



الجنوب للطاقة  
— SOUTH —  
ENERGY

GENERAL GUIDELINES AND REQUIREMENTS FOR PRESSURE REDCUING  
AND METERING STATION (PRMS)

Revision History:

Rev.#	Revision Comments	Date	Prepared By	Reviewed By	Approved By
0	Issued for Comments				
1	Draft for Review				
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## **1 INTRODUCTION**

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The purpose of this document is to describe the works related to the supply and installation of the gas service riser and Pressure Reducing and Metering Station (PRMS) for Residential apartments, Town houses, Villas and Commercial outlets in gas distribution network at Dubai South residential city.

South Energy (SE) is an integrated energy service provider that is a Wholly Owned Dubai South Subsidiary. Incorporated in June 2017 with the key mission of providing full Spectrum of Energy Related Services to Dubai South and its customers. SE is solely responsible for district cooling and central domestic gas within Dubai South and provides additional services in all other energy sectors such as Solar within and far beyond Dubai South boundaries.

This design and installation guidelines are not to be use to override any other international standards, which are currently in use. The purpose of this document is also to provide information on all mandatory and safety provisions required for PRMS as per the international standards and local regulations.

South Energy supplies this document on the express understanding it is to be treated as confidential and that it may not be copies, used or contents disclosed to others in the whole or in part for any purpose except as authorized in writing by South Energy.

## **2 SCOPE**

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This procedure shall be applicable to the plot developers, building owners and contractors for the PRMS selection, installation, tie-inn with the existing network, testing and commissioning purposes. The scope of these guidelines is covering the work from gas service line extension to the PRMS skid outlet for Residential apartments, Town houses Villas and commercial outlets in gas distribution network in Dubai South Residential city.

This scope also gives the minimum requirements for the Pressure Reducing Stations (PRS) for the individual Villas and Town houses.

### 3 OBJECTIVE

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This document is intended to be used as overview and guidelines for Investors, Building Owners, Client Representatives, Consultants, and Contractors to design, build and operate the Pressure Reducing and Metering Station (PRMS).

Design and Installation Guidelines is to define and implement a standard, identical design and installation approach for the LPG and future NG(Natural Gas) Systems that to be interface between South Energy Gas Network Distribution System and Dubai South Customers Gas Utilization Systems (Building Internal Piping) in the residential city.

### 4 REFERENCES

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Pressure Reducing and Metering Station (PRMS) shall be designed and installed with minimum requirement complying to the below listed referenced standards and codes of practice.

IGE/GM/6 – Diaphragm and RPD Meter Installations, > 6m<sup>3</sup>/hr., MOP ≤ 75 mbar

IGE/GM/8, Part 1 – Meter Installations I & C – Design, MOP ≤ 38 bar

IGE/GM/8, Part 2 – Meter Installations I & C – Location & Housing, MOP ≤ 38 bar

IGE/GM/5 – Electronic Gas Meter Volume Conversion Systems

IGE/SR/25 – Hazardous Area Classification of Natural Gas Installations

IGE/TD/13:2001 - Pressure regulating installations for transmission and distribution systems

BS EN 1359:1999 - Gas meters. Diaphragm gas meters

BS EN 12480:2002 - Gas meters. Rotary Positive Displacement (RPD) gas meters

BS EN 12261:2002 - Gas meters. Turbine gas meters

BS EN 12405-1:2005 - Gas meters. Conversion devices. Volume conversion.

BS 6400 – Specification for the Installation of domestic-sized gas meters maximum rated capacity not exceeding 6 m<sup>3</sup>/h (2nd and 3rd family gases)

- Part 1 Natural Gas (low pressure)

- Part 2 Natural Gas (Medium Pressure)

IGE/UP/15- Gas in Flats: Gas Installations in Multi-Occupancy Buildings

IGE/UP/2 - Gas installation pipe work, boosters and compressors on industrial and commercial premises

IGE/G/5 - Gas in flats and other multi-dwelling buildings

IGE/TD/4 - Gas Services

IGE/TD/3 Edition 4; 2005 Steel and PE pipelines for gas distribution

BS 6891 - Specification for installation of low-pressure gas pipework of up to 28 mm (R1) in domestic premises (2nd family gas)

NFPA 54 – National Fuel Gas Code Handbook

NFPA 58 – Liquefied Petroleum Gas Code

Local Authority Regulations:

UAE Civil Defense chapter -11

## **5 DEFINITIONS & ABBREVIATIONS**

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**Customer** – A master developer, building owner, individual flat owner or others who are using LPG services provided by South Energy.

**PRMS** - Pressure Reducing and Metering Station

**PRS** -Pressure Reducing Station

**BMS**- Building Management System

**NOC** – No Objection Certificate

**PVC** – Plot Valve Chamber

**SSV**- Slam Shutoff Valve

**GDCP** – Gas leak Detection Control Panel

**FACP** – Fire Alarm Control Panel

**Scmh** – Standard meter cube per hour

**M3** – Standard Meter Cube

## 6 RESPONSIBILITY & AUTHORITY

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### 6.1 Dubai South Customers Responsibilities:

The plot developers/building owners his consultant and contractors shall be responsible for the design, procure, supply, install, test and commission of all necessary PRMS room equipments such as Regulators, SSV, valves, flowmeter, necessary piping and instrumentation to meet the design criteria. The operation and maintenance of PRMS shall be part of the customer responsibility.

### 6.2 South Energy Responsibilities:

South Energy shall be responsible for communicating the requirements to its customers stated herewith ensuring the PRMS standards and guidelines compliance. Such requirements may correlate with LPG distribution network construction and operation. South Energy is the authority to control and regulate the PRMS Guidelines conforming to all the relevant PRMS standards and requirements to meet the design criteria for gas distribution network side and building secondary utilization system.

South Energy shall be the reviewing and approving authority for design, installation, commissioning activities of PRMS (material submittal and specifications to be submitted to South Energy for approval).

## 7 DESIGN SPECIFICATIONS & TECHNICAL REQUIREMENTS

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### 7.1 GENERAL AND SAFETY REQUIREMENTS :

- 7.1.1 All Pressure Reducing and Metering Stations (PRMS) should be constructed, installed and commissioned as per IGE/TD/13 and IGE/GM/8 standards

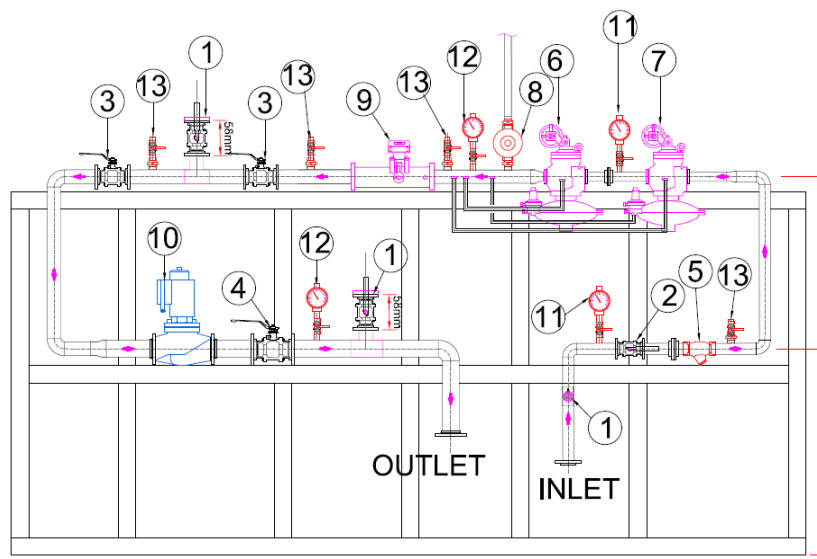
- 7.1.2 The PRMS room shall be preferably at outside the boundary wall and should be at the ground level
- 7.1.3 It shall be Easily accessible for inspection and meter reading and lockable
- 7.1.4 Protected against physical damage, vandalism and the effects of severe weather
- 7.1.5 Well ventilated such that any gas venting or leakage does not result in gas entering the building
- 7.1.6 Positioned to minimize risk from possible interference or third party damage.
- 7.1.7 PRMS room shall no closer than 3m vertically and horizontally from source of ignition or electrical substation
- 7.1.8 All single stream PRMS station shall be provided with by-pass valves at the inlet and at the outlet before the solenoid valve.
- 7.1.9 Gas leak detector shall be installed in the Pressure Reducing & Metering Station room at a minimum 300 mm from the finished floor level.
- 7.1.10 The Gas leak detection control panel (GDGP) shall be interfaced with building Fire Alarm Control Panel (FACP)
- 7.1.11 All gas meter installed should be calibrated to International Organization of Legal Metrology (OIML) standard.
- 7.1.12 All the Gas meters shall be suitable for integrating with building BMS system for billing purpose.
- 7.1.13 Approved third party shall calibrate all installed gas meters
- 7.1.14 The gas meters inside the PRMS shall be equipped with the electronic volume corrector to convert the volume to the standard operating conditions.
- 7.1.15 A gas meter and its associated fittings shall be fitted more than 1000 mm from an electricity meter/electrical apparatus or more than 500 mm away from the electricity supply and distribution cables, if this distance cannot be achieved a non-combustible partition made of an electrically insulating material shall be placed between them.
- 7.1.16 All electrical cables shall be fire proof cables and enclosures and cable gland shall be suitable to use in the Zone –II area and should be ATEX approved.
- 7.1.17 Where electrical cross bonding is applied to the gas installation pipes, a clamp shall be used to make connection to the outlet side of the meter not further than 600 mm of the pipe run from the meter.

- 7.1.18 Highly visible reflective safety signboards with dimensions of 800 X 600 mm shall be provided at two places on the PRMS room.
- 7.1.19 Warning signs boards shall be provided near the room. pictures are given below for the reference



- 7.1.20 The emergency contact number should be displayed on the warning signboard of the installer or maintenance service provider.
- 7.1.21 Proper identification shall be mentioned in the name board for the buildings or villas/town houses connected to the respective PRMS for easy isolation gas in case of any emergency.
- 7.1.22 Furthermore, SOUTH ENERGY will perform necessary inspection and witness in order to make sure that the quality of Pressure Reducing Station is satisfactory in accordance with SOUTH ENERGY's minimum requirements stated in the technical guidelines.

## 7.2 TYPICAL P&ID OF PRESSURE REDUCING AND METERING STATION:





### 7.3 TECHNICAL SPECIFICATIONS :

Tag No	Item Description	Specification	Make/Remarks
1 - 4	Isolation ball valve	Type PC 201(FNPT), body CF8M, Seat :PTFE; Ball CF8M ;PN 40	A+R , Apollo, RIV
5	Strainer	Body : Brass , Rubber Gasket, MOP Pressure 20 bar, FNPT, mesh 20 micorn	Boldrin, Apollo,3D valves
6	Regulator (Active)	EN 334/EN 14382 PED 2014/68/UE Acceptable for NG,LPG , End connection FNPT, design pressure 20 bar, inlet Pr. 0.5 to 10 bar, outlet pressure Pd=80 mbar to 350 mbar , flow rate 100 m <sup>3</sup> /hr-400 m <sup>3</sup> /hr , Design temp -20 to 60° C Accuracy calss (AC) : up to +/- 10% Lock up pressure class (SG) : up to +20 %	Gnali Bocia, Pietro Fioretini/Briffault Boldrin
7	Regulator With Slam Shut off valve(Monitor)	EN 334/EN 14382 PED 2014/68/UE Acceptable for NG,LPG , End connection NPT, design pressure 20 bar, inlet Pr. 0.5 to 10 bar, outlet pressure Pd=80 mbar to 350 mbar , flow rate 100 m <sup>3</sup> /hr-400 m <sup>3</sup> /hr , Accuracy calss (AC) : up to +/- 10% Lock up pressure class (SG) : up to +20 % Under pressure shut off(UPS0) - 0.1 - 0.15 bar Over Pressure Shut off (OPSO) – 0.4 to 0.8 bar	Gnali Bocia, Pietro Fioretini/Briffault Boldrin
8	Safety Releif valve	It confirms with : 2014/68/EU PED Directive (Ex 97/23/EC) 2014/34/EU ATEX Directive (Ex 94/9/EC) Body : Die Cast aluminum Max.Working Pressure : 6 bar Environment Temp: -15 to 60 ° C Seat : NBR Rubber End connections : DN 15 to DN 50 threaded according to EN 10226 Setting Pressure : 200 to 1000 mbar Pmax 1500 mbar	Boldrin Italy Madas

9	Turbine Gas flow meter	Application: suitable for LPG and Natural gas Approvals : DVGW, ATEX, PED Suitable interface with BMS modules, M-Bus, Optical interface Max working pressure : 20 bar ANSI 150, Measuring range (0-100 m <sup>3</sup> /hr based on the max flow rate of the total connected loads) End connections : DN type Pulsers emitters with reed switch Accuracy +/- 1.5% at Q <sub>max</sub>	Elster Quantometer QA/QAe Itron/Common
10	Solenoid Valve	In Conformity with : EN 161 standard Type NC : Normally closed Manual Reset type Max working pressure : 6 bar Temp : -20 to 60 °C Protection Degree : IP65 Class A,B II, closing time less than 1 sec. 2009/142/EC Gas Directives 2014/68/EU PED directive (6 bar versions) 2014 34/EU ATEX Directive (Ex 94/9/EC) Threaded connections: DN 20-DN 50 According to EN 10226 Power supply :24VDC Coil: ATEX approved connecting type DIN 43650 Valve Body : Die Cast Aluminum Diaphragm : NBR rubber or viton (UNI7702)	MADAS ASCO TORK
11	Pressure gauge (Inlet)	0-7000 mbar full scale, stainless steel Ø 61.3mm dial with bottom connections as ½" MNPT	Boldrin ,Wika,Waree, Calcon
12	Pressure gauge (outlet)	0-600 mbar full scale, stainless steel Ø 61.3 mm dial with bottom connection as ½" MNPT	Boldrin, Wika, Waree, Calcon
13	Purge valve	Type PC 201(FNPT), body CF8M, Seat :PTFE; Ball CF8M PN 40	A+R , Apollo, RIV
14	Stainless steel tubing	10mm Tubing 316, class 3000 LBS	Local
15	C – Channel	75X75X6 Galvanized iron	Local
16	Pipes	Carbon steel seamless pipe to API 5L Grade B or ASTM A 105 GrB an equivalent must be used. Pipework	Inter Pipe, Sumitomo.

		should be Schedule 40. All metallic LP-Gas piping shall be installed in accordance with ASME B 31.3, Process Piping, for normal fluid service or Section 6.9. of NFPA #58,	
17	Transition fitting	Coupler with integral pipe fixation PE 100 SDR, Pressure 10 bar, limited path fusion indicators, 4mm pins for connectors 32 mm,63mm	Georg Fischer (Not shown in the above layout)
18	Gas Detector (Not Shown in the above layout)	In confrimity with : Approvals I13GD , Ineris 11 ATEX3023X-IECEX T4 0-100 % LEL Suitable use for Zone 2 ATEX locations temp : -20 -55 °C. Ingres Protection : IP65 output : 4-20 mA anlaog transmitter , sesnor type : catalytic bead/semi conductor, Suitable to detect LPG Power Supply – 12-30VDC	Oldham , Techo control, Watson. (Not shown in the above layout)

### Note : Material Submittals\*

All the materials shall be listed and approved by UAE civil defense and consultant. Material submittals shall be done during the process of obtaining construction NOC from South Energy.

The PRMS consists of the below mentioned following items:

- Isolation Ball valves
- Strainer
- Active Regulator
- Regulator with slam shutoff valve (Monitor)
- Check valves (if twin stream regulating station)
- Turbine gas flow meter
- Solenoid valve 24 VDC
- Safety Relief valve
- Pressure Gauges (Inlet & Outlet)
- Purge valve
- Gas Leak Detector

### **7.4 FUNCTIONALITIES OF THE ITEMS IN PRMS :**

- 7.4.1 **Isolation Ball Valves:** Ball valves are to be used to start and stop the gas flow. These valves are provided in the inlet and outlet of the PRMS and purging points. The same will be used during maintenance of the regulators and other equipments.
- 7.4.2 **Strainer:** Includes a disposable medium for removing particles of specified micron sizes. Strainer uses a perforated plate or screen mesh to remove larger particles from a process stream.
- 7.4.3 **Active Regulator:** Under normal operating conditions, the active regulator will control the outlet pressure at a fixed value.
- 7.4.4 **Regulator with Slam Shut off Valve (Monitor):** The monitor regulator will be set at a pressure slightly higher than the active regulator and under normal operating conditions will be wide open. If the active regulator should fail open, the outlet pressure would rise to the set point of the monitor, which would then begin to control at the slightly higher pressure. In the extreme event that both active and monitor regulators should fail open, the pressure would rise to the set point of the slam shut valve which would then close, isolating that stream.
- 7.4.5 **Check Valve (NRV):** A check valve should be installed downstream of the regulators in case of twin stream PRS but a sensing point shall be provided in the inlet of the check valve to the active and monitor regulators in each line. The sensing point of the slam shut valve senses the pressure between the active regulator and the check valve. This will allow the standby stream to remain operational in the event the active slam shut closed due to high outlet pressure.
- 7.4.6 **Turbine Gas Meter:** It is to be installed to measure LP Gas/natural gas flow rate and the total building consumption.

- 7.4.7 **Solenoid Valve:** A solenoid valve shall interfaced with the gas leak detection control panel. In case of any gas leak in the PRMS, a signal shall send to control panel from leak detector and the control panel shall stop the power supply to the solenoid valve to close.
- 7.4.8 **Safety Relief valve :** An incorporated relief valve will prevent closure of the slam shut valve in the event there is a pressure build-up from the flow through the pilots during periods when the station is not operating, this is especially important when considering a small downstream system. Installations shall incorporate a regulator with a relief piped to the outside as well as overpressure shut-off capabilities (OPSO) and under pressure shut off (UPS0) capabilities.
- 7.4.9 **Pressure Gauges:** Pressure gauges are to be provided in the skid to identify the upstream and downstream pressure for the equipments and the gas distribution network inlet pressure.
- 7.4.10 **Purge Valves:** To vent or drain the gas in the system these purge valves are to be useful especially during maintenance and testing purpose.
- 7.4.11 **Gas Leak Detector:** A gas detector is a device that detects the presence of gases in the PRMS Room, often as part of a safety system. This detector will be interfaced with control panel to shutoff the solenoid valve at downstream of the PRMS.

### 7.5 DESIGN CRITERIA OF PRMS & GAS LOAD ASSUMPTIONS

Peak hour loads are determined by diversifying total connected loads. The connected gas loads calculated using presented information about type of the consumer and based on following load assumptions for Natural Gas generally using in UAE, which can be recalculated to LPG load according to calorific value.

These loads are then used for the design of the Gas supply facility and the Gas Distribution Network and Gas utilization system.

The Main PRMS at the tank farm is having a capacity 1000 m<sup>3</sup>/hr to feed the network. The underground piping LP Gas network designed based on the following criteria's.

- LPG Composition 30% Propane and 70% Butane

- Higher Heat Content or calorific value = 1,07,508 Btu/m<sup>3</sup> (47,338 Btu/kg)
- Specific Gravity = 1.86
- Maximum Operating pressure for existing networks – the regulated LPG vapor pressure delivered from storage shall be 2 bar
- Minimum available pressure 1.2 bar at the service line
- Maximum allowed delivered pressure to commercial customers has MOP 350 mbar
- Maximum allowed delivered pressure to residential consumers has MOP 75 mbar
- Maximum utilized pressure at residential appliances is 37 mbar
- Maximum allowed pressure drop for utilization pipes is 10% and velocity is less than 20 m/s.
- External pipe work inside mechanical shaft or outside the building wall containing branch connections to domestic consumers shall operate at a maximum pressure of 75 mbar.

Gas Assumptions (Residential and Commercial Building)			
Property Type	Peak Hour m <sup>3</sup> /hour (NG)	Peak Hour m <sup>3</sup> /hour (LPG)	Diversity Factor
Apartment	1.0	0.4	0.2
Villa	1.7	0.6	0.3
Restaurant	16	6.0	See Note 1
Mall Restaurant	16	6.0	See Note 1
Large Hotel	400	140	-
Other Hotel	65	25	-

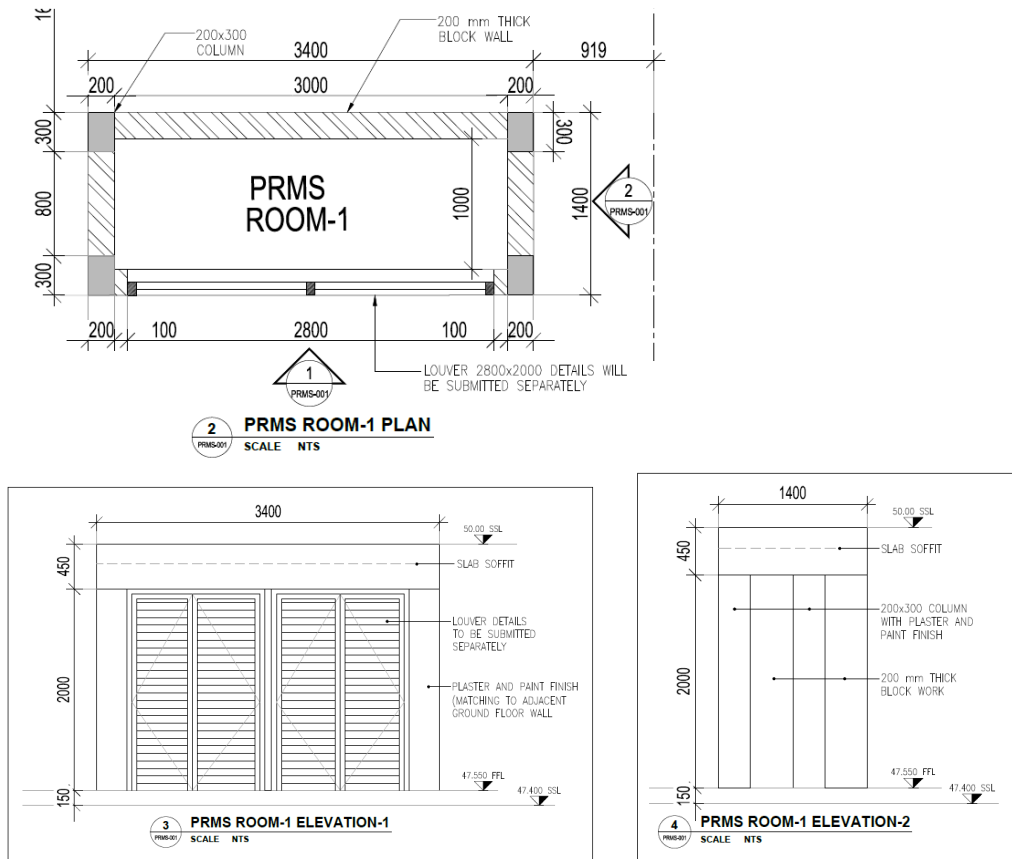
Note 1: Restaurants diversity factor:

- a) 1-5 Restaurants diversity factor 1.0
- b) 6-10 Restaurants diversity factor 0.8
- c) 11-15 Restaurants diversity factor 0.75
- d) Above 15 Restaurants diversity factor 0.7



### 7.6.1.2 Typical Civil drawings for the construction:

Refer attached civil drawing no: SE-LPG-PRMS-CIVIL-001



### 7.6.2 PRESSURE REDUCING STATION (PRS) FOR TOWN HOUSES OR VILLAS.

The PRS stations are shall be mandatory for the individual villas and town houses to reduce the pressure to 75 / 37 mbar as per the international standards and safety.

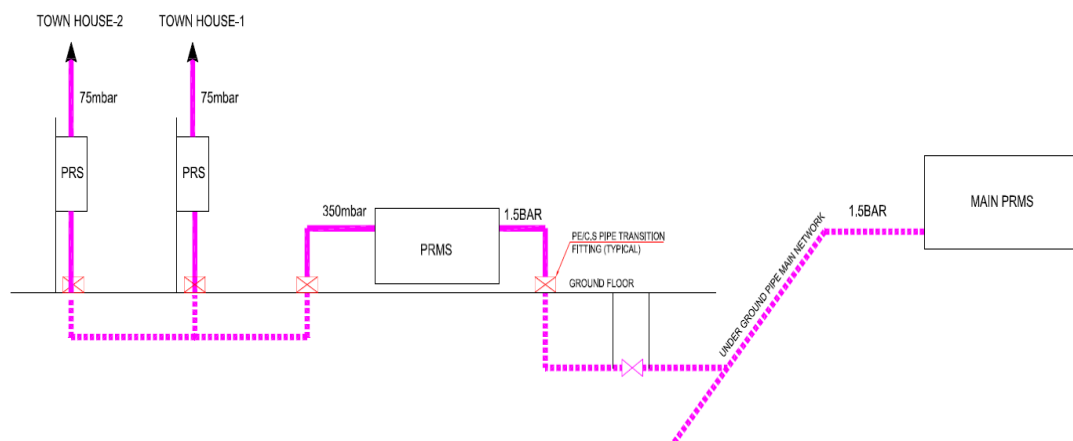
Considering construction of the most common individual villas and town houses. The following proposed locations provided below to construct PRS as per the South Energy Standards.

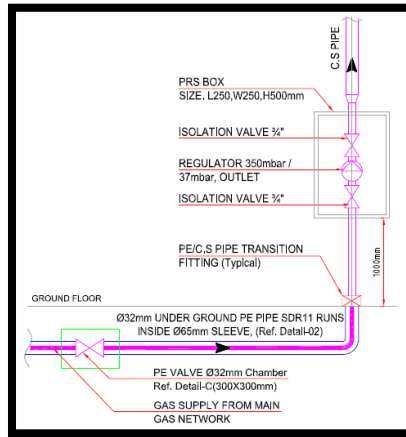


7.6.2.1 General Requirements of PRS:

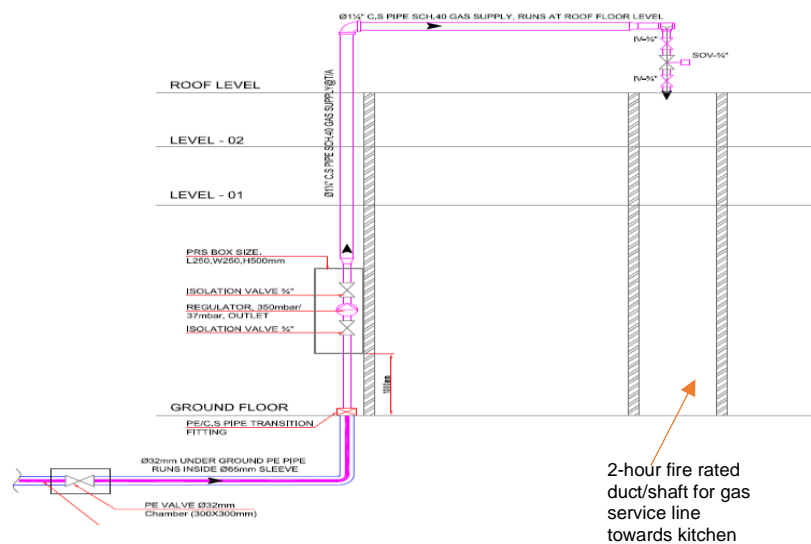
- All Pressure Reducing Station (PRS) shall be easily access.
- Pressure shall be keep at 37 mbar or 75mbar depending on the length of pipe.
- If 75 mbar pressures is in use, secondary pressure regulator with over pressure and under pressure shut-off valve (OPSO & UPSO) shall be installed prior to entering the Villas or town houses
- Pipes installed crossing the wall shall be in sleeve and grouted with fire resistance sealant.
- All service riser shall protected with GRP pipes or UPVC wherever it is crossing the wall
- All belowground service pipes shall be provided with GRP or UPVC sleeves for the addition protection
- All belowground pipes shall be rise aboveground before entering the building.
- Pressure Reducing Station location shall be approved by SOUTH ENERGY

7.6.2.2 Schematic diagrams of PRS for the Individual villas & Town houses:





\*\*Ref: The above picture are from the existing construction of the Dubai South owned buildings in the CP3, Town Houses.

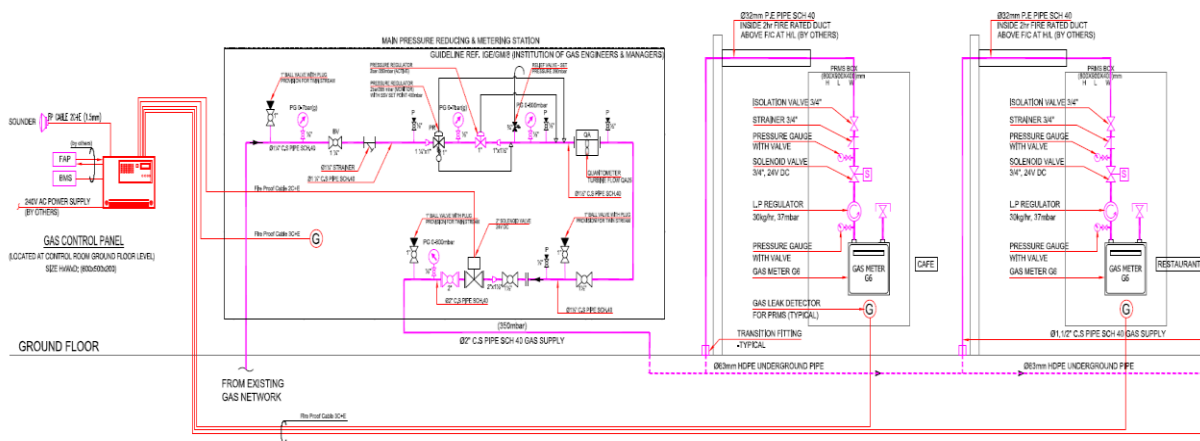


## 7.6.3 PRMS FOR THE LARGE COMMERCIAL OUTLETS

The construction and installation requirements of the Main PRMS room for the commercial outlets is similar to the Residential buildings/Town houses PRMS room. The below schematic diagram is for the reference .

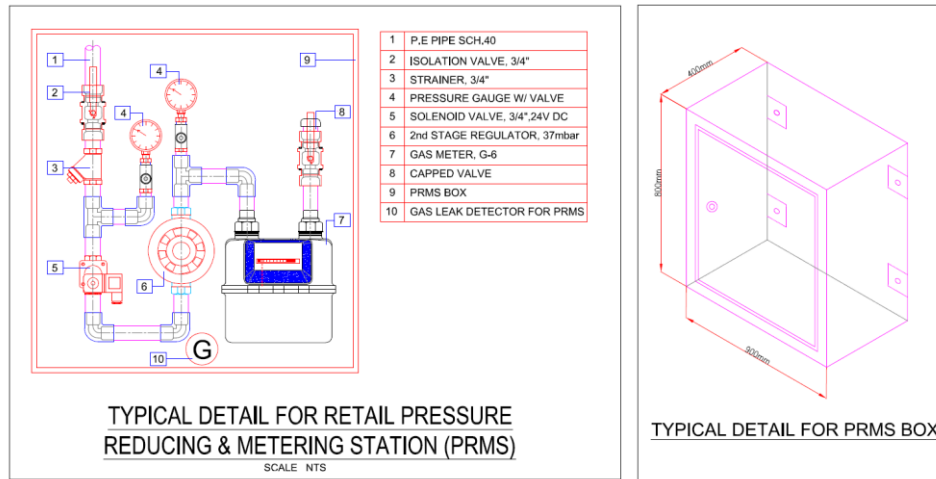
### 7.6.3.1 General and safety Requirements for Large Commercial Outlets :

- Regulators, isolation valves, solenoid valves, pressure gauges, gas detectors shall be covered with a metal enclosure with the dimensions of 900 (L) X 800 (H) X 400(W) mm.
- A Gas leak detector shall be installed in the inside commercial kitchen PRMS cabinet.
- The cabinet at a minimum height of 1 meter from the finished floor level
- Operating instructions, DO's & Do not's and procedures incase emergency procedures shall be placed near to the PRMS cabinet.
- The emergency contact number should be displayed on the warning signboard of the installer or maintenance service provider.



**SCHMATIC DIAGRAM**

### 7.6.3.2 Internal commercial kitchen typical PRMS:



## 8 PIPE & PIPE FITTINGS INSTALLATION WORKS

- 8.1 Customer/building owner/Contractor shall be responsible for the installation work for gas facilities located downstream of service line including the gas meter and its accessories in the PRMS room.
- 8.2 All PRMS pipe works shall be tested in accordance with IGE/UP/1A or 1B.
- 8.3 The customer shall obtain necessary approvals and permissions from the South Energy for the installation of PRMS room and skid. (PRMS Construction NOC)
- 8.4 During the fabrication and installation of PRMS skid, Contractor should follow the contents of design documents/drawings reviewed by SOUTH ENERGY.
- 8.5 All welding and brazing of metallic piping shall be in accordance with ASME Boiler and Pressure Vessel Code, Section IX. Fittings and flanges shall be designed for a pressure rating greater than or equal to 300 Psi.
- 8.6 Thread sealants must be of a non-setting type and spiral wound gaskets must be used. Gaskets shall be made of metal or material confined in metal having a melting point over 1500°F (816°C).

### 9 PAINTING AND COLOR CODES

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- 9.1 Pipes and structural steel supports should be protected against corrosion arising from environmental effects and these should be done properly and adequately maintained.
- 9.2 The structural steel inside the PRMS room shall be complete shot blast operation and subsequent zinc metal spray treatment of at least 70 microns thickness or other suitable treatment to a recognized standard prior to painting.
- 9.3 The final top coat of predominantly polyurethane Golden Yellow color, high gloss (shade RAL 1007) must be applied to 150 microns dry film thickness before the PRMS is commissioned.

### 10 PRESSURE AND LEAK TEST

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- 10.1 After the completion of Pressure Reducing Station pipe spools fabrication and station assembly, they shall be subjected to pressure test (hydrostatic or pneumatic).
- 10.2 Completed pipework must be subject to the visual examination and hydraulically tested according to the piping code or at least 1.5 times the maximum working pressure of the system. (Gas meters, regulators and associated fittings shall be avoid during the hydrostatic test)
- 10.3 The Gas meters, regulators and associated fittings in the installation shall be tested for tightness/leak test and purged in accordance to the acceptable standards. All medium of test shall be inter gas (nitrogen). The contractor shall present the manufacturer factory test certificates for all the items during the PRMS pressure test whitenss by South Energy.
- 10.4 Contractor/building owner shall advice South Energy for the pressure test witness at least 48 hour prior. The limits of the pressure test shall be Building plot valve chamber to the PRMS outlet

10.5 The same will be witness by South Energy representative. The contract should incorporate in the Pressure-Test witness report for the South Energy representative signature. This shall be considered for the final approval requirements.

### **11 PRE COMMISSIONING CHECK LIST :**

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Contractor shall conduct all the below mentioned tests, and consultant should ensure approve the same based on the availability of items and quality of works done by contractor

- 11.1 Leakage from piping
- 11.2 Setting Pressure of Regulator, Slam Shut Valve and Relief Valve
- 11.3 Leak detection system test report (alarm, solenoid valve cut off conditions and FACP interfacing checks shall be tested)
- 11.4 3m safety distance around the PRMS room from the source of ignition Clearance
- 11.5 All electrical cables and associated fittings shall be suitable to use in the Zone –II classified area.
- 11.6 Warning signboards
- 11.7 Fire Extinguishers

SOUTH ENERGY will reserve the right not to connect Pressure Reducing Station to service if the testing result is not satisfactory.

### **12 FINAL APPROVAL REQUIREMENTS FOR THE COMMISSIONING.**

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- 12.1 All the necessary approvals shall be obtained by civil defense for the internal gas utilization system
- 12.2 Design , construction NOC's from the South Energy
- 12.3 Leak & Pressure test witness by South Energy
- 12.4 Pre – Commissioning checklist signed and stamped by South Energy representative
- 12.5 Commissioning NOC from South Energy

- 12.6 AMC contract with service provider for operation and maintenance of the internal gas utilization system and PRMS
- 12.7 Gas supply and billing agreement between service providers and Building owner for the monthly billing to the tenants.

### **13 ATTACHMENTS: SCHEMATIC DRAWINGS AND CIVIL CONSTRUCTION DETAILS OF PRMS ROOM**

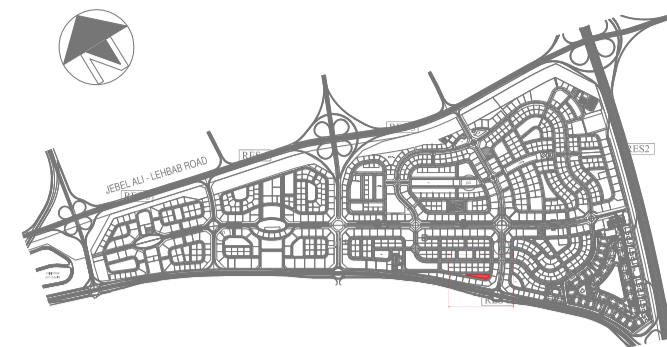
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1. Schematic drawing for typical mixed use residential and retail commercial outlets PRMS Ref: IGS-LPG-J467-01
2. Schematic drawing and layout for main PRMS and typical Retail commercial outlets inside kitchen PRMS Ref: IGS-108A-ACB-SHD-NAG-004
3. Typical installation details for the Villas and Town house for Pressure Reducing Station (PRS) Ref: IGS-P446-004
4. Civil Construction detailed drawing for PRMS room for maximum capacity 100scmh Ref: SE-LPG-PRMS-Civil









DRAWING REFERENCE

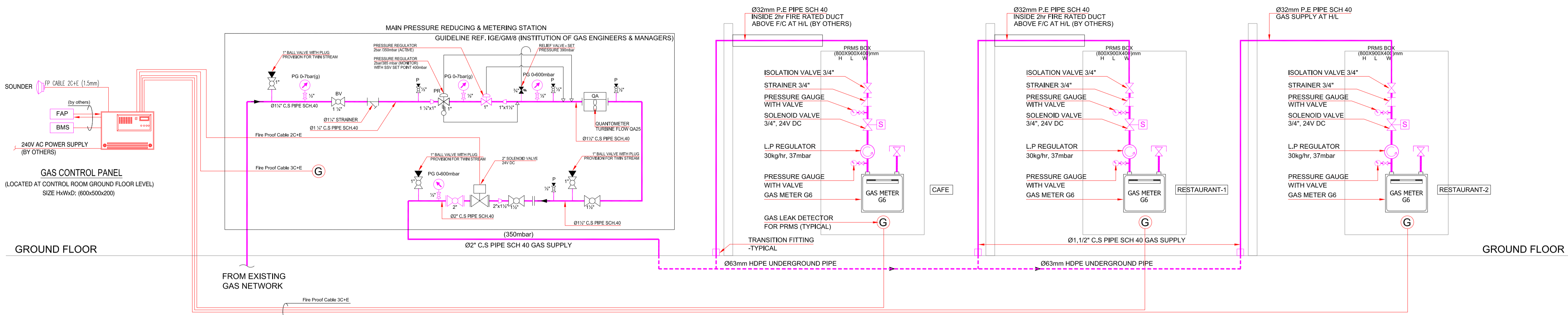
DRAWING NUMBER	DRAWING TITLE	REV.	DATE

GENERAL NOTES:

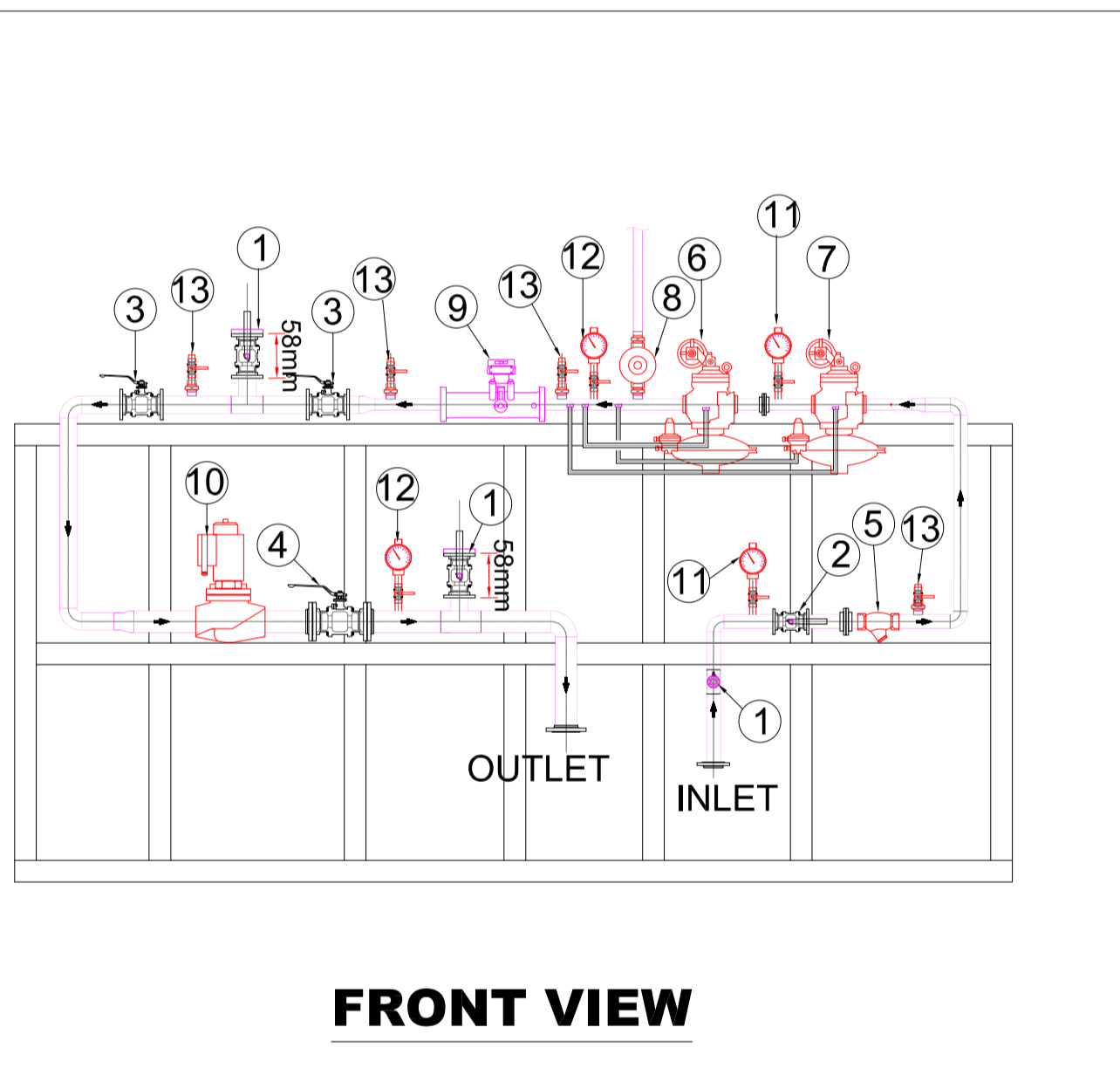
- ALL DIMENSIONS ARE IN MM. AND LEVELS ARE IN METER UNLESS OTHERWISE NOTED.
- READ THESE DRAWINGS IN CONJUNCTION WITH THE MENTIONED RELEVANT INFRASTRUCTURE, ARCHITECTURAL AND STRUCTURAL AS-BUILT DRAWINGS.
- NO DIMENSIONS TO BE SCALED OFF. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- "TYPICAL" MEANS THE REFERENCED DETAIL SHALL APPLY FOR ALL SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.

LEGEND

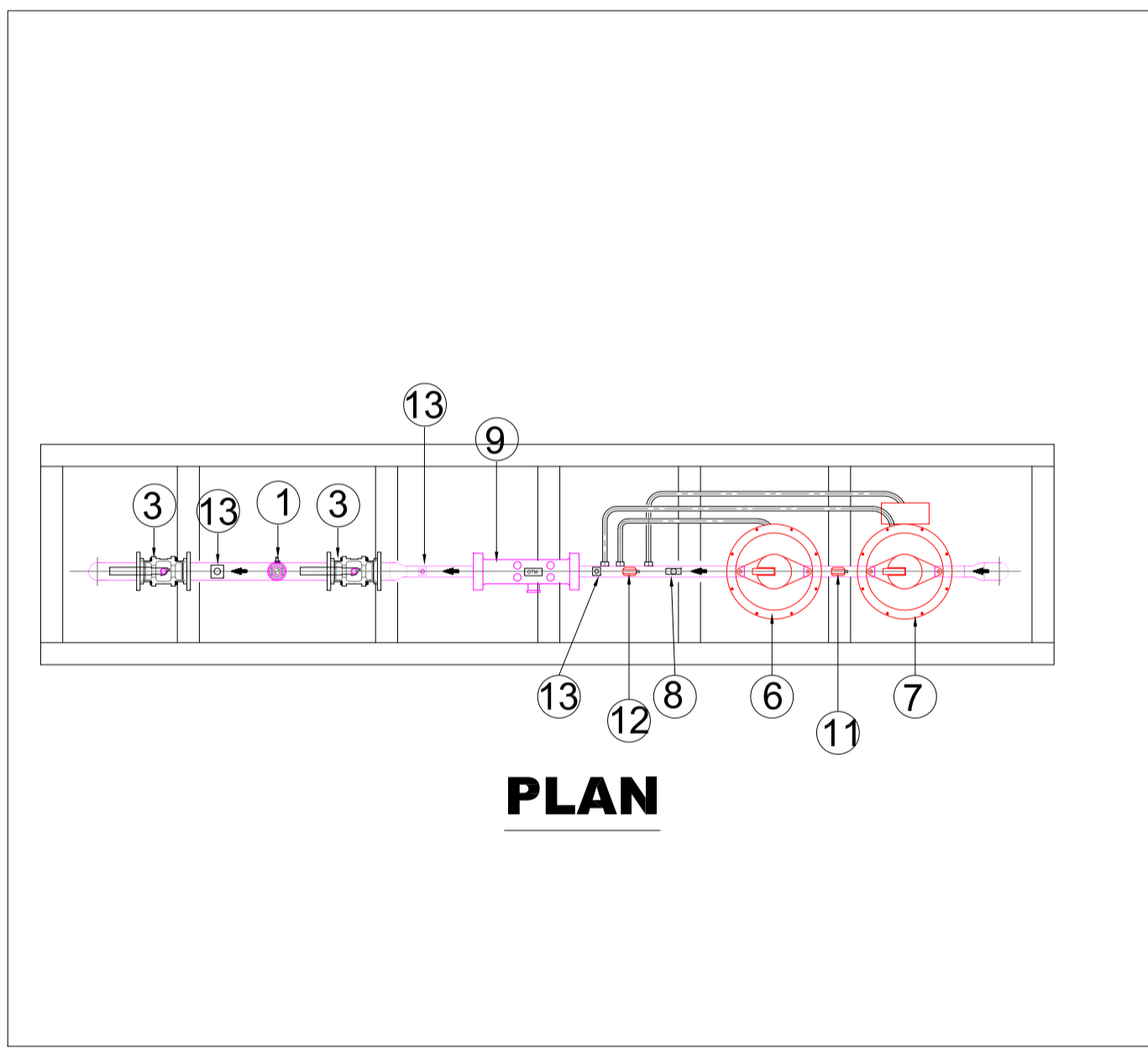
SYMBOL	REF.	DESCRIPTION	T/A
ISOLATION VALVE	1	ISOLATION VALVE	T/A TO ABOVE
SOLENOID VALVE	10	SOLENOID VALVE	T/A TO BELOW
GAS DETECTOR	13	GAS DETECTOR	F/B FROM ABOVE
GAS CONTROL PANEL	G	GAS CONTROL PANEL	F/B FROM BELOW
FIRE ALARM PANEL	FAP	FIRE ALARM PANEL	C/S CARBON STEEL PIPE
REGULATOR	6	REGULATOR	G/S GAS CONTROL PANEL
ADJUSTABLE PRESSURE REGULATOR	7	ADJUSTABLE PRESSURE REGULATOR	FAP FIRE ALARM PANEL
PRESSURE GAUGE	11, 12	PRESSURE GAUGE	FCO FALSE CEILING
EMERGENCY SWITCH	8	EMERGENCY SWITCH	HL HIGH LEVEL
PRESSURE REDUCING STATION	PR	PRESSURE REDUCING STATION	LL LOW LEVEL
PRESSURE REDUCING & DISTRIBUTION PANEL	PRDP	PRESSURE REDUCING & DISTRIBUTION PANEL	
SOUNDER	S	SOUNDER	



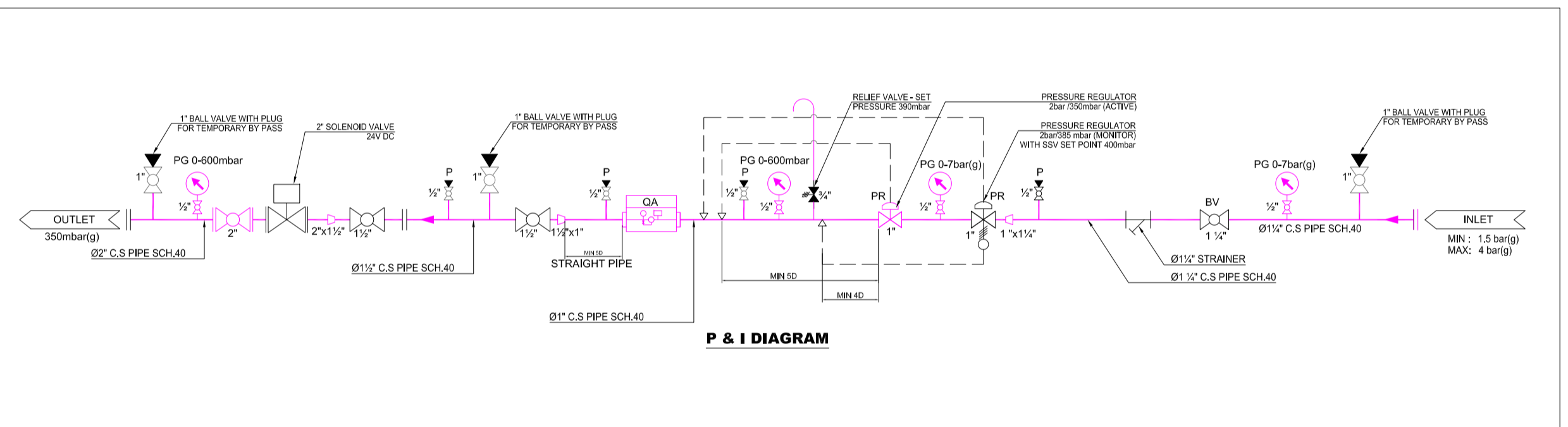
SCHEMATIC DIAGRAM



FRONT VIEW



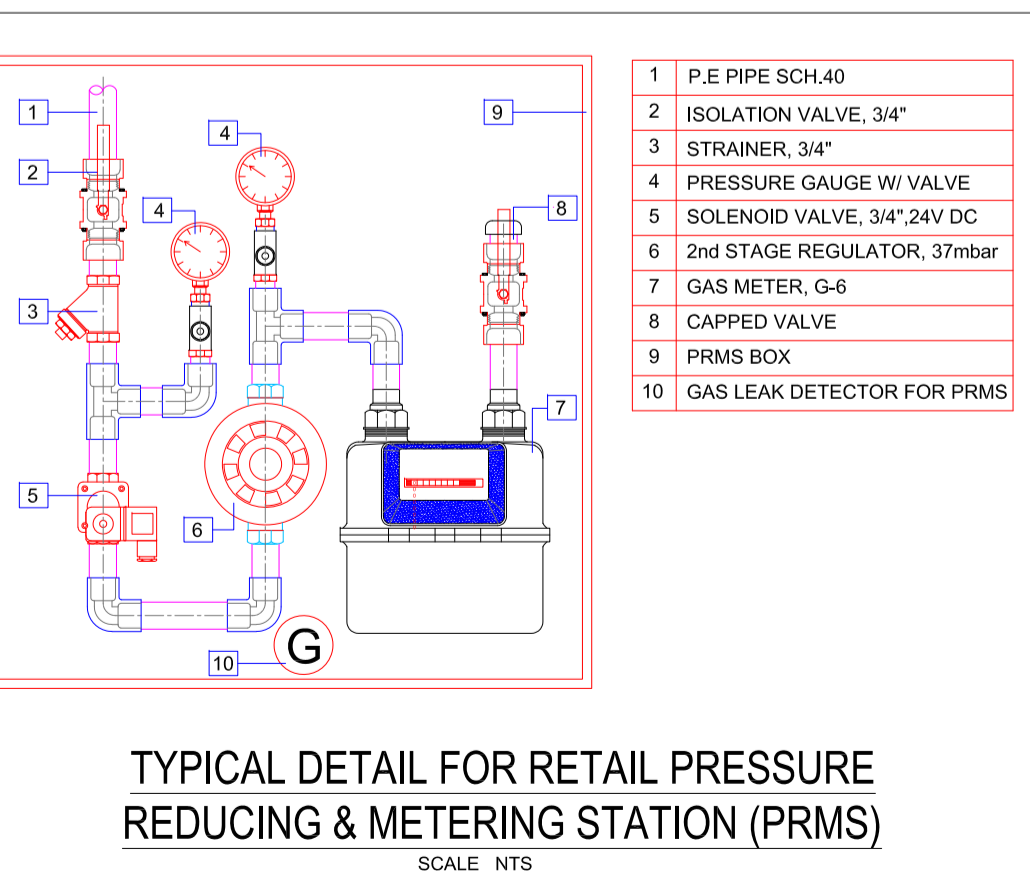
PLAN



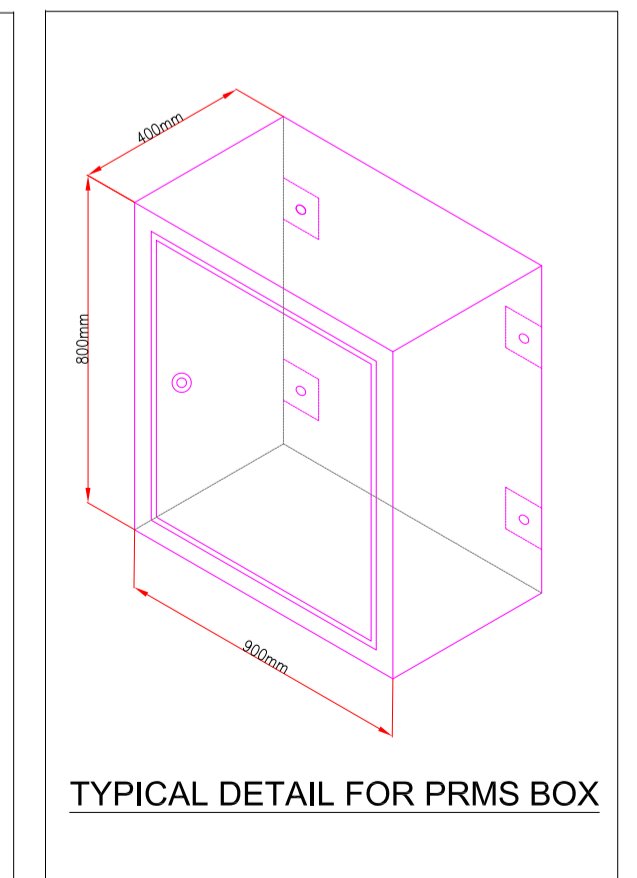
P & I DIAGRAM

PRMS ASSEMBLY DETAILS

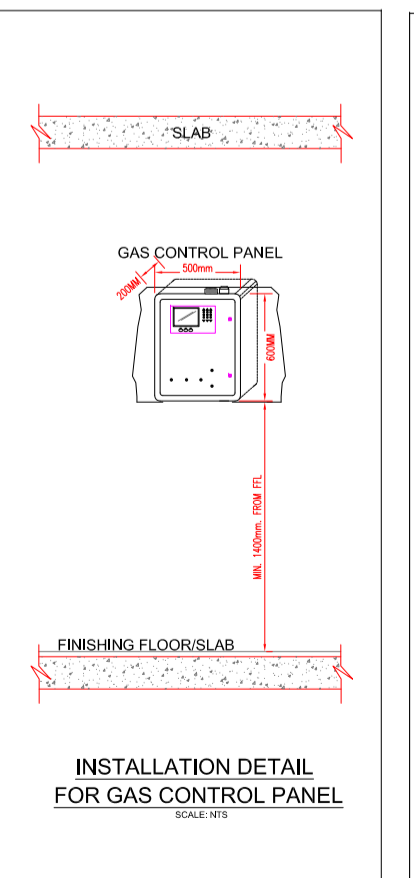
1	ISOLATION VALVE, 1"
2	ISOLATION VALVE, 1/4"
3	ISOLATION VALVE, 1/2"
4	ISOLATION VALVE, 2"
5	STRAINER, 1/4"
6	REGULATOR (ACTIVE)
7	REGULATOR WITH SSV (MONITOR)
8	SAFETY RELIEF VALVE, 3/4"
9	DN25 TURBINE GAS METER QA25
10	SOLENOID VALVE, 2", 24V DC
11	PRESSURE GAUGE INLET
12	PRESSURE GAUGE OUTLET
13	PURGE VALVE, 1/2"



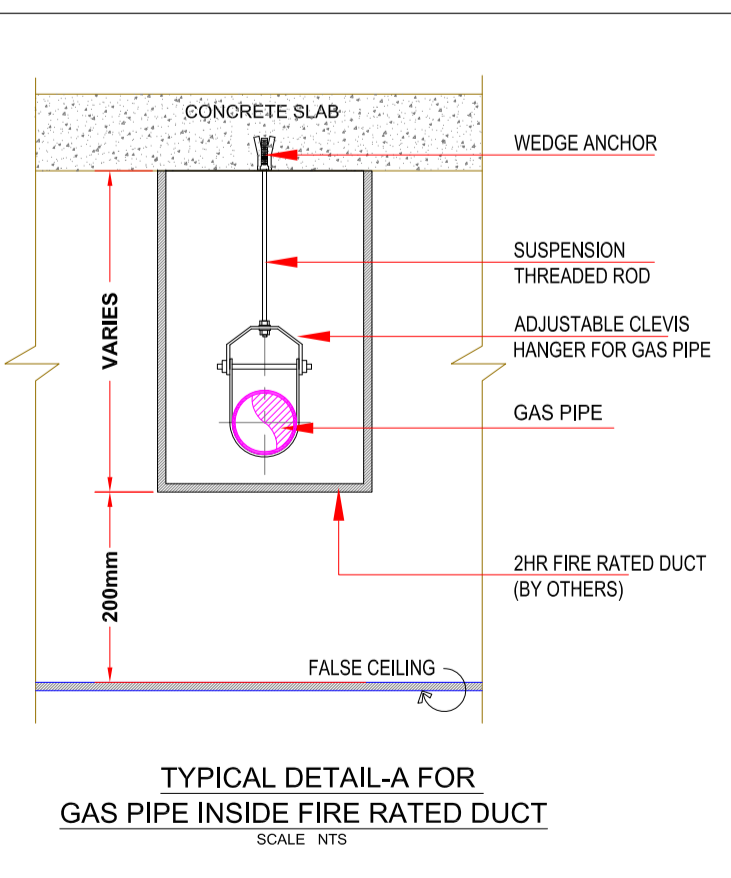
TYPICAL DETAIL FOR RETAIL PRESSURE REDUCING & METERING STATION (PRMS) SCALE: NTS



TYPICAL DETAIL FOR PRMS BOX



INSTALLATION DETAIL FOR GAS CONTROL PANEL SCALE: NTS



TYPICAL DETAIL-A FOR GAS PIPE INSIDE FIRE RATED DUCT SCALE: NTS

AS-BUILT

REV.	DATE	DESCRIPTION	DRN.	CKD.	APP.
00	23-12-2019	AS-BUILT	J.F	D.Z	C.Z

PROJECT: DUBAI SOUTH RESIDENTIAL CITY RETAIL COMPLEX



CLIENT: image Engineering Consultant

MAIN CONTRACTOR: AMANA

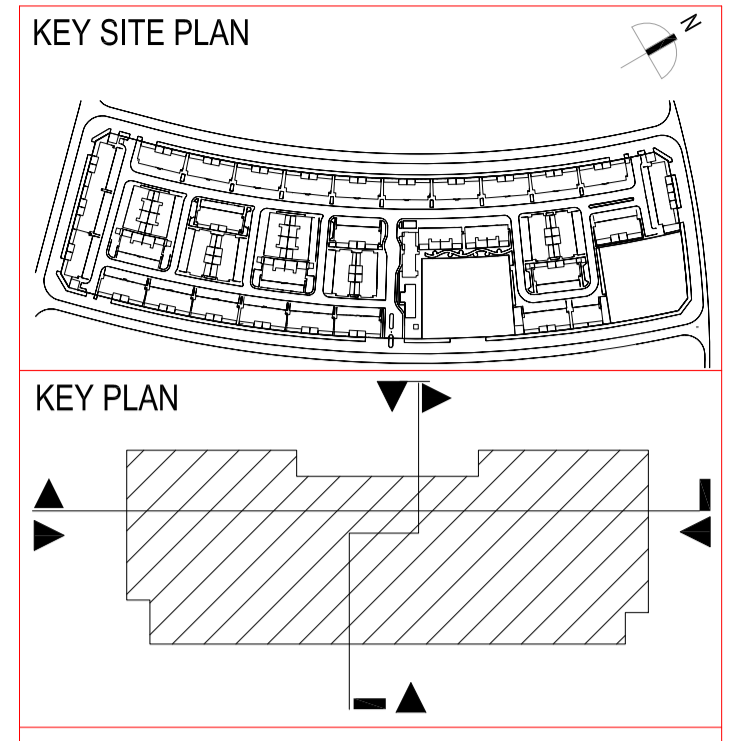
GAS CONTRACTOR: I.G.S. DUBAI

DRG. TITLE: LPG SCHEMATIC DIAGRAM & INSTALLATION DETAIL

DRAWN	J.F	SCALE	A1 1:300
CHECKED	D.Z	DATE	23.12.2019
LOCATION	DUBAI SOUTH	PLOT NO.	RB-051
CLIENT DWG NO:	108A-ACSB-ASB-NAG-000004	REV. NO:	00
AMANA DWG NO:	108A-ACSB-SHD-NAG-000004	REV. NO:	00



LEGEND AND ABBREVIATIONS		
SYMBOL/REF.	DESCRIPTION	T/A TO ABOVE T/B TO BELOW F/A FROM ABOVE F/B FROM BELOW C.S CARBON STEEL PIPE F.A.P FIRE ALARM PANEL F.C FALSE CEILING HL HIGH LEVEL LL LOW LEVEL D DROPPER
	ISOLATION VALVE	
	SOLENOID VALVE	
	GAS DETECTOR	
	GAS INTERFACE MODULE	
	REGULATOR	
	EMERGENCY SWITCH	
	GAS METER STATION	



- GENERAL NOTES**
- ALL DIMENSIONS ARE IN MM. AND LEVELS ARE IN METER UNLESS OTHERWISE NOTED.
  - READ THESE DRAWINGS IN CONJUNCTION WITH THE MENTIONED RELEVANT INFRASTRUCTURE, ARCHITECTURAL AND STRUCTURAL AS-BUILT DRAWINGS.
  - NO DIMENSIONS TO BE SCALED OFF. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
  - "TYPICAL" MEANS THE REFERENCED DETAIL SHALL APPLY FOR ALL SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.

**STATUS STAMP**

<b>ATKINS</b>	<b>PROJECT SITE OFFICE</b>
<b>FINAL AS-BUILT DRAWING</b>	
<i>Prepared and Verified by Contractor</i>	
Sign PM: _____	Date: 22.01.2020
<i>Confirmed by Engineer</i>	
Sign RE: _____	Date: _____

- STATUS LEGEND :**
- CODE - 1 : APPROVED
  - CODE - 2 : APPROVED AS NOTED
  - CODE - 3 : REVISE & RESUBMIT
  - CODE - 4 : REJECTED
  - FOR INFORMATION ONLY

**CLIENT**

**DESIGN CONSULTANT**

**SUPERVISION CONSULTANT**

**WS Atkins & Partners Overseas**

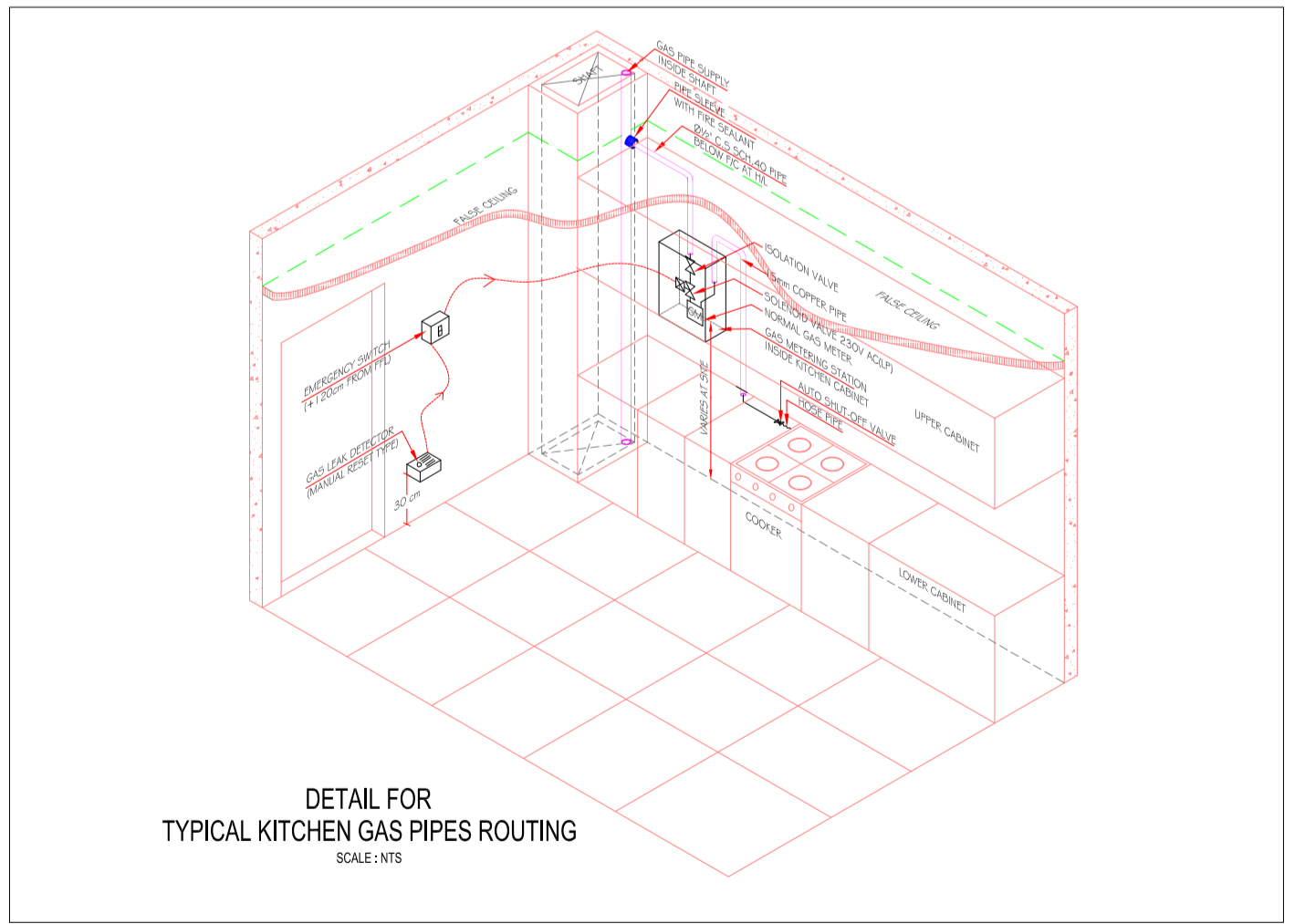
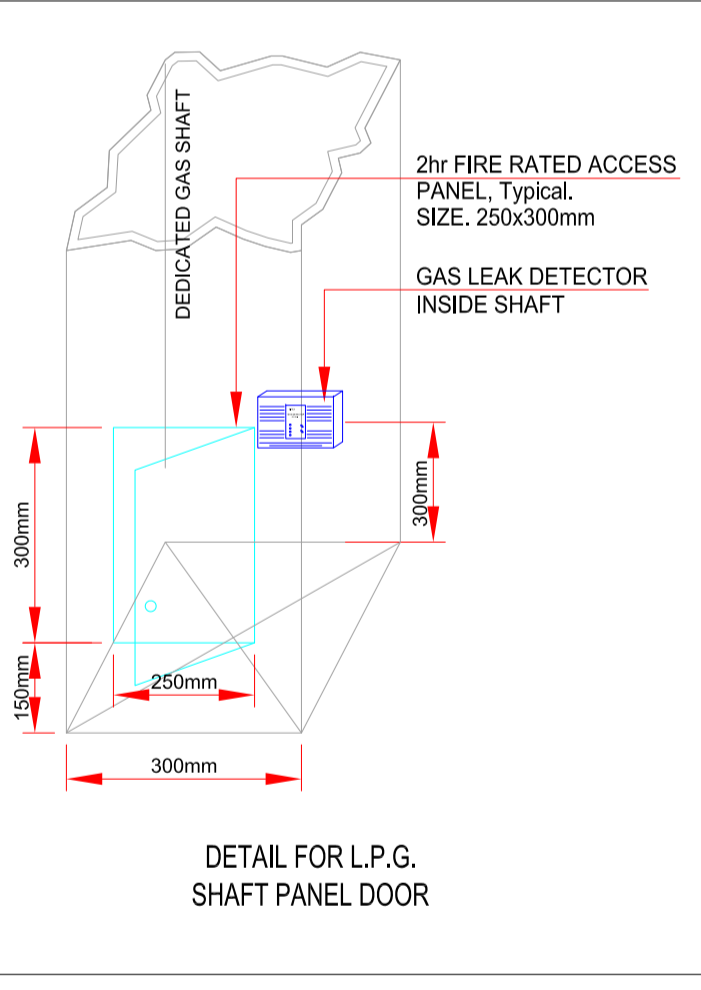
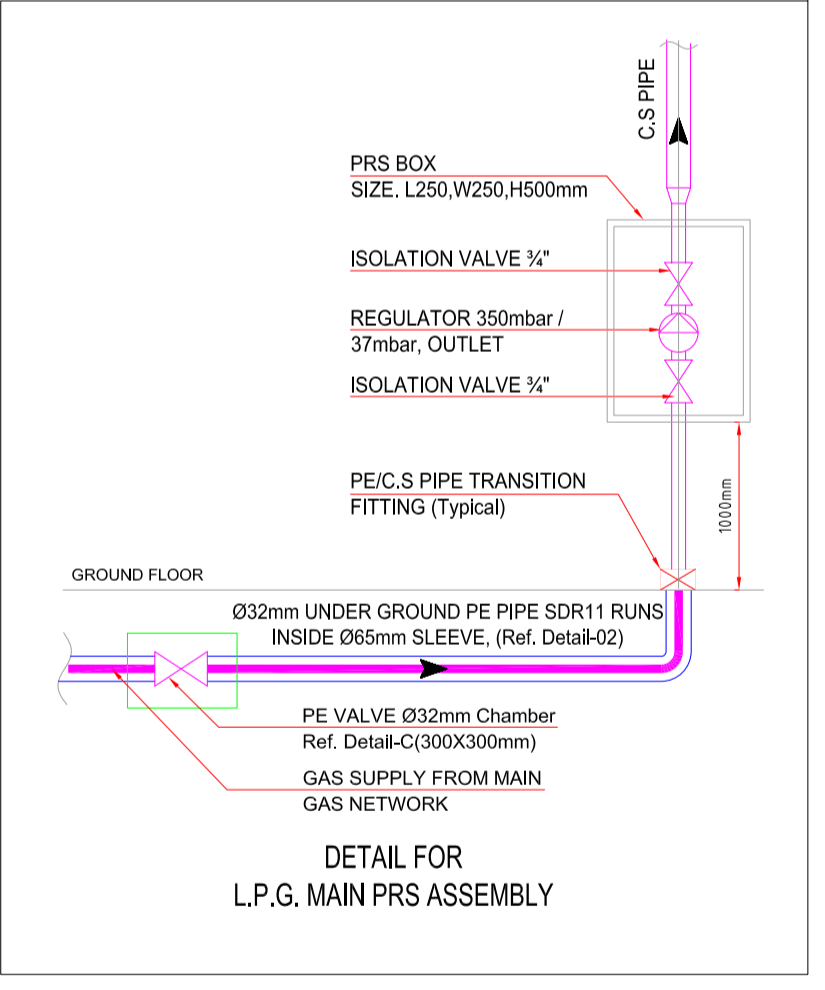
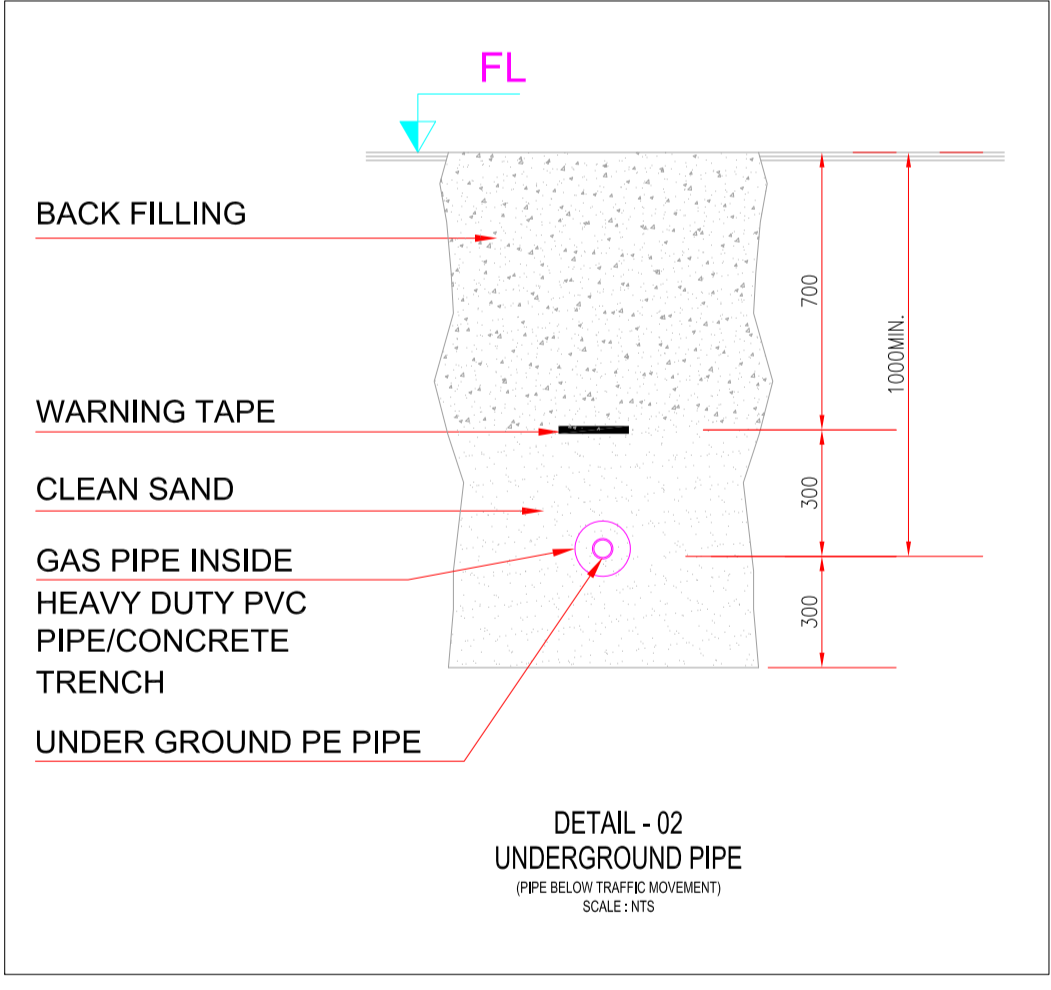
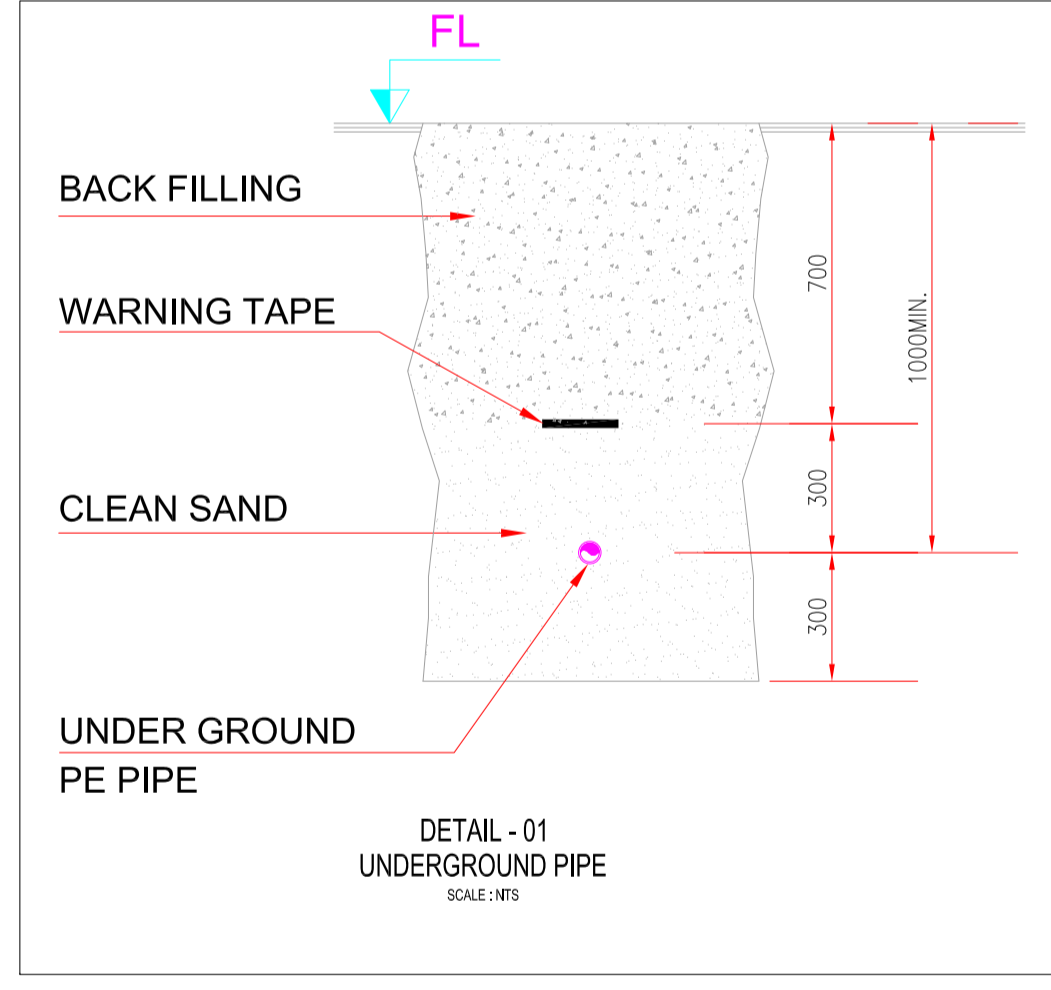
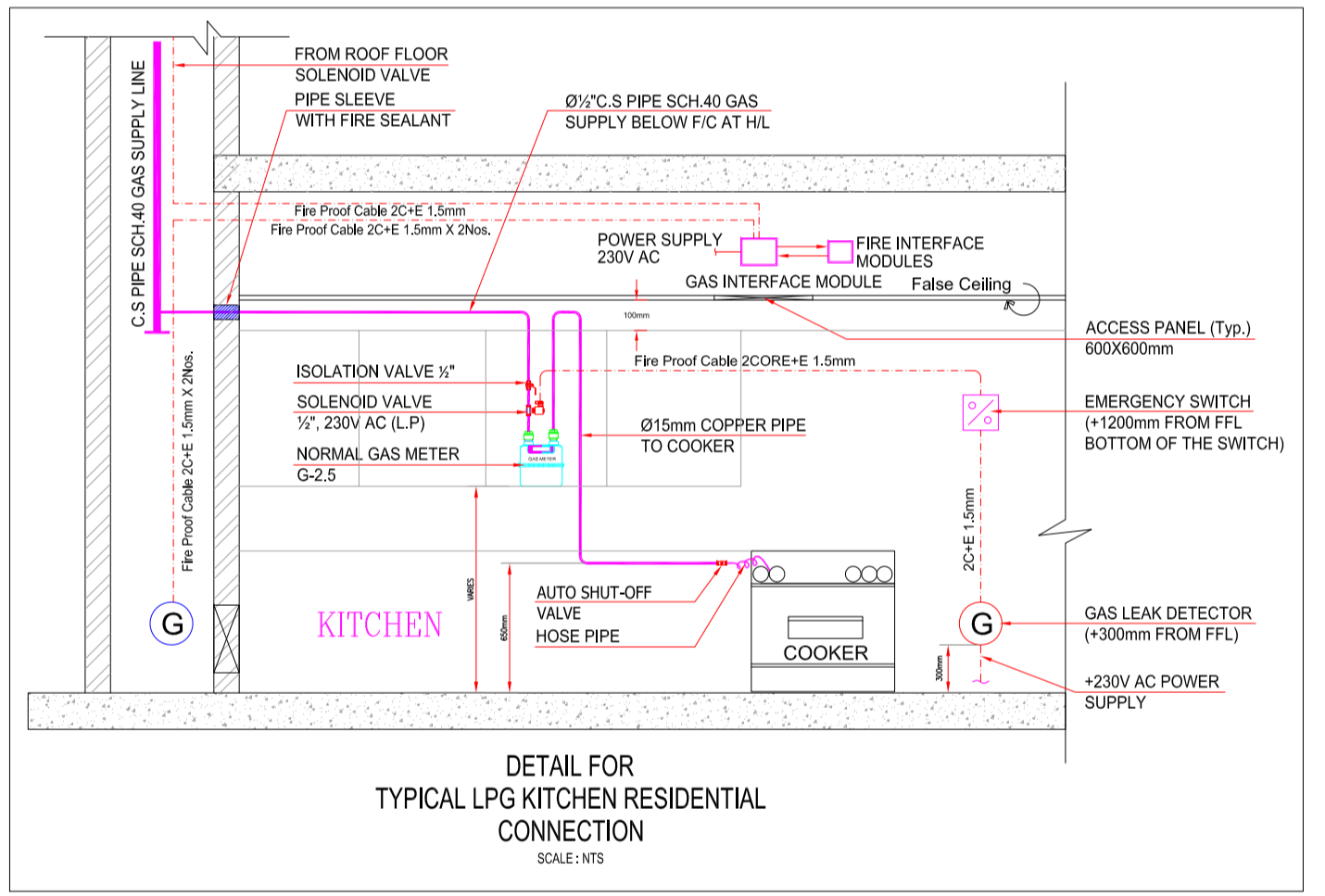
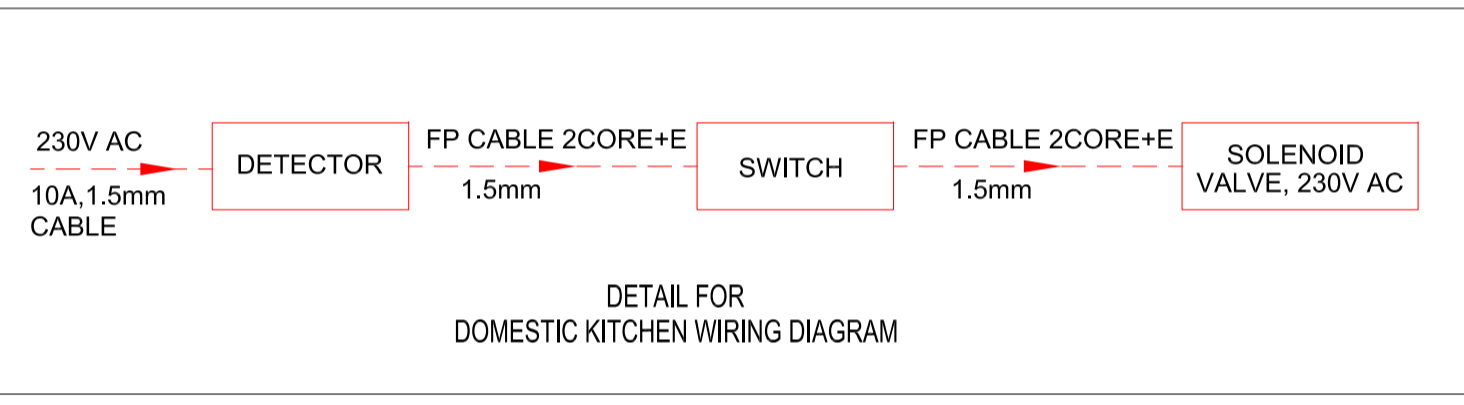
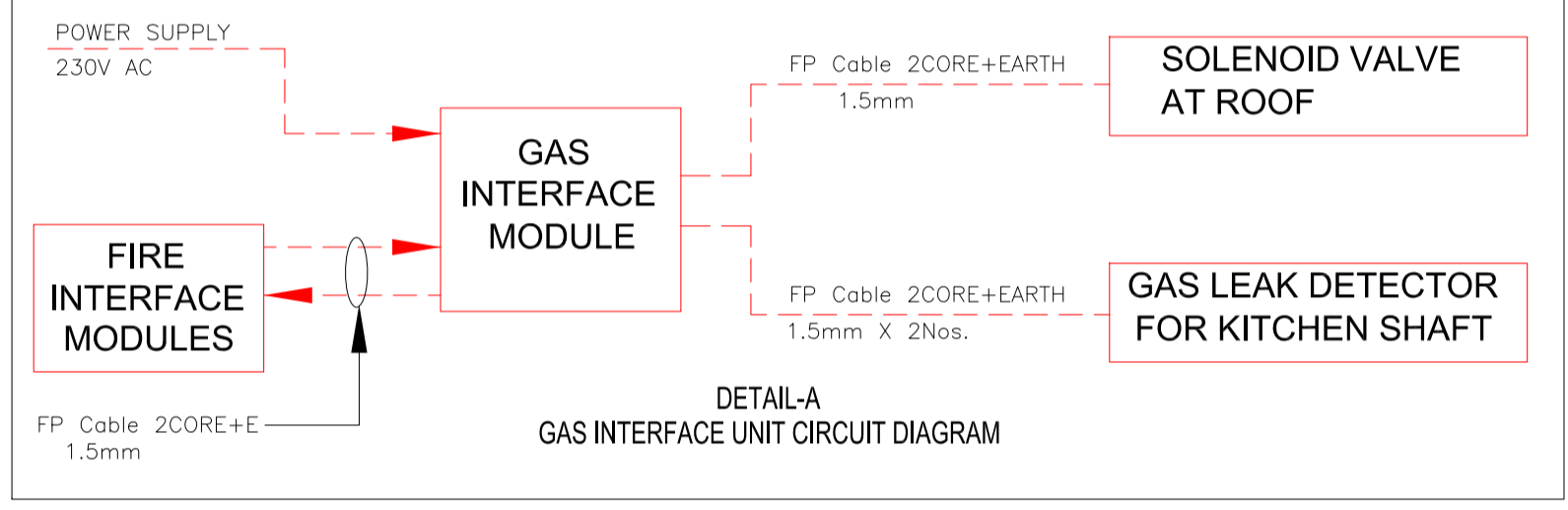
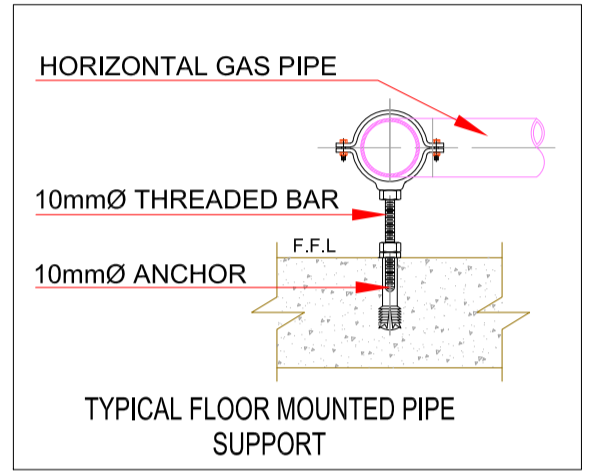
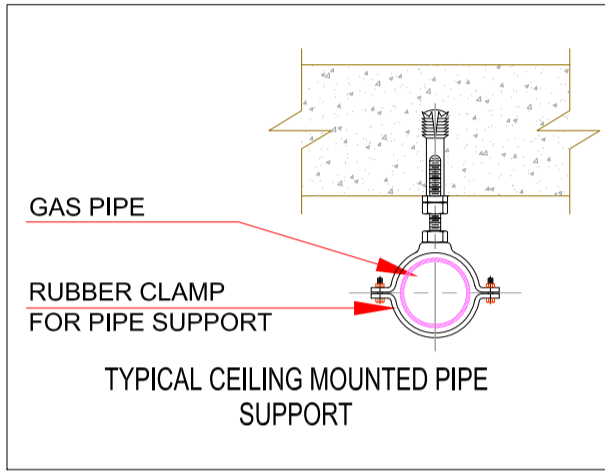
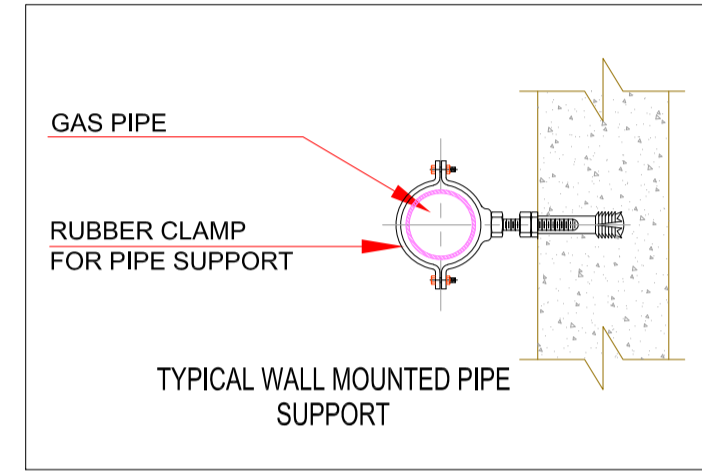
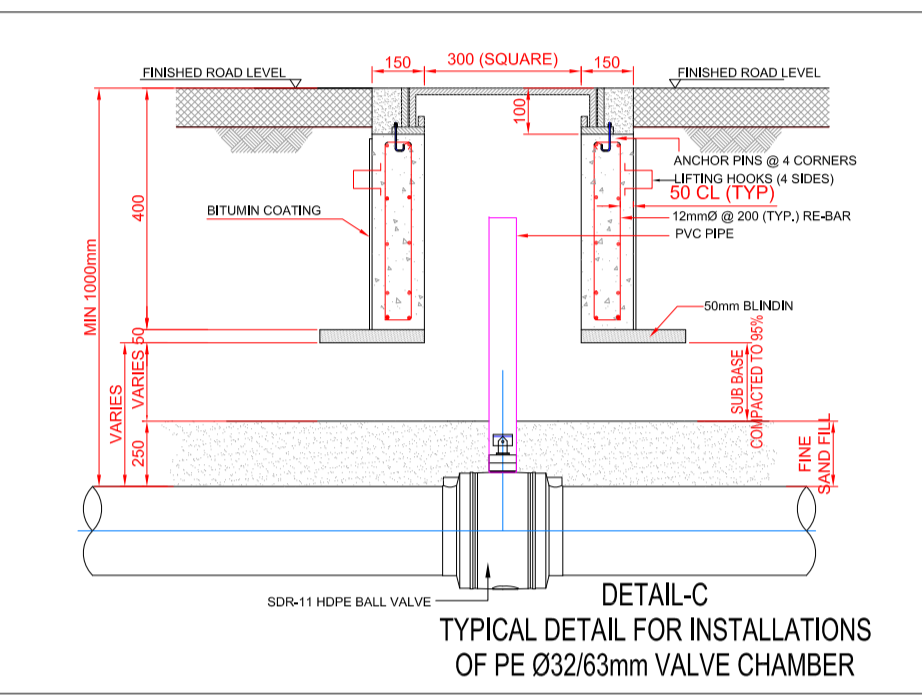
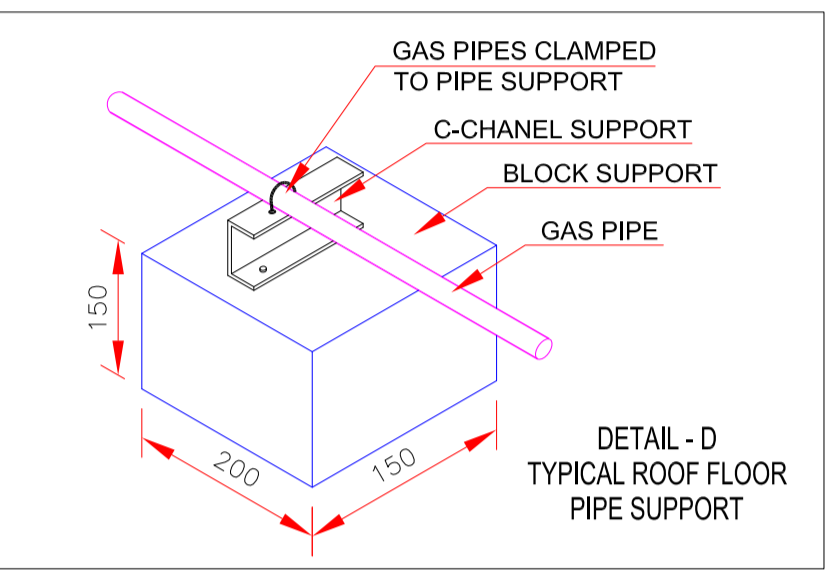
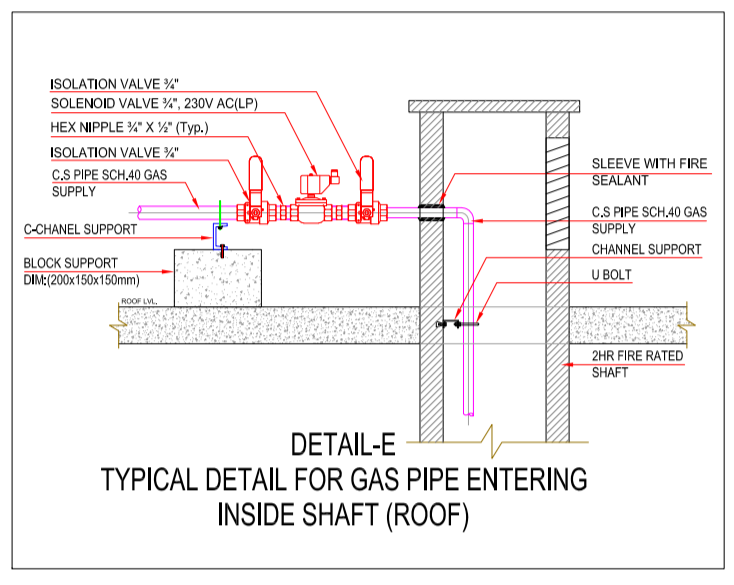
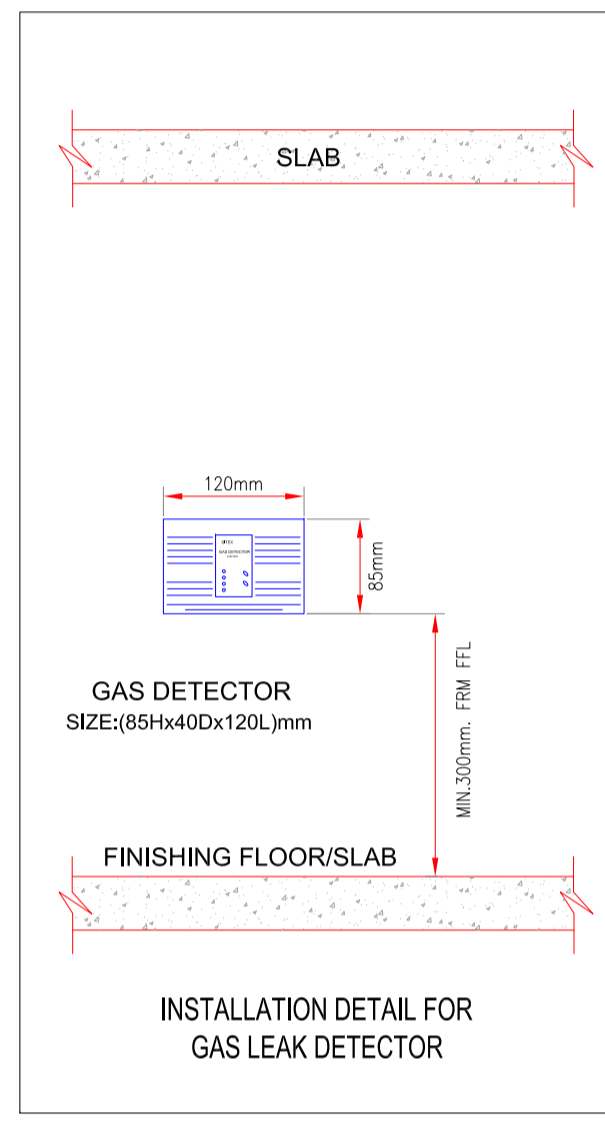
**MAIN CONTRACTOR**

**PROJECT NAME**  
CONSTRUCTION OF TOWNHOMES WITHIN THE PULSE AT THE RESIDENTIAL DISTRICT OF DUBAI SOUTH

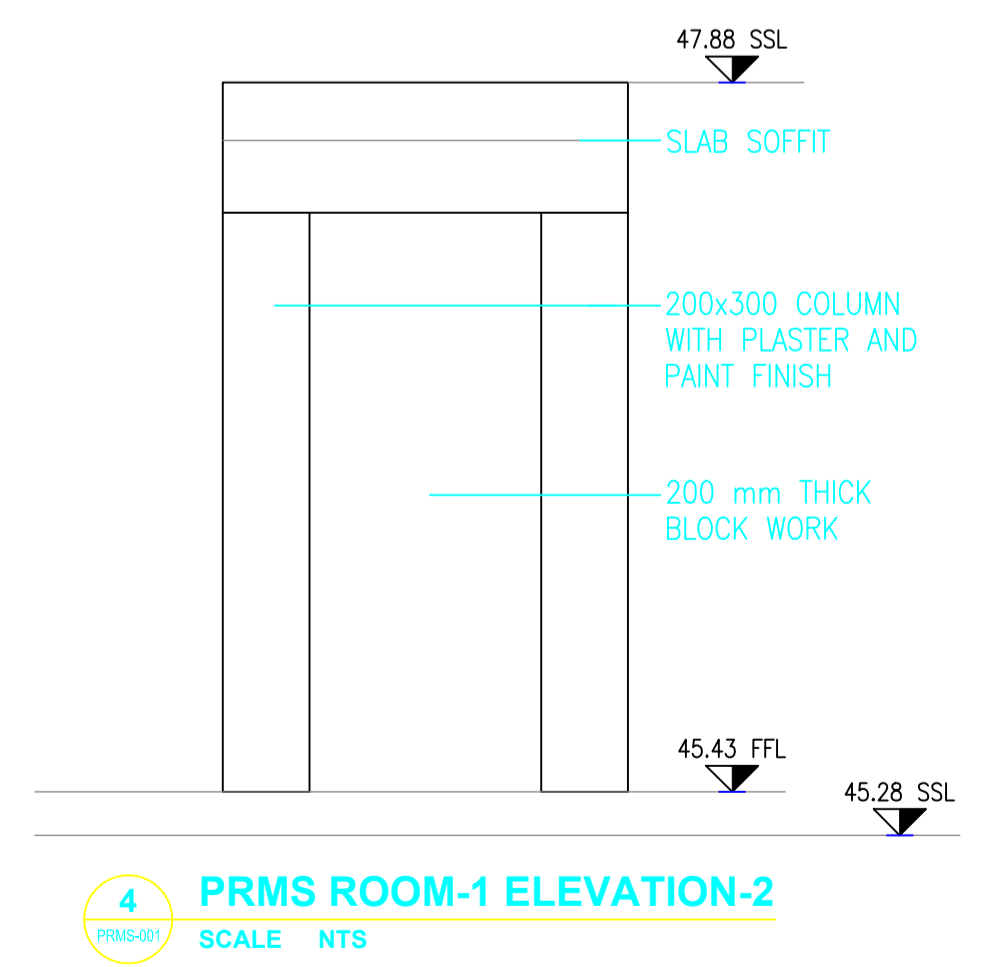
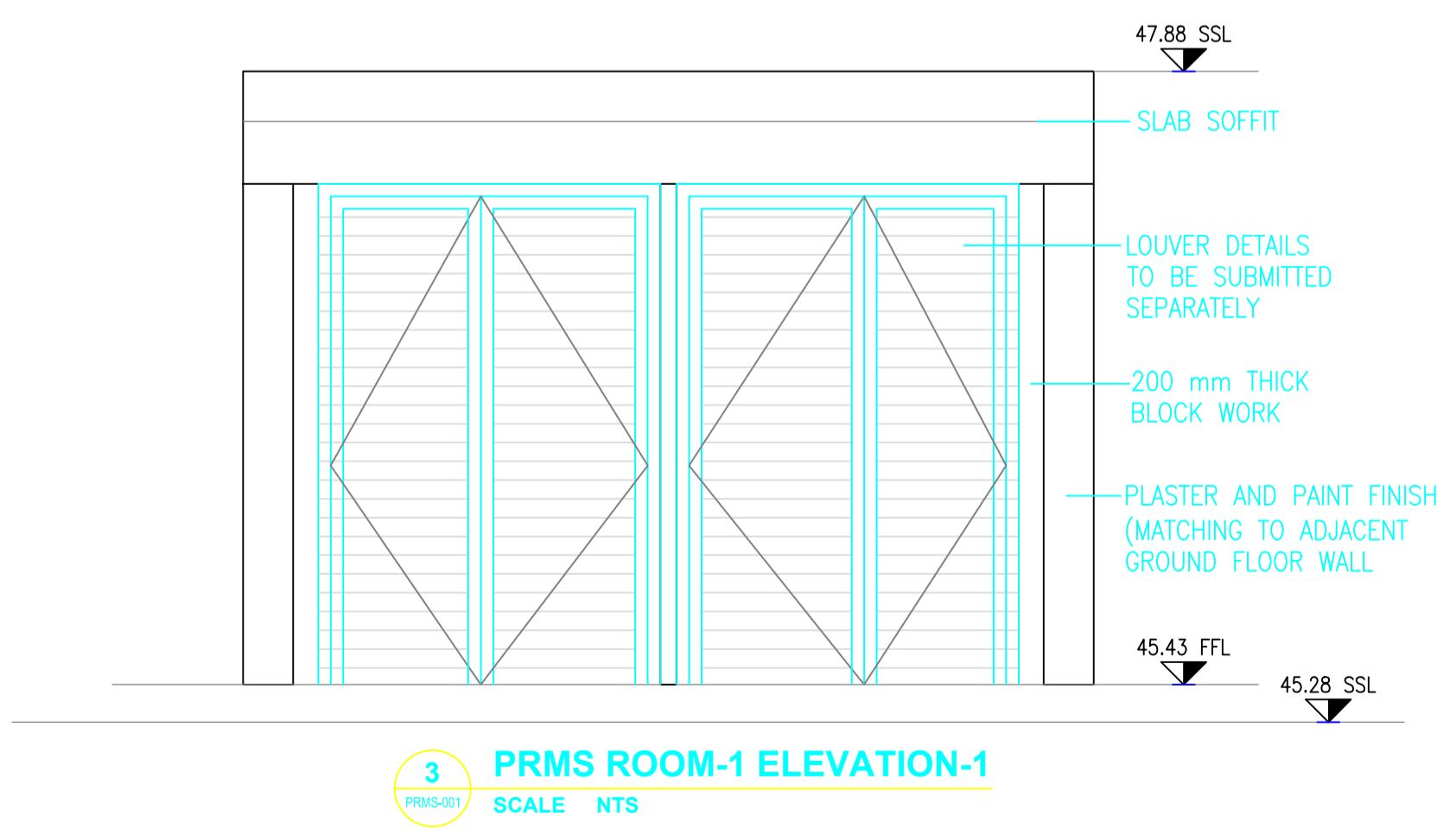
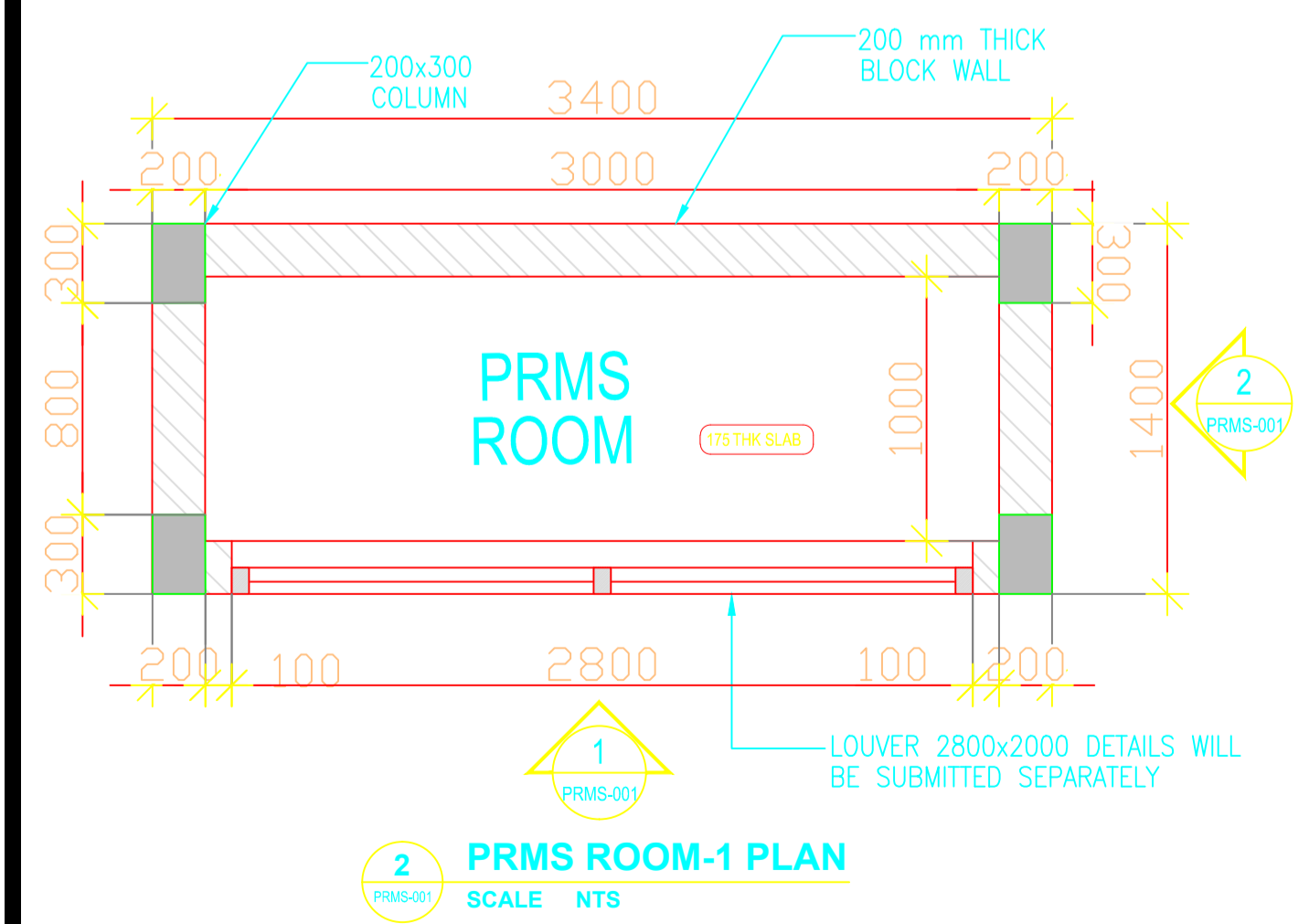
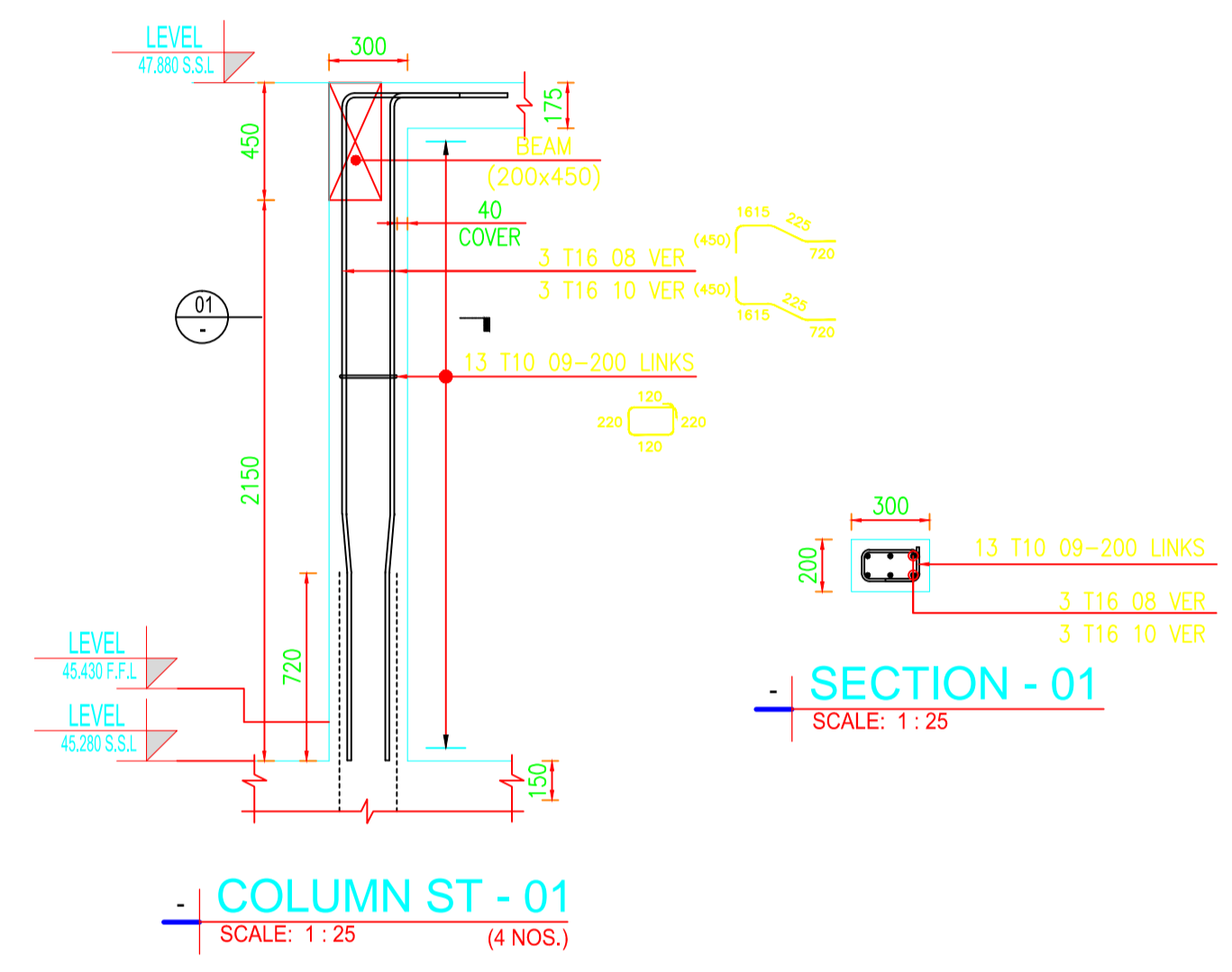
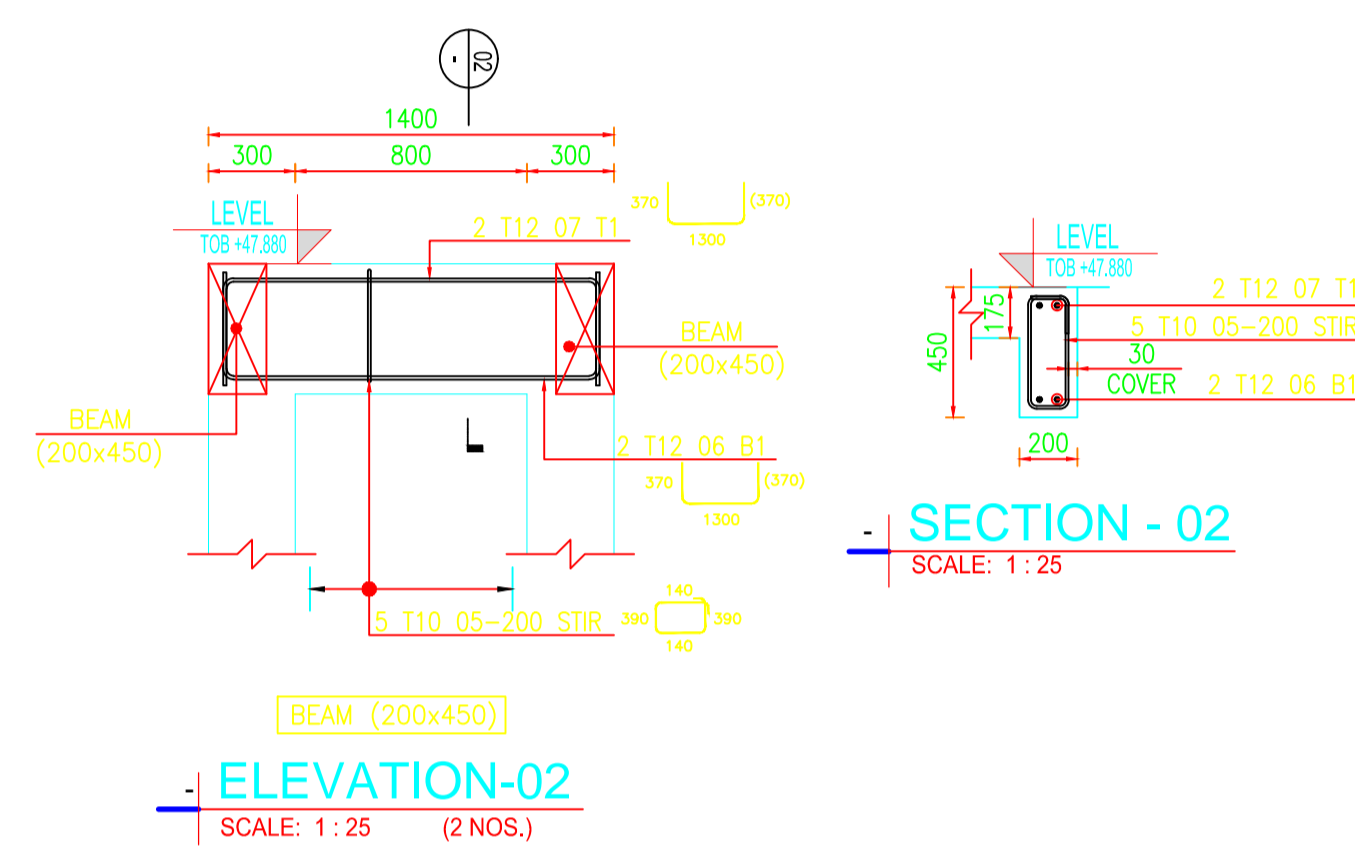
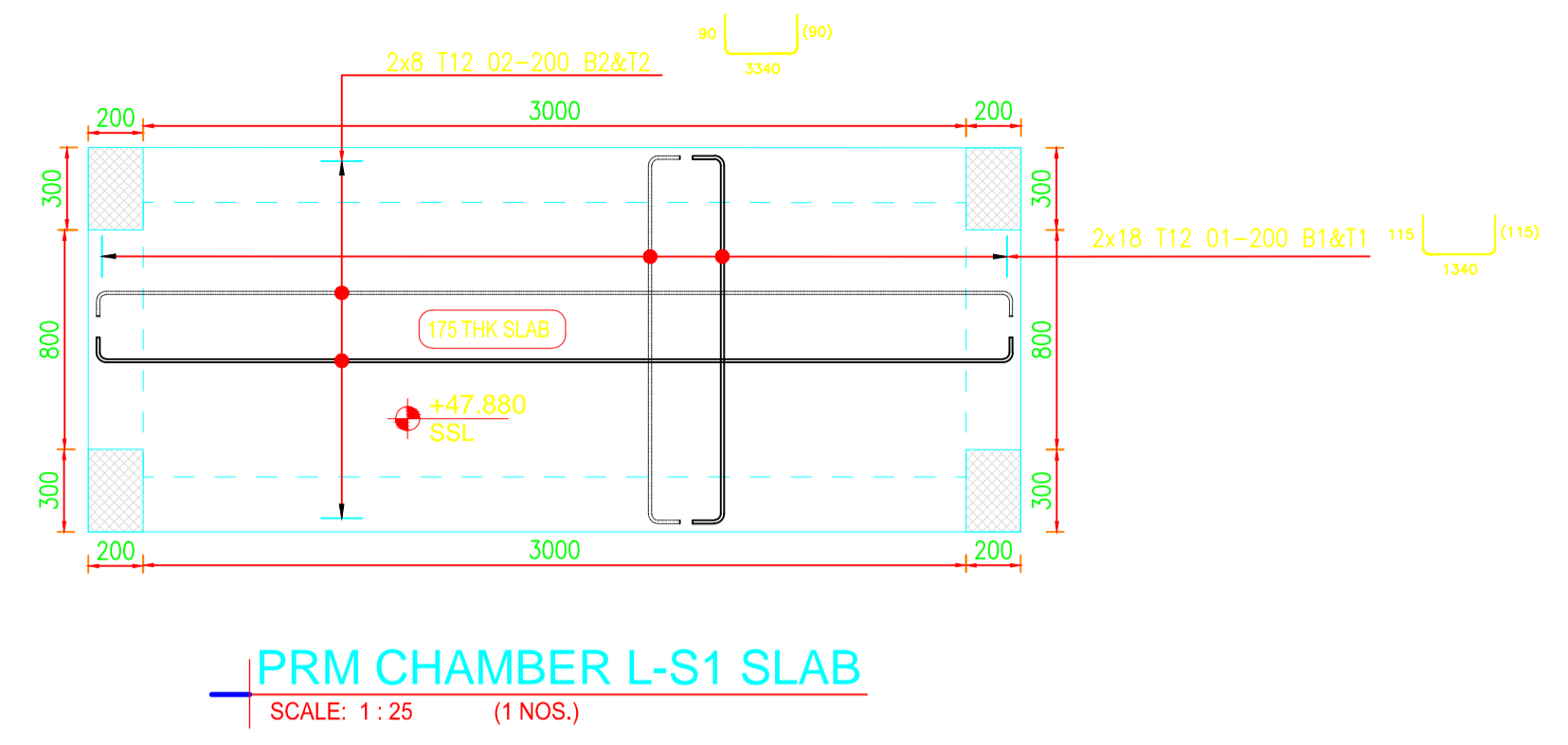
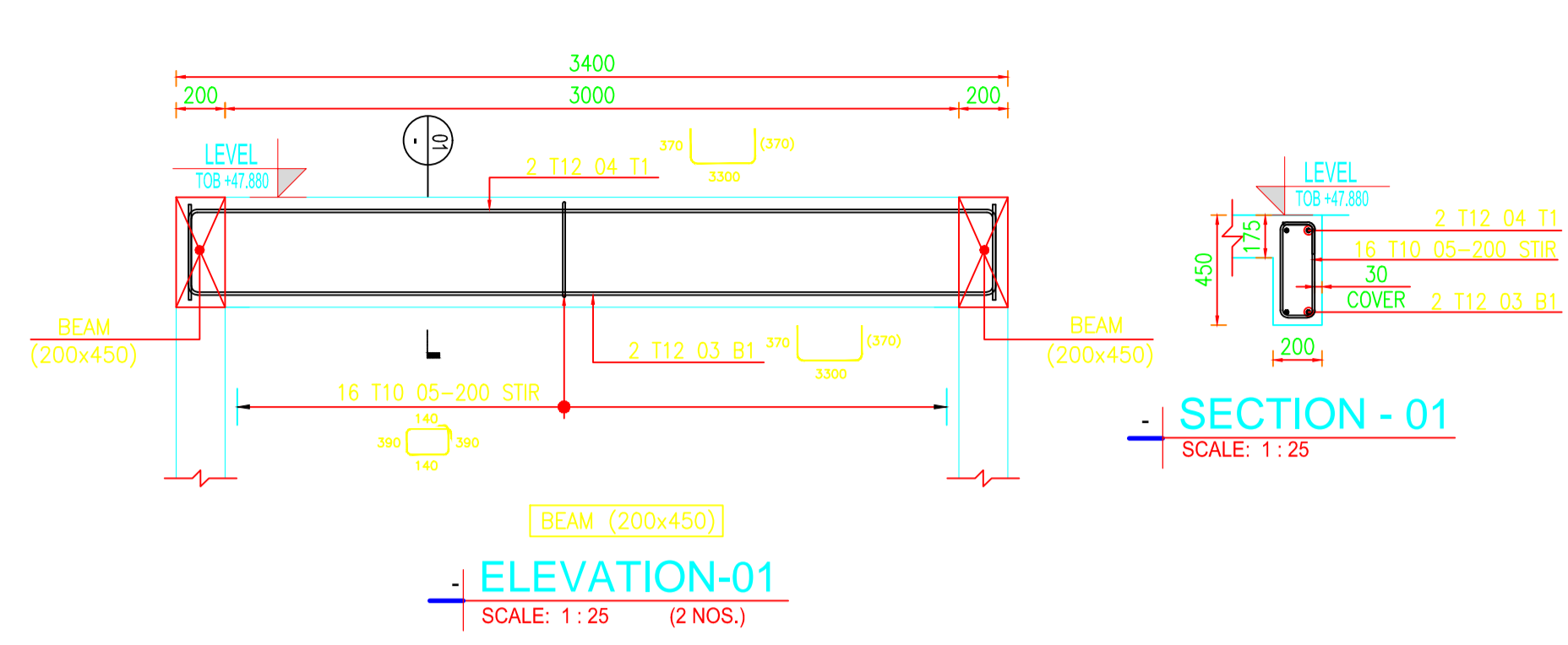
**BUILDING TYPE**

**DRAWING TITLE**  
GAS TYPICAL INSTALLATION DETAILS

AS-BUILT		DRAWN BY	U.K
		CHECKED BY	C.Z
SCALE	NTS@A1	ISSUE DATE	22.01.2020
PROJECT REFERENCE	RD-SIE	APPROVED BY	C.Z
ZONE	G	FLOOR NO.	
DISCIPLINE	ABR	DRW. NO.	0004
DOC. TYPE		REV. NO.	AB



**1 GAS TYPICAL INSTALLATION DETAILS**



**NOTES:**  
 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTES OTHERWISE.  
 2. CONCRETE COVER:  
 SLAB, BEAM COVER... 30mm, COLUMN COVER... 40mm  
 3. CONCRETE GRADE-C48/60  
 4. STEEL REINFORCEMENT GRADE-500B  
 5. FY= 460N/MM<sup>2</sup>  
 6. OVER LAPING-45xDIA  
 7. DEVELOPMENT LENGTH-45xDIA  
 8. BAR NOTATION AS FOLLOWS:  
 57 - T25 - 113-150 T1&B1

NOTES  
 SPACING  
 BAR MARK  
 TYPE&DIA OF BAR  
 NO. OF BARS

T Top bar  
 B Bottom bar  
 EF Each face  
 ADDL Additional  
 ALT. Alternate  
 STG. Staggered

**CONTRACT DRAWINGS REFERENCE:**


**REVISION DETAILS:**

SN.	Description	Date	Drawn	Rev.

**PROJECT:**



**LEAD CONSULTANT & ARCHITECTS**

**MAIN CONTRACTOR:**

**SUB-CONTRACTOR:**

**RECEIVING STAMP:**


**STATUS LEGEND :**

- CODE - 1 : APPROVED
- CODE - 2 : APPROVED AS NOTED
- CODE - 3 : REVISE & RESUBMIT
- CODE - 4 : REJECTED
- FOR INFORMATION ONLY

**DRAWING TITLE:**  
 TYPICAL PRMS CHAMBER BEAM,SLAB & COLUMN REINFORCEMENT DETAILS  
 SHEET 01 OF 01

**DRAWING NO: SE-LPG-PRMS-CIVIL**

DATE	SCALE	DRAWN	REVIEWED BY	REV.
17-02-2020				