
TYPICAL PROJECT EXECUTION PLAN

Material Take-off

If required the material Take-off will be performed in a speedy, efficient and accurate manner to ensure that all the materials will be ordered well in advance and will be at the job site matching construction schedule.

Immediately upon signing a contract we will commence the detail equipment take-off to add more detail to the equipment take-off that has already been prepared at the tender stage.

For piping take-off, Lorven Energies India Pvt. Ltd. has a proprietary computer system for performing material take-off.

The proprietary computer system needs to be customized to some degree for individual project as project specifications vary from project to project. Therefore, immediately after contract award we would customize our computer system to reflect the detailed insulation, cladding and accessories specification and that are specific to the project. This will enable to instantly calculate the bill of materials in detail and summary form as soon as the line information is entered into the computer from isometrics.

Immediately on receipt of isometric drawing we would commence the takeoff of the isometrics and enter the takeoff information into the computer. The information that will be entered includes the line numbers the orientation of pipe (i.e., horizontal or vertical), the quantity and radius of bends, the quantity, pressure and number of valves and flanges, as well as additional relevant information such as anticipated release schedule.

A typical piping Takeoff, with a brief explanation, has been enclosed elsewhere in this submittal.

Once the information has been entered into the computer it becomes the central database from which many aspects of insulation works will be managed. Examples of how this information is used include

- A detailed and summary bill of materials can be produced by individual line, group of lines, unit number, release date, etc.

A typical material and shipment control is enclosed elsewhere in this submittal.

- Material requisitions can be printed out to enable the warehousing operations to issue precise quantities of materials that are required for each line, this provides a valuable control on material consumption and wastage.

A typical Material Requisition is enclosed elsewhere in this submittal.

- A Fabrication Release ticket is printed out for the sheet Metal fabrication facility to fabricate sheet metal efficiently.
- The planned man hours required for the scaffolding and insulation for each line will be automatically generated by the computer. Each day the quantity of scaffolding, insulation and cladding that is completed for each line is entered into the computer. As a result, percentage progress completion and progress invoice calculations can be generated quickly and rapidly.

- When the information regarding release date, start date, completion date and inspection date is also entered into the computer, all the necessary manpower planning and loading reports can easily generated.

Heat Loss Calculation

Lorven Energies India Pvt. Ltd. possesses its own proprietary software to perform Heat Loss Calculation to: BS, ASTM, DIN and JIS Standards. This enables us to estimate the Insulation thickness, Maximum heat loss, and surface temperature after insulation etc.

A typical Heat Loss Calculation is enclosed elsewhere in this submittal.

SPECIAL NOTE ON TAKEOFF FOR POWER PLANTS

Lorven Energies India Pvt. Ltd. performs a very detailed material estimate for Power Plants:

- We prepare CAD drawing for different areas of the Boiler casing and ducting. This enables us to recalculate and supply precut Corrugated / Ribbed cladding.
- These drawings show exactly where and how these sheets are to be installed and are very useful during site installation.

A typical such drawing produced be used for a recent is enclosed elsewhere in this submittal.

Material Purchase

The Mumbai HO is the driving force and the important factor in the successful performance of the material procurement efforts that will be required on this project to ensure that all materials will be delivered to the job site on time.

The overall co-ordination and control of the material procurement efforts will be the responsibility of the Lorven Energies India Pvt. Ltd., Mumbai Office. A master control database will be maintained showing status of the procurement of each individual type of material that is required at the job site.

The above procedure has worked successfully for the SUAVAL group (**former partners**) on many major international insulation projects where several hundred 40' containers of Insulation, cladding and accessory materials have been shipped in a tight schedule to a remote job site location.

Material Inspection

The quality control department of our Mumbai HO will be responsible for ensuring the quality of materials that are shipped from region. Our quality control personnel in each regional office will be performing random inspections at our vendor's facilities to ensure the quality of manufacture of materials, packing and loading of materials into the containers. Tests on random samples will be performed during manufacturing stage by both the manufacturer as well as our own quality control personnel. Materials will also be checked once they are received at site to ensure that there has been no damage during transit. If damage does occur, then immediate remedial action will be taken to ensure that damage will not occur in future shipments.

Shipping

The shipping and expediting personnel of each regional office will be responsible for ensuring that all materials are prepared properly to ensure that customs clearance procedures are followed. Shipments will be made on reputable and well-financed shipping lines only.

Customs Clearance

It will be the responsibility of Lorven Energies India Pvt. Ltd. to produce all the necessary documentation with the required information and in the required format to facilitate customs clearance under applicable regulations. Lorven Energies India Pvt. Ltd. has had extensive experience in the preparation of documentation to ensure the customs clearance proceeds smoothly.

Inland Transportation

Inland transportation of containers will be organized in partnership with reputable companies who have transported several hundred containers for several companies over the years.

Site Storage

In addition, for our off-site facility we will be constructing on-site facilities for shorter term storage of materials. Additional details of our proposed on-site facilities are attached.

Prefabrication

Sheet Metal

When specific pipelines are released to us for insulation, they will be marked in our computer system as released. The computer system will combine lines of the same pipe size and generate sheet metal fabrication bills of material for fabrication of sheet metal. All prefabricated sheet metal will be labeled with computer-generated labels.

Our prefabrication facility will be managed by our fabrication superintendent who has had extensive experience in management of sheet metal fabrication facilities in various locations. The layout of our sheet metal fabrication shop is enclosed.

Scaffolding

We intend to perform the design and construction in accordance with the requirements detailed in Project Site Rules and Safety regulations. Whenever equipment or piping is released to us for insulation our scaffolding superintendent will make an assessment of scaffolding requirements and plan the scaffolding work and material requirements. The scaffolding team will then erect the scaffolding under the direction of a competent scaffolding specialist. A "scaffolding" system will be adopted for all scaffolding to ensure that scaffold inspections are carried out at least weekly by a competent person. The names and resumes of all appointed "Competent persons" would be submitted to the Client before they commence their duties.

We shall mobilize required quantities of material on site based on the work release schedule for the project.

Interface with other Contractors

Interface with other contractors is a very important aspect of successful completion of a major insulation project. A smooth working relationship with other contractors is essential to ensure that all contractors have proper access to work surfaces and that once insulation is complete that it is not damaged by other contractors. We suggest that Client organize periodic meetings where representatives of all the contractors are present so that interface and other inter-contractor issues can be solved before they become problems.

Progress Reporting

We will be inputting into our computer system progress information on work completed by individual pipeline on daily basis. As a result, we will be able to produce reports for the Client on progress made whenever required. As piping or equipment is released to us, we will be marking it on our computer system as released. Therefore, we will also be able to provide the Client with reports in the head of work that available to us as well as the number or man hours and length of time that we would require to finish the work.

Progress Invoicing Calculation

We will be inputting into our computer system daily progress information on work completed for each pipeline and equipment. The work completed will be identified in terms of (a) prefabrication completed (b) scaffolding completed (c) insulation completed and (d) sheet metal cladding completed. Our computer system will also have in its database the entire set of unit rates for insulation works. We will customize our computer system to produce a progress invoice in the format required by the Client. Therefore, at the end of each month it will be quite straightforward to produce the progress invoice for the month.

Box Insulation

The Valve and Flange box insulation is scheduled to be performed towards the end of the insulation works, after all pipe lines have been tested. We intend to prefabricate as many of the valve and flange boxes as possible during the course of project, (subject to availability of storage space), so that the fabrication of valve and flange boxes does not hold up the schedule of completion of the project.

Completion

In order to successfully complete the project, all works need to be inspected and accepted by the Client. We plan to work closely together with Client inspection personnel throughout the course of the project and to make any rectifications quickly and smoothly. Our crews will also be available to assist in insulation related activities required for commissioning of the plant. At the end of the project, we will demobilize our site storage and fabrication facility.