

Annual Consultant/CoSA Seminar Design & Constructability Challenges 2012 & Beyond

**Capital Improvements
Management Services**



Addressing Constructability Issues and Improving Design/Quality of Bid Docs

Luis E. Maltos, P.E. – CIMS

Kenneth W. Thomas, Jr., PE., R.P.L.S. - CEC

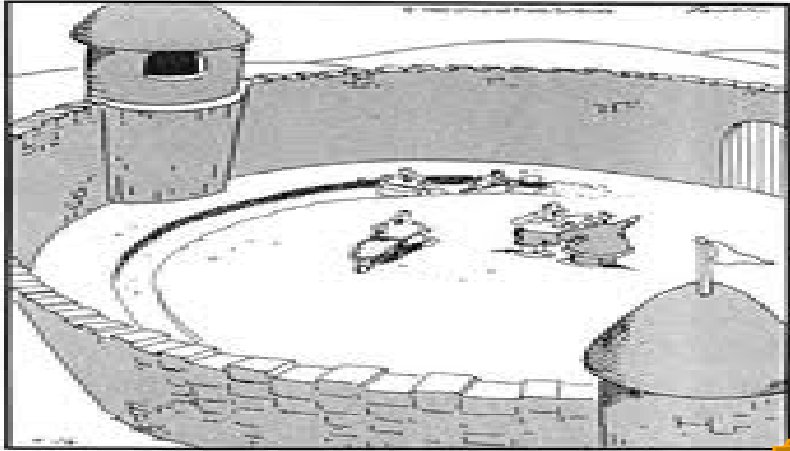
John E. Carlson, DBIA – Sundt Construction, Inc.

City of San Antonio and PEPP/SACEC
January 27th, 2012




We are going to need a bigger boat!!!!

THE FAR SIDE By GARY LARSON



Suddenly, a heated exchange took place between the king and the moat contractor.

Collaboration & Communication



Environmental Regulations & Compliance

SWPPP Plan Preparation

- Alternative Options for Establishing Vegetation
 - 70% Cover
 - Temporary Irrigation System for sensitive/high profile areas

Environmental Regulations & Compliance

404 Permits

- Individual-*How do we avoid????!!*
- Construction Means & Methods

Traffic Control/Phasing

What Should We Consider?

- Think “*Traffic Flow not Traffic Control*”
- Eliminate the “*Sea of Barricades of Approach*”
- Work Zone is bigger than trench
- Room for Excavated Materials during construction
- Temporary Traffic Signal Plans

Confusing lane configuration:



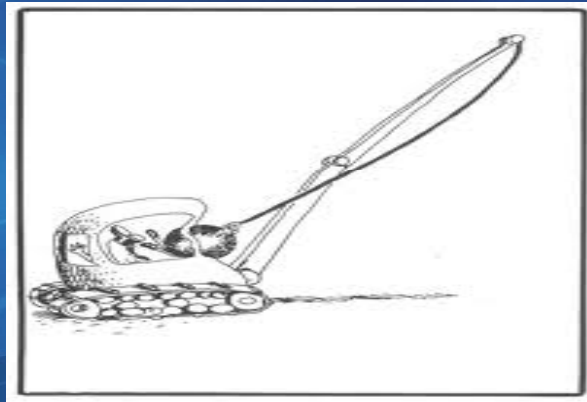
Confusing lane configuration:



Traffic Control/Phasing

What Should We Consider?

- Contractor's Mean's and Methods

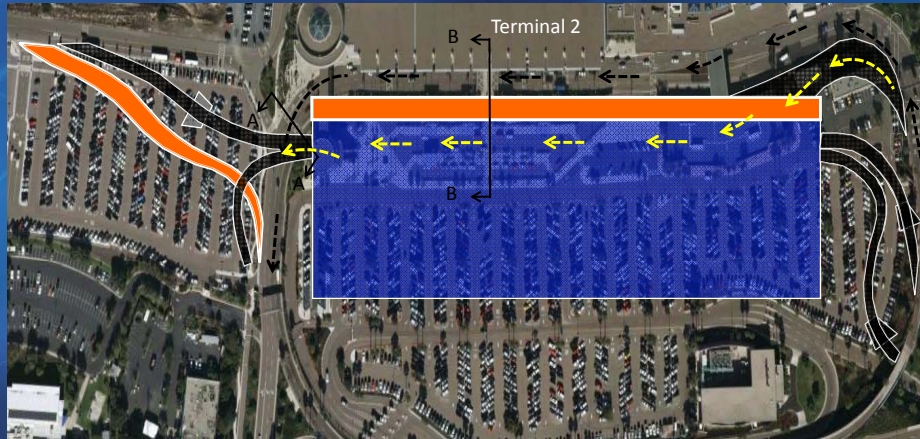


Traffic Control/Phasing

What Should We Consider?

- Normalize the Roadway
 - ✓ Striping
 - ✓ Positive Barriers
- Vacuum Sweeping
 - ✓ Include as Bid Item
- Visual Communication

PHASE 4



EDR & PARKING STRUCTURE

EXITING SHUTTLES/TAXIS FROM PARKING STRUCTURE MERGE W/ OTHER EXITING TRAFFIC

Section A-A

PARKING STRUCTURE & EDR

COURTESY VEHICLES

TAXIS/SHUTTLES

CONSTRUCTION OF SMART CURB CHECK-IN

4 LANES LOADING/UNLOADING

SIDEWALK

TERMINAL

38'

38'

113'

48'

17'

Section B-B



Our Crews Think and Build in 3D

Traffic Control/Phasing

What Should We Consider?

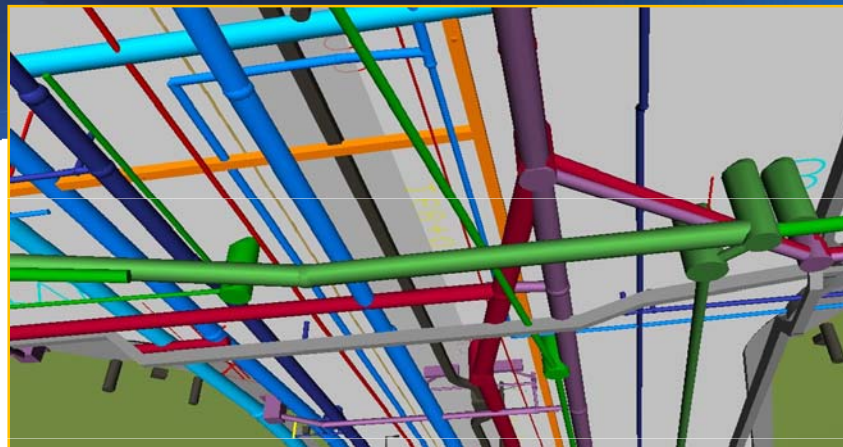
- Utilities
 - ✓ How to best incorporate the work
 - ✓ Adjustments for temporary work/phasing
 - ✓ Final elevation adjustments

- Elevation Differences-Existing, Transition, Final

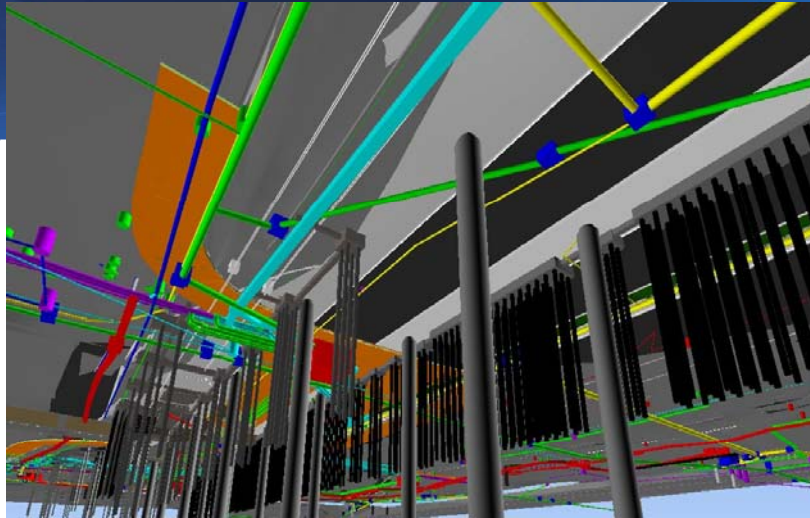
Utilities

If We Can't Get Out of Ground,
We Can't Get Going

- Better coordination between all utilities
- Street work in ROW
- ✓ Impacts to homeowner and private property



New Storm	New Gas	New Sanitary	Lightrail Ductbank
Exist Storm	Exist Gas	Exist Sanitary	Joint Trench
New Water	Electrical	New Irrigation	
Exist Water	Exist Elect	Existing Irrigation	



Utility and Foundation Coordination – San Diego, CA

Utilities

**If We Can't Get Out of Ground,
We Can't Get Going**

- Separation distances between existing and proposed facilities on design plans
- Trench widths for utility installation, and how to design with those widths in mind

Communications & Collaboration

Partnering

- How to improve communication and chain of command
- Official documentation and use of portal

Design and Construction Issues

- V. Project Schedule
 - Demonstrate Resource Availability
 - Are schedules too long?

Design and Construction Issues

VI. Material Testing

- Required compaction by utilities
- Contractor to provide proof of compaction
- Utilities to conduct Quality Assurance Testing as needed

Design and Construction Issues

VII. Contractor Responsibilities

- Means and Methods
- Construction Site Safety
- Issue Resolution
- Calls to get utility locates
- Customer Notification before construction and 48 hours before customer is affected
- Supply and Approval of Asbestos Removal Plan at beginning of project and before any work is done

Design and Construction Issues

VIII. Miscellaneous

- Prompt Upload by all parties to portal to pay contractors
- ROW & Fence Relocations – could be a separate contract and completed before construction

Design Guidance Manual

Created for 2007 Bond Program

- Effective June 2008

Update for 2012 Bond Program

- Effective February 2012
- All Professional Engineering Contracts

Design Guidance Manual 2012 Update

40% - Basic Roadway and Drainage Design

- Plan and Profiles
- Utility Basemap
- Cross Sections (Roadway and Drainage)
- Traffic Control Narrative

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"Well, there went Atlantis — I
told You not to use low bidder!"

Design Guidance Manual 2012 Update

- Submittal Checklists
- Project Work Plan
 - Updated and subdivided into submittals
 - Standardize Fee Proposals

Design Guidance Manual

Project Name	Project Manager	Project Engineer	EIT	Engineering Tech
Date	\$ 150.00	\$ 125.00	\$ 110.00	\$ 75.00
Prepared By				
40% Design Phase	10	10	10	40
1. Initial Scope Meeting				
1.1. Complete DSR	10			
2. Right of Way Surveying and Mapping				
2.1. Acquire Ownership information				
2.2. Secure Right of Entry				
2.3. Survey ROW				
2.3.1. Boundary				
2.3.2. Apparent ROW only				
2.4. Monument ROW				
3. Topographic Survey/Base Mapping				
3.1. Establish Primary and Secondary Project Control		10		
3.2. Set Project centerline or baseline			10	
3.2.1. Interval				10
3.3. Survey topographic features				
3.4. Survey Cross sections / spot elevations to develop DTM/cross sections				
3.4.1. To ROW only				
3.4.2. _____ feet into adjacent property [everywhere] [where required] [only where ROE can be secured]				

Design Guidance Manual 2012 Update

Utility Coordination

COMMUNICATION IS KEY!!

- Prior to 40% Submittal
- Meet with utilities to describe project scope
- Gather all utility system maps, and as-builts
- Prepare Utility Basemap (Quality Level C)
- Identify conflicts with proposed improvements

Design Guidance Manual 2012 Update

Utility Coordination

- Prior to 40% Submittal (Con't)
 - Identify SUE needs
 - Coordinate design or all utilities that will be relocated/adjusted
 - Recommend and assign utility alignments
 - Utility Report and Conflict Matrix

Design Guidance Manual 2012 Update

Utility Coordination

- **70% , 95%, and Bid Documents**
 - **Continue coordination efforts**
 - **Update Utility Basemap**
 - **Update Utility Report**
 - **To include narrative of major changes**

Design Guidance Manual 2012 Update

- **Forms Added**
 - **Utility Conflict Matrix**
 - **Comment and Resolution Form**
 - **Variance Letter**
 - **As-Built Procedures**
 - **Updated QA/QC form**

Design Guidance Manual 2012 Update

- **Also Added**
 - **Complete Street Field Analysis Checklist**
 - **Complete Street Public Meeting**
 - **Estimated Quantity Sheet**
 - **CoSA Standard Details will not be required on construction plans**
 - **Added “geogrid” to the pavement design standards**

Constructability

- **Added Bid Phase Checklist**
 - **100 % Plans**
 - **100% Meeting**
 - Finalize Constructability Issues
 - Finalize Utility Conflict Matrix
 - Finalize Comment and Resolution Form
 - Coordinate with Inspectors
 - On-site meeting if req'd
- **QA/QC form updated**
 - Follow internal QA/QC program
 - Constructability Review
 - Meeting Minutes (Action Items)
 - Quantities and Pay items verified