42nd Annual State Construction Conference

March 2, 2023
Cost Estimation and Current Bid Environment
DISCUSSION TOPICS

- Bid Environment
- SCIF
- Universal Terms
- OC-25 Estimate
- Top-Down Method
- Bottom-Up Method
- Best Practice: Project Cash Flow
- Best Practice: 90 / 10 Rule
- Best Practice: Escalation
- Best Practice: 70 / 30 Rule
BID ENVIRONMENT

July 2020 – December 2022

32.58%  
(Over 14% / Year)
North Carolina
State Capital and Infrastructure Fund
### Cash Flow By Quarter

- **Total Project Cost** >$3 Million
- **Quarterly Allotments** Need-Based
- **Capital Analyst** at Your Fiscal

### Instructions:
1. This form is for SCIF funded projects with total budgets of $3 million or greater.
2. Each project will need its own form.
3. Fill out the highlighted fields with the information for the project.
4. The projected future allotments by quarter should be based on projected project need, and not just an even division of the funds among quarters.
5. Email the completed form to your capital analyst.

<table>
<thead>
<tr>
<th>Project Title: DHHS Campus Phase 1</th>
<th>Total Project Budget: $253,700,000.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASH BALANCE:</td>
<td>PROJECT BALANCE:</td>
</tr>
<tr>
<td>Q1: 21,375,896.00</td>
<td>Q4: 7,452,310.00</td>
</tr>
<tr>
<td>Q2: 21,628,001.00</td>
<td>Q1: 15,449,379.00</td>
</tr>
<tr>
<td>Q3: 15,449,379.00</td>
<td>Q2: 19,406,588.00</td>
</tr>
<tr>
<td>Q4: 7,452,310.00</td>
<td>Q3: 19,756,503.00</td>
</tr>
<tr>
<td>Total: 65,905,586.00</td>
<td>Total: 60,159,229.00</td>
</tr>
</tbody>
</table>

### FY 24-25

- **New DHHS Campus Phase 1 project to relocate all DHHS staff from the current Dorothea Dix Park location to a new campus on Blue Ridge Road in Raleigh.**

### FY 26-27

- Total: $276,182,219.00

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BEST PRACTICE – Project Cash Flow

- Agency Defines Project Scope and Cost (OC-25)
- Agency Funding Request to OSBM
- Capital Priorities to Fiscal/Governor/General Assembly
- State Budget Reconciled
- Project Funding Available to Agency

FY 2022-2023
Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
RFQ SD DD CD B/N

FY 2023-2024
FY 2024-2025
FY 2025-2026
FY 2026-2027
FY 2027-2028

14 Months
18 Months - 1st Invoice
36 Months - Invoices Total 10%

Indicates Designer Agreement
Indicates Construction Manager Agreement (Fixed Guaranteed Maximum Price)

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### Flex Fund Request

**State Agencies**

- **Design Development**
- **OC-25: Original as Baseline**
- **90/10 Rule**
- **Scope Reduction**
- **Maximum 10% of Total Project Cost**

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**Flex Fund Request**

- **Authority:** Department of Administration
- **Date:** 9/8/2022
- **Project Title:** DHHS Campus Phase 1
- **Budget Code:** 42001
- **Fund Code:** 401

**Brief Project Description:**

OC-25 Project Description: Construct a new Phase I DHHS Office Campus to replace the space currently occupied at Dorothy Dix Property. 420,000 SF of general office space, 500 surface parking spaces, and 900 structured parking spaces. Buildings will consist of multiple mid-rise office buildings and one structured parking. A central utility plant is included for Phase I, to be expanded for future Phase II. Work will also include roadway and utilities site improvements. Site is State-owned land on Blue Ridge Road, Raleigh.

**BEST PROJECT DESCRIPTION:**

- **OC-25 Budget:** $249,074,000
- **Current Proj Budget:** $253,700,000
- **% Increase:** 9.46%
- **10% max:**
- **Requested Increase:** $24,000,000

**Current Project Phase:**

Schematic design, construction docs, constrcution etc.

**Funds needed per FY**

<table>
<thead>
<tr>
<th>FY</th>
<th>$24,000,000</th>
</tr>
</thead>
</table>

**Reason Increase Needed:**

Construction inflation data sourced from the U.S. Bureau of Labor Statistics and Carolinas Associated General Contractors is provided in this submittal. The data identifies that over the past 24 months, the inflationary impact on the project’s bid packages is projected to be an increase in the cost of 28%-30% or $52.8 million. The design and construction management team has re-designed and value engineered the project to identify a funding shortfall of $35 million or 19.9% of the value of the first tier subcontractor bid packages. Further value engineering, scope reductions, and applying various contingencies identify the $24 million in Flex Funding request.

Please refer to the submittal package cover letter and backup documentation.

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**BEST PRACTICES**

- **90/10 Rule**
  - Designer held to scope of 90%, with 10% of total construction held until receipt of GMP
- **Scope Reduction**
- **Escalation**
  - Owner holds to address bidding results; owner’s option to add funds to bidding total in lieu of redesign / project schedule delay

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**Before Submitting**

- Initial to indicate adherence to the following
  - Per 143C-8-9, the scope of this project is NOT increased
  - Design Development has been completed
  - A copy of the OC-25 is attached to the email request
# BEST PRACTICE – 90 / 10 Rule

Design Project to **90%** of Estimated Construction Costs

10% Owner’s Reserve
UNIVERSAL TERMS

Name/Location/Description

Project Name/Location/Description

SCOPE OF PROGRAM

TOTAL ESTIMATED CONSTRUCTION COSTS

CONSULTANTS, CONTINGENCIES, ESCALATION

TOTAL ESTIMATED PROJECT COSTS
UNIVERSAL TERMS

Name/Location/Description

Above-The-LINE
AKA Hard Costs

SCOPE OF PROGRAM

TOTAL ESTIMATED CONSTRUCTION COSTS

CONSULTANTS, CONTINGENCIES, ESCALATION

TOTAL ESTIMATED PROJECT COSTS
UNIVERSAL TERMS

Name/Location/Description

Above-The-LINE
AKA Hard Costs

Quantities, GSF, Unit Costs

Project Name/Location/Description

SCOPE OF PROGRAM

TOTAL ESTIMATED CONSTRUCTION COSTS

CONSULTANTS, CONTINGENCIES, ESCALATION

TOTAL ESTIMATED PROJECT COSTS
UNIVERSAL TERMS

Name/Location/Description

Above-The-LINE
AKA Hard Costs
Quantities, GSF, Unit Costs

Below-The-LINE
AKA Soft Costs

Project Name/Location/Description

SCOPE OF PROGRAM

TOTAL ESTIMATED CONSTRUCTION COSTS

CONSULTANTS, CONTINGENCIES, ESCALATION

TOTAL ESTIMATED PROJECT COSTS
## UNIVERSAL TERMS

<table>
<thead>
<tr>
<th>Name/Location/Description</th>
<th>Project Name/Location/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above-The-LINE AKA Hard Costs</td>
<td>SCOPE OF PROGRAM</td>
</tr>
<tr>
<td>Quantities, GSF, Unit Costs</td>
<td>TOTAL ESTIMATED CONSTRUCTION COSTS</td>
</tr>
<tr>
<td>Below-The-LINE AKA Soft Costs</td>
<td>CONSULTANTS, CONTINGENCIES, ESCALATION</td>
</tr>
</tbody>
</table>

**Above + Below The LINE**

TOTAL ESTIMATED PROJECT COSTS
UNIVERSAL TERMS

Name/Location/Description

Above-The-LINE
AKA Hard Costs
Quantities, GSF, Unit Costs

Below-The-LINE
AKA Soft Costs

Above + Below The LINE

Project Name/Location/Description
SCOPE OF PROGRAM
TOTAL ESTIMATED CONSTRUCTION COSTS
CONSULTANTS, CONTINGENCIES, ESCALATION
TOTAL ESTIMATED PROJECT COSTS

The LINE
OC - 25 ESTIMATE

Use of the Estimate

- Funding/Authority Request
- Scope & Cost of Project
- Reserves for Owner Soft Costs
- Designer Agreement
- CM at Risk Agreement

ESTIMATE IN TODAY’S $$$
Where Do We Begin?

<table>
<thead>
<tr>
<th>SCOPE OF PROGRAM</th>
<th>QTY</th>
<th>UNIT</th>
<th>UNIT COST</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Requirement</td>
<td>1</td>
<td>LS</td>
<td>$3,500,000</td>
<td>$3,500,000</td>
</tr>
<tr>
<td>Site</td>
<td></td>
<td>Site Work</td>
<td>$2,250</td>
<td>$2,250</td>
</tr>
<tr>
<td>Site</td>
<td></td>
<td>Surface Parking</td>
<td>$1,175,000</td>
<td>$1,175,000</td>
</tr>
<tr>
<td>Site</td>
<td>1</td>
<td>LS</td>
<td>$6,000,000</td>
<td>$6,000,000</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td>Structured Parking</td>
<td>$20,000</td>
<td>$20,000</td>
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<tr>
<td>Construction Elevators</td>
<td>9</td>
<td>E.A.</td>
<td>$472,000</td>
<td>$4,272,000</td>
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<tr>
<td>Life Safety</td>
<td>420,000</td>
<td>GSF</td>
<td>$1,100</td>
<td>$460,000</td>
</tr>
<tr>
<td>Generator Data Integrity &amp; Back-up Power</td>
<td>System</td>
<td>2,000,000</td>
<td>2,000,000</td>
<td></td>
</tr>
<tr>
<td>Physical Plant</td>
<td>1</td>
<td>LS</td>
<td>$13,000,000</td>
<td>$13,000,000</td>
</tr>
<tr>
<td>All IT, Data, Systems, Cabling &amp; Fiber, DIT</td>
<td>1</td>
<td>System</td>
<td>$15,000,000</td>
<td>$15,000,000</td>
</tr>
</tbody>
</table>

**ESTIMATED CONSTRUCTION COSTS**

- **ADVANCE PLANNING**
  - 0.75% (includes programming, feasibility, analysis)
  - $879,375
- **DESIGN FEE**
  - 7.5% (% of Estimated Construction Costs)
  - $4,782,990
- **PRECONSTRUCTION**
  - 1% (% of Estimated Construction Costs [1% for $50,000,000])
  - $50,000
- **COMMISSIONING FEE**
  - 0.5% (0.5% simple; 1% moderate; 1.5% complex)
  - $816,000
- **SPECIAL INSPECTIONS**
  - 1.25% (% estimated)
  - $2,405,418
- **SUSTAINABILITY**
  - 0% (2% LEED Gold, 2% LEED Silver)
  - $0
- **FURNITURE**
  - 1.5
  - $7,000,000
- **MOVING**
  - 1.5
  - $5,000,000
- **CONTINGENCIES**
  - 2%
  - $5,256,200

**SUB-TOTAL ESTIMATED COSTS**

- $229,574,471

**Escalation**

- 5% AIR: 0.40% per month for 20 months
- 0.40% per month

**ESTABLISHED COST INCREASE (Estimated Construction Costs + Escalation %)**

- $15,381,886

**TOTAL ESTIMATED PROJECT COSTS**

- (Estimated Costs + Escalation Cost Increase)
  - $244,756,337
TOP-DOWN METHOD

KNOWN: Scope of Program
Use TOP-DOWN Cost Estimating Method To Develop
UNKNOWN Total Project Cost (Total Funding)

Total Project Cost............UNKNOWN
TOP-DOWN METHOD

Name/Location/Description

Construct a new Phase 1 DHHS Office Campus to replace the space currently occupied at Dorothy Dix Property. 420,000 SF of general office space, 500 surface parking spaces, and 900 structured parking spaces. Buildings will consist of multiple mid-rise office buildings and one structured parking. A central utility plant is included for Phase I, to be expanded for future Phase II. Work will also include roadway and utilities site improvements. Site is State-owned land on Blue Ridge Road, Raleigh.

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<th>SCOPE OF PROGRAM</th>
<th>QTY</th>
<th>UNIT</th>
<th>UNIT COST</th>
<th>TOTAL</th>
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<tbody>
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<td>Land Requirement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Work</td>
<td>1</td>
<td>LS</td>
<td>$3,500,000</td>
<td>$3,500,000</td>
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<tr>
<td>Site Surface Parking</td>
<td>500</td>
<td>space</td>
<td>$1,175,000</td>
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<td>Site Structural Parking</td>
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<td>Construction</td>
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<td></td>
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<tr>
<td>New Office Space</td>
<td>420,000</td>
<td>GSF</td>
<td>$20,000,000</td>
<td>$20,000,000</td>
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<tr>
<td>Elevators</td>
<td>9</td>
<td>E.A.</td>
<td>$472,000</td>
<td>$472,000</td>
</tr>
<tr>
<td>Life Safety &amp; Emergency Power</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Data Integrity &amp; Back-up Power</td>
<td></td>
<td>System</td>
<td>$2,000,000</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Physical Plant</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>All IT, Data, Systems, Cabling &amp; Fiber, DIT</td>
<td></td>
<td>System</td>
<td>$15,000,000</td>
<td>$15,000,000</td>
</tr>
</tbody>
</table>

ESTIMATED CONSTRUCTION COSTS

$192,273,328

ADVANCE PLANNING 0.75% (includes programming, feasibility, analysis) $7,373
DESIGN FEE 7.5% (% of Est Construction) $14,782
PRECONSTRUCTION 1% (% of Estimated Construction Costs (1% for) $57,667
COMMISSIONING FEE 0.5% (0.5% simple; 1% moderate; 1.5% complex) $981
SPECIAL INSPECTIONS 1.35% (2.5% estimated) $2,405
SUSTAINABILITY 0% (2% LEED Gold, 3% LEED Silver) $-0
FURNITURE 1.5 $7,000,000
MOVING 1.5 $5,000,000
CONTINGENCIES 3% (% of Estimated Construction Costs) $5,056,600

SUB-TOTAL ESTIMATED COSTS $229,874,471

Escalation 5% AIR = 0.40% per month for 20 months = 0.90% per month $15,381,866

TOTAL ESTIMATED PROJECT COSTS (Estimated Costs + Escalation Cost Increase) $244,756,337
TOP-DOWN METHOD

Name/Location/Description

Above-The-LINE
AKA Hard Costs

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TOP-DOWN METHOD

Name/Location/Description

Above-The-LINE

AKA Hard Costs

Quantities, GSF, Unit Costs
TOP-DOWN METHOD

Name/Location/Description

Above-The-LINE
AKA Hard Costs
Quantities, GSF, Unit Costs

Estimated Construction Costs
TOP-DOWN METHOD

Name/Location/Description
Below-The LINE
AKA Hard Costs
Quantities, GSF, Unit Costs

Estimated Construction Costs
Designer Agreement
CM @ Risk Agreement

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**TOP-DOWN METHOD**

Name/Location/Description

Above-The-LINE

AKA Hard Costs

Quantities, GSF, Unit Costs

Estimated Construction Costs

<table>
<thead>
<tr>
<th>SCOPE OF PROGRAM</th>
<th>QTY</th>
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</thead>
<tbody>
<tr>
<td>Land</td>
<td></td>
<td>LS</td>
<td>$3,500,000</td>
<td>$3,500,000</td>
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<td>LS</td>
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<tr>
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<td>Construction</td>
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<td>GSF</td>
<td>$305</td>
<td>$128,100,000</td>
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<td>Construction</td>
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<td>EA</td>
<td>$472,000</td>
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<td>$13,000,000</td>
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<tr>
<td>All IT, Data,</td>
<td>1</td>
<td>System</td>
<td>$15,000,000</td>
<td>$15,000,000</td>
</tr>
<tr>
<td>Cabling &amp; Fiber, DIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ESTIMATED CONSTRUCTION COSTS**

- **ARCHITECTURE, ENGINEERING, DESIGN FEE**: $7,500
- **PRECONSTRUCTION**: 1% of Estimated Construction Costs [1% of $192,273,328] = $1,922,733
- **COMMISSIONING FEE**: 0.5% of (0.5% simple: 1.5% complex) = $981,360
- **ELEVATORS**: 1.25% of $192,273,328 = $2,403,418
- **SUSTAINABILITY**: 0% (2% LEED Gold, 2% LEED Silver) = $0
- **FURNITURE**: 1%
- **MOVING**: 1.5%
- **CONTINGENCIES**: 3% of Estimated Construction Costs [3% of $192,273,328] = $5,768,200

**SUB-TOTAL ESTIMATED COSTS**

$229,574,471

- **Escalation**: 5% AIR = 0.40% per month, 20 months = 0.80% per month

**TOTAL ESTIMATED PROJECT COSTS**

Estimated Costs = $229,574,471

Escalation Cost Increase = 5% AIR = 0.40% per month = $15,381,866

**TOTAL ESTIMATED PROJECT COSTS** = $244,956,337

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TOP-DOWN METHOD

Name/Location/Description
Above-The-LINE
AKA Hard Costs
Quantities, GSF, Unit Costs
Estimated Construction Costs
Below-The-LINE
AKA Soft Costs

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TOP-DOWN METHOD

Name/Location/Description

Above-The-LINE
AKA Hard Costs
Quantities, GSF, Unit Costs
Estimated Construction Costs

Below-The-LINE
AKA Soft Costs
Percentage of Construction Costs

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TOP-DOWN METHOD

Name/Location/Description

Above-The-LINE
AKA Hard Costs
Quantities, GSF, Unit Costs
Estimated Construction Costs

Below-The-LINE
AKA Soft Costs

Hard Costs + Soft Costs = TOTAL ESTIMATED PROJECT COST

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ESCALATION

Annual Inflation Rate / 12 Months

Number of Months from ESTIMATE to Mid-Point of Construction

Estimated Construction Cost
BEST PRACTICE - Escalation

Estimate Date to Mid-Point of Construction

This Example:
5% / 12 Months x 50 Months = 21% Escalation
**BOTTOM - UP METHOD**

**KNOWN:** Total Project Cost (Total Funding)

Use **BOTTOM - UP** Cost Estimating Method

To Develop **UNKNOWN:** Scope of Program

---

**Total Project Cost........................KNOW**

**Scope of Program...............UNKNOWN**

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**Health and Human Services - Phase I**

DHHS Office Campus
Raleigh, North Carolina

Construct a new Phase I DHHS Office Campus to replace the space currently occupied at Dorothia Dix Property. 420,000 SF of general office space, 500 surface parking spaces, and 900 structured parking spaces. Buildings will consist of multiple mid-rise office buildings and one structured parking. A central utility plant is included for Phase I. Work will also include roadway and site work.

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**Estimated Construction Costs**

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance Planning</td>
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<tr>
<td>Design Fee</td>
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<td>Sustaining Inspections</td>
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<td>Furniture</td>
<td>$7,000,000</td>
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<td>Moving</td>
<td>$5,000,000</td>
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<tr>
<td>Contingencies</td>
<td>$5,686,000</td>
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<tr>
<td>Sub-total Estimated Costs</td>
<td>$259,874,471</td>
</tr>
</tbody>
</table>

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**Known:**

- Total Project Cost: $259,874,471

**Unknown:**

- Scope of Program

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BEST PRACTICE – 70 / 30 Rule

TYPICAL STATE PROJECT:

70% Total Project Cost = ESTIMATED CONSTRUCTION COSTS

30% Total Project Cost = SOFT COSTS
BEST PRACTICE - 70 / 30 Rule

TRIAL and ERROR STEPS:

1. Hard Costs: Identify **Scope of Program** Line Items Equal to 70%

2. Soft Costs: Identify **Lump Sums** Until Equal to 30%

3. Identify Months of **Escalation**

4. Lather, Rinse, Repeat
Thank You

William C. Johnson, RA
Assistant Director
Capital Project Management Section
State Construction Office
William.johnson@doa.nc.gov
984.236.5462