

**COAA**  
**Contractor Questionnaire Version 8.4**  
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**1. General Information Form**

Your Company Name: \_\_\_\_\_

Please provide the Name that you will use to refer to this Project: \_\_\_\_\_

Location of Project:

City: \_\_\_\_\_

Province: \_\_\_\_\_

Country: \_\_\_\_\_

Contact Person: (Benchmarking Associate) \_\_\_\_\_

Contact's Phone: \_\_\_\_\_

Contact's Fax: \_\_\_\_\_

Contact's E-mail Address: \_\_\_\_\_

All Project costs should be recorded herein using Canadian Dollars (CAD)

Project quantities to be recorded as:  Metrics (cm., m. tonne)  Imperial (in. ft. ton)

Expected project Completion Data(MM/DD/Year): \_\_\_\_\_

Is the owner of this project a public agency or a private company?  Public  Private

**1.1 Project Description**

**Principle Type of Project:**

Choose a Project Type which **best** describes the project from the categories below. If the project is a mixture of two or more of those listed, select the principle type. If the project type does not appear in the list, select other under the appropriate industry group and specify the project type.

**Heavy Industrial**

- Chemical Manufacturing
- Electrical (Generating)
- Environmental
- Metals Refining/Processing
- Mining
- Natural Gas Processing
- Oil Exploration/Production
- Oil Refining
- Oil Sands Mining/Extraction
- Oil Sands SAGD
- Oil Sands Upgrading

**Light Industrial**

- Automotive Manufacturing
- Consumer Products Manufacturing
- Foods
- Microelectronics Manufacturing
- Office Products Manufacturing
- Pharmaceutical Manufacturing
- Pharmaceutical Labs
- Clean Room (Hi-Tech)
- Other Light Industrial

### Heavy Industrial

- Cogeneration
- Pulp and Paper
- Pipeline
- Gas Distribution
- Other Heavy Industrial

### Buildings

- Communications Center
- Courthouse
- Dormitory/Hotel/Housing/Residential
- Embassy
- Low rise Office ( $\leq 3$  floors)
- High rise Office ( $> 3$  floors)
- Hospital
- Laboratory
- Maintenance Facilities
- Movie Theatre
- Parking Garage
- Physical Fitness Center
- Prison
- Restaurant/Nightclub
- Retail Building
- School
- Warehouse
- Other Buildings

### Infrastructure

- Airport
- Electrical Distribution
- Flood Control
- Highway
- Marine Facilities
- Navigation
- Rail
- Tunneling
- Water/Wastewater
- Telecom, Wide Area Network
- Other Infrastructure

If other, please describe: \_\_\_\_\_

## 1.2 Project Nature

From the list below select the category that best describes the nature of this project. If your project is a combination of these natures, select the category that you would like your project to be benchmarked against. Please see the glossary for definitions.

The Project Nature was:  Grass Roots, Green Field  
 Modernization, Renovation  
 Addition, Expansion  
 Other Project Nature (Please describe): \_\_\_\_\_

Is this project part of a larger project?     Yes     No

If Yes, please describe: \_\_\_\_\_

### 1.3 Project Characteristics

#### a. Project Drivers

Select the primary driver influencing the execution of this project. Assume safety is a given for all projects. This section must be verified again at project closeout.

The primary driver was:

<input type="checkbox"/>	Cost
<input type="checkbox"/>	Schedule
<input type="checkbox"/>	Meeting Product Specifications
<input type="checkbox"/>	Production Capacity
<input type="checkbox"/>	Other (Please describe): _____
<input type="checkbox"/>	No primary driver

#### b. Turnarounds/Shutdowns/Outages

Construction performance (cost, schedule and quality) during project turnarounds, shutdowns, and outages may be impacted by schedule demands of the turnaround. These turnarounds may be scheduled or unscheduled. Please complete the blocks below to indicate the percentage of construction work completed during turnaround.

1. Percent construction during <b>scheduled turnaround:</b>		%
2. Percent construction during <b>unscheduled turnaround:</b>		%
3. Percent construction during <b>non-turnaround:</b>		%

Note: the percentages should add up to 100 %

#### c. Percent Modularization

Choose a percentage value that best describes the level of modularization (offsite construction) used. This value should be determined as a ratio of the cost of all modules divided by total cost of contractor's scope of work.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

#### d. Percent Offsite Construction Labour Hours

Choose a percentage value that best describes the level of offsite labour hours for building modules. This value should be determined as a ratio of the offsite labour hours of all modules divided by total construction hours.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

## 1.4 Project Delivery System

Please choose the project delivery system from those listed below that most closely characterizes the delivery system used for your project. If more than one delivery system was used, select the primary system.

Delivery System	Description
Traditional Design-Bid-Build	Serial sequence of design and construction phases; Owner contracts separately with designer and constructor.
Design-Build (or EPC)	Overlapped sequence of design and construction phase; procurement normally begins during design; owner contracts with Design-Build (or EPC) contractor.
CM at Risk	Overlapped sequence of design and construction phases; procurement normally begins during design; owner contracts separately with designer and CM at Risk (constructor). CM holds the contracts.
Multiple Design-Build	Overlapped sequence of design and construction phases; procurement normally begins during design; owner contracts with two Design-Build (or EPC) contractors, one for process and one for facilities.
Parallel Primes	Overlapped sequence of design and construction phases; Procurement normally begins during design. Owner contracts separately with designer and multiple prime constructors.
Other Delivery System _____	

Did you use a Construction Manager not at Risk in conjunction with the selected delivery system?

Yes \_\_\_\_\_ No \_\_\_\_\_

## 1.5 Project Complexity

Choose a value that best describes the level of complexity for this project as compared to other projects from all the companies within the same industry sector. For example, if this is a heavy industrial project, how does it compare in complexity to other heavy industrial projects? Use the definitions below as general guidelines.

1. **Low** - Characterized by the use of no unproven technology, small number of process steps, small facility size or process capacity, previously used facility configuration or geometry, proven construction methods, etc.
2. **High** - Characterized by the use of unproven technology, an unusually large number of process steps, large facility size or process capacity, new facility configuration or geometry, new construction methods, etc.

Low			Average				High		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10

## 1.6 Engineering Standards and Specifications

Please provide information about this project's use of engineering standards and specifications.

Process Industry Practices (PIP) is a consortium of process industry owners and engineering construction contractors who serve the industry. PIP publishes documents called "Practices" that reflect standards in many engineering discipline.

Source of Standards and Specifications		Strongly Disagree 0	Disagree 1	Neutral 2	Agree 3	Strongly Agree 4	NA / UNK
A	The project was executed with internal owner engineering standards and specifications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	The project was executed with contractor engineering standards and specifications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	The project was executed using industry consortia engineering practices for standards and specifications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D	The project was executed using Process Industry Practices (PIP) standards and specifications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Engineering Deliverables

1) Engineering deliverables were released in a timely manner to support construction operations?

Not at all		Sometimes			Always	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2) Engineering deliverables were complete and accurate (minimal errors and omission)?

Not at all		Sometimes			Always	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) Please rate the usability of the engineering deliverables?

Poor		Adequate			Excellent	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## 1.8 Project Participation

First, indicate the **percentage of each function** performed by your company and the approximate percent of that function.

Next, indicate the **principle contract type** you were awarded for each function. If more than one contract type was used, indicate the most prevalent.

**Principle Type of Contract for each company:** Unit price refers to a price for in place units of work and does not refer to hourly charges for skill categories or time card mark-ups. Hourly rate payment schedules should be categorized as cost reimbursable. The contract type for your own company's contribution should be recorded as In House.

- Cost Reimbursable/Target Price
- Guaranteed Maximum Price
- In House
- Lump Sum
- Unit Price

Also indicate if **incentives** were used.

**Contract Incentives:** Please indicate whether cost, schedule, safety, and quality incentives were used. Incentives may be positive (a financial incentive for attaining an objective), negative (a financial disincentive for failure to achieve an objective), or both. Indicate "none" if no incentives were used for a category.

Finally, indicate if you had an **Alliance** with the owner, and whether the owner was a **COAA** or **CII Member** company.

Contractor Response Table				
Functions	Your Company Self Perform (0-100%)	Principle Contract Type (select one per phase)	Contractor Incentive Use (select one for each incentive type)	
Front End Planning	<input type="text"/> %	<input type="checkbox"/> Cost Reimbursable / Target Price <input type="checkbox"/> Guaranteed Max Price <input type="checkbox"/> Lump Sum <input type="checkbox"/> Unit Price	<b>Cost</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Schedule</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
			<b>Safety</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Quality</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
Detailed Engineering	<input type="text"/> %	<input type="checkbox"/> Cost Reimbursable / Target Price <input type="checkbox"/> Guaranteed Max Price <input type="checkbox"/> Lump Sum <input type="checkbox"/> Unit Price	<b>Cost</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Schedule</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
			<b>Safety</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Quality</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
Procurement	<input type="text"/> %	<input type="checkbox"/> Cost Reimbursable / Target Price <input type="checkbox"/> Guaranteed Max Price <input type="checkbox"/> Lump Sum <input type="checkbox"/> Unit Price	<b>Cost</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Schedule</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
			<b>Safety</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Quality</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
Construction	<input type="text"/> %	<input type="checkbox"/> Cost Reimbursable / Target Price <input type="checkbox"/> Guaranteed Max Price <input type="checkbox"/> Lump Sum <input type="checkbox"/> Unit Price	<b>Cost</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Schedule</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
			<b>Safety</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Quality</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
Startup	<input type="text"/> %	<input type="checkbox"/> Cost Reimbursable / Target Price <input type="checkbox"/> Guaranteed Max Price <input type="checkbox"/> Lump Sum <input type="checkbox"/> Unit Price	<b>Cost</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Schedule</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
			<b>Safety</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None	<b>Quality</b> <input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Both <input type="checkbox"/> None
Is the Owner of this project a CII or COAA member company?			<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is your company an Alliance Partner with the Owner of this project?			<input type="checkbox"/> Yes	<input type="checkbox"/> No

## 1.9 Percentage Union Workforce

Please indicate the percentage of Building Trades, Alternate Union, and Non Union labour employed for the following disciplines. Each row should sum up to 100%.

**Building Trades Unions** are organizations of workers formed for the purpose of advancing their members' interests in respect to wages, benefits and working conditions. Building trades unions typically represent single trades.

Example: IBEW - International Brotherhood of Electrical Workers

**Alternate Unions** are multicraft unions or wall-to-wall unions similar in purpose to building trades unions but are inclusive of multiple trades and industries.

Example: CLAC - Christian Labour Association of Canada

Discipline	Percentage Building Trades	Percentage Alternate Union	Percentage Non Union	Total (%)
Concrete	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	100%
Structural Steel	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	100%
Electrical	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	100%
Piping	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	100%
Instrumentation	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	100%
Equipment	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	100%
Insulation	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	_____% <input type="checkbox"/> NA <input type="checkbox"/> Unknown	100%

## 2. Performance

### 2.1 Budgeted and Actual Project Costs by Phase

Please indicate the Budgeted (Baseline) and Actual Project Costs by phase. All project costs should be recorded using Canadian Dollars (CAD).

1. **Only enter data for your scope of work.**
2. Budget amounts should include contingency and correspond to the estimate at time of contract award. This is the original baseline budget, and should not be updated to include any changes. Change data are collected in a later section. Metrics definitions specifically address changes as appropriate.
3. Click on the project phase links below for phase definitions and typical cost elements.
4. If this project did not include a particular phase, please select N/A.
5. The total project **budget** amount should be the **planned expenses** of all phases performed by your company, including amounts for in-house salaries, overhead, travel, etc., but excluding the cost of land.
6. The total **actual** project cost should be the **actual** project costs for phases performed by your company including amounts expended for in-house salaries, overhead, travel, etc., but excluding the cost of land.
7. **If you know total contract costs but have incomplete phase information**, you may enter as much phase information as you know and override the automatic totaling function by manually filling in the total project cost. As long as you don't click back into a phase field, your total will be accepted and recorded.

Project Phase		Baseline Budget (Including Contingency)	Amount of Contingency in Budget	Actual Phase Cost
<u>Front End Planning</u>		<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<u>Detail Engineering</u>		<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<u>Procurement<sup>1</sup></u>		<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<u>Construction<sup>2</sup></u>	<u>Directs</u>			
	<u>Indirects</u>			
	<u>Total</u>	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<u>Startup</u>		<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<u>Total Project</u>				
If you track the <u>cost of construction management</u> , please provide it. \$ _____				

Remark: <sup>1</sup> **Procurement Phase Cost** – Costs of **Major Equipment** including process and mechanical equipment, construction equipment left on site and used after commissioning (see table p.13) and modules fabricated offsite.

<sup>2</sup> **Construction Cost** – See “**Instructions for Construction Direct and Indirect Costs**” below.

## Construction Direct and Indirect Cost

Direct costs are those which are readily or directly attributed to, or become an identifiable part of, the final project (e.g., piping labour and material). Indirect costs are costs that cannot be attributed readily to a part of the final product (e.g. temporary facilities).

Please use the following table as a guide in categorizing direct and indirect construction cost.

Direct Construction Cost	Indirect Construction Cost
Direct labour - See construction productivity table	Indirect labour - See construction productivity table
Direct subcontracts	Labour burdens and Fringe benefits
Bulk materials - See bulk material table	Overtime premium (additional cost for which no work is performed)
Construction equipment (rental/ ownership & consumables- fuel, oil, etc.)	Mobilization, Demobilization
	Construction office trailers and equipment.
	Construction utilities (power, water etc.)
	Temporary construction facilities (e.g. roads, fencing, fab. shops, etc.)
	Other consumables- small tools, supplies
	Scaffolding materials (rental/ ownership)
	Field services
	Permits (construction related)
	Vendor representatives
	Freight (for items listed in this table)
	Catering, accommodations
	Travel
	Misc. (insurance, etc.)
	Indirect subcontracts
<p>Note: For benchmarking purposes exclude the following:</p> <ul style="list-style-type: none"> <li>- Demolition cost</li> <li>- Remediation cost</li> <li>- Site preparation cost (construction cost begins with excavation for foundations or driving of piles)</li> </ul> <p>Provide data for Construction subtotal if indirect and indirect breakout is not available.</p>	

## **Bulk Material**

**Bulk materials** are generally defined as the balance of construction components outside the major equipment classification. Bults are commonly referred to as commodity materials. In general bulks do not include tagged/numbered equipment. Please use the following table as a guide in categorizing cost of bulk materials.

<b>Bulk Material Reference Table</b>	
<b>Craft</b>	<b>Examples of Bulk Material</b>
Civil/Structural	Concrete
	Reinforcing Steel
	Concrete Embeds
	Structural Steel
	Piling
Pipe	Pipe
	Fittings
	Manual valves
	Hangers / Supports
	Process Air Duct
Instrumentation	Control valves
	Control panels
	Field instrumentation
	Instrument air tubing
Electrical	Cable tray
	Conduit
	Wire/Cable
	Light fixtures
	Electrical heat tracing
	Grounding
Misc.	Insulation
	Paint
	Fireproofing

## Total Cost of Major Equipment

The purpose of this question is to determine the extent to which the overall project cost is driven by the purchase of **major equipment in general and more particularly, mechanical and process equipment**. Please see the Equipment Reference Table provided below. Record the total purchase cost of major equipment overall as well as the total purchase cost of mechanical and process equipment.

Total Cost of Major Equipment      \$ \_\_\_\_\_  N/A     Unknown

Total Cost of Mechanical and process Equipment \$ \_\_\_\_\_  N/A     Unknown

<b>Equipment Reference Table</b>	
<b>Examples of Major Equipment</b>	<b>Kinds of Equipment Covered</b>
<b>Electrical Equipment</b>	
HVAC Systems	Prefabricated air supply houses
Motors	600V and above
Electricity Generation and Transmission	Major electrical items (e.g., unit substations, transformers, switch gear, motor-control centers, batteries, battery chargers, turbines and other miscellaneous power generation equipment).
<b>Mining Equipment</b>	
Loaders and Haulers	Dozers, haul trucks, graders.
Excavators	Hydraulic/ electric shovels, draglines, etc.
<b>Material Handling Equipment</b>	
<b>Mechanical &amp; Process Equipment</b>	
Exchangers	Heat transfer equipment: tubular exchangers, condensers, evaporators, reboilers, coolers (including fin-fan coolers and cooling towers).
Pumps	All types of liquid pumps and drivers.
Direct-fired Equipment	Fired heaters, furnaces, boilers, kilns, and dryers, including associated equipment such as super-heaters, air preheaters, burners, stacks, flues, draft fans and drivers, etc.
Columns and Pressure Vessels	Towers, columns, reactors, unfired pressure vessels, bulk storage spheres, and unfired kilns; includes internals such as trays and packing.
Tanks	Atmospheric storage tanks, bins, hoppers, and silos.
Vacuum Equipment	Mechanical vacuum pumps, ejectors, and other vacuum producing apparatus and integral auxiliary equipment.
Material Handling Equipment	Conveyers, cranes, hoists, chutes, feeders, scales and other weighing devices, packaging machines, and lift trucks.
Package Units	Integrated systems bought as a package (e.g., air dryers, air compressors, refrigeration systems, ion exchange systems, etc.).
Special Processing Equipment	Agitators, crushers, pulverizers, blenders, separators, cyclones, filters, centrifuges, mixers, dryers, extruders, fermenters, reactors, pulp and paper, and other such machinery with their drivers.
Include freight. Exclude costs of project team, costs for field services, bulk construction equipment (such as valves, bus duct etc.) and off-the-shelf equipment.	

## 2.2 Planned and Actual Project Schedule

Please indicate your company's Planned Baseline and Actual Project Schedule by phase:

1. **Only enter data for your scope of work.**
2. The dates for the planned schedule should be those in effect at the estimate time of contract award. If you cannot provide an exact day for either the planned or actual, estimate to the nearest week
3. Click on the project phase links below for a description of starting and stopping points for each phase.
4. If this project did not include a particular phase please select N/A.
5. **If you have incomplete phase information**, please enter as much phase information as you know. You must enter overall project start and stop dates, however. They will not be calculated from phase data.

Project Phase	Baseline Schedule		Actual Schedule	
	Start mm/dd/yyyy	Stop mm/dd/yyyy	Start mm/dd/yyyy	Stop mm/dd/yyyy
<a href="#">Front End Planning</a>	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<a href="#">Detail engineering</a>	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<a href="#">Procurement</a>	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<a href="#">Construction</a>	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
<a href="#">Startup</a>	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown	<input type="checkbox"/> NA <input type="checkbox"/> Unknown
Your Project Start and Stop dates	<input type="checkbox"/> Unknown	<input type="checkbox"/> Unknown	<input type="checkbox"/> Unknown	<input type="checkbox"/> Unknown

### % Design Complete

What percentage of detailed engineering work-hours was completed as of total Project Sanction?

\_\_\_\_\_ %

Unknown

What percentage of detailed engineering work-hours was completed as of start of the construction phase?

\_\_\_\_\_ %

Unknown

## 2.3 Project Development Changes and Scope Changes

Please record the **approved** changes to your project by phase in the table provided below. For each phase indicate the net cost impact, and the net schedule impact resulting from project **approved** development changes and scope changes. Either the owner or contractor may initiate changes. **All costs should be recorded using Canadian Dollars (CAD).**

**Project Development Changes** include those changes required to execute the original scope of work or obtain original process basis.

**Scope Changes** include changes in the base scope of work or process basis.

1. **Only enter data for your scope of work.**
2. Changes should be included in the phase in which they were initiated. Click on the project phase links below for assistance in classifying the changes by project phase. **If you cannot provide the requested change information by phase** but can provide the information for the total project, please fill in the totals field manually, thereby overriding the totaling function. As long as you don't click back into a phase field, your total will be accepted and recorded.
3. Indicate whether the net impact was a decrease (-) or an increase (+) by indicating a negative number for a decrease and a positive number for an increase. If no change orders were granted during a phase, write "0" in that row.

Project Phase	Cost Increase (+) / Decrease (-) of Project Development Changes	Cost Increase (+) / Decrease (-) of Scope Changes	Schedule Increase (+) / Decrease (-) of Project Development Changes (weeks)	Schedule Increase (+) / Decrease (-) of Scope Changes (weeks)
<a href="#">Pre-Construction</a>	\$ _____ <input type="checkbox"/> Unknown	\$ _____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown
<a href="#">Construction thru Startup</a>	\$ _____ <input type="checkbox"/> Unknown	\$ _____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown
Totals	\$ _____	\$ _____	_____	_____

## 2.4 Field Rework

Was there a system for tracking and evaluating field rework for this project?

Yes  No  Unknown

If Yes:

1. Please indicate the Direct Cost and Schedule Impact of Field Rework for each source shown below. The **direct cost of field rework** relates to all costs needed to perform the rework itself.
2. If there was no direct cost of field rework for a category, please enter “0”.
3. **If you cannot provide the requested information by source**, but can provide the total for the project, please click unknown in the source fields and **enter the project total**. This will override the totaling function. As long as you don’t click back into a phase field, your total will be accepted and recorded.
4. All costs should be recorded using Canadian Dollars (CAD).

Source of Field Rework	Direct Cost of Field Rework	Schedule Impact of Field Rework (weeks)
Design	\$ _____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown
Vendor	\$ _____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown
Owner	\$ _____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown
Contractor	\$ _____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown
Other	\$ _____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown
Total	\$ _____	_____

### 3. Engineering Productivity Metrics

#### Instructions for Computation of Work-Hours and Rework-Hours

Work-hours are computed by the summation of all the account hours that are listed as **Direct** in the following table. All the account hours listed as **Indirect** are to be **excluded** from the work-hours that are submitted in the productivity data for the following sections.

**Direct work-hours should include all detailed engineering hours used to produce deliverables including site investigations, meetings, planning, constructability, RFIs, etc., and rework.** Specifically exclude work-hours for operating manuals and demolition drawings. Engineering work-hours reported should only be for the categories requested and may not equal the total engineering work-hours for the project.

**Exclude the following categories: architectural design, plumbing, process design, civil/site prep, HVAC, insulation and paint, sprinkler/deluge systems, etc.** Within a category, direct work-hours that cannot be specifically assigned into the provided classifications, and have not been excluded, should be prorated based on known work-hours or quantities as appropriate. Please review this table completely before providing data in the following sections.

	<b>Direct</b>	<b>Indirect</b>
<b>Account</b>	Discipline Engineer	Document Control
	Designer	Reproduction Graphics
	Technician	Project Management
		Project Controls (cost/schedule/estimating)
		Project Engineer
		Secretary/clerk
		Procurement (supply management)
		Construction Support (test package support, commissioning, etc.)
		Quality Assurance
		Accounting
		Legal

#### Unit of Measure Legend:

cm.	centimeter	SM	Square Meter	WH	Work-hour
mm.	millimeter	MT	Metric Ton	HP	Horse Power
LM	Linear Meter	CM	Cubic Meter	kW	kilo-watts

### 3.1 Concrete

#### Instructions

Please complete the following tables indicating quantity and engineering work-hours for the categories appropriate to your project. If you cannot enter all data then enter totals only. Include rework in the work-hours only. If the project had no work-hours or quantities for a category, enter none.

The quantity of concrete is the amount of concrete that is required for the specified slab, foundation, or structure provided in the final Issued for Construction (IFC) drawings.

Refer to the section “Instructions for Computation of Work-Hours and Rework-Hours” for a detailed listing of direct hours to be included and indirect hours that are to be excluded from the computation of the work-hours.

Which design platform was used for this category in this project? Check all that apply.

2D ( )

3D ( )

Slabs	None	IFC Quantity (CM)	Engineering WH (including rework) (hours)
Ground & Supported Slabs			
Area Paving			
<b>Total Slabs</b>			

Foundations	None	IFC Quantity (CM)	Engineering WH (including rework) (hours)
Piling (each)			
Foundations (< 4CM)			
Foundations (≥4CM)			
<b>Total Foundations (CM)</b> (Excluding piling)			

Concrete Structures	None	IFC Quantity (CM)	Engineering WH (including rework) (hours)
<b>Concrete Structures</b>			
Concrete Structures include concrete structures, columns, beams, cooling tower basins, trenches, formed elevated slabs/structures, and retaining walls.			

Total Concrete	None	IFC Quantity (CM)	Engineering WH (including rework) (hours)
<b>Total Concrete</b>			

## Concrete Design Reuse

If the project design includes multiple similar components that allow reuse of design effort, estimate the percentage of the total quantity for concrete that did not require unique design.

**Example:** The total concrete quantity for a project is 5,000 CM. The design includes three identical foundations of 1,000 CM each. There are no other identical components. The estimated design reuse for concrete is:  $\frac{3(1,000) - 1,000 \text{ CM}}{5,000 \text{ CM}} = \frac{2,000 \text{ CM}}{5,000 \text{ CM}} = 40\%$

<input type="checkbox"/> No Response									
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
< 10%	≥ 10%	> 20%	>30%	> 40%	>50%	> 60%	> 70%	> 80%	> 90%

---

## 3.2 Structural Steel

### Instructions

Please complete the following tables indicating quantity and engineering work-hours for the categories appropriate to your project. If possible, separate data for structural steel, pipe racks & utility bridges and miscellaneous steel. If you can not separate structural steel from pipe racks & utility bridges, combine these data in the space provided below. If you cannot enter all data then enter totals only. Include rework in the work-hours only. If the project had no work-hours or quantities for a category, enter none.

The quantity of steel is the amount of steel provided in the final Issued for Construction (IFC) drawings.

Refer to the section “Instructions for Computation of Work-Hours and Rework-Hours” for an additional detailed listing of direct hours to be included and indirect hours that are to be excluded from the computation of the work-hours.

Which design platform was used for this category in this project? Check all that apply.

2D ( )

3D ( )

<b>Structural Steel</b>	<b>None</b>	<b>IFC Quantity (MT)</b>	<b>Engineering WH (including rework) (hours)</b>
Structural Steel			
This includes trusses, columns, girders, beams, struts, girts, purlins, vertical and horizontal bracing, bolts, and nuts.			
Pipe Racks & Utility Bridges			
This includes steel structures outside the physical boundaries of a major structure, which are used to support pipe, conduit, and/or cable tray.			
<b>Combined Structural Steel / Pipe Racks &amp; Utility Bridges*</b>			
* Enter combined structural steel and pipe racks & utility bridges if you cannot separate the quantities above.			
Miscellaneous Steel			
This includes handrails, toe plate, grating, checker plate, stairs, ladders, cages, miscellaneous platforms, pre-mounted ladders and platforms, miscellaneous support steel including scab on supports, “T” and “H” type supports, trench covers, and Q decking.			
<b>Total Steel</b>			
This is the total of structural steel, pipe racks & utility bridges, and miscellaneous steel from above or the total of combined structural steel, pipe racks & utility bridges (if not separated) and miscellaneous steel. If you have quantities for steel not included in the breakouts above, include them in the totals here.			

## Structural Steel Design Reuse

If the project design includes multiple similar components that allow reuse of design effort, estimate the percentage of the total quantity for structural steel that did not require unique design.

**Example:** The total structural steel quantity for a project is 5,000 MT. The design includes three identical structural steel frames of 1,000 MT each. There are no other identical components. The estimated repeated quantity for structural steel is:  $\frac{3(1,000) - 1,000 \text{ MT}}{5,000 \text{ MT}} = \frac{2,000 \text{ MT}}{5,000 \text{ MT}} = 40\%$

<input type="checkbox"/> No Response									
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
< 10%	≥ 10%	> 20%	>30%	> 40%	>50%	> 60%	> 70%	> 80%	> 90%

---

### 3.3 Electrical

#### Instructions

Please complete the following tables indicating quantity and engineering work-hours for the categories appropriate to your project. If you cannot enter all data then enter totals only. Include rework in the work-hours only. If the project had no work-hours or quantities for a category, enter none.

- Total Direct Engineering Electrical Work-Hours for This Project \_\_\_\_\_
- Total Connected Horsepower of Motors \_\_\_\_\_
- Number of Motors \_\_\_\_\_
- Total KVA Load of Project \_\_\_\_\_

The quantity of electrical equipment, conduit, cable trays, wire, termination, and lighting fixtures are the amount of each provided in the final Issued for Construction (IFC) drawings.

Refer to the section “Instructions for Computation of Work-Hours and Rework-Hours” for an additional detailed listing of direct hours to be included and indirect hours that are to be excluded from the computation of the work-hours.

Which design platform was used for this category in this project? Check all that apply.

2D ( )

3D ( )

Electrical Equipment	None	IFC Quantity (each)	Engineering WH (including rework) (hours)
Electrical Equipment 600V & Below			
Electrical Equipment Over 600V			
Electrical equipment includes transformers, switchgear, UPS systems, MCCs, rectifiers, motors, generators, etc. This also includes work-hours for single line, elementary diagrams and studies.			
<b>Total Electrical Equipment</b>			

Conduit	None	IFC Quantity	Engineering WH (including rework) (hours)
Conduit			
	LM		
	Number of Runs		
This includes power plan, cable and conduit schedule and interconnects. Exposed / aboveground and underground			

<b>Cable Tray</b>	<b>None</b>	<b>IFC Quantity (LM)</b>	<b>Engineering WH (including rework) (hours)</b>
Cable Tray			
This includes electrical and instrument cable trays, channels, supports, covers, etc.			

<b>Wire &amp; Cable</b>		<b>None</b>	<b>IFC Quantity</b>	<b>Engineering WH (including rework) (hours)</b>
Wire & Cable (w/o conduit or tray)	LM			
	Number of Terminations			
This includes power, control and grounding cables.				

<b>Other Electrical</b>	<b>None</b>	<b>IFC Quantity</b>	<b>Engineering WH (including rework) (hours)</b>
Lighting Fixtures (each)			
This includes fixtures, conduit, wiring, panels, and control devices. Quantity is the number of fixtures.			
Electrical Heat Tracing (LM)			
This includes electric heat trace cable, power feeds to the cable, control accessories, end of line devices, connectors, tape or other strapping/support materials, and any other items needed to complete the heat trace system. Length is based on the lineal meter of process and utility piping heat traced.			

### 3.4 Piping

#### Instructions

Please complete the following tables indicating quantity, percent hot and cold, and engineering work-hours for the categories appropriate to your project. Piping includes under ground pressure pipe. **Exclude tubing except where indicated.** If you cannot enter all data then enter totals only. Include rework in the work-hours only. If the project had no work-hours or quantities for a category, enter none.

The quantity of piping is the amount of piping specified in the final Issued for Construction (IFC) drawings. This quantity should not be “cut lengths” but should be measured “center-to-center” through valves and fittings as with the quantity for the construction metric. Most “CADD dumps” are cut lengths. The quantity should be adjusted to be the length measured as noted above.

Refer to the section “Instructions for Computation of Work-Hours and Rework-Hours” for an additional detailed listing of direct hours to be included and indirect hours that are to be excluded from the computation of the work-hours.

Which design platform was used for this category in this project? Check all that apply.

2D ( )

3D ( )

Piping	None	IFC Quantity	Percent Hot and Cold (%)	Engineering WH (including rework) (hours)
Small Bore (2-1/2” and Smaller) (LM)				
Large Bore (3” and Larger) (LM)				
Engineered Hangers and Supports (each) (Includes stress analysis)				
Number of pipe fittings*				
<b>Total Piping** (LM)</b>				

\* Elbows, flanges, reducers, branch connection fittings e.g. o-lets, saddles etc., Y’s, T’s, caps, unions, couplings, etc.

\*\* Total piping quantity is linear meter only. The total piping work-hours include those hours for small & large bore piping, engineered hangers and supports and fittings.

Heat Tracing Tubing	None	IFC Quantity (LM)	Engineering WH (including rework) (hours)
<b>Total Heat Tracing Tubing</b>			

### 3.5 Instrumentation

#### Instructions

Please complete the following tables indicating quantity and engineering work-hours for the categories appropriate to your project. If you cannot enter all data then enter totals only. Include rework in the work-hours only. If the project had no work-hours or quantities for a category, enter none.

The quantity of instrumentation is the amount provided in the final Issued for Construction (IFC) drawings.

Refer to the section “Instructions for Computation of Work-Hours and Rework-Hours” for an additional detailed listing of direct hours to be included and indirect hours that are to be excluded from the computation of the work-hours.

Which design platform was used for this category in this project? Check all that apply.

2D ( )

3D ( )

Instrumentation	None	IFC Quantity	Engineering WH (including rework) (hours)
Loops (count)			
Tagged Devices (count)			
I/O (count)			
This includes all instrument and control design work-hours except DCS/PLC Configuration and Programming. I/O (count) includes the I/O that comes over digital communication interfaces from outside of the control system. For such interfaces, count the addressable points. For fieldbus interfaces, count only the devices.			
<input checked="" type="checkbox"/> DCS/PLC Design included			
DCS/PLC Configuration and Programming			

---

### 3.6 Equipment

#### Instructions

Please complete the following tables indicating quantity and engineering work-hours for the categories appropriate to your project. If you cannot enter all data then enter totals only. Include rework in the work-hours only. If the project had no work-hours or quantities for a category, enter none.

The Total Quantity of equipment is the amount of tagged items provided in the final Issued for Construction (IFC) drawings with vendor designed skids being counted as a single item. The Individually Designed quantity is the quantity defined by unique data sheets. For example, pump P201a/b is one unique data sheet, but is a total of two items.

These hours include only mechanical discipline hours.

Refer to the section “Instructions for Computation of Work-Hours and Rework-Hours” for an additional detailed listing of direct hours to be included and indirect hours that are to be excluded from the computation of the work-hours.

Which design platform was used for this category in this project? Check all that apply.

2D ( )

3D ( )

Pressure Vessels	None	Individually Designed (each)	Total Quantity (each)	Engineering WH (including rework) (hours)
This includes tray/packed towers, columns, reactors/regenerators, and miscellaneous other pressure vessels. Field fabricated towers, columns, reactors and regenerators are to be included.				

Atmospheric Tanks	None	Individually Designed (each)	Total Quantity (each)	Engineering WH (including rework) (hours)
This includes storage tanks, floating roof tanks, bins/hoppers/silos/cyclones, cryogenic & low temperature tanks and miscellaneous other atmospheric tanks.				

Heat Transfer Equipment	None	Individually Designed (each)	Total Quantity (each)	Engineering WH (including rework) (hours)
This includes heat exchangers, fin fan coolers, evaporators, cooling towers and miscellaneous other heat transfer equipment.				

<b>Boiler &amp; Fired Heaters</b>	<b>None</b>	<b>Individually Designed (each)</b>	<b>Total Quantity (each)</b>	<b>Engineering WH (including rework) (hours)</b>	<b>Total (BTU/Hr)</b>
This includes packaged boilers, field erected boilers, fired heaters, waste heat boilers, stand-alone stacks, and miscellaneous other boilers and fired heaters.					

<b>Rotating Equipment (w/drivers)</b>	<b>None</b>	<b>Individually Designed (each)</b>	<b>Total Quantity (each)</b>	<b>Engineering WH (including rework) (hours)</b>	<b>Total (horsepower)</b>
This includes compressors (centrifugal/reciprocating), blowers, screw rotary compressors, metering/in-line pumps, pumps (centrifugal/reciprocating), positive displacement pumps, agitators, mixers, blenders and other miscellaneous compressors, fans and pumps.					

<b>Material Handling Equipment (w/drivers)</b>	<b>None</b>	<b>Individually Designed (each)</b>	<b>Total Quantity (each)</b>	<b>Engineering WH (including rework) (hours)</b>
This includes conveyors (belt, chain, screen, rotor, etc.), cranes & hoists, scales, lifts, stackers, reclaimers, ship loaders, compactors, feeders and baggers, and miscellaneous other material handling equipment.				

<b>Power Generation Equipment</b>	<b>None</b>	<b>Individually Designed (each)</b>	<b>Total Quantity (each)</b>	<b>Engineering WH (including rework) (hours)</b>	<b>Total (kilo-watts)</b>
This includes gas turbines, steam turbines, diesel, and other miscellaneous power generation equipment.					

<b>Other Process Equipment</b>	<b>None</b>	<b>Individually Designed (each)</b>	<b>Total Quantity (each)</b>	<b>Engineering WH (including rework) (hours)</b>
This includes specialty gas equipment, bulk chemical equipment, process equipment, particle extraction (bag houses, scrubbers, etc.), treatment systems (water treatment, etc.), incinerators, and flares/flare systems.				

<b>Vendor-Designed Modules &amp; Pre-Assembled Skids</b>	<b>None</b>	<b>Individually Designed (each)</b>	<b>Total Quantity (each)</b>	<b>Engineering WH (including rework) (hours)</b>

This includes modules (partial units) and complete skids units.

<b>Total Equipment Count*</b>	<b>None</b>	<b>Individually Designed (each)</b>	<b>Total Quantity (each)</b>	<b>Engineering WH (including rework) (hours)**</b>

Skids & modules with multiple equipments are counted still as a single entry.  
\* Total equipment count may include items not identified above.  
\*\* This is total mechanical discipline direct work-hours.

## 4. Construction Productivity Metrics

### Instructions for Computation of Actual Work-Hours, Rework-Hours, and Installed Costs

**Actual work-hours** are computed by the summation of all the account hours that are listed as **Direct** in the following table. All the account hours listed as **Indirect** are to be **excluded** from the actual work-hours that are submitted in the productivity data for the following sections.

**Estimated quantities** and work-hours should be updated to include all change orders. **Actuals** include all quantities installed and work-hours, to include rework-hours for these quantities.

**Total Installed Unit Costs** are the burdened **direct cost of labour, material and equipment** which are directly attribute to, or become a part of the final product. The **direct labour costs** are those associated with work-hours by craft persons listed as **Direct** in the following table.

	Direct	Indirect	
Account	Direct Craft Labour	Accounting	Procurement
	Foreman	Area Superintendent	Process Equipment Maintenance
	General Foreman	Assistant Project Manager	Project Controls
	Load and Haul	Bus Drivers	Project Manager
	Oilers	Clerical	QA/QC
	Operating Engineer	Craft Planners	Quantity Surveyors
	Safety Meetings	Craft Superintendent	Receive and Offload
	Scaffolding	Craft Training	Recruiting
	Truck Drivers Direct	Crane Setup/take down	Safety
		Document Control	Safety Barricades
		Drug Testing	Security
		Equipment Coordinator	Show-up/Travel Time
		Evacuation Time	Site Construction Manager
		Field Administration Staff	Site Maintenance
		Field Engineer-Project	Subcontract Administrator
		Field Staff (Hourly)	Supervision (Hourly)
		Field Staff (Salary)	Surveying Crews
		Fire Watch	Temporary Facilities
		Flag Person	Temporary Utilities
		General Superintendent	Test Welders
		Hole Watch	Tool Room
		Janitorial	Truck Drivers Indirect
		Job Clean-Up	Warehouse
		Master Mechanic	Warehousing
		Material Control	Water Hauling
		Mobilization	
	Nomex Distribution		
	Orientation Time		
	Payroll Clerks/ Timekeepers		

#### Unit of Measure Legend:

cm. centimeter	SM Square Meter	WH Work-hour
mm. millimeter	MT Metric Ton	HP Horse Power
LM Linear Meter	CM Cubic Meter	kW kilo-watts

## 4.1 Concrete

### Instructions

Please provide estimated and actual productivity below for the categories appropriate to your project for the installation of concrete.

In the first section of each category include the **estimated quantity to be installed, the estimated work-hours required for the installation and the estimated total installed unit cost including labour and material cost at the time of project sanction (or as soon as available following sanction).**

**In the second section for each category, provide the actual installed neat quantity, the work-hours (including rework), and the actual total installed unit cost which is the burdened cost including labour and material and equipment from both direct hire and subcontract. Indicate if the work performed for each category was subcontracted or not. If work was both subcontracted and in-house, indicate the type that was more predominant.**

### Include work-hours for the following selected activities:

Loading material at the jobsite yard, hauling to, and unloading at the job work site; local layout, excavation and backfill, fabrication, installation, stripping and cleaning forms; field installation of reinforcing material; field installation of all embeds; all concrete pours, curing, finishing, rubbing, mud mats; and anchor bolt installation.

### Do not include work-hours for:

Piling, drilled piers, wellpoints and major de-watering, concrete fireproofing, batch plants, non-permanent roads and facilities, third party testing, mass excavations, rock excavations, site survey, q-deck, sheet piles, earthwork shoring, cold pour preparation, grouting, precast tees, panels, decks, vaults, manholes, etc.

### Definitions

The **Installed Neat Quantity** of concrete is the amount of concrete that is required for the specified slab, foundation, or structure provided in the project's plans and specifications and does not include any quantity of concrete that is used due to rework.

Refer to the section "**Instructions for Computation of Actual Work-Hours, Rework-Hours and Installed Cost**" for a detailed listing of direct hours and their associated costs to be included as well as indirect hours and their associated costs to be excluded.

Slabs	Estimated Productivity			Total Installed Unit Cost (\$/CM)
	None	Quantity (CM)	WH	
On-Grade				
Elevated Slabs /On Deck				
Area Paving				
<b>Total Slabs</b>				
Total Installed Unit Cost (TIUC) for Total Slabs is the weighted average by quantity of the On-Grade, Elevated Slabs/ On Deck, Area Paving and any other slabs not included above.				

Slabs	Actual Productivity				
	None	Sub contracted (Yes or No)	Installed Quantity (CM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/CM)
On-Grade					
Elevated Slabs /On Deck					
Area Paving					
<b>Total Slabs</b>					

Total Installed Unit Cost (TIUC) for Total Slabs is the weighted average by quantity of the On-Grade, Elevated Slabs/ On Deck, Area Paving and any other slabs not included above.

Foundations	Estimated Productivity			
	None	Quantity (CM)	WH	Total Installed Unit Cost (\$/CM)
< 4 CM				
4 – 15 CM				
16– 38 CM				
≥ 38 CM				
<b>Total Foundations</b>				

Total Installed Unit Cost (TIUC) for Total Foundations is the weighted average by quantity of the each category above.

Foundations	Actual Productivity				
	None	Sub contracted (Yes or No)	Installed Quantity (CM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/CM)
< 4 CM					
4 – 15 CM					
16– 38 CM					
≥ 38 CM					
<b>Total Foundations</b>					

Total Installed Unit Cost (TIUC) for Total Foundations is the weighted average by quantity of the each category above.

Concrete Structures	Estimated Productivity			
	None	Quantity (CM)	WH	Total Installed Unit Cost (\$/CM)
Concrete Structures				

Concrete Structures	Actual Productivity				
	None	Sub contracted (Yes or No)	Installed Quantity (CM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/CM)
Concrete Structures					

Total Concrete	Estimated Productivity			
	None	Quantity (CM)	WH	Total Installed Unit Cost (\$/CM)
Total Concrete				
Total Installed Unit Cost (TIUC) for Total Concrete is the weighted average by quantity of the total slabs, total foundations, total concrete structures and any other concrete not included above.				

Total Concrete	Actual Productivity				
	None	Sub contracted (Yes or No)	Installed Quantity (CM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/CM)
Total Concrete					
Total Installed Unit Cost (TIUC) for Total Concrete is the weighted average by quantity of the total slabs, total foundations, total concrete structures and any other concrete not included above.					

### Concrete Repetitive Construction

If the project includes multiple similar components that allow construction efficiencies (i.e. based on learning curve, formwork reuse, etc.), estimate the percentage of the total quantity for concrete that was repeated.

**Example:** The total concrete quantity for a project is 5,000 CM. The design includes three identical foundations of 1,000 CM each. There are no other identical components. The estimated repeated quantity for concrete is:  $\frac{3(1,000) - 1,000 \text{ CM}}{5,000 \text{ CM}} = \frac{2,000 \text{ CM}}{5,000 \text{ CM}} = 40\%$

<input type="checkbox"/> No Response									
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
< 10%	≥ 10%	> 20%	>30%	> 40%	>50%	> 60%	> 70%	> 80%	> 90%

## 4.2 Structural Steel

### Instructions

Please provide estimated and actual productivity below for the categories appropriate to your project for the installation of structural steel.

In the first section of each category include the **estimated quantity to be installed, the estimated work-hours required for the installation and the estimated total installed unit cost including labour and material cost at the time of project sanction (or as soon as available following sanction).**

**In the second section for each category, provide the actual installed quantity, the work-hours (including rework), and the actual total installed unit cost which is the burdened cost including labour and material and equipment from both direct hire and subcontract. Indicate if the work performed for each category was subcontracted or not. If work was both subcontracted and in-house, indicate the type that was more predominant.**

Include work-hours for the following selected activities:

Shake-out, transporting, erection, plumbing, leveling, bolting, and welding.

Do not include work-hours for:

Fabrication, demolition, and architectural work, such as roofing, siding and vents.

### Definitions

The **Installed Quantity** of steel is the amount of steel provided in the project's plans and specifications and does not include any quantity of steel that is used due to rework.

Refer to the section "**Instructions for Computation of Actual Work-Hours, Rework-Hours and Installed Cost**" for a detailed listing of direct hours and their associated costs to be included as well as indirect hours and their associated costs to be excluded.

Structural Steel	Estimated Productivity			
	None	Quantity (MT)	WH	Total Installed Unit Cost (\$/MT)
Structural Steel				
This includes trusses, columns, girders, beams, struts, girts, purlins, vertical and horizontal bracing, bolts, and nuts.				
Pipe Racks & Utility Bridges				
This includes steel structures outside the physical boundaries of a major structure, which is used to support pipe, conduit, and/or cable tray.				
Miscellaneous Steel				
This includes handrails, toe plate, grating, checker plate, stairs, ladders, cages, miscellaneous platforms, pre-mounted ladders and platforms, miscellaneous support steel including scab on supports, "T" and "H" type supports, trench covers, and Q decking.				
<b>Total Structural Steel</b>				
Total Installed Unit Cost (TIUC) for Structural Steel is the weighted average by quantity of Structural Steels, Pipe Racks & Utility Bridges, Miscellaneous Steel and any other Structural Steel not included above.				

Structural Steel	Actual Productivity				
	None	Sub contracted (Yes or No)	Installed Quantity (MT)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/ MT)
Structural Steel					
This includes trusses, columns, girders, beams, struts, girts, purlins, vertical and horizontal bracing, bolts, and nuts.					
Pipe Racks & Utility Bridges					
This includes steel structures outside the physical boundaries of a major structure, which is used to support pipe, conduit, and/or cable tray.					
Miscellaneous Steel					
This includes handrails, toe plate, grating, checker plate, stairs, ladders, cages, miscellaneous platforms, pre-mounted ladders and platforms, miscellaneous support steel including scab on supports, "T" and "H" type supports, trench covers, and Q decking.					
<b>Total Structural Steel</b>					
Total Installed Unit Cost (TIUC) for <b>Structural Steel</b> is the weighted average by quantity of Structural Steels, Pipe Racks & Utility Bridges, Miscellaneous Steels and any other Structural Steel not included above.					

### Structural Steel Repetitive Construction

If the project includes multiple similar components that allow construction efficiencies (i.e. based on learning curve, formwork reuse, etc.), estimate the percentage of the total quantity for structural steel that was repeated.

**Example:** The total structural steel quantity for a project is 5,000 MT. The design includes three identical structural steel frames of 1,000 MT each. There are no other identical components. The estimated repeated quantity for structural steel is :

$$\frac{3(1,000) - 1,000 \text{ MT}}{5,000 \text{ MT}} = \frac{2,000 \text{ MT}}{5,000 \text{ MT}} = 40\%$$

<input type="checkbox"/> No Response									
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
< 10%	≥ 10%	> 20%	>30%	> 40%	>50%	> 60%	> 70%	> 80%	> 90%

### 4.3 Electrical

#### Instructions

Please provide estimated and actual productivity below for the categories appropriate to your project for the installation of electrical.

In the first section of each category include the **estimated quantity to be installed, the estimated work-hours required for the installation and the estimated total installed unit cost including labour and material cost at the time of project sanction (or as soon as available following sanction).**

**In the second section for each category, provide the actual installed quantity, the work-hours (including rework), and the actual total installed unit cost which is the burdened cost including labour and material and equipment from both direct hire and subcontract. Indicate if the work performed for each category was subcontracted or not. If work was both subcontracted and in-house, indicate the type that was more predominant.**

Include work-hours for the following selected activities:

Installation, testing, labeling, etc.

#### Definitions

The **Installed Quantity** of electrical equipment, devices, conduit and cable trays are the amount of each provided in the project's plans and specifications and does not include any quantity that is used due to rework.

Refer to the section "**Instructions for Computation of Actual Work-Hours, Rework-Hours and Installed Cost**" for a detailed listing of direct hours and their associated costs to be included as well as indirect hours and their associated costs to be excluded.

- Total Direct Electrical Work-Hours for This Project \_\_\_\_\_
- Total Connected Horsepower of Motors \_\_\_\_\_
- Number of Motors \_\_\_\_\_
- Total KVA Load of Project \_\_\_\_\_

Electrical Equipment and Devices	Estimated Productivity			
	None	Quantity (each)	WH	Total Installed Unit Cost (\$/Each)
Panels and Small Devices				
This includes all labour for the installation of lighting and power panels, dry type transformers, control stations (pushbuttons, small local panels, etc.), welding receptacles and their supports. Count includes only actual electrical devices - not supports.				
Electrical Equipment 1kV & Below				
Electrical Equipment Over 1kV				
<b>Total Electrical Equipment</b>				
<ul style="list-style-type: none"> <li>- This includes all labour for the installation of transformers, switchgear, UPS systems, MCCs, DCS/PLC racks and panels, etc.</li> <li>- Total Installed Unit Cost (TIUC) for <b>Electrical Equipment</b> is the weighted average by quantity of Electrical Equipments 1kV &amp; Below, Electrical Equipments Over 1kV.</li> </ul>				

Electrical Equipment and Devices	Actual Productivity				
	None	Sub contracted (Yes or No)	Installed Quantity (each)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/Each)
Panels and Small Devices					
This includes all labour for the installation of lighting and power panels, dry type transformers, control stations (pushbuttons, small local panels, etc.), welding receptacles and their supports. Count includes only actual electrical devices - not supports.					
Electrical Equipment 1kV & Below					
Electrical Equipment Over 1kV					
<b>Total Electrical Equipment</b>					
<ul style="list-style-type: none"> <li>- This includes all labour for the installation of transformers, switchgear, UPS systems, MCCs, DCS/PLC racks and panels, etc.</li> <li>- Total Installed Unit Cost (TIUC) for <b>Electrical Equipment</b> is the weighted average by quantity of Electrical Equipments 1kV &amp; Below, Electrical Equipments Over 1kV.</li> </ul>					

Instructions for calculation of Weighted-Average Diameter of Conduit (Hyperlink)

Conduit	Weighted Average Diameter (inches)	Estimated Productivity			
		None	Quantity (LM)	WH	Total Installed Unit Cost (\$/LM)
Exposed or Aboveground Conduit					
This includes all labour for installation of conduit, hangers, supports, fittings, flexible connections, marking, grounding jumpers, seals, boxes, etc. This excludes lighting conduit.					
Underground, Duct Bank or Embedded Conduit					
This includes all labour for installation of conduit, supports, grounding jumpers, etc. Does not include excavation, backfill, concrete, manholes, etc.					
<b>Total Conduit</b>					
- Total Installed Unit Cost (TIUC) for <b>Conduit</b> is the weighted average by quantity of Exposed or Aboveground Conduits, Underground, Duct Bank or Embedded Conduit.					

Conduit	Weighted Average Diameter (mm.)	Actual Productivity				Total Installed Unit Cost (\$/LM)
		None	Sub Contracted (Yes or No)	Installed Quantity (LM)	Actual WH (including rework) (hours)	
Exposed or Aboveground Conduit						
This includes all labour for installation of conduit, hangers, supports, fittings, flexible connections, marking, grounding jumpers, seals, boxes, etc. This excludes lighting conduit.						
Underground, Duct Bank or Embedded Conduit						
This includes all labour for installation of conduit, supports, grounding jumpers, etc. Does not include excavation, backfill, concrete, manholes, etc.						
<b>Total Conduit</b>						
- Total Installed Unit Cost (TIUC) for <b>Conduit</b> is the weighted average by quantity of Exposed or Aboveground Conduits, Underground, Duct Bank or Embedded Conduit.						

Instructions for calculation of Weighted-Average Size of Cable Tray (Hyperlink)

Cable Tray	Weighted Average Size (inches)	Estimated Productivity			
		None	Quantity (LM)	WH	Total Installed Unit Cost (\$/LM)
Cable Tray					
- This includes all labour for the installation of tray, channel, supports, covers, grounding jumpers, marking, etc. Includes cable tray for instrument cable but does not include fire stop.					

Cable Tray	Weighted Average Size (inches)	Actual Productivity				
		None	Sub Contracted (Yes or No)	Installed Quantity (LM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/LM)
Cable Tray						
This includes all labour for the installation of tray, channel, supports, covers, grounding jumpers, marking, etc. Includes cable tray for instrument cable but does not include fire stop.						

Wire and Cable	Estimated Productivity			
	None	Quantity (LM)	WH	Total Installed Unit Cost (\$/LM)
Control Cable				
Power Cable below 1kV				
Power Cable above 1kV				
This includes all labour for the installation, termination, labeling, and testing of 1kV and below power and control cable. It does not include heat-tracing cable.				
<b>Total Wire and Cable</b>				
- Total Installed Unit Cost (TIUC) for <b>Wire and Cable</b> is the weighted average by quantity of Control Cables, Power Cable below 1kV, Power Cable above 1kV and any other listed above.				

Wire and Cable	Actual Productivity				
	None	Sub Contracted (Yes or No)	Installed Quantity (LM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/LM)
Control Cable					
Power Cable below 1kV					
Power Cable above 1kV					
This includes all labour for the installation, termination, labeling, and testing of 1kV and below power and control cable. It does not include heat-tracing cable.					
<b>Total Wire and Cable</b>					
- Total Installed Unit Cost (TIUC) for <b>Wire and Cable</b> is the weighted average by quantity of Control Cables, Power Cable below 1kV, Power Cable above 1kV listed above.					

Transmission Line	Estimated Productivity			
	None	Quantity (LM)	WH	Total Installed Unit Cost (\$/LM)
High Voltage above 25kV				
This includes all labour for the installation of line, tower, foundations, switch yards and testing of power and control line.				
<b>Total Transmission Line</b>				

Transmission Line	Actual Productivity				
	None	Sub Contracted (Yes or No)	Installed Quantity (LM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/LM)
High Voltage above 25kV					
This includes all labour for the installation of line, tower, foundations, switch yards and testing of power and control line.					
<b>Total Transmission Line</b>					

Other Electrical	Estimated Productivity			
	None	Quantity	WH	Total Installed Unit Cost (\$/each or \$/LM)
Lighting Fixtures (each)				
This includes all labour for the installation of fixtures (including lamps and supports) and for the installation of conduit and wiring from the lighting panel to the fixtures. Includes any control equipment, switches, conduit, wiring and accessories installed on the load side of the lighting panel. Installation of lighting panels is included in Panels and Small Devices and power feeder wiring for the panel is included in Power and Control Cable – 1kV.				
Grounding (LM)				
This includes all the labour for the installation of cable, ground rods, connectors and all accessories for the installation of conduit and wiring from the lighting panel to the fixtures. Includes work-hours for the installation of ground cables pulled into cable trays, duct banks, and installed exposed in electric or other rooms. The Length is based on the total meter of ground cable installed.				
Electrical Heat Tracing (LM)				
This includes the labour for the installation of electric heat trace cable, power feeds to the cable, control accessories, end of line devices, connectors, tape or other strapping/support materials, and any other items needed to complete the heat trace system. Length is based on the lineal meter of process and utility piping heat traced.				

Other Electrical	Actual Productivity				
	None	Sub Contracted (Yes or No)	Installed Quantity	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/each or \$/LM)
Lighting Fixtures (each)					
<p>This includes all labour for the installation of fixtures (including lamps and supports) and for the installation of conduit and wiring from the lighting panel to the fixtures. Includes any control equipment, switches, conduit, wiring and accessories installed on the load side of the lighting panel. Installation of lighting panels is included in Panels and Small Devices and power feeder wiring for the panel is included in Power and Control Cable – 1kV.</p>					
Grounding (LM)					
<p>This includes all the labour for the installation of cable, ground rods, connectors and all accessories for the installation of conduit and wiring from the lighting panel to the fixtures. Includes work-hours for the installation of ground cables pulled into cable trays, duct banks, and installed exposed in electric or other rooms. The Length is based on the total meter of ground cable installed.</p>					
Electrical Heat Tracing (LM)					
<p>This includes the labour for the installation of electric heat trace cable, power feeds to the cable, control accessories, end of line devices, connectors, tape or other strapping/support materials, and any other items needed to complete the heat trace system. Length is based on the lineal meter of process and utility piping heat traced.</p>					

## 4.4 Piping

### Instructions

Please provide estimated and actual productivity below for the categories appropriate to your project for the installation of piping.

In the first section of each category include the **estimated quantity to be installed, the estimated work-hours required for the installation and the estimated total installed unit cost including labour and material cost at the time of project sanction (or as soon as available following sanction).**

**In the second section for each category, provide the actual installed quantity, the work-hours (including rework), and the actual total installed unit cost which is the burdened cost including labour and material and equipment from both direct hire and subcontract. Indicate if the work performed for each category was subcontracted or not. If work was both subcontracted and in-house, indicate the type that was more predominant.**

### Include work-hours for the following selected activities:

Erecting and installing large bore piping, including welding, valves, in-line specials, flushing/hydro testing, tie-ins (excluding hot taps), material handling (from the laydown yard to the field), in-line devices, specialties, equipment operators, and hangers & supports.

### Do not include work-hours for:

Non-destructive evaluation (NDE), steam tracing, stress relieving, underground piping, offloading pipe as it is received, commissioning, and field fabrication of large bore.

### Definitions

The **Installed Quantity** of piping is the amount of piping specified in the project's plans and specifications and does not include any quantity of piping that is used due to rework.

Refer to the section "**Instructions for Computation of Actual Work-Hours, Rework-Hours and Installed Cost**" for a detailed listing of direct hours and their associated costs to be included as well as indirect hours and their associated costs to be excluded.

Instructions for calculation of Small Bore Weighted Diameter (Hyperlink)

**Small Bore (2-1/2" and Smaller)**

- Field and Shop Fabricated and Field Run (Excludes Tubing)

Small Bore	Weighted Diameter (inches)	Percent Shop Fabricated (%)	Estimated Productivity			
			None	Quantity (LM)	WH	Total Installed Unit Cost (\$/LM)
Carbon Steel						
Stainless Steel						
Chrome						
Other Alloys						
Non Metallic						
<b>Total Small Bore</b>						

- Total Installed Unit Cost (TIUC) for **Small Bore** is the weighted average by quantity of types of small bore listed above and any other small bore not listed above.

Small Bore	Weighted Diameter (inches)	Percent Shop Fabricated (%)	Actual Productivity				
			None	Sub Contracted (Yes or No)	Installed Quantity (LM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/LM)
Carbon Steel							
Stainless Steel							
Chrome							
Other Alloys							
Non Metallic							
<b>Total Small Bore</b>							

- Total Installed Unit Cost (TIUC) for **Small Bore** is the weighted average by quantity of types of small bore listed above and any other small bore not listed above.

In the following section for large bore piping, the following definitions apply for hot and cold piping: Hot piping is that which has a design temperature greater than 121 degrees Celsius. Cold Piping is that which has a design temperature less than minus 28 degrees Celsius.

[Instructions for calculation of ISBL and OSBL Large Bore Weighted Diameter \(Hyperlink\)](#)

**Inside Battery Limits (ISBL) Large Bore (3” and Larger) (Excludes Tubing)**

**Estimated Productivity**

Large Bore (ISBL)	None	Weighted Diameter (inches)	Average Schedule	Quantity (LM)	WH	% Shop Fabricated	Total Installed Unit Cost (\$/LM)
Carbon Steel							
Stainless Steel							
Chrome							
Other Alloys							
Non Metallic							
<b>Total Large Bore (ISBL)</b>							
- Total Installed Unit Cost (TIUC) for <b>Large Bore (ISBL)</b> is the weighted average by quantity of types of large bore listed above and any other large bore pipe not listed above.							

**Actual Productivity**

Large Bore (ISBL)	None	Sub contracted (Yes or No)	Weighted Diameter (inches)	Average Schedule	Installed Quantity (LM)	Actual WH (including rework) (hours)	% Shop Fabricated	Total Installed Unit Cost (\$/LM)
Carbon Steel								
Stainless Steel								
Chrome								
Other Alloys								
Non Metallic								
<b>Total Large Bore (ISBL)</b>								
- Total Installed Unit Cost (TIUC) for <b>Large Bore (ISBL)</b> is the weighted average by quantity of types of large bore listed above and any other large bore pipe not listed above.								

**Outside Battery Limits (OSBL) Large Bore (3” and Larger) (Excludes Tubing)**

**Estimated Productivity**

Large Bore (OSBL)	None	Weighted Diameter (inches)	Average Schedule	Quantity (LM)	WH	% Shop Fabricated	Total Installed Unit Cost (\$/LM)
Carbon Steel							
Stainless Steel							
Chrome							
Other Alloys							
Non Metallic							
<b>Total Large Bore (OSBL)</b>							

- Total Installed Unit Cost (TIUC) for **Large Bore (OSBL)** is the weighted average by quantity of types of large bore listed above and any other large bore not listed above.

**Actual Productivity**

Large Bore (ISBL)	None	Sub contracted (Yes or No)	Weighted Diameter (inches)	Average Schedule	Installed Quantity (LM)	Actual WH (including rework) (hours)	% Shop Fabricated	Total Installed Unit Cost (\$/LM)
Carbon Steel								
Stainless Steel								
Chrome								
Other Alloys								
Non Metallic								
<b>Total Large Bore (OSBL)</b>								

- Total Installed Unit Cost (TIUC) for **Large Bore (OSBL)** is the weighted average by quantity of types of large bore listed above and any other large bore not listed above.

Heat Tracing Tubing	Estimated Productivity			
	None	Quantity (LM)	WH	Total Installed Unit Cost (\$/LM)
<b>Total Heat Tracing Tubing</b>				

Heat Tracing Tubing	Actual Productivity				
	None	Sub Contracted (Yes or No)	Installed Quantity (LM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/LM)
<b>Total Heat Tracing Tubing</b>					

## 4.5 Instrumentation

### Instructions

Please provide estimated and actual productivity below for the categories appropriate to your project for the installation of instrumentation.

In the first section of each category include the **estimated quantity to be installed, the estimated work-hours required for the installation and the estimated total installed unit cost including labour and material cost at the time of project sanction (or as soon as available following sanction).**

**In the second section for each category, provide the actual installed quantity, the work-hours (including rework), and the actual total installed unit cost which is the burdened cost including labour and material and equipment from both direct hire and subcontract. Indicate if the work performed for each category was subcontracted or not. If work was both subcontracted and in-house, indicate the type that was more predominant.**

### Include work-hours for the following selected activities:

Installation, calibration, testing, check out, and otherwise field certify the devices. A device is a physical device that has a tag number. This category includes process tubing, instrument air tubing, cable trays, conduits, instrument wire and cable, junction boxes, etc.

### Do not include work-hours for:

DCS, software, installation of in-line devices, programming and configuration.

### **Definitions**

The **Installed Quantity** of instrumentation is the amount provided in the project's plans and specifications and does not include any quantity of instrumentation that is used due to rework.

Refer to the section "**Instructions for Computation of Actual Work-Hours, Rework-Hours and Installed Cost**" for a detailed listing of direct hours and their associated costs to be included as well as indirect hours and their associated costs to be excluded.

Instrumentation	Estimated Productivity			
	None	Quantity (each)	WH	Total Installed Unit Cost (\$/ each)
Loops (count)				
Devices (Instruments, count)				
Unit of measure: Dual – Each based on loop check quantity. Each based on field-installed devices. (Instrumentation wire and cable are recorded in Electrical, Section 4.3.)				

Instrumentation	Actual Productivity				
	None	Sub contracted (Yes or No)	Installed Quantity (each)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/ each)
Loops (count)					
Devices (Instruments, count)					
Unit of measure: Dual – Each based on loop check quantity. Each based on field-installed devices. Instrumentation wire and cable are recorded in electrical section (4.3).					

## 4.6 Equipment

### Instructions

Please provide estimated and actual productivity below for the categories appropriate to your project for the installation of equipment.

In the first section of each category include the **estimated quantity to be installed, the estimated work-hours required for the installation and the estimated total installed unit cost including labour and material cost at the time of project sanction (or as soon as available following sanction).**

**In the second section for each category, provide the actual installed quantity, the work-hours (including rework), and the actual total installed unit cost which is the burdened cost including labour and material and equipment from both direct hire and subcontract. Indicate if the work performed for each category was subcontracted or not. If work was both subcontracted and in-house, indicate the type that was more predominant.**

### **Definitions**

The **Installed Quantity** of equipment is the amount provided in the project's plans and specifications and does not include any quantity of equipment that is used due to rework.

Refer to the section "**Instructions for Computation of Actual Work-Hours, Rework-Hours and Installed Cost**" for a detailed listing of direct hours and their associated costs to be included as well as indirect hours and their associated costs to be excluded.

Pressure Vessels Field Fab. & Erected	Estimated Productivity				
	None	Quantity (each)	WH	Total Weight (MT)	Total Installed Unit Cost (\$/ MT)
Pressure Vessels					
This includes tray/packed towers, columns, reactors/regenerators, and miscellaneous other pressure vessels. Work-hours should include installation of trays and packing if installed in the field.					

Pressure Vessels Field Fab. & Erected	Actual Productivity					
	None	Sub contracted (Yes or No)	Installed Quantity (each)	Actual WH (including rework) (hours)	Total Weight (MT)	Total Installed Unit Cost (\$/ MT)
Pressure Vessels						
This includes tray/packed towers, columns, reactors/regenerators, and miscellaneous other pressure vessels. Work-hours should include installation of trays and packing if installed in the field.						

<b>Pressure Vessels Shop Fab./ Field Erected</b>	<b>Estimated Productivity</b>				
	<b>None</b>	<b>Quantity (each)</b>	<b>WH</b>	<b>Total Weight (MT)</b>	<b>Total Installed Unit Cost (\$/ MT)</b>
Pressure Vessels					
This includes tray/packed towers, columns, reactors/regenerators, and miscellaneous other pressure vessels. Work-hours should include installation of trays and packing if installed in the field.					

<b>Pressure Vessels Shop Fab./ Field Erected</b>	<b>Actual Productivity</b>					
	<b>None</b>	<b>Sub contracted (Yes or No)</b>	<b>Installed Quantity (each)</b>	<b>Actual WH (including rework) (hours)</b>	<b>Total Weight (MT)</b>	<b>Total Installed Unit Cost (\$/ MT)</b>
Pressure Vessels						
This includes tray/packed towers, columns, reactors/regenerators, and miscellaneous other pressure vessels. Work-hours should include installation of trays and packing if installed in the field.						

<b>Atmospheric Tanks – Shop Fabricated</b>	<b>Estimated Productivity</b>				
	<b>None</b>	<b>Quantity (each)</b>	<b>WH</b>	<b>Total Capacity (MT)</b>	<b>Total Installed Unit Cost (\$/ MT)</b>
Atmospheric Tanks – Shop Fabricated					
This includes storage tanks, floating roof tanks, bins/hoppers/silos/cyclones, cryogenic & low temperature tanks and miscellaneous other atmospheric tanks. Include all shop built-up and field-erected tanks. Excluded are field fabricated and assembled tanks.					

<b>Atmospheric Tanks – Shop Fabricated</b>	<b>Actual Productivity</b>					
	<b>None</b>	<b>Sub contracted (Yes or No)</b>	<b>Installed Quantity (each)</b>	<b>Actual WH (including rework) (hours)</b>	<b>Total Capacity (MT)</b>	<b>Total Installed Unit Cost (\$/ MT)</b>
Atmospheric Tanks – Shop Fabricated						
This includes storage tanks, floating roof tanks, bins/hoppers/silos/cyclones, cryogenic & low temperature tanks and miscellaneous other atmospheric tanks. Include all shop built-up and field-erected tanks. Excluded are field fabricated and assembled tanks.						

Atmospheric Tanks – Field Fabricated	Estimated Productivity				
	None	Quantity (each)	WH	Total Capacity (MT)	Total Installed Unit Cost (\$/ MT)
Atmospheric Tanks – Field Fabricated					
This includes storage tanks, floating roof tanks, bins/hoppers/silos/cyclones, cryogenic and low temperature tanks, and other miscellaneous atmospheric tanks.					

Atmospheric Tanks – Field Fabricated	Actual Productivity					
	None	Sub contracted (Yes or No)	Installed Quantity (each)	Actual WH (including rework) (hours)	Total Capacity (MT)	Total Installed Unit Cost (\$/ MT)
Atmospheric Tanks – Field Fabricated						
This includes storage tanks, floating roof tanks, bins/hoppers/silos/cyclones, cryogenic and low temperature tanks, and other miscellaneous atmospheric tanks.						

Heat Transfer Equipment	Estimated Productivity				
	None	Quantity (each)	WH	Total Weight (MT)	Total Installed Unit Cost (\$/ MT)
Heat Transfer Equipment					
This includes heat exchangers, fin fan coolers, evaporators, package cooling towers and miscellaneous other heat transfer equipment.					

Heat Transfer Equipment	Actual Productivity					
	None	Sub contracted (Yes or No)	Installed Quantity (each)	Actual WH (including rework) (hours)	Total Weight (MT)	Total Installed Unit Cost (\$/ MT)
Heat Transfer Equipment						
This includes heat exchangers, fin fan coolers, evaporators, package cooling towers and miscellaneous other heat transfer equipment.						

<b>Boiler &amp; Fired Heaters</b>	<b>Estimated Productivity</b>				
	<b>None</b>	<b>Quantity (each)</b>	<b>WH</b>	<b>Total (MBTU)</b>	<b>Total Installed Unit Cost (\$/ MBTU)</b>
Boiler & Fired Heaters					
This includes packaged boilers, field erected boilers, fired heaters, waste heat boilers, stand-alone stacks, and miscellaneous other boilers and fired heaters.					

<b>Boiler &amp; Fired Heaters</b>	<b>Actual Productivity</b>					
	<b>None</b>	<b>Sub contracted (Yes or No)</b>	<b>Installed Quantity (each)</b>	<b>Actual WH (including rework) (hours)</b>	<b>Total (MBTU)</b>	<b>Total Installed Unit Cost (\$/ MBTU)</b>
Boiler & Fired Heaters						
This includes packaged boilers, field erected boilers, fired heaters, waste heat boilers, stand-alone stacks, and miscellaneous other boilers and fired heaters.						

<b>Rotating Equipment (w/drivers)</b>	<b>Estimated Productivity</b>				
	<b>None</b>	<b>Quantity (each)</b>	<b>WH</b>	<b>Total (HP)</b>	<b>Total Installed Unit Cost (\$/ HP)</b>
Rotating Equipment (w/drivers)					
This includes compressors (centrifugal/reciprocating), blowers, screw rotary compressors, metering/in-line pumps, pumps (centrifugal/reciprocating), positive displacement pumps, agitators, mixers, blenders and other miscellaneous compressors, fans and pumps.					

<b>Rotating Equipment (w/drivers)</b>	<b>Actual Productivity</b>					
	<b>None</b>	<b>Sub contracted (Yes or No)</b>	<b>Installed Quantity (each)</b>	<b>Actual WH (including rework) (hours)</b>	<b>Total (HP)</b>	<b>Total Installed Unit Cost (\$/ HP)</b>
Rotating Equipment (w/drivers)						
This includes compressors (centrifugal/reciprocating), blowers, screw rotary compressors, metering/in-line pumps, pumps (centrifugal/reciprocating), positive displacement pumps, agitators, mixers, blenders and other miscellaneous compressors, fans and pumps.						

<b>Material Handling Equipment (w/drivers)</b>	<b>Estimated Productivity</b>				
	<b>None</b>	<b>Quantity (each)</b>	<b>WH</b>	<b>Total Weight (MT)</b>	<b>Total Installed Unit Cost (\$/ MT)</b>
Material Handling Equipment (w/drivers)					
This includes conveyors (belt, chain, screen, rotor, etc.), cranes & hoists, scales, lifts, stackers, reclaimers, ship loaders, compactors, feeders and baggers, and miscellaneous other material handling equipment.					

<b>Material Handling Equipment (w/drivers)</b>	<b>Actual Productivity</b>					
	<b>None</b>	<b>Sub contracted (Yes or No)</b>	<b>Installed Quantity (each)</b>	<b>Actual WH (including rework) (hours)</b>	<b>Total Weight (MT)</b>	<b>Total Installed Unit Cost (\$/ MT)</b>
Material Handling Equipment (w/drivers)						
This includes conveyors (belt, chain, screen, rotor, etc.), cranes & hoists, scales, lifts, stackers, reclaimers, ship loaders, compactors, feeders and baggers, and miscellaneous other material handling equipment.						

<b>Power Generation Equipment</b>	<b>Estimated Productivity</b>				
	<b>None</b>	<b>Quantity (each)</b>	<b>WH</b>	<b>Total (kW)</b>	<b>Total Installed Unit Cost (\$/ kW)</b>
Power Generation Equipment					
This includes gas turbines, steam turbines, diesel, and other miscellaneous power generation equipment.					

<b>Power Generation Equipment</b>	<b>Actual Productivity</b>					
	<b>None</b>	<b>Sub contracted (Yes or No)</b>	<b>Installed Quantity (each)</b>	<b>Actual WH (including rework) (hours)</b>	<b>Total (kW)</b>	<b>Total Installed Unit Cost (\$/ kW)</b>
Power Generation Equipment						
This includes gas turbines, steam turbines, diesel, and other miscellaneous power generation equipment.						

Other Process Equipment	Estimated Productivity				
	None	Quantity (each)	WH	Total weight (MT)	Total Installed Unit Cost (\$/ MT)
Other Process Equipment					
This includes specialty gas equipment, bulk chemical equipment, process equipment, particle extraction (bag houses, scrubbers, etc.), treatment systems (water treatment, etc.), incinerators, and flares/flare systems.					

Other Process Equipment	Actual Productivity					
	None	Sub contracted (Yes or No)	Installed Quantity (each)	Actual WH (including rework) (hours)	Total weight (MT)	Total Installed Unit Cost (\$/ MT)
Other Process Equipment						
This includes specialty gas equipment, bulk chemical equipment, process equipment, particle extraction (bag houses, scrubbers, etc.), treatment systems (water treatment, etc.), incinerators, and flares/flare systems.						

Modules & Pre-Assembled Skids	Estimated Productivity				
	None	Quantity (each)	WH	Total weight (MT)	Total Installed Unit Cost (\$/ MT)
Modules & Pre-Assembled Skids					
This includes modules (partial units) and complete skids units.					

Modules & Pre-Assembled Skids	Actual Productivity					
	None	Sub contracted (Yes or No)	Installed Quantity (each)	Actual WH (including rework) (hours)	Total weight (MT)	Total Installed Unit Cost (\$/ MT)
Modules & Pre-Assembled Skids						
This includes modules (partial units) and complete skids units.						

## 4.7 Insulation

### Instructions

Please provide estimated and actual productivity below for the categories appropriate to your project for the installation of insulation.

In the first section of each category include the **estimated quantity to be installed, the estimated work-hours required for the installation and the estimated total installed unit cost including labour and material cost at the time of project sanction (or as soon as available following sanction).**

**In the second section for each category, provide the actual installed quantity, the work-hours (including rework), and the actual total installed unit cost which is the burdened cost including labour and material and equipment from both direct hire and subcontract. Indicate if the work performed for each category was subcontracted or not. If work was both subcontracted and in-house, indicate the type that was more predominant.**

### **Definitions**

The **Installed Quantity** of insulation is the amount of insulation that is required for the equipment and piping provided in the project's plans and specifications and does not include any quantity of insulation that is used due to rework.

Refer to the section "**Instructions for Computation of Actual Work-Hours, Rework-Hours and Installed Cost**" for a detailed listing of direct hours and their associated costs to be included as well as indirect hours and their associated costs to be excluded.

### **Equipment**

This includes work-hours for the following selected activities:

Installation of insulation, jacketing overall vessels, tanks, exchangers, etc.; installation of equipment blankets for pumps, exchangers, etc.; material handling.

Do not include: scaffolding.

Insulation	Average Thickness (inches)	Estimated Productivity			Total Installed Unit Cost (\$/ SM)
		None	Quantity (SM of insulated area)	WH	
Equipment					

Insulation	Average Thickness (inches)	Actual Productivity				Total Installed Unit Cost (\$/ SM)
		None	Sub contracted (Yes or No)	Installed Quantity (SM of insulated area)	Actual WH (including rework) (hours)	
Equipment						

**Piping**

This includes work-hours for the following selected activities:

Installation of insulation and jacketing over pipe, valves and fittings; installation of valve insulation blankets and flange insulation.

Instructions for calculation of Weighted Diameter of Piping with Insulation (Hyperlink)

Insulation	Average Thickness (inches)	Estimated Productivity			
		None	Quantity (ELM)	WH	Total Installed Unit Cost (\$/ ELM)
Piping					
ELM – Equivalent Linear Meters of insulation applied to piping. Multiple layers count only one time in linear meters.					

Insulation	Average Thickness (inches)	Actual Productivity				
		None	Sub contracted (Yes or No)	Installed Quantity (ELM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/ ELM)
Piping						
ELM – Equivalent Linear Meters of insulation applied to piping. Multiple layers count only one time in linear meters.						

## 4.8 Module Installation

### Instructions

Please provide estimated and actual productivity below for the categories appropriate to your project for field installation of modules. This includes all modules fabricated offsite and transported to the work site as over-dimensional loads requiring special heavy haul/lifting equipment. (Applies to pipe rack modules, process modules and building modules) **Do not include large vessels, towers, columns or drums.**

In the first section of each category include the **estimated quantity (MT) to be installed, the estimated work-hours required for the installation and the estimated total installed unit cost including labour and material cost at the time of project sanction (or as soon as available following sanction).**

**In the second section for each category, provide the actual installed quantity, the offsite work-hours (including rework), and the actual total installed unit cost which is the burdened cost including labour and material and equipment from both direct hire and subcontract. Indicate if the work performed for each category was subcontracted or not. If work was both subcontracted and in-house, indicate the type that was more predominant.**

### Definitions

The **Installed Quantity** of offsite modules is the number of metric tones (MT) amount indicated in units shown below of offsite modules that are field-installed as provided in the project's plans and specifications.

Refer to Section 4, "**Instructions for Computation of Actual Work-Hours, Rework-Hours and Installed Cost**" for a detailed listing of direct hours and their associated costs to be included as well as indirect hours and their associated costs to be excluded.

Pipe Racks Modules	Estimated Productivity			
	None	Quantity (MT)	WH	Total Installed Unit Cost (\$/ MT)

Pipe rack module structure may include several components such as structural steel for framework, walkway, platform to support the piping, piping c/w (cooling water) valving. It also may include electrical tray, heat tracing and insulation.

Pipe Racks Modules	Actual Productivity				
	None	Sub Contracted (Yes/No)	Installed Quantity (MT)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/ MT)

Pipe rack module structure may include several components such as structural steel for framework, walkway, platform to support the piping, piping c/w (cooling water) valving. It also may include electrical tray, heat tracing and insulation.

Process Equipment Modules	Estimated Productivity			
	None	Quantity (MT)	WH	Total Installed Unit Cost (\$/ MT)

Process Equipment Modules	Actual Productivity				
	None	Sub Contracted (Yes/No)	Installed Quantity (MT)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/ MT)

Building	Estimated Productivity			
	None	Quantity (SM)	WH	Total Installed Unit Cost (\$/ SM)

Building	Actual Productivity				
	None	Sub Contracted (Yes/No)	Installed Quantity (SM)	Actual WH (including rework) (hours)	Total Installed Unit Cost (\$/ SM)

## 4.9 Scaffolding

### Instructions

Please provide estimated and actual productivity for scaffolding:

Enter the ***estimated total work-hours*** required for scaffolding installation, the ***estimated scaffolding work-hours divided by total direct hours***, and the ***estimated total installed scaffolding cost*** including materials and labour cost for installation at the time of project sanction (or as soon as available following sanction).

For ***actual*** productivity, please indicate whether the Scaffolding activity was ***subcontracted or not***. If work was both subcontracted and in-house, indicate which was more predominant.

Last, please provide the ***actual total work-hours*** (including rework) required for scaffolding installation, the ***actual scaffolding work-hours divided by total direct hours***, and the ***actual total installed scaffolding cost*** which include material, labour and equipment cost for installation from both direct hire and subcontract.

Scaffolding	Estimated			
	None	Total Scaffolding Work- Hours	Scaffolding WH/ Total direct hours	Total Installed Scaffolding Cost (\$)

Scaffolding	Actual				
	None	Sub contracted (Yes or No)	Total Scaffolding Work- Hours	Scaffolding WH/ Total direct hours	Total Installed Scaffolding Cost (\$)

### Scaffold Materials

- Free Issue to Contractor
- Rented
- Purchased & Included as part of Scaffold Cost

## 4.10 Construction Work-Hours

### Instructions

Please provide estimated and actual Construction Indirect and Direct Work-hours

Refer to the section “**Instructions for Computation of Actual Work-Hours and Rework-Hours**” in the construction productivity section and “**Instruction for Construction Direct and Indirect Costs**” for a detailed listing of direct and indirects.

Construction Work-hours	Estimated		Actual	
	Total Work-hours	Total Indirect WH/ Total Direct WH	Total Work-hours	Total Indirect WH/ Total Direct WH
Direct				
Indirect				

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## 5. Practices

### 5.1 Front End Planning

Front End Planning involves the process of developing sufficient strategic information that owners can address risk and decide to commit resources to maximize the chance for a successful project. Front End Planning includes putting together the project team, selecting technology, selecting project site, developing project scope, and developing project alternatives. Front End Planning is often perceived as synonymous with front-end loading, front-end planning, feasibility analysis, and conceptual planning.

Your Front End Planning score is based on your response to the questions below (4 for owners or 6 for contractors) and to selected questions from the PDRI (Project Definition Rating Index) which follows. If you use the PDRI as part of your project planning process, please respond to the following questions and then complete the PDRI (either Industrial, Building, or both) which follow. If you do not desire to use the full PDRI(s), you may obtain your Front End Planning score by completing the questions below (4 for owners or 6 for contractors) and completing only the PDRI questions that are highlighted by italics. You will obtain the same Front End Planning score that you would have received if you completed the full PDRI. Those completing the full PDRI(s) will also receive their score(s) on the 0 to 1000 scale used for PDRI assessments.

#### Contractor Question Only

Select the response below that best describes your company's participation in the Front End Planning effort.

Did your company participate in the Front End Planning effort?

- Yes, as the pre-project planner.
- Yes, as a consultant.
- No, my company did not participate in the preplanning effort. Please skip following Front End Planning questions and continue with the next best practice (Team Building).

#### Contractor Question Only

Did your company formally assess the quality of the Front End Planning effort?

Yes  No

#### Owner and Contractor Questions

Select a number below that best describes the composition of the Front End Planning team using the scale and definitions provided.

Poor			Average				Excellent		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10

1. **Excellent** - Highly skilled and experienced members with authority; representation from business, project management, technical disciplines, and operations; able to respond to both business and project objectives.
2. **Poor** - Members with a poor combination of skill or experience that lack authority; insufficient representation from business, project management, technical disciplines, and operations; unable to respond to both business and project objectives.

Select a number below that best describes the technology evaluation performed for this project during Front End Planning.

Poor			Average				Excellent		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10

1. **Excellent** - Thorough and detailed identification and analysis of existing and emerging technologies for feasibility and compatibility with corporate business and operations objectives. Scale-up problems and hands-on process experience were considered.
2. **Poor** - Poor or no technology evaluation.

Select a number below that best describes the evaluation of alternate siting locations.

Poor			Average				Excellent		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10

- **Excellent** - Thorough and detailed assessment of relative strengths and weaknesses of alternate locations to meet owner requirements.
- **Poor** - Poor or no evaluation of alternate siting locations.

Select a number below that best describes the risk analysis performed for project alternatives.

Poor			Average				Excellent		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	3	4	5	6	7	8	9	10

1. **Excellent** - Risks associated with the selected project alternatives were identified and analyzed. These analyses included financial/business, regulatory, project and operational risk categories in order to minimize the impacts of risks on project success.
2. **Poor** - Poor or no risk analysis performed for project alternatives.

### 5.1.1. Full Building PDRI

Was a Front End Loading Index used to determine the quality of Front End Planning for this project? (Includes PDRI, FEL, or an in-house developed system.)

Yes  No

Was the Project Definition Rating Index (PDRI) utilized on this project?

Yes  No

If yes, please copy your original responses to the PDRI below, if not, please fill in the PDRI below using existing, available information.

Please complete the following matrix using the *appropriate definition levels* given below. Indicate how well defined each element was *prior to the contract awarded* by selecting the appropriate definition level.

- Complete definition
- Minor deficiencies
- Some deficiencies
- Major deficiencies
- Incomplete or poor definition
- Not Applicable
- Unknown

Note: If this is an infrastructure project some of the following elements may not apply to your project. Please fill in "Not Applicable" to indicate if any element does not apply to your project. *Italicized questions will be scored for your Front End Planning Score*

A. Business Strategy	(1) Complete <----->Poor (5)						
<i>A1. Building Use</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>A2. Business Justification</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>A3. Business Plan</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>A4. Economic Analysis</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>A5. Facility Requirements</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>A6. Future Expansion/Alternate Consideration</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>A7. Site Selection Consideration</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>A8. Project Objectives Statement</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>B. Owner Philosophies</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
<b>B1. Reliability Philosophy</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>B2. Maintenance Philosophy</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>B3. Operating Philosophy</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>B4. Design Philosophy</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C. Project Requirements</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
<b>C1. Value-Analysis Process</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C2. Project Design Criteria</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C3. Evaluation of Existing Facilities</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C4. Scope of Work Overview</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C5. Project Schedule</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C6. Project Cost Estimate</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D. Site Information</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
<b>D1. Site Layout</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D2. Site Surveys</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D3. Civil/Geotechnical Information</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D4. Governing Regulatory Requirements</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D5. Environmental Assessment</b>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D6. Utility Sources with Supply Conditions	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D7. Site Life Safety Considerations	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D8. Special Water and Waste Treatment Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>E. Building Programming</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
E1. <i>Program Statement</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E2. <i>Building Summary Space List</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E3. Overall Adjacency Diagrams	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E4. Stacking Diagrams	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E5. <i>Growth and Phased Development</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E6. Circulation and Open Space Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E7. Functional Relationship Diagrams/Room by Room	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E8. Loading/Unloading/Storage Facilities Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E9. Transportation Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E10. <i>Building Finishes</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E11. Room Data Sheets	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E12. Furnishings, Equipment, and Built-Ins	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E13. Window Treatment	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>F. Building/Project Design Parameters</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
F1. Civil/Site Design	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

F2. <i>Architectural Design</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F3. <i>Structural Design</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F4. <i>Mechanical Design</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F5. <i>Electrical Design</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F6. Building Life Safety Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F7. Constructability Analysis	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F8. Technological Sophistication	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G. Equipment</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
G1. <i>Equipment List</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G2. Equipment Location Drawings	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G3. Equipment Utility Requirements/TD>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>H. Procurement Strategy</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
H1. Identify Long-Lead/Critical Equip. and Materials	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H2. Procurement Procedures and Plans	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>J. Deliverables</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
J1. CADD/Model Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J2. Documentation/Deliverables	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>K. Project Control</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
K1. Project Quality Assurance and Control	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K2. Project Cost Control	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

K3. Project Schedule Control	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K4. <i>Risk Management</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K5. Safety Procedures	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>L. Project Execution Plan</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
L1. Project Organization	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L2. Owner Approval Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L3. <i>Project Delivery Method</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L4. <i>Design/Construction Plan &amp; Approach</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L5. Substantial Completion Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 5.1.2. Full Industrial PDRI

Was a Front End Loading Index used to determine the quality of Front End Planning for this project? (Includes PDRI, FEL, or an in-house developed system.)

Yes  No

Was the Project Definition Rating Index (PDRI) utilized on this project?

Yes  No

Please complete the following matrix using the *appropriate definition levels* given below. Indicate how well defined each element *was prior to the total Contract Awarded* by selecting the appropriate definition level.

1. Complete definition
2. Minor deficiencies
3. Some deficiencies
4. Major deficiencies
5. Incomplete or poor definition
6. Not Applicable
7. Unknown

Note: If this is an infrastructure project some of the following elements may not apply to your project. Please fill in "Not Applicable" to indicate if any element does not apply to your project. *Italicized questions will be scored for your Front End Planning Score*

Industrial PDRI	Definition Level at Authorization						
<b>A. Manufacturing Objectives Criteria</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
A1. <i>Reliability Philosophy</i>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	NA <input type="checkbox"/>	UNK <input type="checkbox"/>
A2. Maintenance Philosophy	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	NA <input type="checkbox"/>	UNK <input type="checkbox"/>
A3. Operating Philosophy	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	NA <input type="checkbox"/>	UNK <input type="checkbox"/>
<b>B. Business Objectives</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
B1. <i>Products</i>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	NA <input type="checkbox"/>	UNK <input type="checkbox"/>
B2. <i>Market Strategy</i>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	NA <input type="checkbox"/>	UNK <input type="checkbox"/>
B3. <i>Project Strategy</i>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	NA <input type="checkbox"/>	UNK <input type="checkbox"/>
B4. Affordability/Feasibility	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	NA <input type="checkbox"/>	UNK <input type="checkbox"/>
B5. <i>Capacities</i>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	NA <input type="checkbox"/>	UNK <input type="checkbox"/>

B6. Future Expansion Considerations	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B7. Expected Project Life Cycle	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B8. Social Issues	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>C. Basic Data Research &amp; Development</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
C1. <i>Technology</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C2. <i>Processes</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>D. Project Scope</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
D1. <i>Project Objectives Statement</i>	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
D2. <i>Project Design Criteria</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D3. <i>Site Characteristics Available vs. Required</i>	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
D4. Dismantling and Demolition Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D5. Lead/Discipline Scope of Work	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D6. Project Schedule	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
<b>E. Value Engineering</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
E1. Process Simplification	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
E2. Design & Material Alternatives	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
E3. Design for Constructability Analysis	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>F. Site Information</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
F1. <i>Site Location</i>	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
F2. Surveys & Soil Tests	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

F3. <i>Environmental Assessment</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F4. Permit Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F5. <i>Utility Sources with Supply Conditions</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F6. Fire Protection & Safety Considerations	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>G. Process/Mechanical</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
G1. <i>Process Flow Sheets</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G2. <i>Heat &amp; Material Balances</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G3. <i>Piping &amp; Instrumentation Diagrams</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G4. Process Safety Management	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G5. Utility Flow Diagrams	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G6. <i>Specifications</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G7. Piping System Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G8. <i>Plot Plan</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G9. <i>Mechanical Equipment List</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G10. Line List	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G11. Tie-In List	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G12. Piping Specialty Items List	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G13. Instrument Index	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>H. Equipment Scope</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
H1. <i>Equipment Status</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H2. Equipment Location Drawings	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H3. Equipment Utility Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>I. Civil, Structural, &amp; Architectural</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
I1. Civil/Structural Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I2. Architectural Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>J. Infrastructure</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
Water Treatment Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J2. Loading/Unloading/Storage Facilities Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J3. Transportation Requirements	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
<b>K. Instrument &amp; Electrical</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
K1. Control Philosophy	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K2. Logic Diagrams	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
K3. Electrical Area Classifications	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K4. Substation Requirements Power Sources Identification	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K5. Electric Single Line Diagrams	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K6. Instrument & Electrical Specifications	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>L. Procurement Strategy</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
L1. <i>Identify Long Lead/Critical Equip. &amp; Materials</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L2. Procurement Procedures and Plans	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L3. Procurement Responsibility Matrix	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
<b>M. Deliverables</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
M1. CADD/Model Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M2. Deliverables Defined	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M3. Distribution Matrix	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
<b>N. Project Control</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
N1. <i>Project Control Requirements</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N2. Project Accounting Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N3. Risk Analysis	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
<b>P. Project Execution Plan</b>	<b>(1) Complete &lt;-----&gt;Poor (5)</b>						
P1. Owner Approval Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P2. <i>Engineering/Construction Plan &amp; Approach</i>	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P3. Shut Down/Turn-Around Requirements	Yes		No		NA	UNK	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
P4. Pre-Commissioned Turnover Sequence Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P5. Startup Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P6. Training Requirements	1	2	3	4	5	NA	UNK
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project.  
Respond with NA if you did not use a best practice.**

**Front End Planning**

Front End Planning involves the process of developing sufficient strategic information that owners can address risk and decide to commit resources to maximize the chance for a successful project. Front End Planning includes putting together the project team, selecting technology, selecting project site, developing project scope, and developing project alternatives. Front End Planning is often perceived as synonymous with front-end loading, front-end planning, feasibility analysis, and conceptual planning.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of Front End Planning* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.2 Project Risk Assessment

Project risk assessment is the process to identify, assess and manage risk. The project team evaluates risk exposure for potential project impact to provide focus for mitigation strategies.

Select the response below that best describes your company's participation in project risk assessment effort.

- Was the project successful in including the appropriate parties to work through an assessment of risk posed to the project?

No		Moderately		Very	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- To what extent was an environment created to encourage free discussions of risk concerns?

Not at all		Moderately		Very	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- To what extent was a comprehensive and systematic process used to identify and assess risks posed to the project?

No Process Used		Most		Very Extensively Used	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Were effective mitigation strategies developed for the identified risks?

Not at all		Moderate		Very Effective	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Were effective mitigation strategies implemented?

Not at all		Moderate		Always	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- To what extent were the mitigation strategies successful?

Not		Moderate		Very	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Was a comprehensive risk assessment process used prior to Front End Planning?

Not at all		Moderate		As Appropriate	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. To what extent was a comprehensive risk assessment process used prior to contract award?

Not at all		Moderate		Often	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Was the process re-visited at a later time to evaluate if any risks should be upgraded of downgraded?

Not at all		Moderate		As needed	
0	1	2	3	4	NA/UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

**Project Risk Assessment**

Project risk assessment is the process to identify, assess and manage risk. The project team evaluates risk exposure for potential project impact to provide focus for mitigation strategies.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of Project Risk Assessment* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 5.3 Team Building

Team Building is a *formal* project-focused process that builds and develops shared goals, interdependence, trust and commitment, and accountability among team members and that seeks to improve team members problem-solving skills.

Unless otherwise indicated, for each question select the single most appropriate response.

1. To what extent was a *formal* team building process used for this project?

Not at all	Moderately			Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. To what extent did upper management support the *formal* team building process (e.g. funding, training, etc.)?

Not at all	Moderately			Extensively	No formal team building used	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. What was the level of involvement in the team building process of a facilitator who was external to this project?

None	Moderate			Extensive		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. To what extent were objectives of the team building process documented and clearly defined?

Very poorly or not at all	Moderately			Very well		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. To what extent were objectives of the team building process achieved?

Not at all	Moderately			Fully		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. To what extent were new team members integrated into team building activities?

Not at all		Moderately		Extensively		NA	UNK
0	1	2	3	4			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. For each project phase, please indicate the extent that your company was involved in the team building process using a scale from 0 to 4, with 0 indicating not at all and 4 indicating extensively.

	Not at all		Extensively		NA	UNK	
	0	1	2	3	4		
Front End Planning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Procurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Startup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Please indicate the parties involved in the team building process? (Check all that apply)

- Owner
- Major Suppliers
- Engineer(s) & Designer(s)
- Subcontractor(s)
- Constructor(s)
- Construction Manager
- Regulator(s)
- Other. If other, please specify:

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

### Team Building

Team Building is a project-focused process that builds and develops shared goals, interdependence, trust and commitment, and accountability among team members and that seeks to improve team members problem-solving skills.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of Team Building* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.4 Alignment during Front End Planning

Alignment is the condition where appropriate project participants are working within acceptable tolerances to develop and meet a uniformly defined and understood set of project objectives.

For each question, select the single most appropriate response as it pertains to the Front End Planning phase of the project.

1. Were the stakeholders (individuals and organizations who are involved in or may be affected by project activities) appropriately represented on the Project Team (e.g., operations, business management, construction, security, etc.)?

Not at all		Moderately		Very	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. How effective was project leadership in aligning team members to meet project objectives?

Not at all		Moderately		Very	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. How well were project objectives defined and prioritized (cost, quality, security & schedule)?

Poorly		Moderately		Very well	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. How effective was the communication within the team?

Not at all		Moderately		Very	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. How effective was the communication with stakeholders?

Not at all		Moderately		Very	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. How effective were team meetings in gaining alignment on project objectives?

Not at all	Moderately			Very productive	NA / UNK
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. To what extent was a clear reward & recognition system implemented to meet identified project objectives?

Not at all	Moderately			Very well	NA / UNK
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How effectively were planning tools (e.g., aide-memoirs, analysis techniques, checklists, simulations, software programs, and work flow diagrams used to plan, develop, control and manage projects) used to promote alignment?

Not at all	Moderately			Very well	NA / UNK
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

### **Alignment during Front End Planning**

Alignment is the condition where appropriate project participants are working within acceptable tolerances to develop and meet a uniformly defined and understood set of project objectives.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of Alignment during Front End Planning Practices* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.5 Design for Maintainability

Design for maintainability is the optimum use of facility maintenance knowledge and experience in the design/engineering of a facility.

For each question select the single most appropriate response.

1. How well were corporate maintainability strategies and standards communicated on this project?

Not at all						Fully
0	1	2	3	4	NA / UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1. Was a designated maintainability person integrated into the project team?

Not at all						Fully
0	1	2	3	4	NA / UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

2. To what extent were your organization's maintainability standards used in the project design?

Not at all						Fully
0	1	2	3	4	NA / UNK	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

3. Were formal maintainability review sessions held with your facility maintenance organization?

Not at all		Sometimes		As Appropriate	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Was a life cycle cost analysis tool used to determine equipment needs for the project?

No		Sometimes		Always	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. To what extent was computerized maintenance management system data used in making design decisions for this project?

Not at all				Fully	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Were maintainability objectives and targets considered in the design process?

Not at all				Always	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Were operations and maintenance input integrated into the design process?

No				Always	
0	1	2	3	4	NA / UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

**Design for Maintainability**

Design for maintainability is the optimum use of facility maintenance knowledge and experience in the design/engineering of a facility.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of Design for Maintainability* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.6 Constructability

**Constructability** is the effective and timely integration of construction knowledge into the conceptual planning, design, construction and field operations of a project to achieve the overall project objectives in the best possible time and accuracy, at the most cost-effective levels.

For each question select the single most appropriate response.

1. To what extent was constructability implemented on this project?

Not at all		Moderately		Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. To what extent was constructability an element addressed in this project's formal written execution plan?

Not at all		Moderately		Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Which of the following best describes how constructability principles were emphasized and communicated on this project? (Select only one)

- No effort to emphasize and communicate
- Minimum effort through informal means such as on-the-job training
- Moderate effort as a component of ongoing management training (e.g. part of project management conference)
- Substantial effort through structured and dedicated formal constructability training
- Not Applicable
- Unknown

4. On what basis was a constructability coordinator assigned to this project? (Select only one)

- No coordinator assigned
- Assigned as a part-time responsibility
- Assigned as a full-time responsibility
- Not Applicable
- Unknown

5. Which of the following best describes the constructability program documentation for this project? (Select only one)
- None; no documentation existed.
  - Limited reference in any source (e.g. CII reference)
  - Project level constructability documents exist; may be included in other corporate documents
  - Project constructability manual is available, but neither widely used nor updated
  - Project constructability manual is available, widely used and periodically updated
  - Not Applicable
  - Unknown
6. Which of the following best describes the method(s) used to track lessons learned and savings/effects on this project due to the constructability program? (Select only one)
- No tracking was used.
  - Ideas were conveyed via word of mouth and personal interaction; limited tracking of saving/effects
  - Some individual documentation existed; selected tracking of saving/ effects
  - System existed for capture and communication of lessons learned; extensive tracking of saving/effects
  - Not Applicable
  - Unknown
7. Please indicate the *earliest time period* of the first project meeting that deliberately and explicitly focused on constructability. Place a check below the *earliest time period* (Select only one).

Front End Planning			Detail engineering/ Procurement			Construction			NA	UNK
Early	Middle	Late	Early	Middle	Late	Early	Middle	Late		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

### Constructability

Constructability is the effective and timely integration of construction knowledge into the conceptual planning, design, construction and field operations of a project.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of Constructability* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.7 Materials Management

Materials management is an integrated process for planning and controlling all necessary efforts to make certain that the quality and quantity of materials and equipment are appropriately specified in a timely manner, are obtained at a reasonable cost, and are available when needed. The materials management systems combine and integrate the takeoff, vendor evaluation, purchasing, expediting, warehousing, distribution, and disposing of materials functions.

Unless otherwise indicated, select the single most appropriate response for each question.

1. To what extent did this project have a *designated* materials management organization that was *integrated* across project teams?

Not at all				Fully		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. How *comprehensive* was the *written* materials management plan for this project in addressing elements such as project goals, responsibility, cost & schedule, and transportation?

Not at all				Very Comprehensive		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. How extensively was the written materials management plan utilized throughout the life of the project?

Not at all				Very		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. How adequate was the plan for addressing the effects of change orders on materials management?

Not at all				Very		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. How extensively was an *automated system* (or integrated set of computer systems) used to identify, track, report, and facilitate control of project material throughout the life of the project?

Not at all					Very	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. How effective was site materials management during the construction phase?

Not at all					Very	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. How effective was the materials tracking and reporting system?

Not at all					Very	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How effective were purchasing plans & procedures over the life of the project?

Not at all					Very	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. How effective were receipt and inspection procedures for critical materials and equipment?

Not at all					Very	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. How adequate was the pre-qualification process for securing the appropriate suppliers of major equipment and materials?

Not at all					Very	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. To what extent did the materials management plan utilize quality management practices?

Not at all				Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. How well were QA/QC plans implemented with the suppliers of major equipment and materials?

Not at all				Very		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Were there other factors that critically impacted your materials management?

No	Yes	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes, please list the activities and indicate whether the impact was positive or negative.

	Negative	Positive
_____	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

**Materials Management**

Materials management is an integrated process for planning and controlling all necessary efforts to make certain that the quality and quantity of materials and equipment are appropriately specified in a timely manner, are obtained at a reasonable cost, and are available when needed. The materials management systems combine and integrate the takeoff, vendor evaluation, purchasing, expediting, warehousing, distribution, and disposing of materials functions.

On a scale of 0 to 10, with 0 indicating no effectiveness and 10 indicating excellent effectiveness please rate *the overall effectiveness of Materials Management* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.8 Project Change Management

Change Management is the process of incorporating a balanced change culture of recognition, planning and evaluation of project changes in an organization to effectively manage project changes.

Unless otherwise indicated, select the single most appropriate response for each question.

- To what extent was a *formal* documented change management process used to *actively* manage changes on this project? Please answer for each phase.

	Not at all		Moderately		Extensively			
	0	1	2	3	4	NA	UNK	
Detailed engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Startup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- How often were major changes (i.e., those that exceed a project threshold) required to go through a formal change justification procedure?

Not at all		Sometimes			Always			
0	1	2	3	4	NA	UNK		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- Was authorization for change required before implementation?

No		Sometimes			Always			
0	1	2	3	4	NA	UNK		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- How timely was communication of change information to the proper disciplines and project participants?

Not at all		Moderately			Very			
0	1	2	3	4	NA	UNK		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5. How well did the project contract identify the primary components and procedures of the project change management system?

Not at all			Moderately		Very well	
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

6. To what extent were areas susceptible to change identified and evaluated for risk during review of the project design basis?

Not at all		Moderately		Fully		
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

7. To what extent were changes on this project evaluated against the business drivers and success criteria for the project?

Not at all		Moderately		Fully		
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

8. At what point were the criteria for change approval established and communicated to all appropriate project participants? Place *a check* below the earliest time period (Select only one).

Front End Planning			Detail engineering/ Procurement			Construction			NA	UNK
Early	Middle	Late	Early	Middle	Late	Early	Middle	Late		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

9. How often were changes managed against a baseline established at authorization or contract award?

Not at all		Sometimes		Always		
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

10. At project close-out, how extensive was the evaluation of changes and their impact on the project cost and schedule performance for future use as lessons learned?

Not at all		Moderately		Very		
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

11. Did project personnel settle, authorize, and execute change orders on this project in a timely manner?

Not at all		Sometimes			Always	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. To what extent did the formal change management process establish plans for mitigating cost and schedule impacts?

Not at all		Partially			Fully	
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

### **Project Change Management**

Change Management is the process of incorporating a balanced change culture of recognition, planning and evaluation of project changes in an organization to effectively manage project changes.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of Project Change Management* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.9 Zero Accident Techniques

Zero accident techniques include the site specific safety programs and implementation, auditing and incentive efforts to create a project environment and a level of training that embraces the mind set that all accidents are preventable and that zero accidents is an obtainable goal.

For each question, select the single most appropriate response.

1. To what extent has an overall project safety plan been implemented?

Not at all		Moderately		Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. To what extent was safety a priority topic at pre-construction and construction meetings?

Not at all		Moderately		Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. To what extent was pre-task planning for safety conducted by contractor foremen or other site managers?

Not at all		Moderately		Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. How often were safety toolbox meetings held?

None	Monthly	Bi-weekly	Weekly	Daily	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. How often were safety audits performed by corporate safety personnel?

Annually or Less frequently	Quarterly	Monthly	Biweekly	Weekly	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Which of the following best describes the time commitment of the site safety supervisor for this project?

No site safety supervisor	Part-time function	Full-time function	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Overall how many workers per safety person were typically on site?

Over 200	151 to 200	71 to 150	21 to 70	1 to 20	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. What type of job-specific safety orientation was conducted for new contractor and subcontractor employees?

None	Informal	Formal	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. On average how much ongoing formal safety training did workers receive each month?

None	Less than 1 hr	1 hr but less than 4 hrs	4 hr but less than 7 hrs	Over 7 hrs	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. To what extent were safety incentives used?

Not at all		Moderately		Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. To what extent was safety performance utilized a criterion for contractor /subcontractor selection?

Not at all		Moderately		Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. How often were accidents formally investigated?

Not at all		Sometimes		Always		
0	1	2	3	4	No accidents occurred	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. How often were near-misses formally investigated?

Not at all		Sometimes		Always		
0	1	2	3	4	None occurred	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. How extensively was senior company management typically involved in the investigation of accidents?

Not at all		Moderately		Extensively		No accidents occurred	UNK
0	1	2	3	4			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. Were pre-employment substance abuse tests for contractor employees conducted?

Never	Sometimes	Usually	Always	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Were contractor employees randomly screened for alcohol and drugs?

Not at all	Once a year or less	Twice a year or more	Quarterly or more	Monthly or more	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Were substance abuse tests conducted after accidents?

Never	Sometimes	Usually	Always	No accidents occurred	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. Were *reasonable cause substance abuse tests* for contractor employees conducted?

Never	Sometimes	Usually	Always	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Reasonable cause test:** An employee who is reasonably suspected of using alcohol or illegal drugs in the workplace or performing official duties while under the influence of alcohol or illegal drugs will be required to undergo an alcohol and drug test.

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

### Zero Accident Techniques

Zero accident techniques include the site specific safety programs and implementation, auditing and incentive efforts to create a project environment and a level of training that embraces the mind set that all accidents are preventable and that zero accidents is an obtainable goal.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of the Safety Program* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.10 Quality Management

Quality Management incorporates all activities conducted to improve the efficiency, contract compliance and cost effectiveness of design, engineering, procurement, QA/QC, construction, and start-up elements of construction projects.

Unless otherwise indicated, select the single most appropriate response for each question.

1. To what extent did your company implement a formal corporate Quality Management System (QMS)?

Not at all			Fully Implemented			
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. (Owner Only) Rate the degree to which the engineering/construction QMS was considered in the selection process.

Not at all		Moderate		Extensive		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. To what extent were specific quality management goals & objectives included in the prime contract?

Not at all			Entirely			
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. How extensively were quality management goals and objectives used to determine project reimbursement (e.g. Incentives)?

Not at all		Moderately		Extensively		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Is the Quality Management System a budgeted item?

No	Yes	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. To what degree was a formal project Quality Management System used on this project?

Not at all			Extensively			
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. Please indicate the earliest time period of the project that quality management planning was initiated. Place a check below the earliest time period.

Front End Planning			Detail engineering/ Procurement			Construction			NA	UNK
Early	Middle	Late	Early	Middle	Late	Early	Middle	Late		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How well was the Quality Management System communicated to key project personnel?

Not at all				Very well		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. To what extent was the Quality Management System implemented by key project personnel?

Not at all				Very well		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. To what extent were the following elements or resources used to implement the Quality Management system on this project?

	Not Used				Extensively Used		
	0	1	2	3	4	NA	UNK
. External quality services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Internal quality manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Discipline-specific quality program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Owner's procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Contractor's procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Does the QA/QC manager for this project have external certification?

No	Yes	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

12. To what extent was corrective actions implemented for root cause quality defects?

Not at all		Partially		Fully			
0	1	2	3	4	NA	UNK	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

13. Which of the following quality management techniques were used on this project by your company? Check all that apply:

- Statistical methods
- Audits
- Quality cost tracking
- Quality circles/quality improvement teams
- Quality goals
- Team building / alignment
- Customer satisfaction measurement
- Quality assurance & quality control requirements
- Post project review
- Rejection rate analysis
- Reference documented quality policies and procedures (Quality manual, etc.)
- Lessons learned systems

14. What are the primary sources of quality problems on this project?

Check all that apply:

- Design Engineering
- Contractual
- Procurement/Materials Management
- Specifications
- Sub-Contracted scope of services
- Craft Labour
- Civil/Concrete
- Mechanical/Equipment
- Electrical/Instrumentation
- Piping
- Fit-up or Welding
- Start-up/Turnover of System
- Other(s); please specify: \_\_\_\_\_

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

**Quality Management**

Quality Management incorporates all activities conducted to improve the efficiency, contract compliance and cost effectiveness of design, engineering, procurement, QA/QC, construction, and start-up elements of construction projects.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of Quality Management* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.11 Automation/Integration (AI) Technology

This section addresses *the degree of automation/level of use and integration of automated systems* for specific tasks/work functions common to most projects. Using the first matrix, please assess the degree of automation and level of use *only*. Using the second matrix, please assess the level of integration of these automated systems among the tasks/work functions.

Referring to the use levels below, indicate how well for this project, the tasks/work functions were automated. Select the single most appropriate *use level* for the task/work functions listed.

### USE LEVELS

- **Level 1 (None/Minimal):** Little or no utilization beyond e-mail.
- **Level 2 (Some):** “Office” equivalent software, 2D CAD for detailed engineering.
- **Level 3 (Moderate):** Standalone electronic/automated engineering discipline (3D CAD) and project services systems.
- **Level 4 (Nearly Full):** Some automated input/output from multiple databases with automated engineering discipline design and project services systems.
- **Level 5 (Full):** Fully or nearly fully automated systems dominate execution of all work functions.

### Automation of Task/Work Functions

Task/Work Functions	Use Level						
	1	2	3	4	5	NA	UNK
<b>Business planning and analysis</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Conceptual definition &amp; design</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Project (discipline) definition &amp; facility design</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Supply management</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Project management</b>							
Coordination system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communications system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schedule system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Off-site/pre-construction</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Construction</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>As-built documentation</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Facility start-up &amp; life cycle support</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Referring to the integration levels below, indicate how well for this project, the tasks/work functions were *integrated across all other* work functions. Select the single most appropriate *integration level* for the task/work functions listed.

**INTEGRATION LEVELS**

- **Level 1(None/Minimal):** Little or no integration of electronic systems/applications.
- **Level 2 (Some):** Manual transfer of information via hardcopy of email.
- **Level 3 (Moderate):** Manual and some electronic transfer between automated systems.
- **Level 4 (Nearly Full):** Most systems are integrated with significant human intervention for tracking inputs/outputs.
- **Level 5 (Full):** All information is stored on a network system accessible to all automation systems and users. All routine communications are automated. The automated process and discipline design systems are fully integrated into 3D design, supply management, and project services systems (cost, schedule, quality, and safety).

**Integration** of Task/Work Functions

Task/Work Functions	Integration Level						
	1	2	3	4	5	NA	UNK
<b>Business planning &amp; analysis</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Conceptual definition &amp; design</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Project (discipline) definition &amp; facility design</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Supply management</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Project management</b>							
Coordination system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communications system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cost system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schedule system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Off-site/pre construction</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Construction</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>As-built documentation</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Facility start-up &amp; life cycle support</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project.  
Respond with NA if you did not use a best practice.**

**Automation/Integration (AI) Technology**

The Automation and Integration Technology practice addresses the degree of automation/level of use and integration of automated systems for predefined tasks/work functions common to most projects.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please **assess *the overall effectiveness of Automation/Integration Technology Practices*** on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 5.12 Planning for Startup

Startup is the transitional phase between plant construction completion and commercial operations, including all of the activities that bridge these two phases. Planning for Startup consists of a sequence of activities that begins during requirements definition and extends through initial operations. This section assesses the level of Startup Planning by evaluating the degree of implementation of specific activities throughout the various phases of a project.

Please select the single most appropriate response to each question below.

1. How well were startup objectives communicated?

Not at all				Very well		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. To what extent was a formal startup execution plan implemented?

Not at all				Very extensive		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. To what extent was commissioning plans developed during planning for startup?

None were developed				Developed for All systems		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. How clearly was startup team key roles & responsibilities communicated?

Not at all				Very		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. To what extent was the startup schedule logic based on systems and sub-systems?

Not at all				Fully		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. To what extent was the startup schedule logic aligned with the EPC schedule?

Not at all				Fully		
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

7. To what extent were startup needs incorporated in procurement requirements?

Not at all				Fully		
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

8. To what extent were suppliers for startup services pre-qualified?

Not at all				Fully		
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

9. Please indicate the *earliest time period* of the first project meeting that deliberately and explicitly focused on planning for startup. Place a check below the *earliest time period* (Select only one).

Front End Planning			Detail engineering/ Procurement			Construction			NA	UNK
Early	Middle	Late	Early	Middle	Late	Early	Middle	Late		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

10. How often were the startup risks assessed?

Not at all		Sometimes			Continuously	
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

11. To what extent was formal operator/maintenance training conducted?

Not at all				Extensively		
0	1	2	3	4	NA	UNK
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

12. How extensive was the system turnover plan?

Not at all				Very		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. To what extent were startup and Process Safety Management (PSM) procedures communicated?

Not at all				Fully		
0	1	2	3	4	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

### Planning for Startup

Startup is the transitional phase between plant construction completion and commercial operations, including all of the activities that bridge these two phases. Planning for Startup consists of a sequence of activities that begins during requirements definition and extends through initial operations. This section assesses the level of Startup Planning by evaluating the degree of implementation of specific activities throughout the various phases of a project.

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of the Planning for Startup process* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 5.13 Prefabrication/ Preassembly/ Modularization

1. To what extent did the project team consider prefabrication, preassembly or modularization?

Not at all				Fully	NA	UNK
0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>

2. To what extent did the project team consider the cost impact of using prefabrication, preassembly or modularization?

Not at all				Fully	NA	UNK
0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>

3. To what extent were labor availability and labor cost considered in evaluation of using prefabrication, preassembly or modularization?

Not at all				Fully	NA	UNK
0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>

4. To what extent were shipping routes and options considered in the prefabrication, preassembly or modularization decision?

Not at all				Fully	NA	UNK
0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>

5. To what extent were safety and quality issues considered in the prefabrication, preassembly or modularization decision?

Not at all				Fully	NA	UNK
0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>

6. To what extent was the construction schedule considered in the prefabrication, preassembly or modularization decision?

Not at all				Fully	NA	UNK
0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>

**Please evaluate the overall effectiveness for each practice you used in this project. Respond with NA if you did not use a best practice.**

#### **Prefabrication/ Preassembly/ Modularization Effectiveness**

On a scale of 0 to 10, with 0 indicating not effective and 10 indicating very effective, please assess *the overall effectiveness of the Prefabrication/ Preassembly/ Modularization* on this project.

0	1	2	3	4	5	6	7	8	9	10	NA	UNK
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 6. Closeout

### 6.1 Achieving Facility Capacity

Indicate the **primary** product or function of the completed facility and the unit of measure which best relates to the product or function capacity of the completed facility.

Product or Function	Unit of Measure

*Examples:*

<i>Product or Function</i>	<i>Unit of Measure</i>
<i>Chemical Products</i>	<i>Tonnes / Day</i>
<i>Oil and Gas</i>	<i>BOE / Day</i> <i>(BOE = Barrel Oil Equivalent)</i>

Were initial planned capacities achieved during Startup?

Not at all

Moderately

Fully Achieved

0	1	2	3	4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Were product quality specifications achieved?

Not at all

Moderately

Fully Achieved

0	1	2	3	4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Achieving Facility Capacity (For Building projects)

Please indicate the size and the unit of measure of the completed facility

Size	Unit of Measure
	Square Footage <input type="checkbox"/>
	Square Meter <input type="checkbox"/>
	Cubic Footage <input type="checkbox"/>
	Cubic Meter <input type="checkbox"/>

Were project quality specifications achieved?

Not at all	1	Moderately	3	Fully Achieved
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 6.2 Work- hours and Accident Data

To measure Safety Performance with the goal of achieving zero injuries and illnesses, the recording and classification of occupational injuries and illnesses of all direct hire workers and contractors are reported following the industry guidelines in Canada (WCB and CAPP).

**For your Direct – Hire Employees and your Subcontractor Employees:** In the spaces below, please record the **Total Number of Fatalities, Lost Time Cases, Medical Aid Cases and First Aid Cases and the Total Number of Restricted Work Cases, Restricted Medical Aid Cases and Restricted First Aid Cases.** With the exception of fatalities, also provide the total number of days away from work for each.

Next, record the number of **Near Misses, the Total Site Work-hours (Exposure Hours), Total Number of Employees, the Average Full Time Equivalent, and the Number of Hours in Your Normal Work Week.**

Use WCB and CAPP definitions. If you do not track in accordance with these definitions, click Unknown in the boxes below.

### 6.2.1. Your Direct-Hire Employees

**Please provide the Total Number of Fatalities from:**

\_\_\_\_\_ Workplace occupational injuries or illnesses

Unknown

\_\_\_\_\_ Travel-related

Unknown

**Please provide the Total Number of Lost Time Cases, Medical Aid Cases and First Aid Cases:**

\_\_\_\_\_ Lost Time Cases  Unknown

\_\_\_\_\_ Medical Aid Cases  Unknown

\_\_\_\_\_ First Aid Cases  Unknown

**Please provide the Total Workdays for Lost Time, Medical Aid and First Aid incidents:**

\_\_\_\_\_ Lost Time Days  Unknown

\_\_\_\_\_ Medical Aid Days  Unknown

\_\_\_\_\_ First Aid Days  Unknown

**Please provide the Total Number of Restricted Work Cases, Restricted Medical Aid Cases and Restricted First Aid Cases:**

\_\_\_\_\_ Total Restricted Work Cases

Unknown

**Please provide the Total Workdays for Restricted Work, Restricted Medical Aid and Restricted First Aid incidents:**

\_\_\_\_\_ Total Restricted Workdays

Unknown

#### Near Misses

Near Misses are common at many worksites. They do not result in injury-but they may cause property damage. If, say, an employee had been in a slightly different position or place, or the equipment or product placement had been to the left or right, serious injury and/or damages could have resulted. A lot depends on sheer luck and circumstance (Heberle, 1998).

How many near misses occurred? \_\_\_\_\_  Unknown

**Total Site Work-hours of Direct-Hire Employees (Exposure Hours):** \_\_\_\_\_  Unknown

**Peak Workforce Number of Direct-Hire Employees:** \_\_\_\_\_  Unknown

## 6.2.2. Subcontractor Employees

**Please provide the Total Number of Fatalities from:**

\_\_\_\_\_ Workplace occupational injuries or illnesses

Unknown

\_\_\_\_\_ Travel-related

Unknown

**Please provide the Total Number of Lost Time Cases, Medical Aid Cases and First Aid Cases:**

\_\_\_\_\_ Lost Time Cases  Unknown

\_\_\_\_\_ Medical Aid Cases  Unknown

\_\_\_\_\_ First Aid Cases  Unknown

**Please provide the Total Workdays for Lost Time, Medical Aid and First Aid incidents:**

\_\_\_\_\_ Lost Time Days  Unknown

\_\_\_\_\_ Medical Aid Days  Unknown

\_\_\_\_\_ First Aid Days  Unknown

**Please provide the Total Number of Restricted Work Cases, Restricted Medical Aid Cases and Restricted First Aid Cases:**

\_\_\_\_\_ Total Restricted Work Cases

Unknown

**Please provide the Total Workdays for Restricted Work, Restricted Medical Aid and Restricted First Aid incidents:**

\_\_\_\_\_ Total Restricted Workdays

Unknown

### Near Misses

Near Misses are common at many worksites. They do not result in injury-but they may cause property damage. If, say, an employee had been in a slightly different position or place, or the equipment or product placement had been to the left or right, serious injury and/or damages could have resulted. A lot depends on sheer luck and circumstance (Heberle, 1998).

How many near misses occurred? \_\_\_\_\_  Unknown

**Total Site Work-hours of Subcontractor Employees (Exposure Hours):** \_\_\_\_\_  Unknown

**Peak Workforce Number of Employees:** \_\_\_\_\_  Unknown

### 6.3. Project Impacts

The following section is intended to assess whether environmental or market conditions adversely or positively affected project performance *beyond the conditions for which you planned*.

Impacts may be assessed ranging from “highly negative”, to “highly positive”. If the factor was adequately planned for, please indicate “As Planned”. If it was not adequately planned for, please indicate the impact, positive or negative. Negative impacts adversely affect the metrics and positive impacts favorably affect the metrics.

#### Weather Conditions

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

#### Labour Availability

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

#### Materials Availability

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

#### Site Conditions

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

### Project Complexity

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

### Regulatory Requirements

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

### Quality of Field Level Supervision

N/A  UNK

Cost					Schedule					Safety					Construction Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

### Amount of Scheduled Overtime

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

### Amount of Unplanned Overtime

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	No Effect	Pos	Hi Pos	Hi Neg	Neg	No Effect	Pos	Hi Pos	Hi Neg	Neg	No Effect	Pos	Hi Pos	Hi Neg	Neg	No Effect	Pos	Hi Pos	Hi Neg	Neg	No Effect	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

### Project Team Experience

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK									

### Craft Labour Skill

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK									

### Engineering Labour Skill

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK									

### Project Team Turnover

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK									

### Detailed Engineering Design Location (Use of Offshore Engineering)

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK									

**Business Market Conditions**

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

**Coordination with Plant Shutdown**

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

**Were there other significant factors not listed above that affected performance?**

Yes  No

If “Yes”, please list each factor separately and assess the impact using the table below:

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

**Please assess below the impact of the percentage of engineering completed prior to project sanction**

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

**Please assess below the impact of the percentage of engineering completed prior to construction start**

N/A  UNK

Cost					Schedule					Safety					Construction Productivity					Engineering Productivity				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos	Hi Neg	Neg	As Planned	Pos	Hi Pos
<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK					<input type="checkbox"/> N/A <input type="checkbox"/> UNK				

## 6.4. Workforce Conditions

Only enter workforce information for your Direct-Hire and Subcontracted employees.

### a) Percentage of workweek by workforce shifts and schedules:

Indicate on average, the predicted and actual percentage of the project's workforce working day, evening and night shifts, by work week schedules. If the actual percentage cannot be calculated, please provide your best assessment. Answer Unknown only if you cannot make a reasonable assessment. Percentages may be indicated in increments of 5 %.

As budgeted at contract award				
Work Schedule (days)	Days		Nights	
	4-3	_____ %	<input type="checkbox"/> Unknown	_____ %
5-2	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
10-4	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
11-3	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
12-2	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
Other	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
Total	100 %		100 %	

Actual at project completion				
Work Schedule (days)	Days		Nights	
	4-3	_____ %	<input type="checkbox"/> Unknown	_____ %
5-2	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
10-4	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
11-3	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
12-2	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
Other	_____ %	<input type="checkbox"/> Unknown	_____ %	<input type="checkbox"/> Unknown
Total	100 %		100 %	

### b) Level of Overtime as % of total field Work-hours

Indicate below the planned and actual percentage of field work-hours classified as overtime.

Planned overtime	Actual overtime
_____ % <input type="checkbox"/> Unknown	_____ % <input type="checkbox"/> Unknown

If the ratio of Actual exceeds Planned overtime, please provide the reason why:

---

**c) Worker accommodations**

Indicate below the planned and actual percentage of workers living in camps and with living out allowance (LOA).

Planned % of workers in camps	Actual % of workers in camps
_____ % <input type="checkbox"/> Unknown	_____ % <input type="checkbox"/> Unknown

Planned % of workers with LOA	Actual % of workers with LOA
_____ % <input type="checkbox"/> Unknown	_____ % <input type="checkbox"/> Unknown

**d) Peak construction work force**

Indicate the peak construction work force planned and achieved for this project by inputting the maximum number of working personnel at the jobsite at one time:

Planned Peak Work Force	Actual Peak Work Force
_____ <input type="checkbox"/> Unknown	_____ <input type="checkbox"/> Unknown

**e) Indicate as a percentage below the planned and actual methods utilized by personnel for travel to the worksite.**

Mode of Travel	Planned	Actual
Bus	_____ % <input type="checkbox"/> Unknown	_____ % <input type="checkbox"/> Unknown
Air	_____ % <input type="checkbox"/> Unknown	_____ % <input type="checkbox"/> Unknown
Personal Vehicle	_____ % <input type="checkbox"/> Unknown	_____ % <input type="checkbox"/> Unknown
Other	_____ % <input type="checkbox"/> Unknown	_____ % <input type="checkbox"/> Unknown
Total	100 %	100 %

**f) Percentage of winter work:**

What percentage of **winter work was performed in outdoor conditions from October 15 to April 15?** If the actual percentage cannot be calculated, please provide your best assessment. Answer Unknown only if you cannot make a reasonable assessment.

Planned Outdoor Work in Winter	Actual Outdoor Work in Winter
_____ % <input type="checkbox"/> Unknown	_____ % <input type="checkbox"/> Unknown