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STANDARD FOR TECHNICAL SUBMISSIONS TO
INDUSTRIAL CITIES

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DOC. No.: IE-TEC-STD-011

REV. 00

TABLE OF CONTENTS

1.0 PURPOSE	4
2.0 SCOPE AND APPLICABILITY	4
3.0 REQUIREMENTS	4
3.1 COVERING SHEET FOR SUBMISSIONS.....	4
3.2 APPLICATION DETAILS	5
3.3 CONTENT OF SUBMISSIONS.....	6
3.4 SUBMISSION OF AS BUILT DRAWINGS	7
4.0 VALIDITY PLAN	7
5.0 REFERENCES TO OTHER DOCUMENTS	8
6.0 DEFINITIONS	10
APPENDICES	12
APPENDIX A1: LIQUID HYDROCARBONS CORRIDOR	12
APPENDIX A2: GAS HYDROCARBONS CORRIDOR	14
APPENDIX A3: HYDROCARBON PIPE CORRIDOR	16
APPENDIX A4: PRODUCT PIPE CORRIDOR.....	17
APPENDIX B: WET UTILITY CORRIDOR	18
APPENDIX B1: POWERED WATER INJECTION (PWI) CORRIDOR	20
APPENDIX C: UNDERGROUND POWER/POWER CORRIDOR.....	22
APPENDIX D: HIGH PRESSURE GAS CORRIDOR	24
APPENDIX E: COMMON COOLING WATER CORRIDOR.....	25
APPENDIX F: TELECOM CORRIDOR/TELECOM & ELV CORRIDOR.....	26
APPENDIX G: LNG CORRIDOR.....	27
APPENDIX H: GAS LIFT INJECTION CORRIDORS	28
APPENDIX I: LEE BREAKWATER & LIQUID PRODUCT BERTH.....	30
APPENDIX J: INTERCONNECTED PIPE RACKS BETWEEN INDUSTRIES.....	32
APPENDIX K: UTILITY CONNECTION & DISCONNECTION FOR THIRD PARTIES/CONTRACTORS	33
APPENDIX L: TEMPORARY SITE FACILITIES.....	34
APPENDIX M: ACCESS ROADS.....	43
APPENDIX N: WORKERS' ACCOMMODATION	45
APPENDIX O: QATARENERGY'S CRITICAL ASSETS.....	46
APPENDIX P: TRANSPORTATION OF HEAVY EQUIPMENT / OVERSIZED ABNORMAL LOADS.....	48
APPENDIX Q: OTHER CATEGORIES.....	49
APPENDIX R: COVERING SHEET FORMAT	50
APPENDIX S: SHEET # 1 & 2 – CROSSING MATRIX IDENTIFICATION – TYPICAL EXAMPLE	51
APPENDIX T: TYPICAL DETAILS OF PIPELINE AND POWER CABLE INSTALLATIONS	53



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX U: TYPICAL FENCE DETAILS FOR TEMPORARY FACILITY 54

APPENDIX V: LIST OF ABBREVIATIONS..... 55

APPENDIX W: REVISION HISTORY LOG..... 56



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

1.0 PURPOSE

To establish and maintain a documented Standard for all Applicants for submitting various Technical Submissions to Ras Laffan Industrial City (RLC), Mesaieed Industrial City (MIC) and Dukhan Concession Area (DCA).

2.0 SCOPE AND APPLICABILITY

This Document covers the requirements for making Technical Submissions by Applicants to Industrial Cities (Ras Laffan and Mesaieed) and Dukhan Concession Area (DCA), the Regulator of these areas. Applicants shall submit all the technical details of the proposed installation to the Industrial Cities Directorate for Review and Approval, before installing any permanent / temporary facility in any of the DCA / MIC / RLC common off-plot areas.

This Document is also applicable for QatarEnergy projects, where Industrial Cities (VI) Directorate is not the Asset Holder.

This document is not applicable to the following:

1. Technical transmittals related to Industrial Cities (VI) projects managed by Projects, Engineering & Procurement Services (VP) Directorate, which are covered under VI-ENG-PRC-022, Procedure for Implementation of Projects in Industrial Cities.
2. Technical Submissions related to Building Permits, which are covered under IE-ECP-GDL-003 Guidelines for Building Permit Technical Submissions to RLC and IMM-ECP-GDL-012 Guidelines for Submission of Building Permit and Completion Certificate Applications to Industrial Cities in MIC.

3.0 REQUIREMENTS

The Applicant shall submit the technical documents detailing the proposed item of work with necessary drawings and documents. The details submitted shall be conclusive and comprehensive about the relevant information to enable easy and quick review. The submission shall be done in accordance with the following minimum requirements.

3.1 COVERING SHEET FOR SUBMISSIONS

All submissions shall contain a covering sheet as per the format in Appendix R. The covering sheet shall contain the following information:

- a. A unique Submission number with date.
- b. Total number of pages included in the Submission.
- c. All submissions shall be addressed to the following:
 Manager,
 Engineering & Business Services,
 Tel: 40147476, Fax: 40139823,
 email ID: ICTechnicalSubmissions@qatarenergy.qa
 Tower 3, Floor 15, QatarEnergy HQ, West Bay,
 Doha, State of Qatar.
- d. All submissions shall be faxed to the above number or submitted by email to the Secretary of the above Manager, and EFSM (Enterprise File Sharing Management System) for size restricted Attachments.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

3.2 APPLICATION DETAILS

- Information regarding the originator.
- Name and Designation of the person to whom Industrial Cities' response to be sent.
- Name of the Company, Business Partner/Applicant/ End-User, or applicable QatarEnergy Directorate.
- Fax number to which Industrial Cities' response to be sent.
- Name of the Project and Subject.
- Brief Description of the request/ content of the submission.
- Contact details (Phone number, Mobile number, Email Id) of a person with whom clarifications on the subject matter are to be sought.
- Submissions are categorized under the following headings based on the nature of work/ location of installation. Submissions shall be made in accordance with the relevant attachment. The Appendices A1 to Q describe the details that are to be submitted

TABLE 1 : TYPES OF SUBMISSIONS

DESCRIPTION	APPENDIX	APPLICABILITY (DCA/MIC/RLC)
Liquid Hydrocarbons Corridor	A1	DCA
Gas Hydrocarbons Corridor	A2	DCA
Hydrocarbon Pipe Corridors	A3	MIC
Product Pipe Corridors	A4	RLC
Wet Utility Corridor	B	DCA/MIC/RLC
Powered Water Injection (PWI) Corridor	B1	DCA
Underground Power Corridor/ Power Corridor	C	DCA/MIC/RLC
High Pressure Gas Corridor	D	RLC
Common Cooling Water Corridor	E	RLC/MIC
Telecom Corridor	F	DCA/MIC/RLC
LNG Corridor	G	RLC
Gas Lift Injection Corridors	H	DCA
Lee Breakwater & Liquid Product Berth	I	RLC
Interconnected pipe racks between industries	J	MIC
Utility Connection & Disconnection for Third Parties / Contractors	K	DCA
Temporary Site Facilities	L	DCA/MIC/RLC
Access Roads	M	DCA/MIC/RLC
Worker's Accommodation	N	DCA/MIC/RLC
QatarEnergy Critical Assets	O	DCA/MIC/RLC
Transportation of abnormal loads	P	DCA/MIC/RLC



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

DESCRIPTION	APPENDIX	APPLICABILITY (DCA/MIC/RLC)
Other categories	Q	DCA/MIC/RLC

a. Purpose of Submission:

The purpose of submission shall be indicated in the appropriate box in the covering sheet by inserting a tick mark. For this purpose, the following types are identified:

- **For Approval:** The documents that are submitted to Industrial Cities directorate for review and issuance of necessary 'Approval Letter', resorts under this type. The approval letter is necessary for the Applicant to initiate the e-CPW / PTW within Industrial Cities.
- **Supplementary submission:** A submission made subsequent to an earlier submission, supplementing the details that are required for Industrial Cities' review. This may be the result of a clarification meeting between respective Departments of Industrial Cities and the Applicant or a voluntary additional submission of details by the originator.
- **Revised submission:** A subsequent submission made after an original submission totally revising the drawings & documents. This must supersede the original submission. This submission may be the result of a review/ Comments Resolution Sheet (CRS) and discussion(s) with respective departments of Industrial Cities, or any other authority involved in the approval/concurring process or a voluntary submission due to an Engineering change.
- **Response to Industrial Cities' letters:** This type is applicable when revised /supplementary submission is made by the Applicant taking into consideration various comments/query communicated to the Applicant on an earlier submission in writing. This shall essentially reference the earlier communications from Industrial Cities.
- **Information & records:** The submission that is made to Industrial Cities wherein no action is required from Industrial Cities, will come under this type. This will be applicable in the case of reports, as-built details, etc.

b. The submission must indicate previous reference(s) / correspondence(s), if any.

3.3 CONTENT OF SUBMISSIONS

Industrial Cities' review and approval process mainly focuses on details, which are pertinent to ensure that the proposals are in line with Industrial Cities' Master Plans. This is to achieve possible synergies with, to evade conflicts between and to avoid interferences with existing/future assets of other Applicants.

Industrial Cities' Review / Approval does not absolve the Applicant from checking and ensuring the technical content of the document regarding its conformity with applicable Codes/Standards and process requirements. Hence, all Applicants must refrain from submitting details such as Fabrication Drawings, Piping Isometrics, Stress Calculations, Design documents, Structural Drawings, etc. unless otherwise requested by Industrial Cities.

3.3.1 Drawings and Documents

- All the documents shall be in A4 size.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

- All drawings shall be in the standard sheet sizes (A0/A1/A2 or A3) prepared as per CORP-ENG-STD-018 Corporate Standard for Development of Drawings. Sketches are not acceptable.
- All Drawings shall be numbered with the revision and date of revision.
- Electronic copies of drawings shall be in AutoCAD format in QNG95 coordinate system and PDF format.
- Coordinates: The submitted drawings shall be in the QNG95 coordinate system. No other coordinate system will be entertained.
- Elevations: All the elevations in the submitted drawings shall be in Qatar National Height Datum (QNHD). However, for marine structures, waterfronts and berthing facilities in RLC & MIC Ports, the elevations shall be in Chart Datum (CD).
- Land Lease Agreement Reference Number, as applicable.
- For QatarEnergy projects (Non-Industrial Cities' projects) executed by VP Directorate, the document submission matrix with columns to "Prepare", "Review" and "Approval" on each submission, shall be provided.

QatarEnergy's critical assets crossing locations: Locations where QatarEnergy's critical assets are crossed or any crossings in close proximity of QatarEnergy's critical assets or the crossings that will have interconnections with QatarEnergy's critical assets/facilities. A rigorous technical review process will be applied to the technical submissions related to such critical asset crossing locations as part of QatarEnergy regulatory compliance review to ensure protection of existing QatarEnergy critical assets in Industrial Cities common areas. Such critical assets crossing locations shall be identified during initial stages of the project (FEED stage) by QatarEnergy and respective End-Users (Crossing Matrix).

The Applicant/ End-User/EPIC Contractor shall provide special attention while designing and executing any facilities at such critical crossing locations. The minimum deliverables / activities as specified in Appendix O in addition to the documents/ details as required in Section 3.2(a) above, shall be performed by the End-users / Applicants and submitted to Industrial Cities for review as part of their technical submission.

If there is any change/modification in the design/routing/location during the installation at any of the above crossing locations, pre-approval shall be obtained from QatarEnergy. In such cases, QatarEnergy shall have the right to request for re-validation (by an approved independent 3rd party consultant appointed by the Applicant) of the revised engineering drawings/design calculations. All such changes shall be properly addressed/referenced in As-Built drawing.

3.4 SUBMISSION OF AS BUILT DRAWINGS

Applicant/ End-User/ Contractor / QatarEnergy Directorate shall submit the as-built drawings to Industrial Cities for records within 3 months after completion of the construction activities. The As-built drawings shall be in electronic format (both AutoCAD and pdf formats, AutoCAD drawings shall be referenced to QNG95 coordinate system).

4.0 VALIDITY PLAN

This standard is effective immediately after its publication and supersedes the previous document VI-TEC-GDL-008 Guidelines for Technical submissions to Industrial Cities Rev 03.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

5.0 REFERENCES TO OTHER DOCUMENTS

In all instances, users of this document shall refer to the latest approved version of the relevant documents.

TABLE 2: REFERENCES TO OTHER DOCUMENTS

Document Name	Document Number	Internal/External Document	Document Referencing
Qatar Construction Specifications	NA	External	NA
Qatar Civil Defence (QCD) Fire and Life Safety Technical Requirements Guide & Annex	NA	External	NA
Fire Code	NFPA 1	External	NA
Life Safety Code	NFPA 101	External	NA
Building Construction and Safety Code	NFPA 5000	External	NA
Philosophy for Fire and Safety	QP-PHL-S-001	Internal	Upwards
Standard for Building Life Safety & Fire Protection Systems in Industrial Cities	VI-HSE-STD-008	Internal	Sideways
Standards for Onshore Pipeline Transmission and Distribution Systems for Gas and Liquid Hydrocarbons	QP-SPS-L-017	Internal	Sideways
Specification for Onshore Pipeline Construction	QP-SPS-L-018	Internal	Sideways
Corporate Standard for Development of Technical Drawings	CORP-ENG-STD-018	Internal	Sideways
Corporate Standard for Managing HSE in Contracts	CORP-HSE-STD-080	Internal	Sideways
Standard for HSE Risk Management	QP-HSE-STD-100	Internal	Sideways
Corporate Standards for Major Accident Hazard Management (MAHM) Report	CORP-MAH-GDL-002	Internal	Sideways
Standard for Emergency Preparedness and Response	QP-BCM-STD-011	Internal	Upwards



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

Document Name	Document Number	Internal/External Document	Document Referencing
Guideline for Safe Escort for Transport of Abnormal Loads	QP-RTS-G-001	Internal	Sideways
Standard for Construction of Workers Accommodation in Industrial Cities	VI-TEC-STD-014	Internal	Sideways
Standard for Protection of Overhead Pipe Bridges in Industrial Cities	IE-ENG-STD-004	Internal	Sideways
Standard for Heavy Goods Vehicles (HGV) and Load Safety in Industrial Cities	VI-SFT-STD-003	Internal	Upwards
Environment Regulations for RLC	IML-ENV-REG-007	Internal	Sideways
Standard for the Review and Approval of Corridor & Sub-Corridor Plans & Drawings in Industrial Cities	IE-TEC-STD-009	Internal	Upwards
Standard for Transportation of Dangerous Goods and Hazardous Materials by Road in Industrial Cities	VI-HSE-STD-005	Internal	Upwards
MIC Environmental Standards	IMM-ENV-STD-001	Internal	Sideways



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

6.0 DEFINITIONS

TABLE 3: KEY TERMS DEFINED

Term	Definition
Abnormal loads	Any vehicle exceeding the limits as defined by Qatar Traffic Law (as indicated in Appendix P of this document) is considered as abnormal loads.
Applicants	Applicant can be any of the following: Business Partners, End-Users, Contractors, or applicable QatarEnergy Directorates.
Approval	Agreement to proceed with specified activities.
Approve	To accept as satisfactory, permit or officially agree.
Business Partners / End-User	A company that uses services, facilities and occupies land within DCA, MIC or RLC, for the purpose of manufacturing a product or providing a service to the Industrial Cities or other entities within DCA, MIC, or RLC. Utilities providers such as Kahramaa, Ooredoo, Vodafone & QNBN, etc. are also included.
Common area	Any area that is outside the battery limits of Business Partners/End-User's plot.
Contractor	A party engaged by Business Partners/ End-User / QatarEnergy Directorates to perform works / or services under a contract.
Corridor	Tract of land set aside for the purpose of accommodating services, such as pipelines, cables, roads, etc. These services may be required to serve a single project or be common services required to serve several projects or common infrastructure in the Industrial Areas. These Corridors are defined as areas that are outside the battery limits of Business Partners/End-user's plot as per the latest revisions of DCA Master drawing # VI-IEE-02-40-002-0002, MIC drawing VI-IEE-02-20-002-009 and RLC drawing # VI-IEE-02-30-002-0024.
Hydrocarbon	Any class of compounds containing only hydrogen and carbon.
Operator	Any person or legal entity in charge of operations legally authorized to carry out Oil and Gas operations. This shall be an organization identified management position with authority, accountability, and responsibility for day-to-day management of the project/facility/installation.
Permanent Structure	Facility/Structure constructed using permanent materials such as reinforced concrete, concrete block, steel, or other permanent materials. It is intended for permanent use and is normally located within permanently allocated land.
Pipeline	A means for transportation of any fluid between defined boundaries together with the following: - Any apparatus for inducing or facilitating the flow. - Valves, valve chambers, instrumentation and control systems, corrosion protection and any other relevant systems annexed to, or incorporated in the pipeline.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

Term	Definition
QatarEnergy critical asset's crossing locations	A structure solely for the support of a pipeline and/or its associated systems.
QatarEnergy's critical assets	Locations where QatarEnergy's critical assets are crossed or any crossings in close proximity of QatarEnergy's critical assets or the crossings that will have interconnections with QatarEnergy's critical assets/facilities.
Shall	QatarEnergy facilities/utilities in the Industrial Cities area, the services of which is highly significant and cannot be expected to be interrupted by any means shall be considered as "QatarEnergy's critical assets". These are identified & designated as critical during initial stages of the project (FEED) by QatarEnergy and respective End-Users. This shall include facilities/utilities such as pipe bridges & culverts (to cross LNG corridors, Cooling Water Corridors, Product Pipe Corridors/ Liquid (or) Gas Hydrocarbons Corridors/), common cooling water pipelines, etc.
Site Reconnaissance survey	A mandatory action.
Sub-Corridor	On-site inspection to identify physical features that validate the existence of utilities & facilities within the planned route (or) crossings (or) expected working areas. Reconnaissance survey may consider the existing data, aerial maps/ photographs, as-builts etc.
Temporary Structure	A Corridor that is allocated to a specific End-user within the Common Corridor.
Third party Consultant	Facility/Structure constructed using temporary materials. It is intended for temporary use and is normally located within temporarily allocated land.
VI Projects	Consultant authorised by an applicant to carry out specific detailed Design and Engineering of the project.
	Capital projects in which Industrial Cities (VI) Directorate is the Asset Holder.



APPENDICES

APPENDIX A1: LIQUID HYDROCARBONS CORRIDOR

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Liquid Hydrocarbon Corridor in DCA.

LIQUID HYDROCARBONS CORRIDOR

Liquid Hydrocarbon Corridor provides space for the movement of Liquid Hydrocarbons within DCA. The piping systems are typically installed above ground; however, some may be laid underground, e.g. raw NGL (Natural Ground Level).

LIQUID HYDROCARBONS CORRIDOR SUBMISSIONS:

1. Conceptual pipeline routings must be finalised in consultation with Industrial Cities / Development Planning & Engineering (IEE) Department. This will be done with reference to the latest revision of the DKN Master drawing (VI-IEE-02-40-002-0002) and in line with the DCA development plans. After finalisation, submit the conceptual routing for IEE department review and approval.
2. After the routing is agreed in-principle, the Applicant will arrive at the requirements of the corridor based on the process parameters. Once the width requirement is optimized, the exact location of the corridor will be advised by IEE department.
3. Once the corridor is allocated, the Applicant / End-User will develop an overall routing layout clearly indicating the corridor width and location, with all crossings identified and numbered. In this regard, a drawing in Plan View is required, clearly identifying all crossings with coordinates in QNG95 and accompanied with an applicable Crossing Matrix. The Crossing Matrix shall be in accordance with the example attached in Appendix S. IEE Department can assist in identifying the respective Asset Owners, if required.
4. In this context 'crossings' means a location where the allocated corridor intersects in plan (underground or overhead) with another corridor (Occupied, Partially occupied or Unoccupied), as defined in the DKN Master drawing (VI-IEE-02-40-002-0002), This overall layout shall be submitted to IEE Department for review and approval.
5. After obtaining the approval for the overall layout / sub-corridor, the Applicant shall submit the following details for review and approval by Industrial Cities.
 - a) **Non-Crossing locations:** Proposed pipe support installation (Excavation details/ Sleeper Details etc.) excluding the crossings. The drawing must contain the details as given below, as a minimum.
 - i. Piping Plan with proposed pipe dimensions with all relevant cross-sectional details.
 - ii. DCA corridor edges with relevant coordinates in QNG95; relevant dimensions shall be clearly given.
 - iii. Existing facilities in the same corridor and known planned facilities.
 - iv. Clearance from the corridor edges shall be indicated. Please see drawing # VI-IEE-02-0-013-0052 in the Appendix T.
 - v. Key Plan
 - vi. Any other information if deemed necessary.
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

- ii. The crossing details must conform to QatarEnergy / Industrial Cities Standards / Guidelines. (Reference: "QGDL-IMD-003 Guidelines for corridors and corridor crossings in DCA "& "QP-PHL-S-001 Philosophy for Fire and Safety").
 - iii. While crossing existing and planned assets of other third parties, necessary concurrence / approval as applicable shall be obtained from the relevant asset owners.
6. Separate approval for hydro testing as per VI-TEC-GDL-018 Guidelines for Submitting Hydrostatic Test Packages to Industrial Cities, for the installed pipelines shall be obtained.



APPENDIX A2: GAS HYDROCARBONS CORRIDOR

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Gas Hydrocarbons Corridor in DCA.

GAS HYDROCARBONS CORRIDOR

Gas Hydrocarbon Corridor provides space for the movement of Gas Hydrocarbons within DCA. The piping systems are typically installed underground; however, some may be laid above ground.

GAS HYDROCARBONS CORRIDOR SUBMISSIONS:

1. Conceptual pipeline routings must be finalised in consultation with IEE department. This will be done with reference to the latest revision of the DCA Master drawing (VI-IEE-02-40-002-0002) and in line with the DCA development plans. After finalisation, submit the conceptual routing for IEE department review and approval.
2. After the routing is agreed in-principle the Applicant/ End-User will arrive at the requirements of the corridor based on the process parameters. Once the width requirement is optimized, the exact location of the corridor will be advised by IEE department.
3. Once the corridor is allocated, the Applicant/ End-User will develop an overall routing layout clearly indicating the corridor width and location, with all crossings identified and numbered. In this regard, a drawing in Plan View is required, clearly identifying all crossings with coordinates in CGIS QNG95 and accompanied with an applicable Crossing Matrix. The Crossing Matrix shall be in accordance with the example attached in Appendix S. IEE department can assist in identifying the respective asset owners, if required.
4. In this context 'crossings' means a location where the allocated corridor intersects in plan (underground or overhead) with another corridor (Occupied, Partially occupied or Unoccupied), as defined in the DKN Master drawing (VI-IEE-02-40-002-0002), This overall layout shall be submitted to IEE department for review and Approval.
5. After obtaining the approval for the overall layout / sub-corridor, the Applicant shall submit the following details for review and approval by Industrial Cities.
 - a) **Non-Crossing locations:** Proposed pipe support installation (Excavation details/ Sleeper Details etc.) excluding the crossings. The drawing must contain the details as given below, as a minimum.
 - i. Piping Plan with proposed pipe dimensions with all relevant cross-sectional details.
 - ii. DCA corridor edges with relevant coordinates in QNG95; relevant dimensions shall be clearly given.
 - iii. Existing facilities in the same corridor and known planned facilities.
 - iv. Clearance from the corridor edges shall be indicated. Please see drawing # VI-IEE-02-0-013-0052 in the Appendix T.
 - v. Key Plan
 - vi. Any other information if deemed necessary.
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details must conform to QatarEnergy / Industrial Cities Guidelines. (Reference: QGDL-IMD-003 Guidelines for corridors and corridor crossings in DCA & QP-PHL-S-001 Philosophy for Fire and Safety).



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

- iii. While crossing existing and planned assets of other third parties, necessary concurrence / approval as applicable shall be obtained from the relevant asset owners.
6. Separate approval for hydro-testing and pneumatic testing as per Industrial Cities documents VI-TEC-GDL-018 Guidelines for Submitting Hydrostatic Test Packages to Industrial Cities and VI-TEC-GDL-019 Guidelines for Submitting Pneumatic Test Packages to Industrial Cities, for the installed pipelines shall be obtained.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX A3: HYDROCARBON PIPE CORRIDOR

This Appendix briefly describes the requirements/details that are to be included in a submission pertaining to Hydrocarbon Pipe Corridor in MIC.

HYDROCARBON PIPE CORRIDOR

Hydrocarbon Pipe Corridor provides space for Hydrocarbon pipelines between Business Partners/End-users within MIC.

HYDROCARBON PIPE CORRIDOR SUBMISSIONS

1. Submission & approval of corridors and sub-corridors shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. After obtaining the approval for the above overall layout / sub-corridor as per Section 3.3 above, the Applicant shall submit the following details for review and approval by Industrial Cities.
 - a) **Non-Crossing locations:** Proposed pipe support installation (Excavation details/ Sleeper Details etc.) excluding the crossings. The drawing must contain the details as given below, as a minimum.
 - i. Piping Plan with proposed pipe dimensions with all relevant cross-sectional details.
 - ii. MIC Corridor edges & the allocated sub-corridor edges with relevant coordinates in QNG95 system. Relevant dimensions shall be clearly given.
 - iii. Clearance from the corridor edges shall be indicated. Please see drawing # VI-IEE-02-0-013-0052 in Appendix T.
 - iv. Existing facilities in the same corridor & known planned facilities.
 - v. Key Plan.
 - vi. Any other information if deemed necessary.
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. Site Reconnaissance Report
 - iii. The crossing details must conform to applicable MIC's Guidelines and QP-PHL-S-001 Philosophy for Fire and Safety.
 - iv. While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
3. Expansion loops should be vertical unless upon MIC's discretion.
4. Separate approval for hydro testing as per VI-TEC-GDL-018 Guidelines for Submission of Hydrostatic test packages to Industrial Cities for the installed pipelines shall be obtained.
5. The details of the Tell-tale system to protect the pipe bridges from possible damages due to movement of heavy vehicles shall be submitted as per IE-ENG-STD-004 Standard for protection of overhead pipe bridges in Industrial Cities.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX A4: PRODUCT PIPE CORRIDOR

This Appendix briefly describes the requirements/details that are to be included in a submission pertaining to Product Pipe Corridor in RLC.

PRODUCT PIPE CORRIDOR

Product Pipe Corridors provide space for pipelines to distribute feedstock to processing plants, from plants via rundown pipelines to tank farms or to the Port for storage and export of products, and for pipelines between Business Partners/End-Users. Pipelines in these corridors carry liquid products and are normally above ground.

PRODUCT PIPE CORRIDOR SUBMISSIONS

1. Submission & approval of corridors and sub-corridors shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. After obtaining the approval for the above overall layout / sub-corridor above, the Applicant shall submit the following details for review and approval by Industrial Cities.
 - a) **Non-Crossing locations:** Proposed pipe support installation (Excavation details/ Sleeper Details etc.) excluding the crossings. The drawing must contain the details as given below, as a minimum.
 - i. Piping Plan with proposed pipe dimensions with all relevant cross-sectional details.
 - ii. RLC Corridor edges & the allocated sub-corridor edges with relevant coordinates in QNG95 system. Relevant dimensions shall be clearly given.
 - iii. Clearance from the corridor edges shall be indicated. Please see drawing VI-IEE-02-0-013-0052 in Appendix T.
 - iv. Existing facilities in the same corridor & known planned facilities.
 - v. Proposed pipe sleepers shall be aligned with the existing adjacent sleepers of the same/ adjacent corridors.
 - vi. Any other information if deemed necessary.
 - vii. Key Plan
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details must conform to QatarEnergy / VI's Guidelines. (Reference: IML-ENG-GDL-001 Guidelines for corridors and corridor crossings in RLC & QP-PHL-S-001 Philosophy for Fire and Safety).
 - iii. While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
3. Expansion loops shall be vertical. Expansion loops and anchor supports/stoppers shall not be located at the corridor crossing locations.
4. Separate approval for hydro-testing and pneumatic testing as per VI-TEC-GDL-018 Guidelines for Submitting Hydrostatic Test Packages to Industrial Cities and VI-TEC-GDL-019 Guidelines for Submitting Pneumatic Test Packages to Industrial Cities, for the installed pipelines shall be obtained.
5. The details of the Tell-tale system to protect the pipe bridges from possible damages due to movement of heavy vehicles shall be submitted according to the IE-ENG-STD-004 Standard for protection of overhead pipe bridges in Industrial Cities.



APPENDIX B: WET UTILITY CORRIDOR

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Wet Utility Corridor.

WET UTILITY CORRIDOR

Wet Utility Corridor provides space for the following 'wet' utilities in the respective industrial city. These pipelines are normally laid underground.

DCA: Desalinated water, potable water, firewater, sewage, storm water and irrigation water.

MIC: Potable water, raw sewage, treated sewage effluent (TSE), groundwater and firewater network.

RLC: Desalinated water, potable water, raw sewage, Treated Sewage Effluent (TSE), irrigation water and Treated Industrial Water (TIW). In RLC, seawater for back-up firewater could be included in the same corridor in areas where Cooling Water Corridors do not exist. Phase I back-up firewater in RLC is installed aboveground. All gravity wet utility lines will have to be routed in separate dedicated corridor (not in common corridor).

WET UTILITY CORRIDOR SUBMISSIONS:

1. Submission & approval of corridors and sub-corridors in RLC & MIC shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. Submission & approval of corridors and sub-corridors in DCA shall be as follows:
 - a) Conceptual pipeline routings must be finalised in consultation with IEE department. This will be done with reference to the latest revision of the DKN Master drawing (VI-IEE-02-40-002-0002), and in line with the DCA development plans. After finalisation, submit the conceptual routing for IEE department review and approval.
 - b) After the routing is agreed in-principle, the Applicant/ End-User will arrive at the requirements of the corridor based on the process parameters. Once the width requirement is optimized, the exact location of the corridor will be advised by IEE department.
 - c) Once the corridor is allocated, the Applicant/ End-User will develop an overall routing layout clearly indicating the corridor width and location, with all crossings identified and numbered. In this regard, a drawing in Plan View is required, clearly identifying all crossings with coordinates in QNG95 and accompanied with an applicable Crossing Matrix. The Crossing Matrix shall be in accordance with the example attached in Appendix S. IEE department can assist in identifying the respective asset owners, if required.
 - d) In this context 'crossings' means a location where the allocated corridor intersects in plan (underground or overhead) with another corridor (Occupied, Partially occupied or Unoccupied), as defined in the DKN Master drawing (VI-IEE-02-40-002-0002), This overall layout shall be submitted to IEE department for review and Approval.
3. After obtaining the approval for the above overall layout / sub-corridor above, the Applicant shall submit the following details for review & Approval by Industrial Cities.
 - a) **Non-Crossing locations:** The Proposed pipeline routing except in the crossing locations clearly indicating the excavation plan shall be submitted for review and Approval by Industrial Cities. This must contain the following details, as a minimum.
 - i. Piping Plan with proposed pipe dimensions with all relevant cross-sectional details.
 - ii. DCA/MIC/RLC Corridor edges & the allocated sub-corridor edges with relevant coordinates QNG95; Relevant dimensions shall be clearly given.
 - iii. Existing facilities in the same corridor & known planned facilities.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

- iv. Normally, the pipelines in the wet utility corridor shall be underground. The Profile plan (longitudinal) & Cross-sectional details showing the proposed pipeline elevation, etc. must be submitted. There must be a minimum cover of 1.00 m with respect to the Finished Grade Level (FGL) or Natural Ground Level (NGL), whichever is lower, or as required by DCA/MIC/RLC.
- v. Clearance from the corridor edges shall be indicated. Refer to drawing VI-IEE-02-0-013-0052 in the Appendix T.
- vi. Key Plan
- vii. Any other information if deemed necessary.
- b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details must conform to QatarEnergy/Industrial Cities Guidelines.
 - iii. While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
4. Separate approval for hydro testing as per VI-TEC-GDL-018 Guidelines for Submission of Hydrostatic test packages to Industrial Cities, for the installed pipelines shall be obtained.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX B1: POWERED WATER INJECTION (PWI) CORRIDOR

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Powered Water Injection (PWI) Corridor in DCA.

POWERED WATER INJECTION (PWI) CORRIDOR

Powered Water Injection (PWI) Corridor provides space for the Powered Water for well injection within DCA. The piping systems may be installed underground or above ground (e.g. ring main).

POWER WATER INJECTION (PWI) CORRIDOR SUBMISSIONS:

1. Conceptual pipeline routings must be finalised in consultation with IEE department. This will be done with reference to the latest revision of the DKN Master drawing (VI-IEE-02-40-002-0002) and in line with the DCA development plans. After finalisation, submit the conceptual routing for IEE department review and approval.
2. After the routing is agreed in-principle, the Applicant / End-User will arrive at the requirements of the corridor based on the process parameters. Once the width requirement is optimized, the exact location of the corridor will be advised by IEE department.
3. Once the corridor is allocated, the Applicant/ End-User will develop an overall routing layout clearly indicating the corridor width and location, with all crossings identified and numbered. In this regard, a drawing in Plan View is required, clearly identifying all crossings with coordinates in CGIS QNG95 and accompanied with an applicable Crossing Matrix. The Crossing Matrix shall be in accordance with the example attached in Appendix S. IEE department can assist in identifying the respective asset owners, if required.
4. In this context 'crossings' means a location where the allocated corridor intersects in plan (underground or overhead) with another corridor (Occupied, Partially occupied or Unoccupied), as defined in the DKN Master drawing (VI-IEE-02-40-002-0002), This overall layout shall be submitted to IEE department for review and Approval.
5. After obtaining the approval for the above overall layout / sub-corridor as above, the Applicant shall submit the following details for review and approval by Industrial Cities.
 - a) **Non-Crossing locations:** Proposed pipe support installation (Excavation details/ Sleeper Details etc.) excluding the crossings. The drawing must contain the details as given below, as a minimum.
 - i. Piping Plan with proposed pipe dimensions with all relevant cross-sectional details.
 - ii. DCA corridor edges with relevant coordinates in QNG95; relevant dimensions shall be clearly given.
 - iii. Existing facilities in the same corridor and known planned facilities.
 - iv. Clearance from the corridor edges shall be indicated. Please see drawing # VI-IEE-02-0-013-0052 in the Appendix T.
 - v. Key Plan
 - vi. Any other information if deemed necessary.
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details must conform to QatarEnergy / Industrial Cities' Guidelines. (Reference: QGDL-IMD-003 Guidelines for corridors and corridor crossings in DCA & QP-PHL-S-001 Philosophy for Fire and Safety).



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

- iii. While crossing existing and planned assets of other third parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
6. Separate approval for hydro testing as per VI-TEC-GDL-018 Guidelines for Submission of Hydrostatic test packages to Industrial Cities for the installed pipelines shall be obtained.



APPENDIX C: UNDERGROUND POWER/POWER CORRIDOR

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Power Corridor in DCA, MIC & RLC which contains both underground and aboveground transmission lines.

UNDERGROUND POWER CORRIDOR /POWER CORRIDOR

Underground Power Corridor/ Power corridor provides space for routing power cables at the following rated voltages above 240V: 0.415kV, 3.3kV, 6.6 kV, 11kV, 33kV, 132kV, 220kV, and 400kV.

POWER CORRIDOR SUBMISSIONS:

1. Submission & approval of corridors and sub-corridors in MIC & RLC shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. Submission & approval of corridors and sub-corridors in DCA shall be as follows:
 - a) Conceptual cable routings must be finalised in consultation with IEE department. This will be done with reference to the latest revision of the DKN Master drawing (VI-IEE-02-40-002-0002), and in line with the DCA development plans. After finalisation, submit the conceptual routing for IEE department review and approval.
 - b) After the routing is agreed in-principle in steps 1 & 2 above, the Applicant / End-User will arrive at the requirements of the corridor based on the cable design parameters. Once the width requirement is optimized, the exact location of the corridor will be advised by IEE Department.
 - c) Once the corridor is allocated, the Applicant/ End-User will develop an overall routing layout clearly indicating the corridor width and location, with all crossings identified and numbered. In this regard a drawing in Plan View is required, clearly identifying all crossings with coordinates in CGIS QNG95 and accompanied with an applicable Crossing Matrix. The Crossing Matrix shall be in accordance with the example attached in Appendix S. IEE Department can assist in identifying the respective asset owners, if required.
 - d) In this context 'crossings' means a location where the allocated corridor intersects in plan (underground or overhead) with another corridor (Occupied, Partially occupied or Unoccupied), as defined in the DKN Master drawing (VI-IEE-02-40-002-0002). This overall layout shall be submitted to IEE department for review and Approval.
3. After obtaining the approval for the above overall layout / sub-corridor as above, the Applicant shall submit the following details, for DCA/MIC/RLC review and Approval.
 - a) **Non-Crossing locations:** The Proposed cable routing except in the crossing locations clearly indicating the excavation plan shall be submitted for review and approval by Industrial Cities. This must contain the following details, as a minimum.
 - i. Cable routing Plan with proposed corridor width.
 - ii. Cross section showing the cable arrangement/configuration and spacing.
 - iii. Minimum clearance & elevation of power cables shall comply with Kahramaa standards in MIC.
 - iv. The clearance between centre line of the outer cables and the edge of the trench bottom shall be 200mm minimum in DCA/RLC and 150mm in MIC and shall be 500mm minimum from the edge of the corridor. This will give a minimum clearance of 1000mm between centre line of the outer cables and the centre line of future outer cables in the adjacent corridors. DCA/MIC/RLC will have the right to revisit the clearance distance based on site conditions in MIC in congested corridors.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

- v. Clearance from the sub-corridor edges shall be indicated. This Clearance shall be decided based on the power/voltage ratings in consultation with DCA/MIC/RLC. Applicants shall take into consideration in their cable design the effects of existing & future cables, which will be installed 1000 mm apart. Please see drawing # VI-IEE-02-0-013-0052 in Appendix T. Should this condition cause a substantial de-rating of the cable capacity, then a wider corridor is required, and shall be included in the Land Lease Agreement.
 - vi. DCA/MIC/RLC Corridor edges & the allocated sub-corridor edges with relevant coordinates QNG95. Relevant dimensions shall be clearly given.
 - vii. Existing facilities in the same corridor & known planned facilities.
 - viii. The Profile plan (longitudinal) & Cross-sectional details showing the elevations of proposed & existing (if any) cables must be submitted. There must be a minimum cover of 1.10 m with respect to the Finished Grade Level (FGL) or Natural Ground Level (NGL) whichever is lower. The minimum cover shall be as per Kahramaa standards in MIC.
 - ix. Joint bays and cable snacking shall be located within the approved corridor limits.
 - x. Any other information if deemed necessary.
 - xi. Key Plan.
- b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
- i. Each crossing must be separately submitted.
 - ii. The crossing details must conform with QatarEnergy/Industrial Cities Standards / Guidelines.
 - iii. Joint bays shall not be located at the crossings.
 - iv. While crossing existing and planned assets of other third parties, necessary concurrence/ approval, as applicable, shall be obtained from the relevant asset owners.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX D: HIGH PRESSURE GAS CORRIDOR

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to High Pressure Gas Corridor in RLC.

HIGH PRESSURE GAS CORRIDOR

The pipelines containing gaseous and mixed phase feedstocks and products are categorised under High Pressure Gas Corridor. The High Pressure Gas pipelines are buried in most of the cases. The buried Gas pipelines may be bundled (Soil Blanket), if required.

HIGH PRESSURE GAS CORRIDOR SUBMISSIONS:

1. Submission & approval of corridors and sub-corridors shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. After obtaining the approval for the above overall layout / sub-corridor as above, the Applicant shall submit the following details for review & approval by Industrial Cities.
 - a) **Non-Crossing locations:** The Proposed pipe routing, except at the crossing locations, clearly indicating the excavation plan shall be submitted for RLC's review and Approval. This must contain the following details, as a minimum.
 - i. The routing Plan with proposed pipe dimensions with relevant cross-sectional details.
 - ii. Existing facilities in the same corridor & known planned facilities.
 - iii. RLC Corridor edges & the allocated sub-corridor edges with relevant coordinates QNG95. Relevant dimensions shall be clearly given.
 - iv. The Profile plan (longitudinal) & Cross-sectional details showing the elevation of proposed & existing (if any) pipeline, NGL, FGL, etc. must be submitted. There must be a minimum cover of 1.50 m with respect to the Finished Grade Level (FGL) or Natural Ground Level (NGL) whichever is lower.
 - v. Clearance from the sub-corridor edges shall be indicated.
 - vi. Any other information if deemed necessary.
 - vii. Key Plan
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details must conform to RLC Guidelines. (Reference: IML-ENG-GDL-001 Guidelines for corridors and corridor crossings in RLC).
 - iii. While crossing existing and planned assets of other third parties, necessary concurrence/ approval, as applicable, shall be obtained from the relevant asset owners.
3. Separate approval for hydro testing and pneumatic testing of the installed pipelines as per VI-TEC-GDL-018 Guidelines for Submission of Hydrostatic test packages to Industrial Cities and VI-TEC-GDL-019 Guidelines for Submission of Pneumatic test packages to Industrial Cities respectively, shall be obtained.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX E: COMMON COOLING WATER CORRIDOR

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Cooling Water Corridor in MIC/RLC.

COMMON COOLING WATER CORRIDOR

This corridor provides space for the following services:

- a) Cooling Seawater headers for supply of seawater to Applicants.
- b) Cooling Seawater headers for return of seawater from Applicants to Receiving Basin / Outfall Channel.
- c) Piping headers for distribution of seawater as Back-up Firewater System.
- d) The pipelines can be installed underground or aboveground.

COMMON COOLING WATER CORRIDOR SUBMISSIONS:

1. Submission & approval of corridors and sub-corridors shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. After obtaining the approval for the above overall layout / sub-corridor as above, the Applicant shall submit the following details for review & approval by Industrial Cities.
 - a) **Non-Crossing locations:** The Proposed pipe routing except in the crossing locations clearly indicating the excavation plan shall be submitted for review and Approval by Industrial Cities. This must contain the following details, as a minimum.
 - i. The proposed piping routing Plan, including pipe dimensions and relevant cross section details.
 - ii. MIC/RLC Corridor edges with relevant coordinates QNG95. Relevant dimensions shall be clearly given.
 - iii. Existing facilities in the same corridor & known planned facilities.
 - iv. For underground installations, the Profile plan (longitudinal) showing the proposed pipe elevation must be submitted. There must be a minimum earth cover of 1.00m with respect to the Finished Grade Level (FGL) or Natural Ground Level (NGL) whichever is lower.
 - v. Any other information if deemed necessary.
 - vi. Key Plan
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details must conform to applicable QatarEnergy/ Industrial Cities Guidelines.
 - iii. While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
 - iv. Anchor/ Thrust blocks shall be located at least 10m away from the crossing locations.
3. Separate approval for hydrotesting as per VI-TEC-GDL-018 Guidelines for Submission of Hydrostatic test packages to Industrial Cities for the installed pipelines shall be obtained.
4. The details of the Tell-tale system to protect the pipe bridges from possible damages due to movement of heavy vehicles shall be submitted according to IE-ENG-STD-004 Standard for protection of overhead pipe bridges in Industrial Cities.



APPENDIX F: TELECOM CORRIDOR/TELECOM & ELV CORRIDOR

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Telecom Corridor/ Telecom & ELV Corridor. The Telecom cables are normally laid underground within ducts.

Telecom Corridor/ Telecom & ELV Corridor

This corridor provides space for installing telecom, Utility related Telecom, and Extra Low Voltage (ELV) cables.

Telecom Corridor /Telecom & ELV Corridor Submissions:

1. Submission & approval of corridors and sub-corridors in DCA, MIC & RLC shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. After obtaining the approval for the above overall layout / sub-corridor as above, the Applicant shall submit the following details for review & Approval by Industrial Cities.
 - a) **Non-Crossing locations:** The proposed cable routing except in the crossing locations clearly indicating the excavation plan shall be submitted for DCA/RLC review and Approval. This must contain the following details, as a minimum.
 - i. The routing Plan with proposed duct dimensions & spacing.
 - ii. DCA/MIC/RLC Corridor edges & the allocated telecom ducts with relevant coordinates in QNG95 system. Relevant dimensions shall be clearly given.
 - iii. Existing facilities in the same corridor & known planned facilities.
 - iv. The Profile plan (longitudinal) showing the proposed duct elevation, must be submitted. There must be a minimum cover of 0.60m with respect to the Finished Grade Level (FGL) or Natural Ground Level (NGL) whichever is lower.
 - v. Any other information if deemed necessary.
 - vi. Key Plan
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details must conform to the applicable DCA / MIC / RLC guidelines.
 - iii. While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
 - iv. The bottom elevation of the proposed pull boxes shall be clearly indicated in the longitudinal section. This shall not be installed in a crossing location.
 - v. Cable marker shall be provided along the route and at the change of direction.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX G: LNG CORRIDOR

This Appendix briefly describes the requirements/details that are to be included in a submission pertaining to LNG Corridor Pipeline Routing in RLC.

LNG CORRIDOR:

This corridor provides space for installing Applicants' LNG Run Down pipelines to storage and/ or vessel loading facilities including the routing through the main Breakwater/ New main breakwater.

LNG CORRIDOR SUBMISSIONS

1. Submission & approval of corridors and sub-corridors shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. After obtaining the approval for the above overall layout / sub-corridor as above, the Applicant shall submit the following details for Review & Approval by Industrial Cities.
 - a) **Non-Crossing locations:** The Proposed pipeline routing except in the crossing locations shall be submitted for RLC's review and approval. This must contain the following details as a minimum.
 - i. The routing Plan with proposed pipe dimensions with relevant cross-sectional details.
 - ii. For LNG pipelines considering the process constraints, horizontal expansion loops are permitted. To the extent possible, this shall be nested. However, in order to avoid sterilization of the land, possibility of providing vertical loops shall be explored.
 - iii. RLC Corridor edges and the allocated sub-corridor edges with relevant coordinates QNG95. Relevant dimensions shall be clearly given.
 - iv. Existing facilities in the same corridor & known planned facilities.
 - v. Piping Plan with proposed pipe dimensions & spacing.
 - vi. Clearance from the corridor edges shall be indicated. Please see drawing # VI-IEE-02-0-013-0052 in Appendix T.
 - vii. Any other information if deemed necessary.
 - viii. Key Plan
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. Loops, anchor/stoppers shall not be located at crossings.
 - iii. The crossing details must conform to RLC Guidelines IML-ENG-GDL-001 Guidelines for corridors and corridor crossings in RLC.
 - iv. While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
3. Separate approvals, as applicable, for hydro-testing and pneumatic testing as per VI-TEC-GDL-018 Guidelines for Submission of Hydrostatic test packages to Industrial Cities and VI-TEC-GDL-019 Guidelines for Submission of Pneumatic test packages to Industrial Cities for the installed pipelines shall be obtained.



APPENDIX H: GAS LIFT INJECTION CORRIDORS

This Appendix briefly describes the requirements/details that are to be included in a submission pertaining to Gas Lift Injection Corridor in DCA.

GAS LIFT INJECTION CORRIDORS

Gas Lift Injection Corridors (Gas Lift) are for the injection of Gas lift from Gas Lift compressor station to 29 injection distribution manifolds for gas lift injection wells within DCA. The piping systems may be installed underground or above ground as per process imperative needs (e.g. ring main).

GAS LIFT INJECTION CORRIDOR SUBMISSIONS:

1. Conceptual pipeline routings must be finalised in consultation with IEE department. This will be done with reference to the latest revision of the DKN Master drawing (VI-IEE-02-40-002-0002), and in line with the DCA development plans. After finalisation, submit the conceptual routing for IEE Department's review and approval.
2. After the routing is agreed in-principle the Applicant/ End-User will arrive at the requirements of the corridor based on the process parameters. Once the width requirement is optimized, the exact location of the corridor will be advised by IEE Department.
3. Once the corridor is allocated, the Applicant/ End-User will develop an overall routing layout clearly indicating the corridor width and location, with all crossings identified and numbered. In this regard, a drawing in Plan View is required, clearly identifying all crossings with coordinates in CGIS QNG95 and accompanied with an applicable Crossing Matrix. The Crossing Matrix shall be in accordance with the example attached in Appendix S. IEE department can assist in identifying the respective asset owners, if required.
4. In this context 'crossings' means a location where the allocated corridor intersects in plan (underground or overhead) with another corridor (Occupied, partially occupied or Unoccupied), as defined in the DKN Master drawing (VI-IEE-02-40-002-0002), This overall layout shall be submitted to IEE department for review and Approval.
5. After obtaining the approval for the above overall layout / sub-corridor as above, the Applicant shall submit the following details for review and approval by Industrial Cities.
 - a) **Non-Crossing locations:** Proposed pipe support installation (Excavation details/ Sleeper Details etc.) excluding the crossings. The drawing must contain the details as given below, as a minimum.
 - i. Piping Plan with proposed pipe dimensions with all relevant cross-sectional details.
 - ii. DCA corridor edges with relevant coordinates in QNG95; relevant dimensions shall be clearly given.
 - iii. Existing facilities in the same corridor and known planned facilities.
 - iv. Clearance from the corridor edges shall be indicated. Please see drawing # VI-IEE-02-0-013-0052 in the Appendix T.
 - v. Key Plan
 - vi. Any other information if deemed necessary.
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details shall conform to QatarEnergy / Industrial Cities Standards / Guidelines. (Reference: QGDL-IMD-003 Guidelines for corridors and corridor crossings in DCA & QP-PHL-S-001 Philosophy for Fire and Safety).



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

- iii. While crossing existing and planned assets of other third parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
6. Separate approvals, as applicable, for hydro-testing and pneumatic testing as per VI-TEC-GDL-018 Guidelines for Submission of Hydrostatic test packages to Industrial Cities and VI-TEC-GDL-019 Guidelines for Submission of Pneumatic test packages to Industrial Cities for the installed pipelines shall be obtained.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX I: LEE BREAKWATER & LIQUID PRODUCT BERTH

This Appendix briefly describes the requirements/details that are to be included in a submission pertaining to pipeline /cable routing through the existing Lee Breakwater Pipe Racks & Liquid Product Berths (also known as Jetties) in RLC.

LEE BREAK WATER & LIQUID PRODUCT BERTH

In the Lee Breakwater & Liquid Product Berths of RLC, the Applicant shall route the pipes through the pipe-racks/bridges previously constructed by RLC for the common use of the Liquid Product Berth Occupiers. The following details are required for submissions related to Lee Breakwater and Liquid Product Berth.

LEE BREAKWATER & LIQUID PRODUCT BERTH SUBMISSIONS

1. Submission & approval of corridors and sub-corridors shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. After obtaining the approval for the above overall layout / sub-corridor as per Section 3.3 above, the Applicant shall submit the following details for review & approval by Industrial Cities.
 - a) Piping Plan with proposed pipe dimensions, spacing and details of the existing/planned assets in the same pipe rack. There shall be cross-sectional details showings different elevations of the pipe racks/bridges.
 - b) Details of modification required to the existing pipe rack/ bridges, if required. Third Party verification for the same is essential.
 - c) Crossing details must be submitted separately, with necessary concurrences/ approval as applicable from other relevant asset owners.
 - d) Existing facilities in the same pipe rack and known planned facilities.
 - e) Jetty Layout showing the allocation of loading arms, allocation of space behind the loading arms, equipment layout in the allocated jetty area, etc.,
 - f) 3D model output from Plant Design System (PDS)/Plant Design Management System (PDMS) shall be presented to RLC. On acceptance of the 3D model, the hard copy & soft copy shall be submitted for detailed review and approval by RLC.
 - g) Model review of the Applicant's designs shall be carried out in three phases (viz. 30%, 60% and 90%). 3D Model shall include all the existing, known planned facilities/ utilities.
 - h) Pipe racks in Liquid Product Causeway are generally used for installing the product pipelines to and from berths. Installation of cables (Power & FO) on such pipe racks shall be through the existing cable ducts or alternatively on hangers/cable trays. Utility line installations if any shall be preferably on hangers or brackets depending on the size.
 - i) No stoppers/anchors are permitted on RLC concrete structure & steel bridges.
 - j) Any other information if deemed necessary.

Structural Design

Since the pipes are routed through a pipe rack/bridge previously built by RLC, it is mandatory for the Applicant to carry out necessary structural analysis & design verifications, based on the piping stress analysis output & other loads as per applicable design codes and standards.

a) Load Verification Table

The Load Verification Table shall be updated (considering all the applicable load cases/ combinations) and submitted to RLC for review. This load verification shall be ensured on receipt preliminary routing approval itself in FEED phase to avoid unanticipated major



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

modification to the existing structure. This is to ensure that the existing pipe rack is structurally adequate to resist the loads from the proposed assets. The permission for hydro testing will be given only after the satisfactory submission of the Load Verification Table.

b) Surge Analysis

Applicants must carry out necessary surge analysis to ensure that the forces transferred to the existing pipe racks/ bridges are within the values considered in the original design. In case, if it exceeds the same, separate arrangement has to be proposed in consultation with RLC so that excessive forces/stresses are not transferred to the existing members.

Separate approval shall be obtained for hydro-testing and pneumatic testing as per VI-TEC-GDL-018 Guidelines for Submission of Hydrostatic test packages to Industrial Cities and VI-TEC-GDL-019 Guidelines for Submission of Pneumatic test packages to Industrial Cities, for the installed pipelines shall be obtained.



APPENDIX J: INTERCONNECTED PIPE RACKS BETWEEN INDUSTRIES

This Appendix briefly describes the requirements/details that are to be included in a submission pertaining to Interconnected Pipe Racks between Industries in MIC.

PIPE RACKS BETWEEN INDUSTRIES CORRIDOR:

This corridor provides space for installing End-Users' interconnecting pipe racks to carry pipelines, cables, etc.

INTERCONNECTED PIPE RACKS BETWEEN INDUSTRIES CORRIDOR SUBMISSIONS

1. Submission & approval of corridors and sub-corridors shall be as per IE-TEC-STD-009 Standard for review & approval of Sub-Corridor Plans & Drawings in Industrial Cities.
2. After obtaining the approval for the above overall layout / sub-corridor as above, the Applicant / End-User / Contractor / QatarEnergy Directorate shall submit the following details for review & approval by Industrial Cities.
 - a) **Non-Crossing locations:** The Proposed pipeline routing except in the crossing locations shall be submitted for MIC's review and approval. This must contain the following details as a minimum.
 - i. The routing Plan with proposed pipe dimensions with relevant cross-sectional details.
 - ii. MIC Corridor edges and the allocated sub-corridor edges with relevant coordinates QNG95. Relevant dimensions shall be clearly given.
 - iii. Existing facilities in the same corridor & known planned facilities.
 - iv. Pipe racks Plan & elevation with proposed pipe racks dimensions & spacing.
 - v. Any other information if deemed necessary.
 - vi. Key Plan
 - b) **Crossing Details:** In addition to the above (a) requirements, the crossing details shall contain the following, as a minimum.
 - i. Each crossing must be separately submitted.
 - ii. The crossing details must conform to applicable MIC's Guidelines and QP-PHL-S-001 Philosophy for Fire and Safety).
 - iii. While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
3. The details of the Tell-tale system to protect the pipe racks from possible damages due to movement of heavy vehicles shall be submitted as per IE-ENG-STD-004 Standard for protection of overhead pipe bridges in Industrial Cities.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX K: UTILITY CONNECTION & DISCONNECTION FOR THIRD PARTIES/CONTRACTORS

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Utility Connection and Disconnection for Third Parties / Contractors in DCA.

1. For requesting a utility connection or disconnection, it is mandatory to submit all relevant information to DCA for review and approval as stated in QPR-CK-002 Procedure for SAT, Commissioning, Power, Water & Sewage Connection & Disconnection for Third Parties/Contractors.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX L: TEMPORARY SITE FACILITIES

This Appendix describes the submission process and the deliverables that shall be included in a submission for Temporary Site Facilities.

TEMPORARY SITE FACILITIES Temporary Site Facilities are temporary facilities developed in a plot of land, which is allocated to the Customer by QatarEnergy in DCA, MIC or RLC under a Temporary Land Lease Agreement and they include:

- Site offices
- Storage and fabrication yards
- Workshops
- Warehouses
- Other similar facilities

They are used by Customers to facilitate work under contracts with QatarEnergy, Asset Operators or Business Partners within DCA, MIC and RLC.

An Environmental Baseline Assessment / Study of the tract shall be done by the Contractor in coordination with Environment Division, DCA/MIC/RLC – HSE department, prior to commencement of any activity. Necessary request shall be made for this purpose by the Applicant /Operator/Contractor.



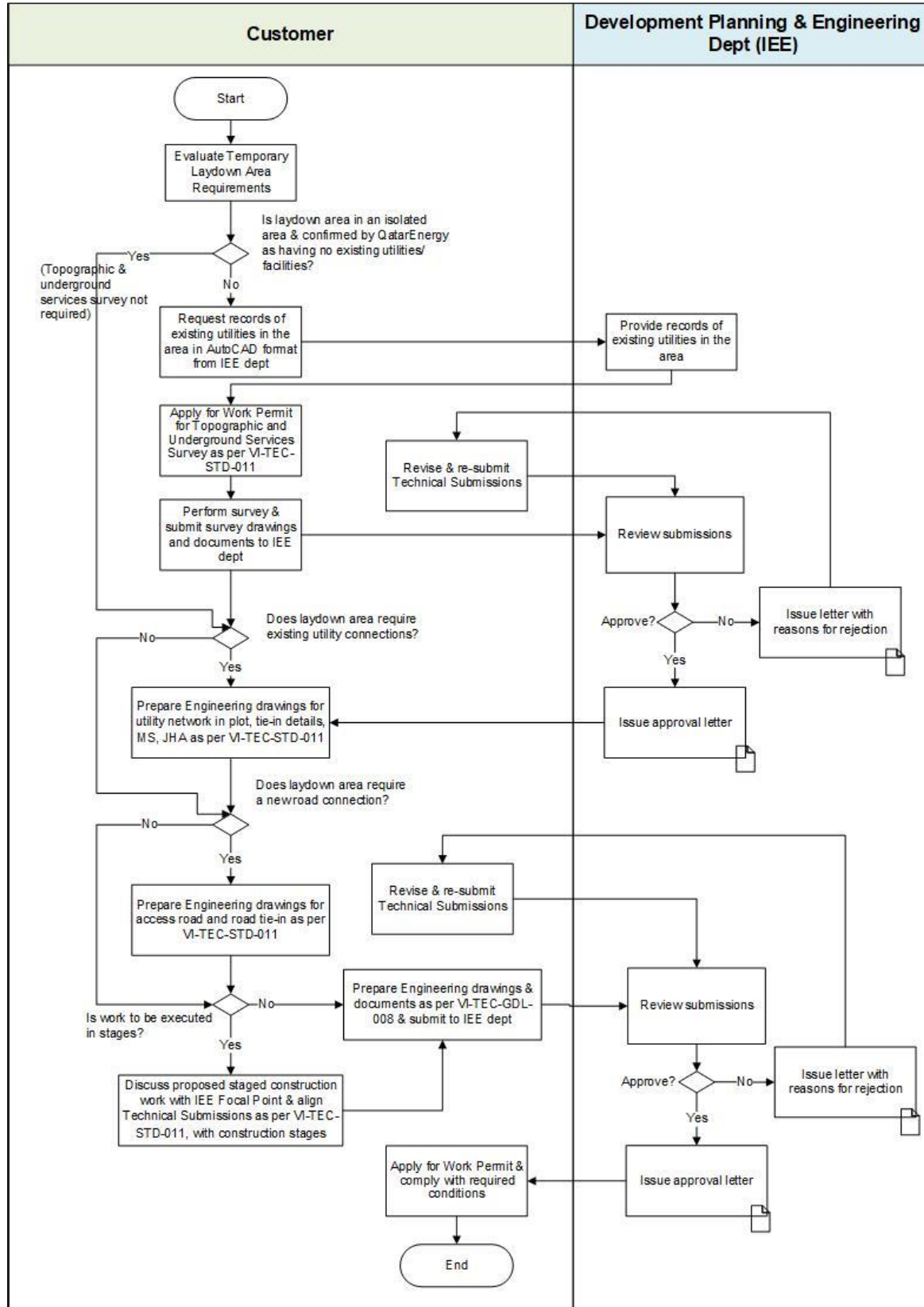
STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

SUBMISSION PROCESS

The below flowchart shows the typical Technical Submission process for Temporary Site Facilities.





STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

1. General

a. Plot Location Layout

The Plot Location Layout shall clearly show the location of the assigned plot of land, identify the QatarEnergy plot number, show neighbouring plots, nearby roads, and the general location within the Industrial City.

b. Site Layout

The Site Layout drawing shall include the following information:

- i. Key plan
- ii. North Arrow
- iii. Site Boundary (Coordinates in QNG95 systems shall be given) to match with Land allocation drawings.
- iv. The internal land use plan and building layouts.
- v. Safe distances between all facilities within the plot.
- vi. Prevailing wind direction
- vii. Emergency access/gate's locations and sizes
- viii. Site access details with coordinates
- ix. Internal road layout and traffic signage
- x. Road tie-in location (if applicable) with traffic control system.
- xi. Location and names of roads leading to the site.
- xii. Location of storage tanks and capacity
- xiii. NGL and Finished Ground Levels (FGLs) elevations in QNHD.
- xiv. Ground surface finishes (e.g., asphalt, precast concrete paving, compacted natural ground, etc.)
- xv. Storm water management details.
- xvi. Location of waste segregation and storage areas, as applicable.
- xvii. Location of Diesel Generator set (if applicable).
- xviii. Fuel filling station if any shall be approved by QatarEnergy
- xix. Legends and References
- xx. Fencing
- xxi. Fire hydrants
- xxii. Muster points
- xxiii. Chemical storage if any shall be approved separately.

c. Topographical, and Underground Services Survey and Drawings

Customer may directly process the required e-CPW/PTW for site surveys such as topographical, and underground scanning etc. (with valid land lease approval along with valid MS and JSA). Technical Submission and approval requirements are exempted for this site surveys, where there is no major excavation is anticipated other than minor excavations for placing temporary benchmarks.

Site surveys such as Trial pit, drilling borehole etc. shall require technical submission and approval from QatarEnergy.

The following documents shall be submitted with e-CPW/PTW application for topographical and underground scanning surveys:

- i. Valid e-CPW/PTW Authorization Cards.
- ii. Copy of survey contractor's commercial license for surveying activities.
- iii. Method Statement.
- iv. Job Hazard Analysis.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

- v. GIS Map and/or drawings showing the extent of the proposed survey works and the existing assets based on QatarEnergy's records.
- vi. Copy of plot Hand Over Certificate.
- vii. Drawing with plot boundary limits with coordinates in QNG95 system (confirmed by QatarEnergy survey team).
- viii. Third party inspection certificate for survey and scanning equipment and record of QatarEnergy's inspection.
- ix. Copy of valid gate passes.
- x. Concurrences/Clearance to Perform Work Form from all the Third-party Assets & QatarEnergy Assets

After completion of the topographic and underground survey, final report (along with relevant drawing) shall be submitted to QatarEnergy for review / information.

2. Civil/structural

a. Grading

The Grading Layout/ details shall include the following information as minimum:

- i. The boundary coordinates as per the TLLA (Temporary Land Lease Agreement).
- ii. The Natural Ground Level (NGL) and the proposed FGL(Finished Grade Level) of the site, and existing FRL (Finished Road Level) from where the access is planned, existing facility, if any, in the proximity in QNHD

Outcome of Environmental Baseline Assessment (EBA) and its requirements shall be ensured. Topsoil if any shall be removed, transported and stored at the location directed by Industrial Cities Environment Division.

b. Fencing Layout and Details

Fencing Layout drawing shall include the following information as minimum:

- i. The layout of Fencing with Coordinates in QNG95 as per TLLA.
- ii. The details of the fence shall comply with standard drawing # VI-IEE-02-0-013-0051. Each enclosed area shall have a minimum of two exit gates, Each with a minimum width of 6 meters.

All temporary site facilities shall be properly fenced and the fence shall be covered with a cloth mesh to avoid litter blowing from the site due to wind. All non-fenced areas will be treated as common areas as defined earlier and DCA/MIC/RLC PTW/e-CPW procedure will be applicable for all work in non-fenced area. Refer to applicable document - VI-ECP-PRC-005 Procedure Governing Requirements for CPW in RLC and MIC common areas, IMD-SFT-GDL-009 Guidelines for Permit to Work Implementation In DCA.

If there is an existing fence at the plot, the Customer shall check the condition of the existing fence and prepare drawings for any necessary repairs/replacement/modification works and include with their technical submission. If the existing fence is in good condition QatarEnergy may consider waiving these deliverables. IEE Department's confirmation may be obtained before making the Technical Submission.

c. Stormwater Drainage Layout, Details and Calculations

Stormwater management system / details shall include the following information as minimum:

All stormwater runoff from the plot shall be contained within the plot limits.

It is not permitted to discharge stormwater runoff into DCA, MIC or RLC drainage networks.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

Submission of Stormwater drainage calculation notes along with proposed drainage system, such as infiltration trenches, soakaways systems, holding tanks, or evaporation pond/ discharge to an open area approved by QatarEnergy, etc. shall be ensured.

d. Porta-cabin Sections

Porta-cabin sections shall be submitted that clearly show the method of construction of the foundation for the porta-cabin, whether excavation is required and the depth of the excavation.

3. Electrical

If power supply tie-in is required from QatarEnergy's network in RLC, then the following shall be applicable:

- a) Power supply agreement will be required.
- b) Contractor shall provide all deliverables listed in following checklist (electrical section).
- c) Tenant shall submit the maximum power demand forecast (kW/kVA) and energy consumption (kWh) for the first 5 years of the proposed facility as per format/table specified by IE-ECP-GDL-003 Guidelines for Building Permit Technical Submission to Industrial Cities In RLC.
- d) Material submittal for Tariff meter shall comply to IE-ECP-GDL-003 Guidelines for Building Permit Technical Submission to Industrial Cities In RLC.
- e) Power cable routing and crossing details shall be as per IML-ENG-GDL-001 Guidelines for Corridors and Corridor Crossings in RLC.

For power supply tie-in from QatarEnergy DCA Electrical network, the following shall be applicable:

- a) Power supply agreement will be required.
- b) Valid Lease Agreement
- c) Contractor / Tenant shall raise request (vide letter) for allocating tie-in feeder.
- d) Contractor / Tenant shall submit the following documents.
 - i. Single Line Diagram (SLD)
 - ii. Load Schedule indicating connected Load & Maximum Demand
- e) Based on review / approval of load requirements and SLD, Contractor / Tenant shall request for joint site survey with QatarEnergy Operations team for identifying tie-in feeder.
- f) Based on identification of tie-in feeder Contractor / Tenant shall submit
 - i. Cable routing Layout
 - ii. Cable sizing / voltage drop calculation.
 - iii. Tariff meter details
 - iv. Protection relay calculations / settings.
- g) On completion of construction activities (based on approved drawings / documents) Contractor / Tenant shall request QatarEnergy to carry out inspection
- h) Commissioning Declaration and request for Energization form QFM-CK-002-001A (section 10 of Procedure for Electrical SAT, Commissioning activities, Connection & Billing of Utilities for Facilities & Leased Plot QPR-CK-002) shall be raised after clearing punch points, if any from the inspection.

In MIC, Applicant / Tenant shall apply to Kahramaa for power supply connection or shall use a diesel generator if Kahramaa is unable to provide power supply from its network.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

4. Mechanical

The layout shall include all invert and cover levels, manhole numbers and setting out coordinates and pipe sizes and slopes.

Details of all manholes, chambers, and typical installation details.

For foul sewer, details of the proposed holding tank shall be ensured. Separate approval if the customer requires connection to the existing QatarEnergy's network.

- a) For requesting a potable water connection in DCA, it is mandatory to submit all relevant information to DCA for review and approval as stated in QPR-CK-002, Procedure for Electrical SAT, Commissioning activities, connection & Billing of utilities for facilities & leased plots.
- b) For potable water supply tie-in from QatarEnergy DCA Potable water network, the following shall be applicable:
 - i. Valid Land Lease Agreement.
 - ii. Valid water supply service agreement.
 - iii. Advance payment receipt.
 - iv. QatarEnergy approved method of statement and P&ID and tie-in drawings.

5. Instrumentation

All deliverables shall be submitted as described in the following checklist.

6. Environment

Facilities like sand blasting and painting areas, concrete batching plant, chemical storage, workshop servicing area, used oil storage, sewage storage, location of diesel generators sets etc. shall be explicitly shown in the layout drawings and shall meet Environmental requirements as advised by respective Industrial Cities HSE Department in DCA/MIC/RLC.

7. Fire Engineering

All the proposed facilities within the temporary site facility shall comply with the requirements of Standard (VI-HSE-STD-008 Standard for Building Life Safety & Fire Protection Systems in Industrial Cities), Qatar Civil Defence (QCD) Building Plan Fire Safety Guide (where applicable), and NFPA.

Life and Safety Report as per QCD including life safety drawings showing fire rating of building construction, exit door opening, exit signs, emergency lights, etc.

Firefighting system layout drawings showing locations of fire extinguishers, fire blankets, firefighting systems (if any).

Fire detection & alarm system layout drawings showing locations of fire detectors, manual call points, audible & visible notification appliances, etc.

A Fire Safety Certificate shall be issued by QatarEnergy's Fire Engineering & Prevention Division (IFE) to certify that all fire and life safety systems are designed and constructed complying with the minimum requirements before occupancy of the facility/buildings.

8. Safety

An Emergency Preparedness and Response Plan shall be prepared and submitted for the plot in line with the assessment performed taking into the consideration of potential major accident hazard (such as release of toxic gas) from neighbouring risk generators facilities/installations.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

9. Emergency Management

Customer shall submit an Emergency Preparedness and Response Plan. This plan should detail emergency response arrangements, incident management at both field and management levels, roles of the Initial Response and Incident Management teams, credible scenarios, team actions, and the frequency of drills and exercises as per the Industrial Cities Sector Emergency Management procedures and guidelines.

The Customer shall submit the following deliverables as shown in the below checklist. A completed copy of the checklist shall be included with the Technical Submission.

The below checklist has been developed based on typical temporary site facility requirements. It considers that the buildings installed on site will be prefabricated 'porta-cabin' type. When buildings are proposed to be constructed on site using permanent materials such as reinforced concrete, concrete blockwork, steel, or other permanent materials the Customer must consult with QatarEnergy to understand their requirements and confirm acceptance of their proposed construction method.

Table 4: Check List for Temporary Site Facility Submissions

No.	Deliverable	Mandatory (Yes/No)	Remarks	Check (✓/X)
General				
1	Cover sheet	Yes		
2	Land Allocation Approval Letter	Yes		
3	Comment Response Sheet (CRS)	No	Only for resubmissions.	
4	Completed Checklist	Yes		
5	Plot Location Layout	Yes		
6	Site Layout	Yes		
7	Topographic and Underground Services Layout	No	See flowchart	
Civil/Structural				
8	Grading Layout	No	See Section 2a.	
9	Grading Sections	No	See Section 2a.	
10	Fencing Layout	No	See Section 2b.	
11	Fencing and Gate Details	No	See Section 2b.	
12	Stormwater Drainage Layout	No	See Section 2c.	
13	Stormwater Drainage Details	No	See Section 2c.	
14	Stormwater Drainage Calculations	No	See Section 2c.	
15	Portacabin Cross-sections	Yes	See Section 2d.	
Electrical				
16	Single Line Diagram	No	Only when tying into QatarEnergy's network.	
17	Power Cable Routing Plan	Yes		



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

No.	Deliverable	Mandatory (Yes/No)	Remarks	Check (✓/✗)
18	Total Connected Load with Estimated Max. Demand	No	Only when tying into QatarEnergy's network.	
19	Cable Sizing & Voltage Drop Calculation	No	Only when tying into QatarEnergy's network.	
20	Energy Metering	No	Only when tying into QatarEnergy's network.	
21	Protective Device, Coordination, Settings, and Short Circuit Calculations	No	Only when tying into QatarEnergy's network.	
22	Earthing layout	Yes		
23	Lighting layout	Yes		
24	Material submittal for Tariff meter	No	Only when tying into QatarEnergy's network.	
Mechanical				
25	Piping and Instrumentation Diagram for Water Supply System	No	Only when tying into QatarEnergy's network.	
26	General Arrangement Drawing for Water Supply System	No	Only when tying into QatarEnergy's network.	
27	Materials specification & pressure rating of pipes, valves, and fittings for water supply system	No	Only when tying into QatarEnergy's network.	
28	Sewage quantities that require treatment in DCA/MIC/RLC wastewater treatment facilities, as applicable	No	Only when utilizing QatarEnergy's wastewater treatment facility.	
29	Foul sewer Layout drawing	Yes		
30	Foul sewer network details	Yes		
31	Potable water requirement (per day) and 02-days storage tank calculation	Yes		
Instrumentation				
32	Fire Alarm System drawings	Yes		
33	The scope of the new installation for loss prevention, fire alarm system shall be provided	Yes		
34	Fire Alarm System Cause and Effect Matrix	Yes		
35	Fire Detection and Equipment layout drawing	Yes		
36	Fire Alarm Schematic Diagram	Yes		

	STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES DOC. No.: IE-TEC-STD-011 REV. 00
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No.	Deliverable	Mandatory (Yes/No)	Remarks	Check (✓/✗)
37	Battery Backup Calculation	Yes		
38	Method statement for Fire Alarm System Installation, Testing and Commissioning	Yes		
Fire Engineering				
39	The TSF Layout Key plan Life and Safety Report	Yes		
40	Fire-fighting equipment and system layout drawings	Yes		
41	Fire Rating Certificate for Building Materials by QCD	Yes		
Safety				
42	Traffic Management Plan	No	Only when activities affect the existing road network.	
43	Construction Method Statement and Job Hazard Analysis (JHA).	Yes		
44	Lifting Plan	No	Only when lifting works are required for the construction.	
45	List of Hazardous Materials/Chemicals stored.	No	Required only when storing hazardous materials/chemicals.	
Emergency Management				
46	Emergency Preparedness and Response Plan	Yes		

10. Demobilization

Demobilisation shall be in accordance with terms and conditions as stated in Land lease Agreement and the respective EDC (Environment Discharge Certificate).



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX M: ACCESS ROADS

This Appendix briefly describes the requirements/details that are to be included in a submission pertaining to main Access roads.

Access roads:

Access roads are temporary or permanent roads that provide access to the main Plants, Tank Farms, Worker's Accommodation, existing roads, temporary installations, etc.

In MIC, the road Construction shall be in accordance with latest revision of Qatar Construction Specification (QCS) and the Traffic Diversions shall be in Conformance with Ashghal work zone traffic management guide. Road markings and traffic signage shall be in conformance with Qatar Traffic Control Manual (QTCM). Design of road shall conform to Qatar Highway Design Manual (QHDM).

Permanent access road submissions:

1. Conceptual Road Layout must be finalised in consultation with DCA/MIC/RLC based on the relevant Traffic study reports. This layout will be done with reference to the latest revision of the DCA/MIC/RLC Common Corridor Drawing and in line with the DCA/MIC/RLC development plans.
2. After the conceptual layout/ location of the road has been agreed, the Applicant must develop the detailed road drawings including the longitudinal profile based on the agreed conceptual layout. Typical layout shall contain the following:
 - a) Key Plan
 - b) Alignment of road/Longitudinal Profile and Cross sections with elevations on QNHD.
 - c) Existing facilities
 - d) Site Reconnaissance Report for existing facilities & utilities in DCA/MIC/RLC
 - e) Known planned facilities
 - f) Coordinates of Right of Way (ROW) and at crossing locations in QNG95
 - g) Road markings & Traffic signage details as per QTCM
 - h) Design of the Road shall conform to QHDM.
3. In the layout, all crossings must be identified and numbered. In this regard, a drawing in Plan View is required clearly identifying all crossings with coordinates in CGIS QNG95 system and accompanied with an applicable Crossing Matrix. The Crossing Matrix shall be in accordance with the example attached in Appendix S. DCA/MIC/RLC can assist in identifying the respective crossing owner, if required.
4. In this context, 'crossings' mean a location where the allocated road intersects in plan (underground or overhead) with another corridor (Occupied, Partially occupied or Unoccupied) defined in the Common Corridor Drawing. This overall road layout shall be submitted to Industrial Cities for review and Approval.
5. Depending upon the terrain if natural waterways /existing drains/future drains are interrupted by the proposed road, necessary culverts shall be provided. This shall be done in consultation with DCA/MIC/RLC
6. After obtaining the approval for the above layout drawings, the Applicant shall submit the crossing details for Industrial Cities' review & Approval.
7. Crossing Details:



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

If the proposed access road crosses an existing utility or a proposed corridor, the details of the crossing shall be submitted to DCA/MIC/RLC separately. Crossing details shall be in accordance with the requirements of relevant QatarEnergy Standards / Guidelines.

While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.

8. Fire apparatus access roads shall be provided for every facility and building in compliance with QatarEnergy standard (VI-HSE-STD-008), NFPA 1 and QCD guide. In addition, fire engine hard standing shall be provided for buildings where required by QCD guide.

Temporary access road submissions:

1. Layout of the proposed temporary access roads from any of the Industrial City main roads shall be prepared in QNG 95 and submitted in AutoCAD format.
2. After the layout/ location of the road has been agreed, the Applicant must develop the detailed road drawings including the longitudinal profile based on the agreed conceptual layout. Typical layout shall contain the following:
 - a) Key Plan
 - b) Layout/ alignment of road and Cross sections and elevations in QNHD
 - c) Existing facilities
 - d) Known planned facilities
 - e) Road markings & Traffic signage details as per QTCM
3. In the layout, all crossings must be identified and numbered. In this regard, a drawing in Plan View is required clearly identifying all crossings with coordinates in QNG95 system and accompanied with an applicable Crossing Matrix. The Crossing Matrix shall be in accordance with the example attached in Appendix S. RLC/MIC/ DCA can assist in identifying the respective crossing owner, if required.
4. In this context, 'crossings' means a location where the allocated road intersects in plan (underground or overhead) with another corridor (Occupied, Partially occupied or Unoccupied) defined in the DCA/MIC/RLC Corridors Drawing. This overall road layout shall be submitted to DCA/MIC/RLC for review and Approval.
5. Depending upon the terrain if natural waterways /existing drains/future drains are interrupted by the proposed road, necessary alternatives shall be proposed. This shall be done in consultation with DCA/MIC/RLC
6. After obtaining the approval for the above layout drawings, the Applicant shall submit the crossing details for DCA/MIC/RLC's review and approval.
7. If the temporary access road crosses an existing utility or a proposed corridor, the details of the crossing shall be submitted to RLC/MIC/DCA separately.
8. While crossing existing and planned assets of other third Parties, necessary concurrence/ approval as applicable shall be obtained from the relevant asset owners.
9. Fire apparatus access roads shall be provided for every temporary site facility and building in compliance with QatarEnergy standard (VI-HSE-STD-008), NFPA 1 and QCD guide.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX N: WORKERS' ACCOMMODATION

This Appendix briefly describes the requirements/details that are to be included in a submission pertaining to Worker's Accommodation s in DCA/MIC/RLC.

Worker's accommodation submissions

1. As per circulars # 24/2006 dated 28th May 2006 & # 31/2007 dated 5th April 2007, all labourers who are performing work in RLC must be accommodated inside the boundaries of RLC. For this purpose, the Applicants can utilise the existing RLC Worker's Accommodation if vacancies are available or else build their own Worker's Accommodations. The same is recommended for labour accommodation in MIC/DCA.
2. In lieu of building a new Worker's Accommodation, if vacant Worker's Accommodations built by other Applicants are available, they can take over the Worker's Accommodation with prior permission from DCA/MIC/RLC subject to conditions stipulated by DCA/MIC/RLC.
3. For building a new Worker's Accommodation in the land allotted to the Applicant/ Contractor for that purpose, it is mandatory to submit all relevant information regarding proposed Worker's Accommodations to DCA/MIC/RLC for review and Approval. This shall be as follows:
 - a) Worker's Accommodations are to be constructed strictly as per the latest revision of VI-TEC-STD-014 Standard for Construction of Workers' Accommodation within Industrial Cities.
 - b) All submissions related to Worker's Accommodations shall be as per the relevant clauses for Technical Detail submission specified in VI-TEC-STD-014 Standard for Construction of Workers' Accommodation within Industrial Cities.



APPENDIX O: QATARENERGY'S CRITICAL ASSETS

This Appendix briefly describes the requirement/details that are to be included in a submission pertaining to QatarEnergy's critical asset crossing locations.

QatarEnergy's critical asset crossing locations

Location where QatarEnergy's critical assets are crossed or any crossings in close proximity of QatarEnergy's critical assets or the crossings that will have interconnections with QatarEnergy's critical assets/facilities.

The Applicant/ End-User/ EPIC Contractor shall provide special attention while designing and executing any facilities at such critical crossing locations, crossing matrix. The minimum deliverables/activities as outlined below shall be submitted/performed by the End-users to QatarEnergy for review as part of their technical submission.

1. Basis of Design

For such identified critical asset crossings, the End-Users shall submit a "Basis of Design"; BOD for Civil, Structural, Electrical, Mechanical, Process and Instrumentation for the facilities in QatarEnergy common areas for IEE Department's approval. Basis of Design shall outline the minimum requirements to be considered in the design such as the following:

- c) Design codes
- d) Software to be used
- e) Factor of safety
- f) Operating and extreme conditions
- g) Various types of loads, loading cases
- h) Wind/Temperature/Seismic requirements
- i) Governing cases/Load Combinations
- j) Tie-in requirements

The Applicant/ End-User/EPIC Contractor will carry out a comprehensive detailed design & engineering based on the approved BOD.

2. Technical Documentation

The Applicant/ End-User/ EPIC Contractor shall provide the following technical documentation during the EPIC Stage:

For QatarEnergy's review and approval

- a) Basis of Design as mentioned above sub-section 1.
- b) General arrangement, routing layout, crossing package, tie-in.
- c) Topographic survey
- d) Trial pit's locations and findings
- e) Method statements & JSA
- f) Any other documents, as deemed necessary.

For QatarEnergy's verification

- a) Soil investigation report (factual and interpretative reports)
- b) Design reports, which may include but not limited to, loading cases, design calculations, finite element analysis, models, pipeline stress analysis etc.
- c) Structural Drawings
- d) Technical Specifications



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

e) AFC drawings.

All the above documents shall be verified, approved and stamped by the End-users Engineering/ Technical department or by Third party (Professional Consultant) appointed by End-users.

For information and record (Post Construction)

- a) Materials data sheet
- b) QA/QC reports.
- c) As-Built drawings in both PDF & AutoCAD formats, in QNG95 coordinate system.

3. Validation by 3rd Party Consultant to be appointed by Applicant / End-User

All the QatarEnergy critical asset crossings (e.g. pipe bridges and culverts to cross LNG corridors, cooling water corridors, product corridors, roads etc.) shall be identified at an early stage of the project (FEED stage) by QatarEnergy in coordination with the Business Partner / FEED consultant.

For such critical asset crossings, it is mandatory that the drawings and design calculations prepared by the EPIC contractor shall be validated/approved by the End-User engineering team if they possess the required Engineering capability or an independent 3rd Party consultant appointed by the End-User. This is to ensure safe/correct design and thereby protection of existing critical assets in the vicinity.

The technical approval letters will be issued by IEE Department only upon producing copy of the design documents with 'Approved' stamp either from End-User Engineering Department or from a competent 3rd Party consultant.

4. Field Changes/modifications

If there is any change/modification in the design/routing/location during the installation at any critical crossing locations, all such changes shall be brought to the notice of QatarEnergy and prior approval shall be obtained from IEE Department.

QatarEnergy shall have the right to request for re-validation (by an independent third-party consultant appointed by the End-User) of the revised engineering drawings/design calculations of such structures.

5. Quality during Construction / Commissioning

As deficiency could happen in any stage of the project which will have an adverse impact on QatarEnergy assets, strict supervision by End-Users at critical locations during construction, testing and commissioning shall be implemented and reported to IEE Department for information and records.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX P: TRANSPORTATION OF HEAVY EQUIPMENT / OVERSIZED ABNORMAL LOADS

Abnormal loads:

As defined by Qatar Traffic Law, a vehicle with load is classified as over-sized (abnormal load) when any of the following conditions applies:

- Height – 4.20m (inclusive of vehicle height)
- Width – 2.60m (inclusive of vehicle width)
- Speed – 60% slower moving than the posted speed limit.
- Weight over 50T in addition to GVM (Gross Vehicle weight) by vehicle manufacturer
- Any load that is longer than 1.0m over the back of the loaded vehicle

In general, Drilling Rigs, Evaporators, Reactors, Radiators, Driers, Absorber, Demethaniser Columns, Skids, Condensate Towers & Debutanizers, Overhead Drums, Separators, Regeneration Heaters, Cold Boxes, Compressors & Oil Units, Tanks, Porta Cabins, Condenser Units etc. are being considered as “Oversized abnormal loads” in Industrial Cities.

This appendix briefly describes the requirements/details that are to be included in a submission pertaining to Transportation of Heavy equipment/Oversized abnormal loads in Industrial Cities.

1. Traffic Management Plan. Traffic management plan shall be included with transportation route/ Layout as endorsed by Industrial Security (MOI) and Industrial City- Road Safety section.
2. Details of modification, if any, required for the existing road furniture's or traffic lights to facilitate the transport should be included. The proposal shall include reinstatement of the modified utilities/facilities/road furniture.
3. Method Statement and Job Safety Analysis report.
4. Exact size of “Heavy equipment/Oversized abnormal loads”, final load distribution/ axle load to the QatarEnergy road, permitted load of the respective QatarEnergy road that is considered for transportation, etc. shall be furnished.
5. If the transport is planned in an unpaved / undeveloped areas (generally applicable in DCA for well Rigs), necessary AutoCAD drawing/ Layout (in QNG95 Coordinate system) showing the location of departure and destination. The layout shall show the Final destination/ Layout of well/rigging.
6. Necessary ground improvement details to develop the area to suit the movements and protection to underground utilities / facilities if any etc. shall be included, for the transportations in unpaved / undeveloped areas.
7. In addition to the above, any Heavy Goods Vehicle HGV that enters to the Secured area of MIC, shall comply with the requirements of “VI-SFT-STD-003 Standard for Heavy Goods Vehicles and Load Safety In Industrial Cities”, “IMM-PTL-PRC-011 Procedure for handling Heavy lift and oversized cargo in MIC port” and other applicable city specific (RLC/MIC/DCA) requirements for safe transport of abnormal loads, shall be complied with.
8. Approximate transportation Schedule. Exact schedule shall be finalized with Industrial Security (MOI) and Industrial City - Road Safety section.
9. A detailed presentation to be made to QatarEnergy & MOI (Industrial Security) on the transportation plan including traffic management plan.
10. Necessary concurrence in PTW / CPW, as applicable, from the all the affected Contractors / End-Users shall be obtained.
11. A consolidated Road closing plan (A3 size) showing the exact date/ time required to pass each junction / busy roads should be submitted for releasing the necessary circular.



STANDARD FOR TECHNICAL SUBMISSIONS TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX Q: OTHER CATEGORIES

Other submissions

The submissions pertaining to Utility Tie-ins / construction / installation items that are not covered under any of the above 14 categories shall be treated as “Category # 015 – Other Categories”. Example – Technical submissions from Government Agencies and other 3rd Party entities (e.g. Manateq, QRail, Ministry of Transport, Ashghal, Ministry of Environment and Climate Change etc.)



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-----**(Name of the Company)**

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BRIEF DESCRIPTION

Email :

PURPOSE OF SUBMISSION (Please tick)

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Name

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APPENDIX S: SHEET # 1 & 2 – CROSSING MATRIX IDENTIFICATION – TYPICAL EXAMPLE

CORRIDOR CROSSING NO.	CROSSING DESCRIPTIONS		CROSSING No. & LOCATION COORDINATES				ASSET OWNER & CONTACT DETAILS	TYPICAL CORDINATE MARKING LAYOUT
			INDIVIDUALCROSSING NUMBER	POINTS	EASTING	NORTHING		
CRX-01	45 m Product Pipeline Corridor	Corridor crossing boundary coordinates	CRX-01	a	231606.088	455064.143	QatarEnergy, Manger Development & Planning Engineering	
				b	231612.680	455060.640		
				c	231606.556	455065.026		
				d	231613.153	455061.525		
		Facility crossing (Dolphin Energy Sub corridor limits)	CRX-01a	a	231659.955	455035.560	Dolphin Energy	
				b	231661.279	455034.857		
				c	231664.356	455033.224		
				d	231665.406	455032.667		
		Facility crossing (QatarEnergy LNG Sub corridor limits)	CRX-01b	a	231670.358	455030.039	QatarEnergy LNG	
				b	231670.759	455029.827		
				c	231675.577	455027.270		
				d	231677.139	455026.441		
CRX-02	60m Wet Utility Corridor	Corridor crossing boundary coordinates	CRX-02	a	231606.556	455065.026	Qatar Energy RLIC, Manger Development & Planning Engineering	
				b	231613.153	455061.525		
				c	231660.423	455036.443		
				d	231661.748	455035.740		
		Facility crossing (Ooredoo Sub corridor limits)	CRX-02a	a	231664.849	455034.095	Ooredoo	
				b	231665.872	455033.547		
				c	231670.852	455030.910		
				d	231671.252	455030.697		
		Facility crossing (Kahramaa Sub corridor limits)	CRX-02b	a	231676.109	455028.120	Kahramaa	
				b	231677.607	455027.325		
				c	231685.343	455023.220		
				d	231688.939	455021.312		

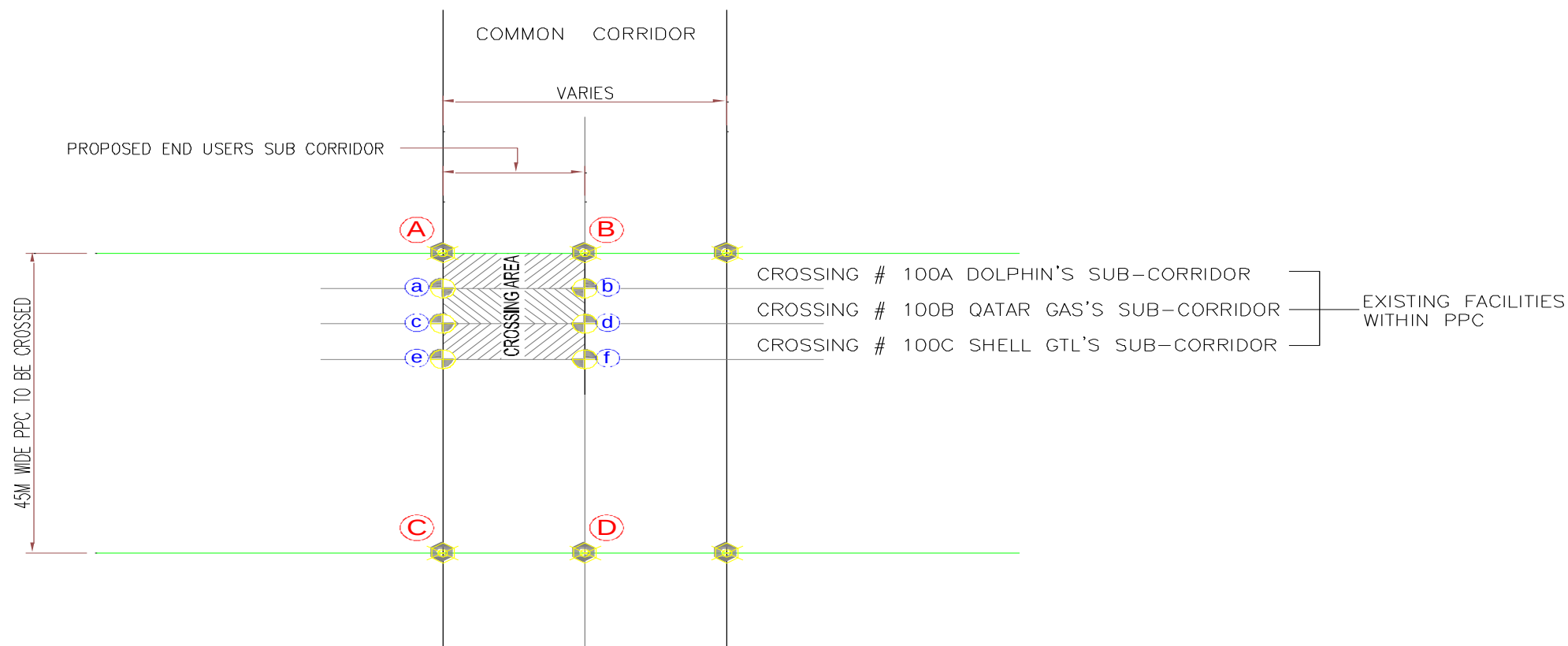




STANDARD FOR TECHNICAL SUBMISSION TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00



CORRIDOR CROSSING # 100
 (FACILITY CROSSING # 100A
 100B, 100C)

TO BE CONSIDERED AS ONE CROSSING

PLAN VIEW (TYPICAL)

CROSSING OCCUPIED 45M WIDE PRODUCT PIPE CORRIDOR (PPC)

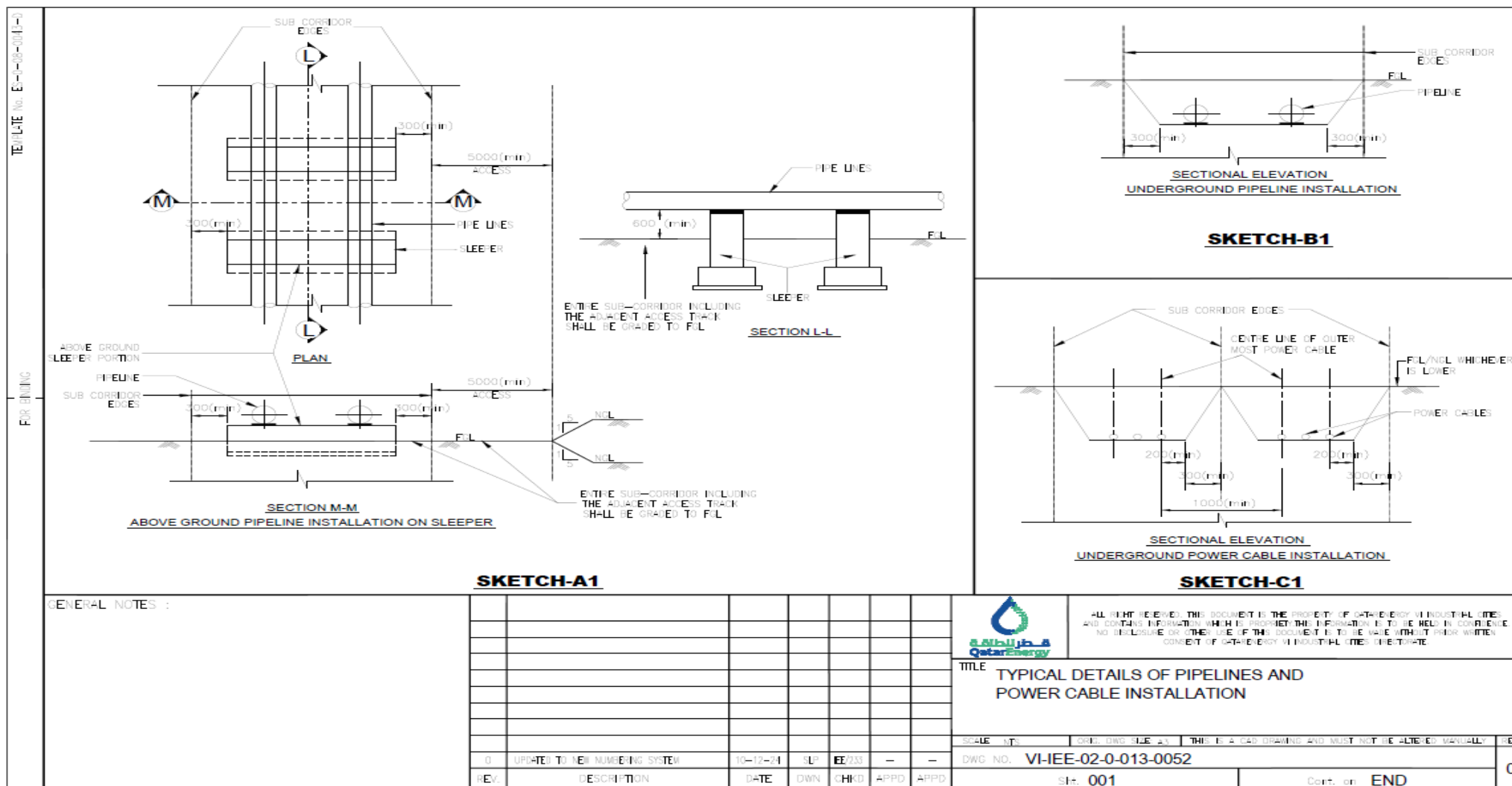


STANDARD FOR TECHNICAL SUBMISSION TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX T: TYPICAL DETAILS OF PIPELINE AND POWER CABLE INSTALLATIONS



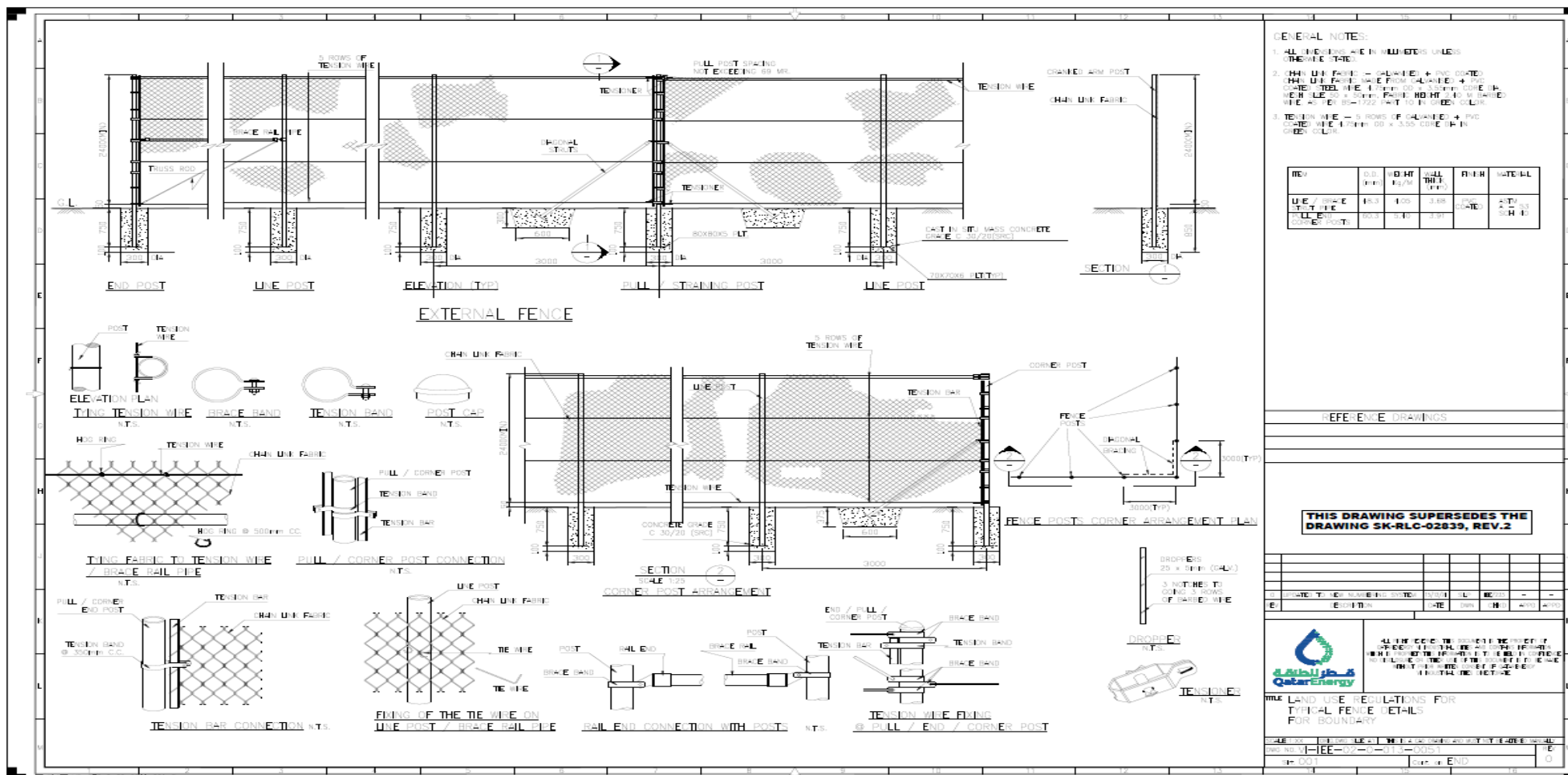


STANDARD FOR TECHNICAL SUBMISSION TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX U: TYPICAL FENCE DETAILS FOR TEMPORARY FACILITY





STANDARD FOR TECHNICAL SUBMISSION TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX V: LIST OF ABBREVIATIONS

Abbreviation	Description
DCA	Dukhan Concession Area
e-CPW	e-Consolidated Permit to Work
ELV	Extra Low Voltage
EPIC	Engineering, Procurement, Installation and Commissioning
FEED	Front End Engineering and Design
FGL	Finished Grade Level
HSE	Health, Safety and Environment
m	Meter
MIC	Mesaieed Industrial City
MOI	Ministry of Interior, State of Qatar
NFPA	National Fire Protection Association
NGL	Natural Ground Level
PTW	Permit to Work (used in DCA)
QCD	Qatar Civil Defence
QCS	Qatar Construction Specification
QHDM	Qatar Highway Design Manual
QNG95	Centre for Geographic Information System- Qatar National Grid 95
QNHD	Qatar National Height Datum
QTCM	Qatar Traffic Control Manual
RLC	Ras Laffan Industrial City
TLLA	Temporary Land Lease Agreement
TSE	Treated Sewage Effluent



STANDARD FOR TECHNICAL SUBMISSION TO INDUSTRIAL CITIES

DOC. No.: IE-TEC-STD-011

REV. 00

APPENDIX W: REVISION HISTORY LOG

Revision Number: 04

Document Revision Date: 01/01/2025

Item Revised	Revision Description	Page No.
	Document # "VI-TEC-GDL-008 Guidelines for Technical Submission to Industrial Cities" Number and Title changed to IE-TEC-STD-011 Standard for Technical Submission to Industrial Cities	All
Item 6	Modification for new Reference indicators	
	Definition updated	10, 11
3.1	Updated email id for receiving submissions	4
Appendix L	Added requirements regarding temporary site facility	36 - 45
Appendix O	Added load case and load combination	49
Appendix U	Added new appendix	

Document Change History

Doc. Code	Rev. No.	Date	Revision Description	Approved By
QGL-RID-001	00	16/05/2011	Revised	
QGL-CE-002	01	21/08/2014	Document Number QGL-RID-001 changed to QGL-CE-002. Updated to reflect new DC Structure.	CE
QGDL-CL-014	02	04/11/2015	Updated to reflect new QP Structure.	CL
VI-TEC-GDL-008	03	26/05/2019	Documents #QGDL-CL-014 and QGDL-IMD-004 combined to have single guideline applicable to DCA, MIC and RLC. Reference indicators and document number updated.	VI