VOLUME – IA
Part I & II

TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED

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VOLUME - IA PART – I CHAPTER – I
PROJECT INFORMATION

5X800 MW SETS AT YADADRI TPS

1	Name of the Project	YADADRI Thermal Power Station
2	Station Capacity	5X800 MW (Coal based)
3	Owner	Telangana State Power Generation Corporation Limited (**TSGENCO**)
4	Site Location	Site is located 7 km from the NH565 (SH2). Veerlapalem village, Dameracherla Mandal, NALGONDA DISTRICT, TELANGANA STATE
5	Latitude	*16° 42'*20.40 N
6	Longitude	79° 34'41.56 E
7	Nearest Town	30 Km Miryalaguda
8	Nearest Railway Station	6.5 Km Damercherla
9	Nearest Airport	130 Kms (Vijayawada)
10	**Site Conditions**	
	Ambient Temperature	
	Daily minimum (average)	10°C
	Daily maximum (average)	47°C
	Design Ambient Temperature	50°C
	Ambient temperature (performance)	38°C
	Relative Humidity for design / efficiency	48-84 %
	Annual rainfall, mm	600 mm
	Plant Elevation above MSL	85 m above MSL
	Mean Wind Speed	8 km/h
	Wind Pressure	As per the latest revision of IS 875/1987
	Seismic co-efficient	Zone-II as per IS- 1893 (Part-IV)

VOLUME-IA PART-I CHAPTER – II
SCOPE OF WORKS

The scope of work shall comprise but not limited to the following:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.2.1. The scope of work includes Handling Erection, testing, commissioning of LP Piping including handling at site stores / storage yard, transporting to site, inspection, pre-assembly, erection, alignment, welding, NDT, fixing of hangers & supports, chemical cleaning / pickling, oil flushing, water flushing, hydro testing & steam blowing, surface finish, supply & application of primer & finish paints including labeling & flow direction on the piping & hangers and supports, pre-commissioning, commissioning, trial operation & handing over to customer of LP Piping including Raw Water Piping System, Plant water system, DM Cooling Water System, Instrument & Service Air system, Plant Service Water and Portable Water System, Pumps & Misc Equipments, Hangers and Supports, Valves, Miscellaneous Equipment's .etc. including for Unit -1 to Unit-5 at 5 X 800MW Yadadri TPS at Veerlapalem Village, Dameracherla Mandal, Nalgonda Dist, Telangana State.

1.2.2. Brief list of system / sub system to be erected by the contractor & approximate weight individual PGMA are given elsewhere in this booklet are meant for giving general idea to the tenderer. The piping components are sent in parts for convenient transportation / layout requirements. They are to be cleaned, pre-assembled in stage, welded, erected and aligned as per the drawing dimensions/ tolerance and instructions of BHEL engineers.

1.2.3. Receipt of materials / component to be erected by the contractor, loading and transportation from the storage yard to the project site, stacking, storage and preservation.

1.2.4. Preassembly, Erection, Testing, Commissioning, Trial operation and reliable operation of equipment.

1.2.5. Final painting as per the Painting Schedule mentioned elsewhere in the tender including supply of paints.

1.2.6. The terminal points are given as per drawing /decided by BHEL are final and binding on the contractor for deciding the scope of work and effecting the

paymentfor the work done up to the terminals.

1.2.7. General scope of system covered under scope of work includes LP piping including Raw Water Piping System, Plant water system, DM cooling water system, Instrument & Service Air system, DM make Up System, Plant Service water and Potable water system, Fire Water System –APH and ESP Wash, Pumps & Misc Equipment, Cranes and hoists and its associated items / systems, hangers and supports, valves, miscellaneous Equipment's etc.

The general scope covers the installation and commissioning of all systems.

The scope of the works for the above mentioned systems will comprise of but notlimited to the following activities: -

- Receipt of materials, storage at site, erection and commissioning of the system.
- Piping and associated all types of fittings, Hanger & supports, expansionbellows, etc.,
- Flow measuring devices / sensors like nozzles, orifice plates etc.,
- Air and moisture traps, Air release valves
- Safety relief valves, Butterfly valves, Expansion joints, dummies erection for Hydro testing of pipe lines.
- The material range from MS, GI, CS, SS, etc., the connection is welded, flanged or threaded as per system and drawings.
- Completion of Hydro test as per P & ID, Layouts or specified elsewhere in the documents pertaining to the contract conditions and site requirement as per IBR, to becompleted for all the systems for LP piping including Raw Water Piping System, Plant water system, DM cooling water system, Instrument & Service Air system, DM make Up System, Plant Service water and Potable water system, Fire Water System –APH and ESP Wash.
- Valves – with Manual, Electrical and Pneumatic operated actuators.
- Strainers, Filters, Coolers, pre-fabricated Tanks
- Hoists & Cranes- either manual or motor operated
- Chemical dosing system Skid and associated Equipment's.
- All underground piping should be wrapped and coated as per specifications.
- Chemical handling / loading to be carried.
- The valves are operated -manual, electrical or pneumatic or hydraulic. The valves may be supplied either mounted with or without actuator. If supplied

separately, the actuator is to be assembled to the valve at site during erection.

- The pumps are supplied along with motors. The motors are to be erected andaligned with the pumps and with gear box wherever supplied as loose.

  The cable glands are supplied in loose along with the actuators, the same are required to be handed over to the electrical contractor, responsibility of handing over the cable glands to the electrical contractor lies with the contractor, in case of missing glands the same are to be procured by the vendor.
- The welding of stubs for Pressure & temperature transmitters and other instruments, thermos wells etc. welding as per P& ID and wherever necessaryis within the scope of contract.
- Similarly, all tanks, equipment foundations to be grouted.
- All the wrapping & coating for underground piping to be carried as per painting specification only.
- Painting to be carried as per painting specification only for both over ground and underground including supports. For detailed information on Painting andWrapping and coating refer relevant chapters.

Note: The Broad area wise scope is described in 1.2.8, relevant P & ID are also enclosed for tendering purpose. The scope of work also covers erection of valves, pumps with motors, underground and over ground piping, supports and instrumentation etc. including pre-commission and commissioning.

1.2.8. LP PIPING SYSTEM:

1.2.8.1. Raw Water Piping System

A. Piping of Stage-1 (Unit#1 and Unit#2) from Outlet of Raw Water Pump Located inside the Raw Water Pump House upto the Inlet of Pre Treatment Plant including recirculation line to Reservoir. The piping comprises of both Under Ground Piping and Over Ground Piping.

B. Piping of Stage-2 (Unit#3, Unit#4 and Unit#5) from Outlet of Raw Water Pump Located inside the Raw Water Pump House upto the Inlet of Pre Treatment Plant including recirculation line. The piping comprises of both Under Ground Piping and Over Ground Piping.

C. Piping from Raw Water line of Stage#1 to Ash Water Tank of Stage#1.

D. Piping from Raw Water line of Stage#2 to Ash Water Tank of Stage#2.

E. Intermittent Pipings, Tappings arising from Raw Water Line and associated lines.

1.2.8.2. Plant Water System

A. CW Make-Up System comprising of Piping of Stage#1 and Stage#2 CW make up pump outlets to CW Fore bay.

B. Service Water System consisting of Piping of Stage#1 and Stage#2 Service Water Pumps to Overhead Service water tanks of respective stages.

C. APH and ESP Water Wash System consisting of Piping of Stage#1 and Stage#2 APH/ESP Washing Pumps to following areas: -

- First Row of Each Boiler columns of respective stages.
- To SCR near the Waste Ammonia Dilution System of respective stages.
- Fire Water Tank Inlet Nozzle of respective stages.

D. FGD Piping from FGD Pumps of Stage#1 and Stage#2 to Process Water Tanks of Each Stage located in the plant area.

1.2.8.3. DM Transfer System

A. Pipeline from the DM plant to DM Transfer tanks of Stage#1 and Stage#2 and interconnecting piping between tanks.

B. Piping from DM transfer tanks to DM transfer Pump houses of Stage#1 and Stage#2 including piping for Backwash Pumps.

C. Piping Originating from DM Transfer Pump houses of Stage#1 and Stage#2 to individual Condensate Storage Tanks of each Stage. Interconnecting piping to Condensers of Individual Units for Normal Make up upto the terminal point located at A-Row of Power House is included in the scope of the vendor.

D. Piping from CST Tanks outlet nozzles to Boiler Fill Pumps of Stage#1 and Stage#2 and further to the areas mentioned below: -

- Deaerator Initial Filling lines of Individual Unit of Each Stage.
- Hot well Initial Filling of Individual Unit of Each Stage.
- Boiler Initial Filling of Individual Unit of Each Stage.

E. Piping from CST Tanks outlet nozzles to Hot Well Make Up Pumps and further to the areas mentioned below: -

- Hot Well make Up station of Individual Unit of Each Stage.
- DMCW Overhead Piping Connection Individual Unit of Each Stage.
- Other Utilities.

1.2.8.4. DM cooling water system:

A. From DMCW pumps to all TG auxiliaries /equipments.

B. DM tank to SG & Boiler Auxiliaries.

C. DMCW pumps to Auxiliary boiler, SWAS, Deaerator, chiller system.

D. All chemical dosing lines.

E. ACW line connection from A-ROW to PHEs of SG and TG DMCW system is in the scope of vendor.

1.2.8.5. Instrument Air System: from compressor house to FOPH, Unloading/ DYKE area, DM, all BOP & water packages, Deareator, Aux boiler, TG & BOILER and its auxiliaries etc.

1.2.8.6. Service Air System: from Compressor house to TG & BOILER, all BOP and water packages, DG SET, Service building, CPU, gas room, elevator, Auxiliary boiler, HFO, FOPH, AC plant etc.

1.2.8.7. Service Water System: from service water overhead tank to all BOP & water packages, all service buildings [TG, ESP, CCR, make pump house, simulator, firestation, indoor storage area, gate complex etc.], air washer room, boiler, SWAS, flash tank drain tank cooling, CHP, ECHS area, SWIPH, AHP area, FOPH, FO unloading & dyke area, flash tank area, chemical house, Fire water protection system area, make up water tank, canteen, auxiliary boiler etc.

1.2.8.8. Potable Water System: From potable water tank to all BOP & water packages, switch yard control room, ETP, CMB, chemical house, Fire water protection system area, make up water tank, canteen, auxiliary boiler, ash water pump house, boiler area, CCR, AHP& CHP area, SWIPH, FO unloading & dyke area. Etc.

NOTE: FOR FURTHER DETAILED SCOPE OF WORKS, REFER RELEVANT CHAPTERS OF THE BOOK.

VOLUME IA PART – I CHAPTER – III
FACILITIES IN THE SCOPE OF CONTRACTOR / BHEL (SCOPE MATRIX)

Sl No.	Description	Scope to be taken care by		Remarks
		BHEL	Bidder	
1.3.1	**PART I**			
1.3.1.1	**ESTABLISHMENT**			
1.3.1.1.1	***FOR CONSTRUCTION PURPOSE:***			
1.3.1.1.1.1	Open space for office	Yes		Free
1.3.1.1.1.2	Open space for storage	Yes		Free
1.3.1.1.1.3	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
1.3.1.1.1.4	Bidder's all office equipment, office / store / canteen consumables		Yes	
1.3.1.1.1.5	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
1.3.1.1.1.6	Firefighting equipment like buckets, extinguishers etc		Yes	
1.3.1.1.1.7	Fencing of storage area, office, canteen etc of the bidder		Yes	
1.3.1.1.2	**FOR LIVING PURPOSES OF THE BIDDER**			
1.3.1.1.2.1	Open space	Yes		
1.3.1.1.2.2	Living accommodation		Yes	
1.3.1.2	**ELECTRICITY**			
1.3.1.2.1	***Electricity of Voltage 415 / 440 V for construction purposes***			
1.3.1.2.1.1	Single point source	Yes		Free
1.3.1.2.1.2	Further distribution for the work to be done which include supply of materials and execution		Yes	
1.3.1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:		Yes	

Sl No.	Description	Scope to be taken care by		Remarks
		BHEL	Bidder	
1.3.1.2.2.1	Distribution from single point including supply of materials and service		Yes	
1.3.1.2.2.2	Supply, installation and connection of material of energy meter including operation and maintenance		Yes	
1.3.1.2.2.3	Duties and deposits including statutory clearances for the above		Yes	
1.3.1.2.2.4	Living facilities for office use including charges		Yes	
1.3.1.2.2.4	Demobilization of the facilities after completion of works		Yes	
1.3.1.2.2.5	Demobilization of the facilities after completion of works		Yes	
1.3.1.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc on the above lines.(in case BHEL provides this facility, the scope should be given without ambiguity)		Yes	
1.3.1.3	**WATER SUPPLY**			
1.3.1.3.1	***For construction purposes:***			
1.3.1.3.1.1	Making the water available at single point	Yes		Free
1.3.1.3.1.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.3.1.3.2	***Water supply for bidder's office, stores, canteen etc***			
1.3.1.3.2.1	Making the water available at single point	Yes		
1.3.1.3.2.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.3.1.4	**LIGHTING**			
1.3.1.4.1	For construction work (supply of all the necessary materials) At office storage area At the preassembly area At the construction site /area		Yes	

Sl No.	Description	Scope to be taken care by		Remarks
		BHEL	Bidder	
1.3.1.4.2	For construction work (Execution of the lighting work / arrangements) At office storage area At the preassembly area At the construction site /area		Yes	
1.3.1.5	**COMMUNICATION FACILITIES for site operations of the bidder**			
1.3.1.5.1	Telephone, Fax, internet, intranet, email etc		Yes	
1.3.1.6	**COMPRESSED AIR SUPPLY**			
1.3.1.6.1	Supply of Compressor and all other equipment required for compressor & compressed air system including pipes, valves, storage systems etc	-	Yes	
1.3.1.6.2	Installation of above system and operation & maintenance of the same	-	Yes	
1.3.1.6.3	Supply of the all the consumables for the above system during the contract period	-	Yes	

Sl No.	Description	Scope to be taken care by		Remarks
		BHEL	Bidder	
1.3.2	**PART II**			
1.3.2.1	**ERECTION FACILITIES**			
1.3.2.1.0	Engineering works for construction	Yes		
1.3.2.1.1	Providing the erection drawings for all the equipment covered under this scope	Yes		
1.3.2.1.2	Drawings for construction methods		Yes	In consultation with BHEL
1.3.2.1.3	As-built drawings – wherever deviations observed and executed and also based on the decisions taken at site- example – routing of small bore pipes		Yes	In consultation with BHEL
1.3.2.1.4	Shipping lists etc for reference and planning the activities	Yes		In consultation with BHEL

Sl No.	Description	Scope to be taken care by		Remarks
		BHEL	Bidder	
1.3.2.1.5	Preparation of site erection schedules and other input requirements		Yes	In consultation with BHEL
1.3.2.1.6	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments		Yes	
1.3.2.1.7	Weekly erection schedules based on Sl No 1.3.2.1.5		Yes	
1.3.2.1.8	Daily erection / work plan based on Sl No 1.3.2.1.7		Yes	For daily monitoring meeting at site
1.3.2.1.9	Periodic visit of the senior official of the bidder to site to review the progress so that works is completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	
1.3.2.1.10	Preparation of preassembly bay		Yes	
1.3.2.1.11	Laying of racks for gantry crane if provided by BHEL or brought by the contractor / bidder himself			Not applicable

1.3.3 **OPEN SPACE:**

1.3.3.1 Minimum Open space will be provided at free of charges to the contractor within the plant premises or adjacent to the plant boundary for construction of temporary office shed, contractor's stores shed(s). **Contractor shall adopt pre-engineered/ pre-fabricated constructions made of steel with single/ double skin, insulated for un- insulated roof and wall coverings (fabricated out of permanently color coated metal sheets) for his site office, covered store or any other temporary building. Alternatively, contractor can adopt readymade 'porta cabin' or similar construction.**

1.3.3.2 Only land for labour colony and staff colony will be provided by BHEL adjacent to the plant boundary to contractor at free of cost. Contractor has to make labour colony and residential accommodation to his staff at his cost.

1.3.3.3 Contractor has to furnish along with their offer, the details of requirements of area of space for his office, stores, storage shed, labour colony etc.

1.3.3.4 Location and area requirement for office/storage sheds/ fabrication yard shall be discussed and mutually agreed to.

1.3.4 **ELECTRICITY**:

1.3.4.1 The construction power (415V) will be provided at a single point for construction purpose free of charge. Construction power shall be provided from the nearest Substation / tapping point within the plant premises. For the purpose of measurement of power consumed, the contractor shall provide Energy meter with valid calibration certificate. Distribution from this source to different locations is to be arranged by the bidder at his cost.

1.3.4.2 Electricity for labour colony and staff colony will be provided at single point on chargeable basis at the prevailing rate of TSGENCO. Distribution from this source to different locations is to be arranged by the bidder at his cost.

1.3.4.3 Any duty, deposit involved in getting the Electricity shall be borne by the bidder. As regards to contractor's office shed also, all such expenditure shall be borne by the contractor. Demand charges if any to be borne by the contractor

1.3.4.4 Provision of distribution of electrical power from the given single central common point to the required places with proper distribution boards, approved cables and cable laying including supply of all materials like cables, switch boards, pipes etc., observing the safety rules laid down by electrical authority of the State / BHEL / their customer with appropriate statutory requirements shall be the responsibility of the tenderer / contractor.

1.3.4.5 BHEL is not responsible for any loss or damage to the contractor's equipment as a result of variations in voltage / frequency or interruptions in power supply.

1.3.4.6 Necessary "Capacitor Banks" to improve the Power factor to a minimum of 0.8 shall be provided by the contractor at his cost. Penalty if any levied by customer on this account will be recovered from contractor's bills.

1.3.5 **CONSTRUCTION WATER**

1.3.5.1 Water (Raw water) shall be provided by BHEL at one point within the plant premises free of charge for construction purpose and bidder has to make their own arrangement for further distribution by arranging required pipes, valves, pumps, etc.

1.3.5.2 Water (Raw water) for labour colony and staff colony shall be provided at single point on chargeable basis at the prevailing Government Tariff and bidder has to make their own arrangement for further distribution by arranging required pipes, valves, pumps, etc.

1.3.5.3 In case of non-availability of water, the contractor shall make his own arrangements for uninterrupted work. No separate payment shall be made for any contingency arrangement made by contractor, due to delay / failure for providing water supply. Contractor has to make his own arrangements for his water requirement for his labour colony at his cost.

1.3.6 **DRINKING WATER**

Bidder shall provide drinking water at their cost.

1.3.7 **ONLINE SITE CONSTRUCTION MANAGEMENT SYSTEM [SCMS]:**

Contractor has to provide minimum 2 computers [along with one operator per PC] for online material management, reporting of daily progress, billing and other similar activities, within the quoted rate. Computers shall have minimum configuration of Windows 7 OS, 4GB RAM and Internet Explorer 8 or above etc.

1.3.8 **CONSUMABLES:**

1.3.8.1 Al required consumables like electrodes, all gases, and other materials for this scope of work are to be arranged by the contractor at their cost.

1.3.8.2 All the required electrodes (in his scope) as approved by BHEL & Customer shall be arranged by contractor at his cost. It shall be the responsibility of the contractor to obtain prior approval of BHEL, before procurement regarding, suppliers, type of electrodes etc. On receipt of the electrodes at site, it shall be subject to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch number and date of expiry etc.

1.3.8.3 The contractor shall provide within finally accepted price / rates, all consumables like welding electrodes (including alloy steel and stainless steel), all gases (inert, welding, and cutting), soldering material, dye penetrants, radiography films. Other erection consumables such as tapes, jointing compound, grease, mobile oil, M-seal, Araldite, petrol, CTC / other cleaning agents, grinding and cutting wheels are to be provided by the contractor. Steel, H&S, packers, shims, wooden planks, scaffolding and pre-assembly materials, hardware items etc required for temporary works such as supports, scaffoldings, bed are to be arranged by him. Sealing compounds, gaskets, gland packing, wooden sleepers for temporary work, required for completion of work except those which are specifically supplied by manufacturing unit are also to be arranged by him.

1.3.8.4 All the shims, gaskets and packing, which go finally as part of equipment, shall be supplied by BHEL free of cost.

1.3.9 **MATERIAL SUPPLY:**

BHEL will supply the materials/equipment indicated in the weight schedule from their respective manufacturing units which are to be executed/incorporated in the permanent system. In addition, the material such as lube oil, grease, required for commissioning the erected equipments and chemicals required for chemical cleaning/detergent flushing of equipments will be supplied free of cost by BHEL.

1.3.10 **POSSESSION OF GENERATORS**

As there are bound to be interruptions in regular power supply, power cut/ load shedding in any construction sites, suitable extension of time, if found necessary only be given and contractor is not entitled for any compensation. It shall be the responsibility of the tenderer / contractor to provide, and maintain the complete installation on the load side of the supply with due regard to safety requirements at site. It shall be responsibility of the contractor to have at least 1 diesel operated welding generator sets to get urgent and important work to go on without interruptions. The consumables required to operate the generators are to be provided by tenderers. This may also be noted while quoting.

1.3.11 **LIGHTING FACILITY:**

Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, pre assembly yard and contractor's material storage area etc. at his cost.

1.3.12 **GASES:**

1.3.12.1 All the required gases like Oxygen / Acetylene / Argon / Nitrogen required for work shall be supplied by the Contractor at his cost. It shall be the responsibility of the contractor to plan the activities and store sufficient quantity of these gases. Non availability of gases cannot be considered as reason for not attaining the required progress.

1.3.12.2 BHEL reserves the right to reject the use of any gas in case required purity is not maintained.

1.3.12.3 The contractor shall submit weekly / fortnightly / monthly statement report regarding consumption of all consumables for cost analysis purposes.

1.3.12.4 The contractor shall ensure safe keeping of the inflammable cylinder at a separate place away from normal habit with proper security etc.

1.3.13 **ELECTRODES SUPPLY AND STORAGE**

1.3.13.1 **The bidder shall use the Customer approved quality welding electrodes only.**

1.3.13.2 It shall be the responsibility of the contractor to obtain prior approval of BHEL, before procurement, regarding suppliers, type of electrodes etc. On receipt of the electrodes at site, it shall be subjected to inspection and approval by BHEL. The contractor shall inform BHEL, details regarding type of electrodes, batch number and date of expiry etc.

1.3.13.3 Shortage of any of the electrodes or the equivalent suggested by BHEL shall not be quoted as reason for deficiency in progress or for additional rate.

1.3.13.4 Storage of electrodes shall be done in an air conditioned / controlled humidity room as per requirement, at their own cost by the contractor.

1.3.13.5 All low hydrogen electrodes shall be baked / dried in the electrode drying oven (range 375 deg. C - 425 deg. C) to the temperature and period specified by the BHEL Engineer before they are used in erection work and each welder should be provided with one portable electrode drying oven at the work spot. Electrode drying oven and portable drying ovens shall be provided by contractor at his cost.

1.3.13.6 In case of improper arrangement of procurement of above electrodes BHEL reserves the right to procure the same from any source and recover the cost from the contractor's first subsequent bills at market value plus departmental charges of BHEL communicated from time to time. Postponement of such recovery is not permitted.

1.3.13.7 BHEL reserves the right to reject the use of any electrodes at any stage, if found defective because of bad quality, improper storage, date of expiry, unapproved type of electrodes etc. It shall be the responsibility of the contractor to replace at his cost without loss of time.

1.3.13.8 **OTHER FACILITIES**

1.3.13.9 Adequate water less urinals [at least 2 nos. at suitable locations] shall be arranged by the contractor within quoted rates, at site of construction, with proper disposal arrangement.

1.3.14 **BID DRAWINGS**

1.3.14.1 Bid drawings published in this tender specification are for information and this may get revised during execution.

1.3.15 **CONTRACTOR'S OBLIGATION ON COMPLETION**

On completion of work, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and leveled and debris shall be removed as per instructions of BHEL by the contractor at his cost. In the event of his failure to do so, the expenditure towards clearance of the same will be recovered from the contractor. The decision of BHEL Engineer in this regard is final.

VOLUME-IA PART-I CHAPTER – IV
T&Ps and MMEs TO BE DEPLOYED BY CONTRACTOR

1.4.1 The following minimum major Tools & Plants (T&P) shall be arranged by the Contractor within the quoted rate for execution of the scope of works covered under this contract.

Sl. No.	Description	Qty
01	For loading and transportation, all necessary T&P such as trailers, Cranes, Winches, welding generators, slings, jacks, sleepers, rails etc., are to be arranged by the contractor.	
02	Crane with appropriate capacity	As required
03	Fill pump	As required
04	HT pump for hydro test (up to 50 Kg/Sq.cm) of LP Piping	As required

1.4.2 All the T&Ps required for this scope of work, except the Tools & Plants provided by BHEL are to be arranged by the contractor within the quoted rates.

1.4.3 T&Ps mentioned above is tentative requirement considering parallel working in all areas mentioned in scope of work. However, mobilization schedule, quantity / numbers and capacity as mutually agreed at site for major T&Ps, have to be adhered to. Numbers/quantity, Capacity & time of requirement of T&Ps will be reviewed time to time by BHEL site and contractor will provide required T&Ps / equipment to ensure completion of entire work within schedule / target date of completion without any additional financial implication to BHEL. Vendor will give advance intimation and certification regarding capacity etc. prior to dispatch of heavy equipment. Also on completion of the respective activity, demobilization of T&P in total or in part can be done with the due approval of engineer in charge. Retaining of the T&P's during the contract period will be mutually agreed in line with construction requirement.

1.4.4 The contractor to furnish a list of Tools and plants including cranes, tractors/ trailers/ trucks etc. which contractor proposed to deploy for this work.

1.4.5 Fill pumps shall be arranged by the contractor, wherever required.

1.4.6 For testing LP lines necessary Hydraulic Test pumps/ Hand pumps are to be arranged by the contractor.

1.4.7 For handling at store and transportation, contractor shall make his own arrangement.

1.4.8 For transportation, material handling, loading & unloading of all components / equipment, the contractor has to make his own arrangements at his own cost. BHEL will not provide any crane / T&Ps for unloading the above components. All necessary T&P such as, Trailers, Cranes Winches, welding generators, Slings, Jacks, Sleepers, Rails etc. are to be arranged by the contractor.

1.4.9 All the T & P, lifting tackles including wire ropes, slings, shackles and electrically operated equipment shall be got approved by BHEL Engineer before they are actually put on use. Test certificates obtained from the statutory authority should be submitted before their usage.

1.4.10 Required HYDRA / Crane for completion of piping system has to be arranged by contractor. The age of the contractor deployed cranes upto 150 T should be within 15 years as on date of deployment. Contractor has to provide documentary proof for the age of the crane at the time of deployment to the BHEL Engineer.

1.4.11 In the event of non-mobilization of Tools, Plants, Machinery, Equipment, Material or non-availability of the same owing to breakdown and as a result progress of work suffered, BHEL reserves the right to make alternative arrangement (available or higher capacity) in line with SCC clause no. 4.2.1.7 and hire charges shall be applicable as under:

Case 1: BHEL provides its own Capital T&P: If BHEL provides owned T&P then BHEL, hire charges (as per BHEL norms) will be recovered from the contractor as per the prevailing BHEL Corporate hire charges applicable (as enclosed in Chapter 11 of Part II Volume IA-Technical Conditions of Contract Volume I Book I) as per following cases:

- In case the T&P is specifically listed in “T&Ps to be deployed by Contractor”, ‘Rates of hire charges applicable to outside agencies other than contractors working for BHEL’ will apply.
- In case the T&P is not specifically listed in “T&Ps to be deployed by Contractor”, ‘Rates of hire charges applicable to contractors working for BHEL’ will apply.
- The hire charges of Capital Tools & Plants are exclusive of operating expenses e.g., Operator, fuel & Consumables and the same shall be arranged by the contractor at his cost.

Case 2: BHEL provides hired T&P: In all cases other than that specified in Case 1 above, actual expenses incurred by BHEL along with applicable overheads will be back-charged to the contractor.

The present rates of BHEL’s Corporate Crane hire charge, are enclosed in Chapter 11 of part II of Technical Conditions of Contract (Volume-IA Book-I). This may get revised further as per the BHEL corporate guidelines. The prevailing rates as on date of execution shall be applicable.

1.4.12 All the T & P arranged by contractor including electrical connections wherein required shall be reliable / proven / tested with necessary test certificate.

1.4.13 All instruments, measuring tools etc. are to be calibrated periodically as per the requirement of BHEL and necessary calibration certificates are to be submitted to BHEL before use.

1.4.14 Crane operators deployed by the contractor shall be tested by BHEL before he is allowed to operate the cranes.

1.4.15 Also Refer clause no 1.5.6 to 1.5.8 in connection with BHEL T&Ps in chapter V, Volume-IA, Part-I of this booklet.

1.4.16 Other Relevant clauses shall be referred in Special Conditions of Contract (SCC) published in Volume IB of Book II.

1.4.17 Also refer clause 1.3.7 on providing computers in chapter-III of Technical Conditions of Contract (VOLUME-IA PART- I) of this booklet.

VOLUME-IA PART-I CHAPTER - V
T&Ps & MMEs TO BE DEPLOYED BY BHEL ON SHARING BASIS

1.5.1. EOT crane without operating personnel shall be made available in the T.G. Hall free of charge for erection purposes. The contractor has to arrange operator for EOT Crane. As the above crane is deployed for T.G. & Aux. erection and also for various contractors the decision of BHEL engineers will be final with regard to allotment of crane.

1.5.2. Experienced Crane operator for EOT crane to be arranged by the bidder at their cost.

1.5.3. Providing manpower assistance required for free movement of Trailing cable of EOT Crane is included in the scope of this contract.

1.5.4. The availability of crane is likely to be hampered from time to time due to routine preventive maintenance or breakdown maintenance. Contractor has to make alternative arrangement or plan / modify / alter his activities to suit the above conditions and the contractor will not be liable for any compensation or extension of time due to this non-availability, for maintaining the erection schedule.

1.5.5. In the event of the crane not available for longer duration due to major breakdown or any other reasons, BHEL will reschedule the work in consultation with bidder and direct the bidder to concentrate on other areas till such time the cranes are made available.

1.5.6. Crane operators deployed by the contractor shall be tested by BHEL before he is allowed to operate the cranes.

1.5.7. Depending upon the nature of work and availability of facilities locally, contractor may have to arrange for a temporary workshop for facilitating uninterrupted progress of work.

1.5.8. All the distribution boards, connecting cables, hoses etc., and temporary connection work including electrical connections for the BHEL issued T & Ps shall have to be arranged by the contractor at his cost.

1.5.9. Cranes provided by BHEL are only for erection purpose and shall not be available for material handling or transportation purpose. Contractor shall make their own arrangements for material transportation to erection Site.

1.5.10. The contractor at his cost shall arrange for grouting of anchor points of T & Ps issued to him. Necessary grout materials are to be arranged by the contractor at his

cost.

1.5.11. Contractor shall make good any loss or damage to the Equipment supplied to him and day to day maintenance and operations of Equipment shall be borne by the contractor including all consumables like petrol, oil and air filters etc.

1.5.12. Any additional crane and other T & P which may be required for successfuland timely execution of the work covered within the scope of this tender shall be arranged and provided at site by the contractor at his cost. In caseif the contractor fails to provide such equipment, BHEL will arrange for the same and the cost will be recovered from the contractor's bill with BHEL overheads, as applicable from time to time which may vary even during contract period.

VOLUME-IA PART-I CHAPTER - VI
TIME SCHEDULE

1.6.1. TIME SCHEDULE

1.6.1.1. The entire work of erection, testing and commissioning of LP Piping including Raw Water Piping System, Plant water system, DM Cooling Water System, Instrument & Service Air system, Plant Service Water and Portable Water System, Pumps & Misc Equipments, Hangers and Supports, Valves, Miscellaneous Equipments .etc. for Unit -1 to Unit-5 as detailed elsewhere in the Tender Specification shall be completed within **Thirty (30) months** from the date of commencement of work at site. No phase shift is allowed for start of erection in all the units.

1.6.1.2. During the total period of contract, the contractor has to carry out the activities in a phased manner as required by BHEL and the program of milestone events.

1.6.1.3. The erection work shall be commenced on the mutually agreed date between the bidder and BHEL engineer and shall be deemed as completed in all respect only when the unit is in operation. The decision of BHEL in this regard shall be final and binding on the contractor. The scope of work under this contract is deemed to be completed only when so certified by the site Engineer.

1.6.1.4. The contractor is required to refer “Form F15: Monthly Performance Evaluation of Contractor” for all the instructions to be taken immediately after receipt of LOI. Please note that Form-15 in the Volume 1D- Forms and Procedures is revised. For details please refer Sl No. 10 of Part-II, Chapter-1 of Technical Conditions of Contract (VOLUME-IA PART II) of his booklet.

1.6.2. COMMENCEMENT OF CONTRACT PERIOD

The date of commencement of contract period shall be the mutually agreed date between the bidder and BHEL engineer to start the work. In case of discrepancy, the decision of BHEL engineer is final.

1.6.3 CONTRACT PERIOD

The contract period for completion of entire work under scope shall be Thirty (30) months from the “COMMENCEMENT OF CONTRACT PERIOD” as specified earlier for completion of the entire work.

1.6.4 MOBILISATION FOR ERECTION, TESTING, ASSISTANCE FOR COMMISSIOING ETC.,

1.6.4.1 The activities for erection, testing etc shall be started as per directions of Construction manager of BHEL.

1.6.4.2 The contractor has to augment his resources in such a manner that following major milestones of erection & commissioning are achieved on specified schedules:

1.6.4.3 TENTATIVE MILESTONES:

Sl. No.	Milestone Activity	Milestone Month				
		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
1	Commencement of Erection	1st Month	2nd Month	1st Month	2nd Month	2nd Month
2	Readiness for Boiler light up	10th Month	12th Month	14th Month	16th Month	18th Month
3	Readiness for Synchronization	15th Month	16th Month	18th Month	20th Month	22nd Month
4	COD & Trial Operation	19th Month	20th Month	21st Month	22nd Month	23rd Month
5	Completion of Contractual	30th Month				

1.6.4.4 In order to meet the schedule in general, and any other intermediate targets set, to meet customer/ project schedule requirements, Contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL Engineer.

1.6.5 MAJOR INTERMEDIATE MILESTONES

Sl. No.	Milestone Description	Month (from date of commencement)	Intermediate Milestone
1.	Readiness for Boiler light up of First Unit to get commissioned.	10th Month	**M1**
2.	Readiness for Synchronisation of the Last Unit to get commissioned.	22nd Month	**M2**

Note: Please refer Sl No. 5 Part II Chapter-1 of Technical Conditions of Contract (Volume 1A of Volume I Book I) for Penalty for Intermediate Milestones

1.6.6 GUARANTEE PERIOD

The guarantee period of **Twelve Months** shall commence from the date of handing over of last Unit to Customer or six months from the date of first synchronization of the last set, whichever is earlier (Provided all erection, testing, and commissioning works are completed in all respects).

VOLUME-IA PART-I CHAPTER - VII
TERMS OF PAYMENT

1.7.1. Terms of payment:

Progressive Payment against monthly running bills will be made up to 85 % of the value of the erected tonnage Pro rata as per Cl no 1.7.1.1 to 1.7.1.7 of the following table.

Sl. No.	Activity/ Erection	% of payment
1.7.1.1.	ON PRE-ASSEMBLY WHEREVER APPLICABLE. (if not applicable then this portion to be paid along with placement in position) FOR UG- wrapping & coating included	10%
1.7.1.2.	PLACEMENT IN POSITION OF PRE ASSEMBLED [equipment/pipe/instruments]	20%
1.7.1.3.	ALIGNMENT IN ALL ASPECTS	15%
1.7.1.4.	WELDING/BOLTING/GROUTING[including initial & final]	15%
1.7.1.5.	Completion of Supports in all aspects	15%
1.7.1.6.	COMPLETION OF NON DESTRUCTIVE EXAMINATION & STRESS RELIEVING/ HEAT TREATMENT (if not applicable, then this portion to be clubbed with next activity)	5%
1.7.1.7.	HYDRAULIC TEST/PNEUMATIC TEST WHEREVER APPLICABLE (if not applicable, then this portion to be clubbed with previous activity)	5%
	Total for Pro rata (85%)	**85%**

1.7.2. Further 15 % payment on pro-rata basis common to all PG shall be released on achievement of the following stage / milestones events (as per Cl no 1.7. 2.1 to1.7.2.9 of the following table) for the tonnage erected.

Sl. No.	STAGE / MILESTONE PAYMENTS (15%)	% of payment
1.7.2.1.	Boiler Light Up	1%
1.7.2.2.	Rolling and Synchronization	2%
1.7.2.3.	Full Load	1%
1.7.2.4.	Trial Operation	2%
1.7.2.5.	Painting (including arrow marking, nomenclature, etc)	3%
1.7.2.6.	Area cleaning, temporary structures cutting/removal and return of scrap.	2%
1.7.2.7.	Punch List points/pending points liquidation	2%
1.7.2.8.	Material Reconciliation	1%
1.7.2.9.	Completion of Contractual Obligations	1%

	Total for Milestone / Stage payments (15%)	**15%**

1.7.3. Total of 1.7.1 & 1.7.2 100%

Notes to Terms of payment:

Refer Part II Chapter 1 of this Technical Conditions of Contract for Corrections/ Revisions in Special Conditions of Contract, General Conditions of Contract and Forms & Procedures.

VOLUME-IA PART-I CHAPTER - VIII
TAXES AND OTHER DUTIES

1.8.1 Goods and service Tax (GST) & Cess

1.8.1.1 The successful bidder shall furnish proof of GST registration with GSTN Portal in the State in which the Project is being executed, covering the services under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by the successful bidder on BHEL for this project/ work.

1.8.1.2 Contractor's price/rates shall be exclusive of GST & Cess (if applicable) (herein after termed as GST). Contractor shall submit to BHEL the GST compliant tax invoice/debit note/revised tax invoice on the basis of which BHEL will claim the input tax credit in its return. Since this is a works contract, the applicable rate shall be @ 18% GST, as applicable presently.

1.8.1.3 Bidder shall note that the GST Tax Invoice complying with GST Invoice Rules wherein the 'Bill To' details will be as below:

BHEL GSTN : 36AAACB4146P1ZG

NAME : BHARAT HEAVY ELECTRICALS LIMITED

ADDRESS : BHEL- PSSR SITE OFFICE,
Yadadri Thermal Power Station, 5X800 MW (Coal based),
Veerlapalem village, Dameracherla Mandal,
Nalgonda District, Telangana State

1.8.1.4 GST charged in the tax invoice/debit note/revised tax invoice by the contractor shall be released separately to the contractor only after contractor files the outward supply details in GSTR-1 on GSTN portal and input tax credit of such invoice is matched with corresponding details of outward supply of the contractor and has paid the GST at the time of filing the monthly return.

1.8.1.5 In case BHEL has to incur any liability (like interest / penalty etc.) due to denial/reversal / delay of input tax credit in respect of the invoice submitted by the contractor, for the reasons attributable to the contractor, the same shall be recovered from the contractor.

1.8.1.6 Further, in case BHEL is deprived of the Input tax credit due to any reason attributable to contractor, the same shall not be paid or Recovered if already paid to the contractor.

1.8.1.7 Tax invoice/debit Note/revised tax invoice shall contain all such particulars as prescribed in GST law and comply to the timelines for issue of the same. Invoices

shall be submitted on time to the concerned BHEL Engineer In Charge.

1.8.1.8 TDS under GST (if/ as & when applicable) shall be deducted at prevailing rates on gross invoice value from the running bills.

1.8.1.9 E-way bills / Transit passes / Road Permits, if required for materials / T&P etc., bought into the project site is to be arranged by the Contractor only.

1.8.1.10 BHEL shall not reimburse any amounts towards any interest / penalty etc., incurred by contractor. Any additional claim at a later date due to issues such as wrong rates / wrong classification by contractor shall not be paid by BHEL.

1.8.2 All taxes and duty other than GST & Cess

The contractor shall pay all (except the specific exclusion viz GST & Cess, which is defined in relevant clauses elsewhere in the tender specification) taxes, fees, license charges, deposits, duties, tools, royalty, commissions, Stamp Duties, or other charges / levies, which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract and the same shall not be reimbursed by BHEL. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.

1.8.3 Statutory Variations

Statutory variations are applicable under the GST Acts, against production of proof. The changes implemented by the Central / State Government during the tenure of the contract viz. increase / decrease in the rate of taxes, applicability, etc. and its impact on upward revision / downward revision are to be suitably paid/ adjusted from the date of respective variation. The bidder shall give the benefit of downward revision in favour of BHEL. No other variations shall be allowed during the tenure of the contract.

1.8.4 New Taxes/Levies –

In case Government imposes any new levy / tax after submission of bid during the tenure of the contract, BHEL shall reimburse the same at actual on submission of documentary proof of payment subject to the satisfaction of BHEL that such new levy / tax is applicable to this contract.

1.8.5 Direct Tax

BHEL shall not be liable towards Income Tax of whatever nature including variations thereof arising out of this contract as well as tax liability of the bidder and their personnel. Deduction of tax at source at the prevailing rates shall be

effected by BHEL before release of payment as a statutory obligation, unless exemption certificate is produced by the bidder. TDS certificate will be issued by BHEL as per the provisions of Income Tax Act.

VOLUME-IA PART-I CHAPTER IX
BILL OF QUANTITY

1.9.1 Weight Schedule- Summary

WEIGHT SCHEDULE SUMMARY			
Sl. No.	**DESCRIPTION**	**APPROX WEIGHT (MT)**	**RATE SCHEDULE**
1	Stainless Steel Piping	418.94	1A
2	Carbon Steel Piping Over Ground	2158.77	1B
3	Buried Piping (CS) Piping Under Ground with Wrapping and Coating	1452	1C
4	Galvanized Iron Piping	157.74	1D
5	Hangers and Supports, Miscellaneous Items	496.04	2
TOTAL WEIGHT OF PIPING (MT)		**4683.48**	

1.9.2 PGMA WISE WEIGHT DETAILS

1.9.2.1 WEIGHT SCHEDULE SUMMARY PGMA WISE

Total	Description	Quantiy (MT)	Category	Rate Schedule
80412	Hot Well Make Up	9.16	SS Piping	1A
80460	SG AUX Cooling Water Unit System	300.68	CS Piping	1B
80463	TG AUX Cooling Water Piping	452.48	CS Piping	1B
80468	CW Piping- Aux Cooling Water, CW Treatment Line, Side Stream Filtration	100.00	CS Piping	1B
80471	Boiler Water Wash	93.17	CS Piping	1B
80473	DM Water System	64.07	SS Piping	1A
80477	Service Water/Raw Water System	491.85	CS Piping	1B
80477	Service Water/Raw Water System Under Ground	1452.00	CS Piping (UG)	1C
80478	Drinking Water/Potable Water System	157.74	GI Piping	1D
80480	Fire Water and Other Areas	112.44	CS Piping	1B
80610	Service Air Piping	109.97	SS Piping	1A
80612	Service Air For Individual Units	62.04	SS Piping	1A
80614	Instrument Air Piping	74.65	SS Piping	1A
80616	Instrument Air For Individual Units	97.05	SS Piping	1A
80650	Fuel Oil Piping	433.24	CS Piping	1B
80673	Lube Oil Piping	28.91	CS Piping	1B

Total	Description	Quantiy (MT)	Category	Rate Schedule
80933	Misc Erection Materials/Hangers and Supports including Hoists, Monorails, Miscellaneous Pumps and Motors, Chain Pully Block etc	244.14	H&S	2
81110	Cooling Water Pump, Piping	1.90	H&S	2
XXXX	Miscellaneous Platforms and Approaches	250.00	H&S	2
XXXX	AIR TRAPS	1.00	CS Piping	1B
XXXX	AIR RELEASE VALVES	40.00	CS Piping	1B
XXXX	BALL VALVES	2.00	SS Piping	1A
XXXX	GATE VALVES/GLOBE VALVES/NRV	100.00	CS Piping	1B
XXXX	BUTTERFLY VALVES	5.00	CS Piping	1B
	Total MT	4683.48		

1.9.2.1 PGMA WISE WEIGHT SCHEDULE

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80412	1	PIPE OD114.3X3.05-SA312TP304H; EP AT SITE	99	M	828.63	1A
7295	80412	2	PIPE OD88.9X3.05;SA312TP304H; EP AT SITE	129	M	833.34	1A
7295	80412	3	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	1	NO	1	1A
7295	80412	4	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7295	80412	5	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	18	NO	20.88	1A
7295	80412	6	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	4	NO	11.76	1A
7295	80412	7	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	1	NO	1.88	1A
7295	80412	8	ASMEB16.9 RED OD114.3X3.05/ 88.9X3.05	4	NO	3.08	1A
7295	80412	9	ASMEB16.9 RED OD168.3X5.4/ 114.3X3.05	1	NO	2.5	1A
7295	80412	10	ASMEB16.9 RED OD88.9X3.05/ 60.3X2.77	1	NO	0.47	1A
7295	80412	11	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X3.05	6	NO	3.48	1A
7295	80412	12	SW STUB NB25 CL3000 SS	5	NO	3.39	1A
7295	80412	13	SW STUB NB50 CL3000 SS	2	NO	2.66	1A
7295	80412	14	CARRIER PLATE 10X50X60	4	NO	0.97	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80412	15	SUP.PIPE OD88.9X3.05L=2000;EP AT SITE	1	NO	12.92	1A
7295	80412	16	SUP.PIPE OD60.3X3.91L=1000;EP AT SITE	1	NO	5.44	1A
7295	80412	17	SUPPORT PLATE T=10 800 X 1100	1	NO	71.02	1A
7296	80412	1	PIPE OD114.3X3.05-SA312TP304H; EP AT SITE	99	M	828.63	1A
7296	80412	2	PIPE OD88.9X3.05;SA312TP304H; EP AT SITE	129	M	833.34	1A
7296	80412	3	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	1	NO	1	1A
7296	80412	4	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7296	80412	5	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	18	NO	20.88	1A
7296	80412	6	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	4	NO	11.76	1A
7296	80412	7	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	1	NO	1.88	1A
7296	80412	8	ASMEB16.9 RED OD114.3X3.05/ 88.9X3.05	4	NO	3.08	1A
7296	80412	9	ASMEB16.9 RED OD168.3X5.4/ 114.3X3.05	1	NO	2.5	1A
7296	80412	10	ASMEB16.9 RED OD88.9X3.05/ 60.3X2.77	1	NO	0.47	1A
7296	80412	11	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X3.05	6	NO	3.48	1A
7296	80412	12	SW STUB NB25 CL3000 SS	5	NO	3.39	1A
7296	80412	13	SW STUB NB50 CL3000 SS	2	NO	2.66	1A
7296	80412	14	CARRIER PLATE 10X50X60	4	NO	0.97	1A
7296	80412	15	SUP.PIPE OD88.9X3.05L=2000;EP AT SITE	1	NO	12.92	1A
7296	80412	16	SUP.PIPE OD60.3X3.91L=1000;EP AT SITE	1	NO	5.44	1A
7296	80412	17	SUPPORT PLATE T=10 800 X 1100	1	NO	71.02	1A
7297	80412	1	PIPE OD114.3X3.05-SA312TP304H;EP AT SITE	99	M	828.63	1A
7297	80412	2	PIPE OD88.9X3.05;SA312TP304H; EP AT SITE	129	M	833.34	1A
7297	80412	3	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	1	NO	1	1A
7297	80412	4	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7297	80412	5	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	18	NO	20.88	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80412	6	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	4	NO	11.76	1A
7297	80412	7	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	1	NO	1.88	1A
7297	80412	8	ASMEB16.9 RED OD114.3X3.05/ 88.9X3.05	4	NO	3.08	1A
7297	80412	9	ASMEB16.9 RED OD168.3X5.4/ 114.3X3.05	1	NO	2.5	1A
7297	80412	10	ASMEB16.9 RED OD88.9X3.05/ 60.3X2.77	1	NO	0.47	1A
7297	80412	11	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X3.05	6	NO	3.48	1A
7297	80412	12	SW STUB NB25 CL3000 SS	5	NO	3.39	1A
7297	80412	13	SW STUB NB50 CL3000 SS	2	NO	2.66	1A
7297	80412	14	CARRIER PLATE 10X50X60	4	NO	0.97	1A
7297	80412	15	SUP.PIPE OD88.9X3.05L=2000;EP AT SITE	1	NO	12.92	1A
7297	80412	16	SUP.PIPE OD60.3X3.91L=1000;EP AT SITE	1	NO	5.44	1A
7297	80412	17	SUPPORT PLATE T=10 800 X 1100	1	NO	71.02	1A
7298	80412	1	PIPE OD114.3X3.05-SA312TP304H;EP AT SITE	99	M	828.63	1A
7298	80412	2	PIPE OD88.9X3.05;SA312TP304H;EP AT SITE	129	M	833.34	1A
7298	80412	3	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	1	NO	1	1A
7298	80412	4	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7298	80412	5	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	18	NO	20.88	1A
7298	80412	6	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	4	NO	11.76	1A
7298	80412	7	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	1	NO	1.88	1A
7298	80412	8	ASMEB16.9 RED OD114.3X3.05/88.9X3.05	4	NO	3.08	1A
7298	80412	9	ASMEB16.9 RED OD168.3X5.4/114.3X3.05	1	NO	2.5	1A
7298	80412	10	ASMEB16.9 RED OD88.9X3.05/60.3X2.77	1	NO	0.47	1A
7298	80412	11	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X3.05	6	NO	3.48	1A
7298	80412	12	SW STUB NB25 CL3000 SS	5	NO	3.39	1A
7298	80412	13	SW STUB NB50 CL3000 SS	2	NO	2.66	1A
7298	80412	14	CARRIER PLATE 10X50X60	4	NO	0.97	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80412	15	SUP.PIPE OD88.9X3.05L=2000;EP AT SITE	1	NO	12.92	1A
7298	80412	16	SUP.PIPE OD60.3X3.91L=1000;EP AT SITE	1	NO	5.44	1A
7298	80412	17	SUPPORT PLATE T=10 800 X 1100	1	NO	71.02	1A
7299	80412	1	PIPE OD114.3X3.05-SA312TP304H;EP AT SITE	99	M	828.63	1A
7299	80412	2	PIPE OD88.9X3.05;SA312TP304H;EP AT SITE	129	M	833.34	1A
7299	80412	3	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	1	NO	1	1A
7299	80412	4	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7299	80412	5	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	18	NO	20.88	1A
7299	80412	6	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	4	NO	11.76	1A
7299	80412	7	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	1	NO	1.88	1A
7299	80412	8	ASMEB16.9 RED OD114.3X3.05/88.9X3.05	4	NO	3.08	1A
7299	80412	9	ASMEB16.9 RED OD168.3X5.4/114.3X3.05	1	NO	2.5	1A
7299	80412	10	ASMEB16.9 RED OD88.9X3.05/60.3X2.77	1	NO	0.47	1A
7299	80412	11	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X3.05	6	NO	3.48	1A
7299	80412	12	SW STUB NB25 CL3000 SS	5	NO	3.39	1A
7299	80412	13	SW STUB NB50 CL3000 SS	2	NO	2.66	1A
7299	80412	14	CARRIER PLATE 10X50X60	4	NO	0.97	1A
7299	80412	15	SUP.PIPE OD88.9X3.05L=2000;EP AT SITE	1	NO	12.92	1A
7299	80412	16	SUP.PIPE OD60.3X3.91L=1000;EP AT SITE	1	NO	5.44	1A
7299	80412	17	SUPPORT PLATE T=10 800 X 1100	1	NO	71.02	1A
7295	80473	1	PIPE OD114.3X6.02 L=3514	1	NO	56.47	1A
7295	80473	2	PIPE NB100 WITH STUB	1	NO	89.97	1A
7295	80473	3	PIPE NB100 WITH CRPL	1	NO	50.81	1A
7295	80473	4	PIPE OD114.3X6.02 L=292	1	NO	4.69	1A
7295	80473	5	PIPE OD114.3X3.05 L=5980	1	NO	50.05	1A
7295	80473	6	PIPE NB100 WITH CRPL	1	NO	51.09	1A
7295	80473	7	PIPE OD114.3X6.02 L=4382	1	NO	70.42	1A
7295	80473	8	PIPE OD114.3X6.02 L=3037	1	NO	48.81	1A
7295	80473	9	PIPE OD114.3X3.05 L=4347	1	NO	36.38	1A
7295	80473	10	PIPE OD114.3X6.02 L=996	1	NO	16.01	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80473	11	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	8	NO	16	1A
7295	80473	12	SPARE PIPE OD114.3X3.05 L=2000	1	NO	16.74	1A
7295	80473	13	PIPE OD114.3X3.05 L=2847	1	NO	23.83	1A
7295	80473	14	PIPE OD114.3X3.05 L=192	1	NO	1.61	1A
7295	80473	15	PLATE 12X500X500	1	NO	23.55	1A
7295	80473	16	PIPE OD114.3X3.05 L=1583	1	NO	13.25	1A
7295	80473	17	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	1	NO	3.16	1A
7295	80473	18	PIPE OD114.3X3.05 L = 1184	1	NO	9.91	1A
7295	80473	19	PIPE OD114.3X3.05 L=562	1	NO	4.7	1A
7295	80473	20	PIPE OD114.3X3.05 L=1208	1	NO	10.11	1A
7295	80473	21	PIPE OD114.3X3.05 L =3660	1	NO	30.63	1A
7295	80473	22	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7295	80473	23	PIPE OD114.3X3.05 L=2269	1	NO	18.99	1A
7295	80473	24	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7295	80473	25	PIPE OD114.3X3.05 L =5246	1	NO	43.91	1A
7295	80473	26	PIPE OD114.3X3.05 L =839	1	NO	7.02	1A
7295	80473	27	PIPE OD114.3X3.05 L=3092	1	NO	25.88	1A
7295	80473	28	PIPE OD114.3X3.05 L =1598	1	NO	13.38	1A
7295	80473	29	PIPE NB100 WITH STUB	1	NO	4.91	1A
7295	80473	30	PIPE OD114.3X3.05 L=1444	1	NO	12.09	1A
7295	80473	31	PIPE OD114.3X3.05 L=1840	1	NO	15.4	1A
7295	80473	32	PIPE OD114.3X3.05 L=2346	1	NO	19.64	1A
7295	80473	33	PIPE OD114.3X3.05 L=4534	1	NO	37.95	1A
7295	80473	34	PIPE OD114.3X3.05 L =5980	9	NO	450.48	1A
7295	80473	35	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7295	80473	36	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	2	NO	2	1A
7295	80473	37	ASMEB16.9 RED OD168.3X3.4/114.3X3.05	1	NO	1.59	1A
7295	80473	38	PIPE OD114.3X3.05 L= 2000	1	NO	16.74	1A
7295	80473	39	SPARE PIPE OD114.3X3.05 L= 3000	1	NO	25.11	1A
7296	80473	1	PIPE OD114.3X6.02 L=3514	1	NO	56.47	1A
7296	80473	2	PIPE NB100 WITH STUB	1	NO	89.97	1A
7296	80473	3	PIPE NB100 WITH CRPL	1	NO	50.81	1A
7296	80473	4	PIPE OD114.3X6.02 L=292	1	NO	4.69	1A
7296	80473	5	PIPE OD114.3X3.05 L=5980	1	NO	50.05	1A
7296	80473	6	PIPE NB100 WITH CRPL	1	NO	51.09	1A
7296	80473	7	PIPE OD114.3X6.02 L=4382	1	NO	70.42	1A
7296	80473	8	PIPE OD114.3X6.02 L=3037	1	NO	48.81	1A
7296	80473	9	PIPE OD114.3X3.05 L=4347	1	NO	36.38	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80473	10	PIPE OD114.3X6.02 L=996	1	NO	16.01	1A
7296	80473	11	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	8	NO	16	1A
7296	80473	12	SPARE PIPE OD114.3X3.05 L=2000	1	NO	16.74	1A
7296	80473	13	PIPE OD114.3X3.05 L=2847	1	NO	23.83	1A
7296	80473	14	PIPE OD114.3X3.05 L=192	1	NO	1.61	1A
7296	80473	15	PLATE 12X500X500	1	NO	23.55	1A
7296	80473	16	PIPE OD114.3X3.05 L=1583	1	NO	13.25	1A
7296	80473	17	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	1	NO	3.16	1A
7296	80473	18	PIPE OD114.3X3.05 L = 1184	1	NO	9.91	1A
7296	80473	19	PIPE OD114.3X3.05 L=562	1	NO	4.7	1A
7296	80473	20	PIPE OD114.3X3.05 L=1208	1	NO	10.11	1A
7296	80473	21	PIPE OD114.3X3.05 L =3660	1	NO	30.63	1A
7296	80473	22	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7296	80473	23	PIPE OD114.3X3.05 L=2269	1	NO	18.99	1A
7296	80473	24	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7296	80473	25	PIPE OD114.3X3.05 L =5246	1	NO	43.91	1A
7296	80473	26	PIPE OD114.3X3.05 L =839	1	NO	7.02	1A
7296	80473	27	PIPE OD114.3X3.05 L=3092	1	NO	25.88	1A
7296	80473	28	PIPE OD114.3X3.05 L =1598	1	NO	13.38	1A
7296	80473	29	PIPE NB100 WITH STUB	1	NO	4.91	1A
7296	80473	30	PIPE OD114.3X3.05 L=1444	1	NO	12.09	1A
7296	80473	31	PIPE OD114.3X3.05 L=1840	1	NO	15.4	1A
7296	80473	32	PIPE OD114.3X3.05 L=2346	1	NO	19.64	1A
7296	80473	33	PIPE OD114.3X3.05 L=4534	1	NO	37.95	1A
7296	80473	34	PIPE OD114.3X3.05 L =5980	9	NO	450.48	1A
7296	80473	35	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7296	80473	36	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	2	NO	2	1A
7296	80473	37	ASMEB16.9 RED OD168.3X3.4/114.3X3.05	1	NO	1.59	1A
7296	80473	38	PIPE OD114.3X3.05 L= 2000	1	NO	16.74	1A
7296	80473	39	SPARE PIPE OD114.3X3.05 L= 3000	1	NO	25.11	1A
7297	80473	1	PIPE OD114.3X6.02 L=3514	1	NO	56.47	1A
7297	80473	2	PIPE NB100 WITH STUB	1	NO	89.97	1A
7297	80473	3	PIPE NB100 WITH CRPL	1	NO	50.81	1A
7297	80473	4	PIPE OD114.3X6.02 L=292	1	NO	4.69	1A
7297	80473	5	PIPE OD114.3X3.05 L=5980	1	NO	50.05	1A
7297	80473	6	PIPE NB100 WITH CRPL	1	NO	51.09	1A
7297	80473	7	PIPE OD114.3X6.02 L=4382	1	NO	70.42	1A
7297	80473	8	PIPE OD114.3X6.02 L=3037	1	NO	48.81	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80473	9	PIPE OD114.3X3.05 L=4347	1	NO	36.38	1A
7297	80473	10	PIPE OD114.3X6.02 L=996	1	NO	16.01	1A
7297	80473	11	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	8	NO	16	1A
7297	80473	12	SPARE PIPE OD114.3X3.05 L=2000	1	NO	16.74	1A
7297	80473	13	PIPE OD114.3X3.05 L=2847	1	NO	23.83	1A
7297	80473	14	PIPE OD114.3X3.05 L=192	1	NO	1.61	1A
7297	80473	15	PLATE 12X500X500	1	NO	23.55	1A
7297	80473	16	PIPE OD114.3X3.05 L=1583	1	NO	13.25	1A
7297	80473	17	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	1	NO	3.16	1A
7297	80473	18	PIPE OD114.3X3.05 L = 1184	1	NO	9.91	1A
7297	80473	19	PIPE OD114.3X3.05 L=562	1	NO	4.7	1A
7297	80473	20	PIPE OD114.3X3.05 L=1208	1	NO	10.11	1A
7297	80473	21	PIPE OD114.3X3.05 L =3660	1	NO	30.63	1A
7297	80473	22	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7297	80473	23	PIPE OD114.3X3.05 L=2269	1	NO	18.99	1A
7297	80473	24	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7297	80473	25	PIPE OD114.3X3.05 L =5246	1	NO	43.91	1A
7297	80473	26	PIPE OD114.3X3.05 L =839	1	NO	7.02	1A
7297	80473	27	PIPE OD114.3X3.05 L=3092	1	NO	25.88	1A
7297	80473	28	PIPE OD114.3X3.05 L =1598	1	NO	13.38	1A
7297	80473	29	PIPE NB100 WITH STUB	1	NO	4.91	1A
7297	80473	30	PIPE OD114.3X3.05 L=1444	1	NO	12.09	1A
7297	80473	31	PIPE OD114.3X3.05 L=1840	1	NO	15.4	1A
7297	80473	32	PIPE OD114.3X3.05 L=2346	1	NO	19.64	1A
7297	80473	33	PIPE OD114.3X3.05 L=4534	1	NO	37.95	1A
7297	80473	34	PIPE OD114.3X3.05 L =5980	9	NO	450.48	1A
7297	80473	35	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7297	80473	36	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	2	NO	2	1A
7297	80473	37	ASMEB16.9 RED OD168.3X3.4/114.3X3.05	1	NO	1.59	1A
7297	80473	38	PIPE OD114.3X3.05 L= 2000	1	NO	16.74	1A
7298	80473	1	PIPE OD114.3X6.02 L=3514	1	NO	56.47	1A
7298	80473	2	PIPE NB100 WITH STUB	1	NO	89.97	1A
7298	80473	3	PIPE NB100 WITH CRPL	1	NO	50.81	1A
7298	80473	4	PIPE OD114.3X6.02 L=292	1	NO	4.69	1A
7298	80473	5	PIPE OD114.3X3.05 L=5980	1	NO	50.05	1A
7298	80473	6	PIPE NB100 WITH CRPL	1	NO	51.09	1A
7298	80473	7	PIPE OD114.3X6.02 L=4382	1	NO	70.42	1A
7298	80473	8	PIPE OD114.3X6.02 L=3037	1	NO	48.81	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80473	9	PIPE OD114.3X3.05 L=4347	1	NO	36.38	1A
7298	80473	10	PIPE OD114.3X6.02 L=996	1	NO	16.01	1A
7298	80473	11	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	8	NO	16	1A
7298	80473	12	SPARE PIPE OD114.3X3.05 L=2000	1	NO	16.74	1A
7298	80473	13	PIPE OD114.3X3.05 L=2847	1	NO	23.83	1A
7298	80473	14	PIPE OD114.3X3.05 L=192	1	NO	1.61	1A
7298	80473	15	PLATE 12X500X500	1	NO	23.55	1A
7298	80473	16	PIPE OD114.3X3.05 L=1583	1	NO	13.25	1A
7298	80473	17	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	1	NO	3.16	1A
7298	80473	18	PIPE OD114.3X3.05 L = 1184	1	NO	9.91	1A
7298	80473	19	PIPE OD114.3X3.05 L=562	1	NO	4.7	1A
7298	80473	20	PIPE OD114.3X3.05 L=1208	1	NO	10.11	1A
7298	80473	21	PIPE OD114.3X3.05 L =3660	1	NO	30.63	1A
7298	80473	22	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7298	80473	23	PIPE OD114.3X3.05 L=2269	1	NO	18.99	1A
7298	80473	24	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7298	80473	25	PIPE OD114.3X3.05 L =5246	1	NO	43.91	1A
7298	80473	26	PIPE OD114.3X3.05 L =839	1	NO	7.02	1A
7298	80473	27	PIPE OD114.3X3.05 L=3092	1	NO	25.88	1A
7298	80473	28	PIPE OD114.3X3.05 L =1598	1	NO	13.38	1A
7298	80473	29	PIPE NB100 WITH STUB	1	NO	4.91	1A
7298	80473	30	PIPE OD114.3X3.05 L=1444	1	NO	12.09	1A
7298	80473	31	PIPE OD114.3X3.05 L=1840	1	NO	15.4	1A
7298	80473	32	PIPE OD114.3X3.05 L=2346	1	NO	19.64	1A
7298	80473	33	PIPE OD114.3X3.05 L=4534	1	NO	37.95	1A
7298	80473	34	PIPE OD114.3X3.05 L =5980	9	NO	450.48	1A
7298	80473	35	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7298	80473	36	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	2	NO	2	1A
7298	80473	37	ASMEB16.9 RED OD168.3X3.4/114.3X3.05	1	NO	1.59	1A
7298	80473	38	PIPE OD114.3X3.05 L= 2000	1	NO	16.74	1A
7299	80473	1	PIPE OD114.3X6.02 L=3514	1	NO	56.47	1A
7299	80473	2	PIPE NB100 WITH STUB	1	NO	89.97	1A
7299	80473	3	PIPE NB100 WITH CRPL	1	NO	50.81	1A
7299	80473	4	PIPE OD114.3X6.02 L=292	1	NO	4.69	1A
7299	80473	5	PIPE OD114.3X3.05 L=5980	1	NO	50.05	1A
7299	80473	6	PIPE NB100 WITH CRPL	1	NO	51.09	1A
7299	80473	7	PIPE OD114.3X6.02 L=4382	1	NO	70.42	1A
7299	80473	8	PIPE OD114.3X6.02 L=3037	1	NO	48.81	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80473	9	PIPE OD114.3X3.05 L=4347	1	NO	36.38	1A
7299	80473	10	PIPE OD114.3X6.02 L=996	1	NO	16.01	1A
7299	80473	11	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	8	NO	16	1A
7299	80473	12	SPARE PIPE OD114.3X3.05 L=2000	1	NO	16.74	1A
7299	80473	13	PIPE OD114.3X3.05 L=2847	1	NO	23.83	1A
7299	80473	14	PIPE OD114.3X3.05 L=192	1	NO	1.61	1A
7299	80473	15	PLATE 12X500X500	1	NO	23.55	1A
7299	80473	16	PIPE OD114.3X3.05 L=1583	1	NO	13.25	1A
7299	80473	17	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	1	NO	3.16	1A
7299	80473	18	PIPE OD114.3X3.05 L = 1184	1	NO	9.91	1A
7299	80473	19	PIPE OD114.3X3.05 L=562	1	NO	4.7	1A
7299	80473	20	PIPE OD114.3X3.05 L=1208	1	NO	10.11	1A
7299	80473	21	PIPE OD114.3X3.05 L =3660	1	NO	30.63	1A
7299	80473	22	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7299	80473	23	PIPE OD114.3X3.05 L=2269	1	NO	18.99	1A
7299	80473	24	PIPE OD114.3X3.05 L=292	1	NO	2.44	1A
7299	80473	25	PIPE OD114.3X3.05 L =5246	1	NO	43.91	1A
7299	80473	26	PIPE OD114.3X3.05 L =839	1	NO	7.02	1A
7299	80473	27	PIPE OD114.3X3.05 L=3092	1	NO	25.88	1A
7299	80473	28	PIPE OD114.3X3.05 L =1598	1	NO	13.38	1A
7299	80473	29	PIPE NB100 WITH STUB	1	NO	4.91	1A
7299	80473	30	PIPE OD114.3X3.05 L=1444	1	NO	12.09	1A
7299	80473	31	PIPE OD114.3X3.05 L=1840	1	NO	15.4	1A
7299	80473	32	PIPE OD114.3X3.05 L=2346	1	NO	19.64	1A
7299	80473	33	PIPE OD114.3X3.05 L=4534	1	NO	37.95	1A
7299	80473	34	PIPE OD114.3X3.05 L =5980	9	NO	450.48	1A
7299	80473	35	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	14	NO	28	1A
7299	80473	36	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X3.05	2	NO	2	1A
7299	80473	37	ASMEB16.9 RED OD168.3X3.4/114.3X3.05	1	NO	1.59	1A
7299	80473	38	PIPE OD114.3X3.05 L= 2000	1	NO	16.74	1A
7300	80473	1	PIPE OD168.3X3.4;EP-STY-D, D1=161.5MM	266	M	3678.78	1A
7300	80473	2	PIPE OD273.1X4.1;EP-STY-D, D1=264.6MM	74	M	2056.46	1A
7300	80473	3	TUBE OD63.5X7.1 ;EP @SITE	30	M	322.98	1A
7300	80473	4	PIPE OD88.9X3.05;EP-STY-D, D1=82.8MM	321	M	2073.66	1A
7300	80473	5	PIPE OD114.3X3.05;EP-STY-D, D1=108.2MM	308	M	2577.96	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7300	80473	6	PIPE OD219.1X3.7;EP AT SITE	371	M	7408.87	1A
7300	80473	7	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	16	NO	10.4	1A
7300	80473	8	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	55	NO	63.8	1A
7300	80473	9	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	74	NO	148	1A
7300	80473	10	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	42	NO	208.74	1A
7300	80473	11	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X3.76	25	NO	240	1A
7300	80473	13	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X3.05	2	NO	1.16	1A
7300	80473	16	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	3	NO	5.64	1A
7300	80473	17	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	6	NO	39	1A
7300	80473	18	ASMEB16.9 BW EQUAL TEE OD219.1X3.76	4	NO	46.2	1A
7300	80473	19	ASMEB16.9 BW EQUAL TEE OD273X4.19	2	NO	38.72	1A
7300	80473	20	ASMEB16.9 UEQT OD88.9X5.49/60.3X5.54	4	NO	11.88	1A
7300	80473	21	ASMEB16.9 UEQT OD168.3X3.4/114.3X3.05	8	NO	47.28	1A
7300	80473	22	ASMEB16.9 UEQT OD168.3X3.4/88.9X3.05	1	NO	5.74	1A
7300	80473	24	ASMEB16.9 UEQT OD219.1X6.35/114.3X3.05	19	NO	317.11	1A
7300	80473	25	ASMEB16.9 UEQT OD219.1X3.76/168.3X3.4	1	NO	10.79	1A
7300	80473	26	ASMEB16.9 UEQT OD219.1X6.35/88.9X5.49	7	NO	118.16	1A
7300	80473	27	ASMEB16.9 UEQT OD273.1X4.19/219.1X3.76	7	NO	127.19	1A
7300	80473	28	ASMEB16.9 UEQT OD273.1X4.19/168.3X3.4	7	NO	122.08	1A
7300	80473	29	ASMEB16.9 RED OD114.3X3.05/88.9X3.05	15	NO	11.55	1A
7300	80473	30	ASMEB16.9 RED OD88.9X5.49/73X5.16	6	NO	5.34	1A
7300	80473	31	ASMEB16.9 RED OD168.3X3.4/114.3X3.05	1	NO	1.59	1A
7300	80473	32	ASMEB16.9 RED OD 219.1X6.35/114.3X4	4	NO	13.92	1A
7300	80473	38	FLAT END COVER OD88.9X3.05(SS)	2	NO	1.8	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7300	80473	39	FLAT END COVER OD168.3X3.4(SS)	4	NO	20.76	1A
7300	80473	40	FLAT END COVER OD219.1X3.76(SS)	3	NO	26.25	1A
7300	80473	41	FLAT END COVER OD273X4.19(SS)	4	NO	54.6	1A
7300	80473	42	PIPE OD219.1X6.35;EP-STY-D, D1=206.4MM	190	M	6328.9	1A
7300	80473	43	PIPENB50X4.50BLHEAVYPLAINEND IS1239 BL	110	M	678.7	1A
7300	80473	44	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	3	NO	57.81	1A
7300	80473	45	ASMEB16.9 BWLR 45DEG ELBOW OD219.1X6.35	1	NO	7.98	1A
7300	80473	46	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	30	NO	501	1A
7300	80473	47	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	10	NO	9	1A
7300	80473	48	PIPE OD219.1X6.35;EP-STY-D, D1=206.4MM	255	M	8494.05	1A
7300	80473	49	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	7	NO	116.9	1A
7300	80473	50	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	1	NO	19.27	1A
7300	80473	51	PIPE OD219.1X6.35;EP-STY-D, D1=206.4MM	312	M	10392.72	1A
7300	80473	52	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	13	NO	217.1	1A
7300	80473	53	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	2	NO	38.54	1A
7300	80473	54	PIPE OD114.3X3.05;EP-STY-D, D1=108.2MM	89	M	744.93	1A
7300	80473	55	PIPE OD168.3X3.4;EP-STY-D, D1=161.5MM	237	M	3277.71	1A
7300	80473	56	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	9	NO	18	1A
7300	80473	57	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	12	NO	59.64	1A
7300	80473	58	ASMEB16.9 RED OD168.3X3.4/114.3X3.05	1	NO	1.59	1A
7300	80473	59	ASMEB16.9 UEQT OD168.3X3.4/114.3X3.05	3	NO	17.73	1A
7300	80473	60	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	2	NO	13	1A
7300	80473	61	PIPE OD114.3X3.05;EP-STY-D, D1=108.2MM	67	M	560.79	1A
7300	80473	62	PIPE OD168.3X3.4;EP-STY-D, D1=161.5MM	420	M	5808.6	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7300	80473	63	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	12	NO	24	1A
7300	80473	64	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	23	NO	114.31	1A
7300	80473	65	ASMEB16.9 UEQT OD168.3X3.4/114.3X3.05	6	NO	35.46	1A
7300	80473	66	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	2	NO	13	1A
7295	80610	1	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	82	NO	407.54	1A
7295	80610	2	PIPE OD168.3X3.4,EP@SHOP;STY-D,D1=161.5	495	M	6845.85	1A
7295	80610	3	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	7	NO	45.5	1A
7295	80610	4	BWUEQT168.3X7.11/33.4X3.38 SA403WP304H	7	NO	98	1A
7295	80610	5	ASMEB16.9 BWLR 45DEG ELBOW OD168.3X3.4	8	NO	19.92	1A
7295	80610	6	UEQT OD168.3X3.4/60.3X3.91 SA403WP304H	9	NO	52.2	1A
7295	80610	7	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	9	NO	10.8	1A
7295	80610	8	ASMEB16.11 SW RED NB50/25 CL3000	9	NO	4.5	1A
7295	80610	9	ASMEB16.11 SW RED NB50/40 CL3000	8	NO	4	1A
7295	80610	10	ASMEB16.11 SW EQUAL TEE NB40 CL3000	8	NO	8	1A
7295	80610	11	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	3.2	1A
7295	80610	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	10	NO	5	1A
7296	80610	1	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	76	NO	377.72	1A
7296	80610	2	PIPE OD168.3X3.4,EP@SHOP;STY-D,D1=161.5	415	M	5739.45	1A
7296	80610	3	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	5	NO	32.5	1A
7296	80610	4	BWUEQT168.3X7.11/33.4X3.38 SA403WP304H	7	NO	98	1A
7296	80610	5	ASMEB16.9 BWLR 45DEG ELBOW OD168.3X3.4	3	NO	7.47	1A
7296	80610	6	UEQT OD168.3X3.4/60.3X3.91 SA403WP304H	9	NO	52.2	1A
7296	80610	7	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	9	NO	10.8	1A
7296	80610	8	ASMEB16.11 SW RED NB50/25 CL3000	9	NO	4.5	1A
7296	80610	9	ASMEB16.11 SW RED NB50/40 CL3000	8	NO	4	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80610	10	ASMEB16.11 SW EQUAL TEE NB40 CL3000	8	NO	8	1A
7296	80610	11	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	3.2	1A
7296	80610	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	10	NO	5	1A
7297	80610	1	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	82	NO	407.54	1A
7297	80610	2	PIPE OD168.3X3.4,EP@SHOP;STY-D,D1=161.5	495	M	6845.85	1A
7297	80610	3	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	7	NO	45.5	1A
7297	80610	4	BWUEQT168.3X7.11/33.4X3.38 SA403WP304H	7	NO	98	1A
7297	80610	5	ASMEB16.9 BWLR 45DEG ELBOW OD168.3X3.4	8	NO	19.92	1A
7297	80610	6	UEQT OD168.3X3.4/60.3X3.91 SA403WP304H	9	NO	52.2	1A
7297	80610	7	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	9	NO	10.8	1A
7297	80610	8	ASMEB16.11 SW RED NB50/25 CL3000	9	NO	4.5	1A
7297	80610	9	ASMEB16.11 SW RED NB50/40 CL3000	8	NO	4	1A
7297	80610	10	ASMEB16.11 SW EQUAL TEE NB40 CL3000	8	NO	8	1A
7297	80610	11	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	3.2	1A
7297	80610	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	10	NO	5	1A
7298	80610	1	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	85	NO	422.45	1A
7298	80610	2	PIPE OD168.3X3.4,EP@SHOP;STY-D,D1=161.5	498	M	6887.34	1A
7298	80610	3	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	7	NO	45.5	1A
7298	80610	4	BWUEQT168.3X7.11/33.4X3.38 SA403WP304H	7	NO	98	1A
7298	80610	5	ASMEB16.9 BWLR 45DEG ELBOW OD168.3X3.4	3	NO	7.47	1A
7298	80610	6	UEQT OD168.3X3.4/60.3X3.91 SA403WP304H	9	NO	52.2	1A
7298	80610	7	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	9	NO	10.8	1A
7298	80610	8	ASMEB16.11 SW RED NB50/25 CL3000	9	NO	4.5	1A
7298	80610	9	ASMEB16.11 SW RED NB50/40 CL3000	8	NO	4	1A
7298	80610	10	ASMEB16.11 SW EQUAL TEE NB40 CL3000	8	NO	8	1A
7298	80610	11	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	3.2	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80610	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	10	NO	5	1A
7299	80610	1	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	69	NO	342.93	1A
7299	80610	2	PIPE OD168.3X3.4,EP@SHOP;STY-D,D1=161.5	348	M	4812.84	1A
7299	80610	3	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	5	NO	32.5	1A
7299	80610	4	BWUEQT168.3X7.11/33.4X3.38 SA403WP304H	7	NO	98	1A
7299	80610	5	ASMEB16.9 BWLR 45DEG ELBOW OD168.3X3.4	3	NO	7.47	1A
7299	80610	6	UEQT OD168.3X3.4/60.3X3.91 SA403WP304H	9	NO	52.2	1A
7299	80610	7	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	9	NO	10.8	1A
7299	80610	8	ASMEB16.11 SW RED NB50/25 CL3000	9	NO	4.5	1A
7299	80610	9	ASMEB16.11 SW RED NB50/40 CL3000	8	NO	4	1A
7299	80610	10	ASMEB16.11 SW EQUAL TEE NB40 CL3000	8	NO	8	1A
7299	80610	11	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	3.2	1A
7299	80610	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	10	NO	5	1A
7300	80610	1	PIPE OD168.3X3.40 EPSTY-D,D1=161.5 SHOP	1850	M	25585.5	1A
7300	80610	2	PIPE OD114.3X3.05 EPSTY-D,D1=108.2 SHOP	4050	M	33898.5	1A
7300	80610	3	PIPE OD60.3X3.91 EP STY-D,D1=52.4 SITE	2250	M	12240	1A
7300	80610	4	TUBE OD 31.8 X 4 EP AT SITE,STY-D	1220	M	3544.1	1A
7300	80610	5	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	30	NO	149.1	1A
7300	80610	6	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	100	NO	200	1A
7300	80610	7	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	56	NO	36.4	1A
7300	80610	8	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	67	NO	34.84	1A
7295	80612	1	PIPE OD21.3X2.77-SA312TP304H;EP AT SITE	2176	M	2763.52	1A
7295	80612	2	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	820	M	2050	1A
7295	80612	3	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	615	M	3345.6	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80612	4	PIPEOD88.9X3.05-EP AT SHOP;STY-D,D1=82.8	30	M	193.8	1A
7295	80612	5	PIPE OD168.3X3.4-EP STY-D;D1=161.5	200	M	2766	1A
7295	80612	6	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	624	NO	187.2	1A
7295	80612	7	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	165	NO	85.8	1A
7295	80612	8	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	99	NO	64.35	1A
7295	80612	9	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	4	NO	4.64	1A
7295	80612	10	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	18	NO	89.46	1A
7295	80612	11	ASMEB16.11 SW EQUAL TEE NB15 CL3000	37	NO	7.4	1A
7295	80612	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	26	NO	13	1A
7295	80612	13	ASMEB16.11 SW UEQT NB25/15 CL3000	210	NO	63	1A
7295	80612	14	ASMEB16.11 SW UEQT NB50/15 CL3000	12	NO	12	1A
7295	80612	15	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	2	1A
7295	80612	16	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7295	80612	17	ASMEB16.9 RED OD114.3X6.02/60.3X5.54	4	NO	5.04	1A
7295	80612	18	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1A
7295	80612	19	SW STUB NB15 (SS)	20	NO	3.6	1A
7295	80612	20	SW END CAP NB15 SS CL3000	30	NO	3	1A
7295	80612	21	SW END CAP NB25 SS CL3000	20	NO	8	1A
7295	80612	22	PIPE OD60.3X3.91 WITH FLAT END CLOSURE	8	NO	7.55	1A
7295	80612	23	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	1	NO	6.5	1A
7295	80612	24	ASMEB16.9 UEQT OD168.3X3.4/88.9X5.49	13	NO	78	1A
7295	80612	25	BW UEQT OD168.3X7.11/33.4X3.38	40	NO	560	1A
7295	80612	26	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	12	NO	10.32	1A
7295	80612	27	SOW FLANGE NB50 CL150 CS	1	NO	2	1A
7295	80612	28	SOW FLANGE NB50 CL150 SS	1	NO	2	1A
7295	80612	29	HEX BOLT-M16X80	10	NO	1.55	1A
7295	80612	30	HEX NUT M16	10	NO	0.3	1A
7295	80612	31	NON-ASBESTOS JOINTING SHEET 1.5MM	1	NO	0.22	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80612	32	PIPE OD60.3X5.54 EP AT SITE D1-49.0	6	M	44.88	1A
7295	80612	33	ASMEB16.11 SW UEQT NB50/25 CL3000	10	NO	10	1A
7296	80612	1	PIPE OD21.3X2.77-SA312TP304H;EP AT SITE	2176	M	2763.52	1A
7296	80612	2	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	820	M	2050	1A
7296	80612	3	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	615	M	3345.6	1A
7296	80612	4	PIPEOD88.9X3.05-EP AT SHOP;STY-D,D1=82.8	30	M	193.8	1A
7296	80612	5	PIPE OD168.3X3.4-EP STY-D;D1=161.5	200	M	2766	1A
7296	80612	6	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	624	NO	187.2	1A
7296	80612	7	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	165	NO	85.8	1A
7296	80612	8	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	99	NO	64.35	1A
7296	80612	9	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	4	NO	4.64	1A
7296	80612	10	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	18	NO	89.46	1A
7296	80612	11	ASMEB16.11 SW EQUAL TEE NB15 CL3000	37	NO	7.4	1A
7296	80612	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	26	NO	13	1A
7296	80612	13	ASMEB16.11 SW UEQT NB25/15 CL3000	210	NO	63	1A
7296	80612	14	ASMEB16.11 SW UEQT NB50/15 CL3000	12	NO	12	1A
7296	80612	15	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	2	1A
7296	80612	16	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7296	80612	17	ASMEB16.9 RED OD114.3X6.02/60.3X5.54	4	NO	5.04	1A
7296	80612	18	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1A
7296	80612	19	SW STUB NB15 (SS)	20	NO	3.6	1A
7296	80612	20	SW END CAP NB15 SS CL3000	30	NO	3	1A
7296	80612	21	SW END CAP NB25 SS CL3000	20	NO	8	1A
7296	80612	22	PIPE OD60.3X3.91 WITH FLAT END CLOSURE	8	NO	7.55	1A
7296	80612	23	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	1	NO	6.5	1A
7296	80612	24	ASMEB16.9 UEQT OD168.3X3.4/88.9X5.49	13	NO	78	1A
7296	80612	25	BW UEQT OD168.3X7.11/33.4X3.38	40	NO	560	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80612	26	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	12	NO	10.32	1A
7296	80612	27	SOW FLANGE NB50 CL150 CS	1	NO	2	1A
7296	80612	28	SOW FLANGE NB50 CL150 SS	1	NO	2	1A
7296	80612	29	HEX BOLT-M16X80	10	NO	1.55	1A
7296	80612	30	HEX NUT M16	10	NO	0.3	1A
7296	80612	31	NON-ASBESTOS JOINTING SHEET 1.5MM	1	NO	0.22	1A
7296	80612	32	PIPE OD60.3X5.54 EP AT SITE D1-49.0	6	M	44.88	1A
7296	80612	33	ASMEB16.11 SW UEQT NB50/25 CL3000	10	NO	10	1A
7297	80612	1	PIPE OD21.3X2.77-SA312TP304H;EP AT SITE	2176	M	2763.52	1A
7297	80612	2	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	820	M	2050	1A
7297	80612	3	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	615	M	3345.6	1A
7297	80612	4	PIPEOD88.9X3.05-EP AT SHOP;STY-D,D1=82.8	30	M	193.8	1A
7297	80612	5	PIPE OD168.3X3.4-EP STY-D;D1=161.5	200	M	2766	1A
7297	80612	6	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	624	NO	187.2	1A
7297	80612	7	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	165	NO	85.8	1A
7297	80612	8	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	99	NO	64.35	1A
7297	80612	9	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	4	NO	4.64	1A
7297	80612	10	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	18	NO	89.46	1A
7297	80612	11	ASMEB16.11 SW EQUAL TEE NB15 CL3000	37	NO	7.4	1A
7297	80612	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	26	NO	13	1A
7297	80612	13	ASMEB16.11 SW UEQT NB25/15 CL3000	210	NO	63	1A
7297	80612	14	ASMEB16.11 SW UEQT NB50/15 CL3000	12	NO	12	1A
7297	80612	15	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	2	1A
7297	80612	16	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7297	80612	17	ASMEB16.9 RED OD114.3X6.02/60.3X5.54	4	NO	5.04	1A
7297	80612	18	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1A
7297	80612	19	SW STUB NB15 (SS)	20	NO	3.6	1A
7297	80612	20	SW END CAP NB15 SS CL3000	30	NO	3	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80612	21	SW END CAP NB25 SS CL3000	20	NO	8	1A
7297	80612	22	PIPE OD60.3X3.91 WITH FLAT END CLOSURE	8	NO	7.55	1A
7297	80612	23	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	1	NO	6.5	1A
7297	80612	24	ASMEB16.9 UEQT OD168.3X3.4/88.9X5.49	13	NO	78	1A
7297	80612	25	BW UEQT OD168.3X7.11/33.4X3.38	40	NO	560	1A
7297	80612	26	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	12	NO	10.32	1A
7297	80612	27	SOW FLANGE NB50 CL150 CS	1	NO	2	1A
7297	80612	28	SOW FLANGE NB50 CL150 SS	1	NO	2	1A
7297	80612	29	HEX BOLT-M16X80	10	NO	1.55	1A
7297	80612	30	HEX NUT M16	10	NO	0.3	1A
7297	80612	31	NON-ASBESTOS JOINTING SHEET 1.5MM	1	NO	0.22	1A
7297	80612	32	PIPE OD60.3X5.54 EP AT SITE D1-49.0	6	M	44.88	1A
7297	80612	33	ASMEB16.11 SW UEQT NB50/25 CL3000	10	NO	10	1A
7298	80612	1	PIPE OD21.3X2.77-SA312TP304H;EP AT SITE	2176	M	2763.52	1A
7298	80612	2	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	820	M	2050	1A
7298	80612	3	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	615	M	3345.6	1A
7298	80612	4	PIPEOD88.9X3.05-EP AT SHOP;STY-D,D1=82.8	30	M	193.8	1A
7298	80612	5	PIPE OD168.3X3.4-EP STY-D;D1=161.5	200	M	2766	1A
7298	80612	6	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	624	NO	187.2	1A
7298	80612	7	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	165	NO	85.8	1A
7298	80612	8	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	99	NO	64.35	1A
7298	80612	9	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	4	NO	4.64	1A
7298	80612	10	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	18	NO	89.46	1A
7298	80612	11	ASMEB16.11 SW EQUAL TEE NB15 CL3000	37	NO	7.4	1A
7298	80612	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	26	NO	13	1A
7298	80612	13	ASMEB16.11 SW UEQT NB25/15 CL3000	210	NO	63	1A
7298	80612	14	ASMEB16.11 SW UEQT NB50/15 CL3000	12	NO	12	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80612	15	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	2	1A
7298	80612	16	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7298	80612	17	ASMEB16.9 RED OD114.3X6.02/60.3X5.54	4	NO	5.04	1A
7298	80612	18	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1A
7298	80612	19	SW STUB NB15 (SS)	20	NO	3.6	1A
7298	80612	20	SW END CAP NB15 SS CL3000	30	NO	3	1A
7298	80612	21	SW END CAP NB25 SS CL3000	20	NO	8	1A
7298	80612	22	PIPE OD60.3X3.91 WITH FLAT END CLOSURE	8	NO	7.55	1A
7298	80612	23	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	1	NO	6.5	1A
7298	80612	24	ASMEB16.9 UEQT OD168.3X3.4/88.9X5.49	13	NO	78	1A
7298	80612	25	BW UEQT OD168.3X7.11/33.4X3.38	40	NO	560	1A
7298	80612	26	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	12	NO	10.32	1A
7298	80612	27	SOW FLANGE NB50 CL150 CS	1	NO	2	1A
7298	80612	28	SOW FLANGE NB50 CL150 SS	1	NO	2	1A
7298	80612	29	HEX BOLT-M16X80	10	NO	1.55	1A
7298	80612	30	HEX NUT M16	10	NO	0.3	1A
7298	80612	31	NON-ASBESTOS JOINTING SHEET 1.5MM	1	NO	0.22	1A
7298	80612	32	PIPE OD60.3X5.54 EP AT SITE D1-49.0	6	M	44.88	1A
7298	80612	33	ASMEB16.11 SW UEQT NB50/25 CL3000	10	NO	10	1A
7299	80612	1	PIPE OD21.3X2.77-SA312TP304H;EP AT SITE	2176	M	2763.52	1A
7299	80612	2	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	820	M	2050	1A
7299	80612	3	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	615	M	3345.6	1A
7299	80612	4	PIPEOD88.9X3.05-EP AT SHOP;STY-D,D1=82.8	30	M	193.8	1A
7299	80612	5	PIPE OD168.3X3.4-EP STY-D;D1=161.5	200	M	2766	1A
7299	80612	6	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	624	NO	187.2	1A
7299	80612	7	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	165	NO	85.8	1A
7299	80612	8	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	99	NO	64.35	1A
7299	80612	9	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	4	NO	4.64	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80612	10	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	18	NO	89.46	1A
7299	80612	11	ASMEB16.11 SW EQUAL TEE NB15 CL3000	37	NO	7.4	1A
7299	80612	12	ASMEB16.11 SW EQUAL TEE NB25 CL3000	26	NO	13	1A
7299	80612	13	ASMEB16.11 SW UEQT NB25/15 CL3000	210	NO	63	1A
7299	80612	14	ASMEB16.11 SW UEQT NB50/15 CL3000	12	NO	12	1A
7299	80612	15	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	2	1A
7299	80612	16	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7299	80612	17	ASMEB16.9 RED OD114.3X6.02/60.3X5.54	4	NO	5.04	1A
7299	80612	18	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1A
7299	80612	19	SW STUB NB15 (SS)	20	NO	3.6	1A
7299	80612	20	SW END CAP NB15 SS CL3000	30	NO	3	1A
7299	80612	21	SW END CAP NB25 SS CL3000	20	NO	8	1A
7299	80612	22	PIPE OD60.3X3.91 WITH FLAT END CLOSURE	8	NO	7.55	1A
7299	80612	23	ASMEB16.9 BW EQUAL TEE OD168.3X3.4	1	NO	6.5	1A
7299	80612	24	ASMEB16.9 UEQT OD168.3X3.4/88.9X5.49	13	NO	78	1A
7299	80612	25	BW UEQT OD168.3X7.11/33.4X3.38	40	NO	560	1A
7299	80612	26	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	12	NO	10.32	1A
7299	80612	27	SOW FLANGE NB50 CL150 CS	1	NO	2	1A
7299	80612	28	SOW FLANGE NB50 CL150 SS	1	NO	2	1A
7299	80612	29	HEX BOLT-M16X80	10	NO	1.55	1A
7299	80612	30	HEX NUT M16	10	NO	0.3	1A
7299	80612	31	NON-ASBESTOS JOINTING SHEET 1.5MM	1	NO	0.22	1A
7299	80612	32	PIPE OD60.3X5.54 EP AT SITE D1-49.0	6	M	44.88	1A
7299	80612	33	ASMEB16.11 SW UEQT NB50/25 CL3000	10	NO	10	1A
7295	80614	1	ERW PIPE DIA 88.90 X3.05 - SA312TP304H	595	M	3843.7	1A
7295	80614	2	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	95	NO	110.2	1A
7295	80614	3	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	10	NO	18.8	1A
7295	80614	4	ASMEB16.9 UEQT OD88.9X5.49/33.4X4.55	8	NO	22.08	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80614	5	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	41	NO	21.32	1A
7295	80614	6	PIPE DIA 33.4 X 3.38 SA312TP304H	41	M	102.5	1A
7295	80614	7	ASMEB16.9 UEQT OD88.9X5.49/60.3X5.54	6	NO	17.82	1A
7295	80614	8	ASMEB16.11 SW UEQT NB50/25 CL3000	6	NO	6	1A
7295	80614	9	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	2	NO	2.4	1A
7295	80614	10	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	12	NO	7.8	1A
7295	80614	11	PIPE DIA 60.3 X 3.91 SA312TP304H	45	M	244.8	1A
7295	80614	12	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7295	80614	13	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X3.05	3	NO	1.74	1A
7296	80614	1	ERW PIPE DIA 88.90 X3.05 - SA312TP304H	515	M	3326.9	1A
7296	80614	2	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	80	NO	92.8	1A
7296	80614	3	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	8	NO	15.04	1A
7296	80614	4	ASMEB16.9 UEQT OD88.9X5.49/33.4X4.55	8	NO	22.08	1A
7296	80614	5	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	41	NO	21.32	1A
7296	80614	6	PIPE DIA 33.4 X 3.38 SA312TP304H	41	M	102.5	1A
7296	80614	7	ASMEB16.9 UEQT OD88.9X5.49/60.3X5.54	6	NO	17.82	1A
7296	80614	8	ASMEB16.11 SW UEQT NB50/25 CL3000	6	NO	6	1A
7296	80614	9	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	2	NO	2.4	1A
7296	80614	10	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	12	NO	7.8	1A
7296	80614	11	PIPE DIA 60.3 X 3.91 SA312TP304H	45	M	244.8	1A
7296	80614	12	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7297	80614	1	ERW PIPE DIA 88.90 X3.05 - SA312TP304H	595	M	3843.7	1A
7297	80614	2	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	95	NO	110.2	1A
7297	80614	3	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	10	NO	18.8	1A
7297	80614	4	ASMEB16.9 UEQT OD88.9X5.49/33.4X4.55	8	NO	22.08	1A
7297	80614	5	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	41	NO	21.32	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80614	6	PIPE DIA 33.4 X 3.38 SA312TP304H	41	M	102.5	1A
7297	80614	7	ASMEB16.9 UEQT OD88.9X5.49/60.3X5.54	6	NO	17.82	1A
7297	80614	8	ASMEB16.11 SW UEQT NB50/25 CL3000	6	NO	6	1A
7297	80614	9	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	2	NO	2.4	1A
7297	80614	10	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	12	NO	7.8	1A
7297	80614	11	PIPE DIA 60.3 X 3.91 SA312TP304H	45	M	244.8	1A
7297	80614	12	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7297	80614	13	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X3.05	3	NO	1.74	1A
7298	80614	1	ERW PIPE DIA 88.90 X3.05 - SA312TP304H	590	M	3937.48	1A
7298	80614	3	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	10	NO	18.8	1A
7298	80614	5	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	41	NO	21.32	1A
7298	80614	6	PIPE DIA 33.4 X 3.38 SA312TP304H	41	M	102.5	1A
7298	80614	7	ASMEB16.9 UEQT OD88.9X5.49/60.3X5.54	6	NO	17.82	1A
7298	80614	8	ASMEB16.11 SW UEQT NB50/25 CL3000	6	NO	6	1A
7298	80614	9	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	2	NO	2.4	1A
7298	80614	10	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	12	NO	7.8	1A
7298	80614	11	PIPE DIA 60.3 X 3.91 SA312TP304H	45	M	244.8	1A
7298	80614	12	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7299	80614	1	ERW PIPE DIA 88.90 X 3.05 - SA312TP304H	438	M	2829.48	1A
7299	80614	2	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	72	NO	83.52	1A
7299	80614	3	ASMEB16.9 BW EQUAL TEE OD88.9X3.05	8	NO	15.04	1A
7299	80614	4	ASMEB16.9 UEQT OD88.9X5.49/33.4X4.55	8	NO	22.08	1A
7299	80614	5	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	41	NO	21.32	1A
7299	80614	6	PIPE DIA 33.4 X 3.38 SA312TP304H	41	M	102.5	1A
7299	80614	7	ASMEB16.9 UEQT OD88.9X5.49/60.3X5.54	6	NO	17.82	1A
7299	80614	8	ASMEB16.11 SW UEQT NB50/25 CL3000	6	NO	6	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80614	9	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	2	NO	2.4	1A
7299	80614	10	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	12	NO	7.8	1A
7299	80614	11	PIPE DIA 60.3 X 3.91 SA312TP304H	45	M	244.8	1A
7299	80614	12	ASMEB16.11 SW RED NB50/25 CL3000	2	NO	1	1A
7300	80614	1	PIPE OD168.3X3.40 EPSTY-D,D1=161.5 SHOP	1050	M	14521.5	1A
7300	80614	2	PIPE OD114.3X3.05 EP STY-D,D1=108.2 SHOP	2150	M	17995.5	1A
7300	80614	3	PIPE OD88.90X3.05 EP STY-D,D1=82.8 SHOP	750	M	4845	1A
7300	80614	4	PIPE OD60.3X3.91 EP STY-D,D1=52.4 SITE	2250	M	12240	1A
7300	80614	5	TUBE OD 31.8 X 4 EP AT SITE,STY-D	1500	M	4357.5	1A
7300	80614	6	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X3.4	20	NO	99.4	1A
7300	80614	7	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	55	NO	110	1A
7300	80614	8	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X3.05	22	NO	25.52	1A
7300	80614	9	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	75	NO	48.75	1A
7300	80614	10	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	65	NO	33.8	1A
7295	80616	1	PIPE OD114.3X3.05 EP STY D , D1=108.2	200	M	1674	1A
7295	80616	2	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	510	M	2774.4	1A
7295	80616	3	PIPE OD48.3X3.68-SA312TP304H;EP AT SITE	200	M	810	1A
7295	80616	4	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	1550	M	3875	1A
7295	80616	5	PIPE OD21.3X3.73-SA312TP304H;EP AT SITE	5550	M	8935.5	1A
7295	80616	6	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	25	NO	50	1A
7295	80616	7	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	105	NO	68.25	1A
7295	80616	8	ASMEB16.9 BWLR 90DEG ELBOW OD48.3X3.68	40	NO	14.4	1A
7295	80616	9	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	310	NO	161.2	1A
7295	80616	10	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	1150	NO	345	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80616	11	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	1	NO	2.94	1A
7295	80616	12	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	10	NO	12	1A
7295	80616	13	ASMEB16.11 SW EQUAL TEE NB40 CL3000	5	NO	5	1A
7295	80616	14	ASMEB16.11 SW EQUAL TEE NB25 CL3000	40	NO	20	1A
7295	80616	15	ASMEB16.11 SW EQUAL TEE NB15 CL3000	250	NO	50	1A
7295	80616	16	ASMEB16.9 UEQT OD114.3X3.05/60.3X3.91	10	NO	26.3	1A
7295	80616	17	ASMEB16.9 UEQT OD114.3X4.5/48.3X4.5	4	NO	14.72	1A
7295	80616	18	ASMEB16.9 UEQT OD114.3X6.02/33.4X4.55	20	NO	94.6	1A
7295	80616	19	ASMEB16.11 SW UEQT NB50/40 CL3000	17	NO	17	1A
7295	80616	20	ASMEB16.11 SW UEQT NB50/25 CL3000	4	NO	4	1A
7295	80616	21	ASMEB16.11 SW UEQT NB50/15 CL3000	40	NO	40	1A
7295	80616	22	ASMEB16.11 SW UEQT NB40/15 CL3000	130	NO	195	1A
7295	80616	23	ASMEB16.11 SW UEQT NB25/15 CL3000	375	NO	112.5	1A
7295	80616	24	ASMEB16.9 RED OD114.3X3.05/88.9X3.05	1	NO	0.77	1A
7295	80616	25	SW END CAP NB15 SS CL3000	100	NO	10	1A
7295	80616	26	SW END CAP NB25 SS CL3000	50	NO	20	1A
7295	80616	27	SW END CAP NB40 SS CL3000	40	NO	28	1A
7295	80616	28	PIPE OD60.3X3.91 WITH FLAT ENDCLOSURE	10	NO	9.44	1A
7295	80616	29	SW STUB NB15 (SS)	75	NO	13.5	1A
7295	80616	30	NIPPLE NB25 NPT R 1"	40	NO	12.96	1A
7295	80616	31	NIPPLE NB25 BSP R 1"	40	NO	12.96	1A
7296	80616	1	PIPE OD114.3X3.05 EP STY D , D1=108.2	200	M	1674	1A
7296	80616	2	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	510	M	2774.4	1A
7296	80616	3	PIPE OD48.3X3.68-SA312TP304H;EP AT SITE	200	M	810	1A
7296	80616	4	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	1550	M	3875	1A
7296	80616	5	PIPE OD21.3X3.73-SA312TP304H;EP AT SITE	5550	M	8935.5	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80616	6	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	25	NO	50	1A
7296	80616	7	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	105	NO	68.25	1A
7296	80616	8	ASMEB16.9 BWLR 90DEG ELBOW OD48.3X3.68	40	NO	14.4	1A
7296	80616	9	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	310	NO	161.2	1A
7296	80616	10	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	1150	NO	345	1A
7296	80616	11	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	1	NO	2.94	1A
7296	80616	12	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	10	NO	12	1A
7296	80616	13	ASMEB16.11 SW EQUAL TEE NB40 CL3000	5	NO	5	1A
7296	80616	14	ASMEB16.11 SW EQUAL TEE NB25 CL3000	40	NO	20	1A
7296	80616	15	ASMEB16.11 SW EQUAL TEE NB15 CL3000	250	NO	50	1A
7296	80616	16	ASMEB16.9 UEQT OD114.3X3.05/60.3X3.91	10	NO	26.3	1A
7296	80616	17	ASMEB16.9 UEQT OD114.3X4.5/48.3X4.5	4	NO	14.72	1A
7296	80616	18	ASMEB16.9 UEQT OD114.3X6.02/33.4X4.55	20	NO	94.6	1A
7296	80616	19	ASMEB16.11 SW UEQT NB50/40 CL3000	17	NO	17	1A
7296	80616	20	ASMEB16.11 SW UEQT NB50/25 CL3000	4	NO	4	1A
7296	80616	21	ASMEB16.11 SW UEQT NB50/15 CL3000	40	NO	40	1A
7296	80616	22	ASMEB16.11 SW UEQT NB40/15 CL3000	130	NO	195	1A
7296	80616	23	ASMEB16.11 SW UEQT NB25/15 CL3000	375	NO	112.5	1A
7296	80616	24	ASMEB16.9 RED OD114.3X3.05/88.9X3.05	1	NO	0.77	1A
7296	80616	25	SW END CAP NB15 SS CL3000	100	NO	10	1A
7296	80616	26	SW END CAP NB25 SS CL3000	50	NO	20	1A
7296	80616	27	SW END CAP NB40 SS CL3000	40	NO	28	1A
7296	80616	28	PIPE OD60.3X3.91 WITH FLAT ENDCLOSURE	10	NO	9.44	1A
7296	80616	29	SW STUB NB15 (SS)	75	NO	13.5	1A
7296	80616	30	NIPPLE NB25 NPT R 1"	40	NO	12.96	1A
7296	80616	31	NIPPLE NB25 BSP R 1"	40	NO	12.96	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80616	1	PIPE OD114.3X3.05 EP STY D , D1=108.2	200	M	1674	1A
7297	80616	2	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	510	M	2774.4	1A
7297	80616	3	PIPE OD48.3X3.68-SA312TP304H;EP AT SITE	200	M	810	1A
7297	80616	4	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	1550	M	3875	1A
7297	80616	5	PIPE OD21.3X3.73-SA312TP304H;EP AT SITE	5550	M	8935.5	1A
7297	80616	6	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	25	NO	50	1A
7297	80616	7	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	105	NO	68.25	1A
7297	80616	8	ASMEB16.9 BWLR 90DEG ELBOW OD48.3X3.68	40	NO	14.4	1A
7297	80616	9	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	310	NO	161.2	1A
7297	80616	10	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	1150	NO	345	1A
7297	80616	11	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	1	NO	2.94	1A
7297	80616	12	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	10	NO	12	1A
7297	80616	13	ASMEB16.11 SW EQUAL TEE NB40 CL3000	5	NO	5	1A
7297	80616	14	ASMEB16.11 SW EQUAL TEE NB25 CL3000	40	NO	20	1A
7297	80616	15	ASMEB16.11 SW EQUAL TEE NB15 CL3000	250	NO	50	1A
7297	80616	16	ASMEB16.9 UEQT OD114.3X3.05/60.3X3.91	10	NO	26.3	1A
7297	80616	17	ASMEB16.9 UEQT OD114.3X4.5/48.3X4.5	4	NO	14.72	1A
7297	80616	18	ASMEB16.9 UEQT OD114.3X6.02/33.4X4.55	20	NO	94.6	1A
7297	80616	19	ASMEB16.11 SW UEQT NB50/40 CL3000	17	NO	17	1A
7297	80616	20	ASMEB16.11 SW UEQT NB50/25 CL3000	4	NO	4	1A
7297	80616	21	ASMEB16.11 SW UEQT NB50/15 CL3000	40	NO	40	1A
7297	80616	22	ASMEB16.11 SW UEQT NB40/15 CL3000	130	NO	195	1A
7297	80616	23	ASMEB16.11 SW UEQT NB25/15 CL3000	375	NO	112.5	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80616	24	ASMEB16.9 RED OD114.3X3.05/88.9X3.05	1	NO	0.77	1A
7297	80616	25	SW END CAP NB15 SS CL3000	100	NO	10	1A
7297	80616	26	SW END CAP NB25 SS CL3000	50	NO	20	1A
7297	80616	27	SW END CAP NB40 SS CL3000	40	NO	28	1A
7297	80616	28	PIPE OD60.3X3.91 WITH FLAT ENDCLOSURE	10	NO	9.44	1A
7297	80616	29	SW STUB NB15 (SS)	75	NO	13.5	1A
7297	80616	30	NIPPLE NB25 NPT R 1"	40	NO	12.96	1A
7297	80616	31	NIPPLE NB25 BSP R 1"	40	NO	12.96	1A
7298	80616	1	PIPE OD114.3X3.05 EP STY D , D1=108.2	200	M	1674	1A
7298	80616	2	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	510	M	2774.4	1A
7298	80616	3	PIPE OD48.3X3.68-SA312TP304H;EP AT SITE	200	M	810	1A
7298	80616	4	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	1550	M	3875	1A
7298	80616	5	PIPE OD21.3X3.73-SA312TP304H;EP AT SITE	5550	M	8935.5	1A
7298	80616	6	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	25	NO	50	1A
7298	80616	7	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	105	NO	68.25	1A
7298	80616	8	ASMEB16.9 BWLR 90DEG ELBOW OD48.3X3.68	40	NO	14.4	1A
7298	80616	9	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	310	NO	161.2	1A
7298	80616	10	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	1150	NO	345	1A
7298	80616	11	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	1	NO	2.94	1A
7298	80616	12	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	10	NO	12	1A
7298	80616	13	ASMEB16.11 SW EQUAL TEE NB40 CL3000	5	NO	5	1A
7298	80616	14	ASMEB16.11 SW EQUAL TEE NB25 CL3000	40	NO	20	1A
7298	80616	15	ASMEB16.11 SW EQUAL TEE NB15 CL3000	250	NO	50	1A
7298	80616	16	ASMEB16.9 UEQT OD114.3X3.05/60.3X3.91	10	NO	26.3	1A
7298	80616	17	ASMEB16.9 UEQT OD114.3X4.5/48.3X4.5	4	NO	14.72	1A
7298	80616	18	ASMEB16.9 UEQT OD114.3X6.02/33.4X4.55	20	NO	94.6	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80616	19	ASMEB16.11 SW UEQT NB50/40 CL3000	17	NO	17	1A
7298	80616	20	ASMEB16.11 SW UEQT NB50/25 CL3000	4	NO	4	1A
7298	80616	21	ASMEB16.11 SW UEQT NB50/15 CL3000	40	NO	40	1A
7298	80616	22	ASMEB16.11 SW UEQT NB40/15 CL3000	130	NO	195	1A
7298	80616	23	ASMEB16.11 SW UEQT NB25/15 CL3000	375	NO	112.5	1A
7298	80616	24	ASMEB16.9 RED OD114.3X3.05/88.9X3.05	1	NO	0.77	1A
7298	80616	25	SW END CAP NB15 SS CL3000	100	NO	10	1A
7298	80616	26	SW END CAP NB25 SS CL3000	50	NO	20	1A
7298	80616	27	SW END CAP NB40 SS CL3000	40	NO	28	1A
7298	80616	28	PIPE OD60.3X3.91 WITH FLAT ENDCLOSURE	10	NO	9.44	1A
7298	80616	29	SW STUB NB15 (SS)	75	NO	13.5	1A
7298	80616	30	NIPPLE NB25 NPT R 1"	40	NO	12.96	1A
7298	80616	31	NIPPLE NB25 BSP R 1"	40	NO	12.96	1A
7299	80616	1	PIPE OD114.3X3.05 EP STY D , D1=108.2	200	M	1674	1A
7299	80616	2	PIPE OD60.3X3.91-SA312TP304H;EP AT SITE	510	M	2774.4	1A
7299	80616	3	PIPE OD48.3X3.68-SA312TP304H;EP AT SITE	200	M	810	1A
7299	80616	4	PIPE OD33.4X3.38-SA312TP304H;EP AT SITE	1550	M	3875	1A
7299	80616	5	PIPE OD21.3X3.73-SA312TP304H;EP AT SITE	5550	M	8935.5	1A
7299	80616	6	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X3.05	25	NO	50	1A
7299	80616	7	ASMEB16.9 BWLR 90DEG ELBOW OD60.3X3.91	105	NO	68.25	1A
7299	80616	8	ASMEB16.9 BWLR 90DEG ELBOW OD48.3X3.68	40	NO	14.4	1A
7299	80616	9	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	310	NO	161.2	1A
7299	80616	10	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	1150	NO	345	1A
7299	80616	11	ASMEB16.9 BW EQUAL TEE OD 114.3X3.05	1	NO	2.94	1A
7299	80616	12	ASMEB16.9 BW EQUAL TEE OD60.3X3.91	10	NO	12	1A
7299	80616	13	ASMEB16.11 SW EQUAL TEE NB40 CL3000	5	NO	5	1A

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80616	14	ASMEB16.11 SW EQUAL TEE NB25 CL3000	40	NO	20	1A
7299	80616	15	ASMEB16.11 SW EQUAL TEE NB15 CL3000	250	NO	50	1A
7299	80616	16	ASMEB16.9 UEQT OD114.3X3.05/60.3X3.91	10	NO	26.3	1A
7299	80616	17	ASMEB16.9 UEQT OD114.3X4.5/48.3X4.5	4	NO	14.72	1A
7299	80616	18	ASMEB16.9 UEQT OD114.3X6.02/33.4X4.55	20	NO	94.6	1A
7299	80616	19	ASMEB16.11 SW UEQT NB50/40 CL3000	17	NO	17	1A
7299	80616	20	ASMEB16.11 SW UEQT NB50/25 CL3000	4	NO	4	1A
7299	80616	21	ASMEB16.11 SW UEQT NB50/15 CL3000	40	NO	40	1A
7299	80616	22	ASMEB16.11 SW UEQT NB40/15 CL3000	130	NO	195	1A
7299	80616	23	ASMEB16.11 SW UEQT NB25/15 CL3000	375	NO	112.5	1A
7299	80616	24	ASMEB16.9 RED OD114.3X3.05/88.9X3.05	1	NO	0.77	1A
7299	80616	25	SW END CAP NB15 SS CL3000	100	NO	10	1A
7299	80616	26	SW END CAP NB25 SS CL3000	50	NO	20	1A
7299	80616	27	SW END CAP NB40 SS CL3000	40	NO	28	1A
7299	80616	28	PIPE OD60.3X3.91 WITH FLAT ENDCLOSURE	10	NO	9.44	1A
7299	80616	29	SW STUB NB15 (SS)	75	NO	13.5	1A
7299	80616	30	NIPPLE NB25 NPT R 1"	40	NO	12.96	1A
7299	80616	31	NIPPLE NB25 BSP R 1"	40	NO	12.96	1A
7295	80460	1	PIPE 88.9X5.49 L=840M-EP-SITE	840	M	9492	1B
7295	80460	2	PIPE OD114.3X6.02 L=405M-EP-SHOP-D-105.3	405	M	6508.35	1B
7295	80460	3	PIPE OD323.9X6 EP STY D D1-312	45	M	2115	1B
7295	80460	4	PIPE OD219.1X6 EP STY D D1-207	475	M	14976.75	1B
7295	80460	5	PIPE NB150 EP STY D D1-156.8	840	M	17808	1B
7295	80460	6	PIPE NB50 EP STY D D1-52.7 AT SITE	350	M	2159.5	1B
7295	80460	7	PIPE NB40 EP STY D D1-41.5 AT SITE	300	M	1329	1B
7295	80460	8	PIPE NB25 EP STY D D1-26.9 AT SITE	600	M	1782	1B
7295	80460	9	PIPE NB15 EP STY D D1-15.9 AT SITE	660	M	957	1B
7295	80460	10	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	6	NO	214.2	1B
7295	80460	11	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	24	NO	400.8	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80460	12	BL. 90 DEG ELL NB150IS1239 BLACK	44	NO	457.6	1B
7295	80460	13	BL. 90 DEG ELL NB100IS1239 BLACK	52	NO	260	1B
7295	80460	14	BL. 90 DEG ELL NB80 IS1239 BLACK	144	NO	299.52	1B
7295	80460	15	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	62	NO	55.8	1B
7295	80460	16	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	60	NO	48	1B
7295	80460	17	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	115	NO	43.7	1B
7295	80460	18	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	140	NO	18.2	1B
7295	80460	19	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	2	NO	17.94	1B
7295	80460	20	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	4	NO	19.36	1B
7295	80460	21	BL. RED NB150 / 100 IS1239 BLACK	6	NO	33	1B
7295	80460	22	BL. RED NB100 / 50 IS1239 BLACK	10	NO	30	1B
7295	80460	23	ASMEB16.11 SW RED NB50/40 CL3000	2	NO	2	1B
7295	80460	24	ASMEB16.11 SW RED NB40/25 CL3000	4	NO	2.4	1B
7295	80460	25	ASMEB16.11 SW RED NB25/15 CL3000	4	NO	1.2	1B
7295	80460	26	ASMEB16.9 UEQT OD323.9X6.35/219.1X6.35	2	NO	74.94	1B
7295	80460	27	ASMEB16.9 UEQT OD219.1X6.35/88.9X5.49	14	NO	236.32	1B
7295	80460	28	UEQT NB 150/100 IS1239 BLACK	4	NO	62	1B
7295	80460	29	BL. EQT NB80 IS1239 BLACK	20	NO	75	1B
7295	80460	30	ASMEB16.11 SW EQUAL TEE NB50 CL3000	12	NO	12	1B
7295	80460	31	ASMEB16.11 SW UEQT NB50/15 CL3000	31	NO	27.9	1B
7295	80460	32	ASMEB16.11 SW EQUAL TEE NB40 CL3000	4	NO	6	1B
7295	80460	33	ASMEB16.11 SW UEQT NB40/25 CL3000	6	NO	12	1B
7295	80460	34	ASMEB16.11 SW UEQT NB40/15 CL3000	12	NO	30.48	1B
7295	80460	35	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7295	80460	36	ASMEB16.11 SW UEQT NB25/15 CL3000	46	NO	13.8	1B
7295	80460	37	ASMEB16.11 SW EQUAL TEE NB15 CL3000	6	NO	0.6	1B
7295	80460	38	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/50)	14	NO	92.75	1B
7295	80460	39	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/40)	4	NO	26.5	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80460	40	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/25)	30	NO	216.75	1B
7295	80460	41	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/15)	4	NO	28.9	1B
7295	80460	42	SW PRESSURE STUB NB 15 CL 3000(CS)	75	NO	13.5	1B
7295	80460	43	SW PRESSURE STUB NB 25 CLASS 3000	30	NO	12.9	1B
7295	80460	44	SW PRESSURE STUB NB 40 CLASS 3000	12	NO	9	1B
7295	80460	45	SW PRESSURE STUB NB 50 CLASS 3000	10	NO	13.3	1B
7295	80460	46	TEMP.STUB M33X2 (CS) L=45	6	NO	3	1B
7295	80460	47	TEMP.STUB M33X2 (CS) L=64	39	NO	27.3	1B
7295	80460	48	PLUG FOR THERMOCOUPLE NIPPLE M33X2(CS)	45	NO	36	1B
7295	80460	49	PACKING RING	45	NO	0.45	1B
7295	80460	50	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	2	NO	34.5	1B
7295	80460	51	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	2	NO	34.36	1B
7296	80460	1	PIPE 88.9X5.49 L=840M-EP-SITE	840	M	9492	1B
7296	80460	2	PIPE OD114.3X6.02 L=405M-EP-SHOP-D-105.3	405	M	6508.35	1B
7296	80460	3	PIPE OD323.9X6 EP STY D D1-312	45	M	2115	1B
7296	80460	4	PIPE OD219.1X6 EP STY D D1-207	475	M	14976.75	1B
7296	80460	5	PIPE NB150 EP STY D D1-156.8	840	M	17808	1B
7296	80460	6	PIPE NB50 EP STY D D1-52.7 AT SITE	350	M	2159.5	1B
7296	80460	7	PIPE NB40 EP STY D D1-41.5 AT SITE	300	M	1329	1B
7296	80460	8	PIPE NB25 EP STY D D1-26.9 AT SITE	600	M	1782	1B
7296	80460	9	PIPE NB15 EP STY D D1-15.9 AT SITE	660	M	957	1B
7296	80460	10	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	6	NO	214.2	1B
7296	80460	11	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	24	NO	400.8	1B
7296	80460	12	BL. 90 DEG ELL NB150IS1239 BLACK	44	NO	457.6	1B
7296	80460	13	BL. 90 DEG ELL NB100IS1239 BLACK	52	NO	260	1B
7296	80460	14	BL. 90 DEG ELL NB80 IS1239 BLACK	144	NO	299.52	1B
7296	80460	15	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	62	NO	55.8	1B
7296	80460	16	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	60	NO	48	1B
7296	80460	17	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	115	NO	43.7	1B
7296	80460	18	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	140	NO	18.2	1B
7296	80460	19	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	2	NO	17.94	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80460	20	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	4	NO	19.36	1B
7296	80460	21	BL. RED NB150 / 100 IS1239 BLACK	6	NO	33	1B
7296	80460	22	BL. RED NB100 / 50 IS1239 BLACK	10	NO	30	1B
7296	80460	23	ASMEB16.11 SW RED NB50/40 CL3000	2	NO	2	1B
7296	80460	24	ASMEB16.11 SW RED NB40/25 CL3000	4	NO	2.4	1B
7296	80460	25	ASMEB16.11 SW RED NB25/15 CL3000	4	NO	1.2	1B
7296	80460	26	ASMEB16.9 UEQT OD323.9X6.35/219.1X6.35	2	NO	74.94	1B
7296	80460	27	ASMEB16.9 UEQT OD219.1X6.35/88.9X5.49	14	NO	236.32	1B
7296	80460	28	UEQT NB 150/100 IS1239 BLACK	4	NO	62	1B
7296	80460	29	BL. EQT NB80 IS1239 BLACK	20	NO	75	1B
7296	80460	30	ASMEB16.11 SW EQUAL TEE NB50 CL3000	12	NO	12	1B
7296	80460	31	ASMEB16.11 SW UEQT NB50/15 CL3000	31	NO	27.9	1B
7296	80460	32	ASMEB16.11 SW EQUAL TEE NB40 CL3000	4	NO	6	1B
7296	80460	33	ASMEB16.11 SW UEQT NB40/25 CL3000	6	NO	12	1B
7296	80460	34	ASMEB16.11 SW UEQT NB40/15 CL3000	12	NO	30.48	1B
7296	80460	35	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7296	80460	36	ASMEB16.11 SW UEQT NB25/15 CL3000	46	NO	13.8	1B
7296	80460	37	ASMEB16.11 SW EQUAL TEE NB15 CL3000	6	NO	0.6	1B
7296	80460	38	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/50)	14	NO	92.75	1B
7296	80460	39	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/40)	4	NO	26.5	1B
7296	80460	40	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/25)	30	NO	216.75	1B
7296	80460	41	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/15)	4	NO	28.9	1B
7296	80460	42	SW PRESSURE STUB NB 15 CL 3000(CS)	75	NO	13.5	1B
7296	80460	43	SW PRESSURE STUB NB 25 CLASS 3000	30	NO	12.9	1B
7296	80460	44	SW PRESSURE STUB NB 40 CLASS 3000	12	NO	9	1B
7296	80460	45	SW PRESSURE STUB NB 50 CLASS 3000	10	NO	13.3	1B
7296	80460	46	TEMP.STUB M33X2 (CS) L=45	6	NO	3	1B
7296	80460	47	TEMP.STUB M33X2 (CS) L=64	39	NO	27.3	1B
7296	80460	48	PLUG FOR THERMOCOUPLE NIPPLE M33X2(CS)	45	NO	36	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80460	49	PACKING RING	45	NO	0.45	1B
7296	80460	50	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	2	NO	34.5	1B
7296	80460	51	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	2	NO	34.36	1B
7297	80460	1	PIPE 88.9X5.49 L=840M-EP-SITE	840	M	9492	1B
7297	80460	2	PIPE OD114.3X6.02 L=405M-EP-SHOP-D-105.3	405	M	6508.35	1B
7297	80460	3	PIPE OD323.9X6 EP STY D D1-312	45	M	2115	1B
7297	80460	4	PIPE OD219.1X6 EP STY D D1-207	475	M	14976.75	1B
7297	80460	5	PIPE NB150 EP STY D D1-156.8	840	M	17808	1B
7297	80460	6	PIPE NB50 EP STY D D1-52.7 AT SITE	350	M	2159.5	1B
7297	80460	7	PIPE NB40 EP STY D D1-41.5 AT SITE	300	M	1329	1B
7297	80460	8	PIPE NB25 EP STY D D1-26.9 AT SITE	600	M	1782	1B
7297	80460	9	PIPE NB15 EP STY D D1-15.9 AT SITE	660	M	957	1B
7297	80460	10	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	6	NO	214.2	1B
7297	80460	11	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	24	NO	400.8	1B
7297	80460	12	BL. 90 DEG ELL NB150IS1239 BLACK	44	NO	457.6	1B
7297	80460	13	BL. 90 DEG ELL NB100IS1239 BLACK	52	NO	260	1B
7297	80460	14	BL. 90 DEG ELL NB80 IS1239 BLACK	144	NO	299.52	1B
7297	80460	15	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	62	NO	55.8	1B
7297	80460	16	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	60	NO	48	1B
7297	80460	17	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	115	NO	43.7	1B
7297	80460	18	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	140	NO	18.2	1B
7297	80460	19	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	2	NO	17.94	1B
7297	80460	20	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	4	NO	19.36	1B
7297	80460	21	BL. RED NB150 / 100 IS1239 BLACK	6	NO	33	1B
7297	80460	22	BL. RED NB100 / 50 IS1239 BLACK	10	NO	30	1B
7297	80460	23	ASMEB16.11 SW RED NB50/40 CL3000	2	NO	2	1B
7297	80460	24	ASMEB16.11 SW RED NB40/25 CL3000	4	NO	2.4	1B
7297	80460	25	ASMEB16.11 SW RED NB25/15 CL3000	4	NO	1.2	1B
7297	80460	26	ASMEB16.9 UEQT OD323.9X6.35/219.1X6.35	2	NO	74.94	1B
7297	80460	27	ASMEB16.9 UEQT OD219.1X6.35/88.9X5.49	14	NO	236.32	1B
7297	80460	28	UEQT NB 150/100 IS1239 BLACK	4	NO	62	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80460	29	BL. EQT NB80 IS1239 BLACK	20	NO	75	1B
7297	80460	30	ASMEB16.11 SW EQUAL TEE NB50 CL3000	12	NO	12	1B
7297	80460	31	ASMEB16.11 SW UEQT NB50/15 CL3000	31	NO	27.9	1B
7297	80460	32	ASMEB16.11 SW EQUAL TEE NB40 CL3000	4	NO	6	1B
7297	80460	33	ASMEB16.11 SW UEQT NB40/25 CL3000	6	NO	12	1B
7297	80460	34	ASMEB16.11 SW UEQT NB40/15 CL3000	12	NO	30.48	1B
7297	80460	35	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7297	80460	36	ASMEB16.11 SW UEQT NB25/15 CL3000	46	NO	13.8	1B
7297	80460	37	ASMEB16.11 SW EQUAL TEE NB15 CL3000	6	NO	0.6	1B
7297	80460	38	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/50)	14	NO	92.75	1B
7297	80460	39	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/40)	4	NO	26.5	1B
7297	80460	40	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/25)	30	NO	216.75	1B
7297	80460	41	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/15)	4	NO	28.9	1B
7297	80460	42	SW PRESSURE STUB NB 15 CL 3000(CS)	75	NO	13.5	1B
7297	80460	43	SW PRESSURE STUB NB 25 CLASS 3000	30	NO	12.9	1B
7297	80460	44	SW PRESSURE STUB NB 40 CLASS 3000	12	NO	9	1B
7297	80460	45	SW PRESSURE STUB NB 50 CLASS 3000	10	NO	13.3	1B
7297	80460	46	TEMP.STUB M33X2 (CS) L=45	6	NO	3	1B
7297	80460	47	TEMP.STUB M33X2 (CS) L=64	39	NO	27.3	1B
7297	80460	48	PLUG FOR THERMOCOUPLE NIPPLE M33X2(CS)	45	NO	36	1B
7297	80460	49	PACKING RING	45	NO	0.45	1B
7297	80460	50	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	2	NO	34.5	1B
7297	80460	51	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	2	NO	34.36	1B
7298	80460	1	PIPE 88.9X5.49 L=840M-EP-SITE	840	M	9492	1B
7298	80460	2	PIPE OD114.3X6.02 L=405M-EP-SHOP-D-105.3	405	M	6508.35	1B
7298	80460	3	PIPE OD323.9X6 EP STY D D1-312	45	M	2115	1B
7298	80460	4	PIPE OD219.1X6 EP STY D D1-207	475	M	14976.75	1B
7298	80460	5	PIPE NB150 EP STY D D1-156.8	840	M	17808	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80460	6	PIPE NB50 EP STY D D1-52.7 AT SITE	350	M	2159.5	1B
7298	80460	7	PIPE NB40 EP STY D D1-41.5 AT SITE	300	M	1329	1B
7298	80460	8	PIPE NB25 EP STY D D1-26.9 AT SITE	600	M	1782	1B
7298	80460	9	PIPE NB15 EP STY D D1-15.9 AT SITE	660	M	957	1B
7298	80460	10	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	6	NO	214.2	1B
7298	80460	11	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	24	NO	400.8	1B
7298	80460	12	BL. 90 DEG ELL NB150IS1239 BLACK	44	NO	457.6	1B
7298	80460	13	BL. 90 DEG ELL NB100IS1239 BLACK	52	NO	260	1B
7298	80460	14	BL. 90 DEG ELL NB80 IS1239 BLACK	144	NO	299.52	1B
7298	80460	15	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	62	NO	55.8	1B
7298	80460	16	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	60	NO	48	1B
7298	80460	17	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	115	NO	43.7	1B
7298	80460	18	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	140	NO	18.2	1B
7298	80460	19	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	2	NO	17.94	1B
7298	80460	20	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	4	NO	19.36	1B
7298	80460	21	BL. RED NB150 / 100 IS1239 BLACK	6	NO	33	1B
7298	80460	22	BL. RED NB100 / 50 IS1239 BLACK	10	NO	30	1B
7298	80460	23	ASMEB16.11 SW RED NB50/40 CL3000	2	NO	2	1B
7298	80460	24	ASMEB16.11 SW RED NB40/25 CL3000	4	NO	2.4	1B
7298	80460	25	ASMEB16.11 SW RED NB25/15 CL3000	4	NO	1.2	1B
7298	80460	26	ASMEB16.9 UEQT OD323.9X6.35/219.1X6.35	2	NO	74.94	1B
7298	80460	27	ASMEB16.9 UEQT OD219.1X6.35/88.9X5.49	14	NO	236.32	1B
7298	80460	28	UEQT NB 150/100 IS1239 BLACK	4	NO	62	1B
7298	80460	29	BL. EQT NB80 IS1239 BLACK	20	NO	75	1B
7298	80460	30	ASMEB16.11 SW EQUAL TEE NB50 CL3000	12	NO	12	1B
7298	80460	31	ASMEB16.11 SW UEQT NB50/15 CL3000	31	NO	27.9	1B
7298	80460	32	ASMEB16.11 SW EQUAL TEE NB40 CL3000	4	NO	6	1B
7298	80460	33	ASMEB16.11 SW UEQT NB40/25 CL3000	6	NO	12	1B
7298	80460	34	ASMEB16.11 SW UEQT NB40/15 CL3000	12	NO	30.48	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80460	35	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7298	80460	36	ASMEB16.11 SW UEQT NB25/15 CL3000	46	NO	13.8	1B
7298	80460	37	ASMEB16.11 SW EQUAL TEE NB15 CL3000	6	NO	0.6	1B
7298	80460	38	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/50)	14	NO	92.75	1B
7298	80460	39	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/40)	4	NO	26.5	1B
7298	80460	40	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/25)	30	NO	216.75	1B
7298	80460	41	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/15)	4	NO	28.9	1B
7298	80460	42	SW PRESSURE STUB NB 15 CL 3000(CS)	75	NO	13.5	1B
7298	80460	43	SW PRESSURE STUB NB 25 CLASS 3000	30	NO	12.9	1B
7298	80460	44	SW PRESSURE STUB NB 40 CLASS 3000	12	NO	9	1B
7298	80460	45	SW PRESSURE STUB NB 50 CLASS 3000	10	NO	13.3	1B
7298	80460	46	TEMP.STUB M33X2 (CS) L=45	6	NO	3	1B
7298	80460	47	TEMP.STUB M33X2 (CS) L=64	39	NO	27.3	1B
7298	80460	48	PLUG FOR THERMOCOUPLE NIPPLE M33X2(CS)	45	NO	36	1B
7298	80460	49	PACKING RING	45	NO	0.45	1B
7298	80460	50	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	2	NO	34.5	1B
7298	80460	51	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	2	NO	34.36	1B
7299	80460	1	PIPE 88.9X5.49 L=840M-EP-SITE	840	M	9492	1B
7299	80460	2	PIPE OD114.3X6.02 L=405M-EP-SHOP-D-105.3	405	M	6508.35	1B
7299	80460	3	PIPE OD323.9X6 EP STY D D1-312	45	M	2115	1B
7299	80460	4	PIPE OD219.1X6 EP STY D D1-207	475	M	14976.75	1B
7299	80460	5	PIPE NB150 EP STY D D1-156.8	840	M	17808	1B
7299	80460	6	PIPE NB50 EP STY D D1-52.7 AT SITE	350	M	2159.5	1B
7299	80460	7	PIPE NB40 EP STY D D1-41.5 AT SITE	300	M	1329	1B
7299	80460	8	PIPE NB25 EP STY D D1-26.9 AT SITE	600	M	1782	1B
7299	80460	9	PIPE NB15 EP STY D D1-15.9 AT SITE	660	M	957	1B
7299	80460	10	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	6	NO	214.2	1B
7299	80460	11	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	24	NO	400.8	1B
7299	80460	12	BL. 90 DEG ELL NB150IS1239 BLACK	44	NO	457.6	1B
7299	80460	13	BL. 90 DEG ELL NB100IS1239 BLACK	52	NO	260	1B
7299	80460	14	BL. 90 DEG ELL NB80 IS1239 BLACK	144	NO	299.52	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80460	15	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	62	NO	55.8	1B
7299	80460	16	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	60	NO	48	1B
7299	80460	17	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	115	NO	43.7	1B
7299	80460	18	ASMEB16.11 SWLR 90DEG ELBOW NB15 CL3000	140	NO	18.2	1B
7299	80460	19	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	2	NO	17.94	1B
7299	80460	20	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	4	NO	19.36	1B
7299	80460	21	BL. RED NB150 / 100 IS1239 BLACK	6	NO	33	1B
7299	80460	22	BL. RED NB100 / 50 IS1239 BLACK	10	NO	30	1B
7299	80460	23	ASMEB16.11 SW RED NB50/40 CL3000	2	NO	2	1B
7299	80460	24	ASMEB16.11 SW RED NB40/25 CL3000	4	NO	2.4	1B
7299	80460	25	ASMEB16.11 SW RED NB25/15 CL3000	4	NO	1.2	1B
7299	80460	26	ASMEB16.9 UEQT OD323.9X6.35/219.1X6.35	2	NO	74.94	1B
7299	80460	27	ASMEB16.9 UEQT OD219.1X6.35/88.9X5.49	14	NO	236.32	1B
7299	80460	28	UEQT NB 150/100 IS1239 BLACK	4	NO	62	1B
7299	80460	29	BL. EQT NB80 IS1239 BLACK	20	NO	75	1B
7299	80460	30	ASMEB16.11 SW EQUAL TEE NB50 CL3000	12	NO	12	1B
7299	80460	31	ASMEB16.11 SW UEQT NB50/15 CL3000	31	NO	27.9	1B
7299	80460	32	ASMEB16.11 SW EQUAL TEE NB40 CL3000	4	NO	6	1B
7299	80460	33	ASMEB16.11 SW UEQT NB40/25 CL3000	6	NO	12	1B
7299	80460	34	ASMEB16.11 SW UEQT NB40/15 CL3000	12	NO	30.48	1B
7299	80460	35	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7299	80460	36	ASMEB16.11 SW UEQT NB25/15 CL3000	46	NO	13.8	1B
7299	80460	37	ASMEB16.11 SW EQUAL TEE NB15 CL3000	6	NO	0.6	1B
7299	80460	38	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/50)	14	NO	92.75	1B
7299	80460	39	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/40)	4	NO	26.5	1B
7299	80460	40	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/25)	30	NO	216.75	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80460	41	ADOPTOR WITH TEMP.STUB M33X2 (NB 80/15)	4	NO	28.9	1B
7299	80460	42	SW PRESSURE STUB NB 15 CL 3000(CS)	75	NO	13.5	1B
7299	80460	43	SW PRESSURE STUB NB 25 CLASS 3000	30	NO	12.9	1B
7299	80460	44	SW PRESSURE STUB NB 40 CLASS 3000	12	NO	9	1B
7299	80460	45	SW PRESSURE STUB NB 50 CLASS 3000	10	NO	13.3	1B
7299	80460	46	TEMP.STUB M33X2 (CS) L=45	6	NO	3	1B
7299	80460	47	TEMP.STUB M33X2 (CS) L=64	39	NO	27.3	1B
7299	80460	48	PLUG FOR THERMOCOUPLE NIPPLE M33X2(CS)	45	NO	36	1B
7299	80460	49	PACKING RING	45	NO	0.45	1B
7299	80460	50	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	2	NO	34.5	1B
7299	80460	51	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	2	NO	34.36	1B
7295	80463	1	PIPE OD88.9X5.49 L=15M-EP-SITE	15	M	169.5	1B
7295	80463	2	PIPE OD114.3X6.02 L=25M-EP-SHOP-D-105.3	25	M	401.75	1B
7295	80463	3	PIPE NB150X5.4 L=140M	140	M	2968	1B
7295	80463	4	PIPE OD 219.1X6.0 L=84M	84	M	2648.52	1B
7295	80463	5	PIPE OD 273X6.0 L=116M	116	M	4582	1B
7295	80463	6	PIPE OD 323.9X6.4 L=210M	210	M	9870	1B
7295	80463	7	PIPE OD 355.6X6.0 L=125M	125	M	6465	1B
7295	80463	8	PIPE OD 406.4X6.4 L=15M	15	M	946.95	1B
7295	80463	9	PIPE OD 457.0X6.0 L=140M	140	M	9340.8	1B
7295	80463	10	PIPE OD 508.0X6.4 L=10M	10	M	791.7	1B
7295	80463	11	PIPE OD 610X8.0 L=42M	42	M	4989.6	1B
7295	80463	12	PIPE OD 711.2X8 L=40M	40	M	5548	1B
7295	80463	13	PIPE OD 813X8 L=7M	7	M	1111.6	1B
7295	80463	14	PIPE OD 914X10 L=20M	20	M	4508	1B
7295	80463	15	PIPE OD 508X6.0 L=60M	60	M	4456.8	1B
7295	80463	16	90DEG MITRE BEND OD813X10 R-813	6	NO	1588.69	1B
7295	80463	17	90DEG MITRE BEND OD711X8 (R-700)	4	NO	640.8	1B
7295	80463	18	90DEG MITRE BEND OD610X8 (R-600)	3	NO	353.9	1B
7295	80463	19	90DEG MITRE BEND OD457X6 (R-450)	40	NO	2001.6	1B
7295	80463	20	90DEG MITRE BEND OD355.6X6 (R-350)	8	NO	242.88	1B
7295	80463	21	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	34	NO	1213.8	1B
7295	80463	22	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	20	NO	524	1B
7295	80463	23	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	75	NO	1252.5	1B
7295	80463	24	90DEG ELL NB150 IS1239 BLACK	45	NO	468	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80463	25	45 DEG MITRE BEND R=800 OD813X10 (OG)	2	NO	259.68	1B
7295	80463	26	30 DEG MITRE BEND OD813X10;R=800	2	NO	241.8	1B
7295	80463	27	45DEG MITRE BEND OD457X6 (R=450)	8	NO	196.42	1B
7295	80463	28	45DEG MITRE BEND OD355.6X6 (R=350)	2	NO	30.51	1B
7295	80463	29	ASMEB16.9 BWLR 45DEG ELBOW OD323.9X6.35	3	NO	53.52	1B
7295	80463	30	ASMEB16.9 BWLR 45DEG ELBOW OD273X6.35	6	NO	78.6	1B
7295	80463	31	ASMEB16.9 BWLR 45DEG ELBOW OD219.1X6.35	3	NO	23.94	1B
7295	80463	32	45DEG MITRE BEND OD711X10 (R-1D)	2	NO	199.08	1B
7295	80463	33	FAB UNEQUAL TEE NB700/NB600	3	NO	650.92	1B
7295	80463	34	FAB UNEQUAL TEE NB700/NB350	1	NO	185.6	1B
7295	80463	35	FAB UNEQUAL TEE NB700/NB450	11	NO	1983.48	1B
7295	80463	36	FAB UNEQUAL TEE NB4 50/NB350	1	NO	65.37	1B
7295	80463	37	FABRICATED EQUAL TEE NB800	2	NO	755.17	1B
7295	80463	38	FABRICATED UN EQUALTEE NB700/NB300	2	NO	224.13	1B
7295	80463	39	ASMEB16.9 BW EQUAL TEE OD323.9X6.35	10	NO	406.7	1B
7295	80463	40	ASMEB16.9 UEQT OD323.9X6.35/168.3X7.11	7	NO	256.41	1B
7295	80463	41	ASMEB16.9 UEQT OD273X6.35/219.1X6.35	2	NO	55.22	1B
7295	80463	42	ASMEB16.9 UEQT OD273.1X6.35/168.3X7.11	8	NO	214.4	1B
7295	80463	43	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	2	NO	38.54	1B
7295	80463	44	ASMEB16.9 UEQT OD219.1X6.35/168.3X7.11	4	NO	73.68	1B
7295	80463	45	EQT NB 150 IS1239	2	NO	32	1B
7295	80463	46	ASMEB16.9 BW EQUAL TEE OD355.6X6.35	1	NO	49.14	1B
7295	80463	47	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	3	NO	51.54	1B
7295	80463	48	ASMEB16.9 UEQT OD355.6X7.92/273X6.35	2	NO	112.3	1B
7295	80463	49	FAB UNEQT NB600X450	2	NO	246.67	1B
7295	80463	50	FAB UNEQT NB500X300	1	NO	69.87	1B
7295	80463	51	FAB. EQUAL TEE NB450	2	NO	373.06	1B
7295	80463	53	PLATE FORMED REDUCERNB800/NB700	2	NO	235	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80463	54	PLATE FORMED REDUCERNB700/NB600	2	NO	136.04	1B
7295	80463	55	PF RED NB700/NB500	1	NO	85.88	1B
7295	80463	56	PF RED NB700/NB450	5	NO	366.26	1B
7295	80463	57	PF RED NB600/NB300	2	NO	124	1B
7295	80463	59	ASMEB16.9 RED OD457.2X6.35/323.9X6.35	2	NO	47.18	1B
7295	80463	60	ASMEB16.9 RED OD406.4X6.35/355.6X6.35	1	NO	20.97	1B
7295	80463	61	ASMEB16.9 RED OD406.4X9.53/323.9X6.35	1	NO	25.21	1B
7295	80463	62	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	3	NO	51.75	1B
7295	80463	63	ASMEB16.9 RED OD355.6X7.92/273X6.35	1	NO	25.6	1B
7295	80463	64	ASMEB16.9 RED OD323.9X6.35/273X6.35	4	NO	37.68	1B
7295	80463	65	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	6	NO	53.82	1B
7295	80463	66	ASMEB16.9 RED OD323.9X6.35/168.3X7.11	1	NO	9.17	1B
7295	80463	67	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7295	80463	68	ASMEB16.9 RED OD273.1X6.35/168.3X4.78	5	NO	28.45	1B
7295	80463	69	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	6	NO	29.04	1B
7295	80463	70	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1B
7295	80463	71	ASMEB16.9 RED OD114.3X6.02/88.9X6.02	5	NO	5.6	1B
7295	80463	72	PF RED NB450/NB250	2	NO	80	1B
7295	80463	73	BL. RED NB40 / 25	30	NO	9	1B
7295	80463	74	BL. RED NB50 / 25	15	NO	6	1B
7295	80463	75	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	3	1B
7295	80463	76	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	4	NO	3.44	1B
7295	80463	77	ASMEB16.11 SW RED NB40/15 CL3000	2	NO	1.2	1B
7295	80463	78	PLATE FORMED REDUCER NB 500/ NB 450	1	NO	59.07	1B
7295	80463	81	PIPE OD 219.1X6.0 L=160M	160	M	5044.8	1B
7295	80463	82	PIPE OD 273X6.0 L=15M	15	M	592.5	1B
7295	80463	83	PIPE OD 323.9X6.4 L=25M	25	M	1175	1B
7295	80463	84	PIPE OD 457.0X6.0 L=75M	75	M	5004	1B
7295	80463	85	PIPE OD 508.0X6.4 L=10M	10	M	791.7	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80463	86	PIPE OD 711.2X8 L=20M	20	M	2774	1B
7295	80463	87	SW PRESSURE STUB NB 15 CL 3000(CS)	60	NO	10.8	1B
7295	80463	88	TEMP.STUB M33X2 (CS)L=45	30	NO	15	1B
7295	80463	89	TEMPERATURE STUB M3 3X2; L=64(CS)	10	NO	7	1B
7295	80463	90	SCREW PLUG M33X2(CS)	40	NO	16	1B
7295	80463	91	PACKING RING	40	NO	0.4	1B
7296	80463	1	PIPE OD88.9X5.49 L=15M-EP-SITE	15	M	169.5	1B
7296	80463	2	PIPE OD114.3X6.02 L=25M-EP-SHOP-D-105.3	25	M	401.75	1B
7296	80463	3	PIPE NB150X5.4 L=140M	140	M	2968	1B
7296	80463	4	PIPE OD 219.1 X 6.0 L=84M	84	M	2648.52	1B
7296	80463	5	PIPE OD 273.1 X 6.0 L=116M	116	M	4582	1B
7296	80463	6	PIPE OD 323.9 X 6.4 L=210M	210	M	9870	1B
7296	80463	7	PIPE OD 355.6 X 6.0 L=125M	125	M	6465	1B
7296	80463	8	PIPE OD 406.4 X 6.4 L=15M	15	M	946.95	1B
7296	80463	9	PIPE OD 457.0 X 6.0 L=140M	140	M	9340.8	1B
7296	80463	10	PIPE OD 508.0 X 6.0 L=70M	70	M	5199.6	1B
7296	80463	11	PIPE OD 610 X 8.0 L=42M	42	M	4989.6	1B
7296	80463	12	PIPE OD 711.2X8.0 L=40M	40	M	5548	1B
7296	80463	13	PIPE OD 813 X 8 L=7M	7	M	1111.6	1B
7296	80463	14	PIPE OD 914X10 L=20M	20	M	4508	1B
7296	80463	15	90DEG MITRE BEND OD813X10 R-813	6	NO	1588.69	1B
7296	80463	16	90DEG MITRE BEND OD711X8 (R-700)	4	NO	640.8	1B
7296	80463	17	90DEG MITRE BEND OD610X8 (R-600)	3	NO	353.9	1B
7296	80463	18	90DEG MITRE BEND OD457X6 (R-450)	40	NO	2001.6	1B
7296	80463	19	90DEG MITRE BEND OD355.6X6 (R-350)	8	NO	242.88	1B
7296	80463	20	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	34	NO	1213.8	1B
7296	80463	21	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	20	NO	524	1B
7296	80463	22	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	75	NO	1252.5	1B
7296	80463	23	90DEG ELL NB150 IS1239 BLACK	45	NO	468	1B
7296	80463	24	45 DEG MITRE BEND R=800 OD813X10 (OG)	2	NO	259.68	1B
7296	80463	25	30 DEG MITRE BEND OD813X10;R=800	2	NO	241.8	1B
7296	80463	26	45DEG MITRE BEND OD457X6 (R=450)	8	NO	196.42	1B
7296	80463	27	45DEG MITRE BEND OD355.6X6 (R=350)	2	NO	30.51	1B
7296	80463	28	ASMEB16.9 BWLR 45DEG ELBOW OD323.9X6.35	3	NO	53.52	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80463	29	ASMEB16.9 BWLR 45DEG ELBOW OD273X6.35	6	NO	78.6	1B
7296	80463	30	ASMEB16.9 BWLR 45DEG ELBOW OD219.1X6.35	3	NO	23.94	1B
7296	80463	31	45DEG MITRE BEND OD711X10 (R-1D)	2	NO	199.08	1B
7296	80463	32	FAB UNEQUAL TEE NB700/NB600	3	NO	650.92	1B
7296	80463	33	FAB UNEQUAL TEE NB700/NB350	1	NO	185.6	1B
7296	80463	34	FAB UNEQUAL TEE NB700/NB450	11	NO	1983.48	1B
7296	80463	35	FAB UNEQUAL TEE NB4 50/NB350	1	NO	65.37	1B
7296	80463	36	FABRICATED EQUAL TEE NB800	2	NO	755.17	1B
7296	80463	37	FABRICATED UN EQUALTEE NB700/NB300	2	NO	224.13	1B
7296	80463	38	ASMEB16.9 BW EQUAL TEE OD323.9X6.35	10	NO	406.7	1B
7296	80463	39	ASMEB16.9 UEQT OD323.9X6.35/168.3X7.11	7	NO	256.41	1B
7296	80463	40	ASMEB16.9 UEQT OD273X6.35/219.1X6.35	2	NO	55.22	1B
7296	80463	41	ASMEB16.9 UEQT OD273.1X6.35/168.3X7.11	8	NO	214.4	1B
7296	80463	42	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	2	NO	38.54	1B
7296	80463	43	ASMEB16.9 UEQT OD219.1X6.35/168.3X7.11	4	NO	73.68	1B
7296	80463	44	EQT NB 150 IS1239	2	NO	32	1B
7296	80463	45	ASMEB16.9 BW EQUAL TEE OD355.6X6.35	1	NO	49.14	1B
7296	80463	46	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	3	NO	51.54	1B
7296	80463	47	ASMEB16.9 UEQT OD355.6X7.92/273X6.35	2	NO	112.3	1B
7296	80463	48	FAB UNEQT NB600X450	2	NO	246.67	1B
7296	80463	49	FAB UNEQT NB500X300	1	NO	69.87	1B
7296	80463	50	FAB. EQUAL TEE NB450	2	NO	373.06	1B
7296	80463	52	PLATE FORMED REDUCERNB800/NB700	2	NO	235	1B
7296	80463	53	PLATE FORMED REDUCERNB700/NB600	2	NO	136.04	1B
7296	80463	54	PF RED NB700/NB500	1	NO	85.88	1B
7296	80463	55	PF RED NB700/NB450	5	NO	366.26	1B
7296	80463	56	PF RED NB600/NB300	2	NO	124	1B
7296	80463	58	ASMEB16.9 RED OD457.2X6.35/323.9X6.35	2	NO	47.18	1B
7296	80463	59	ASMEB16.9 RED OD406.4X6.35/355.6X6.35	1	NO	20.97	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80463	60	ASMEB16.9 RED OD406.4X9.53/323.9X6.35	1	NO	25.21	1B
7296	80463	61	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	3	NO	51.75	1B
7296	80463	62	ASMEB16.9 RED OD355.6X7.92/273X6.35	1	NO	25.6	1B
7296	80463	63	ASMEB16.9 RED OD323.9X6.35/273X6.35	4	NO	37.68	1B
7296	80463	64	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	6	NO	53.82	1B
7296	80463	65	ASMEB16.9 RED OD323.9X6.35/168.3X7.11	1	NO	9.17	1B
7296	80463	66	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7296	80463	67	ASMEB16.9 RED OD273.1X6.35/168.3X4.78	5	NO	28.45	1B
7296	80463	68	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	6	NO	29.04	1B
7296	80463	69	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1B
7296	80463	70	ASMEB16.9 RED OD114.3X6.02/88.9X6.02	5	NO	5.6	1B
7296	80463	71	PF RED NB450/NB250	2	NO	80	1B
7296	80463	72	BL. RED NB40 / 25	30	NO	9	1B
7296	80463	73	BL. RED NB50 / 25	15	NO	6	1B
7296	80463	74	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	3	1B
7296	80463	75	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	4	NO	3.44	1B
7296	80463	76	ASMEB16.11 SW RED NB40/15 CL3000	2	NO	1.2	1B
7296	80463	77	PLATE FORMED REDUCER NB 500/ NB 450	1	NO	59.07	1B
7296	80463	80	PIPE OD 219.1X6.0 L=160M	160	M	5044.8	1B
7296	80463	81	PIPE OD 273X6.0 L=15M	15	M	592.5	1B
7296	80463	82	PIPE OD 323.9X6.4 L=25M	25	M	1175	1B
7296	80463	83	PIPE OD 457.0X6.0 L=75M	75	M	5004	1B
7296	80463	84	PIPE OD 508.0X6.4 L=10M	10	M	791.7	1B
7296	80463	85	PIPE OD 711.2X8 L=20M	20	M	2774	1B
7296	80463	86	SW PRESSURE STUB NB 15 CL 3000(CS)	60	NO	10.8	1B
7296	80463	87	TEMP.STUB M33X2 (CS)L=45	30	NO	15	1B
7296	80463	88	TEMPERATURE STUB M3 3X2; L=64(CS)	10	NO	7	1B
7296	80463	89	SCREW PLUG M33X2(CS)	40	NO	16	1B
7296	80463	90	PACKING RING	40	NO	0.4	1B
7297	80463	1	PIPE OD88.9X5.49 L=15M-EP-SITE	15	M	169.5	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80463	2	PIPE OD114.3X6.02 L=25M-EP-SHOP-D-105.3	25	M	401.75	1B
7297	80463	3	PIPE NB150X5.4 L=140M	140	M	2968	1B
7297	80463	4	PIPE OD 219.1 X 6.0 L=84M	84	M	2648.52	1B
7297	80463	5	PIPE OD 273.1 X 6.0 L=116M	116	M	4582	1B
7297	80463	6	PIPE OD 323.9 X 6.4 L=210M	210	M	9870	1B
7297	80463	7	PIPE OD 355.6 X 6.0 L=125M	125	M	6465	1B
7297	80463	8	PIPE OD 406.4 X 6.4 L=15M	15	M	946.95	1B
7297	80463	9	PIPE OD 457.0 X 6.0 L=140M	140	M	9340.8	1B
7297	80463	10	PIPE OD 508.0 X 6.0 L=70M	70	M	5199.6	1B
7297	80463	11	PIPE OD 610 X 8.0 L=42M	42	M	4989.6	1B
7297	80463	12	PIPE OD 711.2X8.0 L=40M	40	M	5548	1B
7297	80463	13	PIPE OD 813 X 8 L=7M	7	M	1111.6	1B
7297	80463	14	PIPE OD 914X10 L=20M	20	M	4508	1B
7297	80463	15	90DEG MITRE BEND OD813X10 R-813	6	NO	1588.69	1B
7297	80463	16	90DEG MITRE BEND OD711X8 (R-700)	4	NO	640.8	1B
7297	80463	17	90DEG MITRE BEND OD610X8 (R-600)	3	NO	353.9	1B
7297	80463	18	90DEG MITRE BEND OD457X6 (R-450)	40	NO	2001.6	1B
7297	80463	19	90DEG MITRE BEND OD355.6X6 (R-350)	8	NO	242.88	1B
7297	80463	20	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	34	NO	1213.8	1B
7297	80463	21	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	20	NO	524	1B
7297	80463	22	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	75	NO	1252.5	1B
7297	80463	23	90DEG ELL NB150 IS1239 BLACK	45	NO	468	1B
7297	80463	24	45 DEG MITRE BEND R=800 OD813X10 (OG)	2	NO	259.68	1B
7297	80463	25	30 DEG MITRE BEND OD813X10;R=800	2	NO	241.8	1B
7297	80463	26	45DEG MITRE BEND OD457X6 (R=450)	8	NO	196.42	1B
7297	80463	27	45DEG MITRE BEND OD355.6X6 (R=350)	2	NO	30.51	1B
7297	80463	28	ASMEB16.9 BWLR 45DEG ELBOW OD323.9X6.35	3	NO	53.52	1B
7297	80463	29	ASMEB16.9 BWLR 45DEG ELBOW OD273X6.35	6	NO	78.6	1B
7297	80463	30	ASMEB16.9 BWLR 45DEG ELBOW OD219.1X6.35	3	NO	23.94	1B
7297	80463	31	45DEG MITRE BEND OD711X10 (R-1D)	2	NO	199.08	1B
7297	80463	32	FAB UNEQUAL TEE NB700/NB600	3	NO	650.92	1B
7297	80463	33	FAB UNEQUAL TEE NB700/NB350	1	NO	185.6	1B
7297	80463	34	FAB UNEQUAL TEE NB700/NB450	11	NO	1983.48	1B
7297	80463	35	FAB UNEQUAL TEE NB4 50/NB350	1	NO	65.37	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80463	36	FABRICATED EQUAL TEE NB800	2	NO	755.17	1B
7297	80463	37	FABRICATED UN EQUALTEE NB700/NB300	2	NO	224.13	1B
7297	80463	38	ASMEB16.9 BW EQUAL TEE OD323.9X6.35	10	NO	406.7	1B
7297	80463	39	ASMEB16.9 UEQT OD323.9X6.35/168.3X7.11	7	NO	256.41	1B
7297	80463	40	ASMEB16.9 UEQT OD273X6.35/219.1X6.35	2	NO	55.22	1B
7297	80463	41	ASMEB16.9 UEQT OD273.1X6.35/168.3X7.11	8	NO	214.4	1B
7297	80463	42	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	2	NO	38.54	1B
7297	80463	43	ASMEB16.9 UEQT OD219.1X6.35/168.3X7.11	4	NO	73.68	1B
7297	80463	44	EQT NB 150 IS1239	2	NO	32	1B
7297	80463	45	ASMEB16.9 BW EQUAL TEE OD355.6X6.35	1	NO	49.14	1B
7297	80463	46	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	3	NO	51.54	1B
7297	80463	47	ASMEB16.9 UEQT OD355.6X7.92/273X6.35	2	NO	112.3	1B
7297	80463	48	FAB UNEQT NB600X450	2	NO	246.67	1B
7297	80463	49	FAB UNEQT NB500X300	1	NO	69.87	1B
7297	80463	50	FAB. EQUAL TEE NB450	2	NO	373.06	1B
7297	80463	52	PLATE FORMED REDUCERNB800/NB700	2	NO	235	1B
7297	80463	53	PLATE FORMED REDUCERNB700/NB600	2	NO	136.04	1B
7297	80463	54	PF RED NB700/NB500	1	NO	85.88	1B
7297	80463	55	PF RED NB700/NB450	5	NO	366.26	1B
7297	80463	56	PF RED NB600/NB300	2	NO	124	1B
7297	80463	58	ASMEB16.9 RED OD457.2X6.35/323.9X6.35	2	NO	47.18	1B
7297	80463	59	ASMEB16.9 RED OD406.4X6.35/355.6X6.35	1	NO	20.97	1B
7297	80463	60	ASMEB16.9 RED OD406.4X9.53/323.9X6.35	1	NO	25.21	1B
7297	80463	61	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	3	NO	51.75	1B
7297	80463	62	ASMEB16.9 RED OD355.6X7.92/273X6.35	1	NO	25.6	1B
7297	80463	63	ASMEB16.9 RED OD323.9X6.35/273X6.35	4	NO	37.68	1B
7297	80463	64	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	6	NO	53.82	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80463	65	ASMEB16.9 RED OD323.9X6.35/168.3X7.11	1	NO	9.17	1B
7297	80463	66	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7297	80463	67	ASMEB16.9 RED OD273.1X6.35/168.3X4.78	5	NO	28.45	1B
7297	80463	68	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	6	NO	29.04	1B
7297	80463	69	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1B
7297	80463	70	ASMEB16.9 RED OD114.3X6.02/88.9X6.02	5	NO	5.6	1B
7297	80463	71	PF RED NB450/NB250	2	NO	80	1B
7297	80463	72	BL. RED NB40 / 25	30	NO	9	1B
7297	80463	73	BL. RED NB50 / 25	15	NO	6	1B
7297	80463	74	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	3	1B
7297	80463	75	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	4	NO	3.44	1B
7297	80463	76	ASMEB16.11 SW RED NB40/15 CL3000	2	NO	1.2	1B
7297	80463	77	PLATE FORMED REDUCER NB 500/ NB 450	1	NO	59.07	1B
7297	80463	80	PIPE OD 219.1X6.0 L=160M	160	M	5044.8	1B
7297	80463	81	PIPE OD 273X6.0 L=15M	15	M	592.5	1B
7297	80463	82	PIPE OD 323.9X6.4 L=25M	25	M	1175	1B
7297	80463	83	PIPE OD 457.0X6.0 L=75M	75	M	5004	1B
7297	80463	84	PIPE OD 508.0X6.4 L=10M	10	M	791.7	1B
7297	80463	85	PIPE OD 711.2X8 L=20M	20	M	2774	1B
7297	80463	86	SW PRESSURE STUB NB 15 CL 3000(CS)	60	NO	10.8	1B
7297	80463	87	TEMP.STUB M33X2 (CS)L=45	30	NO	15	1B
7297	80463	88	TEMPERATURE STUB M3 3X2; L=64(CS)	10	NO	7	1B
7297	80463	89	SCREW PLUG M33X2(CS)	40	NO	16	1B
7297	80463	90	PACKING RING	40	NO	0.4	1B
7298	80463	1	PIPE OD88.9X5.49 L=15M-EP-SITE	15	M	169.5	1B
7298	80463	2	PIPE OD114.3X6.02 L=25M-EP-SHOP-D-105.3	25	M	401.75	1B
7298	80463	3	PIPE NB150X5.4 L=140M	140	M	2968	1B
7298	80463	4	PIPE OD 219.1 X 6.0 L=84M	84	M	2648.52	1B
7298	80463	5	PIPE OD 273.1 X 6.0 L=116M	116	M	4582	1B
7298	80463	6	PIPE OD 323.9 X 6.4 L=210M	210	M	9870	1B
7298	80463	7	PIPE OD 355.6X6.0 L=125M	125	M	6465	1B
7298	80463	8	PIPE OD 406.4 X 6.4 L=15M	15	M	946.95	1B
7298	80463	9	PIPE OD 457.0 X 6.0 L=140M	140	M	9340.8	1B
7298	80463	10	PIPE OD 508.0 X 6.0 L=70M	70	M	5199.6	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80463	11	PIPE OD 610 X 8.0 L=17M	17	M	2019.6	1B
7298	80463	12	PIPE OD 711.2X8.0 L=40M	40	M	5548	1B
7298	80463	13	PIPE OD 813X8 L=7M	7	M	1111.6	1B
7298	80463	14	PIPE OD 914X10 L=20M	20	M	4508	1B
7298	80463	15	PIPE OD 610X6.0 L=25M	25	M	2234.2	1B
7298	80463	16	90DEG MITRE BEND OD813X10 R-813	6	NO	1588.69	1B
7298	80463	17	90DEG MITRE BEND OD711X8 (R-700)	4	NO	640.8	1B
7298	80463	18	90DEG MITRE BEND OD610X8 (R-600)	3	NO	353.9	1B
7298	80463	19	90DEG MITRE BEND OD457X6 (R-450)	40	NO	2001.6	1B
7298	80463	20	90DEG MITRE BEND OD355.6X6 (R-350)	8	NO	242.88	1B
7298	80463	21	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	34	NO	1213.8	1B
7298	80463	22	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	20	NO	524	1B
7298	80463	23	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	75	NO	1252.5	1B
7298	80463	24	90DEG ELL NB150 IS1239 BLACK	45	NO	468	1B
7298	80463	25	45 DEG MITRE BEND R=800 OD813X10 (OG)	2	NO	259.68	1B
7298	80463	26	30 DEG MITRE BEND OD813X10;R=800	2	NO	241.8	1B
7298	80463	27	45DEG MITRE BEND OD457X6 (R=450)	8	NO	196.42	1B
7298	80463	28	45DEG MITRE BEND OD355.6X6 (R=350)	2	NO	30.51	1B
7298	80463	29	ASMEB16.9 BWLR 45DEG ELBOW OD323.9X6.35	3	NO	53.52	1B
7298	80463	30	ASMEB16.9 BWLR 45DEG ELBOW OD273X6.35	6	NO	78.6	1B
7298	80463	31	ASMEB16.9 BWLR 45DEG ELBOW OD219.1X6.35	3	NO	23.94	1B
7298	80463	32	45DEG MITRE BEND OD711X10 (R-1D)	2	NO	199.08	1B
7298	80463	33	FAB UNEQUAL TEE NB700/NB600	3	NO	650.92	1B
7298	80463	34	FAB UNEQUAL TEE NB700/NB350	1	NO	185.6	1B
7298	80463	35	FAB UNEQUAL TEE NB700/NB450	11	NO	1983.48	1B
7298	80463	36	FAB UNEQUAL TEE NB4 50/NB350	1	NO	65.37	1B
7298	80463	37	FABRICATED EQUAL TEE NB800	2	NO	755.17	1B
7298	80463	38	FABRICATED UN EQUALTEE NB700/NB300	2	NO	224.13	1B
7298	80463	39	ASMEB16.9 BW EQUAL TEE OD323.9X6.35	10	NO	406.7	1B
7298	80463	40	ASMEB16.9 UEQT OD323.9X6.35/168.3X7.11	7	NO	256.41	1B
7298	80463	41	ASMEB16.9 UEQT OD273X6.35/219.1X6.35	2	NO	55.22	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80463	42	ASMEB16.9 UEQT OD273.1X6.35/168.3X7.11	8	NO	214.4	1B
7298	80463	43	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	2	NO	38.54	1B
7298	80463	44	ASMEB16.9 UEQT OD219.1X6.35/168.3X7.11	4	NO	73.68	1B
7298	80463	45	EQT NB 150 IS1239	2	NO	32	1B
7298	80463	46	ASMEB16.9 BW EQUAL TEE OD355.6X6.35	1	NO	49.14	1B
7298	80463	47	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	3	NO	51.54	1B
7298	80463	48	ASMEB16.9 UEQT OD355.6X7.92/273X6.35	2	NO	112.3	1B
7298	80463	49	FAB UNEQT NB600X450	2	NO	246.67	1B
7298	80463	50	FAB UNEQT NB500X300	1	NO	69.87	1B
7298	80463	51	FAB. EQUAL TEE NB450	2	NO	373.06	1B
7298	80463	53	PLATE FORMED REDUCERNB800/NB700	2	NO	235	1B
7298	80463	54	PLATE FORMED REDUCERNB700/NB600	2	NO	136.04	1B
7298	80463	55	PF RED NB700/NB500	1	NO	85.88	1B
7298	80463	56	PF RED NB700/NB450	5	NO	366.26	1B
7298	80463	57	PF RED NB600/NB300	2	NO	124	1B
7298	80463	59	ASMEB16.9 RED OD457.2X6.35/323.9X6.35	2	NO	47.18	1B
7298	80463	60	ASMEB16.9 RED OD406.4X6.35/355.6X6.35	1	NO	20.97	1B
7298	80463	61	ASMEB16.9 RED OD406.4X9.53/323.9X6.35	1	NO	25.21	1B
7298	80463	62	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	3	NO	51.75	1B
7298	80463	63	ASMEB16.9 RED OD355.6X7.92/273X6.35	1	NO	25.6	1B
7298	80463	64	ASMEB16.9 RED OD323.9X6.35/273X6.35	4	NO	37.68	1B
7298	80463	65	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	6	NO	53.82	1B
7298	80463	66	ASMEB16.9 RED OD323.9X6.35/168.3X7.11	1	NO	9.17	1B
7298	80463	67	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7298	80463	68	ASMEB16.9 RED OD273.1X6.35/168.3X4.78	5	NO	28.45	1B
7298	80463	69	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	6	NO	29.04	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80463	70	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1B
7298	80463	71	ASMEB16.9 RED OD114.3X6.02/88.9X6.02	5	NO	5.6	1B
7298	80463	72	PF RED NB450/NB250	2	NO	80	1B
7298	80463	73	BL. RED NB40 / 25	30	NO	9	1B
7298	80463	74	BL. RED NB50 / 25	15	NO	6	1B
7298	80463	75	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	3	1B
7298	80463	76	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	4	NO	3.44	1B
7298	80463	77	ASMEB16.11 SW RED NB40/15 CL3000	2	NO	1.2	1B
7298	80463	78	PLATE FORMED REDUCER NB 500/ NB 450	1	NO	59.07	1B
7298	80463	81	PIPE OD 219.1X6.0 L=160M	160	M	5044.8	1B
7298	80463	82	PIPE OD 273X6.0 L=15M	15	M	592.5	1B
7298	80463	83	PIPE OD 323.9X6.4 L=25M	25	M	1175	1B
7298	80463	84	PIPE OD 457.0X6.0 L=75M	75	M	5004	1B
7298	80463	85	PIPE OD 508.0X6.4 L=10M	10	M	791.7	1B
7298	80463	86	PIPE OD 711.2X8 L=20M	20	M	2774	1B
7298	80463	87	SW PRESSURE STUB NB 15 CL 3000(CS)	60	NO	10.8	1B
7298	80463	88	TEMP.STUB M33X2 (CS)L=45	30	NO	15	1B
7298	80463	89	TEMPERATURE STUB M3 3X2; L=64(CS)	10	NO	7	1B
7298	80463	90	SCREW PLUG M33X2(CS)	40	NO	16	1B
7298	80463	91	PACKING RING	40	NO	0.4	1B
7299	80463	1	PIPE OD88.9X5.49 L=15M-EP-SITE	15	M	169.5	1B
7299	80463	2	PIPE OD114.3X6.02 L=25M-EP-SHOP-D-105.3	25	M	456	1B
7299	80463	3	PIPE NB150X5.4 L=140M	140	M	3567	1B
7299	80463	4	PIPE OD 219.1 X 6.0 L=84M	84	M	2648.52	1B
7299	80463	5	PIPE OD 273.1 X 6.0 L=116M	116	M	4582	1B
7299	80463	6	PIPE OD 323.9 X 6.4 L=210M	210	M	9870	1B
7299	80463	7	PIPE OD 355.6 X 6.0 L=125M	125	M	6465	1B
7299	80463	9	PIPE OD 457.0 X 6.0 L=140M	140	M	9340.8	1B
7299	80463	10	PIPE OD 508.0 X 6.0 L=70M	70	M	5199.6	1B
7299	80463	11	PIPE OD 610 X 6.0 L=42M	42	M	3753.46	1B
7299	80463	12	PIPE OD 711.2X8.0 L=40M	40	M	5548	1B
7299	80463	13	PIPE OD 813 X 8 L=7M	7	M	1111.6	1B
7299	80463	14	PIPE OD 914X10 L=20M	20	M	4508	1B
7299	80463	15	PIPE OD 406.4 X 6.0 L=7M	7	M	414.68	1B
7299	80463	17	90DEG MITRE BEND OD711X8 (R-700)	4	NO	640.8	1B
7299	80463	18	90DEG MITRE BEND OD610X8 (R-600)	3	NO	353.9	1B
7299	80463	19	90DEG MITRE BEND OD457X6 (R-450)	40	NO	2001.6	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80463	20	90DEG MITRE BEND OD355.6X6 (R-350)	8	NO	242.88	1B
7299	80463	21	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	34	NO	1213.8	1B
7299	80463	22	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	20	NO	524	1B
7299	80463	23	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	75	NO	1252.5	1B
7299	80463	24	90DEG ELL NB150 IS1239 BLACK	45	NO	468	1B
7299	80463	25	45 DEG MITRE BEND R=800 OD813X10 (OG)	2	NO	259.68	1B
7299	80463	26	30 DEG MITRE BEND OD813X10;R=800	2	NO	241.8	1B
7299	80463	27	45DEG MITRE BEND OD457X6 (R=450)	8	NO	196.42	1B
7299	80463	28	45DEG MITRE BEND OD355.6X6 (R=350)	2	NO	30.51	1B
7299	80463	29	ASMEB16.9 BWLR 45DEG ELBOW OD323.9X6.35	3	NO	53.52	1B
7299	80463	30	ASMEB16.9 BWLR 45DEG ELBOW OD273X6.35	6	NO	78.6	1B
7299	80463	31	ASMEB16.9 BWLR 45DEG ELBOW OD219.1X6.35	3	NO	23.94	1B
7299	80463	32	45DEG MITRE BEND OD711X10 (R-1D)	2	NO	199.08	1B
7299	80463	33	FAB UNEQUAL TEE NB700/NB600	3	NO	650.92	1B
7299	80463	34	FAB UNEQUAL TEE NB700/NB350	1	NO	185.6	1B
7299	80463	35	FAB UNEQUAL TEE NB700/NB450	11	NO	1983.48	1B
7299	80463	36	FAB UNEQUAL TEE NB4 50/NB350	1	NO	65.37	1B
7299	80463	37	FABRICATED EQUAL TEE NB800	2	NO	755.17	1B
7299	80463	38	FABRICATED UN EQUALTEE NB700/NB300	2	NO	224.13	1B
7299	80463	39	ASMEB16.9 BW EQUAL TEE OD323.9X6.35	10	NO	406.7	1B
7299	80463	40	ASMEB16.9 UEQT OD323.9X6.35/168.3X7.11	7	NO	256.41	1B
7299	80463	41	ASMEB16.9 UEQT OD273X6.35/219.1X6.35	2	NO	55.22	1B
7299	80463	42	ASMEB16.9 UEQT OD273.1X6.35/168.3X7.11	8	NO	214.4	1B
7299	80463	43	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	2	NO	38.54	1B
7299	80463	44	ASMEB16.9 UEQT OD219.1X6.35/168.3X7.11	4	NO	73.68	1B
7299	80463	45	EQT NB 150 IS1239	2	NO	32	1B
7299	80463	46	ASMEB16.9 BW EQUAL TEE OD355.6X6.35	1	NO	49.14	1B
7299	80463	47	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	3	NO	51.54	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80463	48	ASMEB16.9 UEQT OD355.6X7.92/273X6.35	2	NO	112.3	1B
7299	80463	49	FAB UNEQT NB600X450	2	NO	246.67	1B
7299	80463	50	FAB UNEQT NB500X300	1	NO	69.87	1B
7299	80463	51	FAB. EQUAL TEE NB450	2	NO	373.06	1B
7299	80463	53	PLATE FORMED REDUCERNB800/NB700	2	NO	235	1B
7299	80463	54	PLATE FORMED REDUCERNB700/NB600	2	NO	136.04	1B
7299	80463	55	PF RED NB700/NB500	1	NO	85.88	1B
7299	80463	56	PF RED NB700/NB450	5	NO	366.26	1B
7299	80463	57	PF RED NB600/NB300	2	NO	124	1B
7299	80463	59	ASMEB16.9 RED OD457.2X6.35/323.9X6.35	2	NO	47.18	1B
7299	80463	60	ASMEB16.9 RED OD406.4X6.35/355.6X6.35	1	NO	20.97	1B
7299	80463	61	ASMEB16.9 RED OD406.4X9.53/323.9X6.35	1	NO	25.21	1B
7299	80463	62	ASMEB16.9 RED OD355.6X6.35/323.9X6.35	3	NO	51.75	1B
7299	80463	63	ASMEB16.9 RED OD355.6X7.92/273X6.35	1	NO	25.6	1B
7299	80463	64	ASMEB16.9 RED OD323.9X6.35/273X6.35	4	NO	37.68	1B
7299	80463	65	ASMEB16.9 RED OD323.9X6.35/219.1X6.35	6	NO	53.82	1B
7299	80463	66	ASMEB16.9 RED OD323.9X6.35/168.3X7.11	1	NO	9.17	1B
7299	80463	67	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7299	80463	68	ASMEB16.9 RED OD273.1X6.35/168.3X4.78	5	NO	28.45	1B
7299	80463	69	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	6	NO	29.04	1B
7299	80463	70	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	5	NO	15.8	1B
7299	80463	71	ASMEB16.9 RED OD114.3X6.02/88.9X6.02	5	NO	5.6	1B
7299	80463	72	PF RED NB450/NB250	2	NO	80	1B
7299	80463	73	BL. RED NB40 / 25	30	NO	9	1B
7299	80463	74	BL. RED NB50 / 25	15	NO	6	1B
7299	80463	75	ASMEB16.11 SW RED NB25/15 CL3000	10	NO	3	1B
7299	80463	76	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	4	NO	3.44	1B
7299	80463	77	ASMEB16.11 SW RED NB40/15 CL3000	2	NO	1.2	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80463	78	PLATE FORMED REDUCER NB 500/ NB 450	1	NO	65	1B
7299	80463	81	PIPE OD 219.1X6.0 L=160M	160	M	5044.8	1B
7299	80463	82	PIPE OD 273X6.0 L=15M	15	M	594	1B
7299	80463	83	PIPE OD 323.9X6.4 L=25M	25	M	1365	1B
7299	80463	84	PIPE OD 457.0X6.0 L=75M	75	M	6004	1B
7299	80463	85	PIPE OD 508.0X6.4 L=10M	10	M	791.7	1B
7299	80463	86	PIPE OD 711.2X8 L=20M	20	M	2987	1B
7299	80463	87	SW PRESSURE STUB NB 15 CL 3000(CS)	60	NO	10.8	1B
7299	80463	88	TEMP.STUB M33X2 (CS)L=45	30	NO	30	1B
7299	80463	89	TEMPERATURE STUB M3 3X2; L=64(CS)	10	NO	15	1B
7299	80463	90	SCREW PLUG M33X2(CS)	40	NO	23	1B
7299	80463	91	PACKING RING	40	NO	0.45	1B
7295	80468	1	Pipe OD 600NB X 7 MM	1200	M	20000	1B
7296	80468	1	Pipe OD 600NB X 7 MM	1200	M	20000	1B
7297	80468	1	Pipe OD 600NB X 7 MM	1200	M	20000	1B
7298	80468	1	Pipe OD 600NB X 7 MM	1200	M	20000	1B
7299	80468	1	Pipe OD 600NB X 7 MM	1200	M	20000	1B
7295	80471	1	PIPE OD406.4X6.0 EP STY 'D' D1=394.4	210	M	12440.4	1B
7295	80471	2	PIPE OD273.1X6.0 EP STY 'D' D1=261.1	40	M	1580	1B
7295	80471	3	PIPE OD219.1X6.0 EP STY 'D' D1=207.1	75	M	2364.75	1B
7295	80471	4	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	200	M	594	1B
7295	80471	5	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	15	NO	900.45	1B
7295	80471	6	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	6	NO	157.2	1B
7295	80471	7	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	10	NO	167	1B
7295	80471	8	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	40	NO	15.2	1B
7295	80471	9	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B
7295	80471	10	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7295	80471	11	ASMEB16.9 RED OD219.1X6.35/114.3X5.4	1	NO	3.94	1B
7295	80471	12	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	4.8	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80471	13	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	1	NO	60.78	1B
7295	80471	14	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7295	80471	15	ASMEB16.11 SW EQUAL TEE NB25 CL3000	6	NO	1.8	1B
7295	80471	16	SW STUB NB15 CL 3000	3	NO	0.54	1B
7295	80471	17	SW STUB NB25 CL 3000	3	NO	1.29	1B
7295	80471	18	SW STUB NB40 CL 3000	4	NO	3	1B
7295	80471	19	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7295	80471	20	ASMEB16.9 UEQT OD406.4X9.53/219.1X6.35	1	NO	80.72	1B
7295	80471	21	SCREW PLUG M33X2	1	NO	0.16	1B
7295	80471	22	PACKING RING	1	NO	0.01	1B
7296	80471	1	PIPE OD406.4X6.0 EP STY 'D' D1=394.4	210	M	12440.4	1B
7296	80471	2	PIPE OD273.1X6.0 EP STY 'D' D1=261.1	40	M	1580	1B
7296	80471	3	PIPE OD219.1X6.0 EP STY 'D' D1=207.1	75	M	2364.75	1B
7296	80471	4	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	200	M	594	1B
7296	80471	5	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	15	NO	900.45	1B
7296	80471	6	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	6	NO	157.2	1B
7296	80471	7	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	10	NO	167	1B
7296	80471	8	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	40	NO	15.2	1B
7296	80471	9	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B
7296	80471	10	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7296	80471	11	ASMEB16.9 RED OD219.1X6.35/114.3X5.4	1	NO	3.94	1B
7296	80471	12	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	4.8	1B
7296	80471	13	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	1	NO	60.78	1B
7296	80471	14	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7296	80471	15	ASMEB16.11 SW EQUAL TEE NB25 CL3000	6	NO	1.8	1B
7296	80471	16	SW STUB NB15 CL 3000	3	NO	0.54	1B
7296	80471	17	SW STUB NB25 CL 3000	3	NO	1.29	1B
7296	80471	18	SW STUB NB40 CL 3000	4	NO	3	1B
7296	80471	19	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80471	20	ASMEB16.9 UEQT OD406.4X9.53/219.1X6.35	1	NO	80.72	1B
7296	80471	21	SCREW PLUG M33X2	1	NO	0.16	1B
7296	80471	22	PACKING RING	1	NO	0.01	1B
7297	80471	1	PIPE OD406.4X6.0 EP STY 'D' D1=394.4	210	M	12440.4	1B
7297	80471	2	PIPE OD273.1X6.0 EP STY 'D' D1=261.1	40	M	1580	1B
7297	80471	3	PIPE OD219.1X6.0 EP STY 'D' D1=207.1	75	M	2364.75	1B
7297	80471	4	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	200	M	594	1B
7297	80471	5	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	15	NO	900.45	1B
7297	80471	6	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	6	NO	157.2	1B
7297	80471	7	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	10	NO	167	1B
7297	80471	8	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	40	NO	15.2	1B
7297	80471	9	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B
7297	80471	10	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7297	80471	11	ASMEB16.9 RED OD219.1X6.35/114.3X5.4	1	NO	3.94	1B
7297	80471	12	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	4.8	1B
7297	80471	13	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	1	NO	60.78	1B
7297	80471	14	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7297	80471	15	ASMEB16.11 SW EQUAL TEE NB25 CL3000	6	NO	1.8	1B
7297	80471	16	SW STUB NB15 CL 3000	3	NO	0.54	1B
7297	80471	17	SW STUB NB25 CL 3000	3	NO	1.29	1B
7297	80471	18	SW STUB NB40 CL 3000	4	NO	3	1B
7297	80471	19	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7297	80471	20	ASMEB16.9 UEQT OD406.4X9.53/219.1X6.35	1	NO	80.72	1B
7297	80471	21	SCREW PLUG M33X2	1	NO	0.16	1B
7297	80471	22	PACKING RING	1	NO	0.01	1B
7298	80471	1	PIPE OD406.4X6.0 EP STY 'D' D1=394.4	210	M	12440.4	1B
7298	80471	2	PIPE OD273.1X6.0 EP STY 'D' D1=261.1	40	M	1580	1B
7298	80471	3	PIPE OD219.1X6.0 EP STY 'D' D1=207.1	75	M	2364.75	1B
7298	80471	4	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	200	M	594	1B
7298	80471	5	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	15	NO	900.45	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80471	6	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	6	NO	157.2	1B
7298	80471	7	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	10	NO	167	1B
7298	80471	8	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	40	NO	15.2	1B
7298	80471	9	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B
7298	80471	10	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7298	80471	11	ASMEB16.9 RED OD219.1X6.35/114.3X5.4	1	NO	3.94	1B
7298	80471	12	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	4.8	1B
7298	80471	13	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	1	NO	60.78	1B
7298	80471	14	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7298	80471	15	ASMEB16.11 SW EQUAL TEE NB25 CL3000	6	NO	1.8	1B
7298	80471	16	SW STUB NB15 CL 3000	3	NO	0.54	1B
7298	80471	17	SW STUB NB25 CL 3000	3	NO	1.29	1B
7298	80471	18	SW STUB NB40 CL 3000	4	NO	3	1B
7298	80471	19	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7298	80471	20	ASMEB16.9 UEQT OD406.4X9.53/219.1X6.35	1	NO	80.72	1B
7298	80471	21	SCREW PLUG M33X2	1	NO	0.16	1B
7298	80471	22	PACKING RING	1	NO	0.01	1B
7299	80471	1	PIPE OD406.4X6.0 EP STY 'D' D1=394.4	210	M	12440.4	1B
7299	80471	2	PIPE OD273.1X6.0 EP STY 'D' D1=261.1	40	M	1580	1B
7299	80471	3	PIPE OD219.1X6.0 EP STY 'D' D1=207.1	75	M	2364.75	1B
7299	80471	4	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	200	M	594	1B
7299	80471	5	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	15	NO	900.45	1B
7299	80471	6	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	6	NO	157.2	1B
7299	80471	7	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	10	NO	167	1B
7299	80471	8	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	40	NO	15.2	1B
7299	80471	9	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B
7299	80471	10	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7299	80471	11	ASMEB16.9 RED OD219.1X6.35/114.3X5.4	1	NO	3.94	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80471	12	ASMEB16.11 SW RED NB40/25 CL3000	8	NO	4.8	1B
7299	80471	13	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	1	NO	60.78	1B
7299	80471	14	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7299	80471	15	ASMEB16.11 SW EQUAL TEE NB25 CL3000	6	NO	1.8	1B
7299	80471	16	SW STUB NB15 CL 3000	3	NO	0.54	1B
7299	80471	17	SW STUB NB25 CL 3000	3	NO	1.29	1B
7299	80471	18	SW STUB NB40 CL 3000	4	NO	3	1B
7299	80471	19	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7299	80471	20	ASMEB16.9 UEQT OD406.4X9.53/219.1X6.35	1	NO	80.72	1B
7299	80471	21	SCREW PLUG M33X2	1	NO	0.16	1B
7299	80471	22	PACKING RING	1	NO	0.01	1B
7295	80477	1	PIPE OD88.9X5.49 L=80M EP AT SITE	80	M	904	1B
7295	80477	2	PIPENB150X5.4HVY,IS1239BL;STY-D,D1=156.8	320	M	6784	1B
7295	80477	3	90DEG ELL NB150 IS1239 BLACK	45	NO	468	1B
7295	80477	4	EQT NB 150 IS1239 BLACK	1	NO	16	1B
7295	80477	5	ASMEB16.9 UEQT OD168.3X7.11/60.3X5.54	15	NO	170.85	1B
7295	80477	6	UEQT NB 150/100 IS1239 BLACK	1	NO	15.5	1B
7295	80477	7	PIPENB100X5.4HVY,IS1239BL;STY-D,D1=105.3	35	M	504	1B
7295	80477	8	90DEG ELL NB100 IS1239 BLACK	7	NO	35	1B
7296	80477	1	PIPE OD88.9X5.49 L=80M EP AT SITE	80	M	904	1B
7296	80477	2	PIPENB150X5.4HVY,IS1239BL;STY-D,D1=156.8	300	M	6360	1B
7296	80477	3	90DEG ELL NB150 IS1239 BLACK	40	NO	416	1B
7296	80477	4	EQT NB 150 IS1239 BLACK	1	NO	16	1B
7296	80477	5	ASMEB16.9 UEQT OD168.3X7.11/60.3X5.54	15	NO	170.85	1B
7296	80477	6	UEQT NB 150/100 IS1239 BLACK	1	NO	15.5	1B
7297	80477	1	PIPE OD88.9X5.49 L=80M EP AT SITE	80	M	904	1B
7297	80477	2	PIPENB150X5.4HVY,IS1239BL;STY-D,D1=156.8	320	M	6784	1B
7297	80477	3	90DEG ELL NB150 IS1239 BLACK	45	NO	468	1B
7297	80477	4	EQT NB 150 IS1239 BLACK	1	NO	16	1B
7297	80477	5	ASMEB16.9 UEQT OD168.3X7.11/60.3X5.54	15	NO	170.85	1B
7297	80477	6	UEQT NB 150/100 IS1239 BLACK	1	NO	15.5	1B
7297	80477	7	PIPENB100X5.4HVY,IS1239BL;STY-D,D1=105.3	35	M	504	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80477	8	90DEG ELL NB100 IS1239 BLACK	7	NO	35	1B
7298	80477	1	PIPE OD88.9X5.49 L=80M EP AT SITE	80	M	904	1B
7298	80477	2	PIPENB150X5.4HVY,IS1239BL;STY-D,D1=156.8	300	M	6360	1B
7298	80477	3	90DEG ELL NB150 IS1239 BLACK	40	NO	416	1B
7298	80477	4	EQT NB 150 IS1239 BLACK	1	NO	16	1B
7298	80477	5	ASMEB16.9 UEQT OD168.3X7.11/60.3X5.54	15	NO	170.85	1B
7298	80477	6	UEQT NB 150/100 IS1239 BLACK	1	NO	15.5	1B
7299	80477	1	PIPE OD88.9X7.62 L=80M-EP-SHOP-D-80.8	80	M	1221.6	1B
7299	80477	2	PIPENB150X5.4HVY,IS1239BL;STY-D,D1=156.8	300	M	6360	1B
7299	80477	3	90DEG ELL NB150 IS1239 BLACK	45	NO	468	1B
7299	80477	4	EQT NB 150 IS1239 BLACK	1	NO	16	1B
7299	80477	5	ASMEB16.9 UEQT OD168.3X7.11/60.3X5.54	15	NO	170.85	1B
7299	80477	6	UEQT NB 150/100 IS1239 BLACK	1	NO	15.5	1B
7299	80477	7	PIPENB100X5.4HVY,IS1239BL;STY-D,D1=105.3	35	M	504	1B
7299	80477	8	90DEG ELL NB100 IS1239 BLACK	7	NO	35	1B
7300	80477	1	PIPE OD 508.0X6.0 L=100M	100	M	7428	1B
7300	80477	2	PIPE OD 406.4X6.0 L=600M	600	M	35544	1B
7300	80477	3	PIPE OD 323.9X6.4 L=500M	500	M	23500	1B
7300	80477	4	PIPE OD 273.1X6.0 L=800M	800	M	31600	1B
7300	80477	5	PIPE OD 219.1X6.0 L=200M	200	M	6306	1B
7300	80477	6	PIPE NB100X5.4 L=200M	200	M	2880	1B
7300	80477	15	PIPE OD813 X 8 EPSTY-D ,D1=797.0 (OG)	125	M	19850	1B
7300	80477	16	PIPE OD610X6 L=680MEP STY,'D' D1=598	680	M	60770.24	1B
7300	80477	17	PIPE OD508.0X6.0 ETSTY'D',D1=496	100	M	7428	1B
7300	80477	18	PIPE OD355.6X6.0 EPSTY'D',D1=343.6	850	M	43567	1B
7300	80477	19	PIPE OD323.9X6.4 EP STY'D',D1=311.1	1650	M	82123	1B
7300	80477	20	PIPE OD273.1X6.0 EP STY'D', D1=261.0	1100	M	43450	1B
7300	80477	21	PIPE OD219.1X6.0 EP STY'D',D1=207.1	450	M	14188.5	1B
7300	80477	22	PIPE NB150X5.4 EP STY'D',D1=156.8	480	M	10176	1B
7300	80477	23	PIPE NB100X5.4 EP STY'D',D1=105.3	3800	M	54720	1B
7300	80477	24	PIPE NB50X4.5 EP STY'D', D1=52.7	100	M	617	1B
7300	80477	25	MITRE BEND OD610X6 R=600	4	NO	344	1B
7300	80477	26	MITRE BEND OD508X6 R=500	2	NO	120.1	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7300	80477	27	MITRE BEND OD355.6X6 R=533	16	NO	727.48	1B
7300	80477	28	ASMEB16.9 BWLR 90DEG ELBOW OD323.9X6.35	45	NO	1606.5	1B
7300	80477	29	ASMEB16.9 BWLR 45DEG ELBOW OD323.9X6.35	12	NO	214.08	1B
7300	80477	30	ASMEB16.9 BWLR 45DEG ELBOW OD355.6X6.35	4	NO	91.52	1B
7300	80477	31	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	38	NO	995.6	1B
7300	80477	32	ASMEB16.9 BWLR 45DEG ELBOW OD273X6.35	8	NO	104.8	1B
7300	80477	33	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	30	NO	501	1B
7300	80477	34	90DEG ELL NB150 IS1239 BLACK	10	NO	104	1B
7300	80477	35	90DEG ELL NB100 IS1239 BLACK	95	NO	475	1B
7300	80477	36	BL. 90 DEG ELL NB50IS1239 BLACK	35	NO	67.73	1B
7295	80480	1	PIPE 88.9X5.49 L=920M EP AT SITE	920	M	10396	1B
7295	80480	2	PIPE OD 406.4 X 6.0 EP STY 'D' D1=394.4	65	M	3850.6	1B
7295	80480	3	PIPE OD273.1 X 6.0 ESTY'D' D1=261.1	40	M	1580	1B
7295	80480	4	PIPE NB80X4.8 BLACK EP STY 'D' D1=80.8	30	M	303	1B
7295	80480	5	PIPE NB50X4.5 BLACK EP STY 'D' D1=52.7	150	M	925.5	1B
7295	80480	6	PIPE NB40X4.0 BLACK EP STY 'D' D1=41.5	260	M	1151.8	1B
7295	80480	7	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	440	M	1306.8	1B
7295	80480	8	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	6	NO	360.18	1B
7295	80480	9	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	8	NO	209.6	1B
7295	80480	10	BL. 90 DEG ELL NB80 IS1239 BLACK	140	NO	532	1B
7295	80480	11	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	30	NO	27	1B
7295	80480	12	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	120	NO	96	1B
7295	80480	13	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	88	NO	33.44	1B
7295	80480	14	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B
7295	80480	15	ASMEB16.9 RED OD406.4X6.35/219.1X6.35	3	NO	54.63	1B
7295	80480	16	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80480	17	ASMEB16.9 RED OD219.1X6.35/88.9X5.49	2	NO	7.68	1B
7295	80480	18	ASMEB16.11 SW RED NB40/25 CL3000	24	NO	14.4	1B
7295	80480	19	ASMEB16.11 SW RED NB25/15 CL3000	26	NO	7.8	1B
7295	80480	20	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	3	NO	182.34	1B
7295	80480	21	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7295	80480	22	BL. UEQT NB80 / 50 IS1239 BLACK	20	NO	38	1B
7295	80480	23	BL. UEQT NB80 / 40 IS1239 BLACK	136	NO	217.6	1B
7295	80480	24	BL. EQT NB80 IS1239 BLACK	50	NO	187.5	1B
7295	80480	25	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7295	80480	28	SW PRESSURE STUB NB 15 CLASS 3000	15	NO	2.7	1B
7295	80480	29	SW PRESSURE STUB NB 25 CLASS 3000	15	NO	6.45	1B
7295	80480	30	SW PRESSURE STUB NB 40 CLASS 3000	10	NO	7.5	1B
7295	80480	31	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7296	80480	1	PIPE 88.9X5.49 L=920M EP AT SITE	920	M	10396	1B
7296	80480	2	PIPE OD 406.4 X 6.0 EP STY 'D' D1=394.4	65	M	3850.6	1B
7296	80480	3	PIPE OD273.1 X 6.0 ESTY'D' D1=261.1	40	M	1580	1B
7296	80480	4	PIPE NB80X4.8 BLACK EP STY 'D' D1=80.8	30	M	303	1B
7296	80480	5	PIPE NB50X4.5 BLACK EP STY 'D' D1=52.7	150	M	925.5	1B
7296	80480	6	PIPE NB40X4.0 BLACK EP STY 'D' D1=41.5	260	M	1151.8	1B
7296	80480	7	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	440	M	1306.8	1B
7296	80480	8	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	6	NO	360.18	1B
7296	80480	9	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	8	NO	209.6	1B
7296	80480	10	BL. 90 DEG ELL NB80 IS1239 BLACK	140	NO	532	1B
7296	80480	11	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	30	NO	27	1B
7296	80480	12	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	120	NO	96	1B
7296	80480	13	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	88	NO	33.44	1B
7296	80480	14	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B
7296	80480	15	ASMEB16.9 RED OD406.4X6.35/219.1X6.35	3	NO	54.63	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80480	16	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7296	80480	17	ASMEB16.9 RED OD219.1X6.35/88.9X5.49	2	NO	7.68	1B
7296	80480	18	ASMEB16.11 SW RED NB40/25 CL3000	24	NO	14.4	1B
7296	80480	19	ASMEB16.11 SW RED NB25/15 CL3000	26	NO	7.8	1B
7296	80480	20	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	3	NO	182.34	1B
7296	80480	21	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7296	80480	22	BL. UEQT NB80 / 50 IS1239 BLACK	20	NO	38	1B
7296	80480	23	BL. UEQT NB80 / 40 IS1239 BLACK	136	NO	217.6	1B
7296	80480	24	BL. EQT NB80 IS1239 BLACK	50	NO	187.5	1B
7296	80480	25	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7296	80480	28	SW PRESSURE STUB NB 15 CLASS 3000	15	NO	2.7	1B
7296	80480	29	SW PRESSURE STUB NB 25 CLASS 3000	15	NO	6.45	1B
7296	80480	30	SW PRESSURE STUB NB 40 CLASS 3000	10	NO	7.5	1B
7296	80480	31	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7297	80480	1	PIPE 88.9X5.49 L=920M EP AT SITE	920	M	10396	1B
7297	80480	2	PIPE OD 406.4 X 6.0 EP STY 'D' D1=394.4	65	M	3850.6	1B
7297	80480	3	PIPE OD273.1 X 6.0 ESTY'D' D1=261.1	40	M	1580	1B
7297	80480	4	PIPE NB80X4.8 BLACK EP STY 'D' D1=80.8	30	M	303	1B
7297	80480	5	PIPE NB50X4.5 BLACK EP STY 'D' D1=52.7	150	M	925.5	1B
7297	80480	6	PIPE NB40X4.0 BLACK EP STY 'D' D1=41.5	260	M	1151.8	1B
7297	80480	7	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	440	M	1306.8	1B
7297	80480	8	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	6	NO	360.18	1B
7297	80480	9	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	8	NO	209.6	1B
7297	80480	10	BL. 90 DEG ELL NB80 IS1239 BLACK	140	NO	532	1B
7297	80480	11	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	30	NO	27	1B
7297	80480	12	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	120	NO	96	1B
7297	80480	13	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	88	NO	33.44	1B
7297	80480	14	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80480	15	ASMEB16.9 RED OD406.4X6.35/219.1X6.35	3	NO	54.63	1B
7297	80480	16	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7297	80480	17	ASMEB16.9 RED OD219.1X6.35/88.9X5.49	2	NO	7.68	1B
7297	80480	18	ASMEB16.11 SW RED NB40/25 CL3000	24	NO	14.4	1B
7297	80480	19	ASMEB16.11 SW RED NB25/15 CL3000	26	NO	7.8	1B
7297	80480	20	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	3	NO	182.34	1B
7297	80480	21	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7297	80480	22	BL. UEQT NB80 / 50 IS1239 BLACK	20	NO	38	1B
7297	80480	23	BL. UEQT NB80 / 40 IS1239 BLACK	136	NO	217.6	1B
7297	80480	24	BL. EQT NB80 IS1239 BLACK	50	NO	187.5	1B
7297	80480	25	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7297	80480	28	SW PRESSURE STUB NB 15 CLASS 3000	15	NO	2.7	1B
7297	80480	29	SW PRESSURE STUB NB 25 CLASS 3000	15	NO	6.45	1B
7297	80480	30	SW PRESSURE STUB NB 40 CLASS 3000	10	NO	7.5	1B
7297	80480	31	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7298	80480	1	PIPE 88.9X5.49 L=920M EP AT SITE	920	M	10396	1B
7298	80480	2	PIPE OD 406.4 X 6.0 EP STY 'D' D1=394.4	65	M	3850.6	1B
7298	80480	3	PIPE OD273.1 X 6.0 ESTY'D' D1=261.1	40	M	1580	1B
7298	80480	4	PIPE NB80X4.8 BLACK EP STY 'D' D1=80.8	30	M	303	1B
7298	80480	5	PIPE NB50X4.5 BLACK EP STY 'D' D1=52.7	150	M	925.5	1B
7298	80480	6	PIPE NB40X4.0 BLACK EP STY 'D' D1=41.5	260	M	1151.8	1B
7298	80480	7	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	440	M	1306.8	1B
7298	80480	8	ASMEB16.9 BWLR 90DEG ELBOW OD406.4X6.35	6	NO	360.18	1B
7298	80480	9	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	8	NO	209.6	1B
7298	80480	10	BL. 90 DEG ELL NB80 IS1239 BLACK	140	NO	532	1B
7298	80480	11	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	30	NO	27	1B
7298	80480	12	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	120	NO	96	1B
7298	80480	13	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	88	NO	33.44	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80480	14	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B
7298	80480	15	ASMEB16.9 RED OD406.4X6.35/219.1X6.35	3	NO	54.63	1B
7298	80480	16	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7298	80480	17	ASMEB16.9 RED OD219.1X6.35/88.9X5.49	2	NO	7.68	1B
7298	80480	18	ASMEB16.11 SW RED NB40/25 CL3000	24	NO	14.4	1B
7298	80480	19	ASMEB16.11 SW RED NB25/15 CL3000	26	NO	7.8	1B
7298	80480	20	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	3	NO	182.34	1B
7298	80480	21	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7298	80480	22	BL. UEQT NB80 / 50 IS1239 BLACK	20	NO	38	1B
7298	80480	23	BL. UEQT NB80 / 40 IS1239 BLACK	136	NO	217.6	1B
7298	80480	24	BL. EQT NB80 IS1239 BLACK	50	NO	187.5	1B
7298	80480	25	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7298	80480	28	SW PRESSURE STUB NB 15 CLASS 3000	15	NO	2.7	1B
7298	80480	29	SW PRESSURE STUB NB 25 CLASS 3000	15	NO	6.45	1B
7298	80480	30	SW PRESSURE STUB NB 40 CLASS 3000	10	NO	7.5	1B
7298	80480	31	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7299	80480	1	PIPE 88.9X7.62 L=915M-EP-SHOP-D-80.8	915	M	13972.05	1B
7299	80480	2	PIPE OD 406.4 X 6.0 EP STY 'D' D1=394.4	65	M	3850.6	1B
7299	80480	3	PIPE OD273.1 X 6.0 ESTY'D' D1=261.1	40	M	1580	1B
7299	80480	4	PIPE NB80X4.8 BLACK EP STY 'D' D1=80.8	35	M	353.5	1B
7299	80480	5	PIPE NB50X4.5 BLACK EP STY 'D' D1=52.7	150	M	925.5	1B
7299	80480	6	PIPE NB40X4.0 BLACK EP STY 'D' D1=41.5	260	M	1151.8	1B
7299	80480	7	PIPE NB25X4.0 BLACK EP STY 'D' D1=26.9	500	M	1700.42	1B
7299	80480	9	ASMEB16.9 BWLR 90DEG ELBOW OD273X6.35	8	NO	209.6	1B
7299	80480	10	BL. 90 DEG ELL NB80 IS1239 BLACK	140	NO	532	1B
7299	80480	11	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	30	NO	27	1B
7299	80480	12	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	120	NO	96	1B
7299	80480	14	ASMEB16.9 RED OD406.4X6.35/273.1X6.35	2	NO	38.42	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80480	15	ASMEB16.9 RED OD406.4X6.35/219.1X6.35	3	NO	54.63	1B
7299	80480	16	ASMEB16.9 RED OD273.1X6.35/219.1X6.35	4	NO	31.6	1B
7299	80480	17	ASMEB16.9 RED OD219.1X6.35/88.9X5.49	2	NO	7.68	1B
7299	80480	18	ASMEB16.11 SW RED NB40/25 CL3000	24	NO	14.4	1B
7299	80480	19	ASMEB16.11 SW RED NB25/15 CL3000	26	NO	7.8	1B
7299	80480	20	ASMEB16.9 BW EQUAL TEE OD406.4X6.35	3	NO	182.34	1B
7299	80480	21	ASMEB16.9 UEQT OD406.4X9.53/273X9.27	2	NO	188.08	1B
7299	80480	22	BL. UEQT NB80 / 50 IS1239 BLACK	20	NO	38	1B
7299	80480	23	BL. UEQT NB80 / 40 IS1239 BLACK	136	NO	217.6	1B
7299	80480	24	BL. EQT NB80 IS1239 BLACK	50	NO	187.5	1B
7299	80480	25	ASMEB16.11 SW EQUAL TEE NB25 CL3000	16	NO	4.8	1B
7299	80480	28	SW PRESSURE STUB NB 15 CLASS 3000	15	NO	2.7	1B
7299	80480	29	SW PRESSURE STUB NB 25 CLASS 3000	15	NO	6.45	1B
7299	80480	30	SW PRESSURE STUB NB 40 CLASS 3000	10	NO	7.5	1B
7299	80480	31	TEMP.STUB M33X2 (CS) L=45	1	NO	0.5	1B
7295	80650	1	PIPE OD219.1 X 6.35 EP STY-D, D1=206.4	3700	M	123247	1B
7295	80650	2	PIPE OD168.3 X 7.11 EP STY-D, D1=155.6	1350	M	38151	1B
7295	80650	3	PIPE OD114.3 X 6.02 EP STY-D, D1=103.5	2250	M	36157.5	1B
7295	80650	4	PIPE OD88.9 X 5.49 EP STY-D, D1=79.0	840	M	9483.6	1B
7295	80650	5	PIPE OD60.3 X 3.91 EP AT SITE D1-52.5	600	M	3258	1B
7295	80650	6	PIPE OD48.3 X 3.68 EP AT SITE D1-40.9	300	M	1215	1B
7295	80650	7	PIPE OD33.4 X 3.38 EP AT SITE D1-26.7	1600	M	4000	1B
7295	80650	8	ASMEB16.9 BWLR 90DEG ELBOW OD219.1X6.35	185	NO	3089.5	1B
7295	80650	9	ASMEB16.9 BWLR 45DEG ELBOW OD219.1X6.35	6	NO	47.88	1B
7295	80650	10	ASMEB16.9 BWLR 90DEG ELBOW OD168.3X7.11	30	NO	312	1B
7295	80650	11	ASMEB16.9 BWLR 45DEG ELBOW OD168.3X7.11	2	NO	10.16	1B
7295	80650	12	ASMEB16.9 BWLR 90DEG ELBOW OD114.3X6.02	148	NO	568.32	1B
7295	80650	13	ASMEB16.9 BWLR 45DEG ELBOW OD114.3X6.02	2	NO	3.84	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80650	14	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X5.49	88	NO	177.76	1B
7295	80650	15	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	125	NO	112.5	1B
7295	80650	16	ASMEB16.11 SWLR 90DEG ELBOW NB40 CL3000	65	NO	52	1B
7295	80650	17	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	300	NO	114	1B
7295	80650	18	ASMEB16.9 RED OD219.1X6.35/168.3X7.11	2	NO	9.68	1B
7295	80650	19	ASMEB16.9 RED OD219.1X6.35/114.3X6.02	4	NO	16.56	1B
7295	80650	20	ASMEB16.9 RED OD114.3X6.02/48.3X5.08	3	NO	3.48	1B
7295	80650	21	ASMEB16.9 RED OD168.3X7.11/114.3X6.02	3	NO	9.48	1B
7295	80650	22	ASMEB16.9 RED OD114.3X6.02/88.9X5.49	4	NO	5.64	1B
7295	80650	23	ASMEB16.9 RED OD88.9X5.49/60.3X5.54	4	NO	3.44	1B
7295	80650	24	ASMEB16.9 BW EQUAL TEE OD219.1X6.35	2	NO	38.54	1B
7295	80650	25	ASMEB16.9 UEQT OD219.1X6.35/114.3X6.02	4	NO	68.72	1B
7295	80650	26	ASMEB16.9 UEQT OD219.1X6.35/88.9X5.49	2	NO	33.76	1B
7295	80650	27	ASMEB16.9 UEQT OD168.3X7.11/88.9X5.49	1	NO	11.63	1B
7295	80650	28	ASMEB16.9 UEQT OD168.3X7.11/60.3X5.54	2	NO	22.78	1B
7295	80650	29	ASMEB16.9 UEQT OD114.3X6.02/88.9X5.49	1	NO	5.23	1B
7295	80650	30	ASMEB16.9 UEQT OD114.3X6.02/60.3X5.54	3	NO	14.79	1B
7295	80650	31	ASMEB16.9 RED OD60.3X5.54/48.3X5.54	2	NO	1.02	1B
7295	80650	32	ASMEB16.9 UEQT OD88.9X5.49/48.3X5.08	1	NO	2.86	1B
7295	80650	33	ASMEB16.11 SW UEQT NB50/25 CL3000	10	NO	22.5	1B
7295	80650	34	ASMEB16.11 SW UEQT NB40/25 CL3000	5	NO	10	1B
7295	80650	35	SW STUB NB 25 CLASS 3000 CS	200	NO	86	1B
7295	80650	36	SW STUB NB 40 CLASS 3000 CS	12	NO	9	1B
7295	80650	37	SW STUB NB 50 CLASS 3000 CS	10	NO	13.3	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80650	1	PIPE OD219.1 X 6.35 EP STY-D, D1=206.4	1000	M	121333	1B
7299	80650	2	PIPE OD168.3 X 7.11 EP STY-D, D1=155.6	350	M	37121	1B
7299	80650	3	PIPE OD114.3 X 6.02 EP STY-D, D1=103.5	250	M	36157.5	1B
7299	80650	4	PIPE OD88.9 X 5.49 EP STY-D, D1=79.0	200	M	9483.6	1B
7299	80650	5	PIPE OD60.3 X 3.91 EP AT SITE D1-52.5	90	M	3237	1B
7299	80650	6	PIPE OD48.3 X 3.68 EP AT SITE D1-40.9	50	M	1397.43	1B
7299	80650	7	PIPE OD33.4 X 3.38 EP AT SITE D1-26.7	1200	M	4123	1B
7295	80673	1	POD88.9X5.49-EP STY-D,D1=79MM AT SITE	979	M	11052.91	1B
7295	80673	2	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X5.49	161	NO	325.22	1B
7295	80673	3	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X5.49	8	NO	8.08	1B
7295	80673	4	ASMEB16.9 BW EQUAL TEE OD88.9X5.49	37	NO	121.73	1B
7295	80673	5	ASMEB16.9 RED OD88.9X5.49/48.3X5.08	2	NO	1.54	1B
7295	80673	6	ASMEB16.9 UEQT OD88.9X5.49/60.3X5.54	2	NO	5.94	1B
7295	80673	7	ASMEB16.9 RED OD88.9X5.49/33.4X4.55	12	NO	8.16	1B
7295	80673	8	BW CAP OD88.9X5.49 SA234WPC	2	NO	2	1B
7295	80673	9	POD60.3X5.54-EP STY-D,D1=49.5MM AT SITE	32	M	239.36	1B
7295	80673	10	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	5	NO	4.5	1B
7295	80673	11	ASMEB16.11 SWLR 45DEG ELBOW NB50 CL3000	2	NO	1.2	1B
7295	80673	12	POD33.4X4.55-EP STY-D,D1=25.2MM AT SITE	18	M	58.32	1B
7295	80673	13	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	5	NO	1.9	1B
7295	80673	14	SW STUB NB15 CL 3000(CS)	14	NO	2.52	1B
7295	80673	15	SW STUB NB25 CL 3000(CS)	12	NO	5.16	1B
7295	80673	16	POD48.3X5.08-EP STY-D,D1=39.2MM AT SITE	2	M	11.49	1B
7297	80673	1	POD88.9X5.49-EP STY-D,D1=79MM AT SITE	1428	M	16122.12	1B
7297	80673	2	ASMEB16.9 BWLR 90DEG ELBOW OD88.9X5.49	217	NO	438.34	1B
7297	80673	3	ASMEB16.9 BWLR 45DEG ELBOW OD88.9X5.49	14	NO	14.14	1B

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80673	4	ASMEB16.9 BW EQUAL TEE OD88.9X5.49	41	NO	134.89	1B
7297	80673	5	ASMEB16.9 RED OD88.9X5.49/48.3X5.08	2	NO	1.54	1B
7297	80673	6	ASMEB16.9 UEQT OD88.9X5.49/60.3X5.54	2	NO	5.94	1B
7297	80673	7	ASMEB16.9 RED OD88.9X5.49/33.4X4.55	16	NO	10.88	1B
7297	80673	8	BW CAP OD88.9X5.49 SA234WPC	2	NO	2	1B
7297	80673	9	POD60.3X5.54-EP STY-D,D1=49.5MM AT SITE	32	M	239.36	1B
7297	80673	10	ASMEB16.11 SWLR 90DEG ELBOW NB50 CL3000	5	NO	4.5	1B
7297	80673	11	ASMEB16.11 SWLR 45DEG ELBOW NB50 CL3000	2	NO	1.2	1B
7297	80673	12	POD33.4X4.55-EP STY-D,D1=25.2MM AT SITE	18	M	58.32	1B
7297	80673	13	ASMEB16.11 SWLR 90DEG ELBOW NB25 CL3000	5	NO	1.9	1B
7297	80673	14	SW STUB NB15 CL 3000(CS)	14	NO	2.52	1B
7297	80673	15	SW STUB NB25 CL 3000(CS)	16	NO	6.88	1B
7297	80673	16	POD48.3X5.08-EP STY-D,D1=39.2MM AT SITE	2	M	11.49	1B
7300	80477	7	PIPE OD1118 X 10 EPSTY-D ,D1=1098.0(UG)	850	M	232245.5	1C
7300	80477	8	PIPE OD813 X 8 EPSTY-D ,D1=797.0 (UG)	400	M	63520	1C
7300	80477	9	PIPE OD711.2 X 8 EPSTY-D ,D1=695.2 (UG)	750.32	M	104922.5	1C
7300	80477	10	PIPE OD1422 X 12 EPSTY-D ,D1=1398.0(UG)	850	M	354450	1C
7300	80477	11	PIPE OD1118 X 10 EPSTY-D ,D1=1098.0(UG)	400	M	109292	1C
7300	80477	12	PIPE OD914 X 10 EPSTY-D ,D1=894.0 (UG)	750	M	169050	1C
7300	80477	13	PIPE OD914 X 10 EPSTY-D , D1=894.0(UG)	800	M	180320	1C
7300	80477	14	PIPE OD813 X 8 EPSTY-D , D1=797.0(UG)	1500	M	238200	1C
7295	80478	1	PIPENB 100X5.4SCREW&SOCKETED IS1239 GAL	115	M	1690.5	1D
7295	80478	2	G&T 90DEG ELL NB100IS1239 G&T	16	NO	64	1D
7295	80478	3	G&T SOCKET NB100 IS1239 G&T	23	NO	29.9	1D
7295	80478	4	G&T UNION NB 100 IS1239	6	NO	25.11	1D
7296	80478	1	PIPENB 100X5.4SCREW&SOCKETED IS1239 GAL	115	M	1690.5	1D

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80478	2	G&T 90DEG ELL NB100IS1239 G&T	16	NO	64	1D
7296	80478	3	G&T SOCKET NB100 IS1239 G&T	23	NO	29.9	1D
7296	80478	4	G&T UNION NB 100 IS1239	6	NO	25.11	1D
7297	80478	1	PIPENB 100X5.4SCREW&SOCKETED IS1239 GAL	115	M	1690.5	1D
7297	80478	2	G&T 90DEG ELL NB100IS1239 G&T	16	NO	64	1D
7297	80478	3	G&T SOCKET NB100 IS1239 G&T	23	NO	29.9	1D
7297	80478	4	G&T UNION NB 100 IS1239	6	NO	25.11	1D
7298	80478	1	PIPENB 100X5.4SCREW&SOCKETED IS1239 GAL	115	M	1690.5	1D
7298	80478	2	G&T 90DEG ELL NB100IS1239 G&T	16	NO	64	1D
7298	80478	3	G&T SOCKET NB100 IS1239 G&T	23	NO	29.9	1D
7298	80478	4	G&T UNION NB 100 IS1239	6	NO	25.11	1D
7299	80478	1	PIPENB 100X5.4SCREW&SOCKETED IS1239 GAL	115	M	1690.5	1D
7299	80478	2	G&T 90DEG ELL NB100IS1239 G&T	16	NO	64	1D
7299	80478	4	G&T UNION NB 100 IS1239	6	NO	25.11	1D
7300	80478	1	PIPENB 150X5.4SCREW&SOCKETED IS1239 GAL	250	M	5475	1D
7300	80478	2	PIPENB 100X5.4SCREW&SOCKETED IS1239 GAL	8000	M	117600	1D
7300	80478	3	PIPENB 50X4.50SCREW&SOCKETED IS1239 GAL	3600	M	22464	1D
7300	80478	4	G&T 90DEG ELL NB150 IS1239	20	NO	208	1D
7300	80478	5	G&T 90DEG ELL NB100 IS1239 G&T	200	NO	800	1D
7300	80478	6	G&T 90DEG ELL NB50 IS1239 G&T	110	NO	167.75	1D
7300	80478	7	REDUCER NB100/50 IS1239 G&T	20	NO	60	1D
7300	80478	8	G&T UNEQT NB150/50 IS1239 G&T	5	NO	45	1D
7300	80478	9	G&T EQT NB100 IS1239G&T	30	NO	180	1D
7300	80478	10	G&T UEQT NB100 / 50 IS1239 G&T	65	NO	260	1D
7300	80478	11	G&T EQT NB150 IS1239 G&T	20	NO	202.2	1D
7300	80478	12	G&T SOCKET NB 150 IS1239	10	NO	15	1D
7300	80478	13	G&T SOCKET NB100 IS1239 G&T	500	NO	650	1D
7300	80478	14	G&T SOCKET NB 50 IS1239	300	NO	150	1D
7300	80478	15	PIPE NIPPLE NB50 IS1239 G&T	120	NO	111	1D
7300	80478	16	G&T UNION NB 50 IS1239	150	NO	225	1D
7300	80478	17	G&T UNION NB 100 IS1239	20	NO	83.7	1D
7295	80933	1	PLATE 12.0 MM	32	M2	3014.4	2
7295	80933	2	CHANNEL 150X75 (SP LTH NOT LESS THAN 5M)	375	M	6300	2
7295	80933	3	CHANNEL 200X75 (SP LTH NOT LESS THAN 5M)	90	M	2007	2
7295	80933	4	ANGLE 75X75X6(SP LTHNOT LESS THAN 5M)	2150	M	14620	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80933	5	PLATE 10MM	12	M2	942	2
7295	80933	6	AS ROD TYPE CLAMP NB 25 SA182F22 CL3	110	NO	11	2
7295	80933	7	CS ROD TYPE PIPE CLAMP NB 200 IS2062GRB	105	NO	220.5	2
7295	80933	8	CS ROD TYPE PIPE CLAMP NB 250 IS2062GRB	35	NO	87.5	2
7295	80933	9	PIPE CLAMP ROD TYP NB 400 (CS) SA105	40	NO	217.2	2
7295	80933	10	PIPE CLAMP ROD TYPE NB 700 CS	8	NO	108.96	2
7295	80933	11	C S TUBE CLIP NB 15 (SHORT) IS2062GRB	224	NO	47.04	2
7295	80933	12	C S TUBE CLIP NB 15 (LONG) IS2062GRB	224	NO	192.64	2
7295	80933	13	C S TUBE CLIP NB 25 (SHORT) IS2062GRB	981	NO	255.06	2
7295	80933	14	C S TUBE CLIP NB 25 (LONG) IS2062GRB	981	NO	843.66	2
7295	80933	15	C S TUBE CLIP NB 40 (SHORT) IS2062GRB	214	NO	77.04	2
7295	80933	16	C S TUBE CLIP NB 40 (LONG) IS2062GRB	214	NO	239.68	2
7295	80933	17	C S TUBE CLIP NB 50 (SHORT) IS2062GRB	238	NO	95.2	2
7295	80933	18	C S TUBE CLIP NB 50 (LONG) IS2062GRB	238	NO	297.5	2
7295	80933	19	C S ROD TYPE PIPE CLAMP NB 15 IS2062GRB	522	NO	41.76	2
7295	80933	20	C S ROD TYPE PIPE CLAMP NB 25 IS2062GRB	2289	NO	251.79	2
7295	80933	21	C S ROD TYPE PIPE CLAMP NB 40 IS2062GRB	500	NO	65	2
7295	80933	22	C S ROD TYPE PIPE CLAMP NB 50 IS2062GRB	555	NO	127.65	2
7295	80933	23	C S ROD TYPE PIPE CLAMP NB 80 IS2062GRB	613	NO	324.89	2
7295	80933	24	CS ROD TYPE PIPE CLAMP NB 100 IS2062GRB	120	NO	148.8	2
7295	80933	25	CS ROD TYPE PIPE CLAMP NB 150 IS2062GRB	196	NO	313.6	2
7295	80933	28	CS ROD TYPE PIPE CLAMP NB 300 IS2062GRB	31	NO	89.9	2
7295	80933	29	PIPE CLAMP ROD TYP NB 350 (CS) SA105	15	NO	63	2
7295	80933	31	PIPE CLAMP ROD TYP NB 450 (CS)	20	NO	117.8	2
7295	80933	32	PIPE CLAMP ROD TYP NB 500 (CS)	10	NO	64.3	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80933	33	PIPE CLAMP ROD TYP NB 600 (CS)	5	NO	61.75	2
7295	80933	35	PIPE CLAMP ROD TYP NB 800 CS	5	NO	122.5	2
7295	80933	36	BL HEXBOLT M8X1.25X30 PCL4.6 GRC IS:1363	2651	NO	53.02	2
7295	80933	37	BOLT-M12X40 -4.6-IS1363P1	994	NO	49.7	2
7295	80933	38	NUT -M 8 -CL4-IS1363P3	17219	NO	86.1	2
7295	80933	39	NUT -M10 -CL4-IS1363P3	2442	NO	24.42	2
7295	80933	40	NUT -M12 -CL4-IS1363P3	2343	NO	46.86	2
7295	80933	41	NUT -M16 -CL4-IS1363P3	695	NO	20.85	2
7295	80933	42	NUT -M20 -CL4-IS1363P3	359	NO	25.13	2
7295	80933	43	NUT -M24 -CL4-IS1363P3	161	NO	17.71	2
7295	80933	44	NUT -M30 -CL4-IS1363-P3	22	NO	5.06	2
7295	80933	45	HEX NUT M36X3-4 IS:1363(P-3) BPS 41304	11	NO	4.36	2
7295	80933	46	TUBE CLIP SHORT NB 25 (AS) SA387 GR 22	42	NO	13.44	2
7295	80933	47	TUBE CLIP LONG NB 25 (AS) SA387 GR 22	42	NO	36.96	2
7295	80933	48	TUBE CLIP SHORT NB 40 (AS) SA387 GR 22	10	NO	4	2
7295	80933	49	TUBE CLIP LONG NB 40 (AS) SA387 GR 22	10	NO	11.2	2
7295	80933	50	TUBE CLIP SHORT NB 50 (AS) SA387 GR 22	161	NO	75.67	2
7295	80933	51	TUBE CLIP LONG NB 50 (AS)	161	NO	202.86	2
7295	80933	53	AS ROD TYPE CLAMP NB40	21	NO	3.89	2
7295	80933	54	AS ROD TYPE CLAMP NB 50	376	NO	83.85	2
7295	80933	55	STUD M12 X 1.75 X 60 SA193B16	469	NO	23.45	2
7295	80933	56	NUT -M10 -GR7	2178	NO	23.96	2
7295	80933	57	NUT -M12 -GR7	938	NO	15.95	2
7295	80933	58	PUN WASHER-M 8 -IS:2016-A	17219	NO	34.44	2
7295	80933	59	PUN WASHER-M10 -IS2016-A	4620	NO	46.2	2
7295	80933	60	PUN WASHER-M12 -IS2016-A	3281	NO	32.81	2
7295	80933	61	PUN WASHER-M16 -IS2016-A	695	NO	6.95	2
7295	80933	62	PUN WASHER-M20 -IS2016-A	359	NO	6.1	2
7295	80933	63	PUN WASHER-M24 -IS2016-A	161	NO	4.83	2
7295	80933	64	PUNCHED WASHER A 33 IS:2016/LATEST	22	NO	1.1	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80933	65	PUNCHED WASHER A 39(ID) IS:2016	11	NO	0.96	2
7295	80933	66	U-ROD CLAMP SS NB15 (M8)	2711	NO	189.77	2
7295	80933	67	U-ROD CLAMP SS NB25 (M8)	1223	NO	122.3	2
7295	80933	68	U-ROD CLAMP SS NB40 (M8)	104	NO	12.48	2
7295	80933	69	U-ROD CLAMP SS NB50(M8)	325	NO	46.15	2
7295	80933	70	U-ROD CLAMP SS NB80 (M8)	122	NO	19.76	2
7295	80933	71	U-ROD CLAMP SS NB100 (M12)	34	NO	20.06	2
7295	80933	72	U-ROD CLAMP SS NB150 (M12)	95	NO	97.85	2
7295	80933	73	HEX NUT M8 SA182F304(SS)	8970	NO	44.85	2
7295	80933	74	HEX NUT M12 SA182F304(SS)	258	NO	4.39	2
7295	80933	82	NON-ASBESTOS JOINTING SHEET 3.0MM	32	NO	819.36	2
7295	80933	83	NUT -M12 -CL4-IS1363P3	1752	NO	31.54	2
7295	80933	84	NUT -M16 -CL4-IS1363P3	815	NO	24.45	2
7295	80933	85	NUT -M20 -CL4-IS1363P3	43	NO	2.8	2
7295	80933	86	NUT -M24 -CL4-IS1363P3	245	NO	26.95	2
7295	80933	87	NUT -M30 -CL4-IS1363-P3	47	NO	10.81	2
7295	80933	88	BLACK HEX NUT M36 X 4 P CL 4 GR B STEEL	63	NO	25.07	2
7295	80933	89	BL HEX NUT M42 X 4.5 P CL 4 GR B STEEL	16	NO	9.46	2
7295	80933	90	CLEVIS WITH BOLT CWB-1	183	NO	51.24	2
7295	80933	91	CLEVIS WITH BOLT CWB-2	97	NO	53.16	2
7295	80933	92	EYE NUT EN-1	945	NO	94.5	2
7295	80933	93	EYE NUT EN-2	428	NO	102.72	2
7295	80933	94	EYE NUT EN-3	27	NO	11.61	2
7295	80933	95	EYE NUT EN-4	132	NO	122.76	2
7295	80933	96	EYE NUT EN-5	23	NO	34.5	2
7295	80933	97	EYE NUT EN-6	34	NO	79.22	2
7295	80933	98	EYE NUT EN-7	11	NO	40.15	2
7295	80933	99	HOR CLAMP ASSY CS OD 114.3	33	NO	91.25	2
7295	80933	100	HOR CLAMP ASSY CS OD 168.3	52	NO	322.45	2
7295	80933	101	HOR CLAMP ASSY CS OD 219.1	30	NO	174.15	2
7295	80933	102	HOR CLAMP ASSY CS OD 273	7	NO	76.31	2
7295	80933	103	HOR CLAMP ASSY CS OD 323.9	11	NO	208.24	2
7295	80933	104	HOR CLAMP ASSY CS OD 355.6	4	NO	80.92	2
7295	80933	105	HOR CLAMP ASSY CS OD 406.4	11	NO	257.3	2
7295	80933	106	HOR CLAMP ASSY CS OD 457	7	NO	212.86	2
7295	80933	107	HOR CLAMP ASSY CS OD 508	5	NO	239.74	2
7295	80933	108	HOR CLAMP ASSY CS OD 88.9	156	NO	393.9	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80933	109	RIS CLAMP CS OD114.3 L=400	15	NO	185.34	2
7295	80933	110	RIS CLAMP CS OD168.3 L=550	24	NO	437.66	2
7295	80933	111	RIS CLAMP CS OD219.1 L=650	14	NO	321.38	2
7295	80933	112	RIS CLAMP CS OD273 L=750	3	NO	129.38	2
7295	80933	113	RIS CLAMP CS OD323.9 L=900	5	NO	253.84	2
7295	80933	114	RIS CLAMP CS OD355.6 L=900	2	NO	129.6	2
7295	80933	115	RIS CLAMP CS OD406.4 L=950	5	NO	359.1	2
7295	80933	116	RIS CLAMP CS OD457 L=1000	3	NO	453.61	2
7295	80933	117	RIS CLAMP CS OD508 L=1050	3	NO	453.31	2
7295	80933	118	RIS CLAMP CS OD610 L=1200	3	NO	541.78	2
7295	80933	119	RIS CLAMP CS OD88.9L=400	72	NO	804.67	2
7295	80933	120	ROD COUPLING RC-1	30	NO	3.9	2
7295	80933	121	ROD COUPLING RC-2	14	NO	3.92	2
7295	80933	122	ROD COUPLING RC-3	2	NO	0.58	2
7295	80933	123	ROD COUPLING RC-4	23	NO	13.34	2
7295	80933	124	ROD COUPLING RC-5	7	NO	7.42	2
7295	80933	125	ROD COUPLING RC-6	7	NO	13.93	2
7295	80933	126	TIE ROD M12x250 LR	564	NO	129.72	2
7295	80933	127	TIE ROD M16x250 LR	263	NO	107.83	2
7295	80933	128	TIE ROD M20x250 LR	14	NO	7.84	2
7295	80933	129	TIE ROD M24x350 LR	66	NO	71.28	2
7295	80933	130	TIE ROD M30x350 LR	12	NO	20.88	2
7295	80933	131	TIE ROD M36x350 LR	17	NO	43.01	2
7295	80933	132	TIE ROD M42x450 LR	6	NO	27.9	2
7295	80933	133	TURN BUCKLE TB-1	564	NO	152.28	2
7295	80933	134	TURN BUCKLE TB-2	263	NO	149.91	2
7295	80933	135	TURN BUCKLE TB-3	14	NO	14.84	2
7295	80933	136	TURN BUCKLE TB-4	66	NO	132	2
7295	80933	137	TURN BUCKLE TB-5	12	NO	36	2
7295	80933	138	TURN BUCKLE TB-6	17	NO	79.9	2
7295	80933	139	TURN BUCKLE TB-7	6	NO	43.8	2
7295	80933	140	WELD ON CLEVIS WCA-1	564	NO	162.43	2
7295	80933	141	WELD ON CLEVIS WCA-2	263	NO	152.01	2
7295	80933	142	WELD ON CLEVIS WCA-3	14	NO	18.56	2
7295	80933	143	WELD ON CLEVIS WCA-4	66	NO	146.12	2
7295	80933	144	WELD ON CLEVIS WCA-5	12	NO	42.94	2
7295	80933	145	WELD ON CLEVIS WCA-6	17	NO	102.65	2
7295	80933	146	WELD ON CLEVIS WCA-7	6	NO	57.66	2
7295	80933	147	HOR CLAMP OD610(CS)	5	NO	445.49	2
7295	80933	148	HOR CLAMP OD813(CS)	5	NO	914.91	2
7295	80933	149	HOR CLAMP OD711(CS)	5	NO	533.13	2
7295	80933	150	TIE ROD M12x3000 RR	516	NO	2105.28	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7295	80933	151	TIE ROD M16x3000 RR	240	NO	1814.4	2
7295	80933	152	TIE ROD M20x3000 RR	15	NO	122.85	2
7295	80933	153	TIE ROD M24x3000 RR	63	NO	679.14	2
7295	80933	154	TIE ROD M30x3000 RR	14	NO	245.7	2
7295	80933	155	TIE ROD M36x3000 RR	17	NO	457.3	2
7295	80933	156	TIE ROD M42x3000 RR	3	NO	122.4	2
7296	80933	1	PLATE 12.0 MM	32	M2	3014.4	2
7296	80933	2	CHANNEL 150X75 (SP LTH NOT LESS THAN 5M)	375	M	6300	2
7296	80933	3	CHANNEL 200X75 (SP LTH NOT LESS THAN 5M)	90	M	2007	2
7296	80933	4	ANGLE 75X75X6(SP LTHNOT LESS THAN 5M)	2150	M	14620	2
7296	80933	5	PLATE 10MM	12	M2	942	2
7296	80933	6	AS ROD TYPE CLAMP NB 25 SA182F22 CL3	110	NO	11	2
7296	80933	7	CS ROD TYPE PIPE CLAMP NB 200 IS2062GRB	105	NO	220.5	2
7296	80933	8	CS ROD TYPE PIPE CLAMP NB 250 IS2062GRB	35	NO	87.5	2
7296	80933	9	PIPE CLAMP ROD TYP NB 400 (CS) SA105	40	NO	217.2	2
7296	80933	10	PIPE CLAMP ROD TYPE NB 700 CS	8	NO	108.96	2
7296	80933	11	C S TUBE CLIP NB 15 (SHORT) IS2062GRB	224	NO	47.04	2
7296	80933	12	C S TUBE CLIP NB 15 (LONG) IS2062GRB	224	NO	192.64	2
7296	80933	13	C S TUBE CLIP NB 25 (SHORT) IS2062GRB	981	NO	255.06	2
7296	80933	14	C S TUBE CLIP NB 25 (LONG) IS2062GRB	981	NO	843.66	2
7296	80933	15	C S TUBE CLIP NB 40 (SHORT) IS2062GRB	214	NO	77.04	2
7296	80933	16	C S TUBE CLIP NB 40 (LONG) IS2062GRB	214	NO	239.68	2
7296	80933	17	C S TUBE CLIP NB 50 (SHORT) IS2062GRB	238	NO	95.2	2
7296	80933	18	C S TUBE CLIP NB 50 (LONG) IS2062GRB	238	NO	297.5	2
7296	80933	19	C S ROD TYPE PIPE CLAMP NB 15 IS2062GRB	522	NO	41.76	2
7296	80933	20	C S ROD TYPE PIPE CLAMP NB 25 IS2062GRB	2289	NO	251.79	2
7296	80933	21	C S ROD TYPE PIPE CLAMP NB 40 IS2062GRB	500	NO	65	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80933	22	C S ROD TYPE PIPE CLAMP NB 50 IS2062GRB	555	NO	127.65	2
7296	80933	23	C S ROD TYPE PIPE CLAMP NB 80 IS2062GRB	422	NO	223.66	2
7296	80933	24	CS ROD TYPE PIPE CLAMP NB 100 IS2062GRB	120	NO	148.8	2
7296	80933	25	CS ROD TYPE PIPE CLAMP NB 150 IS2062GRB	196	NO	313.6	2
7296	80933	28	CS ROD TYPE PIPE CLAMP NB 300 IS2062GRB	31	NO	89.9	2
7296	80933	29	PIPE CLAMP ROD TYP NB 350 (CS) SA105	15	NO	63	2
7296	80933	31	PIPE CLAMP ROD TYP NB 450 (CS)	20	NO	117.8	2
7296	80933	32	PIPE CLAMP ROD TYP NB 500 (CS)	10	NO	64.3	2
7296	80933	33	PIPE CLAMP ROD TYP NB 600 (CS)	5	NO	61.75	2
7296	80933	35	PIPE CLAMP ROD TYP NB 800 CS	5	NO	122.5	2
7296	80933	36	BL HEXBOLT M8X1.25X30 PCL4.6 GRC IS:1363	2651	NO	53.02	2
7296	80933	37	BOLT-M12X40 -4.6-IS1363P1	994	NO	49.7	2
7296	80933	38	NUT -M 8 -CL4-IS1363P3	17219	NO	86.1	2
7296	80933	39	NUT -M10 -CL4-IS1363P3	2442	NO	24.42	2
7296	80933	40	NUT -M12 -CL4-IS1363P3	2343	NO	46.86	2
7296	80933	41	NUT -M16 -CL4-IS1363P3	695	NO	20.85	2
7296	80933	42	NUT -M20 -CL4-IS1363P3	359	NO	25.13	2
7296	80933	43	NUT -M24 -CL4-IS1363P3	161	NO	17.71	2
7296	80933	44	NUT -M30 -CL4-IS1363-P3	22	NO	5.06	2
7296	80933	45	HEX NUT M36X3-4 IS:1363(P-3) BPS 41304	11	NO	4.36	2
7296	80933	46	TUBE CLIP SHORT NB 25 (AS) SA387 GR 22	42	NO	13.44	2
7296	80933	47	TUBE CLIP LONG NB 25 (AS) SA387 GR 22	42	NO	36.96	2
7296	80933	48	TUBE CLIP SHORT NB 40 (AS) SA387 GR 22	10	NO	4	2
7296	80933	49	TUBE CLIP LONG NB 40 (AS) SA387 GR 22	10	NO	11.2	2
7296	80933	50	TUBE CLIP SHORT NB 50 (AS) SA387 GR 22	161	NO	75.67	2
7296	80933	51	TUBE CLIP LONG NB 50 (AS)	161	NO	202.86	2
7296	80933	53	AS ROD TYPE CLAMP NB40	21	NO	3.89	2
7296	80933	54	AS ROD TYPE CLAMP NB 50	376	NO	83.85	2
7296	80933	55	STUD M12 X 1.75 X 60 SA193B16	469	NO	23.45	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80933	56	NUT -M10 -GR7	2178	NO	23.96	2
7296	80933	57	NUT -M12 -GR7	938	NO	15.95	2
7296	80933	58	PUN WASHER-M 8 -IS:2016-A	17219	NO	34.44	2
7296	80933	59	PUN WASHER-M10 -IS2016-A	4620	NO	46.2	2
7296	80933	60	PUN WASHER-M12 -IS2016-A	3281	NO	32.81	2
7296	80933	61	PUN WASHER-M16 -IS2016-A	695	NO	6.95	2
7296	80933	62	PUN WASHER-M20 -IS2016-A	359	NO	6.1	2
7296	80933	63	PUN WASHER-M24 -IS2016-A	161	NO	4.83	2
7296	80933	64	PUNCHED WASHER A 33 IS:2016/LATEST	22	NO	1.1	2
7296	80933	65	PUNCHED WASHER A 39(ID) IS:2016	11	NO	0.96	2
7296	80933	66	U-ROD CLAMP SS NB15 (M8)	2711	NO	189.77	2
7296	80933	67	U-ROD CLAMP SS NB25 (M8)	1223	NO	122.3	2
7296	80933	68	U-ROD CLAMP SS NB40 (M8)	104	NO	12.48	2
7296	80933	69	U-ROD CLAMP SS NB50(M8)	325	NO	46.15	2
7296	80933	70	U-ROD CLAMP SS NB80 (M8)	122	NO	19.76	2
7296	80933	71	U-ROD CLAMP SS NB100 (M12)	34	NO	20.06	2
7296	80933	72	U-ROD CLAMP SS NB150 (M12)	95	NO	97.85	2
7296	80933	73	HEX NUT M8 SA182F304(SS)	8970	NO	44.85	2
7296	80933	74	HEX NUT M12 SA182F304(SS)	258	NO	4.39	2
7296	80933	82	NON-ASBESTOS JOINTING SHEET 3.0MM	32	NO	819.36	2
7296	80933	83	NUT -M12 -CL4-IS1363P3	1345	NO	24.21	2
7296	80933	84	NUT -M16 -CL4-IS1363P3	815	NO	24.45	2
7296	80933	85	NUT -M20 -CL4-IS1363P3	43	NO	2.8	2
7296	80933	86	NUT -M24 -CL4-IS1363P3	245	NO	26.95	2
7296	80933	87	NUT -M30 -CL4-IS1363-P3	47	NO	10.81	2
7296	80933	88	BLACK HEX NUT M36 X 4 P CL 4 GR B STEEL	63	NO	25.07	2
7296	80933	89	BL HEX NUT M42 X 4.5 P CL 4 GR B STEEL	16	NO	9.46	2
7296	80933	90	CLEVIS WITH BOLT CWB-1	158	NO	44.24	2
7296	80933	91	CLEVIS WITH BOLT CWB-2	97	NO	53.16	2
7296	80933	92	EYE NUT EN-1	710	NO	71	2
7296	80933	93	EYE NUT EN-2	428	NO	102.72	2
7296	80933	94	EYE NUT EN-3	27	NO	11.61	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80933	95	EYE NUT EN-4	132	NO	122.76	2
7296	80933	96	EYE NUT EN-5	23	NO	34.5	2
7296	80933	97	EYE NUT EN-6	34	NO	79.22	2
7296	80933	98	EYE NUT EN-7	11	NO	40.15	2
7296	80933	99	HOR CLAMP ASSY CS OD 114.3	33	NO	91.25	2
7296	80933	100	HOR CLAMP ASSY CS OD 168.3	52	NO	322.45	2
7296	80933	101	HOR CLAMP ASSY CS OD 219.1	30	NO	174.15	2
7296	80933	102	HOR CLAMP ASSY CS OD 273	7	NO	76.31	2
7296	80933	103	HOR CLAMP ASSY CS OD 323.9	11	NO	208.24	2
7296	80933	104	HOR CLAMP ASSY CS OD 355.6	4	NO	80.92	2
7296	80933	105	HOR CLAMP ASSY CS OD 406.4	11	NO	257.3	2
7296	80933	106	HOR CLAMP ASSY CS OD 457	7	NO	212.86	2
7296	80933	107	HOR CLAMP ASSY CS OD 508	5	NO	239.74	2
7296	80933	108	HOR CLAMP ASSY CS OD 88.9	104	NO	262.6	2
7296	80933	109	RIS CLAMP CS OD114.3 L=400	15	NO	185.34	2
7296	80933	110	RIS CLAMP CS OD168.3 L=550	24	NO	437.66	2
7296	80933	111	RIS CLAMP CS OD219.1 L=650	14	NO	321.38	2
7296	80933	112	RIS CLAMP CS OD273 L=750	3	NO	129.38	2
7296	80933	113	RIS CLAMP CS OD323.9 L=900	5	NO	253.84	2
7296	80933	114	RIS CLAMP CS OD355.6 L=900	2	NO	129.6	2
7296	80933	115	RIS CLAMP CS OD406.4 L=950	5	NO	359.1	2
7296	80933	116	RIS CLAMP CS OD457 L=1000	3	NO	453.61	2
7296	80933	117	RIS CLAMP CS OD508 L=1050	3	NO	453.31	2
7296	80933	118	RIS CLAMP CS OD610 L=1200	3	NO	541.78	2
7296	80933	119	RIS CLAMP CS OD88.9L=400	48	NO	536.45	2
7296	80933	120	ROD COUPLING RC-1	22	NO	2.86	2
7296	80933	121	ROD COUPLING RC-2	14	NO	3.92	2
7296	80933	122	ROD COUPLING RC-3	2	NO	0.58	2
7296	80933	123	ROD COUPLING RC-4	23	NO	13.34	2
7296	80933	124	ROD COUPLING RC-5	7	NO	7.42	2
7296	80933	125	ROD COUPLING RC-6	7	NO	13.93	2
7296	80933	126	TIE ROD M12x250 LR	434	NO	99.82	2
7296	80933	127	TIE ROD M16x250 LR	263	NO	107.83	2
7296	80933	128	TIE ROD M20x250 LR	14	NO	7.84	2
7296	80933	129	TIE ROD M24x350 LR	66	NO	71.28	2
7296	80933	130	TIE ROD M30x350 LR	12	NO	20.88	2
7296	80933	131	TIE ROD M36x350 LR	17	NO	43.01	2
7296	80933	132	TIE ROD M42x450 LR	6	NO	27.9	2
7296	80933	133	TURN BUCKLE TB-1	434	NO	117.18	2
7296	80933	134	TURN BUCKLE TB-2	263	NO	149.91	2
7296	80933	135	TURN BUCKLE TB-3	14	NO	14.84	2
7296	80933	136	TURN BUCKLE TB-4	66	NO	132	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7296	80933	137	TURN BUCKLE TB-5	12	NO	36	2
7296	80933	138	TURN BUCKLE TB-6	17	NO	79.9	2
7296	80933	139	TURN BUCKLE TB-7	6	NO	43.8	2
7296	80933	140	WELD ON CLEVIS WCA-1	434	NO	124.99	2
7296	80933	141	WELD ON CLEVIS WCA-2	263	NO	152.01	2
7296	80933	142	WELD ON CLEVIS WCA-3	14	NO	18.56	2
7296	80933	143	WELD ON CLEVIS WCA-4	66	NO	146.12	2
7296	80933	144	WELD ON CLEVIS WCA-5	12	NO	42.94	2
7296	80933	145	WELD ON CLEVIS WCA-6	17	NO	102.65	2
7296	80933	146	WELD ON CLEVIS WCA-7	6	NO	57.66	2
7296	80933	147	HOR CLAMP OD610(CS)	5	NO	445.49	2
7296	80933	148	HOR CLAMP OD813(CS)	5	NO	914.91	2
7296	80933	149	HOR CLAMP OD711(CS)	5	NO	533.13	2
7296	80933	150	TIE ROD M12x3000 RR	394	NO	1607.52	2
7296	80933	151	TIE ROD M16x3000 RR	240	NO	1814.4	2
7296	80933	152	TIE ROD M20x3000 RR	15	NO	122.85	2
7296	80933	153	TIE ROD M24x3000 RR	63	NO	679.14	2
7296	80933	154	TIE ROD M30x3000 RR	14	NO	245.7	2
7296	80933	155	TIE ROD M36x3000 RR	17	NO	457.3	2
7296	80933	156	TIE ROD M42x3000 RR	3	NO	122.4	2
7297	80933	1	PLATE 12.0 MM	32	M2	3014.4	2
7297	80933	2	CHANNEL 150X75 (SP LTH NOT LESS THAN 5M)	375	M	6300	2
7297	80933	3	CHANNEL 200X75 (SP LTH NOT LESS THAN 5M)	90	M	2007	2
7297	80933	4	ANGLE 75X75X6(SP LTHNOT LESS THAN 5M)	2150	M	14620	2
7297	80933	5	PLATE 10MM	12	M2	942	2
7297	80933	6	AS ROD TYPE CLAMP NB 25 SA182F22 CL3	110	NO	11	2
7297	80933	7	CS ROD TYPE PIPE CLAMP NB 200 IS2062GRB	105	NO	220.5	2
7297	80933	8	CS ROD TYPE PIPE CLAMP NB 250 IS2062GRB	35	NO	87.5	2
7297	80933	9	PIPE CLAMP ROD TYP NB 400 (CS) SA105	40	NO	217.2	2
7297	80933	10	PIPE CLAMP ROD TYPE NB 700 CS	8	NO	108.96	2
7297	80933	11	C S TUBE CLIP NB 15 (SHORT) IS2062GRB	224	NO	47.04	2
7297	80933	12	C S TUBE CLIP NB 15 (LONG) IS2062GRB	224	NO	192.64	2
7297	80933	13	C S TUBE CLIP NB 25 (SHORT) IS2062GRB	981	NO	255.06	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80933	14	C S TUBE CLIP NB 25 (LONG) IS2062GRB	981	NO	843.66	2
7297	80933	15	C S TUBE CLIP NB 40 (SHORT) IS2062GRB	214	NO	77.04	2
7297	80933	16	C S TUBE CLIP NB 40 (LONG) IS2062GRB	214	NO	239.68	2
7297	80933	17	C S TUBE CLIP NB 50 (SHORT) IS2062GRB	238	NO	95.2	2
7297	80933	18	C S TUBE CLIP NB 50 (LONG) IS2062GRB	238	NO	297.5	2
7297	80933	19	C S ROD TYPE PIPE CLAMP NB 15 IS2062GRB	522	NO	41.76	2
7297	80933	20	C S ROD TYPE PIPE CLAMP NB 25 IS2062GRB	2289	NO	251.79	2
7297	80933	21	C S ROD TYPE PIPE CLAMP NB 40 IS2062GRB	500	NO	65	2
7297	80933	22	C S ROD TYPE PIPE CLAMP NB 50 IS2062GRB	555	NO	127.65	2
7297	80933	23	C S ROD TYPE PIPE CLAMP NB 80 IS2062GRB	422	NO	223.66	2
7297	80933	24	CS ROD TYPE PIPE CLAMP NB 100 IS2062GRB	120	NO	148.8	2
7297	80933	25	CS ROD TYPE PIPE CLAMP NB 150 IS2062GRB	196	NO	313.6	2
7297	80933	28	CS ROD TYPE PIPE CLAMP NB 300 IS2062GRB	31	NO	89.9	2
7297	80933	29	PIPE CLAMP ROD TYP NB 350 (CS) SA105	15	NO	63	2
7297	80933	31	PIPE CLAMP ROD TYP NB 450 (CS)	20	NO	117.8	2
7297	80933	32	PIPE CLAMP ROD TYP NB 500 (CS)	10	NO	64.3	2
7297	80933	33	PIPE CLAMP ROD TYP NB 600 (CS)	5	NO	61.75	2
7297	80933	35	PIPE CLAMP ROD TYP NB 800 CS	5	NO	122.5	2
7297	80933	36	BL HEXBOLT M8X1.25X30 PCL4.6 GRC IS:1363	2651	NO	53.02	2
7297	80933	37	BOLT-M12X40 -4.6-IS1363P1	994	NO	49.7	2
7297	80933	38	NUT -M 8 -CL4-IS1363P3	17219	NO	86.1	2
7297	80933	39	NUT -M10 -CL4-IS1363P3	2442	NO	24.42	2
7297	80933	40	NUT -M12 -CL4-IS1363P3	2343	NO	46.86	2
7297	80933	41	NUT -M16 -CL4-IS1363P3	695	NO	20.85	2
7297	80933	42	NUT -M20 -CL4-IS1363P3	359	NO	25.13	2
7297	80933	43	NUT -M24 -CL4-IS1363P3	161	NO	17.71	2
7297	80933	44	NUT -M30 -CL4-IS1363-P3	22	NO	5.06	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80933	45	HEX NUT M36X3-4 IS:1363(P-3) BPS 41304	11	NO	4.36	2
7297	80933	46	TUBE CLIP SHORT NB 25 (AS) SA387 GR 22	42	NO	13.44	2
7297	80933	47	TUBE CLIP LONG NB 25 (AS) SA387 GR 22	42	NO	36.96	2
7297	80933	48	TUBE CLIP SHORT NB 40 (AS) SA387 GR 22	10	NO	4	2
7297	80933	49	TUBE CLIP LONG NB 40 (AS) SA387 GR 22	10	NO	11.2	2
7297	80933	50	TUBE CLIP SHORT NB 50 (AS) SA387 GR 22	161	NO	75.67	2
7297	80933	51	TUBE CLIP LONG NB 50 (AS)	161	NO	202.86	2
7297	80933	53	AS ROD TYPE CLAMP NB40	21	NO	3.89	2
7297	80933	54	AS ROD TYPE CLAMP NB 50	376	NO	83.85	2
7297	80933	55	STUD M12 X 1.75 X 60 SA193B16	469	NO	23.45	2
7297	80933	56	NUT -M10 -GR7	2178	NO	23.96	2
7297	80933	57	NUT -M12 -GR7	938	NO	15.95	2
7297	80933	58	PUN WASHER-M 8 -IS:2016-A	17219	NO	34.44	2
7297	80933	59	PUN WASHER-M10 -IS2016-A	4620	NO	46.2	2
7297	80933	60	PUN WASHER-M12 -IS2016-A	3281	NO	32.81	2
7297	80933	61	PUN WASHER-M16 -IS2016-A	695	NO	6.95	2
7297	80933	62	PUN WASHER-M20 -IS2016-A	359	NO	6.1	2
7297	80933	63	PUN WASHER-M24 -IS2016-A	161	NO	4.83	2
7297	80933	64	PUNCHED WASHER A 33 IS:2016/LATEST	22	NO	1.1	2
7297	80933	65	PUNCHED WASHER A 39(ID) IS:2016	11	NO	0.96	2
7297	80933	66	U-ROD CLAMP SS NB15 (M8)	2711	NO	189.77	2
7297	80933	67	U-ROD CLAMP SS NB25 (M8)	1223	NO	122.3	2
7297	80933	68	U-ROD CLAMP SS NB40 (M8)	104	NO	12.48	2
7297	80933	69	U-ROD CLAMP SS NB50(M8)	325	NO	46.15	2
7297	80933	70	U-ROD CLAMP SS NB80 (M8)	122	NO	19.76	2
7297	80933	71	U-ROD CLAMP SS NB100 (M12)	34	NO	20.06	2
7297	80933	72	U-ROD CLAMP SS NB150 (M12)	95	NO	97.85	2
7297	80933	73	HEX NUT M8 SA182F304(SS)	8970	NO	44.85	2
7297	80933	74	HEX NUT M12 SA182F304(SS)	258	NO	4.39	2
7297	80933	82	NON-ASBESTOS JOINTING SHEET 3.0MM	32	NO	819.36	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80933	83	NUT -M12 -CL4-IS1363P3	1345	NO	24.21	2
7297	80933	84	NUT -M16 -CL4-IS1363P3	815	NO	24.45	2
7297	80933	85	NUT -M20 -CL4-IS1363P3	43	NO	2.8	2
7297	80933	86	NUT -M24 -CL4-IS1363P3	245	NO	26.95	2
7297	80933	87	NUT -M30 -CL4-IS1363-P3	47	NO	10.81	2
7297	80933	88	BLACK HEX NUT M36 X 4 P CL 4 GR B STEEL	63	NO	25.07	2
7297	80933	89	BL HEX NUT M42 X 4.5 P CL 4 GR B STEEL	16	NO	9.46	2
7297	80933	90	CLEVIS WITH BOLT CWB-1	158	NO	44.24	2
7297	80933	91	CLEVIS WITH BOLT CWB-2	97	NO	53.16	2
7297	80933	92	EYE NUT EN-1	710	NO	71	2
7297	80933	93	EYE NUT EN-2	428	NO	102.72	2
7297	80933	94	EYE NUT EN-3	27	NO	11.61	2
7297	80933	95	EYE NUT EN-4	132	NO	122.76	2
7297	80933	96	EYE NUT EN-5	23	NO	34.5	2
7297	80933	97	EYE NUT EN-6	34	NO	79.22	2
7297	80933	98	EYE NUT EN-7	11	NO	40.15	2
7297	80933	99	HOR CLAMP ASSY CS OD 114.3	33	NO	91.25	2
7297	80933	100	HOR CLAMP ASSY CS OD 168.3	52	NO	322.45	2
7297	80933	101	HOR CLAMP ASSY CS OD 219.1	30	NO	174.15	2
7297	80933	102	HOR CLAMP ASSY CS OD 273	7	NO	76.31	2
7297	80933	103	HOR CLAMP ASSY CS OD 323.9	11	NO	208.24	2
7297	80933	104	HOR CLAMP ASSY CS OD 355.6	4	NO	80.92	2
7297	80933	105	HOR CLAMP ASSY CS OD 406.4	11	NO	257.3	2
7297	80933	106	HOR CLAMP ASSY CS OD 457	7	NO	212.86	2
7297	80933	107	HOR CLAMP ASSY CS OD 508	5	NO	239.74	2
7297	80933	108	HOR CLAMP ASSY CS OD 88.9	104	NO	262.6	2
7297	80933	109	RIS CLAMP CS OD114.3 L=400	15	NO	185.34	2
7297	80933	110	RIS CLAMP CS OD168.3 L=550	24	NO	437.66	2
7297	80933	111	RIS CLAMP CS OD219.1 L=650	14	NO	321.38	2
7297	80933	112	RIS CLAMP CS OD273 L=750	3	NO	129.38	2
7297	80933	113	RIS CLAMP CS OD323.9 L=900	5	NO	253.84	2
7297	80933	114	RIS CLAMP CS OD355.6 L=900	2	NO	129.6	2
7297	80933	115	RIS CLAMP CS OD406.4 L=950	5	NO	359.1	2
7297	80933	116	RIS CLAMP CS OD457 L=1000	3	NO	453.61	2
7297	80933	117	RIS CLAMP CS OD508 L=1050	3	NO	453.31	2
7297	80933	118	RIS CLAMP CS OD610 L=1200	3	NO	541.78	2
7297	80933	119	RIS CLAMP CS OD88.9L=400	48	NO	536.45	2
7297	80933	120	ROD COUPLING RC-1	22	NO	2.86	2
7297	80933	121	ROD COUPLING RC-2	14	NO	3.92	2
7297	80933	122	ROD COUPLING RC-3	2	NO	0.58	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7297	80933	123	ROD COUPLING RC-4	23	NO	13.34	2
7297	80933	124	ROD COUPLING RC-5	7	NO	7.42	2
7297	80933	125	ROD COUPLING RC-6	7	NO	13.93	2
7297	80933	126	TIE ROD M12x250 LR	434	NO	99.82	2
7297	80933	127	TIE ROD M16x250 LR	263	NO	107.83	2
7297	80933	128	TIE ROD M20x250 LR	14	NO	7.84	2
7297	80933	129	TIE ROD M24x350 LR	66	NO	71.28	2
7297	80933	130	TIE ROD M30x350 LR	12	NO	20.88	2
7297	80933	131	TIE ROD M36x350 LR	17	NO	43.01	2
7297	80933	132	TIE ROD M42x450 LR	6	NO	27.9	2
7297	80933	133	TURN BUCKLE TB-1	434	NO	117.18	2
7297	80933	134	TURN BUCKLE TB-2	263	NO	149.91	2
7297	80933	135	TURN BUCKLE TB-3	14	NO	14.84	2
7297	80933	136	TURN BUCKLE TB-4	66	NO	132	2
7297	80933	137	TURN BUCKLE TB-5	12	NO	36	2
7297	80933	138	TURN BUCKLE TB-6	17	NO	79.9	2
7297	80933	139	TURN BUCKLE TB-7	6	NO	43.8	2
7297	80933	140	WELD ON CLEVIS WCA-1	434	NO	124.99	2
7297	80933	141	WELD ON CLEVIS WCA-2	263	NO	152.01	2
7297	80933	142	WELD ON CLEVIS WCA-3	14	NO	18.56	2
7297	80933	143	WELD ON CLEVIS WCA-4	66	NO	146.12	2
7297	80933	144	WELD ON CLEVIS WCA-5	12	NO	42.94	2
7297	80933	145	WELD ON CLEVIS WCA-6	17	NO	102.65	2
7297	80933	146	WELD ON CLEVIS WCA-7	6	NO	57.66	2
7297	80933	147	HOR CLAMP OD610(CS)	5	NO	445.49	2
7297	80933	148	HOR CLAMP OD813(CS)	5	NO	914.91	2
7297	80933	149	HOR CLAMP OD711(CS)	5	NO	533.13	2
7297	80933	150	TIE ROD M12x3000 RR	394	NO	1607.52	2
7297	80933	151	TIE ROD M16x3000 RR	240	NO	1814.4	2
7297	80933	152	TIE ROD M20x3000 RR	15	NO	122.85	2
7297	80933	153	TIE ROD M24x3000 RR	63	NO	679.14	2
7297	80933	154	TIE ROD M30x3000 RR	14	NO	245.7	2
7297	80933	155	TIE ROD M36x3000 RR	17	NO	457.3	2
7297	80933	156	TIE ROD M42x3000 RR	3	NO	122.4	2
7298	80933	1	PLATE 12.0 MM	32	M2	3014.4	2
7298	80933	2	CHANNEL 150X75 (SP LTH NOT LESS THAN 5M)	375	M	6300	2
7298	80933	3	CHANNEL 200X75 (SP LTH NOT LESS THAN 5M)	90	M	2007	2
7298	80933	4	ANGLE 75X75X6(SP LTHNOT LESS THAN 5M)	2150	M	14620	2
7298	80933	5	PLATE 10MM	12	M2	942	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80933	6	AS ROD TYPE CLAMP NB 25 SA182F22 CL3	110	NO	11	2
7298	80933	7	CS ROD TYPE PIPE CLAMP NB 200 IS2062GRB	105	NO	220.5	2
7298	80933	8	CS ROD TYPE PIPE CLAMP NB 250 IS2062GRB	35	NO	87.5	2
7298	80933	9	PIPE CLAMP ROD TYP NB 400 (CS) SA105	40	NO	217.2	2
7298	80933	10	PIPE CLAMP ROD TYPE NB 700 CS	8	NO	108.96	2
7298	80933	11	C S TUBE CLIP NB 15 (SHORT) IS2062GRB	224	NO	47.04	2
7298	80933	12	C S TUBE CLIP NB 15 (LONG) IS2062GRB	224	NO	192.64	2
7298	80933	13	C S TUBE CLIP NB 25 (SHORT) IS2062GRB	981	NO	255.06	2
7298	80933	14	C S TUBE CLIP NB 25 (LONG) IS2062GRB	981	NO	843.66	2
7298	80933	15	C S TUBE CLIP NB 40 (SHORT) IS2062GRB	214	NO	77.04	2
7298	80933	16	C S TUBE CLIP NB 40 (LONG) IS2062GRB	214	NO	239.68	2
7298	80933	17	C S TUBE CLIP NB 50 (SHORT) IS2062GRB	238	NO	95.2	2
7298	80933	18	C S TUBE CLIP NB 50 (LONG) IS2062GRB	238	NO	297.5	2
7298	80933	19	C S ROD TYPE PIPE CLAMP NB 15 IS2062GRB	522	NO	41.76	2
7298	80933	20	C S ROD TYPE PIPE CLAMP NB 25 IS2062GRB	2289	NO	251.79	2
7298	80933	21	C S ROD TYPE PIPE CLAMP NB 40 IS2062GRB	500	NO	65	2
7298	80933	22	C S ROD TYPE PIPE CLAMP NB 50 IS2062GRB	555	NO	127.65	2
7298	80933	23	C S ROD TYPE PIPE CLAMP NB 80 IS2062GRB	422	NO	223.66	2
7298	80933	24	CS ROD TYPE PIPE CLAMP NB 100 IS2062GRB	120	NO	148.8	2
7298	80933	25	CS ROD TYPE PIPE CLAMP NB 150 IS2062GRB	196	NO	313.6	2
7298	80933	28	CS ROD TYPE PIPE CLAMP NB 300 IS2062GRB	31	NO	89.9	2
7298	80933	29	PIPE CLAMP ROD TYP NB 350 (CS) SA105	15	NO	63	2
7298	80933	31	PIPE CLAMP ROD TYP NB 450 (CS)	20	NO	117.8	2
7298	80933	32	PIPE CLAMP ROD TYP NB 500 (CS)	10	NO	64.3	2
7298	80933	33	PIPE CLAMP ROD TYP NB 600 (CS)	5	NO	61.75	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80933	35	PIPE CLAMP ROD TYP NB 800 CS	5	NO	122.5	2
7298	80933	36	BL HEXBOLT M8X1.25X30 PCL4.6 GRC IS:1363	2651	NO	53.02	2
7298	80933	37	BOLT-M12X40 -4.6-IS1363P1	994	NO	49.7	2
7298	80933	38	NUT -M 8 -CL4-IS1363P3	17219	NO	86.1	2
7298	80933	39	NUT -M10 -CL4-IS1363P3	2442	NO	24.42	2
7298	80933	40	NUT -M12 -CL4-IS1363P3	2343	NO	46.86	2
7298	80933	41	NUT -M16 -CL4-IS1363P3	695	NO	20.85	2
7298	80933	42	NUT -M20 -CL4-IS1363P3	359	NO	25.13	2
7298	80933	43	NUT -M24 -CL4-IS1363P3	161	NO	17.71	2
7298	80933	44	NUT -M30 -CL4-IS1363-P3	22	NO	5.06	2
7298	80933	45	HEX NUT M36X3-4 IS:1363(P-3) BPS 41304	11	NO	4.36	2
7298	80933	46	TUBE CLIP SHORT NB 25 (AS) SA387 GR 22	42	NO	13.44	2
7298	80933	47	TUBE CLIP LONG NB 25 (AS) SA387 GR 22	42	NO	36.96	2
7298	80933	48	TUBE CLIP SHORT NB 40 (AS) SA387 GR 22	10	NO	4	2
7298	80933	49	TUBE CLIP LONG NB 40 (AS) SA387 GR 22	10	NO	11.2	2
7298	80933	50	TUBE CLIP SHORT NB 50 (AS) SA387 GR 22	161	NO	75.67	2
7298	80933	51	TUBE CLIP LONG NB 50 (AS)	161	NO	202.86	2
7298	80933	53	AS ROD TYPE CLAMP NB40	21	NO	3.89	2
7298	80933	54	AS ROD TYPE CLAMP NB 50	376	NO	83.85	2
7298	80933	55	STUD M12 X 1.75 X 60 SA193B16	469	NO	23.45	2
7298	80933	56	NUT -M10 -GR7	2178	NO	23.96	2
7298	80933	57	NUT -M12 -GR7	938	NO	15.95	2
7298	80933	58	PUN WASHER-M 8 -IS:2016-A	17219	NO	34.44	2
7298	80933	59	PUN WASHER-M10 -IS2016-A	4620	NO	46.2	2
7298	80933	60	PUN WASHER-M12 -IS2016-A	3281	NO	32.81	2
7298	80933	61	PUN WASHER-M16 -IS2016-A	695	NO	6.95	2
7298	80933	62	PUN WASHER-M20 -IS2016-A	359	NO	6.1	2
7298	80933	63	PUN WASHER-M24 -IS2016-A	161	NO	4.83	2
7298	80933	64	PUNCHED WASHER A 33 IS:2016/LATEST	22	NO	1.1	2
7298	80933	65	PUNCHED WASHER A 39(ID) IS:2016	11	NO	0.96	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80933	66	U-ROD CLAMP SS NB15 (M8)	2711	NO	189.77	2
7298	80933	67	U-ROD CLAMP SS NB25 (M8)	1223	NO	122.3	2
7298	80933	68	U-ROD CLAMP SS NB40 (M8)	104	NO	12.48	2
7298	80933	69	U-ROD CLAMP SS NB50(M8)	325	NO	46.15	2
7298	80933	70	U-ROD CLAMP SS NB80 (M8)	122	NO	19.76	2
7298	80933	71	U-ROD CLAMP SS NB100 (M12)	34	NO	20.06	2
7298	80933	72	U-ROD CLAMP SS NB150 (M12)	95	NO	97.85	2
7298	80933	73	HEX NUT M8 SA182F304(SS)	8970	NO	44.85	2
7298	80933	74	HEX NUT M12 SA182F304(SS)	258	NO	4.39	2
7298	80933	82	NON-ASBESTOS JOINTING SHEET 3.0MM	32	NO	819.36	2
7298	80933	83	NUT -M12 -CL4-IS1363P3	1345	NO	24.21	2
7298	80933	84	NUT -M16 -CL4-IS1363P3	815	NO	24.45	2
7298	80933	85	NUT -M20 -CL4-IS1363P3	43	NO	2.8	2
7298	80933	86	NUT -M24 -CL4-IS1363P3	245	NO	26.95	2
7298	80933	87	NUT -M30 -CL4-IS1363-P3	47	NO	10.81	2
7298	80933	88	BLACK HEX NUT M36 X 4 P CL 4 GR B STEEL	63	NO	25.07	2
7298	80933	89	BL HEX NUT M42 X 4.5 P CL 4 GR B STEEL	16	NO	9.46	2
7298	80933	90	CLEVIS WITH BOLT CWB-1	158	NO	44.24	2
7298	80933	91	CLEVIS WITH BOLT CWB-2	97	NO	53.16	2
7298	80933	92	EYE NUT EN-1	710	NO	71	2
7298	80933	93	EYE NUT EN-2	428	NO	102.72	2
7298	80933	94	EYE NUT EN-3	27	NO	11.61	2
7298	80933	95	EYE NUT EN-4	132	NO	122.76	2
7298	80933	96	EYE NUT EN-5	23	NO	34.5	2
7298	80933	97	EYE NUT EN-6	34	NO	79.22	2
7298	80933	98	EYE NUT EN-7	11	NO	40.15	2
7298	80933	99	HOR CLAMP ASSY CS OD 114.3	33	NO	91.25	2
7298	80933	100	HOR CLAMP ASSY CS OD 168.3	52	NO	322.45	2
7298	80933	101	HOR CLAMP ASSY CS OD 219.1	30	NO	174.15	2
7298	80933	102	HOR CLAMP ASSY CS OD 273	7	NO	76.31	2
7298	80933	103	HOR CLAMP ASSY CS OD 323.9	11	NO	208.24	2
7298	80933	104	HOR CLAMP ASSY CS OD 355.6	4	NO	80.92	2
7298	80933	105	HOR CLAMP ASSY CS OD 406.4	11	NO	257.3	2
7298	80933	106	HOR CLAMP ASSY CS OD 457	7	NO	212.86	2
7298	80933	107	HOR CLAMP ASSY CS OD 508	5	NO	239.74	2
7298	80933	108	HOR CLAMP ASSY CS OD 88.9	104	NO	262.6	2
7298	80933	109	RIS CLAMP CS OD114.3 L=400	15	NO	185.34	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80933	110	RIS CLAMP CS OD168.3 L=550	24	NO	437.66	2
7298	80933	111	RIS CLAMP CS OD219.1 L=650	14	NO	321.38	2
7298	80933	112	RIS CLAMP CS OD273 L=750	3	NO	129.38	2
7298	80933	113	RIS CLAMP CS OD323.9 L=900	5	NO	253.84	2
7298	80933	114	RIS CLAMP CS OD355.6 L=900	2	NO	129.6	2
7298	80933	115	RIS CLAMP CS OD406.4 L=950	5	NO	359.1	2
7298	80933	116	RIS CLAMP CS OD457 L=1000	3	NO	453.61	2
7298	80933	117	RIS CLAMP CS OD508 L=1050	3	NO	453.31	2
7298	80933	118	RIS CLAMP CS OD610 L=1200	3	NO	541.78	2
7298	80933	119	RIS CLAMP CS OD88.9L=400	48	NO	536.45	2
7298	80933	120	ROD COUPLING RC-1	22	NO	2.86	2
7298	80933	121	ROD COUPLING RC-2	14	NO	3.92	2
7298	80933	122	ROD COUPLING RC-3	2	NO	0.58	2
7298	80933	123	ROD COUPLING RC-4	23	NO	13.34	2
7298	80933	124	ROD COUPLING RC-5	7	NO	7.42	2
7298	80933	125	ROD COUPLING RC-6	7	NO	13.93	2
7298	80933	126	TIE ROD M12x250 LR	434	NO	99.82	2
7298	80933	127	TIE ROD M16x250 LR	263	NO	107.83	2
7298	80933	128	TIE ROD M20x250 LR	14	NO	7.84	2
7298	80933	129	TIE ROD M24x350 LR	66	NO	71.28	2
7298	80933	130	TIE ROD M30x350 LR	12	NO	20.88	2
7298	80933	131	TIE ROD M36x350 LR	17	NO	43.01	2
7298	80933	132	TIE ROD M42x450 LR	6	NO	27.9	2
7298	80933	133	TURN BUCKLE TB-1	434	NO	117.18	2
7298	80933	134	TURN BUCKLE TB-2	263	NO	149.91	2
7298	80933	135	TURN BUCKLE TB-3	14	NO	14.84	2
7298	80933	136	TURN BUCKLE TB-4	66	NO	132	2
7298	80933	137	TURN BUCKLE TB-5	12	NO	36	2
7298	80933	138	TURN BUCKLE TB-6	17	NO	79.9	2
7298	80933	139	TURN BUCKLE TB-7	6	NO	43.8	2
7298	80933	140	WELD ON CLEVIS WCA-1	434	NO	124.99	2
7298	80933	141	WELD ON CLEVIS WCA-2	263	NO	152.01	2
7298	80933	142	WELD ON CLEVIS WCA-3	14	NO	18.56	2
7298	80933	143	WELD ON CLEVIS WCA-4	66	NO	146.12	2
7298	80933	144	WELD ON CLEVIS WCA-5	12	NO	42.94	2
7298	80933	145	WELD ON CLEVIS WCA-6	17	NO	102.65	2
7298	80933	146	WELD ON CLEVIS WCA-7	6	NO	57.66	2
7298	80933	147	HOR CLAMP OD610(CS)	5	NO	445.49	2
7298	80933	148	HOR CLAMP OD813(CS)	5	NO	914.91	2
7298	80933	149	HOR CLAMP OD711(CS)	5	NO	533.13	2
7298	80933	150	TIE ROD M12x3000 RR	394	NO	1607.52	2
7298	80933	151	TIE ROD M16x3000 RR	240	NO	1814.4	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7298	80933	152	TIE ROD M20x3000 RR	15	NO	122.85	2
7298	80933	153	TIE ROD M24x3000 RR	63	NO	679.14	2
7298	80933	154	TIE ROD M30x3000 RR	14	NO	245.7	2
7298	80933	155	TIE ROD M36x3000 RR	17	NO	457.3	2
7298	80933	156	TIE ROD M42x3000 RR	3	NO	122.4	2
7299	80933	1	PLATE 12.0 MM	32	M2	3014.4	2
7299	80933	2	CHANNEL 150X75 (SP LTH NOT LESS THAN 5M)	375	M	6300	2
7299	80933	3	CHANNEL 200X75 (SP LTH NOT LESS THAN 5M)	90	M	2007	2
7299	80933	4	ANGLE 75X75X6(SP LTHNOT LESS THAN 5M)	2150	M	14620	2
7299	80933	5	PLATE 10MM	12	M2	942	2
7299	80933	6	AS ROD TYPE CLAMP NB 25 SA182F22 CL3	110	NO	11	2
7299	80933	7	CS ROD TYPE PIPE CLAMP NB 200 IS2062GRB	105	NO	220.5	2
7299	80933	8	CS ROD TYPE PIPE CLAMP NB 250 IS2062GRB	35	NO	87.5	2
7299	80933	9	PIPE CLAMP ROD TYP NB 400 (CS) SA105	40	NO	217.2	2
7299	80933	10	PIPE CLAMP ROD TYPE NB 700 CS	8	NO	108.96	2
7299	80933	11	C S TUBE CLIP NB 15 (SHORT) IS2062GRB	224	NO	47.04	2
7299	80933	12	C S TUBE CLIP NB 15 (LONG) IS2062GRB	224	NO	192.64	2
7299	80933	13	C S TUBE CLIP NB 25 (SHORT) IS2062GRB	981	NO	255.06	2
7299	80933	14	C S TUBE CLIP NB 25 (LONG) IS2062GRB	981	NO	843.66	2
7299	80933	15	C S TUBE CLIP NB 40 (SHORT) IS2062GRB	214	NO	77.04	2
7299	80933	16	C S TUBE CLIP NB 40 (LONG) IS2062GRB	214	NO	239.68	2
7299	80933	17	C S TUBE CLIP NB 50 (SHORT) IS2062GRB	238	NO	95.2	2
7299	80933	18	C S TUBE CLIP NB 50 (LONG) IS2062GRB	238	NO	297.5	2
7299	80933	19	C S ROD TYPE PIPE CLAMP NB 15 IS2062GRB	522	NO	41.76	2
7299	80933	20	C S ROD TYPE PIPE CLAMP NB 25 IS2062GRB	2289	NO	251.79	2
7299	80933	21	C S ROD TYPE PIPE CLAMP NB 40 IS2062GRB	500	NO	65	2
7299	80933	22	C S ROD TYPE PIPE CLAMP NB 50 IS2062GRB	555	NO	127.65	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80933	23	C S ROD TYPE PIPE CLAMP NB 80 IS2062GRB	422	NO	223.66	2
7299	80933	24	CS ROD TYPE PIPE CLAMP NB 100 IS2062GRB	120	NO	148.8	2
7299	80933	25	CS ROD TYPE PIPE CLAMP NB 150 IS2062GRB	196	NO	313.6	2
7299	80933	28	CS ROD TYPE PIPE CLAMP NB 300 IS2062GRB	31	NO	89.9	2
7299	80933	29	PIPE CLAMP ROD TYP NB 350 (CS) SA105	15	NO	63	2
7299	80933	31	PIPE CLAMP ROD TYP NB 450 (CS)	20	NO	117.8	2
7299	80933	32	PIPE CLAMP ROD TYP NB 500 (CS)	10	NO	64.3	2
7299	80933	33	PIPE CLAMP ROD TYP NB 600 (CS)	5	NO	61.75	2
7299	80933	35	PIPE CLAMP ROD TYP NB 800 CS	5	NO	122.5	2
7299	80933	36	BL HEXBOLT M8X1.25X30 PCL4.6 GRC IS:1363	2651	NO	53.02	2
7299	80933	37	BOLT-M12X40 -4.6-IS1363P1	994	NO	49.7	2
7299	80933	38	NUT -M 8 -CL4-IS1363P3	17219	NO	86.1	2
7299	80933	39	NUT -M10 -CL4-IS1363P3	2442	NO	24.42	2
7299	80933	40	NUT -M12 -CL4-IS1363P3	2343	NO	46.86	2
7299	80933	41	NUT -M16 -CL4-IS1363P3	695	NO	20.85	2
7299	80933	42	NUT -M20 -CL4-IS1363P3	359	NO	25.13	2
7299	80933	43	NUT -M24 -CL4-IS1363P3	161	NO	17.71	2
7299	80933	44	NUT -M30 -CL4-IS1363-P3	22	NO	5.06	2
7299	80933	45	HEX NUT M36X3-4 IS:1363(P-3) BPS 41304	11	NO	4.36	2
7299	80933	46	TUBE CLIP SHORT NB 25 (AS) SA387 GR 22	42	NO	13.44	2
7299	80933	47	TUBE CLIP LONG NB 25 (AS) SA387 GR 22	42	NO	36.96	2
7299	80933	48	TUBE CLIP SHORT NB 40 (AS) SA387 GR 22	10	NO	4	2
7299	80933	49	TUBE CLIP LONG NB 40 (AS) SA387 GR 22	10	NO	11.2	2
7299	80933	50	TUBE CLIP SHORT NB 50 (AS) SA387 GR 22	161	NO	75.67	2
7299	80933	51	TUBE CLIP LONG NB 50 (AS)	161	NO	202.86	2
7299	80933	53	AS ROD TYPE CLAMP NB40	21	NO	3.89	2
7299	80933	54	AS ROD TYPE CLAMP NB 50	376	NO	83.85	2
7299	80933	55	STUD M12 X 1.75 X 60 SA193B16	469	NO	23.45	2
7299	80933	56	NUT -M10 -GR7	2178	NO	23.96	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80933	57	NUT -M12 -GR7	938	NO	15.95	2
7299	80933	58	PUN WASHER-M 8 -IS:2016-A	17219	NO	34.44	2
7299	80933	59	PUN WASHER-M10 -IS2016-A	4620	NO	46.2	2
7299	80933	60	PUN WASHER-M12 -IS2016-A	3281	NO	32.81	2
7299	80933	61	PUN WASHER-M16 -IS2016-A	695	NO	6.95	2
7299	80933	62	PUN WASHER-M20 -IS2016-A	359	NO	6.1	2
7299	80933	63	PUN WASHER-M24 -IS2016-A	161	NO	4.83	2
7299	80933	64	PUNCHED WASHER A 33 IS:2016/LATEST	22	NO	1.1	2
7299	80933	65	PUNCHED WASHER A 39(ID) IS:2016	11	NO	0.96	2
7299	80933	66	U-ROD CLAMP SS NB15 (M8)	2711	NO	189.77	2
7299	80933	67	U-ROD CLAMP SS NB25 (M8)	1223	NO	122.3	2
7299	80933	68	U-ROD CLAMP SS NB40 (M8)	104	NO	12.48	2
7299	80933	69	U-ROD CLAMP SS NB50(M8)	325	NO	46.15	2
7299	80933	70	U-ROD CLAMP SS NB80 (M8)	122	NO	19.76	2
7299	80933	71	U-ROD CLAMP SS NB100 (M12)	34	NO	20.06	2
7299	80933	72	U-ROD CLAMP SS NB150 (M12)	95	NO	97.85	2
7299	80933	73	HEX NUT M8 SA182F304(SS)	8970	NO	44.85	2
7299	80933	74	HEX NUT M12 SA182F304(SS)	258	NO	4.39	2
7299	80933	82	NON-ASBESTOS JOINTING SHEET 3.0MM	32	NO	819.36	2
7299	80933	83	NUT -M12 -CL4-IS1363P3	1345	NO	24.21	2
7299	80933	84	NUT -M16 -CL4-IS1363P3	815	NO	24.45	2
7299	80933	85	NUT -M20 -CL4-IS1363P3	43	NO	2.8	2
7299	80933	86	NUT -M24 -CL4-IS1363P3	245	NO	26.95	2
7299	80933	87	NUT -M30 -CL4-IS1363-P3	47	NO	10.81	2
7299	80933	88	BLACK HEX NUT M36 X 4 P CL 4 GR B STEEL	63	NO	25.07	2
7299	80933	89	BL HEX NUT M42 X 4.5 P CL 4 GR B STEEL	16	NO	9.46	2
7299	80933	90	CLEVIS WITH BOLT CWB-1	158	NO	44.24	2
7299	80933	91	CLEVIS WITH BOLT CWB-2	97	NO	53.16	2
7299	80933	92	EYE NUT EN-1	710	NO	71	2
7299	80933	93	EYE NUT EN-2	428	NO	102.72	2
7299	80933	94	EYE NUT EN-3	27	NO	11.61	2
7299	80933	95	EYE NUT EN-4	132	NO	122.76	2
7299	80933	96	EYE NUT EN-5	23	NO	34.5	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80933	97	EYE NUT EN-6	34	NO	79.22	2
7299	80933	98	EYE NUT EN-7	11	NO	40.15	2
7299	80933	99	HOR CLAMP ASSY CS OD 114.3	33	NO	91.25	2
7299	80933	100	HOR CLAMP ASSY CS OD 168.3	52	NO	322.45	2
7299	80933	101	HOR CLAMP ASSY CS OD 219.1	30	NO	174.15	2
7299	80933	102	HOR CLAMP ASSY CS OD 273	7	NO	76.31	2
7299	80933	103	HOR CLAMP ASSY CS OD 323.9	11	NO	208.24	2
7299	80933	104	HOR CLAMP ASSY CS OD 355.6	4	NO	80.92	2
7299	80933	105	HOR CLAMP ASSY CS OD 406.4	11	NO	257.3	2
7299	80933	106	HOR CLAMP ASSY CS OD 457	7	NO	212.86	2
7299	80933	107	HOR CLAMP ASSY CS OD 508	5	NO	239.74	2
7299	80933	108	HOR CLAMP ASSY CS OD 88.9	104	NO	262.6	2
7299	80933	109	RIS CLAMP CS OD114.3 L=400	15	NO	185.34	2
7299	80933	110	RIS CLAMP CS OD168.3 L=550	24	NO	437.66	2
7299	80933	111	RIS CLAMP CS OD219.1 L=650	14	NO	321.38	2
7299	80933	112	RIS CLAMP CS OD273 L=750	3	NO	129.38	2
7299	80933	113	RIS CLAMP CS OD323.9 L=900	5	NO	253.84	2
7299	80933	114	RIS CLAMP CS OD355.6 L=900	2	NO	129.6	2
7299	80933	115	RIS CLAMP CS OD406.4 L=950	5	NO	359.1	2
7299	80933	116	RIS CLAMP CS OD457 L=1000	3	NO	453.61	2
7299	80933	117	RIS CLAMP CS OD508 L=1050	3	NO	453.31	2
7299	80933	118	RIS CLAMP CS OD610 L=1200	3	NO	541.78	2
7299	80933	119	RIS CLAMP CS OD88.9L=400	48	NO	536.45	2
7299	80933	120	ROD COUPLING RC-1	22	NO	2.86	2
7299	80933	121	ROD COUPLING RC-2	14	NO	3.92	2
7299	80933	122	ROD COUPLING RC-3	2	NO	0.58	2
7299	80933	123	ROD COUPLING RC-4	23	NO	13.34	2
7299	80933	124	ROD COUPLING RC-5	7	NO	7.42	2
7299	80933	125	ROD COUPLING RC-6	7	NO	13.93	2
7299	80933	126	TIE ROD M12x250 LR	434	NO	99.82	2
7299	80933	127	TIE ROD M16x250 LR	263	NO	107.83	2
7299	80933	128	TIE ROD M20x250 LR	14	NO	7.84	2
7299	80933	129	TIE ROD M24x350 LR	66	NO	71.28	2
7299	80933	130	TIE ROD M30x350 LR	12	NO	20.88	2
7299	80933	131	TIE ROD M36x350 LR	17	NO	43.01	2
7299	80933	132	TIE ROD M42x450 LR	6	NO	27.9	2
7299	80933	133	TURN BUCKLE TB-1	434	NO	117.18	2
7299	80933	134	TURN BUCKLE TB-2	263	NO	149.91	2
7299	80933	135	TURN BUCKLE TB-3	14	NO	14.84	2
7299	80933	136	TURN BUCKLE TB-4	66	NO	132	2
7299	80933	137	TURN BUCKLE TB-5	12	NO	36	2
7299	80933	138	TURN BUCKLE TB-6	17	NO	79.9	2

CUST	PGMA	DU	DESCRIPTION	Design Quantity	UOM	Design Weight (KG)	Rate Schedule
7299	80933	139	TURN BUCKLE TB-7	6	NO	43.8	2
7299	80933	140	WELD ON CLEVIS WCA-1	434	NO	124.99	2
7299	80933	141	WELD ON CLEVIS WCA-2	263	NO	152.01	2
7299	80933	142	WELD ON CLEVIS WCA-3	14	NO	18.56	2
7299	80933	143	WELD ON CLEVIS WCA-4	66	NO	146.12	2
7299	80933	144	WELD ON CLEVIS WCA-5	12	NO	42.94	2
7299	80933	145	WELD ON CLEVIS WCA-6	17	NO	102.65	2
7299	80933	146	WELD ON CLEVIS WCA-7	6	NO	57.66	2
7299	80933	147	HOR CLAMP OD610(CS)	5	NO	445.49	2
7299	80933	148	HOR CLAMP OD813(CS)	5	NO	914.91	2
7299	80933	149	HOR CLAMP OD711(CS)	5	NO	533.13	2
7299	80933	150	TIE ROD M12x3000 RR	394	NO	1607.52	2
7299	80933	151	TIE ROD M16x3000 RR	240	NO	1814.4	2
7299	80933	152	TIE ROD M20x3000 RR	15	NO	122.85	2
7299	80933	153	TIE ROD M24x3000 RR	63	NO	679.14	2
7299	80933	154	TIE ROD M30x3000 RR	14	NO	245.7	2
7299	80933	155	TIE ROD M36x3000 RR	17	NO	457.3	2
7299	80933	156	TIE ROD M42x3000 RR	3	NO	122.4	2
7295	81110	1	COOLING WATER PUMP WITH MOTOR	2	NO	380	2
7296	81110	1	COOLING WATER PUMP WITH MOTOR	2	NO	380	2
7297	81110	1	COOLING WATER PUMP WITH MOTOR	2	NO	380	2
7298	81110	1	COOLING WATER PUMP WITH MOTOR	2	NO	380	2
7299	81110	1	COOLING WATER PUMP WITH MOTOR	2	NO	380	2

Note to Weight Schedule:	
1	The weights mentioned above are approximate and liable to vary as per design consideration. There will be change in PG, weight, description etc. However, payments will be made to the contractor for the tonnage actually erected at the respective category as per the quoted / accepted rate. Quantity Variation will be dealt as per clause 2.14 of General Conditions of Contract (Volume I Book II).
2	There may be variation or addition of PGMAs, description, weights etc., and any additional scope of work supplied under the above package shall be erected by the contractor and payment will be made as per the quoted/accepted rate in the respective category.

VOLUME-IA PART-I CHAPTER -X GENERAL

The scope of the work will comprise of but not limited to the following:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.10.1 Contractors are requested to furnish the following at PSSR-HQ, Chennai immediately after release of Letter of Intent (LOI)

i) Security Deposit and additional Security Deposit.
ii) Unqualified Acceptance for Detailed LOI/ Work Order.
iii) Rs.100/- Stamp Paper for preparation of Contract Agreement.

1.10.2 Contractors are requested to furnish the proof of documents for the following at PSSR- Site

i) Provident Fund Registration No.
ii) Labour License No.
iii) Workmen Insurance Policy No.

1.10.3 In addition to the clause 2.8 of General Conditions of Contract (Volume-1C of Book-II) the contractor shall comply with the following.

1.10.3.1 BOCW Act & BOCW Welfare Cess Act

1.10.3.1.1 The Contractor should Register their Establishment under BOCW Act 1996 read with rules 1998 by submitting Form I (Application for Registration of Establishment) and Form IV (Notice Of Commencement / Completion of Building other Construction Work) to the respective Labour Authorities i.e.,

a) Assistant Labour Commissioner (Central) in respect of the project premises which is under the purview of Central Govt.–NTPC, NTPL etc.

b) Appropriate State Authorities in respect of the project premises which is under the purview of State Govt.

1.10.3.1.2 The Contractor should comply with the provisions of BOCW Welfare Cess Act 1996 in respect of the work awarded to them by BHEL.

1.10.3.1.3 The contractor should ensure compliance regarding Registration of Building Workers as Beneficiaries, Hours of work, welfare measures and other conditions of service with particular reference to Safety and Health measures like Safety Officers, safety committee, issue of Personal protective

equipments, canteen, rest room, drinking water, Toilets, ambulance, first aid centre etc.

1.10.3.1.4 The contractor irrespective of their nature of work and manpower (Civil, Mechanical, Electrical works etc) should register their establishment under BOCW Act 1996 and comply with BOCW Welfare Cess Act 1996.

1.10.3.1.5 Contractor shall make remittance of the BOCW cess as per the Act in consultation with BHEL as per the rates in force (presently 1%). BHEL shall reimburse the same upon production of documentary evidence. However, BHEL shall not reimburse the fee paid towards the registration of establishment, fees paid towards registration of Beneficiaries and contribution of Beneficiaries remitted.

1.10.3.1.6 Non-compliance to Provisions of the BOCW Act & BOCW Welfare Cess Act is not acceptable. In case of any non-compliance, BHEL reserves the right to withhold any sum as it deems fit. Only upon total compliance to the BOCW Act and also discharge of total payment of Cess under the BOCW Cess Act by the Contractor, BHEL shall consider refund of the Amounts.

1.10.3.2 PROVIDENT FUND

1.10.3.2.1 The contractor is required to extent the benefit of Provident Fund to the labour employed by you in connection with this contract as per the Employees Provident Fund and Miscellaneous Provisions Act 1952. For due implementation of the same, you are hereby required to get yourself registered with the Provident Fund authorities for the purpose of reconciliation of PF dues and furnish to us the code number allotted to you by the Provident Fund authorities within one month from the date of issue of this letter of intent. In case you are exempted from such remittance an attested copy of authority for such exemption is to be furnished. Please note that in the event of your failure to comply with the provisions of said Act, if recoveries therefore are enforced from payments due to us by the customer or paid to statutory authorities by us, such amount will be recovered from payments due to you.

1.10.3.2.2 The final bill amount would be released only on production of clearance certificate from PF/ESI and labour authorities as applicable.

1.10.3.3 OTHER STATUTORY REQUIREMENTS

1.10.3.3.1 The Contractor shall submit a copy of Labour License obtained from the Licensing Officer (Form VI) u/r 25 read with u/s 12 of Contract Labour (R&A) Act 1970 & rules and Valid WC Insurance copy or ESI Code (if applicable) and PF code no. along with the first running bill.

1.10.3.3.2 The contactor shall submit monthly running bills along with the copies of monthly wages (of the preceding month) u/r78(1)(a)(1) of Contract Labour

Rules, copies of monthly return of PF contribution with remittance Challans under Employees Provident Fund Act 1952 and copy of renewed WC Insurance policy or copies of monthly return of ESI contribution with Challans under ESI Act 1948 (if applicable) in respect of the workmen engaged by them.

1.10.3.3.3 The Contractor should ensure compliance of Sec 21 of Contract Labour (R&A) Act 1970 regarding responsibility for payment of Wages. In case of "Non-compliance of Sec 21 or non-payment of wages" to the workmen before the expiry of wage period by the contactor, BHEL will reserve its right to pay the workmen under the orders of Appropriate authority at the risk and cost of the Contractor.

1.10.3.3.4 The Contractor shall submit copies of Final Settlement statement of disbursal of retrenchment benefits on retrenchment of each workmen under I D Act 1948, copies of Form 6-A (Annual Return of PF Contribution) along with copies of PF Contribution Card of each member under PF Act and copies of monthly return on ESI Contribution – Form 6 under ESI Act 1948 (if applicable) to BHEL along with the Final Bill.

1.10.3.3.5 In case of any dispute pending before the appropriate authority under ID act 1948, WC Act 1923 or ESI Act 1948 and PF Act 1952, BHEL reserve the right to hold such amounts from the final bills of the Contractor which will be released on submission of proof of settlement of issues from the appropriate authority under the act.

1.10.3.3.6 In case of any dispute prolonged / pending before the authority for the reasons not attributable to the contractor, BHEL reserves the right to release the final bill of the contractor on submission of Indemnity bond by the contractor indemnifying BHEL against any claims that may arise at a later date without prejudice to the rights of BHEL.

1.10.3.4 DEPLOYMENT OF SKILLED / SEMI-SKILLED TRADESMEN

The following clause is applicable in case the contract value / contract price is Rs. Five crores and above.

The contractor shall, at all stages of work deploy skilled / semi-skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute / Industrial Training Institute / National Institute of Construction Management and Research (NICMAR), National Academy of Construction, CIDC or any similar reputed and recognized Institute managed / certified by State / Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled / semi-skilled workers required in each trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized

Institute to Engineer-in-Charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer-in-Charge. Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs. 100 per such tradesman per day. Decision of Engineer-in-Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding.

1.10.3.5 RECOVERY OF COMPENSATION PAID TO VICTIMS BY BHEL IN CASES OF DEATH/ PERMANENT INCAPACITATION OF PERSON DUE TO AN ACCIDENT DURING THE WORKS

BHEL shall recover the amount of compensation paid to victim(s) by BHEL towards loss of life / permanent disability due to an accident which is attributable to the negligence of contractor, agency or firm or any of its employees as detailed below.

a) Victim: Any person who suffers permanent disablement or dies in an accident as defined below.

b) Accident: Any death or permanent disability resulting solely and directly from any unintended and unforeseen injurious occurrence caused during the manufacturing / operation and works incidental thereto at BHEL factories/ offices and precincts thereof, project execution, erection and commissioning, services, repairs and maintenance, trouble shooting, serving, overhaul, renovation and retrofitting, trial operation, performance guarantee testing undertaken by the company or during any works /during working at BHEL Units/ Offices/ townships and premises/ Project Sites.

c) Compensation in respect of each of the victims:

In the event of death or permanent disability resulting from Loss of both limbs: Rs. 10,00,000/- (Rs. Ten Lakh)

In the event of other permanent disability: Rs. 7,00,000/- (Rs. Seven Lakh)

d) Permanent Disablement: A disablement that is classified as a permanent total disablement under the proviso to Section 2 (I) of the Employee's Compensation Act, 1923."

1.10.4 GENERAL

1.10.4.1 Site Visit by the Bidder

The bidder prior to submitting his tender for the work, shall visit, examine and

acquire full knowledge & information of necessary conditions prevailing at the site and its surroundings of the plant premises together with all statutory, obligatory, mandatory requirements of various authorities about the site of works at his own expense, and obtain and ascertain for himself on his own responsibility that may be for preparing his tender and entering into a contract, and take the same into account in the quoted contract price for the work.

1.10.4.2 The bidder shall satisfy themselves about the following factors:

i) Site conditions including access to the site, existing and required roads and other means of transport/communication for use by him in connection with the work including diverting and re-routing of services.

ii) Requirement and availability of land and other facilities of his enabling works, establishment of his nursery, office, stores etc.

iii) Ground conditions including those bearing upon transportation, disposal, handling and storage of materials required for the work or obtained there-from.

iv) Source and extent of availability of suitable materials, including water etc., and labour (skilled and unskilled) required for work, and laws and regulations governing their use and employment.

v) Geological, meteorological, topographical and other general features of the site and its surroundings as are pertaining to and needed for the performance of the work.

vi) The limit and extent of surface and subsurface water to be encountered during the performance of the work, and the requirement of drainage and pumping.

vii) The type of equipment and facilities needed, for and in the performance of the work;

viii) The extent of lead and lift required for the work in complete form over the entire duration of the contract, and

ix) All other information pertaining to and needed for the work including information as to the risks, contingencies and other circumstances which may influence or affect the work or the cost thereof under this contract.

1.10.4.3 The bidder should note that information, if any, in regard to the local conditions, as contained in these tender documents, has been given to tenderer merely for guidance and is not warranted to be complete.

1.10.4.4 A bidder shall be deemed to have full knowledge of the site, whether he inspects it or not, and no extra charges consequent on any misunderstanding or otherwise shall be allowed.

1.10.4.5 The bidder and any of his personnel or agents will be granted permission by the Site-In-Charge or his authorized nominee, on receipt of formal application in respect thereof a week in advance of the proposed date of inspection of site, to enter upon his premises and lands for purpose of such inspection, but only on the express condition that the tenderer (and his personnel and agents) will relieve and indemnify the Employer (and his personnel and agents) from and against all liability in respect thereof and will be responsible for personal injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, costs and expenses however caused which, but for the exercise of such permission, would not have arisen.

1.10.4.6 Scope of work covered under this specification requires quality workmanship, engineering and green belt management along with the supply of all consumables, tools and tackles and testing instruments. The contractor shall ensure timely completion of work. The contractor shall have adequate tools, measuring instruments etc. in his possession. He shall also have adequate trained, qualified and experienced engineers, supervisory staff and skilled personnel. The manpower deployment identified by contractor shall match with above scope of works.

1.10.4.7 It is not the intent to specify herein all details of all material. Any item related this work not covered by this but necessary to complete the system will be deemed to have been included in the scope of the work.

1.10.4.8 All the necessary certificates and licenses required to carry out this scope of work are to be arranged by the contractor then and there at no extra cost.

1.10.4.9 Site testing wherever required shall be carried out for all items / materials installed by the contractor to ensure proper installation and functioning in accordance with drawings, specifications and manufacturer's recommendations.

1.10.4.10 The contractor shall carryout additional tests, if any, which the Engineer feels necessary because of site conditions and also to meet system specification.

1.10.4.11 The work shall be executed under the usual conditions without affecting power plant construction / operation and in conjunction with other operations and contracting agencies at site. The contractor and his personnel shall co-operate with the personnel of other agencies, co-ordinate his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

1.10.4.12 All the work shall be carried out as per instructions of BHEL engineer. BHEL engineer's decision regarding the correctness of the work and method of working shall be final and binding on the contractor.

1.10.4.13 Wherever Construction sequences are furnished by BHEL, the contractor shall follow the same sequence.

1.10.4.14 Contractor shall execute the supply and works as per sequence prescribed by BHEL at site engineer. No claims for extra payment from the contractor will be entertained on the grounds of deviation from the methods of execution of similar job in any other site or for any reasons whatsoever.

1.10.4.15 If required by BHEL, the contractor shall change the sequence of his operation so that work on priority sectors can be completed within the projects schedule. The contractor shall afford maximum assistance to BHEL in this connection without causing delay to agreed completion date.

1.10.4.16 Contractor shall, transport all materials to site and unload at site / working area for inspection and checking. All material handling equipment required shall be arranged by the contractor.

1.10.4.17 Contractor shall retain all T&P / Testing instrument / Material handling equipment's etc. at site as per advice of BHEL engineer and same shall be taken out from site only after getting the clearances from engineer in charge.

1.10.4.18 The contractor at his cost shall arrange necessary security measures for adequate protection of his machinery, equipment, tools, materials etc. BHEL shall not be responsible for any loss or damage to the contractor's construction equipment and materials. The contractor may consult the Engineer-in-Charge on the arrangements made for general site security for protection of his machinery equipment tools etc.

1.10.4.19 The Contractor may have to execute work in such a place and condition where other agencies also will be under such circumstances. However, completion time for construction, agreed will be subject to the condition that contractor's work is not hampered by the agencies.

1.10.4.20 Contractor has to work in close co-ordination with other agency at site. BHEL engineer will co-ordinate area clearance. In a project of such magnitude, it is possible that the area clearance may be less / more at a particular given time. Activities and Construction program have to be planned in such a way that the milestones are achieved as per schedule/ plans. Contractor shall arrange & augment the resources accordingly.

1.10.4.21 The contractor must obtain the signature and permission of the security personnel of the customer / BHEL for bringing any of their materials inside the site premises. Without the Entry Gate Pass these materials will not be allowed to be taken outside.

1.10.4.22 Contractor shall remove all scrap materials periodically generated from his working area and collect the same at one place earmarked for the same. Load of scraps is to be shifted to a place earmarked by BHEL. Failure to collect the scrap is likely to lead to accidents and as such BHEL reserves the right to collect and remove the scrap at contractor's risk and cost if there is any failure on the part of contractor in this respect.

1.10.4.23 The contractor shall ensure that his premises are always kept clean and tidy to the extent possible. Any untidiness noted on the part of the contractor shall be brought to the attention of the contractor's site representative who shall take immediate action to clean the surroundings to the satisfaction of the Engineer-in-Charge.

1.10.4.24 The contractor is strictly prohibited from using BHEL's regular components like angles, channels, beams, plates, pipe / tubes, and handrails etc. for any temporary supporting or scaffolding works. Contractor shall arrange himself all such materials. In case of such misuse of BHEL materials, a sum as determined by BHEL engineer will be recovered from the contractor's bill. The decision of BHEL engineer is final and binding on the contractor.

1.10.4.25 No member of the already erected structure / buildings, other component and auxiliaries should be removed / modified without specific approval of BHEL engineer.

1.10.4.26 Contractors shall ensure that all their Staff / Employees are exposed to periodical training programme conducted by qualified agencies/ personnel on latest ISO 9001 Standards.

1.10.4.27 Some time it may be required to re-schedule the activities to enable other agencies to commence / continue the work so as to keep the overall project schedule.

1.10.4.28 The terminal points decided by BHEL are final and binding on the contractor for deciding the scope of work and effecting the payment for the work done up to the terminals.

1.10.4.29 Crane operators deployed by the contractor shall be tested by BHEL before he is allowed to operate the cranes.

1.10.4.30 On Completion of work, all the temporary buildings, structures, pipe lines, cable etc. shall be dismantled and leveled and debris shall be removed as per instruction of BHEL by the contractor at his cost. In the event of his failure to do so, the expenditure towards clearance of the same will be recovered from the contractor. The decision of BHEL Engineer in this regard is final.

1.10.4.31 It is the responsibility of the contractor to do the checking, testing etc. if necessary, repeatedly to satisfy BHEL Engineer with all the necessary tools and tackles, manpower etc. without any extra cost. The testing will be completed only when jointly certified so, by the BHEL Engineer.

1.10.4.32 If any item not covered but requires being executed, same shall be carried out by the contractor. Equivalent or proportional unit rate shall be considered wherever possible from the BOQ. The rates quoted by the contractor shall be uniform as far as possible for similar items appearing in rate schedule.

1.10.4.33 The contractor's work shall not hinder other work, either underground or over ground, such as electrical, phone lines, water or sewage lines, etc. In areas of overlap, the contractor shall work in coordination with other related contractors. Any damage by the landscape contractor's team to such utilities will be penalized and contractor shall be responsible for cost for such damages.

1.10.4.34 The contractor will be responsible for the safe custody and proper accounting of all materials in connection with the work. If the contractor has drawn materials in excess of design requirements, recoveries will be effected for such excess drawls at the rate prescribed by manufacturing units.

1.10.4.35 Contractor has to clear the front, expeditiously and promptly as instructed by BHEL Engineer for other agencies, like Boiler, piping, Turbine, Generator erection, Cabling, instrumentation, insulation etc., to commence their work from / on the equipments coming under this scope.

1.10.4.36 For the purpose of planning, contractor shall furnish the estimated requirement of power (month wise) for execution of work in terms of maximum KW demand.

1.10.5 SITE INSPECTION

1.10.5.1 BHEL or his authorized agents may inspect various stages of work during the currency of the contract awarded to him. The contractor shall make necessary arrangements for such inspection and carry out the rectification pointed out by the owner / employer without any extra cost to the owner / employer. No cost whatsoever such duplication of inspection of work be entertained.

1.10.5.2 BHEL / Customer will have full power and authority to inspect the works at any time, either on the site or at the contractor's premises. The contractor shall arrange every facility and assistance to carry out such inspection. On no account will the contractor be allowed to proceed with work of any type unless such work has been inspected and entries are made in the site inspection register by customer / BHEL.

1.10.5.3 The contractor shall maintain at site a joint protocol for recording actual measurement of work carried out at site, inspection and witnessing of various tests conducted by the contractor.

1.10.5.4 Field Quality Assurance (FQA) Formats: -

It is the responsibility of the contractor to collect and fill up the relevant FQA log sheets of BHEL and present the same to BHEL after carrying out the necessary checks as per the log sheets and obtaining the signature of BHEL and Owner as token of their acceptance. Payment to the contractor will be inked with the submission of these FQA log sheets.

1.10.5.5 Site testing wherever required shall be carried out for all items / materials installed by the contractor to ensure proper installation and functioning in accordance with drawings, specifications and manufacturer's recommendations

1.10.5.6 Contractor shall, transport all materials to site and unload at site / working area for inspection and checking. All material handling equipment required shall be arranged by the contractor.

1.10.6 AS BUILT DRAWINGS:

1.10.6.1 Contractor shall be supplied with two extra copies of the layout & isometrics drawings. Contractor to incorporate in one of the copy with Red ink all the changes / deviations / alterations etc carried out at site due to various reasons, with site engineer's endorsement. Marked up drawings shall be submitted to BHEL for approval.

1.10.6.2 After successful completion, testing and commissioning of installation work, Purchaser's drawings / documents shall be updated in line with the actual work carried out and as built drawings / documents shall be submitted by the contractor as agreed for the project.

1.10.7 DOCUMENTATION

1.10.7.1 Record of Quantity of FREE / Chargeable items issued by BHEL must be maintained during contract execution. Also reconciliation statement to be prepared at regular intervals.

1.10.7.2 The under mentioned Records/ Log-books/ Registers applicable to be maintained.

a) Hindrance Register.

b) Site Order Book.

c) Test Check of measurements.

d) Steel & Cement Supply and Consumption Daily Register

e) Records of Test reports of Field tests.

f) Records of manufacture's test certificates.

g) Records of disposal of scraps generated during and after the work completion.

h) List of T&Ps and MMEs

1.10.7.3 Other documents / records as specified in chapter -Progress of work in PART-I of Technical conditions of Contract Volume IA (Volume I Book I).

1.10.7.4 Schedule as specified in chapters of Technical conditions of Contract Volume IA (Volume I Book I).

VOLUME-IA PART-I CHAPTER - XI
PROGRESS OF WORK

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.11.1 Refer forms F -14 to F-18 of volume I D (Forms & Procedure) of volume -I Book-II. Plan and review will be done as per the formats. Please note that Form F-14 and F-15 are revised and published in this booklet (Volume IA Part-II)

1.11.2 Contractor is required to draw mutually agreed monthly erection programs in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed program and shall also timely arrange additional resources considered necessary at no extra cost to BHEL.

1.11.3 Progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled program shall be discussed for actions to be taken for achieving targets. Contractor shall also present the program for subsequent week. The contractor shall constantly update / revise his work program to meet the overall requirement. All quality problems shall also be discussed during above review meetings. Necessary preventive and corrective action shall be discussed and decided upon in such review meetings and shall be implemented by the contractor in time bound manner so as to eliminate the cause of nonconformities.

1.11.4 Tenderers have to furnish a list of Tools and Plants including cranes, Tractor / Trailers etc., which they propose to deploy for this work.

1.11.5 The progress reports shall indicate the progress achieved against plan, indicating reasons for delays, if any. The report shall also give remedial actions which the contractor intends to make good the slippage or lost time so that further works can proceed as per the original plan the slippages do not accumulate and affect the overall programme.

1.11.6 The contractor shall submit daily, weekly and monthly progress reports, manpower reports, materials reports, consumables (gases / electrodes) report, cranes availability report and other reports as per Performa considered necessary by the Engineer. The periodicity of the reports will be decided by BHEL Engineer at site.

1.11.7 The monthly report as a booklet shall be submitted at the end of every month and shall contain the following details: -

a. Progress photographs in color.

b. Erection progress in terms of tonnage, welding joints, radiography, stress relieving, etc., completed as relevant to the respective work areas against planned.

c. Site Organization chart of engineers & supervisors as on the last day of the month with further mobilization plan

d. Category- wise man hours engaged during the previous month under the categories of fitters, welders, riggers, khalasis, grinder-men, gas-cutters, electricians, crane operations and helpers. Data shall be split up under the work areas like Piping, Insulation etc.

e. Consumables report giving consumption of all types of gases and electrodes during the previous month.

f. Availability report of cranes

g. Safety implementation report in the format

h. Pending material and any other inputs required from BHEL for activities planned during the subsequent month.

1.11.8 The manpower reports shall clearly indicate the manpower deployed, category wise specifying also the activities in which they are engaged.

1.11.9 The contractor shall submit weekly / fortnightly / monthly statement report regarding consumption of all consumables for cost analysis purposes.

1.11.10 During the course of erection, if the progress is found unsatisfactory, or if the target dates fixed from time to time for every milestone are to be advanced, or in the opinion of BHEL, if it is found that the skilled workmen like fitters, operators, technicians employed are not sufficient BHEL will induct required additional workmen to improve the progress and recover all charges incurred on this account including all expenses together with BHEL overheads from contractor's bills.

VOLUME-IA PART-I CHAPTER -XII FOUNDATIONS, GROUTING AND CIVIL WORKS

The scope of the work will comprise of but not limited to the following:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.12.1. Foundation for the equipments to be erected shall be provided by BHEL / clients of BHEL. The dimensions of the foundations and anchor bolt pits shall be checked by the contractor for their correctness as per drawings. Further, top elevation of foundations shall be checked with respect to bench mark etc. All adjustments of foundations surfaces, enlarging the pockets in foundations etc. as may be required for the erection of equipments / plants shall be carried out by the contractor.

1.12.2. Cleaning of foundation surfaces, pocket holes and anchor bolt pits etc., dewatering, making them free of oil, grease, sand and other foreign materials by soda wash, water wash, compressed air or any other approved methods etc., form / shuttering work are within the scope this work.

1.12.3. It shall be contractor's responsibility to check the various equipment foundations for their correctness with respect to level, orientation, dimensions etc., and ascertained dimensions shall be measured and submitted to BHEL for approval before erection. Also minor chipping, dressing of foundations up to 30 mm for obtaining proper face for packer plates / shims, and may be required for the erection of the equipment / plants will have to be carried out by the contractor without extra cost

1.12.4. The surface of foundations shall be dressed to bring the surface of the foundations to the required level and smoothness prior to placement of equipments / equipments based on the foundations including shear lug provisions / openings.

1.12.5. Foundation pockets are to be cleaned thoroughly before placing the supports / columns / equipments. Verticality of foundation bolts to be checked along with correctness of the threads and freeness of the nuts movement. If required cleaning of the threads to be done with proper dies.

1.12.6. The concrete foundation, surfaces shall be properly prepared by chipping, as required to bring the top of such foundation to the required level to provide the necessary roughness for bondage and to ensure enough bearing strength.

Allaitance and surface film shall be removed and cleaned and the packers placed with suitable mortar prior to erection of the equipment.

1.12.7. Non shrink cementitious flowable grout shall be used for grouting of pockets and under pinning work below base plate of columns. Nominal thickness of grout shall be 50 mm. Non shrink cum plasticizer admixture shall be added in the grout. Crushing strength of the grout shall be generally be one grade higher than that of the base concrete. Minimum grade of grout shall be M30.

1.12.8. However, for Equipment Foundations, high strength (Minimum Characteristic Compressive Strength of 60 N/mm2 at 28 days) ready mixed non-shrink, Chloride free, Cement based, free flowing, non-metallic grout as recommended by Equipment manufacturer shall be used. The ready mix grout shall be of reputed make as approved by the customer. Total grouting of the columns/equipments including pocket grouting, grouting at the gap between foundation and base plates top surface of column / equipments is in the scope of the contractor. The quoted rate shall inclusive of the same.

1.12.9. The contractor shall arrange for grouting of foundation bolt holes of equipment and final grouting of equipment as per the drawings / specification as advised by the Engineer or BHEL after preparing the foundation surface for grouting. The contractor has to arrange, a representative from the supplier of special cement for witnessing the grouting and other works at their cost including any miscellaneous expenditure for this activity. BHEL will not pay any service and incidental charges for arranging the supplier representative. The contractor to take note of this aspect and quote accordingly.

1.12.10. All equipment bases and structural steel bases and foundations pockets shall be grouted and finished as per the specifications after surface preparation unless otherwise recommended by the equipment manufacturers. The surface preparation includes soda washing of the foundations to remove oil, grease etc. to ensure proper grouting.

1.12.11. The certificates of the grout is to be submitted BHEL. If necessary, test cubes are to be made and tested at site to ensure the quality of the grout as per relevant IS standards. In case grouting with Portland cement is approved, necessary cement, sand etc. to be arranged by the contractor including the fine aggregates.

1.12.12. All the materials required for grouting including special cements as approved by BHEL and other materials like Portland cement, sand, chips, gravel, etc., are to be arranged by the contractor at his cost. It shall be the responsibility of thecontractor to obtain prior approval of BHEL, regarding suppliers, type of

grouting cements before procurement of grouting cements.

1.12.13. Certain packer plates and shims over and above the quantity received as part of supplies from manufacturing units of BHEL will have to be cut out from steel plates / sheets at site by the contractor to meet site requirement. However, machining of the packers, wherever necessary, will be arranged by BHEL at free of cost.

1.12.14. Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with non-shrink cementitious flowable grout as per specification using non-shrink cum plasticizer admixture. Crushing Strength of the grout shall be one grade higher than that of the base concrete (however grade of grout shall be minimum M30 to max M35 grade).

1.12.15. The contractor at his cost shall arrange for grouting of anchor points of T & P issued to him and also grouting of winches or any other supports required for T & Ps. Necessary grout materials are to be arranged by the contractor at his cost.

1.12.16. Total grouting of the columns/equipments including pocket grouting, grouting at the gap between foundation and base plates top surface of column/equipments is in the scope of the contractor. All the grouting Piping should be carried out by non-shrink cement like Conbextra GP I / Conbextra GP II of 'FOSROC' make / Shrinkkomp or its equivalent etc. This special non-shrink cement shall be arranged by the contractor at his cost. Premixed grout of above mentioned non-shrink cement of crushing strength 650 kg/sq cm for major equipment foundation and 450 kg/sq cm for other foundation where concrete grade M30 or higher is provided. The quoted rate shall be inclusive of the same.

1.12.17. **PROCEDURE FOR GROUTING:**

Contractor has to carry out the grouting as per the work instructions for grouting available at site or the grouting is to be carried out as per the supplier's recommendation/ IS standard. Copy of those recommendations is to be submitted to BHEL for records.

VOLUME-IA PART-I CHAPTER -XIII

MATERIAL HANDLING, TRANSPORTATION AND SITE STORAGE

The scope of the work will comprise of but not limited to the following:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.13.1. While BHEL will endeavour to store / stack / identify materials properly in their open / closed storage yard / shed it shall be contractor's responsibility to assist BHEL in identifying materials well in time for erection, taking delivery of the samein time following the procedure indicated by BHEL and transport the material safely to pre-assembly yard / erection site in time according to program.

1.13.2. The contractor shall identify necessary supervisor / labour for the above work in sufficient quantity as may be needed by BHEL for areas covering their scope.

1.13.3. It shall be contractor's responsibility to arrange necessary tractors, trailer or trucks / slings / tools and tackles / labour including operators Fuel lubricants etc., for loading from storage yard and on to transport equipment, move it to erection site/pre-assembly yard and unload the same at pre-assembly yard/ erection site and the quoted rate shall include the same.

1.13.4. Any loss / damage to materials issued to contractor shall be made good by him or BHEL will arrange for replacement at cost recovery basis and decision of BHEL shall be final.

1.13.5. All welding filler wires / electrodes is issued to contractor shall be preserved by him carefully to prevent deterioration of their properties. Special care shall be taken to preserve alloy steel and other special electrodes / filler wires. Contractors shall exercise maximum care in using these electrodes, filler wires to minimize wastage by maintaining a record of all usages.

1.13.6. All pipe and tube ends shall be covered with plastic caps or will be closed with wooden plugs as the case may be.

1.13.7. All the surplus damaged, unused materials, package materials / containers / special transporting frames, gunny bags etc. supplied by BHEL shall be returned to the BHEL Stores by the contractor and maintain records.

1.13.8. The Contractor shall take delivery of the components and equipments and special consumables from the storage area after getting the approval of the BHEL Engineer on standard indent forms to be specified by BHEL. At periodic intervals

of work, complete and detailed account of the equipment so erected and electrodes used shall be submitted to the BHEL Engineer.

1.13.9. The Contractor shall have total responsibility for all equipment and materials in his custody, stores, loose, semi-assembled, assembled or erected by him at site.

1.13.10. The contractor shall make suitable security arrangement including employment of security personnel to ensure the protection of all materials / equipments and works from theft, fire, pilferage and any other damage and loss.

1.13.11. The contractor shall ensure that the packing materials and protection devices used for the various equipments during transit and storage are removed before these equipments are installed.

1.13.12. All equipments shall be handled very carefully to prevent any damage or loss. No bare wire ropes, slings etc. shall be used for unloading and / or handling of the equipments without the specific written permission of the Engineer. The equipments from the storage yard shall be moved to the actual site of erection / location at the appropriate time as per the direction of BHEL Engineer so as to avoid damage for such equipments at site.

1.13.13. The contractor shall take all reasonable care to protect the materials and work till such time the erected equipment has been taken over by BHEL/their client. Wherever necessary suitable temporary fencing and lighting shall have to be provided by the contractor as a safety measure against accident and damage of property of BHEL. Suitable caution notices shall be displayed where access to any part may be deemed to be unsafe and hazardous.

1.13.14. The contractor shall take delivery of equipment from BHEL / Customer stores and storage yard. He shall also make arrangements for verification of equipment, scrupulously maintain records and keep safe custody watch and ward of equipment after it has been handed over to him till these are fully erected, tested and commissioned and taken over by BHEL's client. The stolen / lost / damaged goods shall have to be made good by the contractor at his own cost.

1.13.15. Loading at BHEL / Customer stores and storage yard, transport to site, unloading at site / pre-assembly area / working area of equipment, placement on respective foundation / location, fabrication yard, pre-assembly bay or at working area are in the scope of work. The scope includes taking materials / Equipments from customer stores / storage yard also. Contractors Quoted / Accepted rate shall be inclusive of the same. Required cranes, tractors, trailer or trucks/ slings/ tools and tackles / labour including operators, fuel, lubricants etc. for loading & unloading of

materials will be in the scope of contractor.

1.13.16. The contractor shall provide any fixtures, concrete blocks & wooden sleepers, sandbags which are required for temporary supporting of the components at their stores at site.

1.13.17. Sometimes it may become necessary for the contractor to handle certain unrequired components in order to take out the required materials. The contractor has to take this contingency also into account. No extra payment is payable for such contingencies.

1.13.18. Materials shall be stacked neatly, preserved and stored in the contractor's shed/ work area in an orderly manner. In case it is necessary to shift and re-stack the materials kept at work area / site to enable other agencies to carry out their work, same shall be done by the contractor at no extra cost.

1.13.19. The contractor shall take necessary measures to see that all the machined surfaces are preserved and covered.

1.13.20. Contractor has to arrange required fire retardant covering materials (tarpaulins) to protect the machined components / assembled parts drawn from BHEL before and after erection at their cost.

1.13.21. Any fittings such as thermos-well plugs, radiography plugs which has been assembled and despatched as a single Despatchable Unit (DU) shall be checked before drawing materials from BHEL Stores. If any such attachments / fittings is found missing the same shall be intimated to concern BHEL Officials and recorded before drawing materials. It shall be the contractor responsibility to safeguard such attachments / fittings. If lost at contractor custody, the same shall be arranged by the contractor else BHEL shall arrange at the cost of contractor.

1.13.22. Contractor shall plan and transport equipments, components from storage yard to erection site in such a manner and sequence that material accumulation at site does not lead to congestion at site of work.

1.13.23. It is the responsibility of the contractor to ensure that the insulation and refractory materials and sheet metal covering issued to him for application are well protected against loss or damage or weather conditions tending to affect its quality by the provision of close / semi closed sheds at his cost. If any damage occurs to the materials due to improper storage or due to any causes attributable to the contractor except for normal breakage or damaged material shall be to the cost of the contractor.

1.13.24. Sometimes it may become necessary for the contractor to handle certain

unrequired components in order to take out required materials. The contractor has to take this contingency into account. No extra payment is payable for such contingencies.

1.13.25. Chemicals required pre-commissioning, commissioning & operation of the PT - DM system has to be drawn from BHEL Stores/Bulk storage facility and handling, transport, filling & refilling has to be carried out by contractor within the quoted rates only.

VOLUME-IA PART-I CHAPTER- XIV ERECTION

The scope of the work will comprise of but not limited to the following:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.14.1. LP Piping (Common to all system including Raw Water Piping System, Plant water system, DM Cooling Water System, Instrument & Service Air system, Plant Service Water and Portable Water System & Other Misc Pumps & equipments)

1.14.1.1. The contractor will have to follow the instructions provided in the technical manuals, drawings, and specifications provided by BHEL, to the contractor from time to time. In case of ambiguity or deviation the decision / clarification of BHEL Engineer will have to be followed.

1.14.1.2. The work covered under this scope of work is of highly sophisticated nature requiring best quality / precision workmanship engineering and construction management. He should also ensure successful and timely commercial operation of equipment installed. The contractor must have adequate quantity of precision tools, construction aids in possession. Contractor must also have adequate trained qualified and experienced supervisory staff and skilled personnel.

1.14.1.3. In case of any class of work for which there is no such specifications as laid down in the contract such us blue matching, welding of stainless steel parts etc., the work shall be carried out in accordance with instructions and requirements of the BHEL engineer at the quoted rates only.

1.14.1.4. The equipments / materials from the storage yard shall be moved in sequence to the actual site of erection / location at the appropriate time as per the direction of BHEL Engineer so as to avoid damage / loss of such equipment at site.

1.14.1.5. Contractor has to arrange required fire retardant covering materials (tarpaulins) to protect the machined components / assembled parts drawn from BHEL before and after erection at their cost.

1.14.1.6. Any fixtures, scaffolding materials, approach ladders, concrete block supports, steel structures required for temporary supporting, pre assembly, checking, welding, lifting & handling during pre assembly and erection and during application of insulations shall be arranged by the contractor at his cost.

1.14.1.7. The contractor shall erect scaffolding / temporary platforms for erection as per the guidelines of relevant IS codes. These should be of adequate capacity and shall never be over loaded. These should be replaced when not found suitable during erection work and dismantled on work completion and removed from work site. Only steel scaffolding materials with proper clamps should be used. Use of bamboo / casuarinas shall not be permitted.

1.14.1.8. Contractor shall remove all scrap materials periodically generated from his working area and collect the same at one place earmarked for the same. Load of scraps is to be shifted to a place earmarked by BHEL. BHEL reserves the right to collect and remove the scrap at contractor's risk and cost if there is any failure on the part of contractor in this respect. All the packaging materials, including special transporting frames, etc. shall be returned to the BHEL stores / customer's stores by the contractor and maintain records.

1.14.1.9. Contractor shall engage separate gangs throughout the contract period, exclusively for proper housekeeping of the site. The contractor has to make necessary arrangements for collection and for bringing down the scrap from, all locations and taking them away from the erection areas to various locations as indicated by BHEL Engineer. The house keeping must be a routine and continuous activity.

1.14.1.10. Any faulty erection shall be removed and re-erected promptly to comply with the design requirements to the satisfaction of Site Engineer.

1.14.1.11. Prior to erection of any components, inspection to be done for any foreign materials and damages and they are to be removed / attended as per instructions of BHEL engineer.

1.14.1.12. The contractor is prohibited in using any of the BHEL's materials/ components like angles, channels, hand rails for any temporary supporting or scaffolding work or for using as bed for pre assembly works etc. In case of such misuse, a sum as determined by BHEL shall be recovered from contractors bills.

1.14.1.13. The temporary structures / items welded to permanent members / pipes are to be cut and removed without any damage. Any damage so to permanent members / pipes to be made good by the contractor at his cost.

1.14.1.14. Upon completion of daily work, the contractor shall remove from the vicinity of work all scrap packing materials rubbish, unused and other materials and deposit them in places to be specified by BHEL Engineer.

1.14.1.15. Delay in clearance of mechanical equipment and piping for insulations is unlikely

to happen. However, if any delay occurs, the contractor shall not claim anything extra, like idle charges.

1.14.1.16. Handling at site stores / storage yard, transporting to site, inspection, pre-assembly, erection, alignment, welding, NDT, fixing of hangers & supports, chemical cleaning / pickling, oil flushing, water flushing, hydro testing & steam blowing, surface finish, supply & application of primer & finish paints including labeling & flow direction on the piping over insulation & hangers and supports, pre-commissioning, commissioning, trial operation & handing over to customer of LP piping including Raw Water Piping System, Plant water system, DM cooling water system, Instrument & Service Air system, Plant service water and potable water system, Pumps & Misc Equipments, Cranes and hoists and its associated items / systems, hangers and supports, valves and miscellaneous Equipments and structures.

1.14.1.17. Brief list of system / sub system, approximate weight of pipes and accessories to be erected by the contractor mentioned in the Bill of Quantity of this tender specification are meant for giving general idea to the tender only about magnitude of the work involved. The piping components are sent in parts for convenient transportation / layout requirements. They are to be cleaned, pre-assembled in stage by stage, welded, erected and aligned as per the drawing dimensions / tolerance and instructions of BHEL Engineers.

1.14.1.18. All the works such as cleaning, leveling, aligning, trial assembly, dismantling of certain components for checking and cleaning, surface preparation, fabrication of sheets, tubes and pipes as per general engineering practice and as per BHEL Engineer's instructions at site, cutting, weld depositing, grinding straightening chamfering, filing, chipping, drilling, reaming, scrapping, lapping, fitting-up, inspection, edge preparation if required, etc., as may be applicable in such erection works and are necessary to complete the work satisfactorily, shall be carried out by the contractor as part of the work within the quoted rate. Major machining work, which is only to be carried out in workshops, will be arranged by BHEL.

1.14.1.19. Erection of all items comprising piping systems such as valves, filters / strainers, expansion bellows, flow elements, hangers and supports, tanks, level instruments, pumps, associated skids are also a part of the scope.

1.14.1.20. Erection of all the piping systems supplied along with PEM / Bhopal / BAP /PESD supplied auxiliaries covered in this contract, is to be erected by the contractor as per the accepted tonnage rate.

1.14.1.21. All operating/ Approach Plat forms, cross over, canopies, ladders etc. along with their supporting structures, for the equipments/valves/filters etc shall be erected by the contractor as per instructions of BHEL and shall be paid as per accepted tonnage rates of “Hangers and Supports”. The steel materials required for these works shall be supllied by BHEL free of cost and the contractor will have to install them to suit to site requirements.

1.14.1.22. If the provision of creep measurement is envisaged in the drawings, stubs erection and welding as per drawing shall be done by the contractor within the quoted rate.

1.14.1.23. The work on piping system will include wrapping & Coating, laying, edge preparation, fixing and welding of the elbows / fittings / valves etc., welded on the lines, NDE, fixing and adjustment of supports / hangers / shock absorbers and carrying out all other activities / works to complete the erection and also carrying out all pre-commissioning / commissioning operations mentioned in the specification as per BHEL Engineer's instructions and/or as per approved drawings / documents.

1.14.1.24. Contractor shall arrange the necessary clearance from any other statutory authorities as required for installation of the plant and equipment and render all assistance, service required in this regard. Inspection fee, if any will be paid by BHEL.

1.14.1.25. Fittings like bends, tees, elbow / bends, reducers, flanges etc., will be supplied as loose items.

1.14.1.26. Fittings shall be supplied with standard dimensions. Edge preparation, matching inner diameter of pipes for welding as per the drawing dimensions shall be part of erection works. No separate payment will be made for the correction of pipes, edge preparation of standard fittings such as bends, Tees etc.,

1.14.1.27. Normally weld neck valves will have prepared edges for welding. It may be occasionally necessary to prepare new edges or recondition the edges by grinding or chamfering to match the corresponding tubes and pipes. All fittings like tees, weld neck flanges, reducers, elbows, flanges, inserts etc., shall be suitably edge prepared and matched with pipes for welding. No extra cost shall be paid for this.

1.14.1.28. In case of piping connected to equipment, matching of flanges for achieving the parallelism and alignment at equipment end by suitably resorting to heat correction or other method as instructed by BHEL Engineer is within scope of

work. No extra work shall be paid for matching the edges.

1.14.1.29. During connection & floating of any decks, etc., before and after pipe connections, adding tentative loads, readjusting of spring to the required level is covered in this scope of work.

1.14.1.30. Carrying out erection of piping as per the specification between equipments constituting terminal points, whether the terminal equipments fall within the scope of work / specification, contractor shall carry out the terminal joints at either end. Also where the piping connection to the terminal points involve flanged joints, matching of flanges, fixing gaskets, bolting and tightening as per BHEL Engineers instructions is in the scope of work. In case piping connected to equipment, matching of flanges for achieving the parallelism and alignment at the equipment end by suitably resorting to heat correction or other method as instructed by BHEL Engineer, with in the quoted rate.

1.14.1.31. Erection of all drains / vents / relief / escape / safety valve, piping to various tanks/ sewage / drain canal / flash box / flash tank / condenser / sump / atmosphere etc. from the stubs on the piping to the equipments erected by the contractor is completely covered in the scope of work.

1.14.1.32. Contractor has to carryout fabrication works such as welding of stubs / nipples, attachments etc., preparation of surface for rust preventive coating and application of rust preventive within the quoted / accepted rate.

1.14.1.33. Attachment, welding of necessary instrumentation tapping points, thermocouple pads, root valves, condensing vessels, flow nozzles and control valves etc., shall be the responsibility of the contractor and the same shall be done as per the instructions of BHEL Engineer. The erection and welding of all above items will be contractor's responsibility even if the items are supplied by an agency other than BHEL if they are integral to the scope envisaged under this package.

1.14.1.34. All the valves will have to be checked, cleaned, lapped or overhauled in full or in parts before erection, after chemical cleaning and during commissioning. The contractor, at his own cost, shall arrange experienced technicians for the above work, including required consumables.

1.14.1.35. The valves, actuators etc., will have to be checked, cleaned or overhauled in full or in part before erection, after chemical cleaning, steam blowing and during commissioning as may be necessary.

1.14.1.36. Contractor shall study the layout of LP piping and other site routed piping well before the start of work. Final routing shall be decided after approval from Site

Erection Engineer for site routed pipe in such a way that it does not foul with other equipments and piping etc.

1.14.1.37. For thermo-well welding with Carbon steel / alloy steel welding applicable combination electrodes shall be arranged by the contractor within the quoted rate.

1.14.1.38. Immediately after erecting electrically operated valves, Valve Tag Nos shall be painted or stickering shall be done for ease of identification.

1.14.1.39. All the valve packing has to be lubricated as per BHEL Engineer instruction till handing over. Necessary gland packing will be supplied by BHEL.

1.14.1.40. All the lifting equipments, actuators / power cylinders, valves / dampers, etc., shall be serviced and lubricated to the satisfaction of BHEL engineer before erecting the same and also during pre commissioning. The required cleaning, servicing and lubrication of bearings to be carried out before commissioning at no extra cost.

1.14.1.41. In the case of structural members, pipes, plates, ducts etc, in certain cases, the raw material will be supplied in random lengths and the contractor will have to make up the length / prepare the edges to suit the matching profiles, weld / bolt connect the joints within the quoted rates / prices.

1.14.1.42. All the tubes and pipes shall be cleaned and blown with compressed air and shown to the Engineer before lifting. Pipes above 2" diameter have to be cleaned by means of wire brush as per the instruction of BHEL Engineer and subsequently flushed with air before lifting them into position. Pipes below 2" diameter, shall be sponge cleaned with air flushing. After cleaning is over, the end caps shall be put back in tube openings till such time they are welded to other tubes. Required compressors shall be arranged by the contractor at his cost.

1.14.1.43. All the equipments / material to be taken inside the plant building shall be cleaned thoroughly before taking them inside and erect. The contractor shall clean, wherever necessary and paint inside surfaces of the equipments like coolers, oil tanks, Rubber expansion joints assembly and other components as per instruction of BHEL Engineer during erection at the quoted rate. The necessary compressor for air cleaning is to be arranged by contractor at his cost.

1.14.1.44. Fine fittings and other small bore piping have to be routed according to site conditions and hence shall be done only in position as per the site requirement. Necessary sketch for routing these lines should be got approved from BHEL by

the contractor. In case any minor modifications are required in these pipelines after completion to meet the system requirements, the same shall be carried out by the contractor within the quoted rate. The contractor should absorb this cost in his quoted rate.

1.14.1.45. Work such as minor rectification of foundation bolts, reaming of holes, drilling of dowels, matching of bolts and nuts, making new dowel pin, etc. are covered in thescope of work.

1.14.1.46. Assistance for calibrating / testing the power cylinders/ actuators / valves, gauges, instruments, etc. and setting to actuators shall be provided by contractor within the quoted rates.

1.14.1.47. Before erecting the valves and other mountings, check for the tag for correct rating with valve schedule. Ensure correct flow direction. Ensure easy accessibility for operation and maintenance of valves.

1.14.1.48. All the drain lines should have sufficient slope towards drain. Slope of 1:500 shall be maintained towards drain point unless otherwise specified. Expansion loops shall be provided in all the vents and drains than carries steam and water having temepature above 50 Deg Cel. as per the drawings.

1.14.1.49. Wherever pipes / bends / equipments are supplied in pre-fabricated / assembled packages, there may be necessity to make minor changes, including strengthening by additional welds. This shall be treated as part of the contractor's scope.

1.14.1.50. All the oil & gas piping flanges, wherever provided are to be blue matched using surface plates for at least 80% contact area to attain leak proof of joints.

1.14.1.51. Wherever drawings indicate site routing and site fabrication, such pipes (in general equal to and less than 2" Dia) will be issued in running meters as straight length. These are to be cut to required at site length to suit layout as given in the erection drawing and edge prepared as per the standards / drawings and as per the instruction of BHEL Engineer. In some cases attachments like lugs, stoppers, cleats etc., will be supplied as loose items and to be cut and welded to the pipes at site as per erection drawing necessary drilling of holes on main pipe for welding stubs shall also be done at site by the contractor. The contractor shall weld the joints of site routing piping as per site requirement.

1.14.1.52. Certain extra lengths of portions / parts of various site fabricated components / parts / bellows / piping etc. are provided as erection allowance and they shall have to be cut to suit site conditions and layout. Certain small length of portions

/ components / bellows / piping casing etc., may have to be added to suit conditions and layouts. Preparing edges afresh and adopting specified heat treatment procedure, are in the scope of work. No extra payment will be admitted for such works.

1.14.1.53. Some extra lengths in various fabricated pipes given as erection allowance shall have to be cut and edges prepared to suit the site conditions at no extra cost. The contractor shall carry out the edge preparation of weld joints at site in accordance with the details acceptable to BHEL Engineer. Wherever possible machining or automatic flame cutting should be done. Gas cutting will be allowed only wherever edge preparation otherwise is impractical. All slag / burrs shall be removed from the edge and all the hand cuts shall be ground smooth to the satisfaction of engineer. Prepared edges to be preserved / applied with weldable primer.

1.14.1.54. Minor adjustment like removal of ovalities in pipes and opening or closing of the fabricated bends by process of heat correction or any other method approved by BHEL Engineer to suit the layout, with specified heat treatment procedure shall be carried out by the contractor within the quoted rate.

1.14.1.55. For pipes for pipes nominal bore size 2” and below routing shall not be shown in piping layouts or in isometrics and the same to be reute/ connected as shown in schematics. For the above sizes if the routing is shown in layouts it is only for guidance and the same shall be routed and supported as per site requirement / convenience as per site engineer’s advice.

1.14.1.56. For piping of nominal bore size 2” and below, valves, flanges, fittings etc. shall be supplied as commercially available. Hence fit-ups, edge preparation including welding of stubs, shall be incuded in the contractor’s scope.

1.14.1.57. Contractor should fabricate bends of </=2’ diameter size at site from running meters of piping for the above and cut, edge prepare and lay the piping as per BHEL Engineer’s instruction.

1.14.1.58. Contractor shall use only bolted clamps for achieving alignment of piping. Wherever "L" shaped stoppers and wedges are to be used for aligning piping and equipments, the same shall be subject to the approval of BHEL Engineer. Contractor shall remove the bridge, stopper etc., by grinding / gouging and not by hammering. Any burrs left on the equipments / piping, after welding, shall be ground off or any scar or cavity made good by welding and grinding. NDT tests shall be carried out if necessary to detect surface and sub-surface cracks in

these ground areas.

1.14.1.59. Flame cutting of piping and other equipment shall be strictly done as per BHEL Engineer's Instructions and in his presence only.

1.14.1.60. All the weld joints on equipments and piping shall be ground or filed after completion of welding and before radiography as per instructions of BHEL Engineer so as to achieve smooth surface to avoid of ripples, undulations etc.,

1.14.1.61. Wherever elbows of 45 deg or any other angle are required, the same shall be cut from 90 deg. elbow supplied and used as per the instructions of BHEL engineer. No extra cost shall be paid.

1.14.1.62. Flow nozzles, orifice, spray nozzles etc., shall be mounted / erected after chemical cleaning / flushing / or steam blowing at site.

1.14.1.63. Erection of Flow nozzles, flow orifices, flow switches, filters, flow meters, flow indicators, other metering elements, spray nozzles, steam traps, flow orifices, flow indicators, control valves, aux. control valves, filters, suction strainers, NRVs, etc. forming part of the system (under this scope of work) irrespective of the suppliers is also to be carried out by the agency without any extra cost after chemical and / or steam blowing / oil flushing at site. This will include collecting from BHEL/ Customers Store , transport to site, suitably cutting the erection piping, cleaning , erection, welding, radiography, NDE and stress relieving and commissioning.

1.14.1.64. Certain instruments like pressure switches, gauges, air sets, regulators, filters, junction boxes, power cylinders, dial gauges, thermometers, flow meters, valve actuators, flow indicators etc., are received in assembled conditions as integral part of equipments. Contractor shall dismount such instruments and re-erect whenever required prior to commissioning. Sometime this may have to be handed over to store or instrumentation contractor.

1.14.1.65. Fixing, fitting, welding of thermowells, stubs, hoses, tapping points, root valves and instruments etc., on different lines / equipments (which will be supplied by BHEL) is within the scope of work. Fixing of Pick-Ups, Probes & Accessories for vibration monitoring system is in the scope of this specification.

1.14.1.66. Contractor shall also weld small length of piping with root valve to the pressure, flow and level tapping points on piping or flow nozzles / orifices / metering elements fixed on piping as per the instructions of BHEL Engineer.

1.14.1.67. Welding of all thermowells, draft, pressure and temperature instrumentation

points and all other instrumentation points on piping and auxiliaries and welding of thermocouple pads for permanent system as well as for performance guarantee test is in the scope of work.

1.14.1.68. It shall be the responsibility of the contractor to provide ladders on column for initial works till such time stairways are completed. For this the ladder should not be welded on the column and should be prefabricated clamping type ladders. No temporary welding on any structural member is permitted except under special circumstances with the approval of BHEL.

1.14.1.69. All thermowells (released under applicable PGMAs and loose received along with instruments) are to be fixed into the equipment and piping erected by PIPING agency as per drawing and same to be welded as per FQP within the quoted rates.

1.14.1.70. Nozzles, Strainers, Fasteners, Expanders, reducers etc are supplied along with the equipments like Pumps, PHEs etc and may be supplied in the scope of different vendor (TG or Boiler), erection of all the fittings supplied along with the equipment's is in the scope of vendor.

1.14.1.71. Erection of line along with root valve for the Service Air, Instrument Air, Service Water, Potable Water etc upto the equipment/valve is in the scope of vendor. Root valve shall be provided at the nearest point of the equipment, or else within 1 metres within the location of the equipment/valve.

1.14.1.72. Providing service air header for floor cleaning of boiler at Corner A and C for each Boiler all along the height of boiler is included in the scope of vendor even if the same is not mentioned in the drawing. The header should be provide with tappings at each elevation along with a root valve. Exact location of the valves may be decided at site in consultation with Erection Enginner.

1.14.1.73. Erection of ACW Supply and Return from A-Row to equipmets and from Equipments to A-Row Terminal points is included in the scope of the vendor

1.14.1.74. All piping items including pipes, valves, flanges, fittings etc. shall be supplied as commercially available. Hence Fit-ups, edge preparation including welding of stubs, shall be included in the contractor's scope.

1.14.1.75. The contractor shall take all reasonable care to protect the materials and equipment during erection. Touch up painting required to be done on any equipment or part during the course of erection will have to be done by the contractor.

1.14.1.76. The contractor shall also weld all thermowells, small length of pipes to all pressure, flow and level tapping points, isolating valves and root valves on all equipment under scope of erection of this contract. All embedded temperature measuring elements provided in the bearings will have to be terminated at the junction box by the contractor. Thermowells tapping point connections incorporated shall be plugged during the pressure testing and steam blow out of piping systems. Upon completion of blow out operation all thermowells and flow elements with branch pipes be installed and welded.

1.14.1.77. The hangers and supports for pipelines and pressure parts may be supplied in dismantled / knocked down condition. It is the responsibility of the contractor to assemble them as per approved drawings and install them in position as per site engineer instructions.

1.14.1.78. For hangers and supports the instruction given in the drawings and documents must be followed for handling, erection and setting of cold / hot values and locking etc.

1.14.1.79. Where the flange comes welded to the equipment, erection of counter flange, Hydrotesting and Normalisation of the line is under the scope of this contract. Where both the flange and counter flange come as loose items and need to be welded, the entire welding of flange and counter flange, Hydrotesting and Normalisation of the line are under the scope of this contract.

1.14.1.80. Wherever hangers and support materials of piping are not received from manufacturing unit in time to suit the erection schedule, contractor shall erect the piping system on temporary supports to ensure the progress of work within quoted rate. The required structural steel materials will be issued on free of charges by BHEL, either from scrap / spare materials. The same shall be removed and returned to BHEL store after erection of permanent supports.

1.14.1.81. Plate / Pipe shoes for piping supports shall be fabricated at site by the contractor at no extra cost. Other supports namely Hangers, U-clamps etc., shall be supplied by BHEL duly bent and threaded. Assembly and necessary cutting work etc. shall be carried out at site by contractor within the quoted rate.

1.14.1.82. Contractor has to fabricate and erect temporary spool pieces wherever required due to non-receipt of valves in time and after receipt of valves the spool pieces are to be replaced with regular valves at free of cost. For spool pieces materials will be supplied free of cost by BHEL.

1.14.1.83. All welded joints should be painted with anti-corrosive paint, once radiography

and stress relieving works are over.

1.14.1.84. Welding, non-destructive testing and heat-treatment as prescribed in BHEL Welding / Heat treatment manual is to be carried out by the contractor. The contractor shall conduct nondestructive tests like radiography, ultrasonic test for weld defects etc., ultrasonic test for finding thickness, dye penetrant tests, magnetic particle test etc. on weld joints, castings, valve bodies and other equipments etc. as per BHEL Engineer's instructions within the quoted rates.

1.14.1.85. Cutting and removal of dummies for all the shop welded stubs (irrespective ofthe equipments supplier for the above) for all the terminal points and preparation of edge where the piping is to be terminated is also in the scope of the contractor without any extra payment.

1.14.1.86. The contractor shall fabricate piping, install lube oil systems, if any and carry out the acid cleaning of fabricated piping. The contractor shall also service the lub oil system, carry out the hydraulic test of oil coolers. etc.,

1.14.1.87. For skid mounted equipment, the checking and re-alignment required at site is in the scope of work.

1.14.1.88. HSFG Bolts are to be tightened by turn of nut method / Torque Wrench, as per the instruction of BHEL Engineer. The bolted joints shall be jointly checked by BHEL/Customer and contractors personnel for the required tightness and retightened wherever necessary. The tightened bolts shall be identified by color paints. Facility for random checking with calibrated Torque Wrench shall also be provided by contractor.

1.14.1.89. All Rotating machineries and equipment shall be cleaned, lubricated, checked for their smooth rotation, if necessary dismantling and refitting before erection. If in the opinion of BHEL Engineer, the equipment is to be checked for clearance, tolerance at any stage of work or during commissioning period, all such works are to be carried out by contractor at his cost.

1.14.1.90. All the shafts of rotating equipment shall have to be properly aligned to those of matching equipment to perfection, accuracy as required and the equipment shall be free from excessive vibration so as to avoid overheating of bearings or other conditions which may tend to shorten the life of the equipment.

1.14.1.91. All the bearings, gearboxes etc., of the equipment / actuators and electrical motors to be erected are provided with protective greases only. Contractor shall arrange as and when required by the engineer for cleaning the bearing / gear boxes etc., with kerosene or some other agent if necessary by dismantling some

of the parts of the equipment during erection and shall arrange for re-greasing / lubricating them with recommended lubricants and assembling back. Lubricants will however be supplied by BHEL at free of cost.

1.14.1.92. All motors / pumps shall be stripped opened, thoroughly serviced with proper care and re-assembled properly before erection by the contractor. During servicing, pre-commissioning & commissioning, if any deficiency is observed the same should be taken up with BHEL Engineer at site and rectified at site without any delay.

1.14.1.93. The actuators / motors of valves may be supplied in loose parts, contractor shall have to match / assemble and align at site as per instructions of BHEL Engineer including placement on foundation.

1.14.1.94. All dimensions / elevations refers to centerline of pipe unless otherwise specified, the pipe routing shall be carried out as per the drawing. Wherever the dimensions are not specified / shown as approximate the same may be routed as per site requirement/ convience as per site engineer's advice.

1.14.1.95. Pipelines shall be cleaned off welding slag and burrs by hand files, wire brushes and flexible grinders wherever required and using cloth.

1.14.1.96. All welded joints shall be subjected to acceptance by BHEL Engineer. Such of those consumables as indicated as "Consumables provided by BHEL" shall alone be provided by contractor by BHEL free of charge. Weight of above BHEL supplied welding consumables/paint will not be considered for any payment.

1.14.1.97. Number of utility points (Service / Instrument air, service / plant water, service / washing steam, inert gas (N2) etc., shall be indicated in the P & I diagram. Contractor to locate the utility points as advised by site engineer and shall route the piping to these points as per site conditions, and shall submit as built layout with B O M to BHEL for approval.

1.14.1.98. The utility points shall be located at convenient point to handle and to be terminated with suitable valve as mentioned in the drawing and BOM with suitable connection for hose pipe.

1.14.1.99. Platforms, ladders crossovers and canopies shall be fabricated and erected by contractor at site as per site engineer's advice. Platforms shall also be provided at places where it has not been shown in drawings but if felt necessary by site engineer. Canopies shall be provided for all out door pumps and motors.

1.14.1.100. All operating and approach platforms, cross over, canopies, ladder etc, shall

have to be fabricated from raw materials supplied by BHEL and erected by contractor as per instruction of BHEL and shall be paid as per accepted tonnage rate for “Hangers and Supports”.

1.14.1.101. Galvanized pipe shall be joined by screwing in to socket and screwed ends of GI pipes shall be thoroughly cleaned and painted with a mixture of red and white lead before joining. The exposed threaded portion on either side of the socket joint shall be applied with Zinc Silicate Paste. All these consumables are in the scope of contractor and shall carry out within the quoted rate.

1.14.1.102. GI pipe with flanged joints shall have screwed flanges. Flanged joints faces shall be painted with red lead and bolting up evenly on all sides with compressed asbestos gaskets in between two flanges.

1.14.1.103. Teflon tapes shall be used to seal out screwed joints and shall be applied to the male threads only. Threaded parts shall be wiped clean of oil or grease with appropriate solvent if necessary and allowing proper time for drying before applying the sealant. Pipe ends shall be attached by screwing the pipe through the flange and pipe and flange shall be refaced accurately. Required Teflon tapes are to be arranged by the contractor at his cost.

1.14.1.104. Required threading should be done by the contractor at site as specified in the drawing. The pipes shall be cut only by Hacksaw / Machining. Required Teflon tapes are to be arranged by the contractor within the quoted rate.

1.14.1.105. All the screwed joints are to be seal welded if required by Customer, suitable electrodes for full seal welding are to be arranged by the contractor at his own cost.

1.14.1.106. The Buried pipe in general shall be laid with the top of the pipe minimum 2.0 /1.5 metre below finished general ground level or as specified in the drawing. Anti-corrosive treatment for all buried pipes as specified in the drawings including supply & application of anti-corrosive treatment, required consumables are in the scope of contractor and shall carry out as per drawing within the quoted rate.

1.14.1.107. Buried GI pipes shall not have flanged joints. All the joints shall be screwed with socket. Screwed ends of GI pipes shall be thoroughly cleaned and painted with a mixture of red and white lead before joining. Threaded portion on either side of the socket joint shall be applied with Zinc Silicate Paste. All these consumables are in the scope of contractor and shall carry out within the quoted rate.

1.14.1.108. Free access is to be provided for the welding of the circumferential joints by increasing the width and depth of the trench at these points. There should be no

obstruction to the welder from any side so that good welded joint is obtained. This type of incidental works are to be carried out by the contractor within quoted rates.

1.14.1.109. Prior to lowering and laying pipe in any trench, the contractor shall ensure for the backfill and compact the bottom of the trench or excavation in accordance with IS 5822 / as per drawing to provide an acceptable bed for placing the pipe.

1.14.1.110. Dewatering of excavated area for pipe laying, welding, wrapping coating etc is in the scope of the contractor.

1.14.1.111. Preparation of pipe surface as per customer/ consultant specifications by sand/grit blasting (if required) for wrapping and coating is included in the scope of this tender. All fittings like elbows, tees, reducers, flanges, inserts etc., valves flow nozzles, etc shall be matched with pipes for welding which may require re-edge preparation, grinding etc., if found necessary.

1.14.1.112. All dimensions / elevations refers to centerline of pipe unless otherwise specified, the pipe routing shall be carried out as per the drawing. Wherever the dimensions are not specified / shown as approximate the same may be routed as per site requirement / convenience as per Engineers's advice.

1.14.1.113. Contractor shall arrange all the equipments, alignment bolts, tools, consumables like welding electrodes (all type), TIG wires (Other than the supplied TIG wires from BHEL if any) and argon gas cylinders etc., for welding of pipes at his cost. Consumables like jute, cotton waste, hacksaw blades, petrol, Kerosene oil etc are in the scope of contractor.

1.14.1.114. Also refer clause Chapter XVI, in Volume IA Part I of TCC titled "Coating and Wrapping".

VOLUME-IA PART-I CHAPTER - XV

WELDING, HEAT TREATMENT & RADIOGRAPHY AND NON-DESTRUCTIVE TESTING

The scope of the work will comprise of but not limited to the following:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.15.1. The equipments and piping shall be erected in conformity with the standard/ specification in practice in BHEL. The method of welding (viz) Arc, TIG or other methods as indicated in the detailed drawing or as instructed by BHEL Engineer shall be followed. BHEL Engineer will have the option to change the method to suit site conditions. All the prepared / patched edges will have to be suitably protected to prevent rusting or foreign material ingression.

1.15.2. All welders including tack welders, structural and high pressure welder shall be tested and approved by BHEL Engineer before they are actually engaged on work even though they may possess a valid certificate. BHEL reserves the right to reject any welder if the welder's performance is not found to be satisfactory. The contractor shall maintain the records of qualification and performance of welders. BHEL Engineer will issue all the welders qualified for the work, an identity card. The welder will keep the same with him at work place at all times. He may be stopped from work if he is not found in possession of the same.

1.15.3. All welders shall be tested and approved by BHEL Engineer before they are quality ensured on work though they may possess the requisite certificates. BHEL reserves the right to reject any welder without assigning any reason. The welder's identification code as approved by the BHEL Engieer shall be stamped by the welder on each joint done by them. The contractor will be responsible for the periodic renewal, retesting of the welders as demanded by BHEL statutory requirements.

1.15.4. BHEL Engineer may stop any welder from the work if his performance is unsatisfactory for any technical reason or if there is a high percentage of rejection in the joints welded by him. The welders having passed qualification tests does not absolve the contractor of contractual obligation to continuously check the welder's performance.

1.15.5. BHEL Engineer is entitled to stop any contractor's wleders from his work if his work is unsatisfactory for any technical reason or there is a high percentage of rejection

of joints welded by him which in the opinion of BHEL Engineer, will adversely affect the quality of welding. Even though the welder has earlier passed the tests it does not relieve the contractor from his contractual obligations, to check the performance of the welders.

1.15.6. Faulty welds caused by the poor workmanship shall be cut and re-welded at the contractor's expense. The engineer prior to any repair being made shall approve the procedure for the repair of defective welds. After the repair has been carried out, the compliance shall be submitted to the quality engineer.

1.15.7. Pre -heating, radiography and other NDT tests, post heating and stress relieving after welding of tubes, pipes, including attachment welding wherever necessary are part of erection work and shall be carried out by the contractor in accordance with the instructions of the Engineer and as specified in Erection Welding Schedule, Welding, Heat Treatment & NDT manuals and FQP. Contractor at his cost shall arrange all equipment and consumables essential for carrying out the above process.

1.15.8. The contractor shall conduct nondestructive tests like radiography dye penetrant tests, magnetic particle test etc., on weld joints, castings, valve bodies and other equipments etc., as per drawing / welding schedule.

1.15.9. The Contractor shall maintain a record in the form as prescribed by BHEL for all operations carried out on each weld and maintain a record indicating the number of welds, the name of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejections if any, percentage of rejection, etc., and submit copies of the same to the BHEL Engineer as required.

1.15.10. Contractor shall arrange all necessary stress relieving equipment with automatic recording devices. The contractor shall arrange for labour, heating elements, thermocouples, compensating cables , thermo-chalks, temperature recorders, thermocouple attachment units, graph sheets, insulating materials like asbestos cloth, ceramic beads, asbestos ropes etc. required for heat treatment / stress-relieving operations. The contractor should take a note of the following,

- Temperature shall be measured by thermocouple and recorded on a continuous printing type recorder. All the recorded graphs for heat treatment works shall be the property of BHEL.
- All stress relieving equipment will be used after due calibration and submission of test certificate to BHEL. Periodic calibration from Govt. Approved / accredited Test Houses traceable to National / International standards will also be arranged by the contractor for such equipment at his cost.

- The contractor shall obtain the signature of Engineer or his representative on the strip chart of the recorder prior to the starting of SR operations.

1.15.11. The contractor shall also be equipped for carrying out other NDT like liquid penetrant inspection (LPI), magnetic particle inspection (MPI), Hardness test etc. as required as per welding schedules / drawings within the finally accepted price/ rates. Ultrasonic testing, wherever required also has to be arranged by the contractor.

1.15.12. All arrangements for carrying out radiography work including radiography source & equipments and consumables, dark room and air conditioner and other accessories shall be provided by contractor within the space allotted for office at his cost. As an alternative the contractor may deploy an agency having all above facilities and who are duly approved / accredited by BARC and / or other Regulatory authorities. Detailed particulars of such agencies will be submitted and got approved by BHEL Engineer before the actual deployment of agency for radiography work.

1.15.13. Contractor shall note that 100% radiography will be done at the initial stages on the piping welding joints. Subsequently radiographic inspection will be done on the basis of quality of welding. However minimum percentage of joints to be radiographed shall not be less than the requirement of BHEL welding schedule/ customer's requirements. The percentage may be increased depending upon the quality of joints and at discretion of BHEL. For LP Piping, as per site engineer's instructions NDT method and other tests to be carried out.

1.15.14. Heat treatment and radiography may be required to be carried out at any time (day and night) to ensure the continuity of the progress. The contractor shall make all necessary arrangements including safety, labour, supervisors/ Engineer required for the work as per directions of BHEL.

1.15.15. All expenses for testing of contractor's welders (pre-production test) including destructive and Non- destructive tests conducted by BHEL or by the inspecting authority at site or at laboratory shall have to be borne by the contractor only. Necessary pipe material and the welding TIG wire, if any, will be arranged by BHEL and all testing/facilities will have to be arranged by contractor with in the quoted rate.

1.15.16. All welded joints shall be subjected to acceptance by BHEL Engineer.

1.15.17. The technical particulars, specifications and other general details of work shall be in accordance with ASME / BHEL welding, Heat treatment and NDE manuals or equivalent as decided by BHEL Engineer.

1.15.18. The Contractor shall carryout Radiography as per welding Manual booklet applicable. However percentage radiography shown in the respective drawings shall be final and binding on the contractors.

1.15.19. Low speed high contrast fine grain films (D7 or equivalent) in 10 cm width only should be used for weld joint radiography. Film density shall be between 1.5. to 2.00

1.15.20. All radiographs shall be free from mechanical, chemical or process marks to the extent they shall not confuse the radiographic image and noticed.

1.15.21. Penetrometer as per ASME / ISO shall be used for all exposures.

1.15.22. Lead numbers and letters (generally of 6mm size) are to be used for identification of radiographic contract No., joints identification, sources used, welders identification, SFD used are to be noted down in the paper cover of radiography. Lead intensifying screens for front and back of the film shall be used as per the instructions of BHEL Engineer.

1.15.23. The weld joint is to be marked with permanent mark A, B, C, etc. to identify the segments. For this a low stress stamp shall be used to stamp the pipe on the downstream side of the weld. For multiple exposures on pipes, an overlap of about 25 mm of film shall be provided.

1.15.24. The contractor shall be fully equipped with radiography equipments, films, chemicals and other dark room facilities. There must be a number of radiographic personnel with sufficient experience and certified by BARC for field radiographic inspection. Further, the contractor must follow strictly the safety rules laid down by BARC, from time to time, contractor's radiographers shall also be registered with BARC for film badge service.

1.15.25. Contractor shall provide all skilled, unskilled work men required for the job, which will include Engineers, supervisors, operators, as required for timely and satisfactory execution of radiography work.

1.15.26. If the contractor does not carry out radiography work in time due to non- availability of film, chemical etc. BHEL shall get the work done through some other agency at the risk and cost of the contractor.

1.15.27. All the radiographs shall be properly preserved in air-conditioned rooms and shall become the property of BHEL. They are to be reconciled with the work done, joints radiographed and submitted to BHEL/customer.

1.15.28. Radiography of joints shall be so planned after welding that the same is done either on the same day or next day of the welding to assess the performance of

high pressure welders. If the performance of the welder is unsatisfactory, he shall be replaced immediately.

1.15.29. The defects as pointed out by the Engineer shall be rectified immediately to the satisfaction of Engineer and Re-radiographed. The decision of Engineer regarding acceptance or otherwise of the joint shall be final and binding on the contractor.

1.15.30. Wherever radiographs are not accepted on account of poor exposure, joints shall be re-radiographed and new film submitted for evaluation. Radiographs shall be taken again on joints after carrying out repairs. However, if the defect persists after first repair as per radiograph, carrying out radiography shall be repeated till the joint is made acceptable. In case the joint is not repairable, the same shall be cut, rewelded and radiographed at the contractor's cost.

1.15.31. The welded surface irrespective of place of welding shall be cleaned of slag and painted at the center with primer paint to prevent corrosion at no extra cost towards this including supply of Paint for this purpose. All welds shall be painted with primer as specified in the painting schedule, once radiography and stress reliving works are over.

1.15.32. Welding of pressure parts, high tensile structural steel, Piping shall be done by certified high pressure welders who possess valid certificate and who are approved by BHEL Engineer.

1.15.33. The contractor shall carry out the root run welding of all LP piping, valves by TIG welding method as specified in the Drg./ EWS. The contractor shall have to carry out full TIG welding of butt weld joints of tubes / pipes of lesser thickness if required. For oil system piping root run of all the butt joints shall be carried out by TIG welding only.

1.15.34. For Stainless Steel pipe, welding procedure will be as per BHEL site Engineers directive. During the root runs of stainless steel joints, if required, the contractor shall carry out purging the pipes with inert gas before and during welding.

1.15.35. Such of those consumables as indicated as "consumables provided by BHEL" shall alone be provided to the contractor by BHEL free of charge. Any excess requirements shall be arranged by the contractor/BHEL at contractor's cost. Other indigenous alloy steel, stainless steel and carbon steel filler wires and all electrodes are to be arranged by the contractor at his cost. Other consumables, filler wires, electrodes, gas etc. are to be arranged by the contractor at his cost. Weight of above BHEL supplied welding consumables will not be considered for any payment.

1.15.36. Any discrepancy in process, procedures provided BHEL engineer decision is final.

1.15.37. Please refer the “FIELD/ ERECTION WELDING SCHEDULES” published under Chapter-2 of Volume IA Part II of Technical Conditions of Contract.

1.15.38. Also refer “GUIDELINES FOR HEAT TREATMENT” and “GUIDELINES FOR WELDING” published under Chapter-5 and Chapter 6 respectively of Volume IA Part II of Technical Conditions of Contract.

VOLUME-IA PART-I CHAPTER – XVI
COATING & WRAPPING

The scope of the work will comprise of but not limited to the following:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

COATING & WRAPPING -Under Ground Protection for Buried Piping External Surfaces shall be done as follows.

1.16.1 The external surfaces of the buried pipes shall be thoroughly cleaned by sand/shot blasting method for free of rust, weld scales, burns etc., before start application of anti-corrosive coats. Slag Blasting may also be considered. Kerosene, solvent or other cleaning material should not be used for external cleaning of the pipes. The above work shall be carried out to the satisfaction of BHEL engineers or as instructed by BHEL engineers.

1.16.1.1 The entire length of pipe shall be cleaned and coated leaving the end about 230 mm for joints, which shall be coated manually after laying in the trench, welding and testing the pipe.

1.16.1.2 Coating & Wrapping of site joints shall be done after completion of weld and / or flanged connections and after completion & approval of Hydro testing. Materials required for coating, wrapping and consumables required for cleaning operations are to be arranged by the contractor within the quoted rate.

1.16.1.3 All primer / Coating / Wrapping materials and method of application shall conform to IS 15337 & AWWA –C–203-93.

1.16.1.4 For all Underground Pipes, Underground Protection shall be provided for the Piping System as below:

i. Pipe surfaces shall be cleaned by sand / shot / grit blasting before application.

ii. The Pipe Surfaces are to be coated with anti-corrosive tape of 4mm thick conforming to IS-15337 and AWWA C203-93 after the application of the Coal Tar Primer, Coal Tar Enamel as per the customer painting schedule. Material and application of tapes shall confirm to IS15337 or equivalent. These tapes shall be applied hot over the cold tar primer in steps of 2mm thickness so as to cover the spiral edges of the first tape by the application of second tape. Total thickness of coating shall not be less than 4.0 mm. Tests to be carried out as per relevant standards.

T&Ps and instruments required for the above are to be arranged by the contractor within the quoted rates.

1.16.1.5 The top of the buried pipe shall be as per drawing.

1.16.1.6 Laying and alignment of Raw Water Piping, supply and application of wrapping and coating materials, conducting Hydro Test(HT) of the piping, draining and dewatering of HT water at appropriate location as per instruction of BHEL engineer, is under contractor scope, within the quoted rates.

1.16.1.7 Also refer the painting schedule enclosed.

1.16.2 **Protection of Internal Surface for buried pipe**

a. Surface cleaning to be done as per the Approved Customer Specifications.
b. Refer to the Painting Schedule enclosed.

1.16.3 **Protection of External Surface (Over ground Piping)**

a. Surface cleaning to be done as per the Approved Customer Specifications.
b. Also refer the painting schedule enclosed.

VOLUME-IA PART- I CHAPTER-XVII
HYDRAULIC TESTING OF LP PIPING

The scope of the work will comprise of but not limited to the following:
(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.17.1. All lines contractor has to arrange Hydraulic Test pump / Hand Pump for Hydro test at his cost.

1.17.2. Contractor shall lay all necessary electric cables and switches etc. required for the hydraulic tests and other tests, flushing etc., and maintain the system till the tests are completed satisfactorily.

1.17.3. Contractor at his cost shall lay all necessary temporary piping, install the pumps, blanks, valves required for the test, pressure gauges etc. Required pipes, valves, plates etc., will be given by BHEL. Temporary piping, pumps, valves, flanges, blanks etc shall be removed by him and returned to BHEL. All thermo well points are to be seal welded, with plug in position. All Temperature Element points are to be provided with blanks and welded. Necessary blanks will be provided by BHEL.

1.17.4. All the tests shall be repeated till all the pipelines to satisfy the requirements / obligation of BHEL to their customer. As far as the hydraulic pressure test is concerned, the same shall be conducted to the satisfaction of BHEL / Customer Engineers. Any rectifications required shall have to be done / redone by the contractor at his cost.

1.17.5. In general HT of piping shall be performed after all eventual pipe branches have been completed and valves installed. Should it be required to hasten erection work, pressure tests may be performed by sections. For this scope of work, the erected pipe lines shall be hydraulically tested as per site requirement in segments. For conducting hydraulic test, both ends of pipe lines shall be blanked by welding of plates. Only one or two set of plates and structural materials for blanking required for one segment will be provided by BHEL free of charge. After completion of hydraulic test in one segment, the same plates are to be cut and removed and utilized / welded on the other segment of the pipe lines, to carry out the hydraulic test for the respective segments. No separate plates for blanking for each segment will be provided. After completion of Hydraulic test, the required edge preparations shall be carried out on the end of pipe lines and to be welded with the respective pipe lines. In such cases joint connection shall be checked during a final and additional test, if required. The contractor shall note this aspect and quote

accordingly.

1.17.6. During hydraulic test, the pipes being tested shall be isolated from the equipments to which they are connected.

1.17.7. Openings on piping for pressure / temperature impulse connections shall be fully closed during the test to prevent dust or foreign matter entering into the instrument piping inadvertently.

1.17.8. Hydraulic test is to be carried out for buried piping also. Where the length of laid and welded pipe is more, pressure test is to be conducted in sections, blanked at both ends. All arrangements for Hydro test like arranging water, pumps, piping, valves, blanks, pipe connections, etc., are to be arranged by contractor within the quoted rate. The section of the pipe can be closed and back filled for the portion of the pipe hydraulically tested and cleared.

1.17.9. Test records shall be made for pressure testing of above piping system. These records shall contain the following information:

- Date of test
- Identification of piping tested Test fluid
- Test pressure
- Approval of the Engineer.

Note: Refer P&ID drawings for conduction of hydro test, if details are not available the decision of BHEL is final.

VOLUME-IA PART - I CHAPTER- XVIII
TESTING AND COMMISSIONING

The scope of the work will comprise of but not limited to the following:
(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.18 TESTING, PRE COMMISSIONING & COMMISSIONING AND POST COMMISSIONING

1.18.1. The Contactor shall carry out all the required tests and pre-commissioning and commissioning activities required for their successful and reliable operation.

1.18.2. The scope of pre-commissioning activities cover installation of all necessary equipment including temporary piping, supports, valves, blanking, pumps, tanks, with access platforms valves, along with accessories required for hydro test, chemical cleaning (Acid cleaning of piping / alkali flushing), steam blowing or for any other tests. The scope also covers the offsite disposal of effluents. The area for effluent disposal shall be provided by BHEL within the plant premises

1.18.3. All items / materials required for conducting pre-commissioning and commissioning tests will be supplied by BHEL. However fabrication, servicing, erection, dismantling and returning of the same to stores are the responsibility of the contractor who is erecting the equipment / piping. The contractor may note that no separate payment shall be released for any temporary works that are to be carried out for conducting pre-commissioning and commissioning tests. Bidders are advised to include expenses on temporary works along with the rates being quoted by them. Broadly the work on temporary systems will be as under erection etc. of all temporary piping including valves, tanks, effluent pumps, electrical control panel and cabling along with insulation and supports are to be carried out as part of work. Contractor will be responsible for their operation and any servicing required during the pre-commissioning activities. He will also service the equipment and handover the equipment to the other agency for further erection / commissioning activities. All the pumps, motors and electrical control panels/ switch gear, valves and actuators will be furnished to the contractor after due servicing.

1.18.4. It shall be the responsibility of the contractor to provide various categories of workers in sufficient numbers along with Supervisors during pre commissioning, commissioning and post commissioning of equipment and attending any problem in the equipment erected by the contractor till handing ove of each unit to the end customer. The contractor will provide necessary consumables, T&Ps, IMTEs etc., and any other assistance required during this period. Association of BHEL's /Client staff during above period will not absolve contractor from above responsibilities.

1.18.5. In case, any rework is required because of contractor's faulty erection, which is noticed during pre-commissioning and commissioning, the same has to be rectified by the contractor at his cost. If any equipment / part is required to be inspected during pre-commissioning and commissioning, the contractor will dismantle / open up the equipment / part and reassemble / re do the work without any extra claim.

1.18.6. During commissioning, opening / closing of valves, changing of gaskets, Re- alignment of rotating and other equipment, attending to leakage and adjustments of erected equipment may arise. The contractor has to carry out these works at his cost by providing required manpower in all the three shifts. The finally accepted price / rates shall also include all such work.

1.18.7. The valves will have to be checked, cleaned or overhauled in full or in part before erection, after acid cleaning, steam blowing and during commissioning as may be necessary. Experienced technicians shall be arranged by the contractor at his own cost.

1.18.8. The contractor shall carry out cleaning and servicing of valves and valve actuators prior to pre-commissioning tests and / or trial operations of the plant. A system for recording of such servicing operations shall be developed and maintained in a manner acceptable to BHEL Engineer to ensure that no valves and valve actuators are left un-serviced. Wherever necessary as required by BHEL Engineer, the contractor shall arrange to lap / grind valve seats.

1.18.9. During the initial stages of work, trenches for draining water may not be available for alkali flushing or mass flushing for discharging and draining the system and piping. Necessary low point drains and temporary piping for this will have to be erected by contractor from materials provided by BHEL.

1.18.10. Overhauling, cleaning, Servicing of tanks, pumps, equipments, valves, during erection and commissioning stages are in the scope of work.

1.18.11. Contractor may have to replace old / damaged gaskets / packing etc. for equipments and the same shall be carried out by contractor as per requirement. Gaskets packing required for replacement will be provided free of cost by BHEL.

1.18.12. In case any erection defect is detected during tests, trial runs and commissioning such as loose components undue noises or vibration strain on connected equipment steam or oil or water leakage etc. the contractor shall immediately attend these defects and take necessary corrective measures. The parts to be replaced shall be provided by BHEL free of cost. If the insulation is to be removed to attend any of the defects the cost of removal and reapplication of insulation should be borne by the contractor.

1.18.13. All temporary supports shall be removed in such ways that pipe supports are not

subjected to any sudden load. During hydraulic testing of pipes, all piping having variable spring type supports shall be held securely in place by temporary means while constant spring type support hangers shall be pinned or blocked solid during the test.

1.18.14. The contractor shall carryout the required tests on the equipments and the pipelines such as gas tightness test / air tightness test, kerosene test, hydrostatic testing of the equipment/piping etc., and rectify all the defects caused due to contractor's fault at his own cost. Compressed air for pneumatic testing is to be arranged by contractor.

1.18.15. The contractor shall carryout any other test as desired by BHEL Engineer on erected equipment covered under the scope of this contract during testing, pre- commissioning, commissioning, and operation, to demonstrate the completion of any part or whole work performed by the contractor.

1.18.16. All the tests shall be repeated till all the equipment satisfy the requirement of BHEL / Customer. As far as the hydraulic pressure test is concerned and same shall be conducted to the satisfaction of Boiler Inspector wherever applicable. Any rectifications required shall have to be done / redone by the contractor at his cost.

1.18.17. All required tests (Mechanical and electrical) indicated by BHEL and their clients for successful commissioning are included in the scope of these specifications. These tests / activities may not have been listed in these specifications. Specialized test equipment, if any, shall be provided by BHEL/ its client free of hire charges. However contractor has to take proper care of the equipment issued to him.

1.18.18. All the tests may have to be repeated till all the equipment satisfy the requirement/ obligation of BHEL at various stages. The contractor shall do all the repairs for site-welded joints arising out of the failure during testing.

1.18.19. Contractor shall cut /open works if needed as per BHEL engineer’s instructions during commissioning for inspection, checking and make good the works after inspection is over. This contingency shall be included within the quoted value.

1.18.20. Contractor to provide necessary commissioning assistance from pre- commissioning state onwards and up to continuous operation of each unit & handing over to customer. The category of personnel to be as per site requirement and to meet the various pre-commissioning and commissioning programme made to achieve the schedule agreed with customer.

1.18.21. It is the responsibility of the contractor to provide necessary manpower, tools, tackles and consumable till the completion of work under these specifications including for trial operation, even if commissioning of Unit and the other equipments is delayed due to reasons not attributable to the contractor.

1.18.22. After synchronization, the commissioning activities and trial operations will continue upto handing over. It shall be the responsibility of the contractor to provide various categories of workers in sufficient numbers as per the work requirement along with supervisors including necessary consumables, tools, etc. during this period. The rate quoted shall include all these contingencies also. The various categories of workers required for pre-commissioning, commissioning and post commissioning activities are as follows.

a) Pipe fitters
b) Mill Wright Fitters
c) HP / Structural welders
d) Riggers
e) Unskilled workers
f) Supervisors
g) Electricians
h) Any other category of workers as may be required

Further in addition to the above, contractor has to arrange the following manpower exclusively for assisting BHEL commissioning engineers during stabilization and trial operation period. This manpower will be directly controlled by BHEL commissioning engineers only.

1. One supervisor per shift for three shifts
2. Two fitters per shift for three shifts
3. Two helpers per shift for three shifts.

1.18.23. It shall be specifically noted that the contractor and employees of the contractor may have to work round the clock during the pre-commissioning, commissioning and post-commissioning period along with BHEL Engineers / customer officials. hence contractor quoted rate shall take into considerations of all expenses that will be incurred for such arrangement of personnel including engineer's/aupervisors. The valves, dampers, actuators etc. will have to be checked cleaned and overhauled in full or in part before erection, after acid cleaning, steam blowing and during commissioning as maybe necessary.

1.18.24. During commissioning any improvement / repair / rework / rectification / fabrication / modification due to design improvement / requirement is involved, the same shall be carried out by the contractor promptly and expeditiously.

1.18.25. Contractor at his cost shall lay all necessary temporary piping, install the pumps, blanks, valves pressure gauges etc required for the test,. Contractor shall also lay the temporary pipelines with fittings, accessories and erection / commission pumps, tanks and other installations as instructed by BHEL Engineer for the purpose of chemical cleaning / alkali

flushing / steam blowing / steam washing / steam flushing / water flushing / water washing / oil flushing etc., of piping and other equipments. Necessary, materials for this will be provided by BHEL. Temporary piping, fittings, accessories, pumps, valves, flanges, blanks etc shall be removed by him and returned to BHEL.

1.18.26. After the chemical cleaning has been successfully completed, removing all temporary piping, fittings of tanks etc., Checking all the valves for any accumulation of foreign materials, welding the valves, pipes which were cut and cleaning, re fixing as per BHEL engineer's instructions is within the scope of work/specifications.

1.18.27. Overhauling / cleaning / servicing of valves, pumps, fittings in temporary system and acid cleaning tanks etc prior to the above operations / activities will also be carried by the contractor at his cost.

1.18.28. Replacing / changing mechanical / other seals, removal and cleaning / replacing of filters etc. during pre-commissioning / commissioning stage is within the scope of work.

1.18.29. Replacing / Cleaning and servicing of all the filters / strainers which are part of the piping system and are erected by the LP Piping vendor during pre-commissioning / commissioning stage, in the system shall be done by the contractor within the accepted price.

1.18.30. The contractor shall make all necessary arrangements including making of temporary closures / dummy on piping / equipment for carrying out the hydro- static testing on all piping, equipment covered in the specification at no extra cost.

1.18.31. Hanger adjustment / re adjustment during erection, before and after Hydraulic Test, before and after steam blowing, during and after full load operation, are to be carried out by the contractor within Quoted Rate.

1.18.32. In case any erection defect is detected during various tests / operations trial runs as detailed above such as loose components undue noises or vibration strain on connected equipment steam or oil or water leakage etc. the contractor shall immediately attend these defects and take necessary corrective measures. If any readjustment and realignments are necessary, the same shall be done as per BHEL Engineer's instructions. If any part needs repairs rectification and replacement the same shall be done by the contractor at no extra cost. The parts to be replaced shall be provided by BHEL free of cost. If insulation is to be removed to attend any of the defects the cost of removal and reapplication of insulation should be borne by the contractor.

1.18.33. Contractor at his cost shall lay all necessary temporary piping, install the pumps, blanks, valves required for the test, pressure gauges etc. Required pipes, valves, plates etc., will be given by BHEL. Temporary piping, pumps, valves, flanges, blanks etc shall be

removed by him and returned to BHEL. All thermo well points are to be seal welded, with plug in position. All Temperature Element points are to be provided with blanks and welded. Necessary blanks will be provided by BHEL. Wherever air vents are necessary for completion of HT successfully, the contractor has to carry out at his cost.

VOLUME-IA PART- I CHAPTER-XIX
PAINTING

The scope of the work will comprise of but not limited to the following:

1.19.1 FINAL PAINTING

1.19.1.1. The scope of work shall also include supply and application of final painting of all the erected equipments as required and specified in the BHEL / Customer / Customer Consultant's painting specification mentioned under Volume-IA Part-II Chapter-3 of this booklet that forms the part of this tender for the components of all Piping Systems mentioned in this tender.

1.19.1.2. In the case of steel fabricated items, raw steel after fabrication has to be cleaned by Sand / Grit / shot blasting and subsequent painting to be carried out. Sand / Grit / shot blasting equipment with all accessories and consumables as required has to be arranged by the contractor within the Quoted rates.

1.19.1.3. All the exposed metal parts of the equipments including piping, structures, hangers etc., wherever applicable after installation unless otherwise specified the surface protected, are to be first painted with at least one coat of suitable primer and required number of finish coats as indicated in the Painting Specification in TCC which matches the shop primer paint used, after thoroughly cleaning the dust, rust, scales, grease oil, and other foreign materials by wire brushing scrapping and chemical cleaning and the same being inspected and approved by BHEL engineers for painting. Afterwards the above parts shall be finished with as per the instructions of BHEL/Customer official.

1.19.1.4. Normally Paint shall be applied by brushing as per the instruction of BHEL Engineer. It shall be ensured that brush marks are minimum. If needed and insisted either by BHEL / Customer in certain cases, spray painting has to be carried out within the Quoted rates. Spray painting gun and compressed air arrangement has to be made by the contractor himself within the Quoted rates.

1.19.1.5. Paint used shall be stirred frequently to keep the pigment in suspension. Paint shall be of the ready mix type in original sealed containers as packed by the paint manufacturer. No thinners shall be permitted. Paint manufacturer's instructions shall be followed in method of application, handling, drying time etc.

1.19.1.6. The scope of painting includes application of colour bands, lettering the names of the systems, equipments; tag nos. of valves, marking the directions of flow and other data required by BHEL within the quoted rate.

1.19.1.7. All surfaces shall be thoroughly cleaned, free from scales, dirt and other foreign matter. Each coat shall be applied in an even & uniform film free from lumps, streaks, runs, sags and uncoated spots. Each coat (Primer, intermediate, finish) shall have a minimum thickness of dry film thickness (DFT) in microns and the DFT of finish paint shall not be less than the specified. Necessary instrument for measuring the thickness of paint applied is to be arranged by the contractor.

1.19.1.8. Finish coat paint, no. of coat and DFT shall be as indicated in the painting specification enclosed in this tender / relevant BHEL document/ customer's specifications. The painting specification which is forming part of this tender as in TCC shall be used as guidelines to be followed.

1.19.1.9. The actual colour to be applied shall be approved by the customer before starting of actual painting work or as per the specifications/colour coding being followed by customer for the Plant.

1.19.1.10. Primer & finish paint shall be of reputed paint supplier approved by BHEL / Customer. Contractor has to procure paints from the BHEL / Customer approved agencies only, and the paints should be as per the customer painting specification. The quality of the finish paint shall be as per the standards of IS or equivalent as approved by BHEL / Customer. Before procurement of paint the contractor has to obtain the clearance from BHEL authorities. The batch certificates of paints to be submitted to BHEL Engineer before using the same.

1.19.1.11. No paint shall be applied when the surface temp is above 55 deg. Centigrade or below 10 deg. Centigrade, and when the humidity is greater than 90% to cause condensation on the surface or frost / foggy weather.

1.19.1.12. Before commencement of final painting, contractor has to obtain written clearance from BHEL / Customer for effective completion of surface preparation.

1.19.1.13. Before applying the subsequent coats, the thickness of each coat shall be measured and recorded with BHEL / Customer.

1.19.1.14. Required paints, thinner other consumable such as wire brush, brush etc. shall have to be arranged by the contractor at their own cost. The required manpower, other required consumables, T & P etc. shall be provided by the contractor within the quoted rate. The arrangement of primer/paint will be in contractor's scope.

1.19.1.15. The contractor shall effectively protect the finished work from action of weather and from damage of defacement and shall cover the finished parts, then and there, for their protection.

1.19.1.16. Necessary scaffolding, required for painting of surfaces at various locations/ elevations shall be arranged by the contractor at their own cost. All the materials, required for scaffoldings shall be arranged by the contractor at their own cost.

1.19.1.17. Coating thickness shall be measured by elcometer or other standard measuring device for measuring of finished film thickness of finished paint. If the thickness is found to be less than specified, the pipes shall be re-surfaced to bring the same to specified thickness.

1.19.2 PRESERVATION / TOUCH UP PAINTING

1.19.2.1 Contractor shall carryout cleaning and preservation / touch up painting for the materials / equipments under this tender specification right from pre- assembly stage to till the equipment is cleared for final painting. The primer paint shall be matching shop primer.

1.19.2.2 The contractor shall clean, wherever necessary and paint inside surfaces of the equipments as per instruction of BHEL Engineer during erection at the quoted rate. The Contractor has to arrange necessary paints within the quoted price.

1.19.2.3 Any equipment which has been given the shop coat of primer shall be carefully examined after its erection in the field and shall be treated with touch up coat of same primer wherever the shop coat has been abraded, removed or damaged during transit / erection, or defaced during welding.

1.19.2.4 Mostly the equipment / items / components will be supplied with one coat of primer paint and one coat of finish paint. However during storage and handling, the same may get peeled off / deteriorate. All such surfaces are to be thoroughly cleaned and to be touch up painted with suitable approved primer and finish paint matching with shop paint / approved final colour.

1.19.2.5 All welded joints should be painted with anti-corrosive paint, once radiography and stress relieving works are over.

1.19.2.6 Due to atmospheric conditions erected materials are likely to get rusted more frequently. It is the responsibility of the contractor to preserve the erection materials drawn from stores for erection till these are commissioned and handed over to customer. The required consumables for this purpose like paint, thinner, rust converter compound (Ruskill or Ferropro) or any other equivalent shall be arranged by bidder. However, the contractor should also arrange other consumables like wire brushes, emery paper, cotton waste, cloth etc. at their cost. The contractor should ensure that the materials are not rusted on any account till they are handed over to customer. The decision of the BHEL Engineer is final with regard to frequency of application of paint and rust converter compound.

1.19.2.7 Painting of portions of Employer's structures wherever connection/welding is carried out by contractor for supporting structures.

1.19.2.8 All rectification including painting of Employer's structure which are damaged by contractor during his work.

VOLUME-IA PART – II CHAPTER 1

CORRECTIONS / REVISIONS IN SPECIAL CONDITIONS OF CONTRACT, GENERAL CONDITIONS OF CONTRACT AND FORMS & PROCEDURES

Sl. No: 1

Clause 4.1.11 of SCC is deleted.

Sl. No: 2

OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT MANAGEMENT/ QUALITY ASSURANCE PROGRAMME

The following clauses in Occupational Health, Safety & Environment Management / Quality Assurance Programme published in Chapter-IX of Special Conditions of Contract (Volume I Book-II) is revised as under.

Chapter IX Clause 9.1 is modified as below:

Contractor will comply with HSE (Health, Safety & Environment) requirements of BHEL as per the "HSE Plan for Site Operations by Subcontractor" (Document No. HSEP: 14 Rev01) enclosed.

Chapter IX Clause 9.1.1 to 9.1.25 stands deleted.

Chapter IX Clause 9.2 to 9.62 stands deleted.

Sl. No: 3

Clause No. 10.5 on RA Bill Payments, in Special Conditions of Contract (SCC), Volume- IB, Book- II, is revised as under:

The payment for running bills will normally be released within 30 days of submission of running bill complete in all respects with all documents. It is the responsibility of the contractor to make his own arrangements for making timely payments towards labour wages, statutory payments, outstanding dues etc., and other dues in the meanwhile.

Sl. No: 4

The following clause is added under clause 1.10 Security Deposit in General Conditions of Contract (Volume I Book II):

"1.10.8 Bidder agrees to submit Security Deposit required for execution of the contract within the time period mentioned. In case of delay in submission of Security Deposit, enhanced Security Deposit which would include interest (Base rate of SBI +6%) for the delayed period, shall be submitted by the bidder. Further, if Security Deposit is not submitted till such time the first bill becomes due, the amount of Security Deposit due shall be

recovered as per terms defined in NIT/contract, from the bills along with due interest."

Sl. No: 5

In addition to clause 2.7.9 of General Conditions of Contract (GCC), a New clause 2.7.9.1 is added as below.

2.7.9.1 Penalty for Intermediate Milestones

2.7.9.1.1 M1 and M2 shall be intermediate Milestones for this work.

2.7.9.1.2 In case of slippage of these identified Intermediate Milestones, Delay Analysis shall be carried out on achievement of each of these two Intermediate Milestones in reference to Form 14.

2.7.9.1.3 Incase delay in achieving M1 milestone is solely attributable to the contractor,0.5% per week of executable contract value* limited to maximum 2% of executable contract value will be withheld.

2.7.9.1.4 Incase delay in achieving M2 milestone is solely attributable to the contractor,0.5% per week of executable contract value* limited to maximum 3% of executable contract value will be withheld.

2.7.9.1.5 Amount already withheld, if any, against slippage of M1 milestone, shall be released only if there is no delay attributable to contractor in achievement of M2 milestone.

2.7.9.1.6 Amount required to be withheld on account of slippage of identified intermediate milestone(s) shall be withheld out of respective milestone payment and balance amount (if any) shall be withheld @10% of RA Bill amount from subsequent RA bills.

2.7.9.1.7 Final deduction towards LD (if applicable), on account of delay attributable to contractor shall be based on final delay analysis on completion / closure of contract. Withheld amount, if any due to slippage of intermediate milestones shall be adjusted against LD or released as the case may be.

2.7.9.1.8 In case of termination of contract due to any reason attributable to contractor before completion of work, the amount already withheld against slippage of intermediate milestones shall not be released and be converted in to recovery.

Note: *Executable contract value-value of work for which inputs/fronts were made available to contractor and were scheduled for execution till the date of achievement of that milestone.

Sl. No.: 6

Procedure 2.3 that forms the part of the "Forms and Procedures (Volume 1 Book 2)" is published as chapter 14 in Volume 1A Part II of this booklet (Volume-I Book-I).

Sl. No: 7

Reverse Auction

The chapter Reverse auction procedure published in 'Forms and Procedures' of Volume I Book-II stands deleted. (Explanation: Reverse Auction is not applicable for this tender).

Sl. No: 8

Existing format on BANK GUARANTEE FOR SECURITY DEPOSIT as available in Form No F-11 (Rev 00) of Volume ID Forms and Procedure stands deleted. Refer proforma of Bank Guarantee (in lieu of Security Deposit)- Form WAM 22 provided in Volume IA Part II Chapter 13.

Sl. No: 9

Existing format on Monthly Plan Review of Contractor, as available in Form No F-14 of Volume ID Forms and procedure stands Deleted. Form No.- F-14 (Rev 01) is enclosed as Volume IA Part II Chapter 9.

Sl. No: 10

Existing format on Monthly Performance Evaluation of Contractor, as available in Form No F-15 of Volume ID Forms and procedure stands Deleted. Form No.- F-15 (Rev 02) is enclosed as Volume IA Part II Chapter 10.

Sl. No: 11

Existing format for Integrity Pact, as available in Volume ID Forms and procedure stands Deleted. Revised Format is enclosed in NIT.

VOLUME-IA PART – II

CHAPTER 2 to 14

In next 301 pages as below

Description	Chapter	No. of pages
Erection/ Field Welding Schedule	Chapter-2	08
Painting Scheme	Chapter-3	18
Drawings (For information & Tendering purpose only and it may undergo revision during execution)	Chapter-4	21
Guidelines for Heat treatment	Chapter-5	18
Guidelines for welding	Chapter-6	98
Guidelines for NDE and Heat Treatment Agency	Chapter-7	13
"HSE Plan for Site Operations by Subcontractor" (Document No. HSEP: 14 Rev01)	Chapter-8	82
Format for Form no.: F-14 (Rev 01); Monthly Plan & Review with Contractor	Chapter-9	06
Format for Form no.: F-15 (Rev 02); Monthly Performance-Evaluation of Contractor	Chapter-10	06
Hire charges on issue of capital tools & Plants (Only corresponding charges)	Chapter-11	14
Proforma of Bank Guarantee (in lieu of Earnest Money)- Form WAM 23	Chapter-12	03
Proforma of Bank Guarantee (in lieu of Security Deposit)- Form WAM 22	Chapter-13	03
Procedure 2.3 for conduct of conciliation proceedings	Chapter-14	11

305952/2021/PS-SR-SUBCONTR

ERECTION/FIELD WELDING SCHEDULE

PROJECT:	TSGENCO YADADRI 5X800MW LPP	**CUST. NO:**	7300
		PGMA:	80-468
NAME OF THE CUSTOMER:	TELANGANA STATE POWER GENERATION CORP. LTD	**CUST. DOC. NO.**	
		SYSTEM DESCRIPTION:	MAIN CIRCULATION WATER PIPING

Sl.No.	Drg. No. for weld location	Description of parts to be welded	Matl. Spec.	Dimensions		Process of Welding	Type of weld	Electrode filler spec.				W.P.S no.	NDT method/Quantum	Ref. Spec. No.	Acc. Norm. Ref.	Remarks
				ID/OD	Thick			TIG	Arc spec							
		Part-1	Part-1	Size				Qty (gms)	Qty(nos)							
		Part-2	Part-2	mm	mm		Qty	Dia2.4	Dia2.5	Dia3.2	Dia4.0					
1		PIPE+PIPE	IS3589	OD	22	SMAW	22 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	3980			720	NIL	217728	357696	347328					
2		PIPE+PIPE	IS3589	OD	18	SMAW	18 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	2032			20	NIL	3108	5106	3774					
3		PIPE+PIPE	IS3589	OD	20	SMAW	20 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	2032			170	NIL	26418	43401	32079					
4		PIPE+PIPE	IS3589	OD	20	SMAW	20 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	2743			91	NIL	19110	31395	23205					
5		PIPE+PIPE	IS3589	OD	10	SMAW	10 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	914			52	NIL	3713	5835	0					
6		PIPE+PIPE	IS3589	OD	8	SMAW	8 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	813			457	NIL	28791	30162	0					
7		PIPE	IS3589	OD	5.4	SMAW	5.4 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	168.3			6	NIL	162	0	0					
8		PIPE+PIPE	IS3589	OD	8	SMAW	8 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	610			240	NIL	11088	11616	0					

Notes:

(1) "REFER DOC NO: AA/CQ/GL/011 (Latest Revision) - MANUAL FOR WELDING, HEAT TREATMENT AND NON DESTRUCTIVE TESTING FOR POWER SECTOR".

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305952/2021/PS-SR-SUBCONTR

ERECTION/FIELD WELDING SCHEDULE

PROJECT:	TSGENCO YADADRI 5X800MW LPP	**CUST. NO:**	7300
		PGMA:	80-468
NAME OF THE CUSTOMER:	TELANGANA STATE POWER GENERATION CORP. LTD	**CUST. DOC. NO.**	
		SYSTEM DESCRIPTION:	MAIN CIRCULATION WATER PIPING

Sl.No.	Drg. No. for weld location	Description of parts to be welded	Matl. Spec.	Dimensions		Process of Welding	Type of weld	Electrode filler spec.				W.P.S no.	NDT method/Quantum	Ref. Spec. No.	Acc. Norm. Ref.	Remarks
				ID/OD	Thick			TIG	Arc spec							
		Part-1	Part-1	Size				Qty (gms)	Qty(nos)							
		Part-2	Part-2	mm	mm		Qty	Dia2.4	Dia2.5	Dia3.2	Dia4.0					
9		PIPE+PIPE	IS3589	OD	10	SMAW	10 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	1016			20	NIL	1596	2508	0					
10		PIPE+PIPE	IS3589	OD	8	SMAW	8 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	711.2			35	NIL	1911	2002	0					
11		PIPE+PIPE	IS3589	OD	10	SMAW	10 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	1219			55	NIL	5082	7986	0					
12		PIPE+PIPE	IS3589	OD	20	SMAW	20 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE BEND	IS3589	2743			45	NIL	9450	15525	11475					
13		PIPE+PIPE	IS3589	OD	6.4	SMAW	6.4 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTINGS	IS3589	323.9			40	NIL	960	680	0					
14		PIPE+PIPE	IS1239	OD	6.4	SMAW	6.4 V	E6013	E7018			1001/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTINGS	IS1239	355.6			50	5850	1350	950	0					
15		PIPE+PIPE	IS3589	OD	6	SMAW	6 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTINGS	IS3589	355.6			48	NIL	1296	816	0					
16		PIPE	SA106GRB	OD	7.11	TIG & ARC	7.11 V	ER70S-A1	E7018-1			1003/REV04	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	SA106GRB	168.3			30	1590	450	330	0					

Notes:

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ERECTION/FIELD WELDING SCHEDULE

PROJECT:	TSGENCO YADADRI 5X800MW LPP	**CUST. NO:**	7300
		PGMA:	80-473
NAME OF THE CUSTOMER:	TELANGANA STATE POWER GENERATION CORP. LTD	**CUST. DOC. NO.**	
		SYSTEM DESCRIPTION:	DEMINERALISED WATER SYSTEM

Sl.No.	Drg. No. for weld location	Description of parts to be welded	Matl. Spec.	Dimensions		Process of Welding	Type of weld	Electrode filler spec.				W.P.S no.	NDT method/Quantum	Ref. Spec. No.	Acc. Norm. Ref.	Remarks
				ID/OD	Thick			TIG	Arc spec							
		Part-1	Part-1	Size				Qty (gms)	Qty(nos)							
		Part-2	Part-2	mm	mm		Qty	Dia2.4	Dia2.5	Dia3.2	Dia4.0					
1		PIPE+PIPE	SA312TP304H	OD	3.4	TIG & ARC	3.4 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	168.3			400	22000	9600	0	0					
2		PIPE+PIPE	SA312TP304H	OD	4.19	TIG & ARC	4.19 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	273.1			60	6480	1440	600	0					
3		PIPE+PIPE	SA312TP304H	OD	7.1	TIG & ARC	7.1 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	63.5			43	843	344	215	0					
4		PIPE+PIPE	SA312TP304H	OD	3.05	TIG & ARC	3.05 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	88.9			212	4452	2756	0	0					
5		PIPE+PIPE	SA312TP304H	OD	3.05	TIG & ARC	3.05 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	114.3			340	9044	5440	0	0					
6		PIPE+PIPE	SA312TP304H	OD	3.76	TIG & ARC	3.76 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	219.1			148	10656	4144	0	0					
7		PIPE+PIPE	SA312TP304H	OD	6.35	TIG & ARC	6.35 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	219.1			55	3905	2035	0	0					
8		PIPE+PIPE	SA312TP304H	OD	5.49	TIG & ARC	5.49 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	88.9			7	138	105	0	0					

Notes:

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ERECTION/FIELD WELDING SCHEDULE

PROJECT:	TSGENCO YADADRI 5X800MW LPP	**CUST. NO:**	7300
		PGMA:	80-473
NAME OF THE CUSTOMER:	TELANGANA STATE POWER GENERATION CORP. LTD	**CUST. DOC. NO.**	
		SYSTEM DESCRIPTION:	DEMINERALISED WATER SYSTEM

Sl.No.	Drg. No. for weld location	Description of parts to be welded	Matl. Spec.	Dimensions		Process of Welding	Type of weld	Electrode filler spec.				W.P.S no.	NDT method/Quantum	Ref. Spec. No.	Acc. Norm. Ref.	Remarks
				ID/OD	Thick			TIG	Arc spec							
		Part-1	Part-1	Size				Qty (gms)	Qty(nos)							
		Part-2	Part-2	mm	mm		Qty	Dia2.4	Dia2.5	Dia3.2	Dia4.0					
9		PIPE	SA106GRB	OD	6.35	TIG & ARC	6.35 V	ER70S-A1	E7018-1			1003/REV04	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA234WPB	219.1			245	17395	9065	0	0					
10		PIPE+PIPE	IS1239	OD	4.5	TIG & ARC	4.5 V	ER70S-A1	E7018-1			1003/REV04	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	IS1239	60.3			40	504	400	0	0					

Notes:
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RAVI KUMAR	TRINADHA RAO	C SARAVANAN	NANTHINI	18.05.2021	4-80-473-84369	02	OF	02	00

305952/2021/PS-SR-SUBCONTR

ERECTION/FIELD WELDING SCHEDULE

PROJECT:	TSGENCO YADADRI 5X800MW LPP	**CUST. NO:**	7300
		PGMA:	80-477
NAME OF THE CUSTOMER:	TELANGANA STATE POWER GENERATION CORP. LTD	**CUST. DOC. NO.**	
		SYSTEM DESCRIPTION:	SERVICE WATER PIPING

Sl.No.	Drg. No. for weld location	Description of parts to be welded	Matl. Spec.	Dimensions		Process of Welding	Type of weld	Electrode filler spec.				W.P.S no.	NDT method/Quantum	Ref. Spec. No.	Acc. Norm. Ref.	Remarks
				ID/OD	Thick			TIG	Arc spec							
		Part-1	Part-1	Size				Qty (gms)	Qty(nos)							
		Part-2	Part-2	mm	mm		Qty	Dia2.4	Dia2.5	Dia3.2	Dia4.0					
1		PIPE	IS3589	OD	6	SMAW	6 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	508			35	NIL	1330	875	0					
2		PIPE	IS3589	OD	6	SMAW	6 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	406.6			100	NIL	3400	2200	0					
3		PIPE+PIPE	IS3589	OD	6.4	SMAW	6.4 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	IS3589	323.9			454	NIL	10896	7718	0					
4		PIPE+PIPE	IS3589	OD	6	SMAW	6 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	IS3589	273.1			397	NIL	9528	5955	0					
5		PIPE+PIPE	IS3589	OD	6	SMAW	6 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	IS3589	219.1			165	NIL	6105	0	0					
6		PIPE+PIPE	IS1239	OD	5.4	SMAW	5.4 V	E6013	E7018			1001/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	IS1239	114.3			810	21546	14580	0	0					
7		PIPE	IS3589	OD	10	SMAW	10 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	1118			125	NIL	11025	17325	0					
8		PIPE	IS3589	OD	8	SMAW	8 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	813			320	NIL	20160	21120	0					

Notes:

(1) "REFER DOC NO: AA/CQ/GL/011 (Latest Revision) - MANUAL FOR WELDING, HEAT TREATMENT AND NON DESTRUCTIVE TESTING FOR POWER SECTOR".

Rev.no.	Date:	Altered:		Rev.no.	Date:	Altered:	
		Approved:				Approved:	

PREPARED BY	DESIGN/CHD.	DESIGN/APPD.	QA-CHD./APPRD.	DATE	DRAWING NO:	SHEET NO:			REV. NO.
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305952/2021/PS-SR-SUBCONTR

ERECTION/FIELD WELDING SCHEDULE

PROJECT:	TSGENCO YADADRI 5X800MW LPP	**CUST. NO:**	7300
		PGMA:	80-477
NAME OF THE CUSTOMER:	TELANGANA STATE POWER GENERATION CORP. LTD	**CUST. DOC. NO.**	
		SYSTEM DESCRIPTION:	SERVICE WATER PIPING

Sl.No.	Drg. No. for weld location	Description of parts to be welded	Matl. Spec.	Dimensions		Process of Welding	Type of weld	Electrode filler spec.				W.P.S no.	NDT method/Quantum	Ref. Spec. No.	Acc. Norm. Ref.	Remarks
				ID/OD	Thick			TIG	Arc spec							
		Part-1	Part-1	Size				Qty (gms)	Qty(nos)							
		Part-2	Part-2	mm	mm		Qty	Dia2.4	Dia2.5	Dia3.2	Dia4.0					
9		PIPE	IS3589	OD	8	SMAW	8 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	711.2			125	NIL	6825	7150	0					
10		PIPE	IS3589	OD	12	SMAW	12 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	1422			85	NIL	9282	15249	4420					
11		PIPE	IS3589	OD	10	SMAW	10 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	914			200	NIL	14280	22440	0					
12		PIPE	IS3589	OD	6	SMAW	6 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	IS3589	610			115	NIL	5313	3542	0					
13		PIPE+PIPE	IS3589	OD	6	SMAW	6 V	NIL	E7018			1213/REV00	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	IS3589	355.6			170	NIL	4590	2890	0					
14		PIPE+PIPE	IS1239	OD	5.4	TIG & ARC	5.4 V	E6013	E7018			1001/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	IS1239	168.3			95	5130	2565	0	0					
15		PIPE+PIPE	IS1239	OD	4.5	TIG & ARC	4.5 V	ER70S-A1	E7018-1			1003/REV04	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	IS1239	60.3			85	1071	850	0	0					

Notes:

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		Approved:				Approved:	

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305952/2021/PS-SR-SUBCONTR

ERECTION/FIELD WELDING SCHEDULE

PROJECT:	TSGENCO YADADRI 5X800MW LPP	**CUST. NO:**	7300
		PGMA:	80-610
NAME OF THE CUSTOMER:	TELANGANA STATE POWER GENERATION CORP. LTD	**CUST. DOC. NO.**	
		SYSTEM DESCRIPTION:	SERVICE AIR-COMP SUCT AND DIS TO RECEI

Sl.No.	Drg. No. for weld location	Description of parts to be welded	Matl. Spec.	Dimensions		Process of Welding	Type of weld	Electrode filler spec.				W.P.S no.	NDT method/Quantum	Ref. Spec. No.	Acc. Norm. Ref.	Remarks
				ID/OD	Thick			TIG	Arc spec							
		Part-1	Part-1	Size				Qty (gms)	Qty(nos)							
		Part-2	Part-2	mm	mm		Qty	Dia2.4	Dia2.5	Dia3.2	Dia4.0					
1		PIPE+PIPE	SA312TP304H	OD	3.4	TIG & ARC	3.4 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	168.3			350	19250	8400	0	0					
2		PIPE+PIPE	SA312TP304H	OD	3.05	TIG & ARC	3.05 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	114.3			823	21892	13168	0	0					
3		PIPE+PIPE	SA312TP304H	OD	3.91	TIG & ARC	3.91 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	60.3			465	28272	0	0	0					
4		PIPE	SA312TP304H	OD	4	NIL	4 ◺	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	33.4			135	NIL	88	0	0					
5		PIPE	SA312TP304H	OD	4	TIG & ARC	4 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	SA312TP304H	33.4			190	1216	950	0	0					

Notes:

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305952/2021/PS-SR-SUBCONTR

ERECTION/FIELD WELDING SCHEDULE

PROJECT:	TSGENCO YADADRI 5X800MW LPP	**CUST. NO:**	7300
		PGMA:	80-614
NAME OF THE CUSTOMER:	TELANGANA STATE POWER GENERATION CORP. LTD	**CUST. DOC. NO.**	
		SYSTEM DESCRIPTION:	INST AIR COMP SUC AND DIS TO RECEIVER

Sl.No.	Drg. No. for weld location	Description of parts to be welded	Matl. Spec.	Dimensions		Process of Welding	Type of weld	Electrode filler spec.				W.P.S no.	NDT method/Quantum	Ref. Spec. No.	Acc. Norm. Ref.	Remarks
				ID/OD	Thick			TIG	Arc spec							
		Part-1	Part-1	Size				Qty (gms)	Qty(nos)							
		Part-2	Part-2	mm	mm		Qty	Dia2.4	Dia2.5	Dia3.2	Dia4.0					
1		PIPE+PIPE	SA312TP304H	OD	3.4	TIG & ARC	3.4 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	168.3			205	11275	4920	0	0					
2		PIPE+PIPE	SA312TP304H	OD	3.05	TIG & ARC	3.05 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	114.3			450	11970	7200	0	0					
3		PIPE+PIPE	SA312TP304H	OD	3.91	TIG & ARC	3.91 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	60.3			500	30400	0	0	0					
4		PIPE	SA312TP304H	OD	4	NIL	4 ◺	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	31.8			130	NIL	80	0	0					
5		PIPE+PIPE	SA312TP304H	OD	3.05	TIG & ARC	3.05 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		FITTING	SA312TP304H	88.9			165	3465	2145	0	0					
6		PIPE	SA312TP304H	OD	4	TIG & ARC	4 V	ER347	E316			1032/REV01	"AS PER SITE FQP"	REFER NOTE-1	REFER NOTE-1	
		PIPE	SA312TP304H	33.4			235	1504	1175	0	0					

Notes:

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TELANGANA POWER GENERATION CORPORATION LIMITED
(A Govt. Of Telangana Undertaking)
VidyutSoudha, Hyderabad - 500082.
Phone: 040 – 23499321 Fax: 040 – 23499323.

From:
The Executive Director
Thermal Projects Construction,
TSGENCO, 2rd Floor, A-Block,
VidyutSoudha, Khiarathabad
Hyderabad-500 082.
edtpctgenco@gmail.com

To:
M/s BHEL,
Piping Centre,
Chennai-17
Ph:9500127314,
E-mail: vishnujyoti@bhel.in

Kind Attention:Smt Vishnujyoti, Manager(Commercial)

Lr.No.ED/TPC/CE/SE-3/EME-14/YTPS(5X800MW)/F.Painting/D.No.99/18,Dt:06.07.2018

Sir,

Sub:- TSGENCO – YTPS(5x800 MW) –Painting Scheme for Piping - Approval-Reg.

Ref:- 1) M/s BHEL Email dt:23-04-2018
2) M/s TCE Email dt: 20-06-2018
3)Lr.No.ED/TPC/SE-3/EME-14/YTPS(5x800MW)/F.PaintingScheme/D.No.86/18,Dt.25-06-18
4) M/s BHEL Email, dt: 27-06-2018
5) M/s TCE Email dt: 05-07-2018

*****

Please refer to the letter 4th cited above, wherein M/s BHEL/Piping Centre, Chennai submitted the Painting Scheme for Piping pertaining to Yadadri TPS (5x800 MW) for review & approval.

Sl.No	Document No	Rev	Description
1.	7295:QPC:11	02	Painting Scheme for Piping

The above Painting Scheme furnished by M/s BHEL/Piping Centre, Chennai is herewith reviewed and approved. An approved copy of the above Painting Scheme is enclosed herewith for taking further necessary action at your end.

However, approval of the above Painting Scheme does not absolve the responsibility of supplying the above equipments to the specifications and relevant standards and to ensure satisfactory performance of the above equipment as per the terms of the contract.

It is requested to upload the approved Painting Scheme in PEDM Portal.

Encl: As above

Yours faithfully,

EXECUTIVE DIRECTOR/TPC

Copy Communicated to:

1) Chief Engineer/Construction/YTPS Site/Damaracherla/Nalgonda Dist.
2) Sri Y.A.Srinivas Rao, BHEL/PMG Camp Office, Vidyut Soudha, Hyderabad.
3) DE/Tech to Director/Projects/TSGENCO/VS/Hyderabad.
4) M/s Tata Consulting EngineersLimited,73/1,Sheriff Centre, St. Marks road, Bangalore-560 001.
5) M/s TCE /Room No.323 /Site Office/VidyutSoudha/Hyderabad

BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE, CHENNAI– 17
QUALITY ASSURANCE & CONTROL DEPT.

PAINTING SCHEME FOR PIPING

PROJECT NAME : - YADADRI TPS - 5X800 MW

BHEL CUSTOMER Nos : 7295,7296,7297,7298,7299,7300&7306

QPNo: 7295:QPC:11
Rev.No: 02
DATE : 03.07.2018

Sl. NO	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat			Finish coat				REMARKS
			Primer	No of coats & DFT	Paint	No of coats & DFT	Shade	Paint	No of coats & DFT	Shade	Total DFT Microns (Min.)	
1	2	3	4	5	6	7		9	10	11	12	13
1	Insulated Piping, components (MS / HRH / CRH / Aux Steam lines, ... tanks&vessels)	SSPC-SP3/ Power Tool Cleaning	Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (30 microns per coat.)	-----	-----	-----	-----	-----	Red Oxide	60	
2	Uninsulated Piping, components (Spray Water / Condensate lines ...,Tanks & Vessels)	SSPC-SP3/ Power Tool Cleaning	Red Oxide - Zinc Phosphate (Alkyd base to IS: 12744)	2 (25 Microns per coat)	-----	-----	-----	Synthetic enamel Long oil Alkyd to IS: 2932	3 (35 microns per coat) (2 at shop + 1 at site)	Smoke Grey (Shade No. 692 of IS: 5)	120 at shop + 35 at site	
3	Structures	Abrasive Blast cleaning to Sa 2 1/2 (35-50 microns)	Epoxy based Zinc Phosphate to IS: 13238	1 (30 Microns per coat)	Epoxy Based MIO Pigmented Intermediate Coat.	1 (DFT=75 Micron Min Per coat)	----	Epoxy based finish paint to IS: 14209 + Aliphatic Acrylic PU Paint to IS: 13213	1 (30 microns per coat) + 1 (30 microns per coat)	Smoke Grey (Shade No. 692 of IS: 5)	165	
4	Hangers & Supports - CLH & VLH	Abrasive Blast cleaning to Sa 2 1/2 (35-50 microns)	Epoxy Zinc rich primer to IS 14589 Gr.II,% VS = 35 Min	1 (50 microns per coat)	-----	-----	-----	Aliphatic Acrylic Polyurethane paint ,%VS = 40 min	2 (35 microns per coat)	Phirozi Blue Shade No.176 of IS 5	120	Refer Note 2
5	Pipe Clamps.	SSPC-SP3/ Power Tool Cleaning	Red Oxide - Zinc Phosphate (Alkyd base to IS: 12744)	2 (25 Microns per coat)	----	----	-----	Synthetic enamel Long oil Alkyd to IS: 2932	2 (35 microns per coat)	Smoke Grey (Shade No. 692 of IS: 5)	120	Refer Note 1
6	Stainless steel / Galvanized items	No paint										
7	Internal surface coating for ECW Tank	Blast cleaning to Sa2½ with surface profile 35-50 microns	Epoxy Zinc rich primer to IS 14589 Gr.II,% VS = 35 Min	2 (35 microns per coat)	-----	-----	-----	Epoxy based Polyamide cured finish paint	2 (65 microns per coat)	Smoke Grey Shade No 692 of IS 5	200	

Note 1 - Smoke grey shade for Carbon Steel ; White shade for Alloy Steel Clamps.

2 - For components other than CLH coming in H&S PGMAs shall be painted as per Sl.No:5 above. Plates, Pipes & Tubing Cut to size at site : Shall follow 2 coats of 60 microns of Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744 .

3 - TANKS : All are atmospheric tanks. (i) CW STORAGE TANK, (ii) IMPURE CONDENSATE TANK (iii) FLASH TANK & (iv) FLASH TANK & DRAIN TANK

PREPARED BY : VIVEKANANDA YELLU, DM/QA	APPROVED BY: C VAITHIANATHAN , AGM/QA	For Customer use

Executive Director
Thermal Projects Construction
TSGENCO, Vidyut Soudha,
Khairatabad, Hyderabad-500 082.

VOLUME : IIA

SECTION-X

PAINTING

CONTENT

VOLUME : IIA

SECTION-X

PAINTING

1.00.00 GENERAL

All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. Surfaces not easily accessible after shop assembly shall be treated before-hand and protected for life of the equipment. Surfaces to be finish painted after installation shall be shop painted with at least two (2) coats of primer. Steel surfaces, which are not to be painted, shall be coated with suitable rust preventive compound subject to the approval of the Owner.

All paints shall be used in accordance with the manufacturer's instructions. No thinners or other substance shall be added to the coating material without the approval of the Engineer. The quality and vendor of the paints shall require approval of the Owner.

All paints, when applied in a normal full coat, shall be free from runs, sags, wrinkles, patchiness, brush marks or other defects.

All primers shall be well marked into the surface, particularly in areas where pitting is evident, and the first priming coat shall be applied as soon as possible after cleaning, within four hours maximum. The paint shall be applied by brush, roller or airless spray, according to the manufacturer's instructions. Spray painting shall be carried out by operators trained and thoroughly experienced in the use of the equipment. If the drying interval between successive coats, which should not exceed one week, has been so long as to endanger the adhesion of the following coat, the paint already applied shall be lightly rubbed down with fine abrasive paper before putting on the next coat.

Paint spraying on large surfaces shall not normally be done indoors, except with the approval of the Engineer. Spray guns shall not be used outdoors in windy weather or near unprotected surfaces of a contrasting colour and under no circumstances shall spray guns be used where spray may be carried into or onto exposed electrical equipment.

Paint containers shall not be opened until required and the paint shall be mechanically mixed thoroughly before use, and agitated occasionally during use.

Electrical equipment shall be shop finished with one or more coats of primer and two coats of high-grade oil resistant enamel. The interior of all panels' cabinets and enclosures shall be finished with gloss white enamel.

The Contractor shall furnish sufficient touch-up paint for one complete finish coat on all exterior factory surfaces of each item of equipment. The touch-up paint shall be of the same type and colour as the factory applied paint and shall

be carefully packed to avoid damage during shipment. Complete painting instructions shall be furnished.

Shop primer for steel and iron surfaces which will have a continuous operating temperature below 35°C shall be selected by the Contractor, in accordance to the relevant standard. Special high temperature primer shall be used on surface exposed to operating temperature above 35°C.

The colour scheme shall be submitted during execution of contract for approval by the Purchaser/Engineer.

2.00.00 PREPARATION

Oil and grease shall be removed from the surface by washing with a suitable detergent, rinsing with clean water, and drying.

Surfaces to be shot blasted shall be cleaned to Swedish Standard SA 2.5 or equivalent, and all dust remaining after cleaning shall be removed.

The priming coat shall be applied without delay.

3.00.00 DAMAGED PAINTWORK

Any damaged paintwork shall be made good as follows:

a) The damaged area, together with an area extending 25mm around its boundary, shall be cleaned down to bare metal.

b) A priming coat shall be immediately applied, followed by a full paint finish equal to that originally applied and extending 50mm around the perimeter of the original damage.

c) The repainted surface shall present a smooth surface. This shall be obtained by carefully chamfering the paint edges before and after priming.

4.00.00 PAINTING SYSTEMS

The requirements for the dry film thickness (DFT) of paint and the materials to be used shall be as stated below, unless otherwise specified elsewhere in this specification.

a) Surfaces Subject To Weathering

All surfaces shall have a minimum of four coats of paint made up as follows:

Primer coat	:	35 micron DFT
Tie coat	:	35 micron DFT

Finishing coat (2 Nos.) : 35 micron DFT per coat

The total minimum DFT shall be 140 micron.

b) Surfaces Inside Buildings

All surfaces shall have a minimum of three coats of paint made up as follows:

Primer coat : 35 micron DFT

Tie coat : 35 micron DFT

Finishing coat (2 Nos.) : 25 micron DFT per coat

The total minimum DFT shall be 120 micron.

For type and colour of primer & finish coat of the equipment refer to Annexure-I & II.

For detail painting on building & structural steel elements refer Volume VII of this specification.

5.00.00 **COLOUR CO-ORDINATION & FINISH**

5.01.00 Exterior surfaces throughout the plant shall be finished in colours and textures which will blend harmoniously together and with the surrounding landscape.

5.02.00 Interior surfaces throughout the plant shall be finished in colours and textures which will blend harmoniously together and which will be conducive to; the comfort, well-being and high productivity of the operators. Operating plant and services provided shall be colour coded for ease of identification.

5.03.00 All finishes shall be durable and as far as possible maintenance free. Finishes shall be easily cleaned.

5.04.00 Final colours and finishes shall be to the Approval of the Owner.

ANNEXURE-1: COLOUR SCHEME FOR POWER PLANT & EQUIPMENT

SL. No.	Name of Equipment	Colour	Remarks
	MAIN PLANT		
1.	Main turbine	Opaline Green Semi Glossy finish	
2.	Main generator	Opaline green Semi Glossy finish	
3.	Condenser	Deep Orange	
4.	Ejectors (Main, starting and priming and vacuum pumps	Aluminium Cladding	Individual equipment to be identified by name & no.
5.	Heat exchangers (Eg.: deaerator LP heaters, HP heaters, gland steam condenser,	Aluminium Cladding	-do-
6.	Turbine oil cooler stator water cooler etc.)	Golden Yellow	-do-
7.	Flash tanks (HP, LP Etc.	Aluminium	-do-
8.	Pumps e.g. :	X	
	i) Boiler feed pumps	Deep Orange	However, individual pump to be identified by name & no.
	i) Condensate extraction pumps	Deep Orange	
	iil) Lube oil Transfer	Light Grey	

Sl. No.	Name of the Equipment	Colour	Remarks
9.	Turbine oil system		
	i) Main oil tank	Brown Glow	Oil tanks to be identified by their name
	ii) Central oil tank	Al. paint	
	iii) Oil purifier & Polishing filter	Light Grey	
10.	Boiler steel supporting structure	Light Grey	
11.	Boiler coating	Al. Cladding	
12.	Super heaters (exposed portions, if any)	Light Admirality Grey	
13.	Metal structures	Light Grey	
14.	Hand rails	Mint. Green	
15.	Pipe supports	Light Grey	
16.	Gratings (non-galvanized)	Black	
17.	Air ducts	Light Admirality Grey	Primary air, secondary air, roar air, ignitor air, scanned air etc. with hot or cold indication to be identified by suitable legend
18.	FD Fan PA fan, scanner (booster) air fan, igniter air fan, seal air fan	Light Admirality Grey	-do-
19.	Flue gas ducts	Dove grey	
20	ID Fans	-do-	

Sl. No.	Name of the Equipment	Colour	Remarks
21.	Coal mills and associated feeders	Quaker Grey	
22.	Mill reject system	Air craft Grey Green	
	FUEL OIL HANDLING SYSTEM		
23.	LDO storage tank	Al. paint	
24.	Furnace oil storage	Covered with G.I. sheet cladding	
25.	Pumps, filters and valves	Light brown	
	INSTRUMENT AND SERVICE PLANT AIR SYSTEM		
26.	Compressors with inter and after coolers	Sky blue	Identifying legends to be used
27.	Heaters/Drivers	Dove Grey	
28.	Air receivers	Sky blue	
	MISCELLANEOUS EQUIPMENTS		
29.	Cranes	Smoke Grey	
	Mono rails & chain pulley systems	Smoke Grey	
30.	Hooks	Black X	
31,	Tanks	Galvanized mesh	X-same colour as for the relevant piping
32.	Fencing	Aluminium Paint	
33.	Lighting poles		

Sl. No.	Equipment	Colour	Remarks
34.	Chimney	Half white & signal Red	Entire outside shell shall be painted with alternate bands of signal red and white colour, (out of which top 50m shall be painted with heat and acid resistance paint and balance with water proof cement paint conforming tolS:5410)
	ELECTRICAL COMPONENTS		
35.	Main generator		
	Lub oil system	X	X-same colour as for the relevant piping
	Hydrogen system	X	-do-
36.	Diesel generator set		
	Diesel engine	Smoke grey	
	Generator	-do-	
37.	L.T. Transformers		
	Indoor	Opaline Green Semi Glossy finish	
38.	Outdoor 33 KV class transformers	-do-Light grey	
39.	Generator bus duct		
	Inside of main plant bldg.	Opaline Green Semi Glossy finish	
	Outside of main plant bldg.	- do -	
40.	Generator transformer	Light grey	
41.	Battery charger	Opaline Green: Semi Glossy finish	

Sl. No.	Name of the Equipment	Colour	Remarks
42.	Mimic flow diagram		
	400 KV	Dark Violet	
	220 KV	Golden Yellow	
	132 KV	Sky Blue Signal	
	33.0 KV	red Solmon Pink	
	11.0 KV	Canary Yellow	
	11.0 KV	Aircraft Blue	
	6.6 KV	Middle brown	
	415V		
43	Unit Control Board (Control Room)	Opaline Green Semi Glossy finish	
44.	Mimic Relay Panel for CHP	Smoke grey	
45.	Motors		
	Indoor	Smoke Grey	
	Outdoor	Light grey	
46.	LT Switchgear (Indoor)	Glossy White	
	LT Switchgear interior	Opaline Green Semi Glossy finish	
	LT switchgear exterior	-do-	
	MCC	-do-	
	D.C. Distribution board	-do-	
	L.T. busduct inside of enclosure	-do-	
	L.T. busduct outside of enclosures		
47.	6.6 KV SWGH	Opaline Green Semi Glossy finish	
	- 6.6 KV busduct inside of main plant bldg.		

Sl. No.	Name of the Equipment	Colour	Remarks
48.	Common system and Station aux. electrical panel (Control room)	Opaline Green Semi Glossy finish	
49.	Control modules and console inserts	Smoke Grey	
50.	Electronic system cabinets, computer system cabinets, BMS, ATRS, EHC system cabinet etc. (Control equipment room)	Opaline Green semi Glossy finish	
51.	All locally mounted C&I systems panel cabinets (Local) (External)	-do-	
52.	Internal colour for all panels and cabinets as listed above	Glossy White	
53.	Lighting Package Equipment		
	- Inside	Glossy White *	
	- Outside	Opline Green Semi Glossy finish	
	220 KV SWITCHYARD EQUIPMENTS		
54.	Control and Relay Panels (Control equipment room and switchyard control room)	Opaline Green Semi Glossy finish	
	ii) PLCC Cabinets	Opaline Green Semi Glossy finish	
55.	CTs, PTs, Lighting arrestors, and Marshalling boxes	Light Admirality Grey	

Sl. No.	Name of the Equipment	Colour	Remarks
56.	Porcelain parts like insulators	Dark Brown	
57.	Generator Protection (Control equipment room)	Opaline Green panel Semi Glossy finish	
58.	All other structures and equipments	Galvanised	

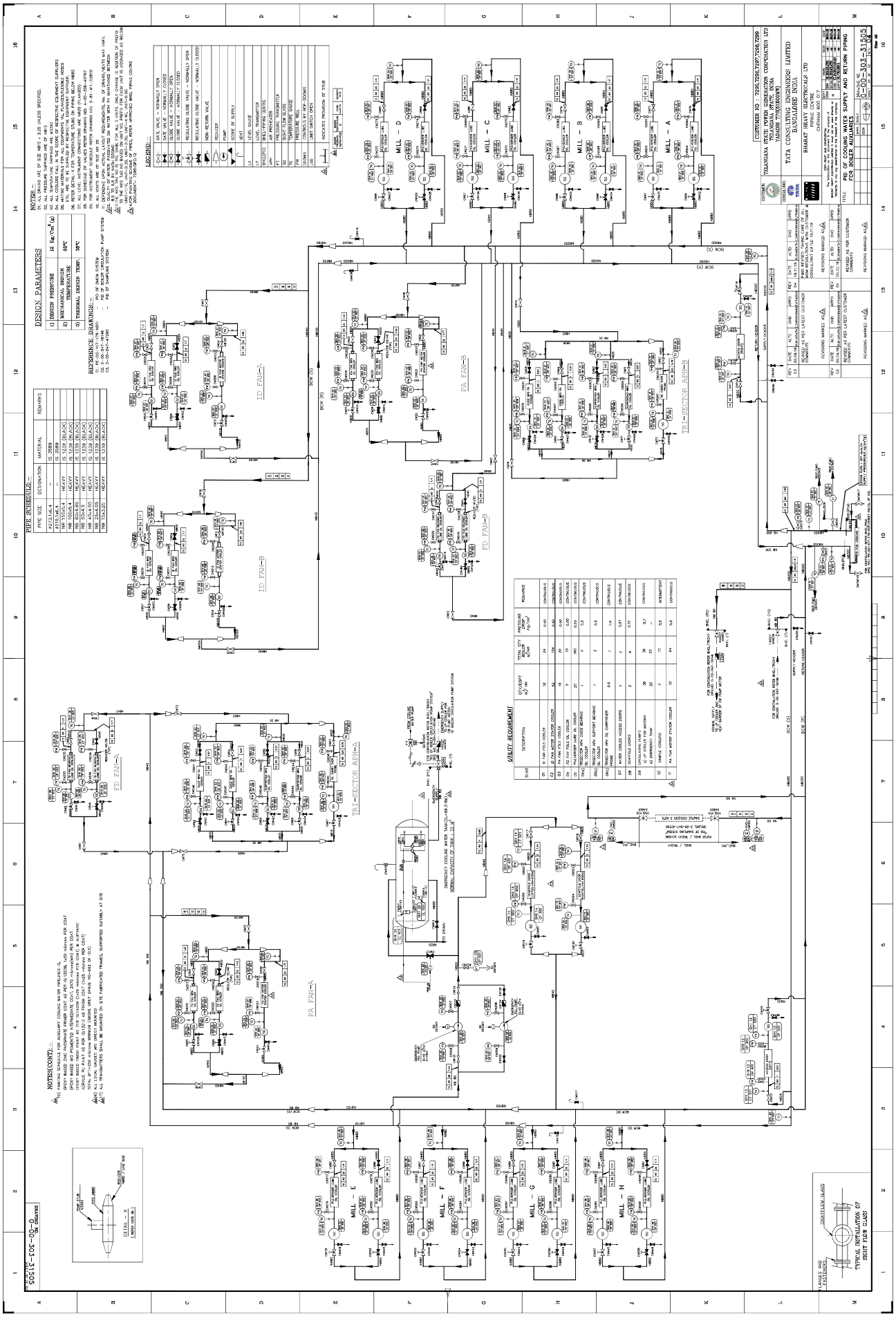
ANNEXURE-2 – PIPELINES

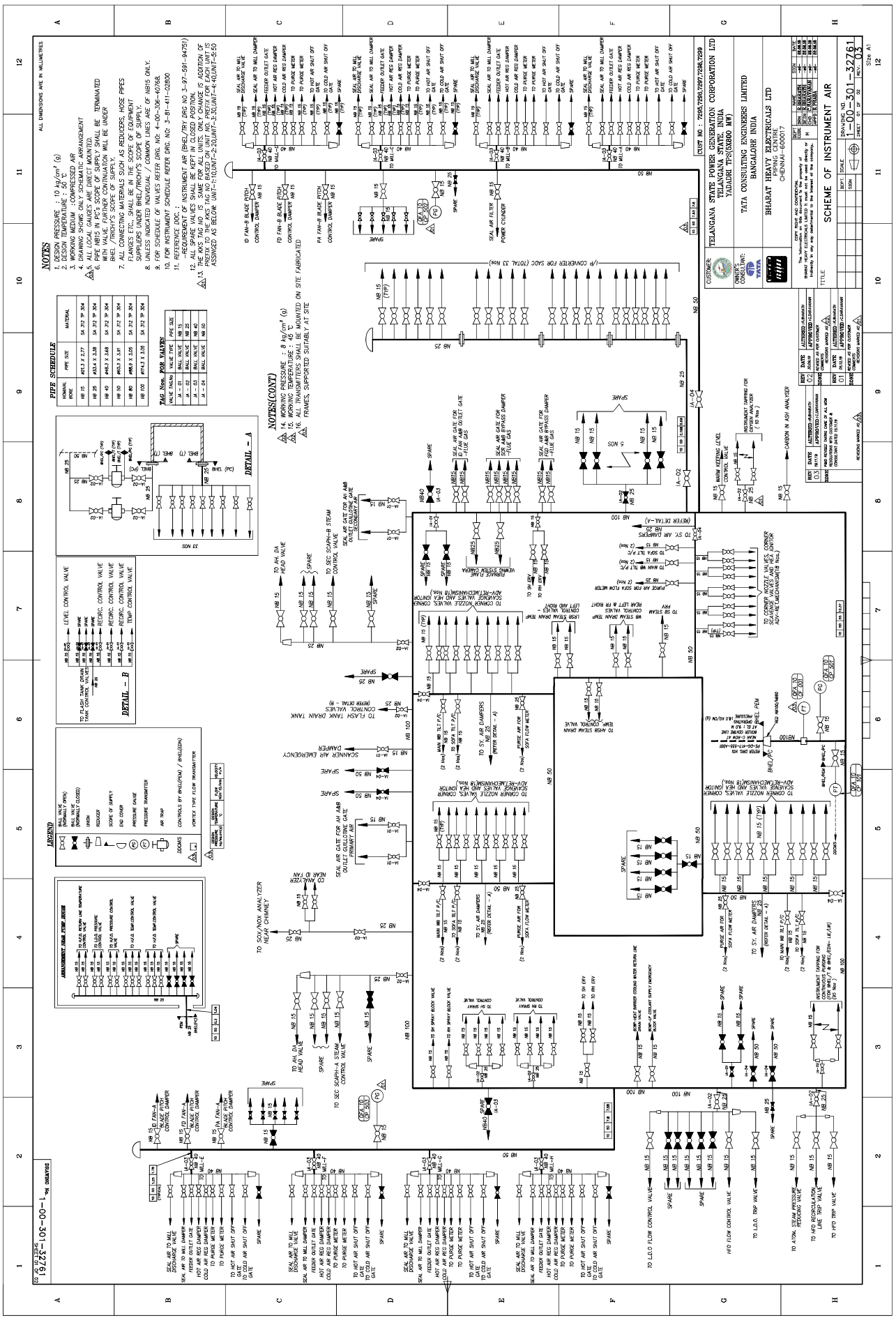
Sl. No.	Name of the Equipment	Colour	Legend	Remarks
1.	Water			
a)	Condensate	Satin Blue	MC	
i)	LP bypass attemperation	Opaline Green with semi glossy finish	LPBA	
ii)	Condensate make-up line to condenser from surge tank and from DM supply header	-do-	CCM	
b)	Boiler feed	Al. Cladding	BFD	
	HP bypass	Opaline Green	HPBA	
i)	attemperation	Semi glossy finish		
ii)	Super-heater attemperation	-do-	SHA	
III)	Reheater attemperation	-do-	RHA	
iv)	Aux. PRDS attemperation	Al. Cladding	APRD	
c)	Heater drips	-do-	HD	
d)	Drains back to cyde cycle	-do-	D	
e)	Drains to waste	-do-	W	
f)	Cooling/Circulating			
	- Pump Inlet	Phiroza Blue	CW	
	- Pump Outlet	Sky Blue		
g)	Aux. Clarified water			
	- Pump Inlet	Phiroza Sky Blue	ACW	
	- Pump Outlet	Sky Blue		

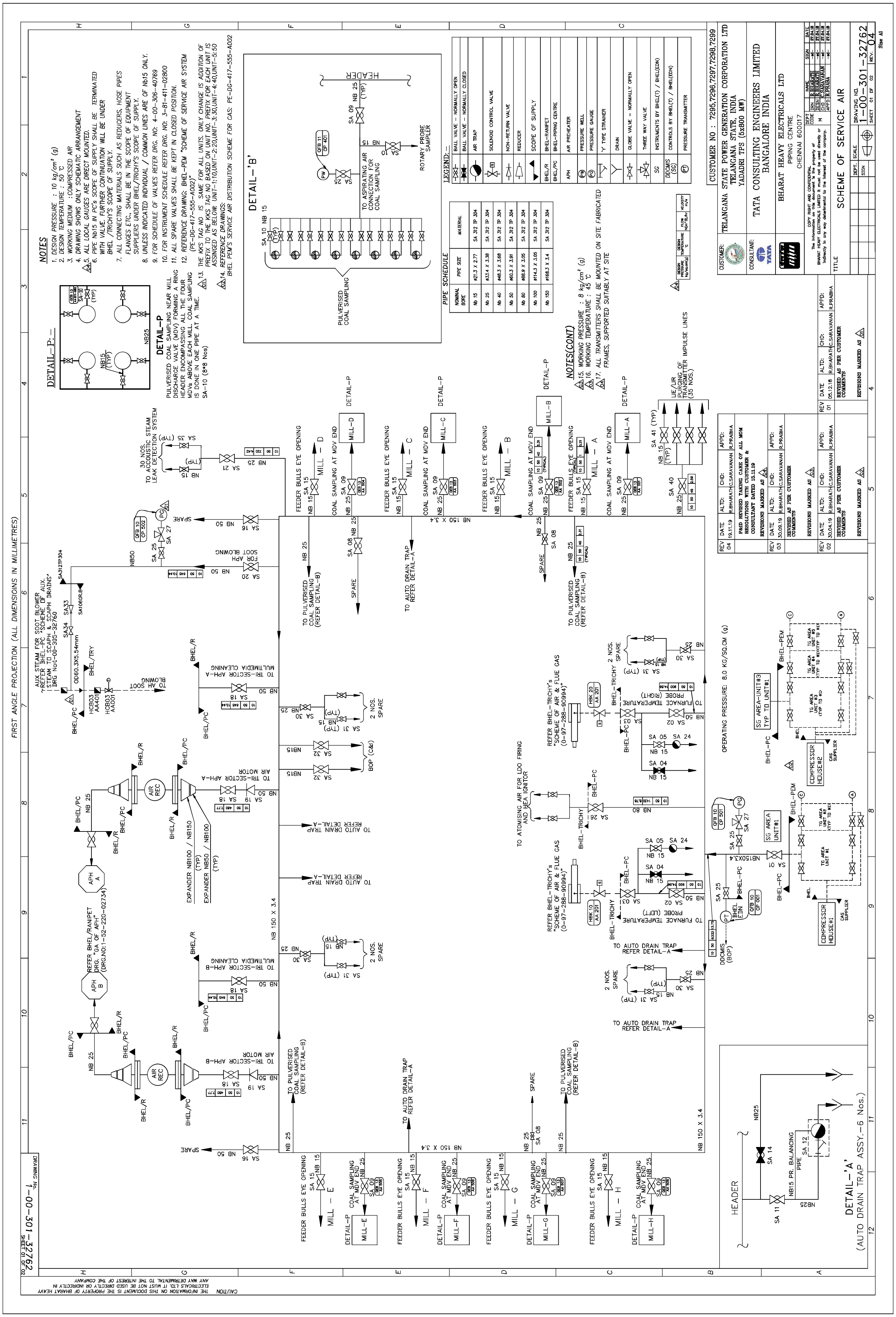
Sl. No.	Name of the Equipment	Colour	Legend	Remarks
h)	Demineralised water (cooling purposes)	Smoke Grey	DMCW	
i)	Drinking water	G.I. Line	PW	
j)	Blowdown	Al. Cladding	BD	
k)	Ash water piping	HP-Green	ASH-HP	
	(both HP & LP system)	LP-Sky Blue	ASH-LP	
2.	Steam			
a)	Main	Aluminium*	MS	*Aluminiurn is to be used only in cases where the pipes are not already clad with aluminium sheets.
b)	Auxiliary	-do-	AS 1EX	
c)	Bled (extraction)	-do--	2 EX	
d)	Hot reheat	-do-	HR	
e)	Cold reheat	-do-	CR	
f)	HP Bypass	-do-	HPB	
g)	LP Bypass	-do-	LPB	
h)	Exhaust/vent (open to atmosphere) and safety valve	Al. Paint	V/SVE	Hazard mark may be given
3.	Air			
a)	Instrument	Dark Blue		
b)	Service/ Plant	Light Blue		
c)	Vacuum			

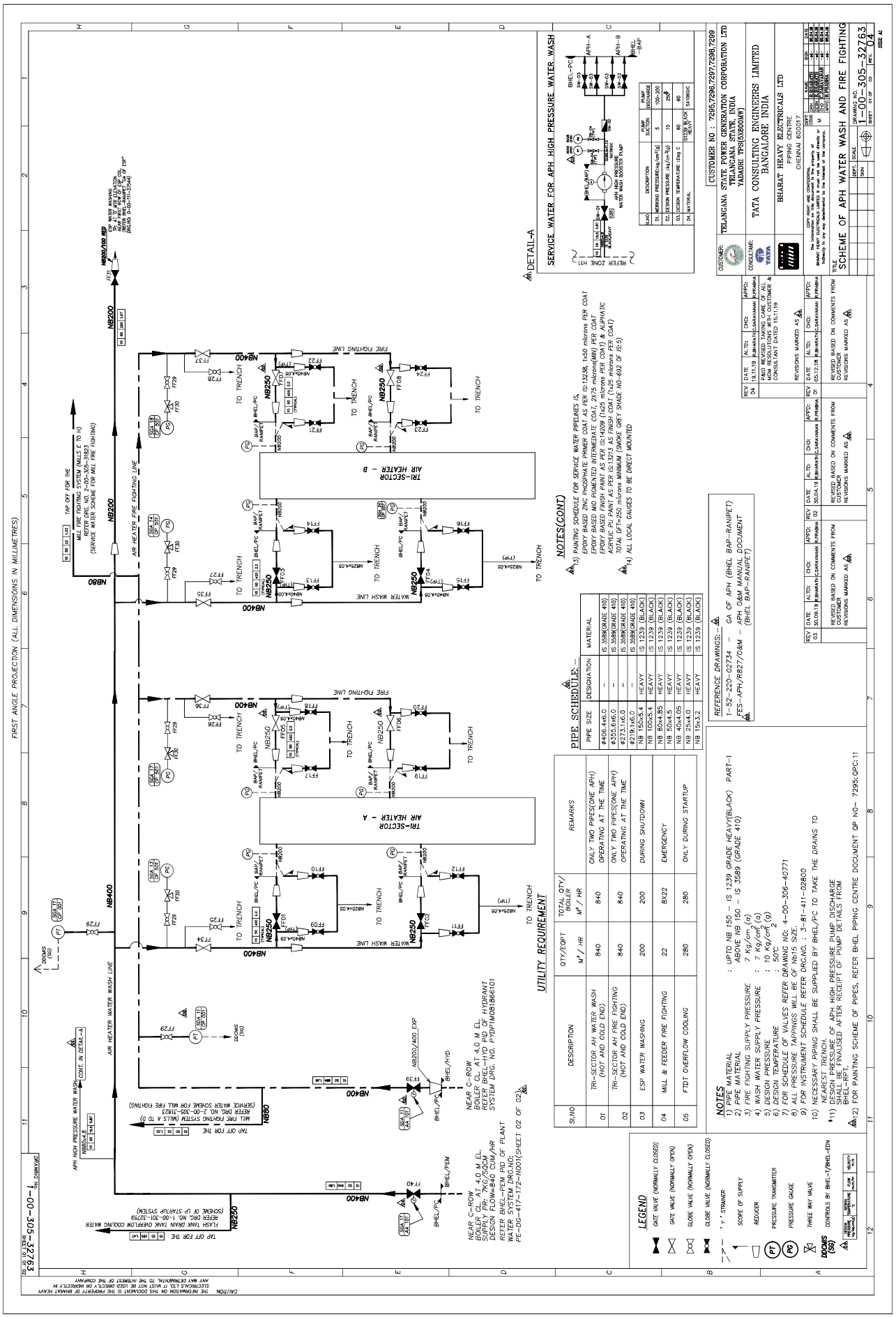
Sl. No.	Name of the Equipment	Colour Legend		Remarks
4.	Air-steam Mixture			* Aluminium is to be used only in cases where the pipes are not already clad with aluminium sheets
a)	From turbine glands to gland steam condenser	Aluminium		
b)	From Condenser to ejectors	-do-		
c)	From Heater Shells to Condenser	Aluminium		
5.	Gas			
a)	Hydrogen	Signal Red	H_2	
b)	Chlorine	Greenish Yellow	CL	
c)	Carbon dioxide	Black	CO_2	
6.	Oils			
		1. Before Filter -Dark Yellow	CRO	
		2. After Filter -Light Yellow	CRO	
b)	Furnace oil	Aluminium Cladding	FO	
c)	Trip Oil	Red	TRP-0	
d)	Auxiliary Trip Oil	Red & While Bands	ATRO	
e)	Primary Oil	Greenish Yellow	PRO	
f)	Secondary Oil	Blue	SERO	
g)	Auxiliary Secondary oil	Red & Blue Bands	Aux. SE-0	
h)	Transformer oil	Smoke Grey	TRO	
7.	Pulverized fuel	Grey	PF	
8.	Fire Installation	Fire red	FIRE	
a)	Control Fluid			

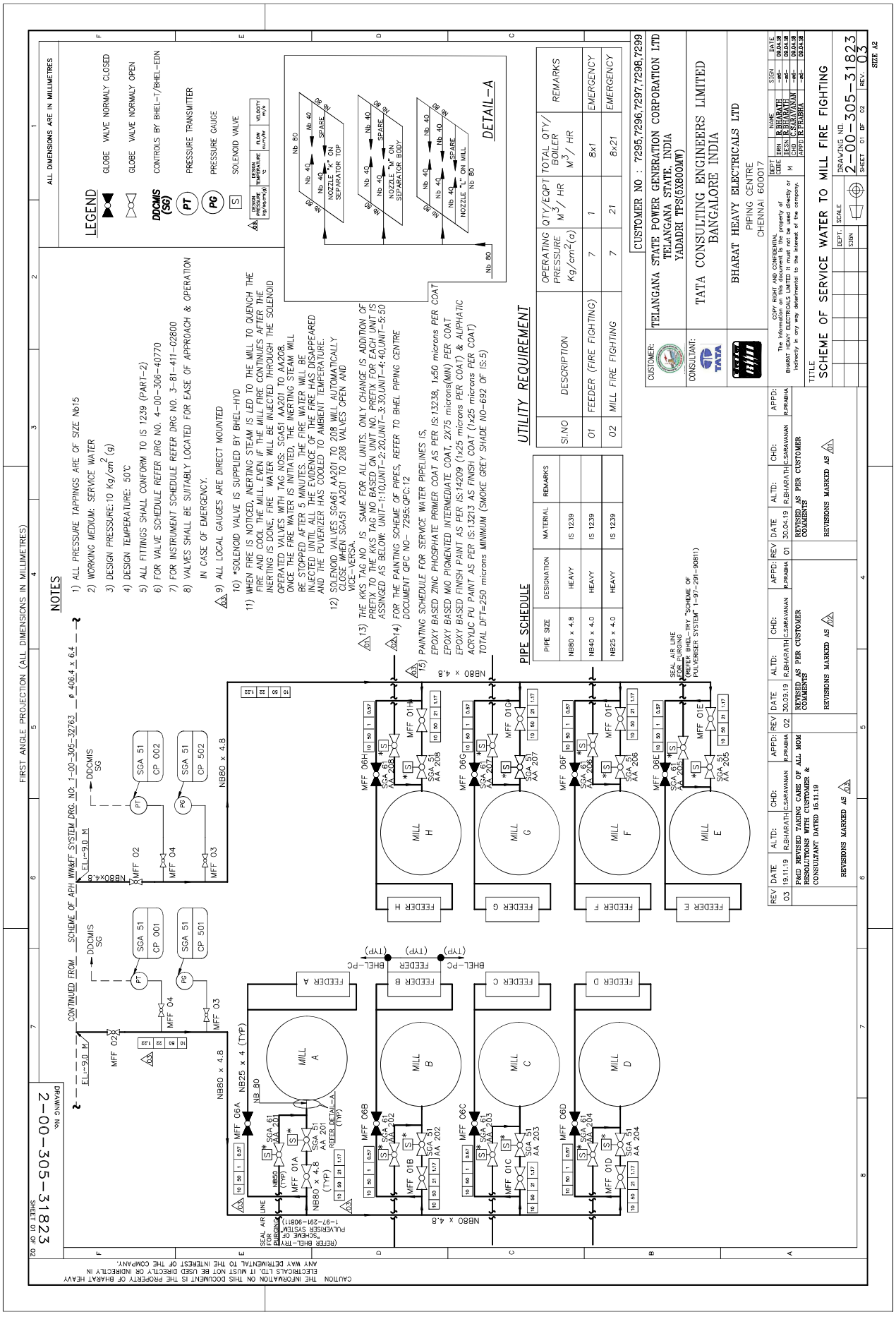
Sl.No.	Name of the Equipment	Colour	Legend	Remarks
9.	Chemical Feed			
a)	HP dosing to boiler (Phosphate)	Light Grey	HPDO	
b)	LP dosing to Condensate (Hydrazine)	S.S. Tube (No Paint)	LPDO	






CUSTOMER NO : 7295,7296,7297,7298,7299
TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE, INDIA
YADADRI TPS (5x800 MW)
TATA CONSULTING ENGINEERS LIMITED
BANGALORE INDIA
BHARAT HEAVY ELECTRICALS LTD
PIPING CENTRE
CHENNAI 600017
SCHEME OF SERVICE AIR
1-00-301-32762


SERVICE WATER FOR APH HIGH PRESSURE WATER WASH
DETAIL-A
NOTES(CONT)
UTILITY REQUIREMENT
PIPE SCHEDULE
REFERENCE DRAWINGS
NOTES
LEGEND
CUSTOMER NO : 7295,7296,7297,7298,7299
TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA STATE, INDIA
YADADRI TPS(5X800MW)
TATA CONSULTING ENGINEERS LIMITED
BANGALORE INDIA
BHARAT HEAVY ELECTRICALS LTD
PIPING CENTRE
CHENNAI 600017
SCHEME OF APH WATER WASH AND FIRE FIGHTING
1-00-305-32763
04


NOTES
1) ALL PRESSURE TAPPINGS ARE OF SIZE Nb15
2) WORKING MEDIUM: SERVICE WATER
3) DESIGN PRESSURE:10 Kg/cm2(g)
4) DESIGN TEMPERATURE: 50°C
5) ALL FITTINGS SHALL CONFORM TO IS 1239 (PART-2)
6) FOR VALVE SCHEDULE REFER DRG NO. 4-00-306-40770
7) FOR INSTRUMENT SCHEDULE REFER DRG NO. 3-81-411-02800
8) VALVES SHALL BE SUITABLY LOCATED FOR EASE OF APPROACH & OPERATION IN CASE OF EMERGENCY.
9) ALL LOCAL GAUGES ARE DIRECT MOUNTED
10) *SOLENOID VALVE IS SUPPLIED BY BHEL-HYD
11) WHEN FIRE IS NOTICED, INERTING STEAM IS LED TO THE MILL TO QUENCH THE FIRE AND COOL THE MILL. EVEN IF THE MILL FIRE CONTINUES AFTER THE INERTING IS DONE, FIRE WATER WILL BE INJECTED THROUGH THE SOLENOID OPERATED VALVES WITH TAG NOS: SGA51 AA201 TO AA208. BE STOPPED AFTER 5 MINUTES. THE FIRE WATER WILL BE INJECTED UNTIL ALL THE EVIDENCE OF THE FIRE HAS DISAPPEARED AND THE PULVERIZER HAS COOLED TO AMBIENT TEMPERATURE.
12) SOLENOID VALVES SGA61 AA201 TO 208 WILL AUTOMATICALLY CLOSE WHEN SGA51 AA201 TO 208 VALVES OPEN AND VICE-VERSA.
13) THE KKS TAG NO IS SAME FOR ALL UNITS. ONLY CHANGE IS ADDITION OF PREFIX TO THE KKS TAG NO BASED ON UNIT NO. PREFIX FOR EACH UNIT IS ASSINGED AS BELOW: UNIT-1:10,UNIT-2:20,UNIT-3:30,UNIT-4:40,UNIT-5:50
14) FOR THE PAINTING SCHEME OF PIPES, REFER TO BHEL PIPING CENTRE DOCUMENT QPC NO- 7295.QPC.12
15) PAINTING SCHEDULE FOR SERVICE WATER PIPELINES IS, EPOXY BASED ZINC PHOSPHATE PRIMER COAT AS PER IS:13238, 1x50 microns PER COAT EPOXY BASED MIO PIGMENTED INTERMEDIATE COAT, 2X75 microns(MIN) PER COAT EPOXY BASED FINISH PAINT AS PER IS:14209 (1x25 microns PER COAT) & ALIPHATIC ACRYLIC PU PAINT AS PER IS:13213 AS FINISH COAT (1x25 microns PER COAT) TOTAL DFT=250 microns MINIMUM (SMOKE GREY SHADE NO-692 OF IS:5)
LEGEND
GLOBE VALVE NORMALLY CLOSED
GLOBE VALVE NORMALLY OPEN
DDCMIS (SG) CONTROLS BY BHEL-T/BHEL-EDN
PT PRESSURE TRANSMITTER
PG PRESSURE GAUGE
S SOLENOID VALVE
ALL DIMENSIONS ARE IN MILLIMETRES
FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)
PIPE SCHEDULE
PIPE SIZE | DESIGNATION | MATERIAL | REMARKS
NB80 x 4.8 | HEAVY | IS 1239
NB40 x 4.0 | HEAVY | IS 1239
NB25 x 4.0 | HEAVY | IS 1239
UTILITY REQUIREMENT
SI.NO | DESCRIPTION | OPERATING PRESSURE Kg/cm2(g) | QTY/EQPT M3/HR | TOTAL QTY/ BOILER M3/HR | REMARKS
01 | FEEDER (FIRE FIGHTING) | 7 | 1 | 8x1 | EMERGENCY
02 | MILL FIRE FIGHTING | 7 | 21 | 8x21 | EMERGENCY
DETAIL-A
CONTINUED FROM SCHEME OF APH WW&FF SYSTEM DRG NO: 1-00-305-32763
CONTINUED FROM SCHEME OF PULVERISER SYSTEM 1-97-291-90811
MILL A
MILL B
MILL C
MILL D
MILL E
MILL F
MILL G
MILL H
FEEDER A
FEEDER B
FEEDER C
FEEDER D
FEEDER E
FEEDER F
FEEDER G
FEEDER H
NB80 x 4.8
NB25 x 4 (TYP)
NB 80
REFER DETAIL-A (TYP)
SEAL AIR LINE FOR PURGING (REFER BHEL-TRY "SCHEME OF PULVERISER SYSTEM" 1-97-291-90811)
CUSTOMER NO : 7295,7296,7297,7298,7299
CUSTOMER: TELANGANA STATE POWER GENERATION CORPORATION LTD TELANGANA STATE, INDIA YADADRI TPS(5X800MW)
CONSULTANT: TATA CONSULTING ENGINEERS LIMITED BANGALORE INDIA
BHARAT HEAVY ELECTRICALS LTD PIPING CENTRE CHENNAI 600017
TITLE SCHEME OF SERVICE WATER TO MILL FIRE FIGHTING
DRAWING NO. 2-00-305-31823
SHEET 01 OF 02
REV. 03
SIZE A2
REVISIONS MARKED AS
REVISED AS PER CUSTOMER COMMENTS
PAID REVISED TAKING CARE OF ALL MOM RESOLUTIONS WITH CUSTOMER & CONSULTANT DATED 15.11.19
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