

SCOPE OF WORK- Road , Drain & Pathway Works at Talwandi Sabo Power Limited, Mansa, Punjab

1. DESCRIPTION OF SITE

Latitude and Longitude of site shall be 29° 53' N to 29° 56' N and 75°12' E to 75°15' E respectively and site is located near Talwandi Sabo at Village Banawala, District Mansa, in the state of Punjab, India. Mansa town is 18 kms & 45 kms respectively away from the plant site.

The nearest railway station is Sadda Singhwala at a distance of about 18 km, for which Railway Siding facility is to be developed. The State Highways SH 12 and SH-13 and district road connects the project site with Mansa and Talwandi Sabo. The nearest airport is at Chandigarh at a distance of 200Km.

The climatological data for the site are as follows :

a)	Altitude above mean sea level (Average)	211.5 m
b)	Design air temperature(dry bulb)	
	i) Maximum:	48.2 Deg.C
	ii) Minimum:	-3.9Deg.C
c)	Design Ambient for all Electrical Equipment	50Deg. C
d)	Relative humidity	
	i) Minimum:	33%
	ii) Maximum:	90%
	iii) Design:	60%
e)	Basic wind pressure	As per IS-875 (Part-3) : 1987
f)	Maximum annual rainfall	693mm
g)	Earthquake design criteria	Zone-III as per IS-1893(latest version)

2. LAYOUT & APPROVAL OF LAYOUT

The Contractor shall prepare the final optimized layout of their scope of work (Road of RCC & Bitumenous type, RCC Drain, Paver block Pathway & etc) , taking into account the interface arrangements, meteorological data, site contours and ease and cost of plant operation. The Contractor shall conduct site survey by deputing their team as a first step in order to finalise the layout drawings of all their scope of work as per directions of TSPL EIC . After completion of Layout survey, contractor shall submit the detailed survey report , layout plan of their scope of work incorporating in overall plant layout for review & approval of TSPL . After getting approval on all layout & cross sectional details & drawings from TSPL EIC, contractor shall start the work by mobilising their workforce. After completion of works by contractor, they shall submit the final as built drawings & cross sectional details to TSPL before closure of contract along with final bill submission.

Present layout of TSPL has been enclosed hereby as Annexure-A.

3. SCOPE OF WORK:

I. Details

Scope of work covers but not limited to the Detailed Site Survey, soil profile testing , submission of survey & soil profile testing report to TSPL , Drawing Layout and cross section Preparation as per IS code & as per suit at site basis, submission of drawings to TSPL for approval along with overall modified plant layout. Work start intimation shall be given by TSPL EIC along with approval of drawing.

Bidders are requested to refer enclosed existing layout drawing of TSPL & detailed BOQ of works envisaged , as mentioned below

Sr No	Description of Work	Remarks
Annexure1	Main Gate to Transit Hostel 6 m wide New Bituminous Road 1.15 KM	BOQ enclosed
Annexure2	Expansion of existing bituminous road from 6 m wide to 9 m wide 1 850 M	BOQ enclosed
Annexure3	RCC Road Works for Bulker Movement 500 M	BOQ enclosed
Annexure4	RCC Drain Works 2 KM	BOQ enclosed
Annexure5	Footpath Paver Block ,Handrail 4 KM	BOQ enclosed

II. MATERIALS OF CONSTRUCTION

Cement: OPC Grade 53 conforming to IS:12269

Reinforcement Steel: Fe 500 grade conforming to IS:1786

Structural Steel: Conforming to IS:2062. Contractor has to take approval before supply for all the construction materials that are in his scope of supply.

III. EXPANSION JOINTS

Expansion joints shall in general conform to IS : 456 – 2000.

Expansion joints shall be preformed bitumen impregnated fibreboard conforming to IS: 1838 shall be used as joint filler. The joints shall be sealed with bitumen sealing compound conforming to IS: 1834.

IV. Code & standard applicable

Earthwork

- a) IS-1498 : Classification and identification of soils for General Engineering purposes.
- b) IS-3764 : Safety Code for excavation work.
- c) IS-7293 : Safety Code for working with construction machinery.

Concrete

- a) IS-383 : Coarse and fine aggregate from natural sources for concrete.
- b) IS-432 : Mild Steel and medium tensile steel bars and hard drawn steel wire for concrete reinforcement.
- c) IS-456 : Code of Practice for Plain and reinforced concrete.
- d) IS-460 : Test Sieves (all parts).
- e) IS-516 : Methods of test for strength of concrete.
- f) IS-1199 : Methods of sampling& analysis of concrete.
- g) IS-1566 : Hard drawn steel wire fabric for concrete Reinforcement.
- h) IS-1786: High strength deformed steel bars and wires for concrete reinforcement.
- i) IS-1834 : Hot applied sealing compounds for joints in concrete.
- j) IS-2386 : Methods of test for aggregates for concrete (all parts).
- k) IS-2502 : Code of practice for bending and fixing of bars for concrete reinforcement.
- l) IS-3370 : Code of practice for concrete structures for storage of liquids (all parts).

- m) IS-7320: Concrete slump test apparatus.
- n) IS-7861: Code of practice for extreme weather concreting (all parts).
- o) IS-8112: High strength ordinary Portland Cement.
- p) IS-10262: Recommended guidelines for concrete mix design.
- q) IS-6909: Indian Standard specification for Supersulphated Cement.
- r) SP-16: Design Aids for reinforced Concrete to IS-456.
- s) SP-34: Reinforcement Detailing.

Soil Engineering

- a) IS-1498: Classification and identification of soils for general engineering purposes.
- b) IS-1892: Code of practice for sub-surface investigation for foundations.
- c) IS-2720: Methods of test for soils (all parts).

V. Approved Vender List:

Sl. No.	Item Description	List of approved manufacturer
1	TMT Reinforcement Bar	a) Steel Authority of India Ltd (SAIL) b) TATA Iron & Steel Co. Ltd c) Rashtriya Ispat Nigam Ltd (RINL) d) JSPL
2	Cement	a) The Associated Cement Companies Ltd.(ACC) b) Ambuja Cement Ltd. c) Ultra Tech Cement Ltd.
3	Structural Steel	a) Steel Authority of India Ltd (SAIL) b) TATA Iron & Steel Co. Ltd c) Rashtriya Ispat Nigam Ltd (RINL) d) JSPL
4	Grouting Material	a) Fosroc Chemicals (I) Pvt Ltd. b) Sika Qualcrete Pvt Ltd. c) CICO Technologies Ltd
5	Paints for Had rails	a) Berger b) Asian Paints c) Nerolac

Annexure 1 : Main Gate to Transit Hostel 6 m wide New Bituminous Road

Sr No	Description of Item	Uom	Average expected Length	Averaged expected Width	Average expected Depth	Qty
1.a	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating or backfilling of earth , dressing to camber making of shoulders and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with all lead and maintaining optimum moisture content and more than 95 % MDD , all complete as per specification and direction of EIC.	Cum	460.000	6.000	0.600	1656.000
1.b	Providing & Laying -Construction of granular sub-base (63 to 40 mm) by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.-With material conforming to Grade-I (size0.15mm) having CBR Value-30. Thickness 175mm.	Cum	460.000	6.000	0.175	483.000

1.c	Providing & Laying, spreading and compacting stone aggregate of specified sizes to WBM (53 to 20 mm) specifications in uniform thickness, hand picking, rolling with 3 wheeled road / vibratory roller 8-10 tonne capacity in 3 stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density . It has to laid in 3 layers total 225 mm thick. Cum	Cum	1150.000	6.000	0.225	1552.500
1.d	Providing and applying tack coat using hot straight run bitumen of grade VG - 10, including heating the bitumen, spraying the bitumen with mechanically operated spray unit fitted on bitumen boiler, cleaning and preparing the existing road surface as per specifications :-On W.B.M. @ 0.75 Kg / sqm	Sqm	1150.000	6.000		6900.000
1.e	Providing and laying Dense Graded Bituminous Macadam using crushed stone aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site by tippers, laying with paver finisher equipped with electronic sensor to the required grade, level and alignment and rolling with smooth wheeled, vibratory and tandem rollers as per specifications to achieve the desired compaction and density, complete as per specifications and directions of Engineer-in-Charge -. 75 mm compacted thickness with bitumen of grade VG-30 @3.5% (percentage by weight of total mix) and lime filler @ 2% (percentage by weight of Aggregate) prepared in Drum Type Hot Mix Plant of 60-90 TPH capacity	Cum	1150.000	6.000	0.075	517.500

1.f	Providing and applying tack coat using hot straight run bitumen of grade VG - 10, including heating the bitumen, spraying the bitumen with mechanically operated spray unit fitted on bitumen boiler, cleaning and preparing the existing road surface as per specifications : On bituminous surface @ 0.50 Kg / sqm	Sqm	1150.000	6.000		6900.000
1.g	Providing and Laying-2 cm premix carpet surfacing with 1.8 cum and 0.90 cum of stone chippings of 13.2 mm size and 11.2 mm size respectively per 100 sqm and 52 kg and 56 kg of hot bitumen per cum of stone chippings of 13.2 mm and 11.2 mm size respectively, including a tack coat with hot straight run bitumen , including consolidation with road roller of 6 to 9 tonne capacity etc. complete	Sqm	1150.000	6.000		6900.000
1.h	Providing,laying and compaction of layer of 70 MM morrum for shoulder making over the compacted and prepared surface. Morrum layer is to compacted by suitable mechanical means.Morrum supply from outside is in the scope of contractor; 200mm depth excavation of soil & compaction of soil subgrade before laying Morrum is also covered in scope. Shoulders shall have sufficient load bearing capacity to support loaded trucks. A slope of 1 in 80 shall be provided on shoulders	Cum	1150.000	2.000	0.070	161.000

Annexure 2 : Expansion of Existing Bituminous Road from 6 m wide to 9 m wide

2.a	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating or backfilling of earth , dressing to camber making of shoulders and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with all lead and maintaining optimum moisture content and more than 95 % MDD , all complete as per specification and direction of EIC.	Cum	848.000	3.500	0.600	1780.800
2.b	Construction of granular sub-base (63 to 40 mm) by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.-With material conforming to Grade-I (size 0.15mm) having CBR Value-30. Thickness 175mm.	Cum	848.000	3.500	0.175	519.400

2.c	Laying, spreading and compacting stone aggregate of specified sizes to WBM (53 to 20 mm) specifications in uniform thickness, hand picking, rolling with 3 wheeled road / vibratory roller 8-10 tonne capacity in 3 stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density . It has to laid in 3 layers total 225 mm thick. Cum	Cum	848.000	3.500	0.225	667.800
2.d	Providing and applying tack coat using hot straight run bitumen of grade VG - 10, including heating the bitumen, spraying the bitumen with mechanically operated spray unit fitted on bitumen boiler, cleaning and preparing the existing road surface as per specifications :-On W.B.M. @ 0.75 Kg / sqm	Sqm	848.000	5.000		4240.000
2.e	Providing and laying Dense Graded Bituminous Macadam using crushed stone aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site by tippers, laying with paver finisher equipped with electronic sensor to the required grade, level and alignment and rolling with smooth wheeled, vibratory and tandem rollers as per specifications to achieve the desired compaction and density, complete as per specifications and directions of Engineer-in-Charge -. 75 mm compacted thickness with bitumen of grade VG-30 @3.5% (percentage by weight of total mix) and lime filler @ 2% (percentage by weight of Aggregate) prepared in Drum Type Hot Mix Plant of 60-90 TPH capacity	Cum	848.000	5.000	0.075	318.000

2.f	Providing and applying tack coat using hot straight run bitumen of grade VG - 10, including heating the bitumen, spraying the bitumen with mechanically operated spray unit fitted on bitumen boiler, cleaning and preparing the existing road surface as per specifications : On bituminous surface @ 0.50 Kg / sqm	Sqm	848.000	9.000		7632.000
2.g	Providing and Laying- 2 cm premix carpet surfacing with 1.8 cum and 0.90 cum of stone chippings of 13.2 mm size and 11.2 mm size respectively per 100 sqm and 52 kg and 56 kg of hot bitumen per cum of stone chippings of 13.2 mm and 11.2 mm size respectively, including a tack coat with hot straight run bitumen , including consolidation with road roller of 6 to 9 tonne capacity etc. complete	Sqm	848.000	9.000		7632.000
2.h	Providing,laying and compaction of layer of 70 MM morrum for shoulder making over the compacted and prepared surface. Morrum layer is to be compacted by suitable mechanical means.Morrum supply from outside is in the scope of contractor; 200mm depth excavation of soil , backfilling & compaction of soil subgrade before laying Morrum is also covered in scope. Shoulders shall have sufficient load bearing capacity to support loaded trucks. A slope of 1 in 80 shall be provided on shoulders	Cum	848.000	2.000	0.070	118.720

Annexure 3 : RCC Road Works For Bulker Movement						
Sr No	Description of Item	Uom	Length	Width	Depth	Qty
3.a	Earthwork in excavation and back filling including clearing of vegetation , fencing, scrap etc and disposing/ bringing the same with leed of 500 m as directed by engineer incharge.	Cum	500.000	4.000	0.500	1000.000
3.b	Providing Laying, spreading and compacting stone aggregate of specified sizes to WBM (53 to 20) specifications in uniform thickness, hand picking, rolling with 3 wheeled road / vibratory roller 8-10 tonne capacity in 3 stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density . It has to laid in first layer depth 100 mm and 4 layers depth 75 mm .	Cum	50.000	7.000	0.400	140.000
3.c	Providing,laying and compaction of layer of 70 MM morrum for shoulder making over the compacted and prepared surface. Morrum layer is to compacted by suitable mechanical means.Morrum supply from outside is in the scope of contractor; 200mm depth excavation of soil , backfilling & compaction of soil subgrade before laying Morrum is also covered in scope. Shoulders shall have sufficient load bearing capacity to support loaded trucks. A slope of 1 in 80 shall be provided on shoulders	Cum	500.000	1.500	0.070	52.500

3.d	Providing and laying in position M-30 grade of reinforcement cement concrete in RCC Road Works including the cost of centering, shuttering , finishing but excluding the cost of Reinforcement. Including Providing and fixing of expansion and construction joints and filling it with Bitumin Grade A Sealant as per IS in RCC Roads as per specifications and attached approved drawing by Engineer in Charge	Cum	500.000	7.000	0.150	525.000
3.e	Road Works - Supply and transporting, bending, laying, binding & fixing in position reinforcement steel of all dia(8mm,10mm,12mm,16mm,20mm and 25 mm) including supplying & providing 18 SWG soft annealed wire used for binding in RCC works. No separate measurements shall be made for Reinforcement used in authorised spacer bars/overlaps/chairs etc.	MT				38.880
3.f	Road Works -Segregating ,Straightning, transporting, bending, laying, binding & fixing in position reinforcement steel of all dia(8mm,10mm,12mm,16mm,20mm and 25 mm) provided by TSPL (Scrap reinforcement) . including supplying & providing 18 SWG soft annealed wire used for binding in RCC works. No separate measurements shall be made for Reinforcement used in authorised spacer bars/overlaps/chairs etc.	MT				10.000

Annexure 4 : Drain Works 2 Km						
Sno	Description of Item	Uom	Length (m)	Width(m)	Depth (m)	Quantity
4.a	Earthwork in excavation and back filling including clearing of vegetation , fencing, scrap etc and disposing/ bringing the same with leed of 500 m as directed by engineer incharge.	Cum	2000	1.8	1.8	6480
4.b	Providing and laying in position M-10 grade PCC in Drain Works including the cost of centering, shuttering , finishing as per specifications and attached approved drawing by Engineer in Charge	Cum	2000	1.2	0.1	240
4.c	Providing and laying in position M-25 grade PCC in Drain Works including the cost of centering, shuttering , finishing as per specifications and attached approved drawing by Engineer in Charge	Cum	2000	2.8	0.15	840
4.d	Road Works -Segregating ,Straightning, transporting, bending, laying, binding & fixing in position reinforcement steel of all dia(8mm,10mm,12mm,16mm,20mm and 25 mm) provided by TSPL (Scrap reinforcement) . including supplying & providing 18 SWG soft annealed wire used for binding in RCC works. No separate measurements shall be made for Reinforcement used in authorised spacer bars/overlaps/chairs etc.	MT	2000			75

4.e	Road Works - Supply and transporting, bending, laying, binding & fixing in position reinforcement steel of all dia(8mm,10mm,12mm,16mm,20mm and 25 mm) including supplying & providing 18 SWG soft annealed wire used for binding in RCC works. No separate measurements shall be made for Reinforcement used in authorised spacer bars/overlaps/chairs etc.	MT				30
4.f	Providing , fabrication and fixing of MS Grating (38mm x38 mm mesh size) , thickness 25 mm and unit weight of minimum 13 kg per sqm of approved make and with all complete as per specification and direction of EIC. Detailed drawing shall be submitted by contractor along with sample models for selection & approval by TSPL EIC	Sqm	2000	0.8		1600

<u>Annexure 5 : Footpath Paver Block 4 km and Handrail</u>						
Sno	Description of Item	Uom	Length (m)	Width(m)	Depth (m)	Quantity
5.a	Supply and Laying of Fly ash Paver Blocks(interlock type) of 80 mm thickness & M30 grade blocks with all complete as per specification, laid over 50 mm pcc and 25 mm mortar mix as approved inclusive of excavation , backfilling of 200 mm depth and compaction up to 95 % MDD. and as directed by engineer incharge .The block joints are filled using suitable fine material of cement & sand	Sqm	4000.000	1.000		4000.000
5.b	Supply and fixing of Hand rail 25mm MS pipe of 4 strands of span 2 m ,fixed on 2000 mm high poles of 40 mm GI Pipe grouted with M20 concrete(300mmx300mm) beneath ground 500 mm deep inclusive of fabrication and erection and tools and tackles for completion , all complete with two coats of primer & two coats of paint(overall DFT- 120 Micron) of approved make and colour all complete as per specification and direction of engineer incharge. Exposed height of handrail above gorund shall be of 1.5M and cross bracing to be provided in between 25 mm horizontal pipe in order to restrict trespassing	RM				4000.000

