

ACKNOWLEDGEMENT

The Central Planning Organization takes this opportunity to express hearty thanks to Sr.DEN/Co-Ord/BZA & other Officials and Inspectors of Engineering Department and Sr.DPO/ BZA & other Officials and Staff of Personal Department of BZA Division for their valuable guidance and co-operation in extending their support by giving necessary information/statistical data.

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M E T H O D O L O G Y

The Work Study department has applied the following techniques for completion of the Work Study.

1. Collection of details of workload.
2. Interaction with the Officers and Staff.
3. Critical examination of the existing system of working and
4. Assessment of manpower required for the existing work Load

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SYNOPSIS

- Subject: Review Of Staff Strength Of Engineering Department Over Vijayawada Division.
- Authority: Annual Programme of Work Studies 2019-20.
- Study No: WSSCR-03/2019-20.
- Reference File No: G.276/2/WSSCR-03/ 2019-20.
- Area of Activity: Engineering Department over Vijayawada Division.
- As per the directives of SDGM, the Central Planning Organisation of South Central Railway has taken up Work-study on "Review of staff strength of Engineering Department over Vijayawada Division".
- **Application of Benchmarking Norms:** Benchmarking is based on dynamic and comparative analysis and is a very useful tool to manage efficient deployment of staff and monitor effects of improvement in working practices, use of new technologies and level of outsourcing. Board in successive meetings has directed all units to achieve average of Indian Railway Benchmark.
- **March-2019 IR average and Bench Marking of BZA divn is as follows.**

Organization	MPR of BZA	IR avg MPR	Benchmark MPR
P.Way	1.5	1.28	0.65
Buildings	0.21	0.18	0.04
Bridges	0.05	0.08	0.02

- MPR of P.Way and Works organizations of Engineering Department over BZA Division are above IR average, where as MPR of Bridges organisation is below IR average.
- Major changes have taken place in the working system of Engineering Department, as several works are being done on zonal contract. Many works have been outsourced. In the P.Way wing, several works are being outsourced such as track maintenance works.
- The Work-study team made an analysis on the requirement of staff based on the following references:
 - a) As per Railway board letter no.2011/E&R/2800/Rly.imp.vol VI/ (Corr) dated 09.06.2016 to bring down the manpower ratios for activities which are above the IR average atleast to the current IR average.
 - b) Number of activities under out sourcing in engineering organization.
 - c) Recommendation to surrender due to the posts lying vacant.
- **Requirement of Manpower of P.Way organisation as per IR average:**

IR Average of March-2019	1.25 men per ETKM
Total ETKM	3701.203
Requirement of manpower =IR average x ETKM	3701.203x1.25 =4626.5 say 4626
Total sanctioned staff in P.way	5360
Staff excess to the requirement	5360-4626=734

- For operational convenience the total section is divided into units, which are controlled by ADEN, SSE units and each SSE unit is further divided in to small gang units. Each gang unit will be responsible for maintainance of 12-13 track kilometers. Sectional track kilometers,no. of gang units in Vijayawada Division

is as follows:

S No	ADEN section	Section length (Tr. KMs)	SSE units	Gang Units
1	NLR	243	NLR,BTTR	8+9=17
2	OGL	211	KVZ,OGL	8+8=16
3	BPP	320	CLX,BPP,TEL	7+9+7=23
4	EE	195	NZD,EE	7+7=14
5	RJY	199	TDD,RJY	7+7=14
6	SLO	307	SLO,PAP	12+7=19
7	TUNI	191	TUNI,AKP	7+7=14
8	BZA	198	BZA(S),BZA(N)	9+9=18
9	BVRM	262	GDV,KKLR,BVRM	13+11+14=38
	Total	2126		173

➤ **Requirement of Track Maintainers as per Practical observation in Engineering Organisation of BZA Division:**

- Total track kilometres in BZA division = 2126 Km
- Total SSE Units in BZA Division = 20 units
- Total no.of Gang Units = 173
- Each Gang unit has 12-13 track kms of track to maintain.
- To maintain 12-13 Track kilometers 25 track Maintainers are required.
- LR 12.5% = $25 \times 12.5\% = 3.12$ say 3
- Total requirement of Track Maintainers for each gang unit = $25 + 3 = 28$
 - Hence requirement of Track maintainers for 173 gang units = $28 \times 173 = 4844$
- Total sanctioned posts of Track Maintainer = 4958
- Requirement of Track Maintainers = 4844
- Excess to the requirement = **4958-4844 = 114**

➤ Comparative statement of staff requirement:

	Total staff	Staff required	Excess
As per IR Average	5360 (P.Way)	4626	734
As per Practical observation	4958(Track Maintainer)	4844	114

- From the above, it is observed that staff excess to the requirement as per the Indian Railway Average Benchmarking is 734 and as per Practical observation is 114 track Maintainers. For convenience of the Department and to bring down the organisation nearer to the Indian railway Average benchmarking gradually, the work study team considered Practical observation.
- In view of the above, the following recommendation is made.

Recommendation: It is recommended to surrender 114 vacant posts of Track Maintainer which are excess to the requirement in Engineering Organisation.

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1.0 INTRODUCTION:**1.1 RAILWAY'S ROLE:**

Indian Railways is a premier transport service provider to the nation and is vested with the responsibility of carrying bulk of freight and passenger traffic across the country at rates affordable for public. The Indian Railways operates through 18 Zones with 73 Divisions to serve the above objective and its operations cover twenty nine states and seven union territories and also provide limited international services to Nepal, Bangladesh and Pakistan.

1.2 GENESIS OF THE REPORT: Engineering Department consists of three organizations namely Permanent way, Works, and Bridges. The prime job of engineering department is to keep on maintaining the track in good fettle from beginning to the end, which is done by Permanent way. Works Organisation maintains the Railway properties such as buildings, stations etc and looks after the passenger amenities at station, supply of water to Railway Colonies & stations, and maintains the sewage lines, roads & premises of Railway colonies etc. Bridge Organisation constructs and maintains Railway Bridges where Railway Track is available.

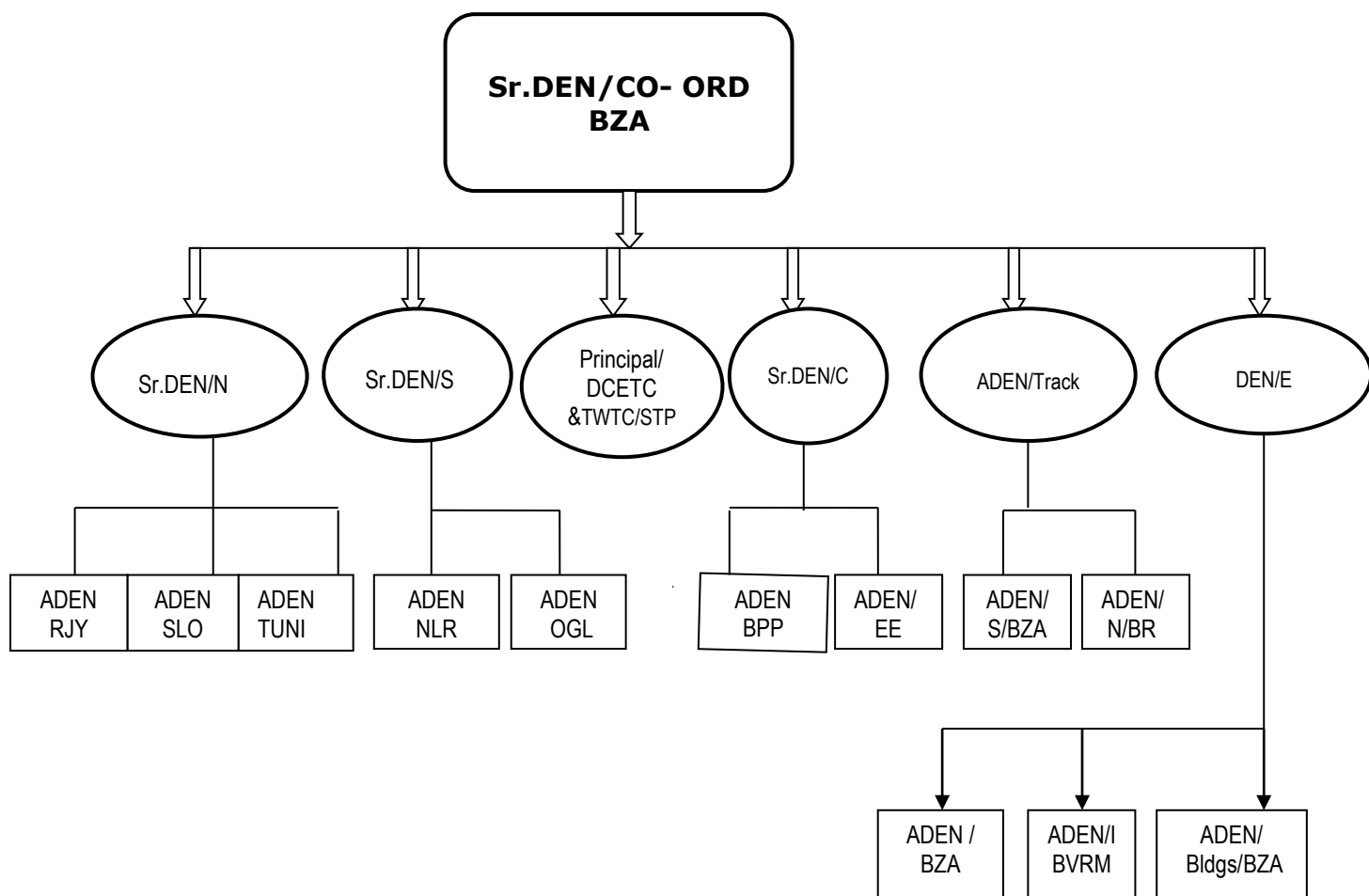
1.3 Civil Engineering infrastructure is the largest static infrastructure of Indian Railways comprising of track, bridges, land, etc. Management of this huge infrastructure has to be done in accordance with the organization's vision. Civil engineering department of Indian Railways manages and maintains all these infrastructures. Further, it has key role in the area of infrastructure development, technological leap in various fields, high-speed travel and development of world-class stations.

1.4 In view of the above, the Central Planning organization under the control of SDGM conducted work-study on Review of Staff Strength of Engineering Department over BZA Division of South Central Railway.

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2.0 EXISTING SCENARIO:

- 2.1 ORGANISATION:** For the administrative convenience, Civil Engineering Department of Vijayawada Division is headed by Sr. DEN/co-ord and assisted by Sr.DEN/N and Sr.DEN/S, Sr.DEN/C, Principal/DCETC & TWTC/STP. In turn, Sr.DEN/N and Sr.DEN/S, Sr.DEN/C are assisted by ADENs and SSE/SEs/JEs.
- 2.2** For the administrative convenience and close supervision/inspection, total KM over the division has been divided into small segments as far as practicable and kept under the control of Sr. Section Engineers, who are also responsible for their jurisdictions. These SSEs are controlled directly by ADENs posted at suitable places, so that coordination will be easy. These ADENs are answerable to Sr.DEN/DENs for their respective jurisdiction who are normally placed at Division Headquarters which are detailed in the chart below:



2.3 SSE/SE/JE's UNITS in P.Way

The list of SSE/ SE/ JE/ P.Way working under the control of the respective ADENs as follows:

S.NO.	UNIT	S.NO.	UNIT
1	SSE/P.WAY/NLR	11	SSE/P.WAY/KVZ
2	SSE/P.Way/BTTR	12	SSE/P.Way/UGL
3	SSE/P.Way/CLX	13	SSE/P.Way/NZD
4	SSE/P.Way/BPP	14	SSE/P.Way/EE
5	SSE/P.Way/TEL	15	SSE/P.Way/SLO
6	SSE/P.Way/TDD	16	SSE/P.Way/PAP
7	SSE/P.Way/RJY	17	SSE/P.Way/GDV
8	SSE/P.Way/S/BZA	18	SSE/P.Way/KKLR
9	SSE/P.Way/N/BZA	19	SSE/P.Way/BVRM
10	SSE/P.Way/AKP	20	SSE/P.Way/TUNI

2.4 VACANCY POSITION OF TRACK MAINTAINERS:

VACANCY POSITION OF TRACK MAINTAINERS/BZA DIV. AS PER SCALE CHECK AS ON 01.05.2019												
	TM-I			TM-II			TM-III			TM-IV		
	S	A	V	S	A	V	S	A	V	S	A	V
AKP	12	10	2	25	26	-1	45	42	3	108	92	16
TUI	15	15	0	30	29	1	55	50	5	132	107	25
PAP	14	13	1	27	27	0	50	32	18	119	104	15
SLO	23	22	1	45	38	7	83	83	0	201	132	69
RJY	15	15	0	30	12	18	54	69	-15	130	92	38
TDD	15	13	2	31	29	2	57	50	7	136	95	41
EE	15	15	0	30	24	6	54	51	3	131	79	52
NZB	16	15	1	32	8	24	59	80	-21	143	87	56

S/B ZA	16	12	4	32	16	16	59	59	0	144	114	30
N/B ZA	21	15	6	41	22	19	76	72	4	181	124	57
TEL	15	10	5	30	25	5	55	61	-6	131	70	61
BPP	17	14	3	35	32	3	63	66	-3	154	89	65
CLX	13	11	2	27	17	10	49	41	8	116	103	13
OGL	15	13	2	30	29	1	55	51	4	134	74	60
KVZ	15	13	2	29	29	0	53	51	2	129	86	43
BTT R	14	13	1	29	24	5	52	17	35	126	105	21
NLR	17	14	3	33	24	9	61	57	4	147	110	37
GDV	16	16	0	33	31	2	60	59	1	173	108	65
KKL R	14	10	4	27	27	0	50	43	7	143	85	58
BVR M	19	16	3	38	27	11	70	74	-4	169	136	33
TOT AL	317	275	42	634	496	138	1160	1108	52	2847	1992	855

2.5 SUMMARY VACANCY POSITION OF TRACK MAINTAINERS:

SUMMARY OF VACANCY POSITION OF TRACK MAINTAINERS/BZA DIV.				
S.NO.	SSE UNIT	SANCTION	ACTUAL	VACANCY
1	AKP	190	170	20
2	TUI	232	201	31
3	PAP	210	176	34
4	SLO	352	275	77
5	RJY	229	188	41
6	TDD	239	187	52

7	EE	230	169	61
8	NZB	250	190	60
9	S/BZA	251	201	50
10	N/BZA	319	233	86
11	TEL	231	166	65
12	BPP	269	201	68
13	CLX	205	172	33
14	OGL	234	167	67
15	KVZ	226	179	47
16	BTTR	221	159	62
17	NLR	258	205	53
18	GDV	282	214	68
19	KKLR	234	165	69
20	BVRM	296	253	43
	TOTAL	4958	3871	1087

2.6 DUTIES OF ENGINEERING STAFF (WORKS):

- **SSE/SEWORKS:** SSE/SE (Works) performs duties both in office and in field. The works are broadly classified as follows:
 - a) Executive works.
 - b) Store Works.
 - c) Establishment works.
 - d) Industrial relations, staff welfare etc.
- **Official work:**
 - a) Maintenance of registers connected to staff quarters and service buildings.
 - b) Periodical verification of stores and placement of indents for procurement of material.
 - c) Maintain attendance, leave, pass and other staff welfare matters and office correspondence.
- **Field work:** Inspection of
 - a) staff Quarters
 - b) Service / Welfare Buildings
 - c) Roads sewage lines
 - d) Maintenance of gardens after they are handed over by the contractor.
 - e) Encroachment their removal and eviction of unauthorized occupants.
- **Maintenance work:** Carries out maintenance works of staff quarters, service

buildings etc. The repairs are undertaken based either on complaints lodged or on routine Inspection. Cob webs cleaning, Cleaning of shrubs and bushes in the around railway premises. Maintain registers to keep record of maintenance and repair works undertaken.

Stores: Periodical indents are to be placed on various stores depots for the procurement of material. Loading/ un-loading of material after procurement of material the same are to be entered in respective ledgers. Day to day issues of materials are to be entered in 'voucher book' maintained in the office.

- **Water Supply:** SE (Works) is responsible for procurement and supply of water to service buildings and residential buildings. In order to keep continuous supply of water, he has to maintain water pipe line, bore wells, reservoirs and overhead tanks and keep them in good fettle.
- **Roads:** SSE/SE (Works) has to maintain and repair the roads when warranted.
- **Sewerage Line:** SSE/SE (Works) arranges staff to attend under ground drainage lines, and cleaning/de- sledge of septic tanks.
- **Maintenance of gardens:** After the plantation and maintenance by the contractor for one year, the gardens are taken over by the SE/JE (Works) for further maintenance and are being maintained with the help of a valve-man for watering the plants.

2.7 DUTIES OF ENGINEERING STAFF (P.Way):

- **Gang mate:** He supervises the work done by trackmen, custodian of tools, introducing patrolling attention in case of emergencies, weekly twice key-man duty.
- **Keyman:** He performs daily daytime patrolling of track for observing any rail failure and in time protection for safe running of trains and tightens all fittings.
- **Spl. Gr. Trackmen:** He is entrusted with duties of Monsoon patrolling, Hot Weather patrolling, cold weather patrolling, watchmen at vulnerable locations, pilot men at work spots of special works.
- **Sr. Trackmen:** He performs the duties of Monsoon patrolling, Hot Weather patrolling, cold weather patrolling, watchmen at vulnerable locations, patrol men at work spots of special works.
- **Jr.Trackmen:** For assisting working of small track machines i.e. transportation/carrying to loading and unloading, replacement of glued joints, SEJs, trucking of rails, rail renewals, stacking of rails and various other P. Way materials for declaring scraping, jungle clearance, through gauging for improving TGI values, curve greasing, points and crossing, L.C. approach screening of pumping joints, cleaning of waterways of bridges longitudinal drains, cross drains, cache water drains.
- **Spl.Gr.Store watchman:** For watching store materials and to watching out side dump P. Way materials, temperature, rain fall measuring, Mail collection, stocking of P. Way materials, cleaning of office compound, Receive phone message and passing the message controlling in charges.
- **Sr.Gr.Store Watchman:** He is entrusted with duties of watching store materials and to watching out side dump P. Way materials, temperature, rain fall measuring, Mail collection, stocking of P. Way materials, cleaning of office compound, Receive phone message and passing the message controlling in charges.
- **Spl.Gr.Trolley man:** Pushing of Trolley, Measuring along with PWI i.e. curves, points and crossings, SEJ's Pre and post Tampering measurements, L.C. Gates

measuring, Attending emergency Rail/Weld failures along with PWI's, Ballast stocks measurements, P. Way material Inventory, Scrap rails Inventory, ASV/DSK, Accompanying along with PWI's, Joint Inspection with SSE/Signals, Traffic Inspector, SE/Bridges and collecting of various details of track works.

- **Jr.Gr.Trollyman:** Pushing of Trolley, Measuring along with PWI i.e. curves, points and crossings, SEJ's Pre and post Tampering measurements, L.C. Gates measuring, Attending emergency Rail/Weld failures along with PWI's, Ballast stocks measurements, P.Way material Inventory, Scrap rails Inventory, ASV/DSK, Accompanying along with PWI's, Joint Inspection with SSE/Signals, Traffic Inspector, SE/Bridges and collecting of various details of track works.
- **Carpenter:** Deployed for laying and adjusting Wooden layouts Points and crossings rail screw prodding and tightening of wooden blocks, cutting and drilling, providing of wooden block at the time of R/W failures, and attending Section Trolley's repairs.
- **Painter:** Painting of curves, points and crossings, SEJ Pillars, Fouling Marks, Km stones, LC. Gates Boards Caution Order Boards, curve Boards, Points Boards letter painting, checking rails, painting, Bridges DL, HFL Level Markings Bridges Nos. paintings, Scrap rails measurements marked with paint, Stencil cutting, Weld collar painting.

2.8 Work Load of Engineering Organisation:

The work Load of P.Way Organisation is represented in the form of ETKMs (Equated track Kms) & Work Load of works Organisation is Integrated Track Kilometers (ITKMS) of the concerned units.

3.0 CRITICAL EXAMINATION:

3.1 General: The prime job of engineering department is to keep the wheels on Rail, either in motion or in stable condition. For this purpose, it has to keep on maintaining the track in good fettle from beginning to the end. In addition to this, there are many Service Buildings and residential buildings in the division to cater to the needs of the employees and commuters. Since train services are working round the clock, water and other amenities are to be provided to the passenger so that smooth functioning is maintained. Round the clock water supply is also required for the Railway Hospitals and other service buildings in the division. In this direction engineering organization of BZA division plays a major role in up keep of the same.

3.2 Yardsticks: In olden days, when these yardsticks were come into force, all these activities were managed by the depots' staff itself. However, now a days Zonal Contracts are introduced to make easy and procurement of required material to achieve the early performance in a satisfactory level without the help of our labour, as we are under going into these contracts for early achievement along with an intention to save some work force. yardsticks have become outdated and not suggestible to implement in Engineering Organization from the date when the Zonal Contracts for the activities have been introduced.

3.3 Application of Benchmarking Norms: Benchmarking is based on dynamic and comparative analysis and is a very useful tool to manage efficient deployment of staff and monitor effects of improvement in working practices, use of new technologies and level of outsourcing. Board in successive meetings has directed all units to achieve average of Indian Railway Benchmark.

3.4 March-2019 IR average and Bench Marking of BZA divn is as follows.

Organization	MPR of BZA	IR avg MPR	Benchmark MPR
P.Way	1.5	1.28	0.65
Buildings	0.21	0.18	0.04
Bridges	0.05	0.08	0.02

- P.Way and Works organizations of Engineering Department over BZA Division are above IR average, where as Bridges organisation is below IR average.
- Major changes have taken place in the working system of Engineering Department, as several works are being done on zonal contract. Many works have been outsourced. In the P.Way wing, several works are being outsourced such as track maintenance works.
- The Work-study team made an analysis on the requirement of staff based on the following references:
 - a) As per Railway board letter no.2011/E&R/2800/Rly.imp.vol VI/ (Corr) dated 09.06.2016 to bring down the manpower ratios for activities which are above the IR average atleast to the current IR average.
 - b) No. of activities under out sourcing in Engineering organization.
 - c) Recommendation to surrender due to the posts lying vacant.

3.5 Activities Outsourced:

Safety related contracts in DEN/East/BZA jurisdiction from 01.06.2018 to 31.05.2019

Sl.No.	TNo	Work	Value of work	Agency	D/o LOA	Original Currency
1	E-22-East-18	Vijayawada Division: Carrying out ancillary works in connection with Rail/Weld/SEJ/Switch testing by Ultrasonic flaw detection equipment in Vijayawada Division	36529893	Kanamarlapudi Chandrasekhar, Singarayakonda	06-08-2018	05-Aug-20
2	E-30-East-18	Vijayawada Division: BZA-GDV-BVRM-NDD, GDV-MTM & BVRM-NS Sections :- SW-I: Repairs to track works and maintenance of track in view of safety in ADEN/BVRM Sub-division. SW-II: Repairs to level crossing gates in ADEN/BVRM Sub-division.	20559738	Suryadevara Sambasiva Rao, Vijayawada	29-10-2018	28-Apr-19
3	E-33-East-18	Vijayawada Division: BZA-GDV-BVRM-NDD Section - Repairs/Reconditioning of wheel burns and scabbed rails on tongue rails /running rails/stock rails etc., using CP-3032 powder as approved by RDSO/LKO in ADEN/BVRM Sub-division.	5492687	Ewac Alloys Ltd., Mumbai	06-12-2018	05-Jun-19
4	E-03-East-19	Vijayawada Division: BZA-GDV-BVRM-NDD section: SW-I: CTR(P) ('D' marked rails) of existing 52kg/72UTS rails on PSC5 sleepers (M+7) density with new 60Kg/90UTS rails (LWR) on new PSC6 sleepers 1660 Nos./Km including recoument and increasing of ballast.	8042993	M/s Roshini Constructions, Vijayawada	15-03-2019	14-Sep-19

Existing Track Works and Safety related Contracts Outsourced in Sr.DEN/Central/BZA jurisdiction as on 31-05-2019

S.No	Tender No./ LOA date	Name of work	Contract Value Rs.	Agency	Currency up to
1	E-28-Central-17 Dt.09-04-18	Vijayawada Division: GDR-BZA section: - TFR without ERCs for a length of 11.91kms in SSE/P.Way/CLX section and 7 track sub-works in ADENs/BPP & EE sub-divisions.	2,36,31,349	Sri Guntupalli Ranga Rao, Vijayawada	08-04-2019
2	E-01-Central-18 Dt.03-07-18	Vijayawada Division: GDR-BZA section: - SW-I: Proposed safety related repairs and maintenance of track in ADEN/BPP sub-division. SW-II: Proposed safety related repairs and maintenance of track in ADEN/EE sub-division.	4,92,97,505	Sri Tokala Ramakrishna , Vijayawada	02-07-2020
3	E-03-Central-18 Dt.11-08-18	SW-I:Complete track renewal (P) by PQRS 4.90kms in ADEN/BPP sub-division and other 7 track sub-works in ADEN/BPP and ADEN/EE sub-divisions.	3,89,48,086	Sri Suryadevara Sambasiva Rao, Vijayawada	13-07-2019

Existing Track Works and Safety related Contracts Outsourced in Sr.DEN/North/BZA jurisdiction

S.No	Tender No./ LOA date	Name of work	Agreement No.& date	Contract Value Rs.	Agency	Currency up to
1	E-14-N-18 01-08-18	Vijayawada Division BZA-VSKP section, SW-I :-Proposed safety related track maintenance works in SSE/P.Way /TDD section and SW-II :- Proposed safety related track maintenance works stations in SSE/P.Way/RJY sections of ADEN/RJY Sub-Division	25/Sr.DEN/ North/BZA. 2018 Dt.19-11-2018	2,47,43,172	Sri K.Ashok Kumar/ Vijayawada	30-07-2020
2	E-15-N-18 25-07-18	Vijayawada Division BZA-VSKP section, SW-I :-Proposed safety related track maintenance works in SSE/P.Way /SLO section and SW-II :- Proposed safety related track maintenance works stations in SSE/P.Way/PAP sections of ADEN/SLO Sub-Division	23/Sr.DEN/ North/BZA. 2018 Dt.12-11-2018	2,28,45,627	Sri P. Venkateswara Reddy/ Vijayawada	24-07-2020
3	E-16-N-18 02-08-18	<i>Vijayawada Division BZA-VSKP section, SW-I: Proposed safety related track maintenance works between in SSE/P.Way /TUNI section and SW-II: Proposed safety related track maintenance works stations in SSE/P.Way/AKP sections of ADEN/TUNI Sub-Division</i>	24/Sr.DEN/ North/BZA. 2018 Dt.19-11-2018	2,03,21,751	Sri K.Ashok Kumar/ Vijayawada	01-08-2020
4	E-04-N-18 18-04-18	<i>BZA Division: Vijayawada - Visakhapatnam section-Rajahmundry Track works in connection with Modification of yard</i>	17/Sr.DEN/ North/BZA. 2018 Dt.30-07-2018	1,59,22,666	M/s Jayalakshmi Constructions/Rajahmundry	17-04-2019

S.No	Tender No./LOA date	Name of work	Contract Value Rs.	Agency	Currency up to
5	E-10-N-18 22-06-18	<p><i>Vijayawada - Visakhapatnam section:</i></p> <p><i>SW-I: CTR(P) by PQRS: Complete track renewal by PQRS at Medapadu depot of existing 52kg/90UTS rails on PSC5 sleepers (M+7) density with new 60Kg/90UTS rails (LWR) on new PSC6 sleepers 1660 Nos./Km on UP & DOWN lines for a total length of 5.649 Kms</i></p> <p><i>SW-II:CTR(P) (M): Complete track renewal by manual of existing 52kg/90UTS rails on PSC5 sleepers (M+7) density with new 60Kg/90UTS rails (LWR) on new PSC6 sleepers 1660 Nos./Km on UP & DOWN lines for a total length of 3.384kms.</i></p> <p><i>SW-III:TRR(P): Through rail renewal of existing 52/60kg(90UTS) rails on PSC6 sleepers 1660 density with new 60Kg/90UTS rails (LWR) on UP & DOWN lines for a total length of 42.599 Kms.</i></p> <p><i>SW-IV:CTR(S): Complete track renewal of existing 52kg/90UTS rails on PSC sleepers with 60Kg/90UTS (SH) rails on PSC6(SH) sleepers (M+7) density at ANV& PAP yards for a total length of 1.668 Kms.</i></p> <p><i>SW-V: TTRR (CS+CMSC) (9sets, 1in 8.5= 1 set, 1 in 12=8 sets) & TTRR (CS) (19sets, 1in 8.5= 2 sets, 1 in 12=17 sets):-</i></p> <p><i>Through Turnout rail renewal of existing 52/60Kg switches, lead rails and crossings in running lines with new 60 kg curved switches, lead rails and CMS crossings.</i></p> <p><i>SW-VI: Through Renewal of Glued Joints - 95 sets at various locations of SSE/P.Way/SLO section and</i></p> <p><i>SW-VII: TFR:- Through renewal of fittings (with pads only) on PSC sleeper track for a total length of 30.628kms. between PUA-DVD stations of Sr.DEN/North/BZA Jurisdiction.</i></p>	4,14,14,094	M/s Jayalakshmi Constructions/Rajahmundry	21-06-2019

**Existing Track Works and Safety related Contracts Outsourced in DEN/South/BZA jurisdiction
as on 31-05-2019**

S.No	Tender No./ LOA date	Name of work	Agreement No.& date	Contract Value Rs.	Agency	Currency up to
1	E-03-South-18 Dt.14-06-18	Vijayawada Division: GDR-BZA section: - Proposed safety related track works and other miscellaneous works in SSE/P.Way/KVZ and SSE/P.Way/OGL sections of ADEN/OGL Sub-division.	11/South/BZA/2018 Dt.07-09-2018	2,61,35,294	Sri Tokala Ramakrishna/ Vijayawada	29-07-2019
2	E-04-South-18 Dt.14-06-18	SW-I-GDR-BZA section: CTR (P) - 2,237kms,TRR(P)-2.708kms between GDR-KRV stations of DEN/South/BZA jurisdiction and other 3 track works.(Total four works)	12/South/BZA/2018 Dt.14-09-2018	2,32,46,852	Sri Suryadevara Sambasiva Rao / Vijayawada	13-06-2019
3	E-06-South-18 Dt.30-07-18	SW-I: Vijayawada Division: GDR-BZA section: - Special Repairs to track between GDR-SVPM (UP & DN lines) in SSE/P.way/NLR & BTTR sections of ADEN/NLR Sub-Division and 3 other track works (Total Four sub works).	14/South/BZA/2018 Dt.06-10-2018	3,49,88,660	Sri K.Chandra Sekhar/ Singarayakonda	29-07-2019
4	E-08-South-18 Dt.14-08-18	Vijayawada Division- GDR-BZA section: Proposed safety related track works and other miscellaneous works in SSE/P.Way/NLR and BTTR sections of ADEN/NLR sub-division.	15/South/BZA/2018 Dt.22-11-2018	2,65,10,188	Sri P. Srinivasa Reddy/ Nellore	13-07-2020

5	E-10-South-18 Dt.17-09-18	Vijayawada Division- GDR-BZA section- Reconditioning of worn-out CMS crossings, built-up crossings, tongue rails and MCI inserts of points & crossings sleepers at NLR & OGL sub-divisions of DEN/South/BZA jurisdiction.	16/South/BZA/2018 Dt.29-11-2018	89,68,145	M/s Santosh Engineering Company, Visakhapatnam	16-09-2020
6	E-14-South-18 Dt.01-02-19	SW-I:TFR ON Girder bridge Nos 279 on up line and 273,279,280,281 on Dn line-1348 sleepers in SSE/P.Way/NLR and other 10 track sub-works.	04/South/BZA/2018 Dt.24-05-2019	3,18,93,650	Sri Tokala Ramakrishna, Vijayawada	31-01-2020

3.6 Work load of P.Way Organisation:

S.NO.	ADEN	SSE	RKM	TK.KM	ETKM
1	NLR	NLR	67.934	161.636	282.674
		BTTR	33.770	82.766	157.145
2	OGL	KVZ	42.730	100.980	171.750
		OGL	46.000	111.407	208.490
3	BPP	CLX	41.000	99.694	181.910
		BPP	45.550	109.689	197.840
		TEL	45.780	111.984	205.250
4	EE	NZD	41.600	98.850	190.453
		EE	42.000	97.453	187.988
5	RJY	TDD	42.550	108.331	209.563
		RJY	34.260	91.388	168.253
6	SLO	SLO	103.487	204.626	333.650
		PAP	45.480	103.121	200.872
7	TUNI	TUNI	47.456	106.931	184.080
		AKP	37.370	85.040	159.958
8	BZA	BZA(S)	16.780	68.721	110.710
		BZA(N)	15.600	120.865	143.820
9	BVRM	GDV	74.160	94.792	147.906
		KKLR	63.240	72.074	113.511
		BVRM	77.110	96.005	145.380
	Total		963.857	2126.353	3701.203

3.7 Requirement of Manpower of P.Way organisation as per IR average:

IR Average of March-2019	1.25 men per ETKM
Total ETKM	3701.203
Requirement of manpower =IR average x ETKM	3701.203x1.25 =4626.5 say 4626
Total sanctioned staff in P.way	5360
Staff excess to the requirement	5360-4626=734

3.8 For operational convenience the total section is divided into units, which are controlled by ADEN, SSE units and each SSE unit is further divided into small gang units. Each gang unit will be responsible for maintenance of 12-13 track kilometers. Sectional track kilometers and no. of gang units in each gang unit of the Vijayawada Division is as follows

S No	ADEN section	Section length (Tr. KMs)	SSE units	Gang Units
1	NLR	243	NLR,BTTR	8+9=17
2	OGL	211	KVZ,OGL	8+8=16
3	BPP	320	CLX,BPP,TEL	7+9+7=23
4	EE	195	NZD,EE	7+7=14
5	RJY	199	TDD,RJY	7+7=14
6	SLO	307	SLO,PAP	12+7=19
7	TUNI	191	TUNI,AKP	7+7=14
8	BZA	198	BZA(S),BZA(N)	9+9=18
9	BVRM	262	GDV,KKLR,BVRM	13+11+14=38
	Total	2126		173

3.9 Requirement of Track Maintainers as per Practical observation in Engineering Organisation of BZA Division:

- Total track kilometers in BZA division = 2126 Km
- Total SSE Units in BZA Division = 20 units
- Total no. of Gang Units = 173
- Each Gang unit has 12-13 track kms of track to maintain.
- To maintain 12-13 Track kilometers 25 track Maintainers are required.
- LR 12.5% = $25 \times 12.5\% = 3.12$ say 3
- Total requirement of Track Maintainers for each gang unit = $25 + 3 = 28$
Hence requirement of Track maintainers for 173 gang units = $28 \times 173 = 4844$
- Total sanctioned posts of Track Maintainer = 4958
- Requirement of Track Maintainers = 4844
- Excess to the requirement = **4958-4844 = 114**

3.10 Comparative statement of staff requirement:

	Total staff	Staff required	Excess
As per IR Average	5360(P.Way)	4626	734
As per Practical observation	4958(Track Maintainer)	4844	114

- From the above, it is observed that staff excess to the requirement as per the Indian Railway Average Benchmarking is 734 and as per Practical observation is 114 track Maintainers. For convenience of the Department and to bring down the organisation nearer to the Indian railway Average benchmarking gradually, the work study team considered Practical observation.
- In view of the above, the following recommendation is made.

3.11 Recommendation: It is recommended to surrender 114 vacant posts of Track Maintainer which are excess to the requirement in Engineering Organisation.

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4.0 FINANCIAL IMPLICATIONS:

- 4.1 When the recommendations are accepted, the recurring savings on surrender of the following posts in Engineering department over BZA Division will be as follows:

S No	Category	Scale		No. of posts	Mean Pay	DA @ 12 %	Emoluments P.M (in Rs.)	Total Emoluments P.A (in Rs.)
		From	To					
1	Group-D	18000	56900	114	37450	4494	4781616	57379392
	TOTAL			114				57379392

On implementation of the recommendations of Work-study report, an annual savings of **Rs. 573.79 lakhs** can be achieved.

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R E C O M M E N D A T I O N

Sl. No.	Description	Para No.
01	It is recommended to surrender 114 vacant posts of Track Maintainer which are excess to the requirement in Engineering Organisation.	3.11