

**SUMMARY OF SCHEDULE OF RATES FOR  
LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR  
CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD  
Bid No.MEC/23R8/01/51/D2/T03/ER/6518**

Sl. No.	Description	Indian Rupees (In Figures)	Indian Rupees (In Words)
1	Total amount of quoted price for Mainline Works SOR		
2	Total amount of quoted price for Cathodic Protection Works SOR		
3	Terminal Works	-	-
I)	Total amount of quoted price for Piping & Mechanical Works SOR		
II)	Total amount of quoted price for Civil Works SOR		
III)	Total amount of quoted price for Structural Works SOR		
IV)	Total amount of quoted price for Electrical Works SOR		
V)	Total amount of quoted price 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	<b>Goods and Services Tax (GST) @ 18.00% on Total Amount mentioned at Item No. 4.0 above</b>		
6	<b>Gross Total Amount (Sl. No. 4 + 5)</b>		

LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
1	<b>MAINLINE WORKS</b>				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
<b>ML-1</b>	<b>CARBON STEEL PIPES &amp; MDPE PIPES</b>				
<b>1.1</b>	<b>PIPELINE LAYING / INSTALLATION</b>				
	<b>a) Coated Steel pipe lines laying</b>				
	Receiving , loading , unloading and transportation and stacking of 3-Layer PE coated and bare line pipes issued by BGL as free issue materials from BGL designated store yard within GHMC limits of Hyderabad 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 BGL 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 required depths by excavation in all types of soils <b>except built up sections</b> 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 1.0 m measured from top of pipeline coating to the top of undisturbed surface of the soil or as per SCC/ relevant code, whichever is higher]. All necessary arrangement will be made and adequate precautions for working at the required depth will be taken by the contractor. 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 and covers, the steel pipeline has to be taken to the required lower depth (as required) by use of slope or vertical bends to accommodate the above without additional cost to BGL.				

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	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, transportation 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. cost towards barricading shall be paid as per separate SOR item.				
	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 X - ray (Gamma Ray where X-ray is not possible at the discretion of EIC) 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).				
	Obtaining in principle ROU permission for laying of the pipeline from the concerned land owning authority (i.e. GHMC / HMWSSB / NHAI / HMDA , R&B etc.) is in the scope of the contractor. Amount for Application fees, Demand note or any other statutory fees will be paid by BGL. Also all the liaisoning with any authority such as GHMC / HMWSSB / NHAI / HMDA, R&B, local officials, traffic police, police, ESCOM, BSNL, Railways, RTO etc. and any other utility companies / agencies such as OFC operators etc. during the execution of pipeline laying, are in the scope of the contractor. The scope also includes liaisoning with Society / individual land owners, road owning authorities for smooth execution of pipeline laying. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner/other utility agencies/ authorities) is in scope of the Contractor. The liaisoning during the execution for all the pipelines for the installed buried length shall be paid as per SOR item ML-6.0 separately.				
	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. However, Supply of 3D bends shall be paid by separate item mentioned elsewhere in SOR.				

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(1)	(2)	(3)	(4)	(5)	(6)
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	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 (600 mm width and 0.5 mm thick ) covering both steel & MDPE pipe on the entire length of both the pipelines as per specification. Warning tape should have anti rodent properties.				
	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/ grating 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 tying-in, including the tie-in(s) of the pipeline with the adjacent sections of pipeline including cutting of test header, rebeveling 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/BGL 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.				

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	Carrying out Sectionalising valve station including tap-off for distribution pipelines on underground steel grid main pipeline & branch pipeline, valves, barred tees, insulating joints, bends (R=3D/1.5D/1D), 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. However, construction of valve pits and erection of flow tees, valves, pipe fittings etc. on the burried pipeline in the valve pits for sectionalising valve stations and tap off shall be paid by separate item mentioned elsewhere in SOR.				
	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 per 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.				
	<b>b) MDPE Pipes laying in the same trench of Steel pipe lines</b>				
	Trenching to required 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 150 mm) to accommodate the pipeline , MDPE Pipe (125 mm, SDR 11, PE 100 Pipe), adjacent to each other with 150 mm clearance except for the location of crossover points of MDPE over steel pipeline for change of sides due to site condition and MDPE pipe flexibility as per the relevant standard/ specification etc. [The minimum depth of the top of pipeline shall be 1.0 m measured from top of pipeline to the top of undisturbed surface of the soil or as top of MDPE pipeline wherever crossing the steel pipeline, as per SCC/ relevant code, whichever is higher]. Dewater of trenches if required as per site condition.				

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	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 BGL 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 preparation 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 of bricks (class 35 ) and placing the brick along its length across the length of MDPE pipeline.				
	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 BGL. All the work shall be executed in accordance with the provision of contract.				
	Installation of Coated Line Pipes & MDPE pipes as per following details:				
	Specified dia. Thk (mm) Material Coating Type Length of each pipe (mm) NB				

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					(4) x (5)
1.1.1	300 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m) & MDPE Pipe - 125 mm dia of PE 100	Meter	2,850		
1.1.2	250 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m) & MDPE Pipe - 125 mm dia of PE 100	Meter	2,300		
1.1.3	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m) & MDPE Pipe - 125 mm dia of PE 100	Meter	4,800		
1.1.4	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m) & MDPE Pipe - 125 mm dia of PE 100	Meter	700		
1.1.5	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	2,000		
<b>Note:</b>					
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 item.				
vii)	The Quoted rate shall be of laying of steel pipe line & MDPE pipeline laying in the same trench as per the drawing. line trench . 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 BGL.				
viii)	The Quoted rate shall include PE pipe branch connections laying in the same item as steel pipe laying. BGL will provide Tees, pipe, caps and fittings as free issue for PE branch connections wherever required. PE pipe laying is to be included in the rate quoted for steel pipe laying.				



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(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
1.20	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 & MDPE Pipes as per following details:				
	Specified dia. Thk (mm) Material Coating Type Length of each pipe (mm) NB				
1.2.1	300 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m) & MDPE Pipe - 125 mm dia of PE 100	Meter	13,050		
1.2.2	250 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m) & MDPE Pipe - 125 mm dia of PE 100	Meter	12,200		
1.2.3	150 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m) & MDPE Pipe - 125 mm dia of PE 100	Meter	15,700		
1.2.4	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m) & MDPE Pipe - 125 mm dia of PE 100	Meter	800		
1.2.5	100 6.4 API 5L Gr. X-52 3 Layer PE Double random Coating (Externally) (approx. 11.5 m to 12.5 m)	Meter	4,250		
1.30	DELETED				
1.40	DELETED				
1.50	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/BGL. (wherever hard rock of single piece exceeding 1.0 m in length along the trench direction as per the decision & direction of EIC)  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 BGL 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 contractor.	CUM	11,426		
1.60	Same as item 1.1 b) above but by moling in all kind of soil (without casing) for PE pipe sizes (if needed in crossings). The contractor Scope also includes restoration of pits. Warning mat is not required to be laid in above pipe line.				



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1.6.1	125 mm PE 100 pipe	Meters	1,600		
1.70	<b>DELETED</b>				
1.80	<b>PE Pipe Laying using Horizontal Directional Drilling (HDD) Technique:</b>				
	Laying of PE pipe , including supply of Couplers, as required to complete the job. Survey of U/G utilities, survey with requisite equipment / manpower, submission of profile drawings and design for approval, execution of the work as per standard procedure attached with proper capacity machine including excavation of pits and subsequent backfilling, compaction, jointing and insertion of PE pipe, testing & commissioning, restoration of the pits to to original condition, submission of As-Built Graph as per specifications and the instruction of Engineer-in-charge. If any additional temporary space is required for positioning of equipment for HDD adjacent to pipeline route, same needs to be arranged by the contractor. Item also includes liasioning with all local authorities, permission if any required, shall be obtained by the contractor.				
i)	<b>HDD Without casing Pipe</b>				
1.8.1	125 mm PE 100 pipe	Meters	3,750		
ii)	<b>HDD With casing Pipe</b>				
1.8.2	<b>DELETED</b>				
ML-2	<b>Restoration of asphalted roads / concrete roads / pavements / foot paths, wherever instructed by EIC .Job includes getting NOC from the concerned authorities.</b>				
a)	<b>Asphalt road</b> :Restoration of bitumen Asphalt road after laying of Pipe lines as per the relevant drawing, specifications and instruction of Engineer-In-Charge. Restoration of roads shall be done as per requirement of <b>EIC/Hyderabad GHMC/NH/etc.</b> 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 also includes disposal of surplus soil / debris with all lift & leads.				
		Meter	12,526		
b)	<b>Asphalt road</b> :Restoration of bitumen Asphalt road after laying of Pipe lines as per the relevant drawing, 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 also includes disposal of surplus soil / debris with all lift & leads.				
		Meter	12,526		
c)	<b>Pavement:</b> Restroation 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	8,350		

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d)	<b>Reinforced Cement Concrete road/ pavement:</b> Restoration 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	8,350		
<b>ML-3</b>	<b>BORROWED SELECT SOIL FOR BACKFILLING</b>				
	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	12,012		
<b>ML-4</b>	<b>Steel Pipeline Laying by Horizontal Directional Drilling (HDD) Technique (without casing pipe):</b>				
	Complete HDD work of the road /Nala crossing (between the limits are defined as in approved drawings including HDD along the road / nala) by HDD method including "Receiving and taking over" owner supplied three layer PE coated line pipes from Owner's designated place to issue/ dump site(s) and transportation to Contractor's stock yard/ work shop/ work site including all handling loading, unloading, aligning etc., manpower, equipment, other resources and acquiring the required land for storage, fabrication including string preparation of pipes(carrier), welding, welding repair, radiography, coating of field joints with special type Heat Shrink 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.				

LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
	<p>Obtaining in principle permission for HDD of the pipeline from the concerned authority (i.e. GHMC / HMWSSB / NHAI / HMDA , R&amp;B, railway etc.) is in the scope of the contractor. Amount for Application fees, Demand note or any other statutory fees will be paid by BGL.</p> <p>Also all the liasioning with any authority such as GHMC / HMWSSB / NHAI / HMDA, R&amp;B, local officials, traffic police, police, ESCOM, BSNL, Railways, RTO etc. and any other utility companies / agencies such as OFC operators etc. during the execution of pipeline laying, are in the scope of the contractor.</p> <p>The scope also includes liasioning with Society / individual land owners, road owning authorities for smooth execution of work. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner/other utility agencies/ authorities) is in scope of the Contractor.</p> <p>The liasioning during the execution for all the pipelines for the HDD length shall be paid as per SOR item ML-6.0 separately.</p>				
	<b>Incase of hard rock contractor has to establish through bore log soil investigation data for carrying out the HDD with diamond bit</b>				
4.1	<b>Steel pipeline HDD (without casing pipe): In all type of soil excluding HARD ROCK AREA</b>				
4.1.1	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 12" NB, 6.4 mm thk API 5LX52	Meter	500		
4.1.2	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 10" NB, 6.4 mm thk API 5LX52	Meter	700		
4.1.3	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 6" NB, 6.4 mm thk API 5LX52	Meter	600		
4.1.4	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 4" NB, 6.4 mm thk API 5LX52	Meter	400		
4.2	<b>Steel pipeline HDD (without casing pipe): IN HARD ROCK AREA USING DIAMOND CUTTER with drilling in hard rock length at the rate of not more than 4.5 m per hour and carrying out soil investigation and lab analysis at a maximum span of 25 metres for establishing the hard rock HDD length to be paid under this item</b>				
4.2.1	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 12" NB, 6.4 mm thk API 5LX52	Meter	250		
4.2.2	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 10" NB, 6.4 mm thk API 5LX52	Meter	700		
4.2.3	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 6" NB, 6.4 mm thk API 5LX52	Meter	600		
4.2.4	For carrier pipeline of 3LPE Coated Carbon Steel Pipeline with Line pipe detail 4" NB, 6.4 mm thk API 5LX52	Meter	300		
<b>ML-5</b>	<b>JACKING / BORING OF STEEL PIPELINES:</b>				
	Complete work of the road (National Highway, State Highway, MDR) or Rail crossing (between the limits as defined in approved drawings) & Jacking / Boring at other places as specified includes 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.				

LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
1	<b>MAINLINE WORKS</b>				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
	<p><b>Supply and Installation</b> 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 terrain 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.</p> <p>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</p>				
	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, end seal 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.				
	<p>Obtaining in principle permission for HDD of the pipeline from the concerned authority (i.e. GHMC / HMWSSB / NHAI / HMDA , R&amp;B, railway etc.) is in the scope of the contractor. Amount for Application fees, Demand note or any other statutory fees will be paid by BGL.</p> <p>Also all the liasioning with any authority such as GHMC / HMWSSB / NHAI / HMDA, R&amp;B, local officials, traffic police, police, ESCOM, BSNL, Railways, RTO etc. and any other utility companies / agencies such as OFC operators etc. during the execution of pipeline laying, are in the scope of the contractor.</p> <p>The scope also includes liasioning with Society / individual land owners, road owning authorities for smooth execution of work. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner/other utility agencies/ authorities) is in scope of the Contractor.</p> <p>The liasoning during the execution for all the pipelines for the HDD length shall be paid as per SOR item ML-6.0 separately.</p>				
5.1.1	<b>Major Jacking &amp; boring (includes crossings like railways &amp; Highways)</b>				
	<b>Major Jacking &amp; boring in all types of Soil excluding HARD ROCK AREA</b>				
5.1.1a	By Jacking/ Boring of Casing Pipe -24 " NB ( 610 mm OD X 9.53 mm wall thickness) - for laying of 12" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	200		

<b>LAYING &amp; CONSTRUCTION OF 12",10", 6" &amp; 4" NB U/G STEEL P/L NETWORK &amp; ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518</b>					
1	<b>MAINLINE WORKS</b>				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
5.1.1b	By Jacking/ Boring of Casing Pipe -20" NB ( 508 mm OD X 9.53 mm wall thickness) - for laying of 10" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	150		
5.1.1c	By Jacking/ Boring of Casing Pipe - 18 " NB ( 457 mm OD X 7.92 mm wall thickness) - for laying of 6" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	100		
5.1.1d	By Jacking/ Boring of Casing Pipe - 14 " NB ( 355.6 mm OD X 7.92 mm wall thickness) - for laying of 4" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe.	M	50		
5.1.1e	By Jacking/ Boring of Casing Pipe - 10 " NB ( 273 mm OD X 6.35 mm wall thickness) - for laying of 4" NB steel pipeline.	M	200		
	<b>Major Jacking &amp; boring in HARD ROCK AREA</b>				
5.1.1f	By Jacking/ Boring of Casing Pipe -24 " NB ( 610 mm OD X 9.53 mm wall thickness) - for laying of 12" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	250		
5.1.1g	By Jacking/ Boring of Casing Pipe -20" NB ( 508 mm OD X 9.53 mm wall thickness) - for laying of 10" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	150		
5.1.1h	By Jacking/ Boring of Casing Pipe - 18 " NB ( 457 mm OD X 7.92 mm wall thickness) - for laying of 6" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	100		
5.1.1i	By Jacking/ Boring of Casing Pipe - 14 " NB ( 355.6 mm OD X 7.92 mm wall thickness) - for laying of 4" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe.	M	50		
5.1.1j	By Jacking/ Boring of Casing Pipe - 10 " NB ( 273 mm OD X 6.35 mm wall thickness) - for laying of 4" NB steel pipeline.	M	200		
	<b>5.1.2 Minor Jacking &amp; boring (includes drains, nallahs, cross roads, culverts &amp; at other places as required)</b>				
	<b>Minor Jacking &amp; boring in all types of Soil excluding HARD ROCK AREA</b>				
5.1.2a	By Jacking/ Boring of Casing Pipe -24 " NB ( 610 mm OD X 9.53 mm wall thickness) - for laying of 12" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	300		
5.1.2b	By Jacking/ Boring of Casing Pipe -20" NB ( 508 mm OD X 9.53 mm wall thickness) - for laying of 10" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	100		
5.1.2c	By Jacking/ Boring of Casing Pipe - 18 " NB ( 457 mm OD X 7.92 mm wall thickness) - for laying of 6" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	150		
5.1.2d	By Jacking/ Boring of Casing Pipe - 14 " NB ( 355.6 mm OD X 7.92 mm wall thickness) - for laying of 4" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe.	M	50		
5.1.2e	By Jacking/ Boring of Casing Pipe - 10 " NB ( 273 mm OD X 6.35 mm wall thickness) - for laying of 4" NB steel pipeline.	M	200		
	<b>Minor Jacking &amp; boring in HARD ROCK AREA</b>				

<b>LAYING &amp; CONSTRUCTION OF 12",10", 6" &amp; 4" NB U/G STEEL P/L NETWORK &amp; ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518</b>					
1	<b>MAINLINE WORKS</b>				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
				(4) x (5)	
5.1.2f	By Jacking/ Boring of Casing Pipe -24 " NB ( 610 mm OD X 9.53 mm wall thickness) - for laying of 12" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	200		
5.1.2g	By Jacking/ Boring of Casing Pipe -20" NB ( 508 mm OD X 9.53 mm wall thickness) - for laying of 10" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	100		
5.1.2h	By Jacking/ Boring of Casing Pipe - 18 " NB ( 457 mm OD X 7.92 mm wall thickness) - for laying of 6" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	150		
5.1.2i	By Jacking/ Boring of Casing Pipe - 14 " NB ( 355.6 mm OD X 7.92 mm wall thickness) - for laying of 4" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe.	M	50		
5.1.2j	By Jacking/ Boring of Casing Pipe - 10 " NB ( 273 mm OD X 6.35 mm wall thickness) - for laying of 4" NB steel pipeline.	M	200		
<b>5.1.3 Other unspecified crossing by open cut method</b>					
<b>Cased crossings in all type of Soil excluding HARD ROCK AREA</b>					
5.1.3a	By Jacking/ Boring of Casing Pipe -24 " NB ( 610 mm OD X 9.53 mm wall thickness) - for laying of 12" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	300		
5.1.3b	By Jacking/ Boring of Casing Pipe -20" NB ( 508 mm OD X 9.53 mm wall thickness) - for laying of 10" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	150		
5.1.3c	By Jacking/ Boring of Casing Pipe - 18 " NB ( 457 mm OD X 7.92 mm wall thickness) - for laying of 6" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	200		
5.1.3d	By Jacking/ Boring of Casing Pipe - 14 " NB ( 355.6 mm OD X 7.92 mm wall thickness) - for laying of 4" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe.	M	75		
5.1.3e	By Jacking/ Boring of Casing Pipe - 10 " NB ( 273 mm OD X 6.35 mm wall thickness) - for laying of 4" NB steel pipeline.	M	200		
<b>Cased crossings in HARD ROCK AREA</b>					
5.1.3f	By Jacking/ Boring of Casing Pipe -24 " NB ( 610 mm OD X 9.53 mm wall thickness) - for laying of 12" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	200		
5.1.3g	By Jacking/ Boring of Casing Pipe -20" NB ( 508 mm OD X 9.53 mm wall thickness) - for laying of 10" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	150		
5.1.3h	By Jacking/ Boring of Casing Pipe - 18 " NB ( 457 mm OD X 7.92 mm wall thickness) - for laying of 6" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe .	M	200		
5.1.3i	By Jacking/ Boring of Casing Pipe - 14 " NB ( 355.6 mm OD X 7.92 mm wall thickness) - for laying of 4" NB steel pipeline & 125 mm MDPE pipe line in common casing pipe.	M	75		

LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
5.1.3	By Jacking/ Boring of Casing Pipe - 10 " NB ( 273 mm OD X 6.35 mm wall thickness) - for laying of 4" NB steel pipeline.	M	200		
	<u>Note:</u> (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) Width of above crossings shall be as per requirement at site for crossings at different locations.				
<b>ML-6</b>	<p><b>Liasioning &amp; Obtaining Permission for laying of steel pipelines of all sizes by all methods including laying of 125 NB PE pipeline in the steel pipe trench, wherever required:</b></p> <p>Obtaining ROU permission for laying of the pipeline from the concerned land owning authority (i.e. GHMC / HMWSSB / NHAI / HMDA , R&amp;B etc.) is in the scope of the contractor. All liasioning and pursuation till issuance of Demand note / other applicable similar document is issued by the permitting authority, is to be carried out by the contractor only. BGL will hand over the application form to the contractor. Amount for Application fees, Demand note or any other statutory fees will be paid by BGL.</p> <p>Further, all the liasioning with any authority such as GHMC / HMWSSB / NHAI / HMDA, R&amp;B, local officials, traffic police, police, ESCOM, BSNL, Railways, RTO etc. and any other utility companies / agencies such as OFC operators etc. during the execution of pipeline laying, are in the scope of the contractor.</p> <p>The scope also includes liasioning with Society / individual land owners, road owning authorities for smooth execution of pipeline laying. Repairing/replacement of all damaged utilities if any, and payment of any compensation (if claimed by owner/other utility agencies/ authorities) is in scope of the Contractor.</p>	Meters	66,000		
<b>ML-7</b>	<b>REPAIR OF DEFECT IN PIPES (NOT ATTRIBUTED TO CONTRACTOR)</b>				
	Repair of defects on Owner supplied linepipes of all grades and wall thickness as specified in following items, noted and recorded at the time of "receiving and taking over" by Contractor in the presence of Engineer-in-charge.				
7.1	Cutting and rebevelling for dents in bevels exceeding 3 mm in depth for pipe sizes:				
	<b>Specified NB, mm</b>				
7.1.1	12"	Nos.	200		
7.1.2	10"	Nos.	160		
7.1.3	6"	Nos.	220		
7.1.4	4"	Nos.	200		
7.2	Jack out of dents in bevels ranging between 1 mm and 3 mm in depth for pipe sizes:				
	<b>Specified NB, mm</b>				
7.2.1	12"	Nos.	200		



LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
7.2.2	10"	Nos.	160		
7.2.3	6"	Nos.	220		
7.2.4	4"	Nos.	200		
<b>ML-8</b>	<b>REPAIR OF COATING DEFECTS (NOT ATTRIBUTED TO CONTRACTOR)</b>				
8.1	<b>Repair of Holiday in Coating (Noted and recorded at the time of "receiving and taking over")</b>				
	Supply of all coating repair materials as per requirements of specification to be compatible with line pipe coating material, supply of all consumables, utilities, equipments and all manpower required, pipe cleaning and surface preparation, repairing of coating defects (resulting in holiday) and testing including all handling, transportation, etc. for line pipes, performing all works necessary for the completion of the works strictly in accordance with relevant specification and instructions of Engineer-In-Charge. This rate shall be applicable per sq. cm of the exposed steel area.	Sq. cm	780		
<b>ML-9</b>	<b>PERMANENT MARKERS</b>				
	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.				
9.1	Pipeline RCC boundary / route marker as per drawing	Nos.	528		
9.2	Pipeline warning markers with post & foundations	Nos.	268		
9.3	Pipeline warning plate markers without post & foundations	Nos.	132		
9.4	Pipeline direction marker with post & foundations	Nos.	132		
9.5	Pipeline KM with post & foundations	Nos.	66		
<b>ML-10</b>	<b>LEAK / BURST (ATTRIBUTABLE TO OWNER)</b>				
	All works for locating leak / burst in Company's supplied material only (occurred during hydro-static testing) including necessary repairing/replacing defective pipe lengths including cutting out and removing the defective pipe, pre-testing and welding of replacement pipe, NDT of welds, repair and retesting of defective welds, coating/painting of replacement pipe, pretesting the replacement pipe into mainline/branch line, coating/painting of welding joints, cleanup, retesting including cost of all labour materials, consumables and performing all works in accordance with the provisions of the Contract document and as directed by Owner /Engineer-in-charge/ Engineer in-charge				
10.1	For 12" NB Line	LUMPSUM	3		
10.2	For 10" NB Line	LUMPSUM	3		
10.3	For 6" NB Line	LUMPSUM	3		
10.4	For 4" NB Line	LUMPSUM	3		
	<u>Note:</u>				
i)	This rate is applicable for manufacturing defects in Owner supplied material only.				

LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
1	<b>MAINLINE WORKS</b>				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
ii)	Leak detection, its rectification and successfully re-hydrotesting shall be carried out as per approved procedure by Contractor with a view that completion of all activity for successful hydrotesting is not inordinately extended which will hamper the overall project schedule.				
<b>ML-11</b>	<b>PRE-COMMISSIONING AND ASSISTANCE IN COMMISSIONING OF PIPELINE SYSTEM</b>				
	Swabbing, vacuum 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 minimum 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.				
11.1	For 12" NB line	Meter	18,000		
11.2	For 10" NB line	Meter	16,000		
11.3	For 6" NB Line	Meter	22,000		
11.4	For 4" NB Line	Meter	10,000		
<b>ML-12</b>	<b>IDLE TIME PRESERVATION OF PIPELINE</b>				
	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.				
12.1	By filling and pressurizing with nitrogen to a pressure of 2 bar(g) for a period of one month.				
i)	For 12" NB line	Meter	18,000		
ii)	For 10" NB line	Meter	16,000		
iii)	For 6" NB Line	Meter	22,000		
iv)	For 4" NB Line	Meter	10,000		
12.2	For every additional period of one month or proportionately				
i)	For 12" NB line	Meter	18,000		
ii)	For 10" NB line	Meter	16,000		
iii)	For 6" NB Line	Meter	22,000		
iv)	For 4" NB Line	Meter	10,000		
<b>ML-13</b>	<b>LONG RADIUS BENDS</b>				
13.1	Supply of Long Radius Bends (R = 3D) for 12" 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)				
13.1.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	125		
13.1.2	23 °- 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	45		
13.1.3	46° - 60°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	40		
13.1.4	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	86		

<b>LAYING &amp; CONSTRUCTION OF 12",10", 6" &amp; 4" NB U/G STEEL P/L NETWORK &amp; ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD</b>					
<b>Bid No.MEC/23R8/01/51/D2/T03/ER/6518</b>					
1	<b>MAINLINE WORKS</b>				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
13.2	Supply of Long Radius Bends (R = 3D) for 10" 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)				
13.2.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	100		
13.2.2	23 ° - 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	100		
13.2.3	46° - 60°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	60		
13.2.4	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	56		
13.3	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)				
13.3.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	125		
13.3.2	23 ° - 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	125		
13.3.3	46° - 60°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	65		
13.3.4	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	101		
13.4	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)				
13.4.1	22.5 ° and lower MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	100		
13.4.2	23 ° - 45°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	100		
13.4.3	46° - 60°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	50		
13.4.4	61° - 90°, MSS-SP-75, Gr. WPHY-42, 6.4 mm thk.	Nos.	50		
	<b>Note : The quantities of LR Bends may vary. For final quantity, approval from EIC shall be taken before order.</b>				
<b>ML-14</b>	<b>VALVE ERECTION</b>				
	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 required.				
14.1	Erection of all types of valves in valve pits on underground pipe lines				
a)	12" NB	Nos.	9		
b)	10" NB	Nos.	4		
c)	6"NB	Nos.	22		
d)	4"NB	Nos.	65		
e)	2" NB	Nos.	42		
	<b>Note: 2" &amp; Below Valves shall be in contractors scope of supply.</b>				
<b>ML-15</b>	<b>SUPPLY &amp; ERECTION OF FITTINGS AND FLANGES in valve pit/ CNG outlets</b>				

LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
	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.				
<b>15.1</b>	<b>Equal Tee &amp; Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW</b>				
15.1.1	6"x 6" - Barred Tee	Nos.	3		
15.1.2	6"x 4" - Barred Tee	Nos.	9		
15.1.3	12"x 6" - Barred Tee	Nos.	9		
15.1.4	10"x 4"	Nos.	8		
15.1.5	10"x 6"- Barred Tee	Nos.	4		
15.1.6	4"x2"	Nos.	24		
<b>15.2</b>	<b>FLANGES</b>				
15.2.1	<b>Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF, 300#) raised face flanges along with fasteners (A193, Gr. B7, B 18.2 for black studs &amp; A194 Gr. 2H B 18.for black nuts) &amp; Sp.WND SS grafill gaskets (B16.20 &amp; B16.5)</b>				
	<b>(End Thickness to match pipe thickness)</b>				
15.2.1.1	12" NB	Nos.	4		
15.2.1.2	10" NB	Nos.	3		
15.2.1.3	6"NB	Nos.	32		
15.2.1.4	4"NB	Nos.	42		
<b>15.3</b>	<b>Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF) raised flanges along with fasteners (A193, Gr. B7, B 18.2 for black studs &amp; A194 Gr. 2H B 18.for black nuts) &amp; Sp.WND grafill gaskets (B16.20 &amp; B16.5)</b>				
15.3.1	4"NB	Nos.	26		
15.3.2	2" NB	Nos.	42		
<b>15.4</b>	<b>Weldolet</b>				
15.4.1	12X4"	Nos.	18		
15.4.2	6x2"	Nos.	18		
<b>15.5</b>	<b>Figure 8 / Spacer &amp; blind set or spectacle blind (B16.48, A105N charpy, 125 AARH)</b>				
15.5.1	12" NB	Nos.	3		
15.5.2	10" NB	Nos.	3		
15.5.3	6"NB	Nos.	16		
15.5.4	4"NB	Nos.	21		
<b>15.6</b>	<b>90" Elbow, R=1.5 D (A234 WPB(charpy), B 16.9)</b>				
15.6.1	6" NB	Nos.	13		
15.6.2	4" NB	Nos.	9		
<b>ML-16</b>	<b>Construction of Valve pits for Steel Line</b>				
	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.				

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1	MAINLINE WORKS				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
16.1.	As per drawing with vent lines & horizontal tap off from main line (SV-1 & SV-2) - Having internal size of 3100mm x1700mm	Nos	13		
16.2.	As per drawing with vent lines & horizontal tap off from main line (SV-3 & SV-4)- Having internal size of 2000mm x1200mm	Nos	25		
<b>ML-17</b>	<b>Supply and installation of PE Isolation Valves</b>				
	Supply of isolation valves (as per data sheet) and installtion of valves in the valve pits as per typical drawing and specification enclosed and instructions of Engineer-in-charge. Payment of valve pits shall be paid separately as per SOR item No: 18				
17.1	PE Valve 125mm dia	Nos.	56		
<b>ML-18</b>	<b>Construction of Valve pits for MDPE line</b>				
	Construction of Valve Pits 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.				
18.1	Type- having Internal size of Minimum 800x800mm (for 125 mm PE Valve) - RCC type	Nos.	72		
18.2	Type- having Internal size of Minimum 500x500mm (for 125 mm PE Valve) - RCC type	Nos.	22		
18.3	Type- having Internal size of Minimum 800x800mm (for 125 mm PE Valve) - Brick construction	Nos.	6		
18.4	Type- having Internal size of Minimum 500x500mm (for 125 mm PE Valve) - Brick construction	Nos.	20		
<b>ML-19</b>	<b>Supply of hard barricading</b>				
19.1	Supply, placement & handling hard barricading, as per the drawing in the tender document. The item includes supply of all materail for fabrication, welding, painting, lettering etc. complete in all respect. On completion of work the barricading are to be returned back to BGL designated yard. <b>Before start of fabrication works, written approval from EIC to be taken</b>	Nos.	170		
<b>ML-20</b>	<b>HOT TAPPING WORKS</b>				
	Arranging the approved specialised agency alongwith hot tapping machine with all its accessories, cutting tool etc. for hot tapping works, obtaining all permissions/ clearances/ permits from Owner/ concerned authorities, submitting all procedures for approval & obtaining approval there on prior to start of works, carrying out hot tapping works including installation of split tees & full bore ball valve with support on existing pipeline of 12", supply of all materials i.e. Split Tee ( ASTM A 234 GR.WPB (charpy) , Sch 40 /6.4 mm thk x Sch 40/6.4 mm thk ), full bore ball valves /sand wick valve (ASTM A 216 Gr.WCB (Charpy) , 300#) and all associated accessories as per specification . <b>Approval to be obtained for specialised agency to carry out the Hot-tapping who has prior experience in carrying out Hot-tapping</b>				

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1	<b>MAINLINE WORKS</b>				
Sl. No.	Description of Item	Unit	Qty.	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
	Consumables for welding & testing requirements, tools, tackles, skilled and unskilled manpower, safety and fire fighting system etc. hydrotesting the installed fitting, carryingout radiography & all NDT, carrying out all works as per the requirements of specification, other provisions of contract document and instructions of Engineer-in-charge. Final restoration of area to its original to the entire satisfaction of Engineer-in-charge.				
	<u>Note:</u> All works associated with installation of valve pit and fencing including supply of all materials & manpower as detailed in piping drawings shall be paid as per rates covered elsewhere in the tender document and shall not be included in the lumpsum price quoted herein.				
	<b>Run Pipe NB (Inches) x Branch Pipe NB (Inches)</b>				
20.1	12" x 6" (with Split tee)	Nos.	3		
20.2	12" x 4" (With Split Tee)	Nos.	3		
	<b>Total Amount (all inclusive except GST) in Rs.</b>				

LAYING & CONSTRUCTION OF 12", 10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
2-(I)	<b>CATHODIC PROTECTION WORKS</b>				
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
<b>TCP-1</b>	<b>TEMPORARY CATHODIC PROTECTION SYSTEM</b>				
					(4) x (5)
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 <b>12", 10", 6", 4" dia</b> , 3LPE Coated pipeline in the Geographical Area (GA) of Hyderabad 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)	12" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	m	18,000		
ii)	10" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	m	16,000		
iii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	m	22,000		
iv)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	m	10,000		
	<b>Note:</b> 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 <b>12", 10", 6", 4" dia</b> , 3LPE Coated pipeline in the Geographical Area (GA) of Hyderabad 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:				





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**MECON LIMITED**

<b>2-(I) CATHODIC PROTECTION WORKS</b>					
<b>Sl. No.</b>	<b>Description of Item</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Rate (all inclusive except GST) in Rs.</b>	<b>Total Amount (all inclusive except GST) in Rs.</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>	<b>(6)</b>
					<b>(4) x (5)</b>
a)	Supply, installation, testing & commissioning of Mg/ Zn Galvanic anodes including carrying out Thermit welding on main pipeline, supply of clips, cables to connect 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 following:and also to be carried out as per approved design including supply of all item				
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 arrester 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 additional 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 GAS pipeline and the other CP protected foreign pipelines at the crossing locations for providing electrical isolation.				
h)	Earthing of above ground cathodically 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.				



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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.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
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.				
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)	12" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	m	18,000		
ii)	10" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	m	16,000		
iii)	6" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	m	22,000		
iv)	4" Pipeline section from IJ to IJ with varying length and for requisite No. of sections	m	10,000		
	<b>Total Amount (all inclusive except GST) in Rs.</b>				



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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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
PP-1	<b>PIPING ( ABOVEGROUND)</b>						
	- Transportation including loading, unloading & handling of all piping items (12", 10", 6", 4" NB pipes & valves are free issue items) from Owner's and/ or Contractor's storage 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. <b>Note : Valve erection shall be paid through separate SOR</b>						
	- 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.						



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<b>LAYING &amp; CONSTRUCTION OF 12",10", 6" &amp; 4" NB U/G STEEL P/L NETWORK &amp; ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518</b>							
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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
	- 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.						
	- 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.						



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LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518							
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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
	- 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 sand blasting 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, identification 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 scaffolding 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.						



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LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518							
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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
-	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	12" NB		50		



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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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
1.1.2		m	10" NB		50		
1.1.3		m	6"NB		150		
1.1.4		m	4" NB		200		
PP-2	<b>SUPPLY &amp; ERECTION OF ASSORTED PIPE, FITTINGS AND FLANGES AND INSULATION JOINTS</b>						
	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						
	- 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						
2.1	<b>CARBON STEEL PIPES</b>						
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	50		
2.1.2		m	1½" NB	S80	10		
2.1.3		m	1½" NB	XS	10		
2.1.4		m	1" NB	S80	10		
2.1.5		m	1" NB	XS	10		
2.1.6		m	¾" NB	S160	10		
2.1.7		m	½" NB	S160	10		
2.2	<b>FLANGES</b>						





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MECON LIMITED

LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518							
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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
	<b>Weld Neck (B-16.5, A105(Charpy), 125 AARH, RF)</b>						
2.2.1	(End Thickness to match pipe thickness)	Nos.	6"	300#	11		
2.2.2		Nos.	4"	300#	36		
2.2.3		Nos.	2"	300#	10		
2.2.4		Nos.	1½" NB	S80	10		
2.2.5	Socket Welded (B-16.5, A105, 125 AARH, SW end to B16.11)	Nos.	¾"	300#	10		
2.2.6	<b>Blind Flanges (B-16.5, A105 (Charpy), 125 AARH, RF)</b>	Nos.	6"	300#	11		
2.2.7		Nos.	4"	300#	5		
2.2.8		Nos.	2"	300#	4		
2.2.9		Nos.	¾"	300#	10		
2.3	<b>ELBOW</b>						
2.3.1	90° Elbow (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW	Nos.	12"	S40	4		
2.3.2		Nos.	10"	S40	4		
2.3.3		Nos.	6"	S40	48		
2.3.4		Nos.	4"	S40	20		
2.3.5		Nos.	2"	XS	18		
2.4	<b>TEE</b>						
2.4.1	Equal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW	Nos.	2"	XS	10		
2.4.2		Nos.	4"	S40	6		
2.4.3		Nos.	6"	S40	4		
	Unequal Tee (A234, Gr. WPB (Charpy), B-16.9, 1.5D), BW						
2.4.4		Nos.	4" x 2"	S40 x XS	6		



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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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
2.5	<b>REDUCER</b>						
	Concentric Reducer (A234, Gr. WPB (Charpy), B-16.9)						
2.5.1		Nos.	4" x 3"	S40	4		
2.5.2		Nos.	6" x 4"	S40	5		
2.5.3		Nos.	4" x 2"	S40	4		
2.5.4		Nos.	10" x 6"	S40	2		
2.5.5		Nos.	10" x 4"	S40	2		
2.5.6		Nos.	12" x 6"	S40	2		
2.5.7		Nos.	12" x 4"	S40	2		
2.6	<b>SOCKOLET (A105, SW)</b>						
2.6.1		Nos.	4" x ¾"	3000#	8		
2.6.2		Nos.	4" x 1"	3000#	8		
2.7	<b>WELDOLET (A105 (Charpy), BW)</b>						
2.7.1		Nos.	6" x 2"	7.9 x XS	10		
2.8	<b>INSULATING JOINTS</b> (As per Standard Specification and Data Sheets enclosed)						
2.8.1		Nos.	12"	300#	1		
2.8.2		Nos.	10"	300#	2		
2.8.3		Nos.	6"	300#	11		
2.8.4		Nos.	4"	300#	5		



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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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
	<p>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.</p> <p>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.</p>						
PP-3	SUPPLY OF VALVES & INSTALLATION						
	supply and installation of valves including all taxes,duties,transportation and inspection charges in accordance with relevant Specifications & relevant Data Sheets indicated in scope of work indicated in SCC, drawings, specification and instructions of EIC and as per all provisions of the CONTRACT DOCUMENT and Installation						
3.1	Plug Valves						
3.1.1	RF	Nos.	2"	300#	18		
3.1.2	BW	Nos.	2"	300#	18		
3.1.3	SW	Nos.	1½ "	800#	4		
3.1.4	SW	Nos.	1"	800#	4		
3.2	Ball Valves						
3.2.2	RF, FB	Nos.	2"	300#	8		
3.2.4	BW, FB	Nos.	2"	300#	8		
3.2.5	SW, FB	Nos.	1"	800#	8		
3.2.6	SW, FB	Nos.	¾"	800#	8		



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**LAYING AND CONSTRUCTION OF 12", 10, 6", 4" NB U/G STEEL P/L NETWORK  
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**MECON LIMITED**

LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518							
<b>3-(I)</b>	<b>PIPING &amp; MECHANICAL WORKS</b>						
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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
<b>PP-4</b>	<b>ERECTION OF VALVES</b>						
	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 required. For 12", 6", & 4" NB valves are under free issue items.						
4.1	<b>Butt welded Valves (Full Bore/ Reduced Bore)</b>						
4.1.1	Ballvalves BW, FB		12"	1	1		
4.1.2	Ballvalves BW, FB		10"	2	2		
4.1.3	Ballvalves BW, FB	Nos.	6"	300#	11		
4.1.4	Ballvalves BW, FB	Nos.	4"	300#	5		
<b>PP-5</b>	<b>Installation of MRS/DRS</b>						



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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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
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, alining, 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.			8		



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LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD Bid No.MEC/23R8/01/51/D2/T03/ER/6518							
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.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Sch.			(6) x (7)
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						
	4) The quoted rates upto 10 tons weight of MRS/DRS						
	<b>Total Amount (all inclusive except GST) in Rs.</b>						

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3-(II)	CIVIL WORKS				Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
Sl. No.	Description of Item	Unit	Quantity		(5)	(6)
(1)	(2)	(3)	(4)		(5)	(6)
						(4) x (5)
<b>CIV-1</b>	<b>SITE CLEARANCE</b>					
a)	<b>DEMOLITION OF R.C.C./BRICKS/STONE MASONARY</b>					
	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	5			
b)	<b>TREE CUTTING</b>					
	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.	6			
<b>CIV-2</b>	<b>EARTH WORK IN EXCAVATION/ SITE GRADING AND BACKFILLING</b>					
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	650			
<b>CIV-3</b>	<b>EARTH WORK IN EXCAVATION/ SITE GRADING IN HARD ROCK</b>					
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	275			
<b>CIV-4</b>	<b>EARTH WORK IN FILLING</b>					
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	20			





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LAYING & CONSTRUCTION OF 12",10", 6" & 4" NB U/G STEEL P/L NETWORK & ASSOCIATED WORKS FOR CITY GAS DISTRIBUTION PROJECT FOR HYDERABAD					
Bid No.MEC/23R8/01/51/D2/T03/ER/6518					
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.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
<b>CIV-5</b>	<b>PLAIN CEMENT CONCRETE</b>				
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	50		
	ii) 1:4:8	M3	20		
<b>CIV-6</b>	<b>REINFORCED CEMENT CONCRETE</b>				
	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	150		
	ii) Super structures	M3	50		
<b>CIV-7</b>	<b>REINFORCEMENT STEEL</b>				
	Supplying and Fabricating and Fixing in position HYSD Steel Reinforcements/ TMT Grade Fe-415 conforming to IS1786-1985 at all levels (all depth & 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		
<b>CIV-8</b>	<b>BRICK WORK</b>				
	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	150		
<b>CIV-9</b>	<b>DELETED</b>				

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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.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
<b>CIV-10</b>	<b>Concertina coil</b>				
	Supply and fixing of 610 mm dia hot dip galvanized barbed razor tape concertina coil fencing each coil having 80 circles, 200 clips with optimum openable stretch of 8 mtrs length supported/tied with two rows of same razor runner wires to the existing 'Y' angle at the top and one run wire at the bottom with 'U' nails, clips etc., complete as per manufacture's specification, drawings and site engineer's instructions. Measurement shall be based on the length of the compound wall. GENERAL SPECIFICATION OF CONCERTINA : Razor Strips: 0.5mm thick hot dip galvanized width 19 mm (Before wrapping on central core wire) and wrapped on central core GI wire of 2.6 mm dia. Zinc coating of 120 g/m <sup>2</sup> . Central core GI wire : UTS 145-160 Kg/mm <sup>2</sup> ; Zinc coating 250-300 gm/m <sup>2</sup> ; diameter 2.6 mm Clips: GI 1.6 mm thick.	rm	200		
<b>CIV-11</b>	<b>PAVER BLOCK FLOORING</b>				
	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	350		
<b>CIV-12</b>	<b>KERB STONE FIXING</b>				
	Providing and fixing precast concrete Kerb stones (125 wide X 300 deep) of M-25 grade or equivalent of approved make and shape at or near ground level as per approved pattern and setting in position with cement mortar 1:3 (one cement : 3 coarse sand) including the cost of required centering, shuttering and finishing smooth with 6 mm thick cement plaster 1:3 (1 cement : 3 fine sand) wherever required over 75 mm thick PCC M-10 levelling course, complete in all respects as per scope of work, detailed construction drawings, technical specifications and directions of the Engineer-In-Charge.	Rm	150		
<b>CIV-13</b>	<b>SAND FILLING</b>				
	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	125		
	<b>Total Amount (all inclusive except GST) in Rs.</b>				

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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.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
ST-1	<b>Providing and fixing chain link Fencing</b>				
	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	<b>Providing and fixing Fencing Gates</b>				
	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.	6		
ST-3	<b>Steel structure Fabrication &amp; Erection</b>				
	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 technical specification and direction of the Engineer-in-Charge	KG	500		
	<b>Total Amount (all inclusive except GST) in Rs.</b>				



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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.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
<b>EL-1</b>	<b>EARTHING</b>				
	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.	16		
1.2	GI Strip (25 x 5) mm	Meters	266		
<b>Total Amount (all inclusive except GST) in Rs.</b>					



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<b>3-(V) INSTRUMENTATION WORKS</b>					
Sl. No.	Description of Item	Unit	Quantity	Unit Rate (all inclusive except GST) in Rs.	Total Amount (all inclusive except GST) in Rs.
(1)	(2)	(3)	(4)	(5)	(6)
					(4) x (5)
<b>IN-1</b>	<b>Supply, Calibration and Installation of instrumentation items listed below</b>				
1.1	Pressure Gauges, Pressure Rating 300# Pressure Range 0 - 50 Kg/cm <sup>2</sup> (Includes supply of two isolation valves per each gauge to provide double isolation)	Nos.	40		
1.2	Temperature Gauges [Range 0 - 100°C]	Nos.	20		
<b>IN-6</b>	<b>EARTHING</b>				
6.1	Supply 8 SWG G.I. Wire	Mtrs.	250		
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.	250		
6.3	Supply of 4 sq. mm. PVC insulated armoured copper cable	Mtrs.	250		
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.	250		
	<b>Total Amount (all inclusive except GST) in Rs.</b>				