

1. GRADES SHOWN ON THIS DRAWING ARE RELATIVE TO THE EXISTING SOUTH EDGE OF SIDEWALK, TAKEN TO BE ELEVATION 100M.
2. FLEXIBLE BOLLARD—50mm TYPE 1 FLEXPOST, WHITE WITH BLACK CAP, INCLUDING BASE AND ANCHOR KIT, BY IMPACT RECOVERY SYSTEMS OR APPROVED EQUAL. SHIM BOLLARD AS REQUIRED TO STAND VERTICAL ON RAMP.
3. EXPANSION JOINT MATERIAL SHALL BE 10mm CELLULAR FIBRE BY W.R. MEADOWS CANADA OR EQUAL.
4. SCHEDULE CONSTRUCTION IN A MANNER THAT PROVIDES ONE LANE OF ACCESS AT ALL TIMES.

- DENOTES CARD READER
- DENOTES CONCRETE FILLED BOLLARD
- DENOTES FLEXIBLE BOLLARD

6. REMOVE ALL PEELED PAINT INSIDE THE STORAGE ROOM AND PAINT THE AFFECTED AREAS ON THE WALLS AND CEILING.
7. CARRY OUT WATER TESTING TO ENSURE THE WATER TIGHTNESS OF THE REPAIRED RAMP.
8. SUBMIT MATERIAL SPECIFICATIONS FOR REVIEW PRIOR TO WORK.



1. REMOVE AND DISPOSE OF THE ENTIRE EXISTING CONCRETE TOPPING INCLUDING ELECTRICAL HEATING CABLES AND WATERPROOFING MEMBRANE TO EXPOSE THE STRUCTURAL CONCRETE RAMP SLAB OF THE RAMP.
2. REMOVE THE CONCRETE BASE OF THE KEY POST. INSTALL DOWELS AND WATERPROOF SLAB PRIOR TO INSTALLING THE NEW CONCRETE BASE TO MATCH EXISTING PROFILE. REINSTATE THE KEY POST.
3. CARRY OUT PARTIAL DEPTH AND/OR THROUGH SLAB CONCRETE REPAIRS, AS REQUIRED TO THE TOP SURFACE AND UNDERSIDE OF THE RAMP SLAB INCLUDING STORAGE ROOMS.
4. PREPARE THE TOP SURFACE OF THE STRUCTURAL CONCRETE RAMP SLAB AND INSTALL A NEW 2PLY HOT APPLIED RUBBERIZED ASPHALTIC WATERPROOFING MEMBRANE AND PROTECTION BOARD.
5. INSTALL NEW CONCRETE TOPPING WITH A NEW SNOW MELTING SYSTEM.

1. REMOVE THE EXISTING CONCRETE TOPPING, HEATING CABLES, IF ANY AND WATERPROOFING MEMBRANE INSIDE THE TRENCH DRAIN TO EXPOSE THE CONCRETE. SUPPLY AND INSTALL A NEW ELASTOMERIC TRAFFIC TOPPING SYSTEM INSIDE THE TRENCH DRAIN INCLUDING SIDEWALLS.
2. CARRY OUT CONCRETE REPAIRS TO THE EXTERIOR AND INTERIOR RAMP WALLS, (FROM GROUND LEVEL TO LEVEL P1).
3. ROUT AND SEAL CRACKS IN THE EXTERIOR RAMP WALLS.
4. LOCALLY PAINT THE INSIDE FACE OF THE RAMP WALLS INSIDE THE GARAGE, AS REQUIRED.
5. REPAIR CRACKED AND/OR DELAMINATED TEXTURED



DETAIL: CONTROL AND EXPANSION JOINT LAYOUT PLAN

A key plan map showing the intersection of William St. West, Richmond St. West, Centre St. N, and Prince St. N. The map includes building footprints, street names, and a hatched rectangular area indicating the location of the subject property.

KEY PLAN

PRIME CONSULTANT	
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ISOTHERM
ENGINEERING
LTD.

95 MURAL STREET, SUITE 600
RICHMOND HILL, ONTARIO
L4B 3G2
PHONE 905-822-2430

JSW+
associates
Tel: (905) 889-8100 Fax: (905) 889-6616

CONSULTING ENGINEERS
LANDSCAPE ARCHITECTS



CONSULTANT PROJECT NO. 24-19

11/11/2019



WORKS DEPARTMENT

WORKS DEPARTMENT
DESIGN, CONSTRUCTION & ASSET MANAGEMENT

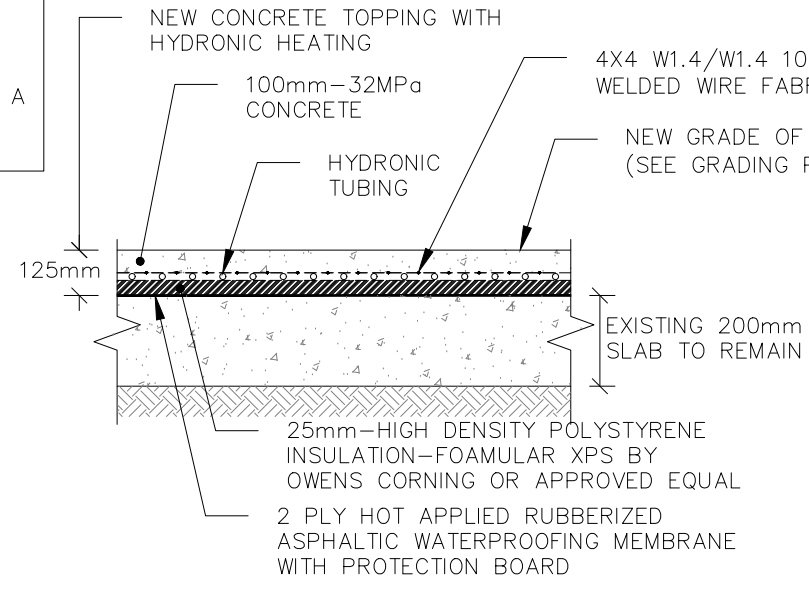
NEW VEHICLE RAMP IN-FLOOR
HEATING AND
NEW CONCRETE RAMP TOPPING
77 CENTRE ST., OSHAWA, ON
GRADING PLAN

PROJECT NO.	FACILITY CODE DRPS-0-01	FACILITIES PROJECT NO.
TENDER NO. T-1005-2025	DRAWING NO. G-001	SHEET NO. 2 of 9

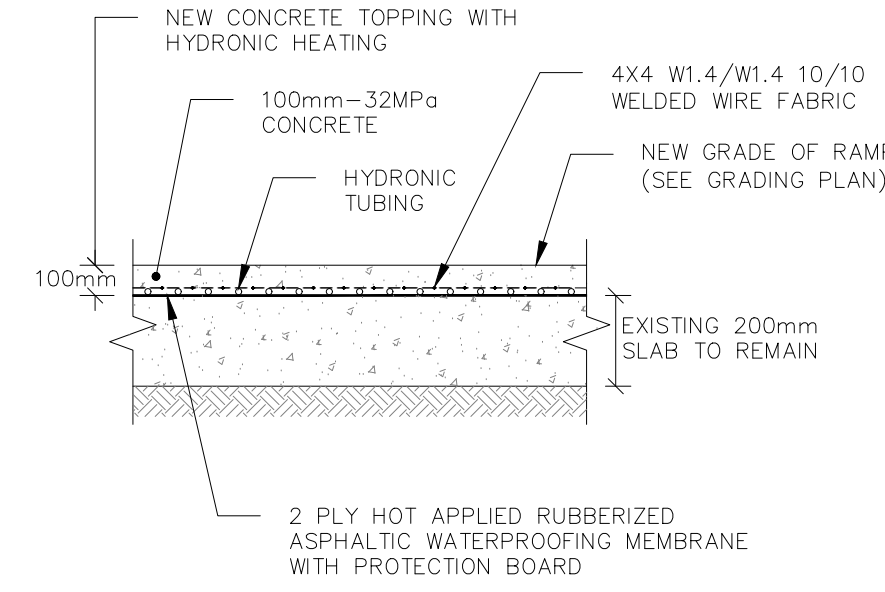
- NOTES:
1. PREPARE EXISTING CONCRETE SURFACE BY CLEANING AND FILLING HOLES AND DEPRESSIONS.
 2. APPLY FLUID APPLIED WATERPROOF MEMBRANE.
 3. USE JOINT SEALER AROUND ENTIRE PERIMETER OF NEW POUR.
 4. PROVIDE COARSE CONCRETE FINISH BY STRIATING FLOAT FINISHED CONCRETE SURFACE 1.5 TO 3.0mm DEEP WITH A STIFF BRISTLED BROOM PERPENDICULAR TO THE LINE OF TRAFFIC.



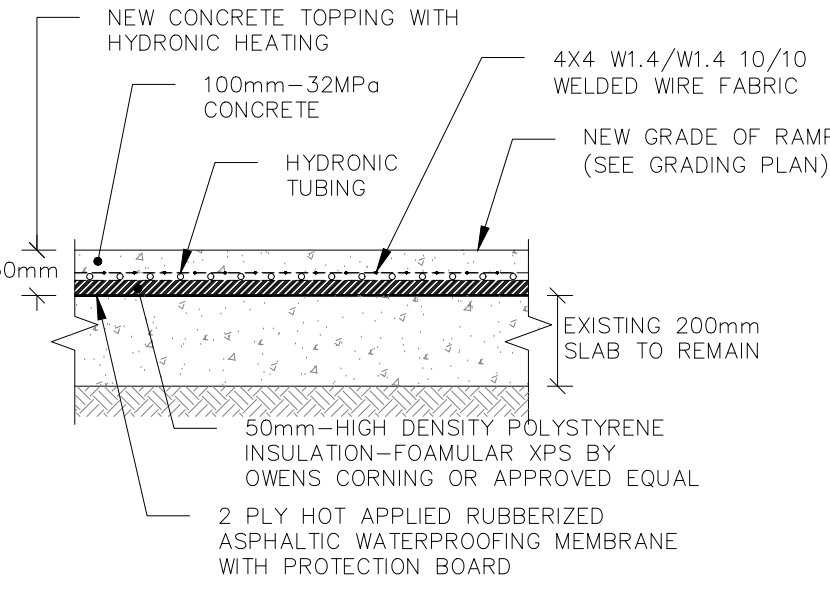
EXISTING CONDITION



PROPOSED INDOOR CONDITION WITH INSULATION



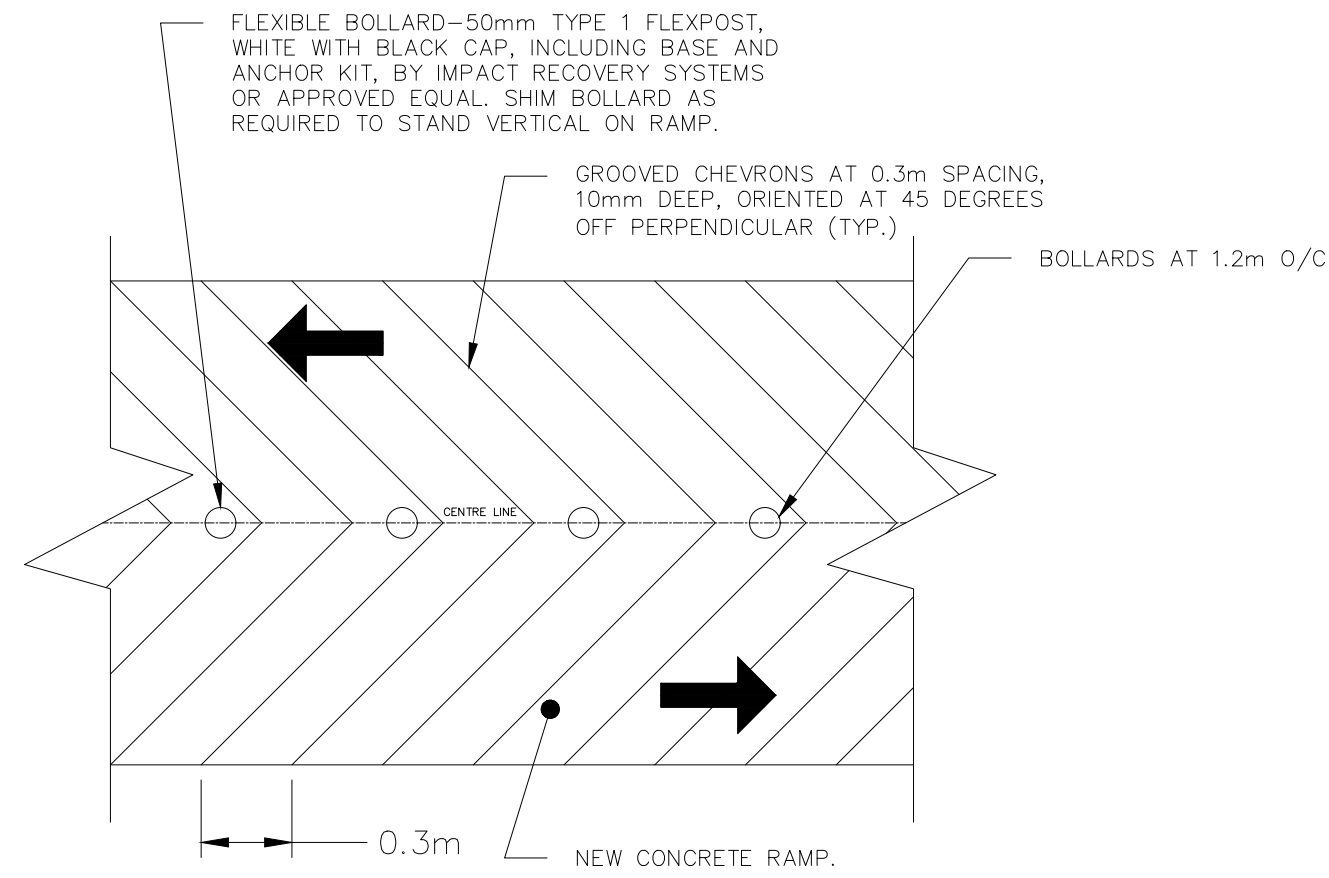
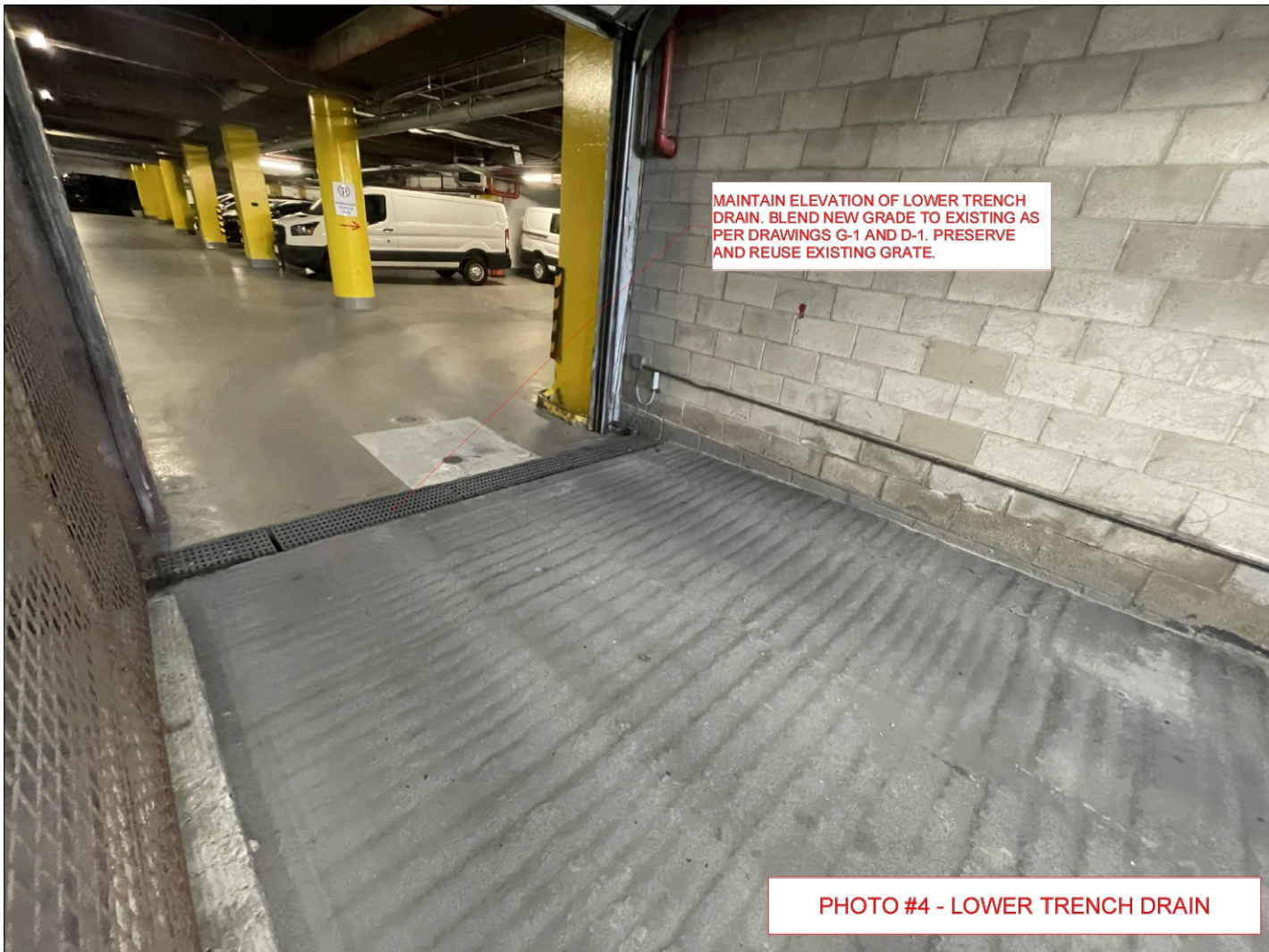
PROPOSED INDOOR CONDITION WITHOUT INSULATION



PROPOSED OUTDOOR CONDITION

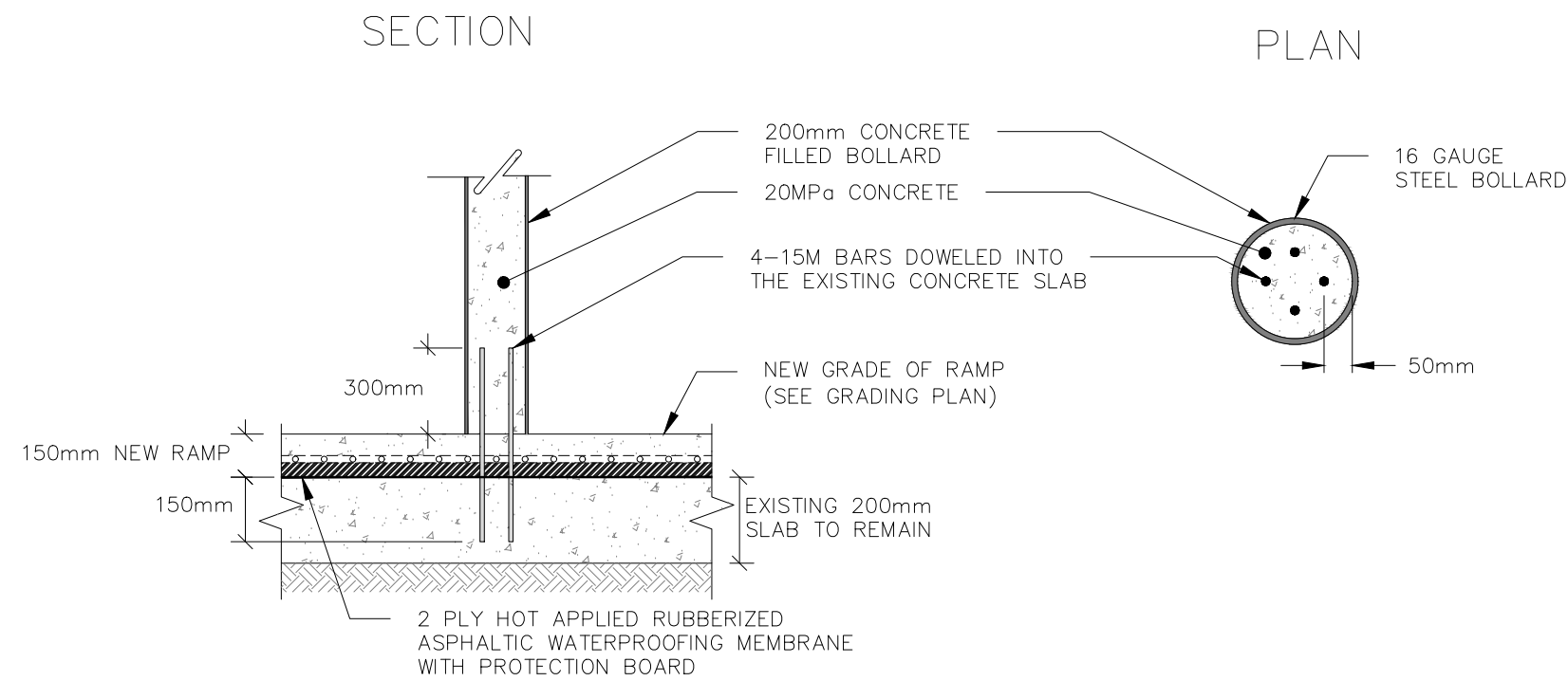
1 DETAIL: RAMP RETOPPING

N.T.S.



2 DETAIL: CHEVRON GROOVING

N.T.S.



3 DETAIL: CONCRETE BOLLARD

N.T.S.

GENERAL NOTES:

1. GRADES SHOWN ON THIS DRAWING ARE RELATIVE TO THE EXISTING SOUTH EDGE OF SIDEWALK, TAKEN TO BE ELEVATION 100M.
2. FLEXIBLE BOLLARD-50mm TYPE 1 FLEXPOST, WHITE WITH BLACK CAP, INCLUDING BASE AND ANCHOR KIT, BY IMPACT RECOVERY SYSTEMS OR APPROVED EQUAL. SHIM BOLLARD AS REQUIRED TO STAND VERTICAL ON RAMP.
3. EXPANSION JOINT MATERIAL SHALL BE 10mm CELLULAR FIBRE BY W.R. MEADOWS CANADA OR EQUAL.
4. SCHEDULE CONSTRUCTION IN A MANNER THAT PROVIDES ONE LANE OF ACCESS AT ALL TIMES.

100.00EX DENOTES EXISTING GRADE TO BE MAINTAINED
100.00 DENOTES PROPOSED GRADE.

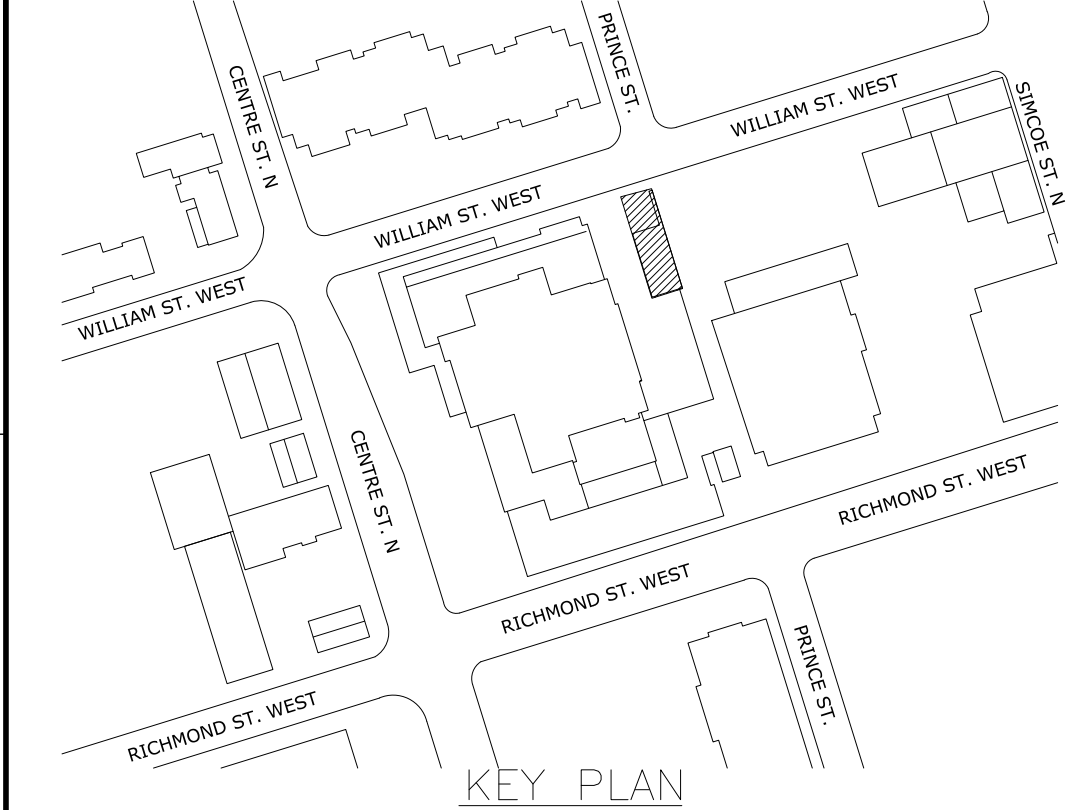
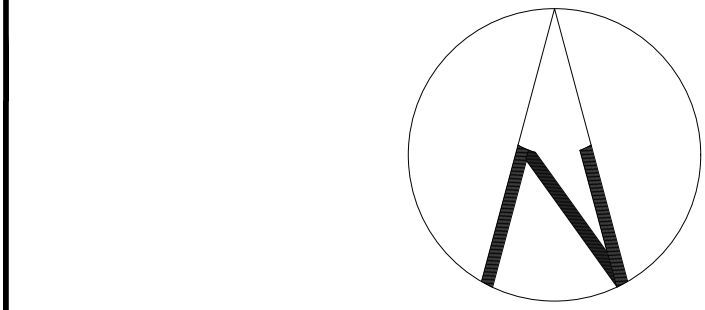
REPAIR NOTES

1. REMOVE AND DISPOSE OF THE ENTIRE EXISTING CONCRETE TOPPING INCLUDING ELECTRICAL HEATING CABLES AND WATERPROOFING MEMBRANE TO EXPOSE THE STRUCTURAL CONCRETE RAMP SLAB OF THE RAMP.
2. REMOVE THE CONCRETE BASE OF THE KEY POST. INSTALL DOWELS AND WATERPROOF SLAB PRIOR TO INSTALLING THE NEW CONCRETE BASE TO MATCH EXISTING PROFILE. REINSTATE THE KEY POST.
3. CARRY OUT PARTIAL DEPTH AND/OR THROUGH SLAB CONCRETE REPAIRS, AS REQUIRED TO THE TOP SURFACE AND UNDERSIDE OF THE RAMP SLAB INCLUDING STORAGE ROOMS.
4. PREPARE THE TOP SURFACE OF THE STRUCTURAL CONCRETE RAMP SLAB AND INSTALL A NEW 2PLY HOT APPLIED RUBBERIZED ASPHALTIC WATERPROOFING MEMBRANE AND PROTECTION BOARD.
5. INSTALL NEW CONCRETE TOPPING WITH A NEW SNOW MELTING SYSTEM.

OTHER REPAIRS:

1. REMOVE THE EXISTING CONCRETE TOPPING, HEATING CABLES, IF ANY AND WATERPROOFING MEMBRANE INSIDE THE TRENCH DRAIN TO EXPOSE THE CONCRETE. SUPPLY AND INSTALL A NEW ELASTOMERIC TRAFFIC TOPPING SYSTEM INSIDE THE

2. TRENCH DRAIN INCLUDING SIDEWALLS.
3. CARRY OUT CONCRETE REPAIRS TO THE EXTERIOR AND INTERIOR RAMP WALLS, (FROM GROUND LEVEL TO LEVEL P1).
4. ROUT AND SEAL CRACKS IN THE EXTERIOR RAMP WALLS.
5. LOCALLY PAINT THE INSIDE FACE OF THE RAMP WALLS INSIDE THE GARAGE, AS REQUIRED.
6. REPAIR CRACKED AND/OR DELAMINATED TEXTURED COATING WITH A NEW COATING TO MATCH EXISTING ON THE EXTERIOR RAMP WALLS. USE APPROVED CONCRETE POLYMER MIX.
7. REMOVE ALL PEELED PAINT INSIDE THE STORAGE ROOM AND PAINT THE AFFECTED AREAS ON THE WALLS AND CEILING.
8. CARRY OUT WATER TESTING TO ENSURE THE WATER TIGHTNESS OF THE REPAIRED RAMP.
9. SUBMIT MATERIAL SPECIFICATIONS FOR REVIEW PRIOR TO WORK.



NO.	DATE	NAME	REVISIONS

PRIME CONSULTANT	ISOTHERM ENGINEERING LTD. 95 MURAL STREET, SUITE 600 RICHMOND HILL, ONTARIO L4B 3J2 PHONE 905-822-2430
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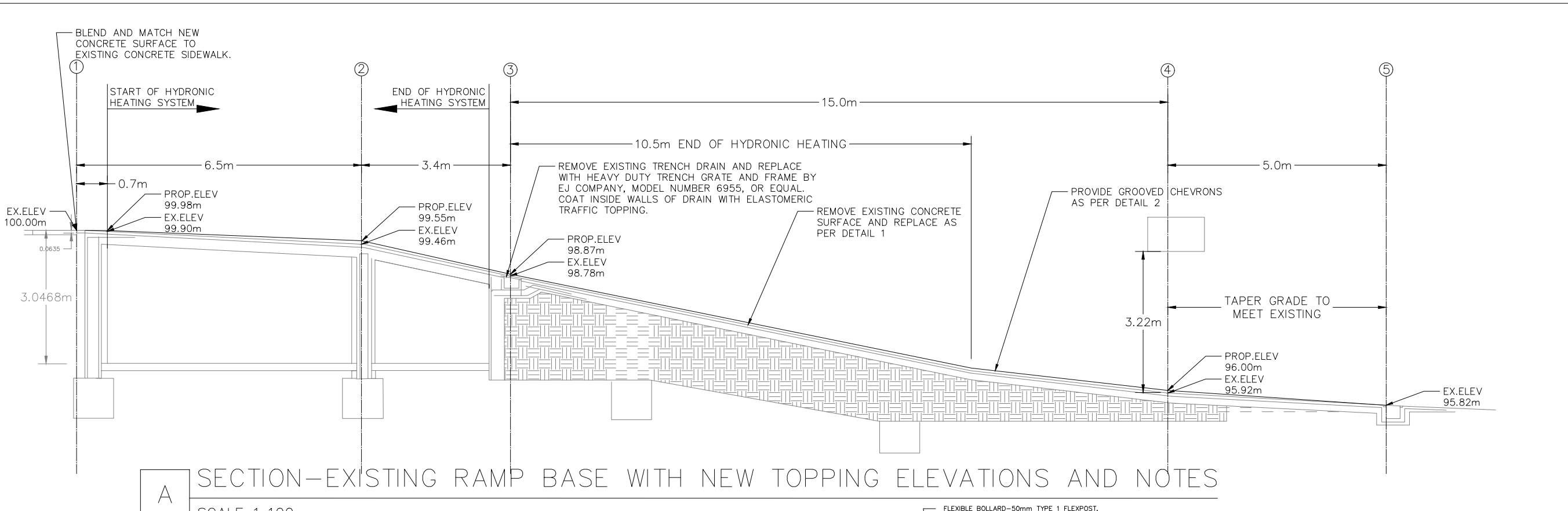
SUB-CONSULTANT	JSW+ associates CONSULTING ENGINEERS LANDSCAPE ARCHITECTS Tel: (905) 889-8100 Fax: (905) 889-6616 LICENSED PROFESSIONAL ENGINEER B. SCHNECKE MAY 21/25 PROVINCE OF ONTARIO
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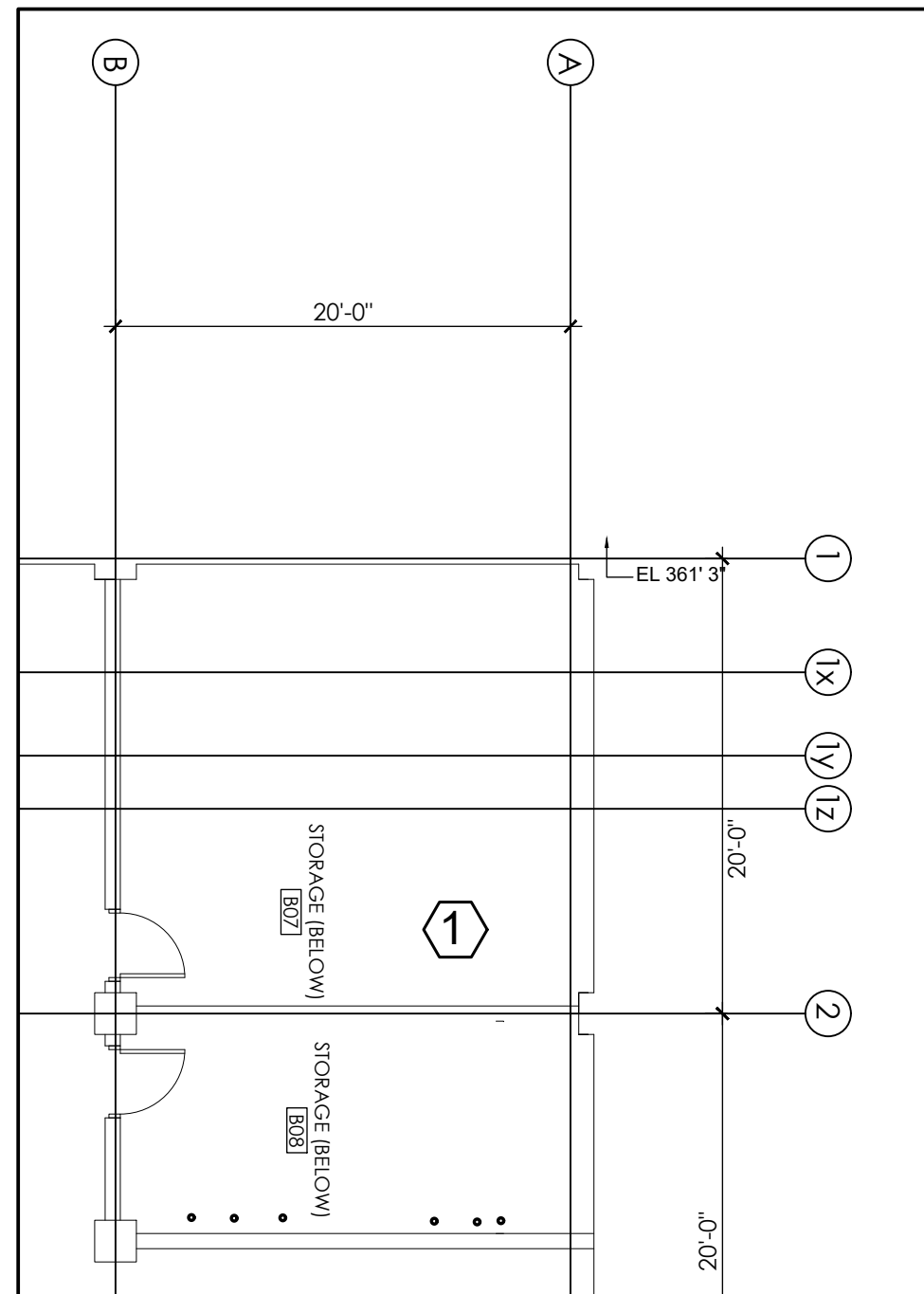
DESIGN BY: B.S.	SCALE: AS SHOWN
DRAWN BY: B.S.	DATE: May 21, 2025
CHECKED BY: B.S.	CONSULTANT PROJECT NO. 24-19
APPROVED BY: B.S.	



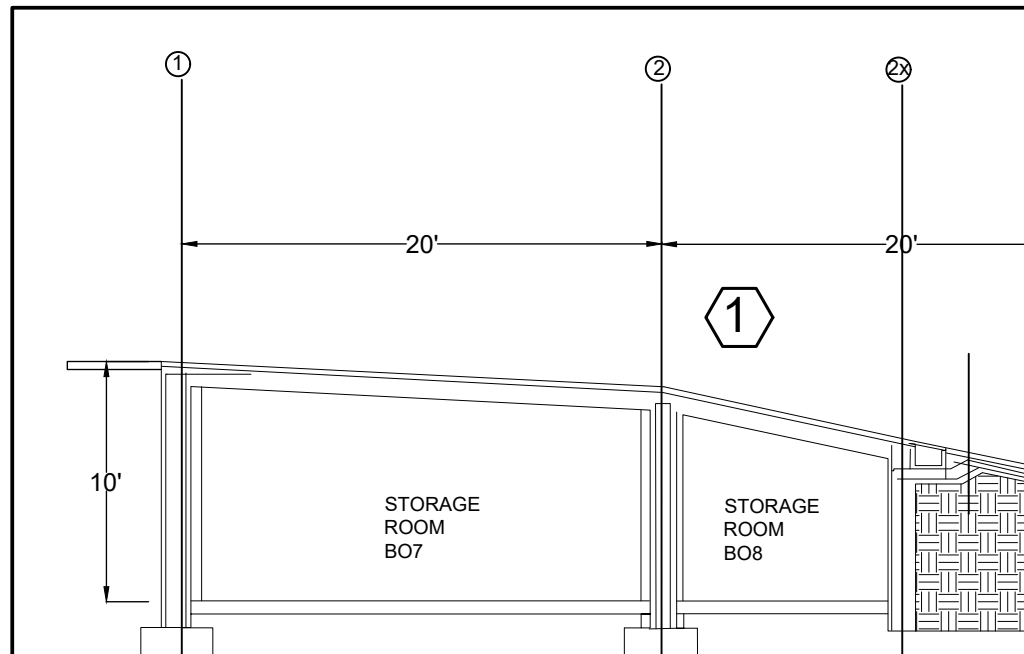
THE REGIONAL MUNICIPALITY
OF DURHAM
WORKS DEPARTMENT
DESIGN, CONSTRUCTION & ASSET MANAGEMENT

THE REGIONAL MUNICIPALITY OF DURHAM WORKS DEPARTMENT DESIGN, CONSTRUCTION & ASSET MANAGEMENT		
NEW VEHICLE RAMP IN-FLOOR HEATING AND NEW CONCRETE RAMP TOPPING 77 CENTRE ST., OSHAWA, ON DETAIL SHEET #1		
PROJECT NO.	FACILITY CODE DRPS-0-01	FACILITIES PROJECT NO.
TENDER NO. T-1005-2025	DRAWING NO. D-001	SHEET NO. 3 of 9





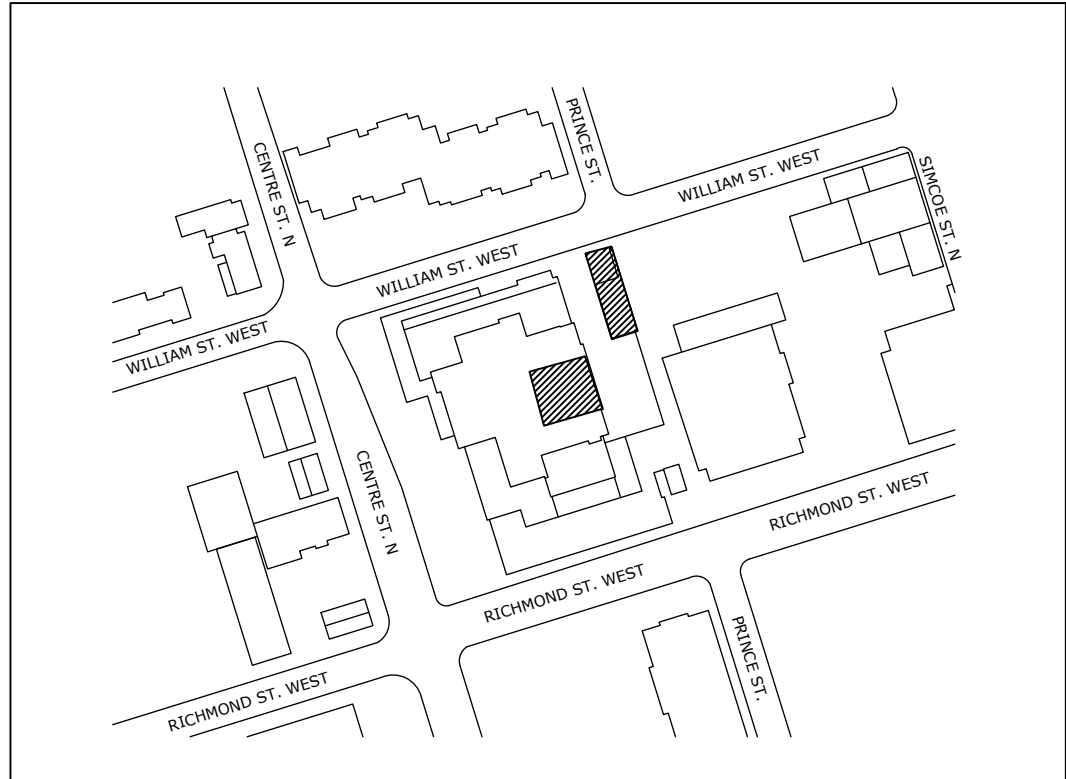
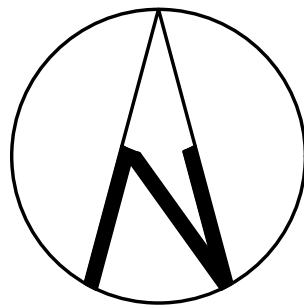
1 ROOMS B08 & B09 WALL AND CEILING PAINTING
A-001 SCALE: 1/8" = 1'-0"



2 RAMP CROSS SECTION VIEW
A-001 SCALE: 1/8" = 1'-0"

KEY NOTES:

1 REMOVE EXISTING PAINT ON WALL AND CEILING SURFACES OF ROOMS B07 AND B08. PATCH/REPAIR DAMAGED CEILING AND WALL SURFACES. CLEAN SURFACES. PRIME AND 2 COATS OF PAINT. REMOVE AND REINSTALL LIGHTING, CONTROL, ELECTRICAL AND OTHER ITEMS AS NECESSARY TO FACILITATE PAINT REMOVAL AND PAINT APPLICATION.



KEY PLAN

NO.	DATE	NAME	REVISIONS

PRIME CONSULTANT



**ISOTHERM
ENGINEERING
LTD.**
90 MURAL STREET, SUITE 600
RICHMOND HILL, ONTARIO
L4B 3G2
PHONE 905-823-2430



SUB-CONSULTANT

DESIGN BY: — D. CHEUNG	SCALE —
DRAWN BY: — D. S.	DATE: 2024-06-28
CHECKED BY: — D. CHEUNG	CONSULTANT PROJECT NO. E237715
APPROVED BY: —	

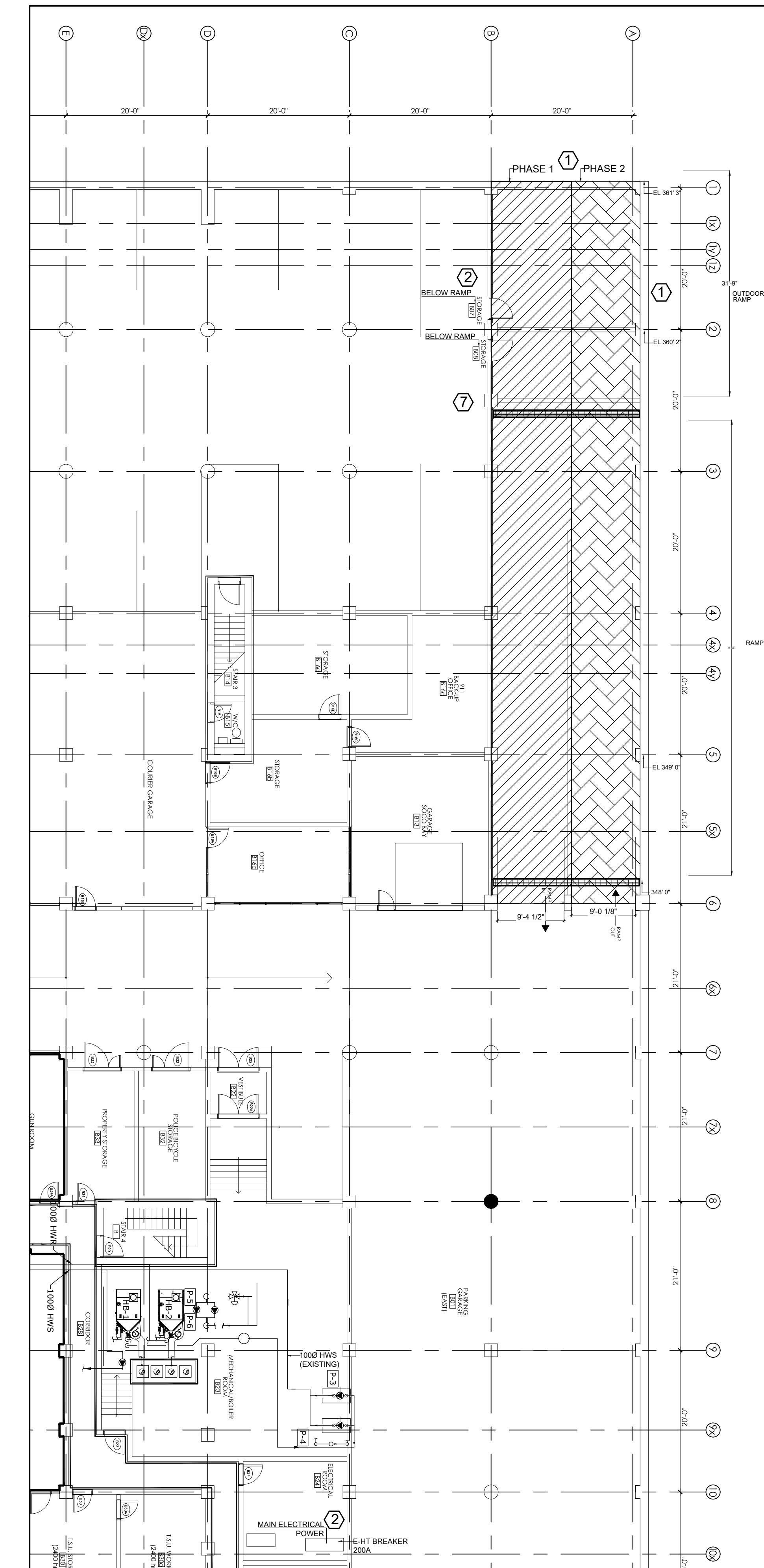


**THE REGIONAL MUNICIPALITY
OF DURHAM**
WORKS DEPARTMENT
DESIGN, CONSTRUCTION & ASSET MANAGEMENT

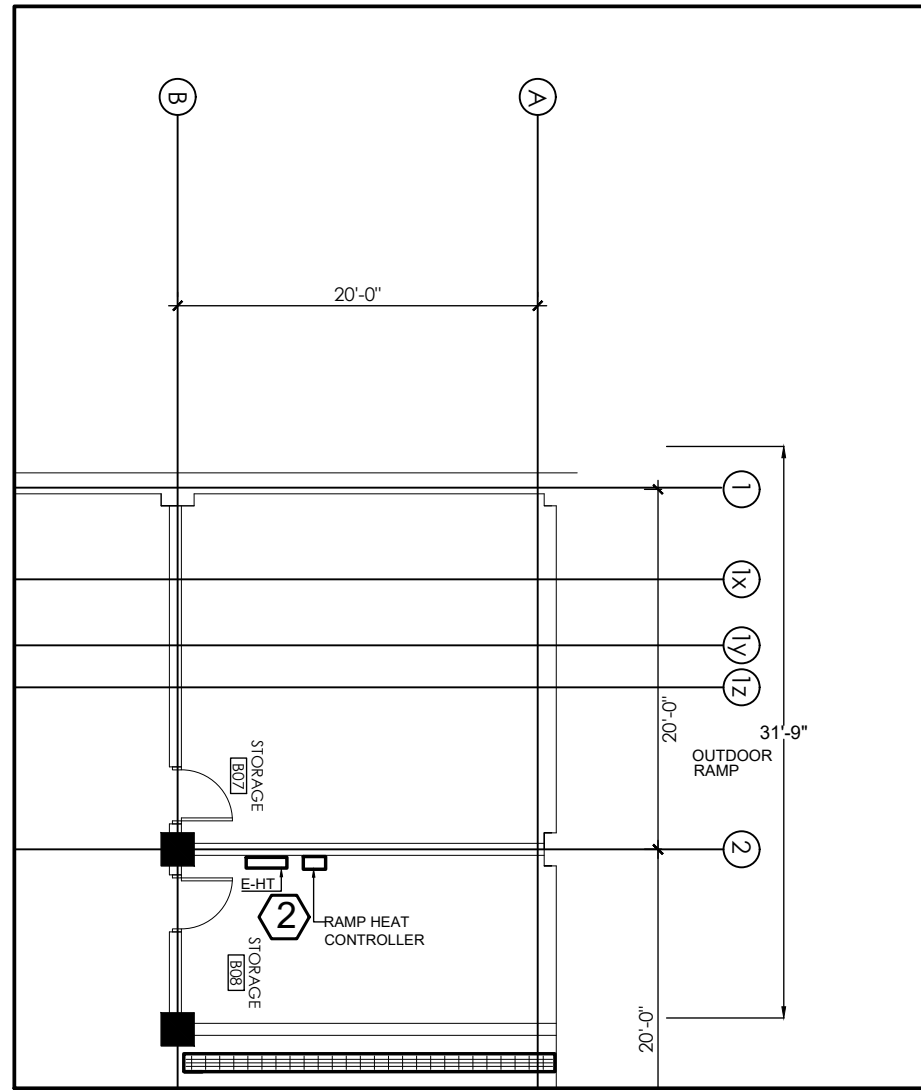
NEW VEHICLE RAMP IN-FLOOR HEATING
AND
NEW CONCRETE RAMP TOPPING

77 CENTRE ST., OSHAWA, ON

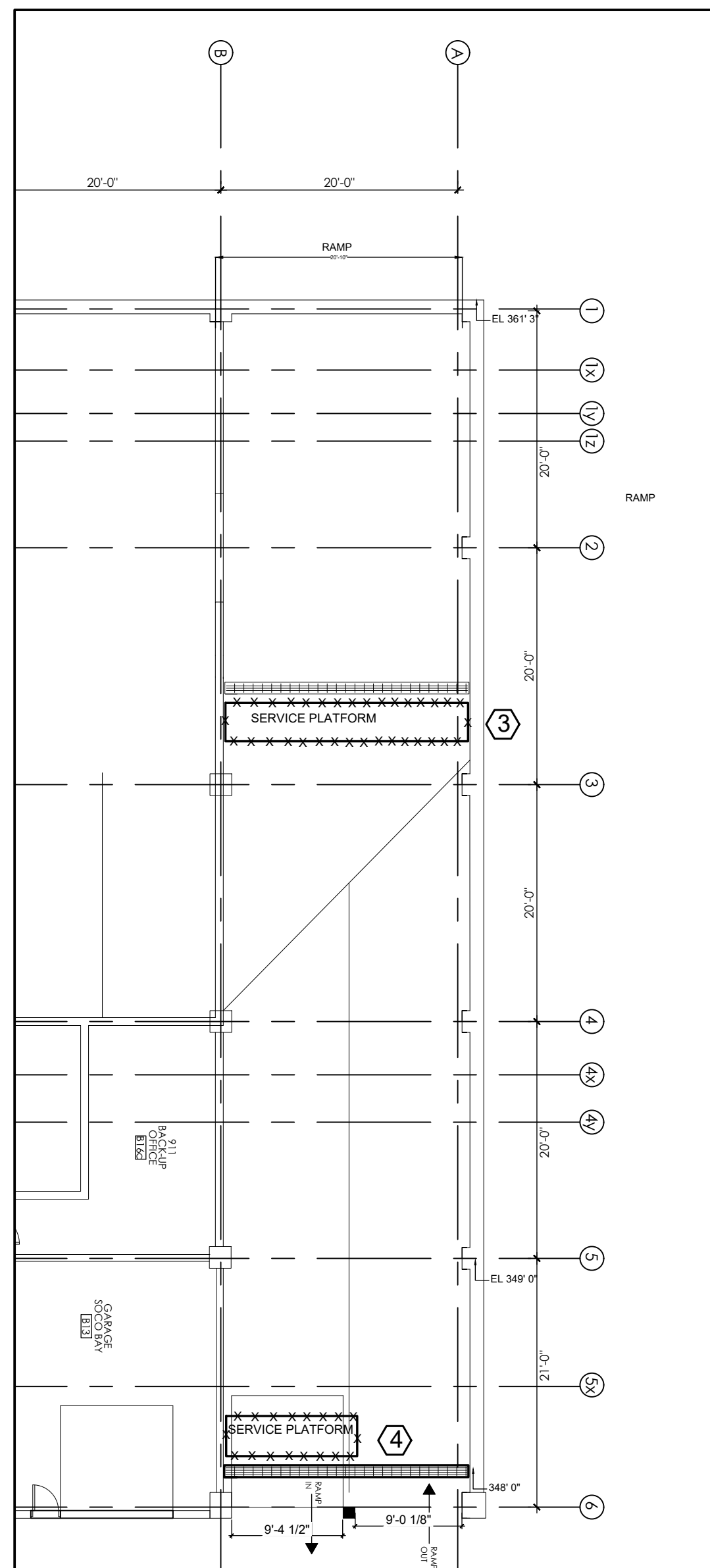
PROJECT NO.	FACILITY CODE DRPS-0-01	FACILITIES PROJECT NO.
TENDER NO. T-1005-2025	DRAWING NO. A-001	SHEET NO. 4 OF 9



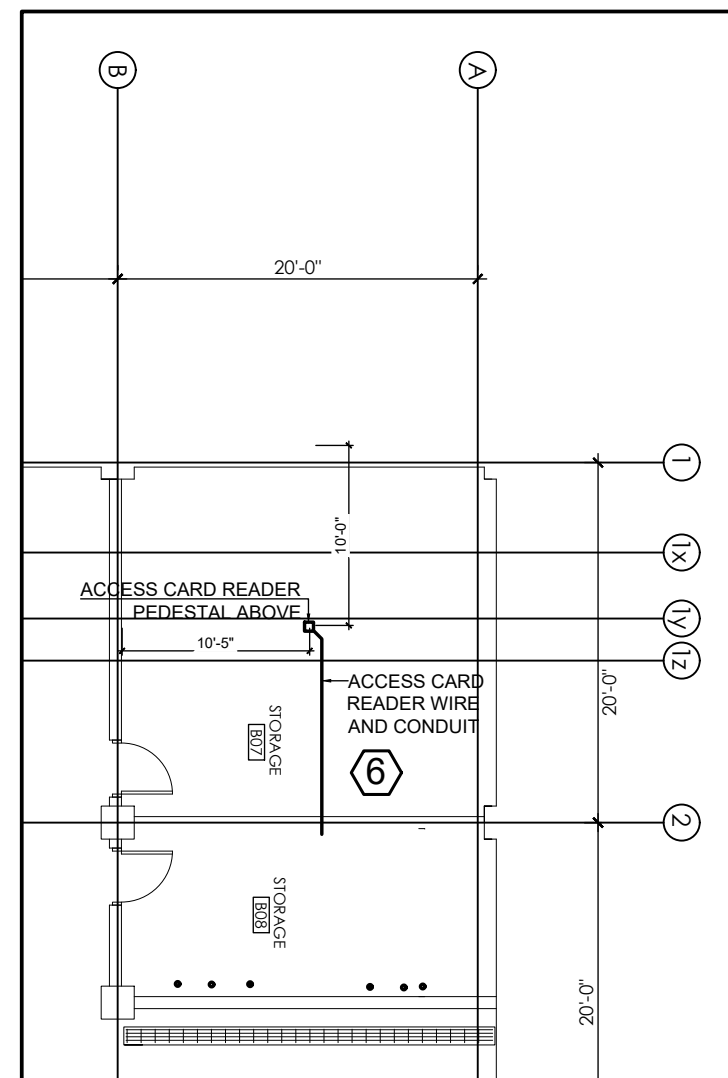
1 VEHICLE RAMP HEATING DEMOLITION
SCALE: 3/32" = 1'0"



2 ROOM B08 RAMP HEATING CONTROL DEMOLITION
SCALE: 3/32" = 1'0"

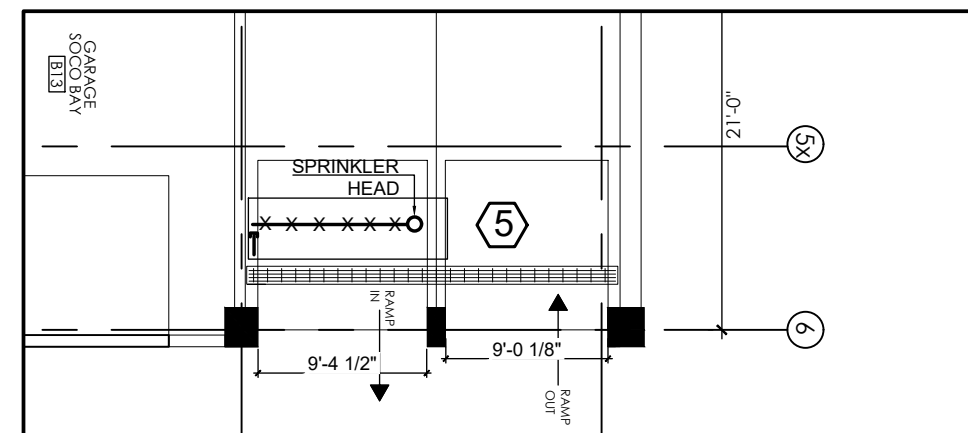


4 SERVICE PLATFORM DEMOLITION
SCALE: 3/32" = 1'0"

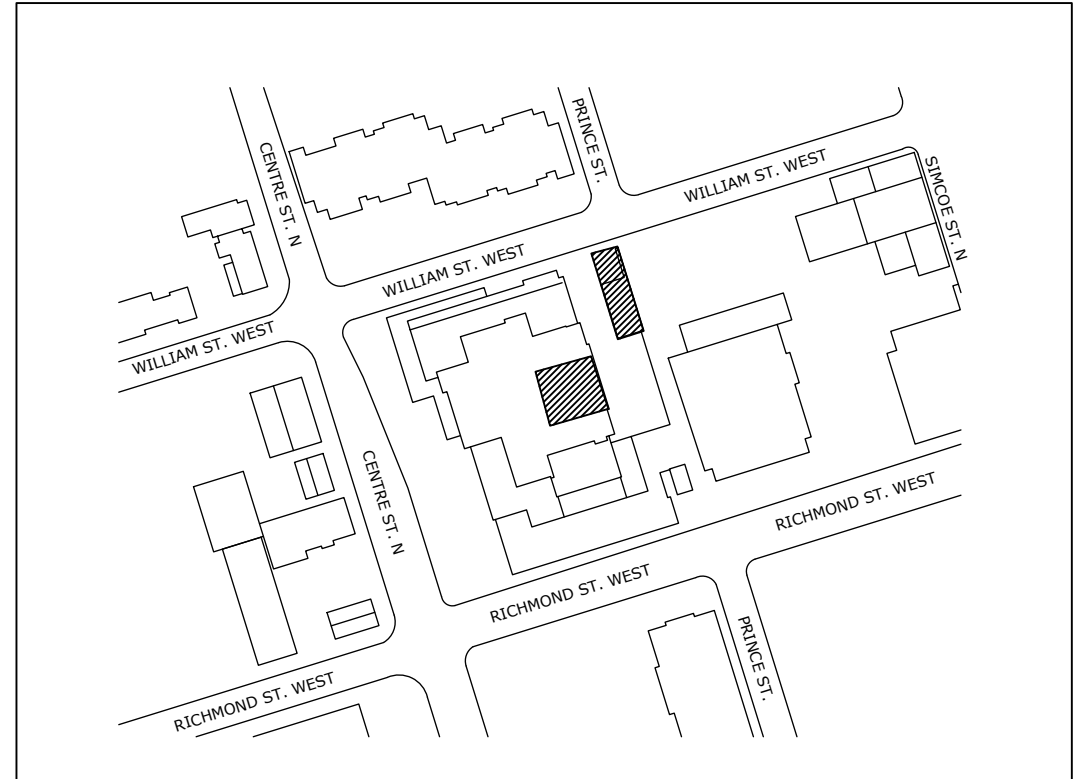
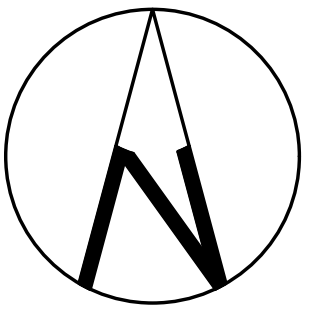


3 ACCESS CARD READER MOD
SCALE: 3/32" = 1'0"

- 1 RAMP CONSTRUCTION AT THE RAMP WILL OCCUR IN TWO PHASES. PHASE 1 WILL DEMOLISH THE VEHICLE "IN" SIDE OF THE RAMP TOPPING INCLUDING THE CENTER CURB/PARTITION. PHASE 2 WILL DEMOLISH THE VEHICLE "OUT" SIDE OF THE RAMP TOPPING.
- 2 REMOVE EXISTING RAMP HEATING ELECTRIC HEATING CABLE AND ALL ASSOCIATED POWER AND CONDUIT ALL THE WAY BACK TO THE POWER PANEL E-HT.
- 3 DEMOLISH (WOOD) GARAGE DOOR ACTUATOR SERVICE PLATFORM NEAR THE OUTDOOR GARAGE DOORS (TOP OF RAMP)
- 4 DEMOLISH THE (WOOD) GARAGE DOOR ACTUATOR SERVICE PLATFORM NEAR THE INDOOR GARAGE DOORS (BOTTOM OF RAMP). RE-SUPPORT 2 EMT CONDUIT (SUPPORTED TO THE PLATFORM) TO THE EXISTING STRUCTURE.
- 5 DEMOLISH THE SPRINKLER HEAD AND CAP THE PIPE LOCATED BELOW THE (WOOD) GARAGE DOOR ACTUATOR SERVICE PLATFORM AT THE INDOOR GARAGE DOORS (BOTTOM OF RAMP)
- 6 ADJUST/MODIFY ACCESS CARD READER CONDUIT AND WIRING TO SUIT NEW ACCESS CARD READER PEDESTAL.
- 7 ADJUST GARAGE DOOR OPENER CONTROL "CLOSING" HEIGHT TO SUIT THE NEW RAMP TOPPING HEIGHT.



5 SPRINKLER HEAD DEMOLITION / MOD
SCALE: 3/32" = 1'0"



KEY PLAN

NO.	DATE	NAME	REVISIONS

PRIME CONSULTANT	ISO THERM ENGINEERING LTD. 90 MURAL STREET, SUITE 600 RICHMOND HILL, ONTARIO L4B 3G2 PHONE 905-823-2430	LICENSED PROFESSIONAL ENGINEER D.C.C. CHEUNG MAY 21/2025 ONNICE OF ONTARIO
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SUB-CONSULTANT		
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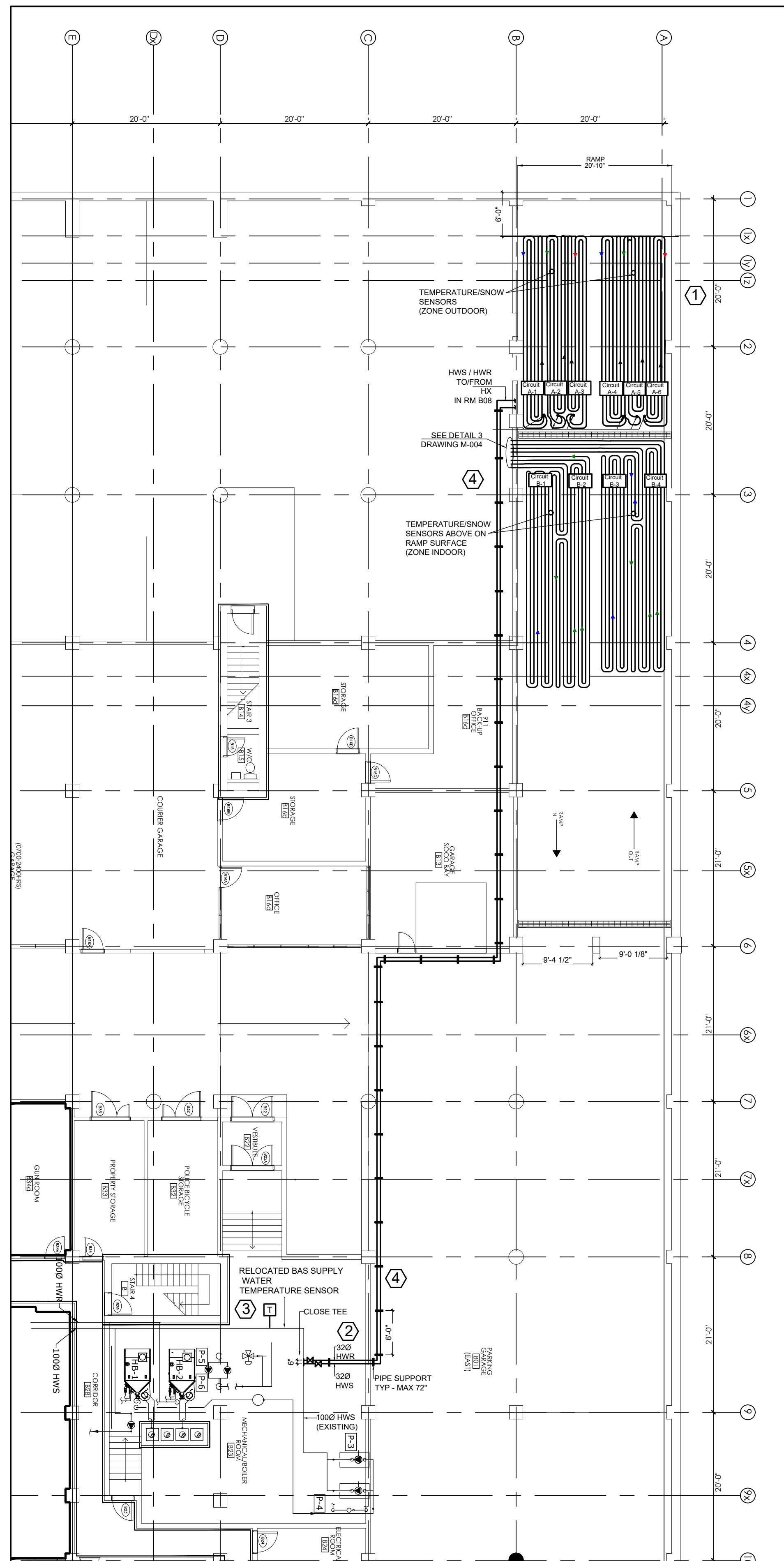
DESIGN BY: — D. CHEUNG	SCALE —
DRAWN BY: — D. S.	DATE: 2024-06-28
CHECKED BY: — D. CHEUNG	CONSULTANT PROJECT NO. E237715
APPROVED BY: —	

NO.	DATE	NAME	REVISIONS
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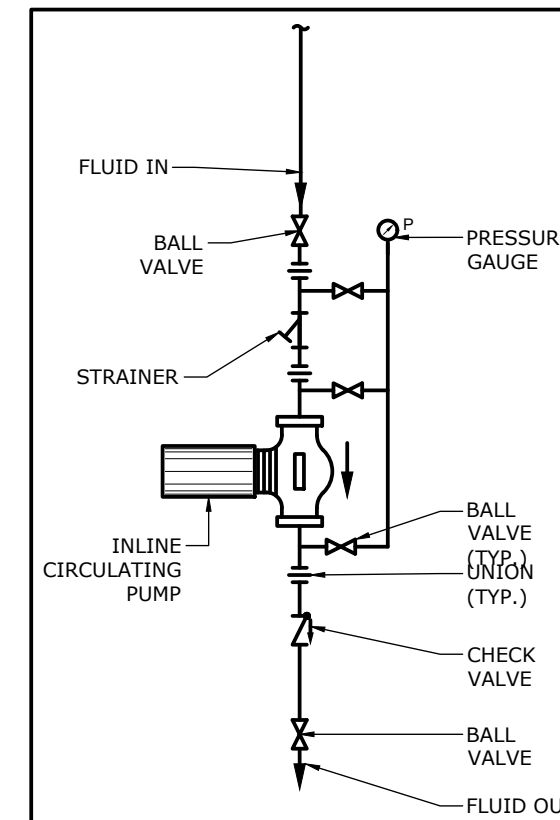
DURHAM REGION	THE REGIONAL MUNICIPALITY OF DURHAM WORKS DEPARTMENT DESIGN, CONSTRUCTION & ASSET MANAGEMENT
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NEW VEHICLE RAMP IN-FLOOR HEATING AND NEW CONCRETE RAMP TOPPING		
77 CENTRE ST., OSHAWA, ON		

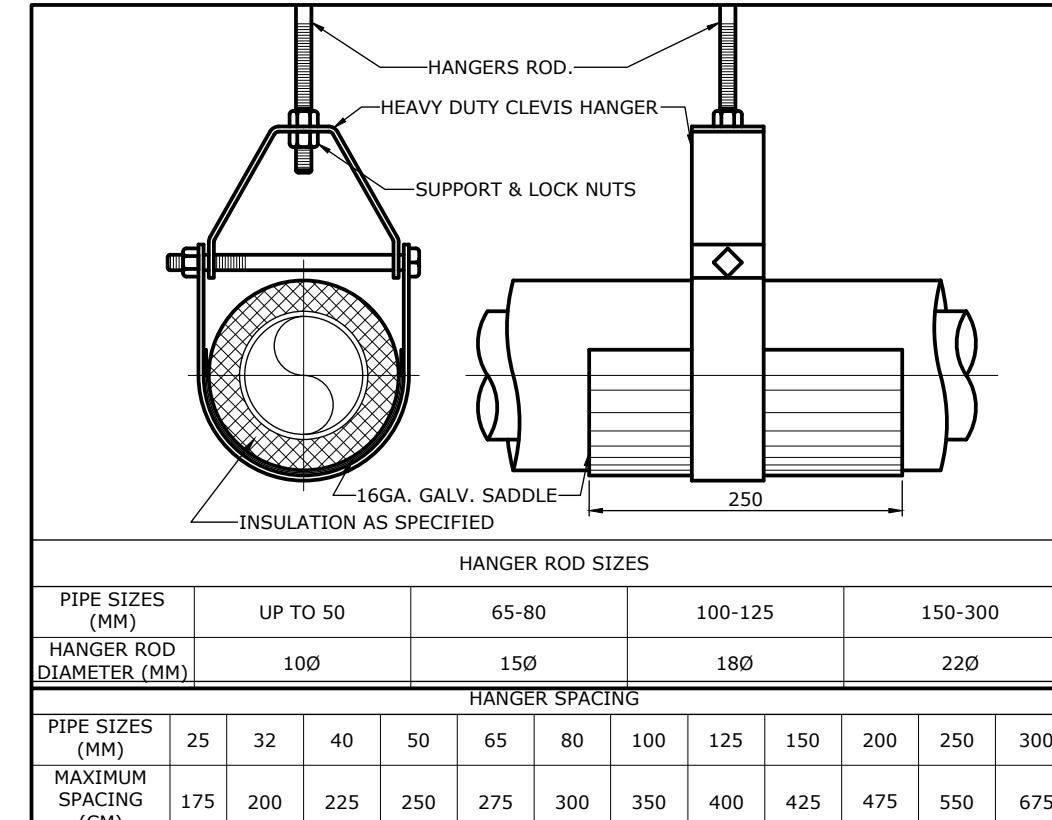
PROJECT NO.	FACILITY CODE DRPS-0-01	FACILITIES PROJECT NO.
TENDER NO. T-1005-2025	DRAWING NO. M-001	SHEET NO. 5 OF 9



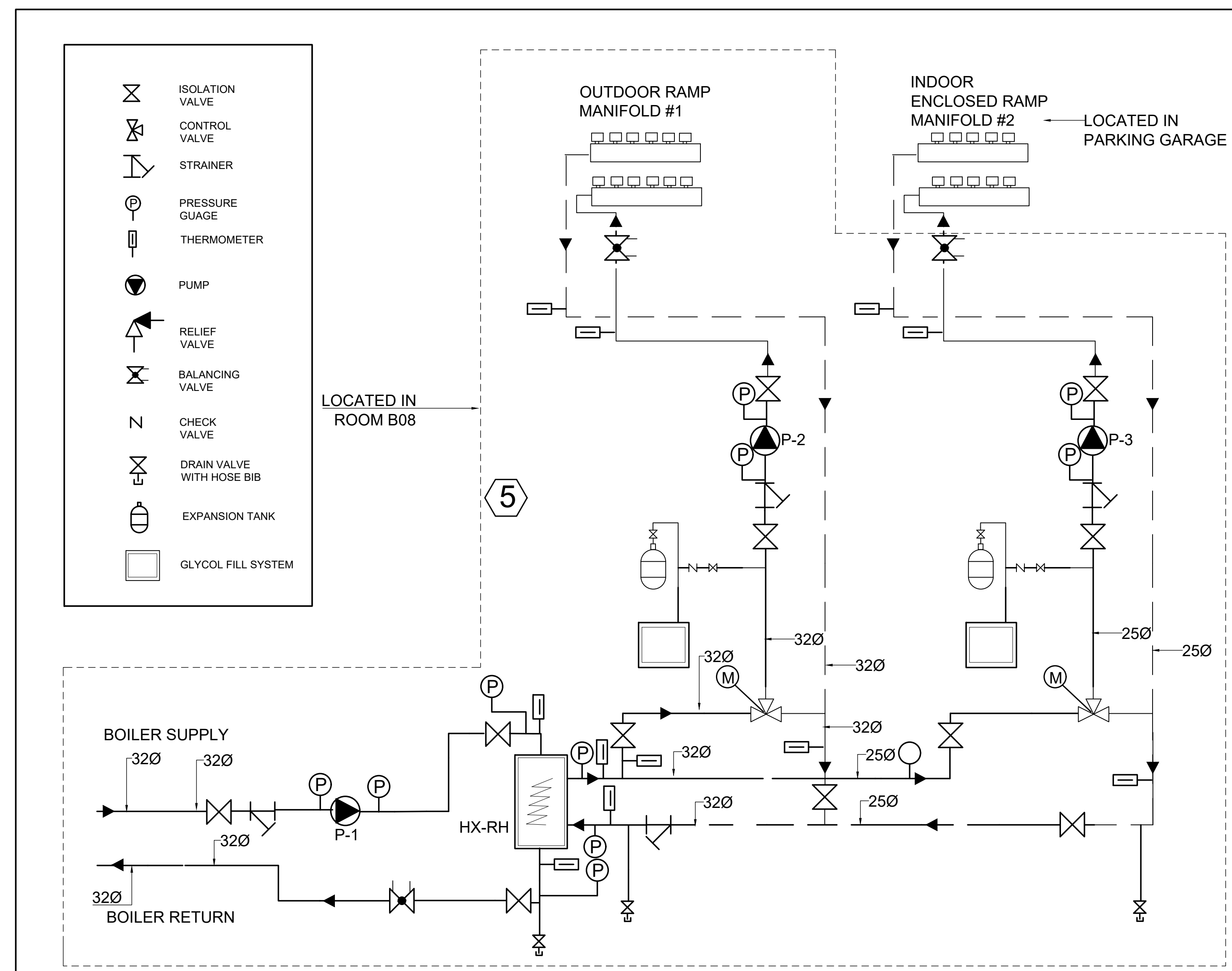
1 VEHICLE RAMP HEATING
M-002 SCALE: 3/32" = 1'0"



3 INLNE PUMP DETAIL
M-002 SCALE: NTS



4 PIPE HANGER DETAIL
M-002 SCALE: NTS



2 RAMP HEATING HYDRONIC PIPING SCHEMATIC
M-002 SCALE: 3/32" = 1'0"

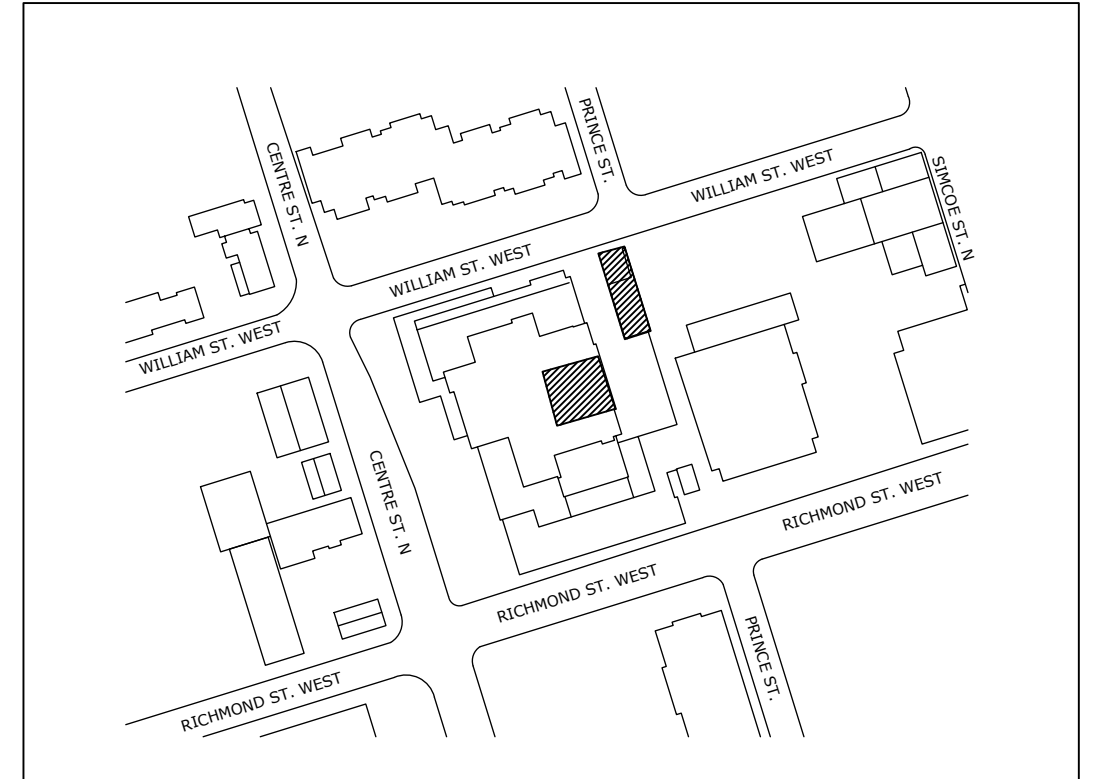
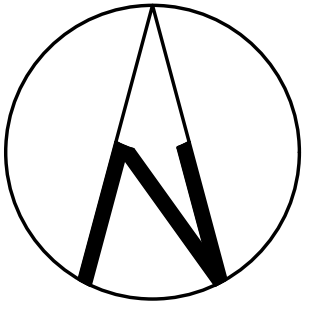
KEY NOTES:

RAMP CONSTRUCTION AT THE RAMP WILL OCCUR IN TWO PHASES.

PHASE 1 WILL INSTALL THE VEHICLE "IN" SIDE OF THE RAMP HEATING AND TOPPING INCLUDING THE CENTER BOLLARDS, CARD READER, PIPING, MANIFOLDS, PUMPS, POWER, CONTROLS, ETC.

PHASE 2 WILL INSTALL THE VEHICLE "OUT" SIDE OF THE RAMP HEATING AND TOPPING.

- ① SUPPLY AND INSTALL HYDRONIC TUBING, CONTROL SENSORS, AND DISTRIBUTION MANIFOLDS FOR THE OUTDOOR AND INDOOR RAMP AREAS.
- ② MODIFY THE EXISTING BUILDING HEATING HOT WATER SYSTEM SUPPLY IN THE BOILER ROOM B23 TO PROVIDE A HEAT SOURCE FOR THE RAMP SNOW MELT SYSTEM VIA A "CLOSE TEE".
- ③ RELOCATE THE EXISTING BUILDING AUTOMATION SYSTEM (BAS) SUPPLY WATER TEMPERATURE SENSOR IN THE BOILER ROOM B23 TO A LOCATION A MINIMUM OF 2 METERS DOWNSTREAM FROM THE "CLOSE TEE".
- ④ SUPPLY AND INSTALL INSULATED SUPPLY AND RETURN HOT WATER PIPING FROM THE BOILER ROOM CLOSE TEE TO ROOM B08.
- ⑤ SUPPLY AND INSTALL HEAT EXCHANGER, PUMPS (P-1, P-2 & P-3), EXPANSION TANK, 3-WAY VALVES, PRESSURE GAUGES C/W VALVES, THERMOMETERS C/W VALVES , PIPING, PIPE INSULATION AND ACCESSORIES. REFER TO SCHEMATIC DETAIL ON DRAWING M002. SUPPLY AND INSTALL RAMP HEATING TEMPERATURE CONTROL.



KEY PLAN

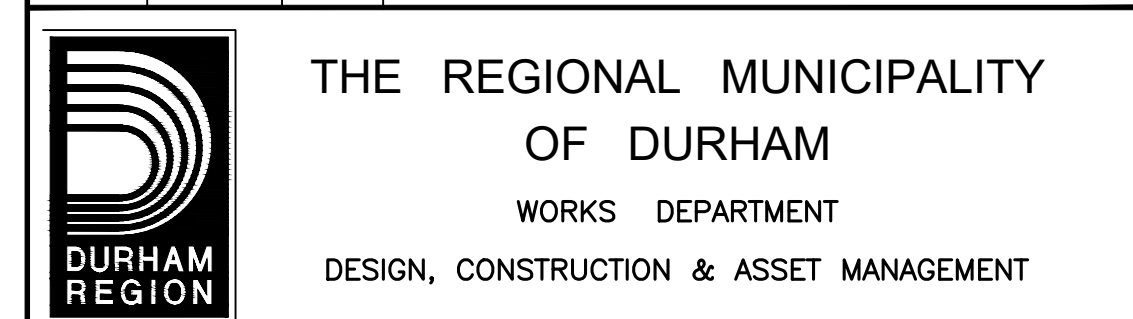
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PRIME CONSULTANT ISOTHERM ENGINEERING LTD. 95 MURAL STREET, SUITE 600 RICHMOND HILL, ONTARIO L4B 3G2 PHONE 905-822-2430	D.C.C. CHEUNG MAY 21, 2025
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SUB-CONSULTANT	
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DESIGN BY: — D CHEUNG	SCALE —
DRAWN BY: — D. S.	DATE: 2024-06-28
CHECKED BY: — D CHEUNG	CONSULTANT PROJECT NO. E237715
APPROVED BY: —	

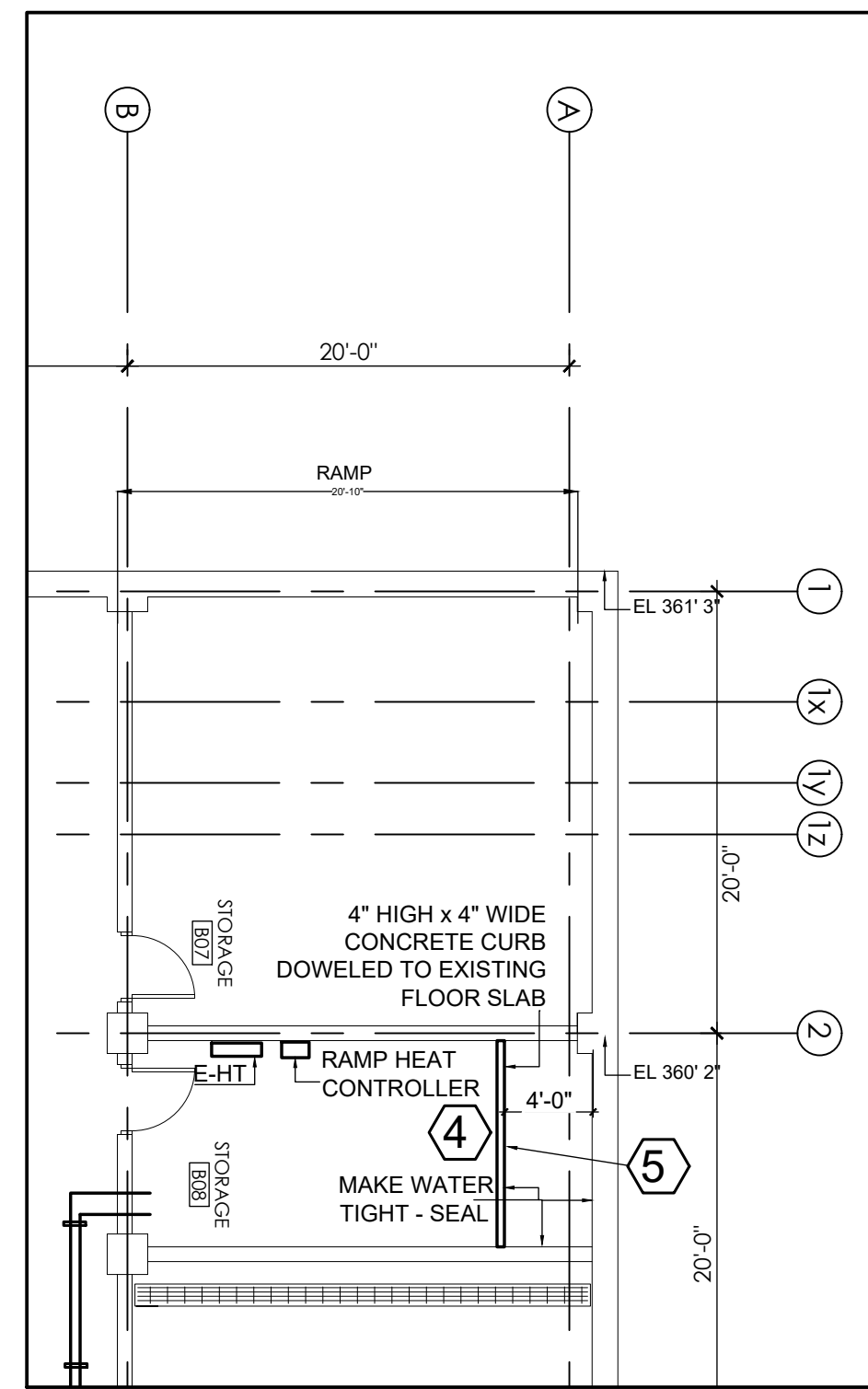
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NO.	DATE	NAME	REVISIONS



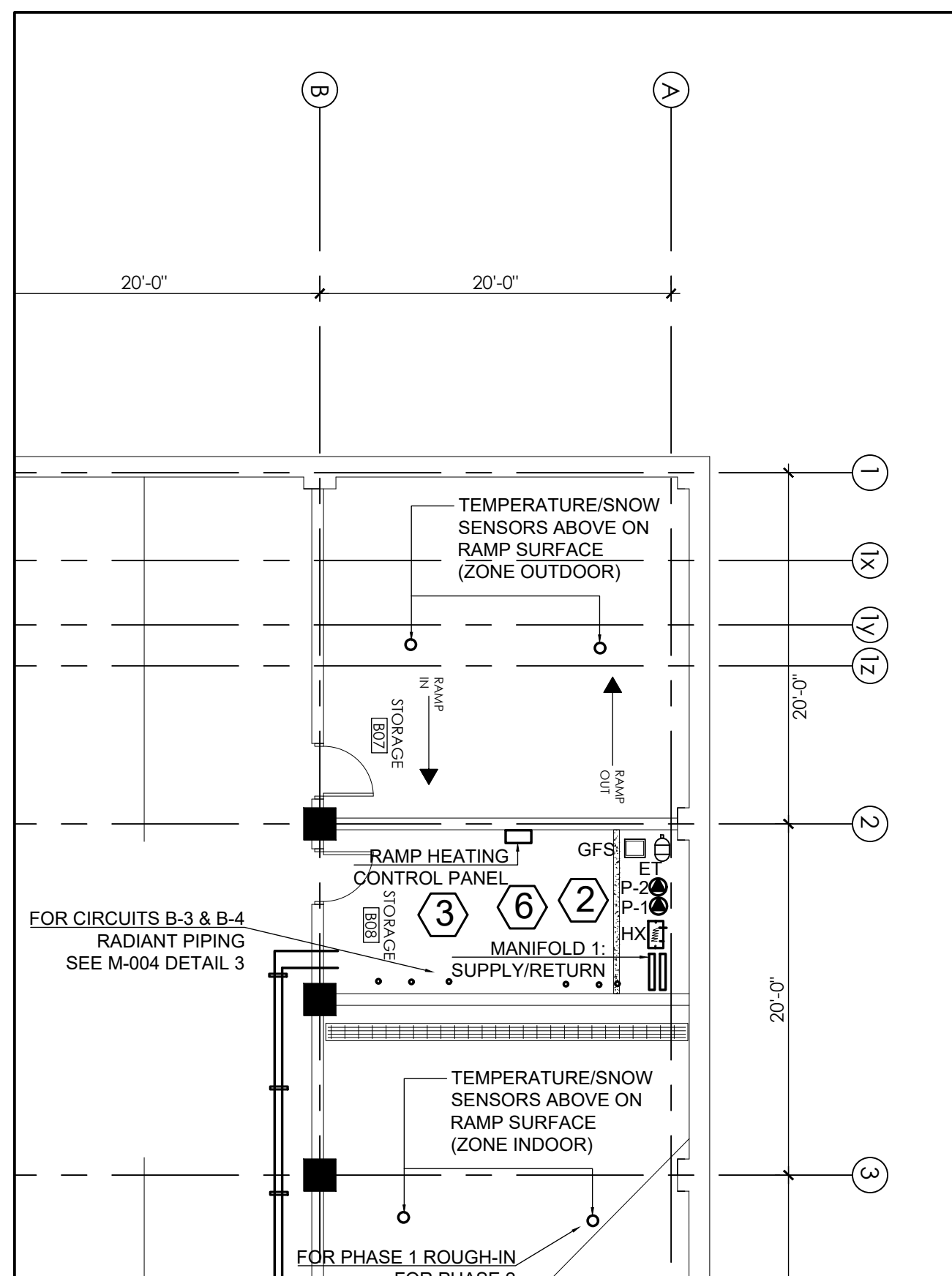
NEW VEHICLE RAMP IN-FLOOR HEATING
AND
NEW CONCRETE RAMP TOPPING

77 CENTRE ST., OSHAWA, ON

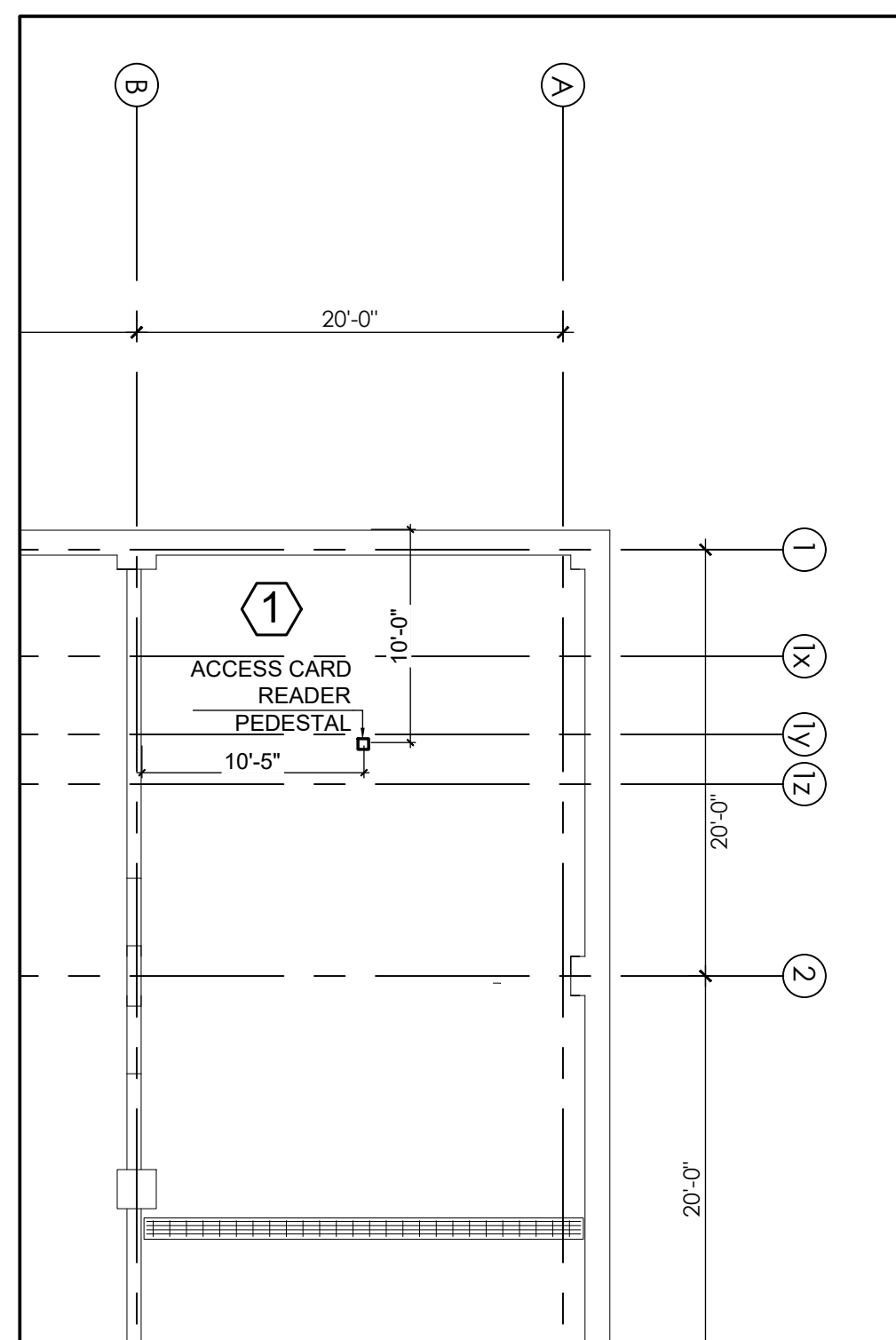
PROJECT NO.	FACILITY CODE DRPS-0-01	FACILITIES PROJECT NO.
TENDER NO. T-1005-2025	DRAWING NO. M-002	SHEET NO. 6 OF 9



1 ROOM B08 CURB
SCALE: 1/8" = 1'0"

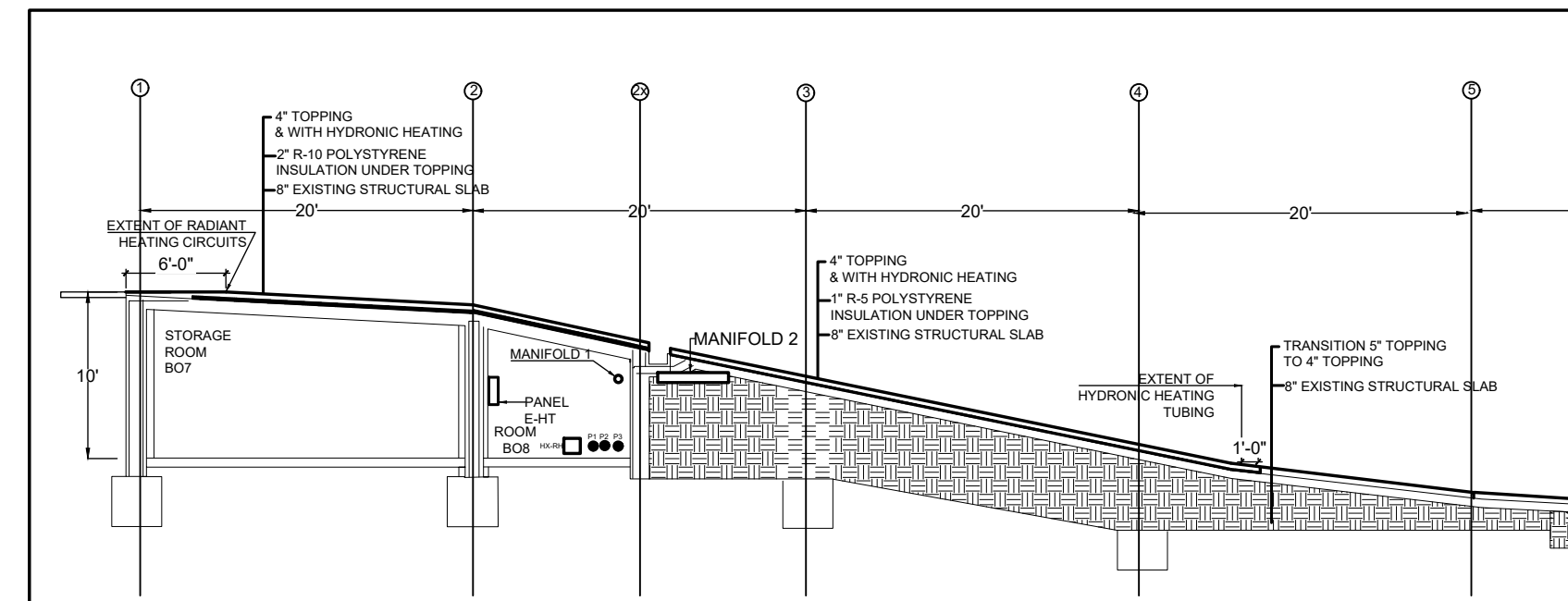


2 ROOM B08 HEATING LAYOUT/CONTROL
SCALE: 1/8" = 1'0"

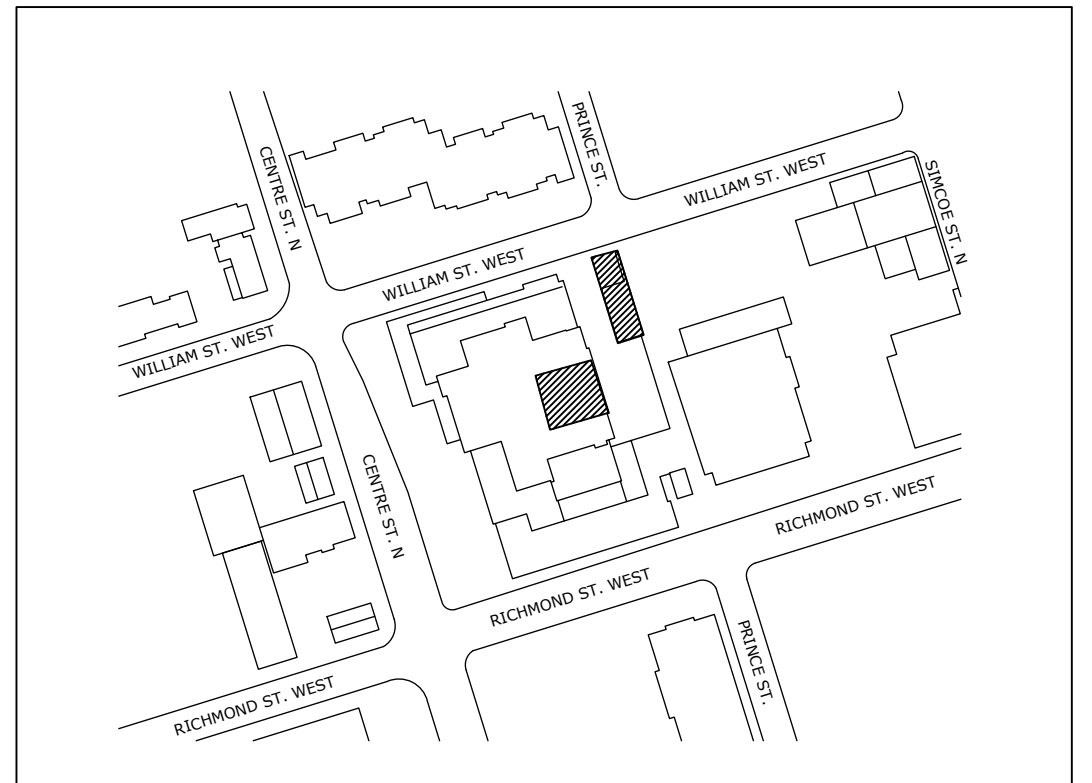
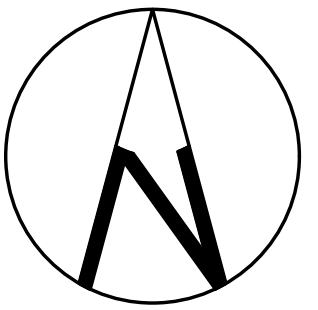


3 ACCESS CARD READER PEDESTAL
SCALE: 3/32" = 1'0"

- KEY NOTES:**
- SUPPLY AND INSTALL A PARKING GARAGE ACCESS CARD READER PEDESTAL AT THE OUTDOOR RAMP AREA. REINSTALL THE EXISTING CARD READER AND CONNECT TO EXISTING DOOR OPERATION CONTROL SYSTEM. CONTROL WIRE FROM CARD READER TO EXISTING DOOR OPERATION SYSTEM VIA IN-SLAB CONDUIT.
 - PROVIDE HEAT EXCHANGER, PUMPS (P-1, P-2 & P-3), EXPANSION TANK, 3-WAY VALVE, PRESSURE GAUGES C/W VALVES, THERMOMETERS C/W VALVES, PIPING, PIPE INSULATION AND ACCESSORIES. REFER TO SCHEMATIC DETAIL ON DRAWING M002.
 - SUPPLY AND INSTALL RAMP HEAT CONTROLLER IN ROOM B08 AND ASSOCIATED SENSORS. CONNECT RAMP HEATING CONTROLLER WITH THE EXISTING BUILDING AUTOMATION SYSTEM. INTERFACE RAMP HEAT CONTROLLER WITH EXISTING BUILDING BAS SYSTEM. MODIFY BAS TO INCLUDE ALL POINTS, GRAPHICS, ALARMS, ETC, FOR RAMP HEATING.
 - SUPPLY AND INSTALL A CURB ON THE FLOOR IN ROOM B08. CURB AND THREE WALLS TO ACT AS A CONTAINMENT FOR WATER/GLYCOL LEAKS. SEAL ALL CURB-TO-FLOOR AND WALL-TO-FLOOR INTERFACE TO RENDER WATER TIGHT. SUPPLY AND INSTALL A WATER LEAK DETECTION SENSOR IN ROOM B-08 CURBED FLOOR ENCLOSURE AND CONNECT WITH EXISTING BAS. MODIFY BAS TO INCLUDE ALL POINTS, GRAPHICS, ALARMS, ETC, FOR WATER LEAK DETECTION
 - CONTRACTOR TO APPLY YELLOW EPOXY PAINT, 12" AT CURBED FLOOR ENCLOSURE.
 - SUPPLY AND INSTALL POWER TO RAMP HEATING CONTROL PANEL, PUMPS, AND BAS SYSTEM CONTROLLER. SEE WIRING SCHEMATIC DRAWING E-001



4 RAMP CROSS SECTION VIEW
SCALE: 3/32" = 1'0"



KEY PLAN

NO.	DATE	NAME	REVISIONS

PRIME CONSULTANT	
 ISOTHERM ENGINEERING LTD. 90 MURAL STREET, SUITE 600 RICHMOND HILL, ONTARIO L4B 3G2 PHONE 905-823-2430	

SUB-CONSULTANT	
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DESIGN BY: — D. CHEUNG	SCALE —
DRAWN BY: — D. S.	DATE: 2024-06-28
CHECKED BY: — D. CHEUNG	CONSULTANT PROJECT NO. E237715
APPROVED BY: —	

	THE REGIONAL MUNICIPALITY OF DURHAM WORKS DEPARTMENT DESIGN, CONSTRUCTION & ASSET MANAGEMENT
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NEW VEHICLE RAMP IN-FLOOR HEATING AND NEW CONCRETE RAMP TOPPING		
77 CENTRE ST., OSHAWA, ON		
PROJECT NO.	FACILITY CODE DRPS-0-01	FACILITIES PROJECT NO.
TENDER NO. T-1005-2025	DRAWING NO. M-003	SHEET NO. 7 OF 9

PUMP SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	FLUID		PUMP		ELECTRICAL				NOTES	
				FLOW RATE (GPM)	WORKING FLUID	HEAD LOSS (FT)	EFFICIENCY (%)	CONSTRUCTION	MOTOR SIZE (HP)	MOTOR BHP (HP)	MOTOR SPEED (RPM)		VOLT/PH/HZ
P-1	TACO 2450	RM B08	CIRCULATOR	11.9	WATER	27.6	N/A	IRON	0.5	N/A	3450	120/1/60	
P-2	TACO 2450	RM B08	CIRCULATOR	10.1	40% P GLY	29	N/A	IRON	0.5	N/A	3450	120/1/60	
P-3	TACO 2450	RM B08	CIRCULATOR	4.8	40% P GLY	33.6	N/A	IRON	0.5	N/A	3450	120/1/60	

HYDRONIC-TO-HYDRONIC HEAT EXCHANGER SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	USAGE	LOAD (BTU/H)	SOURCE MEDIUM (HYDRONIC)			TRANSFER MEDIUM (HYDRONIC)			PHYSICAL		NOTES
						FLOW RATE (GPM)	ENTERING/ LEAVING TEMP. (°F)	WORKING FLUID	HEAD LOSS (FT)	FLOW RATE (GPM)	ENTERING/ LEAVING TEMP. (°F)	WORKING FLUID	HEAD LOSS (FT)	
HX-1	TACO TFP10X20-24(1-1/2"TMPT)	RM B08	BRAZED PLATE	HEATING	174300	11.9	180/150	WATER	4	5.1	66/139	40% P GLY	6	/20.3/24 28.88

GLYCOL FEED SYSTEM SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	FLUID		COLD		ELECTRICAL		PHYSICAL			NOTES
				WORKING FLUID	TOTAL VOLUME (LITRE)	STATIC FILL PRESSURE (PSIG)	PRESSURE RATING (PSIG)	VOLT/PH/Hz	ALARM PANEL	LENGTH/ WIDTH/ HEIGHT (CM)	NPT FITTING (MM)	TANK SIZE (LITRE)	
GFS-1	AXIOM DMF300	B-08	STANDARD	40% P GLY	64	8.3	60	120/1/60	-----	30.5/92	13	64	1

EXPANSION TANK SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	FLUID		MIN. TANK/ ACCEPTANCE VOLUME (GAL)	MINIMUM FILL PRESSURE (PSIG)	MAXIMUM WORKING PRESSURE (PSIG)	RELIEF VALVE PRESSURE (PSIG)	PHYSICAL			NOTES
				WORKING FLUID						TANK SIZE (GAL)	DIA./ HEIGHT (IN)	NPT FITTING (IN)	
ET-1	TACO CA-90	B-08	VERT BLADDER FULL	40% P GLY	1.2/0.5	8.3	27	30	23	20/29.1	0.5		1

3-WAY CONTROL VALVE SCHEDULE

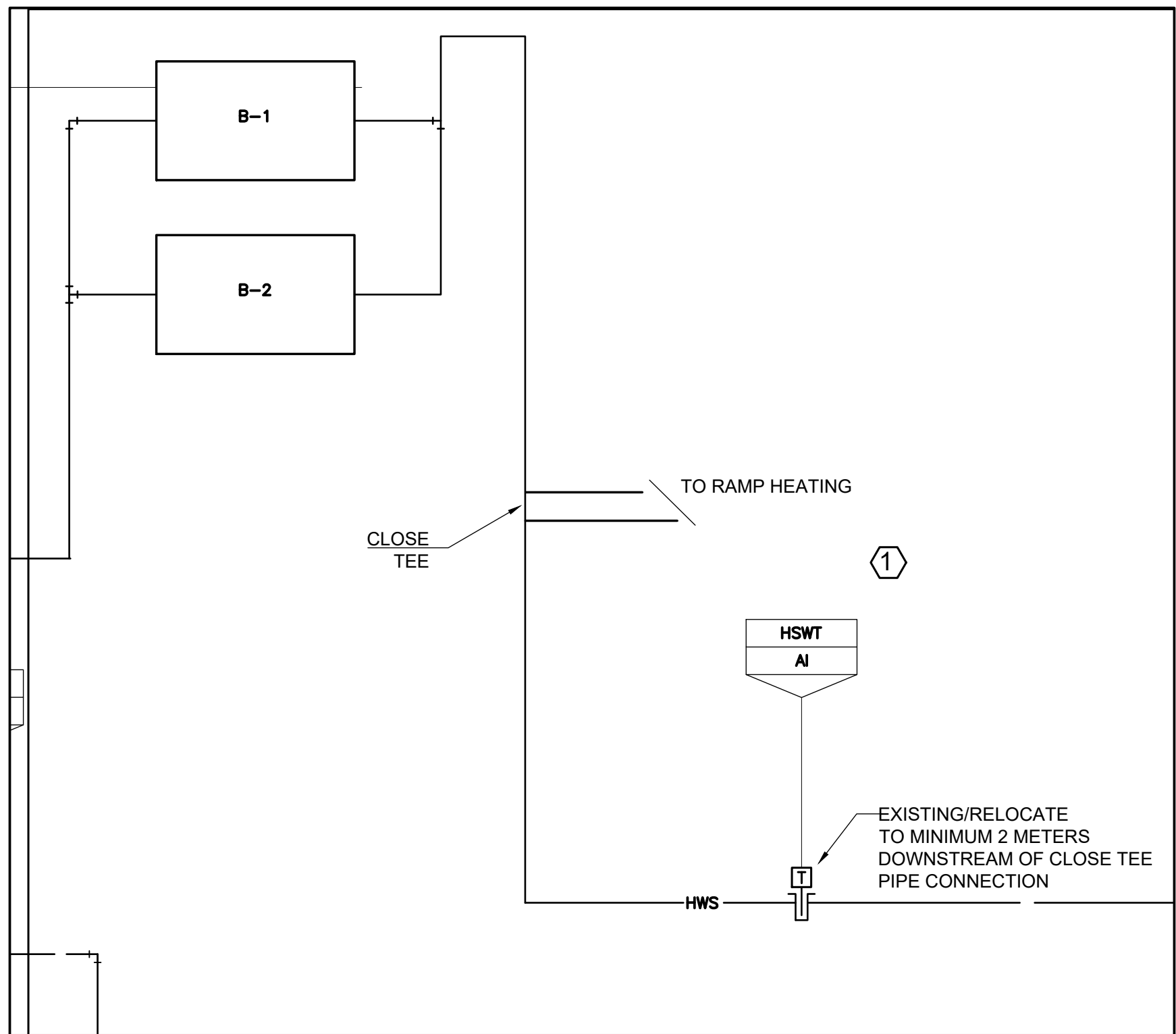
ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	CONSTRUCTION	CONTROL TYPE	ACTUATOR TYPE	FLUID		ELECTRICAL	PHYSICAL	NOTES
							FLOW RATE (GPM)	HEAD LOSS (FT)		CONNECT SIZE (IN)	
CV-INDOOR	TACO ST2-05-3-12	INDOOR	CHARACTERIZED BALL	BRASS	MODULATING	ELECTRONIC	4.8	2.5	4.6	24/1/60	0.5
CV-OUTDOOR	TACO ST2-1-3-12	OUTDOOR	CHARACTERIZED BALL	BRASS	MODULATING	ELECTRONIC	10.1	4.3	7.4	24/1/60	1

BALANCING VALVE SCHEDULE

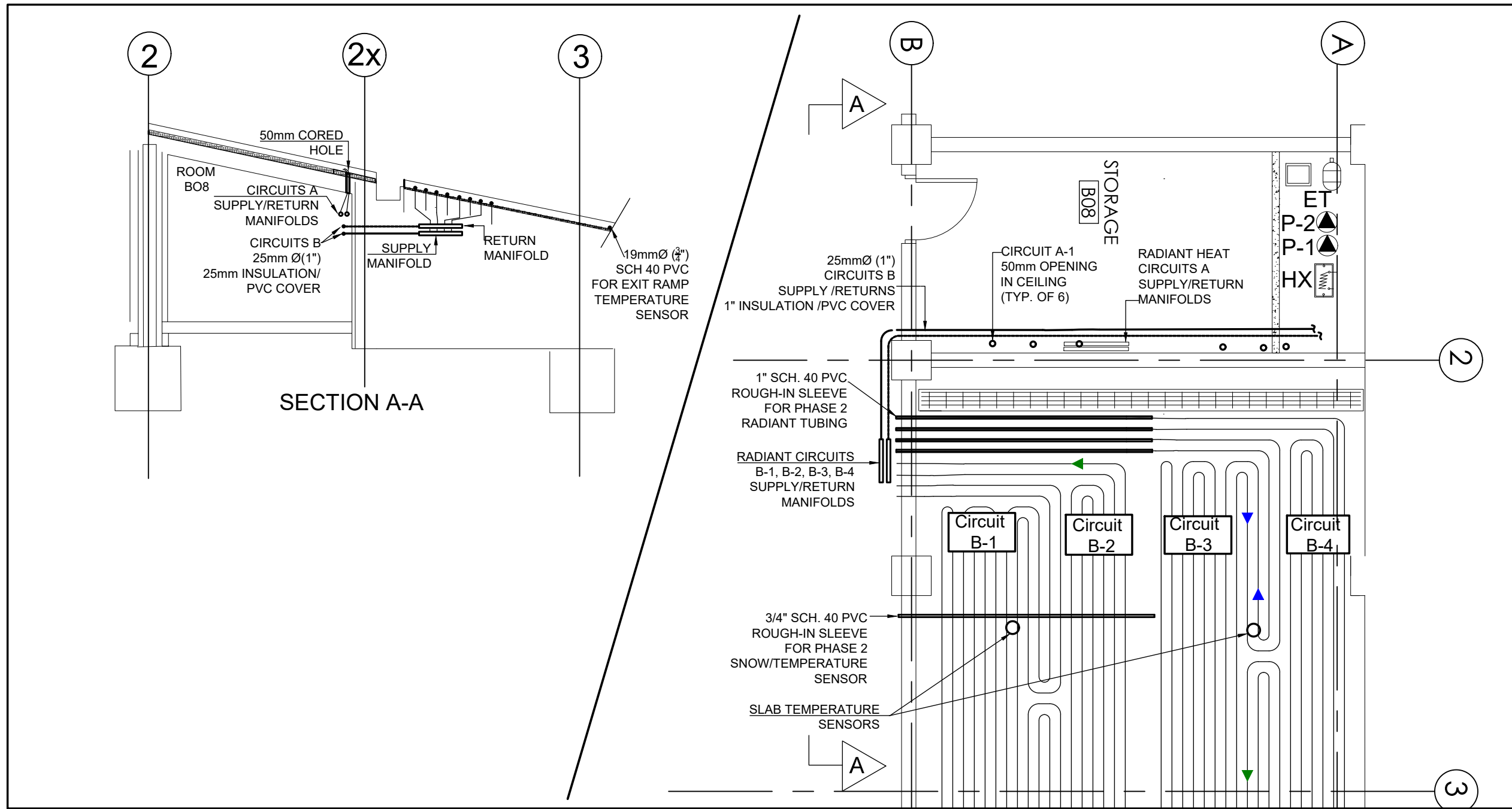
ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	BODY CONSTRUCTION	FLUID		ELECTRICAL	PHYSICAL	NOTES
					FLOW RATE (GPM)	HEAD LOSS (FT)		CONNECT SIZE (IN)	
BV-HX-1	TACO ACUF-125-AT	HX-1	MANUAL STRAIGHT	BRONZE	11.9	5		1.25	
BV-2	TACO ACUF-100-AT	INDOOR	MANUAL STRAIGHT	BRONZE	0	5		1	
BV-3	TACO ACUF-100-AT	INDOOR	MANUAL STRAIGHT	BRONZE	0	5		1	
BV-4	TACO ACUF-050-AT	INDOOR	MANUAL STRAIGHT	BRONZE	1.6	5		0.5	
BV-5	TACO ACUF-075-AT	INDOOR	MANUAL STRAIGHT	BRONZE	3.2	5		0.75	

HYDRONIC TUBING

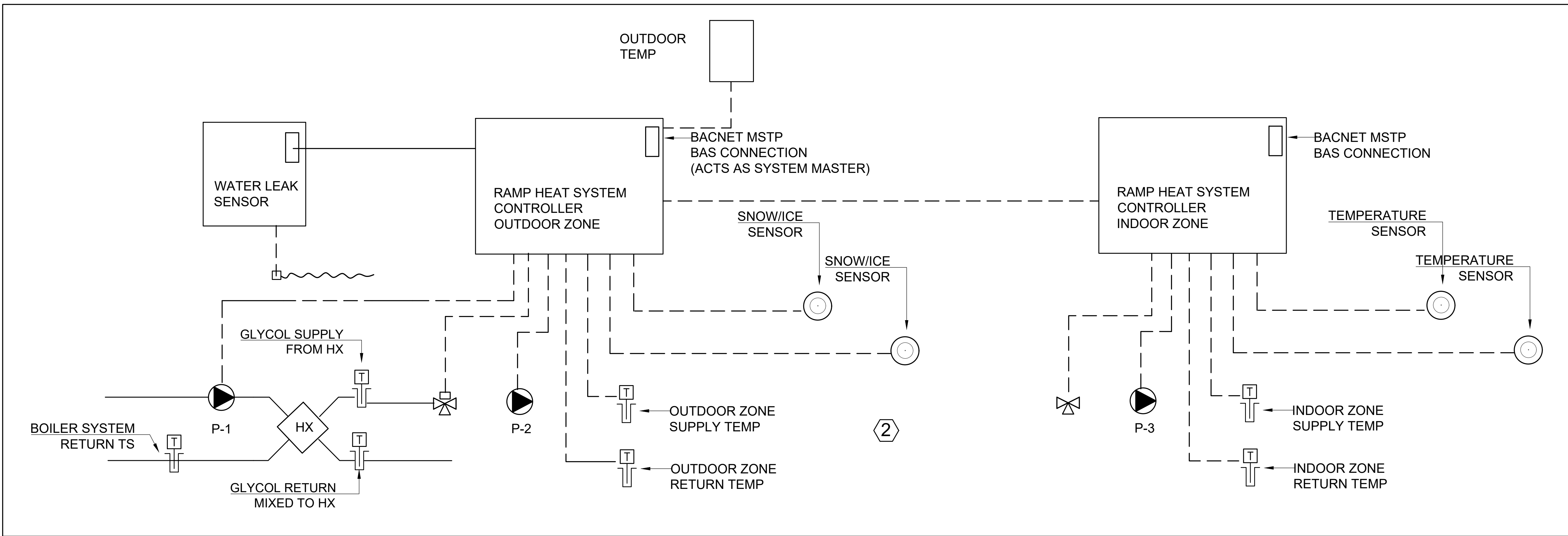
Circuit A-1 8"-199 ft @ 6 in. Flow: 1.70 USGPM ΔT: 25 °F	Circuit A-2 8"-190 ft @ 6 in. Flow: 1.63 USGPM ΔT: 25 °F	Circuit A-3 8"-198 ft @ 6 in. Flow: 1.69 USGPM ΔT: 25 °F	Circuit A-4 8"-199 ft @ 6 in. Flow: 1.71 USGPM ΔT: 25 °F	Circuit A-5 8"-190 ft @ 6 in. Flow: 1.64 USGPM ΔT: 25 °F	Circuit A-6 8"-198 ft @ 6 in. Flow: 1.71 USGPM ΔT: 25 °F
Circuit B-1 8"-293 ft @ 6 in. Flow: 1.18 USGPM ΔT: 25 °F	Circuit B-2 8"-293 ft @ 6 in. Flow: 1.17 USGPM ΔT: 25 °F	Circuit B-3 8"-291 ft @ 6 in. Flow: 1.15 USGPM ΔT: 25 °F	Circuit B-4 8"-290 ft @ 6 in. Flow: 1.13 USGPM ΔT: 25 °F		



1 BOILER ROOM CONTROL MODIFICATION
SCALE: NTS

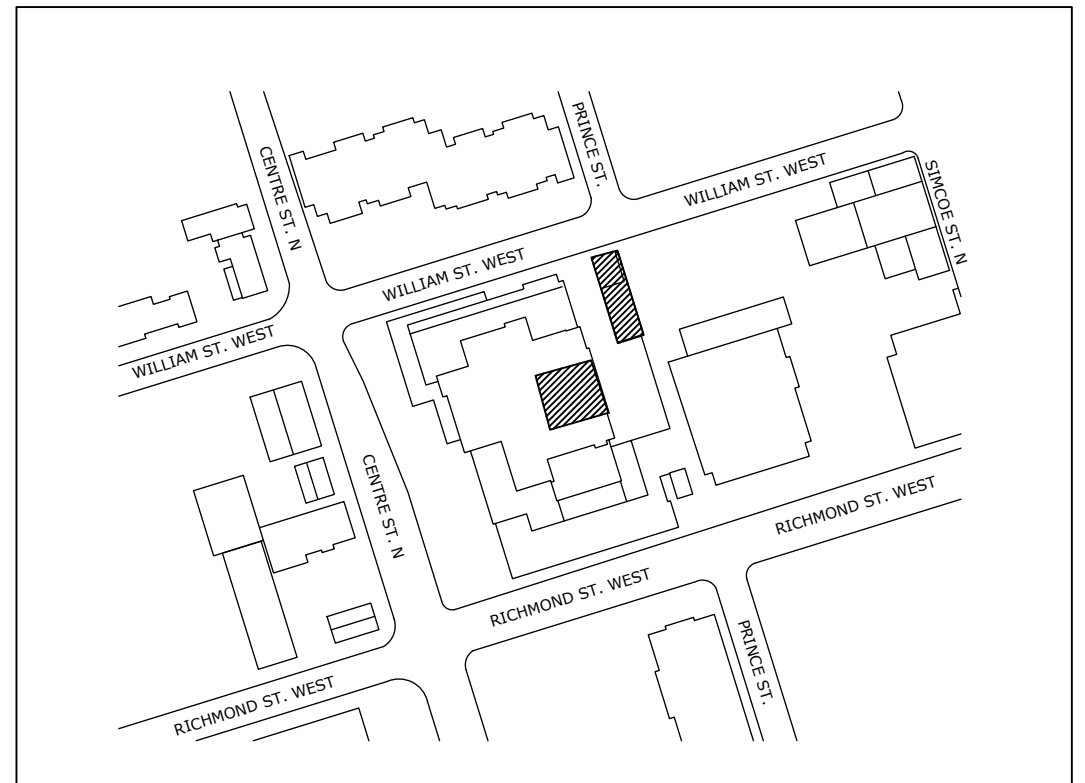
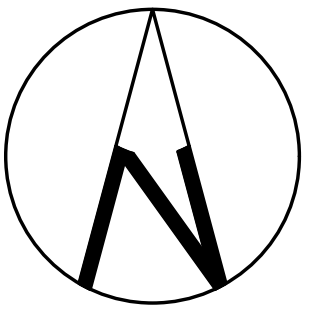


3 INDOOR RADIANT CIRCUITS B LAYOUT
SCALE: 3/16" = 1'0"



2 CONTROL SCHEMATIC
SCALE: NTS

- KEY NOTES:
- RELOCATE EXISTING BAS SYSTEM BOILER SUPPLY WATER TEMPERATURE SENSOR
 - SUPPLY AND INSTALL A 2 ZONE HYDRONIC RAMP HEATING CONTROL SYSTEM USING THE EXISTING BAS SYSTEM AS A MASTER



KEY PLAN

NO.	DATE	NAME	REVISIONS

PRIME CONSULTANT

ISO THERM ENGINEERING LTD.
90 MURAL STREET, SUITE 600
RICHMOND HILL, ONTARIO
L4B 3G2
PHONE 905-823-2430

LICENSED PROFESSIONAL ENGINEER
D.C.C. CHEUNG
MAY 21, 2025
PROVINCE OF ONTARIO

SUB-CONSULTANT	
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DESIGN BY: — D. CHEUNG	SCALE —
DRAWN BY: — D. S.	DATE: 2024-06-28
CHECKED BY: — D. CHEUNG	CONSULTANT PROJECT NO. E237715
APPROVED BY: —	

NO.	DATE	NAME	REVISIONS

DURHAM REGION

THE REGIONAL MUNICIPALITY OF DURHAM
WORKS DEPARTMENT
DESIGN, CONSTRUCTION & ASSET MANAGEMENT

NEW VEHICLE RAMP IN-FLOOR HEATING AND NEW CONCRETE RAMP TOPPING

77 CENTRE ST., OSHAWA, ON

PROJECT NO.	FACILITY CODE DRPS-0-01	FACILITIES PROJECT NO.
TENDER NO. T-1005-2025	DRAWING NO. M-004	SHEET NO. 8 OF 9



PRIME CONSULTANT	
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NO.	DATE	NAME	REVISIONS
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