SUMMARY OF SCHEDULE OF RATES- PART-A
FOR
LAYING & CONSTRUCTION OF 8", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT IN EAST & WEST GODAVARI DIST. (A.P)
Bid No.MEC/23TS/01/51/S2/ST/ER/0007

Sl. No.	Description	in INR	
		(In Figures)	(In Words)
1	Total amount (all inclusive except GST) for Mainline Works SOR		
2	Total amount (all inclusive except GST) for Cathodic Protection Works SOR		
3	Terminal Works		
I)	Total amount (all inclusive except GST) for Piping & Mechanical Works SOR		
II)	Total amount (all inclusive except GST) for Civil Works SOR		
III)	Total amount (all inclusive except GST) for Structural Works SOR		
IV)	Total amount (all inclusive except GST) for Electrical Works SOR		
V)	Total amount (all inclusive except GST) for Instrumentation Works SOR		
4	Gross Total Amount (all inclusive except GST) [1+2+(3-I)+(3-II)+(3-III)+(3-IV)+(3-V)]		
5	**GST @ 18.00% on Total Amount mentioned at Sl. No. 4 above**		
6	**GST @ 18.00% on free issue material of INR 12.58 Crore**	**22,644,000.00**	Rupees Two Crores Twenty Six Lakhs Forty Four Thousand Only
7	**Gross Total Amount (Sl. No. 4 + 5 + 6)**		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(a)	(b)	(c)	(d)	(e)	(f)
ML-1	CARBON STEEL PIPES				
1.1	PIPELINE LAYING / INSTALLATION				
	a) Coated Steel pipe lines laying				
	Receiving , loading , unloading and transportation and stacking of 3-Layer PE coated and bare line pipes issued by GGPL as free issue materials from GGPL designated store yard within corporation /municipality limits of Rajahmundry to Contractor's stock yard/workshop / work-site. The scope of contractor includes preparation of drawings, wherever required for crossing etc. including handling, stacking, stringing on the pipeline route alignment, carrying out inspection of GGPL supplied materials including linepipes at the time of taking over, laying/ installation of coated linepipes as per specification wherever required depending on site condition including execution of all works, "taking over", handling , including loading and unloading, transportation of Owner supplied materials from Owner's designated place (s) of issue to work site. Arrangement of all additional lands required for Contractor's storage, fabrication, access for construction, procurement and supply of all materials (except Owner supplied materials), consumables, equipment, labour and other inputs, carrying out all temporary, ancillary, auxiliary works, ready for commissioning of pipeline as per drawings, specifications, other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:				
	Surveying of route and detours required at the time of execution including marking the same in topographical sheet, preparation of construction drawings showing survey details, and submit same to Owner for review / approval.				
	Clearing, full filling all the requirements of various statutory/ environment authorities to the entire satisfaction of concerned authorities, grading of work area. Relocating of any obstruction within the Pipeline route alignment / Approved route viz. electrical lines/ poles, telephone line / poles, foreign pipeline, etc. in co-ordination with concerned authorities and obtain permissions from these authorities for pipeline execution.				
	Trenching to all depths by excavation in all types of soils **except built up sections** on top as different type of pavement / footpath / roads etc. as required by using mechanical excavator or manually depending on the site condition and storing excavated soil, reusable materials at designated area as directed by Engineer in charge and to a width to accommodate the pipeline as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0m measured from top of pipeline coating to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition is included in the scope of contractor. As SVs shall be buried on the pipeline alignment itself with RCC pits with covers. The steel pipeline has to be taken to the required lower depth by use of slope or vertical bends to accommodate the above without additional cost to GGPL				
	During the execution of the work, the construction area shall be barricaded to ensure the smooth execution of work and safety of the public/ working area. The item also includes fabrication, trsansportation and placing the barricading at the site. Barricading to be made as per approved drawing and to the entire satisfaction of Owner / Engineer-in-charge.				
	Carrying out repairs of pipe defects/ replacement in case of irreparable defects and repairs of defects of pipe coating not attributable to Owner including defects/ damages occurring during transportation / handling.				
	Stringing of line pipes along pipeline trench /sand / soft soil bags including supply of bags and its filling materials.				
	Checking, cleaning, aligning, bending, cutting and bevelling (as required) of pipes for welding and field adjustments including pipe fittings, welding, carrying out non-destructive testing of welds as required including 100% radiography by Gamma-ray / x ray and providing all requisite equipment, labour, supervision, materials, films, consumables, all facilities and personnel to process, develop, examine and interpret radiographs and other tests as required, carrying out repairs of weld joints found defective by Engineer-in-Charge, carrying out re-radiography and other tests as required on repaired joints.				
	Carrying out installation of carrier line pipe at all minor crossing viz. road, carttrack, pathway, water bodies etc. at designated depth by open cut (except at crossing by HDD method/ moling / Augur boring).				

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
	The above item also include liasioning with state authorities / owners : Obtaining ROU and all permissions from the concerned land-owning / statutory authorities along the proposed route / area. However, the required statutory / mandatory fees will be paid by M/s GGPL against demand note.The liasioning during the pipeline laying execution with local authorities & local officials, traffic ploice, police and any other utility companies / agencies such OFC operators etc are in the scope of the contractor. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner/other utility agencies) is in scope of the contarctor. Liasioning for other associated works like SV station / DRS Station & valve pits etc. also included in this.				
	Coating of field weld joints, long radius bends (R=3D), elbows, buried fittings and valves etc. including supply of coating materials etc. (i.e. heat shrinkable sleeves and high build epoxy etc.) as per PJS & Technical Specification compatible with 3 layer PE coating material of the line pipe.				
	Installation of LR Bend (R = 3D) , as per specification wherever required depending on site condition.				
	Installation / lowering the pipeline in trench to required depth as per PJS, Technical Specification & drawings including padding around pipeline with suitable soil duly approved by EIC including supply of padding material, backfilling and its compaction to the satisfaction of concerned authorities with excavated earth / borrowed select soil including supply of borrowed select soil duly approved by EIC.				
	Supply & Installation of warning mat (OD+100 mm width and 0.5 mm thick) on the entire length of the pipeline as per specification.				
	Supply and installation of slope breakers, wherever required or, as directed by Owner / Engineer–in–charge.				
	Crossing the all-foreign pipeline / HT line / cable / any other utilities etc. with necessary concrete / PVC protection including coordination with all agencies and obtaining NOC.				
	Carrying out air cleaning, flushing, cleaning and hydrostatic testing of complete pipeline with required quantity of corrosion inhibitor including pre-testing of designated sections complete as per specification and approved by Engineer–in–charge to specified pressures indicated elsewhere and duration after stabilization as per specification, providing all equipment, pumps, fittings, instruments, dead weight tester, pressure recorder, thermocouples etc., and services, supervision, labour, consumables, water including supply of corrosion inhibitor, air, etc. as required, locating of leaks and rectification of defect attributable to Contractor (rectification of defects in linepipe material not attributable to contractor shall be paid separately as per other item of schedule of rate), re-testing after rectification, dewatering after successful completion of hydrotesting of entire section and as approved by Engineer-in-Charge.				
	(Note : Leak detection, its rectification and successfully re-hydrotesting shall be carried out by Contractor with a view that completion of all activity for successful hydrotesting is not inordinately extended, which will hamper the overall project schedule. Further, no extra payment claim shall be entertained for re-hydrotesting and leak detection if defects found attributable to Contractor.				
	All tieing-in, including the tie-in(s) of the pipeline with the adjacent sections of pipeline including cutting of test header, rebevelling as required, radiography and other NDT examination, joint coating as per specification.				
	Final clean-up & restoration of right-of-use or area disturbed by contractor including obtaining NOC from respective land owner and statutory authorities during their construction activities for laying of pipeline works and disposal of debris, excess soil to designated disposal areas as per local authorities/GGPL and returning all surplus material to designated storage yard and backfilling of trench and compaction of the same as per satisfaction of Owner and / Or as directed by Engineer–in–charge.				
	Restoration of land, facilities and boundary wall etc. and associated facilities dismantled/damaged by the Contractor during construction;				
	Installation of all burried valves inside the valve pit and making provision to operate the valve.				
	Protective coating of 500 micron thick two component (applied with the help of minimum three coats) liquid epoxy including supply of materials duly approved by Owner for all piping valves, fittings, structural steels etc. for buried installation and inside the valve pit as approved by the Engineer-in-charge.				
	Carrying out all temporary, ancillary, auxiliary works and all incidental works required to make the pipeline ready for pre-commissioning;				

Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
1	**MAINLINE WORKS**				
	Preparation of as-built drawings, pipe-books including collection of GPS co-ordinates.(Drawings /documents to be submitted as pr SCC) All the works shall be executed in accordance with the provision of contract including carrying out all temporary/ ancillary/ auxiliary works required for the performance of the works and all other acts, deeds, matters and things necessary to make the pipeline ready for precommissioning activities.				
	Any other activities not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to GGPL. All the work shall be executed in accordance with the provision of contract.				
	Installation of Coated Line Pipes as per following details:				
	Specified dia, NB Thk (mm) Material Coating Type Length of each pipe (mm)				
1.1.1	200 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	18000		
1.1.2	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	9000		
1.1.3	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	1500		
	Note:				
i)	This item shall be applicable for the underground steel grid main pipeline & branch pipeline including tap-off for distribution pipelines, valves, barred tees, insulating joints, bends (R=3D), flanges & fittings, accessories etc. , tie-in of valve assembly including radiography of tie-in joints as per Schematic Layout Drawings of respective sections, Technical Specification and aboveground approach pipeline upto Insulating Joint (including installation of aboveground / underground insulating joint) for various stations.				
ii)	Supply of all valves, flanges, fittings, assorted pipes, barred tees & insulating Joints, etc. shall be paid by separate item mentioned elsewhere in SOR.				
iii)	In above item, backfilling of pipeline trench by borrowed select soil duly approved by Owner / EIC shall be paid by separate item mentioned elsewhere in the SOR.				
iv)	Contractor shall not perform any pipeline activities along Pipe alignment without specified barricading as per Std. Drg. and other safety measures.				
v)	The lengths of pipelines are tentative. All items required to complete the laying and commissioning except the Items covered separately in this SOR are included under the scope of this item				
vi)	Cutting of Hard Rock shall be paid on CUM basis as per separate SOR.				
viii)	Carbon steell coated steel pipes of Size 8", 6" & 4" NB pipes will be issued as free issue items.				
1.2	**Same as item 1.1 above but with built up sections (different type of pavement / footpath / roads etc. which includes Asphalt roads, Tiled pavement and PCC/RCC roads) on the top surface**				
	Installation of Coated Line Pipes				
	Specified dia, NB Thk (mm) Material Coating Type Length of each pipe (mm)				
1.2.1	200 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	2400		
1.2.2	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	1200		
1.2.3	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	200		
1.3	**PIPELINE LAYING / INSTALLATION OF MDPE PIPES IN TRENCH ADJUNCT TO STEEL PIPE LINE TRENCH**				
	Trenching to all depths by excavation in all types of soils except built up sections on top as different type of pavement / footpath / roads etc. Storing excavated soil, reusable materials at designated area as directed by Engineer in charge and to a width (steel pipe line to MDPE clearance shall be minimum 150 mm) to accommodate the pipeline , MDPE Pipe (125 mm, SDR 11, PE 100 Pipe) as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0m measured from top of pipeline to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition. Laying of steel pipe line will be paid separately as per SOR item no.1.1 /1.2				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Loading, storing, unloading and laying of PE100, SDR11 line pipes of size 125 mm in steel pipe line trench including ,proper stacking, identification,and supply of accessories of all sizes & thickness like PE Bends, Couplers, Endcaps, Tee, Reducer, CS to PE Fittings, Saddle Tapping, GI sleeves etc.. Handling, Stringing/ uncoiling,aligning of the PE line pipe on the pipeline Right-of-Use/route , laying/ installation of PE line pipe alongwith required accessories as mentioned above as per specification wherever required depending on site condition including execution of all works; additional lands required for contractor's storage , fabrication, access for construction;procurement and supply of all materials , consumables,equipments, labour and other inputs. In case of free issue items,the scope also includes, receiving and loading from GGPL designated store, transportation, unloading and stacking of free issue items at Contractor's store				
	Carrying out all temporary, ancillary, auxiliary works required to make the PE pipeline ready for commissioning including cleaning, flushing and removing the ingress of water / moisture etc., as per drawings.				
	Specifications, scope of work indicated in PJS and other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:				
	Carrying out preliminary activities such as preperation of drawings wherever required for crossing etc.				
	Preparation and getting approval of schedules, execution procedures, drawings/ sketches/ wherever required, making trial pits to determine the underground utilities/ services etc., restoration of the abandoned trial pits to original condition.				
	Uncoiling/ stringing & aligning of PE pipes, clamping, jointing of the pipe ends/ fittings/ valves by qualified personnel using approved electro-fusion techniques as per specification.				
	Installation / lowering the pipeline in trench to required depth as per PJS, Technical Specification & drawings.				
	Electro-fusion jointing of valves wherever required and as directed by Engineer-in-charge.				
	Pneumatic testing, purging with nitrogen and commissioning as per specification and approved procedures providing all tools and tackles, nitrogen, instruments, manpower and other related accessories and as per the instructions of the Engineer-in-charge.				
	Supply and installation of bricks (class 50) of 230 mm width over MDPE pipes for the entire length				
	Supply & Installation of warning mat (250 mm width and 0.5 mm thick) on the entire length of the pipeline as per specification.				
	Any other activities not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to GGPL. All the work shall be executed in accordance with the provision of contract.				
1.3.1	PE 100 (Size 125 mm) Pipe	Meter	4275		
	Note: The Quoted rate shall be of laying of MDPE pipeline laying adjunct to steel pipe line trench . Steel pipe line laying will be paid separately under SOR item no.1.1. CS main pipes & MDPE pipes are free issue materials to the contractor. Any stand-alone trenching required to detour PE pipeline laying due to space constraint shall be in the scope of contractor without any extra cost to GGPL.				
1.4	**Same as item 1.3 above but with built up sections (different type of pavement / footpath / roads etc.) on the top surface:**				
1.4.1	PE 100 (Size 125 mm) Pipe	Meter	570		

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
1.5	**Cutting/ breaking of hard rock found in trenches using mechanical means such as rock breakers / excavators (blasting prohibited) etc. Scope also includes disposal of rocky earth after breaking to designated disposal areas as per local authorities/GGPL. (wherever hard rock of single piece exceeding 1.0 m in length along the trench direction as per the decision & direction of EIC)**	CUM	3800		
ML-2	**Restoration of asphalted roads / concrete roads / pavements / foot paths, wherever instructed by EIC .Job includes getting NOC from the concerned authorities.**				
a)	**Asphalt road** :Restoration of bitumen Asphalt road after laying of Pipe lines as per the drawing no. MEC/23TS/01/11/D2/ST/LY/0211/R00/A3 , specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per requirement of **NH/etc.** and to get NOC from the concerned authorities. Restoration of the asphalt road cut portion for pipeline trench width shall be carried out by filling the bottom layer with with stone dust / Quarry dust watering & compaction followed by 200mm thk GSB & 250 mm thk WMM with top bituminous layers comprising of primer coat, tack coat, 50mm thk DBM & 40 mm thk BC matching with the existing road top level.This item alos includes disposal of surplus soil / debris with all lift & leads.	Meter	1615		
b)	**Asphalt road** :Restoration of bitumen Asphalt road after laying of Pipe lines as per the drawing no. MEC/23TS/01/11/D2/ST/LY/0210/R00/A3 , specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per specifications / drawing and to get NOC from the concerned authorities. This item alos includes disposal of surplus soil / debris with all lift & leads.	Meter	3230		
c)	Restroration of the all kind of pathway by using excavated material such as tiles/pavers/granite/red stone etc by providing PCC 1:4:8 of 75mm thickness below or as per construction found and making it as original . Item includes providing of extra material if required due to breakage during excavation work such as Tiles/Paver/Granite etc matching to original pathways.	Meter	1615		
d)	**Reinforced Cement Concrete road/ pavement:** Restroration of Reinforced concrete road and pavements shall be done by providing PCC 1:4:8 of 75 mm thick and RCC 1:2:4 of 100 mm thickness and providing minimum 8mm dia reinforcement steel at 200mm c/c . The cost of reinforcement . Shuttering, compacting the base surface etc. are in the scope of this item.	Meter	3230		
ML-3	**BORROWED SELECT SOIL FOR BACKFILLING**				
	Additional work over and above item 1.5 for supply of specified and approved quality of borrowed foreign soft graded soil / sand in place of available excavated material and / or other suitable soil as per applicable standards / specifications, including backfilling of excavated trench for specified length after laying and padding of pipeline, including transportation of such special backfill material over all distances, complete. (Also to be used in open cut road crossing if required as per decision of EIC)	CUM	3800		
ML-4	**Steel Pipeline CROSSINGS BY HDD without casing**				
	Complete work of the road /Nala crossing (between the limits are defined as in approved drawings) by HDD method including transporation of three layer PE coated line pipes from Contractor's designated place / storage work site including all handling loading, unloading, aligning etc., manpower, equipment, other resources and aquiring the required land for storage, fabrication incldluing string preparation of pipes(carrier), welding, welding repair, radiography, coating of field joints with special type Heat Shrink Sleeve (DIREX SLEEVE)and repair of pipeline coating with special repair patch materials as per specification, pre-testing etc. of complete string made for crossing access for Contractor etc. and execution of, but not limited to, following works in accordance with specifications and instruction of Engineer-in-charge and as per all provision of Contract Document.				
	Pre-construction survey based on site visit, collection of data (if required) from concerned Authority including design and detail engineering and making of crossing drawings for getting their approval from concerned Authority/ & Engineer-in-charge, getting work permit/ NOC for road/ Nala crossing as well as utility crossings (if any) encountered during road/ Nala crossing prior to start the execution of work.				
	Directional drilling to required depth from top of road/ Nala Bed including maintenance of drill hole in all types of strata including rocky terrain at all depth to accommodate the pipeline at all conditions encountered during road/ Nala crossing by approved HDD methods for providing minimum cover specified in code/ specification or the actual depth as decided by concerned authority, whichever is more.				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Backfilling of the ditch/ trench including restoration and cleanup of area and all other works including pigging, cleaning, final hydrotesting etc. alongwith mainline works (as mentioned in item no. 1.0 above) required as per specification, approved drawings, calculations, methods and to the satisfaction of Engineer-in-charge and/or as directed by concerned Authority.				
4.1	**ROAD/Nala CROSSINGS by HDD: in all type of soil**				
4.1.1	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 8" NB, 6.4 mm thk API 5LX52	Meter	2400		
4.1.2	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 6" NB, 6.4 mm thk API 5LX52	Meter	1200		
4.1.3	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 4" NB, 6.4 mm thk API 5LX52	Meter	200		
ML-5	**CASED CROSSING WITH HDD:**				
	Complete work of the road (National Highway, State Highway, MDR) or Rail crossing (between the limits as defined in approved drawings) including handling, loading, transportation, unloading to Contractor's own stock yard/ work site.				
	Pre-construction survey and making of crossing drawing based on site visit and getting their approval from concerned Authority/ & Engineer-in-charge prior to start the execution of work.				
	Supply and Installation of casing pipe by jacking/ boring/or as described below for rail crossings in all type of soil strata including soft / hard rock and open cut for adjacent service road, canal, minor nature of water channel, utility line crossing etc. (if any) wherever required for all depth in all type of soils and terrrain for carrier pipe insertion. All other Contractor supplied materials like casing insulators, Zinc Ribbon Anodes and casing end seals as per enclosed specification/ drawings materials for casing vents and drain assembly etc. including supply of all other materials, equipments, consumables, manpower, welding including visual inspection of all weld joints. The casing pipes shall conform to material API 5L Gr. B / IS : 3589 or equivalent ERW Pipe duly Corrosion coated of High build epoxy of minimum 450 microns thickness				
	Preparation of required length of carrier pipeline welded string including all other works as mentioned in item no. 1.0 above and as per specification/ drawings. Insertion of carrier pipe in casing pipe after above ground pretesting at specified test pressure including installation of casing insulators and Zn ribbon anode as per approved design calculation, specification/ drawings. Insatllation of vent and drain assembly, fixing of end seals, backfilling and restoration as original of the facilities crossed and performing all other works including pigging, cleaning, final hydrotesting etc. alongwith mainline works (as mentioned in item no. 1.0 above) and as per specification, approved procedure, drawing etc. and instruction of Engineer-in-charge and provision of contract document, getting NOC from all concerned Authority of the facilities crossed.				
	2.5 m min depth to maintain throughout the railway crossing as per instruction of railway DRM.				
	Major crossings like railways & Highways				
5.10	Cased crossings in all type of Soil				
5.1.1	By Jacking/ Boring of Casing Pipe 14" NB.with 8" NB pipeline	M	1,200.00		
5.1.2	By Jacking/ Boring of Casing Pipe 12" NB.with 6" NB pipeline	M	600.00		
5.1.3	By Jacking/ Boring of Casing Pipe 10" NB.with 4" NB pipeline	M	100.00		
	Note: (i) Actual length & cover from top of casing pipe string may vary depending upon site conditions, approved drawings, specification etc. and / or as decided by concerned Authority / Engineer-in-charge.				
	(ii) Payment for supply & installation of Zinc ribbon anode and its design excluded from above item and covered elsewhere in the SOR.				
	(iii) Payment for the length carrier pipeline string inserted in casing pipe laid by Boring are covered separately and shall be paid under other items mentioned elesewhere in the SOR.				
	(iv) Width of above crossings indicated are tentative. The width indicated in SOR item 5.1.3 to 5.1.6 are not for any single crossings. This shall be as per requirement at site for crossings at different locations.				

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
ML-6	PERMANENT MARKERS				
	Supply, fabrication and installation of all types of permanent markers along the route including all associated civil works such as excavation in all types of soil, construction in all types of soil, construction of pedestals and grouting with concrete, clearing, supply and application of approved colour and quality of primer and paint, stencil letter cutting for numbers, direction, change etc., restoration of area to original condition and performing all works as per drawing, specification and instruction of engineer-in-charge.				
6.1	Pipeline RCC boundary / route marker as per drawing	Nos.	380		
6.2	Pipeline warning markers with post & foundations	Nos.	50		
6.3	Pipeline warning plate markers without post & foundations	Nos.	50		
6.4	Pipeline direction marker with post & foundations	Nos.	50		
6.5	Pipeline KM with post & foundations	Nos.	38		
ML-7	PRE-COMMISSIONING AND ASSISTANCE IN COMMISSIONING OF PIPELINE SYSTEM				
	Swabbing, drying, purging with nitrogen of the complete pipeline network and the associated facilities being installed to the specified acceptance criteria, carrying out pre-commissioning works, providing assistance during the complete duration of commissioning operations for entire pipeline network system including supply of all equipment, man-power, consumables (including pigs & nitrogen required for purging with maintaining nitrogen column of mininum 10% of pipeline geometric volume) materials for all temporary works and performing all associated works, complete as per the relevant specifications, other provisions of Contract document and instructions of Engineer-in-charge.				
7.1	For 8" NB Pipe line	Meter	24000		
7.2	For 6" NB Pipe Line	Meter	12000		
7.3	For 4" NB pipe Line	Meter	2000		
ML-8	IDLE TIME PRESERVATION OF PIPELINE				
	Preservation of complete pipeline and associated facilities forming part of the pipeline as per Bid document and its maintenance including supply of all consumables, all equipment, man-power, etc. complete as per the requirements of specifications, other provisions of Contract document and instructions of Engineer-in-charge.				
	Note : Owner reserves the right to exercise either or none of the rates below.				
	By filling and pressurizing with nitrogen to a pressure of 2 bar(g) for a period of one month.				
8.1	For 8" NB Pipe line	Meter	24000		
8.2	For 6" NB Pipeline	Meter	12000		
8.3	For 4" NB Pipeline	Meter	2000		
ML-9	LONG RADIUS BENDS				
9.1	Supply of Long Radius Bends (R = 3D) for 8" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
9.1.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	96		
9.1.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	48		
9.1.3	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	48		
9.2	Supply of Long Radius Bends (R = 3D) for 6" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	48		
9.2.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	24		
9.2.3	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	24		
9.3	Supply of Long Radius Bends (R = 3D) for 4" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	8		
9.2.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	4		
9.2.4	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	4		
	Note : The quantities of LR Bends may vary. For final quantity, approval from EIC shall be taken before order.				
ML-10	**ERECTION OF VALVES**				
	Handling including lifting and transportation from COMPANY's warehouse to CONTRACTOR'S Stores and/or work site and installation of all types of valves, including assembly of valve accessories, (if any) by bolting, threading or welding, supply and insertion of gaskets, nuts & bolts, nipples, etc. at all elevations of pipe sleepers, supports or overhead on racks, equipments nozzle, skid & painting etc. supply of all consumables, manpower, equipment, etc. for completion of all works as per scope of work and as per drawings, specifications and instructions of Engineer-in-charge including servicing/ cleaning of valve wherever requried.Valves of 8" , 6" & 4" NB valve will be issued as Free issue items.				
10.1	Erection of Ball valves in valve pits on underground pipe lines				
a)	8" NB		9		
b)	6" NB		5		
c)	4" NB		12		
d)	2" NB (Supply & erection)		26		
	Note: Valves of Size 8", 6" & 4" NB pipes will be issued as free issue items.				
ML-11	**SUPPLY & ERECTION OF FITTINGS AND FLANGES in valve pit**				
	Complete work of supply of fittings and flanges including all taxes, duties, transportation and inspection charges but not limited to, the following items in accordance with relevant specifications indicated in clause of SCC & scope of work indicated in SCC, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT.				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Handling including lifting, transportation from Contractor Stores to CONTRACTOR's workshop for fabrication and/ or to work site for field fabrication and erection for all piping items supplied by Contractor.				
	TEE				
11.1	**Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW**				
11.1.1	4" NB	Nos.	20		
11.2	**Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW**				
11.2.1	6"x 4" NB	Nos.	30		
11.2.2	8"x 4" NB	Nos.	20		
11.2.3	4" X 2" NB	Nos.	20		
	FLANGES				
11.3	**Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)**				
	(End Thickness to match pipe thickness)				
11.3.1	**8" NB**	Nos.	15		
11.3.2	**6" NB**	Nos.	15		
11.3.3	4" NB	Nos.	15		
11.3.4	2" NB	Nos.	26		
11.4	**Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)**				
11.4.1	8" NB	Nos.	20		
11.4.2	6" NB	Nos.	10		
11.4.3	4" NB	Nos.	10		
11.4.4	2" NB	Nos.	10		
11.5	**Weldolet**				
11.5.1	6x2"NB	Nos.	10		
11.5.2	8X2" NB	Nos.	20		
11.6	**Elbow**				
11.6.1	4"	Nos.	10		
11.6.2	6"	Nos.	10		
11.6.3	8"	Nos.	20		
11.6.4	2"	Nos.	10		
ML-12	**Construction of Valve pits for Steel Line**				
	Construction of Valve Pits for Steel line as per the enclosed drawing and specification. The item includes supply of all the material including Pre-cast RCC cover, shuttering,reinforcement,labour,curing etc as per the drgs ,specification and instruction of EIC.				
12.2.1	As per the drawing	Nos	13		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
	Total Amount (all inclusive except GST)				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
TCP-1	**TEMPORARY CATHODIC PROTECTION SYSTEM**				
1.1	Survey, Design, detail engineering of the temporary Cathodic protection system using Mg (Min 3.0 Kg Each)/ Zn galvanic anodes to protect the external surface of **8", 6", 4" dia** , 3LPE Coated pipeline in the Geographical Area (GA) of East & West Godavari dist. against corrosion for a design life of minimum 2 year as per standard specification enclosed with the tender for temporary cathodic protection system, approved design document, data sheets & drawings. Scope shall also include but not limited to the following for completion of jobs:				
a)	Measurement of soil resistivity along the right of way of the main pipeline & take atleast one soil sample for one pipeline section for its chemical & microbial analysis along the pipeline route as per specification for corrosion survey MEC/TS/05/21/016C.				
b)	Collection of additional data related to cathodic protection along the right of way of pipeline as per standard specifications.				
c)	Design, Detailed Engineering, Preparation of Design Document, Preparation of Test station schedule & Bill of Material as per the corrosion survey & Chemical analysis of Soil / Water samples for Temporary Cathodic Protection system.				
i)	8" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	24.00		
ii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	12.00		
iii)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	2.00		
	Note: Design shall be carried out from Insulation Joint to Insulation Joint. Each stretch of length will be vary from location to location				
1.2	Manufacturing, Inspection/FAT (Factory acceptance test), supply, Packing, transportation to site, storage, installation, testing & commissioning of the temporary Cathodic protection system using Mg (Min 3.0 Kg Each)/ Zn galvanic anodes to protect the external surface of 8", **6", 4" dia** , 3LPE Coated pipeline in the Geographical Area (GA) of East & West Godavari Dist. against corrosion for a design life of minimum 2 year as per standard specification enclosed with the tender for temporary cathodic protection system, approved design document, data sheets & drawings. Scope shall also include but not limited to the following for completion of jobs:				
a)	Supply, installation, testing & commissioning of Mg/ Zn Galvanic anodes including carrying out Thermit welding on main pipeline, suppy of clits, cables to conenct to anodes as per the standard specification- MEC/TS/05/E9/016A. The weight of the Mg Anode & the total nos. of anodes shall be calculated as per the result of corrosion survey, soil chemical analysis, total weight and current requirement of the pipeline section. However, Min one anode is to be installed at every one KM with test station. The scope of work includes the the following:and also to be carried out as poer approved design including supply of all item				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
b)	Supply, Installation, Testing & commissioning of Test stations (Big Size & Normal Size) weather proof (IP-55) as per specification & enclosed drawings.				
c)	Supply, installation, testing & commissioning of one set of spark gap arrestor 100 kA (Solid State) across each insulating joint provided at tap-off, SV & various consumer terminals as per scope of work / specification. The un-protected/above ground pipeline shall be earthed through GI earth electrodes with separate earth pit. The resistance of grounding shall be limited to 5 ohms max.				
d)	Supply, installation, testing & commissioning one set of polarization cell (Solid State) with zinc anode at all high tension electrical power transmission line/equipments /railway tractions (all 66 KV & above) crossing or running parallel to the pipeline for grounding purpose as per specification. The rating shall depend upon anticipated fault current & ground bed resistance at the location of installation. However, the rating of polarisation cell (solid state) shall not be less than 3.7 KA @ 30 cycle & number of 20 kg net weight zinc anode shall not be less than two.The resistance to earth of grounding shall be limited to 5 ohms max.				
e)	Supply & installation of Zinc Ribbon Anodes at 4-8 O'clock position in the interval of 2 meter (max.) on carrier pipes where casing pipe is coated and no addtional protection for carrier pipe where casing is bare which also includes Zn bentonite filling b/w carrier & casing cased crossings i.e. roads etc as per specification & Scope of work.				
f)	Bonding in between pipelines running parallel or crossing as required.				
g)	Supply, Laying of HDPE/PVC sheets between the BGL GAS pipeline and the other CP protected foreign pipelines at the crossing locations for providing electrical isolation.				
h)	Earthing of above ground catholically unprotected pipeline at , SV, R/T & D/T etc, as applicable the earth electrode shall be 65 mm dia, 4.5 mm thickness & 3000mm long.				
i)	Supply, installation, testing & commissioning of Electrical resistance Probes (1 No. with 1 no. of ER probe reading Instrument)(if applicable) utilizing the electrical resistance technique shall be provided along the pipeline at marshy areas and at vulnerable locations to monitor the external corrosion activity on the pipeline. Location of external ER probe shall be decided during detail engineering.				
j)	Supply, installation, testing & commissioning of Polarisation coupons (2 Nos.) (if applicable) have one side exposed area of 100 mm x 100 mm with 2 nos. of spare coupons shall be provided along the pipeline at marshy areas and at vulnerable locations to monitor the external corrosion activity on the pipeline as per enclosed standard specification. Location of external Polarisation coupons shall be decided during detail engineering. Magnetic devices for operation of magnetic switch shall be provided.				
k)	Supplying,laying ,testing of 35 ,25,10 ,6 sq.mm, 600/1100 V grade copper cables XLP insulated /PVC sheath of including excavation in soil or rock of minimum 1.2m depth below GL,				
l)	Making cable to pipe jointing by thermit welding/Pin brazing (for charged pipeline) for 35 ,25,10 ,6 sq.mm copper cable including excavation and exposing piping , recoating with epoxy, testing etc.				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
m)	Monitoring of the TCP system till commissioning of PCP system & handing over of the pipeline system to BGL.				
n)	All civil/ structural works related to TCP system including supply of bricks, cement & steel etc. required for completion of the system.				
i)	8" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	24.00		
ii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	12.00		
iii)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	2.00		
	Total Amount (all inclusive except GST)				

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PP-1	**PIPING (ABOVEGROUND)**						
	Supply, Transportation including loading, unloading & handling of all piping items fromstorage point to work site/ workshop as applicable, complete work of fabrication, erection, painting, testing of pipes, flanges and fittings, insulation joints and making ready for further Commissioning / Start-up of carbon steel piping of all sizes and ratings including supply of all consumables, equipment, manpower and other resources and execution of, but not limited to, the following works in accordance with relevant specifications & scope of work, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT. **Note : Valve erection shall be paid through separate SOR**						
-	Fabrication including cutting, edge preparation, inclusive of grinding the edges of pipes, fittings, flanges etc. to match with the matching edges of uneven/different thickness wherever required, welding, attachment of all pipe fittings like elbows, tees, reducers. Supply of nipples, couplings,caps, plugs, gasket, stud bolts, nuts, U Clamps etc. as required for completion of job.						
	Checking, cleaning, aligning, bending, cutting and bevelling (as required) of pipes for welding and field adjustments including pipe fittings, welding, carrying out non-destructive testing of welds as required including 100% radiography by Gamma-ray and providing all requisite equipment, labour, supervision, materials, films, consumables, all facilities and personnel to process, develop, examine and interpret radiographs and other tests as required, carrying out repairs of weld joints found defective by Engineer-in-Charge, carrying out re-radiography / x ray and other tests as required on repaired joints.						
-	Fixing/ Installation of weldolets, sockolets, flanges, vent and drain point connection etc., including providing stub-in connections, fabricated fittings and reinforcement pads etc., as required.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	Erection including prior cleaning, lifting, placing on pipe sleepers and supports, overhead on racks, skids and at all elevations including installation and carrying out connected activities for all types of valves including supply and fixing of gaskets, studs/ bolts, nuts wherever required for all sizes, levelling, aligning, joining of flanges, blind flanges, connecting with equipment, nozzles, strainers, tie-in with existing piping/facilities, etc. tapping for inline instruments like pressure gauges, thermowells, sample connection, etc.						
-	Preparation of final bill of material based on piping GADs.						
-	Preparation of isometric and fabrication drawings.						
-	Carrying out Non-destructive testing as required except items mentioned in sl. no. 5 of SOR.						
-	Surface preparation before application of primer by means of dry abrasive including supply of approved quality of dry abrasive, manpower, machineries, tools & tackles to achieve required roughness as per specification and as per instruction of Engineer-in-charge.						
-	Painting of entire system (including aboveground all pipes fittings, flanges and accessories) as per specification MEC/S/05/21/07 including supply of approved paints and primers, application of primer and paints, indentification lettering/ numbering, colour coding, etc. as specified including rub down & touch up of shop primer or scrapping of shop primer wherever required by COMPANY and providing scafolding for all heights etc.						
-	Cleaning and flushing by water/ compressed air, testing of the systems including hydrostatic, pneumatic and any other type of testing as specified, draining, drying by compressed air/other methods approved by COMPANY.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	Precommissioning & making operational all piping system and equipments and provide all necessary assistance in term of supply of man-power, equipment, tools and tackles required amount of nitrogen for purging of entire terminal piping system including equipments etc. to the company during commissioning activities.						
-	Clean-up and restoration of site, preparation of as built drawings, documents and project records; transportation of surplus free issue material to Owner's designated plac(s); completing all works in all respects as per the AFC drawing, specifications, standards and other provisions of Contract and instruction of Engineer-in-charge.						
-	Completion of all such work in all respects as per scope of work and as per drawings, specifications and instructions of the Engineer-In-Charge and keeping the system ready in all respects for further commissioning and start up.						
-	Hook-up works including making provision for hooking up and carrying out shutdown activities at terminals if necessary.						
1.1	Complete Carbon Steel Piping Work with painting including all fittings, flanges and supply of all required gaskets, studs bolts & nuts etc. as described under item 1.0 above						
1.1.1	Pipes of different grades and thickness	m	6"NB		650		
1.1.2	Pipes of different grades and thickness	m	4" NB		1500		
1.1.3	Pipes of different grades and thickness	m	8"NB		600		
PP-2	**SUPPLY & ERECTION OF ASSORTED PIPE, FITTINGS AND FLANGES AND INSULATION JOINTS**						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Complete work of supply of pipes, fittings and flanges , insulation joints including all taxes, duties, transportation and inspection charges but not limited to, the following items in accordance with relevant specifications indicated in clause of SCC & scope of work indicated in SCC, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT.						
-	Handling including lifting, transportation from Contractor Stores to CONTRACTOR's workshop for fabrication and/ or to work site for field fabrication and erection for all piping items supplied by Contractor.						
2.1	**CARBON STEEL PIPES**						
2.1.1	CS pipe Sch.80 API 5L, Gr. B, PSL-2, Seamless, BE / ASTM A106, Gr. B (Charpy), Seamless, BE	m	2" NB	S80	500		
2.1.2		m	1" NB	S80	100		
2.1.3		m	¾" NB	S160	100		
2.2	**FLANGES**						
	Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)						
2.2.1	(End Thickness to match pipe thickness)	Nos.	6"	300#	10		
2.2.2		Nos.	4"	300#	36		
2.2.3		Nos.	2"	300#	24		
2.2.4		Nos.	8"	300#	10		
2.2.5	Socket Welded (B-16.5, A105, 125 AARH, SW end to B16.11)						
2.2.6	**Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)**	Nos.	6"	300#	5		
2.2.7		Nos.	4"	300#	10		
2.2.8		Nos.	2"	300#	10		
2.2.9		Nos.	8"	300#	10		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.3	**ELBOW**						
2.3.1	90° Elbow (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.3.2		Nos.	6"	S40	10		
2.3.3		Nos.	4"	S40	20		
2.3.4		Nos.	2"	XS	25		
2.3.5	90° Elbow (A234, Gr. WPB (Charpy), B-16.11, 1.5D), SW	Nos.	3/4"	XS	10		
2.4	**TEE**						
2.4.1	Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.4.2		Nos.	4"	S40	10		
2.4.3			6"		10		
	Equal Tee (A234, Gr. WPB (Charpy), B-16.11, 1.5D), SW	Nos.	3/4"		5		
2.4.4	Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW	Nos.	4" x 2"	S40 x XS	10		
2.5	**REDUCER**						
	Concentric Reducer (A234, Gr. WPB (Charpy), B-16.9)						
2.5.1		Nos.	4" x 3"	S40	10		
2.5.2		Nos.	6" x 4"	S40	10		
2.5.3		Nos.	2"x1"	XS	5		
2.6	**SOCKOLET** (A105, SW)						
2.6.1		Nos.	4" x ¾"	3000#	10		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.6.2		Nos.	4" x 1"	3000#	10		
2.8	**INSULATING JOINTS** (As per Standard Specification and Data Sheets enclosed) . **Insulation joints will be issued as free issue items**						
2.8.1		Nos.	4"	300#	29		
2.8.2		Nos.	6"	300#	2		
2.8.3		Nos.	8"	300#	2		
	Note:a) All butt welded fittings end shall generally match with connecting pipe wall thickness however in case of misalignment Contractor shall have to do end preparation without any extra cost.						
	B) All coupling, nipples etc. as required shall be supplied by contractor but no separate payments shall be made as it is covered under erection rate.						
PP-3	**SUPPLY & ERECTION OF VALVES**						
	Handling including lifting and transportation from COMPANY's warehouse to CONTRACTOR'S Stores and/or work site and installation of all types of valves including assembly of valve accessories, (if any) by bolting, threading or welding, supply and insertion of gaskets, nuts & bolts, nipples, etc. at all elevations of pipe sleepers, supports or overhead on racks, equipments nozzle, skid & painting etc. supply of all consumables, manpower, equipment, etc. for completion of all works as per scope of work and as per drawings, specifications and instructions of Engineer-in-charge including servicing/ cleaning of valve wherever requried. **For 8", 6", & 4" NB valves are under free issue items.**						
3.1	**Butt welded Valves (Full Bore/ Reduced Bore)**						
	Ballvalves BW, FB	Nos.	8"	300#	1		
3.1.1	Ballvalves BW, FB	Nos.	6"	300#	1		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.1.2	Ballvalves BW, FB	Nos.	4"	300#	12		
3.2.2	Ballvalves RF, FB	Nos.	2"	300#	12		
3.2.6	Ballvalves SW, FB	Nos.	¾"	800#	12		
PP-4	**Installation of MRS/DRS**						
4.1	Handling, including lifting, transportation from Company's stores at Hyderabad to Contractor's work-shop for fabrication or/ and to worksite for field fabrication, assembly of parts/ sub-assemblies erection for all vessels, equipments, skid supplied by company above ground/ underground at all elevation/ depth, fixing of foundation bolts welding wherever required, alinging, grouting, hooking-up, cleaning and flushing by water draining, drying by compressed air providing all mountings, ancilliary, enabling works as required and completing in all respect as per drawings, specification and instruction of Engineer-in-charge. Contractor's scope shall include supply of all material and accessories including but not limited to any fixtures, clamps, gasket, nut bolts, finish coat of painting including rub down & touch up of shop primer/ paint scrapping of shop primer/ paint and further their painting after application of primer as per specification, wherever required by Company.						
5.1.1	MRS/DRS	Nos.			10		
Note:	1) The quantities given above against individual items are indicative and shall not be considered to be binding. The quantities may be increased, decreased or deleted at site at the time of actual execution. Procurement shall be done as per actual site condition, approved construction drawings and as per instruction of Engineer-in-charge. The unit rate shall be operated to work out the final payment to the contractor.						
	2) In each area, quantities given against individual item may be utilise/ used for other consumer in same area.						
	3) The rates quoted shall be applicable for all Terminals						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total Amount (all inclusive except GST)						

3-(II) CIVIL WORKS

Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
CIV-1	**SITE CLEARANCE**				
a)	**DEMOLITION OF R.C.C./BRICKS/STONE MASONARY**				
	Site clearance by demolition of R.C.C./Brickwork/Stone masonry/ Stone soling, Flexible pavements (including steel bars)etc.,alongwith removing the debris and disposal of unserviceable material to any lead and staking of serviceable materials, handing over serviceable material to concerned department if required as per technical specifications and direction of Engineer-in-charge.	M3	100		
b)	**TREE CUTTING**				
	Tree cutting (only of girth more than 30 cm shall be counted for payments) including royalties, disposal, taking approval from competent authorities etc. all complete, as per technical specifications and direction of Engineer-in-charge.	Nos.	100		
CIV-2	**EARTH WORK IN EXCAVATION/ SITE GRADING AND BACKFILLING**				
a)	Earth work in excavation,site grading and backfilling in all kinds of soil including soft rock in any plan dimension up to 3.0M depth including disposal of excavated surplus and unserviceable earth up to any lead in all conditions. Soil to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings, as per technical specifications and directions of the Engineer-in-charge.	M3	300		
CIV-3	**EARTH WORK IN EXCAVATION/ SITE GRADING IN HARD ROCK**				
a)	Earth work in excavation in hard rock requiring blasting for all type and size of foundations in any plan dimension up to required depth including disposal of excavated material up to any lead in all conditions, and disposal of surplus and unserviceable material. Surface to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings and directions of the Engineer-in-charge.	M3	50		
CIV-4	**EARTH WORK IN FILLING**				
a)	Earth work in filling with good quality imported earth from approved source in the layers of 150 mm and compacted up to 95% to its MDD up to 3 m depth and any plan dimension including all testing, watering, rolling each layer with 1/2 tonne roller or wooden or steel rammers, and dressing / filling up ground depressions etc. complete in all respect as per scope of work, detailed construction drawings , as per technical specifications and directions of the Engineer-in-charge.	M3	100		
CIV-5	**PLAIN CEMENT CONCRETE**				

3-(II) CIVIL WORKS

Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
a)	Supplying and laying plain cement concrete with stone aggregate 20mm down grade (including shuttering if required) in all types of concrete works including levelling courses below foundations, columns, pedestals, pedestal bases, pipe supports,floors, chambers, cable trench, under floors and any other locations (which are not covered as part of composite items) , at all levels and locations as per drawings, specifications and directions of the Engineer-in-charge.				
	i) 1:2:4	M3	300		
	ii) 1:4:8	M3	200		
CIV-6	**REINFORCED CEMENT CONCRETE**				
	Providing and laying RCC (reinforced cement concrete) of grade M-25 with 20mm and down grade crushed stone aggregate in all types of structures like Beams, foundations, walls, columns, pedestals, pedestal bases, pipe supports, sleepers, cable trench, RCC retaining wall foundation for boundary wall including construction joints, shuttering at all depths and levels complete as per drawings, specifications and directions of the Engineer-in-charge.				
	i) Sub structures	M3	200		
	ii) Super structures	M3	300		
CIV-7	**REINFORCEMENT STEEL**				
	Supplying and Fabricating and Fixing in position HYSD Steel Reinforcements/ TMT Grade Fe-415 conforming to IS1786-1985 at all levels (all deapth & hights) and positions including the Cost of transport, Straightening, Cutting, Bending, Cranking, Binding, Welding, Provision of necessary Chairs and Spacers, Preparation of bar bending schedule, getting the same approved by EIC etc., complete as per Drawings and Specifications and including Cost of binding wire, Labour etc., all complete in all respects as per scope of work, detailed construction drawings, technical specifications and direction of Engineer-in-charge. The chairs and spacer bars provided will not be Measured for payment.	MT	15		
CIV-8	**CEMENT CONCRETE BLOCK WORK**				
	Providing and laying cement blocks (solid blocks) masonry Grade M 7.5 with 200 mm thick blocks upto plinth level and super structure in cement mortar 1:4 (1 cement : 4 coarse sand).	M3	15		
CIV-9	**BRICK WORK**				

3-(II) CIVIL WORKS

Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
	Providing and laying brick work with brick class designation M-7.5 of IS:1077 in Cement Mortar 1:4 (1cement : 4 sand) in steps, compound wall, drains, or at any other location at all depths & height for all leads including providing required finishes, curing, scaffolding, etc., complete as per specifications and drawings with all bye-works as per direction of the Engineer-in-charge.	M3	50		
CIV-10	**PAVER BLOCK FLOORING**				
	Supply , construction and handing over of CC inter locking paver block 80 mm thick, I shape, rough finish, M-30 strength of approved brand laid over the sand bed of minimum 50 mm thick. The CC interlocking blocks to be of uniform Grey colour or as approved by EIC complete in all respects as per scope of work, detailed construction drawings, technical specifications and directions of the Engineer-in-charge.	M2	300		
CIV-11	**SAND FILLING**				
	Supplying and filling Sand in maximum 300 mm thick layers and compacting by rolling, ramming, consolidating and dressing the surface including cost of sand (zone-II/Zone-III sand only) complete in all respect as per scope of work, detailed construction drawings as per technical specifications and directions of the Engineer-in-charge.	M3	100		
	Total Amount (all inclusive except GST)				

3-(III) STRUCTURAL WORKS					
Sl. No.	**Description of Item**	**Unit**	**Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
				Figures	**(4) x (5)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ST-1	**Providing and fixing chain link Fencing**				
	Supply, fabrication and erection of structures such as angle iron post/Channel post,Strainer and strut,etc.with necessary holes for fixing the chain link fencing,site assembly and finally erection of structures at appropriate location with painting as per specification,including 2.0m high G.I. Chain link fabric fencing mesh size 50x50x3.15 mm dia, with 0.5 m heigh barbed wire (type-A) as per IS:278-1978 shall be made from two strands of galvanized steel wire of nominal dia 2.5 mm twisted together fixed on fencing posts with GI staples, turn buckles etc, including strengthening with 4 mm dia wire Nuts bolts and washer complete in all respects.All work as per Specification and drawings and as direction of the Engineer-In-Charge(excluding foundation and RCC beams Refer Standard drawing)	R.M	**200**		
ST-2	**Providing and fixing Fencing Gates**				
	Supplying, fabrication & fixing of fencing Mild steel gate 2.5m high with Chian link fencing mesh upto 2m height and 0.5m barbed wire fencing including all fixtures like MS Pivot,locking arrangement, tower bolt etc.complete in all respects including painting ,all work as per Specification and drawings and as direction of the Engineer-In-Charge (excluding foundations and RCC beams)				
a)	2m Wide Gate	Nos.	**15**		

3-(III) STRUCTURAL WORKS					
Sl. No.	**Description of Item**	**Unit**	**Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
				Figures	**(4) x (5)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ST-3	**Steel structure Fabrication & Erection**				
	Supply ,fabrication and erection of all types of pipes supports like clamps saddle,guide stops,cradles,turn buckles,anchors,T-post,stockade/trestle and pipe bridge for over head piping ,approach ladders and platform,crossover,cable tray supports,etc. including painting as per painting specification(Bolts,nuts,washer,U-clamps etc. shall be supplied by the contractor within the rates quoted.These items will not be measured and paid seperately).The work is to be completed in all respect as per drawings and techanical specification and direction of the Engineer-in-Charge	KG	**1500**		
	Total Amount (all inclusive except GST)				

3-(IV)	ELECTRICAL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
EL-1	EARTHING				
	Supply, installation, testing & commissioning of the complete earthing system, earth electrodes/pit, earth main ring, earthing of metering skid, electrical equipments, instrument panels, field instruments, process equipments & pipes / flanges and accessories such as GI wire, wire rope and all balance earthing material as per the specification including all associated civil work with all material & labour as per specification & drawings approved by the company.				
1.1	Earth Electrodes including earthpit with 6 mm thick chequered plate cover	Nos.	50		
1.2	GI Strip (25 x 5) mm	Meters	200		
	Total Amount (all inclusive except GST)				

3-(V)	INSTRUMENTATION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
	(2)	(3)	(4)	(5)	(6)
IN-1	**Supply, Calibration and Installation of instrumentation items listed below**				
1.1	Pressure Gauges, Pressure Rating 300# Pressure Range 0 - 50 Kg/cm2 (Includes supply of two isolation valves per each gauge to provide double isolation)	Nos.	10		
1.2	Temperature Gauges [Range 0 - 100°C]	Nos.	10		
IN-2	**EARTHING**				
2.1	Supply 8 SWG G.I. Wire	Mtrs.	50		
2.2	Laying and termination of both ends from earth grid to Field instruments/JBs/Control Panel by 8 SWG G.I. Wire in tray and conduits as required excluding earth-pit preparation.	Mtrs.	50		
2.3	Supply of 4 sq. mm. PVC insulated armoured copper cable	Mtrs.	50		
2.4	Laying and Termination of both ends of 4 sq. mm. PVC insulated armoured copper cable from earth pit to the barrier earth bus bar in trays/conduits/trenches as required.	Mtrs.	50		

3-(V)	INSTRUMENTATION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
	(2)	(3)	(4)	(5)	(6)
	Total Amount (all inclusive except GST)				

SUMMARY OF SCHEDULE OF RATES- PART-B
FOR
LAYING & CONSTRUCTION OF 8", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT IN EAST & WEST GODAVARI DIST. (A.P)
Bid No.MEC/23TS/01/51/S2/ST/ER/0007

Sl. No.	Description	in INR	
		(In Figures)	(In Words)
1	Total amount (all inclusive except GST) for Mainline Works SOR		
2	Total amount (all inclusive except GST) for Cathodic Protection Works SOR		
3	Terminal Works		
I)	Total amount (all inclusive except GST) for Piping & Mechanical Works SOR		
II)	Total amount (all inclusive except GST) for Civil Works SOR		
III)	Total amount (all inclusive except GST) for Structural Works SOR		
IV)	Total amount (all inclusive except GST) for Electrical Works SOR		
V)	Total amount (all inclusive except GST) for Instrumentation Works SOR		
4	Gross Total Amount (inclusive of all applicable taxes & duties except GST) [1+2+(3-I)+(3-II)+(3-III)+(3-IV)+(3-V)]		
5	**GST @ 18.00% on Total Amount mentioned at Sl. No. 4 above**		
6	**GST @ 18.00% on free issue material of INR 10.19 Crores**	**18,342,000.00**	Rupees One Crore Eighty Three Lakhs Forty Two Thousand Only
7	**Gross Total Amount (Sl. No. 4 + 5 + 6)**		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(a)	(b)	(c)	(d)	(e)	(f)
ML-1	CARBON STEEL PIPES				
1.1	PIPELINE LAYING / INSTALLATION				
	a) Coated Steel pipe lines laying				
	Receiving , loading , unloading and transportation and stacking of 3-Layer PE coated and bare line pipes to Contractor's stock yard/ workshop/work-site. The scope of contractor includes preparation of drawings, wherever required for crossing etc. including handling, stacking, stringing on the pipeline route alignment, carrying out inspection of materials including linepipes , laying/ installation of coated linepipes as per specification wherever required depending on site condition including execution of all works, handling , including loading and unloading, transportation of all the materials to work site. Arrangement of all additional lands required for Contractor's storage, fabrication, access for construction, procurement and supply of all materials , consumables, equipment, labour and other inputs, carrying out all temporary, ancillary, auxiliary works, ready for commissioning of pipeline as per drawings, specifications, other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:				
	Surveying of route and detours required at the time of execution including marking the same in topographical sheet, preparation of construction drawings showing survey details, and submit same to Owner for review / approval.				
	Clearing, full filling all the requirements of various statutory/ environment authorities to the entire satisfaction of concerned authorities, grading of work area. Relocating of any obstruction within the Pipeline route alignment / Approved route viz. electrical lines/ poles, telephone line / poles, foreign pipeline, etc. in co-ordination with concerned authorities and obtain permissions from these authorities for pipeline execution.				
	Trenching to all depths by excavation in all types of soils **except built up sections** on top as different type of pavement / footpath / roads etc. as required by using mechanical excavator or manually depending on the site condition and storing excavated soil, reusable materials at designated area as directed by Engineer in charge and to a width to accommodate the pipeline as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0m measured from top of pipeline coating to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition is included in the scope of contractor. As SVs shall be buried on the pipeline alignment itself with RCC pits with covers. The steel pipeline has to be taken to the required lower depth by use of slope or vertical bends to accommodate the above without additional cost to GGPL				
	During the execution of the work, the construction area shall be barricaded to ensure the smooth execution of work and safety of the public/ working area. The item also includes fabrication, trsansportation and placing the barricading at the site. Barricading to be made as per approved drawing and to the entire satisfaction of Owner / Engineer-in-charge.				
	Carrying out repairs of pipe defects/ replacement in case of irreparable defects and repairs of defects of pipe coating not attributable to Owner including defects/ damages occurring during transportation / handling.				
	Stringing of line pipes along pipeline trench /sand / soft soil bags including supply of bags and its filling materials.				
	Checking, cleaning, aligning, bending, cutting and bevelling (as required) of pipes for welding and field adjustments including pipe fittings, welding, carrying out non-destructive testing of welds as required including 100% radiography by Gamma-ray / x ray and providing all requisite equipment, labour, supervision, materials, films, consumables, all facilities and personnel to process, develop, examine and interpret radiographs and other tests as required, carrying out repairs of weld joints found defective by Engineer-in-Charge, carrying out re-radiography and other tests as required on repaired joints.				
	Carrying out installation of carrier line pipe at all minor crossing viz. road, carttrack, pathway, water bodies etc. at designated depth by open cut (except at crossing by HDD method/ moling / Augur boring).				
	The above item also include liasioning with state authorities / owners : Obtaining ROU and all permissions from the concerned land-owning / statutory authorities along the proposed route / area. However, the required statutory / mandatory fees will be paid by M/s GGPL against demand note.The liasioning during the pipeline laying execution with local authorities & local officials, traffic ploice, police and any other utility companies / agencies such OFC operators etc are in the scope of the contractor. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner/other utility agencies) is in scope of the contarctor. Liasioning for other associated works like SV station / DRS Station & valve pits etc. also included in this.				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Coating of field weld joints, long radius bends (R=3D), elbows, buried fittings and valves etc. including supply of coating materials etc. (i.e. heat shrinkable sleeves and high build epoxy etc.) as per PJS & Technical Specification compatible with 3 layer PE coating material of the line pipe.				
	Installation of LR Bend (R = 3D) , as per specification wherever required depending on site condition.				
	Installation / lowering the pipeline in trench to required depth as per PJS, Technical Specification & drawings including padding around pipeline with suitable soil duly approved by EIC including supply of padding material, backfilling and its compaction to the satisfaction of concerned authorities with excavated earth / borrowed select soil including supply of borrowed select soil duly approved by EIC.				
	Supply & Installation of warning mat (OD+100 mm width and 0.5 mm thick) on the entire length of the pipeline as per specification.				
	Supply and installation of slope breakers, wherever required or, as directed by Owner / Engineer–in–charge.				
	Crossing the all-foreign pipeline / HT line / cable / any other utilities etc. with necessary concrete / PVC protection including coordination with all agencies and obtaining NOC.				
	Carrying out air cleaning, flushing, cleaning and hydrostatic testing of complete pipeline with required quantity of corrosion inhibitor including pre-testing of designated sections complete as per specification and approved by Engineer–in–charge to specified pressures indicated elsewhere and duration after stabilization as per specification, providing all equipment, pumps, fittings, instruments, dead weight tester, pressure recorder, thermocouples etc., and services, supervision, labour, consumables, water including supply of corrosion inhibitor, air, etc. as required, locating of leaks and rectification of defect attributable to Contractor (rectification of defects in linepipe material not attributable to contractor shall be paid separately as per other item of schedule of rate), re-testing after rectification, dewatering after successful completion of hydrotesting of entire section and as approved by Engineer-in-Charge.				
	(Note : Leak detection, its rectification and successfully re-hydrotesting shall be carried out by Contractor with a view that completion of all activity for successful hydrotesting is not inordinately extended, which will hamper the overall project schedule. Further, no extra payment claim shall be entertained for re-hydrotesting and leak detection if defects found attributable to Contractor.				
	All tieing-in, including the tie-in(s) of the pipeline with the adjacent sections of pipeline including cutting of test header, rebevelling as required, radiography and other NDT examination, joint coating as per specification.				
	Final clean-up & restoration of right-of-use or area disturbed by contractor including obtaining NOC from respective land owner and statutory authorities during their construction activities for laying of pipeline works and disposal of debris, excess soil to designated disposal areas as per local authorities/GGPL and returning all surplus material to designated storage yard and backfilling of trench and compaction of the same as per satisfaction of Owner and / Or as directed by Engineer–in–charge.				
	Restoration of land, facilities and boundary wall etc. and associated facilities dismantled/damaged by the Contractor during construction;				
	Installation of all burried valves inside the valve pit and making provision to operate the valve.				
	Protective coating of 500 micron thick two component (applied with the help of minimum three coats) liquid epoxy including supply of materials duly approved by Owner for all piping valves, fittings, structural steels etc. for buried installation and inside the valve pit as approved by the Engineer-in-charge.				
	Carrying out all temporary, ancillary, auxiliary works and all incidental works required to make the pipeline ready for pre-commissioning;				
	Preparation of as-built drawings, pipe-books including collection of GPS co-ordinates.(Drawings /documents to be submitted as pr SCC) All the works shall be executed in accordance with the provision of contract including carrying out all temporary/ ancillary/ auxiliary works required for the performance of the works and all other acts, deeds, matters and things necessary to make the pipeline ready for precommissioning activities.				
	Any other activities not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to GGPL. All the work shall be executed in accordance with the provision of contract.				
	Installation of Coated Line Pipes as per following details:				

Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
1	**MAINLINE WORKS**				
	Specified dia, NB Thk (mm) Material Coating Type Length of each pipe (mm)				
1.1.1	200 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	5800		
1.1.2	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	15750		
1.1.3	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	4200		
	Note:				
i)	This item shall be applicable for the underground steel grid main pipeline & branch pipeline including tap-off for distribution pipelines, valves, barred tees, insulating joints, bends (R=3D), flanges & fittings, accessories etc. , tie-in of valve assembly including radiography of tie-in joints as per Schematic Layout Drawings of respective sections, Technical Specification and aboveground approach pipeline upto Insulating Joint (including installation of aboveground / underground insulating joint) for various stations.				
ii)	Supply of all valves, flanges, fittings, assorted pipes, barred tees & insulating Joints, etc. shall be paid by separate item mentioned elsewhere in SOR.				
iii)	In above item, backfilling of pipeline trench by borrowed select soil duly approved by Owner / EIC shall be paid by separate item mentioned elsewhere in the SOR.				
iv)	Contractor shall not perform any pipeline activities along Pipe alignment without specified barricading as per Std. Drg. and other safety measures.				
v)	The lengths of pipelines are tentative. All items required to complete the laying and commissioning except the Items covered separately in this SOR are included under the scope of this item				
vi)	Cutting of Hard Rock shall be paid on CUM basis as per separate SOR.				
viii)	**Coated pipe sizes of 8", 6" & 4" NB will be issued as free issue items.**				
1.2	**Same as item 1.1 above but with built up sections (different type of pavement / footpath / roads etc. which includes Asphalt roads, Tiled pavement and PCC/RCC roads) on the top surface**				
	Installation of Coated Line Pipes				
	Specified dia, NB Thk (mm) Material Coating Type Length of each pipe (mm)				
1.2.1	200 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	800		
1.2.2	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	2100		
1.2.3	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	600		
1.3	**PIPELINE LAYING / INSTALLATION OF MDPE PIPES IN TRENCH ADJUNCT TO STEEL PIPE LINE TRENCH**				
	Trenching to all depths by excavation in all types of soils except built up sections on top as different type of pavement / footpath / roads etc. Storing excavated soil, reusable materials at designated area as directed by Engineer in charge and to a width (steel pipe line to MDPE clearance shall be minimum 150 mm) to accommodate the pipeline , MDPE Pipe (125 mm, SDR 11, PE 100 Pipe) as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0m measured from top of pipeline to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition. Laying of steel pipe line will be paid separately as per SOR item no.1.1 /1.2				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Loading, storing, unloading and laying of PE100, SDR11 line pipes of size 125 mm in steel pipe line trench including ,proper stacking, identification,and supply of accessories of all sizes & thickness like PE Bends, Couplers, Endcaps, Tee, Reducer, CS to PE Fittings, Saddle Tapping, GI sleeves etc.. Handling, Stringing/ uncoiling,aligning of the PE line pipe on the pipeline Right-of-Use/route , laying/ installation of PE line pipe alongwith required accessories as mentioned above as per specification wherever required depending on site condition including execution of all works; additional lands required for contractor's storage , fabrication, access for construction;procurement and supply of all materials , consumables,equipments, labour and other inputs. In case of free issue items,the scope also includes, receiving and loading from GGPL designated store, transportation, unloading and stacking of free issue items at Contractor's store				
	Carrying out all temporary, ancillary, auxiliary works required to make the PE pipeline ready for commissioning including cleaning, flushing and removing the ingress of water / moisture etc., as per drawings.				
	Specifications, scope of work indicated in PJS and other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:				
	Carrying out preliminary activities such as preperation of drawings wherever required for crossing etc.				
	Preparation and getting approval of schedules, execution procedures, drawings/ sketches/ wherever required, making trial pits to determine the underground utilities/ services etc., restoration of the abandoned trial pits to original condition.				
	Uncoiling/ stringing & aligning of PE pipes, clamping, jointing of the pipe ends/ fittings/ valves by qualified personnel using approved electro-fusion techniques as per specification.				
	Installation / lowering the pipeline in trench to required depth as per PJS, Technical Specification & drawings.				
	Electro-fusion jointing of valves wherever required and as directed by Engineer-in-charge.				
	Pneumatic testing, purging with nitrogen and commissioning as per specification and approved procedures providing all tools and tackles, nitrogen, instruments, manpower and other related accessories and as per the instructions of the Engineer-in-charge.				
	Supply and installation of bricks (class 50) of 230 mm width over MDPE pipes for the entire length				
	Supply & Installation of warning mat (250 mm width and 0.5 mm thick) on the entire length of the pipeline as per specification.				
	Any other activities not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to GGPL. All the work shall be executed in accordance with the provision of contract.				
1.3.1	PE 100 (Size 125 mm) Pipe	Meter	3937.5		
	Note: The Quoted rate shall be of laying of MDPE pipeline laying adjunct to steel pipe line trench . Steel pipe line laying will be paid separately under SOR item no.1.1. CS main pipes & MDPE pipes are free issue materials to the contractor. Any stand-alone trenching required to detour PE pipeline laying due to space constraint shall be in the scope of contractor without any extra cost to GGPL.				
1.4	**Same as item 1.3 above but with built up sections (different type of pavement / footpath / roads etc.) on the top surface:**				
1.4.1	PE 100 (Size 125 mm) Pipe	Meter	525		

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
1.5	**Cutting/ breaking of hard rock found in trenches using mechanical means such as rock breakers / excavators (blasting prohibited) etc. Scope also includes disposal of rocky earth after breaking to designated disposal areas as per local authorities/GGPL. (wherever hard rock of single piece exceeding 1.0 m in length along the trench direction as per the decision & direction of EIC)**	CUM	3500		
ML-2	**Restoration of asphalted roads / concrete roads / pavements / foot paths, wherever instructed by EIC .Job includes getting NOC from the concerned authorities.**				
a)	**Asphalt road** :Restoration of bitumen Asphalt road after laying of Pipe lines as per the drawing no. MEC/23TS/01/11/D2/ST/LY/0211/R00/A3 , specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per requirement of **NH/etc.** and to get NOC from the concerned authorities. Restoration of the asphalt road cut portion for pipeline trench width shall be carried out by filling the bottom layer with with stone dust / Quarry dust watering & compaction followed by 200mm thk GSB & 250 mm thk WMM with top bituminous layers comprising of primer coat, tack coat, 50mm thk DBM & 40 mm thk BC matching with the existing road top level.This item alos includes disposal of surplus soil / debris with all lift & leads.	Meter	1488		
b)	**Asphalt road** :Restoration of bitumen Asphalt road after laying of Pipe lines as per the drawing no. MEC/23TS/01/11/D2/ST/LY/0210/R00/A3 , specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per specifications / drawing and to get NOC from the concerned authorities. This item alos includes disposal of surplus soil / debris with all lift & leads.	Meter	2975		
b)	Restroration of the all kind of pathway by using excavated material such as tiles/pavers/granite/red stone etc by providing PCC 1:4:8 of 75mm thickness below or as per construction found and making it as original . Item includes providing of extra material if required due to breakage during excavation work such as Tiles/Paver/Granite etc matching to original pathways.	Meter	1488		
c)	**Reinforced Cement Concrete road/ pavement:** Restroration of Reinforced concrete road and pavements shall be done by providing PCC 1:4:8 of 75 mm thick and RCC 1:2:4 of 100 mm thickness and providing minimum 8mm dia reinforcement steel at 200mm c/c . The cost of reinforcement . Shuttering, compacting the base surface etc. are in the scope of this item.	Meter	2975		
ML-3	**BORROWED SELECT SOIL FOR BACKFILLING**				
	Additional work over and above item 1.5 for supply of specified and approved quality of borrowed foreign soft graded soil / sand in place of available excavated material and / or other suitable soil as per applicable standards / specifications, including backfilling of excavated trench for specified length after laying and padding of pipeline, including transportation of such special backfill material over all distances, complete. (Also to be used in open cut road crossing if required as per decision of EIC)	CUM	3500		
ML-4	**Steel Pipeline CROSSINGS BY HDD without casing**				
	Complete work of the road /Nala crossing (between the limits are defined as in approved drawings) by HDD method including transporation of three layer PE coated line pipes from Contractor's designated place / storage work site including all handling loading, unloading, aligning etc., manpower, equipment, other resources and aquiring the required land for storage, fabrication inclduing string preparation of pipes(carrier), welding, welding repair, radiography, coating of field joints with special type Heat Shrink Sleeve (DIREX SLEEVE)and repair of pipeline coating with special repair patch materials as per specification, pre-testing etc. of complete string made for crossing access for Contractor etc. and execution of, but not limited to, following works in accordance with specifications and instruction of Engineer-in-charge and as per all provision of Contract Document.				
	Pre-construction survey based on site visit, collection of data (if required) from concerned Authority including design and detail engineering and making of crossing drawings for getting their approval from concerned Authority/ & Engineer-in-charge, getting work permit/ NOC for road/ Nala crossing as well as utility crossings (if any) encountered during road/ Nala crossing prior to start the execution of work.				
	Directional drilling to required depth from top of road/ Nala Bed including maintenance of drill hole in all types of strata including rocky terrain at all depth to accommodate the pipeline at all conditions encountered during road/ Nala crossing by approved HDD methods for providing minimum cover specified in code/ specification or the actual depth as decided by concerned authority, whichever is more.				
	Backfilling of the ditch/ trench including restoration and cleanup of area and all other works including pigging, cleaning, final hydrotesting etc. alongwith mainline works (as mentioned in item no. 1.0 above) required as per specification, approved drawings, calculations, methods and to the satisfaction of Engineer-in-charge and/or as directed by concerned Authority.				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
4.1	**ROAD/Nala CROSSINGS by HDD: in all type of soil**				
4.1.1	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 8" NB, 6.4 mm thk API 5LX52	Meter	800		
4.1.2	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 6" NB, 6.4 mm thk API 5LX52	Meter	2100		
4.1.3	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 4" NB, 6.4 mm thk API 5LX52	Meter	600		
ML-5	**CASED CROSSING WITH HDD:**				
	Complete work of the road (National Highway, State Highway, MDR) or Rail crossing (between the limits as defined in approved drawings) including handling, loading, transportation, unloading to Contractor's own stock yard/ work site.				
	Pre-construction survey and making of crossing drawing based on site visit and getting their approval from concerned Authority/ & Engineer-in-charge prior to start the execution of work.				
	Supply and Installation of casing pipe by jacking/ boring/or as described below for rail crossings in all type of soil strata including soft / hard rock and open cut for adjacent service road, canal, minor nature of water channel, utility line crossing etc. (if any) wherever required for all depth in all type of soils and terrrain for carrier pipe insertion. All other Contractor supplied materials like casing insulators, Zinc Ribbon Anodes and casing end seals as per enclosed specification/ drawings materials for casing vents and drain assembly etc. including supply of all other materials, equipments, consumables, manpower, welding including visual inspection of all weld joints. The casing pipes shall conform to material API 5L Gr. B / IS : 3589 or equivalent ERW Pipe duly Corrosion coated of High build epoxy of minimum 450 microns thickness				
	Preparation of required length of carrier pipeline welded string including all other works as mentioned in item no. 1.0 above and as per specification/ drawings. Insertion of carrier pipe in casing pipe after above ground pretesting at specified test pressure including installation of casing insulators and Zn ribbon anode as per approved design calculation, specification/ drawings. Insatllation of vent and drain assembly, fixing of end seals, backfilling and restoration as original of the facilities crossed and performing all other works including pigging, cleaning, final hydrotesting etc. alongwith mainline works (as mentioned in item no. 1.0 above) and as per specification, approved procedure, drawing etc. and instruction of Engineer-in-charge and provision of contract document, getting NOC from all concerned Authority of the facilities crossed.				
	2.5 m min depth to maintain throughout the railway crossing as per instruction of railway DRM.				
	Major crossings like railways & Highways				
5.10	Cased crossings in all type of Soil				
5.1.1	By Jacking/ Boring of Casing Pipe 14'' NB.with 8" NB pipeline	M	600.00		
5.1.2	By Jacking/ Boring of Casing Pipe 12'' NB.with 6" NB pipeline	M	1,050.00		
5.1.3	By Jacking/ Boring of Casing Pipe 10'' NB.with 4" NB pipeline	M	600.00		
	Note: (i) Actual length & cover from top of casing pipe string may vary depending upon site conditions, approved drawings, specification etc. and / or as decided by concerned Authority / Engineer-in-charge.				
	(ii) Payment for supply & installation of Zinc ribbon anode and its design excluded from above item and covered elsewhere in the SOR.				
	(iii) Payment for the length carrier pipeline string inserted in casing pipe laid by Boring are covered separately and shall be paid under other items mentioned elesewhere in the SOR.				
	(iv) Width of above crossings indicated are tentative. The width indicated in SOR item 5.1.3 to 5.1.6 are not for any single crossings. This shall be as per requirement at site for crossings at different locations.				
ML-6	**PERMANENT MARKERS**				
	Supply, fabrication and installation of all types of permanent markers along the route including all associated civil works such as excavation in all types of soil, construction in all types of soil, construction of pedestals and grouting with concrete, clearing, supply and application of approved colour and quality of primer and paint, stencil letter cutting for numbers, direction, change etc., restoration of area to original condition and performing all works as per drawing, specification and instruction of engineer-in-charge.				
6.1	Pipeline RCC boundary / route marker as per drawing	Nos.	350		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
6.2	Pipeline warning markers with post & foundations	Nos.	50		
6.3	Pipeline warning plate markers without post & foundations	Nos.	50		
6.4	Pipeline direction marker with post & foundations	Nos.	50		
6.5	Pipeline KM with post & foundations	Nos.	35		
ML-7	PRE-COMMISSIONING AND ASSISTANCE IN COMMISSIONING OF PIPELINE SYSTEM				
	Swabbing, drying, purging with nitrogen of the complete pipeline network and the associated facilities being installed to the specified acceptance criteria, carrying out pre-commissioning works, providing assistance during the complete duration of commissioning operations for entire pipeline network system including supply of all equipment, man-power, consumables (including pigs & nitrogen required for purging with maintaining nitrogen column of mininum 10% of pipeline geometric volume) materials for all temporary works and performing all associated works, complete as per the relevant specifications, other provisions of Contract document and instructions of Engineer-in-charge.				
7.1	For 8" NB Pipe line	Meter	8000		
7.2	For 6" NB Pipe Line	Meter	21000		
7.3	For 4" NB pipe Line	Meter	6000		
ML-8	IDLE TIME PRESERVATION OF PIPELINE				
	Preservation of complete pipeline and associated facilities forming part of the pipeline as per Bid document and its maintenance including supply of all consumables, all equipment, man-power, etc. complete as per the requirements of specifications, other provisions of Contract document and instructions of Engineer-in-charge.				
	Note : Owner reserves the right to exercise either or none of the rates below.				
	By filling and pressurizing with nitrogen to a pressure of 2 bar(g) for a period of one month.				
8.1	For 8" NB Pipe line	Meter	8000		
8.2	For 6" NB Pipeline	Meter	21000		
8.3	For 4" NB Pipeline	Meter	6000		
ML-9	LONG RADIUS BENDS				
9.1	Supply of Long Radius Bends (R = 3D) for 8" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.1.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	32		
9.1.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	16		
9.1.3	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	16		
9.2	Supply of Long Radius Bends (R = 3D) for 6" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	84		

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
9.2.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	42		
9.2.3	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	42		
9.3	Supply of Long Radius Bends (R = 3D) for 4" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	24		
9.2.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	12		
9.2.4	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	12		
	Note : The quantities of LR Bends may vary. For final quantity, approval from EIC shall be taken before order.				
ML-10	**ERECTION OF VALVES**				
	Handling including lifting and transportation from COMPANY's warehouse to CONTRACTOR'S Stores and/or work site and installation of all types of valves, including assembly of valve accessories, (if any) by bolting, threading or welding, supply and insertion of gaskets, nuts & bolts, nipples, etc. at all elevations of pipe sleepers, supports or overhead on racks, equipments nozzle, skid & painting etc. supply of all consumables, manpower, equipment, etc. for completion of all works as per scope of work and as per drawings, specifications and instructions of Engineer-in-charge including servicing/ cleaning of valve wherever requried.				
10.1	Erection of all types of valves in valve pits on underground pipe lines				
a)	8" NB		3		
b)	6" NB		8		
c)	4" NB		11		
d)	2" NB (Supply & erection)		22		
	Note: Valves of Size 8", 6" & 4" NB will be issued as free issue items.				
ML-11	**SUPPLY & ERECTION OF FITTINGS AND FLANGES in valve pit**				
	Complete work of supply of fittings and flanges including all taxes, duties, transportation and inspection charges but not limited to, the following items in accordance with relevant specifications indicated in clause of SCC & scope of work indicated in SCC, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT.				
	Handling including lifting, transportation from Contractor Stores to CONTRACTOR's workshop for fabrication and/ or to work site for field fabrication and erection for all piping items supplied by Contractor.				
	TEE				
11.1	**Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW**				
11.1.1	4" NB	Nos.	20		
11.2	**Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW**				
11.2.1	6"x 4" NB	Nos.	20		
11.2.2	8"x 4" NB	Nos.	20		
11.2.3	4" X 2" NB	Nos.	30		
	FLANGES				

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
11.3	**Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)**				
	(End Thickness to match pipe thickness)				
11.3.1	**8" NB**	Nos.	15		
11.3.2	**6" NB**	Nos.	15		
11.3.3	4" NB	Nos.	30		
11.3.4	2" NB	Nos.	22		
11.4	**Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)**				
11.4.1	8" NB	Nos.	20		
11.4.2	6" NB	Nos.	10		
11.4.3	4" NB	Nos.	30		
11.4.4	2" NB	Nos.	10		
11.5	**Weldolet**				
11.5.1	6x2"NB	Nos.	10		
11.5.2	8X2" NB	Nos.	20		
11.6	**Elbow**				
11.6.1	4"	Nos.	20		
11.6.2	6"	Nos.	10		
11.6.3	8"	Nos.	20		
11.6.4	2"	Nos.	10		
ML-12	**Construction of Valve pits for Steel Line**				
	Construction of Valve Pits for Steel line as per the enclosed drawing and specification. The item includes supply of all the material including Pre-cast RCC cover, shuttering,reinforcement,labour,curing etc as per the drgs ,specification and instruction of EIC.				
12.2.1	As per the drawing	Nos	11		
	Total Amount (all inclusive except GST)				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
TCP-1	**TEMPORARY CATHODIC PROTECTION SYSTEM**				
1.1	Survey, Design, detail engineering of the temporary Cathodic protection system using Mg (Min 3.0 Kg Each)/ Zn galvanic anodes to protect the external surface of **8'', 6", 4" dia** , 3LPE Coated pipeline in the Geographical Area (GA) of East & West Godavari dist. against corrosion for a design life of minimum 2 year as per standard specification enclosed with the tender for temporary cathodic protection system, approved design document, data sheets & drawings. Scope shall also include but not limited to the following for completion of jobs:				
a)	Measurement of soil resistivity along the right of way of the main pipeline & take atleast one soil sample for one pipeline section for its chemical & microbial analysis along the pipeline route as per specification for corrosion survey MEC/TS/05/21/016C.				
b)	Collection of additional data related to cathodic protection along the right of way of pipeline as per standard specifications.				
c)	Design, Detailed Engineering, Preparation of Design Document, Preparation of Test station schedule & Bill of Material as per the corrosion survey & Chemical analysis of Soil / Water samples for Temporary Cathodic Protection system.				
i)	8" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	8.00		
ii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	21.00		
ii)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	6.00		
iii)	**Note**: Design shall be carried out from Insulation Joint to Insulation Joint. Each stretch of length will be vary from location to location				
1.2	Manufacturing, Inspection/FAT (Factory acceptance test), supply, Packing, transportation to site, storage, installation, testing & commissioning of the temporary Cathodic protection system using Mg (Min 3.0 Kg Each)/ Zn galvanic anodes to protect the external surface of 8", **6", 4" dia** , 3LPE Coated pipeline in the Geographical Area (GA) of East & West Godavari Dist. against corrosion for a design life of minimum 2 year as per standard specification enclosed with the tender for temporary cathodic protection system, approved design document, data sheets & drawings. Scope shall also include but not limited to the following for completion of jobs:				
a)	Supply, installation, testing & commissioning of Mg/ Zn Galvanic anodes including carrying out Thermit welding on main pipeline, suppy of clits, cables to conenct to anodes as per the standard specification- MEC/TS/05/E9/016A. The weight of the Mg Anode & the total nos. of anodes shall be calculated as per the result of corrosion survey, soil chemical analysis, total weight and current requirement of the pipeline section. However, Min one anode is to be installed at every one KM with test station. The scope of work includes the the following:and also to be carried out as poer approved design including supply of all item				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
b)	Supply, Installation, Testing & commissioning of Test stations (Big Size & Normal Size) weather proof (IP-55) as per specification & enclosed drawings.				
c)	Supply, installation, testing & commissioning of one set of spark gap arrestor 100 kA (Solid State) across each insulating joint provided at tap-off, SV & various consumer terminals as per scope of work / specification. The un-protected/above ground pipeline shall be earthed through GI earth electrodes with separate earth pit. The resistance of grounding shall be limited to 5 ohms max.				
d)	Supply, installation, testing & commissioning one set of polarization cell (Solid State) with zinc anode at all high tension electrical power transmission line/equipments /railway tractions (all 66 KV & above) crossing or running parallel to the pipeline for grounding purpose as per specification. The rating shall depend upon anticipated fault current & ground bed resistance at the location of installation. However, the rating of polarisation cell (solid state) shall not be less than 3.7 KA @ 30 cycle & number of 20 kg net weight zinc anode shall not be less than two.The resistance to earth of grounding shall be limited to 5 ohms max.				
e)	Supply & installation of Zinc Ribbon Anodes at 4-8 O'clock position in the interval of 2 meter (max.) on carrier pipes where casing pipe is coated and no addtional protection for carrier pipe where casing is bare which also includes Zn bentonite filling b/w carrier & casing cased crossings i.e. roads etc as per specification & Scope of work.				
f)	Bonding in between pipelines running parallel or crossing as required.				
g)	Supply, Laying of HDPE/PVC sheets between the BGL GAS pipeline and the other CP protected foreign pipelines at the crossing locations for providing electrical isolation.				
h)	Earthing of above ground catholically unprotected pipeline at , SV, R/T & D/T etc, as applicable the earth electrode shall be 65 mm dia, 4.5 mm thickness & 3000mm long.				
i)	Supply, installation, testing & commissioning of Electrical resistance Probes (1 No. with 1 no. of ER probe reading Instrument)(if applicable) utilizing the electrical resistance technique shall be provided along the pipeline at marshy areas and at vulnerable locations to monitor the external corrosion activity on the pipeline. Location of external ER probe shall be decided during detail engineering.				
j)	Supply, installation, testing & commissioning of Polarisation coupons (2 Nos.) (if applicable) have one side exposed area of 100 mm x 100 mm with 2 nos. of spare coupons shall be provided along the pipeline at marshy areas and at vulnerable locations to monitor the external corrosion activity on the pipeline as per enclosed standard specification. Location of external Polarisation coupons shall be decided during detail engineering. Magnetic devices for operation of magnetic switch shall be provided.				
k)	Supplying,laying ,testing of 35 ,25,10 ,6 sq.mm, 600/1100 V grade copper cables XLP insulated /PVC sheath of including excavation in soil or rock of minimum 1.2m depth below GL,				
l)	Making cable to pipe jointing by thermit welding/Pin brazing (for charged pipeline) for 35 ,25,10 ,6 sq.mm copper cable including excavation and exposing piping , recoating with epoxy, testing etc.				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
m)	Monitoring of the TCP system till commissioning of PCP system & handing over of the pipeline system to BGL.				
n)	All civil/ structural works related to TCP system including supply of bricks, cement & steel etc. required for completion of the system.				
i)	8" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	8.00		
ii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	21.00		
iii)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	6.00		
	Total Amount (all inclusive except GST)				

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PP-1	**PIPING (ABOVEGROUND)**						
	Supply, Transportation including loading, unloading & handling of all piping items fromstorage point to work site/ workshop as applicable, complete work of fabrication, erection, painting, testing of pipes, flanges and fittings, insulation joints and making ready for further Commissioning / Start-up of carbon steel piping of all sizes and ratings including supply of all consumables, equipment, manpower and other resources and execution of, but not limited to, the following works in accordance with relevant specifications & scope of work, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT. **Note : Valve erection shall be paid through separate SOR**						
-	Fabrication including cutting, edge preparation, inclusive of grinding the edges of pipes, fittings, flanges etc. to match with the matching edges of uneven/different thickness wherever required, welding, attachment of all pipe fittings like elbows, tees, reducers. Supply of nipples, couplings,caps, plugs, gasket, stud bolts, nuts, U Clamps etc. as required for completion of job.						
	Checking, cleaning, aligning, bending, cutting and bevelling (as required) of pipes for welding and field adjustments including pipe fittings, welding, carrying out non-destructive testing of welds as required including 100% radiography by Gamma-ray and providing all requisite equipment, labour, supervision, materials, films, consumables, all facilities and personnel to process, develop, examine and interpret radiographs and other tests as required, carrying out repairs of weld joints found defective by Engineer-in-Charge, carrying out re-radiography / x ray and other tests as required on repaired joints.						
-	Fixing/ Installation of weldolets, sockolets, flanges, vent and drain point connection etc., including providing stub-in connections, fabricated fittings and reinforcement pads etc., as required.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	Erection including prior cleaning, lifting, placing on pipe sleepers and supports, overhead on racks, skids and at all elevations including installation and carrying out connected activities for all types of valves including supply and fixing of gaskets, studs/ bolts, nuts wherever required for all sizes, levelling, aligning, joining of flanges, blind flanges, connecting with equipment, nozzles, strainers, tie-in with existing piping/facilities, etc. tapping for inline instruments like pressure gauges, thermowells, sample connection, etc.						
-	Preparation of final bill of material based on piping GADs.						
-	Preparation of isometric and fabrication drawings.						
-	Carrying out Non-destructive testing as required except items mentioned in sl. no. 5 of SOR.						
-	Surface preparation before application of primer by means of dry abrasive including supply of approved quality of dry abrasive, manpower, machineries, tools & tackles to achieve required roughness as per specification and as per instruction of Engineer-in-charge.						
-	Painting of entire system (including aboveground all pipes fittings, flanges and accessories) as per specification MEC/S/05/21/07 including supply of approved paints and primers, application of primer and paints, indentification lettering/ numbering, colour coding, etc. as specified including rub down & touch up of shop primer or scrapping of shop primer wherever required by COMPANY and providing scafolding for all heights etc.						
-	Cleaning and flushing by water/ compressed air, testing of the systems including hydrostatic, pneumatic and any other type of testing as specified, draining, drying by compressed air/other methods approved by COMPANY.						
-	Precommissioning & making operational all piping system and equipments and provide all necessary assistance in term of supply of man-power, equipment, tools and tackles required amount of nitrogen for purging of entire terminal piping system including equipments etc. to the company during commissioning activities.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	Clean-up and restoration of site, preparation of as built drawings, documents and project records; transportation of surplus free issue material to Owner's designated plac(s); completing all works in all respects as per the AFC drawing, specifications, standards and other provisions of Contract and instruction of Engineer-in-charge.						
-	Completion of all such work in all respects as per scope of work and as per drawings, specifications and instructions of the Engineer-In-Charge and keeping the system ready in all respects for further commissioning and start up.						
-	Hook-up works including making provision for hooking up and carrying out shutdown activities at terminals if necessary.						
1.1	Complete Carbon Steel Piping Work with painting including all fittings, flanges and supply of all required gaskets, studs bolts & nuts etc. as described under item 1.0 above						
1.1.1	Pipes of different grades and thickness	m	6"NB		500		
1.1.2	Pipes of different grades and thickness	m	4" NB		2500		
1.1.3	Pipes of different grades and thickness	m	8"NB		500		
PP-2	**SUPPLY & ERECTION OF ASSORTED PIPE, FITTINGS AND FLANGES AND INSULATION JOINTS**						
	Complete work of supply of pipes, fittings and flanges , insulation joints including all taxes, duties, transportation and inspection charges but not limited to, the following items in accordance with relevant specifications indicated in clause of SCC & scope of work indicated in SCC, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT.						
-	Handling including lifting, transportation from Contractor Stores to CONTRACTOR's workshop for fabrication and/ or to work site for field fabrication and erection for all piping items supplied by Contractor.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.1	**CARBON STEEL PIPES**						
2.1.1	CS pipe Sch.80 API 5L, Gr. B, PSL-2, Seamless, BE / ASTM A106, Gr. B (Charpy), Seamless, BE	m	2" NB	S80	500		
2.1.2		m	1" NB	S80	100		
2.1.3		m	¾" NB	S160	100		
2.2	**FLANGES**						
	Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)						
2.2.1	(End Thickness to match pipe thickness)	Nos.	6"	300#	20		
2.2.2		Nos.	4"	300#	40		
2.2.3		Nos.	2"	300#	24		
2.2.4		Nos.	8"	300#	10		
2.2.5	Socket Welded (B-16.5, A105, 125 AARH, SW end to B16.11)						
2.2.6	**Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)**	Nos.	6"	300#	5		
2.2.7		Nos.	4"	300#	10		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.2.8		Nos.	2"	300#	10		
2.2.9		Nos.	8"	300#	10		
2.3	**ELBOW**						
2.3.1	90° Elbow (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.3.2		Nos.	6"	S40	10		
2.3.3		Nos.	4"	S40	30		
2.3.4		Nos.	2"	XS	25		
2.3.5	90° Elbow (A234, Gr. WPB (Charpy), B-16.11, 1.5D), SW	Nos.	3/4"	XS	10		
2.4	**TEE**						
2.4.1	Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.4.2		Nos.	4"	S40	20		
2.4.3			6"		10		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Equal Tee (A234, Gr. WPB (Charpy), B-16.11, 1.5D), SW	Nos.	3/4"		5		
2.4.4	Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW	Nos.	4" x 2"	S40 x XS	20		
2.5	**REDUCER**						
	Concentric Reducer (A234, Gr. WPB (Charpy), B-16.9)						
2.5.1		Nos.	4" x 3"	S40	30		
2.5.2		Nos.	6" x 4"	S40	10		
2.5.3		Nos.	2"x1"	XS	5		
2.5.4							
2.5.5							
2.6	**SOCKOLET** (A105, SW)						
2.6.1		Nos.	4" x ¾"	3000#	20		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.6.2		Nos.	4" x 1"	3000#	20		
2.8	**INSULATING JOINTS** (As per Standard Specification and Data Sheets enclosed). **Insulation joints will be issued as free issue items**						
2.8.1		Nos.	4"	300#	23		
2.8.2		Nos.	6"	300#	2		
2.8.3		Nos.	8"	300#	2		
	Note:a) All butt welded fittings end shall generally match with connecting pipe wall thickness however in case of misalignment Contractor shall have to do end preparation without any extra cost.						
	B) All coupling, nipples etc. as required shall be supplied by contractor but no separate payments shall be made as it is covered under erection rate.						
PP-3	**SUPPLY & ERECTION OF VALVES**						
	Handling including lifting and transportation from COMPANY's warehouse to CONTRACTOR'S Stores and/or work site and installation of all types of valves including assembly of valve accessories, (if any) by bolting, threading or welding, supply and insertion of gaskets, nuts & bolts, nipples, etc. at all elevations of pipe sleepers, supports or overhead on racks, equipments nozzle, skid & painting etc. supply of all consumables, manpower, equipment, etc. for completion of all works as per scope of work and as per drawings, specifications and instructions of Engineer-in-charge including servicing/ cleaning of valve wherever requried. **For 8", 6", & 4" NB valves are under free issue items.**						
3.1	**Butt welded Valves (Full Bore/ Reduced Bore)**						
	Ballvalves BW, FB	Nos.	8"	300#	1		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.1.1	Ballvalves BW, FB	Nos.	6"	300#	1		
3.1.2	Ballvalves BW, FB	Nos.	4"	300#	11		
3.2.2	Ballvalves RF, FB	Nos.	2"	300#	11		
3.2.6	Ballvalves SW, FB	Nos.	¾"	800#	11		
PP-5	**Installation of MRS/DRS**						
5.1	Handling, including lifting, transportation from Company's stores at Hyderabad to Contractor's work-shop for fabrication or/ and to worksite for field fabrication, assembly of parts/ sub-assemblies erection for all vessels, equipments, skid supplied by company above ground/ underground at all elevation/ depth, fixing of foundation bolts welding wherever required, alinging, grouting, hooking-up, cleaning and flushing by water draining, drying by compressed air providing all mountings, ancilliary, enabling works as required and completing in all respect as per drawings, specification and instruction of Engineer-in-charge. Contractor's scope shall include supply of all material and accessories including but not limited to any fixtures, clamps, gasket, nut bolts, finish coat of painting including rub down & touch up of shop primer/ paint scrapping of shop primer/ paint and further their painting after application of primer as per specification, wherever required by Company.						
5.1.1	MRS/DRS	Nos.			10		
Note:	1) The quantities given above against individual items are indicative and shall not be considered to be binding. The quantities may be increased, decreased or deleted at site at the time of actual execution. Procurement shall be done as per actual site condition, approved construction drawings and as per instruction of Engineer-in-charge. The unit rate shall be operated to work out the final payment to the contractor.						
	2) In each area, quantities given against individual item may be utilise/ used for other consumer in same area.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	3) The rates quoted shall be applicable for all Terminals						
	Total Amount (all inclusive except GST)						

3-(II)	CIVIL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
CIV-1	SITE CLEARANCE				
a)	DEMOLITION OF R.C.C./BRICKS/STONE MASONARY				
	Site clearance by demolition of R.C.C./Brickwork/Stone masonry/ Stone soling, Flexible pavements (including steel bars)etc.,alongwith removing the debris and disposal of unserviceable material to any lead and staking of serviceable materials, handing over serviceable material to concerned department if required as per technical specifications and direction of Engineer-in-charge.	M3	50		
b)	TREE CUTTING				
	Tree cutting (only of girth more than 30 cm shall be counted for payments) including royalties, disposal, taking approval from competent authorities etc. all complete, as per technical specifications and direction of Engineer-in-charge.	Nos.	50		
CIV-2	EARTH WORK IN EXCAVATION/ SITE GRADING AND BACKFILLING				
a)	Earth work in excavation,site grading and backfilling in all kinds of soil including soft rock in any plan dimension up to 3.0M depth including disposal of excavated surplus and unserviceable earth up to any lead in all conditions. Soil to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings, as per technical specifications and directions of the Engineer-in-charge.	M3	300		
CIV-3	EARTH WORK IN EXCAVATION/ SITE GRADING IN HARD ROCK				
a)	Earth work in excavation in hard rock requiring blasting for all type and size of foundations in any plan dimension up to required depth including disposal of excavated material up to any lead in all conditions, and disposal of surplus and unserviceable material. Surface to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings and directions of the Engineer-in-charge.	M3	100		
CIV-4	EARTH WORK IN FILLING				
a)	Earth work in filling with good quality imported earth from approved source in the layers of 150 mm and compacted up to 95% to its MDD up to 3 m depth and any plan dimension including all testing, watering, rolling each layer with 1/2 tonne roller or wooden or steel rammers, and dressing / filling up ground depressions etc. complete in all respect as per scope of work, detailed construction drawings , as per technical specifications and directions of the Engineer-in-charge.	M3	100		
CIV-5	PLAIN CEMENT CONCRETE				

3-(II)	CIVIL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
a)	Supplying and laying plain cement concrete with stone aggregate 20mm down grade (including shuttering if required) in all types of concrete works including levelling courses below foundations, columns, pedestals, pedestal bases, pipe supports,floors, chambers, cable trench, under floors and any other locations (which are not covered as part of composite items) , at all levels and locations as per drawings, specifications and directions of the Engineer-in-charge.				
	i) 1:2:4	M3	300		
	ii) 1:4:8	M3	200		
CIV-6	**REINFORCED CEMENT CONCRETE**				
	Providing and laying RCC (reinforced cement concrete) of grade M-25 with 20mm and down grade crushed stone aggregate in all types of structures like Beams, foundations, walls, columns, pedestals, pedestal bases, pipe supports, sleepers, cable trench, RCC retaining wall foundation for boundary wall including construction joints, shuttering at all depths and levels complete as per drawings, specifications and directions of the Engineer-in-charge.				
	i) Sub structures	M3	200		
	ii) Super structures	M3	300		
CIV-7	**REINFORCEMENT STEEL**				
	Supplying and Fabricating and Fixing in position HYSD Steel Reinforcements/ TMT Grade Fe-415 conforming to IS1786-1985 at all levels (all deapth & hights) and positions including the Cost of transport, Straightening, Cutting, Bending, Cranking, Binding, Welding, Provision of necessary Chairs and Spacers, Preparation of bar bending schedule, getting the same approved by EIC etc., complete as per Drawings and Specifications and including Cost of binding wire, Labour etc., all complete in all respects as per scope of work, detailed construction drawings, technical specifications and direction of Engineer-in-charge. The chairs and spacer bars provided will not be Measured for payment.	MT	15		
CIV-8	**CEMENT CONCRETE BLOCK WORK**				
	Providing and laying cement blocks (solid blocks) masonry Grade M 7.5 with 200 mm thick blocks upto plinth level and super structure in cement mortar 1:4 (1 cement : 4 coarse sand).	M3	20		
CIV-9	**BRICK WORK**				

3-(II)	CIVIL WORKS				
Sl. No.	**Description of Item**	**Unit**	**Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Providing and laying brick work with brick class designation M-7.5 of IS:1077 in Cement Mortar 1:4 (1cement : 4 sand) in steps, compound wall, drains, or at any other location at all depths & height for all leads including providing required finishes, curing, scaffolding, etc., complete as per specifications and drawings with all bye-works as per direction of the Engineer-in-charge.	M3	200		
CIV-10	**PAVER BLOCK FLOORING**				
	Supply , construction and handing over of CC inter locking paver block 80 mm thick, I shape, rough finish, M-30 strength of approved brand laid over the sand bed of minimum 50 mm thick. The CC interlocking blocks to be of uniform Grey colour or as approved by EIC complete in all respects as per scope of work, detailed construction drawings, technical specifications and directions of the Engineer-in-charge.	M2	500		
CIV-11	**SAND FILLING**				
	Supplying and filling Sand in maximum 300 mm thick layers and compacting by rolling, ramming, consolidating and dressing the surface including cost of sand (zone-II/Zone-III sand only) complete in all respect as per scope of work, detailed construction drawings as per technical specifications and directions of the Engineer-in-charge.	M3	200		
	Total Amount (all inclusive except GST)				

3-(III) STRUCTURAL WORKS					
Sl. No.	**Description of Item**	**Unit**	**Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
				Figures	**(4) x (5)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ST-1	**Providing and fixing chain link Fencing**				
	Supply, fabrication and erection of structures such as angle iron post/Channel post,Strainer and strut,etc.with necessary holes for fixing the chain link fencing,site assembly and finally erection of structures at appropriate location with painting as per specification,including 2.0m high G.I. Chain link fabric fencing mesh size 50x50x3.15 mm dia, with 0.5 m heigh barbed wire (type-A) as per IS:278-1978 shall be made from two strands of galvanized steel wire of nominal dia 2.5 mm twisted together fixed on fencing posts with GI staples, turn buckles etc, including strengthening with 4 mm dia wire Nuts bolts and washer complete in all respects.All work as per Specification and drawings and as direction of the Engineer-In-Charge(excluding foundation and RCC beams Refer Standard drawing)	R.M	**200**		
ST-2	**Providing and fixing Fencing Gates**				
	Supplying, fabrication & fixing of fencing Mild steel gate 2.5m high with Chian link fencing mesh upto 2m height and 0.5m barbed wire fencing including all fixtures like MS Pivot,locking arrangement, tower bolt etc.complete in all respects including painting ,all work as per Specification and drawings and as direction of the Engineer-In-Charge (excluding foundations and RCC beams)				
a)	2m Wide Gate	Nos.	**15**		

3-(III) STRUCTURAL WORKS					
Sl. No.	**Description of Item**	**Unit**	**Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
				Figures	**(4) x (5)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ST-3	**Steel structure Fabrication & Erection**				
	Supply ,fabrication and erection of all types of pipes supports like clamps saddle,guide stops,cradles,turn buckles,anchors,T-post,stockade/trestle and pipe bridge for over head piping ,approach ladders and platform,crossover,cable tray supports,etc. including painting as per painting specification(Bolts,nuts,washer,U-clamps etc. shall be supplied by the contractor within the rates quoted.These items will not be measured and paid seperately).The work is to be completed in all respect as per drawings and techanical specification and direction of the Engineer-in-Charge	KG	**1500**		
	Total Amount (all inclusive except GST)				

3-(IV)	ELECTRICAL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
EL-1	EARTHING				
	Supply, installation, testing & commissioning of the complete earthing system, earth electrodes/pit, earth main ring, earthing of metering skid, electrical equipments, instrument panels, field instruments, process equipments & pipes / flanges and accessories such as GI wire, wire rope and all balance earthing material as per the specification including all associated civil work with all material & labour as per specification & drawings approved by the company.				
1.1	Earth Electrodes including earthpit with 6 mm thick chequered plate cover	Nos.	50		
1.2	GI Strip (25 x 5) mm	Meters	300		
	Total Amount (all inclusive except GST)				

3-(V)	INSTRUMENTATION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
	(2)	(3)	(4)	(5)	(6)
IN-1	**Supply, Calibration and Installation of instrumentation items listed below**				
1.1	Pressure Gauges, Pressure Rating 300# Pressure Range 0 - 50 Kg/cm2 (Includes supply of two isolation valves per each gauge to provide double isolation)	Nos.	10		
1.2	Temperature Gauges [Range 0 - 100°C]	Nos.	10		
IN-2	**EARTHING**				
6.1	Supply 8 SWG G.I. Wire	Mtrs.	50		
6.2	Laying and termination of both ends from earth grid to Field instruments/JBs/Control Panel by 8 SWG G.I. Wire in tray and conduits as required excluding earth-pit preparation.	Mtrs.	50		
6.3	Supply of 4 sq. mm. PVC insulated armoured copper cable	Mtrs.	50		
6.4	Laying and Termination of both ends of 4 sq. mm. PVC insulated armoured copper cable from earth pit to the barrier earth bus bar in trays/conduits/trenches as required.	Mtrs.	50		
	Total Amount (all inclusive except GST)				

SUMMARY OF SCHEDULE OF RATES- PART-C
FOR
LAYING & CONSTRUCTION OF 8", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT IN EAST & WEST GODAVARI DIST. (A.P)
Bid No.MEC/23TS/01/51/S2/ST/ER/0007

Sl. No.	Description	in INR	
		(In Figures)	(In Words)
1	Total amount (all inclusive except GST) for Mainline Works SOR		
2	Total amount (all inclusive except GST) for Cathodic Protection Works SOR		
3	Terminal Works		
I)	Total amount (all inclusive except GST) for Piping & Mechanical Works SOR		
II)	Total amount (all inclusive except GST) for Civil Works SOR		
III)	Total amount (all inclusive except GST) for Structural Works SOR		
IV)	Total amount (all inclusive except GST) for Electrical Works SOR		
V)	Total amount (all inclusive except GST) for Instrumentation Works SOR		
4	Gross Total Amount (all inclusive except GST) [1+2+(3-I)+(3-II)+(3-III)+(3-IV)+(3-V)]		
5	**GST @ 18.00% on Total Amount mentioned at Sl. No. 4 above**		
6	**GST @ 18.00% on free issue material of INR 8.7 Crores**	**15,660,000.00**	Rupees One Crore Fifty Six Lakhs Sixty Thousand Only
7	**Gross Total Amount (Sl. No. 4 + 5 + 6)**		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(a)	(b)	(c)	(d)	(e)	(f)
ML-1	CARBON STEEL PIPES				
1.1	PIPELINE SUPPLY, LAYING / INSTALLATION				
	a) Coated Steel pipe lines supply & laying				
	Receiving , loading , unloading and transportation and stacking of 3-Layer PE coated and bare line pipes to Contractor's stock yard/workshop/work-site. The scope of contractor includes preparation of drawings, wherever required for crossing etc. including handling, stacking, stringing on the pipeline route alignment, carrying out inspection of materials including linepipes , laying/ installation of coated linepipes as per specification wherever required depending on site condition including execution of all works, handling , including loading and unloading, transportation of all the materials to work site. Arrangement of all additional lands required for Contractor's storage, fabrication, access for construction, procurement and supply of all materials , consumables, equipment, labour and other inputs, carrying out all temporary, ancillary, auxiliary works, ready for commissioning of pipeline as per drawings, specifications, other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:				
	Surveying of route and detours required at the time of execution including marking the same in topographical sheet, preparation of construction drawings showing survey details, and submit same to Owner for review / approval.				
	Clearing, full filling all the requirements of various statutory/ environment authorities to the entire satisfaction of concerned authorities, grading of work area. Relocating of any obstruction within the Pipeline route alignment / Approved route viz. electrical lines/ poles, telephone line / poles, foreign pipeline, etc. in co-ordination with concerned authorities and obtain permissions from these authorities for pipeline execution.				
	Trenching to all depths by excavation in all types of soils **except built up sections** on top as different type of pavement / footpath / roads etc. as required by using mechanical excavator or manually depending on the site condition and storing excavated soil, reusable materials at designated area as directed by Engineer in charge and to a width to accommodate the pipeline as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0m measured from top of pipeline coating to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition is included in the scope of contractor. As SVs shall be buried on the pipeline alignment itself with RCC pits with covers. The steel pipeline has to be taken to the required lower depth by use of slope or vertical bends to accommodate the above without additional cost to GGPL				
	During the execution of the work, the construction area shall be barricaded to ensure the smooth execution of work and safety of the public/ working area. The item also includes fabrication, trsansportation and placing the barricading at the site. Barricading to be made as per approved drawing and to the entire satisfaction of Owner / Engineer-in-charge.				
	Carrying out repairs of pipe defects/ replacement in case of irreparable defects and repairs of defects of pipe coating not attributable to Owner including defects/ damages occurring during transportation / handling.				
	Stringing of line pipes along pipeline trench /sand / soft soil bags including supply of bags and its filling materials.				
	Checking, cleaning, aligning, bending, cutting and bevelling (as required) of pipes for welding and field adjustments including pipe fittings, welding, carrying out non-destructive testing of welds as required including 100% radiography by Gamma-ray / x ray and providing all requisite equipment, labour, supervision, materials, films, consumables, all facilities and personnel to process, develop, examine and interpret radiographs and other tests as required, carrying out repairs of weld joints found defective by Engineer-in-Charge, carrying out re-radiography and other tests as required on repaired joints.				
	Carrying out installation of carrier line pipe at all minor crossing viz. road, carttrack, pathway, water bodies etc. at designated depth by open cut (except at crossing by HDD method/ moling / Augur boring).				
	The above item also include liasioning with state authorities / owners : Obtaining ROU and all permissions from the concerned land-owning / statutory authorities along the proposed route / area. However, the required statutory / mandatory fees will be paid by M/s GGPL against demand note.The liasioning during the pipeline laying execution with local authorities & local officials, traffic ploice, police and any other utility companies / agencies such OFC operators etc are in the scope of the contractor. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner/other utility agencies) is in scope of the contarctor. Liasioning for other associated works like SV station / DRS Station & valve pits etc. also included in this.				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Coating of field weld joints, long radius bends (R=3D), elbows, buried fittings and valves etc. including supply of coating materials etc. (i.e. heat shrinkable sleeves and high build epoxy etc.) as per PJS & Technical Specification compatible with 3 layer PE coating material of the line pipe.				
	Installation of LR Bend (R = 3D) , as per specification wherever required depending on site condition.				
	Installation / lowering the pipeline in trench to required depth as per PJS, Technical Specification & drawings including padding around pipeline with suitable soil duly approved by EIC including supply of padding material, backfilling and its compaction to the satisfaction of concerned authorities with excavated earth / borrowed select soil including supply of borrowed select soil duly approved by EIC.				
	Supply & Installation of warning mat (OD+100 mm width and 0.5 mm thick) on the entire length of the pipeline as per specification.				
	Supply and installation of slope breakers, wherever required or, as directed by Owner / Engineer–in–charge.				
	Crossing the all-foreign pipeline / HT line / cable / any other utilities etc. with necessary concrete / PVC protection including coordination with all agencies and obtaining NOC.				
	Carrying out air cleaning, flushing, cleaning and hydrostatic testing of complete pipeline with required quantity of corrosion inhibitor including pre-testing of designated sections complete as per specification and approved by Engineer–in–charge to specified pressures indicated elsewhere and duration after stabilization as per specification, providing all equipment, pumps, fittings, instruments, dead weight tester, pressure recorder, thermocouples etc., and services, supervision, labour, consumables, water including supply of corrosion inhibitor, air, etc. as required, locating of leaks and rectification of defect attributable to Contractor (rectification of defects in linepipe material not attributable to contractor shall be paid separately as per other item of schedule of rate), re-testing after rectification, dewatering after successful completion of hydrotesting of entire section and as approved by Engineer-in-Charge.				
	(Note : Leak detection, its rectification and successfully re-hydrotesting shall be carried out by Contractor with a view that completion of all activity for successful hydrotesting is not inordinately extended, which will hamper the overall project schedule. Further, no extra payment claim shall be entertained for re-hydrotesting and leak detection if defects found attributable to Contractor.				
	All tieing-in, including the tie-in(s) of the pipeline with the adjacent sections of pipeline including cutting of test header, rebevelling as required, radiography and other NDT examination, joint coating as per specification.				
	Final clean-up & restoration of right-of-use or area disturbed by contractor including obtaining NOC from respective land owner and statutory authorities during their construction activities for laying of pipeline works and disposal of debris, excess soil to designated disposal areas as per local authorities/GGPL and returning all surplus material to designated storage yard and backfilling of trench and compaction of the same as per satisfaction of Owner and / Or as directed by Engineer–in–charge.				
	Restoration of land, facilities and boundary wall etc. and associated facilities dismantled/damaged by the Contractor during construction;				
	Installation of all burried valves inside the valve pit and making provision to operate the valve.				
	Protective coating of 500 micron thick two component (applied with the help of minimum three coats) liquid epoxy including supply of materials duly approved by Owner for all piping valves, fittings, structural steels etc. for buried installation and inside the valve pit as approved by the Engineer-in-charge.				
	Carrying out all temporary, ancillary, auxiliary works and all incidental works required to make the pipeline ready for pre-commissioning;				
	Preparation of as-built drawings, pipe-books including collection of GPS co-ordinates.(Drawings /documents to be submitted as pr SCC) All the works shall be executed in accordance with the provision of contract including carrying out all temporary/ ancillary/ auxiliary works required for the performance of the works and all other acts, deeds, matters and things necessary to make the pipeline ready for precommissioning activities.				
	Any other activities not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to GGPL. All the work shall be executed in accordance with the provision of contract.				
	Installation of Coated Line Pipes as per following details:				
	Specified dia, NB Thk (mm) Material Coating Type Length of each pipe (mm)				
1.1.1	200 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	670		

Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
1	**MAINLINE WORKS**				
1.1.2	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	12730		
1.1.3	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	9380		
	Note:				
i)	This item shall be applicable for the underground steel grid main pipeline & branch pipeline including tap-off for distribution pipelines, valves, barred tees, insulating joints, bends (R=3D), flanges & fittings, accessories etc. , tie-in of valve assembly including radiography of tie-in joints as per Schematic Layout Drawings of respective sections, Technical Specification and aboveground approach pipeline upto Insulating Joint (including installation of aboveground / underground insulating joint) for various stations.				
ii)	Supply of all valves, flanges, fittings, assorted pipes, barred tees & insulating Joints, etc. shall be paid by separate item mentioned elsewhere in SOR.				
iii)	In above item, backfilling of pipeline trench by borrowed select soil duly approved by Owner / EIC shall be paid by separate item mentioned elsewhere in the SOR.				
iv)	Contractor shall not perform any pipeline activities along Pipe alignment without specified barricading as per Std. Drg. and other safety measures.				
v)	The lengths of pipelines are tentative. All items required to complete the laying and commissioning except the Items covered separately in this SOR are included under the scope of this item				
vi)	Cutting of Hard Rock shall be paid on CUM basis as per separate SOR.				
vii)	**Carbon steell coated steel pipes of Size 8", 6" & 4" NB pipes will be issued as free issue items.**				
1.2	**Same as item 1.1 above but with built up sections (different type of pavement / footpath / roads etc. which includes Asphalt roads, Tiled pavement and PCC/RCC roads) on the top surface**				
	Installation of Coated Line Pipes				
	Specified dia, NB Thk (mm) Material Coating Type Length of each pipe (mm)				
1.2.1	200 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	100		
1.2.2	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	1900		
1.2.3	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	1400		
1.3	**PIPELINE LAYING / INSTALLATION OF MDPE PIPES IN TRENCH ADJUNCT TO STEEL PIPE LINE TRENCH**				
	Trenching to all depths by excavation in all types of soils except built up sections on top as different type of pavement / footpath / roads etc. Storing excavated soil, reusable materials at designated area as directed by Engineer in charge and to a width (steel pipe line to MDPE clearance shall be minimum 150 mm) to accommodate the pipeline , MDPE Pipe (125 mm, SDR 11, PE 100 Pipe) as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0m measured from top of pipeline to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition. Laying of steel pipe line will be paid separately as per SOR item no.1.1 /1.2				
	Loading, storing, unloading and laying of PE100, SDR11 line pipes of size 125 mm in steel pipe line trench including ,proper stacking, identification,and supply of accessories of all sizes & thickness like PE Bends, Couplers, Endcaps, Tee, Reducer, CS to PE Fittings, Saddle Tapping, GI sleeves etc.. Handling, Stringing/ uncoiling,aligning of the PE line pipe on the pipeline Right-of-Use/route , laying/ installation of PE line pipe alongwith required accessories as mentioned above as per specification wherever required depending on site condition including execution of all works; additional lands required for contractor's storage , fabrication, access for construction;procurement and supply of all materials , consumables,equipments, labour and other inputs. In case of free issue items,the scope also includes, receiving and loading from GGPL designated store, transportation, unloading and stacking of free issue items at Contractor's store				
	Carrying out all temporary, ancillary, auxiliary works required to make the PE pipeline ready for commissioning including cleaning, flushing and removing the ingress of water / moisture etc., as per drawings.				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Specifications, scope of work indicated in PJS and other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:				
	Carrying out preliminary activities such as preperation of drawings wherever required for crossing etc.				
	Preparation and getting approval of schedules, execution procedures, drawings/ sketches/ wherever required, making trial pits to determine the underground utilities/ services etc., restoration of the abandoned trial pits to original condition.				
	Uncoiling/ stringing & aligning of PE pipes, clamping, jointing of the pipe ends/ fittings/ valves by qualified personnel using approved electro-fusion techniques as per specification.				
	Installation / lowering the pipeline in trench to required depth as per PJS, Technical Specification & drawings.				
	Electro-fusion jointing of valves wherever required and as directed by Engineer-in-charge.				
	Pneumatic testing, purging with nitrogen and commissioning as per specification and approved procedures providing all tools and tackles, nitrogen, instruments, manpower and other related accessories and as per the instructions of the Engineer-in-charge.				
	Supply and installation of bricks (class 50) of 230 mm width over MDPE pipes for the entire length				
	Supply & Installation of warning mat (250 mm width and 0.5 mm thick) on the entire length of the pipeline as per specification.				
	Any other activities not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to GGPL. All the work shall be executed in accordance with the provision of contract.				
1.3.1	PE 100 (Size 125 mm) Pipe	Meter	3315		
	Note: The Quoted rate shall be of laying of MDPE pipeline laying adjunct to steel pipe line trench . Steel pipe line laying will be paid separately under SOR item no.1.1. CS main pipes & MDPE pipes are free issue materials to the contractor. Any stand-alone trenching required to detour PE pipeline laying due to space constraint shall be in the scope of contractor without any extra cost to GGPL				
1.4	**Same as item 1.3 above but with built up sections (different type of pavement / footpath / roads etc.) on the top surface:**				
1.4.1	PE 100 (Size 125 mm) Pipe	Meter	510		
1.5	**Cutting/ breaking of hard rock found in trenches using mechanical means such as rock breakers / excavators (blasting prohibited) etc. Scope also includes disposal of rocky earth after breaking to designated disposal areas as per local authorities/GGPL. (wherever hard rock of single piece exceeding 1.0 m in length along the trench direction as per the decision & direction of EIC)**	CUM	3400		
ML-2	**Restoration of asphalted roads / concrete roads / pavements / foot paths, wherever instructed by EIC .Job includes getting NOC from the concerned authorities.**				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
a)	**Asphalt road** :Restoration of bitumen Asphalt road after laying of Pipe lines as per the drawing no. MEC/23TS/01/11/D2/ST/LY/0211/R00/A3 , specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per requirement of **NH/etc.** and to get NOC from the concerned authorities. Restoration of the asphalt road cut portion for pipeline trench width shall be carried out by filling the bottom layer with with stone dust / Quarry dust watering & compaction followed by 200mm thk GSB & 250 mm thk WMM with top bituminous layers comprising of primer coat, tack coat, 50mm thk DBM & 40 mm thk BC matching with the existing road top level.This item alos includes disposal of surplus soil / debris with all lift & leads.	Meter	1000		
b)	**Asphalt road** :Restoration of bitumen Asphalt road after laying of Pipe lines as per the drawing no. MEC/23TS/01/11/D2/ST/LY/0210/R00/A3 , specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per specifications / drawing and to get NOC from the concerned authorities. This item alos includes disposal of surplus soil / debris with all lift & leads.	Meter	2550		
b)	Restroration of the all kind of pathway by using excavated material such as tiles/pavers/granite/red stone etc by providing PCC 1:4:8 of 75mm thickness below or as per construction found and making it as original . Item includes providing of extra material if required due to breakage during excavation work such as Tiles/Paver/Granite etc matching to original pathways.	Meter	1000		
c)	**Reinforced Cement Concrete road/ pavement:** Restroration of Reinforced concrete road and pavements shall be done by providing PCC 1:4:8 of 75 mm thick and RCC 1:2:4 of 100 mm thickness and providing minimum 8mm dia reinforcement steel at 200mm c/c . The cost of reinforcement . Shuttering, compacting the base surface etc. are in the scope of this item.	Meter	2550		
ML-3	**BORROWED SELECT SOIL FOR BACKFILLING**				
	Additional work over and above item 1.5 for supply of specified and approved quality of borrowed foreign soft graded soil / sand in place of available excavated material and / or other suitable soil as per applicable standards / specifications, including backfilling of excavated trench for specified length after laying and padding of pipeline, including transportation of such special backfill material over all distances, complete. (Also to be used in open cut road crossing if required as per decision of EIC)	CUM	3400		
ML-4	**Steel Pipeline CROSSINGS BY HDD without casing**				
	Complete work of the road /Nala crossing (between the limits are defined as in approved drawings) by HDD method including transporation of three layer PE coated line pipes from Contractor's designated place / storage work site including all handling loading, unloading, aligning etc., manpower, equipment, other resources and aquiring the required land for storage, fabrication inclduing string preparation of pipes(carrier), welding, welding repair, radiography, coating of field joints with special type Heat Shrink Sleeve (DIREX SLEEVE)and repair of pipeline coating with special repair patch materials as per specification, pre-testing etc. of complete string made for crossing access for Contractor etc. and execution of, but not limited to, following works in accordance with specifications and instruction of Engineer-in-charge and as per all provision of Contract Document.				
	Pre-construction survey based on site visit, collection of data (if required) from concerned Authority including design and detail engineering and making of crossing drawings for getting their approval from concerned Authority/ & Engineer-in-charge, getting work permit/ NOC for road/ Nala crossing as well as utility crossings (if any) encountered during road/ Nala crossing prior to start the execution of work.				
	Directional drilling to required depth from top of road/ Nala Bed including maintenance of drill hole in all types of strata including rocky terrain at all depth to accommodate the pipeline at all conditions encountered during road/ Nala crossing by approved HDD methods for providing minimum cover specified in code/ specification or the actual depth as decided by concerned authority, whichever is more.				
	Backfilling of the ditch/ trench including restoration and cleanup of area and all other works including pigging, cleaning, final hydrotesting etc. alongwith mainline works (as mentioned in item no. 1.0 above) required as per specification, approved drawings, calculations, methods and to the satisfaction of Engineer-in-charge and/or as directed by concerned Authority.				
4.1	**ROAD/Nala CROSSINGS by HDD: in all type of soil**				
4.1.1	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 8" NB, 6.4 mm thk API 5LX52	Meter	130		
4.1.2	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 6" NB, 6.4 mm thk API 5LX52	Meter	2470		
4.1.3	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 4" NB, 6.4 mm thk API 5LX52	Meter	1820		
ML-5	**CASED CROSSING WITH HDD:**				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Complete work of the road (National Highway, State Highway, MDR) or Rail crossing (between the limits as defined in approved drawings) including handling, loading, transportation, unloading to Contractor's own stock yard/ work site.				
	Pre-construction survey and making of crossing drawing based on site visit and getting their approval from concerned Authority/ & Engineer-in-charge prior to start the execution of work.				
	Supply and Installation of casing pipe by jacking/ boring/or as described below for rail crossings in all type of soil strata including soft / hard rock and open cut for adjacent service road, canal, minor nature of water channel, utility line crossing etc. (if any) wherever required for all depth in all type of soils and terrrain for carrier pipe insertion. All other Contractor supplied materials like casing insulators, Zinc Ribbon Anodes and casing end seals as per enclosed specification/ drawings materials for casing vents and drain assembly etc. including supply of all other materials, equipments, consumables, manpower, welding including visual inspection of all weld joints. The casing pipes shall conform to material API 5L Gr. B / IS : 3589 or equivalent ERW Pipe duly Corrosion coated of High build epoxy of minimum 450 microns thickness				
	Preparation of required length of carrier pipeline welded string including all other works as mentioned in item no. 1.0 above and as per specification/ drawings. Insertion of carrier pipe in casing pipe after above ground pretesting at specified test pressure including installation of casing insulators and Zn ribbon anode as per approved design calculation, specification/ drawings. Insatllation of vent and drain assembly, fixing of end seals, backfilling and restoration as original of the facilities crossed and performing all other works including pigging, cleaning, final hydrotesting etc. alongwith mainline works (as mentioned in item no. 1.0 above) and as per specification, approved procedure, drawing etc. and instruction of Engineer-in-charge and provision of contract document, getting NOC from all concerned Authority of the facilities crossed.				
	2.5 m min depth to maintain throughout the railway crossing as per instruction of railway DRM.				
	Major crossings like railways & Highways				
5.10	Cased crossings in all type of Soil				
5.1.1	By Jacking/ Boring of Casing Pipe 14" NB.with 8" NB pipeline	M	100.00		
5.1.2	By Jacking/ Boring of Casing Pipe 12" NB.with 6" NB pipeline	M	1,900.00		
5.1.3	By Jacking/ Boring of Casing Pipe 10" NB.with 4" NB pipeline	M	1,400.00		
	Note: (i) Actual length & cover from top of casing pipe string may vary depending upon site conditions, approved drawings, specification etc. and / or as decided by concerned Authority / Engineer-in-charge.				
	(ii) Payment for supply & installation of Zinc ribbon anode and its design excluded from above item and covered elsewhere in the SOR.				
	(iii) Payment for the length carrier pipeline string inserted in casing pipe laid by Boring are covered separately and shall be paid under other items mentioned elesewhere in the SOR.				
	(iv) Width of above crossings indicated are tentative. The width indicated in SOR item 5.1.3 to 5.1.6 are not for any single crossings. This shall be as per requirement at site for crossings at different locations.				
ML-6	**PERMANENT MARKERS**				
	Supply, fabrication and installation of all types of permanent markers along the route including all associated civil works such as excavation in all types of soil, construction in all types of soil, construction of pedestals and grouting with concrete, clearing, supply and application of approved colour and quality of primer and paint, stencil letter cutting for numbers, direction, change etc., restoration of area to original condition and performing all works as per drawing, specification and instruction of engineer-in-charge.				
6.1	Pipeline RCC boundary / route marker as per drawing	Nos.	340		
6.2	Pipeline warning markers with post & foundations	Nos.	50		
6.3	Pipeline warning plate markers without post & foundations	Nos.	50		
6.4	Pipeline direction marker with post & foundations	Nos.	50		

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
6.5	Pipeline KM with post & foundations	Nos.	34		
ML-7	**PRE-COMMISSIONING AND ASSISTANCE IN COMMISSIONING OF PIPELINE SYSTEM**				
	Swabbing, drying, purging with nitrogen of the complete pipeline network and the associated facilities being installed to the specified acceptance criteria, carrying out pre-commissioning works, providing assistance during the complete duration of commissioning operations for entire pipeline network system including supply of all equipment, man-power, consumables (including pigs & nitrogen required for purging with maintaining nitrogen column of mininum 10% of pipeline geometric volume) materials for all temporary works and performing all associated works, complete as per the relevant specifications, other provisions of Contract document and instructions of Engineer-in-charge.				
7.1	For 8" NB Pipe line	Meter	1000		
7.2	For 6" NB Pipe Line	Meter	19000		
7.3	For 4" NB pipe Line	Meter	14000		
ML-8	**IDLE TIME PRESERVATION OF PIPELINE**				
	Preservation of complete pipeline and associated facilities forming part of the pipeline as per Bid document and its maintenance including supply of all consumables, all equipment, man-power, etc. complete as per the requirements of specifications, other provisions of Contract document and instructions of Engineer-in-charge.				
	Note : Owner reserves the right to exercise either or none of the rates below.				
	By filling and pressurizing with nitrogen to a pressure of 2 bar(g) for a period of one month.				
8.1	For 8" NB Pipe line	Meter	1000		
8.2	For 6" NB Pipeline	Meter	19000		
8.3	For 4" NB Pipeline	Meter	14000		
ML-9	**LONG RADIUS BENDS**				
9.1	Supply of Long Radius Bends (R = 3D) for 8" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.1.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	4		
9.1.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	2		
9.1.3	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	2		
9.2	Supply of Long Radius Bends (R = 3D) for 6" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	76		
9.2.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	38		
9.2.3	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	38		
9.3	Supply of Long Radius Bends (R = 3D) for 4" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	56		

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
9.2.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	28		
9.2.4	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	28		
	Note : The quantities of LR Bends may vary. For final quantity, approval from EIC shall be taken before order.				
ML-10	**ERECTION OF VALVES**				
	Handling including lifting and transportation from COMPANY's warehouse to CONTRACTOR'S Stores and/or work site and installation of all types of valves, including assembly of valve accessories, (if any) by bolting, threading or welding, supply and insertion of gaskets, nuts & bolts, nipples, etc. at all elevations of pipe sleepers, supports or overhead on racks, equipments nozzle, skid & painting etc. supply of all consumables, manpower, equipment, etc. for completion of all works as per scope of work and as per drawings, specifications and instructions of Engineer-in-charge including servicing/ cleaning of valve wherever requried.				
10.1	Erection of all types of valves in valve pits on underground pipe lines				
a)	8" NB		2		
b)	6" NB		7		
c)	4" NB		15		
d)	2" NB (Supply & erection)		24		
	Note: Valves of Size 8", 6" & 4" NB will be issued as free issue items.				
ML-11	**SUPPLY & ERECTION OF FITTINGS AND FLANGES in valve pit**				
	Complete work of supply of fittings and flanges including all taxes, duties, transportation and inspection charges but not limited to, the following items in accordance with relevant specifications indicated in clause of SCC & scope of work indicated in SCC, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT.				
	Handling including lifting, transportation from Contractor Stores to CONTRACTOR's workshop for fabrication and/ or to work site for field fabrication and erection for all piping items supplied by Contractor.				
	TEE				
11.1	**Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW**				
11.1.1	4" NB	Nos.	30		
11.2	**Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW**				
11.2.1	6"x 4" NB	Nos.	30		
11.2.2	8"x 4" NB	Nos.	20		
11.2.3	4" X 2" NB	Nos.	30		
	FLANGES				
11.3	**Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)**				
	(End Thickness to match pipe thickness)				
11.3.1	**8" NB**	Nos.	15		
11.3.2	**6" NB**	Nos.	30		
11.3.3	4" NB	Nos.	50		
11.3.4	2" NB	Nos.	24		
11.4	**Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)**				
11.4.1	8" NB	Nos.	20		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
11.4.2	6" NB	Nos.	10		
11.4.3	4" NB	Nos.	30		
11.4.4	2" NB	Nos.	30		
11.5	**Weldolet**				
11.5.1	6x2"NB	Nos.	20		
11.5.2	8X2" NB	Nos.	20		
11.6	**Elbow**				
11.6.1	4"	Nos.	20		
11.6.2	6"	Nos.	15		
11.6.3	8"	Nos.	10		
11.6.4	2"	Nos.	10		
ML-12	**Construction of Valve pits for Steel Line**				
	Construction of Valve Pits for Steel line as per the enclosed drawing and specification. The item includes supply of all the material including Pre-cast RCC cover, shuttering,reinforcement,labour,curing etc as per the drgs ,specification and instruction of EIC.				
12.2.1	As per the drawing	Nos	12		
	Total Amount (all inclusive except GST)				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
TCP-1	**TEMPORARY CATHODIC PROTECTION SYSTEM**				
1.1	Survey, Design, detail engineering of the temporary Cathodic protection system using Mg (Min 3.0 Kg Each)/ Zn galvanic anodes to protect the external surface of **8", 6", 4" dia** , 3LPE Coated pipeline in the Geographical Area (GA) of East & West Godavari dist. against corrosion for a design life of minimum 2 year as per standard specification enclosed with the tender for temporary cathodic protection system, approved design document, data sheets & drawings. Scope shall also include but not limited to the following for completion of jobs:				
a)	Measurement of soil resistivity along the right of way of the main pipeline & take atleast one soil sample for one pipeline section for its chemical & microbial analysis along the pipeline route as per specification for corrosion survey MEC/TS/05/21/016C.				
b)	Collection of additional data related to cathodic protection along the right of way of pipeline as per standard specifications.				
c)	Design, Detailed Engineering, Preparation of Design Document, Preparation of Test station schedule & Bill of Material as per the corrosion survey & Chemical analysis of Soil / Water samples for Temporary Cathodic Protection system.				
i)	8" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	1.00		
ii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	19.00		
iii)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	14.00		
	Note: Design shall be carried out from Insulation Joint to Insulation Joint. Each stretch of length will be vary from location to location				
1.2	Manufacturing, Inspection/FAT (Factory acceptance test), supply, Packing, transportation to site, storage, installation, testing & commissioning of the temporary Cathodic protection system using Mg (Min 3.0 Kg Each)/ Zn galvanic anodes to protect the external surface of 8", **6", 4" dia** , 3LPE Coated pipeline in the Geographical Area (GA) of East & West Godavari Dist. against corrosion for a design life of minimum 2 year as per standard specification enclosed with the tender for temporary cathodic protection system, approved design document, data sheets & drawings. Scope shall also include but not limited to the following for completion of jobs:				
a)	Supply, installation, testing & commissioning of Mg/ Zn Galvanic anodes including carrying out Thermit welding on main pipeline, suppy of clits, cables to conenct to anodes as per the standard specification- MEC/TS/05/E9/016A. The weight of the Mg Anode & the total nos. of anodes shall be calculated as per the result of corrosion survey, soil chemical analysis, total weight and current requirement of the pipeline section. However, Min one anode is to be installed at every one KM with test station. The scope of work includes the the following:and also to be carried out as poer approved design including supply of all item				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
b)	Supply, Installation, Testing & commissioning of Test stations (Big Size & Normal Size) weather proof (IP-55) as per specification & enclosed drawings.				
c)	Supply, installation, testing & commissioning of one set of spark gap arrestor 100 kA (Solid State) across each insulating joint provided at tap-off, SV & various consumer terminals as per scope of work / specification. The un-protected/above ground pipeline shall be earthed through GI earth electrodes with separate earth pit. The resistance of grounding shall be limited to 5 ohms max.				
d)	Supply, installation, testing & commissioning one set of polarization cell (Solid State) with zinc anode at all high tension electrical power transmission line/equipments /railway tractions (all 66 KV & above) crossing or running parallel to the pipeline for grounding purpose as per specification. The rating shall depend upon anticipated fault current & ground bed resistance at the location of installation. However, the rating of polarisation cell (solid state) shall not be less than 3.7 KA @ 30 cycle & number of 20 kg net weight zinc anode shall not be less than two.The resistance to earth of grounding shall be limited to 5 ohms max.				
e)	Supply & installation of Zinc Ribbon Anodes at 4-8 O'clock position in the interval of 2 meter (max.) on carrier pipes where casing pipe is coated and no addtional protection for carrier pipe where casing is bare which also includes Zn bentonite filling b/w carrier & casing cased crossings i.e. roads etc as per specification & Scope of work.				
f)	Bonding in between pipelines running parallel or crossing as required.				
g)	Supply, Laying of HDPE/PVC sheets between the BGL GAS pipeline and the other CP protected foreign pipelines at the crossing locations for providing electrical isolation.				
h)	Earthing of above ground catholically unprotected pipeline at , SV, R/T & D/T etc, as applicable the earth electrode shall be 65 mm dia, 4.5 mm thickness & 3000mm long.				
i)	Supply, installation, testing & commissioning of Electrical resistance Probes (1 No. with 1 no. of ER probe reading Instrument)(if applicable) utilizing the electrical resistance technique shall be provided along the pipeline at marshy areas and at vulnerable locations to monitor the external corrosion activity on the pipeline. Location of external ER probe shall be decided during detail engineering.				
j)	Supply, installation, testing & commissioning of Polarisation coupons (2 Nos.) (if applicable) have one side exposed area of 100 mm x 100 mm with 2 nos. of spare coupons shall be provided along the pipeline at marshy areas and at vulnerable locations to monitor the external corrosion activity on the pipeline as per enclosed standard specification. Location of external Polarisation coupons shall be decided during detail engineering. Magnetic devices for operation of magnetic switch shall be provided.				
k)	Supplying,laying ,testing of 35 ,25,10 ,6 sq.mm, 600/1100 V grade copper cables XLP insulated /PVC sheath of including excavation in soil or rock of minimum 1.2m depth below GL,				
l)	Making cable to pipe jointing by thermit welding/Pin brazing (for charged pipeline) for 35 ,25,10 ,6 sq.mm copper cable including excavation and exposing piping , recoating with epoxy, testing etc.				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
m)	Monitoring of the TCP system till commissioning of PCP system & handing over of the pipeline system to BGL.				
n)	All civil/ structural works related to TCP system including supply of bricks, cement & steel etc. required for completion of the system.				
i)	8" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	1.00		
ii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	19.00		
iii)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	14.00		
	Total Amount (all inclusive except GST)				

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PP-1	**PIPING (ABOVEGROUND)**						
	Supply, Transportation including loading, unloading & handling of all piping items fromstorage point to work site/ workshop as applicable, complete work of fabrication, erection, painting, testing of pipes, flanges and fittings, insulation joints and making ready for further Commissioning / Start-up of carbon steel piping of all sizes and ratings including supply of all consumables, equipment, manpower and other resources and execution of, but not limited to, the following works in accordance with relevant specifications & scope of work, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT. **Note : Valve erection shall be paid through separate SOR**						
-	Fabrication including cutting, edge preparation, inclusive of grinding the edges of pipes, fittings, flanges etc. to match with the matching edges of uneven/different thickness wherever required, welding, attachment of all pipe fittings like elbows, tees, reducers. Supply of nipples, couplings,caps, plugs, gasket, stud bolts, nuts, U Clamps etc. as required for completion of job.						
	Checking, cleaning, aligning, bending, cutting and bevelling (as required) of pipes for welding and field adjustments including pipe fittings, welding, carrying out non-destructive testing of welds as required including 100% radiography by Gamma-ray and providing all requisite equipment, labour, supervision, materials, films, consumables, all facilities and personnel to process, develop, examine and interpret radiographs and other tests as required, carrying out repairs of weld joints found defective by Engineer-in-Charge, carrying out re-radiography / x ray and other tests as required on repaired joints.						
-	Fixing/ Installation of weldolets, sockolets, flanges, vent and drain point connection etc., including providing stub-in connections, fabricated fittings and reinforcement pads etc., as required.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	Erection including prior cleaning, lifting, placing on pipe sleepers and supports, overhead on racks, skids and at all elevations including installation and carrying out connected activities for all types of valves including supply and fixing of gaskets, studs/ bolts, nuts wherever required for all sizes, levelling, aligning, joining of flanges, blind flanges, connecting with equipment, nozzles, strainers, tie-in with existing piping/facilities, etc. tapping for inline instruments like pressure gauges, thermowells, sample connection, etc.						
-	Preparation of final bill of material based on piping GADs.						
-	Preparation of isometric and fabrication drawings.						
-	Carrying out Non-destructive testing as required except items mentioned in sl. no. 5 of SOR.						
-	Surface preparation before application of primer by means of dry abrasive including supply of approved quality of dry abrasive, manpower, machineries, tools & tackles to achieve required roughness as per specification and as per instruction of Engineer-in-charge.						
-	Painting of entire system (including aboveground all pipes fittings, flanges and accessories) as per specification MEC/S/05/21/07 including supply of approved paints and primers, application of primer and paints, indentification lettering/ numbering, colour coding, etc. as specified including rub down & touch up of shop primer or scrapping of shop primer wherever required by COMPANY and providing scafolding for all heights etc.						
-	Cleaning and flushing by water/ compressed air, testing of the systems including hydrostatic, pneumatic and any other type of testing as specified, draining, drying by compressed air/other methods approved by COMPANY.						
-	Precommissioning & making operational all piping system and equipments and provide all necessary assistance in term of supply of man-power, equipment, tools and tackles required amount of nitrogen for purging of entire terminal piping system including equipments etc. to the company during commissioning activities.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	Clean-up and restoration of site, preparation of as built drawings, documents and project records; transportation of surplus free issue material to Owner's designated plac(s); completing all works in all respects as per the AFC drawing, specifications, standards and other provisions of Contract and instruction of Engineer-in-charge.						
-	Completion of all such work in all respects as per scope of work and as per drawings, specifications and instructions of the Engineer-In-Charge and keeping the system ready in all respects for further commissioning and start up.						
-	Hook-up works including making provision for hooking up and carrying out shutdown activities at terminals if necessary.						
1.1	Complete Carbon Steel Piping Work with painting including all fittings, flanges and supply of all required gaskets, studs bolts & nuts etc. as described under item 1.0 above						
1.1.1	Pipes of different grades and thickness	m	6"NB		800		
1.1.2	Pipes of different grades and thickness	m	4" NB		2500		
1.1.3	Pipes of different grades and thickness	m	8"NB		500		
PP-2	**SUPPLY & ERECTION OF ASSORTED PIPE, FITTINGS AND FLANGES AND INSULATION JOINTS**						
	Complete work of supply of pipes, fittings and flanges , insulation joints including all taxes, duties, transportation and inspection charges but not limited to, the following items in accordance with relevant specifications indicated in clause of SCC & scope of work indicated in SCC, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT.						
-	Handling including lifting, transportation from Contractor Stores to CONTRACTOR's workshop for fabrication and/ or to work site for field fabrication and erection for all piping items supplied by Contractor.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.1	**CARBON STEEL PIPES**						
2.1.1	CS pipe Sch.80 API 5L, Gr. B, PSL-2, Seamless, BE / ASTM A106, Gr. B (Charpy), Seamless, BE	m	2" NB	S80	500		
2.1.2		m	1" NB	S80	100		
2.1.3		m	¾" NB	S160	100		
2.2	**FLANGES**						
	Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)						
2.2.1	(End Thickness to match pipe thickness)	Nos.	6"	300#	20		
2.2.2		Nos.	4"	300#	40		
2.2.3		Nos.	2"	300#	24		
2.2.4		Nos.	8"	300#	10		
2.2.5	Socket Welded (B-16.5, A105, 125 AARH, SW end to B16.11)						
2.2.6	**Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)**	Nos.	6"	300#	5		
2.2.7		Nos.	4"	300#	10		
2.2.8		Nos.	2"	300#	10		
2.2.9		Nos.	8"	300#	10		
2.3	**ELBOW**						
2.3.1	90° Elbow (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.3.2		Nos.	6"	S40	10		
2.3.3		Nos.	4"	S40	30		
2.3.4		Nos.	2"	XS	25		
2.3.5	90° Elbow (A234, Gr. WPB (Charpy), B-16.11, 1.5D), SW	Nos.	3/4"	XS	10		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.4	**TEE**						
2.4.1	Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.4.2		Nos.	4"	S40	20		
2.4.3			6"		10		
	Equal Tee (A234, Gr. WPB (Charpy), B-16.11, 1.5D), SW	Nos.	3/4"		5		
2.4.4	Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW	Nos.	4" x 2"	S40 x XS	20		
2.5	**REDUCER**						
	Concentric Reducer (A234, Gr. WPB (Charpy), B-16.9)						
2.5.1		Nos.	4" x 3"	S40	30		
2.5.2		Nos.	6" x 4"	S40	10		
2.5.3		Nos.	2"x1"	XS	5		
2.5.4							
2.5.5							
2.6	**SOCKOLET** (A105, SW)						
2.6.1		Nos.	4" x ¾"	3000#	20		
2.6.2		Nos.	4" x 1"	3000#	20		
2.8	**INSULATING JOINTS** (As per Standard Specification and Data Sheets enclosed) . **Insulation joints will be issued as free issue items**						
2.8.1		Nos.	4"	300#	37		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.8.2		Nos.	6"	300#	2		
2.8.3		Nos.	8"	300#	2		
	Note:a) All butt welded fittings end shall generally match with connecting pipe wall thickness however in case of misalignment Contractor shall have to do end preparation without any extra cost.						
	B) All coupling, nipples etc. as required shall be supplied by contractor but no separate payments shall be made as it is covered under erection rate.						
PP-3	**SUPPLY & ERECTION OF VALVES**						
	Handling including lifting and transportation from COMPANY's warehouse to CONTRACTOR'S Stores and/or work site and installation of all types of valves including assembly of valve accessories, (if any) by bolting, threading or welding, supply and insertion of gaskets, nuts & bolts, nipples, etc. at all elevations of pipe sleepers, supports or overhead on racks, equipments nozzle, skid & painting etc. supply of all consumables, manpower, equipment, etc. for completion of all works as per scope of work and as per drawings, specifications and instructions of Engineer-in-charge including servicing/ cleaning of valve wherever requried. For 8", 6", & 4" NB valves are under free issue items.						
3.1	**Butt welded Valves (Full Bore/ Reduced Bore)**						
	Ballvalves BW, FB	Nos.	8"	300#	1		
3.1.1	Ballvalves BW, FB	Nos.	6"	300#	1		
3.1.2	Ballvalves BW, FB	Nos.	4"	300#	15		
3.2.2	Ballvalves RF, FB	Nos.	2"	300#	15		
3.2.6	Ballvalves SW, FB	Nos.	¾"	800#	15		
	Note: Valves of Size 8", 6" & 4" NB will be issued as free issue items.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PP-5	**Installation of MRS/DRS**						
5.1	Handling, including lifting, transportation from Company's stores at Hyderabad to Contractor's work-shop for fabrication or/ and to worksite for field fabrication, assembly of parts/ sub-assemblies erection for all vessels, equipments, skid supplied by company above ground/ underground at all elevation/ depth, fixing of foundation bolts welding wherever required, alinging, grouting, hooking-up, cleaning and flushing by water draining, drying by compressed air providing all mountings, ancilliary, enabling works as required and completing in all respect as per drawings, specification and instruction of Engineer-in-charge. Contractor's scope shall include supply of all material and accessories including but not limited to any fixtures, clamps, gasket, nut bolts, finish coat of painting including rub down & touch up of shop primer/ paint scrapping of shop primer/ paint and further their painting after application of primer as per specification, wherever required by Company.						
5.1.1	MRS/DRS	Nos.			15		
Note:	1) The quantities given above against individual items are indicative and shall not be considered to be binding. The quantities may be increased, decreased or deleted at site at the time of actual execution. Procurement shall be done as per actual site condition, approved construction drawings and as per instruction of Engineer-in-charge. The unit rate shall be operated to work out the final payment to the contractor.						
	2) In each area, quantities given against individual item may be utilise/ used for other consumer in same area.						
	3) The rates quoted shall be applicable for all Terminals						
	Total Amount (all inclusive except GST)						

3-(II)	CIVIL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
CIV-1	SITE CLEARANCE				
a)	DEMOLITION OF R.C.C./BRICKS/STONE MASONARY				
	Site clearance by demolition of R.C.C./Brickwork/Stone masonry/ Stone soling, Flexible pavements (including steel bars)etc.,alongwith removing the debris and disposal of unserviceable material to any lead and staking of serviceable materials, handing over serviceable material to concerned department if required as per technical specifications and direction of Engineer-in-charge.	M3	100		
b)	TREE CUTTING				
	Tree cutting (only of girth more than 30 cm shall be counted for payments) including royalties, disposal, taking approval from competent authorities etc. all complete, as per technical specifications and direction of Engineer-in-charge.	Nos.	100		
CIV-2	EARTH WORK IN EXCAVATION/ SITE GRADING AND BACKFILLING				
a)	Earth work in excavation,site grading and backfilling in all kinds of soil including soft rock in any plan dimension up to 3.0M depth including disposal of excavated surplus and unserviceable earth up to any lead in all conditions. Soil to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings, as per technical specifications and directions of the Engineer-in-charge.	M3	300		
CIV-3	EARTH WORK IN EXCAVATION/ SITE GRADING IN HARD ROCK				
a)	Earth work in excavation in hard rock requiring blasting for all type and size of foundations in any plan dimension up to required depth including disposal of excavated material up to any lead in all conditions, and disposal of surplus and unserviceable material. Surface to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings and directions of the Engineer-in-charge.	M3	200		
CIV-4	EARTH WORK IN FILLING				
a)	Earth work in filling with good quality imported earth from approved source in the layers of 150 mm and compacted up to 95% to its MDD up to 3 m depth and any plan dimension including all testing, watering, rolling each layer with 1/2 tonne roller or wooden or steel rammers, and dressing / filling up ground depressions etc. complete in all respect as per scope of work, detailed construction drawings , as per technical specifications and directions of the Engineer-in-charge.	M3	200		
CIV-5	PLAIN CEMENT CONCRETE				
a)	Supplying and laying plain cement concrete with stone aggregate 20mm down grade (including shuttering if required) in all types of concrete works including levelling courses below foundations, columns, pedestals, pedestal bases, pipe supports,floors, chambers, cable trench, under floors and any other locations (which are not covered as part of composite items) , at all levels and locations as per drawings, specifications and directions of the Engineer-in-charge.				
	i) 1:2:4	M3	300		
	ii) 1:4:8	M3	200		

3-(II)	CIVIL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
CIV-6	REINFORCED CEMENT CONCRETE				
	Providing and laying RCC (reinforced cement concrete) of grade M-25 with 20mm and down grade crushed stone aggregate in all types of structures like Beams, foundations, walls, columns, pedestals, pedestal bases, pipe supports, sleepers, cable trench, RCC retaining wall foundation for boundary wall including construction joints, shuttering at all depths and levels complete as per drawings, specifications and directions of the Engineer-in-charge.				
	i) Sub structures	M3	200		
	ii) Super structures	M3	300		
CIV-7	REINFORCEMENT STEEL				
	Supplying and Fabricating and Fixing in position HYSD Steel Reinforcements/ TMT Grade Fe-415 conforming to IS1786-1985 at all levels (all deapth & hights) and positions including the Cost of transport, Straightening, Cutting, Bending, Cranking, Binding, Welding, Provision of necessary Chairs and Spacers, Preparation of bar bending schedule, getting the same approved by EIC etc., complete as per Drawings and Specifications and including Cost of binding wire, Labour etc., all complete in all respects as per scope of work, detailed construction drawings, technical specifications and direction of Engineer-in-charge. The chairs and spacer bars provided will not be Measured for payment.	MT	20		
CIV-8	CEMENT CONCRETE BLOCK WORK				
	Providing and laying cement blocks (solid blocks) masonry Grade M 7.5 with 200 mm thick blocks upto plinth level and super structure in cement mortar 1:4 (1 cement : 4 coarse sand).	M3	30		
CIV-9	BRICK WORK				
	Providing and laying brick work with brick class designation M-7.5 of IS:1077 in Cement Mortar 1:4 (1cement : 4 sand) in steps, compound wall, drains, or at any other location at all depths & height for all leads including providing required finishes, curing, scaffolding, etc., complete as per specifications and drawings with all bye-works as per direction of the Engineer-in-charge.	M3	300		
CIV-10	PAVER BLOCK FLOORING				
	Supply , construction and handing over of CC inter locking paver block 80 mm thick, I shape, rough finish, M-30 strength of approved brand laid over the sand bed of minimum 50 mm thick. The CC interlocking blocks to be of uniform Grey colour or as approved by EIC complete in all respects as per scope of work, detailed construction drawings, technical specifications and directions of the Engineer-in-charge.	M2	500		
CIV-11	SAND FILLING				
	Supplying and filling Sand in maximum 300 mm thick layers and compacting by rolling, ramming, consolidating and dressing the surface including cost of sand (zone-II/Zone-III sand only) complete in all respect as per scope of work, detailed construction drawings as per technical specifications and directions of the Engineer-in-charge.	M3	200		

3-(II)	CIVIL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
	Total Amount (all inclusive except GST)				

3-(III)	STRUCTURAL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
ST-1	**Providing and fixing chain link Fencing**				
	Supply, fabrication and erection of structures such as angle iron post/Channel post,Strainer and strut,etc.with necessary holes for fixing the chain link fencing,site assembly and finally erection of structures at appropriate location with painting as per specification,including 2.0m high G.I. Chain link fabric fencing mesh size 50x50x3.15 mm dia, with 0.5 m heigh barbed wire (type-A) as per IS:278-1978 shall be made from two strands of galvanized steel wire of nominal dia 2.5 mm twisted together fixed on fencing posts with GI staples, turn buckles etc, including strengthening with 4 mm dia wire Nuts bolts and washer complete in all respects.All work as per Specification and drawings and as direction of the Engineer-In-Charge(excluding foundation and RCC beams Refer Standard drawing)	R.M	**200**		
ST-2	**Providing and fixing Fencing Gates**				
	Supplying, fabrication & fixing of fencing Mild steel gate 2.5m high with Chian link fencing mesh upto 2m height and 0.5m barbed wire fencing including all fixtures like MS Pivot,locking arrangement, tower bolt etc.complete in all respects including painting ,all work as per Specification and drawings and as direction of the Engineer-In-Charge (excluding foundations and RCC beams)				
a)	2m Wide Gate	Nos.	**15**		
ST-3	**Steel structure Fabrication & Erection**				
	Supply ,fabrication and erection of all types of pipes supports like clamps saddle,guide stops,cradles,turn buckles,anchors,T-post,stockade/trestle and pipe bridge for over head piping ,approach ladders and platform,crossover,cable tray supports,etc. including painting as per painting specification(Bolts,nuts,washer,U-clamps etc. shall be supplied by the contractor within the rates quoted.These items will not be measured and paid seperately).The work is to be completed in all respect as per drawings and techanical specification and direction of the Engineer-in-Charge	KG	**1000**		
	Total Amount (all inclusive except GST)				

3-(IV)	ELECTRICAL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
EL-1	EARTHING				
	Supply, installation, testing & commissioning of the complete earthing system, earth electrodes/pit, earth main ring, earthing of metering skid, electrical equipments, instrument panels, field instruments, process equipments & pipes / flanges and accessories such as GI wire, wire rope and all balance earthing material as per the specification including all associated civil work with all material & labour as per specification & drawings approved by the company.				
1.1	Earth Electrodes including earthpit with 6 mm thick chequered plate cover	Nos.	50		
1.2	GI Strip (25 x 5) mm	Meters	200		
	Total Amount (all inclusive except GST)				

3-(V)	INSTRUMENTATION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
	(2)	(3)	(4)	(5)	(6)
IN-1	**Supply, Calibration and Installation of instrumentation items listed below**				
1.1	Pressure Gauges, Pressure Rating 300# Pressure Range 0 - 50 Kg/cm2 (Includes supply of two isolation valves per each gauge to provide double isolation)	Nos.	10		
1.2	Temperature Gauges [Range 0 - 100°C]	Nos.	10		
IN-2	**EARTHING**				
6.1	Supply 8 SWG G.I. Wire	Mtrs.	50		
6.2	Laying and termination of both ends from earth grid to Field instruments/JBs/Control Panel by 8 SWG G.I. Wire in tray and conduits as required excluding earth-pit preparation.	Mtrs.	50		
6.3	Supply of 4 sq. mm. PVC insulated armoured copper cable	Mtrs.	50		
6.4	Laying and Termination of both ends of 4 sq. mm. PVC insulated armoured copper cable from earth pit to the barrier earth bus bar in trays/conduits/trenches as required.	Mtrs.	50		
	Total Amount (all inclusive except GST)				

SUMMARY OF SCHEDULE OF RATES- PART-D
FOR
LAYING & CONSTRUCTION OF 8", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT IN EAST & WEST GODAVARI DIST. (A.P)
Bid No.MEC/23TS/01/51/S2/ST/ER/0007

Sl. No.	Description	in INR	
		(In Figures)	(In Words)
1	Total amount (all inclusive except GST) for Mainline Works SOR		
2	Total amount (all inclusive except GST) for Cathodic Protection Works SOR		
3	Terminal Works		
I)	Total amount (all inclusive except GST) for Piping & Mechanical Works SOR		
II)	Total amount (all inclusive except GST) for Civil Works SOR		
III)	Total amount (all inclusive except GST) for Structural Works SOR		
IV)	Total amount (all inclusive except GST) for Electrical Works SOR		
V)	Total amount (all inclusive except GST) for Instrumentation Works SOR		
4	Gross Total Amount (all inclusive except GST) [1+2+(3-I)+(3-II)+(3-III)+(3-IV)+(3-V)]		
5	**GST @ 18.00% on Total Amount mentioned at Sl. No. 4 above**		
6	**GST @ 18.00% on free issue material of INR 11.38 Crores**	**20,484,000.00**	Rupees Two Crores Four Lakhs Eighty Four Thousand Only
7	**Gross Total Amount (Sl. No. 4 + 5 + 6)**		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(a)	(b)	(c)	(d)	(e)	(f)
ML-1	CARBON STEEL PIPES				
1.1	PIPELINE LAYING / INSTALLATION				
	a) Coated Steel pipe lines laying				
	Receiving , loading , unloading and transportation and stacking of 3-Layer PE coated and bare line pipes to Contractor's stock yard/workshop/work-site. The scope of contractor includes preparation of drawings, wherever required for crossing etc. including handling, stacking, stringing on the pipeline route alignment, carrying out inspection of materials including linepipes , laying/ installation of coated linepipes as per specification wherever required depending on site condition including execution of all works, handling , including loading and unloading, transportation of all the materials to work site. Arrangement of all additional lands required for Contractor's storage, fabrication, access for construction, procurement and supply of all materials , consumables, equipment, labour and other inputs, carrying out all temporary, ancillary, auxiliary works, ready for commissioning of pipeline as per drawings, specifications, other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:Supply, receiving , loading , unloading and transportation and stacking of 3-Layer PE coated and bare line pipes to Contractor's stock yard/workshop/work-site. The scope of contractor includes preparation of drawings, wherever required for crossing etc. including handling, stacking, stringing on the pipeline route alignment, carrying out inspection of materials including linepipes , laying/ installation of coated linepipes as per specification wherever required depending on site condition including execution of all works, handling , including loading and unloading, transportation of all the materials to work site. Arrangement of all additional lands required for Contractor's storage, fabrication, access for construction, procurement and supply of all materials , consumables, equipment, labour and other inputs, carrying out all temporary, ancillary, auxiliary works, ready for commissioning of pipeline as per drawings, specifications, other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:				
	Surveying of route and detours required at the time of execution including marking the same in topographical sheet, preparation of construction drawings showing survey details, and submit same to Owner for review / approval.				
	Clearing, full filling all the requirements of various statutory/ environment authorities to the entire satisfaction of concerned authorities, grading of work area. Relocating of any obstruction within the Pipeline route alignment / Approved route viz. electrical lines/ poles, telephone line / poles, foreign pipeline, etc. in co-ordination with concerned authorities and obtain permissions from these authorities for pipeline execution.				
	Trenching to all depths by excavation in all types of soils **except built up sections** on top as different type of pavement / footpath / roads etc. as required by using mechanical excavator or manually depending on the site condition and storing excavated soil, reusable materials at designated area as directed by Engineer in charge and to a width to accommodate the pipeline as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0m measured from top of pipeline coating to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition is included in the scope of contractor. As SVs shall be buried on the pipeline alignment itself with RCC pits with covers. The steel pipeline has to be taken to the required lower depth by use of slope or vertical bends to accommodate the above without additional cost to GGPL				
	During the execution of the work, the construction area shall be barricaded to ensure the smooth execution of work and safety of the public/ working area. The item also includes fabrication, trsansportation and placing the barricading at the site. Barricading to be made as per approved drawing and to the entire satisfaction of Owner / Engineer-in-charge.				
	Carrying out repairs of pipe defects/ replacement in case of irreparable defects and repairs of defects of pipe coating not attributable to Owner including defects/ damages occurring during transportation / handling.				
	Stringing of line pipes along pipeline trench /sand / soft soil bags including supply of bags and its filling materials.				
	Checking, cleaning, aligning, bending, cutting and bevelling (as required) of pipes for welding and field adjustments including pipe fittings, welding, carrying out non-destructive testing of welds as required including 100% radiography by Gamma-ray / x ray and providing all requisite equipment, labour, supervision, materials, films, consumables, all facilities and personnel to process, develop, examine and interpret radiographs and other tests as required, carrying out repairs of weld joints found defective by Engineer-in-Charge, carrying out re-radiography and other tests as required on repaired joints.				
	Carrying out installation of carrier line pipe at all minor crossing viz. road, carttrack, pathway, water bodies etc. at designated depth by open cut (except at crossing by HDD method/ moling / Augur boring).				
	The above item also include liasioning with state authorities / owners : Obtaining ROU and all permissions from the concerned land-owning / statutory authorities along the proposed route / area. However, the required statutory / mandatory fees will be paid by M/s GGPL against demand note.The liasioning during the pipeline laying execution with local authorities & local officials, traffic ploice, police and any other utility companies / agencies such OFC operators etc are in the scope of the contractor. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner/other utility agencies) is in scope of the contarctor. Liasioning for other associated works like SV station / DRS Station & valve pits etc. also included in this.				
	Coating of field weld joints, long radius bends (R=3D), elbows, buried fittings and valves etc. including supply of coating materials etc. (i.e. heat shrinkable sleeves and high build epoxy etc.) as per PJS & Technical Specification compatible with 3 layer PE coating material of the line pipe.				
	Installation of LR Bend (R = 3D) , as per specification wherever required depending on site condition.				

Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
1	**MAINLINE WORKS**				
	Installation / lowering the pipeline in trench to required depth as per PJS, Technical Specification & drawings including padding around pipeline with suitable soil duly approved by EIC including supply of padding material, backfilling and its compaction to the satisfaction of concerned authorities with excavated earth / borrowed select soil including supply of borrowed select soil duly approved by EIC.				
	Supply & Installation of warning mat (OD+100 mm width and 0.5 mm thick) on the entire length of the pipeline as per specification.				
	Supply and installation of slope breakers, wherever required or, as directed by Owner / Engineer–in–charge.				
	Crossing the all-foreign pipeline / HT line / cable / any other utilities etc. with necessary concrete / PVC protection including coordination with all agencies and obtaining NOC.				
	Carrying out air cleaning, flushing, cleaning and hydrostatic testing of complete pipeline with required quantity of corrosion inhibitor including pre-testing of designated sections complete as per specification and approved by Engineer–in–charge to specified pressures indicated elsewhere and duration after stabilization as per specification, providing all equipment, pumps, fittings, instruments, dead weight tester, pressure recorder, thermocouples etc., and services, supervision, labour, consumables, water including supply of corrosion inhibitor, air, etc. as required, locating of leaks and rectification of defect attributable to Contractor (rectification of defects in linepipe material not attributable to contractor shall be paid separately as per other item of schedule of rate), re-testing after rectification, dewatering after successful completion of hydrotesting of entire section and as approved by Engineer-in-Charge.				
	(Note : Leak detection, its rectification and successfully re-hydrotesting shall be carried out by Contractor with a view that completion of all activity for successful hydrotesting is not inordinately extended, which will hamper the overall project schedule. Further, no extra payment claim shall be entertained for re-hydrotesting and leak detection if defects found attributable to Contractor.				
	All tieing-in, including the tie-in(s) of the pipeline with the adjacent sections of pipeline including cutting of test header, rebevelling as required, radiography and other NDT examination, joint coating as per specification.				
	Final clean-up & restoration of right-of-use or area disturbed by contractor including obtaining NOC from respective land owner and statutory authorities during their construction activities for laying of pipeline works and disposal of debris, excess soil to designated disposal areas as per local authorities/GGPL and returning all surplus material to designated storage yard and backfilling of trench and compaction of the same as per satisfaction of Owner and / Or as directed by Engineer–in–charge.				
	Restoration of land, facilities and boundary wall etc. and associated facilities dismantled/damaged by the Contractor during construction;				
	Installation of all burried valves inside the valve pit and making provision to operate the valve.				
	Protective coating of 500 micron thick two component (applied with the help of minimum three coats) liquid epoxy including supply of materials duly approved by Owner for all piping valves, fittings, structural steels etc. for buried installation and inside the valve pit as approved by the Engineer-in-charge.				
	Carrying out all temporary, ancillary, auxiliary works and all incidental works required to make the pipeline ready for pre-commissioning;				
	Preparation of as-built drawings, pipe-books including collection of GPS co-ordinates.(Drawings /documents to be submitted as pr SCC) All the works shall be executed in accordance with the provision of contract including carrying out all temporary/ ancillary/ auxiliary works required for the performance of the works and all other acts, deeds, matters and things necessary to make the pipeline ready for precommissioning activities.				
	Any other activities not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to GGPL. All the work shall be executed in accordance with the provision of contract.				
	Installation of Coated Line Pipes as per following details:				
	Specified dia, NB Thk (mm) Material Coating Type Length of each pipe (mm)				
1.1.1	200 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	7975		
1.1.2	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	10150		
1.1.3	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	12325		
	Note:				
i)	This item shall be applicable for the underground steel grid main pipeline & branch pipeline including tap-off for distribution pipelines, valves, barred tees, insulating joints, bends (R=3D), flanges & fittings, accessories etc. , tie-in of valve assembly including radiography of tie-in joints as per Schematic Layout Drawings of respective sections, Technical Specification and aboveground approach pipeline upto Insulating Joint (including installation of aboveground / underground insulating joint) for various stations.				
ii)	Supply of all valves, flanges, fittings, assorted pipes, barred tees & insulating Joints, etc. shall be paid by separate item mentioned elsewhere in SOR.				
iii)	In above item, backfilling of pipeline trench by borrowed select soil duly approved by Owner / EIC shall be paid by separate item mentioned elsewhere in the SOR.				
iv)	Contractor shall not perform any pipeline activities along Pipe alignment without specified barricading as per Std. Drg. and other safety measures.				
v)	The lengths of pipelines are tentative. All items required to complete the laying and commissioning except the Items covered separately in this SOR are included under the scope of this item				
vi)	Cutting of Hard Rock shall be paid on CUM basis as per separate SOR.				
viii)	**Carbon steell coated steel pipes of Size 8", 6" & 4" NB pipes will be issued as free issue items.**				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
1.2	**Same as item 1.1 above but with built up sections (different type of pavement / footpath / roads etc. which includes Asphalt roads, Tiled pavement and PCC/RCC roads) on the top surface**				
	Installation of Coated Line Pipes				
	Specified dia, NB Thk (mm) Material Coating Type Length of each pipe (mm)				
1.2.1	200 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	1100		
1.2.2	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	1400		
1.2.3	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	1700		
1.3	**PIPELINE LAYING / INSTALLATION OF MDPE PIPES IN TRENCH ADJUNCT TO STEEL PIPE LINE TRENCH**				
	Trenching to all depths by excavation in all types of soils except built up sections on top as different type of pavement / footpath / roads etc. Storing excavated soil, reusable materials at designated area as directed by Engineer in charge and to a width (steel pipe line to MDPE clearance shall be minimum 150 mm) to accommodate the pipeline , MDPE Pipe (125 mm, SDR 11, PE 100 Pipe) as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0m measured from top of pipeline to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition. Laying of steel pipe line will be paid separately as per SOR item no.1.1 /1.2				
	Loading, storing, unloading and laying of PE100, SDR11 line pipes of size 125 mm in steel pipe line trench including ,proper stacking, identification,and supply of accessories of all sizes & thickness like PE Bends, Couplers, Endcaps, Tee, Reducer, CS to PE Fittings, Saddle Tapping, GI sleeves etc.. Handling, Stringing/ uncoiling,aligning of the PE line pipe on the pipeline Right-of-Use/route , laying/ installation of PE line pipe alongwith required accessories as mentioned above as per specification wherever required depending on site condition including execution of all works; additional lands required for contractor's storage , fabrication, access for construction;procurement and supply of all materials , consumables,equipments, labour and other inputs. In case of free issue items,the scope also includes, receiving and loading from GGPL designated store, transportation, unloading and stacking of free issue items at Contractor's store				
	Carrying out all temporary, ancillary, auxiliary works required to make the PE pipeline ready for commissioning including cleaning, flushing and removing the ingress of water / moisture etc., as per drawings.				
	Specifications, scope of work indicated in PJS and other provisions of Contract document and instructions of Engineer-in-charge, including but not limited to carrying out the following works:				
	Carrying out preliminary activities such as preperation of drawings wherever required for crossing etc.				
	Preparation and getting approval of schedules, execution procedures, drawings/ sketches/ wherever required, making trial pits to determine the underground utilities/ services etc., restoration of the abandoned trial pits to original condition.				
	Uncoiling/ stringing & aligning of PE pipes, clamping, jointing of the pipe ends/ fittings/ valves by qualified personnel using approved electro-fusion techniques as per specification.				
	Installation / lowering the pipeline in trench to required depth as per PJS, Technical Specification & drawings.				
	Electro-fusion jointing of valves wherever required and as directed by Engineer-in-charge.				
	Pneumatic testing, purging with nitrogen and commissioning as per specification and approved procedures providing all tools and tackles, nitrogen, instruments, manpower and other related accessories and as per the instructions of the Engineer-in-charge.				
	Supply and installation of bricks (class 50) of 230 mm width over MDPE pipes for the entire length				
	Supply & Installation of warning mat (250 mm width and 0.5 mm thick) on the entire length of the pipeline as per specification.				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Any other activities not mentioned/ covered explicitly above, but otherwise required for satisfactory completion/ operation/ safety/ statutory/ maintenance of the works shall also be covered under the scope of work and has to be completed by the Contractor within specified schedule at no extra cost to GGPL. All the work shall be executed in accordance with the provision of contract.				
1.3.1	PE 100 (Size 125 mm) Pipe	Meter	3045		
	Note: The Quoted rate shall be of laying of MDPE pipeline laying adjunct to steel pipe line trench . Steel pipe line laying will be paid separately under SOR item no.1.1. CS main pipes & MDPE pipes are free issue materials to the contractor. Any stand-alone trenching required to detour PE pipeline laying due to space constraint shall be in the scope of contractor without any extra cost to GGPL				
1.4	**Same as item 1.3 above but with built up sections (different type of pavement / footpath / roads etc.) on the top surface:**				
1.4.1	PE 100 (Size 125 mm) Pipe	Meter	420		
1.5	**Cutting/ breaking of hard rock found in trenches using mechanical means such as rock breakers / excavators (blasting prohibited) etc. Scope also includes disposal of rocky earth after breaking to designated disposal areas as per local authorities/GGPL. (wherever hard rock of single piece exceeding 1.0 m in length along the trench direction as per the decision & direction of EIC)**	CUM	4200		
ML-2	**Restoration of asphalted roads / concrete roads / pavements / foot paths, wherever instructed by EIC .Job includes getting NOC from the concerned authorities.**				
a)	**Asphalt road** :Restoration of bitumen Asphalt road after laying of Pipe lines as per the drawing no. MEC/23TS/01/11/D2/ST/LY/0211/R00/A3 , specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per requirement of **NH/etc.** and to get NOC from the concerned authorities. Restoration of the asphalt road cut portion for pipeline trench width shall be carried out by filling the bottom layer with with stone dust / Quarry dust watering & compaction followed by 200mm thk GSB & 250 mm thk WMM with top bituminous layers comprising of primer coat, tack coat, 50mm thk DBM & 40 mm thk BC matching with the existing road top level.This item alos includes disposal of surplus soil / debris with all lift & leads.	Meter	1733		
b)	**Asphalt road** :Restoration of bitumen Asphalt road after laying of Pipe lines as per the drawing no. MEC/23TS/01/11/D2/ST/LY/0210/R00/A3 , specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per specifications / drawing and to get NOC from the concerned authorities. This item alos includes disposal of surplus soil / debris with all lift & leads.	Meter	3465		
b)	Restroration of the all kind of pathway by using excavated material such as tiles/pavers/granite/red stone etc by providing PCC 1:4:8 of 75mm thickness below or as per construction found and making it as original . Item includes providing of extra material if required due to breakage during excavation work such as Tiles/Paver/Granite etc matching to original pathways.	Meter	1733		
c)	**Reinforced Cement Concrete road/ pavement:** Restroration of Reinforced concrete road and pavements shall be done by providing PCC 1:4:8 of 75 mm thick and RCC 1:2:4 of 100 mm thickness and providing minimum 8mm dia reinforcement steel at 200mm c/c . The cost of reinforcement . Shuttering, compacting the base surface etc. are in the scope of this item.	Meter	1733		
ML-3	**BORROWED SELECT SOIL FOR BACKFILLING**				
	Additional work over and above item 1.5 for supply of specified and approved quality of borrowed foreign soft graded soil / sand in place of available excavated material and / or other suitable soil as per applicable standards / specifications, including backfilling of excavated trench for specified length after laying and padding of pipeline, including transportation of such special backfill material over all distances, complete. (Also to be used in open cut road crossing if required as per decision of EIC)	CUM	4200		
ML-4	**Steel Pipeline CROSSINGS BY HDD without casing**				
	Complete work of the road /Nala crossing (between the limits are defined as in approved drawings) by HDD method including transporation of three layer PE coated line pipes from Contractor's designated place / storage work site including all handling loading, unloading, aligning etc., manpower, equipment, other resources and aquiring the required land for storage, fabrication inclduing string preparation of pipes(carrier), welding, welding repair, radiography, coating of field joints with special type Heat Shrink Sleeve (DIREX SLEEVE)and repair of pipeline coating with special repair patch materials as per specification, pre-testing etc. of complete string made for crossing access for Contractor etc. and execution of, but not limited to, following works in accordance with specifications and instruction of Engineer-in-charge and as per all provision of Contract Document.				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Pre-construction survey based on site visit, collection of data (if required) from concerned Authority including design and detail engineering and making of crossing drawings for getting their approval from concerned Authority/ & Engineer-in-charge, getting work permit/ NOC for road/ Nala crossing as well as utility crossings (if any) encountered during road/ Nala crossing prior to start the execution of work.				
	Directional drilling to required depth from top of road/ Nala Bed including maintenance of drill hole in all types of strata including rocky terrain at all depth to accommodate the pipeline at all conditions encountered during road/ Nala crossing by approved HDD methods for providing minimum cover specified in code/ specification or the actual depth as decided by concerned authority, whichever is more.				
	Backfilling of the ditch/ trench including restoration and cleanup of area and all other works including pigging, cleaning, final hydrotesting etc. alongwith mainline works (as mentioned in item no. 1.0 above) required as per specification, approved drawings, calculations, methods and to the satisfaction of Engineer-in-charge and/or as directed by concerned Authority.				
4.1	**ROAD/Nala CROSSINGS by HDD: in all type of soil**				
4.1.1	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 8" NB, 6.4 mm thk API 5LX52	Meter	1375		
4.1.2	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 6" NB, 6.4 mm thk API 5LX52	Meter	1750		
4.1.3	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 4" NB, 6.4 mm thk API 5LX52	Meter	2125		
ML-5	**CASED CROSSING WITH HDD:**				
	Complete work of the road (National Highway, State Highway, MDR) or Rail crossing (between the limits as defined in approved drawings) including handling, loading, transportation, unloading to Contractor's own stock yard/ work site.				
	Pre-construction survey and making of crossing drawing based on site visit and getting their approval from concerned Authority/ & Engineer-in-charge prior to start the execution of work.				
	Supply and Installation of casing pipe by jacking/ boring/or as described below for rail crossings in all type of soil strata including soft / hard rock and open cut for adjacent service road, canal, minor nature of water channel, utility line crossing etc. (if any) wherever required for all depth in all type of soils and terrrain for carrier pipe insertion. All other Contractor supplied materials like casing insulators, Zinc Ribbon Anodes and casing end seals as per enclosed specification/ drawings materials for casing vents and drain assembly etc. including supply of all other materials, equipments, consumables, manpower, welding including visual inspection of all weld joints. The casing pipes shall conform to material API 5L Gr. B / IS : 3589 or equivalent ERW Pipe duly Corrosion coated of High build epoxy of minimum 450 microns thickness				
	Preparation of required length of carrier pipeline welded string including all other works as mentioned in item no. 1.0 above and as per specification/ drawings. Insertion of carrier pipe in casing pipe after above ground pretesting at specified test pressure including installation of casing insulators and Zn ribbon anode as per approved design calculation, specification/ drawings. Insatllation of vent and drain assembly, fixing of end seals, backfilling and restoration as original of the facilities crossed and performing all other works including pigging, cleaning, final hydrotesting etc. alongwith mainline works (as mentioned in item no. 1.0 above) and as per specification, approved procedure, drawing etc. and instruction of Engineer-in-charge and provision of contract document, getting NOC from all concerned Authority of the facilities crossed.				
	2.5 m min depth to maintain throughout the railway crossing as per instruction of railway DRM.				
	Major crossings like railways & Highways				
5.10	Cased crossings in all type of Soil				
5.1.1	By Jacking/ Boring of Casing Pipe 14" NB.with 8" NB pipeline	M	550.00		
5.1.2	By Jacking/ Boring of Casing Pipe 12" NB.with 6" NB pipeline	M	700.00		
5.1.3	By Jacking/ Boring of Casing Pipe 10" NB.with 4" NB pipeline	M	850.00		
	Note: (i) Actual length & cover from top of casing pipe string may vary depending upon site conditions, approved drawings, specification etc. and / or as decided by concerned Authority / Engineer-in-charge.				
	(ii) Payment for supply & installation of Zinc ribbon anode and its design excluded from above item and covered elsewhere in the SOR.				
	(iii) Payment for the length carrier pipeline string inserted in casing pipe laid by Boring are covered separately and shall be paid under other items mentioned elesewhere in the SOR.				
	(iv) Width of above crossings indicated are tentative. The width indicated in SOR item 5.1.3 to 5.1.6 are not for any single crossings. This shall be as per requirement at site for crossings at different locations.				
ML-6	**PERMANENT MARKERS**				
	Supply, fabrication and installation of all types of permanent markers along the route including all associated civil works such as excavation in all types of soil, construction in all types of soil, construction of pedestals and grouting with concrete, clearing, supply and application of approved colour and quality of primer and paint, stencil letter cutting for numbers, direction, change etc., restoration of area to original condition and performing all works as per drawing, specification and instruction of engineer-in-charge.				
6.1	Pipeline RCC boundary / route marker as per drawing	Nos.	420		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
6.2	Pipeline warning markers with post & foundations	Nos.	60		
6.3	Pipeline warning plate markers without post & foundations	Nos.	60		
			60		
6.4	Pipeline direction marker with post & foundations	Nos.	60		
6.5	Pipeline KM with post & foundations	Nos.	42		
ML-7	PRE-COMMISSIONING AND ASSISTANCE IN COMMISSIONING OF PIPELINE SYSTEM				
	Swabbing, drying, purging with nitrogen of the complete pipeline network and the associated facilities being installed to the specified acceptance criteria, carrying out pre-commissioning works, providing assistance during the complete duration of commissioning operations for entire pipeline network system including supply of all equipment, man-power, consumables (including pigs & nitrogen required for purging with maintaining nitrogen column of mininum 10% of pipeline geometric volume) materials for all temporary works and performing all associated works, complete as per the relevant specifications, other provisions of Contract document and instructions of Engineer-in-charge.				
7.1	For 8" NB Pipe line	Meter	11000		
7.2	For 6" NB Pipe Line	Meter	14000		
7.3	For 4" NB pipe Line	Meter	17000		
ML-8	IDLE TIME PRESERVATION OF PIPELINE				
	Preservation of complete pipeline and associated facilities forming part of the pipeline as per Bid document and its maintenance including supply of all consumables, all equipment, man-power, etc. complete as per the requirements of specifications, other provisions of Contract document and instructions of Engineer-in-charge.				
	Note : Owner reserves the right to exercise either or none of the rates below.				
	By filling and pressurizing with nitrogen to a pressure of 2 bar(g) for a period of one month.				
8.1	For 8" NB Pipe line	Meter	11000		
8.2	For 6" NB Pipeline	Meter	14000		
8.3	For 4" NB Pipeline	Meter	17000		
ML-9	LONG RADIUS BENDS				
9.1	Supply of Long Radius Bends (R = 3D) for 8" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.1.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	44		
9.1.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	22		
9.1.3	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	22		
9.2	Supply of Long Radius Bends (R = 3D) for 6" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	56		
9.2.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	28		
9.2.3	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	28		
9.3	Supply of Long Radius Bends (R = 3D) for 4" dia.pipe, (thk. 6.4 mm) as per specification enclosed in Tender Document. (Installation of bends is included in the pipeline laying and measured along with the pipeline)				
9.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	68		
9.2.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	34		
9.2.4	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	34		
	Note : The quantities of LR Bends may vary. For final quantity, approval from EIC shall be taken before order.				
ML-10	ERECTION OF VALVES				

1	**MAINLINE WORKS**				
Sl. No.	**Description of Item**	**Unit**	**Total Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
	Handling including lifting and transportation from COMPANY's warehouse to CONTRACTOR'S Stores and/or work site and installation of all types of valves, including assembly of valve accessories, (if any) by bolting, threading or welding, supply and insertion of gaskets, nuts & bolts, nipples, etc. at all elevations of pipe sleepers, supports or overhead on racks, equipments nozzle, skid & painting etc. supply of all consumables, manpower, equipment, etc. for completion of all works as per scope of work and as per drawings, specifications and instructions of Engineer-in-charge including servicing/ cleaning of valve wherever requried.				
10.1	Erection of all types of valves in valve pits on underground pipe lines				
a)	8" NB		4		
b)	6" NB		7		
c)	4" NB		15		
d)	2" NB (Supply & erection)		26		
	Note: Valves of Size 8", 6" & 4" NB will be issued as free issue items.				
ML-11	**SUPPLY & ERECTION OF FITTINGS AND FLANGES in valve pit**				
	Complete work of supply of fittings and flanges including all taxes, duties, transportation and inspection charges but not limited to, the following items in accordance with relevant specifications indicated in clause of SCC & scope of work indicated in SCC, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT.				
	Handling including lifting, transportation from Contractor Stores to CONTRACTOR's workshop for fabrication and/ or to work site for field fabrication and erection for all piping items supplied by Contractor.				
	TEE				
11.1	**Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW**				
11.1.1	4" NB	Nos.	20		
11.2	**Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW**				
11.2.1	6"x 4" NB	Nos.	20		
11.2.2	8"x 4" NB	Nos.	20		
11.2.3	4" X 2" NB	Nos.	30		
	FLANGES				
11.3	**Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)**				
	(End Thickness to match pipe thickness)				
11.3.1	**8" NB**	Nos.	15		
11.3.2	**6" NB**	Nos.	15		
11.3.3	4" NB	Nos.	30		
11.3.4	2" NB	Nos.	26		
11.4	**Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)**				
11.4.1	8" NB	Nos.	20		
11.4.2	6" NB	Nos.	10		
11.4.3	4" NB	Nos.	30		
11.4.4	2" NB	Nos.	10		
11.5	**Weldolet**				
11.5.1	6x2"NB	Nos.	10		
11.5.2	8X2" NB	Nos.	20		
11.6	**Elbow**				
11.6.1	4"	Nos.	20		
11.6.2	6"	Nos.	10		
11.6.3	8"	Nos.	20		
11.6.4	2"	Nos.	10		
ML-12	**Construction of Valve pits for Steel Line**				
	Construction of Valve Pits for Steel line as per the enclosed drawing and specification. The item includes supply of all the material including Pre-cast RCC cover, shuttering,reinforcement,labour,curing etc as per the drgs ,specification and instruction of EIC.				
12.2.1	As per the drawing	Nos	13		

1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Total Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
	Total Amount (all inclusive except GST)				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
TCP-1	**TEMPORARY CATHODIC PROTECTION SYSTEM**				
1.1	Survey, Design, detail engineering of the temporary Cathodic protection system using Mg (Min 3.0 Kg Each)/ Zn galvanic anodes to protect the external surface of **8", 6", 4" dia** , 3LPE Coated pipeline in the Geographical Area (GA) of East & West Godavari dist. against corrosion for a design life of minimum 2 year as per standard specification enclosed with the tender for temporary cathodic protection system, approved design document, data sheets & drawings. Scope shall also include but not limited to the following for completion of jobs:				
a)	Measurement of soil resistivity along the right of way of the main pipeline & take atleast one soil sample for one pipeline section for its chemical & microbial analysis along the pipeline route as per specification for corrosion survey MEC/TS/05/21/016C.				
b)	Collection of additional data related to cathodic protection along the right of way of pipeline as per standard specifications.				
c)	Design, Detailed Engineering, Preparation of Design Document, Preparation of Test station schedule & Bill of Material as per the corrosion survey & Chemical analysis of Soil / Water samples for Temporary Cathodic Protection system.				
i)	8" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	11.00		
ii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	14.00		
iii)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	17.00		
	Note: Design shall be carried out from Insulation Joint to Insulation Joint. Each stretch of length will be vary from location to location				
1.2	Manufacturing, Inspection/FAT (Factory acceptance test), supply, Packing, transportation to site, storage, installation, testing & commissioning of the temporary Cathodic protection system using Mg (Min 3.0 Kg Each)/ Zn galvanic anodes to protect the external surface of 8", **6", 4" dia** , 3LPE Coated pipeline in the Geographical Area (GA) of East & West Godavari Dist. against corrosion for a design life of minimum 2 year as per standard specification enclosed with the tender for temporary cathodic protection system, approved design document, data sheets & drawings. Scope shall also include but not limited to the following for completion of jobs:				
a)	Supply, installation, testing & commissioning of Mg/ Zn Galvanic anodes including carrying out Thermit welding on main pipeline, suppy of clits, cables to conenct to anodes as per the standard specification- MEC/TS/05/E9/016A. The weight of the Mg Anode & the total nos. of anodes shall be calculated as per the result of corrosion survey, soil chemical analysis, total weight and current requirement of the pipeline section. However, Min one anode is to be installed at every one KM with test station. The scope of work includes the the following:and also to be carried out as poer approved design including supply of all item				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
b)	Supply, Installation, Testing & commissioning of Test stations (Big Size & Normal Size) weather proof (IP-55) as per specification & enclosed drawings.				
c)	Supply, installation, testing & commissioning of one set of spark gap arrestor 100 kA (Solid State) across each insulating joint provided at tap-off, SV & various consumer terminals as per scope of work / specification. The un-protected/above ground pipeline shall be earthed through GI earth electrodes with separate earth pit. The resistance of grounding shall be limited to 5 ohms max.				
d)	Supply, installation, testing & commissioning one set of polarization cell (Solid State) with zinc anode at all high tension electrical power transmission line/equipments /railway tractions (all 66 KV & above) crossing or running parallel to the pipeline for grounding purpose as per specification. The rating shall depend upon anticipated fault current & ground bed resistance at the location of installation. However, the rating of polarisation cell (solid state) shall not be less than 3.7 KA @ 30 cycle & number of 20 kg net weight zinc anode shall not be less than two.The resistance to earth of grounding shall be limited to 5 ohms max.				
e)	Supply & installation of Zinc Ribbon Anodes at 4-8 O'clock position in the interval of 2 meter (max.) on carrier pipes where casing pipe is coated and no addtional protection for carrier pipe where casing is bare which also includes Zn bentonite filling b/w carrier & casing cased crossings i.e. roads etc as per specification & Scope of work.				
f)	Bonding in between pipelines running parallel or crossing as required.				
g)	Supply, Laying of HDPE/PVC sheets between the BGL GAS pipeline and the other CP protected foreign pipelines at the crossing locations for providing electrical isolation.				
h)	Earthing of above ground catholically unprotected pipeline at , SV, R/T & D/T etc, as applicable the earth electrode shall be 65 mm dia, 4.5 mm thickness & 3000mm long.				
i)	Supply, installation, testing & commissioning of Electrical resistance Probes (1 No. with 1 no. of ER probe reading Instrument)(if applicable) utilizing the electrical resistance technique shall be provided along the pipeline at marshy areas and at vulnerable locations to monitor the external corrosion activity on the pipeline. Location of external ER probe shall be decided during detail engineering.				
j)	Supply, installation, testing & commissioning of Polarisation coupons (2 Nos.) (if applicable) have one side exposed area of 100 mm x 100 mm with 2 nos. of spare coupons shall be provided along the pipeline at marshy areas and at vulnerable locations to monitor the external corrosion activity on the pipeline as per enclosed standard specification. Location of external Polarisation coupons shall be decided during detail engineering. Magnetic devices for operation of magnetic switch shall be provided.				
k)	Supplying,laying ,testing of 35 ,25,10 ,6 sq.mm, 600/1100 V grade copper cables XLP insulated /PVC sheath of including excavation in soil or rock of minimum 1.2m depth below GL,				
l)	Making cable to pipe jointing by thermit welding/Pin brazing (for charged pipeline) for 35 ,25,10 ,6 sq.mm copper cable including excavation and exposing piping , recoating with epoxy, testing etc.				

2-(I)	CATHODIC PROTECTION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
m)	Monitoring of the TCP system till commissioning of PCP system & handing over of the pipeline system to BGL.				
n)	All civil/ structural works related to TCP system including supply of bricks, cement & steel etc. required for completion of the system.				
i)	8" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	11.00		
ii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	14.00		
iii)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	km	17.00		
	Total Amount (all inclusive except GST)				

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PP-1	**PIPING (ABOVEGROUND)**						
	Supply, Transportation including loading, unloading & handling of all piping items fromstorage point to work site/ workshop as applicable, complete work of fabrication, erection, painting, testing of pipes, flanges and fittings, insulation joints and making ready for further Commissioning / Start-up of carbon steel piping of all sizes and ratings including supply of all consumables, equipment, manpower and other resources and execution of, but not limited to, the following works in accordance with relevant specifications & scope of work, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT. **Note : Valve erection shall be paid through separate SOR**						
-	Fabrication including cutting, edge preparation, inclusive of grinding the edges of pipes, fittings, flanges etc. to match with the matching edges of uneven/different thickness wherever required, welding, attachment of all pipe fittings like elbows, tees, reducers. Supply of nipples, couplings,caps, plugs, gasket, stud bolts, nuts, U Clamps etc. as required for completion of job.						
	Checking, cleaning, aligning, bending, cutting and bevelling (as required) of pipes for welding and field adjustments including pipe fittings, welding, carrying out non-destructive testing of welds as required including 100% radiography by Gamma-ray and providing all requisite equipment, labour, supervision, materials, films, consumables, all facilities and personnel to process, develop, examine and interpret radiographs and other tests as required, carrying out repairs of weld joints found defective by Engineer-in-Charge, carrying out re-radiography / x ray and other tests as required on repaired joints.						
-	Fixing/ Installation of weldolets, sockolets, flanges, vent and drain point connection etc., including providing stub-in connections, fabricated fittings and reinforcement pads etc., as required.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	Erection including prior cleaning, lifting, placing on pipe sleepers and supports, overhead on racks, skids and at all elevations including installation and carrying out connected activities for all types of valves including supply and fixing of gaskets, studs/ bolts, nuts wherever required for all sizes, levelling, aligning, joining of flanges, blind flanges, connecting with equipment, nozzles, strainers, tie-in with existing piping/facilities, etc. tapping for inline instruments like pressure gauges, thermowells, sample connection, etc.						
-	Preparation of final bill of material based on piping GADs.						
-	Preparation of isometric and fabrication drawings.						
-	Carrying out Non-destructive testing as required except items mentioned in sl. no. 5 of SOR.						
-	Surface preparation before application of primer by means of dry abrasive including supply of approved quality of dry abrasive, manpower, machineries, tools & tackles to achieve required roughness as per specification and as per instruction of Engineer-in-charge.						
-	Painting of entire system (including aboveground all pipes fittings, flanges and accessories) as per specification MEC/S/05/21/07 including supply of approved paints and primers, application of primer and paints, indentification lettering/ numbering, colour coding, etc. as specified including rub down & touch up of shop primer or scrapping of shop primer wherever required by COMPANY and providing scafolding for all heights etc.						
-	Cleaning and flushing by water/ compressed air, testing of the systems including hydrostatic, pneumatic and any other type of testing as specified, draining, drying by compressed air/other methods approved by COMPANY.						
-	Precommissioning & making operational all piping system and equipments and provide all necessary assistance in term of supply of man-power, equipment, tools and tackles required amount of nitrogen for purging of entire terminal piping system including equipments etc. to the company during commissioning activities.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-	Clean-up and restoration of site, preparation of as built drawings, documents and project records; transportation of surplus free issue material to Owner's designated plac(s); completing all works in all respects as per the AFC drawing, specifications, standards and other provisions of Contract and instruction of Engineer-in-charge.						
-	Completion of all such work in all respects as per scope of work and as per drawings, specifications and instructions of the Engineer-In-Charge and keeping the system ready in all respects for further commissioning and start up.						
-	Hook-up works including making provision for hooking up and carrying out shutdown activities at terminals if necessary.						
1.1	Complete Carbon Steel Piping Work with painting including all fittings, flanges and supply of all required gaskets, studs bolts & nuts etc. as described under item 1.0 above						
1.1.1	Pipes of different grades and thickness	m	6"NB		500		
1.1.2	Pipes of different grades and thickness	m	4" NB		2500		
1.1.3	Pipes of different grades and thickness	m	8"NB		500		
PP-2	**SUPPLY & ERECTION OF ASSORTED PIPE, FITTINGS AND FLANGES AND INSULATION JOINTS**						
	Complete work of supply of pipes, fittings and flanges , insulation joints including all taxes, duties, transportation and inspection charges but not limited to, the following items in accordance with relevant specifications indicated in clause of SCC & scope of work indicated in SCC, drawings, specification and instructions of Engineer-in-charge and as per all provisions of the CONTRACT DOCUMENT.						
-	Handling including lifting, transportation from Contractor Stores to CONTRACTOR's workshop for fabrication and/ or to work site for field fabrication and erection for all piping items supplied by Contractor.						
2.1	**CARBON STEEL PIPES**						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.1.1	CS pipe Sch.80 API 5L, Gr. B, PSL-2, Seamless, BE / ASTM A106, Gr. B (Charpy), Seamless, BE	m	2" NB	S80	1000		
2.1.2		m	1" NB	S80	100		
2.1.3		m	¾" NB	S160	100		
2.2	**FLANGES**						
	Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)						
2.2.1	(End Thickness to match pipe thickness)	Nos.	6"	300#	20		
2.2.2		Nos.	4"	300#	40		
2.2.3		Nos.	2"	300#	30		
2.2.4		Nos.	8"	300#	10		
2.2.5	Socket Welded (B-16.5, A105, 125 AARH, SW end to B16.11)						
2.2.6	**Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)**	Nos.	6"	300#	10		
2.2.7		Nos.	4"	300#	20		
2.2.8		Nos.	2"	300#	10		
2.2.9		Nos.	8"	300#	10		
2.3	**ELBOW**						
2.3.1	90° Elbow (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.3.2		Nos.	6"	S40	10		
2.3.3		Nos.	4"	S40	40		

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.3.4		Nos.	2"	XS	25		
2.3.5	90° Elbow (A234, Gr. WPB (Charpy), B-16.11, 1.5D), SW	Nos.	3/4"	XS	10		
2.4	**TEE**						
2.4.1	Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.4.2		Nos.	4"	S40	20		
2.4.3			6"		10		
	Equal Tee (A234, Gr. WPB (Charpy), B-16.11, 1.5D), SW	Nos.	3/4"		5		
2.4.4	Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW	Nos.	4" x 2"	S40 x XS	20		
2.5	**REDUCER**						
	Concentric Reducer (A234, Gr. WPB (Charpy), B-16.9)						
2.5.1		Nos.	4" x 3"	S40	30		
2.5.2		Nos.	6" x 4"	S40	10		
2.5.3		Nos.	2"x1"	XS	5		
2.5.4							
2.5.5							
2.6	**SOCKOLET** (A105, SW)						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2.6.1		Nos.	4" x ¾"	3000#	25		
2.6.2		Nos.	4" x 1"	3000#	25		
2.8	**INSULATING JOINTS** (As per Standard Specification and Data Sheets enclosed). **Insulation joints will be issued as free issue items**						
2.8.1		Nos.	4"	300#	21		
2.8.2		Nos.	6"	300#	4		
2.8.3		Nos.	8"	300#	2		
	Note:a) All butt welded fittings end shall generally match with connecting pipe wall thickness however in case of misalignment Contractor shall have to do end preparation without any extra cost.						
	B) All coupling, nipples etc. as required shall be supplied by contractor but no separate payments shall be made as it is covered under erection rate.						
PP-3	**SUPPLY & ERECTION OF VALVES**						
	Handling including lifting and transportation from COMPANY's warehouse to CONTRACTOR'S Stores and/or work site and installation of all types of valves including assembly of valve accessories, (if any) by bolting, threading or welding, supply and insertion of gaskets, nuts & bolts, nipples, etc. at all elevations of pipe sleepers, supports or overhead on racks, equipments nozzle, skid & painting etc. supply of all consumables, manpower, equipment, etc. for completion of all works as per scope of work and as per drawings, specifications and instructions of Engineer-in-charge including servicing/ cleaning of valve wherever requried. **8", 6", & 4" NB valves are under free issue items.**						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3.1	**Butt welded Valves (Full Bore/ Reduced Bore)**						
	Ballvalves BW, FB	Nos.	8"	300#	1		
3.1.1	Ballvalves BW, FB	Nos.	6"	300#	2		
3.1.2	Ballvalves BW, FB	Nos.	4"	300#	15		
3.2.2	Ballvalves RF, FB	Nos.	2"	300#	15		
3.2.6	Ballvalves SW, FB	Nos.	¾"	800#	15		
PP-5	**Installation of MRS/DRS**						
5.1	Handling, including lifting, transportation from Company's stores at Hyderabad to Contractor's work-shop for fabrication or/ and to worksite for field fabrication, assembly of parts/ sub-assemblies erection for all vessels, equipments, skid supplied by company above ground/ underground at all elevation/ depth, fixing of foundation bolts welding wherever required, alinging, grouting, hooking-up, cleaning and flushing by water draining, drying by compressed air providing all mountings, ancilliary, enabling works as required and completing in all respect as per drawings, specification and instruction of Engineer-in-charge. Contractor's scope shall include supply of all material and accessories including but not limited to any fixtures, clamps, gasket, nut bolts, finish coat of painting including rub down & touch up of shop primer/ paint scrapping of shop primer/ paint and further their painting after application of primer as per specification, wherever required by Company.						
5.1.1	MRS/DRS	Nos.			10		
Note:	1) The quantities given above against individual items are indicative and shall not be considered to be binding. The quantities may be increased, decreased or deleted at site at the time of actual execution. Procurement shall be done as per actual site condition, approved construction drawings and as per instruction of Engineer-in-charge. The unit rate shall be operated to work out the final payment to the contractor.						

3-(I)	PIPING & MECHANICAL WORKS						
Sl. No.	Description of Item	Unit	Size	Rating/ Thk.	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Sch.		Figures	(6) x (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	2) In each area, quantities given against individual item may be utilise/ used for other consumer in same area.						
	3) The rates quoted shall be applicable for all Terminals						
	Total Amount (all inclusive except GST)						

3-(II)	CIVIL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
CIV-1	SITE CLEARANCE				
a)	DEMOLITION OF R.C.C./BRICKS/STONE MASONARY				
	Site clearance by demolition of R.C.C./Brickwork/Stone masonry/ Stone soling, Flexible pavements (including steel bars)etc.,alongwith removing the debris and disposal of unserviceable material to any lead and staking of serviceable materials, handing over serviceable material to concerned department if required as per technical specifications and direction of Engineer-in-charge.	M3	100		
b)	TREE CUTTING				
	Tree cutting (only of girth more than 30 cm shall be counted for payments) including royalties, disposal, taking approval from competent authorities etc. all complete, as per technical specifications and direction of Engineer-in-charge.	Nos.	75		
CIV-2	EARTH WORK IN EXCAVATION/ SITE GRADING AND BACKFILLING				
a)	Earth work in excavation,site grading and backfilling in all kinds of soil including soft rock in any plan dimension up to 3.0M depth including disposal of excavated surplus and unserviceable earth up to any lead in all conditions. Soil to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings, as per technical specifications and directions of the Engineer-in-charge.	M3	400		
CIV-3	EARTH WORK IN EXCAVATION/ SITE GRADING IN HARD ROCK				
a)	Earth work in excavation in hard rock requiring blasting for all type and size of foundations in any plan dimension up to required depth including disposal of excavated material up to any lead in all conditions, and disposal of surplus and unserviceable material. Surface to be leveled and neatly dressed complete in all respect as per scope of work, detailed construction drawings and directions of the Engineer-in-charge.	M3	200		
CIV-4	EARTH WORK IN FILLING				
a)	Earth work in filling with good quality imported earth from approved source in the layers of 150 mm and compacted up to 95% to its MDD up to 3 m depth and any plan dimension including all testing, watering, rolling each layer with 1/2 tonne roller or wooden or steel rammers, and dressing / filling up ground depressions etc. complete in all respect as per scope of work, detailed construction drawings , as per technical specifications and directions of the Engineer-in-charge.	M3	150		
CIV-5	PLAIN CEMENT CONCRETE				
a)	Supplying and laying plain cement concrete with stone aggregate 20mm down grade (including shuttering if required) in all types of concrete works including levelling courses below foundations, columns, pedestals, pedestal bases, pipe supports,floors, chambers, cable trench, under floors and any other locations (which are not covered as part of composite items) , at all levels and locations as per drawings, specifications and directions of the Engineer-in-charge.				

3-(II)	CIVIL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
	i) 1:2:4	M3	300		
	ii) 1:4:8	M3	200		
CIV-6	REINFORCED CEMENT CONCRETE				
	Providing and laying RCC (reinforced cement concrete) of grade M-25 with 20mm and down grade crushed stone aggregate in all types of structures like Beams, foundations, walls, columns, pedestals, pedestal bases, pipe supports, sleepers, cable trench, RCC retaining wall foundation for boundary wall including construction joints, shuttering at all depths and levels complete as per drawings, specifications and directions of the Engineer-in-charge.				
	i) Sub structures	M3	200		
	ii) Super structures	M3	300		
CIV-7	REINFORCEMENT STEEL				
	Supplying and Fabricating and Fixing in position HYSD Steel Reinforcements/ TMT Grade Fe-415 conforming to IS1786-1985 at all levels (all deapth & hights) and positions including the Cost of transport, Straightening, Cutting, Bending, Cranking, Binding, Welding, Provision of necessary Chairs and Spacers, Preparation of bar bending schedule, getting the same approved by EIC etc., complete as per Drawings and Specifications and including Cost of binding wire, Labour etc., all complete in all respects as per scope of work, detailed construction drawings, technical specifications and direction of Engineer-in-charge. The chairs and spacer bars provided will not be Measured for payment.	MT	20		
CIV-8	CEMENT CONCRETE BLOCK WORK				
	Providing and laying cement blocks (solid blocks) masonry Grade M 7.5 with 200 mm thick blocks upto plinth level and super structure in cement mortar 1:4 (1 cement : 4 coarse sand).	M3	100		
CIV-9	BRICK WORK				
	Providing and laying brick work with brick class designation M-7.5 of IS:1077 in Cement Mortar 1:4 (1cement : 4 sand) in steps, compound wall, drains, or at any other location at all depths & height for all leads including providing required finishes, curing, scaffolding, etc., complete as per specifications and drawings with all bye-works as per direction of the Engineer-in-charge.	M3	300		
CIV-10	PAVER BLOCK FLOORING				

3-(II)	CIVIL WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
	Supply , construction and handing over of CC inter locking paver block 80 mm thick, I shape, rough finish, M-30 strength of approved brand laid over the sand bed of minimum 50 mm thick. The CC interlocking blocks to be of uniform Grey colour or as approved by EIC complete in all respects as per scope of work, detailed construction drawings, technical specifications and directions of the Engineer-in-charge.	M2	600		
CIV-11	SAND FILLING				
	Supplying and filling Sand in maximum 300 mm thick layers and compacting by rolling, ramming, consolidating and dressing the surface including cost of sand (zone-II/Zone-III sand only) complete in all respect as per scope of work, detailed construction drawings as per technical specifications and directions of the Engineer-in-charge.	M3	300		
	Total Amount (all inclusive except GST)				

3-(III) STRUCTURAL WORKS					
Sl. No.	**Description of Item**	**Unit**	**Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
				Figures	**(4) x (5)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
ST-1	**Providing and fixing chain link Fencing**				
	Supply, fabrication and erection of structures such as angle iron post/Channel post,Strainer and strut,etc.with necessary holes for fixing the chain link fencing,site assembly and finally erection of structures at appropriate location with painting as per specification,including 2.0m high G.I. Chain link fabric fencing mesh size 50x50x3.15 mm dia, with 0.5 m heigh barbed wire (type-A) as per IS:278-1978 shall be made from two strands of galvanized steel wire of nominal dia 2.5 mm twisted together fixed on fencing posts with GI staples, turn buckles etc, including strengthening with 4 mm dia wire Nuts bolts and washer complete in all respects.All work as per Specification and drawings and as direction of the Engineer-In-Charge(excluding foundation and RCC beams Refer Standard drawing)	R.M	**500**		
ST-2	**Providing and fixing Fencing Gates**				
	Supplying, fabrication & fixing of fencing Mild steel gate 2.5m high with Chian link fencing mesh upto 2m height and 0.5m barbed wire fencing including all fixtures like MS Pivot,locking arrangement, tower bolt etc.complete in all respects including painting ,all work as per Specification and drawings and as direction of the Engineer-In-Charge (excluding foundations and RCC beams)				
a)	2m Wide Gate	Nos.	**20**		
ST-3	**Steel structure** Fabrication & Erection				
	Supply ,fabrication and erection of all types of pipes supports like clamps saddle,guide stops,cradles,turn buckles,anchors,T-post,stockade/trestle and pipe bridge for over head piping ,approach ladders and platform,crossover,cable tray supports,etc. including painting as per painting specification(Bolts,nuts,washer,U-clamps etc. shall be supplied by the contractor within the rates quoted.These items will not be measured and paid seperately).The work is to be completed in all respect as per drawings and techanical specification and direction of the Engineer-in-Charge	KG	**2000**		

3-(III) STRUCTURAL WORKS					
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
(1)	(2)	(3)	(4)	(5)	(6)
	Total Amount (all inclusive except GST)				

3-(IV)	ELECTRICAL WORKS				
Sl. No.	**Description of Item**	**Unit**	**Quantity**	**Unit Rate (all inclusive except GST) in Rs.**	**Total Amount (all inclusive except GST) in Rs.**
EL-1	**EARTHING**				
	Supply, installation, testing & commissioning of the complete earthing system, earth electrodes/pit, earth main ring, earthing of metering skid, electrical equipments, instrument panels, field instruments, process equipments & pipes / flanges and accessories such as GI wire, wire rope and all balance earthing material as per the specification including all associated civil work with all material & labour as per specification & drawings approved by the company.				
1.1	Earth Electrodes including earthpit with 6 mm thick chequered plate cover	Nos.	75		
1.2	GI Strip (25 x 5) mm	Meters	200		
	Total Amount (all inclusive except GST)				

3-(V)	INSTRUMENTATION WORKS				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
				Figures	(4) x (5)
	(2)	(3)	(4)	(5)	(6)
IN-1	**Supply, Calibration and Installation of instrumentation items listed below**				
1.1	Pressure Gauges, Pressure Rating 300# Pressure Range 0 - 50 Kg/cm2 (Includes supply of two isolation valves per each gauge to provide double isolation)	Nos.	15		
1.2	Temperature Gauges [Range 0 - 100°C]	Nos.	15		
IN-2	**EARTHING**				
6.1	Supply 8 SWG G.I. Wire	Mtrs.	75		
6.2	Laying and termination of both ends from earth grid to Field instruments/JBs/Control Panel by 8 SWG G.I. Wire in tray and conduits as required excluding earth-pit preparation.	Mtrs.	75		
6.3	Supply of 4 sq. mm. PVC insulated armoured copper cable	Mtrs.	75		
6.4	Laying and Termination of both ends of 4 sq. mm. PVC insulated armoured copper cable from earth pit to the barrier earth bus bar in trays/conduits/trenches as required.	Mtrs.	75		
	Total Amount (all inclusive except GST)				