

Site Information & Scope of Work

Site Information

Site Name : Titas Gas Field Location 3
Site Code : 10-ASH-202

Site Address : To be provided later.

Coordinates : N 24° 00' 55.7 " : E 91° 07' 20.4 "
* 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 checked="" 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 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 : BGFCL

Remarks : Additional instruments are required at this site.

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: [1]
 - 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: [2]
 - 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: [1]
 - 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. [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

■ : 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



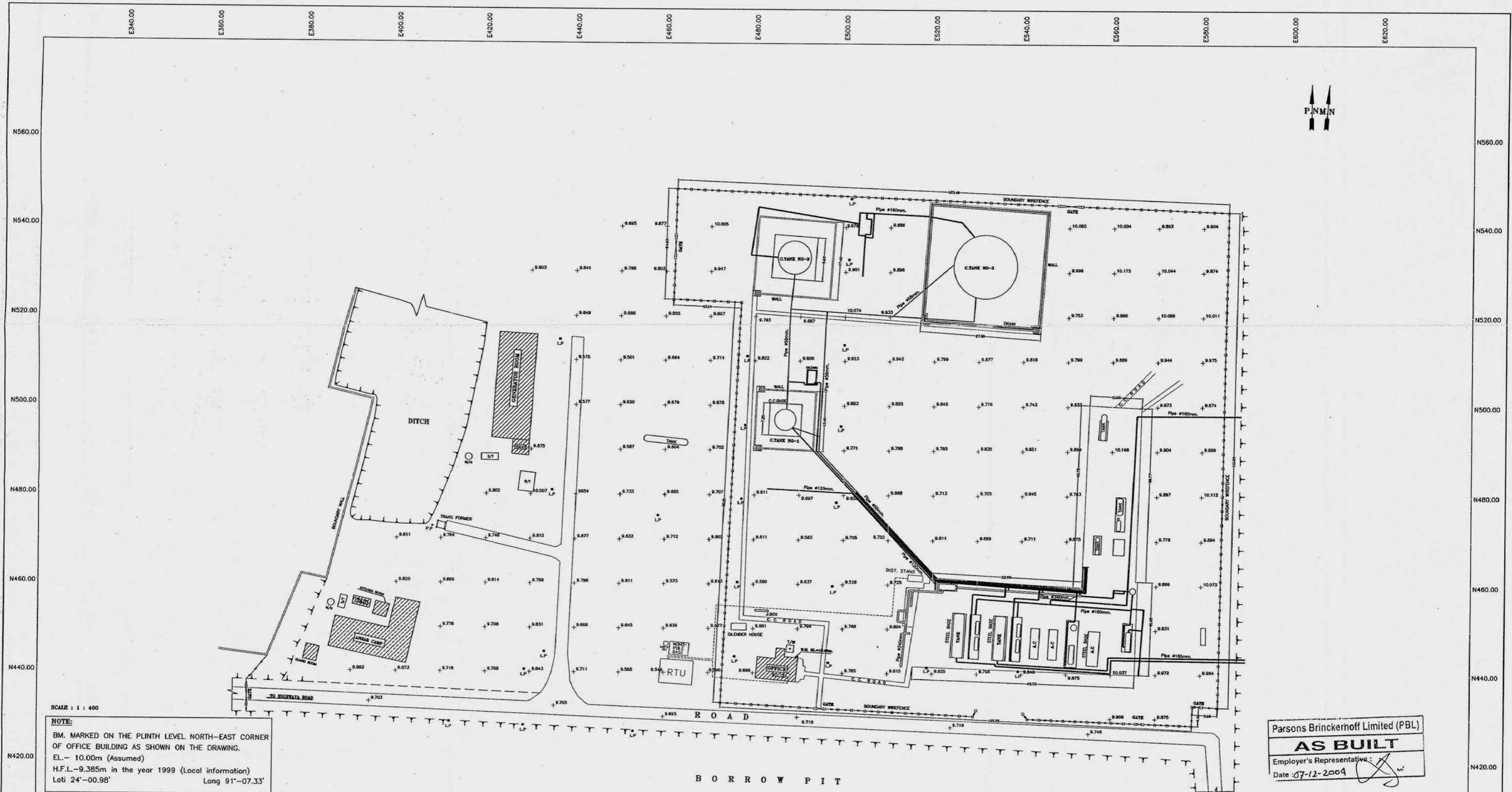
Existing RTU



Existing Instrument Stand

6. Site Layout

See attached Layout Plan.



SCALE : 1 : 400

NOTE:
 BM. MARKED ON THE PLINTH LEVEL NORTH-EAST CORNER OF OFFICE BUILDING AS SHOWN ON THE DRAWING.
 EL.- 10.00m (Assumed)
 H.F.L.-9.385m in the year 1999 (Local information)
 Lat 24°-00.98' Long 91°-07.33'

Parsons Brinckerhoff Limited (PBL)
AS BUILT
 Employer's Representative:
 Date: 07-12-2009

ISSUE	Revision	Date	D.O. Ref	Contractor	Sub Contractor	S.O. No.	Employer
A	ISSUED FOR DESIGN APPROVAL				SURVEY CORPORATION		GAS TRANSMISSION COMPANY Ltd (GTCL)
B	ISSUED FOR DESIGN APPROVAL	01-11-04					
				CONTRACT DRAWING APPROVAL Drawing Status: DESIGN APPROVAL REDLINED CHANGES: <input type="checkbox"/> APPROVED NO CHANGES: <input type="checkbox"/>		THE BANGLADESH GAS INFRASTRUCTURE DEVELOPMENT PROJECT. SUPERVISORY CONTROL, DATA ACQUISITION AND TELECOMMUNICATIONS SYSTEMS.	
				Drawing No. 206-60-72 Drawing Title: SITE CODE : 206 SITE NAME : TITAS GAS FIELD LOCATION-3		Consultant: PB Technologies Ltd.	
				Drawing No. 206-60-72 Rev B Sheet Drig. Size A1		Employer Contract No: GTCL/RL-1109/C2	
				PRINT NAME: _____ SIGNED: _____ DATE: _____		BY: M.A.ALIM Date: 08-05-99	
				Checked: M. A. HAYAT Date: 20-03-99		Approved: M. A. HADAYET Date: 20-03-99	

Site Information & Scope of Work

Site Information

Site Name : Titas Gas Field Location 7
Site Code : 10-ASH-203

Site Address : To be provided later.

Coordinates : N 23° 56' 54.4 " : E 91° 06' 48.9 "
* 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 checked="" 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 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 : BGFLC

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.

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

■ : No electrical works at this site.

4. Civil Works

■ : No civil works at this site.

5. Site Photo



Whole view of site

6. Site Layout

Not Available.

Site Information & Scope of Work

Site Information

Site Name : BGFCL Head Office
Site Code : 10-ASH-204T

Site Address : To be provided later.

Coordinates : N 23° 58' 59.1 " : E 91° 06' 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 checked="" 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 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 : BGFCL

Remarks : _____

Scope of Work

Works checked off hereinafter shall be carried out for the Project

1. SCADA System

■ : OCT (Operating Company Terminal)

- Design, supply and install a HMI, a color printer and UPS as minimum configuration to monitor the operating condition of GTCL pipeline.
- 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.

2. Communication System

■ : IP PBX System

- IP PBX main unit
Design, supply and install IP PBX main unit with necessary accessories and spare parts.
- Extension telephone set Q'ty
Design, supply and install extension telephone set(s) with required cables. [1]

■ : Operating Company Terminal (OCT)

- Radio equipment to connect OCT with Master Telemetry Station
Design, supply and install IP radio equipment at the building where OCT shall be installed to connect this OCT with Master Telemetry Station, including all necessary cables, accessories and the antenna with monopole.

3. Electrical Works

- : No electrical works at this site.

4. Civil Works

- : No civil works at this site.

5. Site Photo



Head office building



The Room where OCT shall be installed

6. Site Layout

Site layout shall be provided later.

Site Information & Scope of Work

Site Information

Site Name : Valve Station R
Site Code : 10-ASH-401

Site Address : To be provided later.

Coordinates : N 24° 02' 22.2 " : E 91° 10' 01.9 "
* 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 : GTCL

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



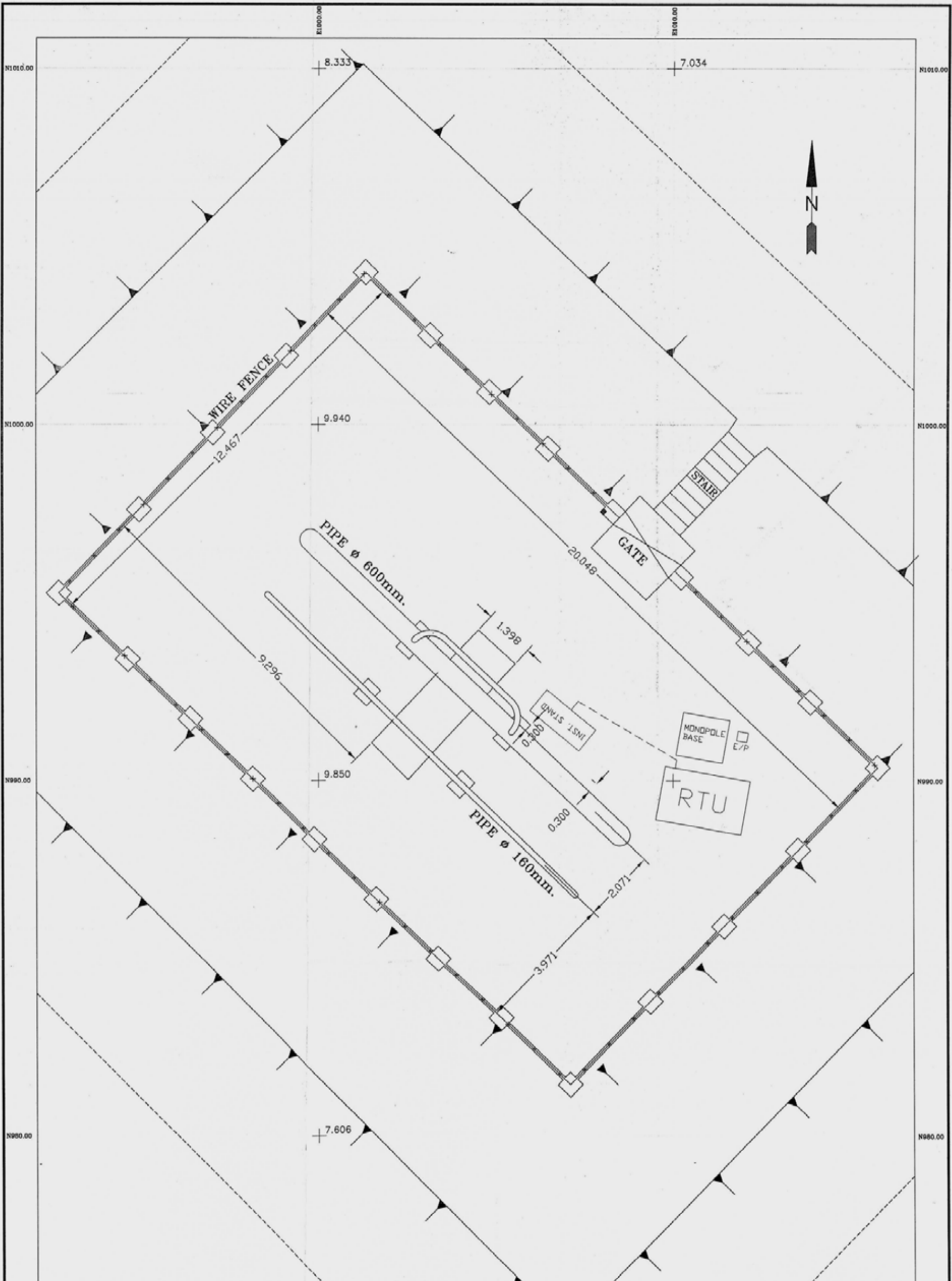
Whole view of site



Existing RTU

6. Site Layout

See attached Layout Plan.



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

SCALE : 1 : 50 (SOLAR POWERED)

NOTE:
 B.M MARKED ON THE TOP OF WALL RIGHT SIDE OF ENTRANCE AS SHOWN ON THE DRAWING.
 EL=10.00m (Assumed)
 H.F.L = 10.00m. in the year 1998 (Local information)
 Lat. 24°-02.36' Long. 91°-10.02'

ISSUE	Revision	Date	B.D. Ref	Contractor	Sub Contractor	S.D. No.	Employer
A	ISSUED FOR DESIGN APPROVAL	-	-	CONTRACT DRAWING APPROVAL DESIGN APPROVAL <input type="checkbox"/> REQUIRED CHANGES <input type="checkbox"/> APPROVED NO-CHANGES PRINT NAME _____ SIGNED _____ DATE _____	SURVEY CORPORATION Drawing Title SITE CODE : 409 SITE NAME : VS 'R' Drawing No. 409-00-73 Rev 3 Sheet 1 Dwg. Size A1 Drawn M.A. HAYAT Checked M.A. HAYAT Approved M.A. HAYAT Date 18-04-99 18-04-99 18-04-99	GAS TRANSMISSION COMPANY Ltd (GTCL) THE BANGLADESH GAS INFRASTRUCTURE DEVELOPMENT PROJECT, SUPERVISORY CONTROL DATA ACQUISITION AND TELECOMMUNICATIONS SYSTEMS. Consultant PB Technologies Ltd. Employer Contract No GTCL/RL-1109/C2	
B	ISSUED FOR DESIGN APPROVAL	07-11-04					

Site Information & Scope of Work

Site Information

Site Name : Valve Station T
Site Code : 10-ASH-402

Site Address : To be provided later.

Coordinates : N 24° 02' 55.7 " : E 91° 06' 55.7 "
* 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 : GTCL

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



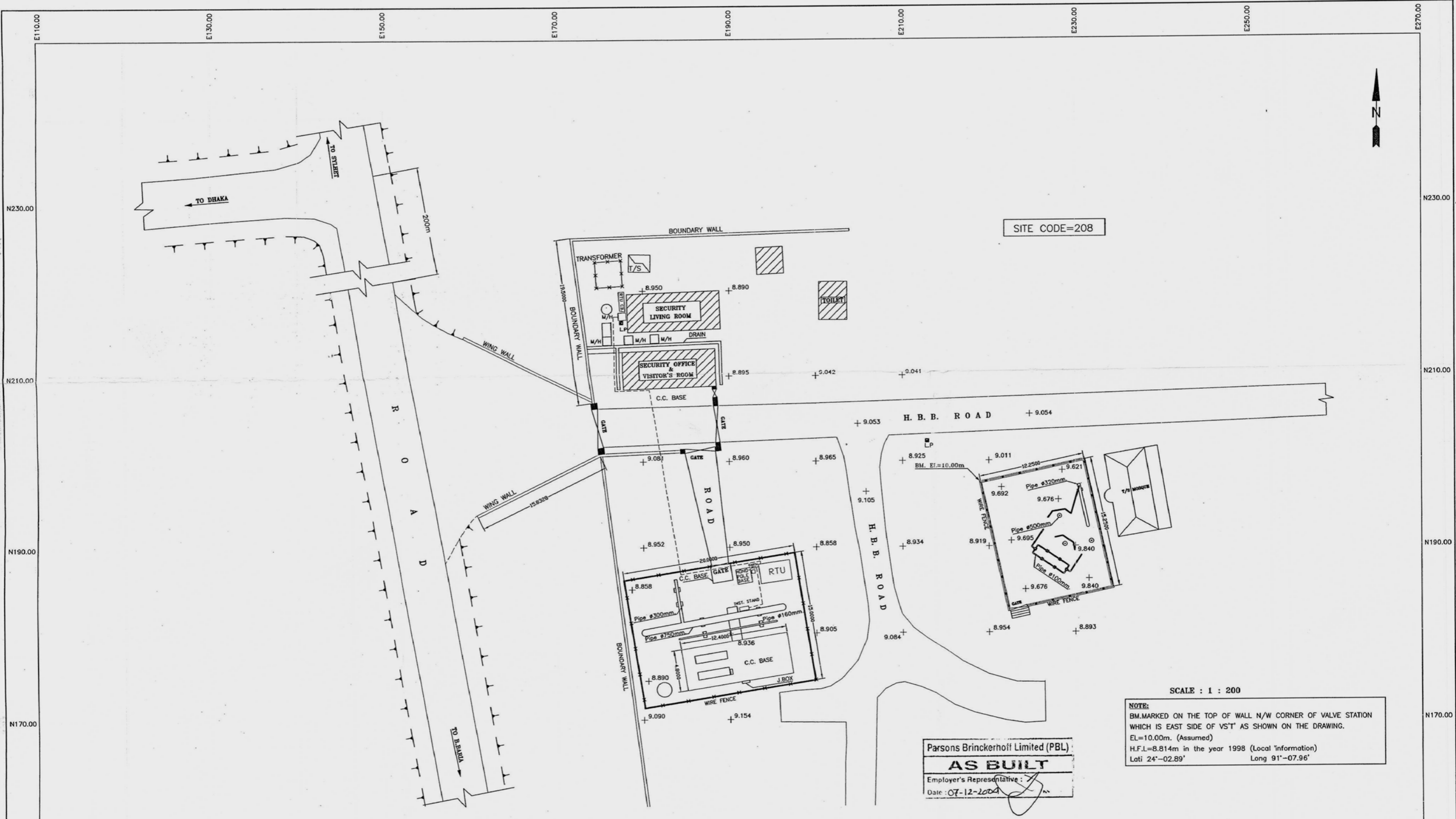
Existing RTU



Existing Instrument Stand

6. Site Layout

See attached Layout Plan.



ISSUE	Revision	Date	D.D. Ref	Contractor	Sub Contractor	S.D. No.	Employer
A	ISSUED FOR DESIGN APPROVAL			CONTRACT DRAWING APPROVAL Drawing Status: DESIGN APPROVAL <input type="checkbox"/> REDLINED CHANGES <input type="checkbox"/> APPROVED NO CHANGES PRINT NAME: _____ SIGNED: _____ DATE: _____	SURVEY CORPORATION		GAS TRANSMISSION COMPANY Ltd (GTCL) THE BANGLADESH GAS INFRASTRUCTURE DEVELOPMENT PROJECT. SUPERVISORY CONTROL, DATA ACQUISITION AND TELECOMMUNICATIONS SYSTEMS.
B	ISSUED FOR DESIGN APPROVAL	07-11-04					
				Drawing Title: SITE CODE: 410 SITE NAME: VS 'T'		Consultant: PB Technologies Ltd. Employer Contract No: GTCL/RL-1109/C2	
				Drawing No. 410-60-72 Rev B Sheet Dwg. Size A1			
				BY: Hashem Date: 17-03-99 Checked: M. A. HAYAT Date: 20-03-99 Approved: M. A. HADAYET Date: 20-03-99			

Site Information & Scope of Work

Site Information

Site Name : Valve Station VS1 A-B
Site Code : 10-ASH-403

Site Address : To be provided later.

Coordinates : N 23° 58' 13.6 " : E 91° 02' 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 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 : GTCL

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



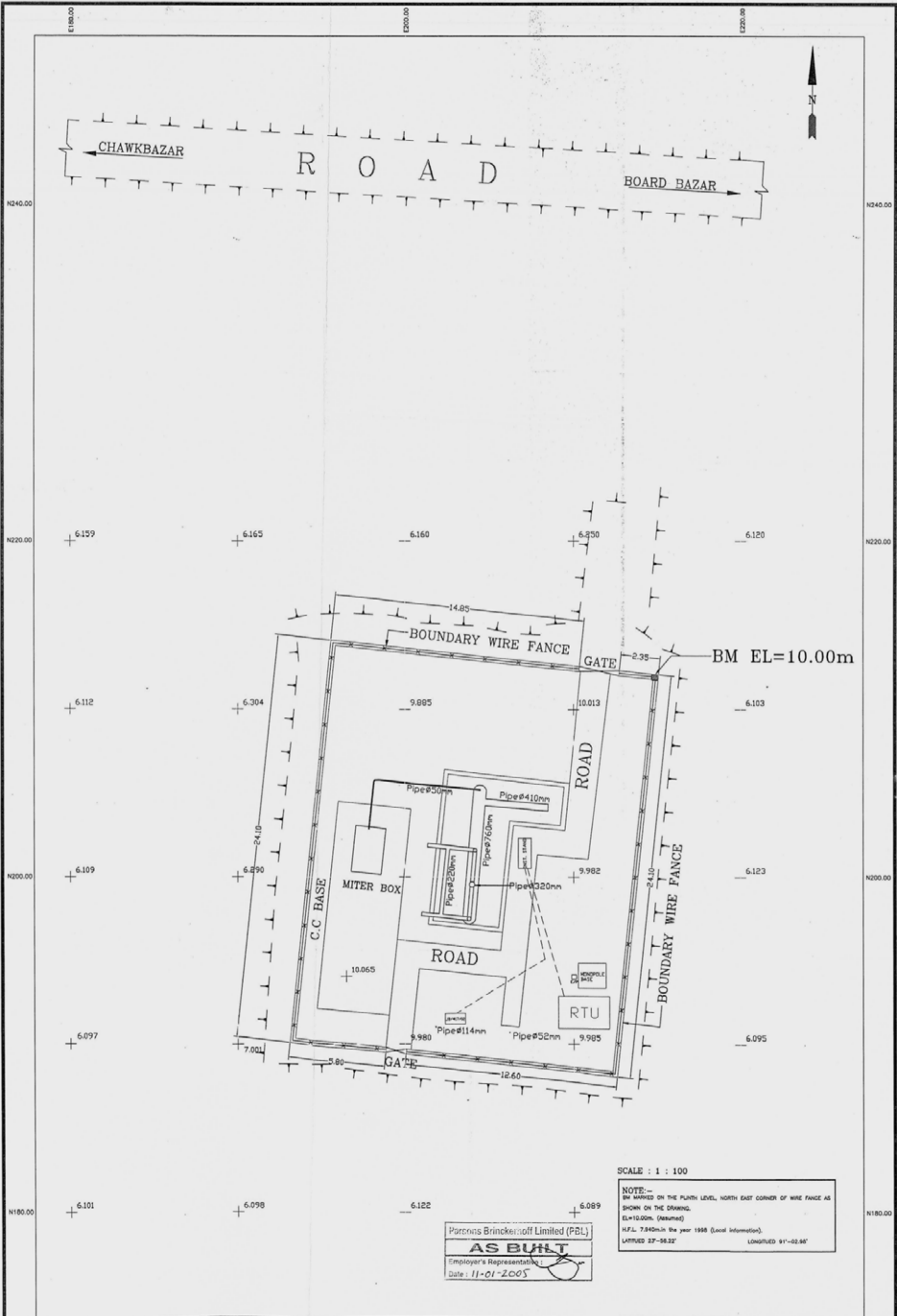
Site view



Existing Instrument

6. Site Layout

See attached Layout Plan.



SCALE : 1 : 100

NOTE:-
 BM MARKED ON THE PLINTH LEVEL, NORTH EAST CORNER OF WIRE FENCE AS SHOWN ON THE DRAWING.
 EL=10.00m. (Assumed)
 H.F.L. 7.940m in the year 1998 (Local Information).
 LATITUDE 27°-58.22' LONGITUDE 91°-02.56'

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	04-11-04	-		◆ SURVEY CORPORATION		GAS TRANSMISSION COMPANY Ltd (GTCL)
B	ISSUED FOR DESIGN APPROVAL						

CONTRACT DRAWING APPROVAL Drawing Status: DESIGN APPROVAL <input type="checkbox"/> REDUCED CHANGES <input type="checkbox"/> APPROVED NO CHANGES		Drawing Title: SITE CODE : 417 SITE NAME : VS 1 A-B Drawing No. 417-60-72 Rev Sheet Orig. Size A1 BY: Date: Checked: Approved:	THE BANGLADESH GAS INFRASTRUCTURE DEVELOPMENT PROJECT, SUPERVISORY CONTROL, DATA ACQUISITION AND TELECOMMUNICATIONS SYSTEMS. Consultant: PB Technologies Ltd. Employer Contract No: GTCLR-1109/C2
---	--	---	---