

Revisions	Issue/Description	Date/Date
5	ISSUED FOR TENDER	2014/12/17
4	ISSUED FOR 100% CD REVIEW	2015/09/13
3	ISSUED FOR 80% CD REVIEW	2015/07/08
2	ISSUED FOR 60% CD REVIEW	2015/05/27
1	ISSUED FOR 33% CD REVIEW	2015/05/08

ESQUIMALT GRAVING DOCK

825 ADMIRALS ROAD
VICTORIA, BC, V9A 2P1

SERVICE ENTRANCE SUBSTATION (SES) & PUMPHOUSE SUBSTATION (PHS)

Project File/Titre du projet: 825 ADMIRALS ROAD VICTORIA BC ESQUIMALT GRAVING DOCK ELECTRICAL SAFETY UPGRADE

Designed by/Conçeur par: G.P.

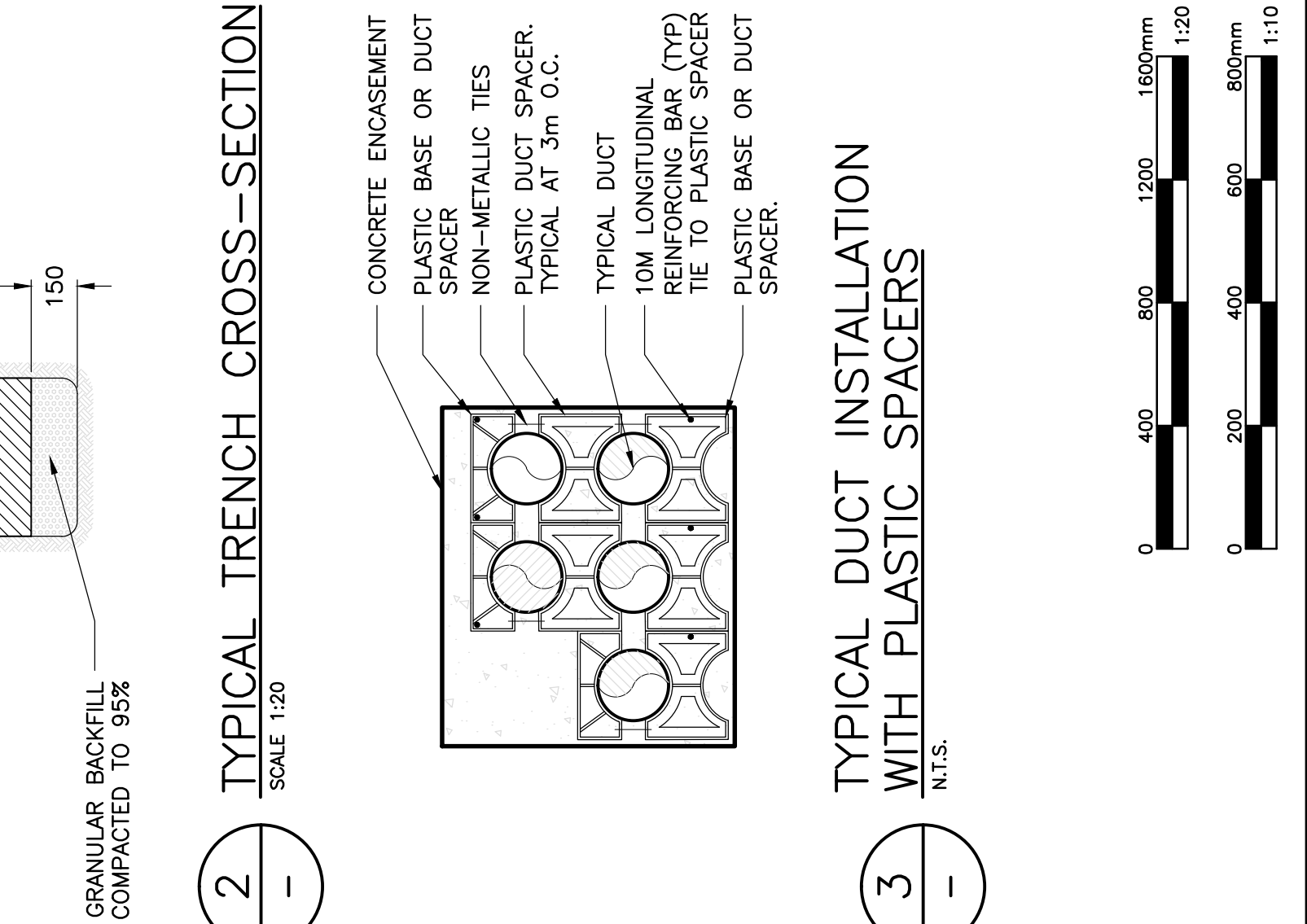
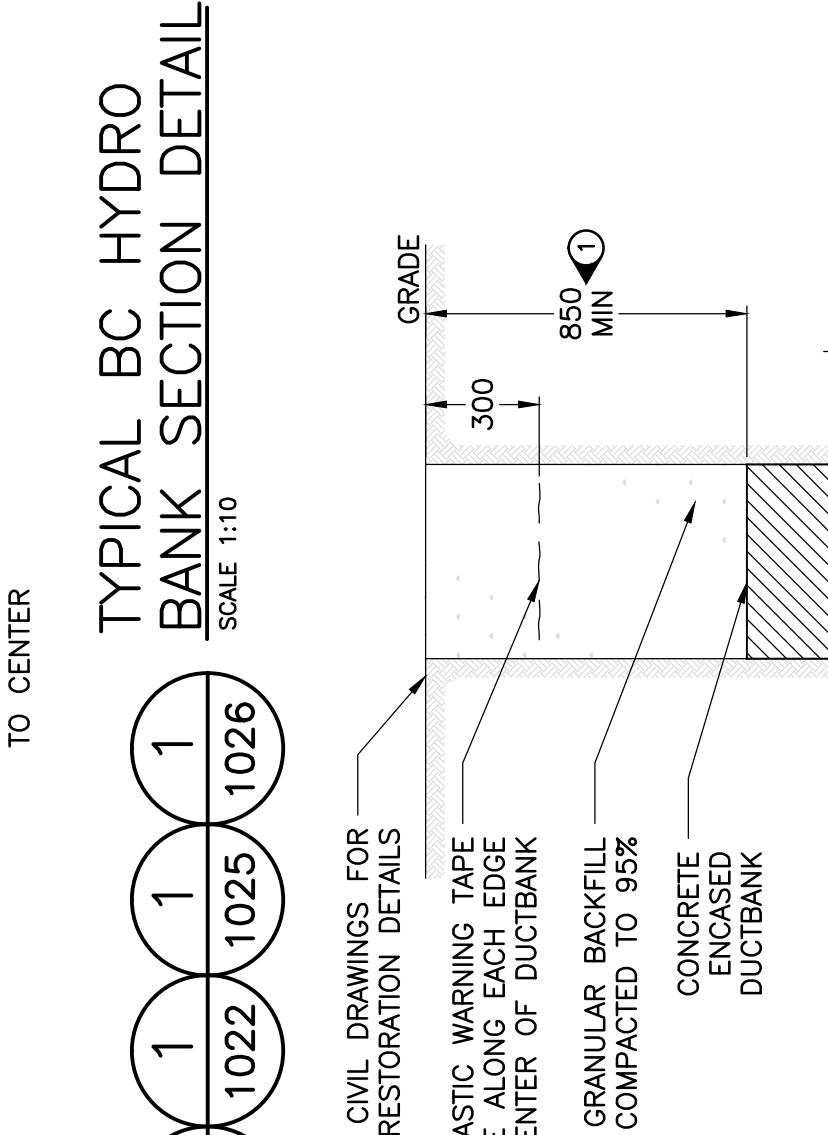
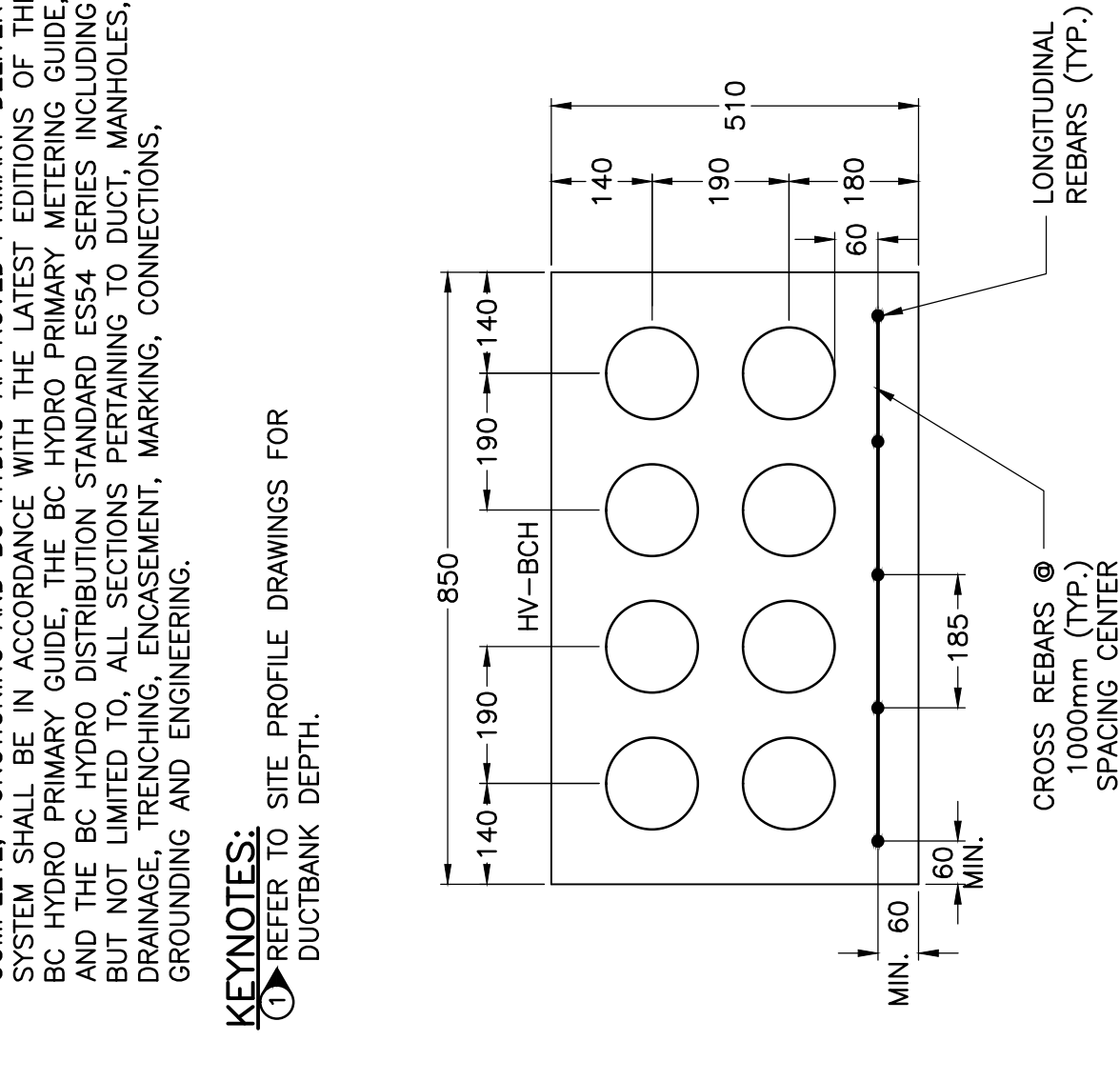
Drawn by/Dessiné par: P.P.

WSPSC Project Manager/Administrateur de Projet: TPSSC
Janice LeBlanc
WSPSC Project Engineer/Ingénieur de Projet: TPSSC
Prestat/Prestataire: TPSSC
Drawing File/Titre du dessin: DUCT BANK DETAILS CROSS-SECTIONS (1 of 8)

Client/Client	Description/Description	Date/Date
0	ISSUED FOR 33% CD REVIEW	2015/05/08
1	ISSUED FOR 60% CD REVIEW	2015/05/27
2	ISSUED FOR 80% CD REVIEW	2015/07/08
3	ISSUED FOR 100% CD REVIEW	2015/09/13
4	ISSUED FOR TENDER	2014/12/17

- GENERAL NOTES:**
- ALL DUCTS ON THIS DRAWING ARE 120mm. ALL OTHER CONDUITS ON THIS DRAWING ARE 103mm UNLESS NOTED OTHERWISE.
 - ALL CONCRETE ENCASED CONDUITS ARE SCHEDULE 40 RIGID PVC CONDUITS.
 - REINFORCE DUCT BANKS WITH 15M BARS RUN CONTINUOUSLY IN ALL 4 CORNERS OF THE DUCT BANK.
 - INSTALL TWO CONTINUOUS 4/0 AWG INSULATED COPPER GROUND CONDUCTORS PER EVERY 100mm OF BANK LENGTH. PROVIDE ELECTRICAL CONTINUITY SITE WIDE. INSULATED GROUND CONDUCTORS ARE IDENTIFIED IN THE CROSS-SECTIONS WITH THE GROUND SYMBOL.
 - PROVIDE ADDITIONAL GROUNDS WHERE DUCT BANKS FAN OUT INTO SEPARATE MANHOLES.
 - BOND ALL METAL RACKING LOCATIONS IN EVERY MANHOLE.
 - USE UNDERGROUND DUCT SPACERS WITH 190mmx190mm DUCT CENTRE TO CENTRE MEASUREMENT.
 - ALL CONDUITS MUST BE ENCASED IN A MINIMUM OF 50mm OF CONCRETE.
 - MAINTAIN MINIMUM 300mm SEPARATION BETWEEN COMMUNICATIONS CONDUITS AND POWER CONDUITS. INSTALL 3 DEDICATED 103mm DEDICATED FIBER OPTIC ONLY DUCT IN THE 300mm SPACE BETWEEN THE LOW VOLTAGE AND THE COMMUNICATIONS CONDUITS.
 - 10/16-BCH DUCTBANK SHALL BE INSTALLED IN ACCORDANCE WITH BC HYDRO STANDARDS AND CANADIAN ELECTRICAL CODE REQUIREMENTS.
 - ALL DUCTBANKS SHALL BE INSTALLED IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE.
 - REFER TO SITE PLANS FOR SPACING BETWEEN DUCTBANKS.
 - ALL DUCTWORK AND ASSOCIATED EQUIPMENT PROVIDED FOR A COMPLETE, FUNCTIONING AND BC HYDRO APPROVED PRIMARY DELIVERY SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE CANADIAN ELECTRICAL CODE (CEC), THE CANADIAN WIREMANS GUIDE AND THE BC HYDRO DISTRIBUTION STANDARD ESS4. SERIES INCLUDING, BUT NOT LIMITED TO, ALL SECTIONS PERTAINING TO DUCT, MANHOLES, DRAINAGE, TRENCHING, ENCASEMENT, MARKING, CONNECTIONS, GROUNDING AND ENGINEERING.

- KEYNOTES:**
- REFER TO SITE PROFILE DRAWINGS FOR DUCTBANK DEPTH.



CONDUIT AND CABLE SCHEDULE

CUT SECTION	CONDUIT ROUTE	CONDUIT ID	SIZE (mm)	TYPE	VOLTAGE	CONDUCTORS	COMMENTS
AA	103C - STUBS	1-1	103	COMM	N/A	EMPTY	FUTURE
		1-2	103	COMM	N/A	EMPTY	FUTURE
		1-3	103	COMM	N/A	EMPTY	FUTURE
A	102LV - STUBS	1-1	103	LV	600V	EMPTY	FUTURE
		1-2	103	LV	600V	EMPTY	FUTURE
		1-3	103	LV	600V	EMPTY	FUTURE

CONDUIT AND CABLE SCHEDULE

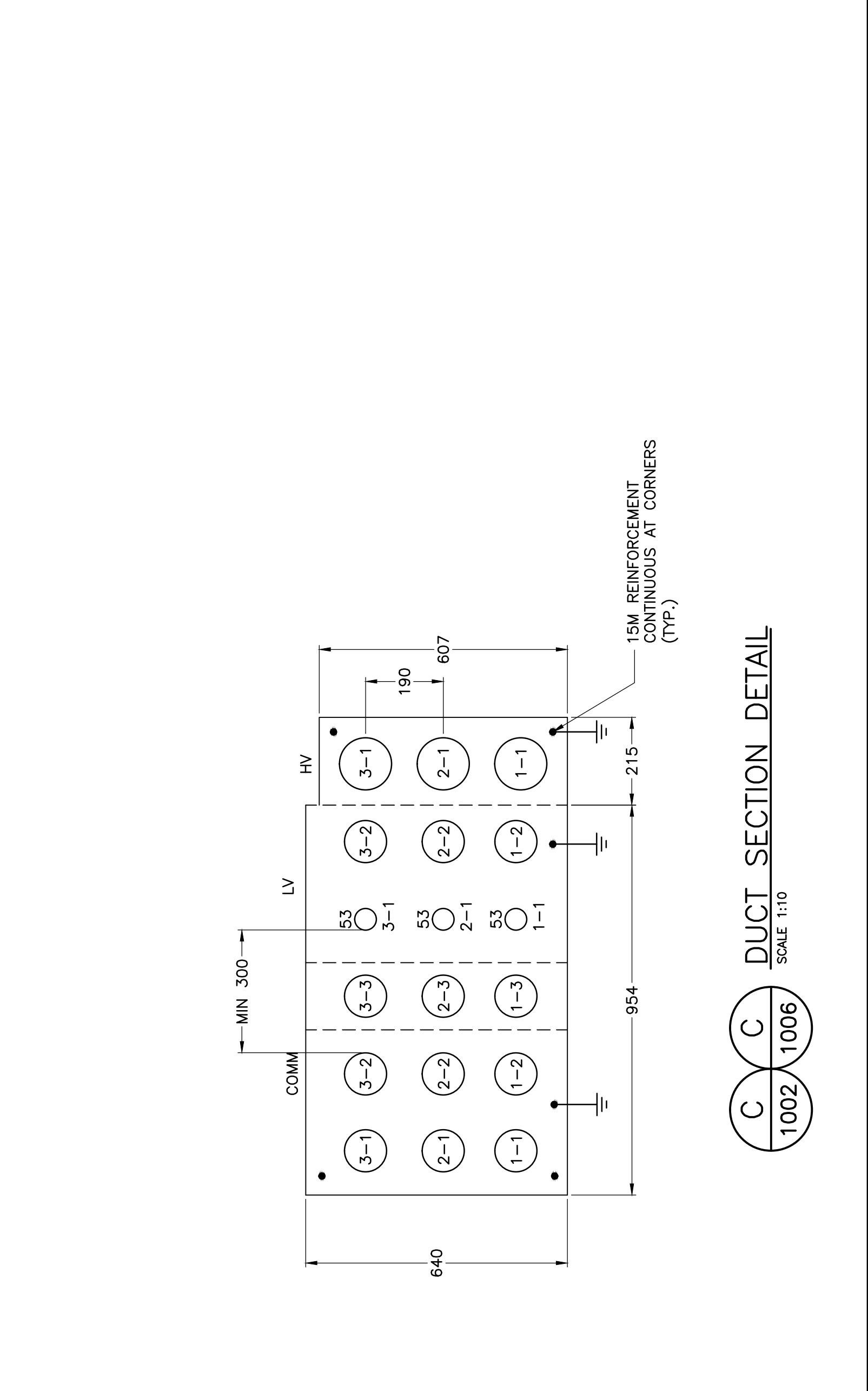
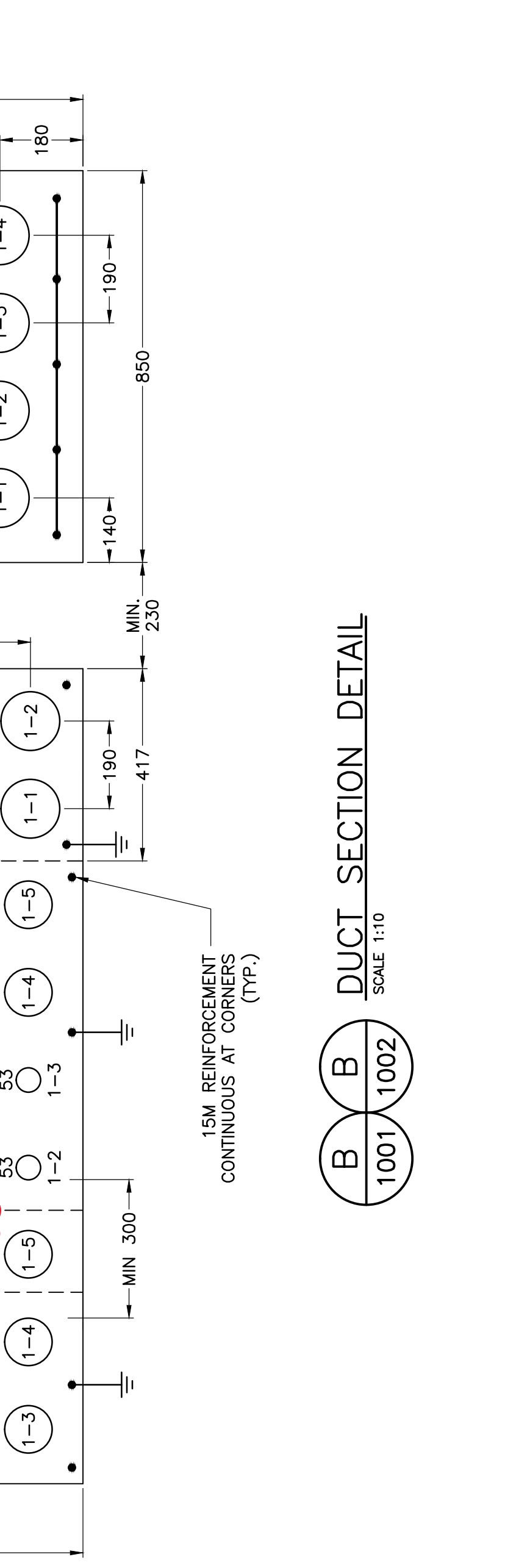
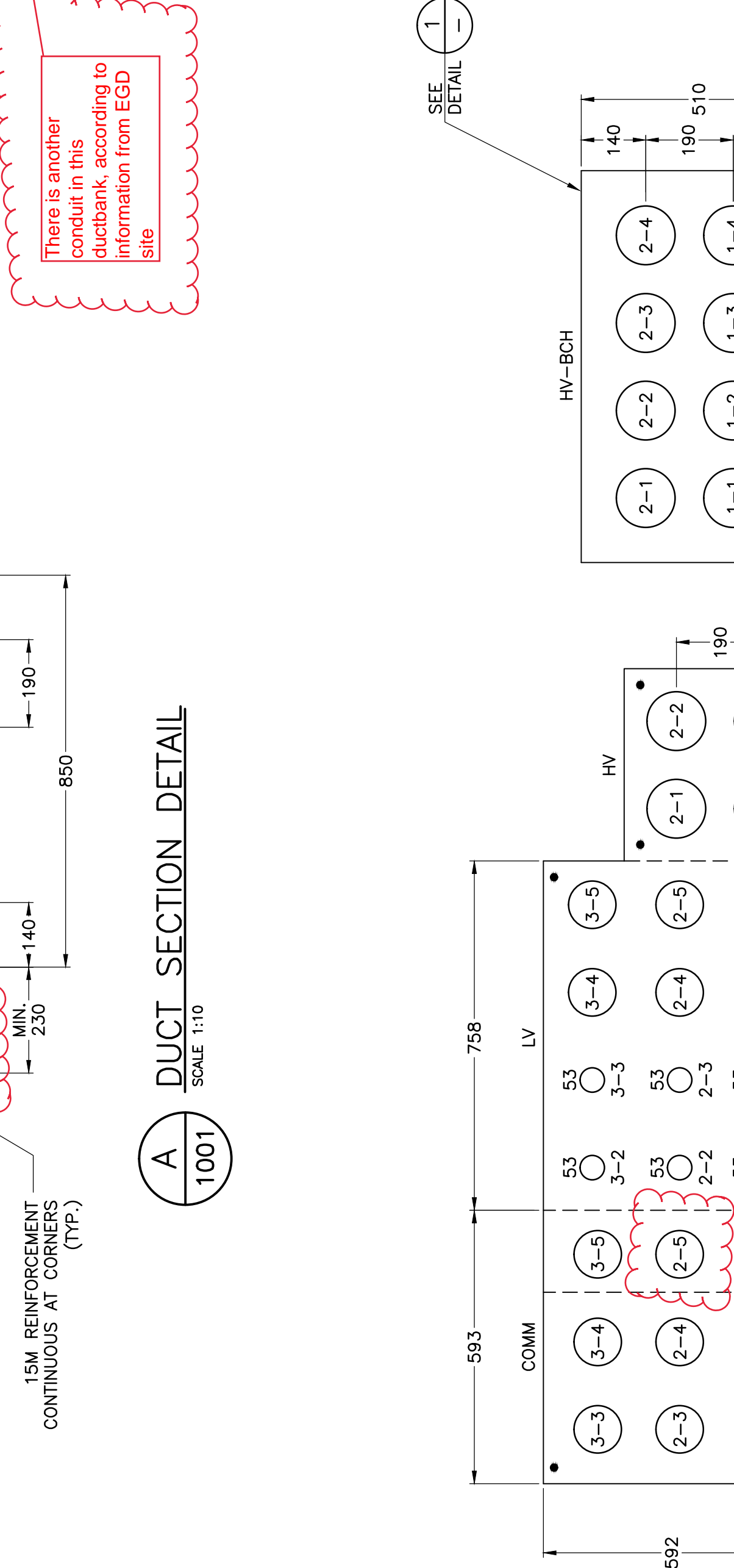
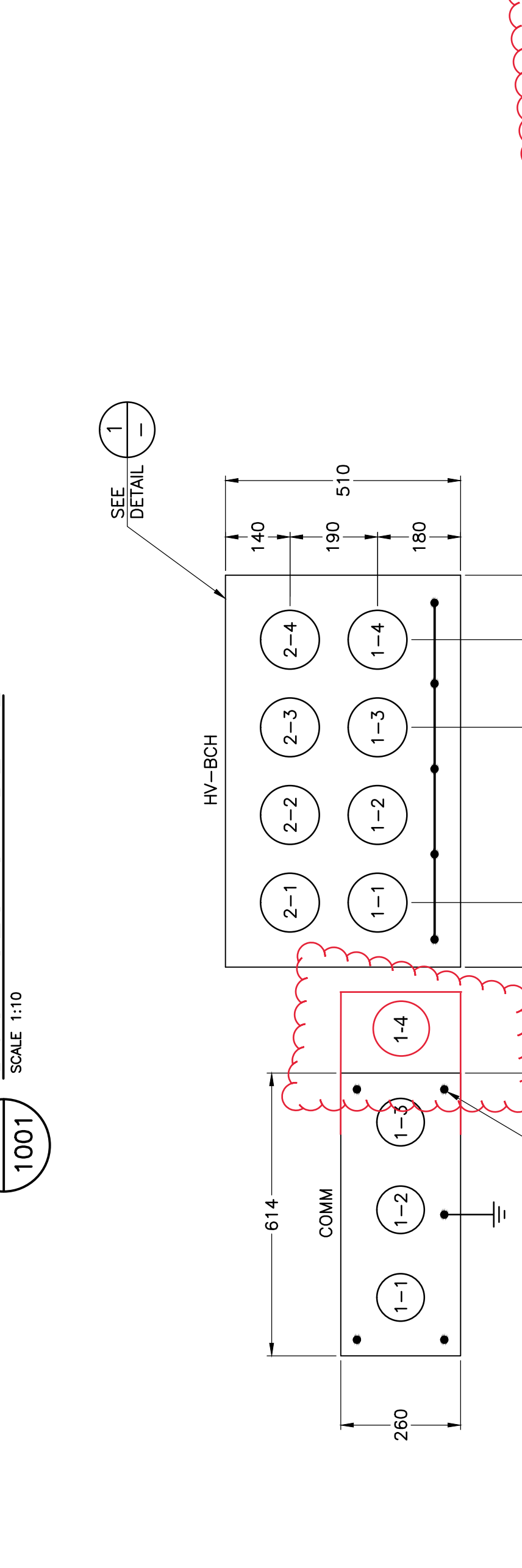
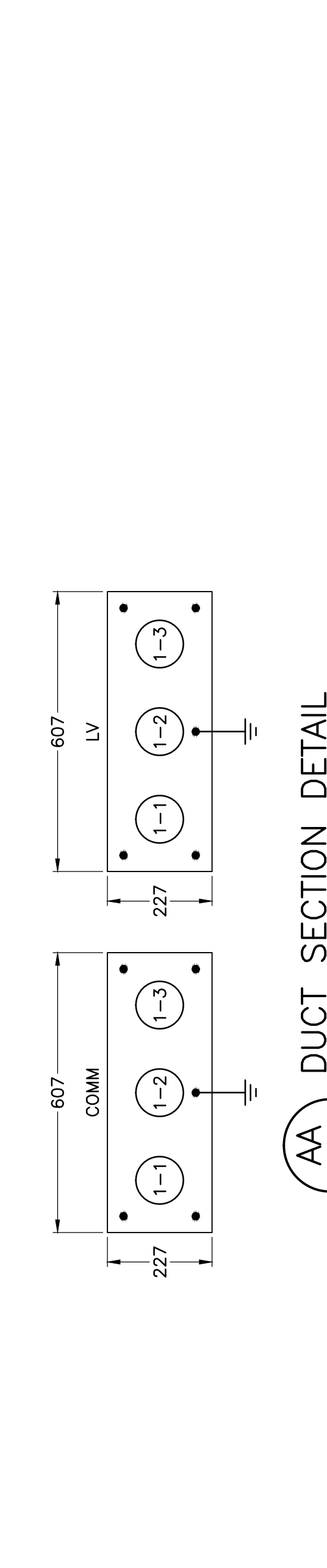
CUT SECTION	CONDUIT ROUTE	CONDUIT ID	SIZE (mm)	TYPE	VOLTAGE	CONDUCTORS	COMMENTS	
A	STUB - 100BCH	1-1	129	BCH - HV	12.5/25KV	EMPTY	INSTALL IN ACCORDANCE WITH BC HYDRO STANDARDS	
		1-2	129	BCH - HV	12.5/25KV	EMPTY		
		1-3	129	BCH - HV	12.5/25KV	EMPTY		
		1-4	129	BCH - HV	12.5/25KV	EMPTY		
		2-1	129	BCH - HV	12.5/25KV	EMPTY		
		2-2	129	BCH - HV	12.5/25KV	EMPTY		
		2-3	129	BCH - HV	12.5/25KV	EMPTY		
		2-4	129	BCH - HV	12.5/25KV	EMPTY		
		1-1	103	COMM	N/A	400 GEL		TELEPHONE CABLE
		1-2	103	COMM	N/A	1 COAX		SHAW CABLE
B	103C - 103C	1-3	103	COMM	N/A	24 SSM	1x24SSM - IN SEPARATE INNER DUCT	
		1-4	103	COMM	N/A	BC Hydro Fiber to SES	BC Hydro Fiber to SES	

CONDUIT AND CABLE SCHEDULE

CUT SECTION	CONDUIT ROUTE	CONDUIT ID	SIZE (mm)	TYPE	VOLTAGE	CONDUCTORS	COMMENTS	
B	100BCH - 124BCH	1-1	129	BCH - HV	12.5/25KV	EMPTY	INSTALL IN ACCORDANCE WITH BC HYDRO STANDARDS	
		1-2	129	BCH - HV	12.5/25KV	EMPTY		
		1-3	129	BCH - HV	12.5/25KV	EMPTY		
		1-4	129	BCH - HV	12.5/25KV	EMPTY		
		2-1	129	BCH - HV	12.5/25KV	EMPTY		
		2-2	129	BCH - HV	12.5/25KV	EMPTY		
		2-3	129	BCH - HV	12.5/25KV	EMPTY		
		2-4	129	BCH - HV	12.5/25KV	EMPTY		
		1-1	129	HV	12.5/25KV	3-1c #4/0		10MVA SERVICE FROM DND PARALLEL WITH CABLES IN CONDUIT 2-1
		1-2	129	HV	12.5/25KV	EMPTY		FUTURE
C	104HV - 104HV	2-1	129	HV	12.5/25KV	3-1c #4/0	10MVA SERVICE FROM DND PARALLEL WITH CABLES IN CONDUIT 1-1	
		2-2	129	HV	12.5/25KV	EMPTY	FUTURE	
		1-2	53	LV	600V	2#8	ENTRY LIGHTING	
		1-3	53	LV	600V	3#6	DEMARIC FEEDER	
		1-4	103	LV	600V	EMPTY	FUTURE	
		1-5	103	LV	600V	EMPTY	FUTURE	
		2-2	53	LV	600V	EMPTY	FUTURE	
		2-3	53	LV	600V	3#6	COMMISSIONARIES KIOSK FEEDER	
		2-4	103	LV	600V	EMPTY	FUTURE	
		3-2	103	LV	600V	EMPTY	FUTURE	
C	105LV - 105LV	3-3	53	LV	600V	EMPTY	FUTURE	
		3-4	103	LV	600V	EMPTY	FUTURE	
		3-5	103	LV	600V	EMPTY	FUTURE	
		1-3	103	COMM	N/A	1 COAX	SHAW CABLE	
		1-4	103	COMM	N/A	24 SSM, VARIES	FIRE/GENERAL ALARM SYSTEM - 1x24SSM IN SEPARATE INNER DUCTS	
		1-5	103	COMM	N/A	150 SSM, 48 SSM	1x96 SSM, 1x48 SSM, 1x65 SSM, 1x48 SSM - IN SEPARATE INNER DUCTS	
		2-3	103	COMM	N/A	110 PR GEL	TELEPHONE CABLE	
		2-4	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY	
		2-5	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY	
		3-3	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY	
C	106C - 106C	3-4	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY	
		3-5	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY	
		3-3	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY	

CONDUIT AND CABLE SCHEDULE

CUT SECTION	CONDUIT ROUTE	CONDUIT ID	SIZE (mm)	TYPE	VOLTAGE	CONDUCTORS	COMMENTS
C	104HV - STUB-OFF	1-1	129	HV	12.5/25KV	EMPTY	FUTURE
		2-1	129	HV	12.5/25KV	EMPTY	FUTURE
		3-1	129	HV	12.5/25KV	EMPTY	FUTURE
		1-1	53	LV	600V	EMPTY	FUTURE
		1-2	103	LV	600V	SPARE	FUTURE - N11 FEEDER
		2-1	53	LV	600V	EMPTY	FUTURE
		2-2	103	LV	600V	EMPTY	FUTURE
		3-1	53	LV	600V	EMPTY	FUTURE
		3-2	103	LV	600V	EMPTY	FUTURE
		1-1	103	COMM	N/A	EMPTY	FUTURE SHAW CABLE
C	106C - STUBS	1-2	103	COMM	N/A	EMPTY	FUTURE FIRE/GENERAL ALARM SYSTEM
		1-3	103	COMM	N/A	EMPTY	FUTURE OPTICAL FIBRE
		2-1	103	COMM	N/A	EMPTY	FUTURE TELEPHONE CABLE
		2-2	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY
		3-1	103	COMM	N/A	EMPTY	FUTURE
		3-2	103	COMM	N/A	EMPTY	FUTURE
		3-3	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY



Public Works and
Government Services
Travaux publics et
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REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
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SUIITE 6041 GARDNER ROAD
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APPLIED ENGINEERING
SOLUTIONS LIMITED
VICTORIA OFFICE
1000 WALKER STREET
VICTORIA BC V8W 2A8
TEL: 250-384-6517 FAX: 250-384-3841

KEYPLAN
PROJECT
NORTH

5	ISSUED FOR TENDER	2014/12/17
4	ISSUED FOR 100% CD REVIEW	2013/09/13
3	ISSUED FOR 80% CD REVIEW	2013/07/08
2	ISSUED FOR 60% CD REVIEW	2013/05/27
1	ISSUED FOR 33% CD REVIEW	2012/05/08
0		

Revision	Description/Description	Date/Date

**ESQUIMALT
GRAVING DOCK**

**825 ADMIRALS ROAD
VICTORIA, BC, V9A 2P1**

**PROJECT FILE/TITRE DU PROJET
825 ADMIRALS ROAD VICTORIA BC
ESQUIMALT GRAVING DOCK
ELECTRICAL SAFETY UPGRADE**

**SERVICE ENTRANCE
SUBSTATION (SES) &
PUMPHOUSE SUBSTATION
(PHS)**

Consultant Signature Box Only

Designed by/Concept par
G.P.

Drawn by/Desiné par
P.P.

Project Manager/Administrateur de Projet: TPSSC
James LeBlanc

Project Engineer/Ingénieur de Projet: TPSSC
Caroline Macdonald

Project Architect/Architecte de Projet: TPSSC
Prestipaul Paul

Drawing Title/Titre du dessin

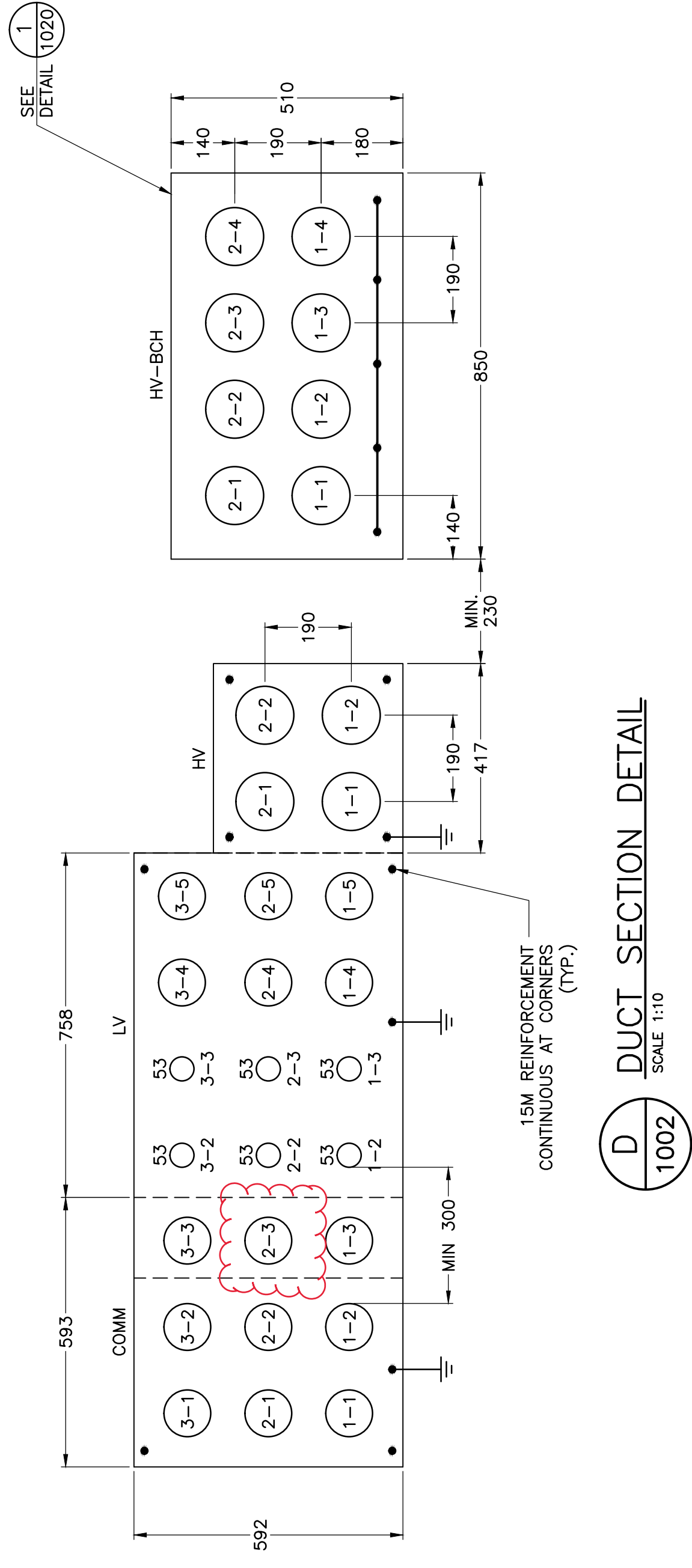
**DUCT BANK DETAILS
CROSS-SECTIONS
(2 of 8)**

Project No./No. du projet R.018739.001	Sheet/Feuille 1021	Revision no./ no. de révisions 4
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- GENERAL NOTES:**
ALL CONDUITS ON THIS DRAWING ARE 120mm. ALL OTHER CONDUITS ON THIS DRAWING ARE 103mm UNLESS NOTED OTHERWISE.
- REINFORCE DUCT BANKS WITH 15M BARS RUN CONTINUOUSLY IN ALL 4 CORNERS OF THE DUCT BANK.
 - INSTALL TWO CONTINUOUS 4/0 AWG INSULATED COPPER GROUND CONDUITS IN EVERY GROUNDED DUCT BANK. PROVIDE ELECTRICAL CONTINUITY SITE WIDE. INSULATED GROUND CONDUITORS ARE IDENTIFIED IN THE CROSS-SECTIONS WITH THE GROUND SYMBOL.
 - PROVIDE ADDITIONAL GROUNDS WHERE DUCT BANKS FAN OUT INTO SEPARATE MANHOLES.
 - BOND ALL METAL RACKING LOCATIONS IN EVERY MANHOLE.
 - USE UNDERGROUND DUCT SPACERS WITH 190mmx190mm DUCT CENTRE TO CENTRE MEASUREMENT.
 - ALL CONDUITS MUST BE ENCASED IN A MINIMUM OF 50mm OF CONCRETE.
 - MAINTAIN MINIMUM 300mm SEPARATION BETWEEN COMMUNICATIONS CONDUITS AND POWER CONDUITS. INSTALL 3 DEDICATED 103mm DEDICATED FIBER OPTIC ONLY DUCT IN THE 300mm SPACE BETWEEN THE LOW VOLTAGE AND THE COMMUNICATIONS CONDUITS.
 - 10/14-BCH DUCTBANK SHALL BE INSTALLED IN ACCORDANCE WITH BC HYDRO STANDARDS AND CANADIAN ELECTRICAL CODE REQUIREMENTS.
 - 11-ALL DUCTBANKS SHALL BE INSTALLED IN ACCORDANCE WITH CANADIAN ELECTRICAL CODE.
 - REFER TO SITE PLANS FOR SPACING BETWEEN DUCTBANKS.
 - ALL DUCTWORK AND ASSOCIATED EQUIPMENT PROVIDED FOR A COMPLETE, FUNCTIONING AND BC HYDRO APPROVED PRIMARY DELIVERY SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE CANADIAN ELECTRICAL CODE (CEC), CANADIAN STANDARDS FOR SAFETY AND THE BC HYDRO DISTRIBUTION STANDARD ESS4 SERIES INCLUDING, BUT NOT LIMITED TO, ALL SECTIONS PERTAINING TO DUCT, MANHOLES, DRAINAGE, TRENCHING, ENCASMENT, MARKING, CONNECTIONS, GROUNDING AND ENGINEERING.

CONDUIT AND CABLE SCHEDULE							
CUT SECTION	CONDUIT ROUTE	CONDUIT ID	SIZE (mm)	TYPE	VOLTAGE	CONDUCTORS	COMMENTS
D	1008CH - 1248CH	1-1	129	BCH - HV	12.5/25KV	EMPTY	
		1-2	129	BCH - HV	12.5/25KV	EMPTY	
		1-3	129	BCH - HV	12.5/25KV	EMPTY	
		1-4	129	BCH - HV	12.5/25KV	EMPTY	
		2-1	129	BCH - HV	12.5/25KV	EMPTY	INSTALL IN ACCORDANCE WITH BC HYDRO STANDARDS
		2-2	129	BCH - HV	12.5/25KV	EMPTY	
		2-3	129	BCH - HV	12.5/25KV	EMPTY	
		2-4	129	BCH - HV	12.5/25KV	EMPTY	
		1-1	129	HV	12.5/25KV	3-1c #4/0	10MVA SERVICE FROM DND PARALLEL WITH CABLES IN CONDUIT 2-1
		1-2	129	HV	12.5/25KV	EMPTY	FUTURE
		2-1	129	HV	12.5/25KV	3-1c #4/0	10MVA SERVICE FROM DND PARALLEL WITH CABLES IN CONDUIT 1-1
		2-2	129	HV	12.5/25KV	EMPTY	FUTURE
		1-2	53	LV	600V	2#8	ENTRY LIGHTING
		1-3	53	LV	600V	2#6	DEWARC FEEDER
		1-4	103	LV	600V	EMPTY	FUTURE
		1-5	103	LV	600V	EMPTY	FUTURE - NII FEEDER
		2-2	53	LV	600V	EMPTY	FUTURE
		2-3	53	LV	600V	3#6	COMMISSIONAIRES KOSK FEEDER
2-4	103	LV	600V	EMPTY	FUTURE		
3-2	53	LV	600V	EMPTY	FUTURE		
3-3	53	LV	600V	EMPTY	FUTURE		
3-4	103	LV	600V	EMPTY	FUTURE		
3-5	103	LV	600V	EMPTY	FUTURE		
1-1	103	COMM	N/A	1 COAX	SHAW CABLE		
1-2	103	COMM	N/A	24 SSM, VARIES	FIRE/GENERAL ALARM SYSTEM - 1x24SSM IN SEPARATE INNER DUCTS		
1-3	103	COMM	N/A	150 SSM, 48 SMM	1x96 SSM, 1x48 SSM, 1x65SSM, 1x48SSMM - IN SEPARATE INNER DUCTS		
2-1	103	COMM	N/A	110 PR GEL	TELEPHONE CABLE		
2-2	103	COMM	N/A	EMPTY	FUTURE		
2-3	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY		
3-1	103	COMM	N/A	EMPTY	FUTURE		
3-2	103	COMM	N/A	EMPTY	FUTURE		
3-3	103	COMM	N/A	EMPTY	FUTURE - FIBRE ONLY		

Route fiber from BC Hydro through this conduit to connect to the SES building



CONDUIT AND CABLE SCHEDULE							
CUT SECTION	CONDUIT ROUTE	CONDUIT ID	SIZE (mm)	TYPE	CURRENT NOMINAL VOLTAGE	CONDUCTORS	COMMENTS
E	107HV - STUBS	1-1	129	HV	12.5/25KV	EMPTY	FUTURE
		1-2	129	HV	12.5/25KV	EMPTY	FUTURE
		2-1	129	HV	12.5/25KV	EMPTY	FUTURE
		2-2	129	HV	12.5/25KV	EMPTY	FUTURE
		1-1	103	LV	600V	EMPTY	FUTURE
		1-2	103	LV	600V	EMPTY	FUTURE
	108LV - STUBS	2-1	103	LV	600V	EMPTY	FUTURE
		2-2	103	LV	600V	EMPTY	FUTURE
		2-3	103	LV	600V	EMPTY	FUTURE
		2-4	103	LV	600V	EMPTY	FUTURE
		2-5	103	LV	600V	EMPTY	FUTURE
		2-6	103	LV	600V	EMPTY	FUTURE
	109C STUBS	3-1	103	COMM	EMPTY	EMPTY	FUTURE SHAW CABLE
		3-2	103	COMM	EMPTY	EMPTY	FUTURE - FIBRE ONLY
		3-3	103	COMM	EMPTY	EMPTY	FUTURE - FIBRE ONLY
		3-4	103	COMM	EMPTY	EMPTY	FUTURE - FIBRE ONLY
		3-5	103	COMM	EMPTY	EMPTY	FUTURE - FIBRE ONLY
		3-6	103	COMM	EMPTY	EMPTY	FUTURE - FIBRE ONLY
108LV - STUBS	3-1	53	LV	600V	EMPTY	FUTURE HIGH MAST LIGHTING #3	
	3-2	53	LV	600V	EMPTY	FUTURE UPPER WALL PANEL	
	3-3	53	LV	600V	EMPTY	FUTURE UPPER WALL PANEL	
109C - STUBS	1-4	53	COMM	EMPTY	EMPTY	FUTURE UPPER WALL COVIMS	
	2-4	53	COMM	EMPTY	EMPTY	FUTURE UPPER WALL COVIMS	

