



September 05, 2019

**THE REGIONAL MUNICIPALITY OF YORK
ADDENDA # 3
T-19-16**

FOR: Construction of Paramedic Response Station No. 29 at 107 Glen Cameron Road in the City of Markham

CLOSING: September 13, 2019 at 1:00:00 P.M. (Eastern Time)

Bidders are requested to incorporate the changes/clarifications noted below to the above noted bid documents in your possession and be governed accordingly.

1. Please refer to the following attached documents for responses to bidder's questions and further changes to the Contract Documents:

- Architectural Addendum, attaching:
 - Architectural Drawings
 - Door Hardware Schedule
- M/E Addendum, attaching
 - M/E Drawings
 - Replacement Specification Section 26 30 00
 - Replacement Specification Section 26 30 10

Each Bidder shall acknowledge receipt of all addenda to this RFT prior to submitting their Bid. Bids that do not contain evidence of receipt of all addenda will be deemed to be "incomplete" and will not be accepted in the Bidding Website.

This addendum shall remain attached to and form part of the Contract Documents.

Yours truly,

A handwritten signature in grey ink, appearing to read "S. D'Angelo".


Sabrina D'Angelo
Senior Purchasing Analyst
Procurement Office

ARCHITECTURAL ADDENDUM 01

Contract No. T-1916

York Region Paramedic Response Station #29

107 Glen Cameron Road, Markham

 The following are responses to questions submitted by bidders:

Q1 When is the projected date of award?

A It is anticipated that the contract will be awarded in late September – beginning of October 2019.

Q2 Section 07 81 00 – Sprayed Fire-Resistive Material is included in the specification, please provide location of application on drawings.

A Refer to A0.1 OBC Chart and A0.3 Fire, Exit and AODA Plan for scope of work.

Q3 Section 07 13 26 – Sheet Waterproofing is included in the specification, please provide location of application on drawings

A Refer to Section 07 13 26 for applicable locations.

Q4 Cash Allowance CA-2 – Supply & install of exterior digital signage: Is there a scope of work for GC in this item?

A Refer to Section 01 21 00 Allowances for scope of work by the Contractor. Review detail 3/A1.4 for scope of work completed by Digital Sign Provider. The Contractor shall provide all power / data requirements as outlined in Architectural and Electrical Drawings.

Q5 Cash Allowance CA-3 – Supply & install of interior building signage: Is there a scope of work for GC in this item?

A Refer to Section 01 21 00 Allowances for scope of work by the Contractor.

Q6 Dwg CV2 – We see site services work extending beyond the property line and onto Glen Cameron Road. We suggest the owner create a cash allowance to cover off the street connection and road restoration. Normally general contractors work within the confines of the property line. If we are asked to work beyond the property line than it must be reconfirmed. We ask clarification be offer on responsibility of site services extending beyond the property line.

A All workout noted beyond the property line is included in the scope of Work under the Contract. Refer to General Notes – Site Plan detail 2/A1.3.

Q7 Dwg CV2 – There is a note calling for “coordinate” the relocation of an existing sign and light. There are no further details. This seems to be work that would fall under traffic management systems to which there is no specification for on this project and requires specialty trades dealing with traffic lights. We assume the Region is taking care of this task with their regular vendor that performs traffic light work. Please issue clarification or establish a cash allowance for general contractors to carry and retain the vendor that normally does this work for York Region.

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- A Refer to A1.2 Demo Site Plan and A1.3 Site Plan. The Contractor shall coordinate relocation with Authorities having Jurisdiction. This is a Municipal Road not Regional Road. Bidders are responsible to contact authorities having jurisdiction in order to determine the costs associated with relocation.**
- Q8** Dwg CV2 – We see a detail right side of the drawing providing a “sub drain detail” and we ask that clear direction be given on the desired locations. Does the civil engineer want it along curbing? Along both sides of curbing? Around catch basins? Behind the retaining wall? Foundation walls? Please disclose to bidder’s information so that we may quantify how many lineal meters is desired.
- A Refer to note on detail:
All CBMH and CB Structures to have subdrain connections installed as shown on subdrain detail.**
- Q9** Dwg A1.3 – A generator is shown to sit atop a concrete pad. Details should be given to identify slab thickness, extent of reinforcing, granular assembly.
- A Concrete slab shall be 200mm in thickness, reinforced w/15@ 300 T&BEW. Provide compacted 250mm of 19mm clear stone compacted to min. 98% standard proctor max. Dry density.**
- Q10** Dwg E2.0 – The electrical drawing shows the secondary ductbank going across the street on Glen Cameron Road. The cross section on the electrical drawing should be updated to reflect the actual assembly including restoration when it passes through the road. In addition (and similar to the question above) please reconfirm if this tender is to include work beyond the property line and if this tender is to include road restoration. It is proper for electrical drawings to show ductbank assemblies as electrical contractors normally provide the civil work for ductbank construction however electrical bidders may exclude the restoration and suggest it is not in the tender because it is not indicated on their drawing. Electrical bidders will need a scope of work directive, otherwise the roadway will be closed during the stages of ductbank assembly (having inspections before backfilling, etc) and it should be established now if the road can be closed, and what costs are involved (ie road occupancy permits, special insurance, traffic management or any detour planning not likely determined in the tender period, etc). Kindly update electrical drawing details showing roadwork assembly on the cross section of the ductbank. In the alternative, a cash allowance could be established to satisfy the electrical ductbank street connection and restoration.
- A All work outside of property line is included in the scope of Work under the Contract. All restorations required for the existing road shall be restored to Municipal Standards. Refer to road restoration requirements OPSD 509.010. The Contractor is responsible to obtain all road permits as noted in Specification Section 01 31 13 Coordination and Responsibility 1.4 Permits, Deposits and Responsibilities.**
- Q11** Owner should clarify if electrical contractor is provide Audio-Visual & pull string (roughin only) for owner Data/IT/Communication system, any security system, any CCTV system, any Audio Visual system, etc. Please clarify what is provided by electrical contractor and what is provided by owner (or provided by owner prequalified trades by cash allowance).

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A The supply and installation of Structured I.T Cabling is carried under the Cash Allowance Item No. CA5. This includes the cabling and server hardware. All related work is included in the scope of Work under the Contract and all costs associated with this work shall be included in the Contract Price. Refer to all requirements on Drawing E1.0 General Notes, Legend and specifications for scope of work for electrical Subcontractor.

Q12 Drawing E4.0 Note 1 Which card access doors have door operators?

A Refer to 3.0, A8.1 and door hardware schedule for locations of door operators. All electrical work is included in the scope of Work under the Contract.

Q13 Drawing E4.0 Note 2 Why is Honeywell supplying the cameras?

A Cameras shall be supplied as outlined in Specification Section 28 00 00 Security System.

Q14 Drawing E4.0 Note 3 Is the Fire Panel in the security scope of work?

A Refer to Section 26 70 00 Fire Alarm System for scope of work. Refer to Section 28 00 00 Security System for scope of work.

Q15 Who is providing the CAT 6 cabling and POE network for the cameras?

A Refer to Section 28 00 00 Security System for scope of work.

Q16 Where are the cameras being recorded?

A The cameras are being monitored by our security department.

Q17 Is the Bosch alarm system need if the station is in operations 24/7?

A Yes, as the station is not occupied 24/7

Q18 Corner Guards 10 26 13

Please provide location of corner guards.

Part 2.1.2 shows full height and 3.1.5.4 show 1500 high, please advise the correct height.

A Review A2.3 Floor Finish & Furniture Plan for locations of Corner Guards (CG). All corner guards shall be full height.

Q19 Request for product approval for Aluminum & Glazing

Aluminum Screen - Kawneer 601UT

Same as 655 thermal storefront system but Windspec does not have 6" back section only 4 ½"

Aluminum Screen - Kawneer 1620 SSG - 5500 series SSG or 5500 htp ssg Aluminum Screen -

Kawneer 451 - 655 thermal storefront system

Aluminum Screen - Kawneer Tri Fab 450 - Interior 630 framing

Aluminum Doors - Kawneer '350 Medium Stile' - 350 Medium stile door or 375 htp medium stile

ARCHITECTURAL ADDENDUM 01

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York Region Paramedic Response Station #29

107 Glen Cameron Road, Markham

Aluminum Screen - Kawneer 518 Isoport – 855 /875 window framing

- A Requests for product substitutions will be considered only after the Contract award. Please refer to Section 01 25 00 - Product Substitution Procedures for the process of approval of proposed alternative products.**

ARCHITECTURAL ADDENDUM 01

Contract No. T-1916
York Region Paramedic Response Station #29
107 Glen Cameron Road, Markham

Owner/Architect Changes

1. General Instructions

.1 All Bidders are hereby advised that the information contained in the issued Bid Documents for the above captioned project, has been amended to include the information contained within this Addendum, and such information is to be covered in the tender submission and shall form part of the *Contract Documents*.

2. Affected Sections of the Project Manual

Architectural

1. Refer to Section 08 71 00 Door Hardware

.1 Insert Door Hardware Schedule dated April 10, 2019, attached to this Addendum.

Structural – none included as part of this addendum

Mechanical – Refer to enclosed Electrical Addendum 1

Electrical - Refer to enclosed Electrical Addendum 1

Civil – none included as part of this addendum

Landscape – none included as part of this addendum

ARCHITECTURAL ADDENDUM 01

Contract No. T-1916

York Region Paramedic Response Station #29
107 Glen Cameron Road, Markham

3. Affected Drawings

Architectural

1. Refer to Drawing A1.4 Site and General Details

- .1 Replace detail 3 with the revised version, which is attached to this Addendum.
- .2 Insert note – the General Contractor shall remove and dispose of all loose debris (bricks, garbage etc) from the site boundary, including within the ditch/swale.

2. Refer to Drawing A1.5 Site and General Details

- .1 Replace detail 2 with the revised version, which is attached to this Addendum.

3. Refer to Drawing A3.1 Roof Plan

- .1 Replace detail 10 with the revised version, which is attached to this Addendum.

4. Refer to Drawing A4.3 Cladding, Glazing, & Louver Elevations, I.T Room Plan And Elevations

- .1 Details 17, 18, 19 and 20 have been updated to indicate electrical outlet locations for I.T room. The General Contractor shall coordinate on site with electrical Drawings and review with project team prior to rough-in. Provide fire rated plywood as indicated. Replace Details 17, 18 and 19 with the revised versions attached to this Addendum.

5. Refer to Drawing A5.1 – Building Sections and Details

- .1 Replace detail 7 and 8 with revised the revised versions, which are attached to this Addendum.

6. Refer to Drawing A7.1 – Washroom Details & Fixture Mounting Heights

- .1 Replace detail 2 and 3 with the revised versions, which are attached to this Addendum.

7. Refer to Drawing A7.2 – Millwork Plan, Elevations and Details

- .1 Replace detail 13 and 18 with the revised versions, which are attached to this Addendum.

8. Refer to Drawing A8.1 – Door Finish Schedules & Universal Washroom Operation

- .1 Replace detail 2 with the revised version which is attached to this Addendum.

9. Refer to Drawing A8.2 – Room Finish Schedule

- .1 Refer to the attached updated Interior Finishes Schedule for revised description of PT-3 and PT-4.
- .2 Refer to the attached updated detail 1 for revised PT-4 locations at Four-Fold and Sectional Door jambs, exposed steel, etc.

Structural – none included as part of this addendum

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Mechanical – Refer to enclosed Mechanical Addendum 1.

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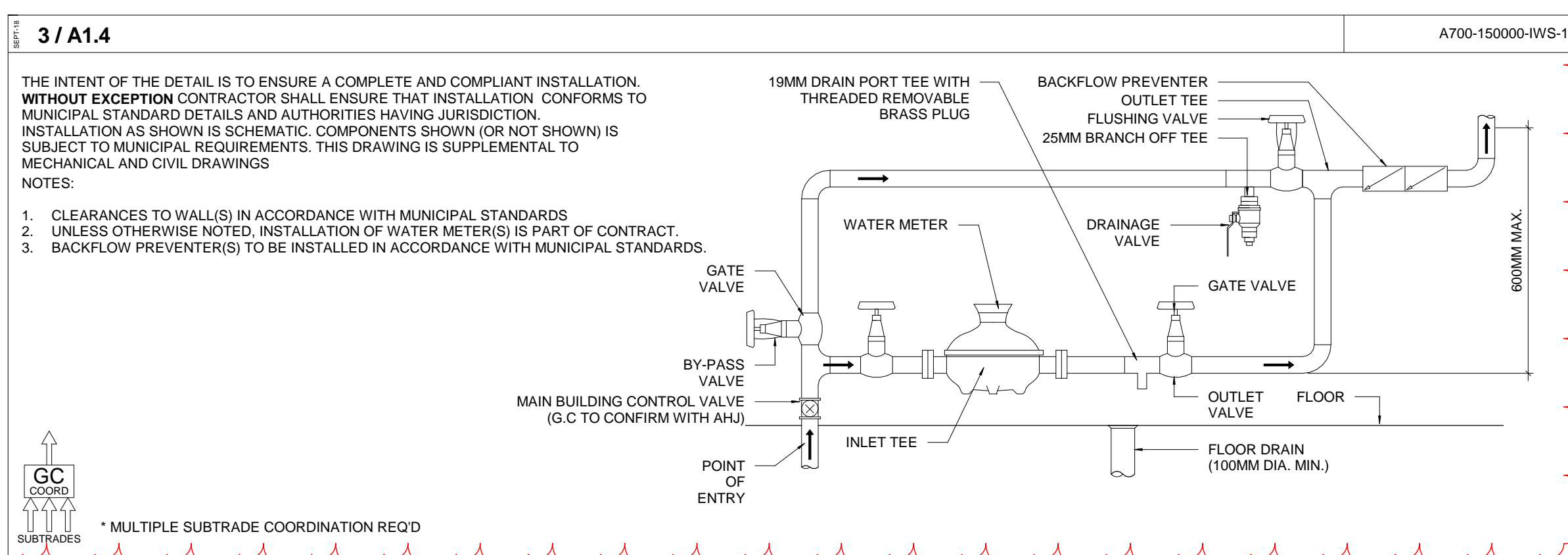
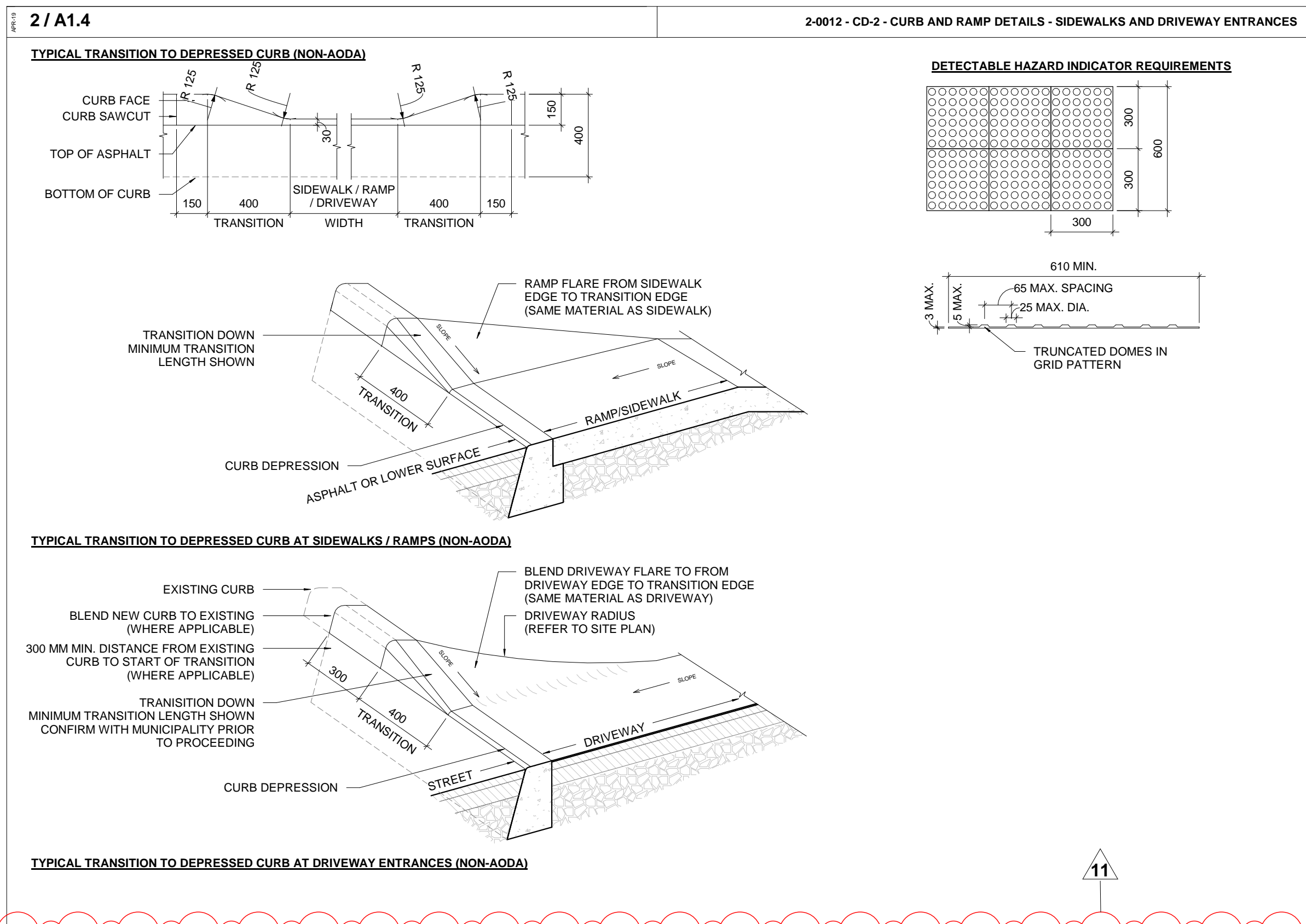
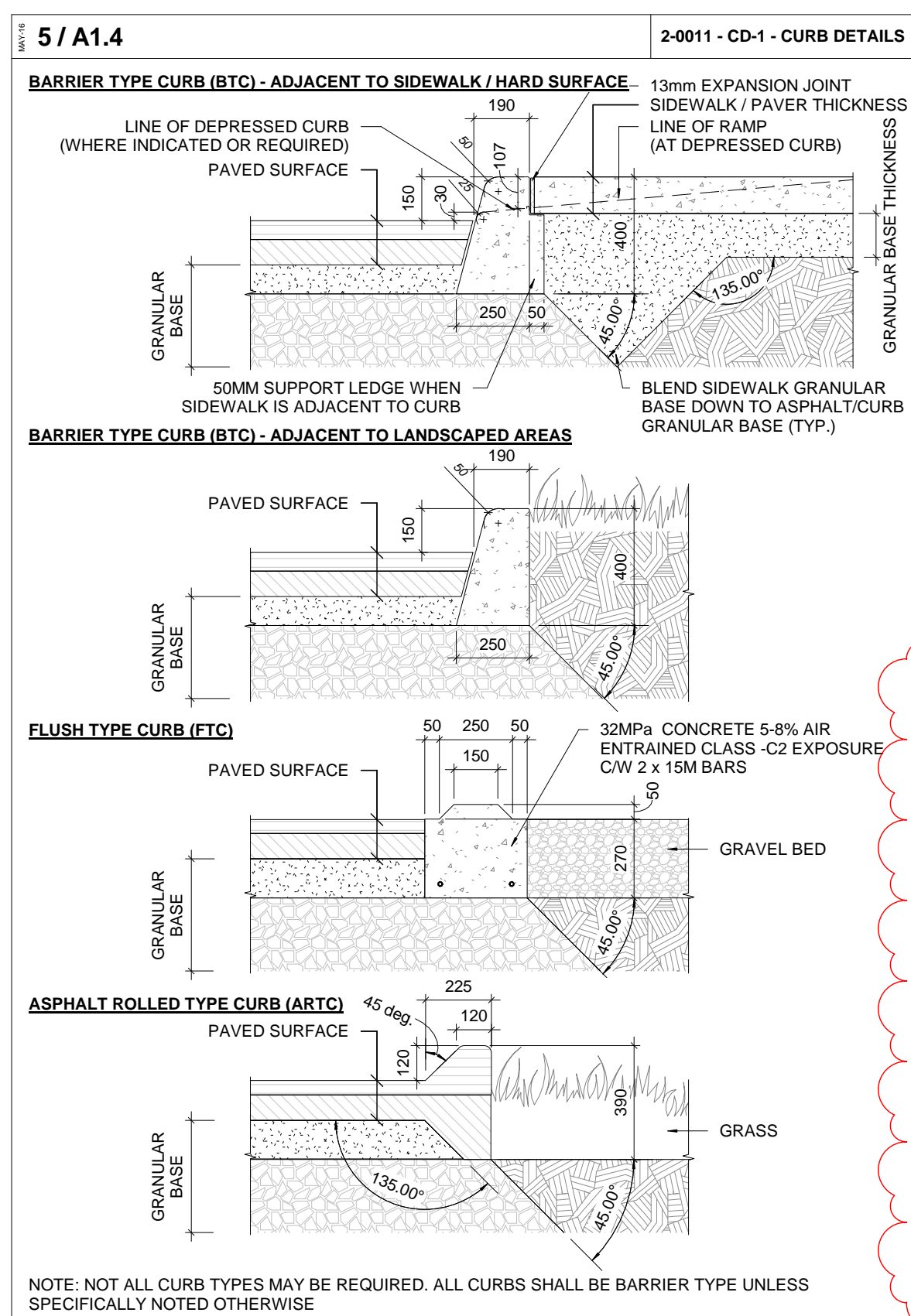
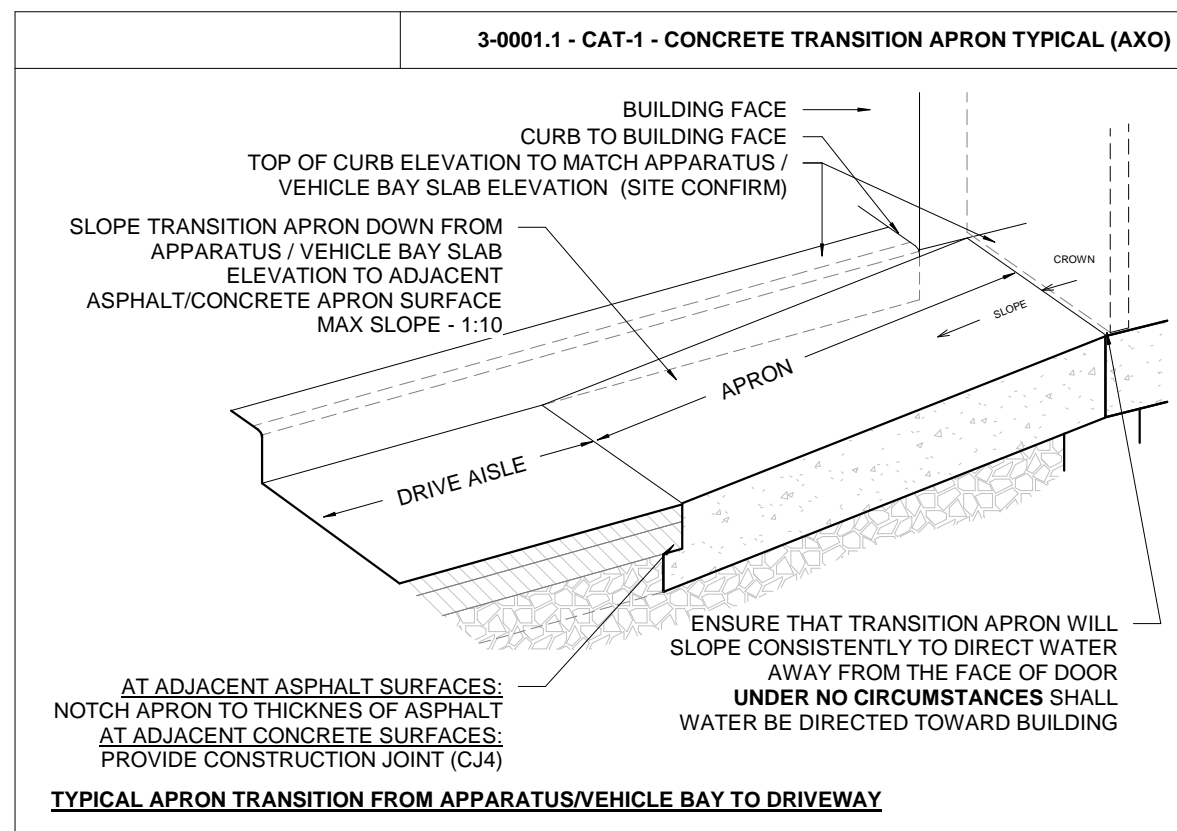
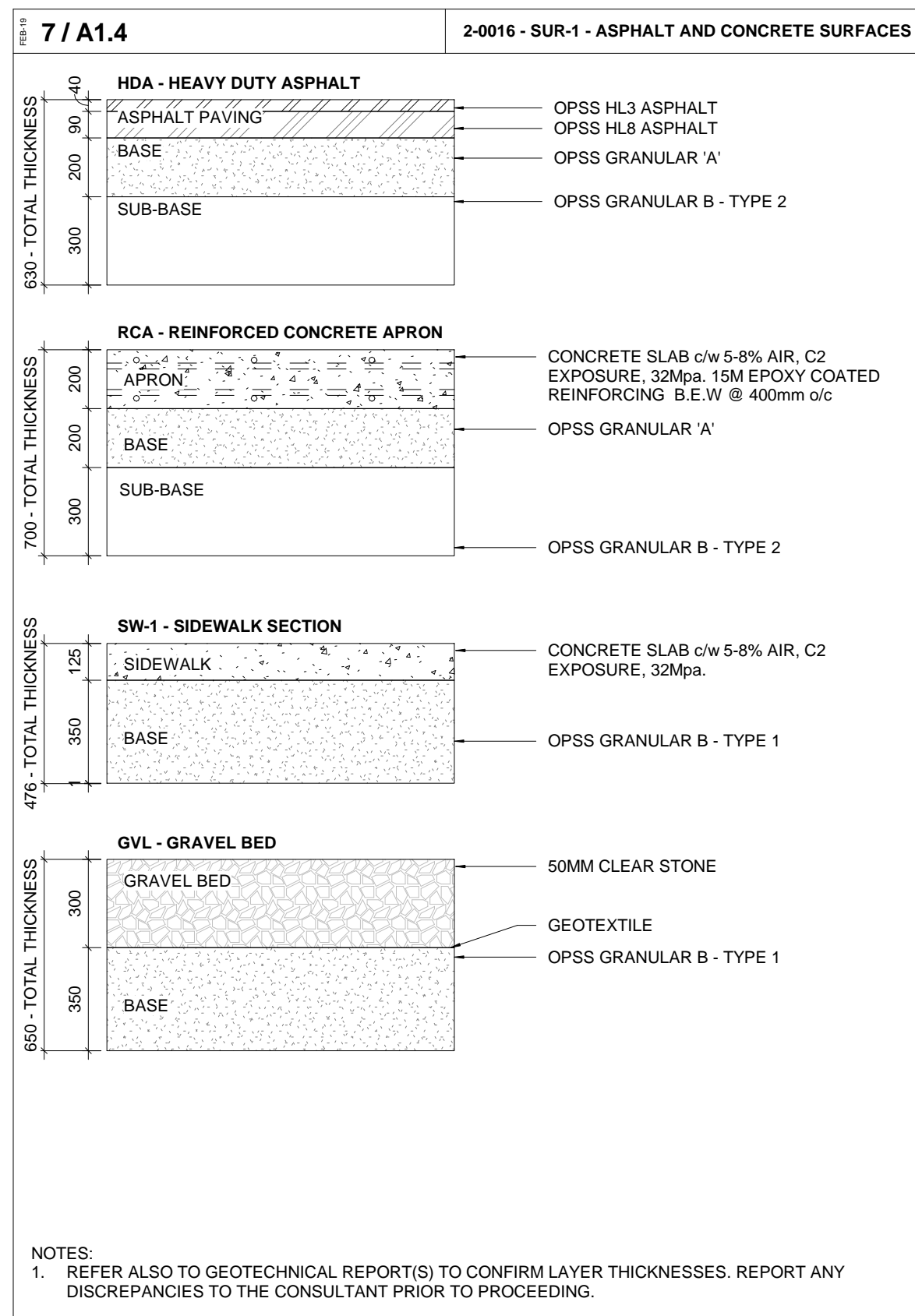
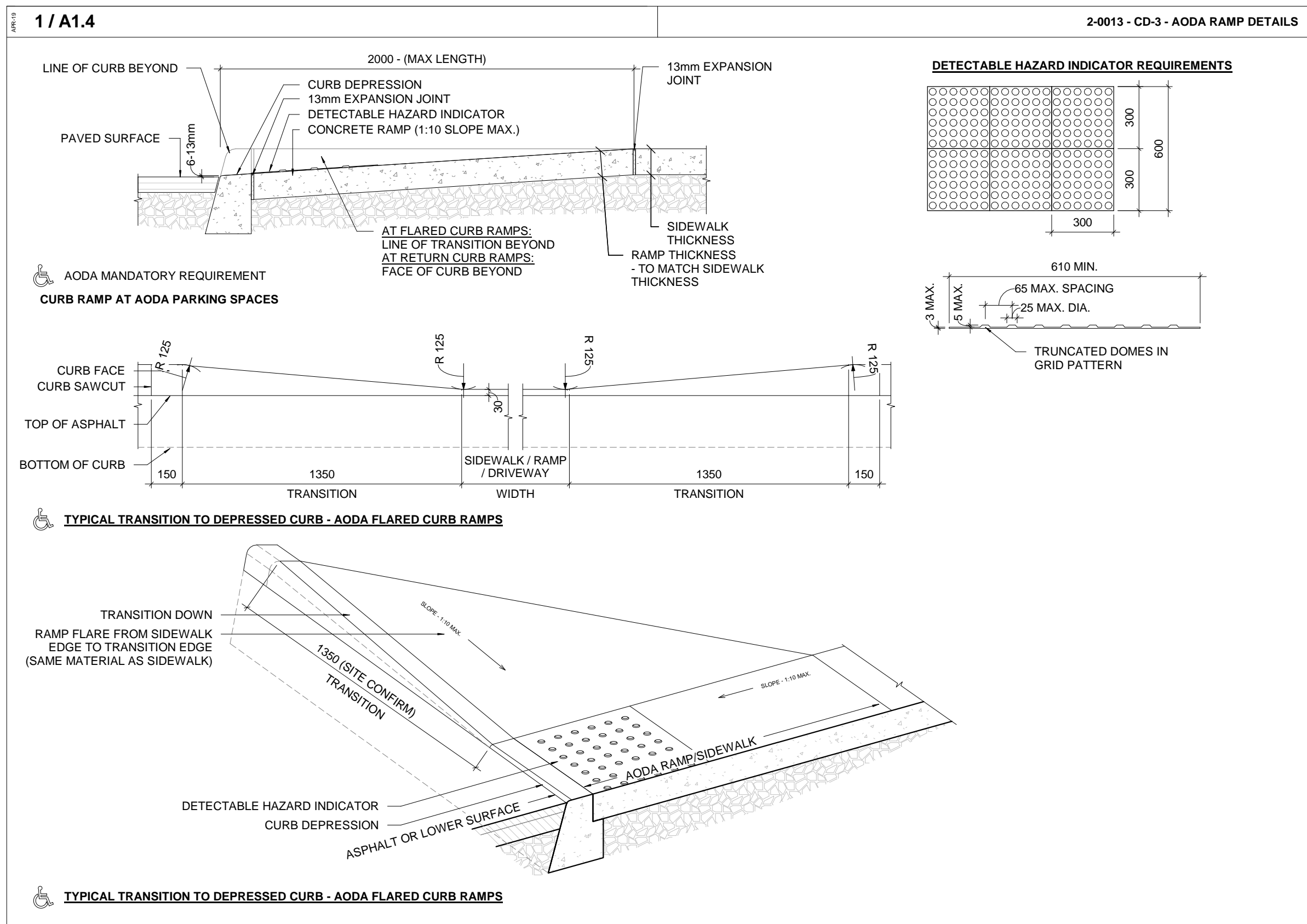
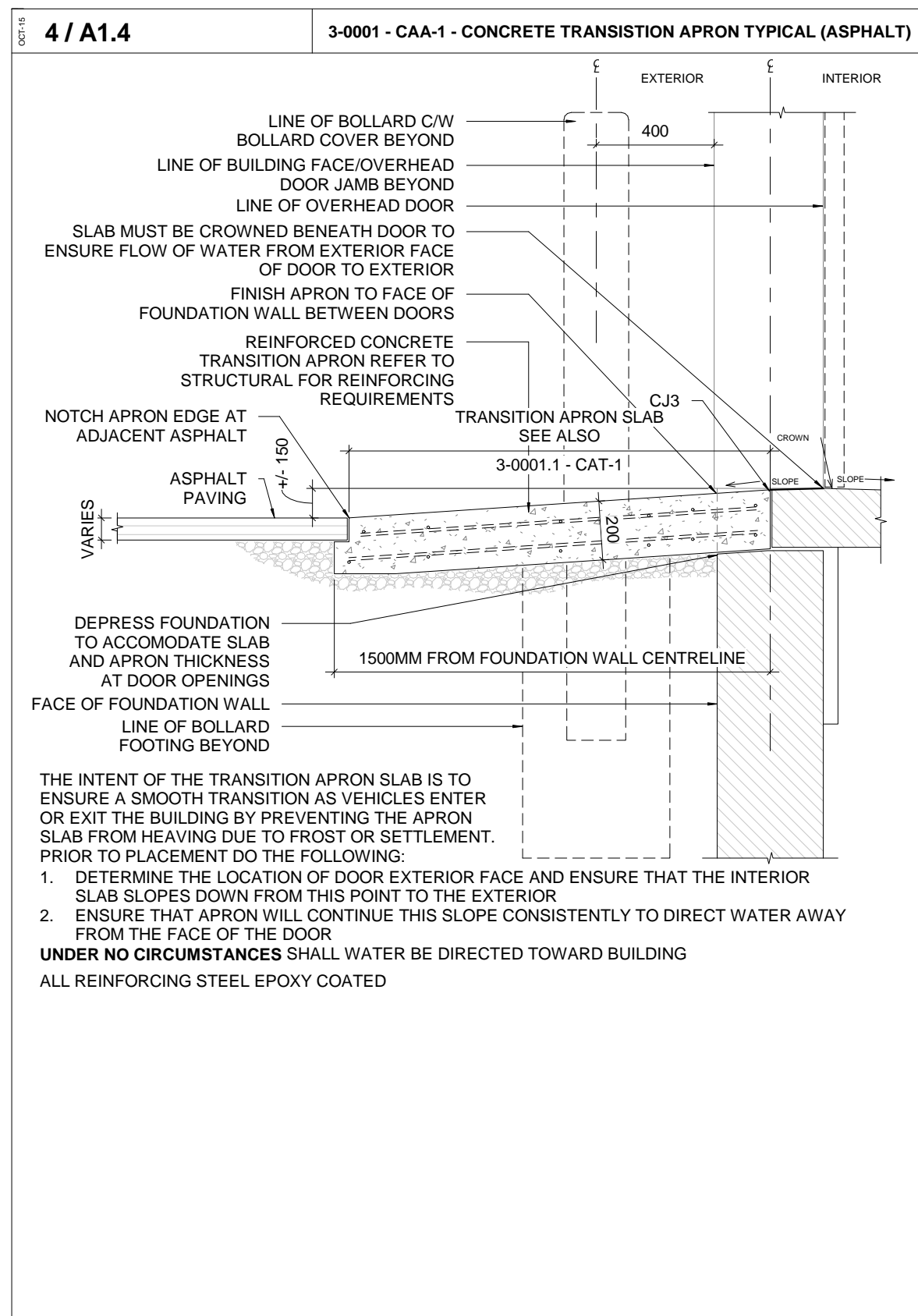
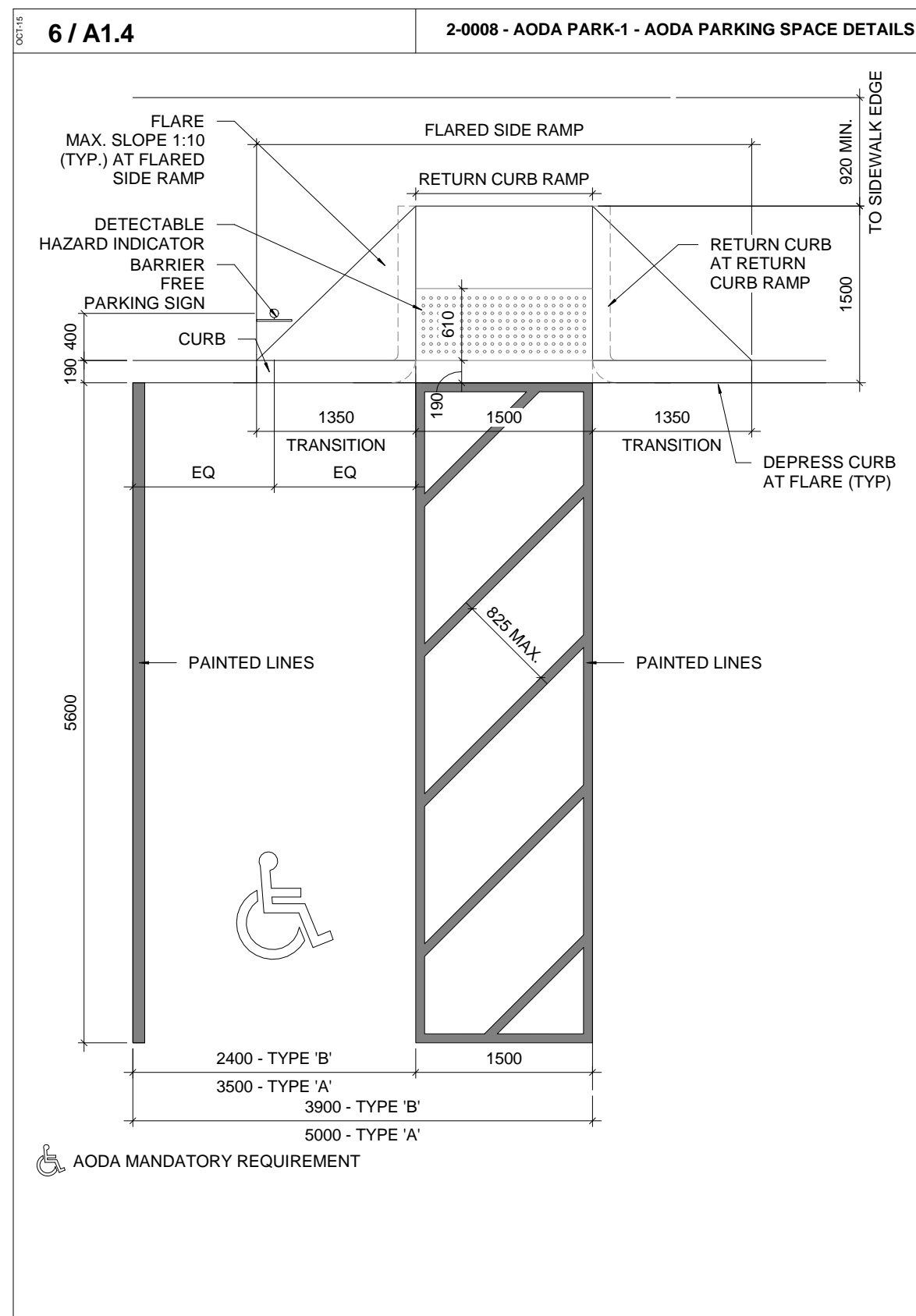
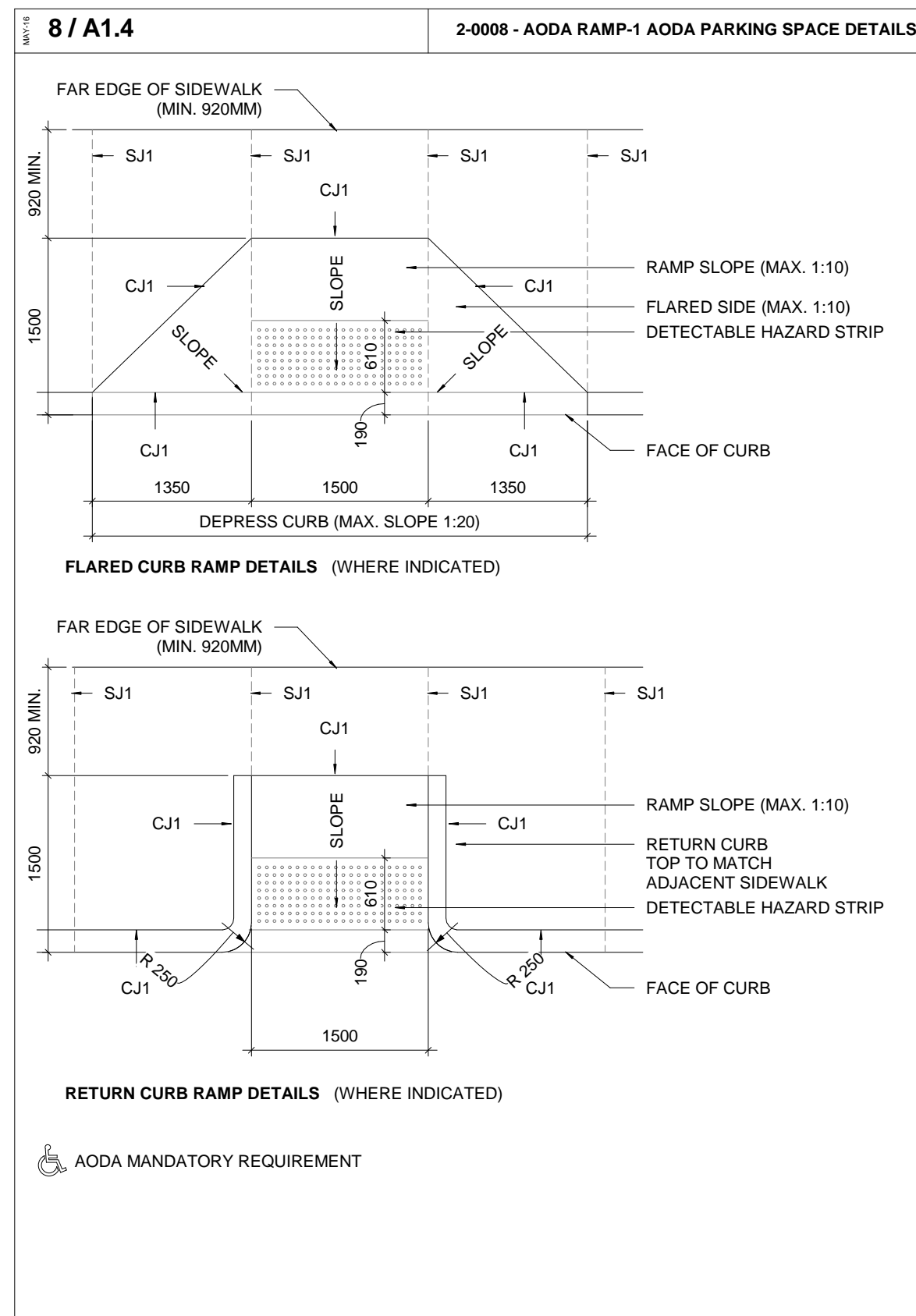
Attachments:

Replacement Architectural Drawings

Door Hardware Schedule

END OF DOCUMENT





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ISSUE OR REVISION		
NO.	ISSUED FOR	DATE
1	SPA SUBMISSION 01	2018.01.29
3	80% CLIENT REVIEW	2018.05.29
7	90% CLIENT REVIEW	2018.12.05
8	100% CLIENT REVIEW	2019.02.12
9	BUILDING PERMIT	2019.04.11
11	ADDENDUM 1	2019.08.22

PROJECT: _____

CLIENT



THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES ARE TO BE REPORTED TO THE CONSULTANT.

ARCHITECT

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PROFESSIONAL SEAL

SITE AND GENERAL DETAILS

ORIENTATION

DATE 2019/07/09

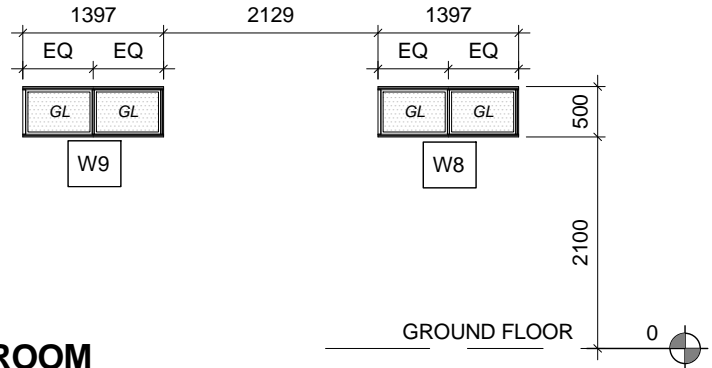
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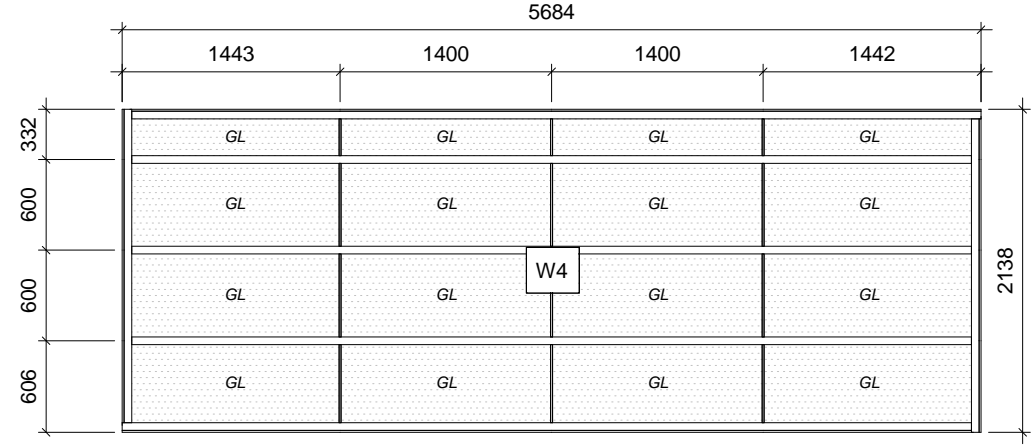
PROJECT No. 1509

DRAWING No.	A1.4	REVISION	11
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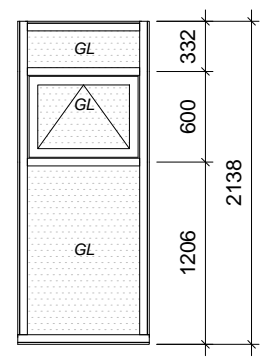
WINDOW SCHEDULE	
TYPE	SPECIFIED BASIS OF DESIGN
W1	BASIS OF DESIGN KAWNEER 1620 SSG OR EQUIVALENT
W2	BASIS OF DESIGN KAWNEER 601UT OR EQUIVALENT
W3	BASIS OF DESIGN KAWNEER 451 OR EQUIVALENT
W4	BASIS OF DESIGN KAWNEER 1620 SSG OR EQUIVALENT
W6	BASIS OF DESIGN KAWNEER 1620 SSG OR EQUIVALENT
W7	BASIS OF DESIGN KAWNEER 1620 SSG OR EQUIVALENT
W8	BASIS OF DESIGN KAWNEER 518 ISOPORT OR EQUIVALENT
W9	BASIS OF DESIGN KAWNEER 518 ISOPORT OR EQUIVALENT
W10	BASIS OF DESIGN FLEMING TYPE 'D' FRAME OR EQUIVALENT



2 GLAZING - CLERSTORY WINDOW IN WASHROOM
1 : 75

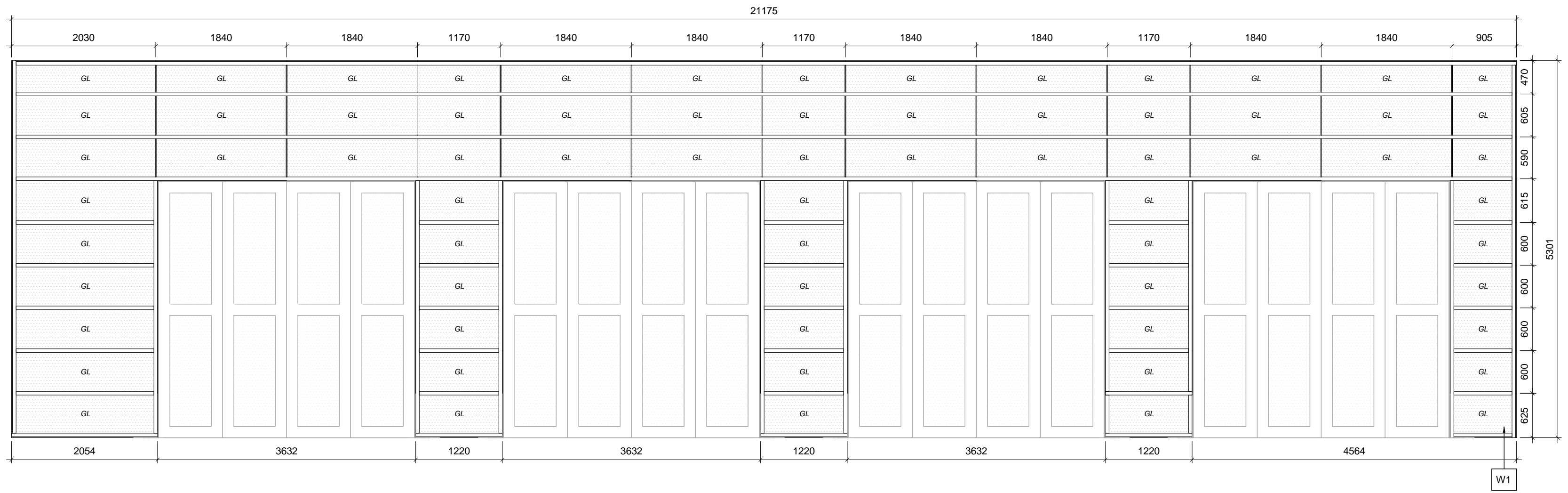


3 GLAZING - CREW AREA
1 : 50

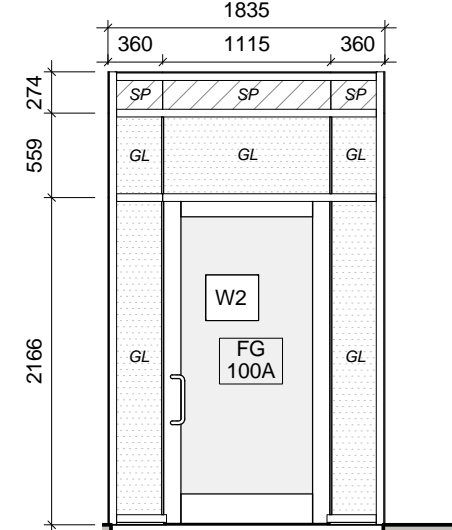


4 GLAZING - CREW AREA
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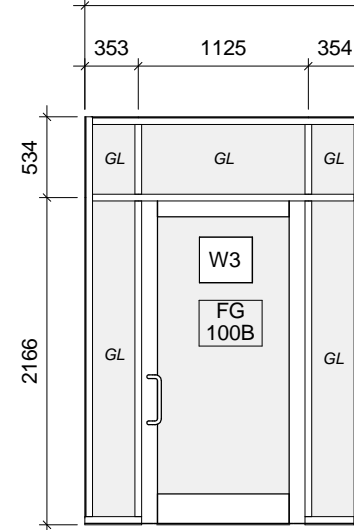
1 GLAZING - VEHICLE BAY
1 : 50



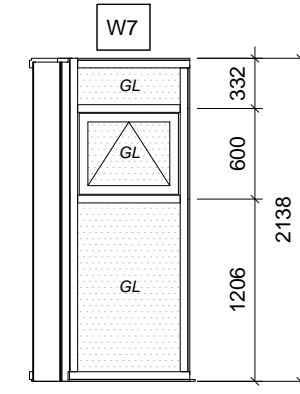
5 GLAZING - ENTRANCE VESTIBULE
1 : 50



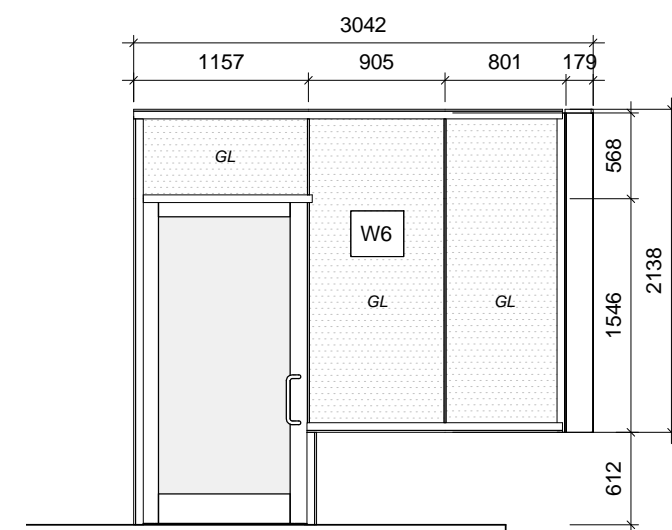
6 GLAZING - ENTRANCE INTERIOR
1 : 50



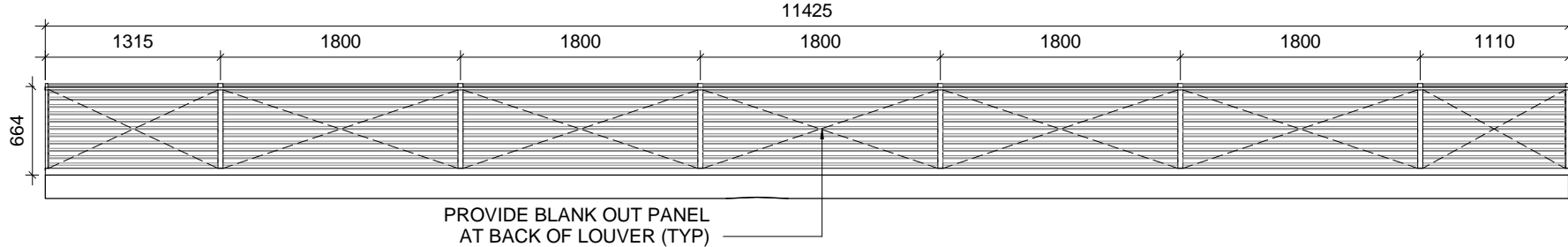
7 GLAZING - WRITE UP ROOM
1 : 50



8 GLAZING - WRITE UP ROOM
1 : 50

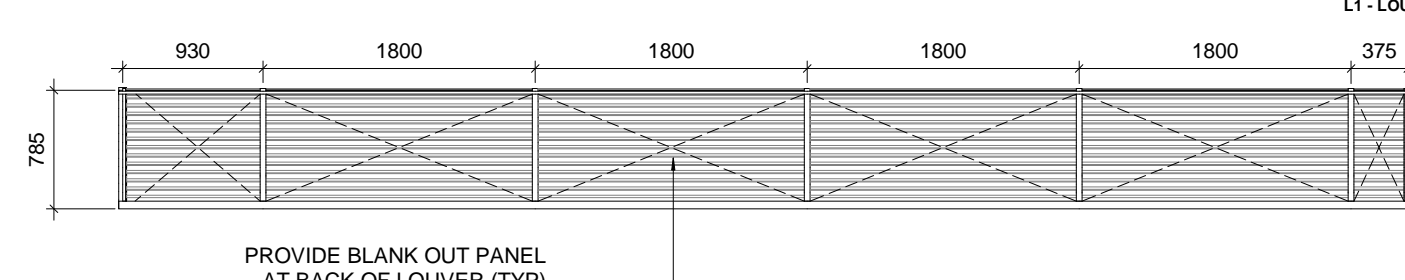


9 CLADDING - LOUVERS
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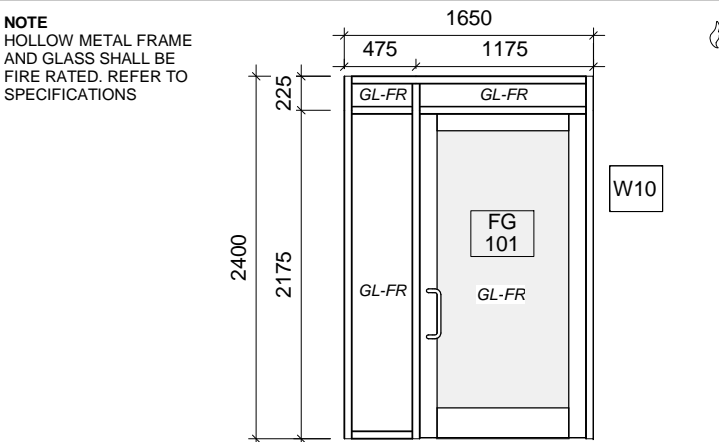


1. LOUVER SHALL BE ANCHORED BACK TO BUILDING STRUCTURE AS PER SPECIFICATIONS (TYP).
2. CONTRACTOR SHALL COORDINATE WITH MECHANICAL DRAWINGS FOR INTAKE AND EXHAUST ACTIVE LOUVER LOCATIONS.

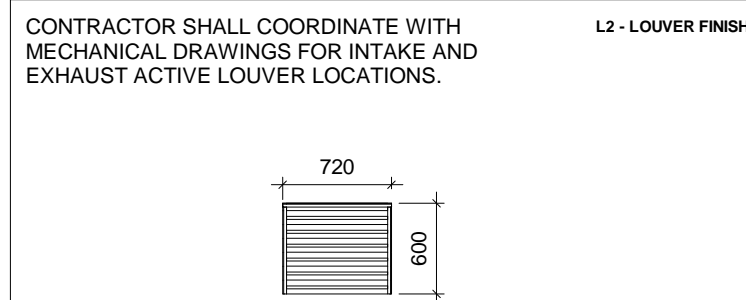
10 CLADDING - LOUVERS
1 : 50



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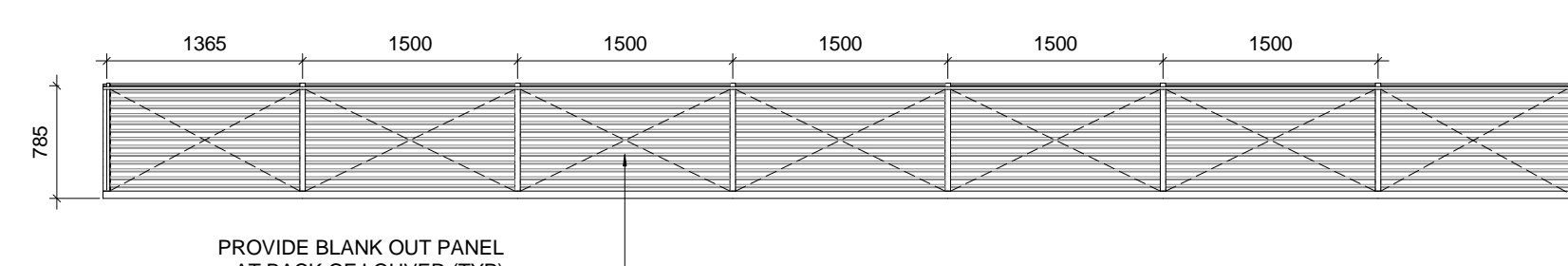


14 GLAZING - VEHICAL BAY TO CORRIDOR
1 : 50

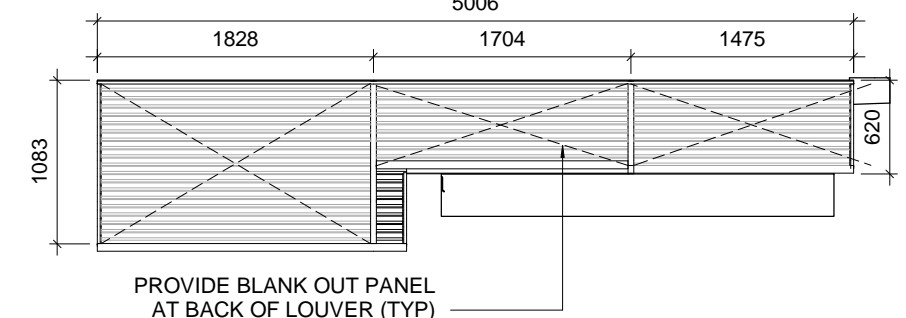


15 CLADDING - LOUVER AT BAY
1 : 50

11 CLADDING - LOUVERS
1 : 50

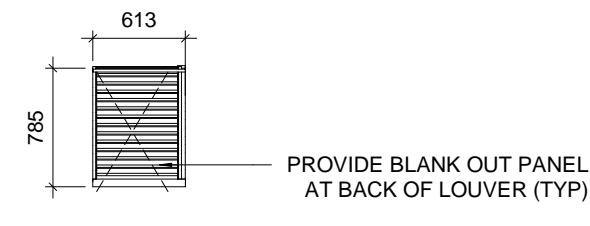


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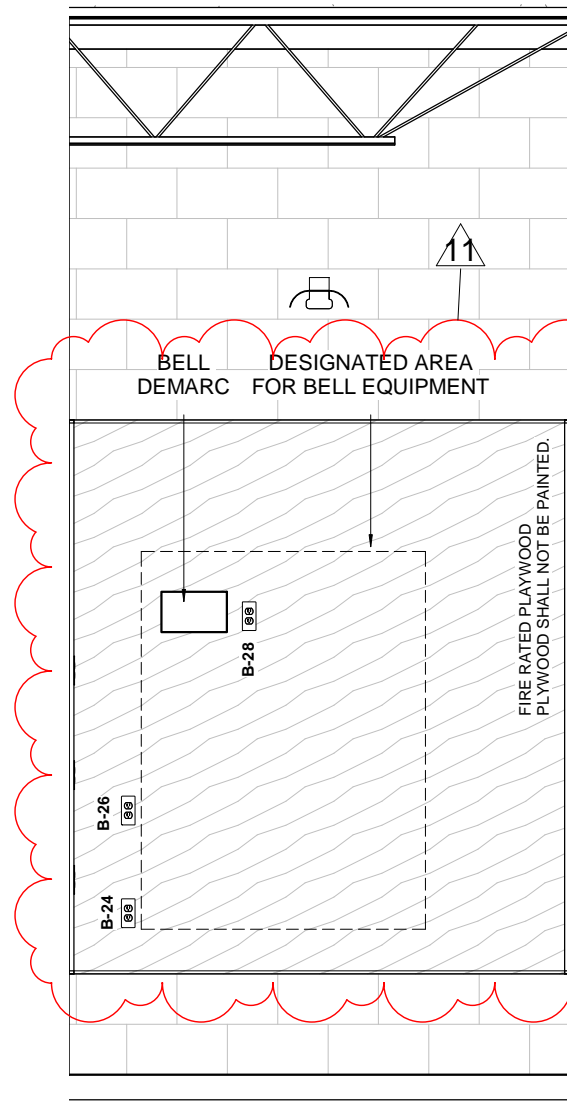
12 CLADDING - LOUVERS
1 : 50

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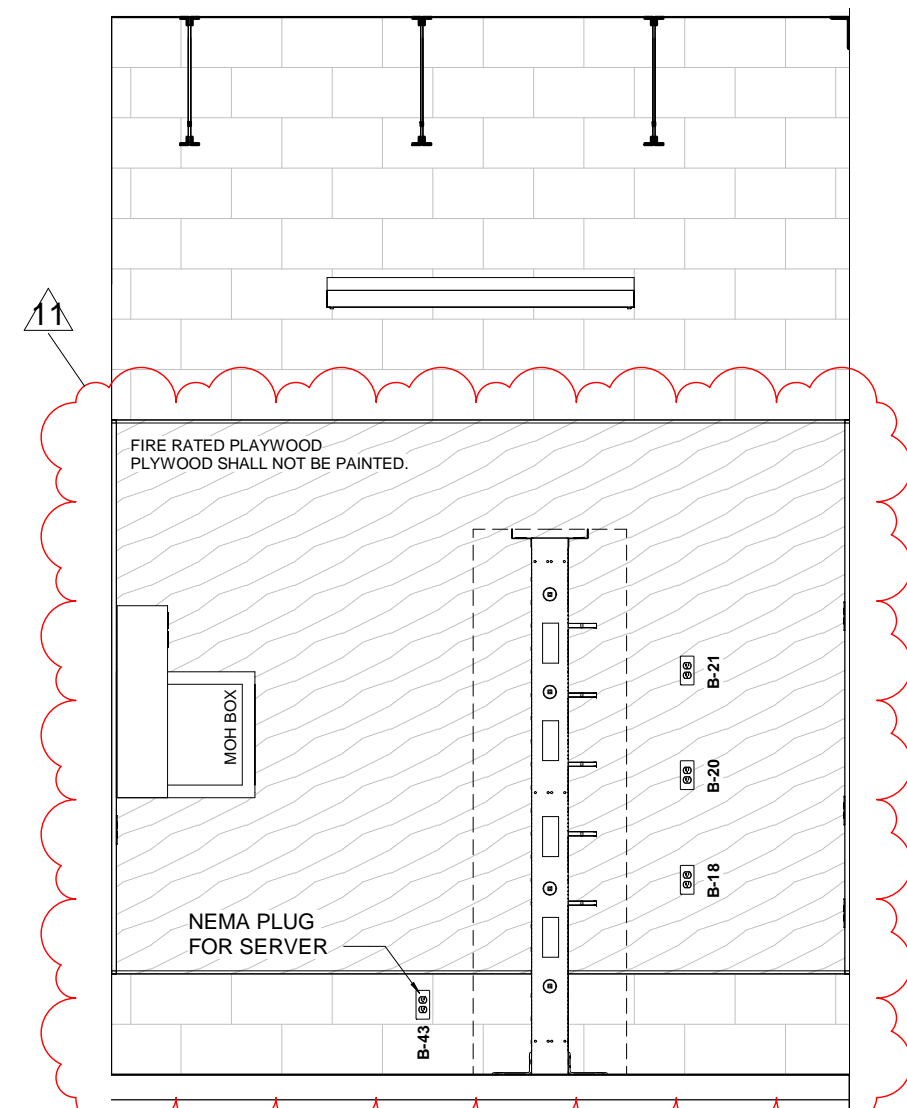


13 CLADDING - LOUVERS
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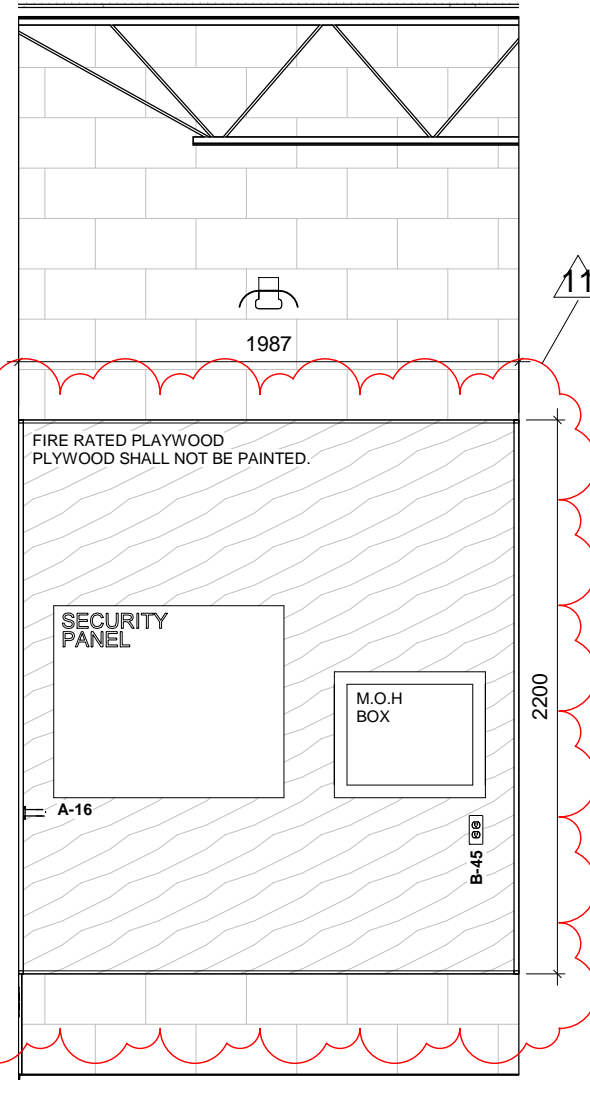
20 I.T ROOM - WEST ELEVATION
1 : 30



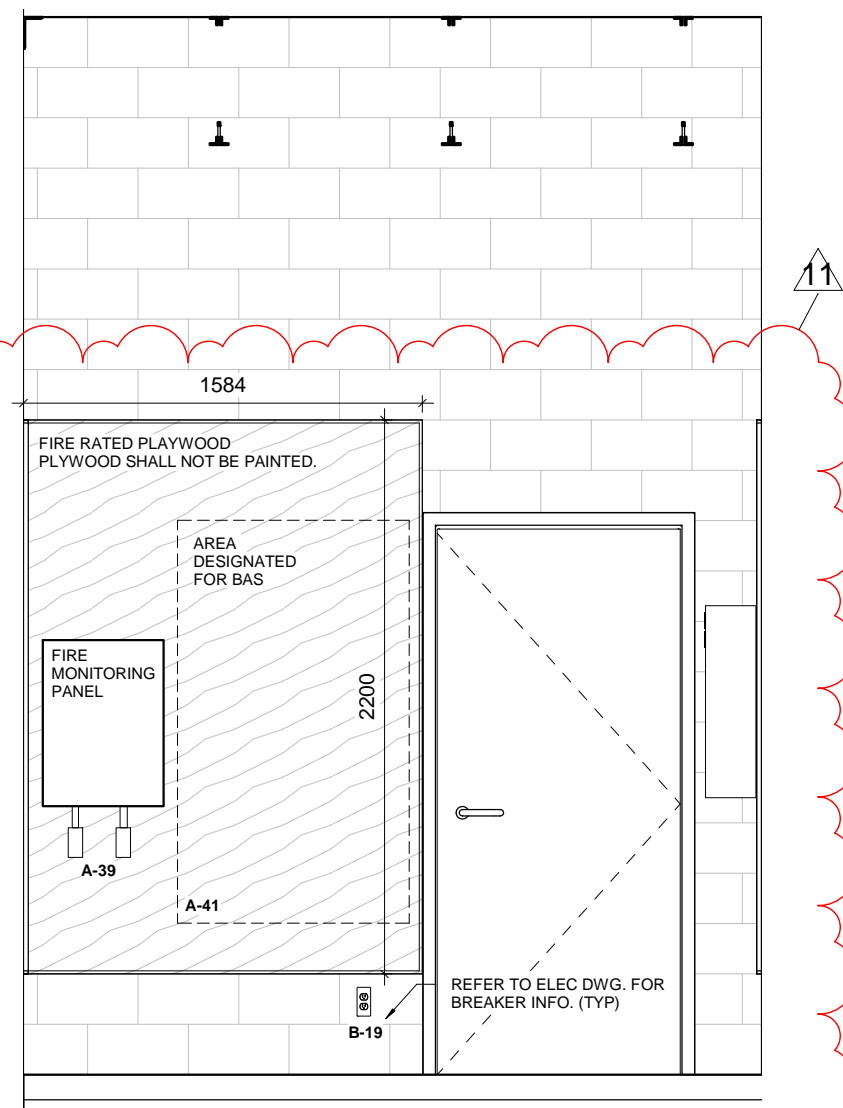
19 I.T ROOM - SOUTH ELEVATION
1 : 30



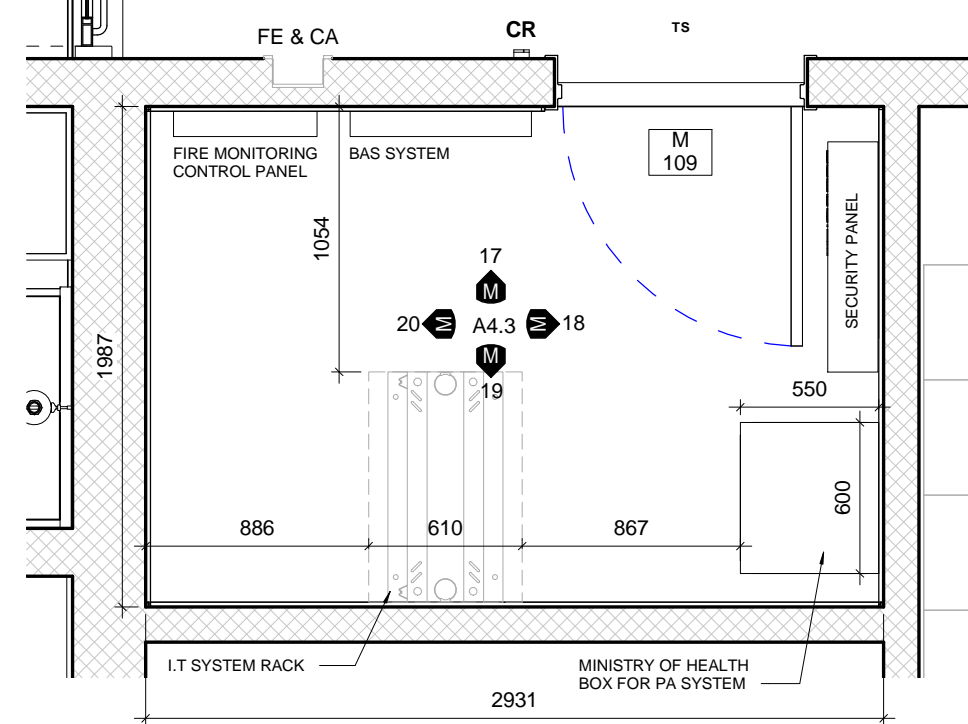
18 I.T ROOM - EAST ELEVATION
1 : 30



17 I.T ROOM - NORTH ELEVATION
1 : 30



16 I.T ROOM FLOOR PLAN
1 : 30



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YORK REGION PRS STATION #29 T-19-16

107 GLEN CAMERON ROAD, MARKHAM

PROJECT :

CLIENT :



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PROFESSIONAL SEAL

CLADDING, GLAZING, & LOUVER ELEVATIONS, I.T ROOM PLAN AND ELEVATIONS

ORIENTATION

DATE 2019/07/09

SCALE As indicated DRAWN BY SRL

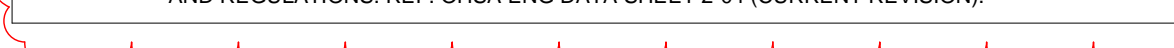
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PROJECT NO. 1509

DRAWING NO. A4.3

REVISION 11

8/21/2019 1:21:27 PM



NO.	ISSUE OR REVISION	DATE
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7	90% CLIENT REVIEW	2018.12.05
8	100% CLIENT REVIEW	2019.02.12
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107 GLEN CAMERON ROAD, MARKHAM

PROJECT :

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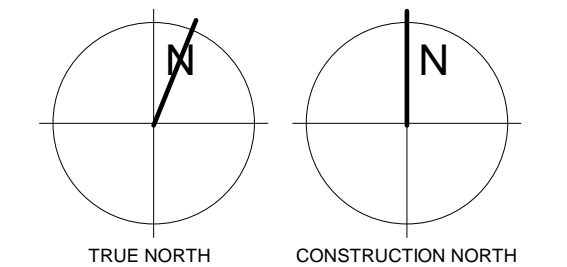
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PROFESSIONAL SEAL

DWG TITLE

WASHROOM DETAILS & FIXTURE MOUNTING HEIGHTS

ORIENTATION



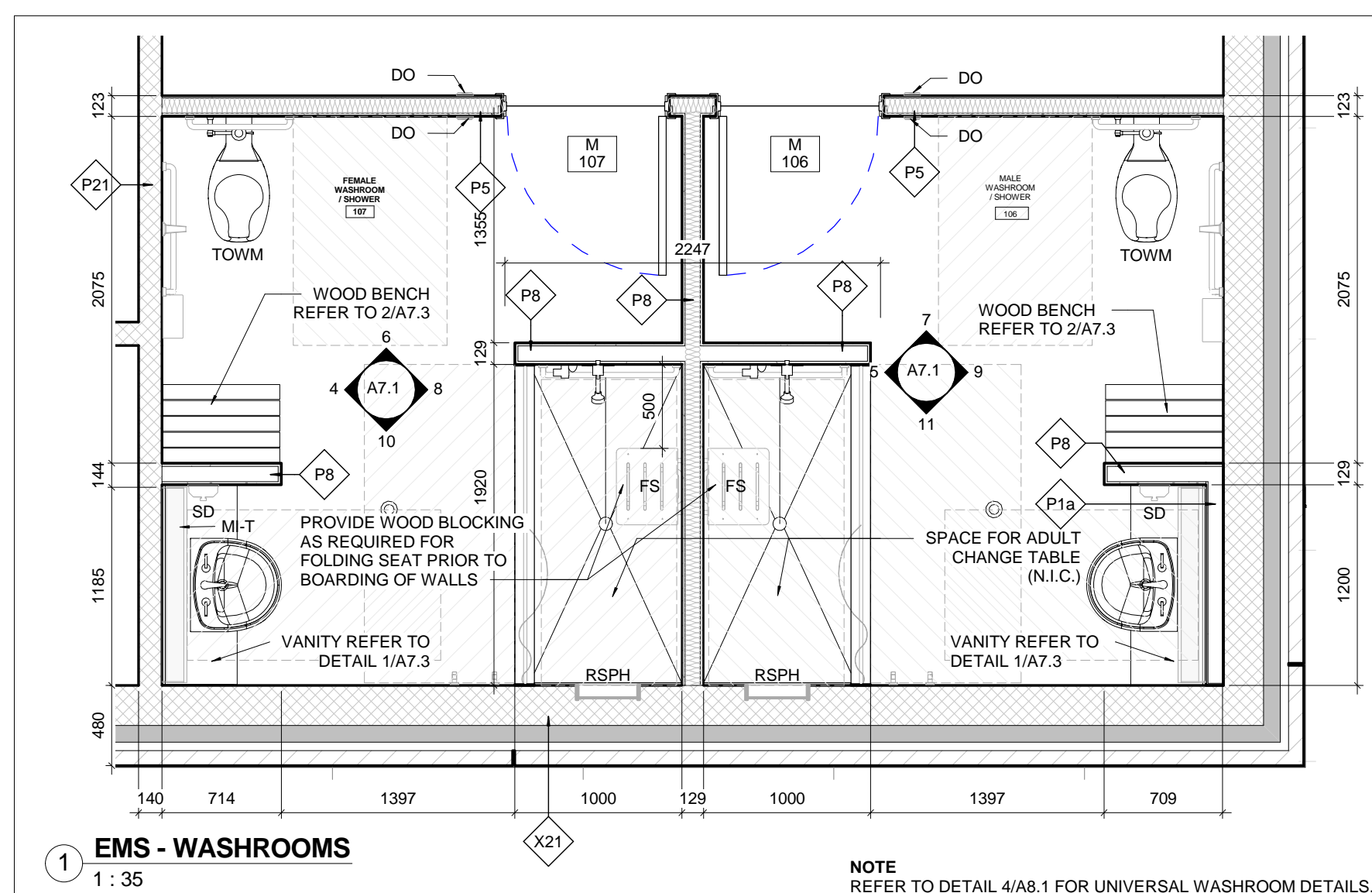
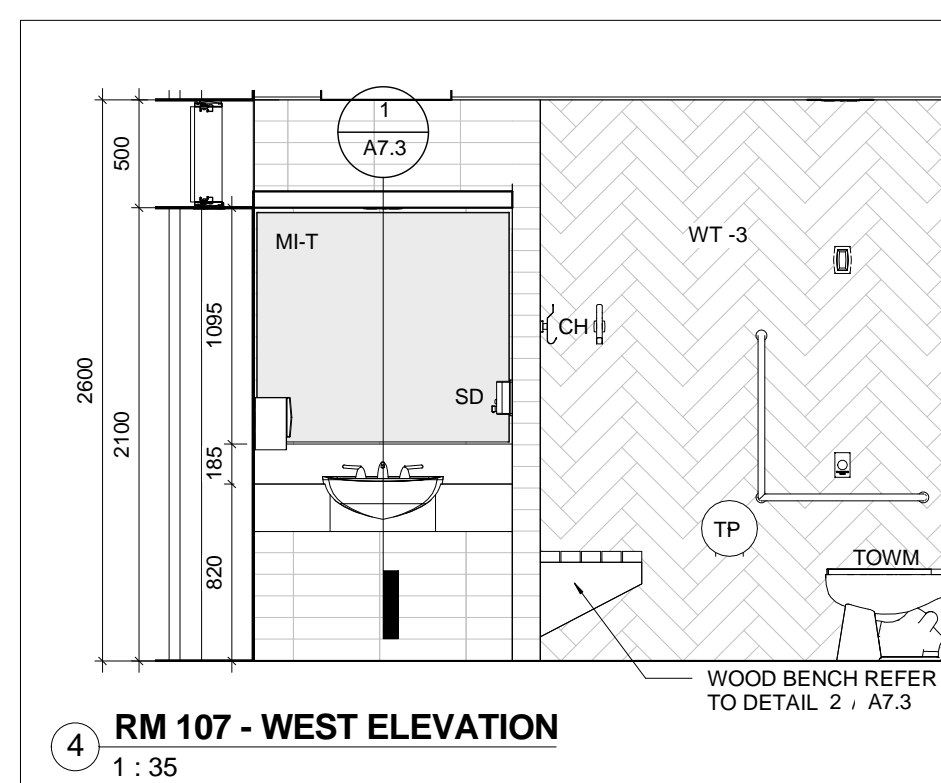
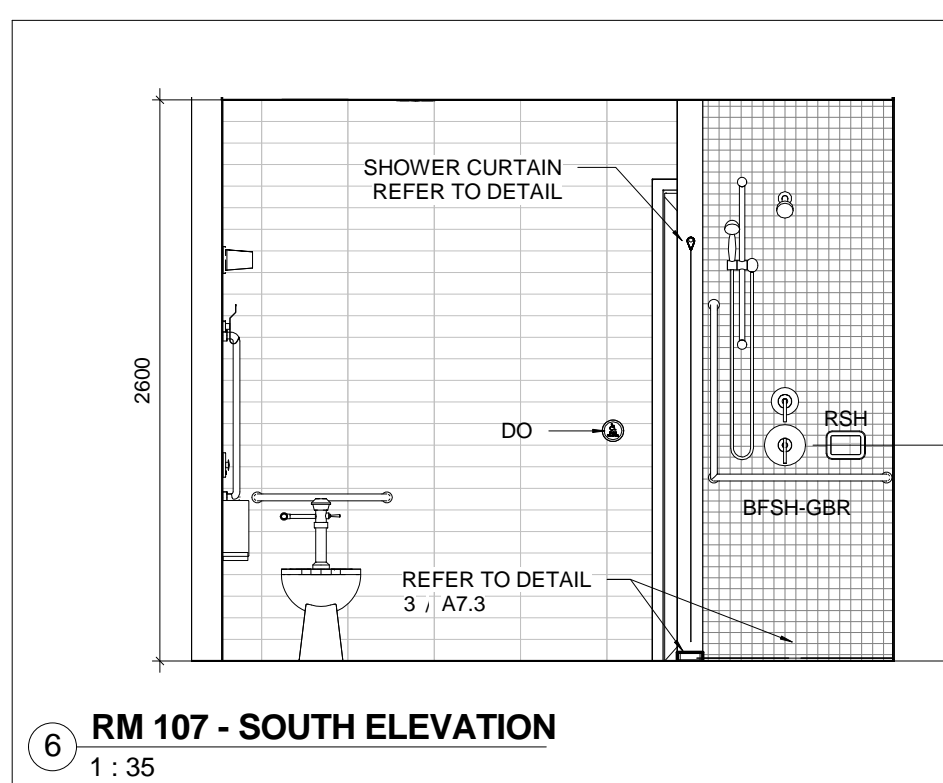
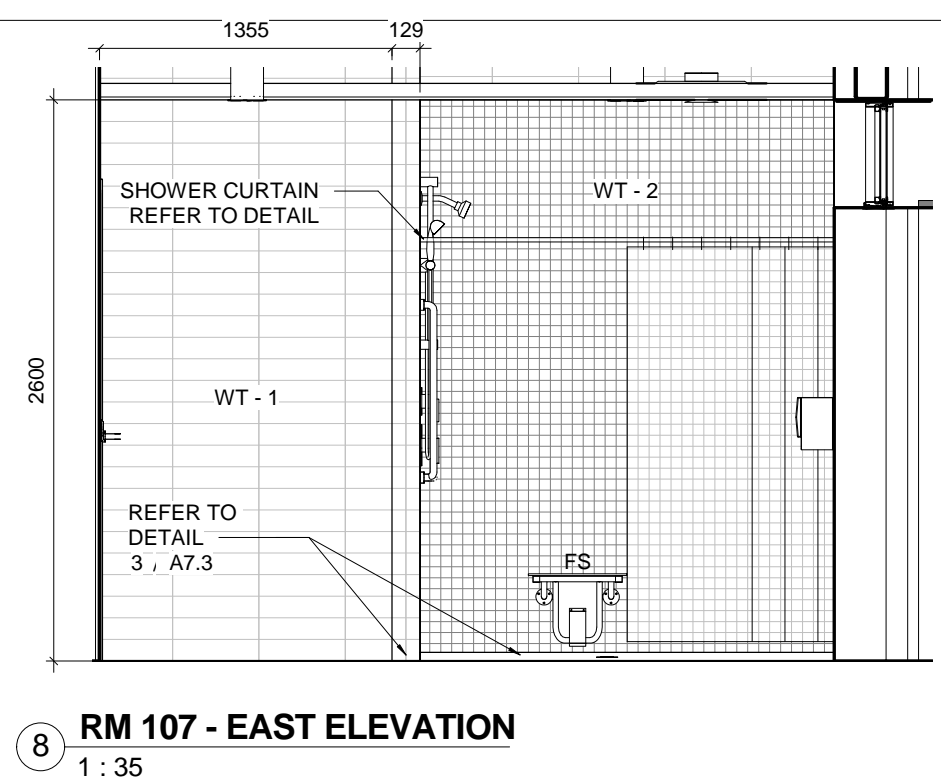
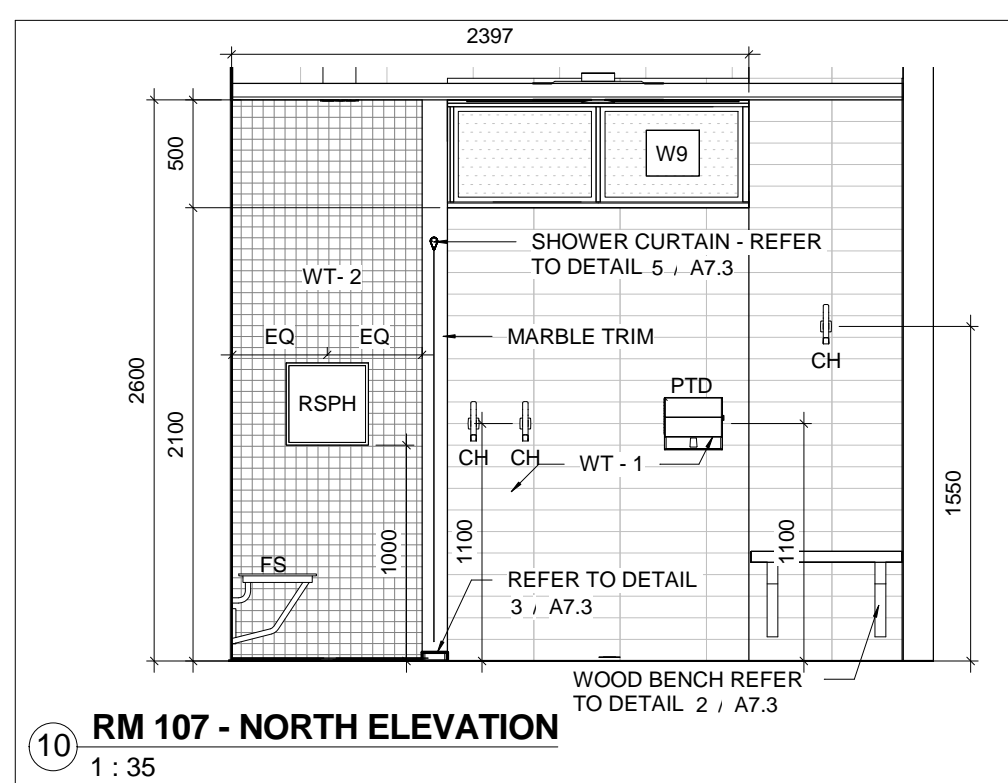
DATE 2019/07/09

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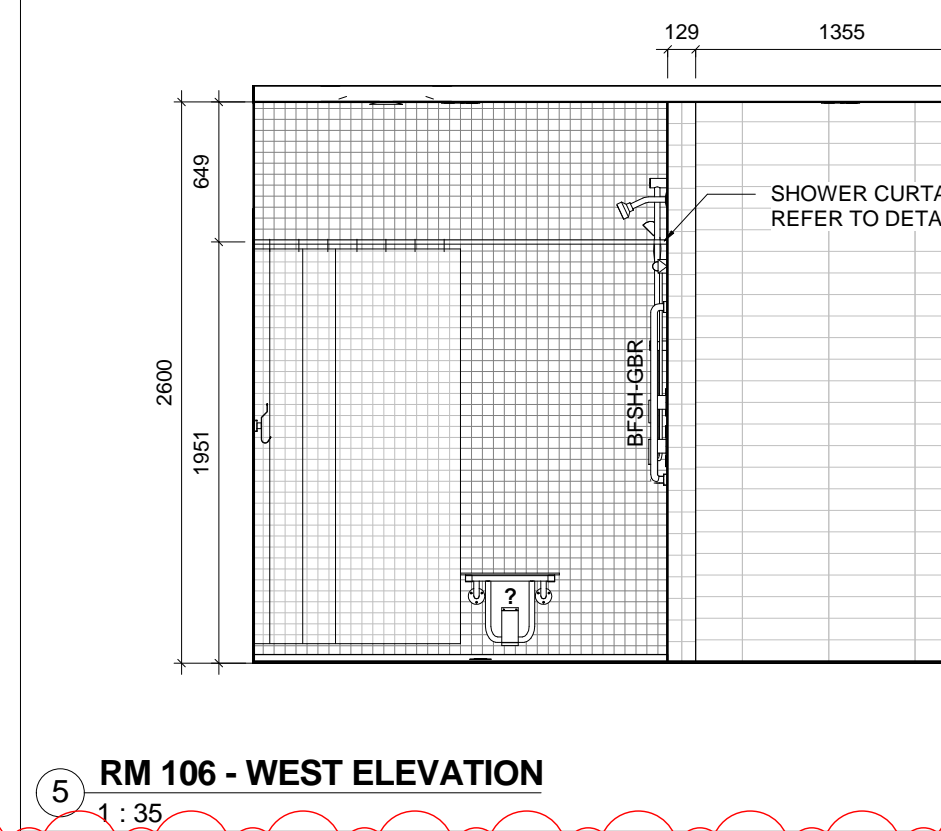
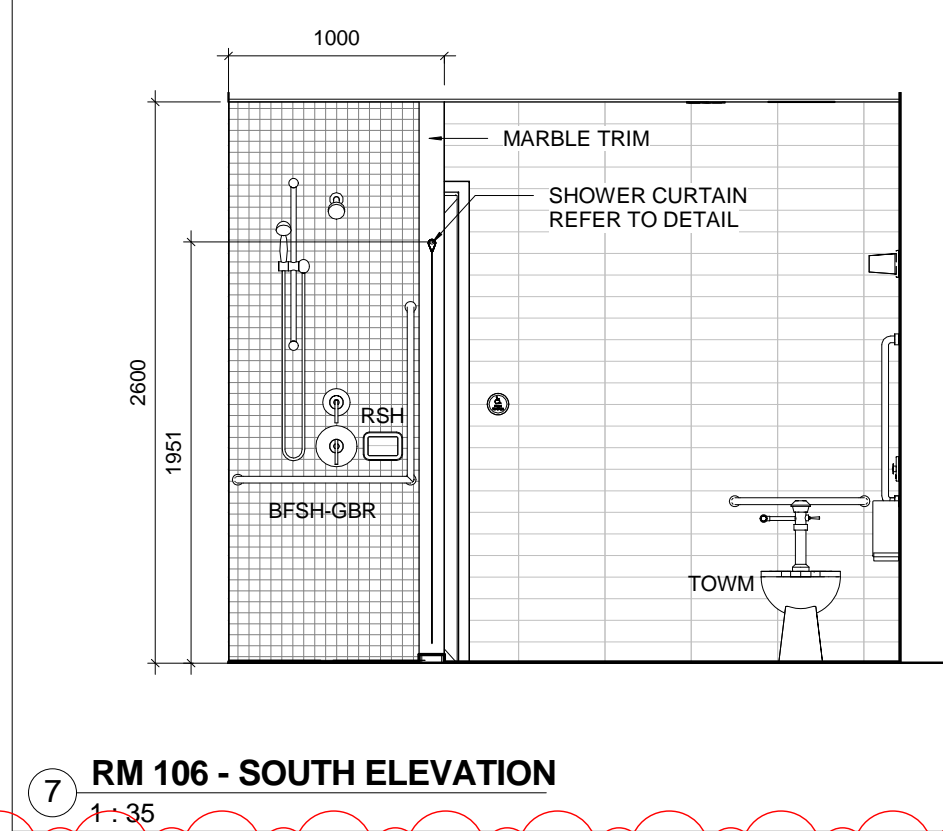
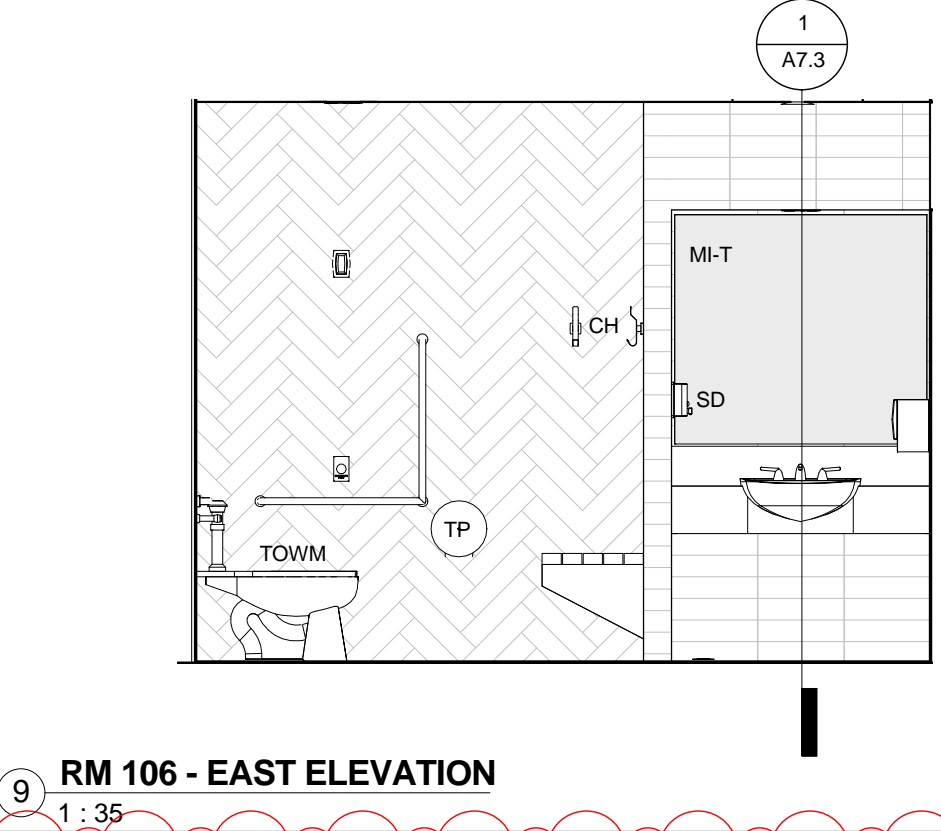
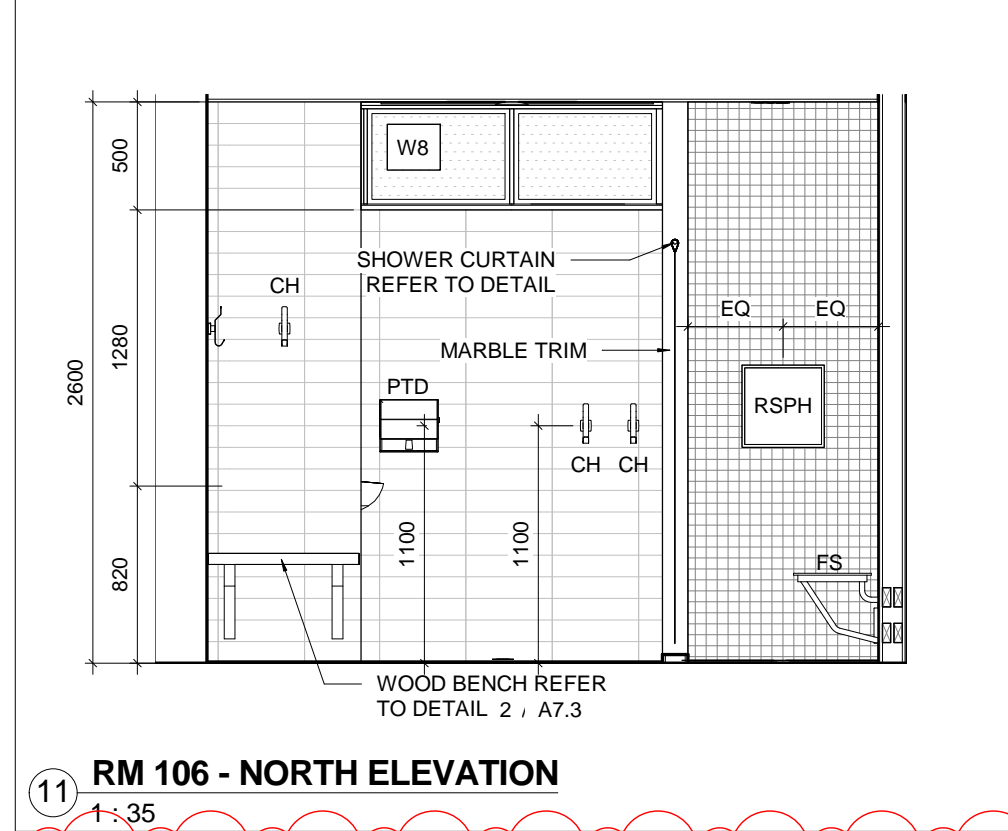
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PROJECT NO. 1509

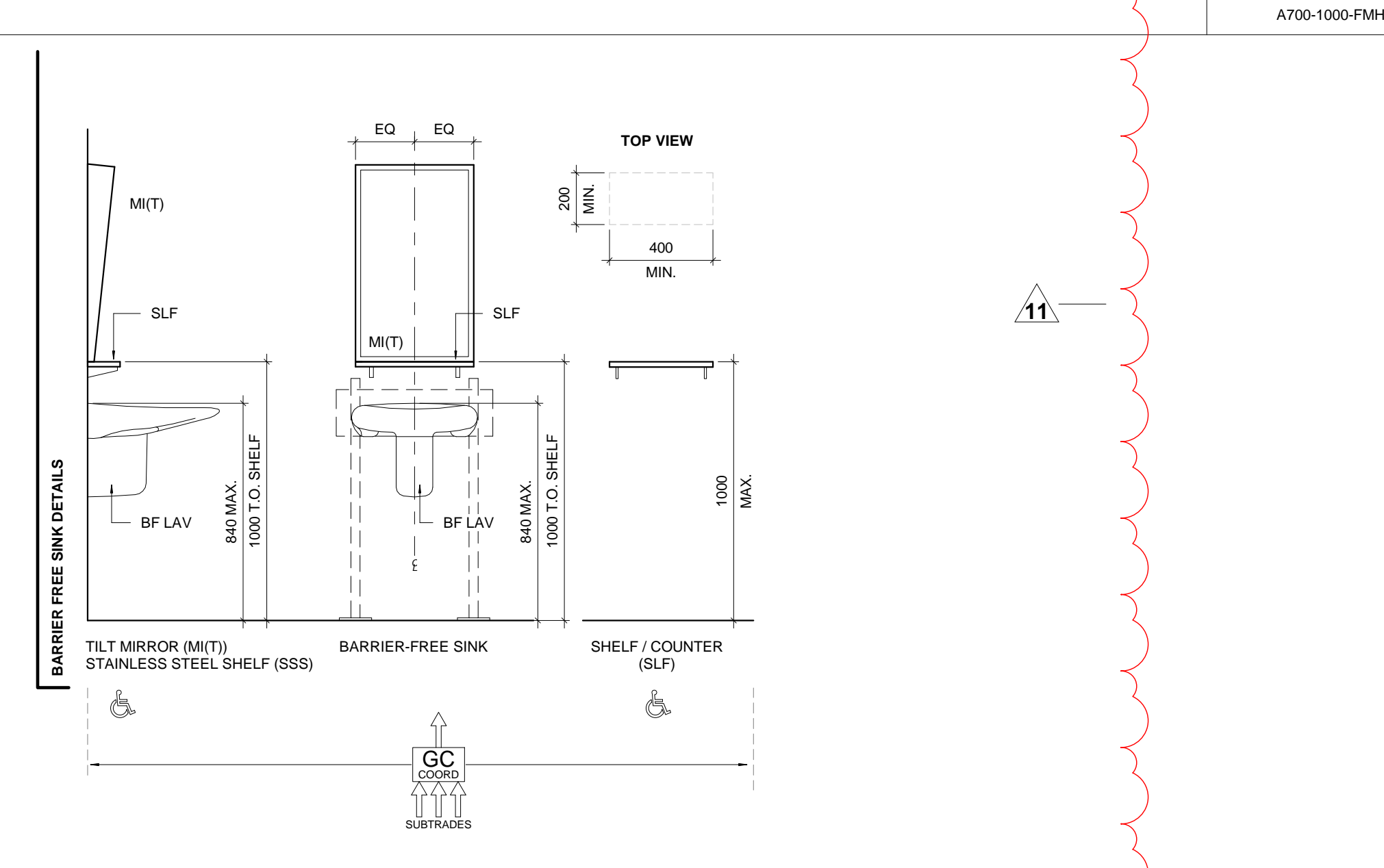
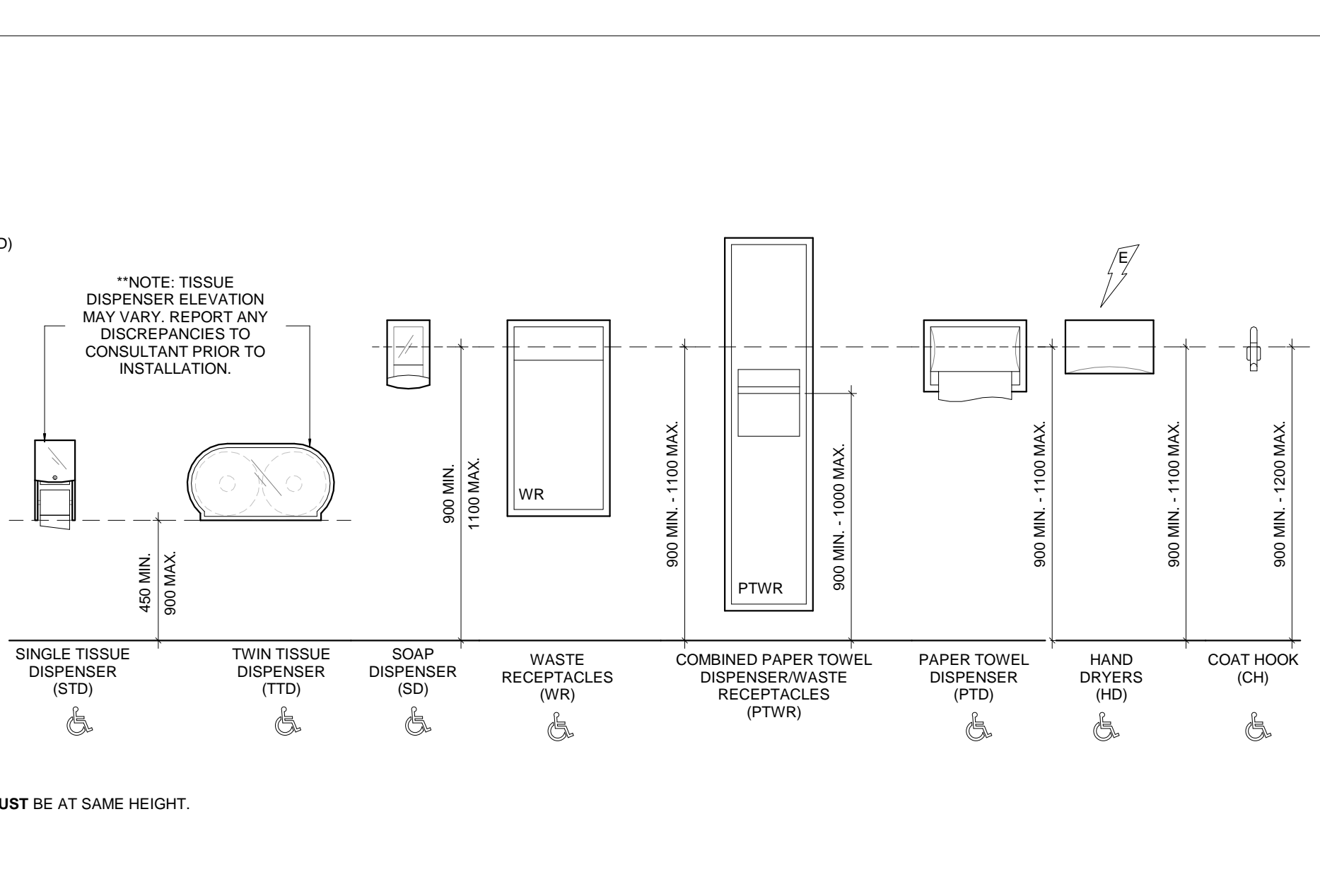
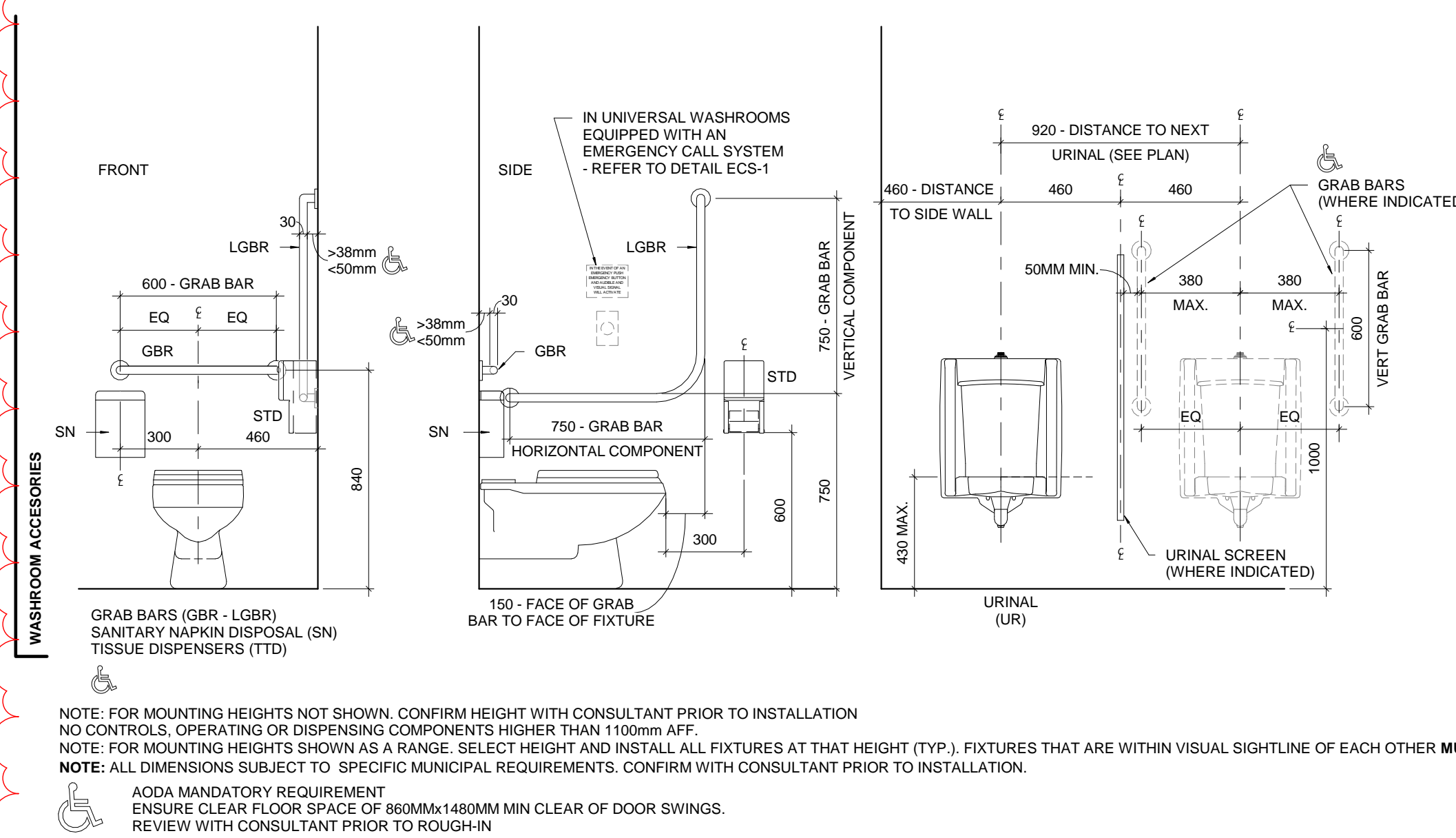
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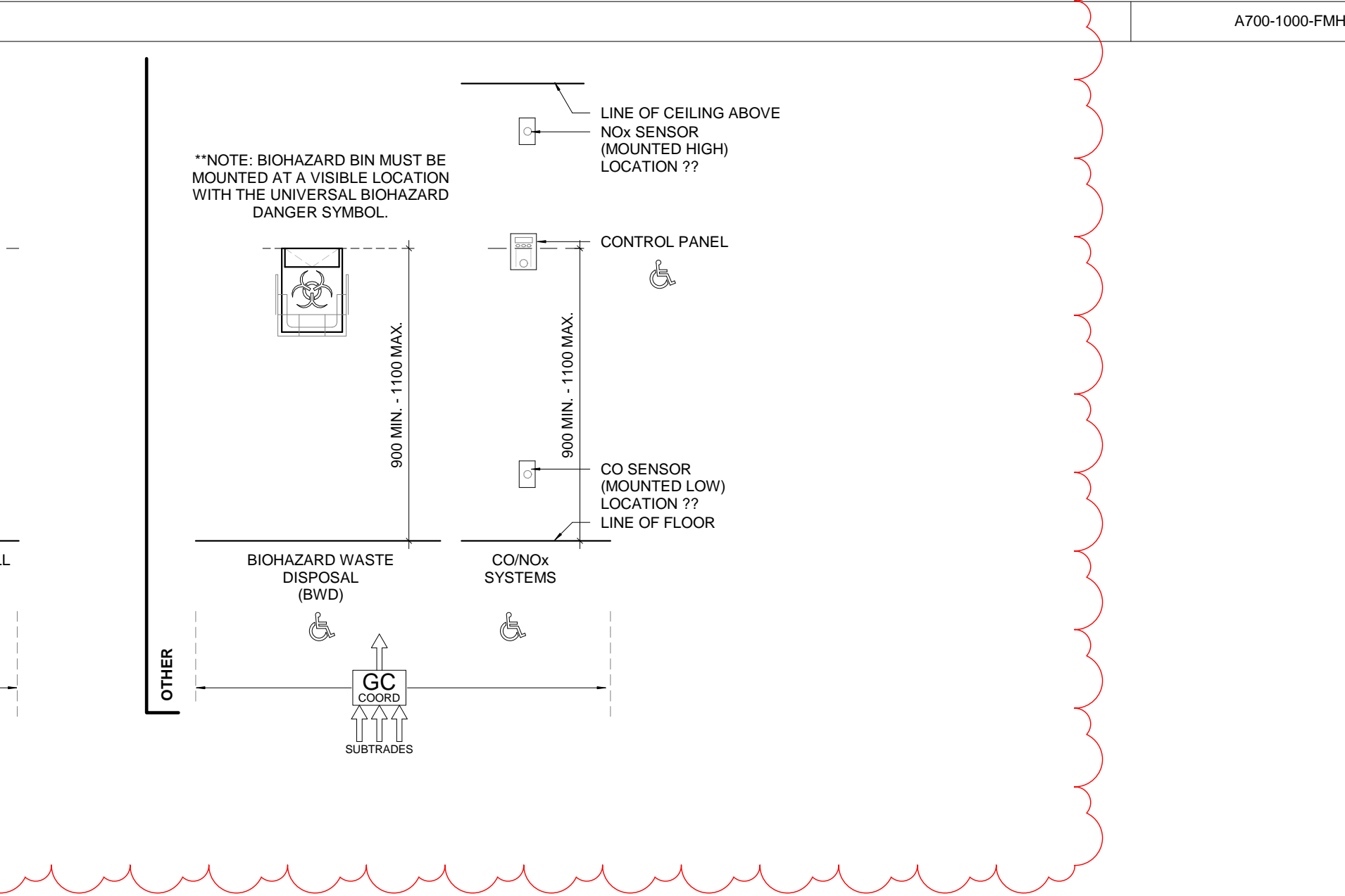
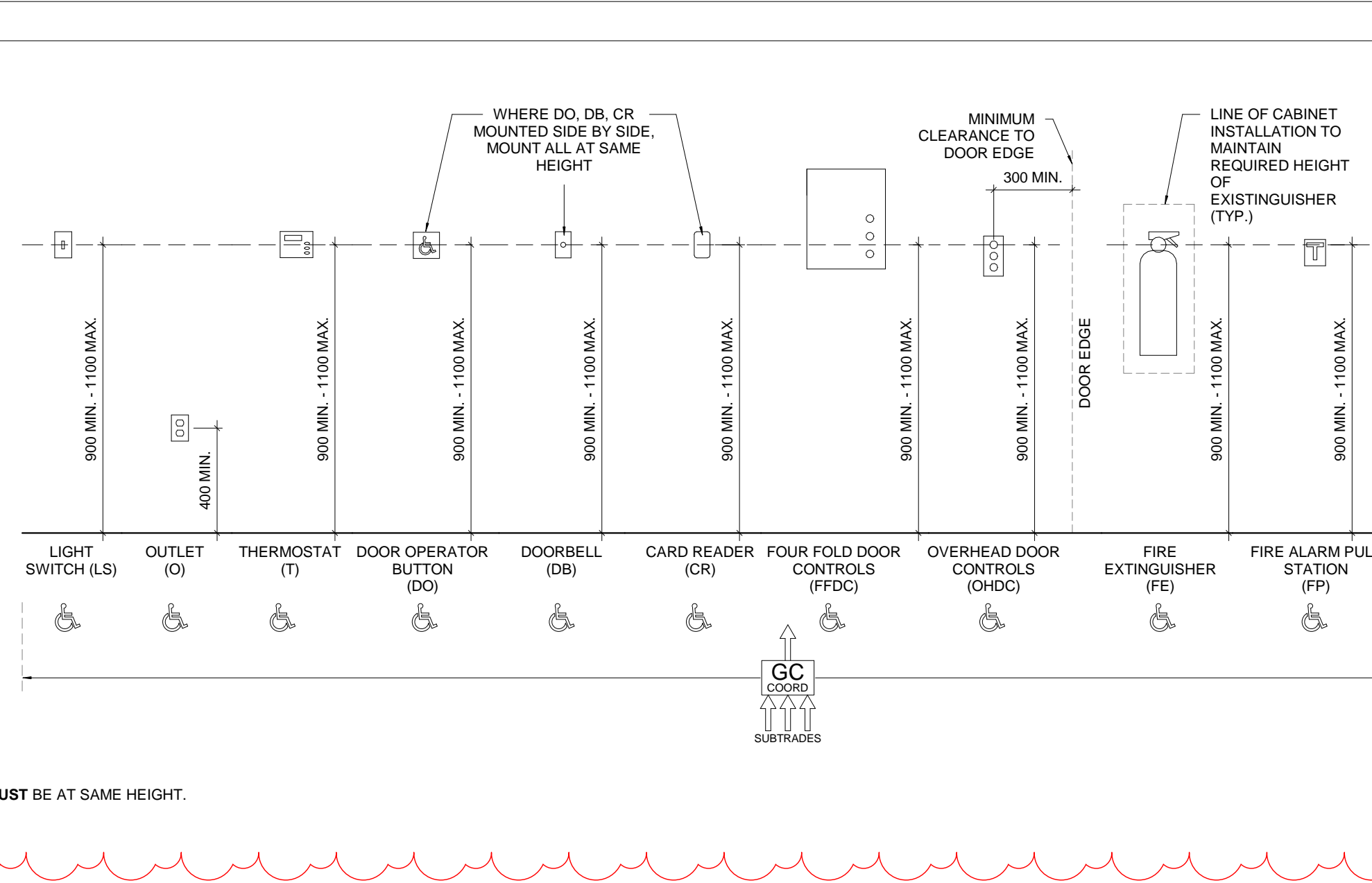
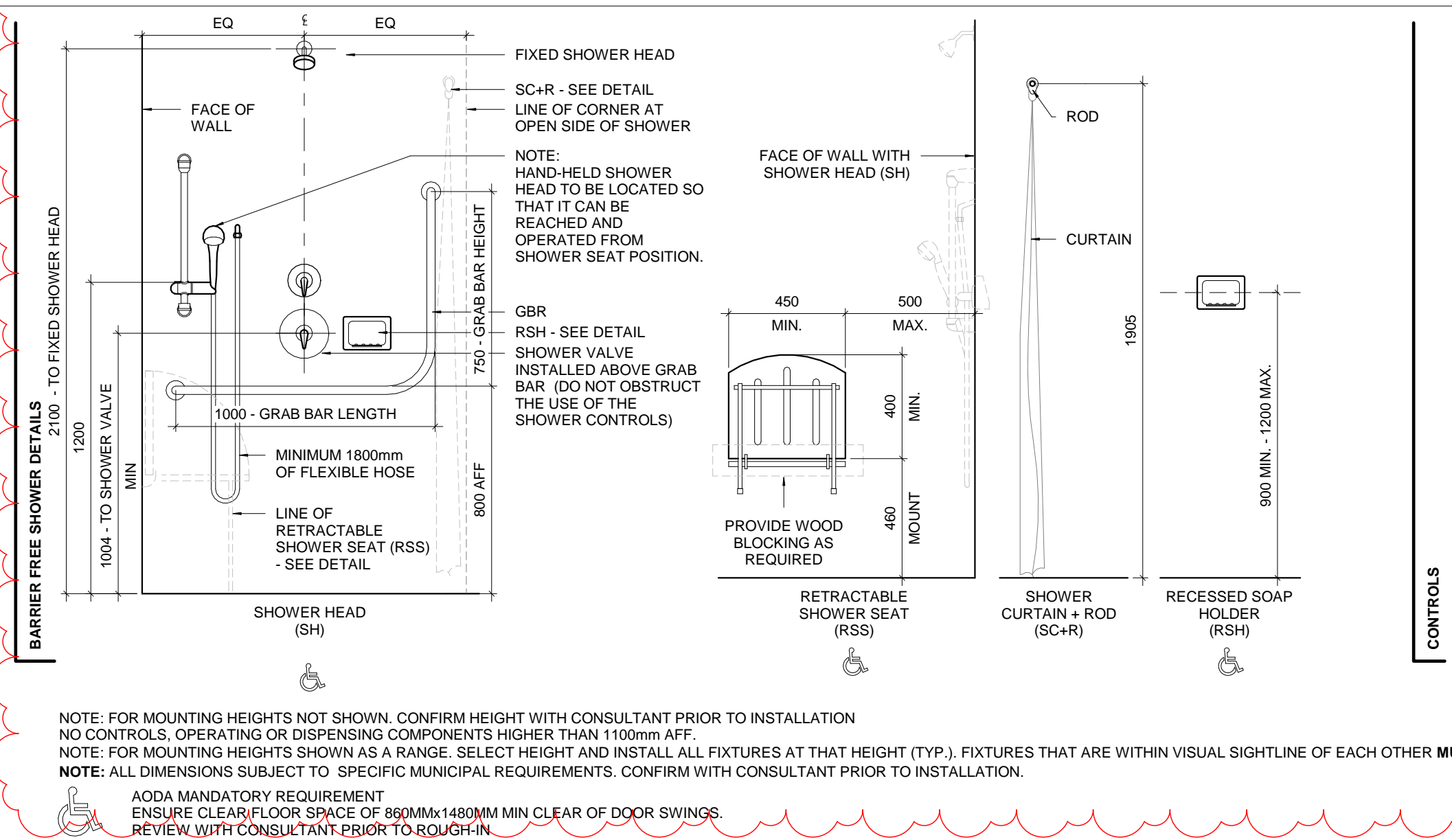
WASHROOM ACCESSORIES			WASHROOM ACCESSORIES		
TAG	DESCRIPTION	QUANTITY	TAG	DESCRIPTION	QUANTITY
BFSH-GBR	BARRIER FREE SHOWER GRAB BAR (750mm VERTICAL AND HORIZONTAL)	2	PTD	PAPER TOWEL DISPENSER	2
MI-T	BARRIER FREE TILTED MIRROR	2	RSPH	RECESSED SHAMPOO HOLDER	2
CH	COAT HOOK	16	RSH	RECESSED SOAP HOLDER	2
GBR LS-H	L-SHAPED 31mm BAR TO BE 750mm LONG AND 750mm VERTICAL (LS) GRAB BAR TO HAVE 500mm LONG HORIZONTAL (H)	2	FS	RETRACTABLE SHOWER SEAT	2
L	LOCKERS AS SPECIFIED (REFER TO DRAWINGS FOR LAYOUT)	34	SC-R	SHOWER CURTAIN	2
			SD	SOAP DISPENSER	3
			TP	SURFACE MOUNTED TOILET TISSUE DISPENSER	2



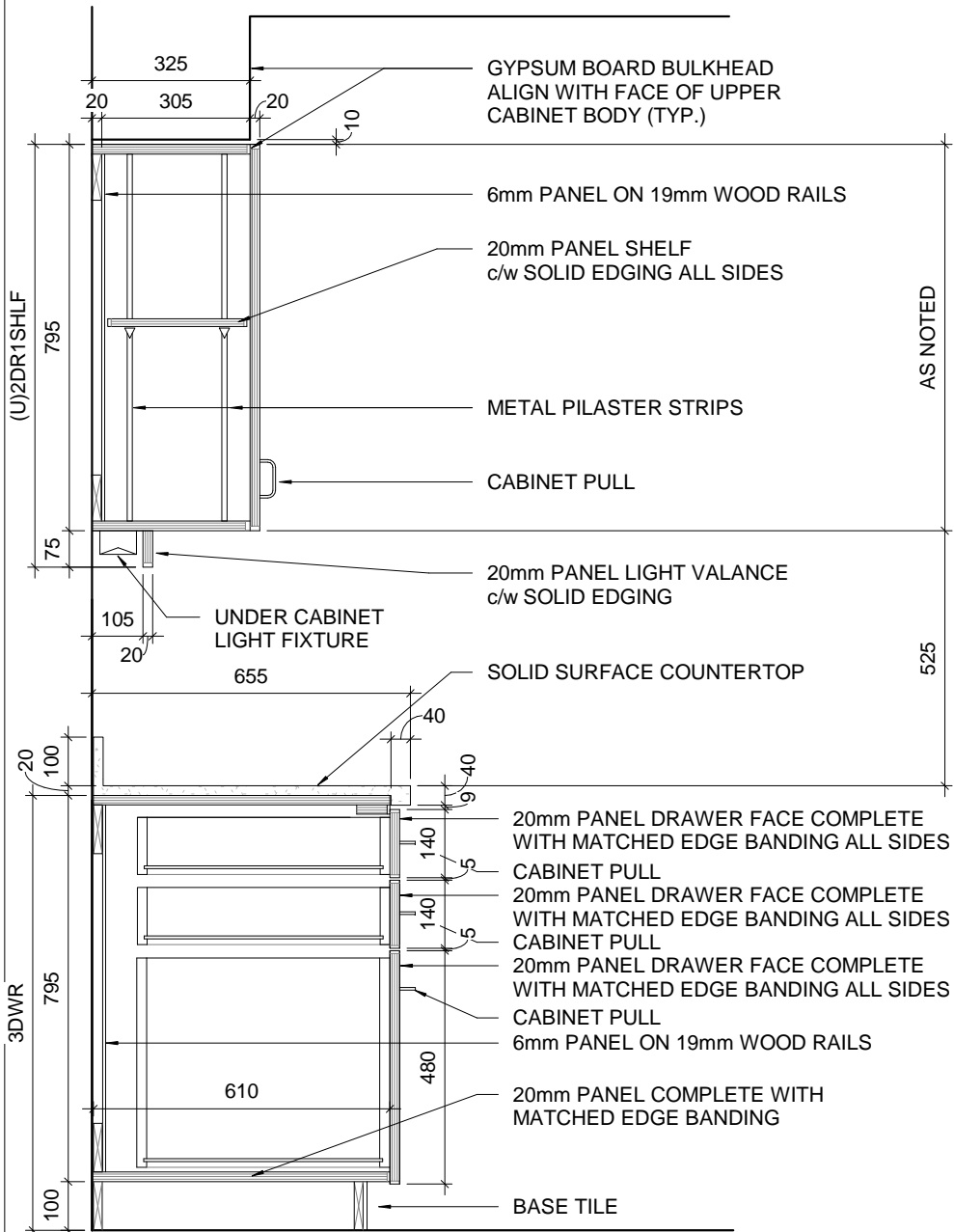
2 / A7.1



3 / A7.1

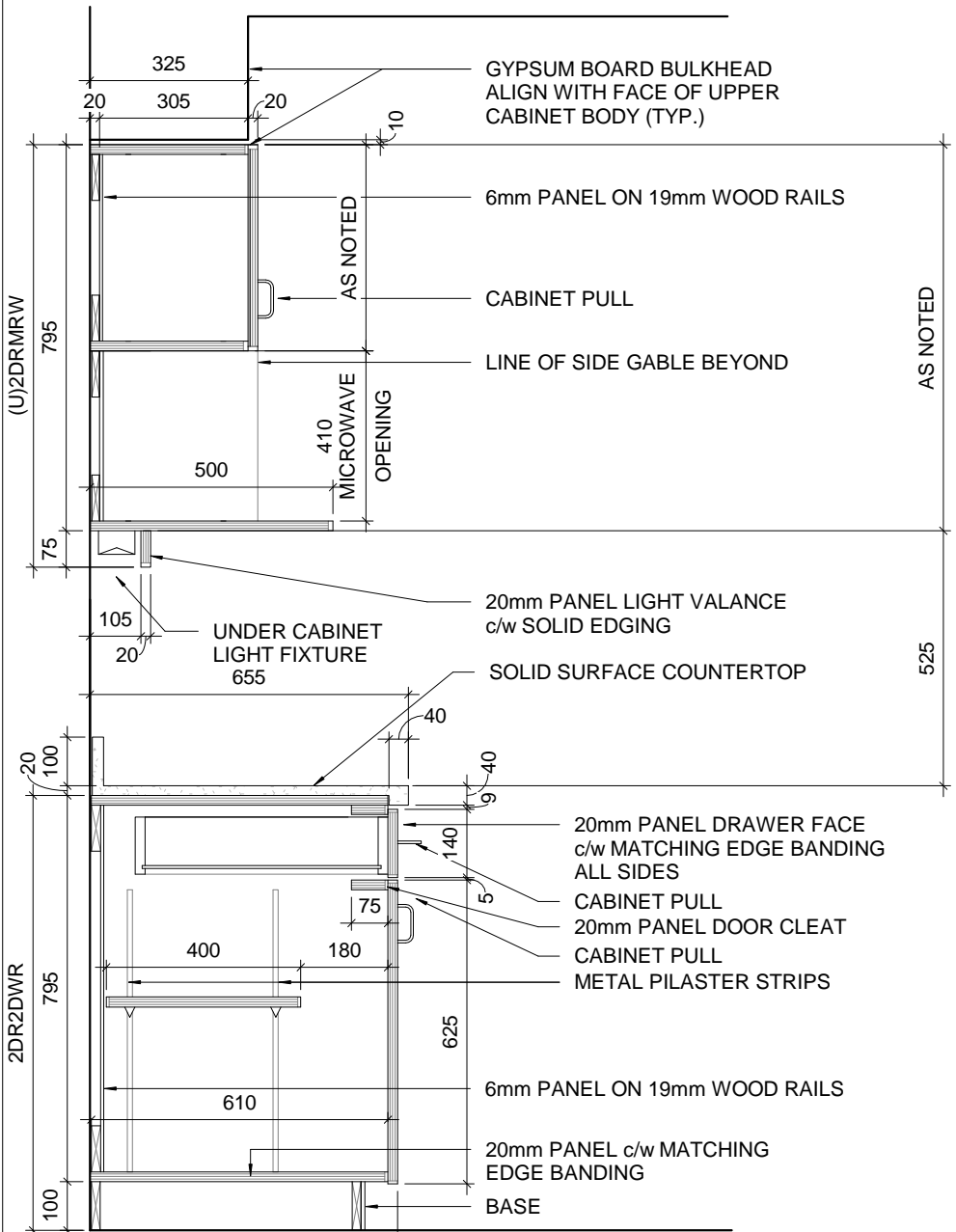


16 / A7.2



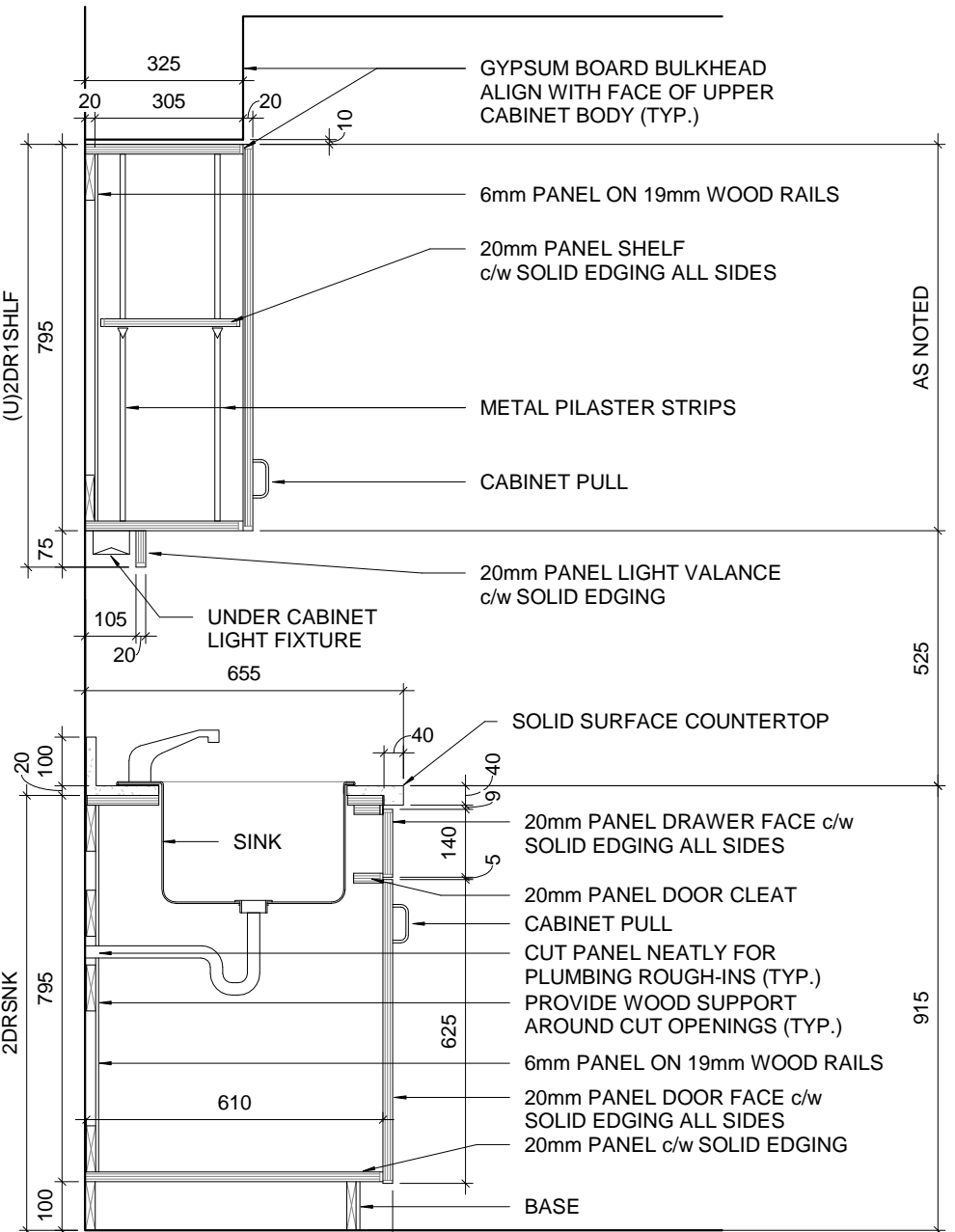
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 ** ALL WORK TO BE COMPLETED IN ACCORDANCE WITH AWMAC ARCHITECTURAL WOODWORK STANDARDS AS SPECIFIED

14 / A7.2



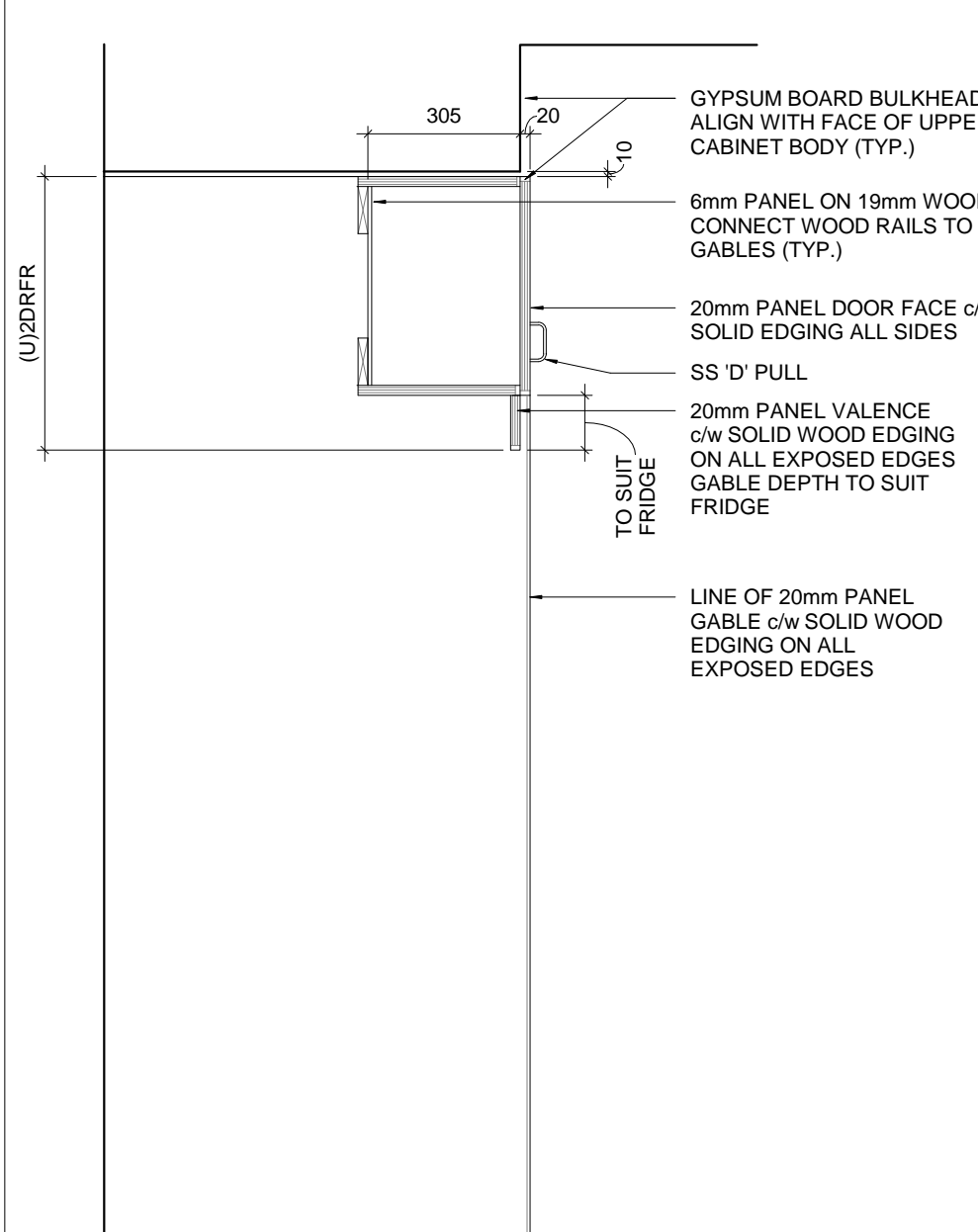
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12 / A7.2



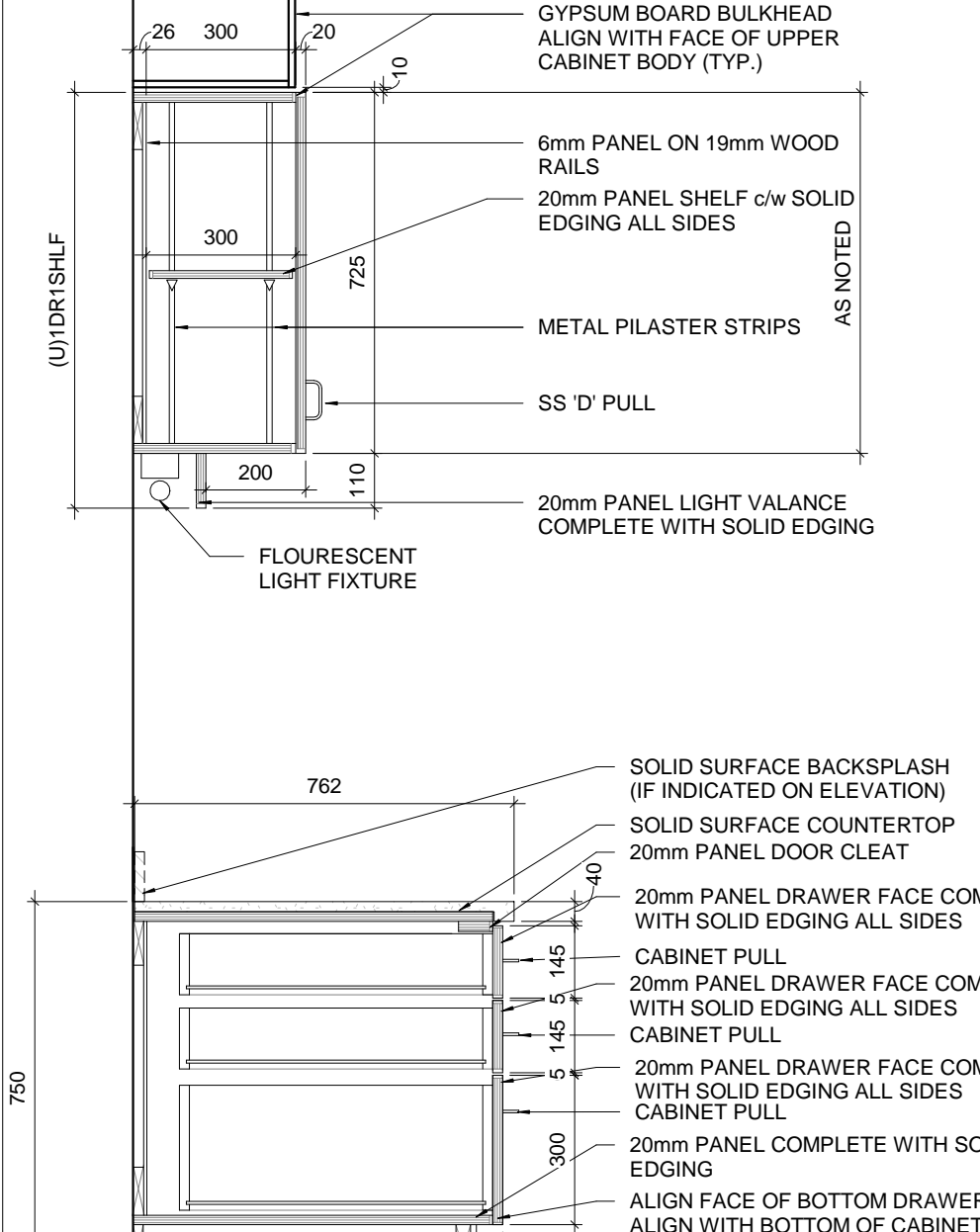
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17 / A7.2



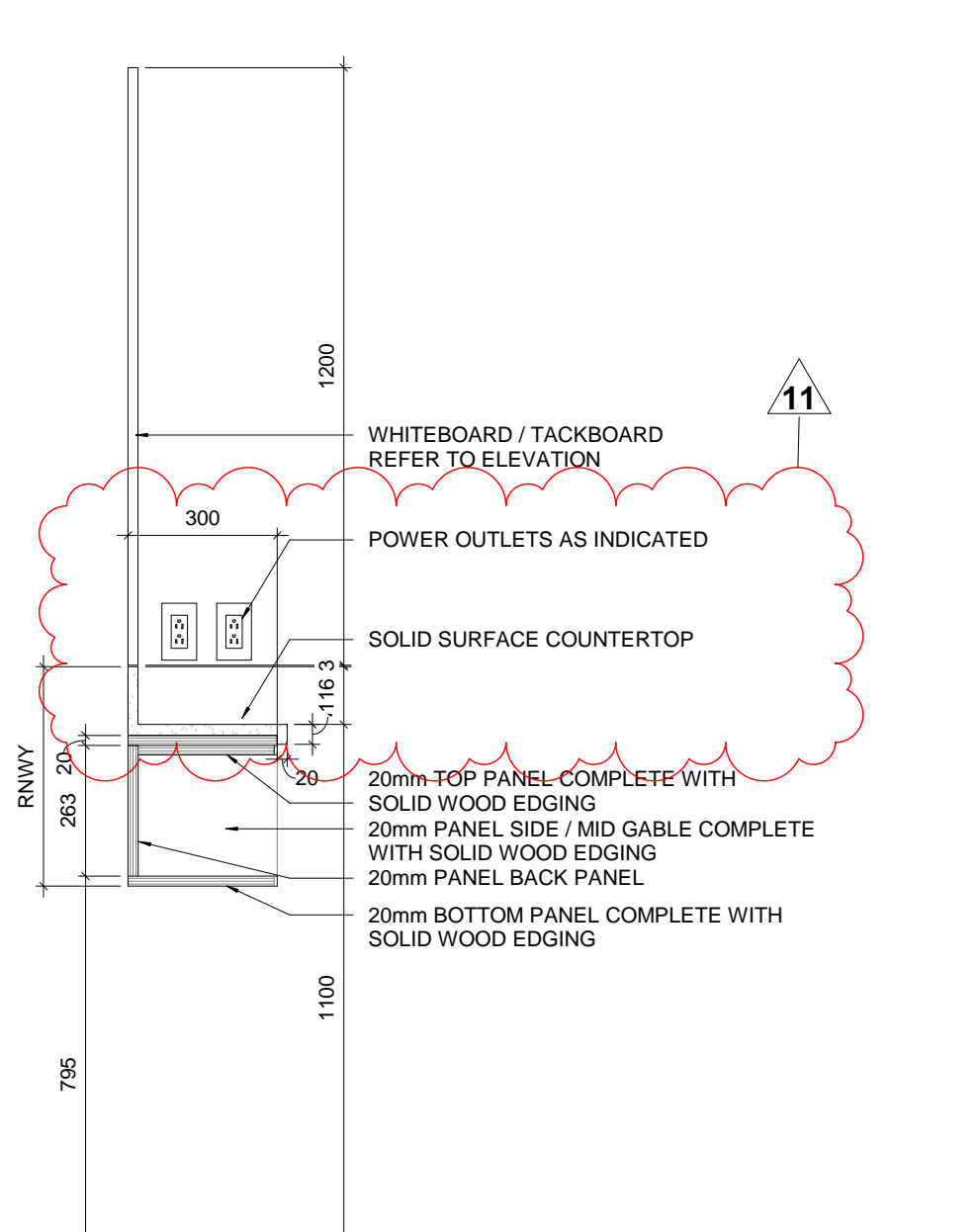
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 ** ALL WORK TO BE COMPLETED IN ACCORDANCE WITH AWMAC ARCHITECTURAL WOODWORK STANDARDS AS SPECIFIED

15 / A7.2



* SHOP DRAWING REQUIRED PRIOR TO FABRICATION
 ** ALL WORK TO BE COMPLETED IN ACCORDANCE WITH AWMAC ARCHITECTURAL WOODWORK STANDARDS AS SPECIFIED

13 / A7.2



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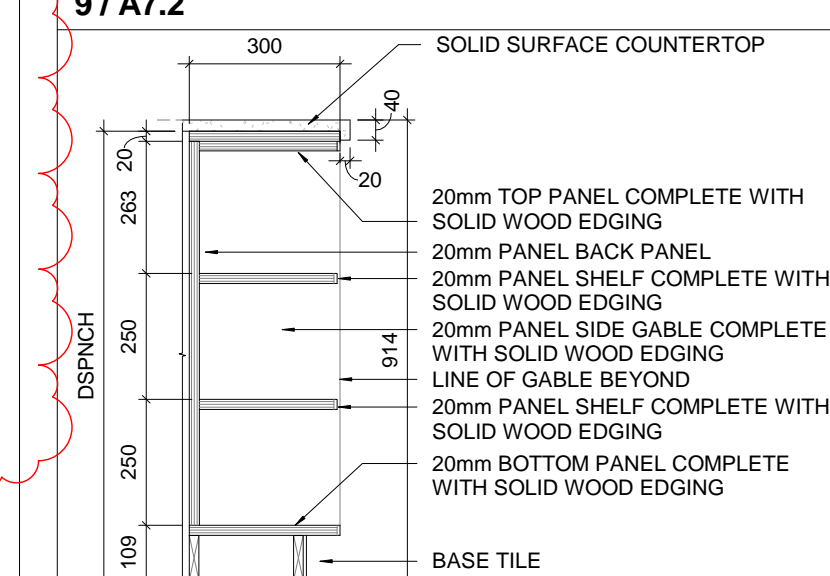
18 / A7.2

- A700 GENERAL NOTES - MILLWORK**
- ALL CUPBOARDS, GABLES, SHELVES, DOORS & DRAWER FRONTS TO BE:
 - A. 20mm HD52 - RIVA - PB-M2 CORE c/w MATCH EDGE BANDING.
 - ALL CUPBOARD BACKINGS TO BE:
 - A. 6mm HD52 - RIVA - MDF CORE c/w MATCHING EDGE BANDING.
 - DRAWER SIDES & BOTTOMS TO BE:
 - A. 12.7mm WHITE MELAMINE.
 - ALL EXPOSED PANEL EDGES TO BE EDGED IN MATCHING EDGE BANDING, INCLUDING ALL 4 EDGES OF DOORS, DRAWER FACES, AND ADJUSTABLE SHELVES.

- SUPPLY AND INSTALL HARDWARE AS FOLLOWS:**
- CONCEALED SELF-CLOSING HINGES.
 - 18mm STAINLESS STEEL ROD TYPE DOOR & DRAWER HANDLES.
 - ALL DRAWERS ON HEAVY DUTY TELESOPING CUSHIONED ROLLING METAL SLIDES.
 - RECESSED METAL ADJUSTABLE PILASTER STRIPS.
 - PROVIDE KEY LOCKS WHERE INDICATED. EACH LOCK SHALL BE UNIQUE.
 - BOBICK B-6827 S.S. HAT & COAT HOOKS FOR ALL CLOTHES HOOKS IN SHOWERS.

*NOTE: ALL MILLWORK HARDWARE SUPPLIED & INSTALLED UNDER MILLWORK CONTRACT.

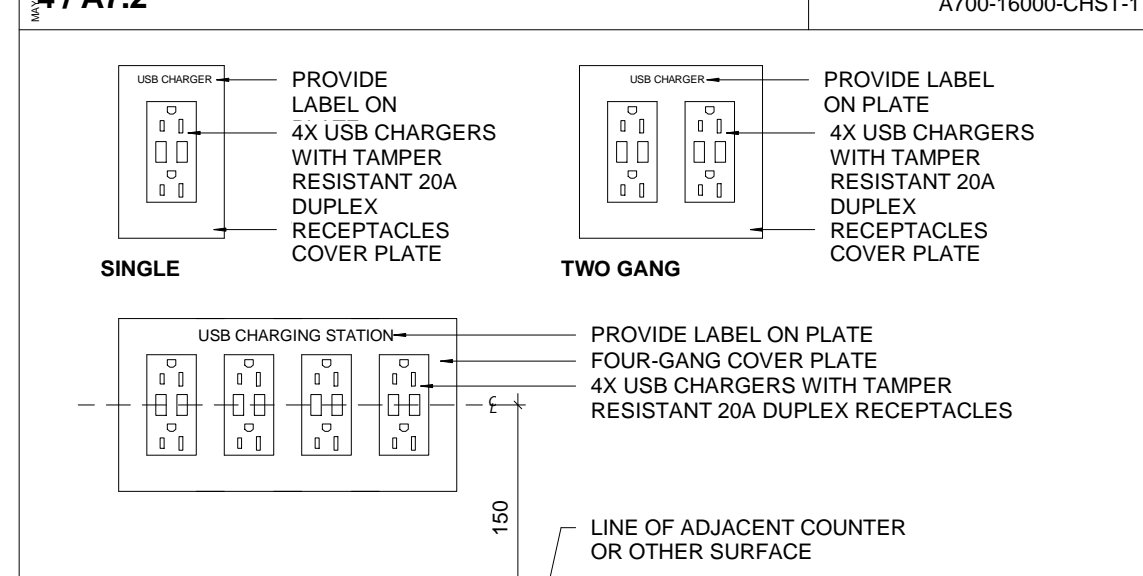
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* SHOP DRAWING REQUIRED PRIOR TO FABRICATION
 ** ALL WORK TO BE COMPLETED IN ACCORDANCE WITH AWMAC ARCHITECTURAL WOODWORK STANDARDS AS SPECIFIED

A700 6400-MW-DETAIL

4 / A7.2



* SHOP DRAWING REQUIRED PRIOR TO FABRICATION
 ** ALL WORK TO BE COMPLETED IN ACCORDANCE WITH AWMAC ARCHITECTURAL WOODWORK STANDARDS AS SPECIFIED

A700-16000-CHST-1

5 KITCHENETTE ELEVATION

1 : 30

6 EAST EMS-KTCHN ISLAND ELEV.

1 : 30

10 SOUTH EMS-KTCHN ISLAND ELEV.

1 : 30

11 NORTH EMS-KTCHN ISLAND ELEV.

1 : 30

7 RUNWAY - MILLWORK

1 : 25

8 MILLWORK - RUNWAY

1 : 30

1 KITCHEN FLOOR PLAN

1 : 30

2 WEST EMS-KTCHN ISLAND ELEV.

1 : 30

3 WRITE-UP DESK ELEVATION

1 : 30

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 AND MUST BE RETURNED UPON COMPLETION OF THE WORK.

NO.	ISSUED FOR	DATE
3	80% CLIENT REVIEW	2018.05.29
7	90% CLIENT REVIEW	2018.12.05
8	100% CLIENT REVIEW	2019.02.12
9	BUILDING PERMIT	2019.04.11
11	ADDENDUM 1	2019.08.22

PROJECT :

CLIENT :

ARCHITECT :

PROFESSIONAL SEAL :

DWG TITLE :

DATE :

SCALE :

DWG STATUS :

PROJECT NO. :

DRAWING NO. :

REVISION :

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2019/07/09

As indicated

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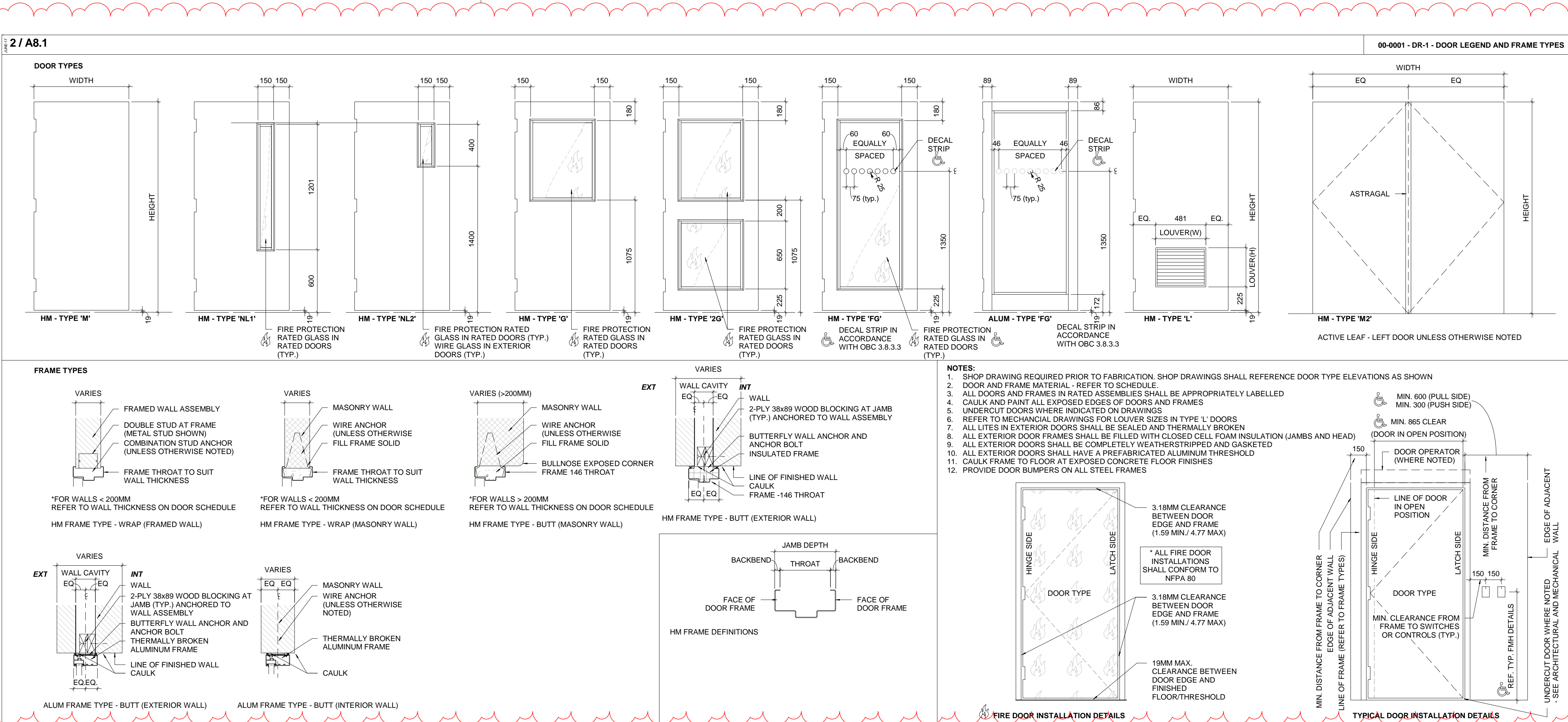
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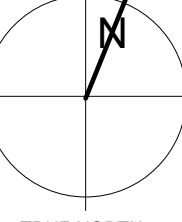
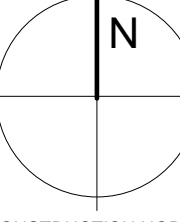
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11

DOOR SCHEDULE KEY PLAN

1 : 100



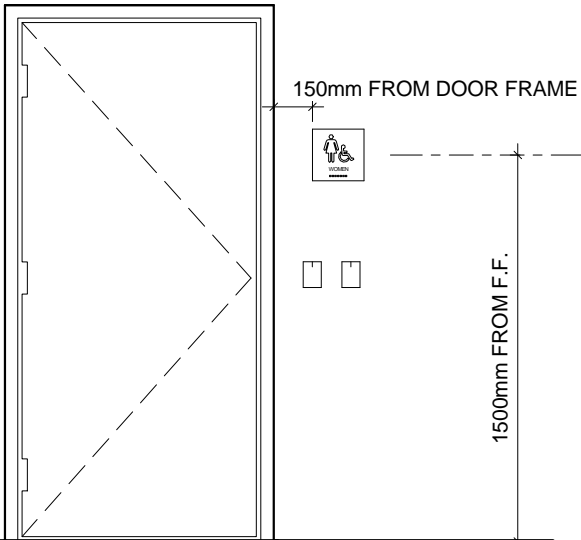
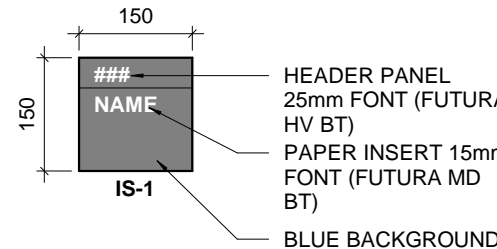
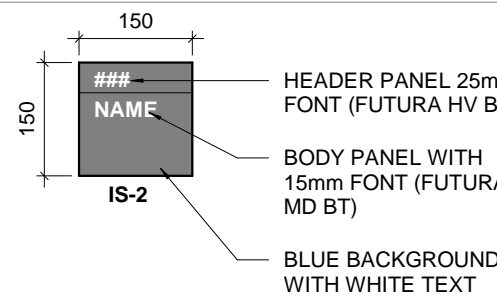
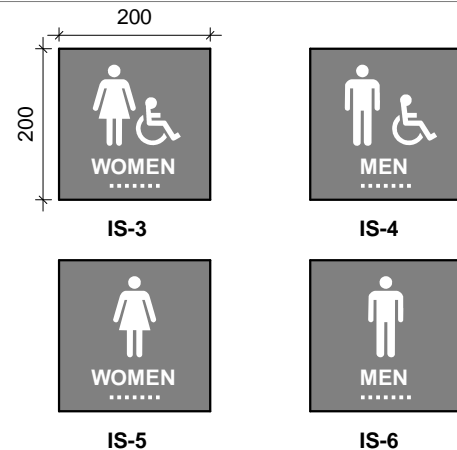
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 <p>TRUE NORTH</p>	 <p>CONSTRUCTION NORTH</p>		
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SCALE: As indicated	DRAWN BY: SRL		
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PROJECT No: 1509	REVISION: 11		
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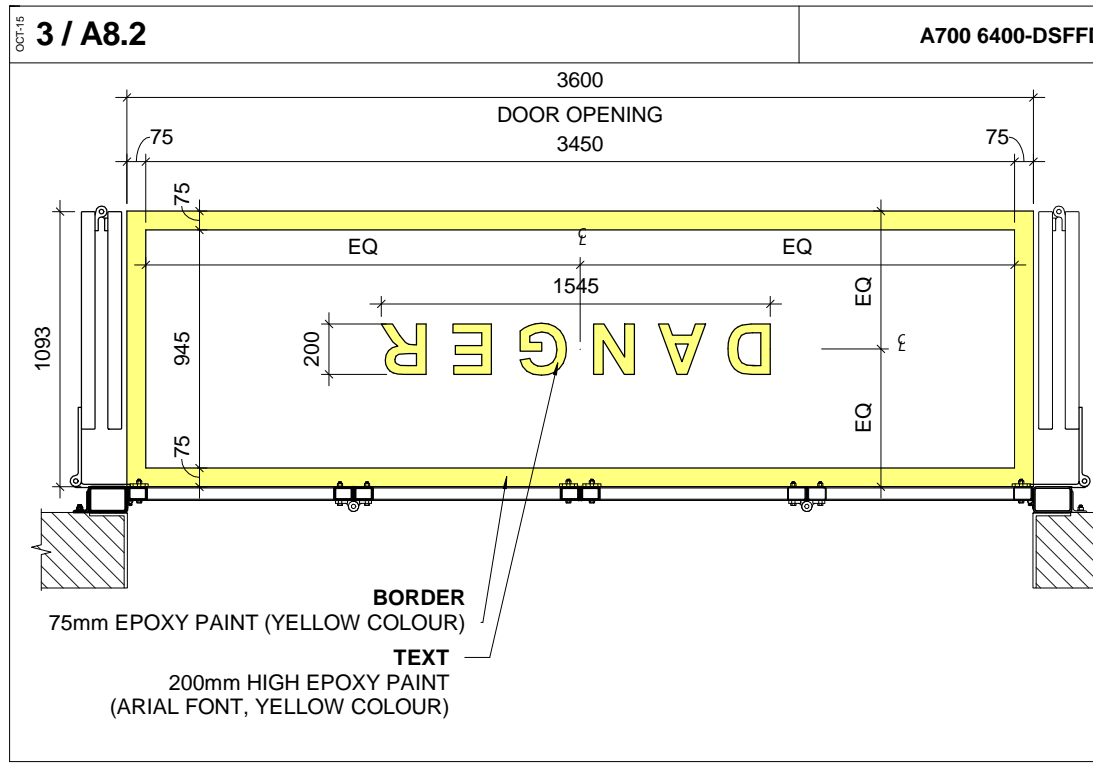


PT-4 DEEP SPACE 2125-20 (SECTIONAL AND FOUR FOLD DOOR JAMB FRAMES, AND ALL EXPOSED VERTICAL STEEL IN BAY AND OUTSIDE, ALL EXPOSED STEEL IN VEHICLE BAY CEILING I.E. JC AND DECK, CONDUITS, PIPES, ETC. REFER TO SPECIFICATIONS FOR COLOR FOR GAS AND SPRINKLER PIPES)

PT-5 COROTEC EPOXY - V400-75 BATTLESHIP GREY

NUMBER	ROOM NAME	SCHEDULE							HEIGHT	COMMENTS
100	VESTIBULE	CT-1	CT-1	PT-1	PT-1	PT-1	PT-1	PT-1	2750	
101	ACCESS CORRIDOR	CT-1	CT-1	PT-1	N/A	PT-1	PT-1	PT-1	2750	
102	KITCHEN / DINING	CT-1	CT-1	PT-1	PT-1	PT-1	PT-1	PT-1	2750	
103	LOUNGE ROOM	CT-1	CT-1	PT-1	N/A	PT-1	N/A	PT-1	2750	
104	WRITE-UP ROOM	CT-1	CT-1	PT-1	PT-2	PT-1	PT-1	PT-1	2750	
105	LOCKER ROOM	CT-1	CT-1	PT-1/PT-2	PT-1/PT-2	PT-1/PT-2	PT-1/PT-2	PT-1	2750	
106	MALE WASHROOM / SHOWER	CT-1 / CT-2	WT-1 / WT-2	WT-1 / WT-2	WT-1 / WT3	WT-1 / WT2	WT-1 / WT2	PT-1	2750	
107	FEMALE WASHROOM / SHOWER	CT-1 / CT-2	WT-1 / WT-2	WT-1 / WT2	WT-1 / WT2	WT-1 / WT2	WT-1 / WT3	PT-1	2750	
108	UTILITY ROOM	SC	N/A	N/A	N/A	N/A	N/A	N/A	2750	
109	I.T ROOM	PT-5	N/A	N/A	N/A	N/A	N/A	PT-4	2750	
110	VEHICLE BAYS	CHC	N/A	PT-1	PT-1	PT-1	PT-1	PT-4	5500	
111	MEDICAL STORAGE	PT-5	N/A	PT-1	PT-1	PT-1	PT-1	PT-4	2750	
112	OXYGEN STORAGE	PT-5	N/A	PT-1	PT-1	PT-1	PT-1	PT-4	2750	
114	EXTERIOR GARAGE ROOM	PT-5	N/A	PT-1	PT-1	PT-1	PT-1	PT-4	2438	

2 / A8.2	A700-1000-IS-1
<p>WAYFINDING INTERIOR SIGNAGE TYPE DANSIGN CURVE</p> <p>FONT FUTURA MEDIUM & FUTURA HEAVY</p> <p>COLOR 1. INTERIOR SIGNS SHALL BE PANTONE 287C BLUE BACKGROUND WITH WHITE TEXT AND GRAPHICS. 2. SURFACE TO HAVE MATTE NON-GLARE FINISH</p> <p>BRAILLE AND TACTILE LETTERS</p> <ol style="list-style-type: none"> BRAILLE SHALL BE OF "RASTER" METHOD E.G. HOLES PUNCTURED AND BALL BEARINGS INSERTED SUITABLY ROUNDED FOR EASY READING BRAILLE DOTS MUST HAVE A DOMED OR ROUNDED SHAPE BRAILING PROCESS USED AND APPLIED ON SIGNAGE SHALL NOT BE SUSCEPTIBLE TO VANDALISM BRAILLE SHALL BE INTEGRAL TO SIGN SURFACE/DESIGN TACTILE SIGNS SHALL HAVE LETTERING AND GRAPHICS THAT ARE RAISED 0.8MM TO 1.5MM ABOVE THE SURFACE OF THE SIGN BRAILLE IS REQUIRED TO BE LOWERCASE, EXCEPT FOR PROPER NOUNS, NAMES AND THE FIRST WORD OF SENTENCES OR INDIVIDUAL LETTERS OF THE ALPHABET THE BRAILLE TEXT/CHARACTERS SHALL ALWAYS BE PLACED IN THE SAME RELATIVE POSITION, MOUNTED NEAR THE BOTTOM EDGE OF SIGNAGE, BELOW OTHER TEXT, SYMBOLS OR TACTILE CHARACTERS. IF TEXT IS MULTI-LINED, BRAILLE SHALL BE PLACED BELOW ENTIRE TEXT ENSURE BRAILLE TEXT IS SEPARATED A MINIMUM OF 9.5MM FROM ANY OTHER TACTILE CHARACTERS WHERE TACTILE CHARACTERS ARE USED, ENSURE EDGES ARE BEVELED AND SMOOTH <p>NOTE: IT IS THE RESPONSIBILITY OF THE SIGN SUPPLIER TO VERIFY THAT A BRAILLE PROOFREADER HAS APPROVED FINAL ARTWORK. BRAILLE DOTS SHOWN IN THIS GUIDELINE ARE TO SHOW PLACEMENT ONLY.</p> 	<p>OFFICE/ROOM SIGNS (CHANGEABLE MESSAGE)</p> <p>TYPE</p> <p>DANSIGN PAPERFLEX CURVE SIGN WITH A MAGNETIC LOCKING SYSTEM AND TAMPER PROOF PAPER INSERT SYSTEM</p> <p>MATERIAL LACQUERED ABS WITH EXTRUDED ALUMINUM BRACKETS</p> <p>MESSAGE VINYL ROOM NUMBER ON HEADER PANEL AND PAPER INSERT WITH ROOM NAME OR OCCUPANT'S NAME</p> <p>INSTALLATION MOUNTED AT 1500MM TO CENTRELINE ABOVE THE FINISHED FLOOR AND 150MM AWAY FROM THE DOOR FRAME</p>  <p>ROOM SIGNS (PERMANENT MESSAGE)</p> <p>MATERIAL LACQUERED ABS WITH EXTRUDED ALUMINUM BRACKETS</p> <p>MESSAGE VINYL ROOM NUMBER ON HEADER PANEL AND VINYL ROOM NAME ON BODY PANEL</p> <p>INSTALLATION MOUNTED AT 1500MM TO CENTRELINE ABOVE THE FINISHED FLOOR AND 150MM AWAY FROM THE DOOR FRAME</p>  <p>WASHROOM SIGNS</p> <p>MATERIAL LACQUERED ABS WITH EXTRUDED ALUMINUM BRACKETS.</p> <p>MESSAGE TACTILE TEXT AND PICTOGRAM AND BRAILLE</p> <p>INSTALLATION MOUNTED AT 1500MM TO CENTRELINE ABOVE THE FINISHED FLOOR AND 150MM AWAY FROM THE DOOR FRAME, ADJACENT TO THE DOOR HANDLE</p> 



HARDWARE SCHEDULE FOR

YORK REGION PRS STATION #29

107 GLEN CAMERON ROAD

Architect

THOMAS BROWN ARCHITECTS INC.
197 SPADINA AVE
SUITE 200
TORONTO, ONTARIO
M5T 2C8
Tel: 416-364-5710

Consultant: **SHAUN CRAIG, DHC**

Plan Revision: 7, Dated: **DEC 5 2018**
Submittal Date: **APRIL 10 2019**

Elite

Door & Hardware Inc

595-16 Cityview Blvd
Vaughan , Ontario, L4H 3M7

YORK REGION PRS STATION #29
107 GLEN CAMERON ROAD

Submittal Date: APRIL 10 2019

Manufacturers & Finishes

Manufacturers

Cal-Royal Products	
CAMDEN	'CAMDEN
Corbin-Russwin	'Corbin-Russwin
HES	'HES
Ilco-Unican	'Ilco-Unican
K.N. Crowder	'K.N. Crowder
McKinney	
Norton	'Norton
Pemko	'Pemko
Rixson	'Rixson
Rockwood Manufacturing	
Sargent	'Sargent
Securitron	'Securitron
Von Duprin	'Von Duprin

Finishes

26D - Satin chromium plated
over nickel

630 - Satin stainless steel

689 - Aluminum painted

US26D - Satin chromium plated
over nickel

US32D - Satin stainless steel

Elite

Door & Hardware Inc

595-16 Cityview Blvd
Vaughan , Ontario, L4H 3M7

YORK REGION PRS STATION #29
107 GLEN CAMERON ROAD

Submittal Date: APRIL 10 2019

Index of Abbreviations

Door Mat'l

PGS - Paintable Galvanneal Steel

Door Type

FG - Full Lite

G - Half Lite

M - Flush

NL1 - Narrow Lite

Frame Mat'l

PGS - Paintable Galvanneal Steel

Elite

Door & Hardware Inc

595-16 Cityview Blvd
Vaughan , Ontario, L4H 3M7

YORK REGION PRS STATION #29
107 GLEN CAMERON ROAD

Submittal Date: APRIL 10 2019

OPENINGS

Opening Number(s)	Heading Num.	Qty	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Frame Mat'l	Frame Type	Door Mat'l	Door Type	Remarks
100A	1	1	EXTERIOR	From	VESTIBULE 100	1100	2150	51	RHR		ALUM AL	ALUM	FG		BY OTHERS
100B	2	1	ACCESS CORRIDOR 101	From	VESTIBULE 100	1100	2150	51	RHR		ALUM AL	ALUM	FG		BY OTHERS
101	3	1	VEHICLE BAYS 110	From	ACCESS CORRIDOR 101	1100	2150	44	RHR	WH-B	PGS	BUTT	PGS	FG	
103	4	1	LOUNGE ROOM 103	To/From	WRITE-UP ROOM 104	1300	2760	44	SLIDING		NONE	N/A	WOOD	M	
104	5	1	EXTERIOR	From	WRITE-UP ROOM 104	1100	2150	51	LHR		ALUM AL	ALUM	FG		
106	6	1	LOCKER ROOM 105	To	MALE WASHROOM 106	965	2150	44	RH		PGS	WRAP	PGS	M	
107	6	1	LOCKER ROOM 105	To	FEMALE WASHROOM 107	965	2150	44	LH		PGS	WRAP	PGS	M	
108	7	1	VEHICLE BAYS 110	From	UTILITY ROOM 108	965	2150	44	LHR	WH-B	PGS	WRAP	PGS	M	
109	8	1	ACCESS CORRIDOR 101	To	IT ROOM 109	965	2150	44	LH		PGS	WRAP	PGS	M	
110A	9	1	EXTERIOR	From	VEHICLE BAYS 110	965	2150	44	RHR		PGS	BUTT	PGS	NL1	
110B	9	1	EXTERIOR	From	VEHICLE BAYS 110	965	2150	44	RHR		PGS	BUTT	PGS	NL1	FOUR-FOLD DOOR BY OTHERS
110C	10	1	EXTERIOR	From	VEHICLE BAYS 110	3600	3600	54	FFD		N/A	N/A	ALUM	FFD	FOUR-FOLD DOOR BY OTHERS
110D	10	1	EXTERIOR	From	VEHICLE BAYS 110	3600	3600	54	FFD		N/A	N/A	ALUM	FFD	FOUR-FOLD DOOR BY OTHERS
110E	10	1	EXTERIOR	From	VEHICLE BAYS 110	3600	3600	54	FFD		N/A	N/A	ALUM	FFD	
110F	10	1	EXTERIOR	From	VEHICLE BAYS 110	3600	3600	54	FFD		N/A	N/A	ALUM	FFD	OVERHEAD DOOR BY OTHERS
110G	11	1	EXTERIOR	From	VEHICLE BAYS 110	3600	3600	50	OHD		N/A	N/A	ALUM	OHD	OVERHEAD DOOR BY OTHERS
110H	11	1	EXTERIOR	From	VEHICLE BAYS 110	3600	3600	50	OHD		N/A	N/A	ALUM	OHD	OVERHEAD DOOR BY OTHERS
110I	11	1	EXTERIOR	From	VEHICLE BAYS 110	3600	3600	50	OHD		N/A	N/A	ALUM	OHD	OVERHEAD DOOR BY OTHERS
110J	11	1	EXTERIOR	From	VEHICLE BAYS 110	3600	3600	50	OHD		N/A	N/A	ALUM	OHD	OVERHEAD DOOR BY OTHERS
112	12	1	VEHICLE BAYS 110	To	MEDICAL STORAGE 111	965	2150	44	RH	WH-B	PGS	BUTT	PGS	G	BY OTHERS
112A	7	1	VEHICLE BAYS 110	To	OXYGEN STORAGE 112	965	2150	44	LH	WH-B	PGS	BUTT	PGS	M	
112B	13	1	EXTERIOR	To	OXYGEN STORAGE 112	965	2150	44	LHR		PGS	BUTT	PGS	M	
114	14	1	EXTERIOR	From	EXT. GARBAGE ROOM	900, 900	2150	44	RHRA		PGS	BUTT	PGS	M2	

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YORK REGION PRS STATION #29
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Hardware Schedule

Heading #1

Item #1	1 Single door 100A, EXTERIOR From VESTIBULE 100		RHR
	1100 x 2150 x 51 - ALUM DR x ALUM FR		
1	Continuous Hinge	MCK-12HD 2150 mm Clear	CLEAR
1	Exit Device	33A-NL US26D 388 US26D RHR 1100 x 2150 Door	US26D/US26D
1	Cylinder	8000ICRIM US26D	US26D
1	Cylinder	2000ICC	
1	Cylinder	1000ICC US26D GMK	US26D
1	Electric Strike	9400-630 - By LENEL	630
1	Door Pull	BF158 US32D Type 12 HD Mounting	US32D
1	Auto Door Operator	Besam SW200i x FWH	
2	Push Button	CM60/2	630
2	Surface Mounted Box	CM-69S	BLK
1	Miscellaneous Item	CX 12	
1	Overhead Door Stop	6-536 689	689
1	Threshold	252X2AFGx1100	AFG
1	Sweep	29326CNBx1100mm	C
1	Door Contact	3287 - OR SIMILAR BY LENEL	
1	Card Reader	Card Reader By LENEL	
1	REX Switch	REX By LENEL	

-Balance of gasketing by Door Supplier.

- Pressing actuators button cycles the operator.Manual operation with exit device from inside. REX inside , shunts the door contact When door is locked, valid card read Releases the Electric strike and makes push button active, inside push button to unlock strike and open the door.

- keyed exterior of exit device is STOREROOM Function .

-All wiring high and low voltage, conduit and back boxes by Electrical.

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Heading #2

Item #2 1 Single door 100B, ACCESS CORRIDOR 101 From VESTIBULE 100 RHR

1100 x 2150 x 51 - ALUM DR x ALUM FR

1	Continuous Hinge	MCK-12HD 2150 mm Clear	CLEAR
1	Exit Device	33A-NL US26D 388 US26D RHR 1100 x 2150 Door	US26D/US26D
1	Cylinder	8000ICRIM US26D	US26D
1	Cylinder	2000ICC	
1	Cylinder	1000ICC US26D GMK	US26D
1	Door Pull	BF158 US32D Type 12 HD Mounting	US32D
1	Auto Door Operator	Besam SW100 x FWH x EXU-SI	
2	Push Button	CM60/2	630
1	Miscellaneous Item	CX 12	
1	Overhead Door Stop	6-536 689	689

-Balance of gasketing by Door Supplier.

- Exit device to be dogged down during normal use to make it unlocked / PASSAGE function/ Push Pull .

- Pushing inside or out side buttons will open door. When door is locked / Undogged operator must be shut off.

-All wiring high and low voltage, conduit and back boxes by Electrical.

Heading #3

Item #3 1 Single door 101, VEHICLE BAYS 110 From ACCESS CORRIDOR 101 RHR

1100 x 2150 x 44 - HM DR x HM FR - WH-B

3	Standard Hinge	T4A3786 127mm x 114mm US26D NRP	US26D
1	Exit Device	99-L-BE-F US26D 996L-BE-R US26D RHR 1100 x 2150 Door	US26D/US26D
1	Surface Closer	CPS7500 689	689
1	Kick Plate	K1050 200mm X 875mm US26D 4BE SA	US26D
1	Sweep	29326CNBx1100mm	C
1	Gasketing	S88 BL 5215mm	BL
1	Threshold	252X3AFGx1100mm	AFG

Exit Device is Passage Function

Heading #4

Item #4 1 Single door 103, LOUNGE ROOM 103 To/From WRITE-UP ROOM 104 SLIDING

1300 x 2760 x 44 - WOOD DR x NONE FR

1	Track / Hanger	C-818HD x 96" 1DR KIT	
1	Track / Hanger	C-110-BLA x 96"	BLA
1	Miscellaneous Item	C-90DP x 626	x 626

KIT INCLUDES STOP AND FLOOR GUIDE.

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Heading #5

Item #5

1 Single door 104, EXTERIOR From WRITE-UP ROOM 104

LHR

1100 x 2150 x 51 - ALUM DR x ALUM FR

1	Continuous Hinge	MCK-12HD 2150 mm Clear	CLEAR
1	Exit Device	33A-NL US26D 388 US26D LHR 1100 x 2150 Door	US26D/US26D
1	Cylinder	8000ICRIM US26D	US26D
1	Cylinder	2000ICC	
1	Cylinder	1000ICC US26D GMK	US26D
1	Electric Strike	9400-630 - By LENEL	630
1	Door Pull	BF158 US32D Type 12 HD Mounting	US32D
1	Surface Closer	CPS7500 689 7788	689
1	Miscellaneous Item	6891	
1	Threshold	252X2AFGx1100	AFG
1	Sweep	29326CNBx1100mm	C
1	Door Contact	3287 - OR SIMILAR BY LENEL	
1	Card Reader	Card Reader By LENEL	
1	REX Switch	REX By LENEL	

-Balance of gasketing by Door Supplier.

-Manual operation with exit device from inside. REX inside , shunts the door contact When door is locked, valid card read Releases the Electric strike,

- keyed exterior of exit device is STOREROOM Function .

-All wiring high and low voltage, conduit and back boxes by Electrical.

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Heading #6

Item #6	1 Single door 106, LOCKER ROOM 105 To MALE WASHROOM 106	RH
Item #7	1 Single door 107, LOCKER ROOM 105 To FEMALE WASHROOM 107	LH

965 x 2150 x 44 - HM DR x HM FR

6	Standard Hinge	T4A3386 127mmx 114mm US26D	US26D
1	Lockset	ML2057 LWA/LWA 626/626 LH LC	626/626
1	Lockset	ML2057 LWA/LWA 626/626 RH LC	626/626
2	Cylinder	7000ICMC US26D	US26D
2	Cylinder	1000ICC US26D GMK	US26D
2	Electric Strike	1006F-630-LBM HM-630 2005M3	630-LBM
2	Auto Door Operator	Besam SW100 x FWH x EXU-SI	
2	Electronic Closer	CM45/4	
2	Electronic Closer	CM-43-CBL	
2	Electronic Closer	CX-WC13XSM	
2	Electronic Closer	CX-WEC10	630
2	Kick Plate	K1050 200MM x 914MM" US26D SA	US26D
2	Wall Stop	406 US32D	US32D
2	Power Supply	BPS-12/24-1	
2	Electrolynx Harness	QC-C1500P	
2	Key Switch	MKA	
2	Coat Hook	RM821 US32D	US32D
2	Key Box	Smash Box - mounted between 2 washrooms - HPC511	

-Operator mounted inside washroom. Entry by pushing door or by pressing corridor wall mounted operator button. Upon entry and door closing, pressing of interior "push to lock" switch. Egress by using lever trim or by pressing wall mounted operator button. System automatically resets when door opens. Pressing emergency switch unlocks electric strike and illuminates interior and exterior assistance required indicators and sound local alerts, until help arrives and opens door. System can be configured to open door upon alarm. For maintenance purposes, corridor side keyswitch secures washroom door and turns corridor side operator actuator off. Relay to be used to latch wall mount momentary tape switches to maintain assistance required status. Free egress at all times. Door is unlocked in a power fail condition.

-All wiring high and low voltage, conduit and back boxes by Electrical.

- RELAY INCLUDED IN RESTROOM KIT

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Heading #7

Item #8	1 Single door 108, VEHICLE BAYS 110 From UTILITY ROOM 108	LHR
Item #9	1 Single door 112A, VEHICLE BAYS 110 To OXYGEN STORAGE 112	LH

965 x 2150 x 44 - HM DR x HM FR - WH-B

6	Standard Hinge	T4A3786 114mm x 102mm US26D NRP	US26D
1	Latchset	ML2010 LWA/LWA 626/626 LH LC	626/626
1	Latchset	ML2010 LWA/LWA 626/626 LHR LC	626/626
2	Surface Closer	CPS7500 689	689
2	Kick Plate	K1050 200MM x 914MM" US26D SA	US26D
2	Astragal	29326CNB 38"	C
2	Weatherstripping	S88 BL18	BL

Passage Function

Heading #8

Item #10	1 Single door 109, ACCESS CORRIDOR 101 To IT ROOM 109	LH
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965 x 2150 x 44 - HM DR x HM FR

3	Standard Hinge	T4A3786 114mm x 102mm US26D NRP	US26D
1	Lockset	ML2057 LWA/LWA 626/626 LH LC	626/626
1	Electric Strike	1006CLB-630 By LENEL	630
1	Cylinder	7000ICMC US26D	US26D
1	Cylinder	2000ICC	
1	Cylinder	1000ICC US26D GMK	US26D
1	Surface Closer	CPS7500 689	689
1	Kick Plate	K1050 200MM x 914MM" US26D SA	US26D
1	Card Reader	Card Reader By LENEL	
1	Door Contact	3287 - OR SIMILAR BY LENEL	
1	REX Switch	REX By LENEL	

-Valid card read releases the electric strike and door can be pulled open. Door closes and locks. REX inside the lockset shunts the door contact.

Storeroom lockset

-All wiring high and low voltage, conduit and back boxes by Electrical.

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Heading #9

Item #11	1 Single door 110A, EXTERIOR From VEHICLE BAYS 110	RHR
Item #12	1 Single door 110B, EXTERIOR From VEHICLE BAYS 110	RHR

965 x 2150 x 44 - HM DR x HM FR

2	Continuous Hinge	MCK-12HD 2150 mm Clear	CLEAR
2	Exit Device	99-L-NL US26D 996L-NL-R US26D RHR 965 x 2150 Door	US26D/US26D
2	Electric Strike	9400-630 - By LENEL	630
2	Cylinder	8000ICRIM US26D	US26D
2	Cylinder	2000ICC	
2	Cylinder	1000ICC US26D GMK	US26D
2	Surface Closer	UNI7500 689 (965 Door) x 6191B-25	689
2	Kick Plate	K1050 200MM x 914MM" US26D SA	US26D
2	Weatherstripping	2891AS-38" x 85"	A
2	Threshold	252X3AFG38"	AFG
2	Astragal	29326CNB 38"	C
2	Door Contact	3287 - OR SIMILAR BY LENEL	
2	Card Reader	Card Reader By LENEL	
2	REX Switch	REX By LENEL	

. Manual operation with exit device from inside. REX inside shunts the door contact. When door is locked, valid card read releases the electric strike and door can be pulled open.

- Extreior keyed side is Storeroom function.

-All wiring high and low voltage, conduit and back boxes by Electrical.

Heading #10

Item #13	1 Single door 110C, EXTERIOR From VEHICLE BAYS 110	FFD
Item #14	1 Single door 110D, EXTERIOR From VEHICLE BAYS 110	FFD
Item #15	1 Single door 110E, EXTERIOR From VEHICLE BAYS 110	FFD
Item #16	1 Single door 110F, EXTERIOR From VEHICLE BAYS 110	FFD

3600 x 3600 x 54 - ALUM DR x N/A FR

4	Card Reader	Card Reader By LENEL
4	REX Switch	REX By LENEL
4	OH Door Contact	OH DOOR CONTACT BY LENEL

FOUR FOLD DOORS COMPLEATE BY DOOR MANUFACTURE.

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Heading #11

Item #17	1 Single door 110G, EXTERIOR From VEHICLE BAYS 110	OHD
Item #18	1 Single door 110H, EXTERIOR From VEHICLE BAYS 110	OHD
Item #19	1 Single door 110I, EXTERIOR From VEHICLE BAYS 110	OHD
Item #20	1 Single door 110J, EXTERIOR From VEHICLE BAYS 110	OHD

3600 x 3600 x 50 - ALUM DR x N/A FR

4	REX Switch	REX By LENEL
4	Card Reader	Card Reader By LENEL
4	OH Door Contact	OH DOOR CONTACT BY LENEL

OVER HEAD DOOR COMPLEAT BY MANUFACTURE

Heading #12

Item #21	1 Single door 112, VEHICLE BAYS 110 To MEDICAL STORAGE 111	RH
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965 x 2150 x 44 - HM DR x HM FR - WH-B

3	Standard Hinge	T4A3786 114mm x 102mm US26D NRP	US26D
1	Lockset	ML2057 LWA/LWA 626/626 RH LC	626/626
1	Electric Strike	1006CLB-630 By LENEL	630
1	Cylinder	7000ICMC US26D	US26D
1	Cylinder	2000ICC	
1	Cylinder	1000ICC US26D GMK	US26D
1	Surface Closer	CPS7500 689	689
1	Kick Plate	K1050 200MM x 914MM" US26D SA	US26D
1	Card Reader	Card Reader By LENEL	
1	Door Contact	3287 - OR SIMILAR BY LENEL	
1	REX Switch	REX By LENEL	

-Valid card read releases the electric strike and door can be pulled open.Door closes and locks. REX inside the lockset shunts the door contact.

Storeroom lockset

-All wiring high and low voltage, conduit and back boxes by Electrical.

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Heading #13

Item #22 1 Single door 112B, EXTERIOR To OXYGEN STORAGE 112 LHR

965 x 2150 x 44 - HM DR x HM FR

1	Continuous Hinge	MCK-12HD 2150 mm Clear	CLEAR
1	Lockset	ML2057 LWA/LWA 626/626 LHR LC	626/626
1	Cylinder	7000ICMC US26D	US26D
1	Cylinder	2000ICC	
1	Cylinder	1000ICC US26D GMK	US26D
1	Surface Closer	CPS7500 689	689
1	Armor Plate	K1050 900mm x 875mm US32D 4BE	US32D
1	Threshold	252X3AFG38"	AFG
1	Astragal	29326CNCB 38"	C
1	Weatherstripping	2891AS-38" x 85"	A
1	Door Contact	3287 - OR SIMILAR BY LENEL	
1	Card Reader	Card Reader By LENEL	
1	Electric Strike	1006CLB-630 By LENEL	630
1	REX Switch	REX By LENEL	

LOCK IS STOREROOM FUNCTION.

Heading #14

Item #23 1 Pair of doors 114, EXTERIOR From EXT. GARBAGE ROOM RHRA

900, 900 x 2150 x 44 - PGS DR x HM FR

2	Continuous Hinge	MCK-12HD 2134 mm Clear	CLEAR
1	Surface Bolt	585-12" US26D	US26D
1	Surface Bolt	585-24" US26D	US26D
1	Lockset	LL1021S-26D-41 - RHR	26D
1	Cylinder	2000ICC	
1	Cylinder	1000ICC US26D GMK	US26D
2	Surface Closer	UNI7500H 689 (900 Door) x 6191B-25	689
1	Threshold	252X3AFGx1800mm	AFG
2	Sweep	29326CNCB 900mm	C
1	Gasketing	2891AS-2@2134,1@1800	A
1	Astragal	357C x S88 x 2134mm	C

Unican lockset to be programed to code Provided by owner

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YORK REGION PRS STATION #29
107 GLEN CAMERON ROAD

Submittal Date: APRIL 10 2019

August 23, 2019

**Contract No. T-19-16
YORK EMS STATION #29
107 Glen Cameron Road, Markham, ON
Regal Project No 2016-147**

**REGAL CONSULTING ENGINEERS INC.
201-2359 Royal Windsor Drive,
Mississauga, ON L5J 4S9**

This addendum forms part of the Contract Documents and amends the original bidding requirements, Drawings and Specifications, as noted below.

MECHANICAL DRAWINGS

1. Mechanical Drawings have been revised and re-issued with this Addendum. Please delete the mechanical Drawings in your possession and replace them with the revised version included with this Addendum.

ELECTRICAL DRAWINGS

1. Electrical Drawings have been revised and re-issued with this Addendum. Please delete the electrical Drawings in your possession and replace them with the revised version included with this Addendum.

MECHANICAL SPECIFICATIONS

The following revisions have been made in the mechanical Specification Sections:

1. Refer to Section 22 42 01

Replace subsection 2.6.2 Interior Wall Hydrants with

“.2 Interior Wall Hydrant, (H-2):

- .1 Watts Drainage model HY-300-2 (Duo-Temp Mild climate Wall Hydrant Encased Type)
- .2 Concealed key operated dual-temp mild climate wall hydrant with nickel bronze box and door, polished bronze hydrant face, 3/4" (19 mm) hose connection, all bronze head, seat casing and internal working parts, galvanized wall casing and hydrant key. “

2. Refer to section 25 90 00

Revise the heading subsection 1. General, Item 2. to read as follows

1. Acceptable BAS Contractors are:
Automated Logic
Delta Controls
Reliable Controls (Set Point).
Or equivalent

3. Refer to section 23 09 13

Add the following requirements to this Section:

Gas Sub Meter:

1. Meter to be supplied and installed by the mechanical Subcontractor as shown on the Drawings.
2. Meter to be supplied with complete pulse output.
3. Sub Meter by American Meter, Itron or Norgas or equivalent are acceptable.
4. Pulse output should be complete with wiring harness.

August 23, 2019

Contract No. T-19-16
YORK EMS STATION #29
107 Glen Cameron Road, Markham, ON
Regal Project No 2016-147

REGAL CONSULTING ENGINEERS INC.
201-2359 Royal Windsor Drive,
Mississauga, ON L5J 4S9

5. BAS Subcontractor to supply intrinsically safe barrier as required.
6. Manufacturer's technician shall be on Site for the startup, to be included with the meter supply.

Water Sub Meter:-

7. Meter shall be supplied and installed by the mechanical Subcontractor as shown on the Drawings.
8. Meter must have Dual pulse contacts (1 for utility and 1 for BAS) or separate meter for BAS with pulse contacts.

ELECTRICAL SPECIFICATIONS

The following revisions have been made to the electrical Specification Sections:

1. Refer to Section 26 09 13 under Part 2 Products 2.0 and revise as follows

Energy Meter and Sub Meter

1. Meter shall be supplied and installed by electrical Subcontractor as shown on the Drawings.
2. Meter to be supplied complete with pulse output.
3. Meters must be BACnet listed.
4. Manufacturer's technician shall be on site for the startup, to be included with meter supply.

2. Refer to Section 26 30 00

Revised specification section 26 30 00 is attached.

3. Refer to Section 26 30 10

Revised Power Generator Specification Section is attached.

4. Refer to section 26 50 00

Lighting Fixtures – Lithonia lighting fixtures are treated as equivalent.

5. Refer to section 26 60 00

Lighting Control Systems – Acuity Lighting Controls should be treated as equivalent.

 Attachments:

Replacement Mechanical and Electrical Drawings
Replacement Specification Section 26 30 00
Replacement Specification Section 26 30 10

END OF MECHANICAL-ELECTRICAL ADDENDUM ME-1

LEGEND - HVAC	
ALL SYMBOLS MAY NOT APPEAR ON DRAWINGS.	
REFER	DESCRIPTION
—E(NAME)—	EXISTING PIPING TO REMAIN
—RS—	REFRIGERANT SUCTION
—RL—	REFRIGERANT LIQUID
—○—	PIPING RISER UP
—◊—	PIPING DROP
—●—	PIPING RISER UP & DOWN
—┴—	TEE
—└┐—	ELBOW — 90°
—└┐—	ELBOW — 45°
—┴—	WYE
—┴—	REDUCER
— —	UNION
— —	FLANGE
—(P)—	PUMP
—(P)○—	VERTICAL INLINE PUMP
—┴—	STRAINER
—┴—	SAFETY (S) OR RELIEF (R) VALVE
—X DC—	DRAIN COCK
—X VB—	SOLENOID ELECTRIC VALVE
—X VB—	VACUUM BREAKER
—B-P—	BACKFLOW PREVENTOR
—P—	POSITIVE PRESSURE (SUPPLY) DUCT UP
—P—	POSITIVE PRESSURE (SUPPLY) DUCT UP
—N—	NEGATIVE PRESSURE (RETURN) DUCT UP
—D—	POSITIVE PRESSURE (SUPPLY) DUCT DOWN
—D—	POSITIVE PRESSURE (SUPPLY) DUCT DOWN
—N—	NEGATIVE PRESSURE (RETURN) DUCT DOWN
—	EXISTING DUCTWORK TO BE REMOVED
—	EXISTING DUCTWORK TO REMAIN
—	NEW DUCTWORK
—X—	SUPPLY AIR DIFFUSER (SQUARE)
—X—	SUPPLY AIR DIFFUSER (ROUND)
—	SIDEWALL GRILLE
—	RETURN/EXHAUST GRILLE
—	FULL RADIUS DUCT CONNECTION
—	TAP-IN DUCT CONNECTION
—	ROUND DUCT CONNECTION
—	TURNING VANES
—FD—	FIRE DAMPER
—MD—	MOTORIZED DAMPER
—BD—	BALANCING DAMPER
—OBB—	OPPOSED BLADE BALANCING DAMPER
—OED—	OPEN ENDED DUCT
—T—	THERMOSTAT
—RAT—	REVERSE ACTING THERMOSTAT
—T—	THERMOSTAT c/w TAMPERPROOF COVER
—CAP—	CAP

LEGEND - PLUMBING	
ALL SYMBOLS MAY NOT APPEAR ON DRAWINGS.	
REFER	DESCRIPTION
—E—	EXISTING PIPING
—	DOMESTIC COLD WATER PIPING
—	DOMESTIC HOT WATER PIPING
—	DOMESTIC HOT WATER RECIRC. PIPING
—V—	VENT PIPING
—	SANITARY PIPING ABOVE FLOOR
—	SANITARY PIPING BELOW GRADE OR FLOOR
—S—	STORM PIPING ABOVE FLOOR
—S—	STORM PIPING BELOW GRADE OR FLOOR
—NP—	NON-PORTABLE WATER PIPING
—T—	TEMPERED WATER PIPING
—GAS—	GAS PIPING
—	PIPING TO BE REMOVED
—	HEAT TRACED PIPING
—E—	CONNECTION OF NEW AND EXISTING PIPING
—	CAPPED PIPE
—FD—	FLOOR DRAIN
—FFD—	FUNNEL FLOOR DRAIN
—HD—	HUB DRAIN
—RD—	ROOF DRAIN
—RD—	ROOF DRAIN ABOVE
—CD—	CANOPY DRAIN
—CO—	CLEANOUT IN FLOOR
—CO—	CLEANOUT IN LINE OR STACK
—M—	WATER METER
—M—	GAS METER
—NFWH—	NON-FREEZE WALL HYDRANT c/w VACUUM BREAKER
—HB—	HOSE BIBB c/w VACUUM BREAKER
—	ISOLATION VALVE
—	THROTTLING VALVE
—	CHECK VALVE
—	CHECK VALVE c/w BALL DRIP VALVE
—	STRAINER
—	GAS VALVE
—RPBP—	REDUCED PRESSURE BACKFLOW PREVENTOR
—PVB—	VACUUM BREAKER — PRESSURE TYPE
—PRV—	PRESSURE REDUCING VALVE (WATER)
—	3-WAY VALVE
—	TEMPERATURE & PRESSURE RELIEF VALVE
—	SOLENOID VALVE
—	UNION
—PG—	PRESSURE GAUGE
—T—	THERMOMETER
—CB—	CATCH BASIN
—ESV—	ELECTRICALLY SUPERVISED VALVE
—D/T—	DRAIN/TEST VALVE
—FS—	FLOW SWITCH
—	PUMP
—	PIPE DOWN
—	PIPE UP
—	PIPE UP & DOWN
—	PIPE TEE
E	DENOTES EXISTING
—E—	EXISTING PIPING
—F—	STANDPIPE PIPING
—SP—	SPRINKLER PIPING
—ESV—	ELECTRICALLY SUPERVISED VALVE
—D/T—	DRAIN/TEST VALVE
—FS—	FLOW SWITCH
—	FIRE DEPARTMENT PUMPER CONNECTION
—FEX—	FIRE EXTINGUISHER — SURFACE MOUNTED
—FEC—	FIRE EXTINGUISHER — CABINET
—SFEC—	SECURE FIRE EXTINGUISHER CABINET
—	SPRINKLER HEAD — PENDENT
—	SPRINKLER HEAD — UPRIGHT
—	SPRINKLER HEAD — SIDEWALL

MECHANICAL DRAWING LIST	
M1.0	MECHANICAL LEAD SHEET
M2.0	DRAINAGE FLOOR PLAN
M3.0	PLUMBING FLOOR PLAN
M4.0	SPRINKLER FLOOR PLAN
M5.0	HVAC FLOOR PLAN
M6.0	MECHANICAL SCHEDULES
M7.0	MECHANICAL DETAILS — 1
M7.1	MECHANICAL DETAILS — 2

GENERAL NOTES	
REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR COORDINATION OF GRILLES, DIFFUSERS AND OTHER ELEMENTS.	
IN ALL INSTANCES THE NEED FOR ACCESS DOORS IN GWB CEILINGS SHOULD BE AVOIDED IF POSSIBLE. WHERE INSTALLATION OF COMPONENTS WHICH REQUIRE ACCESS CANNOT BE AVOIDED, SUBMIT (DIMENSIONED) LAYOUT ON ARCHITECTURAL REFLECTED CEILING PLANS TO CONSULTANTS FOR APPROVAL PRIOR TO INSTALLATION OF COMPONENT.	
EXISTING ITEMS TO BE REMOVED REMAIN THE PROPERTY OF THE OWNER AND SHALL BE DELIVERED TO A LOCATION ON SITE DESIGNATED BY THE OWNER. IF THE OWNER DECLARES NO INTEREST IN THE REMOVED ITEMS, ASSUME OWNERSHIP AND REMOVE THE ITEMS FROM THE SITE.	
REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATION FOR PHASING AND STAGING.	

PLUMBING NOTES	
1. CONTRACTOR IS TO VERIFY CONNECTION POINTS TO SERVICES WITH OTHER TRADES ON SITE.	
2. CONTRACTOR IS TO CLEAR DUCTWORK WHEN INSTALLING NEW PIPING. CLEARANCES TO BE VERIFIED ON SITE.	
3. PROVIDE A CLEANOUT AT THE BOTTOM OF EVERY SOIL AND WASTE STACK THAT CONNECTS TO A HORIZONTAL DRAINAGE PIPE.	
4. PROVIDE A CLEANOUT FROM EACH PLUMBING FIXTURE WHERE REQUIRED BY ONTARIO BUILDING CODE, PART 7 — PLUMBING.	
5. CHECK AND VERIFY LOCATION OF ALL PIPES, DUCTS, AND EQUIPMENT WITH ALL OTHER TRADES TO PREVENT INTERFERENCE. REMOVAL OR RELOCATION OF ANY SUCH WORK INTERFERING WITH WORK OF OTHER TRADES IS THE RESPONSIBILITY OF THE MECHANICAL TRADE CONCERNED UNLESS OTHERWISE APPROVED IN WRITING.	
6. ALL PLUMBING FIXTURES INCLUDING FLOOR DRAINS (HUB, FUNNEL FLOOR DRAINS) TO BE TRAPPED AND VENTED AS REQUIRED BY ONTARIO BUILDING CODE, PART 7 — PLUMBING.	
7. FOR MOUNTING HEIGHT OF ALL PLUMBING FIXTURES REFER TO ARCHITECTURAL DRAWINGS.	
8. PROVIDE ACCESS DOOR FOR ALL VALVES LOCATED ABOVE DRY WALL CEILING.	
9. PROVIDE ACCESS DOOR FOR ALL CLEANOUTS LOCATED ABOVE DRY WALL CEILING.	
10. IN ALL INSTANCES THE NEED FOR ACCESS DOOR IN GWB CEILINGS SHOULD BE AVOIDED IF POSSIBLE. WHERE INSTALLATION OF COMPONENTS WHICH REQUIRE ACCESS CANNOT BE AVOIDED, SUBMIT (DIMENSIONED) LAYOUT ON ARCHITECTURAL REFLECTED CEILING PLANS TO CONSULTANTS FOR APPROVAL PRIOR TO INSTALLATION OF COMPONENT.	
11. PROVIDE SIGN IDENTIFYING LOCATION OF ALL VALVES INSTALLED IN CEILING SPACE.	
12. ALL WATER, SANITARY, SEWER AND VENT COPPER PIPING WITH SOLDER JOINTS SHALL BE LEAD FREE. DO NOT INSTALL WATER LINES IN OUTSIDE WALL WHERE THEY MAY FREEZE, UNLESS BOTH THE WALL AND THE PIPES ARE PROPERLY INSULATED.	
13. INSTALL SHUT-OFF VALVES AT EACH PLUMBING FIXTURE.	
14. REFER TO ARCHITECTURAL FOR OWNER SUPPLIED EQUIPMENT. CONFIRM ALL MECHANICAL REQUIREMENTS AND PROVIDE TO SUIT.	


FIRE SUPPRESSION NOTES	
1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL BUILDING CODE, NFPA STANDARDS AND THE ONTARIO BUILDING CODE.	

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5	ISSUED FOR BUILDING PERMIT	2019-03-14
6	ISSUED FOR ADDENDUM ME-1	2019-08-20

PROJECT :


YORK REGION PRS
STATION #29

107 GLEN CAMERON ROAD, MARKHAM



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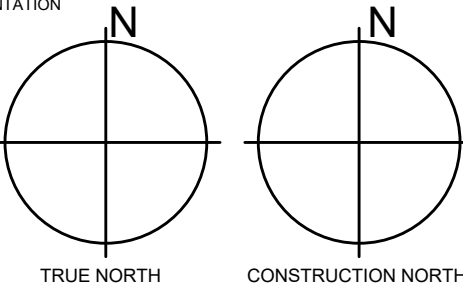
Project Phase

Authorization (signature)

DWG TITLE

LEAD SHEET

ORIENTATION



TRUE NORTH CONSTRUCTION NORTH

DATE

Jan. 03, 2019

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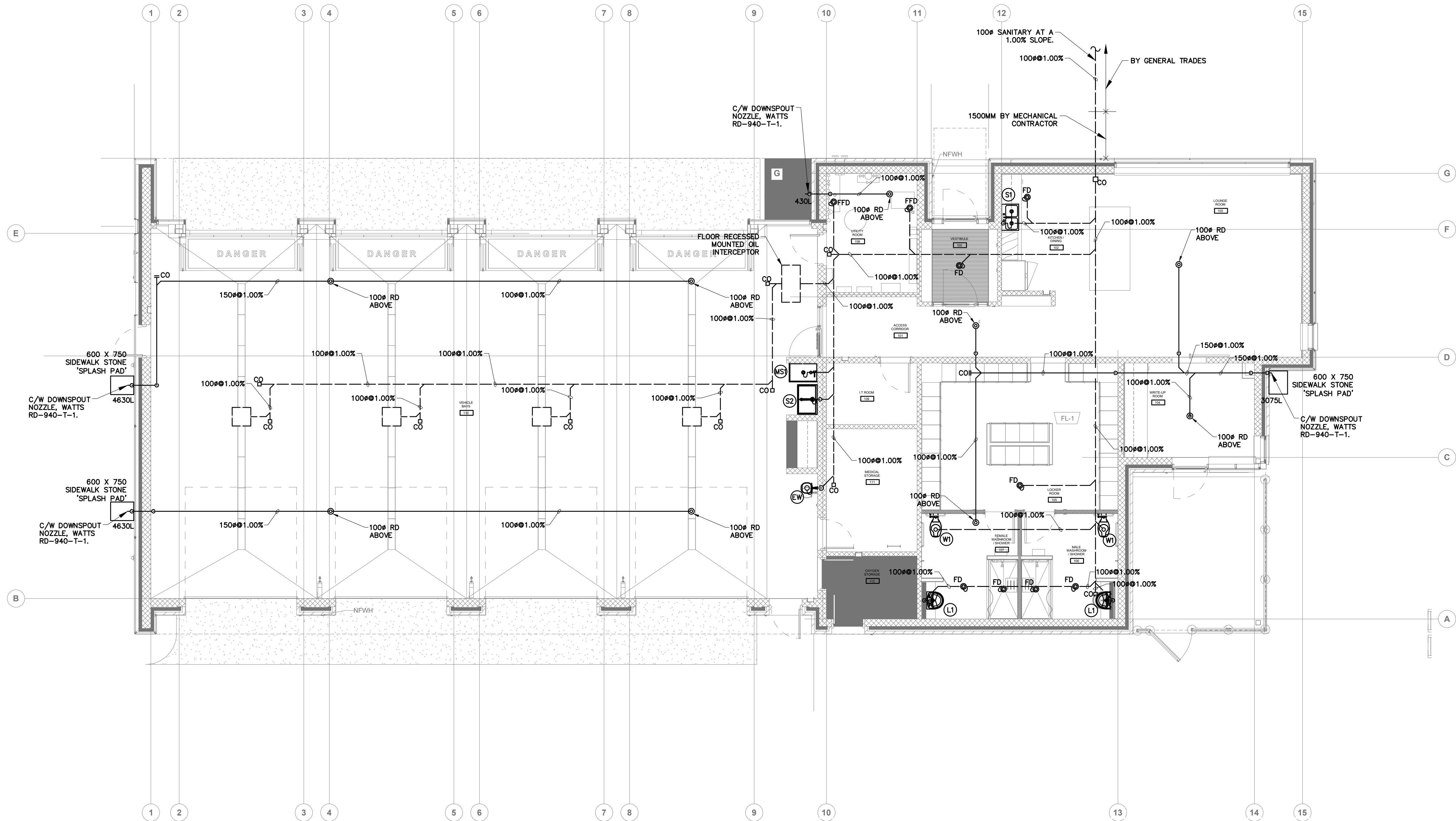
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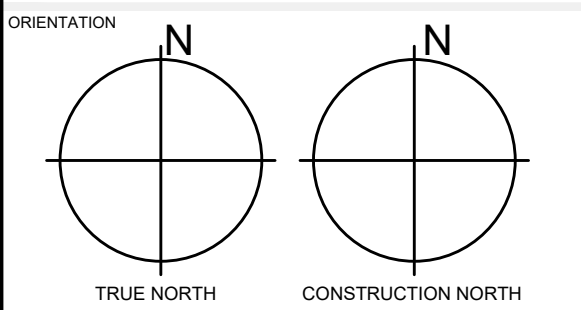
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DWG TITLE
**DRAINAGE FLOOR
PLAN**



DATE
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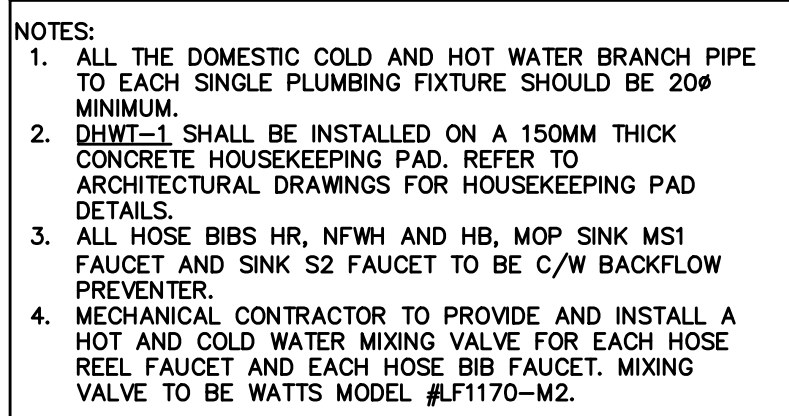
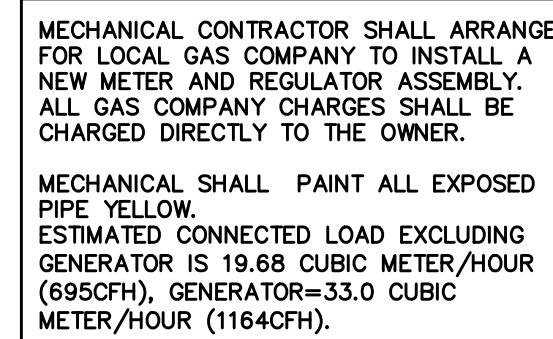
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STATION #29

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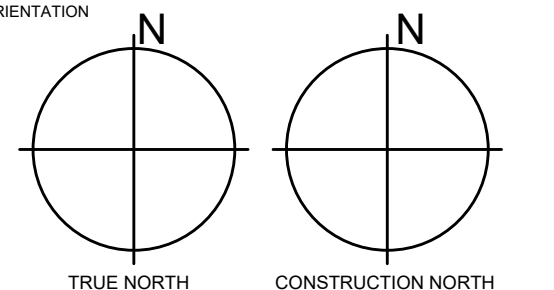
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WORKING TITLE

PLUMBING FLOOR PLAN

IMPLEMENTATION



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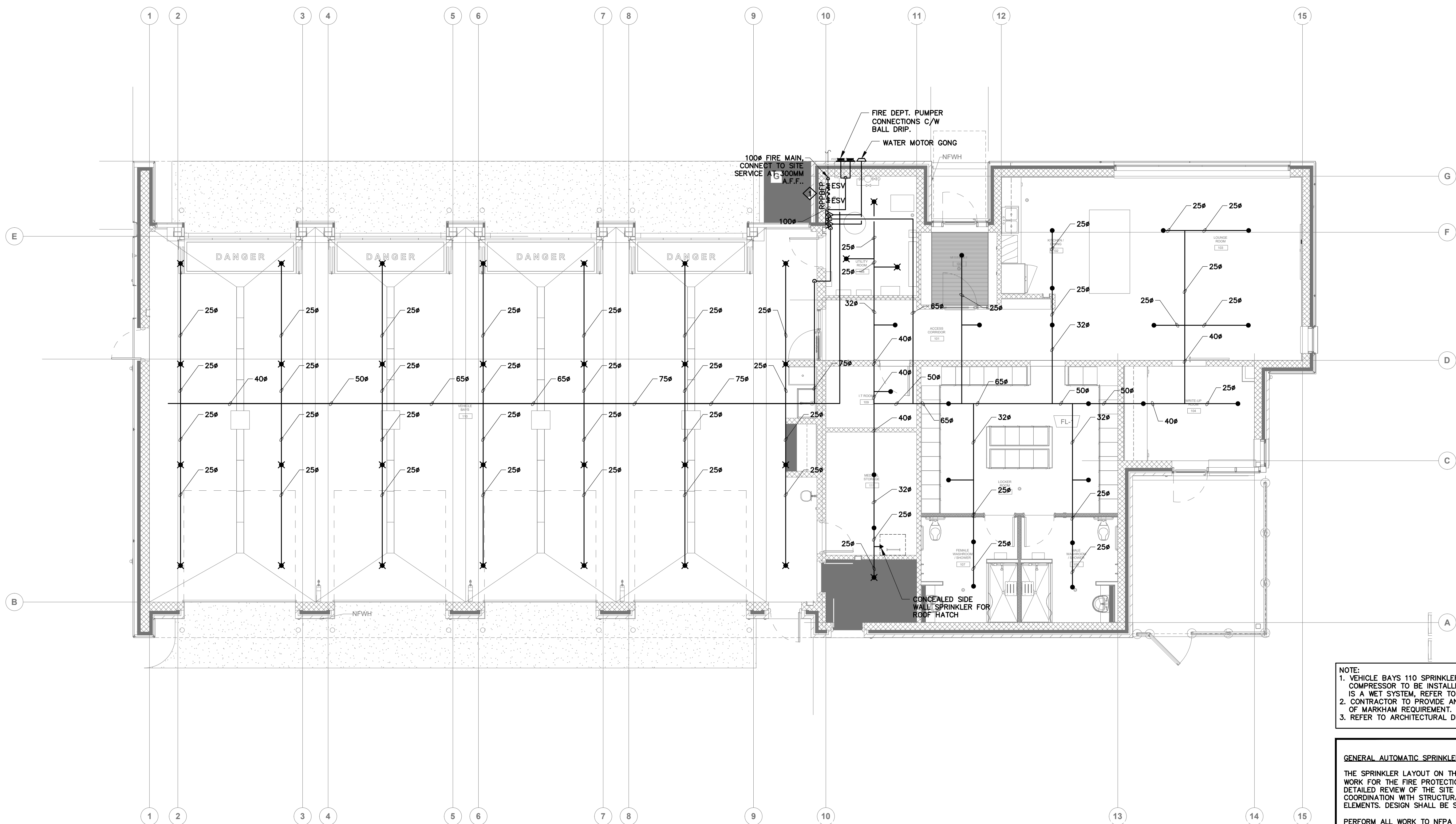
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NOTE:
1. VEHICLE BAYS 110 SPRINKLER SYSTEM IS A DRY SPRINKLER SYSTEM. AIR COMPRESSOR TO BE INSTALLED IN UTILITY ROOM. OTHER SPRINKLER SYSTEM IS A WET SYSTEM, REFER TO THE SPRINKLER PIPING SCHEMATICS.
2. CONTRACTOR TO PROVIDE AND INSTALL BACKFLOW PREVENTER AS PER CITY OF MARKHAM REQUIREMENT.
3. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING DETAILS.

GENERAL AUTOMATIC SPRINKLER NOTES

THE SPRINKLER LAYOUT ON THESE DRAWINGS SERVES AS A GENERAL SCOPE OF WORK FOR THE FIRE PROTECTION CONTRACTOR (FPC). THE FPC SHALL DO A DETAILED REVIEW OF THE SITE AND DETERMINE THE BEST DETAILED LAYOUT IN COORDINATION WITH STRUCTURAL, MECHANICAL, ELECTRICAL AND OTHER BUILDING ELEMENTS. DESIGN SHALL BE STAMPED AND SIGNED BY THE FPC PENG.

PERFORM ALL WORK TO NFPA 13 AND AUTHORITIES HAVING JURISDICTION (OBC).

SPRINKLER HEADS SHALL BE ALIGNED IN BOTH DIRECTIONS WHERE POSSIBLE, LENGTHWISE CENTRE OF TILE AT CENTRE OR QUARTER POINTS. THE CONSULTANTS MAY REQUIRE SPRINKLER LAYOUT BE REVISED FOR APPEARANCE CONSIDERATIONS AT NO CHANGE IN PRICE FOR THE CONTRACTOR.

FPC SHALL SITE VERIFY WATER SUPPLY AND PERFORM A FLOW TEST.

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YORK REGION PRS
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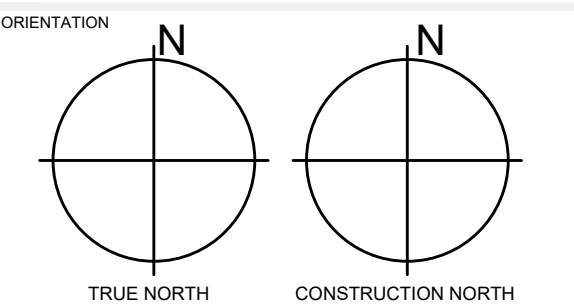
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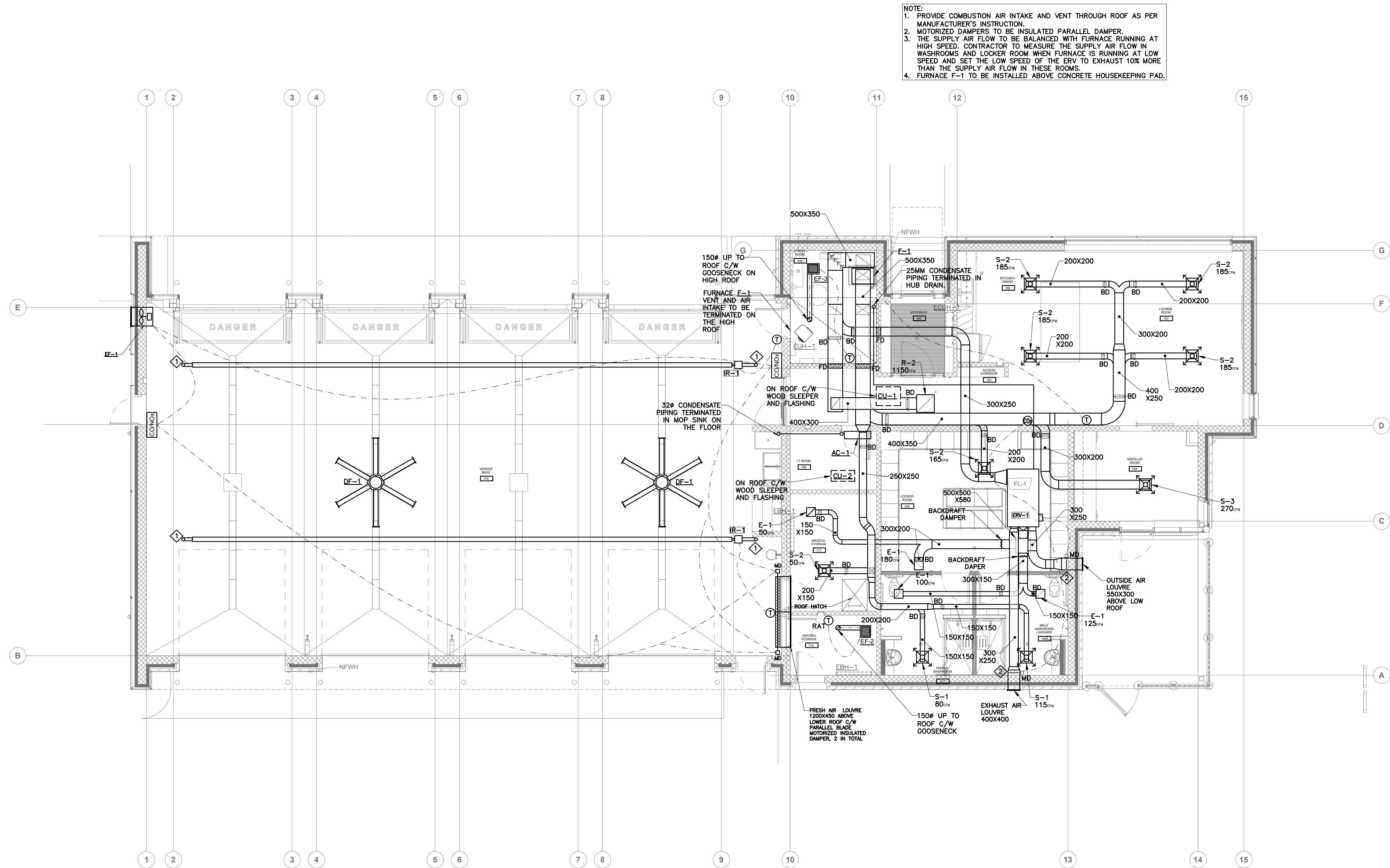
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DWG TITLE
SPRINKLER FLOOR PLAN



DATE Jan. 03, 2019
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DWG STATUS : PERMIT
PROJECT No. 2016-147
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PROJECT :

YORK REGION PRS STATION #29

107 GLEN CAMERON ROAD, MARKHAM



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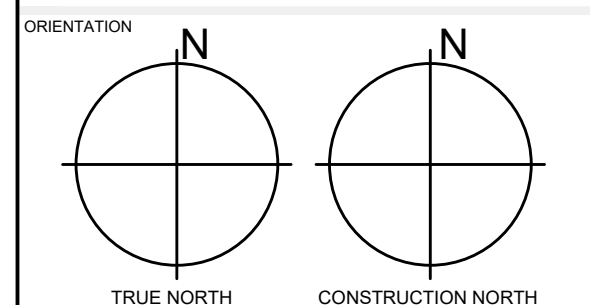
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DWG TITLE
HVAC FLOOR PLAN



DATE
Jan. 03, 2019

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DWG STATUS :
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PROJECT No.
2016-147

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FURNACE UNIT SCHEDULE												
REFER	AIRFLOW LPS (CFM)	E.S.P. Pa (IN.W.C.)	COOLING				HEATING	ELECTRICAL				MANUFACTURER, MODEL AND ACCESSORIES
			TOTAL KW (MEH)	SENSIBLE KW (MEH)	EER	REFRIGERANT	TOTAL KW (MEH)	MOTOR SIZE HP	VOLTAGE	M.C.A.	M.O.C.P.	
F-1	670 (1420)	175 (0.7)	14.1 (48.0)	—	—	R410a	29.31 (100)	1.0	120V/1/60Hz	14.7	20	CARRIER 59TP6A100E21-20 AND CASED VERTICAL N-COIL CNPVP4821ALA WITH FACTORY INSTALLED THERMOSTATIC EXPANSION VALVE. FURNACE TO BE CONTROLLED BY BAS. OUTSIDE AIR 480 CFM PROVIDED BY ERV.
CU-1				—		R410a	—	—	208V/1/60Hz	26.1	40	CARRIER 24ABC648A003

NOTES: 1. ACCEPTABLE ALTERNATES SUBJECT TO SHOP DRAWING REVIEW: TRANE, YORK.
2. REFER TO THE CONTROL SCHEMATICS AND SEQUENCES OF OPERATION.

EXHAUST FAN SCHEDULE												
REFER	AREA SERVED	AIR FLOW LPS (CFM)	E.S.P. PA (IN.W.C.)	ELECTRICAL		DRIVE	FAN SPEED RPM	OPERATING WEIGHT KG (LBS)	SONES	MANUFACTURER, MODEL AND ACCESSORIES		
				MOTOR SIZE	VOLTAGE							
EF-1	VEHICLE BAYS [128]	1558.1 (3300)	63.5 (0.25)	3/4 HP	115V/1ø/60Hz	BELT	1188	49.5 (109)	8.9	COOK XPD, 18XP29D132; COMPLETE WITH PRE-WIRED FLEX-CONDT, GRAVITY BACKDRAFT DAMPER ALUM, SHUTTER GUARD-STL, FAN SPEED CONTROLLER.		
EF-2	OXYGEN STORAGE [112]	47 (100)	127 (0.5)	86 WATTS	115V/1ø/60Hz	DIRECT	900	—	2.7	COOK GEMINI GC-144; COMPLETE WITH WHITE METAL FACE GRILL, 100 SERIES DAMPER AND ISOLATOR KIT. C/W LINE VOLTAGE REVERSE ACTING THERMOSTAT		
EF-3	UTILITY ROOM [108]	47 (100)	127 (0.5)	86 WATTS	115V/1ø/60Hz	DIRECT	900	—	2.7	COOK GEMINI GC-144; COMPLETE WITH WHITE METAL FACE GRILL, 100 SERIES DAMPER AND ISOLATOR KIT. CONTROL BY BAS VIA TEMPERATURE SENSOR. MECHANICAL CONTRACTOR TO PROVIDE HAND-OFF-AUTO STARTER INSTALLED IN THE ROOM BY ELECTRICAL CONTRACTOR.		

NOTES: 1. ALL FANS SHALL INCLUDE VIBRATION ISLOATION AND STARTERS.
2. REFER TO THE CONTROL SCHEMATICS AND SEQUENCES OF OPERATION.
3. ACCEPTABLE ALTERNATES SUBJECT TI SHOP DRAWING REVIEW: COOK, CARNES, GREENHECK, REVERSOMATIC, BROAN.

HEAT RECOVERY VENTILATOR																		
SYMBOL	SUPPLY FAN		EXHAUST FAN		DESIGN OUTDOOR TEMP		EXHAUST AIR TEMP		SUPPLY AIR TEMP ACROSS UNIT		RECOVERED HEAT ACROSS UNIT		TEMP. EFFICIENCY ACROSS UNIT		ELECTRICAL			REMARKS
	AIR VOLUME (CFM)	EXT. S.P. (IN.W.G.)	AIR VOLUME (CFM)	EXT. S.P. (IN.W.G.)	WINTER DB/(WB°F)	SUMMER DB/(WB°F)	WINTER DB/(WB°F)	SUMMER DB/(WB°F)	WINTER DB/(WB°F)	SUMMER DB/(WB°F)	WINTER TOTAL/ MBH LATENT/ MBH	SUMMER TOTAL/ MBH LATENT/ MBH	WINTER	SUMMER	VOLTAGE	MCA	MOP	
ERV-1	480	0.5	455	0.5	-5.0/-5.0	88.0/73.0	72.0/55.0	75.0/63.0	62.4/47.5	78.0/70.2	34.9/7.7	-5.2	87.5%	77.1%	208/3/60	11.0	15.0	TEMPEFF RGSP 600 C/W EC MOTOR, MODULATION CONTROLLED BY BAS. ERV TO BE WITH REMOVABLE PANELS FOR ACCESS THE CORES ON THE SIDE OF THE UNIT.

PLUMBING FIXTURE CONNECTION SCHEDULE												
TAG	FIXTURN NAME	SANITARY		VENT		DWVS		DWVS		TEMPERED		REMARKS
		MM	INS	MM	INS	MM	INS	MM	INS	MM	INS	
W1	BARRIER FREE FLUSH VALVE WATER CLOSET	75	3.00	38	1.50	32	1.25	-	-	-	-	
L1	BARRIER FREE COUNTERTOP LAVATORY	32	1.25	32	1.25	13	0.50	13	0.50	13	0.5	
SH1	BARRIER FREE SHOWER	-	-	-	-	13	0.50	13	0.50	19	0.75	
SH1	SHOWER HEAD SET	-	-	-	-	13	0.50	13	0.50	19	0.75	
S1	SINGLE COMPARTMENT STAINLESS STEEL SINK	38	1.50	32	1.25	13	0.50	13	0.50	-	-	
S2	SINK PROVIDED BY GENERAL CONTRACTOR, REFER TO ARCHITECTURAL SPECIFICATIONS, FAUCET PROVIDE BY MECHANICAL CONTRACTOR	38	1.50	32	1.25	13	0.50	13	0.50	-	-	
MS1	MOP SINK	75	3.00	38	1.50	19	0.75	19	0.75	-	-	
EW	EMERGENCY EYE WASH	32	1.25	32	1.25	19	0.75	19	0.75	19	0.75	
HB	HOSE BIB	-	-	-	-	13	0.50	13	0.50	13	0.50	
HR	HOSE REEL	-	-	-	-	13	0.50	13	1.50	13	1.50	
NFWH	NON-FROZEN WALL HYDRANT	-	-	-	-	13	0.50	-	-	-	-	
FD	FLOOR DRAIN	75	3.00	38	1.50	10	0.38	-	-	-	-	
FFD	FUNNEL FLOOR DRAIN	75	3.00	38	1.50	10	0.38	-	-	-	-	
TSP	TRAP SEAL PRIMER	-	-	-	-	10/13	0.38/0.50	-	-	-	-	ONE - 10MM/0.38" PER FD, FFD, HD, PD

AC UNIT SCHEDULE												
REFER	AIRFLOW CFM	E.S.P. IN.W.C.	COOLING				HEATING TOTAL MBH	ELECTRICAL				MANUFACTURER, MODEL AND ACCESSORIES
			TOTAL MBH	SENSIBLE MBH	EER	REFRIGERANT		MOTOR SIZE KW	VOLTAGE	M.C.A.	M.O.C.P.	
AC-1	425	—	18.0	—	—	R410a	—	0.03	230V/1/60Hz, FROM CU-3	—	—	mitsubishi PKA-A18HA6
CU-2	—	—	18.0	—	—	R410a	—	—	230V/1/60Hz	13	15	mitsubishi PUY-A18NHA6. C/W ULTRA LOW AMBIENT KIT (-40F)

NOTES: BASIS IF DESIGN IS MITSUBISHI. EQUIVALENT PRODUCT MATCHING THE SPECIFICATIONS BY SAMSUNG, LG DAIKIN TO BE TREATED AS EQUAL.

RETURN/ EXHAUST GRILLE SCHEDULE							
SYMBOL	SIZE MM x MM (IN x IN)	APPLICATION	NECK SIZE MM (IN)	AIRFLOW RANGE CFM	NC RANGE	MANUFACTURER AND MODEL (BASIS OF DESIN E.H. PRICE)	
R-1 CFM	E-1 CFM	300x300 (12x12)	CEILING GRILLE	—	<450	<30	800
R-2 CFM		600x600 (24x24)	CEILING GRILLE	—	<1600	<30	800

NOTE(S): 1. ACCEPTABLE ALTERNATES SUBJECT TO SHOP DRAWING REVIEW: TITUS, METALAIRE, KRUEGER.

DIFFUSER SCHEDULE						
SYMBOL	SIZE MM x MM (IN x IN)	APPLICATION	NECK SIZE MM (IN)	AIRFLOW RANGE CFM	NC RANGE	MANUFACTURER AND MODEL (BASIS OF DESIN E.H. PRICE)
S-1 CFM	600x600 (24x24)	4 WAY CEILING DIFFUSER	150 (6)	0-135	<30	SCD
S-2 CFM	600x600 (24x24)	4 WAY CEILING DIFFUSER	200 (8)	136-250	<30	SCD
S-3 CFM	600x600 (24x24)	4 WAY CEILING DIFFUSER	200 (10)	251-350	<30	SCD

NOTE(S): 1. ACCEPTABLE ALTERNATES SUBJECT TO SHOP DRAWING REVIEW: TITUS, METALAIRE, KRUEGER.

ELECTRIC CABINET UNIT HEATER SCHEDULE		
SYMBOL	CAPACITY (KW)	REMARK
ECUH-1	3.00	PROVIDED AND INSTALLED BY DIV. 16

ELECTRIC BASEBOARD HEATER SCHEDULE		
SYMBOL	CAPACITY (KW)	REMARK
EBH-1	0.75	PROVIDED AND INSTALLED BY DIV. 16. CONTROLLED BE BAS.

ELECTRIC UNIT HEATER SCHEDULE		
SYMBOL	CAPACITY (KW)	REMARK
EUH-1	2.0	PROVIDED AND INSTALLED BY DIV. 16. CONTROLLED BY BAS.

DE-STRATIFICATION FAN SCHEDULE							
SYMBOL	AREA SERVED	LOCATION	ELECTRICAL MOTOR HP	VOLTAGE	MOTOR	OPRATING WEIGHT LBS	MODEL
DF-1	APPARATUS BAY	CEILING SUSPENDED	1.0	120/1/60	ONBOARD VFD CONTROLLER	124	BIG ASS BASIC 6, FAN DIAMETER 3000MM, C/W WALL-MOUNTED KEYPAD, SAFETY CABLE. INSTALLATION HEIGHT TO BE CONFIRMED ON SITE.

RADIANT TUBE HEATER SCHEDULE					
SYMBOL	CAPACITY GAS INPUT MBH	ELECTRICAL		OPERATING WEIGHT LBS	MODEL (BASIS OF DESIGN SCHWANK
		AMPS	VOLTAGE		
IR-1	200	145VA	120/1/60	518	SCHWANK MODEL UHE 200-60. HEATERS ARE TO BE MOUNTED HORIZONTALLY. EACH RADIANT TUBE HEATER TO BE CONTROLLED BY A SCHWANK TRUTEMP MEAN RADIANT TEMPERATURE THERMOSTAT THROUGH BAS AND INTERLOCKED WITH OVERHEAD DOORS AND FOLDING DOORS THROUGH BAS.

DOMESTIC HOT WATER TANK					
SYMBOL/AREA	INPUT	STORAGE CAPACITY	RECOVERY RATE + 100°F RISE	ELECTRICAL	REMARKS
		MBH	GALLON		
DHWT-1	120	60	138	120/1/60	A.O. SMITH CYCLONE MXI BTH-120(A). NATURAL GAS.

PUMP SCHEDULE								
REF:	SYSTEM	PERFORMANCE			ELECTRICAL DATA		REMARKS	
		FLUID	GPM	FT. HEAD	RPM	MOTOR HP		VOLTAGE
P-1	DOMESTIC HOT WATER RECIRCULATING PUMP	WATER	4.0	3.0	1800	1/40	120/1/60	TACO MODEL PLUMB 'n' PLUG C/W AQUASTAT OR APPROVED EQUIVALENT. CONTROLLED BY BAS.

EXPANSION TANK SCHEDULE					
SYMBOL	LOCATION/SERVICE	MODEL No.	TANK VOLUME LITERS (GAL.)	ACCEPTANCE VOLUME LITERS (GAL.)	REMARKS
EXP-1	MECH/ELEC ROOM 111 DOMESTIC HOT WATER RETURN	PLT-20	32.1 (8.5)	12.9 (3.4)	WATTS PLT-20

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5	ISSUED FOR BUILDING PERMIT	2019-03-14
6	ISSUED FOR ADDENDUM ME-1	2019-08-20

PROJECT :

YORK REGION PRS
STATION #29

107 GLEN CAMERON ROAD, MARKHAM

RCEI

REGAL CONSULTING ENGINEERS INC.
CONSULTING MECHANICAL & ELECTRICAL ENGINEERS
2359 Royal Windsor Drive, Suite 201, Mississauga, Ontario L5J 4S9
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CLIENT

York Region

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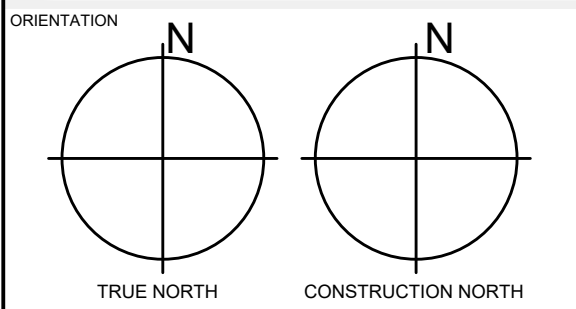
PROFESSIONAL SEAL

Approval to Proceed

Project Phase

Authorization (signature)

DWG TITLE
MECHANICAL
SCHEDULES



DATE
Jan. 03, 2019

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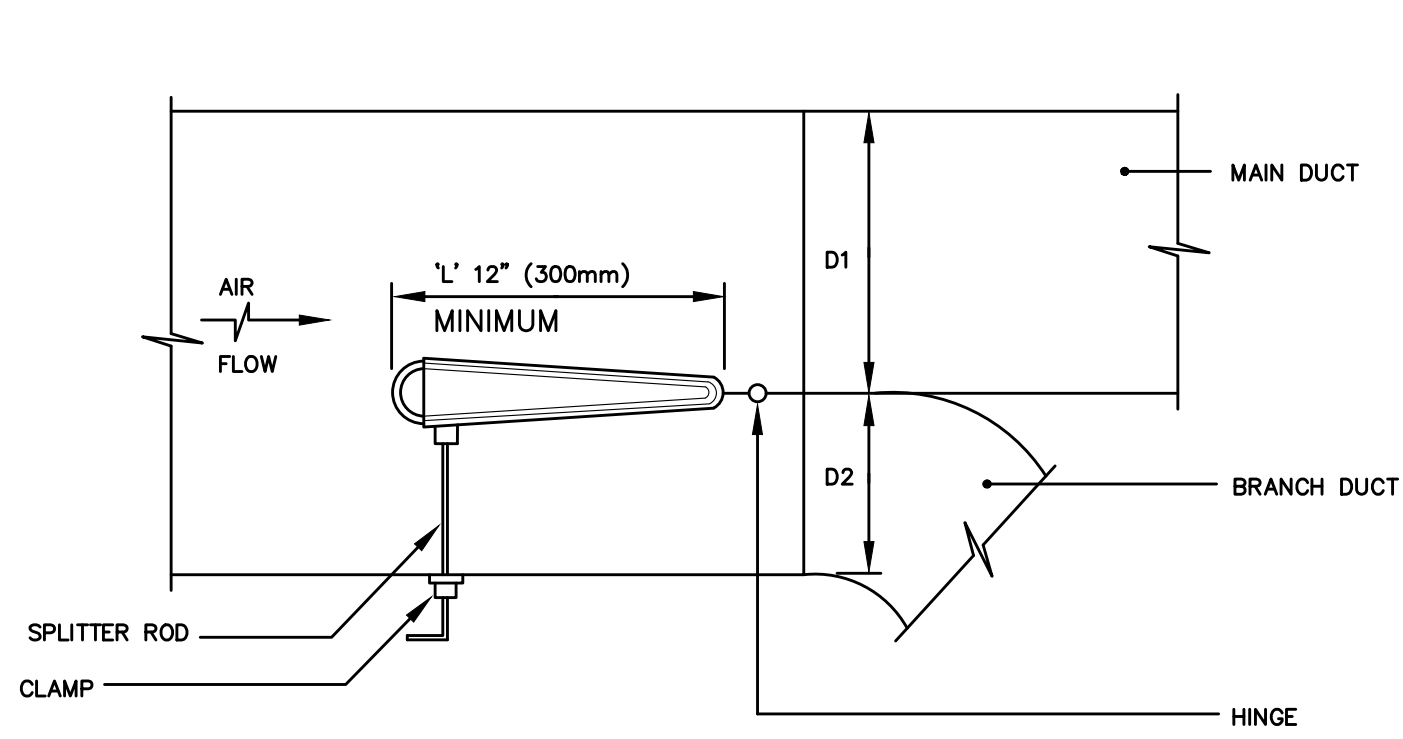
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PROJECT No.
2016-147

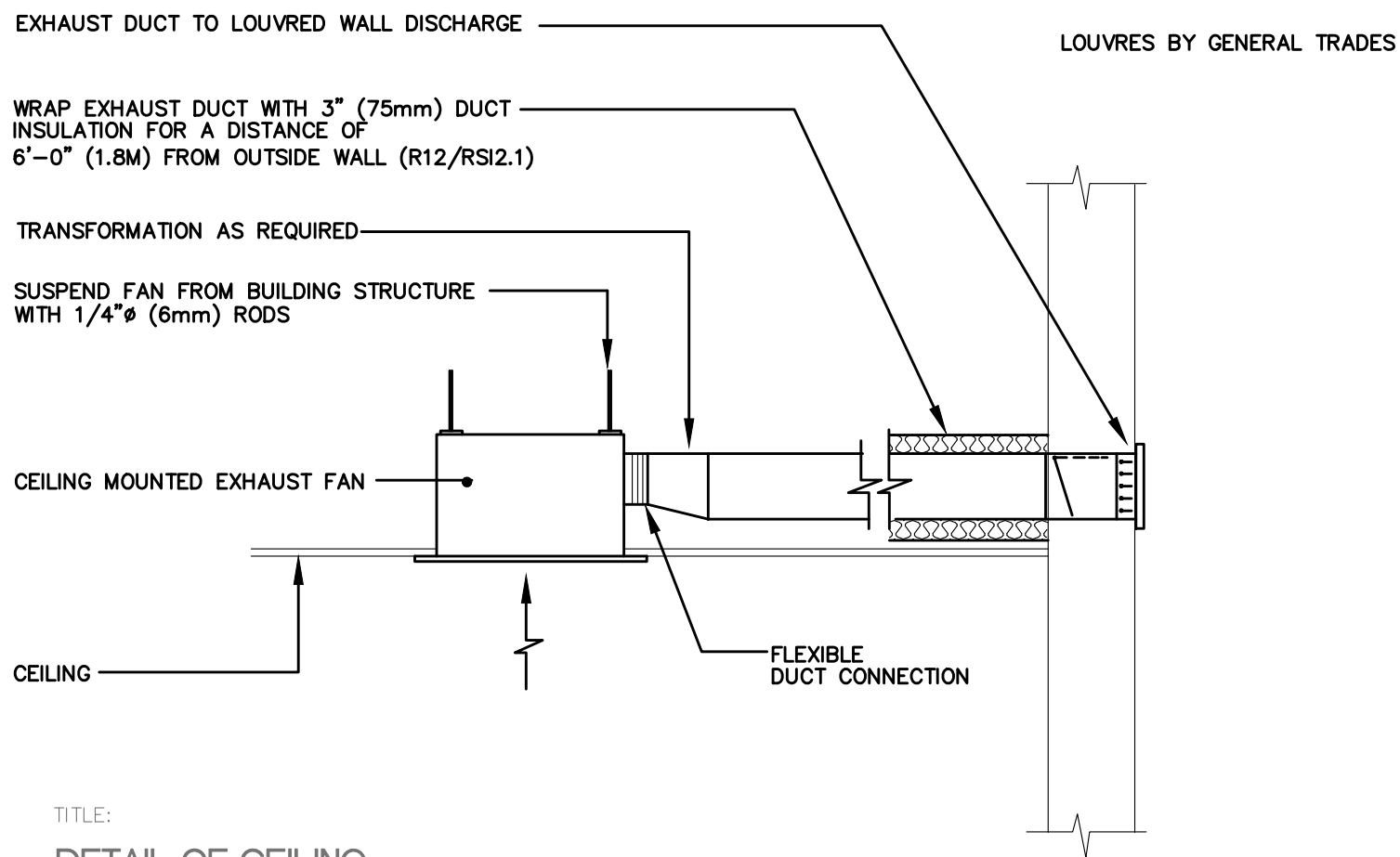
DRAWING No.
M6.0

REVISION
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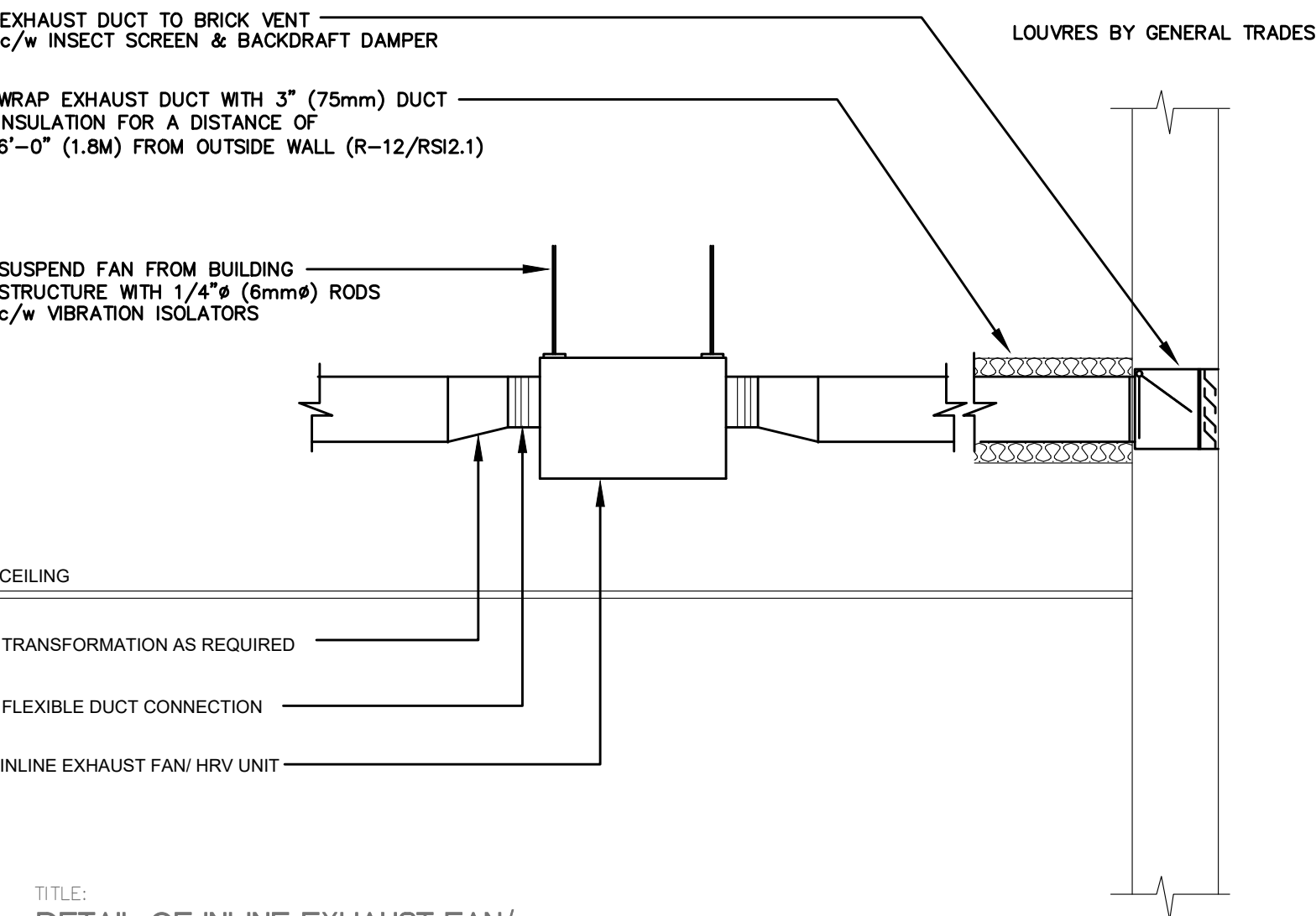


'L' = 1-1/2 D2 FOR 8" (200mm) TO 24" (600mm)
'L' = 1-1/4 D2 FOR D2 OVER 24" (600mm)

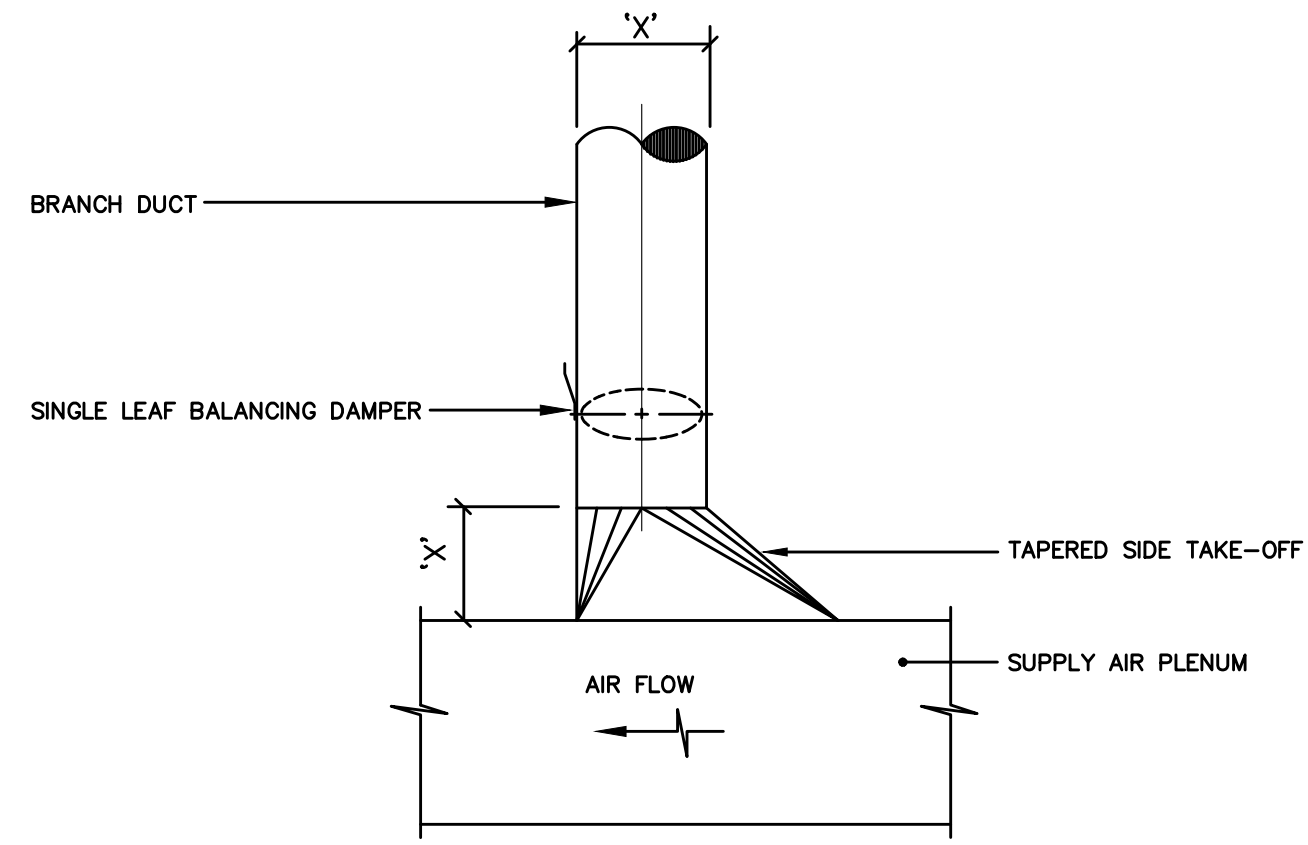
TITLE:
DETAIL OF
SPLITTER DAMPER



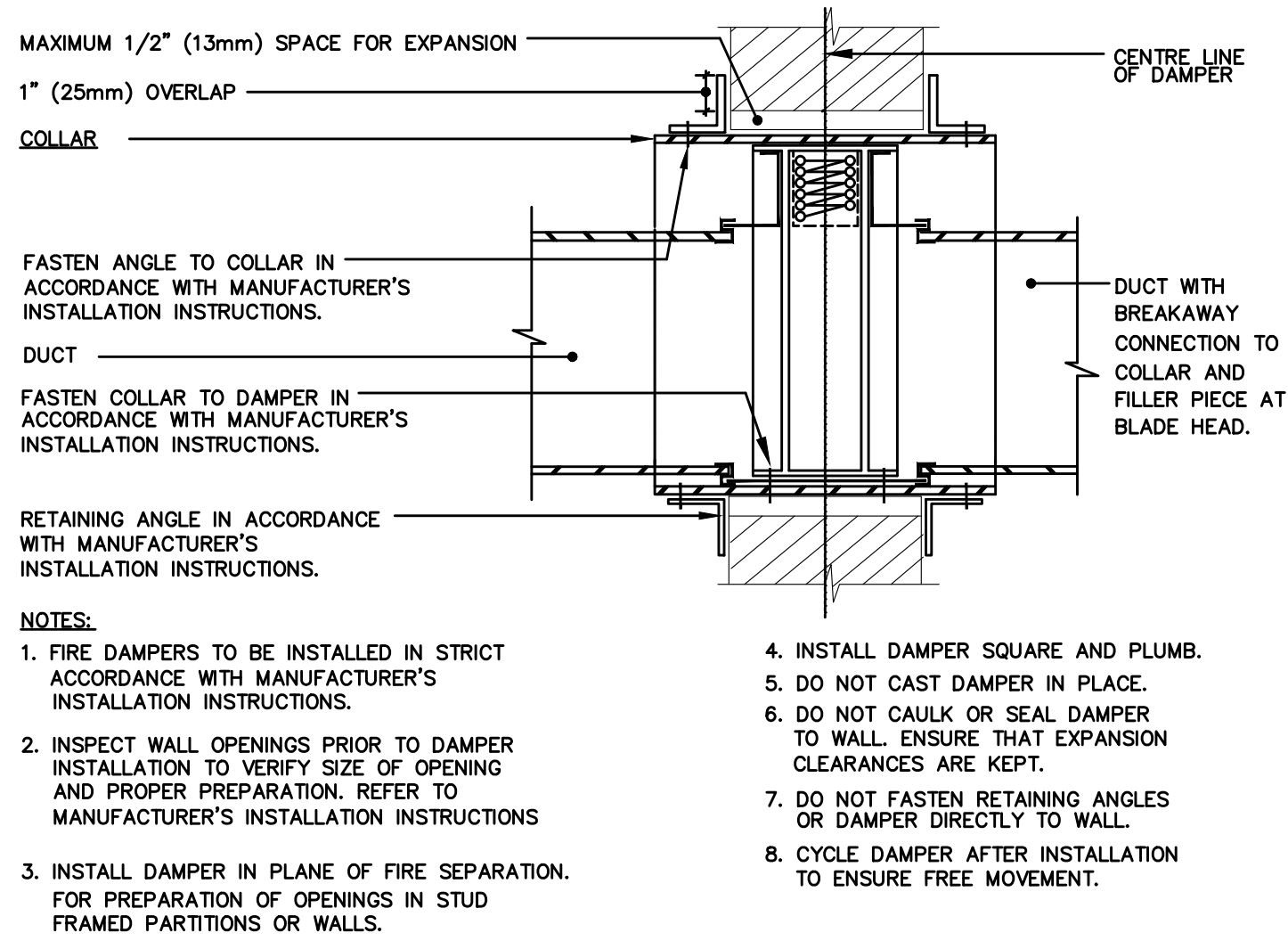
TITLE:
DETAIL OF CEILING
MOUNTED EXHAUST FAN



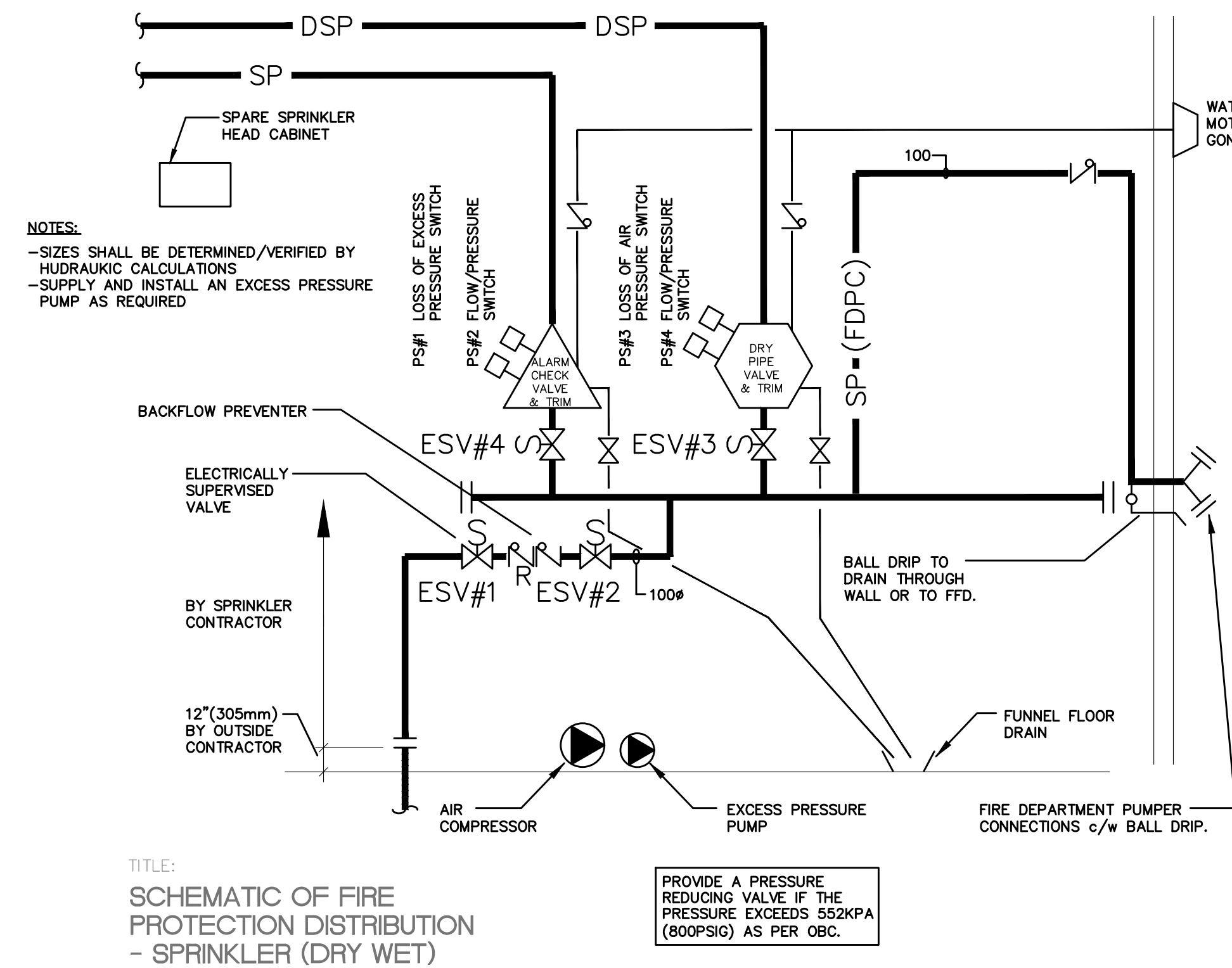
TITLE:
DETAIL OF INLINE EXHAUST FAN/
HRV UNIT (EXHAUST AND OUTSIDE AIR DUCT)



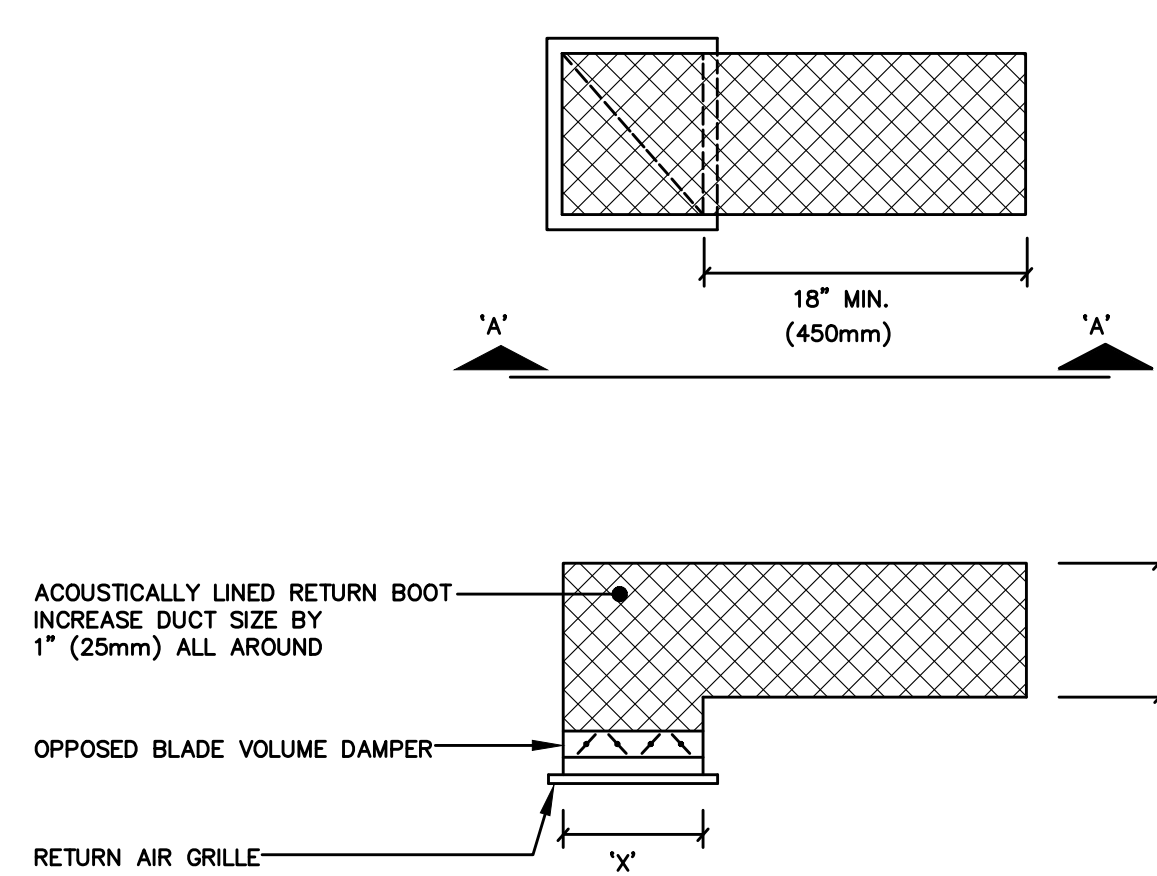
TITLE:
DETAIL OF ROUND
DUCT TAKE-OFF



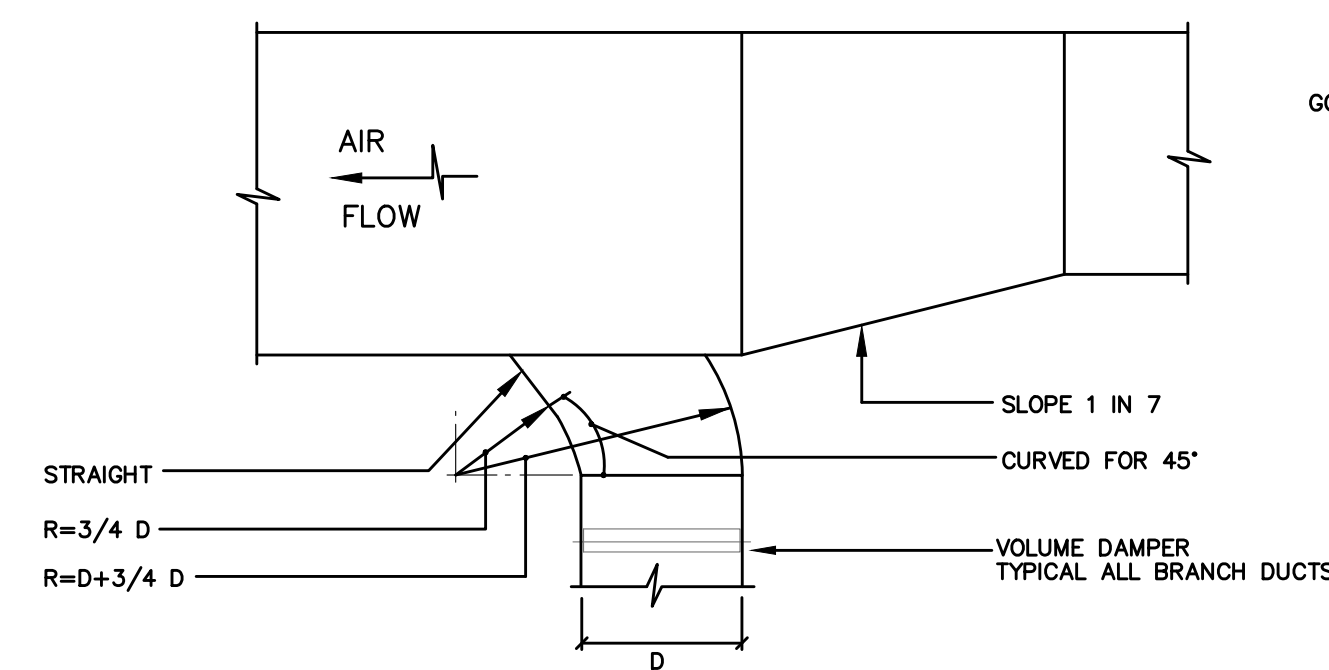
TITLE:
DETAIL OF TYPE B FIRE
DAMPER INSTALLATION-
VERTICAL



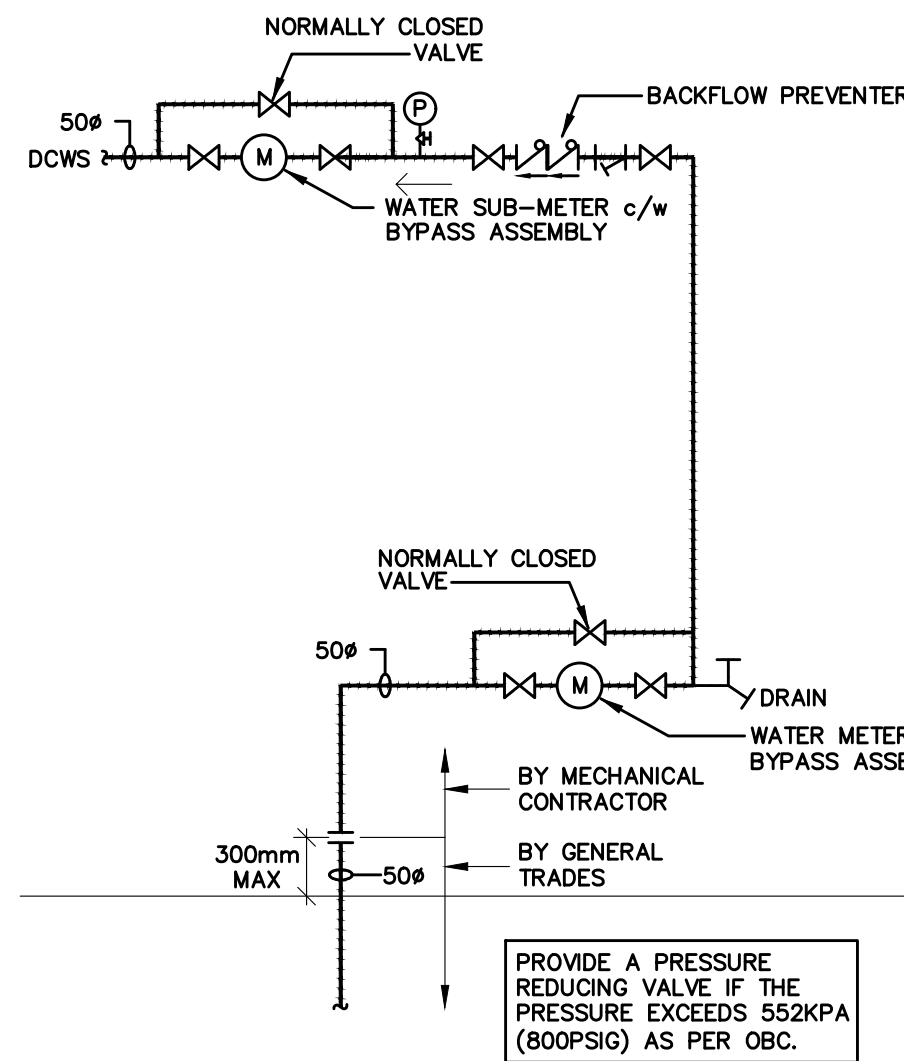
TITLE:
SCHEMATIC OF FIRE
PROTECTION DISTRIBUTION
- SPRINKLER (DRY WET)



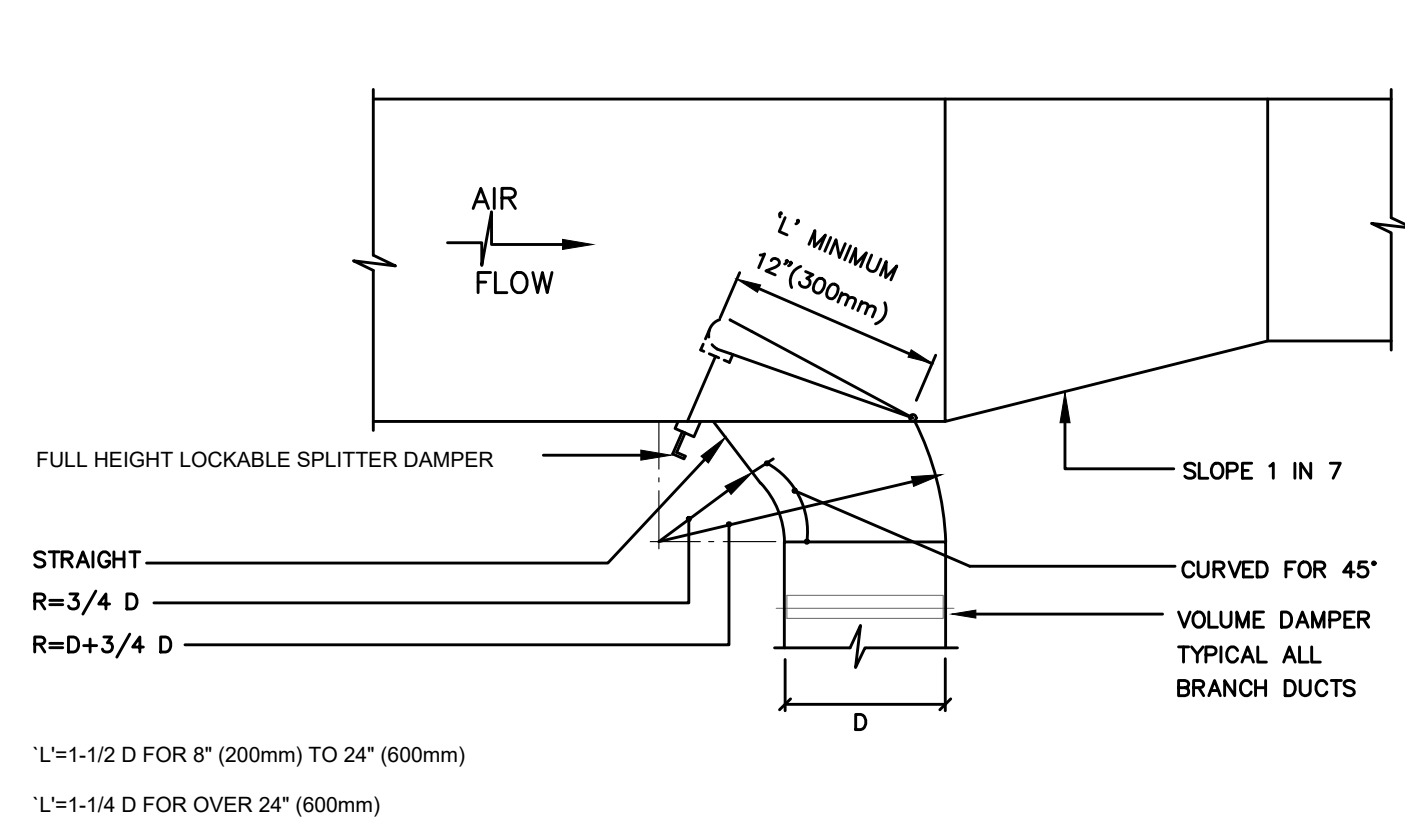
TITLE:
DETAIL OF RETURN
AIR GRILLE AND BOOT



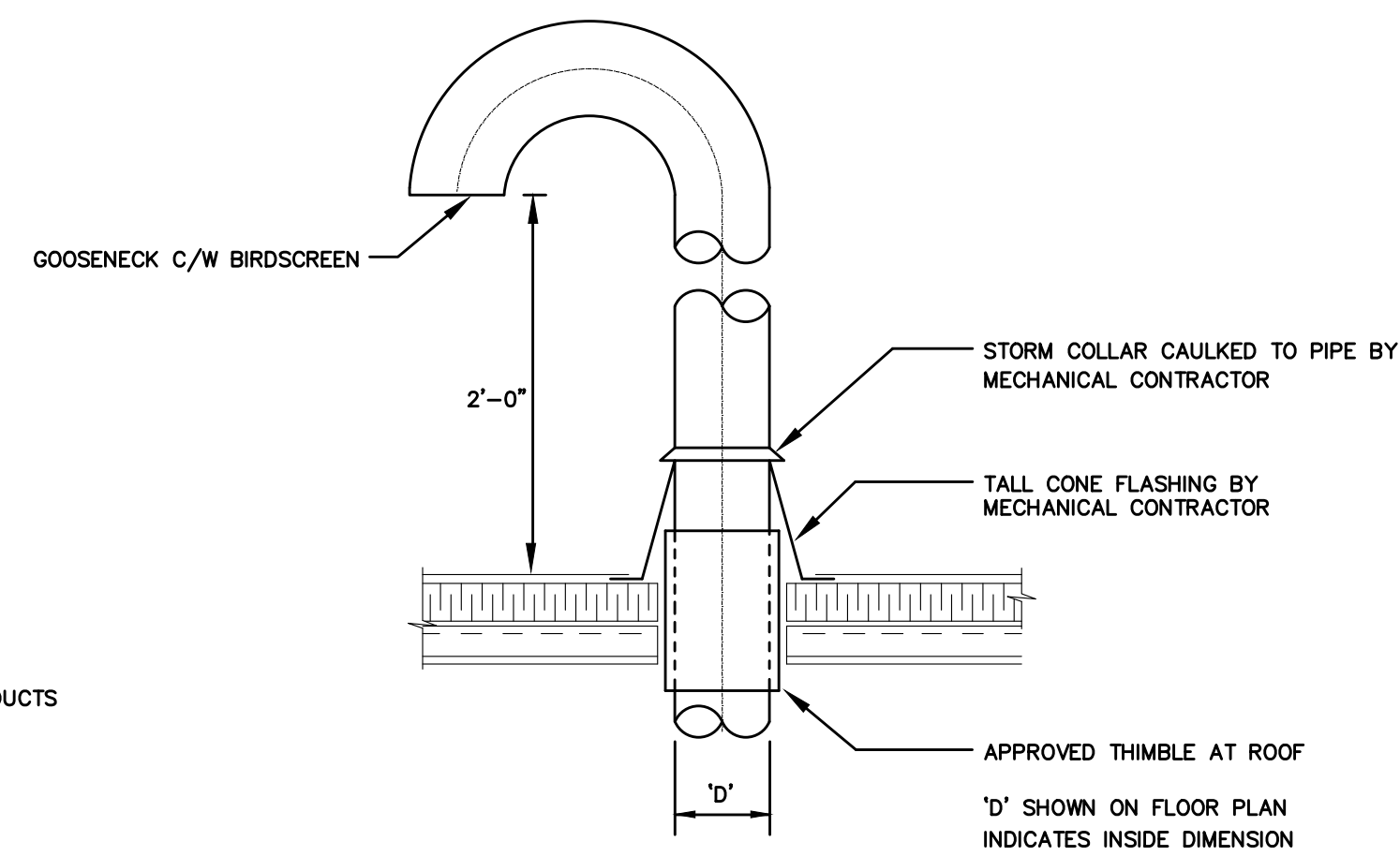
TITLE:
DETAIL OF RETURN
TAP-IN CONNECTION



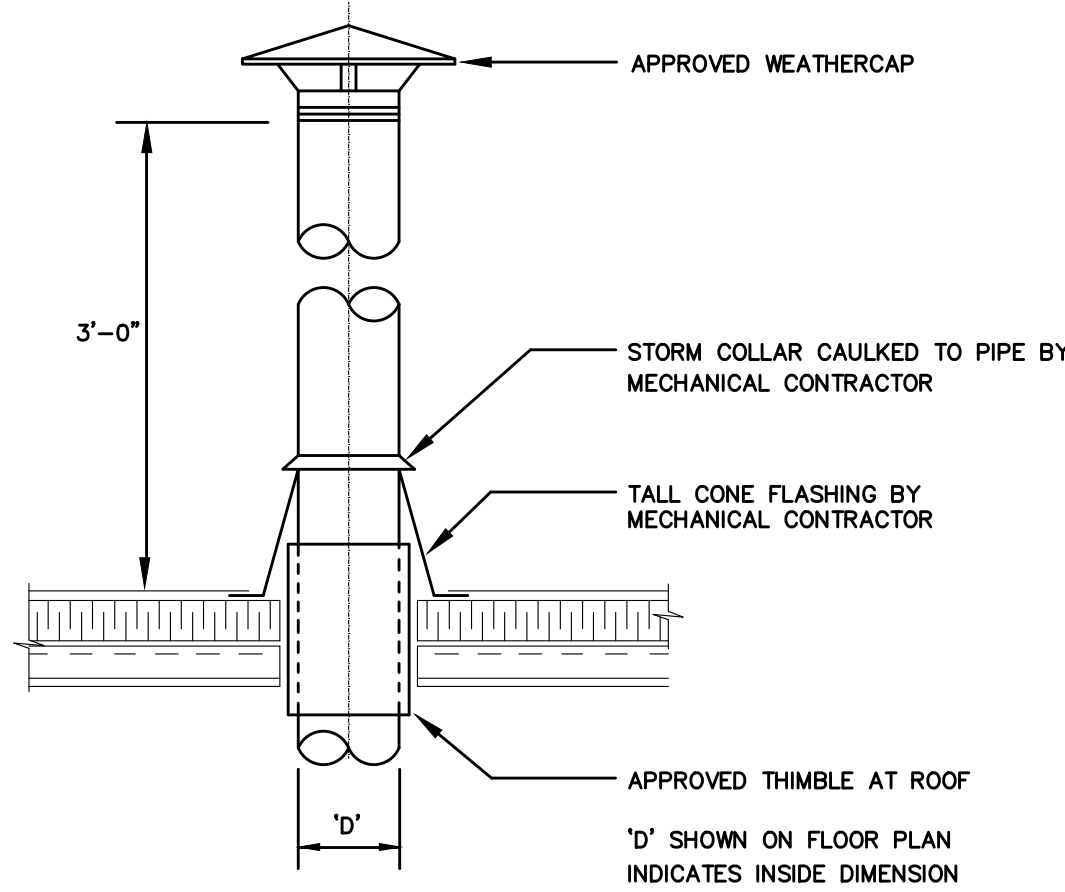
TITLE:
WATER SERVICE
SCHEMATIC



TITLE:
DETAIL OF SUPPLY
TAP-IN CONNECTION



TITLE:
DETAIL OF COMBUSTION AIR FOR RADIANT HEATERS
(AS PER MANUFACTURER'S RECOMMENDATION)



TITLE:
DETAIL OF GAS VENT FROM RADIANT HEATERS
(AS PER MANUFACTURER'S RECOMMENDATION)

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PROJECT:
**YORK REGION PRS
STATION #29**
107 GLEN CAMERON ROAD, MARKHAM



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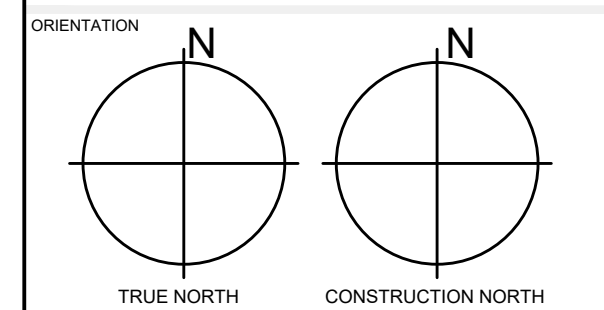
PROFESSIONAL SEAL

Approval to Proceed

Project Phase

Authorization (signature)

DWG TITLE
**MECHANICAL
DETAILS - 1**



DATE
Jan. 03, 2019

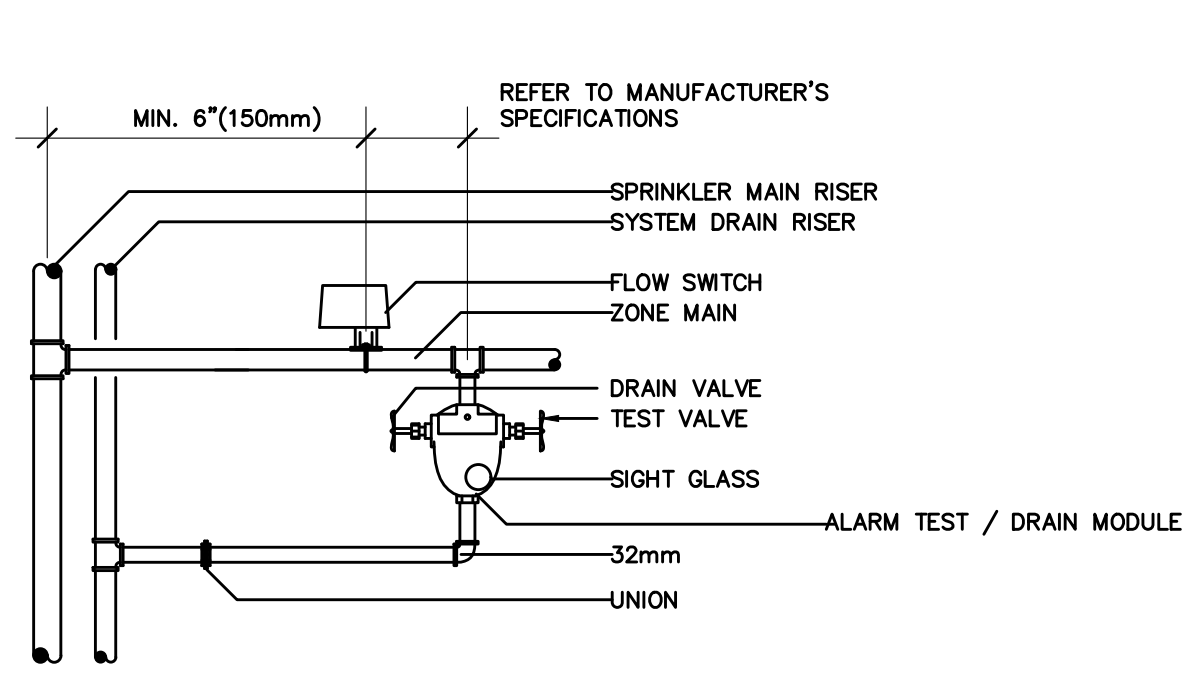
SCALE
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DWG STATUS:
PERMIT

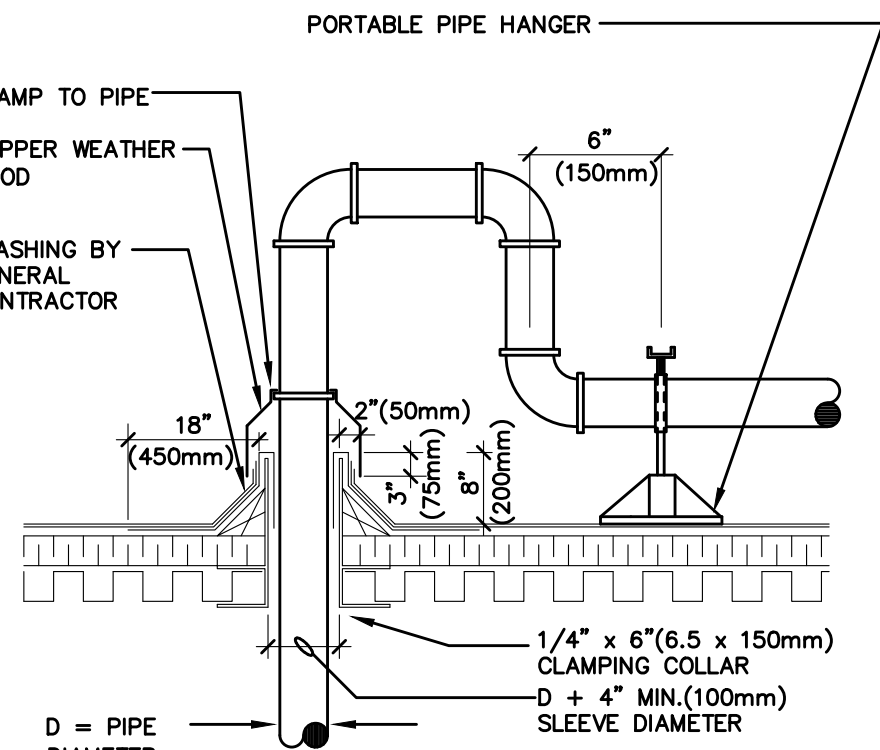
PROJECT No.
2016-147

DRAWING No.
M7.0

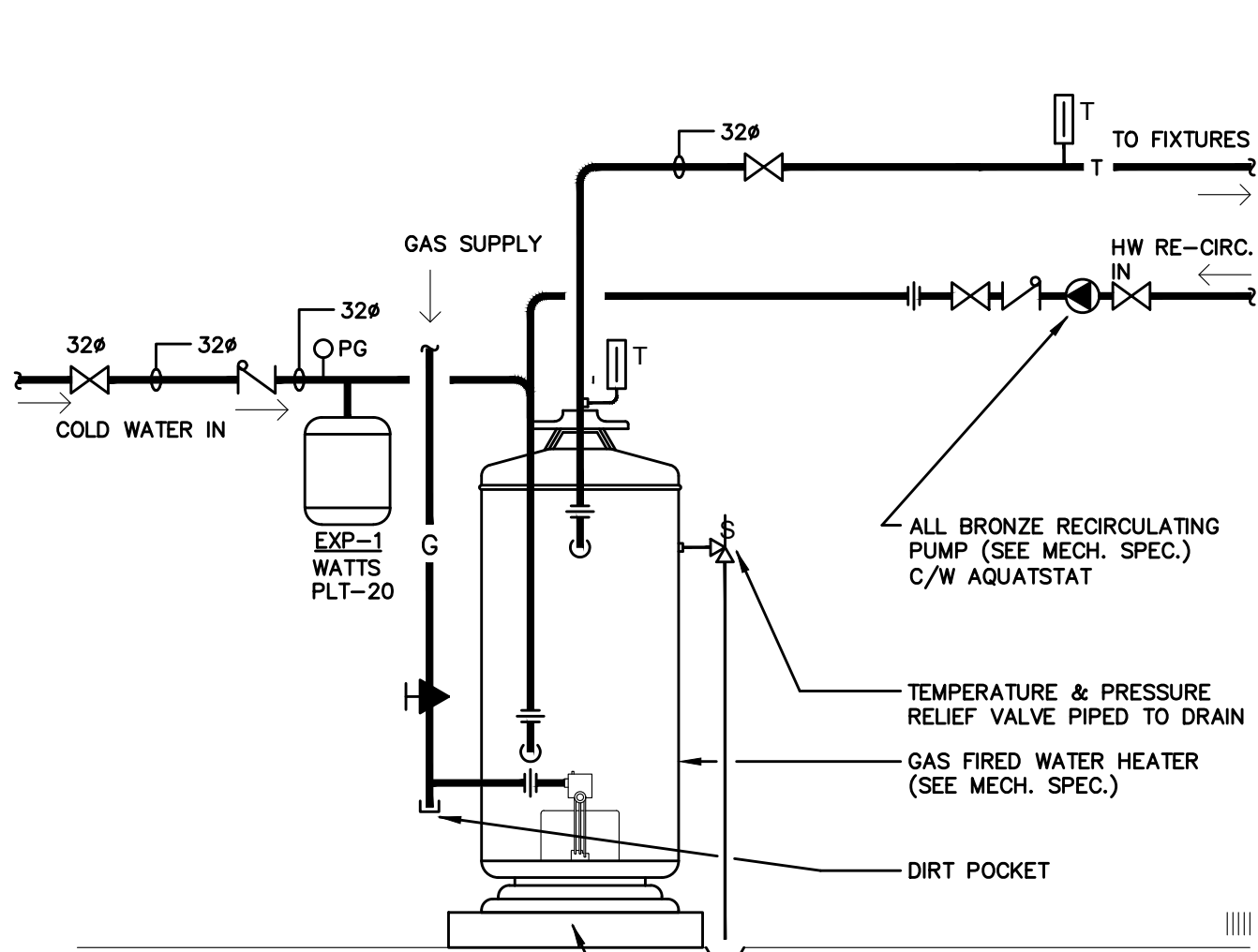
REVISION
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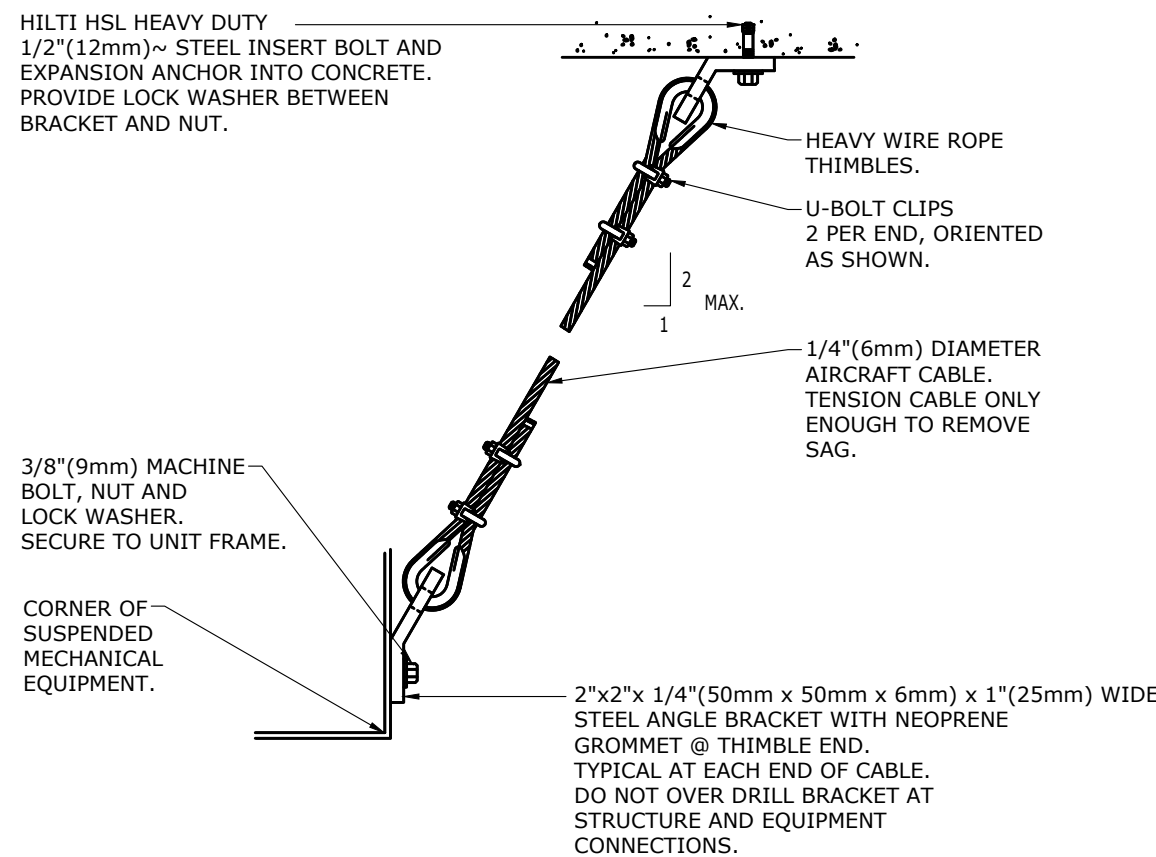
TITLE:
SCHEMATIC OF SPRINKLER
ZONE MONITORING
ARRANGEMENT



TITLE:
DETAIL OF GAS PIPING
THROUGH ROOF AND
PIPE SUPPORT

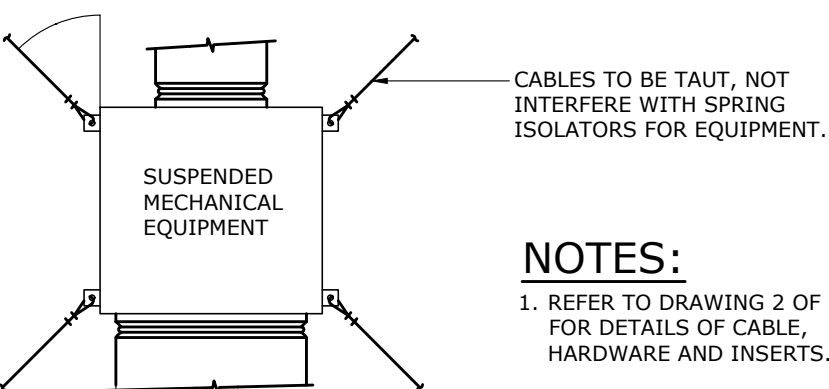
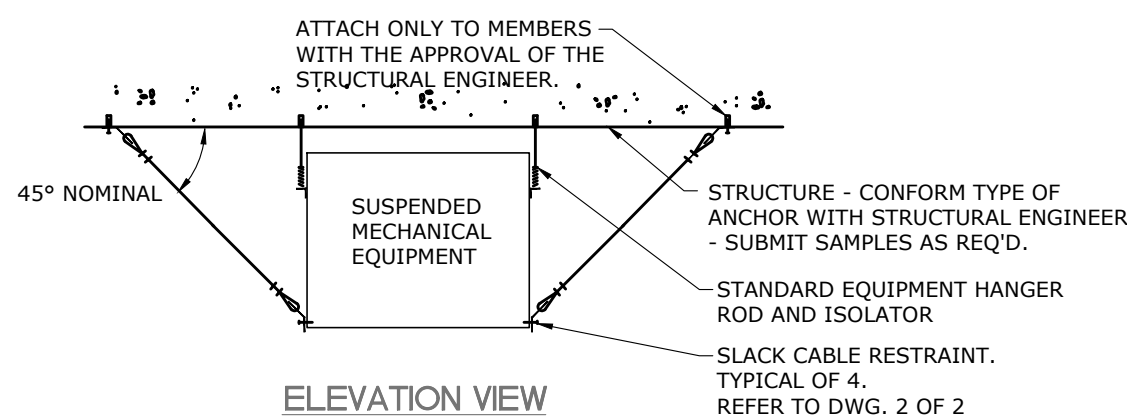


TITLE:
SCHEMATIC OF GAS FIRED
WATER HEATER c/w

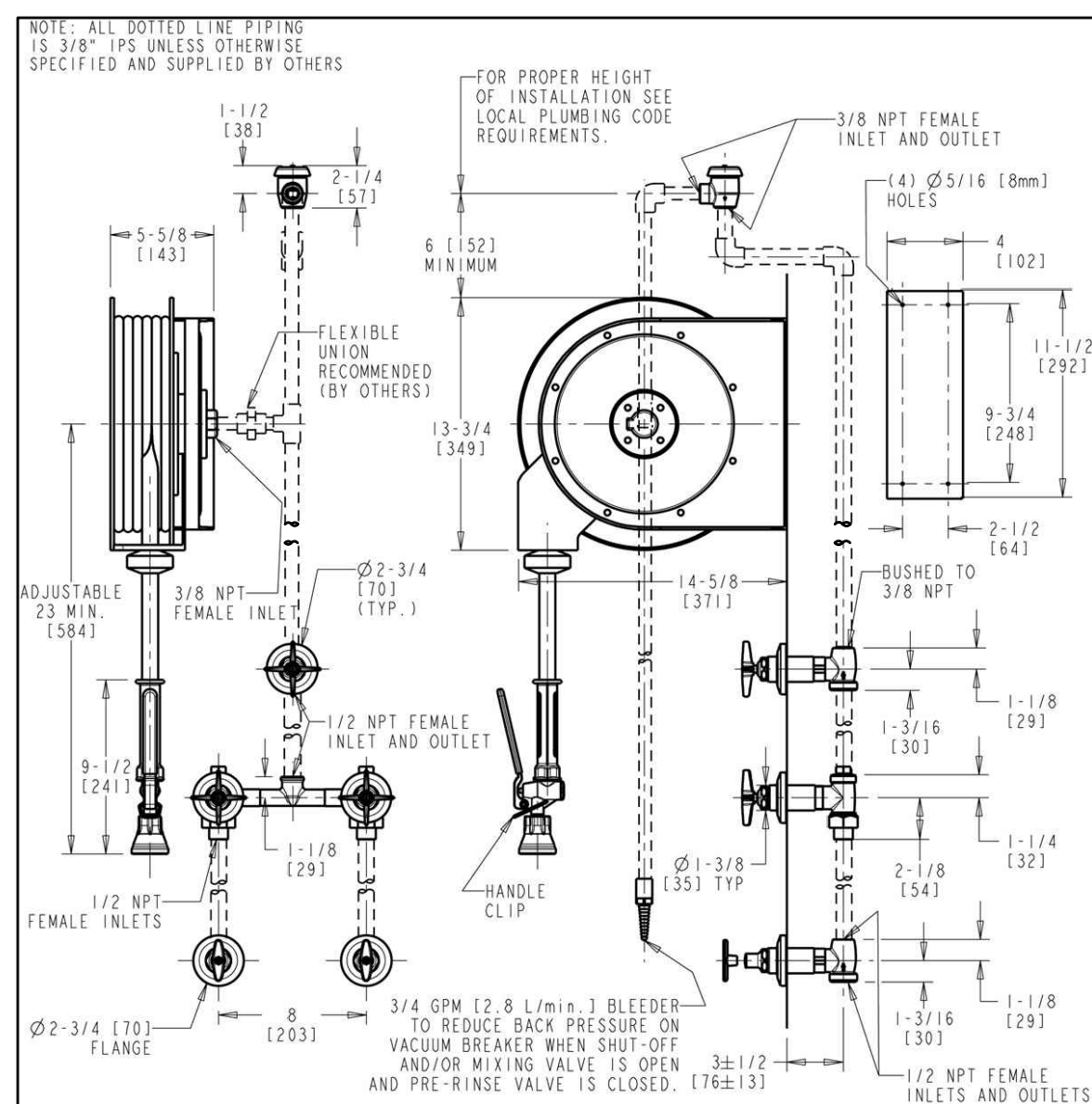


NOTES:
1. PROVIDE SLACK CABLE RESTRAINT.
2. PROVIDE CABLE RESTRAINT AT EACH OF 4 CORNERS OF THE UNIT.
3. THIS DETAIL APPLIES FOR UNIT WEIGHTS UP TO 500 LBS. MAX. FOR OTHER WEIGHTS CONSULT THE ENGINEER.

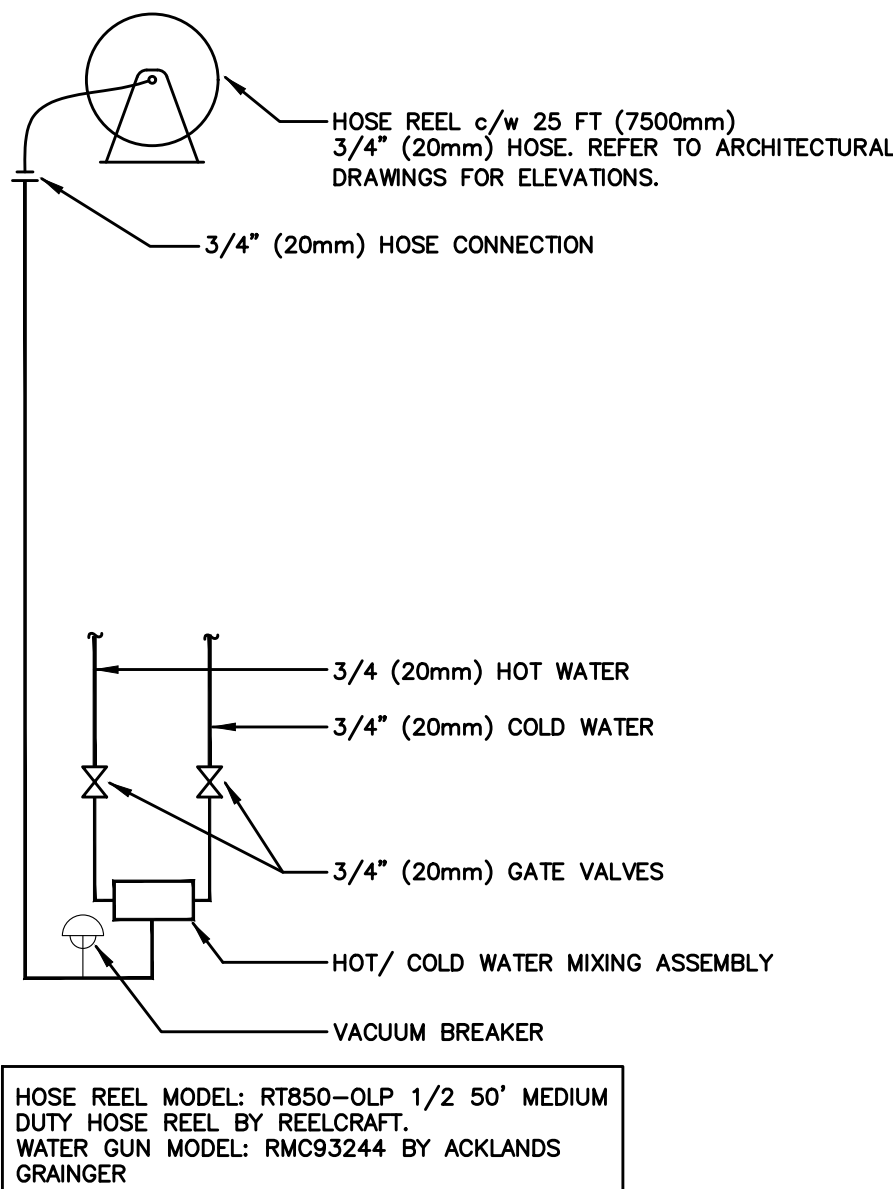
SEISMIC RESTRAINT DETAILS FOR SUSPENDED EQUIPMENT



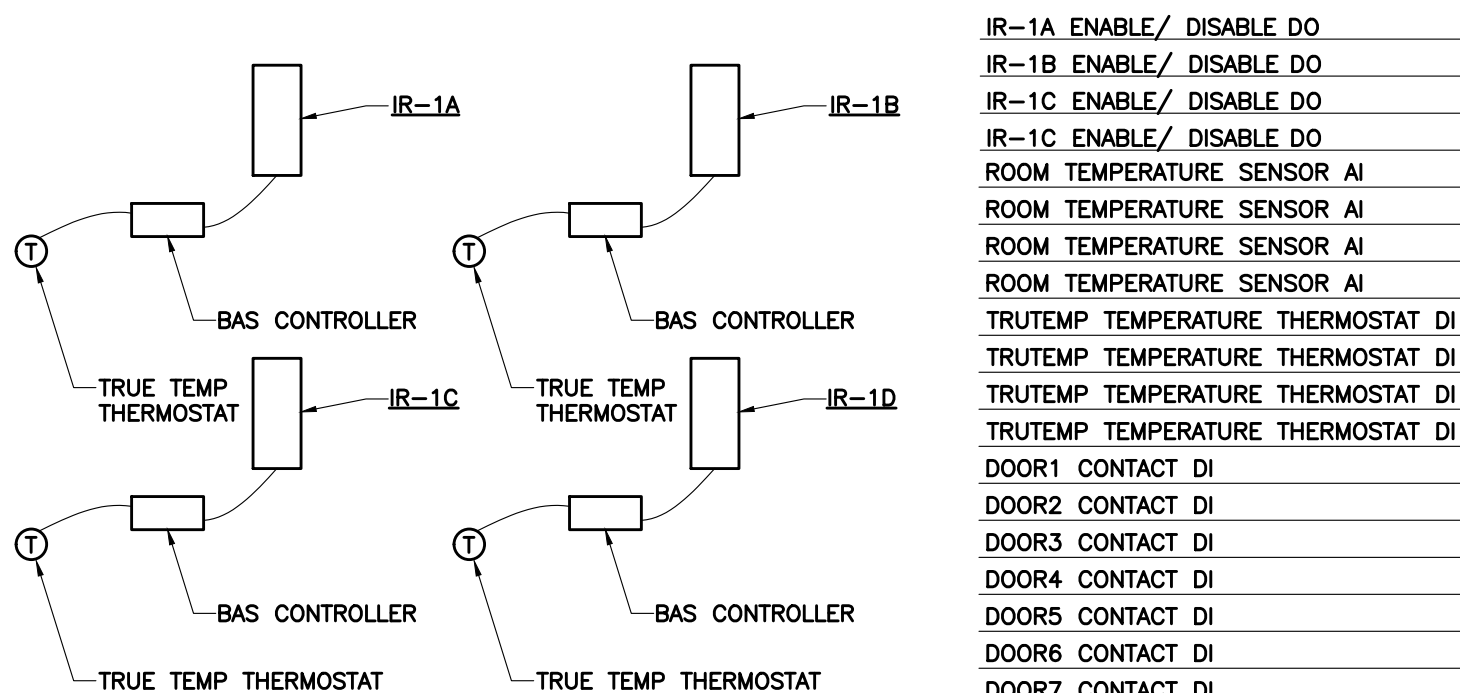
NOTES:
1. REFER TO DRAWING 2 OF 2 FOR DETAILS OF CABLE, HARDWARE AND INSERTS.



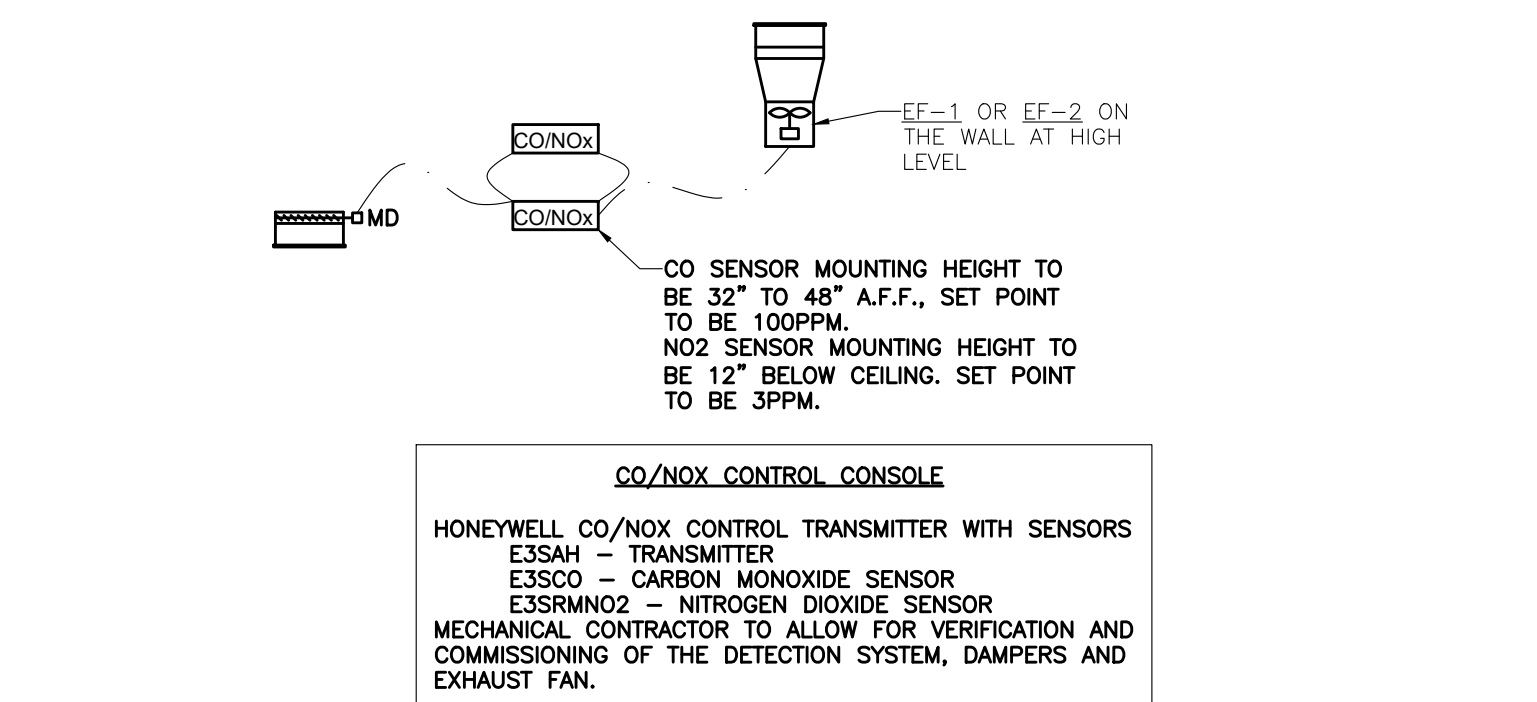
TITLE:
DETAIL OF HOSE REEL



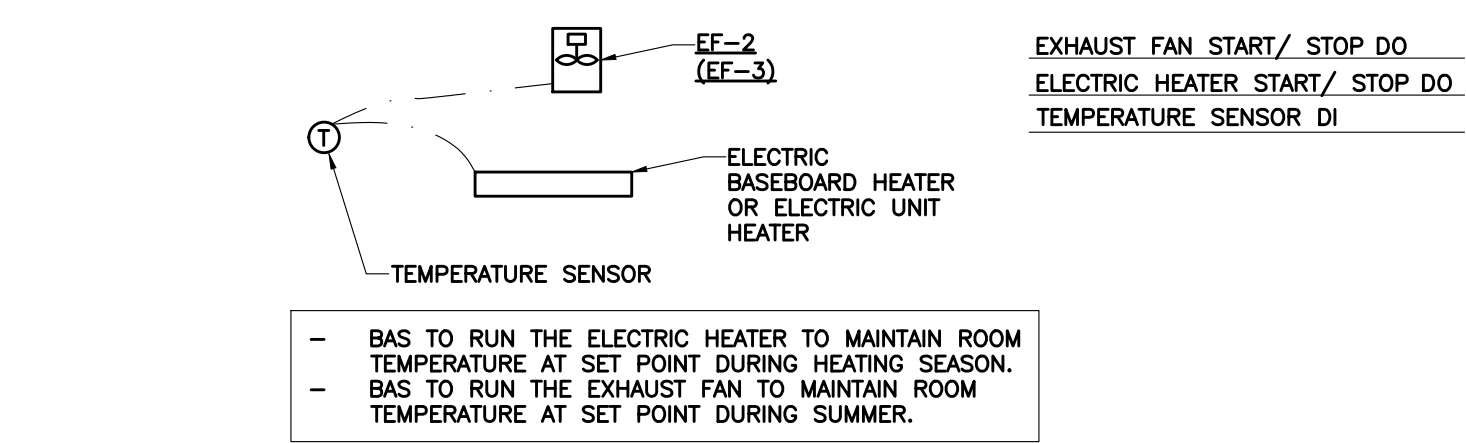
HOSE REEL MODEL: RT850-OLP 1/2 50' MEDIUM DUTY HOSE REEL BY REELCRAFT.
WATER GUN MODEL: RMC93244 BY ACKLANDS GRAINGER



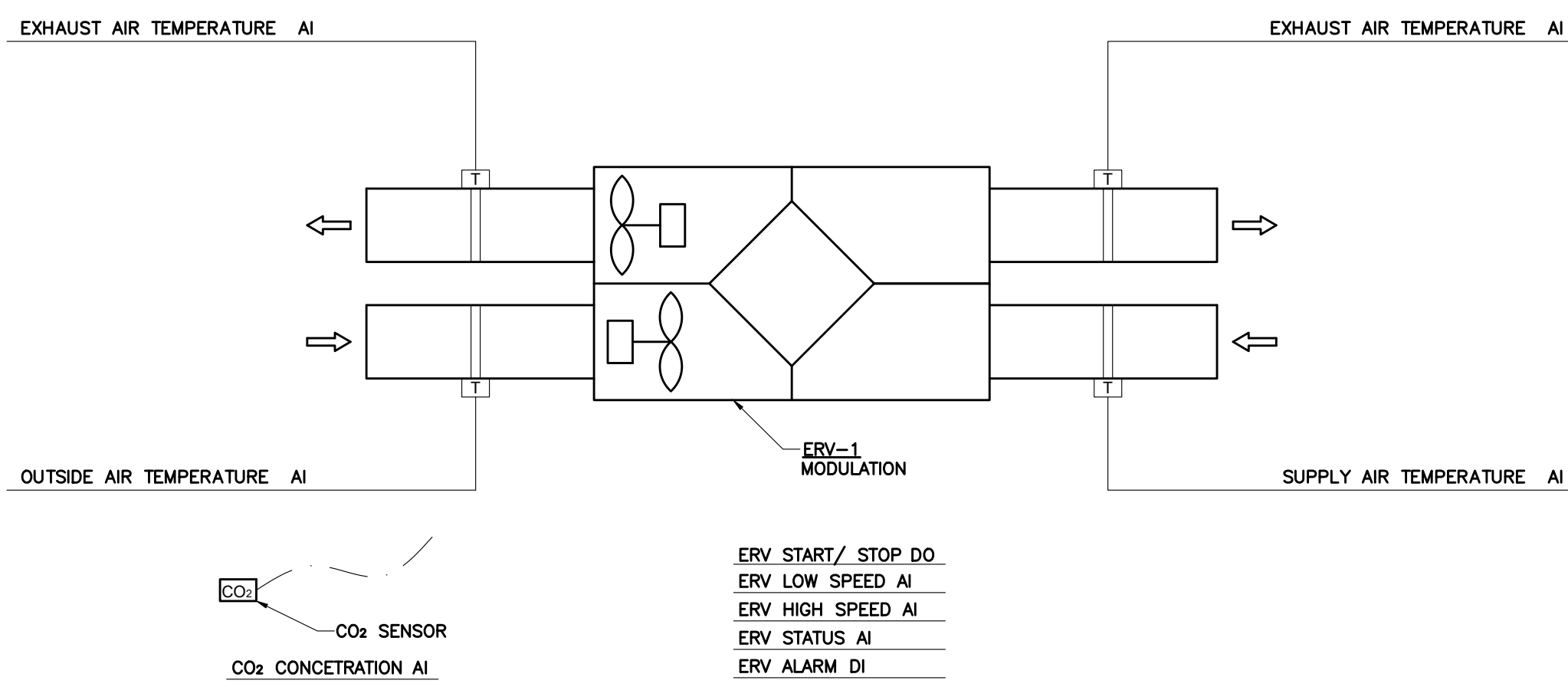
RADIANT TUBE HEATER CONTROL SCHEMATIC



CO + NOX SENSOR/ VENTILATION SYSTEM SCHEMATIC

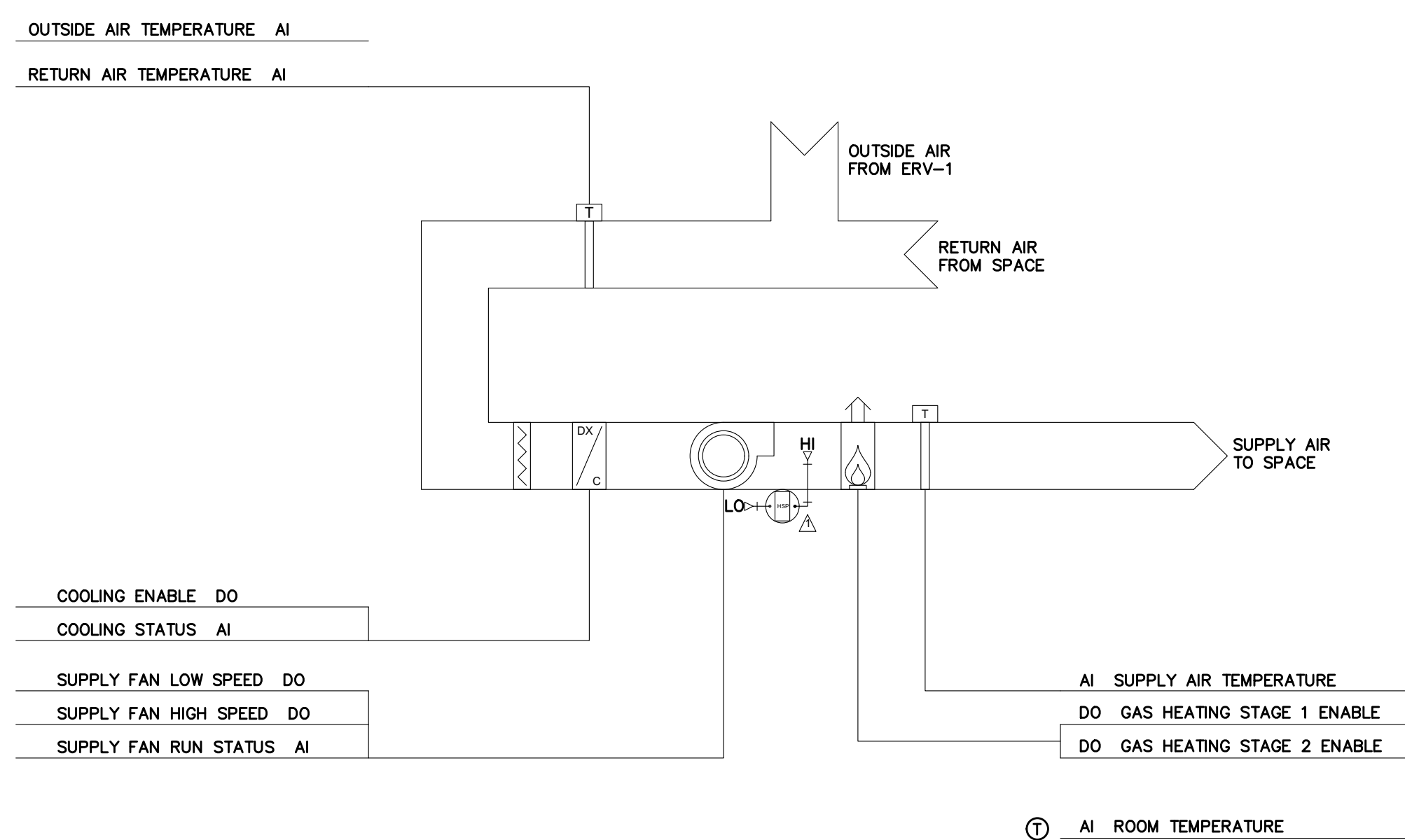


UTILITY ROOM AND OXYGEN STORAGE ROOM CONTROL SCHEMATIC



ERV START/ STOP DO
ERV LOW SPEED AI
ERV HIGH SPEED AI
ERV STATUS AI
ERV ALARM DI

ERV CONTROL SCHEMATIC



FURNACE F-1 CONTROL SCHEMATIC

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6	ISSUED FOR ADDENDUM ME-1	2019-08-20

PROJECT:
YORK REGION PRS STATION #29
107 GLEN CAMERON ROAD, MARKHAM



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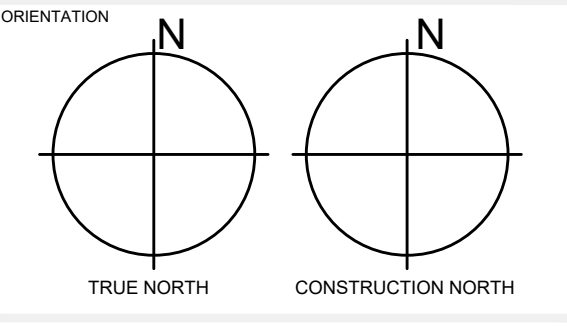
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ARCHITECT:
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Authorization (signature)

DWG TITLE
MECHANICAL DETAILS - 2



DATE
Jan. 03, 2019

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PROJECT No.
2016-147

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M7.1
REVISION
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LEGEND	
	FIXTURE TYPE "A1"
	15A, 125V SINGLE POLE SWITCH, S ₁ (TWO POLE), S ₃ (3-WAY), S ₄ (4-WAY), S ₅ (KEY OPERATED), S ₆ (DIMMER), S ₇ (C/W PILOT LIGHT), S _{8V} (LOW VOLTAGE), S ₉ (TIMER), S ₁₀ (OCCUPANCY SENSOR SWITCH), S ₁₁ (GANGED SWITCHES)
	DIGITAL ONE BUTTON LIGHT SWITCH, WATT STOPPER LMSW-101
	DIGITAL TWO BUTTONS LIGHT SWITCH, WATT STOPPER LMSW-102
	DIGITAL THREE BUTTONS LIGHT SWITCH, WATT STOPPER LMSW-103
	DIGITAL FOUR BUTTONS LIGHT SWITCH, WATT STOPPER LMSW-104
	DIGITAL DIMMING WALL SWITCH LIGHT, WATT STOPPER LMDM-101.
	ELECTRICAL PANEL
	NON-FUSED DISCONNECT SWITCH
	WEATHERPROOF DISCONNECT SWITCH
	TELEVISION OUTLET C/W 21MM CONDUIT.
	ANALOG TELEPHONE OUTLET C/W 21MM CONDUIT. (RED PHONE) TO BE INSTALLED AT 1200MM A.F.F.
	INTERCOM UNIT OUTLET C/W 21MM CONDUIT.
	TELEPHONE OUTLET MOUNTED AT 1500MM A.F.F C/W 21MM CONDUIT.
	DATA OUTLET C/W 21MM CONDUIT.
	WIFI OUTLET C/W 21MM CONDUIT. AT CEILING LEVEL
	MEDIX SAFE C/W 50MM CONDUIT.
	TELEPHONE/DATA OUTLET C/W 21MM CONDUIT.
	LOCAL SOUND SYSTEM SPEAKER C/W 16MM CONDUIT TO LOCAL SOUND SYSTEM.
	MICROPHONE OUTLET C/W 16MM CONDUIT.
	DOOR OPERATOR
	DOOR BELL BUZZER
	DOOR BELL PUSH BUTTON
	FIRE ALARM HEAT DETECTOR, CEILING MOUNTED
	FIRE ALARM HEAT DETECTOR, CEILING MOUNTED, FIXED TEMPERATURE
	FLOW SWITCH
	ELECTRICALLY SUPERVISED VALVE
	FIRE ALARM PULLSTATION
	FIRE ALARM STROBE
	FIRE ALARM COMBINATION HORN AND STROBE
	SURFACE OR RECESS MOUNTED LIGHTING FIXTURE. LETTER DENOTES TYPE
	LIGHTING FIXTURE ON NIGHT LIGHT CIRCUIT
	SURFACE OR RECESS MOUNTED LIGHTING FIXTURE. LETTER DENOTES TYPE
	DIRECT HARDWARE CONNECTION
	JUNCTION BOX
	SURFACE MOUNTED STRIP FLUOUESCENT LIGHTING FIXTURE. LETTER DENOTES TYPE
	OCCUPANCY SENSOR
	EMERGENCY LIGHTING FIXTURE
	EXIT SIGN
	BATTERY
	EMERGENCY LIGHTING FIXTURE AND BATTERY
	EMERGENCY LIGHTING FIXTURE, BATTERY AND EXIT SIGN
	SECURITY MOTION SENSOR
	TRANSFORMER
	ABOVE COUNTER
	ABOVE FINISHED FLOOR
	FIRE ALARM ANNUNCIATOR
	BASEBOARD HEATER
	CIRCUIT BREAKER
	EXISTING TO BE RELOCATED
	EXISTING TO REMAIN
	FORCED-AIR HEATER
	EQUIPMENT SO NOTED TO BE SUPPLIED WITH GROUND FAULT CIRCUIT INTERRUPT
	JUNCTION BOX
	RELAY WITH AUXILIARY CONTACTS
	DISH WASHER
	TRANSFORMER
	UNIT HEATER
	WALL MOUNT - VERIFY HEIGHT
	EQUIPMENT SO NOTED TO BE SUPPLIED WITH THE MANUFACTURER'S WEATHER-PROOF OPTION(S)
	MOTORIZED DAMPER
	SPEAKER
	MOTOR CONNECTION (SINGLE OR THREE PHASE)

	FLOOR MOUNTED DATA/TEL OUTLET
	OUTLET FOR SECURITY DOOR STRIKE
	OUTLET FOR SECURITY CONCEALED DOOR CONTACT
	OVER HEAD DOOR CONTACT
	ARMING BUTTON
	OUTLET FOR SECURITY HID CARD ACCESS READER
	OUTLET FOR HONEYWELL KEY PAD
	OUTLET FOR SECURITY GLASS BREAK SENSOR
	OUTLET FOR SECURITY MOTION SENSOR
	OUTLET FOR ASSISTANCE REQUIRE BUTTON
	OUTLET FOR REQUEST FOR EXIT
	EMERGENCY RESPONSE SYSTEM
	OUTLET FOR SECURITY SIREN/ALARM HORN
	OUTLET FOR CLOSED CIRCUIT TV SECURITY CAMERA
	OUTLET FOR A/V MICROPHONE.
	EMERGENCY PUSH BUTTON FOR GAS SOLENOID VALVE
	FIRE ALARM SMOKE DETECTOR, CEILING MOUNTED
	120V, COMBINATION SMOKE & CO ALARM UNIT C/W STROBE LIGHT & BATTERY BACK UP. EDWARDS # 900-0119 OR KIDDE, SIMPLEX
	BELL DEMARC
	CEILING MOUNT DUAL TECH OCCUPANCY SENSOR, WATT STOPPER LMDC-100.
	CEILING MOUNT PIR OCCUPANCY SENSOR, WATT STOPPER LMPC-100.
	CEILING MOUNT ULTRA SONIC OCCUPANCY SENSOR, WATT STOPPER LMUC-100.
	WALL CORNER MOUNT DUAL TECH OCCUPANCY SENSOR, WATT STOPPER LMDX-100.
	WALL MOUNT DUAL TECH OCCUPANCY SENSOR, WATT STOPPER LMDX-102.
	WALL MOUNT PIR OCCUPANCY SENSOR, WATT STOPPER PW-100
	DIGITAL ROOM CONTROLLER WITH SINGLE RELAY, WATT STOPPER LMRC-101
	DIGITAL ROOM CONTROLLER WITH TWO RELAYS, WATT STOPPER LMRC-102
	DIGITAL ON/OFF/0-10V DIMMING ROOM CONTROLLERS WITH ONE RELAY, WATT STOPPER LMRC-211
	DIGITAL ON/OFF/0-10V DIMMING ROOM CONTROLLERS WITH TWO RELAYS, WATT STOPPER LMRC-212
	DIGITAL ON/OFF/0-10V DIMMING ROOM CONTROLLERS WITH THREE RELAYS, WATT STOPPER LMRC-213
	HAND DRYER
	15A, 120V DUPLEX RECEPTACLE.
	15A, 120V HALF SWITCHED DUPLEX RECEPTACLE.
	15A, 120V DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER.
	20A, 120V T-SLOT DUPLEX RECEPTACLE.
	15A, 120V ISOLATED GROUND DUPLEX RECEPTACLE WITH SEPARATE NEUTRAL & GROUND WIRE PER CIRCUIT
	15A, 120V ISOLATED GROUND DUPLEX RECEPTACLE WITH SEPARATE NEUTRAL & GROUND WIRE PER CIRCUIT MOUNTED ABOVE COUNTER.
	15A, 120V DUPLEX GROUND FAULT INTERRUPTER RECEPTACLE.
	15A, 120V DUPLEX GROUND FAULT INTERRUPTER RECEPTACLE MOUNTED ABOVE COUNTER OR AT HEIGHT.
	20A CEILING MOUNT EMS SHORE CORD ASSEMBLES.
	15A, 120V DUPLEX RECEPTACLE WITH USB CHARGER (SG: SINGLE GANG, DG: DOUBLE GANG, QG: QUAD GANG)
	15A, 120V SINGLE RECEPTACLE.
	50A, 250V 3 WIRE RANGE RECEPTACLE.
	30A, 208V, 1Ø SINGLE RECEPTACLE.
	20A, 208V SINGLE RECEPTACLE.
	20A, 208V, 3Ø SINGLE RECEPTACLE.
	15A, 208V, 1Ø SINGLE RECEPTACLE.
	15A, 208V, 3Ø SINGLE RECEPTACLE.
	40A, 208V, 3Ø SINGLE RECEPTACLE.
	TELEVISION OUTLET C/W 21MM CONDUIT.

ELECTRICAL DRAWING LIST

- E1.0 ELECTRICAL LEAD SHEET
- E2.0 ELECTRICAL SITE PLAN
- E3.0 POWER FLOOR PLAN
- E4.0 SECURITY SYSTEM FLOOR PLAN
- E5.0 LIGHTING FLOOR PLAN
- E6.0 FIRE ALARM SYSTEM FLOOR PLAN
- E7.0 SINGLE LINE DIAGRAM & PANEL SCHEDULES
- E8.0 ELECTRICAL DETAILS
- E9.0 LIGHTING CONTROL DETAILS
- E10.0 TYPICAL SECURITY DOOR DETAILS

LIGHTING FIXTURE SCHEDULE								
TYPE	DESCRIPTION	MAKE/MODEL	VOLT	LAMP			MOUNT	REMARKS
				WATT	TYPE	COL.		
F1	GE 2X4 TROFFER WITH HIGH OPTICAL GRADE LENS	GE MODEL BR-24-0-A3-A-V-XX OR APPROVED EQUIVALENT BY ALTERNATE: PEERLESS, METALUMEN, OR HUBBELL.	120-277	49	LED	4000	CEILING RECESSED	MEDICAL STORAGE, I.T. ROOM, LOCKER ROOM, WRITE-UP ROOM, LOUNGE ROOM
F6	4' UNDERCABINET GM LIGHTING LTAB DIMMABLE HIGH OUTPUT LED LINEAR LIGHTBAR	2X LTAB-N-24 W/ LTCWP-12 CONNECTOR AND LTH-16 POWER SUPPLY OR APPROVED EQUIVALENT BY COLUMBIA AND SENSO LIGHT.	120	10.4	LED	3500	UNDER CABINET	KITCHEN
F7	8' SUSPENDED LED FIXTURE	GE MODEL ALR1-0-1-H-47-1-8-S-N-V-ST-XX-N-W ALTERNATE: PEERLESS, COLUMBIA OR HUBBELL.	120-277	74	LED	4000	CEILING SUSPENDED	APPARATUS BAY
F7A	4' SUSPENDED LED FIXTURE	GE MODEL ALR1-0-1-H-47-1-4-S-N-V-ST-XX-N-W ALTERNATE: PEERLESS, COLUMBIA OR HUBBELL.	120-277	38	LED	4000	CEILING SUSPENDED	APPARATUS BAY
T1	SUSPENDED LED FIXTURE	GE MODEL ALR1-0-1-H-47-1-4-S-N-V-ST-XX-N-W ALTERNATE: PEERLESS, COLUMBIA OR HUBBELL.	120-277	38	LED	4000	CEILING SUSPENDED	OXYGEN STORAGE, UTILITY ROOM
CA	4' LED DOWN LIGHT, ALZAK SEMI-DIFFUSE REFLECTOR, WHITE TRIM, 2000 LUMEN, WET RATED	GE DI-4R-20-940-1V-10 WITH R-DI4R-W-SD OR APPROVED EQUIVALENT BY PEERLESS, PRESCOLTE OR SENSO	120	25	LED	4000	CEILING RECESSED	SHOWER AREA
CB	6' LED DOWN LIGHT, ALZAK SEMI-DIFFUSE REFLECTOR, WHITE TRIM, 2000 LUMEN, WET RATED	GE DI-6R-20-940-1V-10 WITH R-DI6R-W-SD OR APPROVED EQUIVALENT BY PEERLESS, PRESCOLTE OR SENSO	120	25	LED	4000	CEILING RECESSED	CORRIDOR, WASHROOM
MA	LED FULL CUTOFF WALL PACK, DIE CAST ALUMINUM HOUSING AND DOOR	HUBBELL OUTDOOR SGI-20-4K7-FT-UNV-XX-CS MOUNT AT 12 AFF. FINISH SHOULD BE AS PER ARCHITECT SELECTION ALTERNATE: WILLIAMS, CANTYLE OR THOMAS	120-277	20	LED	4000	WALL MOUNTED	EXTERIOR WALL
MB	2', 4', 6', 8' CONTINUOUS DIRECT TRUGROOVE LED LUMINAIRE	PHILLIPS MODEL 39S0-L-A-K-Q-S-4-X-1-1 OR APPROVED EQUIVALENT BY ALTERNATE: PEERLESS, METALUMEN, OR HUBBELL.	120	18.7/4FT	LED	4000	CEILING RECESSED	CANOPY
MC	6" LED POT LIGHT, CSA LISTED FOR PROTECTED WET LOCATIONS, 22.6W	COOPER MODEL # FFLD6A-15-DL3 ALTERNATE: PEERLESS, CANLYTE OR GE	120-277	22.6	LED	4000	CEILING RECESSED	CANOPY
PA	FULL CUTOFF LIGHTING FIXTURE. LIGHTING STANDARD C/W 3.85M HIGH STEEL TAPPED POLE ON 550MM ABOVE GRADE CONCRETE BASE, POLE & LUMINAIRES (BLACK) FINISH AS PER ARCHITECT SELECTION.	BEACON VIPER MODEL # VPS-48NB-110-3K-T3-UNV-HSS-90 ALTERNATE: GE, CANLYTE & HUBBELL.	120-277	110	LED	3000	POLE MOUNTED	PARKING LOT

GENERAL NOTES

- DO NOT SCALE DRAWINGS FOR INSTALLATION PURPOSES. ALL MEASUREMENTS ARE TO BE OBTAINED FROM ARCHITECTURAL PLANS, ELEVATIONS, AND FROM FIELD MEASUREMENTS.
- DIVISION 16 SHALL REFER TO ARCHITECTURAL & MECHANICAL DRAWINGS FOR ALL SCOPE OF WORK OF DIVISION 16 WHICH ARE RELATED TO OTHER TRADES
- ELECTRICAL AND MECHANICAL TRADES SHALL WORK IN CONJUNCTION WITH ONE ANOTHER, SO AS TO AVOID INTERFERENCES AND TO MAINTAIN MINIMUM CLEARANCES BETWEEN DUCTWORK, PIPING, CONDUIT AND LIGHTING FIXTURE.
- REVIEW ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS, AND CEILINGS AND PROVIDE NECESSARY FIRE STOPPING AS REQUIRED.
- WORK IN CONJUNCTION WITH REFLECTED CEILING PLANS WHEN LOCATING LIGHT FIXTURES.
- WORK IN CONJUNCTION WITH MECHANICAL DIFFUSER LAYOUT WHEN LOCATING SMOKE DETECTORS.
- POWER AND CONTROL WIRING SHALL RISE TO ROOF TOP EQUIPMENT WITHIN CURB OF UNIT, WHEN OTHERWISE APPROVED BY THE CONSULTANT.
- PROVIDE AND INCLUDE FOR ALL NECESSARY ACCESSORIES AND FITTINGS FOR A FULL AND COMPLETE INSTALLATION OF LIGHTING FIXTURES, INCLUDING CEILING TRIMS AND FRAMES TO SUIT CEILING. REFER TO ARCHITECTURAL CEILING SCHEDULE FOR CEILING TYPES.
- LIGHTING BALLASTS AND DIMMERS SHALL BE COMPATIBLE WITH THE LIGHTING SOURCE AND LIGHTING FIXTURES BEING CONTROLLED AND INSTALLED.
- PROVIDE EACH ITEM MENTIONED OR INDICATED OF QUALITY AND SUBJECT TO QUALIFICATIONS NOTED; PERFORM ACCORDING TO CONDITIONS STATED EACH OPERATIONS STATED. EACH OPERATION PRESCRIBED ; AND PROVIDE THEREFORE ALL LABOR, MATERIAL, EQUIPMENT, INCIDENTALS AND SERVICES REQUIRED TO COMPLETE THE INSTALLATION.
- SCHEDULE AND COORDINATE ALL WORK WITH OTHER TRADES.
- CONTRACTOR SHALL BALANCE CIRCUIT LOADS AS CLOSELY AS POSSIBLE.
- CONTRACTOR SHALL PERFORM VOLTAGE DROP CALCULATIONS FOR ALL BRANCH CIRCUITS OF LIGHTING, POWER AND FEEDERS AND SHALL MAINTAIN VOLTAGE DROP WITHIN PERMISSIBLE LIMITS AS PER OESC REQUIREMENTS AND PROVIDE PROPER WIRE SIZES ACCORDINGLY PRIOR TO COMMENCING ROUGH-IN INSTALLATION. THE VOLTAGE DROP CALCULATIONS SHALL BE BASED ON MAXIMUM CIRCUIT AMPACITY.
- ALL CONDUITS BACKBOXES AND ROUGH-IN FOR LOW VOLTAGE SYSTEMS SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.
- DIVISION 16 TO PROVIDE CONDUIT & WIRING FOR ALL ELECTRICAL & MECHANICAL EQUIPMENT FOR A COMPLETE OPERATIONAL SYSTEM.
- ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL OF THE COORDINATION WORKS REGARDING HYDRO NEW INCOMING SERVICE. ELECTRICAL CONTRACTOR SHALL COMPLY WITH HYDRO REQUIREMENT AND SHALL PROVIDE ALL NECESSARY MATERIAL & LABOR REQUIRED ACCORDINGLY.
- ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL THE ROUGH INS REQUIRED FOR DIVISION 15 SCOPE OF WORK (UNLESS NOTED OTHERWISE) INCLUDING CONDUITS, BACK BOXES, JUNCTION BOXES, PULL WIRES, ETC. ELECTRICAL CONTRACTOR SHALL REFER TO DIVISION 15 DRAWINGS AND SPECS FOR MORE INFORMATION AND SHALL INCLUDE ALL COSTS ASSOCIATED RELATED TO THE ROUGH INS IN HIS TENDER PRICE.
- REFER TO DOOR HARDWARE SCHEDULE FOR ROUGH IN REQUIREMENT AND PROVIDE ALL NECESSARY FOR FULL OPERATIONAL SYSTEM TO COMPLY ACCORDINGLY.
- ELECTRICAL CONTRACTOR SHALL PROVIDE SUPPORTING SYSTEM TO SUPPORT ALL LIGHT FIXTURES ONLY FROM THE JOIST OR STEEL BEAMS (NOT FROM THE ROOF DECK).
- ALL ELECTRICAL EQUIPMENT THAT IS SUSPENDED SHALL BE SUPPORTED BY A SYSTEM THAT IS CERTIFIED BY THE MANUFACTURER TO CARRY THE LOADS OF THE EQUIPMENT. IF NO SYSTEM IS RECOMMENDED BY THE MANUFACTURER, THE CONTRACTOR SHALL PROVIDE A DESIGN STAMPED BY A P.ENG. THESE ITEMS SHALL INCLUDE BUT NOT LIMITED TO LIGHTING, TRANSFORMER, HEATERS, AND ALL SIMILAR ELECTRICAL EQUIPMENT. INSTALL IN ACCORDANCE WITH MANUFACTURER'S OR P.ENG DESIGN.
- PROVIDE 3/4" EMT CONDUIT FROM EACH VOICE/DATA OUTLET TO THE PLYWOOD BACKBOARD LOCATED IN THE MECH/ELEC ROOM # 109.
- PROVIDE 3/4" EMT CONDUIT FROM PUBLIC ADDRESS SPEAKER TO THE PLYWOOD BACKBOARD LOCATED IN THE MECH/ELEC ROOM # 109.
- PROVIDE STAINLESS STEEL COVER PLATES FOR ALL WIRING DEVICES UNLESS NOTED OTHERWISE.
- COORDINATION & ARC FLASH STUDY SHOP DRAWINGS SHALL BE PROVIDED FOR THE CONSULTANT'S REVIEW PRIOR TO MANUFACTURING OF ELECTRICAL PANELS INCLUDING MAIN SWITCHBOARD & DISTRIBUTION PANELS.
- THROUGHOUT DIVISION 16 ARE LIST OF "ALTERNATE EQUIPMENT" MANUFACTURERS ACCEPTABLE TO CONSULTANT IF THEIR PRODUCT MEETS CHARACTERISTICS OF SPECIFIED DESCRIBED EQUIPMENT/PRODUCTS. IT IS RESPONSIBILITY OF THIS DIVISION TO ENSURE "ALTERNATE EQUIPMENT" COMPLIES WITH THE SPECIFIED DESCRIBED EQUIPMENT/PRODUCTS. ALL ADDITIONAL WORK REQUIRED FOR AND ASSOCIATED WITH ALTERNATE EQUIPMENT SHALL BE PROVIDED WITHOUT CHANGE IN CONTRACT AMOUNT. ONLY MANUFACTURERS LISTED IN THE SPECS WILL BE ACCEPTED FOR THEIR PRODUCT LISTING. REFER TO ELECTRICAL SUPPLEMENTARY BID FORM DOCUMENT 16001 FOR MORE INFORMATION.
- COORDINATE ON SITE WITH THE GENERATOR MANUFACTURER AND OTHER TRADES BEFORE COMMENCEMENT OF THE GENERATOR INSTALLATION WORK AND THEN PROCEED ACCORDINGLY.
- PROVIDE ADDITIONAL ALARM SIGNALS (C/W ALL MATERIAL AND LABOR FOR FULLY OPERATIONAL SYSTEM) AT THE GENERATOR CONTROL PANEL AND THE REMOTE ANNUNCIATOR PANEL TO INCLUDE THE FOLLOWING ALARM SIGNALS:
-ATS ON BYPASS MODE
-ATS ON EMERGENCY POWER.

ELECTRIC CABINET UNIT HEATER SCHEDULE			
SYMBOL	CAPACITY KW	ELECTRICAL VOLTAGE	REMARK
	3	208/1/60	MODEL # 0AOC4000 BY OUELLET OR APPROVED EQUIVALENT. UNITS TO COME WITH INTEGRAL THERMOSTAT

ELECTRIC BASEBOARD HEATER SCHEDULE			
SYMBOL	CAPACITY KW	ELECTRICAL VOLTAGE	REMARK
	0.75	120/1/60	MODEL # OFM0752 BY OUELLET OR APPROVED EQUIVALENT. UNITS TO COME WITH INTEGRAL THERMOSTAT

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1	ISSUED FOR REVIEW	2018-03-14
2	ISSUED FOR 80% REVIEW	2018-10-02
3	ISSUED FOR 90% DESIGN DEVELOPMENT	2018-11-21
4	ISSUED FOR REVIEW	2019-01-03
5	ISSUED FOR BUILDING PERMIT	2019-03-14
6	ISSUED FOR ADDENDUM ME-1	2019-08-20

PROJECT :

YORK REGION PRS

STATION #29

107 GLEN CAMERON ROAD, MARKHAM



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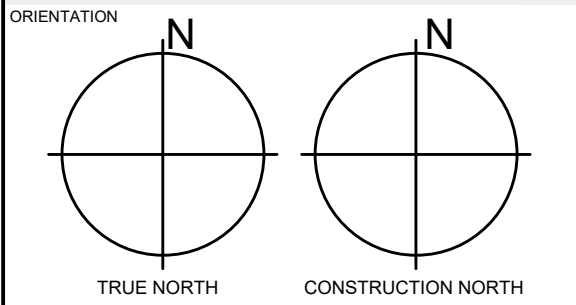
PROFESSIONAL SEAL

Approval to Proceed

Project Phase

Authorization (signature)

DWG TITLE



DATE Jan. 03, 2019

SCALE DRAWN BY

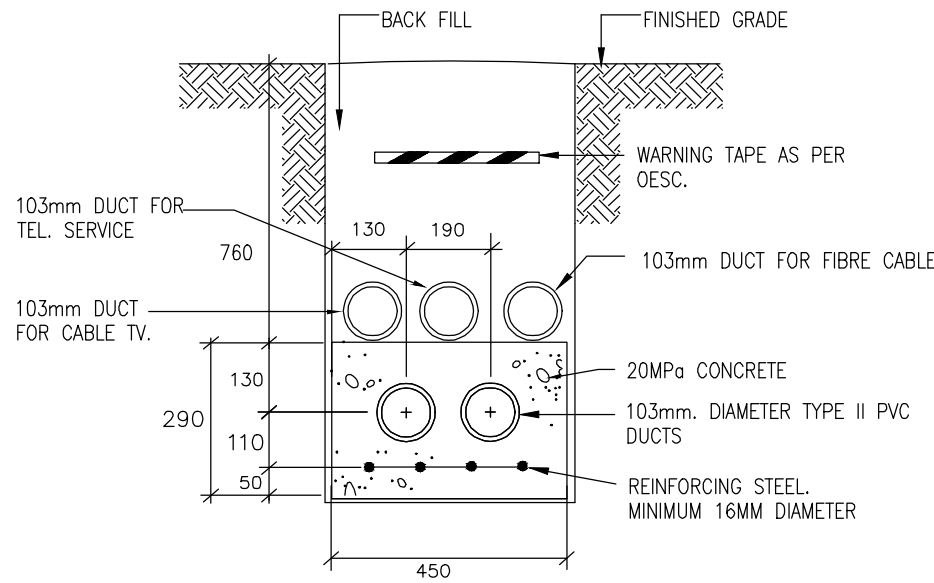
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PERMIT

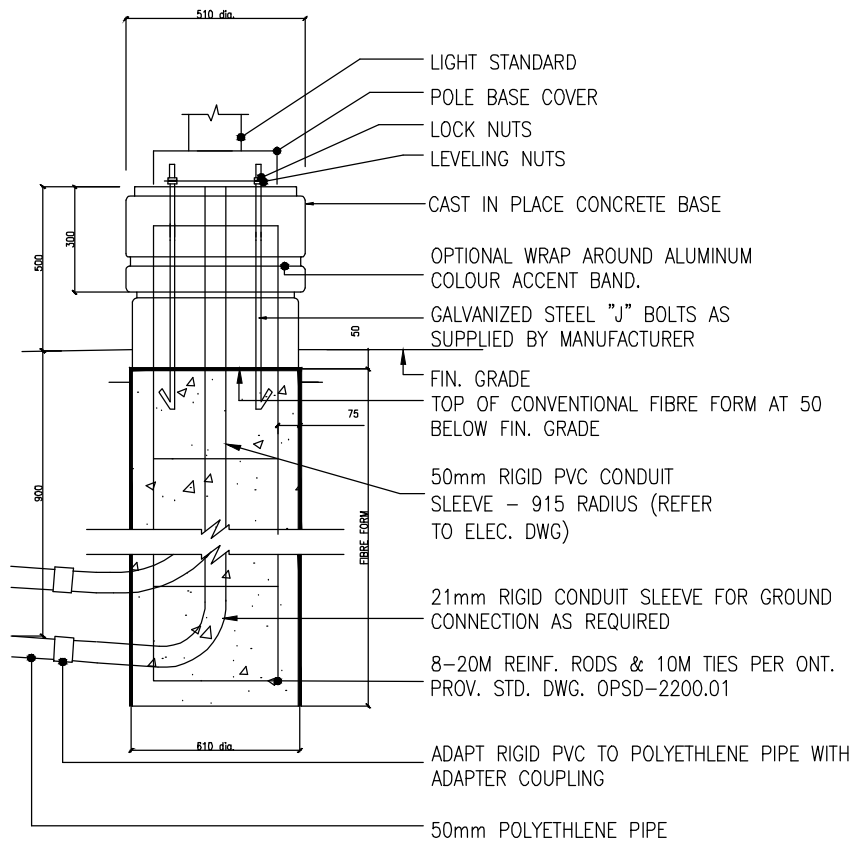
PROJECT No. 2016-147

DRAWING No. E1.0 REVISION --

- NOTES:
1. PROVIDE DUCTBANK TO OESC STANDARDS AND APPROVAL.
 2. PROVIDE BELL FITTINGS AT EACH END, PROVIDE DUCT SPACERS AT 1.0M INTERVALS.
 3. REFER TO SPECIFICATIONS FOR DETAILED DESCRIPTION.
 4. ALL DIMENSIONS ARE TYPICAL IN MM.



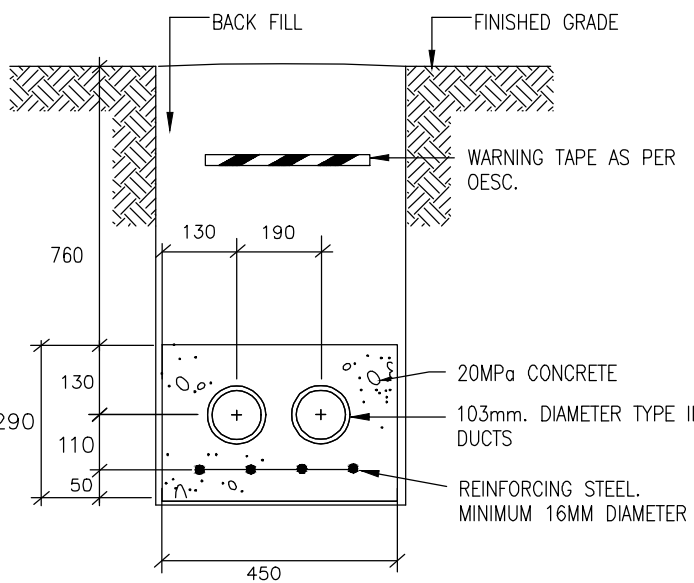
1 SECONDARY DUCTBANK DETAIL
E2.0
SCALE: N.T.S.



- NOTES:
1. ALL DIMENSION UNIT SHALL BE IN mm UNLESS OTHERWISE NOTED.

2 LIGHT POLE BASE DETAIL
E2.0
SCALE: N.T.S.

- NOTES:
1. PROVIDE DUCTBANK TO OESC STANDARDS AND APPROVAL.
 2. PROVIDE BELL FITTINGS AT EACH END, PROVIDE DUCT SPACERS AT 1.0M INTERVALS.
 3. REFER TO SPECIFICATIONS FOR DETAILED DESCRIPTION.
 4. ALL DIMENSIONS ARE TYPICAL IN MM.



3 SECONDARY DUCTBANK DETAIL
E2.0
SCALE: N.T.S.

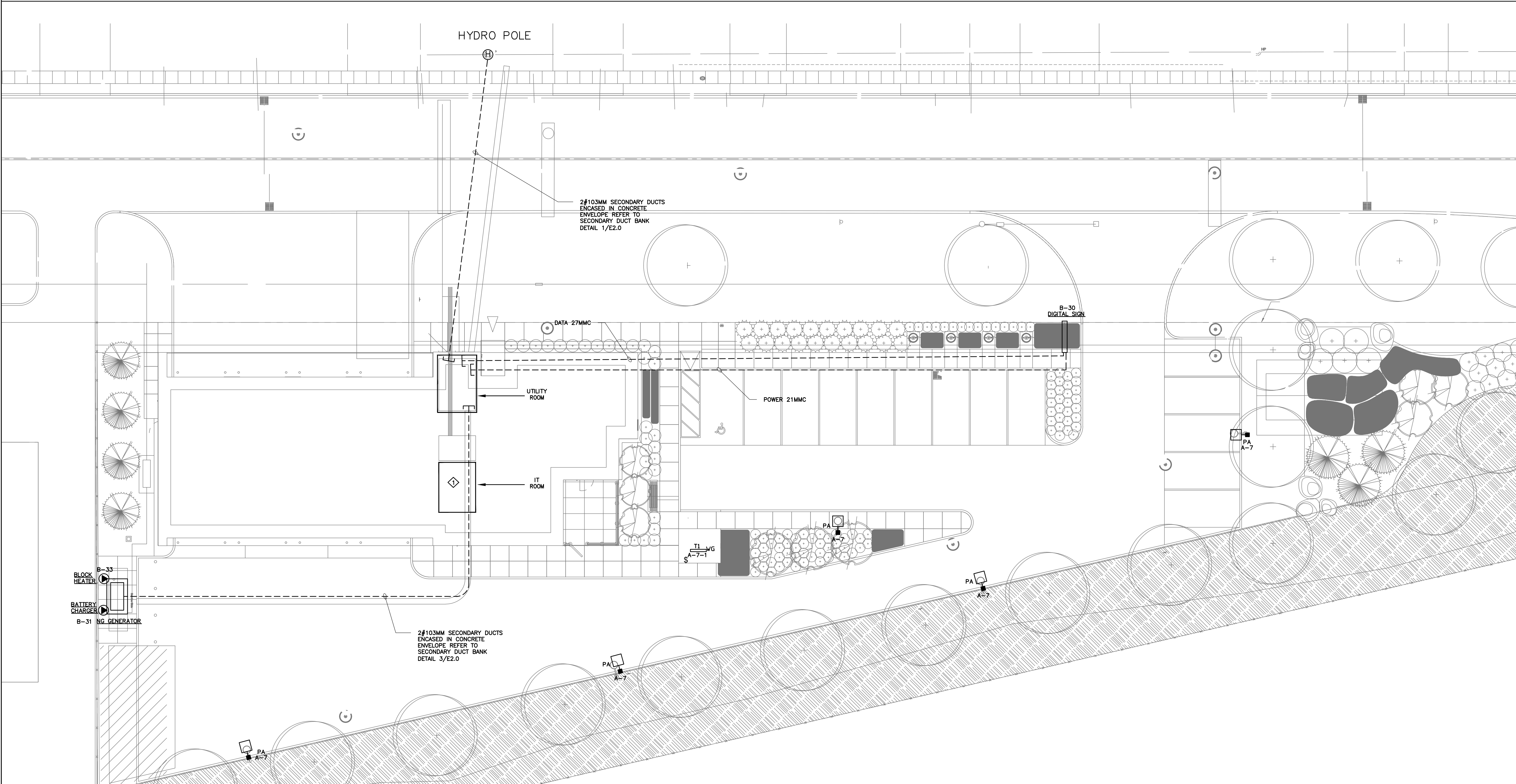
NOTES:

ALECTRA WILL SUPPLY AND INSTALL THE FOLLOWING:

1. 120/208V PHASE 4 WIRE POLE MOUNTED TRANSFORMER WITH KVA RATING TO SUIT LOAD REQUIREMENTS.
2. PRIMARY HIGH VOLTAGE CABLES.
3. POWER CONNECTION AT HYDRO POLE, PRIMARY AND SECONDARY SIDE OF TRANSFORMER.
4. HYDRO METER
5. CONTRACTOR TO CARRY A CASH ALLOWANCE AS PER SPECIFICATIONS FOR ITEM 1.2.3&4 TO BE DONE BY ALECTRA.
6. CONTACT ALECTRA UTILITY TEL: 905-273-9050.

ELECTRICAL CONTRACTOR SHALL SUPPLY & INSTALL THE FOLLOWING:

1. 2-103MM SECONDARY DUCTS ENCASED IN CONCRETE FROM HYDRO POLE TO THE LOCATION AS SHOWN ON DRAWING.
2. GROUNDING AT POLE MOUNTED TRANSFORMER AS PER ALECTRA REQUIREMENTS.
3. RUN #250MCM RWU 90 XLPE+GROUND FROM HYDRO POLE TO MAIN SWITCH IN THE BASEMENT. LEAVE 12 METERS SLACK WITH LUGS AT THE POLE MOUNTED TRANSFORMERS.
4. SECONDARY CABLES CONNECTION AT MAIN DISCONNECT SWITCH.
5. INSTALL METER AS PER REQUIREMENTS OF ALECTRA.
6. CO-ORDINATE ALL WORK WITH LOCAL UTILITIES.



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5	ISSUED FOR BUILDING PERMIT	2019-03-14
6	ISSUED FOR ADDENDUM ME-1	2019-06-20

PROJECT :

YORK REGION PRS STATION #29

107 GLEN CAMERON ROAD, MARKHAM



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PROFESSIONAL SEAL

Approval to Proceed

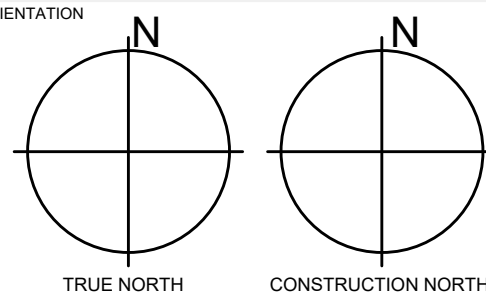
Project Phase

Authorization (signature)

DWG TITLE

**ELECTRICAL
SITE PLAN**

ORIENTATION



DATE

Jan. 03, 2019

SCALE

1:150

DRAWN BY

MJ

DWG STATUS:

PERMIT

PROJECT No.

2016-147

DRAWING No.

E2.0

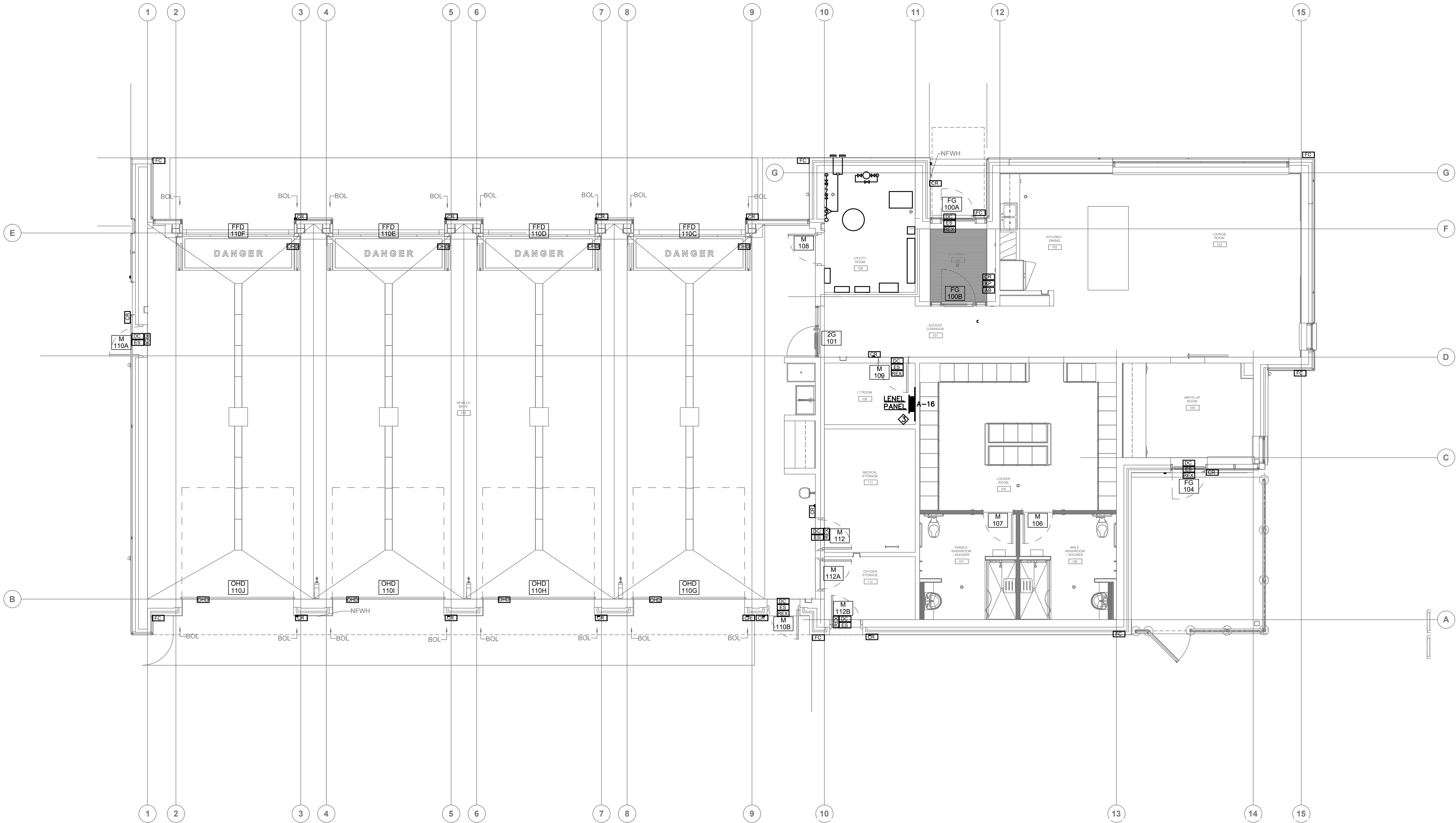
REVISION

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REVISION

LEGEND	
[1S]	OUTLET FOR SECURITY DOOR STRIKE
[1C]	OUTLET FOR SECURITY CONCEALED DOOR CONTACT
[2S]	OVER HEAD DOOR CONTACT
[2B]	ARMING BUTTON
[3S]	OUTLET FOR SECURITY HID CARD ACCESS READER
[3B]	HONEYWELL CONTROL PANELS
[5S]	OUTLET FOR REQUEST FOR EXIT
[7C]	FIXED AXIS WIDE ANGLE CAMERA

- NOTES:
- SECURITY CONTRACTOR TO PROVIDE INTEGRATION OF DOOR OPERATORS. ALL DOOR OPERATORS TO INCLUDE SEQUENCING CONTROL OK12.
 - FIXED CAMERAS ARE TO BE SUPPLIED BY HONEYWELL AND INSTALLED BY SECURITY CONTRACTOR. FINAL LOCATION FOR THE CAMERAS ARE TO BE APPROVED BY YR DURING CONSTRUCTION TO ACHIEVE BEST FIELD OF VIEW.
- ◆ PROVIDE ALL ROUGH IN CONDUITS FOR FIRE ALARM PANEL TO BE TERMINATED AT THIS PLYWOOD BACK BOARD.



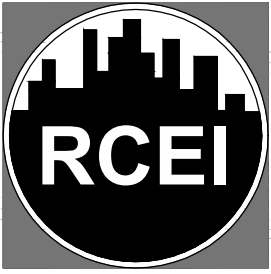
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6	ISSUED FOR ADDENDUM ME-1	2019-08-20

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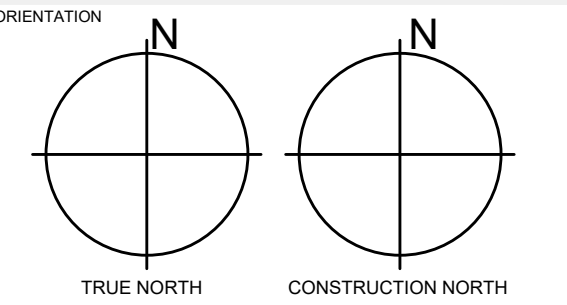
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PROFESSIONAL SEAL
Approval to Proceed
Project Phase
Authorization (signature)

DWG TITLE
**SECURITY
SYSTEM
FLOOR PLAN**



DATE
Jan. 03, 2019

SCALE
1:75

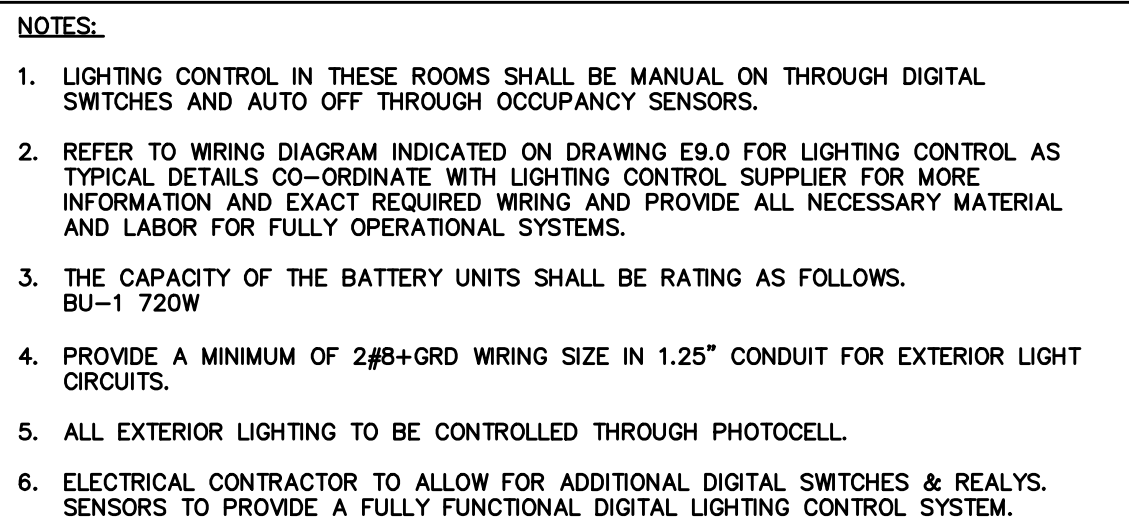
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DWG STATUS :
PERMIT

PROJECT No.
2016-147

DRAWING No.
E4.0

REVISION
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BATTERY UNIT SCHEDULE						
LOCATION	UNIT NUMBER	EXIT SIGNS	DOUBLE HEADS	SINGLE HEADS	CONNECTED LOAD (WATT)	CAPACITY (WATT)
UTILITY ROOM # 126	BU-1	10	7	8	490	720

REFER TO SPECIFICATION SECTION 26 50 00

[illegible]

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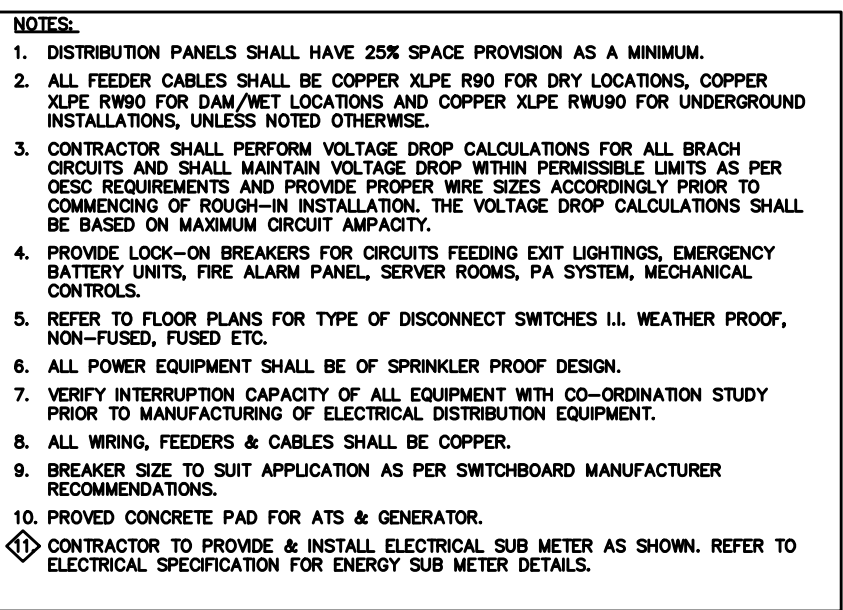
 Authorization (signature)

DRAWING No.	E5.0	REVISION
		--

PANELBOARD A SCHEDULE

Category	Count
1	10
2	20
3	30
4	40
5	50
6	40
7	30
8	20
9	10
10	5

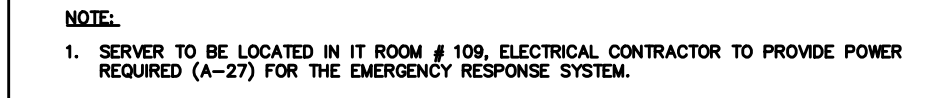
PANELBOARD B SCHEDULE



NOTES

1. PROVIDE POWER CONNECTION TO ALL EQUIPMENTS LISTED IN THE SCHEDULE. REFER TO ELECTRICAL AND MECHANICAL LAYOUTS FOR EXACT LOCATION OF EQUIPMENTS.
2. PROVIDE SEPARATE BREAKER FOR INDIVIDUAL MECHANICAL EQUIPMENT. SIZE AS INDICATED IN THE SCHEDULE.
3. PROVIDE LOCAL DISCONNECT SWITCH FOR ALL MECHANICAL EQUIPMENTS AS REQUIRED BY CESC.
4. DIVISION 16 TO PROVIDE POWER WIRING TO & FROM STARTERS (SUPPLIED BY DIV. 15 & INSTALLED BY DIVISION 16) TO MECHANICAL EQUIPMENTS.
5. DIVISION 16 SHALL REFER TO MECHANICAL DRAWINGS FOR LOCATIONS OF MECHANICAL EQUIPMENT AND SHALL COORDINATE FOR MECHANICAL MECHANICAL EQUIPMENT LOCATIONS, STARTERS LOCATIONS AND BREAKERS SIZES & WIRES WITH THE MECHANICAL CONTRACTOR & CONSULTANT PRIOR TO ROUGH-IN.
6. LOCATIONS OF BOILERS AND HOT WATER HEATERS DISCONNECT SWITCHES SHALL BE NEXT TO THE ENTRANCE DOOR OF THE RESPECTIVE ROOM.
7. LOCATIONS OF BOILERS AND HOT WATER HEATERS DISCONNECT SWITCHES SHALL BE NEXT TO THE ENTRANCE DOOR OF THE RESPECTIVE ROOM.
8. REFER TO MECHANICAL DOCUMENTS/DRAWINGS FOR DIVISION 16 SCOPE OF WORK.
9. RESERVED.
10. LOCATION OF ON/OFF SWITCHES, THERMOSTATS AND SPEED CONTROLLER SWITCHES SHALL BE VERIFIED/COORDINATED ON SITE WITH OTHER TRADES AND CLIENT'S REPRESENTATIVE PRIOR TO ROUGH-IN.
11. PROVIDE POWER CONNECTION TO ALL REVERSE ACTING THERMOSTATS AND SPEED CONTROLLER SWITCHES AND FEED FROM RESPECTIVE CIRCUITS FEEDING RESPECTIVE MECHANICAL EQUIPMENT WHICH SHALL BE CONTROLLED VIA THE REVERSE ACTING THERMOSTATS AND SPEED CONTROLLERS. LOCATIONS OF DEVICES SHALL BE WITHIN THE SAME AREA SERVED BY THE RESPECTIVE MECHANICAL EQUIPMENT. COORDINATE ON SITE FOR DEVICE LOCATIONS WITH ARCHITECT AND CONSULTANT PRIOR TO ROUGH IN.
12. REFER TO PANEL SCHEDULES AND FLOOR PLAN FOR ORCUTING.

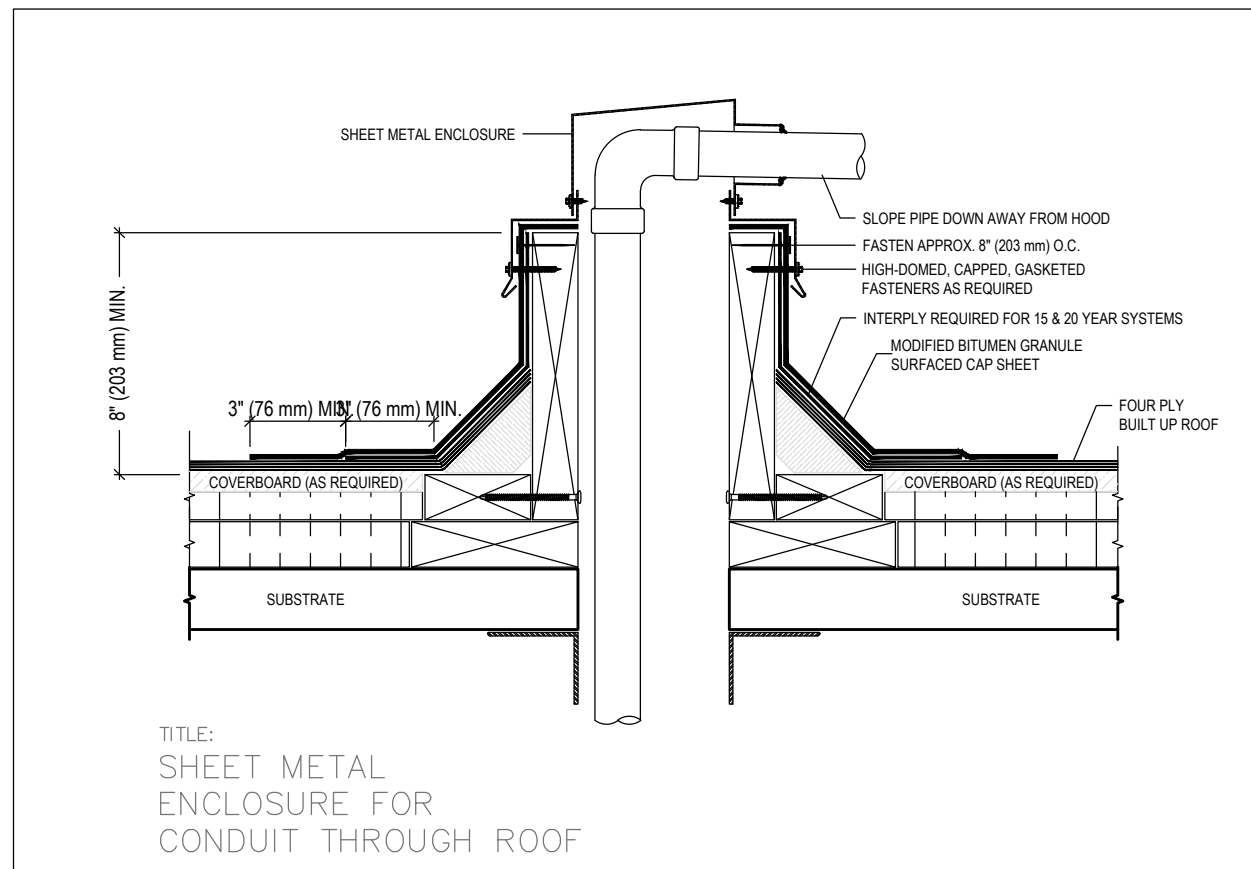
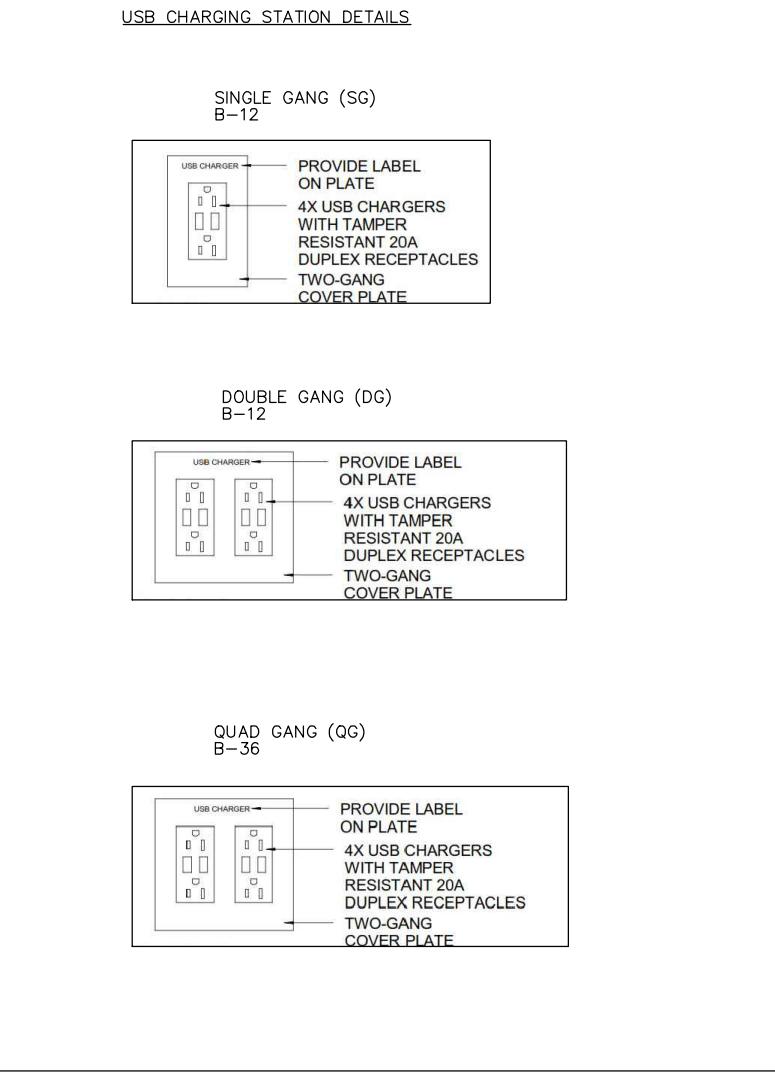
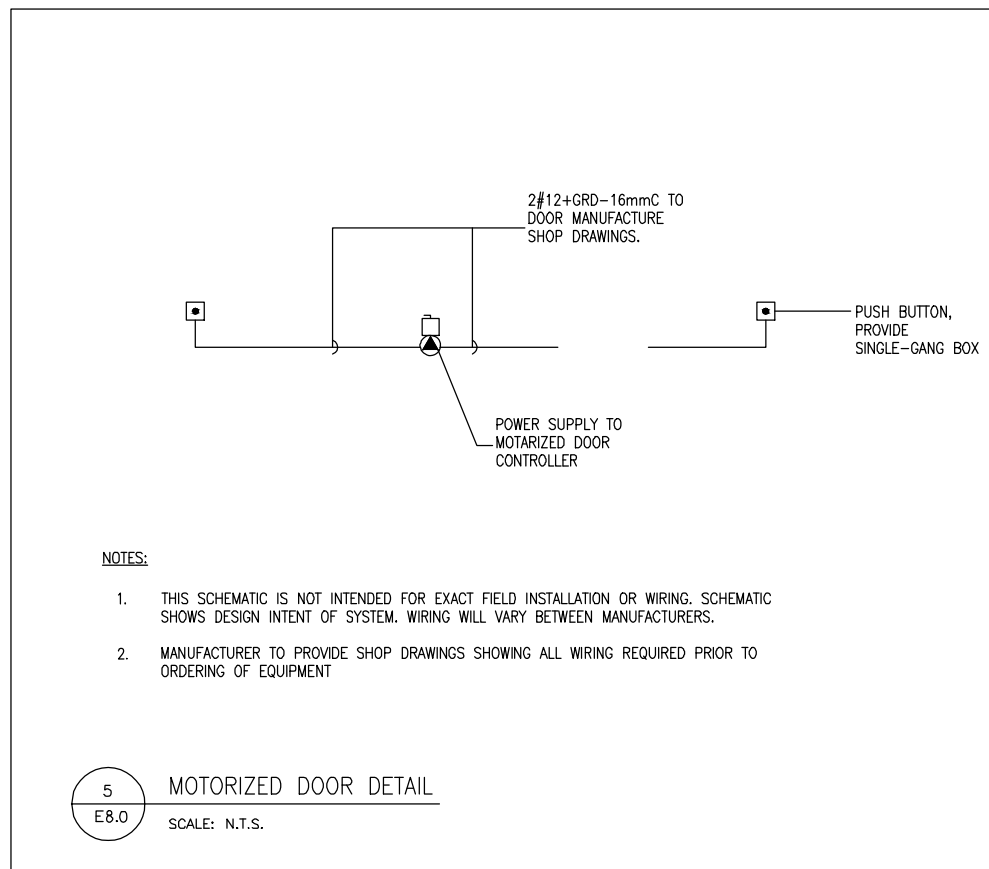
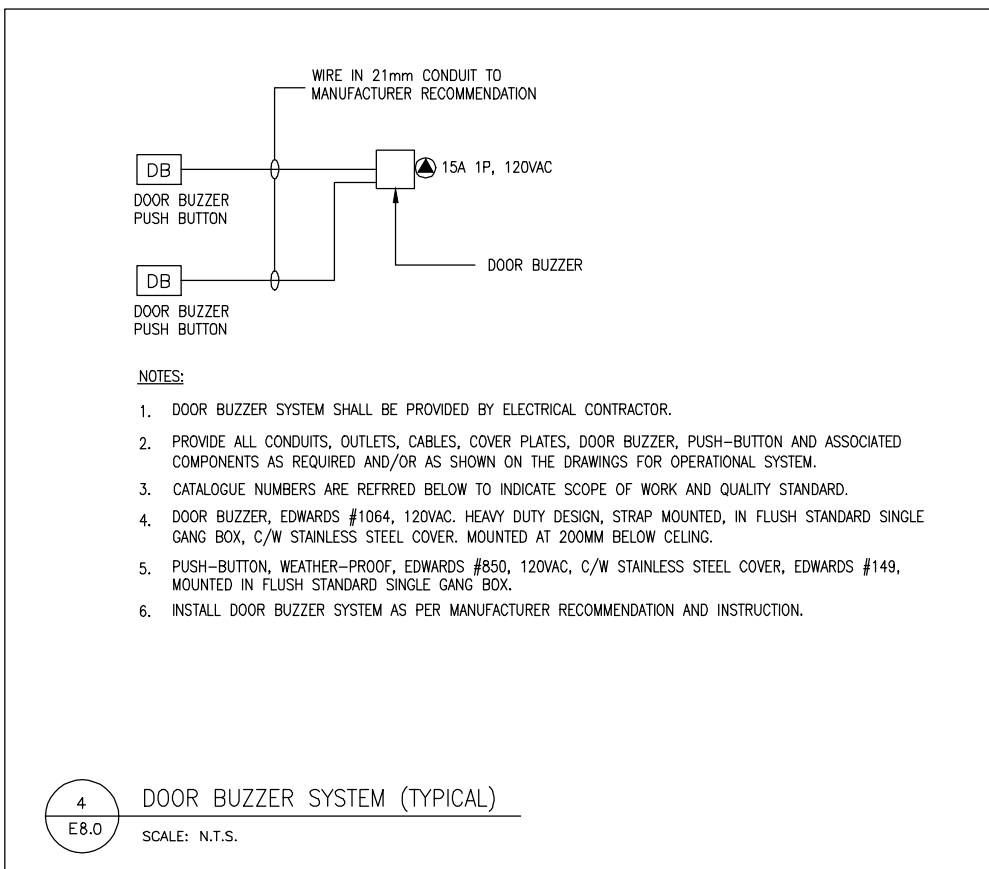
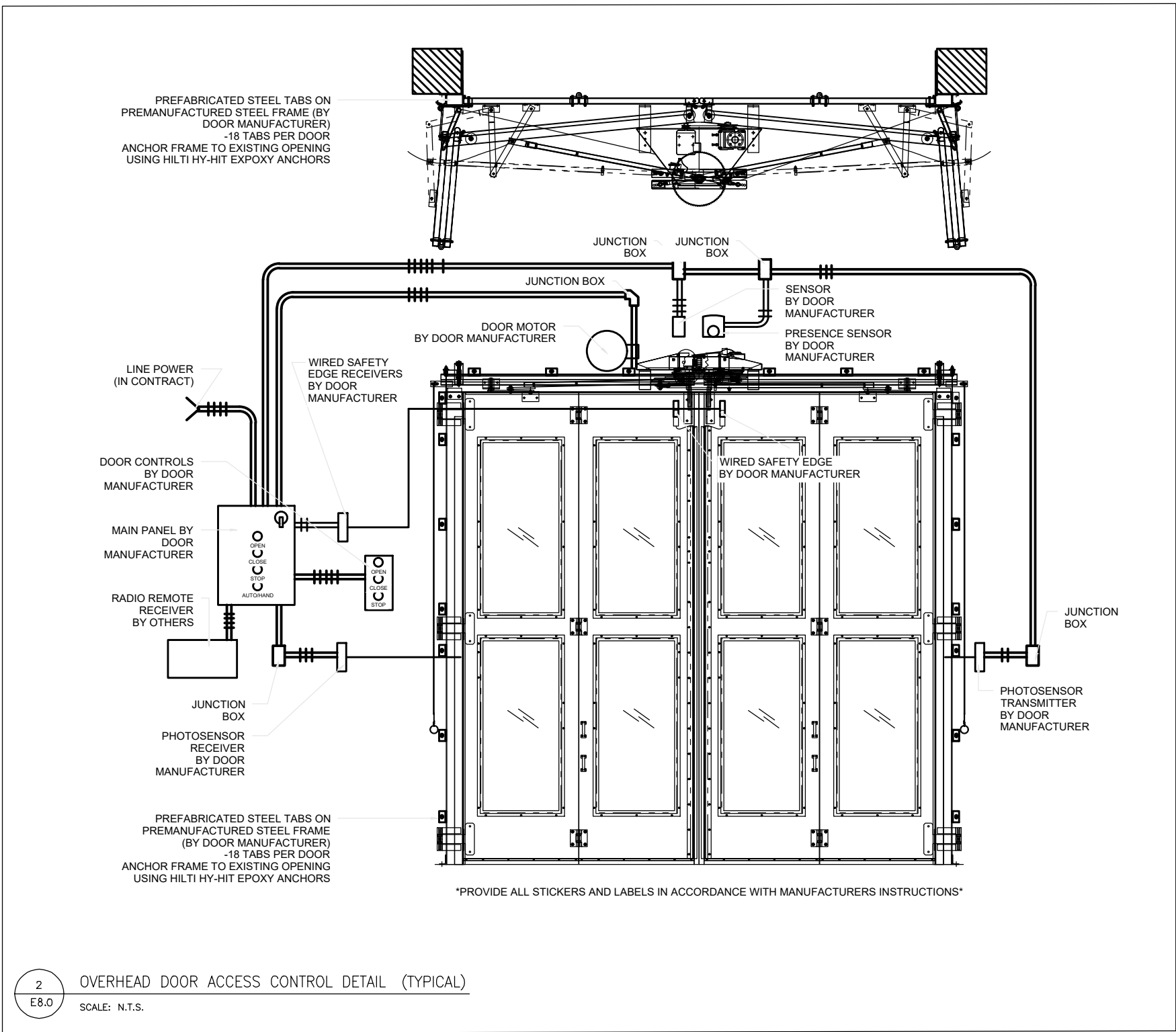
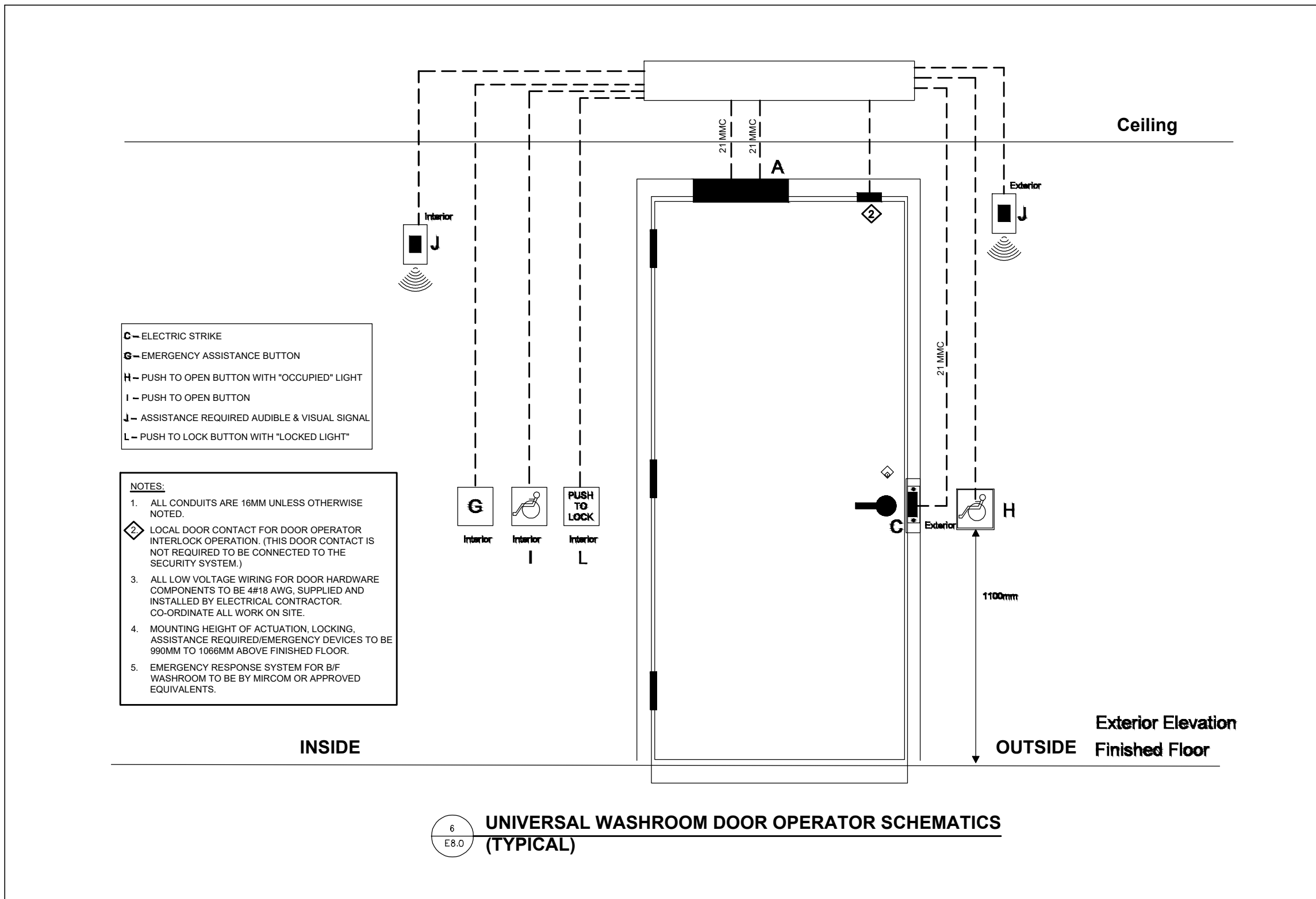
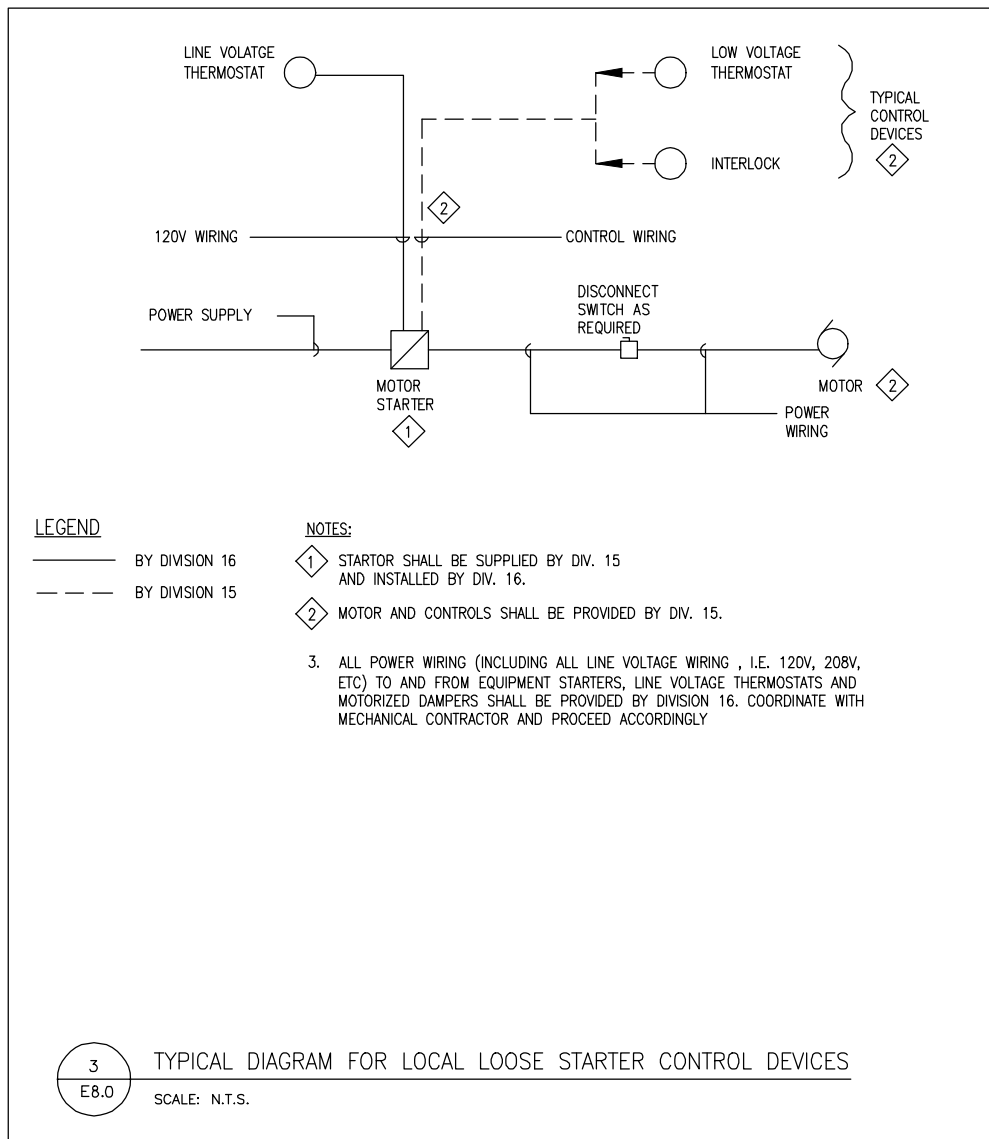
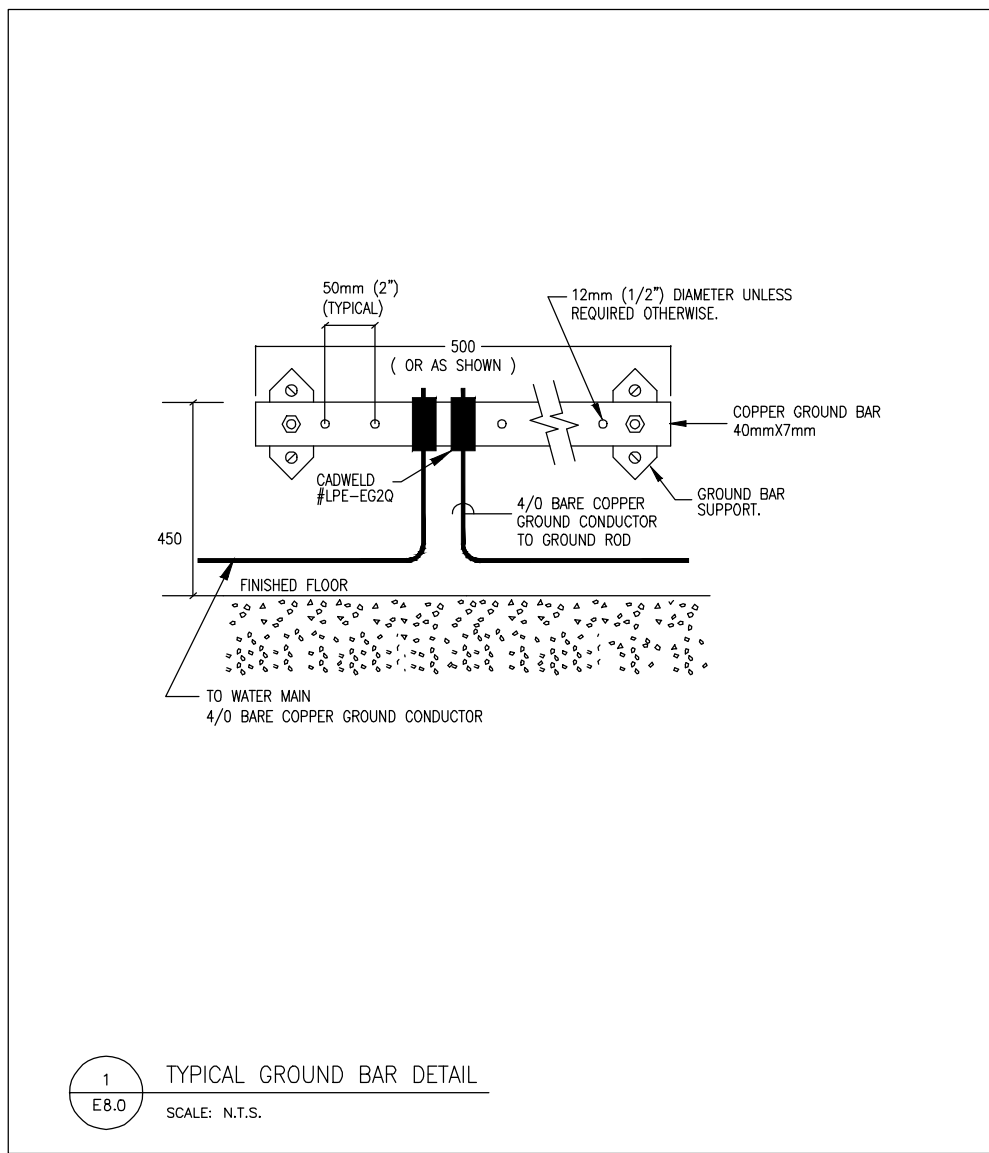
MICRO SYSTEM CONSIST OF THE FOLLOWING	
REGULATOR BUNDLE	NC 210SW 1 EACH
SR-12W	NC 210SW 1 EACH
4 LED MULTIPOM LIGHT	NC 4LED 4 EACH
PATIENT UNIT	NC 2000 4 EACH
SERVER	1 EACH
ROUTER	1 EACH
4 PORT ELECTRICAL BOX	3 FMSH-UPC 4 EACH
ELECTRICAL BOX	1XW-PS-24BB 1 EACH
24V POWER SUPPLY	RM-PM-980 1 EACH
CABLE 1 FOOT	200'
EOL-103	END OF LINE RESISTOR



PROJECT: YORK REGION PRS
STATION #29

107 GLEN CAMERON ROAD, MARKHAM





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3	ISSUED FOR 90% DESIGN DEVELOPMENT	2018-11-21
4	ISSUED FOR REVIEW	2019-01-03
5	ISSUED FOR BUILDING PERMIT	2019-03-14
6	ISSUED FOR ADDENDUM ME-1	2019-08-20

PROJECT :

YORK REGION PRS STATION #29

107 GLEN CAMERON ROAD, MARKHAM

RCEI

REGAL CONSULTING ENGINEERS INC.
CONSULTING MECHANICAL & ELECTRICAL ENGINEERS
2359 Royal Windsor Drive, Suite 201, Mississauga, Ontario L5J 4S9
PHONE: (905) 655-2010
www.regal-ncg.com

CLIENT

York Region

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES ARE TO BE REPORTED TO THE CONSULTANT.

ARCHITECT

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PROFESSIONAL SEAL

Approval to Proceed

Project Phase

Authorization (signature)

DWG TITLE

ELECTRICAL DETAILS

ORIENTATION

TRUE NORTH

CONSTRUCTION NORTH

DATE

Jan. 03, 2019

SCALE

1:75

DRAWN BY

MJ

DWG STATUS :

PERMIT

PROJECT No.

2016-147

DRAWING No.

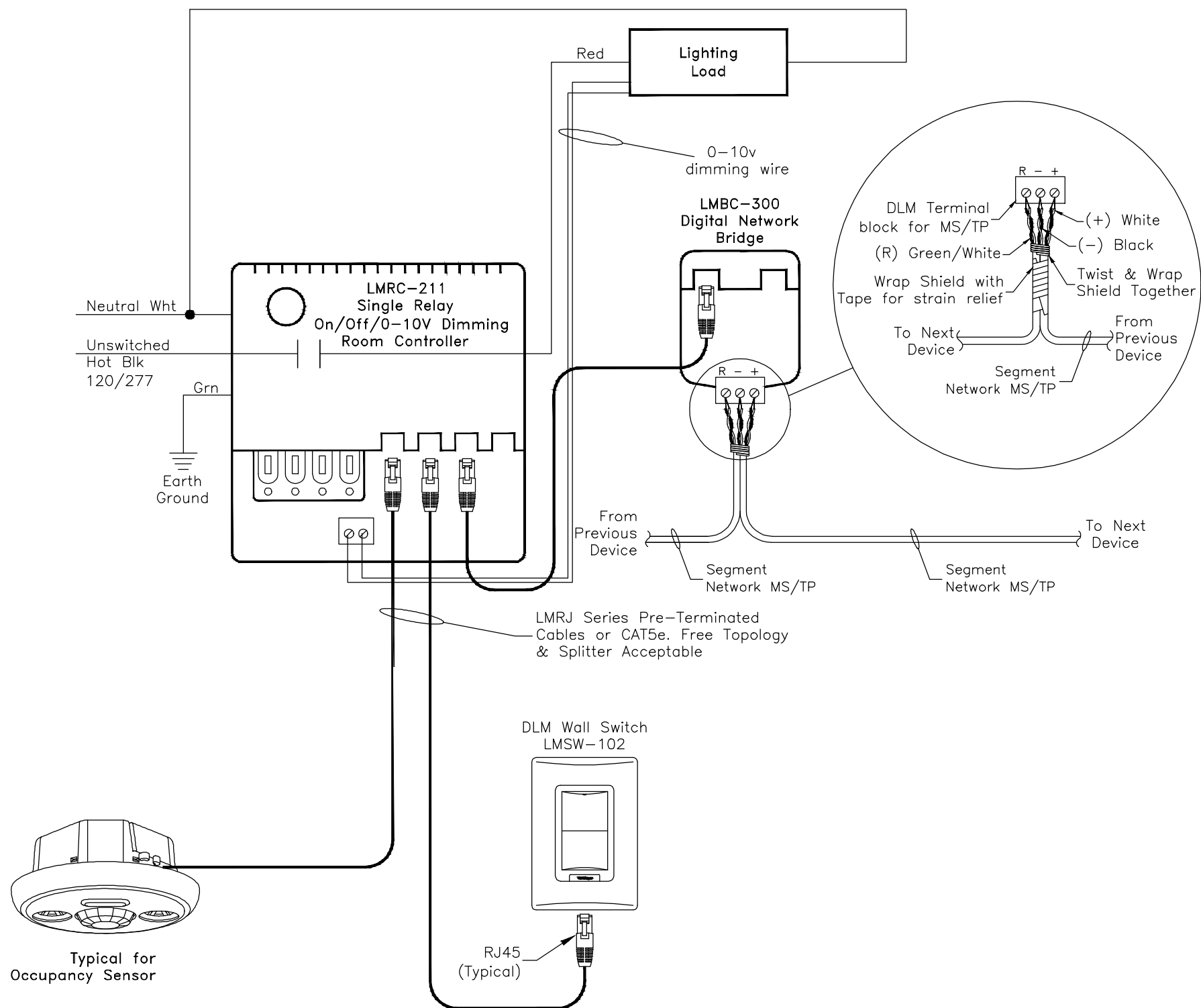
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REVISION

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OFFICE (TYPICAL)

- MANUAL ON 100%
- AUTO OFF AFTER VACANCY VIA OCCUPANCY SENSOR

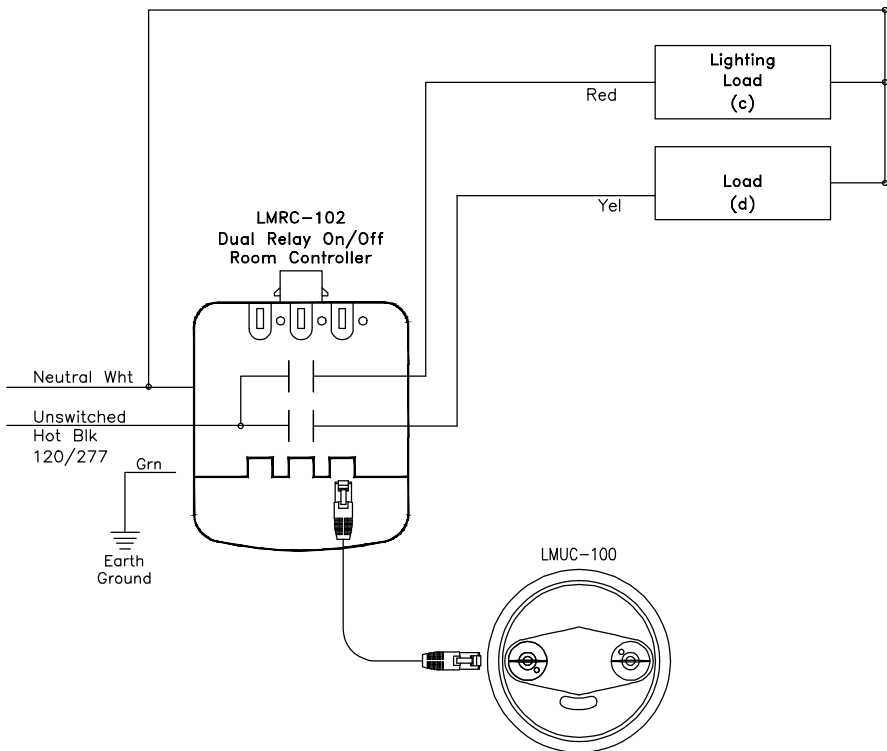


DEVICES ARE PRESET FOR PLUG n' GO™ OPERATION. ADJUSTMENT IS OPTIONAL. Sequence of Operation: In this configuration the LMRC-211 defaultsto automatic-on/automatic-off operation. Enhanced room controllers support up to 64 loads and 48 devices per DLM local network. For full operational details, adjustments and more features of the product, see the DLM System Installation Guide at www.wattstopper.com

LMRC-211 Single Relay Wiring Diagram

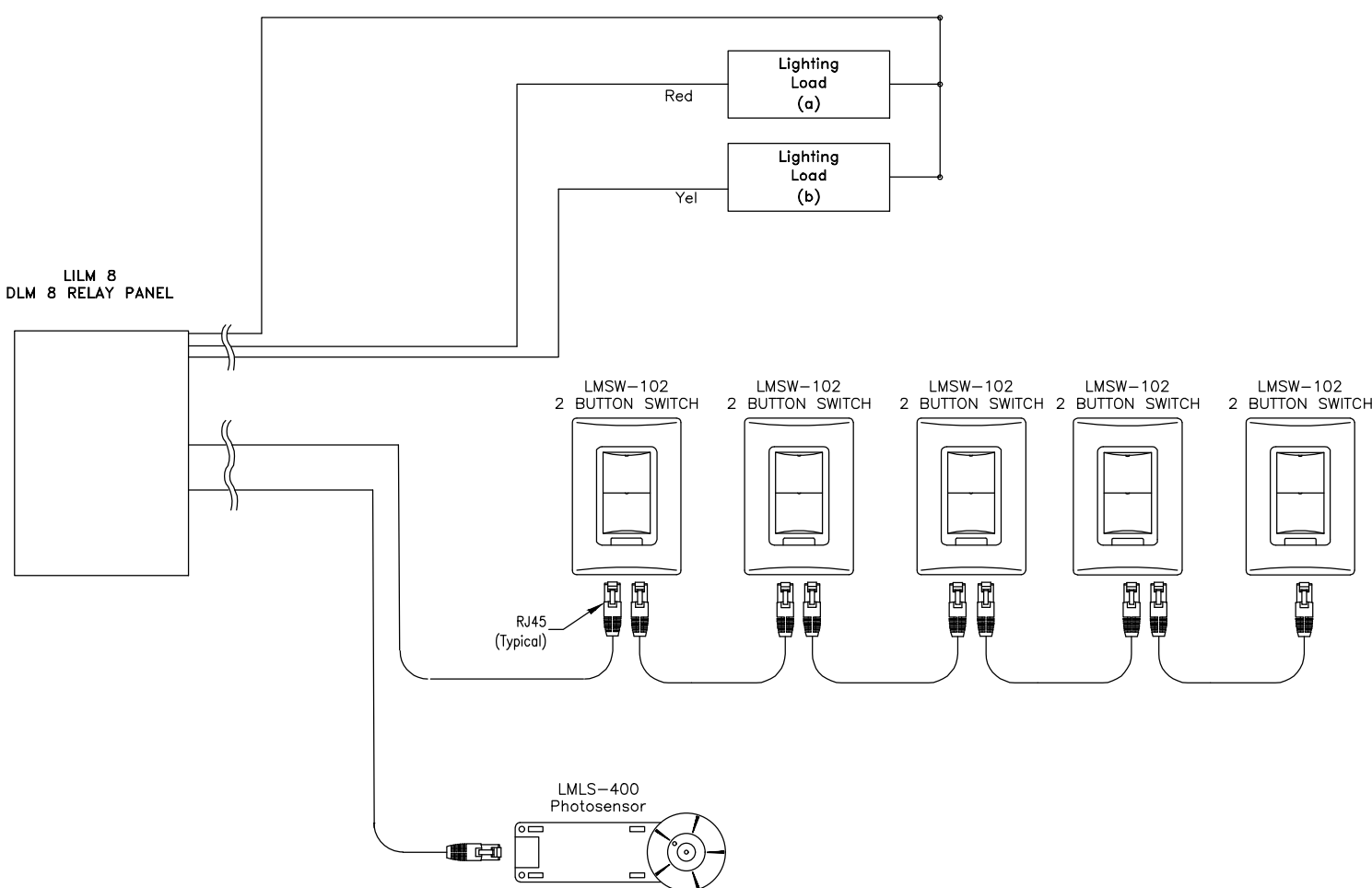
WASHROOMS

- AUTO ON 100%
- AUTO OFF AFTER VACANCY VIA OCCUPANCY SENSOR
- USE OF ULTRASONIC OR DUAL TECHNOLOGY SENSOR



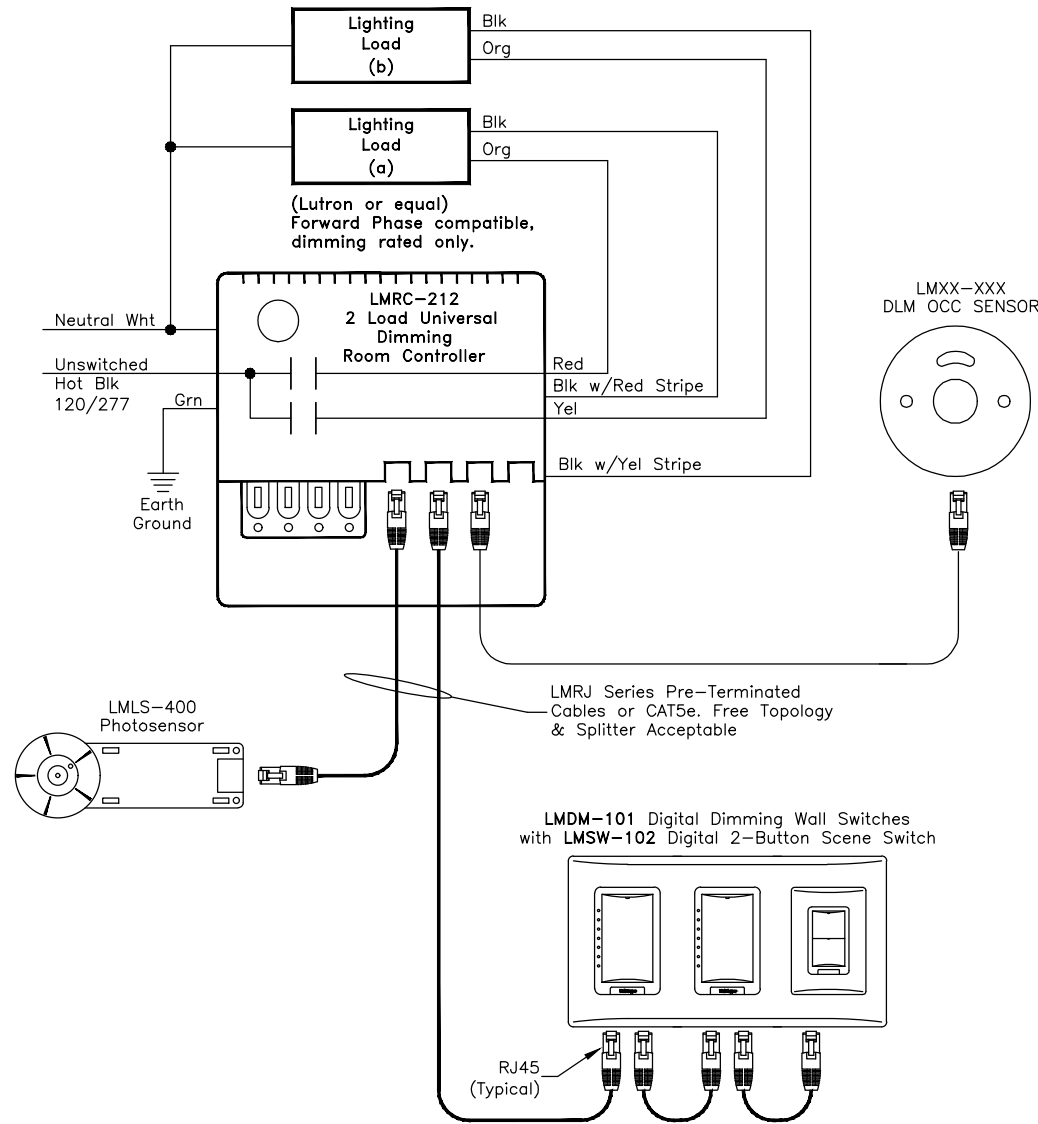
APPARATUS BAY

- MANUAL AND/OR PROGRAMMING ON / OFF
- SWITCHES LOCATED AT ENTRANCE(S)



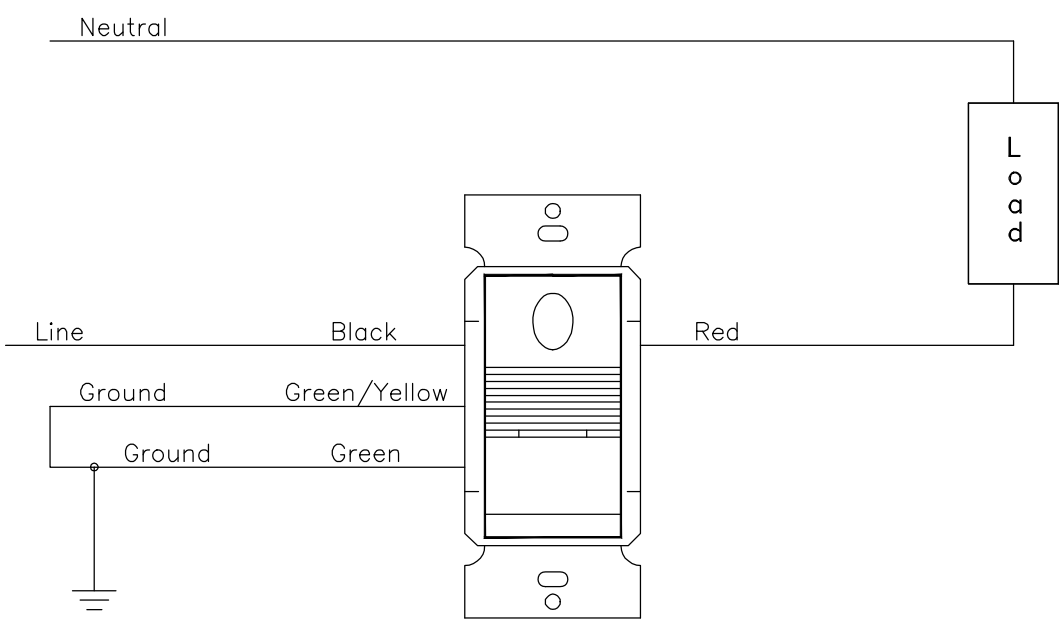
COMMON SPACES (RELAY PANEL) (LOUNGE/KITCHEN)

- MANUAL ON AUTO OFF
- SWITCHES LOCATED AT ENTRANCE(S)
- DAY LIGHTING CONTROLLED VIA PHOTOCELL



STORAGE ROOMS

- MANUAL ON 100%
- AUTO OFF AFTER 15 MIN OF VACANCY VIA OCCUPANCY SENSOR



- NOTES:
1. THESE DETAILS ARE TYPICAL. SCHEMATIC FOR INDICATION PURPOSE ONLY. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH LIGHTING CONTROL MANUFACTURER/ SUPPLIER FOR MORE INFORMATION AND INSTALLATION DETAILS PRIOR TO ROUGH IN FOR FULLY OPERATIONAL SYSTEM.
 2. REFER TO FLOOR PLAN FOR QUANTITIES AND TYPES OF DEVICES REQUIRED AND COORDINATE WITH SYSTEM SUPPLIER/MANUFACTURER FOR EXACT LOCATIONS OF SENSORS PRIOR TO ROUGH IN.
 3. LIGHTING CONTROL SHALL BE PROVIDED IN ACCORDANCE WITH ASHRAE 90.1. PROVIDE ALL NECESSARY MATERIAL AND LABOUR REQUIRED TO COMPLY ACCORDINGLY FOR FULLY OPERATIONAL SYSTEM.
 4. PROVIDE PROGRAMMING AND SCHEDULING AND SCHEDULING AS PER CLIENT'S REQUEST.
 5. CONTRACTOR TO ENSURE COMPATIBILITY BETWEEN THE DIMMING BALLAST AND THE WATTSTOPPER DIMMING CONTROLLER. PROVIDE ALL NECESSARY MATERIAL AND LABOR FOR FULLY OPERATIONAL SYSTEM.
 6. ALL EXTERIOR LIGHTING TO BE CONTROLLED BY PHOTOCCELL AND ASTRONOMICAL TIME CLOCK WITH SMALL OFFSETS.

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PROJECT : YORK REGION PRS STATION #29 107 GLEN CAMERON ROAD, MARKHAM

RCEI REGAL CONSULTING ENGINEERS INC. CONSULTING MECHANICAL & ELECTRICAL ENGINEERS 2359 Royal Windsor Drive, Suite 201, Mississauga, Ontario L5J 4S9 PHONE: (905) 655-2010 www.regal-rcei.com

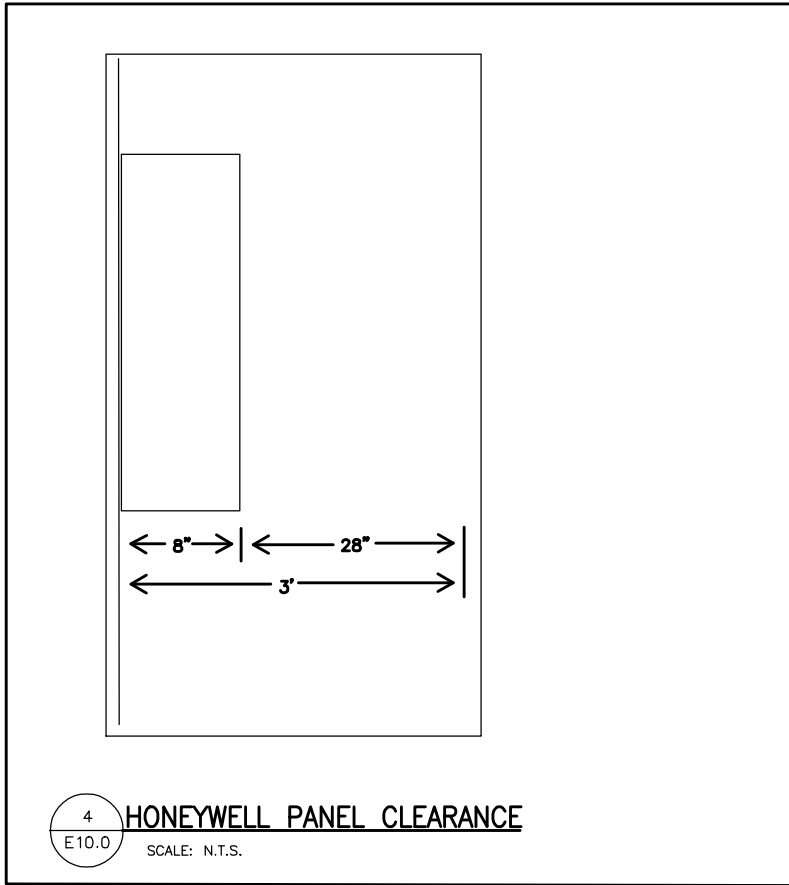
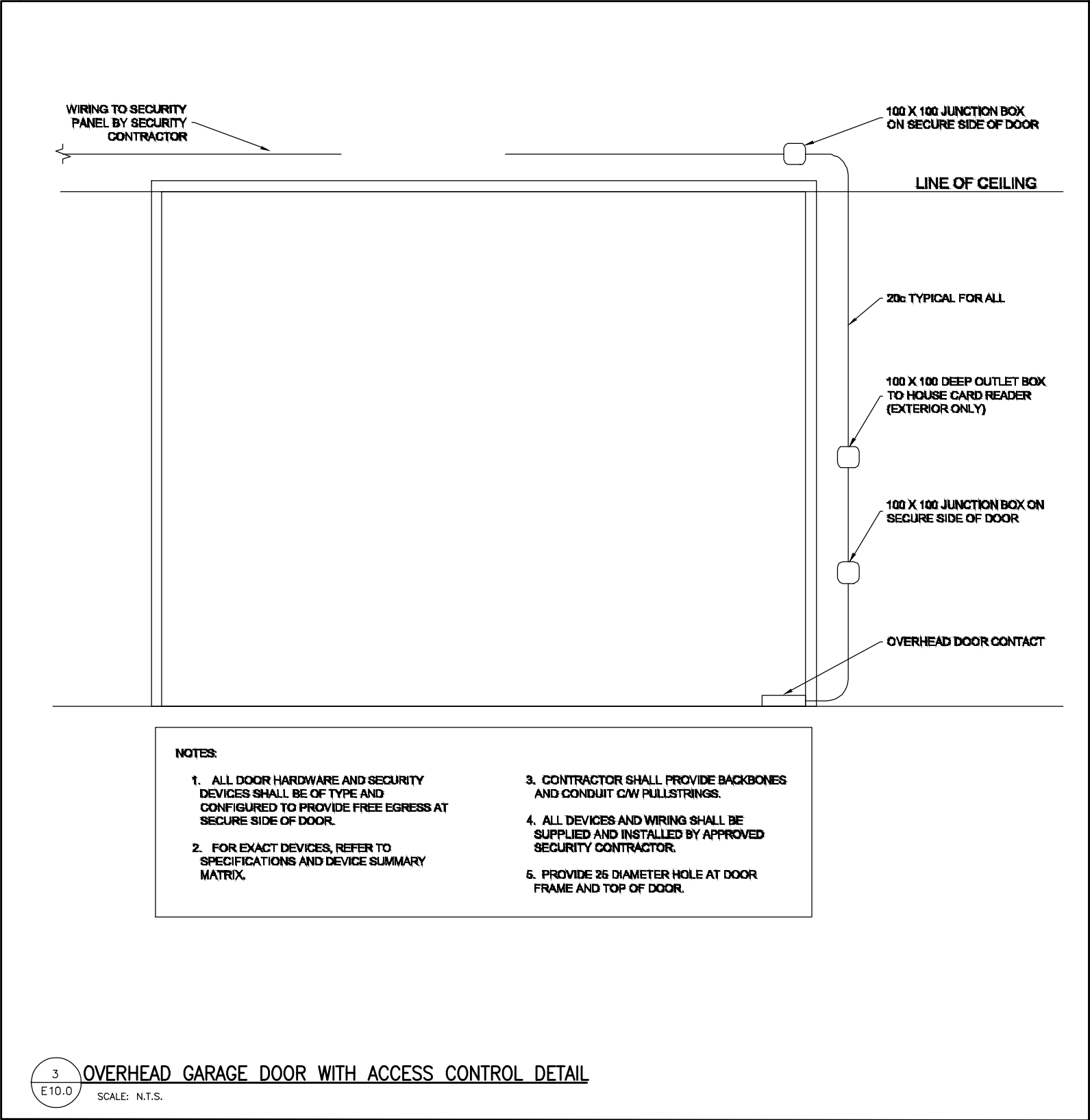
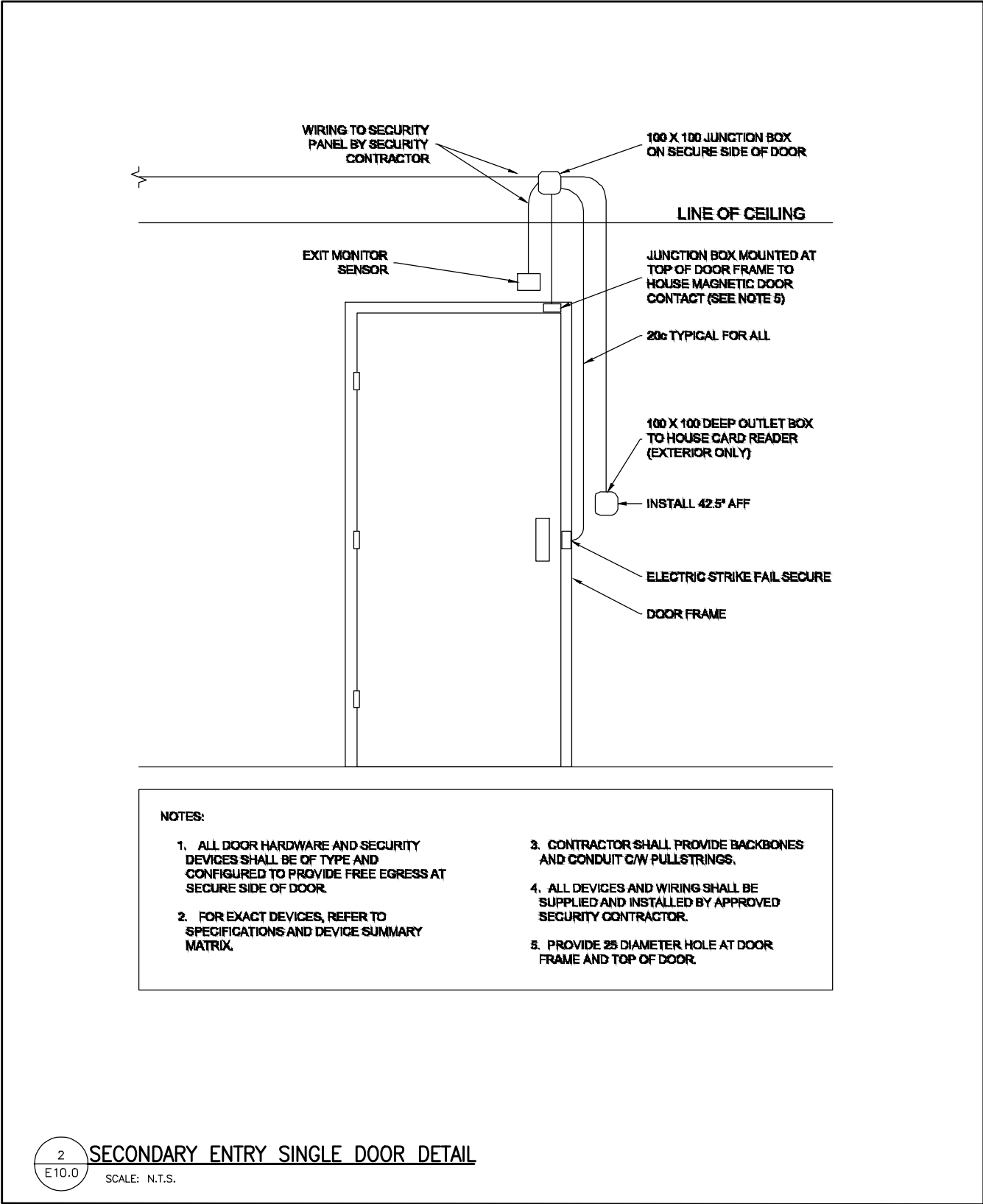
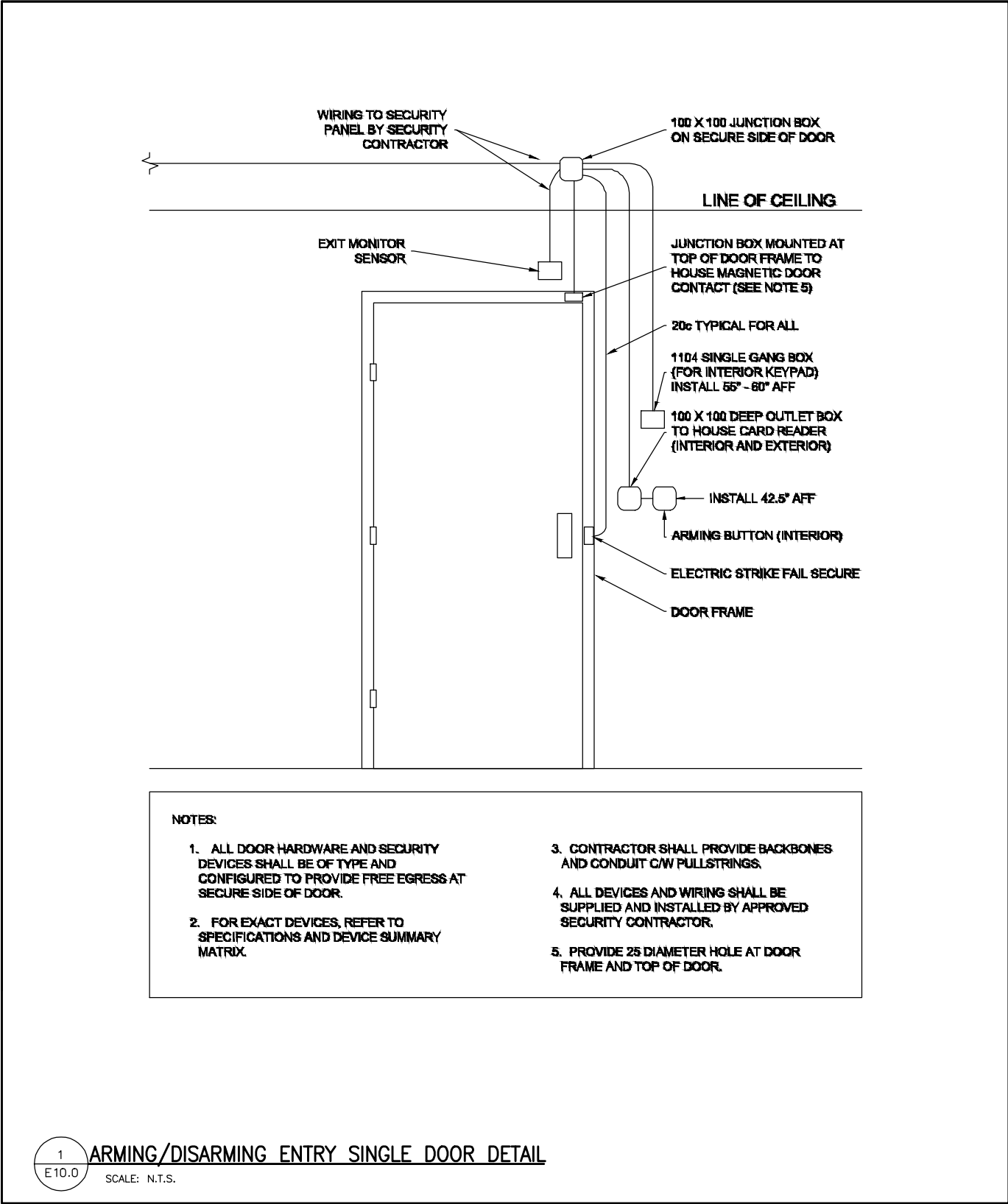
CLIENT York Region THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES ARE TO BE REPORTED TO THE CONSULTANT. ARCHITECT THOMASBROWN ARCHITECTS 197 SPADINA AVE., SUITE 500, TORONTO, ON 416-364-5710 EXT 101 WWW.TBROWNARCH.COM

PROFESSIONAL SEAL Approval to Proceed Project Phase Authorization (signature)

DWG TITLE LIGHTING CONTROL DETAILS

ORIENTATION TRUE NORTH CONSTRUCTION NORTH

DATE Jan. 03, 2019 SCALE 1:75 DRAWN BY MJ DWG STATUS PERMIT PROJECT No. 2016-147 DRAWING No. E9.0 REVISION --



EMS MARKHAM #29 SECURITY DEVICE SUMMARY

SECURITY / ACCESS SYSTEM COMPONENTS														INTRUSION DETECTION EQUIPMENT					LOCKSMITHING & KEYS		
DOOR # ON DRAWING SUPPLIER	DOOR DESCRIPTION	SECURITY OPERATION TYPE	EXTERIOR CARD READER	INTERIOR CARD READER	ARMING BUTTON	ELECTRIC STRIKE MECHANISM	ELECTROMAGNETIC LOCK	MAGNETIC DOOR CONTACT	OVERHEAD DOOR CONTACT	REQUEST TO EXIT MOTION	PIZZO BUZZER	DOOR / GATE RELEASE	INTERCOM OR COMMUNICATOR NEEDED	KEYPAD	CONTROL PANEL	DIRECTIONAL MOTION DETECTOR	360 DEGREE MOTION VICINITY	GLASS BREAKER DETECTOR IN VICINITY	REQUIRED LOCKSMITHING	DETAILS	COMMENTS OR QUESTIONS
FG 100A	SINGLE EXTERIOR DOOR LEADING IN TO VESTIBULE 100	T1	1	1	1	1	0	1	0	1	0	0	0	1	0	0	0	0		GMK ONLY (lockbox to be installed on exterior)	EXTERIOR CARD READER TO BE INSTALLED NEXT TO THE DOOR OPERATOR BUTTON.
FG 100B	SINGLE INTERIOR DOOR LEADING INTO ACCESS CORRIDOR 101	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PASSAGE FUNCTION	N/A	
FG 101	SINGLE EXTERIOR DOOR FROM GARAGE BAY INTO CORRIDOR 101	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PASSAGE FUNCTION	N/A	
FG 104	SINGLE EXTERIOR DOOR LEADING INTO THE WRITE UP ROOM	T2	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	STOREROOM FUNCTION LOCKSET	GMK ONLY	GC to install all required equipment to comply with ADDA regulation. Red emergency box to be installed between the two washrooms which house key to override the lock.
M 106	Single door leading into Male Washroom	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	STOREROOM FUNCTION	Change key 1	GC to install all required equipment to comply with ADDA regulation. Red emergency box to be installed between the two washrooms which house key to override the lock.
M 107	Single door leading into Women's Washroom	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	STOREROOM FUNCTION	Change key 1	GC to install all required equipment to comply with ADDA regulation. Red emergency box to be installed between the two washrooms which house key to override the lock.
M 108	Single Door leading into Utility room	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	PASSAGE FUNCTION	N/A	
M 109	Single Door leading into the IT room	T2	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	STOREROOM FUNCTION LOCKSET	GMK ONLY	
ML1 110A	Single Exterior door leading into the Bay Area	T2	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	STOREROOM FUNCTION LOCKSET	GMK ONLY	
M 110B	Single Exterior door leading into the Bay Area	T2	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	STOREROOM FUNCTION LOCKSET	GMK ONLY	
2G 112	SINGLE INTERIOR DOOR LEADING INTO MEDICAL STORAGE	T2	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	STOREROOM FUNCTION LOCKSET	GMK ONLY	
M 112B	Single Interior door leading into the Bays Area	T2	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	PASSAGE FUNCTION	GMK ONLY	
M 112A	Single Exterior door leading into the oxygen room	N/A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	STOREROOM FUNCTION UNICAN LOCK	GMK ONLY	Code to be programmed by GC as per EMS instruction.
OHd 110H	Overhead door leading into Bay 1	T5	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	N/A	N/A	GC to provide relay for card access integration to be wired and tested by sec. contractor
OHd 110I	Overhead door leading into Bay 2	T5	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	N/A	N/A	GC to provide relay for card access integration to be wired and tested by sec. contractor
OHd 110J	Overhead door leading into Bay 3	T5	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	N/A	N/A	GC to provide relay for card access integration to be wired and tested by sec. contractor
OHd 110G	Overhead door leading into Bay 4	T5	2	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	N/A	N/A	GC to provide relay for card access integration to be wired and tested by sec. contractor
TOTALS			12	4	1	7	0	7	8	15	0	0	0	1	0	0	0	0	N/A	N/A	GC to provide relay for card access integration to be wired and tested by sec. contractor

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PROFESSIONAL SEAL

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Project Phase

Authorization (signature)

DWG TITLE

TYPICAL SECURITY DOOR DETAILS

ORIENTATION

TRUE NORTH

CONSTRUCTION NORTH

DATE

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SCALE

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MJ

DWG STATUS :

PERMIT

PROJECT No.

2016-147

DRAWING No.

E10.0

REVISION

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1. GENERAL

1.1 RELATED INSTRUCTIONS

- .1 Refer to Section 26 00 00, Electrical General Requirements.

1.2 SCOPE

- .1 Work includes, but is not limited to:
 - 1. Secondary ductbank and secondary cables including termination from pole mounted transformer to service entrance switchboard. Terminal connectors shall be provided as per the Local Hydro Authority's requirements/standards.
 - 2. Grounding System.
 - 3. Supply and install a 1.25" rigid PVC conduit complete with fish wire from Service Entrance Board metering compartment to outdoor P-base Hydro meter cabinet (supplied by the Local Hydro Authority and installed by the electrical Subcontractor. Provide phone line to meter and coordinate on site with the Local Hydro Authority for the location of the meter enclosure prior to rough in.
 - 4. Obtaining approvals from, co-operation and scheduling the work with Supply and Inspection Authorities, before commencing work.
 - 5. Preparation of all necessary working drawings for submission to Inspection Authorities.

1.3 SYSTEM CO-ORDINATION & SHORT CIRCUIT STUDY

- .1 Characteristics of protective devices (relays, circuit breakers, fuses and the like) shall be selected to provide a coordinated fully-rated protective system; affording minimum fault-clearing times, and fault values.
- .2 Retain services of approved testing company to perform protective co-ordination study to establish optimum settings and selections for all protective devices.
- .3 Study shall be plotted on reproducible logarithmic paper (K&E #48-5257) illustrating:
 - 1. Study single line diagram, showing steady-state and transient values.
 - 2. Three phase bolted fault current, symmetrical and asymmetrical, and minimal arcing ground fault values.
 - 3. Time-current characteristics curves of all pertinent relays, breakers, fuses, etc. including Supply Authority's primary protective devices, for the complete project.
 - 4. Thermal damage curves for cable, transformers, motors and the like.
 - 5. Summation chart showing all ratings and settings referenced to the appropriate time-current characteristic curve.
- .4 Provide full scale transparencies for time-current characteristic curves of proposed devices.
- .5 Submit study for approval by the Consultant. Make all necessary subsequent changes to form "as-built" document.
- .6 Provide system coordination and short circuit study for complete high voltage and 120/208V power system

1.4 ARC FLASH PROTECTION

- .1 Retain the services of an industry-approved testing company to perform arc flash hazard study and calculation for all switchboards, panel boards, transformer, panels, control panels, MCC, meters, disconnect switches, breakers, etc, that require examination, adjustment, servicing, or maintenance while energized.

- .2 The study and calculation shall meet IEEE 1584-2002, Guide for Performing Arc-Flash Hazard Calculations.
- .3 Provide arc flash report to include the following, but not limited to:
 1. Results of the study and calculation.
 2. Detailed hazard/risk category (0 to 5).
 3. Voltage shock hazard, incident current and energy.
 4. Flash protection boundary and shock approach boundaries.
 5. The protection plan including safe work procedures, preventive maintenance programs, personal protective equipment, etc. The protection plan shall meet CSA Z462-08, workplace electrical safety.
- .4 Based on the arc flash report, provide required labels state the existence of arc flash hazard and the corrective action to take. The labels must meet ANSI Z535.4-2002, product Safety signs and Labels.

1.5 INSPECTION & TESTING

- .1 Systems, equipment and all major items of material shall be tested to the satisfaction of the Consultant, and as required to establish compliance with plans and specifications, and with the requirements for the Supply and Inspection Authorities.
- .2 Faulty and defective equipment shall be replaced with new materials Conductors which are found to be shorted or grounded, or to have less than proper insulation resistance, shall be replaced with new conductors.
- .3 Tests shall include but are not limited to the following:
 1. Test of power cables shall include megger tests to establish proper insulation resistance, and phase-to-ground resistance of cables.
 2. of all adjustable electrical protective devices of switchgear to establish calibration and operation in accordance with specifications and approved co-ordination curves.
 3. Visual examination of switchgear to determine adherence to allowable manufacturing tolerance and compliance with manufacturer's recommended installation requirements.
 4. Proper functioning of all systems.
 5. Polarity tests - to establish proper polarity connections to all sockets and receptacles.
 6. Calibration setting, and test-tripping, of all protective relays and devices, using "Primary-injection" equipment, in accordance with approved co-ordination schedule.
 7. Test of all alarm devices and contacts.
 8. Test of system neutral to establish proper insulations resistance and isolation of neutral from ground except for required ground connection at service
 9. Inspection after system is energized shall include infrared thermographic examination of current carrying parts in switchgear, transformers, and at ducts. The Contractor shall cooperate with inspection personnel, open all equipment enclosures to permit inspection, and make good defective conditions.
- .4 Testing Company
 1. Retain the services of an independent testing company, to the Consultant's approval to perform the above tests.
 2. The testing company shall submit test results directly to the Consultant.
 3. Include copy of tests in Maintenance and Operating Manual.

.5 Certification of Tests

1. When work is complete, submit three copies of test results and a signed statement listing all tests that have been performed as required by specifications and manufacturer's instructions.

2. **PRODUCTS**

2.1 **SERVICE ENTRANCE SWITCHBOARD**

- .1 Provide metal enclosed 120/208 volt switchboard as arranged on the Drawings and further described herein, and detailed on the Drawings.
- .2 The switchboard shall comprise an indoor, metal enclosed free standing assembly employing breakers manufactured by Federal Pioneer or equal.
- .3 Assembly shall be factory assembled CEMA Type 2 "Sprinkler Proof" construction, and constructed in accordance with applicable CEMA and AIEE Standards. The equipment design shall be CSA approved. Note that all other panels and equipment in Electrical Rooms shall be "Sprinkler Proof" as noted in the Contract Documents.
- .4 Bus and connections shall be copper, supported and braced to withstand short-circuit stresses in excess of main breaker rating (50 KA SYM minimum).
- .5 Structures shall consist of metal enclosed steel frame and front enclosures, which shall include separate compartments for each breaker and metering section. All joints of buses shall have tin-plated high pressure contacts and flame retardant bus supports.
- .6 A ground bus shall be provided bolted to each unit.
- .7 Provide bus extensions for connection to outgoing feeders and provide adequate space to suit connections to outgoing cables. Compression indent type terminals shall be used for all cable connections.
- .8 Provide suitable worded engraved plastic laminate nameplates for each device and compartment.
- .9 Provide all necessary fuses, fuse mounts, disconnect switches, small wiring, terminal blocks, and the like, as required for metering and relaying accessories as detailed.
- .10 The switchgear shall be completely assembled, wired and tested at the factory. After assembly, the complete switchgear shall be tested for operation under simulated service conditions to assure the accuracy of the wiring and functioning of the equipment.
- .11 The manufacturer shall provide necessary drawings prior to assembly of the equipment for approvals and provide final drawings upon completion of fabrication.
- .12 The entire structure shall be thoroughly cleaned and phosphated prior to application of the primary and finishing coats of paint.
- .13 Main 120/208 volt switchboard / Splitter - to contain generally as detailed on the Drawings and as follows:
 1. 200 ampere, 3 pole, 208 volt Main Bus - full capacity neutral with provisions for incoming bus and cables.
 2. Main breaker to comprise 200A/200AT amp fixed moulded case circuit breaker, 100% rated, solid state trip unit, for metered distribution. Interrupting rating shall be 50 KA-Symmetrical minimum.

3. Metering compartment for Supply Authority's transformers with hinged door complete with sealing and padlock provisions. Provide removable mounting pan within compartment for mounting of transformers. These provisions shall be submitted to and approved by the Supply Authority before manufacture.
4. Distribution Sections - Distribution Sections have 400 ampere main bus and full capacity neutral and circuit breakers with coordinated fault and trip ratings to suit main and distribution switches.
5. Auxiliary Customer Metering Compartments which shall include:
 - .1 Power Logic Digital Metering system capable of displaying voltage, current, KVA, KVAR, KW, PF, HZ, and the accumulated MWH, and KW demand. It shall be capable of continuously monitoring and storing minimum values of volts and PF and maximum values of amps., - KW-KVA-KVAR-KWS. All minimum/maximum values can be displayed. KYZ Pulse output to BMS. 1pulse=1kwh. Ethernet communications interface and all hardware/software. Field server RS232 to Ethernet Gateway and BACnet drivers for Ethernet and IP interface to BMS.
 - .2 All necessary instrument current and potential transformers and control protection devices.
6. The neutral conductor of the wiring system together with the conduit and service grounding system shall be bonded to the water service as detailed and in accordance with the Local Hydro Authority requirements.
7. All access to unmetered bus to be provided with bolted panels and provisions for sealing and padlocking.
8. Switchboard / Main Splitter shall be provided c/w 200 kA TVSS surge protection system.

3. EXECUTION

3.1 SECONDARY DUCT BANKS

- .1 Provide underground secondary duct bank as detailed to provide for installation of secondary cables. Construction details and exact location of terminations shall be verified on the site prior to installation commencing. Entire installation shall meet OESC requirements and local ESA Inspector's approval.
- .2 Provide warning tapes for secondary duct banks as per latest OESC code & bulletins.
- .3 Provide a secondary duct bank constructed to OESC approval comprising PVC Class 1 CSA approved ducts with minimum internal diameter of 104 mm (4 inches), buried to a depth as indicated on the Drawings to provide cover over the duct run. Ducts shall be laid parallel, spaced 152 mm (6") on centre horizontally and vertically, encased throughout their length in concrete, with a minimum cover of 76 mm (3") on all sides. The duct shall be on even grade, sloped not less than 76 mm (3") in 30 mm (100 feet). The duct bank enclosure shall be steel reinforced as detailed. Provide Bell ends for all ducts.
- .4 Provide in each duct a 5/16" (8 mm) polypropylene Draw Rope, to facilitate the cable installation.
- .5 The ducts shall be encased in a concrete envelope which shall be worked below and between ducts to provide a homogenous mass. Duct spacers shall be plastic to provide required spacing both horizontally and vertically. Minimum of two spacers per 3050 mm (10 ft.) length of duct shall be used.

3.2 GROUNDING

- .1 Provide a grounding system at the transformer and switchgear in accordance with OESC. Provide #2/0 AWG copper conductor connected to building ground system.
- .2 All work in connection with the pole mounted transformer shall be performed in strict accordance with regulations and the OESC. Obtain approval of all details before commencing work.

3.3 ELECTRICAL SERVICE

- .1 Provide complete electrical service as shown on the Drawings and as further described here.
- .2 The Local Hydro Authority will supply electrical service at 208 volt, 3 phase, 4 wire, 60 cycles.
- .3 Grounding service, equipment, feeders, and the like shall be performed in accordance with the Local Hydro Authority requirements.

The neutral conductor of the wiring system together with the conduit system and service equipment shall be bonded to the water service as near as practical to the service entrance. Confirm type of water service pipe system with Mechanical Division and provide grounding system in accordance with O.H.E.P.C. regulations.

Provide an "Artificial Grounding" system in accordance with Canadian Electric Code, Section 10-702 and Ontario Hydro Supplement. Location shall be to approval of the Supply & Inspection Authority requirements.

- .4 Install an outdoor P-base metering cabinet as per requirements and connected to switchboard with an empty 1-1/4" rigid conduit and telephone line all to approval of the Local Hydro Authority.

3.4 SECONDARY CABLES

- .1 Secondary cables c/w termination lugs (coordinate with the Local Hydro Authority for more information regarding termination lugs requirement at transformer secondary side and comply accordingly) shall be supplied and installed by the electrical Subcontractor.

3.5 HYDRO STANDARDS / REQUIREMENTS

- .1 Coordinate on site with the Local Hydro Authority representative for more information and details regarding hydro standards and requirement and exact scope of work prior to commencing the work and comply accordingly.

END OF SECTION

SECTION
SPECIFICATIONS: GENERATOR SET

1. Scope of Work

- 1.1. It is the intent of this specification to secure an engine-driven generator set that has been prototype tested, factory built, production-tested, and site-tested together with all accessories necessary for a complete installation as shown on the plans and the Drawings and specified herein.
- 1.2. Any and all exceptions to the published specifications shall be subject to the approval of the Consultant.
- 1.3. The power system shall be furnished by a single manufacturer who shall be responsible for the design, coordination, and testing of the complete system. The entire system shall be installed as shown on the plans, the Drawings, and specifications herein.
- 1.4. The equipment shall be produced by a manufacturer who has produced this type of equipment for a period of at least 10 years and who maintains a service organization available twenty-four hours a day throughout the year.
- 1.5. The equipment shall be produced by a manufacturer who is ISO 9001 certified for the design, development, production and service of its complete product line.

2. General Requirements

- 2.1. It is the intent of this specification to secure a generator set system that has been tested during design verification, in production, and at the final job site. The generator set will be a commercial design and will be complete with all of the necessary accessories for complete installation as shown on the plans, drawings, and specifications herein. The equipment supplied shall meet the requirements of the Ontario Electrical Code and applicable local codes and regulations.
- 2.2. All equipment shall be new and of current production by a firm that manufactures the generator sets and controls, transfer switches, and switchgear, and assembles the generator sets as a complete and coordinated system. There will be one-source responsibility for warranty, parts, and service through a local representative with factory-trained servicemen.

3. Submittal

- 3.1. The submittal shall include prototype test certification and specification sheets showing all standard and optional accessories to be supplied; schematic wiring diagrams, dimension drawings, and interconnection diagrams identifying by terminal number each required interconnection between the generator set, the transfer switch, and the remote annunciator panel if it is included elsewhere in these specifications.

4. Codes and Standards

- 4.1. The generator set shall be listed to UL 2200 or submitted to an independent third party certification process to verify compliance as installed.
- 4.2. The generator set shall conform to the requirements of the following codes and standards:
 - 4.2.1. CSA C22.2, No. 14-M91 Industrial Control Equipment.
 - 4.2.2. EN50082-2, Electromagnetic Compatibility-Generic Immunity Requirements, Part 2: Industrial.
 - 4.2.3. EN55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
 - 4.2.4. IEC8528 part 4, Control Systems for Generator Sets.

- 4.2.5. IEC Std 61000-2 and 61000-3 for susceptibility, 61000-6 radiated and conducted electromagnetic emissions.
- 4.2.6. IEEE446 Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications.
- 4.2.7. CSA-C282-09 Emergency Electrical Power Supply for Buildings. The generator set shall meet all requirements of the specification including all alarms, shutdowns, and indications shown on Table-2 of the specification. The generator enclosure shall include dampers, heaters, emergency lighting, and a distribution panel in accordance with this specification.
- 4.2.8. CSA-149.1-10 Natural Gas and Propane Installation Code.

5. Testing

- 5.1. To ensure that the equipment has been designed and built to the highest reliability and quality standards, the manufacturer and/or local representative shall be responsible for three separate tests: design prototype tests, final production tests, and site tests.
- 5.2. **Design Prototype Tests.** Components of the emergency system, such as the engine/generator set, transfer switch, and accessories, shall not be subjected to prototype tests because the tests are potentially damaging. Rather, similar design prototypes and preproduction models shall be subject to the following tests:
 - 5.2.1. Maximum power (kW).
 - 5.2.2. Maximum motor starting (kVA) at 35% instantaneous voltage dip.
 - 5.2.3. Alternator temperature rise by embedded thermocouple and/or by resistance method per NEMA MG1-32.6.
 - 5.2.4. Governor speed regulation under steady-state and transient conditions.
 - 5.2.5. Voltage regulation and generator transient response.
 - 5.2.6. Harmonic analysis, voltage waveform deviation, and telephone influence factor.
 - 5.2.7. Three-phase short circuit tests.
 - 5.2.8. Alternator cooling air flow.
 - 5.2.9. Torsional analysis to verify that the generator set is free of harmful torsional stresses.
 - 5.2.10. Endurance testing.
- 5.3. **Final Production Tests.** Each generator set shall be tested under varying loads with guards and exhaust system in place. Tests shall include:
 - 5.3.1. Single-step load pickup
 - 5.3.2. Safety shutdown device testing
 - 5.3.3. Rated Power @ 0.8 PF
 - 5.3.4. Maximum power
 - 5.3.5. Upon request, a witness test, or a certified test record sent prior to shipment.
- 5.4. **Site Tests.** The manufacturer's distribution representative shall perform an installation check, start-up, and building load test. The Consultant, regular operators, and the maintenance staff shall be notified of the time and date of the site test. The tests shall include:
 - 5.4.1. Fuel, lubricating oil, and antifreeze shall be checked for conformity to the manufacturer's recommendations, under the environmental conditions present

and expected.

- 5.4.2. Accessories that normally function while the set is standing by shall be checked prior to cranking the engine. These shall include: block heaters, battery chargers, alternator strip heaters, remote annunciators, etc.
- 5.4.3. Generator set start-up under test mode to check for exhaust leaks, path of exhaust gases outside the building, cooling air flow, movement during starting and stopping, vibration during operation, normal and emergency line-to-line voltage and frequency, and phase rotation.
- 5.4.4. Automatic start by means of a simulated power outage to test remote-automatic starting, transfer of the load, and automatic shutdown. Prior to this test, all transfer switch timers shall be adjusted for proper system coordination. Engine coolant temperature, oil pressure, and battery charge level along with generator set voltage, amperes, and frequency shall be monitored throughout the test.

6. Warranty and Maintenance

- 6.1. The generator set shall include a standard one year warranty to guarantee against defective material and workmanship in accordance with the manufacturer's published warranty from date of start-up. Optional warranties shall be available upon request.
- 6.2. The generator set manufacturer and its distributor shall maintain a 24-hour parts and service organization. This organization shall regularly engage in maintenance contract programs to perform preventive maintenance and service on equipment similar to that specified. A service agreement shall be available and shall include system operation under simulated operating conditions; adjustment to the generator set, transfer switch, and switchgear controls as required, and certification in the owner's maintenance log of repairs made and function tests performed on all systems.

7. Equipment

- 7.1. The generator set shall be a Kohler model 60REZGB with a 4P7BX alternator or equivalent. It shall provide 60kW/75 kVA when operating at 120/208 volts, 60 Hz, .8 power factor. The generator set shall be capable of a Standby 130°C rating while operating in an ambient condition of less than or equal to 77° F and a maximum elevation of 656 feet above sea level.
- 7.2. Motor starting performance and voltage dip determinations shall be based on the complete generator set. The generator set shall be capable of supplying 135 LRKVA for starting motor loads with a maximum instantaneous voltage dip of 35%, as measured by a digital RMS transient recorder in accordance with IEEE standard 115. Motor starting performance and voltage dip determination that does not account for all components affecting total voltage dip i.e. engine, alternator, voltage regulator and governor will not be acceptable. As such, the generator set shall be prototype tested to optimize and determine performance as a generator set system.
- 7.3. Vibration isolators shall be provided between the engine-alternator and heavy-duty steel base.

8. Engine

- 8.1. The minimum 305-cubic-inch displacement engine shall deliver a minimum of 89 HP at a governed engine speed of 1800 rpm, and shall be equipped with the following:
 - 8.1.1. Electronic isochronous governor capable of 0.5% steady-state frequency regulation. Engine speed shall be nominally 1800 rpm. Engines running at higher rpm's and featuring speed reduction gear drives are not acceptable.
 - 8.1.2. 12-volt positive-engagement solenoid shift-starting motor.
 - 8.1.3. 70-ampere automatic battery charging alternator with a solid-state voltage

regulation.

- 8.1.4. Positive displacement, full-pressure lubrication oil pump, cartridge oil filters, dipstick, and oil drain.
- 8.1.5. Dry-type replaceable air cleaner elements for normal applications.
- 8.1.6. Engine-driven or electric fuel-transfer pump including fuel filter and electric solenoid fuel shutoff valve capable of lifting fuel.
- 8.2. The turbocharged engine shall be fueled by natural gas.
- 8.3. The engine shall have a minimum of 8 cylinders and be liquid-cooled by Unit Mounted Radiator 122°F/50°C.
- 8.4. The engine shall be EPA certified from the factory, and shall not require a site performance test.
- 8.5. Natural Gas fuel supply pressure, measured at the generator set fuel inlet downstream of any fuel system equipment accessories shall be within the operating range of 1.74-2.74 kPa (7.0-11.0 in. H₂O). Engines requiring higher gas pressures are not acceptable.

9. Alternator

- 9.1. The alternator shall be salient-pole, brushless, 2/3-pitch, 12 lead, self-ventilated with drip-proof construction and amortisseur rotor windings and skewed for smooth voltage waveform. The ratings shall meet the NEMA standard (MG1-32.40) temperature rise limits. The insulation shall be class H per UL1446 and the varnish shall be a fungus resistant epoxy. Temperature rise of the rotor and stator shall be limited to Standby 130°C. The excitation system shall be of brushless construction controlled by a solid-state voltage regulator capable of maintaining voltage within $\pm 2.0\%$ at any constant load from 0% to 100% of rating. The AVR shall be capable of proper operation under severe nonlinear loads and provide individual adjustments for voltage range, stability and volts-per-hertz operations. The AVR shall be protected from the environment by conformal coating. The waveform harmonic distortion shall not exceed 5% total RMS measured line-to-line at full rated load. The TIF factor shall not exceed 50.
- 9.2. The alternator shall have a single maintenance-free bearing, designed for 40000 hour B10 life. The alternator shall be directly connected to the flywheel housing with a semi-flexible coupling between the rotor and the flywheel.
- 9.3. The generator shall be inherently capable of sustaining at least 250% of rated current for at least 10 seconds under a 3-phase symmetrical short circuit without the addition of separate current-support devices.

10. Controller

- 10.1. **Decision-Maker® 550 Controller**
 - 10.1.1. The generator set controller shall meet CSA-C282-09 requirements and shall include an integral alarm horn as required by NFPA.
 - 10.1.2. The controller shall meet all alarms, shutdowns, and indication stipulated in Table 2 of the CSA-C282-09 specification.
 - 10.1.3. The controller shall be UL 508 listed.
 - 10.1.4. Controller shall have a key switch to meet local code requirements and shall be removable only in the AUTO position.
- 10.2. Applicability
 - 10.2.1. The controller shall be standard on a 60REZGB.
 - 10.2.2. The controller shall support 12-volt starting systems.
 - 10.2.3. The controller's environmental specification shall be: -40°C to 70°C operating

temperature range and 5-95% humidity, non-condensing.

- 10.2.4. The controller shall mount on the generator or remotely within 40 feet with viewable access.

10.3. Hardware Requirements

10.3.1. Control Panel shall include:

1. The control shall have a run-off/reset-auto three-position selector switch.
2. A controller-mounted, latch-type emergency stop pushbutton.
3. Five indicating lights: System Ready - green Not in Auto - yellow Programming Mode - yellow System Warning - yellow System Shutdown - red
4. Display with two lines of 20-alphanumeric characters, viewable in all light conditions.
5. Sixteen position snap action sealed keypad for menu selection and data entry.
6. For ease of use, an operating guide shall be printed on the controller faceplate.
7. An audible alarm with alarm silence capability.
8. Panel lights shall be supplied as standard.

10.4. Control Functional Requirements

- 10.4.1. Field-programmable time delay for engine start. Adjustment range 0-5 minutes in 1 second increments.
- 10.4.2. Field-programmable time delay engine cooldown. Adjustment range 0-10 minutes in 1 second increments.
- 10.4.3. Capability to start and run at user-adjustable idle speed during warmup for a selectable time period (0-10 minutes), until engine reaches preprogrammed temperature, or as supported by ECM-equipped engine.
- 10.4.4. The idle function including engine cooldown at idle speed.
- 10.4.5. Real-time clock and calendar for time stamping of events.
- 10.4.6. Output with adjustable timer for an ether injection starting system. Adjustment range, 0-10 seconds.
- 10.4.7. Output for shedding of loads if the generator set reaches a user programmable percentage of its kW rating. Load shed shall also be enabled if the generator set output frequency falls below 59 Hz.
- 10.4.8. Programmable cyclic cranking that allows up to six crank cycles and up to 35 seconds of crank time per crank cycle.
- 10.4.9. The capability to reduce controller current battery draw, for applications where no continuous battery charging is available. The controller vacuum fluorescent display should turn off automatically after the controller is inactive for 5 minutes.
- 10.4.10. Control logic with alternator protection for overload and short circuit matched to each individual alternator and duty cycle.
- 10.4.11. Control logic with RMS digital voltage regulation. A separate voltage regulator is not acceptable. The digital voltage regulator shall be applicable to single- or three-phase systems.
- 10.4.12. The capability to exercise the generator set by programming a running time into

the controller. This feature shall also be programmable through the PC software.

- 10.4.13. Control function shall include output voltage adjustment.
- 10.4.14. Battle switch function selection to override normal fault shutdowns, except emergency stop and overspeed shutdown.
- 10.4.15. The control shall detect the following conditions and display on control panel:
 - 1. Customer programmed digital auxiliary input ON (any of the 21 inputs available)
 - 2. Customer programmed analog auxiliary input out of bounds (any of 7 inputs for ECM equipped engines and 5 inputs for non ECM engines)
 - 3. Emergency stop
 - 4. High & low coolant temperature
 - 5. High oil temperature
 - 6. Controller internal fault
 - 7. Locked rotor - fail to rotate
 - 8. Low coolant level
 - 9. Low oil pressure
 - 10. Master switch error
 - 11. CSA-C282-09 common alarm
 - 12. Overcrank
 - 13. Overspeed with user-adjustable level, range 60-70 Hz.
 - 14. Overvoltage with user adjustable level, range 105% to 135%
 - 15. Overfrequency with user adjustable level, range 102% to 140%
 - 16. Underfrequency with user adjustable level, range 80% to 90%
 - 17. Undervoltage with user adjustable level, range 70% to 95%
 - 18. Coolant temperature signal loss
 - 19. Oil pressure gauge signal loss

Conditions resulting in generator warning (generator will continue to operate):

- 1. Battery charger failure
- 2. Customer programmed digital auxiliary input on (any of the 21 inputs available)
- 3. Customer programmed analog auxiliary input on (any of the 7 inputs available on ECM engines and 5 inputs for non ECM engines)
- 4. Power system supplying load
- 5. Ground fault detected - detection by others
- 6. High battery voltage - Level shall be user adjustable.
- 7. Range 29-33 volts for 24-volt systems.
- 8. High coolant temperature
- 9. Load shed

10. Loss of AC sensing
11. Underfrequency
12. Low battery voltage - level shall be user adjustable, range 20-25 volts for 24-volt systems.
13. Low coolant temperature
14. Low fuel level or pressure
15. Low oil pressure
16. CSA-C282-09 common alarms
17. Overcurrent
18. Speed sensor fault
19. Weak battery
20. Alternator protection activated

10.5. Control Monitoring Requirements

- 10.5.1. All monitored functions must be viewable on the control panel display.
- 10.5.2. The following generator set functions shall be monitored:
 1. All output voltages - single phase, three phase, line to line, and line to neutral, 0.25% accuracy
 2. All single phase and three phase currents, 0.25% accuracy
 3. Output frequency, 0.25% accuracy
 4. Power factor by phase with leading/lagging indication
 5. Total instantaneous kilowatt loading and kilowatts per phase, 0.5% accuracy
 6. kVARS total and per phase, 0.5% accuracy
 7. kVA total and per phase, 0.5% accuracy
 8. kW hours
 9. A display of percent generator set duty level (actual kW loading divided by the kW rating)
- 10.5.3. Engine parameters listed below shall be monitored: (*available with ECM equipped engines)
 1. Coolant temperature both in English and metric units
 2. Oil pressure in English and metric units
 3. Battery voltage
 4. RPM
 5. Lube oil temperature*
 6. Lube oil level*
 7. Crankcase pressure*
 8. Coolant level*
 9. Coolant pressure*
 10. Fuel pressure*
 11. Fuel temperature*

- 12. Fuel rate*
- 13. Fuel used during the last run*
- 14. Ambient temperature*

10.5.4. Operational records shall be stored in the control beginning at system start-up.

- 1. Run time hours
- 2. Run time loaded hours
- 3. Run time unloaded hours
- 4. Number of starts
- 5. Factory test date
- 6. Last run data including date, duration, and whether loaded or unloaded
- 7. Run time kilowatt hours

10.5.5. The following operational records shall be a resettable for maintenance purposes:

- 1. Run time hours
- 2. Run time loaded hours
- 3. Run time unloaded hours
- 4. Run time kilowatt hours
- 5. Days of operation
- 6. Number of starts
- 7. Start date after reset

10.5.6. The controller shall store the last one hundred generator set system events with date and time of the event.

10.5.7. For maintenance and service purposes, the controller shall store and display on demand the following information:

- 1. Manufacturer's model and serial number
- 2. Battery voltage
- 3. Generator set kilowatt rating
- 4. Rated current
- 5. System voltage
- 6. System frequency
- 7. Number of phases

10.6. Inputs and Outputs

10.6.1. Inputs

- 1. There shall be 21 dry contact inputs that can be user-configured to shut down the generator set or provide a warning.
- 2. There shall be 7 user-programmable analog inputs for ECM-equipped engines (5 for non-ECM engines) for monitoring and control.
- 3. Each analog input can accept 0-5 volt analog signals
- 4. Resolution shall be 1:10,000

5. Each input shall include range settings for 2 warnings and 2 shutdowns.
6. All values shall be on the control panel display.
7. Shall be user-assigned.
8. Additional standard inputs required:
 - Input for an external ground fault detector. Digital display shall show "ground fault" upon detection of a ground fault.
 - Reset of system faults.
 - Remote two-wire start.
 - Remote emergency stop.
9. Idle mode enable.

10.6.2. Outputs

1. All CSA-C282-09 outputs shall be available.
2. Thirty outputs shall be available for interfacing to other equipment:
 - All outputs shall be user-configurable from a list of 25 functions and faults.
 - These outputs shall drive optional dry contacts.
3. A programmable user-defined common fault output with over 40 selections shall be available.

10.7. Communications

- 10.7.1. If the generator set engine is equipped with an ECM (engine control module), the controller shall communicate with the ECM for control, monitoring, diagnosis, and meet SAE J1939 standards.
- 10.7.2. Industry standard Modbus communication shall be available.
- 10.7.3. A Modbus master shall be able to monitor and alter parameters, and start or stop a generator.
- 10.7.4. The controller shall have the capability to communicate to a personal computer (IBM or compatible) running Windows '9X or Windows NT.
- 10.7.5. Communications shall be available for serial, CAN, and Ethernet bus networks.
- 10.7.6. A variety of connections shall be available based on requirements:
 1. A single control connection to a PC.
 2. Multiple controls on an intranet network connected to a PC.
 3. A single control connection to a PC via phone line.
 4. Multiple controls to a PC via phone line.
- 10.7.7. Generator and transfer switch controls shall be equipped with communications modules capable of connecting to the same communication network.
- 10.7.8. The capability to connect up to 128 controls (any combination of generator sets and transfer switches) on a single network shall be supported.
- 10.7.9. Cabling shall not be limited to the controller location.
- 10.7.10. Network shall be self-powered.

11. Accessories

- 11.1. **Air Restriction Indicator.** The air cleaner restriction indicator shall indicate the need for maintenance of the air cleaners.
- 11.2. **Battery Charger.** A 6-ampere automatic float to equalize battery charger with the following features:
 - 1. 12 VDC output
 - 2. 1% steady-state voltage regulation from no load to full load over 10% AC input line voltage variation
 - 3. LED lamps for charge state indication
 - 4. Temperature compensated for ambient temperatures for -40°C to 70°C
 - 5. Potting for durability
 - 6. Short-circuit and reverse polarity protection
 - 7. UL 1236 listed
- 11.3. **Battery Rack and Cables.** Battery rack and battery cables capable of holding the manufacturer's recommended batteries shall be supplied.
- 11.4. **Circuit Breaker.** The generator shall come with a primary, factory installed, 100% rated line circuit breaker of 200 amperes that is UL2200 listed. Line circuit breakers shall be sized for the rated ampacity of the genset. Load side lugs shall be provided from the factory. The line circuit breaker shall include auxiliary contacts, shunt trip, undervoltage trip, alarm switch, and overcurrent switch functionality. Load side breaker connections made at the factory shall be separated from field connections. When GFI breakers are required, additional neutrals shall be factory installed.
- 11.5. **Dry Contact Kits.** The 10 Dry Contact Kit shall provide normally open and normally closed, gold-plated contacts in a form C configuration to activate warning devices and other customer-provided accessories allowing remote monitoring of the generator set. Typically, lamps, audible alarms, or other devices signal faults or status conditions.
- 11.7. **Failure Relay.**
 - 11.7.1. The common failure relay shall remotely signal auxiliary faults, emergency stop, high engine temperature, low oil pressure, overcrank, and overspeed via one single-pole, double-throw relay with 10 amps at 120 VAC contacts.
 - 11.7.2. The relay contacts shall be gold flashed to allow use of low current draw devices (100ma @ 28VDC min.).
 - 11.7.3. Once energized the relay shall remain latched until the system is reset by the main controller switch.
- 11.8. **Remote Annunciator Panel.** The remote annunciator shall meet CSA-C282-09 Table 2 requirements and enable remote viewing of the generator status. The panel shall be connected to the generator controller via either network communication wires or via hard wired connections. Options shall be available to provide ATS source availability, contactor position, and loaded or unloaded test for up to four transfer switches. The panel shall have the capability to be either flush- mounted or surface-mounted. The annunciator shall meet UL508 requirements.
- 11.9. **Rodent Guards.** Generator rodent guards shall prevent intrusion and protect internal components.
- 11.10. **Run Relay.** The run relay shall provide a three-pole, double-throw relay with 10-amp/ 250 VAC contacts to indicate that the generator is running. The relay provides three sets of dry contacts for energizing or de-energizing customer devices while the generator is running

(e.g. louvers, indicator lamps, etc.)

- 11.11. **Skid End Caps.** The generator shall include skid end caps.
- 11.12. **Standard Air Cleaner.** The air cleaner shall provide engine air filtration which meets the engine manufacturer's specifications under typical operating conditions.
- 11.13. **Block Heater.** The block heater shall be thermostatically controlled and sized to maintain manufacturers recommended engine coolant temperature to meet the start-up requirements of CSA-C282-09.

12. Sound Enclosure

- 12.1. The enclosure shall be constructed from high strength, low alloy steel, aluminum or galvanized steel.
- 12.2. The enclosure shall be finish coated with powder baked paint for superior finish, durability and appearance. Enclosures will be finished in the manufacturer's standard color.
- 12.3. The enclosure shall allow the generator set to operate at full load in an ambient of 40°C - 45°C with no additional de-rating of the electrical output.
- 12.4. The enclosure shall be equipped with sufficient side and end doors to allow access for operation, inspection, and service of the unit and all options. Minimum requirements are two doors per side. When the generator set controller faces the rear of the generator set, an additional rear facing door is required. Access to the controller and main line circuit breaker must meet the requirements of the Ontario Electric Code.
- 12.5. Doors shall be equipped with lockable latches. Locks must be keyed alike.
- 12.6. A duct between the radiator and air outlet shall be provided to prevent re-circulation of hot air.
- 12.7. The complete exhaust system shall be internal to the enclosure.
- 12.8. All acoustical insulation shall be fixed to the mounting surface with pressure sensitive adhesive or mechanically fastened. In addition, all acoustical insulation mounted on a horizontal plane shall be mechanically fastened. The acoustical insulation shall be flame retardant.
- 12.9. The enclosure shall include an exhaust scoop to direct the cooling air in a vertical direction.
- 12.10. The enclosure shall include a mounted load centre to be fed from the buildings normal electrical supply. The load centre shall include individual feeder breakers pre-wired to all engine and enclosure electrical devices requiring normal supply power including, but not limited to: block heater, battery heater, battery charger, enclosure space heater, enclosure dampers, and 2-hour battery back-up emergency light pack (as specified in CSA-C282-09).
- 12.11. The enclosure dampers and space heater shall be configured so as to keep the interior space of the enclosure at 10°C at all times when the engine is not running. Dampers shall be installed in a fail-safe to open configuration. The dampers shall be configured to open upon failure of normal power. Dampers shall also be configured to open upon engine running, regardless of the condition of normal supply power.
- 12.12. If the plans show the generator is not being installed on a solid concrete pad and will be elevated in any way such the bottom of the generator set enclosure will be open to the elements, provide a solid sheet metal bottom to the enclosure. The solid bottom shall be installed in such a way that it does not compromise the enclosure heating, engine cooling, or sound emissions of the unit, while also preventing rodent intrusions.

END OF SECTION