June 19 - 20, 2025
Hollywood, FL

TRANSPORTATION SYMPOSIUM

Using Independent Project Costs to Inform Work Programming

2025 FDOT TRANSPORTATION SYMPOSIUM

Transportation Symposium Website

SCAN ME

1

Presenters

Ashley Anderson
Forecasting and Project Cost Engineer
FDOT

Ryan Flannery
Construction Project Manager
Burns & McDonnell

Andrew Underwood
Senior Estimator
Burns & McDonnell

TRANSPORTATION SYMPOSIUM

2

2

Forecasting & Performance Office Updates

- New Director – Chris Lewis
- Officially switching over from Program Management to Forecasting and Performance on websites and SharePoint sites
- Our goal is to elevate the importance of project cost and embrace project management as a profession in successfully delivering the work program, as well as delivering local program projects.

TRANSPORTATION SYMPOSIUM

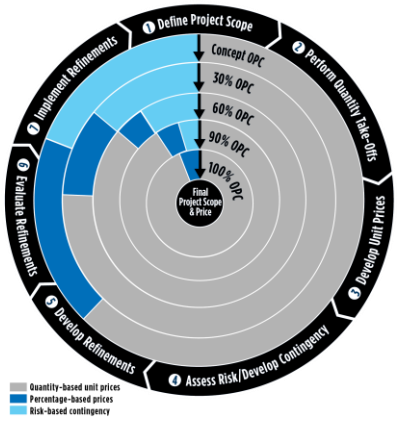
Implementing the Philosophy Change

- Not just a terminology change…

…it's a philosophy change

Estimate ▶ **Project Cost**

- Expect to see more consistency in project cost projections from Scope Project Costs through Award.



TRANSPORTATION SYMPOSIUM

Cost Analysis

- **Traditional**
  - Parametric analysis using historical bid averages
  - Engineers and District Estimators
  - Projects less than $100 million

- **Bottom Up**
  - Independent Project Cost
  - Labor, Materials and Equipment
  - IPC Consultants
  - Projects over $100 million

TRANSPORTATION SYMPOSIUM

5

5

New Handbooks Under Development

Consistent processes and deliverables

TRANSPORTATION SYMPOSIUM

6

6

New Design Deliverables

Engineer's Project Cost	Pay Items, Quantities, Unit Prices, and Extended Prices detail typical of an Engineer's Estimate.
Detailed Project Information	Plans, strip maps, reports, spreadsheets, etc. that convey the project scope and design.
Project Document Checklist	A fillable template that reports what documents are being provided and file names to help IPC teams orient to the project.
Design Confidence Report	Fillable template reporting confidence that project quantities have been captured in the in the Engineer's Project Cost.
Engineer's Risk Assessment	Identification of project risks and potential cost impacts within a provided Risk Register template.
Basis of Engineer's Cost	Memorandum that provides a project overview and places into appropriate context all of these deliverables.

TRANSPORTATION SYMPOSIUM

7

7

IPC Process – IPC Documents

- In order to develop an accurate project cost, it will require project teams to more fully document project components or assumptions that can serve as the basis of quantities.
- This doesn't mean more fully developed plans are needed. Just better documented assumptions and basis of quantities.

TRANSPORTATION SYMPOSIUM

8

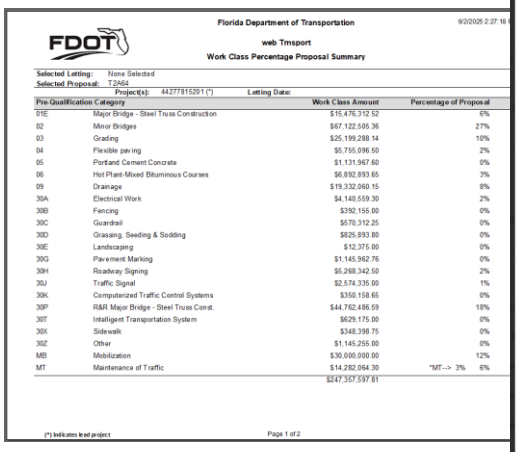
8

Design Deliverables Used by IPC Teams

- **Engineer's Project Cost**
- Detailed Project Information
- Project Document Checklist
- Design Confidence Report
- Engineer's Risk Assessment
- Basis of Engineer's Cost

TRANSPORTATION SYMPOSIUM

Engineer's Project Cost



Florida Department of Transportation — 9/2/2025 2:27:18 PM

FDOT

web Trnsport

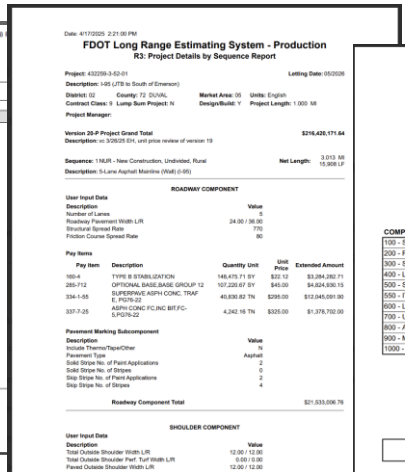
Work Class Percentage Proposal Summary

Selected Letting: None Selected
Selected Proposal: T2464
Project(s): 44277815201 (*) Letting Date:

Pre-Qualification Category		Work Class Amount	Percentage of Proposal
01E	Major Bridge - Steel Truss Construction	$15,476,312.52	6%
02	Minor Bridges	$67,122,595.36	27%
03	Grading	$25,199,288.14	10%
04	Flexible paving	$5,755,096.50	2%
05	Portland Cement Concrete	$1,131,967.60	0%
06	Hot Plant-Mixed Bituminous Courses	$6,892,893.65	3%
09	Drainage	$19,332,060.15	8%
30A	Electrical Work	$4,140,559.30	2%
30B	Fencing	$392,155.00	0%
30C	Guardrail	$570,312.25	0%
30D	Grassing, Seeding & Sodding	$825,893.80	0%
30E	Landscaping	$12,375.00	0%
30G	Pavement Marking	$1,145,962.76	0%
30H	Roadway Signing	$5,268,342.50	2%
30J	Traffic Signal	$2,574,335.00	1%
30K	Computerized Traffic Control Systems	$350,158.65	0%
30P	R&R Major Bridge - Steel Truss Const.	$44,762,486.59	18%
30T	Intelligent Transportation System	$629,175.00	0%
30X	Sidewalk	$348,398.75	0%
30Z	Other	$1,145,255.00	0%
MB	Mobilization	$30,000,000.00	12%
MT	Maintenance of Traffic	$14,282,064.30	*MT--> 3% 6%
		$247,357,597.61	

(*) Indicates lead project

Page 1 of 2



Date: 4/17/2025 2:21:06 PM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: 432259-3-52-01 Letting Date: 05/2026
Description: I-95 (JTB to South of Emerson)
District: 02 County: 72 DUVAL Market Area: 05 Units: English
Contract Class: 9 Lump Sum Project: N Design/Build: Y Project Length: 1.000 MI
Project Manager:

Version 20-P Project Grand Total $216,420,171.64
Description: w; 3/26/25 EH, unit price review of version 19

Sequence: 1 NUR - New Construction, Undivided, Rural Net Length: 3.013 MI / 15,908 LF
Description: 5-Lane Asphalt Mainline (Wall) (I-95)

ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	5
Roadway Pavement Width LR	24.00 / 36.00
Structural Spread Rate	770
Friction Course Spread Rate	80

Pay Items

Pay Item	Description	Quantity Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	148,475.71 SY	$22.12	$3,284,282.71
285-712	OPTIONAL BASE,BASE GROUP 12	107,220.67 SY	$45.00	$4,824,930.15
334-1-55	SUPERPAVE ASPH CONC, TRAF E, PG76-22	40,830.82 TN	$295.00	$12,045,091.90
337-7-25	ASPH CONC FC,INC BIT,FC-5,PG76-22	4,242.16 TN	$325.00	$1,378,702.00

Pavement Marking Subcomponent

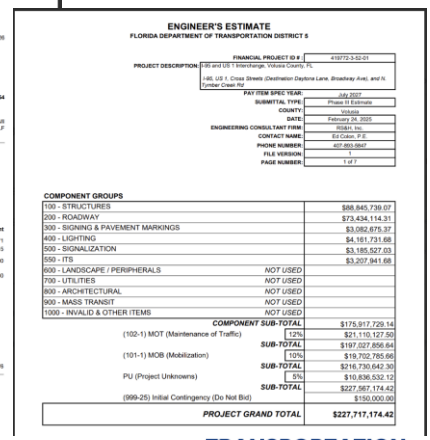
Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	2
Solid Stripe No. of Stripes	0
Skip Stripe No. of Paint Applications	2
Skip Stripe No. of Stripes	4

Roadway Component Total $21,533,006.76

SHOULDER COMPONENT

User Input Data

Description	Value
Total Outside Shoulder Width LR	12.00 / 12.00
Total Outside Shoulder Perf. Turf Width LR	0.00 / 0.00
Paved Outside Shoulder Width LR	12.00 / 12.00



ENGINEER'S ESTIMATE

FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 5

FINANCIAL PROJECT ID #	419772-3-52-01
PROJECT DESCRIPTION	I-95 and US 1 Interchange, Volusia County, FL *I-95, US 1, Cross Streets (Destination Daytona Lane, Broadway Ave), and N. Tymber Creek Rd*
PAY ITEM SPEC YEAR:	July 2007
SUBMITTAL TYPE:	Phase II Estimate
COUNTY:	Volusia
DATE:	February 24, 2025
ENGINEERING CONSULTANT FIRM:	RS&H, Inc.
CONTACT NAME:	Ed Colon, P.E.
PHONE NUMBER:	407.660.6947
FILE VERSION:	1
PAGE NUMBER:	1 of 7

COMPONENT GROUPS

100 - STRUCTURES		$88,845,739.07
200 - ROADWAY		$73,434,114.31
300 - SIGNING & PAVEMENT MARKINGS		$3,082,675.37
400 - LIGHTING		$4,161,731.68
500 - SIGNALIZATION		$3,185,527.03
550 - ITS		$3,207,941.68
600 - LANDSCAPE / PERIPHERALS	*NOT USED*	
700 - UTILITIES	*NOT USED*	
800 - ARCHITECTURAL	*NOT USED*	
900 - MASS TRANSIT	*NOT USED*	
1000 - INVALID & OTHER ITEMS	*NOT USED*	
	COMPONENT SUB-TOTAL	$175,917,729.14
(102-1) MOT (Maintenance of Traffic)	12%	$21,110,127.50
	SUB-TOTAL	$197,027,856.64
(101-1) MOB (Mobilization)	10%	$19,702,785.66
	SUB-TOTAL	$216,730,642.30
PU (Project Unknowns)	5%	$10,836,532.12
	SUB-TOTAL	$227,567,174.42
(999-25) Initial Contingency (Do Not Bid)		$150,000.00
	PROJECT GRAND TOTAL	**$227,717,174.42**

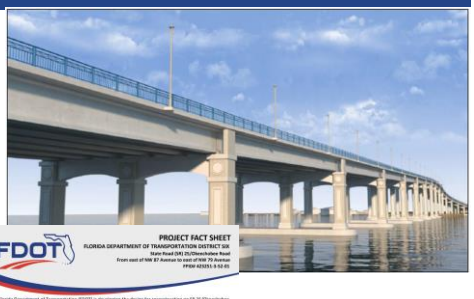
TRANSPORTATION SYMPOSIUM

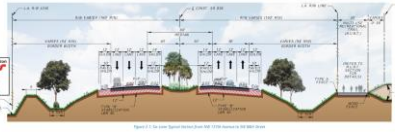
Design Deliverables Used by IPC Teams

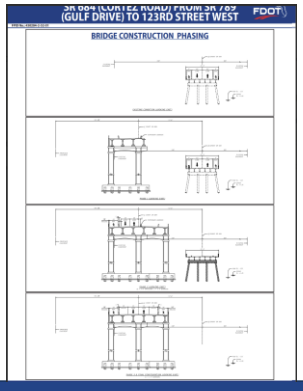
- Engineer's Project Cost
- **Detailed Project Information**
- Project Document Checklist
- Design Confidence Report
- Engineer's Risk Assessment
- Basis of Engineer's Cost

TRANSPORTATION SYMPOSIUM

Detailed Project Information



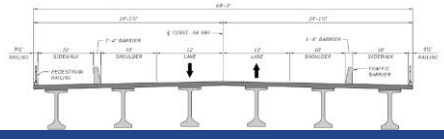




Proposed Typical Section

Bridge
68'-3" Overall Width
Two 12-Foot Travel Lanes
Two 10-Foot Shoulders
Two 10-Foot Sidewalks

Roadway
11-Foot Travel Lanes
6-Foot Bike Lanes
10-Foot Sidewalks



TRANSPORTATION SYMPOSIUM

Design Deliverables Used by IPC Teams

- Engineer's Project Cost
- Detailed Project Information
- **Project Document Checklist**
- Design Confidence Report
- Engineer's Risk Assessment
- Basis of Engineer's Cost

TRANSPORTATION SYMPOSIUM

Project Document Checklist

Project Document Checklist

The consultant designer will provide the following project documents and information to the Department for use by the IPC team. This checklist should accompany the information being provided. The EOR should include any pertinent documents that are not listed. Additional or missing information may be requested by the IPC team as needed.

No.	Deliverable	File Included (Y/N)	Link/Comments
1	District Project Cost (XLSX format)		
2	Project drawings, schematic, sketches, plans etc. (PDF format)		
3	CAD files, including existing and proposed surface models (DGN, InRoads/OpenRoads, OpenBridge files)		
4	Quantity/backup calculations (Spreadsheets, CAD shapes, etc.)		
5	Basis of Engineer's Cost, incl. Design Confidence Report		
6	Project Reports (PD&E, Structural, Geotechnical, Drainage, etc.)		
7	Typical Section Package		
8	Pavement Design Package		
9	Project Map		
10	.kmz Files		
11	Quantitative Project Risk Register with dispositions		
12	Cost Schedule Risk Analysis (CSRA) Qualitative Spreadsheet		
13	Studies (e.g. Noise Wall, Lighting, Signals, etc.)		
14	Technical Special Provisions		
15	Nearby Project Info (past/future)		
16	Environmental Permits, if available. If not, Environmental Permits Matrix		
17	Request for Proposal		
18	Utility SUE		
19	Draft/Final Utility Work Schedules		
20	Utility Work by Highway Contractor (UWHCA) plans (if applicable)		

Project Document Checklist

TRANSPORTATION SYMPOSIUM

Design Deliverables Used by IPC Teams

- Engineer's Project Cost
- Detailed Project Information
- Project Document Checklist
- **Design Confidence Report**
- Engineer's Risk Assessment
- Basis of Engineer's Cost

TRANSPORTATION SYMPOSIUM

15

15

Design Confidence Report

DESIGN CONFIDENCE REPORT

Project Name: _____

Project Phase: _____ **Date:** _____

Project Component	What is your level of confidence that the design quantities have captured ALL of the project cost?	Are the project quantities reported on the Engineer's Project Cost supported with information contained in the plans and/or reports.	How much conservatism is incorporated into the design that is, therefore, reported in the quantities?		Additional Information and Clarifications
Project limits					
Construction sequencing					
Temporary improvements					
Earthwork volumes					
Walls					
Paving sections					

Design Confidence Report

TRANSPORTATION SYMPOSIUM

16

16

Design Deliverables Used by IPC Teams

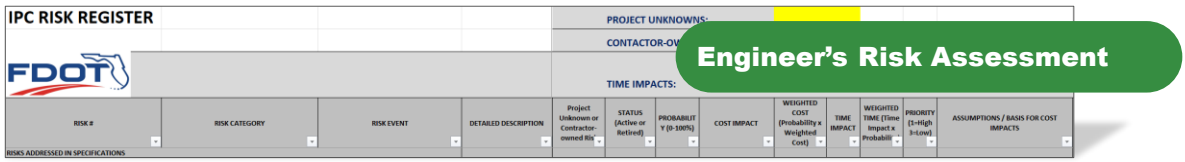
- Engineer's Project Cost
- Detailed Project Information
- Project Document Checklist
- Design Confidence Report
- **Engineer's Risk Assessment**
- Basis of Engineer's Cost

TRANSPORTATION SYMPOSIUM

17

17

Risk Register Supported Project Unknowns



Engineer's Risk Assessment

- The approach can be scaled to the project and FDOT needs. Some approaches are:
  - IPC team develops Risk Register internally based on their review of the project and IPC Documents.
  - IPC team engages Central Office, District, and Designer in a collaborative process that involves some combination of these industry standard steps:
    - Risk Identification
    - Qualitative Risk Assessment
    - Quantitative Risk Analysis

TRANSPORTATION SYMPOSIUM

18

18

Design Deliverables Used by IPC Teams

- Engineer's Project Cost
- Detailed Project Information
- Project Document Checklist
- Design Confidence Report
- Engineer's Risk Assessment
- **Basis of Engineer's Cost**

TRANSPORTATION SYMPOSIUM

19

19

Basis of Engineer's Cost

- Source and criteria for unit price selection
- Any similar projects referenced
- Review basis of Lump Sum/Allowances
- Design influences on unit price selection (i.e. scheduling/phasing)
- Location of resources available
- Local Market conditions (impacts of recent project lettings)
- Any project-specific special conditions; geology, construction type, local constraints, etc.

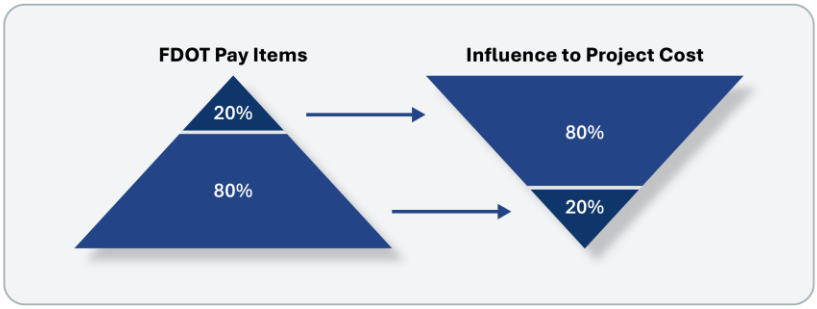
TRANSPORTATION SYMPOSIUM

20

20

What is an Independent Project Cost

- Developed by estimators with self-perform construction experience
- Utilizes cost-based, bottom-up approach for 80% +/- of the project cost
- Remainder of IPC uses bid-based, historical pricing approach

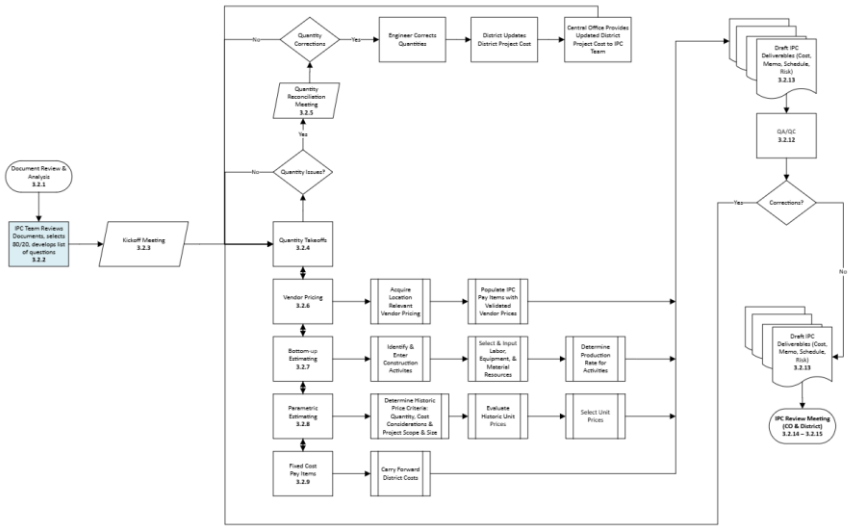


TRANSPORTATION SYMPOSIUM

21

21

IPC Process

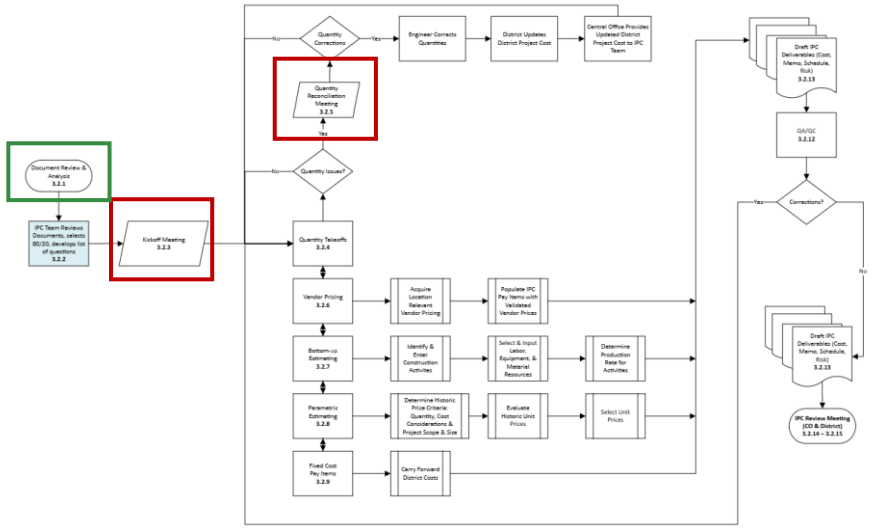


TRANSPORTATION SYMPOSIUM

22

22

IPC Process



TRANSPORTATION SYMPOSIUM

23

23

IPC Process - Kick-off Meeting

- Confirms IPC teams understanding of the project scope and design documents
- Allows collaboration between design and IPC teams
- IPC teams solicit additional input from the design team so the IPC is best on the design team's best estimate of what final the final design of the project may involve.

TRANSPORTATION SYMPOSIUM

24

24

IPC Process - Quantity Validation Meeting

- The IPC team performs a quantity takeoff on all the pay items that will be part of the bottoms-up approach.
- A Quantity Reconciliation Meeting is scheduled after the IPC team has their quantities.
- Not a “we’re right, you’re wrong” meeting!
- Goal is to confirm both the design team and IPC team are aligned on the scope (pay items and quantities) of the project. (Again, think garbage in, garbage out.)

TRANSPORTATION SYMPOSIUM

Bottom-up estimating explained

- To develop a bottom-up estimate, you must break down each FDOT Pay Item in a set of **Activities** that each require **Resources** to complete.

TRANSPORTATION SYMPOSIUM

Bottom-up estimating explained

- Example of Activities used to develop the price for Concrete Class IV, Mass, Substructure:

CONCRETE CLASS IV, MASS, SUBSTRUCTURE

FOOTINGS

- 10 - Materials/Subs
- 20 - Unload/Reload Steel Forms
- 30 - Assemble Steel Forms
- 35 - Re-Assemble Forms
- 40 - Set/Strip Forms
- 50 - Install Cooling Pipes
- 60 - Grout Cooling Pipes
- 70 - Setup/Place Concrete
- 80 - Wet Finish Concrete
- 90 - CJ Prep Footings
- 92 - Cure Footings
- 96 - Point and Patch Footings

TRANSPORTATION SYMPOSIUM

27

27

Bottom-up estimating explained

- Example of Activities used to develop the price for Concrete Class IV, Mass, Substructure:

CONCRETE CLASS IV, MASS, SUBSTRUCTURE

FOOTINGS

- 10 - Materials/Subs ←
- 20 - Unload/Reload Steel Forms
- 30 - Assemble Steel Forms
- 35 - Re-Assemble Forms
- 40 - Set/Strip Forms ←
- 50 - Install Cooling Pipes
- 60 - Grout Cooling Pipes
- 70 - Setup/Place Concrete
- 80 - Wet Finish Concrete
- 90 - CJ Prep Footings
- 92 - Cure Footings
- 96 - Point and Patch Footings

TRANSPORTATION SYMPOSIUM

28

28

Bottom-up estimating explained

- Example of Resources for two of the 11 Activities:

CONCRETE CLASS IV, MASS, SUBSTRUCTURE
- Footings
  - Materials/Subs
    - 2C4500 - BMCD-4500 PSI Concrete
    - 2CONCOOL-Concrete Cooling (ICE)
    - 2COOLINGPIPE - 1" Pex Cooling Pipe
    - 2GROUT-Grout - Cooling
    - 3COOLINGMAT - Mass Concrete Cooling Materials
    - 3CURE - Concrete Cure
    - 3FWBUY - Buy/Salvage Plate Girder Forms
    - 3FWHW - Formwork Hardware
    - 3FWOIL-Form Oil
    - 3L - LUMBER & FASTENERS
    - 3PP - Point & Patch Materials
    - 3THERMAL - Thermal Analysis
    - 3VIB - Purchase Concrete Vibrators
    - 4PUMPCONC - Pump Truck Sub

40 - Set/Strip Forms
- 354000 - Sm Tools - General
- 8CRC150-150 Ton Crawler Crane
- 8TKPU - Pickup Truck
- 8ZWLD - Welding Maching (400 AMP)
- CPFM - Carpenter Foreman
- CPJ - Carpenter Journeyman
- LS-Labor, Skilled
- OPC - Operator, Crane

TRANSPORTATION SYMPOSIUM

29

29

Bottom-up estimating explained

- Example of Resources for two of the 11 Activities:

CONCRETE CLASS IV, MASS, SUBSTRUCTURE
- Footings
  - Materials/Subs
    - 2C4500 - BMCD-4500 PSI Concrete
    - 2CONCOOL-Concrete Cooling (ICE)
    - 2COOLINGPIPE - 1" Pex Cooling Pipe
    - 2GROUT-Grout - Cooling
    - 3COOLINGMAT - Mass Concrete Cooling Materials
    - 3CURE - Concrete Cure
    - 3FWBUY - Buy/Salvage Plate Girder Forms
    - 3FWHW - Formwork Hardware
    - 3FWOIL-Form Oil
    - 3L - LUMBER & FASTENERS
    - 3PP - Point & Patch Materials
    - 3THERMAL - Thermal Analysis
    - 3VIB - Purchase Concrete Vibrators
    - 4PUMPCONC - Pump Truck Sub

40 - Set/Strip Forms
- 354000 - Sm Tools - General
- 8CRC150-150 Ton Crawler Crane
- 8TKPU - Pickup Truck
- 8ZWLD - Welding Maching (400 AMP)
- CPFM - Carpenter Foreman
- CPJ - Carpenter Journeyman
- LS-Labor, Skilled
- OPC - Operator, Crane

TRANSPORTATION SYMPOSIUM

30

30

IPC Process - Activity-based Quantities

- Why do IPC teams need more information than just the quantities?
  - IPC teams must develop activity-based quantities, not just the quantities for a pay item.

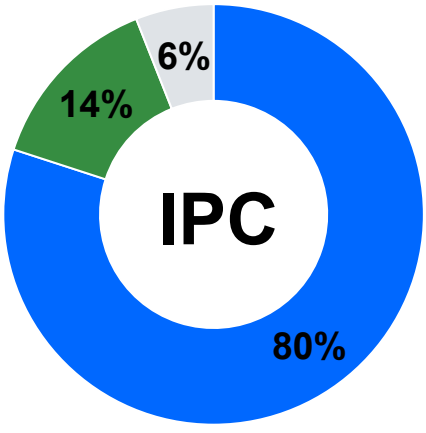
QUANTITY ESTIMATE									Sheet:	1 of 1	Estimator:		Item #:	400-4-25
Burns & McDonnell									Plan Sheet:		Bid Quantity:	288.00	CY	
Project:	BID DATE			Footings					Spec. Ref:	400 Conc. Struct.	Take Off Quantity:	288.00	CY	
Detail	L	W	H	EA	Concrete	Formwork	CJ Prep	Wet Finish	P.P.	Cure	Cooling Tubes	Cooling Tube Grout		
					CY	SF	SF	SF	SF	SF	LF	CUFT		
Pier 2	12.00	18.00	6.00	2.00	96.00	720.00	37.55	178.45	720.00	936.00	288.00	1.57		
Pier 3	12.00	18.00	6.00	2.00	96.00	720.00	37.55	178.45	720.00	936.00	288.00	1.57		
Pier 4	12.00	18.00	6.00	2.00	96.00	720.00	37.55	178.45	720.00	936.00	288.00	1.57		
					288.00	2160.00	112.65	535.35	2160.00	2808.00	864.00	4.71		

TRANSPORTATION SYMPOSIUM

31

31

IPC Process – Putting it all together



Estimating Approach by Dollar Value

- Bottom-up
- Parametric
- Carry-forward

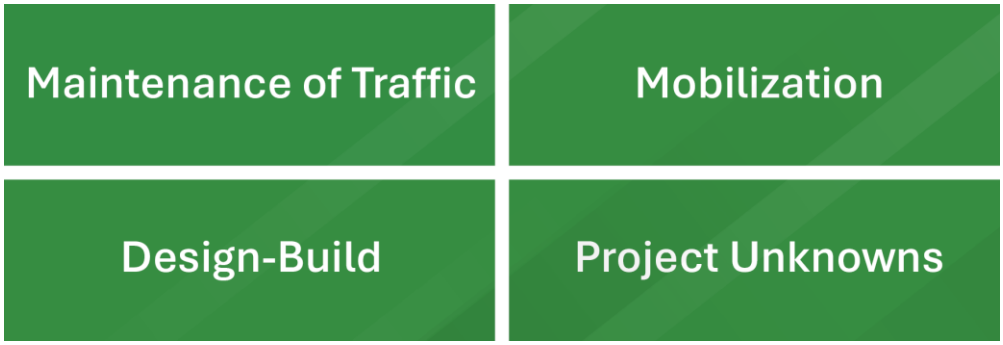
TRANSPORTATION SYMPOSIUM

32

32

IPC Process - Validation of Allowances

- IPCs typically apply percentages to those items that are typically percentages in a District Estimate as well.



TRANSPORTATION SYMPOSIUM

33

33

Benefits seen to date

- Validate budget prior to letting
- Validate quantities prior to letting
- Bottom-up pricing fills a need when relevant historical price data is limited or not available
- IPC process promotes a more fully assessed design that considers constructability
- Leads to more reliable project cost projections from engineers, districts, and IPC teams

TRANSPORTATION SYMPOSIUM

34

34

QUESTIONS

Contact Us

Office of Forecasting and Performance
Forecasting and Project Cost Section
Ashley Anderson, PE
Forecasting and Project Cost Engineer
Ashley.Anderson@dot.state.fl.us
850-414-4184

June 19 - 20, 2025
Hollywood, FL

TRANSPORTATION SYMPOSIUM

Please be sure to **certify your attendance** before leaving this event or no later than **Monday, June 30**, in order to receive PDH/CEC. Detailed instructions are available on the Transportation Symposium website.

Transportation Symposium Website

SCAN ME

37

37

Safety Message

TRANSPORTATION SYMPOSIUM

38

38