

25 June 2020

Via E-filing

Ms. Marija Tresoglavic
Acting Commission Secretary
BC Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Ms. Tresoglavic:

**Re: British Columbia Utilities Commission (BCUC, Commission)
Creative Energy Vancouver Platforms Inc. (Creative Energy)
Registration of Extension to South Downtown Heating Thermal Energy System (TES)**

Please find attached a completed registration form for an extension of the South Downtown Heating TES to 889 Pacific Street, Vancouver.

As per the completed form, Creative Energy attests to the fact that this extension meets the criteria set out in the TES Guidelines issued under G-27-15 such that a Certificate of Public Convenience and Necessity for the extension is not required and that no further action or approval of the Commission is required at this time. An updated rates application will be filed in 2021 prior to the in-service date of the extension.

For further information, please contact the undersigned.

Yours sincerely,



Rob Gorter
Director, Regulatory Affairs and Customer Relations

Enclosure

CREATIVE ENERGY VANCOUVER
PLATFORMS INC.

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V6B 2M1

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EXTENSION FORM FOR STREAM B THERMAL ENERGY SYSTEMS (TES)
(Appendix C to TES Regulatory Framework Guidelines issued under Order G-27-15)

This Registration Form applies to system extensions planned for Stream B Thermal Energy Systems (TES) where the system extension capital cost, plus the capital cost of any previous extensions, is less than the initial capital cost of the Stream B TES.

By filing this Registration Form with the Commission, the Applicant attests that all information provided is true, accurate and complete.

Stream B TES – System Extension Form																	
Applicant Information																	
Name of Applicant: Creative Energy Vancouver Platforms Inc.	Company Name: Creative Energy Vancouver Platforms Inc.																
CPCN Number for TES: C-1-19																	
TES Specifics																	
TES Location (address): Energy Transfer Station at 889 Pacific Street, Vancouver, connecting to the South Downtown Heating TES approved by Order C-1-19 with distribution piping in the 700 and 800 blocks of Pacific Street																	
Is this extension for: <input checked="" type="checkbox"/> new distribution/new customer <input type="checkbox"/> expand or modify thermal energy generation <input type="checkbox"/> both	Planned In-Service date of the extension (YY/MM/DD): 21/10/01																
Description of TES extension including energy centre and distribution system (drawing, diagram or description of equipment, connections etc., thermal energy supply and demand before and after the planned extension) <ul style="list-style-type: none"> Approximately 105 meters of underground distribution piping system from existing valves on Pacific street to servicing site Approximately 35 meters of aboveground distribution piping system from building entry to Energy Transfer Station Energy Transfer Station located in Level P2 of the building Please refer to the attached drawings Annual incremental capacity: 1,350 kW Annual incremental energy: 2,400 MWh 																	
Cost Estimate																	
Estimated Capital Cost of the TES extension (AACE Class 3 minimum) (Applicant may add additional line items as appropriate) Contingency included.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: right;">\$000s</th> </tr> </thead> <tbody> <tr> <td>Equipment</td> <td style="text-align: right;">65</td> </tr> <tr> <td>Materials</td> <td style="text-align: right;">105</td> </tr> <tr> <td>Engineering / Design</td> <td style="text-align: right;">95</td> </tr> <tr> <td>Construction</td> <td style="text-align: right;">505</td> </tr> <tr> <td>Legal</td> <td style="text-align: right;">5</td> </tr> <tr> <td>Project Management</td> <td style="text-align: right;">80</td> </tr> <tr> <td>Total</td> <td style="text-align: right;">855</td> </tr> </tbody> </table>	Category	\$000s	Equipment	65	Materials	105	Engineering / Design	95	Construction	505	Legal	5	Project Management	80	Total	855
Category	\$000s																
Equipment	65																
Materials	105																
Engineering / Design	95																
Construction	505																
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Project Management	80																
Total	855																

Calculated ratio of TES extension capital cost (plus any previous extension capital)/initial TES capital cost. (Must be less than 1.0 to use this Form. If greater than 1.0 a CPCN application is required.)

Total capital cost of the extension: \$855,000
Initial TES capital cost (no extension): \$3.8 million
Ratio: 0.22

Does the TES Provider have a system extension policy? If so, please attach.

No.

Rate Impacts

Please provide the impact to current rates including calculations and schedule showing current rates and forecast rates over time resulting from the proposed extension. Include a schedule of any deferral accounts that may be used as rate mitigation. (Must be less than a 10% aggregate increase to use this form. If greater than 10% increase, a CPCN application is required.)

When will the TES Provider file an updated rates application?

No Extension

	2020	2021	2022	2023
Total Annual Fixed and Operating Costs (\$)	388,178	428,382	436,950	445,689
Total Capacity (kW)	2,548	2,548	2,548	2,548
Annual Fixed Rate (\$/kW)	\$152.35	\$168.12	\$171.49	\$174.92

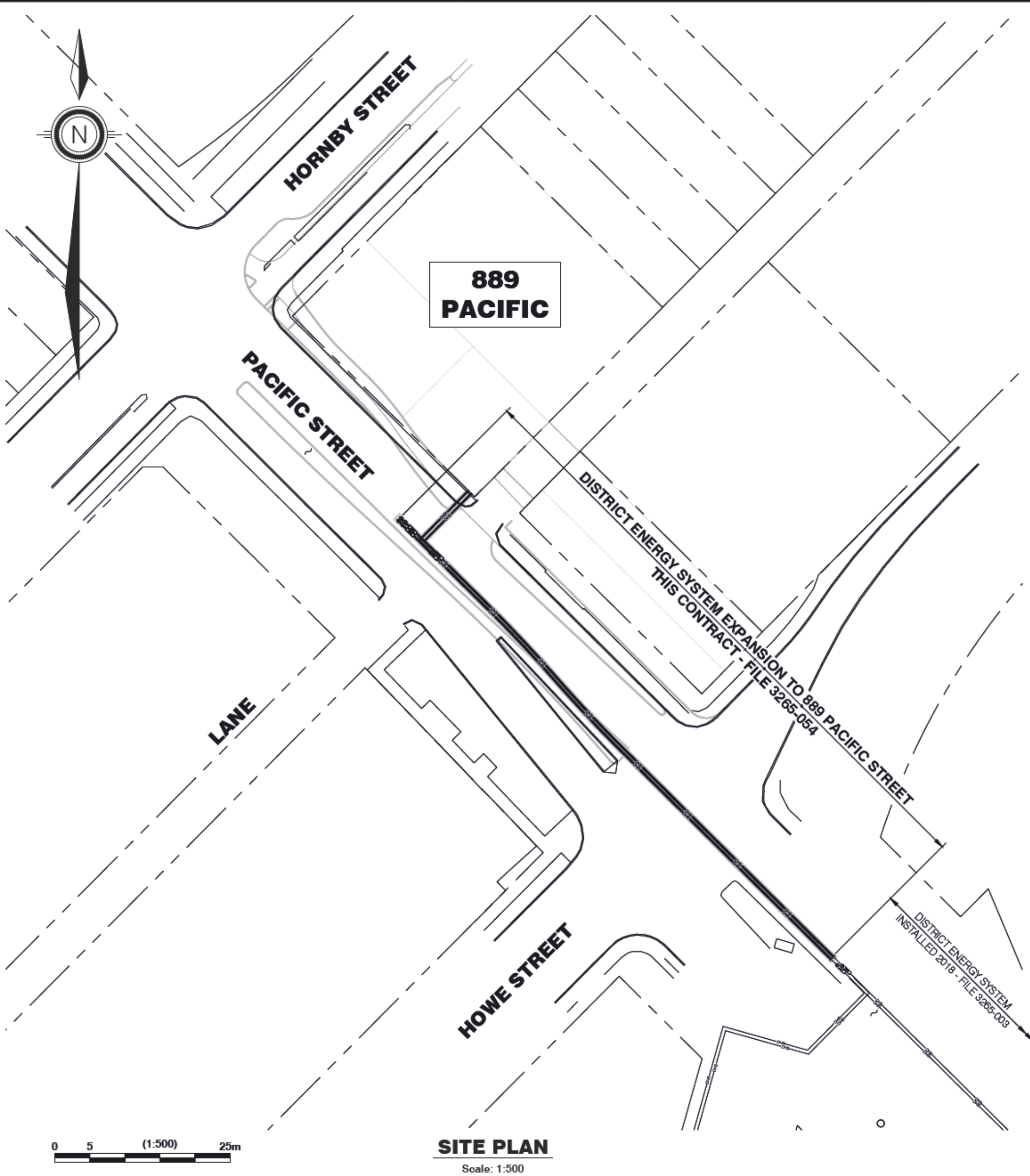
With Extension

	2020	2021	2022	2023
Total Annual Fixed and Operating Costs (\$)			528,547	539,118
Total Capacity (kW)			3,898	3,898
Annual Fixed Rate (\$/kW)			\$135.59	\$138.31
Rate Change (%)			-20.9%	-20.9%

Note:

- Fixed rates under 'No Extension' are approved on an interim basis for 2020 (\$141.68/kW). The rates shown from 2020 through 2023 are indicative pending a final rates application to be filed later this year.
- An updated rates application for the extension will be filed in 2021.
- Variable fuel costs for electricity and natural gas are flow-through charges of the BC Hydro and FortisBC invoices for fuel use and are allocated to each customer based on actual energy consumption. These costs are independent of the extension.

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SITE PLAN
Scale: 1:500



LOCATION MAP
Scale: 1:10,000

GENERAL NOTES:

1. FABRICATION, INSTALLATION AND TESTING OF HOT WATER PIPING SHALL BE IN ACCORDANCE TO ASME B31.1 AND CSA B51.
2. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH PROJECT SPECIFICATIONS. IN CASE OF CONFLICT, CONTRACTOR TO REPORT TO ENGINEER IN WRITING.
3. ALL DIMENSIONS ARE ONLY INDICATIVE AND SHALL BE VERIFIED BY CONTRACTOR ON SITE.
4. CONTRACTOR SHALL CONFORM TO MANUFACTURER/SUPPLIER INSTALLATIONS INSTRUCTIONS. ANY PERSONNEL PERFORMING PIPE INSTALLATION SHALL COMPLETE LOGSTOR TRAINING CERTIFICATION IN ADVANCE OF COMMENCING WORK.
5. ALL PIPING THROUGH SLEEVES OR CORED HOLES SHALL BE SEALED BY CONTRACTOR.
6. ALL JOINTS SHALL BE WELDED UNLESS STATED OTHERWISE.
7. ALL MATERIALS SHALL BE SUPPLIED AND INSTALLED BY CONTRACTOR EXCEPT FOR MATERIAL SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR AS SUMMARIZED IN PROJECT SPECIFICATIONS.
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO RECEIVE, HANDLE AND TRACK ALL OWNER SUPPLIED MATERIAL ON SITE AS PER OWNER DIRECTIONS.
9. ANY UTILITY CROSSING WITHIN 250 mm OF HOT WATER PIPING SHALL BE SEGREGATED USING APPROVED INSULATION BOARDS.
10. BID PRICE SHALL INCLUDE ALL COSTS ALLOCATED FOR RELOCATION OF STREET LIGHTING CABLES AND TRAFFIC SIGNAL WIRES OBSTRUCTING DES PIPES. OTHER OBSTRUCTIONS SHALL BE ALLOCATED IN THE BID PRICE ONLY IF SHOWN ON THE PLAN AND PROFILE DRAWINGS.
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE UN-INSULATED JOINTS ARE PROTECTED FROM WEATHER CONDITIONS AT ALL TIMES AND THAT THE TRENCH IS CONTINUOUSLY DE-WATERED.
12. NONE OF INSTALLED VALVES SHALL BE UTILIZED TO ISOLATE FOR PRESSURE TESTING PURPOSES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY TEMPORARY CONNECTIONS FOR THAT PURPOSE.
13. THE CONTRACTOR SHALL COORDINATE BETWEEN THE SUPPLY AND RETURN LINES BURIED PIPING AND THE INTERIOR ABOVE GROUND BUILDING PIPING TO ENSURE PROCESS CONTINUITY. THE ORDER OF PIPING SHOWN ON THE PLAN AND PROFILE DRAWING TAKE PRECEDENCE.
14. ALL DES PIPE SHALL BE APPROPRIATELY MARKED WITH PAINT, "DES SUPPLY" OR "DES RETURN" AT THE END FITTING.
15. IF DISTURBING SOIL BEHIND EXISTING THRUST BLOCK, CONSULT ENGINEER FOR SOLUTION.
16. FOR EXCAVATION WITHIN TREE DRIP LINES, CUT ROOTS CLEANLY WITH SAW AFTER GETTING NECESSARY APPROVALS.
17. CONTRACTOR TO ENSURE THAT ANY SITE DISTURBANCE FROM D.E.S. WORK IS RESTORED TO ORIGINAL CONDITION.

SURVEY CONTROL				
MASCOT MONUMENT COORDINATES SCALED ABOUT PUBLISHED GRID COORDINATE OF MON V-3148, VIA CSF OF 1.0.9996027 (HELD V-3148). VERTICAL DATUM CVD28GVRD2005. (TO MATCH DRAWING BG-2015-0092A "BUILDING C" GRADE ELEVATIONS FOR LOTS A-B & LOT A, BLK 111, D.L. 541 PLANS Z10 & BCP12494," AS PROVIDED BY BUTLER SUNDVICK AND SHOWN ON DRAWING C-100. HORIZONTAL DATUM NAD83(CRS) 4.0.0.BC.1.GVRD.				
MARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
3148	5458167.129	490241.471	8.948	MON-3148
2786	5458229.656	490620.869	25.932	MON-2786
2787	5458343.178	490736.423	25.214	MON-2787
5	5458133.973	490476.018	21.095	NAIL-BSA-5
6	5458171.844	490439.241	22.016	NAIL-BSA-6

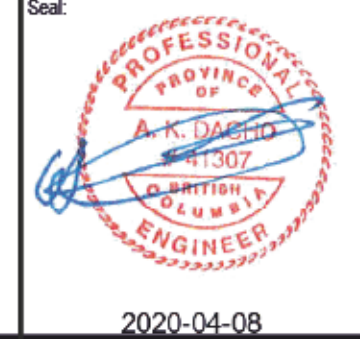
DRAWING LIST			
DWG No.	DESCRIPTION	DWG No.	DESCRIPTION
GENERAL		PROCESS	
G-001	SITE PLAN, LOCATION MAP, GENERAL NOTES AND DRAWING LIST	D-001	ETS STANDARD INSTRUMENTATION DIAGRAM
CIVIL		D-002	ETS STANDARD PIPING SYMBOLS
C-100	SURVEY AND SETTING OUT PLANS	D-101	ETS PROCESS AND INSTRUMENTATION DIAGRAM
MECHANICAL		ELECTRICAL	
C-101	DPS PLAN AND PROFILES	M-101	BUILDING INTERIOR PIPING ROUTE
C-501	DPS STANDARD DETAILS - SHEET 1	M-102	ETS PLAN AND SECTIONS
C-502	DPS STANDARD DETAILS - SHEET 2	M-501	ETS STANDARD DETAILS - SHEET 1
C-503	DPS STANDARD DETAILS - SHEET 3	ELECTRICAL	
		E-101	COMMUNICATION CONDUIT LAYOUT

CREATIVE ENERGY SOUTH DOWNTOWN DISTRICT ENERGY SYSTEM EXPANSION TO 889 PACIFIC STREET

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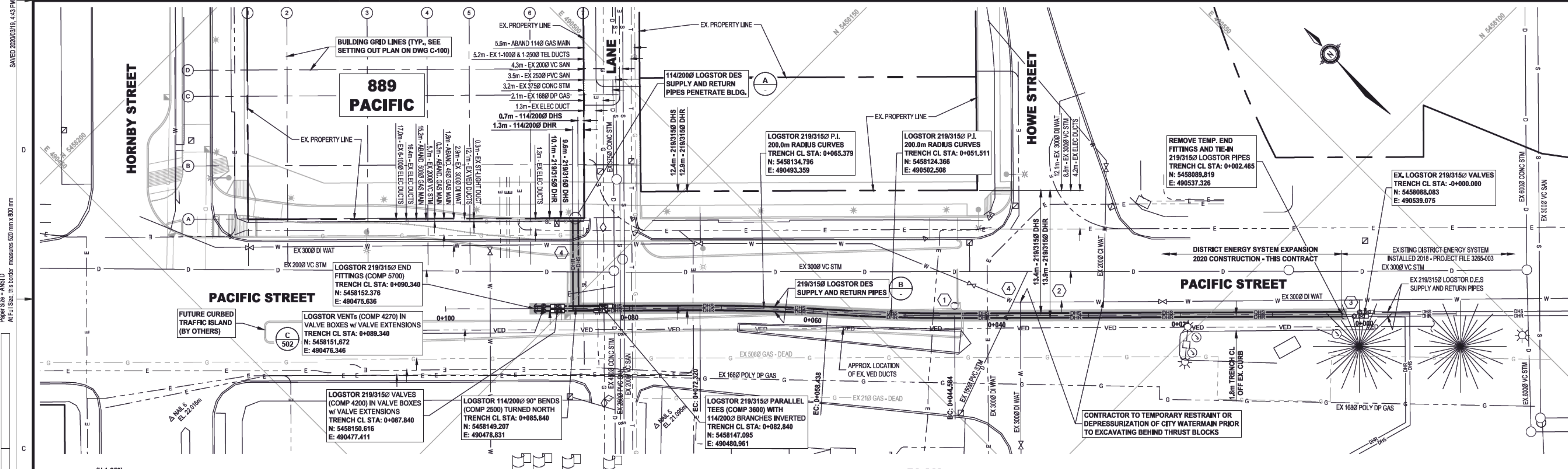


Rev	Date	Des	Dwn	Chk	Description
0	2020-03-19	AKD	SB	CAK	ISSUE FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

CREATIVE ENERGY
SOUTH DOWNTOWN DISTRICT ENERGY SYSTEM
DES EXPANSION TO 889 PACIFIC STREET
SITE PLAN, LOCATION MAP,
GENERAL NOTES AND DRAWING LIST

Project No. 3265-054 Drawing No. G-001 Rev. 0
Group GENERAL



PLAN
Scale 1:250

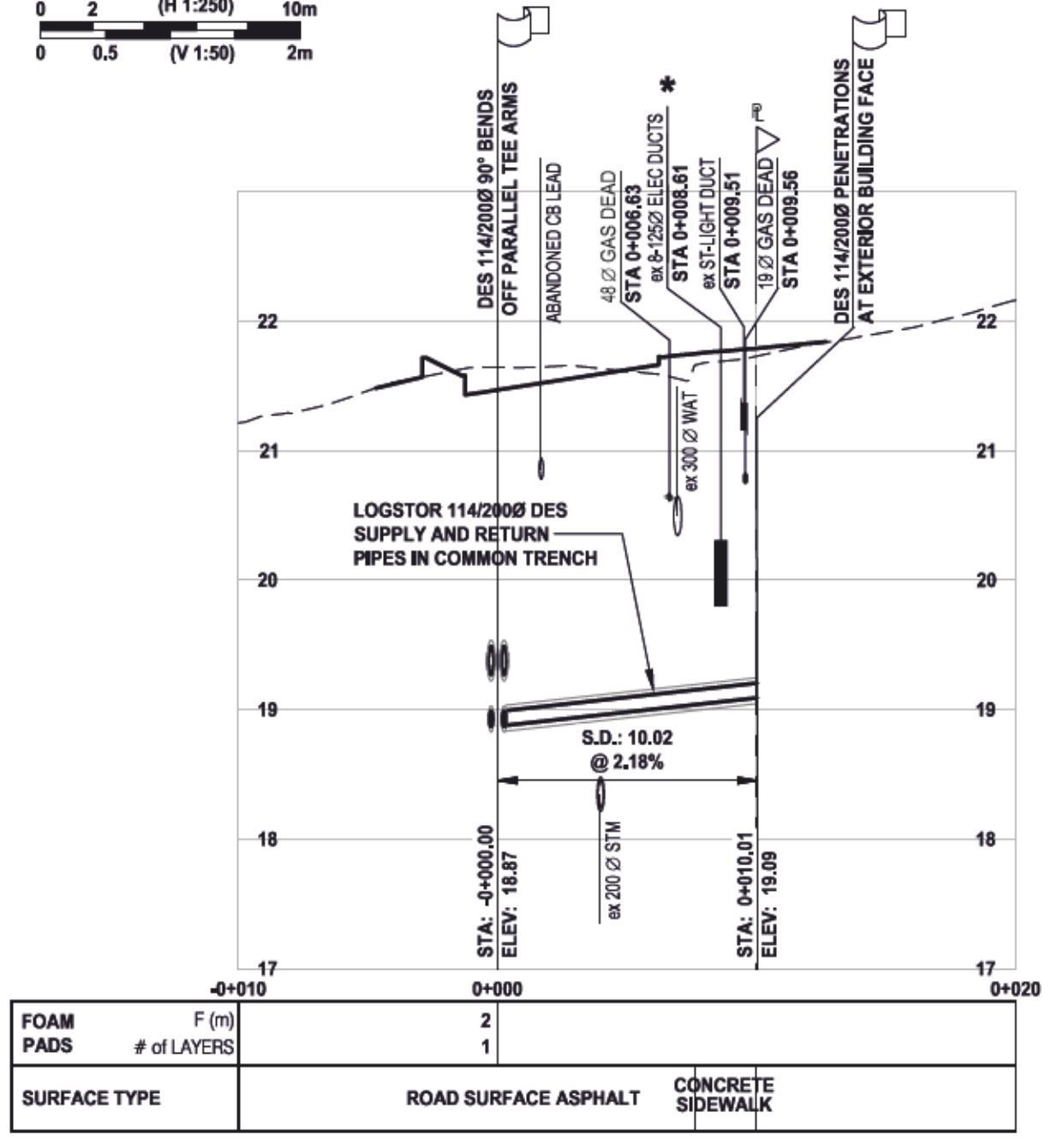
- GENERAL NOTES**
- ELEVATIONS SHOWN ON PROFILE ARE TO UNDERSIDE OF STEEL PIPE.
 - STATIONING REFERENCES TRENCH CENTERLINE. REFER TO DETAIL 'A' OF DRAWING C-501 FOR TRENCH SECTION.
 - CONTRACTOR TO COORDINATE TIE-IN WITH PLANT OPERATOR.
 - CONTRACTOR TO SUPPLY ALL MATERIALS REQUIRED FOR HIGH-SPEED FLUSH.
 - OVERHEAD UTILITIES NOT SHOWN. CONTRACTOR TO FLAG PRIOR TO CONSTRUCTION.
 - ALL WORK TO BE COMPLETED IN ACCORDANCE WITH CITY-APPROVED TRAFFIC MANAGEMENT PLAN.
 - CONTRACTOR TO CONFIRM SIZE AND INVERTS OF ALL UTILITIES PRIOR TO CONSTRUCTION. REPORT CONFLICTS TO ENGINEER.
 - HOT WATER PRESTRESSING REQUIRED FOR THIS PIPING. CONTRACTOR TO ALLOW FOR PRESTRESS TO BE DONE IN TWO SECTIONS. INCLUDE ALL MATERIALS, LABOUR AND COORDINATION, INCLUDING BYPASS, FILLING, RECORDS. CONFIRM PIPE EXPANSION IS ACCEPTED BY ENGINEER PRIOR TO BACKFILL. BACKFILL TO 900mm ABOVE PIPE WHILE AT PRESTRESS TEMPERATURE. SUBMIT PRESTRESS PLAN FOR APPROVAL.
 - CONTRACTOR TO ENSURE RESTORATION OF DISTURBED SURFACES AND WORKS TO A CONDITION AS GOOD OR BETTER THAN THE ORIGINAL CONDITION.

- SPECIFIC NOTES**
- CONTRACTOR TO REINSTATE CATCH BASIN IF DISTURBED DURING PIPE INSTALLATION.
 - CONTRACTOR TO RESTORE TRAFFIC DETECTOR LOOPS IN ACCORDANCE WITH CITY GUIDELINES/COORDINATION.
 - CONTRACTOR TO CONFIRM EXISTING LEAK DETECTION SYSTEM AT TIE IN POINT IS FUNCTIONAL PRIOR TO CONNECTING NEW LEAK DETECTION WIRES. CONTRACTOR SHALL TEST AND DEMONSTRATE THE LEAK DETECTION SYSTEM AS FUNCTIONAL TO THE ENGINEER PRIOR TO BACKFILL.
 - CONTRACTOR TO RESTORE EXISTING WATER MAIN TRENCH IN ACCORDANCE WITH CITY STANDARD DETAIL DRAWINGS, GENERAL DETAILS, SHEET G4.2.
 - CONTRACTOR TO NOTIFY ENGINEER IF CLEARANCE BETWEEN UTILITIES IS LESS THAN 300mm.

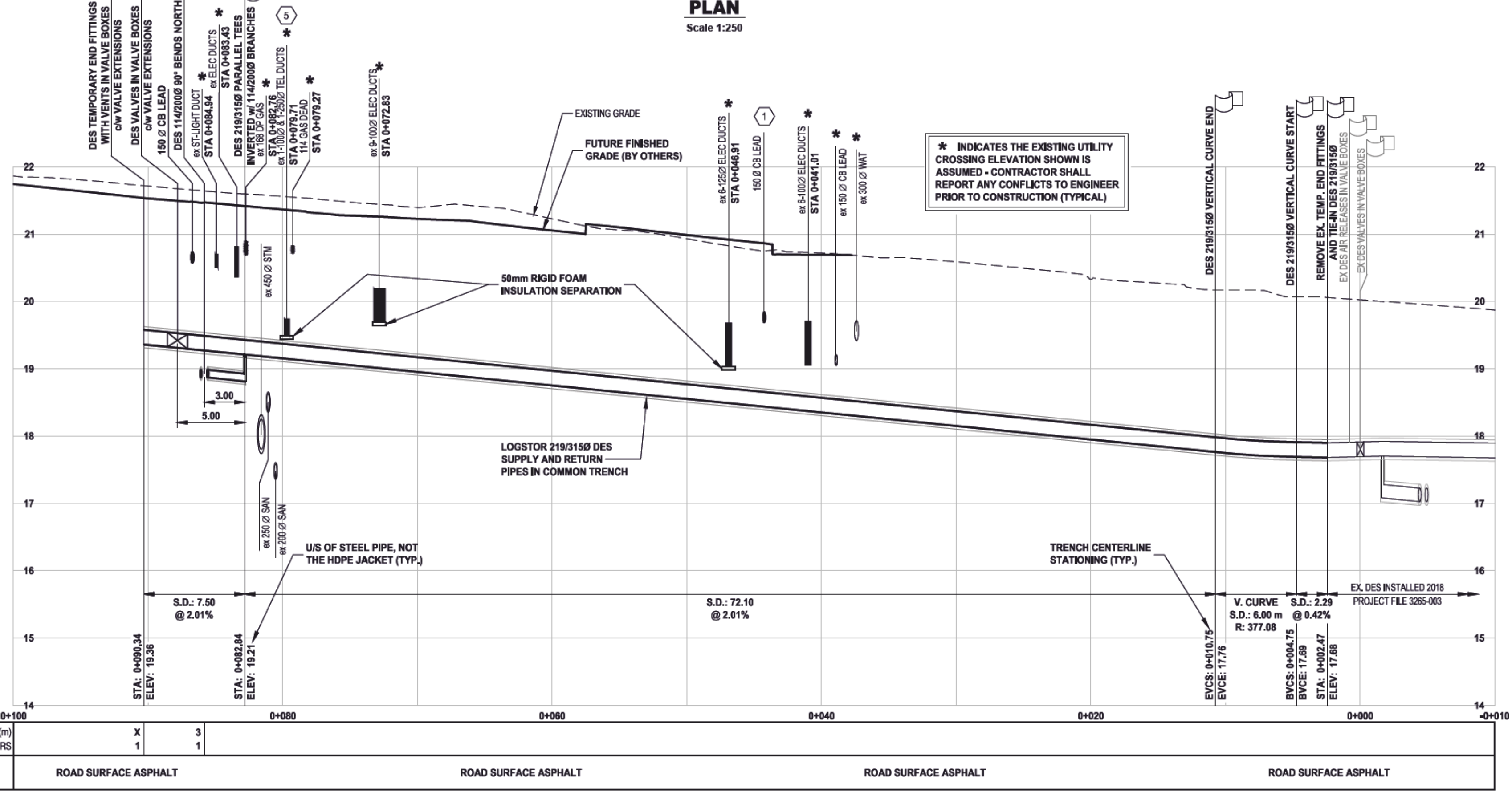
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6	5458171.844	490439.241	22.016	NAIL-BSA-6



A 889 PACIFIC STREET DPS PROFILE
Scale H 1:250, V 1:50



B PACIFIC STREET DPS PROFILE
Scale H 1:250, V 1:50

FOAM PADS	F (m)	# of LAYERS
	2	1

SURFACE TYPE	ROAD SURFACE ASPHALT	CONCRETE SIDEWALK
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FOAM PADS	F (m)	# of LAYERS
	3	1

SURFACE TYPE	ROAD SURFACE ASPHALT	ROAD SURFACE ASPHALT	ROAD SURFACE ASPHALT	ROAD SURFACE ASPHALT
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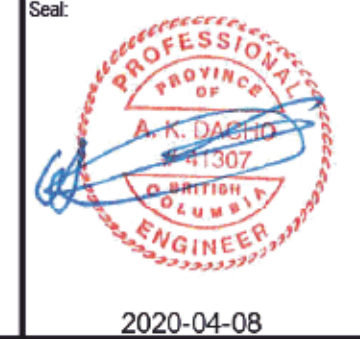
DESIGN CONDITIONS

DESIGN PRESSURE	1600 kPa
DESIGN TEMPERATURE	120° C
PIPE MATERIAL	LOSTOR SERIES 1
DESIGN STANDARD	ASME B31.1
HYDROSTATIC TEST PRESSURE	2400 kPa
PRESTRESS TEMPERATURE	69.5° C

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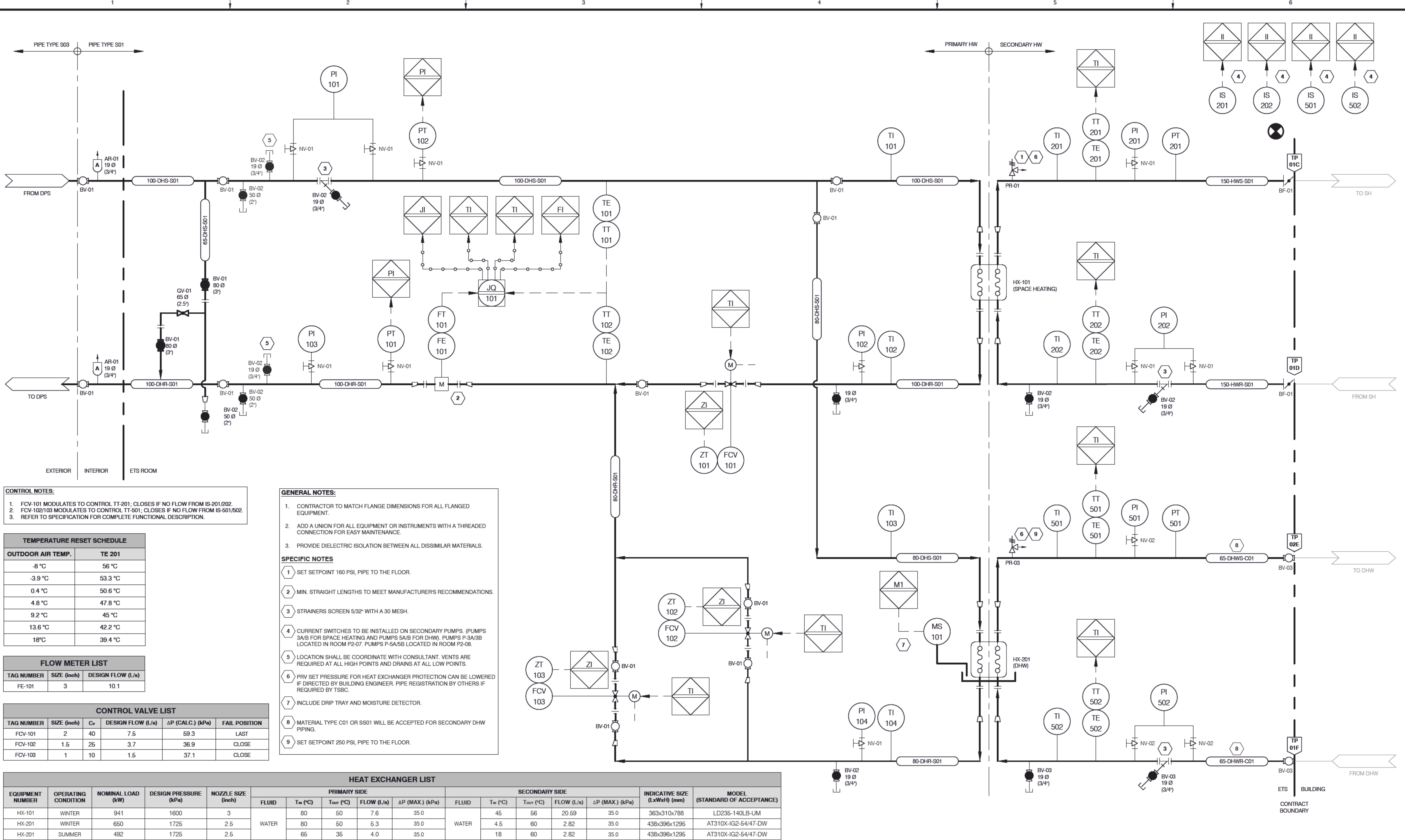


Rev	Date	Des	Dwn	Chk	Description
0	2020-03-19	AKD	SB	CAK	ISSUE FOR TENDER

CREATIVE ENERGY
SOUTH DOWNTOWN DISTRICT ENERGY SYSTEM
DES EXPANSION TO 889 PACIFIC STREET
PLAN AND PROFILES

Project No. **3265-054** Drawing No. **C-101** Rev. **0**
Group **CIVIL**

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- CONTROL NOTES:**
- FCV-101 MODULATES TO CONTROL TT-201; CLOSURES IF NO FLOW FROM IS-201/202.
 - FCV-102/103 MODULATES TO CONTROL TT-501; CLOSURES IF NO FLOW FROM IS-501/502.
 - REFER TO SPECIFICATION FOR COMPLETE FUNCTIONAL DESCRIPTION.

TEMPERATURE RESET SCHEDULE	
OUTDOOR AIR TEMP.	TE 201
-8 °C	56 °C
-3.9 °C	53.3 °C
0.4 °C	50.6 °C
4.8 °C	47.8 °C
9.2 °C	45 °C
13.6 °C	42.2 °C
18 °C	39.4 °C

FLOW METER LIST		
TAG NUMBER	SIZE (inch)	DESIGN FLOW (L/s)
FE-101	3	10.1

CONTROL VALVE LIST					
TAG NUMBER	SIZE (inch)	Cv	DESIGN FLOW (L/s)	ΔP (CALC.) (kPa)	FAIL POSITION
FCV-101	2	40	7.5	59.3	LAST
FCV-102	1.5	25	3.7	36.9	CLOSE
FCV-103	1	10	1.5	37.1	CLOSE

- GENERAL NOTES:**
- CONTRACTOR TO MATCH FLANGE DIMENSIONS FOR ALL FLANGED EQUIPMENT.
 - ADD A UNION FOR ALL EQUIPMENT OR INSTRUMENTS WITH A THREADED CONNECTION FOR EASY MAINTENANCE.
 - PROVIDE DIELECTRIC ISOLATION BETWEEN ALL DISSIMILAR MATERIALS.

- SPECIFIC NOTES:**
- SET SETPOINT 160 PSI, PIPE TO THE FLOOR.
 - MIN. STRAIGHT LENGTHS TO MEET MANUFACTURER'S RECOMMENDATIONS.
 - STRAINERS SCREEN 5/32" WITH A 30 MESH.
 - CURRENT SWITCHES TO BE INSTALLED ON SECONDARY PUMPS. (PUMPS 3A/B FOR SPACE HEATING AND PUMPS 5A/B FOR DHW), PUMPS P-3A/3B LOCATED IN ROOM P2-07. PUMPS P-5A/5B LOCATED IN ROOM P2-08.
 - LOCATION SHALL BE COORDINATE WITH CONSULTANT. VENTS ARE REQUIRED AT ALL HIGH POINTS AND DRAINS AT ALL LOW POINTS.
 - PRV SET PRESSURE FOR HEAT EXCHANGER PROTECTION CAN BE LOWERED IF DIRECTED BY BUILDING ENGINEER. PIPE REGISTRATION BY OTHERS IF REQUIRED BY TSBC.
 - INCLUDE DRIP TRAY AND MOISTURE DETECTOR.
 - MATERIAL TYPE C01 OR S01 WILL BE ACCEPTED FOR SECONDARY DHW PIPING.
 - SET SETPOINT 250 PSI, PIPE TO THE FLOOR.

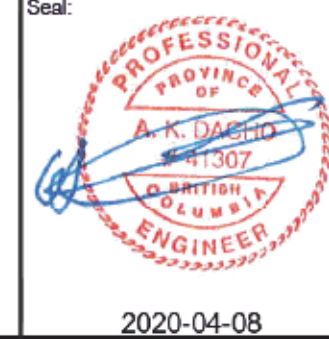
HEAT EXCHANGER LIST																
EQUIPMENT NUMBER	OPERATING CONDITION	NOMINAL LOAD (kW)	DESIGN PRESSURE (kPa)	NOZZLE SIZE (inch)	PRIMARY SIDE				SECONDARY SIDE				INDICATIVE SIZE (LxWxH) (mm)	MODEL (STANDARD OF ACCEPTANCE)		
					FLUID	T _{in} (°C)	T _{out} (°C)	FLOW (L/s)	ΔP (MAX.) (kPa)	FLUID	T _{in} (°C)	T _{out} (°C)			FLOW (L/s)	ΔP (MAX.) (kPa)
HX-101	WINTER	941	1600	3	WATER	80	50	7.6	35.0	WATER	45	56	20.59	35.0	363x310x788	LD235-140LB-UM
HX-201	WINTER	650	1725	2.5		80	50	5.3	35.0		4.5	60	2.82	35.0	438x396x1295	AT310X-IG2-54/47-DW
HX-201	SUMMER	492	1725	2.5		65	35	4.0	35.0		18	60	2.82	35.0	438x396x1295	AT310X-IG2-54/47-DW

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0	2020-03-19	KSP	KSP	AKD	ISSUE FOR TENDER						

CREATIVE ENERGY
SOUTH DOWNTOWN DISTRICT ENERGY SYSTEM
DES EXPANSION TO 889 PACIFIC STREET
PROCESS AND INSTRUMENTATION DIAGRAM
ENERGY TRANSFER STATION

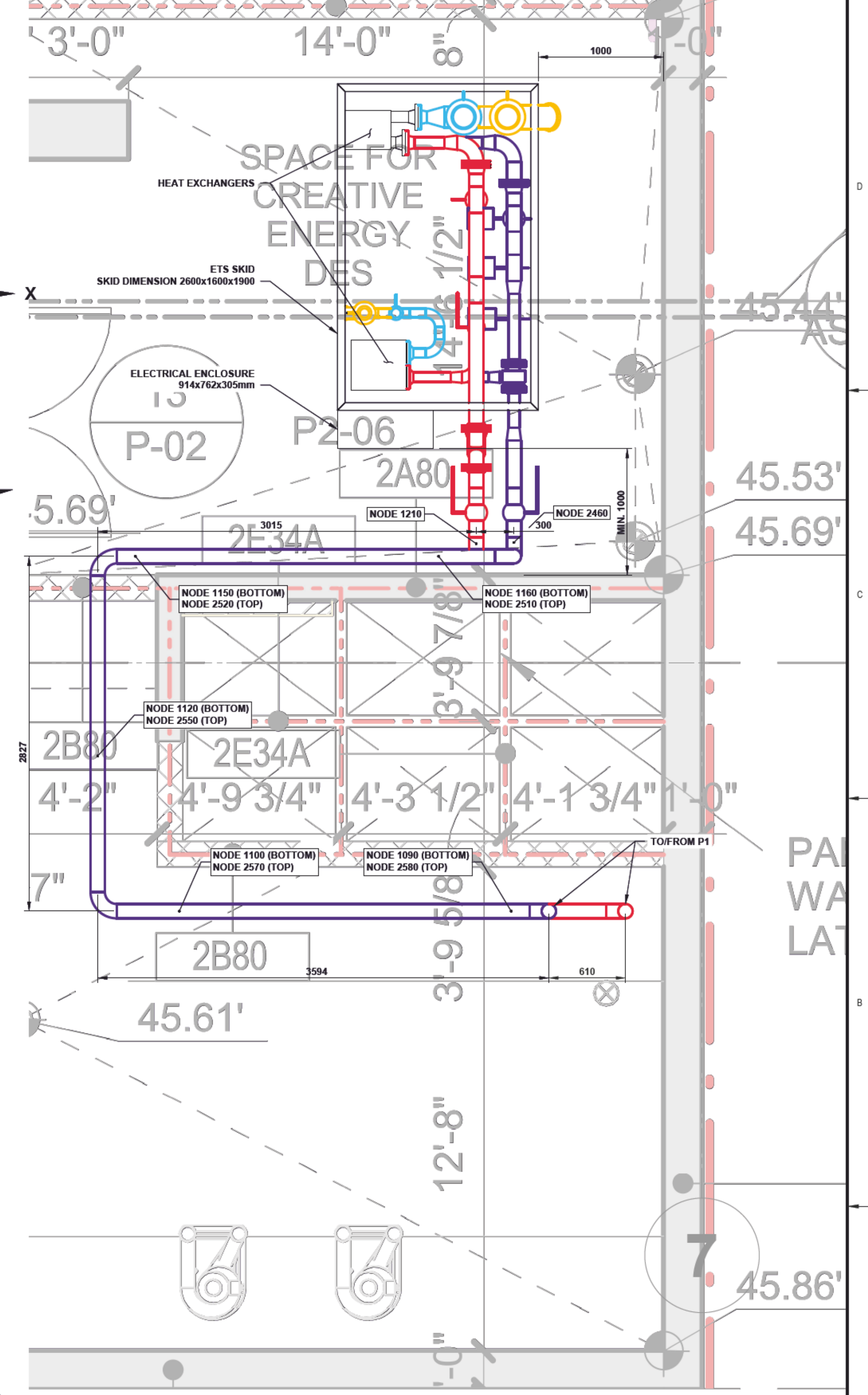
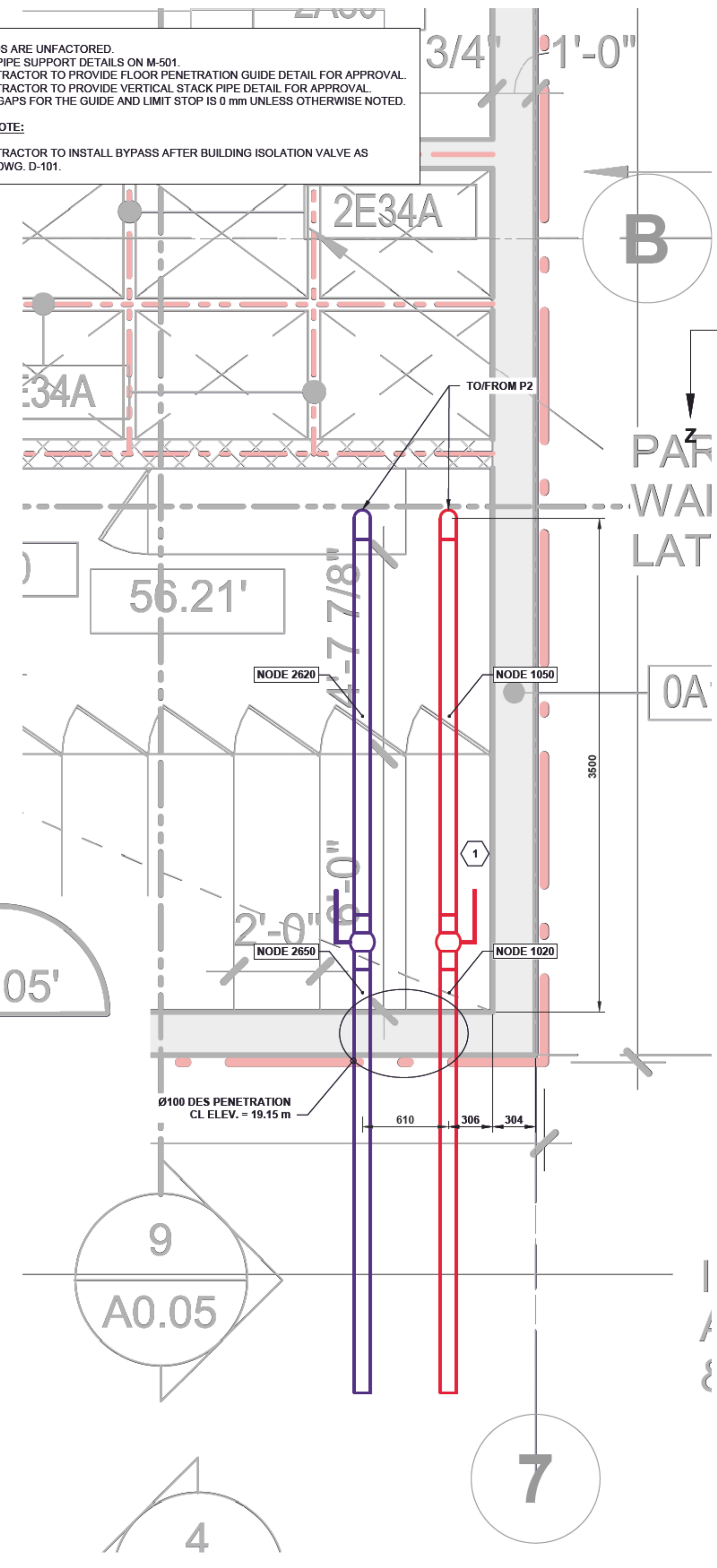
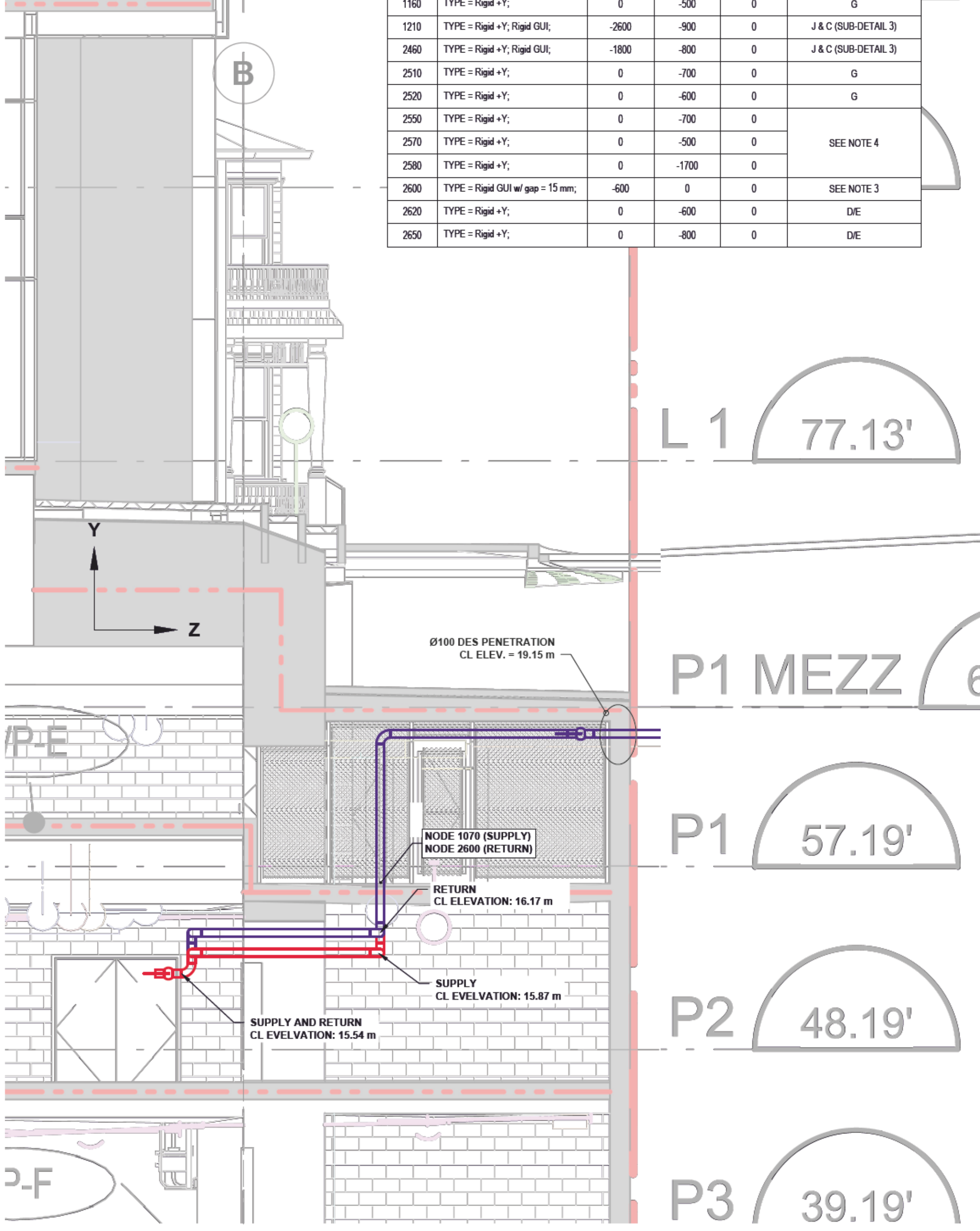
Project No. **3265.054** Drawing No. **D-101** Rev. **0**
Group **PROCESS**

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DESIGN CONDITIONS	
DESIGN PRESSURE	1600 kPa
DESIGN TEMPERATURE	120 °C
PIPE MATERIAL	ASTM A53 GR.B
INSULATION	50 mm
DESIGN STANDARD	ASME B31.1
HYDROSTATIC TEST PRESSURE	2400 kPa
SEISMIC	0.543 G
NDE	20% X-RAY, 100% VISUAL

STRESS ANALYSIS SUMMARY					
NODE	LOAD CASE	FX N.	FY N.	FZ N.	DETAIL REFERENCE AS PER DWG. M-501
1020	TYPE = Rigid +Y;	0	-800	0	D/E
1050	TYPE = Rigid +Y;	0	-1200	0	D/E
1070	TYPE = Rigid GUI w/ gap=15 mm;	700	0	0	SEE NOTE 3
1090	TYPE = Rigid +Y;	0	-2000	0	SEE NOTE 4
1100	TYPE = Rigid +Y;	0	-300	0	SEE NOTE 4
1120	TYPE = Rigid +Y;	0	-600	0	SEE NOTE 4
1150	TYPE = Rigid +Y;	0	-700	0	G
1160	TYPE = Rigid +Y;	0	-500	0	G
1210	TYPE = Rigid +Y, Rigid GUI;	-2600	-900	0	J & C (SUB-DETAIL 3)
2460	TYPE = Rigid +Y, Rigid GUI;	-1800	-800	0	J & C (SUB-DETAIL 3)
2510	TYPE = Rigid +Y;	0	-700	0	G
2520	TYPE = Rigid +Y;	0	-600	0	G
2550	TYPE = Rigid +Y;	0	-700	0	SEE NOTE 4
2570	TYPE = Rigid +Y;	0	-500	0	SEE NOTE 4
2580	TYPE = Rigid +Y;	0	-1700	0	SEE NOTE 4
2600	TYPE = Rigid GUI w/ gap = 15 mm;	-600	0	0	SEE NOTE 3
2620	TYPE = Rigid +Y;	0	-600	0	D/E
2650	TYPE = Rigid +Y;	0	-800	0	D/E

- NOTES:**
- LOADS ARE UNFACTORED.
 - SEE PIPE SUPPORT DETAILS ON M-501.
 - CONTRACTOR TO PROVIDE FLOOR PENETRATION GUIDE DETAIL FOR APPROVAL.
 - CONTRACTOR TO PROVIDE VERTICAL STACK PIPE DETAIL FOR APPROVAL.
 - THE GAPS FOR THE GUIDE AND LIMIT STOP IS 0 mm UNLESS OTHERWISE NOTED.
- SPECIAL NOTE:**
- CONTRACTOR TO INSTALL BYPASS AFTER BUILDING ISOLATION VALVE AS PER DWG. D-101.



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TENDER ISSUE
DO NOT USE FOR CONSTRUCTION

PROFESSIONAL ENGINEER
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31307
BRITISH COLUMBIA
2020-04-08

Rev	Date	Des	Dwn	Chk	Description
0	2020-04-08	KSP	KSP	AKD	ISSUE FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

CREATIVE ENERGY
SOUTH DOWNTOWN DISTRICT ENERGY SYSTEM

DES EXPANSION TO 889 PACIFIC STREET BUILDING INTERIOR PIPING ROUTE

Project No. 3265.054
Group MECHANICAL
Drawing No. M-101
Rev. 0