



ITEM	2012 ONTARIO BUILDING CODE DATA MATRIX - PART 3										CODE REFERENCE											
	REFERENCES ARE TO DIV. 9 UNLESS NOTED (A) FOR DIV. A OR (C) FOR DIV. C																					
01	PROJECT DESCRIPTION: NEW CONSTRUCTION OF 615SQM POLICE DISPATCH FACILITY					<input checked="" type="checkbox"/> NEW <input type="checkbox"/> ADDITION <input type="checkbox"/> ALTERATION		<input type="checkbox"/> CHANGE OF USE		<input checked="" type="checkbox"/> PART 3 1.1.2.[A]	<input type="checkbox"/> PART 9											
02	MAJOR OCCUPANCY(S): <b>GROUP D - BUSINESS AND PERSONAL SERVICES</b>										3.1.2.1.(1) <b>APPENDIX "A"</b>											
03	IMPORTANCE CATEGORY: <input type="checkbox"/> LOW <input type="checkbox"/> MED <input type="checkbox"/> HIGH <input checked="" type="checkbox"/> POST-DISASTER																					
04	BUILDING AREA (m²):		EXISTING: 0 m²		NEW: 620 m²		TOTAL: 620 m²		1.4.1.2.[A]													
05	GROSS FLOOR AREA (m²):		EXISTING: 0 m²		NEW: 620 m²		TOTAL: 620 m²		1.4.1.2.[A]													
	INTERNAL MEZZANINE(S) AREA (m²):		EXISTING: 0 m²		NEW: 0 m²		TOTAL: 0 m²		3.2.1.1.(3) - (8)													
	EXTERNAL MEZZANINE(S) AREA (m²):		EXISTING: 0 m²		NEW: 0 m²		TOTAL: 0 m²															
	MEZZANINE 10% OR LESS ENCLOSED AREA (m²):					0 m²																
	MEZZANINE 40% OR MORE ENCLOSED AREA (m²):					0 m²																
06	NUMBER OF STOREYS:		ABOVE GRADE: 1		BELOW GRADE: 0				1.4.1.2.[A] & 3.2.1.1.													
07	BUILDING HEIGHT (m):		5.9 m		HIGH POINT				1.4.1.2.[A]													
08	NUMBER OF STREETS / FIRE FIGHTER ACCESS:		1						3.2.2.10. & 3.2.5.													
09	BUILDING CLASSIFICATION: 3.2.2.56 - GROUP D, UP 2 STOREYS, SPRINKLERED										3.2.2.56											
10	SPRINKLER SYSTEM PROPOSED:					<input checked="" type="checkbox"/> ENTIRE BUILDING					3.2.2.56											
						<input type="checkbox"/> SELECTED COMPARTMENTS					3.2.1.5.											
						<input type="checkbox"/> SELECTED FLOOR AREAS					3.2.2.17.											
						<input type="checkbox"/> BASEMENT ONLY					INDEX											
						<input type="checkbox"/> IN LIEU OF ROOF RATING					INDEX											
						<input type="checkbox"/> NOT REQUIRED																
11	STANDPIPE SYSTEM REQUIRED: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO										3.2.9. 3.2.8.4.(1) 3.2.8.4.(2)(9)											
	HOSE CABINET LOCATION: N/A										3.2.4.											
12	FIRE ALARM REQUIRED: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO										3.2.5.7.											
13	WATER SERVICE/SUPPLY IS ADEQUATE: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO										3.2.6.											
14	HIGH BUILDING: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO										# IF YES, REFER TO HIGH BUILDING REQUIREMENTS CHART											
15	CONSTRUCTION RESTRICTIONS: REQUIRED: <input type="checkbox"/> COMBUSTIBLE PERMITTED <input type="checkbox"/> NON-COMBUSTIBLE <input checked="" type="checkbox"/> BOTH PROVIDED: <input type="checkbox"/> COMBUSTIBLE <input checked="" type="checkbox"/> NON-COMBUSTIBLE <input type="checkbox"/> BOTH										3.2.2.20. - 3.2.2.83.											
16	HAZARDOUS SUBSTANCES: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO										3.3.1.2. & 3.3.1.19.											
17	BARRIER-FREE DESIGN: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF NO, EXPLAIN: WRITE EXPLANATION HERE										3.8.											
18	BARRIER-FREE ENTRANCES: NUMBER OF ENTRANCES REQ'D TO BE BARRIER FREE: 1 POWER DOOR OPERATORS REQ'D: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO										3.8.1.2.											
											3.8.3.3.											
19	REQUIRED FIRE RESISTANCE RATINGS:		HORIZONTAL ASSEMBLIES FIRE RESISTANCE RATINGS (F.R.R.)				LISTED DESIGN No. (ULC) OR ASSEMBLY DESCRIPTION (SB-2)															
			FLOOR: 0 (NON-COMBUSTIBLE)				FLOOR: N/A				3.2.2.56											
			ROOF: N/A				ROOF: N/A				3.2.2.56											
			MEZZANINE: N/A				MEZZANINE: N/A				3.2.2.56											
	REQUIRED SEPARATION FIRE RESISTANCE RATINGS:		FIRE RESISTANCE RATINGS OF SUPPORTING MEMBERS (F.R.R.)				LISTED DESIGN No. (ULC) OR ASSEMBLY DESCRIPTION (SB-2)															
			FLOOR: 0 (NON-COMBUSTIBLE)				FLOOR: N/A				3.2.2.56											
			ROOF: N/A				ROOF: N/A				3.2.2.56											
			MEZZANINE: N/A				MEZZANINE: N/A				3.2.2.56											
20	REQUIRED SEPARATION FIRE RESISTANCE RATINGS:		SPACE NAME:				REQUIRED RATING:		SPECIFIC REFERENCE(S):													
			SUITES				N/A															
			PUBLIC CORRIDORS				N/A															
			JANITOR ROOMS				0		3.3.1.20.(3)													
			SERVICE ROOMS				1		3.6.2.1.(1)													
			VERTICAL SERVICE SPACES				N/A															
			HORIZONTAL SERVICE SPACES				N/A															
			ELEVATOR - HOISTWAY				N/A															
			ELEVATOR - MACHINE ROOM				N/A															
			EXITS - STAIR TOWERS				N/A															
			EXITS - CORRIDORS				N/A															
			LOBBY SEPARATION TO OTHER EXITS				N/A															
			21	EXITS:								3.4.										
MAXIMUM TRAVEL DISTANCE						45 m		3.4.2.5.(1)(c)														
MAXIMUM DEAD END CORRIDOR						9 m		3.3.1.9.(11)														
22	EXPPOSED BUILDING FACE & SPATIAL SEPARATION:										3.2.3.											
	WALL FACE		AREA OF E.B.F. (m²)		AREA OF U.P.O. (m²)		LIMITING DISTANCE (m)		RATIO LH OR HL (1 : x)		PERMITTED MAX. % OF OPENINGS		PROPOSED MAX. % OF OPENINGS		REQUIRED F.R.R. OF WALL (HR)		LISTED DESIGN OR DESCRIPTION		NON-COMB. CONSTRUCTION REQ'D		NON-COMB. CLADDING REQ'D	
	NORTH		154		13.6		19.7		1 : 4		100		8.83		N/A		-		NO		NO	
	EAST		141		5		37.7		1 : 4		100		3.55		N/A		-		NO		NO	
	SOUTH		154		2		10.7		1 : 4		100		1.3		N/A		-		NO		NO	
	WEST		141		2.7		10.7		1 : 4		100		1.91		N/A		-		NO		NO	
	REFERENCE: Table 3.2.3.1.D																					
23	OCCUPANT LOAD: (REFER TO OCCUPANT LOAD CHART FOR SPECIFICS)										3.1.17.		9.9.1.3.									
	OCCUPANT LOAD BASED ON: <input checked="" type="checkbox"/> m²/PERSON <input type="checkbox"/> DESIGN OF BUILDING																					
	LEVEL:		OCCUPANCY:		AREA:		LOAD:		PERSONS:													
	LEVEL 01:		GROUP D - OFFICES		375 m²		9.3		41													
TOTAL OCCUPANT LOAD: 41 PERSONS																						
24	WASHROOM REQUIREMENTS: OCCUPANT LOAD FOR PLUMBING = 375 / 14 = 27 PERSONS					REQUIRED FIXTURES:		PROVIDED FIXTURES:		3.7.4. 3.7.4.2.(1) (AREA PER PERSON IS 14 m²), 3.7.4.2.(7),Table 3.7.4.7 (UNIVERSAL COUNTS AS 1 MALE AND 1 FEMALE WASHROOM), 3.7.4.2.(8)(b)												
	LEVEL:		OCCUPANCY:		PERSONS:		MALE FEMALE		MALE FEMALE													
	LEVEL 01:		GROUP D - OFFICES		14 PER SEX		2 2		2 2													
TOTALS: 1 UNIVERSAL, 1 MALE, 1 FEMALE																						
25	EXIT WIDTH REQUIREMENTS EXIT WIDTH REQUIRED: 41 x 6.1 mm = 250.1 mm EXIT WIDTH PROVIDED: 1,930 mm + 965 mm = 2,995 mm										Table 3.1.17.1 3.4.3.2.(1)(a)											

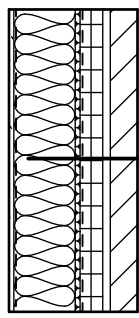


GENERAL NOTES

- ALL INTERIOR WALL PARTITIONS AND CEILINGS TO BE SEISMICALLY RESTRAINED.
- FOR CEILINGS AND SOFFITS PROVIDE ALL REQUIRED SEISMIC RESTRAINTS INCLUDING COMPRESSION STRUT, SEISMIC CLIP AND EDGE STRIP INCLUDING 2.5mm DIAMETER WIRE RATED FOR SEISMIC.
- ALL PARTITIONS SHOULD BE FULL-HEIGHT, SLAB TO SLAB.
- WHERE MULTIPLE LAYERS OF DRYWALL ARE USED, STAGGER THE JOINTS BETWEEN LAYERS.
- WHENEVER GWB MEETS ANOTHER MATERIAL, SEAL WITH ACOUSTICAL SEALANT.
- NO CONTINUOUS GWB LAYERS BETWEEN ROOMS, I.E. INTERRUPT AT ALL INTERSECTIONS.
- USE SOUND BARRIER PADS FOR ALL OUTLET BOXES IN SOUND RATED PARTITIONS.
- PROVIDE 5-SIDED GWB ENCLOSURES AROUND OUTLET/JUNCTION BOXES LARGER THAN FOUR-GANG.
- FILL PENETRATIONS THROUGH ACOUSTICALLY RATED PARTITIONS (DUCTS, PIPES, CABLE TRAYS ETC.) WITH BATT INSULATION AND/OR FIRE SAFING AND/OR SEAL. AIRTIGHT WITH ACOUSTICAL SEALANT.
- AVOID RECESSED ELEMENTS IN STC 50 OR HIGHER PARTITIONS.
- USE MOISTURE RESISTANT GYPSUM ON ALL GYPSUM WALLS THAT ARE IN MOISTURE SENSITIVE AREAS SUCH AS WASHROOMS, SHOWERS, ETC.
- LIMITING HEIGHTS FOR PARTITIONS ARE APPROXIMATELY CALCULATED. CONTRACTOR TO VERIFY LIMITING HEIGHTS AND DEFLECTIONS AND ENSURE PARTITIONS ARE USED APPROPRIATELY.

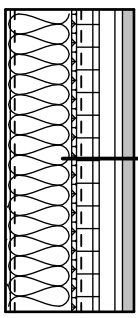
EXTERIOR WALL ASSEMBLIES:

EW1 - EXTERIOR WALL - BRICK ON METAL STUDS [425mm]



- 90mm BRICK VENEER w/ 10mm COURSE TYP.
- 25mm AIR SPACE
- 75mm ISO RIGID INSULATION (R-18)
- AIR BARRIER
- 16mm GYPSUM SHEATHING
- 203mm METAL STUDS @ 400 O.C.
- C/W BATT INSULATION (R-24)
- VAPOUR BARRIER
- 16mm GYPSUM BOARD

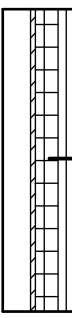
EW2 - EXTERIOR WALL - ACM PANELS ON METAL STUDS [425mm]



- 38mm ACM PANELS ( COLOUR AS SCHEDULED)
- 25mm FURRING CHANNELS @ 400 O.C.
- 127mm THERMALLY BROKEN VERTICAL CLIP @ 600mm O.C. VERT. AND 400mm O.C. HORIZ. C. W. 75mm ISO RIGID INSULATION (R-18)
- AIR BARRIER
- 16mm GYPSUM SHEATHING
- 203mm METAL STUDS @ 400 O.C. (R-24)
- C/W BATT INSULATION (R-24)
- VAPOUR BARRIER
- 16mm GYPSUM BOARD

\* USE 16mm CEMENT BACKER BOARD WHERE TILE IS BEING APPLIED

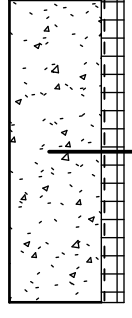
EW4 - EXTERIOR WALL - ALUMINUM SIDING ON METAL STUDS [246mm]



- 12mm ALUMINUM SIDING (LONGBOARD)
- 22mm FURRING CHANNELS @ 400 O.C.
- 102mm THERMALLY BROKEN VERTICAL CLIP @ 400 O.C. VERT. AND 600 O.C. HORIZ. C/W. 75mm ISO RIGID INSULATION
- 16mm GYPSUM SHEATHING
- 92mm METAL STUDS @ 400 O.C.

FOUNDATION WALL ASSEMBLIES:

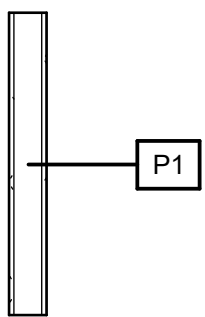
FW1 - STRUCTURAL FOUNDATION WALL



- CAST IN PLACE CONCRETE FOUNDATION WALL (SEE STRUCTURAL)
- 50mm INSULATION
- WATERPROOFING MEMBRANE

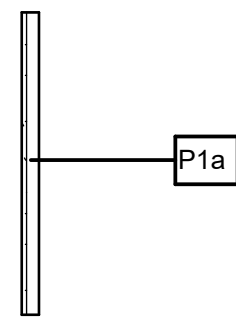
INTERIOR PARTITION ASSEMBLIES:

P1 - INTERIOR PARTITION [124mm] (1 HR F.R.R. - UL U 419)



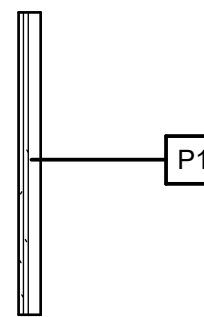
- 16mm TYPE "X" GYPSUM BOARD
  - 92mm METAL STUDS @400mm O.C.
  - 16mm TYPE "X" GYPSUM BOARD
- LIMITING HEIGHTS:  
5588mm L/240 ( for 5psf)  
4900 mm L/360 ( for 5 psf)

P1a - INTERIOR FURRING [67mm]



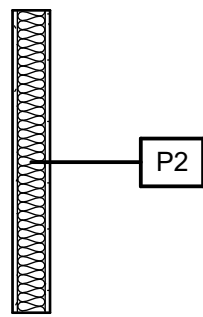
- 16mm GYPSUM BOARD
- 41mm METAL STUDS @400mm O.C.

P1b - INTERIOR FURRING [73mm] ( 1 HR F.R.R.)



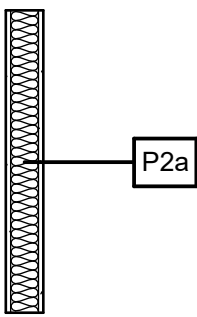
- 2 LAYERS 16mm TYPE "X" GYPSUM BOARD
- 41mm METAL STUDS @400mm O.C.

P2 - FULL HEIGHT INTERIOR PARTITION [124mm, STC 40]



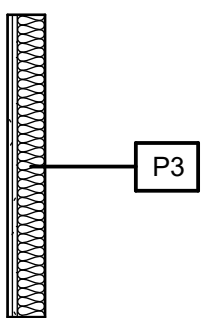
- 16mm GYPSUM BOARD
  - 92mm METAL STUDS @400mm O.C.
  - C/W MINERAL FIBRE ACOUSTIC BATT INSULATION
  - 16mm GYPSUM BOARD
- LIMITING HEIGHTS:  
5588mm L/240 ( for 5psf)  
4900 mm L/360 ( for 5 psf)

P2a - FULL HEIGHT INTERIOR PARTITION [124mm, STC 40] (1 HR F.R.R.)



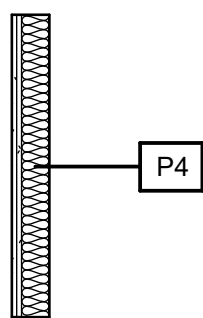
- 16mm CEMENT BACKER BOARD
  - 92mm METAL STUDS @400mm O.C.
  - C/W MINERAL FIBRE ACOUSTIC BATT INSULATION
  - 16mm GYPSUM BOARD
- LIMITING HEIGHTS:  
5588mm L/240 ( for 5psf)  
4900 mm L/360 ( for 5 psf)

P3 - FULL HEIGHT INTERIOR PARTITION [124mm, STC 45/50]



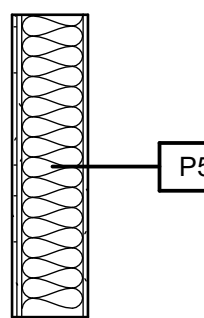
- 2 LAYERS 16mm GYPSUM BOARD
  - 92mm METAL STUDS @400mm O.C.
  - C/W MINERAL FIBRE ACOUSTIC BATT INSULATION
- LIMITING HEIGHTS:  
5588mm L/240 ( for 5psf)  
4900 mm L/360 ( for 5 psf)

P4 - FULL HEIGHT INTERIOR PARTITION [124mm, STC 45/50]



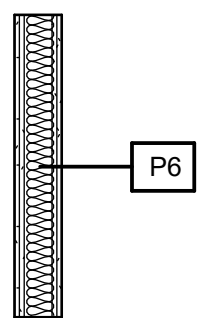
- 1 LAYER 16mm CEMENT BACKER BOARD
  - 1 LAYER 16mm MOISTURE RESISTANT GYPSUM BOARD
  - 92mm METAL STUDS @400mm O.C.
  - C/W MINERAL FIBRE ACOUSTIC BATT INSULATION
- LIMITING HEIGHTS:  
5588mm L/240 ( for 5psf)  
4900 mm L/360 ( for 5 psf)

P5 - FULL HEIGHT INTERIOR PARTITION [251mm, STC 45/50]



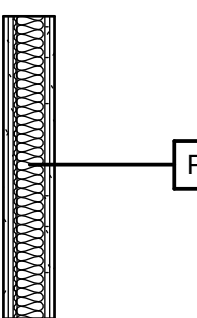
- 2 LAYERS 16mm TYPE "X" GYPSUM BOARD
- 203mm METAL STUDS @400mm O.C.
- C/W MINERAL FIBRE ACOUSTIC BATT INSULATION
- 1 LAYER 16mm TYPE "X" GYPSUM BOARD

P6 - FULL HEIGHT INTERIOR PARTITION [156mm, STC 50]



- 2 LAYERS 16mm TYPE "X" GYPSUM BOARD
  - 92mm METAL STUDS @400mm O.C.
  - C/W MINERAL FIBRE ACOUSTIC BATT INSULATION
  - 2 LAYERS 16mm TYPE "X" GYPSUM BOARD
- LIMITING HEIGHTS:  
5588mm L/240 ( for 5psf)  
4900 mm L/360 ( for 5 psf)

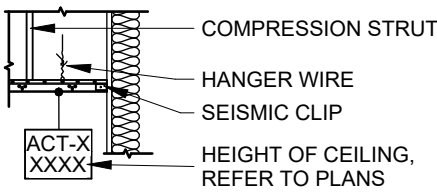
P7 - FULL HEIGHT INTERIOR PARTITION [169mm, STC 60] (1 HR F.R.R. - UL U 419)



- 2 LAYERS 16mm TYPE "X" GYPSUM BOARD
  - 92mm METAL STUDS @400mm O.C.
  - C/W MINERAL FIBRE ACOUSTIC BATT INSULATION
  - 13mm RESILIENT SOUND ISOLATION CLIPS
  - 2 LAYERS 16mm TYPE "X" GYPSUM BOARD
- LIMITING HEIGHTS:  
5588mm L/240 ( for 5psf)  
4900 mm L/360 ( for 5 psf)

CEILING ASSEMBLIES:

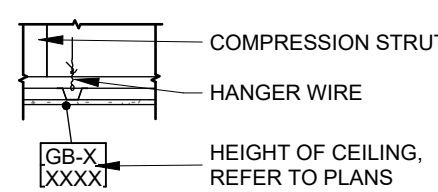
TYPICAL ACOUSTIC TILE CEILING



- ACT-1 CEILING
- 610 x 610 (ACT-1) ACOUSTIC CEILING TILE IN EXPOSED T-BAR SUSPENSION SYSTEM
  - PROVIDE SYSTEM FOR SEISMIC RESTRAINT FOR CEILINGS

- ACT-2 CEILING
- 1220 x 1220 (ACT-2) ACOUSTIC CEILING TILE IN EXPOSED T-BAR SUSPENSION SYSTEM
  - PROVIDE SYSTEM FOR SEISMIC RESTRAINT FOR CEILINGS

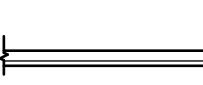
TYPICAL GYPSUM BOARD CEILING



- GC-1 - TYPICAL GYPSUM CEILING ASSEMBLY
- STEEL GRID SUSPENSION FRAMING
  - 16mm GYPSUM BOARD
  - PROVIDE SYSTEM FOR SEISMIC RESTRAINT FOR CEILINGS

SOFFIT ASSEMBLIES:

AS-1 SOFFIT



- 92mm METAL STUD RUN PERPENDICULARLY TO THE ORIENTATION OF THE LONGBOARD
- 16mm EXTERIOR SHEATHING
- AIR BARRIER
- 102mm THERMALLY BROKEN HORIZONTAL CLIP @ 400 O.C. VERT. AND 600 O.C. HORIZ. C/W. 75mm ISO RIGID INSULATION
- 22 METAL FURRING CHANNELS @ 400 O.C. RUN PERPENDICULARLY TO THE ORIENTATION OF THE LONGBOARD
- 12mm ALUMINUM SIDING (WOOD PATTERN)
- PROVIDE SYSTEM FOR SEISMIC RESTRAINT FOR CEILINGS

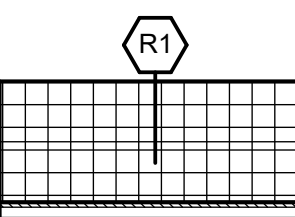
ACM-1 SOFFIT



- 41mm METAL STUD FRAMING
- 16mm EXTERIOR SHEATHING
- AIR BARRIER
- 78mm THERMALLY BROKEN HORIZONTAL CLIP @ 400 O.C. VERT. AND 600 O.C. HORIZ. C/W. 75mm ISO RIGID INSULATION
- 22 METAL FURRING CHANNELS @ 400 O.C.
- 38mm ALUMINUM COMPOSITE PANELS
- PROVIDE SYSTEM FOR SEISMIC RESTRAINT FOR CEILINGS

ROOF ASSEMBLIES:

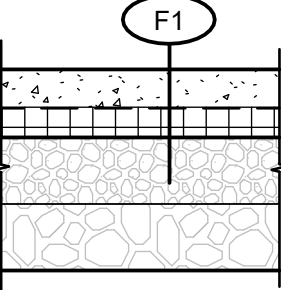
R1 - ROOF [±L 260mm]



- SBS MODIFIED BITUMINOUS MEMBRANE
- SBS MEMBRANE UNDERLAYMENT (PROTECTION BOARD)
- TAPERED INSULATION (REFER TO A112 FOR SLOPES)
- 200mm ISO RIGID INSULATION (R49)
- AIR/VAPOUR BARRIER
- 16mm GYPSUM ROOF BOARD
- METAL DECK (SEE STRUCTURAL)

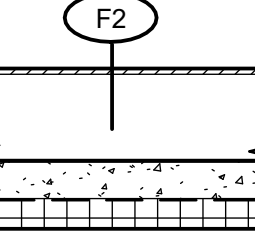
FLOOR ASSEMBLIES:

F1 - SLAB ON GRADE



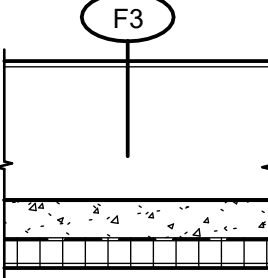
- CAST-IN-PLACE CONCRETE SLAB ON GRADE (SEE STRUCTURAL)
- CONTINUOUS VAPOUR BARRIER
- 100mm RIGID INSULATION (R24)
- GRANULAR "A" FILL (SEE STRUCTURAL)
- GRANULAR "B" FILL (SEE STRUCTURAL)

F2 - RAISED FLOOR SYSTEM [300mm]



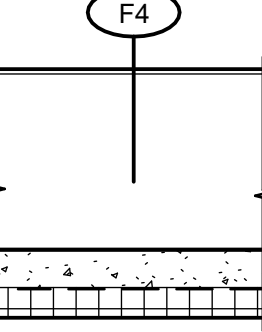
- 300mm RAISED FLOOR SYSTEM (FOR FLOOR COVERING SEE FINISHES PLAN)
- FLOOR TYPE F1 BELOW

F3 - RAISED FLOOR SYSTEM [460mm]



- 460mm RAISED FLOOR SYSTEM (FOR FLOOR COVERING SEE FINISHES PLAN)
- FLOOR TYPE F1 BELOW

F4 - RAISED FLOOR SYSTEM [600mm]



- 600mm RAISED FLOOR SYSTEM (FOR FLOOR COVERING SEE FINISHES PLAN)
- FLOOR TYPE F1 BELOW

AECOM

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NORTH:

Niagara Region



SEAL:

NRPS NG911 BACKUP CENTRE  
5 LINCOLN STREET  
WELLAND, ONTARIO

Owner's Project Number: 60686829  
Owner's Contract Number: 987654321

Mark	Date	Description
G	Date 7	ADDENDUM #1
F	2025-01-23	ISSUED FOR TENDER
E	2024-12-13	IFP RE-SUBMISSION
D	2024-11-29	ISSUED FOR OWNER REVIEW
C	2024-10-30	ISSUED FOR PERMIT
B	2024-08-30	ISSUED FOR 30% CD
A	2024-07-26	ISSUED FOR 100% DD

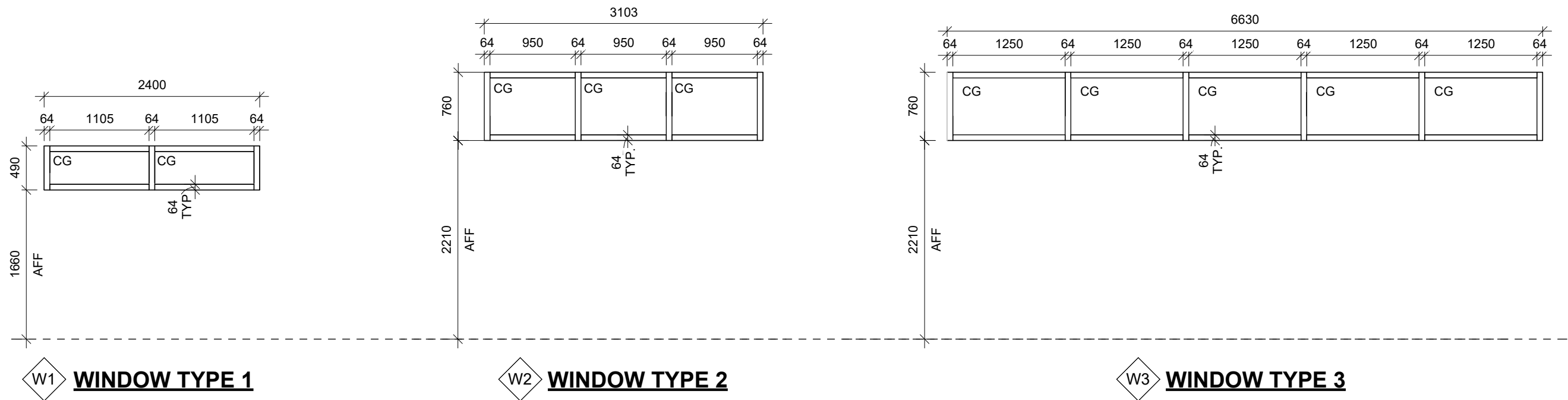
Revision History		Version
Filename :		2020.2.
Project Number <b>60686829</b>	Project Manager : <b>John Page</b>	
Project Administrator :	BIM/VDC Manager :	
Sustainability Target : <b>LEED Silver</b>	IPMS 1 (m <sup>2</sup> ) :	IPMS 2 (m <sup>2</sup> ) :
Designed : <b>Designer</b>	Date (yyyy-mm-dd) :	
Drawn : <b>Author</b>	Date (yyyy-mm-dd) :	
Reviewed :	Date (yyyy-mm-dd) :	
Checked : <b>Allan Man</b>	Date (yyyy-mm-dd) :	
Approved : <b>Approver</b>	Date (yyyy-mm-dd) :	

BUILDING ASSEMBLIES

Autodesk Docs/JP-AMER (CAN) 60686829-NRPS 911 Backup\_Dispatch/60686829-NRPS 911 Backup\_Dispatch - BLD - RVT24.rvt  
Print Date: 10/02/2025 13:42:22  
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WINDOW SCHEDULE						
TYPE	QUANTITY	WIDTH	HEIGHT	SILL HEIGHT	U-VALUE	COMMENTS
W1	1	2400	490	1660	0.80	TRIPLE GLAZED LOW-E
W2	2	3103	760	2210	0.80	TRIPLE GLAZED LOW-E
W3	1	6630	760	2210	0.80	TRIPLE GLAZED LOW-E

WINDOW TYPES

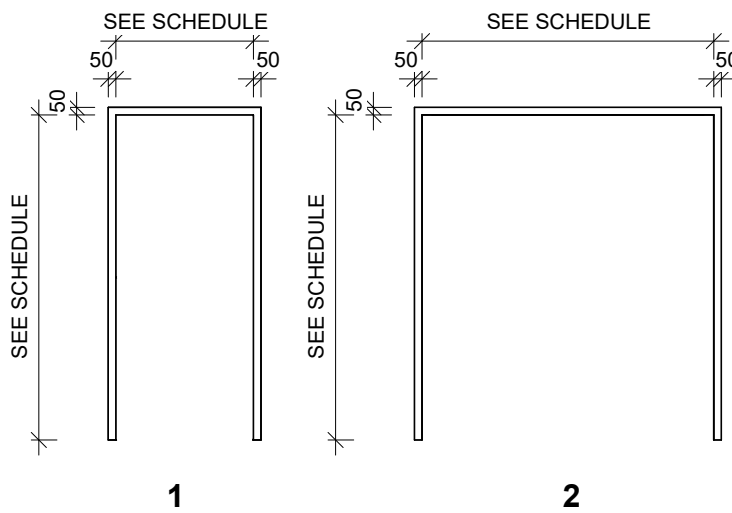


DOOR AND FRAME SCHEDULE

DOOR No.	DOOR							FRAME			ACOUSTIC INSULATION	INSULATION	FIRE RATING	HARDWARE GROUP
	WIDTH	HEIGHT	THICKNESS	TYPE	MATERIAL	FINISH	GLAZING	TYPE	MATERIAL	FINISH				
D101a	1930	2134	45	D	HM	PT	TG	2	STL	PT	-	YES	-	1
D101b	1930	2134	45	D	HM	PT	TG	2	STL	PT	-	-	-	2
D102	965	2134	45	A	HM	PT	N/A	1	STL	PT	35	-	-	8
D103A	965	2134	45	B	HM	PT	FG	1	STL	PT	40	-	-	4
D103B	965	2134	45	B	HM	PT	FG	1	STL	PT	40	-	-	4
D103C	914	2150	45	A	HM	PT	N/A	1	STL	PT	-	YES	-	3
D104	965	2134	45	B	HM	PT	FG	1	STL	PT	50	-	-	5
D105	965	2134	45	B	HM	PT	FG	1	STL	PT	50	-	-	5
D107	965	2134	45	B	HM	PT	FG	1	STL	PT	50	-	-	5
D108	965	2134	45	A	HM	PT	TG	1	STL	PT	50	-	-	5
D109	965	2134	45	A	HM	PT	N/A	1	STL	PT	35	-	-	7
D110	965	2134	45	A	HM	PT	N/A	1	STL	PT	35	-	-	7
D111	965	2134	45	A	HM	PT	N/A	1	STL	PT	35	YES	-	9
D112	914	2150	45	C	HM	PT	TG	1	STL	PT	-	YES	-	3
D113A	965	2134	45	B	HM	PT	TG	1	STL	PT	40	-	-	5
D113B	965	2134	45	B	HM	PT	TG	1	STL	PT	40	-	-	5
D114	965	2134	45	A	HM	PT	N/A	1	STL	PT	50	YES	45 MIN	6
D115	965	2134	45	A	HM	PT	N/A	1	STL	PT	50	YES	45 MIN	6
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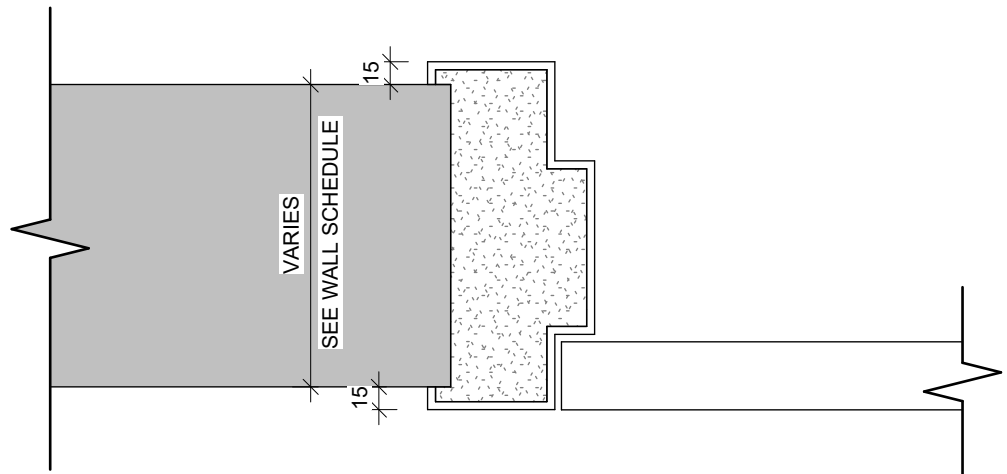
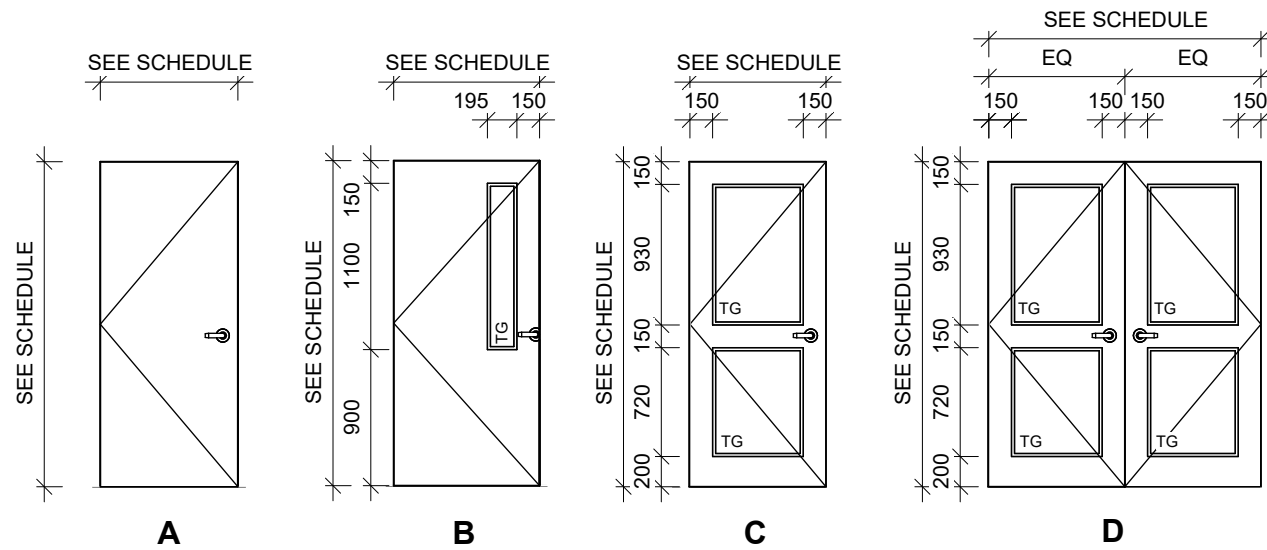
Grand total: 19

FRAME ELEVATIONS



DOOR ELEVATIONS

NOTE: - SEE MECHANICAL FOR COORDINATION OF DOOR UNDERCUTS AND TRANSFER GRILLES



1 TYPICAL INTERIOR JAMB PLAN DETAIL

1 : 5

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NORTH:

Niagara Region



SEAL:

NRPS NG911 BACKUP CENTRE  
5 LINCOLN STREET  
WELLAND, ONTARIO

Owner's Project Number: 60686829  
Owner's Contract Number: 987654321

G	Date 7	ADDENDUM #1
F	2025-01-23	ISSUED FOR TENDER
E	2024-12-13	IFP RE-SUBMISSION
D	2024-11-29	ISSUED FOR OWNER REVIEW
C	2024-10-30	ISSUED FOR PERMIT
B	2024-08-30	ISSUED FOR 30% CD
A	2024-07-26	ISSUED FOR 100% DD

Mark	Date	Description
------	------	-------------

Revision History

Filename :	Version
60686829	2020.2.5.

Project Number:	Project Manager:
60686829	John Page
Project Administrator:	BIM/VDC Manager:

Sustainability Target: LEED Silver

Designed: Designer

Drawn: Author

Reviewed: Approver

Checked: Allan Man

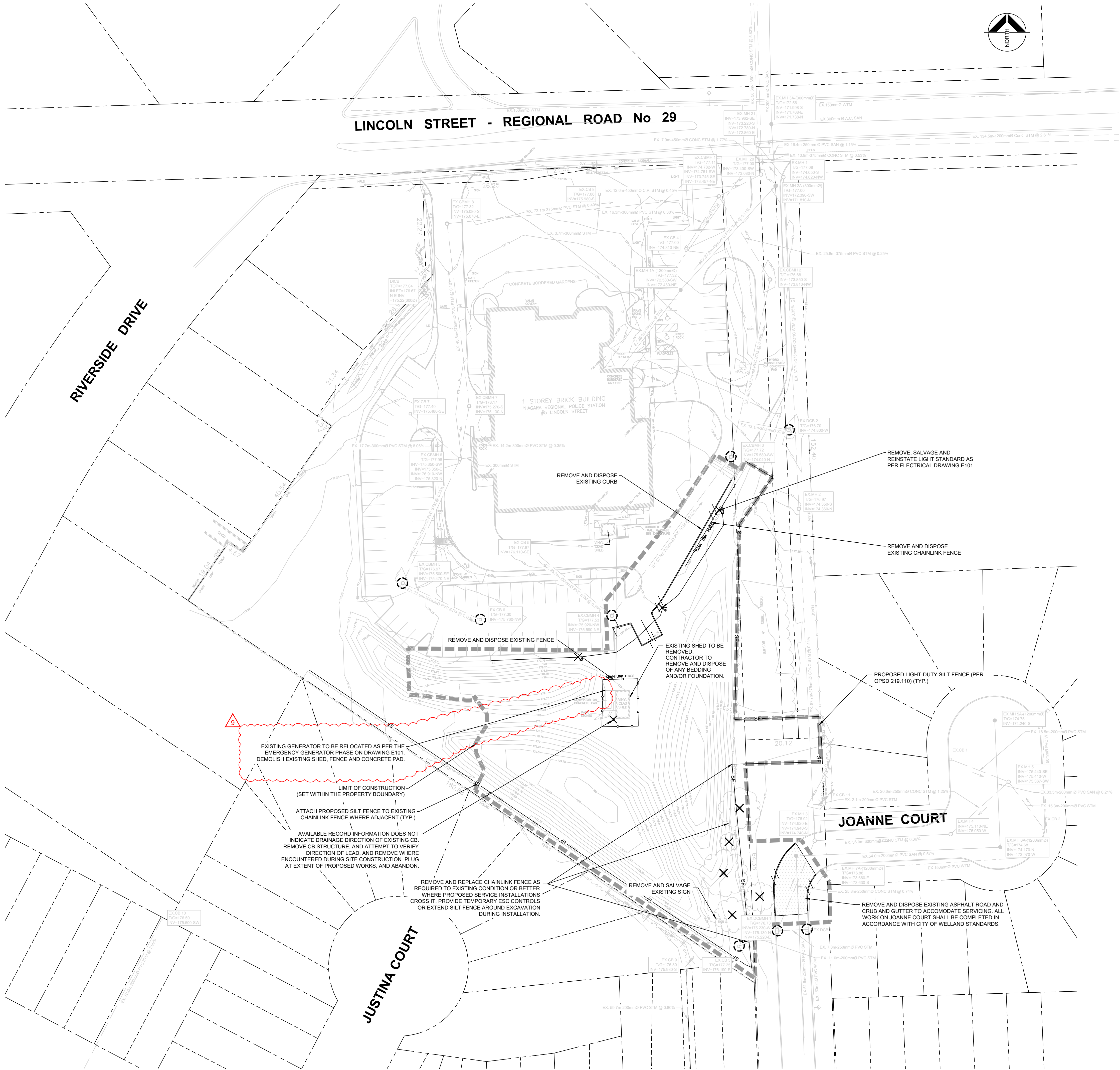
Approved: Approver

Title:

DOOR AND WINDOW SCHEDULE

Page Size	Sheet	Rev
ANSI D	A004	G
Scale	of	
As indicated		





SURVEY NOTES

METRIC NOTE  
ALL DISTANCES SHOWN HEREON ARE IN METERS AND CAN BE CONVERTED TO IMPERIAL FEET BY DIVIDING BY 0.3048.  
VERTICAL DATUM  
ELEVATIONS HEREON ARE GEODETIC AND WERE DERIVED FROM THE TOPNET RKT NETWORK, NAD83 CSRS, VERSION 3, EPOC 2010  
COMPLETION NOTE  
TOPOGRAPHIC SURVEY WAS DONE BY CHAMBERS AND ASSOCIATES SURVEYING LTD. DATED JUNE 07, 2022

PROPERTY BOUNDARIES

PROPERTY BOUNDARY INFORMATION SHOWN WAS PROVIDED BY CHAMBERS AND ASSOCIATES SURVEYING LTD. ALL DIMENSIONS ARE APPROXIMATE. THIS DOCUMENT IN ITSELF CAN NOT BE USED TO ESTABLISH PROPERTY LIMITS.

LEGEND

- PROPERTY LINE
- PROPERTY BAR
- EX. CONTOUR
- EX. SPOT ELEVATION
- EX. VEGETATION
- EX. CB, DCB, CBMH AND MH
- EX. SWALE/ DITCH
- EX. CHAIN LINK FENCE
- EX. POST & WIRE FENCE
- EX. ABOVE GROUND HYDRO LINE
- ASPHALT/CONCRETE REMOVALS FULL DEPTH
- REMOVALS
- SILT FENCE (PER OPSD 219.110)
- LIMIT OF CONSTRUCTION
- CATCHBASIN SILT SAC PROTECTION (PER DETAIL ON D200)



PROJECT

NIAGARA REGIONAL  
POLICE SERVICE  
911 BACKUP DISPATCH  
5 LINCOLN STREET, WELLAND, ONTARIO

CLIENT



CONSULTANT

AECOM Canada Ltd.  
50 Sportsworld Crossing Road, Suite 290  
Kitchener, Ontario, N2P 0A4  
519 650 5313 tel 519 650 3424 fax  
www.aecom.com

NOTE:  
IT IS THE RESPONSIBILITY OF THE CONTRACTORS TO INFORM THEMSELVES OF THE EXACT LOCATION OF AND ASSUME ALL LIABILITY FOR DAMAGE TO ALL UTILITIES, SERVICES AND STRUCTURES WHETHER ABOVE GROUND OR BELOW GRADE BEFORE COMMENCING THE WORK. SUCH INFORMATION IS NOT NECESSARILY SHOWN ON THE DRAWING, AND WHERE SHOWN, THE ACCURACY CANNOT BE GUARANTEED.

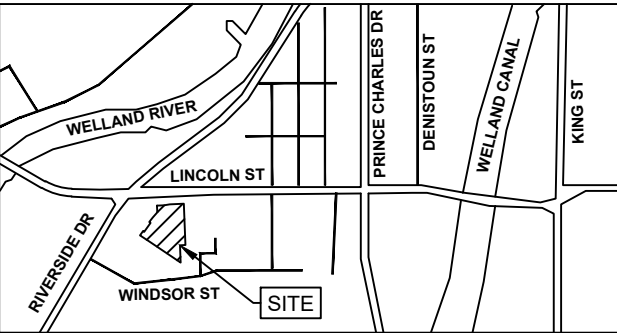
WITH THE SOLE EXCEPTION OF THE BENCHMARK(S) SPECIFICALLY DESCRIBED FOR THIS PROJECT, NO ELEVATION INDICATED OR ASSUMED HEREON IS TO BE USED AS A REFERENCE ELEVATION FOR ANY PURPOSE.

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
9	2025-02-10	ISSUED FOR ADDENDUM #1
8	2025-01-22	ISSUED FOR TENDER
7	2024-12-13	IFP RE-SUBMISSION
6	2024-11-29	ISSUED FOR OWNER REVIEW
5	2024-10-30	ISSUED FOR PERMIT
4	2024-07-26	ISSUED FOR 100% DD

KEY PLAN



PROJECT NUMBER

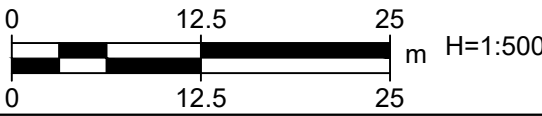
60686829

SHEET TITLE

EXISTING CONDITIONS, REMOVALS,  
AND EROSION AND SEDIMENT  
CONTROL PLAN

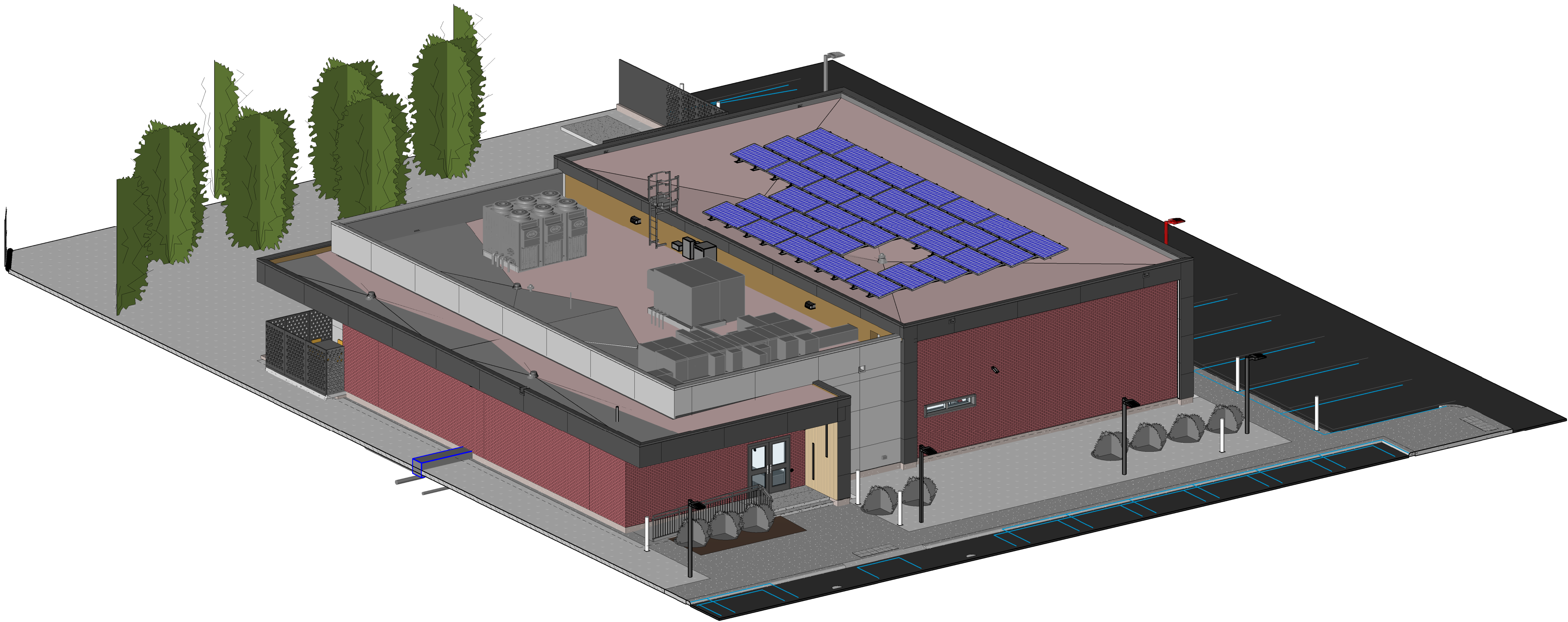
SHEET NUMBER

C101





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1 PV ISOMETRIC VIEW

Sheet Number	Sheet Name
PV100	ROOF PV ISOMETRIC AND GENERAL NOTES
PV101	LEGEND AND GENERAL NOTES
PV102	ROOF PV LAYOUT
PV103	PV SINGLE LINE DIAGRAM
PV104	DETAILS 1 of 2
PV105	DETAILS 2 of 2

SYSTEM DESCRIPTION	
ARRAY SIZE: DC SYSTEM RATING AC NAMEPLATE RATING DC/AC RATIO	22.44kW DC 20.0kW AC 1.12
NO. OF MODULES PER STRING	11 & 12
NO. OF STRING	3
NO. OF MODULES	34
MODULE INFORMATION: MANUFACTURER MODULE NUMBER STC RATING	LONGI LR7-72HYD-660M 660W
NO. OF INVERTER	1
INVERTER INFORMATION: MANUFACTURER MODULE NUMBER AC SIZE	FRONIUS SYMO ADVANCED 20.0-3 (480V) 20kW
ARRAY TABLE RACKING SYSTEM: MANUFACTURER ROW SPACING TILT ANGLE MODULE AZIMUTH	KB RACKING AEROGRID 0.434m 10° 180°
PROJECT ANNUAL ENERGY PRODUCTION	28.81MWhr
SYSTEM CONFIGURATION	NET-METERED
LOCAL DISTRIBUTION COMPANY	WELLAND HYDRO-ELECTRIC SYSTEM CORP.



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NORTH:



SEAL:

**NRPS - 911 BACKUP DISPATCH**  
5 LINCOLN STREET  
WELLAND, ONTARIO

Owner's Project Number:	Owner's Contract Number:
60686829	987654321

3	2025-02-10	ADDENDUM #01
2	2025-01-27	ISSUED FOR CLIENT REVIEW
1	2025-01-24	ISSUED FOR ESA AND WHEHC REVIEW

Mark	Date	Description
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







Revision History	
Filename :	Version: 2020.2.5.
Project Number : 60686829	Project Manager :
Project Administrator :	BIM/VDC Manager :
Sustainability Target :	IPMS 1 (m²) : IPMS 2 (m²) :
Designed : T.W.	Date (yyyy-mm-dd) :
Drawn : A.H.	Date (yyyy-mm-dd) :
Reviewed : G.R.	Date (yyyy-mm-dd) :
Checked : W.A.	Date (yyyy-mm-dd) :
Approved : W.A.	Date (yyyy-mm-dd) :
Title :	

ROOF PV ISOMETRIC AND  
GENERAL NOTES

Page Size : ANSI D	Sheet :	Rev : 3
Scale : N.T.S.	PV100	Sheet : of :



ELECTRICAL GENERAL NOTES			
<p><b>SCOPE OF WORK</b></p> <p>1. PROVIDE COMPLETE ENGINEERING, PERMITTING, COORDINATION, PROCUREMENT, CONSTRUCTION, START-UP, AND COMMISSIONING SERVICES OF NET-METERED PV SYSTEM DESCRIBED ON THESE PLANS AND SPECIFICATIONS. SYSTEM SHALL BE SUPPLIED COMPLETE WITH ALL ITEMS DESCRIBED HEREIN SUCH AS, BUT NOT LIMITED TO: MONITORING SYSTEM, LIGHTNING PROTECTION, ETC.</p> <p>2. THESE DRAWINGS AND SPECIFICATIONS AS DRAFTED ARE INTENDED TO ILLUSTRATE SCOPE OF WORK AND DESIGN INTENT. IT REMAINS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE SERVICES OUTLINED IN THE ITEM ABOVE.</p> <p>3. UTILITY COORDINATION: CONTACT WELLAND HYDRO- ELECTRIC SYSTEM COPR, REFER TO SPECIFICATIONS FOR CONTACT DETAILS.</p> <p><b>GENERAL ITEMS</b></p> <p>1. READ AND UNDERSTAND FULL SET OF CONTRACT DOCUMENTS.</p> <p>2. ALL ELECTRICAL SYSTEMS HEREIN ARE TO BE CONSIDERED AND GOVERNED BY THE REQUIREMENTS OF LATEST EDITION OF THE ONTARIO ELECTRICAL SAFETY CODE (OESC), THE LATEST EDITION OF THE ONTARIO BUILDING CODE (OBC), CSA STANDARDS FOR INSTALLATION AND TESTING REQUIREMENTS, THE ELECTRICAL SAFETY AUTHORITY (ESA), AND OTHER AUTHORITIES HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE CONFORMANCE WITH ALL APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS.</p> <p>3. ONLY CSA/ULC MARKED EQUIPMENT AND MATERIALS CAN BE USED FOR THE PROJECT.</p> <p>4. THE LOCATIONS AND DETAILED LAYOUTS OF POWERED EQUIPMENT ITEMS SHOWN ON THE ELECTRICAL DRAWINGS ARE APPROXIMATE ONLY.</p> <p>5. ALL WIRING SHALL BE MINIMUM #12 AWG, COPPER, 600V, XLPE INSULATION. ALL CONTROL WIRING SHALL BE MINIMUM #14AWG, COPPER, XLPE INSULATION. ALL LOW VOLTAGE WIRING IS AS RECOMMENDED BY THE MANUFACTURER. ALL NETWORK DATA WIRING IS AS RECOMMENDED BY THE MANUFACTURER.</p> <p>6. UNLESS NOTED OTHERWISE, ALL CONDUCTORS SHALL BE RW90 FOR ABOVE GROUND, RPVU90 FOR PV EXPOSED TO SUN, RWU90 FOR UNDERGROUND INSTALLATIONS.</p> <p>7. ALL CONDUCTORS SHALL BE SIZED PER VOLTAGE DROP AS PER OESC.</p> <p>8. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY. CONTRACTOR SHALL DETERMINE THE MOST EFFICIENT ROUTING UNDER ACTUAL SITE CONDITIONS. ALL JUNCTION BOXES, FITTINGS, ETC. ARE THE RESPONSIBILITY OF THE CONTRACTOR.</p> <p>9. AT PROJECT CLOSEOUT, ALL CONDUIT AND OTHER EQUIPMENT OPENINGS SHALL BE CAPPED AND SEALED.</p> <p>10. THE CONTRACTOR IS RESPONSIBLE FOR ALL BRACING AND STRUCTURAL SUPPORTS NECESSARY DURING INSTALLATION.</p>	<p><b>PERMITS AND INSPECTIONS</b></p> <p>1. THE PROPOSED PV SYSTEM IS INTENDED TO BE NET-METERED. A PCIR HAS BEEN SUBMITTED AND RETURNED. A CONNECTION IMPACT ASSESSMENT IS NOT REQUIRED BY THE UTILITY FOR THIS PROJECT.</p> <p>2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL NECESSARY PERMITTING RELATED TO THIS SYSTEM, INCLUDING BUT NOT LIMITED TO: BUILDING PERMIT, ESA PLAN'S REVIEW, ESA WIRING PERMITS, ETC.</p> <p>3. PAY ALL ASSOCIATED FEES RELATED TO PERMITS AND INSPECTIONS.</p> <p><b>WIRING AND WIRING METHODS</b></p> <p>1. ALL WIRING METHODS AND INSTALLATION PRACTICES SHALL CONFORM TO THE OESC.</p> <p>2. EXPOSED PV SOLAR PANEL WIRING SHALL BE RATED FOR EXPOSURE TO DIRECT SUNLIGHT OR PROTECTED FROM DIRECT SUNLIGHT, WET ENVIRONMENTS AND A MINIMUM OF 90 DEGREES C.</p> <p>3. ALL EXPOSED CABLES, SUCH AS MODULE LEADS SHALL BE SECURED WITH MECHANICAL OR OTHER SUN-LIGHT RESISTANT MEANS TO THE MODULE RACKING.</p> <p>4. ALL GROUNDING CONDUCTORS ARE MARKED GREEN OR BARE COPPER.</p> <p>5. ALL FIELD WIRING THAT IS NOT COLOUR CODED SHALL BE TAGGED AT BOTH ENDS WITH PERMANENT WIRE MARKERS TO IDENTIFY POLARITY AND GROUND</p> <p>6. FLEXIBLE METAL CONDUIT IS GENERALLY SUITABLE FOR INSTALLATION IN DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS WILL BE NO MORE THAN 300mm FROM BOXES AND NO MORE THAN 900mm APART.</p> <p>7. LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT IS GENERALLY SUITABLE FOR INSTALLATION IN WET AND DRY LOCATIONS. SHOULD IT BE EMPLOYED, SUPPORTS SHALL BE NO MORE THAN 300mm FROM BOXES AND NO MORE THAN 900mm APART.</p> <p>8. LONG STRAIGHT CONDUIT RUNS 30m OR MORE SHALL HAVE EXPANSION FITTINGS.</p> <p>9. USE CERTIFIED BRIDGEPORT RAIN TIGHT CONNECTORS AS AVAILABLE. SEAL ALL OTHER ELECTRICAL CONNECTIONS WITH WATER RESISTANT CAULKING.</p> <p>10. ALL INSULATED CONDUCTORS SHALL BE PROTECTED FROM SHARP EDGES.</p> <p>11. SLACK TO BE INCORPORATED IN WIRING TO ALLOW FOR THERMAL EXPANSION. AN APPROPRIATELY SIZED DRIP LOOP SHALL BE INCORPORATED ON ALL STRING WIRING PRIOR TO ENTERING OR EXISTING ANY ENCLOSURE.</p>	<p><b>GROUNDING</b></p> <p>1. ALL GROUNDING METHODS SHALL BE AS PER SECTION 10 OF THE OESC.</p> <p>2. AC SYSTEM SHALL BE GROUNDED IN ONE POINT ONLY.</p> <p>3. NON-CURRENT CARRYING METAL PARTS SHALL BE CHECKED AND PROPERLY BONDED.</p> <p>4. THE CONNECTION TO A MODULE OR PANEL SHALL BE ARRANGED SO THAT REMOVAL OF A MODULE OR PANEL FROM PV SOURCE CIRCUIT DOES NOT INTERRUPT A BONDING CONDUCTOR TO OTHER PV EQUIPMENT.</p> <p>5. RACKING SYSTEM TO BE BONDED INTERNALLY AS PER MANUFACTURER SPECIFICATIONS. MODULE FRAME BONDED THROUGH APPROVED RACKING SYSTEM.</p> <p><b>OVERCURRENT PROTECTION</b></p> <p>1. OVERCURRENT PROTECTION SHALL BE PROVIDED FOR ALL PV CONDUCTORS AND APPARATUS IN COMPLIANCE WITH THE OESC.</p> <p>2. OVERCURRENT PROTECTION FOR PV SOURCE CIRCUITS SHALL BE ACCESSIBLE AND GROUPED WHEN PRACTICAL</p> <p><b>RAPID SHUTDOWN</b></p> <p>1. INVERTER PLACEMENT IS INTENDED THE MINIMIZE THE USE OF RAPID SHUTDOWN DEVICES.</p> <p>2. PROVIDE RAPID SHUTDOWN DEVICES AND COMPONENTS AS DESCRIBED IN OESC RULE 64-200 AND BULLETIN 64-6-4, DATED OCT 2023.</p> <p><b>DISCONNECTING MEANS</b></p> <p>1. DISCONNECTING MEANS SHALL BE PROVIDED TO DISCONNECT ALL EQUIPMENT, INCLUDING THE POWER CONDITIONING UNIT, FROM ALL UNGROUNDED CONDUCTORS FROM ALL SOURCES.</p> <p>2. ALL DISCONNECTS SHALL BE SECURED FROM UNAUTHORIZED/UNQUALIFIED PERSONNEL BY LOCK OR LOCATION.</p> <p>3. ALL DISCONNECTS SHALL CERTIFIED FOR THEIR PURPOSE.</p> <p>4. DISCONNECTING MEANS SHALL BE PROVIDED TO DISCONNECT A FUSE FROM ALL SOURCES OF SUPPLY IF THE FUSE IS ENERGIZED FROM BOTH DIRECTION AND IS ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS. SUCH A FUSE IN A PV SOURCE CIRCUIT SHALL BE CAPABLE OF BEING DISCONNECTED INDEPENDENTLY OF FUSES IN OTHER PV SOURCE CIRCUITS.</p>	<p><b>REQUIRED SAFETY SIGNS AND LABELS</b></p> <p>1. SAFETY SIGNS AND LABELS SHALL BE PERMANENTLY ATTACHED BY MECHANICAL MEANS. LABELS SHALL COMPLY WITH APPLICABLE CODES. SEE LABELS AND MARKING SHEET FOR DETAILS.</p> <p>2. ANY SWITCH, FUSE, OR CIRCUIT BREAKER THAT CAN BE ENERGIZED IN EITHER DIRECTION SHALL BE LABELED AS FOLLOWS:</p> <p>"</p> <p>WARNING</p> <p>ELECTRICAL SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.</p> <p>"</p> <p>3. DC DISCONNECTS SHALL BE LABELED AS FOLLOWS:</p> <p>"</p> <p>PHOTOVOLTAIC D.C. DISCONNECT</p> <p>OPERATING CURRENT: ###A</p> <p>OPERATING VOLTAGE: ###V</p> <p>MAXIMUM SYSTEM VOLTAGE: ###V</p> <p>SHORT CIRCUIT CURRENT: ###A</p> <p>"</p> <p>4. PERMANENT MARKING SHALL BE PROVIDED AT A VISIBLE LOCATION ON THE INVERTER SPECIFYING THE FOLLOWING:</p> <p>"</p> <p>RATED MAXIMUM OPERATING CURRENT: ###A</p> <p>RATED MAXIMUM OPERATING VOLTAGE: ###V</p> <p>AC FREQUENCY: 60Hz</p> <p>"</p> <p>5. PROVIDE A PERMANENT PLAQUE IDENTIFYING PV SYSTEM CONFIGURATION AND POINT OF INTERCONNECTION.</p> <p>6. PV MODULES SHALL BE MARKED TO IDENTIFY LEAD POLARITY, DEVICE RATINGS, AND SPECIFICATIONS FOR VOLTAGES, CURRENT, AND POWER.</p> <p>7. ALL EQUIPMENT SHALL BE LABELED WITH ARC FLASH HAZARD WARNING PER THE OESC.</p> <p>8. ALL INTERACTIVE SYSTEM POINTS OF INTERCONNECTION WITH OTHER SOURCES SHALL BE MARKED AT AN ACCESSIBLE LOCATION AT THE DISCONNECTING MEANS.</p>

STANDARD ELECTRICAL SYMBOLS	
POWER	
	DISCONNECT SWITCH
	TRANSFORMER
	METER CABINET
SINGLE LINE DIAGRAM	
	TRANSFORMER
	WYE CONNECTION WITH SOLIDLY GROUND NEUTRAL
	DISCONNECT SWITCH
	DELTA CONNECTION
	METER BASE



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NORTH:



SEAL:

**NRPS - 911 BACKUP DISPATCH**  
5 LINCOLN STREET  
WELLAND, ONTARIO

Owner's Project Number:	Owner's Contract Number:
60686829	987654321

3	2025-02-10	ADDENDUM #01
2	2025-01-27	ISSUED FOR CLIENT REVIEW
1	2025-01-24	ISSUED FOR ESA AND WHEHC REVIEW

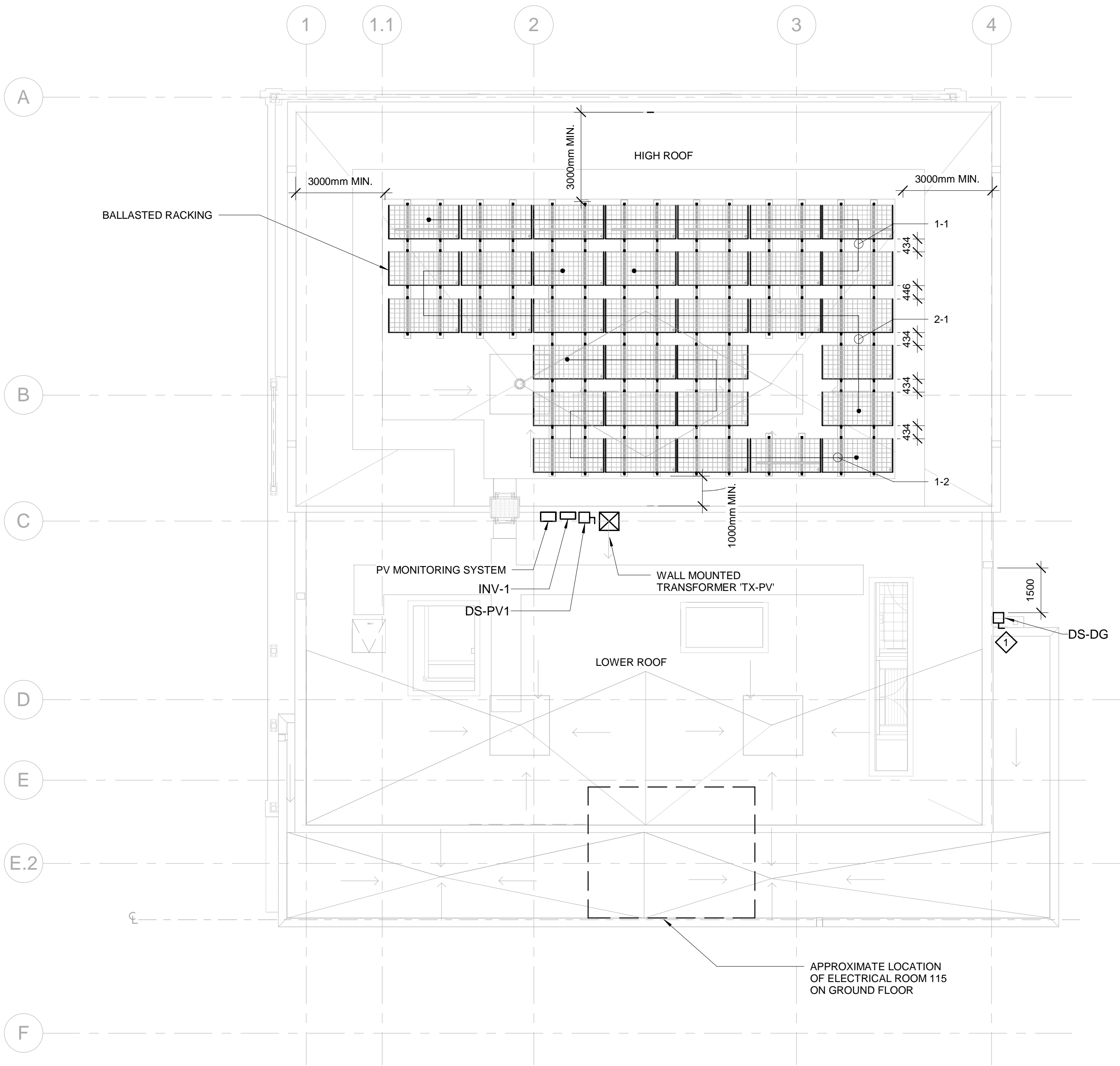
Mark	Date	Description
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Revision History	
Filename :	Version: 2020.2.5.
Project Number : 60686829	Project Manager :
Project Administrator :	BIM/VDC Manager :
Sustainability Target :	IPMS 1 (m²) : IPMS 2 (m²) :
Designed : T.W.	Date (yyyy-mm-dd) :
Drawn : A.H.	Date (yyyy-mm-dd) :
Reviewed : G.R.	Date (yyyy-mm-dd) :
Checked : W.A.	Date (yyyy-mm-dd) :
Approved : W.A.	Date (yyyy-mm-dd) :
Title :	

LEGEND AND GENERAL NOTES

Page Size: ANSI D	Sheet:	Rev: 3
Scale: 1:1	PV101	Sheet of:





1 ROOF PLAN - PV LAYOUT  
1 : 100

DESIGN AS ILLUSTRATED ON DRAWINGS IS CONCEPTUAL IN NATURE TO PROVIDE INTENT. PV CONTRACTOR IS RESPONSIBLE FOR PROVIDING FULL ENGINEERING, PROCUREMENT AND CONSTRUCTION OF PV SYSTEM SHOWN.

PV LAYOUT GENERAL NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS (A112), STRUCTURAL DRAWINGS (S111) AND OTHER DRAWINGS FOR ROOF LAYOUTS, SECTIONS AND DETAILS.
2. SOLAR PV INSTALLATION SHALL NOT LIMIT ROOF MEMBRANE PERFORMANCE OR WARRANTY. COORDINATE MOUNTING DETAILS AND RACKING DESIGN WITH DIVISION 07.
3. PV MODULE STRINGS AS PROPOSED IS AIMED AT REDUCING CABLING AND ASSOCIATED RACEWAYS. FINAL STRINGING CONFIGURATION IS PV CONTRACTOR'S RESPONSIBILITY. PROVIDE MECHANICAL PROTECTION AGAINST RODENTS FOR PV SOURCE CIRCUITS IN ACCORDANCE WITH OESC RULE 64-210 5).
4. PLACE MONITORING SYSTEM SENSORS SUCH THAT THE TOTAL CABLE LENGTH IS WITHIN MANUFACTURER RECOMMENDED LIMITS.
5. THIS DRAWING HAS BEEN PREPARED SOLELY FOR THE ELECTRICAL WORK THAT WILL TAKE PLACE AS PART OF THIS PROJECT OF WHICH IS SUBJECT TO THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE (OESC). IT DOES NOT PROVIDE ANY INFORMATION REGARDING STRUCTURAL ASPECTS OF THE DESIGN, NOR SHOULD IT BE USED TO DEMONSTRATE COMPLIANCE WITH THE ONTARIO BUILDING CODE (OBC).
6. BALLASTED RACKING SHALL NOT IMPEDE THE ROOF DRAINAGE.

DRAWING NOTES:

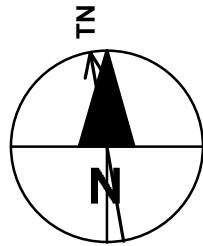
1. COORDINATE FINAL LOCATION OF UTILITY ACCESSIBLE EXTERIOR DISCONNECT WITH WELLAND HYDRO. MAINTAIN 1500mm MINIMUM HORIZONTAL CLEARANCE FROM ROOF SCUPPER ABOVE. ALL RACEWAYS AND CABLES ASSOCIATED WITH THIS DISCONNECT SHALL BE ROUTED WITHIN THE BUILDING INTERIOR AND CONCEALED FROM VIEW ON THE BUILDING EXTERIOR FACADE. ANY DEVIATIONS REQUIRE PRIOR APPROVAL FROM THE CONSULTANT.



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NORTH:



SEAL:

NRPS - 911 BACKUP DISPATCH  
5 LINCOLN STREET  
WELLAND, ONTARIO

Owner's Project Number: 60686829  
Owner's Contract Number: 987654321

3	2025-02-10	ADDENDUM #01
2	2025-01-27	ISSUED FOR CLIENT REVIEW
1	2025-01-24	ISSUED FOR ESA AND WHEHC REVIEW

Mark	Date	Description
------	------	-------------

Revision History

Filename: 2020.2.5.

Project Number:	60686829	Project Manager:	
Project Administrator:		BIM/VDC Manager:	
Sustainability Target:	IPMS 1 (m²):	IPMS 2 (m²):	
Designed:	T.W.	Date (yyyy-mm-dd):	
Drawn:	A.H.	Date (yyyy-mm-dd):	
Reviewed:	G.R.	Date (yyyy-mm-dd):	
Checked:	W.A.	Date (yyyy-mm-dd):	
Approved:	W.A.	Date (yyyy-mm-dd):	

Title:

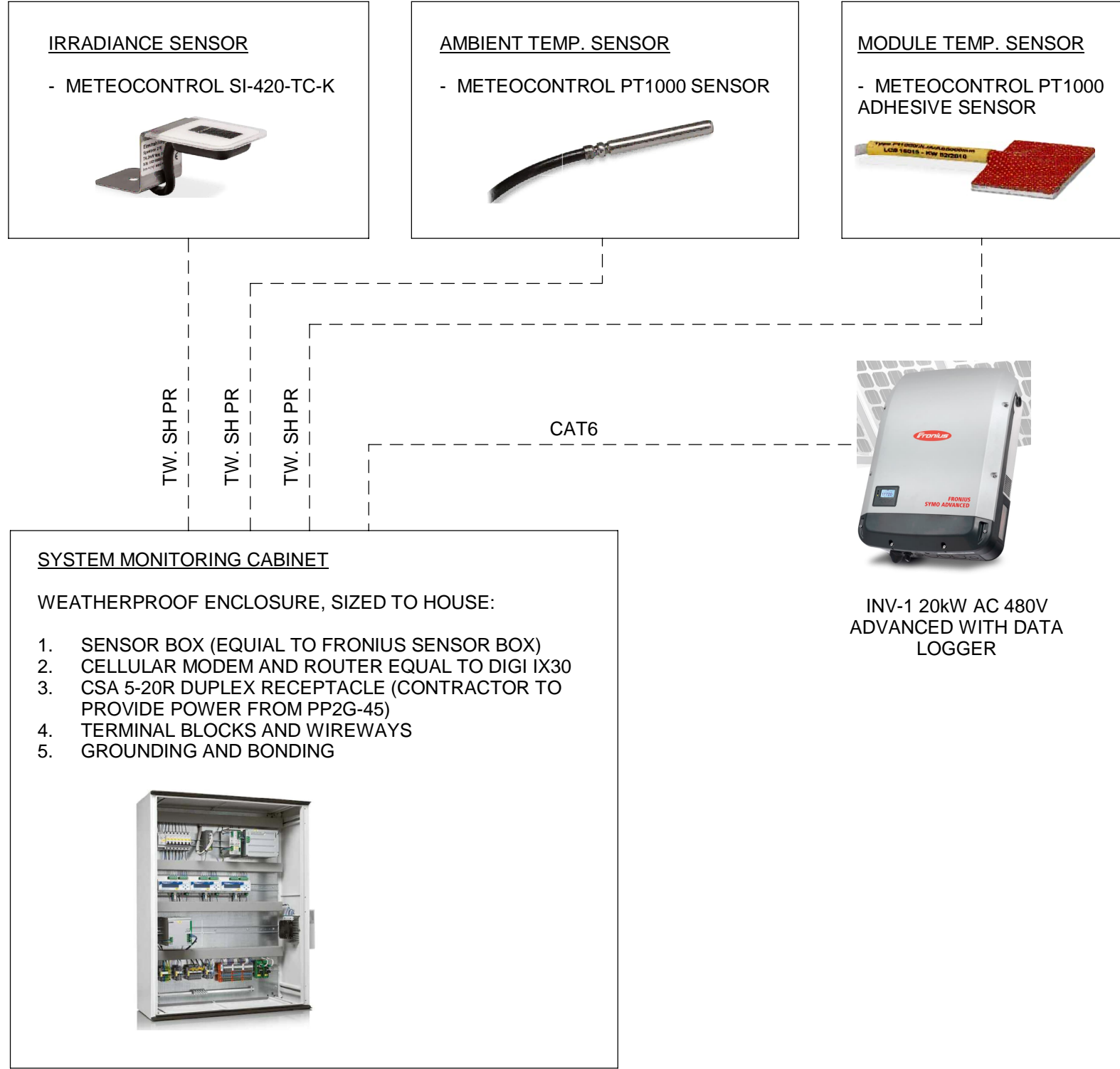
ROOF PV LAYOUT

Page Size:	ANSI D	Sheet:		Rev:	3
Scale:	1 : 100			Sheet:	
				of:	

PV102

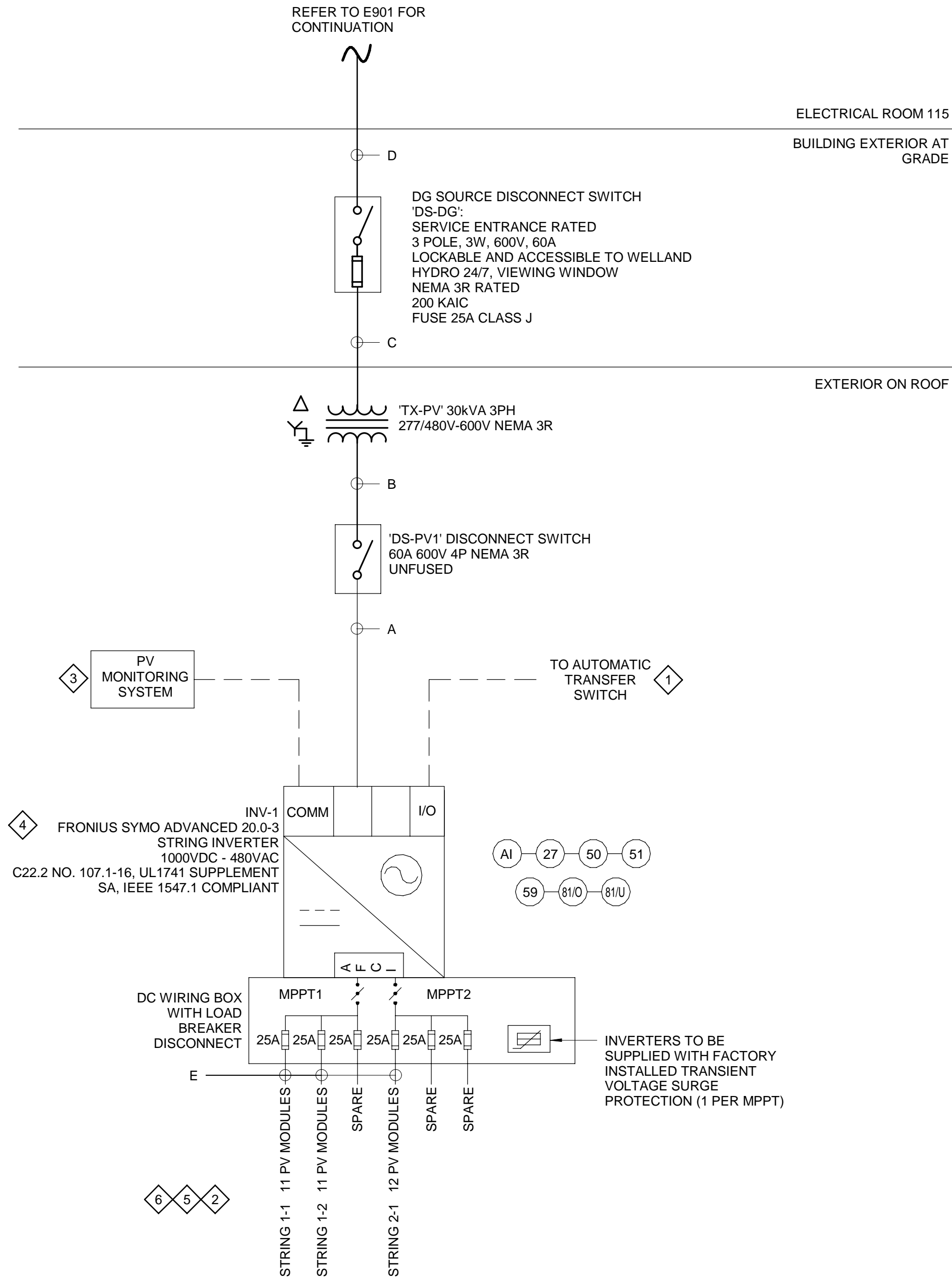


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## 2 PV MONITORING SYSTEM DETAILS

N.T.S.



## 1 SOLAR PV SINGLE LINE DIAGRAM

N.T.S.

SOLAR PV SYSTEM AC CABLE SCHEDULE											
CABLE TAG	FROM	TO	ROUTING	APPROX DISTANCE (m)	CONDUCTOR SIZE	GND SIZE	NO. OF CONDUCTORS PER PHASE	CONDUCTOR TYPE	SYSTEM VOLTAGE	VOLTAGE DROP (%)	COMMENTS
A	INV-1	DS-PV1	AS PER PV102	3	4-#10 AWG	#12 AWG	1	RW90	480V	0.10	TO TRANSFORMER
B	DS-PV1	TX-PV	AS PER PV102	3	4-#8 AWG	#10 AWG	1	RW90	480V	0.10	TO DG SOURCE DISCONNECT SWITCH
C	TX-PV	DS-DG	AS PER PV102	30	3-#10 AWG	#12 AWG	1	RW90	600V	0.59	TO DISCONNECT SWITCH
D	DS-DG	ELEC. ROOM 115	AS PER PV102	40	3-#10 AWG	#12 AWG	1	RW90	600V	0.79	TO MAIN SWITCHBOARD

NOTES: ALL CONDUCTORS ARE COPPER UNLESS STATED OTHERWISE. PROVIDE RACEWAY IN RPVC, PER CONTRACT DOCUMENTS AND SIZED PER OESC.

SOLAR PV SYSTEM DC CABLE SCHEDULE										
CABLE TAG	FROM (STRING TAG)	TO (INVERTER TAG)	ROUTING	APPROX RUN LENGTH (m)	CONDUCTOR SIZE	BONDING CONDUCTOR SIZE	NO. OF PARALLEL RUNS	CONDUCTOR TYPE	SYSTEM VOLTAGE	VOLTAGE DROP (%)
E	STR 1-1	INV-1	AS PER PV102	40	#10 AWG	#6 AWG	1	RPVU90	1000V	0.84
E	STR 1-2	INV-1	AS PER PV102	40	#10 AWG	#6 AWG	1	RPVU90	1000V	0.84
E	STR 2-1	INV-1	AS PER PV102	40	#10 AWG	#6 AWG	1	RPVU90	1000V	0.77

NOTES: ALL CONDUCTORS ARE COPPER UNLESS STATED OTHERWISE. ATTACHED TO RACKING WITH UV RESISTANT CABLE TIES. LOCATED IN COVERED LADDER TRAY AND LIQUID TIGHT RPVC.

DESIGN AS ILLUSTRATED ON DRAWINGS IS CONCEPTUAL IN NATURE TO PROVIDE INTENT. PV CONTRACTOR IS RESPONSIBLE FOR PROVIDING FULL ENGINEERING, PROCUREMENT AND CONSTRUCTION OF PV SYSTEM SHOWN.

### DESIGN INTENT AND SCOPE OF WORK:

1. DRAWINGS PROVIDE A CONCEPTUAL BASIS FOR THE PROPOSED PV SYSTEM. THE PV CONTRACTOR IS RESPONSIBLE FOR COMPLETE SYSTEM ENGINEERING, PROCUREMENT AND CONSTRUCTION RELATED TO THESE SUBSYSTEMS: PV, ELECTRICAL DISTRIBUTION, RACKING, STRUCTURAL AND PV SYSTEM MONITORING.
2. PV CONTRACTOR IS RESPONSIBLE FOR ALL PERMITTING, SUPPLY AUTHORITY COORDINATION AND COMMISSIONING ACTIVITIES RELATED TO THIS SCOPE.
3. REFER TO SPECIFICATIONS RELATED TO THIS SECTION FOR DETAILS.

#### DRAWING NOTES:

- 1 INVERTER SHALL BE SUPPLIED WITH PERMISSIVE SIGNAL FROM AUTOMATIC TRANSFER SWITCH, ATS-6X, AND PROGRAMMED AND COMMISSIONED SUCH THAT IF ATS IS IN STANDBY GENERATOR POSITION, THE INVERTER SHALL TURN OFF.
- 2 BASIS OF DESIGN IS LONGI LR7-72HYD-660M (660W) BIFACIAL MODULE. REFER TO PV105 FOR PV MODULE DATA SHEET.
- 3 REFER TO PV SYSTEM MONITORING DETAILS ON THIS DRAWING.
- 4 INVERTER MODEL SYMO 20.0-3 480 SHALL BE COMPLETE WITH INTEGRATED SUNSPEC RAPID SHUTDOWN PLC AND DATA MANAGER.
- 5 PROVIDE RAPID SHUTDOWN IN COMPLIANCE WITH OESC RULE 64-218 AND BULLETIN 64-6-4. DESIGN INTENT IS TO UTILIZE MODULE LEVEL RAPID SHUTDOWN SYSTEM, APsmart RSD-S-PLC - RAPID SHUTDOWN SYSTEM.
- 6 STRING WIRING IS #10 AWG CU RPVU CABLE AND SHALL BE CSA LISTED, WEATHERPROOF, UV SUNLIGHT RESISTANT, FINGERSAFE, PLUG-AND-PLAY RECEPTACLE CONNECTORS, MULTICONTACT TYPE OR EQUIVALENT.

OPEN CIRCUIT VOLTAGE CALCULATION AS PER OESC BULLETIN 64-3-4 (RULE 64-202 2)	
WEATHER DATA SOURCE	CLIMATE CANADA NORMALS WEBSITE
LOCATION	WELLAND-PELHAM
T <sub>min</sub> LOWEST DAILY TEMPERATURE (°C)	-31.9
MODULE	LONGI LR7-72HYD-660M (660W) BIFACIAL MODULE
T <sub>k</sub> TEMPERATURE COEFFICIENT (%/°C)	-0.2
V <sub>ROC</sub> PV MODULE RATE OPEN-CIRCUIT VOLTAGE AT STC (V):	54.42
V <sub>MOC</sub> PV MODULE MAXIMUM OPEN-CIRCUIT VOLTAGE:	60.61
STRING MAXIMUM VOLTAGE (11 MODULES) (V)	667
STRING MAXIMUM VOLTAGE (12 MODULES) (V)	727

AMPERE RATING OF PV SOURCE CIRCUITS AS PER OESC RULE 64-206 b)	
SHORT CIRCUIT CURRENT	15.3
MAX. CONT. I <sub>out</sub> PER STRING (A <sub>oc</sub> )	19.13
MIN. OCPD, ASSUMING 80% RATED DEVICE	23.9
THEREFORE 25A DC FINGER SAFE FUSE	

#### LEGEND:

- POWER  
--- COMMUNICATION

AECOM

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NORTH:

Niagara Region



SEAL:

NRPS - 911 BACKUP DISPATCH  
5 LINCOLN STREET  
WELLAND, ONTARIO

Owner's Project Number: 60686829  
Owner's Contract Number: 987654321

3	2025-02-10	ADDENDUM #01
2	2025-01-27	ISSUED FOR CLIENT REVIEW
1	2025-01-24	ISSUED FOR ESA AND WHEHC REVIEW

Mark	Date	Description
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#### Revision History

Filename: Version: 2020.2.5.

Project Number: 60686829 Project Manager:

Project Administrator: BIM/VDC Manager:

Sustainability Target: IPMS 1 (m²): IPMS 2 (m²):

Designed: T.W. Date (yyyy-mm-dd):

Drawn: A.H. Date (yyyy-mm-dd):

Reviewed: G.R. Date (yyyy-mm-dd):

Checked: W.A. Date (yyyy-mm-dd):

Approved: W.A. Date (yyyy-mm-dd):

Title:

PV SINGLE LINE DIAGRAM

Page Size: ANSI D  
Scale: N.T.S.  
Sheet: PV103  
Rev: 3  
of: 1



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## Hi-MO 9

### LR7-72HYD 625~660M

- Products for utility with optimal power generation through the entire lifecycle
- Performance improvement leads to a more than 6.5% power generation gain
- TaiRay wafer & BC technology enhances high product reliability
- Smart manufacturing & LONGi product lifecycle standards deliver exceptional product quality

- 12-year Warranty for Materials and Processing
- 30-year Warranty for Extra Linear Power Output

#### Complete System and Product Certifications

IEC 61215, IEC 61730, UL 61730  
ISO9001:2015:ISO Quality Management System  
ISO14001:2015:ISO Environment Management System  
ISO45001:2018:Occupational Health and Safety  
IEC62941: Guideline for module design qualification and type approval



1

#### PV System details SCALE: NTS

## Hi-MO 9

24.4%  
MAX MODULE  
EFFICIENCY

0~3%  
POWER  
TOLERANCE

<1%  
FIRST YEAR  
POWER DEGRADATION

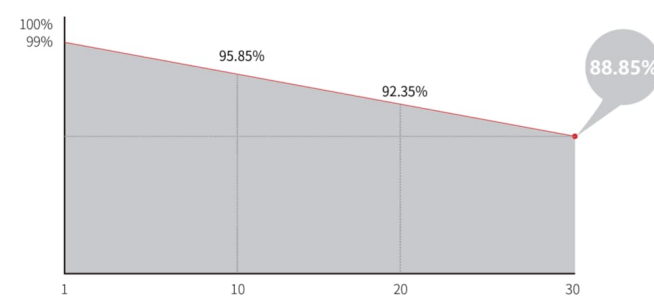
0.35%  
YEAR 2-30  
POWER DEGRADATION

BC-CELL  
LOWER OPERATING  
TEMPERATURE

### LR7-72HYD 625~660M

#### Additional Value

##### 30-Year Power Warranty



#### Mechanical Parameters

Cell Orientation	144 (6×24)
Junction Box	IP68, three diodes
Output Cable	4mm <sup>2</sup> , 4000, 2000mm(±1400mm) length can be customized
Glass	Dual glass, 2.0±0.0mm heat strengthened glass
Frame	Anodized aluminum alloy frame
Weight	33.5kg
Dimension	2382×1134×30mm
Packaging	36pcs per pallet / 144pcs per 20' GP / 720pcs per 40' HC

#### Electrical Characteristics

	STC: AM1.5 1000W/m <sup>2</sup> 25°C				NOCT: AM1.5 800W/m <sup>2</sup> 20°C 1m/s				Test uncertainty for P <sub>max</sub> : ±3%			
Module Type	LR7-72HYD-625M	LR7-72HYD-630M	LR7-72HYD-635M	LR7-72HYD-640M	LR7-72HYD-645M	LR7-72HYD-650M	LR7-72HYD-655M	LR7-72HYD-660M				
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (P <sub>max</sub> /W)	625	475.8	630	479.6	635	483.4	640	487.2	645	491.0	650	494.8
Open Circuit Voltage (V <sub>oc</sub> /V)	53.72	51.05	53.82	51.15	53.92	51.24	54.02	51.34	54.12	51.43	54.22	51.53
Short Circuit Current (I <sub>sc</sub> /A)	14.73	11.83	14.81	11.90	14.89	11.96	14.98	12.03	15.06	12.10	15.14	12.16
Voltage at Maximum Power (V <sub>mp</sub> /V)	44.37	42.17	44.47	42.26	44.57	42.36	44.67	42.45	44.77	42.55	44.87	42.64
Current at Maximum Power (I <sub>mp</sub> /A)	14.09	11.29	14.17	11.36	14.25	11.42	14.33	11.49	14.41	11.55	14.49	11.61
Module Efficiency(%)	23.1	23.3	23.3	23.5	23.7	23.9	24.1	24.2	24.4	24.5	24.6	24.6

#### Electrical characteristics with different rear side power gain (reference to 645W front)

P <sub>max</sub> /W	V <sub>oc</sub> /V	I <sub>sc</sub> /A	V <sub>mp</sub> /V	I <sub>mp</sub> /A	P <sub>max</sub> gain
677	54.12	15.81	44.77	15.13	5%
710	54.12	16.57	44.77	15.85	10%
744	54.22	17.32	44.87	16.57	15%
776	54.22	18.07	44.87	17.29	20%
808	54.22	18.83	44.87	18.01	25%

#### Operating Parameters

Operational Temperature	-40°C ~ +85°C
Power Output Tolerance	0~3%
Maximum System Voltage	DC1500V (IEC/UL)
Maximum Series Fuse Rating	30A
Nominal Operating Cell Temperature	45±2°C
Protection Class	Class II
Bifaciality	70±5%
Fire Rating	UL type 29 IEC Class C

#### Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

#### Temperature Ratings (STC)

Temperature Coefficient of I <sub>sc</sub>	+0.050%/°C
Temperature Coefficient of V <sub>oc</sub>	-0.200%/°C
Temperature Coefficient of P <sub>max</sub>	-0.260%/°C



Web: www.longi.com

Specifications included in this datasheet are subject to change without notice.  
LONGi reserves the right of final interpretation. (20241024/03)

/ Perfect Welding / Solar Energy / Perfect Charging

## FRONIUS SYMO ADVANCED

Powering three-phase projects that last -  
now with integrated SunSpec PLC



Featuring ten models ranging from 10 kW to 24 kW, the Fronius Symo Advanced is the ideal inverter for commercial applications. The new Advanced versions combine the benefits of the Fronius Symo with additional value for states with Module Level Shutdown requirements including integrated PLC transmitter for SunSpec Rapid Shutdown communication standard, compliance with NEC pre-2014, 2014 and 2017, zero tilt mounting, light weight and field serviceability.

#### TECHNICAL DATA FRONIUS SYMO ADVANCED (208-240 V VERSIONS)

INPUT DATA	SYMO 10.0-3 208-240		SYMO 12.0-3 208-240	
	208 V	240 V	208 V	240 V
Max. PV generator output (P <sub>g,max</sub> )	15 kW <sub>peak</sub>		18 kW <sub>peak</sub>	
Max. input current (I <sub>g,max</sub> / I <sub>sc,max</sub> )	25 A / 16.5 A		31.5 A / 24.8 A	
Max. array short circuit current (MPP / MPP2)	37.5 A / 24.8 A		47.5 A / 31.2 A	
Nominal input voltage	350 V	370 V	350 V	370 V
DC input voltage range (U <sub>dc,min</sub> + U <sub>dc,max</sub> )	200 - 600 V		200 - 600 V	
Fixed in start voltage (U <sub>dc,stat</sub> )	200 V		200 V	
Usable MPP voltage range (U <sub>MPP,min</sub> + U <sub>MPP,max</sub> )	300 - 500 V		300 - 500 V	
Max. input voltage	600 V		600 V	
Admissible conductor size DC	AWG 14-AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-AWG 2 copper or aluminum with input combiner		AWG 14-AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-AWG 2 copper or aluminum with input combiner	
Number of MPP trackers	2		2	

OUTPUT DATA	SYMO 10.0-3 208-240		SYMO 12.0-3 208-240	
	208 V	240 V	208 V	240 V
AC nominal output (P <sub>ac,n</sub> )	9,995 W	11,995 W	11,995 W	13,995 W
Max. output power	9,995 VA	11,995 VA	11,995 VA	13,995 VA
Output configuration	208 / 240 V		208 / 240 V	
Frequency range (f <sub>min</sub> - f <sub>max</sub> )	45 - 60 Hz		45 - 60 Hz	
Admissible conductor size AC	AWG 14 - AWG 6		AWG 14 - AWG 6	
Total harmonic distortion	< 1.5 %		< 1.75 %	
Power factor (cos φ <sub>ac</sub> )	0-1 ind. / cap.		0-1 ind. / cap.	
Max. continuous output current	27.7 A	24 A	33.3 A	28.9 A
DC/AC breaker size	35 A	30 A	45 A	40 A

EFFICIENCY	SYMO 10.0-3 208-240		SYMO 12.0-3 208-240	
	208 V	240 V	208 V	240 V
Max. Efficiency	97.8 %		97.8 %	
CEC Efficiency	96.5 %		96.5 %	

2

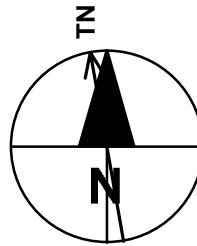
#### INVERTER - INV-1 DETAIL-1 SCALE: NTS



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Kitchener, Ontario N2P 0A4

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NORTH:



SEAL:

**NRPS - 911 BACKUP DISPATCH**  
5 LINCOLN STREET  
WELLAND, ONTARIO

Owner's Project Number: 60686829  
Owner's Contract Number: 987654321

3	2025-02-10	ADDENDUM #01
2	2025-01-27	ISSUED FOR CLIENT REVIEW
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Mark Date Description

#### Revision History

Filename:	Version: 2020.2.5.
Project Number: 60686829	Project Manager:
Project Administrator:	BIM/VDC Manager:
Sustainability Target:	IPMS 1 (m <sup>2</sup> ): IPMS 2 (m <sup>2</sup> ):
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Reviewed: G.R.	Date (yyyy-mm-dd):
Checked: W.A.	Date (yyyy-mm-dd):
Approved: W.A.	Date (yyyy-mm-dd):
Title:	

DETAILS 1 of 2

Page Size: ANSI D	Sheet:	Rev: 3
Scale: N.T.S.	PV104	Sheet of:



TECHNICAL DATA FRONIUS SYMO (208-240 V VERSIONS)

GENERAL DATA	SYMO 10.0-3 208-240	SYMO 12.0-3 208-240
Dimensions (height x width x depth)	510 x 725 x 225 mm (20.1 x 28.5 x 8.9 inches)	
Weight	41.7 kg (91.9 lbs)	
Protection Class	NEMA 4X	
Night time consumption	<1 W	
Inverter topology	Transformerless	
Cooling	Regulated air cooling	
Installation	Indoor and outdoor installation, tilt from 0 - 90 degrees <sup>1</sup>	
DIN rail (length x width x depth)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)	
Ambient operating temperature range	-40 - +60 °C (-40 - +140 °F)	
Permitted humidity	0 - 100 % (non-condensing)	
Elevation	max. input voltage of 600 V up to 3,400 m (11,155 ft)	
DC connection technology	6x DC+ and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)	
AC connection technology	Screw terminals 14-6 AWG	
Certificates and compliance with standards	UL 1741-2010 Second Edition (incl. UL1741 Supplement SA 2016-09 for California Rule 21 and Hawaiian Electric Code Rule 14H), UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547a-2014, IEEE 1547-1-2003, ANSI/IEEE 62.41, FCC Part 15 A & B, NEC 2017 Article 690, C22.2 No. 107.1-16, UL1699B Issue 2 - 2013, CSA T1L M-07 Issue 1 - 2013	

<sup>1</sup> Fronius Shade Cover required for installation angles less than 15 degree

PROTECTIVE DEVICES	SYMO 10.0-3 208-240	SYMO 12.0-3 208-240
DC reverse polarity protection	Yes	
Anti islanding	Yes	
Over temperature protection	Output power derating / Active cooling	
AFCI	Yes	
Rapid shutdown compliant	Yes	
Ground Fault Protection with Isolation Monitor Interrupter	Yes	
DC disconnect	Yes	

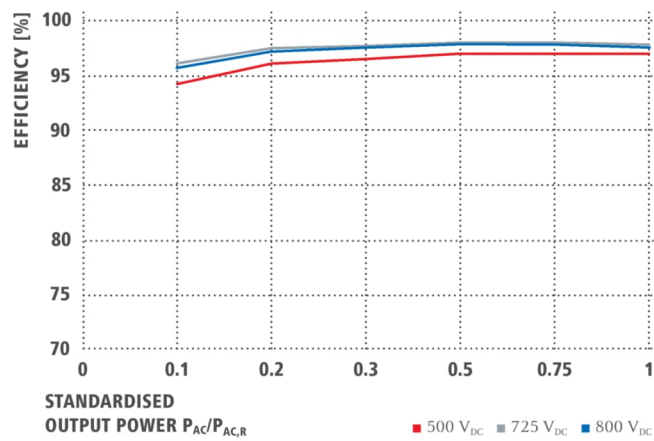
INTERFACES	SYMO 10.0-3 208-240	SYMO 12.0-3 208-240
USB (A socket)	Datalogging and inverter update possible via USB	
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol	
Power Line Communication (PLC)	Yes – SunSpec Rapid Shutdown communication standard	
Wi-Fi/Ethernet/Serial Datalogger and webserver <sup>2</sup>	Wireless standard 802.11 b/g/n / Fronius Solar web, SunSpec Modbus TCP, ISON / SunSpec Modbus RTU	
6 inputs and 4 digital I/Os <sup>3</sup>	Load management; signaling, multipurpose I/O	

<sup>2</sup> Available with the Fronius Datamanager 2.0 Card (only one card required for up to 100 inverters)

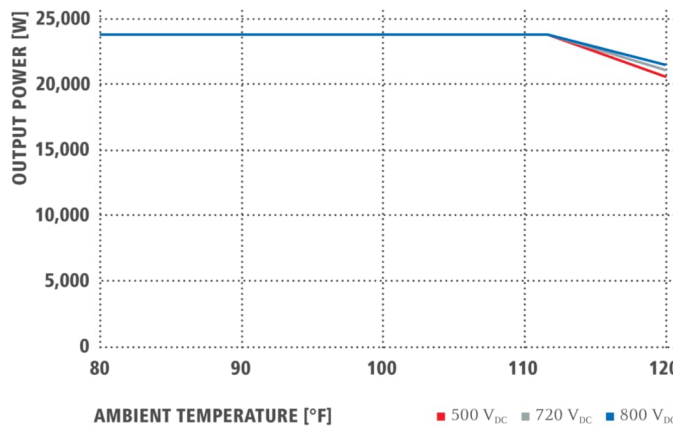
TECHNICAL DATA FRONIUS SYMO (480 V VERSIONS)

INPUT DATA	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
Max. PV generator output (P <sub>GE max</sub> )	22.5 kW <sub>peak</sub>	30 kW <sub>peak</sub>	34 kW <sub>peak</sub>	36 kW <sub>peak</sub>
Max. input current (I <sub>GE max</sub> / I <sub>GE max2</sub> )	33 A / 25 A			
Max. array short circuit current (MPP1 / MPP2)	49.5 A / 37.5 A			
Nominal input voltage	685 V	710 V	720 V	
DC input voltage range (U <sub>GE min</sub> + U <sub>GE max</sub> )	200 - 1,000 V			
DC startup voltage	200 V			
Usable MPP voltage range (U <sub>mppt min</sub> + U <sub>mppt max</sub> )	350 - 800 V	450 - 800 V	500 - 800 V	
Max. input voltage	1,000 V			
Admissible conductor size DC	AWG 14 - AWG 6 copper direct, AWG 6 aluminum direct, AWG 4 - AWG 2 copper or aluminum with input combiner			
Number of MPP trackers	2			

FRONIUS SYMO 24.0-3 480 CEC EFFICIENCY CURVE



FRONIUS SYMO 24.0-3 480 TEMPERATURE DERATING CURVE



TECHNICAL DATA FRONIUS SYMO (480 V VERSIONS)

OUTPUT DATA	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
AC nominal Output (P <sub>ACn</sub> )	14,995 W	19,995 W	22,727 W	23,995 W
Max. output power	14,995 VA	19,995 VA	22,727 VA	23,995 VA
Grid connection	480 / 277 V WYE			
Frequency (frequency range f <sub>min</sub> - f <sub>max</sub> )	60 Hz (45 - 65 Hz)			
Admissible conductor size (AC)	AWG 14-AWG 6			
Total harmonic distortion	< 1.5 %	< 1 %	< 1.25 %	< 1 %
Power factor (C <sub>PF min</sub> )	0.1 ind. / cap.			
Max. continuous output current	18 A	24 A	27.3 A	28.9 A
OCF/DIAC breaker size	25 A	30 A	35 A	40 A

EFFICIENCY	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
Max. Efficiency	98 %			
CEC Efficiency	97 %	97.5 %		

GENERAL DATA	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
Dimensions (height x width x depth)	510 x 725 x 225 mm (20.1 x 28.5 x 8.9 inches)			
Weight	43.4 kg (95.7 lbs)			
Protection Class	NEMA 4X			
Night time consumption	< 1 W			
Inverter topology	Transformerless			
Cooling	Regulated air cooling			
Installation	Indoor and outdoor installation, tilt from 0 - 90 degree <sup>4</sup>			
DIN rail (length x width x depth)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)			
Ambient operating temperature range	-40 - +60 °C (-40°F - + 140 °F)			
Permitted humidity	0 - 100 % (non-condensing)			
Elevation	2000 m (6562 ft) with a max. input voltage of 1000 V / 3400 m (11155 ft) with a max. input voltage of 850 V			
DC connection technology	6x DC+ and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)			
AC connection technology	Screw terminals 14-6 AWG			
Certificates and compliance with standards	UL 1741-2010 Second Edition (incl. UL1741 Supplement SA 2016-09 for California Rule 21 and Hawaiian Electric Code Rule 14H), UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547a-2014, IEEE 1547-1-2003, ANSI/IEEE 62.41, FCC Part 15 A & B, NEC 2017 Article 690, C22.2 No. 107.1-16, UL1699B Issue 2 - 2013, CSA T1L M-07 Issue 1 - 2013			

<sup>3</sup> +N for sensing purposes - no current carrying conductor

<sup>4</sup> Fronius Shade Cover required for installation angles less than 15 degree

PROTECTIVE DEVICES	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
DC reverse polarity protection	Yes			
Anti islanding	Yes			
Over temperature protection	Output power derating / Active cooling			
AFCI	Yes			
Rapid shutdown compliant	Yes			
Ground Fault Protection with Isolation Monitor Interrupter	Yes			
DC disconnect	Yes			

INTERFACES	SYMO 15.0-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
USB (A socket)	Datalogging and inverter update possible via USB			
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol			
Power Line Communication (PLC)	Yes – SunSpec Rapid Shutdown communication standard			
Wi-Fi/Ethernet/Serial Datalogger and webserver <sup>2</sup>	Wireless standard 802.11 b/g/n / Fronius Solar web, SunSpec Modbus TCP, ISON / SunSpec Modbus RTU			
6 inputs and 4 digital I/Os <sup>3</sup>	Load management; signaling, multipurpose I/O			

<sup>2</sup> Available with the Fronius Datamanager 2.0 Card (only one card required for up to 100 inverters)

/ Perfect Welding / Solar Energy / Perfect Charging

**THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.**

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 4,760 employees worldwide and 1,253 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

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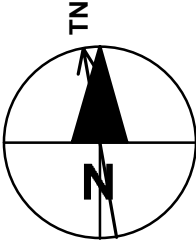
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WELLAND, ONTARIO

Owner's Project Number: <b>60686829</b>	Owner's Contract Number: <b>987654321</b>
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3	2025-02-10	ADDENDUM #01
2	2025-01-27	ISSUED FOR CLIENT REVIEW
1	2025-01-24	ISSUED FOR ESA AND WHEHC REVIEW

Mark	Date	Description
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Revision History		
Filename :		Version : <b>2020.2.5.</b>
Project Number : <b>60686829</b>		Project Manager :
Project Administrator :		BIM/VDC Manager :
Sustainability Target :		IPMS 1 ( m <sup>2</sup> ) : IPMS 2 ( m <sup>2</sup> ) :
Designed : <b>T.W.</b>		Date (yyyy-mm-dd) :
Drawn : <b>A.H.</b>		Date (yyyy-mm-dd) :
Reviewed : <b>G.R.</b>		Date (yyyy-mm-dd) :
Checked : <b>W.A.</b>		Date (yyyy-mm-dd) :
Approved : <b>W.A.</b>		Date (yyyy-mm-dd) :
Title :		

DETAILS 2 of 2

Page Size: <b>ANSI D</b>	Sheet: <b>PV105</b>	Rev: <b>3</b>
Scale: <b>N.T.S.</b>	of:	of: