Advanced Work Packaging (AWP) is used to provide constraint-free, executable work while improving alignment between the project delivery functional groups – Engineering, Procurement, and Construction – with a focus on streamlined project execution.

Two components make up the AWP process: Front End Planning (FEP) and WorkFace Planning (WFP). With several planning gateways and feedback loops within our end-to-end AWP process, we can ensure collaboration, communication, and the development of a workable plan.

**WORK BREAKDOWN STRUCTURE COMPONENTS**

- Engineering Work Packages (EWP)
- Procurement Work Packages (PWP)
- Construction Work Packages (CWP)
- Installation Work Packages (IWP)
- Start-Up Work Packages (SWP)
- Construction Work Areas (CWA)

Effective AWP Implementation leads to an increase in time-on-tools and optimized results for safety, quality, and productivity. Early collaboration with owners, suppliers, and trade partners contributes to efficient project execution.
FRONT-END PLANNING (FEP)

FEP begins with the end in mind, using a construction driven approach that formalizes the components and methodology for project success.

STAGE I OF FEP

Stage I is identified as the period of time from Receipt of RFP from the Owner, to contact negotiations, and ultimately Notice of Award or NTP/LNTP.

Stage I deliverables are generated through a series of Integrated Phase Planning workshops, and include all stakeholders and subject matter experts. Key objectives of the IPP workshops include:

- Perform constructability analysis and establish the critical path
- Identify preliminary CWA and CWP scope delineations
- Identify primary interface and information handoff points
- Establish preliminary sequencing of CWP, EWP, and PWP deliverables
- Develop preliminary procurement strategy
- Develop construction manpower optimization plan

STAGE II OF FEP

Stage II is identified as the period of time from Notice of Award or NTP/LNTP, to Detailed Engineering, and ultimately to start of construction.

Integrated Phase Planning efforts continue into Stage II, ensuring there is a staged turnover plan from Estimating/Proposals to Project Execution. Outputs of Stage II IPP workshops include:

- Refined CWA & CWP scope boundaries.
- Facilitate project team alignment, consensus, and support of the Path of Construction.
- EWP and PWP progress toward their respective CWPs.
- Information staging for WorkFace Planning and IWP identification.

The Construction Work Package evolves into a deliverable that provides the staging point for information to be used during WorkFace Planning. The CWP scope boundaries and Path of Construction are refined as needed, based on detailed EWP and PWP input. Startup & Commissioning professionals ensure the refined CWA/CWP plan still aligns with the overall Turnover & Commissioning
WORKFACE PLANNING (WFP)

A continuation of the planning efforts started during Front End Planning, WFP is structured to ensure streamlined workflow to the field. By organizing, staging, and delivering all the elements necessary, we enable craft professionals to perform work in a safe and efficient manner.

Construction Work Packages are the foundation upon which WFP occurs, and from which IWPs will be developed. Effective WorkFace Planning is measured by several key performance indicators:

- **Safety** — No work packages delayed or shut down in the field due to safety concerns
- **Quality** — No re-work, no punch lists
- **Craft Tool Time** — down time is minimized, time-on-tools is optimized
- **Construction Turnover to Startup** — No partial system turnovers
- **Schedule Certainty** — Percent Planned Complete (PPC) is tracked through the Last Planner Process
- **IWP Lifecycle** — Percentage of IWPs identified at 90-day interval, percentage of IWPs ready for release to field 2 weeks before start of work, percentage of IWPs closed out within 1 week of work completion

Collaborative constraint removal during IWP Development ensures all requirements are met in a lead-up to the start of the planned work. CWP information is refined as needed to address the specific work assigned to the IWP. Once all constraints are removed, a content review is completed and a “Go/No-Go” decision is made to the release the IWP to the field for execution.
**Master Project Schedules and Look-Ahead Schedules of 90-day, 6-week, and 1-week align and incorporate the Work Breakdown Structure elements - CWAs, CWPs, IWPs.**

Our WFP process utilizes the Project Schedule and Path of Construction as guidelines for IWP development. Building on IPP efforts of Front End Planning, collaboration meetings continue with more project execution stakeholders joining planning development.

The project execution team establishes reoccurring Integrated Phase Planning sessions throughout the project – each serving a specific purpose in the lead up to the start of work.

<table>
<thead>
<tr>
<th>3-Month Look Ahead</th>
<th>6-Week Look Ahead</th>
<th>1-Week Look Ahead</th>
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<tbody>
<tr>
<td>Communicate the path/sequence of work for the next 3 months</td>
<td>Communicate the path/sequence of work for the next 6 weeks</td>
<td>Perform final check on any and all IWPs scheduled for release to field within the next week</td>
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<tr>
<td>Establish initial identification of upcoming IWPs, i.e. Release Plan</td>
<td>Monitor IWP progress toward release to the field, i.e. Readiness</td>
<td>Review work scheduled for the next week to address trade coordination, material/equipment, and staffing</td>
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<tr>
<td>Breakdown critical path items, discuss risk identification and mitigation</td>
<td>Participants include Project Field Manager, Construction Manager, Superintendents, Construction Coordinators, Project Controls Managers, and Scheduling Managers</td>
<td>Participants include Superintendents, Construction Coordinators, Scheduling Managers, General Foremen, and Foremen</td>
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The Daily Improvement Huddle is a vital element of WorkFace Planning. This enables field professionals to track and analyze their work, discuss issues and successes, and implement countermeasures to positively affect their work. Our Opportunity for Improvement program provides the structure to gather, document, and implement ideas from the field. OFI details and results are then shared with the entire project team and catalogued for future reference.

Our Lean principles and company culture of continuous improvement empower field professionals to provide feedback and develop strategies to enhance work execution.

Our project-specific WorkFace Planning strategy addresses moving from producing IWPs based on a bulk CWA methodology to a system closure approach in line with the optimal startup sequence as identified during Front End Planning. This involves developing IWPs for Testing & Turnover Packages which include Testing and Acceptance criteria.

Best practices, implemented OFI’s, and IWP Improvement Huddle results are incorporated into future IWPs, as applicable.