UNLESS OTHERWISE SHOWN ON THE DRAWINGS, PIPE EQUIPMENT DRAIN TO UPSTREAM OF PROCESS EQUIPMENT FROM WHICH DRAINAGE IS GENERATED OR TO THE NEAREST SUMP OR FLOOR DRAIN.

6. FLOOR DRAIN

6.1 REFER TO MECHANICAL DRAWINGS FOR DETAILS.

7. PENETRATIONS

7.1 IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE PENETRATIONS ARE ACCOUNTED FOR PRIOR TO CONCRETE POURS.

7.2 REFER TO PIPE PENETRATION DETAILS ON THE PROCESS STANDARD DETAIL DRAWINGS.

7.3 SUPPLY WALL OR FLOOR PENETRATIONS INTO SUBMERGED AREAS, UNDER SLAB AREAS, AND WHERE SHOWN WITH A 6 mm THICK WATER STOP FLANGE AT LEAST 50 mm LARGER THAN THE PIPE OR PIPE SLEEVE OUTSIDE DIAMETER.

7.4 FOR STRUCTURAL CONCRETE WALL AND FLOOR PENETRATIONS OF NON-INSULATED PIPE BETWEEN DRY AREAS, FURNISH A SLEEVE WHICH HAS AN INTERNAL DIAMETER AT LEAST 50 mm LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE. FOR PIPES 75 mm AND LESS FURNISH A PIPE SLEEVE 25 mm LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE.

7.5 MASONRY WALL PENETRATIONS OF NON-INSULATED PIPE, FURNISH A SLEEVE WHICH HAS AN INTERNAL DIMENSION OF AT LEAST 50 mm LARGER THAN OUTSIDE DIAMETER OF THE PIPE. FOR PIPES 75 mm AND LESS FURNISH A PIPE SLEEVE 25 mm LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE.

7.6 AT WALL PENETRATIONS, EXTEND PIPE A MINIMUM OF 150 mm FROM THE WALL TO ALLOW THE JOINT TO BE MADE.

8. LIFTING/EQUIPMENT REMOVAL

8.1 ALL LIFTING HOOKS INSTALLED BY CONTRACTOR FOR EQUIPMENT INSTALLATION TO BE LEFT IN PLACE FOR CITY'S USE. ENSURE THAT LIFTING HOOKS ARE RATED FOR THE SERVICED EQUIPMENT AND CERTIFY AS SUCH VIA SHOP DRAWING SUBMISSION.

8.2 ARRANGE PIPING INLETS AND OUTLETS FROM EQUIPMENT SO THAT EQUIPMENT CAN BE REMOVED WHEN NECESSARY FOR REPLACEMENT OR MAINTENANCE WITHOUT DISRUPTING PIPE INSTALLATION. TO THE DEGREE POSSIBLE, DO NOT RUN PIPING OVER EQUIPMENT WHERE IT MAY INTERFERE WITH LIFTING.

8.3 PROVIDE ACCESS FOR LIFTING EQUIPMENT FOR LARGE VALVES OVER 50 KG.

9. DISSIMILAR METALS

9.1 NO CONTACT IS ALLOWED BETWEEN A PIPE AND HANGER OR SUPPORT COMPONENTS OF ANY DISSIMILAR METALS TO PREVENT GALVANIC CORROSION.

10. HOUSEKEEPING PADS

10.1 PROVIDE CONCRETE BASES OR HOUSEKEEPING PADS UNDER ALL FLOOR MOUNTED EQUIPMENT AND COMPONENTS.

10.2 FIELD MODIFY HOUSEKEEPING PADS AS REQUIRED FOR RETROFIT AND NEW PUMP INSTALLATION WHERE INDICATED, DIMENSIONS DEFINED IN STRUCTURAL DRAWING STANDARD DETAILS.

10.3 PENETRATIONS IN THE HOUSEKEEPING PAD TO BE PREPARED PRIOR TO POURING OF CONCRETE. EQUIPMENT BASE AND ANCHORAGE DETAILS FOUND IN SPECIFICATION SECTION 11050.

	PLAN DESCRIPTION/REVISION	DATE	BY
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1	30% DETAILED DESIGN	2021-01-29	MM

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
GENERAL
PIPING ARRANGEMENT GUIDELINES

CONSULTANT DRAWING NO. 761-1916-402

SCALE: -

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

WALL AND FLOOR PENETRATION NOTES

TYPE OF PIPE	SIDE 1 CONDITION	SIDE 2 CONDITION	TYPE OF WALL/ FLOOR	ACCEPTABLE WALL PENETRATIONS	NOTES
STAINLESS STEEL DN900 - SUCTION PIPE	WET WELL	DRY WELL	CONCRETE WALL	NO.1	SEALANTS REQUIRED (PUDDLE FLANGE)
STAINLESS STEEL DN900 - SUCTION PIPE	WET WELL	DRY WELL	CONCRETE WALL	NO.1	SEALANTS REQUIRED (PUDDLE FLANGE)
STAINLESS STEEL DN900 - SUCTION PIPE	WET WELL	DRY WELL	CONCRETE WALL	NO.1	SEALANTS REQUIRED (PUDDLE FLANGE)
STAINLESS STEEL DN50 - PIPE FOR LEVEL SENSOR	WET WELL	DRY WELL	CONCRETE WALL	NO.1	SEALANTS REQUIRED
STAINLESS STEEL DN700 - DISCHARGE PIPE	DRY WELL (LOWER LEVEL)	DRY WELL (UPPER LEVEL)	CONCRETE FLOOR	NO.2	SEALANTS REQUIRED (METAL PIPE SLEEVE WITH GROUT RING)
STAINLESS STEEL DN700 - DISCHARGE PIPE	DRY WELL (LOWER LEVEL)	DRY WELL (UPPER LEVEL)	CONCRETE FLOOR	NO.2	SEALANTS REQUIRED (METAL PIPE SLEEVE WITH GROUT RING)
STAINLESS STEEL DN700 - DISCHARGE PIPE	DRY WELL (LOWER LEVEL)	DRY WELL (UPPER LEVEL)	CONCRETE FLOOR	NO.2	SEALANTS REQUIRED (METAL PIPE SLEEVE WITH GROUT RING)
STAINLESS STEEL DN50 - DISCHARGE PIPE FROM SUMP PUMPS	DRY WELL (LOWER LEVEL)	DRY WELL (UPPER LEVEL)	CONCRETE FLOOR	NO.2	SEALANTS REQUIRED (METAL PIPE SLEEVE WITH GROUT RING)
STAINLESS STEEL DN50 - DISCHARGE PIPE FROM SUMP PUMPS	DRY WELL (LOWER LEVEL)	DRY WELL (UPPER LEVEL)	CONCRETE FLOOR	NO.2	SEALANTS REQUIRED (METAL PIPE SLEEVE WITH GROUT RING)
STAINLESS STEEL DN50 - DISCHARGE PIPE FROM SUMP PUMPS	DRY WELL (UPPER LEVEL)	WET WELL	CONCRETE WALL	NO.1	SEALANTS REQUIRED (PUDDLE FLANGE)
STAINLESS STEEL DN50 - DISCHARGE PIPE FROM SUMP PUMPS	DRY WELL (UPPER LEVEL)	WET WELL	CONCRETE WALL	NO.1	SEALANTS REQUIRED (PUDDLE FLANGE)
STAINLESS STEEL DN25 - AIR PIPE	DRY WELL (LOWER LEVEL)	DRY WELL (UPPER LEVEL)	CONCRETE FLOOR	NO.2	SEALANTS REQUIRED (METAL PIPE SLEEVE WITH GROUT RING)
STAINLESS STEEL DN1050 - FORCEMAIN	DRY WELL	OUTSIDE BUILDING	CONCRETE WALL	NO.1 NO.7	SEALANTS REQUIRED (PUDDLE FLANGE)
CONCRETE DN1800 - INFLUENT PIPE	FROM GROUND	WET WELL	CONCRETE WALL	SEE STRUCTURAL DETAIL	SEALANTS REQUIRED

OTHER NOTES:

1. EXTEND PIPE A MINIMUM OF 150mm FROM WALL, EXCEPT WHERE CONNECTING TO UNDERGROUND PIPING. FOR THAT CASE, REFER TO STANDARD DETAIL NO. 7.
2. FOR FLOOR PENETRATIONS INTO EQUIPMENT AREAS PROVIDE CURB AS SHOWN IN STANDARD DETAIL NO. 2.
3. FOR PENETRATIONS INTO WET WELL, USE STANDARD STRUCTURAL STANDARD DETAIL.

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SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
GENERAL
WALL AND FLOOR PENETRATION NOTES

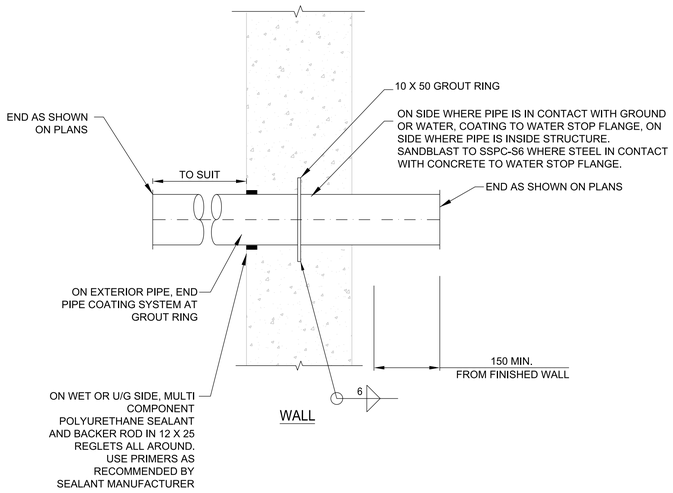
CONSULTANT DRAWING NO. 761-1916-403

SCALE: NTS

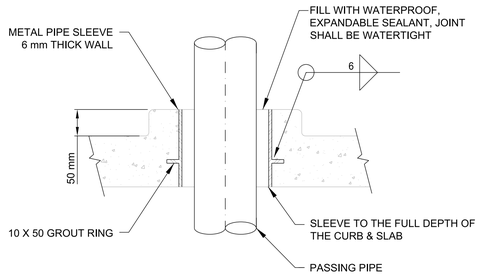
COS FILE NO.

COS CONTRACT NO.

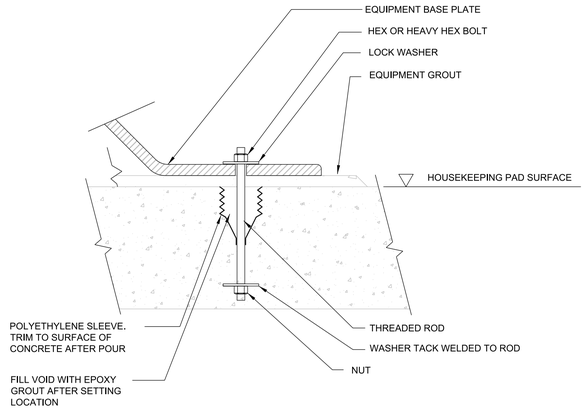
COS DRAWING NO.



1 WALL PENETRATION
NTS



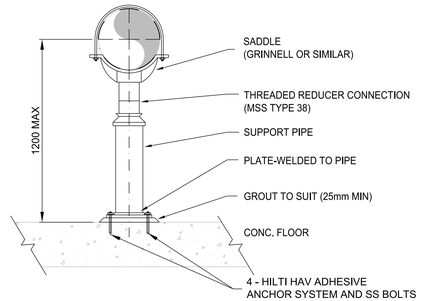
2 FLOOR PENETRATION
NTS



NOTES:

1. ANCHOR BOLT DIAMETER AND EMBEDMENT DESIGNED TO WITHSTAND INSTALLATION, TESTING, OPERATIONAL, AND SEISMIC LOADS.
2. USE ANCHOR BOLT MATERIALS LISTED IN SPECIFICATIONS.
3. REFER TO STRUCTURAL STANDARD DETAILS FOR BOLT TYPE, DIMENSIONS, AND OTHER DETAILS.

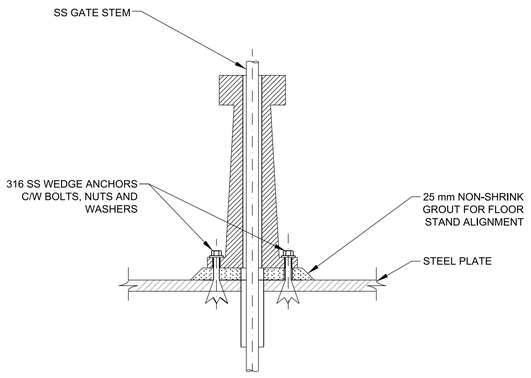
3 ANCHOR BOLTS, EQUIP MOTOR > 15 kW
NTS



PIPE SIZE (mm)	SUPPORT PIPE (mm)	PLATE SIZE (mm)
50	38	150 X 150 X 9.5
75	50	250 X 250 X 9.5
100	75	250 X 250 X 9.5
150	100	250 X 250 X 9.5
200	150	250 X 250 X 9.5
250	200	300 X 300 X 9.5

NOTE: ALL MATERIALS ARE STAINLESS STEEL.

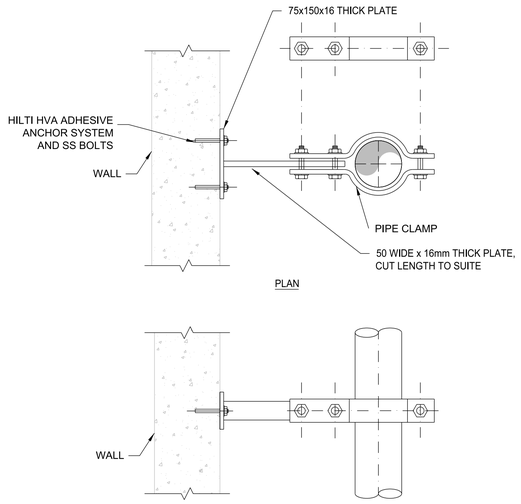
4 ADJUSTABLE PIPE SADDLE SUPPORT
NTS



NOTES:

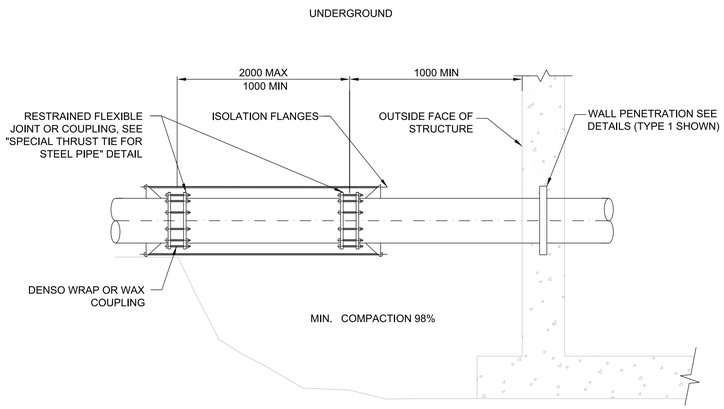
1. THIS DETAIL IS REPRESENTATIVE ONLY, REFER TO GATE MANUFACTURERS SUBMITTAL FOR INSTALLATION DETAILS.
2. ALL PIPE SUPPORT COMPONENTS SHALL BE DESIGNED FABRICATED FROM STAINLESS STEEL MATERIAL, UNLESS NOTED OTHERWISE.
3. SEE SLIDE GATE DETAIL NO. 11.

5 FLOOR STAND INSTALLATION
NTS



NOTE: ALL MATERIALS ARE STAINLESS STEEL.

6 VERTICAL PIPE ALIGNMENT BRACKET
NTS



7 CONNECTION TO STRUCTURE UNDERGROUND PIPE
NTS

	PLAN DESCRIPTION/REVISION	DATE	BY
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SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
GENERAL
STANDARD DETAILS (1)

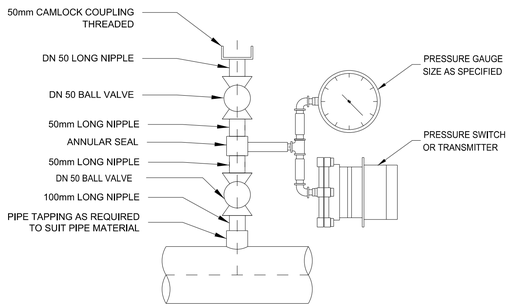
CONSULTANT DRAWING NO. 761-1916-404

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

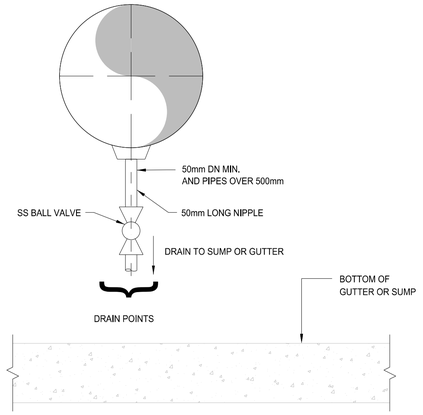
COS DRAWING NO.



NOTE:

1. ACCEPTABLE ANNULAR SEALS: ONYX VALVE PS REDVALVE 40 OR 48 SERIES.

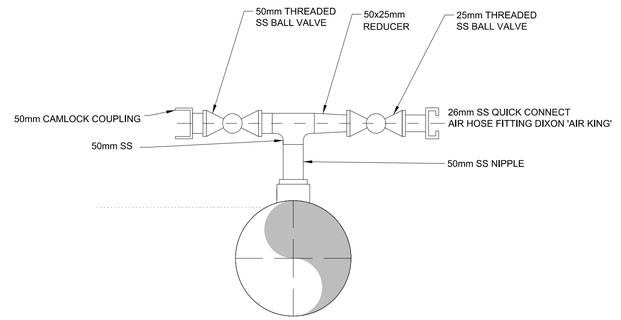
8 PRESSURE GAUGE AND SWITCH
NTS



NOTES:

1. ALL DRAIN & SAMPLE POINT FITTINGS SHALL BE SS PIPING, FITTINGS SHALL BE SS.
2. LOCATE DRAINS AT LOW POINTS OF ALL LINES AND AS NOTED.
3. LOCATE EACH VALVE FOR EASE OF OPERATION.

9 SAMPLE DRAIN
NTS



10 FLUSHING/AIR PURGING CONNECTION
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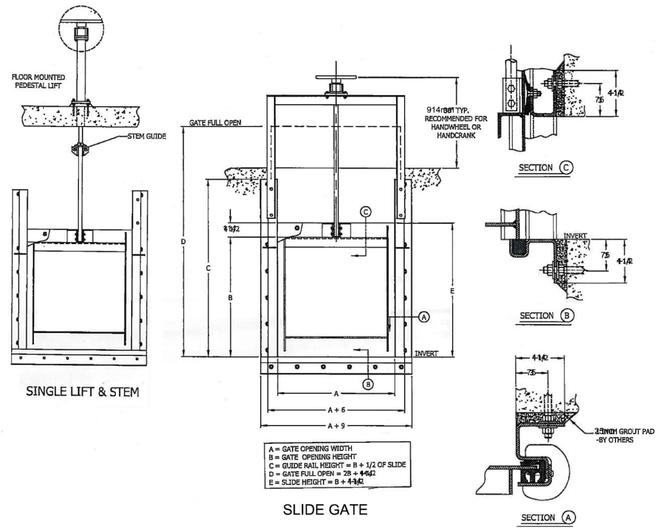
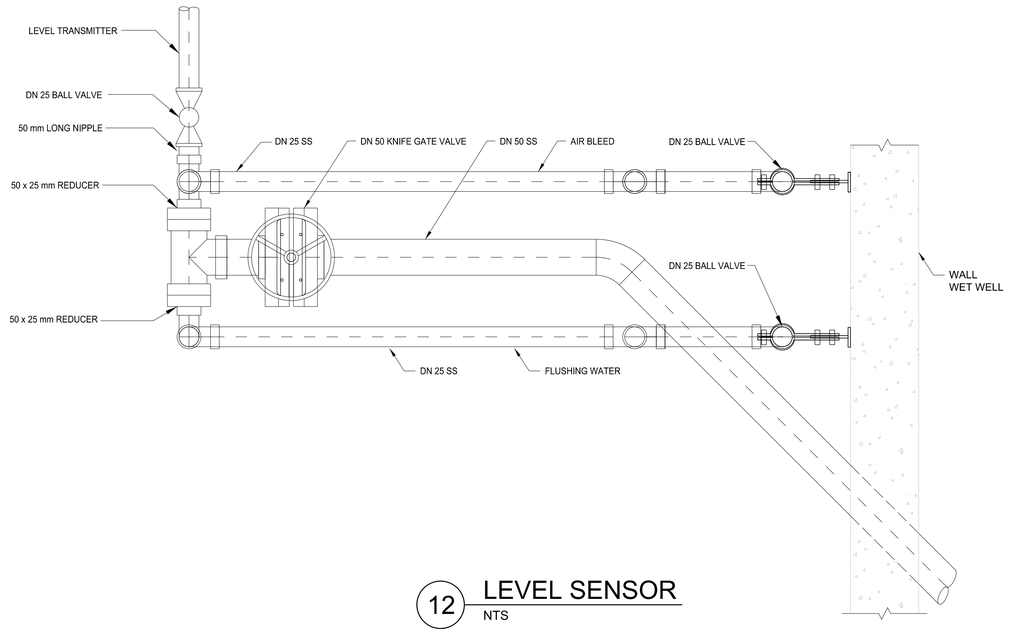


11 SLIDE GATE
NTS



12 LEVEL SENSOR
NTS

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SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
GENERAL
STANDARD DETAILS (2)

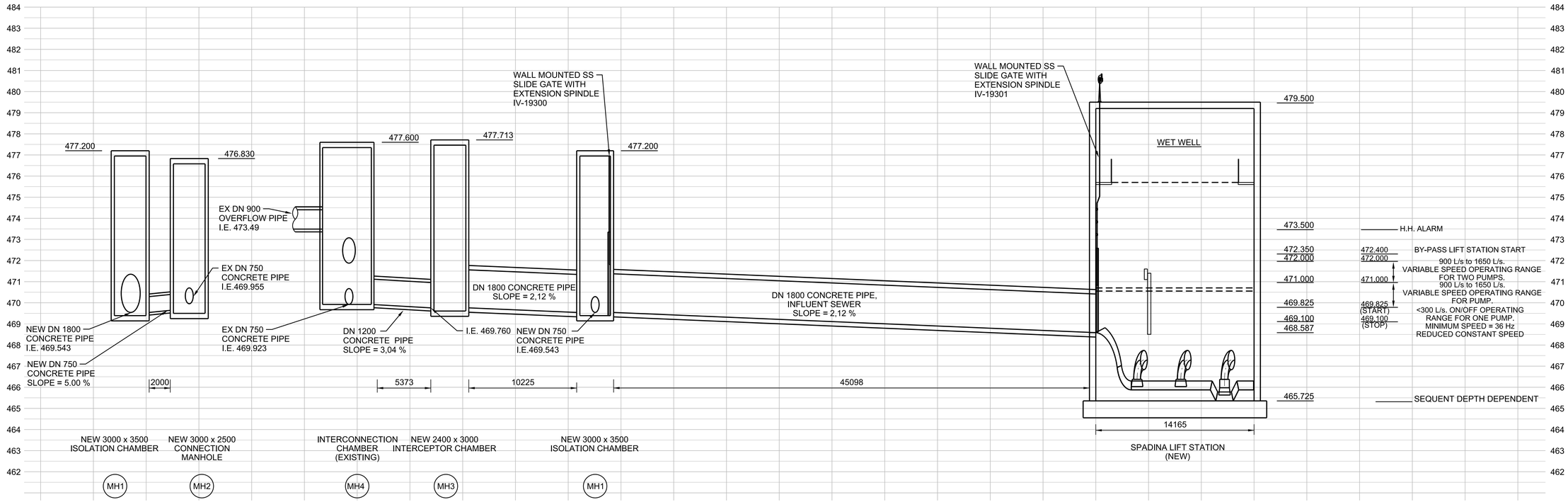
CONSULTANT DRAWING NO. 761-1916-405

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



PROFILE

V 1:100, H 1:200

0 1 2 3 4 5m — V 1:100

0 2 4 6 8 10m — H 1:200

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SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

PROCESS
GENERAL
HYDRAULIC PROFILE

CONSULTANT DRAWING NO. 761-1916-410

SCALE: 1:100/200

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

PLCP-19610

LEVEL SWITCH HIGH — LSH 19301 — DI — 1
WET WELL LEVEL INDICATION 1 — LT 19301B — AI — 2
WET WELL LEVEL INDICATION 2 — LT 19301A — AI — 3

REMOTE MODE — HS-1 19301 — DI — 4
OPENED STATUS — ZSO 19301 — DI
CLOSED STATUS — ZSC 19301 — DI
OPEN COMMAND — ZCO 19301 — DO
CLOSE COMMAND — ZCC 19301 — DO
POSITION SET POINT — ZC 19301 — AO
POSITION FEEDBACK — ZT 19301 — AI

REMOTE MODE — HS-1 19302A — DI — 5
RUNNING STATUS — YS-1 19302A — DI — 6
FAULT STATUS — YA 19302A — DI — 7
RUN COMMAND — YC 19302A — DO
SPEED SET POINT — SC 19302A — AO
SPEED FEEDBACK — ST 19302A — AI

PRESSURE INDICATION — PT 19302 — AI — 8
FLOW INDICATION — FT 19302 — AI — 9
FLOOD ALARM — XH 19302 — DI — 10

A | 761-1916-414 — DR-19305A-50-SS — DRAIN FROM PROCESS SUMP
B | 761-1916-414 — DR-19305B-50-SS — DRAIN FROM PROCESS SUMP
FLOOR DRAIN — DR-19702-100-CI — 11 — PUMPING STATION GROUND LEVEL

900 (EXISTING) — TO RIVER
1200 (EXISTING) — TO EXISTING BYPASS L.S.

EXISTING INTERCEPTOR — 1800
EXISTING INTERCONNECTION CHAMBER
1200 (EXISTING) TO EXISTING L.S.
NEW INTERCONNECTION CHAMBER
1800
NEW ISOLATION VALVE CHAMBER
IV-19300
1800
MV-19301
750 (NEW)
EXISTING INTERCEPTOR — 750 (EXISTING)
NEW CONNECTION MANHOLE

M — 4
2 — LIT 19301B
11
1 — LSH 19301

XE 19302 — 10 — FLOOR MOUNT FLOOD SENSOR (DRY WELL LOWER LEVEL)

M — TRAVELLING BRIDGE CRANE WITH ELECTRIC HOIST (600V) — MH-19300

472.000
471.000 — 900 L/s TO 1650 L/s. CONSTANT OPERATING RANGE FOR TWO PUMPS.
469.825 START — 300 L/s TO 900 L/s. CONSTANT OPERATING RANGE FOR ONE PUMP.
469.10 STOP — <300 L/s. ON/OFF OPERATING RANGE FOR ONE PUMP. MINIMUM SPEED = 36Hz.

LE/LT 19301A — 3

1100x900 — RS-19302A-900-SS — K — 5 — NOTE 1 NOTE 2 — VFD — M — 500x700 — 900x600 — K — SV-19302A — NOTE 3 — TP-19302A — NOTE 1 NOTE 2 — CV-19302A — RS-19302A-700-SS — DV-19302A — K
1100x900 — RS-19302B-900-SS — 6 — NOTE 1 NOTE 2 — VFD — M — 500x700 — 900x600 — K — SV-19302B — NOTE 3 — TP-19302B — NOTE 1 NOTE 2 — CV-19302B — RS-19302B-700-SS — DV-19302B — K
1100x900 — RS-19302C-900-SS — 7 — NOTE 1 NOTE 2 — VFD — M — 500x700 — 900x600 — K — SV-19302C — NOTE 3 — TP-19302C — NOTE 1 NOTE 2 — CV-19302C — RS-19302C-700-SS — DV-19302C — K

RS-19302-1050-SS

8 — PIT 19302
9 — FIT 19302 — FE 19302 — RS-19302-1050-SS — NOTE 1 — K — CONNECTION TO HDPE FORCEMAIN BY OTHERS — DISCHARGE FORCEMAIN
M — NOTE 4 — IV-19302

NOTES:

1. 25mm AIR QUICK CONNECT
2. 50mm FLUSH QUICK CONNECT
3. 65mm DRAIN TO PROCESS SUMP
4. 100mm DRAIN TO INFLUENT WALL

TP-19302C RAW SEWAGE PUMP 3
CAPACITY: 900 L/s
TDH: ~11.00 m

TP-19302B RAW SEWAGE PUMP 2
CAPACITY: 900 L/s
TDH: ~11.00 m

TP-19302A RAW SEWAGE PUMP 1
CAPACITY: 900 L/s
TDH: ~11.00 m

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2	30% DETAILED DESIGN	2021-01-29	MM
1	PRELIMINARY DESIGN	2020-12-04	MM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

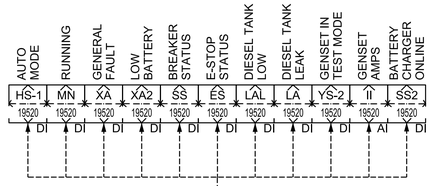
City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
PIPING & INSTRUMENTATION DIAGRAM
RAW SEWAGE PUMPS

CONSULTANT DRAWING NO. 761-1916-411

SCALE: NTS
COS FILE NO.
COS CONTRACT NO.
COS DRAWING NO.

PLCP-19610



CB-19520

GENERATOR | CONTROL PANEL

GN-19520

DIESEL GENERATOR

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2	30% DETAILED DESIGN	2021-01-29	MM
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SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
PIPING & INSTRUMENTATION DIAGRAM
DIESEL GENERATOR

CONSULTANT DRAWING NO. 761-1916-412

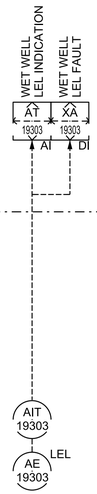
SCALE: NTS

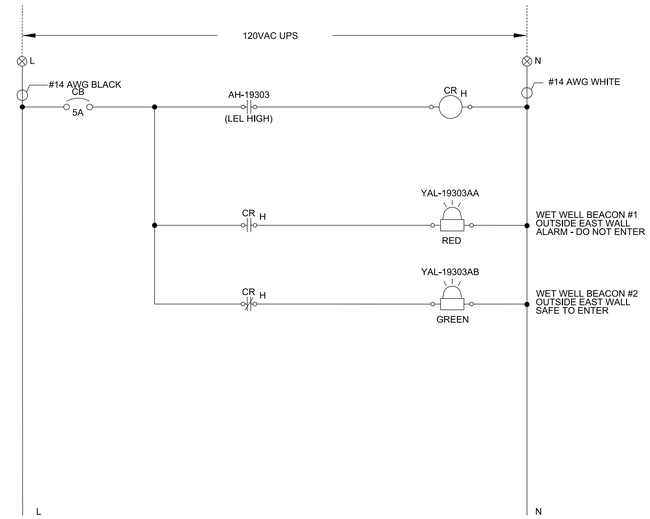
COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

PLCP-19610





CB-19303 CONTROL PANEL

NTS WET WELL ROOM

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1	PRELIMINARY DESIGN	2020-12-04	MM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

PROCESS
PIPING & INSTRUMENTATION DIAGRAM
GAS DETECTION + ALARMING

CONSULTANT DRAWING NO. 761-1916-413

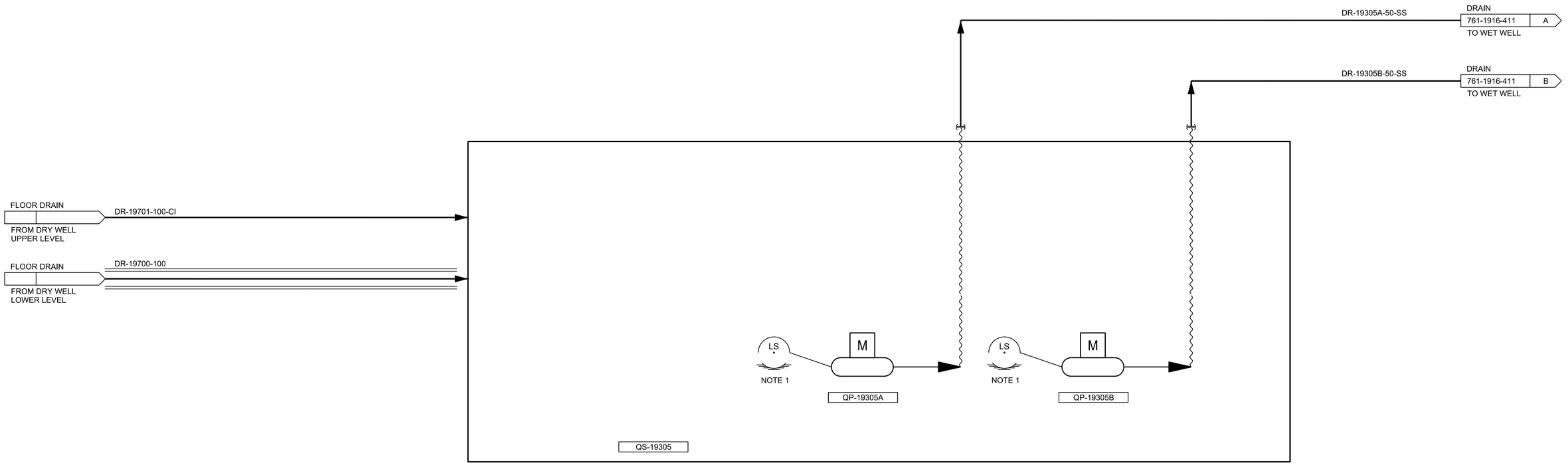
SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

PLCP-19610



QS-19305
PROCESS SUMP

QP-19305A
PROCESS SUMP
PUMP 1
CAPACITY: 1.7 L/s
TDH: 8.65 m
POWER: 120VAC

QP-19305B
PROCESS SUMP
PUMP 2
CAPACITY: 1.7 L/s
TDH: 8.65 m
POWER: 120VAC

NOTES:

1. INTEGRATED LEVEL SWITCH.

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SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
PIPING & INSTRUMENTATION DIAGRAM
PROCESS SUMP

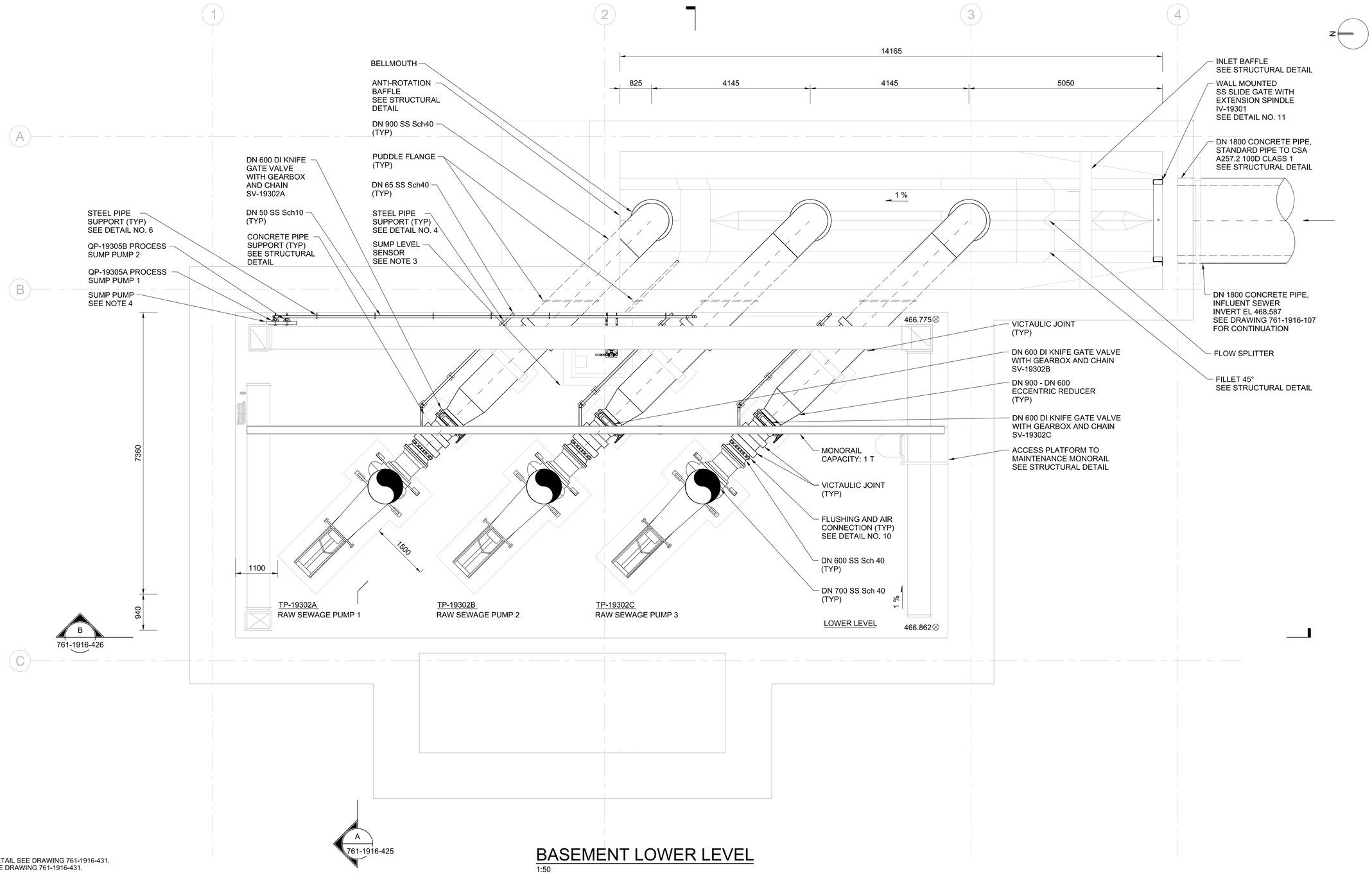
CONSULTANT DRAWING NO. 761-1916-414

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES:

1. DN = NOMINAL DIAMETER.
2. NO. = NUMBER.
3. FOR SUMP LEVEL SENSOR DETAIL SEE DRAWING 761-1916-431.
4. FOR SUMP PUMPS DETAIL SEE DRAWING 761-1916-431.

BASEMENT LOWER LEVEL

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2	30% DETAILED DESIGN	2021-01-29	MM
1	PRELIMINARY DESIGN	2020-12-04	MM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

PROCESS
PLAN
BASEMENT LOWER LEVEL

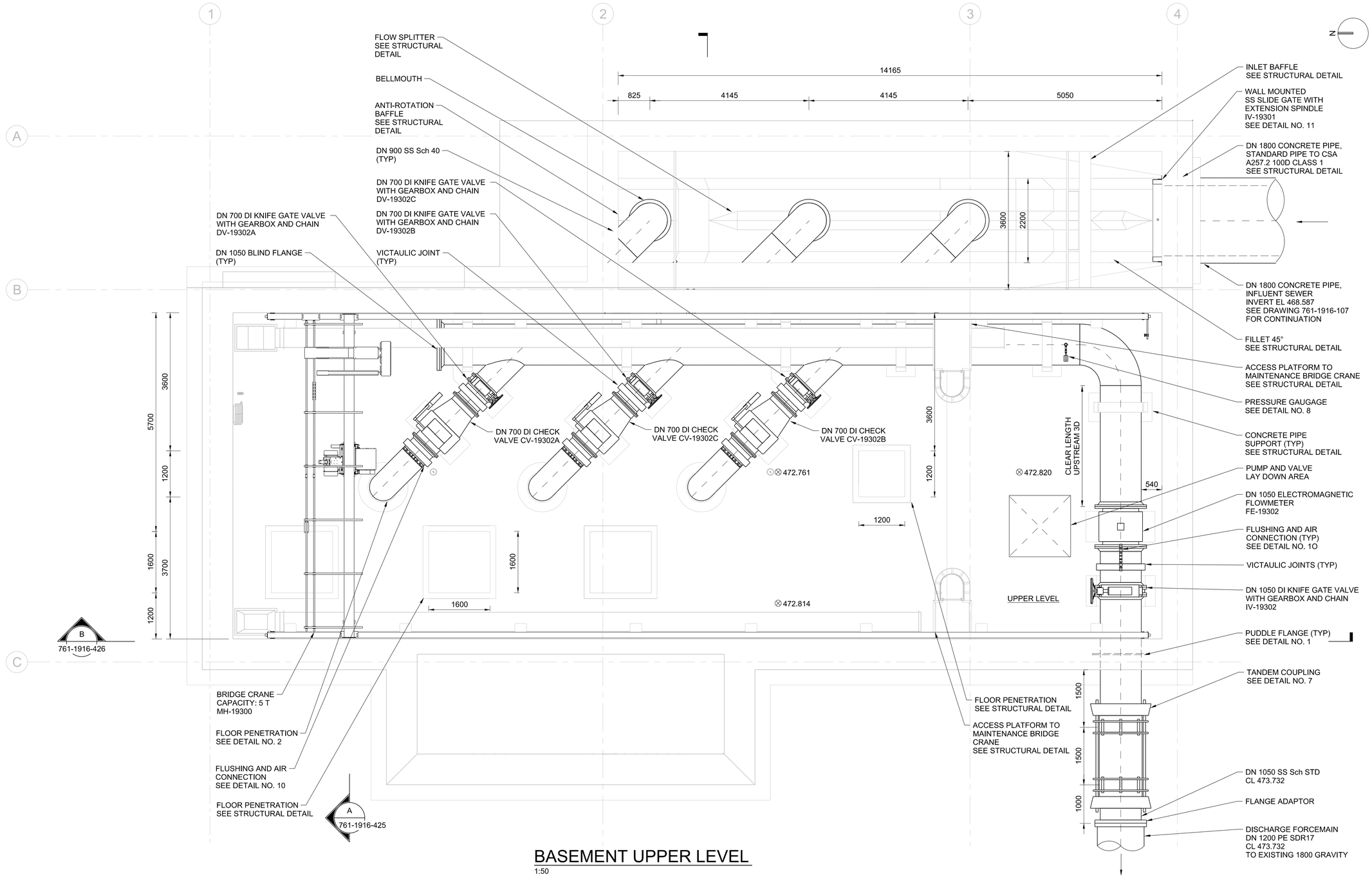
CONSULTANT DRAWING NO. 761-1916-420

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES:

1. DN = NOMINAL DIAMETER.
2. NO. = NUMBER.

BASEMENT UPPER LEVEL

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2	30% DETAILED DESIGN	2021-01-29	MM
1	PRELIMINARY DESIGN	2020-12-04	MM
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

PROCESS
PLAN
BASEMENT UPPER LEVEL

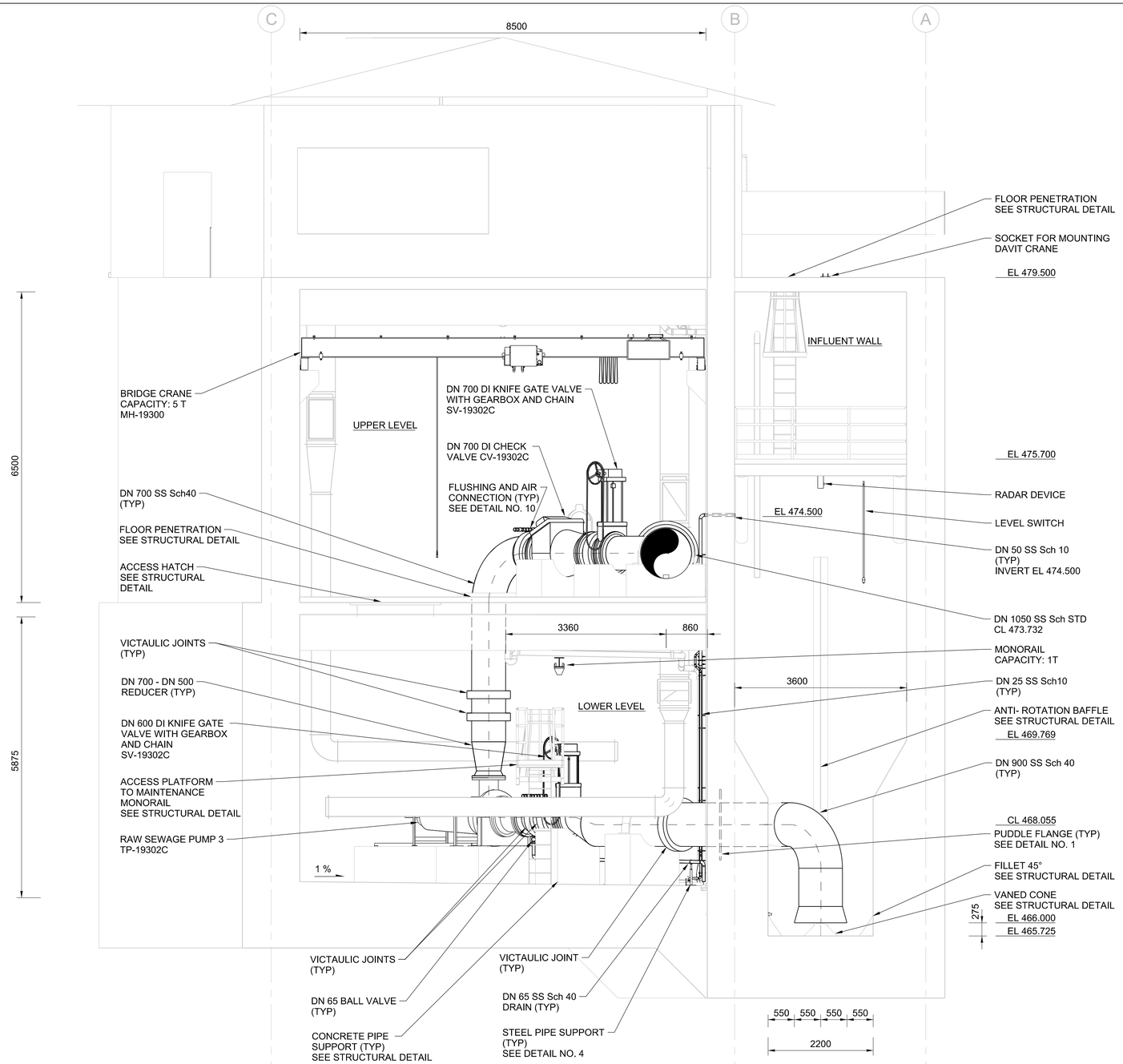
CONSULTANT DRAWING NO. 761-1916-421

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



SECTION A

1:50

NOTES:

1. DN = NOMINAL DIAMETER.
2. NO. = NUMBER.

	PLAN DESCRIPTION/REVISION	DATE	BY
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2	30% DETAILED DESIGN	2021-01-29	MM
1	PRELIMINARY DESIGN	2020-12-04	MM

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
SECTION
SECTION A

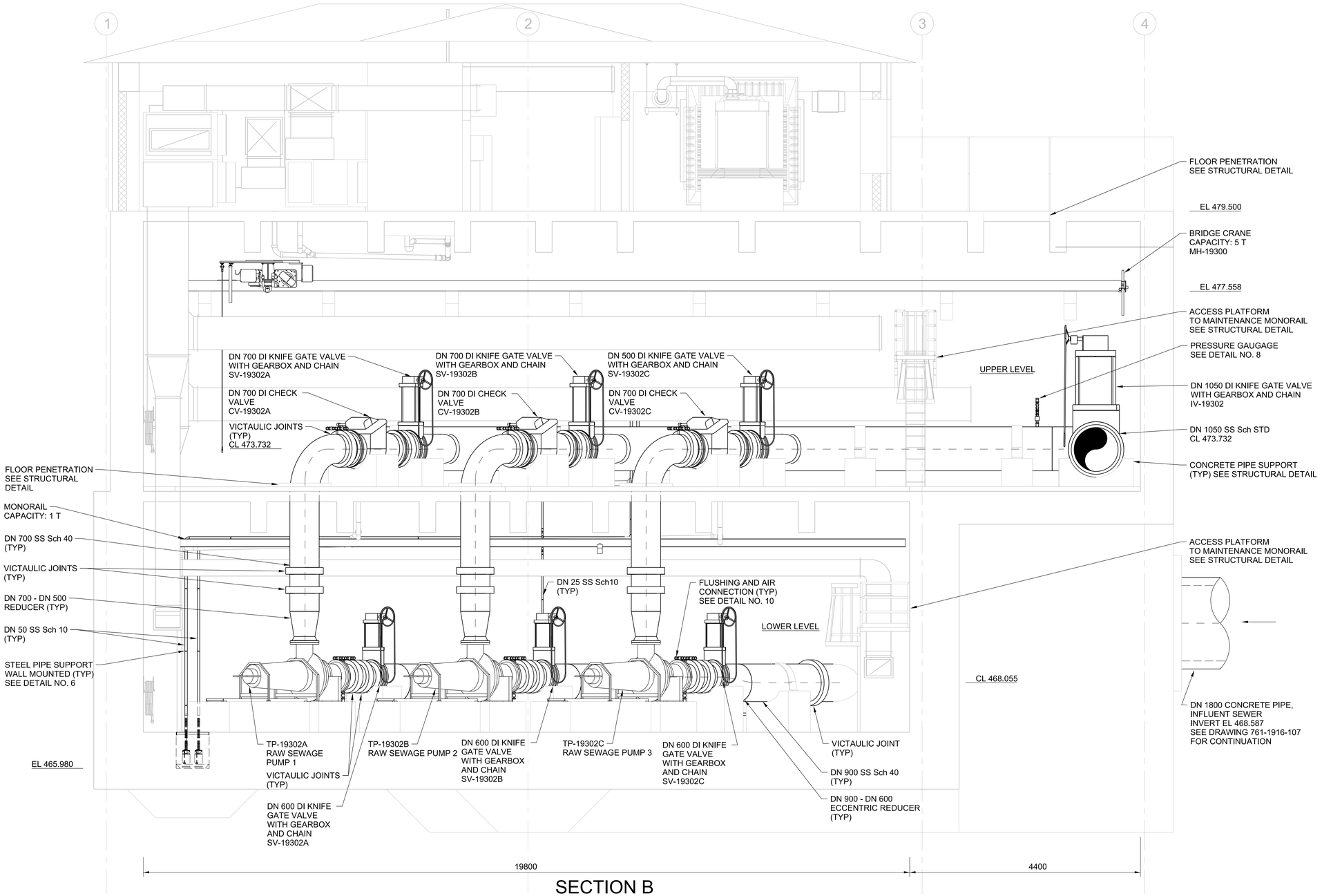
CONSULTANT DRAWING NO. 761-1916-425

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



SECTION B

1:50

NOTES:

1. DN = NOMINAL DIAMETER.
2. NO. = NUMBER.

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2	30% DETAILED DESIGN	2021-01-29	MM	
1	PRELIMINARY DESIGN	2020-12-04	MM	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

PROCESS
SECTION
SECTION B

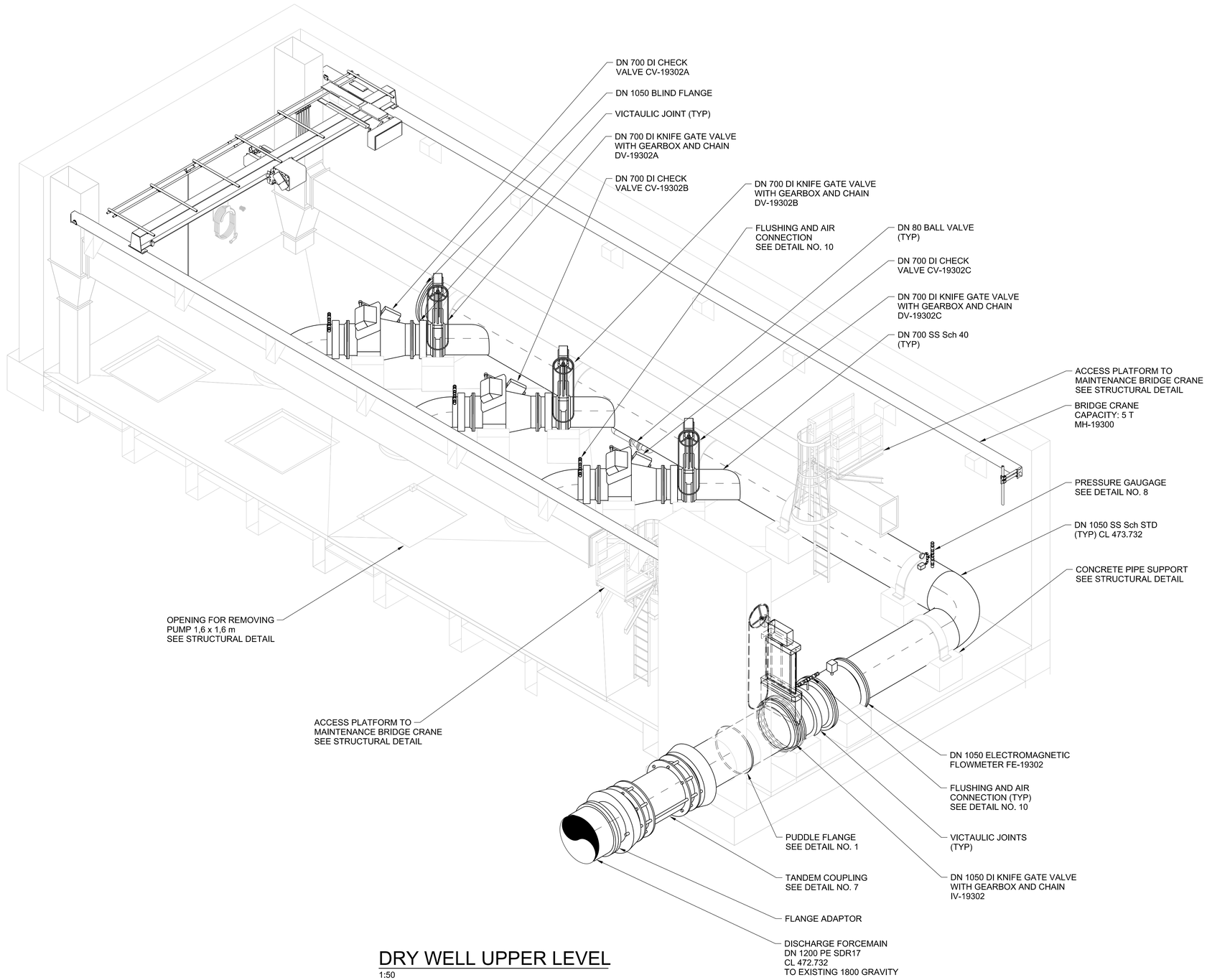
CONSULTANT DRAWING NO. 761-1916-426

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES:

1. DN = NOMINAL DIAMETER.
2. NO. = NUMBER.

DRY WELL UPPER LEVEL

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2	30% DETAILED DESIGN	2021-01-29	MM
1	PRELIMINARY DESIGN	2020-12-04	MM
	PLAN DESCRIPTION/REVISION	DATE	BY

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

PROCESS
ISOMETRIC
DRY WELL UPPER LEVEL

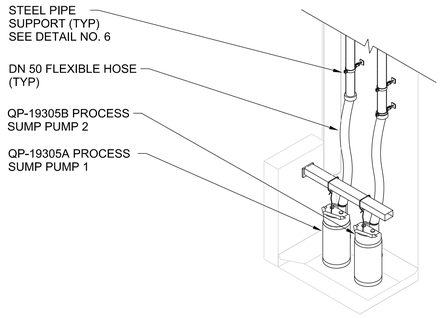
CONSULTANT DRAWING NO. 761-1916-430

SCALE: 1:50

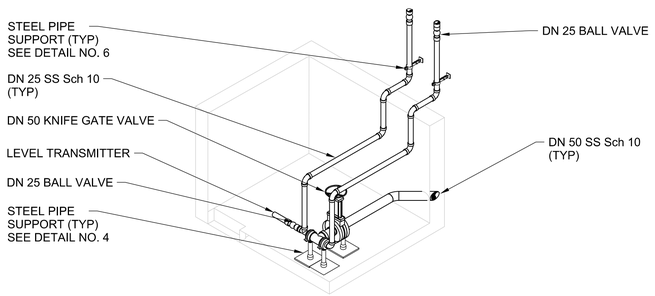
COS FILE NO.

COS CONTRACT NO.

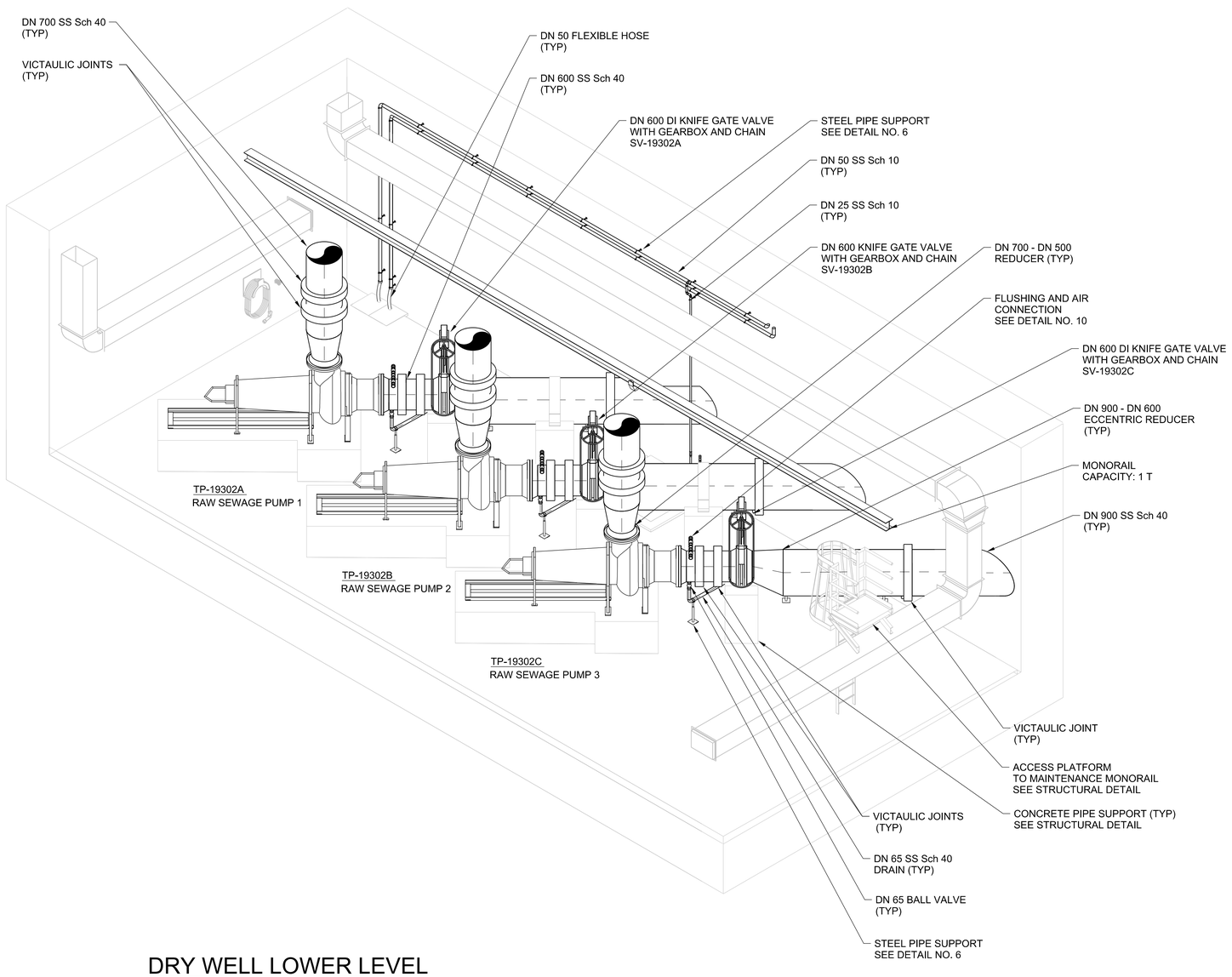
COS DRAWING NO.



SUMP PUMPS
1:20



SUMP LEVEL SENSOR
1:20



DRY WELL LOWER LEVEL
1:50

NOTES:

1. DN = NOMINAL DIAMETER.
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SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

PROCESS
ISOMETRIC
DRY WELL LOWER LEVEL

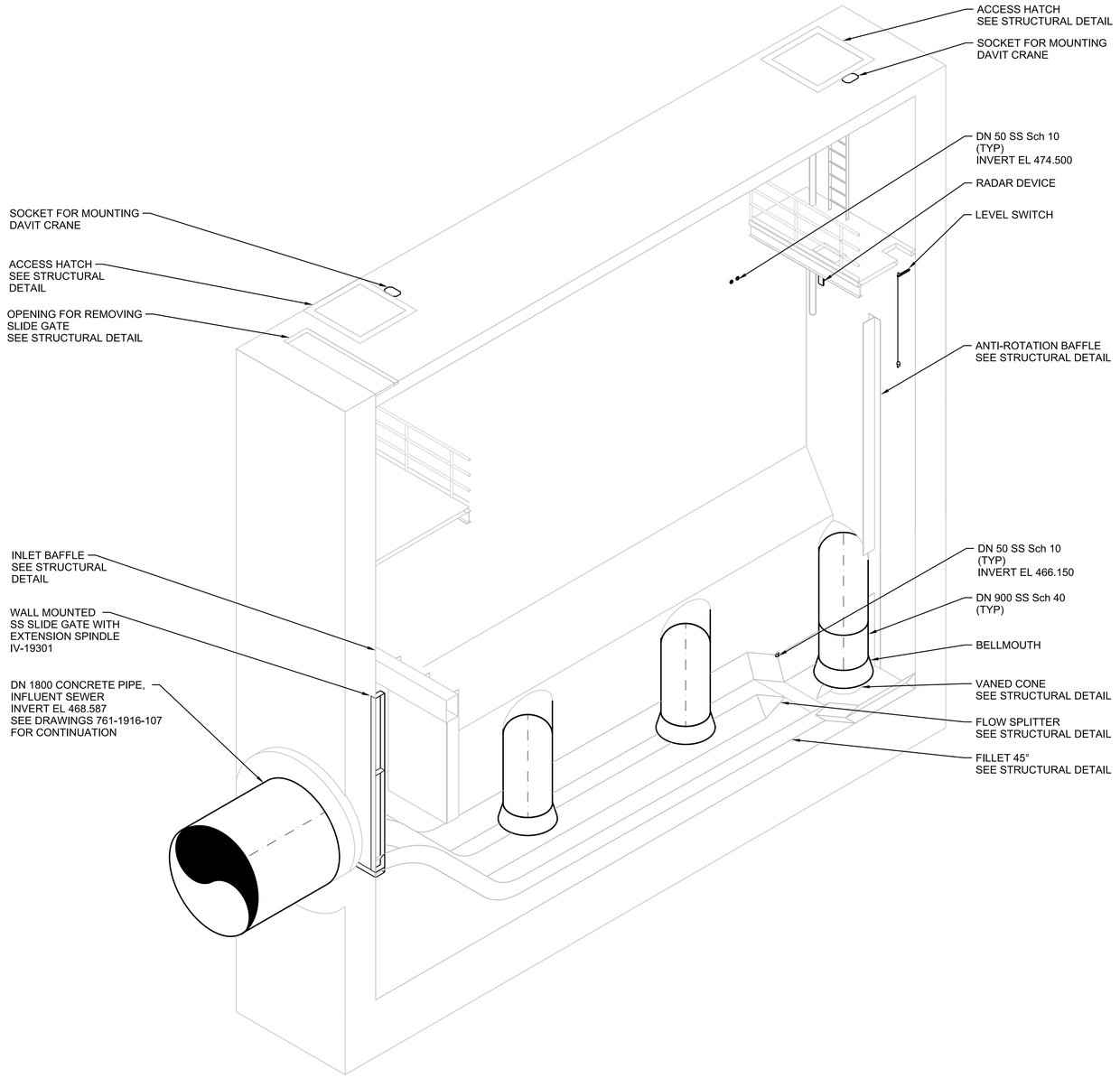
CONSULTANT DRAWING NO. 761-1916-431

SCALE: 1:50, 1:20

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES:

1. DN = NOMINAL DIAMETER.
2. NO. = NUMBER.

WET WELL
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2	30% DETAILED DESIGN	2021-01-29	MM	
1	PRELIMINARY DESIGN	2020-12-04	MM	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
PROCESS
ISOMETRIC
WET WELL

CONSULTANT DRAWING NO. 761-1916-432

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

HEATING, VENTILATING, AND AIR CONDITIONING PIPE AND FITTING SYMBOLS

HVAC ABBREVIATIONS

AC	AIR CONDITIONING UNIT
ACD	ACCESS DOOR
AU	AIR HANDLING UNIT
BD	BALANCING DAMPER
BDD	BACKDRAFT DAMPER
HB	HEATING BOILER
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BOP	BOTTOM OF PLENUM
CA	COMBUSTION AIR / CAPACITOR
CF	CEILING FAN / COOLING FAN
CT	COOLING TOWER
RD	AIR-COOLED CONDENSING UNIT
DG	DOOR GRILLE
DN	DOWN
EA	EXHAUST AIR
EF	EXHAUST FAN
FC	FAIL IN CLOSED POSITION
FD	FIRE DAMPER
FO	FAIL IN OPEN POSITION
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FSD	COMBINATION FIRE AND SMOKE DAMPER
GLYR	GLYCOL RETURN
GLYS	GLYCOL SUPPLY
HE	HEAT EXCHANGER
HUM	HUMIDIFIER
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
SF	MAKE-UP AIR UNIT / SUPPLY FAN
MD	MOTORIZED DAMPER
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OED	OPEN END DUCT
RA	RETURN AIR
R	REFRIGERANT PIPE
RF	RETURN FAN
SA	SUPPLY AIR
SD	SLOT/SUPPLY DIFFUSER
TU	TERMINAL UNIT
UH	UNIT HEATER
VD	VOLUME DAMPER

VALVE SYMBOLS

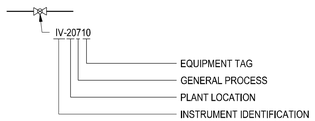
SINGLE LINE	DOUBLE LINE
GATE	
BUTTERFLY	OR
GLOBE	OR
BALL	OR
SEATING PORT	
ECCENTRIC PLUG	OR
PLUG OR COCK	OR
NEEDLE	OR
SWING CHECK	OR
BALL CHECK	OR
FLOW CONTROL/ BALANCING VALVE	
STRAINER	
COMBINATION FLOWMETER AND BALANCING FITTING	
COMBINATION FLOWMETER, BALANCING FITTING AND SHUT-OFF VALVE	
PRESSURE RELIEF	
AIR VENT (AUTO)	
AIR VENT (MANUAL)	
REGULATED SIDE PRESSURE CONTROL	
MOTORIZED VALVE - 3 WAY	
MOTORIZED VALVE - 2 WAY	

MISCELLANEOUS PIPING SYMBOLS

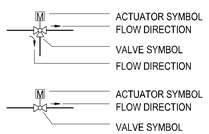
STEAM TRAP X = NO. IN SPECS	GAUGE WITH COCK
FLOW SWITCH	
FLOW METER	THERMOMETER
	GAS METER
PRESSURE SWITCH	
STRAINER	

VALVE DESIGNATIONS MANUAL VALVES AND CHECK VALVES

REFER TO THE CITY'S INSTRUMENTATION AND EQUIPMENT TAGGING AND STANDARDS POLICY W10-04 FOR MORE INFORMATION



CONTROL VALVES

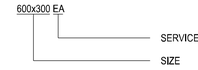


HEATING, VENTILATING, AND AIR CONDITIONING SYMBOLS

	WALL REGISTER OR GRILLE (SUPPLY)
	CEILING DIFFUSER OR REGISTER (SUPPLY)
	CEILING REGISTER OR GRILLE (RETURN AND EXHAUST)
	WALL REGISTER OR GRILLE (RETURN AND EXHAUST)
	TURNING VANES
	45 DEGREE ENTRY
	CONICAL TEE
	BELLMOUTH
SD	SMOKE DAMPER
FD	FIRE DAMPER
	MANUAL OPPOSED-BLADE DAMPER
	MANUAL BUTTERFLY DAMPER
	BACKDRAFT DAMPER
BDD M	MOTORIZED DAMPER
	SOUND ATTENUATED DUCT
	FLEXIBLE CONNECTION
	FLEXIBLE DUCTWORK
R	INCLINED RISE IN DUCT
D	INCLINED DROP IN DUCT
	SUPPLY DUCT (SECTION)
	INTAKE, RETURN, OR EXHAUST DUCT (SECTION)
KS	TIMER
TS	ROOM THERMOSTAT
TI	ROOM TEMPERATURE TRANSMITTER
PT	ROOM PRESSURE TRANSMITTER
MT	ROOM MOISTURE TRANSMITTER
CP	HVAC CONTROL PANEL
(200 L/s)	200 L/s
I	SMOKE DETECTOR
PDT	DIFFERENTIAL PRESSURE TRANSMITTER
U	UNDERCUT DOOR
L	LOUVERED DOOR

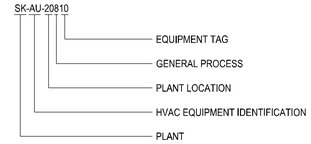
SUPPLY, RETURN, EXHAUST, OR TRANSFER GRILLE/REGISTER/DIFFUSER IDENTIFICATION

HVAC DUCT IDENTIFICATION



HVAC EQUIPMENT IDENTIFICATION

REFER TO THE CITY'S INSTRUMENTATION AND EQUIPMENT TAGGING AND STANDARDS POLICY W10-04 FOR MORE INFORMATION



HVAC GENERAL NOTES:

1. DUCT AND PIPING ELEVATIONS SHOWN ARE APPROXIMATE. FIELD VERIFY ELEVATIONS PRIOR TO INSTALLATION, EXCEPT WHERE DIMENSIONS ARE SPECIFICALLY INDICATED, MECHANICAL DRAWINGS ARE GENERALLY DIAGRAMMATIC AND SHALL NOT BE SCALED. SIZE AND LOCATION OF EQUIPMENT IS SHOWN TO SCALE WHERE POSSIBLE. DRAWINGS INDICATE THE REQUIRED SIZE AND ROUTES OF SYSTEM ELEMENTS. IT IS NOT INTENDED TO INDICATE ALL OFFSETS, RISERS, OR FITTINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL SYSTEM ELEMENTS IN A MANNER TO CONFORM TO BUILDING STRUCTURE AND TO AVOID OBSTRUCTIONS.
2. PROVIDE OFFSETS IN THE PIPING AND DUCT RUNS WHERE REQUIRED TO CLEAR EXISTING AND NEW DUCT, STRUCTURE AND OTHER PIPING SYSTEMS.
3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF LOUVERS AND ROOF OPENINGS.
4. COORDINATE FINAL LOCATIONS OF FLOOR AND HUB DRAINS THAT RECEIVE CONDENSATE DRAINAGE.
5. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
6. ARRANGE EQUIPMENT INTO THE AVAILABLE SPACE IN A MANNER TO MAKE ALL WORKING PARTS ACCESSIBLE FOR MAINTENANCE AND SERVICE.
7. REFER TO DRAWING(S) 751-0018-502 TO 751-0018-505 FOR STANDARD DETAILS OF HVAC SYSTEM EXCEPT AS NOTED.
8. ITEMS SHOWN AS EXISTING ARE BASED ON AS-BUILT DOCUMENTS AND MAY NOT BE REPRESENTATIVE OF ACTUAL CONDITIONS. CONFIRM THE CONDITION, SIZE, ETC. OF ALL EXISTING EQUIPMENT PRIOR TO STARTING WORK.

	PLAN DESCRIPTION/REVISION	DATE	BY
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1	30% DETAILED DESIGN	2021-01-29	DC

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

MECHANICAL
GENERAL
LEGEND, ABBREVIATIONS, AND GENERAL NOTES

CONSULTANT DRAWING NO. 761-1916-500

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

PLUMBING SYMBOLS

- EXISTING PIPE (SCREENED)
- NEW PIPE
- EXISTING PIPE TO BE ABANDONED
- EXISTING PIPE TO BE REMOVED
- ANCHOR
- CAP
- ELBOW, 90 DEGREE
- ELBOW UP
- ELBOW DOWN
- CROSS
- TEE
- TEE UP
- TEE DOWN
- ELBOW, 45 DEGREE
- LATERAL
- LATERAL UP
- LATERAL DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- UNION
- GROOVED END JOINT
- FLEXIBLE (ELASTOMER) PIPE CONNECTION
- STEEL BELLOWS EXPANSION JOINT
- STRAINER
- SIGHT GLASS
- PS — PRESSURE SWITCH
- FS — FLOW SWITCH
- PRESSURE GAUGE WITH COCK
- THERMOMETER
- ROTAMETER
- HOSE RACK (TYPE AS INDICATED)
- EMERGENCY EYEWASH
- S — EMERGENCY SAFETY SHOWER
- S — COMBINED EMERGENCY SHOWER AND EYE WASH
- FE-X — FIRE EXTINGUISHER X = NO. IN SPECS
- XCO — X = F - FLOOR CLEANOUT; D - DECK CLEANOUT; W - WALL CLEANOUT
- HD-XY — HUB DRAIN X = NO. IN SPECS; Y = T - WITH TRAP; P - WITH PRIMED TRAP
- FD-XY — FLOOR DRAIN X = NO. IN SPECS; Y = T - WITH TRAP; P - WITH PRIMED TRAP
- AD-XY — AREA DRAIN X = NO. IN SPECS; Y = T - WITH TRAP; P - WITH PRIMED TRAP
- OD-X — OVERFLOW DRAIN X = NO. IN SPECS
- RD-X — ROOF DRAIN X = NO. IN SPECS

PLUMBING FIXTURE IDENTIFICATION

LEGEND	FIXTURE
AD	AREA DRAIN
BF	BACKFLOW PREVENTER
CO	CLEANOUT
DF	DRINKING FOUNTAIN
EEW	EMERGENCY EYE WASH
ES	EMERGENCY SAFETY SHOWER
EWC	ELECTRIC WATER COOLER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
GD	GUTTER DRAIN
HD	HUB DRAIN
HDS	HOSE DOWN STATION
HV	HOSE VALVE
LAV	LAVATORY
MS	MOP SINK
OD	OVERFLOW ROOF DRAIN
ON	OVERFLOW NOZZLE
SK	SINK
SH	SHOWER
SPD	SUMP PUMP DISCHARGE
SSH	COMBINED EMERG. SHOWER & EYEWASH
SSK	SERVICE SINK
LSK	LABORATORY DOUBLE SINK
RD	ROOF DRAIN
TP	TRAP PRIMER (PRESSURE ACTUATED)
TV	TEMPERING VALVE
UR	URINAL
WC	WATER CLOSET
WF	WASH FOUNTAIN

FIXTURE CONNECTION SCHEDULE

ITEM NO	DESCRIPTION	DRAIN	V	HW	W1
LAV-1	LAVATORY	50mm	38mm	12mm	12mm
MS-1	MOP SINK	75mm	38mm	12mm	12mm
SK-1	LAB SINK	50mm	38mm	12mm	12mm
SK-2	SINK	50mm	38mm	12mm	12mm
WC-1	WATER CLOSET, FLUSH VALVE	100mm	50mm	25mm	---

EXAMPLE CALLOUT: SSH - X
FIXTURE LEGEND
NO. IN SPECIFICATIONS

SERVICE DESIGNATIONS

SAN	DRAIN SANITARY
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DR	DRAIN
OD	OVERFLOW DRAIN
NG	NATURAL GAS
PSW	PROCESS SERVICE WATER
RWL	RAIN WATER LEADER
SPD	SUMP PUMP DISCHARGE
ST	STORM WATER
SW	SEAL WATER
TWS	TEMPERED WATER SUPPLY
TWR	TEMPERED WATER RETURN
V	VENT
VTA	VENT TO ATMOSPHERE
VTR	VENT THROUGH ROOF

PLUMBING EQUIPMENT IDENTIFICATION

IDENTIFICATION	EQUIPMENT NAME
AC	AIR COMPRESSOR
D	SANITARY DRAIN
ANT	ACID NEUTRALIZATION TANK
BF	BACK FLOW PREVENTER
BP	BOOSTER PUMP
CP	CIRCULATION PUMP
ET	EXPANSION TANK
TP	TRAP PRIMER ASSEMBLY (ELECTRICALLY ACTUATED)
EWH	ELECTRIC WATER HEATER
HE	HEAT EXCHANGER
OWS	OIL\WATER SEPERATOR
P	PUMP
SP	SUMP PUMP
ST	STORAGE TANK
TV	TEMPERING VALVE
WT	WATER STORAGE TANK

EXAMPLE CALLOUT: P - 1 0 1
FIXTURE LEGEND
SEQUENTIAL UNIT NUMBER

VALVE SYMBOLS

- HOSE VALVE
- REGULATED SIDE PRESSURE CONTROL
- DOUBLE CHECK VALVE
- REDUCED PRESSURE BACKFLOW PREVENTER
- NON FREEZE HOSE VALVE
- NON FREEZE HOSE VALVE WITH HOSE RACK
- S — SOLENOID VALVE
- T — TO TEMPERATURE SENSOR TEMPERATURE SENSING VALVE

PLUMBING GENERAL NOTES

1. FIXTURES LOCATED IN SLABS ON GRADE SHALL HAVE THEIR TRAPS AND HORIZONTAL TRAP ARMS CAST INTO THE FLOOR SLAB UNLESS INDICATED OTHERWISE.
2. INSTALL BURIED AND CONCRETE ENCASED COPPER PIPING WITH A PROTECTIVE SLEEVE OR WRAP FOR IT'S ENTIRE LENGTH. SLEEVE OR WRAP SHALL BE FLEXIBLE POLYETHYLENE MANUFACTURED FOR CONTINUOUS PIPE COVER APPLICATION. EXTEND SLEEVE OR WRAP 50mm ABOVE FINISHED FLOOR.
3. PIPING ELEVATIONS SHOWN ARE APPROXIMATE, FIELD VERIFY PIPING ELEVATIONS WITH EXISTING CONDITIONS PRIOR TO INSTALLATION.
4. PROVIDE OFFSETS IN THE PIPING RUNS WHERE REQUIRED TO CLEAR EXISTING AND NEW DUCT, STRUCTURE AND OTHER PIPING SYSTEMS.
5. PLUMBING VENTS THROUGH ROOF SHALL BE OFFSET AT ROOF TO PROVIDE MINIMUM DISTANCE OF 1m FROM EXTERIOR WALL.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF PLUMBING FIXTURES AND ROOF DRAINS.
7. CLEANOUT TO GRADE FITTINGS, WHERE SANITARY DRAIN EXITS THE BUILDING, SHALL ALLOW FOR RODDING BOTH WAYS.
8. COORDINATE FINAL LOCATIONS OF FLOOR AND HUB DRAINS THAT RECEIVE CONDENSATE DRAINAGE FROM HVAC AND PROCESS EQUIPMENT.
9. PROVIDE CLEANOUTS IN ROOF DRAIN PIPING. ROOF OVERFLOW DRAIN PIPING AND SANITARY WASTE PIPING AS SHOWN ON THE DRAWINGS. FURNISH AND INSTALL ADDITIONAL CLEANOUTS AS REQUIRED BY CODE.
10. SLOPE SANITARY, ROOF, AND OVERFLOW PIPING AT 2% UNLESS OTHERWISE INDICATED ON FLOOR PLANS. WHERE FIELD CONDITIONS DO NOT ALLOW A 2% SLOPE, PROVIDE MINIMUM 1% SLOPE.
11. ITEMS SHOWN AS EXISTING ARE BASED ON AS-BUILT DOCUMENTS AND MAY NOT BE REPRESENTATIVE OF ACTUAL CONDITIONS. CONFIRM THE CONDITION, SIZE, ETC. OF ALL EXISTING EQUIPMENT PRIOR TO STARTING WORK.

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1	30% DETAILED DESIGN	2021-01-29	DC
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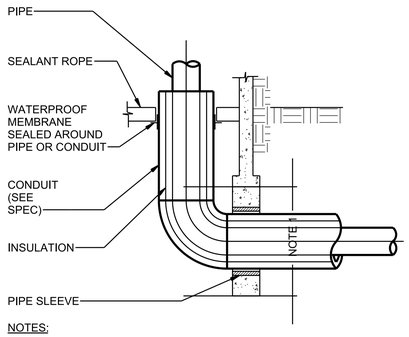
Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
MECHANICAL
GENERAL
HVAC & PLUMBING LEGEND AND SYMBOLS

CONSULTANT DRAWING NO. 761-1916-501

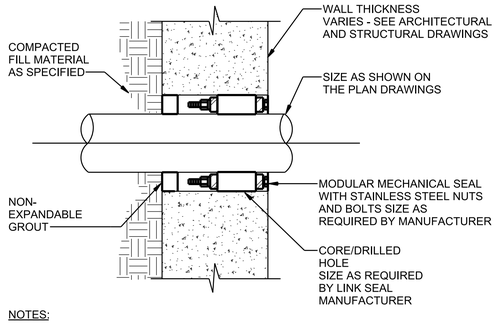
SCALE: NTS
COS FILE NO.
COS CONTRACT NO.
COS DRAWING NO.



NOTES:

1. 40" (1000) MAX. CONCRETE FILL. SEE STRUCTURAL DRAWINGS.

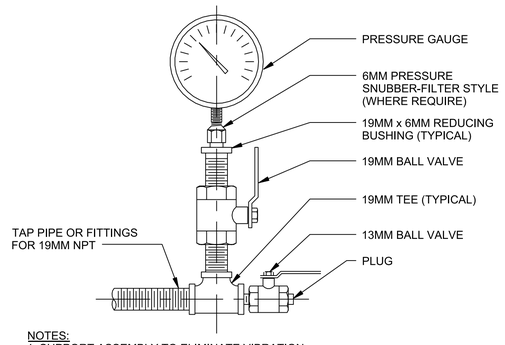
1 PIPE BUILDING ENTRY
NTS



NOTES:

1. CONTRACTOR SHALL DETERMINE WALL SLEEVE SIZE REQUIRED TO ALLOW INSTALLATION OF MODULAR MECHANICAL SEAL OF PROPER SIZE FOR PIPE SIZE SHOWN ON PLANS.

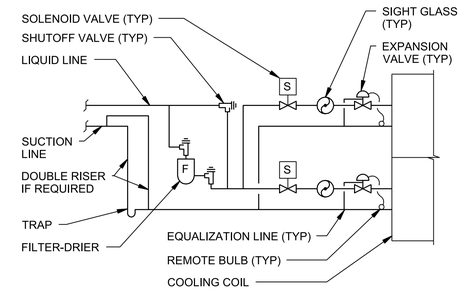
2 LINKSEAL UNDERGROUND WALL PENETRATION WITH MECHANICAL SEAL
NTS



NOTES:

1. SUPPORT ASSEMBLY TO ELIMINATE VIBRATION.
2. ARRANGE ASSEMBLY TO MEET INSTALLATION REQUIREMENTS.

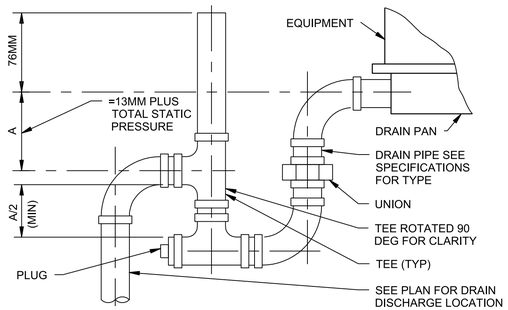
3 PRESSURE GAUGE - HEATING/COOLING WATER
NTS



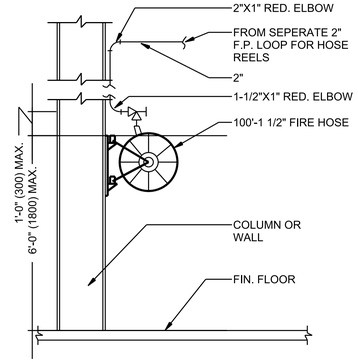
NOTE:

1. CONTRACTOR SHALL SIZE AND INSTALL REFRIGERANT PIPE PER MANUFACTURER'S RECOMMENDATIONS.

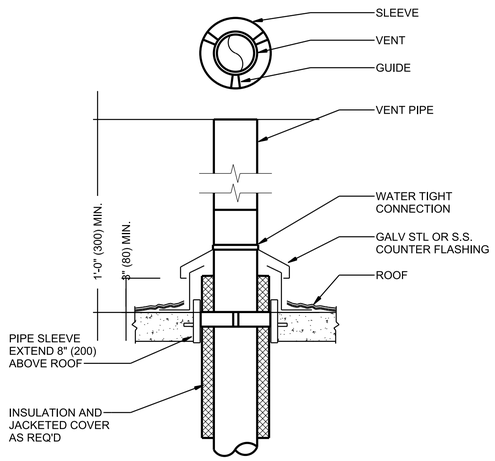
4 REFRIGERANT PIPING
NTS



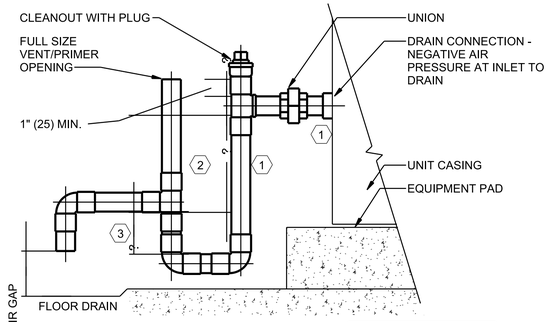
5 DRAIN PAN TRAP - DRAW THROUGH
NTS



6 HOSE REEL
NTS



7 VENT PIPING
NTS



CONNECTED COOLING LOAD (TONS)	MIN* PIPE SIZE
2	3/4"
2.1-5	1"
5.1-50	1-1/2"
51-160	2"
161-300	3"
301-425	4"

*NOT SMALLER THAN OUTLET SIZE

NOTES:

1. MINIMUM DRAIN PIPE SIZE EQUAL TO CONNECTION PROVIDED WITH EQUIPMENT.
2. MINIMUM DISTANCE EQUAL TO NEGATIVE STATIC PRESSURE (IN. W.C.)+1".
3. DISTANCE EQUAL TO 1/2 NEGATIVE STATIC PRESSURE (IN. W.C.)+1".

8 TYPICAL CONDENSATE DRAIN
NTS

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1	30% DETAILED DESIGN	2021-01-29	DC
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
MECHANICAL
GENERAL
STANDARD DETAILS (1)

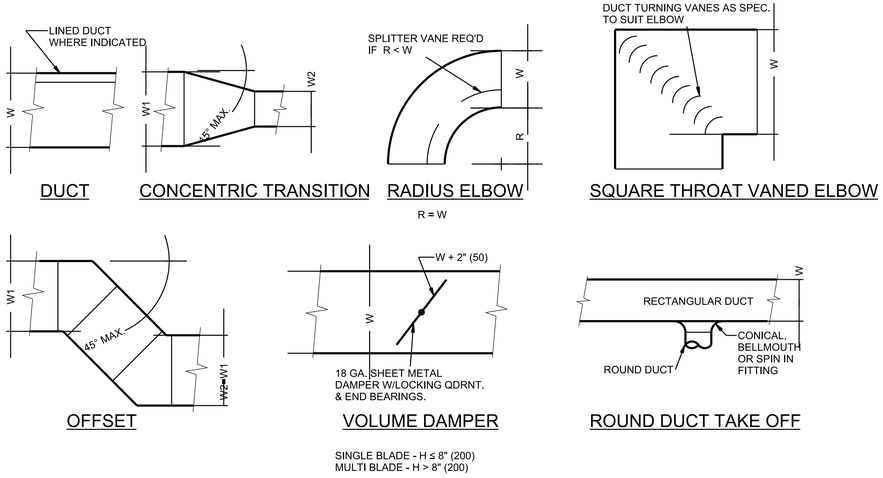
CONSULTANT DRAWING NO. 761-1916-502

SCALE: NTS

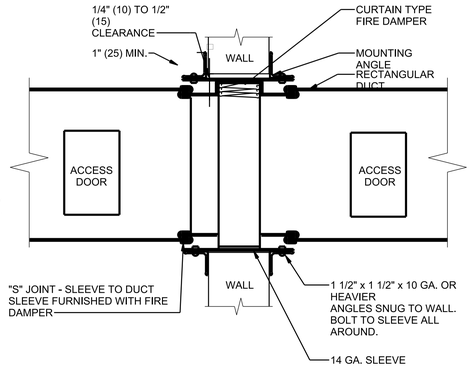
COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



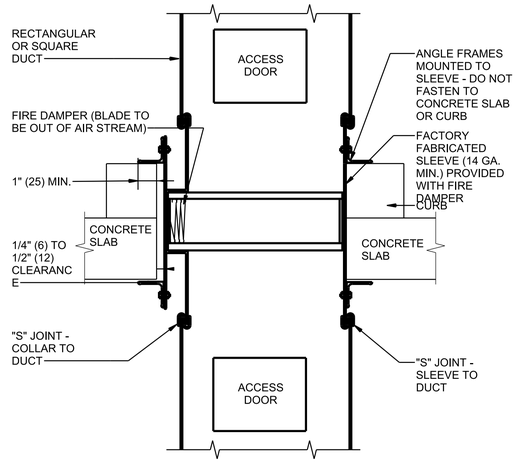
9 TYPICAL LOW PRESSURE DUCT CONSTRUCTION
NTS



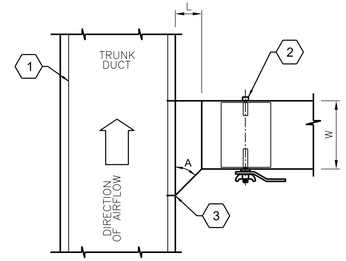
NOTES:

1. SEE ARCHITECTURAL DWGS. FOR WALL FIRE RATING.
2. CONTRACTOR SHALL PROVIDE ALL FIRE DAMPERS WHERE DUCT PENETRATES FIRE RATED WALLS.

10 RECTANGULAR FIRE DAMPER
NTS



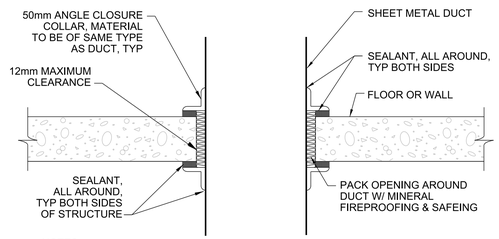
11 RECTANGULAR FIRE DAMPER
NTS



L = 1/4 W, 100mm MINIMUM
A = 45°

1. 25mm INSULATION GUARD WHERE REQUIRED FOR INTERNALLY LINED DUCTWORK.
2. MANUAL DAMPER W/ LOCKING QUADRANT
3. CLOSE OPENINGS AT CORNERS

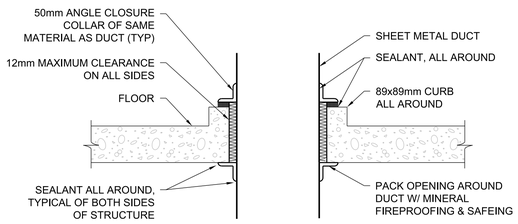
12 RECTANGULAR DUCT BRANCH
NTS



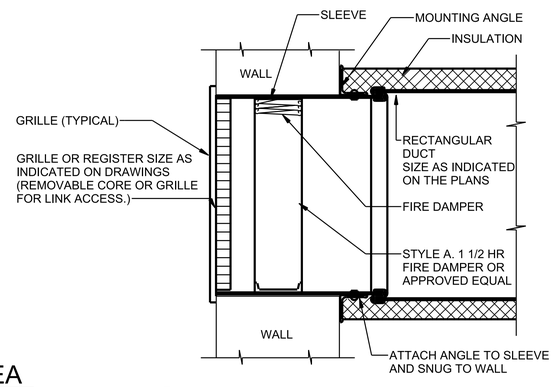
NOTES:

1. WALL PENETRATION SIMILAR.

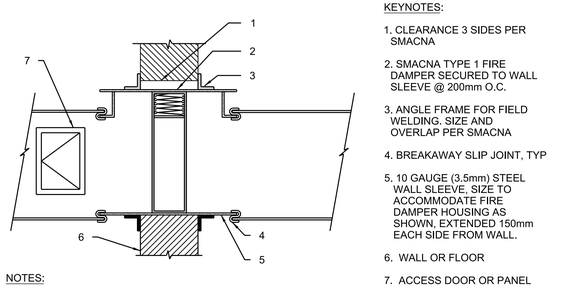
13 FLOOR / WALL PENETRATION
NTS



14 FLOOR PENETRATION - WET AREA
NTS



15 FIRE DAMPER WITH GRILLE
NTS



KEYNOTES:

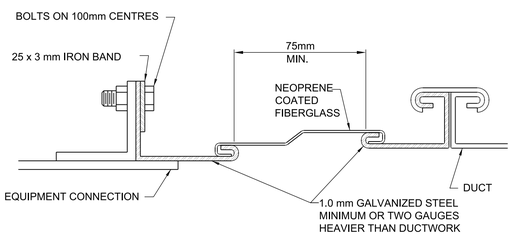
1. CLEARANCE 3 SIDES PER SMACNA
2. SMACNA TYPE 1 FIRE DAMPER SECURED TO WALL SLEEVE @ 200mm O.C.
3. ANGLE FRAME FOR FIELD WELDING. SIZE AND OVERLAP PER SMACNA
4. BREAKAWAY SLIP JOINT, TYP
5. 10 GAUGE (3.5mm) STEEL WALL SLEEVE, SIZE TO ACCOMMODATE FIRE DAMPER HOUSING AS SHOWN, EXTENDED 150mm EACH SIDE FROM WALL.
6. WALL OR FLOOR
7. ACCESS DOOR OR PANEL

NOTES:

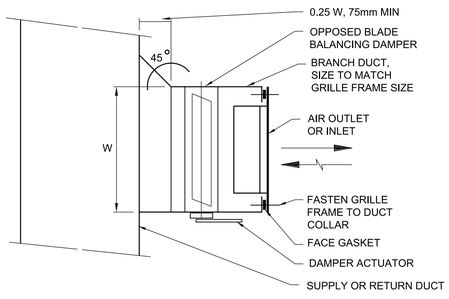
A. CONNECTING DUCTWORK NOT PROVIDED FOR TRANSFER GRILLE APPLICATION.

B. INSTALL IN STRICT COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND INSTRUCTIONS; IN COMPLIANCE WITH SMACNA FIRE, SMOKE, AND RADIATION DAMPER INSTALLATION GUIDE FOR HVAC SYSTEMS, LATEST EDITION; AND THIS DETAIL. IF THERE IS A CONFLICT, THE MANUFACTURER'S INSTRUCTIONS SHALL TAKE PRECEDENCE.

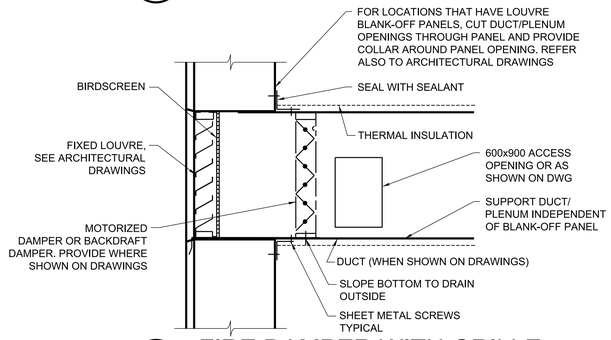
16 FIRE DAMPER INSTALLATION
NTS



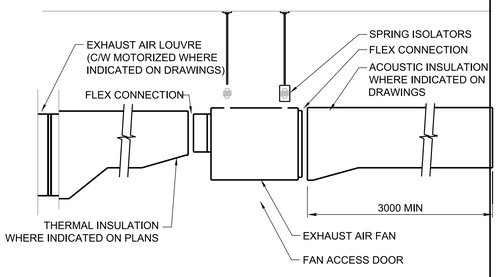
17 FLEXIBLE DUCT CONNECTION DETAIL
NTS



18 DUCT MOUNTED AIR OUTLET OR INLET
NTS



19 FIRE DAMPER WITH GRILLE
NTS



20 EXHAUST FAN ARRANGEMENT
NTS

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1	30% DETAILED DESIGN	2021-01-29	DC	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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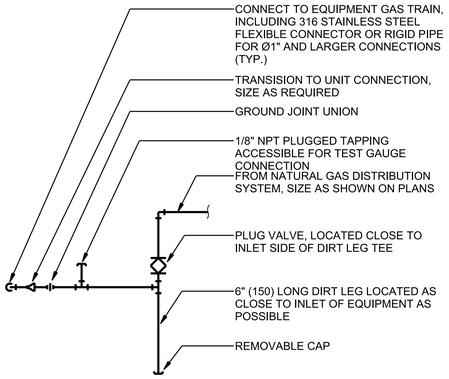
Utilities & Environment Department
Saskatoon Water

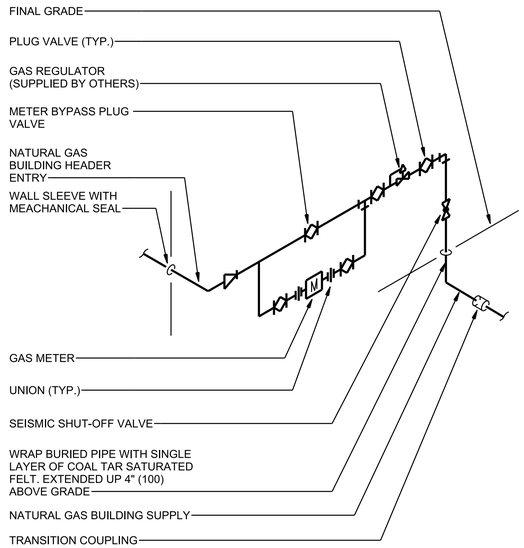
SPADINA LIFT STATION REPLACEMENT
MECHANICAL
GENERAL
STANDARD DETAILS (2)

CONSULTANT DRAWING NO. 761-1916-503

SCALE: NTS
COS FILE NO.
COS CONTRACT NO.
COS DRAWING NO.



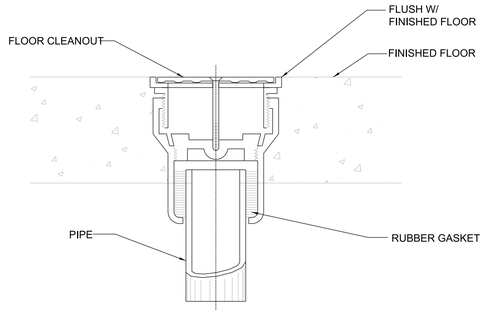
21 GAS FIRED EQUIPMENT CONNECTION
NTS



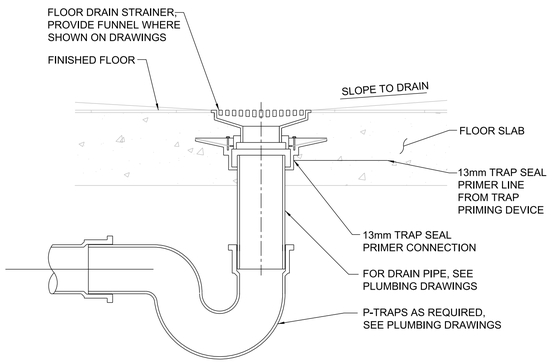
NOTES:

1. LOCATE GAS REGULATOR MIN 6' (1830) FROM BUILDING INTAKES.

22 NATURAL GAS ENTRY
NTS



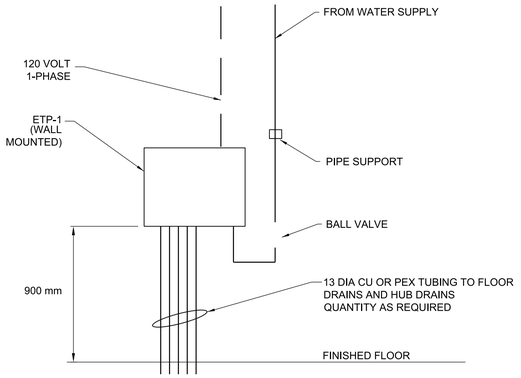
23 FLOOR CLEANOUT (FCO-1)
NTS



NOTE:

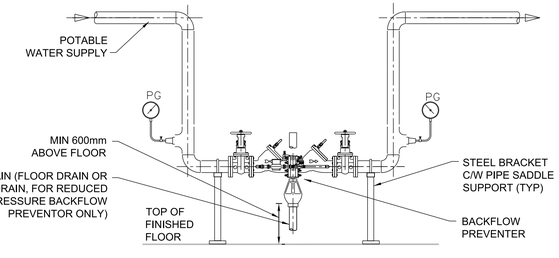
1. SET DRAIN GRATE BELOW FLOOR LEVEL AS SHOWN ON THE STRUCTURAL STANDARD DETAILS.

24 FLOOR DRAIN
NTS



ELEVATION

25 FLOOR DRAIN TRAP ELECTRONIC PRIMER VALVE
NTS

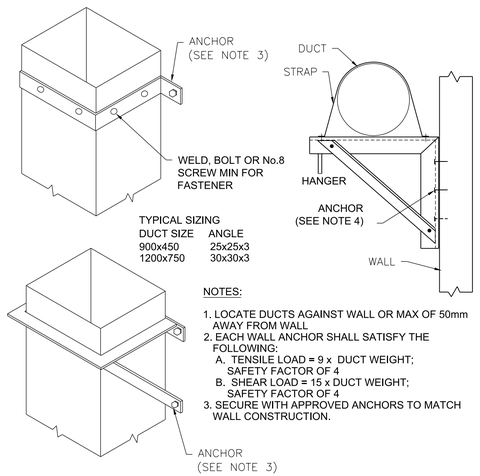


26 BACKFLOW PREVENTER ASSEMBLY
NTS

NOTES:

1. OVERALL SIZE OF OPENING SHOULD BE 6.35mm AND 12.7mm GREATER IN BOTH DIRECTIONS THAN EXTERNAL DIMENSIONS OF LOUVRE FOR SIZES < 1200mm OR > 1200mm, RESPECTIVELY.
2. MAXIMUM LOUVRE WIDTH < 1.5m, USE MULLION CONNECTED SECTIONS FOR GREATER WIDTHS.
3. CAULK AND SEAL AROUND PERIMETER OF LOUVRE SECTION AT WALL.
4. PROVIDE ALUMINUM OR GALV EXPANDED BIRD EXCLUSION SCREEN ON OUTSIDE OF LOUVRE. (MIN FREE AREA 80% OF GROSS AREA).
5. FOR AIR TIGHT SEAL PROVIDE VINYL GASKET ALONG FULL WIDTH OF EACH BLADE.
6. CONSTRUCT LOUVRE OF NON-FERROUS CORROSION RESISTANT MATERIAL AND SECURE WITH SS OR ALUMINUM FASTENERS.

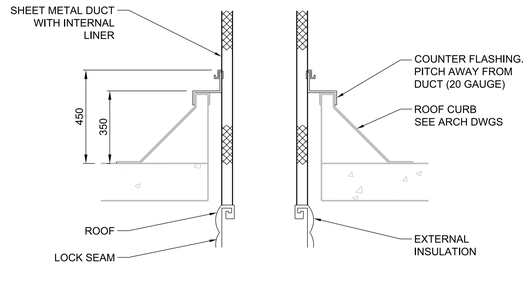
27 MOTORIZED DAMPER
NTS



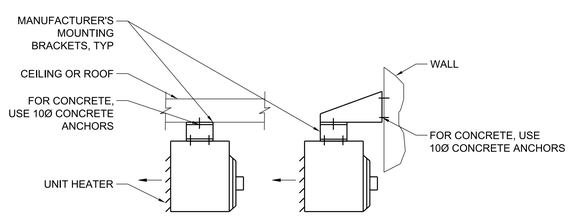
NOTES:

1. LOCATE DUCTS AGAINST WALL OR MAX OF 50mm AWAY FROM WALL
2. EACH WALL ANCHOR SHALL SATISFY THE FOLLOWING:
   A. TENSILE LOAD = 9 x DUCT WEIGHT; SAFETY FACTOR OF 4
   B. SHEAR LOAD = 15 x DUCT WEIGHT; SAFETY FACTOR OF 4
3. SECURE WITH APPROVED ANCHORS TO MATCH WALL CONSTRUCTION.

28 DUCT SUPPORTS FROM WALL
NTS



29 INSULATED DUCT THROUGH ROOF
NTS



NOTE:

1. USE THREADED HANGER RODS ONLY WHERE MANUFACTURER'S MOUNTING BRACKETS ARE NOT PRACTICAL.

30 UNIT HEATER MOUNTING
NTS

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1	30% DETAILED DESIGN	2021-01-29	DC
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
MECHANICAL
GENERAL
STANDARD DETAILS (3)

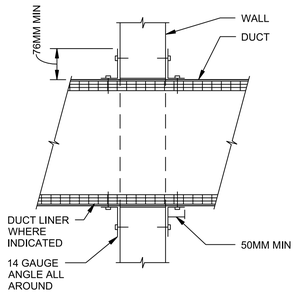
CONSULTANT DRAWING NO. 761-1916-504

SCALE: NTS

COS FILE NO.

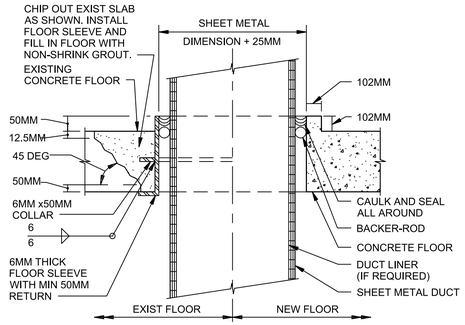
COS CONTRACT NO.

COS DRAWING NO.



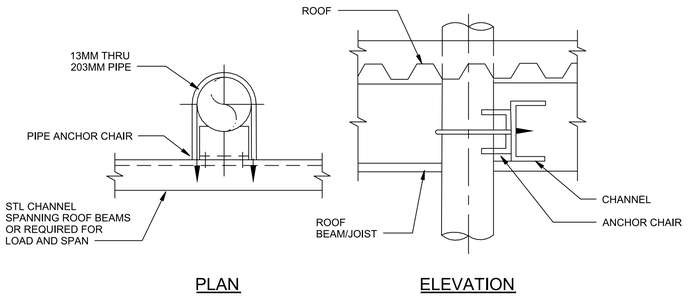
31 DUCT WALL PENETRATION - INTERIOR

NTS



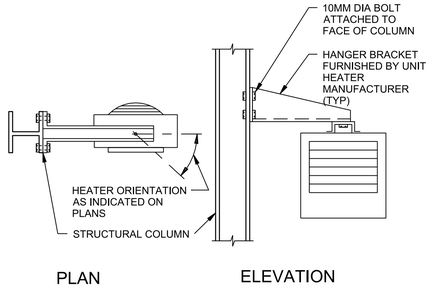
32 DUCT FLOOR PENETRATION

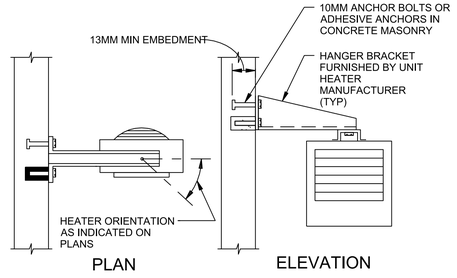
NTS



33 ROOF PENETRATION PIPE SUPPORT

NTS





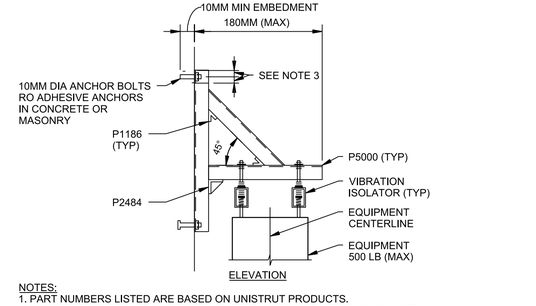
NOTE:
MASONRY WALLS SHALL BE SOLIDLY GROUTED 10MM MIN, ALL SIDES OF ANCHORS.

34 HYDRONIC UNIT HEATER SUPPORT - COLUMN

NTS

35 HYDRONIC UNIT HEATER SUPPORT - WALL

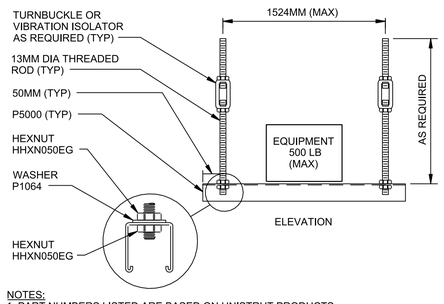
NTS



NOTES:
1. PART NUMBERS LISTED ARE BASED ON UNISTRUT PRODUCTS.
2. UNISTRUT MATERIAL SHALL BE GALVANIZED UNLESS OTHERWISE INDICATED.
3. MASONRY WALLS SHALL BE SOLIDLY GROUTED 10MM MIN, ALL SIDES OF ANCHORS.

36 WALL HANGER - 2 ROD - EQUIPMENT SUPPORT STRUT TYPE

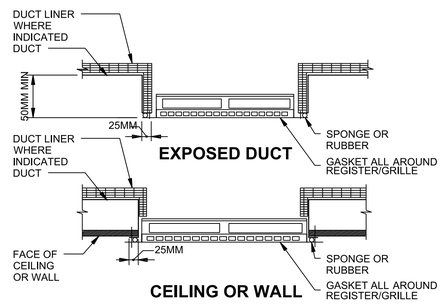
NTS



NOTES:
1. PART NUMBERS LISTED ARE BASED ON UNISTRUT PRODUCTS.
2. UNISTRUT MATERIAL SHALL BE GALVANIZED UNLESS OTHERWISE INDICATED.

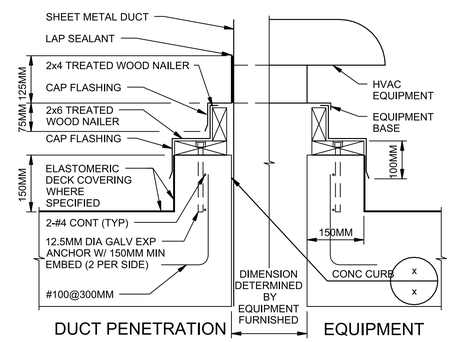
37 CEILING HANGER - 2 ROD - EQUIPMENT SUPPORT STRUT TYPE

NTS



38 REGISTER/GRILLE

NTS



39 HVAC EQUIPMENT CURB

NTS

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1	30% DETAILED DESIGN	2021-01-29	DC	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

MECHANICAL
GENERAL
STANDARD DETAILS (4)

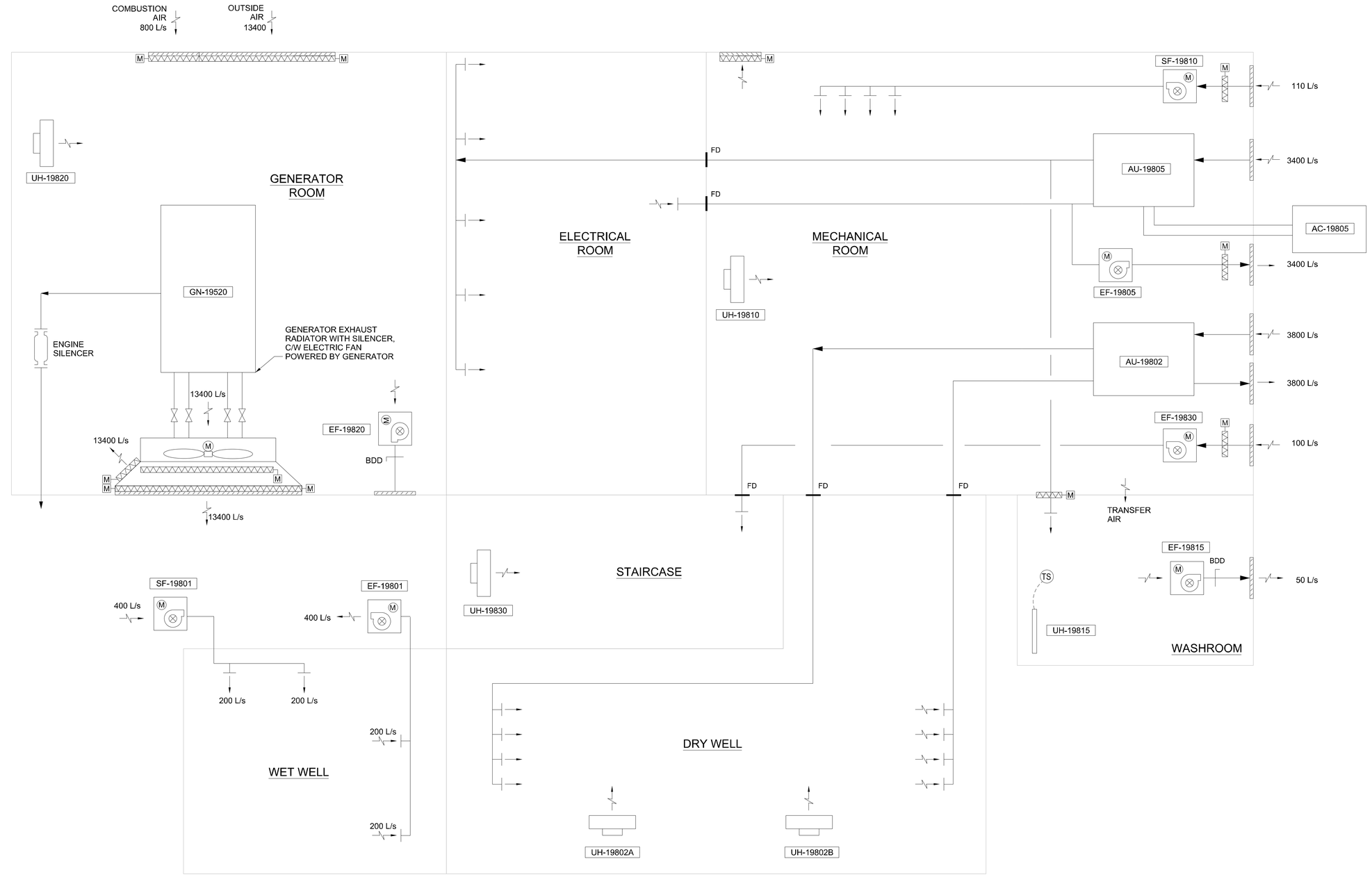
CONSULTANT DRAWING NO. 761-1916-505

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



HVAC SCHEMATIC

NTS

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2	30% DETAILED DESIGN	2021-01-29	DC
1	PRELIMINARY DESIGN	2020-12-04	DC
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
MECHANICAL
SCHEMATIC
HVAC

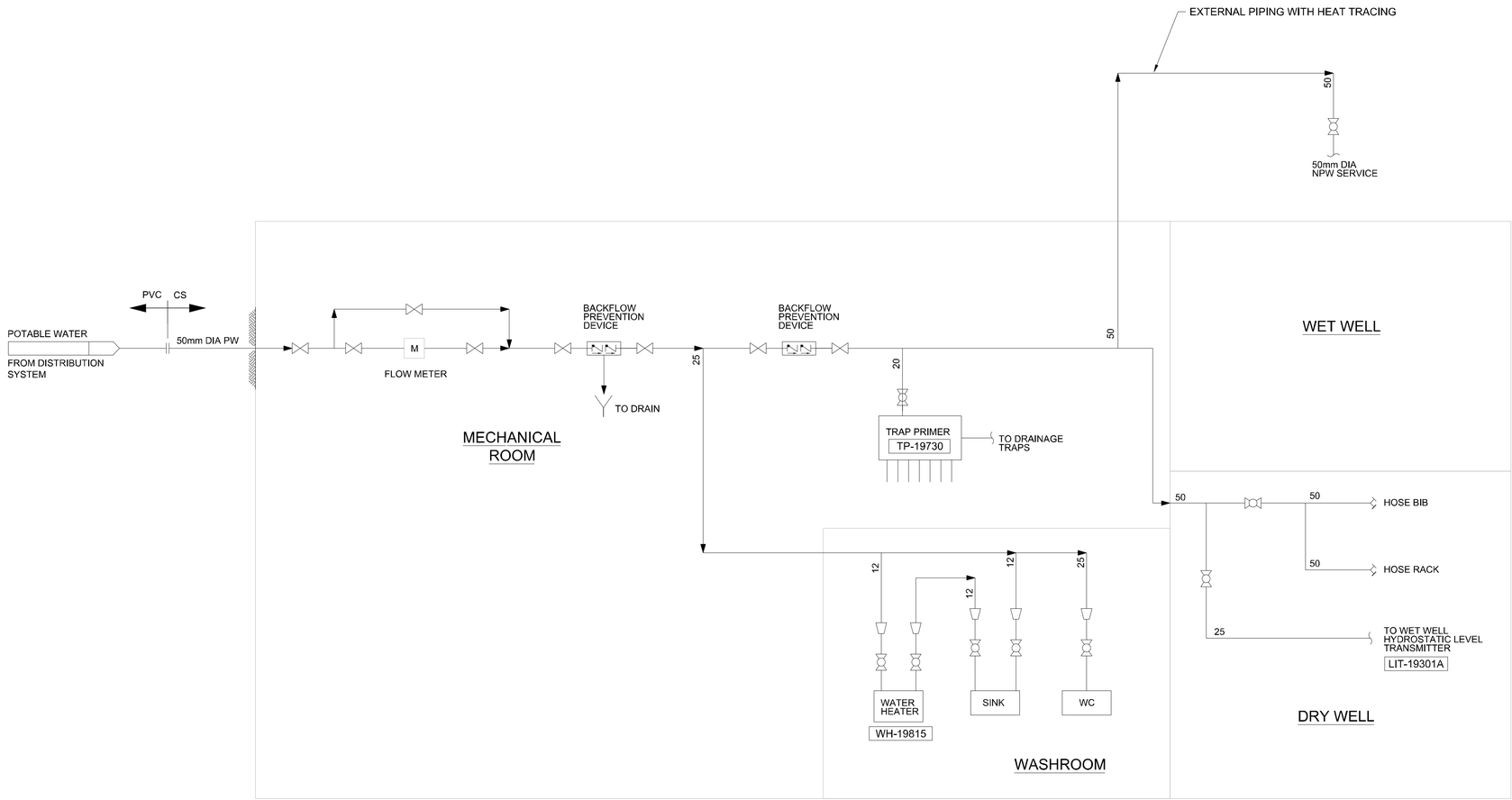
CONSULTANT DRAWING NO. 761-1916-510

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



DOMESTIC / POTABLE WATER SCHEMATIC

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2	30% DETAILED DESIGN	2021-01-29	DC	
1	PRELIMINARY DESIGN	2020-12-04	DC	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

MECHANICAL
SCHEMATIC
DOMESTIC/POTABLE WATER

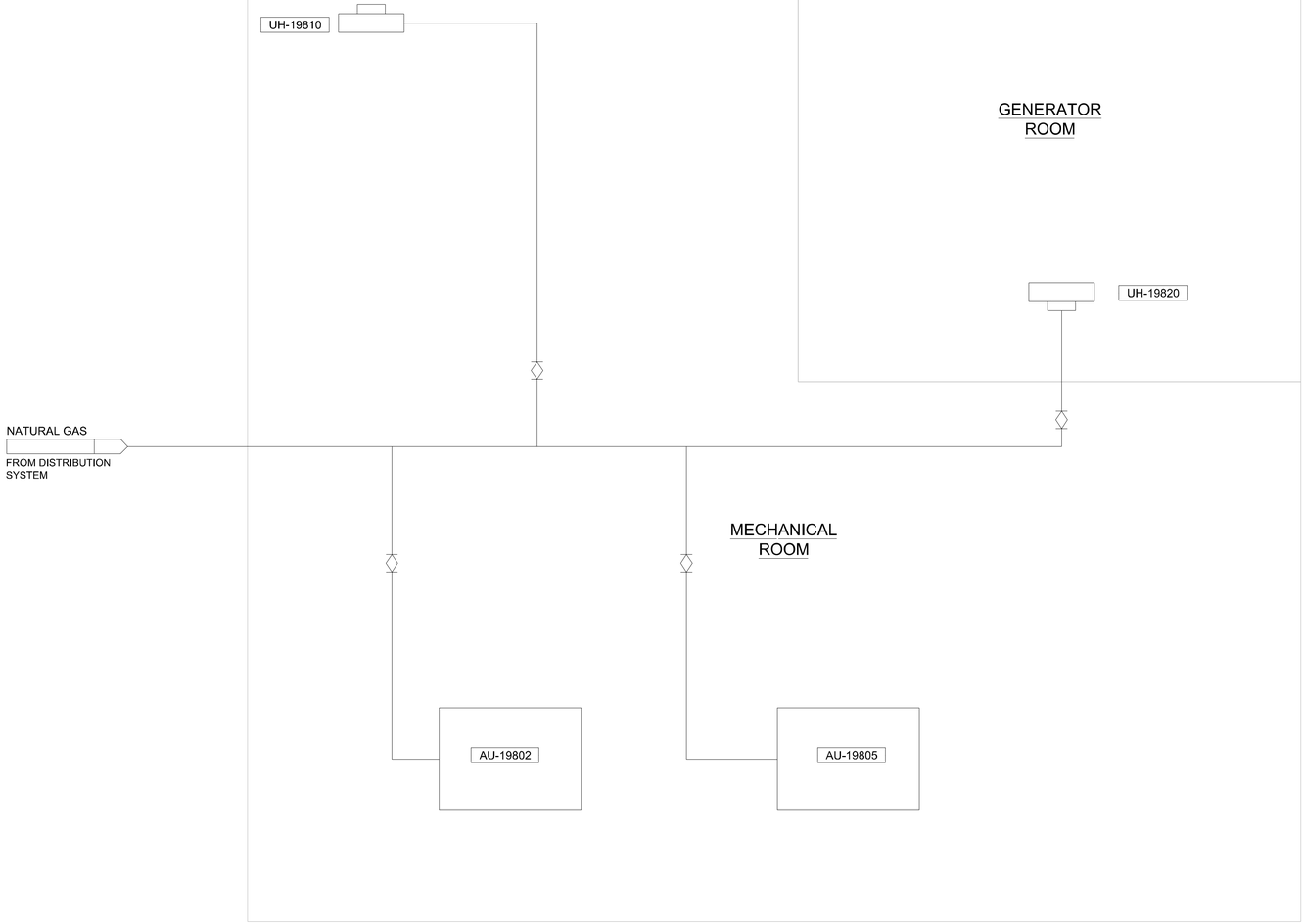
CONSULTANT DRAWING NO. 761-1916-511

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NATURAL GAS SCHEMATIC

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2	30% DETAILED DESIGN	2021-01-29	DC	
1	PRELIMINARY DESIGN	2020-12-04	DC	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

MECHANICAL
SCHEMATIC
NATURAL GAS

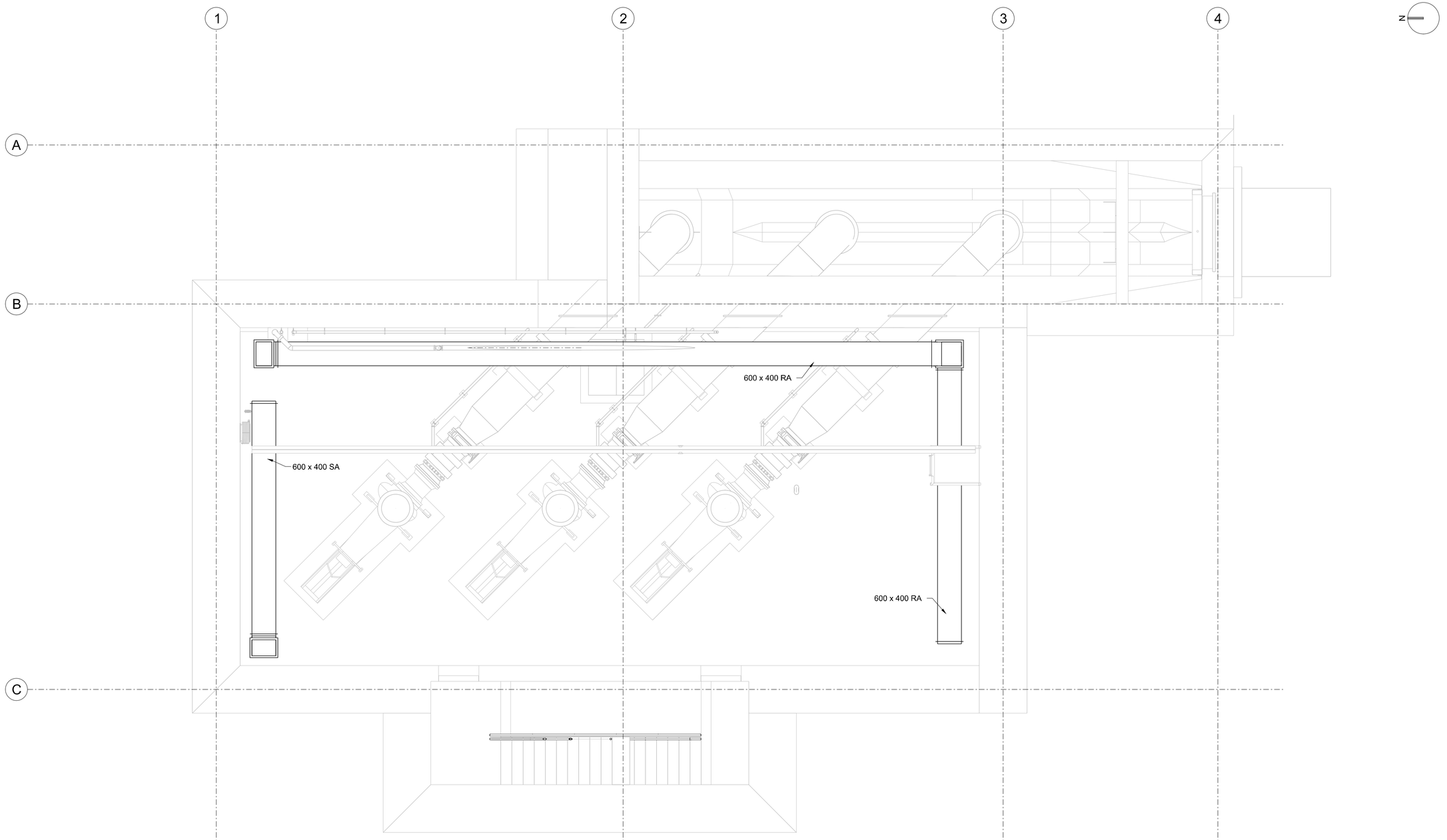
CONSULTANT DRAWING NO. 761-1916-512

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



HVAC BASEMENT LOWER LEVEL
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1	30% DETAILED DESIGN	2021-01-29	DC
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
MECHANICAL
PLAN
HVAC BASEMENT LOWER LEVEL

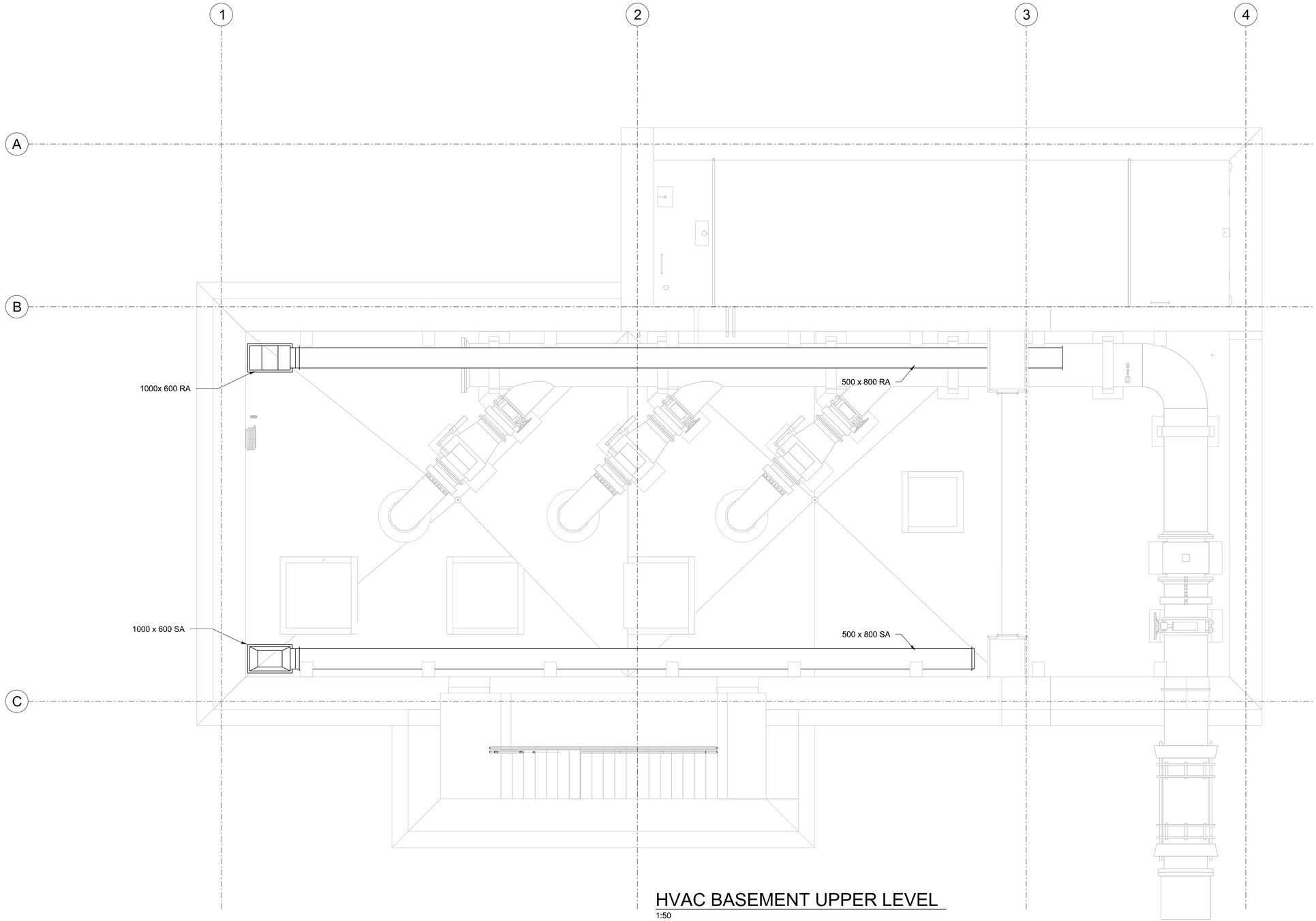
CONSULTANT DRAWING NO. 761-1916-514

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



HVAC BASEMENT UPPER LEVEL
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1	30% DETAILED DESIGN	2020-11-29	DC
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
MECHANICAL
PLAN
HVAC BASEMENT UPPER LEVEL

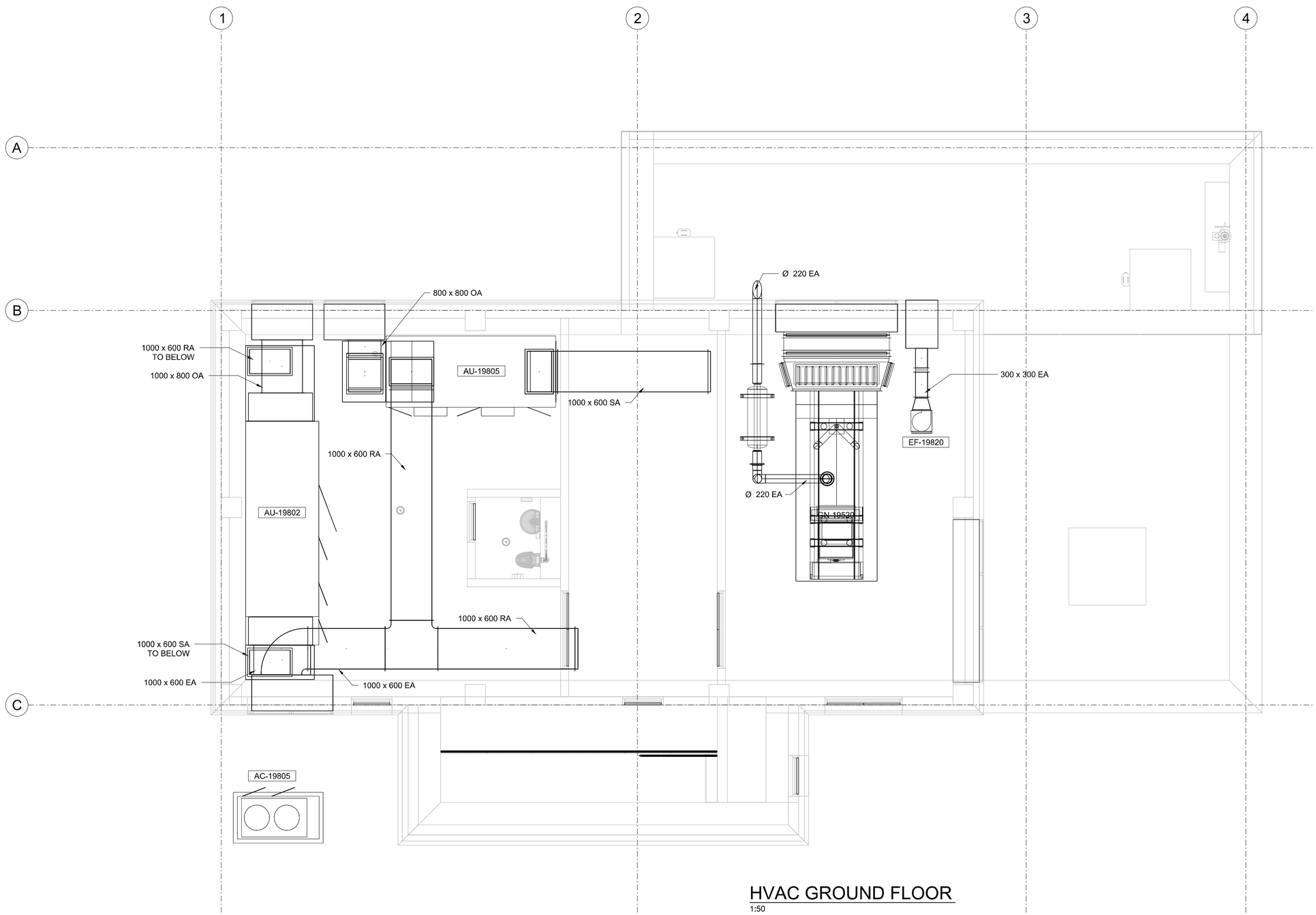
CONSULTANT DRAWING NO. 761-1916-515

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



HVAC GROUND FLOOR

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1	30% DETAILED DESIGN	2021-01-29	DC	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

MECHANICAL
PLAN
HVAC GROUND FLOOR

CONSULTANT DRAWING NO. 761-1916-516

SCALE: 1:50

COS FILE NO.

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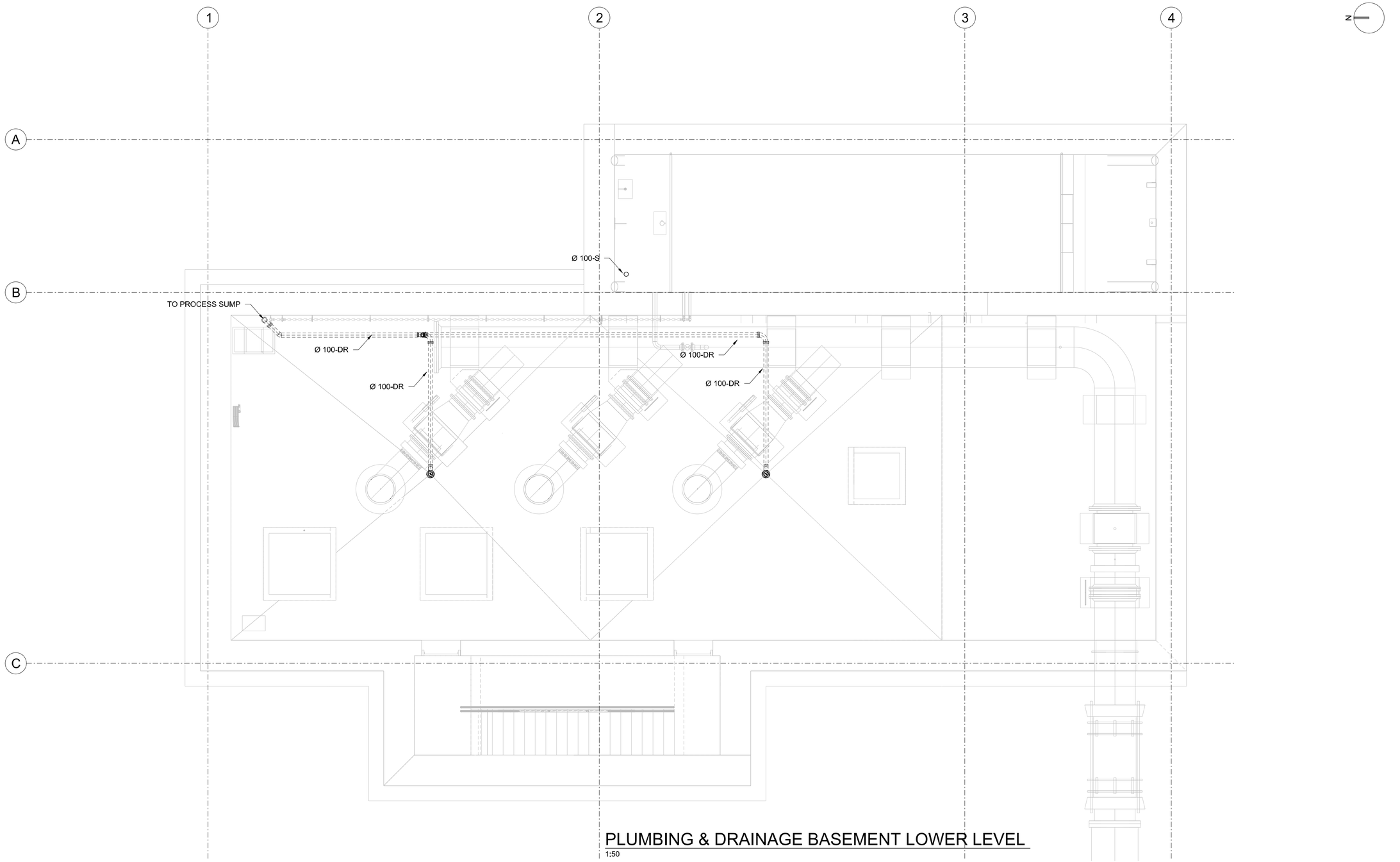

PLUMBING & DRAINAGE BASEMENT LOWER LEVEL

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1	30% DETAILED DESIGN	2021-01-29	DC	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

MECHANICAL
PLAN
PLUMBING & DRAINAGE BASEMENT LOWER LEVEL

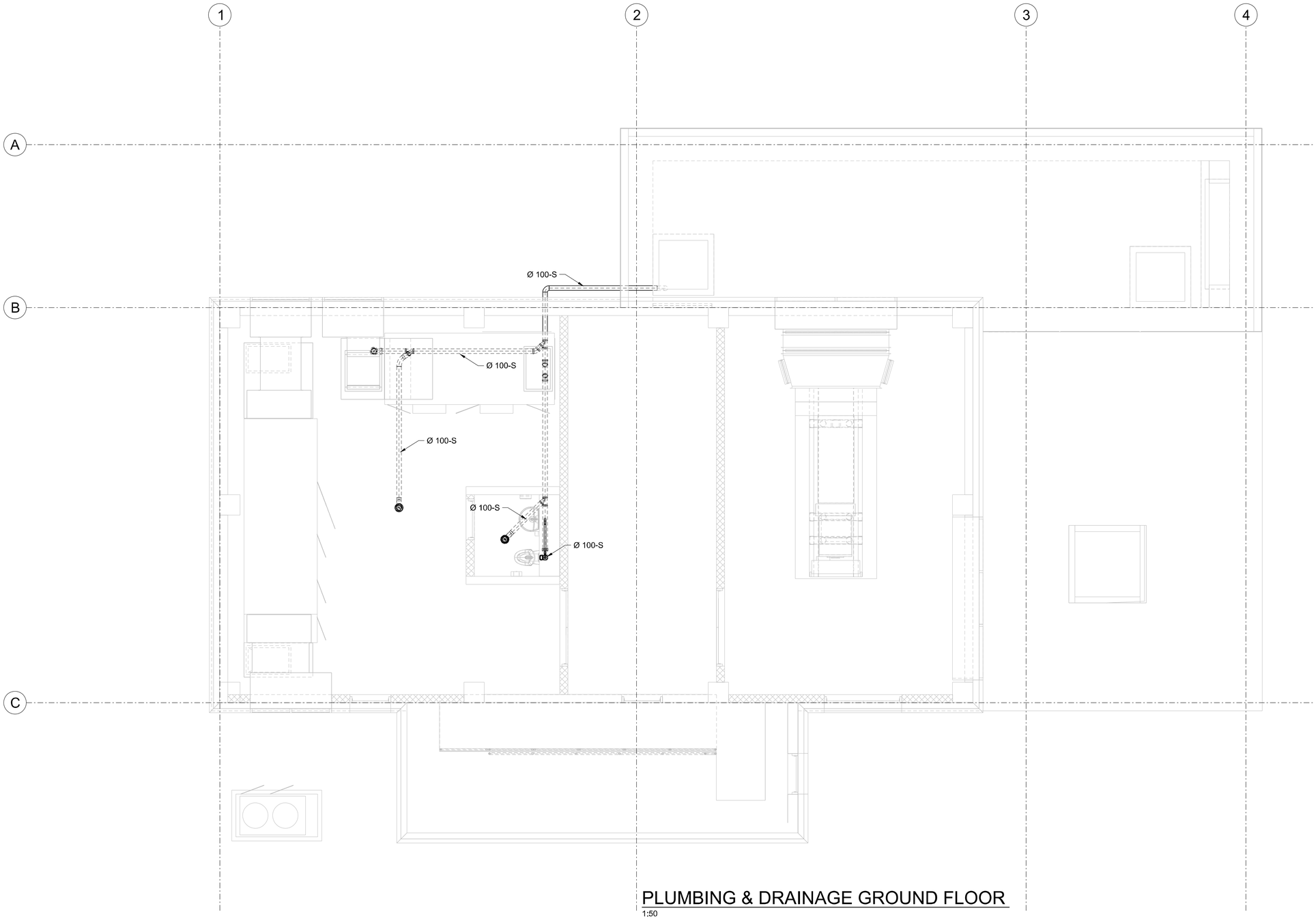
CONSULTANT DRAWING NO. 761-1916-517

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



PLUMBING & DRAINAGE GROUND FLOOR
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1	30% DETAILED DESIGN	2021-01-29	DC	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
MECHANICAL
PLAN
PLUMBING & DRAINAGE GROUND FLOOR

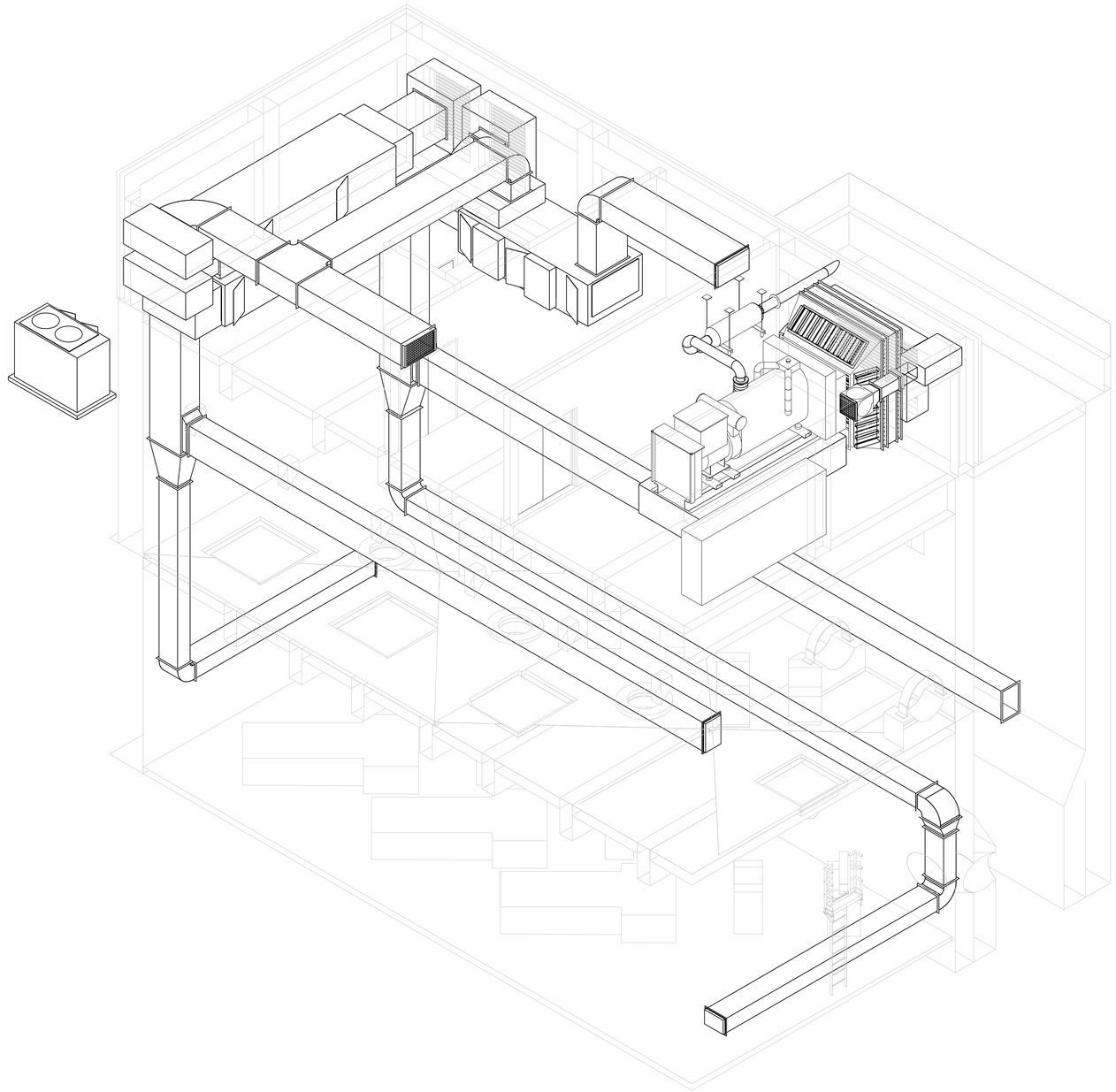
CONSULTANT DRAWING NO. 761-1916-518

SCALE: 1:50

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



HVAC & PLUMBING ISOMETRIC

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1	30% DETAILED DESIGN	2021-01-29	DC	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

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Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

MECHANICAL
3D ISOMETRIC VIEWS
HVAC & PLUMBING

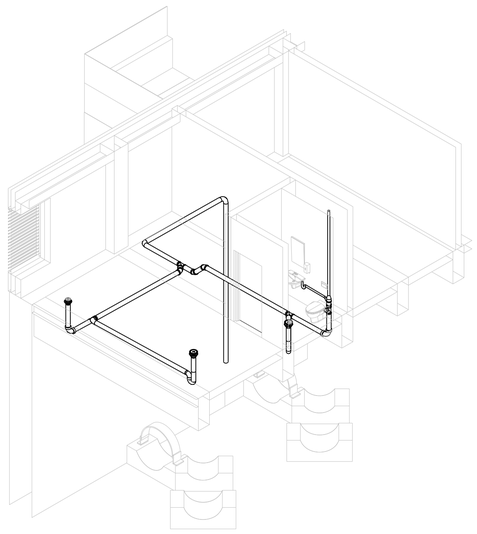
CONSULTANT DRAWING NO. 761-1916-525

SCALE: 1:50

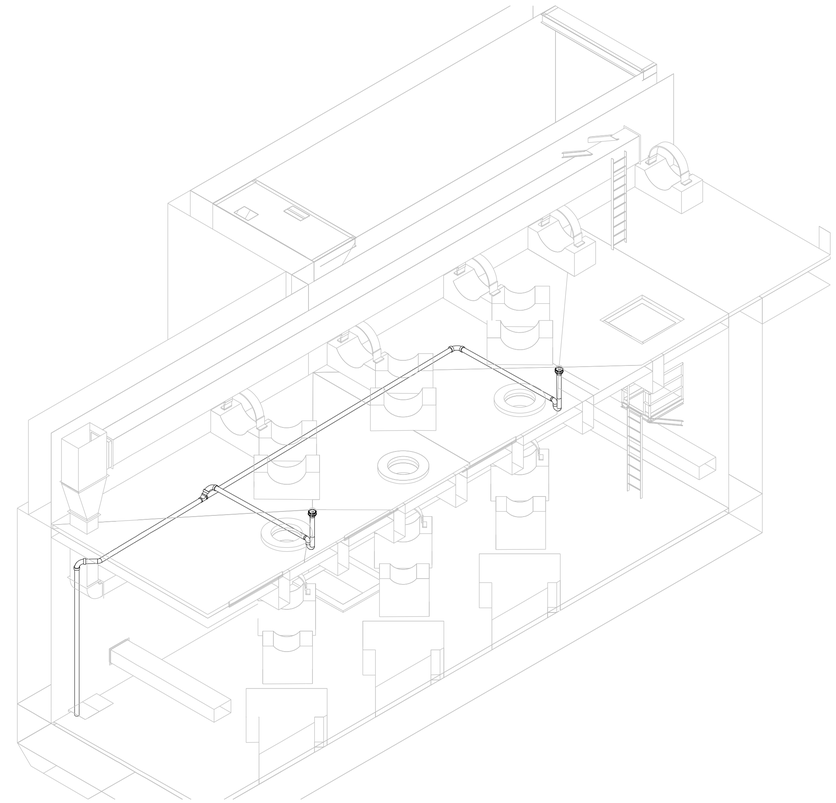
COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



FLOOR DRAINAGE ISOMETRIC 1
NTS



FLOOR DRAINAGE ISOMETRIC 2
NTS

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1	30% DETAILED DESIGN	2021-01-29	DC
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
MECHANICAL
3D ISOMETRIC VIEWS
FLOOR AND ROOF DRAINAGE SYSTEM

CONSULTANT DRAWING NO. 761-1916-526

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.

POWER

- WALL MOUNTED SINGLE RECEPTACLE
- WALL MOUNTED DUPLEX RECEPTACLE
- WALL MOUNTED SPLIT FEED DUPLEX RECEPTACLE
- WALL MOUNTED FOUR-PLEX RECEPTACLE
- 2 — POWER PEDESTAL WITH TWO SINGLE RECEPTACLES
- WALL MOUNTED TWISTLOCK RECEPTACLE
- 208V RECEPTACLE
- FLOOR OR COUNTERTOP MOUNTED DUPLEX RECEPTACLE
- CEILING MOUNTED DUPLEX RECEPTACLE
- CEILING MOUNTED FOURPLEX RECEPTACLE
- GF — GROUND FAULT RECEPTACLE
- WP — WEATHERPROOF DUPLEX RECEPTACLE
- SP — SURGE SUPPRESSION RECEPTACLE
- WALL MOUNTED 5-20RA RECEPTACLE
- 15A — L5-15R LOCKING RECEPTACLE
- 20A — L5-20R LOCKING RECEPTACLE
- REEL DOWN RECEPTACLE
- LIGHTNING PROTECTION
- JUNCTION BOX

LIGHTNING PROTECTION AND GROUNDING

- AIR TERMINAL LOCATION
- GROUNDING ROD
- GROUNDING TEST WELL
- GROUNDING CONDUCTOR STUB-UP WITH PIGTAIL
- PERIMETER GROUNDING COPPER CABLE
- DOWNCONDUCTOR CABLE
- LIGHTNING PROTECTION CABLE

LIGHTING

- SURFACE MOUNTED LUMINAIRE
- RECESSED LUMINAIRE
- EMERGENCY SURFACE MOUNTED LUMINAIRE
- EMERGENCY RECESSED LUMINAIRE
- WALL MOUNTED LUMINAIRE
- SURFACE OR SUSPENDED CEILING MOUNTED LUMINAIRE
- WALL MOUNTED LUMINAIRE
- RECESSED LUMINAIRE
- SURFACE MOUNTED OR CEILING SUSPENDED HID LUMINAIRE
- WALL OR POLE MOUNTED HID LUMINAIRE
- EXIT LIGHT ('N' DENOTES NON-ELECTRIC)
- TROUBLE LIGHTS (WALL AND CEILING MOUNTED)
- OC — OCCUPANCY SENSOR
- OC — LIGHTING SWITCH WITH OCCUPANCY SENSOR

MECHANICAL

- MOTOR
- DISCONNECT SWITCH
- WP — WEATHERPROOF DISCONNECT SWITCH
- MP — MANUAL MOTOR PROTECTION SWITCH C/W PILOT LIGHT
- EQUIPMENT CONNECTION
- FD — FIRE DAMPER

SINGLE LINE & SCHEMATICS

- CIRCUIT BREAKER
- MCP — MOTOR CIRCUIT PROTECTOR
- NO CONTACT
- NC CONTACT
- OVERLOAD
- DISCONNECT SWITCH
- FUSE
- TRANSFORMER
- LIGHT
- WYE SYMBOL
- DELTA SYMBOL
- GROUND SYMBOL
- GROUND BUS
- GENERATOR
- LEVEL DIFFERENTIAL SWITCH
- DIFFERENTIAL LIMIT SWITCH NORMALLY CLOSED
- DIFFERENTIAL LIMIT SWITCH NORMALLY OPEN
- DISCONNECT SWITCH CLOSED
- LIMIT SWITCH HELD CLOSED
- LIMIT SWITCH HELD OPEN
- LIMIT SWITCH NORMALLY CLOSED
- LIMIT SWITCH NORMALLY OPEN
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- LUG DISCONNECT
- MOTOR-TYPE LOAD
- UNDERGROUND DUCT BANK

- LEVEL SWITCH CLOSING ON RISE
- LEVEL SWITCH OPENING ON RISE
- TEMPERATURE SWITCH CLOSING ON INCREASE
- TEMPERATURE SWITCH OPENING ON INCREASE
- PRESSURE SWITCH CLOSING ON INCREASE
- PRESSURE SWITCH OPENING ON INCREASE
- FLOW SWITCH CLOSING ON FLOW
- FLOW SWITCH OPENING ON FLOW
- TIMED TO CLOSE (TIME DELAY CLOSE)
- TIMED TO OPEN (TIME DELAY OPEN)
- PRESSURE DIFFERENTIAL SWITCH
- SELECTOR SWITCH (HAND)
- 3 POSITION SELECTOR SWITCH
- 2 POSITION SELECTOR SWITCH
- H O A — POSITION SWITCH (HOA)
- K — KEYED INTERLOCK
- M — METER
- OCR — FEEDER PROTECTION RELAY
- NGR — NEUTRAL GROUND RESISTOR PROTECTION RELAY
- NEUTRAL GROUND RESISTOR
- IX — CONTACTOR BASED TRANSFER SWITCH
- IX — BREAKER BASED TRANSFER SWITCH

SWITCHES

- LINE VOLTAGE SWITCH
- (2) LINE VOLTAGE SWITCHES
- 2 — 2 POLE LINE VOLTAGE SWITCH
- 3 — 3 WAY LINE VOLTAGE SWITCH
- 4 — 4 WAY LINE VOLTAGE SWITCH
- P — LIGHT SWITCH C/W PILOT LIGHT
- K — KEY OPERATED SWITCH
- WP — WEATHERPROOF LINE VOLTAGE SWITCH
- EMERGENCY STOP BUTTON
- T — TIMER SWITCH

COMMUNICATION

- X — COMBINATION VOICE/DATA OUTLET - X DENOTES NUMBER OF CABLES
- VOICE OUTLET
- DATA OUTLET

MISCELLANEOUS

- NORMAL POWER PANELBOARD, 120/208V OR 347/600V
- EMERGENCY POWER PANELBOARD, 120/208V OR 347/600V
- SYSTEM PANEL (KEYNOTES DEFINES TYPE)
- RECESSED PANEL
- SURFACE MOUNTED PANEL

NOTES & ABBREVIATIONS

- # — DRAWING DESCRIPTION / INSTRUCTION KEYNOTE
- # — DRAWING REVISION IDENTIFICATION
- WP — WEATHERPROOF DEVICE
- EX — EXPLOSION PROOF DEVICE
- GF — GROUND FAULT PROTECTED DEVICE

LIFE SAFETY

- EMERGENCY LIGHT C/W BATTERY PACK
- DUAL EMERGENCY LIGHTING REMOTE HEAD
- SINGLE EMERGENCY LIGHTING REMOTE HEAD
- STROBE BEACON
- FIRE ALARM HORN / STROBE
- FIRE ALARM HORN
- HD — HEAT DETECTOR
- F — FIRE ALARM PULL STATION
- FDNE — FIRE: DO NOT ENTER - WARNING SIGN
- SMOKE DETECTOR

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1	30% DETAILED DESIGN	2021-01-29	WT	SEALS & STAMPS
	PLAN DESCRIPTION/REVISION	DATE	BY	

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ELECTRICAL
GENERAL
LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

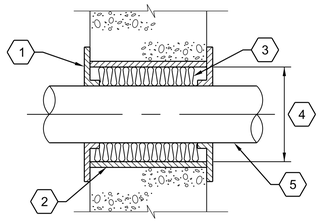
CONSULTANT DRAWING NO. 761-1916-600

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

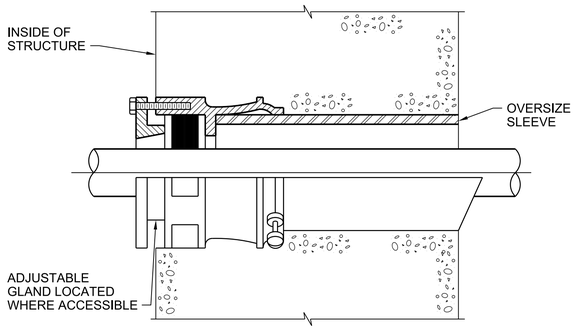
COS DRAWING NO.



NOTES:

1. GALVANIZED STEEL SHEET METAL ESCUTCHEON, TYP.
2. GALVANIZED STEEL PIPE SLEEVE OR CORE DRILLED HOLE IN CONCRETE WALL.
3. INSULATION AS REQUIRED TO FILL CAVITY.
4. OUTSIDE DIAMETER OF CONDUIT PLUS 1" MIN.
5. CONDUIT.

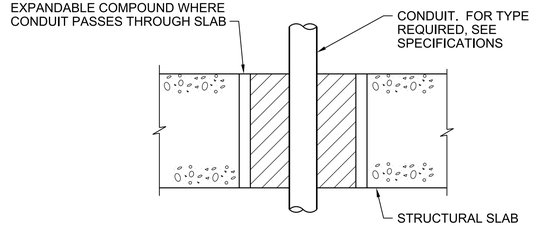
1 INTERIOR WALL PENETRATION
NTS



NOTES:

1. USE WATERTIGHT CONDUIT SEAL WHERE CONDUIT PENETRATIONS OF BUILDING EXTERIOR WALLS ARE BELOW GRADE.

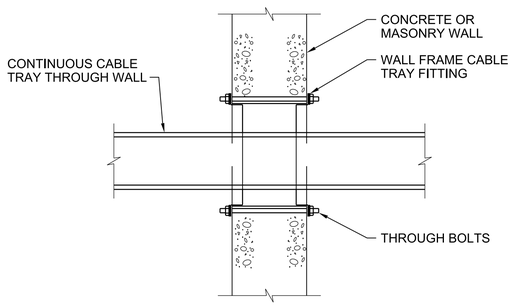
2 WATERTIGHT WALL CONDUIT SEAL
NTS



NOTES:

1. ALL CONDUITS THROUGH CONCRETE FLOOR SLABS AND EQUIPMENT PADS SHALL BE INSTALLED IN ACCORDANCE WITH THIS DETAIL.

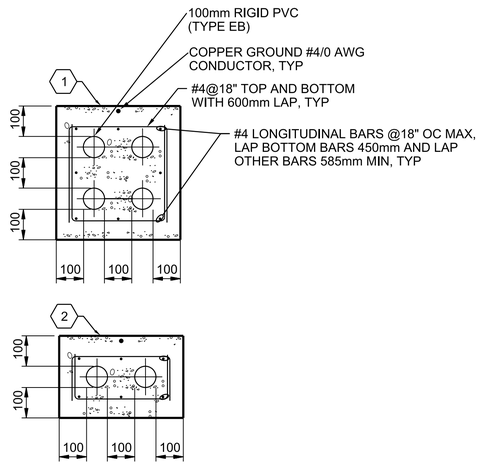
3 INTERIOR FLOOR SLAB PENETRATION
NTS



NOTES:

1. SEAL OPENING IN AND AROUND CABLE TRAY WITH KBS-SEALBAGS OR EQUAL.

4 CABLE TRAY WALL PENETRATION
NTS



NOTES:

1. DUCT BANK TO BE USED FOR MAIN 600V CABLE.
2. DUCT BANK TO BE USED FOR MAIN 25kV CABLE.
3. PROVIDE 150mm MINIMUM COMPACTED GRAVEL UNDER ALL CONCRETE ENCASED DUCT RUNS.
4. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.

5 DUCT BANK DETAIL
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1	30% DETAILED DESIGN	2021-01-29	WT
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ELECTRICAL
GENERAL
STANDARD DETAILS (1)

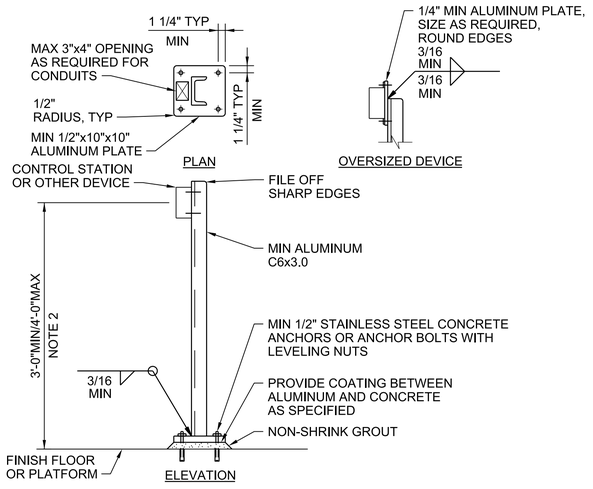
CONSULTANT DRAWING NO. 761-1916-601

SCALE: NTS

COS FILE NO.

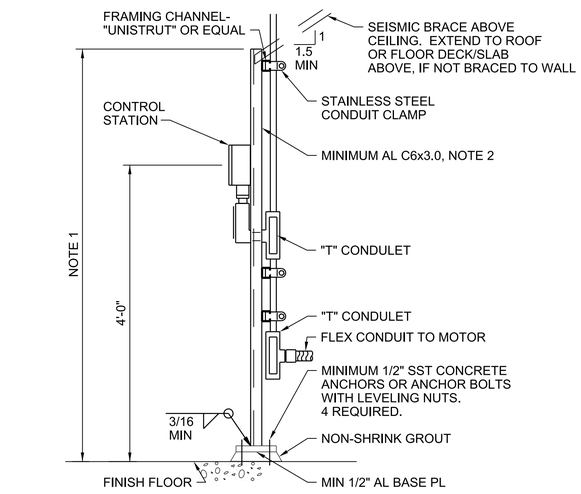
COS CONTRACT NO.

COS DRAWING NO.



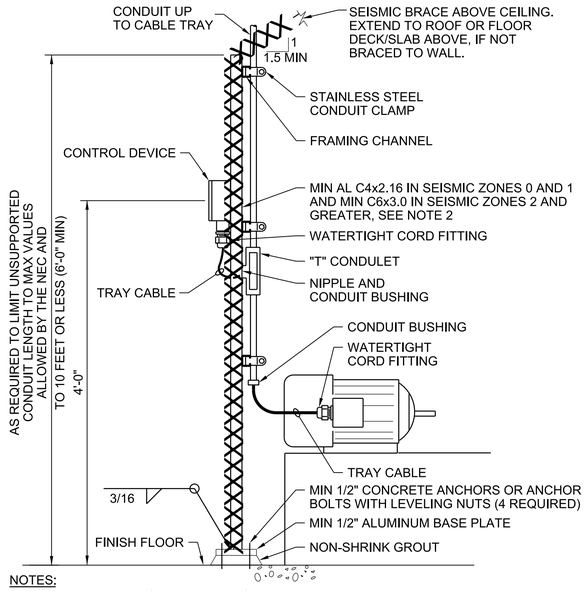
NOTES:
1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. USE WASHERS AND LOCK WASHERS UNDER ALL NUTS AND BOLTS.
2. EXTEND POSTS TO STRUCTURE ABOVE WHERE REQUIRED BY CALCULATION. EXTENSION SHALL ACCOMODATE DEFLECTION OF THE SUPPORTING STRUCTURE.
3. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.
4. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

6 PEDESTAL MOUNTED DEVICE
NTS



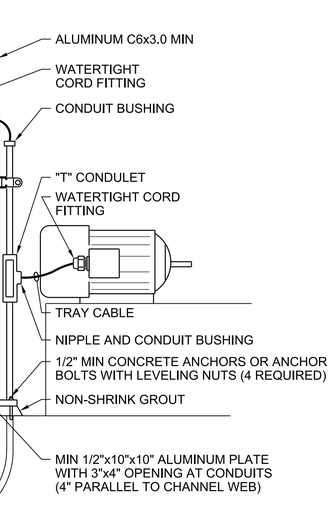
NOTES:
1. AS REQUIRED TO LIMIT UNSUPPORTED CONDUIT LENGTH TO MAXIMUM VALUES ALLOWED BY CEC, OR 10'-0" MAXIMUM. FOR LENGTHS EXCEEDING 6'-0", EXTEND TO STRUCTURE ABOVE. TOP CONNECTION TO ALLOW FOR 5/8" VERTICAL STRUCTURE DEFLECTION.
2. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES AS REQUIRED BY CALCULATIONS.
3. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

7 PEDESTAL MOUNTED DEVICE, OVERHEAD FEED
NTS



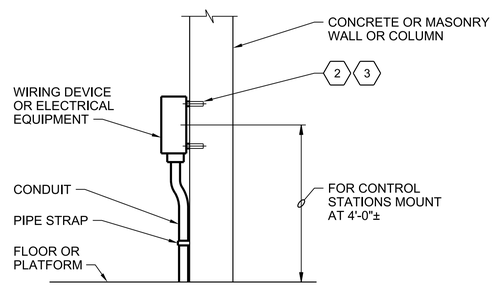
NOTES:
1. FOR SUPPORT HEIGHTS EXCEEDING 6'-0", EXTEND SUPPORT TO STRUCTURE ABOVE. TOP CONNECTION TO ALLOW FOR 5/8" VERTICAL STRUCTURE DEFLECTION.
2. SIZE SUPPORT POST, TOP BRACE(S) AND CONNECTIONS FOR VERTICAL AND LATERAL LOADS.

8 OVERHEAD FEED FROM CABLE TRAY
NTS



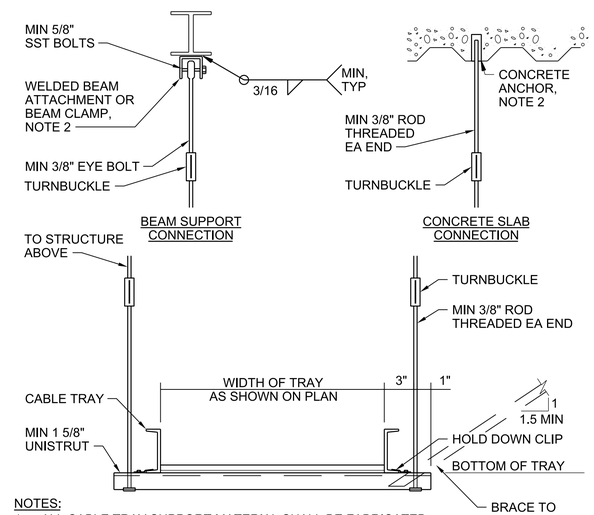
NOTES:
1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. USE WASHERS AND SPLIT-LOCK WASHERS UNDER ALL NUTS AND BOLTS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

9 UNDERFLOOR FEED FROM CABLE TRAY
NTS



NOTES:
1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. USE BOTH WASHER AND LOCK WASHERS UNDER ALL NUTS.
2. ON CONCRETE WALLS USE STAINLESS STEEL CONCRETE ANCHORS. MOUNT ENCLOSURE ON SPACERS OF MIN 1/2" SCHEDULE 80 PVC CONDUIT.
3. BOXES 6 INCHES SQUARE AND SMALLER SHALL BE SUPPORTED BY TWO ANCHORS, MIN. LARGER BOXES SHALL BE SUPPORTED AS REQUIRED BY CALCULATION; FOUR ANCHORS MIN.
4. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

10 DEVICE MOUNTING, WALL OR COLUMN
NTS



NOTES:
1. ALL CABLE TRAY SUPPORT MATERIAL SHALL BE FABRICATED FROM ALUMINUM. REPAIR ALL DAMAGED COATING PER SPECIFICATIONS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.
3. PROVIDE STAINLESS STEEL HARDWARE IN WET OR CORROSIVE AREAS.

11 CABLE TRAY SUPPORT
NTS

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	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ELECTRICAL
GENERAL
STANDARD DETAILS (2)

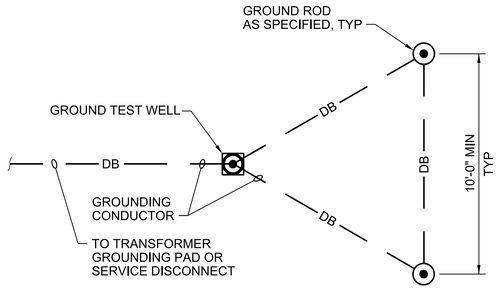
CONSULTANT DRAWING NO. 761-1916-602

SCALE: NTS

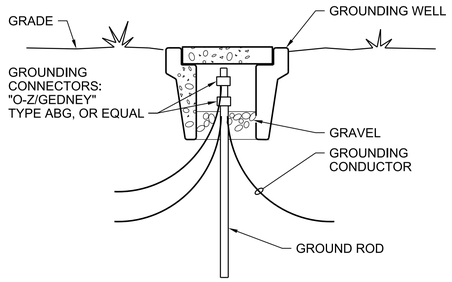
COS FILE NO.

COS CONTRACT NO.

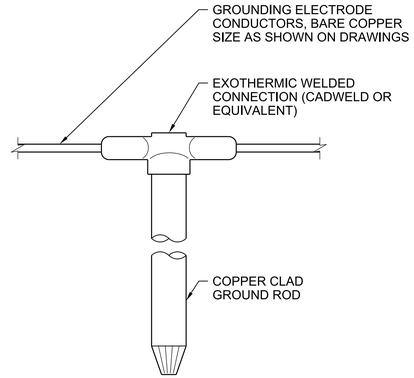
COS DRAWING NO.



12 GROUND TRIANGLE
NTS

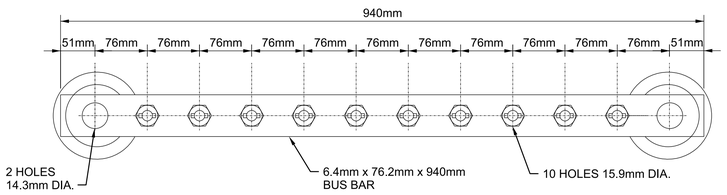


13 GROUND TEST WELL
NTS

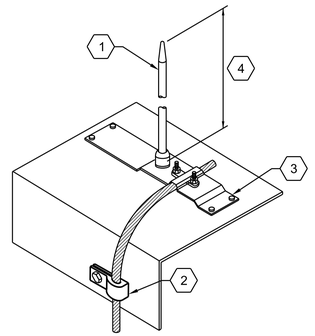


NOTES:
1. TOP OF GROUND ROD SHALL BE SAND BEDDED 6" MIN BELOW GRADE.
2. CONNECTIONS TO EXISTING GROUNDING ELECTRODE CONDUCTORS SHALL BE CADWELD OR EQUIVALENT.

14 GROUND ROD CONNECTION
NTS



15 STAND-OFF GROUNDING BUS BAR ASSEMBLY
NTS



NOTES:
1. 16mm SOLID ALUMINUM AIR TERMINAL WITH BLUNT TIP.
2. ALUMINUM LOOP TYPE CABLE FASTENER. SECURE WITH 5mm x 25mm STAINLESS STEEL TEK SCREW.
3. ALUMINUM STRAP TYPE POINT BASE. SECURE WITH FOUR 5mm X 25mm STAINLESS STEEL TEK SCREWS. INSTALLING CONTRACTOR TO FIELD ADJUST BASE TO ENSURE VERTICAL POSITIONING OF THE POINT.
4. POINT EXTENDS A MINIMUM OF 250mm ABOVE THE PROTECTED SURFACE.

16 LIGHTNING PROTECTION SYSTEM AIR TERMINAL
NTS

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1	30% DETAILED DESIGN	2021-01-29	WT	
	PLAN DESCRIPTION/REVISION	DATE	BY	SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ELECTRICAL
GENERAL
STANDARD DETAILS (3)

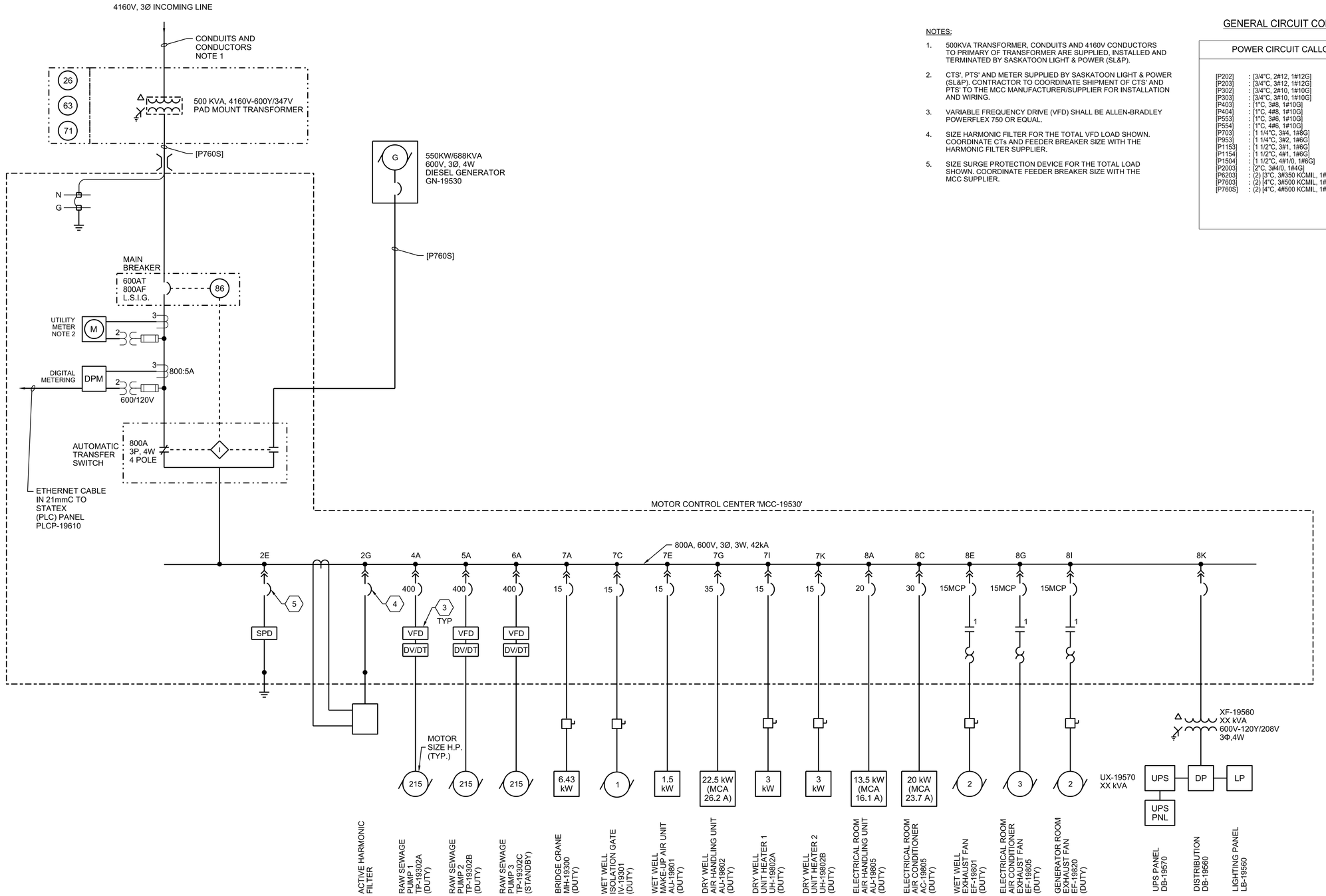
CONSULTANT DRAWING NO. 761-1916-603

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES:

1. 500KVA TRANSFORMER, CONDUITS AND 4160V CONDUCTORS TO PRIMARY OF TRANSFORMER ARE SUPPLIED, INSTALLED AND TERMINATED BY SASKATOON LIGHT & POWER (SL&P).
2. CTS', PTS' AND METER SUPPLIED BY SASKATOON LIGHT & POWER (SL&P), CONTRACTOR TO COORDINATE SHIPMENT OF CTS' AND PTS' TO THE MCC MANUFACTURER/SUPPLIER FOR INSTALLATION AND WIRING.
3. VARIABLE FREQUENCY DRIVE (VFD) SHALL BE ALLEN-BRADLEY POWERFLEX 750 OR EQUAL.
4. SIZE HARMONIC FILTER FOR THE TOTAL VFD LOAD SHOWN. COORDINATE CTs AND FEEDER BREAKER SIZE WITH THE HARMONIC FILTER SUPPLIER.
5. SIZE SURGE PROTECTION DEVICE FOR THE TOTAL LOAD SHOWN. COORDINATE FEEDER BREAKER SIZE WITH THE MCC SUPPLIER.

GENERAL CIRCUIT CONDUCTOR AND CONDUIT IDENTIFICATION

POWER CIRCUIT CALLOUTS		EMPTY CONDUIT	
[P202]	: [3/4"C, 2#12, 1#12G]	[EC-21]	[3/4"C, WITH PULL STRING]
[P203]	: [3/4"C, 3#12, 1#12G]	[EC-27]	[1"C, WITH PULL STRING]
[P302]	: [3/4"C, 2#10, 1#10G]	[EC-35]	[1 1/4"C, WITH PULL STRING]
[P303]	: [3/4"C, 3#10, 1#10G]	[EC-41]	[1 1/2"C, WITH PULL STRING]
[P403]	: [1"C, 3#8, 1#10G]	[EC-53]	[2"C, WITH PULL STRING]
[P404]	: [1"C, 4#8, 1#10G]	[EC-78]	[3"C, WITH PULL STRING]
[P553]	: [1"C, 3#6, 1#10G]	[EC-103]	[4"C, WITH PULL STRING]
[P554]	: [1"C, 4#6, 1#10G]	[EC-129]	[5"C, WITH PULL STRING]
[P703]	: [1 1/4"C, 3#4, 1#8G]		
[P953]	: [1 1/4"C, 3#2, 1#6G]		
[P1153]	: [1 1/2"C, 3#1, 1#6G]		
[P1154]	: [1 1/2"C, 4#1, 1#6G]		
[P1504]	: [1 1/2"C, 4#1/0, 1#6G]		
[P2003]	: [2"C, 3#4/0, 1#4G]		
[P6203]	: (2) [3"C, 3#350 KCMIL, 1#1G]		
[P7603]	: (2) [4"C, 3#500 KCMIL, 1#1/0G]		
[P760S]	: (2) [4"C, 4#500 KCMIL, 1#1/0G]		

FOR METRIC CONDUIT SIZES USE THE FOLLOWING CONVERSION:

3/4"	= 21 mm	2 1/2"	= 63 mm
1"	= 27 mm	3"	= 78 mm
1 1/4"	= 35 mm	3 1/2"	= 91 mm
1 1/2"	= 41 mm	4"	= 103 mm
2"	= 53 mm	5"	= 129 mm

ABBREVIATIONS

HF:	HARMONIC FILTER
LL:	LINE REACTOR
LR:	LOAD REACTOR
MPC:	MINI POWER CENTER
MCA:	MINIMUM CIRCUIT AMPACITY

	PLAN DESCRIPTION/REVISION	DATE	BY
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2	30% DETAILED DESIGN	2021-01-29	WT
1	PRELIMINARY DESIGN	2020-12-04	WT

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
ELECTRICAL
SINGLE LINE DIAGRAM

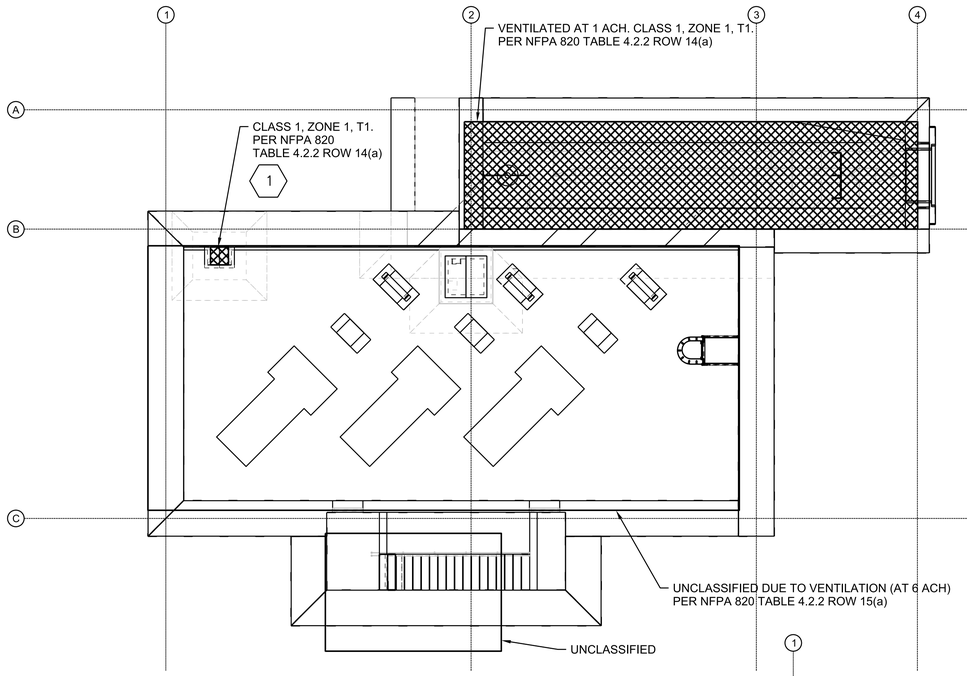
CONSULTANT DRAWING NO. 761-1916-606

SCALE: NTS

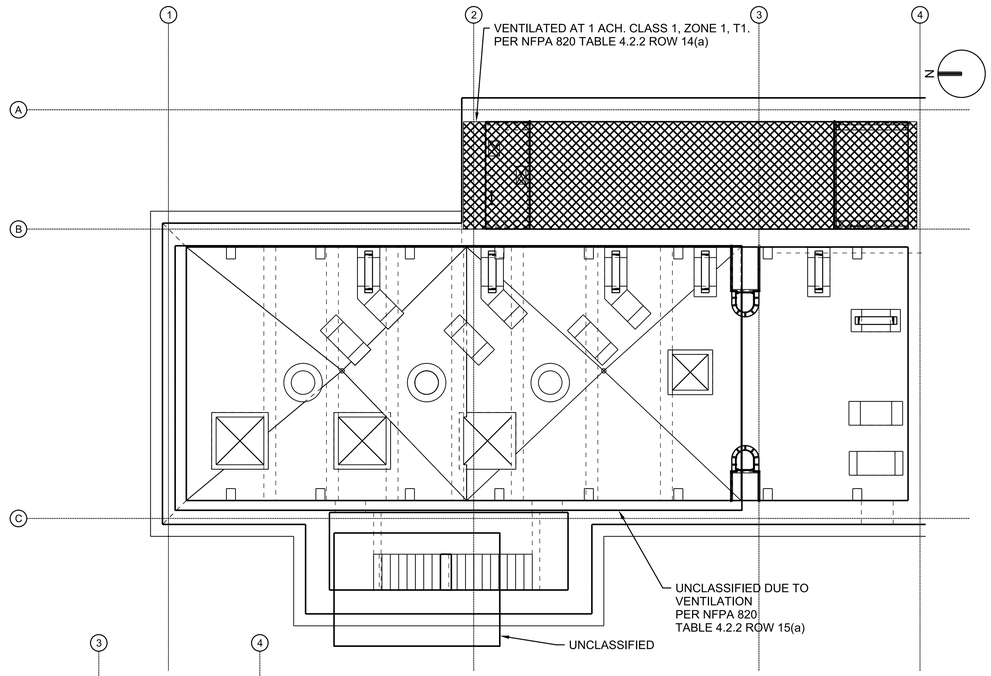
COS FILE NO.

COS CONTRACT NO.

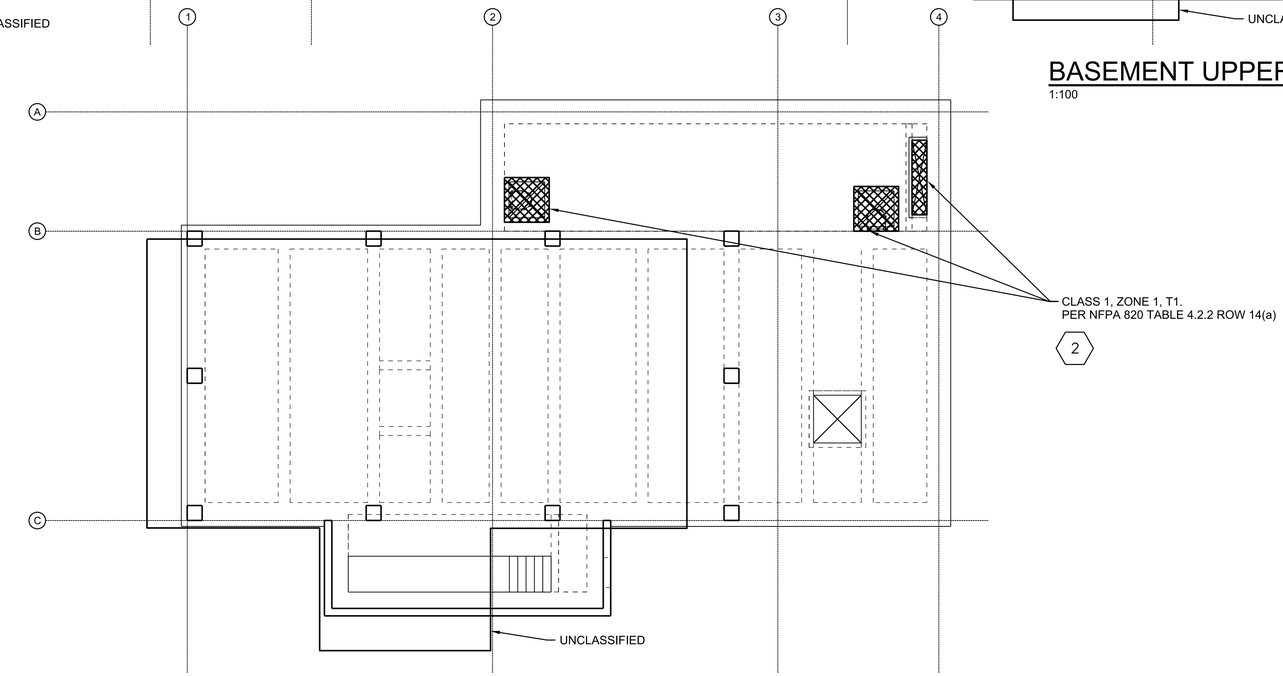
COS DRAWING NO.



BASEMENT LOWER LEVEL
1:100



BASEMENT UPPER LEVEL
1:100



GROUND FLOOR
1:100

LEGEND:

- CLASS 1, ZONE 2, T1
- CLASS 1, ZONE 1, T1
- UNCLASSIFIED

NOTES:

1. CLASS 1, ZONE 1 BOUNDARY EXTENDS 1,5 m ABOVE THE PROCESS SUMP.
2. CLASS 1, ZONE 1 BOUNDARY EXTENDS 1,5 m ABOVE THE WET WELL ACCESS POINTS.

	PLAN DESCRIPTION/REVISION	DATE	BY
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2	30% DETAILED DESIGN	2021-01-29	WT
1	PRELIMINARY DESIGN	2020-12-04	WT

SEALS & STAMPS

Jacobs

City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ELECTRICAL
PLAN
AREA CLASSIFICATIONS

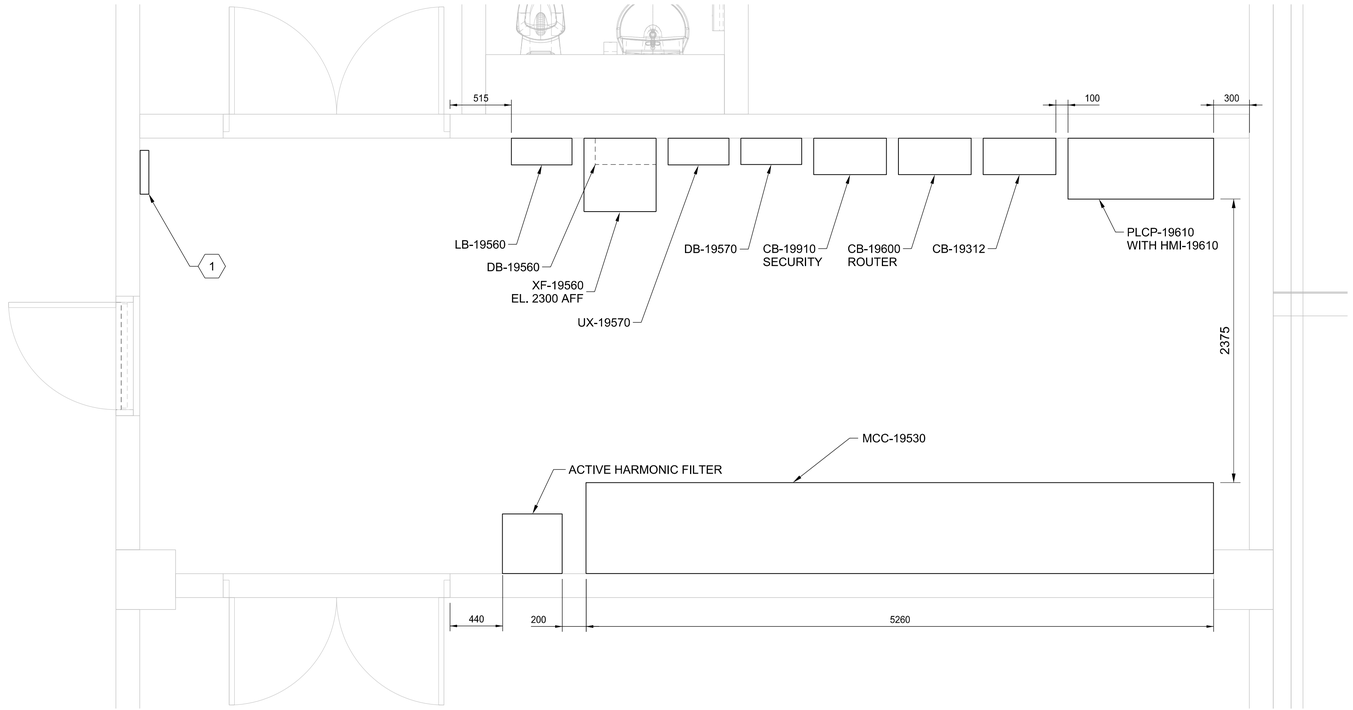
CONSULTANT DRAWING NO. 761-1916-610

SCALE: 1:100

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



N

ELECTRICAL ROOM

1:25

	1	2	3	4	5	6	7	8	9
A	1A	2A	3A	4A	5A	6A	7A	8A	9A
B		CT		PowerFlex 753	PowerFlex 753	PowerFlex 753	MH-19300	AU-19805	SPACE
C		2C					7C	8C	9C
D		DPM					IV-19301	AC-19805	SPACE
E	MAIN BREAKER	2E	AUTOMATIC TRANSFER SWITCH	TP-19302A	TP-19302B	TP-19302C	7E	8E	9E
F		SPD					AU-19801	EF-19801	SPACE
G		2G					7G	8G	9G
H		FEED FOR ACTIVE HARMONIC FILTER					AU-19802	EF-19805	SPACE
I		2I					7I	8I	9I
J		SPACE					UH-19802A	EF-19820	SPACE
K		2K					7K	8K	9K
L		SPACE					UH-19802B	DB-19560	SPACE
M									

635 | 508 | 762 | 610 | 610 | 610 | 508 | 508 | 508

5260

2286

MCC-19530 - ELEVATION

NTS

NOTES:

1. LOCAL GROUND BAR - SEE DETAIL 15. GROUND BAR TO BE CONNECTED TO GROUNDING SYSTEM BY TWO INDEPENDENT CONNECTIONS.

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1	30% DETAILED DESIGN	2021-01-29	WT
	PLAN DESCRIPTION/REVISION	DATE	BY

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT

ELECTRICAL
PLAN
ELECTRICAL ROOM PLAN AND ELEVATION

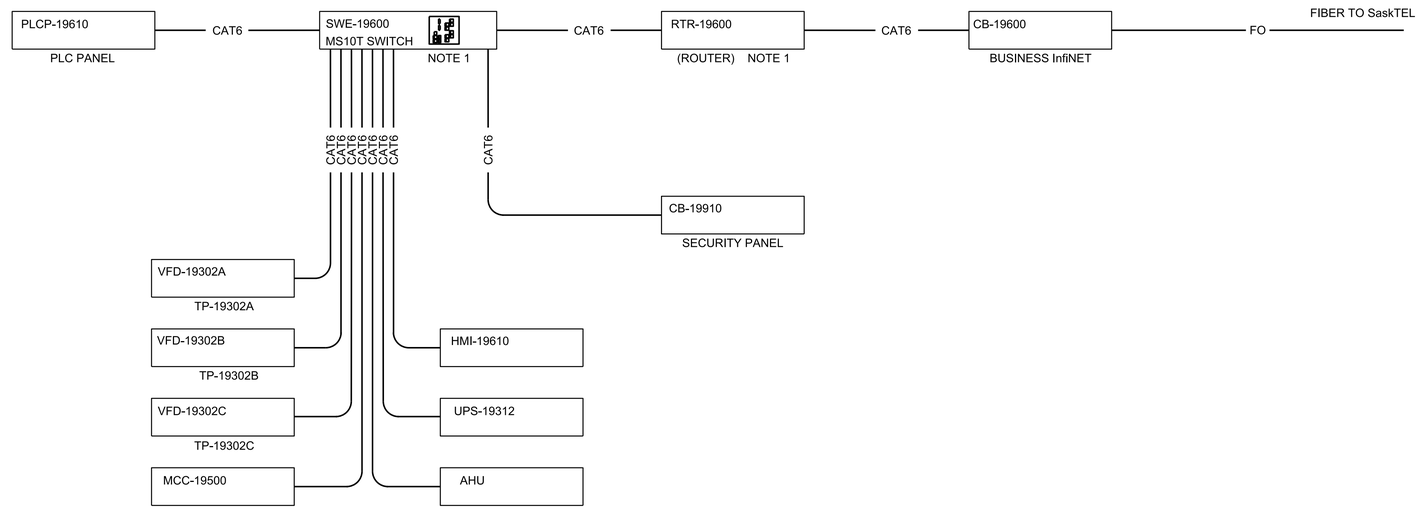
CONSULTANT DRAWING NO. 761-1916-616

SCALE: VARIES

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.



NOTES:

1. THE ETHERNET SWITCH AND THE ROUTER ARE MOUNTED IN THE PLC PANEL.

LEGEND

ETHERNET SWITCH

FO — FIBER OPTIC CONNECTION

CAT6 — CAT6 CONNECTION

NEW DEVICE / PANEL

	PLAN DESCRIPTION/REVISION	DATE	BY
11			
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1	30% DETAILED DESIGN	2021-01-29	RN

SEALS & STAMPS

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City of Saskatoon
Utilities & Environment Department
Saskatoon Water

SPADINA LIFT STATION REPLACEMENT
INSTRUMENTATION & CONTROLS
GENERAL
NETWORK ARCHITECTURE

CONSULTANT DRAWING NO. 761-1916-700

SCALE: NTS

COS FILE NO.

COS CONTRACT NO.

COS DRAWING NO.