

# Chennai Metro Rail Ltd

Prebid meeting-1

**Reference** : CMRL-PS&OHE-02-2016

**Contract name:** Design Manufacture, Supply, erection, testing and commissioning of 33kV shunt reactor for Power factor Correction along with required switchgears, cable, protections and SCADA interface at Receiving Substations of CMRL at Alandur

**Date** : 17/10/2016

**Venue** : Meeting room no 2, Admin building Chennai Metro Rail Ltd, Koyambedu, Chennai

S no	Query	Reply
1	Operating philosophy of our network	SLD enclosed
2	Pre-qualification: Eligibility criterion: We have manufactured and supplied dry type reactors for limiting starting current of HT motors. We have full capability to design and manufacture HT reactors up to 33 kV at our plant in Pune. However, we cannot comply with the conditions given in tender (copy attached). We have not supplied any Reactors for PF improvement. All other conditions we are complying. Can we participate in this tender?	Similar works mean 33KV & above works related PF correction
3	Civil work: Is this limited to only installation of panels only, or, should we make necessary foundation for the panels also? Are cable trenches in our scope? Are earthing pits in our scope?	Already existing trenches can be used. However new trenches if any required shall be made by the bidder, Foundation for Reactor, 33kV panels and all other equipment supplied by the bidder as part of the contract shall be executed as per the manufacturer requirements.
4	do we follow RDSO guidelines? Type test requirements?	There is no RDSO guidelines for Reactors. Type test is not required for reactor

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5	Inter-phase with existing SCADA package: We need make, model no. and the protocol to be used for communication with existing SCADA. We may have to slightly modify the existing SCADA system for making it compatible with our system. Is this also in our scope? Is yes, you have furnish us complete details of the existing system.	communication protocols required for the Relays with SCADA has been indicated in tender clause no 71.4 of schedule of requirements.
6	Cable length	250m of cables at Koyambedu and 400m of cables at Alandur approximately
7	Trench preparation and laying of 33 kV cables: are they in our scope?	Already covered in question No 3
8	Can we propose the KVAR rating of the reactor bank to achieve the 0.9 lead to 0.9 lag power factor	No, rating of reactors shall be provided as given in annexure 8 (revised in corrigendum)
9	Annexure -8 rating of reactor is KVA or KVAR?	Noted same shall be read as KVAR instead of KVA
10	Any system study is required	No need for system study to estimate the KVAR rating of the reactor to be installed. However the bidder has to ensure that the reactor does not resonate with the system.
11	As per annexure no 8, rating of each reactor is 500KVAR with tapping of +5, +2.5, 0, -2.5 & -5. can we conclude the rating as 500KVAR, 487.5 KVAR, 475KVAR, 462.5 KVAR and 450KVAR	refer corrigendum
12	Should MFM communicate with SCADA if yes what is the parameters to be communicate? What is the sampling rate & any storage time required	refer corrigendum
13	Is LA is required at the switch yard	Yes, LA to be provided at the yard with suitable rating
14	LD of 1% on 1 week is too heavy & the time duration of KD No 2 is very tight for manufacturing & erection process Request : LD shall be 0.5% per week 5% max also suggest KD no 2 shall by KD no 1 approval + 90 days	LD is revised to 0.5% per week with maximum slab of 5% also KD no2 shall by replaced as KD no 1 +90 days instead of LOA +90 days
15	Page no 18 NOA to be replaced as LOA	accepted
16	Summation of 5% for supply, 65% for supply and 25% for installation and commissioning doesnot come to 100%	Installation and commissioning shall be revised to 30%

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17	can running bill be raised for each item i.e supply of each material?	No, Running bill can be generated for completion of design approval, one for supply of each RSS & One for Commission of each RSS & retention money.
18	Is there is approval vender list	No
19	Type test reports & certificate of performance for reactor not available. Is it mandate to provide the same?	Type test and certificate of performance for 33kV reactor is not mandatory
20	Interrupter of 170 KV is not sufficient for operation of circuit breaker to switch reactors	170kV class with surge suppressor circuit is shall be designed
21	Should we submit a complete tender book with each page signed on it	Yes, LA to be provided at the yard with suitable rating
22	Is tap changing option in dry type reactor is required?	Tap changing required, either dry type or oil type as specified in tender book
23	Requirement of other two RSS's i.e. Koyambedu & Chennai central RSS is missing in the Name of the work.	details given in corrigendum
24	Kindly let us know when the Chennai central RSS will be made ready? When we have to supply the 33kV power factor compensation system for Chennai central RSS? Time frame is required.	access availability for the chennai central RSS shall be from june 2017. time frame of 90 days shall be given for completion of chennai central RSS power factor correction equipment
25	Request the list of vendors for supply of the materials.	kindly refer query no 19
26	We understand that system will have to operate in 110V DC, shall we consider the battery & charger in our scope of work?	Substation already contains the 110V DC and the same shall be used for control and protection relays
27	Scope of AC supply for system working?	Supply shall be taken from existing AC supply at RSS
28	Any approval is required from any external source?	NO
29	Communication protocol of existing system in SCADA system	refer query no 5
30	What type of parameter to be communicated in SCADA system	status of CB, interrupter, Isolator, earth switch, and all possible parameters from relay (measurement, trip status, warnings, healthiness)

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31	All the power & control cables to be laid in cable trench supports or it require the cable trays?	no need of cable trays, cables shall be laid on supports in cable trench.
32	Relay communication protocol in SCADA to be clarified.	refer query no 5
33	Training required or not, if required pls clarify the venue, travel mode, no. of days required, area of interest and etc.,	No
34	Any special test is required for major equipment or we shall refer the relevant standards in IS	standard shall be followed
35	We assume that final rating of the 33kV shunt reactor shall be 500kVAR including the +5% off load tap change.	refer query no 11
36	what type of cooling equipment is required for shunt reactor.	shall be as per manufacturer design
37	what is the Base insulation level of 33kV circuit breaker/ interrupter?	refer query no 21
38	How many CT's are required at 33kV level, since the specification call for 2 Nos of CT for protection purpose. But page no 37 of 64 require the measurement of the shunt reactor.	refer corrigendum
39	Specification of measurement CT & PT in 33kV level	refer clause no 71.3 XII & annexure 8
40	Scope of time synchronization through NTP clock?	Yes time synchronise is in bidders scope
41	Scope of any gas flooding system & fire suppression system for equipment?	gas flooding for LV panels of switch gear is required and shall be connected with existing setup.
42	Any additional warranty is to be offered or we shall consider the clause of 48.0 Warranty/ Defect liability period (DLP)	All nature of warranty is required for 2 year and shall be part of DLP
43	Material of Shunt reactor i.e. whether Al or cu.	33kV reactor shall be of copper make
44	Due to space constraint, we propose the shunt reactor is oil cooled out door type, is it acceptable?	accepted
45	Approval of drawings shall be the highest priority, is it acceptable to CMRL?	Accepted
46	Requirement of lightning arrestors is not specified in the contract, we suggest that keep the option of LA's at 33kV switch gear or at outdoor, since the surge current will be more during switching.	refer query no 14

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47	Type of Isolator at outdoor, whether it shall be manual or motor operated?	Isolator shall be of isolator cum earth switch with motorised operation capable of remote operation and feedback. Required mechanical interlock also to be done with interrupter and earth switch. Isolator
48	We suggest the following for instead of REF protections 1. Measurement of all Shunt reactor shall be from 33kV switchgear itself, accordingly CT will be mounted inside the switchgear. Hence no need of 33kV outdoor CT at yard. 2. We suggest to provide the SEF (Stand by Earth fault) instead of REF protection, since it attract more no. of CT at outdoor. 3. Combined or individual SEF protection will be provided at 33kV switchgear.	Acceptable. Provided SEF protection shall give details to discriminate the faulty reactor and healthy reactor.
49	Outdoor CT's are required for measurement or it shall be integrated at 33kV switchgear itself?	accepted if SEF/REF shall give discrimination of faulty and healthy reactor
50	What type of outdoor structure shall be considered?, i.e. lattice or pipe structure	anything is acceptable if the structure is capable of bearing the load
51	We propose the entire substation shall be outdoor type and shall be coved with fencing with door interlock, if necessary.	acceptable and space availability shall be taken into account
52	Rating of the neutral CT is not mentioned for REF.	shall be designed appropriately
53	All the protection will be one numerical relay, is it acceptable?	acceptable, but care should be taken that with the data available it should be able to discriminate the healthy and faulty reactor
54	Back up protection is required for numerical relay or not? If required, we shall allow to take CT's input's in series for main and breakup protections.	not required
55	Mode of drawings submissions to CMRL. We presume that drawings will be submitted through the letterhead.	accepted
56	Specification of Civil works is missing in the tender documents.	all load bearing structure if any constructed shall be of M30 grade and cable trench shall be as per required dimension matching the existing trench

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57	Pls provide the soil bearing capacity for civil foundation.	Koyambedu: 8 Ton per SqM for foundation below 1.5 m from GL by providing 500 mm thick well compacted murrum below foundation. (i.e total excavation 2 m from GL then fill with murrum for 500 mm) Alandur: 7.5 Ton per SqM for foundation below 1.5 m from GL.
58	Pls provide the earth resistance value for earth mate design.	shall be measured
59	What is the time frame to approve the documents from CMRL?	7 working days
60	What are the criteria to issue the final acceptance test at site? Shall we consider the DLP will start once the system will get commissioned?	tender clause prevails
61	What is the requirement of spares for CMRL?	No
62	What is the requirement of special tools & tackles for CMRL?	entire original packing list materials from manufacturer shall be handed over
63	What is the Fault level of 33kV system to be considered?	All equipment shall be rated for 25kA for 1 sec and for relay setting calculation more details shall be shared during execution
64	Specification of outdoor type Interrupter is missing, kindly provide the same. We pre assume that specified one is suitable for onload interrupter.	Yes the breaker shall be of onload type and shall be capable of handling the surge generated during switching of reactor and or a surge arrestor circuit shall be installed to ensure proper operation of interrupter
65	We propose the earth switch at field isolator towards the shunt reactor for better maintenance works	refer corrigendum
66	If earth switch are to be considered, we have to consider the manual or motor operated?	refer corrigendum
67	All the 4 nos 33kv shunt reactor protection will be clubbed in the bay marshalling box, the final output will be only one, is it acceptable to CMRL?	accepted
68	We have not considered any lighting arrangement at yard.	Not required

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69	We have not considered any lightning protection for yard side.	refer query no 14
70	We assume that no preliminary design is required for this package, pls confirm?	Preliminary design shall include the scheme and make of equipments (major equipments) shall be submitted along with bid as in annexure 3a.
71	We request CMRL to use the existing materials for this package, if meets the requirement of this contract.	Accepted, but costing of the shall be prepared based on the assumption that no existing materials is used and shall be done with negative variation if any existing equipment is used.
72	We assume that no external (i.e. third part test) test are to be conducted for any material. Pls confirm.	FAT & SAT shall be carried out. No third party test required unless if the equipment has not been type tested before (except for reactor)
73	Any gas flooding system to be considered for 33kV Panel in our scope of work?	refer query no 42
74	CMRL is requested to revise the payment terms as follows: 5% against Detailed Design submission & approval, 80% against supply of equipment , 10% against erection at site and 5% against successful commissioning.	refer corrigendum
75	Our assumption for full value in statement " <b>The bidder shall return.... For the full value</b> " is subject to the maximum of order value.	accepted
76	Tri-party arbitrator shall be accepted by CMRL instead of Sole arbitrator, confirmation is required.	not accepted
77	Recoveries of cost, if any, shall be mutually agreed and accepted before it's occurrence	tender clause hold good
78	CMRL is requested to revise the Split as proposed in SI No. 52.	details in corrigendum
79	CMRL is requested to clarify the taxes & duties in this order.	The price bid shall include the taxing part and incase of any tax relaxation by government shall be passed to CMRL.
80	EMD shall be accepted for 90 days from the date of issuance of bank draft issued by bank. Confirmation is required from CMRL.	accepted, DD shall not be taken 4 days before bid submission

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81	It is requested to provide the load list to calculate the required PF improvement	Load details are not required
82	It is requested to provide the existing PF data & network detail to calculate the required kVAR value.	refer query no 82
83	It is requested to confirm that shunt reactor will be indoor type or outdoor type, if any one can be considered then please provide the indoor or out door area layout showing available space for erection.	site visit can be under taken on 21/10/2016 & 22/10/2016
84	It is understood that shunt reactor (Without capacitor) is being used for compensation of capacitive reactance (Leading PF)	supplier scope
85	Shunt reactor rating is defined in KVA, It is understood that shunt reactor of 2000kVAR at Koyambedu & 2500 kVAR at Alandur station is required to compensate the leading power factor. It is also understood that shunt reactor will supply only lagging reactance in 5 steps and -5 & -2.5 steps do not define leading reactance. Pls confirm	refer query no 9
86	It is requested to provide the existing 33kV Panel sectioning detail with bus bar & feeder rating at Koyambedu & Alandur stations.	existing panel rating are similar to that of the specification share in rescheduled of requirements and annexure 8. SLD of the substation is enclosed
87	For 33kV Panel, 1250 A rating for the busbar & breaker is sufficient for 2500kVAR reactor, please accept the same.	the rating shall match with the existing panels
88	Please confirm that single CT with two core can be used in 33kV panel for Overcurrent (Main) & BB protection.	accepted. Busbar differnetial is not requirred and hence the sinlge core CT is suffecient. Same given in corrigendum
89	Defined CT turn ratio is only suitable for 2000kVAR shunt reactor, please provide the CT ratio for 2500kVAR shunt reactor.	CT ratio shall be design as requirred by the bidder based on the current rating of the reactor
90	Aux 415/230V AC & 110 DC shall be taped from existing ACDB & DCDB. Supply of cable from ACDB/ DCDB to panel is part of this contract.	Is in scope of the contract. Exsistng power supply and panels can be used answer to query no 72 also to be considered
91	Existing RTU have spare AI/DI/DO card for shunt reactor condition monitoring signals.	need to be added



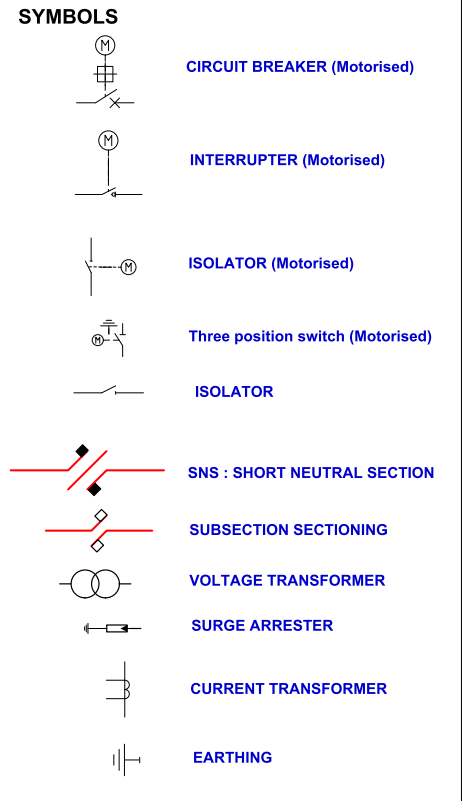
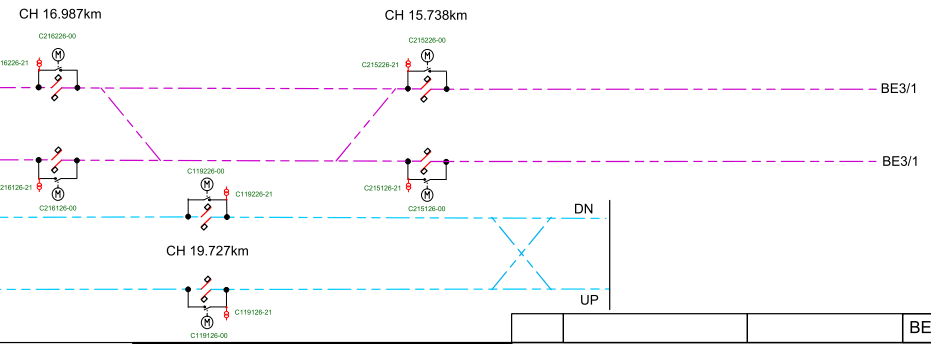
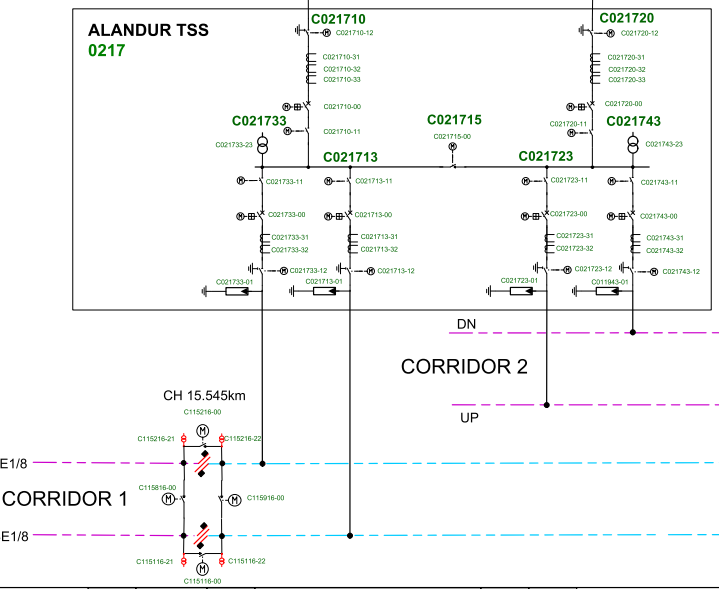
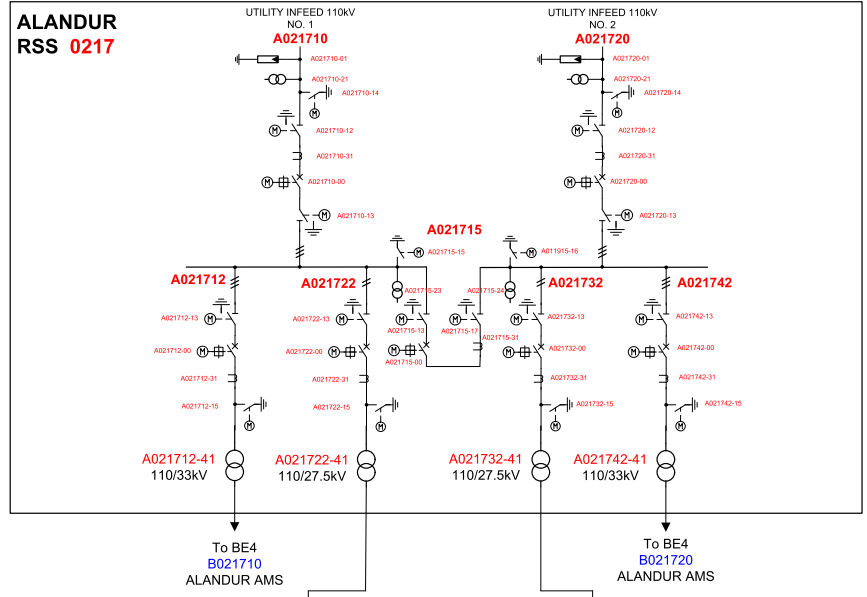
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92	It is understood that only 2 years of warranty will be provided from date of system acceptance (No separate additional 2 years of warranty).	refer query no 43
93	Please confirm in case of outdoor shunt reactor is used then existing cable trench can be used or new trench to be made.	where ever cable trench is available the same can be used. Else new trench has to be made
94	Is it required to add a surge protection ie, RC protection devices near the terminal of the shunt reactor to damp the voltage transients during switching.	shall be designed to meet the required BIL level of the system
95	The reactors, breakers, isolators all need to be rated for atleast 200kvp BIL since switching reactor involves definite voltage transients and all equipments need to be have a coordinated insulation, pls confirm	shall be designed to meet the required BIL level of the system
96	500kvar @ 33kv is a more complex design as compared to 1000kvar since the currents at 500kvar is very low and impedance is very high. Transient surges can be very demanding on such complex designs, request your confirmation on this regard. hence we prepare to offer in 1000kVAR units.	The reactor bank shall be designed to have steps of 500kVAR to vary the reactance. May be designed accordingly
97	It is wiser for the equipment point of view to opt for a 1000 kvar step atleast. We can also provide a 33kv 2000kVAR shunt reactor with taps at multiple points. This shall be technically better and also cheap, also this scheme shall be more cost effective, pls confirm.	The reactor bank shall be designed to have steps of 500kVAR to vary the reactance. May be designed accordingly
98	Technically reactor can be given taps. But what is the use of a tap on a reactor for +/-5% ? in distribution transformers, we use the tapping to adjust the secondary voltage. In series reactors, it is used for tuning the LC combination. However, such a low tapping value is of no use in shunt reactors. Again these are manually switched shunt reactors and such fine tuning does not help in any way. Technically this just adds to cost without any technical benefit, hence we request to avoid the taps in the reactor, if CMRL agrees for 1000kVAR i.e fixed with out any tapping.	The reactor bank shall be designed to have steps of 500kVAR to vary the reactance. May be designed accordingly

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CHENNAI METRO RAIL LIMITED  
CHENNAI METRO RAIL PROJECT PHASE I

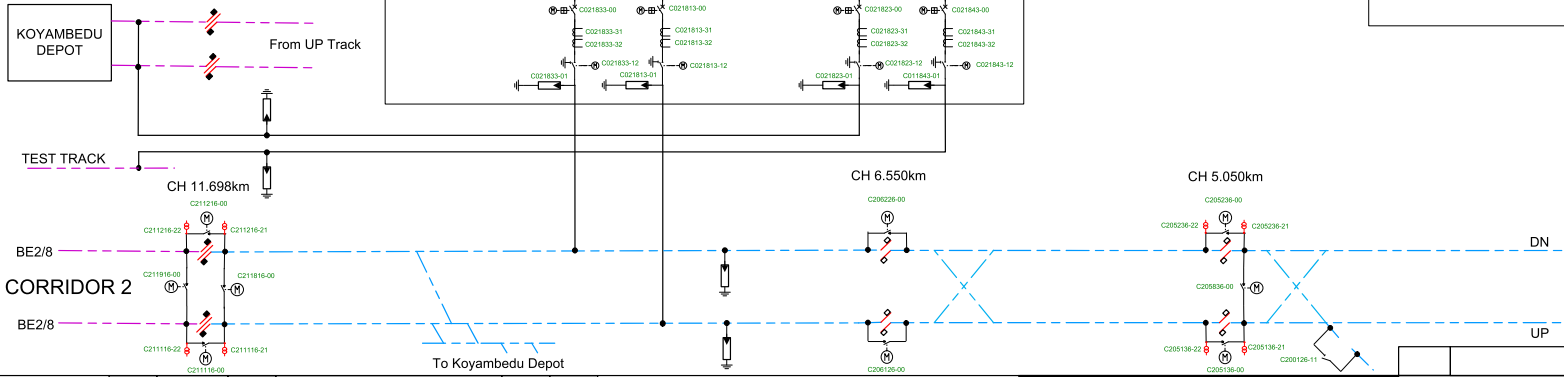
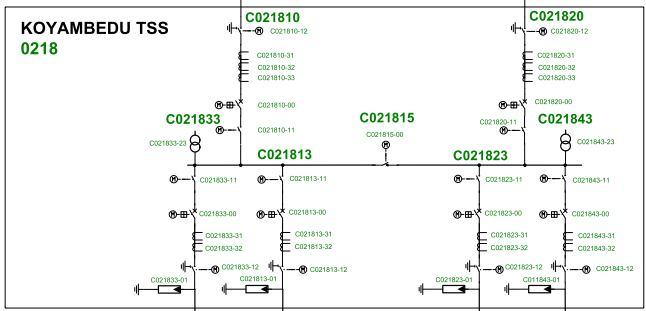
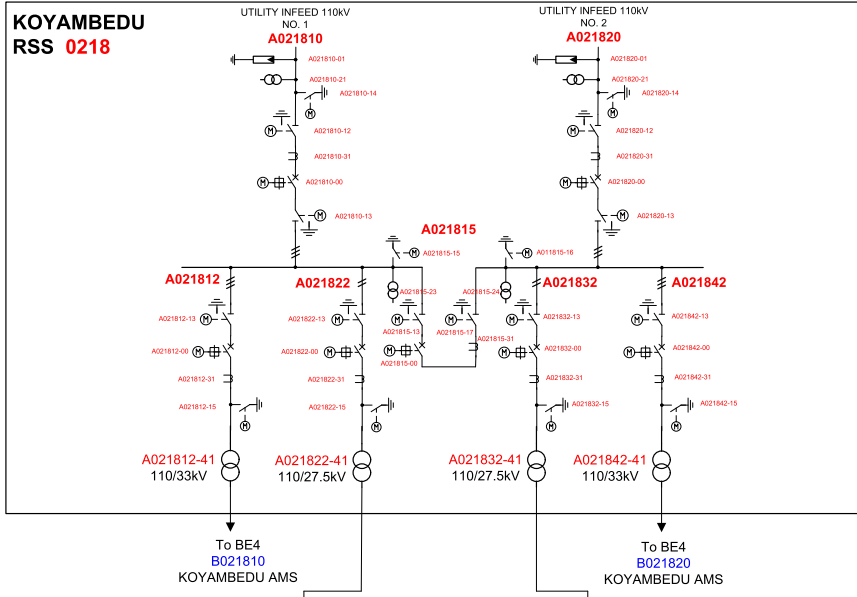
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**SYMBOLS**

- CIRCUIT BREAKER (Motorised)**
- INTERRUPTER (Motorised)**
- ISOLATOR (Motorised)**
- Three position switch (Motorised)**
- ISOLATOR**
- SNS : SHORT NEUTRAL SECTION**
- SUBSECTION SECTIONING**
- VOLTAGE TRANSFORMER**
- SURGE ARRESTER**
- CURRENT TRANSFORMER**
- EARTHING**

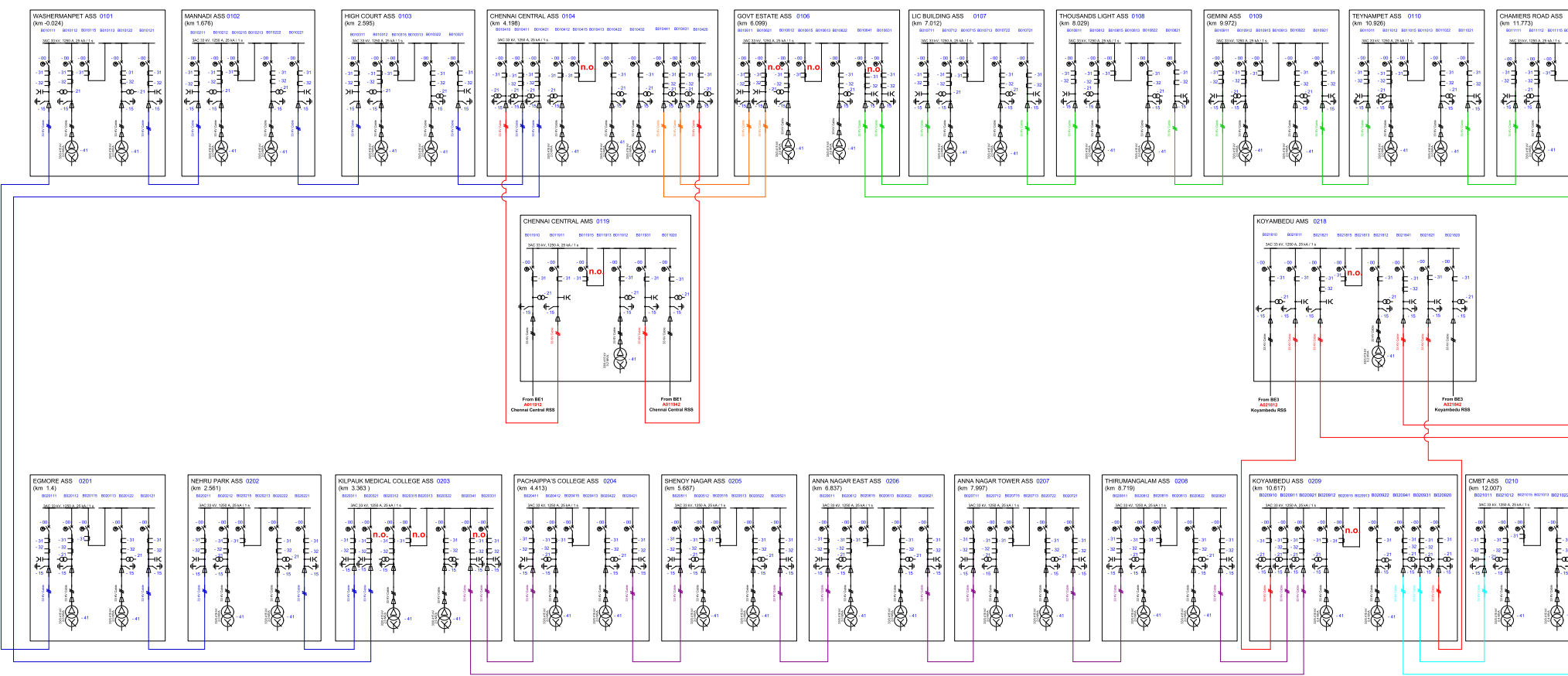
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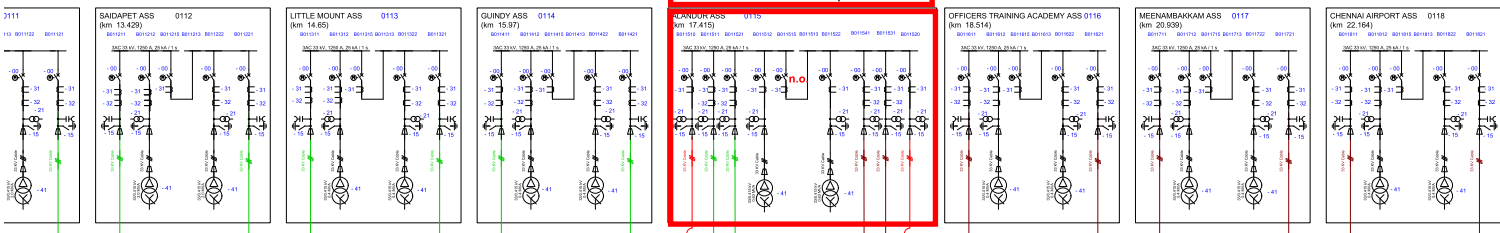
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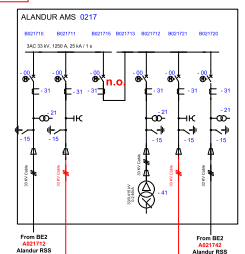
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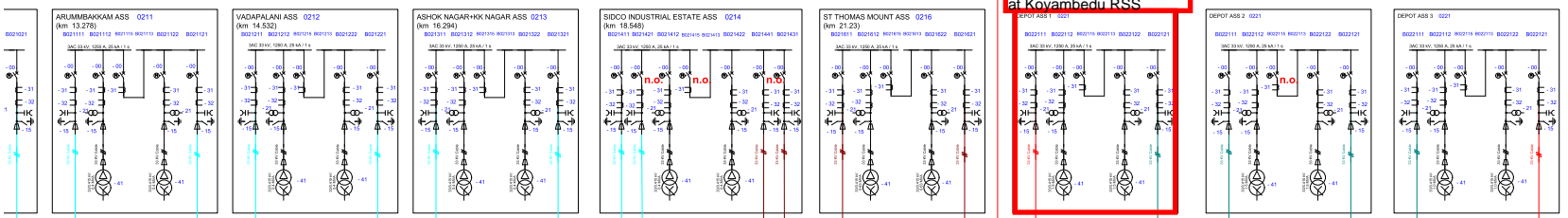




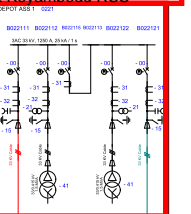
Reactor to be coupled here



SYMBOLS	
	LWM
	CABLE TERMINATION
	CIRCUIT BREAKER INTERRUPTER
	POTENTIAL TRANSFORMER
	CURRENT TRANSFORMER
	AUXILIARY TRANSFORMER
	EARTHING SWITCH



Reactor to be coupled here  
Physically located at Kovaybedu RSS



Rev.	Date	Chng.	Description	Check.	App.
A	28.09.2011	Preced	Revised designation		
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