Israel Natural Gas Lines

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נתיבי הגז הטבעי לישראל
ISRAEL NATURAL GAS LINES

Document Title

International Public Tender for the Provision of Professional Advisory and Supervision Services

Scope of Services

(INGL/TENDER/2026/18)

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1. General

1.1. The main purpose of the Consultant's services is to support and consult INGL regarding the design, construction, operation, and maintenance of the Israeli natural gas high pressure transmission system, low-pressure (under 16 bars) distribution system and other energy related ventures.

The services will include *inter alia* and as required by INGL designs and technical documentation reviews, representing INGL in technical discussions and reviews, reviewing of design and construction procedures, internal inspection of designs, construction and installation of the system (including FAT and SAT), approbations of technical documentations which are being submitted to the authorities including Engineering Plans before starting the construction and Completion Certificates before starting the hot commissioning.

1.2. The Consultant shall engage all the appropriate personnel required for the duration of the provision of the services during the Contract Period. Such Personnel shall provide the services ordered by INGL remotely during for the whole duration of the Contract Period but may be required to be present in Israel, as required by the Company on an On-Call assignment basis:

The On-Call assignment basis shall apply should the period of assignment of a personnel member to Israel is usually expected to be less than three consecutive months. Such short-term/on-call personnel shall be made available by the Consultant and arrive to Israel within one month of receiving a written notice regarding such request for allocation from INGL in the form of a CSR.

Vacation, reporting to home office, illness, etc., shall not be interpreted as interrupting the long-term assignment. The rates apply to a working day is of 12 man-hours per day.

1.3. At any time during the Contract Period, the Company may, at its sole discretion (but in no way is obligated to) instruct the Consultant to provide the any of the Services or any part thereof to the tasks/Projects designated by the Company by giving the Consultant a prior notice. All Services rendered under this Contract are subject to a prior written order from the Company and to the extent provided therein.

2. The Services

The Consultant shall provide, *inter alia*, the following services within the scope of the Services under the Agreement:

2.1. Review and update (if necessary) of the System's conceptual and basic design.

2.2. Provide signed approvals for the design and construction specifications according to section 26.3 of the License.

2.3. Perform reviews and provide signed approvals for all engineering plans and specifications provided by INGL before submission of such plans to the authorities (see **Annex C1** - examples for table of content of such Engineering plans for Offshore piping, Onshore piping and PRMS).

2.4. Perform reviews and provide signed approvals for construction, production and operation procedures and for hot and cold commissioning tests.

2.5. Completion certificates (see **Annex C2** for example), signed and approved by the Consultant.

2.6. Perform reviews and provide signed approvals for the gassing-up procedures before submission to the NGA.

2.7. Perform reviews and provide signed approvals for any reports/plans/documents/technical queries/waiver requests etc. as may be required by INGL.

2.8. Review of procurement, certification and general consultancy regarding tender processes and procurement activities, including cost evaluation (if required).

2.9. Issue approved and signed operation, gassing-up and emergency procedures for INGL's various facilities.

2.10. Option to perform Project Management and close on-site supervision for onshore and offshore projects.

2.11. Issue status reports regarding planning process and construction for offshore Projects in which the Consultant is in charge for supervision and management.

2.12. Establish and implement an overall training program for INGL's engineering, construction, and O&M employees, for the on-going activities and other specific issues, as may be required by INGL.

2.13. Provide signed approvals prior to the gassing-up and commencement of operation of the System.

2.14. Provide engineering and supervision support as an owner engineer of the Company during Company's Projects.

2.15. Any other relevant consultancy, supervision and design support services which may be required by INGL in relation to INGL's engineering, design, construction, and operation activities, including providing expert support reports and ancillary documents. The Services may also include other energy related activities including projects, underground storage, energy feasibility studies etc., as determined by the Company.

The above does not derogate from the full scope of services to be provided by the Consultant to the Company according to the Contract and the best industry practice in the field of the Services.

3. **Consultant's Key Personnel**

3.1. **General Engineering and Design** - Senior Consultant

The Services provided to INGL will be managed by the Senior Consultant, who shall act as the Project Manager and will be responsible for execution of the Services. The Senior Consultant will be the formal point of contact for all communication with INGL and shall be authorized in all matters relating to the Services.

During execution of the Services the Senior Consultant will be responsible for overall supervision of the Services; for the review and approval of the design of any new project prepared by INGL; issuance of certificates such as a mechanical completion certificate for any new sections after cold commissioning; issuance of a report after hot commissioning regarding the readiness of the system; progress monitoring and cost control for offshore projects; and shall issue progress and status reports on a regular basis and in accordance with the demands of INGL.

The Senior Consultant will maintain a close working relationship with INGL in order to facilitate communication, promote the exchange of ideas and make timely decisions. He will perform the quality assurance function as well as the engineering and planning support. He will endorse the engineering plans as well as implement corrective action, if required.

The Senior Consultant shall perform all management, coordination and supervision activities that are necessary to achieve the Project objective.

The Senior Consultant, who shall have at least 15 years of experience in design of high pressure gas transportation systems, pressure regulating and metering stations as well as in procurement of materials (as provided in the ITB), shall perform all necessary support, coordination and supervision activities that are necessary to achieve the Project objective. This will include the following:

- Establishing of administrative requirements, guidelines and instruction;
- Mobilization of qualified personnel, to INGL's request;
- Mobilization and availability of all tools and systems, as required;
- Communication and reporting to INGL;
- Establishment of work programs and direction/delegation of work;

- Review and acceptance of Services;
- Acting as point of contact and/or a representative of INGL in relation to the NGA and/or other authorities, at the request of INGL
- Know how transfer in all areas of engineering and Services management.
- Evaluation of Project team requirements;
- Perform and check calculations, simulations for the gas systems;
- Perform material and equipment definitions for the gas systems;
- Guide the engineering team in designing gas distribution systems (including low-pressure systems) for industrial areas;
- Establishment of work programs and direction/delegation of work;
- Review and Checking of Services;
- Updating of the Basis Design and other INGL technical documentation such as procedures, specifications and technical part of tenders.

3.2. Construction Supervision of Gas Facilities - Construction Advisor

The Construction Advisor assigned by Consultant will be part of a management team together with the INGL Construction Manager.

The INGL Member will be “Primus inter Pares” and will cover all projects aspects with the emphasis on organization, costs and time impacts. He will be guided and supported by Consultant's Personnel specifically on technical aspects like pipeline standards, pipeline construction technology and all questions in connection to the supervision of a construction site for a high-pressure gas transmission system. Within this team Consultant member will be responsible for the technical issues.

The Construction Advisor (CA) is responsible for the supervision and monitoring of the Contractor(s) and the other activities regarding the Pipeline, PRMS, and installations including the cold-commissioning and handing over to the Operation and Maintenance Department of INGL.

The CA reports directly to the INGL's Head of Construction Department and will be supported by the Supervisors, the General Coordinating Manager of the dedicated Israeli supervision company and as well by the head of the Third-Party Inspection Company in charge.

CA reports on a weekly basis to INGL's Head of Construction Department and is responsible for the monitoring, control and fulfilment of INGL's main contractor's project construction, installation and mechanical completion activities, its duties are as follows:

- To update construction management policy and ensure its ongoing implementation in the field;
- To update all necessary construction interfaces with all departments, INGL's main contractor for the project construction INGL and authorities etc;
- The supervision and administration of construction teams based on all project sites (lots) via the site construction Supervisors;
- The CA has to assure that the Site Supervisors documents the induction training of all members of the Site Supervision;
- To supervise the monitoring, witnessing and approval of the qualification of the main contract's construction procedures i.e.: welding, NDT and coatings etc, as requested by the Company;
- To liaise with all discipline leaders concerning the ongoing engineering and construction activities;
- To take all necessary actions to prevent, halt or minimise variations in time, cost, quality, performance and completion of the scope of work;
- To ensure in conjunction with applicable personnel that the project requirements for documenting and controlling the construction works are being maintained and implemented through deliverable documentation, documented communications, meetings, and presentations etc.

3.3. Operation and Maintenance - Operation and Maintenance Consultant

The Consultant for operation and maintenance is the assistant to the head of the department with the duty to assist handling the day to day operation and maintenance of the entire transmission system including the PRMS / BVS (ball valve stations) and the SCADA (control) system, Low-pressure Distribution system as well as the necessary repairs. The Department is also responsible for the availability of the necessary spare parts, tools and maintenance equipment.

The Consultant covers mainly the organization, technical aspects as well as the planning impacts. The cost impact and the local issues will be handled by INGL.

He will be also supported if required by the Construction Advisor in case of repairs.

The Department shall be also supported by the Team of QA/QC, HSE and the Security Officer.

The duties of the Consultant for operation and maintenance are as follows:

- To assist in establishing and to participate in the induction training of the maintenance personnel;
- To supervise the monitoring, witnessing and approval of the qualification of

the operation, maintenance and repair procedures;

- Work out and proposing all necessary work execution plan and procedures for all operation, maintenance and repair activities;
- Monitor the implementation of the work execution plans and procedures covering all operation, maintenance and repair activities;
- Monitor the availability of all necessary spare parts and equipment and support the stock management;
- To ensure that all equipment and spare parts etc. are delivered, stored, preserved, maintained and used in the correct manner;
- To be responsible for the documenting and control of all operation, maintenance and repair activities and in conjunction with the engineering department;
- To ensure that all necessary standards are met and the personnel is trained and educated in yearly intervals.

4. Additional Optional Services (Onshore Personnel)

4.1. Cathodic Protection Engineer

Engineer/Technician, having experience in Cathodic protection design, installation and maintenance works in high pressure natural gas pipeline projects designed in accordance with European Standards and/or NEN 3650 Dutch code.

4.2. Welding Engineer for Stations and Pipeline

Engineer with special certificate as Welding Engineer, having experience in pipeline and stations construction works in high pressure natural gas projects designed in accordance with European Standards and/or NEN 3650 Dutch code.

4.3. Process Engineer

Engineer having experience in high pressure natural gas systems with focus on the aspects of design, operation, control systems and has utilized tools and methods including process flow diagram (PFD), storage equipment (tanks), material properties (flowrates, pressures, temperatures). etc.

4.4. Mechanical Engineer for compressor stations

Engineer having experience in design, construction and operation and maintenance in high pressure natural gas compressor station (minimum 90 bar) projects (minimum 3 projects).

5. Additional Optional Services (Offshore Pipeline Personnel)

5.1. Senior Consultant, Project Sponsor & Client Interface

A Senior Project Manager with experience in structural and O&G engineering and significant experience in the design and delivery management of complex subsea and export systems. The Consultant shall serve as a Technical Lead, Project Manager and Client Representative during the engineering, procurement and construction phases of the INGL offshore Projects. Having experience in project works of high pressure natural gas, designed in accordance with European Standards and/or DNV F101 code.

5.2. Engineering Manager

A Senior Consultant within the contractor's subsea engineering team who has worked in a variety of Engineering and Project Management roles, with extensive experience gained in subsea riser systems and pipelines, in the areas of design, verification, package management and operational support. Having experience in project works of high-pressure natural gas, designed in accordance with European Standards and/or DNV F101 code.

5.3. Pipeline & Landfall Lead

A Consultant Pipeline Engineer with over extensive experience in offshore pipeline engineering. Has played a lead role on a wide variety of offshore projects ranging from feasibility studies, FEED, detailed design to installation and construction management projects for major clients. Having experience in project works of high-pressure natural gas, designed in accordance with European Standards and/or DNV F101 code.

5.4. Structural Lead

A Consulting Engineer with experience in structural and offshore engineering. Has worked in various roles, including Project Manager and Senior Structural Engineer. The experience of a Structural Lead shall include detailed design and design consultancy on subsea structures and marine terminals projects. He shall also be experienced in piping design, geotechnical design, cathodic protection design, installation procedures and HSEQ. Having experience in project works of high-pressure natural gas, designed in accordance with European Standards and/or DNV F101 code.

5.5. Pipeline Welding Lead

An offshore pipeline welding lead Engineer with experience in offshore welding including but not limited to DNV F101- 2017. Has been involved in all aspects of offshore pipeline and sub-sea structures welding in large offshore projects from detailed design of deep-water pipeline projects to qualifications, procurement, and delivery

management of system components. Has significant offshore experience acting as client representative. Having experience in project works of high-pressure natural gas, designed in accordance with European Standards and/or DNV F101 code.

5.6. Senior Survey & Positioning Consultant

An offshore Survey and positioning Consultant with experience in offshore Surveys including but not limited to MBES, SSS, SBP, MAG. Has experience with various survey datums and transformations (mainly WGS84 UTM and ING512). Has been involved in all aspects of offshore pipeline and sub-sea structures surveying in large offshore projects from detailed design of deep-water pipeline projects to qualifications, procurement and delivery management of system components. Has significant offshore experience acting as client representative. Having experience in project works of high-pressure natural gas, designed in accordance with European Standards and/or DNV F101 code.

5.7. Senior Geotechnical Consultant

An offshore Geotechnical Consultant with experience in offshore Geotechnical Surveys. Has experience with various surveys has been involved in all aspects of offshore geotechnical aspects of pipeline and sub-sea structures surveying and analysis in large offshore projects from detailed design of deep-water pipeline projects and delivery management of system components. Has significant offshore experience acting as client rep. Having experience in project works of high-pressure natural gas, designed in accordance with European Standards and/or DNV F101 code.

6. Background and Experience of Consultant's Personnel

	Position	Education/Background	Experience (years)
1.1	**Senior Consultant**	As required in the ITB.	
2.1	**Construction Advisor**	As required in the ITB.	
3.1	**Operation and Maintenance Consultant**	As required in the ITB.	

4.1	**Cathodic Protection Engineer**	Engineer/Technician, having experience in Cathodic protection design, installation and maintenance works in high pressure natural gas pipeline projects designed in accordance with European Standards and/or NEN 3650 Dutch code.	>10
4.2	**Welding Engineer for Stations and Pipeline**	Engineer with special certificate as Welding Engineer, having experience in pipeline and stations construction works in high pressure natural gas projects designed in accordance with European Standards and/or NEN 3650 Dutch code.	>10
4.3	**Process Engineer**	Engineer having experience in high pressure natural gas systems pipeline projects designed in accordance with European Standards and/or NEN 3650 Dutch code.	>10
4.3	**Mechanical Engineer for Compressor Stations**	Engineer having experience in design, construction and operation and maintenance in high pressure natural gas compressor stations (minimum 90 bar) projects (minimum 3 projects)	>10
5.1	**Senior Consultant, Project Sponsor & Client Interface**	Mechanical/Process/Civil Engineer with University degree, having work experience in offshore high pressure natural gas projects of transmission systems in European including pipelines, sub-sea structures. The experience shall be for high pressure (at least 80 bar) NG facilities designs, construction & installation and knowledge regarding transmission.	>15
5.2	**Engineering Manager**	Mechanical/Process/Civil Engineer with University degree, having experience in designs of high pressure (at least 80 bar) NG facilities of transmission systems projects which have been designed in accordance with European Standards and the DNV F101 code. The experience will include design of pipelines stations sub-sea structures.	>10
5.3	**Pipeline & Landfall Lead**	Mechanical/Process/Civil Engineer, having experience in construction works of high-pressure natural gas projects designed in accordance with European Standards and/or DNV F101 code.	>10
5.4	**Structural Lead**	Mechanical/Process/Civil Engineer, having experience in construction works of offshore high pressure natural gas projects designed in accordance with European Standards and/or DNV F101code.	10-15
5.5	**Pipeline Welding Lead**	Engineer with special certificate as Welding Engineer, having experience in offshore pipeline and sub-sea structures construction works in offshore high pressure natural gas projects designed in accordance with European Standards and/or DNV F101 & relevant ASME code.	>10

5.6	**Senior Pipeline Installation Consultant**	Mechanical/Process/Civil Engineer, having experience in construction works of offshore high pressure natural gas projects designed in accordance with European Standards and/or DNV F101 code.	10-15
5.7	**Senior Geotechnical Consultant**		>10

7. Working days & hours

7.1. While performing the Services in Israel the Services shall be performed consecutively and during all working hours in the Projects (days and nights according to the Company needs).

7.2. While performing the Services in Israel Consultant's personnel working days shall be according to the working days in Israel and the Jewish calendar (Sunday to Friday).

8. Vacations & Holidays

8.1. While performing the Services in Israel Consultant's personnel shall be entitled to up to a total of 10 vacation calendar days (travel time is included) every 3 months.

- Such vacation days shall be subject to the prior written approval of the Company's Representative.
- The Consultant shall submit to Company Representative's approval a planned vacation calendar for its Key Personnel at the beginning of each calendar year.
- Such vacation's plan shall be required to conform with the working days on Site, taking into consideration the Jewish holidays. The implementation vacation plan shall not delay the works on Site.

8.2. Company Representative may withhold approval to a vacation plan or withdraw approval previously granted or condition any such approval with other professional requirements including the Consultant providing an adequate substitute personnel.

9. Flights, Travel, and Accommodation

The Consultant is responsible to provide its Personnel located in Israel, at Consultant's sole expense, with all the means required to perform the Services, including without limitation, flights to and from Israel, accommodation, travel expenses, health-care insurance, and all other requirements that shall enable the Services to be performed properly.

10. Equipment and vehicle

For the purpose of providing the Services, Consultant shall, at Consultant's sole expense, allocate for and provide to each of the Consultant's personnel located in Israel with office space

and equipment required for the performance of the Services, including lap top computers, mobile phones and other communication equipment, fast and remote internet connections, suitable vehicles, and every other mean that shall enable the Services to be performed properly.

11. Reporting

All findings must be reported by the Consultant to the Company Representative. The Consultant shall provide the Company Representative with the following reporting:

11.1. The Consultant shall prepare a weekly periodical reporting to Company and Company's representative, which shall highlight the findings, concerns and proposals for improvement.

11.2. Daily basis reporting by the Consultant to the Company's Representative shall be performed on according the project progress and requirements.

11.3. A monthly report as defined by Company's representative at the commencing and during the Services.

11.4. Non-Conformity Report (NCR), to describe and localize a non-conformity from the standard / specification / procedure, shall be issued by the Consultant if necessary. As well, verification that a satisfied corrective action required (CAR) took place and closure of NCR.

11.5. A final close out report shall be prepared by the Consultant at the end of the project.

11.6. The Key Personnel, if requested by the Company's representative, shall be present in any meeting in regarding to the relevant project.

12. Special Conditions

12.1. All reports such as inspection reports, daily reports, weekly report, NCR's and CAR's, as well as all certificates shall be submitted by the Consultant to the Company or to the Company's representative in original form with an electronic backup. The Consultant shall submit, in advanced, a typical format of reports for the Company's representative, for review and approval.

12.2. The Services shall be provided in the English language. All Consultant's Personnel performing the services shall be capable to speak, read and write English at an internationally fluent acceptable level.

12.3. The Consultant shall provide a technically responsible person to attend during the execution of "Hot Tie-in's" activities, without additional costs.

12.4. The supervision of the System as well the gassing up will be carried out by the Company or the Company's representative.

ANNEX C1 – EXAMPLES FOR TABLE OF CONTENT FOR ENGINEERING PLANS FOR OFFSHORE PIPING, ON SHORE PIPING, ONSHORE STATIONS AND PRMS

TENDER No. INGL/TENDER/2026/18

Project No.: **XXXX**
Doc No: **XXXX**
Rev: **XX**
Date: **XX.XX.XX**

OFFSHORE PIPELINE

Example of Content of Engineering Plan

	Chapter A: Design Basis				
Document. No. or Drawing	**Description, Remarks**	**Rev**	**Date**	**Checker**	**Signature**
A.1 GENERAL / MANAGEMENT					
XXXX	SCOPE OF WORK FOR MWS				
XXXX	PROJECT HSE PLAN				
XXXX	EMERGENCY RESPONSE PLAN (ERP)				
XXXX	WASTE MANAGEMENT PLAN				
XXXX	OIL SPILL CONTINGENCY PLAN				
XXXX	HAZARD IDENTIFICATION & RISK ASSESSMENT FOR ONSHORE/LANDFALL/CIVIL WORKS				
XXXX	HAZARD IDENTIFICATION & RISK ASSESSMENT FOR TBM REMOVAL				
XXXX	HAZARD IDENTIFICATION & RISK ASSESSMENT FOR COFFERDAM INSTALLATION				
XXXX	HAZARD IDENTIFICATION & RISK ASSESSMENT FOR DREDGING ACTIVITIES				
XXXX	HAZCON WORKSHOP REPORT FOR OFFSHORE ACTIVITIES				
XXXX	PROJECT QUALITY PLAN				
XXXX	36" LAYING QUALITY CONTROL PLAN				

XXXX	QUALITY CONTROL PLAN FOR WELDERS QUALIFICATIO				
XXXX	ONSHORE SITE ACCEPTANCE PROCEDURE AND REPORT (AS APPLICABLE FOR ONSHORE WORKS)				
A.2 ONSHORE PIPELINE - DESIGN & INSTALLATION					
XXXX	SPECIFICATION FOR ONSHORE PIPELINE CONSTRUCTION				
XXXX	ONSHORE P/L STRESS ANALYSIS				
XXXX	ONSHORE P/L STRESS ANALYSIS				
XXXX	ONSHORE P/L ROUTE AND GENERAL LAYOUT				
XXXX	ONSHORE P/L ALIGNMENT SHEET				
XXXX	TRENCH LAYOUT & PROFILE				
A.3 OFFSHORE PIPELINE DESIGN					
XXXX	OFFSHORE AND SHORE APPROACHES INSTALLATION METHOD STATEMENT				
XXXX	INSTALLATION MINIMUM REQUIREMENTS DEFINITION				
XXXX	P/L SYSTEM - DESIGN PREMISES				
XXXX	PIPELINE WALL THICKNESS VERIFICATION				
XXXX	PIPELINE ON BOTTOM STABILITY REPORT				
XXXX	PIPELINE UPHEAVAL BUCKLING ANALISYS REPORT				
XXXX	PIPELINE ALLOWABLE FREE SPAN ANALYSIS REPORT				
XXXX	PIPELINE ON-BOTTOM STRESS ANALYSIS REPORT				
XXXX	FLOW ASSURANCE STUDY - STEADY STATE ANALYSIS REPORT				
XXXX	FLOW ASSURANCE STUDY - TRANSIENT STATE ANALYSIS REPORT				
XXXX	PIPELINE CATHODIC PROTECTION DESIGN REPORT				
XXXX	MTO FOR OFFSHORE PIPELINE				
XXXX	PIPE-SOIL INTERACTION STUDY REPORT				
XXXX	OFFSHORE P/L SEISMIC ANALYSIS & SOIL LIQUEFACTION REPORT				
XXXX	INTERNAL MATERIAL CORROSION VERIFICATION				
XXXX	PIPELINE - PRE COMMISSIONING PHILOSOPHY				
XXXX	ANTICORROSION COATING VERIFICATION AND FIELD JOINT MATERIAL SELECTION REPORT				

XXXX	ROUTING REPORT		
XXXX	PRE-LAY INTERVENTION WORKS ASSESSMENT REPORT		
XXXX	MTO FOR CATHODIC PROTECTION		
XXXX	TRAWL GEAR INTERACTION ANALYSIS REPORT		

Project No.: XXXX
Doc No: XXXX
Rev: XX
Date: XX.XX.XX

ONSHORE PIPELINE

Example of Content of Engineering Plan

Chapter A: Design Basis					
Document. No. or Drawing	**Description, Remarks**	**Rev**	**Date**	**Checker**	**Signature**
A.1 System Overview & Description					
XXXX	Pipeline System Overview & Description				
A.2 Soil Investigation and Hydrology and Erosion Reports					
XXXX	Soil Investigation and Hydrology and Erosion Reports				
A.3 Civil Basis of Design					
XXXX	Civil Basis of Design				
Chapter B: Land and Ownership (Separate File)					
Chapter C: Engineering Design					
C.1 General Design					
C.1.1 Process Flow Diagram					
XXXX	Process Flow Diagram				
C.1.2 Venting Calculations					
XXXX	Venting Calculations				
C.1.3 Pipe Wall Thickness					
XXXX	Pipe Wall Thickness Calculation				
C.2 Pipeline Design					
C.2.1 Area Classification					
XXXX	Area Classification				
C.2.2 Route and Pipe Layouts and Cross Sections					

XXXX	MAP LEGEND & GENERAL NOTES				
XXXX	36" Pipeline Layout & Longitudinal Scetion				
XXXX	36" Pipeline Layout & Longitudinal Scetion				
XXXX	36" Pipeline Layout & Longitudinal Scetion				
XXXX	36" Pipeline Layout & Longitudinal Scetion				
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XXXX	36" Pipeline Layout & Longitudinal Scetion				
XXXX	36" Pipeline Layout & Longitudinal Scetion				
XXXX	36" Pipeline Layout & Longitudinal Scetion				
C.2.3 Cathodic Protection					
XXXX	Corrosion Protection Design Report				
C.2.4 MTO					
XXXX	Pipeline MTO				
C.2.5 Stress Analysis					

XXXX	Railway XX Crossing Stress Analysis				
XXXX	Road XX HD Crossing Stress Analysis				
XXXX	Road XX HD Crossing Stress Analysis				
XXXX	Railway HD Crossing Stress Analysis				
XXXX	Road XXX HD Crossing Stress Analysis				

Project No.: XXX
Doc No: XXX
Revision: XX
Date: XX.XX.XX

PIPELINE

XXX STATION

Example of Content of Engineering Plan

Document. No. or Drawing	Description, Remarks	Rev	Date
	Chapter A: Design Basis		
A.1 System Overview & Description			
XXXX	Stations System Overview & Description		
A.2 Soil Investigation and Hydrology and Erosion Reports			
XXXX	Soil Investigation and Hydrology and Erosion Reports		
A.3 Civil Basis of Design			
XXXX	Civil Basis of Design		

Chapter B: Land and Ownership (Separate File)

Chapter C: Engineering Design

C.1 General Design			
C.1.1 Process Flow Diagram			
XXXX	Process Flow Diagram		
C.1.2 Wall Thickness Calculations			
XXXX	Pipe Wall Thickness Calculation		
C.2 Stations Design			
C.2.1 Venting Calculations			
XXXX	Venting Calculations		
C.2.2 P&ID			
XXXX	Afula Station P&ID		

C.2.3 Piping layout & Sections			
XXXX	Afula Station layout & Sections		
C.2.4 Electrical Design			
XXXX	ONE LINE DIAGRAM		
XXXX	Station Earthing Plan		
C.2.5 Hazardous Area & QRA			
XXXX	HAZARDOUS AREA CLASSIFICATION		
XXXX	HAZARDOUS AREA CLASSIFICATION LAYOUT & SECTIONS		
XXXX	HAZARDOUS AREA CLASSIFICATION SECTIONS		
XXXX	QUANTITIVE RISK ASSESSMENT		
C.2.6 MTO			
XXXX	MTO		
C.2.7 Stress Analysis			
XXXX	AFULA VALVE STATION STRESS ANALYSIS CALCULATIONS		
C.2.8 Civil Design			
XXXX	AFULA VALVE STATION SUPERPOSITION		
XXXX	AFULA VALVE STATION VIEWS & SECTIONS		
XXXX	AFULA VALVE STATION DETAILS		
XXXX	AFULA VALVE STATION ELECTRICAL PILLAR		
XXXX	AFULA VALVE STATION CATHODIC PROTECTION ROOM		
XXXX	AFULA VALVE STATION FOUNDATIONS ARRANGEMENT		
C.2.9 Cathodic protection report & design			
XXXX	CORROSION PROTECTION DESIGN REPORT		

Example of Content of Engineering Plan for PRMS

1. TECHNICAL SPECIFICATION
1.1. General Technical Description & Functional Units
2. PROCESS
2.1. General Legend
2.2. P&ID + Process Flow Diagram
2.3. Heat Exchangers
2.3.1. Water Heat Exchangers Drawings, Reports
Water Heat Exchangers Mechanical Calculations
Water Heat Exchangers Thermal Calculations
2.3.2. Electrical Heat Exchangers Drawings, Reports
Electrical Heat Exchangers Mechanical Calculations
Electrical Heat Exchangers Thermal Calculations
2.4. Dust/Liquid Separators
2.4.1. Dust/Liquid Separators Drawings, Reports
2.4.2 Dust/Liquid Separators Calculations
2.4.3. Orifice calculation
2.4.4. Quick opening closure
2.5. Boilers and Hot Water System
2.5.1. Boilers Data Sheet and Technical Description
2.5.2. Boilers Burner Data Sheet and Technical Information
2.5.3. Safety Relief Valve Data Sheet and Technical Information
2.5.4. Hydraulic Shunt/Thermal Guide (If applicable)
2.6. Differential Pressure Diagram
2.7. Valve List
2.8. Vent Rating Verification
3. MECHANICAL
3.1. General layout drawing

3.1.1. General Arrangement PRMS
3.1.2. Layout PRMS
3.1.2 Vents Layout and Isometric
3.2. Cross section drawings
3.2.1. Cross Sections A-A, B-B
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ANNEX C2 – EXAMPLES FOR COMPLETION CERTIFICATE

TENDER No. INGL/TENDER/2026/18

COMPLETION CERTIFICATE

Dated: XXXX

For Israel Natural Gas Lines (INGL) Project**;** INGL Project Number XXXX

(Hereinafter - "the Project")

Section 1: XXX valve station expansion, from the tie-ins to existing grid, up to inlet connection to XXX PRMS including the following sub-sections:

1.1 Existing XXX Valve Station modification and expansion including new scraper launcher, from tie-ins to existing grid – 24" and 12" golden welds marked 2042-ASH-YG-24-GW03, and 2042-ASH-YG-12-GW05; to golden welds 2042-ASH-YG-10-GW10 – supply to Rotenberg 1, and 2042-ASH-YG-24-GW12 – supply for Chevron metering station.

1.2 Existing XXX valve station expansion from golden weld marked 2042-24-YG-GW03, up to the following future connections: 36" supply line for XXX ending with a welded cap marked B.L.1, future 36" supply line ending with a welded cap marked B.L.2, future 36" supply line ending with a welded cap marked B.L.3.

1.3 Future connection for the 'Offshore Southern Loop', from the Scraper launcher – part of the ASH expansion, and golden weld 2042-ASH-YG-10-GW01, to welded cap marked B.L.4.

Section 3: From outlets of XXX PRMS, including the following sub sections:

3.1 Natural gas supply line for XXX PP, from 24" golden weld marked 2042-ASH-YG-30-GW07, to blow-off vent marked B.O.10, and to 30" welded cap marked B.L.5, future connection to Rutenberg PP (IEC)

3.2 Natural gas supply line connection to existing grid XXX, from 24" golden weld marked 2042-ASH-YG-24-GW13NR, to connection point to existing grid marked B.L.6

1.4 This is to certify that the _____(the Contractor) has successfully completed the installation of aforementioned sections of the high pressure natural gas project as follows:

1. All works of the Project have been performed according to the design, NEN 3650 and INGL specs and approved for construction (AFC) drawings.
2. All materials have been purchased and supplied by INGL and fabricated and constructed by XXX in accordance with the design and in accordance with the relevant standard and to (AFC) drawings.
3. All welds in the above mentioned sections have been welded, checked, approved and accepted in accordance with project specifications, NEN 3650 and INGL specs.
4. Holiday Detection was performed according to the standard and accepted.
5. All hydrostatic tests and leak tests, dewatering and drying of the pipe sections have been performed according to the standard and specification. Pressure test, gauging, dewatering and drying of the pipe sections were completed and accepted.
6. All Golden Welds in the above sections were performed according to the project specification, NEN 3650 and INGL specifications checked, approved and accepted by all parties.

7. Permanent Cathodic protection has been installed as per AFC design, relevant standards and accepted by all parties.
8. No NCR's/CAR'S have been issued for this section.
9. Cold commissioning checks to sections executed by the XXX has taken place successfully and accepted by all parties.
10. Sections installed by XXX. are ready for gassing up as per the design and relevant specifications.

Technical data relating to this Completion Certificate is specified in the Mechanical Completion Certificate issued by XXX. (doc. ref. no. XXX) attached herewith

<table>
<tr><td colspan="3">For and on behalf of Construction Contractor, _____.:
(_____, Project Manager)</td></tr>
<tr><td colspan="3">Acknowledged by, for and on behalf of :</td></tr>
<tr><td>_____ (Third Party Inspection Company)</td><td>_____
(Supervision and Management Company)</td><td>_____
(Professional Company)</td></tr>
</table>

_____, CEO, INGL
Israel Natural Gas Lines Ltd.
Floor 33, Atidim Tower 8
Kiryat Atidim, Tel Aviv 58177
Israel

T +972-3-6270-233

Our reference
XXXXXXXXXXX

Date : _____

Dear Sir,

INGL project number XXXX: XXX Valve Station, PIPELINE AND PRMS

Mechanical Completion Certificate

In Accordance with NEN 3650:2003/EN12186

For the following Natural Gas High Pressure transmission sections, including the relevant XXX PRMS and Line valve and scraper stations, according to the below structure

Section 1: XXX valve station expansion, from the tie-ins to existing grid, up to inlet connection to XXX PRMS, and XXX PRMS including the following sub-sections:

1.5 Existing XXX Valve Station modification and expansion including new scraper launcher, from tie-ins to existing grid – 24" and 12" golden welds marked 2042-ASH-YG-24-GW03, and 2042-ASH-YG-12-GW05 – **battery limit for gassing up**; to golden welds 2042-ASH-YG-10-GW10 – supply to XXX, and 2042-ASH-YG-24-GW12 – supply for XXX PRMS.

1.6 Existing XXX valve station expansion from golden weld marked 2042-24-YG-GW03, up to the following future connections: 36" supply line for XXX ending with a welded cap marked B.L.1, future 36" supply line ending with a welded cap marked B.L.2, future 36" supply line ending with a welded cap marked B.L.3.

1.7 Future connection for the 'XXX, from the Scraper launcher – part of the XXX expansion, and golden weld 2042-ASH-YG-10-GW01, to welded cap marked B.L.4.

Section 2: Pressure Reducing & Metering Station, XXX PRMS

Section 3: From outlets of XXX PRMS, including the following sub sections:

6.1 Natural gas supply line for XXX PP, from 24" golden weld marked 2042-ASH-YG-30-GW07, to blow-off vent marked B.O.10, and to 30" welded cap marked B.L.5, future connection to XXX PP – **Battery limit for gassing up of sub-section 3.1**.

6.2 Natural gas supply line connection to existing grid XXX, from 24" golden weld marked 2042-ASH-YG-24-GW13NR, to connection point to existing grid marked B.L.6 – **Battery limit for gassing up of sub-section 3.2**.

1. Owner

State of Israel
Licence Owner I.D. Number: 51343694
Israel Natural Gas Lines Ltd. (INGL)
Atidim Bld. 33rd Floor
Tel Aviv, 6158101 – Israel

2. Expert Company

XXXX (name and Adress)

3. Supervision Company

XXXX (name and Adress)

4. Third Party Inspection

TÜV Rheinland Industries Service GmbH
Am Grauen Stein
51105 Köln
Germany

5. Contractors

XXXX (name and Adress)

6. Reference Drawing Numbers

Overall

PFD:	XXXXXXX
P&ID:	XXXXXXX

XXX Valve Station

General layout: XXXXXXX

XXX PRMS:

P&ID: XXXXXXX
PFD: XXXXXXX

7. Technical Data

7.1 Design Data

Section 1 XXX valve station expansion, up to inlet connection to XXX PRMS including the following sub-sections:

Sub Section 1.1: Existing XXX Valve Station modification and expansion including new scraper launcher, from tie-ins to existing grid – 24" and 12" golden welds, to future connection for metering station.

Design data

Q max for sub section 1.1:

- *Supply for PRMS XXX 1: Q max = XXX,XXX Nm3/hr*

Design pressure, MOP: 80 barg
Temperature: -10 / 50 C

Sub Section 1.2: Existing XXX valve station expansion from golden weld marked 2042-24-YG-GW03, up to the following future connections:
A) 36" supply line for XXX, ending with a welded cap marked B.L.1,
B) future 36" supply line ending with a welded cap marked B.L.2,
C) future 36" supply line ending with a welded cap marked B.L.3.

Design data for sub section 1.2
A) supply line for XXX:
Q max: 480,000 Nm3/hr
Design pressure, MOP: 80 barg
Temperature: -10 / 60 C
B) future 36" supply line 1: Q max = TBD
C) future 36" supply line 2: Q max = TBD
Design pressure, MOP: 80 barg
Temperature: -10 / 50 C

Sub Section 1.3: Future connection for the 'XXX, from the Scraper launcher – part of the XXX expansion – to welded cap marked B.L.4.

Design data
Q max for sub section 1.3: XXX,XXX Nm3/hr
Design pressure, MOP: 80 barg
Temperature: -10 / 50 C

Section 2

Pressure Reducing & Metering Station, XXX PRMS, and Chevron Metering Skid, containing the following elements:

- Motor Operated Valves (MOV's)
- Safety Shut down Valves (SSv's)
- Pressure Safety Valves (PSV's)
- Pressure Reduction Valves (PCV's)
- Pressure- Temperature Transmitters
- Filters / Separators
- Heat Exchangers
- Pressure Reduction Runs
- Flow Meters
- Gas Chromatograph
- Control Room

Section 3

Starting from XXX outlet, to XXX Powerplant, including the following sub sections:
Natural gas supply line for XXX PP, future connection to XXX PP
Natural gas supply line connection to existing grid XXX to connection point to existing grid

Design data
Q max for sub section 3:

- *Supply for Rutenberg PP: Q max = XXX,XXX Nm3/hr*
- *Supply for EMG Skid: Q max = XXX,XXX Nm3/hr*

Design pressure, MOP: 80 barg
Temperature: -10 / 50 C

7.2 Golden Welds / Battery Limits

General:
All Golden Welds carried out as Tie-in butt welds that have not been pressure-tested, have been 100% NDT tested by means of Radiographic (RT), Ultrasonic (UT) or Magnetic particles (MPI) testing.

For ease identification of Golden Welds locations, refer to drawing IEN-OME-DRG-0212 Attached.

#	Gold Weld No.	Dia [inch]	Location
1	2042-ASH-YG-30-GW07	30	XXX Valve Station to PRMS Outlet
2	2042-ASH-YG-30-GW08	30	XXX Valve Station to PRMS Outlet
3	2042-ASH-YG-10-GW09	10	XXX Valve Station to PRMS Inlet
4	2042-ASH-YG-10-GW10	10	XXX Valve Station to PRMS Inlet
5	2042-ASH-YG-24-GW11	24	XXX Valve Station to Metering Inlet
6	2042-ASH-YG-24-GW12	24	XXX Valve Station to Metering Inlet
7	2042-ASH-YG-10-GW01	10	Connection from existing station to XXX 1 (T.P. 1)
8	2042-ASH-YG-10-GW02	10	Connection from existing station to XXX (T.P. 1)

9	2042-ASH-YG-24-GW03	24	Connection from existing station to XXX (T.P. 2)
10	2042-ASH-YG-24-GW04	24	Connection from existing station to XXX (T.P. 2)
11	2042-ASH-YG-12-GW05	12	Connection from existing station to XXX (T.P. 3)
12	2042-ASH-YG-12-GW06	12	Connection from existing station to XXX (T.P. 3)
13	2042-ASH-YG-24-GW13NR	24	XXX Valve Station to Metering Outlet
14	2042-ASH-YG-30-GW14R	30	XXXValve Station to Metering Outlet
15	2042-ASH-YG-30-GW15R	30	XXX Valve Station to Metering Outlet

Tests Executed

Sections 1&3

The Natural Gas High Pressure pipeline system has been successfully tested for Strength and Tightness according to NEN 3650 / EN 12327 / DVGW G 469 Contractor's procedure: XXX Procedure Nr. XXXXXXX.

Section 2

The Natural Gas High Pressure Regulation and Metering Station (PRMS) has been successfully tested for Tightness according to NEN 3650 / EN 12327 / DVGW G 491, Contractor procedure: XXXXXXX.

The water heating system has been successfully tested for Tightness according to NEN 3650 / EN 12327 / DVGW G 469, Contractor procedure: XXXXXXX.

The safety devices listed were installed, functionally tested in accordance with the Pressure Regulation and Metering Station Test Procedure, document number XXXXXXX, XXXXXXX and certified without any objections.

The results of the functional test reports are summarized in the following table:
(Note: all figures are in Barg)

XXX-PRMS-XXXX

No	Tag		required value (barg)	range	Test 1	Test 2	Test 3	Date	Certificate No.	Tested by
	FILTERING SECTION									
1	PSV-5118	Set Point Check	88 barg	85.36÷90.64 barg				25/08/2021	5262-0322	Check by TUV
		Lock up Check	min 80 barg							
2	PSV-5218	Set Point Check	88 barg	85.36÷90.64 barg				25/08/2021	5262-0322	Check by TUV
		Lock up Check	min 80 barg							
	GAS HEATING SECTION									
3	PSV-4117	Set Point Check	88 barg	85.36÷90.64 barg				25/08/2021	5262.0172	Check by TUV
			min 80 barg							
4	PSV-4217	Set Point Check	88 barg	85.36÷90.64 barg				25/08/2021	5262.0172	Check by TUV
			min 80 barg							
	GAS REDUCTION SECTION									
5	PSV-4151	Set Point Check	8.7 barg	8.48÷8.92	8.78	8.74	8.72	16.05.22		
6	PSV-4251	Set Point Check	8.7 barg	8.48÷8.92	8.76	8.77	8.75	12.04.2022		
7	SSV-4131	Set Point Check	10.0 barg	9.9÷10.1	10	10	10	12.04.2022		
8	SSV-4138	Set Point Check	10.0 barg	9.9÷10.1	9.96	9.96	9.98	12.04.2022		
9	SSV-4231	Set Point Check	9.3 barg	9.21÷9.39	9.31	9.31	9.31	12.04.2022		
10	SSV-4228	Set Point Check	9.3 barg	9.21÷9.39	9.29	9.31	9.32	12.04.2022		
11	PCV-4137	Set Point Check	6.0 barg	5.94÷6.06	6.04	6.05	6	11.04.2022		
12	PCV-4237	Set Point Check	6.9 barg	6.83÷6.97	6.9	6.91	6.9	11.04.2022		

	FUEL GAS REDUCTION SECTION 1st STAGE									
23	PSV-2139	Set Point Check	4.6 barg	4.49÷4.79 barg	4.63	4.66	4.69	12.04.2022		
			Min 4.1 barg							
24	PSV-2229	Set Point Check	4.6 barg	4.49÷4.79 barg	4.62	6.69	4.66	12.04.2022		
			Min 4.1 barg							
25	PSV-2122	Set Point Check	5 barg	4.95÷5.05 barg	5	5	4.99	12.04.2022		
26	PSV-2125	Set Point Check	5 barg	4.95÷5.05 barg	5	5	4.99	12.04.2022		
27	PSV-2222	Set Point Check	5 barg	4.95÷5.05 barg	5.01	5.01	5.01	12.04.2022		
28	PSV-2225	Set Point Check	5 barg	4.95÷5.05 barg	5.01	5.01	5.01	12.04.2022		
29	PCV-2131	Set Point Check	3.9 barg	3.71÷4.1 barg	3.9	3.88	3.96	12.04.2022		
		Lock up Check	4.29 barg	4.29 barg	3.95	3.94	3.99	12.04.2022		
30	PCV-2231	Set Point Check	3.9 barg	3.71÷4.1 barg	3.9	3.9	3.91	12.04.2022		
		Lock up Check	4.29 barg	4.29 barg	3.95	3.96	3.96	12.04.2022		
31	PSV-2117	Set Poing Check	88.0 barg	85.36÷90.64 barg				25/08/2021	5262.0032	Check by TUV
			min 80 barg							
32	PSV-2217	Set Poing Check	88.0 barg	85.36÷90.64 barg				25/08/2021	5262.0032	Check by TUV
			min 80 barg							
	FUEL GAS REDUCTION SECTION 2nd STAGE									
53	PSV-2164	Set Point Check	0.25 barg	0.224÷0.256 barg	0.255	0.256	0.255	12.04.2022		
			min 0.2 barg							
53	PSV-2264	Set Point Check	0.25 barg	0.224÷0.256 barg	0.255	0.256	0.256	12.04.2022		
			min 0.2 barg							
54	PSV-2149	Set Point Check	0.27 barg	0.243÷0.277 barg	0.273	0.273	0.274	12.04.2022		
55	PSV-2146	Set Point Check	0.27 barg	0.243÷0.277 barg	0.273	0.273	0.274	12.04.2022		
56	PSV-2249	Set Point Check	0.3 barg	0.255÷0.308 barg	0.3	0.3	0.3	12.04.2022		
57	PSV-2246	Set Point Check	0.3 barg	0.255÷0.308 barg	0.3	0.3	0.3	12.04.2022		
58	PCV-2155	Set Point Check	0.21 barg	0.19÷0.25 barg	0.21	0.21	0.21	12.04.2022		
		Lock up Check		0.23 barg	0.225	0.224	0.224	12.04.2022		
59	PCV-2255	Set Point Check	0.15 barg	0.14÷0.17 barg	0.16	0.16	0.16	12.04.2022		
		Lock up Check		0.18 barg	0.168	0.168	0.168	12.04.2022		
	BOILER SECTION									
60	PSV-8126	Set Point Check	6 barg	5.82 ÷6.18 barg				23/06/2021	5262.5804	Check by TUV
61	PSV-8226	Set Point Check	6 barg	5.82 ÷6.18 barg				23/06/2021	5262.5804	Check by TUV
62	PSV-8326	Set Point Check	6 barg	5.82 ÷6.18 barg				23/06/2021	5262.5804	Check by TUV

No	Tag		required value (barg)	range	Test 1	Test 2	Test 3	Date
	WATER PSV							
43	PSV-4182	Set Point Check	4000 mbarg		4.05	3.95	4.02	01.06.2022
44	PSV-4164	Set Point Check	4000 mbarg		4.0	4.1	4.0	01.06.2022
45	PSV-4282	Set Point Check	4000 mbarg		4.0	3.99	4.02	01.06.2022
46	PSV-4264	Set Point Check	4000 mbarg		4.05	4.1	4.07	01.06.2022

2029-MS-XXX

No	Tag		required value (barg)	range	Test 1	Test 2	Test 3	Date	certificate No	Tested by	Bubble test for SSV (pass,not pass)
	FILTERING SECTION										
1	PSV-0118	Set Point Check	88 barg	85.36÷90.64 barg		88.55		11/11/2021	2557	Check by Blass	pass
		Lock up Check	min 80 barg								
2	PSV-0218	Set Point Check	88 barg	85.36÷90.64 barg		88.58		11/11/2021	2558	Check by Blass	pass
		Lock up Check	min 80 barg								
3	PSV-0318	Set Point Check	88 barg	85.36÷90.64 barg		88.56		11/11/2021	2559	Check by Blass	pass
		Lock up Check	min 80 barg								

8. Remarks

The Supervision Team have been guided by INGL together with technical advice/approval and checks/Audits from XXX.

All welds have been completed, NDT tested and accepted according to EN 12732 by all relevant parties. The pressure set points have been adjusted and checked according to the relevant requirements at all lines.

9. Confirmation

We hereby confirm that the above-described section of the high-pressure gas transmission system was correctly built-in accordance with the relevant provisions of NEN Standard 3650-1:2003, which was verified and inspected in accordance with Chapter 2A paragraph 9.11 of this Standard, and the submitted and approved detailed design documents.

In addition, we confirm that based on the results of pressure-test performed plus mechanically/functionally tests, there are no objections to start-up/operate the tested line sections up to the maximum permissible operation pressure.

However, transfer and supply of natural gas to the customer can be permitted only upon submission of a certificate issued by an authorized entity stating that the customer's facilities are built and tested in accordance with the applicable requirements

Attachments: Drawing IEN-OME-DRG-0212

Herewith we confirm that the above statement is correct and that the sections

Specified above are fit for purpose.

_____
Professional Company

XXXX (2nd Party)

Site Supervision Third Party Inspection

COMPLETION CERTIFICATE

Dated: _____

For Israel Natural Gas Lines (INGL) Project Number: XXXX

XXX PRMS;

(Hereinafter - "the Project")

- **Section 2**
  XXX PRMS

This is to certify that the **Contractor name**, have completed the installation of aforementioned segments of the high pressure natural gas project as follows:

1. All works of the Project have been performed according to the design, the NEN 3650, EN 12186 and INGL specification.
2. All gas spools have been manufactured and checked according to design, the NEN 3650, EN 12186 and have been verified by third party inspection.
3. The instrumentation and electrical works have been performed according to the design, specifications and standards.
4. All pressure tests, Leak tests for the entire system has been performed and accepted according to the NEN 3650, INGL specifications and relevant standards.
5. Cold commissioning has taken place successfully and accepted by all.
6. No NCR's / CAR's issued for this section.
7. System installed by **Contractor name** is ready for gassing up as per the design and relevant specifications.
8. The fire detection and firefighting system has been constructed as per the design and relevant specifications and is ready for startup of the facility.

The technical data relating to this Completion Certificate is specified in the Mechanical Completion Certificate issued by XXX(doc. ref. no. IEN-CSE-CER-0071) attached herewith.

<table>
<tr><td colspan="3">For and on behalf of Construction Contractor, _____

(_____, Project Manager)</td></tr>
<tr><td colspan="3">Acknowledged by, for and on behalf of:</td></tr>
<tr><td>_____
(Third Party Inspection Company)</td><td>_____
(Supervision and Management Company)</td><td>_____
(Professional Company and Supervision)</td></tr>
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