COMPLIANCE REPORT OF POINT 1 OF ADDITIONAL INFORMATION

PROPOSAL NO – EP/RJ/IND/153357/2022

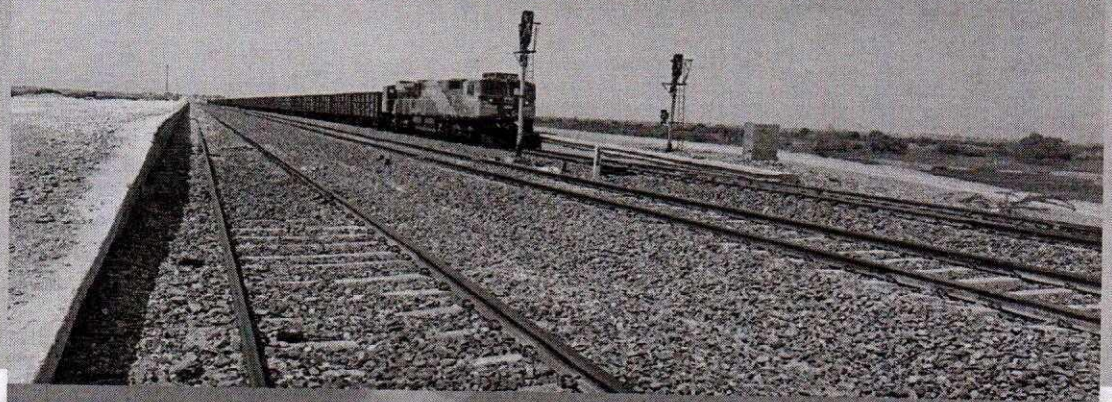
WONDER CEMENT
EK PERFECT SHURUAAT

WONDER CEMENT LIMITED

DETAILED PROJECT REPORT

PRO. RAILWAY SIDING TAKING OFF FROM SONU STATION, JODHPUR DIVISION, NORTH WESTERN RAILWAY TO SERVE FOR PRO. CEMENT PLANT BY M/s. WCL

SONU



APRIL 2022

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INTRODUCTION AND CONCEPT OF THE STUDY

1.0 INTRODUCTION - M/s. WONDER CEMENT LIMITED (WCL)

M/s. Wonder Cement Ltd. is a unit of R.K. Marble Group, is a cutting-edge cement manufacturing company with an ambition to establish itself as a leading player in the industry.

M/s. Wonder Cement plant having three integrated clinker and cement production plants of total capacity 8.0 MTPA & 9.50 MTPA respectively, located in Nimbahera, District Chittorgarh, in Rajasthan. The state-of-the-art manufacturing units was established in technical collaboration with ThyssenKrupp and Pfeiffer Ltd. of Germany, the world leaders in cement technology, and it produces cement at par with international standards.

M/s.WCL commissioned its first clinker grinding unit in August 2018 at Nardana, Dist.: Dhule, Maharashtra having a capacity of 2 MTPA and second clinker grinding unit commissioned in January 2020 at Badnawar, Dist: Dhar (MP) having a capacity of 2 MTPA cement annually and third grinding unit at dist Jhajjar, Haryana State, with the capacity of 2.5 MTPA.

M/s Wonder cement is growing very fast and has already started one more 2.75 MTPA clinkerization unit at same location (Nimbahera) and planned to commission by first quarter of 2022. In order to consume the additional quantity of clinker produced from new line, M/s. Wonder cement is planning to set up few more Grinding units.

1.1 THE PROJECT

M/s Wonder Cement Ltd has been issued TOR for Proposed integrated Cement Project - Clinker - 8.0 MTPA (2 X 4.0 MTPA), Cement 5.0 MTPA (2 X 2.5 MTPA), CPP - 40 MW (2 X 20 MW), WHRS - 40 MW (2 X 20 MW) in Phased manner along with Railway Siding at village Parewar, Tehsil & District Jaisalmer by MoEFCC, New Delhi vide Letter No. - 1A-J-11016/24/2022 -1A-11 (IND-1) dated 2nd March, 2022.

In order to meet the lime stone requirement of Cement plants, M/s.WCL has been granted Mining lease and proposes to set up Limestone mine Near Parewar Village, Teshil & Dist.: Jaisalmer, Rajasthan State.

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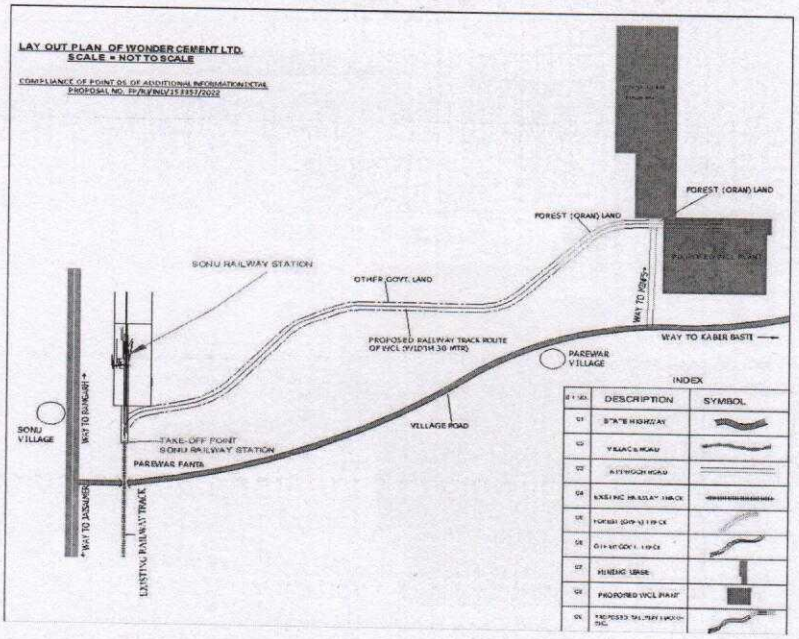
M/s Wonder Cement Limited Layout Plan Showing Mining Lease , Plant Area & Railway Track



M/s.WCL planning to develop Railway siding with in their plant premises in order to transport inward raw materials of Coal & Condition Flyash and outward traffic of Clinker, High grade Lime stone and Cement. Siding is proposed to take-off from the nearest Rail head i.e. Sonu on Thaiyat Hamira – Sonu Single line non-electrified section of Jodhpur Division, North Western Railway. The proposed Cement Plant is located at approximately aerial distance of 10.0km from Sonu station and Land acquisition for development of Railway siding are under progress.

1.2 RAILWAY CONSULTANTS

M/s.WCL have appointed **M/s.MGR Infra Techno Economical Services LLP (MGRITES),** 1408, 14th floor, Hemkunt Chambers, Nehru Place, New Delhi – 110019 with Telephone Nos.+91-9959215798 & +91-8826692829 and E-mail id:mgrinfratech@mgrites.com, mcsreddy@mgrites.com as Railway consultants for railway siding. They are in the panel of authorized consultants on North Western Railway vide letter No. W-623/1/Reg. Consult./MGR Infra, dated.15.10.2019.

The agency will act on behalf of us for doing Survey, submission of Reports, designs/drawings, detailed engineering services and project management consultancy for obtaining the approvals from Railways. Copy of Consultants authorization letter is placed at **Annexure-I.**

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1.3 PROJECT OBJECTIVE

The aim of this study is to carryout Reconnaissance survey, assess technical feasibility and to prepare Feasibility report, Detailed survey, Detailed Project Report, Detailed Engineering including railway approvals and Project Management Consultancy for development of new Railway siding with loading/unloading infrastructure facilities, taking off from Sonu on Thaiyat Hamira - Sonu Single line non-electrified section of Jodhpur Division, North Western Railway, to serve for transportation of inward raw materials of Coal & Condition Flyash and outward traffic of Clinker, High grade Lime stone and Cement.

1.4 DETAILED SURVEY:

1.4.1 Detailed Engineering survey has been done using Total station from serving station to proposed Plant. The investigation included study on terrain, study of existing Serving station, availability of land, location for take-off for railway siding, identification of water sources, road crossings, Railway boundary, Gradient post, Type of Signals and power transmission lines etc.

1.4.2 After detailed study at site and data/drawings collected, Feasibility study report has been prepared for developing Railway siding along with loading/unloading infrastructure facilities for Handling inward traffic of Coal & Condition Flyash and outward traffic of Clinker, High grade Lime stone and Cement

1.5 CONCEPTUAL STUDY

1.5.1 Layout of the proposed rail connectivity from the Sonu station to the Plant area and In-plant yard facilities are formulated with due consideration to the following aspects.

- Anticipated inward traffic and outward traffic.
- Existing Serving station facilities and future proposal of Railways at this station.
- Take off arrangements at existing serving station.
- Land availability up to the plant area and inside the plant area.
- Loading/Unloading operational requirements in in-plant area.
- Existing ground profile from take-off to Plant area.
- Connectivity by means of curves and gradients.

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1.5.2 Traffic needs mainly consist of inward traffic of Coal & Condition Flyash and outward traffic of Clinker, High grade Lime stone and Cement

1.5.3 As could be seen from the details of Chapter-II, the proposed Private siding will be required to handle total inward traffic of Coal 13.0 rakes/month, Flyash 13.0 rakes/month and outward traffic of Cement 16.0 rakes/month, Clinker 31.0 rakes/month (Phase-I) & 69.0 rakes/month (Phase-II) and Lime stone initially 31.0 rakes/month & gradually increases to 50 rakes/month.

1.5.4 Layout of the In-plant yard with technically most suitable and economically viable alignment to connect the plant yard have been finalized after conducting Reconnaissance and Preliminary Engineering Survey and to suit traffic projected by WCL. Conceptual plan is placed at **Annexure-II**.

1.6 In-principle approval (IPA)

In-Principle approval has been granted vide Sr.DOM/JU, North Western Railway Letter No. MT-6B/Plg/Wonder Cement/2021, dated 28.01.2022, placed at **Annexure-III**.

1.7 Shunting engine facility

1.7.1 There is no proposal of providing shunting Engine in the siding as the siding opting for EOL (Engine on Load) scheme.

1.8 Private siding

1.8.1 The proposed siding shall be developed based on GCT policy of 2021. All eligibility criteria for GCTO as mentioned in GCT policy of 2021 (GCT circular letter no.2021/TC(FM)/18/23, dated 15.12.2021) have been fulfilled by M/s.WCL.

S. No.	Item	Annexure
1.	Details of the Ownership of Land	Land acquisition under process.
2.	Location and details of EIMWB	EIMWB proposed to install as per RDSO guidelines on Cement loading line at Ch.:10680.0m at entry of in-plant yard.
3.	Details of the cargo handling mechanism inside the Terminal	As explained in Chapter-IV i.e., System of working, Coal & Flyash rakes unloading through Wagon tippler with traverse arrangement, Clinker & Lime stone loading through Hopper Silo & Cement loading through mechanized system.

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4.	Standard layout chosen for the Terminal	Enclosed ESP as annexure – IV & VI
5.	Alignment and L-section of connectivity line from take-off point to GCT	Enclosed ESP as Annexure – IV & L-section as Annexure – V & VI.

1.9 Salient features of proposed rail infrastructure facilities for M/s.WCL are as follows:

1.	Serving Railway Station	:	Sonu Railway station, Thaiyat Hamira – Sonu section, Jodhpur division, North Western Railway
2.	Route length of proposed Railway siding	:	13.0 km
3.	Gauge	:	Broad Gauge 1676 mm
4.	Gradient of In-plant yard	:	1 in 1200/Level
5.	Curves	:	Max. 300m Radius
6.	Bridges (Culverts)	:	25 T loading
7.	Rails	:	60Kg IRS (T-12) Prime & IU Rails for railway siding
8.	Sleepers	:	a) 60kg PSC sleepers / (M+7) density
		:	b) PSC Sleepers for points & crossings with fan-shaped layout.
9.	Ballast	:	Track Ballast of 300mm cushion.
10.	Points and Crossings	:	60Kg 1 in 8½ points & Crossings in private siding portion and 1 in 12 Main line connections.
11.	Signaling arrangements at serving station.	:	Electronic Interlocking Standard IIR (B-Class station) with multiple aspect color light signaling (MACLS).
12.	OHE and Traction	:	Electrification (Sanctioned)
13.	Estimate cost of the siding	:	**Rs.89.80 Cr.**

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Chapter II

TRAFFIC PROJECTIONS

2.0 VOLUME OF TRAFFIC

As indicated by M/s.WCL, it is proposed to transport inward traffic of Coal & Condition Flyash and outward traffic of Clinker, High grade Lime stone and Cement. The proposed Inward and outward traffic is as under.

2.1 TRAFFIC PROJECTIONS:

Inward Traffic:

S. No.	Commodity	Quantity (MTPA)	Source
1	Coal (Imported)	0.60	Kandla (Gujarat)
2	Condition Flyash	0.60	Lalitpur (Chhattisgarh); Tiroda (Maharashtra)

Outward Traffic:

S. No.	Commodity	Quantity (MTPA)	Destination
1	Cement	0.15	North India
2	Clinker	1.50 (Phase – I) 3.30 (Phase – II)	Central Uttar Pradesh; Eastern Uttar Pradesh
3	High grade Lime stone	Initially 1.50 & gradually increases to 2.30	Nimbahera (Rajasthan)

2.2 The volume of traffic to be handled in the In-plant yard as mentioned in Para 2.1 converted into number of rakes based on the carrying capacity of different types of wagons with enhanced load ability (BOXN/BCN/BCCW) to be used per month will be as under:

Inward Traffic:

S. No.	Commodity	No. of rakes/month
1	Coal	13.0
2	Condition Fly ash	13.0

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Outward Traffic:

S. No.	Commodity	No. of rakes/month
1	Cement	16.0
2	Clinker	31.0 (Phase-I) & 69.0 (Phase-II)
3	High grade Lime stone	31.0 gradually increases to 50.0

2.3 From the above, it may be seen that the total inward traffic of Coal 13.0 rakes/month, Flyash 13.0 rakes/month and outward traffic of Cement 16.0 rakes/month, Clinker 31.0 rakes/month (Phase-I) & 69.0 rakes/month (Phase-II) and Lime stone initially 31.0 rakes/month & gradually increases to 50 rakes/month.

2.4 ***Type of wagon used for Inward traffic***

It is proposed to use BOXN wagons which is suitable for transportation of Coal, Clinker & Lime stone, BCN wagons for Cement and BCCW for Fly ash.

2.5 ***Rake composition & carrying capacity***

Type of Wagon	Carrying capacity per wagon	Rake composition	Total Carrying capacity per Rake
BOXN	68 Tonnes	59 no. of wagons	4012 Tonnes
BCN	62 Tonnes	42 no. of wagons	2604 Tonnes
BCCW	68 Tonnes	59 no. of wagons	4012 Tonnes

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CHAPTER- III

PROJECT ENGINEERING

3.0 To provide rail connectivity from nearest station to Plant for transportation of Inward & outward traffic, Reconnaissance survey / Detailed Study of various route options was carried out.

3.1 Sign convention for Chainage measurements

3.1.1 All the chainages for the existing yard facilities are reckoned by considering Center line of Sonu Station building Km:54.780 as Zero Chainage reference point and proposed facilities along alignment for Railway siding & In-plant yard is reckoned by considering proposed Take-off point at Ch.1062.0m F/CSB as Zero Chainage reference point.

3.2 Sonu as Serving station

3.2.1 In order to provide the railway connectivity for the proposed Cement plant, it is preferred to propose Sonu railway station as serving station.

3.2.2 Sonu station is situated at Km.54.780 on Thaiyat Hamira – Sonu Single Line non-electrified section, on Jodhpur division, North Western Railway. The station is equipped with Electronic Interlocking (MACLS) to Standard-II (R) Interlocking. All points & crossings are operated from SM's office.

3.3 Block stations on either side

Sonu Station is terminal station situated between Lanela at a distance of 24.90 kms towards Thaiyat Hamira and Dead end existed on the other side.

3.4 Existing Layout of the station

The yard presently consists of Eight running lines i.e. Main Line and Seven Goods Loop line. The CSR of these lines are as detailed below.

Line No.	Nomenclature	CSR (m)
Line No.01	Goods Loop line	774.0 m
Line No.02	Goods Main line	720.0 m
Line No.03	Goods Loop line	765.0 m
Line No.04	Goods Loop line	720.0 m

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Line No.05	Goods Loop line	834.65 m
Line No.06	Goods Loop line	947.65 m
Line No.07	Goods Loop line	1084.046 m
Line No.08	Goods Loop line	917.754 m

3.5 Proposed modifications by Railway at Somna Station

A Shunting neck of Length 377.80m with connectivity of Main line is provided duly extending Loop Line No.03 towards Thaiyat Hamira The station.

3.6 Description of the Siding alignment

3.6.1 Serving Station – Sonu

In order to provide a workable take-off for setting up the railway siding facility for transportation of Inward and outward traffic for the proposed Cement plant, it is preferred to propose nearest Rail head i.e. Sonu railway station as serving station.

3.6.2 Take off & Lead line

It is proposed to take off from Goods Loop Line No.03 at Ch.1377.296m F/CSB (KM:53/402.74). After take-off, Connectivity line passing (approx. 13.0km) with in the in Govt. & Private Land up to proposed plant. Land acquisition of the connectivity line is under progress.

An additional loop line of full rake length of CSR 720m is provided on lead line immediately after take off for the purpose of simultaneous reception & dispatch of rakes WCL siding.

3.6.3 Lay out of the In-plant yard

For Handling the total inward traffic and out ward traffic, following infrastructure is proposed to be developed at In-plant yard.

Line No.	Nomenclature	CSR
1	Pre-Tippling line	791.0m
2	R&D Line cum Engine escape line	720.0m
3	Clinker Pre-loading Line	740.0m

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4	Lime stone Pre-Loading Line	720.0m
5	Cement loading Line	750.0m
6	Cement loading Line	720.0m
7	Post tippling line	720.0m
8	Clinker Post loading Line	720.0m
9	Lime stone Post-Loading Line	720.0m
10	Shunting Neck	910.0m

3.7 Horizontal Curves

A total of 06 nos. curves has been provided along the proposed alignment from proposed take-off to yard DE with a maximum of 500m radius. List of horizontal curves are indicated below:

Curve No.	Deflection angle			Rad. (M)	Deg.	Tangents (F/CSB)		TL	CL
	Deg.	Min	Sec			Ch:TP1	Ch:TP2		
1	108	26	28	500	3.5	42.23	988.556	693.790	946.326
2	37	6	57	875	2	1108.556	1675.375	293.755	566.819
3	24	50	34	583.33	3	4058.36	4311.285	128.482	252.925
4	25	38	52	583.33	3	4676.455	4937.575	132.785	261.121
5	47	3	18	583.33	3	6188.49	6667.558	253.972	479.068
6	45	56	2	583.33	3	8689.20	9156.854	467.654	247.212

3.8 Longitudinal Section (Main line regrading):

Regrading of Main line about a length of 880.0m is required to be done on Thaiyat Hamira end due to extension of Sonu station yard.

Chainage (F/CSB)		Gradient
From Ch.:	To Ch.:	

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1180.0 (Km:53/600)	1540.0 (Km:53/240)	1 in 400 F
1540.0 (Km:53/240)	2060.0 (Km:52/720)	1 in 150 F

3.9 **Longitudinal Section (WCL siding):**

Chainage (F/CSB)		**Gradient**
From Ch.:	**To Ch.:**	
0.00	100.0	1 in 400 F
100.0	480.0	1 in 600R
480.0	900.0	1 in 1000R
900.0	1160.0	1 in 400R
1160.0	2500.0	1 in 374F
2500.0	3300.0	1 in 250F
3300.0	3680.0	1 in 300R
3680.0	3880.0	Level
3880.0	5640.0	1 in 200F
5640.0	5920.0	1 in 250R
5920.0	6760.0	1 in 500R
6760.0	8800.0	1 in 200F
8600.0	8820.0	Level
8820.0	10580.0	1 in 200F
10580.0	10780.0	Level
10780.0	12852.50	1200F

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3.10 **Bridges**

List of bridges proposed along the proposed siding are as under.

Bridge No.	Chainage	Size of Bridge	Remarks
1	318.0	LHS (1x3.0mx3.0m)	Cart track
2	1220.0	1x6.10m PSC Slab	Nallah
3	1775.0	RCC Box (1x2.0mx2.0m)	Balancing culvert
4	3094.175	RCC Box (1x2.0mx2.0m)	Balancing culvert
5	3785.27	1x12.20m Composite Grider	Nallah
6	5854.39	RCC Box (1x2.0mx2.0m)	Balancing culvert
7	7381.22	LHS (1x3.0mx3.0m)	Cart track
8	8700.0	1x12.20m Composite Grider	Nallah
9	9808.51	LHS (1x4.0mx4.0m)	Cart track
10	9994.0	RCC Box (1x2.0mx2.0m)	Balancing culvert
11	10413.0	1x6.10m PSC Slab	Nallah

3.11 **Speed potential**

Maximum permissible speed on proposed siding shall be 60 Kmph since this is a dead-end terminal.

3.12 **Fixed Structure Clearances**

All fixed structures to be provided on the siding shall have clearances conforming to recommended schedule of dimensions of Indian Railways.

3.13 **Buildings and Structures:**

Office accommodation with basic amenities for staff, for train crew, inspection pathway till dead end in siding etc. are proposed to be provided in the yard area.

3.14 **Earthwork**

The topography of the area renders it necessary to provide the siding mostly in embankment as shown in the longitudinal section.

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The required earthwork will be carried out using locally available soil as per RDSO guidelines and Railway's specifications.

The suitable depth of embankment will be provided with blanketing and compacted as per the RDSO guidelines.

The top width of the embankment will be kept at 7.85 m. for single line and in case of additional line, the spacing of tracks will be kept minimum at 6.0m.

The side slopes of the embankment will be 2:1 and the top of formation will be laid with camber of 1 in 30 to facilitate proper drainage. In cutting, the bottom width of the formation excluding side drains will be 7.85 m. Suitable side drains will be provided. The side slopes of the cutting will not be steeper than 1:1.

3.15 Time Frame for Commissioning

Time frame for commissioning will be 8 to 10 months from the date of approval received for construction of siding.

3.16 Drawings

- Engineering Scale Plan of Sonu station showing existing station facilities, proposed Junction & take-off of WCL siding arrangements is enclosed **as Annexure – IV.**
- Plan & profile of WCL siding enclosed as **Annexure – V (Sheet 1 to 4).**
- WCL In-plant yard enclosed as **Annexure – VI.**

3.17 Estimate:

Estimate is based on the parameters mentioned above and the quantities obtained from the proposals.

The estimate adopts the specifications of East Central Railway and BIS specifications for all the Civil Engineering works. The costing has been done taking into consideration the market rates for earthwork, track work, concrete works and ballast.

Cost estimate for the civil & Track works **is Rs.70.50 Crores**, Detailed vetted Estimate Placed **as Annexure–IX.**

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CHAPTER- IV

SYSTEM OF WORKING

4 System of Working:

Following system of working is proposed for reception/dispatch of rakes from/to WCL siding.

4.1 Reception of trains from Main line (Sonu station) to In-plant yard

- All Incoming loaded/empty rakes bound to WCL siding, are expected to receive from Thaiyat Hamira end only.
- On arrival at station, SM/Sonu shall be ensured a formal acknowledgement via means of available communication from Yard In-charge regarding on which line train to be received.
- On getting acknowledgment from yard in-charge, SM/Sonu shall set route to Siding.
- Thereafter, Train shall be received on to the designated line at In-plant yard.

4.2 System of working at In-plant yard

Coal & Fly ash

- The Loaded train from serving station shall be received on the Pre-Tippling line no.1.
- On arrival, the train engine detaches, reversed and attached on the BV, the BV is detached and placed BV just before Tippler and train engine is attached on the station end.
- The complete rake is backed towards Tippler duly coupling of BV and handed over wagon to the Tippler for tippling.
- Wagons including the BV after tippling/unloading, gathered on to the Post Tippling line no.7. Train Engine attached on the empty formation and made ready for further dispatch.

Empty rake back loading for Clinker & High grade Lime stone

- Whenever the empties are permitted for back loading of clinker/High grade lime stone, the empty rake from the R&D line no.2 with BV in appropriate position shall be pushed ahead either on to Clinker Post loading line no.8 or Lime stone Post loading line no.9 via proposed cross over between the lines.

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- After completely pushed ahead, the empty rake is slowly pulled on to silos/hopper towards either on to Clinker Pre-loading line no.3 or Lime stone Pre-loading line no.4 with each wagon placed for loading under the loading Silo/hopper.
- After all wagons are loaded, train engine is attached and dispatch towards Sonu Railway station duly getting the weighment of wagons on the In-motion Weigh Bridge installed at entry of plant yard.

Clinker and High grade Lime Stone

- The Empty train from serving station shall be received either on to the Clinker Pre-loading line no.3 or Lime stone Pre-loading line no.4.
- On arrival, the train engine detaches, reversed and attached on the BV, the BV is detached and placed BV just before hopper/silo and train engine is attached on the station end, shall be pushed ahead duly coupling of BV either on to Clinker Post loading line no.8 or Lime stone Post loading line no.9.
- After completely pushed ahead, the empty rake is slowly pulled on to silos/hopper towards either on to Clinker Pre-loading line no.3 or Lime stone Pre-loading line no.4 with each wagon placed for loading under the loading Silo/hopper.
- After all wagons are loaded, the train is ready on the Clinker Pre-loading line no.3 or Lime stone Pre-loading line no.4 for further dispatch towards Sonu Railway station duly getting the weighment of wagons on the In-motion Weigh Bridge installed at entry of plant yard.

Cement

- On arrival of Empty rake on Cement loading line no.5 or 6 and given placement for loading.
- The train engine detaches, reversed and attached on the BV, the BV is detached and placed BV on short dead end and train engine is attached on the station end.
- After completion of Cement loading, the complete rake is backed to couple up BV and made ready for further dispatch towards Sonu Railway station duly getting the weighment of wagons on the In-motion Weigh Bridge installed at entry of plant yard.

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4.3 **Dispatch of trains from In-plant yard to Main line (Godhra end & Anand end)**

- When train is ready to be dispatched to destination. The Yard in-charge shall obtain permission from SM/Sonu to start the train.
- SM/Sonu shall ensure that the section is clear and grant permission to the Yard in charge.
- The Yard in-charge after getting permission, shall authorize the loco pilot to start the train for dispatch to destination.

4.4 **Weighment of incoming and outgoing rakes:**

All outgoing rakes will be weighed on in-motion electronic weigh bridge installed at entry of Plant yard with 100m straight & leveled track in such a way that the train stops beyond 50 meters from Weighbridge and then move over in-motion weighbridge with a maximum speed of 15 kmph.

As per 3.1 of Rates Master Circular/Weighment/2019, All consignments loaded in standard bags of uniform size is exempted from mandatory weighment at the weighbridges with a provision that at least 5% of rakes should be subjected to weighment.

4.5 **Security of Wagons**

Whenever rake is stabled for loading/unloading (unattached with Engine), all precautions will be taken to secure the wagons by way of putting on hand brakes and put wedges for last wagons.

4.6 **Mechanical**

Company undertakes to pay derailment charges for any derailment taking place in the connectivity and in-plant yard of the siding.

4.7 **Interlocking of Yard**

In-plant Yard will be provided with spring loaded hand operated points and will be worked as non-interlocked for flexibility of operation. Points will be operated by ground levers locally with self-locking (plunger type) devices. Rail-way retired experienced Points-men shall be engaged by client to operate the points.

4.8 **Provision of OHE**

Since the section is non-electrified, siding will also be non-electrified. Siding shall be provided with electrification as and when section gets electrified.

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4.9 **General Electrical and Yard Lighting**

Illumination at In-plant yard shall be provided with adequate lighting arrangements as per railways specifications and standards by the WCL at their cost.

4.10 **Requirement of Operating Staff**

An experienced Retired Operating official along with Points man shall be engaged for manning movements in the yard.

4.11 **Commercial Formalities**

- The commercial formalities for working of trains for the proposed siding complex will be finalised after discussions and interaction with the Commercial Department of Railway. M/s. WCL will enter into a Siding Agreement before siding is notified commercially open for traffic.
- As the projected traffic is minimum at present, Railways can post one commercial clerk under excluded category. TMS hardware peripheral will be installed by the M/s. WCL in Railway office building (air conditioned) for FOIS and issuing computerized RR's. Railways to provide Software.

4.12 **Infrastructure facilities at Yard**

- An office with facilities of furniture, Toilet and rest room will be provided for the commercial staff near weighbridge to witness weighment of trains and for other staff like crew coming for trains working with all facilities is envisaged.
- Telecommunication facility will be provided for commercial activity.

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STANDARDS OF CONSTRUCTION

5 **Standards:**

5.1 **Gauge**

Gauge shall be broad gauge i.e. 1676 mm compatible to main line.

5.2 **Rails**

60 Kg Rails, Prime quality Rails will be used in the Railway premises and 60 Kg IU quality Rails will be used in the WCL premises.

5.3 **Ballast**

300 mm ballast cushion (well graded) hard stone ballast as per RDSO Specification has been envisaged.

5.4 **Sleeper**

PSC mono block sleepers @ 1540 Nos. per km shall be used.

5.5 **Points & Crossings**

All turnouts in the proposed rail connectivity and plant yard shall have points 60 Kg 1 in 8½ with CMS crossing and Fan shaped PSC sleeper layouts conforming to RDSO standards. All turnouts connected to main line shall have points 60 kg 1 in 12 or conforming to RDSO standards.

5.6 **Cross section & formation**

Proposed Formation width in filling is. 7.85m and cutting is 7.85m (excluding side drains in cutting) for single track. Side slopes proposed for embankment 2:1 (H to V) & cutting is 1:1 (H to V). Compacted blanketing of suitable thickness on the embankment is proposed as per RDSO guidelines.

5.7 **Track structure**

The track structure is designed for 25T axle load.

5.8 **Loops**

The existing & proposed handling lines in the in-plant yard are having full rake length capacity.

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5.9 **Curves**

The maximum allowable degree of curvature (R-500m) is proposed in the alignment

5.10 **Ruling Gradient**

The proposed ruling gradient on connectivity line is 1 in 200 is envisaged.

5.11 **Bridges**

The bridges are proposed to suit for 25T loading.

5.12 **Speed potential**

Maximum permissible speed on proposed connectivity line is 30Kmph and on points & crossings, it is 15 kmph.

5.13 **Traction**

The section is non-electrified, and the same mode of traction will apply to the siding.

5.14 Protection Works

Side slopes of banks at bridge approaches (at nallahs) and on high banks shall be protected by providing pitching in general to prevent rainwater flowing down and eroding the side-slopes. Provision has been made for side drains, catch water drains, wherever required.

5.15 Fixed Structure Clearances

All fixed structures to be provided on the siding shall have clearances conforming to recommended schedule of dimensions of Indian Railways.

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CHAPTER- VI

SIGNALLING & TELECOMMUNICATION

6 General

The Wonder Cement Ltd (WCL) proposes to setup an Integrated Cement Plant, located in Near Parewar Village, Teshil & Dist: Jaisalmer, Rajasthan State. M/s. WCL planning to develop Railway siding with in their plant premises in order to transport inward raw materials of Coal & Condition Fly ash and outward traffic of Clinker, High grade Lime stone and Cement. Siding is proposed to take-off from the nearest Rail head i.e. Sonu on Thaiyat Hamira – Sonu Single line non-electrified section of Jodhpur Division, North Western Railway. Present Hamira - Sonu line is sanctioned for Electrification by Railways.

Sonu station is situated at Km.54.780 on Thaiyat Hamira – Sonu Single Line non-electrified section, on Jodhpur division, North Western Railway. The station is equipped with Electronic Interlocking (MACLS) to Standard-II (R) Interlocking. All points & crossings are operated from SM's office.

Block stations on either side

Sonu Station is terminal station situated between Lanela at a distance of 24.90 kms towards Thaiyat Hamira and Dead end existed on the other side.

6.1 Existing Signaling System at SONU Station

Interlocking

This station is presently equipped with Electronic interlocking, Line 1 and 3 are provided with SSDAC in place of conventional Track circuits. All Points in the station and terminal yard are operated by Electric point machines. All the motor operated points are controlled by Signals in the Sonu station as well in the terminal yard.

Signaling: It is proposed to provide an additional cross over taking off from main line at distance of 1.438 Km from C/L of station, connecting to third line and a take off point to proposed WCL sidings. As such Existing Home signal and LSS shall be shifted to new locations and additional signals are proposed to train movements over motor operated points.

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Block Working

Train traffic is working on Absolute Block working at this station, for this purpose Absolute Block working between Sonu Station and Lanela station with UFSBI (Single Line Block). On the other end Goods terminal Yard exists with 5 reception lines and one sick line. The yard is completely Track circuited.

connectivity to wonder cements worked out additional 19 Routes as per the signaling sketch enclosed.

6.2 **Siding proposals**

The schematic signal Sketch of Sonu station (Part) is attached as **Annexure-VII**. In the proposals for wonder cement siding, Existing Third line is extended from BS to newly proposed cross over with BS further for Over shoot purpose. For interlocking signals with points starters and shunt signals are proposed. Existing home shall be shifted to suitable location and treated as routing signal. As per the requirement of single line B class working new Advanced Starter, Home, and Distant are proposed with standard over laps.

Spare Function Nos are utilized in preparation of Scheme plan and detailed estimate.

6.3 **Communication**

For communication between SONU Station with WONDER CEMENT SIDING, push button type magneto phone and VHF sets are planned to provide. 6 quad cable laying is proposed from SONU STATION to WONDER CEMENTS SIDING for this purpose.

6.4 **Estimate:**

While giving in-principle approval, suggested to operate the newly proposed signaling gears such as Points, signals shall be controlled from existing SSI/EI at station. Hence modifications, additional equipment and alterations to existing EI is planned at a cost of **Rs.4.86 Lakhs** and the detailed vetted estimate for signaling and telecommunication is enclosed as **Annexure – X**.

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CHAPTER- VII

OVER HEAD ELECTRIFICATION

7 Introduction

The Wonder Cement Ltd (WCL) proposes to setup an Integrated Cement Plant, located in Near Parewar Village, Teshil & Dist.: Jaisalmer, Rajasthan State. M/s.WCL planning to develop Railway siding with in their plant premises in order to transport inward raw materials of Coal & Condition Flyash and outward traffic of Clinker, High grade Lime stone and Cement. Siding is proposed to take-off from the nearest Rail head i.e. Sonu on Thaiyat Hamira – Sonu Single line non-electrified section of Jodhpur Division, North Western Railway. Present Hamira-Sonu line is sanctioned for Electrification by Railways.

7.1 Existing facilities

All the chainages for the existing yard facilities are reckoned by considering Center line of Sonu Station building Km:54.780 as Zero Chainage reference point and proposed facilities along alignment for Railway siding & In-plant yard is reckoned by considering proposed Take-off point at Ch.1062.0m F/CSB as Zero Chainage reference point. Hamira-Sonu line is sanctioned for Electrification by Railways. In line with the main line works we are also proposed 25KV single phase OHE for the WCL siding.

7.2 Proposed OHE facilities for WCL siding

M/S WCL siding is proposed with 25KV, single phase, conventional regulated type OHE.

It should be ensured to maintain safe distances from OHE during manual loading on Cement Loading line of WCL in-plant yard.

Conceptual OHE sectioning cum wiring diagram is shown at **Annexure-VIII** and the Cost estimate for provision of 25KV conventional OHE is placed at **Annexure-XI (B1) to IX (B-4).**

7.3 Power Supply Arrangement for WCL siding

As regards to Power supply arrangements of proposed WCL siding, a separate SSP is proposed with one dedicated circuit breaker for siding along with associated equipment's with modification/alteration to SCADA arrangements at remote control center at divisional headquarters is proposed.

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7.4 **OHE/PSI Maintenance Facilities for Proposed WCL siding**

As per latest Railway Board circular no. 2018/TC(FM)/14/04 dt. 23.06.2020 (Amendment no. 5 to Freight Marketing Circular No. 11 of 2016), the maintenance of OHE for M/s.WCL siding shall be done by Siding owner as per extant rules.

7.5 **Traction Overhead equipment in Indian Railway**

7.5.1 The present OHE system adopted by Indian Railway is 25KV single phase 50 HZ conventional simple conventional type consisting of Copper Cadmium Catenary wire of 65 sq mm & Solid Copper grooved hard drawn Contact wire of 107 sq.mm. Steel RSJ/BFB masts or fabricated masts are used for erection of OHE with spans varying from 27 m to 63 m with cantilevers made up of steel tube with composite stay and bracket insulators between masts and cantilevers.

7.5.2 In regulated OHE, counter weights along with auto tensioning devices at both ends of the shots are used, and anchored at center of the shot length so as to retain the conductors in position in the event of SS wire rope snapping or any other unusual occurrence. At the anchor terminating locations guy rods are used to balance the pull on the masts concerned. Bracket design allows swiveling up to 90 degrees on either side due to automatically and manual adjustment during expansion in summer and contraction in winter so as to retain the tension of Two-ton tension on the OHE.

7.5.3 However, care should be taken in Loading operation with equipment to ensure the crane zib/bulldoze should not get entangled with the wire while lifting or moving.

7.5.4 The design and drawings of the above arrangement is custom made and will be provided by the Railway approved Vendor of the equipment.

7.5.5 SCADA System to OHE automation is in use for which a traction Power Control (TPC) at the Divisional Head Quarter of the Railway is setup which in turn is connected by Optic fiber network with the equipment in TSS, SSP and SP for remote switch on & off.

7.6 **Design Consideration**

7.6.1 The OHE design for entire siding is considered for a wind pressure of 155 kg.f/m2 and soil bearing capacity assumed approximately 8.0 T/sq M.

7.6.2 Implantation for OHE structures are considered as per the latest guidelines for open route & yard and for curved track locations, adequate curve allowances are considered.

7.6.3 Considered provision of long creepage path 1600 mm Composite insulators to prevent insulator failures as per latest Railway Board circular. Executive agency for TRD work shall submit the proposal for provision of 1600 mm CD composite insulators to Division prior to execution of work.

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7.6.4 Necessary isolation arrangements of OHE have been considered at take-off point so as to isolate the siding OHE from main line OHE in the event of OHE failure and for maintenance purpose.

7.6.5 OHE estimate has been prepared duly considering OHE components to latest RDSO and CORE approved makes and the OHE works shall be executed as per railway standards and specifications laid down in ACTM and latest Railway Board circular comes into effect from time to time.

7.6.6 Preparation of OHE designs, execution of OHE works shall be carried out by an approved/working OHE contractor of North Western Railway under railway supervision.

7.6.7 OHE layout plan, sectioning diagram, general power supply arrangements along with associated drawings shall be submitted for approval of Railway after approval of DPR and Engineering scale plan prior to starting of OHE works.

7.6.8 All types of foundation, steel structures, and conductors, power supply equipment, all fittings (ferrous and non-ferrous), insulators and execution processes and practices are covered by relevant specifications(latest) formulated by RDSO and CORE.

7.6.9 There are no major/minor bridges proposed in the alignment for which there is no consideration of special OHE design.

7.6.10 There is one L.C gate in the proposed alignment which shall be extended suitably and provided with height gauge.

7.7 General Electrical works at in-plant yard

7.7.1 As regards to illumination of Inplant Yard, the siding owner shall provide adequate no of High Mast towers with Metal Halide fittings as per railway standards and specifications. The required power for High Mast system shall be extended from the available power source at siding owner premises.

7.7.2 Power lines crossing, if any, in the proposed alignment shall be modified according to 1987 regulation act(latest). Voltage level up to and including 33 kv shall be made under ground.

7.7.3 There is one In-motion weigh bridge room in on siding line at entry of plant yard which shall be provided with air conditioning system by siding owner at his cost.

7.7.4 Since all the above General Electrical works shall be carried out by the siding owner at his own cost including power recurring cost there is no cost estimation prepared for General Electrical works for the in-plant yard in this project report.

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7.8 Cost Estimate

7.8.1 The vetted cost estimate towards OHE and GE works for the proposed WCL siding is **Rs.14.44 Crores**, worked out as under:

S.No	Description	Amount (R.s)	Annexure
1	Conventional OHE Rly premises	**47,94,312**	Annexure-XI(B1)
2	SSP with dedicated Circuit Breaker	**95,32,443**	Annexure- XI (B2)
3	Conventional OHE Lead Line	**6,08,92,770**	Annexure- XI (B3)
4	Conventional OHE In Plant	**6,91,92,085**	Annexure- XI (B4)
	Total (Rs.)	**14,44,11,610**	
	Total (Crores)	**14.44**	

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COST ESTIMATE

3 PROJECT ESTIMATE:

The total capital cost of Civil Engineering, Signaling & Telecommunication and OHE works for recommended siding has been computed considering the present-day cost of earthwork, P-way, equipment for S&T and OHE works excluding cost of land.

Estimates have been prepared based on the General Lay out Plan and prevailing market rates for Civil Engineering Works and Schematic Lay out Plans for Signaling and OHE Works taking into consideration the specifications of North Western Railway for various works.

The total estimated project cost is **Rs. 89.80 Crores.** The abstract cost estimate is detailed below:

Sl. No.	Item	Total amount (Rs. Crores)	Annexures
1	Civil and P-way works	70.50	Annexure – IX
2	Signaling & Telecommunication works	4.86	Annexure –X
3	Overhead Electrification works	14.44	Annexure – XI (B1 to B4)
5	**Total (In Rs. crores)**	**89.80**	

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