

TIME IS OF THE ESSENCE...



Scheduling the OR:43 Oregon City
Bridge Rehabilitation Project

Photo by Mark Toal

Activity ID	Activity Name	Schedule %	Start	Finish	Trace Logic	Acceptance	Critical	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
2720	2930	0%	07/21/10	08/17/12											

SCHEDULING PROJECT STAKEHOLDERS

Oregon Department of Transportation (ODOT)

Project Manager: Wayne Statler, PE

Asst. Project Manager: Tim Smith

Wildish Standard Paving (WSTP)

General Super. : Scott Vogl

Project Manager: Josh Smith

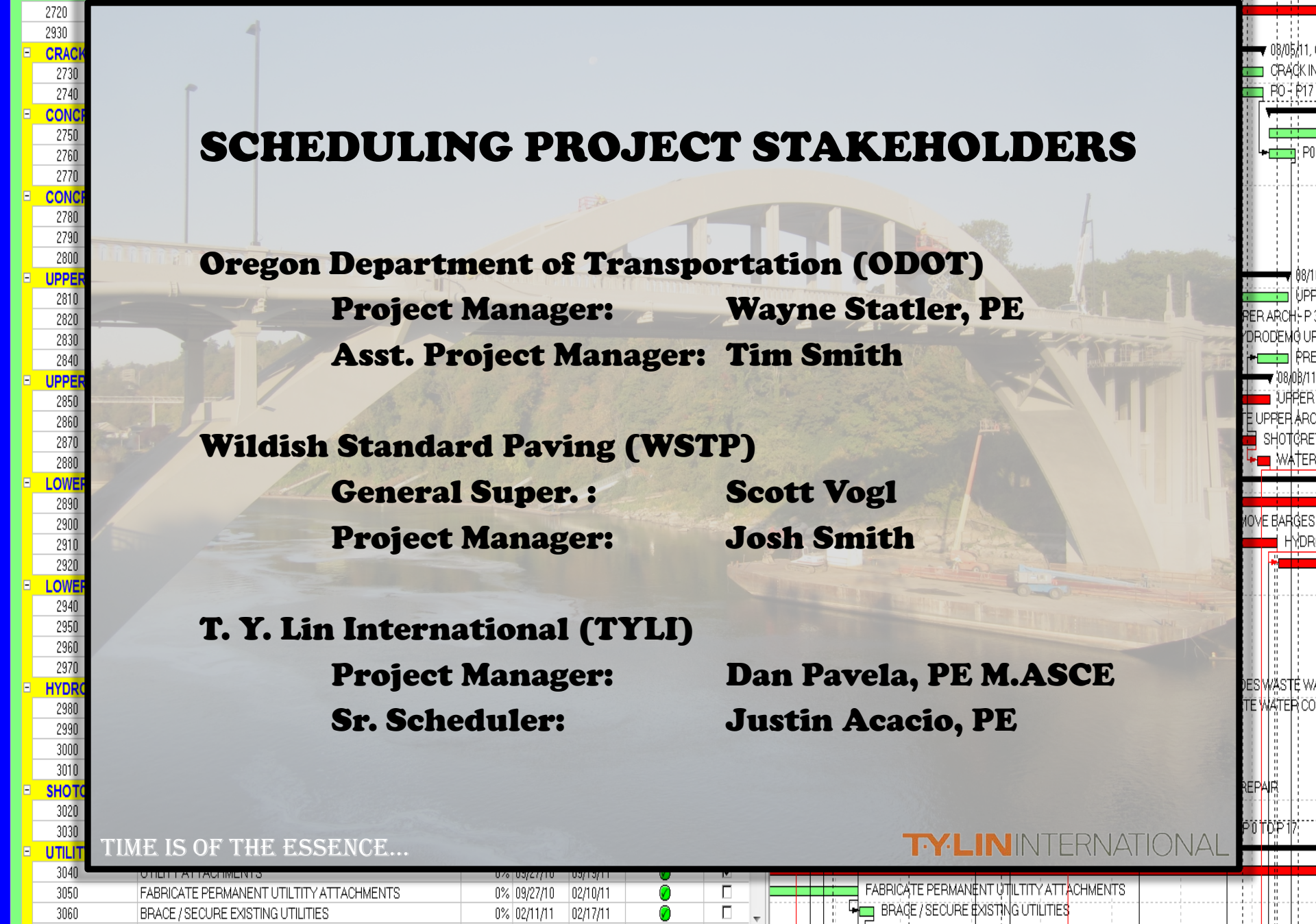
T. Y. Lin International (TYLI)

Project Manager: Dan Pavela, PE M.ASCE

Sr. Scheduler: Justin Acacio, PE

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- MAIN ARCH (PIER 1 TO PIER 2)
- CRACK
- CONCP
- CONCP
- UPPER
- UPPER
- LOWER
- LOWER
- HYDR
- SHOTO
- UTILIT



3040	CLIENT ATTACHMENTS	0%	03/27/10	03/13/11		
3050	FABRICATE PERMANENT UTILITY ATTACHMENTS	0%	03/27/10	02/10/11		
3060	BRACE / SECURE EXISTING UTILITIES	0%	02/11/11	02/17/11		

	FABRICATE PERMANENT UTILITY ATTACHMENTS					
	BRACE / SECURE EXISTING UTILITIES					

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REHABILITATION

❖ **Rehab Included:**

- **Select removal of old Gunite cover**
- **Rehabilitation of structural steel**
- **Repairs to the:**
 - ✓ **Deck**
 - ✓ **Joints**
 - ✓ **Rails**
 - ✓ **Arch Span**
- **Installation of cathodic protection**
- **Installation of new lighting**
- **Painting of the structure**
- **Numerous unforeseen conditions**

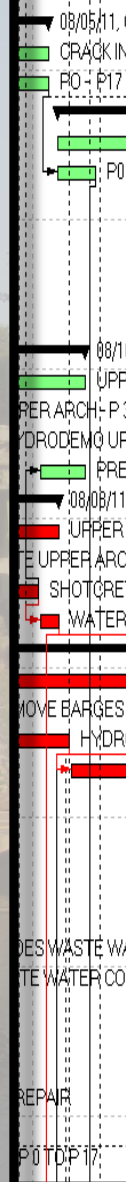
❖ **Rehabilitation Began: May 10, 2010**

❖ **Critical Opening Date: October 15, 2012**

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3060	BRACE / SECURE EXISTING UTILITIES	0%	02/11/11	02/17/11	●	□											



CONTRACTOR'S SCHEDULE

- ❖ Original baseline was created in MS Project 2007
- ❖ Over 500 "Activities" in the schedule
- ❖ 50 Activities were flagged as critical

- ❖ The baseline schedule was created in December 2010
- ❖ The schedule was "Progressed" in December 2011 and again in July of 2011

- ❖ Nearly 30 Contract Change Orders were issued by the July 2011 update; more were to follow

- ❖ Additional Activities overwhelmed MS Project
 - New Activity numbers are always added sequentially from the last number assigned
 - Created serious conflicts in maintaining schedule continuity under the WBS system

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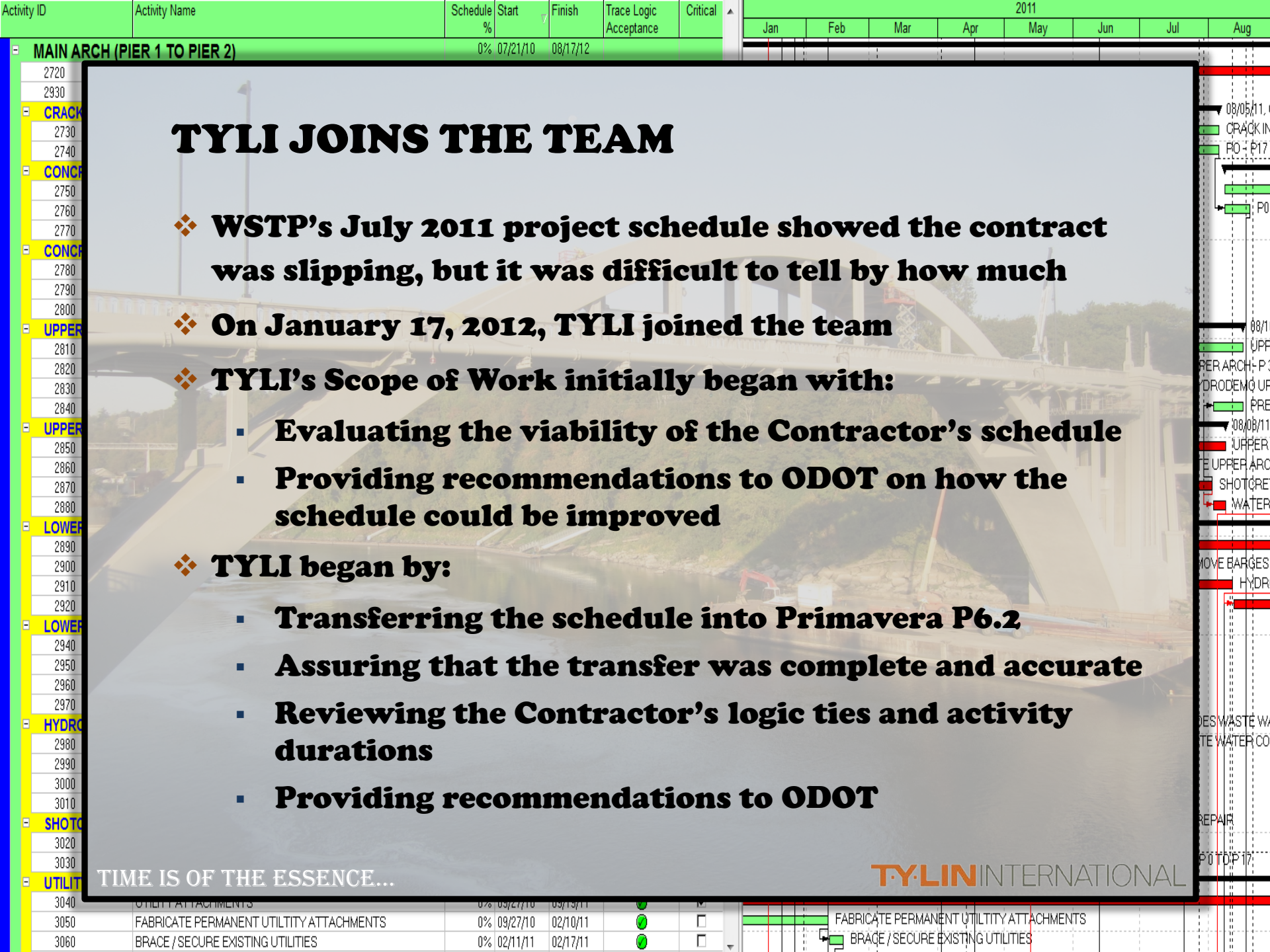
The image shows a construction site for a bridge with a large concrete arch. A semi-transparent grey box is overlaid on the center, containing the text. The background is a photograph of the bridge under construction, with cranes and construction equipment visible. The overall scene is in grayscale, with the text box providing the primary information.

TYLI JOINS THE TEAM

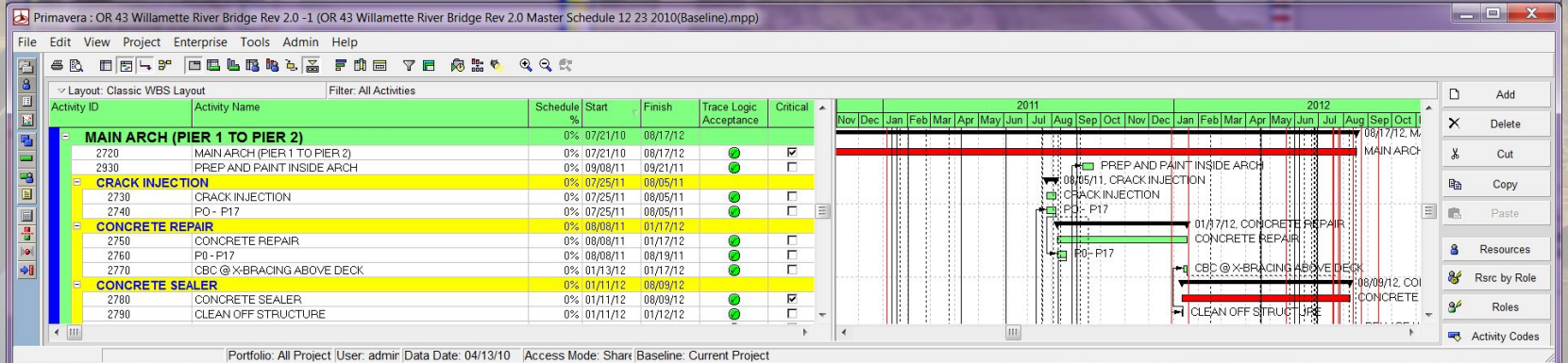
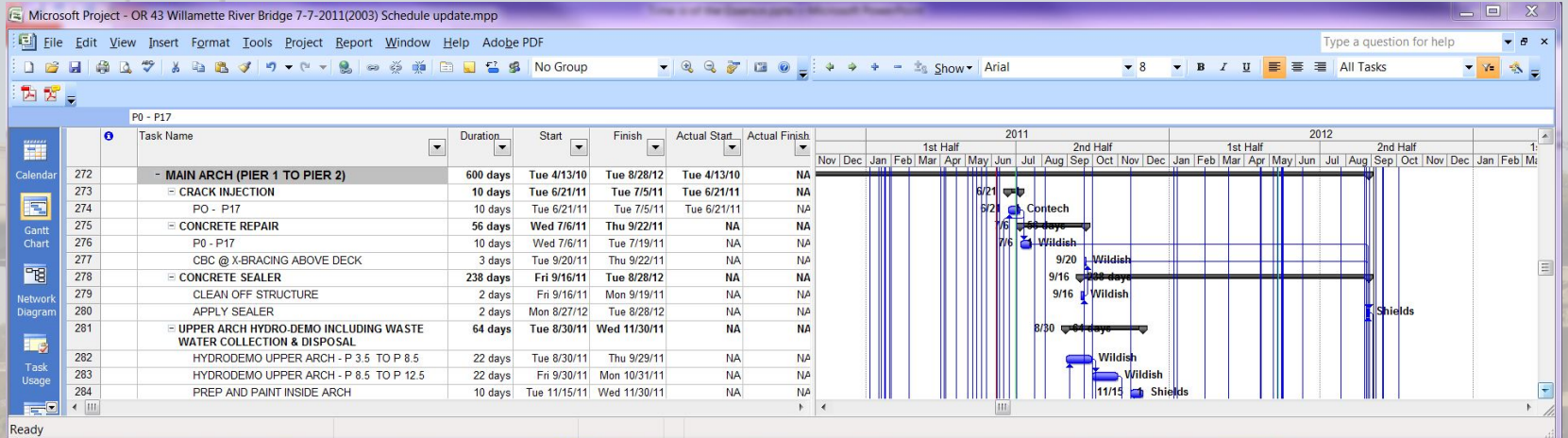
- ❖ **WSTP's July 2011 project schedule showed the contract was slipping, but it was difficult to tell by how much**
- ❖ **On January 17, 2012, TYLI joined the team**
- ❖ **TYLI's Scope of Work initially began with:**
 - **Evaluating the viability of the Contractor's schedule**
 - **Providing recommendations to ODOT on how the schedule could be improved**
- ❖ **TYLI began by:**
 - **Transferring the schedule into Primavera P6.2**
 - **Assuring that the transfer was complete and accurate**
 - **Reviewing the Contractor's logic ties and activity durations**
 - **Providing recommendations to ODOT**

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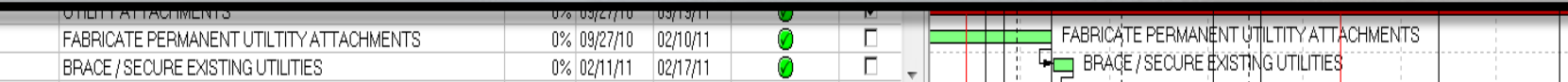


MS Project 2007 vs. Primavera 6.2



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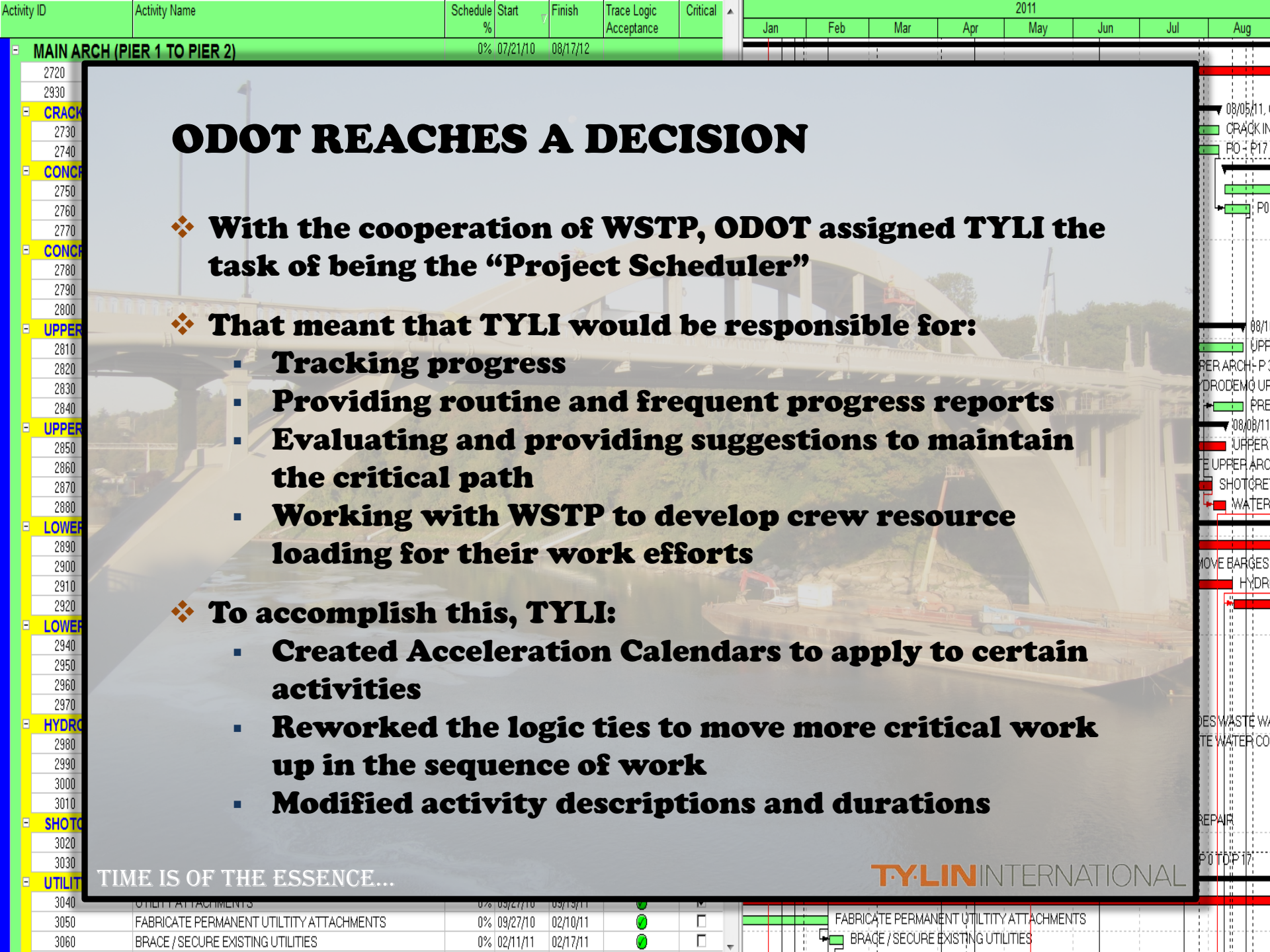


ODOT REACHES A DECISION

- ❖ **With the cooperation of WSTP, ODOT assigned TYLI the task of being the “Project Scheduler”**
- ❖ **That meant that TYLI would be responsible for:**
 - **Tracking progress**
 - **Providing routine and frequent progress reports**
 - **Evaluating and providing suggestions to maintain the critical path**
 - **Working with WSTP to develop crew resource loading for their work efforts**
- ❖ **To accomplish this, TYLI:**
 - **Created Acceleration Calendars to apply to certain activities**
 - **Reworked the logic ties to move more critical work up in the sequence of work**
 - **Modified activity descriptions and durations**

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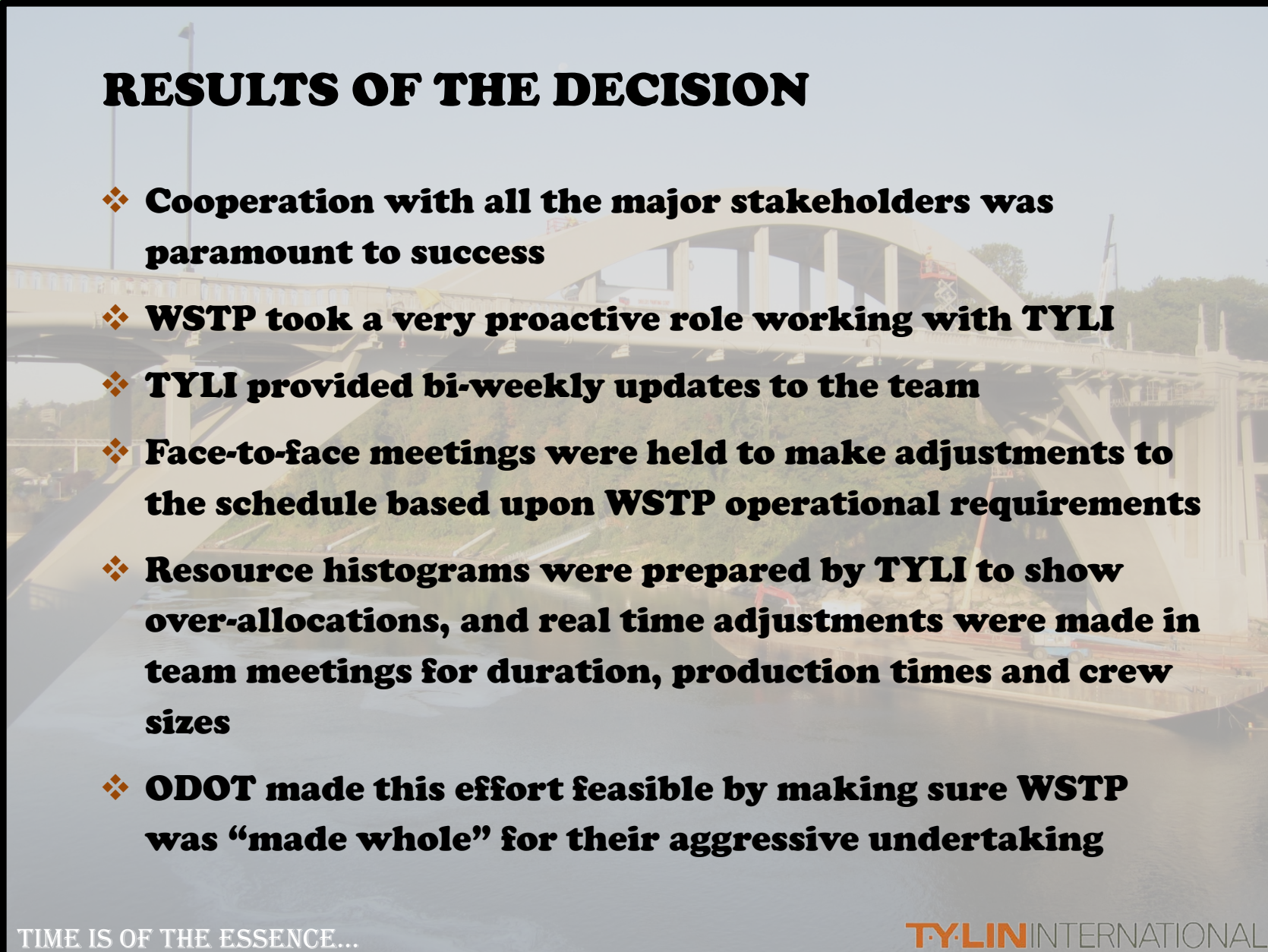
RESULTS OF THE DECISION

- ❖ Cooperation with all the major stakeholders was paramount to success
- ❖ WSTP took a very proactive role working with TYLI
- ❖ TYLI provided bi-weekly updates to the team
- ❖ Face-to-face meetings were held to make adjustments to the schedule based upon WSTP operational requirements
- ❖ Resource histograms were prepared by TYLI to show over-allocations, and real time adjustments were made in team meetings for duration, production times and crew sizes
- ❖ ODOT made this effort feasible by making sure WSTP was “made whole” for their aggressive undertaking

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08/05/11
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POT P17

Histogram : Over-Allocation of Resource

Primavera: OR43 120406 Update (OR43: 2012-03-07 Update_Work Session 04-06-12)

File Edit View Project Enterprise Tools Admin Help

Tracking

Display: Projects

WBS Code	WBS Name	Total Activities
OR43 120406 Update.MAIN ARCH	MAIN ARCH	96
OR43 120406 Update.MAIN DEMOLITION	MAIN DEMOLITION	11
OR43 120406 Update.MAIN SIDEWALK	MAIN SIDEWALK	3
OR43 120406 Update.M/S CURVE SECTIONS	M/S CURVE SECTIONS	23
OR43 120406 Update.MAIN DECK	MAIN DECK	0
OR43 120406 Update.MAIN CONCRETE	MAIN CONCRETE	21
OR43 120406 Update.Mr PYLONS - PIERS 1 & 2, P 0 & P 17	PYLONS - PIERS 1 & 2, P 0 & P 17	6
OR43 120406 Update.MAIN STRUCTURAL STEEL REPAIRS	MAIN STRUCTURAL STEEL REPAIRS	20
OR43 120406 Update.Mr FLOOR BEAMS	FLOOR BEAMS	2
OR43 120406 Update.Mr BEARINGS - INCLUDES FALSEWORK	BEARINGS - INCLUDES FALSEWORK	5
OR43 120406 Update.Mr STRINGERS	STRINGERS	10
OR43 120406 Update.Mr ARCH CROSS BRACING INSIDE CHAM	ARCH CROSS BRACING INSIDE CHAM	0
OR43 120406 Update.Mr LATERAL DECK BRACING	LATERAL DECK BRACING	1
OR43 120406 Update.Mr REPAIR STRINGER ENDS	REPAIR STRINGER ENDS	0
OR43 120406 Update.Mr REPAIR TRUSS SUPPORTS	REPAIR TRUSS SUPPORTS	0
OR43 120406 Update.Mr ARCH CHAMBERS	ARCH CHAMBERS	2
OR43 120406 Update.MAIN SHOTCRETE AND PAINT	MAIN SHOTCRETE AND PAINT	15
OR43 120406 Update.MAIN MISCELLANEOUS	MAIN MISCELLANEOUS	6
OR43 120406 Update.Mr UTILITY ATTACHMENTS	UTILITY ATTACHMENTS	2
OR43 120406 Update.Mr SHEAR STRAKES	SHEAR STRAKES	4
OR43 120406 Update.OREGO OREGON CITY APPROACH	OREGO OREGON CITY APPROACH	45
OR43 120406 Update.OREI DEMOLITION	OREI DEMOLITION	4
OR43 120406 Update.OREI SIDEWALK	OREI SIDEWALK	20
OR43 120406 Update.OREI DECK	OREI DECK	0
OR43 120406 Update.OREI CONCRETE	OREI CONCRETE	14
OR43 120406 Update.OF CONCRETE SEALER	OF CONCRETE SEALER	0
OR43 120406 Update.OF CRACK INJECTION	OF CRACK INJECTION	0
OR43 120406 Update.OF APPROACH SLAB	OF APPROACH SLAB	9

Display: Resource Analysis : Spreadsheet for Selected Portfolios/Projects

Layout Name: Resource Allocation Spreadsheet

Resource ID Name	Start	Finish	Remaining Units	2012																	
				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
OR43 120406 UR	07/Mar/12	20/Nov/12							32	72	88	96	24	152	24	16					
Shields.Shields	07/Mar/12	08/Mar/12							16												
Shields.Shields	19/Nov/12	20/Nov/12															16				
Shields.Shields	11/Jul/12	24/Jul/12											80								
Shields.Shields	18/May/12	01/Jun/12									72	8									
Shields.Shields	29/Aug/12	03/Oct/12													24	152	24				
Shields.Shields	26/Jul/12	27/Jul/12											16								
Shields.Shields	07/Mar/12	08/Mar/12							16												
Shields.Shields	08/Jun/12	21/Jun/12										80									

Display: Current Project's Resources

Resource ID	Resource Name	Resource Type	Unit of Measure
Wldsh	Wldsh	Labor	
Shields	Shields	Labor	
North Star	North Star	Labor	
Johnson Western	Johnson Western	Labor	
Pacific Precast	Pacific Precast	Labor	
Willamette Valley St	Willamette Valley Steel	Labor	
Wldsh/IM	Wldsh/IM	Labor	

Display: Resource Analysis : Total Allocation Profile

Legend:

- Budgeted Units (Green)
- Remaining Early Units (Blue)
- Overallocated Remaining Early Units (Red)
- Limit (Black Line)

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CONCLUSIONS

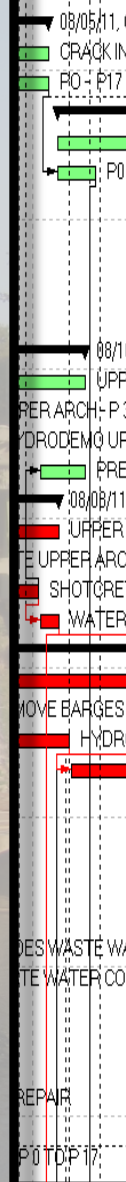
- ❖ **The project, once 6 months behind schedule, was ready for opening to traffic on October 12, 2012 – 3 days ahead of schedule**
- ❖ **ODOT realized a successful project with no outstanding claims, and to a resounding cheer from the local community that the bridge was opened on time**
- ❖ **The type of cooperative effort demonstrated by all the stakeholders showed that interjecting a scheduling expert into the team mix can be both beneficial and cost effective**

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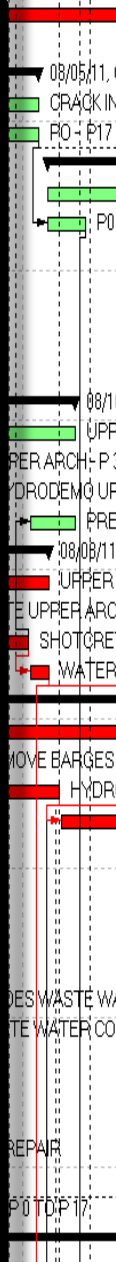
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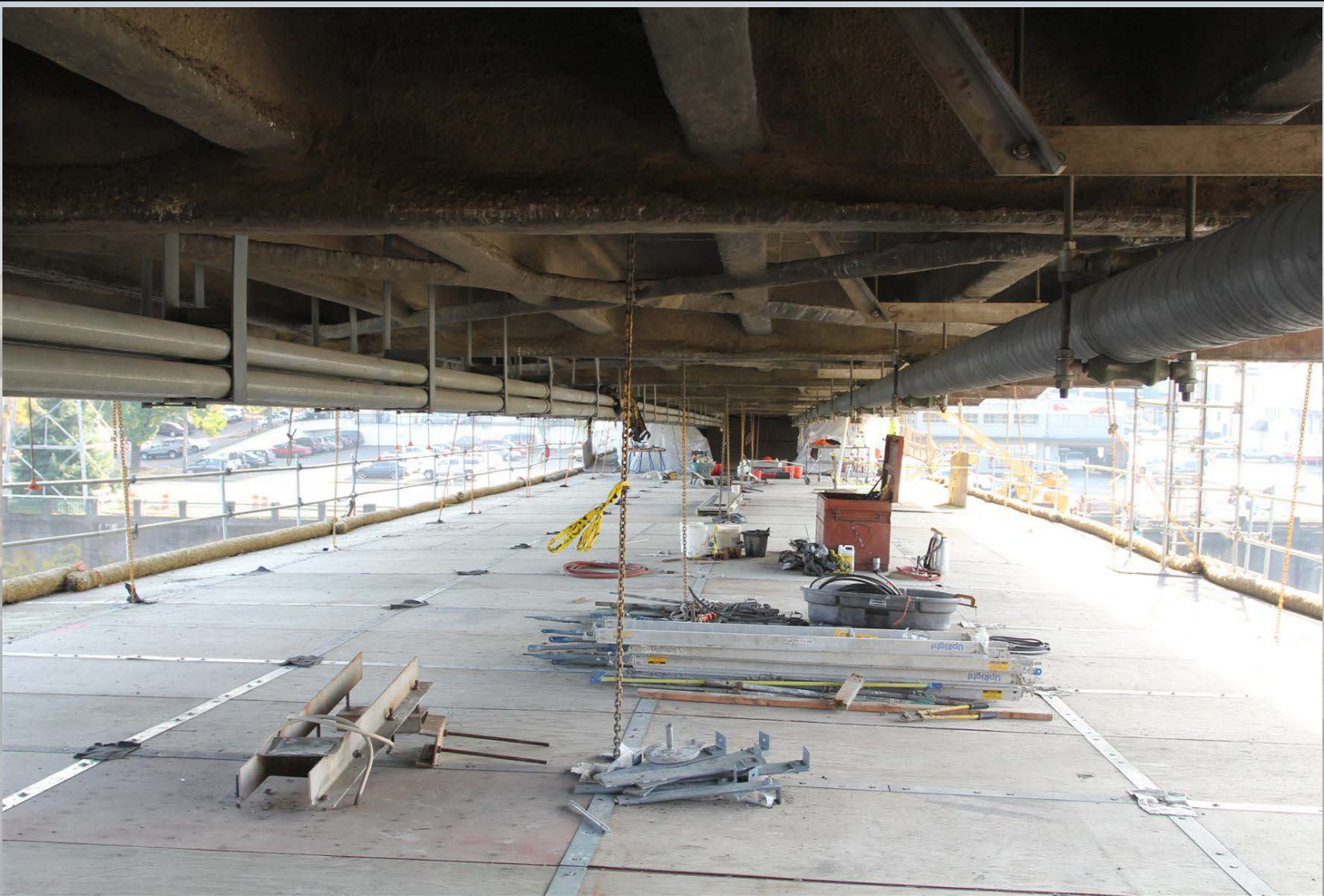
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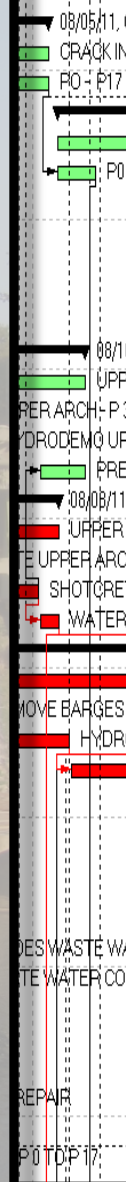


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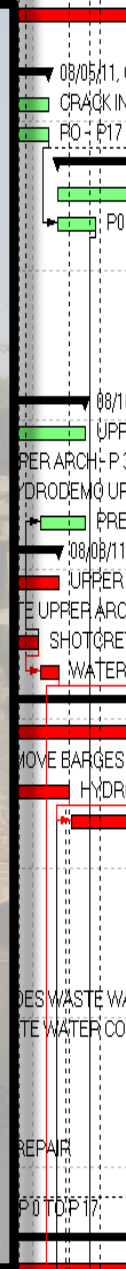


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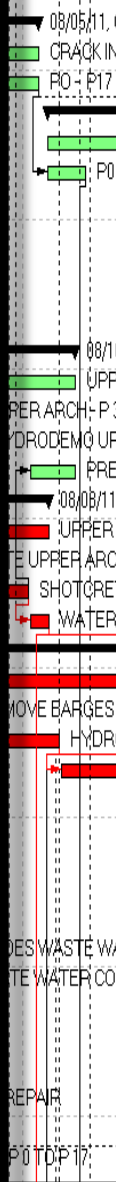


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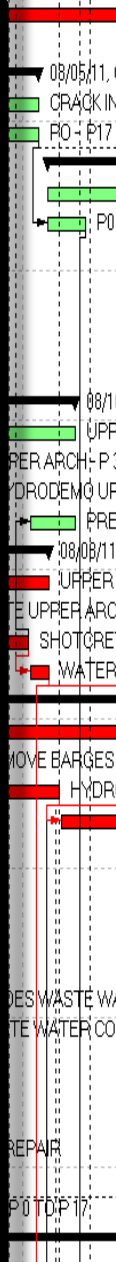
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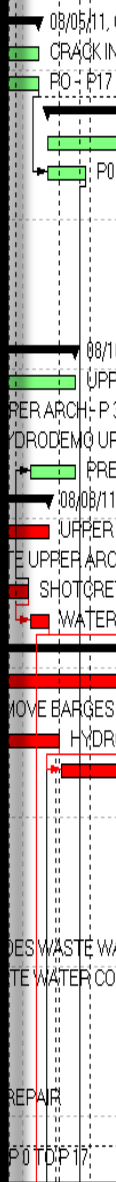
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- UTILIT
- 3040
- 3050
- 3060



TIME IS OF THE ESSENCE...

TYLIN INTERNATIONAL

3040	UTILITY ATTACHMENTS	0%	03/27/10	03/13/11	●	■
3050	FABRICATE PERMANENT UTILITY ATTACHMENTS	0%	03/27/10	02/10/11	●	■
3060	BRACE / SECURE EXISTING UTILITIES	0%	02/11/11	02/17/11	●	■

■	FABRICATE PERMANENT UTILITY ATTACHMENTS
■	BRACE / SECURE EXISTING UTILITIES

Activity ID	Activity Name	Schedule %	Start	Finish	Trace Logic	Acceptance	Critical	2011							
								Jan	Feb	Mar	Apr	May	Jun	Jul	Aug

MAIN ARCH (PIER 1 TO PIER 2) 0% 07/21/10 08/17/12

- 2720
- 2930
- CRACK**
- 2730
- 2740
- CONCR**
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- CONCR**
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- LOWER**
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- 2920
- LOWER**
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- HYDR**
- 2980
- 2990
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- SHOTC**
- 3020
- 3030
- UTILIT**
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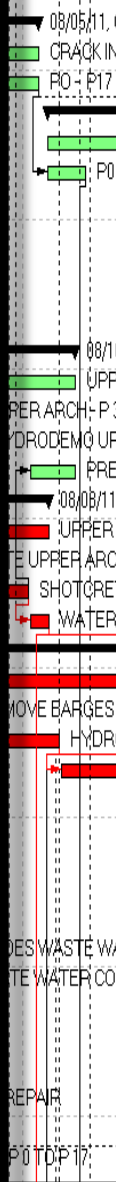


TIME IS OF THE ESSENCE...

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3040	UTILITY ATTACHMENTS	0%	03/27/10	03/13/11	●		
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- HYDR
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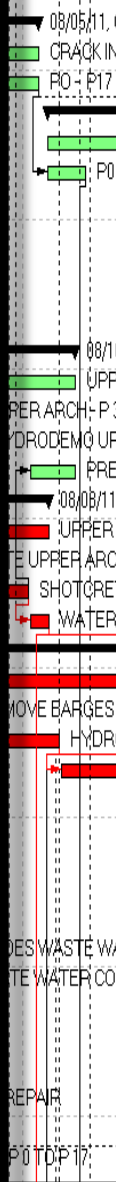


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	FABRICATE PERMANENT UTILITY ATTACHMENTS						
	BRACE / SECURE EXISTING UTILITIES						



Activity ID	Activity Name	Schedule %	Start	Finish	Trace Logic	Acceptance	Critical	2011						
								Jan	Feb	Mar	Apr	May	Jun	Jul

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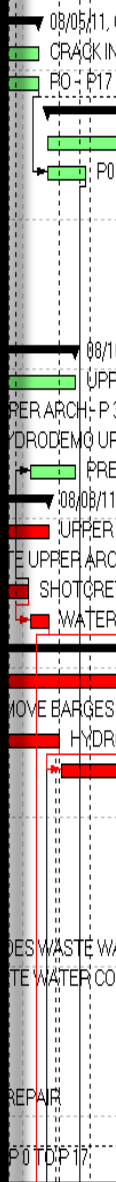
10.27.2011

TIME IS OF THE ESSENCE...

TYLIN INTERNATIONAL

3040	UTILITY ATTACHMENTS	0%	03/27/10	03/13/11	●	■
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■	FABRICATE PERMANENT UTILITY ATTACHMENTS
■	BRACE / SECURE EXISTING UTILITIES



Activity ID	Activity Name	Schedule %	Start	Finish	Trace Logic	Critical	2011	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
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08.21.2012

TIME IS OF THE ESSENCE...

TYLIN INTERNATIONAL

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■	FABRICATE PERMANENT UTILITY ATTACHMENTS
■	BRACE / SECURE EXISTING UTILITIES

08/05/11
 CRACK IN
 PO - P17
 PO
 08/11
 UPPER
 PER ARCH - P
 DRODEM UP
 PRE
 08/08/11
 UPPER
 TE UPPER ARC
 SHOTCRE
 WATER
 MOVE BARGES
 HYDR
 DES WASTE WA
 TE WATER CO
 REPAIR
 POTOP 17

Activity ID	Activity Name	Schedule %	Start	Finish	Trace Logic	Critical	2011	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
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Questions?



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TYLIN INTERNATIONAL

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	FABRICATE PERMANENT UTILITY ATTACHMENTS	
	BRACE / SECURE EXISTING UTILITIES	