

# Site Information & Scope of Work

## Site Information

Site Name : Joydevpur CGS  
Site Code : 40-MHD-503

Site Address : To be provided later.

Coordinates : N 24° 00' 31.8 " : E 90° 24' 55.8 "  
\* Coordinates are surveyed by handy type GPS and might be inaccurate.

- Site Type
- |  |  |
|--|--|
| <input type="checkbox"/> Control Center                    | <input type="checkbox"/> Master Telemetry Station          |
| <input type="checkbox"/> Gas Field                         | <input type="checkbox"/> Operating Company Terminal (OCT)  |
| <input checked="" type="checkbox"/> CGS (City Gas Station) | <input type="checkbox"/> Power station/Fertilizer Factory  |
| <input type="checkbox"/> Compressor Station                | <input type="checkbox"/> TBS (Town Bordering Station)      |
| <input type="checkbox"/> Pig Station                       | <input type="checkbox"/> DRS (District Regulating Station) |
| <input type="checkbox"/> MS (Metering Station)             | <input type="checkbox"/> GMS (Gas Manifold Station)        |
| <input type="checkbox"/> VS (Valve Station)                |  |

- Site Status
- Originally covered by The Existing System and shall be covered by The New System.
  - Currently not covered by The Existing System but shall be covered by The New System.
  - Upcoming site which will be covered by The New System after the completion of the Project.

Operating Company : TGTDCCL

Remarks : Additional instruments are required at this site.  
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## Scope of Work

Works checked off hereinafter shall be carried out for the Project

### 1. SCADA System

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■ : RTU

- RTU without display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
  - RTU
  - Instrumentation and communication equipment
  - Backup battery system with charger for 24 hours
  - Lighting
  - Anti-condensation heater
  - Earthing and lightning protection
  - All internal wiring
  - Other equipment to satisfy the functional requirements
  
- RTU with display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
  - RTU
  - Display monitor
  - Instrumentation and communication equipment
  - Backup battery system with charger for 24 hours
  - Lighting
  - Anti-condensation heater
  - Earthing and lightning protection
  - All internal wiring
  - Other equipment to satisfy the functional requirements
  
- RTU (design & supply only)  
Design and supply self-standing IP65 enclosure equipped with following items:
  - RTU
  - Instrumentation and communication equipment
  - Backup battery system with charger for 24 hours
  - Lighting
  - Anti-condensation heater
  - Earthing and lightning protection
  - All internal wiring
  - Other equipment to satisfy the functional requirements
  
- Interface with flow computer  
Make provision for:
  - Installation of the flow computer which shall be prepared by GTCL in the enclosure
  - Interface between RTU and the said flow computer
  
- Interface with receiver for turbine meter  
Install the existing receiver for turbine meter(s) in the RTU enclosure and interface it (them) via communication (MODBUS) cable.

Interface with other system  
Provide the interface between RTU and other system such as PLC or PC operated by the operating company including all communication cables between RTU and other system.

Cable between RTU and Master Telemetry Station  
Design, supply and install the cable between RTU and Master Telemetry Station in case RTU and Master Telemetry Station are located in the same site.

■ : Instruments

Existing instruments  
Re-use the existing instruments and cables.

*Note:*  
*Existing instruments and cables shall be serviced by the Employer.*

New Instruments  
Design, supply and install the following instruments.  
Output signals from instruments are to be cabled via field junction box to the RTU.

■ : Pressure transmitters Q'ty

Design, supply and intall:  
- Pressure transmitter on the existing spare tapping point  
- Tubing between tapping point and transmitter

Prepare the tapping point for the pressure transmitter, and design, supply and install: [ 8 ]  
- Pressure transmitter on the prepared tapping point  
- Tubing between tapping point and transmitter

■ : Differential pressure transmitters Q'ty

Design, supply and install:  
- Differential pressure transmitter on the existing spare tapping point  
- Tubing between tapping point and transmitter

Prepare the tapping point for the differential pressure transmitter, and design, supply and install: [ 2 ]  
- Differential pressure transmitter on the tapping point  
- Tubing between tapping point and transmitter

■ : Temprature transmitters Q'ty

Design, supply and install: [ 8 ]  
- Thermowell in the spare boss on the pipe  
- Resistance temperater detector complete with a head mounted transmitter into the thermowell

■ : Limit switch Q'ty

Design, supply and install the limit switch on the existing shutdown valve for valve position monitoring.

Pick up Signal from the Existing Turbine Meter Q'ty  
Supply and install a dual pulse output pickup head in place of the single pulse output pickup in the existing turbine flowmeter sensor head. The output signal from the existing turbine flowmeter to be cabled via junction box to RTU. [ 7 ]

Local Field Instrument Junction Box Q'ty  
Design, supply and install an Intrinsic safety junction box. The junction box to be suitable for glanding appropriate cables. [ 2 ]

Instrument Cables  
Design, supply, install the instrument cables from the field instruments to RTU via junction box including each cable termination with gland.

## 2. Communication System

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### ■ : Slave Telemetry System

- Removal of existing slave telemetry equipment  
Remove and dispose the existing slave telemetry system including antenna and cable.
- Slave Telemetry Equipment  
Design, supply and install new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Slave Telemetry Equipment (design & supply only)  
Design and supply new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Existing monopole  
Re-use existing monopole to mount new antenna.
- New monopole  
Design, supply and install new monopole with foundation to mount new antenna.
- New monopole (design & supply only)  
Design and supply new monopole to mount new antenna.

## 3. Electrical Works

---

### ■ : Power Supply to RTU

- Electrical power shall be supplied to RTU from existing PDB, and existing power cable shall be re-used.
- Design, supply and install MCB box for the power supply to RTU including all cables from existing PDB to MCB box and from MCB box to RTU.
- Design, supply and install power controller and power cable to RTU at remote site where electrical power is supplied from existing solar panel.
- Design, supply and install new solar panel, power controller and power cable to RTU.

## 4. Civil Works

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### ■ : Foundation & Sunshade for RTU

- Re-use existing foundation & sunshade for RTU  
Examine the condition of existing foundation and sunshade for RTU and repair the defects, if any.
- Provide new foundation & sunshade for RTU  
Design and construct the foundation and sunshade for new RTU at suitable location. The foundation and sunshade should be designed to suitably accommodate new RTU.

### ■ : Instrument Stand with Foundation & Sunshade

- Re-use existing Instrument stand(s) with foundation & sunshade  
Examine the condition of existing Instrument stand(s) with foundation & sunshade and repair the defects, if any.
- Provide new Instrument stand(s) with foundation & sunshade  
Design and construct the Instrument stand(s) with foundation & sunshade at suitable location. It should be designed to suitably accommodate the required number of instruments and explosion proof instrument field junction box.

## 5. Site Photo

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Site view

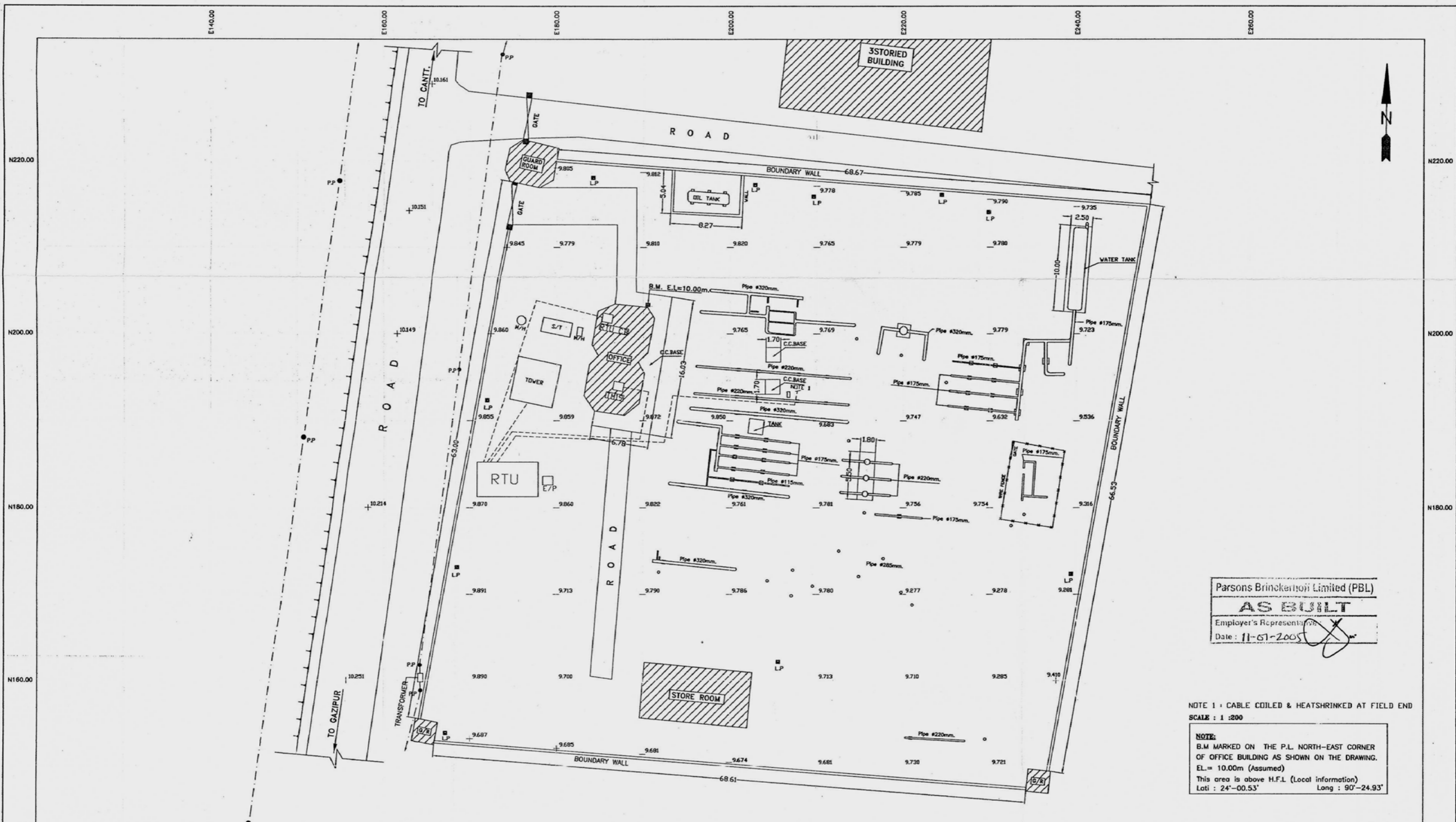


Existing RTU

## 6. Site Layout

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See attached Layout Plan.



Parsons Brinckerhoff Limited (PBL)  
**AS BUILT**  
 Employer's Representation  
 Date: 11-01-2005

NOTE 1: CABLE COILED & HEATSHRINKED AT FIELD END  
 SCALE: 1:200

**NOTE:**  
 B.M MARKED ON THE P.L. NORTH-EAST CORNER  
 OF OFFICE BUILDING AS SHOWN ON THE DRAWING.  
 EL.= 10.00m (Assumed)  
 This area is above H.F.L. (Local information)  
 Lat: 24°-00.53' Long: 90°-24.93'

ISSUE	Revision	Date	D.D. Ref	Contractor	Sub Contractor	S.D. No.	Employer
A	ISSUED FOR DESIGN APPROVAL			CONROLS LTD	SURVEY CORPORATION		GAS TRANSMISSION COMPANY Ltd (GTCL)
B	ISSUED FOR DESIGN APPROVAL	10-11-04					
				<b>CONTRACT DRAWING APPROVAL</b> Drawing Status: <b>DESIGN APPROVAL</b> <input type="checkbox"/> RECLINED CHANGES <input type="checkbox"/> APPROVED NO CHANGES		THE BANGLADESH GAS INFRASTRUCTURE DEVELOPMENT PROJECT, SUPERVISORY CONTROL, DATA ACQUISITION AND TELECOMMUNICATIONS SYSTEMS.	
				PRINT NAME: _____ DATE: _____ SIGNED: _____		Consultant: <b>PB Technologies Ltd.</b> Employer Contract No: <b>GTCL/RL-1109/C2</b>	
				Drawing Title: <b>CONTRACT DRAWING APPROVAL</b> Drawing No: <b>505-60-72</b>		THE BANGLADESH GAS INFRASTRUCTURE DEVELOPMENT PROJECT, SUPERVISORY CONTROL, DATA ACQUISITION AND TELECOMMUNICATIONS SYSTEMS.	
				SITE CODE: 505 SITE NAME: JOYDEVPUR		Consultant: <b>PB Technologies Ltd.</b> Employer Contract No: <b>GTCL/RL-1109/C2</b>	
				Rev: _____ Sheet: _____ Drig. Size: A1		Consultant: <b>PB Technologies Ltd.</b> Employer Contract No: <b>GTCL/RL-1109/C2</b>	
				BY: _____ Date: _____ Drawn: _____ Checked: _____ Approved: _____		Consultant: <b>PB Technologies Ltd.</b> Employer Contract No: <b>GTCL/RL-1109/C2</b>	

# Site Information & Scope of Work

## Site Information

Site Name : Poladi VS3  
Site Code : 40-MHD-504

Site Address : To be provided later.

Coordinates : N 24° 12' 49.2 " : E 90° 32' 00.0 "  
\* Coordinates are surveyed by handy type GPS and might be inaccurate.

Site Type

<input type="checkbox"/> Control Center	<input type="checkbox"/> Master Telemetry Station
<input type="checkbox"/> Gas Field	<input type="checkbox"/> Operating Company Terminal (OCT)
<input type="checkbox"/> CGS (City Gas Station)	<input type="checkbox"/> Power station/Fertilizer Factory
<input type="checkbox"/> Compressor Station	<input type="checkbox"/> TBS (Town Bordering Station)
<input type="checkbox"/> Pig Station	<input type="checkbox"/> DRS (District Regulating Station)
<input type="checkbox"/> MS (Metering Station)	<input type="checkbox"/> GMS (Gas Manifold Station)
<input checked="" type="checkbox"/> VS (Valve Station)	

Site Status

- Originally covered by The Existing System and shall be covered by The New System.
- Currently not covered by The Existing System but shall be covered by The New System.
- Upcoming site which will be covered by The New System after the completion of the Project.

Operating Company : TGTDCCL

Remarks : \_\_\_\_\_  
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## Scope of Work

Works checked off hereinafter shall be carried out for the Project

### 1. SCADA System

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- : RTU
  - RTU without display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
    - RTU
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - RTU with display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
    - RTU
    - Display monitor
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - RTU (design & supply only)  
Design and supply self-standing IP65 enclosure equipped with following items:
    - RTU
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - Interface with flow computer  
Make provision for:
    - Installation of the flow computer which shall be prepared by GTCL in the enclosure
    - Interface between RTU and the said flow computer
  - Interface with receiver for turbine meter  
Install the existing receiver for turbine meter(s) in the RTU enclosure and interface it (them) via communication (MODBUS) cable.

- Interface with other system  
Provide the interface between RTU and other system such as PLC or PC operated by the operating company including all communication cables between RTU and other system.

- Cable between RTU and Master Telemetry Station  
Design, supply and install the cable between RTU and Master Telemetry Station in case RTU and Master Telemetry Station are located in the same site.

■ : Instruments

- Existing instruments  
Re-use the existing instruments and cables.

*Note:*

*Existing instruments and cables shall be serviced by the Employer.*

- New Instruments  
Design, supply and install the following instruments.  
Output signals from instruments are to be cabled via field junction box to the RTU.

■ : Pressure transmitters Q'ty

- Design, supply and intall:
  - Pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the pressure transmitter, and design, supply and install:
  - Pressure transmitter on the prepared tapping point
  - Tubing between tapping point and transmitter

■ : Differential pressure transmitters Q'ty

- Design, supply and install:
  - Differential pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the differential pressure transmitter, and design, supply and install:
  - Differential pressure transmitter on the tapping point
  - Tubing between tapping point and transmitter

■ : Temprature transmitters Q'ty

- Design, supply and install:
  - Thermowell in the spare boss on the pipe
  - Resistance temperature detector complete with a head mounted transmitter into the thermowell

■ : Limit switch Q'ty

- Design, supply and install the limit switch on the existing shutdown valve for valve position monitoring.

- Pick up Signal from the Existing Turbine Meter Q'ty  
Supply and install a dual pulse output pickup head in place of the single pulse output pickup in the existing turbine flowmeter sensor head. The output signal from the existing turbine flowmeter to be cabled via junction box to RTU.

- Local Field Instrument Junction Box Q'ty  
Design, supply and install an Intrinsic safety junction box. The junction box to be suitable for glanding appropriate cables.

- Instrument Cables  
Design, supply, install the instrument cables from the field instruments to RTU via junction box including each cable termination with gland.

## 2. Communication System

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### ■ : Slave Telemetry System

- Removal of existing slave telemetry equipment  
Remove and dispose the existing slave telemetry system including antenna and cable.
- Slave Telemetry Equipment  
Design, supply and install new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Slave Telemetry Equipment (design & supply only)  
Design and supply new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Existing monopole  
Re-use existing monopole to mount new antenna.
- New monopole  
Design, supply and install new monopole with foundation to mount new antenna.
- New monopole (design & supply only)  
Design and supply new monopole to mount new antenna.

## 3. Electrical Works

---

### ■ : Power Supply to RTU

- Electrical power shall be supplied to RTU from existing PDB, and existing power cable shall be re-used.
- Design, supply and install MCB box for the power supply to RTU including all cables from existing PDB to MCB box and from MCB box to RTU.
- Design, supply and install power controller and power cable to RTU at remote site where electrical power is supplied from existing solar panel.
- Design, supply and install new solar panel, power controller and power cable to RTU.

## 4. Civil Works

---

### ■ : Foundation & Sunshade for RTU

- Re-use existing foundation & sunshade for RTU  
Examine the condition of existing foundation and sunshade for RTU and repair the defects, if any.
- Provide new foundation & sunshade for RTU  
Design and construct the foundation and sunshade for new RTU at suitable location. The foundation and sunshade should be designed to suitably accommodate new RTU.

### ■ : Instrument Stand with Foundation & Sunshade

- Re-use existing Instrument stand(s) with foundation & sunshade  
Examine the condition of existing Instrument stand(s) with foundation & sunshade and repair the defects, if any.
- Provide new Instrument stand(s) with foundation & sunshade  
Design and construct the Instrument stand(s) with foundation & sunshade at suitable location. It should be designed to suitably accommodate the required number of instruments and explosion proof instrument field junction box.



## 5. Site Photo

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Existing RTU

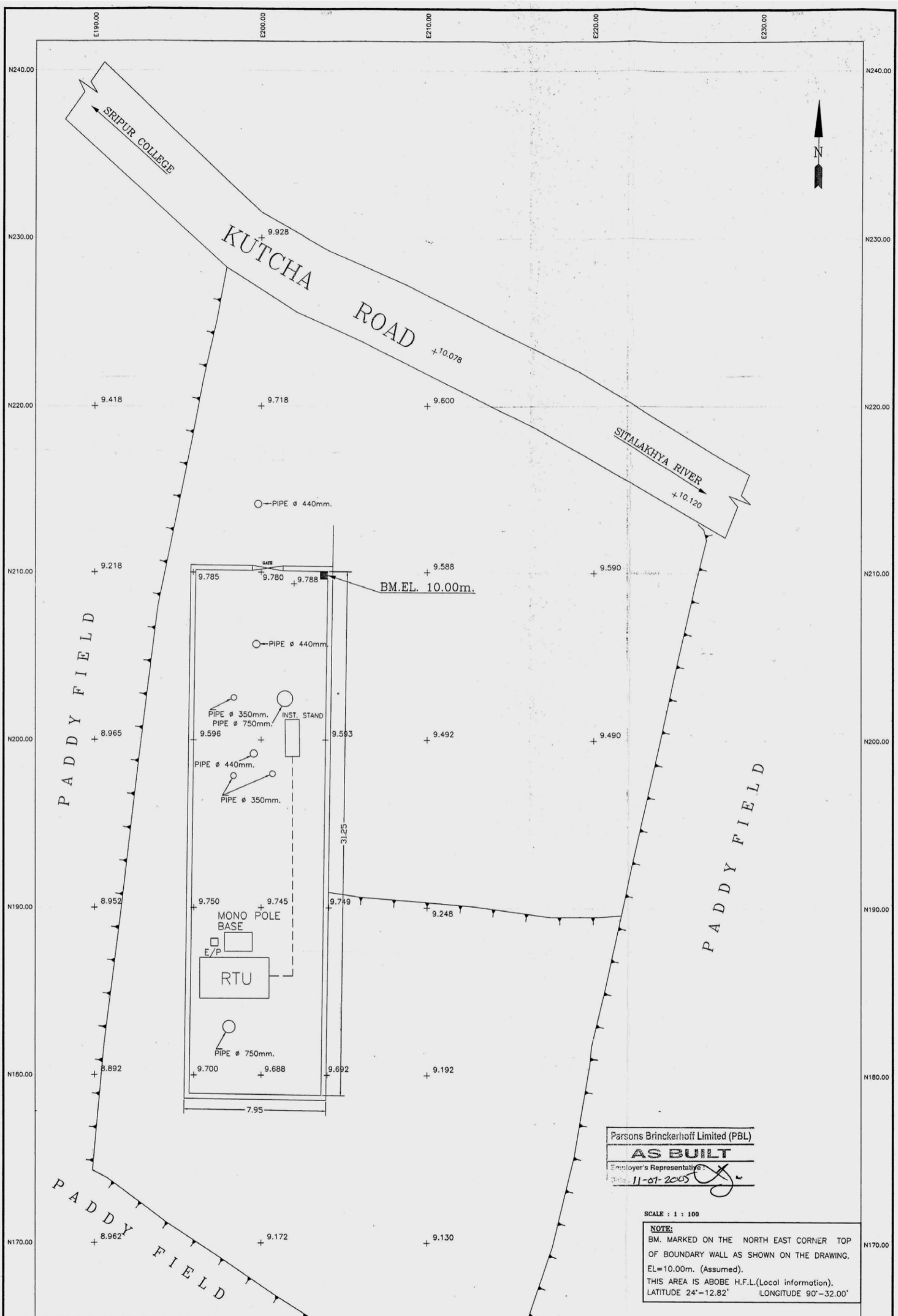
## 6. Site Layout

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See attached Layout Plan.



Existing Instrument Stand



Parsons Brinckerhoff Limited (PBL)  
**AS BUILT**  
 Employer's Representative: *[Signature]*  
 Date: 11-01-2005

SCALE : 1 : 100  
**NOTE:**  
 BM. MARKED ON THE NORTH EAST CORNER TOP OF BOUNDARY WALL AS SHOWN ON THE DRAWING. EL=10.00m. (Assumed). THIS AREA IS ABOVE H.F.L.(Local information). LATITUDE 24°-12.82' LONGITUDE 90°-32.00'

ISSUE	Revision	Date	D.D. Ref	Contractor	Sub Contractor	S.D. No.	Employer
A	ISSUED FOR DESIGN APPROVAL			CONTROL'S Ltd	SURVEY CORPORATION		GAS TRANSMISSION COMPANY Ltd (GTCL)
B	ISSUED FOR DESIGN APPROVAL	10-11-04					

<b>CONTRACT DRAWING APPROVAL</b> Drawing Status: DESIGN APPROVAL <input type="checkbox"/> REDLINED CHANGES <input checked="" type="checkbox"/> APPROVED NO CHANGES PRINT NAME: _____ DATE: _____ SIGNED: _____		Drawing Title: SITE CODE : 515 SITE NAME : VS-3 TITAS GAS Drawing No. 515-60-72 Rev _____ Sheet _____ Orig. Size A4 Drawn _____ Checked _____ Approved _____ BY _____ DATE _____	Consultant: PB Technologies Ltd. Employer Contract No: GTCL/RL-1109/C2
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# Site Information & Scope of Work

## Site Information

Site Name : Uzilab VS1  
Site Code : 40-MHD-505

Site Address : To be provided later.

Coordinates : N 24° 04' 26.4 " : E 90° 49' 34.0 "  
\* Coordinates are surveyed by handy type GPS and might be inaccurate.

Site Type

<input type="checkbox"/> Control Center	<input type="checkbox"/> Master Telemetry Station
<input type="checkbox"/> Gas Field	<input type="checkbox"/> Operating Company Terminal (OCT)
<input type="checkbox"/> CGS (City Gas Station)	<input type="checkbox"/> Power station/Fertilizer Factory
<input type="checkbox"/> Compressor Station	<input type="checkbox"/> TBS (Town Bordering Station)
<input type="checkbox"/> Pig Station	<input type="checkbox"/> DRS (District Regulating Station)
<input type="checkbox"/> MS (Metering Station)	<input type="checkbox"/> GMS (Gas Manifold Station)
<input checked="" type="checkbox"/> VS (Valve Station)	

Site Status

- Originally covered by The Existing System and shall be covered by The New System.
- Currently not covered by The Existing System but shall be covered by The New System.
- Upcoming site which will be covered by The New System after the completion of the Project.

Operating Company : TGTDCCL

Remarks : Additional instruments are required at this site.  
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## Scope of Work

Works checked off hereinafter shall be carried out for the Project

### 1. SCADA System

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- : RTU
  - RTU without display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
    - RTU
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - RTU with display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
    - RTU
    - Display monitor
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - RTU (design & supply only)  
Design and supply self-standing IP65 enclosure equipped with following items:
    - RTU
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
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Make provision for:
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  - Interface with receiver for turbine meter  
Install the existing receiver for turbine meter(s) in the RTU enclosure and interface it (them) via communication (MODBUS) cable.

- Interface with other system  
Provide the interface between RTU and other system such as PLC or PC operated by the operating company including all communication cables between RTU and other system.

- Cable between RTU and Master Telemetry Station  
Design, supply and install the cable between RTU and Master Telemetry Station in case RTU and Master Telemetry Station are located in the same site.

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Re-use the existing instruments and cables.

*Note:*

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Design, supply and install the following instruments.  
Output signals from instruments are to be cabled via field junction box to the RTU.

■ : Pressure transmitters Q'ty

- Design, supply and intall:
  - Pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the pressure transmitter, and design, supply and install:
  - Pressure transmitter on the prepared tapping point
  - Tubing between tapping point and transmitter[ 1 ]

■ : Differential pressure transmitters Q'ty

- Design, supply and install:
  - Differential pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the differential pressure transmitter, and design, supply and install:
  - Differential pressure transmitter on the tapping point
  - Tubing between tapping point and transmitter

■ : Temprature transmitters Q'ty

- Design, supply and install:
  - Thermowell in the spare boss on the pipe
  - Resistance temperature detector complete with a head mounted transmitter into the thermowell

■ : Limit switch Q'ty

- Design, supply and install the limit switch on the existing shutdown valve for valve position monitoring. [ 1 ]

Pick up Signal from the Existing Turbine Meter Q'ty

- Supply and install a dual pulse output pickup head in place of the single pulse output pickup in the existing turbine flowmeter sensor head. The output signal from the existing turbine flowmeter to be cabled via junction box to RTU.

Local Field Instrument Junction Box Q'ty

- Design, supply and install an Intrinsic safety junction box. The junction box to be suitable for glanding appropriate cables. [ 1 ]

Instrument Cables

- Design, supply, install the instrument cables from the field instruments to RTU via junction box including each cable termination with gland.

## 2. Communication System

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### ■ : Slave Telemetry System

- Removal of existing slave telemetry equipment  
Remove and dispose the existing slave telemetry system including antenna and cable.
- Slave Telemetry Equipment  
Design, supply and install new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Slave Telemetry Equipment (design & supply only)  
Design and supply new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Existing monopole  
Re-use existing monopole to mount new antenna.
- New monopole  
Design, supply and install new monopole with foundation to mount new antenna.
- New monopole (design & supply only)  
Design and supply new monopole to mount new antenna.

## 3. Electrical Works

---

### ■ : Power Supply to RTU

- Electrical power shall be supplied to RTU from existing PDB, and existing power cable shall be re-used.
- Design, supply and install MCB box for the power supply to RTU including all cables from existing PDB to MCB box and from MCB box to RTU.
- Design, supply and install power controller and power cable to RTU at remote site where electrical power is supplied from existing solar panel.
- Design, supply and install new solar panel, power controller and power cable to RTU.

## 4. Civil Works

---

### ■ : Foundation & Sunshade for RTU

- Re-use existing foundation & sunshade for RTU  
Examine the condition of existing foundation and sunshade for RTU and repair the defects, if any.
- Provide new foundation & sunshade for RTU  
Design and construct the foundation and sunshade for new RTU at suitable location. The foundation and sunshade should be designed to suitably accommodate new RTU.

### ■ : Instrument Stand with Foundation & Sunshade

- Re-use existing Instrument stand(s) with foundation & sunshade  
Examine the condition of existing Instrument stand(s) with foundation & sunshade and repair the defects, if any.
- Provide new Instrument stand(s) with foundation & sunshade  
Design and construct the Instrument stand(s) with foundation & sunshade at suitable location. It should be designed to suitably accommodate the required number of instruments and explosion proof instrument field junction box.

## 5. Site Photo

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Site view

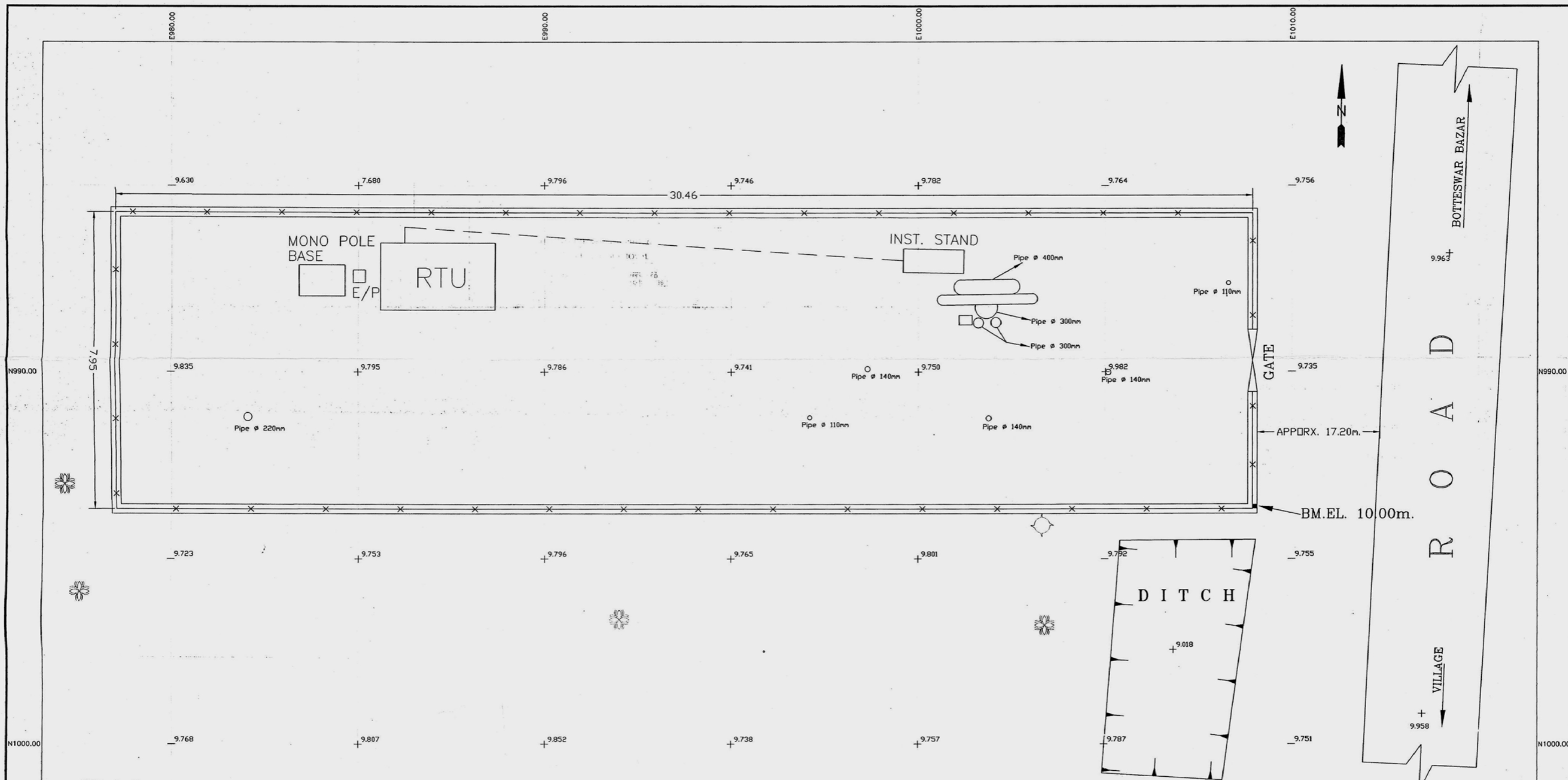


Existing Instrument Stand

## 6. Site Layout

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See attached Layout Plan.



SCALE : 1 : 50

**NOTE:**  
 BM. MARKED ON THE TOP OF WALL, S/E CORNER AS SHOWN ON THE DRAWING.  
 EL=10.00m. (Assumed).  
 THE AREA IS ABOVE H.F.L. (Local information).  
 LATITUDE 24°-04.44' LONGITUDE 90°-49.61'

**LEGEND**

JACKFRUIT TREE MANGO TREE

Parsons Brinckerhoff Limited (PBL)  
**AS BUILT**  
 Employer's Representative:   
 Date : 11-01-2005

ISSUE	Revision	Date	D.D. Ref	Contractor	Sub Contractor	S.D. No.	Employer
A	ISSUED FOR DESIGN APPROVAL			 CONTROLS LTD Ready One COMPANY West Village, CG 4/11	 SURVEY CORPORATION		GAS TRANSMISSION COMPANY Ltd (GTCL)
B	ISSUED FOR DESIGN APPROVAL	09-11-04					
				<b>CONTRACT DRAWING APPROVAL</b> Drawing Status: DESIGN APPROVAL <input type="checkbox"/> REDLINED CHANGES <input type="checkbox"/> APPROVED NO CHANGES PRINT NAME: _____ SIGNED: _____ DATE: _____		THE BANGLADESH GAS INFRASTRUCTURE DEVELOPMENT PROJECT. SUPERVISORY CONTROL, DATA ACQUISITION AND TELECOMMUNICATIONS SYSTEMS.	
				Drawing No. 517-60-72      Rev      Sheet      Orig. Size A1 BY: _____ Draw      Checked      Approved		Consultant: <b>PB Technologies Ltd.</b> Employer Contract No: GTCL/RL-1109/C2	

# Site Information & Scope of Work

## Site Information

Site Name : Khirti VS2  
Site Code : 40-MHD-506

Site Address : To be provided later.

Coordinates : N 24° 09' 06.9 " : E 90° 40' 50.3 "  
\* Coordinates are surveyed by handy type GPS and might be inaccurate.

Site Type

<input type="checkbox"/> Control Center	<input type="checkbox"/> Master Telemetry Station
<input type="checkbox"/> Gas Field	<input type="checkbox"/> Operating Company Terminal (OCT)
<input type="checkbox"/> CGS (City Gas Station)	<input type="checkbox"/> Power station/Fertilizer Factory
<input type="checkbox"/> Compressor Station	<input type="checkbox"/> TBS (Town Bordering Station)
<input type="checkbox"/> Pig Station	<input type="checkbox"/> DRS (District Regulating Station)
<input type="checkbox"/> MS (Metering Station)	<input type="checkbox"/> GMS (Gas Manifold Station)
<input checked="" type="checkbox"/> VS (Valve Station)	

Site Status

- Originally covered by The Existing System and shall be covered by The New System.
- Currently not covered by The Existing System but shall be covered by The New System.
- Upcoming site which will be covered by The New System after the completion of the Project.

Operating Company : TGTDCL

Remarks : Following future site shall be covered by the RTU at this site.  
- MS Dhanua  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Scope of Work

Works checked off hereinafter shall be carried out for the Project

### 1. SCADA System

---

- : RTU
  - RTU without display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
    - RTU
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - RTU with display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
    - RTU
    - Display monitor
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - RTU (design & supply only)  
Design and supply self-standing IP65 enclosure equipped with following items:
    - RTU
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - Interface with flow computer  
Make provision for:
    - Installation of the flow computer which shall be prepared by GTCL in the enclosure
    - Interface between RTU and the said flow computer
  - Interface with receiver for turbine meter  
Install the existing receiver for turbine meter(s) in the RTU enclosure and interface it (them) via communication (MODBUS) cable.



- Interface with other system  
Provide the interface between RTU and other system such as PLC or PC operated by the operating company including all communication cables between RTU and other system.

- Cable between RTU and Master Telemetry Station  
Design, supply and install the cable between RTU and Master Telemetry Station in case RTU and Master Telemetry Station are located in the same site.

■ : Instruments

- Existing instruments  
Re-use the existing instruments and cables.

*Note:*

*Existing instruments and cables shall be serviced by the Employer.*

- New Instruments  
Design, supply and install the following instruments.  
Output signals from instruments are to be cabled via field junction box to the RTU.

■ : Pressure transmitters Q'ty

- Design, supply and intall:
  - Pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the pressure transmitter, and design, supply and install:
  - Pressure transmitter on the prepared tapping point
  - Tubing between tapping point and transmitter

■ : Differential pressure transmitters Q'ty

- Design, supply and install:
  - Differential pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the differential pressure transmitter, and design, supply and install:
  - Differential pressure transmitter on the tapping point
  - Tubing between tapping point and transmitter

■ : Temprature transmitters Q'ty

- Design, supply and install:
  - Thermowell in the spare boss on the pipe
  - Resistance temperature detector complete with a head mounted transmitter into the thermowell

■ : Limit switch Q'ty

- Design, supply and install the limit switch on the existing shutdown valve for valve position monitoring.

- Pick up Signal from the Existing Turbine Meter Q'ty  
Supply and install a dual pulse output pickup head in place of the single pulse output pickup in the existing turbine flowmeter sensor head. The output signal from the existing turbine flowmeter to be cabled via junction box to RTU.

- Local Field Instrument Junction Box Q'ty  
Design, supply and install an Intrinsic safety junction box. The junction box to be suitable for glanding appropriate cables.

- Instrument Cables  
Design, supply, install the instrument cables from the field instruments to RTU via junction box including each cable termination with gland.

## 2. Communication System

---

### ■ : Slave Telemetry System

- Removal of existing slave telemetry equipment  
Remove and dispose the existing slave telemetry system including antenna and cable.
- Slave Telemetry Equipment  
Design, supply and install new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Slave Telemetry Equipment (design & supply only)  
Design and supply new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Existing monopole  
Re-use existing monopole to mount new antenna.
- New monopole  
Design, supply and install new monopole with foundation to mount new antenna.
- New monopole (design & supply only)  
Design and supply new monopole to mount new antenna.

## 3. Electrical Works

---

### ■ : Power Supply to RTU

- Electrical power shall be supplied to RTU from existing PDB, and existing power cable shall be re-used.
- Design, supply and install MCB box for the power supply to RTU including all cables from existing PDB to MCB box and from MCB box to RTU.
- Design, supply and install power controller and power cable to RTU at remote site where electrical power is supplied from existing solar panel.
- Design, supply and install new solar panel, power controller and power cable to RTU.

## 4. Civil Works

---

### ■ : Foundation & Sunshade for RTU

- Re-use existing foundation & sunshade for RTU  
Examine the condition of existing foundation and sunshade for RTU and repair the defects, if any.
- Provide new foundation & sunshade for RTU  
Design and construct the foundation and sunshade for new RTU at suitable location. The foundation and sunshade should be designed to suitably accommodate new RTU.

### ■ : Instrument Stand with Foundation & Sunshade

- Re-use existing Instrument stand(s) with foundation & sunshade  
Examine the condition of existing Instrument stand(s) with foundation & sunshade and repair the defects, if any.
- Provide new Instrument stand(s) with foundation & sunshade  
Design and construct the Instrument stand(s) with foundation & sunshade at suitable location. It should be designed to suitably accommodate the required number of instruments and explosion proof instrument field junction box.

## 5. Site Photo

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Existing RTU

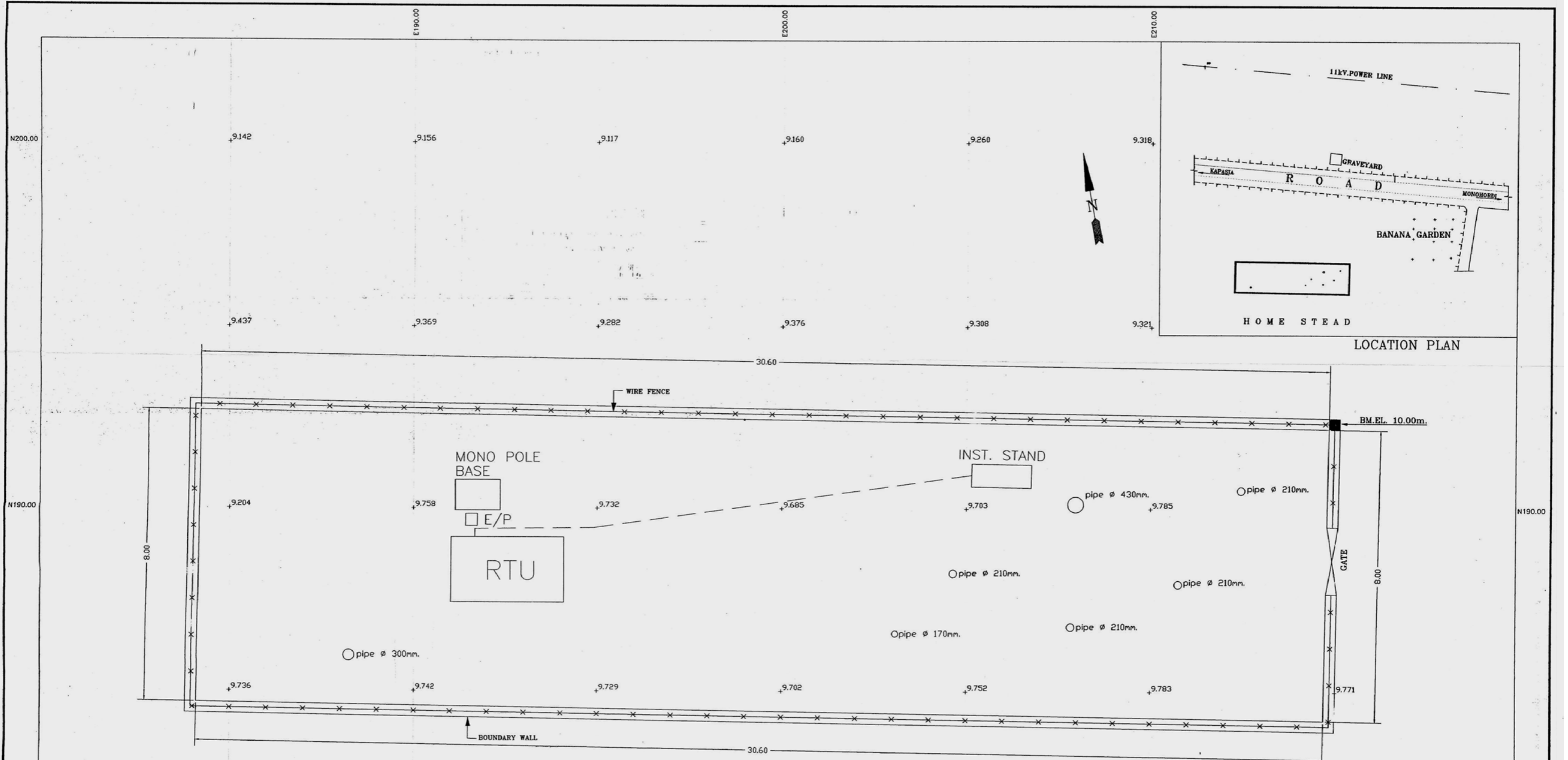


Existing Instrument Stand

## 6. Site Layout

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See attached Layout Plan.



LOCATION PLAN

Parsons Brinckerhoff Limited (PBL)  
**AS BUILT**  
 Employer's Representative:  
 Date: 11-01-2005

**NOTE:**  
 B.M MARKED ON THE NORTH EAST CORNER OF TOP OF THE WALL AS SHOWN ON THE DRAWING.  
 E.L. 10.00m. (Assumed).  
 This area is above H.F.L. (Local information).  
 Lat. 24°-09.15' Long. 90°-40.85'

ISSUE	Revision	Date	DD Ref	Contractor	Sub Contractor	S.D. No.	Employer																										
A	ISSUED FOR DESIGN APPROVAL			CONTROLS Ltd Survey Division West Islands Office	SURVEY CORPORATION		GAS TRANSMISSION COMPANY Ltd (GTCL)																										
B	ISSUED FOR DESIGN APPROVAL	09-11-04																															
<table border="1"> <tr> <td colspan="2">CONTRACT DRAWING APPROVAL</td> </tr> <tr> <td colspan="2">Drawing Status: DESIGN APPROVAL</td> </tr> <tr> <td>RECLINED CHANGES</td> <td>APPROVED NO CHANGES</td> </tr> <tr> <td>PRINT NAME: _____</td> <td>SIGNED: _____ DATE: _____</td> </tr> </table>				CONTRACT DRAWING APPROVAL		Drawing Status: DESIGN APPROVAL		RECLINED CHANGES	APPROVED NO CHANGES	PRINT NAME: _____	SIGNED: _____ DATE: _____	<table border="1"> <tr> <td colspan="4">Drawing Title: SITE CODE : 518 SITE NAME : VS-2 TITAS GAS</td> </tr> <tr> <td>Drawing No. 518-60-72</td> <td>Rev</td> <td>Sheet</td> <td>Orig. Size A1</td> </tr> <tr> <td>BY: _____</td> <td>Drawn</td> <td>Checked</td> <td>Approved</td> </tr> <tr> <td>Date</td> <td></td> <td></td> <td></td> </tr> </table>			Drawing Title: SITE CODE : 518 SITE NAME : VS-2 TITAS GAS				Drawing No. 518-60-72	Rev	Sheet	Orig. Size A1	BY: _____	Drawn	Checked	Approved	Date				Consultant: PB Technologies Ltd.		Employer Contract No: GTCL/RL-1109/C2
CONTRACT DRAWING APPROVAL																																	
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RECLINED CHANGES	APPROVED NO CHANGES																																
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Drawing No. 518-60-72	Rev	Sheet	Orig. Size A1																														
BY: _____	Drawn	Checked	Approved																														
Date																																	

# Site Information & Scope of Work

## Site Information

Site Name : Dhanua VS4  
Site Code : 40-MHD-507

Site Address : To be provided later.

Coordinates : N 24° 14' 39.7 " : E 90° 24' 11.1 "  
\* Coordinates are surveyed by handy type GPS and might be inaccurate.

Site Type

<input type="checkbox"/> Control Center	<input type="checkbox"/> Master Telemetry Station
<input type="checkbox"/> Gas Field	<input type="checkbox"/> Operating Company Terminal (OCT)
<input type="checkbox"/> CGS (City Gas Station)	<input type="checkbox"/> Power station/Fertilizer Factory
<input type="checkbox"/> Compressor Station	<input type="checkbox"/> TBS (Town Bordering Station)
<input type="checkbox"/> Pig Station	<input type="checkbox"/> DRS (District Regulating Station)
<input type="checkbox"/> MS (Metering Station)	<input type="checkbox"/> GMS (Gas Manifold Station)
<input checked="" type="checkbox"/> VS (Valve Station)	

Site Status

- Originally covered by The Existing System and shall be covered by The New System.
- Currently not covered by The Existing System but shall be covered by The New System.
- Upcoming site which will be covered by The New System after the completion of the Project.

Operating Company : TGTDCCL

Remarks : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Scope of Work

Works checked off hereinafter shall be carried out for the Project

### 1. SCADA System

---

- : RTU
  - RTU without display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
    - RTU
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - RTU with display monitor  
Design, supply and install a self-standing IP65 enclosure equipped with following items:
    - RTU
    - Display monitor
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - RTU (design & supply only)  
Design and supply self-standing IP65 enclosure equipped with following items:
    - RTU
    - Instrumentation and communication equipment
    - Backup battery system with charger for 24 hours
    - Lighting
    - Anti-condensation heater
    - Earthing and lightning protection
    - All internal wiring
    - Other equipment to satisfy the functional requirements
  - Interface with flow computer  
Make provision for:
    - Installation of the flow computer which shall be prepared by GTCL in the enclosure
    - Interface between RTU and the said flow computer
  - Interface with receiver for turbine meter  
Install the existing receiver for turbine meter(s) in the RTU enclosure and interface it (them) via communication (MODBUS) cable.

- Interface with other system  
Provide the interface between RTU and other system such as PLC or PC operated by the operating company including all communication cables between RTU and other system.

- Cable between RTU and Master Telemetry Station  
Design, supply and install the cable between RTU and Master Telemetry Station in case RTU and Master Telemetry Station are located in the same site.

■ : Instruments

- Existing instruments  
Re-use the existing instruments and cables.

*Note:*

*Existing instruments and cables shall be serviced by the Employer.*

- New Instruments  
Design, supply and install the following instruments.  
Output signals from instruments are to be cabled via field junction box to the RTU.

■ : Pressure transmitters Q'ty

- Design, supply and intall:
  - Pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the pressure transmitter, and design, supply and install:
  - Pressure transmitter on the prepared tapping point
  - Tubing between tapping point and transmitter

■ : Differential pressure transmitters Q'ty

- Design, supply and install:
  - Differential pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the differential pressure transmitter, and design, supply and install:
  - Differential pressure transmitter on the tapping point
  - Tubing between tapping point and transmitter

■ : Temprature transmitters Q'ty

- Design, supply and install:
  - Thermowell in the spare boss on the pipe
  - Resistance temperature detector complete with a head mounted transmitter into the thermowell

■ : Limit switch Q'ty

- Design, supply and install the limit switch on the existing shutdown valve for valve position monitoring.

- Pick up Signal from the Existing Turbine Meter Q'ty  
Supply and install a dual pulse output pickup head in place of the single pulse output pickup in the existing turbine flowmeter sensor head. The output signal from the existing turbine flowmeter to be cabled via junction box to RTU.

- Local Field Instrument Junction Box Q'ty  
Design, supply and install an Intrinsic safety junction box. The junction box to be suitable for glanding appropriate cables.

- Instrument Cables  
Design, supply, install the instrument cables from the field instruments to RTU via junction box including each cable termination with gland.

## 2. Communication System

---

### ■ : Slave Telemetry System

- Removal of existing slave telemetry equipment  
Remove and dispose the existing slave telemetry system including antenna and cable.
- Slave Telemetry Equipment  
Design, supply and install new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Slave Telemetry Equipment (design & supply only)  
Design and supply new slave telemetry equipment in the RTU enclosure, including cables and antenna.
- Existing monopole  
Re-use existing monopole to mount new antenna.
- New monopole  
Design, supply and install new monopole with foundation to mount new antenna.
- New monopole (design & supply only)  
Design and supply new monopole to mount new antenna.

## 3. Electrical Works

---

### ■ : Power Supply to RTU

- Electrical power shall be supplied to RTU from existing PDB, and existing power cable shall be re-used.
- Design, supply and install MCB box for the power supply to RTU including all cables from existing PDB to MCB box and from MCB box to RTU.
- Design, supply and install power controller and power cable to RTU at remote site where electrical power is supplied from existing solar panel.
- Design, supply and install new solar panel, power controller and power cable to RTU.

## 4. Civil Works

---

### ■ : Foundation & Sunshade for RTU

- Re-use existing foundation & sunshade for RTU  
Examine the condition of existing foundation and sunshade for RTU and repair the defects, if any.
- Provide new foundation & sunshade for RTU  
Design and construct the foundation and sunshade for new RTU at suitable location. The foundation and sunshade should be designed to suitably accommodate new RTU.

### ■ : Instrument Stand with Foundation & Sunshade

- Re-use existing Instrument stand(s) with foundation & sunshade  
Examine the condition of existing Instrument stand(s) with foundation & sunshade and repair the defects, if any.
- Provide new Instrument stand(s) with foundation & sunshade  
Design and construct the Instrument stand(s) with foundation & sunshade at suitable location. It should be designed to suitably accommodate the required number of instruments and explosion proof instrument field junction box.

## 5. Site Photo

---



Existing RTU



Existing Instrument Stand

## 6. Site Layout

---

See attached Layout Plan.



# Site Information & Scope of Work

## Site Information

Site Name : VS12 Narsingdi  
Site Code : 40-MHD-508

Site Address : To be provided later.

Coordinates : N 23° 55' 56.2 " : E 90° 42' 06.6 "  
\* Coordinates are surveyed by handy type GPS and might be inaccurate.

Site Type

<input type="checkbox"/> Control Center	<input type="checkbox"/> Master Telemetry Station
<input type="checkbox"/> Gas Field	<input type="checkbox"/> Operating Company Terminal (OCT)
<input type="checkbox"/> CGS (City Gas Station)	<input type="checkbox"/> Power station/Fertilizer Factory
<input type="checkbox"/> Compressor Station	<input type="checkbox"/> TBS (Town Bordering Station)
<input type="checkbox"/> Pig Station	<input type="checkbox"/> DRS (District Regulating Station)
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<input checked="" type="checkbox"/> VS (Valve Station)	

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Operating Company : TGTDCCL

Remarks : \_\_\_\_\_  
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## Scope of Work

Works checked off hereinafter shall be carried out for the Project

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- : RTU
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    - Installation of the flow computer which shall be prepared by GTCL in the enclosure
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  - Pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the pressure transmitter, and design, supply and install:
  - Pressure transmitter on the prepared tapping point
  - Tubing between tapping point and transmitter[ 2 ]

■ : Differential pressure transmitters Q'ty

- Design, supply and install:
  - Differential pressure transmitter on the existing spare tapping point
  - Tubing between tapping point and transmitter
- Prepare the tapping point for the differential pressure transmitter, and design, supply and install:
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- Design, supply and install:
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- Local Field Instrument Junction Box Q'ty [ 1 ]  
Design, supply and install an Intrinsic safety junction box. The junction box to be suitable for glanding appropriate cables.

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## 2. Communication System

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## 4. Civil Works

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Design and construct the Instrument stand(s) with foundation & sunshade at suitable location. It should be designed to suitably accommodate the required number of instruments and explosion proof instrument field junction box.

## 5. Site Photo

---

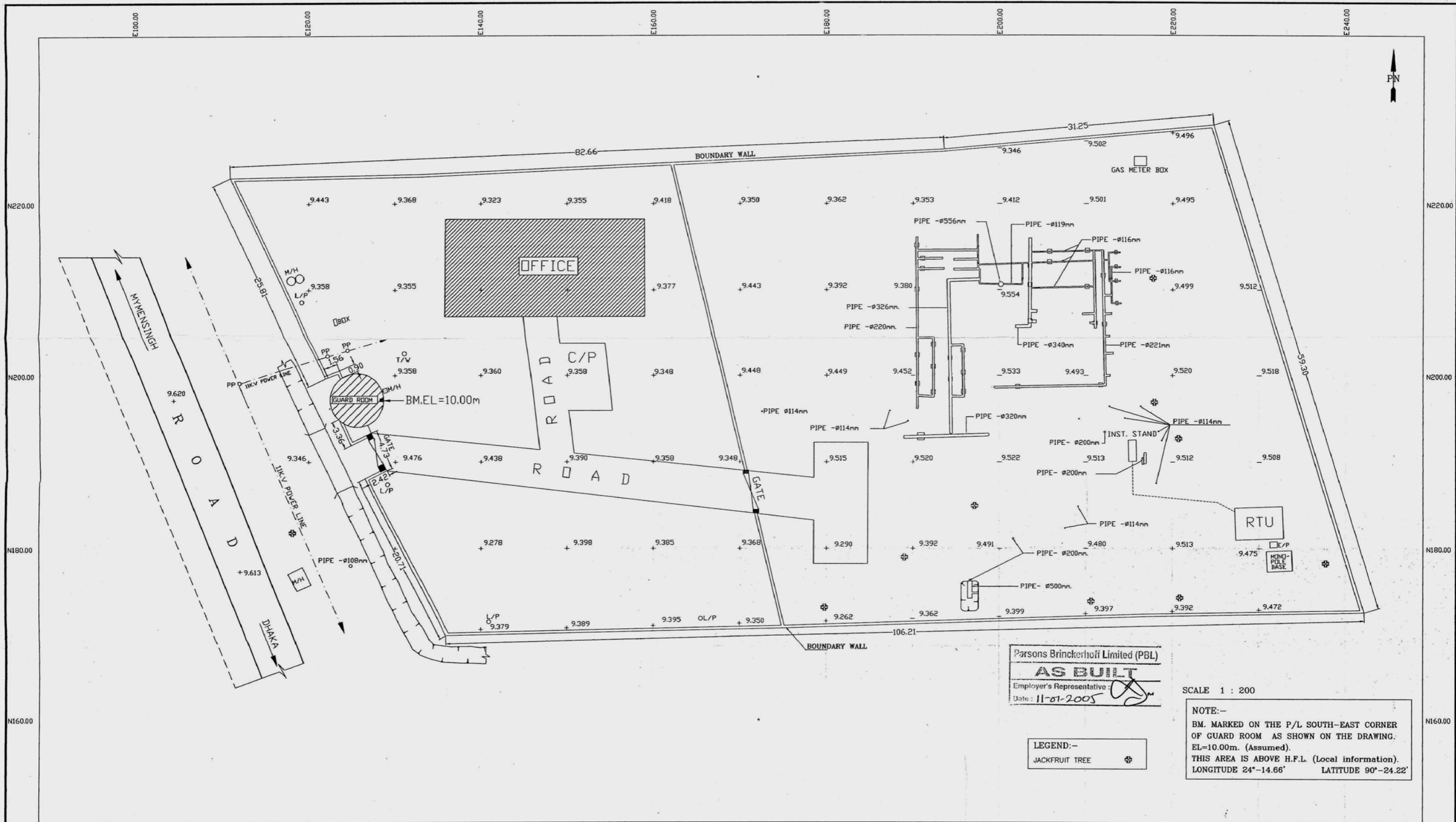


Site view

## 6. Site Layout

---

Site layout shall be provided later.



Parsons Brinckerhoff Limited (PBL)  
**AS BUILT**  
 Employer's Representative: [Signature]  
 Date: 11-01-2005

SCALE 1 : 200

NOTE:-  
 BM. MARKED ON THE P/L SOUTH-EAST CORNER  
 OF GUARD ROOM AS SHOWN ON THE DRAWING.  
 EL=10.00m. (Assumed).  
 THIS AREA IS ABOVE H.F.L. (Local information).  
 LONGITUDE 24°-14.66'      LATITUDE 90°-24.22'

LEGEND:-  
 JACKFRUIT TREE      \*

ISSUE	Revision	Date	D.D. Ref	Contractor	Sub Contractor	S.D. No.	Employer
A	ISSUED FOR DESIGN APPROVAL			PEROL CONTROLS Ltd Ready to use ENERGY Test Methods ISO 9001	SURVEY CORPORATION		GAS TRANSMISSION COMPANY Ltd (GTCL)
B	ISSUED FOR DESIGN APPROVAL	11-11-04					
				<b>CONTRACT DRAWING APPROVAL</b> Drawing Status: DESIGN APPROVAL		THE BANGLADESH GAS INFRASTRUCTURE DEVELOPMENT PROJECT. SUPERVISORY CONTROL, DATA ACQUISITION AND TELECOMMUNICATIONS SYSTEMS.	
				<input type="checkbox"/> REDLINED CHANGES <input type="checkbox"/> APPROVED NO CHANGES		Consultant: PB Technologies Ltd.      Employer Contract No: GTCL/RL-1109/C2	
				PRINT NAME: _____ DATE: _____			
				Drawing Title: SITE CODE: 519      SITE NAME: VS-4 TITAS			
				Drawing No. 519-60-72      Rev _____      Sheet _____      Dwg. Size A1			
				BY: Drawn HASHEM      Checked M. A. HAYAT      Approved M. A. HADAYET			
				Date: 27-05-99      27-05-99      27-05-99			