



# DISTRIBUTION CONSTRUCTION STANDARDS

*Date Published: 14 May 2020*

## PART 10 - SUBSTATIONS

### G2 - DISTRIBUTION SUBSTATION NETWORK ARRANGEMENTS

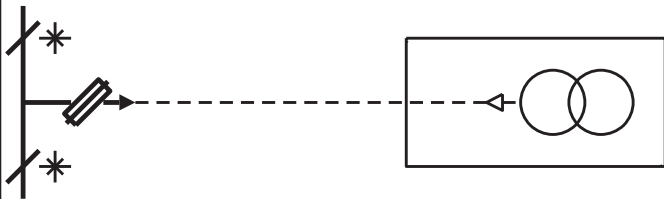
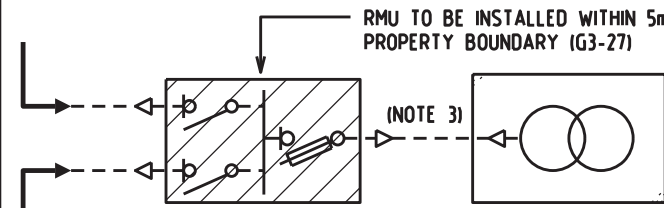
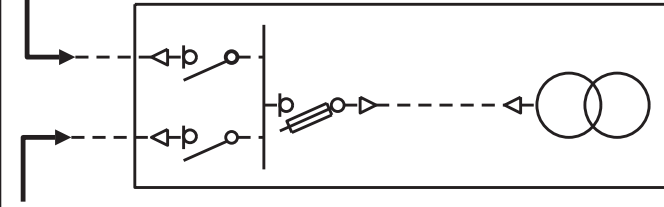
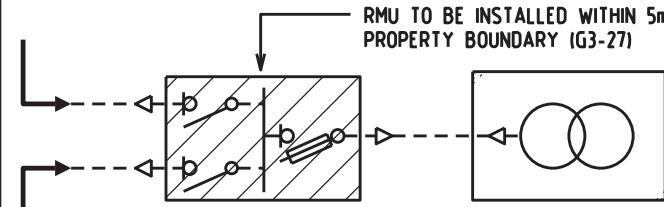
For application to  
Horizon Power  
Electricity Distribution Networks

## G2 - DISTRIBUTION SUBSTATION NETWORK ARRANGEMENTS – Drawing Register

Number	Description
<a href="#">G2-1/1</a>	6.6kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-1/2</a>	6.6kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-2/1</a>	6.6kV Overhead Supply Customer Owned Substation, Typical Urban
<a href="#">G2-2/2</a>	6.6kV Overhead Supply Customer Owned Substation Typical Urban
<a href="#">G2-3/1</a>	6.6kV Underground Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-4/1</a>	6.6kV Underground Supply Customer Owned Subststion, Typical Urban
<a href="#">G2-4/2</a>	6.6kV Underground Supply Customer Owned Substation, Typical Urban
<a href="#">G2-5/1</a>	11kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-5/2</a>	11kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-5/3</a>	11kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-6/1</a>	11kV Overhead Supply Customer Owned Substation, Typical Urban
<a href="#">G2-6/2</a>	11kV Overhead Supply Customer Owned Substation, Typical Urban
<a href="#">G2-7/1</a>	11kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-7/2</a>	11kV Underground Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-7/3</a>	11kV Underground Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-8/1</a>	11kV Underground Supply Customer Owned Substation, Typical Urban
<a href="#">G2-8/2</a>	11kV Underground Supply Customer Owned Substation, Typical Urban
<a href="#">G2-9/1</a>	22kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-9/2</a>	22kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-9/3</a>	22kV Overhead Supply District and Sole Use Substation, Typical Urban
<a href="#">G2-10/1</a>	22kV Overhead Supply District and Sole Use Substation, Typical Rural
<a href="#">G2-10/2</a>	22kV Overhead Supply District and Sole Use Substation, Typical Rural
<a href="#">G2-11/1</a>	22kV Overhead Supply Customer Owned Substation, Typical Urban
<a href="#">G2-11/2</a>	22kV Overhead Supply Customer Owned Substation, Typical Urban
<a href="#">G2-12/1</a>	22kV Overhead Supply Customer Owned Substation, Typical Rural
<a href="#">G2-13/1</a>	22kV Underground Supply District and Sole Use Substation, Typical Urban and Rural
<a href="#">G2-13/2</a>	22kV Underground Supply District and Sole Use Substation, Typical Urban and Rural
<a href="#">G2-13/3</a>	22kV Underground Supply District and Sole Use Substation, Typical Urban and Rural
<a href="#">G2-14/1</a>	22kV Underground Supply Customer Owned Substation, Typical Urban and Rural
<a href="#">G2-14/2</a>	22kV Underground Supply Customer Owned Substation, Typical Urban and Rural
<a href="#">G2-15/1</a>	33kV Overhead Supply District and Sole Use Substation, Typical Rural
<a href="#">G2-16/1</a>	33kV Overhead Supply Customer Owned Substatin, Typical Rural

Number	Description
<a href="#">G2-17/1</a>	33kV Underground Supply District and Sole Use Substation, Typical Urban and Rural
<a href="#">G2-17/2</a>	33kV Underground Supply District and Sole Use Substation, Typical Urban and Rural
<a href="#">G2-17/3</a>	33kV Underground Supply District and Sole Use Substation, Typical Urban and Rural
<a href="#">G2-18/1</a>	33kV Underground Supply Customer Owned Substation, Typical Urban and Rural
<a href="#">G2-18/2</a>	33kV Underground Supply Customer Owned Substation Typical Urban and Rural

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-9D1-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 630 MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>  <p>SUBSTATION TO HAVE PROVISION FOR MV SWITCHGEAR, BUT NOT TO BE INSTALLED INITIALLY</p>	G3-02	N/A	N/A	N/A
ONE	160 to 630 MPS	<p>SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY</p>  <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	N/A	N/A	N/A	N/A
ONE	160 to 1000 NON MPS	<p>SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY FOR USE OF DROP OUT FUSES AS AN ALTERNATIVE FOR THIS ARRANGEMENT</p>  <p>WHERE DROPOUT FUSES ARE USED AS AN ALTERNATIVE TO THIS ARRANGEMENT, SUBSTATION TO HAVE PROVISION FOR MV SWITCHGEAR BUT NOT TO BE INSTALLED INITIALLY</p>	G3-04	G3-08	G3-14	G3-18
ONE	160 to 1000 NON MPS	<p>SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY</p>  <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	N/A	N/A	G3-13	G3-17



DISTRIBUTION CONSTRUCTION STANDARDS

6.6kV OVERHEAD SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN

REVISION	DATE
B	FEB18

DRAWING No.

G2-1/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.  
THIS DRAWING IN NO WAY RELATES TO WESTERN POWER DRAWING WITH THE SAME NO.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
TWO	160 to 1000 NON MPS		G3-06	G3-10	G3-16	G3-20
TWO	160 to 1000 NON MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p>	N/A	N/A	G3-15	G3-19
COMMENTS						
SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY. WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.						
SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY. WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.						



DISTRIBUTION CONSTRUCTION STANDARDS

REFERENCE DRAWING

6.6kV OVERHEAD SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN

REVISION DATE  
B FEB18

DRAWING No.

G2-1/2

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<p>&gt;1.5MVA up to 2MVA</p> <p>DEPENDING ON CIRCUMSTANCES THIS ARRANGEMENT MAY BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS <math>\leq</math>1MVA BUT &gt;1.5MVA</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p> <p>ALWAYS PROVIDE FOR 2nd HP ISOLATOR</p>	G3-22	G3-23
<p><math>\geq</math>1.5MVA up to 2MVA</p> <p>ALTERNATIVE TO ABOVE WHERE CUSTOMER IS PREPARED TO PAY THE FULL COST OF THE SECOND CABLE &amp; ISOLATOR FOR IMPROVED SECURITY.</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23
<p>&gt;2MVA up to 4MVA</p> <p>EACH SWITCHBOARD IS SUPPLIED OFF A SEPARATE FEEDER (TWO FEEDERS OPERATING RADIALLY).</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 2MVA</p> <p>* N.O.P. AT EITHER ISOLATOR</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 2MVA</p> <p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23



DISTRIBUTION CONSTRUCTION STANDARDS

6.6kV OVERHEAD SUPPLY  
CUSTOMER OWNED  
SUBSATION, TYPICAL URBAN

REVISION	DATE
B	FEB 18

DRAWING No.

G2-2/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-901-01-0002-2015.

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<p>COMMENTS</p> <p>ABOVE 4MVA</p> <p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION.</p>		G3-22	G3-23



DISTRIBUTION CONSTRUCTION STANDARDS

6.6KV OVERHEAD SUPPLY CUSTOMER OWNED SUBSTATION, TYPICAL URBAN

REVISION	DATE
B	FEB18

DRAWING No.

G2-2/2

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 630 MPS	<p>COMMENTS</p> <p>REMOTE FUSE SWITCH AVAILABLE</p> <p>REMOTE FUSE SWITCH</p>	G3-01	N/A	N/A	N/A
ONE	160 to 630 MPS	<p>COMMENTS</p> <p>MV SWITCHGEAR REQUIRED, SUBSTATION BE LOCATED WITHIN 30m OF PROPERTY BOUNDARY</p>	G3-02	N/A	N/A	N/A
ONE	160 to 630 MPS	<p>COMMENTS</p> <p>MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY</p> <p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p>	N/A	N/A	N/A	N/A
ONE	160 to 1000 NON MPS	<p>COMMENTS</p> <p>REMOTE FUSE SWITCH AVAILABLE</p> <p>REMOTE FUSE SWITCH</p>	G3-03	G3-07	G3-13	G3-17



LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<p>COMMENTS</p> <p>&gt;1.5MVA up to 2MVA</p> <p>DEPENDING ON CIRCUMSTANCES THIS ARRANGEMENT MAY BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS <math>\leq</math> 1MVA BUT &gt;1.5MVA.</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23
<p>&gt;2MVA up to 4MVA</p> <p>EACH SWITCHBOARD IS SUPPLIED OFF A SEPARATE FEEDER (TWO FEEDERS OPERATING RADIALLY).</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 2MVA</p> <p>* N.O.P. AT EITHER ISOLATOR</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 2MVA</p> <p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.



DISTRIBUTION CONSTRUCTION STANDARDS

6.6kV UNDERGROUND SUPPLY CUSTOMER OWNED SUBSTATION, TYPICAL URBAN

REVISION	DATE
B	FEB18

DRAWING No.

G2-4/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<p>COMMENTS</p> <p>ABOVE 4MVA</p> <p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION.</p>	<p>REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS BOARD CONFIGURATION DEPENDS UPON INSTALLATION.</p> <p>CUSTOMER</p> <p>ZONE SUBSTATION</p> <p>FIRE SEGREGATED</p> <p>CUSTOMER</p> <p>REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS BOARD CONFIGURATION DEPENDS UPON INSTALLATION.</p>	G3-22	G3-23



DISTRIBUTION CONSTRUCTION STANDARDS

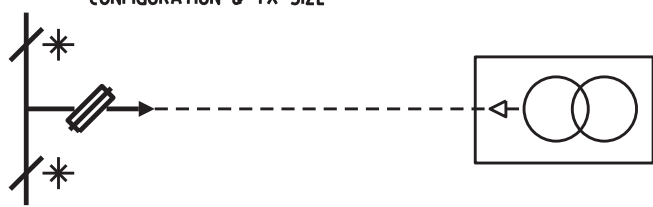
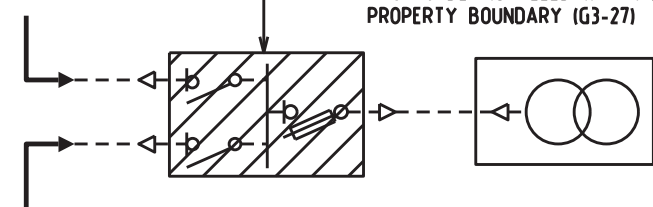
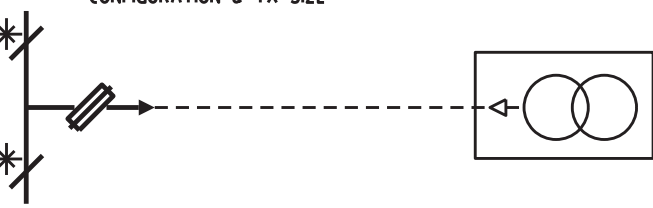
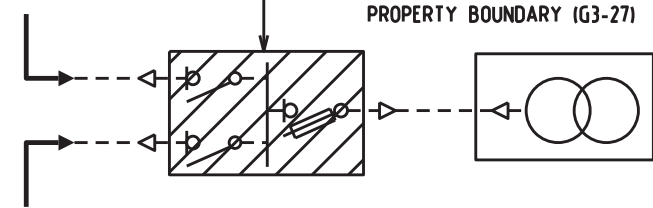
6.6kV UNDERGROUND SUPPLY CUSTOMER OWNED SUBSTATION, TYPICAL URBAN

REVISION	DATE
B	FEB.18

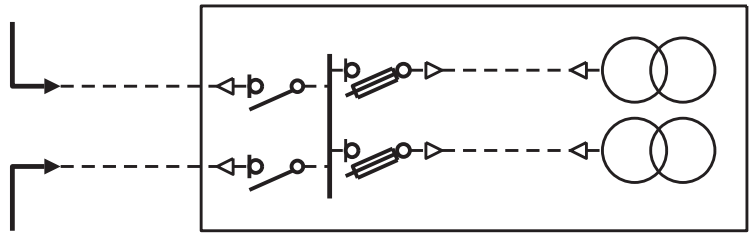
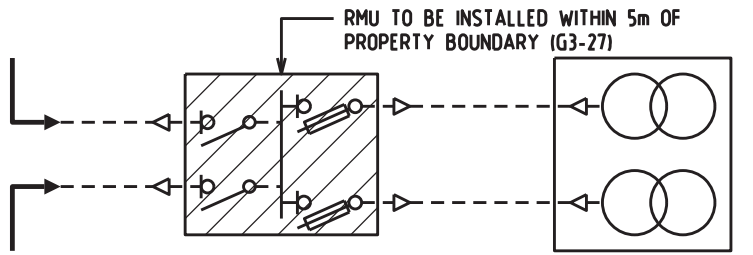
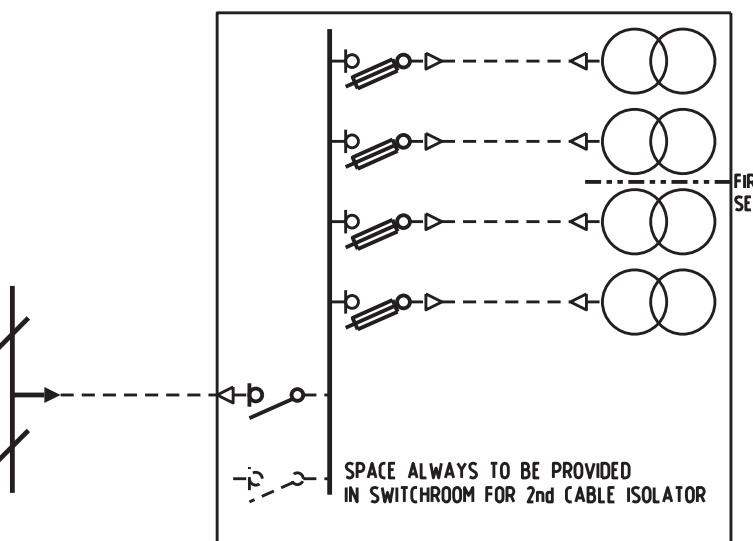
DRAWING No.

G2-4/2

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 630 MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>  <p>SUBSTATION TO HAVE PROVISION FOR MV SWITCHGEAR, BUT NOT TO BE INSTALLED INITIALLY</p>	G3-02	N/A	N/A	N/A
SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY.						
ONE	160 to 630 MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p>  <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	N/A	N/A	N/A	N/A
SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY.						
ONE	160 to 1000 NON MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>  <p>SUBSTATION TO HAVE PROVISION FOR MV SWITCHGEAR, BUT NOT TO BE INSTALLED INITIALLY</p>	G3-04	G3-08	G3-14	G3-18
SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY.						
ONE	160 to 1000 NON MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p>  <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	N/A	N/A	G3-13	G3-17
SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY.						

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
TWO	160 to 1000 NON MPS		G3-06	G3-10	G3-16	G3-20
TWO	160 to 1000 NON MPS		N/A	N/A	G3-15	G3-19
THREE OR FOUR	160 to 1000 NON MPS		N/A	N/A	N/A	G3-21

**COMMENTS**

SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY. WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.

SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY. WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.

WHERE THE TRANSFORMERS ARE TO BE LOCATED WITHIN 30m OF THE BOUNDARY, THE MV SWITCHROOM CAN BE ADJACENT TO THE TRANSFORMERS. HOWEVER WHERE THE TRANSFORMERS ARE TO BE LOCATED MORE THAN 30m FROM THE BOUNDARY THE MV SWITCHROOM IS TO BE LOCATED SEPARATELY FROM THE TRANSFORMERS & SHOULD BE WITHIN 5m OF THE BOUNDARY. WHERE LESS TRANSFORMERS CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE MINIMUM ARRANGEMENT.



DISTRIBUTION CONSTRUCTION STANDARDS

11kV OVERHEAD SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN

REVISION DATE  
B FEB 18

DRAWING No.

G2-5/2

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
THREE OR FOUR	160 to 1000 NON MPS		N/A	N/A	N/A	G3-21
COMMENTS ALTERNATIVE TO PREVIOUS WHERE CUSTOMER IS PREPARED TO PAY THE FULL COST OF THE SECOND CABLE & ISOLATOR FOR IMPROVED SECURITY.						

**HORIZON**  
POWER  
DISTRIBUTION CONSTRUCTION  
STANDARDS

11KV OVERHEAD SUPPLY  
DISTRICT AND SOLE USE  
SUBSATION, TYPICAL URBAN

REVISION	DATE
B	FEB 18
DRAWING No. G2-5/3	

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<p>COMMENTS</p> <p>&gt;2MVA up to 4MVA</p> <p>DEPENDING ON CIRCUMSTANCES THIS ARRANGEMENT MAY ALSO BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS <math>\approx</math>4MVA BUT &gt;1.5MVA</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p> <p>SPACE ALWAYS TO BE PROVIDED IN SWITCHROOM FOR 2nd CABLE ISOLATOR</p>	G3-22	G3-23
<p>&gt;2MVA up to 4MVA</p> <p>ALTERNATIVE TO ABOVE WHERE CUSTOMER IS PREPARED TO PAY THE FULL COST OF THE SECOND CABLE &amp; ISOLATOR FOR IMPROVED SECURITY.</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23
<p>&gt;4MVA up to 8MVA</p> <p>EACH SWITCHBOARD SUPPLIED OFF A SEPARATE FEEDER. (TWO FEEDERS OPERATING RADIALLY)</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA</p> <p>* N.O.P. AT EITHER ISOLATOR</p> <p>FIRE SEGREGATED</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA</p> <p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.



DISTRIBUTION CONSTRUCTION STANDARDS

11kV OVERHEAD SUPPLY  
CUSTOMER OWNED  
SUBSATION, TYPICAL URBAN

REVISION	DATE
B	FEB 18


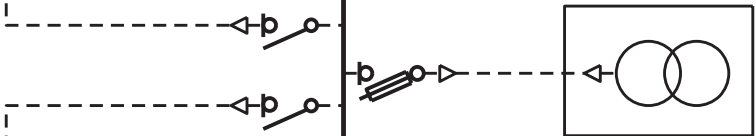
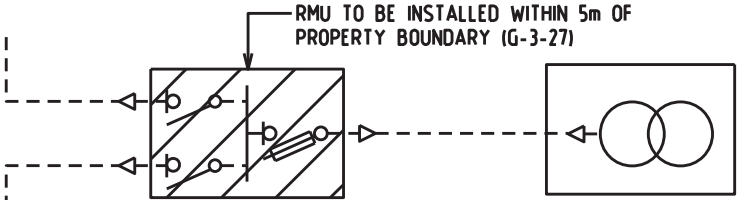
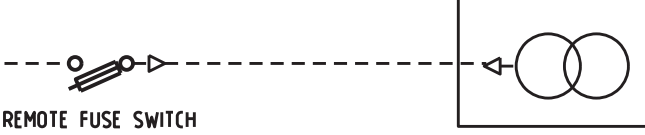
DRAWING No.

G2-6/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING
<p>COMMENTS</p> <p>ABOVE 8MVA</p> <p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION</p>	<p>The diagram illustrates a closed ring MV system arrangement. A central vertical busbar is connected to two horizontal busbars, forming a closed loop. A section of the ring is labeled 'FIRE SEGREGATED' with a dashed line. On the left side, a 'ZONE SUBSTATION' is connected to the ring. Two 'CUSTOMER' connections are shown at the top and bottom, with dashed lines indicating the connection path. Two kWh meters are connected to the busbar. Text above and below the diagram states: 'REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS BOARD CONFIGURATION DEPENDS UPON INSTALLATION.'</p>	<p>G-3-22</p>

 <p>DISTRIBUTION CONSTRUCTION STANDARDS</p>		<p>11kV OVERHEAD SUPPLY CUSTOMER OWNED SUBSATION, TYPICAL URBAN</p>	<p>REVISION B</p>	<p>DATE FEB 18</p>
			<p>DRAWING No. G2-6/2</p>	

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 630 MPS	 <p>REMOTE FUSE SWITCH</p>	G-3-01	N/A	N/A	N/A
ONE	160 to 630 MPS		G-3-02	N/A	N/A	N/A
ONE	160 to 630 MPS	 <p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G-3-27)</p>	N/A	N/A	N/A	N/A
ONE	160 to 1000 NON MPS	 <p>REMOTE FUSE SWITCH</p>	G-3-03	G-3-07	G-3-13	G-3-17

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.



DISTRIBUTION CONSTRUCTION STANDARDS

11kV OVERHEAD SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN

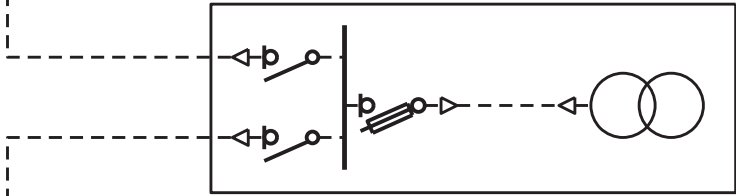
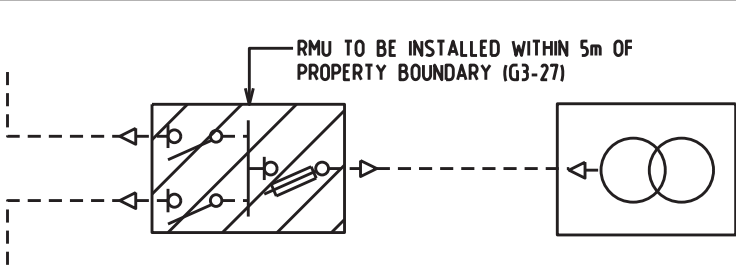
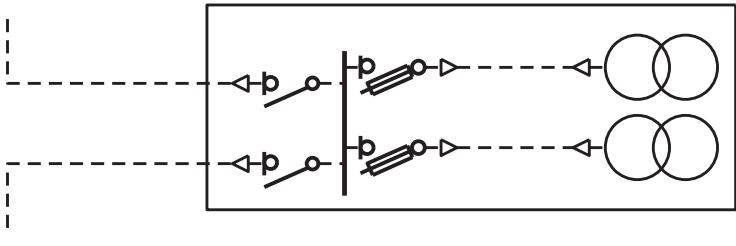
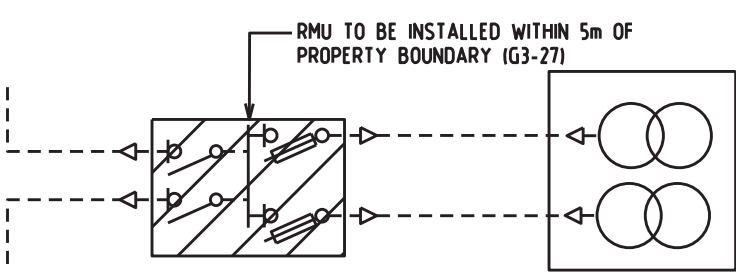
REVISION	DATE
B	FEB 18

DRAWING No.

G2-7/1



THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 1000 NON MPS		G3-04	G3-08	G3-14	G3-18
ONE	160 to 1000 NON MPS		N/A	N/A	G3-13	G3-17
TWO	160 to 1000 NON MPS		G3-06	G3-10	G3-16	G3-20
TWO	160 to 1000 NON MPS		N/A	N/A	G3-15	G3-19

COMMENTS

ONE  
160 to 1000  
NON MPS  
MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY

ONE  
160 to 1000  
NON MPS  
MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY

TWO  
160 to 1000  
NON MPS  
SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY, WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.

TWO  
160 to 1000  
NON MPS  
SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY, WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.



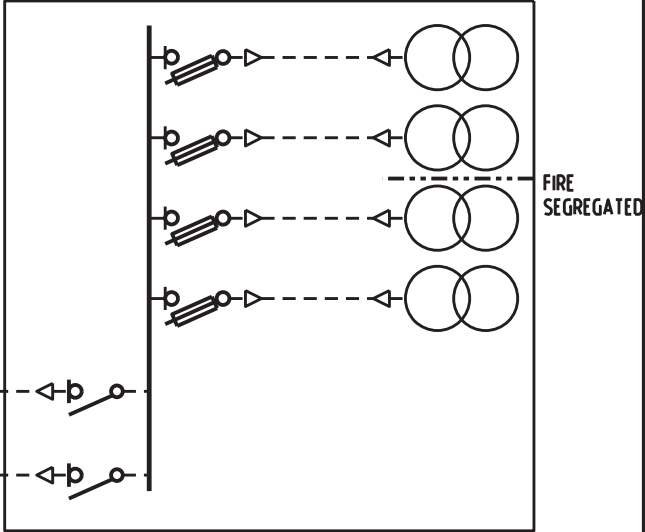
DISTRIBUTION CONSTRUCTION STANDARDS

11kV UNDERGROUND SUPPLY DISTRICT AND SOLE USE SUBSATION, TYPICAL URBAN

REVISION	DATE
B	FEB 18

DRAWING No.

G2-7/2

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
THREE OR FOUR	160 to 1000 NON MPS	 <p>FIRE SEGREGATED</p>	N/A	N/A	N/A	G3-21
<p>COMMENTS</p> <p>WHERE THE TRANSFORMERS ARE TO BE LOCATED WITHIN 30m OF THE BOUNDARY, THE MV SWITCHROOM CAN BE ADJACENT TO THE TRANSFORMERS. HOWEVER WHERE THE TRANSFORMERS ARE TO BE LOCATED MORE THAN 30m FROM THE BOUNDARY THE MV SWITCHROOM IS TO BE LOCATED SEPARATELY FROM THE TRANSFORMERS &amp; SHOULD BE WITHIN 5m OF THE BOUNDARY. WHERE LESS TRANSFORMERS CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS &amp; THE MINIMUM ARRANGEMENT.</p>						

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.



DISTRIBUTION CONSTRUCTION STANDARDS

11kV UNDERGROUND SUPPLY DISTRICT AND SOLE USE SUBSATION, TYPICAL URBAN

REVISION	DATE
B	FEB 18

DRAWING No.

G2-7/3

*THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.*

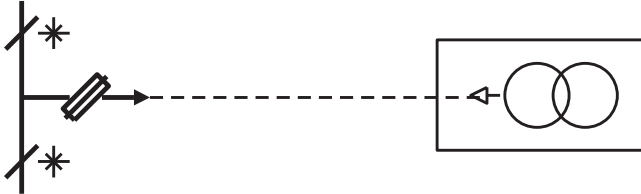
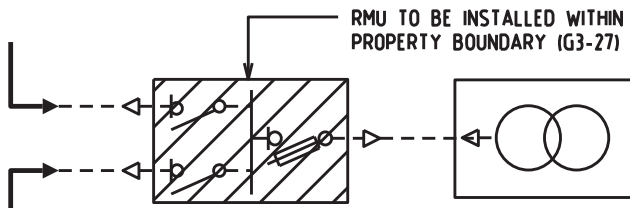
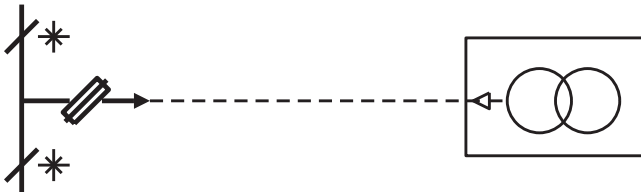
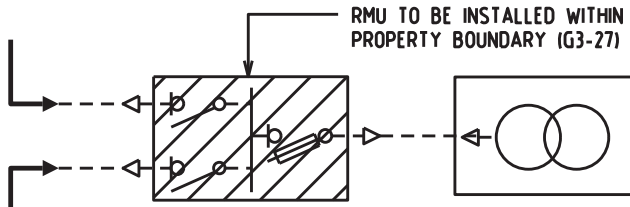
LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<b>COMMENTS</b> >2MVA up to 4MVA DEPENDING ON CIRCUMSTANCES THIS ARRANGEMENT MAY ALSO BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS <4MVA BUT >1.5MVA	REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS SEE G1-10 FOR CUSTOMER REQUIREMENTS 	G3-22	G3-23
>4MVA up to 8MVA EACH SWITCHBOARD SUPPLIED OFF A SEPARATE FEEDER. (TWO FEEDERS OPERATING RADIALLY)	SEE G1-10 FOR CUSTOMER REQUIREMENTS BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA * N.O.P. AT EITHER ISOLATOR FIRE SEGREGATED BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA SEE G1-10 FOR CUSTOMER REQUIREMENTS 	G3-22	G3-23

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING
<p>COMMENTS</p> <p>ABOVE 8MVA</p> <p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION</p>	<p>The diagram illustrates a closed ring MV system arrangement. A central vertical busbar is connected to two horizontal busbars, forming a closed loop. A section of the ring is labeled 'FIRE SEGREGATED' with dashed lines. On the left side, two feeders are shown with switches and directional protection symbols, labeled 'ZONE SUBSTATION'. On the right side, two feeders are shown with switches and kWh meters. Customer connections are indicated by dashed lines with arrows pointing to the busbar, labeled 'CUSTOMER'. Text above and below the busbar reads 'REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS BOARD CONFIGURATION DEPENDS UPON INSTALLATION.'</p>	<p>G3-22</p>

 <p>DISTRIBUTION CONSTRUCTION STANDARDS</p>		<p>11kV UNDERGROUND SUPPLY CUSTOMER OWNED SUBSATION, TYPICAL URBAN</p>	<p>REVISION</p> <p>B</p>	<p>DATE</p> <p>FEB 18</p>
			<p>DRAWING No.</p> <p>G2-8/2</p>	

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING						
			DISTRICT		SOLE USE				
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED			
COMMENTS									
ONE	160 to 630 MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>  <p>SUBSTATION TO HAVE PROVISION FOR MV SWITCHGEAR, BUT NOT TO BE INSTALLED INITIALLY</p>	G3-02	N/A	N/A	N/A			
SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY - (REF NOTE 2)									
ONE	160 to 630 MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p>  <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	N/A	N/A	N/A	N/A			
SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY									
ONE	160 to 1000 NON MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>  <p>SUBSTATION TO HAVE PROVISION FOR MV SWITCHGEAR, BUT NOT TO BE INSTALLED INITIALLY</p>	G3-04	G3-08	G3-14	G3-18			
SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY									
ONE	160 to 1000 NON MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p>  <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	N/A	N/A	G3-13	G3-17			
SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY									



DISTRIBUTION CONSTRUCTION STANDARDS

22kV OVERHEAD SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN

REVISION	DATE
B	FEB 18

DRAWING No.

G2-9/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING						
			DISTRICT		SOLE USE				
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED			
COMMENTS									
TWO	160 to 1000 NON MPS		G3-06	G3-10	G3-16	G3-20			
SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY. WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.									
TWO	160 to 1000 NON MPS		N/A	N/A	G3-15	G3-19			
SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY. WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.									
THREE OR FOUR	160 to 1000 NON MPS		N/A	N/A	N/A	G3-21			
WHERE THE TRANSFORMERS ARE TO BE LOCATED WITHIN 30m OF THE BOUNDARY, THE MV SWITCHROOM CAN BE ADJACENT TO THE TRANSFORMERS. HOWEVER WHERE THE TRANSFORMERS ARE TO BE LOCATED MORE THAN 30m FROM THE BOUNDARY THE MV SWITCHROOM IS TO BE LOCATED SEPARATELY FROM THE TRANSFORMERS & SHOULD BE WITHIN 5m OF THE BOUNDARY. WHERE LESS TRANSFORMERS CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE MINIMUM ARRANGEMENT.									



DISTRIBUTION CONSTRUCTION STANDARDS

22kV OVERHEAD SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN

REVISION	DATE
B	FEB 18

DRAWING No.

G2-9/2

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
THREE OR FOUR	160 to 1000 NON MPS		N/A	N/A	N/A	G3-21
COMMENTS ALTERNATIVE TO PREVIOUS WHERE CUSTOMER IS PREPARED TO PAY THE FULL COST OF THE SECOND CABLE & ISOLATOR FOR IMPROVED SECURITY.						



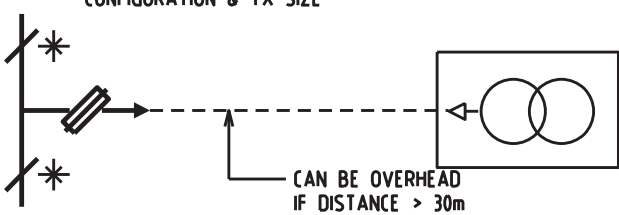
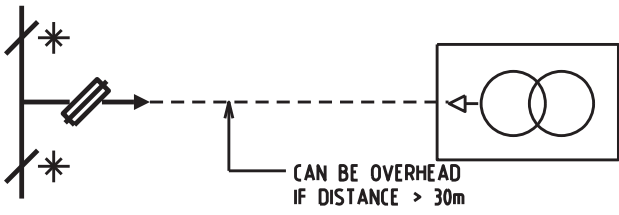
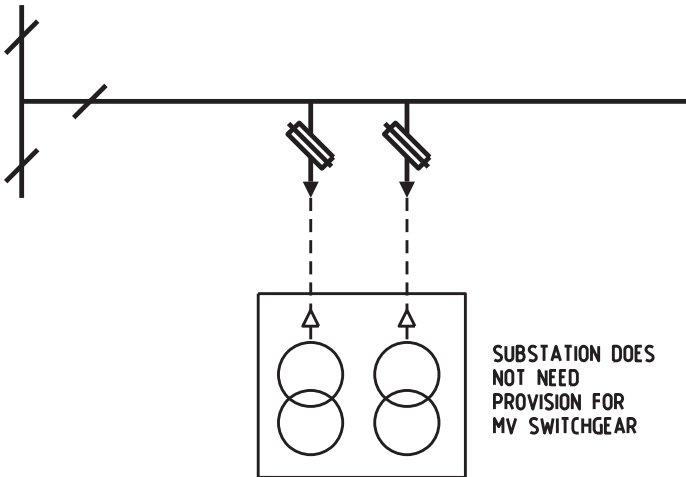
DISTRIBUTION CONSTRUCTION STANDARDS

22KV OVERHEAD SUPPLY DISTRICT AND SOLE USE SUBSATION, TYPICAL URBAN

REVISION B DATE FEB 18

DRAWING No. G2-9/3

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 630 MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>  <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	G3-01	N/A	N/A	N/A
ONE	160 to 1000 NON MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>  <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	G3-03	G3-07	G3-13	G3-17
TWO	160 to 1000 NON MPS	 <p>SUBSTATION DOES NOT NEED PROVISION FOR MV SWITCHGEAR</p>	G3-05	G3-09	G3-15	G3-19



THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
THREE OR FOUR	500 to 1000 NON MPS		N/A	N/A	N/A	G3-21
THREE OR FOUR	500 to 1000 NON MPS		N/A	N/A	N/A	G3-21

**COMMENTS**

WHERE THE TRANSFORMERS ARE TO BE LOCATED WITHIN 30m OF THE BOUNDARY, THE MV SWITCHROOM CAN BE ADJACENT TO THE TRANSFORMERS. HOWEVER WHERE THE TRANSFORMERS ARE TO BE LOCATED MORE THAN 30m FROM THE BOUNDARY THE MV SWITCHROOM IS TO BE LOCATED SEPARATELY FROM THE TRANSFORMERS & SHOULD BE WITHIN 5m OF THE BOUNDARY. WHERE LESS TRANSFORMERS CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS AND THE MINIMUM ARRANGEMENT.

THREE OR FOUR 500 to 1000 NON MPS

ALTERNATIVE TO ABOVE WHERE CUSTOMER IS PREPARED TO PAY THE FULL COST OF THE SECOND CABLE & ISOLATOR FOR IMPROVED SECURITY.



DISTRIBUTION CONSTRUCTION STANDARDS

22kV OVERHEAD SUPPLY DISTRICT AND SOLE USE SUBSATION, TYPICAL RURAL

REVISION B DATE FEB 18

DRAWING No.

G2-10/2

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<p>COMMENTS</p> <p>&gt;2MVA up to 4MVA</p> <p>DEPENDING ON CIRCUMSTANCES THIS ARRANGEMENT MAY ALSO BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS <math>\leq</math> 2MVA BUT <math>&gt;</math> 1.5MVA</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p> <p>SPACE ALWAYS TO BE PROVIDED IN SWITCHROOM FOR 2nd CABLE ISOLATOR</p>	G3-22	G3-23
<p>&gt;2MVA up to 4MVA</p> <p>ALTERNATIVE TO ABOVE WHERE CUSTOMER IS PREPARED TO PAY THE FULL COST OF THE SECOND CABLE &amp; ISOLATOR FOR IMPROVED SECURITY.</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23
<p>&gt;4MVA up to 8MVA</p> <p>EACH SWITCHBOARD SUPPLIED FROM A SEPARATE LEG OF A Y SPLIT FEEDER. (MAY BE FROM THE SAME OR DIFFERENT FEEDERS)</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA</p> <p>* N.O.P. AT EITHER ISOLATOR</p> <p>FIRE SEGREGATED</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA</p> <p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23



DISTRIBUTION CONSTRUCTION STANDARDS

22KV OVERHEAD SUPPLY  
CUSTOMER OWNED  
SUBSATION, TYPICAL URBAN

REVISION	DATE
B	FEB 18

DRAWING No.

G2-11/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING
<p>COMMENTS</p> <p>&gt;8MVA up to 15MVA</p> <p>SINGLE DEDICATED FEEDER FROM ZONE SUBSTATION TO THE CUSTOMER. (MINIMUM ARRANGEMENT)</p>		G3-22
<p>ABOVE 15MVA</p> <p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION NOTE:- CAN ALSO BE USED AS AN ALTERNATIVE TO ABOVE WHERE THE CUSTOMER IS PREPARED TO PAY THE ADDITIONAL COSTS. IN SUCH CASES ISOLATORS CAN BE USED IN PLACE OF CIRCUIT BREAKERS AND ONE BUS SECTION SWITCH MUST BE A N.O.P.</p>		G3-22



DISTRIBUTION CONSTRUCTION STANDARDS

22kV OVERHEAD SUPPLY  
CUSTOMER OWNED  
SUBSATION, TYPICAL URBAN


REVISION	DATE
B	FEB 18

DRAWING No.

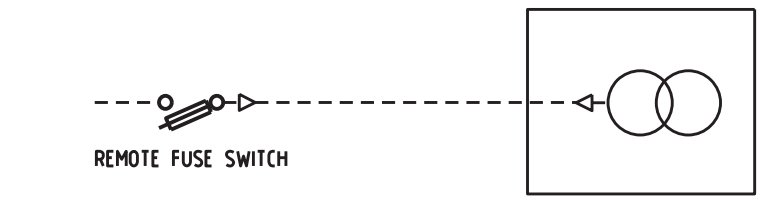
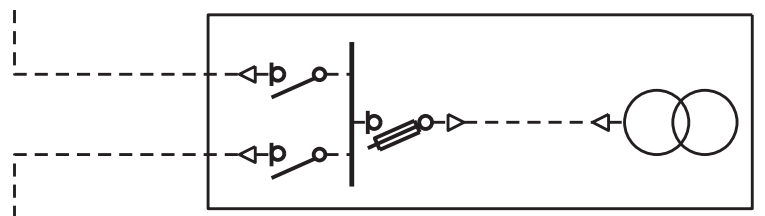
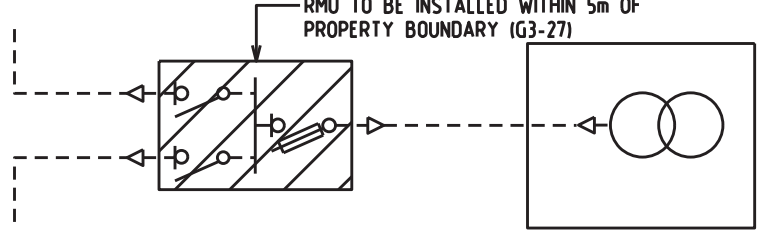

G2-11/2

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING
<p>COMMENTS</p> <p>&gt; 2MVA up to 4MVA</p> <p>DEPENDING ON CIRCUMSTANCES THIS MAY ALSO BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS &lt; 2MVA BUT &gt; 1.5MVA</p>		G3-27
<p>&gt; 4MVA up to 8MVA</p> <p>EACH SWITCHBOARD SUPPLIED FROM A SEPARATE LEG OF A Y SPLIT FEEDER. (MAY BE FROM THE SAME OR DIFFERENT FEEDERS) THIS ARRANGEMENT MAY ALSO BE USED FOR LOADS AS ABOVE WHERE THE CUSTOMER IS PREPARED TO PAY THE FULL COST OF THE ADDITIONAL METERING UNIT AND TWO ADDITIONAL ISOLATORS.</p>		G3-27
<p>&gt; 8MVA up to 15MVA</p> <p>SINGLE DEDICATED FEEDER FROM ZONE SUBSTATION TO THE CUSTOMER.</p>		G3-27
<p>ABOVE 15MVA</p> <p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION. NOTE:- CAN ALSO BE USED AS AN ALTERNATIVE TO ABOVE WHERE THE CUSTOMER IS PREPARED TO PAY ADDITIONAL COSTS. IN SUCH CASES THE CUSTOMERS BUS SECTION WOULD BE A N.O.P. c/w LOCK BY HP</p>		G3-27

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		DISTRIBUTION CONSTRUCTION STANDARDS	
	22kV OVERHEAD SUPPLY CUSTOMER OWNED SUBSTATION, TYPICAL RURAL	REVISION B	DATE FEB 18
		DRAWING No.	G2-12/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 630 MPS	 <p>REMOTE FUSE SWITCH AVAILABLE</p>	G3-01	N/A	N/A	N/A
ONE	160 to 630 MPS	 <p>MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY</p>	G3-02	N/A	N/A	N/A
ONE	160 to 630 MPS	 <p>MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY</p> <p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p>	N/A	N/A	N/A	N/A
ONE	160 to 1000 NON MPS	 <p>REMOTE FUSE SWITCH AVAILABLE</p>	G3-03	G3-07	G3-13	G3-17



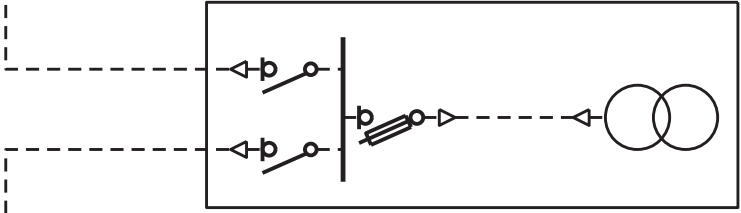
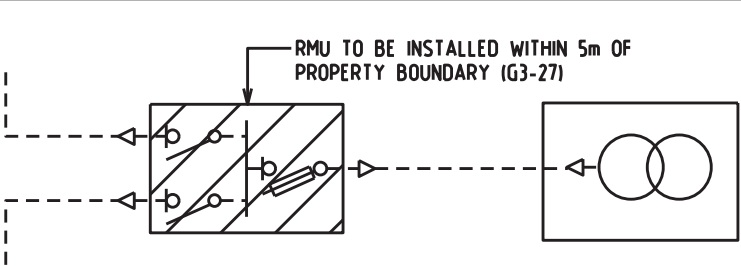
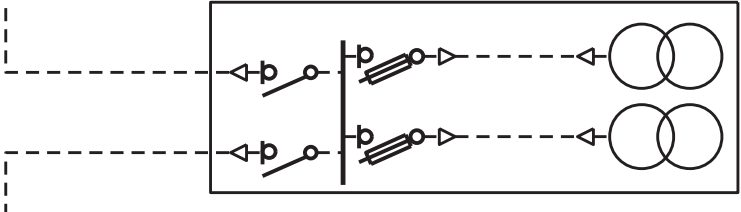
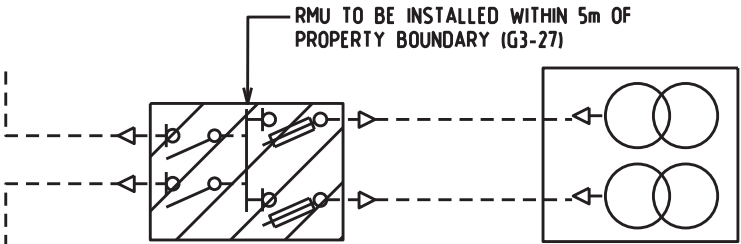
DISTRIBUTION CONSTRUCTION STANDARDS

22kV UNDERGROUND SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN AND RURAL

REVISION	DATE
B	FEB 18

DRAWING No.

G2-13/1

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 1000 NON MPS		G3-04	G3-08	G3-14	G3-18
ONE	160 to 1000 NON MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p> 	N/A	N/A	G3-13	G3-17
TWO	160 to 1000 NON MPS		G3-06	G3-10	G3-16	G3-20
TWO	160 to 1000 NON MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p> 	N/A	N/A	G3-15	G3-19

**THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-901-01-0002-2015.**



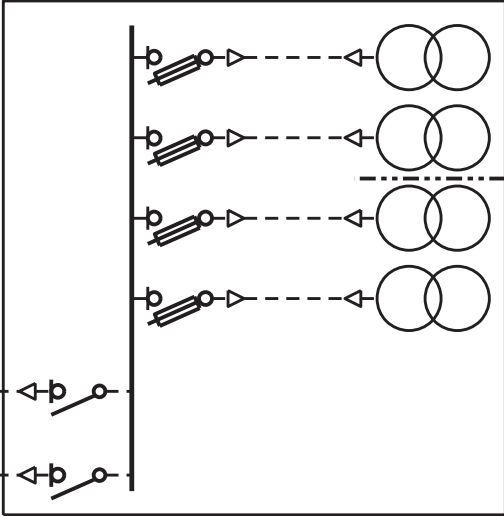
DISTRIBUTION CONSTRUCTION STANDARDS

22kV UNDERGROUND SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN AND RURAL

REVISION DATE  
B FEB 18

DRAWING No.

G2-13/2

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
THREE OR FOUR	160 to 1000 NON MPS	 <p style="text-align: right;">FIRE SEGREGATED</p>	N/A	N/A	N/A	G3-21
<p>WHERE THE TRANSFORMERS ARE TO BE LOCATED WITHIN 30m OF THE BOUNDARY, THE MV SWITCHROOM CAN BE ADJACENT TO THE TRANSFORMERS. HOWEVER WHERE THE TRANSFORMERS ARE TO BE LOCATED MORE THAN 30m FROM THE BOUNDARY THE MV SWITCHROOM IS TO BE LOCATED SEPARATELY FROM THE TRANSFORMERS &amp; SHOULD BE WITHIN 5m OF THE BOUNDARY. WHERE LESS TRANSFORMERS CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS &amp; THE MINIMUM ARRANGEMENT.</p>						

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

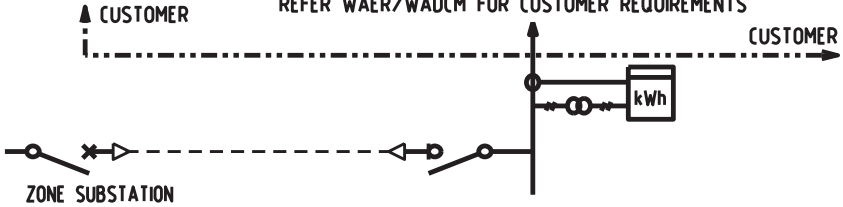
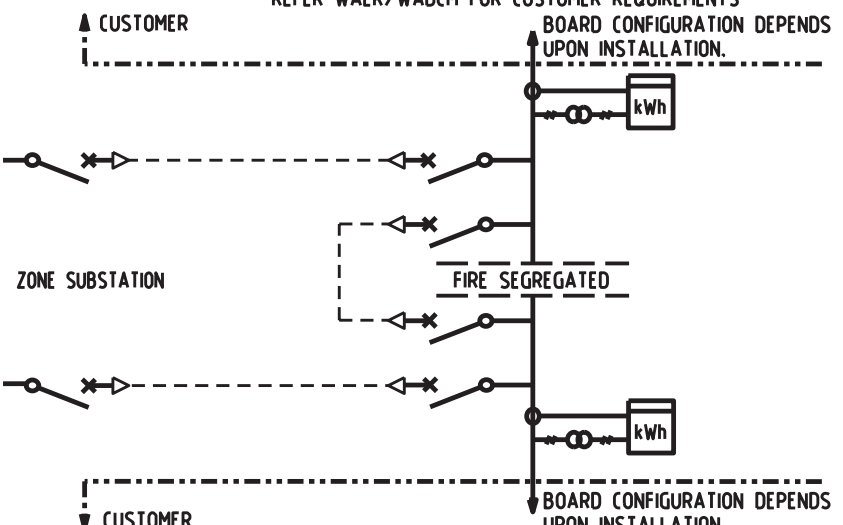
		DISTRIBUTION CONSTRUCTION STANDARDS
22kV UNDERGROUND SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN AND RURAL	REVISION B	DATE FEB 18
DRAWING No. G2-13/3		

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<p>COMMENTS</p> <p>&gt;2MVA up to 4MVA</p> <p>DEPENDING ON CIRCUMSTANCES THIS ARRANGEMENT MAY ALSO BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS &gt;1.5MVA BUT ≤ 2MVA</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23
<p>&gt;4MVA up to 8MVA</p> <p>EACH SWITCHBOARD SUPPLIED FROM A SEPARATE LEG OF A Y SPLIT FEEDER (MAY BE FROM THE SAME OR DIFFERENT FEEDERS)</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA</p> <p>* N.O.P. AT EITHER ISOLATOR</p> <p>FIRE SEGREGATED</p> <p>BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA</p> <p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.



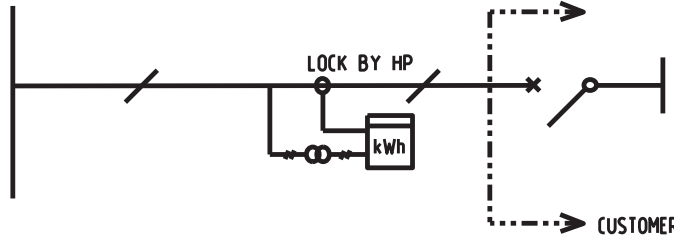
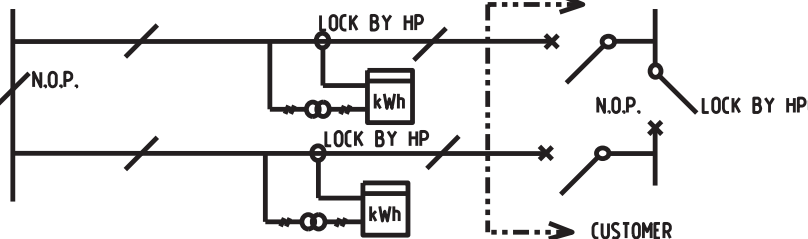
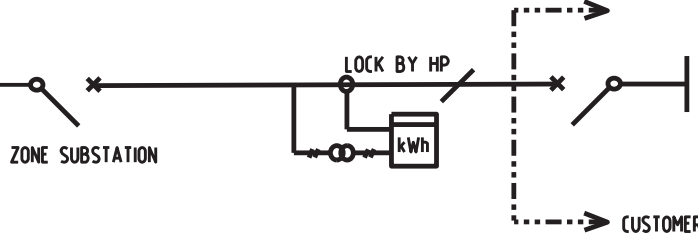
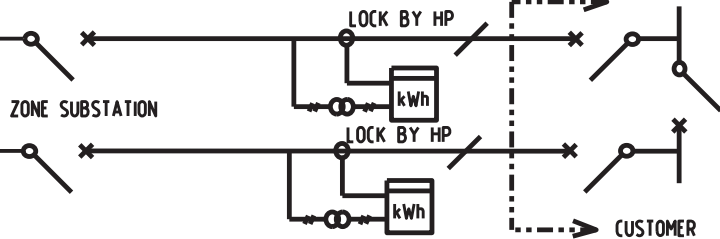
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LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING
<p>COMMENTS</p> <p>&gt;8MVA up to 15MVA</p>	<p>REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS</p> 	<p>G3-22</p>
<p>SINGLE DEDICATED FEEDER FROM ZONE SUBSTATION TO THE CUSTOMER. (MINIMUM ARRANGEMENT)</p>		
<p>ABOVE 15MVA</p>	<p>REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS</p> 	<p>G3-22</p>
<p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION</p> <p>NOTE:- CAN ALSO BE USED AS AN ALTERNATIVE TO ABOVE WHERE THE CUSTOMER IS PREPARED TO PAY THE ADDITIONAL COSTS. IN SUCH CASES ISOLATORS CAN BE USED IN PLACE OF CIRCUIT BREAKERS AND ONE HP BUS SECTION SWITCH MUST BE A N.O.P.</p>		

 <p>DISTRIBUTION CONSTRUCTION STANDARDS</p>		<p>22KV UNDERGROUND SUPPLY CUSTOMER OWNED SUBSATION, TYPICAL URBAN AND RURAL</p>	<table border="1"> <tr> <td data-bbox="33 1292 179 1572">DRAWING No.</td> <td data-bbox="179 1292 257 1572">G2-14/2</td> </tr> <tr> <td data-bbox="33 1292 179 1436">REVISION</td> <td data-bbox="179 1292 257 1436">B</td> </tr> <tr> <td data-bbox="33 1436 179 1572">DATE</td> <td data-bbox="179 1436 257 1572">FEB 18</td> </tr> </table>	DRAWING No.	G2-14/2	REVISION	B	DATE	FEB 18
DRAWING No.	G2-14/2								
REVISION	B								
DATE	FEB 18								

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

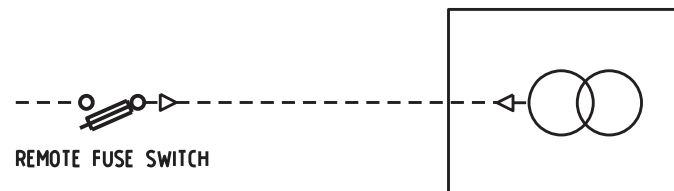
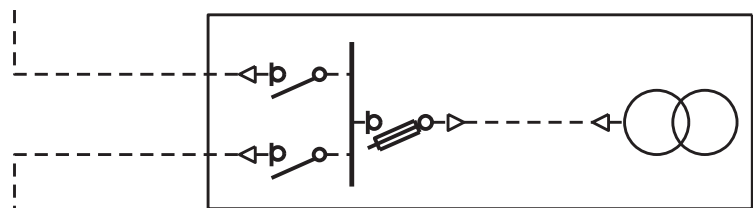
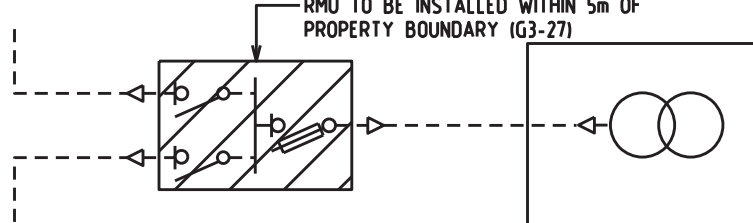
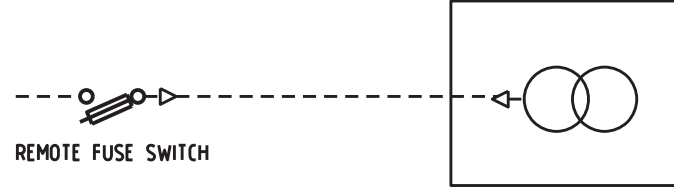
NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 630 MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>	G3-01	N/A	N/A	N/A
ONE	160 to 1000 NON MPS	<p>* OPTIONAL - DEPENDS ON NEIGHBOURING NETWORK CONFIGURATION &amp; TX SIZE</p>	G3-03	G3-07	G3-13	G3-17
TWO	160 to 1000 NON MPS		G3-05	G3-09	G3-15	G3-19

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING
<p>COMMENTS</p> <p>&gt; 2MVA up to 4MVA</p>		G3-27
<p>DEPENDING ON CIRCUMSTANCES THIS MAY ALSO BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS &lt; 2MVA BUT &gt; 1.5MVA</p>		
<p>&gt; 4MVA up to 8MVA</p> <p>EACH SWITCHBOARD SUPPLIED FROM A SEPARATE LEG OF A Y SPLIT FEEDER. (MAY BE FROM THE SAME OR DIFFERENT FEEDERS) THIS ARRANGEMENT MAY ALSO BE USED FOR LOADS AS ABOVE WHERE THE CUSTOMER IS PREPARED TO PAY THE FULL COST OF THE ADDITIONAL METERING UNIT AND TWO ADDITIONAL ISOLATORS.</p>		G3-27
<p>&gt; 8MVA up to 15MVA</p> <p>SINGLE DEDICATED FEEDER FROM ZONE SUBSTATION TO THE CUSTOMER.</p>		G3-27
<p>ABOVE 15MVA</p> <p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION. NOTE:- CAN ALSO BE USED AS AN ALTERNATIVE TO ABOVE WHERE THE CUSTOMER IS PREPARED TO PAY ADDITIONAL COSTS. IN SUCH CASES THE CUSTOMER'S BUS SECTION WOULD BE A N.O.P. c/w LOCK BY HP</p>		G3-27

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

		DISTRIBUTION CONSTRUCTION STANDARDS
33kV OVERHEAD SUPPLY CUSTOMER OWNED SUBSTATION, TYPICAL RURAL		
DRAWING No. G2-16/1		
REVISION B		DATE FEB 18

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 630 MPS	 <p>REMOTE FUSE SWITCH AVAILABLE</p>	G3-01	N/A	N/A	N/A
ONE	160 to 630 MPS	 <p>MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY</p>	G3-02	N/A	N/A	N/A
ONE	160 to 630 MPS	 <p>MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY</p> <p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p>	N/A	N/A	N/A	N/A
ONE	160 to 1000 NON MPS	 <p>REMOTE FUSE SWITCH AVAILABLE</p>	G3-03	G3-07	G3-13	G3-17



DISTRIBUTION CONSTRUCTION STANDARDS

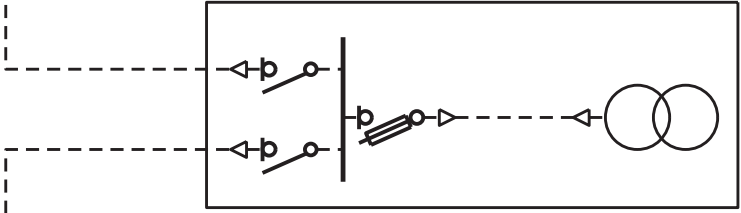
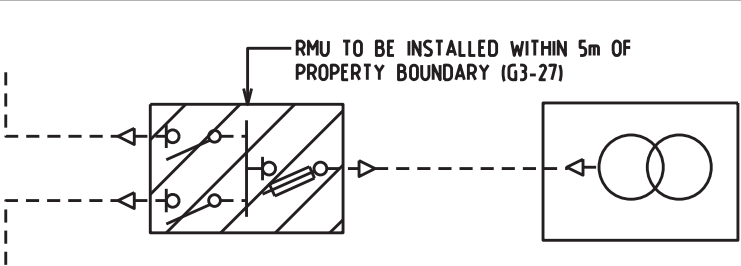
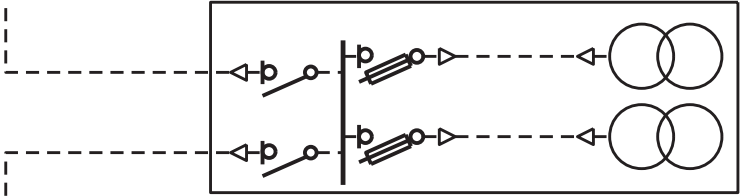
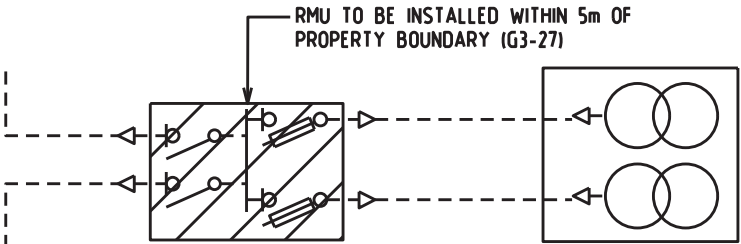
33KV UNDERGROUND SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN AND RURAL

REVISION	DATE
B	FEB 18

DRAWING No.

G2-17/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
ONE	160 to 1000 NON MPS		G3-04	G3-08	G3-14	G3-18
ONE	160 to 1000 NON MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p> 	N/A	N/A	G3-13	G3-17
TWO	160 to 1000 NON MPS		G3-06	G3-10	G3-16	G3-20
TWO	160 to 1000 NON MPS	<p>RMU TO BE INSTALLED WITHIN 5m OF PROPERTY BOUNDARY (G3-27)</p> 	N/A	N/A	G3-15	G3-19

COMMENTS

ONE  
160 to 1000  
NON MPS  
MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY - (REF NOTE 2)

ONE  
160 to 1000  
NON MPS  
MV SWITCHGEAR REQUIRED, SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY - (REF NOTE 2)

TWO  
160 to 1000  
NON MPS  
SUBSTATION LOCATED WITHIN 30m OF PROPERTY BOUNDARY - (REF NOTE 2). WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.

TWO  
160 to 1000  
NON MPS  
SUBSTATION LOCATED MORE THAN 30m FROM PROPERTY BOUNDARY - (REF NOTE 2). WHERE ONE TRANSFORMER CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS & THE APPROPRIATE SINGLE TRANSFORMER ARRANGEMENT.



DISTRIBUTION CONSTRUCTION STANDARDS

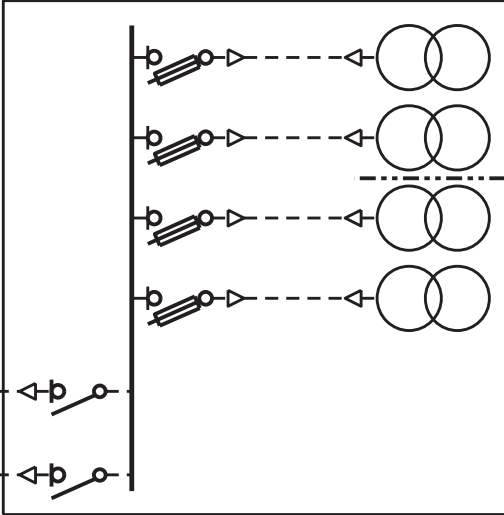
33KV UNDERGROUND SUPPLY DISTRICT AND SOLE USE SUBSTATION, TYPICAL URBAN AND RURAL

REVISION	DATE
B	FEB 18

DRAWING No.

G2-17/2

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NUMBER OF TRANSFORMERS	RATING OF EACH TRANSFORMER (kVA)	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING			
			DISTRICT		SOLE USE	
			NON-FIRE RATED	FIRE RATED	NON-FIRE RATED	FIRE RATED
THREE OR FOUR	160 to 1000 NON MPS	 <p>FIRE SEGREGATED</p>	N/A	N/A	N/A	G3-21
<p>WHERE THE TRANSFORMERS ARE TO BE LOCATED WITHIN 30m OF THE BOUNDARY, THE MV SWITCHROOM CAN BE ADJACENT TO THE TRANSFORMERS. HOWEVER WHERE THE TRANSFORMERS ARE TO BE LOCATED MORE THAN 30m FROM THE BOUNDARY THE MV SWITCHROOM IS TO BE LOCATED SEPARATELY FROM THE TRANSFORMERS &amp; SHOULD BE WITHIN 5m OF THE BOUNDARY. WHERE LESS TRANSFORMERS CAN PROVIDE FOR THE LOAD, THE CUSTOMER MUST PAY THE FULL COST DIFFERENCE BETWEEN THIS &amp; THE MINIMUM ARRANGEMENT.</p>						

**HORIZON**  
POWER  
DISTRIBUTION CONSTRUCTION  
STANDARDS

33kV UNDERGROUND SUPPLY  
DISTRICT AND SOLE USE  
SUBSTATION, TYPICAL URBAN AND RURAL

REVISION	DATE
B	FEB 18
DRAWING No. G2-17/3	

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING	
		FIRE RATED	NON-FIRE RATED
<p>COMMENTS</p> <p>&gt; 2MVA up to 4MVA</p> <p>DEPENDING ON CIRCUMSTANCES THIS ARRANGEMENT MAY ALSO BE CONSIDERED FOR A MV CUSTOMER WHOSE LOAD IS <math>\leq 2\text{MVA}</math> BUT <math>&gt; 1.5\text{MVA}</math></p>	<p>SEE DSM 1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23
<p>&gt; 4MVA up to 8MVA</p> <p>EACH SWITCHBOARD SUPPLIED FROM A SEPARATE LEG OF A Y SPLIT FEEDER (MAY BE FROM THE SAME OR DIFFERENT FEEDERS)</p>	<p>SEE G1-10 FOR CUSTOMER REQUIREMENTS BOARD CONFIGURATION DEPENDS UPON INSTALLATION. MAX LOAD ON EACH BOARD IS 4MVA</p> <p>* N.O.P. AT EITHER ISOLATOR</p> <p>FIRE SEGREGATED</p> <p>SEE G1-10 FOR CUSTOMER REQUIREMENTS</p>	G3-22	G3-23

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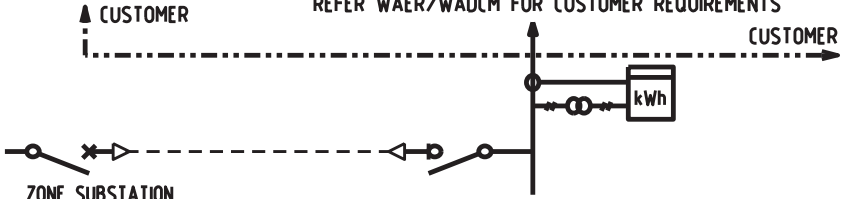
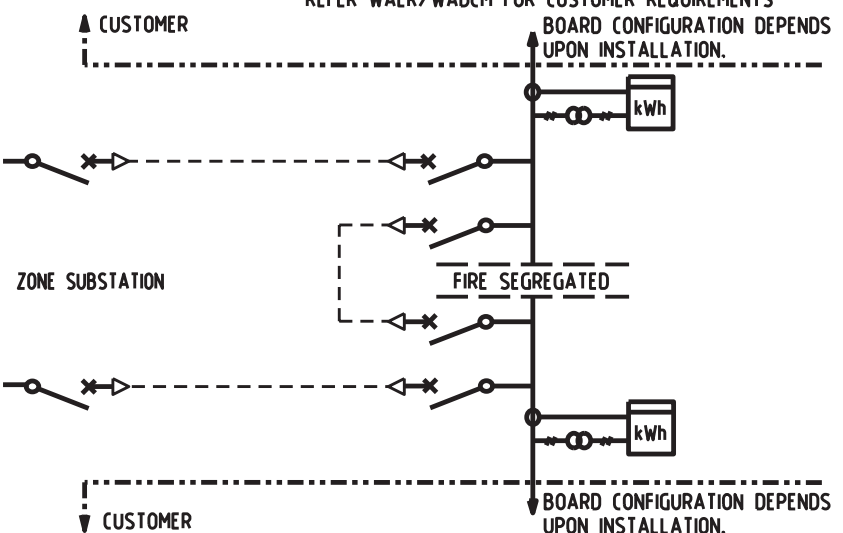
33KV UNDERGROUND SUPPLY CUSTOMER OWNED SUBSTATION, TYPICAL URBAN AND RURAL

REVISION	DATE
B	FEB 18

DRAWING No.

G2-18/1

THIS DRAWING TO BE READ IN CONJUNCTION WITH THE DISTRIBUTION DESIGN RULES - HPC-90J-01-0002-2015.

LOAD RANGE	MV SYSTEM ARRANGEMENT	SUBSTATION ARRANGEMENT DRAWING
<p>COMMENTS</p> <p>&gt;8MVA up to 15MVA</p>	<p>REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS</p> 	<p>G3-22</p>
<p>SINGLE DEDICATED FEEDER FROM ZONE SUBSTATION TO THE CUSTOMER. (MINIMUM ARRANGEMENT)</p>		
<p>ABOVE 15MVA</p>	<p>REFER WAER/WADCM FOR CUSTOMER REQUIREMENTS</p> 	<p>G3-22</p>
<p>DEDICATED FEEDERS FROM THE SAME ZONE SUBSTATION BUSBAR OPERATING ON CLOSED RING WITH DIRECTIONAL O/C &amp; E/F OR PILOT PROTECTION</p> <p>NOTE:- CAN ALSO BE USED AS AN ALTERNATIVE TO ABOVE WHERE THE CUSTOMER IS PREPARED TO PAY THE ADDITIONAL COSTS. IN SUCH CASES ISOLATORS CAN BE USED IN PLACE OF CIRCUIT BREAKERS AND ONE HP BUS SECTION SWITCH MUST BE A N.O.P.</p>		