

S.No. 102	GMR Kamalanga Energy Limited	SEPCO Ref Doc No: KTHP-OT-SEPC-GKEL-0340 dated 25.08.2010							
	4x350 MW Kamalanga Thermal Power Project	LII Ref : LII/GGN/7234/10/0527							
Date : 08-09-2010	Comment Resolution	GKEL Ref No.: GKEL/EPC/SEPCO/10/432 Dated 08-09-2010							
S. No.	SEPCO Doc. Ref. & Description	GKEL/ LII comment dated 24.02.10	Reply by SEPCO on 05/03/2010	GKEL/ LII Reply dated 17.03.10	Reply by SEPCO on 24/03/10	Resolution between GKEL/LII andSEPCO / SNPDI on 19/04/10 at Beijing	SEPCO Doc. Ref. & Description	GKEL/ LII comment dated 08-09-2010	Resolution between GKEL/LII and SEPCO / SNPDI on 09/09/10 at Beijing
A	General comments valid for all the drawings:	Approval Category: C for all drawings		Approval Category: C for all drawings		Approval Category: A for all drawings	FOUNDATIONS OF TURBINE HALL @ COLUMN LINE (A) 37-F4341S-T0301, Rev B	General Comments	FOUNDATIONS OF TURBINE HALL @ COLUMN LINE (A) 37-F4341S-T0301 Approval Category: A for all drawings
1		Responsibility for conformity of design and drawings with the relevant G.A drawing, design documents and data rests with SEPCO and in case of any deviation, the same will be rectified by M/S SEPCO without any commercial implications to GKEL.	SEPCO agree to execute as per the contract and relevant MOM.	Noted.		SEPCO agree to execute as per the contract and relevant MOM.		Responsibility for conformity of design and drawings with the relevant G.A drawing, design documents and data rests with SEPCO and in case of any deviation, the same will be rectified by M/S SEPCO without any commercial implications to GKEL.	SEPCO agree to execute as per the contract and relevant MOM.
2		In the absence of analysis results and design calculations, The adequacy of the pedestal, shear wall & foundation sizes and their reinforcement could not be reviewed. SEPCO to provide the same for review.	SEPCO agree to provide the documents of calculations in the revised drawings.	Noted. SEPCO is requested to submit design calculation as early as possible. In general design calculations should be submitted before submittal of the related drawings so that all the agreed comments of the design document can be incorporated in the drawings. In this way review process of both design as well as drawings can be reduced.	SEPCO will provide the relevant calculation documents .	SEPCO / SNPDI produced inputs for STAAD model, loading calculations and output results of STAAD analysis. Design calculations for foundations and pedestals have been submitted and reviewed by GKEL/ LII at Beijing. a) Dead loads, live loads, earthquake loads and wind loads, considered in STAAD model are in line with the calculations. b) Vau of Major Equipment loadings have been verified from supplier equipment loading drawings. Equipments loading drawings are in Chinese language, therefore SEPCO / SNPDI agreed for the correctness of loads considered for the analysis. c) Design of foundations and pedestals have been done based on Chinese codes which found generally in line and satisfy the requirements.		Although the foundations at column line A of first 3 units have already been approved considering an SBC of underlying soil/rock as 800 kPa under 3x350 MW system, yet the foundation design of 4th unit is to be reviewed for approval. SEPCO to submit design calculations for the 4th unit foundations.	SEPCO / SNPDI informed as below: a) 4th unit is just an additional unit in continuation of 1 to 3. b) No change in the inputs, STAAD model and design calculations. c)Same output results has been used in the 4 the unit. d) Typical foundations designed for critical loadings have been used in 4th unit also. The details have been verified in the drawings and found that the details and type of foundations are same as they are used for other 1 to 3 units.
3		Refer cl. No. 1.1.5, xiv , Part-D EPC Technical specification, SEPCO to provide the quantities of steel reinforcement and concrete in the construction drawings. SEPCO is requested to include the same in all the drawings.	The quantities of steel reinforcement and concrete will be included in the work instruction.	The quantities of steel reinforcement and concrete will be included in the work instruction is not clear.As per the clause, SEPCO is expected to provide total concrete (grade wise), reinforcement steel (diameter wise) and structural steel (section wise) in all construction drawings.	SEPCO will provide the quantities of steel reinforcement and concrete in the work instruction document.The document is provided by the engineer on the site.	SEPCO clarified that SEPCO site civil engineer will provide Steel and concrete quantity in work instruction for each drawing. GKEL/LII noted		SEPCO to note that SEPCO's site office has not provided quantities of the previously approved documents so far. Therefore, SEPCO is requested to take necessary action for the same and instruct its site staff to clear all back log and ensure to provide quantities for all upcoming documents/drawings.	SEPCO assured that SEPCO site office will provide Steel and concrete quantity in work instruction for each drawing.
B	General Specification 37-F4341S-T0301-01 Rev 0	Approval Category: C		Approval Category: C		Approval Category: A	General Specification 37-F4341S-T0301-01 Rev B	Approval Category: B	General Specification 37-F4341S-T0301-01 Rev B Approval Category: A
1		Refer Note 1. Please specify the reference code/document for design grade of foundation i.e. Class I.	SEPCO will specify the relevant codes' clauses.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The required code furnished in Design calculation submitted by SEPCO and issue closed		Issue Closed.	Issue Closed.
2		Mention the Indian / Chinese codes as well as the reference drawings in the specifications.	SEPCO will specify the relevant codes.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.		Issue Closed.	Issue Closed.
3		Please also include specifications for the anti-termite treatment and anti-corrosive treatment for reinforced concrete.	Durability requirements of concrete have been included in the drawing.	Please inform the details.	The durability parameters of concrete are shown in the table of general specifications.	The comment incorporated. Issue Closed.		Issue Closed.	Issue Closed.
4		Refer note 4. In the note the soil layer (V) has been mentioned. In the absence of the Geotechnical Investigation Report, the design instructions 37-F4341C-T-01 Rev B has been referred. But as per this document there are only three soil layers i.e. (1), (2) & (3). Please check and correct accordingly.	SEPCO have received the official geotechnical investigation report,the note 4 is conformed with the new report.	Please submit Final Detailed Geo-Technical Investigation Report for verification.	SEPCO will provide the Final Detailed Geo-Technical Investigation Report.	The details mentioned in Soil Investigation report has been considered in the calculation. Issue closed		Refer note 4. SEPCO to confirm the SBC as 800 KPa in the fourth boiler unit area with some proof document or geotechnical investigation report.	SEPCO submitted Geotechnical report for unit 4. Issue Closed.
5		Please mention the grade of concrete used for short columns of JC-7, JC-8, JC-9 & JC-10 in note no. 8.	SEPCO will revise the drawings in the version.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	M-30/C-30 concreting shall be used .M-30 is equivalent to C-30. Issue closed		Issue Closed.	Issue Closed.
6		Refer Note 10. The Chinese code GB/T 50476-2008 is not available. Please provide the relevant clause from this code in support of environmental category of foundation. Also please provide English version of the code for verifying the same.	(1)SEPCO will specify relevant code names.(2)The english version of the code will be provided by SEPCO.	Noted. i) Revised drawing to be submitted after incorporating the comment. ii) Please provide english version of the code.	SEPCO will assure that the final drawings are confirmed with the verified comments	SEPCO agreed to provide English version of chinese codes mentioned in various drawings by - 05/10 GKEL/LII noted.		English version of codes not received. SEPCO to submit the same.	For environmental category C13.2 of the code, GB/T 50476-2008 is used. Soft copy of the English version of the code has been submitted by SEPCO. Issue Closed.
7		As per drawing no. 37-F4341S-T0301-04 Rev the pouring of concrete for pedestals shall be done in 2 or 3 stages. Please provide the details of this 2/3 steps procedure for concrete pouring in this drawing.	SEPCO will revise the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.		Issue Closed.	Issue Closed.

8		Please provide reference document or drawing for excavation.	SEPCO agree to provide the separately work instruction document.	What is work instruction document? Please submit excavation drawing.	The work instruction document means document which guides the work on the site. The excavation drawing is a part of the excavation WI.	Noted. Issue Closed.	Issue Closed.	Issue Closed.	
9		Refer note 11. Provide relevant code names. Also please provide English version of the code for verifying the same.	(1)SEPCO will specify relevant code names.(2)The English version of the code will be provided by SEPCO.	Noted. i) Revised drawing to be submitted after incorporating the comment. ii) Please provide English version of the code.	SEPCO will assure that the final drawings are confirmed with the verified comments	SEPCO agreed to provide English version of Chinese codes mentioned in various drawings by - 05/10 GKEL/LII noted.	English version of codes not received. SEPCO to submit the same.	Shall be done as per relevant Indian Codes. Issue Closed.	
10		Absolute level to be confirmed. Refer item -2.	±0.000 corresponds to absolute elevation 70.000.	Noted.		The comment incorporated. Issue Closed.	Issue Closed.	Issue Closed.	
11		The word drainage should be changed to dewatering. Refer item-6.	SEPCO will revise the drawings in the next version..	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.	Issue Closed.	Issue Closed.	
12		Butt welding must be avoided for TOR steel. Lapping should be done as per the specification. In case welding is unavoidable it should be done on stitch type on both side of lapping. Refer item-9.	SEPCO will specify the relevant specifications.	In addition to specification, welding procedure is to be provided	Welding procedure will be included in the work instruction document.	SEPCO agreed for Lapping of TMT bars but in few unavoidable conditions, tack welding will be done for TMT bars overlapping. Issue closed	Issue Closed.	Issue Closed.	
13		Grade of concrete to be mentioned as per IS. Refer item -10.	SEPCO will specify the relevant specifications.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.	Issue Closed.	Issue Closed.	
14		Backfilling detail with quality of backfill soil to be mentioned with compaction detail.	The relevant specifications shall see the note 7.	Noted.		SEPCO clarified that SEPCO site civil engineer shall provide separately as work instruction. GKEL / LII noted.	Issue Closed.	Issue Closed.	
15		Procedure for installation of settlement observation points needs to be mentioned. Allowable settlement details shall be mentioned. Refer item-16.	SEPCO will note the relevant specifications in the next version.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.	Issue Closed.	Issue Closed.	
16		All construction activities shall be in conformation with relevant IS as Civil works are to be executed at site and as per Indian conditions. Refer item-18.	SEPCO will specify it in item-18.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	SEPCO confirmed. Issue Closed.	Issue Closed.	Issue Closed.	
C	Arrangement Plan of Foundations 37-F4341S-T0301-02 Rev 0	Approval Category: C		Approval Category: C		Approval Category: A	Arrangement Plan of Foundations 37-F4341S-T0301-02 Rev B	Approval Category: C	Arrangement Plan of Foundations 37-F4341S-T0301-02 Rev C Approval Category: A
1		Refer the coordinates provided at grid A1 and A21. The 'X' coordinate at these grids are wrong as per basic design stage drg 37-F4341C-T-02 Rev B. The X-coordinate 22040.00 is at grid 1/0A instead of grid A. Please check and correct.	The coordinate value is correct according to the general layout of the plant area.	Noted. SEPCO is requested to check and revise basic design document/ drawing related to co-ordinates as per final plant layout and submit the same for record. This will help in reviewing future drawings / document of various buildings/ structures.	SEPCO agree.	SEPCO confirmed that The 'X' coordinate at these grids are correct.	Refer comment 2 in general comments.	Refer resolution 2 in general comments.	
2		The total no. of points of observation is 11 instead of 12. Perhaps the point on grid 11 has been read twice. Please check and correct.	SEPCO will revise the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.	The total no. of Points of Settlement Observation is 15 instead of 11. Please check and correct.	Comment incorporated. Issue closed.	
3		Please clarify the details ZD1, ZD2 and ZD3. What are these details? If these are the dowels for some pedestals then please clarify the requirement of these pedestals.	The details indicate the preserved reinforced bars of ZD-1 ~ ZD-3.	SEPCO is requested to clarify the purpose of these preserved bars.	ZD-1~ZD-3 are poured after the construction of foundations finished. They are used for supporting the subgrade beams.	SEPCO confirmed. Issue Closed.	Issue Closed.	Issue Closed.	
4		Refer pedestals on grid 6&7, 13&14. The shear slots provided on these pedestals are of "Model B" while the shear slot provided on the pedestal on grid 21 is of "Model A". Please check and confirm.	"Model A" is used at the bottom of columns braced along two direction,"Model B" is used at the bottom of columns braced along one direction.	Noted.		SEPCO confirmed. Issue Closed.	Issue Closed.	Issue Closed.	
5		Absolute level corresponds to ± 0.00 to be mentioned in the drawing.	SEPCO will revise the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	SEPCO confirmed. Issue Closed.	Issue Closed.	Issue Closed.	
6		Sectional details are not available for the different types of footings as per this layout.	SEPCO will revise the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	SEPCO confirmed. Issue Closed.	Issue Closed.	Issue Closed.	
7		Corner coordinates to be mentioned on the drawing.	SEPCO will revise the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The details are not required as centre co-ordinates provided. Issue closed	Issue Closed.	Issue Closed.	
8		Location and sectional detail for ZD1, ZD2 are not mentioned.	The details of DZ-1,DZ-2 indicate the section and the arrangement plan indicate the location of them.	Location noted. However SEPCO is requested to provide vertical section of these details so that hoop reinforcement and other embedments requirement can be seen.	SEPCO will provide their vertical sections.	SEPCO confirmed. Issue Closed.	Issue Closed.	Issue Closed.	

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9								Refer shear wall shown on grid 21. As per Drg No. 37-F4341S-T0309(1)-04, Rev A there is no shear wall at this location. SEPCO to check and correct.	Shear wall is required as placed on other similar starting grids 7 and 14. Issue Closed.
D	Detail Drawing of Foundation (Sht. 1) 37-F4341S-T0301-03 Rev 0	Approval Category: C		Approval Category: C		Approval Category: A	Detail Drawing of Foundation (Sht. 1) 37-F4341S-T0301-03 Rev B	Approval Category: C	Detail Drawing of Foundation (Sht. 1) 37-F4341S-T0301-03 Rev C Approval Category: A
1		Section 1-1(2-2), 3-3, 4-4(5-5), 6-6, 7-7 & 8-8. a) Provide at least minimum top reinforcement as per clause 26.5.2.1 IS456-2000 in all isolated footings i.e. half of 0.12% both directions. b) As per Indian code SP34, section 6, maximum spacing of ties within the footing must be 300mm subject to a minimum of 3 ties. SEPCO is requested to modify the drawing as per Indian code or provide Chinese corresponding code for justification. c) The bent portion of the main vertical bars of pedestals at bottom resting on the footing's bottom reinforcement must be at least 300 mm as per IS code SP34 instead of 150 mm.	SEPCO will revise the drawings in the next version..	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.		Refer comment 2 in general comments.	Refer resolution 2 in general comments.
2		Side R/t on isolate footings to be considered.	SEPCO will discuss the item with GKEL later.	Considering good engineering practices, some minimum skin reinforcement should be provided on all concrete surfaces to avoid development of cracks due to effects of shrinkage, creep, temperature etc. Therefore SEPCO is advised to provide side surface reinforcement in all isolated foundations.	SEPCO consider the side surface reinforcements are not needed as per Chinese code.	The comment incorporated. Issue Closed.		Issue Closed.	Issue Closed.
3		Development length for vertical R/t to be provided conforming with relevant IS.	SEPCO will revise the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	Bend length of 300mm is incorporated. Issue closed		Issue Closed.	Issue Closed.
4		Top mat may be considered for footings JC-1,2,3,4,5,6,7,8	SEPCO will add the mat in the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.		Issue Closed.	Issue Closed.
5		Location of ZD1, ZD2 on JC-8 and sectional details are not available.	The relevant items shall see the drawing -02.	Location noted. However SEPCO is requested to provide vertical section of these details so that hoop reinforcement and other embedments requirement can be seen.	SEPCO will provide their vertical sections.	The comment incorporated. Issue Closed.		Issue Closed.	Issue Closed.
E	Detail Drawing of Foundation (Sht. 2) 37-F4341S-T0301-04 Rev 0	Approval Category: C		Approval Category: C		Approval Category: A	Detail Drawing of Foundation (Sht. 2) 37-F4341S-T0301-04 Rev B	Approval Category: C	Detail Drawing of Foundation (Sht. 2) 37-F4341S-T0301-04 Rev B Approval Category: A
1		Refer Section 1-1 & 2-2. Perform the same corrections as per the comment no. 1 on drg no 37-F4341S-T0301-03.	SEPCO will revise the drawings in the next version..	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.		Refer comment 2 in general comments.	Refer resolution 2 in general comments.
2		Refer "Sketch-Map of Short Column Casting by Steps" for (JC-7-10). Although there are only 2 stages of casting shown in the figure however the top portion casting has been named as "Part of Third Casting". Please check and correct suitably.	SEPCO will revise the drawings in the next version..	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	SEPCO clarified that details of 1 st step is from bottom of footing to bottom of frame , 2nd step is from bottom of inserts to -0.550m and 3rd step is from -0.550 to +0.150 . Issue closed.		Issue Closed.	Issue Closed.
3		Refer section JLQ-1(JLQ-2). a) Provide details in the drawing to elaborate the embedment of wall reinforcement into the pedestals above footing JC-1, JC-2 & JC-5. b) The bent portion of the vertical reinforcement at bottom should be at least 300 mm.	SEPCO will revise the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.		Issue Closed.	Issue Closed.
4		Refer "Rebar Mat of Column Chapter", please include locations of the detail in the title.	SEPCO will provide the locations.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.		Issue Closed.	Issue Closed.
5		It seems that there will be a lot of congestion of reinforcement and the anchor bolt rack within the pedestal near -0.55 m level. SEPCO to confirm the practical feasibility of this arrangement.	The arrangement is feasible according to the previous projects in India.	SEPCO to ensure that care shall be taken during construction to avoid cutting of main reinforcement bars of pedestals to accommodate the anchor bolt fixing frame.	SEPCO agree.	Reinforcement spacing will not be reduced. Rather SEPCO shall arrange proper vibrating needle for concreting GKEL/J noted..		Issue Closed.	Issue Closed.

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6	Please provide the locations of circular openings in the shear wall in this drawing or otherwise provide the reference drg no.	SEPCO will provide the locations.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.	Issue Closed.	Issue Closed.
7	"The material of anchor bolts and angle steel shall be Q235-B. Anchor bolt shall be purchased and made in site". This implies that the material for bolts and rack shall be made from local available material. So corresponding IS code shall be mentioed for Q235-B to conform the quality of steel. Refer item-2 of note.	SEPCO will provide the relevant performance parameters of Q235-B.	Noted. Please submit the document regarding performance parameters of Q235-B.	SEPCO will provide the parameters of Q235 -B.	Noted. Issue Closed.	Issue Closed.	Issue Closed.
8	Side R/t on isolate footings to be considered.	SEPCO will discuss the item with GKEL later.	Considering good engineering practices, some minimum skin reinforcement should be provided on all concrete surfaces to avoid development of cracks due to effects of shrinkage, creep, temperature etc. Therefore SEPCO is advised to provide side surface reinforcement in all isolated foundations.	SEPCO consider the side surface reinforcements are not needed as per Chinese code.	Surface reinforcement has been incorporated. issue closed	Issue Closed.	Issue Closed.
9	Development length for vertical R/t to be provided conforming with relevent IS.	SEPCO will revise the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	Develpoment length for vertical R/F alongwith bend leghth of 300mm has been incorporaed. Issue closed	Issue Closed.	Issue Closed.
10	In the item-"Short column casting by steps", in the casting method dowel bars shall be provided for different grade of concrete. Alternatively some bonding adhesive shall be applied on the concrete surface before cating the next stage.	SEPCO will revise the drawings in the next version..	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.	Issue Closed.	Issue Closed.
11	Insert/cast-in plate details are not mentioned.	For detail to see the volume T0104.	Volume T0104 is not avilable. Please submit the same for verification.	The volume T0104 is the collective drawings of embedded parts.and SEPCO will submit this drawing as per the schedule.	Details are provided in the drawing volume T0104. Noted. Issue closed	Issue Closed.	Issue Closed.
12	Location of ZD1, ZD2 on JC-9 and sectional details are not available.	The relevant items shall see the drawing -02.	Location noted. However SEPCO is requested to provide vertical section of these details so that hoop reinforcement and other embeddments requirement can be seen.	SEPCO will provide their vertical sections.	The comment incorporated. Issue Closed.	Issue Closed.	Issue Closed.
13	Top mat to be considered for footings JC-9,10	SEPCO will add the mat in the drawings.	Noted. Revised drawing to be submitted after incorporating the comment.	SEPCO will assure that the final drawings are confirmed with the verified comments	The comment incorporated. Issue Closed.	Issue Closed.	Issue Closed.

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