

**Table 3: Definitions of Phases**

Phase	Typical Participants:	Start/Stop	Typical Activities and Products	Typical Cost Elements
<b>Front End Planning</b>	<ul style="list-style-type: none"> <li>• Owner Personnel</li> <li>• Planning Consultants</li> <li>• Constructability Consultant</li> <li>• Alliance/Partner</li> </ul>	<p>Start: Defined Business Need that requires facilities</p> <p>Stop: Total Project Budget Authorized</p>	<ul style="list-style-type: none"> <li>• Options Analysis</li> <li>• Life-cycle Cost Analysis</li> <li>• Project Execution Plan</li> <li>• Appropriation Submittal Pkg</li> <li>• P&amp;IDs and Site Layout</li> <li>• Project Scoping</li> <li>• Procurement Plan</li> <li>• Arch. Rendering</li> </ul>	<ul style="list-style-type: none"> <li>• Owner Planning Team Personnel Expenses</li> <li>• Consultant Fees &amp; Expenses</li> <li>• Environmental Permitting Costs</li> <li>• Project Manager/Construction Manager Fees</li> <li>• Licensor Costs</li> </ul>
<b>Detail Engineering</b>	<ul style="list-style-type: none"> <li>• Typical Participants:</li> <li>• Owner Personnel</li> <li>• Design Contractor</li> <li>• Constructability Expert</li> <li>• Alliance/Partner</li> </ul>	<p>Start: Design Basis</p> <p>Stop: Release of all approved drawings and specs for construction (or last package for fast-track)</p>	<ul style="list-style-type: none"> <li>• Drawing &amp; Spec Preparation</li> <li>• Bill of Material Preparation</li> <li>• Procurement Status</li> <li>• Sequence of Operations</li> <li>• Technical Review</li> <li>• Definitive Cost Estimate</li> </ul>	<ul style="list-style-type: none"> <li>• Owner Project Management Personnel</li> <li>• Designer Fees</li> <li>• Project Manager/Construction Manager Fees</li> </ul>
<b>Procurement</b>	<ul style="list-style-type: none"> <li>• Typical Participants:</li> <li>• Owner Personnel</li> <li>• Design Contractor</li> <li>• Alliance/Partner</li> </ul>	<p>Start: Procurement Plan for Engineered Equipment</p> <p>Stop: All engineered equipment has been delivered to site</p>	<ul style="list-style-type: none"> <li>• Supplier Qualification</li> <li>• Supplier Inquiries</li> <li>• Bid Analysis</li> <li>• Purchasing</li> <li>• Engineered Equipment</li> <li>• Transportation</li> <li>• Supplier QA/QC</li> </ul>	<ul style="list-style-type: none"> <li>• Owner Project Management Personnel</li> <li>• Project/Construction Manager Fees</li> <li>• Procurement &amp; Expediting Personnel</li> <li>• Engineered Equipment</li> <li>• Transportation</li> <li>• Shop QA/QC</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>• Typical Participants:</li> <li>• Owner Personnel</li> <li>• Design Contractor (Inspection)</li> <li>• Construction Contractor and its Subcontractors</li> </ul>	<p>Start: Commencement of foundations or driving piles</p> <p>Stop: Mechanical Completion</p>	<ul style="list-style-type: none"> <li>• Set Up Trailers</li> <li>• Procurement of Bulks</li> <li>• Issue Subcontracts</li> <li>• Construction Plan for Methods/Sequencing</li> <li>• Build Facility &amp; Install Engineered Equipment</li> <li>• Complete Punchlist</li> <li>• Demobilize Construction Equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Owner Project Management Personnel</li> <li>• Project Manager/Construction Manager Fees</li> <li>• Building Permits</li> <li>• Inspection QA/QC</li> <li>• Construction Labor, Equipment &amp; Supplies</li> <li>• Bulk Materials</li> <li>• Construction Equipment</li> <li>• Contractor Management Personnel</li> <li>• Warranties</li> </ul>
<b>Startup / Commissioning</b>	<p>Note: Not usually applicable to infrastructure or building projects</p> <ul style="list-style-type: none"> <li>• Owner personnel</li> <li>• Design Contractor</li> <li>• Construction Contractor</li> <li>• Training Consultant</li> <li>• Equipment Suppliers</li> </ul>	<p>Start: Mechanical Completion</p> <p>Stop: Custody transfer to user/operator (steady state operation)</p>	<ul style="list-style-type: none"> <li>• Testing Systems</li> <li>• Training Operators</li> <li>• Documenting Results</li> <li>• Introduce Feedstocks and Obtain First Product</li> <li>• Hand-off to User/Operator</li> <li>• Operating System</li> <li>• Functional Facility</li> <li>• Warranty Work</li> </ul>	<ul style="list-style-type: none"> <li>• Owner Project Management Personnel</li> <li>• Project Manager/Construction Manager Fees</li> <li>• Consultant Fees &amp; Expenses</li> <li>• Operator Training Expenses</li> <li>• Wasted Feedstocks</li> <li>• Supplier Fees</li> </ul>