社会開発協力部報告書

REPUBLIC OF BOLIVIA

BOLIVIAN NATIONAL RAILWAYS

RAILWAY CONSTRUCTION PROJECT, EASTERN LINE

(TAPERAS-ROBORE)

Vol. 1. Instructions to Bidders
2. General Conditions of Contract
3. Bid Form
4. General Specifications
5. Technical Specifications
6. Special Specifications
7. Bill of Quantities
8. Drawings
9. Form of Agreements

Volume 6

March, 1981

JAPAN INTERNATIONAL COOPERATION AGENCY

(JICA)

REPUBLIC OF BOLIVIA

BOLIVIAN NATIONAL RAILWAYS

RAILWAY CONSTRUCTION PROJECT, EASTERN LINE

(TAPERAS-ROBORE)

Vol. 1. Instructions to Bidders
2. General Conditions of Contract
3. Bid Form
4. General Specifications
5. Technical Specifications
6. Special Specifications
7. Bill of Quantities
8. Drawings
9. Form of Agreements

Volume 6

March, 1981

JAPAN INTERNATIONAL COOPERATION AGENCY

(JICA)

SPECIAL SPECIFICATIONS

CONTENTS

SPECIAL SPECIFICATIONS

SS. 01 Special Obligation of Contractor for Engineer's Accommodation and Vehicles

(1) In clarification of the provisions of General Specifications Clauses GS. 12 (1) (d) and GS. 26, it is to be understood that the Contractor shall provide the followings:

(a) Maintenance and serving for Two Hundred and Sixty Four (264) vehicle-months of jeeps throughout the Contract Period to be used by the Engineer and his staff members for the performance of supervision of the project works, including supply of tires, spare parts, fuel and lubricants and repairs;

(b) Suitable housing at Robore and Taperas, including offices, living quarters, accommodation, furniture and fittings, including their maintenance and repair and supplying water and electric power during the Contract Period;

(c) One radio-telephone set each at Robore and Taperas, including two radio masts each 18 meters high and affiliated power source at each location to be installed on the sites as directed by the Engineer;

(d) Providing to the Engineer's and his staff's offices all necessary office equipment, instruments and stationaries during the duration of works as specified in this Clause.

(2) The living quarters and offices shall be handed over to the Engineer not later than 90 days after the commencement date of the Contract Period.

If, after the above-mentioned period of time, the Contractor has not completed the construction of offices, living quarters and the accommodation and has not supplied all the furniture and fittings, the Engineer will be entitled to take appropriate action to charge all the relevant expenses to the Contractor by means of deductions from monthly payment certificates.

(3) After the provisional hand-over of the project works, all buildings, equipment, office equipment, fittings, furniture and household effect, provided under this Clause, will become the properties of the Employer and shall be handed over to him complete as herein described and in a good state of repair.

(4) The housing provided under the item (b) above, shall consist of the Engineer's and his staff members' offices and living quarters, in reasonably close comformity with the drawings on sites provided by the Engineer and chosen by the Engineer, consisting of separate buildings, together with equipment, office equipment, furniture and fittings as stated below:

(a) The living quarters shall be equipped, to the satisfaction of the Engineer, with the necessary electrical installations, heaters, and independent electric generator, and water supply by means of a reserve tank.

(b) All offices and living quarters, shall be constructed in permanent materials, weather proof, within minimum roof pitch of 35 degrees, and minimum eaves overhang of 1.5 meters. They shall be well founded on concrete slab or strip footings with concrete floors, fully damp and insect proof.

(c) All rooms have adequate insect proof ventilation and glazed openings, and lockable doors.

(d) Living quarters and offices shall be equipped, to the satisfaction of the Engineer, with electric installations, and full water supply with elevated tanks for 6,000 liters and

water pumps. All sinks, wash-basins and toilet bowls of flushing type will be adequately tapped and ventilated and connected to septic tanks.

(e) The sites will be adequately fenced. Rainwater shall be efficiently collected and discharged clear of buildings and drained to the edge of the enclosed areas.

(f) All accommodation shall be constructed according to good local building practice, finished and fitted to the satisfaction of the Employer and chosen by the Engineer.

(5) Payment for the performance of the works described above will be made as provided in General Specifications Clauses GS. 12 (4) and GS. 26 where the first installation of 70% (seventy per-cent) is understood to cover all mobilization except the cost of demobilization, the maintenance and serving the Engineer's jeeps and maintenance and repair of housings provided under the item (2) above, both of which are provided for with the second installation of 30% (thirty per-cent). Such payment covers the utilization of but not the ownership of the equipment, apparatus and installation of field laboratory which remains the property of the Contractor on the completion of the Contract. Any costs incurred in the operation and maintenance of the laboratory will not be paid for separately, but shall be included in the prices for various pay items under the Contract.

(6) The minimum accommodation and fittings to be provided shall be as listed below:

(a) **Offices**

On sites the following offices shall be provided by the Contractor for the use by the Engineer's Team. The location of those offices will be chosen by the Engineer.

(i) **Engineer's Office in Robore**

- Chief Resident Engineer's Room:
  Minimum floor area of 16.5 sq.meters fitted with a large ceiling lamp, an electric plug, and equipped with a executive desk, a desk lamp, side desks, a executive chair, a office safe of double lock and variable number lock, a metallic filing cabinet with two doors and five shelves (0.95 m x 0.50 m x 1.85 m), 2 metallic filing cabinets with 4 drawers (0.40 m x 0.60 m x 1.40 m) and a room heater.
- Reception Room:
  Minimum floor area of 13.5 sq.meters fitted with a large ceiling lamp, an electric plug, a sofa and 3 arm-chairs, a coffee table and a sideboard.
- Administrator's Room:
  Minimum floor of 10 sq.meters fitted with a large ceiling lamp, 2 electrical plugs and equipped with a standard writing desk, a typing desk, 2 office chairs, 2 metallic cabinet with 2 doors and five shelves, 2 desk lamps, a manual Olivetti standard typewriter (70 cm), a manual standard typewriter, a set of plain paper copying machine (minimum capacity A3 size of Fuji Xerox or equivalent) and a room heater.
- Meeting Room:
  Minimum floor area of 26 sq.meters fitted with 2 large ceiling lamps, 2 electric plugs, a meeting table for 14 persons and 14 folding chairs, a blackboard (120 cm x 240 cm) and a room heater.
- Assistant Resisdent Engineer's Room:
  Minimum floor area of 13.5 sq.meters fitted with a large ceiling lamp, an electric plug, and equipped with a standard writing desk with drawers, a desk lamp, a manual Olibetti standard typewriter, an office chair, 2 folding chairs, a lockable metallic filing cabinet with two doors and five shelves, a lockable

filing cabinet with 4 drawers, 4 linear meters book shelf and a room heater.

- Engineers' Room:
  Minimum floor area of 25 sq.meters fitted with 2 large ceiling lamp, 6 electric plugs, 6 standard writing desks with drawers, 6 office chairs, 2 folding chairs, 6 lockable metallic filing cabinets with 4 drawers, 6 desk lamps, 2 book shelves, 3 drawing racks and a room heater.
- Supervisor's Room:
  Minimum floor area of 25 sq.meters fitted with a large ceiling lamps, 6 electric plugs, and equipped with 6 standard writing desks with drawers, a drawing table (1.60 m x 0.80 m) x 0.80 m high adjustable, 7 office chairs, a draftsman stool, 1 standard size Kuhlmann drawing machine with lamp, and a room heater.
- Radio-Telephone Room:
  Minimum floor area of 7 sq.meters fitted with a ceiling lamp, 2 electric plugs, and equipped with a set of radio-telephone system accompanied with all accessories together with witings and repairing instruments, 3 shelves to hold system, an operator desk and an office chair.
- Toilet Room:
  A toilet room of minimum floor area of 10 sq.meters fitted with a ceiling lamp, 1 European styled toilet stall with bowl of flushing type, a European styled urinal and a wash-basin with mirror and lamp.
- Storage Room:
  Minimum floor area of 12 sq.meters fitted with a ceiling lamp and a shelf for stationaries, and a shelf for surveying instruments.
- Drivers' Room:
  Minimum floor area of 16 sq.meters fitted with a ceiling lamp, an electric plug and equipped with a table and 3 3-persons benches.
- Porch:
  Minimum floor area of 8 sq.meters with cover.
- Parking Area:
  Minimum space for 8 jeeps.
- Septic Tank:
  A septic tank of decomposition type and the capacity for 20 persons toilet waste water.
- Water and Power Supplies:
  Water shall be supplied from the water tank of the Engineer's residence complex, if possible. If it is to far away from the residence complex, water shall be supplied from a separate water tank of 4,500 liters in capacity with a well accompanied with pumping facility.
  Electric power shall be supplied by the contractor.
- Fence and Gate:
  The compound shall be adequately fenced and a front gate shall be provided. The compound shall include a space sufficient for installing radio masts mentioned in SS. 01 (1) (c).

(ii) Engineer's Office at Taperas

- Assistant Resident Engineer's Room:
  Minimum floor area of 13.5 sq.meters fitted with a large ceiling lamp, an electric plug, and equipped with a standard writing desk with drawers, a desk lamp, a manual Olibetti standard typewriter, an office chair, 2 folding chairs, a lockable metallic filing cabinet with two doors and five shelves, a lockable filing cabinet with four drawers, 4 linear meters shelf and a room heater.

– Typist Room:
Minimum floor area of 7.5 sq.meters fitted with a ceiling lamp, an electric plug, a typist desk, a manual Olibetti standard typewriter of 70 cm, a typist chair, a side table of lockable drawers, a desk lamp and a room heater.

– Reception Room:
Minimum floor area of 13.5 sq.meters fitted with a large ceiling lamp, an electric plug, a sofa and 3 arm-chairs, a coffee table and a sideboard a blackboard (120 cm x 240 cm) and a room heater.

– Engineer's Room:
Minimum floor area of 25 sq.meters fitted with 2 large ceiling lamps, 6 electrical plugs, and equipped with 6 standard writing desks with drawers, 6 office chairs, 2 folding chairs, metallic filing cabinets with 4 drawers, 6 desk lamps, 2 book shelves, 2 drawing racks and a room heater.

– Supervision's Room:
Minimum floor area of 25 sq.meters fitted with 2 large ceiling lamps, 3 electric plugs, and equipped with 6 writing desks with drawers, a drawing table (1.60 m x 0.80 m) x 0.80 m high adjustable, 6 office chairs, a draftsman stool, 1 standard size Kuhlmann drawing in machine with lamp, and a room heater.

– Medical Clinic Room:
Medical Clinic Room, which is specified in General Conditions of Contracts Clause 39 (10), shall be of the minimum floor area of 16.0 sq.meters fitted with a ceiling lamp, 2 electric plugs, a wash-basin with mirror accompanied with cold and hot water pipings, and equipped with a writing desk with lockable drawers, a desk lamp, 2 office chairs, a stool, a single bed with mattress, 4 blankets, 2 bed-sheets, a pillow and 2 pillow cases, a 4-persons bench, a curtain shield, a medicine & instrument cabinet and a room heater. Medicines and instruments to be provided shall conform with the requests to be made by Caja National de Segridad Social (C.N.S.S.).

– Radio-Telephone Room:
Minimum floor area of 7 sq.meters fitted with a ceiling lamp, 2 electric plugs, and equipped with a set of radio-telephone system accompanied with all affiliated accessories together with wirings and repairing instruments, 3 shelves to hold the system, an operator table and an office chair.

– Toilet Room:
A toilet room of minimum floor area of 10 sq.meters fitted with a ceiling lamp, 1 European styled toilet stall with bowl of flushing type, a European styled urinal and a wash-basin with mirror and lamp.

– Storage Room:
Minimum floor area of 12 sq.meters fitted with a ceiling lamp and a shelf for stationaries, and a shelf for surveying instruments.

– Drivers' Room:
Minimum floor area of 16 sq.meters fitted with a ceiling lamp, an electric plug and equipped with a table and 3 3-persons benches.

– Porch:
Minimum floor area of 8 sq.meters with cover.

– Parking area:
Minimum space for minimum 6 jeeps.

– Septic Tank:
A septic tank of decomposition type and capacity for 20 persons for toilet waste water.

– Water and Power Supplies:
Water shall be supplied from the water tank of the Engineer's residence, if

possible. If it is too far away from the residence complex, water shall be supplied from a separate water tank with a well accompanied with pumping facility. Electric power shall be supplied by the Contractor.

– Fence and Gate:
The compound shall be adequately fenced and a front gate shall be provided. The compound shall include a space sufficient for installing radio masts mentioned in SS. 01 (1) (c).

(b) Engineer's and his Staff's Living Quarters

(i) Living Quarter of Chief Resident Engineer at Robore

– Lounge:
A single lounge of minimum floor area of 53 sq.meters fitted with 2 large ceiling lamps and 2 electric plugs. Lounge shall be equipped with a large dining table with 6 chairs and 6 folding chairs, a large cupboard with cups, bowls, dishes, knives, forks and spoons for 12 persons, 6 arm-chairs and a coffee table, a sideboard and a room heater.

– Kitchen Room:
A kitchen room of minimum floor area of 15 sq.meters fitted with a large sink with wide washboard on both sides, a large ceiling lamp, 2 electric plugs, a ventilation fan and equipped with a gas cooking stove with 4 burners and an oven, Philips or its equivalent including 2 gas bottles, a refrigerator of at least 280 liters in capacity with separate freezer compartment, plus adequate shelves, cooking utensils, cutlery and a cooking table to cater for at least 12 persons. All ceiling and walls shall be oil-painted.

– Bed Rooms:
i) A bed room of minimum floor area of 16.0 sq.meters fitted with a large ceiling lamp and 2 electric plugs, a set of mirror and table, a wardrobe with drawers, 2 chairs, a double bed with mattress, a bedside table with lamp, 2 pillows, 8 blankets, 4 bed-sheets and 4 pillow cases.
ii) A bed room of minimum floor area of 16 sq.meters fitted with a large ceiling lamp and 3 electric plugs, 2 single beds with mattress, a set of mirror and table, 2 bedside tables with lamp, 1 large wardrobe with drawers, 2 chairs, 2 pillows, 8 blankets, 4 bed-sheets and 4 pillow cases.

– Shower Room:
2 shower rooms of minimum of 6 sq.meters each. Each shower room shall be fitted with a ceiling lamp, 2 electric plugs one for shaver, another for electric water heater, a shower stall to be used both for cold and hot water, a wash basin with mirror and lamp, and a European styled toilet bowl of flushing type. An electric water heater shall be fitted in one of shower rooms to supply hot water to both shower rooms. Walls and floor shall be white-tiled and ceiling shall be oil-painted.

– Washing Room:
Minimum floor area of 3.0 sq.meters fitted with a ceiling lamp, an electric plug, water piping and draining piping and equipped with 1 electric washer with centrifugal drier.

– Storage Room:
A storage room of minimum floor area of 4.0 sq.meters fitted with a ceiling lamp shall be provided.

– Servant Rooms:
2 servant rooms of minimum floor area of 7.5 sq.meters each. Each room shall

be fitted with a ceiling lamp, an electric plug, a single bed with mattress, a bedside table with chest of drawer and shelves, 4 blankets, 2 bed sheets, 1 pillow and 2 pillow cases.

A bathroom with toilet for common use by both servants of floor area of 6.0 sq.meters shall be provided between 2 servant rooms.

- Porch:

  Minimum floor area of 14 sq.meters with roof shall be provided.
- Water and Power Supplies:

  Water tank of 4,500 liters in capacity and a well equipped with pumping facilities shall be provided and electric power shall be supplied by the Contractor.
- Septic Tank and Drainage:

  A septic tank of decomposition type and capacity for 5 persons of waste water from toilet, kitchen and wash room and its affiliated drainage piping shall be provided.
- Fence and Gate:

  The compound shall be adequately fenced and a front with doors and back gates shall be provided.
- Garage:

  A garage for a jeep, covered and paved, shall be provided.

(ii) **Living Quarter of Engineers at Robore**

- Lounge (Dining Room):

  Minimum floor area of 30 sq.meters fitted with a large ceiling lamp and 2 electric plugs. Lounge shall be equipped with 2 sofas and 4 arm-chairs, a coffee table and a sideboard, a large dining table with 10 chairs and 6 holding chairs a large cupboard with cups, bowls, dishes, knives and forks and spoons for 12 persons and a large room heater.
- Kitchen Room:

  Minimum floor area of 25 sq.meters fitted with a large ceiling lamp and 2 electric plugs, a ventilation fan, and equipped with 2 gas cooking stoves of 4 burners and an oven, Philips or its equivalent including 4 gas bottles, 2 refrigerators each of at least 340 liters in capacity with separate freezer compartment, plus adequate cooking table, shelves, cooking utensils, and cutlery, to cater for at least 12 persons. All ceiling and walls shall be oil-painted.
- Bed Rooms:

  10 bed rooms, each having a minimum floor area of 13.5 sq.meters and fitted with a ceiling lamp and 2 electric plugs and equipped with a set of mirror and table, a wardrobe with drawers, a single bed with mattress, a chair, a bedside table with lamp, a pillow, 4 blankets, 2 bed-sheets and 2 pillow cases.
- Shower Room and Dressing Room:

  Shower room of minimum floor area of 6 sq.meters fitted with a ceiling lamp and 2 white-tiled shower stalls to be used for bath cold and hot water, shower curtains, a wash-basin with mirror and lamp and an electric water heater, accompanied with a dressing room of minimum floor area of 3 sq.meters fitted with a ceiling lamp and equipped with 2 dressing metallic lockers.
- Toilet Room:

  A toilet room of minimum floor area of 9 sq.meters fitted with a ceiling lamp, 2 European styled toilet stalls with bowl of flushing type, 2 European styled urinals and a wash basin with mirror and lamp.
- Room for Shaving and Washing:

  Minimum floor area of 7 sq.meters fitted with a ceiling lamp, 3 electric plugs,

two for shower and one for electric washer, 2 wash basin with mirror and an electric washer with centrifugal drier, pipings for cold water and hot water and drainage.

- Servant Rooms:
  2 servant rooms of minimum floor area of 7.5 sq.meters each. Each room shall be fitted with a ceiling lamp, an electric plug, a single bed with mattress, a bedside table with chest of drawer and shelves, 4 blankets, 2 bed-sheets, 1 pillow and 2 pillow cases.
  A bathroom with toilet for common use by both servants with a floor area of 6 sq.meters shall be provided between 2 servant rooms.
- Porch:
  Minimum floor area of 14 sq.meters with cover.
- Water and Power Supplies:
  A water tank of 6,000 liters in capacity and a well equipped with pumping facilities shall be provided and electric power shall be supplied by the Contractor.
- Septic Tank and Drainage:
  A septic tank of decomposition type and capacity for 10 persons of waste water from kitchen, toilets and wash room and their affiliated drainage pipings shall be provided.
- Fence and Gate:
  The compound shall be adequately fenced and a front gate with doors shall be provided.
- Garage:
  A garage for 6 jeeps, covered and paved, shall be provided.

(iii) Living Quarter of Engineers at Taperas

- Lounge (Dining Room):
  Minimum floor area of 25 sq.meters fitted with a large ceiling lamp and 2 electric plugs. Lounge shall be equipped a sofa and 4 arm-chairs, a coffee table and a sideboard, a large dining table with 8 chairs and 4 folding chairs, a large cupboard with cups, bowls, dishes, knives, forks and spoons for 10 persons and a large heater.
- Kitchen Room:
  Minimum floor area of 20 sq.meters fitted with a large ceiling lamp, 2 electric plugs, a ventilation fan, and a wide sink with washboards on both sides, and equipped with 2 gas cooking stoves of 4 burners and oven, Philips or its equivalent including 4 gas bottles, 2 refrigerators each of at least 340 liters in capacity with separate freezer compartment, plus adequate cooking table, shelves, cooking utensils and cutlery to cater for at least 10 persons. All ceiling and walls shall be oil-painted.
- Bed Rooms:
  8 bed rooms, each having a minimum floor area of 13.5 sq.meters and fitted with a ceiling lamp and 2 electric plugs and equipped with a set of mirror and table a wardrobe with drawers, a single bed with mattress, a chair, a bedside table with lamp, 4 blankets, 2 bed-sheets, 1 pillow and 2 pillow cases.
- Shower Room and Dressing Room:
  A shower room of minimum floor area of 6 sq.meters fitted with a ceiling lamp and 2 white-tiled shower stalls to be used for both cold and hot water, shower curtains, a wash-basin with mirror and lamp and an electric water heater, accompanied with a dressing room of minimum floor area of 3 sq.meters fitted with a ceiling lamp and equipped with 2 dressing metallic lockers.

- Toilet Room:
  A toilet room of minimum floor area of 9 sq.meters fitted with a ceiling lamp, 2 European styled toilet stalls with bowl of flushing type, 2 European styled urinals and a wash basin with mirror and lamp.
- Room for Shaving and Washing:
  Minimum floor area of 7 sq.meters fitted with a ceiling lamp, 3 electric plugs, two for shaver and one for electric washer, 2 wash basins with mirror and lamp and an electric washer with centrifugal drier, pipings for cold and hot water and drainage.
- Servant Rooms:
  2 servant rooms of minimum floor area of 7.5 sq.meters each. Each room shall be fitted with a ceiling lamp, an electric plug, a single bed with mattress, a bedside table with chest of drawer and shelves, 4 blankets, 2 bed-sheets, 1 pillow and 2 pillow cases.
  A Bolivian styled bathroom with toilet for common use by both servants with a floor area of 6.0 sq.meters shall be provided between 2 servant rooms.
- Porch:
  Minimum floor area of 14 sq.meters with cover.
- Water and Power Supplies:
  Water tank of 6,000 liters in capacity and a well equipped with pumping facilities shall be provided and electric power shall be supplied by the Contractor.
- Septic Tank and Drainage:
  A septic tank of decomposition type and capacity for 10 persons of waste water from kitchen, toilets and wash room, and their affiliated drainage pipings shall be provided.
- Fence and Gate:
  The compound shall be adequately fenced and a front gate with doors shall be provided.
- Garage:
  A garage for 5 jeeps, covered and paved, shall be provided.

SS. 02 Surveying Equipment

The Contractor shall provide to the engineer solely for his own use the following surveying instruments according to General Specifications Clause GS. 40.

1 Wild RDS Theodolite (360 degrees); 1 Wild TO Theodolite (360 degrees); 2 Wild NAK Levels; 2 steel measuring tapes 50 meters long; 2 steel measuring tapes 20 meters long, 2 foot plates; 4 measuring rods (4 meters long); 20 target poles with tripods; and miscellaneous tools required in surveying 2 track levels and 2 track gages, 2 3-m templates and 2 1.5-m templates. All surveying instruments shall be supplied complete including tripods, etc.

SS. 03 Plan of Maintenance

The Contractor shall prepare and submit a detailed plan of maintenance of the project railway track, bridges, culverts, buildings and communication system. This plan, which shall be satisfactory to the Engineer, shall be submitted to the Engineer at least 60 (sixty) days prior to the Completion Date of the work as adjusted for authorized extensions.

The plan will indicate the specified operations, their frequency, the staffing, equipment requirements and material requirements.