

THE STATE OF SOUTH CAROLINA
In The Court of Appeals

APPEAL FROM CHARLESTON COUNTY
Court of Common Pleas

Mikell R. Scarborough, Master-In-Equity

Appellate Case No. 2024-000788
Case No.: 2019-CP-10-01108

RECEIVED

Aug 12 2026

SC Court of Appeals

Balfour Beatty Construction, LLC, Appellant,

v.

Library Associates, LLC; and Metropolitan Life Insurance Company, a New York Corporation, Defendants,

And

Library Associates, LLC, Third-Party Plaintiff,

v.

Lithko Contracting, LLC, Guy M. Beaty, Inc., Bernard MMC, LLC, Gulf Stream Construction Company, Inc., Precision Walls, Inc., Palmetto Automatic Sprinkler Company, Inc., Cook & Boardman, LLC, Strong Tower Construction, LLC d/b/a Koch Corporation, Watson Electrical Construction Co., LLC, Trimark Foodcraft, LLC, Pleasant Places, Inc., David Allen Company, Inc., Premier Exteriors, LLC, Warco Construction, Inc., Old North State Masonry, LLC, Tom Rochester & Associates d/b/a Southeastern Architectural Systems, Forton Company, LLC, Low Country Case & Millwork, Inc., Quantum Coatings, LLC, Balfour Beatty Construction Group, Inc., Third-Party Defendants.

Of which Library Associates, LLC is the Respondent.

AMENDED RECORD ON APPEAL - VOLUME 15 OF 20

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Balfour Beatty
Construction

Request for Payment

Pay Request # **PE09**
Work Performed Through: **09/30/18**

Subcontractor's Name **Warco Construction, Inc.**
Subcontractor's Address **3910 Stuart Andrew Blvd.**
Charlotte, NC 28217
Phone Number **704-512-5200**
Fax Number **704-521-5199**

Project Name: **Hotel at Marion Square** Job No.: **13026400** Date: **09/25/18**
Owner: **Library Associates, LLC**

Description of Work:	Specialties DIV 10	
Original Contract Amount	\$585,000.00	
Change Order Total	\$117,972.15	GET BOND RIDER!!
Through C/O #: 0		
Total Revised Contract	\$702,972.15	
Previous Work Performed to Date(SSR)	\$460,536.00	
Value of Materials Stored On Site	\$0.00	
Value of Materials Stored Off Site	\$0.00	
Current Month Gross	\$71,266.15	
New Work Performed to Date	\$531,802.15	
Less 10 % Retainage	\$53,180.22	
Amount Earned to Date	\$478,621.93	
Less Previous Net Billings	\$414,482.40	
Less Adjustments/Joint Checks	\$0.00	
Less Pending Back Charges	\$0.00	
Total Amount this Requisition	\$64,139.53	

Subcontract ☒ Purchase Order ☐

Other Contract Type _____

Unit Price ☐ Lump Sum ☒
Bonded ☐ Unbonded ☒

Subguard ☐ Alternate Plan ☐

Contract Increased 20%? Y ☒ N ☐
If yes, bond rider received Y ☐ N ☐
EEO Reports Current Y ☐ N ☐
Certified Payrolls Current Y ☐ N ☐

Insurance Status **FINALED**
Insurance Expiration Date **12/31/18**

Release Attached Y ☐ N ☐
Tier/Supplier Release Y ☐ N ☐
If Required Y ☐ N ☐
Reducing Retention Y ☐ N ☐

If reducing retainage, reducing From ☐ To ☒
Consent of Surety for retention reduction if bonded Y ☐ N ☐
New materials stored off site Y ☐ N ☒
If yes, attach stored materials checklist

Final Payment Y ☐ N ☒
If yes, see attached checklist

Owner Billing Number **12**

Owner Payment Rec'd Date: _____

Payment Terms: **Pay When Paid**

Pay Select # **1448328**
2370893

For Balfour Beatty Use Only:

CO #	Vendor #	Job #	Contract No.
50000	120046	13026400	535592
Date	Invoice #	Description	
09/30/18	13026400 - PE09	13026400 . PE# PE09 . 18.09	
Gross Amount	Retainage Amt	Net Amount	
\$71,266.15	\$3,563.31	\$64,139.53	
Trade Account?	Tax Code	Pay Item & Cost Code	Accrue Tax?
NO		400 51000000.40	NO
Halt Codes: 02- OWNER FUNDING Lower Tier Schedule/Waivers PM APP NEED CO'S			

Approvals: _____ CA 09/27/18
PM / Date PA / Date APA / Date

**Balfour Beatty
Construction****Request for Payment**Subcontractor's Name
Subcontractor's Address

Weico Construction, Inc.

3910 Stuart Andrew Blvd

Charlotte, NC 28217

Phone Number

704-621-6200

Fax Number

704-521-5199

Pay Request #

09 15827

Work Performed Through:

08/30/2018

Project Name: Hotel at Marion Square

Job No.: 13026000

Date: 09/17/2018

Description of Work:

Specialties Div 10

Original Contract Amount

\$585,000.00

Change Order Total

\$117,972.15

Through C/O #:

Total Revised Contract

\$702,972.15

Value of Work Performed to Date

\$531,802.15

Value of Materials Stored On Site

Value of Materials Stored Off Site

Current Month (Stored Materials)

Total

\$531,802.15

Less 10% Retainage

\$53,180.22

Amount Earned to Date

\$478,621.93

Less Previous Billings/Payments

\$414,482.40

Less Adjustments/Joint Checks

Less Pending Back Charges

Total Amount this Requisition

\$64,139.53

For Balfour Beatty Use Only:

CO #	Vendor #	Job #	Contract No.
Date	Invoice #	Description	
Gross Amount	Retainage Amt	Net Amount	
\$531,802.15	\$53,180.22	\$64,139.53	
Accrue Tax	Tax Code	Pay Item & Cost Code	
YES			
NO			
Ball Codes			

Approvals:

PM / Date

PA / Date

APA / Date

Subcontract ☐Purchase Order ☐**Other Contract Type**Unit Price ☐Lump Sum ☐Bonded ☐Unbonded ☐Subguard ☐Alternate Plan ☐Contract Increased 20%? Y ☐ N ☐If yes, bond rider received Y ☐ N ☐EEO Reports Current Y ☐ N ☐Certified Payrolls Current Y ☐ N ☐**Insurance Status**

Insurance Expiration Date

Release Attached Y ☐ N ☐Tier/Supplier Release Y ☐ N ☐

If Required

Reducing Retention Y ☐ N ☐

If reducing retainage, reducing

Fresh ☐To ☐

Consent of Surety for retention

Y ☐N ☐

reduction If bonded

New materials stored off site

Y ☐N ☐

If yes, attach stored materials checklist

Final Payment

Y ☐N ☐

If yes, see attached checklist

Owner Billing Number

Owner Payment Rec'd Date:

Payment Terms:

Pay Select #

APPLICATION AND CERTIFICATE FOR PAYMENT

TO (Contractor):

BALFOUR BEATTY CONSTRUCTION, LLC
1930 Camden Road, Suite 280
Charlotte, NC 28203

PROJECT:

Hotel at Marion Square

FROM (TRADE CONTRACTOR):

Warco Construction Inc.
3910 Stuart Andrew Blvd
Charlotte, NC 28210

VIA (Construction Contract):

AIA DOCUMENT G702

PAGE 1 OF 2 PAGES

APPLICATION: 09 15-15627 DISTRIBUTION TO:

PERIOD FROM 09/01/2018

OWNER

PERIOD TO: 09/30/2018

CONTRACTOR

ARCHITECT

ARCHITECTS

PROJECTS NO:

13026000

**CONTRACT FOR: Division 10
CONTRACTOR'S APPLICATION FOR PAYMENT**

CONTRACT DATE:

06/29/2015

Application is made for Payment, as shown below, in connection with the Contract.

Continuation Sheet

CHANGE ORDER SUMMARY		
Change Orders appl previous months by Owner	ADDITIONS	DEDUCTIONS
TOTAL		
Approved this Month		
No. Date Approved		
1	117,972.15	
	117,972.15	\$0.00
Net change by Change Orders:		\$117,972.15

The undersigned Contractor certifies that to the best of the contractor's knowledge information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: Warco Construction, Inc.

By: *Warco Construction, Inc.* Date: 09/17/2018**CONTRACTOR'S CERTIFICATE FOR PAYMENT**

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Construction Manager certifies to the Owner that to the best of their knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Trade Contractor is entitled to payment of the AMOUNT CERTIFIED.

1. ORIGINAL CONTRACT SUM

\$ 585,000.00

2. Net change by Change Orders

\$ 117,972.15

3. CONTRACT SUM TO DATE (Line 1 + 2)

\$ 702,972.15

4. TOTAL COMPLETED & STORED TO DATE

\$ 531,802.15

(Column G)

5. RETAINAGE:

a. 10 % of Completed Work

\$ 53,180.22

(Column D + E)

b. 0 % of Stored Material

\$

(Column F)

Total Retainage (Line 5a + 5b or

Total in Column I)

\$ 53,180.22

6. TOTAL EARNED LESS RETAINAGE

\$ 478,621.93

(Line 4 less Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR

\$ 414,482.40

PAYMENT (Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE

\$ 64,139.53

9. BALANCE TO FINISH, PLUS RETAINAGE

\$ 224,350.22

(Line 3 less Line 6)

State of: North Carolina

County of: Mecklenburg

Subscribed and sworn to before me this 17th

day of September 2018

Notary Public: *Dana R. Malone*

Dana R. Malone

My commission expires: 12/08/2020

Notary Public

Caldwells County, NC

AMOUNT CERTIFIED

(Attach explanation if amount certified differs from the amount applied for.)

CONTRACTOR: BALFOUR BEATTY CONSTRUCTION, LLC

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Trade Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Trade Contractor under this Contract.

CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side) PAGE OF PAGES

AIA DOCUMENT G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing

APPLICATION NUMBER: 9

Contractor's signed Certification is attached.

APPLICATION DATE: 2018-09-17

In tabulations below, amounts are stated to the nearest dollar.

PERIOD TO: 2018-09-30

Use Column I on Contracts where variable retainage for line items may apply.

ARCHITECT'S PROJECT NO:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D + E + F)	H BALANCE TO FINISH (C - G)	I RETAINAGE
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD				
1	Restroom Accessories	274050.00	274050.00	0.00	0.00	274050.00	100.00%	27405.00
2	Wall Protection	13120.00	13120.00	0.00	0.00	13120.00	100.00%	1312.00
3	Lockers	25460.00	25460.00	0.00	0.00	25460.00	100.00%	2546.00
4	Fire Protection Specialties	11400.00	11400.00	0.00	0.00	11400.00	100.00%	1140.00
5	Linen Chutes	27810.00	27810.00	0.00	0.00	27810.00	100.00%	2781.00
6	Shutters	166600.00	0.00	0.00	0.00	0.00	0.00%	0.00
7	Projection Screens	7150.00	7150.00	0.00	0.00	7150.00	100.00%	715.00
8	Safety Deposit Boxes	2800.00	2800.00	0.00	0.00	2800.00	100.00%	280.00
9	Depository Safe	2500.00	2500.00	0.00	0.00	2500.00	100.00%	250.00
10	EZ Access Ramps	2660.00	2660.00	0.00	0.00	2660.00	100.00%	266.00
11	Mangers Apartment Appliances	4160.00	4160.00	0.00	0.00	4160.00	100.00%	416.00
12	Knox Box	3300.00	0.00	3300.00	0.00	3300.00	100.00%	330.00
13	Concierge Fireplace / Mantel	10200.00	10200.00	0.00	0.00	10200.00	100.00%	1020.00
14	General Conditions	30462.00	25892.00	0.00	0.00	25892.00	85.00%	2589.20
15	Composite Clean Up	3328.00	3328.00	0.00	0.00	3328.00	100.00%	332.80
16	Change Order # 1	0.00	0.00	0.00	0.00	0.00	0.00%	0.00
17	Change Order # 2 (17-18233)	13750.00	13750.00	0.00	0.00	13750.00	100.00%	1375.00
18	Change Order # 3 Appliances Package 1	36256.00	36256.00	0.00	0.00	36256.00	100.00%	3625.60
19	Change Order # 4 Shutter Revisions	67966.15	0.00	67966.15	0.00	67966.15	100.00%	6796.62
	Total	702972.15	460536.00	71266.15	0.00	531802.15		53180.22

AIA DOCUMENT G703 APPLICATION AND CERTIFICATE FOR PAYMENT MAY 1983 EDITION AIA® © 1983
THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVENUE, N.W., WASHINGTON, D.C. 20006

G703-1983

**Subcontractor's and Other Lower Tier's Conditional Partial Waiver and Release of Lien
(Upon Progress Payment)**

KNOW ALL MEN BY THESE PRESENTS:

That Warco Construction (the "Lienor") for and in consideration of the payment of the sum of \$ 64,139.54 and other good and valuable consideration paid by Balfour Beatty Construction, LLC (the "Contractor") or Library Associates, LLC ("Owner"), receipt of which is hereby acknowledged, hereby releases, waives and quit claims to Contractor, the Owner, and their respective successors and assigns, all liens, lien rights, claims or demands of any kind whatsoever, which Lienor now has or might have against Contractor and/or Owner and/or the buildings and Improvements on the premises legally described as: See Exhibit "A" attached hereto (the "Property") on account of labor and services performed and/or material furnished for the construction of any Improvements thereon; except for retention, and open change order requests, claims or disputes identified as follows:

None

That the undersigned has the right and authority to execute this Conditional Partial Waiver and Release of Lien on behalf of the Lienor. That this is a waiver of all lien rights and other claims which Lienor has against the Property, the Contractor, and the Owner for all labor, material and services performed thereon, including all extras and change orders, that all laborers retained or employed by the Lienor for construction of improvements on the Property, all suppliers and sub-contractors of Lienor who have furnished labor, material and services for the undersigned for the construction of improvements on the Property, and all labor, services and materials used by the undersigned in the construction of said improvements, have been paid in full for work performed or materials supplied, up to and including the 31st day of January, 20 17, excluding the items identified hereinabove, if any.

THE UNDERSIGNED ACKNOWLEDGES THAT THE CONTRACTOR AND OWNER AND OTHER PARTIES HAVE A RIGHT TO RELY UPON THIS WAIVER AND RELEASE AND THAT MAKING ANY FALSE STATEMENTS SHALL CONSTITUTE PERJURY AND PUNISHMENT CAN BE MADE IN ACCORDANCE WITH THE LAWS OF THE STATE OF SOUTH CAROLINA.

IN WITNESS THEREOF, I have hereunto set my hand seal this 17 day of September, 20 18

Signed, sealed and delivered
in the presence of:

Signature
Kathryn Bulas

Print Name _____

STATE OF NC

COUNTY OF Mecklenburg

Warco Construction, Inc.

a _____ corporation

Signature

H.G. Warren, Jr. President

Print Name & Title

The foregoing instrument was acknowledged before me this 17 day of September, 2018 by H.G. Warren, Jr. President of Warco a Corp. corporation on, on behalf of the corporation. He/she is personally known to me or has produced In Person (type of identification) as identification.

Dana R Malone

NOTARY PUBLIC, STATE OF North Carolina

My Commission Expires: 12/08/2020

Dana R. Malone
Notary Public
Cabarrus County, NC

My Commission Expires

R - 7005

Balfour Beatty
Construction

Exhibit F1

CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT
(Subcontractor/Vendor)

The undersigned, Warco Construction, Inc. ("Subcontractor"), pursuant to a
(Name of Subcontractor)
contract or agreement with Balfour Beatty Construction, LLC, ("BBC"), Warco, a
subcontractor to BBC or a sub-subcontractor under which Subcontractor agreed to furnish labor,
services, materials and/or equipment ("Work") for the construction of certain improvements on
the work of improvement commonly known as:
Hotel at Marion Square ("Project")
(Name or Description of Project)
which is located at _____
in the City of Charleston, and County of Charleston,
and is owned by Library Associates, LLC ("Owner").
(Name of Owner)

Upon receipt by Subcontractor of a check in the sum of \$ 64,139.54
(Amount to be paid to Subcontractor)
the sufficiency of which is hereby acknowledged and confessed, and when the check has been
properly endorsed and has been paid by the bank on which it is drawn, this document becomes
effective pursuant to which the Subcontractor hereby: (1) waives, releases and relinquishes any
and all liens and claims of lien, actual or potential, and all bonds and bond rights, for the Work
performed, rendered, supplied or furnished by Subcontractor for or with respect to the Project
through September 30 2018 (the "Release Period"); and, (2) waives, releases
(Insert date through which release is given)
and relinquishes any and all claims for payment for Work performed, rendered, supplied or
furnished by the Subcontractor for or with respect to the Project through the Release Period
including any claims for extended or additional job costs and overhead, lost profits, impact costs
and the like, as well as claims and demands arising from any contended delays, disruptions or
changes to the Work, except with regard to retainage amounts and compensation for extra work
but only to the extent such extra work is specifically identified below:

None

(Describe here or set out in an Attachment "A" which must be identified here and attached, all extras not included in the Release. Failure to describe any extras as excluded shall be a waiver and release of any right to payment for such work.)

Subcontractor hereby acknowledges payment in full of all amounts previously being due
and payable to the undersigned for the Work. Subcontractor further affirms, represents and
warrants that, except as noted above: (1) Subcontractor has no lien or claim of lien, either actual
or potential, bond right or claim, or contractual right or claim for payment with respect to any
Work performed, rendered, supplied or furnished by Subcontractor prior to the Release Date;
and, (2) all persons and entities that have performed or rendered labor or services, or supplied

or furnished materials, equipment, furniture and furnishings, to Subcontractor in connection with the Work have been paid in full, or upon receipt of the payment described above will be paid in full, all undisputed amounts, and Subcontractor has no knowledge of the filing of any lien, claim of lien, bond claim or contractual claim for payment by any such person or entity with respect to the Project.

Subcontractor acknowledges, affirms, represents and warrants that it has fully reviewed the terms and conditions of this waiver, that it is fully informed with respect to the legal effect of this waiver, and that it accepts the terms and conditions of this waiver in return for the payment recited above.

Given under hand and seal this 17 day of September, 2018.

Warco Construction, Inc.
(Company Name)

By: HG Wamery

Its: President

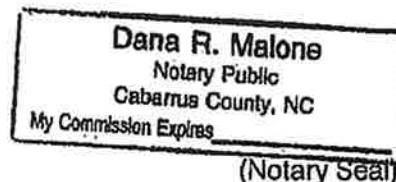
STATE OF NORTH CAROLINA

COUNTY OF Mecklenburg

The foregoing instrument was signed, sealed and acknowledged before me this 17th day of September, 2018, by the aforesaid representative, having been duly sworn and stating and affirming that he/she is duly authorized to give this Affidavit and that the foregoing statements are true.

Signed: Dana R. Malone
Notary Public Dana R. Malone

My Commission expires: 12/08/2020



ELECTRONICALLY FILED - 2023 May 16 9:07 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Balfour Beatty
Construction

Request for Payment

Pay Request # 7
Work Performed Through: 09/30/18

Subcontractor's Name Chester Pool Systems, Inc
Subcontractor's Address 5311 Foundation Blvd
New Albany, IN 47150
Phone Number 800-248-5488
Fax Number _____

Project Name: Hotel at Marlon Square Job No.: 13026400 Date: 09/18/18
Owner: Library Associates, LLC

Description of Work: Stainless Steel Swimming Pool & Pool Lift

Original Contract Amount	<u>\$202,000.00</u>
Change Order Total	<u>\$109,800.00</u>
Through C/O # <u>2</u>	
Total Revised Contract	<u>\$311,800.00</u>
Previous Work Performed to Date(SSR)	<u>\$287,560.00</u>
Value of Materials Stored On Site	<u>\$0.00</u>
Value of Materials Stored Off Site	<u>\$0.00</u>
Current Month Gross	<u>\$24,240.00</u>
New Work Performed to Date	<u>\$311,800.00</u>
Less <u>10</u> % Retainage	<u>\$31,180.00</u>
Amount Earned to Date	<u>\$280,620.00</u>
Less Previous Net Billings	<u>\$258,804.00</u>
Less Adjustments/Joint Checks	<u>\$0.00</u>
Less Pending Back Charges	<u>\$0.00</u>
Total Amount this Requisition	<u>\$21,816.00</u>

For Balfour Beatty Use Only:

CO #	Vendor #	Job #	Contract No.
<u>50540</u>	<u>3713941</u>	<u>13026400</u>	<u>535305</u>
Date	Invoice #	Description	
<u>09/30/18</u>	<u>13026400 - 07</u>	<u>13026400 . PE# 07 . 18.09</u>	
Gross Amount	Retainage Amt	Net Amount	
<u>\$24,240.00</u>	<u>\$1,212.00</u>	<u>\$21,816.00</u>	
Trade Account?	Tax Code	Pay Item & Cost Code	Address Tax?
<u>NO</u>		<u>400.51315100 40</u>	<u>NO</u>
Hall Codes: <u>02- OWNER FUNDING</u> <u>Owner Waiver</u> <u>PM APP</u>			

Subcontract ☒ Purchase Order ☐

Other Contract Type _____

Unit Price ☐ Lump Sum ☒
Bonded ☐ Unbonded ☒

Subguard ☐ Alternate Plan ☐

Contract Increased 20%? ☒ Y ☐ N ☐
If yes, bond rider received ☐ Y ☐ N ☐
EEO Reports Current ☐ Y ☐ N ☐
Certified Payrolls Current ☐ Y ☐ N ☐

Insurance Status FINALED
Insurance Expiration Date 05/01/19

Release Attached ☐ Y ☐ N ☐
Tier/Supplier Release ☐ Y ☐ N ☐
if Required ☐ Y ☐ N ☐
Reducing Retention ☐ Y ☐ N ☐

If reducing retainage, reducing From ☐ To ☒
Consent of Surety for retention ☐ Y ☐ N ☐
reduction if bonded ☐ Y ☐ N ☐
New materials stored off site ☐ Y ☐ N ☒
if yes, attach stored materials checklist ☐ Y ☐ N ☐

Final Payment ☐ Y ☐ N ☒
If yes, see attached checklist ☐ Y ☐ N ☐

Owner Billing Number 11

Owner Payment Rec'd Date: _____

Payment Terms: Pay When Paid

Pay Select # _____

Approvals:

PM / Date

CA 09/18/18

PA / Date

APA / Date

Bernhard Balfour Beatty

APPLICATION AND CERTIFICATION FOR PAYMENT

AIA DOCUMENT G702

PAGE ONE OF TWO PAGES

TO CONSTRUCTION MANAGER:

PROJECT: HOTEL AT MARION SQUARE

APPLICATION NO: 7

Distribution to:

☒ OWNER☒ ARCHITECT☒ INSPECTORBalfour Beatty Construction
1830 Camden Rd, Suite 280
Charlotte, NC 28210

FROM CONTRACTOR:

VIA ARCHITECT

Chester Pool Systems
3311 Poundin Blvd
New Albany, IN 47150

PROJECT NO #13028000

CONTRACT FOR CONSTRUCTION

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract, Continuation Sheet, AIA Document G703, is attached.

The undersigned Construction Manager (CM) certifies that to the best of the CM's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the CM for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

SUBCONTRACTOR

By: Robert Davis Date: 9/13/2018

CONTRACTOR

By: _____ Date: _____

CONSTRUCTION MANAGER:

By: _____ Date: _____

1. ORIGINAL CONTRACT SUM	\$	202,000.00
2. Net change by Change Orders	\$	109,800.00
3. CONTRACT SUM TO DATE (Line 1 + 2)	\$	311,800.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	\$	311,800.00
5. RETAINAGE	\$	31,180.00
6. TOTAL EARNED LESS RETAINAGE (Line 4 less Line 5 Total)	\$	280,620.00
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)	\$	258,804.00
8. CURRENT PAYMENT DUE	\$	21,816.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	\$	31,180.00

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect advises the Owner that to the Architect's knowledge, information and belief the Work has progressed as indicated, the Work is in general accordance with the Contract Documents, and the Contractors are entitled to payment of the AMOUNT REQUESTED

AMOUNT REQUESTED: \$ 5 21,816.00

(Attach explanation if amount requested differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount requested.)

ARCHITECT:

By: _____ Date: _____

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$118,300.00	(\$8,500.00)
Total approved this Month	\$0.00	\$0.00
TOTALS	\$118,300.00	(\$8,500.00)
NET CHANGES by Change Order	\$109,800.00	

AIA DOCUMENT G702 APPLICATION AND CERTIFICATION FOR PAYMENT - 1992 EDITION AIA G702

Users may obtain validation of this document by requesting a completed AIA Document D401 - Certification of Document's Authenticity from the Licensee.

THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 KEEPER AVE., NW, WASHINGTON, DC 20004-6322

CONTINUATION SHEET

6/1/2023 10:07 AM

ALL BIDDERS MUST SUBMIT A BIDDING APPLICATION WITH THE BIDDING DOCUMENTS. BIDDERS MUST SUBMIT A BIDDING APPLICATION WITH THE BIDDING DOCUMENTS. BIDDERS MUST SUBMIT A BIDDING APPLICATION WITH THE BIDDING DOCUMENTS.

APPLICATION NO
7
APPLICATION DATE
6/1/2018
PERIOD TO
6/30/18

Bidder's Name Project

BID PACKAGE	CONTRACTOR	SCHEDULED VALUE	TOTAL CHARGE ORDERS	REVISED CONTRACT	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN ORDER)	TOTAL COMPLETED AND STORED TO DATE (D-E+F)	(G - C)	BALANCE TO FINISH (C - G)	RETAINAGE
					FROM PREVIOUS APPLICATION (D-E-F)	THIS PERIOD (H-I)					
1	Engineering Submittals & Shop Drawings	24,240.00		24,240.00	24,240.00			24,240.00	100.00%	-	2,424.00
2	Materials	60,600.00		60,600.00	60,600.00			60,600.00	100.00%	-	9,080.00
3	Shop Fabrication	70,700.00		70,700.00	70,700.00			70,700.00	100.00%	-	7,670.00
4	Field Installation	22,220.00		22,220.00	22,220.00			22,220.00	100.00%	-	2,222.00
5	Clean Up	6,060.00		6,060.00	6,060.00			6,060.00	100.00%	-	808.00
6	Cisco Cui	4,040.00		4,040.00	4,040.00			4,040.00	100.00%	-	404.00
7	Start Up & Ongoing Training	10,100.00		10,100.00	10,100.00			10,100.00	100.00%	-	1,010.00
8	Purch List	4,040.00		4,040.00	4,040.00			4,040.00	100.00%	-	404.00
9	Change Order 1 deck level water		22,000.00	22,000.00	22,000.00			22,000.00	100.00%	-	2,200.00
10	Change Order 3 Acrylic Pool Cover		77,350.00	77,350.00	77,350.00			77,350.00	100.00%	-	7,735.00
11	Change Order 5 Engineering for Acrylic Pool		2,800.00	2,800.00	2,800.00			2,800.00	100.00%	-	280.00
12	Pool Edge		7,650.00	7,650.00	7,650.00			7,650.00	100.00%	-	765.00
13	Cover										
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
GRAND TOTALS		202,000.00	109,800.00	311,800.00	287,560.00	24,240.00	0.00	311,800.00	100.00%	0.00	31,180.00

**Subcontractor's and Other Lower Tier's Conditional Partial Waiver and Release of Lien
(Upon Progress Payment)**

KNOW ALL MEN BY THESE PRESENTS:

That Chester Pool (the "Lienor") for and in consideration of the payment of the sum of \$ 21,816.00 and other good and valuable consideration paid by Balfour Beatty Construction, LLC (the "Contractor") or Library Associates, LLC ("Owner"), receipt of which is hereby acknowledged, hereby releases, waives and quit claims to Contractor, the Owner, and their respective successors and assigns, all liens, lien rights, claims or demands of any kind whatsoever, which Lienor now has or might have against Contractor and/or Owner and/or the buildings and improvements on the premises legally described as: See Exhibit "A" attached hereto (the "Property") on account of labor and services performed and/or material furnished for the construction of any improvements thereon; except for retention, and open change order requests, claims or disputes identified as follows:

That the undersigned has the right and authority to execute this Conditional Partial Waiver and Release of Lien on behalf of the Lienor. That this is a waiver of all lien rights and other claims which Lienor has against the Property, the Contractor, and the Owner for all labor, material and services performed thereon, including all extras and change orders, that all laborers retained or employed by the Lienor for construction of improvements on the Property, all suppliers and sub-contractors of Lienor who have furnished labor, material and services for the undersigned for the construction of improvements on the Property, and all labor, services and materials used by the undersigned in the construction of said improvements, have been paid in full for work performed or materials supplied, up to and including the 30th day of September, 2018, excluding the items identified hereinabove, if any.

THE UNDERSIGNED ACKNOWLEDGES THAT THE CONTRACTOR AND OWNER AND OTHER PARTIES HAVE A RIGHT TO RELY UPON THIS WAIVER AND RELEASE AND THAT MAKING ANY FALSE STATEMENTS SHALL CONSTITUTE PERJURY AND PUNISHMENT CAN BE MADE IN ACCORDANCE WITH THE LAWS OF THE STATE OF SOUTH CAROLINA.

IN WITNESS THEREOF, I have hereunto set my hand seal this 18th day of September, 2018

Signed, sealed and delivered
in the presence of:

Robert Larson

Signature

Robert Larson

Print Name

Chester Pool Systems, Inc.
a Kentucky corporation

Greg Carnforth

Signature

Greg Carnforth, Vice President

Print Name & Title

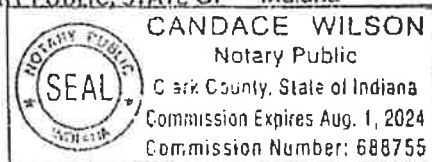
STATE OF Indiana

COUNTY OF Clark

The foregoing instrument was acknowledged before me this 18th day of September, 2018, by Greg Carnforth, Vice President of Chester Pool Systems, Inc., a Kentucky corporation on, on behalf of the corporation. He/she is personally known to me or has produced Indiana drivers license (type of identification) as identification.

Candace Wilson
NOTARY PUBLIC, STATE OF Indiana

My Commission Expires: August 1, 2024



R - 7011

Balfour Beatty
Construction

Request for Payment

Pay Request # 21
Work Performed Through: 09/30/18

Subcontractor's Name Low Country Case & Millwork, Inc.
Subcontractor's Address 3270 Benchmark Drive
Ladson, SC 29458
Phone Number 704-609-5116
Fax Number _____

Project Name: Hotel at Marlon Square Job No.: 13026400 Date: 09/13/18
Owner: Library Associates, LLC

Description of Work: Casework & Millwork Floors 3-8

Original Contract Amount	\$1,051,032.00
Change Order Total	\$621,535.90
Through C/O #: <u>0</u>	
Total Revised Contract	\$1,672,567.90
Previous Work Performed to Date(SSR)	\$1,805,091.90
Value of Materials Stored On Site	\$0.00
Value of Materials Stored Off Site	\$12,701.00
Current Month Gross	\$300.00
New Work Performed to Date	\$1,618,092.90
Less <u>10 % Retainage</u>	\$80,904.65
Amount Earned to Date	\$1,537,188.25
Less Previous Net Billings	\$1,524,837.31
Less Adjustments/Joint Checks	\$0.00
Less Pending Back Charges	\$0.00
Total Amount this Requisition	\$12,350.94

Subcontract ☒ Purchase Order ☐

Other Contract Type _____

Unit Price ☐ Lump Sum ☒
Bonded ☐ Unbonded ☒

Subguard ☐ Alternate Plan ☐

Contract Increased 20%? Y ☒ N ☐
If yes, bond rider received Y ☐ N ☐
EEO Reports Current Y ☐ N ☐
Certified Payrolls Current Y ☐ N ☐

Insurance Status Finalized
Insurance Expiration Date 08/04/19

Release Attached Y ☐ N ☐
Tier/Supplier Release Y ☐ N ☐
if Required
Reducing Retention Y ☐ N ☐

If reducing retainage, reducing From ☐ To ☒
Consent of Surety for retention reduction if bonded Y ☐ N ☐

New materials stored off site Y ☐ N ☒
If yes, attach stored materials checklist

Final Payment Y ☐ N ☒
If yes, see attached checklist

For Balfour Beatty Use Only:

CO #	Vendor #	Job #	Contract No.
50000	3798186	13026000	
Date	Invoice #	Description	
09/30/18	13026400 - 21	13026400 . PE# 21 . 180930	
Gross Amount	Retainage Amt	Net Amount	
\$300.00	\$161,809.29	\$12,350.94	
Trade Account?	Tax Code	Pay Item & Cost Code	Accrue Tax?
NO			NO
Halt Codes: PM APP O/F stored materials			

Owner Billing Number N/A

Owner Payment Rec'd Date: _____

Payment Terms: Pay When Paid

Pay Select # _____

Approvals: _____ CA 09/13/18
PM / Date PA / Date APA / Date

APPLICATION AND CERTIFICATION FOR PAYMENT

Contractor's Name and Address

Balfour Beatty Construction
1530 Camden Rd Suite 200
Charlotte, NC 28210

Hotel at Marion Square

Owner's Name and Address

Low Country Case and Millwork
3270 Benchmark Drive
Ladson, SC 29456

Project Name

Project No. #12026000

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment as shown below, in accordance with the Contract Documents, and the Contractor certifies that the work shown on the Application for Payment is complete and ready for payment.

1. ORDER OF PAYMENT FROM THE OWNER	1,051,000.00
2. ORDER OF PAYMENT FROM THE OWNER	621,535.20
3. ORDER OF PAYMENT FROM THE OWNER	1,075,500.00
4. ORDER OF PAYMENT FROM THE OWNER	1,018,000.00
5. ORDER OF PAYMENT FROM THE OWNER	80,900.00
6. ORDER OF PAYMENT FROM THE OWNER	1,537,188.26
7. ORDER OF PAYMENT FROM THE OWNER	1,521,812.11
8. ORDER OF PAYMENT FROM THE OWNER	12,350.94
9. ORDER OF PAYMENT FROM THE OWNER	153,700.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total Change Orders Approved	\$649,312.00	\$433,199.00
Total Change Orders Pending Approval	\$5,522.00	\$53,700.00
Total Change Orders Approved this Month	\$64,312.00	\$53,700.00
Total Change Orders Pending Approval	\$5,522.00	\$53,700.00

Users may obtain validation of this document by requesting a completed AIA Document D-401, Certification of Documents' Authenticity from the Licensee

ARCHITECTS CERTIFICATE FOR PAYMENT

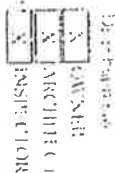
In accordance with the Contract Documents, based on on-site observation and the data compiled by the Architect, the Architect certifies that the work shown on the Application for Payment is complete and ready for payment, and that the work has progressed as indicated in the Architect's knowledge, information and belief of the work has progressed as indicated in the work is in general accordance with the Contract Documents, and the Certifications are certified to payment of the Application for Payment.

AMOUNT REQUESTED \$ 12,350.94

The Architect's application of amount requested is based on the amount applied for by the Contractor, and the Architect's knowledge, information and belief of the work has progressed as indicated in the work is in general accordance with the Contract Documents, and the Certifications are certified to payment of the Application for Payment.

Date _____

This Certificate is not negotiable. The Architect (AIA) is not responsible for the work shown on the Application for Payment, and the Architect's knowledge, information and belief of the work has progressed as indicated in the work is in general accordance with the Contract Documents, and the Certifications are certified to payment of the Application for Payment.



Signature of Architect: David Stewart, Date: 9/12/18

CONTRACTOR: _____ Date: _____

CONSTRUCTION MANAGER: _____ Date: _____

ITEM	CONTRACTOR	NORTH 117 AMOUNT	TOTAL AMOUNT	REVENUE AMOUNT	ACCOUNTING		STATUS	COMPLETED DATE	%	TOTAL AMOUNT	TOTAL AMOUNT
					DATE	DATE					
1	Rock L3	5,863.00	5,863.00	5,863.00	214,057.00	214,057.00	*	214,057.00	100.00%	13,702.00	13,702.00
2	3rd Floor	214,057.00	214,057.00	214,057.00	217,623.00	217,623.00	*	217,623.00	100.00%	10,981.00	10,981.00
3	4th Floor	217,623.00	217,623.00	217,623.00	205,043.00	205,043.00	*	205,043.00	100.00%	10,252.00	10,252.00
4	5th Floor	205,043.00	205,043.00	205,043.00	125,165.00	125,165.00	*	125,165.00	100.00%	6,586.00	6,586.00
5	6th Floor	125,165.00	125,165.00	125,165.00	131,997.00	131,997.00	*	131,997.00	100.00%	6,976.00	6,976.00
6	7th Floor	131,997.00	131,997.00	131,997.00	139,521.00	139,521.00	*	139,521.00	100.00%	236.00	236.00
7	8th Floor	139,521.00	139,521.00	139,521.00	4,736.00	4,736.00	*	4,736.00	100.00%	301.00	301.00
8	Concierge	4,736.00	4,736.00	4,736.00	6,027.00	6,027.00	*	6,027.00	100.00%	194.00	194.00
9	Manager	6,027.00	6,027.00	6,027.00	1,320.00	1,320.00	*	1,320.00	100.00%	66.00	66.00
10	Change Order 1	3,880.00	3,880.00	3,880.00	203,088.00	203,088.00	*	203,088.00	100.00%	10,154.00	10,154.00
11	Change Order 2	1,320.00	1,320.00	1,320.00	44,749.00	44,749.00	*	44,749.00	100.00%	2,237.00	2,237.00
12	Change Order 3	203,088.00	203,088.00	203,088.00	5,375.00	5,375.00	*	5,375.00	100.00%	269.00	269.00
13	Change Order 4	14,759.00	14,759.00	14,759.00	16,146.00	16,146.00	*	16,146.00	100.00%	850.00	850.00
14	Change Order 5	44,749.00	44,749.00	44,749.00	17,009.37	17,009.37	*	17,009.37	100.00%	84.00	84.00
15	Change Order 6	5,375.00	5,375.00	5,375.00	1,698.00	1,698.00	*	1,698.00	100.00%	365.00	365.00
16	Change Order 7	16,146.00	16,146.00	16,146.00	7,710.00	7,710.00	*	7,710.00	100.00%	59.55	59.55
17	Change Order 8	17,009.37	17,009.37	17,009.37	1,397.00	1,397.00	*	1,397.00	100.00%	3,574.10	3,574.10
18	Change Order 9	1,698.00	1,698.00	1,698.00	71,482.00	71,482.00	*	71,482.00	100.00%	974.00	974.00
19	Change Order 10	7,710.00	7,710.00	7,710.00	17,488.00	17,488.00	*	17,488.00	100.00%	2,270.00	2,270.00
20	Change Order 11	1,397.00	1,397.00	1,397.00	45,418.00	45,418.00	*	45,418.00	100.00%	1,660.00	1,660.00
21	Change Order 12	71,482.00	71,482.00	71,482.00	3,120.53	3,120.53	*	3,120.53	100.00%	56.10	56.10
22	Change Order 13	17,488.00	17,488.00	17,488.00	1,322.00	1,322.00	*	1,322.00	100.00%	488.40	488.40
23	Change Order 14	45,418.00	45,418.00	45,418.00	9,758.00	9,758.00	*	9,758.00	100.00%	486.30	486.30
24	Change Order 15	3,120.53	3,120.53	3,120.53	5,726.00	5,726.00	*	5,726.00	100.00%	225.00	225.00
25	Change Order 16	1,322.00	1,322.00	1,322.00	4,100.00	4,100.00	*	4,100.00	100.00%	135.93	135.93
26	Change Order 17	9,758.00	9,758.00	9,758.00	17,190.00	17,190.00	*	17,190.00	100.00%	1,446.75	1,446.75
27	Change Order 18	9,726.00	9,726.00	9,726.00	28,935.00	28,935.00	*	28,935.00	100.00%	158.00	158.00
28	Change Order 19	9,726.00	9,726.00	9,726.00	3,121.00	3,121.00	*	3,121.00	100.00%	1,966.25	1,966.25
29	Change Order 20	4,100.00	4,100.00	4,100.00	39,725.00	39,725.00	*	39,725.00	100.00%	36.05	36.05
30	Change Order 21	17,190.00	17,190.00	17,190.00	1,731.00	1,731.00	*	1,731.00	100.00%	-	-
31	Change Order 22	28,935.00	28,935.00	28,935.00	-	-	-	-	-	-	-
32	Change Order 23	3,121.00	3,121.00	3,121.00	-	-	-	-	-	-	-
33	Change Order 24	39,725.00	39,725.00	39,725.00	-	-	-	-	-	-	-
34	Change Order 25	1,731.00	1,731.00	1,731.00	-	-	-	-	-	-	-

CONTINUATION SHEET

Contractor										Estimate Details Project	
LINE	DESCRIPTION	QUANTITY	UNIT	RATE	TOTAL	TAXES		TOTAL	PERCENT	AMOUNT	TOTAL
						STATE	FEDERAL				
34	Change Order 26	10	973.00	10	973.00	10	973.00	10	973.00	100.00%	100.00%
35	Change Order 27	121	507.00	121	507.00	121	507.00	121	507.00	100.00%	100.00%
36	Change Order 28	9	024.00	9	024.00	9	024.00	9	024.00	100.00%	100.00%
37	Change Order 29	1	558.00	1	558.00	1	558.00	1	558.00	100.00%	100.00%
38	Change Order 30	77	674.00	77	674.00	77	674.00	77	674.00	100.00%	100.00%
39	Change Order 31	6	528.00	6	528.00	6	528.00	6	528.00	100.00%	100.00%
40	Change Order 32	1	313.00	1	313.00	1	313.00	1	313.00	100.00%	100.00%
41	Change Order 33	5	522.00	5	522.00	5	522.00	5	522.00	100.00%	100.00%
GRAND TOTALS		1,672,567.90	0.00	1,672,567.90	1,605,091.90	300.00	12,701.00	1,618,092.90	95.74%	54,475.00	80,265.50

**Subcontractor's and Other Lower Tier's Conditional Partial Waiver and Release of Lien
(Upon Progress Payment)**

KNOW ALL MEN BY THESE PRESENTS:

That Low Country Case and Millwork (the "Lienor") for and in consideration of the payment of the sum of \$ 256,004 and other good and valuable consideration paid by Balfour Beatty Construction, LLC (the "Contractor") or Library Associates, LLC ("Owner"), receipt of which is hereby acknowledged, hereby releases, waives and quit claims to Contractor, the Owner, and their respective successors and assigns, all liens, lien rights, claims or demands of any kind whatsoever, which Lienor now has or might have against Contractor and/or Owner and/or the buildings and improvements on the premises legally described as: See Exhibit "A" attached hereto (the "Property") on account of labor and services performed and/or material furnished for the construction of any improvements thereon, except for retention, and open change order requests, claims or disputes identified as follows.

That the undersigned has the right and authority to execute this Conditional Partial Waiver and Release of Lien on behalf of the Lienor. That this is a waiver of all lien rights and other claims which Lienor has against the Property, the Contractor, and the Owner for all labor, material and services performed thereon, including all extras and change orders, that all laborers retained or employed by the Lienor for construction of improvements on the Property, all suppliers and sub-contractors of Lienor who have furnished labor, material and services for the undersigned for the construction of improvements on the Property, and all labor, services and materials used by the undersigned in the construction of said improvements, have been paid in full for work performed or materials supplied, up to and including the 12th day of September, 2019, excluding the items identified hereinabove, if any.

THE UNDERSIGNED ACKNOWLEDGES THAT THE CONTRACTOR AND OWNER AND OTHER PARTIES HAVE A RIGHT TO REIFY UPON THIS WAIVER AND RELEASE AND THAT MAKING ANY FALSE STATEMENTS SHALL CONSTITUTE PERJURY AND PUNISHMENT CAN BE MADE IN ACCORDANCE WITH THE LAWS OF THE STATE OF SOUTH CAROLINA.

IN WITNESS THEREOF, I have hereunto set my hand seal this 12th day of September, 2019

Signed, sealed and delivered
in the presence of:

B. Gaymon
Signature
Brittany Gaymon
Print Name

STATE OF South Carolina
COUNTY OF Charleston

Low Country Case and Millwork

a South Carolina corporation

David Stasiukaitis
Signature

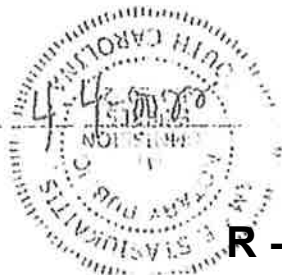
David Stasiukaitis, CEO

Print Name & Title

The foregoing instrument was acknowledged before me this 12th day of September, 2019 by David Stasiukaitis CEO of Low Country Case and Millwork a SC corporation on, on behalf of the corporation. He/she is personally known to me or has produced _____ (type of identification) as identification.

Any E. Stasiukaitis
NOTARY PUBLIC, STATE OF SC

My Commission Expires:



R - 7017

DEFENDANT LIBRARY ASSOCIATES, LLC'S

TRIAL EXHIBIT #35

Part 2 of 2

Material Bill of Sale

TO Balfour Beatty Construction, LLC

REGARDING Material Bill of Sale, Conditional Upon Receipt of Payment

DATE 09/12/18

We hereby transfer, convey and assign title for the property described below and located at the address indicated below to BALFOUR BEATTY CONSTRUCTION, LLC for the sum of (\$12,701.00) thirty three thousand one hundred seventy nine Dollars.

We further certify that we have full title to this material and that we will defend same against any and all claims

Material Description: Registration Desk, Bell Stand, Bridal Suite Doors

Stored Address 4144 Carolina Commerce Parkway, Ladson SC 29456

Sum Total Value: \$12,701.00

Witness:

B. Gaymon
Brittany Gaymon

Subcontractor:

David Stasiukaitis
David Stasiukaitis, CEO
 Name & Title

State of South CarolinaCounty of Charleston

The foregoing instrument was acknowledged before me this 12th day of September
 2018 by David Stasiukaitis as CEO
 of Lowcountry Cases & Millwork

My Commission Expires

W. E. Stasiukaitis
 Notary Public

(Seal)



STORAGE RECEIPT

Date 09/12/18

This is to certify that the undersigned holds on storage at 4144 Carolina Commerce Parkway, Ladson, SC 29456 the following described building material, consisting of _____ and that it will deliver or surrender same to Balfour Beatty Construction, LLC at the Jobsite or other designated location; All payments due for said material in the amount of \$12,701.00, not including the amount of \$635.05 being held as retainage under the Agreement between Balfour Beatty Construction, LLC and _____ Low Country Case and Millwork (Subcontractor/Vendor) having been made and are hereby acknowledged by the undersigned

Low Country Case and Millwork (Subcontractor/Vendor) does hereby acknowledge responsibility to deliver and install Registration, Bell, and Bridal Suite Doors in accordance with the agreements between Balfour Beatty Construction, LLC and Low Country Case and Millwork (Subcontractor/Vendor) for the guestroom millwork (scope of work)

If storage at 3rd Party Warehouse, by signing below, the Warehouseman represents that all warehouse charges have been paid in advance through period ending _____ (N/A if stored at Subcontractor's facilities)

By signing below, the Warehouseman, if applicable, and Subcontractor acknowledge and agree that Balfour Beatty Construction or the Owner shall have accessibility to the storage premises until materials are fully delivered to the jobsite.

BY: _____
Warehouseman (if applicable)

BY: David Stainback
Subcontractor / Vendor

BY: _____
Balfour Beatty Construction, LLC

HOTEL AT MARION SQUARE - FLOORS 3-8

Stored Material Log

	August			September		
	Added to SM	Removed from SM (Installed)	Total Stored at Month's End	Added to SM	Removed from SM (Installed)	Total Stored at Month's End
MOCK UP						
Millwork			\$0			\$0
Casework			\$0			\$0
3RD FLOOR						
<u>GUEST ROOMS</u>						
Base (4,345)			\$0			\$0
Small Crown (3,818)			\$0			\$0
Large Crown (3,093)			\$0			\$0
Door Casing (7,100)			\$0			\$0
Celling Trim (1,515)			\$0			\$0
<u>CORRIDOR</u>						
Base (955)			\$0			\$0
Small Crown (745)			\$0			\$0
Door Casing (1,180)			\$0			\$0
Portals			\$0			\$0
<u>CASEWORK</u>						
Corner Cabinets			\$0			\$0
Vanities			\$0			\$0
Closets			\$0			\$0
Linen Shelving			\$0			\$0
4TH FLOOR						
<u>GUEST ROOMS</u>						
Base (4,345)			\$0			\$0
Small Crown (3,825)			\$0			\$0
Large Crown (3,093)			\$0			\$0
Door Casing (6,938)			\$0			\$0
Ceiling Trim (1,515)			\$0			\$0
<u>CORRIDOR</u>						
Base (930)			\$0			\$0
Small Crown (818)			\$0			\$0
Door Casing (1,140)			\$0			\$0
Portals		\$0	\$0		\$0	\$0
<u>CASEWORK</u>						
Corner Cabinets			\$0			\$0
Vanities			\$0			\$0
Closets			\$0			\$0
Linen Shelving			\$0			\$0
5TH FLOOR						
<u>GUEST ROOMS</u>						
Base (4,203)			\$0			\$0
Small Crown (3,638)			\$0			\$0

Large Crown (2,946)		\$0		\$0
Door Casing (6,680)		\$0		\$0
Ceiling Trim (1,435)		\$0		\$0
CORRIDOR				
Base (853)		\$0		\$0
Small Crown (736)		\$0		\$0
Door Casing (1,160)		\$0		\$0
Portals		\$0		\$0
CASEWORK				
Corner Cabinets		\$0		\$0
Vanities		\$0		\$0
Closets		\$0		\$0
Linen Shelving		\$0		\$0
6TH FLOOR				
GUEST ROOMS				
Base (2,211)		\$0		\$0
Small Crown (2,014)		\$0		\$0
Large Crown (1,512)		\$0		\$0
Door Casing (3,618)		\$0		\$0
Ceiling Trim (755)		\$0		\$0
CORRIDOR				
Base (705)		\$0		\$0
Small Crown (651)		\$0		\$0
Door Casing (780)		\$0		\$0
Portals		\$0		\$0
CASEWORK				
Corner Cabinets		\$0		\$0
Vanities		\$0		\$0
Closets		\$0		\$0
Linen Shelving		\$0		\$0
7TH FLOOR				
GUEST ROOMS				
Base (2,613)	\$0	\$0	\$0	\$0
Small Crown (2,410)		\$0		\$0
Large Crown (1,722)		\$0		\$0
Door Casing (3,826)		\$0		\$0
Ceiling Trim (915)		\$0		\$0
CORRIDOR				
Base (691)		\$0		\$0
Small Crown (631)		\$0		\$0
Door Casing (760)		\$0		\$0
Portals		\$0		\$0
CASEWORK				
Corner Cabinets		\$0		\$0
Vanities		\$0		\$0
Closets		\$0		\$0
Linen Shelving		\$0		\$0
8TH FLOOR				

<u>GUEST ROOMS</u>						
Base (2,835)			\$0			\$0
Small Crown (2,595)			\$0			\$0
Large Crown (1,885)			\$0			\$0
Door Casing (4,190)			\$0			\$0
Ceiling Trim (995)			\$0			\$0
<u>CORRIDOR</u>						
Base (712)			\$0			\$0
Small Crown (646)			\$0			\$0
Door Casing (800)			\$0			\$0
Portals			\$0			\$0
<u>CASEWORK</u>			\$0			\$0
Corner Cabinets			\$0			\$0
Vanities			\$0			\$0
Closets			\$0			\$0
Linen Shelving			\$0			\$0
CONCIERGE						
Base & Crown			\$0			\$0
MANAGER						
Base & Crown			\$0			\$0
Change Order 4						
Ballrooms MOD 1-8			\$0			\$0
Camella's MOD 1-8			\$0			\$0
Guest Tub Mould			\$0			\$0
Private Dining Mod 1-8			\$0			\$0
Change Order 6						
Spa Casework		\$0	\$0		\$0	\$0
Spa Millwork			\$0			\$0
Change Order 7						
Camella's Lounge			\$0			\$0
Change Order 9						
Private Dining SI 46			\$0			\$0
Change Order 14						
Concierge Casework	\$0		\$0	\$0		\$0
Change Order 18						

9th Floor Plaster
Change Order 20
Rooftop Bar
Change Order 30
Registration Desk
Bell Stand
Hostess Stand
Change Order 32
L9 Bar Foot Rail
Change Order 33
Bridal Suite Doors

\$0	\$0	\$0
\$20,659		\$20,659
\$6,464		\$6,464
\$5,044		\$5,044
\$1,013		\$1,013
		\$0
\$33,180	\$0	\$33,180

\$0	\$0	\$0
\$8,263		\$28,922
\$2,585		\$9,049
		\$5,044
	\$1,013	\$0
\$1,852		\$1,852
\$12,700	\$1,013	\$44,867



EVIDENCE OF PROPERTY INSURANCE

YANDLER

DATE (MM/DD/YYYY)
9/12/2018

THIS EVIDENCE OF PROPERTY INSURANCE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE ADDITIONAL INTEREST NAMED BELOW. THIS EVIDENCE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS EVIDENCE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE ADDITIONAL INTEREST.

AGENCY Insurance Office of America, Inc. 1221 Bower Parkway Suite 101 Columbia, SC 29212-3732	PHONE (A/C, No, Ext): (888) 326-4498	COMPANY Wesco Insurance Company 59 Malden Lane, 6th Floor New York, NY 10038
FAX (A/C, No): (803) 957-4945	E-MAIL ADDRESS:	
CODE: AGENCY CUSTOMER ID #: LOWCCAS-01	SUB CODE: License # 0E67768	
INSURED LOW COUNTRY CASE & MILLWORK INC. 3270 Benchmark Drive Ladson, SC 29456	LOAN NUMBER	POLICY NUMBER WPP108312006
	EFFECTIVE DATE 8/4/2018	EXPIRATION DATE 8/4/2019
	CONTINUED UNTIL TERMINATED IF CHECKED	
THIS REPLACES PRIOR EVIDENCE DATED:		

PROPERTY INFORMATION

LOCATION/DESCRIPTION
Loc # 3, Bldg # 1, 4144 Carolina Commerce Parkway, Ladson, SC 29456, New Office/Warehouse/Mfg.

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS EVIDENCE OF PROPERTY INSURANCE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

COVERAGE INFORMATION	PERILS INSURED	BASIC	BROAD	SPECIAL	AMOUNT OF INSURANCE	DEDUCTIBLE
Loc # 3, Bldg # 1 Property of Others, Special (Including theft)	COVERAGE / PERILS / FORMS				\$44,867	5,000

REMARKS (Including Special Conditions)

Special Conditions:
18/19 Balfour Beatty HMS Guest Floors @ Marion Square stored materials \$44,867 9/12/18

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

ADDITIONAL INTEREST

NAME AND ADDRESS Balfour Beatty Construction 1930 Camden Rd Suite 280 Charlotte, NC 28210	ADDITIONAL INSURED MORTGAGEE LOAN # AUTHORIZED REPRESENTATIVE 	LENDER'S LOSS PAYABLE	LOSS PAYEE
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Balfour Beatty
Construction

Request for Payment

Subcontractor's Name Low Country Case & Millwork, Inc.
Subcontractor's Address 3270 Benchmark Drive
Ladson, SC 29456
Phone Number 704-609-5118
Fax Number _____

Pay Request # PE20
Work Performed Through: 08/30/18

Project Name: Hotel at Marion Square Job No.: 13026100 Date: 08/21/18
Owner: Library Associates, LLC

Description of Work: Casework & Millwork Floors 1, 2, & 9
Original Contract Amount \$1,071,713.00
Change Order Total \$249,759.00
Through C/O #: 0
Total Revised Contract \$1,321,472.00
Previous Work Performed to Date(SSR) \$1,253,865.00
Value of Materials Stored On Site \$0.00
Value of Materials Stored Off Site \$0.00
Current Month Gross \$11,167.00
New Work Performed to Date \$1,265,032.00
Less 5 % Retainage \$63,251.60
Amount Earned to Date \$1,201,780.40
Less Previous Net Billings \$1,191,171.75
Less Adjustments/Joint Checks \$0.00
Less Pending Back Charges \$0.00
Total Amount this Requisition \$10,608.65

Subcontract ☒ Purchase Order ☐
Other Contract Type _____
Unit Price ☐ Lump Sum ☒
Bonded ☐ Unbonded ☒
Subguard ☐ Alternate Plan ☐

Contract Increased 20%? Y ☒ N ☐
If yes, bond rider received Y ☐ N ☐
EEO Reports Current Y ☐ N ☐
Certified Payrolls Current Y ☐ N ☐

Insurance Status Finalized
Insurance Expiration Date 08/04/18

Release Attached Y ☐ N ☐
Tier/Supplier Release Y ☐ N ☐
if Required Y ☐ N ☐
Reducing Retention Y ☐ N ☐

If reducing retainage, reducing From ☐ To ☒
Consent of Surety for retention Y ☐ N ☐
reduction if bonded
New materials stored off site Y ☐ N ☒
If yes, attach stored materials checklist

Final Payment Y ☐ N ☒
If yes, see attached checklist

Owner Billing Number N/A

Owner Payment Rec'd Date: _____

Payment Terms: Pay When Paid

Pay Select # _____

For Balfour Beatty Use Only:

CO #	Vendor #	Job #	Contract No.
50000	3798186	13026000	640007
Date	Invoice #	Description	
08/30/18	13026100 - PE20	13026100 . PE# PE20 . 180830	
Gross Amount	Retainage Amt	Net Amount	
\$11,167.00	\$128,503.20	\$10,608.65	
Trade Account?	Tax Code	Pay Item & Cost Code	Accrue Tax?
NO			NO
Mail Codes: PM APP CO'S O/F			

Approvals: _____ CA 09/13/18
PM / Date PA / Date APA / Date

APPLICATION AND CERTIFICATION FOR PAYMENT

AIA DOCUMENT G702

PAGE ONE OF TWO PAGES

TO CONSTRUCTION MANAGER:

Balfour Beatty Construction
1930 Camden Rd. Suite 280
Charlotte, NC 28210

FROM CONTRACTOR:

Low Country Casa and Millwork
3270 Benchmark Drive
Ladson, SC 29456

CONTRACT FOR CONSTRUCTION

PROJECT: HOTEL AT MARION SQUARE - Cor

APPLICATION NO: 20

PERIOD TO: 42674

PROJECT NO: #13026000

Distribution to:

☒	OWNER
☒	ARCHITECT
☒	INSPECTOR

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM
\$ 1,071,713.00
2. Net change by Change Orders
\$ 249,759.00
3. CONTRACT SUM TO DATE (Line 1 + 2)
\$ 1,321,472.00
4. TOTAL COMPLETED & STORED TO
DATE (Column G on G703)
\$ 1,265,032.00
5. RETAINAGE
\$ 63,251.60
6. TOTAL EARNED LESS RETAINAGE:
(Line 4 less Line 5 Total)
\$ 1,201,780.40
7. LESS PREVIOUS CERTIFICATES FOR
PAYMENT (Line 6 from prior Certificate)
\$ 1,551,174.75
8. CURRENT PAYMENT DUE
\$ 16,606.65
9. BALANCE TO FINISH, INCLUDING RETAINAGE:
(Line 3 less Line 6)
\$ 119,697.60

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total change approved in previous months by Owner	\$249,759.00	\$0.00
Total approved this Month	\$6,541.00	\$0.00
TOTALS	\$249,759.00	\$0.00
NET CHANGES by Change Order	\$249,759.00	

SUBCONTRACTOR: Dave Standish Date: 9/12/18

CONTRACTOR

By: _____ Date: _____

CONSTRUCTION MANAGER:

By: _____ Date: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect advises the Owner that the Work has progressed as indicated. The Architect's knowledge, information and belief the Work has progressed as indicated, the Work is in general accordance with the Contract Documents, and the Contractors are entitled to payment of the AMOUNT REQUESTED.

AMOUNT REQUESTED \$ 16,606.65

(Attach explanation if amount requested differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount requested.)
ARCHITECT

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT REQUESTED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

AIA DOCUMENT G702 APPLICATION AND CERTIFICATION FOR PAYMENT 1001 (OFFICIAL AIA 2007)

Users may obtain validation of this document by requesting a completed AIA Document D401 - Certification of Document's Authenticity from the Licensee.

CONTINUATION SHEET

AIA DOCUMENT G703

AIA Document G703, APPLICATION AND CERTIFICATION FOR PAYMENT, containing

Contractor's signed certification is attached.

In tabulations below, amounts are stated in the nearest dollar.

(See General Conditions where applicable; retainage, for line items may apply.)

APPLICATION NO.
94247
APPLICATION DATE
11/10/20
PROJECT TO
9/30/21

BID PACKAGE #	CONTRACTOR	SCHEDULED VALUE	TOTAL CHANGE ORDERS	REVISED CONTRACT	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN DOR E)	TOTAL COMPLETED AND STORED TO DATE (DVE + F)	% (G - C)	BALANCE TO FINISH (C - G)	RETAINAGE
					FROM PREVIOUS APPLICATION (DVE + F)	THIS PERIOD (H - F)					
1	1st Floor - Millwork	296,567.00	-	296,567.00	296,567.00	-	-	296,567.00	100.00%	-	14,828.3
2	1st Floor - Casework	163,776.00	-	163,776.00	162,395.00	1,381.00	-	163,776.00	100.00%	-	8,188.8
3	2nd Floor - Millwork	255,473.00	-	255,473.00	255,473.00	-	-	255,473.00	100.00%	-	12,773.6
4	2nd Floor - Casework	42,175.00	-	42,175.00	42,175.00	(1.00)	-	42,175.00	100.00%	-	2,108.7
5	2nd Floor Spa - Millwork	44,442.00	-	44,442.00	44,442.00	-	-	44,442.00	100.00%	-	2,222.1
6	Concierge - Millwork	16,340.00	-	16,340.00	16,340.00	-	-	16,340.00	100.00%	-	817.0
7	Concierge - Casework	4,654.00	-	4,654.00	4,654.00	-	-	4,654.00	100.00%	-	232.7
8	Managers Apartment - Millwork	36,308.00	-	36,308.00	36,308.00	-	-	36,308.00	0.00%	36,306.00	-
9	Managers Apartment - Casework	20,133.00	-	20,133.00	20,133.00	-	-	20,133.00	0.00%	20,133.00	-
10	Roof/Top - Millwork	53,959.00	-	53,959.00	53,959.00	-	-	53,959.00	100.00%	1.00	2,597.5
11	Roof/Top - Casework	48,193.00	-	48,193.00	44,947.00	3,246.00	-	48,193.00	100.00%	-	2,409.5
12	Elevator Lobbies - Millwork	26,606.00	-	26,606.00	26,606.00	-	-	26,606.00	100.00%	-	1,330.5
13	Elevator Cabinets	36,949.00	-	36,949.00	36,949.00	-	-	36,949.00	100.00%	-	1,847.2
14	Bonding	26,140.00	-	26,140.00	26,140.00	-	-	26,140.00	100.00%	-	1,307.6
15	Change Order 1	30,013.00	-	30,013.00	30,013.00	-	-	30,013.00	100.00%	-	1,500.5
16	Change Order 2	126,088.00	-	126,088.00	126,088.00	-	-	126,088.00	100.00%	-	6,304.2
17	Change Order 3	2,398.00	-	2,398.00	2,398.00	-	-	2,398.00	100.00%	-	119.5
18	Change Order 4 (Moved from CCO 005 - May)	1,949.00	-	1,949.00	1,949.00	-	-	1,949.00	100.00%	-	97.4
19	Change Order 5 (Moved from CCO 004, 008)	5,658.00	-	5,658.00	5,658.00	-	-	5,658.00	100.00%	-	282.5
20	Change Order 6 (Patisserie)	4,103.00	-	4,103.00	4,103.00	-	-	4,103.00	100.00%	-	205.7
21	Change Order 7 (Piv Dining)	2,363.00	-	2,363.00	2,363.00	-	-	2,363.00	100.00%	-	118.7
22	Change Order 8 (CCO 006)	3,540.00	-	3,540.00	3,540.00	-	-	3,540.00	100.00%	-	177.1
23	Change Order 9 (CCO 006.02 & 008.02)	13,226.00	-	13,226.00	13,226.00	-	-	13,226.00	-	-	-
24	Change Order 10 (Elevator Lobby Changes)	(3,705.00)	-	(3,705.00)	-	(3,706.00)	-	16,338.00	100.00%	-	816.7
25	CCO 008 - Stair D4	16,338.00	-	16,338.00	12,995.00	3,343.00	-	16,338.00	16.89%	33,981.00	345.7
26	CCO 008 - Manager's Apartment	47,789.00	-	47,789.00	40,865.00	6,904.00	-	6,904.00	#DIV/0!	-	-
27	CCO 009a - Registration	-	-	-	-	-	-	-	#DIV/0!	-	-
28	CCO 009b - Bell Hop	-	-	-	-	-	-	-	#DIV/0!	-	-
29	CCO 009c - Waitress Stand	-	-	-	-	-	-	-	#DIV/0!	-	-
30	-	-	-	-	-	-	-	-	#DIV/0!	-	-
31	-	-	-	-	-	-	-	-	#DIV/0!	-	-
32	-	-	-	-	-	-	-	-	#DIV/0!	-	-
33	-	-	-	-	-	-	-	-	#DIV/0!	-	-
GRAND TOTALS		1,321,472.00	0.00	1,321,472.00	1,253,865.00	11,167.00	0.00	1,265,032.00	95.73%	56,440.00	60,731.5

**Subcontractor's and Other Lower Tier's Conditional Partial Waiver and Release of Lien
(Upon Progress Payment)**

KNOW ALL MEN BY THESE PRESENTS:

That Low Country Case and Millwork (the "Lienor") for and in consideration of the payment of the sum of \$ 10,608.65 and other good and valuable consideration paid by Balfour Beatty Construction, LLC (the "Contractor") or Library Associates, LLC ("Owner"), receipt of which is hereby acknowledged, hereby releases, waives and quit claims to Contractor, the Owner, and their respective successors and assigns, all liens, lien rights, claims or demands of any kind whatsoever, which Lienor now has or might have against Contractor and/or Owner and/or the buildings and improvements on the premises legally described as: See Exhibit "A" attached hereto (the "Property") on account of labor and services performed and/or material furnished for the construction of any improvements thereon; except for retention, and open change order requests, claims or disputes identified as follows:

That the undersigned has the right and authority to execute this Conditional Partial Waiver and Release of Lien on behalf of the Lienor. That this is a waiver of all lien rights and other claims which Lienor has against the Property, the Contractor, and the Owner for all labor, material and services performed thereon, including all extras and change orders, that all laborers retained or employed by the Lienor for construction of improvements on the Property, all suppliers and sub-contractors of Lienor who have furnished labor, material and services for the undersigned for the construction of improvements on the Property, and all labor, services and materials used by the undersigned in the construction of said improvements, have been paid in full for work performed or materials supplied, up to and including the 30th day of September, 2018, excluding the items identified hereinabove, if any.

THE UNDERSIGNED ACKNOWLEDGES THAT THE CONTRACTOR AND OWNER AND OTHER PARTIES HAVE A RIGHT TO RELY UPON THIS WAIVER AND RELEASE AND THAT MAKING ANY FALSE STATEMENTS SHALL CONSTITUTE PERJURY AND PUNISHMENT CAN BE MADE IN ACCORDANCE WITH THE LAWS OF THE STATE OF SOUTH CAROLINA.

IN WITNESS THEREOF, I have hereunto set my hand seal this 12th day of September, 2018

Signed, sealed and delivered
in the presence of:

B. Maymon
Signature
Bri-Haney Gaymon
Print Name

Lowcountry Case & Millwork
a South Carolina corporation
David Stasiukaitis
Signature
David Stasiukaitis, CEO
Print Name & Title

STATE OF South Carolina
COUNTY OF Charleston

The foregoing instrument was acknowledged before me this 12th day of September, 2018 by David Stasiukaitis CEO of Lowcountry Case & Millwork SC corporation on, on behalf of the corporation. He/she is personally known to me or has produced _____ (type of identification) as identification.

My Commission Expires: 4-4-2022

David Stasiukaitis
NOTARY PUBLIC, STATE OF SC

PO BOX 347
Ladson, SC 29456
Phone 843.797.0881 Fax 843.797.0883
www.LCCM.com

Customer: Balfour Beatty

	<u>Subtotal</u>	<u>Overhead (15%)</u>	
Materials	\$13,971	\$2,096	\$16,067

Subtotal	\$58,540
AWI Fee	\$293
Bonding	\$1,471
TOTAL	\$60,304

LESS: Invoice 2016-01.008.01	-\$4,405
LESS: Invoice 2016-01.008.02	-\$8,110
LESS: Invoice 2016-01.008.03	-\$31,975
LESS: Invoice 2016-01.008.04	-\$8,910

TOTAL	\$6,904
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DUE AND PAYABLE UPON RECEIPT OF INVOICE.
THANK YOU FOR YOUR BUSINESS!

AW1

R - 7031

Low Country Case and Millwork

PO BOX 347
Ladson, SC 29456
Phone 843.797.0881 Fax 843.797.0883
www.lccm.com

DATE: September 12, 2018
Invoice #: 2016-01.006.04
JOB NAME: HMS CCD 006
Stair 04

Customer: Balfour Beatty

CCD #006 - STAIR 04

			<u>Subtotal</u>	<u>Overhead (15%)</u>	
Materials			\$2,353	\$353	\$2,706
Labor			<u>Subtotal</u>	<u>Overhead (15%)</u>	
	<u>Hours</u>	<u>Rate</u>			
CEO	2.0	\$100	\$200	\$30	\$230
Accounting	1.0	\$40	\$40	\$6	\$46
Estimating	12.5	\$40	\$500	\$75	\$575
PM	27.0	\$75	\$2,025	\$304	\$2,329
Engineer	0.5	\$75	\$38	\$6	\$43
CNC	0.0	\$75	\$0	\$0	\$0
Manufacturing	34.0	\$30	\$1,020	\$153	\$1,173
Finishing	15.0	\$30	\$450	\$68	\$518
Install Supervisor	30.5	\$60	\$1,830	\$275	\$2,105
Installation	282.5	\$40	\$11,300	\$1,695	\$12,995
	405.0		\$17,403	\$2,610	\$22,719
Subtotal					\$22,719
AWI Fee					\$114
Bonding					\$571
TOTAL					\$23,403
LESS: Invoice 2016-01.006.01					-\$1,949
LESS: Invoice 2016-01.006.02					-\$5,116
LESS: Invoice 2016-01.006.03					-\$12,995
TOTAL					\$3,343



DUE AND PAYABLE UPON RECEIPT OF INVOICE.
THANK YOU FOR YOUR BUSINESS!

AWI

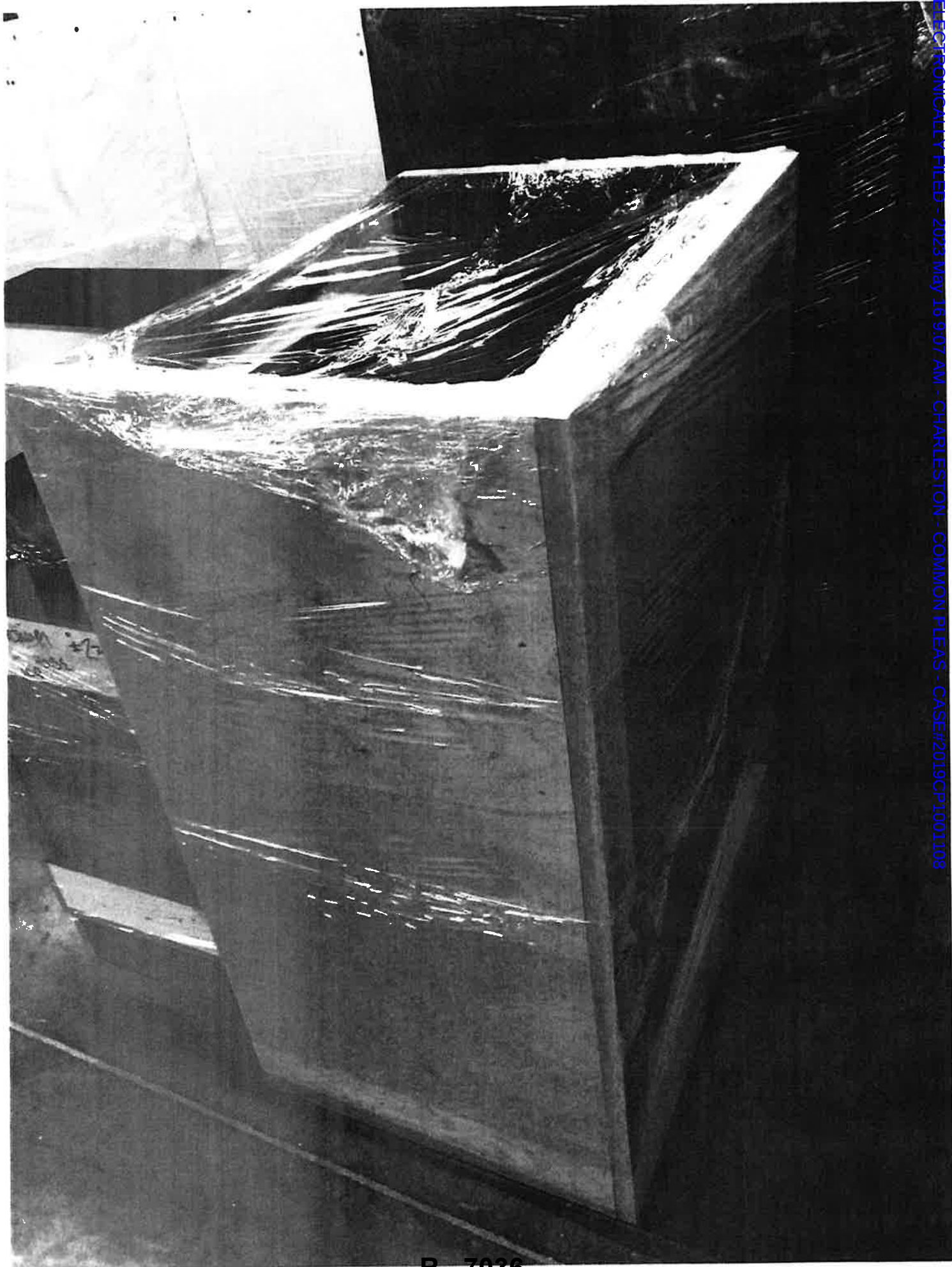




R - 7034



R - 7035



R - 7036

Balfour Beatty
 Construction

Request for Payment

 Subcontractor's Name
 Subcontractor's Address

 Phone Number
 Fax Number

Planning Services

2220 Technical Parkway

North Charleston, SC 29405

843-764-4875

843-764-4876

Pay Request #

P612

Work Performed Through

02/20/18

 Project Name: Howe for 88,000 Square

 Job No.: 110,36000

 Date: 01/19/2018
Description of Work:
Flooring

Original Contract Amount

\$48,770.00

Change Order Total

\$49,072.00

Through C/O #

Total Revised Contract

\$49,072.00

Value of Work Performed to Date

\$407,068.25

Value of Materials Stored On Site

\$0.00

Value of Materials Stored Off Site

Current Month (Stored Materials)

Total

\$407,068.25

Less % Retainage

\$20,353.41

Amount Earned to Date

\$386,714.84

Less Previous Billings/Payments

\$372,557.90

Less Adjustments/Joint Checks

Less Pending Back Charges

Total Amount this Requisition

\$14,156.94

For Balfour Beatty Use Only:

CD #	Vendor #	Job #	Contract No.
Date	Invoice #	Description	
		4529542	
Gross Amount	Retainage Amt	Net Amount	
\$407,068.25	\$20,353.41	\$386,714.84	
Agency Tax	Tax Code	Pay Item & Cost Code	
NO		001 3194 001 A1	
Bill Cycle	PM App	IT Warrs	
	OFF		
need co for \$6,052.00			
Approvers:	PSI Date	CA 09/26/18	PA Date

 Subcontract ☐

 Purchase Order ☐

Other Contract Type

Unit Price

Lump Sum

 Bonded ☐

 Unbonded ☐

 Subguard ☐

 Alternate Plan ☐

Contract Increased 20%?

If yes, bond rider received

EEO Reports Current

Certified Payrolls Current

Insurance Status

Insurance Expiration Date

Release Attached

Tier/Supplier Release

If Required

Reducing Retention

If reducing retainage, reducing

Consent of Surety for retention

reduction if bonded

New materials stored off site

If yes, attach stored materials checklist

Final Payment

If yes, see attached checklist

Owner Billing Number

Owner Payment Rec'd Date:

Payment Terms:

Pay Select #

APPLICATION AND CERTIFICATE FOR PAYMENT

TO (Construction Manager):
Balfour Beatty Construction, LLC
 600 Galleria Parkway, Suite 1800
 Atlanta, GA 30339

PROJECT: Hotel at Marion Square
 404 King Street
 Charleston, SC 29403

FROM (TRADE CONTRACTOR):
Flooring Services, LLC
 2220 Technical Parkway
 North Charleston, SC 29406

VIA (CONSTRUCTION MANAGER):

ARCHITECTS
 PROJECTS NC 13026000

AIA DOCUMENT G702 PAGE 1 OF 2 PAGES

APPLICATION: 1 DISTRIBUTION TO:
 PERIOD FROM 08/21/2018 OWNER
 PERIOD TO 09/20/2018 CONSTRUCTION MANAGER
 ARCHITECT
 TRADE CONTRACTOR

CONTRACTOR'S APPLICATION FOR PAYMENT

CHANGE ORDER SUMMARY		
Change Orders approved in previous months by Owner	ADDITIONS	DEDUCTIONS
	49887.00	
TOTAL	\$49,887.00	
Approved this Month		
No.		
Date Approved	09/10/2018	
TOTAL	49,887.00	\$0.00
Net change by Change Orders		\$49,887.00

The undersigned Contractor certifies that to the best of the contractor's knowledge information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

James Jacobs
 James Jacobs, CEO

Date 9/18/2018

CONSTRUCTION MANAGER'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Construction Manager/Architect certifies to the Owner that to the best of their knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Trade Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED

(Attach explanation if amount certified differs from the amount expected.)

CONSTRUCTION MANAGER:

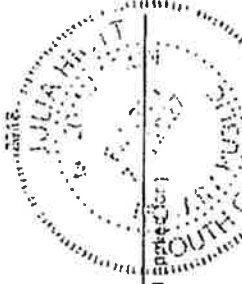
Balfour Beatty Construction, LLC

By:

Date:

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Trade Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Trade Contractor under this Contract.

State of: South Carolina County of: Charleston
 Subscribed and sworn to before me this 18th day of September
 Notary Public
 My commission expires 7/8/2023



CONTINUATION SHEET

ALA DOCUMENT C703

PAGE 2 OF 2 PAGES

APPLICATION FOR PAYMENT, INTERIM RELEASE & INTERIM LIEN WAIVER

APPLICATION NO:

APPLICATION DATE:

PERIOD TO:

Project #1302600; Hotel at Marion Square

containing Subcontractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar

Use Column I on Contracts where variable retainage for line items may apply.

A	B	C	D	E	F	G	H	I
LINE NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED THIS PERIOD FROM PREVIOUS APPLICATION (D + E)	MATERIALS PRESENTLY STORED (F-G-H)	TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G - C)	BALANCE TO FINISH (H - G)	RETAINAGE OF CARLA (I - H)
1	Cardboard Protection Over Floor	\$18,567.00	\$18,567.00			100.00%	\$0.00	\$228.35
2	Synthetic Rubber Lin. Treatment, Vinyltile Bamboo	\$33,822.00	\$33,822.00			100.00%	\$0.00	\$1,461.10
3	Concrete Lounge Dining	\$13,980.00	\$13,980.00			100.00%	\$0.00	\$609.00
4	1st Floor Bar, Pre-Finish, Board Room	\$134,368.00	\$134,368.00			100.00%	\$0.00	\$6,342.40
5	Storage, Reception, Staff Bank Rm, Locker Rm-VCT	\$18,420.00	\$18,420.00			100.00%	\$0.00	\$321.00
6	RRP-01 Panels Rm Flr Oak	\$6,532.00	\$6,532.00			100.00%	\$0.00	\$327.80
7	Ball Rm Cp-02 Install Only	\$11,000.00	\$11,000.00			100.00%	\$0.00	\$350.00
8	Admin Offices Cp-06 Install Only	\$1,805.00	\$1,805.00			100.00%	\$0.00	\$40.25
9	Bratd Suite Cp-05 Install Only	\$340.00	\$340.00			100.00%	\$0.00	\$17.00
10	Restaurant Dining Rm & End Plr Cp-01 Install Only	\$4,560.00	\$4,560.00			100.00%	\$0.00	\$228.00
11	Guest Rm Corridors	\$17,700.00	\$8,850.00	\$8,850.00		100.00%	\$0.00	\$382.00
12	End Guest Rm Cp-04 Install Only	\$25,200.00	\$25,200.00			100.00%	\$0.00	\$1,260.00
13	Unit Guest Room Manager Suite Wood	\$74,170.00	\$64,335.25			86.73%	\$9,834.75	\$1,216.70
14	Composite Clean	\$9,805.00					\$0.00	\$0.00
							\$0.00	\$0.00

R - 7040

APPLICATION FOR PAYMENT, INTERIM RELEASE & INTERIM LIEN WAIVER

containing Subcontractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column F on Contracts where variable retainage for line items may apply

APPLICATION NO:

APPLICATION DATE:

PERIOD TO:

Project #1302600; Hotel at Marion Square

9/18

9/20

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D		E WORK COMPLETED THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D+E+F)	H BALANCE TO FINISH (C - G)	I RETA (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D : E)						
	Original Contract Amount		\$386,770.00						
	Change Orders		\$55,939.00						
	Adjusted Contract Amount		\$425,709.00						
	Amount complete		\$407,068.25						
	Less 5% retainage		\$20,353.41						
	Total less retainage		\$386,714.84						
	Less previously paid		\$372,557.94						
	Amount Due This Request		\$14,156.90						
	Balance to Finish		\$38,994.16						

R - 7042

**Subcontractor's and Other Lower Tier's Conditional Partial Waiver and Release of Lien
(Upon Progress Payment)**

KNOW ALL MEN BY THESE PRESENTS:

That Flooring Services (the "Lienor") for and in consideration of the payment of the sum of \$ 14,156.90 and other good and valuable consideration paid by Balfour Beatty Construction, LLC (the "Contractor") or Library Associates, LLC ("Owner"), receipt of which is hereby acknowledged, hereby releases, waives and quit claims to Contractor, the Owner, and their respective successors and assigns, all liens, lien rights, claims or demands of any kind whatsoever, which Lienor now has or might have against Contractor and/or Owner and/or the buildings and improvements on the premises legally described as: See Exhibit "A" attached hereto (the "Property") on account of labor and services performed and/or material furnished for the construction of any improvements thereon; except for retention, and open change order requests, claims or disputes identified as follows:
None

That the undersigned has the right and authority to execute this Conditional Partial Waiver and Release of Lien on behalf of the Lienor. That this is a waiver of all lien rights and other claims which Lienor has against the Property, the Contractor, and the Owner for all labor, material and services performed thereon, including all extras and change orders, that all laborers retained or employed by the Lienor for construction of improvements on the Property, all suppliers and sub-contractors of Lienor who have furnished labor, material and services for the undersigned for the construction of improvements on the Property, and all labor, services and materials used by the undersigned in the construction of said improvements, have been paid in full for work performed or materials supplied, up to and including the 18th day of September, 2018, excluding the items identified hereinabove, if any.

THE UNDERSIGNED ACKNOWLEDGES THAT THE CONTRACTOR AND OWNER AND OTHER PARTIES HAVE A RIGHT TO RELY UPON THIS WAIVER AND RELEASE AND THAT MAKING ANY FALSE STATEMENTS SHALL CONSTITUTE PERJURY AND PUNISHMENT CAN BE MADE IN ACCORDANCE WITH THE LAWS OF THE STATE OF SOUTH CAROLINA.

IN WITNESS THEREOF, I have hereunto set my hand seal this 18th day of September, 2018

Signed, sealed and delivered
in the presence of:

Inge Crawford
Signature
Inge Crawford
Print Name

Flooring Services, Inc.
a South Carolina corporation
James Jacobs
Signature
James Jacobs, CFO
Print Name & Title

STATE OF South Carolina

COUNTY OF Charleston

The foregoing instrument was acknowledged before me this 18th day of September, 2018 by James Jacobs, Chief Financial Officer of Flooring Services, LLC, a South Carolina corporation on, on behalf of the corporation. He/she is personally known to me or has produced _____ (type of identification) as identification

My Commission Expires:

07/06/2021

NOTARY PUBLIC, STATE OF South Carolina

Julia Hull

R - 7043

Balfour Beatty

TIER RELEASE SCHEDULE & OCIP CONFIRMATION LOG

Job Name: Hotel at Garden Square Job #: 2019000

Date Provided: 1/22/2019

PRIME SUB'S NAME: Flooding Services, Inc.

Assignment for Pay Rec #: 12

For Month Ending: August MONTH ENDING DATE HERE

****Note: For any unencumbered/encumbered tier sub that is involved in an OCIP, BBE, you may be responsible for \$50,000 deductible**

Subcontractor/Suppliers List all subs or suppliers who will perform work for this contract. List Address & Phone Number	Indicate if tier is based in country of Project	Notice to Owner Filed (NTO) [Yes/No]	Date NTO Filed	Bonded Sub? (Yes/No)	Has Tier Sub enrolled in OCIP? select: (Yes/No)	Has tier billed for work to date? select: (Yes/No)	Cumulative dollar amount billed for work/materials to date:	Tier's most recent invoice is dated through:	Tier's most recent release is dated through: (as noted on releases)	Tier's most recent release is PARTIAL or FINAL?	Comments:
Castle Creek Bldg. Inc. P.O. BOX 200056 Dallas Texas 75320-0056	Yes	NO	NA	NO	YES	YES	\$592.25	2/16/2019	6/11/2019	FINAL	Tier August 26, 2019
Tom 1704 15 Redwood Rd Kaiser Creek, S. 26406	Yes	NO	2/26	NO	YES	YES	\$2,755.00	5/11/2019	6/26/2019	FINAL	Final 11/10/2019
J. Lunnos & Co. Inc 100 S. S. 27104 Bismarck, ND 58107	Yes	NO	NA	NO	YES	YES	\$7,616.52	6/21/2019	6/26/2019	FINAL	Final 11/10/2019
BBE - Tier 2 100 S. S. 27104 Bismarck, ND 58107	Yes	NO	NA	NO	YES	YES	\$1,257.05	5/10/2019	5/30/2019	FINAL	Final 11/10/2019
BBE - Tier 3 100 S. S. 27104 Bismarck, ND 58107	Yes	NO	NA	NO	YES	YES	\$1,257.05	5/10/2019	5/30/2019	FINAL	Final 11/10/2019
BBE - Tier 4 100 S. S. 27104 Bismarck, ND 58107	Yes	NO	NA	NO	YES	YES	\$1,257.05	5/10/2019	5/30/2019	FINAL	Final 11/10/2019

Balfour Beatty
Construction

Request for Payment

Pay Request # **PE18REV**
Work Performed Through: **09/30/18**

Subcontractor's Name **SBC Group LLC, dba Merit Professional Coatings**
Subcontractor's Address **1470 Ben Sawyer Blvd Suite 16**
MT Pleasant, SC 29464
Phone Number **-**
Fax Number **-**

Project Name: **Hotel at Marion Square** Job No.: **13026400**
Owner: **Library Associates, LLC**

Date: **09/20/18**

Description of Work: **Painting & Wallcovering**
Original Contract Amount **\$698,480.00**
Change Order Total **\$306,409.12** GET BOND RIDER!!
Through CIO #: **1**
Total Revised Contract **\$1,004,889.12**
Previous Work Performed to Date(SSR) **\$969,518.65**
Value of Materials Stored On Site **\$0.00**
Value of Materials Stored Off Site **\$0.00**
Current Month Gross **\$14,104.28**
New Work Performed to Date **\$983,622.93**
Less **5 % Retainage** **\$49,181.15**
Amount Earned to Date **\$934,441.78**
Less Previous Net Billings **\$921,042.71**
Less Adjustments/Joint Checks **\$0.00**
Less Pending Back Charges **\$0.00**
Total Amount this Requisition **\$13,399.07**

Subcontract ☒ Purchase Order ☐
Other Contract Type ☐
Unit Price ☐ Lump Sum ☒
Bonded ☐ Unbonded ☒
Subguard ☐ Alternate Plan ☐
Contract Increased 20%? Y ☒ N ☐
If yes, bond rider received Y ☐ N ☐
EEO Reports Current Y ☐ N ☐
Certified Payrolls Current Y ☐ N ☐
Insurance Status **Finalized**
Insurance Expiration Date **04/23/19**
Release Attached Y ☐ N ☐
Tier/Supplier Release Y ☐ N ☐
If Required Y ☐ N ☐
Reducing Retention Y ☐ N ☐

For Balfour Beatty Use Only:

CO #	Vendor #	Job #	Contract No.
50540	3715721	13026400	554222
Date	Invoice #	Description	
09/30/18	13026400 - PE18REV	13026400 . PE#18R . 18.09	
Gross Amount	Retainage Amt	Net Amount	
\$14,104.28	\$705.21	\$13,399.07	
Trade Account?	Tax Code	Pay Item & Cost Code	Accrue Tax?
NO		400.50991000 40	NO
Mail Codes: 02- OWNER FUNDING CO's PM APP			

If reducing retainage, reducing From ☐ To ☒
Consent of Surety for retention Y ☐ N ☐
reduction if bonded
New materials stored off site Y ☐ N ☒
If yes, attach stored materials checklist

Final Payment Y ☐ N ☒
If yes, see attached checklist

Owner Billing Number **11**

Owner Payment Rec'd Date:

Payment Terms: **Pay When Paid**

Pay Select #

Approvals: PM / Date

CA 09/20/18
PA / Date

APA / Date

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ELECTRONICALLY FILED - 2023 May 16 9:07 AM - CHARLESTON - COMMON PLEAS CASE#2019CP1001106

APPLICATION AND CERTIFICATION FOR PAYMENT

PAGE ONE OF TWO PAGES

TO OWNER:

Library Associates LLC

PROJECT:

Hotel at Marion Square
404 King Street
Charleston SC 29403

APPLICATION NO

18

Distribution to:

OWNER	
ARCHITECT	
CONTRACTOR	X

FROM CONTRACTOR:

Quantum Coatings
1470 Ben Sawyer Blvd, Suite 16
Mt. Pleasant, SC 29464

VIA CONTRACTOR:

Balfour Beatty Construction

PERIOD TO:

9/19/2018

PROJECT NOS:

13026000

CONTRACT FOR: Painting

CONTRACT DATE 6/29/2015

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
Continuation Sheet, AIA Document G703, is attached.

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

1. ORIGINAL CONTRACT SUM	\$ 698,480.00
2. Net change by Change Orders	\$ 307,212.54
3. CONTRACT SUM TO DATE (Line 1 + 2)	\$ 1,005,692.54
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	\$ 983,622.93

RETAINAGE:

a. % of Completed Work (Column D + E on G703)	\$ 49,181.15
b. % of Stored Material (Column F on G703)	\$ Included in above
Total Retainage (Lines 5a + 5b or Total Earned Less Retainage (Line 4 Less Line 5 Total))	\$ 49,181.15

6. TOTAL EARNED LESS RETAINAGE	\$ 934,441.78
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)	\$ 921,042.71
8. CURRENT PAYMENT DUE	\$ 13,399.07
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	\$ 71,250.76

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total Change Orders Approved	\$307,212.54	
Total Change Orders Pending		
TOTALS	\$307,212.54	\$0.00
NET CHANGES by Change Order	\$307,212.54	

CONTRACTOR: Quantum Coatings LLC

By: [Signature] Date: [Signature]

State of: South Carolina County of: Charleston
Subscribed and sworn to before me this 19 day of September, 2018
Notary Public: [Signature]

My Commission expires: 08/09/2026

ARCHITECT'S CERTIFICATE FOR PAYMENT
In accordance with the Contract Documents, based on on-site observations and the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED\$

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)
ARCHITECT:

By: [Signature] Date: [Signature]

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

THE AMERICAN INSTITUTE OF ARCHITECTS, 1735 NEW YORK AVE., N.W., WASHINGTON, DC 20005-5282

AIA Document G702 - APPLICATION AND CERTIFICATION FOR PAYMENT - 1992 EDITION AIA G1692
Users may obtain validation of this document by requesting a completed AIA Document D401 - Certification of Document's Authenticity from the Licensee.

CONTINUATION SHEET

PAGE TWO OF TWO PAGES

ALA DOCUMENT G703

CONTINUATION SHEET

Contractor's signed certification is attached.

Contractor's signed statement is enclosed.

In tabulations below, amounts are stated to the nearest dollar.

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED THIS PERIOD		F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D+E+F)	H %	I BALANCE TO FINISH (C - I)	J RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION	THIS PERIOD					
	Permis, Fees, Licenses, Insurance Meek-Ups	\$22,752.00 \$6,500.00	\$22,752.00 \$6,500.00			\$22,752.00 \$6,500.00	100.00% 100.00%	\$0.00 \$0.00	\$1,137.60 \$325.00 \$0.00 \$100.00
	BOH Sealed Floors	\$2,000.00	\$2,000.00			\$2,000.00	100.00%	\$0.00	\$0.00
	BOH Exp Ceiling Blockfill	\$1,200.00	\$1,200.00			\$1,200.00	100.00%	\$0.00	\$60.00
	BOH Exp Ceiling 1st Coat	\$950.00	\$950.00			\$950.00	100.00%	\$0.00	\$47.50
	BOH Exp Ceiling 2nd Coat	\$850.00	\$850.00			\$850.00	100.00%	\$0.00	\$42.50
	BOH Metal Stairs	\$9,200.00	\$9,200.00			\$9,200.00	100.00%	\$0.00	\$460.00
	BOH Masonry Walls Blockfill	\$3,800.00	\$3,800.00			\$3,800.00	100.00%	\$0.00	\$190.00
	BOH Masonry Walls 1st Coat	\$3,300.00	\$3,300.00			\$3,300.00	100.00%	\$0.00	\$165.00
	BOH Masonry Walls 2nd Coat	\$3,300.00	\$3,300.00			\$3,300.00	100.00%	\$0.00	\$165.00
	BOH Painting - Prime	\$15,800.00	\$15,800.00			\$15,800.00	100.00%	\$0.00	\$790.00
	BOH Painting - 1st Coat	\$13,200.00	\$13,200.00			\$13,200.00	100.00%	\$0.00	\$660.00
	BOH Painting - 2nd Coat	\$12,200.00	\$12,200.00			\$12,200.00	100.00%	\$0.00	\$610.00
	BOH WC Hang	\$10,000.00	\$10,000.00			\$10,000.00	100.00%	\$0.00	\$500.00
	Ext Bollards	\$720.00	\$720.00			\$720.00	100.00%	\$0.00	\$36.00
	2-1/2" L. Inlets	\$25,600.00	\$25,600.00			\$25,600.00	100.00%	\$0.00	\$1,280.00
	3rd Floor Prime	\$23,575.00	\$23,575.00			\$23,575.00	100.00%	\$0.00	\$1,178.75
	3rd Floor 1st Coat	\$19,575.00	\$19,575.00			\$19,575.00	100.00%	\$0.00	\$978.75
	3rd Floor 2nd Coat	\$4,340.00	\$4,340.00			\$4,340.00	100.00%	\$0.00	\$217.00
	3rd Floor WC Hang	\$25,600.00	\$25,600.00			\$25,600.00	100.00%	\$0.00	\$1,280.00
	4th Floor Prime	\$23,575.00	\$23,575.00			\$23,575.00	100.00%	\$0.00	\$1,178.75
	4th Floor 1st Coat	\$19,575.00	\$19,575.00			\$19,575.00	100.00%	\$0.00	\$978.75
	4th Floor 2nd Coat	\$4,340.00	\$4,340.00			\$4,340.00	100.00%	\$0.00	\$217.00
	4th Floor WC Hang	\$25,600.00	\$25,600.00			\$25,600.00	100.00%	\$0.00	\$1,280.00
	5th Floor Prime	\$23,575.00	\$23,575.00			\$23,575.00	100.00%	\$0.00	\$1,178.75
	5th Floor 1st Coat	\$19,575.00	\$19,575.00			\$19,575.00	100.00%	\$0.00	\$978.75
	5th Floor 2nd Coat	\$4,340.00	\$4,340.00			\$4,340.00	100.00%	\$0.00	\$217.00
	5th Floor WC Hang	\$19,500.00	\$19,500.00			\$19,500.00	100.00%	\$0.00	\$975.00
	6th Floor Prime	\$17,352.00	\$17,352.00			\$17,352.00	100.00%	\$0.00	\$867.60
	6th Floor 1st Coat	\$15,352.00	\$15,352.00			\$15,352.00	100.00%	\$0.00	\$767.60
	6th Floor 2nd Coat	\$3,250.00	\$3,250.00			\$3,250.00	100.00%	\$0.00	\$162.50
	6th Floor WC Hang								

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7th Floor Prime	\$19,500.00	\$19,500.00	100.00%	\$0.00	\$975.00
7th Floor 1st Coat	\$17,352.00	\$17,352.00	100.00%	\$0.00	\$867.60
7th Floor 2nd Coat	\$15,352.00	\$15,352.00	100.00%	\$0.00	\$767.60
7th Floor WC Hang	\$3,256.00	\$3,256.00	100.00%	\$0.00	\$162.80
8th Floor Prime	\$19,500.00	\$19,500.00	100.00%	\$0.00	\$975.00
8th Floor 1st Coat	\$17,352.00	\$17,352.00	100.00%	\$0.00	\$867.60
8th Floor 2nd Coat	\$15,352.00	\$15,352.00	100.00%	\$0.00	\$767.60
8th Floor WC Hang	\$3,200.00	\$3,200.00	100.00%	\$0.00	\$160.00
Corridors 3rd Floor Prime	\$4,000.00	\$4,000.00	100.00%	\$0.00	\$200.00
Corridors 3rd Floor 1st Coat	\$3,000.00	\$3,000.00	100.00%	\$0.00	\$150.00
Corridors 3rd Floor 2nd Coat	\$2,500.00	\$2,500.00	100.00%	\$0.00	\$125.00
Corridors 3rd Floor WC Hang	\$5,600.00	\$5,600.00	100.00%	\$0.00	\$280.00
Corridors 4th Floor Prime	\$4,000.00	\$4,000.00	100.00%	\$0.00	\$200.00
Corridors 4th Floor 1st Coat	\$3,000.00	\$3,000.00	100.00%	\$0.00	\$150.00
Corridors 4th Floor 2nd Coat	\$2,500.00	\$2,500.00	100.00%	\$0.00	\$125.00
Corridors 4th Floor WC Hang	\$5,600.00	\$5,600.00	100.00%	\$0.00	\$280.00
Corridors 5th Floor Prime	\$4,090.00	\$4,090.00	100.00%	\$0.00	\$200.00
Corridors 5th Floor 1st Coat	\$3,000.00	\$3,000.00	100.00%	\$0.00	\$150.00
Corridors 5th Floor 2nd Coat	\$2,500.00	\$2,500.00	100.00%	\$0.00	\$125.00
Corridors 5th Floor WC Hang	\$5,600.00	\$5,600.00	100.00%	\$0.00	\$280.00
Corridors 6th Floor Prime	\$3,000.00	\$3,000.00	100.00%	\$0.00	\$150.00
Corridors 6th Floor 1st Coat	\$2,255.00	\$2,255.00	100.00%	\$0.00	\$112.75
Corridors 6th Floor 2nd Coat	\$2,000.00	\$2,000.00	100.00%	\$0.00	\$100.00
Corridors 6th Floor WC Hang	\$4,000.00	\$4,000.00	100.00%	\$0.00	\$200.00
Corridors 7th Floor Prime	\$3,000.00	\$3,000.00	100.00%	\$0.00	\$150.00
Corridors 7th Floor 1st Coat	\$2,255.00	\$2,255.00	100.00%	\$0.00	\$112.75
Corridors 7th Floor 2nd Coat	\$2,000.00	\$2,000.00	100.00%	\$0.00	\$100.00
Corridors 7th Floor WC Hang	\$4,000.00	\$4,000.00	100.00%	\$0.00	\$200.00
Corridors 8th Floor Prime	\$3,000.00	\$3,000.00	100.00%	\$0.00	\$150.00
Corridors 8th Floor 1st Coat	\$2,255.00	\$2,255.00	100.00%	\$0.00	\$112.75
Corridors 8th Floor 2nd Coat	\$2,000.00	\$2,000.00	100.00%	\$0.00	\$100.00
Corridors 8th Floor WC Hang	\$4,000.00	\$4,000.00	100.00%	\$0.00	\$200.00
Ballroom Prime	\$8,000.00	\$8,000.00	100.00%	\$0.00	\$400.00
Ballroom 1st Coat	\$7,500.00	\$7,500.00	100.00%	\$0.00	\$375.00
Ballroom 2nd Coat	\$6,400.00	\$6,400.00	100.00%	\$0.00	\$320.00
Ballroom WC Hang	\$6,200.00	\$6,200.00	100.00%	\$0.00	\$310.00
Camellia Prime	\$1,500.00	\$1,500.00	100.00%	\$0.00	\$75.00

Camillus 1st Coat	\$1,200.00	\$1,200.00	\$1,200.00	100.00%	\$0.00	\$60.00
Camillus 2nd Coat	\$1,000.00	\$1,000.00	\$1,000.00	100.00%	\$0.00	\$30.00
Camillus WC Hang	\$400.00	\$400.00	\$400.00	100.00%	\$0.00	\$20.00
Lobby Prime	\$6,000.00	\$6,000.00	\$6,000.00	100.00%	\$0.00	\$300.00
Lobby 1st Coat	\$5,500.00	\$5,500.00	\$5,500.00	100.00%	\$0.00	\$275.00
Lobby 2nd Coat	\$4,500.00	\$4,500.00	\$4,500.00	100.00%	\$0.00	\$225.00
Lobby WC Hang	\$4,000.00	\$4,000.00	\$4,000.00	100.00%	\$0.00	\$200.00
Parking Deck Prime	\$14,400.00	\$14,400.00	\$14,400.00	100.00%	\$0.00	\$720.00
Parking Deck Top Coat	\$12,800.00	\$12,800.00	\$12,800.00	100.00%	\$0.00	\$640.00
Spa Prime	\$4,000.00	\$4,000.00	\$4,000.00	100.00%	\$0.00	\$200.00
Spa 1st Coat	\$3,500.00	\$3,500.00	\$3,500.00	100.00%	\$0.00	\$175.00
Spa 2nd Coat	\$3,000.00	\$3,000.00	\$3,000.00	100.00%	\$0.00	\$150.00
Spa WC Hang	\$6,300.00	\$6,300.00	\$6,300.00	100.00%	\$0.00	\$315.00
Patisserie Prime	\$3,500.00	\$3,500.00	\$3,500.00	100.00%	\$0.00	\$175.00
Patisserie 1st Coat	\$2,900.00	\$2,900.00	\$2,900.00	100.00%	\$0.00	\$145.00
Patisserie 2nd Coat	\$2,500.00	\$2,500.00	\$2,500.00	100.00%	\$0.00	\$125.00
Patisserie WC Hang	\$6,300.00	\$6,300.00	\$6,300.00	100.00%	\$0.00	\$315.00
Restaurant Prime	\$2,500.00	\$2,500.00	\$2,500.00	100.00%	\$0.00	\$125.00
Restaurant 1st Coat	\$2,000.00	\$2,000.00	\$2,000.00	100.00%	\$0.00	\$100.00
Restaurant 2nd Coat	\$1,600.00	\$1,600.00	\$1,600.00	100.00%	\$0.00	\$80.00
Restaurant WC Hang	\$1,005.00	\$1,005.00	\$1,005.00	100.00%	\$0.00	\$50.25
Rooftop Prime	\$3,500.00	\$3,500.00	\$3,500.00	100.00%	\$0.00	\$175.00
Rooftop 1st Coat	\$2,850.00	\$2,850.00	\$2,850.00	100.00%	\$0.00	\$142.50
Rooftop 2nd Coat	\$2,500.00	\$2,500.00	\$2,500.00	100.00%	\$0.00	\$125.00
Bond	\$10,485.00	\$10,485.00	\$10,485.00	100.00%	\$0.00	\$0.00
30th Meeting Street Office	\$1,435.00	\$1,435.00	\$1,435.00	100.00%	\$0.00	\$71.75
Fence Painting	\$580.00	\$580.00	\$580.00	100.00%	\$0.00	\$29.00
Pedestals	\$36,000.00	\$36,000.00	\$36,000.00	100.00%	\$0.00	\$1,800.00
SF-14 Mock Ups	\$1,800.00	\$1,800.00	\$1,800.00	100.00%	\$0.00	\$90.00
CO4 2nd Pedestal Mock Up	\$1,800.00	\$1,800.00	\$1,800.00	100.00%	\$0.00	\$90.00
CO5 Mod 5 Paint Revisions	\$1,691.00	\$1,691.00	\$1,691.00	100.00%	\$0.00	\$84.55
CO6 LL Sheet Pile Change	\$7,771.00	\$7,771.00	\$7,771.00	100.00%	\$0.00	\$388.55
CO7 Purgals Mock Up Rods	\$350.00	\$350.00	\$350.00	100.00%	\$0.00	\$17.50
CO8 SF-140 Painting Revisions	\$1,067.28	\$1,067.28	\$1,067.28	100.00%	\$0.00	\$53.36
CO9 Paint Drivall Tub Well in Guest Bathrooms	\$5,972.00	\$5,972.00	\$5,972.00	100.00%	\$0.00	\$298.60
CO10 Mod 6 Painting Revisions	\$4,114.83	\$4,114.83	\$4,114.83	100.00%	\$0.00	\$205.74
CO11 SF-01 to Paint	\$7,738.00	\$7,738.00	\$7,738.00	100.00%	\$0.00	\$386.90
CO12 MOD 1 SF-01 to Paint	\$36,339.53	\$36,339.53	\$36,339.53	100.00%	\$0.00	\$1,816.98
CO13 Mod 7 Revisions	\$6,663.80	\$6,663.80	\$6,663.80	100.00%	\$0.00	\$333.19
CO14 SF Changes 39 Stair (4 Millwork	\$8,945.92	\$8,945.92	\$8,945.92	100.00%	\$0.00	\$447.30
CO15 Mod 8 Changes	\$13,166.67	\$13,166.67	\$13,166.67	40.00%	\$900.00	\$263.33
CO16 Guestroom Window Casings	\$1,385.70	\$1,385.70	\$1,385.70	100.00%	\$0.00	\$69.29
CO17 Guestroom HFCU Painting	\$22,602.00	\$22,602.00	\$22,602.00	100.00%	\$0.00	\$1,130.10
CO17 Repaint Guest Bath Ceiling	\$10,078.00	\$10,078.00	\$10,078.00	100.00%	\$0.00	\$503.90
	\$9,165.00	\$9,165.00	\$9,165.00	100.00%	\$0.00	\$458.25

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CO 17	Paint Applique at Foyer	\$10,126.00	\$10,136.00			\$10,126.00	100.00%	\$0.00	\$506.30
CO 17	ISF 05 Two Tone Candelias	\$3,582.00	\$3,582.00			\$3,582.00	100.00%	\$0.00	\$179.10
CO 17	Recaulk/Repaint Guest Trim 3rd Floor	\$2,400.00	\$2,400.00			\$2,400.00	100.00%	\$0.00	\$120.00
CO 18	Repaint Trim Down Mook Up Trim	\$560.09	\$560.09		\$0.00	\$560.09	100.00%	\$0.00	\$28.00
CO 18	Repaint 3rd Floor Portals	\$1,407.60	\$1,407.60		\$0.00	\$1,407.60	100.00%	\$0.00	\$70.38
CO 18	Recaulk & Repaint 1st Floor	\$7,612.43	\$7,612.43			\$7,612.43	100.00%	\$0.00	\$380.62
CO 18	Recaulk Grand Stair & Ballroom Trim	\$3,670.79	\$3,670.79			\$3,670.79	100.00%	\$0.00	\$183.54
CO 18	Prep & Repaint 4th Floor After Trim Removal	\$828.00	\$828.00			\$828.00	100.00%	\$0.00	\$41.40
CO 18	Recaulk Upper Dining & Profusion	\$9,688.09	\$9,688.09			\$9,688.09	100.00%	\$0.00	\$484.40
CO 18	Paint Ext Pipe Supports Mook Up	\$383.31	\$383.31			\$383.31	100.00%	\$0.00	\$19.17
CO 18	Recaulk & Repaint Upper Dining	\$5,073.88	\$5,073.88			\$5,073.88	100.00%	\$0.00	\$253.69
CO 19	ISF10 Gold Leaf at Mirror Frame	\$17,044.38	\$17,044.38			\$17,044.38	100.00%	\$0.00	\$852.22
CO 20	CCD-402 HC 7-4-16	\$3,535.00	\$3,535.00			\$3,535.00	100.00%	\$0.00	\$176.75
CO 21	Mod 1 Rev	\$8,880.72	\$8,880.72			\$8,880.72	100.00%	\$0.00	\$444.04
CO 21	Mod 2 Rev	\$744.30	\$744.30			\$744.30	100.00%	\$0.00	\$37.22
CO 22	COR 40, 44, 45, 48, 54, 50	\$16,424.85	\$16,424.85			\$16,424.85	100.00%	\$0.00	\$821.24
CO 23	ASI 52	\$3,093.15	\$3,093.15			\$3,093.15	100.00%	\$0.00	\$154.66
	CCD 8 Managers Apartment	\$14,169.61				\$0.00	100.00%	\$14,169.61	\$0.00
	CCD 9 Private Dining	\$3,374.36				\$3,374.36	100.00%	\$0.00	\$168.72
	CCD 2 Stair 4 & 6	\$4,177.78				\$4,177.78	100.00%	\$0.00	\$208.89
	CCD 24 2nd Flr Ballroom	\$1,285.47				\$1,285.47	100.00%	\$0.00	\$64.27
	GRAND TOTALS	\$1,005,692.54	\$969,518.65	\$14,104.28	\$0.00	\$983,622.93	99%	\$22,069.61	\$4,181.15

Users may obtain validation of this document by requesting of the license a completed AIA Document D401 - Certification of Document's Authenticity

Exhibit F1

CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT
(Subcontractor/Vendor)

The undersigned, Quantum Coatings LLC ("Subcontractor"), pursuant to a contract or agreement with Balfour Beatty Construction, LLC, ("BBC"), _____, a subcontractor to BBC or a sub-subcontractor under which Subcontractor agreed to furnish labor, services, materials and/or equipment ("Work") for the construction of certain improvements on the work of improvement commonly known as:

Hotel at Marion Square ("Project")
(Name or Description of Project)
which is located at King Street
(Street Address)
in the City of Charleston, and County of Charleston,
and is owned by Library Associates, LLC ("Owner").

Upon receipt by Subcontractor of a check in the sum of \$ 13,399.07,
(Amount to be paid to Subcontractor)
the sufficiency of which is hereby acknowledged and confessed, and when the check has been properly endorsed and has been paid by the bank on which it is drawn, this document becomes effective pursuant to which the Subcontractor hereby: (1) waives, releases and relinquishes any and all liens and claims of lien, actual or potential, and all bonds and bond rights, for the Work performed, rendered, supplied or furnished by Subcontractor for or with respect to the Project through September 30, 2018 (the "Release Period"); and, (2) waives, releases
(Insert date through which release is given)
and relinquishes any and all claims for payment for Work performed, rendered, supplied or furnished by the Subcontractor for or with respect to the Project through the Release Period including any claims for extended or additional job costs and overhead, lost profits, impact costs and the like, as well as claims and demands arising from any contended delays, disruptions or changes to the Work, except with regard to retainage amounts and compensation for extra work but only to the extent such extra work is specifically identified below:

(Describe here or set out in an Attachment "A" which must be identified here and attached, all extras not included in the Release. Failure to describe any extras as excluded shall be a waiver and release of any right to payment for such work.)

Subcontractor hereby acknowledges payment in full of all amounts previously being due and payable to the undersigned for the Work. Subcontractor further affirms, represents and warrants that, except as noted above: (1) Subcontractor has no lien or claim of lien, either actual or potential, bond right or claim, or contractual right or claim for payment with respect to any

Work performed, rendered, supplied or furnished by Subcontractor prior to the Release Date; and, (2) all persons and entities that have performed or rendered labor or services, or supplied

or furnished materials, equipment, furniture and furnishings, to Subcontractor in connection with the Work have been paid in full, or upon receipt of the payment described above will be paid in full, all undisputed amounts, and Subcontractor has no knowledge of the filing of any lien, claim of lien, bond claim or contractual claim for payment by any such person or entity with respect to the Project.

Subcontractor acknowledges, affirms, represents and warrants that it has fully reviewed the terms and conditions of this waiver, that it is fully informed with respect to the legal effect of this waiver, and that it accepts the terms and conditions of this waiver in return for the payment recited above.

Given under hand and seal this 19 day of September, 2018.

Quantum Coatings LLC
(Company Name)

By: [Signature]

Its: Managing Member

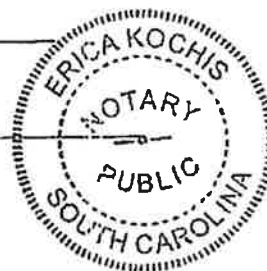
STATE OF South Carolina

COUNTY OF Charleston

The foregoing instrument was signed, sealed and acknowledged before me this 19 day of September, 2018, by the aforesaid representative, having been duly sworn and stating and affirming that he/she is duly authorized to give this Affidavit and that the foregoing statements are true.

Signed: [Signature]
Notary Public

My Commission expires: 08/09/2026



(Notary Seal)

**Subcontractor's and Other Lower Tier's Conditional Partial Waiver and Release of Lien
(Upon Progress Payment)**

KNOW ALL MEN BY THESE PRESENTS:

That Quantum Coatings LLC (the "Lienor") for and in consideration of the payment of the sum of \$_____ and other good and valuable consideration paid by Balfour Beatty Construction, LLC (the "Contractor") or Library Associates, LLC ("Owner"), receipt of which is hereby acknowledged, hereby releases, waives and quit claims to Contractor, the Owner, and their respective successors and assigns, all liens, lien rights, claims or demands of any kind whatsoever, which Lienor now has or might have against Contractor and/or Owner and/or the buildings and improvements on the premises legally described as: See Exhibit "A" attached hereto (the "Property") on account of labor and services performed and/or material furnished for the construction of any improvements thereon; except for retention, and open change order requests, claims or disputes identified as follows:

That the undersigned has the right and authority to execute this Conditional Partial Waiver and Release of Lien on behalf of the Lienor. That this is a waiver of all lien rights and other claims which Lienor has against the Property, the Contractor, and the Owner for all labor, material and services performed thereon, including all extras and change orders, that all laborers retained or employed by the Lienor for construction of improvements on the Property, all suppliers and sub-contractors of Lienor who have furnished labor, material and services for the undersigned for the construction of improvements on the Property, and all labor, services and materials used by the undersigned in the construction of said improvements, have been paid in full for work performed or materials supplied, up to and including the 31 day of June, 2018, excluding the items identified hereinabove, if any.

THE UNDERSIGNED ACKNOWLEDGES THAT THE CONTRACTOR AND OWNER AND OTHER PARTIES HAVE A RIGHT TO RELY UPON THIS WAIVER AND RELEASE AND THAT MAKING ANY FALSE STATEMENTS SHALL CONSTITUTE PERJURY AND PUNISHMENT CAN BE MADE IN ACCORDANCE WITH THE LAWS OF THE STATE OF SOUTH CAROLINA.

IN WITNESS THEREOF, I have hereunto set my hand seal this 19 day of September, 2018.

Signed, sealed and delivered
in the presence of:

Erica Kochis

Signature Erica Kochis

Print Name

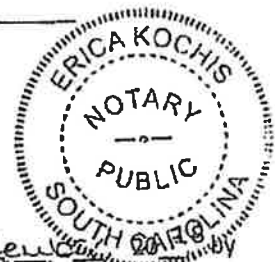
STATE OF SOUTH CAROLINA

COUNTY OF CHARLESTON

Quantum Coatings
a _____ corporation

Signature
Scott McCormack, Managing Member

Print Name & Title



The foregoing instrument was acknowledged before me this 19 day of September, 2018 by Scott McCormack of Quantum Coatings LLC a _____ corporation on, on behalf of the corporation. He/she is personally known to me or has produced _____ (type of identification) as identification.

Erica Kochis

NOTARY PUBLIC, STATE OF SOUTH CAROLINA

My Commission Expires: 08/09/2026

Balfour Beatty
Construction

Exhibit F2

UNCONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT
(Subcontractor/Vendor)

The undersigned, Sherwin Williams ("Subcontractor"), pursuant to a
(Name of Subcontractor)
contract or agreement with Balfour Beatty Construction, LLC, ("BBC"),
Quantum Coatings, a subcontractor to BBC or a sub-subcontractor under which
Subcontractor agreed to furnish labor, services, materials and/or equipment
("Work") for the construction of certain improvements on the work of improvement commonly
known as: The Hotel at Marion Square ("Project")
(Name or Description of Project)
which is located at King & Calhoun Streets
(Street Address)
in the City of Charleston, and County of Charleston,
and is owned by Library Associates LLC ("Owner").
(Name of Owner)

Subcontractor has been paid and received payment of \$ 104,434.44
(Amount paid to Subcontractor)
the sufficiency of which is hereby acknowledged and confessed, and as such Subcontractor
hereby: (1) waives, releases and relinquishes any and all liens and claims of lien, actual or
potential, and bonds or bond rights, for the Work performed, rendered, supplied or furnished by
Subcontractor for or with respect to the Project through 8/31, 2018 (the
(Insert date through which release is given)
"Release Period"); and, (2) waives, releases and relinquishes any and all claims for payment for
Work performed, rendered, supplied or furnished by the Subcontractor for or with respect to the
Project through the Release Period including any claims for extended or additional job costs and
overhead, lost profits, impact costs and the like, as well as claims and demands arising from
any contended delays, disruptions or changes to the Work, except with regard to retainage
amounts and compensation for extra work but only to the extent such extra work is specifically
identified below:

(Describe here or set out in an Attachment "A" which must be identified here and attached, all extras not included in the Release. Failure to describe any extras as excluded shall be a waiver and release of any right to payment for such work.)

Subcontractor hereby acknowledges payment in full of all amounts previously being due
and payable to the undersigned for the Work. Subcontractor further affirms, represents and
warrants that, except as noted above: (1) Subcontractor has no lien or claim of lien, either actual
or potential, bond right or claim, or contractual right or claim for payment, with respect to any
Work performed, rendered, supplied or furnished by Subcontractor prior to the Release Date;
and, (2) all persons and entities that have performed or rendered labor or services, or supplied
or furnished materials, equipment, furniture and furnishings, to Subcontractor in connection with

Page 1 of 2

Updated as of 6/29/2013

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the Work have been paid in full all undisputed amounts, and Subcontractor has no knowledge of the filing of any lien, claim of lien, bond claim or contractual claim for payment by any such person or entity with respect to the Project.

NOTICE: This document waives rights unconditionally and states that you have been paid for giving up those rights. This document is enforceable against you if you sign it, even if you have not been paid. If you have not been paid, use a conditional release form.

Subcontractor acknowledges, affirms, represents and warrants that it has fully reviewed the terms and conditions of this waiver, that it is fully informed with respect to the legal effect of this waiver, and that it accepts the terms and conditions of this waiver in return for the payment recited above.

Given under hand and seal this 18 day of September, 2018.

Sherwin Williams Company
(Company Name)

By: [Signature]

Its: [Signature]

STATE OF Georgia
COUNTY OF Dekalb

The foregoing instrument was signed, sealed and acknowledged before me this 18 day of September by the aforesaid representative, having been duly sworn and stating and affirming that he/she is duly authorized to give this Affidavit and that the foregoing statements are true.

Signed: [Signature]

Notary Public

My Commission expires: 8-22-21



Exhibit F2

UNCONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT
(Subcontractor/Vendor)

The undersigned, Martinez Painting ("Subcontractor"), pursuant to a
(Name of Subcontractor)
contract or agreement with Balfour Beatty Construction, LLC, ("BBC"),
Quantum Coatings, a subcontractor to BBC or a sub-subcontractor under which
Subcontractor agreed to furnish labor, services, materials and/or equipment
("Work") for the construction of certain improvements on the work of improvement commonly
known as: The Hotel at Marion Square ("Project")
(Name or Description of Project)
which is located at King & Calhoun Streets
(Street Address)
in the City of Charleston, and County of Charleston,
and is owned by Library Associates LLC ("Owner").
(Name of Owner)

Subcontractor has been paid and received payment of \$ 356,836.47,
(Amount paid to Subcontractor)
the sufficiency of which is hereby acknowledged and confessed, and as such Subcontractor
hereby: (1) waives, releases and relinquishes any and all liens and claims of lien, actual or
potential, and bonds or bond rights, for the Work performed, rendered, supplied or furnished by
Subcontractor for or with respect to the Project through September 9, 2018 (the
(Insert date through which release is given)
"Release Period"); and, (2) waives, releases and relinquishes any and all claims for payment for
Work performed, rendered, supplied or furnished by the Subcontractor for or with respect to the
Project through the Release Period including any claims for extended or additional job costs and
overhead, lost profits, impact costs and the like, as well as claims and demands arising from
any contended delays, disruptions or changes to the Work, except with regard to retainage
amounts and compensation for extra work but only to the extent such extra work is specifically
identified below:

(Describe here or set out in an Attachment "A" which must be identified here and attached, all extras not included in the Release. Failure to describe any extras as excluded shall be a waiver and release of any right to payment for such work.)

Subcontractor hereby acknowledges payment in full of all amounts previously being due
and payable to the undersigned for the Work. Subcontractor further affirms, represents and
warrants that, except as noted above: (1) Subcontractor has no lien or claim of lien, either actual
or potential, bond right or claim, or contractual right or claim for payment, with respect to any
Work performed, rendered, supplied or furnished by Subcontractor prior to the Release Date;
and, (2) all persons and entities that have performed or rendered labor or services, or supplied
or furnished materials, equipment, furniture and furnishings, to Subcontractor in connection with

the Work have been paid in full all undisputed amounts, and Subcontractor has no knowledge of the filing of any lien, claim of lien, bond claim or contractual claim for payment by any such person or entity with respect to the Project.

NOTICE: This document waives rights unconditionally and states that you have been paid for giving up those rights. This document is enforceable against you if you sign it, even if you have not been paid. If you have not been paid, use a conditional release form.

Subcontractor acknowledges, affirms, represents and warrants that it has fully reviewed the terms and conditions of this waiver, that it is fully informed with respect to the legal effect of this waiver, and that it accepts the terms and conditions of this waiver in return for the payment recited above.

Given under hand and seal this 19 day of Sept, 2018.

Painting Martinez LLC
(Company Name)

By: Erica Martinez

Its: Office Manager

STATE OF South Carolina
COUNTY OF Charleston

The foregoing instrument was signed, sealed and acknowledged before me this 19 day of Sept, '18 by the aforesaid representative, having been duly sworn and stating and affirming that he/she is duly authorized to give this Affidavit and that the foregoing statements are true.

Signed: Erica Kochis
Notary Public

My Commission expires: 08/09/2026



(Notary Seal)

Dallan Bosty

[illegible]

TIER RELEASE SCHEDULE & OCIP CONFIRMATION LOG

A		B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
1. Subcontractor's Name		2. Project Name		3. Project Location		4. Project Description		5. Project Status		6. Project Dates		7. Project Budget		8. Project Cost		9. Project Revenue		10. Project Profit		11. Project Loss		12. Project Net		13. Project Total		14. Project Balance	
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15. Subcontractor's Address		16. Subcontractor's Phone		17. Subcontractor's Email		18. Subcontractor's Website		19. Subcontractor's Fax		20. Subcontractor's FIC		21. Subcontractor's FIC		22. Subcontractor's FIC		23. Subcontractor's FIC		24. Subcontractor's FIC		25. Subcontractor's FIC		26. Subcontractor's FIC		27. Subcontractor's FIC		28. Subcontractor's FIC	
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15. Subcontractor's Address		16. Subcontractor's Phone		17. Subcontractor's Email		18. Subcontractor's Website		19. Subcontractor's Fax		20. Subcontractor's FIC		21. Subcontractor's FIC		22. Subcontractor's FIC		23. Subcontractor's FIC		24. Subcontractor's FIC		25. Subcontractor's FIC		26. Subcontractor's FIC		27. Subcontractor's FIC		28. Subcontractor's FIC	
1. Subcontractor's Name		2. Project Name		3. Project Location		4. Project Description		5. Project Status		6. Project Dates		7. Project Budget		8. Project Cost		9. Project Revenue		10. Project Profit		11. Project Loss		12. Project Net		13. Project Total		14. Project Balance	
15. Subcontractor's Address		16. Subcontractor's Phone		17. Subcontractor's Email		18. Subcontractor's Website		19. Subcontractor's Fax		20. Subcontractor's FIC		21. Subcontractor's FIC		22. Subcontractor's FIC		23. Subcontractor's FIC		24. Subcontractor's FIC		25. Subcontractor's FIC		26. Subcontractor's FIC		27. Subcontractor's FIC		28. Subcontractor's FIC	
1. Subcontractor's Name		2. Project Name		3. Project Location		4. Project Description		5. Project Status		6. Project Dates		7. Project Budget		8. Project Cost		9. Project Revenue		10. Project Profit		11. Project Loss		12. Project Net		13. Project Total		14. Project Balance	
15. Subcontractor's Address		16. Subcontractor's Phone		17. Subcontractor's Email		18. Subcontractor's Website		19. Subcontractor's Fax		20. Subcontractor's FIC		21. Subcontractor's FIC		22. Subcontractor's FIC		23. Subcontractor's FIC		24. Subcontractor's FIC		25. Subcontractor's FIC		26. Subcontractor's FIC		27. Subcontractor's FIC		28. Subcontractor's FIC	
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15. Subcontractor's Address		16. Subcontractor's Phone		17. Subcontractor's Email		18. Subcontractor's Website		19. Subcontractor's Fax		20. Subcontractor's FIC		21. Subcontractor's FIC		22. Subcontractor's FIC		23. Subcontractor's FIC		24. Subcontractor's FIC		25. Subcontractor's FIC		26. Subcontractor's FIC		27. Subcontractor's FIC		28. Subcontractor's FIC	
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15. Subcontractor's Address		16. Subcontractor's Phone		17. Subcontractor's Email		18. Subcontractor's Website		19. Subcontractor's Fax		20. Subcontractor's FIC		21. Subcontractor's FIC		22. Subcontractor's FIC		23. Subcontractor's FIC		24. Subcontractor's FIC		25. Subcontractor's FIC		26. Subcontractor's FIC		27. Subcontractor's FIC		28. Subcontractor's FIC	
1. Subcontractor's Name		2. Project Name		3. Project Location		4. Project Description		5. Project Status		6. Project Dates		7. Project Budget		8. Project Cost		9. Project Revenue		10. Project Profit		11. Project Loss		12. Project Net		13. Project Total		14. Project Balance	
15. Subcontractor's Address		16. Subcontractor's Phone		17. Subcontractor's Email		18. Subcontractor's Website		19. Subcontractor's Fax		20. Subcontractor's FIC		21. Subcontractor's FIC		22. Subcontractor's FIC		23. Subcontractor's FIC		24. Subcontractor's FIC		25. Subcontractor's FIC		26. Subcontractor's FIC		27. Subcontractor's FIC		28. Subcontractor's FIC	
1. Subcontractor's Name																											



Request # 107

Project Name: Marion Hotel

RE: CCD 9

Sales Tax	9.0% _a	\$0.00
Subtotal		\$2,835.00
O&P	15%	\$ 425.25
P&P Bond	3.5%	\$ 114.11

TOTAL LABOR and MATERIAL

\$3,374.36



QUANTUM
COATINGS

EXTRA
WORK ORDER

CUSTOMER'S ORDER NO.	OUR JOB #	DATE
		04-11-18
JOB NAME	LOCATION	PHONE
Bennett Marion	1st Floor.	
ORDERED BY		
Tim Speno		
BILL TO		
ADDRESS		
TIME PLUS MATERIALS YES ☐ NO ☐		
IF YES LABOR TO BE CHARGED AT \$ _____ PER HR.		
DESCRIPTION OF WORK		
C.C.D. 1st Floor		
Paint first and 2nd coat		
3 painters 8 hrs.		
24 hrs.		
7-3130		

I hereby authorize Quantum Coatings to complete the above described work.

DATE

For Sam

DATE

04-11-18



QUANTUM
COATINGS

EXTRA
WORK ORDER

CUSTOMER'S ORDER NO.	OUR JOB #	DATE
		08-24-18
JOB NAME	LOCATION	PHONE
Bennett Marion	Private Dining	
ORDERED BY		
Tim Speno		
BILL TO		
ADDRESS		
TIME PLUS MATERIALS YES ☐ NO ☐		
IF YES LABOR TO BE CHARGED AT \$ _____ PER HR.		
DESCRIPTION OF WORK		
C.C.D. 9 private Dining		
Repaint Ceiling.		
1 guy 8 hrs. 08-27-3:30		
08-29-PAINT CEILING		

I hereby authorize Quantum Coatings to complete the above described work.

ELECTRONICALLY FILED 2023 May 16 9:07 AM - CHARLESTON - COMMON PLEAS - CASE#2023CP1001508

QUANTUM COATINGS | **EXTRA WORK ORDER**

CUSTOMER'S ORDER NO.		OUR JOB #	DATE
		CCD 9	9-19-18
JOB NAME	LOCATION	PHONE	
Boerhoff Addition	1st Floor		
ORDERED BY			
T. Spivey			
BILL TO			
ADDRESS			
TIME PLUS MATERIALS YES ☐ NO ☐ PER HR.			
IF YES LABOR TO BE CHARGED AT \$ _____ PER HR.			
DESCRIPTION OF WORK			
Paint to wall at lobby area.			
2 coats Reception			
Shes			
5401			

I hereby authorize Quantum Coatings to complete the above described work.

SIGNATURE *Robert C. Commons* COMMONS PLEAS CASE#2019CP1901108

Balfour Beatty
Construction

Request for Payment

Pay Request # 22
Work Performed Through: 09/30/18

Subcontractor's Name David Allen Company, INC.
Subcontractor's Address P.O. Box 27705
Raleigh, NC 27611
Phone Number 803-926-1040
Fax Number 803-926-0350

Project Name: Hotel at Marlon Square Job No.: 13026000
Owner: Library Associates, LLC

Date: 09/13/18

Description of Work:	<u>Title</u>
Original Contract Amount	<u>\$3,348,828.00</u>
Change Order Total	<u>\$176,705.78</u>
Through C/O #:	
Total Revised Contract	<u>\$3,525,534.78</u>
Previous Work Performed to Date(SSR)	<u>\$3,496,528.73</u>
Value of Materials Stored On Site	<u>\$0.00</u>
Value of Materials Stored Off Site	<u>\$0.00</u>
Current Month Gross	<u>\$62,299.05</u>
New Work Performed to Date	<u>\$3,558,827.78</u>
Less <u>5 % Retainage</u>	<u>\$177,940.98</u>
Amount Earned to Date	<u>\$3,380,886.80</u>
Less Previous Net Billings	<u>\$3,321,702.76</u>
Less Adjustments/Joint Checks	<u>\$0.00</u>
Less Pending Back Charges	<u>\$0.00</u>
Total Amount this Requisition	<u>\$59,184.04</u>

For Balfour Beatty Use Only:

CO #	Vendor #	Job #	Contract No.
42040	111420	13026000	546466
Date	Invoice #	Description	
09/30/18	13026000 - 22	13026000 . PE# 22 . 18.09	
Gross Amount		Retainage Amt	Net Amount
\$62,299.05		\$3,114.95	\$59,184.04
Trade Account?	Tax Code	Pay Item & Cost Code	Accrue Tax?
NO			NO
Hall Codes: PM Approval O/F		Lower Tier Waivers Change orders	

Subcontract ☒ Purchase Order ☐

Other Contract Type _____

Unit Price ☐ Lump Sum ☒
Bonded ☐ Unbonded ☒

Subguard ☐ Alternate Plan ☐

Contract Increased 20%? Y ☐ N ☒
If yes, bond rider received Y ☐ N ☐
EEO Reports Current Y ☐ N ☐
Certified Payrolls Current Y ☐ N ☐

Insurance Status Finalized
Insurance Expiration Date 01/01/19

Release Attached Y ☐ N ☐
Tier/Supplier Release Y ☐ N ☐
If Required Y ☐ N ☐
Reducing Retention Y ☐ N ☐

If reducing retainage, reducing From ☐ To ☒
Consent of Surety for retention reduction if bonded Y ☐ N ☐
New materials stored off site Y ☐ N ☒
If yes, attach stored materials checklist

Final Payment Y ☐ N ☒
If yes, see attached checklist

Owner Billing Number 14

Owner Payment Rec'd Date: _____

Payment Terms: Pay When Paid

Pay Select # _____
Batch # _____

Approvals: _____ CA 09/18/18 _____
PM / Date PA / Date APA / Date

Balfour Beatty
Construction

Request for Payment

Pay Request # 22
Work Performed Through 09/30/18

Subcontractor's Name David Allen Company, INC.
Subcontractor's Address P O Box 27705
Raleigh, NC 27611
Phone Number 803-928-1040
Fax Number 803-928-0350

Project Name: Hotel at Marlon Square Job No.: 13026000 Date: 09/13/18
Owner: Library Associates, LLC

Description of Work:	<u>Title</u>
Original Contract Amount	<u>\$3,348,828.00</u>
Change Order Total	<u>\$176,706.78</u>
Through C/O # <u>19-Jan</u>	
Total Revised Contract	<u>\$3,525,534.78</u>
Previous Work Performed to Date(SSR)	<u>\$3,558,827.78</u>
Value of Materials Stored On Site	<u>\$0.00</u>
Value of Materials Stored Off Site	<u>\$0.00</u>
Current Month Gross	<u>\$82,298.05</u>
New Work Performed to Date	<u>\$3,558,827.78</u>
Less <u>5.0</u> % Retainage	<u>\$177,940.98</u>
Amount Earned to Date	<u>\$3,380,886.80</u>
Less Previous Net Billings	<u>\$3,321,702.76</u>
Less Adjustments/Joint Checks	<u>\$0.00</u>
Less Pending Back Charges	<u>\$0.00</u>
Total Amount this Requisition	<u>\$59,184.04</u>

Subcontract ☒ Purchase Order ☐

Other Contract Type _____

Unit Price ☐ Lump Sum ☒
Bonded ☐ Unbonded ☒

Subguard ☐ Alternate Plan ☐

Contract Increased 20%? Y ☐ N ☒
If yes, bond rider received Y ☐ N ☐
EEO Reports Current Y ☐ N ☐
Certified Payrolls Current Y ☐ N ☐

Insurance Status Financed
Insurance Expiration Date 01/01/17

Release Attached Y ☐ N ☐
Tier/Supplier Release Y ☐ N ☐
If Required Y ☐ N ☐
Reducing Retention Y ☐ N ☐

If reducing retainage, reducing From ☐ To ☒
Consent of Surety for retention Y ☐ N ☐
reduction if bonded
New materials stored off site Y ☐ N ☒
If yes, attach stored materials checklist

Final Payment Y ☐ N ☒
If yes, see attached checklist

For Balfour Beatty Use Only:

CO #	Vendor #	Job #	Contract No.
42040	111420	13026000	24
Date	Invoice #	Description	
09/30/18	13026000 - 22	13026000 . PE# 22 . 18.09	
Gross Amount		Retainage Amt	Net Amount
\$62,299.05		\$3,114.95	\$59,184.04
Trade Account?	Tax Code	Pay Item & Cost Code	
NO		NO	

Half Cycles:

Approvals: _____
PM / Date _____ PA / Date _____ AFA / Date _____

Owner Billing Number 14
Owner Payment Rec'd Date: _____
Payment Terms: Pay When Paid
Pay Select # _____

ELECTRONICALLY FILED - 2023 May 16 9:07 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

**Subcontractor's and Other Lower Tier's Conditional Partial Waiver and Release of Lien
(Upon Progress Payment)**

KNOW ALL MEN BY THESE PRESENTS:

That David Allen Company, Inc. (the "Lienor") for and in consideration of the payment of the sum of \$ 59,184.04 and other good and valuable consideration paid by Balfour Beatty Construction, LLC (the "Contractor") or Library Associates, LLC ("Owner"), hereby releases, waives and quit claims to Contractor, the Owner, and their respective successors and assigns, all liens, lien rights, claims or demands of any kind whatsoever, which Lienor now has or might have against Contractor and/or Owner and/or the buildings and improvements on the premises legally described as: See Exhibit "A" attached hereto (the "Property") on account of labor and services performed and/or material furnished for the construction of any improvements thereon; except for retention, and open change order requests, claims or disputes identified as follows:

This excludes the attached list of extra work and any extra work being performed in the field through the end of the month.

That the undersigned has the right and authority to execute this Conditional Partial Waiver and Release of Lien on behalf of the Lienor. That this is a waiver of all lien rights and other claims which Lienor has against the Property, the Contractor, and the Owner for all labor, material and services performed thereon, including all extras and change orders, that all laborers retained or employed by the Lienor for construction of improvements on the Property, all suppliers and sub-contractors of Lienor who have furnished labor, material and services for the undersigned for the construction of improvements on the Property, and all labor, services and materials used by the undersigned in the construction of said improvements, have been paid in full for work performed or materials supplied, up to and including the 31st day of July, 2018, excluding the items identified hereinabove, if any.

THE UNDERSIGNED ACKNOWLEDGES THAT THE CONTRACTOR AND OWNER AND OTHER PARTIES HAVE A RIGHT TO RELY UPON THIS WAIVER AND RELEASE AND THAT MAKING ANY FALSE STATEMENTS SHALL CONSTITUTE PERJURY AND PUNISHMENT CAN BE MADE IN ACCORDANCE WITH THE LAWS OF THE STATE OF SOUTH CAROLINA.

IN WITNESS THEREOF, I have hereunto set my hand seal this 13th day of September, 2018.

Signed, sealed and delivered
in the presence of:

Joseph B. Martin
Signature
Joseph B. Martin
Print Name

David Allen Company, Inc.
a North Carolina corporation
Joseph B. Martin
Signature
Joseph B. Martin, VP
Print Name & Title

STATE OF North Carolina

COUNTY OF Wake

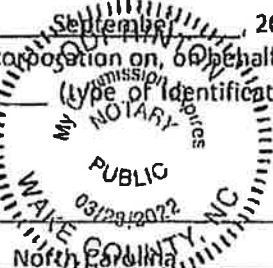
The foregoing Instrument was acknowledged before me this 13th day of September, 2018, by Joseph B. Martin, VP of David Allen Company, Inc., a North Carolina corporation, on behalf of the corporation. He/she is personally known to me or has produced _____ (Type of Identification) as identification.

My Commission Expires: 03/28/2022

R - 7065

NOTARY PUBLIC, STATE OF

North Carolina



Balfour Beatty
Construction

Exhibit F1

CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT

(Subcontractor/Vendor)

The undersigned,

David Allen Company, Inc.

(Name of Subcontractor/Vendor)

("Subcontractor"), pursuant to a contract or agreement with:

Balfour Beatty Construction, LLC

("BBC"), a subcontractor to BBC or a

sub-subcontractor under which Subcontractor agreed to furnish labor, services, materials and/or equipment ("Work") for the construction of certain improvements on the work of Improvement commonly known as:

Hotel at Marion Square

("Project")

(Name or Description of Project)

which is located at

404 King Street, Charleston, SC 29403

Street Address

In the City of

Charleston

, and County of

Charleston

, and is owned by

Library Associates, LLC.

("Owner")

(Name of Owner)

Upon receipt by Subcontractor of a check in the sum of \$ 59,184.04 the sufficiency of which is hereby acknowledged and confessed,

(Amount to be paid to Subcontractor/Vendor)

and when the check has been properly endorsed and has been paid by the bank on which it is drawn, this document becomes effective pursuant to which the Subcontractor hereby: (1) waives, releases and relinquishes any and all liens and claims of lien, actual or potential, and all bonds and bond rights, for the Work performed, rendered, supplied or furnished by Subcontractor for or with respect to the Proj. 9/30/2018

(insert date through which release is given)

(the "Release Period"); and, (2) waives, releases and relinquishes any and all claims for payment for Work performed, rendered, supplied or furnished by the Subcontractor for or with respect to the Project through the Release Period including any claims for extended or additional job costs and overhead, lost profits, impact costs and the like, as well as claims and demands arising from any contended delays, disruptions or changes to the Work, except with regard to retainage amounts and compensation for extra work but only to the extent such extra work is specifically identified below:

This excludes the attached list of extra work and any extra work being performed in the field through the end of the month

(Describe here or set out in an Attachment "A" which must be identified here and attached, all extras not included in the

Release. Failure to describe any extras as excluded shall be a waiver and release of any right to payment for such work.)

Subcontractor hereby acknowledges payment in full of all amounts previously being due and payable to the undersigned for the Work. Subcontractor further affirms, represents and warrants that, except as noted above: (1) Subcontractor has no lien or claim of lien, either actual or potential, bond right or claim, or contractual right or claim for payment with respect to any Work performed, rendered, supplied or furnished by Subcontractor prior to the Release Date; and, (2) all persons and entities that have performed or rendered labor or services, or supplied or furnished materials, equipment, furniture and furnishings, to Subcontractor in connection with the Work have been paid in full, or upon receipt of the payment described above will be paid in full, all undisputed amounts, and Subcontractor has no knowledge of the filing of any lien, claim of lien, bond claim or contractual claim for payment by any such person or entity with respect to the Project.

Subcontractor acknowledges, affirms, represents and warrants that it has fully reviewed the terms and conditions of this waiver, that it is fully informed with respect to the legal effect of this waiver, and that it accepts the terms and conditions of waiver in return for the payment recited above

Given under hand and seal this 13th day of September 20 18David Allen Company, Inc.

(Name of Subcontractor/Vendor)

signature

By:

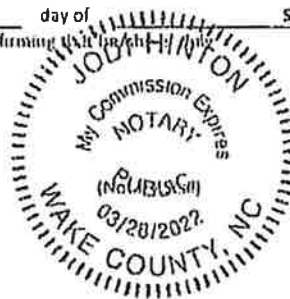
Joseph B. Martin, VP

(Print or Type the Signers Name and Title)

STATE OF North CarolinaCOUNTY OF WakeThe foregoing instrument was signed, sealed and acknowledged before me this 13th day of September 20 18, by the aforesaid representative, having been duly sworn and stating and affirming that he/she/it is fully authorized to give this Affidavit and that the foregoing statements are true

Signed:

Notary Public

My Commission expires: 3/28/2022

Application No: 22
 Date: 9/15/2018
 Period To: 9/30/2018
 Architect's Project No:
 Contract Date:

Hotel at Marion Square
 404 King Street
 Charleston, SC 29403

Project:

Contractor Job Number: SC510401/17

Via (Architect):

Contract For:

Phone: 919 821-7100

Contractor's Application For Payment

Change Order Summary	Additions	Deductions	Original contract sum
Change orders approved in previous months by owner	210,164.00	-86,465.00	3,348,828.00
Change orders approved this month			176,706.78
			3,525,534.78
			3,558,827.78
			177,940.98
			0.00
			177,940.98
			3,380,886.80
			3,321,702.76
			0.00
			0.00
			0.00
			59,184.04
			144,910.98

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information, and belief the work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

Contractor: [Signature] Date: 9/13/2022

State of: North Carolina County of: Wake
 Subscribed and sworn to before me this 13th day of September, 2022

Notary public: [Signature]

My commission expires 09/28/22

Architect's Certificate for Payment

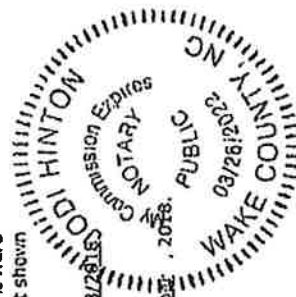
In accordance with the Contract Documents, based on on-site observations and the data comprising the above application the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the Amount Certified.

Amount Certified: \$ _____

Architect:

By: _____ Date: _____

This Certification is not negotiable. The Amount Certified is payable only to the Contractor named herein. Issuance, payment, and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.



Application and Certificate For Payment -- page 2

To Owner: BAUFOR BEATTY CONSTRUCTION

Application No: 22 Date: 9/15/2018

From (Contractor): David Allen Company, Inc.
Project: Hotel at Marion Square

Contractor's Job Number: SC510401/17
Architect's Project No:

Period To: 9/30/2018

Work Completed

Item Number	Description	Scheduled Value	Previous Application	This Period	Materials Presently Stored	Completed and Stored to Date	%	Balance to Finish	Retention	Memo
01001	Submittals	16,744.00	16,744.00	0.00	0.00	16,744.00	100.00	0.00	837.20	
01002	Mobilization	16,744.00	16,744.00	0.00	0.00	16,744.00	100.00	0.00	837.20	
01003	Guest Room Mockups	20,650.00	20,650.00	0.00	0.00	20,650.00	100.00	0.00	1,032.50	
01004	Thin Brick at Rooftop Bar	28,800.00	28,800.00	0.00	0.00	28,800.00	100.00	0.00	1,440.00	
01005	Kitchen Floors	64,567.00	64,567.00	0.00	0.00	64,567.00	100.00	0.00	3,228.35	
01006	Patisserie Tops	15,985.00	15,985.00	0.00	0.00	15,985.00	100.00	0.00	799.25	
01007	1st Floor Pub Rest Tops	6,860.00	6,860.00	0.00	0.00	6,860.00	100.00	0.00	343.00	
01008	Lobby Bar Top	12,256.00	12,256.00	0.00	0.00	12,256.00	100.00	0.00	612.80	
01009	Camellia Bar Feb/Install	3,856.00	3,856.00	0.00	0.00	3,856.00	100.00	0.00	192.80	
0101	Tile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
01010	Kitchen Tops	2,970.00	2,970.00	0.00	0.00	2,970.00	100.00	0.00	148.50	
01011	2nd Floor Public Rest Tops	8,075.00	8,075.00	0.00	0.00	8,075.00	100.00	0.00	403.74	
01012	Spa Treatment Tops	5,824.00	5,824.00	0.00	0.00	5,824.00	100.00	0.00	291.20	
01013	Mani Pedl Tops	2,980.00	2,980.00	0.00	0.00	2,980.00	100.00	0.00	149.00	
01014	Manager Apartment Tops	4,051.00	4,051.00	0.00	0.00	4,051.00	100.00	0.00	202.55	
01015	6th Floor Concierge Tops	9,254.00	9,254.00	0.00	0.00	9,254.00	100.00	0.00	462.70	
01016	Rooftop Restroom Tops	4,023.00	4,023.00	0.00	0.00	4,023.00	100.00	0.00	201.15	
01017	Patisserie Floor - Materials	23,569.00	23,569.00	0.00	0.00	23,569.00	100.00	0.00	1,178.00	
01018	Patisserie Floor - Labor	15,197.00	14,437.15	759.85	0.00	15,197.00	100.00	0.00	759.84	
01019	Spa Retail - Materials	14,563.00	14,563.00	0.00	0.00	14,563.00	100.00	0.00	728.15	
01020	Spa Retail - Labor	9,390.00	8,920.50	469.50	0.00	9,390.00	100.00	0.00	469.50	
01021	1st Fl Publ Rest/Vest Tile - M	20,926.00	20,926.00	0.00	0.00	20,926.00	100.00	0.00	1,046.30	
01022	1st Fl Publ Rest/Vest Tile - L	13,493.00	12,818.35	674.65	0.00	13,493.00	100.00	0.00	574.64	
01023	1st Floor Elev Lobby - Matl	5,601.00	5,601.00	0.00	0.00	5,601.00	100.00	0.00	280.05	
01024	1st Floor Elev Lobby - Labor	3,611.00	3,430.45	180.55	0.00	3,611.00	100.00	0.00	180.55	

Application and Certificate For Payment -- page 3

To Owner: BALFOUR BEATTY CONSTRUCTION

Application No:

22

Date:

9/15/2018

From (Contractor): David Allen Company, Inc.
Project: Hotel at Marion Square

Contractor's Job Number:
Architect's Project No:

SC510401/17

Period To:

9/30/2018

Work Completed

Item Number	Description	Scheduled Value	Previous Application	This Period	Materials Presently Stored	Completed and Stored to Date	%	Balance to Finish	Retention	Memo
01025	Elevator Cabs - Materials	5,601.00	5,320.95	280.05	0.00	5,601.00	100.00	0.00	280.05	
01026	Elevator Cabs - Labor	3,611.00	0.00	3,611.00	0.00	3,611.00	100.00	0.00	180.55	
01027	Camella Lounge Floor - Matl	73,934.00	73,934.00	0.00	0.00	73,934.00	100.00	0.00	3,696.70	
01028	Camella Lounge Floor - Labor	47,672.00	45,288.40	2,383.60	0.00	47,672.00	100.00	0.00	2,383.60	
01029	Lobby/Concierge Floor - M	84,599.00	84,599.00	0.00	0.00	84,599.00	100.00	0.00	4,229.95	
01030	Lobby/Concierge Floor - L	54,548.00	51,820.60	2,727.40	0.00	54,548.00	100.00	0.00	2,727.40	
01031	1st Floor Rotunda - Matl	22,852.00	22,852.00	0.00	0.00	22,852.00	100.00	0.00	1,142.60	
01032	1st Floor Rotunda - Labor	14,735.00	13,998.25	736.75	0.00	14,735.00	100.00	0.00	736.75	
01033	Foyer - Materials	15,459.00	15,459.00	0.00	0.00	15,459.00	100.00	0.00	772.95	
01034	Foyer - Labor	9,968.00	9,469.60	498.40	0.00	9,968.00	100.00	0.00	498.40	
01035	1st Floor Staff Restrooms - M	5,377.00	5,377.00	0.00	0.00	5,377.00	100.00	0.00	268.85	
01036	1st Floor Staff Restrooms - L	3,467.00	3,293.65	173.35	0.00	3,467.00	100.00	0.00	173.34	
01037	2nd Floor Public Rest Tile - M	16,355.00	16,355.00	0.00	0.00	16,355.00	100.00	0.00	817.75	
01038	2nd Floor Public Rest Tile - L	10,546.00	10,018.70	527.30	0.00	10,546.00	100.00	0.00	527.30	
01039	2nd Floor Spa Toilets - Matl	1,344.00	1,344.00	0.00	0.00	1,344.00	100.00	0.00	67.31	
01040	2nd Floor Spa Toilets- Labor	867.00	823.65	43.35	0.00	867.00	100.00	0.00	43.34	
01041	2nd Floor Spa Showers - Matl	1,792.00	1,792.00	0.00	0.00	1,792.00	100.00	0.00	89.60	
01042	2nd Floor Spa Showers - Labor	1,156.00	1,098.20	57.80	0.00	1,156.00	100.00	0.00	57.80	
01043	Manl Pedi Tile - Material	8,402.00	8,402.00	0.00	0.00	8,402.00	100.00	0.00	420.10	
01044	Manl Pedi Tile - Labor	5,417.00	5,146.15	270.85	0.00	5,417.00	100.00	0.00	270.85	
01045	2nd Floor Fitness Restrm - M	1,232.00	1,232.00	0.00	0.00	1,232.00	100.00	0.00	61.60	
01046	2nd Floor Fitness Restrm - L	795.00	755.25	39.75	0.00	795.00	100.00	0.00	39.74	
01047	2nd Fir Elev Lobbies/Pantry -M	10,440.00	10,440.00	0.00	0.00	10,440.00	100.00	0.00	522.00	
01048	2nd Fir Elev Lobbies/Pantry -L	6,732.00	6,395.40	336.60	0.00	6,732.00	100.00	0.00	336.60	
01049	Prefunction Vestibule - Matls	2,240.00	2,240.00	0.00	0.00	2,240.00	100.00	0.00	112.00	

Application and Certificate For Payment -- page 4

To Owner: BALFOUR BEATTY CONSTRUCTION

Application No: 22

Date: 9/15/2018

From (Contractor): David Allen Company, Inc.
Project: Hotel at Marion Square

Contractor's Job Number: SC510401/17
Architect's Project No:

Period To: 9/30/2018

Work Completed

Item Number	Description	Scheduled Value	Previous Application	This Period	Materials Presently Stored	Completed and Stored to Date	%	Balance to Finish	Retention	Memo
01050	Prefunction Vestibule - Labor	1,445.00	1,372.75	72.25	0.00	1,445.00	100.00	0.00	72.25	
01051	2nd Floor Rotunda - Materials	23,189.00	23,189.00	0.00	0.00	23,189.00	100.00	0.00	1,159.45	
01052	2nd Floor Rotunda - Labor	14,952.00	14,204.40	747.60	0.00	14,952.00	100.00	0.00	747.60	
01053	Stair 1 - Materials	13,443.00	13,443.00	0.00	0.00	13,443.00	100.00	0.00	672.15	
01054	Stair 1 - Labor	8,668.00	8,234.60	433.40	0.00	8,668.00	100.00	0.00	433.40	
01055	Stair 2 - Materials	13,443.00	13,443.00	0.00	0.00	13,443.00	100.00	0.00	672.15	
01056	Stair 2 - Labor	8,668.00	8,234.60	433.40	0.00	8,668.00	100.00	0.00	433.40	
01057	3rd Flr Terrace Merkrete - M	8,497.00	8,497.00	0.00	0.00	8,497.00	100.00	0.00	424.85	
01058	3rd Flr Terrace Merkrete - L	19,826.00	19,826.00	0.00	0.00	19,826.00	100.00	0.00	991.30	
01059	3rd Flr Terrace Tile - Mats	76,175.00	76,175.00	0.00	0.00	76,175.00	100.00	0.00	3,808.75	
01060	3rd Flr Terrace Tile - Labor	49,116.00	46,660.20	2,455.80	0.00	49,116.00	100.00	0.00	2,455.80	
01061	3rd Flr Elevator Lobby - Mats	3,831.00	3,831.00	0.00	0.00	3,831.00	100.00	0.00	191.55	
01062	3rd Flr Elevator Lobby - Labor	2,470.00	2,346.50	123.50	0.00	2,470.00	100.00	0.00	123.49	
01063	3rd Flr Guest Room Floors- M	138,571.00	138,571.00	0.00	0.00	138,571.00	100.00	0.00	6,928.55	
01064	3rd Flr Guest Room Floors- L	89,348.00	84,880.60	4,467.40	0.00	89,348.00	100.00	0.00	4,467.40	
01065	3rd Flr Guest Room Walls - M	81,686.00	81,686.00	0.00	0.00	81,686.00	100.00	0.00	4,084.30	
01066	3rd Flr Guest Room Walls - L	52,670.00	50,036.50	2,633.50	0.00	52,670.00	100.00	0.00	2,633.50	
01067	4th Flr Elevator Lobby - Mats	3,831.00	3,831.00	0.00	0.00	3,831.00	100.00	0.00	191.55	
01068	4th Flr Elevator Lobby - Labor	2,470.00	2,346.50	123.50	0.00	2,470.00	100.00	0.00	123.50	
01069	4th Flr Guest Room Floors - M	139,041.00	139,041.00	0.00	0.00	139,041.00	100.00	0.00	6,952.05	
01070	4th Flr Guest Room Floors - L	89,652.00	85,169.40	4,482.60	0.00	89,652.00	100.00	0.00	4,482.60	
01071	4th Flr Guest Room Walls - M	78,124.00	78,124.00	0.00	0.00	78,124.00	100.00	0.00	3,906.20	
01072	4th Flr Guest Room Walls - L	50,373.00	47,854.35	2,518.65	0.00	50,373.00	100.00	0.00	2,518.65	
01073	5th Flr Elevator Lobby - M	3,831.00	3,831.00	0.00	0.00	3,831.00	100.00	0.00	191.55	
01074	5th Flr Elevator Lobby - L	2,470.00	2,346.50	123.50	0.00	2,470.00	100.00	0.00	123.50	

Application and Certificate For Payment -- page 5

To Owner: BALFOUR BEATTY CONSTRUCTION

Application No:

22

Date:

9/15/2018

From (Contractor): David Allen Company, Inc.
Project: Hotel at Marion Square

Contractor's Job Number: SC510401/17
Architect's Project No:

Period To: 9/30/2018

Work Completed

Item Number	Description	Scheduled Value	Previous Application	This Period	Materials Presently Stored	Completed and Stored to Date	%	Balance to Finish	Retention	Memo
01075	5th Flr Guest Room Floors - M	132,051.00	132,051.00	0.00	0.00	132,051.00	100.00	0.00	6,602.55	
01076	5th Flr Guest Room Floors - L	85,144.00	80,886.80	4,257.20	0.00	85,144.00	100.00	0.00	4,257.20	
01077	5th Flr Guest Room Walls - M	74,315.00	74,315.00	0.00	0.00	74,315.00	100.00	0.00	3,715.75	
01078	5th Flr Guest Room Walls - L	47,917.00	45,521.15	2,395.85	0.00	47,917.00	100.00	0.00	2,395.85	
01079	6th Flr Terrace Merkrete - M	12,745.00	12,745.00	0.00	0.00	12,745.00	100.00	0.00	637.25	
01080	6th Flr Terrace Merkrete - L	29,740.00	29,740.00	0.00	0.00	29,740.00	100.00	0.00	1,487.00	
01081	6th Flr Terrace Tile - Matis	121,499.00	121,499.00	0.00	0.00	121,499.00	100.00	0.00	6,074.95	
01082	6th Flr Terrace Tile - Labor	78,340.00	74,423.00	3,917.00	0.00	78,340.00	100.00	0.00	3,917.00	
01083	6th Flr Elevator Lobby - M	5,310.00	5,310.00	0.00	0.00	5,310.00	100.00	0.00	265.50	
01084	6th Flr Elevator Lobby - L	3,424.00	3,252.80	171.20	0.00	3,424.00	100.00	0.00	171.20	
01085	6th Flr Guest Room Floors - M	74,360.00	74,360.00	0.00	0.00	74,360.00	100.00	0.00	3,718.00	
01086	6th Flr Guest Room Floors - L	47,946.00	45,548.70	2,397.30	0.00	47,946.00	100.00	0.00	2,397.30	
01087	6th Flr Guest Room Walls - M	42,927.00	42,927.00	0.00	0.00	42,927.00	100.00	0.00	2,146.35	
01088	6th Flr Guest Room Walls - L	27,678.00	26,294.10	1,383.90	0.00	27,678.00	100.00	0.00	1,383.90	
01089	7th Flr Elevator Lobby - Matis	3,831.00	3,831.00	0.00	0.00	3,831.00	100.00	0.00	191.55	
01090	7th Flr Elevator Lobby - Labor	2,470.00	2,346.50	123.50	0.00	2,470.00	100.00	0.00	123.50	
01091	7th Flr Guest Room Floors - M	92,844.00	92,844.00	0.00	0.00	92,844.00	100.00	0.00	4,642.20	
01092	7th Flr Guest Room Floors - L	59,864.00	56,870.80	2,993.20	0.00	59,864.00	100.00	0.00	2,993.20	
01093	7th Flr Guest Room Walls - M	57,154.00	57,154.00	0.00	0.00	57,154.00	100.00	0.00	2,857.70	
01094	7th Flr Guest Room Walls - L	36,852.00	35,009.40	1,842.60	0.00	36,852.00	100.00	0.00	1,842.60	
01095	8th Flr Elevator Lobby - Matis	3,831.00	3,831.00	0.00	0.00	3,831.00	100.00	0.00	191.55	
01096	8th Flr Elevator Lobby - Labor	2,470.00	2,346.50	123.50	0.00	2,470.00	100.00	0.00	123.50	
01097	8th Flr Guest Room Floors - M	96,025.00	96,025.00	0.00	0.00	96,025.00	100.00	0.00	4,801.25	
01098	8th Flr Guest Room Floors - L	61,915.00	58,819.25	3,095.75	0.00	61,915.00	100.00	0.00	3,095.75	
01099	8th Flr Guest Room Walls - M	56,750.00	56,750.00	0.00	0.00	56,750.00	100.00	0.00	2,837.50	

Application and Certificate For Payment -- page 6

To Owner: BALFOUR BEATTY CONSTRUCTION

Application No: 22

Date: 9/15/2018

From (Contractor): David Allen Company, Inc.
Project: Hotel at Marion Square

SC510401/17

Contractor's Job Number:
Architect's Project No:

Period To: 9/30/2018

Work Completed

Item Number	Description	Scheduled Value	Previous Application	This Period	Materials Presently Stored	Completed and Stored to Date	%	Balance to Finish	Retention	Memo
01100	8th Flr Guest Room Walls - L	36,592.00	34,762.40	1,829.60	0.00	36,592.00	100.00	0.00	1,829.60	
01101	Rooftop Elevator Lobbies - M	19,089.00	19,089.00	0.00	0.00	19,089.00	100.00	0.00	954.45	
01102	Rooftop Elevator Lobbies - L	12,308.00	11,692.60	615.40	0.00	12,308.00	100.00	0.00	615.40	
01103	Rooftop Shower - Materials	4,481.00	4,481.00	0.00	0.00	4,481.00	100.00	0.00	224.05	
01104	Rooftop Shower - Labor	2,889.00	2,889.00	0.00	0.00	2,889.00	100.00	0.00	144.45	
01105	Rooftop Bar Floor - Materials	47,049.00	47,049.00	0.00	0.00	47,049.00	100.00	0.00	2,352.45	
01106	Rooftop Bar Floor - Labor	30,337.00	28,820.15	1,516.85	0.00	30,337.00	100.00	0.00	1,516.85	
01107	Rooftop Merkrete - Materials	17,380.00	17,380.00	0.00	0.00	17,380.00	100.00	0.00	869.00	
01108	Rooftop Merkrete - Labor	40,554.00	40,554.00	0.00	0.00	40,554.00	100.00	0.00	2,027.70	
01109	Pool Deck/Terrace Tile - Mats	100,820.00	100,820.00	0.00	0.00	100,820.00	100.00	0.00	5,041.00	
01110	Pool Deck/Terrace Tile - Labor	65,007.00	61,756.65	3,250.35	0.00	65,007.00	100.00	0.00	3,250.35	
CO 01	Deduct to modify work	-19,085.00	-19,085.00	0.00	0.00	-19,085.00	100.00	0.00	-954.25	
CO 02	Zero Change order	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
CO 03	Guestroom Mockup Glass	9,283.00	9,283.00	0.00	0.00	9,283.00	100.00	0.00	464.15	
CO 04	Credit for SF-09 Thin Brick Wall	-16,810.00	-16,810.00	0.00	0.00	-16,810.00	100.00	0.00	-840.50	
CO 05	SI-48 Add of Shower	7,495.00	7,495.00	0.00	0.00	7,495.00	100.00	0.00	374.75	
CO 06	Private Terrace Prep on L3	95,485.00	95,485.00	0.00	0.00	95,485.00	100.00	0.00	4,774.25	
CO 07	Camellia's Lounge GMP to SI54	-3,566.00	-3,566.00	0.00	0.00	-3,566.00	100.00	0.00	-178.30	
CO 08	ADA Bathroom Floor Tile Revision	3,511.00	3,511.00	0.00	0.00	3,511.00	100.00	0.00	175.55	
CO 09	SI 54 Tile Revisions - Entry Foyer	6,485.00	6,485.00	0.00	0.00	6,485.00	100.00	0.00	324.25	
CO 10	Elevator Lobby Stone & Tile	1,963.00	1,963.00	0.00	0.00	1,963.00	100.00	0.00	98.15	
CO 11	Camellia' Bar - Pink Marble Changes	6,877.00	6,877.00	0.00	0.00	6,877.00	100.00	0.00	343.85	
CO 12	Epoxy in Back of House	2,718.78	2,718.78	0.00	0.00	2,718.78	100.00	0.00	135.94	
CO 13	Lobby & Bar GMP to SI-54	1,713.00	1,713.00	0.00	0.00	1,713.00	100.00	0.00	85.65	
CO 14	SPA GMP to SI-54	1,934.00	1,934.00	0.00	0.00	1,934.00	100.00	0.00	96.70	
CO 15	9th Floor Bar GMP to SI Billing Total	7,236.00	7,236.00	0.00	0.00	7,236.00	100.00	0.00	886.80	

CD 16	Spa Retail Countertops Billing Total	9,147.00	9,147.00	0.00	0.00	9,147.00	100.00	0.00	457.35
CD 17	Patisserie-GMP to SI-54	1,531.00	1,531.00	0.00	0.00	1,531.00	100.00	0.00	76.55
CD 18	Guestroom Tile Revision	50,126.00	50,126.00	0.00	0.00	50,126.00	100.00	0.00	2,506.30
CD 19	RFI 1118	163.00	163.00	0.00	0.00	163.00	100.00	0.00	8.15
CD 20	EWO- Cut Vanity Backsplashes	263.00	263.00	0.00	0.00	263.00	100.00	0.00	13.15
PCO	See PCO Log: 12, 13	0.00	33,030.00	0.00	0.00	33,030.00	100.00	-33,030.00	1,651.50
Application Total		3,525,797.78	3,496,528.73	62,299.05	0.00	3,558,827.78	100.00	-33,030.00	177,940.98

TIER RELEASE SCHEDULE

PRIME SUB'S NAME	David Allen Company, INC.
Attachment for Pay Req #:	22
for Month Ending:	9/30/2019

R - 7074

Report Selection Criteria:

Job: SCS10401
 Customer: ALL
 Change Request #: ALL
 CR Status: A.N.P.R.S.T.RT
 Include change request notes? No

With Owner CO? Both
 Owner CO: ALL
 Cost Reimbursable? Yes
 Cost Group: ALL

Origination:
 NTP Submitted: 12/31/18
 NTP Received: 12/31/18
 Quote Submitted: 12/31/18
 Quote Due: 12/31/18
 Quote Approved: 12/31/18

From Date

To Date

David Allen Company, Inc.

Change Request Log Sorted by Change Request Number

CR Number	Description	Origination Date	NTP Submitted	NTP Received	Quote Submitted	Proposal or *R.O.M.	Status	Days Ext.	Proposed Days	Quote Due Date	Days Past Due	Approved Amount	Approved Days Ext.	Owner CO No.
Approved Change Requests														
04	Mud at 221B and 222B	04/27/16			12/13/17	565.00	A			02/15/18		565		
11	Extra Work Ticket - Level off floors in 2nd floor gang restrooms.	07/21/17			07/21/17	8,266.00	T			02/05/18		8,266		
12	6th Floor Terrace Sloping	11/16/17					T			01/02/17		12,240		
13	6th Floor Terrace Sloping	11/16/17					T			01/02/17		20,790		
20	Extra Work Ticket - Self Level & Raise 1st Floor Public Restroom	07/21/17			07/21/17	2,708.00	T			02/13/18		2,708		
27	6th Floor Terrace West Floor Prep	11/30/17					T			11/30/17		25,245		
30	EWO - Floor Prep 1st Floor Lobby	01/12/18					T			01/12/18		6,120		
31	EWO - Floor Prep at Camellia's	01/31/18					T			01/31/18		3,513		
32	EWO - Floor Prep at Front Entry	01/31/18					T			01/31/18		1,410		
33	EWO - Room 502 Tile Rework	02/18/18					T			02/18/18		340		
34	EWO - Room 535 Tile Rework	02/18/18					T			02/18/18		242		
35	EWO - Room 402 Tile Rework	02/13/18					T			02/13/18		289		
37	GR Vanity Countertops Replacement 3 rooms	03/30/18			03/30/18	6,301.00	A			06/11/18		6,301		
38	EWO Tickets - GR 3rd & 4th Floor Vanity Openings Rework	03/30/18					T			03/12/18		4,336		
39	EWO Ticket - Tile Rework at Plumbing Brackets	03/30/18					T			03/15/18		2,418		
40	EWO Ticket - Tile Rework at GR 839	03/30/18					T			03/15/18		523		
41	EWO Ticket - Tile Rework at GR 401 & 529	03/30/18					T			03/21/18		420		
43	EWO Ticket - Tile Rework at GR 326	03/30/18					T			03/01/18		176		
44	EWO - Tile Rework at ADA Niches	03/30/18					T			03/21/18		3,634		
46	Demo & Replace tile at elevator lobbies	06/15/18					T			06/15/18		697		
48	EWO Tile Repair at pool deck	06/19/18					T			06/19/18		602		
49	EWO - Tile Repair at elevator lobby	07/06/18					T			06/27/18		278		
50	EWO - Tile Repair at Room 723	07/06/18					T			06/27/18		254		

R-7075

David Allen Company, Inc.

Change Request Log Sorted by Change Request Number

Job: SC510401 Hotel at Marion Square Customer: BALFOUR BEATTY CONSTRUCTION

Current Contract Status - Through Issued C.O. Number: IHCO 01A

Original Contract:	3,348,828.00	Approved Changes:	118,914.00	Proposed Changes:	282,635.00
Executed Changes:	130,855.00	Revised Contract:	3,598,597.00	Rejected Changes:	0.00
Executed Contract:	3,479,683.00				

CR Number	Description	Origination Date	NTP Submitted	NTP Received	Quote Submitted	Proposal or *R.O.M.	Status	Proposed Days Ext.	Quoted Due Date	Days Past Due	Date Approved	Approved Amount	Approved Days Ext.	Owner CO No.
51	EW0 - Tile Repair at 9th Floor Restrooms	07/27/18					T				07/27/18		407	
52	EW0 - Tile Repair at Fitness Showers	07/27/18					T				07/27/18		271	
53	EW0 - Tile Repair at Room 837	07/27/18					T				07/27/18		229	
54	Install backboard at elevator cabs 1 thru 4 for tile installation	08/30/18					T				08/30/18		1,819	
55	EW0 - Tile Repair at Lobby Hand Rail	08/30/18					T				08/30/18		834	
29.5	Spa Relail - GMP to SI - 54	12/28/17					A				12/28/17		-993	
29.7	6th Floor Concierge ille - GMP to SI - 54	12/28/17			09/06/18	7,133.00	A				08/30/18		7,133	
29.9	9th Floor Pool Deck - GMP to SI - 54	12/28/17					A				12/28/17		5,078	
29.14A	9th Floor Bar Tile - GMP to SI - 54	01/19/18					A				02/22/18		2,769	
Approved Change Requests Total:												118,914		
Approved CO's that do not have any CR detail:												0		
Approved Changes Total:												118,914		

Proposed Change Requests

22	Supplemental Instructions - 37 Credit	08/22/17			12/13/17	-2,430.00	S							
25	Supplemental Instructions - 41 Marble Sills Credit & Countertop Add	08/22/17			12/13/17	-20,993.00	P							
45	Extended Costs thru 8-31-18	05/31/18			05/31/18	205,548.00	P							
29.10	9th Floor Bar Communal Table - GMP to SI - 54	12/28/17			03/16/18	7,486.00	P							
Proposed Change Requests Total:												189,611.00		

Executed CO's that do not have any CR detail:

-55,002

Executed Changes Total:

-55,002

End of Report

DEFENDANT LIBRARY ASSOCIATES, LLC'S

TRIAL EXHIBIT #39

Part 1 of 2

Response to RFP

Hotel at Marion Square

Charleston, SC

November 6, 2013

Bennett Hospitality

Matrix Program
Management Services

Balfour Beatty
Construction



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THE RITZ-CARLTON

R - 7078

Response to RFP

Hotel at Marion Square

Charleston, SC

November 6, 2013

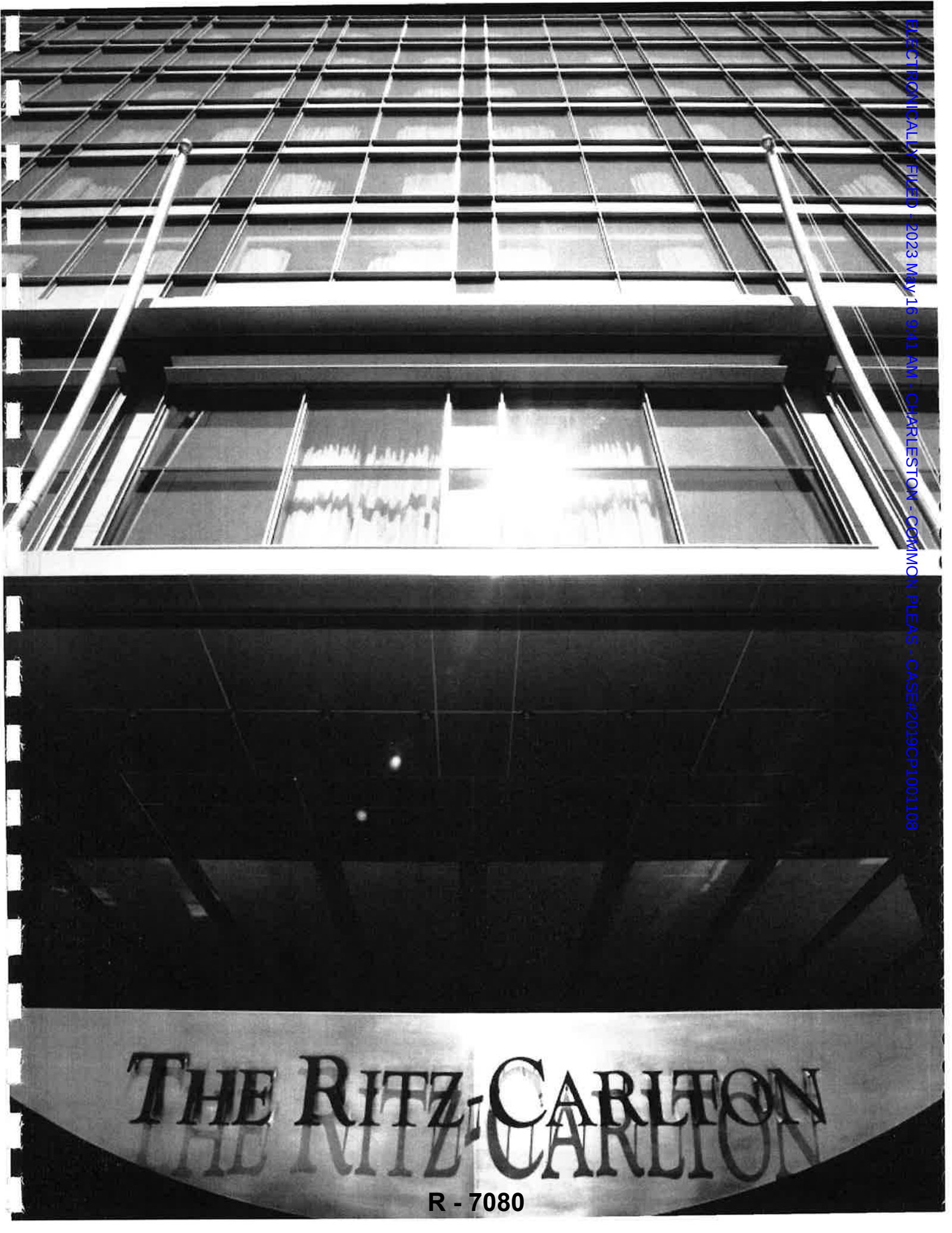
Bennett Hospitality

Matrix Program
Management Services

Balfour Beatty
Construction

THE RITZ-CARLTON

R - 7079



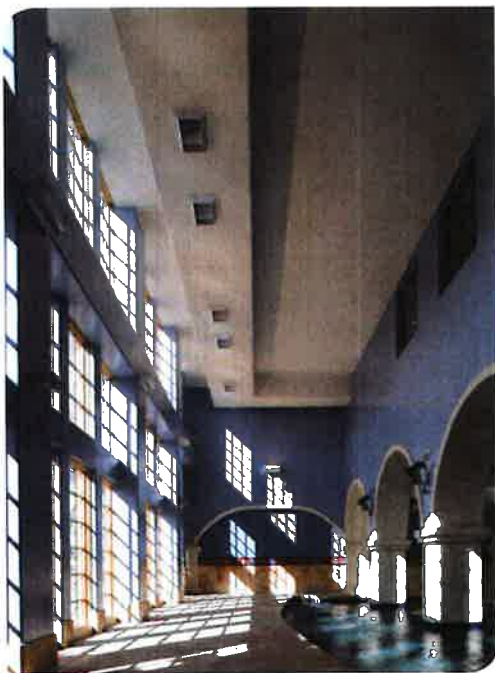
THE RITZ-CARLTON

R - 7080

Hotel at Marion Square



Ritz-Carlton Charlotte



Hilton Santa Fe Golf Resort & Spa at Buffalo Thunder

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Balfour Beatty Construction

Ms. Tracy Ray
Bennett Hospitality
17 Lockwood Drive
Rice Building Suite 400
Charleston, SC 29401

1930 Camden Road
Suite 280
Charlotte, NC 28203
t 704.319.4000
www.balfourbeattyus.com

Dear Tracy,

We are delighted to present our qualifications and response to your proposal. Our focus on high quality, full service hotels is unique. Our depth of resources, vast experience in this project type, and the recent successful completion of the Ritz Carlton in Charlotte provide you the assurance that Balfour Beatty will lead and support the process from design evolution through "heads in beds" turnover and beyond like no other.

In addition, we would like to highlight the following:

Signature Hospitality Experience

In the past eight years Balfour Beatty has completed more than \$1.4 billion in hospitality projects across the United States for prestigious clients and flags including Ritz Carlton, Wyndham, Hilton, Omni, Starwood, Gaylord, and Disney. In addition, we rank 4th nationally among the Top Hospitality General Contractors as reported by *Commercial Construction and Renovation*. Our experience with branding and understanding the signature guest experience means that we offer you valuable insight and no learning curve on your project which is key to your speed-to-market approach. David Rothwell, General Manager at the Ritz-Carlton Charlotte, can answer any questions you might have regarding the Signature Hospitality Construction Experience of Balfour Beatty Construction. His direct number is 704.549.4199.

Achieving Bennett Hospitality's Vision with Certainty

With our construction expertise and Bennett Hospitality's goals in mind, we take a solutions-minded approach as an active participant in each phase of the project to provide Bennett Hospitality guidance and support around program, design, constructability, schedule, quality and costing that gives you the flexibility and options to make good decisions on where and how to spend your investment. Having led the procurement, construction and assistance of FFE installation at the Ritz-Carlton Charlotte, we can assist you to create a destination that represents Bennett Hospitality's vision for The Hotel at Marion Square. Knox Tate who led this effort at the Ritz-Carlton Charlotte, will be utilizing this relevant experience to lead this effort on the interiors at your Hotel at Marion Square

Successful Experience with Lindsay Pope Brayfield Clifford & Associates

We have significant and successful experience with Lindsay Pope Brayfield Clifford & Associates. They are the the Architect-of-Record on our 1.25 million sf Cabana Bay Beach Resort project at Universal Orlando that we are currently working on together. This \$175 million, fast-track project is scheduled to open in March 2014. In order to embed this successful preconstruction experience with Lindsay Pope Brayfield Clifford & Associates at the Cabana Bay Beach Resort, we will be adding Bruce Capone to the Balfour Beatty Construction preconstruction team. This will ensure that those lessons learned are captured and applied to the Hotel at Marion Square thus eliminating your risk of cost and guaranteeing your speed-to-market objectives will be met.

Together, with our significant hospitality construction experience, our successful experience with your designer, Lindsay Pope Brayfield Clifford & Associates, and our long history in Charleston, we look forward to talking with you further about this exciting opportunity.

Very truly yours,



G. Michael Baumbach
Senior Vice President
Balfour Beatty Construction

R - 7082



Ritz-Carlton Charlotte, Charlotte, NC

Balfour Beatty
Construction



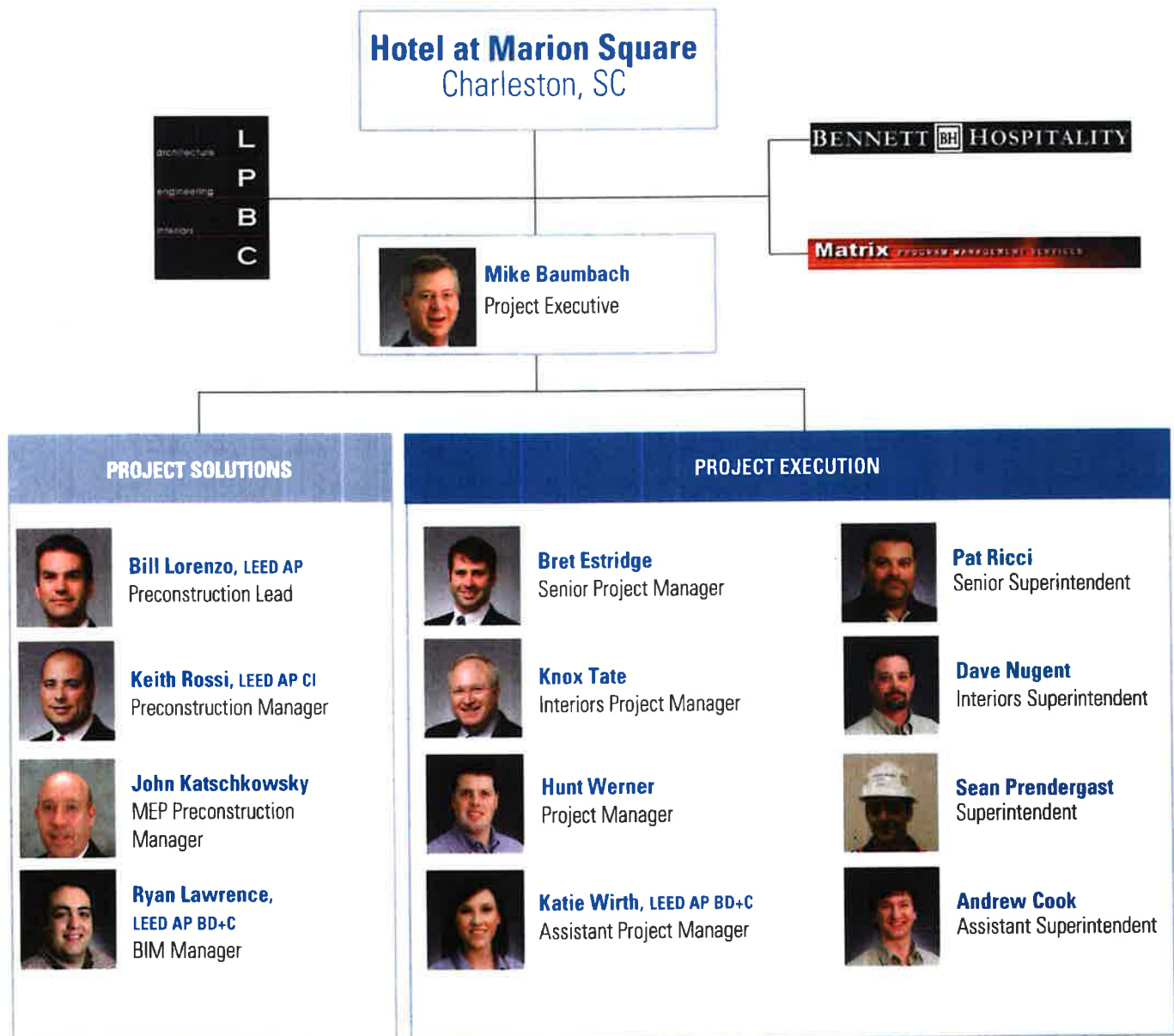
**"The place is remarkable!
You and your team more than
delivered on your vision and your
commitments. This is clearly a
brand enhancer for us."**

Bill Rhodes
Senior VP of Operations
North America
The Ritz-Carlton

OUR TEAM

Our proposed team has been hand-selected for the Hotel at Marion Square project. Each member has experience working on complex hospitality projects and has delivered best-in-class, high-end facilities, luxury amenities and sustainable environments. Our relationship with Lindsay Pope Brayfield Clifford & Associates will allow our team to hit the ground running without a learning curve. Our team has what it takes to deliver your project and exceed your expectations. A complete look at our team's skills and experience is outlined on the following pages.

- ✓ National Hospitality Experience
- ✓ Innovative Preconstruction Services
- ✓ Successful Track Record with Lindsay Pope Brayfield Clifford & Associates
- ✓ Focus on Safety
- ✓ Established Relationships with Charleston Subcontractors and Vendors





Mike Baumbach

Project Executive

With more than 32 years in the construction industry, Mike Baumbach has been responsible for over \$1 billion of construction projects including renovations, additions, vertical expansions, new construction, fast-track and design-build projects and program management assignments. Mike has primary responsibility for Balfour Beatty Construction activities in the programming, design, preconstruction and construction assignments in the Carolinas.

Years of Experience 32

Years with Firm 2

Office Location
Charlotte, NC

Education

B.S., Civil Engineering,
Virginia Polytechnic
Institute and State
University, 1981

PROJECT EXPERIENCE (PARTIAL LIST)

DoubleTree Hotel | Charleston Historic District Charleston, SC

Project Size | 215,000 sf **Project Cost** | \$18 million

This hotel, located in Charleston's Downtown Historic District, houses 212 hotel rooms with 165 spacious suites. Also included is the Lighthouse Cafe, Lobby Lounge, an on-site fitness center, 10,000 sf of flexible meeting space, and an intricate courtyard featuring a fountain.

Roper St. Francis Healthcare — Mount Pleasant Hospital Replacement Facility Mount Pleasant, SC

Project Size | 215,000 sf **Project Cost** | \$85 million

A 215,000 sf new full-service 85-bed hospital and remote central energy plant were constructed on a 78-acre greenfield site. The project also consists of a 24-hour emergency care department with 12 exam rooms, a dedicated women's services area with 15 high-tech labor and delivery suites, a 16-bassinet nursery, inpatient and outpatient surgery areas, a 10-bed intensive and critical care area, a six-room cardiac care unit, imaging area, laboratories, pharmacy, and support areas.

Roper St. Francis Healthcare — Mount Pleasant Medical Office Building Mount Pleasant, SC

Project Size | 91,000 sf **Project Cost** | \$12 million

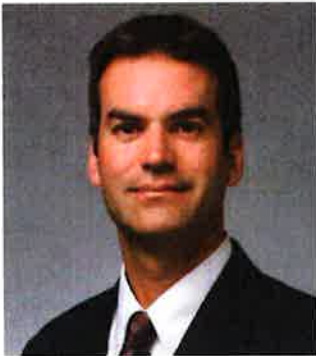
A three-story, 91,000 sf medical office building that provides office space for 45 private practice physicians and also houses diagnostic services and hospital administrative functions.

Roper St. Francis Hospital — Heart Tower Addition/Renovations and Parking Deck, Charleston, SC

Project Size | 262,000 sf **Project Cost** | \$79 million

This seven-story, 262,000 sf addition for cutting edge cardiac care and ambulatory surgery offers first-rate patient and guest amenities. The addition includes two operating rooms, patient rooms, waiting areas, nurses' stations, intensive care units, and recovery areas. The project also encompassed approximately 37,000 sf of renovations to the emergency department, radiology, and admitting areas. In addition, this project includes a five-level, precast parking facility of approximately 145,000 sf.

**Project completed prior to joining Balfour Beatty Construction*



Bill Lorenzo, LEED AP

Preconstruction Director | Design Integrator

Bill has been in the construction industry for 17 years and has focused the last 13 on preconstruction services for large and complex projects. He has experience with large hospitality projects, fast track delivery, providing full preconstruction services from the program stage to GMP. Bill's innovative project solutions for the Hotel at St. Marion will result in a best-in-class, high-end facility. His collaborative problem solving approach will uncover opportunities to extend the value of your dollar.

Years of Experience 17

Years with Firm 13

Office Location
Charlotte, NC

Education
M.S., Building Construction
Management,
University of Florida, 1997

B.A., Architecture,
University of Florida, 1996

Credentials
LEED AP

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

The Ritz-Carlton Charlotte at Bank of America Center, Charlotte, NC

Project Size | 275,000 sf **Project Cost** | \$62,609,621

The Ritz-Carlton Charlotte was constructed as one part of a massive project encompassing an entire city block in uptown Charlotte. The five-star hotel features 18 stories, with 120 deluxe rooms and 30 suites, gourmet dining options, full-service salon and health club services, an urban garden, and a 48,000-gallon swimming pool on the 18th floor. The hotel includes 12,000 sf of function space, a 7,000 sf ballroom and a 13,000 sf bi-level penthouse spa and wellness center.

A LEED Gold Certified facility, The Ritz-Carlton, Charlotte was the first green hotel within the greater Charlotte area and the first LEED Certified Hotel within the Ritz-Carlton hotel brand. Balfour Beatty took an extremely proactive approach working directly with manufacturers, suppliers and the interior designer to redesign certain elements and features of the project to meet LEED standards while maintaining the design intent so crucial to the Ritz-Carlton experience. In addition to the usual top-of-the-line luxury amenities, the hotel incorporates sustainable features including improved indoor air quality; a "green," vegetated roof to reduce cooling loads, heat island effect, and storm water runoff, widespread use of recycled and regionally produced construction materials, and a water consumption reduction of up to 34 percent.

Founders Hall Renovation at Bank of America Center, Charlotte, NC

Project Size | 100,000 sf **Project Cost** | \$52,519,622

The 100,000 sf Founders Hall Renovation project, located adjacent to the Ritz-Carlton Charlotte and Bank of America Corporate Headquarters in Charlotte, NC, included partial skin and roof removal and replacement, a new building entrance atrium with 4-floor escalator circulation, new mercantile spaces open to the atrium and street, interior demolition and renovation, Booth Theater Lobby renovation in the Blumenthal Performing Arts Center, new Founders Hall Uptown restaurant, and new food hall build-out consisting of two levels of rooftop dining.

1 Bank of America Center, Charlotte, NC

Project Size | 750,000 sf **Project Cost** | \$444,407,418

The Bank of America project included the construction of a new 750,000 sf, 32-floor office tower across from Bank of America's corporate headquarters, and the addition of more than 700 spaces to the existing parking deck to accommodate 1,200 associates. The project included administrative areas, break areas, a three-story Sky Garden to provide pleasant landscaped space for impromptu gatherings and team meetings, conference rooms, a 400-seat auditorium, and a 20,000 sf conference center. The project achieved LEED Gold certification.



Keith Rossi, LEED AP CI Preconstruction Manager

As Preconstruction Manager, Keith is responsible for oversight and leadership of the estimating, value engineering, and bid packaging phase of the project. His knowledge of the preconstruction process, the local marketplace and construction costs ensures the integrity and accuracy of the estimate throughout preconstruction. Keith's vast experience with high-end finishes and corporate upfits allows him to contribute unmatched expertise on pricing and proactively address any schedule/cost issues that may arise during the preconstruction phase.

Years of Experience 15

Years with Firm 5

Office Location
Charlotte, NC

Education

B.S., Industrial and Systems
Engineering, Virginia
Polytechnic Institute and
State University, 1998

Credentials
LEED AP CI

OSHA 10 Hour

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

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John Katschkowsky, LEED AP BD+C MEP Preconstruction Manager

As MEP Preconstruction Manager, John has 20 years of construction experience. John is highly skilled in assuring quality in the mechanicals and electrical aspects of projects. John will be involved in design reviews, he will price system options for life cycle cost analysis, review specifications to ensure the most cost-effective materials and equipment are being purchased and installed, and will solicit subcontractor market input to ensure budget accuracy.

Years of Experience 21

Years with Firm 10

Office Location

Raleigh, NC

Education

B.S., Construction Engineering, Iowa State University, 1986

Credentials

LEED AP BD+C

CPR

Engineer In Training

First Aid/CPR

LEED AP BD+C

OSHA 10 Hour

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

North Carolina Museum of Art Expansion, Raleigh, NC

Project Size | Renovations - 165,000 sf, New Construction - 100,000 sf **Project Cost** | \$73,038,798

This project consisted of renovations to the existing 165,000 sf museum building and the construction of a 100,000 sf gallery expansion building. The museum remained fully operational during construction. The expansion included day-lit galleries for the display of the museum's permanent collection, with a public lobby, restaurant, bookshop, art storage, and mechanical space. Although not a LEED project, the museum was constructed to LEED Silver standards.

NCSU Wolf Ridge Centennial Campus Student Housing, Raleigh, NC

Project Size | 525,000 sf **Project Cost** | \$111,659,650

The new NCSU Centennial Student Housing project includes a six-building, 1,150-bed, apartment/suite style student housing complex located on the east side of the Oval at Centennial Campus. It will include a 20,000 sf, 400-seat dining facility, and parking. It will also include lounges, common areas and moderately-sized laundry rooms on each floor. As the first residence hall on NCSU's Centennial campus, it is designed to achieve LEED Silver sustainability standards. The Centennial Student Housing project will be turned over in multiple phases.

UNC Greensboro Quad Renovation, Greensboro, NC

Project Size | 241,000 sf **Project Cost** | \$48,938,855

The UNC Quad Project included renovations to seven existing residence buildings, originally constructed between 1920 and 1923. Work included the complete interior demolition and comprehensive renovations to approximately 610-bed/241,000 sf of space with primarily single and double bed living spaces. The project also included two additions to Shaw Hall that incorporated a Living/Learning Center into the Quad. The project successfully improved students' living areas and safety.

DUMC Center for Integrated Medicine Building, Durham, NC

Project Size | 30,000 sf **Project Cost** | \$9,476,011

The Duke Center for Integrative Medicine is a world-class facility which supports both conventional and alternative medical practices. The one-story, LEED Certified, 30,000 sf building houses therapeutic treatment rooms, conference and workshop spaces, fitness facilities, meditation spaces, and a state-of-the-art kitchen for healthy cooking demonstrations, guest meals and catered events. The gardens inside and outside the building create calm and provide relaxing views from almost every vantage point in the Center. This facility contains a small 300 sf, two-washer, two-dryer laundry room.



Ryan Lawrence, LEED AP BD+C BIM Manager

As BIM Manager, Ryan will lead the development of all BIM models, coordinating with designers, engineers, subcontractors and vendors to promote the utilization of off-site prefabrication and to coordinate installation. Ryan will work with the entire project team in utilizing the BIM process to identify conflicts during the design phase that will promote smooth installation of systems and materials while reducing changes in the field, diminishing waste and enhancing quality.

Years of Experience 6

Years with Firm 1

Office Location
Charlotte, NC

Education
Bachelor of Architecture,
University of North
Carolina at Charlotte, 2007

Credentials
LEED AP BD+C

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

Harrah's Cherokee Hotel Tower III and Casino, Cherokee, NC*

Project Size | 240,000 sf **Project Cost** | Hotel Tower III - \$125,000,000, Casino - \$140,000,000

This project included Construction Management at Risk services for several projects within Harrah's Cherokee Casino and Hotel's \$633 Million Expansion program.

The first project was a new 21-story tower that will position Harrah's as the premier gaming destination in the Southeast. The new Creek Tower features a waving roof form that complements the surrounding mountain-scape. Additional features include an elegant VIP Check-in area, Fire lounge, a dramatic café/bakery area and a full floor of super suites. The overall design of the hotel features a modern lodge experience with natural materials. Custom light features hang throughout the main lobbies of the hotel, one of them utilizes fiber optics that can be customized to change colors. The original 23 month schedule for this project was delivered in just 19 months.

The Casino Renovation and Expansion portion of the project the addition of 110,000 square ft and the renovation of 130,000 sf. The project includes modern upgrades, lavish bars, several new restaurants and new gaming areas and has a 70-foot interior waterfall with a rotunda area that changes lighting and sound with the changing seasons.

David H. Murdock Core Laboratory & Central Energy Plant | North Carolina Research Campus, Kannapolis, NC*

Project Size | 311,000 sf **Project Cost** | \$145,000,000

This 311,000 sf, four-story research building consists of a steel structure with brick veneer and a copper standing-seam roof. The core laboratory is the cornerstone of the 350-acre campus and contains highly specialized equipment. In the basement of the Core Lab is a 34,000 sf animal Vivarium and imaging suite consisting of an MRI, cyclotron and Pharmascan MRI/MRS scanner. The CEP consists of cooling towers, chillers, boilers, pumps, generators and associated gear/piping, which services the entire North Carolina Research Campus with hot and chilled water. The plant also provides emergency electricity for the Core Lab Building only.

UNC Center for Excellence in Nutrition, Kannapolis, NC*

Project Size | 311,000 sf **Project Cost** | \$65,000,000

This 130,000 sf laboratory research building consists of a steel structure with concrete slabs-on-metal deck. The exterior skin will include a brick facade, cast stone, FRP, punched windows, and a thermoplastic and standing seam metal roof system.

**Project completed prior to joining Balfour Beatty Construction*



Bret Estridge, LEED AP

Senior Project Manager

*Bret has extensive experience working on hotel projects including the Ritz-Carlton Charlotte and the Hilton Baltimore Convention Center Hotel. He will lead the project team from project inception to preconstruction through successful delivery and closeout. In Bret's focus for your project, he will work closely with the design engineers during preconstruction. He will prepare alternative design solutions, phasing of construction, future planning, fast-track purchase of long-lead equipment, and provide cost analysis alternatives. Once construction commences, Bret will provide continuous support for the on-site team.**

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

Years of Experience 12

Years with Firm 6

Office Location
Charlotte, NC

Education
B.S., Construction
Management, East Carolina
University, 2003

Credentials
LEED AP

OSHA 10 Hour

OSHA 30 Hour

CPR/First Aid Certified

The Ritz-Carlton Charlotte at Bank of America Center, Charlotte, NC

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Hilton Baltimore Convention Center Hotel, Baltimore, MD*

Project Size | 850,000 sf **Project Cost** | \$230,745,000

This 850,000 sf, design-build project included a 20-story, 757 room hotel and convention center. Additional features included a 550-space, 235,000 sf underground parking garage.

Ashford Suites Hotel, High Point, NC*

Project Size | 45,000 sf **Project Cost** | \$3,000,000

The Ashford Suites Hotel project included the construction of a 45,000 sf, three-story, wood-frame hotel.

**Project completed prior to joining Balfour Beatty Construction*



Knox Tate

Interiors Project Manager

Knox Tate joined our company in 1973 as a project manager as one of the first five employees. Over the years, Knox has singlehandedly established the interiors program for corporate giant, Bank of America, and has helped build many of the landmark corporate headquarters projects for clients such as Bank of America, Wells Fargo, Goodrich, and many more. Knox has been an important part of Balfour Beatty Construction's core leadership team from the time he entered the business. His experience working on the Ritz-Carlton Charlotte project will add value and lessons learned to the Hotel at Marion Square.

Years of Experience 35

Years with Firm 35

Office Location
Charlotte, NC

Education
B.A., Economics,
UNC Chapel Hill, 1971

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

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Bank of America NY 47th Street, New York, NY

Project Size | 365,000 sf **Project Cost** | \$35,028,236

This first class interior upfit and renovation featured a workspace of the future design for 13 floors and the decommissioning of five floors. The project involved building out temporary swing space for the clients on separate floors to be utilized during the course of this project. This project also included the installation of new chilled water loop pumps and equipment for all of the floors renovated.

1 Bank of America Office Tower Interiors, Charlotte, NC

Project Size | 750,000 sf **Project Cost** | \$95,673,729

This project included the interior build-out of 750,000 sf of office space in the 1 Bank of America Center tower in the heart of Uptown Charlotte. The project included administrative areas, break areas, a three-story Sky Garden to provide pleasant landscaped space for impromptu gatherings and team meetings, conference rooms, a 400-seat auditorium, and a 20,000 sf conference center. The project achieved LEED Gold certification. Encompassing 32 floors, the new office tower houses approximately 1,200 Bank of America associates, as well as other office tenants, and is one of the most environmentally-responsible corporate spaces in the Southeast having achieved LEED Gold certification.



Hunt Werner Project Manager

Hunt has focused exclusively on complex hospitality and mixed-use projects for over seven years. His knowledge and project expertise includes phased construction on multiple floors, complex schedules, urban project sites with multiple tenants and maintaining operations throughout construction. Hunt helps define and establish project goals and team expectations. He manages project team relationships, ensures the timeliness of deliverables, provides a comprehensive review of the budget, and ensures constructability of design.

Years of Experience 7

Years with Firm 7

Office Location
Charlotte, NC

Education
B.S., Mechanical
Engineering
Clemson University, 2006

Credentials
CPR/First Aid
OSHA 30 Hour

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

Buckhead Atlanta, Atlanta, GA

Project Size | 1,500,000 sf **Project Cost** | \$150,000,000

Balfour Beatty Construction was chosen to reconstruct the former Buckhead Village bar and nightclub district and transform it into a new upscale, mixed-use community. This signature, three-phase project will consist of luxury retailers, restaurants, hotels, office space and residential units.

Parcel A is an 86,477 sf office and 138,105 sf retail complex and four levels of below-grade parking. Two floors of offices will feature Class A finishes and terraces. Two floors of retail space will sit above the parking facility. Parcel B is a single-story retail building, with approximately 50,000 sf of multi-tenant space. Parcel C will be two, 20-story residential towers featuring 370 upscale apartment units and an 8th floor amenity deck. The towers will sit above parking garages, with retail podiums housing 122,000 sf of space for luxury, designer tenants. Between the two towers sits a 4,500 sf luxury clubhouse containing a pool with private cabanas, a theater, a billiard room, a study/library, and bath houses.

Located on eight acres across six city blocks, Buckhead Atlanta will connect the two main arteries of Atlanta at Peachtree and West Paces where local residents and bustling life collide. The project challenges include building on a tight, urban site with limited staging areas.

Avenue Murfreesboro, Murfreesboro, TN

Project Size | 678,000 sf **Project Cost** | \$64,000,000

This \$64 million retail project consists of a 365,489 sf lifestyle center and a 228,949 sf market center, including site work. The scope of the project included a challenging, 100-acre turnkey site work package, including rock removal and underground utilities. In addition, the team completed 678,000 sf of retail shell space and the interior build-out of Dick's Sporting Goods, Michael's, Cost Plus World Market, Linens 'N Things, Petco, and Best Buy.

1 Bank of America Office Tower Interiors, Charlotte, NC

Project Size | 750,000 sf **Project Cost** | \$95,673,729

This project included the interior build-out of 750,000 sf of office space in the 1 Bank of America Center tower in the heart of Uptown Charlotte. The project included administrative areas, break areas, a three-story Sky Garden to provide pleasant landscaped space for impromptu gatherings and team meetings, conference rooms, a 400-seat auditorium, and a 20,000 sf conference center. The project achieved LEED Gold certification. Encompassing 32 floors, the new office tower houses approximately 1,200 Bank of America associates, as well as other office tenants, and is one of the most environmentally-responsible corporate spaces in the Southeast having achieved LEED Gold certification.



Katie Wirth, LEED AP BD+C

Assistant Project Manager

Katie has over five years of extensive experience working on mixed-use and hospitality as well as commercial projects. As Assistant Project Manager, Katie will be active in all document review and trade contractor coordination and budget reviews. She is responsible for the coordination of specialty contractor product submittals and approvals, requests for information, change requests and payment requests. Katie is involved in maintaining the budget and schedule and coordinating the specialty contractors and suppliers.

Years of Experience 5

Years with Firm 5

Office Location

Charlotte, NC

Education

B.S., Civil Engineering,
Michigan State University,
2008

Credentials

LEED AP BD+C

CPR/First Aid

OSHA 30 Hour

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

The Ritz-Carlton Charlotte at Bank of America Center, Charlotte, NC

Project Size | 275,000 sf **Project Cost** | \$62,609,621

The Ritz-Carlton Charlotte was constructed as one part of a massive project encompassing an entire city block in uptown Charlotte. The five-star hotel features 18 stories, with 120 deluxe rooms and 30 suites, gourmet dining options, full-service salon and health club services, an urban garden, and a 48,000-gallon swimming pool on the 18th floor. The hotel includes 12,000 sf of function space, a 7,000 sf ballroom and a 13,000 sf bi-level penthouse spa and wellness center.

A LEED Gold Certified facility, The Ritz-Carlton, Charlotte was the first green hotel within the greater Charlotte area and the first LEED Certified Hotel within the Ritz-Carlton hotel brand. Balfour Beatty took an extremely proactive approach working directly with manufacturers, suppliers and the interior designer to redesign certain elements and features of the project to meet LEED standards while maintaining the design intent so crucial to the Ritz-Carlton experience. In addition to the usual top-of-the-line luxury amenities, the hotel incorporates sustainable features including improved indoor air quality; a "green," vegetated roof to reduce cooling loads; widespread use of recycled and regionally produced construction materials; and a water consumption reduction of up to 34 percent.

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Bank of America Merrill Lynch Security Program, Charlotte, NC

Project Size | various **Project Cost** | \$9,200,000

After the successful roll out of previous programs for their extensive administrative portfolio, Bank of America selected Balfour Beatty Construction to execute another program on their behalf. The Bank of America/Merrill Lynch Security program is focused on the installation of security system components at approximately 550 Merrill Lynch Wealth Branch boutique retail locations throughout the United States.



Pat Ricci

Senior Superintendent

Pat is an expert in the planning and execution of complex mid-rise projects on tight urban sites. He responds quickly to challenges with innovative solutions that maintain the budget and schedule while exceeding owner expectations. Pat excels in creating and maintaining the project schedule to facilitate an on time delivery while ensuring safety on the jobsite. He is responsible for the supervision of field construction work and shares responsibility with Bret Estridge and Hunt Werner for developing the project schedule, actively participating in the preconstruction phase, and ensuring that the project is built on time and within budget.

Years of Experience 18

Years with Firm 6

Office Location
Charlotte, NC

Education

Attended *Rider College*

Credentials

Certified Construction
Manager

Confined Space Certified

First Aid/CPR/AED

EM 385-1-1 10 hour

Fork Lift Certification

OSHA 10 Hour

OSHA 30 Hour

OSHA Trench Safety
Certification

Scaffold Certification

Scissor Lift Certification

Rigging Certified

Flagging Certified

International Safety Access
Certified

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

The Ritz-Carlton Charlotte at Bank of America Center, Charlotte, NC

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131 Ponce Midtown Apartments, Atlanta, GA

Project Size | 325,000 sf **Project Cost** | \$31,500,000

The project is a four-story, wood-frame building with 280 luxury apartment units over two levels of concrete podium parking. A majority of the 280 units will be studios or one bedroom apartments. Amenities including three private, elevated courtyards connected by a series of stair towers will offer residents a tranquil retreat from urban life, while a rooftop pool will showcase stunning views of the city skyline.

ASU Plemmons Student Union and Living Learning Center, Boone, NC

Project Size | Student Union-52,500 sf, Residence Hall-98,879 sf **Project Cost** | \$57,029,621

The Center for Student Leadership Complex consists of the construction of an eight-story, 350-bed residence hall with an attached three-story academic living-learning facility and a four-story expansion to the Plemmons Student Union. The project scope includes underground utilities work, street reconstruction and demolition of two buildings. Both sites are situated on an active residence quad with pedestrian traffic around both of the projects. This project is pursuing Gold LEED certification for the student union and LEED Silver for the residence hall. Depending on budget, both projects may incorporate green roofs.



Dave Nugent

Interiors Superintendent

Dave is known for his significant hospitality and commercial interiors experience and has worked on several large and complex interior hospitality projects including the Ritz-Carlton Charlotte. Dave has extensive experience on multi-phased projects with aggressive schedules for high-end clients. He is responsible for the supervision of field construction work and shares responsibility with Knox Tate for developing the interiors project schedule, actively participating in the preconstruction phase, and ensuring that the project is built on time and within budget

Years of Experience 9

Years with Firm 9

Office Location

Charlotte, NC

Credentials

CAD for Building

Professionals

CPR/First Aid/AED

Critical Environment Work

Authorized

Fork Lift Certification

OSHA 10 Hour

OSHA 30 Hour

Scaffold Certification

Scissor Lift Certification

STS (Safety Trained

Supervisor)

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

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Red Hat Corporate Headquarters, Raleigh, NC

Project Size | 365,500 sf **Project Cost** | \$26,900,000

The Red Hat Corporate Headquarters renovation and relocation project includes the phased demolition and reconstruction of 365,000 sf of Class "A" interior office space located at 100 East Davie Street in downtown Raleigh, NC. Upon the project's completion, the 19-story office tower at 100 E. Davie St. was christened "Red Hat Tower."

The project includes selective demolition, new interior improvements, façade, and ground level exterior renovations. Additional elements incorporated in the preliminary plans include: reception areas, computer and server rooms, a fitness area, interior/exterior connecting stairwells, and hardsurface flooring. The project is designed to achieve LEED Gold for Commercial Interiors Certification. With this move, Red Hat was able to transfer more than 750 employees to downtown Raleigh, helping the state capital become a national hub for open source technology.

E2 Emeril's Eatery, Charlotte, NC

Project Size | 8,200 sf **Project Cost** | \$2,793,409

Located in the Levine Center for the Arts, this 8,200 sf restaurant was constructed around multiple, heavily occupied facilities, including the Bechtler Museum of Modern Art and the Duke Energy Center. The facility includes a 2,700 sf kitchen, a 286-seat dining room, outdoor patio, food bar, liquor bar, and a take-out restaurant known as E2Go. The project, finished January 2012, achieved LEED Certification (LEED-CI Retail v2009) and is Emeril's first LEED project.



Sean Prendergast Superintendent

Sean has significant hospitality and commercial experience and has worked on several large and complex hospitality projects including the Ritz-Carlton Charlotte. He is responsible for assisting with all field activities in connection with the General Superintendent and Project Manager. His responsibilities include planning implementing and supervising all field work; preparing project forecasts and field records; expediting materials delivery; implementing and supervising the safety program, code compliance and coordinating regular jobsite meetings and inspections.

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

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Sonic Automotive Corporate Office, Charlotte, NC

Project Size | 62,000 sf **Project Cost** | \$9,569,588

The 62,000 sf Corporate Headquarters for Fortune 500 Charlotte-based Sonic Automotive required upfitting seven floors and included upgrading the site with a new entrance, removing the skin of the building and replacing it with a new curtainwall, and renovating the IT network operations center. A fitness center for employee use along with a small training room on the third floor and additional generators were added to the campus.

Years of Experience 6

Years with Firm 6

Office Location

Charlotte, NC

Education

B.S., Construction

Management, *Appalachian*

State University, 2007

Credentials

CPR/First Aid/AED

OSHA 10 Hour

OSHA 30 Hour

Scissor Lift Certification

Deep Excavation

Certification

Flagging and Rigging

Certification



Andrew Cook

Assistant Superintendent

Drew has over six years of extensive experience working in hospitality, retail and corporate/mixed-use projects. He worked on the Ritz-Carlton Charlotte project and is well respected by the entire project team. He has extensive LEED experience and specializes in preparing sustainable solutions in high-end spaces.

Years of Experience 6

Years with Firm 6

Office Location
Charlotte, NC

Education
B.S., Construction
Management, East
Carolina University, 2000

Credentials
CPR/First Aid/AED
OSHA 30 Hour
Fork Lift Certification

RELEVANT PROJECT EXPERIENCE (PARTIAL LIST)

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Charlotte Checkers Epicentre Upfit, Charlotte, NC

Project Size | 7,100 sf **Project Cost** | \$556,208

This project includes the upfit of a 7,100 sf first generation office space located in the vibrant Epicenter in uptown Charlotte, NC. The Charlotte Checkers wanted to relocate their corporate office to a new space that was specifically built to meet their needs. The office has a modern open feel with exposed concrete columns and walls and natural day lighting and includes 13 private offices, a conference room, a break room, retail display, and a large open work area.



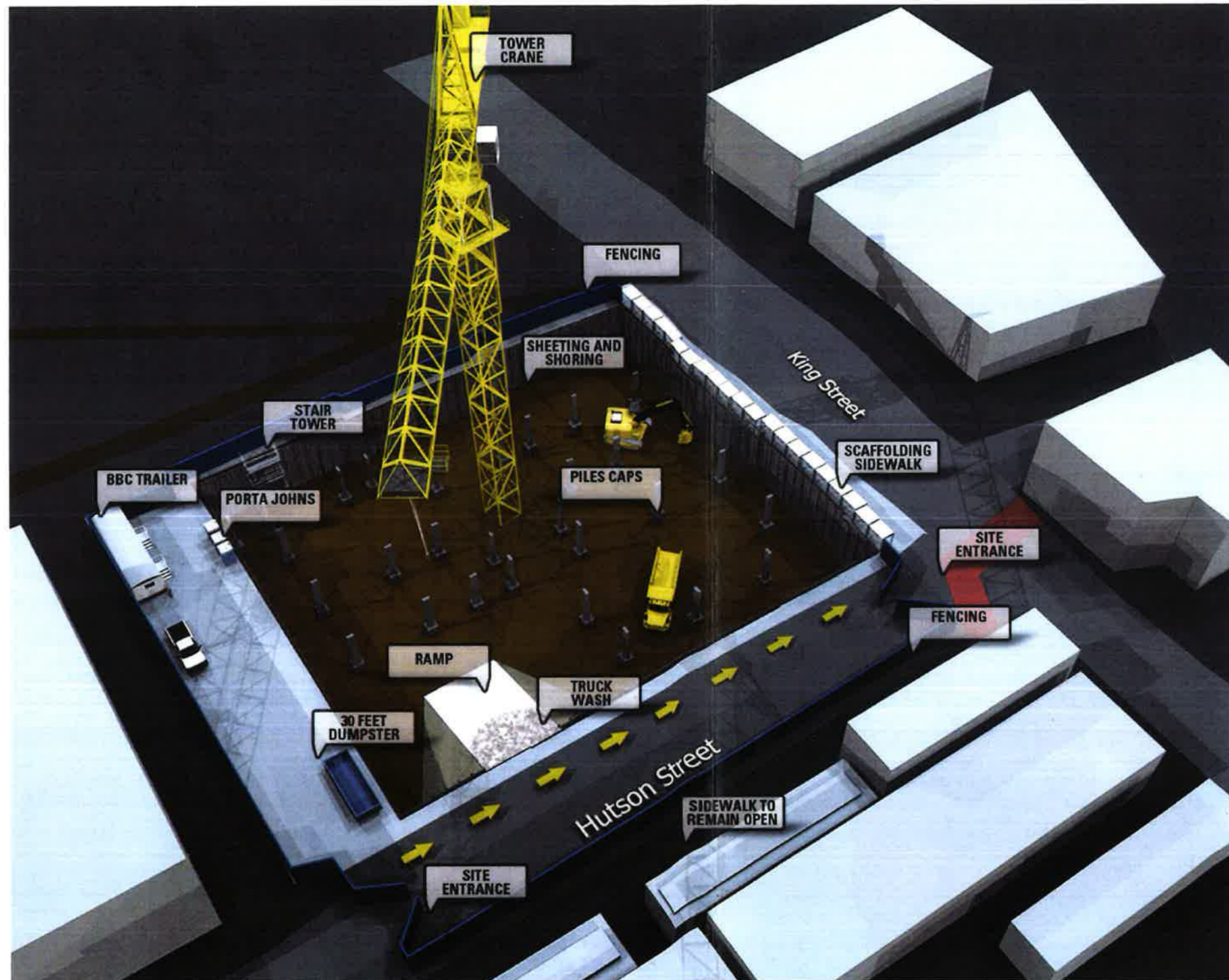
Cabana Bay Beach Resort at Universal, Orlando, FL

Balfour Beatty
Construction



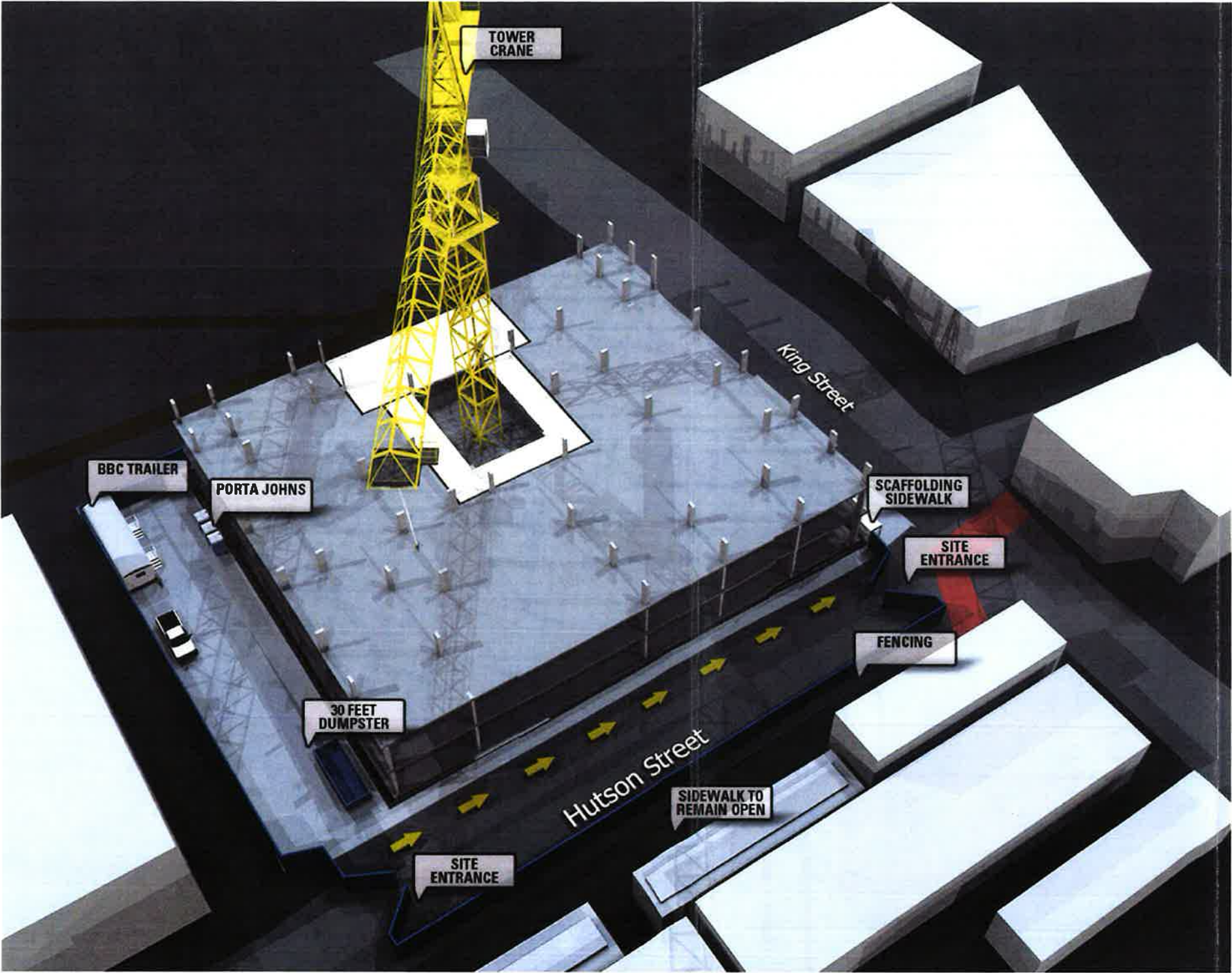
Designed by *Lindsay Pope
Brayfield Clifford & Associates*, this complex, is a themed resort reminiscent of a 1950s-style retro family driving vacation. The moderately priced 1,800-room hotel will feature 900 family suites with kitchens, capable of sleeping up to six people. The resort will also include 900 regular guest rooms, two themed pool areas, a pool bar, and various resort amenities. A central commercial building will include a lobby, restaurants, fitness center, bowling alley and game room.

LOGISTICS PLAN



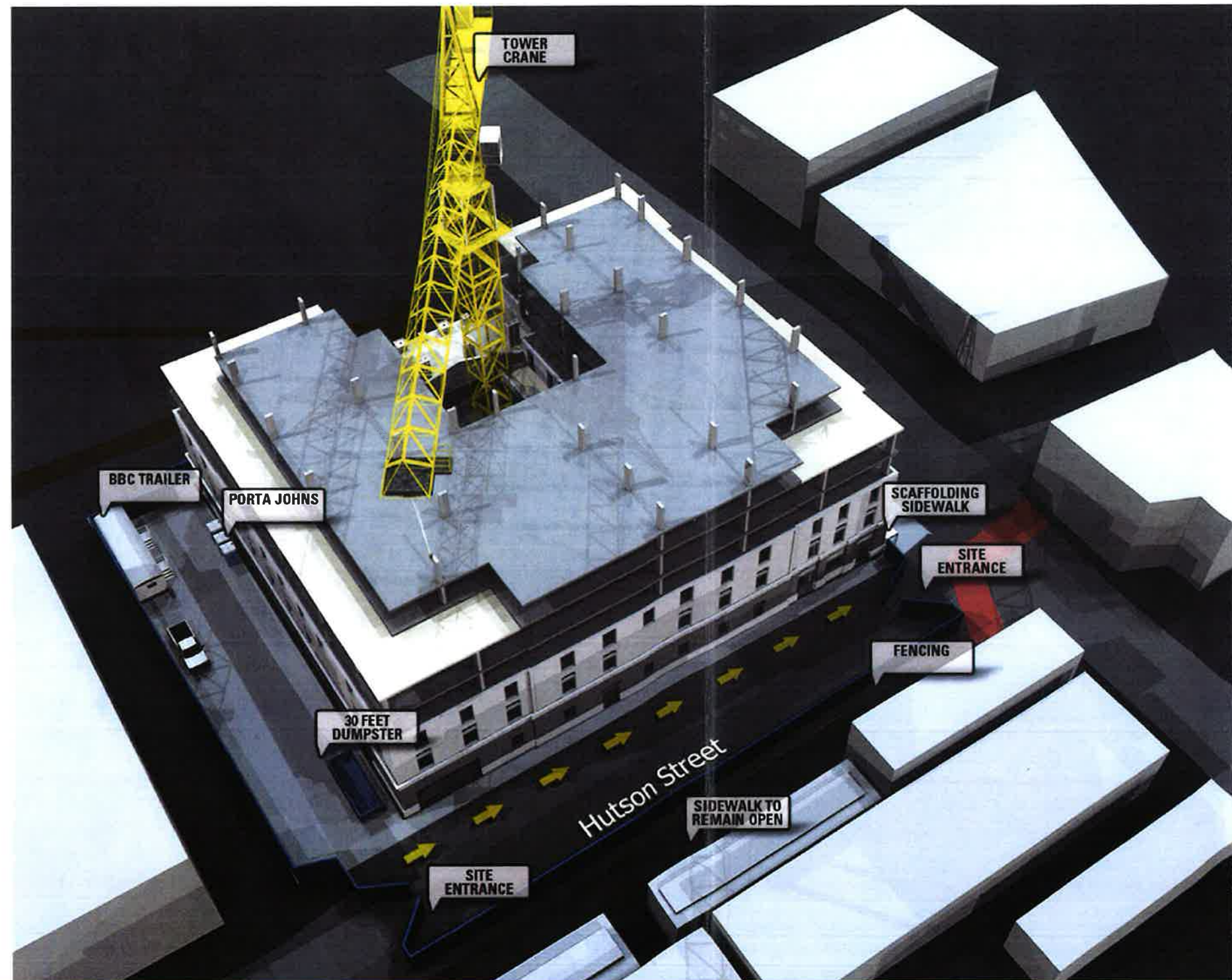
Phase 1 - June 2014

LOGISTICS PLAN



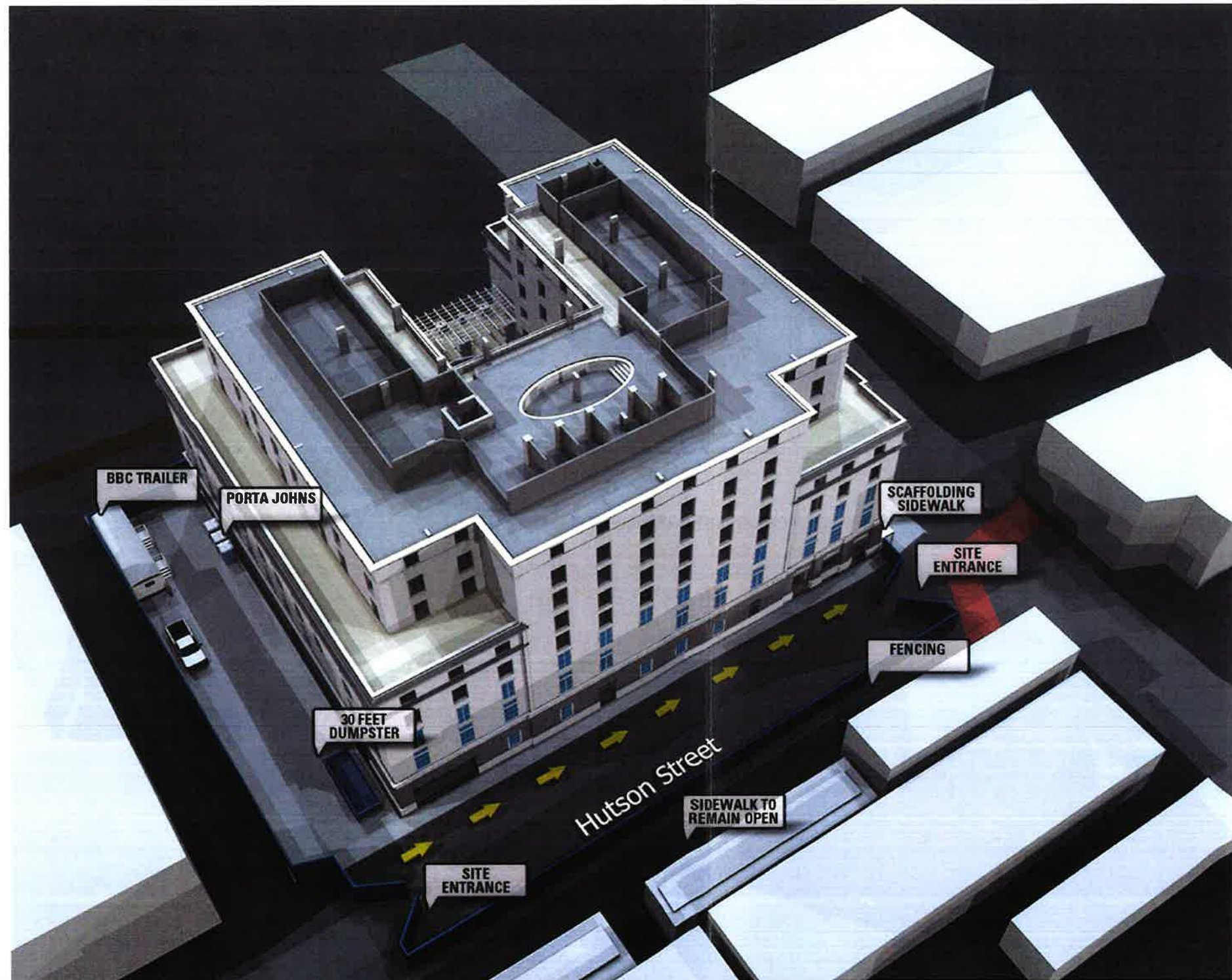
Phase 2 - Mid-September 2014

LOGISTICS PLAN



Phase 3 - Mid-November 2014

LOGISTICS PLAN



Phase 4 - June 2015

LOGISTICS PLAN



Phase 5 - Completed January 2016

Hotel at Marion Square | Charleston, SC

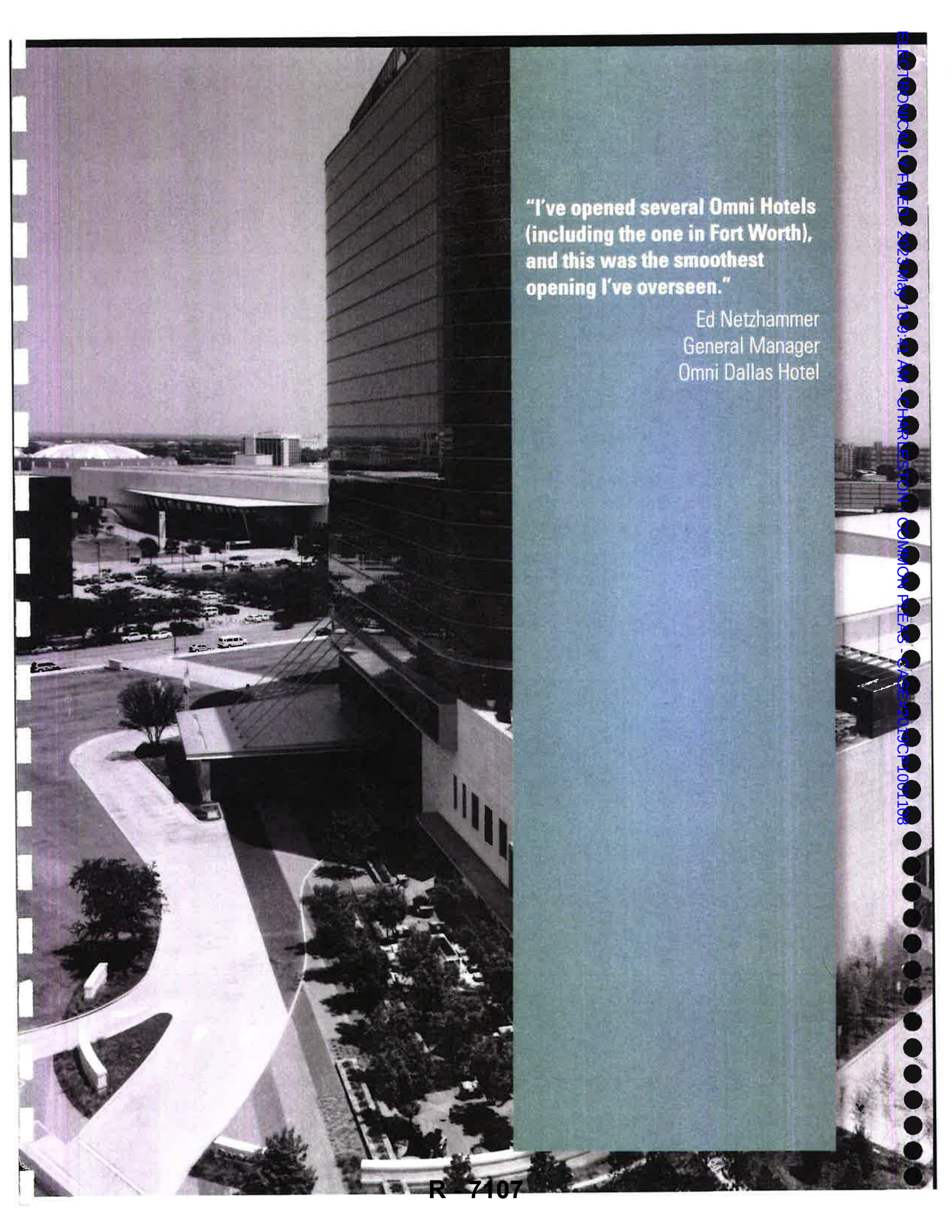
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Balfour Beatty
Construction



Omni Dallas Hotel, Dallas, TX

Balfour Beatty
Construction



**"I've opened several Omni Hotels
(including the one in Fort Worth),
and this was the smoothest
opening I've overseen."**

Ed Netzhammer
General Manager
Omni Dallas Hotel

C. Provide a detailed Schematic Budget Estimate No. 1 for the work as outlined in the RFP documents including all qualifications and assumptions.

Included on the following pages is our detailed Schematic Budget Estimate No. 1 for the work as outlined in the RFP documents including all qualifications and assumptions.



November 6, 2013

Hotel at Marion Square

Charleston, SC

Balfour Beatty
Construction

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Table of Contents

Balfour Beatty
Construction

Section 1 Project Description Summary

Section 2 Clarifications and Assumptions

Section 3 Estimates

A. Estimate Summary

B. Estimate Details

C. Take-Off Detail

* Subcontractor Input available upon request

Project Description Summary

Balfour Beatty
Construction

Project History – the site is in the historic district of Charleston, and has relevance dating back to the original founding of the city. The square on which the site fronts is named for General Francis Marion (the Swamp Fox), noted Revolutionary War leader. The site was most recently occupied by a public library which was demolished in August 2013. The Pink marble façade material has been salvaged from the demolished library and will be reused in parts of the new hotel. The proposed project is subject to the approval of the City Board of Architectural Review (BAR), who granted final approval of the exterior massing and detail on June, 7, 2013. It is the responsibility of the development team to remain faithful to the design and materials approved by the BAR.

Proposed boutique hotel - 9-story with basement, 208,000 gsf, 185 rooms, with 121 lower level valet parking spaces, 150 seat full service restaurant, bar, 6,000 sf ballroom, pre-function and meeting rooms, roof level pool, fitness, grill.

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
*** Total 3rd floor					\$126,710
4th floor					
5100.000	Misc. Steel (Turnkey)	22,438.00 ea			
	Lump Sum Price			4.705	105,570.79
*** Total 4th floor					\$105,571
5th floor					
500.000	Misc. Steel (Turnkey)	22,438.00 ea			
	Lump Sum Price			4.705	105,570.79
*** Total 5th floor					\$105,571
6th floor					
500.000	Misc. Steel (Turnkey)	16,202.00 ea			
	Lump Sum Price			4.705	76,230.41
*** Total 6th floor					\$76,230
7th floor					
5100.000	Misc. Steel (Turnkey)	16,202.00 ea			
	Lump Sum Price			4.705	76,230.41
*** Total 7th floor					\$76,230
8th floor					
5100.000	Misc. Steel (Turnkey)	16,202.00 ea			
	Lump Sum Price			4.705	76,230.41
*** Total 8th floor					\$76,230
9th Floor					
500.000	Misc. Steel (Turnkey)	4,000.00 ea			
	Lump Sum Price			4.705	18,820.00
*** Total 9th Floor					\$18,820
** Total 05A - Metals					\$969,268
09A - Framing & Drywall					
9th Floor					
5810.000	Light Gauge Trusses & Framing	4,000.00 sf			
	Lump Sum Price			41.250	165,000.00
*** Total 9th Floor					\$165,000
** Total 09A - Framing & Drywall					\$165,000
14A - Elevators					
Floors Blank					
501.000	Hydraulic Elevator 1	1.00 ea			
	Lump Sum Price			108,000.000	108,000.00
501.000	Hydraulic Elevator 2	1.00 ea			
	Lump Sum Price			200,000.000	200,000.00
501.000	Hydraulic Elevator 3	1.00 ea			
	Lump Sum Price			200,000.000	200,000.00
501.000	Hydraulic Elevator 4	1.00 ea			
	Lump Sum Price			200,000.000	200,000.00
501.000	Hydraulic Elevator 5	1.00 ea			
	Lump Sum Price			200,000.000	200,000.00
501.000	Hydraulic Elevator 6	1.00 ea			
	Lump Sum Price			200,000.000	200,000.00
*** Total Floors Blank					\$1,108,000
** Total 14A - Elevators					\$1,108,000
15B - HVAC					
Sub Level Parking					
501.000	New HVAC System (Hotel)	28,000.00 sf			
	Lump Sum Price			10.000	280,000.00
*** Total Sub Level Parking					\$280,000
1st Floor					
501.000	New HVAC System (Hotel)	26,664.00 sf			
	Lump Sum Price			10.000	266,640.00
*** Total 1st Floor					\$266,640
2nd floor					
5001.000	New HVAC System (Hotel)	26,931.00 sf			
	Lump Sum Price			10.000	269,310.00
*** Total 2nd floor					\$269,310
3rd floor					
501.000	New HVAC System (Hotel)	26,931.00 sf			
	Lump Sum Price			10.000	269,310.00
*** Total 3rd floor					\$269,310
4th floor					

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ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
001.000	New HVAC System (Hotel)	22,438.00 sf			
	Lump Sum Price			10.000	224,380.00
***	Total 4th floor				\$224,380
	5th floor				
001.000	New HVAC System (Hotel)	22,438.00 sf			
	Lump Sum Price			10.000	224,380.00
***	Total 5th floor				\$224,380
	6th floor				
001.000	New HVAC System (Hotel)	16,202.00 sf			
	Lump Sum Price			10.000	162,020.00
***	Total 6th floor				\$162,020
	7th floor				
001.000	New HVAC System (Hotel)	16,202.00 sf			
	Lump Sum Price			10.000	162,020.00
***	Total 7th floor				\$162,020
	8th floor				
001.000	New HVAC System (Hotel)	16,202.00 sf			
	Lump Sum Price			10.000	162,020.00
***	Total 8th floor				\$162,020
	9th Floor				
001.000	New HVAC System (Hotel)	4,000.00 sf			
	Lump Sum Price			10.000	40,000.00
***	Total 9th Floor				\$40,000
**	Total 15B - HVAC				\$2,960,080
	15C - Plumbing				
	Sub Level Parking				
001.000	New Plumbing System (Hotel)	28,000.00 sf			
	Lump Sum Price			4.250	119,000.00
***	Total Sub Level Parking				\$119,000
	1st Floor				
001.000	New Plumbing System (Hotel)	26,664.00 sf			
	Lump Sum Price			4.250	113,322.00
***	Total 1st Floor				\$113,322
	2nd floor				
001.000	New Plumbing System (Hotel)	26,931.00 sf			
	Lump Sum Price			4.250	114,456.75
***	Total 2nd floor				\$114,457
	3rd floor				
001.000	New Plumbing System (Hotel)	26,931.00 sf			
	Lump Sum Price			4.250	114,456.75
***	Total 3rd floor				\$114,457
	4th floor				
001.000	New Plumbing System (Hotel)	22,438.00 sf			
	Lump Sum Price			4.250	95,361.50
***	Total 4th floor				\$95,362
	5th floor				
001.000	New Plumbing System (Hotel)	22,438.00 sf			
	Lump Sum Price			4.250	95,361.50
***	Total 5th floor				\$95,362
	6th floor				
001.000	New Plumbing System (Hotel)	16,202.00 sf			
	Lump Sum Price			4.250	68,858.50
***	Total 6th floor				\$68,859
	7th floor				
001.000	New Plumbing System (Hotel)	16,202.00 sf			
	Lump Sum Price			4.250	68,858.50
***	Total 7th floor				\$68,859
	8th floor				
001.000	New Plumbing System (Hotel)	16,202.00 sf			
	Lump Sum Price			4.250	68,858.50
***	Total 8th floor				\$68,859
	9th Floor				
001.000	New Plumbing System (Hotel)	4,000.00 sf			
	Lump Sum Price			4.250	17,000.00
***	Total 9th Floor				\$17,000
**	Total 15C - Plumbing				\$875,534

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Subcontract Detail - Hotel at Marion Square

Motor : MT
 Project Size : 206008 SF

Group 1: Area
 Group 2: Bid Packages
 Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
15D - Fire Protection					
Sub Level Parking					
001.000	New Wet Sprinkler System (Hotel)	28,000.00 sf			
	Lump Sum Price			1.050	29,400.00
	*** Total Sub Level Parking				\$29,400
1st Floor					
001.000	New Wet Sprinkler System (Hotel)	26,664.00 sf			
	Lump Sum Price			1.050	27,997.20
	*** Total 1st Floor				\$27,997
2nd floor					
001.000	New Wet Sprinkler System (Hotel)	26,931.00 sf			
	Lump Sum Price			1.050	28,277.55
	*** Total 2nd floor				\$28,278
3rd floor					
001.000	New Wet Sprinkler System (Hotel)	26,931.00 sf			
	Lump Sum Price			1.050	28,277.55
	*** Total 3rd floor				\$28,278
4th floor					
001.000	New Wet Sprinkler System (Hotel)	22,438.00 sf			
	Lump Sum Price			1.050	23,559.90
	*** Total 4th floor				\$23,560
5th floor					
001.000	New Wet Sprinkler System (Hotel)	22,438.00 sf			
	Lump Sum Price			1.050	23,559.90
	*** Total 5th floor				\$23,560
6th floor					
001.000	New Wet Sprinkler System (Hotel)	16,202.00 sf			
	Lump Sum Price			1.050	17,012.10
	*** Total 6th floor				\$17,012
7th floor					
001.000	New Wet Sprinkler System (Hotel)	16,202.00 sf			
	Lump Sum Price			1.050	17,012.10
	*** Total 7th floor				\$17,012
8th floor					
001.000	New Wet Sprinkler System (Hotel)	16,202.00 sf			
	Lump Sum Price			1.050	17,012.10
	*** Total 8th floor				\$17,012
9th Floor					
001.000	New Wet Sprinkler System (Hotel)	4,000.00 sf			
	Lump Sum Price			1.050	4,200.00
	*** Total 9th Floor				\$4,200
	** Total 15D - Fire Protection				\$216,308
16A - Electrical					
Sub Level Parking					
001.000	New Electrical System (Hotel)	28,000.00 sf			
	Lump Sum Price			8.250	231,000.00
	*** Total Sub Level Parking				\$231,000
1st Floor					
001.000	New Electrical System (Hotel)	26,664.00 sf			
	Lump Sum Price			8.250	219,978.00
	*** Total 1st Floor				\$219,978
2nd floor					
001.000	New Electrical System (Hotel)	26,931.00 sf			
	Lump Sum Price			8.250	222,180.75
	*** Total 2nd floor				\$222,181
3rd floor					
001.000	New Electrical System (Hotel)	26,931.00 sf			
	Lump Sum Price			8.250	222,180.75
	*** Total 3rd floor				\$222,181
4th floor					
001.000	New Electrical System (Hotel)	22,438.00 sf			
	Lump Sum Price			8.250	185,113.50
	*** Total 4th floor				\$185,114
5th floor					
001.000	New Electrical System (Hotel)	22,438.00 sf			
	Lump Sum Price			8.250	185,113.50

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
*** Total 5th floor					\$185,114
5th floor					
0001.000	New Electrical System (Hotel)	16,202.00 sf			
	Lump Sum Price			8.250	133,666.50
*** Total 6th floor					\$133,667
6th floor					
0001.000	New Electrical System (Hotel)	16,202.00 sf			
	Lump Sum Price			8.250	133,666.50
*** Total 7th floor					\$133,667
7th floor					
0001.000	New Electrical System (Hotel)	16,202.00 sf			
	Lump Sum Price			8.250	133,666.50
*** Total 8th floor					\$133,667
8th floor					
0001.000	New Electrical System (Hotel)	16,202.00 sf			
	Lump Sum Price			8.250	133,666.50
*** Total 9th Floor					\$33,000
9th Floor					
0001.000	New Electrical System (Hotel)	4,000.00 sf			
	Lump Sum Price			8.250	33,000.00
*** Total 16A - Electrical					\$1,699,566
D - Fire Alarm					
Sub Level Parking					
0001.000	New Fire Alarm System (Hotel)	28,000.00 sf			
	Lump Sum Price			1.348	37,749.60
*** Total Sub Level Parking					\$37,750
1st Floor					
0001.000	New Fire Alarm System (Hotel)	26,664.00 sf			
	Lump Sum Price			1.348	35,943.07
*** Total 1st Floor					\$35,943
2nd floor					
0001.000	New Fire Alarm System (Hotel)	26,931.00 sf			
	Lump Sum Price			1.348	36,302.99
*** Total 2nd floor					\$36,303
3rd floor					
0001.000	New Fire Alarm System (Hotel)	26,931.00 sf			
	Lump Sum Price			1.348	36,302.99
*** Total 3rd floor					\$36,303
4th floor					
0001.000	New Fire Alarm System (Hotel)	22,438.00 sf			
	Lump Sum Price			1.348	30,246.42
*** Total 4th floor					\$30,246
5th floor					
0001.000	New Fire Alarm System (Hotel)	22,438.00 sf			
	Lump Sum Price			1.348	30,246.42
*** Total 5th floor					\$30,246
6th floor					
0001.000	New Fire Alarm System (Hotel)	16,202.00 sf			
	Lump Sum Price			1.348	21,840.30
*** Total 6th floor					\$21,840
7th floor					
0001.000	New Fire Alarm System (Hotel)	16,202.00 sf			
	Lump Sum Price			1.348	21,840.30
*** Total 7th floor					\$21,840
8th floor					
0001.000	New Fire Alarm System (Hotel)	16,202.00 sf			
	Lump Sum Price			1.348	21,840.30
*** Total 8th floor					\$21,840
9th Floor					
0001.000	New Fire Alarm System (Hotel)	4,000.00 sf			
	Lump Sum Price			1.348	5,392.00
*** Total 9th Floor					\$5,392
** Total 16D - Fire Alarm					\$277,704
* Total STRUCTURE					\$14,076,873

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
04 - ENVELOPE					
04A - Masonry					
Floors Blank					
000.000	Veneer @ First Floor	1,700.00 sf			
	Lump Sum Price			75.477	128,310.05
010.000	Cast Stone Trims, Sills, Caps, Coping, Bands, Pa	20,497.00 sf			
	Lump Sum Price			30.273	620,505.68
010.000	Engineering & Shop Dwg Fees	1.00 lsum			
	Lump Sum Price			12,000.000	12,000.00
010.000	Freight Charges	1.00 lsum			
	Lump Sum Price			83,160.000	83,160.00
*** Total Floors Blank					\$843,976
** Total 04A - Masonry					\$843,976
06A - Rough Carpentry					
Floors Blank					
6740.000	Sheathing	30,664.00 sf			
	Lump Sum Price			0.750	22,998.00
6900.000	Trellis	1,950.00 sf			
	Lump Sum Price			40.000	78,000.00
6920.000	FRP Columns	1.00 lsum			
	Lump Sum Price			30,930.000	30,930.00
*** Total Floors Blank					\$131,928
** Total 06A - Rough Carpentry					\$131,928
07A - Roofing					
3rd floor					
035.000	Roof Pavers	3,300.00 sf			
	Lump Sum Price			21.987	72,555.45
*** Total 3rd floor					\$72,555
4th floor					
04000.000	Copper Standing Seam Roof, Gutters, Down Spo	2,842.00 sf			
	Lump Sum Price			17.731	50,390.08
*** Total 4th floor					\$50,390
6th floor					
0435.000	Roof Pavers	15,925.00 sf			
	Lump Sum Price			21.987	350,135.01
07000.000	Copper Standing Seam Roof, Gutters, Down Spo	8,802.00 sf			
	Lump Sum Price			17.731	156,063.86
*** Total 6th floor					\$506,199
9th Floor					
0435.000	Roof Pavers	6,700.00 sf			
	Lump Sum Price			21.987	147,309.55
07000.000	Copper Standing Seam Roof, Gutters, Down Spo	10,916.00 sf			
	Lump Sum Price			17.731	193,546.14
*** Total 9th Floor					\$340,856
** Total 07A - Roofing					\$970,000
07B - Waterproofing & Dampproofing					
Floors Blank					
07320.000	Dampproofing	68,664.00 sf			
	Lump Sum Price			0.650	44,631.60
07340.000	Air and Weather Barrier	1.00 lsum			
	Lump Sum Price			23,770.000	23,770.00
*** Total Floors Blank					\$68,402
3rd floor					
0700.000	Waterproofing	26,931.00 sf			
	Lump Sum Price			8.088	217,817.93
*** Total 3rd floor					\$217,818
6th floor					
0700.000	Waterproofing	16,202.00 sf			
	Lump Sum Price			8.088	131,041.78
*** Total 6th floor					\$131,042
9th Floor					
0700.000	Waterproofing	4,000.00 sf			
	Lump Sum Price			8.088	32,352.00
*** Total 9th Floor					\$32,352
** Total 07B - Waterproofing & Dampproofing					\$449,613
08 - Caulking & Sealing					
Floors Blank					

Subcontract Detail - Hotel at Marion Square

Signature: MT
Project Size: 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Unit	Cost Quantity	Unit Price	Total Subcontract
001.000	Caulking & Sealing	1.00	lsum		25,000.000	25,000.00
	Lump Sum Price					\$25,000
	*** Total Floors Blank					\$25,000
	** Total 07C - Caulking & Sealing					\$25,000
	07D - Metal Panels					
	Floors Blank					
030.000	Bronze Panels	1.00	lsum		249,000.000	249,000.00
	Lump Sum Price					\$249,000
	*** Total Floors Blank					\$249,000
	** Total 07D - Metal Panels					\$249,000
	07E - EIFS / Stucco					
	Floors Blank					
0620.000	Stucco	1.00	lsum		715,000.000	715,000.00
	Lump Sum Price					\$715,000
	*** Total Floors Blank					\$715,000
	** Total 07E - EIFS / Stucco					\$715,000
	08F - Glass and Glazing					
	Floors Blank					
006.000	Bronze Storefront	1.00	lsum		1,785,000.000	1,785,000.00
	Lump Sum Price					\$1,785,000
	*** Total Floors Blank					\$1,785,000
	** Total 08F - Glass and Glazing					\$1,785,000
	08I - Windows					
	Floors Blank					
8701.000	Vinyl Clad Windows & French Doors	408.00	ea		3,500.000	1,428,000.00
	Lump Sum Price					
8791.000	Window Shutter	402.00	pair		185.401	74,531.00
	Lump Sum Price					\$1,502,531
	*** Total Floors Blank					\$1,502,531
	** Total 08I - Windows					\$1,502,531
	10A - Specialties					
	Floors Blank					
031.000	Flagpole	6.00	ea		500.000	3,000.00
	Lump Sum Price					
061.000	Flag	6.00	ea		250.000	1,500.00
	Lump Sum Price					
071.000	Bracket	6.00	ea		150.000	900.00
	Lump Sum Price					
021.000	Louver	36.00	ea		762.500	27,450.00
	Lump Sum Price					\$32,850
	*** Total Floors Blank					\$32,850
	1st Floor					
0931.000	Knox Box	2.00	ea		500.000	1,000.00
	Lump Sum Price					\$1,000
	*** Total 1st Floor					\$33,850
	** Total 10A - Specialties					\$33,850
	* Total SKIN / ENVELOPE					\$6,705,898

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Subcontract Detail - Hotel at Marion Square

Signator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
INTERIORS					
00A - Staging and Logistics					
Floors Blank					
092.000	Hoist & Operator	1.00	lsum		
	Lump Sum Price			90,000.000	90,000.00
***	Total Floors Blank				\$90,000
**	Total 00A - Staging and Logistics				\$90,000
01A - General Trades					
Floors Blank					
092.000	Clean Up, Trash Chute, Dumpsters	1.00	lsum		
	Lump Sum Price			324,000.000	324,000.00
1080.000	FF&E-OSE - Install Labor Allowance	1.00	allow		
	Lump Sum Price			125,000.000	125,000.00
***	Total Floors Blank				\$449,000
**	Total 01A - General Trades				\$449,000
06A - Rough Carpentry					
Sub Level Parking					
001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total Sub Level Parking				\$3,000
1st Floor					
001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 1st Floor				\$3,000
2nd floor					
0001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 2nd floor				\$3,000
3rd floor					
001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 3rd floor				\$3,000
4th floor					
001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 4th floor				\$3,000
5th floor					
0001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 5th floor				\$3,000
6th floor					
001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 6th floor				\$3,000
7th floor					
001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 7th floor				\$3,000
8th floor					
0001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 8th floor				\$3,000
9th Floor					
0001.000	Wood Blocking for backing	3,000.00	lf		
	Lump Sum Price			1.000	3,000.00
***	Total 9th Floor				\$3,000
**	Total 06A - Rough Carpentry				\$30,000
08B - Casework and Millwork					
1st Floor					
000.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	26,664.00	sf		
	Lump Sum Price			6.393	170,462.95
000.000	Base, Picture Trim, Chair Railing, Crown Moldi	26,664.00	sf		
	Lump Sum Price			3.932	104,842.85
***	Total 1st Floor				\$275,306
2nd floor					
0200.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	26,931.00	sf		

R - 7118

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Subcontract Detail - Hotel at Marion Square

Signator: MT
Project Size: 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
	Lump Sum Price			6.393	172,156.42
00.000	Base, Picture Trim, Chair Railing, Crown Moldi	26,931.00 sf			
	Lump Sum Price			3.932	105,892.69
*** Total 2nd floor					\$278,049
3rd floor					
00.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	26,931.00 sf			
	Lump Sum Price			6.393	172,169.88
00.000	Base, Picture Trim, Chair Railing, Crown Moldi	26,931.00 sf			
	Lump Sum Price			3.932	105,892.69
*** Total 3rd floor					\$278,063
4th floor					
00.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	22,478.00 sf			
	Lump Sum Price			6.393	143,701.85
00.000	Base, Picture Trim, Chair Railing, Crown Moldi	22,478.00 sf			
	Lump Sum Price			3.932	88,383.50
*** Total 4th floor					\$232,085
5th floor					
00.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	22,478.00 sf			
	Lump Sum Price			6.393	143,701.85
00.000	Base, Picture Trim, Chair Railing, Crown Moldi	22,478.00 sf			
	Lump Sum Price			3.932	88,383.50
*** Total 5th floor					\$232,085
6th floor					
00.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	16,202.00 sf			
	Lump Sum Price			6.393	103,579.39
00.000	Base, Picture Trim, Chair Railing, Crown Moldi	16,202.00 sf			
	Lump Sum Price			3.932	63,706.26
*** Total 6th floor					\$167,286
7th floor					
00.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	16,202.00 sf			
	Lump Sum Price			6.393	103,579.39
00.000	Base, Picture Trim, Chair Railing, Crown Moldi	16,202.00 sf			
	Lump Sum Price			3.932	63,706.26
*** Total 7th floor					\$167,286
8th floor					
00.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	16,202.00 sf			
	Lump Sum Price			6.393	103,579.39
00.000	Base, Picture Trim, Chair Railing, Crown Moldi	16,202.00 sf			
	Lump Sum Price			3.932	63,706.26
*** Total 8th floor					\$167,286
9th Floor					
00.000	Guestroom Vanities, Stone Tops, Rooftop Bars,	4,000.00 sf			
	Lump Sum Price			6.393	25,572.00
00.000	Base, Picture Trim, Chair Railing, Crown Moldi	4,000.00 sf			
	Lump Sum Price			3.932	15,728.00
*** Total 9th Floor					\$41,300
** Total 06B - Casework and Millwork					\$1,838,745
07X - Firestopping					
Sub Level Parking					
00.000	Firestopping	1.00 lsum			
	Lump Sum Price			2,000.000	2,000.00
*** Total Sub Level Parking					\$2,000
1st Floor					
00.000	Firestopping	1.00 lsum			
	Lump Sum Price			2,000.000	2,000.00
*** Total 1st Floor					\$2,000
2nd floor					
00.000	Firestopping	1.00 lsum			
	Lump Sum Price			2,000.000	2,000.00
*** Total 2nd floor					\$2,000
3rd floor					
00.000	Firestopping	1.00 lsum			
	Lump Sum Price			2,000.000	2,000.00
*** Total 3rd floor					\$2,000
4th floor					
00.000	Firestopping	1.00 lsum			
	Lump Sum Price			2,000.000	2,000.00
*** Total 4th floor					\$2,000

R - 7119

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Subcontract Detail - Hotel at Marion Square

Estimator: MT
Project Size: 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
5th floor					
11.000	Firestopping	1.00	lsum		
	Lump Sum Price			2,000.000	2,000.00
*** Total 5th floor					\$2,000
6th floor					
11.000	Firestopping	1.00	lsum		
	Lump Sum Price			2,000.000	2,000.00
*** Total 6th floor					\$2,000
7th floor					
11.000	Firestopping	1.00	lsum		
	Lump Sum Price			2,000.000	2,000.00
*** Total 7th floor					\$2,000
8th floor					
11.000	Firestopping	1.00	lsum		
	Lump Sum Price			2,000.000	2,000.00
*** Total 8th floor					\$2,000
9th floor					
11.000	Firestopping	1.00	lsum		
	Lump Sum Price			2,000.000	2,000.00
*** Total 9th floor					\$2,000
** Total 07X - Firestopping					\$20,000
08D - Frames, Doors and HW					
Sub Level Parking					
8001.000	Solid Core Wood Door	5.00	ea		
	Lump Sum Price			350.000	1,750.00
8021.000	Hollow Metal Frame	5.00	ea		
	Lump Sum Price			270.000	1,350.00
8041.000	Finish Hardware	5.00	ea		
	Lump Sum Price			650.000	3,250.00
*** Total Sub Level Parking					\$6,350
1st Floor					
01.000	Solid Core Wood Door	56.00	ea		
	Lump Sum Price			530.000	29,680.00
21.000	Hollow Metal Frame	56.00	ea		
	Lump Sum Price			270.000	15,120.00
41.000	Finish Hardware	56.00	ea		
	Lump Sum Price			650.000	36,400.00
*** Total 1st Floor					\$81,200
2nd floor					
01.000	Solid Core Wood Door	38.00	ea		
	Lump Sum Price			530.000	20,140.00
21.000	Hollow Metal Frame	38.00	ea		
	Lump Sum Price			270.000	10,260.00
41.000	Finish Hardware	38.00	ea		
	Lump Sum Price			650.000	24,700.00
*** Total 2nd floor					\$55,100
3rd floor					
01.000	Solid Core Wood Door	78.00	ea		
	Lump Sum Price			530.000	41,340.00
21.000	Hollow Metal Frame	78.00	ea		
	Lump Sum Price			270.000	21,060.00
41.000	Finish Hardware	78.00	ea		
	Lump Sum Price			650.000	50,700.00
*** Total 3rd floor					\$113,100
4th floor					
01.000	Solid Core Wood Door	59.00	ea		
	Lump Sum Price			530.000	31,270.00
21.000	Hollow Metal Frame	59.00	ea		
	Lump Sum Price			270.000	15,930.00
41.000	Finish Hardware	59.00	ea		
	Lump Sum Price			650.000	38,350.00
*** Total 4th floor					\$85,550
5th floor					
01.000	Solid Core Wood Door	42.00	ea		
	Lump Sum Price			530.000	22,260.00
21.000	Hollow Metal Frame	42.00	ea		
	Lump Sum Price			270.000	11,340.00
41.000	Finish Hardware	42.00	ea		

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Unit	Cost Quantity	Unit Price	Total Subcontract
	Lump Sum Price				650.000	27,300.00
*** Total 5th floor						\$60,900
6th floor						
01.000	Solid Core Wood Door	51.00	ea			
	Lump Sum Price				530.000	27,030.00
02.000	Hollow Metal Frame	51.00	ea			
	Lump Sum Price				270.000	13,770.00
04.000	Finish Hardware	51.00	ea			
	Lump Sum Price				650.000	33,150.00
*** Total 6th floor						\$73,950
7th floor						
01.000	Solid Core Wood Door	31.00	ea			
	Lump Sum Price				530.000	16,430.00
02.000	Hollow Metal Frame	31.00	ea			
	Lump Sum Price				270.000	8,370.00
04.000	Finish Hardware	31.00	ea			
	Lump Sum Price				650.000	20,150.00
*** Total 7th floor						\$44,950
8th floor						
01.000	Solid Core Wood Door	32.00	ea			
	Lump Sum Price				530.000	16,960.00
02.000	Hollow Metal Frame	32.00	ea			
	Lump Sum Price				270.000	8,640.00
04.000	Finish Hardware	32.00	ea			
	Lump Sum Price				650.000	20,800.00
*** Total 8th floor						\$46,400
9th Floor						
01.000	Solid Core Wood Door	18.00	ea			
	Lump Sum Price				530.000	9,540.00
02.000	Hollow Metal Frame	18.00	ea			
	Lump Sum Price				270.000	4,860.00
04.000	Finish Hardware	18.00	ea			
	Lump Sum Price				650.000	11,700.00
*** Total 9th Floor						\$26,100
** Total 08D - Frames, Doors and HW						\$593,600
08H - Glass Office Walls						
Sub Level Parking						
06.000	Mirrors & Misc. Glazing	1.00	floor			
	Lump Sum Price				2,000.000	2,000.00
*** Total Sub Level Parking						\$2,000
1st Floor						
06.000	Mirrors & Misc. Glazing	1.00	floor			
	Lump Sum Price				2,000.000	2,000.00
*** Total 1st Floor						\$2,000
2nd floor						
06.000	Mirrors & Misc. Glazing	1.00	floor			
	Lump Sum Price				2,000.000	2,000.00
*** Total 2nd floor						\$2,000
3rd floor						
06.000	Mirrors & Misc. Glazing	1.00	floor			
	Lump Sum Price				2,000.000	2,000.00
*** Total 3rd floor						\$2,000
4th floor						
06.000	Mirrors & Misc. Glazing	1.00	floor			
	Lump Sum Price				2,000.000	2,000.00
*** Total 4th floor						\$2,000
5th floor						
06.000	Mirrors & Misc. Glazing	1.00	floor			
	Lump Sum Price				2,000.000	2,000.00
*** Total 5th floor						\$2,000
6th floor						
06.000	Mirrors & Misc. Glazing	1.00	floor			
	Lump Sum Price				2,000.000	2,000.00
*** Total 6th floor						\$2,000
7th floor						
06.000	Mirrors & Misc. Glazing	1.00	floor			
	Lump Sum Price				2,000.000	2,000.00
*** Total 7th floor						\$2,000

R - 7121

ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
8th floor					
0261.000	Mirrors & Misc. Glazing	1.00 floor			
	Lump Sum Price			2,000.000	2,000.00
*** Total 8th floor					\$2,000
9th Floor					
061.000	Mirrors & Misc. Glazing	1.00 floor			
	Lump Sum Price			2,000.000	2,000.00
*** Total 9th Floor					\$2,000
** Total 08H - Glass Office Walls					\$20,000
08R - Special Doors					
Sub Level Parking					
8130.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total Sub Level Parking					\$14,479
1st Floor					
030.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total 1st Floor					\$14,479
2nd floor					
030.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total 2nd floor					\$14,479
3rd floor					
8130.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total 3rd floor					\$14,479
4th floor					
030.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total 4th floor					\$14,479
5th floor					
030.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total 5th floor					\$14,479
6th floor					
8130.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total 6th floor					\$14,479
7th floor					
8130.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total 7th floor					\$14,479
8th floor					
030.000	Won Doors	1.00 ea			
	Lump Sum Price			14,479.000	14,479.00
*** Total 8th floor					\$14,479
** Total 08R - Special Doors					\$130,311
08X - Smoke Curtains					
Sub Level Parking					
8501.000	Smoke Curtain	1.00 ea			
	Lump Sum Price			4,953.000	4,953.00
*** Total Sub Level Parking					\$4,953
1st Floor					
001.000	Smoke Curtain	1.00 ea			
	Lump Sum Price			4,953.000	4,953.00
*** Total 1st Floor					\$4,953
2nd floor					
001.000	Smoke Curtain	1.00 ea			
	Lump Sum Price			4,953.000	4,953.00
*** Total 2nd floor					\$4,953
3rd floor					
8501.000	Smoke Curtain	1.00 ea			
	Lump Sum Price			4,953.000	4,953.00
*** Total 3rd floor					\$4,953
4th floor					
8501.000	Smoke Curtain	1.00 ea			

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ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
	Lump Sum Price			4,953.000	4,953.00
*** Total 4th floor					\$4,953
5th floor					
901.000	Smoke Curtain	1.00 ea			
	Lump Sum Price			4,953.000	4,953.00
*** Total 5th floor					\$4,953
6th floor					
901.000	Smoke Curtain	1.00 ea			
	Lump Sum Price			4,953.000	4,953.00
*** Total 6th floor					\$4,953
7th floor					
901.000	Smoke Curtain	1.00 ea			
	Lump Sum Price			4,953.000	4,953.00
*** Total 7th floor					\$4,953
8th floor					
901.000	Smoke Curtain	1.00 ea			
	Lump Sum Price			4,953.000	4,953.00
*** Total 8th floor					\$4,953
** Total 08X - Smoke Curtains					\$44,577
09A - Framing & Drywall					
1st Floor					
9006.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
9051.000	20 gauge., 3-5/8" gyp (one side), insulation, 10'h	4,400.00 lf			
	Lump Sum Price			40.000	176,000.00
9071.000	Drywall Ceiling	26,664.00 sf			
	Lump Sum Price			4.000	106,656.00
*** Total 1st Floor					\$447,158
2nd floor					
906.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
9071.000	Drywall Ceiling	26,931.00 sf			
	Lump Sum Price			4.000	107,724.00
*** Total 2nd floor					\$272,226
3rd floor					
906.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
9071.000	Drywall Ceiling	26,931.00 sf			
	Lump Sum Price			4.000	107,724.00
*** Total 3rd floor					\$272,226
4th floor					
9006.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
9071.000	Drywall Ceiling	22,478.00 sf			
	Lump Sum Price			4.000	89,912.00
*** Total 4th floor					\$254,414
5th floor					
906.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
9071.000	Drywall Ceiling	22,478.00 sf			
	Lump Sum Price			4.000	89,912.00
*** Total 5th floor					\$254,414
6th floor					
906.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
9071.000	Drywall Ceiling	16,202.00 sf			
	Lump Sum Price			4.000	64,808.00
*** Total 6th floor					\$229,310
7th floor					
9006.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
9071.000	Drywall Ceiling	16,202.00 sf			
	Lump Sum Price			4.000	64,808.00
*** Total 7th floor					\$229,310
8th floor					
906.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
9071.000	Drywall Ceiling	16,202.00 sf			

R - 7123

ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
	Lump Sum Price			4.000	64,808.00
*** Total 8th floor					\$229,310
9th Floor					
06.000	Frame, Insulate, Hang & Finish Walls	2,223.00 lf			
	Lump Sum Price			74.000	164,502.00
71.000	Drywall Ceiling	4,000.00 sf			
	Lump Sum Price			4.000	16,000.00
*** Total 9th Floor					\$180,502
** Total 09A - Framing & Drywall					\$2,368,870
09B - Flooring					
1st Floor					
0221.000	Wood Floor	26,664.00 sf			
	Lump Sum Price			8.000	213,312.00
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
0263.000	Kitchen Tiles	1.00 lsum			
	Lump Sum Price			78,820.000	78,820.00
0263.000	Lobby Tiles	1.00 lsum			
	Lump Sum Price			138,500.000	138,500.00
0263.000	Public Restroom Tiles	1.00 lsum			
	Lump Sum Price			81,580.000	81,580.00
0263.000	Staff Restroom Tiles	1.00 lsum			
	Lump Sum Price			9,365.000	9,365.00
069.000	Fabricate & Set Pink Granite at Lobby/Bar	1,000.00 sf			
	Lump Sum Price			64.000	64,000.00
*** Total 1st Floor					\$720,927
2nd floor					
01.000	Carpet Floor	2,992.33 sy			
	Lump Sum Price			5.000	14,961.67
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
*** Total 2nd floor					\$150,312
3rd floor					
01.000	Carpet Floor	2,992.33 sy			
	Lump Sum Price			5.000	14,961.67
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
*** Total 3rd floor					\$150,312
4th floor					
01.000	Carpet Floor	2,497.56 sy			
	Lump Sum Price			5.000	12,487.78
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
*** Total 4th floor					\$147,838
5th floor					
01.000	Carpet Floor	2,497.56 sy			
	Lump Sum Price			5.000	12,487.78
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
*** Total 5th floor					\$147,838
6th floor					
01.000	Carpet Floor	1,800.22 sy			
	Lump Sum Price			5.000	9,001.11
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
*** Total 6th floor					\$144,351
7th floor					
01.000	Carpet Floor	1,800.22 sy			
	Lump Sum Price			5.000	9,001.11
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
*** Total 7th floor					\$144,351
8th floor					
01.000	Carpet Floor	1,800.22 sy			
	Lump Sum Price			5.000	9,001.11
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
*** Total 8th floor					\$144,351

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Sheet Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
9th Floor					
0201.000	Carpet Floor	444.44 sy			
	Lump Sum Price			5.000	2,222.22
0263.000	Guestroom Bathroom Tiles	1.00 lsum			
	Lump Sum Price			135,350.000	135,350.00
*** Total 9th Floor					\$137,572
** Total 09B - Flooring					\$1,887,851
09D - Paint					
Sub Level Parking					
0301.000	Painting	27,280.00 sf			
	Lump Sum Price			0.750	20,460.00
*** Total Sub Level Parking					\$20,460
1st Floor					
0301.000	Painting	26,664.00 sf			
	Lump Sum Price			2.250	59,994.00
*** Total 1st Floor					\$59,994
2nd floor					
0301.000	Painting	26,931.00 sf			
	Lump Sum Price			2.250	60,594.75
*** Total 2nd floor					\$60,595
3rd floor					
0301.000	Painting	26,931.00 sf			
	Lump Sum Price			2.250	60,594.75
*** Total 3rd floor					\$60,595
4th floor					
0301.000	Painting	22,478.00 sf			
	Lump Sum Price			2.250	50,575.50
*** Total 4th floor					\$50,576
5th floor					
0301.000	Painting	22,478.00 sf			
	Lump Sum Price			2.250	50,575.50
*** Total 5th floor					\$50,576
6th floor					
0301.000	Painting	16,202.00 sf			
	Lump Sum Price			2.250	36,454.50
*** Total 6th floor					\$36,455
7th floor					
0301.000	Painting	16,202.00 sf			
	Lump Sum Price			2.250	36,454.50
*** Total 7th floor					\$36,455
8th floor					
0301.000	Painting	16,202.00 sf			
	Lump Sum Price			2.250	36,454.50
*** Total 8th floor					\$36,455
9th Floor					
0301.000	Painting	4,000.00 sf			
	Lump Sum Price			2.250	9,000.00
*** Total 9th Floor					\$9,000
** Total 09D - Paint					\$421,158
10A - Specialties					
Sub Level Parking					
09001.000	Toilet Accessories	1.00 restrooms			
	Lump Sum Price			1,750.000	1,750.00
09201.000	Fire Extinguisher (10 lbs - ABC)	4.00 ea			
	Lump Sum Price			125.000	500.00
*** Total Sub Level Parking					\$2,250
1st Floor					
0901.000	Toilet Accessories	4.00 restrooms			
	Lump Sum Price			1,750.000	7,000.00
0901.000	Fire Extinguisher (10 lbs - ABC)	10.00 ea			
	Lump Sum Price			125.000	1,250.00
0911.000	Standard Stall Partition	8.00 ea			
	Lump Sum Price			1,000.000	8,000.00
0918.000	Urinal Partitions	2.00 ea			
	Lump Sum Price			650.000	1,300.00
*** Total 1st Floor					\$17,550
2nd floor					

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
001.000	Toilet Accessories	4.00	restrooms		
	Lump Sum Price			1,750.000	7,000.00
001.000	Fire Extinguisher (10 lbs - ABC)	10.00	ea		
	Lump Sum Price			125.000	1,250.00
011.000	Standard Stall Partition	18.00	ea		
	Lump Sum Price			1,000.000	18,000.00
018.000	Urinal Partitions	5.00	ea		
	Lump Sum Price			650.000	3,250.00
*** Total 2nd floor					\$29,500
3rd floor					
0001.000	Toilet Accessories	39.00	restrooms		
	Lump Sum Price			1,750.000	68,250.00
0201.000	Fire Extinguisher (10 lbs - ABC)	10.00	ea		
	Lump Sum Price			125.000	1,250.00
*** Total 3rd floor					\$69,500
4th floor					
001.000	Toilet Accessories	38.00	restrooms		
	Lump Sum Price			1,750.000	66,500.00
001.000	Fire Extinguisher (10 lbs - ABC)	10.00	ea		
	Lump Sum Price			125.000	1,250.00
*** Total 4th floor					\$67,750
5th floor					
001.000	Toilet Accessories	36.00	restrooms		
	Lump Sum Price			1,750.000	63,000.00
001.000	Fire Extinguisher (10 lbs - ABC)	10.00	ea		
	Lump Sum Price			125.000	1,250.00
*** Total 5th floor					\$64,250
6th floor					
0001.000	Toilet Accessories	25.00	restrooms		
	Lump Sum Price			1,750.000	43,750.00
0201.000	Fire Extinguisher (10 lbs - ABC)	10.00	ea		
	Lump Sum Price			125.000	1,250.00
*** Total 6th floor					\$45,000
7th floor					
001.000	Toilet Accessories	25.00	restrooms		
	Lump Sum Price			1,750.000	43,750.00
001.000	Fire Extinguisher (10 lbs - ABC)	10.00	ea		
	Lump Sum Price			125.000	1,250.00
*** Total 7th floor					\$45,000
8th floor					
001.000	Toilet Accessories	26.00	restrooms		
	Lump Sum Price			1,750.000	45,500.00
001.000	Fire Extinguisher (10 lbs - ABC)	10.00	ea		
	Lump Sum Price			125.000	1,250.00
*** Total 8th floor					\$46,750
9th Floor					
0001.000	Toilet Accessories	2.00	restrooms		
	Lump Sum Price			1,750.000	3,500.00
0201.000	Fire Extinguisher (10 lbs - ABC)	10.00	ea		
	Lump Sum Price			125.000	1,250.00
0711.000	Standard Stall Partition	5.00	ea		
	Lump Sum Price			1,000.000	5,000.00
0718.000	Urinal Partitions	1.00	ea		
	Lump Sum Price			650.000	650.00
*** Total 9th Floor					\$10,400
** Total 10A - Specialties					\$397,950
10A - Window Treatments					
1st Floor					
000.000	Horizontal Blinds		lsum		
	Lump Sum Price			7,000.000	
*** Total 1st Floor					
2nd floor					
000.000	Horizontal Blinds		lsum		
	Lump Sum Price			7,000.000	
*** Total 2nd floor					
3rd floor					
000.000	Horizontal Blinds		lsum		
	Lump Sum Price			7,000.000	

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
*** Total 3rd floor					
4th floor					
2000.000	Horizontal Blinds	lsum			
	Lump Sum Price			7,000.000	
*** Total 4th floor					
5th floor					
200.000	Horizontal Blinds	lsum			
	Lump Sum Price			7,000.000	
*** Total 5th floor					
6th floor					
200.000	Horizontal Blinds	lsum			
	Lump Sum Price			7,000.000	
*** Total 6th floor					
7th floor					
2000.000	Horizontal Blinds	lsum			
	Lump Sum Price			7,000.000	
*** Total 7th floor					
8th floor					
200.000	Horizontal Blinds	lsum			
	Lump Sum Price			7,000.000	
*** Total 8th floor					
9th Floor					
200.000	Horizontal Blinds	lsum			
	Lump Sum Price			7,000.000	
*** Total 9th Floor					
** Total 12A - Window Treatments					
13B - Water Features					
9th Floor					
3451.000	Pool	1.00 ea			
	Lump Sum Price			365,000.000	365,000.00
*** Total 9th Floor					\$365,000
** Total 13B - Water Features					\$365,000
13B - HVAC					
1st Floor					
201.000	New HVAC System (Hotel)	26,664.00 sf			
	Lump Sum Price			16.900	450,621.60
*** Total 1st Floor					\$450,622
2nd floor					
3001.000	New HVAC System (Hotel)	26,931.00 sf			
	Lump Sum Price			16.900	455,133.90
*** Total 2nd floor					\$455,134
3rd floor					
201.000	New HVAC System (Hotel)	26,931.00 sf			
	Lump Sum Price			16.900	455,133.90
*** Total 3rd floor					\$455,134
4th floor					
201.000	New HVAC System (Hotel)	22,478.00 sf			
	Lump Sum Price			16.900	379,878.20
*** Total 4th floor					\$379,878
5th floor					
3001.000	New HVAC System (Hotel)	22,478.00 sf			
	Lump Sum Price			16.900	379,878.20
*** Total 5th floor					\$379,878
6th floor					
2001.000	New HVAC System (Hotel)	16,202.00 sf			
	Lump Sum Price			16.900	273,813.80
*** Total 6th floor					\$273,814
7th floor					
201.000	New HVAC System (Hotel)	16,202.00 sf			
	Lump Sum Price			16.900	273,813.80
*** Total 7th floor					\$273,814
8th floor					
2001.000	New HVAC System (Hotel)	16,202.00 sf			
	Lump Sum Price			16.900	273,813.80
*** Total 8th floor					\$273,814

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ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Subcontract Detail - Hotel at Marion Square

Estimator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
9th Floor					
001.000	New HVAC System (Hotel)	4,000.00 sf			
	Lump Sum Price			16.900	67,600.00
	*** Total 9th Floor				\$67,600
	** Total 15B - HVAC				\$3,009,687
15C - Plumbing					
1st Floor					
001.000	New Plumbing System (Hotel)	26,664.00 sf			
	Lump Sum Price			11.577	308,689.13
	*** Total 1st Floor				\$308,689
2nd floor					
001.000	New Plumbing System (Hotel)	26,931.00 sf			
	Lump Sum Price			11.577	311,780.19
	*** Total 2nd floor				\$311,780
3rd floor					
001.000	New Plumbing System (Hotel)	26,931.00 sf			
	Lump Sum Price			11.577	311,780.19
	*** Total 3rd floor				\$311,780
4th floor					
001.000	New Plumbing System (Hotel)	22,478.00 sf			
	Lump Sum Price			11.577	260,227.81
	*** Total 4th floor				\$260,228
5th floor					
001.000	New Plumbing System (Hotel)	22,478.00 sf			
	Lump Sum Price			11.577	260,227.81
	*** Total 5th floor				\$260,228
6th floor					
001.000	New Plumbing System (Hotel)	16,202.00 sf			
	Lump Sum Price			11.577	187,570.55
	*** Total 6th floor				\$187,571
7th floor					
001.000	New Plumbing System (Hotel)	16,202.00 sf			
	Lump Sum Price			11.577	187,570.55
	*** Total 7th floor				\$187,571
8th floor					
001.000	New Plumbing System (Hotel)	16,202.00 sf			
	Lump Sum Price			11.577	187,570.55
	*** Total 8th floor				\$187,571
9th Floor					
001.000	New Plumbing System (Hotel)	4,000.00 sf			
	Lump Sum Price			11.577	46,308.00
	*** Total 9th Floor				\$46,308
	** Total 15C - Plumbing				\$2,061,725
15D - Fire Protection					
1st Floor					
001.000	New Wet Sprinkler System (Hotel)	26,664.00 sf			
	Lump Sum Price			2.000	53,328.00
	*** Total 1st Floor				\$53,328
2nd floor					
001.000	New Wet Sprinkler System (Hotel)	26,931.00 sf			
	Lump Sum Price			2.000	53,862.00
	*** Total 2nd floor				\$53,862
3rd floor					
001.000	New Wet Sprinkler System (Hotel)	26,931.00 sf			
	Lump Sum Price			2.000	53,862.00
	*** Total 3rd floor				\$53,862
4th floor					
001.000	New Wet Sprinkler System (Hotel)	22,478.00 sf			
	Lump Sum Price			2.000	44,956.00
	*** Total 4th floor				\$44,956
5th floor					
001.000	New Wet Sprinkler System (Hotel)	22,478.00 sf			
	Lump Sum Price			2.000	44,956.00
	*** Total 5th floor				\$44,956
6th floor					
001.000	New Wet Sprinkler System (Hotel)	16,202.00 sf			

R - 7128

ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Subcontract Detail - Hotel at Marion Square

Originator : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
	Lump Sum Price			2.000	32,404.00
*** Total 6th floor					\$32,404
7th floor					
001.000	New Wet Sprinkler System (Hotel)	16,202.00 sf			
	Lump Sum Price			2.000	32,404.00
*** Total 7th floor					\$32,404
8th floor					
001.000	New Wet Sprinkler System (Hotel)	16,202.00 sf			
	Lump Sum Price			2.000	32,404.00
*** Total 8th floor					\$32,404
9th Floor					
001.000	New Wet Sprinkler System (Hotel)	4,000.00 sf			
	Lump Sum Price			2.000	8,000.00
*** Total 9th Floor					\$8,000
** Total 15D - Fire Protection					\$356,176
16A - Electrical					
1st Floor					
001.000	New Electrical System (Hotel)	26,664.00 sf			
	Lump Sum Price			15.000	399,960.00
*** Total 1st Floor					\$399,960
2nd floor					
001.000	New Electrical System (Hotel)	26,931.00 sf			
	Lump Sum Price			15.000	403,965.00
*** Total 2nd floor					\$403,965
3rd floor					
001.000	New Electrical System (Hotel)	26,931.00 sf			
	Lump Sum Price			15.000	403,965.00
*** Total 3rd floor					\$403,965
4th floor					
001.000	New Electrical System (Hotel)	22,478.00 sf			
	Lump Sum Price			15.000	337,170.00
*** Total 4th floor					\$337,170
5th floor					
001.000	New Electrical System (Hotel)	22,478.00 sf			
	Lump Sum Price			15.000	337,170.00
*** Total 5th floor					\$337,170
6th floor					
001.000	New Electrical System (Hotel)	16,202.00 sf			
	Lump Sum Price			15.000	243,030.00
*** Total 6th floor					\$243,030
7th floor					
001.000	New Electrical System (Hotel)	16,202.00 sf			
	Lump Sum Price			15.000	243,030.00
*** Total 7th floor					\$243,030
8th floor					
001.000	New Electrical System (Hotel)	16,202.00 sf			
	Lump Sum Price			15.000	243,030.00
*** Total 8th floor					\$243,030
9th Floor					
001.000	New Electrical System (Hotel)	4,000.00 sf			
	Lump Sum Price			15.000	60,000.00
*** Total 9th Floor					\$60,000
** Total 16A - Electrical					\$2,671,320
16D - Fire Alarm					
1st Floor					
001.000	New Fire Alarm System (Hotel)	26,664.00 sf			
	Lump Sum Price			3.500	93,324.00
*** Total 1st Floor					\$93,324
2nd floor					
001.000	New Fire Alarm System (Hotel)	26,931.00 sf			
	Lump Sum Price			3.500	94,258.50
*** Total 2nd floor					\$94,259
3rd floor					
001.000	New Fire Alarm System (Hotel)	26,931.00 sf			
	Lump Sum Price			3.500	94,258.50
*** Total 3rd floor					\$94,259

R - 7129

ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Subcontract Detail - Hotel at Marion Square

Genitor : MT
Project Size : 206008 SF

Group 1: Area
Group 2: Bid Packages
Group 3: Floors

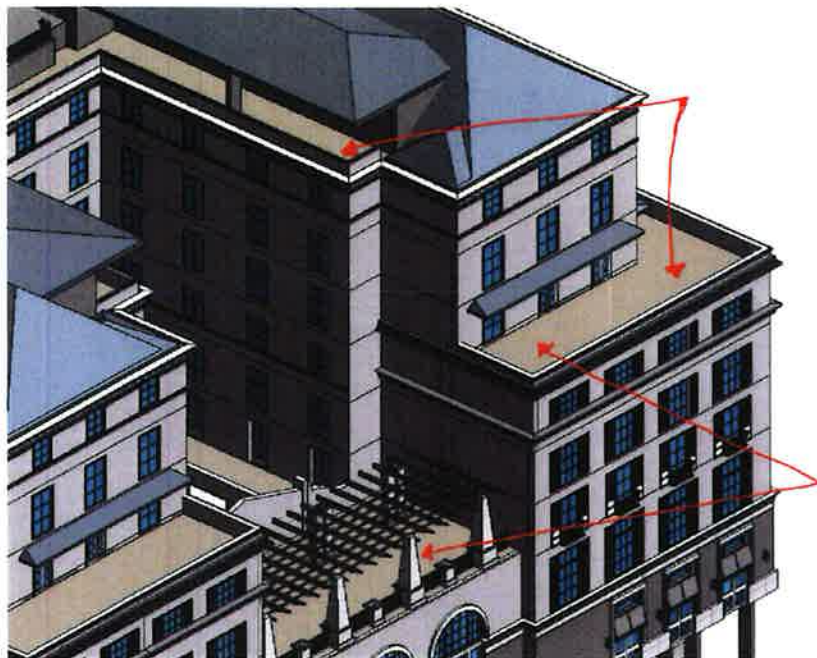
Item Code	Description	Quantity	Cost Quantity	Unit Price	Total Subcontract
4th floor					
001.000	New Fire Alarm System (Hotel)	22,478.00 sf			
	Lump Sum Price			3.500	78,673.00
*** Total 4th floor					\$78,673
5th floor					
001.000	New Fire Alarm System (Hotel)	22,478.00 sf			
	Lump Sum Price			3.500	78,673.00
*** Total 5th floor					\$78,673
6th floor					
001.000	New Fire Alarm System (Hotel)	16,202.00 sf			
	Lump Sum Price			3.500	56,707.00
*** Total 6th floor					\$56,707
7th floor					
001.000	New Fire Alarm System (Hotel)	16,202.00 sf			
	Lump Sum Price			3.500	56,707.00
*** Total 7th floor					\$56,707
8th floor					
001.000	New Fire Alarm System (Hotel)	16,202.00 sf			
	Lump Sum Price			3.500	56,707.00
*** Total 8th floor					\$56,707
9th Floor					
001.000	New Fire Alarm System (Hotel)	4,000.00 sf			
	Lump Sum Price			3.500	14,000.00
*** Total 9th Floor					\$14,000
** Total 16D - Fire Alarm					\$623,308
* Total INTERIORS					\$17,379,279
Total Estimate					\$42,277,083

ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

Pavers SF

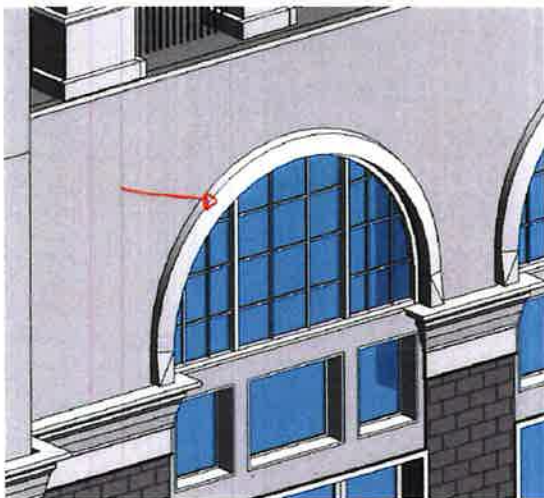
3rd Floor	3237
6th floor	15925
9th floor	1544

Total **20706 SF**

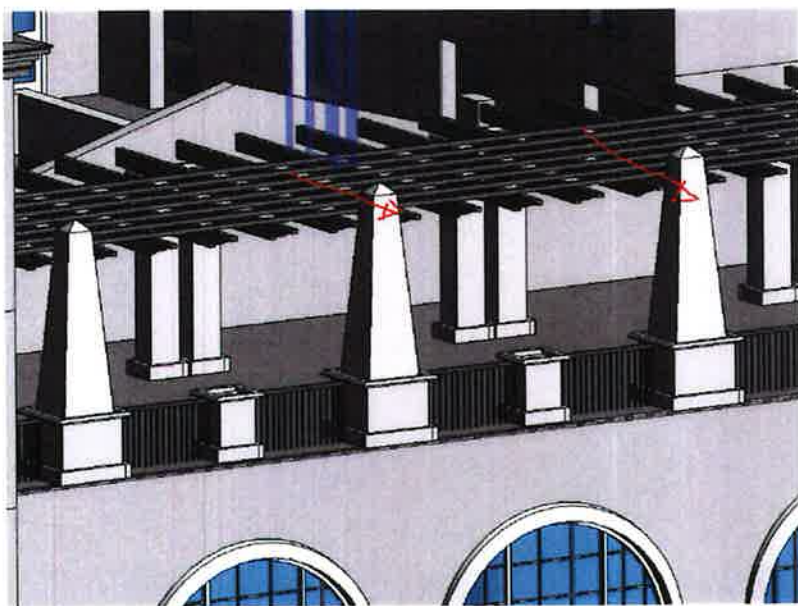


Gross Surface Area

arched windows moulding south elevation
170 SF



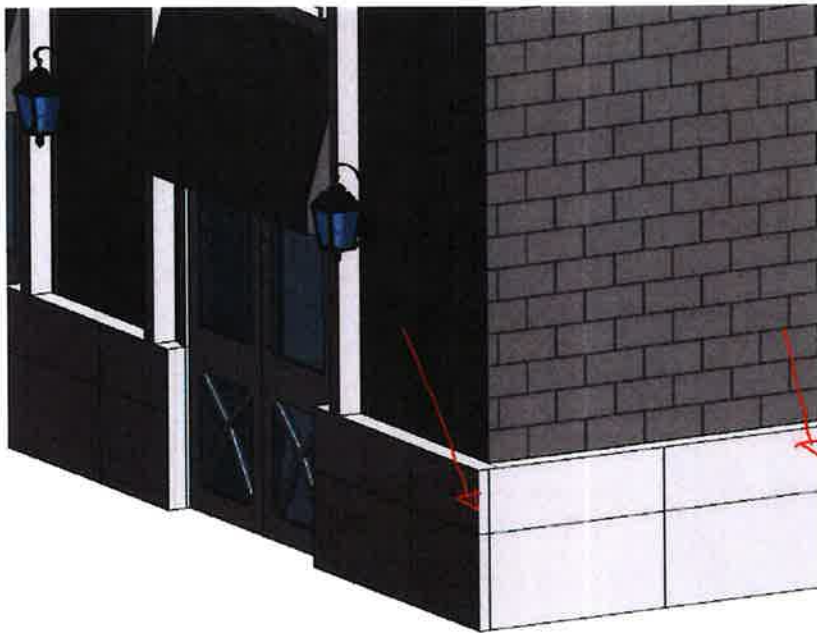
columns third floor south elevation - obelisque
402 SF



window moulding first floor windows
1701 SF



Cast stone veneer first floor
1700 SF



TOTAL:

3973

Cast Stone Banding - Linear Feet

Type

Length

1st floor Large Sweep

682' - 6 3/4"



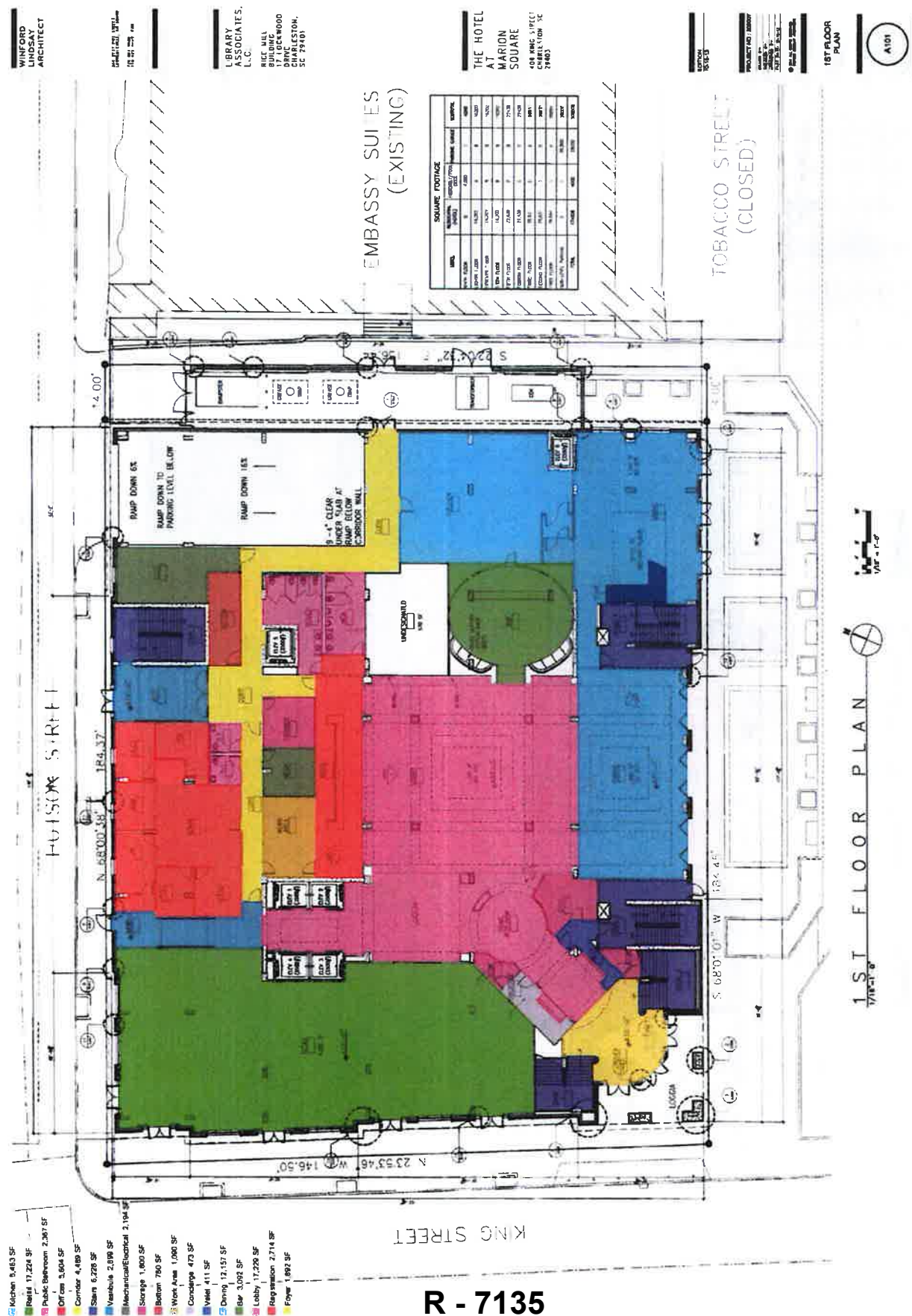
5th floor Large Sweep

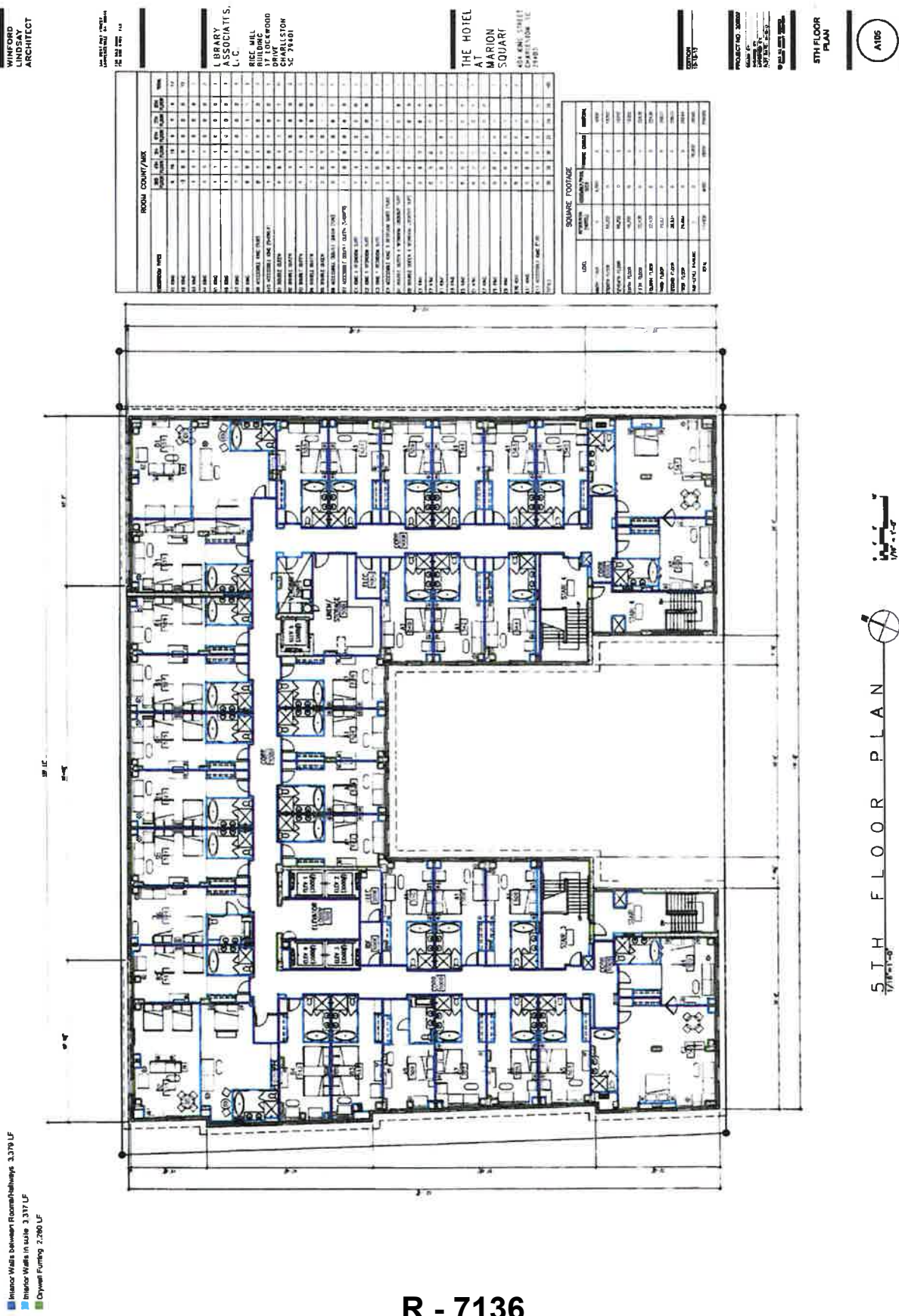
686' - 4"

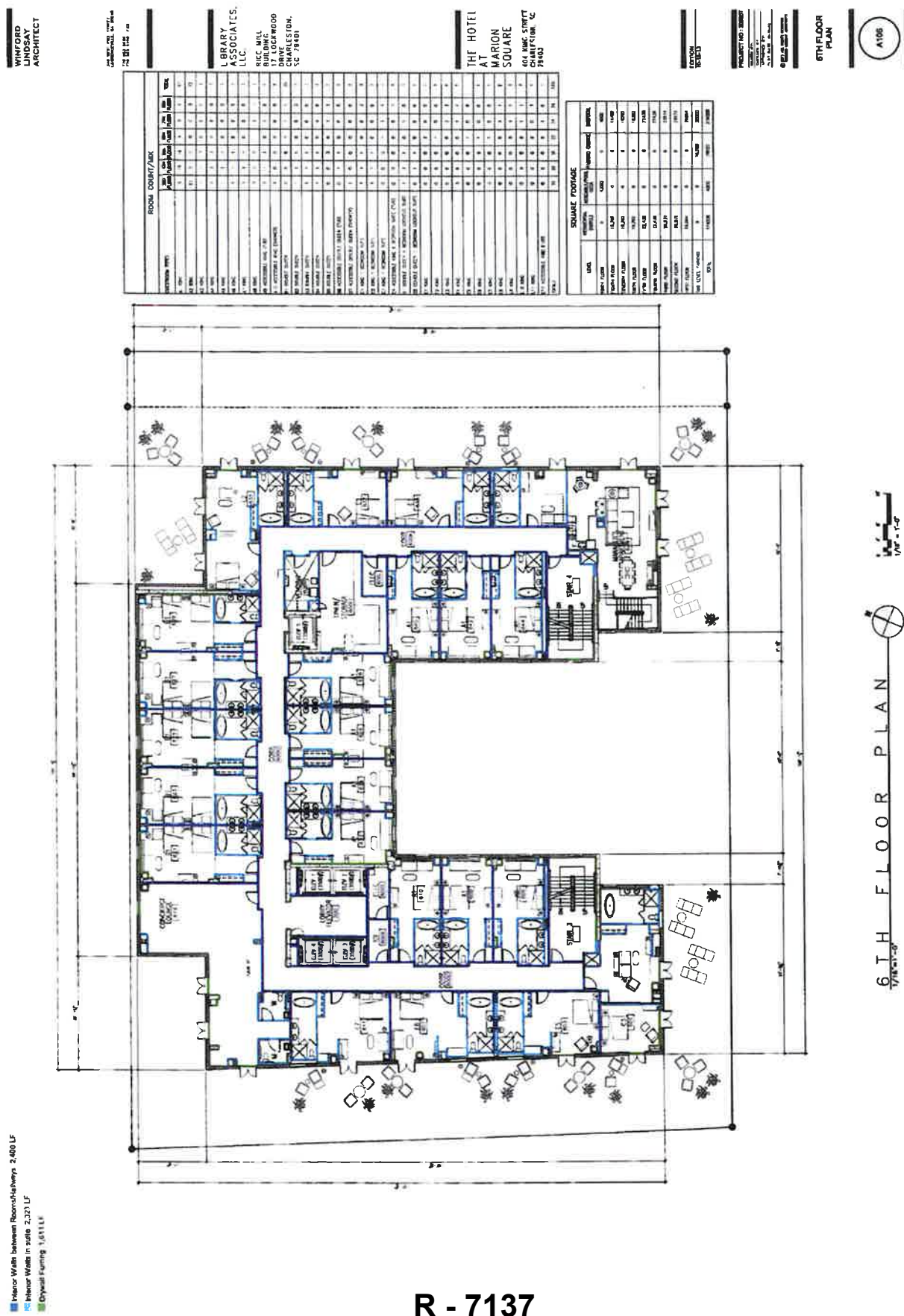
5th floor small Sweep

686' - 4"









**WINFORD
LINDSAY
ARCHITECT**

THE UNIVERSITY OF CHICAGO

LIBRARY
ASSOCIATES.
L.L.C.
RICE MILL
BUILDING
17 LOCKWOOD
DRIVE
CHARLESTON,
SC 29401

THE HOTEL
AT MARION
SQUARE
404 KING STREET
CHARLESTON SC
29403

0.5050
power:

—

RESEARCH

पुस्तकालय

7TH FLOOR

PLAN

10

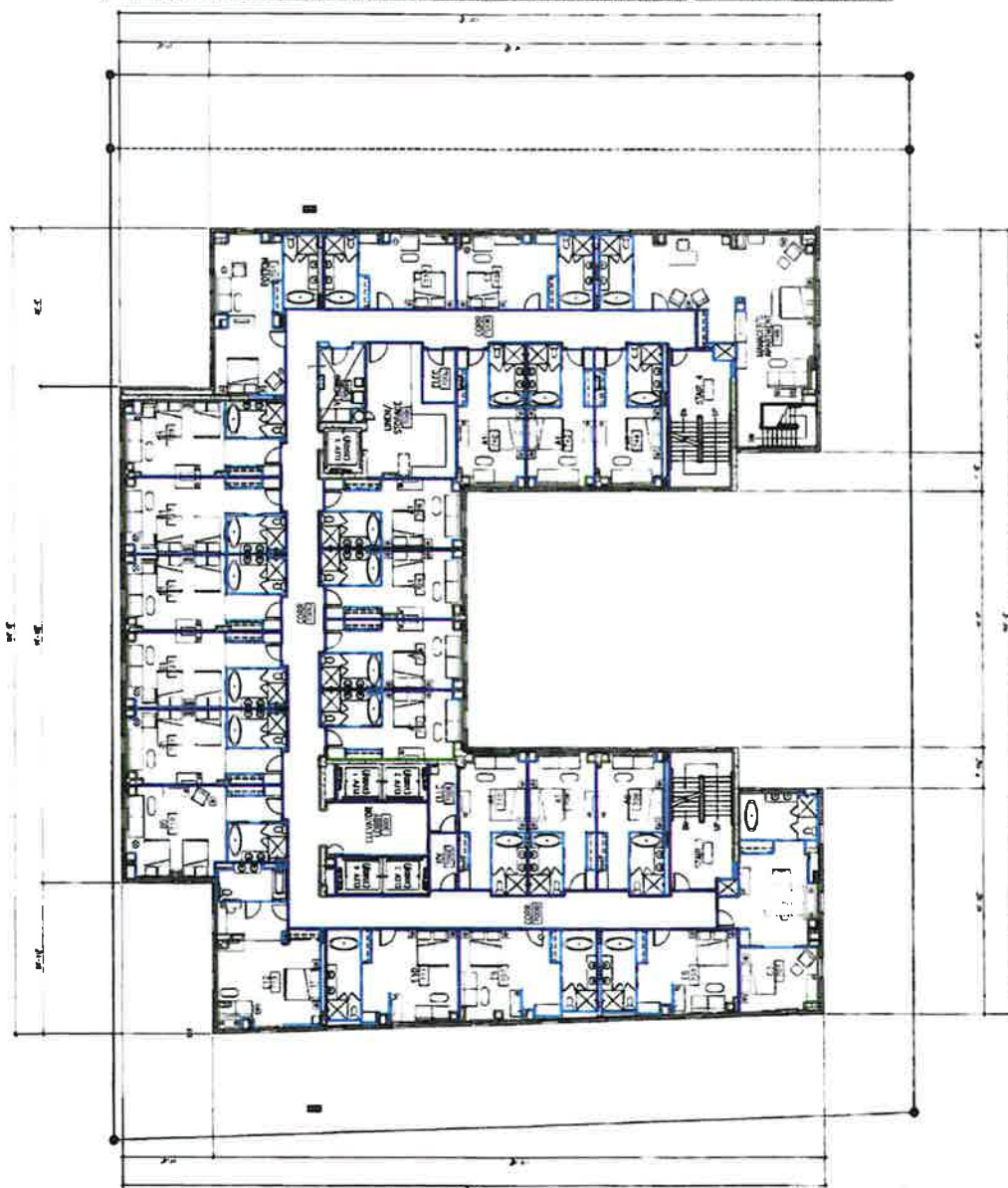
A107

1

FILED -

1

Interior Walls between Rooms/Hallways 2,431 LF
Interior Walls in Suite 2,366 LF
Drywall Flurring 1,819 LF



7TH FLOOR PLAN

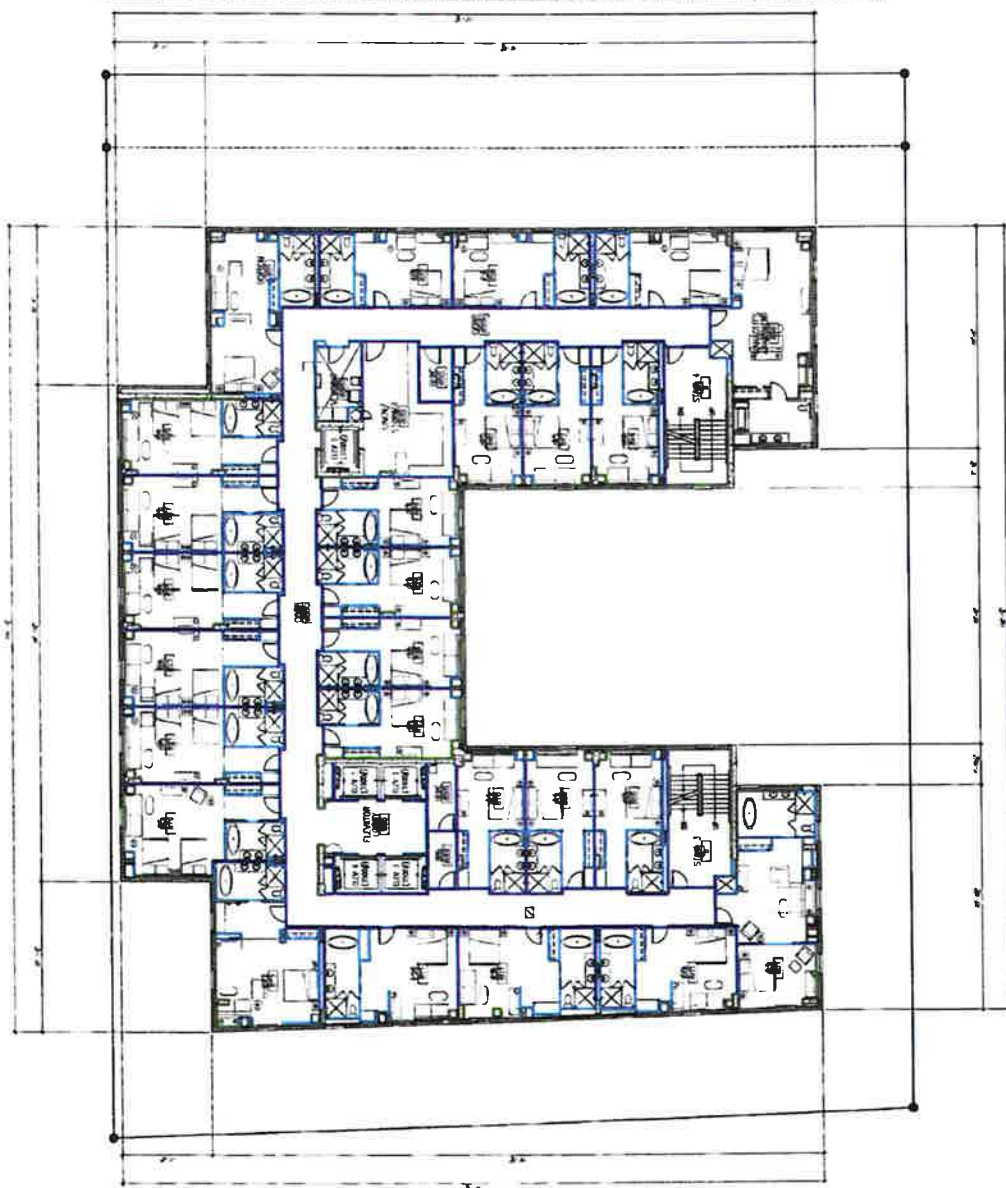
148-150

A107

th Floor (34% of Scale); Charleston Hotel; Projects 10 v1.0; 11/1/2013 03:25 PM

- Interior Walls between Rooms/Hallways 2,410 LF
- Interior Walls in suite 2,391 LF
- Drywall Finishing 1,828 LF

8th Floor (34% of Scale); Charleston Hotel; Projects 10 v1.0; 11/1/2013 03:25 PM



R - 7139

100



8TH FLOOR PLAN

A108

8TH FLOOR
PLAN

NOTES

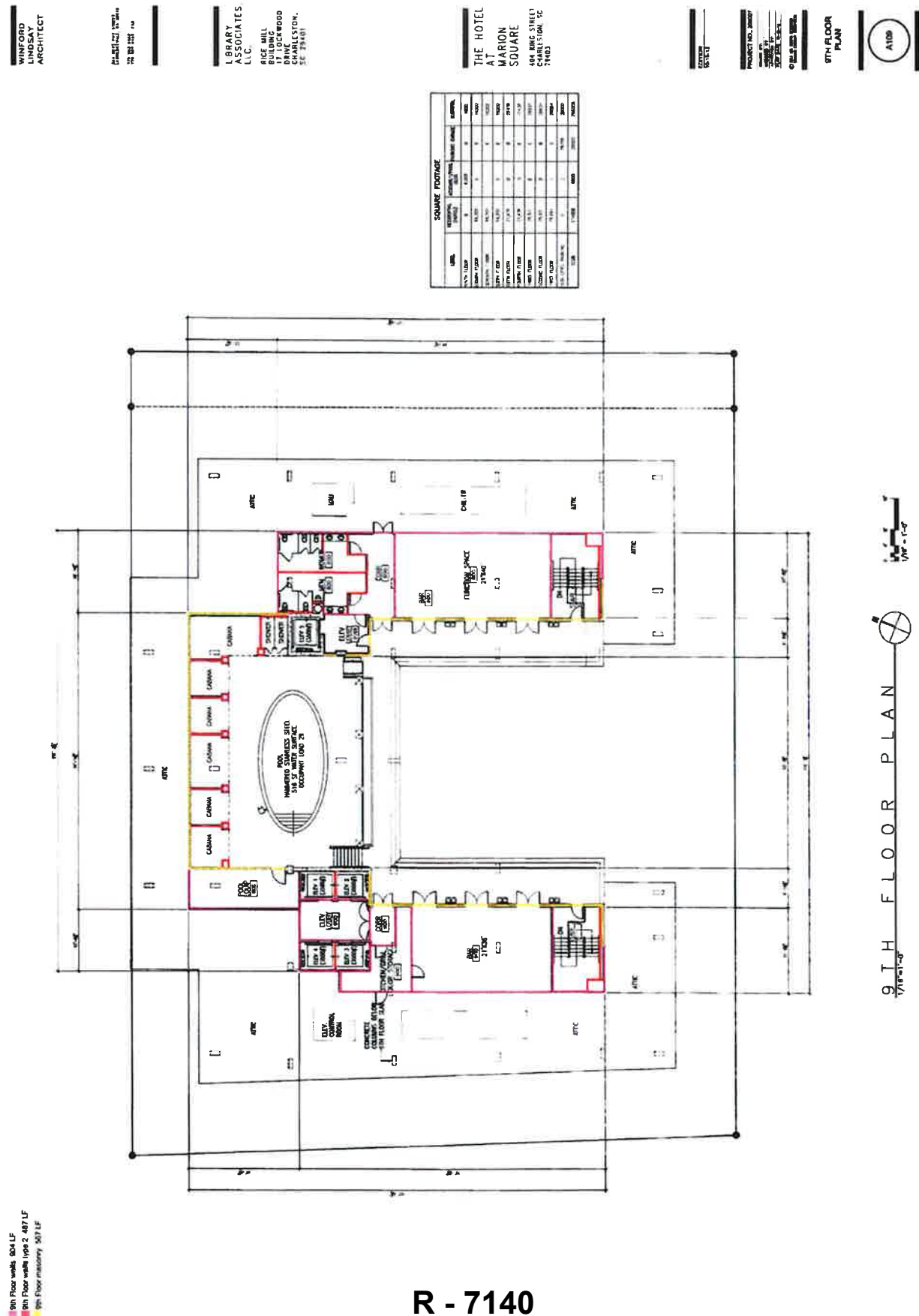
PRODUCT NO: 20000761-1150
 65-1150

THE HOTEL
AT
MARION
SQUARE
404 KING STREET
CHARLESTON, SC
29403

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DRIVE
CHARLESTON,
SC 29401

[illegible]

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Takeoff Tab

Charleston Hotel
Bid No. 56

No.	Name	Height	Area	Quantity1	UOM1	Quantity2	UOM2	Quantity3	UOM3
4	Building Area								
4	Kitchen	0"	Multi-Area Total	11,023 SF		697 LF		0	
			1st	5,463 SF		357 LF		0	
			2nd	5,561 SF		340 LF		0	
5	Retail	0"	1st	17,224 SF		632 LF		0	
6	Public Bathroom	0"	Multi-Area Total	5,143 SF		806 LF		0	
			1st	2,367 SF		443 LF		0	
			2nd	2,776 SF		363 LF		0	
7	Offices	0"	1st	5,804 SF		844 LF		0	
8	Corridor	0"	Multi-Area Total	12,980 SF		2,228 LF		0	
			1st	4,489 SF		786 LF		0	
			2nd	8,490 SF		1,463 LF		0	
9	Stairs	0"	Multi-Area Total	13,278 SF		1,842 LF		0	
			1st	6,228 SF		1,045 LF		0	
			2nd	5,117 SF		616 LF		0	
			3rd	1,934 SF		281 LF		0	
10	Vestibule	0"	1st	2,899 SF		368 LF		0	
11	Mechanical/Electrical	0"	Multi-Area Total	4,732 SF		660 LF		0	
			1st	2,194 SF		296 LF		0	
			2nd	1,780 SF		174 LF		0	
			3rd	757 SF		189 LF		0	
12	Storage	0"	Multi-Area Total	3,855 SF		522 LF		0	
			1st	1,800 SF		344 LF		0	
			2nd	1,855 SF		178 LF		0	
			1st	780 SF		128 LF		0	
13	Bottom	0"	1st	1,090 SF		135 LF		0	
14	Work Area	0"	1st	473 SF		117 LF		0	
15	Concierge	0"	1st	411 SF		131 LF		0	
16	Valet	0"	Multi-Area Total	16,078 SF		1,182 LF		0	
17	Dining	0"	1st	12,157 SF		778 LF		0	
			2nd	3,921 SF		404 LF		0	
18	Bar	0"	1st	3,092 SF		382 LF		0	
19	Lobby	0"	1st	17,229 SF		811 LF		0	
20	Registration	0"	1st	2,714 SF		302 LF		0	
21	Foyer	0"	1st	1,892 SF		208 LF		0	
22	Linen	0"	2nd	1,947 SF		267 LF		0	
23	Housekeeping	0"	2nd	5,264 SF		432 LF		0	
24	Employee Breakroom	0"	2nd	1,875 SF		185 LF		0	
25	Locker room	0"	2nd	3,568 SF		556 LF		0	
26	Maintenance	0"	2nd	1,060 SF		162 LF		0	
27	Ballroom	0"	2nd	27,636 SF		1,123 LF		0	
28	Elevator Lobby	0"	2nd	1,142 SF		162 LF		0	
29	Prefunction	0"	2nd	11,801 SF		631 LF		0	

Takeoff Tab

Charleston Hotel
Bid No. 56

No.	Name	Height	Area	Quantity1	UOM1	Quantity2	UOM2	Quantity3	UOM3
30	Undesignated	0"	2nd	7,741	SF	407	LF	0	
31	Residential Corridor	0"	3rd	10,101	SF	1,721	LF	0	
32	Residential Bottom	0"	3rd	1,971	SF	280	LF	0	
33	Residential Elevator Lobby	0"	3rd	858	SF	133	LF	0	
34	Residential Room	0"	3rd	18,467	SF	2,728	LF	0	
35	Residential Bathroom	0"	3rd	3,821	SF	905	LF	0	
09250	Metal Stud & Drywall								
1	Interior Walls between Rooms/Hallways	0"	Multi-Area Total	17,455	LF	0		0	
			3rd	3,440	LF	0		0	
			4th	3,397	LF	0		0	
			5th	3,379	LF	0		0	
			6th	2,400	LF	0		0	
			7th	2,431	LF	0		0	
			8th	2,410	LF	0		0	
2	Interior Walls in suite	0"	Multi-Area Total	17,052	LF	0		0	
			3rd	3,271	LF	0		0	
			4th	3,342	LF	0		0	
			5th	3,337	LF	0		0	
			6th	2,323	LF	0		0	
			7th	2,386	LF	0		0	
			8th	2,393	LF	0		0	
36	Drywall Furring	0"	Multi-Area Total	11,702	LF	0		0	
			3rd	2,283	LF	0		0	
			4th	2,279	LF	0		0	
			5th	2,280	LF	0		0	
			6th	1,611	LF	0		0	
			7th	1,619	LF	0		0	
			8th	1,629	LF	0		0	
37	9th Floor walls	0"	9th	904	LF	0		0	
38	9th Floor walls type 2	0"	9th	487	LF	0		0	
39	9th Floor masonry	0"	9th	567	LF	0		0	

9th Floor walls 904 LF
9th Floor walls type 2 487 LF
9th Floor masonry 367 LF

WINFORD
LINDSEAY
ARCHITECT

25001725 10/10/2013
R-7143

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DRIVE
CHARLESTON,
SC 29401

R - 7143

SQUARE FOOTAGE				
TYPE	AREA	PERCENT	PERCENT	PERCENT
1.00	10,000	10.00	10.00	10.00
2.00	10,000	10.00	10.00	10.00
3.00	10,000	10.00	10.00	10.00
4.00	10,000	10.00	10.00	10.00
5.00	10,000	10.00	10.00	10.00
6.00	10,000	10.00	10.00	10.00
7.00	10,000	10.00	10.00	10.00
8.00	10,000	10.00	10.00	10.00
9.00	10,000	10.00	10.00	10.00
10.00	10,000	10.00	10.00	10.00
11.00	10,000	10.00	10.00	10.00
12.00	10,000	10.00	10.00	10.00
13.00	10,000	10.00	10.00	10.00
14.00	10,000	10.00	10.00	10.00
15.00	10,000	10.00	10.00	10.00
16.00	10,000	10.00	10.00	10.00
17.00	10,000	10.00	10.00	10.00
18.00	10,000	10.00	10.00	10.00
19.00	10,000	10.00	10.00	10.00
20.00	10,000	10.00	10.00	10.00
21.00	10,000	10.00	10.00	10.00
22.00	10,000	10.00	10.00	10.00
23.00	10,000	10.00	10.00	10.00
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27.00	10,000	10.00	10.00	10.00
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29.00	10,000	10.00	10.00	10.00
30.00	10,000	10.00	10.00	10.00
31.00	10,000	10.00	10.00	10.00
32.00	10,000	10.00	10.00	10.00
33.00	10,000	10.00	10.00	10.00
34.00	10,000	10.00	10.00	10.00
35.00	10,000	10.00	10.00	10.00
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37.00	10,000	10.00	10.00	10.00
38.00	10,000	10.00	10.00	10.00
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41.00	10,000	10.00	10.00	10.00
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45.00	10,000	10.00	10.00	10.00
46.00	10,000	10.00	10.00	10.00
47.00	10,000	10.00	10.00	10.00
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68.00	10,000	10.00	10.00	10.00
69.00	10,000	10.00	10.00	10.00
70.00	10,000	10.00	10.00	10.00
71.00	10,000	10.00	10.00	10.00
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74.00	10,000	10.00	10.00	10.00
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76.00	10,000	10.00	10.00	10.00
77.00	10,000	10.00	10.00	10.00
78.00	10,000	10.00	10.00	10.00
79.00	10,000	10.00	10.00	10.00
80.00	10,000	10.00	10.00	10.00
81.00	10,000	10.00	10.00	10.00
82.00	10,000	10.00	10.00	10.00
83.00	10,000	10.00	10.00	10.00
84.00	10,000	10.00	10.00	10.00
85.00	10,000	10.00	10.00	10.00
86.00	10,000	10.00	10.00	10.00
87.00	10,000	10.00	10.00	10.00
88.00	10,000	10.00	10.00	10.00
89.00	10,000	10.00	10.00	10.00
90.00	10,000	10.00	10.00	10.00
91.00	10,000	10.00	10.00	10.00
92.00	10,000	10.00	10.00	10.00
93.00	10,000	10.00	10.00	10.00
94.00	10,000	10.00	10.00	10.00
95.00	10,000	10.00	10.00	10.00
96.00	10,000	10.00	10.00	10.00
97.00	10,000	10.00	10.00	10.00
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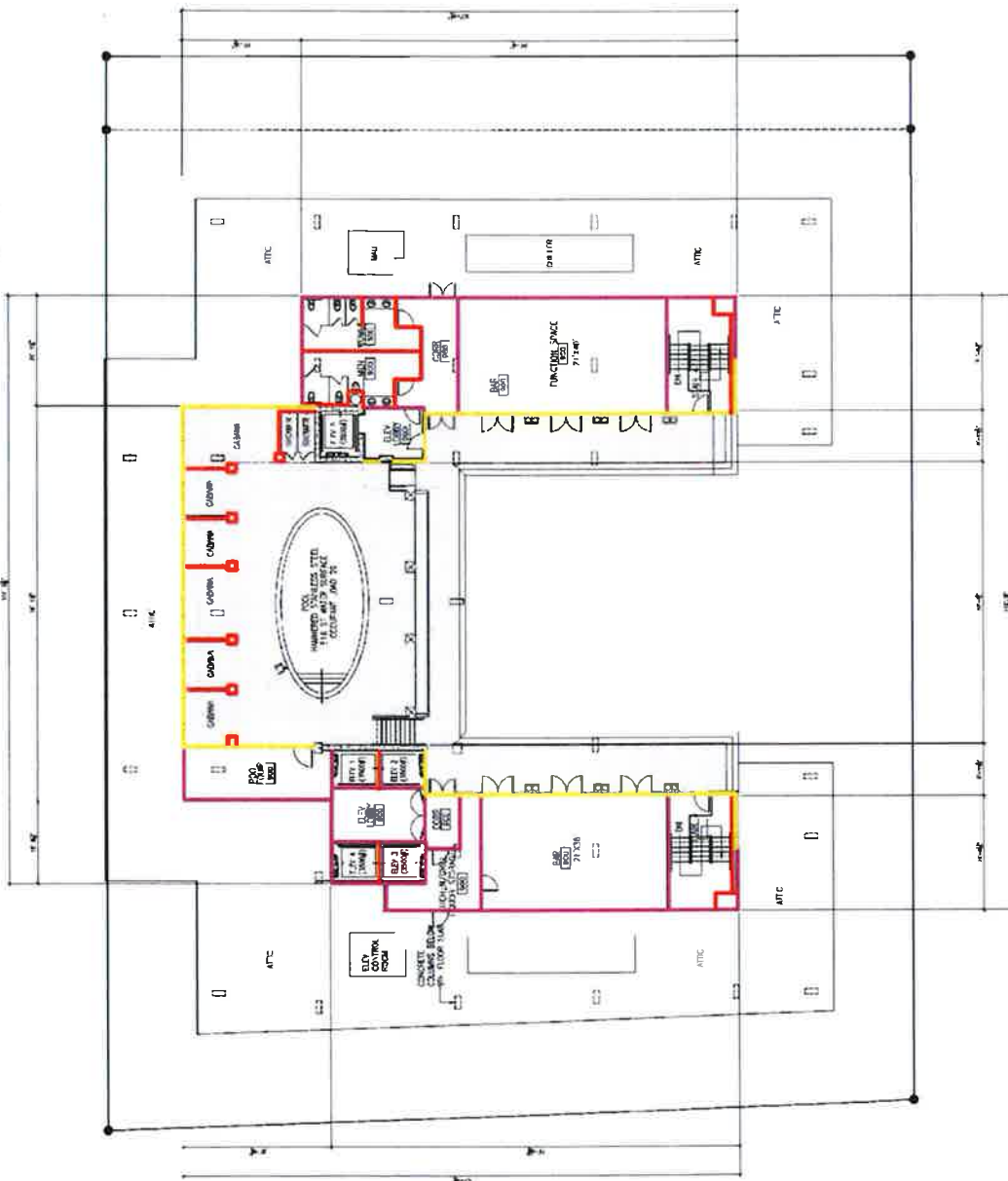
4E HOTEL
AT
MARION
SQUARE
404 KING STREET
CHARLESTON, SC
29401

8TH FLOOR
PLAN

PROJECT NO. 000007
DATE 10/10/2013
DRAWN BY J. LINDSEAY
CHECKED BY J. LINDSEAY
PROJECT NO. 000007

8TH FLOOR
PLAN

A108



8TH FLOOR PLAN
1/8" = 1'-0"

oof Plan (17% of Scale); Charleston Hotel; Projects 10 v1.0; 11/1/2013 12:57 PM



Hilton Santa Fe Golf Resort & Spa at Buffalo Thunder, Santa Fe, NM

Balfour Beatty
Construction



"Your organization, attention to detail/schedule and ability to deliver within the budgeted parameters is something we do not take for granted and greatly appreciate."

Timothy A. Benolken
Senior VP of Operations -
Western North America
Hilton Worldwide

D. Provide a recommendation of three MEP subcontractors that your company would consider best suited for this project. Include a list of all subcontractors and vendors that assisted you with responding to this RFP. Please include Low Country Wrecking as a bidder for demolition and excavation. (contact Steve Bisulca at 843-821-6260)

Included below are the MEP subcontractors that we consider to be best suited for this project. We have included a list of subcontractors and vendors who assisted us with our response to this RFP on the following page.

MECHANICAL & PLUMBING

CR Hipp

4981 Dorchester Rd.
Charleston, SC 29418
843.744.4477

MCC Mechanical

9233 Forsyth Park Drive
Charlotte, NC 28273
704.817.1800

Cullum Mechanical

3325 Pacific St.
North Charleston, SC 29418
843.554.6645

WO Blackstone

1841 Shop Rd.
Columbia, SC 29201
803.252.8222

ELECTRICAL

HR Allen

2675 Rourk St.
Charleston, SC 29405
843.747.4100

Eldeco Electric

5751 Augusta Rd.
Greenville, SC 29605
864.277.9088

Gregory Electric

2124 College St.
Columbia, SC 29205
803.786.5022

Watson Electric

1500 Charleston St.
PO Box 3105
Wilson, NC 27895
252.237.7511

Relationship with Subcontractors in Charleston

We understand that reaching out to the local community for involvement in the project is very important. Keeping project expenditures within Charleston whenever possible is essential to local economic growth. In addition, we understand the importance of proactively working with small businesses to facilitate growth and provide valuable experience that will leave a lasting impact beyond this project.

We have a proven track record of extensive community outreach sessions in the Charleston area to promote involvement from local contractors, and a well-documented history of success in the use of local suppliers and trade contractors.

Benefit: Our established relationship with Charleston subcontractors and vendors and our local market knowledge will yield you the best pricing available and will promote the betterment of Hotel at Marion Square and the community.

Balfour Beatty Construction

Hotel at Marion Square

Schematic Budget Assistance
PRECON CONTACT: Manny Teodoro & Keith Rossi

TRADE	COMPANY
02000 - Sitework	Celek and Celek
02000 - Sitework	Low Country Wrecking
02000 - Special Foundations	Palmetto Pile Driving
02000 - Special Foundations	Parker Marine
02080 - Landscaping	Unit Paving, Inc.
02080 - Landscaping	Three Oaks
03000 - Concrete	Pro Slab Inc.
04000 - Masonry	Mac's Masonry
04000 - Masonry	Old North State Masonry, LLC.
05010 - Structural Steel / Misc. Metals	SteelFab, Inc. (CM Steel)
05040 - Arch Railings / Orn Iron	Architectural Railings & Grilles, Inc.
05060 - Metal Panels	SECO Architectural Systems, Inc.
05060 - Metal Panels	Southeastern Architectural Systems
06040 - Millwork/Casework	Low Country Case & Millwork, Inc.
06040 - Millwork/Casework	OnSite Woodwork Corporation
06050 - Rough Carpentry	The Building center
07010 - Waterproofing / Caulking	Palmetto Waterproofing, LLC.
07010 - Waterproofing / Caulking	TA Rupert Waterproofing, Inc.
07040 - Roofing	Baker Roofing Company
07040 - Roofing	Keating Roofing
08000 - Doors, Frames & Hardware	Cook & Boardman
08000 - Doors, Frames & Hardware	Lowcountry Doors & Hardware, Inc.
08080 - Glass & Glazing	Custom Shutter Company
08080 - Glass & Glazing	Jeld-win Windows
08080 - Glass & Glazing	Hope's Windows and Doors
08080 - Glass & Glazing	Port City Glass & Mirror
09010 - EIFS / Stucco	Forconi-Bongiomo, Inc.
09010 - EIFS / Stucco	Southern Stucco, Inc.
09010 - EIFS / Stucco	Century Contracting Inc
09020 - Drywall	Environamics, Inc.
09020 - Drywall	PWI
09030 - Hard Tile	Lowcountry Tile
09030 - Hard Tile	Superior Stone of the Southeast
09040 - Acoustical Ceilings	Acousti Engineering Company of Florida
09040 - Acoustical Ceilings	Warco Construction, Inc.
09060 - Painting	A & K Painting Company, Inc.
09060 - Painting	Peters Paint & Wallcovering Inc
09080 - Flooring & Carpet	Flooring Services, Inc.
09080 - Flooring & Carpet	Garmon & Company
10060 - Lockers	RC Specialties, Inc.
10070 - Operable Wall Panels	Maxson & Associates
13010 - Pools	Blue Haven Pools
13010 - Pools	Year Round Pool Co.
14010 - Elevator	Otis Elevator
15030 - HVAC & Plumbing	CR Hipp Construction
15030 - HVAC & Plumbing	MCC Mechanical, LLC.
15030 - HVAC & Plumbing	Cullum Mechanical
15060 - Fire Protection	Century Fire Protection
15060 - Fire Protection	Precision Fire Systems, LLC
16010 - Electrical	Eldeco Electric
16010 - Electrical	Gregory Electric
16010 - Electrical	Watson Electrical Construction Company, LLC.



The Westin Alexandria Hotel | Jamieson Residences,
Alexandria, VA

Balfour Beatty
Construction

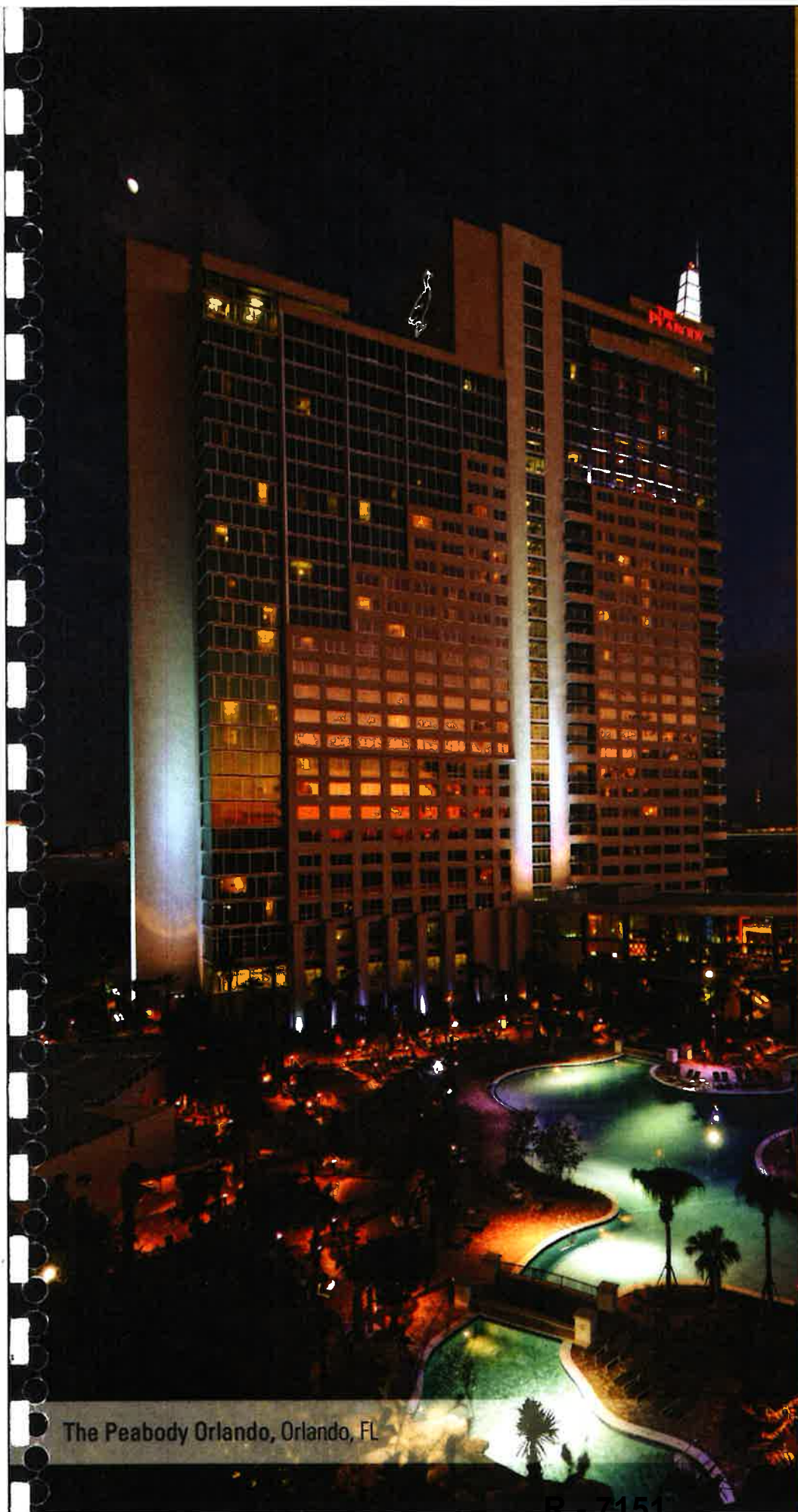


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Best Building in the Mixed-Use Category
NAIOP, Northern Virginia Chapter

E. Provide a preconstruction schedule outlining anticipated staff commitment and utilization. The schedule should begin with completion of schematic design documents and continue through establishment of a GMP, followed by a proposed construction time line. The schedule should identify: (1) design phases; (2) budget delivery dates; (3) submission and review dates; (4) bidding document release dates; and (5) bid dates. Allow reasonable time for Owner's review of budgets.

Please refer to the schedule included in Section F.



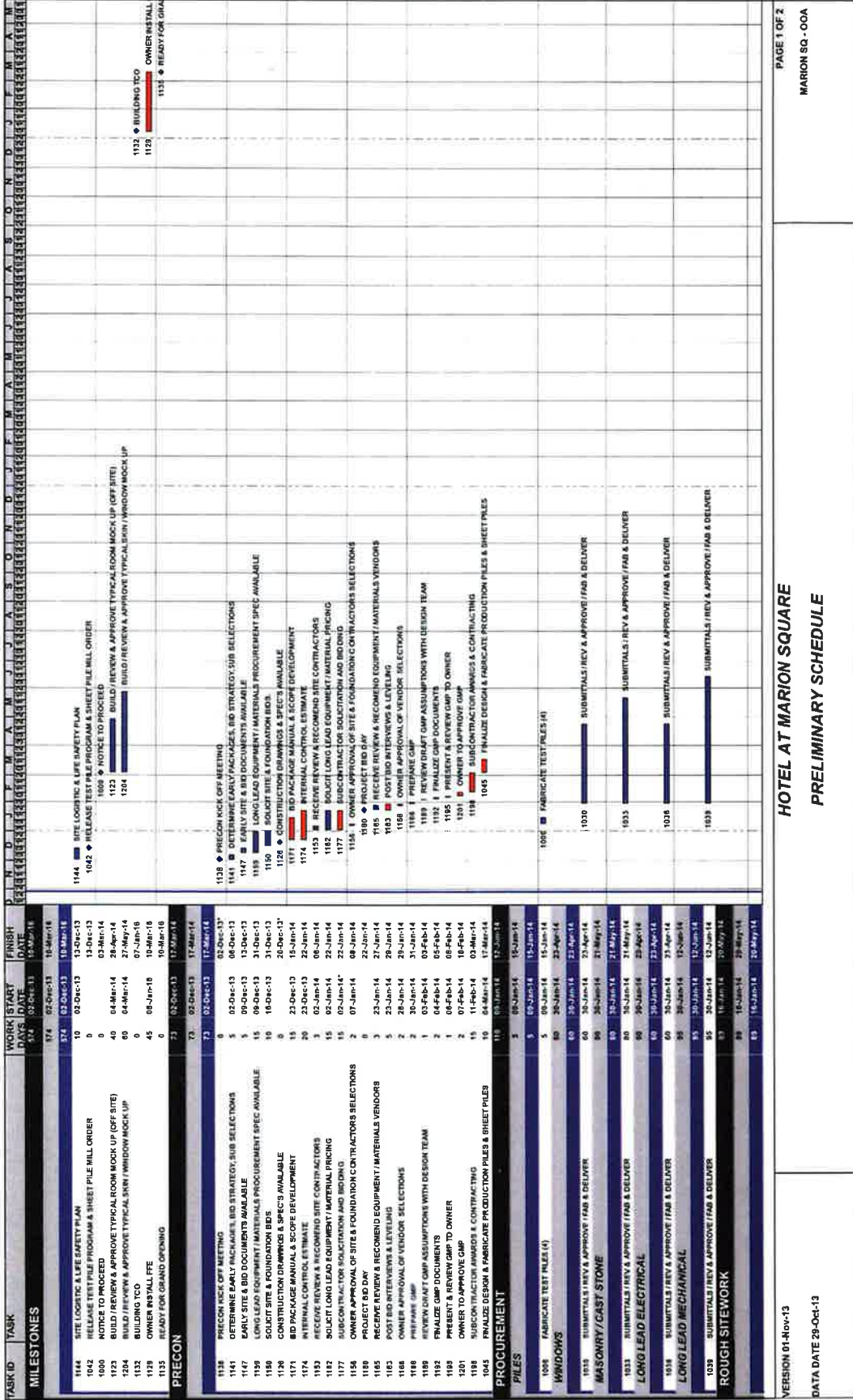
The Peabody Orlando, Orlando, FL

Balfour Beatty
Construction



"Most importantly, we are hearing rave reviews from our guests and staff. We are proud to mention that this project was ahead of schedule and under budget."

Barb Bowden
General Manager
The Peabody Orlando



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VERSION 01-Nov-13 DATA DATE 29-Oct-13	HOTEL AT MARION SQUARE PRELIMINARY SCHEDULE	PAGE 2 OF 2 MARION SQ - ODA
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Inn of the Mountain Gods Resort & Casino, Mescalero, NM

Balfour Beatty
Construction

R - 7155



"This above and beyond demonstration of client commitment is rare in the industry, and is undoubtedly one of the many reasons why your company is consistently ranked among the nation's leading construction firms."

Douglas Worth
President
WorthGroup (design partner)

G. Provide a detailed list of exceptions to the proposed form of Agreement and suggest alternative language for consideration. Any negotiations of the final agreement will be restricted to those items identified in your response. No additional exceptions will be entertained. The Owner reserves the right to propose additional changes to the A133 and A201 as necessary based upon negotiations with the selected firm.

Regarding the review of the proposed AIA A133-2009 Agreement and A201-2007 General Conditions, both as modified, as a general statement, the agreement and general conditions as modified are relatively fair, despite the fact that the modifications are numerous. The most notable and important change is the elimination of the AIA standard language for mutual waiver of consequential damages provision (General Conditions, Art. 15.1.6). We will need to address this issue versus a blanket elimination of the protection from consequential damages. We have worked through this issue numerous times in the past with similar language and do not see difficulty coming to agreement on mutually acceptable terms related to this issue. Also related to the issue of consequential damages, the contract documents do not include a liquidated damages provision for contractor caused delay, which we would recommend be included.

The following are more clarifications to the agreement and general conditions:

AIA A133:

Article 2.2.4.3: Suggest further review of (5) or delete. If we're negligent in our pricing/estimating errors, then that's one thing, but if we simply make an error in estimating using less than complete design documents, that error ought to be corrected using funds from contingency.

Article. 2.3.1.3: We don't believe this provision is applicable to our project as it seems to be focused on healthcare work (same for 6.11.2).

Article 5.2.1: Shared Savings (we would suggest a reasonable shared savings incentive clause as mentioned in 5.2.1)

Article 6.2.4: Contractor's Fixed Billable total payroll burden rates shall be billed at: Salaried: 62.54%; Hourly: 36.98%.

Article 6.6.1: The Contractor's liability insurance premiums shall be billed as follows and are expressed as a percentage of the GMP. Commercial General and Excess Liability – 0.8%, Subguard – 1.25%.

Articles 6.11.1 and 6.11.2: These provisions seem to conflict as one requires the retention of cost-related records for 3 years (6.11.1) and the other for 4 years (6.11.2), we are fine with either.

Article 7.1.11.3: This provision requires the Contractor to carry the cost in its budget for complying with the Owner's audit provisions; however, those provisions are open-ended as to the number of audits that may

be conducted. We would suggest clarifying with some definition of scope to the number of audits and the audit process so we can better estimate this cost.

Article. 9.2: Would prefer alternative dispute resolution, however, would be OK with litigation selection in 9.2 if Section 15.3 of the A201 remained so that mediation was utilized initially to attempt to resolve.

Article 10.2.2: Delete as this conflicts with Art. 14.1.3 of the General Conditions.

AIA A201:

Article 2.2.1: The language, which obligates the Owner to provide the information that is listed in the first sentence, has been deleted. This information is typically required of any project and we would ask clarification as to who is required to provide this information.

Article 3.2.3: Delete the last sentence.

Article 3.5: There is no duration or term for the warranty. Presume it's one year.

Article 3.10.1 and 3.10.4.1: These two provisions seem to state different time periods when the initial schedule is to be delivered – one says 10 days from award, the other says 14 days from the NTP. We assume the final construction schedule would be 14 days from the NTP.

Article 3.18.1: Delete "Architect, Architect's consultants" and insert "its" in front of agents. (we typically do not indemnify the Architect unless they correspondingly indemnify us)

Article. 8.3.1: Delete .2. (We cannot know whether a subcontractor is going to go insolvent. We would request that this be a Class 2 cause of delay.)

Article 8.3.3: The language of .4 seems to give broad discretion to use one or more of the remedies identified in this section, despite the fact that those remedies may be expressly limited to certain circumstances (ex., the "no damages for delay" language of .2 is limited only to Class 2 delays which are delays for which neither party is responsible like force majeure – and therefore, can't be used for any delay other than a delay that falls within the parameters described as a Class 2 delay). We would request to confirm that .4 does not undo the limitations stated in the items above it, otherwise, we are OK with the Class 1 & 2 delay provisions.



Gaylord Texan Resort & Convention Center, Grapevine, TX

Balfour Beatty
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Dan Paradiso
Director of Engineering
Gaylord Entertainment

Pol Federal Building Modernization, Roanoke, VA	Gary Zimmerman U.S. General Services Administration (GSA) Public Buildings Service, Chesapeake Service Center, The Shawbridge Bldg., 20 North 8th Street, 9th Floor Philadelphia, PA, 19107 +1 215 4444619 gary.zimmerman@gsa.gov	James Rice Senior Architect - Design Team Leader TranSystems/DP&A Architects 421 Chestnut Street, Philadelphia, PA, 19106 +1 267 5460067 jrice@transystems.com	\$45,699,990	71%	10/1/2014
National Gallery of Art East Building Stone Repair, Washington, DC	Dean Koepf Contracting Officer National Gallery of Art (NGA) 2000 B South Club Drive, Landover, MD, 20785 +1 202 8428402 dkoepf@nga.gov	Kirk Mettam Director Robert Gilman Associates 1053 31st Street, NW, Washington, DC, 20007 +1 202 3336230	\$59,200,000	95%	10/30/2013
Miami Dade College Hialeah Renovation & Classroom, Hialeah, FL	Enelide Perez-Mendez Senior Project Manager/Facilities Design and Construction Miami Dade College Facilities Management 11011 S.W. 104th Street, Room L-105 Miami, FL 33178-3363 (305) 237-0576 eperezma@mdc.edu	Jose Murguio Vice President Zyscorch, Inc. 100 N. Biscayne Blvd, 27th Floor, Miami, FL 33132 +1 305 3725222 jose@zyscorch.com	\$22,200,000	16%	7/1/2014
Wake County Cary High School Renovation 2013, Cary, NC	Brian Conklin Wake County Public School System 1429 Rock Quarry Road, Suite 116, Raleigh, NC, 27601 +1 919 8577690 bconklin@wcpss.net	Donna Francis Pearce Brinkley Casse & Law PA (PBC) 333 Fayetteville St. Mail, Raleigh, NC, 27601 +1 919 8369731 dfrancis@brinkley.com	\$22,850,000	5%	8/1/2014
NC A&T Student Union, Greensboro, NC	Andy Perkins Asst. VC Facilities DeHuguley Physical Plant 1601 E. Market Street, Greensboro, NC, 27411 +1 336 3347572 perkins@ncat.edu	Victor Vines, AIA, LEED AP President Vines Architecture 530 Hibernborough Street, Raleigh, NC, 27603 +1 919 7551575 vines@vines.com	\$90,000,000	5%	6/1/2015
Wake Tech Classroom/Administration Building, Raleigh, NC	Gerton Brann Project Manager Wake Technical Community College +1 919 8805534 gbrann@wake-tech.edu	Eric Schoenagel Little Diversified Architectural Consultants 410 Blackwell Street, Suite 10, Durham, NC, 27701 +1 919 4742543 eschoenagel@litle.com	\$8,000,000	10%	11/1/2013
UNC Wilmington Social and Behavioral Sciences, Wilmington, NC	Mark Morgan University of North Carolina (UNC) - Wilmington +1 919 8805534 gmorgan@uncw.edu	Dan Van Dyke Jenkins Pear Architects +1 704 9408915 dvan@jpear.com	\$4,500,000	20%	8/15/2014
Wake County H7 High School, Raleigh, NC	Brian Conklin Wake County Public School System 1429 Rock Quarry Road, Suite 116, Raleigh, NC, 27601 +1 919 8577690 bconklin@wcpss.net	Steve Hawley Farrington/Hawley Associates, Inc. Raleigh, NC, +1 919 8311631 shawley@fha.com	\$50,000,000	1%	1/1/2017
UNCC Residence Hall Phase XIII, Charlotte, NC	Rick Ellis Project Manager University of North Carolina (UNC) - Charlotte (UNCC) 6201 University City Blvd., Charlotte, NC, 28223 +1 704 8870517 rellis@uncc.edu	Scott Baker Vice President LS3P Associates Ltd 227 W. Trade Street, Suite 700, Charlotte, NC, 28202 +1 704 3330586 scottbaker@ls3p.com	\$29,000,000	10%	6/25/2015
Wake County Middle School MB, Raleigh, NC	Brian Conklin Wake County Public School System 1429 Rock Quarry Road, Suite 116, Raleigh, NC, 27601 +1 919 8577690 bconklin@wcpss.net	Hal Bowen Radio Architects 135 East Main St., Suite 101, Raleigh, NC, 27601 +1 919 8210805 hbowen@radioarchitects.com	\$26,000,000	1%	8/1/2016
Wake County Green Elementary Renovation/Additions, Raleigh, NC	Brian Conklin Wake County Public School System 1429 Rock Quarry Road, Suite 116, Raleigh, NC, 27601 +1 919 8577690 bconklin@wcpss.net	James Gopeland Vice President Moseley Architects 3000 Rdu Cir. Dr. Ste 217, Morrisville, NC, 27560 +1 919 8400091 jgopeland@moseleyarchitects.com	\$17,700,000	1%	8/1/2016
FAA Air Route Traffic Control Center, Memphis Reno, Memphis TN	Marlies Drexel Federal Aviation Administration 600 Independence Ave., SW, Washington, DC, 20591 +1 202 3658462 marlies.drexel@faa.gov	Stewart Schubel Design Services Manager Heery International, Inc. Franklin Court, 1088 14th Street, NW, Suite 101, Washington, DC, 20005 +1 202 4638200 sschubel@heery.com	\$12,115,969	60%	2/1/2014
USACE MATOC Fort Lee, NE Region, Ft. Lee, VA	Lisa Billman Contract Specialist U.S. Army Corps of Engineers Fort Worth District 819 Taylor Street, Room 2A19, Fort Worth, TX 76102 +1 817 8861086 lisa.billman@usace.army.mil	Greg Monnig Project Director Woodport, Inc. 4454 Kees Center Blvd., Dayton, OH, 45420-1500 +1 957 5311481 greg.monnig@woodport.com	Confidential	50%	8/1/2014

DEFENDANT LIBRARY ASSOCIATES, LLC'S

TRIAL EXHIBIT #39

Part 2 of 2

FOA Central Utility Plant Expansion - Subcontractor, Silver Spring, MD	Matt Corigan Engineered Systems Alliance (ESA) 4216 Wheeler Ave., Alexandria, VA, 22304 +1 703 7512400 mcorigan@esa-alliances.com	Craig Newton Senior Vice President HAA Architects and Engineers (formerly Harkins & Anderson) 4880 Sadler Road, Suite 300, Glen Allen, VA, 23060 +1 804 8217050 c.newton@haaengineers.com	\$17,720,000	99%	11/30/2013
PSU Energy Efficient Buildings Hub (EEB Hub)-GPKC, Philadelphia, PA	Gregory Scott Penn State University The 328 Building, University Park, PA, 16802 +1 814 8639622 gas112@psu.edu	David Ritz Kieran Timberlake 420 North 20th Street, Philadelphia, PA, 19130 +1 215 6276600 ritz@kierantimberlake.com	\$26,000,000	66%	4/1/2014
14th & U Streets Apartments, Washington, DC	Paul Elias Senior Vice President JBG Companies c/o 14th & U Residential, 4445 Willard Ave., Suite 400, Chevy Chase, MD, 20815 +1 240 3333673 pelias@jbg.com	Brian Buckenell Eric Robert & Associates PC 717 - 5th Street, N.W., Washington, DC, 20001 +1 202 2896800 buckenell@era-pc.com	\$47,203,400	66%	1/16/2014
Turkish American Community Center (TACC), Lanham, MD	Yasar Cobak President Turkish American Community Center (TACC) +1 301 2754657 ycobak@ymcc.com	Steve Kurin Project Manager Fentress Architects 1350 Connecticut Avenue, NW, Washington, DC, 20036 +1 202 3375100 kurin@fentressarchitects.com	\$87,006,000	30%	9/4/2014
Fair Lakes Apartments, Fairfax, VA	Robert Gaherty Banbridge CRP Fair Lakes, LLC 12785 W. Forest Hill Blvd., Suite 1307, Wellington, FL, 33414 +1 561 3333689 rgaherty@banbridgefair.com	Vinay Ganeshan SK&I Architectural Design Group 7735 Old Georgetown Road, Suite 1000, Bethesda, MD, +1 301 6549300 vganeshan@skarch.com	\$21,350,000	51%	11/1/2013
1200 17th Street Office Building, Washington, DC	Andrei Pomonarev Nidridge 601 Thirteenth Street, NW, Suite 300 North, Washington, DC, 20005 +1 202 6363000 apomonarev@nridridge.com	Aliso Beall Associate Partner Zimmer Gunsul Frasca Architects LLP (ZGF) 1800 K Street, NW, Suite 200, Washington, DC, 20006 +1 202 3603043 aliso.beall@zgf.com	\$36,000,000	25%	6/11/2014
Shenandoah Housing VMB, George Mason University, Fairfax, VA	Nancy Pickens Project Manager George Mason University Facilities Administration, 4400 University Dr., MS 1E4, Fairfax, VA, 22030 +1 703 9912844 npickens@gmu.edu	Don Ghent Gensler Architecture, Design & Planning PC 2020 K St. NW, Suite 200, Washington, DC, 20006 +1 202 7215294 don_ghent@gensler.com	\$15,654,654	30%	7/30/2014
Hoffman Building One, Phase 1, Alexandria, VA	Robert Love Vice President Hoffman Company, LLC 2034 Eisenhower Ave, Suite 200, Alexandria, VA, 22314 +1 703 9604790 rllove@hoffmancompanycenter.com	Robert McMahon Principal Novotak Associates 605 Prince Street, Alexandria, VA, 22314 +1 703 7399966 rmcmahon@nla-arch.com	\$12,000,000	50%	1/14/2014
Embassy Security Group Facilities (Subcontractor), Quantico, VA	Andres Baker Construction Manager, NAVFAC RDCG NAVFAC Washington 2504 Blinnell Avenue MCN, Quantico, VA, +1 703 4322466 andres.baker@navy.mil	David Hoffmann Fentress Architects 1250 Connecticut Avenue, NW, Suite 1250, Washington, DC, 20036 +1 202 4642459 dhoffmann@fentressarchitects.com	\$23,000,000	20%	3/15/2015
Widgreave #13823 Wilmington, DE; Wilmington, DE	Greg Feneck Vice President, Construction Services Hunt Real Estate Services Inc 5100 West Kennedy Blvd., Suite 225, Tampa, FL, 33609 +1 813 7390050 gfeneck@huntsco.com	Jeff Whelan GTM Architects 7735 Old Georgetown Road, Suite 700, Bethesda, MD, 20814 +1 240 3332067 jwhelan@gtmarchitects.com	\$2,080,000	81%	10/31/2013
Florida Avenue Apartments, Washington, DC	Lauren Jazenski JBG Companies 4445 Willard Avenue, Suite 400, Chevy Chase, MD, 20815 +1 240 3333730 ljazenski@jbg.com	John Masto BKD Group 1054 31st Street, NW Canal Square, Suite 204, Washington, DC, 20007 +1 202 5857361 jmasto@bkdgroup.com	\$38,000,000	2%	3/6/2015
Dr. Phillips Center for the Performing Arts, Orlando, FL	Kathy Ramstberger Vice President Orlando Performing Arts Center 455 South Orange Avenue 7th Floor, Orlando, FL, 32801 +1 407 8390119 kathy@drphillipscenter.org	Steven Evans Vice President HKS, Inc. 225 E. Robinson St., Ste. 405, Orlando, FL, 32801 +1 407 6409958 sevens@hksinc.com	\$134,406,829	10%	7/15/2014

Tradition Medical Center - Martin Health System, Port St. Lucie, FL	Matt Kelly Director Construction & Real Estate Management Martin Health System 200 S.E. Hospital Avenue, Stuart, FL, 34996 +1 772 2239454 ext 5786 matt.kelly@martinhealth.org	Roy Gutstein Senior Vice President HKS, Inc. 1919 McKinney Avenue, Dallas, TX, 75201 +1 214 8892670 rgutstein@hksinc.com	\$81,115,335	1%	11/30/2013
Harris Technology Center, Palm Bay, FL	Jeff Homburger Project Engineering & EHS Manager Harris Corporation 2400 Palm Bay Road, Palm Bay, FL, 32909 +1 321 7275577 jhombu01@harris.com	Roger Anderson Director of Design BRPH Companies, Inc. 5700 North Harbor City Boulevard, Suite 400, Melbourne, FL, 32940 +1 321 7513147 randerson@brph.com	\$82,000,000	45%	11/28/2014
Cabana Bay Beach Resort at Universal Orlando, Orlando, FL	Russ Dagon Vice President, Universal Creative Lions +1 407 2243236 russ.dagon@universalorlando.com	Buck Lindsay Lindsay Pope Brayfield Associates, Inc. 270 Lexington Drive, Levittown, PA, 19045 (770) 963-4959 blindsay@lpsballanta.com	\$175,000,000	76%	5/1/2014
IKEA Miami (Retail Store #39), Sweetwater, FL	Charles Keller Construction Manager IKEA Property Inc. 420 Alan Wood Road, Conshohocken, PA, 19428 +1 810 834018 ext 5206 charles.keller@ikea.com	John Berman Studio Director/Senior Associate GreenbergFarrow 44 West 28th Street, 16th Floor, New York, NY, 10001 +1 212 7259530 jberman@greenbergfarrow.com	\$72,400,000	58%	6/4/2014
Orlando Magic Amway Center Continuing Works, Orlando, FLSC	Charles Freeman Vice President Business Development & Strategy Orlando Magic 8701 Mallard Summit Drive, Orlando, FL, 32810 +1 407 9182723 cfreeman@orlandomagic.com	Michael Houseman Principal Baker Barnes Architects Inc. 169 S. Orange Ave., Suite 1700, Orlando, , 32801 +1 407 8263000 mhhouseman@bakernbarnes.com	\$500,000	30%	12/31/2014
NCSU Wolf Ridge Centennial Campus Student Housing, Raleigh, NC	Tim Luckadoo Associate Vice Chancellor - Student Affairs North Carolina State University Campus Box 7216, 2321 Sittenon Drive, NCSU Campus Raleigh, NC, 27695-7232 +1 919 8153088 tim_luckadoo@ncsu.edu	Katherine Peele LS3P Associates Ltd 227 W. Trade Street, Suite 700, Charlotte, NC, 28202 +1 919 8292700 katherinepeele@ls3p.com	\$111,659,850	95%	3/31/2014
Onslow County Albert J. Ellis Airport, Richlands, NC	Chris White Airport Director County of Onslow 254 Albert J. Ellis Airport Rd., Richlands, NC, 28574 +1 910 3241100 chriswhite@onslowcountync.gov	Tom Slater RS&H 8801 Six Forks Road, Suite 200, Raleigh, NC, 27615 +1 919 2478242 tom.slater@rsandh.com	\$17,500,000	20%	7/15/2014
RDU Airport Terminal I Renovations, RDU Airport, NC	Dave Powell Director, Major Capital Improvements Program Raleigh Durham Airport Authority P.O. Box 80001, RDU Airport, NC, 27623 +1 919 8402100 dave.powell@rdu.com	Donna Francis Pearce Brinkley Cassie & Leo PA (PBCL) 333 Fayetteville St. Mail, Raleigh, NC, 27601 +1 919 8369751 dfrancis@clarkhessan.com	\$39,437,780	45%	11/1/2013
Onslow Memorial Hospital ED Renovation & Addition, Jacksonville, NC	Mike Hildren Facility and Engineering Services Onslow Memorial Hospital 317 Western Boulevard, Jacksonville, NC, 28548 +1 910 5772371 michael.hildren@onslow.org	Keith Fleming Vice President Onslow Memorial Hospital 1435 W. Morehead St, Suite 100, Charlotte, NC, 28206 +1 704 3347571 kfleming@wilkersonarch.com	\$4,000,000	20%	9/15/2014
Cumberland County Detention Center Expansion, Fayetteville, NC	Robert Stanger Cumberland County Engineering Department Cumberland County Board of Commissioners 117 Dick Street, Fayetteville, NC, 28301 +1 910 6787633 rstanger@ccor.cumberlandnc.us	Russell Giles Vice President Mooney Architects 3000 RDU Center Drive, Suite 217, Morrisville, NC, 27560 +1 704 6972927 rgiles@mooneyarchitects.com	\$13,081,334	75%	10/25/2013

§ 3.5 - On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.

* Due to a high volume of projects, we're listing only those managed in Balfour Beatty Construction's East Region.

Project Name	Owner Reference	Architect	Contract Value	Completion Date	Completed with own Forces	Primary Facility Type	Division
Headquarters Relocation,	Craig Youst Senior Director, Global Facilities & Real Estate Red Hat 100 East Dave Street, Raleigh, NC, 27601 +1 919 7544398 cyoust@redhat.com	Melissa Carter IA Interior Architects 205 West Wacker Drive, Suite 1500, Chicago, IL, 60606 +1 919 5468800 m.carter@interiorarchitects.com	\$26,900,000	6/1/2013	5%	Corporate	Division
Core and Shell, Charlotte, NC	Clifton Cobble President Brissett Development LLC 13850 Ballantyne Corporate Park, Suite 300, Charlotte, NC, 28277 +1 704 2482061 ccobble@brissett-companies.com	Shawn Mottern Project Manager LS3P Associates Ltd 227 W. Trade Street, Suite 700, Charlotte, NC, 28202 +1 704 3717820 shawnmottern@ls3p.com	\$31,031,403	8/10/2012	5%	Corporate	Division
Corporate HQ Reloc., Raleigh,	Adam Derbyshire EVP and CEO Salix Pharmaceuticals 8510 Colonnade Center Drive, Raleigh, NC, 27615 +1 919 8521025 adam.derbyshire@salix.com	Chad Parker 530 Hillsborough Street, Raleigh, , 27603 (919) 833-0250 chad_parker@gensier.com	\$12,749,985	8/26/2011	5%	Corporate	Division
Headquarters, Raleigh, NC	David Swartzel Facilities Manager Extron Electronics 1230 South Lewis Street, Anaheim, CA, 92805 +1 919 6019431 dswartzel@extron.com	Roger Dellos Project Manager GAA Architect 4 Park Plaza, Suite 120, Irvine, CA, 92614 +1 949 2635521	\$14,036,987	12/22/2011	5%	Corporate	Division
Headquarters, Cary, NC	Jim Valade Director Siemens Shared Services, LLC 186 Wood Avenue South, Iselin, NJ, 08830 +1 561 9234685 jim.valade@siemens.com	Jim Smith Vice President Hager Smith Design PA 300 South Dawson Street, PO Box 1308, Raleigh, NC, 27607 +1 919 8215517 jsmith@hagersmith.com	\$34,100,000	2/1/2010	5%	Corporate	Division
High School, Columbus, GA	Bobby Hecht Director of Construction Muscogee County School District (MCSD) 1200 Bradley Drive, Columbus, GA, 31901 +1 706 7482584 hecht.robert.g@muscogee.k12.ga.us	Sam Andras Senior Vice President CFO 2WR 119th Street, Suite 120, Columbus, GA, 31901 sam@2wrinc.com	\$37,035,000	8/1/2012	5%	PreK-12	Division
Midland, GA	Bobby Hecht Director of Construction Muscogee County School District (MCSD) 1200 Bradley Drive, Columbus, GA, 31901 +1 706 7482584 hecht.robert.g@muscogee.k12.ga.us	Lee Martin 2WR 11 Ninth Street, Suite 120, Columbus, , 31901 +1 706 5716923	\$19,158,582	12/12/2012	5%	PreK-12	Division

Expansion, Norcross, GA	Don Dillon Manager - General Affairs CANON USA, Inc. One Canon Plaza, Lake Success, NY, 11042 +1 616 3284291 ddillon@cusa.canon.com	Peter Newfield Project Manager Gensler Architecture, Design & Planning PC 999 Peachtree Street NE, Suite 1400, Atlanta, GA, 30308 +1 404 5070934 peter_newfield@gensler.com	\$10,500,000	9/30/2013	5%	Corporate	Division
Washington, DC	William Nussbaum Executive Vice President, General Counsel National Public Radio (NPR) 635 Massachusetts Avenue, NW, Washington, DC, 20001 +1 202 5132965 wnussbaum@npr.org	Yefanila Cole Senior Principal Hickok Cole Architects 1023 31st St NW, Washington, DC, 20007 +1 202 6679776 ycole@hickokcole.com	\$80,740,303	12/12/2012	5%	Corporate	D.C.
10, Fort Myers, FL	Adam Hinds Vice President Chico's FAS Inc. +1 239 2744429 adam.hinds@chicos.com	Fabien Behague GMA Architects +1 239 2750225 fbehague@gmaarchitect.com	\$18,747,362	2/8/2013	5%	Corporate	Division
BUILD-OUT, Boca Raton, FL	Jose Havia Chief Executive Officer and President Fugler Real Estate Development Corp 2855 LeJeune Road, 4th Floor, Coral Gables, FL, 33134 +1 305 5202309 jose.havia@fuglerdev.com	Tim Blair Helmuth, Obata & Kassabaum, PC (HOK) 120 NE 27th Street, Suite 700, Miami, FL, 33137 +1 786 4974820 tim.blair@hok.com	\$38,183,064	10/16/2008	5%	Corporate	Division
Headquarters &	Stephen Calkins Sr. Vice President, Business Solutions Division Office Depot, Inc. 6600 North Military Trail, Boca Raton, FL, 33496 +1 561 4387512 steve.calkins@officedepot.com	Tim Blair Helmuth, Obata & Kassabaum, PC (HOK) 120 NE 27th Street, Suite 700, Miami, FL, 33137 +1 786 4974820 tim.blair@hok.com	\$101,600,937	10/20/2008	5%	Corporate	Division
Coral Gables, FL	Eduardo Avila President 398 Altamira, LLC 2601 South Bayshore Drive, Suite 200, Miami, FL, 33133 +1 305 8570400 eavila@thekeycorp.com	John Fullerton President Fullerton Diaz Architects 398 Altamira Avenue, Coral Gables, FL, 33148 +1 305 4424200 jfullerton@fdarchitects.com	\$64,090,604	5/1/2012	5%	Corporate	Division
Palm Beach, FL	Bruce Warwick Vice Chairman Related Companies, L.P. 60 Columbus Circle, New York, NY, 10023 +1 212 8011019 bwarwick@related.com	Howard Elkus Principal Elkus Manfredi Architects 200 A Street, Boston, MA, 02210 +1 617 4261300 howardeokus@myoungjacob.com	\$52,500,000	11/21/2008	5%	Corporate	Division
Headquarters, Fort Belvoir, VA	Rick Calloway Chief, Contract Administration Branch, NGA IPO U.S. Army Corps of Engineers Headquarters 441 G Street NW, Washington, DC, 20314 +1 202 7617500 rick.calloway@usace.army.mil	Mark Kendall Vice President RTKL Associates Inc. 901 South Bond Street, Baltimore, MD, 21231 +1 410 5376075 mkendall@rtkl.com	\$1,378,515,000	4/18/2011	5%	Corporate	D.C.

Radiological Health, Silver	Shapour Ebadi Deputy Regional Commissioner U.S. General Services Administration (GSA) 2701 Martin Luther King Avenue, SE, Bldg. 40, St. Elizabeths, Washington, DC, 20032 +1 202 5817822 shapour.ebadi@gsa.gov	Ray Symanski Principal RTKL Associates Inc. 2101 L Street, NW, Suite 200, Washington, DC, 20037 +1 202 8334400 rsymanski@rtkl.com	\$66,956,000	1/16/2009	5%	Corporate	D.C.
Washington, DC	Wyatt Shoaf Senior Vice President Carr Properties 1776 Eye Street, NW, Suite 500, Washington, DC, 20006 +1 202 3033080 wshoaf@carrprop.com	John Crump Principal SmithGroupJJR 901 K Street, NW, Suite 400, Washington, DC, 20001 +1 202 8422100 john.crump@smithgroupjr.com	\$29,000,000	9/30/2013	5%	Corporate	D.C.
Washington, DC	Roman Iwasiw Vice President, Construction and Development Property Group Partners 20 Westport Rd, P.O. Box 717, Wilton, CT, 06897-0717 +1 846 3565553 riwasiw@pgp.us.com	Phil Kinsella Principal Kevin Roche, John Dinkeloo & Associates 20 Davis Street, Hamden, CT, 06517 +1 203 7777251 kinsella@kjrda.com	\$97,198,277	7/13/2009	5%	Corporate	D.C.
DC	Bob Schofield Vice President Akridge 601 13th Street, N.W., Suite 300 North, Washington, DC, 20005 +1 202 6383000 bschofield@akridge.com	Rick Moy Helmuth, Obata & Kassabaum, PC (HOK) 3223 Grace Street, NW, Washington, DC, 20007 +1 202 3388700 rick.moy@hok.com	\$50,879,000	5/15/2009	5%	Corporate	D.C.
Arta Complex II, Orlando, FL	Jack Price Assistant Director, Major Projects University of Central Florida UCF Facilities Planning & Construction, 4000 Central Florida Blvd, Bldg 16, Orlando, FL, 32816-3020 +1 407 8232210 jack.price@ucf.edu	Matthew Clear Vice President HKS, Inc. 225 E. Robinson St., Ste. 405, Orlando, FL, 32801 +1 407 6489956 mclear@hksinc.com	\$17,674,007	12/28/2010	5%	Higher /	Division
Harbor Branch Research, Ft.	Thomas Donaudy VP for Facilities & University Architect Florida Atlantic University 777 Glades Road, CO #69 Room 101, Boca Raton, FL, 33431 +1 561 2972653 tdonaudy@fau.edu	Ian Nestler Principal PG&A 791 Park of Commerce Boulevard, Suite 400, Boca Raton, FL, 33487 +1 561 884002 inestler@pga.com	\$13,675,494	9/30/2011	5%	Higher /	Division
College of Medicine, Lake	Jack Price Assistant Director, Major Projects University of Central Florida UCF Facilities Planning & Construction, 4000 Central Florida Blvd, Bldg 16, Orlando, FL, 32816-3020 +1 407 8232210 jack.price@ucf.edu	Chuck Cole Healthcare HunttonBrady Architects 800 N. Magnolia Ave., Suite 800, Orlando, FL, 32803-3252 +1 407 8390886 ccole@hunttonbrady.com	\$33,335,800	5/12/2010	5%	Higher /	Division
Englewood, FL	Jerry Olivo Assistant Superintendent of District Support Svcs. Charlotte County Public Schools 1445 Education Way, Port Charlotte, FL, 33948 +1 941 5755400 jerry_olivo@ccps.k12.fl.us	Jack Williams Director Harvard Jolly 1342 Colonial Boulevard, Building H-60, Fort Myers, FL, 33907 +1 239 2767774 j.williams@harvardjolly.com	\$31,600,000	12/15/2011	5%	PreK-12	Division

Replacement, Phases I & II, Fort	Gregory Boardman Project Manager III Broward County School Board 1643 North Harrison Parkway, Building H, Sunrise, FL, 33323 +1 754 3211620 gregory.boardman@browardschools.com	Armando Rizo Partner/Registered Architect Rizo Carreño & Partners 2100 Ponce De Leon, #750, Coral Gables, FL, 33134 +1 305 4410888 arizo@rcpdesign.com	\$17,154,741	3/31/2009	5%	PreK-12	Division
Partnership Center, Sanford,	Arle Price Director Seminole State College 100 Weldon Blvd., Sanford, FL, 32773 +1 407 7082430 arprice@scsco-fl.edu	Philip Trezza Vice President Harvard Jolly 2714 Dr Martin Luther King Jr Street North, St. Petersburg, FL, 33704 +1 727 8984611 p.trezza@harvardjolly.com	\$25,897,953	2/22/2010	5%	Higher /	Division
Garage, Davis, FL	Juan Raigosa Project Administrator III Broward College 3501 SW Davis Road, Building 23, Davis, FL, 33314 +1 954 2016977 jraigosa@broward.edu	Marlo Cartaya Principal Cartaya and Associates Architects P.A. 2400 East Commercial Boulevard, #415, Fort Lauderdale, FL, 33308 +1 954 7712724 mcartaya@cartayaandassociates.com	\$19,200,000	9/24/2009	5%	Higher /	Division
Replacement Project, Orlando,	Kay Syed Sr. Administrator Orange County Public Schools 6501 Magic Way, Bldg. 200, Orlando, FL, 32809 +1 407 3173700 ksyed@ocps.net	J. Torbert Partner SchenkelShultz Architecture 101 E Town Place, Suite 600, St. Augustine, FL, 32081 +1 407 8723322 j.torbert@schenkelshultz.com	\$30,279,063	12/18/2008	5%	PreK-12	Division
Charlotte, NC	Larry Pronovost Director of Facility Development and Construction at Infilaw Systems Charlotte School of Law 1100 5TH Avenue South Suite 401, Naples, FL, 24102 +1 239 6594800 lpronovost@infilaw.com	Ben Benson Architect/Partner Jenkins Peier Architects 112 South Tryon Street, Suite 1300, Charlotte, NC, 28264 +1 704 8405913 bbenson@jenkinspeier.com	\$12,000,000	7/15/2013	5%	Higher /	Division
Raleigh, NC	Ken Fuller Wake County Public School System 1429 Rock Quarry Road, Suite 116, Raleigh, NC, 27601 +1 919 8568241 kfuller@wcps.net	Bill Highsmith Skinner, Lamm & Highsmith 301 Glenwood Ave, Suite 270, Raleigh, NC, 27603 +1 252 2914127 bhighsmith@slharch.com	\$13,561,928	10/30/2008	5%	PreK-12	Division
School, Jamestown, NC	Nicole Krausowski Guilford County 517 West Market Street, Greensboro, NC, 27401 +1 336 7075417 nkrausow@gcdnc.com	Dave Burnett Moseley Architects 3000 RDU Center Drive, Suite 217, Morrisville, NC, 27560 +1 804 7047555	\$23,000,000	8/28/2012	5%	PreK-12	Division
Renovation, Greensboro, NC	John Pope Project Architect University of North Carolina (UNC) at Greensboro (UNCG) UNCG-Gray Home Management House, PO Box 26170, Greensboro, NC, 27402-6170 +1 336 3345259 john_pope@uncg.edu	David Welling Woolpert, Inc. 678 Independence Parkway, Suite 100, Chesapeake, VA, 23320 +1 704 5263130 david.welling@woolpert.com	\$46,744,284	8/8/2012	5%	Higher /	Division
Durham, NC	Eric Frazier Facilities Electrical Engineer North Carolina Central University 1801 Fayetteville Street, 304 Hoev Administration Bldg. Durham, NC, 27707 +1 919 5306696 efrazier@nccu.edu	Andre Johnson Sr. Associate BBH Design P.O. Box 12697, Research Triangle Park, NC, 27709 +1 919 4594247 ajohnson@bbh-design.com	\$16,787,198	8/5/2011	5%	Higher /	Division

Raleigh, NC	Mika Burisa Asst. Super of Facilities D.H. Griffin Wrecking Co., Inc. 1004 Brengle Avenue, Orlando, FL, 32808 +1 919 8562800 mburisa@dwcpss.net	Bill Highsmith Skinner, Lamm & Highsmith 301 Glenwood Ave., Suite 270, Raleigh, NC, 27603 +1 252 2914127 bhighsmith@slharch.com	\$18,533,714	11/30/2009	5%	PreK-12	Division
Hill, NC	Guy Chamberlain Asst. Superintendent Charlotte-Mecklenburg Schools 3301 Stafford Drive, Charlotte, NC, 28208 +1 880 3435175 g.chamberlain@cms.k12.nc.us	Jerry Focht Senior Associate Little Diversified Architectural Consulting 5815 Westpark Drive, Charlotte, NC, 28217 +1 704 5613266 jfocht@litleonline.com	\$42,920,703	4/1/2010	5%	PreK-12	Division
Charlotte, NC	John Neilson University of North Carolina (UNC) - Charlotte (UNCC) 9201 University City Boulevard, Charlotte, NC, 28223-001 +1 704 5472114 jneilson@email.uncc.edu	Thom Tonetti PWA Group 2 Nations Bank Plaza, 101 South Tryon Street, Charlotte, NC, 28280 +1 704 3327004 ttonetti@pwa-group.com	\$55,739,383	6/15/2009	5%	Higher /	Division
Center, Durham, NC	Shawn Subasic Director of Design and Construction Duke University School of Medicine P.O. Box 3019 DUMC, Durham, NC, 27710 +1 919 2868314 subasic001@mc.duke.edu	Ray Weaver S1/A/M Collaborative ... +1 860 6578077 weaver@slmcoll.com	\$25,000,000	11/1/2012	5%	Higher /	Division
Science Building, Chapel Hill	Bruce Runberg Associate Vice Chancellor for Facilities Planning University of North Carolina (UNC) at Chapel Hill C.B. #1000, Giles F. Homey Building, 103 Airport Drive, Chapel Hill, NC, 27599-1000 +1 919 9627248 bruce_runberg@unc.edu	Bill Boghosian Associate Wilson Architects, Inc. 374 Congress Street, Suite 400, Boston, MA, 02210 +1 919 9293300 bboghosian@wilsonarch.com	\$68,468,308	9/17/2010	5%	Science	Division
School Comprehensive	Roberto Pacheco Director, OGPS Facilities and Construction Contracting Orange County Public Schools 8601 Magic Way, Bldg. 100B, Orlando, FL, 32809 +1 407 3173700x5016 roberto.pacheco@ocps.net	Mark Kaiser DLR Group 100 East Penn Street, Suite 404, Orlando, FL, 32804 +1 407 8034921	\$11,439,330	11/20/2012	5%	PreK-12	Division
Replacement Cafeteria	Gregory Boardman Project Manager III Broward County School Board 1643 North Harrison Parkway, Building H, Sunrise, FL, 33323 +1 754 3211620 gregory.boardman@browardsch ools.com	Naomi Harrison Architect MC Harry & Associates, Inc. 2780 SW Douglas Road, Suite 302, Miami, FL, 33133 +1 305 4453785x122 nharrison@mccharry.com	\$8,672,481	1/24/2011	5%	PreK-12	Division
School, Fort Lauderdale, FL	Charles Ricka Project Manager III Broward County School Board 1643 North Harrison Parkway, Building H, Sunrise, FL, 33323 +1 754 3211602	Jose Murguido Vice President Zyscovich, Inc. 100 N. Biscayne Blvd, 27th Floor, Miami, FL, 33132 +1 305 3725222 jose@zyscovich.com	\$19,399,957	8/31/2012	5%	PreK-12	Division
Center Ph 2E, 3A, 3B, Lake	Kirk Stelson Manager Facilities Planning Palm Beach State College 4200 Congress Avenue, Lake Worth, FL, 33461 +1 561 8683481 stelsonk@palmbeachstate.edu	Philip Luchner Sr. Vice President Stephen Bonuff, AIA Architects & Planners, Inc. 901 Northpoint Parkway, Suite 101, West Palm Beach, FL, 33407 +1 561 4718520 pluchner@sba-arch.com	\$18,100,000	1/31/2013	5%	Higher /	Division
Sunrise, FL	Gregory Boardman Project Manager III Broward County School Board	Roger Bolling Sr. Architect/Director of Education Design Studio Song & Associates, Inc.	\$24,829,540	8/13/2009	5%	PreK-12	Division

	1843 North Harrison Parkway, Burlington, FL 33323 +1 754 3211620 gregory.boardman@browardschools.com	400 Australian South, 6 floor, West Palm Beach, FL 33401 +1 561 6652423 rooling@songandassociates.com					
of America Center, Charlotte,	Tim Brooks Sr. Construction Project Manager Bank of America 525 N. Tryon St., NC1-023 04-03, Charlotte, NC, 28255 +1 980 3872852 timothy.d.brooks@bankofamerica.com	Jeff Purdy Smalwood, Reynolds, Stewart, Stewart & Associates 3565 Piedmont Road, Suite 303, Atlanta, GA, 30305 +1 404 2335453 jpurdy@rssta.com	\$62,803,521	9/21/2009	5%	Hospitality	Division
Tier IV Data Center, Charlotte,	Bill Hailey Senior Project Manager Wells Fargo 550 South Tryon Street, Charlotte, NC, 28202 +1 704 3744437 bill.hailey@wellsfargo.com	John Walker Little & Associates 5815 Westpark Drive, Charlotte, NC, 28217 +1 704 5256350 jwalker@littleonline.com	\$107,053,725	11/1/2009	5%	Critical	Division
Center, Greensboro, NC	Sandra Woodard Intern Property Management Administrator Guilford County 301 West Market Street, Suite 400, Greensboro, NC, 27401 +1 336 5413722 swoodard@co.guilford.nc.us	Russell Giles Vice President Moseley Architects 3000 RDU Center Drive, Suite 217, Morrisville, NC, 27560 +1 704 6972927 rgiles@moseleyarchitects.com	\$84,895,359	12/15/2012	5%	Justice	Division
Dining Searle Center, Durham,	Shawn Subasic Director of Design and Construction Duke University School of Medicine P.O. Box 3019 DUMC, Durham, NC, 27710 +1 919 2868314 subas001@mc.duke.edu	Lucien Roughton Roughton, Nickelson & De Luca Architects, P.A. 3608 University Dr., Suite 204, Durham, NC, 27707 +1 919 4901266 lroughton@rmdpa.com	\$11,000,000	11/21/2012	5%	Healthcare	Division
Zebra Data Center, Charlotte,	Susie Glass Time Warner Cable 7910 Crescent Executive Drive, Charlotte, NC, 28217 +1 704 7313133 susie.glass@twcable.com	John Walker Little & Associates 5815 Westpark Drive, Charlotte, NC, 28217 +1 704 5256350 jwalker@littleonline.com	\$82,838,955	10/12/2012	5%	Critical	Division
Steam Plant, Durham, NC	Paul Manning Dir. Project Management Duke University PO Box 90144, 114 S. Buchanan Bld., Durham, NC, 27708 +1 919 8604221 paul.o.manning@duke.edu	Brian Dautel Associate SmithGroupJJR 901 K Street, NW, Suite 400, Washington, DC, 20001 +1 919 2940921 brian.dautel@smithgroupjir.com	\$16,129,173	3/26/2010	5%	Higher /	Division
(Building D) - Day 2, Cary, NC	Chad Ruehle SAS Institute 100 SAS Campus Drive, V470, Cary, NC, 27513-2414 +1 919 6778000	John Walker Little & Associates 5815 Westpark Drive, Charlotte, NC, 28217 +1 704 5256350 jwalker@littleonline.com	\$20,097,515	6/20/2013	5%	Critical	Division
Bed Tower, Smithfield, NC	Kyle McDermott Vice President Johnson Memorial Hospital Authority 508 N. Bright Leaf Blvd, Smithfield, NC, 27577 +1 919 9387115 kmcdermott@johnsonhealth.org	Steven Reutter Associate Architect Johnson Johnson Crabtree Architects 4551 Trousdale Drive, Nashville, TN, 37204 +1 615 5777864 sreutter@jca.com	\$43,240,745	5/12/2011	5%	Healthcare	Division

Renovations, RDU Airport, NC	Dave Powell Director, Major Capital Improvements Program Raleigh Durham Airport Authority P.O. Box 80001, RDU Airport, NC, 27623 +1 919 8402100 dave.powell@rdau.com	Donna Francis Pearce Brinkley Cease & Lee PA (PBCL) 333 Fayetteville St. Mail, Raleigh, NC, 27601 +1 919 8389751 dfrancis@clarknixon.com	\$39,427,780	10/1/2013	5%	Airports	Division
Raleigh, NC	R. Timothy Ashby Facilities Project Manager Wake County +1 919 8566661 roger.ashby@wakegov.com	Scott Hemlock Hellmuth, Obata & Kassabaum, PC (HOK) Canal House, 3223 Grace St., N.W., Washington, DC, 20007 +1 202 3398700 scott.hemlock@hok.com	\$148,403,358	5/1/2013	5%	Justice	Division
Expansion, Raleigh, NC	Larry Wheeler Director of Planning and Design North Carolina Museum of Art 2110 Blue Ridge Road, Raleigh, NC, 27607 +1 919 6845767 larry.wheeler@ncdot.gov	Clymer Cease, AIA, LEED AP Operations Director, Principal Pearce Brinkley Cease & Lee PA (PBCL) 333 Fayetteville Street, Suite 1000, Raleigh, NC, 27601 +1 919 8281876 ccease@clarknixon.com	\$68,304,464	6/30/2010	5%	Civic	Division
Center Colocation, Charlotte,	Ray Caponi Director Regional Facility Engineering Peak 10 8910 Lennox Point Drive, Charlotte, NC, 28273 +1 704 2641076 ray.caponi@peak10.com	John Carew RS&H 10748 Deerwood Park Boulevard South, Jacksonville, FL, 32256-0597 +1 904 2562332 john.carew@rsandh.com	\$10,466,551	11/5/2012	5%	Critical	Division
TEMF, Ft Bragg, NC	Karl Gabzdyl Administrative Contracting Officer (ACO) U.S. Army Corps of Engineers- Savannah Building C-2343, Campobello Street, Fort Bragg, NC, 28310 +1 910 3969124 karl.a.gabzdyl@usace.army.mil	Clark Nexsen	\$10,477,000	9/30/2013	5%	Ancillary	D.C.
TEMF, Ft Bragg, NC	Karl Gabzdyl Administrative Contracting Officer (ACO) U.S. Army Corps of Engineers- Savannah Building C-2343, Campobello Street, Fort Bragg, NC, 28310 +1 910 3969124 karl.a.gabzdyl@usace.army.mil	Clark Nexsen	\$18,964,000	12/18/2012	5%	Ancillary	D.C.
Fort Lee, VA	Anthony Weaver Area Engineer U.S. Army Corps of Engineers- Norfolk USACE, Ft. Lee BRAC Area Office, CVAD, Building 5206, 830 20th Street, Fort Lee, VA, 23801 +1 804 7344041 anthony.j.weaver@usace.army.mil	Michael Zapkowski Principal Hellmuth, Obata & Kassabaum, PC (HOK) 3233 Grace Street, NW, Washington, DC, 20007 +1 202 3398700 michael.zapkowski@hok.com	\$110,100,000	5/12/2009	5%	Higher /	D.C.
Washington, DC	Harry Debes Project Executive U.S. General Services Administration (GSA) 301 7th Street, SW, Suite 2002, Washington, DC, 20407 +1 202 2609583 harry.debes@gsa.gov	James Wright Principal PageSoutherlandPage (PSP) 3101 Wilson Blvd., Suite 300, Arlington, VA, 22201 +1 703 4655395 jwright@pspaec.com	\$51,169,776	1/28/2010	5%	Science	D.C.

I. Fort Lee, VA	John Barr U.S. Army Corps of Engineers- Norfolk +1 757 2017551	Bradley Schulz Vice President HNTB 1615 M Street, NW, 7th Floor, Washington, DC, 20036 +1 202 654 1017 bschulz@hntb.com	\$196,500,000	2/18/2010	5%	Higher /	D.C.
Room Upgrade, Bethesda, MD	Craig Hamer Commanding Officer, OICC Bethesda NAVFAC Virginia Beach COMNECC, N3, 1575 Gator Blvd, Bldg 3504, JEB Little Creek Virginia Beach, VA, 23459 +1 757 4624316ext201 craig.hamer@navy.mil	Tom Briggs Principal HKS, Inc. 1919 McKinney Avenue, Dallas, TX, 75201 +1 214 9695599 tbriggs@hksinc.com	\$49,595,866	8/16/2012	5%	Healthcare /	D.C.
Security Perimeter,	Bonnie Echols Contracting Officer U.S. General Services Administration (GSA) 2701 Martin Luther King Avenue, SE, Bldg. 40, St. Elizabeths, Washington, DC, 20032 +1 202 5617821 bonnie.echols@gsa.gov	Jane Cameron Perkins + Will 330 North Wabash Ave., Suite 3600, Chicago, IL, 60611 +1 312 7550770	\$55,566,400	9/4/2013	5%	Ancillary /	D.C.
Phase 1B Tunnel,	Bonnie Echols Contracting Officer U.S. General Services Administration (GSA) 2701 Martin Luther King Avenue, SE, Bldg. 40, St. Elizabeths, Washington, DC, 20032 +1 202 5617821 bonnie.echols@gsa.gov	Jane Cameron Perkins + Will 330 North Wabash Ave., Suite 3600, Chicago, IL, 60611 +1 312 7550770	\$24,596,000	9/30/2012	5%	Ancillary /	D.C.
Complex, Ft Eustis, VA	Michael Bullock U.S. Army Corps of Engineers- Norfolk 803 Front Street Norfolk, VA, 23510-1096 +1 757 8781382 michael.j.bullock@usace.army.mil	Greg Monnig Project Director Woolpert, Inc. 4454 Idea Center Blvd., Dayton, OH, 45430-1600 +1 957 5311481 greg.monnig@woolpert.com	\$16,618,720	5/31/2012	5%	Multi-Family	D.C.
VA	Paul Sowter Senior Vice President of Development Vornado/Charles E. Smith 2345 Crystal Drive, Suite 1000, Arlington, VA, 22202 +1 703 7698200 psowter@vnc.com	Anthony Hall Project Architect Donsky Hodgson Parrish Yue 1825 K Street NW, Suite 500, Washington, DC, 20006 +1 202 7760400 ahall@dhy-arch.com	\$67,279,308	8/27/2009	5%	Multi-Family	D.C.
National Harbor, Oxon Hill, MD	Raymond Carter II Director, Development, Planning and Construction Wyndham Worldwide 8427 South Park Circle, Suite 500, Orlando, FL, 32819 +1 407 8264571 raymond.carter@wynd.com	M. Darwood Dixon Managing Principal WDG Architecture 1026 Connecticut Ave., NW, Suite 300, Washington, DC, 20036 +1 202 8578300 ddixon@wdgarch.com	\$77,100,000	8/28/2009	5%	Multi-Family	D.C.
Security Facility, Independence,	Kimberley Lipp Chief Construction and Administrative Officer Virginia Department of Corrections 6900 Atmore Drive, Richmond, VA, 23225 +1 804 6743102x1206 kimberley.lipp@vadoc.virginia.gov	Taylor Muniz Vice President Mosley Architects 3200 Norfolk Street, Richmond, VA, 23230 +1 804 7947555 tmuniz@mosleyarchitects.com	\$38,425,000	8/31/2011	5%	Justice	D.C.
Building, Chevy Chase, MD	Jon Olson Boston Properties Inc. 505 9th Street, NW, Suite 800, Washington, DC, 20004 +1 202 5850861 jolson@bostonproperties.com	Bob Evans Evans Heintges Architects 128 Fifth Avenue, 9th Floor, New York, NY, 10011 +1 212 6522887 bevans@eharch.com	\$42,610,000	5/26/2009	5%	Retail	D.C.

Regional Jail Exp and Reno.	Gerald McPeak Superintendent New River Valley Regional Jail Authority 106 Baker Road, Dublin, VA, 24064 +1 540 6432001 gmcpeak@nrvj.org	Bill King Thompson & Linton, Inc. 100 5th Street, Suite 400, Bristol, VA, 27620 +1 423 9896491 bking@t-l.com	\$55,200,000	2/17/2010	5%	Justice	D.C.
Center and Hotel, Fairfax, VA	Thomas Cathoun Vice President, Facilities George Mason University 4400 University Drive, MS 1E4, Fairfax, VA, 22030 +1 703 9939467 tcathou2@gmu.edu	Jeff Barber Managing Director and Principal Gensler Architecture, Design & Planning PC 2020 K St. NW, Suite 200, Washington, DC, 20006 +1 202 7215283 jeff_barber@gensler.com	\$53,632,000	6/6/2010	5%	Hospitality	D.C.
Staunton, VA	Joe Cronin Director of Architecture and Engineering VA Dept. of Behavioral Health & Developmental Services 1220 Bank Street, 7th Floor, P.O. Box 1787 (zip 23218), Richmond, VA, 23219 +1 804 2254850 joe.cronin@dohhs.virginia.gov	Bill Upton President Beltou Justice Upton & Associates 2402 N. Parham Road, Richmond, VA, 23229 +1 804 2701443 bupton1@bjusaarchitects.com	\$117,800,000	6/24/2013	5%	Healthcare	D.C.
Facility, Chesapeake, VA	John Miller NAVFAC Construction Manager NAVFAC Mid-Atlantic 9742 Maryland Avenue, Building D, Norfolk, VA, 23511 +1 757 3221030 john.c.miller@navy.mil	Taylor Muniz Vice President Moseley Architects 3200 Norfolk Street, Richmond, VA, 23230 +1 804 7947555 tmuniz@moseleyarchitects.co m	\$61,637,000	6/15/2011	5%	Justice	D.C.
George Mason University,	Thomas Cathoun Vice President, Facilities George Mason University 4400 University Drive, MS 1E4, Fairfax, VA, 22030 +1 703 9939467 tcathou2@gmu.edu	Jeff Barber Managing Director and Principal Gensler Architecture, Design & Planning PC 2020 K St. NW, Suite 200, Washington, DC, 20006 +1 202 7215283 jeff_barber@gensler.com	\$47,467,000	12/15/2011	5%	Multi-Family	D.C.
Structure, Bethesda, MD	Craig Hamer Commanding Officer, DiCC Bethesda NAVFAC Virginia Beach COMNEDC, N3, 1575 Galois Bldg, Bldg 3604, JEB Little Creek Virginia Beach, VA, 23459 +1 757 4824316ext201 craig.hamer@navy.mil	Tom Briggs Principal HKS, Inc. 1919 McKinney Avenue, Dallas, TX, 75201 +1 214 9695599 tbriggs@hksinc.com	\$24,135,408	8/5/2011	5%		D.C.
UT	James Simms Deputy Chief RSFO U.S. Army Corps of Engineers Baltimore District 300 Sentinel Drive, Suite 400, Annapolis Junction, MD, 20701 +1 410 8540728 james.l.simms@usace.army.mil	Tom Reed Principal / Senior Director KingStubbins 2301 Chestnut Street, Philadelphia, PA, 19103 +1 215 5695958 treed@kingstubbins.com	\$1,198,500,000	9/24/2013	5%	Critical	D.C.
Springfield, VA	Kerry Nickerson Executive Vice President Miller Global Properties 4643 South Utekar Street, Suite 1500, Denver, CO, 80237 +1 303 7730369 kerry.nickerson@mlgglobal.co m	Khrystil Ushin Cooper Carry 825 N. Washington Street, Suite 200, Alexandria, VA, 22314 +1 703 5186152 khrystilushin@coopercarry.com	\$31,533,769	7/31/2015	5%	Hospitality	D.C.
& 15 Gate Exp., Chanality, VA	Kenneth Luthi Metropolitan Washington Airports Authority 1 Aviation Circle, Suite 154, Washington, DC, 20001 6000 +1 703 5723472 kenneth.luthi@mwaa.com	Morgan Williams Design Principal Hellmuth, Obata & Kassabaum, PC (HOK) 3223 Grove Street, NW, Washington, DC, 20007 +1 202 3398701 morgan.williams@hok.com	\$128,935,000	10/31/2008	5%	Airports	D.C.

Bragg, NC	Ruben Del Rio Project Manager U.S. Army Corps of Engineers- Savannah PO Box 889, Attn: CESAS-CT Savannah, GA, 31402 +1 912 6526100 ruben.delrio@usace.army.mil	Steve Pearson Director of Military Programs H&A Architects and Engineers (formerly Hanks & Anderson) 5712 Cleveland Street, Suite 200, Virginia Beach, VA, 23462 +1 757 2136040 s.pearson@hiengeers.com	\$13,744,000	9/25/2012	5%	Ancillary	D.C.
Administrative Headquarters,	Robert Peltam Assistant Director of Engineering Toho Water Authority 101 Church Street, Kissimmee, FL, 34741 (407) 944-5132 rpeltam@tohowater.com	Eric Kleinstaubert Vice President KZF Design 2101 Park Center Drive, Suite 200, Suite 215, Orlando, FL, 32835-7608 +1 407 2981988 eric.kleinstaubert@kzf.com	\$10,751,404	6/6/2010	5%	Sewage	Division
Ilf, Jacksonville, FL	Bob Mole Director Planning and Development Jacksonville Aviation Authority P.O. Box 18018, Jacksonville, FL, 32229-0018 +1 904 7412405 bmole@jaa.aero	Dan Clayton Vice President Reynolds Smith & Hills, Inc. 10748 Deerwood Park Blvd. South, Jacksonville, FL, 32256 +1 904 2562338 dan.clayton@rsandh.com	\$105,000,000	10/31/2012	5%	Airports	Division
Headquarters, Cape Coral, FL	Charles Pavlos Director of Public Works City of Cape Coral 1015 Cultural Park Blvd., Cape Coral, FL, 33909 +1 239 5740791 cpavlos@capecoral.net	Ian Reeves Associate AIA, Vice President Architects Design Group, Inc. 333 North Knowles Ave., Winter Park, FL, 32789 +1 407 6471706 ianr@adgusa.org	\$19,114,414	10/1/2009	5%	Justice	Division
Expansion, Fort Myers, FL	Jim Lavender Director of Public Works Lee County Department of Public Works 1500 Monroe Street, Fort Myers, FL, 33901 +1 239 5338301 lavenderj@leegov.com	Kevin Williams Project Manager BSSW Architects, Inc. 1600 Jackson Street, Suite 200, Fort Myers, FL, 33901 +1 239 2763838 kevinw@bsswarchitects.com	\$38,000,000	8/30/2009	5%	Justice	Division
The Peabody Orlando,	Marty Belz Chairman of the Board / President Peabody Hotel Group 5118 Park Avenue, Suite 249, Suite 249, Memphis, TN, 38117 +1 901 7625468 mbelz@phg.net	Lynn Hill V.P. Project Director SCA Design Group, Inc. 1412 Trevillion Ave., Winter Park, FL, 32789 +1 321 2821318 lhill@scadg.com	\$251,408,799	1/9/2011	5%	Hospitality	Division
Innovation Village Apt, Boca	Thomas Donaudy VP for Facilities & University Architect Florida Atlantic University 777 Glades Road, CO #68 Room 101, Boca Raton, FL, 33431 +1 561 2972863 tdonaudy@fau.edu	Joby Balint Associate Principal PGAL 751 Park of Commerce Boulevard, Suite 400, Boca Raton, FL, 33487 +1 561 9864002ext25 jbalint@pgal.com	\$66,455,082	6/1/2011	5%	Multi-Family	Division
Football Stadium, Boca Raton,	Thomas Donaudy VP for Facilities & University Architect Florida Atlantic University 777 Glades Road, CO #68 Room 101, Boca Raton, FL, 33431 +1 561 2972863 tdonaudy@fau.edu	J. Michael Drye Associate HKS, Inc. 2100 East Cary Street, Suite 100, Richmond, VA, 23223 +1 804 8448400 mdrye@hksinc.com	\$50,213,863	10/7/2011	5%	Civic	Division
Communications/EOC,	Frank Anderson Director of Architectural Services 110 W. Neptune Road, Kissimmee, FL, 34744 +1 407 9621310 fand@osceola.org	Susan Gantt Project Architect Architects Design Group, Inc. 333 North Knowles Ave., Winter Park, FL, 32789 +1 407 6471706 susan.g@architectsdesigngroup.com	\$16,141,589	5/28/2009	5%	Civic	Division

Annex & Main Unit Ex, Mayn. Fl	Roy Phelps Asst. Bureau Chief Florida Department of Corrections 2601 Blair Stone Road, Tallahassee, FL, 32399 +1 850 4104109 phelps.roy@mail.dc.state.fl.us	Ned Terry Architect Supervisor Florida Department of Corrections 2601 Blair Stone Road, Tallahassee, FL, 32399 +1 850 4104217 terry.ned@mail.dc.state.fl.us	\$70,800,000	3/10/2010	5%	Justice	Division
+ Kidani Village, Lake Buena	Bruce MacDonald Construction Manager Walt Disney Imagineering P.O. Box 10321, Trailer W229, Lake Buena Vista, FL, 32830- 0321 +1 407 8274775 bruce.d.mcdonald@disney.com	Darcy Gagneau Managing Principal EDI Architecture, Inc. 2600 Post Oak Blvd., Suite 3800, Houston, TX, 77056 +1 713 7890395ext250 darcy.gagneau@ediarchitecture.com	\$160,600,000	6/29/2009	5%	Hospitality	Division
Widening, City of Cape Coral,	Steve Neff Director of Public Works City of Cape Coral 1015 Cultural Park Blvd., Cape Coral, FL, 33990 +1 239 6740702 sneff@capecoral.net	Tom Giles President Avalon Engineering 2503 Del Prado Blvd., Suite 200, Cape Coral, FL, 33904 +1 239 5732077 tom@avaloneng.com	\$29,043,444	5/5/2011	5%	n	Division
Parliament Hall, Boca Raton,	Robert Richman Director Florida Atlantic University 777 Glades Road, Building CO 69, Room 109, Boca Raton, FL, 33431 +1 561 2973166 richman@fau.edu	Ian Nestler Principal PGAL 791 Park of Commerce Boulevard, Suite 400, Boca Raton, FL, 33487 +1 561 9884000 inestler@pgal.com	\$29,222,818	7/18/2013	5%	Multi-Family	Division

**TRAVELERS**

November 1, 2013

Ms. Tracy Ray
Bennett Hospitality
17 Lockwood Drive
Rice Building Suite 400
Charleston, SC 29401

RE: **Hotel at Marion Square**
Charleston, SC

Dear Ms. Ray:

Balfour Beatty Construction, LLC requests consideration to provide Construction Management Services for the referenced project. In this regard, they have asked us to provide a letter outlining evidence of their single and aggregate bonding capacities.

Travelers Casualty and Surety Company of America serves as the lead surety for **Balfour Beatty Construction, LLC** in a co-surety for a program arranged with the following sureties: Travelers Casualty and Surety Company of America, with an A.M. Best Rating of A+ XIV, Fidelity and Deposit Company of Maryland (a subsidiary of Zurich Financial Services Group) with an A.M. Best Rating of A+ XV, Liberty Mutual Insurance Company with an A.M. Best Rating of A XV, and Federal Insurance Company (a Subsidiary of the Chubb Group of Insurance Companies based in Warren, New Jersey) with an A.M. Best Rating of A+ XV. Each of these sureties is admitted and licensed to do business in all fifty states and the District of Columbia, as well as serving as an integral part of the overall co-surety program for **Balfour Beatty Construction, LLC**.

This is to advise that as co-surety partners, we have approved bonds on individual projects in excess of \$300,000,000 with a total aggregate bond limit established at \$6,250,000,000. Based on the information provided at this time, the current available bonding capacity is approximately \$2,365,400,000. **Balfour Beatty Construction, LLC's** bond program has a blended base rate of \$6.80 per thousand for General Construction. The base rates apply to projects with a completion time up to 24 months and a warranty period up to 12 months.

Please understand that authorizations or approval of any bonds are subject to our standard underwriting at the time of the individual bond request, including a review of acceptable bond forms, contract financing, contract terms, and other standard underwriting considerations.

Our consideration and issuance of bonds is a matter solely between **Balfour Beatty Construction, LLC** and ourselves, and we assume no liability to third parties or to you by the issuance of this letter.

Sincerely,

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA



Carol S. Card
Attorney-in-Fact

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

POWER OF ATTORNEY

TRAVELERS

Farmington Casualty Company
 Fidelity and Guaranty Insurance Company
 Fidelity and Guaranty Insurance Underwriters, Inc.
 St. Paul Fire and Marine Insurance Company
 St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
 Travelers Casualty and Surety Company
 Travelers Casualty and Surety Company of America
 United States Fidelity and Guaranty Company

Attorney-In Fact No. 225134

Certificate No. 005304986

KNOW ALL MEN BY THESE PRESENTS That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Matthew W. Varner, Jennifer B. Gullett, Catherine Thompson, Walter Caldwell, Carol S. Card, and Amy Waugh

of the City of Charlotte, State of North Carolina, their true and lawful Attorney(s)-In-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 13th day of December, 2012.

Farmington Casualty Company
 Fidelity and Guaranty Insurance Company
 Fidelity and Guaranty Insurance Underwriters, Inc.
 St. Paul Fire and Marine Insurance Company
 St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
 Travelers Casualty and Surety Company
 Travelers Casualty and Surety Company of America
 United States Fidelity and Guaranty Company



State of Connecticut
 City of Hartford ss.

By: [Signature]
 Robert L. Raney, Senior Vice President

On this the 13th day of December, 2012, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
 My Commission expires the 30th day of June, 2016.



[Signature: Marie C. Tetraault]
 Marie C. Tetraault, Notary Public

68440-8-12 Printed in U.S.A.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

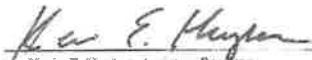
FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate of authority or by one or more Company officers pursuant to a written delegation of authority, and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or undertaking to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 1st day of November, 2013.


Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-5880 or contact us at www.ata-verify.com. Please refer to the Attorney-in-Fact number, the above-named individuals and the details of the bond to which the power is attached.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER



The Joule Hotel, Dallas, TX

Balfour Beatty
Construction

R - 7178

Award of Excellence

Renovation/Restoration

*Associated Builders and Contractors,
North Texas Chapter*

Award of Excellence

Historic Rehabilitation

Preservation Texas

Design Award

Juror Choice Award

*American Institute of Architects,
Dallas Chapter*

Award of Excellence

Special Recognition for 25th Annual
Reconstruction Awards

Building Design + Construction

I. Proposed Fee for Preconstruction Services Provide a lump sum fee for Preconstruction services for the entire program covering all aspects of providing the services as described in this RFP. Include items such as, estimating, scheduling, printing, consultant and/or subcontractor fees; all travel costs, general overhead, office supplies, etc.

Our proposed fee for preconstruction services is \$36,779. Please refer to our Preconstruction Services Proposal below for a breakdown of this fee.

Balfour Beatty Construction

Hotel at Marion Square
Charleston, SC

PRECONSTRUCTION SERVICES PROPOSAL

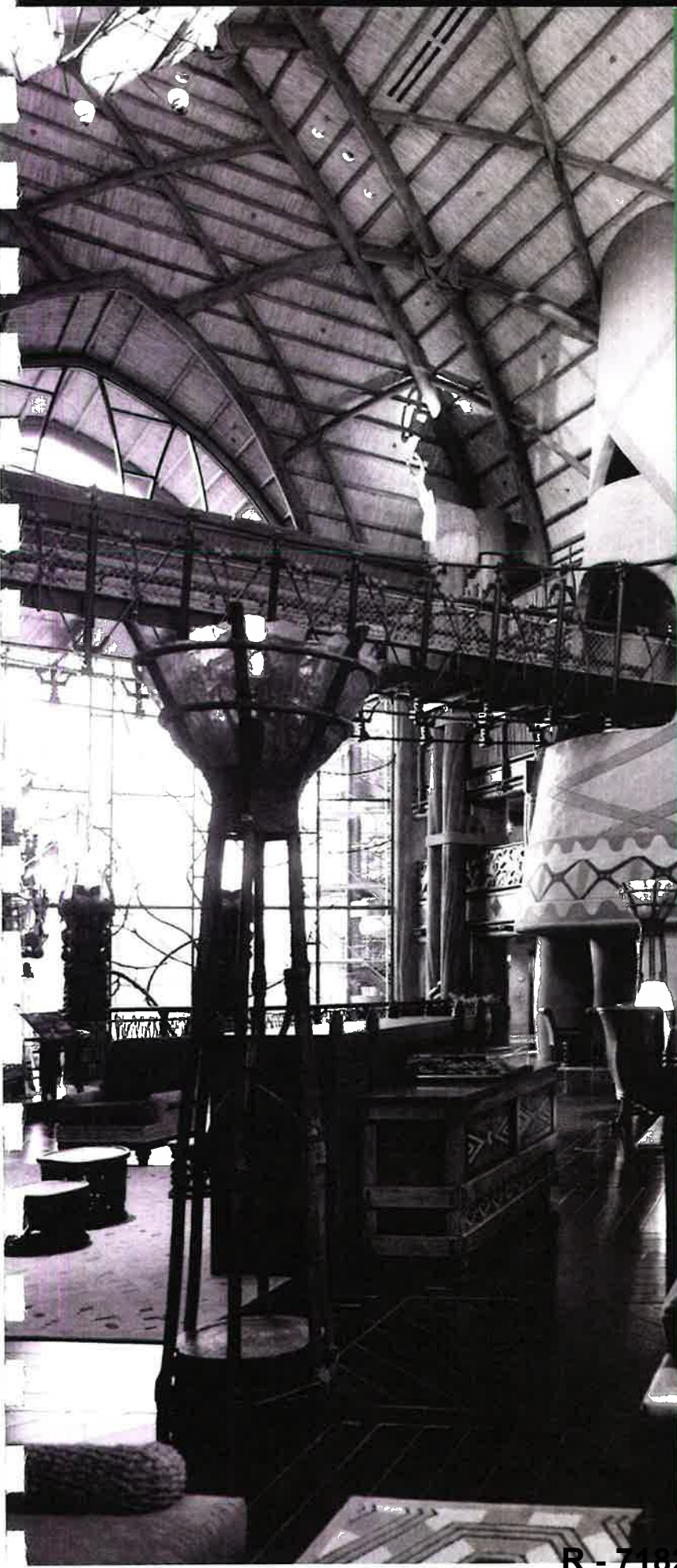
November 5, 2013

	CD / GMP Estimate	Total
DELIVERABLE COSTS:		
Personnel		
Operations	\$11,288	\$11,288
Administrative / Preconstruction	\$8,900	\$8,900
Estimating	\$7,840	\$7,840
Support Staff	\$3,224	\$3,224
Consultants	\$0	\$0
Total Personnel Costs	\$31,252	\$31,252
Document Reprographics / Bid Solicitation		
Document Reprographics	\$750	\$750
Postage & Couriers	\$100	\$100
Total Document / Bid Solicitation Costs	\$850	\$850
TOTAL DELIVERABLE COSTS	\$32,102	\$32,102
MEETINGS & WORKSHOPS:		
Design Review Meetings:		
Operations	\$1,584	\$1,584
Administrative / Preconstruction	\$712	\$712
Estimating	\$448	\$448
Support Staff	\$0	\$0
Consultants	\$0	\$0
Document Reprographics	\$150	\$150
Total Design Review Meetings	\$2,894	\$2,894
TOTAL MEETINGS & WORKSHOPS	\$2,894	\$2,894
Travel:		
Estimate / Deliverable / Meetings	\$1,250	\$1,250
Total Travel Expenses	\$1,250	\$1,250
SUBTOTALS	\$36,246	\$36,246
IT Support & Records Retention	\$156	\$156
Liability Insurance - 1.04%	\$377	\$377
TOTAL PRECONSTRUCTION SERVICES COSTS	\$36,779	\$36,779



Disney's Animal Kingdom, Lake Buena Vista, FL

Balfour Beatty
Construction



**"[Your company] has been
building for the Disney
organization since 1968.
Because of your strong project
management, you consistently
perform to our expectations."**

Robert L. Schinn
Former Senior Vice President
Walt Disney Imagineering

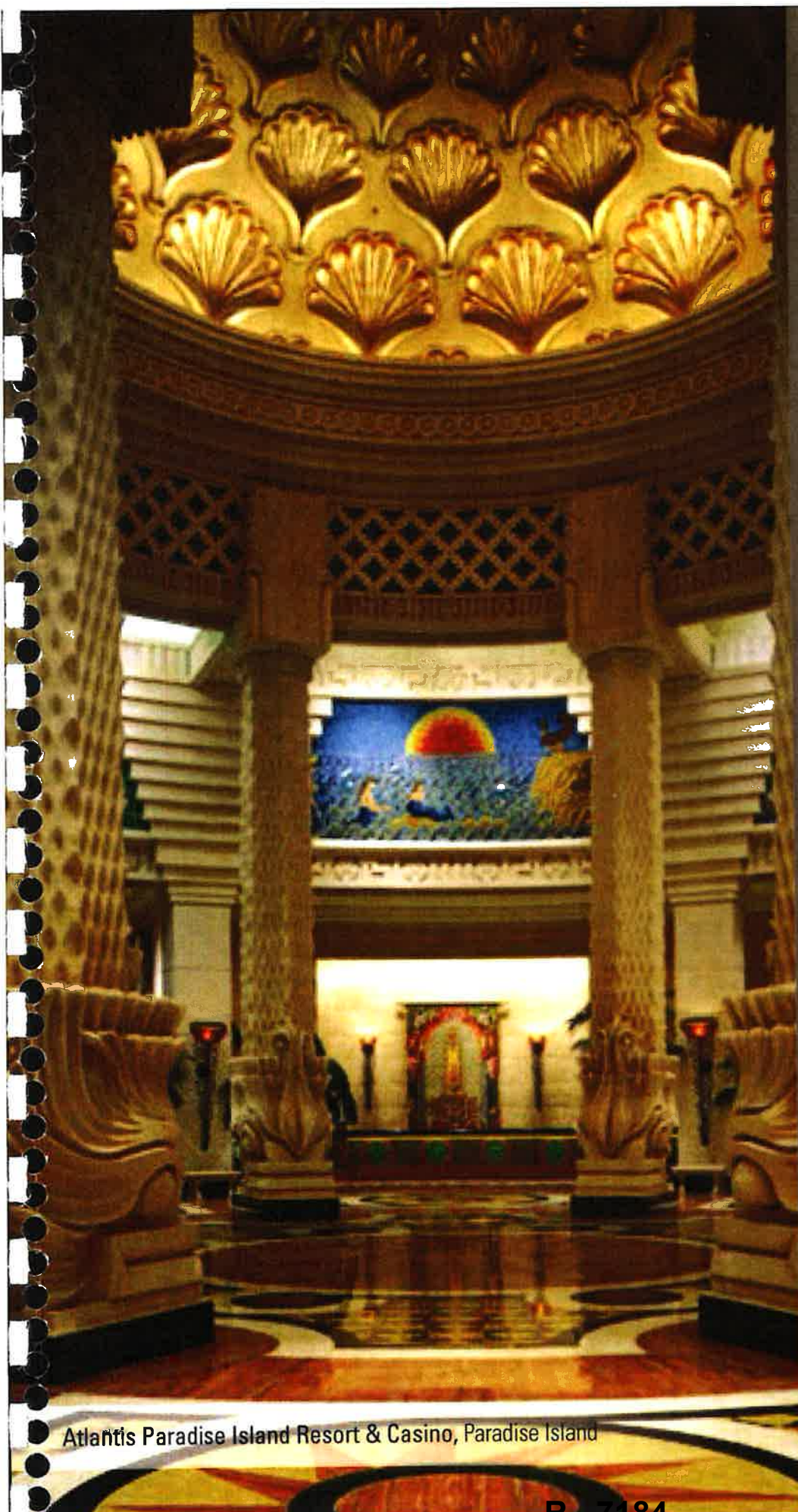
section j proposed construction fee**J. Proposed Fee for Construction Services**

1. Provide a fee percentage based on the Owner-approved GMP to provide comprehensive construction phase services for the project described in this request for proposal. The General Conditions costs to be included are outlined in the attached Project Cost Items Matrix. Items not identified either in the Cost Items Matrix or the Construction Manager's response will be assumed to be included in the Construction Manager's fee.

Our proposed fee percentage for construction services is 2.5% of the final GMP contract value.

2. Provide a percentage mark-up on the direct costs incurred by subcontractors, or suppliers for Change Orders. The Construction Manager's fee for Change Orders will be the same as the fee established for the GMP.

Subcontractor mark-up on change orders for the Hotel at Marion Square project will be capped at 10%. Construction manager fee on change orders will remain at 2.5%.



Atlantis Paradise Island Resort & Casino, Paradise Island

Balfour Beatty
Construction



"With all the projects completed, not one was late. This is an incredible feat given the fact that most of the work has been off shore and under extreme conditions. I...can testify that this would not have happened without an extremely professional staff and senior management hands-on participation."

Jaime Juado
President
Electric Machinery Enterprises, Inc.

K. Proposed GMP for General Conditions

The General Conditions costs to be included are outlined in the attached Project Cost Matrix. Please provide a proposed GMP, including all detail for the proposed General Conditions costs. This "General Conditions GMP" will be a separately capped item included in the overall GMP.

Based on the information received within the RFP, dated October 16, 2013, Balfour Beatty Construction proposes a GMP of \$2,470,431. Please refer to the attachment on the following pages for a detailed breakdown of the General Conditions GMP based upon the matrix provided.

Balfour Beatty Construction

11/6/2013

DESCRIPTION	BASIC FEE	GEN CONDS	A/E COST	OWNER COST	DIRECT COST
Project Superintendent(s)		340971			
Assistant Superintendent(s)		396228			
Field Engineer		0			
Corporate Executives	X				
Principal in Charge	X				
Project Executive	X				
Legal (Basic Service)	X				
Project Management		739680			
Accounting	X				
Scheduling		30800			
Life-Cycle Analysis	X				
Energy Management	X				
Production Engineering	X				
Purchasing	X				
Value Engineering	X				
System Development	X				
Estimating	X				
Cost Engineers	X				
Project Coordinator	X				
Project Expeditor	X				
Drafting Detailer	X				
Drawing Checker	X				
Safety Officer	X				
E.E.O. Officer	X				
Secretarial - On Site		In Time Keeper Below			
Clerk- Typist		0			
Mechanical Coordinator		31950			
Electrical Coordinator		In Above			
Project Engineer		153000			
Scheduling Engineer		0			
Time Keeper/Checker		100000			
Safety Engineer		10875			
Superintendents Transportation		95058			
Off-Site Staff Travel Costs	X				
Off-Site Staff Transportation	X				
On-Site Project Manager Transportation		51787			
On-Site Engineers Transportation		0			
Project Staff Moving Expense		16000			
Project Staff Subsistence Costs		176918			
Project Budget Estimating	X				
Project Phasing	X				
II. SAFETY, SECURITY AND SERVICES					
Safety Equipment		5000			
First Aid Supplies		20000			
Handrails and Toe Boards		18000			
Opening Protection		By Trades			
Fire Extinguishers/ Fire Watch		6000			
Security Guard/ Watchman Services					X
Weekly Cleanup					X
Final Cleanup					X
Temporary Fencing		7500	Maintenance of Existing		
Covered Walkways		9350			
Barricades		By Trades			
Safety Nets		By Trades			
Ambulance Costs		0			
Debris Hauling / Removal					X
Traffic Control		By Trades			
Roadway Maintenance		15000	Street Clean Post Site-work		
Dust Controls		By Sitework			
2-Way Radio Equipment		3600			
Trash Chute & Hoppers		0			
Snow and Ice Removal		0			
III. FACILITIES, EQUIPMENT, AND SERVICES					
Office Trailer Rental		23050			
Tool/Utility Trailer Rental		2000			
Water/Ice		2400			
Temp. Lighting/Wiring		By Electrician			
Power Expenses		6000	For Trailer Only		
Temp. Water Services		2750	For Trailer Only		

Balfour Beatty Construction

11/6/2013

DESCRIPTION	BASIC FEE	GEN CONDS	A/E COST	OWNER COST	DIRECT COST
Temp. Heat Expenses		NA			
Temp. Cooling Expenses		In Trades			
Temp. Toilets/Sewer Services		40820			
Change/Shower Rooms		NA			
Lunch Rooms		1000			
Temp. Stairs		10000			
Temp. Enclosures/Partitions		In Trades			
Projects Signs/Bulletin Boards		2000			
Telephone Expenses*		47444			
Temp. Roads		By Sitework			
Trucks		By Sitework			
Air Compressors		By Trades			
Dewatering Equipment		By Trades			
Generators		By Trades			
Miscell. Equipment		10000			
Fuel/Repairs/Maint.		2000			
IV. VERTICAL HOISTING					
Hoist & Tower Rental					X
Small Material Hoist Rental					X
Hoist Landings and Fronts					X
Hoist Operators					X
Hoist Safety Inspections					X
Hoist Material Skips					X
Hoist Material Hoppers					X
Erect & Dismantle Hoists					X
Fuel/Repairs/Maint.					X
Hoist Communication					X
Crane Rental					X
Crane Operators					X
Crane Safety Inspections					X
Erect & Dismantle Crane					X
Fuel/Repairs/Maint.					X
Crane Raising/Jumping Cost					X
Temp. Elevator Rental					X
Elevator Operations Cost					X
Elevator Repairs & Maint.					X
Cage Rider @ Elevator					X
Safety Inspections					X
Forklift Rental					X
Forklift Operators					X
Forklift Safety Inspections					X
Fuel/Repairs/Maint.					X
Elevator Service Costs					X
V. REPRODUCTION AND PRINTING					
Design Phase					
Cost Study Documents			X		
Systems Study Documents			X		
Bid Package Documents			X		
Bidding Instructions			X		
Construction Documents			X		
Postage and Express Costs			X		
As-Built Documents (Drafting)			X		
As-Built Documents (Printing)			X		
Construction Phase					
Accounting Forms	X				
Field Reporting Forms	X				
Contract Agreements	X				
Schedule Report Forms	X				
Contract Agreements	X				
Schedule Report Forms	X				
Estimating Forms	X				
Cost Reporting Forms	X				
Presentation Charts and Graphics	X				
Value Analysis Studies	X				
Data Processing (In-House)	X				
Reference Materials	X				
Duplication Expense (Misc.)		7000			
Shop Drawing Printing		7300			
Maintenance Manuals		Included Above			

Balfour Beatty Construction

11/6/2013

DESCRIPTION	BASIC FEE	GEN CONDS	A/E COST	OWNER COST	DIRECT COST
Operation Manuals		Included Above			
Special Forms	X				
Postage and Delivery Expense		8400			
VI. QUALITY CONTROL					
Chief Inspector				X	
Field Inspector				X	
Inspectors Office					X
Inspectors Transportation					X
Inspectors Equipment					X
Special Inspection Consultants					X
Special Testing Consultants					X
Concrete Testing				X	
Masonry Testing				X	
Compaction Testing				X	
Welding Inspections				X	
Soils Investigations				X	
Special Testing Services					X
Field Office Supplies/Material		26610			
Project Photographs		12250			
Warranty Inspection Cord.	X				
Air & Water Balancing					X
Operator On-Site Training					X
Prepare Operation Manuals		Included			
Prepare Maint. Manuals		Included			
VII. PERMITS AND SPECIAL FEES					
Storage Yard Rental		2500			
Parking Lot Rental		In Below			
Parking Fees		21600			
Curb & Gutter Permits				X	
Sign Permits				X	
Staking & Layout Fees/Costs		7500			
Sidewalk Permits		0			
Landscape Permits				X	
Street/Curb Design Charge				X	
Building Permits		Shown- Executive Summary			
Plan Check Fees				X	
Water Connection Fee*				X	
Sanitary Connection Fee*				X	
Storm Connection Fee*				X	
Gas Service Charge Fee*				X	
Power Service Charge*				X	
Steam Service Charge*				X	
Chiller Water Service Charge*				X	
Special Tap Fees				X	
Contractors Licenses		Included			
Royalties		Included			
Zoning Fees/Consultants				X	
Use Fees		By Trades			
Construction Equip. Licenses		Included			
Construction Equip. Permits		Included			
Association Fees	X				
		Grand Total	2,470,341		

K. Proposed GMP for General Conditions

The General Conditions costs to be included are outlined in the attached Project Cost Matrix. Please provide a proposed GMP, including all detail for the proposed General Conditions costs. This "General Conditions GMP" will be a separately capped item included in the overall GMP.

Based on the information received within the RFP, dated October 16, 2013, Balfour Beatty Construction proposes a GMP of \$2,470,431. Please refer to the attachment on the following pages for a detailed breakdown of the General Conditions GMP based upon the matrix provided.

Balfour Beatty Construction

11/6/2013

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Field Engineer		0			
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Principal in Charge	X				
Project Executive	X				
Legal (Basic Service)	X				
Project Management		739680			
Accounting	X				
Scheduling		30800			
Life-Cycle Analysis	X				
Energy Management	X				
Production Engineering	X				
Purchasing	X				
Value Engineering	X				
System Development	X				
Estimating	X				
Cost Engineers	X				
Project Coordinator	X				
Project Expeditor	X				
Drafting Detailer	X				
Drawing Checker	X				
Safety Officer	X				
E.E.O. Officer	X				
Secretarial - On Site		In Time Keeper Below			
Clerk- Typist		0			
Mechanical Coordinator		31950			
Electrical Coordinator		In Above			
Project Engineer		153000			
Scheduling Engineer		0			
Time Keeper/Checker		100000			
Safety Engineer		10875			
Superintendents Transportation		95058			
Off-Site Staff Travel Costs	X				
Off-Site Staff Transportation	X				
On-Site Project Manager Transportation		51787			
On-Site Engineers Transportation		0			
Project Staff Moving Expense		16000			
Project Staff Subsistence Costs		176918			
Project Budget Estimating	X				
Project Phasing	X				
II. SAFETY, SECURITY AND SERVICES					
Safety Equipment		5000			
First Aid Supplies		20000			
Handrails and Toe Boards		18000			
Opening Protection		By Trades			
Fire Extinguishers/ Fire Watch		6000			
Security Guard/ Watchman Services					X
Weekly Cleanup					X
Final Cleanup					X
Temporary Fencing		7500	Maintenance of Existing		
Covered Walkways		9350			
Barricades		By Trades			
Safety Nets		By Trades			
Ambulance Costs		0			
Debris Hauling / Removal					X
Traffic Control		By Trades			
Roadway Maintenance		15000	Street Clean Post Site-work		
Dust Controls		By Sitework			
2-Way Radio Equipment		3600			
Trash Chute & Hoppers		0			
Snow and Ice Removal		0			
III. FACILITIES, EQUIPMENT, AND SERVICES					
Office Trailer Rental		23050			
Tool/Utility Trailer Rental		2000			
Water/Ice		2400			
Temp. Lighting/Wiring		By Electrician			
Power Expenses		6000	For Trailer Only		
Temp. Water Services		2750	For Trailer Only		

Balfour Beatty Construction

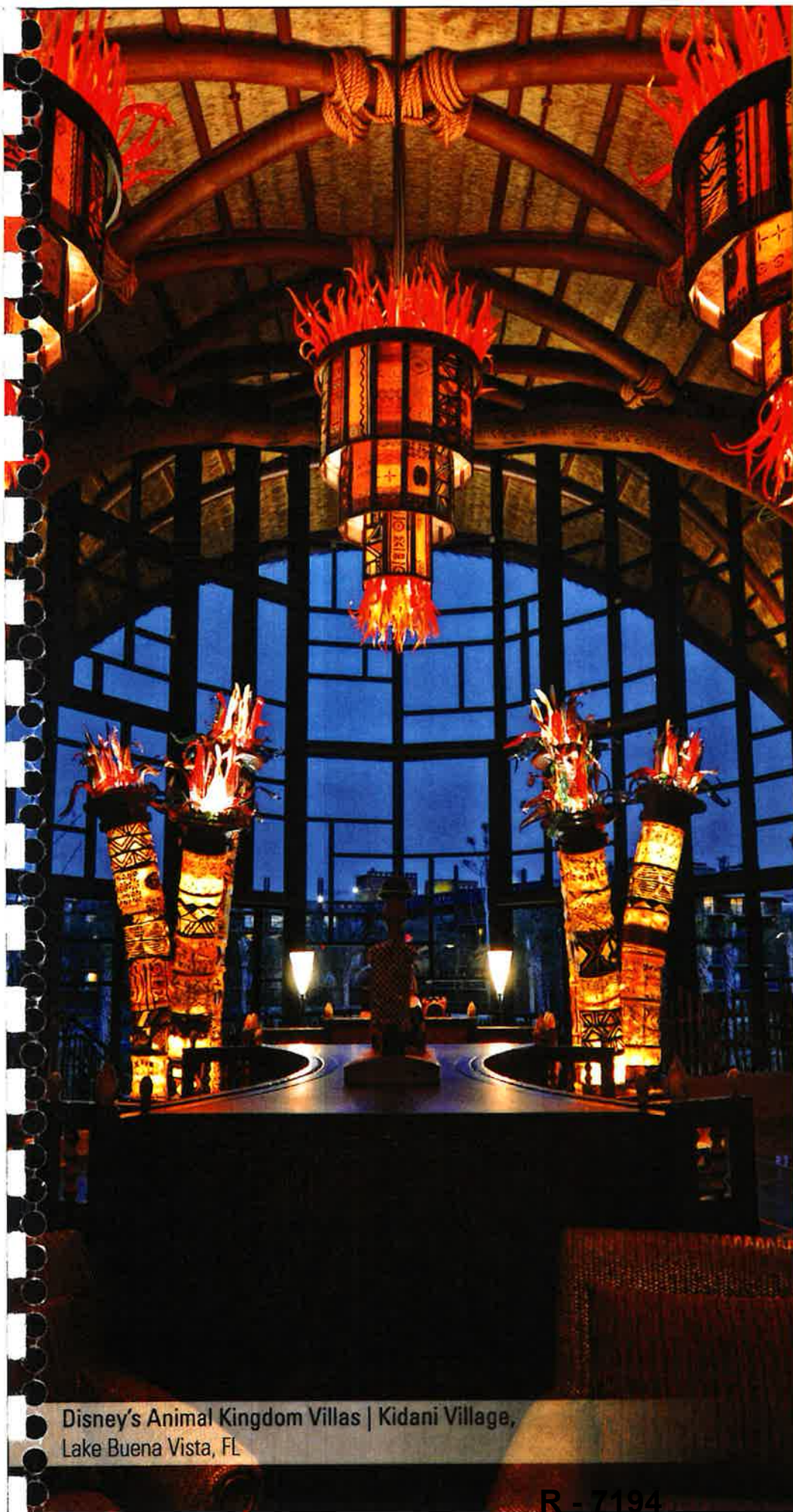
11/6/2013

DESCRIPTION	BASIC FEE	GEN CONDS	A/E COST	OWNER COST	DIRECT COST
Temp. Heat Expenses		NA			
Temp. Cooling Expenses		In Trades			
Temp. Toilets/Sewer Services		40829			
Change/Shower Rooms		NA			
Lunch Rooms		1000			
Temp. Stairs		10000			
Temp. Enclosures/Partitions		In Trades			
Projects Signs/Bulletin Boards		2000			
Telephone Expenses*		47444			
Temp. Roads		By Sitework			
Trucks		By Sitework			
Air Compressors		By Trades			
Dewatering Equipment		By Trades			
Generators		By Trades			
Miscell. Equipment		10000			
Fuel/Repairs/Maint.		2000			
IV. VERTICAL HOISTING					
Hoist & Tower Rental					X
Small Material Hoist Rental					X
Hoist Landings and Fronts					X
Hoist Operators					X
Hoist Safety Inspections					X
Hoist Material Skips					X
Hoist Material Hoppers					X
Erect & Dismantle Hoists					X
Fuel/Repairs/Maint.					X
Hoist Communication					X
Crane Rental					X
Crane Operators					X
Crane Safety Inspections					X
Erect & Dismantle Crane					X
Fuel/Repairs/Maint.					X
Crane Raising/Jumping Cost					X
Temp. Elevator Rental					X
Elevator Operations Cost					X
Elevator Repairs & Maint.					X
Cage Rider @ Elevator					X
Safety Inspections					X
Forklift Rental					X
Forklift Operators					X
Forklift Safety Inspections					X
Fuel/Repairs/Maint.					X
Elevator Service Costs					X
V. REPRODUCTION AND PRINTING					
PRINTING					
Design Phase					
Cost Study Documents			X		
Systems Study Documents			X		
Bid Package Documents			X		
Bidding Instructions			X		
Construction Documents			X		
Postage and Express Costs			X		
As-Built Documents (Drafting)			X		
As-Built Documents (Printing)			X		
Construction Phase					
Accounting Forms	X				
Field Reporting Forms	X				
Contract Agreements	X				
Schedule Report Forms	X				
Contract Agreements	X				
Schedule Report Forms	X				
Estimating Forms	X				
Cost Reporting Forms	X				
Presentation Charts and Graphics	X				
Value Analysis Studies	X				
Data Processing (In-House)	X				
Reference Materials	X				
Duplication Expense (Misc.)		7000			
Shop Drawing Printing		7300			
Maintenance Manuals		Included Above			

Balfour Beatty Construction

11/6/2013

DESCRIPTION	BASIC FEE	GEN CONDS	A/E COST	OWNER COST	DIRECT COST
Operation Manuals		Included Above			
Special Furnis	X				
Postage and Delivery Expense		\$400			
VI. QUALITY CONTROL					
Chief Inspector				X	
Field Inspector				X	
Inspectors Office					X
Inspectors Transportation					X
Inspectors Equipment					X
Special Inspection Consultants					X
Special Testing Consultants					X
Concrete Testing				X	
Masonry Testing				X	
Compaction Testing				X	
Welding Inspections				X	
Soils Investigations				X	
Special Testing Services					X
Field Office Supplies/Material		26610			
Project Photographs		12250			
Warranty Inspection Cord.	X				
Air & Water Balancing					X
Operator On-Site Training					X
Prepare Operation Manuals		Included			
Prepare Maint. Manuals		Included			
VII. PERMITS AND SPECIAL FEES					
Storage Yard Rental		2500			
Parking Lot Rental		In Below			
Parking Fees		21600			
Curb & Gutter Permits				X	
Sign Permits				X	
Staking & Layout Fees/Costs		7500			
Sidewalk Permits		0			
Landscape Permits				X	
Street/Curb Design Charge				X	
Building Permits		Shown- Executive Summary			
Plan Check Fees				X	
Water Connection Fee*				X	
Sanitary Connection Fee*				X	
Storm Connection Fee*				X	
Gas Service Charge Fee*				X	
Power Service Charge*				X	
Steam Service Charge*				X	
Chiller Water Service Charge*				X	
Special Tap Fees				X	
Contractors Licenses		Included			
Royalties		Included			
Zoning Fees/Consultants				X	
Use Fees		By Trades			
Construction Equip. Licenses		Included			
Construction Equip. Permits		Included			
Association Fees	X				
Grand Total			2,470,341		



Disney's Animal Kingdom Villas | Kidani Village,
Lake Buena Vista, FL

R - 7194

Balfour Beatty
Construction



"Thank you for allowing me to participate to the end of this project as a team member. I look forward to new and different projects with Balfour Beatty. I am honored to have been a team member that completed this project and the accolades should rest mostly with your team who drove this project to its successful end. Congratulations on leading such a talented team and achieving this recognition from the ABC group."

Chuck Abel
Construction Manager
Walt Disney Imagineering

L. Shared Savings

The savings provision of the Agreement has been left intentionally blank. Provide your proposal of returning savings to the Owner.

We are enthusiastic about your consideration of utilizing integrated project delivery methods, including design-assist, for your project. Sharing risk and reward among core team members will allow you to reach your objectives using collaborative processes that contain costs, eliminate waste, maximize efficiency, and effectively communicate information.

We combine proven methodologies and best practices with the talent to apply these processes and achieve optimal results on such projects. Whether you choose a full design-assist contract or another form of collaborative agreement (such as CM at risk, IPD, Integrated Design-Bid-Build or Early Contractor Involvement – all of which we have successfully prosecuted work under), we have found our clients struggle less to manage costs during the project, and often have opportunities to enhance their programs by realizing savings early.

Our proposal is to return savings by offering 75% to Hotel at Marion Square and 25% to Balfour Beatty Construction.

Benefit: Our expertise in managing the GMP process reduces unknowns to provide a pricing environment conducive to obtaining more responsive bids to guarantee Hotel at Marion Square the best market pricing.



R - 7197

Balfour Beatty
Construction

Mike Baumbach
Senior Vice President

t. 704.319.4040

e. mbaumbach@balfourbeattyus.com

1930 Camden Road, Suite 280

Charlotte, NC 28203

www.balfourbeattyus.com

ELECTRONICALLY FILED - 2023 May 16 9:41 AM - CHARLESTON - COMMON PLEAS - CASE#2019CP1001108

DEFENDANT LIBRARY ASSOCIATES, LLC'S
TRIAL EXHIBIT #44



STATE OF SOUTH CAROLINA)
)
 COUNTY OF CHARLESTON)
)
 Balfour Beatty Construction, LLC,)
)
 Petitioner,)
)
 v.)
)
 Library Associates, LLC; and)
 Metropolitan Life Insurance Company, a)
 New York Corporation;)
)
 Respondents.)
)

IN THE REGISTER OF DEEDS

**NOTICE AND CERTIFICATE OF
MECHANIC'S LIEN**

RECEIVED 1/25/19
 PER CLERK
 ROD OFFICE JBA
 CHARLESTON COUNTY, SC
 0774 - 273

Petitioner's South Carolina General Contractor's License Number: 110668

TO THE ABOVE-NAMED RESPONDENTS:

NOTICE IS HEREBY GIVEN that a Mechanic's Lien is claimed pursuant to S.C. Code Ann. § 29-5-10 and 20 *et. seq.* (1976, as amended) by Balfour Beatty Construction, LLC, above-named, and is being filed in the Office of the Register of Deeds for Charleston County, South Carolina on behalf of the above-named Petitioner for labor, equipment and/or materials furnished and actually used in the erection, alteration or improvements to the real estate more fully described in **Exhibit A**, attached hereto and incorporated herein by reference. The undersigned Petitioner has furnished, within ninety (90) days of the date hereof, labor, services and materials in improving said real estate by virtue of an agreement with and/or the consent of the owners of said real estate. Petitioner craves reference to **Exhibit B** attached hereto and incorporated herein by reference, which is a just and true Statement of Account of the monies due to the Petitioner for such labor, services or materials provided at the request of or with the consent of the owners of said real estate or with their authorization.

The value of the labor and materials furnished, with all just credits given, totals

PPAB 4683786v1

Eight Million Four Hundred Nine Thousand Six Hundred Fifty-Eight and 54/100 Dollars (\$8,409,658.54), as is evidenced by the Verified Statement of Account.

That by virtue thereof, by the serving and filing of this Notice and Certificate, and pursuant to the provisions of the Code of Laws of South Carolina in such cases as have been made and provided, Petitioner has and claims a lien interest to secure the payment of the debt so due and the cost of enforcing said lien upon the property, buildings and/or structures hereinabove mentioned and upon the real property described in **Exhibit A**.

WHEREFORE, Petitioner claims a Mechanics Lien of Eight Million Four Hundred Nine Thousand Six Hundred Fifty-Eight and 54/100 Dollars (\$8,409,658.54), plus interest, attorney's fees, all other damages incurred and the costs and disbursements of this action.

PARKER POE ADAMS & BERNSTEIN, LLP
200 Meeting Street, Suite 301
Charleston, SC 29401



Thomas C. Hildebrand, Jr.
843.727.2653 (direct dial)
tomhildebrand@parkerpoe.com

Robert C. Byrd
843.727.2665 (direct dial)
bobbybyrd@parkerpoe.com

Robert C. Osborne III
843.727.2662 (direct dial)
robertosborne@parkerpoe.com

Attorneys for Balfour Beatty Construction, LLC

January 25, 2019
Charleston, South Carolina

EXHIBIT "A"

Property Address: 404 King Street, Charleston, SC 29403

Owner of Property: Library Associates, LLC

Description of Property subject to lien:

ALL that certain piece, parcel or tract of land, with the buildings and improvements thereon, situate, lying and being on the southeast corner of King and Hutson Streets, in the City of Charleston, State of South Carolina, shown and designated as "Lot 1" containing 0.722 acres, more or less, on a plat thereof entitled "PLAT OF THE ADJUSTMENT OF PROPERTY LINES BETWEEN LOT 1, 404 MEETING STREET & LOT 2, 337 MEETING STREET, CITY OF CHARLESTON, CHARLESTON COUNTY, SOUTH CAROLINA, PREPARED FOR OLD CITADEL ASSOCIATES, LLC" prepared by F. Elliotte Quinn III, South Carolina Professional Land Surveyor, License No. 10292, dated June 14, 2011, and recorded in the RMC Office for Charleston County, South Carolina in Plat Book L11, at Page 0185; said Lot 1 having such size shape, dimensions, buttings and boundings as will by reference to said plat more fully appear, said plat being incorporated herein and made a part hereof by this reference.

BEING a portion of the property conveyed to Old Citadel Associates, LLC by deed of The County of Charleston, dated March 14, 1995, recorded March 15, 1995 in the RMC Office for Charleston County, South Carolina in Book L-253, Page 629; also being a portion of the property conveyed to Hofford-Library, LLC by deed of Library Associates, LLC, dated December 30, 2008, recorded December 31, 2008, in the RMC Office for Charleston County, South Carolina in Book 0027, Page 418; also being a portion of the property conveyed to Library Associates, LLC, by deed of Hofford-Library, LLC, dated January 11, 2010, recorded January 12, 2010, in the RMC Office for Charleston County, South Carolina in Book 0102, Page 032; and also being a portion of the property conveyed to Library Associates, LLC by Deed of Old Citadel Associates, LLC dated June 16, 2011, recorded in RMC Office for Charleston County on June 17, 2011, in Book 0192, at Page 809.

TMS#: 460-16-04-009

Parcel ID: 4601604009
OWNER1: LIBRARY ASSOCIATES LLC
ACREAGE: 0.72
PLAT_BOOK_PAGE: L11- 0185
DEED_BOOK_PAGE: 0102-032
Jurisdiction: CITY OF CHARLESTON

0 90 180 360 Feet

1 inch = 144 feet



R - 7203

EXHIBIT "B"**STATEMENT OF ACCOUNT**

Claimant/ Mechanic Lienor: Balfour Beatty Construction, LLC

Owner: Library Associates, LLC

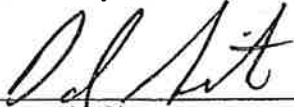
Nature of labor, materials and/or
Equipment supplied: Labor, materials and supplies to construct a hotel

Property Subject: See Exhibit "A" to Notice and
Certificate of Mechanic's Lien

Total Amount Due: \$8,409,658.54 plus interest thereon and attorney's fees

I hereby certify that the amount due to Balfour Beatty Construction, LLC, for the labor, materials and supplies necessary to construct a hotel on Owner's property, after all just credits and debits as of this date is Eight Million Four Hundred Nine Thousand Six Hundred Fifty-Eight and 54/100 (\$8,409,658.54), plus interest accruing thereon and attorney's fees and costs/expenses.

Balfour Beatty Construction, LLC

By: 

David Simonton

Its: Vice President, Operations

SWORN TO BEFORE ME

this 25th day of January, 2019Kimberly S. Nagy (L.S.)Kimberly S. Nagy (Printed Name)Notary Public for South CarolinaMy Commission expires 3/12/23 (SEAL)

Charleston County ROD

101 Meeting Street, Suite 200 <> Charleston, SC 29401
PO Box 726 <> Charleston, SC 29402
V: 843.958.4800 <> F: 843.958.4803
www.charlestoncounty.org

Michael Miller
Register of Deeds



RECORDER'S RECEIPT

Received From:

PARKER POE ADAMS & BERNSTEIN LLP
200 MEETING STREET
SUITE 301
CHARLESTON SC 29402-0160

DATE: 25-Jan-19

INVOICE #:	X000408449
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DRAWER:	Drawer 2
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CLERK:	JBA
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TIME: 02:07:28 PM

Description	# Total Pgs	# Bill'd Pgs	Ex / Tr Page Cost	# Refs	Chat	Pstg	Value in 000	Unit Price	Extra Ref Cost	County Fee	State Fee	Item Total
Mech/Lien	6	5	\$ 1					\$10.00		\$ -	\$ -	\$ 11.00
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Paid:

Check #	Amount	
12482	\$ 11.00	Total Paid: \$ 11.00
		Balance: \$ -
Check Total	\$ 11.00	
Cash Total		

***Please note:**

The ROD Office retains any recording fee overages of \$5 or less. Due to Charleston County Auditing Procedures for the ROD Overage Account, your request for refund must be made in writing on Company letterhead and signed by the requesting party. Please send a self-addressed stamped envelope with your request. Thank you.

It is our pleasure to serve you!

DEFENDANT LIBRARY ASSOCIATES, LLC'S
TRIAL EXHIBIT #45



BP0775799

PGS:

6

STATE OF SOUTH CAROLINA)

IN THE REGISTER OF DEEDS

COUNTY OF CHARLESTON)

Gulf Stream Construction Company, Inc.,)

Petitioner and Lien Claimant,)

NOTICE AND CERTIFICATE OF
MECHANIC'S LIEN

v.)

Library Associates, LLC and Balfour Beatty
Construction, LLC,)

Respondents.)

TO THE RESPONDENTS ABOVE NAMED:

THERE IS NOW DUE and owing to Petitioner Gulf Stream Construction Company, Inc. (hereinafter "Gulf Stream") the sum of One Hundred Nineteen Thousand One Hundred Fifty-Two Dollars and Seventeen Cents (\$119,152.17), for materials and labor provided by Petitioner as shown by the Affidavit of Mechanic's Lien and Statement of Account attached hereto and made a part hereof.

SAID DEBT is due to Petitioner for materials and labor furnished and used in the construction work or in otherwise improving the real estate owned by Library Associates, LLC, hereinafter described by virtue of an agreement with Balfour Beatty Construction, LLC (hereinafter the "Contracting Party").

AS SHOWN on the attached Affidavit of Mechanic's Lien and Statement of Account, the Petitioner furnished materials and associated labor for such improvements within the last ninety (90) days of the date hereof.

BY VIRTUE thereof, and by the filing of this Notice and Certificate, and pursuant to Sections 29-5-10 *et seq.*, SC Code of Laws, the Petitioner has and claims a lien to secure the payment of the above-stated indebtedness so due, plus prejudgment interest and the costs, including attorneys' fees, of enforcing said lien upon the improvements hereinabove mentioned, and upon the following described real property, to-wit:

404 King Street
Charleston, South Carolina 29403
TMS No. 460-16-04-009

LEGALLY DESCRIBED AS:

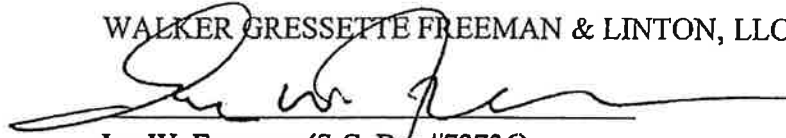
See Attached Exhibit A



R - 7207

WHEREFORE, the Petitioner claims a Mechanic's Lien against the Property in the sum of \$119,152.17, together with the interest thereon, and costs, including reasonable attorney's fees.

WALKER GRESSETTE FREEMAN & LINTON, LLC



Ian W. Freeman (S.C. Bar #72736)

P.O. Box 22167

Charleston, SC 29413

Tel: 843-727-2242

E-mail: Freeman@WGFLlaw.com

**ATTORNEYS FOR PETITIONER AND LIEN CLAIMANT
GULF STREAM CONSTRUCTION COMPANY, INC.**

Charleston, South Carolina
February 4, 2019

EXHIBIT A

Property Address: 404 King Street, Charleston, SC29403

Owner of Property: Library Associates, LLC

Description of Property subject to lien:

ALL that certain piece, parcel or tract of land, with the buildings and improvements thereon, situate, lying and being on the southeast corner of King and Hutson Streets, in the City of Charleston, State of South Carolina, shown and designated as "Lot 1" containing 0.722 acres, more or less, on a plat thereof entitled "PLAT OF THE ADJUSTMENT OF PROPERTY LINES BETWEEN LOT 1, 404 MEETING STREET & LOT 2, 337 MEETING STREET, CITY OF CHARLESTON, CHARLESTON COUNTY, SOUTH CAROLINA, PREPARED FOR OLD CITADEL ASSOCIATES, LLC" prepared by F. Elliott Quinn III, South Carolina Professional Land Surveyor, License No. 10292, dated June 14, 2011, and recorded in the RMC Office for Charleston County, South Carolina in Plat Book L11, at Page 0185; said Lot 1 having such size shape, dimensions, buttings and boundings as will by reference to said plat more fully appear, said plat being incorporated herein and made a part hereof by this reference.

BEING a portion of the property conveyed to Old Citadel Associates, LLC by deed of The County of Charleston, dated March 14, 1995, recorded March 15, 1995 in the RMC Office for Charleston County, South Carolina in Book L-253, Page 629; also being a portion of the property conveyed to Hofford-Library, LLC by deed of Library Associates, LLC, dated December 30, 2008, recorded December 31, 2008, in the RMC Office for Charleston County, South Carolina in Book 0027, Page 418; also being a portion of the property conveyed to Library Associates, LLC, by deed of Hofford-Library, LLC, dated January 11, 2010, recorded January 12, 2010, in the RMC Office for Charleston County, South Carolina in Book 0102, Page 032; and also being a portion of the property conveyed to Library Associates, LLC by Deed of Old Citadel Associates, LLC dated June 16, 2011, recorded in RMC Office for Charleston County on June 17, 2011, in Book 0192, at Page 809.

TMS#: 460-16-04-009

STATE OF SOUTH CAROLINA)

IN THE REGISTER OF DEEDS)

COUNTY OF CHARLESTON)

Gulf Stream Construction Company, Inc.,)

AFFIDAVIT OF MECHANIC'S LIEN)

Petitioner and Lien Claimant,)

v.)

Library Associates, LLC and Balfour Beatty
Construction, LLC,)

Respondents.)

Personally, appeared before me, Gulf Stream Construction Company, Inc., by Shawn Sullivan its Assistant Controller, who, first being duly sworn, deposes and states that he has personal knowledge of the matters stated herein, excepting only those matters stated upon information and belief. Pursuant to a contract with Balfour Beatty Construction, LLC (the "Contracting Party"), Gulf Stream Construction Company, Inc. provided certain valuable materials and associated labor for the improvement of the Property described in the attached Notice and Certificate of Mechanic's Lien (the "Property") within the last ninety (90) days. The last time Gulf Stream Construction Company, Inc. worked at the Property was within the last ninety (90) days. Upon information and belief, the subject Property is owned by Library Associates, LLC ("Owner") and such materials and labor were furnished to the Property at the request of or by consent of the Owner or some person or agent having authority from or rightfully acting for such Owner or authorized by the Owner.

The undersigned further states that there is past due and owing to Gulf Stream Construction Company, Inc. for the provision of the materials and labor referenced herein the principal sum certain of One Hundred Nineteen Thousand One Hundred Fifty-Two Dollars and Seventeen Cents (\$119,152.17), as evidenced by the Statement of Account attached hereto and incorporated herein as Exhibit I, plus prejudgment interest, costs, and reasonable attorneys' fees, and that all just and lawful offsets, discounts, payments and credits have been allowed.

Gulf Stream Construction Company, Inc.

Shawn M SullivanBy: Shawn Sullivan
Its Assistant Controller

SWORN to and subscribed before me this

1st day of February, 2019Shirley A. Hills

NOTARY PUBLIC FOR CHARLESTON

My Commission Expires: 5/26/26

EXHIBIT "I"STATEMENT OF ACCOUNT

Date: February __, 2019

Property Address: 404 King Street
Charleston, South Carolina 29403

Owner: Library Associates, LLC

Contracting Party: Balfour Beatty Construction, LLC

Personally, appeared before me, Gulf Stream Construction Company, Inc., by Shawn Sullivan its Assistant Controller, who, first being duly sworn, deposes and states that Gulf Stream Construction Company, Inc. has provided materials and labor for the benefit of Owner named above as described herein as follows:

Total materials and labor supplied	\$1,542,810.46
Less payments to date	<u>\$1,423,658.29</u>
Balance on account	\$119,152.17

The undersigned further states that this Statement of Account is a true and just account of the amount due to Gulf Stream Construction Company, Inc., with all just credits given, for building materials and associated labor furnished to and actually used in the course of construction on the Property of Owner, by virtue Gulf Stream Construction Company, Inc.'s contract with the Contracting Party to furnish materials to and for the benefit of the Owner.

Gulf Stream Construction Company, Inc.

Shawn M Sullivan

By: Shawn Sullivan
Its Assistant Controller

SWORN to and subscribed before me this

1st day of February, 2019
Sherr A. Hills
NOTARY PUBLIC FOR CHARLESTON

My Commission Expires: 5/26/26



DEFENDANT LIBRARY ASSOCIATES, LLC'S
TRIAL EXHIBIT #50

Balfour Beatty

April 30, 2019

CERTIFIED MAIL RETURN RECEIPT REQUESTED

Sam Hadley, CPA/CFF, CFE, CGFM, CCA, CCP
Partner
Cotton & Company
635 Slaters Lane
4th Floor
Alexandria, VA 22314

Re: Hotel at Marion Square Project, Notice of Project Cost Review Response

Dear Mr. Hadley:

I am in receipt of your letter of April 22, 2019. For efficiency, this response will incorporate the same definitional terms used in your letter. Your request for documentation is inappropriate for numerous reasons to include, but not limited to, those enumerated below.

First, the Owner is in breach for failure to pay Balfour Beatty Construction and as such is not entitled to any benefits of the contract except as it might be able to prove in the litigation that has now been initiated.

Second, the mechanism for the owner to obtain documentation as alluded to in the preceding response is through the litigation that is now pending.

Third, the owner has waived its right to receive the requested information for numerous reasons.

Finally, the request is untimely as Substantial Completion was received on February 15, 2019, beyond the 60-day timeframe provided for production of the documents under the contract. See Section 7.1.11.

Sincerely,

BALFOUR BEATTY CONSTRUCTION, LLC

By: 
David Simonton, V.P.



DEFENDANT LIBRARY ASSOCIATES, LLC'S
TRIAL EXHIBIT #89

R - 7215





AAACE® International Recommended Practice No. 29R-03

FORENSIC SCHEDULE ANALYSIS

TCM Framework: 6.4 – Forensic Performance Assessment

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1. ORGANIZATION AND SCOPE

1.1. Introduction

The purpose of the AACE® International Recommended Practice 29R-03 *Forensic Schedule Analysis* is to provide a unifying reference of basic technical principles and guidelines for the application of critical path method (CPM) scheduling in forensic schedule analysis. In providing this reference, the RP will foster competent schedule analysis and furnish the industry as whole with the necessary technical information to categorize and evaluate the varying forensic schedule analysis methods. The RP discusses certain methods of schedule delay analysis, irrespective of whether these methods have been deemed acceptable or unacceptable by courts or government boards in various countries around the globe.

This RP is not intended to establish a standard of practice, nor is it intended to be a prescriptive document applied without exception. Therefore, a departure from the recommended protocols should not be automatically treated as an error or a deficiency as long as such departure is based on a conscious and sound application of schedule analysis principles. As with any other recommended practice, the RP should be used in conjunction with professional judgment and knowledge of the subject matter. While the recommended protocols contained herein are intended to aid the practitioner in creating a competent work product it may, in some cases, require additional or fewer steps.

AACE recognizes that the method(s) of analysis to be utilized in a given situation, and the manner in which a particular methodology might be implemented, are dependent upon the contract, the facts, applicable law, availability and quality of contemporaneous project documentation, and other circumstances particular to a given situation. Therefore, the RP should be read in its entirety and fully understood before applying or using the information for any purpose. The reader should refrain from using the RP in a manner which is not consistent with its intended use, and not quote any of the contents in an out-of-context manner. As with any other recommended practice published by AACE, this RP is subject to future revisions as new methodologies are identified; new forensic scheduling software is developed; etc.

Forensic¹ scheduling analysis refers to the study and investigation of events using CPM or other recognized schedule calculation methods. It is recognized that such analyses may potentially be used in a legal proceeding. It is the study of how actual events interacted in the context of a complex model for the purpose of understanding the significance of a specific deviation or series of deviations from some baseline model and their role in determining the sequence of tasks within the complex network.

Forensic schedule analysis, like many other technical fields, is both a science and an art. As such, it relies upon professional judgment and expert opinion and usually requires many subjective decisions. One of the most important of these decisions is what technical approach should be used to measure or quantify delay and identify the effected activities in order to focus on causation. Equally important is how the analyst should apply the chosen method. The desired objective of this RP is to reduce the degree of subjectivity involved in the current state of the art. This is with the full awareness that there are certain types of subjectivity that cannot be minimized, let alone eliminated. Professional judgment and expert opinion ultimately rest on subjectivity, but that subjectivity must be based on diligent factual research and analyses whose procedures can be objectified.

For these reasons, the RP focuses on minimizing procedural subjectivity. It does this by defining terminology, identifying methodologies currently used by forensic scheduling analysts, classifying them, and setting forth recommended procedural protocols for the use of these techniques. By describing uniform procedures that increase the transparency of the analytical method and the analyst's thought

¹ The word 'forensic' is defined as: 1. Relating to, used in, or appropriate for courts of law or for public discussion or argumentation. 2. Of, relating to, or used in debate or argument; rhetorical. 3. Relating to the use of science or technology in the investigation and establishment of facts or evidence in a court of law: a forensic laboratory.[9]



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process, the guidelines set forth herein will increase both the accountability and the testability of an opinion and minimize the need to contend with “black-box” or “voodoo” analyses. Implementation of this RP should result in minimizing disagreements over technical implementation of accepted techniques and allow the providers and consumers of these services to concentrate on resolving disputes based upon substantive, factual and legal issues.

1.2. Basic Premise and Assumptions

- a. Forensic scheduling is a technical field that is associated with, but distinct from, project planning and scheduling. It is not just a subset of planning and scheduling.
- b. Procedures that may be sufficient for the purpose of project planning, scheduling, and controls may not necessarily be adequate for forensic schedule analysis.
- c. It is assumed that this document will be used by practitioners to foster consistency of practice and be used in the spirit of intellectual honesty.
- d. All methods are subject to manipulation as they all involve judgment calls by the analyst whether in preparation or in interpretation.
- e. No forensic schedule analysis method is exact. The level of accuracy of the answers produced by each method is a function of the quality of the data used therein, the accuracy of the assumptions, and the subjective judgments made by the forensic schedule analyst.
- f. Schedules are a project management tool that, in and of themselves, do not demonstrate root causation or responsibility for delays. Legal entitlement to delay damages should be distinct and apart from the forensic schedule analysis methodologies contained in this RP.

1.3. Scope and Focus

The scope and focus of this RP are:

- a. This RP covers the technical aspects of forensic schedule analysis methods. It identifies, defines, and describes the usage of various forensic schedule analysis methods in current use. It is not the intent of the RP to exclude or to endorse any method over others. However, it offers caveats and considerations for usage and cites the best current practices and implementation for each method.
- b. The focus of this document is on the technical aspects of forensic scheduling as opposed to the legal aspects. This RP is not intended to be a primary resource for legal factors governing claims related to scheduling, delays, and disruption. However, relevant legal principles are discussed to the extent that they would affect the choice of techniques and their relative advantages and disadvantages.
- c. Accordingly, the RP primarily focuses on the use of forensic scheduling techniques and methods for factual analysis and quantification as opposed to assignment of delay responsibility. This, however, does not preclude the practitioner from performing the analysis based on certain assumptions regarding liability.
- d. This RP is not intended to be a primer on forensic schedule analysis. The reader is assumed to have advanced, hands-on knowledge of all components of CPM analysis and a working experience in a contract claims environment involving delay issues.
- e. This RP not intended to be an exhaustive treatment of CPM scheduling techniques. While the RP



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explains how schedules generated by the planning and scheduling process become the source data for forensic schedule analysis, it is not intended to be a manual for basic scheduling.

- f. This RP is not intended to override contract provisions regarding schedule analysis methods or other mutual agreement by the parties to a contract regarding the same. However, this is not an automatic, blanket endorsement of all methods of delay analysis by the mere virtue of their specification in a contract document. It is noted that contractually specified methods often are appropriate for use during the project in a prospective mode but may be inappropriate for retrospective use².
- g. It is not the intent of this RP to intentionally contradict or compete with other similar protocols³. All efforts should be made by the user to resolve and reconcile apparent contradictions. AACE requests and encourages all users to notify AACE and bring errors, contradictions, and conflict to its attention.
- h. This RP deals with CPM-based schedule analysis methods. It is not the intent of the RP to exclude analyses of simple cases where explicit CPM modeling may not be necessary, and mental calculation is adequate for analysis and presentation. The delineation between simple and complex is admittedly blurry and subjective. For this purpose, a 'simple case' is defined as any CPM network model that can be subjected to mental calculation whose reliability cannot be reasonably questioned and allows for effective presentation to lay persons using simple reasoning and intuitive common sense.
- i. Finally, the RP is an advisory document to be used in conjunction with professional judgment based on working experience and knowledge of the subject matter. It is not intended to be a prescriptive document that can be applied without exception. When used as intended, this RP will aid the practitioner in creating a competent work product, but some cases require additional steps and some require less. Thus, a departure from the recommended protocols should not be automatically treated as an error or a deficiency as long as such departure is based on a conscious and sound application of schedule analysis principles.

1.4. Taxonomy and Nomenclature

The industry knows the forensic schedule analysis methods and approaches described herein by various common names. Current usage of these names throughout the industry is loose and undisciplined. It is not the intent of this document to enforce more disciplined use of the common names. Instead, the RP will correlate the common names with a taxonomic classification. This taxonomy will allow for the freedom of regional, cultural, and temporal differences in the use of common names for these methods.

The RP correlates the common names for the various methods to taxonomic names much like the biosciences use Latin taxonomic terms to correlate regionally diverse common names of plants and animals. This allows the common variations in terminology to coexist with a more objective and uniform language of technical classification. For example, the implementation of method implementation protocol (MIP) 3.7 (aka "TIA") has a bewildering array of regional variations. Not only that, the method undergoes periodic evolutionary changes while maintaining the same name.

By using taxonomic classifications, the RP allows the discussion of the various forensic analysis methods to become more specific and objective. Thus, the RP will not provide a uniform definition for the common names of the various methods, but it will instead describe in detail the taxonomic classification in which they belong. Figure 1 – *Nomenclature Correspondence* shows the commonly associated names for each of the taxonomic classifications.

² For example, the prospective mode of "Time Impact Analysis" method that inserts estimated delay fragments into the current schedule update for the purpose of contemporaneously demonstrating entitlement to time –extensions.

³ The only other similar protocol known at this time is the "Delay & Disruption Protocol" issued in October 2002 by the Society of Construction Law of the United Kingdom [1]. The DDP has a wider scope than this RP.

The RP's taxonomy is a hierarchical classification system of known methods of schedule impact analysis techniques and methods used to analyze how delays and disruptions affect entire CPM networks. For example, methods like the window analysis and collapsed as-built are included in the taxonomy, while procedures such as fragnet modeling, bar charting, and linear graphing are not included. Procedures are tools, not methods, and therefore are not classified under this taxonomy.

The taxonomy is comprised of five layers: timing, basic and specific methods, and the basic and specific implementation of each method. Please refer to Figure 2 – *Taxonomy of Forensic Schedule Analysis* for a graphic representation of the taxonomy. The elements of the diagrams are explained below.

Taxonomy	1	RETROSPECTIVE															
	2	OBSERVATIONAL						MODELED									
	3	Static Logic		Dynamic Logic				Additive				Subtractive					
	4	3.2 Periodic		Contemporaneous Updates (3.3 As-Is or 3.4 Split)				3.6 Modified / Reconstructed Updates		3.6 Single Base ¹		3.7 Multi Base ¹		3.8 Single Simulation		3.9 Multi Simulation ¹	
	5	3.1 Gross	Fixed Periods	Variable Windows	All Periods	Grouped Periods	Fixed Periods	Variable Windows	Global Insertion	Stepped Insertion	Fixed Periods	Variable Windows or Grouped	Global Extraction	Stepped Extraction	Fixed Periods	Stepped Extraction	
Common Names		As-Planned vs As-Built	Window Analysis		Contemporaneous Period Analysis, Time Impact Analysis, Window Analysis	Contemporaneous Period Analysis, Time Impact Analysis, Window Analysis	Contemporaneous Period Analysis, Time Impact Analysis, Window Analysis	Window Analysis, Time Impact Analysis	Impacted As-Planned, What-If	Time Impact Analysis, Impacted As-Planned	Time Impact Analysis	Window Analysis, Impacted As-Planned	Collapsed As-Built	Time Impact Analysis, Collapsed As-Built	Time Impact Analysis, Collapsed As-Built	Time Impact Analysis, Window Analysis, Collapsed As-Built	

Footnotes

1. Contemporaneous or Modified / Reconstructed

2. The single base can be the original baseline or an update

Figure 1 – Nomenclature Correspondence (see enlarged size figure in Appendix A)

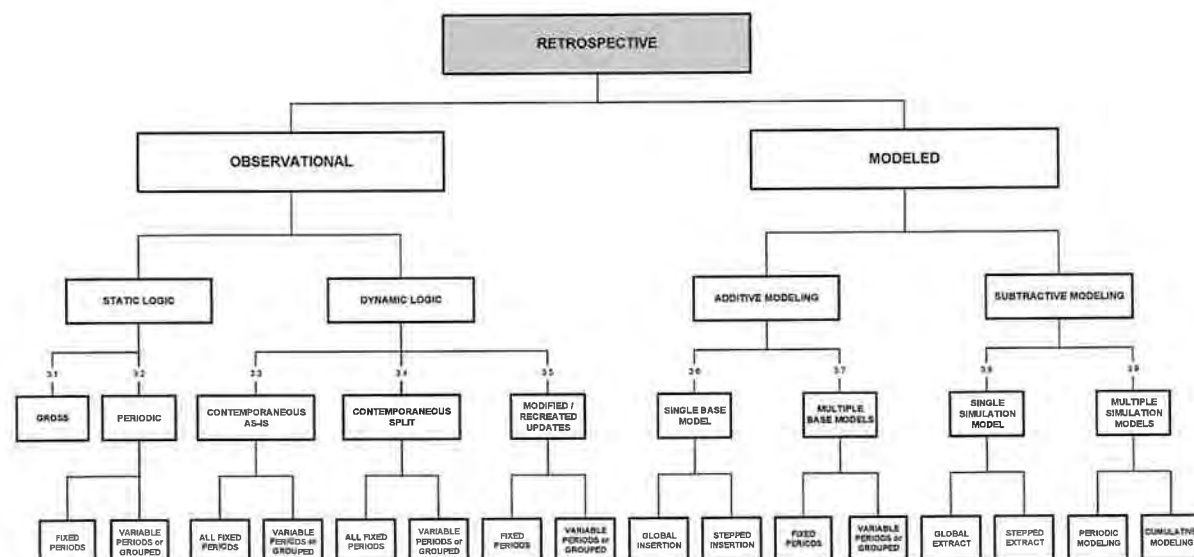


Figure 2 – Taxonomy of Forensic Schedule Analysis (see enlarged size figure in Appendix B)

A. Layer 1: Timing

The first hierarchy layer distinguishes the timing of when the analysis is performed consisting of two branches: prospective and retrospective.

1. **Prospective** analyses are performed in real-time prior to the delay event or in real-time,

contemporaneous with the delay event. In all cases prospective analysis consists of the analyst's best estimate of future events. Prospective analysis occurs while the project is still underway and may not evolve into a forensic context. Since this RP focuses only on forensic schedule analyses, true prospective schedule analysis methods are not discussed. While some of the methods discussed in this RP employ forward looking calculations they are still performed after the project is completed and are therefore considered retrospective.

2. Retrospective analyses are performed after the delay event has occurred and the impacts are known. The timing may be soon after the delay event but prior to the completion of the overall project, or after the completion of the entire project. Note that forward-looking analyses (such as 'additive modeling') performed after project completion are still retrospective in terms of timing. What is classified here is the real-time point-of-view of the analyst and not the method of analysis). In other words even forward-looking analysis methods implemented retrospectively have the full benefit of hindsight at the option of the analyst.

This distinction in timing is one of the most significant factors in the choice of methods. For example, contract provisions prescribing methods of delay analysis typically contemplate the preparation of such analyses in the prospective mode in order to facilitate the evaluation of time extensions. Therefore, a majority of contractually specified methods, often called "TIA" (MIP 3.7), consists of the insertion of delay events into the most current schedule update that existed at the time of the occurrence of the event: a prospective, forward-looking method.

At the end of the project the choices of analysis methods are expanded with the full advantage of hindsight offered by the various forms of as-built documentation. In addition, if as-built documentation is available, the best evidence rule demands that all factual investigations use the as-built as the primary source of analysis.

Also the timing distinction is often mirrored by a change in personnel. That is, often the forensic schedule analyst who typically works in the retrospective mode is not the same person as the project scheduler who worked under the prospective mode.

B. Layer 2: Basic Methods

The second hierarchy layer is the basic method consisting of two branches: observational and modeled. The distinction drawn here is whether the analyst's expertise is utilized for the purpose of interpretation and evaluation of the existing scheduling data only, or for constructing simulations and the subsequent interpretation and evaluation of the different scenarios created by the simulations. The distinction between the two basic methods becomes less defined in cases where the identity of the forensic analyst and the project scheduler rest in the same person.

1. Observational

The observational method consists of analyzing the schedule by examining a schedule, by itself or in comparison with another, without the analyst making any changes to the schedule to simulate any specific scenario.

Contemporaneous period analysis and as-built vs. as-planned are common examples that fall under the observational basic method.

2. Modeled

Unlike the observational method, the modeled method calls for intervention by the analyst beyond mere observation. In preparing a modeled analysis the analyst inserts or extracts activities representing delay events into or from a CPM network and compares the calculated results of the

'before' and 'after' states.

Common examples of the modeled method are the collapsed as-built, time impact analysis, and the impacted as-planned.

C. Layer 3: Specific Methods

At the third layer are the specific methods.

1. Observational Methods

Under the observational method, further distinction is drawn on whether the evaluation considers just the original schedule logic or the additional sets of progressive schedule logic that were developed during the execution of the project, often called the dynamic logic.

a. Static Logic Observation

A specific subset of the observational method, the static logic variation compares a plan consisting of one set of network logic to the as-built state of the same network. The term 'static' refers to the fact that observation consists of the comparison of an as-built schedule to just one set of as-planned network logic.

The as-planned vs. as-built is an example of this specific method.

b. Dynamic Logic Observation

In contrast with the static logic variation, the dynamic logic variation typically involves the use of schedule updates whose network logic may differ to varying degrees from the baseline and from each other. This variation considers the changes in logic that were incorporated during the project.

The contemporaneous period analysis is an example of this specific method. Note that this category does not occur under the prospective timing mode because the use of past updates indicates that the analysis is performed using retrospective timing.

2. Modeled Methods

The two distinctions under the modeled method are whether the delays are added to a base schedule or subtracted from a simulated as-built.

a. Additive Modeling

The additive modeling method consists of comparing a schedule with another schedule that the analyst has created by adding schedule elements (i.e. delays) to the first schedule for the purpose of modeling a certain scenario.

The additive modeling methods include the impacted as-planned and some forms of the window analysis method. The MIP 3.6 (aka "TIA") can also be classified as an additive modeling method. This term or its equivalent, time impact evaluation (TIE), has been used in contracts and specifications to refer to other basic and specific methods as well.

b. Subtractive Modeling

The subtractive modeling method consists of comparing a CPM schedule with another

schedule that the analyst has created by subtracting schedule elements (i.e. delays) from the first schedule for the purpose of modeling a certain scenario.

The collapsed as-built is one example that is classified under the subtractive modeling method.

D. Layer 4: Basic Implementation

The fourth layer consists of the differences in implementing the methods outlined above. The static logic method can be implemented in a gross mode or periodic mode. The dynamic logic method can be implemented as contemporaneous: as-is, contemporaneous split, contemporaneous modified, or recreated. The additive or subtractive modeling method can be implemented as a single base with simulation or a multiple base with simulation.

1. Gross Mode or Periodic Mode

The first of the two basic implementations of the static logic variations of the observational method is the gross mode. Implementation of the gross mode considers the entire project duration as one whole analysis period without any segmentation.

The alternate to the gross mode is the periodic mode. Implementation of the periodic mode breaks the project duration into two or more segments for specific analysis focusing on each segment. Because this is an implementation of the static logic method, the segmented analysis periods are *not* associated with any changes in logic that may have occurred contemporaneously with these project periods.

2. Contemporaneous / As-Is or Contemporaneous / Split

This basic implementation pair occurs under the dynamic logic variation of the observation method. Both choices contemplate the use of the schedule updates that were prepared contemporaneously during the project. However the as-is implementation evaluates the differences between each successive update in its unaltered state, while the split implementation bifurcates each update into the pure progress and the non-progress revisions such as logic changes.

The purpose of the bifurcation is to isolate the schedule slippage (or recovery) caused solely by work progress based on existing logic during the update period from that caused by non-progress revisions newly inserted (but not necessarily implemented) in the schedule update.

3. Modified or Recreated

This pair, also occurring under the dynamic logic variation of the observational method, involves the observation of updates. Unlike the contemporaneous pair, however, this implementation involves extensive modification of the contemporaneous updates, as in the modified implementation, or the recreation of entire updates where no contemporaneous updates exist, as in the recreated implementation.

4. Single Base, Simulation or Multi-Base, Simulation

This basic implementation pair occurs under the additive and the subtractive modeling methods. The distinction is whether when the modeling (either additive or subtractive) is performed, the delay activities are added to or extracted from a single CPM network or multiple CPM networks.

For example, a modeled analysis that adds delays to a single baseline CPM schedule is a single

base implementation of the additive method, whereas one where delays are extracted from several as-built simulations is a multi-base simulation implementation of the subtractive method.

A single base additive modeling method is typically called the impacted as-planned. Similarly the single simulation subtractive method is called the collapsed as-built. The multi-base, additive simulation variation is often called a window analysis.

The nine method implementation protocols (MIP) in Section 3 represent the instances of basic protocols based on the distinctions outlined in Layer 4.

E. Layer 5: Specific Implementation

1. Fixed Periods vs. Variable Periods / Grouped Periods

These specific implementations are the two possible choices for segmentation under all basic implementations except gross mode and the single base / simulation basic implementations. They are not available under the gross mode because the absence of segmentation is the distinguishing feature of the basic gross mode. They are not available under the single base / simulation basic implementation because segmentation assumes a change in network logic for each segment; the single base simulation uses only one set of network logic for the model.

In the fixed period specific implementation, the periods are fixed in date and duration by the data dates used for the contemporaneous schedule updates, usually in regular periods such as monthly. Each update period is analyzed. The act of grouping the segments for summarization after each segment is analyzed is called blocking.

The variable period/grouped period specific implementation establishes analysis periods other than the update periods established during the project by the submission of regular schedule updates. The grouped period implementation groups together the pre-established update periods while the variable period implementation establishes new periods whose lines of demarcation may not coincide with the data dates used in the pre-established periods and/or which can be determined by changes in the critical path or by the issuance of revised or recovery baseline schedules. This implementation is one of the primary distinguishing features of the variable period analysis method.

2. Global (Insertion or Extraction) vs. Stepped (Insertion or Extraction)

This specific implementation pair occurs under the single base, simulation basic implementation, which in turn occurs under the additive modeling and the subtractive modeling specific methods. Under the global implementation delays are either inserted or extracted all at once, while under the stepped implementation, the insertion or the extraction is performed sequentially (individually or grouped).

Although there are further variations in the sequence of stepping the insertions or extractions, usually the insertion sequence is from the start of the project towards the end, whereas stepped extraction starts at the end and proceeds towards the start of the project.

1.5. Underlying Fundamentals and General Principles

A. Underlying Fundamentals

At any given point in time on projects, certain work must be completed at that point in time so the completion of the project does not slip later in time. The industry calls this work, "critical work." Project

circumstances that delay critical work will extend the project duration. Critical delays are discrete, happen chronologically, and accumulate to the overall project delay at project completion.

When the project is scheduled using CPM scheduling, the schedule typically identifies the critical work as the work that is on the “longest” or “critical path” of the schedule’s network of work activities. The performance of non-critical work can be delayed for a certain amount of time without affecting the timing of project completion. The amount of time that the non-critical work can be delayed is “float” or “slack” time referring to as Total Float.

A CPM schedule for a particular project generally represents only one of the possible ways to construct the project. Therefore, in practice, the schedule analyst must also consider the assumptions (work durations, logic, sequencing, and labor availability) that form the basis of the schedule when performing a forensic schedule analysis. This is particularly true when the schedule contains preferential logic (i.e., sequencing which is not based on physical or safety considerations) and resource assumptions. This is because both can have a significant impact on the schedule’s calculation of the critical path and float values of non-critical work at a given point in time.

CPM scheduling facilitates the identification of work as either critical or non-critical. Thus, at least in theory, CPM schedules give the schedule analyst the ability to determine if a project circumstance delays the project or if it just consumes float in the schedule assuming that float is not specifically owned by either party under that terms of the contract. For this reason, delay evaluations utilizing CPM scheduling techniques are preferred for the identification and quantification of project delays.

The critical path and float values of uncompleted work activities in CPM schedules change over time as a function of the progress (or lack of progress) on the critical and non-critical work paths in the schedule network. Only project circumstances that delay work that is critical when the circumstances occur extend the overall project. Thus, when quantifying actual project delay, the accuracy in quantification is increased when the impacts of potential causes of delay are evaluated within the context of the schedule in effect at the time when the impacts happen.

B. General Principles

1. Use CPM Calculations

Calculation of the critical path and float must be based on a CPM schedule with proper logic (see Subsection 2.1.)

2. Concept of Data Date Must be Used

The CPM schedule used for the calculation must employ the concept of the data date or status date. Note that the critical path and float can be computed by commonly available commercial CPM software only for the portion of the schedule forward (future) of the data date.

3. Shared Ownership of Network Float

In the absence of contrary contractual language, network float, as opposed to project float, is a shared commodity between the owner and the contractor. In such a case float must be shared in the interest of the project rather than to the sole benefit of one of the parties to the contract.

4. Update Float Preferred Over Baseline Float

If validated, contemporaneous updates exist, relative float values for activities in those updates at the time the schedule activity was being performed are considered more reliable compared to relative float values in the baseline for those same activities.

5. Sub-Network Float Values

What is critical in a network model may not be critical when a part of that network is evaluated on its own, and vice versa. The practical implication of this rule is that what is considered critical to a subcontractor in performing its own scope of work may not be critical in the master project network. Similarly, a schedule activity on the critical path of the general contractor's master schedule may carry float on a subcontractor's sub-network when considered on its own.

6. Delay Must Affect the Critical Path

In order for a claimant to be entitled to an extension of contract time for a delay event (and further to be considered compensable), the delay must affect the critical path. This is because before a party is entitled to time-related compensation for damages it must show that it was actually damaged. Because conventionally a contractor's delay damages are a function of the overall duration of the project, there must be an increase in the duration of the project.

7. All Available Schedules Must Be Considered

Regardless of the method selected for analysis, all available sources of planning and schedule data created during the project, including but not limited to, various versions of baselines, updates and as-builts, should be examined and considered, even if they are not directly used for the analysis.

2. SOURCE VALIDATION

The intent of the source validation protocols (SVP) is to provide guidance in the **process** of assuring the validity of the source input data that forms the foundation of the various forensic schedule analysis methodologies discussed in Section 3. Any analysis method, no matter how reliable and meticulously implemented, can fail if the input data is flawed. The primary purpose of the SVP is to minimize the failure of an analysis method based upon the flawed use of source data.

The approach of the SVP is to maximize the **reliable use** of the source data as opposed to assuring the underlying reliability or accuracy of the substantive content of the source data. The best accuracy that an analyst can hope to achieve is in the faithful reflection of the facts as represented in contemporaneous project documents, data, and witness statements. Whether that reflection is an accurate model of reality is almost always a matter of debatable opinion.

Source validation protocols consist of the following:

- 2.1. Baseline Schedule Selection, Validation, and Rectification (SVP 2.1)
- 2.2. As-Built Schedule Sources, Reconstruction, and Validation (SVP 2.2)
- 2.3. Schedule Updates: Validation, Rectification, and Reconstruction (SVP 2.3)
- 2.4. Identification and Quantification of Discrete Impact Events and Issues (SVP 2.4)

2.1. Baseline Schedule Selection, Validation, and Rectification (SVP 2.1)

A. General Considerations

The baseline schedule is the starting point of most types of forensic schedule analyses. Even methods that do not directly use the baseline schedule, such as the modeled subtractive method, often refer to the baseline for activity durations and initial schedule logic. Hence, assuring the validity



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of the baseline schedule is one of the most important steps in the analysis process.

Note that validation for forensic purposes may be fundamentally different from validation for purposes of project controls. What may be adequate for project controls may not be adequate for forensic scheduling, and vice versa. Thus, the initial focus here is in assuring the functional utility of the CPM baseline schedule for purpose of analysis as opposed to assuring the reasonableness of the information that is represented by the data or optimization of the schedule logic. Functional utility refers to the usefulness of the schedule data for quantitative, CPM-based calculations as opposed to a more subjective, qualitative assessment of the reasonableness of the baseline schedule. So, for example, the validation of activity durations against quantity estimates is probably not something that would be performed as part of this protocol. The test is that if it is possible to build the project in the manner indicated in the schedule and still be in compliance with the contract, then do not make any subjective changes to improve it or make it more reasonable.

The obvious exception to the above would be where the explicit purpose of the investigation is to evaluate the reasonableness of the baseline schedule for planning, scheduling and project control purposes. For those guidelines please refer to other Recommended Practices published by AACE⁴.

The recommended protocol outlined below assumes that the forensic analysis contemplates the investigation of schedule deviations at Level 3 (sufficient detail to monitor and manage the overall project) degree of detail⁵. The user is cautioned that an investigation of schedule deviations at Level 1 or 2 may require less detail. Similarly, investigation of schedule deviations at Level 4 may require verification at a higher level of detail.

The recommended protocol below is worded as a set of investigative issues that should be addressed. If the baseline schedule is to be used in an observational analysis, the forensic schedule analyst may simply note the baseline's schedule's compliance or non-compliance with the various protocols below. If however, the baseline schedule is to be used in a modeled analysis, the various protocols below form the basis for documented alterations so that the adjusted baseline schedule both reflects its original intent as closely as possible and still meets the procedural elements of the recommended protocol.

SVP 2.1 also forms the basis of SVP 2.3, which deals with the validation and rectification of schedule updates, since early updates are based almost entirely on the baseline schedule.

B. Recommended Protocol

CAVEAT: When implementing MIPs 3.3 or 3.4, baseline validation protocols involving changes to logic or calendars should **not** be implemented.

1. Ensure that the baseline schedule is the earliest, conformed plan for the project. If it is not the earliest, conformed plan, be prepared to identify the significant differences and the reasons why the earliest, conformed plan is not being used as the baseline schedule.
2. Ensure that the work breakdown and the level of detail are sufficient for the intended analysis.
3. Ensure that the data date is set at notice-to-proceed (or earlier) with no progress data for any schedule activity that occurred after the data date.
4. Ensure that there is at least one continuous critical path, using the longest path criterion that

⁴ AACE International's Planning & Scheduling Committee is developing an RP that includes an extensive discussion on the baseline schedule.

⁵ Refer to AACE International Recommended Practice No. 37R-06 *Schedule Levels of Detail: As Applied in Engineering, Procurement and Construction* for additional information.

starts at the earliest occurring schedule activity in the network (start milestone) and ends at the latest occurring schedule activity in the network (finish milestone).

5. Ensure that all activities have at least one predecessor, except for the start milestone, and one successor, except for the finish milestone.
6. Ensure that the full scope of the project/contract is represented in the schedule.
7. Investigate and document the basis of any milestones dates that violate the contract provisions.
8. Investigate and document the basis of any other aspect of the schedule that violates the contract provisions.
9. Document and provide the basis for each change made to the baseline for purposes of rectification.
10. Ensure that the calendars used for schedule calculations reflect actual working day constraints and restrictions actually existing at the time when the baseline schedule was prepared.
11. Document and explain the software settings used for the baseline schedule.

C. Recommended Enhanced Protocol

CAVEAT: When implementing MIP 3.3 or 3.4, baseline validation protocols involving changes to logic or calendars should **not** be implemented.

1. The level of detail is such that no single schedule activity (other than a milestone activity created solely for the purpose of payment) carries a contract payment value of more than one half of one percent ($\frac{1}{2}\%$) of total contract payment value per unit of activity duration, and no more than five percent (5%) of total contract payment value per schedule activity.
2. Create separate activities for each responsible party.
3. Document the basis of all controlling and non-controlling constraints.
4. Replace controlling constraints, except for the start milestone and the finish milestone, with logic and/or activities.
5. Because delay scenarios often involve factors external to the original contract assumptions when the baseline was created, it may be necessary to add activities or enhance the level of detail beyond that contained in the baseline.
6. If the description of the schedule activity is too general or vague to properly ascertain the scope, the schedule activity should be subdivided into detailed components using other progress records.

D. Special Procedures

1. Summarization of Schedule Activities

- a. If the level of detail of the baseline is clearly excessive in comparison to the delays being evaluated, the analyst may choose to summarize the baseline schedule for purposes of analysis. In doing so, the following guidelines are recommended:
- b. Restrict the summarization of activities that fall on the critical or near-critical paths to only

those situations where the available as-built data do not correspond with the activity breakdown and/or the activity descriptions of the baseline schedule.

- c. Organize the full-detail source schedule so that the identity of the activities comprising the summary schedule activity can be determined using:
 - i. Summarizing or hammocking.
 - ii. Work breakdown structure (WBS).
 - iii. Coding of the detail activities with the summarized activity ID.
- d. Restrict the summarization to logical chains of activities with no significant predecessor or successor logic ties to activities outside of the summarized detail.
- e. Restrict the summarization to logical chains of activities that are not directly subject to delay impact evaluation or modeling.

2. Reconstruction of a Computerized CPM Model from a Hardcopy

- a. The recommended set of hardcopy data necessary for an accurate reconstruction is:
 - i. Predecessor & successor listing with logic type and lag duration, preferably sorted by activity ID.
 - ii. Tabular listing of activities showing duration, calendar ID, early and late dates, preferably sorted by activity ID.
 - iii. Detailed listing of working days for each calendar used.
- b. The recommended level of reconstruction has been reached when the reconstructed model and the hardcopy show matching data for:
 - i. Early start & early finish.
 - ii. Late start & late finish.
- c. A graphic logic diagram alone is not a reliable hardcopy source to reconstruct an accurate copy of a schedule.

3. De-Statusing a Progressed Schedule to Create a Baseline

If a baseline schedule is not available, but a subsequent CPM update exists, the progress data from the update can be removed to create a baseline schedule. Also, the schedule that is considered to be the baseline schedule may contain some progress data or even delays that occurred prior to the preparation or the acceptance of the baseline schedule. The general procedure consists of the following:

- a. For each schedule activity with any indicated progress, remove actual start (AS) and actual finish (AF) dates.
- b. For each schedule activity with any indicated progress, set completion percentage to 0%.
- c. For each schedule activity with any indicated progress, set remaining duration (RD) equal to

original duration (OD).

- i. The OD should be based on the duration that was thought to be reasonable at the time of NTP. If the update is one that was prepared relatively early in the project, it is likely that the OD is the same as the OD used in the baseline schedule.
 - ii. The OD should not be based on the actual duration of the schedule activity from successive updates.
- d. Set the schedule data date (DD) to the start of the project, usually the notice-to-proceed or some other contractually recognized start date.
 - e. Review the scope of the progressed schedule to determine whether it contains additions to or deletions from the base contract scope. If so, modify the schedule so it reflects the base contract scope.

4. Software Format Conversions

- a. Document the exact name, version, and release number of the software used for the source data which is to be converted.
- b. If available, use a built-in automatic conversion utility for the initial conversion and compare the recalculated results to the source data for:
 - i. Early start & early finish.
 - ii. Late start & late finish.
- c. Manually adjust for an exact match of the early and late dates by adjusting:
 - i. The lag value of a controlling predecessor tie and the calendar assigned to the lag value, if necessary.
 - ii. The relationship type of a controlling predecessor tie.
 - iii. Activity duration.
 - iv. Constraint type and/or date.
- d. Document all manual adjustments made and explain and justify if those adjustments have a significant effect on the network.

2.2. As-Built Schedule Sources, Reconstruction, and Validation (SVP 2.2)

A. General Considerations

Along with the baseline schedule, the as-built schedule, more specifically the as-built schedule data, is one of the most important source data for most types of forensic schedule analysis methods. Even methods that do not directly use the as-built schedule, such as the modeled additive methods, often refer to the as-built schedule data to test the reasonableness of the model. As with the baseline, assuring the validity of the as-built schedule data is one of the most important steps in the analysis process.

It is important to accept the fact that the accuracy and the reliability of as-built data are never going to

be perfect. Rather than insisting on increasing the accuracy, it is better to recognize uncertainty and systematize the measurement of the level of uncertainty of the as-built data and document the source data. One of the simplest systems is to call all uncertainty in favor of the adverse party. However, it may be more defensible to use a set of consistent set of documentation for the as-built. Of course the most reasonable solution may be for both parties to agree on a set of as-built dates prior to proceeding with the analysis and the resolution of the dispute.

There are two different approaches to creating an as-built schedule. The first one is to create an as-built schedule from scratch using various types of progress records, for example, the daily log. The resulting schedule is defined by and potentially constrained by the level of detail and the scope of information available in the project records used to reconstruct the as-built.

The second approach is to adopt the fully progressed update as the basic as-built schedule and modify or augment it as needed. Often a fully progressed update is not available and the analyst must complete the statusing of the schedule using progress records. A subset of this approach is to create a fully progressed baseline schedule from progress records. In implementing this approach it is important to understand the exact scope of the activities in the baseline schedule before verifying or researching the actual start and finish dates.

The subtractive modeling methods require an as-built schedule with complete logic as the starting point. Note that the preparation of the model requires not only the validation of as-built dates but also the simulation of an as-built schedule based on actual durations, logic and lags.

To qualify as an as-built schedule, the cause of delays need not be explicitly shown so long as the delay effect is shown. For example, if a scheduled activity that was planned to be completed in ten days but took thirty days and is shown as such, the cause of the delay need not be shown for it to be a proper as-built. However, as the analysis progresses, eventually the delay causation would need to be addressed and made explicit in some form. Note that if the analyst chooses to explicitly show delays, SVP 2.4 covers the subject of identification and quantification of delays.

In most cases the as-built schedule is a fully statused scheduled with a data date equal to or later than the actual completion date of the project. However, the term "as-built" may also be used to describe the most recent schedule update. In this case, only the activities which are statused to the left of the data date are considered "as-built" data. Consequently it is possible to perform a comparative as-built analysis, such as MIP 3.1, prior to the actual completion of the overall project, as long as the delaying events and its effects have all occurred prior to the data date.

The as-built critical path cannot be directly determined using conventional float calculation on the past portion (left) of the data date. Because of this technical reason, often the critical set of as-built activities is called the **controlling** activities as opposed to **critical** activities.

Objective identification of the controlling activities is difficult, if not impossible, without the benefit of any schedule updates or at least a baseline CPM schedule with logic. Therefore, in the absence of competent schedule updates, the analyst must err on the side of over-inclusion in selecting the controlling set of as-built activities. The determination must be a composite process based on multiple sources of project data including the subjective opinion of the percipient witnesses.

Contemporaneous perception of criticality by the project participants is just as important as the actual fact of criticality because important project execution decisions are often made based on perceptions. For more on the subject of Identifying the As-Built Critical Path, refer to Subsection 4.3.C.

The recommended protocol outline below assumes that the forensic analysis contemplates the investigation of schedule deviations at Level 3 (project controls) degree of detail. The user is cautioned that an investigation of schedule deviations at Level 1 or 2 may require less detail.

Similarly, an investigation of schedule deviations at Level 4 may require verification at a higher level of detail.

B. Recommended Protocol

1. If a schedule update is the primary source of as-built schedule data:
 - a. Ensure that the data date is set equal to or later than the events and impacts that are to be evaluated in the analysis.
 - b. Ensure that all activities to the left of the data date have actual start and completion dates.
 - c. Ensure that all activities to the right of the data date do not have actual start or finish dates.
 - d. Perform a check of the as-built dates using the source deemed most reliable other than the update itself.
 - e. If possible, interview the project scheduler or other persons most knowledgeable for updated data collection and data entry procedures to evaluate the reliability of the status data.
 - f. Determine and allow for whether significant changes have been made to activity descriptions and IDs.
 - g. Understand the exact scope and assumptions underlying the schedule activities so that the as-built data is a reflection of the same scope and assumptions.
2. Perform a check of all critical and near-critical activities as defined by this RP and a random 10% sampling of all activities against the reliable alternate source to determine whether a more extensive check is necessary. Note that this step may have to be repeated as ongoing analysis warrants the inclusion of more activities as critical or near-critical than originally identified.
3. Dates of significant activities should be accurate to 1 working day and dates of all other activities should be accurate to 5 working days or less.
4. Contractual dates such as notice-to-proceed, milestones, and completion dates should be accurate to the exact date. Should those dates be subject to dispute, the justification for the selection of the dates should be clearly stated.

C. Recommended Enhanced Protocol

1. Tabulate all sources of as-built schedule data and evaluate each for reliability.
2. If a baseline schedule exists and where a direct comparison between the baseline and the as-built would be difficult due to changes in activity IDs, descriptions, and/or software packages, an "as-built" can be created by fully progressing the planned activities allowing for a one-to-one planned versus actual comparison of each baseline schedule activity. See Subsection 2.2.D.2.
3. Show discrete activities for delay events and delaying influences.
4. If the description of the schedule activity is too general or vague to properly ascertain the scope, the schedule activity should be subdivided into detailed components using other progress records.

D. Special Procedures

1. Creating an Independent As-Built from Scratch “Daily Specific As-Built” (DSAB)

- a. An as-built record of the work on a project is often necessary to verify the accuracy of the CPM dates reflected in the various schedule updates and to identify and correlate events inside a single CPM schedule activity. This identification of events inside a CPM schedule activity is essential to particularize possible shifts in the schedule and explain responsibility for any delays.
- b. The best source for as-built data is a continuous daily history of events on the project developed and maintained by persons working on the project. Traditionally, there are contractor's daily reports, but there may also be owner's daily inspection reports or a scheduler's daily progress report. These daily records can be augmented as required by other primary sources such as certified payrolls and timesheets, completion certificates, inspection reports, incident reports, and start-up reports. Secondary sources such as weekly meeting minutes or progress reports can also provide insight into what happened.
- c. It is often best to develop the DSAB using a database where every entry in the daily report is separately listed as a record. Such a database would allow for the complete history of each schedule activity over time, or an electronic version of the daily report coded for activities worked on each particular day. Notes on the daily reports such as problems or delays can be listed as additional activities.
- d. It is important to develop a correlation between as-planned activities and as-built activities. Baseline schedule activities usually include descriptions sufficient to distinguish them from other similar activities. The as-built schedule is coded to the same activities included in the baseline schedule. It is frequently the case that there is not a perfect match between the activities of the two schedules. Some of the as-planned activities do not appear in the as-built, and, more frequently, there are significant as-built activities that are either in greater detail than the as-planned or simply do not appear in the as-planned.
 - i. *Activity in the baseline schedule, but not the as-built schedule*--There are generally three reasons for an activity to appear in the baseline schedule but not the as-built schedule. The first and most likely reason is that the as-built is not sufficiently detailed. This is usually because the work depicted in detail in the baseline schedule is described more generically in the as-built. In this case, the preferred method would be to divide the as-built activity into two constituent parts if contemporaneous notes permit. If this is not possible, then the two represented activities in the baseline schedule should be combined. The second reason could be that the schedule activity was deleted by change order and thus does not appear in the as-built. If this is the case, it is generally not appropriate to modify the baseline schedule. Rather, the lack of an as-built activity will have to be evaluated in light of successor work. The third reason rarely occurs: The contractor may not have performed a specific aspect of the work, even though it is required. In such a situation the longer duration of the predecessor or successor must be considered in light of the “missing” schedule activity.
 - ii. *Activities in the as-built schedule, but not the baseline schedule* --There generally are three reasons for an activity appearing in the as-built schedule but not the baseline schedule. The first and most likely possibility is that the actual activity is simply reported in more detail in the as-built than in the as-planned. In this situation, it is generally better to combine the more detailed as-built data into a schedule activity that is reflected in the as-planned. However, this extra detail from the as-built may be necessary in performing a responsibility analysis. The second reason could be that the activity was new--it was

added by a change order. If this is the case, it is generally again not appropriate to modify the baseline schedule. Rather, the new as-built activity should be treated simply as additional work and coded in such a manner as to indicate this situation and permit the analysis to properly consider it. The third reason is that the baseline schedule might not completely reflect the actual scope of contractual work. Again, it is probably best not to alter the baseline schedule but rather to reflect the actual work activity in its proper logical as-built sequence. This should not occur if the analysis is utilizing a properly validated baseline schedule (see SVP 2.1).

- e. Line up the as-built and baseline schedule--This step can be performed either in a large database with graphical output, or can be done in a more personal/mechanical manner by hand.
 - i. *Using a database*—By using a database, the analyst can arrange or cluster the activities according to whatever sequence seems most appropriate. For example, it may be useful on a multi-building project to review the data by building. Alternatively, if the performance of a particular trade is important, then the review could be performed based on trade. It is possible through export from a database to a graphical program to plot the baseline schedule data (early/late, start/finish) directly against the as-built record.
 - ii. *By hand. (A.K.A. X-chart or Dot-chart)*—On small projects it is possible to simply plot the data graphically by hand. This technique is called the “X-chart” because the analyst placed an “X” in the appropriate date and activity of a chart with dates along the X-axis and activities along the Y-axis. This pre-computer technique is still useful for smaller projects or partial analysis.
- f. Identify the true “start” of an activity—It is usually relatively easy to identify from the as-built data the start of an activity but not always. It is recommended that the start of an activity be considered the first date associated with a series of substantive work days on the activity. Care should be taken in discounting “false starts” or “false finishes” that they do not reflect a true delay. Care should also be taken to ensure that a false start does not actually represent an actual start coupled with a suspension due to a delay event.
- g. Identify the true “finish” of an activity—The same logic as above applies to the finish dates. Generally the analyst, absent specific data to the contrary, should assume that when the period of concentrated work is completed on an activity, the activity is complete. Another possible criterion is that an activity can be considered *logically* complete when a successor tied with a simple FS logic is able to start substantive work.

2. Creating a Fully Progressed Baseline

- a. A fully-progressed version of the baseline schedule allows for a comparison of the plan to actual performance at an individual activity level of detail. Often, however, a progressed baseline is not readily available because the schedule is changed during progress.
- b. The most expedient procedure to create a fully progressed baseline is to use the as-built data for each activity contained in the final update and transfer them to the corresponding baseline activities. In implementing this procedure the analyst must:
 - i. Recognize that using the activity ID as the sole criterion for correspondence between the final update and the baseline may not be adequate if the activity descriptions are not virtually identical.
 - ii. Therefore, in addition, the analyst must understand the scope and the assumptions

underlying the baseline schedule activities so that the as-built data is a reflection of the same scope and assumptions.

- c. The baseline set of activities may have to be summarized to receive the corresponding as-built data if the activities have been summarized in the final update.
- d. If the corresponding final update activities are more detailed than the baseline activities, determine the update activity representing the start of the less detailed activity chain in the baseline and the update activity representing the finish of that same chain in order to set the actual start and finish dates.

3. Determination of 'Significant' Activities for Inclusion in an As-Built

Many CPM schedules in current use contain hundreds if not thousands of activities. While that level of detail may be necessary to keep track of performance and progress for the purpose of project controls, the facts of the dispute may not require the analysis of each and every activity in a forensic context. This section offers guidelines for streamlining and economizing the as-built analysis process without compromising the quality of the process and the reliability of the results.

Because this step typically occurs early in the analysis process, the analyst may not have a full understanding of the project and the issues. Therefore, the criterion is of *prima facie* significance. In other words, if in doubt, consider it significant. As a result, it is possible that at the end of the analysis some of the selected activities are considered insignificant. But that is better than discovering at the end of the analysis that some significant activities and key factors were not considered. This is a multi-iterative process that requires continuous refinement of the set of significant activities during the analysis process.

The main factor for significance is criticality. The procedure for determining the as-built critical path is discussed in Subsection 4.3.C and the procedure for determining the significant activities includes the procedure set forth in Subsection 4.3.C. However, in addition to those items the following items are recommended for inclusion in the significant set:

- Suspected concurrent delays including those alleged by the opposing party
- Activity paths for which time extensions were granted
- Delay events and all activities on the logical path(s) on which those events lie
- All milestones used in the schedule
- High-value (based on pay loading) activities
- High-effort (based on resource loading) activities

Note that in many cases some significant activities are not discretely and explicitly contained in the CPM model. Obviously, these extraneous activities must also be considered in the as-built.

4. Collapsible As-Built CPM Schedule

The fundamental difference between a fully progressed CPM and a collapsible as-built CPM schedule is in the schedule logic. The fully progressed CPM schedule can graphically illustrate the as-built condition using the actual start and actual finish dates assigned to each schedule activity. However, the schedule cannot be used for calculation because it has been fully progressed. Therefore, the actual activity duration (AD) and the logic ties are no longer controlling

the network calculation. On the other hand, the collapsible as-built is a CPM model of the as-built condition. The schedule is revised by assigning actual durations to the activities and tying them together with logical relationships so that the actual start and the actual finish dates are simulated in the schedule as calculated start and finish dates. For a step-by-step procedure please refer to MIP 3.8.

5. Summarization of Schedule Activities

- a. If the level of detail of the as-built is clearly excessive in comparison to the delays being evaluated, the analyst may choose to summarize the as-built schedule for purposes of analysis. In doing so, the following guidelines are recommended:
- b. Ensure that summarization is restricted to activities that do not fall on the critical or near-critical paths.
- c. Organize the full-detail source schedule so that the identity of the activities comprising the summary schedule activity can be determined using:
 - i. Summarizing or hammocking.
 - ii. Work breakdown structure (WBS).
 - iii. Coding the detail activities with the summarized activity ID.
- d. Restrict the summarization to logical chains of activities with no significant predecessor or successor logic ties to activities outside of the summarized detail.
- e. Restrict the summarization to logical chains of activities that are not directly subject to delay impact evaluation or modeling.

2.3. Schedule Updates: Validation, Rectification, and Reconstruction (SVP 2.3)

A. General Considerations

SVP 2.3 discusses issues involved in evaluating the project schedule updates for use in forensic schedule analysis.

The schedule update consists of the as-built portion on the left side of the data date, the as-planned portion on the right side of the data date, and the data date itself. Because SVP 2.1 addresses the issues relevant to the as-planned portion, and 2.2 addresses the issues relevant to the as-built portion, the focus of SVP 2.3 is on the practice of updating the schedule with progress information and the reliable use of that progress data.

B. Recommended Protocol

1. Interview the project scheduler or other persons-most-knowledgeable for updated data collection and data entry procedures to evaluate the reliability of the statusing data.
2. Assemble all schedule updates so that they cover the entire project duration from start to finish or up to the current real-time data date.
3. Use officially submitted schedule updates.
4. Ensure that the update chain starts with a validated baseline.

5. Check on the consistency of the actual start and finish dates assigned to each schedule activity from update to update.
6. For each update, identify all changes made that extend, reduce, or change the longest path or the controlling path to an interim contractual milestone.
7. If other progress records are available, check the remaining duration and percentage complete values for consistency with these other progress records and make.

C. Recommended Enhanced Protocol

1. Implement SVP 2.1 for the as-planned portion of each schedule update, including the baseline.
2. Implement Subsection 2.4.D.2. to bifurcate the pure-progress step from the logic revision steps in each update.

D. Special Procedures

1. Reconstructed Updates

There are two main schools of thought on recreating a partially stasured schedule. The first school of thought, called the hindsight method, states that since the forensic scheduler is performing the analysis after the job has been completed, the analyst should use the actual performance dates and durations to recreate the updates.

The second school of thought, called the blinders or the blindsight method, requires the analyst to pretend that the analyst does not have access to actual performance data and simulate the project scheduler's mindset at the time the update was actually being prepared. Therefore, the analyst needs to consider what the scheduler would have assigned as the remaining duration for that schedule activity at that time. If the analyst does not have reliable access to the scheduler's contemporaneous bases for assigning remaining durations, the analyst needs to be as objective as possible and follow a remaining duration formula.

Outlined below are the two methods:

a. "Hindsight" Method

In this method, the actual status of the schedule activity in the succeeding schedule update period is used to calculate the remaining duration of the previous schedule update. This is delineated in the formula below:

- i. $RD = \text{actual duration of succeeding update} - (\text{data date} - \text{actual start of activity})$ where the data date is the data date of the existing schedule update that needs to be stasured.

b. "Blindsight" Method

In this method, it is assumed that the analyst does not have the update schedule for the succeeding period and has no knowledge of the project conditions later than the update under investigation. Therefore, the analyst must stand in the shoes of the scheduler at the time of the project. Note that the progress curve created by this method assumes a straight line.

- i. IF: $\text{data date (DD)} - \text{actual start of the activity (AS)} < \text{original duration (OD)}$, THEN:

remaining duration (RD) = OD - (DD - AS)

- ii. IF: DD - AS > OD, THEN: RD = 1

2. Bifurcation: Creating a Progress-Only Half-Step Update

Bifurcation (aka half-stepping or two-stepping) is a procedure to segregate progress reporting from various non-progress revisions inherent in the updating process. This should not be considered a revision or modification of the update schedules but rather a procedure that examines selected data, namely logic changes isolated by this process, which may be present in the updates of record. For a step-by-step implementation of the bifurcation process refer to MIP 3.4

3. Changing the Contemporaneous Project Schedule for the Analysis

Due to the complex nature of construction projects and the fact that CPM schedules are models of reality, not reality itself, the analyst will inevitably encounter an instance when the contemporaneous project schedule contains an anomaly that could affect the assessment of critical project delay. Instead of completing the analysis using a schedule with an anomaly or entirely abandoning the schedules because of the anomaly, the analyst has the option to correct the anomaly in the contemporaneous project schedule and use the corrected schedule as the basis for the analysis.

Correcting the contemporaneous schedules does not automatically result in a shift in classification of the analytical technique from an analysis based on contemporaneous schedules such as MIP 3.3 (Observational / Dynamic / As Is) to one based on non-contemporaneous schedules such as MIP 3.5 (Observational / Dynamic / Modified or Recreated). However, these changes and how they affect the contemporaneous data, plan, and information reported, should be disclosed by the analyst along with the objective reason for those changes.

Having stated that, the preference of every analyst should be to use the contemporaneous schedules and updates as they were prepared, reviewed, or accepted, and used on the project. This belief is grounded in the fact that the parties used the imperfect schedules to make decisions and manage the project work. Thus, these schedules, even though not perfect, are the best representation of the parties' objectives and understanding of the project contemporaneously and are an indicator of each party's performance. The fact that the contemporaneous schedules were rejected by the owner is not automatically dispositive of their value. This is because where delays are present during the project schedules are often rejected for reasons other than their technical reliability as a schedule, but for reasons of contractual compliance regarding the completion date.

However, absent contract language mandating the use of the contemporaneous schedules to quantify delay, corrections to the contemporaneous schedules can be properly considered by the analyst without eroding the credibility of the resulting analysis. The following is a discussion of examples of revisions to the contemporaneous schedules that may fit within the boundaries of such corrections:

a. Correcting a Wrong Actual Start or Finish Date

Sometimes, the actual start and finish dates recorded in the contemporaneous project schedules may be inaccurate. The analyst may consider relying on other contemporaneous documents to correct these dates. The analyst may limit the correction of the wrong actual start and finish dates to paths of work that have the

potential to delay the project and are on critical or near-critical paths. When an analyst chooses to correct a wrong actual date in the schedule, the analyst should be mindful that correcting a date may result in a shift in the critical path. If the project team never recognized that the date was wrong, and relied on the schedule generated by calculations based on that date, the correction should not be made if the focus of the analysis is on the mindset of the team on which decisions were made at the time, as opposed to developing an accurate as-built schedule.

b. Correcting Schedule Anomalies

A schedule anomaly is any feature in the schedule that creates a physically or logically impossible sequence of work or a sequence of work that is not permitted by the conformed contract provisions. These features may include:

- i. An incorrect logic relationship
- ii. A missing logic relationship
- iii. An incorrect activity based on described scope of the activity
- iv. A missing activity

If a sequence of work is possible and contractually permitted, it should not be corrected even if, in the opinion of the analyst, there is a 'better' way of performing the work. The correction of an anomalous feature can gain enhanced validity if the project participants recognized the anomaly in the schedule contemporaneously and that the anomaly was ultimately corrected by the project team in the contemporaneous project schedules at some point during the project, or recognized and identified as an anomaly in the schedule in a contemporaneous project document.

c. Bringing a Revision Back in Time to Represent Added or Changed Work

This situation occurs when a schedule revision or fragnet (fragmentary network representing added or changed work) was inserted into the contemporaneous project schedules well after the change or event that necessitated the revision occurred. If the schedule revision or fragnet was not inserted into the appropriate contemporaneous project schedule, but was recognized and identified in a contemporaneous project document as a change that should have been made, then the analyst may decide to insert the schedule revision or fragnet into the contemporaneous schedule update in effect when the change occurred to measure the resulting delay.

This correction involves bringing back (or inserting) the schedule revision or fragnet to the point or nearest the moment in time when the event occurred. The schedule revision or fragnet that is brought back in time (or inserted) will typically be a duplicate of an existing revision or fragnet that was inserted into the schedule during the project or as described in the contemporaneous project documents. It must be noted that if the fragnet consists of actual durations, and relationships, this procedure would create a hindsight impact simulation as opposed to a blindsight impact simulation, which would be implemented with a fragnet consisting of planned durations and relationships estimated at the time the event occurred.

d. Splitting an Activity

Typically, updates increase in detail as the schedule progresses, therefore the number of activities increase, not necessarily an increase in scope but an increase in detail. When a variance analysis is performed between two updates with different activity counts, exact correlation is not possible since the more detailed activity set did not

exist in the previous update. Therefore, the detailed activity set should be replicated in the previous update with the same planning duration, logic and dates of the summary activity.

All of these corrections should be described in the analyst's report along with the basis of the corrections so that the other parties and the fact finders understand the changes that the analyst made to the contemporaneous schedule.

When an analyst concludes that more extensive revisions are necessary to the contemporaneous project schedules than those contemplated in paragraphs a., b., and c., above, such revisions should be made cautiously, consistently, and founded to the greatest extent possible on the contemporaneous project documentation. The analyst must also remember that most schedules are models and, hence, perfection is not the standard.

The issue of correcting the schedule is one of balance and reasonableness and, for these reasons corrections should not be made across the board or automatically.

Note that some significant errors in the underlying analysis schedules may not substantially affect the ultimate conclusions of the analysis. For example, imagine a schedule where a significant activity was omitted. Even though the work is absent from the schedule, it would not necessarily be absent from the analysis. If three activities, A, B, and C, must be performed in sequence, but the schedule leaves out B, the analysis will still detect a delay due to B. This is because C cannot start until B is completed. Any delay attributable to B will show up as a delay to the start of C. There may be no need to "correct" the schedule by adding B into the schedule. Delays to B may be addressed by the analysis even though B is not present.

Finally, the analyst must also be consistent and maintain independence and objectivity. The analyst cannot limit its corrections to those that have the affect of improving the analyst's client's position.

2.4. Identification and Quantification of Discrete Delay Events and Issues (SVP 2.4)

A. General Considerations

SVP 2.4 discusses the compilation of information regarding delay events, activities and influences that are inserted or extracted in modeled methods or used in evaluating the observational methods. As stated in the introduction to the SVP, the approach of the SVP is to maximize the reliable use of the source data as opposed to assuring the reliability or the accuracy of the substantive content of the source data. The best accuracy that an analyst can hope to achieve is an objective reflection of the facts as represented in documents, data and witness statements. Whether that reflection is an accurate model of reality is almost always a matter of debatable opinion. This is especially true in assembling delay data and making the causal connection between the delay event or influence and the impacted activity.

1. 'Delay' Defined

For the purpose of this section, the term, 'delay', is considered neutral in terms of liability. Delay simply means a state of extended duration of an activity, or a state of an activity not having started or finished on time, relative to its predecessor.

a. Activity-Level Variance (ALV)

Forensic delay analysis primarily focuses on determining start or duration variances of a specific

schedule activity otherwise known as activity-level variances or ALV's.

ALV's are the result of several types of delay causes:

- Waiting (delayed start)
- Performance (Productivity Impacts, Additional Work, etc.)
- Interruption (Work Stoppage, Weather, Strikes, etc.)

For example a delayed start of an activity awaiting a response to an RFI is the delay cause "waiting." In contrast, a delayed start due to the performance of a scope of work that was missed at bid time is the performance of additional scope of work. Finally, an activity experiencing numerous rain days over several months is experiencing interruption of work or otherwise known as disruption. Given these variations there are two main ways in which ALVs are expressed in a CPM schedule:

i. Delayed Relative Start

This is the variance between the planned start relative to the planned controlling predecessor to the actual point of start. Because this is a relative measure, it cannot be determined by the comparison of planned date (either early or late) to the actual, which would yield a cumulative delay figure. The cumulative delay incorporates all the delays that occurred previously in the activity chain.

ii. Extended Duration

An extended duration delay occurs when the actual activity duration exceeds the planned original duration or reasonable duration required to perform the described activity. Unlike the delayed relative start case, extended duration calculations are not dependent on predecessor logic for quantification. Extended durations may result from continuous impact, intermittent impact such as stop-and-go operations, weather delays, or from discrete periods of added work or suspensions. In addition, extended durations may be due to experiencing lower labor productivity than planned for when the activity duration was developed. Unless the delay is fully attributable to a discretely identifiable period of exclusive extra work performance, quantification of this type of delay requires some estimating on the part of the analyst.

b. Distinguishing ALV from Project-Level Variance (PLV)

The ALV should be distinguished from the project-level variance (PLV) which is also a variance but at the overall project level. While the ALVs occur close in time to the causes, i.e. in the same period, the PLV may be months apart from the actual cause(s) of the delay. PLV is the result of the aggregation of ALV's after taking into account network float. Within the context of this RP, ALVs are considered 'delays' regardless of the amount of float they carry. The activity experiences a delay if an ALV exists regardless if the delay affects the project completion date, i.e. the PLV.

c. Distinguishing Delay-Cause from Delay-Effect

It is important for the analyst to be able to distinguish the cause of delay from the resulting effect. For example, a fully updated schedule may show extended activities and delayed start of activities relative to their controlling predecessors. While the cause may not be apparent, a competent statusing of the schedule will show the delay-effects. What caused the initial ALV for the chain of activities often does not appear on the schedule but must be investigated and researched using project documents, data and witness interviews. If, on the other hand, a delay was appropriately inserted into the schedule as a new activity as a predecessor to the activity

with the start delay, the cause of the ALV is readily apparent.

The identification of delay-causes is a focus in the latter phases of delay analysis, during causation analysis.

d. Delay Characterization is Independent of Responsibility

ALV's are considered "delays" independent of the responsibility for those variances. Thus an ALV can be contractor-caused or owner-caused, but it is still a delay. Similarly, the characterization of delays as 'excusable', 'compensable', 'concurrent' and 'paced' are attributes that are assigned well after the initial delay analysis starts by examining ALVs based on the causation analysis that has been performed after the schedule analysis is completed.

2. Identifying and Collecting Delays

a. Two Main Approaches to Identification and Collection

i. Cause-Based Approach

This approach starts with the collection of suspected causes of delays and then determining the effect they had on the baseline schedule and individual schedule updates. It is a 'causes in search of effects' approach. This is often used in the additive modeling methods. For example, an analysis may review the monthly reports, searching for issues that may have caused delays to the project.

ii. Effect-Based Approach

This approach is the opposite of the cause-based approach. It starts by compiling a set of ALV's and then identifies the causes of those variances. Specific documents that are associated with the time-frame, activity description, and amount of ALV's are reviewed to see if they could have created this variance. This approach is applied in the observational and the subtractive modeling methods. In the majority of the analysis scenarios, the effect-based approach is the more economical approach.

b. Criticality of the Delay

It is important for an analyst to not prejudge criticality, nor limit the collection process to only those delays perceived to affect the critical path, especially if the delays are being identified for a modeled method. In addition, a path that is near critical in one window maybe become critical in the next especially if delays are being extracted from the critical path. For example, in the Modeled / Subtractive / Single Simulation (MIP 3.8) and the Modeled / Subtractive / Multiple Base (MIP 3.9) methods, as delays are being stripped from the critical path, the path will "collapse" and the first near critical path will become critical. This is an iterative method and therefore, paths may collapse numerous times so that a path that originally has plenty of float becomes the critical path. The ultimate critical path quantification from the effect of each delay will eventually be determined in the modeling process. It is impossible for the analyst to know what the final critical path is until all of these delays have been added in (MIP's 3.6 and 3.7 or extracted out (MIP's 3.8 and 3.9).

Also, float consumption and ownership can be relevant where issues involve disruption, loss of productivity, and constructive acceleration regardless of the criticality of the activity.

3. Quantification of Delay Durations and Activity Level Variances

There are two different modes of quantification of delay durations. They are the retrospective actual mode (hindsight) and the prospective forecasted mode (blindsight). The hindsight mode relies on project documentation of actual chronological events that constitute the set of activities considered to be the cause or the effect of delays. The blindsight mode uses activities, sequences and durations that were estimated prior to the occurrence of the alleged delay. Where the focus of the analysis is to identify actual schedule impact, the hindsight mode is preferred. If the focus of the analysis is to identify potential impact or to ascertain the state of mind of the project team at the time of the impact, the analyst would use the blindsight mode.

Under either of these modes, there are two fundamentally different methods for quantifying delay durations. They are the variance method and the independent method.

a. Variance Method

The variance method is a comparative method that determines the delay duration by computing the ALV between the as-built activity duration and the unimpacted or planned activity duration obtained from the baseline schedule, an updated schedule or other non-CPM sources such as a measured-mile analysis or some reasoned estimate. This method is purely mathematical in nature. Two figures (a planned and an actual) are subtracted from each other to compute the variance. These two figures may be dates, durations, or productivity measurements. Thus, the entire variance needs to be tied to one or more causes for the variance.

b. Independent Method

In contrast, the independent method is not comparative. The delay duration is determined from project documentation that contemporaneously chronicled or otherwise recorded the occurrence of the delay or quantified the impact resulting from a delay event. Under this method, the answer to the question whether causation has been established or not depends on the type and content of the documentation that was used for the quantification.

These methods do not have to be exclusive of each other. The analyst may elect to use a mixture of the two methods depending on the nature of the delay or the availability of necessary documentation. Also, one may elect to use both methods for each delay to evaluate and reconcile the different outcomes resulting from the differences.

For example, if the documentation consists of a daily diary entry that states that a specific activity was suspended for that specific day pending an investigation of a differing site condition, there is prima facie establishment of causation (one day of delay is clearly stated). But if the documentation is a letter stating that, "during the previous month many activities experienced extensive delays due to Owner-changes," further analysis to determine the delay duration and which activities were affected by the delaying events will be needed.

The example below is given to illustrate the difference between the variance and independent method: Suppose that the ALV for a specific activity is ten days. In the variance method, the entire ten days will be distributed among the responsible parties. However, in the independent method, the ALV is not even looked at in the beginning. Instead, the analyst researches project documentation to determine the delay amount. Therefore, if the project documentation only states that the activity was delayed three days by an event, the remaining seven days of the ALV will not be assigned to this delay and may not be assigned to the party responsible for this delay. If the documentation states the delay event was twelve days, the analyst will consider the delay to the activity was twelve days but since the ALV is ten, the other two days may have been made up via acceleration. Therefore, in the variance method, the analyst is guided to the delay amount by the

amount of ALV. On the other hand, in the independent method, the analyst does not review the ALV, but relies on what is written in the documentation to make its determination of delay amount.

4. Cause of Variance

What caused the variances often does not appear on the schedule but must be investigated and researched using project documents, data and witness interviews. In researching, evaluating and modeling the cause-and-effect relationships, the analyst must be aware that these relationships are often successively linked into a chain of alternating causes and effects. In addition, an ALV may be created by more than one cause.

Causation is established primarily on the quality of documents available for the analyst at the time of the schedule analysis. Some documents are more reliable than others.

Development of a document-type list and a reliability assessment for each document type are often the first steps prior to a detailed review of the record. This list is essential for two reasons. First, the analyst will become familiar with the types of documents that are available for review. Discussions with the project team concerning types of documents as well as the chronology of events will optimize the causation research process. For example, if the analyst is not aware that daily construction reports exist, and instead relies on monthly reports for determining causation, its conclusions of delay amount and impact may be very different.

5. Assigning or Assuming Variance Responsibility

When the forensic schedule analyst does not possess adequate information to make an independent determination of responsibility for the delay, the analyst may have to proceed with the analysis based on an assumption. Such assumptions should be noted and clearly stated as part of the final analysis product along with the basis of such assumption.

a. Contractor delay is any delay event caused by the contractor or those under its control, or the risk of which has been assigned solely to the contractor. Typical examples of contractor delay events include, but are not limited to, delays caused by rework resulting from poor workmanship, subcontractor delays, insufficient labor, management and coordination problems, failure to order necessary materials and failure to secure contractual approvals.

b. Owner delay is any delay event caused by the owner, or the risk of which has been assigned solely to the owner. Examples of owner-delay events include, but are not limited to, delays resulting from change orders, extended submittal review, directed suspension of work, delayed owner-furnished equipment, differing site conditions, and defective contract documents.

c. Force majeure delay is any delay event caused by something or someone other than the owner (including its agents) or the contractor (or its agents), or the risk of which has not been assigned solely to the owner or the contractor by contract language and/or local industry custom and practice. Examples of force majeure delays include, but are not limited to, delays caused by acts of God, inclement weather, acts of war, extraordinary economic disruptions, strikes, and other events not foreseeable at the time of contract. Many contracts specifically define force majeure events. Although strictly not a 'force majeure' event, delays caused by parties external to the contract may also be classified under this category if there are no contractual risk assignment to the contractor or the owner for such delays.

B. Recommended Protocol

1. Determine the delay identification and collection approach to be used.

2. Tabulate all sources of delay data and evaluate each for reliability. If the documentation sources have conflicting data, the analyst should use the source that is the most reliable and explain why the source used is considered the most reliable.
3. Identify the specific actual start date and actual finish date for each delay along with the scope of work that occurred on those dates and their significance in relation to the delay.
4. Correlate the delay event to the specific activity or activities in the schedule affected by the delay and determine if it affected the start of the activity or the duration of the activity.
5. Identify, tabulate, and quantify all significant activity-level variances. The significance of the ALV is done on a case by case basis, but the criteria for that significance and their bases should be noted.
6. Determine the criticality of those significant ALVs.
7. Determine the causation of those significant ALVs based on the correlation of delay event to activity as described in step number four.
8. Determine responsibility or proceed based on assumed allocation of responsibility
9. Quantify the claim portion of each ALV for which causation has been determined.
 - a. If the delay is not a complete stoppage or not continuous throughout the entire period of the activity's duration, quantify the net delay duration during that time frame.
 - b. For each delay issue, if applicable, distinguish the informational delay portion from the actual performance of disputed/extra work.
 - c. For each discrete delay event, identify the activity ID number or numbers of the schedule activity or activities that were impacted by the delay.

C. Recommended Enhanced Protocol

1. Establish the activity coding structure for various attributes of delays, such as responsibility, issue grouping and documentation source so that different delay scenarios can be analyzed and relevant reports can be generated with minimal difficulty.
2. For each delay issue, if applicable, document and reconcile the claimed delay duration against any contract time extensions already received for that issue. The analyst needs to ensure that the entitlement quantification does not overlap or "double-dip" on pre-existing granted time extensions.

D. Special Procedures

1. Duration and Lag Variance Analysis

Prepare a table comparing the planned duration of a schedule activity to the actual duration and determine the cause for each significant variance.

Prepare a table comparing the planned controlling predecessor logic of the schedule activity to the actual controlling predecessor logic and determine the cause for each significant variance both in terms of change in type of logic and lag values.

3. METHOD IMPLEMENTATION

The intent of the Method Implementation Protocols (MIP) is to describe each forensic schedule analysis method identified in the Taxonomy and to provide guidance in implementing these methods. The user is reminded that the focus of this RP is on procedure as opposed to substance. Adopting a method and using the recommended procedures do not, on their own, assure soundness of substantive content.

The use of the Source Validation Protocols (SVP) discussed in Section 2 is integral to the implementation guidelines discussed here. Therefore a thorough understanding of the SVP is a prerequisite to the competent use of the MIP.

Method implementation protocols consist of the following:

- 3.1. Observational / Static / Gross (MIP 3.1)
- 3.2. Observational / Static / Periodic (MIP 3.2)
- 3.3. Observational / Dynamic / Contemporaneous As-Is (MIP 3.3)
- 3.4. Observational / Dynamic / Contemporaneous Split (MIP 3.4)
- 3.5. Observational / Dynamic / Modified or Recreated (MIP 3.5)
- 3.6. Modeled / Additive / Single Base (MIP 3.6)
- 3.7. Modeled / Additive / Multiple Base (MIP 3.7)
- 3.8. Modeled / Subtractive / Single Simulation (MIP 3.8)
- 3.9. Modeled / Subtractive / Multiple Base (MIP 3.9)

3.1. Observational / Static / Gross (MIP 3.1)

A. Description

MIP 3.1 is an observational technique that compares the baseline or other planned schedule to the as-built schedule or a schedule update that reflects progress.

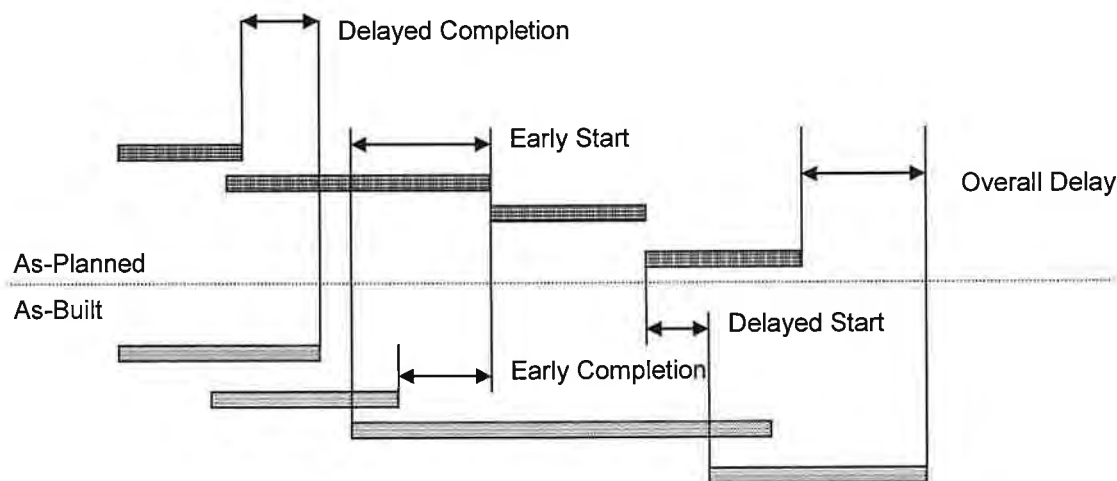


Figure 3 – Observational, Static, Gross Analysis Method Graphic Example

In its simplest application, the method does not involve any *explicit* use of CPM logic and can simply be an observational study of start and finish dates of various activities. It can be performed using a simple graphic comparison of the as-planned schedule to the as-built schedule. A more sophisticated



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implementation compares the dates and the relative sequences of the activities and tabulates the differences in activity duration, and logic ties and seeks to determine the causes and explain the significance of each variance. In its most sophisticated application, it can identify on a daily basis the most delayed activities and candidates for the as-built critical path.

MIP 3.1 is classified as a static logic method because it primarily relies on the single set of CPM logic underlying the baseline or other planned schedule. The method is classified as gross as opposed to periodic because the analysis is performed on the entire project against a single baseline or other planned schedule rather than in periodic segments.

B. Common Names

1. As-planned vs. as-built
2. AP vs. AB
3. Planned vs. actual
4. As-planned vs. update

C. Recommended Source Validation Protocols

1. Implement SVP 2.1 (baseline validation) and,
2. Implement SVP 2.2 (as-built validation) or,
3. Implement SVP 2.3 (update validation) and,
4. Implement SVP 2.4 (delay ID & quantification)

D. Enhanced Source Validation Protocols

[Not used.]

E. Minimum Recommended Implementation Protocols

The application of this methodology involves the sequential comparison of individual activities' planned start and finish dates with actual start and finish dates. Through this comparison, a detailed summary of the delays and/or accelerations of activities can be identified. Generally, it is best to compare the LATE planned dates from a CPM schedule, rather than the early dates. While contractors usually intend to perform their work in accordance with the early dates, delay to an activity cannot be measured until the activity is actually delayed—is later than the planned late dates. The basic steps in the analysis are as follows:

1. Identify the baseline or other schedule that will form the as-planned schedule. Ideally, this schedule has been approved or accepted by both parties and reflects the full scope of the work, includes proper logic from the start of the project through completion, and reflects neither progress nor post-commencement mitigations of delay. This schedule is usually a CPM model, so that even without functioning CPM logic and modeling, the original planned logic should be used in analysis and interpretation. Alternatively, a simple comparison can be performed using graphic time-scaled diagrams. In this situation, no explicit schedule logic is evident, although the sequence and timing will imply certain logical connections.
2. The comparison progresses from the earliest activities' planned dates to later dates. Generally,

this comparison sequence should follow the logic in the original as-planned schedule. Thus, at least until the first significant delays, the focus will be on the as-planned critical and near-critical paths.

3. The analysis should advance through the comparison by identifying for each activity: (a) delayed starts, (b) extended durations, and (c) delayed finishes. Since the as-built analysis is performed using a 7-day calendar, it is important that all durations be in calendar days. In this manner, it is possible to identify where the most significant delays occurred, where there were mitigations of delay through implementation of out-of-sequence logic and possible accelerations through shorter than planned durations.
4. Arithmetic calculations performed at the start and completion of each as-built activity provide a detailed view of the relative delay of every as-built activity. The most delayed series of activities can be ascertained using this method and can often be used as a starting point for identifying the as-built critical path. Expert judgment is required to separate the as-built critical path (based on industry experience and contemporaneous evidence as discussed in Subsection 4.3.C) from the various set of most delayed activities at any particular time.
5. Simultaneous delays, whether they are pacing delays (see Subsection 4.2.B) or concurrent delays (see Subsection 4.2.A), should be identified and confirmed as being on the critical path.
6. As the analysis continues and advances through the as-planned schedule, it is likely that it will become less accurate since contemporaneous adjustments to the contractor's plan will supersede the original logic. For this reason, particular care must be exercised during the analysis of the later stages of the project.
7. Extended durations that extend the Late Finish Date for any activity should be examined for the cause. This will determine the cause of the delays along the critical path.
8. Similarly, any duration with shorter than planned durations may indicate reductions in work scope or acceleration by the contractor.
9. If time extensions have been granted, they should be considered both at the time they were granted and at the end of the analysis. Time extensions should be considered at the time granted when the reasons for delayed performance are identified through the comparison as well as identification of the as-built critical path. Time extensions will change the overall delay to the project and may therefore override apparent delays to specific activities.

If the baseline schedule has both early and late dates, the analysis should be performed using late dates unless a review of the late dates reveal that the logic associated with the late dates is significantly different than the logic of the early dates. In this situation, the analysis should be performed using early dates with the understanding that adjustments for available float may need to be considered. A schedule with logic that is incomplete or has logic associated with the late dates that appears significantly different from the logic associated with the early dates should be considered for correction in accordance with Subsection 2.1.B.

The minimum implementation of this method is applicable only to relatively simple cases and should not be used for long duration cases or where there are significant changes between the original planned work scope and the final as-built scope. For the purpose of this MIP, a 'simple case' is defined as one in which there is a single clearly defined chain of activities on the longest path that stayed as the longest path throughout the performance of the project.

F. Enhanced Implementation Protocols

1. Daily Delay Measure

The as-planned vs. as-built methodology can be used in more complicated cases if the data is available. Since the basic implementation protocol is applicable only for very simple cases, this more advanced method should be used if possible. However, even this more enhanced implementation is useful only for simple projects where the sequence of work did not vary significantly from the baseline schedule.

- a. The as-built should be a fully progressed baseline schedule allowing for a one-to-one comparison of each schedule activity. This is essential as activity descriptions and ID numbers often change as the project advances.
- b. On larger schedules and projects that are active for long periods of time, it is often desirable to use a database comparison between actual dates determined from the as-built analysis with the LATE planned dates. This comparison will allow the selection of the more significant activities for graphical comparison. Prepare a table comparing the planned duration or a schedule activity to the actual duration and determine the cause for each significant variance.
- c. Prepare a table comparing the planned controlling predecessor logic of schedule activity to the actual controlling predecessor logic and determine the cause for each significant variance.
- d. If an edited baseline schedule was used, the analysis should proceed using both the unaltered baseline as well as the modified baseline. A comparison between the two sets of results will assist the analysis in identifying the likely and realistic progress of the job.
- e. Arithmetic calculations performed on a daily basis can provide significantly more accurate information if the as-built data is available at the appropriate level of detail. This method is called Daily Delay Measure (DDM). DDM is an enhanced variation for the identification of activities that are candidates for critical and near critical paths. DDM compares late start and finish dates with as-built start and finish dates.
 - It can be done on a daily, weekly, or any other periodic basis. By depicting the number of days a schedule activity is ahead or behind the planned late dates, a determination of any point of the status of any schedule activity is possible.
 - While the comparison can be made between the early start/finish dates and the actual dates, it is better to compare late start/finish dates with actual dates. By using late dates, any delay indicated by the comparison is a true delay rather than consumption of float. As a result of that exercise, any float associated with the duration of a schedule activity is excluded. Activities that have float (and accordingly are not on the as-planned critical path) will generally not appear to have been delayed during the early stages of analysis, since they will appear to be "ahead" of schedule because of their float. As the analysis progresses through a project's performance however, the activities that initially had float, if they were delayed for a duration in excess of the value of that float, can become critical, thus overtaking one or more of those activities originally on the project's as-planned critical path. While late dates are preferred in performing the analysis, in some CPM schedules, late dates do not represent a consistent or practical plan for execution of the work even if the early dates do. In these cases, it is better to use early dates.
 - The DDM can also identify possible changes in the as-built critical path if the analysis is done on a frequent, possible daily basis, even within the actual duration of activities. In this case there are several alternative assumptions that can be made to identify progress within an activity duration: (1) if accurate progress data is available on a regular basis, this regular progress can be used (realistically this is rare in most construction projects);

(2) progress can be assumed to advance at an equal rate each period, for example, a 10-day activity would be assumed to advance 10 percent each day; or (3) a different progress rate, perhaps conforming to a more typical bell-curve distribution.

G. Identification of Critical and Near-Critical Paths

In this method, the emphasis should be on the as-built critical path as opposed to the baseline critical path. Since this methodology does not use a computational CPM, the methodology relies more extensively on expert evaluation.

- Identify and understand all related contractual language.
- From the fully populated baseline schedule, identify the calculated critical path of the baseline using the longest path and the lowest total float concept of the validated baseline.
- From the fully populated as-built schedule, identify the near-critical path using the procedure in Subsection 4.3.C. for identifying the as-built critical path.
- Confirm and cross check these results by tracing the delays through the as-planned critical path and near critical paths based on late as-planned dates.
- Identify the most delayed activities at every measuring point.
- Review the planned logic and evaluate any likely changes based on contemporaneous evidence.

H. Identification and Quantification of Concurrent Delays and Pacing

- Identify and understand all related contractual language.
- Determine whether literal or functional concurrency theory is to be used (see Subsection 4.2).
- If applicable, determine the near-critical threshold (see Subsection 4.3.).
- If applicable, determine the frequency, duration, and placement of the analysis intervals.
- Determine whether there are two simultaneous delays to activities on the critical path, or two simultaneous causes of delay to a single activity on the as-built critical path.
- Determine the day each delay commenced or period within which each commenced.
- Determine the contractually responsible party for each delay by the contractor or owner at issue.
- For each delay event, distinguish the cause from the effect of delay.
- Identify and explain all relative delayed starts and extended duration of activities that are critical or near-critical.
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of precedence between the parent delay and the pacing delay.
- For each suspected pacing delay event, evaluate whether enough resources could have been

realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

Identify and understand all contractual language related to delay apportionment and determine whether the contractual language would override any determination of excusability and compensability based on findings resulting from analyses performed under this RP.

Absent such overriding language, use the following procedure:

1. Excusable and Compensable Delay (ECD)

Each incremental delay along the as-built critical path should be independently quantified and the cause of the delay identified. The net Excusable & Compensable Delay (ECD) is the sum of the individual delays that: 1) were the responsibility of the owner, and 2) delayed the completion date of the project, and 3) were not concurrent with delays which were the responsibility of the contractor or *force majeure* events.

2. Excusable and Non-Compensable Delay (END)

Each incremental delay along the as-built critical path should be independently quantified and the cause of the delay identified. The net Excusable & Non-compensable Delay (END) is the sum of the individual owner-caused or relevant third-party caused delays that: 1) were *force majeure* events or were concurrent with contractor-responsible delays or *force majeure* events, and 2) delayed the completion date of the project, and 3) were not the responsibility of the contractor.

J. Identification and Quantification of Mitigation / Constructive Acceleration

Observational / static analysis methods can note differences in logic but cannot directly quantify net critical path impact. However, there may be evidence of reduced individual activity duration, which when coupled with detailed records of increased man-hours, would serve as adequate proof of acceleration. Note that the acceleration would be evident in both critical path and non-critical path activities.

K. Specific Implementation Procedures and Enhancements

[Not Used]

L. Summary of Considerations in Using the Minimum Protocol

- Suitable for analyzing short projects with minimal logic changes.
- Can be performed in a manner that is easy to understand and simple to present.
- Technically simple to perform compared to other MIP's.
- Can be performed with very rudimentary schedules and as-built data.
- As-built activities must be closely correlated with as-planned activities.
- As-built data used must be accurate and validated.
- Does not, by itself, identify the as-built critical path.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- Not suitable for project durations extending into multiple dozens of update periods.
- Not suitable for projects built in a manner significantly different than planned. The rate of error increases as the incidence of change increases.
- Not suitable for complicated projects with multiple critical paths.
- Does not consider the possibility of critical path shifts either within periods or across the project.
- Susceptible to unintentional or intentional manipulation by choice of as-built data that is incorporated into schedule.
- May fail to identify all critical delays or time extensions, and typically does not adequately consider concurrency and pacing issues.
- Does not consider that changes to original baseline schedule may have been the actual cause of delay instead of the identified delay issues
- Typically fails to consider chronological order of delays or reconcile periodic planned critical path shifts with the as-built critical path
- Not suited for clearly demonstrating acceleration

3.2. Observational / Static / Periodic (MIP 3.2)

A. Description

Like MIP 3.1, 3.2 is an observational technique that compares the baseline or other planned schedule to the as-built schedule or a schedule update that reflects progress. But, this method analyzes the project in multiple segments rather than in one whole continuum. Because this is essentially an enhancement of MIP 3.1, as a practical matter, the implementation of MIP 3.2 requires that prerequisites for MIP 3.1 be implemented first.

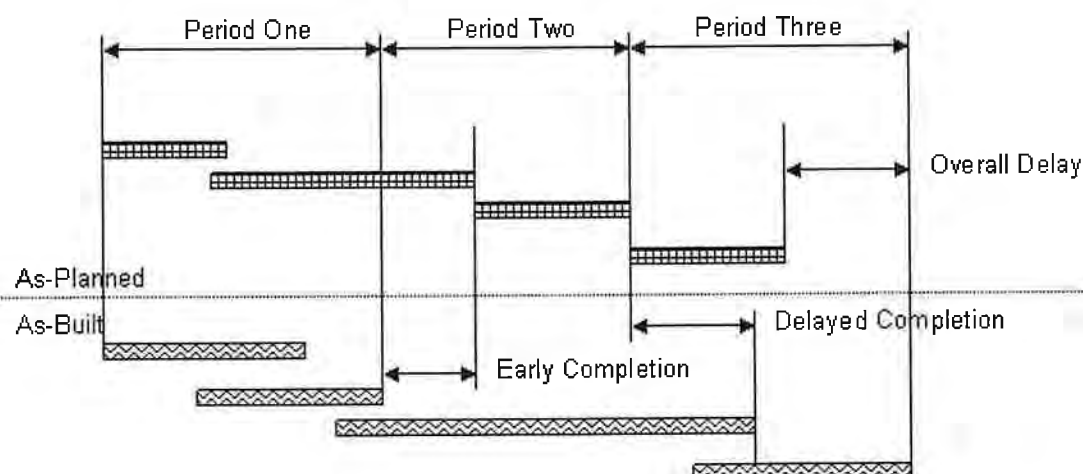


Figure 4 – Observational, Static, Periodic Method Graphic Example

In its range of implementation from simple to sophisticated, it shares the characteristics of MIP 3.1. In its simplest application, the method does not involve any *explicit* use of CPM logic and can be simply an observational study of start and finish dates of various activities. It can be performed using a simple graphic comparison of the as-planned schedule to the as-built schedule. A more sophisticated implementation compares the dates and the relative sequences of the activities, tabulates the differences in activity duration and logic ties, seeks to determine the causes, and explains the significance of each variance. In its most sophisticated application, it can identify on a daily basis the most delayed activities and candidates for the as-built critical path.

The advantage of performing this analysis in two or more time periods is that the identification of delays or accelerations can be more precisely identified to particular events. Generally the more time periods, the more closely related the analysis is to the events that actually occurred. The fact that the analysis is segmented into periods does not significantly increase or decrease the technical accuracy of this method when compared to MIP 3.1 because the comparison remains between the as-built and baseline or original as-planned schedule. However, the segmentation is useful in enhancing the organization of the analysis process and enables prioritization. It also may add to the effectiveness of the presentation of the analysis.

MIP 3.2 is classified as a static logic method because it primarily relies on the single set of CPM logic underlying the baseline schedule or other planned schedule. Note that a similar method as described in MIP 3.3 is classified as a dynamic logic method because that method uses a series of updates schedule with logic that may be different from the baseline and from each other. MIP 3.2 is distinguished from MIP 3.3 in that while the analysis is performed in segments, they are segments of the as-planned and as-built without reference to schedule updates that are contemporaneous to those segments.

The method is classified as periodic because the analysis is performed in periodic segments rather than in one continuous project period.

B. Common Names

1. As-planned vs. as-built
2. AP vs. AB
3. Planned vs. actual
4. As-planned vs. update
5. Window analysis
6. Windows analysis

C. Recommended Source Validation Protocols

1. Implement SVP 2.1 (baseline validation) and,
2. Implement SVP 2.2 (as-built validation) or,
3. Implement SVP 2.3 (update validation) and,
4. Implement SVP 2.4 (delay ID & quantification)

D. Enhanced Source Validation Protocols

[Not used.]

E. Minimum Recommended Implementation Protocols

The procedures below are essentially those of MIP 3.1, but are applied only for a specific time period which is less than the overall duration of the project. Selection of the time periods should follow Subsection 3.2.A. In this method however, the selection is primarily made for clarity of conclusions, not for greater accuracy of analysis.

The results of this analysis are summed at the end of each time analysis period. The application of this methodology involves the sequential comparison of individual activities' planned start and finish dates with actual start and finish dates. Through this comparison, a detailed summary of the delays and/or accelerations of activities can be identified. Generally, it is best to compare the LATE planned dates from a CPM schedule rather than the early dates. While contractors usually intend to perform their work in accordance with the early dates, delay to an activity cannot be measured until the activity is actually delayed—is later than the planned late dates. The basic steps in the analysis are as follows:

1. Identify the baseline or other schedule that will form the as-planned schedule. Ideally, this schedule has been approved or accepted by both parties and reflects the full scope of the work, includes proper logic from the start of the project through completion, and reflects neither progress nor post-commencement mitigations of delay. This schedule is usually a CPM model, so that even without functioning CPM logic and modeling, the original planned logic should be used in analysis and interpretation. Alternatively, a simple comparison can be performed using graphic time-scaled diagrams. In this situation, no explicit schedule logic is evident, although the sequence and timing will imply certain logical connections.
2. The comparison progresses from the earliest activity planned dates to later dates. Generally, this comparison sequence should follow the logic in the original as-planned schedule. Thus, at least until the first significant delays, the focus will be on the as-planned critical and near-critical paths.
3. The analysis should advance through the comparison by identifying for each activity: (a) delayed starts, (b) extended durations, and (c) delayed finishes. Since the as-built analysis is performed using a 7-day calendar, it is important that all durations be in calendar days. In this manner, it is possible to identify where the most significant delays occurred, in which there were mitigations of delay through implementation of out-of-sequence logic, and possible accelerations through shorter than planned durations.
4. Arithmetic calculations performed at the start and completion of each as-built activity provide a detailed view of the relative delay of every as-built activity. The most delayed series of activities can be ascertained using this method and can often be used as a starting point for identifying the as-built critical path. Expert judgment is required to identify the as-built critical path, based on industry experience and contemporaneous evidence as discussed in Subsection 4.3.C, from the various set of the most delayed activities at any particular time.
5. Simultaneous delays, whether they are pacing delays (see Subsection 4.2.B), or concurrent delays (see Subsection 4.2.A), should be identified and confirmed as being on the critical path.
6. As the analysis continues and advances through the as-planned schedule, it is likely that it will become less accurate since contemporaneous adjustments to the contractor's plan will supersede the original logic. For this reason, particular care must be exercised during the analysis of the later stages of the project.

7. Extended durations that extend the Late Finish Date for any activity should be examined for the cause. This will determine the cause of the delays along the critical path.
8. Similarly, any activities with shorter than planned durations may indicate reductions in work scope or acceleration by the contractor.
9. If time extensions have been granted, they should be considered both at the time they were granted and at the end of the analysis. Time extensions should be considered when evaluating the reasons for delayed performance identified through the comparison as well as identification of the as-built critical path. Time extensions will change the overall delay to the project and may therefore override apparent delays to specific activities.
10. Prepare a table that summarizes the variances quantified for each analysis period and reconcile the total to the result that would be obtained by a competent implementation of MIP3.1. This is intended to eliminate the possibility of skewing the result of the analysis through the use of variable periods.

If the baseline schedule has both early and late dates, the analysis should be performed using late dates unless a review of the late dates reveal that the logic associated with the late dates is significantly different than the logic of the early dates. In this situation, the analysis should be performed using early dates with the understanding that adjustments for available float may need to be considered. A schedule with logic that is incomplete or significantly different from the logic associated with the early dates should be considered for correction in accordance with Subsection 2.1.B.

The minimum implementation of this method is applicable only to relatively simple cases and should not be used for long duration cases or where there are significant changes between the original planned work scope and the final as-built scope. For the purpose of this MIP, a 'simple case' is defined as one in which there is a single clearly defined chain of activities on the longest path that stayed as the longest path throughout the performance of the project.

F. Enhanced Implementation Protocols

1. Daily Delay Measure

The as-planned vs. as-built methodology can be used in more complicated cases if the data is available. Since the basic implementation protocol is applicable only for very simple cases, this more advanced method should be used if possible. However, even this more enhanced implementation is useful only for simple projects where the sequence of work did not vary significantly from the baseline schedule.

- a. The as-built should be a fully progressed baseline schedule allowing for a one-to-one comparison of each schedule activity. This is essential as activity descriptions and ID numbers often change as the project advances.
- b. On larger schedules and projects that are active for long periods of time, it is often desirable to use a database comparison between actual dates determined from the as-built analysis with the LATE planned dates. This comparison will allow the selection of the more significant activities for graphical comparison. Prepare a table comparing the planned duration or a schedule activity to the actual duration and determine the cause for each significant variance.
- c. Prepare a table comparing the planned controlling predecessor logic of schedule activity to the actual controlling predecessor logic and determine the cause for each significant variance.

- d. If an edited baseline schedule was used, the analysis should proceed using both the unaltered baseline as well as the modified baseline. A comparison between the two sets of results will assist the analysis in identifying the likely and realistic progress of the job.
- e. Arithmetic calculations performed on a daily basis can provide significantly more accurate information if the as-built data is available at the appropriate level of detail. This method is called Daily Delay Measure (DDM). DDM is an enhanced variation for the identification of activities that are candidates for critical and near critical paths. DDM compares late start and finish dates with as-built start and finish dates.
 - It can be done on a daily, weekly, or any other periodic basis. By depicting the number of days a schedule activity is ahead or behind the planned late dates, a determination at any point of the status of any schedule activity is possible.
 - While the comparison can be made between the early start/finish dates and the actual dates, it is better to compare late start/finish dates with actual dates. By using late dates, any delay indicated by the comparison is a true delay rather than consumption of float. As a result of that exercise, any float associated with the duration of a schedule activity is excluded. Activities that have float (and accordingly are not on the as-planned critical path) will generally not appear to have been delayed during the early stages of analysis, since they will appear to be "ahead" of schedule because of their float. As the analysis progresses through a project's performance however, the activities that initially had float, if they were delayed for duration in excess of the value of that float, can become critical, thus overtaking one or more of those activities originally on the project's as-planned critical path. While late dates are preferred in performing the analysis, in some CPM schedules, late dates do not represent a consistent or practical plan for execution of the work even if the early dates do. In these cases, it is better to use early dates, taking into account the float values.
 - The DDM can also identify possible changes in the as-built critical path if the analysis is done on a frequent, possibly daily basis, even within the actual duration of activities. In this case, there are several alternative assumptions that can be made to identify progress within an activity duration: (1) if accurate progress data is available on a regular basis, this regular progress can be used (realistically this is very rare in most construction projects); (2) progress can be assumed to advance at an equal rate each period, for example a 10-day activity would be assumed to advance 10 percent each day; or (3) a different progress rate, perhaps conforming to a more typical bell-curve distribution.

G. Identification of Critical and Near-Critical Paths

In this method, the emphasis should be on the as-built critical path as opposed to the as-planned critical path. Since this methodology does not use a computational CPM, the methodology relies more extensively on expert evaluation.

- Identify and understand all related contractual language.
- From the fully populated baseline schedule, identify the calculated critical path of the as-planned using the longest path and the lowest total float concept of the validated as-planned schedule.
- From the fully populated as-built schedule, identify the near-critical path using the procedure in Subsection 4.3.C. for identifying the as-built critical path.
- Confirm and cross check these results by tracing the delays through the as-planned critical path

and near critical paths based on late as-planned dates.

- Identify the most delayed activities at every measuring point.
- Review the planned logic and evaluate any likely changes based on contemporaneous evidence.

H. Identification and Quantification of Concurrent Delays and Pacing

- Identify and understand all related contractual language.
- Determine whether literal or functional concurrency theory is to be used.
- If applicable, determine the near-critical threshold (see Subsection 4.3.).
- If applicable, determine the frequency, duration, and placement of the analysis intervals.
- Determine whether there are two simultaneous delays to activities on the critical path or two simultaneous causes of delay to a single activity on the as-built critical path.
- Determine the day each delay commenced or period within which each commenced.
- Determine the contractually responsible party for each delay by the contractor or owner at issue.
- For each delay event, distinguish the cause from the effect of delay.
- Identify and explain all relative delayed starts and extended duration of activities that are critical or near-critical.
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of precedence between the parent delay and the pacing delay.
- For each suspected pacing delay event, evaluate whether enough resources could have been realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

Identify and understand all contractual language related to delay apportionment and determine whether the contractual language would override any determination of excusability and compensability based on findings resulting from analyses performed under this RP.

Absent such overriding language, use the following procedure.

1. Excusable and Compensable Delay (ECD)

Each incremental delay along the as-built critical path should be independently quantified and the cause of the delay identified. The net Excusable & Compensable Delay (ECD) is the sum of the individual delays that: 1) were the responsibility of the owner, and 2) delayed the completion date of the project, and 3) were not concurrent with delays which were the responsibility of the contractor or *force majeure* events.

2. Excusable and Non-Compensable Delay (END)

Each incremental delay along the as-built critical path should be independently quantified and the cause of the delay identified. The net Excusable & Non-compensable Delay (END) is the sum of

the individual owner-caused delays that: 1) were *force majeure* events or were concurrent with contractor-responsible delays or *force majeure* events, and 2) delayed the completion date of the project, and 3) were not the responsibility of the contractor.

J. Identification and Quantification of Mitigation / Constructive Acceleration

Observational / Static analysis methods can note differences in logic but cannot directly quantify net critical path impact. However, there may be evidence of reduced individual activity duration, which when coupled with detailed records of increased man-hours, would serve as adequate proof of acceleration. Note that the acceleration would be evident in both critical path and non-critical path activities.

K. Specific Implementation Procedures and Enhancements

1. Fixed Periods

The analysis periods are of virtually identical duration and may coincide with regular schedule update periods.

2. Variable Periods

The analysis periods are of varying durations and are characterized by their different natures such as the type of work being performed, the types of delaying influences, significant events, changes to the critical path, revised baseline schedules, and/or the operative contractual schedule under which the work was being performed.

Fixed periods have the advantage of providing regular measurements and thus make it easier to track progress through the project. However, variable periods identified by major events on the project are often more useful since they will relate status of the delay to a specific known event.

L. Summary of Considerations in Using the Minimum Protocol

- Allows for logical segmenting of relatively longer project durations than MIP 3.1
- Suitable for analyzing short projects with minimal logic changes.
- Can be performed in a manner that is easy to understand and simple to present.
- Technically simple to perform compared to other MIP's, other than MIP 3.1. However it is still relatively time consuming when implemented correctly.
- Can be performed with very rudimentary schedules and as-built data.
- As-built activities must be closely correlated with as-planned activities.
- As-built data used must be accurate and validated.
- Does not, by itself, identify the as-built critical path.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- Provides illusion of greater detail and accuracy compared to MIP 3.1 where none exists since it still does not consider the possibility of critical path shifts either within periods or across the project.

- Does not use the contemporaneous as-planned update predictions of critical paths
- The choice of variable periods may be abused to skew the results of the analysis.
- Not suitable for project durations extending into multiple dozens of update periods.
- Not suitable for projects built in a manner significantly different than planned. The rate of error increases as the incidence of change increases.
- Not suitable for complicated projects with multiple critical paths.
- Susceptible to unintentional or intentional manipulation by choice of as-built data that is incorporated into schedule.
- May fail to identify all critical delays or time extensions, and typically does not adequately consider concurrency and pacing issues.
- Does not consider that changes to original baseline schedule may have been the actual cause of delay instead of the identified delay issues
- Typically fails to consider chronological order of delays
- Typically fails to reconcile periodic planned critical path shifts with the as-built critical path
- Not suited for clearly demonstrating acceleration due to reliance on original as-planned logic only

3.3. Observational / Dynamic / Contemporaneous As-Is (MIP 3.3)

A. Description

MIP 3.3 is a retrospective technique that uses the project schedule updates to quantify the loss or gain of time along a logic path that was or became critical and identify the activities responsible for the critical delay or gain. Although this method is a retrospective technique, it relies on the forward-looking calculations made at the time the updates were prepared. That is, it primarily uses the information to the right of the updates' data dates.

MIP 3.3 is an observational technique since it does not involve the insertion or deletion of delays but instead is based on observing the behavior of the network from update to update and measuring schedule variances based on essentially unaltered, existing schedule logic.

Because the method uses schedule updates whose logic may have changed from the previous updates as well as from the baseline, it is considered a dynamic logic method.

It is labeled contemporaneous because the updates it relies on were prepared contemporaneously with the project execution as opposed to reconstructed after-the-fact as in MIP 3.5.

Finally, the 'as-is' label distinguishes this method from MIP 3.4 by the fact that the updates are evaluated almost completely untouched or 'as is'.

While rare, it is possible that no non-progress revisions were made in the contemporaneous updates. In this situation, this method should yield a result similar to a static logic method (MIP 3.1 and 3.2) since the initial baseline logic is in place for the entire project

B. Common Names

1. Contemporaneous period analysis
2. Contemporaneous project analysis
3. Observational CPA
4. Update analysis
5. Month-to-month
6. Window analysis
7. Windows analysis

C. Recommended Source Validation Protocols

1. Implement SVP 2.1 (baseline validation) and,
2. Implement SVP 2.3 (update validation)

D. Enhanced Source Validation Protocols

1. Implement SVP 2.2 (as-built validation)
2. Implement SVP 2.4 (identification of delay events)

E. Minimum Recommended Implementation Protocols

1. Recognize all contract time extensions granted.
2. Identify the critical path activity that will be used to track the loss or gain of time for the overall network.
3. Determine whether evaluations will be done on all periods or grouped periods as described in Subsection 3.3.K.
4. Every update may not be used. However, every update should be considered. Accuracy is reduced if updates are not evaluated for multiple-month periods when schedule revisions or changes in sequence occurred to the project plan.
5. Separately identify activities that will be used to track intra-network time losses and gains, such as interim milestones.
6. Compare the update at the start of the analysis period to the update at the end of the analysis period.
7. Use the longest path and the least float criteria to identify the controlling chain of activities.
8. Identify changes (gained or lost time) in overall Project completion date based on the critical path activity identified in 3.3.E.2, and if necessary, in interim milestone completion dates.

9. Identify start and finish variances of critical and near-critical activities in the analysis period.
10. Identify all changes and/or revisions to logic, durations, and/or progress that were made during analysis period.
11. Identify responsibility for delays and gains during analysis period.
12. Continue with implementation until all periods are complete.
13. Sum the net gains and losses for each period to arrive at an overall impact to the project. The sum of the net impacts must be equal to difference between the first schedule update and last schedule update used in the evaluation.

F. Enhanced Implementation Protocols

1. Use every contemporaneous update
2. If minor logic revisions are made or schedule anomalies are corrected prepare alternate evaluations using updates without the corrections and compare the results.
3. Daily Progress Method

The application of this methodology involves identifying the delay or savings in time attributable to the project's progress between the updates by chronologically tracking progress along the critical path on a unit basis (typically the smallest planning unit used in executing the project, for example, daily), by comparing the planned timing of the activities in the first update to their actual progress as depicted in the second, and identifying the resulting effect of the project's progress. The following steps outline the application of this methodology:

- a. Identify the consecutive schedules that will be used to measure the delay or savings in time. For example, update No. 1 and update No. 2.
- b. Using a copy of the first update, insert the progress made on day 1 of the update period, as depicted in the second update, and re-status the progressed update with a data date of the next calendar day.
- c. Compare the critical paths of the first update and the progressed update to identify the activity(ies) whose progress or lack of progress affected the project's milestones.
- d. Separately measure the effect of the responsible critical activity(ies) to the project milestones. In doing so, the analyst should separately identify critical activity(ies) that cause delay and other critical activities that may show out-of-sequence progress resulting in a savings in time to the project milestones.
- e. Repeat this procedure of inserting the project's progress on a daily basis for every calendar day between the updates, while identifying and measuring the effect of progress on the critical paths of consecutive calendar days until reaching the data date of the second update.
- f. This step concludes with the creation of a totally-progressed version of the first update, with the second update's data date, that contains all of the progress contained in the second update and that depicts the status of the project before the development of the second update.

The distribution of progress to activities that made progress between the updates can determine

whether an activity becomes critical and potentially delays the project. For example, assume an activity started before the update period, made five workdays of progress during the update period, and was not completed during the update period. If there are no contemporaneous documents to identify when those five workdays of progress occurred, then the analyst has to decide when and how to depict the work occurring between the updates. The analyst could assume that the progress occurred within the first available five workdays of the period, or the last available workdays of the period, or in some other manner between the updates. Regardless of which method is chosen to distribute progress between the updates, the analyst should consistently apply the chosen method throughout the entire analysis and be able to explain why the method was chosen.

Upon completion of these steps, the analyst will be able to specifically identify the activities that were responsible for the delay or savings in time to the project's milestones during the update period and assign the resultant delay or savings to those same activities caused by the progress made between the updates. Additionally, by tracking the progress along the critical path between the updates the analyst will be able to identify shifts in the critical path.

This process is performed between all consecutive updates throughout the entire project duration.

G. Identification of Critical and Near-Critical Paths

- Identify and understand all related contractual language.
- Identify the negative float theory being used by the opposing analyst.
- For each analysis interval, identify the calculated critical path using the longest path and the lowest total float concept of the validated update(s) corresponding to the analysis interval.
- The near-critical activity-set in each analysis interval is the one that yields the most number of activities using one of the following methods:
 - lowest float value in the update PLUS the average duration of all discrete delay events contained in whole or in part inside the analysis interval, or
 - lowest float value in the update PLUS duration of the analysis interval.

H. Identification and Quantification of Concurrent Delays and Pacing

- Determine whether compensable delay by contractor or owner is at issue.
- Identify and understand all related contractual language.
- For each delay event, distinguish the cause from the effect of delay.
- Determine whether literal or functional concurrency theory is to be used.
- If applicable, determine the near-critical threshold (see Subsection 4.3.).
- If applicable, determine the frequency, duration, and placement of the analysis intervals.
- For each analysis interval, identify the critical path(s) and the near-critical path(s) and explain all relative delayed starts and extended duration of activities that occurred in the previous analysis interval on the same chains of activities.
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of

precedence between the parent delay and the pacing delay.

- For each suspected pacing delay event, evaluate whether enough resources could have been realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

Identify and understand all contractual language related to delay apportionment and determine whether the contractual language would override any determination of excusability and compensability based on findings resulting from analyses performed under this RP.

Absent contract language or other agreements, use the following procedure to determine the net total delay apportionment:

1. Non-Excusable and Non-Compensable Delay (NND)

- a. For each period analyzed, determine the longest-path delay attributable to events that are contractor-caused that occurred between the current data date and the last data date.
- b. For each period analyzed, determine the longest-path gains attributable to contractor-initiated schedule mitigation that was actually implemented, and then add the resulting values together.
- c. Make adjustment for concurrent delays due to owner-caused and *force majeure*-caused events using the selected concurrency analysis method.

2. Excusable and Compensable Delay (ECD)

- a. For each period analyzed, determine the longest-path delay attributable to events that are owner-caused that occurred between the current data date and the last data date.
- b. For each period analyzed, determine the longest-path gains attributable to owner-initiated schedule mitigation that was actually implemented, and then add the resulting values together.
- c. Make adjustment for concurrent delays due to contractor-caused and *force majeure*-caused events using the selected concurrency analysis method.

3. Excusable and Non-Compensable Delay (END)

- a. Total network delay less total NND less total ECD is the total END.

J. Identification and Quantification of Mitigation / Constructive Acceleration

The observational / dynamic analysis methods are especially well-suited for identifying and quantifying acceleration and delay mitigation through the use of logic changes. These methods allow the analyst to not only quantify the acceleration, but also determine whether the acceleration was achieved by current, actually implemented measures, or by logic changes representing promise of future acceleration.

With MIP 3.3, acceleration or delay mitigation is identified by comparing the completion date of the longest path of the previous period with that of the current period. A current date that is earlier than the previous date suggests acceleration. However, note that the value is a net number potentially representing both slippage and gain, where the gain was greater than the slippage. Thus a detailed examination of the longest path and the near-longest path surrounding the data date is necessary

along with the examination of the logic changes between the last and the current periods along those paths is necessary for a competent identification and quantification of acceleration and delay mitigation.

In order to determine whether the promised future acceleration was actually implemented, it will be necessary to compare the proposed accelerated fragnet with an as-built of the same activities. The process can become complicated if the actual execution of the accelerated scenario was hampered by delays that occurred subsequent to the formulation of the acceleration scenario.

K. Specific Implementation Procedures and Enhancements

1. All Periods

The analysis is performed for each and all contemporaneous updates. Whether the periods are of fixed or variable width is dictated by the frequency of the contemporaneous updates, not by the forensic analyst.

The all-periods implementation yields more information than the grouped-periods implementation and is considered more complete in that it identifies and measures the critical project delay for the entire project duration.. Also the grouped-periods implementation allows the analyst to ignore periods that may be unfavorable to the party for which the analysis is being performed by not explicitly showing the variances between the updates within each grouping.

2. Grouped Periods

The analysis is performed for grouped periods where each group may contain updates between two or more updates with the same planned critical path being compared for variance calculation. So for example, a group may be the period starting with the January update and ending with the May update, and contain three other updates (February, March, April). The three updates are not ignored but may not be directly utilized in quantifying the variance. The analyst should ensure that changes in the logic sequence within the grouped periods are taken into consideration in the grouped period analysis in order to avoid missing significant shifts in the critical path that could affect causal activities for delay or gain.

3. Blocked Periods

The individual periods, whether prepared in the all-periods mode or the grouped-periods mode, can be gathered into blocks for summarization. Blocking is mentioned here to distinguish the practice from grouping. Blocking is the summing of the variances obtained in several contiguous periods of an all-periods implementation, while grouping skips over the individual variance calculation for periods inside the group.

4. Changing the Contemporaneous Project Schedule During the Analysis

MIP 3.3 is an observational technique that does not involve the insertion or deletion of delays, but instead is based on observing the behavior of the network from update to update and measuring schedule variances based on unaltered, existing logic models. The analyst's preference is to identify and measure the critical project delays using the contemporaneous project schedules as they existed during the project.

However minor corrections to the contemporaneous schedules do not automatically result in a shift in classification of the analytical technique from MIP 3.3 to MIP 3.5 (Observational / Dynamic / Modified or Recreated). Certain limited corrections do not rise to the level of "recreations" or "modifications" and, thus, a MIP 3.3 analysis conducted using schedules with

limited corrections is still properly characterized as a MIP 3.3 analysis and not a MIP 3.5 analysis. Refer to Subsection 2.3.D.3 for specific changes that can be implemented under this restriction.

The preference of every analyst should be to use the contemporaneous schedules and updates as they were prepared, reviewed, approved or accepted, and used on the project. This belief is grounded in the fact that the parties used the imperfect schedules to make decisions and manage the project work. Thus, these schedules, even though not perfect, are the best representation of the parties' objectives and understanding of the project contemporaneously and are an indicator of each party's performance. However, absent contract language mandating the use of the contemporaneous schedules to quantify delay, MIP 3.3 is not so rigid that corrections to the contemporaneous schedules cannot be considered by the analyst.

All corrections should be described in the analyst's report so that the other parties and the fact finders understand the changes that the analyst made to the contemporaneous schedule.

The issue of correcting the schedule is one of balance and reasonableness and, for this reason corrections should not be made across the board or automatically. Whenever the analyst believes that changes or modifications to the contemporaneous project schedule are necessary during the analysis, it must be kept in mind that MIP 3.3, is a "self-correcting" analysis.

Finally, the analyst must also be consistent and maintain independence and objectivity. The analyst cannot limit corrections to those that have the affect of improving the analyst's client's position.

One option is to run the analysis two ways. The first run of the analysis would use the schedules as they existed contemporaneously, or unaltered. The second run of the analysis would use the schedule with the minor correction. This approach allows the finder of fact to see the difference, understand the proposed minor modification, and make a reasoned decision without having to guess what the difference would have been between the performing the analysis with the unaltered schedule and with the corrected schedule.

L. Summary of Considerations in Using the Minimum Protocol

- Cannot be implemented if contemporaneous schedule updates do not exist.
- Uses as the primary tool a set of contemporaneous schedules that are already familiar to the parties at dispute.
- Can enhance credibility if it can be shown that the project participants used the contemporaneous schedules in managing and constructing the project.
- Accounts for the dynamics of evolving events and conditions because it considers the real-time perspective of project conditions, the state of mind, and knowledge of the project participants during each update period.
- Considers the dynamic nature of the critical path because it identifies shifts in the critical path between the updates.
- Delays or savings in time can be assigned to specific activities.
- Data preparation process may be quicker than other methods that require a separate as-built schedule.

- This method can be used to identify and specifically quantify acceleration.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- The analyst may determine that the critical path responsible for project delays and gains, in hindsight, may be different from that indicated as the planned critical path shown in the contemporaneous schedule updates. Contemporaneous documentation should be provided with the analysis to support any instance of this determination.
- To yield accurate results, the contemporaneous schedule updates used in the analysis must be validated as accurate both in reported progress and in the network's representation of contemporaneous means and methods.
- Except with very simple network models, it may be difficult to distinguish schedule variances caused by non-progress revisions from schedule variances caused purely by insufficient progress. Consider MIP 3.4 to overcome this challenge.
- If date constraints were liberally used in the update schedules, analysis may be very difficult.

3.4. Observational / Dynamic / Contemporaneous Split (MIP 3.4)

A. Description

MIP 3.4 is identical to MIP 3.3 in all respects except that for each update an intermediate file is created between the current update and the previous update consisting of progress information without any non-progress revisions. Generally, the process involves updating the previous update with progress data from the current update and recalculating the previous update using the current data date. This is the intermediate schedule or the half-step schedule. The process allows the analyst to bifurcate the update-to-update schedule variances based on pure progress by evaluating the difference between the previous update and the half-step, and then the variance based on non-progress revisions by observing the difference between the half-step and the current update.

As with MIP 3.3, 3.4 is a retrospective technique that uses the project schedule updates to quantify the loss or gain of time along a logic path that was or became critical and identify the activities responsible for the critical delay or gain. Although this method is a retrospective technique, it relies on the forward-looking calculations made at the time the updates were prepared. That is, it primarily uses the information to the right of the updates' data date.

MIP 3.4 is an observational technique since it does not involve the insertion or deletion of delays, but instead is based on observing the behavior of the network from update to update and measuring schedule variances based on essentially unaltered, existing schedule logic.

Because the method uses schedule updates whose logic may have changed from the previous updates as well as from the baseline, it is considered a dynamic logic method.

It is labeled contemporaneous because the updates it relies on were prepared contemporaneously with the project execution as opposed to reconstructed after the fact as in MIP 3.5.

The 'split' label distinguishes this method from MIP 3.3 by the fact that the updates are evaluated after the bifurcation process that splits the pure progress update from the non-progress revisions.

While rare, it is possible that no non-progress revisions were made in the contemporaneous updates.

If that is the case, then MIP 3.3 is a better solution for the analysis.

B. Common Names

1. Contemporaneous period analysis
2. Contemporaneous project analysis
3. Contemporaneous schedule analysis
4. Bifurcated CPA
5. Half-stepped update analysis
6. Two-stepped update analysis
7. Month-to-month
8. Window analysis
9. Windows analysis

C. Recommended Source Validation Protocols

1. Implement SVP 2.1 (baseline validation)
2. Implement SVP 2.3 (update validation)
3. Implement SVP 2.2 D.2 (as-built validation)

D. Enhanced Source Validation Protocols

1. Implement SVP 2.2 (as-built validation)
2. Implement SVP 2.4 (identification of delay events)

E. Minimum Recommended Implementation Protocols

1. Recognize all contract time extensions granted.
2. Identify the critical path activity that will be used to track the loss or gain of time for the overall network.
3. Determine whether evaluations will be done on all periods or grouped periods as described in Subsection 3.4.K.
4. Every update may not be used. However, every update should be considered. Accuracy is reduced if updates are not evaluated for multiple-month periods when schedule revisions or changes in sequence occurred to the project plan..
5. Separately identify activities that will be used to track intra-network time losses and gains, such as on interim milestones.
6. Create a copy of the as-planned schedule and each of the update schedules for use in analysis

as the bifurcated updates.

7. Import progress from the next update into each of the newly created bifurcated updates for use in identifying progress only gains and losses.
8. Compare the update at the start of the analysis period to the progress-only bifurcated update, and then compare that progress-only bifurcated update to the update at the end of the analysis period.
9. Use both the longest path and the least float criteria to identify the controlling chain of activities.
10. Identify changes (gained or lost time) in overall Project completion date based on the critical path activity identified in 3.4.E.2, and if necessary, in interim milestone completion dates.
11. Identify start and finish variances of critical and near-critical activities in the analysis period.
12. Identify all changes and/or revisions to logic, durations, and/or progress that were made during analysis period.
13. Sum the net gains and losses for the update at the start of the update period and the bifurcated update for that same period. The net gains and losses must equal the net gains and losses between the start of the update period and the start of the next update period.
14. Identify responsibility for delays and gains during analysis period.
15. Continue with implementation until all periods are complete
16. Sum the net gains and losses for each period to arrive at an overall impact to the project. The sum of the net impacts must be equal to difference between the first schedule update and last schedule update used in the evaluation.

F. Enhanced Implementation Protocols

1. Use every contemporaneous update
2. If minor logic revisions are made or schedule anomalies are corrected prepare alternate evaluations using updates without the corrections and compare the results.
3. Daily Progress Method (see Subsection 3.3.F.1)

G. Identification of Critical and Near-Critical Paths

- Identify and understand all related contractual language.
- Identify the negative float theory being used by the opposing analyst.
- For each analysis interval, identify the calculated critical path using the longest path and the lowest total float concept of the validated update(s) corresponding to the analysis interval.
- The near-critical activity-set in each analysis interval is the one that yields the most number of activities using one of the following methods:
 - lowest float value in the update PLUS the average duration of all discrete delay events contained in whole or in part inside the analysis interval, or

- lowest float value in the update PLUS duration of the analysis interval.

H. Identification and Quantification of Concurrent Delays and Pacing

- Determine whether compensable delay by contractor or owner is at issue.
- Identify and understand all related contractual language.
- For each delay event, distinguish the cause from the effect of delay.
- Determine whether literal or functional concurrency theory is to be used.
- If applicable, determine the near-critical threshold (see Subsection 4.3.)
- If applicable, determine the frequency, duration, and placement of the analysis intervals.
- For each analysis interval, identify the critical path(s) and the near-critical path(s) and explain all relative delayed starts and extended duration of activities that occurred in the previous analysis interval on the same chains of activities.
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of precedence between the parent delay and the pacing delay.
- For each suspected pacing delay event, evaluate whether enough resources could have been realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

(See Subsection 3.3.I)

J. Identification and Quantification of Mitigation / Constructive Acceleration

The observational / dynamic analysis methods are especially well-suited for identifying and quantifying acceleration and delay mitigation through the use of logic changes. These methods allow the analyst to not only quantify the acceleration, but also determine whether the acceleration was achieved by current, actually implemented measures, or by logic changes representing the promise of future acceleration.

The difference between this method and MIP 3.3 is that the bifurcation of each update into half-steps in MIP 3.4 makes it much easier to identify acceleration and delay mitigation that results from logic changes.

As with MIP 3.3, in 3.4, acceleration or delay mitigation is identified by comparing the completion date of the longest path of the previous period with that of the current period. A current date that is earlier than the previous date suggests acceleration. However, note that the value is a net number potentially representing both slippage and gain, where the gain was greater than the slippage. Thus, a detailed examination of the longest path, the near-longest path surrounding the data date, and the examination of the logic changes between the last and the current periods along those paths are necessary for a competent identification and quantification of acceleration and delay mitigation.

In order to determine whether the promised future acceleration was actually implemented, it will be necessary to compare the proposed accelerated fragnet with an as-built of the same activities. The process can become complicated if the actual execution of the accelerated scenario was hampered by delays that occurred subsequent to the formulation of the acceleration scenario.

K. Specific Implementation Procedures and Enhancements

1. All Periods

The analysis is performed for each and all contemporaneous updates. Whether the periods are of fixed or variable width is dictated by the frequency of the contemporaneous updates, not by the forensic analyst.

The all-periods implementation yields more information than the grouped-periods implementation and is considered more complete in that it identifies and measures the critical project delay for the entire project duration.. Also the grouped-periods implementation allows the analyst to ignore periods that may be unfavorable to the party for which the analysis is being performed by not explicitly showing the variances between the updates within each grouping.

2. Grouped Periods

The analysis is performed for grouped periods where each group may contain updates between the two updates being compared for variance calculation. So for example, a group may be the period starting with the January update and ending with the May update, and contain three other updates (February, March, April). The three updates are analyzed just as they would be analyzed if they were not grouped and the results would be the same, whether grouped or not. The analyst should ensure that changes in the logic sequence within the grouped periods are taken into consideration in the grouped period analysis in order to avoid missing significant shifts in the critical path that could affect causal activities for delay or gain.

3. Blocked Periods

The individual periods, whether prepared in the all-periods mode or the grouped-periods mode can be gathered into blocks for summarization. Blocking is mentioned here to distinguish the practice from grouping.

4. Bifurcation: Creating a Progress-Only Half-Step Update

Bifurcation (a.k.a. half-stepping or two-stepping) is a procedure to segregate progress reporting from various non-progress revisions inherent in the updating process. Elements that are considered to be non-progress revisions include:

- Addition or deletion of activities
- Split or combined activities, using new activity IDs
- Addition or deletion of logic links
- Changes to lag value of logic links
- Addition, deletion or changes to constraints
- Changes to OD
- Increase in RD such that RD becomes greater than OD
- Changes to RD not accompanied by changes to PCT
- Increase in RD of activities that have not started

- Changes to calendar assignments
- Changes to holiday assignments within a pre-existing calendar

The following is one of several step-by-step procedures used to perform the bifurcation:

- a. Make a copy of the baseline or an updated schedule for which a half-step is to be created. The original baseline or update will be referred to herein as 01 and the copy as H1.
- b. Update the copy, H1, using the progress data from the next schedule update [referred to herein as 02] for the following fields:
 - i. Actual start
 - ii. Actual finish
 - iii. Increased percent complete
 - iv. Decreased remaining duration
- c. Recalculate schedule H1 by setting the data date⁶ to that used by 02.
- d. The variance between the completion dates of H1 compared to that of 01 represents the slippage or gain due to progress during the update period.
- e. The variance between the completion dates of H1 compared to that of 02 represents the slippage or gain due to non-progress revisions made in 02.
- f. These two variance values add up to the variance between 01 and 02.
- g. The validity of the H1 file should be checked by comparing the duration of the update period (that is, the difference between the two data dates) to the progress variance. If the progress variance value is greater than the duration of the update period, there are two possible explanations:
 - i. The first one is that there is a 'pseudo-non-progress revision' such as an increase in RD-value found itself in the H1 file. This needs to be fixed.
 - ii. The second possibility is that the lack of progress during the update period pushed subsequent activities into a period of no-work defined by the calendar. This does not need to be fixed.
- h. Elements that are considered to be nuisances or complications that require case-by-case intervention by the analyst include:
 - i. Significant changes in activity descriptions to a schedule activity occupying a preexisting activity ID
 - ii. Assignments of a different activity ID to a preexisting schedule activity
 - iii. Changes in actual start or actual finish values previously reported

⁶ Note that in some software packages, for example, Microsoft Project, the default setting need to be changed to recognize the concept of the data date.

- iv. Any change in calculation mode such as progress override and retained logic

Reversal of previously reported progress (i.e. deprogressing) by either increasing the value of remaining duration of the activity over the previously stated value or decreasing the percentage-complete value under what was previously reported.

5. Changing the Contemporaneous Project Schedule During the Analysis

MIP 3.4 is an observational technique that does not involve the insertion or deletion of delays, but instead is based on observing the behavior of the network from update to update and measuring schedule variances based on unaltered, existing logic models. The analyst's preference is to identify and measure the critical project delays using the contemporaneous project schedules as they existed during the project.

However minor corrections to the contemporaneous schedules do not automatically result in a shift in classification of the analytical technique from MIP 3.4 to MIP 3.5 (Observational / Dynamic / Modified or Recreated). Certain limited corrections do not rise to the level of "recreations" or "modifications" and, thus, a MIP 3.4 analysis conducted using schedules with limited corrections is still properly characterized as a MIP 3.4 analysis and not a MIP 3.5 analysis. Refer to Subsection 2.3.D.3 for specific changes that can be implemented under this restriction.

The preference of every analyst should be to use the contemporaneous schedules and updates as they were prepared, reviewed, approved or accepted, and used on the project. This belief is grounded in the fact that the parties used the imperfect schedules to make decisions and manage the project work. Thus, these schedules, even though not perfect, are the best representation of the parties' objectives and understanding of the project contemporaneously and are an indicator of each party's performance. However, absent contract language mandating the use of the contemporaneous schedules to quantify delay, MIP 3.4 is not so rigid that corrections to the contemporaneous schedules cannot be considered by the analyst.

All corrections should be described in the analyst's report so that the other parties and the fact finders understand the changes that the analyst made to the contemporaneous schedule.

The issue of correcting the schedule is one of balance and reasonableness and, for this reason corrections should not be made across the board or automatically. Whenever the analyst believes that changes or modifications need to be implemented in the contemporaneous project schedules during the analysis, it should be noted that MIP 3.4, is a "self-correcting" analysis since it uses each of the successive contemporaneous schedule updates rather than progressing a single schedule.

Finally, the analyst must also be consistent and maintain independence and objectivity. The analyst cannot limit corrections to those that have the affect of improving the analyst's client's position.

One option is to run the analysis two ways. The first run of the analysis would use the schedules as they existed contemporaneously, or unaltered. The second run of the analysis would use the schedule with the minor correction. This approach allows the finder of fact to see the difference, understand the proposed minor modification, and make a reasoned decision without having to guess what the difference would have been between the performing the analysis with the unaltered schedule and with the corrected schedule.

L. Summary of Considerations in Using the Minimum Protocol

- Allows for easier identification of schedule slippage and gains due to schedule revisions and

other non-progress factors compared to MIP 3.3

- Cannot be implemented if contemporaneous schedule updates do not exist.
- Uses as the primary tool a set of contemporaneous schedules that are already familiar to the parties at dispute.
- Can enhance credibility if it can be shown that the project participants used the contemporaneous schedules in managing and constructing the project.
- Accounts for the dynamics of evolving events and conditions because it considers the real-time perspective of project conditions, the state of mind, and knowledge of the project participants during each update period
- Considers the dynamic nature of the critical path because it identifies shifts in the critical path between the updates
- Delays or savings in time can be assigned to specific activities.
- Data preparation process may be quicker than other methods that require a separate as-built schedule.
- This method can be used to identify and specifically quantify acceleration.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- The analyst may determine that the critical path responsible for project delays and gains, in hindsight, may be different from that indicated as the planned critical path shown in the contemporaneous schedule updates. Contemporaneous documentation should be provided with the analysis to support any instance of this determination.
- To yield accurate results, the contemporaneous schedule updates used in the analysis must be validated as accurate both in reported progress, according to SVP 2.2, and in the network's representation of contemporaneous means and methods, according to SVP 2.3.
- If date constraints were liberally used in the update schedules, analysis may be very difficult.

3.5. Observational / Dynamic / Modified or Recreated (MIP 3.5)

A. Description

MIP 3.5 looks like MIPs 3.3 or 3.4 except that it uses contemporaneous schedule updates that were extensively modified or 'updates' that were completely recreated. MIP 3.5 is usually implemented when contemporaneous updates are not available or never existed. The fact that it does not use the contemporaneous updates places this method in a fundamentally different category from the standpoint of the nature of source input data.

It is a retrospective technique that uses the modified or recreated schedule updates to quantify the loss or gain of time along a logic path that was or became critical and identify the activities responsible for the critical delay or gain. Although this method is a retrospective technique, it relies on the forward-looking calculations made at the time the updates would have been prepared. That is, it primarily uses the information to the right of the updates' data date.

While MIP 3.5 is still categorized as an observational technique since it does not involve the insertion

or deletion of delays, it is not purely observational when seen in the context of the level of data intervention by the analyst. MIP's 3.3 and 3.4 are purely observational in the sense that the analyst is interpreting what is observed in the behavior of the network from update to update and measuring schedule variances based on unaltered, existing logic models. Because of extensive data intervention by the analyst when using MIP 3.5, the observation is made on the behavior of the networks on which the analyst had significant control.

If there were non-progress revisions to the baseline during the project, the method must recognize those non-progress revisions. Otherwise, the modification or the reconstruction is not complete or proper. As such, a properly implemented MIP 3.5 is considered a Dynamic Logic method. If non-progress revisions did not occur on the project, the results of MIP 3.5 would be very similar to one that would result from MIP 3.2.

MIP 3.5 can be implemented with or without the half-step process. Unlike the contemporaneous MIP's 3.3 and 3.4, the label 'as-is' is an irrelevant distinction from the 'split.' This is because the modification or reconstruction is under the control of the analyst.

Note that an implementation can be a mixture of some MIP 3.3/3.4 and some MIP 3.5 if some contemporaneous schedules are used and some non-contemporaneous ones are newly created. This occurs often when there are large gaps in the record of contemporaneous updates due to data loss or the fact that updates were not performed for a long period of time during the project. Therefore, just because some schedules used for the analysis are not contemporaneous, it does not necessarily make the entire method an MIP 3.5

B. Common Names

1. Update analysis
2. Reconstructed update analysis
3. Modified update analysis
4. Month-to-month
5. Window analysis
6. Windows analysis

C. Recommended Source Validation Protocols

1. Implement SVP 2.3 (update validation) and,
2. Implement SVP 2.3 D.1 or D.2 (reconstruction) and,
3. Implement SVP 2.1 (baseline validation).

D. Enhanced Source Validation Protocols

1. Implement SVP 2.2 (as-built validation)
2. Implement SVP 2.4 (identification of delay events)

E. Minimum Recommended Implementation Protocols

1. Recognize all contract time extensions granted.
2. Identify the critical path activity that will be used to track the loss or gain of time for the overall network.
3. Determine whether evaluations will be done on all periods or grouped periods as described in Subsection 3.3.K.
4. Every update may not be used. However, every update should be considered. Accuracy is reduced if updates are not evaluated for multiple-month periods when schedule revisions or changes in sequence occurred to the project plan.
5. Separately identify activities that will be used to track intra-network time losses and gains, such as on interim milestones.
6. Compare the update at the start of the analysis period to the update at the end of the analysis period.
7. Use both the longest path and the least float criteria to identify the controlling chain of activities.
8. Identify changes (gained or lost time) in overall Project completion date based on the critical path activity identified in 3.4.E.2, and if necessary.
9. Identify start and finish variances of critical and near-critical activities in the analysis period.
10. Identify all changes and/or revisions to logic, durations, and/or progress that were made during analysis period.
11. Identify responsibility for delays and gains during analysis period.
12. Continue with implementation until all periods are complete.
13. Sum the net gains and losses for each period to arrive at an overall impact to the project. The sum of the net impacts must be equal to difference between the first schedule update and last schedule update used in the evaluation.

F. Enhanced Implementation Protocols**1. Daily Progress Method**

(See Subsection 3.3.F.1)

G. Identification of Critical and Near-Critical Paths

- Identify and understand all related contractual language.
- Identify the negative float theory being used by the opposing analyst.
- For each analysis interval, identify the calculated critical path using the longest path and the lowest total float concept of the validated update(s) corresponding to the analysis interval.
- The near-critical activity-set in each analysis interval is the one that yields the most number of

activities using one of the following methods:

- lowest float value in the update PLUS the average duration of all discrete delay events contained in whole or in part inside the analysis interval, or
- lowest float value in the update PLUS duration of the analysis interval.

H. Identification and Quantification of Concurrent Delays and Pacing

- Determine whether compensable delay by contractor or owner is at issue.
- Identify and understand all related contractual language.
- For each delay event, distinguish the cause from the effect of delay.
- Determine whether literal or functional concurrency theory is to be used.
- If applicable, determine the near-critical threshold (see Subsection 4.3).
- If applicable, determine the frequency, duration, and placement of the analysis intervals.
- For each analysis interval, identify the critical path(s) and the near-critical path(s) and explain all relative delayed starts and extended duration of activities that occurred in the previous analysis interval on the same chains of activities.
- In cases where the difference in full-hindsight approach versus 'blindsight' approach results in a significance variance, use both approaches for evaluation of concurrency.
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of precedence between the parent delay and the pacing delay.
- For each suspected pacing delay event, evaluate whether enough resources could have been realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

(See MIP 3.3.)

J. Identification and Quantification of Mitigation / Constructive Acceleration

(See MIP 3.3.)

K. Specific Implementation Procedures and Enhancements

1. Fixed Periods

The analysis periods are of virtually identical duration and may coincide with regular schedule update periods. Note that the fixed period implementation can be further processed into Grouped or Blocked implementation as described in MIP's 3.3 and 3.4.

2. Variable Periods

The analysis periods are of varying durations and are characterized by their different natures such as the type of work being performed, the types of delaying influences, or the operative

contractual schedule under which the work was being performed.

3. Fixed-Periods vs. Variable-Periods

Similar to the comparison between the all-periods implementation and the grouped-periods implementation for MIP's 3.3 and 3.4, a frequent-fixed-periods implementation yields more information than the infrequent-variable-periods implementation, and is considered more precise. The infrequent-variable-periods implementation allows the analyst to skip over periods that may be unfavorable to the party for which the analysis is being performed.

L. Summary of Considerations in Using the Minimum Protocol

- Able to simulate MIP's 3.3 and/or 3.4 without the benefit of reliable contemporaneous schedule updates if update modification and/or reconstruction is reliable.
- Requires, at the least, a baseline schedule and a reliable source of as-built dates.
- Typically, the smaller the number of modifications to the contemporaneous schedule updates, the more credible the results of the analysis.
- Allows for the consideration of the dynamic nature of the critical path because it identifies shifts in the critical path between the updates even if reliable contemporaneous schedule updates do not exist.
- Allows for the use of hindsight progress updates to simulate the actual critical path.
- Delays can be assigned to specific activities.
- Data preparation process may be quicker than other methods that require compilation of a separate detailed as-built schedule.
- This method can be used to identify acceleration.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- Where updates are recreated, it is perceived to be an after-the-fact analysis that fails to consider logic changes that would have been incorporated in view of contemporaneous project circumstances.
- Does not have the benefit of source schedules that are already familiar to the parties at dispute.
- To be credible, recreated schedule updates must be accurate both in reported progress to date and in the network's representation of contemporaneous means, and consistent with other project documentation during the update periods reflecting the real-time perspective of project conditions, the state of mind, and knowledge of the project participants.
- Progress reported for activity performance spanning more than one period must be supported by reasonable means.
- Relatively time consuming and therefore costly to implement compared to MIP's 3.3 or 3.4 because it requires substantial support to justify the modifications or the reconstruction.
- The analyst should anticipate significantly more scrutiny and challenges regarding the reliability of the data and logic.

- The analyst may determine that the critical path responsible for project delays and gains, in hindsight, may be different from that indicated as the planned critical path shown in the contemporaneous schedule updates. Contemporaneous documentation should be provided with the analysis to support any instance of this determination.
- Except with very simple network models, it may be difficult to distinguish schedule variances caused by non-progress revisions from schedule variances caused purely by insufficient progress. The reliability of the project documentation to support distinguishing non-progress revision variances from insufficient progress variations will affect the reliability of the analysis.

3.6. Modeled / Additive / Single Base (MIP 3.6)

A. Description

MIP 3.6 is a modeled technique since it relies on a simulation of a scenario based on a CPM model. The simulation consists of the insertion or addition of activities representing delays or changes into a network analysis model representing a plan to determine the hypothetical impact of those inserted activities to the network. Hence, it is an additive model.

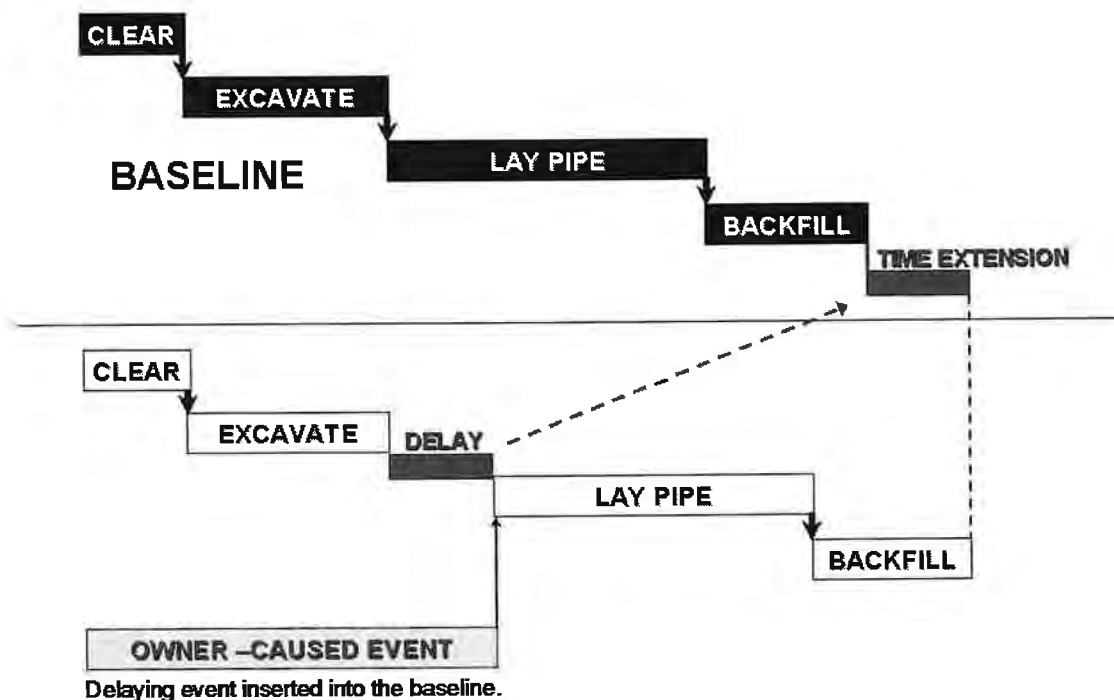


Figure 5 – Graphic Example: Modeled, Additive, Single Base

MIP 3.6 is a single base method, distinguished from MIP 3.7 as a multiple base method. The additive simulation is performed on one network analysis model representing the plan. Hence, it is a static logic method as opposed to a dynamic logic method.

MIP 3.6 can be used prospectively or retrospectively. Prospectively, it can be used to forecast future impacts; for description and implementation⁷, see AACE Recommended Practice 52R-06 *Time*

⁷ See AACE Recommended Practice No. 52R-06 *Time Impact Analysis – As Applied in Construction*.

Impact Analysis – As Applied in Construction. Retrospectively, as described here, it relies on the forward-looking calculations to the right of the data date.

B. Common Names

1. Impacted as-planned (IAP)
2. Impacted baseline (IB)
3. Plan plus delay
4. Impacted update analysis
5. Time impact analysis (TIA)
6. Time impact evaluation (TIE)
7. Fragnet insertion
8. Fragnet analysis

C. Recommended Source Validation Protocols

1. Implement SVP 2.1 (baseline validation) or,
2. Implement SVP 2.3 (update validation) and,
3. Implement SVP 2.4 (delay ID and quantification).

D. Enhanced Source Validation Protocols

1. Implement SVP 2.2 (as-built validation)

E. Minimum Recommended Implementation Protocols

1. Recognize all contract time extensions granted.
2. Identify and quantify delays that are to be evaluated, including source documents on which they are based.
3. Select the planned network to be utilized as the “un-impacted schedule”. If not using the baseline, select the contemporaneous update that existed just prior to the initial delay that is to be evaluated. Unless very accurate daily project documentation data is available, there is generally no improvement in analysis accuracy with an attempt to status the update schedule to the beginning of the delay(s) over the use of the analysis update statused to the data date used for the selected period
4. Insert an activity or activities (fragnet) into the “un-impacted schedule” to represent the selected delay(s).
5. Calculate or schedule the new schedule created by the “un-impacted schedule” with the fragnet or activity inserted. In the most basic implementations (i.e. bar chart evaluation) it may be necessary to calculate the impact by hand. The resultant network is considered the “impacted schedule”.

6. Zero out the durations of all activities in the added fragnet and verify that when calculated, there is no change to the completion date from the un-impacted schedule completion date. This verifies that there is no added logic in the fragnet that creates a delay.
7. Ensure that the resulting schedule has at least one continuous critical path, using the longest path criterion that starts at NTP or some earlier start milestone and ends at a finish milestone, which is the latest occurring schedule activity in the network, after the insertion of delay activities.
8. Compare the Project completion date of the impacted and un-impacted schedules to determine the impact of the inserted fragnet(s).
9. Tabulate and justify each change made to the baseline used to create the impacted as-planned.
10. Use both the longest path and the least float criteria to identify the controlling chain of activities.
11. Quantify net delays and gains.

F. Enhanced Implementation Protocols

1. Analysis accompanied by a listing of known significant delays that are not incorporated into the model.
2. Compare the impacted schedule to the as-built and explain the variances between the two schedules for all significant chains of activities.

G. Identification of Critical and Near-Critical Paths

- Identify and understand all related contractual language.
- Identify the negative float theory being used by the opposing analyst.
- From the baseline schedule, identify the calculated critical path of the baseline using the longest path and the lowest total float concept of the validated baseline.
- The near-critical activity-set is the one that yields the most number of activities using one of the following methods:
 - the lowest float value in the pre-insertion baseline network PLUS the maximum duration of all the inserted delays, or
 - the float value of the pre-insertion baseline longest path PLUS the maximum duration of all the inserted delays, or
 - the lowest float value in the pre-insertion baseline PLUS the average duration of the periods of schedule updates or revisions generated during the project.
- Stepped insertion should be in chronological order of the occurrence of the delay event.

H. Identification and Quantification of Concurrent Delays and Pacing

In its minimum implementation, concurrency cannot be evaluated by this method. The procedure below outlines some enhancements over the minimum implementation that would allow limited evaluation of concurrent delays using this method.

- Determine whether compensable delay by contractor or owner is at issue.

- Identify and understand all related contractual language.
- For each delay event, distinguish the cause from the effect of delay.
- Determine whether literal or functional concurrency theory is to be used.
- If applicable, determine the near-critical threshold (see Subsection 4.3).
- If applicable, determine the frequency, duration, and placement of the analysis intervals.
- Compare the pre-insertion baseline to the as-built and discretely identify and classify by causation all delays on those chains of activities that are near-critical in the pre-insertion baseline schedule.
- Insert the delays found in the previous step into the pre-insertion baseline and compare the result with the impacted baseline that resulted from the insertion of the claimed delays.
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of precedence between the parent delay and the pacing delay.
- For each suspected pacing delay event, evaluate whether enough resources could have been realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

Identify and understand all contractual language related to delay apportionment and determine whether the contractual language would override any determination of excusability and compensability based on findings resulting from analyses performed under this RP.

Absent contract language or other agreements, use the following procedure to determine the net total delay apportionment:

1. Excusable and Compensable Delay (ECD)

An additive-modeled schedule by itself does not account for concurrent delays and is therefore unsuitable for determining compensability to the claimant. However, it is possible to analyze for *approximate* concurrency by comparing two additive-modeled schedules. To do this:

- a. Create one additive model by inserting all owner-caused and *force majeure*-caused impact events into the baseline.
- b. Create another additive model by inserting all contractor-caused impact events into the baseline.
- c. Compare the two resulting schedules. To the extent that the net delay-effect beyond the baseline completion date overlaps, there is concurrency.
- d. The extent to which the completion date of the additive model with the owner-impact is later than that of the other additive model with the contractor-impact, *may* be the quantity of ECD, but only to the extent that the impacted completion date does not exceed the actual completion date.

2. Non-Excusable and Non-Compensable Delay (NND)

An additive-modeled schedule by itself does not account for concurrent delays and is therefore

unsuitable for determining compensability to the respondent or liquidated/stipulated damages. However, it is possible to analyze for *approximate* concurrency by comparing two additive-modeled schedules. To do this:

- a. Create one additive model by inserting all owner-caused and *force majeure*-caused impact events into the baseline.
- b. Create another additive model by inserting all contractor-caused impact events into the baseline.
- c. Compare the two resulting schedules. To the extent that the net delay-effect beyond the baseline completion date overlaps there is concurrency.
- d. The extent to which the completion date of the additive model with the contractor-impact is later than that of the other additive model with the owner-impact, *may* be the quantity of NND, but only to the extent that the impacted completion date does not exceed the actual completion date.

3. Excusable and Non-Compensable Delay (END)

- a. Insert all owner-caused and *force majeure*-caused impact events into the baseline and recalculate the schedule.
- b. The difference between the baseline completion of the longest path and the completion of the longest path in the additive model is the END.
- c. If the completion of the longest path in the additive model is later than the actual completion date, the END is the difference between the baseline completion and the actual completion dates.

J. Identification and Quantification of Mitigation / Constructive Acceleration

The comparison between the completion date of the longest path of the additive model and the actual completion date will provide a gross approximation of acceleration or delay mitigation. This is based on the theory that if non-contractor delays inserted into the baseline yield a completion date that is later than that actually achieved, it must have resulted from shortening of actual performance duration and/or the use of more aggressive logic. Note that the gross comparison does not provide the detail necessary in order to address the issue of who gets the credit for the acceleration.

K. Specific Implementation Procedures and Enhancements

1. Global Insertion

Once the Baseline Schedule is identified then all known delaying events are added to this schedule. In the global insertion method, all delay events and influences are added together and the impact is determined on the combined effect of the added delays. If the analyst is trying to document the total impact of all delay events then insertion of all events at one time may accomplish this task.

2. Stepped Insertion

The delays are added individually or in groups to the Baseline Schedule and the impact is determined after each iterative insertion. If the analyst is concerned with the impact of each delay event then the events should be inserted in chronological order of occurrence of the event in

order to reflect actual circumstances If the events are introduced into the delay analysis individually, the impacted completion date should be recorded after each delay is included.

For each delay event introduced into this analysis one must be able to document the duration of the delay, and the predecessor and successor activities related to the delay, in order to perform this method objectively.

L. Summary of Considerations in Using the Minimum Protocol

- Suited primarily for the use in identifying and quantifying potential delays rather than actual delays.
- This method can be used to quantify non-compensable time extensions, but cannot, by itself, quantify compensable delays because it does not account for concurrent or pacing delays.
- This method can be used to identify acceleration, although actual performance that is better than predicted by use of this method does not, in and of itself, necessarily demonstrate active implementation of acceleratory measures.
- Intuitively easy to understand and present, and can be understood especially by those that do not have a construction background.
- Does not require an as-built schedule or contemporaneous schedule updates.
- Can be implemented relatively easily and quickly compared to other MIP's, but is of limited reliable use.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- Because it does not rely on as-built data, it is a hypothetical model, especially where the project is actually constructed differently than the baseline schedule logic.
- Susceptible to unintended or intended manipulation due to modeling if only one party's delays are considered, since the method cannot account for the impact of delays not explicitly inserted.
- Accuracy of the duration of critical path impact for any given delay event degrades in proportion to the chronological distance of the delay event from the data date of the schedule.
- Since it relies only on the initial as-planned critical path to analyze delays, it does not account for changes in logic or durations of activities
- Does not necessarily consider the chronological order of delays.
- Extremely sensitive to the order of fragnet and logic insertion.

3.7. Modeled / Additive / Multiple Base (MIP 3.7)

A. Description

MIP 3.7 is a modeled technique since it relies on a simulation of a scenario based on a CPM model. The simulation consists of the insertion or addition of activities representing delays or changes into a network analysis model representing a plan to determine the hypothetical impact of those inserted activities to the network. Hence, it is an additive model.



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MIP 3.7 is a multiple base method, distinguished from MIP 3.6 as a single base method. The additive simulation is performed on multiple network analysis models representing the plan, typically an update schedule, contemporaneous, modified contemporaneous, or recreated. Each base model creates a period of analysis that confines the quantification of delay impact.

Because the updates typically reflect non-progress revisions, it is a dynamic logic method as opposed to a static logic method.

MIP 3.7 is a retrospective analysis since the existence of the multiple periods means the analyst has the benefit of hindsight.

B. Common Names

1. Window analysis
2. Windows analysis
3. Impacted update analysis
4. Time impact analysis (TIA)
5. Time impact evaluation (TIE)
6. Fragnet insertion
7. Fragnet analysis

C. Recommended Source Validation Protocols

1. Implement SVP 2.1 (baseline validation) and,
2. Implement SVP 2.3 (update validation) and,
3. Implement SVP 2.4 (delay ID and quantification)

D. Enhanced Source Validation Protocols

1. Implement SVP 2.2 (as-built validation)

E. Minimum Recommended Implementation Protocols

1. Recognize all contract time extensions granted.
2. Identify and quantify delays that are to be evaluated, including source documents on which they are based.
3. Select the as-planned network to be utilized as the "un-impacted schedule". If not using the baseline, select the contemporaneous update that existed just prior to the initial delay that is to be evaluated.
4. Identify the schedule updates, or recreated updates, that correlate to the beginning of each analysis interval. Unless very accurate daily project documentation data is available, there is generally no improvement in analysis accuracy with an attempt to status the update schedules to the beginning of the delay(s) over the use of the analysis updates statused to the data dates used

for each period.

5. Insert an activity or activities (fragnet) into the “un-impacted schedule” to represent the selected delay(s). Ensure that the impact events are chronologically inserted into the proper updated schedules.
6. Calculate or schedule the new schedule created using the “un-impacted schedule” with the fragnet or activity inserted. In the most basic implementations (i.e. bar chart evaluation) it may be necessary to calculate the impact by hand. The resultant network is considered the “impacted schedule”.
7. Zero out the durations of all activities in the added fragnet and verify that when calculated, there is no change to the completion date from the un-impacted schedule completion date. This verifies that there is no added logic in the fragnet that creates a delay situation.
8. Ensure that the resulting schedule has at least one continuous critical path, using the longest path criterion that starts at NTP or some earlier start milestone and ends at a finish milestone, which is the latest occurring schedule activity in the network, after the insertion of delay activities.
9. Tabulate and justify each change made to an update schedule to create the impacted schedule. Insert model fragnets in the correct updated schedule containing previous impacts, period by period.
10. Use both the longest path and the least float criteria to identify the controlling chain of activities.
11. A new analysis period needs to be established with each significant change in the critical path chain of activities, and with each available contemporaneous update schedule.
12. Correlate the impacted schedule with each available contemporaneous update, identifying and using either hindsight or blindsight for establishing remaining durations for the incomplete fragnet activities.
13. Quantify net delays and gains.
14. Prepare a tabulation that summarizes the variances quantified for each analysis period and reconcile the total to the result that would be obtained by a competent implementation of MIP 3.1.

F. Enhanced Implementation Protocols

1. Analysis is accompanied by a listing of known significant delays not incorporated into the model.
2. Compare the impacted schedule to the as-built and explain the variances between the two schedules for all significant chains of activities.
3. Use accepted baseline, updates and schedule revisions.

G. Identification of Critical and Near-Critical Paths

- Identify and understand all related contractual language.
- Identify the negative float theory being used by the opposing analyst.
- For each analysis interval, identify the calculated critical path using the longest path and the lowest total float concept of the pre-insertion validated update(s) corresponding to the analysis

interval.

- The near-critical activity-set in each analysis interval is the one that yields the most number of activities using one of the following methods:
 - float value of the longest path in the pre-insertion validated update PLUS the maximum duration of all discrete delay events inserted in whole or in part inside the analysis interval, or
 - lowest float value in the pre-insertion validated update PLUS the maximum duration of all discrete delay events inserted in whole or in part inside the analysis interval, or
 - lowest float value in the update PLUS duration of the analysis interval.
- Stepped insertion should be in chronological order of the occurrence of the delay event.

H. Identification and Quantification of Concurrent Delays and Pacing

- Determine whether compensable delay by contractor or owner is at issue.
- Identify and understand all related contractual language.
- For each delay event, distinguish the cause from the effect of delay.
- Determine whether literal or functional concurrency theory is to be used.
- If applicable, determine the near-critical threshold (see Subsection 4.3.)
- If applicable, determine the frequency, duration, and placement of the analysis intervals.
- For each analysis interval, compare the pre-insertion schedule update(s) corresponding to the analysis interval to the as-built, and discretely identify and classify by causation all delays on those chains of activities that are near-critical in the pre-insertion schedule update.
- Insert those discrete delay activities into the pre-insertion update and compare the result of the impacted schedule to the un-impacted schedule for that analysis interval that resulted from the insertion of the claimed delays.
- Compare the longest path of the impacted schedule for the analysis interval with the longest path of the same schedule recalculated with the progress data and the data date of the subsequent analysis interval. If the longest path and the overall completion dates are the same, the predictive model generated for the analysis period is reasonably accurate.
- If the longest path is the same but the overall completion date of the progressed version is later, the delay predicted for the longest path was, in actuality, worse, or additional delay events occurred on the longest path.
- If the longest path is the same but the overall completion date of the progressed version is earlier, there was acceleration or some other delay mitigation on the delays on the longest path.
- If the longest path and the overall completion dates are the same but an additional path is also the longest path, some activity or delay event on that additional longest path may be concurrent with the claimed delay.

- If the longest path has changed but the overall completion date is the same, some activity or delay event on the new longest path may be partially or completely concurrent with the claimed delay on the former longest path.
- If the longest path has changed but the overall completion date is earlier, some activity or delay event on that new longest path may be partially or completely concurrent with the claimed delay on the former longest path.
- If the longest path has changed but the overall completion date is later, some activity or delay event on that new longest path may be partially or completely concurrent with the claimed delay on the former longest path.
- Compare the longest path of the progressed version of the analysis interval with the longest path of the pre-insertion baseline of the subsequent analysis interval. Any differences are the result of non-progress revisions implemented in the pre-insertion baseline of the subsequent analysis interval and should be identified and explained.
- Repeat the process for all analysis intervals.
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of precedence between the parent delay and the pacing delay.
- For each suspected pacing delay event, evaluate whether enough resources could have been realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

Identify and understand all contractual language related to delay apportionment and determine whether the contractual language would override any determination of excusability and compensability based on findings resulting from analyses performed under this RP. Note that this method or a variation of this is often specified as the method of choice in many construction contracts, including specific procedural steps for implementation. Therefore, the following procedure should be applied only in absence of contract language or other agreements.

1. Excusable and Compensable Delay (ECD)

An additive-modeled schedule by itself does not account for concurrent delays and is therefore unsuitable for determining compensability. However, it is possible to analyze for concurrency by comparing two additive-modeled schedules. The reliability of this quantification method is inversely proportional to the duration of the analysis periods. In other words, the shorter the period duration, the more reliable the quantification. See Subsection 4.2.D.4.

To do this, for each analysis period:

- a. Create one additive model by inserting the subject owner-caused and *force majeure*-caused impact events into the update with the data date closest in time prior to the commencement of the impact event.

Create a separate additive model by inserting the contractor-caused impact events into the same update chosen for the owner-impact model.

- b. Compare the two resulting schedules. To the extent that the net delay-effect beyond the baseline completion date overlaps there is concurrency.
- c. The extent to which the completion date of the additive model with the owner-impact is later

than that of the other additive model with the contractor-impact, *may* be the quantity of ECD, but only to the extent that the impacted completion date does not exceed the actual completion date.

2. Non-Excusable and Non-Compensable Delay (NND)

An additive-modeled schedule by itself does not account for concurrent delays and is therefore unsuitable for determining compensability. However, it is possible to analyze for concurrency by comparing two additive-modeled schedules. The reliability of this quantification method is inversely proportional to the duration of the analysis periods. In other words, the shorter the period duration, the more reliable the quantification. See Subsection 4.2.D.4.

To do this, for each analysis period:

- a. Create one additive model by inserting the subject contractor-caused impact events into the update with the data date closest in time prior to the commencement of the impact event.
- b. Create a separate additive model by inserting the owner-caused and *force majeure*-caused impact events into the same update chosen for the owner-impact model.
- c. Compare the two resulting schedules. To the extent that the net delay-effect beyond the baseline completion date overlaps there is concurrency.
- d. The extent to which the completion date of the additive model with the contractor-impact is later than that of the other additive model with the owner-impact, *may* be the quantity of NND, but only to the extent that the impacted completion date does not exceed the actual completion date.

3. Excusable and Non-Compensable Delay (END)

- a. Insert the owner-caused and *force majeure*-caused impact events into the update with the data date closest in time prior to the commencement of the impact event.
- b. The difference between the completion of the longest path prior to the insertion and the completion of the longest path after the insertion is the END.
- c. The post-insertion schedule can be further analyzed by inserting actual progress data. If the resulting completion date is shorter than that indicated in the post-insertion schedule prior to actual progressing, it may be proper to reduce the amount of END accordingly.

J. Identification and Quantification of Mitigation / Constructive Acceleration

In MIP 3.7, after inserting delays into the update closest in time preceding the delay, the identity and the movement of the critical path is monitored. Then, when the update is progressed with actual progress data and the same logic path reexamined, if the logic path is shorter than that which was calculated prior to adding actual progress, there was acceleration or schedule recovery during the period for which actual progress was entered.

K. Specific Implementation Procedures and Enhancements

1. Fixed Periods

The analysis periods are of virtually identical duration and may coincide with regular schedule update periods.

2. Variable Periods

The analysis periods are of varying durations and are characterized by their different natures such as the type of work being performed, the types of delaying influences, significant project events, changes to the critical path, revised baseline schedules, and/or the operative contractual schedule under which the work was being performed.

3. Global Insertion

All the delay events and influences are added together and the impact is determined on the combined effect of the added delays.

4. Stepped Insertion

The delays are added individually or in groups and the impact is determined after each iterative insertion. Note that stepping is different from inserting the delays in time period groups that create a straight, vertical delineation of analysis periods; whereas, delays for each step insertion may not fit neatly into an existing analysis period.

L. Summary of Considerations in Using the Minimum Protocol

- Considers the chronological order of delays better than MIP 3.6.
- Can be performed relatively easily throughout the life of the project for project control when implemented as the AACE Recommended Practice 52R-06, Time Impact Analysis, as well as for forensic use as described in this recommended practice.
- Takes into consideration changes to the critical path as they occur on the project
- Requires routine schedule updates performed throughout project life.
- This method can be used to quantify non-compensable time extensions, but cannot, by itself, quantify compensable delays because it does not account for concurrent or pacing delays.
- This method can be used to identify and quantify acceleration, although actual performance that is better than predicted by use of this method does not, in and of itself, necessarily demonstrate active implementation of acceleratory measures.
- Does not require an as-built schedule.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- Because it does not rely on as-built data, it is a hypothetical model, especially where the project is actually constructed differently than the baseline schedule logic. However, compared to MIP 3.6, the periodic nature of the analysis incorporates as-built data.
- Susceptible to unintended or intended manipulation due to modeling if only one party's delays are considered, since the method cannot account for the impact of delays not explicitly inserted.
- Accuracy of the duration of critical path impact for any given delay event degrades in proportion to the chronological distance of the delay event from the data date of the schedule.
- Labor intensive in comparison to MIP 3.6 when implemented properly because of the additional

source schedules and technical complexity.

- Extremely sensitive to the order of fragnet and logic insertion.

3.8. Modeled / Subtractive / Single Simulation (MIP 3.8)

A. Description

3.8 is a modeled technique relying on a simulation of a scenario based on a CPM model. The simulation consists of the extraction of entire activities or a portion of the as-built durations representing delays or changes from a network analysis model representing the as-built condition of the schedule to determine the impact of those extracted activities on the network. Hence, it is a subtractive model.

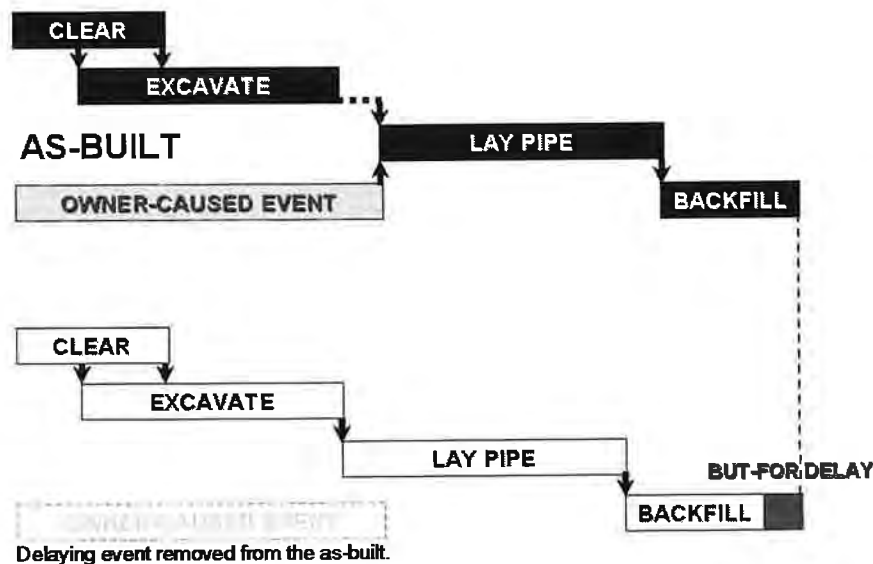


Figure 6 – Graphic Example: Modeled, Subtractive, Single Simulation

The subtractive simulation is performed on one network analysis model representing the as-built. Because it uses one network analysis model, it is technically a static logic method as opposed to a dynamic logic method. But, recall that the significance of the distinction rests in the fact that the project undergoes non-progress revisions reflecting the as-built conditions in contrast to the original baseline logic. And in view of that, a method that dynamically considers how the original logic changed is thought to be more forensically accurate than that which statically relies solely on the baseline logic. Therefore, in that context, the distinction in the case of MIP 3.8 is irrelevant since it relies on the as-built as the starting point.

MIP 3.8 is primarily used retrospectively.

B. Common Names

1. Collapsed as-built (CAB)
2. But-for analysis
3. As-built less delay

4. Modified as-built

C. Recommended Source Validation Protocols

1. Implement SVP 2.2 (as-built validation) and,
2. Implement SVP 2.4 (delay ID and quantification)

D. Enhanced Source Validation Protocols

1. Implement SVP 2.1 (baseline validation)
2. Implement SVP 2.3 (update validation)

E. Minimum Recommended Implementation Protocols

1. The as-built schedule model from which the delays are extracted is CPM logic-driven as opposed to a graphic as-built schedule. Therefore the calculated early start and early finish dates in the as-built schedule model match the actual start and actual finish dates; and, the collapsed schedule after delay extraction should also be CPM logic-driven.
2. Each change made to the as-built schedule model to create the collapsed schedule is tabulated and justified.
3. Reconcile all contract time extensions granted.
4. The as-built schedule model should contain:
 - a. As-built critical path activities found in implementing Subsection 4.3 including near-critical and near-longest paths.
 - b. Baseline critical path and longest path.
 - c. All contractual milestones and their predecessor chains.
 - d. All chains of activities alleged by the respondent to have constituted critical claimant-caused delays or concurrent delays due to specific fault of the claimant.
 - e. All delays for which contract time extensions were granted.
5. The collapsing process should not involve any adjustment to logic, including lag values, or removal of constraints unless each instance of such adjustment is specifically tabulated and the basis of such adjustment explained.
6. Perform a constructability analysis of the resulting collapsed as-built schedule.

F. Enhanced Implementation Protocols

1. Reconcile the as-built and the collapsed as-built to the as-planned schedule.
2. Use all schedule activities found in the baseline schedule.
3. To account for periods during which work could not have progressed under the collapsed

scenario, use a calendar simulating actual weather conditions.

G. Identification of Critical and Near-Critical Paths

Prior to the extraction of delays, pure computation of the criticality of a schedule activity under the collapsed as-built method is neither practical nor necessary. To fully verify the quantum of compensable delays and to fully account for non-compensable concurrencies, the analyst must consider and extract the delays *and then* assess the criticality of the delay. The critical path identified after the extraction process is called the analogous critical path. See Subsection 3.8.K.3

Identification of the near-controlling path at this stage is not necessary if the significant set of as-built activities were properly selected when the as-built model was prepared.

The checklist for the identification of critical and near-critical paths is as follows:

- Identify and understand all related contractual language.
- Identify the negative float theory used by the opposing party.
- If necessary, identify the as-built controlling path(s) using Subsection 4.3.C.
- After extraction of delays, identify the analogous critical path (see Subsection 3.8.K.3).

H. Identification and Quantification of Concurrent Delays and Pacing

Even in its minimum implementation, concurrency analysis is built into this method. Since the as-built, by definition, contains all delays that occurred on the activity paths modeled to the extent that a subset of those delays are extracted, the post-extraction schedule still contains the impact of those delays that were left in the model, thereby accounting for the concurrent impact of those delays. Because of this, often the evaluation of pacing delays is a part of the extraction process. To what extent concurrent delays are evaluated is directly related to the significant set of activities that was integrated into the as-built model.

The checklist for the identification of critical and near-critical paths is as follows:

- Determine whether compensable delay by contractor or owner is at issue.
- Identify and understand all related contractual language.
- For each delay event, distinguish the cause from the effect of delay.
- Determine whether literal or functional concurrency theory is to be used (see Subsection 4.2.).
- In a stepped extraction implementation, begin extraction with the delay event that is latest in time.
- Reconcile the total net variance between the as-built and the collapsed schedule by identifying the analogous critical path (see Subsection 3.8.K.3).
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of precedence between the parent delay and the pacing delay.
- For each suspected pacing delay event, evaluate whether enough resources could have been realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

Identify and understand all contractual language related to delay apportionment and determine whether the contractual language would override any determination of excusability and compensability based on findings resulting from analyses performed under this RP.

Absent such overriding language, use the following procedure.

1. Excusable and Compensable Delay (ECD)

The difference between the as-built completion date and the collapsed as-built completion date resulting from the extraction of all owner-caused delays is the total ECD. If the owner has paid the contractor specifically to accelerate, then any negative delay durations (delay mitigation) resulting from the owner-paid acceleration should be credited to the owner against the total ECD to avoid double payment to the contractor for acceleration. Where the quantification of the duration of the specific paid mitigation is not reasonably feasible, the credit adjustment may be accomplished by crediting the monetary value of the acceleration payment against the monetary value of the ECD.

2. Non-Excusable and Non-Compensable Delay (NND)

The difference between the as-built completion date and the collapsed as-built completion date resulting from the extraction of all contractor-caused delays is the total NND. If the contractor accelerated or implemented other mitigating measures and the owner did not reimburse the contractor for the cost of mitigation, the net critical mitigation duration should be subtracted from the total NND.

3. Excusable and Non-Compensable Delay (END)

Because entitlement to END does not require that concurrency periods be eliminated, this method is too rigorous for quantifying END since it automatically accounts for concurrency. However, it can be said that the difference between the as-built completion date and the collapsed as-built completion date resulting from the extraction of all owner-caused delays is at least the total END.

J. Identification and Quantification of Mitigation / Constructive Acceleration

The subtractive modeling methods are not the best tools for identifying and quantifying specific instances of acceleration and delay mitigation, since the methods start with the as-built schedule that already incorporates all acceleration measures to the extent that they were actually implemented. When the delays are subtracted the resulting schedule still retains all acceleration measures that were built into the as-built. Therefore, the resulting comparison is that of one accelerated schedule to another, albeit one without delays.

However, the subtractive modeling methods are one of the only tools to identify and quantify the overall extent to which the contractor's actual performance would have resulted in a project duration shorter than the baseline schedule, but for the delays. If the completion date of the collapsed schedule is earlier than that of the original baseline schedule it can be claimed by the contractor that if allowed to proceed unhindered by delays, it was possible to finish earlier than originally planned. Whether the contractor would have decided to actually incur the necessary expenses to implement the acceleratory measures absent delays must be proven independently of the schedule analysis.

K. Specific Implementation Procedures and Enhancements

1. Choice of Extraction Modes

a. Global Extraction

All the delay events and influences are extracted together and the impact is determined on the combined effect of the extracted delays.

b. Stepped Extraction

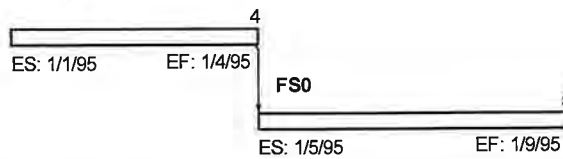
The delays are extracted individually or in groups, and the impact is determined after each iterative extraction. Stepped extraction should be in reverse chronological order of the occurrence of the delay event. This is the reverse of the order recommended for the additive MIP's 3.6 and 3.7. In the additive methods, the base schedule contains no delays, so it makes sense to start the additive process chronologically. In 3.8 the base schedule already contains all the delays. If extraction is performed chronologically, the iterative results would make no sense. For example, extracting the earliest delay first would create a schedule that still contains all the delays that occurred after the first delay.

2. Creating a Collapsible As-Built CPM Schedule

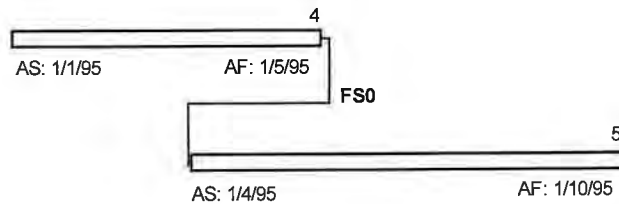
- a. The first step in modeling the as-built CPM is to determine the actual duration of each schedule activity. In assigning actual durations and actual lead-lag values, use a 7-day week calendar which allows all duration units to be in calendar days rather than working days, the main reason being that often project documentation will reveal that work was performed on some days that were planned to be non-working days. The spillover advantage of using a 7-day calendar is that it significantly simplifies the reconciliation of the calculated results. This system may sometimes produce anomalous results. For example, if work started on Friday and completed on the next Monday, the duration assignment will be four days although only two were actually worked. Then in the collapse, if the same activity happens to start on the first day of a four-day holiday weekend, it will show to continue through the holiday weekend and complete on the last day of the holiday. However, the system tends to balance itself out because it is equally likely that an activity which started on a Friday and finished on the following Monday (a 2 workday activity taking 4 calendar days) would show up as occupying four workdays from a Monday through Thursday in the collapsed as-built. The counterbalancing rule is applicable to both work activities and no-work durations. Hence, the 7-day calendar is often used initially for assigning actual durations to both types of activities. Conversion to a 7-day calendar, however, may not always be appropriate. For example, when calendars include long non-work periods, such as winter breaks, it may be more appropriate to retain the original project calendars to ensure that the collapsed as-built schedule does not result in work being performed during non-work periods.
- b. The as-built schedule, containing actualized data, forms the basis for creating the collapsible As-Built CPM schedule. This bar chart is modified to convert it to a CPM schedule by incorporating actual and underlying unimpacted logic relationships. The purpose of this is to allow the CPM schedule to simulate the actual activity durations and sequences solely by CPM computation using the logic ties and actual durations. The four-series diagram in Figure 7 illustrates this concept.
- c. Be aware that in many cases an activity should have more than one predecessor. For example, suppose that the start of wire pulling in building B was controlled by the completion of wire pulling in building A. In such a case, there would be a finish-to-start (FS) relationship with a zero lag value from "pull wire building A" to "pull wire building B". But the installation of conduit in building B will need to be tied as a logical predecessor to wire pulling, even if that activity may not have been the controlling factor. This non-controlling relationship may become the controlling relationship if the wire pulling for building A collapses to an earlier

date than conduit installation for building B.

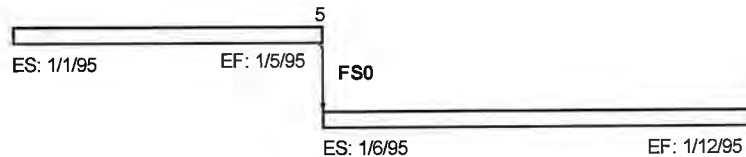
AS-PLAN LOGIC WITH AS-PLANNED DURATIONS



AS-PLAN LOGIC WITH PROGRESSED ACTUAL DATES



AS-PLAN LOGIC WITH AS-BUILT DURATIONS (WRONG)



AS-BUILT LOGIC WITH AS-BUILT DURATIONS (RIGHT)

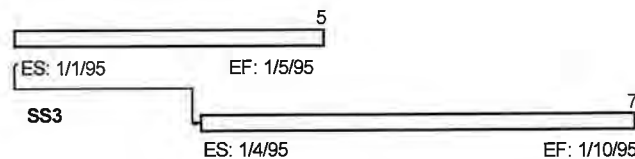


Figure 7 – Conversion of As-Planned Logic to As-Built Logic

- d. Depending on the level to which the as-built logic has been developed, the activity float value in and of itself, may not be the true computed delineation of the as-built controlling path. This is illustrated in Figure 8 below.
- e. The focus is on activity #2. This first model shows a FS0 logic tie from activity #2 to activity #4 allowing activity #2 to carry a float value of 5. The diagram below shows that a change to the successor logic of activity #2 to a FF5 to activity #3 will not change the dates but makes activity #2 critical.

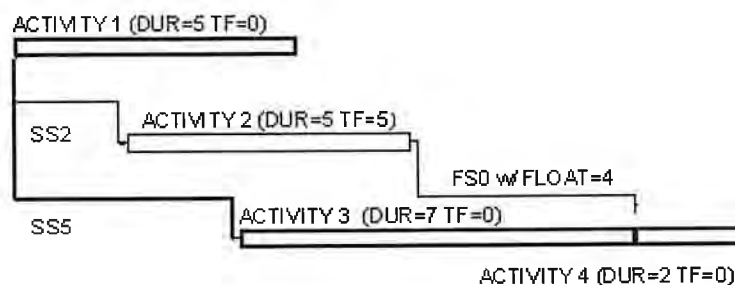
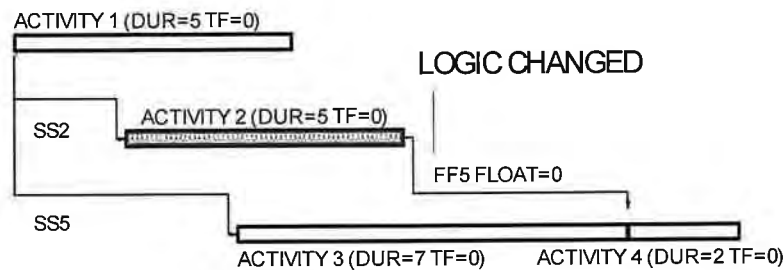


Figure 8 – As-Built Logic Showing Activity 2 Not Critical**Figure 9 – Logic Change to Make Activity 2 Critical**

- f. Another way of looking at this FF5 logic is to model the 5 days of lag as an explicit schedule activity, and tie that to activity #4 with an FS0. While adopting a policy to replace all non-zero lag values with explicit activities and restrict all relationship ties to FS0 may simplify the logic and debugging process, it will greatly increase the number of activities to be processed.
- g. If the logic change is more reflective of what actually took place, the second model is superior to the first model and is further along in the modeling process. This does not make the first model wrong because the validity of the as-built dates is intact, just the logic and the calculated float have changed. But, to rely solely on the float value of a less developed as-built model may invite error in the determination of the controlling path.
- h. In most cases, simulating the actual performance of work using CPM logic requires the use of logic ties other than standard, simple, consecutive finish-to-start ties (FS0). The following is a set of guidelines to be used in assigning CPM logic ties to simulate as-built performance:
 - i. Replace any FS logic with lag values 50% or longer than the duration of its predecessor or its successor, with a schedule activity.
 - ii. Replace any SS Logic with lag values 50% or longer than the duration of the predecessor with a schedule activity.
 - iii. Replace any FF Logic with lag values 50% or longer than the duration of the successor with a schedule activity.
 - iv. Replace FS logic with negative lag values whose absolute value is larger than one unit of duration, with another type of logic with a zero or a positive lag that does not violate the rules stated above. Some practitioners, however, may elect to allow negative lags if the lag value is small relative to the predecessor activity duration.
 - v. Replace SS or FF logic with negative lag values whose absolute value is larger than one unit of duration, with another type of logic with a zero or a positive lag that does not violate the rules stated above.
 - vi. Where more than one type of logic tie is applicable, use the type that would use the smallest absolute lag value as the controlling logic tie.
- i. This highlights the importance of this logic process, but do not expect to perfect the logic at this stage. This is due to the fact that the collapsed as-built method is most efficiently implemented as a multi-iterative process involving rapid modeling and a subsequent trial collapse which reveals faulty or incomplete as-built logic. This is repeated until the model is

debugged. However, this does not excuse the analyst from using a judicious combination of expert judgment, common sense, and extensive input from project personnel with first-hand knowledge of the day-to-day events during this step of the process.

3. Identification of the Analogous Critical Path (ACP)

The analogous critical path, or ACP, is determined by transferring the calculated critical path of the collapsed as-built onto the logic path of the as-built schedule. After the delays are extracted from the as-built schedule, the remaining critical path is transferred onto the logic path of the as-built schedule. This critical path is called the analogous critical path, or ACP. The analogous critical path allows the analyst to reconcile the total delta between the collapsed state and the as-built state with the sum of those delays, whole or in part, lying on the analogous path.

Because the collapsed as-built schedule is the residual schedule after the extraction of delay activities at issue, a comparison of the critical path of the collapsed as-built with the same logic path on the as-built will yield the list of delays whose discrete durations add up to the net difference in overall duration between the two schedules.

The ACP may or may not be identical to the controlling path. The paths are identical if the sum of the delays along the controlling path is equal to the duration difference between the as-built and the collapse. A rule that can be derived from this is that the sum of delays along the ACP is equal to or less than those on the controlling path, but never more. The converse of this rule is that if a delay that does not lie on the ACP but is on the controlling path and was not extracted out of the as-built, a full collapse may not be achieved to the extent the duration of the particular delay exceeds the arithmetic difference between the sum of the delays on the ACP and the sum of all delays on the subject controlling path.

L. Summary of Considerations in Using the Minimum Protocol

- Concept is intuitively easy to understand and present.
- Can isolate owner and/or contractor-caused delays if there is sufficient detail in the as-built schedule.
- Relies upon history of actual events.
- Can be implemented without any baseline schedule or contemporaneous schedule updates.
- Relatively few practitioners with significant, hands-on experience in properly performing this method.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- Perceived to be purely an after-the-fact reconstruction of events that does not refer to schedule updates used during the project.
- Summarized as-built variation of the minimum protocol creates the potential for missing scope of work or the skewing of results of the analysis.
- Reconstructing the as-built schedule is very fact and labor intensive.
- Assignment of logic to mimic as-built conditions requires subjective decisions that sometimes do not match the contemporaneously planned logic relationships between activities.

- Indicated as-built critical path throughout project does not necessarily reflect changes in the prospective critical path indicated in contemporaneous schedule updates.
- Susceptible to unintended or intended manipulation during as-built logic assignments.
- May ignore prospective critical paths projected in the contemporaneous schedule updates along with the project management decisions that were based upon those critical paths.
- Not suited for identification or quantification of acceleration because the source as-built schedule already incorporates acceleration.

3.9. Modeled / Subtractive / Multiple Base (MIP 3.9)

A. Description

Like MIP 3.8, MIP 3.9 is a modeled technique relying on a simulation of a CPM model scenario. The simulation consists of the extraction of entire activities or a portion of the as-built durations representing delays or changes from a network analysis model representing the as-built condition of the schedule to determine the impact of those extracted activities to each network model. Hence, MIP 3.9 is also a subtractive model.

MIP 3.9 is a multiple base method, distinguished from MIP 3.8 which is a single base method. The subtractive simulation is performed on multiple network analysis models representing the as-built schedule, typically updated schedules, which may include contemporaneous, modified contemporaneous, or recreated schedules. As the project undergoes non-progress revisions in reaction to the as-built conditions, in contrast to the original baseline logic, MIP 3.9 considers those logic changes and, therefore, is thought to be more attuned to the perceived critical path, in addition to the actual critical path that existed during the project than methods which rely solely on the initial baseline or the final as-built. Because the updates typically include non-progress revisions, MIP 3.9 is a dynamic logic method as opposed to a static logic method.

The subtractive simulation is performed on periodic network analysis models representing intervals of the as-built schedule. Each model creates a time period of analysis that confines the quantification of delay impact. Forecasted delays beyond an analysis period, however, may also need to be extracted at the time that the forecasted delays are introduced into the schedule. For example, a schedule update may include a change order impact inserted into the update to forecast delay events which is expected to occur several months after the schedule update period. This may distort the delay calculations when compared with the previous schedule being used as the baseline for the analysis. Thus, these forecasted impacts may need to be removed from the analysis period under consideration in order to properly quantify current impacts.

MIP 3.9 shares an important technical consideration with MIP 3.5 (Observational / Dynamic / Modified or Recreated), namely the choice in using hindsight or blindsight in recreating, and in the case of MIP 3.9, modeling activities that were partially complete on a given data date.

MIP 3.9 is primarily used retrospectively.

B. Common Names

1. Collapsed As-Built (CAB)
2. Windows Collapsed As-Built

3. But-For Analysis
4. Windows As-Built But-For
5. As-Built Less Delay
6. Modified As-Built
7. Look-Back Window

C. Recommended Source Validation Protocols

1. Implement SVP 2.2 (as-built validation),
2. Implement SVP 2.3 (update validation) and,
3. Implement SVP 2.4 (delay ID and quantification)

D. Enhanced Source Validation Protocols

1. Implement SVP 2.1 (baseline validation)

E. Minimum Recommended Implementation Protocols

1. The as-built schedule models from which the delays are extracted are CPM logic-driven as opposed to graphic as-built schedules. Therefore the calculated early start and early finish dates in the as-built schedule models match the actual start and actual finish dates and the collapsed schedules after delay extraction should also be CPM logic-driven.
2. Each change made to the as-built portion of the schedule for each time period to create the collapsed schedule is tabulated and justified.
3. There should be **at least** two base models, consisting of one based on a partially progressed schedule update and a second one based on a fully progressed schedule update or an as-built schedule.
4. The as-built schedule models should contain:
 - a. As-built critical path activities found in implementing Subsection 4.3 including near-critical and near-longest paths.
 - b. Baseline critical path and longest path.
 - c. All contractual milestones and their predecessor chains.
 - d. All chains of activities alleged by the respondent to have constituted critical claimant-caused delays or concurrent delays due to specific fault of the claimant.
 - e. All delays for which contract time extensions were granted.
5. The collapsing process should not involve any adjustment to logic, including lag values, or removal of constraints unless each instance of such adjustment is specifically tabulated and the basis of such adjustment explained.

6. Perform a constructability analysis of the resulting collapsed as-built schedules.
7. Reconcile all contract time extensions granted.

F. Enhanced Implementation Protocols

1. Reconcile the as-built and the collapsed as-built to the as-planned schedule.
2. Use all schedule activities found in the baseline schedule.
3. To account for periods during which work could not have progressed under the collapsed scenario, use a calendar simulating actual weather conditions.
4. Perform the analysis by modeling all schedule updates.
5. For each time period, create two models, one using hindsight progress rules, and the other using blindsight progress rules in modeling activities that were partially complete on the data date.

G. Identification of Critical and Near-Critical Paths for Each Periodic Update

Prior to the extraction of delays, pure computation of the criticality of a schedule activity under the collapsed as-built method is neither practical nor necessary. To fully verify the quantum of compensable delays, and to fully account for non-compensable concurrencies, the analyst must consider and extract the delays *and then* assess the criticality of the delay. This analogous critical path is used to identify the controlling activities of the collapsed as-built. See Subsection 3.9.K.5

Identification of the near-controlling path at this stage is not necessary if the significant set of as-built activities were properly selected when the as-built model was prepared.

The checklist for the identification of critical and near-critical paths is as follows:

- Identify and understand all related contractual language.
- Identify the negative float theory used by the opposing party.
- Identify and understand the implications of the choice of method, hindsight or blindsight, when modeling remaining durations of partially complete activities. (See Subsection 4.2.D.6)
- If necessary, identify the as-built controlling path(s) using Subsection 4.3.C.
- After extraction of delays, identify the analogous critical path (ACP). (See Subsection 3.9.K.5)

H. Identification and Quantification of Concurrent Delays and Pacing

As with MIP 3.8, even in its minimum implementation, concurrency analysis is built into MIP 3.9. Since the as-built, by definition, contains all delays that occurred on the activity paths modeled, to the extent that a subset of those delays are extracted, the post-extraction schedule still contains the impact of those delays that were left in the model, thereby accounting for the concurrent impact of those delays. Because of this, often the evaluation of pacing delays is a part of the extraction process. To what extent concurrent delays are evaluated is directly related to the significant set of activities that were integrated into the as-built model. However, the analyst must be aware that unlike MIP 3.8, this method contains a retrospective and a prospective portion within the logic-driven portion of each model. (See Figure 10).

The checklist for the identification of critical and near-critical paths is as follows:

- Determine whether compensable delay by contractor or owner is at issue.
- Identify and understand all related contractual language.
- For each delay event, distinguish the cause from the effect of delay.
- Determine whether literal or functional concurrency theory is to be used (see Subsection 4.2.).
- In a stepped extraction implementation, begin extraction with the delay event that is latest in time in the period being analyzed.
- Reconcile the total net variance between the as-built and the collapsed schedule by identifying the analogous critical path. (See Subsection 3.9.K.5)
- For each suspected pacing delay event, identify the parent delay(s) and establish the order of precedence between the parent delay and the pacing delay.
- For each suspected pacing delay event, evaluate whether enough resources could have been realistically employed to perform the paced activity within its original planned duration.

I. Determination and Quantification of Excusable and Compensable Delay

Identify and understand all contractual language related to delay apportionment and determine whether the contractual language would override any determination of excusability and compensability based on findings resulting from analyses performed under this RP.

Absent such overriding language, use the following procedure.

1. Excusable and Compensable Delay (ECD)

The difference between the as-built completion date and the collapsed as-built completion date resulting from the extraction of all owner-caused delays is the total ECD for each modeled time period. If the owner has paid the contractor specifically to accelerate, then any negative delay durations (delay mitigation) resulting from the owner-paid acceleration should be credited to the owner against the total ECD to avoid double payment to the contractor for acceleration. Where the quantification of the duration of the specific paid mitigation is not reasonably feasible, the credit adjustment may be accomplished by crediting the monetary value of the acceleration payment against the monetary value of the ECD.

2. Non-Excusable and Non-Compensable Delay (NND)

The difference between the as-built completion date and the collapsed as-built completion date resulting from the extraction of all contractor-caused delays is the total NND for each modeled time period. If the contractor accelerated or implemented other mitigating measures and the owner did not reimburse the contractor for the cost of mitigation, the net critical mitigation duration should be subtracted from the total NND.

3. Excusable and Non-Compensable Delay (END)

Because entitlement to END does not require that concurrency periods be eliminated, this method is too rigorous for quantifying END since it automatically accounts for concurrency. However, it can be said that the difference between the as-built completion date and the

collapsed as-built completion date resulting from the extraction of all owner-caused delays is at least the total END for each modeled time period.

J. Identification and Quantification of Mitigation / Constructive Acceleration

The subtractive modeling methods are not the best tools for identifying and quantifying specific instances of acceleration and delay mitigation, since the methods start with the as-built schedule that already incorporates all acceleration measures to the extent that they were actually implemented. When the delays are subtracted, the resulting schedule still retains all acceleration measures that were built into the as-built. Therefore, the resulting comparison is that of one accelerated schedule to another, albeit one without delays.

However, the subtractive modeling methods are one of the only tools to identify and quantify the overall extent to which the contractor's actual performance would have resulted in a project duration shorter than the baseline schedule, but for the delays. If the completion date of the collapsed update is earlier than that of the schedule update of the previous period, it can be claimed by the contractor that if allowed to proceed unhindered by delays, it was possible to finish earlier than originally planned. Whether the contractor would have decided to actually incur the necessary expenses to implement the acceleration measures absent delays must be proven independently of the schedule analysis.

K. Specific Implementation Procedures and Enhancements

1. Choice of Analysis Periods

a. Fixed Periods

The analysis periods are of virtually identical duration and may coincide with regular schedule update periods.

b. Variable Periods

The analysis periods are of varying duration and are characterized by their different natures such as the type of work being performed, the types of delaying influences, or the operative contractual schedule under which the work was being performed.

c. Fixed Periods vs. Variable Periods

Similar to the comparison between the all-periods implementation and the grouped-periods implementation for MIP 3.3, 3.4, and 3.5, a frequent-fixed-periods implementation yields more information than the infrequent-variable-periods implementation and is considered more precise.

2. Order of Analysis Periods

- a. The extraction process may be started by the sequence of time periods, working from the first period to the last, or from the last period to the first. Neither approach is necessarily better than the other since each period is reconciled with the contemporaneous schedule updates. However, when an activity and any delay to that activity occurs over more than one period of time, and the analyst does not know exactly during which period the delay occurred, and the delay could have occurred in either or both periods, the overall delay result for the project may vary based on the approach to choosing the period. The analyst should develop a consistent convention, such as choosing the first period in which the delay could have occurred to extract the delay.

3. Choice of Modeling Increments

a. Periodic Modeling

In periodic modeling, the logic-driven as-built schedule occupies the period starting with the day after the data date of the previous update and ending with the data date of the current update from which the as-built model is generated. The data date of the previous update remains the data date for the model. This data date will be referred to as the hard data date of the model in order to distinguish it from the soft data date which is the data date of the current update from which the model was generated. The soft data date is so named because the calculation discontinuity of the data date of the source update is blurred or softened in the continuous CPM logic spanning the source update data date, as shown in the diagram below.

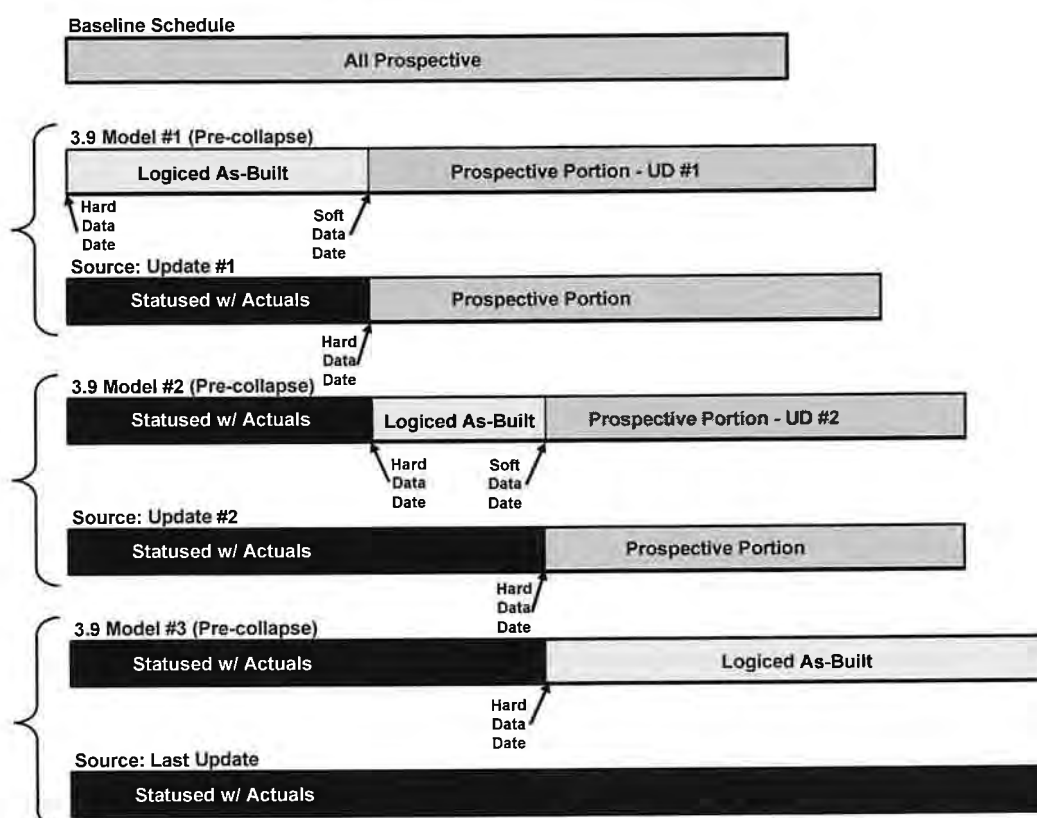


Figure 10 – Graphic Example: MIP 3.9 with Periodic Modeling

Hindsight progress rules are used to model the as-built at the hard data date of the model, since this point in time is already fully progressed in the source update. The analyst has a choice of rules, hindsight or blindsight, in modeling the as-built at the soft data date since on one hand, this point in time is the hard data date of the source update, but on the other hand, if the analysis is being performed after project completion, full as-built information is available. The difference in progress rules used for modeling may make a difference in the calculation of the critical path(s), near-critical paths, longest path(s), and the near-longest paths.

b. Cumulative Modeling

In a cumulatively modeled set of MIP 3.9 as-builts, the hard data date is set for the first model, and all subsequent models use the same hard data date. In many cases the initial hard data date is the same as that of the baseline schedule. The soft data date of the models moves with the data date of the source updates. If the final source update is a fully progressed update, the final as-built model will be identical to a MIP 3.8 model based on a fully progressed update, as shown in the diagram below.

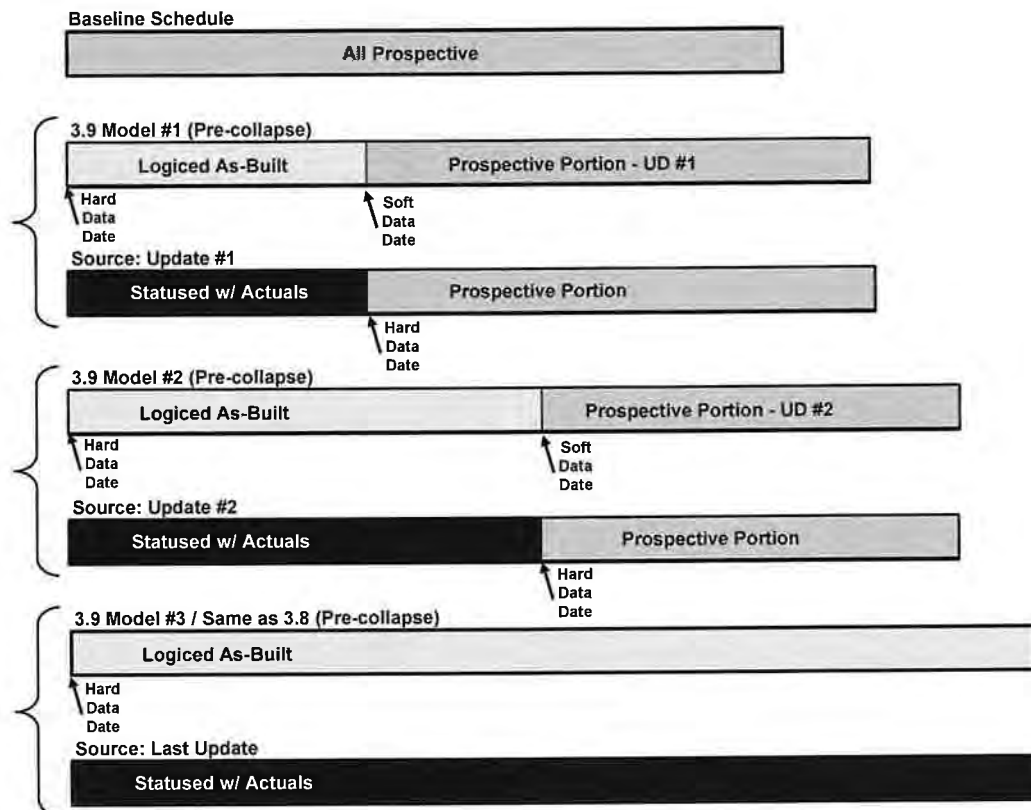


Figure 11 – Graphic Example: MIP 3.9 with Cumulative Modeling

As with the periodic modeled set of as-builts, the analyst has a choice of rules, hindsight or blindsight, in modeling the as-built at the soft data date since on one hand, this point in time is the hard data date of the source update, but on the other hand, if the analysis is being performed after project completion, full as-built information is available. The difference in progress rules used for modeling may make a difference in the calculation of the critical path(s), near-critical paths, longest path(s), and the near-longest paths.

4. Choice of Extraction Modes

a. Global Extraction

All the delay events and influences in each model are extracted together and the impact is determined on the combined effect of the extracted delays.

b. Stepped Extraction

The delays are extracted individually or in groups, and the impact is determined after each iterative extraction. Stepped extraction should be in reverse chronological order of the occurrence of the delay event. This is the opposite of the order recommended for the additive MIP's, 3.6 and 3.7. In the additive methods, the base schedule contains no delays, so it makes sense to start the additive process chronologically. In MIP 3.9, the base schedules already contain all the delays. If extraction is performed chronologically, the iterative results would make no sense. For example, extracting the earliest delay first would create a schedule that still contains all the delays that occurred after the first delay.

5. Creating a Collapsible As-Built CPM Schedule

The procedure for creating a collapsible as-built schedule for each period analysis is the same as presented in Subsection 3.8.K.2, except that the process must be repeated for the relevant analysis period for each as-built schedule update.

6. Identification of the Analogous Critical Path (ACP)

The procedure for identifying the Analogous Critical Path for each period analysis is the same as presented in Subsection 3.8.K.3, except that the process must be repeated for the relevant analysis period for each as-built schedule update.

L. Summary of Considerations in Using the Minimum Protocol

- Accounts for changes in the prospective critical path for each schedule update utilized.
- Concept is intuitively easy to understand and present.
- Can isolate owner and/or contractor-caused delays if there is sufficient detail in the as-built schedule.
- Relies upon history of actual events.
- This method requires a baseline schedule and subsequent schedule updates in addition to the as-built schedule.
- Relatively few practitioners with significant, hands-on experience in properly performing this method.

M. Caveats in Using the Minimum Protocol / Conditions Requiring Enhanced Protocols

- Summarized as-built variation of the minimum protocol creates the potential for missing scope of work or the skewing of results of the analysis.
- Reconstructing the as-built schedule is very fact and labor intensive.
- Assignment of logic to mimic as-built conditions requires subjective decisions that sometimes do not match the contemporaneously planned logic relationships between activities.
- Susceptible to unintended or intended manipulation during as-built logic assignments.
- Not suited for identification or quantification of acceleration because the source as-built schedule already incorporates acceleration.

- More time-consuming and hence more expensive to implement than other MIP's.

4. ANALYSIS EVALUATION

- 4.1 Excusability and Compensability of Delay
- 4.2 Identification and Quantification of Concurrency of Delay
- 4.3 Critical Path and Float
- 4.4 Delay Mitigation & Constructive Acceleration

The ultimate conclusion sought in forensic schedule analysis involving delay disputes is the determination and quantification of excusable delays along with the compensability of such delays. The analysis methods outlined in Section 3 are the tools used in reaching this ultimate conclusion⁸. This section describes the procedures for interpreting the results obtained from the use of the methods described in Section 3.

The process of segregating non-excusable, excusable, and compensable delays is referred to herein as *apportionment* of the responsibility for delay. Many jurisdictions in the United States and other countries prefer the use of critical path method (CPM) techniques for the purpose of apportionment of delay. This is in distinction to the use of other techniques such as bar-charts without network logic or by gross allocation of fault by percentage, often called the pie-chart method.

Subsection 4.1 was placed first so that the reader can gain an overview before delving into the underlying technical concepts. The analyst must be familiar with the concepts of concurrency of delay (Subsection 4.2), and criticality and float (Subsection 4.3) in order to fully understand the concepts in the first Subsection, 4.1. Therefore, for issues involving delay, the actual order of performance of the analysis interpretation protocol would be Subsection 4.3 first, then 4.2 followed by 4.1.

Constructive acceleration, along with recovery schedules, disruption, and delay mitigation are addressed in Subsection 4.4. Even if the project did not result in actual slippage of the completion date, these issues still generate disputes. Because the issues are intertwined with excusability of delay, they are discussed here in Section 4.

Be advised that differences in analysis methods combined with differences in concurrency and float theories may result in conflicting ultimate conclusions. The primary purpose of this section is to describe and explain the different theories in order to aid in the reconciliation of the conflicting conclusions.

4.1. Excusability and Compensability of Delay

A. General Rules⁹

Excusability exists where there is contractual or equitable justification in a claimant's request for a contract time extension for relief from potential claims for liquidated/stipulated or actual delay damages. The showing of excusability does not necessarily mean that the claimant is also entitled to compensation for the delay. Conversely, delay is *non-excusable* when such justification does not exist.

Compensability or *compensable delay* exists where the claimant is entitled to recover not only a time

⁸ As a practical matter, delay analysis is just an intermediate step towards the ultimate question of financial liability. Thus, if agreement can be reached directly on the question of the specific amount of financial liability, the forensic schedule analysis leading to an apportionment of delay liability is moot.

⁹ The contracting parties are free to depart from the general rule by mutual agreement as long as such agreement does not violate public policy.



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extension but compensation for expenses associated with the extension of completion date or the prolongation of the duration of work. Excusability is a prerequisite to compensability. Therefore, where compensability can be established, excusability is assumed.

B. Accounting for Concurrent Delay

In the absence of any contractual language or other agreements, the conventional rule governing compensability is that the claimant must first account for concurrent delays (see Subsection 4.2) in quantifying the delay duration to which compensation applies. That is, the contractor is barred from recovering delay damages to the extent that concurrent contractor-caused delays offset owner-caused delays, and the owner is barred from recovery liquidated/stipulated or actual delay damages to the extent that concurrent owner-caused delays offset contractor-caused delays.

The evaluation proceeds in two distinct steps. First, the liability for each delay event is individually analyzed¹⁰. The classification is made primarily according to the responsibility for the cause of the delay but may also consider the contractual risk allocation of the delay event regardless of the party who caused such delay. The second step consists of evaluating whether each delay event is concurrent with other types of delays to arrive at the final conclusion of excusability, compensability, or non-excusability.

As evident from the list of existing definitions, the current, common usage of the terms compensable, excusable, and non-excusable is confusing because analysts often use those terms to characterize the assignment of liability performed in the first step. For the purpose of this RP, the delays identified in the first step will be classified as: contractor delay, owner delay, or *force majeure* delay.

A *contractor delay* is any delay event caused by the contractor or the risk of which has been assigned solely to the contractor¹¹. If the contractor delay is on the critical path, in the absence of other types of concurrent delays, the contractor is granted neither an extension of contract time nor additional compensation for delay related damages. Such a delay may expose the contractor to a claim for damages from the owner.

An *owner delay* is any delay event caused by the owner, or the risk of which has been assigned solely to the owner¹². If the owner delay is on the critical path, in the absence of other types of concurrent delays, the contractor is granted both an extension of contract time and additional compensation for delay related damages.

A *force majeure delay* is any delay event caused by something or someone other than the owner (including its agents), or the contractor (or its agents), or the risk of which has not been assigned solely to the owner or the contractor. If the *force majeure* delay is on the critical path, the contractor is granted an extension of contract time but does not receive additional compensation for delay related damages even if there is a concurrent delay.

After liability is determined in the first step, the second step requires a determination of concurrency in accordance with Subsection 4.2. The various permutations of concurrency scenarios are summarized below in Figure 12 – *Net Effect Matrix*.

¹⁰ Note that the forensic scheduling analyst may not possess the skill, knowledge, or experience to independently determine the legal liability for an event. In such a case, the first step consists of making a reasoned assumption of liability subject to verification by those with the requisite expertise.

¹¹ The SCL Delay & Disruption Protocol calls this a contractor risk event which is defined as an event or cause of delay which under the contract is at the risk and responsibility of the contractor. SCL also calls it a non-compensable event.[1]

¹² The SCL Delay & Disruption Protocol calls this an employer risk event which is defined as an event or cause of delay which under the contract is at the risk and responsibility of the employer (owner). SCL also calls it a compensable event.[1]

Delay Event	Concurrent with	Net Effect
Owner Delay	Another Owner Delay or Nothing	Compensable to Contractor, Non-Excusable to Owner
Owner Delay	Contractor Delay	Excusable but Not Compensable to both Parties
Owner Delay	Force Majeure Delay	Excusable but Not Compensable to both Parties
Contractor Delay	Another Contractor Delay or Nothing	Non-Excusable to Contractor, Compensable to Owner
Contractor Delay	Force Majeure Delay	Excusable but Not Compensable to both Parties
Force Majeure Delay	Another Force Majeure Delay or Nothing	Excusable but Not Compensable to Contractor

Figure 12 – Net Affect Matrix – Concurrent Delay

There are two alternatives if there are more than two parties among which the delay must be apportioned depending on whether the additional parties are distinct signatories to the subject contract or whether the parties are agents and therefore subsumed under the two primary parties.

Under the first alternative there would be another factor added to the above matrix. But, the principle used to derive the net effect would be the same. Namely, in order to be entitled to compensation the party must not have caused or otherwise be held accountable for any concurrent delay and concurrent *force majeure* delays.

Under the second alternative involving agents to the two primary parties such as subcontractors, suppliers, architects, and construction management firms, the net effect equation should be solved first between the two primary parties. This is followed by a subsidiary analysis apportioning the quantified delay allocation established by the first analysis.

C. Equitable Symmetry of the Concept

Note that the terms compensable, excusable, and non-excusable in current industry usage are from the viewpoint of the contractor. That is, a delay that is deemed compensable is compensable to the contractor but non-excusable to the owner. Conversely, a non-excusable delay is a compensable delay to the owner since it results in the collection of liquidated/stipulated damages.

A neutral perspective on the usage of the terms often aids understanding of the parity and symmetry of the concepts¹³. Thus entitlement to compensability, whether it applies to the contractor or the owner, requires that the party seeking compensation shows a lack of concurrency if concurrency is alleged by the other party. But for entitlement to excusability without compensation, whether it applies to the contractor or the owner, it only requires that the party seeking excusability show that a delay by the other party impacted the critical path.

Based on this symmetry, contractor entitlement to a time extension does not automatically entitle the contractor to delay compensation. The contractor would first have to show that an owner delay impacted the critical path, and then if the owner defends alleging concurrent delay, the contractor would have to show the absence of concurrent delays caused by a contractor delay or a *force majeure* delay in order to be entitled to compensation.

¹³ Especially in the absence of contractual provisions to the contrary. For example, depending on the contract language and applicable law, the applicable tests for the recovery of actual delay damages may be different from that applicable to the owner's right to liquidated/stipulated damages.



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A contractor delay concurrent with many owner delays would negate the contractor's entitlement to delay compensation. Similarly, one owner delay concurrent with many contractor delays would negate the owner's entitlement to delay compensation, including liquidated/stipulated damages. While in such extreme cases the rule seems draconian, it is a symmetrical rule that applies to both the owner and the contractor and hence ultimately equitable.

4.2. Identification and Quantification of Concurrent Delay

A. Relevance and Application

Projects are frequently delayed by multiple impacts and by multiple parties. The concept of concurrent delay is based upon the premise that when multiple parties independently contribute to an impact to the critical path, the party or parties causing the event should be responsible for their share of that project critical path impact. There can be concurrent delays between separate delay events both caused by the same party. However, in such case there is effectively no need for a concurrency analysis. Throughout this Recommended Practice, it has been assumed that concurrency exists only when it is caused by at least two separate parties or between at least one party and a force majeure event. While the allocation and distribution of concurrent delay impacts should always be based upon the terms and conditions of the contract, most contracts are silent on the subject of concurrent delay. This section is intended to identify and facilitate the calculation and apportionment of concurrent delay impacts.

Typically, Owners assess liquidated/stipulated damages for non-excusable delay and Contractors claim entitlement to extended overhead reimbursement for compensable delay. In each case, the damages are typically calculated on the basis of a daily unit rate. Under most concurrent delay applications however, the Owner and Contractor time-related damages are not offset against each other when concurrent delay can be demonstrated. Typically, when both Contractor and Owner are concurrently responsible for an extended period of performance, the Contractor is granted an extension of contract time without compensation and the Owner forgoes the collection of liquidated/stipulated damages. No time-related compensation flows from either party to the other. Generally, therefore, substantial incentive exists for:

1. The Contractor to demonstrate concurrent excusable delay during a period likely to be considered non-excusable delay; and
2. The Owner to demonstrate concurrent non-excusable delay during a period likely to be considered excusable delay.

Accordingly, both Owners and Contractors frequently contend that concurrent delays offset each other as a defense to excuse their potential liability to compensate the other party for time related costs.

The identification and quantification of concurrent delay is arguably the most contentious technical subject in forensic schedule analysis. Accordingly, it is important that all sides, if possible, agree on either the Literal or Functional theory (See Subsection 4.2.D.1.) employed in the identification and quantification of concurrent delay. Failing that, the analyst should be aware of the theory adopted by the opposing party.

B. Various Definitions of Concurrency

AACE Recommended Practice No. 10S-90 *Cost Engineering Terminology*, lists five different but similar definitions for concurrent delay.[4] As discussed more fully in the sections that follow, the five definitions reflect some of the differing opinions and applications associated with concurrent delay. The apparent contradictions underscore why this has become one of the most contentious areas of

forensic schedule delay analysis.

(1) Two or more delays that take place or overlap during the same period, either of which occurring alone would have affected the ultimate completion date. In practice, it can be difficult to apportion damages when the concurrent delays are due to the owner and contractor respectively.

(2) Concurrent delays occur when there are two or more independent causes of delay during the same time period. The "same" time period from which concurrency is measured, however, is not always literally within the exact period of time. For delays to be considered concurrent, most courts do not require that the period of concurrent delay precisely match. The period of "concurrency" of the delays can be related by circumstances, even though the circumstances may not have occurred during exactly the same time period.

(3) True concurrent delay is the occurrence of two or more delay events at the same time, one an employer risk event, the other a contractor risk event and the effects of which are felt at the same time. The term 'concurrent delay' is often used to describe the situation where two or more delay events arise at different times, but the effects of them are felt (in whole or in part) at the same time. To avoid confusion, this is more correctly termed the 'concurrent effect' of sequential delay events.

(4) Concurrent delay occurs when both the owner and contractor delay the project or when either party delays the project during an excusable but non-compensable delay (e.g., abnormal weather). The delays need not occur simultaneously but can be on two parallel critical path chains.

(5) The condition where another delay-activity independent of the subject delay is affecting the ultimate completion of the chain of activities.

The existence of a contractual definition is a major factor on the determination of concurrency. As stated in the previous subsections, contracting parties are free to mutually agree on any method or procedure as long as those agreements are legally enforceable. Therefore, the general rules, exceptions, and considerations in this RP are applicable to the extent that they do not directly contradict contractual definitions and specifications.

C. Pre-Requisite Findings Concerning the Delays Being Evaluated for Concurrency

Before evaluation of concurrency, there must be:

- Two or more delays that are unrelated, independent, and would have delayed the project even if the other delay did not exist;
- Two or more delays that are the contractual responsibility of different parties, but one may be a force majeure event.;
- The delay must be involuntary; and,
- The delayed work must be substantial and not easily curable.

1. Two or More Delays that are Unrelated and Independent

Concurrent delays occur when two or more unrelated and independent events delay the project. When two or more parties contribute to a single delay to the project and the causation is linked or related, the event is not considered to have two concurrent causes. The distinction between concurrent delay and mutually-caused delay is a subtle, yet a vitally important distinction that each analyst must observe and reconcile.

There must be at least two independent delay events. The first event, for example, could be the Owner's failure to timely approve the purchase of a piece of Owner-furnished equipment. The second and potentially concurrent event could be the Contractor's failure to advance steel erection sufficiently

to support the installation of that equipment. These two independent events are often separate, co-critical network paths, but they need not be in order to be candidates for a concurrent delay. The delay events could affect the same activity, but must be independent.

Care must be taken to ensure the events are truly independent. In the example above, the facts *might* show that the steel was not erected timely because the Contractor knew the equipment was going to be late. In such a case, the “two” delay events are actually one – they are both caused by the Owner’s failure to timely approve the purchase of a piece of equipment.

2. Two or More Delays that are the Contractual Responsibility of Different Parties

The application of concurrent delay theory is only relevant when the delays are the responsibility of different parties or one of the delays is a force majeure event. Since the concept of concurrency has both a legal and a technical component, the concurrent events must contractually be the responsibility of separate parties. The parties are typically the Owner and the Contractor. Some contracts contain language assigning responsibility or contractual risk for certain types of events such as differing site conditions and force majeure events. Such risk assignment may impact the liability of events causing concurrent delay.

If one of the delay events is contractually assigned to neither or both parties, such as a force majeure event, the effective result is the same as concurrency; it is excusable and non-compensable to either party. Generally, whenever a force majeure event occurs, it *trumps* any other concurrent delay that might have occurred. This serves two purposes: first, it can eliminate or reduce significant proof problems that might arise in establishing responsibility, and second, it promotes equity, since one of the delays is beyond the control and responsibility of the either of the parties.

3. The Delay Must Be Involuntary

A delay that otherwise meets the requirements of concurrency, but is performed voluntarily is generally considered pacing. If the delay could have been easily cured, but was not, the delay would be considered voluntary. See Subsections 4.2 E and F below.

4. The Delay Must Be Substantial and Not Easily Curable

This requirement comports with common sense. If one of the delays is associated with a minor element of work that could easily be performed, that work should not create a concurrent delay. This element is closely allied with the involuntary nature of truly concurrent delays cited above.

D. Functional Requirements Establishing Concurrency and the Factors that Influence Findings

Having satisfied the four requirements on the nature of the subject delay events being evaluated for concurrency, there are two major functional requirements relating to the relationship of the delays.

- The delays must occur during or impact the same time analysis period.
- The delays, each of which, absent the other, must independently delay the critical path.

The first functional requirement that the delays must occur during or impact the same analysis time period is intuitively obvious, but difficult to absolutely satisfy. This is due to the fact that absolute, literal concurrency is an unachievable goal since time is infinitely divisible. It is more a function of the planning unit used by the schedule or the verification unit used in the review of the as-built data. For example, upon further examination, a pair of events that were determined to have occurred concurrently on a given day may not be literally concurrent because one occurred in the morning and the other in the afternoon. This condition seldom occurs since most construction schedules use the

day as the smallest measurement of time.

The second functional requirement is that each concurrent delay event must, absent the other, delay the timely completion of a completion milestone. Such independent events must also be on the critical path or near critical path, depending on the time analysis period and the concurrency theory being used. For example, assume that a forensic analysis confirms that the late installation of drywall caused a critical path delay to the completion of the project. This work was critical to the commencement of final painting and interior trim work. Further assume that the delay in the drywall was the result of two factors: first, the general contractor failed to procure its drywall subcontractor in a timely manner and second, there was a severe shortage of drywall to the region. These events are unrelated, but either one of them would have delayed the overall completion of the drywall. This test is sometimes called the “but-for” test. But-For the failure to procure the drywall subcontractor, the work would still have been late because of the shortage of materials.

Findings of concurrency analysis to determine compliance with these functional requirements are highly dependent on several factors, all of which are dictated by discretionary choices made by the analyst in the course of analysis – these choices should be well documented as part of the analysis. There are at least six factors, each discussed in detail below, that influence the determination of these two conditions:

- Whether concurrency is determined literally or functionally
- Whether criticality is determined on least-value float or less-than-one float value
- Whether concurrency is determined on the cause or the effect of delay
- The frequency, duration and placement of the analysis interval
- The order of delay insertion or extraction in a stepped implementation
- Whether the analysis is done using full hindsight or blindsight (knowledge-at-the-time).

There is no consensus on the many factors that affect the identification and quantification of concurrency. The one thing that seems to be universally accepted is that reliable identification and quantification of concurrency must be based on CPM concepts, particularly distinguishing critical from non-critical delays. Gross concurrency, or the method of counting concurrent delay events based purely on contemporaneous occurrence without regard to CPM principles, is typically not a sufficient basis for concluding that a delay is not compensable.

1. Literal Concurrency vs. Functional Concurrency

There are two different theories regarding the exact timing of the two or more delays that are candidates for concurrency. Under the Literal Theory, the delays have to be literally concurrent in time, as in “happening at the same time.” In contrast, under the Functional Theory, the delays need to be occurring within the same analysis period.

Of the two, the functional theory is more liberal in identifying and quantifying concurrency since the delays need only occur within the same measurement period, while in the literal theory, only delays require same-time occurrence. The assumption made by the functional theory practitioner is that most delays have the potential of becoming critical, once float on the path on which they resides has been consumed.

An advocate of *functional concurrency* believes that if the two delays occur within the same measurement period [usually a month] they can be concurrent. For example, analyses that are based upon monthly update submissions will manifest delay only at the end of the month. It is quite possible therefore, that an Owner-caused delay occurring in the first week of the update period may appear concurrent with a Contractor-caused delay occurring in the last week of the update period. These delay events could nonetheless be concurrent so long as the other tests are met. Accordingly, the functional application of concurrent delay theory does not necessarily require the delay events to

occur on the same days.

This type of functional concurrency is closely attuned to delay methodologies that use modeled CPM schedules as their basis and utilize some form of time period analysis. Since these analyses measure delay at the end of time periods [typically the status updates] it makes sense to measure concurrency under this methodology at the same points, rather than trying to develop a separate concurrency analysis. Accordingly, the functional application of concurrent delay theory does not necessarily require the delay events to occur at the same time. In addition, the functional theory allows that CPM schedules, even if properly maintained, are not perfect, and near critical delays may in fact be concurrent.

The literal theory will result in the identification of fewer concurrent delays, since delays are dropped from the list of suspects if they do not share real-time concurrency. Since the literal theory is based on the general notion that concurrent delays must be on the critical path and occur at the same time (usually measured at a day interval), findings of concurrency are exceedingly rare.

An advocate of *literal concurrency* prefers to view concurrency in the context of day-to-day performance. Under this theory, if the first delay started on day one, and the second delay started on day two, they would not be concurrent – the delay associated with the first event would create float in the entire project so the second delay could not also be on the co-critical path. In the case where two independent delay events act on the same activity, the same rational applies: the first delay event causes the delay, while the second does not. *Literal* concurrency generally identifies fewer concurrent delays than *functional* concurrency. Since *literal* concurrency requires the delay events to occur at the same time and *functional* concurrency only requires that the events occur within the same measurement period, it is very likely that more concurrency will be recognized under the *functional* theory. The *literal* theory requires the forensic analyst to look inside a monthly update. In one sense, this approach vitiates the analysis of monthly progress because the status depicted at the end of the month is insufficient.

The difference in outcome between the literal and functional theory is significant. Given the same network model, the literal theory practitioner will find less concurrency -- many more compensable delays for both parties. The functional theory practitioner will find many of those delays to be concurrent and hence excusable but, depending on the terms of the contract, non-compensable for both parties. It is also possible that the ultimate outcome may be similar when, under the literal theory, the compensation due one party is cancelled by the compensation due the other party. The only significant difference, despite the fact that the canceling effect (functional) operates under both theories, is the timing of the canceling effect and its impact on the damage calculation (literal).

Under the literal theory, an owner delay and a contractor delay of equal duration, occurring at different times are calculated as a period of compensable delay for the owner and a separate period of compensable delay of equal length for the contractor. The two periods will neither cancel each other out in time, nor money, since the contractor is likely to get a time extension for the owners delay and it is unlikely the owner's liquidated/stipulated damages rate will not be equal to the contractor's extended project rate. So, despite the apparent canceling effect, there is still potential of award of compensability to one side or the other. In contrast, under the functional theory, the canceling effect is realized *before* calculation of damages; hence there will be no offsetting calculation for damages.

The functional theory also recognizes the real-world limitations of exactly measuring delays and limitations of scheduling accuracy. While CPM schedules measure activities and events to the day, it is often difficult to retrospectively identify, with the exactitude of a day, the events on a project. By measuring possible concurrent delays with a measurement period larger than a day, the functional theory accommodates this real-world limitation. At the same time as the measurement period expands, it is likely that more delays will get treated like concurrent delays.

When evaluating the relevance of the time period, it is important to consider whether the concurrency analysis is being performed contemporaneously or forensically. Concurrent Delay analysis is frequently applied on projects that are still under construction because the full scope of the impact may not yet be known. Both parties to a construction contract often recognize that a full and final settlement of delay on a contemporaneous basis is not only compliant with the terms of the contract, but it provides a means to effectively balance risk on delays that are not yet complete. Contemporaneous analyses therefore, are often more *functional* than they are *literal*. When delay analyses are performed forensically, however, the standard-of-care increases because the settlement is likely to be based on technical proof rather than mid-project business decisions. Accordingly, forensic concurrency analyses are more likely to be *literal* in nature.

2. Least Float vs. Negative Float

The use of Negative Float or Longest Path Theory (Subsection 4.3.A.2.) for identification of critical activities can have a profound effect on the calculation of concurrent delay. The disparity stems from divergent approaches to criticality. Virtually all forensic delay methodologies provide for extensions of contract time on the critical path only. Therefore, the definition of the critical path is of utmost importance.

The Negative Float Theory assumes criticality on any activity that has negative total float relative to a contractual milestone. There is a certain practicality to this approach since most parties working from a CPM schedule will generally move to advance any activities that have negative total float because they are all essential to the maintenance or recovery of project delay.

The Longest Path Theory provides for criticality on the longest path only, even if other secondary paths are late with regard to a contractual milestone. Under the Longest Path Theory, all paths shorter than the longest path (even those with negative total float) have positive total float with respect to the longest path and are therefore not critical. In contrast, under the Negative Float Theory, any delays, occasioned by negative total float, occurring during the same measurement period are potential candidates for concurrency.

Concurrency analyses should always be consistent with the contract's definition of criticality. While it is beyond the scope of this document to catalogue the variations in contractual specifications, one relatively common definition is worth mentioning. Namely, some contracts include in the definition of concurrent delay that it cause a critical path delay. The requirement that the concurrent delay be critical, in effect, excludes other delay events with float values greater than the critical path from being evaluated for offsets against compensable delays. This view comports with the Literal Theory. It can be argued that absent such contract definition, non-critical delays can be used to offset compensable delay on a day-for-day basis after the expenditure of relative float against the critical path. This view comports with the Functional Theory.

3. Cause of Delay vs. Effect of Delay

Another philosophical dichotomy that complicates the evaluation of concurrency is the difference between the proximate (immediate) cause of the delay and effect of the delay.

For example, assume a schedule activity with a planned duration of five days experiences work suspensions on the second day and the fifth day, thereby extending the duration by two days. The delaying events are on the second and the fifth day, but the delay-effect is on the sixth and the seventh day. The differences become much larger on activities with longer planned durations that experience extended delays. A good example would be delayed approval of a submittal that stretches for weeks and months.

The philosophical difference rests on the observation by the delay-effect adherents that there is no 'delay' until the planned duration has been exhausted. In contrast, the delay-cause adherents

maintain that the identification of delay should be independent of planned or allowed duration, and instead should be driven by the nature of the event. The disadvantage of the delay-cause theory is that if there are no discrete events that cause a schedule activity to exceed its planned duration, it would have to fall back to the delay-effect method of identifying the delay. Conversely, in cases where the delay was a result of a series of discrete events, the delay-effect method of chronological placement of delay would often be at odds with contemporaneous documentation of such discrete events.

The difference in outcome is pronounced under the literal theory, since it affects whether or not a delay is identified as concurrent. Under the functional theory the significance to the outcome depends on whether the analyst is using a static method (MIP 3.1, 3.6 or 3.8) or a dynamic method (MIP 3.2, 3.3, 3.4, 3.5, 3.7 or 3.9). Using a static method, the cause-effect dichotomy makes no difference because the entire project is one networked continuum. But using a dynamic method, it does make a difference because the chronological difference between the cause and effect may determine the analysis interval in which the delay is analyzed.

There are two solutions to reconcile this potential dichotomy between the static and dynamic methods. One solution is to use the cause theory where discrete delay events are identifiable and to use the effect theory where there are no identifiable discrete events that led to the delay. But note that in many cases the identification of discrete causes is a function of diligence in factual research, which is in turn dictated by time and budget allowed for the analysis. The second solution is to review the delay on an activity basis and not to review the events on a daily basis within the event. This solution comports with the reality that delays that occur at the outset of an activity may be made up during the performance of that activity.

4. Frequency, Duration, and Placement of Analysis Intervals

Analysis interval refers to the individual time periods used in analyzing the schedule under the various dynamic methods (MIP 3.2, 3.3, 3.4, 3.5, 3.7 and 3.9). The frequency, duration and the placement of the analysis intervals are significant technical factors that influence the determination of concurrency. The significance of the analysis interval concept is also underscored by the fact that it creates the distinction in the taxonomy between the static versus the dynamic methods. The static method (MIP 3.1, 3.6, or 3.8) has just one analysis interval, namely the entire project, whereas the dynamic model segments the project into multiple analysis intervals.

a. Frequency and Duration

Concurrency is evaluated discretely for each analysis interval. That is, at the end of each period, accounting of concurrency is closed, and a new one opened for the next period. This is especially significant when analysis proceeds under the functional theory of concurrency in cases where two functionally concurrent delay events, one owner delay and the other a contractor delay, are separated into separate periods. If those delay events were contained in one period, they would be accounted together and offset each other. When they are separated, they would each become compensable to the owner and the contractor respectively. The analyst is recommended to analyze multiple-period events in both separate periods and combined periods to achieve the most accurate results.

However, the distinction between the functional and the literal theories does not disappear automatically with the use of multiple analysis intervals. Two delay events separated by time within one analysis interval will still be treated differently depending on which theory is used. The distinction becomes virtually irrelevant only when the duration of the analysis interval is reduced to a single day.

When multiple analysis intervals are used an additional dimension is added to the canceling

effect that was discussed in the comparison of the literal theory to the functional theory. As stated above, the separation of two potential concurrent delay events into different analysis intervals causes the functional theory to behave like the literal theory. Because the change from one period to another closes analysis for that period and mandates the identification and quantification of excusable, compensable and non-excusable delays for that period, it is only after all the analysis intervals, covering the entire duration of the project, are evaluated that reliable results can be obtained by performing a 'grand total' calculation. In other words, the ultimate conclusion cannot be reached by selective evaluation of some, but not all, analysis intervals.

b. Chronological Placement

The general rule that all the intervals be evaluated will ensure the reliability of the net result. But the analyst can still influence the characterization of the delays by determining the chronological placement of the boundaries of the intervals, or the cut-off dates.

There are two main ways that the analysis intervals are placed. The first method is to adopt the update periods used during the project by using the data dates of the updates, which are usually monthly or some other regular periods dictated by reporting or payment requirements. The other is the event-based method in which the cut-off dates are determined by key project events such as the attainment of a project milestone, occurrence of a major delay event, change in the project critical path based on progress (or lack thereof), or a major revision of the schedule. Event-based cut-off dates may not necessarily coincide with any update period.

The most distinguishing feature of the event-based placement of cut-off dates is that there is significant independent judgment exercised by the forensic analyst in choosing that time period. Because the cut-off date is equivalent to the data date used for CPM calculation, it heavily influences the determination of criticality and float, and hence the identification and quantification of concurrent delays. Also, as stated above, the placement of cut-off date plays a major role in how the canceling effect operates.

5. Order of Insertion or Extraction in Stepped Implementation

In a stepped insertion (MIP 3.6, and 3.7) or extraction (MIP 3.8, and 3.9) implementation, the order of the insertion or extraction of the delay may affect the identity of potentially concurrent delays and their quantification.

As a general rule, for additive modeling methods where results are obtained by the forward pass calculation, the order of insertion should be from the earliest in time to the latest in time. For subtractive modeling methods the order is reversed so that the stepped extraction starts with the latest delay event and proceeds in reverse chronological order.

There are other systems, such as inserting delays in the order that the change orders were processed, or extracting delays grouped by subcontractors responsible for the delays. In all these seemingly logical schemes if chronological order of the delay events is ignored, the resulting float calculation for each step may not yield the data necessary for reliable determination of concurrent delays.

6. Hindsight vs. Blindsight

The difference between the prospective and the retrospective modes was addressed in Section 1. In this section however, we are reviewing two ways to view historic events in retrospective analysis. The first is "hindsight," where the analysis uses all the facts, regardless of the contemporaneous knowledge, in determining what occurred in the past. The second is "blindsight" where the analysis evaluates events as-if standing at the contemporaneous point in time, with no knowledge of

subsequent events. This RP deals primarily with the retrospective mode of analysis. The determination of concurrency made prospectively during the project is usually done using the functional theory so as to resolve potential concurrencies as they occur –essentially blindsight. However, such determinations may be discovered to be incorrect in hindsight using retrospective information. Thus, in the context of forensic schedule analysis, the analyst must be aware of the difference when reconciling the results of the retrospective analysis utilizing full hindsight with findings made during the project when the future was unknown.

The one place where this difference becomes technically relevant in the practice of forensic schedule analysis is in rectifying and reconstructing schedule updates (MIP 3.5 and 3.9). Specifically, the assignment of remaining duration to each partially progressed activity is highly dependent on whether the approach is hindsight or blindsight. Because CPM calculation of schedule updates depends, in part, on the value of remaining duration of activities at the data date, the difference in approach may affect the identification and quantification of concurrent delays.

In the Figure below, Activity A has an original duration of 21 work days, starts several days after the first Monthly Status Update, and has been in progress 20 work days at the time of the second Monthly Status Update.

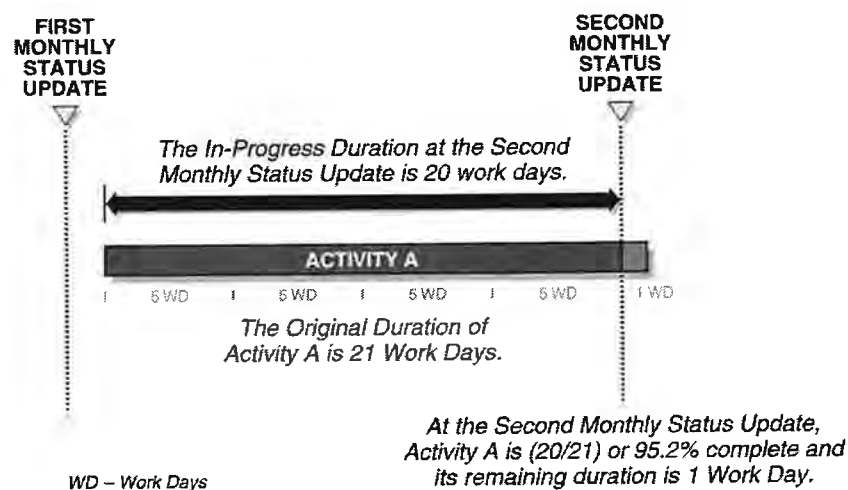


Figure 13 - Blindsight Method for Determining Remaining Durations of Activities in Progress

Using the Blindsight method, and not knowing that any delay had occurred during the first 20 work days of progress, the remaining duration could be said to be only one work day at the time of the second Monthly Status Update. It would not be known until the activity was complete after the second Monthly Status Update that it's as-built duration was 25 work days.

The next figure below illustrates the remaining duration of an activity using the hindsight method:

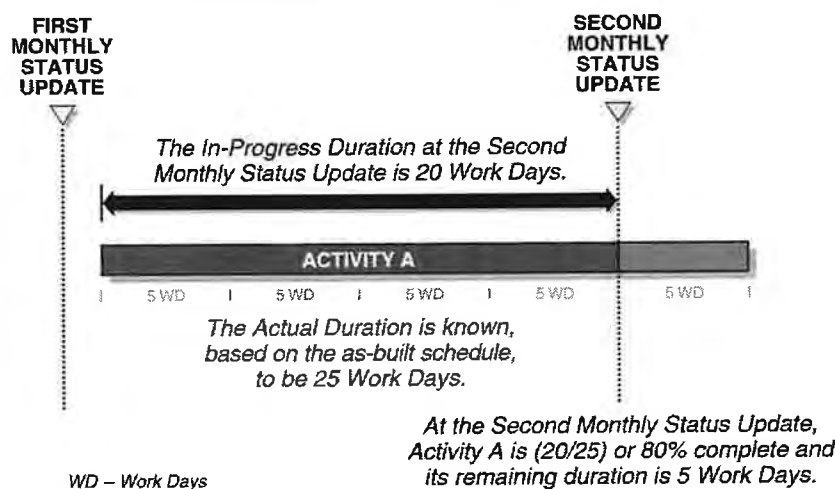


FIGURE VII-C-8 10 MAR 09

Figure 14 - Hindsight Method for Determining Remaining Durations of Activities in Progress

In this example, the same Activity A, which had an original duration of 21 work days, starts several days after the first Monthly Status Update, and based on the as-built data, finishes with an actual duration of 25 work days. The second Monthly Status Update occurs after 20 work days of progress on Activity A have occurred. Therefore, the analyst would conclude that the Activity A is 80 percent complete at the second Monthly Status Update, and would have a Remaining Duration of 5 work days at that time.

There is no prevailing practice, let alone agreement, on which practice ought to be used in the reconstruction of schedule updates. On one hand, the hindsight supporters maintain that it serves no purpose to ignore best available evidence and recreate updates, pretending that the as-built information does not exist. On the other hand, the blindsight supporters argue that the very purpose of reconstructing schedule updates is to replicate the state of mind of the project participants at the time of the update, because project decisions were made based on best available information at the time.

It is recommended that both approaches be evaluated in cases where difference in approach results in a significance variance.

E. Defining the Net Effect of Concurrent Combinations of Delay

If the contract documents are silent with regard to delay event definition, they are also likely to be silent on the net effect of concurrent combinations of delay. Under the foregoing delay definitions, there are just three potential combinations of discrete delay events. The following figure assumes the more common contractual situation where Force Majeure events are excusable but non-compensable events.

In the absence of specific contract language to the contrary, this Recommended Practice suggests the following protocol:

Delay Event 1		Delay Event 2	Net Effect
Force Majeure Delay [Time / No Compensation for Extended Overhead / No Liquidated/stipulated Damage Assessment]	concurrent with	Contractor Caused Delay [No Time / No Compensation for Extended Overhead / Liquidated/stipulated Damage Assessment]	Excusable [Time / No Compensation for Extended Overhead / No Liquidated/stipulated Damage Assessment]
Force Majeure Delay [Time / No Compensation for Extended Overhead / No Liquidated/stipulated Damage Assessment]	concurrent with	Owner Caused Delay [Time / Compensation for Extended Overhead]	Excusable [Time / No Compensation for Extended Overhead / No Liquidated/stipulated Damage Assessment]
Contractor Caused Delay [No Time / No Compensation for Extended Overhead / Liquidated/stipulated Damage Assessment]	concurrent with	Owner Caused Delay [Time / Compensation for Extended Overhead]	Excusable [Time / No Compensation for Extended Overhead / No Liquidated/stipulated Damage Assessment]

Figure No. 15 - Net Effect of Potential Concurrent Delay Combinations

Each of the foregoing conditions may result in an excusable, non-compensable delay (depending on the terms of the contract), which in turn typically results in at least four findings and remedies:

- Neither party benefits monetarily from the delay.
- The sole remedy for the delay is an extension of time.
- The right to compensation for either party is deemed offset by the compensation to the other party.
- The delay is treated as excusable and not within the control of either party.

F. Pacing

Pacing occurs when one of the independent delays is the result of a conscious, voluntary and contemporaneous decision to pace progress against the other delay. The quality that distinguishes pacing from concurrent delay is the fact that pacing is a conscious choice by the performing party to proceed at a slower rate of work with the knowledge of the other contemporaneous delay, while concurrent delays occur independently of each other without a conscious decision to slow the work.

By pacing the work, the performing party is exercising its option to reallocate its resources in a more cost effective manner in response to the changes in the schedule caused by the other parent (non-pacing) delay and thereby mitigating or avoiding the cost associated with the resource demands. There may be no need to maintain the original schedule in the face of a known delay caused by the other party – no need to ‘hurry up and wait’. In other words, it is the consumption of float created¹⁴ in the pacing activity by the occurrence of the parent delay. Pacing delay is a real-life manifestation of the principle that work durations expand to fill the time available to perform them. It can take many forms. Work can be slowed down, resulting in extended work durations, or temporarily suspended, or performed on an intermittent basis. Whatever form it takes, the key is that it results from the performing party’s reasoned decision to keep pace with another activity, which is called the parent delay, which is experiencing a delay.

¹⁴ The term ‘creation’ should not be interpreted to mean that total float is increased. In fact, the opposite is true. The parent delay adversely impacts the overall critical path of the project, thereby decreasing total float. What it creates (increases) is relative total float on the path of the paced activity relative to the total float on the path carrying the parent delay.

There are two distinct circumstances to which the term, *pacing delay*, is often applied. The first circumstance, often referred to as *direct pacing*, occurs where the duration of a schedule activity is extended due to a delay in a predecessor activity on which the progress of the subject activity is directly dependent. An example would be the pacing of electrical conduit rough-in when the duration of metal stud installation is extended by delays. In such a case, because there is not enough work to sustain the continuous utilization of a full crew, the electrical subcontractor may order a crew size reduction, by temporarily reassigning some workers to other areas, slowing the progress. In either case it extends the overall duration of electrical rough-in. Although this is definitely *pacing*, it is not considered a *pacing delay* because the two activities are sequential and not concurrent.

The second type of *pacing delay* is where the paced activity has no direct dependency on the parent delay activity, sometimes called *indirect pacing*. The fact that it shares the same time frame is a function of schedule timing as opposed to construction logic. An example of this type of *pacing* would be the landscaping subcontractor who demobilizes its crew and returns at a later time because critical path work in the building has been delayed.

In this type of *pacing*, the sole relationship of the paced activity to the parent delay is the fact that the parent delay creates additional relative total float available for consumption by the paced activity. The deceleration is achieved typically by reassignment or reduction of resources or entirely foregoing the procurement of resources that would have been otherwise necessary.

It should be clear that where the *pacing defense* is raised in answer to the identification of a potential concurrent delay, the *pacing delay* is not a distinct delay event but an alternate characterization or 'label' to describe and explain the concurrent delay event. Therefore, the *pacing* issue is relevant only to the extent that concurrency of delays is an issue. If there have been no potential concurrent delays identified, then *pacing* is irrelevant.

The term *pacing defense* is a misnomer, because paced performance, when properly undertaken, is a proactive rather than a reactive response to another party's parent delay. The use of the term *defense* implies that *pacing* is a forensic excuse rather than a contemporaneous option.

Pacing almost never occurs in the context of a literal method of concurrency analysis. Under the literal theory, the initial delay event would create float within the other near critical simultaneous activities. Since those activities had float relative to the new critical path, there would be no need to consider *pacing*.

Provided that *pacing* is not precluded by contract or local law, the contractor's right to pace its work in reaction to a critical path delay is a generally accepted concept. Thus, the contractor will not be penalized for *pacing* its work. This is consistent with the majority view that float, a shared commodity, is available for consumption on a 'first come first served' basis. Contracts that reserve float ownership to one party or the other may effectively preclude *pacing* as a management tool.

Pacing is irrelevant without the initial assertion of concurrent delay, and since concurrent delay is irrelevant where compensability is not at issue, the general acceptance of *pacing* strongly suggests that the contractor's right to pace would remove the owner's defense of concurrent delay and thereby make an otherwise non-compensable parent delay a compensable one. Alternatively, the owner can also pace performance. The owner's legitimate *pacing* would remove the contractor's defense of concurrent delay and thereby make an otherwise excusable contractor delay, non-excusable.

G. Demonstrating Pacing

In the absence of clear law or prevailing contractual language, the following criteria provide common sense guidelines for determining the legitimacy of *pacing delays*:

1. Existence of the Parent Delay

By definition, pacing delay cannot exist by itself. It exists only in reaction to another delay which is equally or more critical or is believed to be more critical than the paced activity. This calls for the calculation of relative total float between the parent delay and the pacing delay. Also, in cases where many different activities are being performed at the same time, it is unclear who is pacing whom. But one thing is clear: the parent delay must always precede the pacing delay. The existence of a parent delay is a mandatory requirement in legitimizing a pacing delay.

Quantitatively, the near-critical threshold can serve as a benchmark for the need to analyze for pacing delays, just like it serves to identify concurrent delays.

2. Showing of Contemporaneous Ability to Resume Normal Pace

Pacing is not realistic unless the party claiming it was pacing can show that it had the ability to resume progress at a normal, un-paced rate. Implicit in that party's ability to show that it could have completed the schedule activity on time if necessary is the fact that the party was able to reasonably determine or reliably approximate when the parent delay would end.

3. Evidence of Contemporaneous Intent

The case can be further strengthened by showing that the pacing was a conscious and deliberate decision that was made at the time of pacing. Without a notice signifying contemporaneous intent to pace, the claimant can use pacing as a hindsight excuse for concurrent delay by offering after-the-fact testimony. Typically, contemporaneous pacing notices are rare in any form, let alone specific written notices. Therefore this should not be a strict requirement of proof.

Paced performance is inherently risky because it is counter intuitive for any party to intentionally delay its performance on a project where time is of the essence. In order to mitigate such risk, it is always recommended that the party claiming the privilege provide the party responsible for the parent delay with notice of its intent to pace its performance. Unfortunately, such notices are exceedingly rare.

4.3. Critical Path and Float

A. Identifying the Critical Path

1. Critical Path: Longest Path School vs. Total Float Value School

In the early days of the development of the CPM, the longest path was the path with the lowest float. Using simple network logic (finish-to-start) only, the critical path of an un-progressed CPM network calculated using the longest path criterion or the lowest float value criterion is the same.

It is only when some advanced scheduling techniques are applied to the network model that the paths identified using these different criteria diverge (see Subsection 4.3.D.).

Most practitioners would agree that the longest path is the true critical path. Even with the use of advanced techniques, if basic network rules (see Subsection 2.1) are observed the total float value is a reasonably accurate way of identifying the critical path. But, note that float values are displayed using workday units defined by the underlying calendar assigned to the schedule activity instead of in 7-day calendar units. Therefore, activities on a chain with uniform network tension may display different float values.

2. Negative Float: Zero Float School vs. Lowest Float Value School

When a project is behind schedule, the network model may display negative values for float. Technically, this results from the fact that the earliest possible dates of performance for the activities are later than the latest dates by which they must be performed in order for the overall network to complete by a constrained finish date. Thus, the negative value is a direct indication of how many work days the schedule activity is behind schedule.

As discussed in Subsection 4.2.D.2, there are two schools of thought in interpreting the criticality of activity paths carrying negative float values. One school, which will be called the zero float school, maintains that all activities with negative float are, by definition, critical, assuming the definition of critical path is anything less than total float of one unit. The other school, which will be called the lowest value school, insists that only the activity paths that carry the lowest value are critical.

In the context of the two critical path schools, longest path versus total float value, the total float value adherents tend to align with the zero float thinking while the longest path adherents tend to think along the lines of the lowest float value school. However, neither one of these philosophical alignments is guaranteed, nor are they logically inconsistent.

Which one is correct depends on which principles are considered. If only CPM principles are used to evaluate the theories, the lowest value school is correct. The zero float school may have an arguable point if contractual considerations are brought into play, since all paths showing negative float are impacting (albeit not equally) the contractual completion date.

For the purpose of this RP, the procedures and methods use the lowest value theory as the valid criterion for criticality where negative float is shown. Thus, the true float value of a schedule activity carrying negative float will be calculated as the relative total float against the lowest float value in the network. For example, if the lowest float value in the network is minus 100, and another schedule activity shows a value of negative 20, the true float for that schedule activity, based on relative total float, is 80, assuming both activities are defined by the same calendar (see Subsection 4.3.D.2). The potential also exists for fragments of activities to have lower total float than the project's longest or critical path. This occurs when activities are tied to intermediate project milestones (and not to overall project completion). If such a scenario is observed, the analysis should also consider the contractual relationship or requirement for the intermediate milestones.

B. Quantifying 'Near-Critical'

The purpose of quantifying the near-critical path is to reduce the effort of identifying and analyzing potential concurrent delays. A rational system of identifying all activities and delays that are near-critical is the first step in objectively streamlining the process of evaluating the schedule for concurrent delays. Thus, if the analyst chooses to analyze all delays and activities on a network, the quantification of near-critical is unnecessary. But in most cases, analyzing all activities, especially on large complex schedules, is excessively time consuming and unnecessary.

Near-critical delays have the greatest potential of becoming concurrent delays. This is because a near-critical delay, upon consumption of relative float against the critical path delay, will become critical. Therefore the near-critical delays are the most likely suspects of concurrency, and must be analyzed for partial concurrency to the extent that the net effect of that delay may exceed such relative float.

The determination of what a 'near critical' activity is depends on the following factors:

1. Duration of Discrete Delay Events

The insertion or extraction of delays affects the CPM calculations of a network model. Specifically, the duration of delays modeled in the analysis is directly proportional to the impact such delays have on the underlying network.

Because the effect results from insertion or extraction of delay, this is of obvious relevance to the modeled methods (MIP 3.6, 3.7, 3.8, and 3.9). But, it is also relevant to the dynamic observation methods where the underlying schedule updates were prepared during the project by inserting delay events.

The maximum duration of the set of all delay events would measure the greatest potential effect resulting from insertion or extraction. Averaging the duration of the set of all delay events would provide a less rigorous average measure. The maximum or the average measure is added to the value of the float value of the critical path to yield the near-critical threshold. Any schedule activity or path carrying a float value between that threshold and the value of the critical path is considered near-critical.

The practical effect is that the greater the duration of the delay events used in the model the greater the number of activities that must be considered near-critical and subjected to concurrency evaluation. Under this criterion, the most obvious way of minimizing the number of near-critical activities is to minimize the duration of the delay events. That is, a delay event of relatively long duration can be segmented into smaller sub-events for analysis and documentation.

While ensuring a finer granularity of delay events gives rise to added work in modeling and documenting those delay events, the trade-off is a lesser number of activities to analyze for concurrency.

2. Duration of Each Analysis Interval

The duration of the analysis interval is the length of time from the start of the segment of analysis to the end of that segment. In the dynamic methods (MIP 3.2, 3.3, 3.4, 3.5, 3.7, and 3.9) where the analysis is segmented into multiple analysis intervals, the measure would be the duration of each time period. In the static methods (MIP 3.1, 3.2, 3.6, and 3.8)¹⁵ the duration of the analysis interval is the duration of the entire project or whatever segment of the project is represented by the schedule used for the analysis. Although this would mean that the static methods would have to perform a concurrency analysis on the entire network, it is both impractical and unnecessary to do so. Thus for methods that use the as-built as a component (MIP 3.1, 3.2, and 3.8), determination of near criticality can be made pursuant to the procedure established in Subsection 4.3.C below regarding the as-built critical path.

The concept underlying this criterion is the fact that the potential change in the critical path due to slippage, lack of progress or gain caused by progress during the analysis interval is equal to the duration of that interval. Thus, if the interval is one month, the maximum slippage that can occur, excluding non-progress revisions and delay insertions, is one month. Hence, near-criticality threshold would be set by adding 30 calendar days to the float value of the critical path.

This criterion is most relevant with the dynamic methods (MIP 3.2, 3.3, 3.4, 3.5, 3.7, and 3.9) that use the concept of analysis intervals. An implementation that uses large time periods would have to consider more activities near-critical than one that uses many small time periods. An extreme example of the latter is an as-planned versus as-built analysis that analyzes progress on a daily basis (MIP 3.2). This would have a near-critical threshold value of one day over the critical path.

¹⁵ MIP 3.2 appears in both classifications because under some (but not all) implementations of MIP 3.2, the segmentation is merely a graphical tool for presenting a conclusion derived from a non-periodic analysis. Please refer to MIP 3.2 for details.

The practical tradeoff is that by increasing the number of analysis intervals one can reduce the work load of concurrency analysis, and vice-versa.

3. Historical Rate of Float Consumption

To augment the previous analysis interval criterion, the rate at which float is being consumed on a given activity-chain over time is worthy of consideration. The rate of consumption should be no more than the duration of the analysis interval per interval. Thus, where the interval is one month, if an activity chain is outside the near-critical threshold but is consuming more than 30 calendar days of float per month in the past updates¹⁶, the trend indicates that it would become near-critical in the next period. Therefore, it should be considered near-critical even though it carries more relative float than the duration of the interval.

4. Amount of Time or Work Remaining on the Project

As the project approaches completion, CPM may not be the best tool to assess criticality. This is true especially in a problem project where many activities are being performed out-of-sequence in an attempt to meet an aggressive deadline. Even on a normal project, as the work transitions from final finishes to punch list work, CPM updates may be abandoned in favor of a list or matrix format of work scheduling. It is often said that near the end 'everything is critical'.

Reduced to an equation, the percentage of activities remaining on the network that should be considered near-critical is proportional to the degree of completion of the schedule.

Therefore, after 90 to 95 percent of the base scope and change order work are complete, the analyst may want to consider all activities on the schedule as near-critical regardless of float.

C. Identifying the As-Built Critical Path

It is impossible to accurately determine the as-built critical path by using only conventional float calculation on the past portion (left) of the data date. Because of this technical reason, the critical set of as-built activities is often called the controlling activities as opposed to critical activities.

One method to show the as-built critical path is to create a collapsible as-built CPM schedule (Subsection 3.8.K.2) where the as-built schedule actual dates are converted into actual activity durations and actual driving lag durations. The total float values of the collapsible as-built schedule can be used to show the as-built critical path if the as-built logic was determined using the enhanced logic rules that not only uses the early-start and early-finish dates to simulate the as-built dates but also determine the proper late start and late finish dates. While there is acknowledgement that this is technically feasible, currently there is no agreement among practitioners on a common set of these enhanced logic rules.

The closest the analyst can come to determining the as-built critical path is to cumulatively collect from successive schedule updates the activities that reside on the critical path between the data date and the data date of the subsequent update. The same technique can be used to determine the as-built near-critical activities. If the updates are available, the following is the recommended protocol.

- a. Use all the critical and near-critical activities in the baseline schedule. If modifications were made to the baseline for analysis purposes, use both sets of critical activities, before and after the modification.

¹⁶ Obviously this would be caused by reasons beyond just pure slippage. An example would be insertion of activities or a change to more restrictive logic.

- b. For each schedule update, use the critical and near-critical chains of activities starting immediately to the right of the data date.
- c. Also use the predecessor activities to the left of the data date that precede the chains found in (b) above.
- d. Use the longest path and near-longest path criteria in addition to the lowest float path criterion in identifying the activities.
- e. If weather or other calendar factors are at issue, also use a baseline recalculated with an alternate calendar reflecting actual weather or other factors to gather critical and near-critical activities.

An enhanced protocol would add the following sets to the recommended protocol.

- f. If appropriate, perform (b) through (d) above using different calculation modes¹⁷ if they are available.
- g. Where significant non-progress revisions were made during the updating process, repeat (b) through (d) using the progress-only, bifurcated schedules (see Subsection 2.3.D)
- h. If appropriate, examine the resource-leveled critical path as opposed to hard-tied sequences, sometimes called preferential logic, based solely on resources.
- i. Conversely, if resource constraint is at issue and the schedule logic does not reflect the constraint, insert resource-based logic to obtain a critical path that considers all significant constraints.

From the above steps the lowest float path will generally be the as-built critical path. However, the expert must use his/her expert opinion based on all the facts, to identify the as-built critical path from among the identified candidates. Factors to be considered include:

- Was the work critical on any update?
- Was the work perceived to be critical by project personnel contemporaneously as documented in letters, meeting minutes, etc.?
- Was the work qualitatively significant toward overall outcome based on cost as well as the analyst's judgment and experience?
- Are their resource restraints not evident in the logic?
- Is the work being performed consistently or piecemeal?
- Does the work drive other subsequent apparently critical work?

Objective identification of the controlling activities is difficult, if not impossible, without the benefit of any schedule updates or at least a baseline CPM schedule with logic. Therefore, in the absence of competent schedule updates, the analyst must err on the side of over-inclusion in selecting the controlling set of as-built activities. The determination must be a composite process based on multiple sources of project data including the subjective opinion of the percipient witnesses. All sources used to identify the as-built controlling path should be tabulated and evaluated for reliability. Contemporaneous perception of criticality by the project participants is just as important as the actual fact of criticality because important project execution decisions are often made based on perceptions. Perceived or subjective as-built critical paths can be based on:

- Interview of the hands-on field personnel.

¹⁷ For example, in *Primavera Project Planner*: retained logic and progress override modes.

- Interview of the project scheduler.
- Contemporaneous non-CPM documentation such as:
 - monthly update reports.
 - meeting minutes.
 - daily reports.

D. Common Critical Path Alteration Techniques

There are various ways of creating, erasing, decreasing, inflating, or hiding float and manipulating the critical path of a CPM network.

These manipulation techniques can be used prospectively during the preparation of the baseline and the project updates as well as in the process of preparing the forensic models (MIP 3.6, 3.7, 3.8, and 3.9). This does not mean that the observational methods (MIP 3.1, 3.2, 3.3, 3.4, and 3.5) are immune from manipulation. Since they rely on the baseline and the updates, the source schedules must be checked for manipulation prior to use in the forensic process. Also, during the forensic process, the dynamic methods are subject to manipulation through the frequency, duration, and placement of analysis intervals (Subsection 4.3.B.2) and through subjective assignment of progress data in reconstructing updates (MIP 3.5).

The use of these techniques per se is not evidence of intentional manipulation. It must be stressed that there are legitimate uses and good reasons, albeit limited, for these features. Even in the absence of 'good reason', the feature could have resulted from laziness or even misguided attempts to improve the schedule. At any rate, schedules used for forensic schedule analysis must minimize the use of these techniques (see Subsection 2.1).

The policy of this RP is to be 'software neutral'. This means that procedures and recommendations are made without regard to the brand or version of software used for analysis. However, the examples of techniques used to manipulate results, listed below, contain descriptions of the features found in some software manufacturer's manuals

1. Resource Leveling and Smoothing

This technique uses available float to balance the resources necessary for executing the schedule. Some analysts maintain that resource leveling is the technical embodiment of pacing (see Subsection 4.2.F).

Resource leveling is the process of determining and minimizing the effect of resource availability on the schedule. Resource leveling can be used to resolve resource conflicts by rescheduling activities to times when sufficient resources are available. When resources are not available, activities can be split; activity durations can be stretched to reduce their resource per time period requirements; or, activity durations can be compressed to take advantage of ample resource supplies. During forward leveling, activities may be shifted to a later date (the leveled date). In backward leveling, activities may be moved earlier in time.

Resource smoothing is an optional resource leveling method that resolves resource conflicts by delaying activities that have positive float. Resource smoothing uses the available positive float and incrementally increases the availability limits.

2. Multiple Calendars

Float values are displayed using workday units defined in the underlying work-day calendar assigned to the activity instead of in calendar-day units. Therefore, activities in a logic sequence but with different calendars may display different float values.

All things being equal, activities using a more restrictive work-day calendar, such as one that excludes the winter months for work, carry less float than activities with less restrictive work-day calendar. Thus, by adding or removing a few holidays in the calendar, float can be manipulated.

The only way to avoid gaps, discontinuities, and work-day conversions is to use only one calendar consisting of a seven-day week.

3. Precedence Logic / Lead and Lag

Simple logic is finish-to-start with a lag value of zero, denoted as FS0. Other known types of logic relationships are start-to-start (SS), finish-to-finish (FF), and start-to-finish (SF). Most software allows the use of these logic types along with the use of lead and lag values other than zero, including negative values. The use of lag values greater than zero with FS-type of logic absorbs otherwise available float. It is possible to assign lag values that are less than zero, called negative lags. Negative lags associated with the FS-type of logic have the effect of overlapping the associated schedule activities, thereby increasing float.

- **Lag:** An offset or delay from an activity to its successor. Lag can be positive or negative; it is measured in the planning unit for the project and based on the calendar of the predecessor activity.
- **Lead Time:** An overlap between tasks that have a dependency. For example, if a task can start when its predecessor is half finished, the analyst can specify a finish-to-start dependency with a lead time of 50 percent for the successor task. The analyst enters lead time as a negative lag value or as a percent complete lag value in some software packages.
- **Lag Time:** A delay between tasks that have a dependency. For example, if the analyst needs a two-day delay between the finish of one task and the start of another, the analyst can establish a finish-to-start dependency and specify a two-day lag time. The analyst can enter lag time as a positive value.

4. Start and Finish Constraints

Setting a start constraint to a date that is later than what would be allowed by a controlling predecessor would decrease the float on the schedule activity. Similarly, setting a finish constraint to a date that is earlier than what would be allowed by a controlling predecessor would also decrease float on the schedule activity. Both techniques can be used to force activity paths to carry negative float.

There are also features that force the schedule activity to carry no total float or no free float. Also certain types of constraints force the assignment of zero float value by fixing dates on which the activity will be performed, overriding associated precedence logic.

5. Various Calculation Modes

Fundamental schedule and float calculation methods can usually be selected by the analyst, further complicating the effort to identify the critical path and quantify float. Below are examples

related to various methods of schedule calculation, duration calculation, and float calculation.

a. Schedule Calculation

- **Retained Logic:** If the analyst selects retained logic, remaining activities are scheduled with out-of-sequence progress according to the network logic. When used, scheduling software schedules the remaining duration of an out-of-sequence activity according to current network logic - after its predecessors.
- **Progress Override:** Progress override ignores logic and affects the schedule only if out-of-sequence progress occurs. If the analyst selects progress override, remaining activities are scheduled with out-of-sequence progress as though they have no constraints from incomplete predecessors with start-to-start relationships and can progress without delay. Not only does the successor activity act as if it has only limited predecessor constraints, the float of the predecessor activity also reflects the loss of that successor relationship. Progress override treats an activity with out-of-sequence progress as though it has no predecessor constraints; its remaining duration is scheduled to start immediately, rather than wait for the activities predecessors to complete. However, neither the longest path nor most-negative float techniques can guarantee an accurate depiction of the critical path when using actual dates if out of sequence status is involved.

b. Duration Calculation

- **Contiguous Activity Duration:** Contiguous activity duration requires that work on an activity occur without interruption. For early dates, this type of logic affects the start dates for an activity when the finish dates are delayed by a finish relationship from a preceding activity or by a finish constraint. If the finish dates of an activity are delayed, the start dates are delayed also.
- **Interruptible Activity Duration:** For early dates, interruptible scheduling affects how start dates of an activity are treated when the finish dates are delayed by a finish relationship from a preceding activity or by a finish constraint. If the finish dates of an activity are delayed, the start dates are not delayed. – The duration of the activity is stretched, allowing the work to be interrupted along the way.

6. Use of Data Date

- Reliable calculation of schedule updates requires the use of the concept of data date or status date is generally the starting point for schedule calculations. Generally, the data date is changed to the current date when the analyst records progress.

7. Judgment Calls During the Forensic Process

Any of the above techniques can be abused to effect discretionary decisions by the forensic analyst to influence the analysis in favor of the client. There are two instances in the forensic process that are especially sensitive to such influence because they directly affect the schedule variables at the data line. They are:

- Frequency, duration, and placement of analysis intervals (see Subsection 4.2.A.3).
- Hindsight vs. blindsight update reconstruction (see Subsection 4.2.A.5).

E. Ownership of Float

In the absence of contrary contractual language, network float is a shared commodity between the owner and the contractor. Conventional interpretation of the principle of shared float allows the use of float on a first-come-first-serve basis, thereby allowing the owner to delay activities on that path up to the point where float is consumed. Therefore, as a corollary, if pacing is defined as the consumption of float, it follows that both owners and contractors are allowed to pace non-critical work.

Project float is the time between the last schedule activity on the baseline schedule and the contractual completion date where the contractual completion date is later than the scheduled completion date. In this case, in the absence of contrary contractual language, project float is owned solely by the contractor.

4.4. Delay Mitigation and Constructive Acceleration

A. Definitions

Acceleration: All or a portion of the contracted scope of work must be completed by the contractor earlier than currently scheduled. The accelerated work may be required as a result of: (a) direction of the owner or its agents (directed acceleration); (b) conduct of the owner or its agents without explicit direction (constructive acceleration); or (c) events within the responsibility of the contractor resulting in possible delay that the contractor decides to recover or mitigate. Acceleration typically has a cost associated with this performance.

Directed Acceleration: Formal instruction by the owner directing the contractor to: (1) complete all or a portion of the work earlier than currently scheduled; (2) undertake additional work; or, (3) perform other actions to complete all, or a portion, of the contract scope of work in the previously scheduled timeframe that otherwise would have been delayed. This could include mitigation efforts that usually have no costs associated with them.

Constructive Acceleration: (1) A contractor's acceleration efforts to maintain scheduled completion date(s) undertaken as a result of an owner's action or inaction and failure to make a specific direction to accelerate; [4] (2) Constructive acceleration generally occurs when five criteria are met: (a) the contractor is entitled to an excusable delay; (b) the contractor requests and establishes entitlement to a time extension; (c) the owner fails to grant a timely time extension; (d) the owner or its agent specifically orders or clearly implies completion within a shorter time period than is associated with the requested time extension; and, (e) the contractor provides notice to the owner or its agent that the contractor considers this action an acceleration order. [4] (3) Acceleration is said to have been constructive when the contractor claims a time extension but the owner denies the request and affirmatively requires completion within the original contract duration, and it is later determined that the contractor was entitled to the extension. The time extension can be for either additional work or delayed original work. [5] (4) Constructive acceleration occurs when the owner forces the contractor to complete all or a portion of its work ahead of a properly adjusted progress schedule. This may mean the contractor suffers an excusable delay, but is not granted a time extension for the delay. If ordered to complete performance within the originally specified completion period, the contractor is forced to complete the work in a shorter period either than required or to which it is entitled. Thus, the contractor is forced to accelerate the work. [6] (5) Acceleration following failure by the employer to recognize that the contractor has encountered employer delay for which it is entitled to an EOT (extension of time) and which failure required the contractor to accelerate its progress in order to complete the works by the prevailing contract completion date may be brought about by the employer's denial of a valid request for an EOT or by the employer's late granting of an EOT. This is not (currently) a recognized concept under English law. [1] (6) Constructive acceleration is caused by an owner failing to promptly grant a time extension for excusable delay and the contractor

accelerating to avoid liquidated/stipulated damages. [7]

Disruption: (1) An interference (action or event) to the orderly progress of a project or activity(ies). Disruption has been described as the effect of change on unchanged work which manifests itself primarily as adverse labor productivity impacts. [4] (2) *Schedule disruption* is any unfavorable change to the schedule that may, but does not necessarily, involve delays to the critical path or delayed project completion. Disruption may include, but is not limited to, duration compression, out-of-sequence work, concurrent operations, stacking of trades, and other acceleration measures. [8]

Out-of-Sequence Progress: Significant work performed on an activity before it is scheduled to occur. In a conventional relationship, an activity that starts before its predecessor completes shows out-of-sequence progress. [2]

Delay Mitigation: A contractor's or owner's efforts to reduce the effect of delays already incurred or anticipated to occur to activities or groups of activities. Mitigation often includes revising the project's scope, budget, schedule, or quality, preferably without material impact on the project's objectives, in order to reduce possible delay. Mitigation usually has no or very minimal associated costs. [4]

Recovery Schedule: A special schedule showing special efforts planned to recover time lost for delays already incurred or anticipated to occur when compared to a previous schedule. Often a recovery schedule is a contract requirement when the projected finish date no longer indicates timely completion. [4] Recovery schedules are usually proposals that must be accepted by the owner prior to implementation.

B. General Considerations

1. Differences between Directed Acceleration, Constructive Acceleration, and Delay Mitigation

In practice, there are subtle distinctions between directed acceleration, constructive acceleration, and delay mitigation. For example, directed acceleration cost implies additional expenditure or money for recovery of either incurred or projected delay, as well as efforts to complete early – all at the direction of the owner. The term constructive acceleration applies to expenditure of money for efforts to recover either incurred or projected delay caused by the owner and without specific direction to do so. Delay mitigation generally refers to no-cost recovery efforts for incurred or projected delay.

In the case of acceleration, constructive acceleration, and delay mitigation, affected activities are usually on the projected critical path; thus, the objective of most acceleration or mitigation is to recover from anticipated delay to project completion. However, acceleration, constructive acceleration, and mitigation can occur with regard to activities that are not on the critical path. For example, an owner might insist that a certain portion of the work be made available prior to the scheduled date for completion of that activity. The contractor may mitigate non-critical delay by resequencing a series of non-critical activities to increase the available float.

There are circumstances in which acceleration measures are used in an attempt to complete the project earlier than planned. Those circumstances are usually classified as: (a) directed acceleration where the owner directs such acceleration and usually pays for the associated additional cost; or (b) voluntary acceleration in which the contractor implements the plan on its own initiative in the hope of earning an early completion bonus. Contractor efforts undertaken during the course of the project to recover from its own delays to activities are generally not considered acceleration, even if the contractor incurs cost as a result.

The causative link between a delay event and cost associated with constructive acceleration is

diagramed below. The root cause of the impact results in a construction delay or projects a construction delay. This, in turn, results in the contractor identifying that it needs a time extension and requesting a time extension. The owner denies the time extension request but the need for recovery from the delay remains. The contractor then undertakes acceleration measures that could include increased labor. Increased labor, without a time extension, can result in loss of productivity.

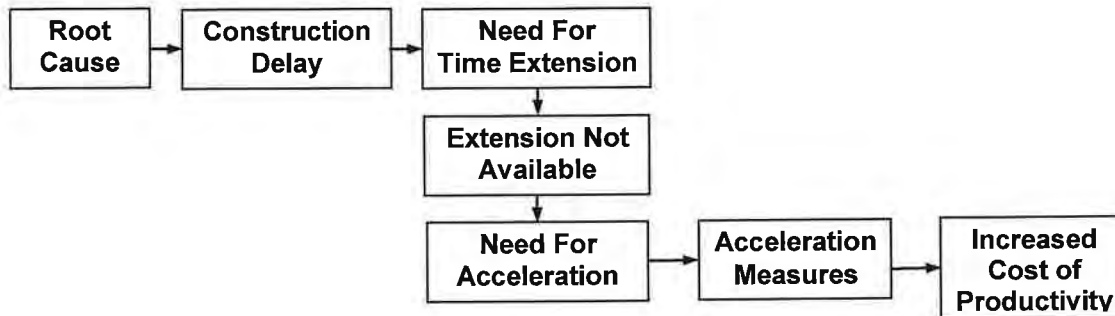


Figure 16 – Constructive Acceleration Flow Chart

A contractor's cost for acceleration, whether directed or constructive, is generally associated with the effort to engage more resources to perform the work during a unit of time than planned. These increased resources fall into the following major categories: (1) increased management resources; (2) increased equipment usage; (3) increased material supply; and (4) increased labor. The greatest cost associated with acceleration is usually increased labor. Since the amount of actual work remains unchanged in most acceleration efforts (assuming the planned scope of work has not increased), the increase in labor cost is a result of a decrease in labor productivity or the increase in the amount of overtime labor. Decreased labor productivity is caused by disruption to the planned sequence and pace of the labor. The greater the disruption to the work, the greater the inefficiency. Disruption can be the result of having more people working in the planned area during a specific time, or loss of productivity associated with individual workers working more hours than planned.

2. Acceleration and Compensability

Directed acceleration is always compensable to the contractor, although the parties may disagree on quantum. This is true regardless of whether the contractor is accelerating to overcome an owner-caused delay, or to recover from a *force majeure* event. Constructive acceleration follows this same pattern. If entitlement to constructive acceleration is established, the contractor may recover for a delay caused by the owner that the owner has refused to acknowledge and also for a *force majeure* event. This is different than the normal rule concerning damages associated with *force majeure* events. Typically, *force majeure* events entitle the contractor to time but no money. However, if an owner refuses to acknowledge a time extension for a *force majeure* event a contractor has no choice but to constructively accelerate so as to avoid the delay and possible liquidated/stipulated damages. As a result, the contractor is entitled to recover its cost associated with that constructive acceleration.

3. Delay Mitigation and Compensability

Delay mitigation is generally achieved through non-compensable efforts. These efforts are usually associated with changes in preferential logic so as to perform the work in a shorter timeframe. Mitigation applies to either incurred or predicted delays. There is no mitigation associated with efforts to complete early. Delay mitigation often has a small cost which is associated with the contractor's management of the schedule and the overall project. It is generally considered

minimal and therefore ignored.

C. Elements of Constructive Acceleration

1. Contractor Entitlement to an Excusable Delay

The contractor must establish entitlement to an excusable delay. The delay can be caused by an action or inaction on the part of the owner that results in delay or it can be a *force majeure* event. In theory, a contractor can recover for constructive acceleration for work yet to be done. In this situation the owner takes some action that will result in the contractor expending acceleration costs to recover from the delay. The contractor could assert its entitlement even though the actual acceleration has yet to occur and the actual acceleration costs have yet to occur. In practice, since constructive acceleration occurs after the owner has denied a time extension, it is almost always resolved after the acceleration is complete and the contractor usually is arguing that it was actually accelerated.

2. Contractor Requests and Establishes Entitlement to a Time Extension

The contractor must ask for a time extension associated with the owner's action or the *force majeure* event. In that request, or associated with that request, the contractor must establish entitlement to a time extension. The owner must have the opportunity to review the contractor's request and act upon it. If the contractor fails to submit proof of entitlement to a time extension, the owner is able to argue that the opportunity was never given to properly decide between granting a time extension and ordering acceleration. The level of proof required to be submitted must in the end be sufficient to convince the eventual trier of fact that the contractor "established" entitlement.

In certain situations, it is possible that actions of the owner may negate the requirement for the contractor to request a time extension or to establish entitlement. In this situation, the theory is that the owner has made clear that a time extension will absolutely not be granted. Such cases are difficult to establish.

3. Owner Failure to Grant a Timely Time Extension

The owner must unreasonably fail to grant a time extension. This is closely related to the requirement that the contractor establish entitlement to a time extension. If the owner reasonably denies a request for time, as eventually decided by the trier of fact, then by definition the contractor has failed to prove entitlement. Therefore, the owner's decision not to grant a time extension where the contractor has shown entitlement must be unreasonable.

4. Implied Order by the Owner to Complete More Quickly

The owner must also, by implication or direction, require the contractor to accelerate. There are several different factual alternatives possible. First, a simple denial of a legitimate time extension, by implication, requires timely completion and thus acceleration. If this denial is timely given, the contractor can proceed. However, the best proof for the contractor is a statement or action by the owner that specifically orders the contractor meet a date that requires acceleration. Second, the owner could deny the time extension request and remind the contractor that it needs to complete on time. This is better than the first alternative above, but not as strong as the next alternative. Third, the owner could deny the time extension request and advise the contractor that any acceleration is the contractor's responsibility. This is probably the best proof for this aspect of constructive acceleration. All three of these options meet the test for an owner having constructively ordered acceleration. Examples of owner actions that meet this requirement include: (1) a letter from the owner informing the contractor that it must meet a completion date

that is accelerated; (2) an owner demand for a schedule that recovers the delay; or (3) the owner threatening to access liquidated/stipulated damages unless the completion date is maintained. The fourth alternative arises when the owner is presented with a request for a time extension but fails to respond. The contractor is faced with either assuming that the time extension will be granted, or accelerating. Under this alternative, the owner's failure to timely decide, functions as a denial.

5. Contractor Notice of Acceleration

The contractor must provide notice of acceleration. As with any contract claim for damages, the owner must be provided notice of the claim. Even though the contractor has requested and supported the application for a time extension, the contractor must still notify the owner of its intent to accelerate or be actually experiencing ongoing acceleration. This is so that the owner can decide if it actually desired acceleration to occur, or, instead, the owner may decide to grant a time extension.

6. Proof of Damages

The contractor must establish its damages. For loss of productivity claims, the contractor is faced with developing convincing proof of decreased productivity. Actual acceleration is not required. A valid contractor effort to accelerate, supported by contemporaneous records, is sufficient to establish constructive acceleration. It is quite common that contractors accelerate to overcome delays but continue to be impacted and delayed by additional events and impacts that actually result in further delay to the project.

5. CHOOSING A METHOD

This RP discusses the choice of a forensic schedule analysis methodology. Because individuals generally work for one party to a dispute, there is often skepticism about the impartiality of the particular methodology chosen. Therefore, it is vitally important that all practitioners understand clearly what it takes to overcome this skepticism when choosing and using a particular delay evaluation method.

First, each claim is unique in that each deals with a different project, different contract documents, different legal jurisdictions, different dispute resolution mechanisms, and different fact patterns among other project execution factors. Likewise, each method discussed in this RP is different and each has certain technical factors to consider, including advantages and disadvantages. Because of the uniqueness and the need to consider multiple variables it is impossible to recommend one method that is the "best" method, or to rank the methods in order of preference.

Second, the selection of the analytical method should be based primarily on technical considerations related to the purpose, the timing, availability of data, and the nature and complexity of the delay and scheduling information.

Having selected the technically appropriate analysis method based on these criteria, the analyst must now consider the legal criteria, which varies from one jurisdiction to another. It is not possible nor is it the intent to list the selection guidelines of all the legal jurisdictions in this RP. The analyst is cautioned to seek the advice of legal professionals with specialized knowledge of the laws of the jurisdiction and forensic schedule analysis methods. This is true especially if the selection based on technical criteria must be reconciled with a different selection based on legal criteria.

Thirdly, there are a number of qualitative reasons, beyond technical schedule analysis reasons, that should be included in determining which forensic schedule analysis method is to be used for a particular claim. As in any commercial undertaking, while practical considerations are appropriate, these

considerations must be secondary to the technical and legal considerations and should be used only when all appropriate technical and legal criteria have been met. Furthermore, the selection decision should be that of the analyst and not that of the client.

There is no requirement that the analyst select only one method to analyze a project. Some cases would necessitate the use of different methods for different phases of the project based on factors, including but not limited to, such as the nature of the claim (compensability versus excusability) and source data availability.

This part of the RP discusses eleven factors that should be considered by the forensic schedule analyst when making a recommendation to the client and its legal counsel concerning this decision. Factors two, three and five cover technical considerations. Factors one, nine and ten cover legal considerations. And factors four, six, seven, eight and eleven are practical considerations.

The forensic schedule analyst should consider each of these factors, reach a conclusion, and offer a recommendation with supporting rationale to the client and legal counsel in order to obtain agreement prior to proceeding with the work. Advance understanding of the analyst's scope of work as well as the time, cost and resources required to perform the work should prevent surprise or disagreements during the drafting of the expert report or worse, at deposition.

5.1 Factor 1: Contractual Requirements

When a project is executed under a contract that specifies or mandates a specific schedule delay analysis method, then the choice of method is largely taken out of the hands of the forensic schedule analyst, and contract compliance is the prevailing factor. Some contracts, for example, now require that all requests for time extension (either during the life of the project or at the end of the job) be substantiated through the use of a prospective TIA (similar to MIP 3.7). As noted in this RP, several methods of forensic schedule analysis fall under this generic terminology. Most likely, the forensic schedule analyst will be required to use one of the additive modeling methods, either single base or multiple base, unless there are persuasive reasons why a different method would yield a more credible result. Care should be taken to ascertain whether the contract actually mandates the use of this analytical method in forensic situations (retrospective delay analysis) or whether it is intended solely for use in prospective delay analysis to aid in negotiation of time impacts due to changes or other delays. If the latter is the situation, then the choice of methodology could be made based upon factors other than contractual language.

On the other hand, if the contract documents are silent on which schedule delay analysis method is to be used when attempting to prove entitlement to a time extension or time related compensation, then the forensic schedule analyst is free to use any of the methods identified in this RP to support such requests. However, even when the contract is silent on methodology, contract language may still constrain the forensic schedule analyst's choice of methods. For example, some contracts contain language requiring that all time extension requests document that the event "...impacted the critical path of the project schedule" or "...caused or will cause the end date of the project schedule to be later than the current contract completion date." Thus, while this language does not dictate a schedule delay analysis method, it probably compels the forensic schedule analyst to use one of the observational dynamic, additive modeling, or subtractive modeling techniques. Also, it precludes the use of any method that does not identify or analyze a critical path such as a listing of delay events or a bar-chart analysis.

Thus, the first factor to be considered is the existence of an unambiguous contract requirement describing the documentation or method to be used to support requests for time extensions or time related compensation. Forensic schedule analysts should adhere to the requirements of the contract and to the applicable codes and laws under which the contract is governed. However, it is not uncommon that requirements set forth in contracts are unclear or ambiguous (such as a contractual reference to a "but-for TIA") or patently erroneous references such as contract language requiring the use of an "impacted as-



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built analysis". It is hoped that adoption and use of the terminology contained in this RP may help prevent such situations in the future. The forensic schedule analyst may want to use this RP as a mechanism to discuss the issue of differing forensic analysis methodologies with the client, legal counsel, and the other parties and help all focus on an appropriate method to be used.

5.2 Factor 2: Purpose of Analysis

Generally, the purpose of forensic schedule analysis is to quantify delay, determine causation, and assess responsibility and financial consequences for delay. Forensic schedule analysis studies how specific events impact a project schedule. Thus, the forensic schedule analyst uses contemporaneous project documentation to determine which events may have caused delay (including event identification, start and completion dates, activities impacted by the event, etc.). The forensic schedule analyst then applies or relates these events in some orderly manner to the schedules employed on the project. Once the events are added to, removed from, or otherwise identified in the schedule, a determination can be made concerning whether any or all of the events caused the project to complete later than planned. From this determination, assessment of causation and liability can be made based on the terms and conditions of the contract and the applicable law.

With respect to a particular project, the purpose of forensic schedule analysis is to determine if a party is entitled to time extensions or delay compensation as a result of certain events. Once the forensic schedule analyst has assessed the events that occurred on the project, then consideration should be given to issues such as concurrent delay, pacing delay, delay mitigation, etc. If the forensic schedule analyst, for example, needs to investigate whether concurrent delay is a major factor in the analysis of project delay, then the choice of method will be limited to those methods that specifically provide for concurrent delay identification and analysis.

Forensic Use of Analysis	M E T H O D								
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
Non-Compensable Time Extension	OK	OK	OK	OK	OK	OK	OK	OK	OK
Compensable Delay	OK	OK	OK	OK	OK			OK	OK
Right to Finish Early Compensable Delay								OK	OK
Entitlement to Early Completion Bonus	OK	OK	OK	OK	OK	OK	OK	OK	OK
Disruption Without Project Delay	OK	OK	OK	OK	OK	OK	OK		
Constructive Acceleration				OK		OK	OK		

Figure 17 – Some Methods are Better Suited for Certain Purposes Than Others

In such a situation, the forensic schedule analyst may be more likely to recommend one of the observational dynamic or modeled methods. If the purpose of the forensic schedule analysis is to demonstrate only excusable, non-compensable delay, numerous methods are available since the forensic schedule analyst will probably not need to deal with concurrent delay. If the purpose is to demonstrate

compensable delay, other methods may be more appropriate. If the purpose of the analysis is to investigate the contractor's ability to complete work early in conjunction with a delayed early completion claim or how the timeframe available for the contractor to perform was compressed, again some schedule delay analysis methods may be better than others. Figure 17 above, generally summarizes the suitability of the nine MIP's for some typical forensic uses of CPM schedules.

5.3 Factor 3: Source Data Availability and Reliability

As discussed in this RP and emphasized heavily in the source validation protocols, the choice of a particular forensic scheduling methodology is substantially influenced by the availability of source data that can be validated and determined reliable for the purpose of the analysis. If, for example, the project records show that there exists only a baseline schedule but no schedule updates for the duration of the project, then the observational MIP's 3.3 and 3.4 cannot be utilized.

As a result, it is incumbent on the forensic schedule analyst to determine the amount of contemporaneous project documentation available and assess its quality. Then the forensic scheduler needs to review a sampling of the project documentation to determine if the data is reliable for the purpose of the delay analysis. Once these reviews have been completed, the forensic scheduler can formulate a plan for the forensic schedule analysis effort and make a recommendation concerning which forensic schedule analysis method can and should be employed on the claim. Figure 18 below shows the source schedules that are required to implement the minimum basic protocol for each MIP. Enhanced protocols would typically require additional schedule sources.

Source Schedules or Data	METHOD								
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
Baseline Schedule	Min.	Min.				Min.	Min.		
Schedule Updates			Min.	Min.			Min.		Min.
As-Built Record	Min.	Min.			Min.			Min.	Min.

Figure 18 – Source Data Validation Needed for Various Methods

5.4 Factor 4: Size of the Dispute

One of the primary factors the forensic scheduler should keep in mind is the size of the dispute or the amount in controversy. In most situations, the choice of the forensic schedule analyst is constrained by how much a client has to spend to increase the probability of successful resolution of the dispute. This is most often determined by how much money is at stake. For example, if the delay damages being sought by the client are approximately US\$100,000, then the forensic schedule analyst should recommend a relatively inexpensive forensic scheduling method that is still effective for its intended purpose. On the other hand, if the delay damages sought are US\$50,000,000 then the range of methods to be considered is substantially expanded because of the greater scope and costs associated with analyzing a substantially larger claim. The forensic schedule analyst needs to recommend a forensic schedule analysis method that is both cost effective and suitable for the size of the dispute.

5.5 Factor 5: Complexity of the Dispute

When considering a forensic schedule analysis method, the forensic schedule analyst should do so with some knowledge of the complexity of the dispute in question and the number of events to be included in the forensic scheduling effort. For example, if the project in question is a linear project of relatively short

duration, and only three specific delay events need to be considered, then a simple comparison of the baseline with the as-built schedule may be appropriate. On the other hand, if the project was a complex process facility, with a 5,000+ activity network, and a hundred or so discrete events occurring over a five year period, the forensic schedule analyst may need to recommend one of the observational or modeled methods that divides the project duration into smaller analysis periods to isolate and explain controlling delays. In this context, the forensic schedule analyst should also distinguish between the complexity of the dispute and the complexity of the forensic analysis. Some complex disputes can still be analyzed with a less complex analytical technique. And, some of the methods contained in this RP may not require analysis of every activity on the schedule but can be focused on the critical path and sub-critical paths or on key events and activities only, to reduce both the cost and the complexity of the analysis.

5.6 Factor 6: Budget for Forensic Schedule Analysis

Hand in glove with the size and the complexity of the dispute is the client's budget for the forensic schedule analysis. That is, what can the client afford to spend on forensic schedule analysis? The forensic schedule analyst needs to determine whether there are any budget constraints prior to making a recommendation on forensic schedule analysis methodology. The forensic schedule analyst should also keep in mind the overall cost of the various forensic scheduling methods when making a recommendation. For example, if the delay analysis method requires the testimony of ten or fifteen percipient witnesses in order to properly lay the groundwork for the analysis in arbitration or litigation, this cost too, should be taken into account.

If the law of the contract has a prevailing legal fees provision, then clients and their counsel may be willing to spend more on forensic schedule analysis than if the contract is under conditions commonly called the "American Rule" where each party pays their own cost, regardless of outcome. If the client is prepared to spend only a small amount for a forensic schedule analysis effort, then the forensic schedule analyst should consider using less expensive forensic scheduling methods or cost saving alternatives – such as using the client's in-house staff for certain tasks rather than outside consultant staff. Or, the forensic schedule analyst may find a method contained in this RP which is appropriate for the situation, but which does not require that all of the validation protocols be performed. If the forensic schedule analyst is required to take short cuts or rely upon the work of others to stay within a very tight budget, the forensic schedule analyst should advise the client and client's legal counsel of the potential risks of proceeding in this manner. The forensic analysis should keep in mind that if insufficient funding is available for the analysis that would be required to investigate and analyze the case, it may be proper and prudent for the analyst to refuse to undertake the assignment rather than knowingly use a methodology that is not appropriate.

5.7 Factor 7: Time Allowed for Forensic Schedule Analysis

There also may be occasions when the amount of time available to perform and produce a complete forensic schedule analysis is limited. Consideration should be given to the time required for research, data validation, and claim team coordination which may be extensive, as well as production of the report. If the contract contains a fast track arbitration clause which requires that hearings begin within ninety days of the filing of the arbitration demand, and all material to be used in the arbitration is to be exchanged with the other side no less than two weeks prior to the first hearing date, the forensic schedule analyst may be limited to a sixty day timeframe in which to perform the scope of work. In many situations, the need for forensic schedule analysis is not made early enough to allow complete flexibility in the choice of an analytical method or is made at the last minute due to time limitations designating testifying experts. In either situation, the forensic schedule analyst may have a very limited timeframe in which to complete its work. Should this be the case, then the forensic schedule analyst may be constrained to recommend short cuts or a method which can be completed in far less time than other forensic scheduling methods in order to meet the time available to perform the work. Again, the forensic schedule analyst should point

out the risks of proceeding in this manner.

5.8 Factor 8: Expertise of the Forensic Schedule Analyst and Resources Available

If the forensic schedule analyst is experienced with only two or three of the methods identified in this RP and will be subject to challenge from the other side during *voir dire*, the forensic schedule analyst may be compelled to recommend use only of methods with which the analyst has experience. If the analyst determines that another method in which the analyst has little or no experience is more appropriate to the particular case then the analyst should be prepared to disclose that fact to the client. Additionally, if the forensic schedule analyst is to perform all analytical work individually with no assistance, the analyst may be constrained to recommend simpler methods which can be performed individually and will not require a staff of additional people processing data, making computer runs, etc.

5.9 Factor 9: Forum for Resolution and Audience

During initial discussions concerning the potential engagement, the forensic schedule analyst should seek advice from the client and its legal counsel on the most likely dispute resolution forum. What the forensic schedule analyst should seek is an opinion from those involved in the project, and their legal counsel, on whether the claim is likely to settle in negotiation, mediation, arbitration (and if so, under what rules), or litigation (and if so, in which court). If there is good reason to believe that all issues are likely to be settled at the bargaining table, or in mediation, then the range of options for forensic scheduling methods is wide open as the audience is only the people on the other side and they may be motivated, persuaded or willing to make decisions based upon a forensic schedule analysis method different than that specified in the contract. Almost any option which is objective, accurately executed and is persuasive is legitimately open for consideration. On the other hand, if legal counsel believes that the issue will end up in court or a government agency board, then the range of options available may be considerably narrowed because many courts and boards have adopted their own rules concerning forensic scheduling.

5.10 Factor 10: Legal or Procedural Requirements

Depending upon the forum for the dispute and the jurisdiction, the forensic schedule analyst must be aware of or ask about any contractual, legal, or procedural requirements that may impact the forensic analysis.

There may be other contractual, legal, or procedural rules impacting forensic scheduling that the forensic scheduling analyst should consider when making a recommendation concerning which forensic scheduling methodology to use on a particular claim. Consultation with the client's legal counsel on these issues is essential.

5.11 Factor 11: Custom and Usage of Methods on the Project or the Case

The final factor to be considered is past history and methods. Typically, a forensic schedule analyst is not engaged until after preliminary negotiations have failed. Thus, the forensic schedule analyst needs to consider what delay analysis method was employed by the client and their staff earlier during the project, which was not acceptable to the other side in prior negotiations. Knowing this, the forensic schedule analyst generally should not recommend use of this technique, as it has already proven unsuccessful, unless the scheduler can determine that the client staff performed the method erroneously in their early efforts or that the basis of the previous ejection of the method was clearly erroneous. Additionally, the forensic scheduler should take into consideration the method that had been previously employed unsuccessfully, if known.



April 25, 2011

Not all of the above factors will be applicable to all delay claims, obviously. Nevertheless, a prudent forensic schedule analyst should consider each of the above factors, as well as any other relevant factors that emerge, to determine which apply to the claim at hand. Once these are identified, including their potential synergistic effect upon each other, the forensic schedule analyst should discuss each applicable factor with the client and their legal counsel prior to making a recommendation as to which method should be employed for the delay analysis. Failure to consider these factors could lead to substantial difficulties later on in claim settlement negotiations, arbitration, or litigation.

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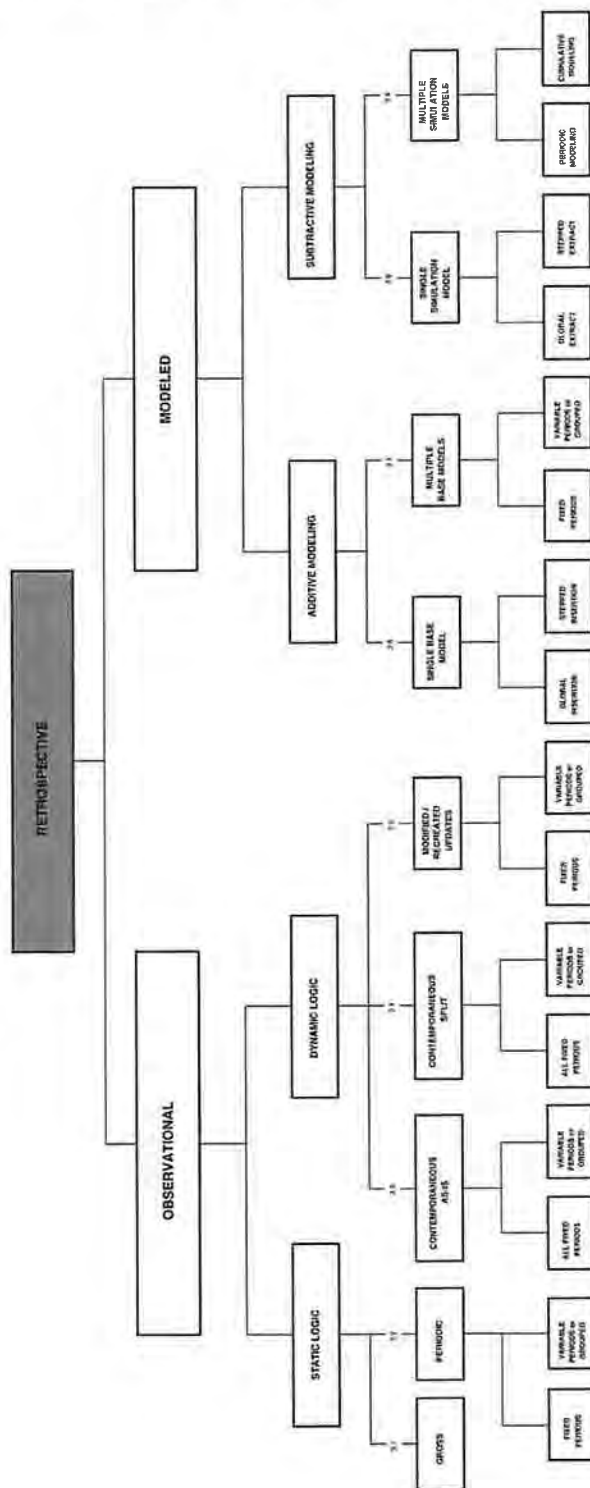
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APPENDIX A: FIGURE 1 - NOMENCLATURE CORRESPONDENCE FIGURE

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APPENDIX B: FIGURE 2 - TAXONOMY OF FORENSIC SCHEDULE ANALYSIS



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Schedule Delay Analysis



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The form of this Standard reflects the goals of the Schedule Delay Analysis Standards Committee of the Construction

Institute of ASCE. The provisions of this document are written in permissive language and, as such, offer to the user a series of options or instructions but do not prescribe a specific course of action. Significant judgment is left to the user of this document.

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CHAPTER 1 INTRODUCTION

Critical path method (CPM) schedules, properly prepared and maintained, make it possible to demonstrate, with reasonable certainty, the impact that can occur as a result of delays on a project. Delays can be reasonably identified, isolated, and quantified, and concurrent delays segregated. CPM networking techniques can be of evidential value to demonstrate causation and liability and also to apportion delays when concurrent delays occur.

It is important for project participants to understand not only the techniques of scheduling but also that a project schedule can serve as a basis for delineating the respective rights, obligations, and warranties flowing from the schedule. A number of key issues are associated with a project schedule that have legal implications.

Also, it is important to keep the project schedule properly updated and the contract completion date timely adjusted for excusable delays. It is equally important for all parties to settle any delays and cost issues associated with changes contemporaneously. The project schedule should be revised to reflect actual performance, major changes, and delays as they occur. The contract completion date also should be adjusted for contemporaneous time extensions.

A number of schedule delay analysis methods are used in the industry. Any method used should follow the industry guidelines identified in this standard.

The 35 guidelines included in this standard generally reflect best engineering principles associated with schedule delay analysis and reflect standard of practice in the United States construction industry. However, individual cases may not follow the general standard. Parties should check the construction contract carefully for notice provisions, exculpatory clauses, and requirements for proof of delays. Less preferred risk-averse contracts attempt to shift the risk of delays and time extensions to one party, which can lead to disputes in contrast to the equitable and fair risk allocation.

This standard should be used in accordance with the schedule practitioner's professional experience and knowledge, along with facts specific to the reference project. Any legal cases referenced in this standard are for additional information only, and their relevance or application to a specific project or jurisdiction requires consultation of a duly licensed legal professional.

CHAPTER 2

SCOPE

The 35 guidelines in this standard allow for segmentation of responsibility for delay to intermediary milestones and to the project completion date. They also enable delay damages or liquidated damages to be calculated by utilizing critical path method schedule techniques and preparing a schedule delay analysis. The guidelines in this standard are based on principles of schedule delay analysis in the following categories:

- Critical path,
- Float,
- Early completion,
- Chronology of delay,

- Concurrent delay,
- Responsibility for delay,
- Changing schedules after the fact, and
- Acceleration.

The application of such principles should be based on the terms of the contract, contract administration, consistency in application, and legal precedent.

These standard guidelines provide commentary, support for, and explanations of this ASCE standard committee's list of guidelines. The definitions of terms is included for reference as used within the context of this standard.

CHAPTER 3 DEFINITIONS

Acceleration—The process of expending additional resources and/or costs to expedite contract performance. Typical examples of acceleration include adding crews, adding equipment, increasing work hours, increasing work days, increasing resources, and expediting material delivery times.

Apportionment—The act of dividing and assigning a share or responsibility for controlling delay or cost.

Concurrent—Happening at the same time; existing side by side; operating at the same time.¹

Concurrent delay—Delay to the project critical path caused concurrently by multiple events not exclusively within the control of one party.²

Contract completion date—The date required by contract for substantial completion of the contract (or, in some cases final completion). The contract may attach liquidated damages to failure to meet the contract completion date. In a schedule, the scheduled completion date typically is constrained to the contract completion date.

Contract milestone—A contractually required date for partial completion of the work, which is also referred to as an intermediary milestone. The contract may attach liquidated damages to failure to meet intermediary contract milestones.

Critical delay—A delay that causes an impact to the project completion date.

Critical path—The series of logically connected tasks that define the minimum overall duration for completion of the project, also known as the longest path. There can be more than one critical path in the schedule.

Critical activities—Activities with zero or negative float in a schedule reflecting a current adjusted completion date, some of which may not be on the critical path.

Current adjusted completion date—A contractually required completion date adjusted to reflect prior excusable delay.

Delay—To impede the process or progress (work).³

Float—The time contingency that exists on a path of activities. Float refers to “total float” unless otherwise specified. Total float is the amount of time an activity can be delayed before it delays the completion date in the CPM network. It is measured by comparing the early and late dates on a start or finish basis. It is possible when using precedence networking that the effective float can vary between the early dates and the late dates for an activity when leads and lags are used.

Longest path—Path through a logic-driven schedule controlling the scheduled or anticipated completion of the work. This also is referred to as the critical path.

Offsetting delay—A delay that may occur when a contractor is behind schedule and the owner later causes a delay to the contract completion date. Time entitlement and damages depend on the measure of delay caused by each party.

Scheduled completion date—The anticipated or predicted date that estimates when work on the project will be complete. This date may differ from the contract completion date depending on schedule progress and delay.

¹ Garner (2004).

² Bruner & O'Connor on Construction Law § 15:67 (May 2007).

³ Dictionary.com (2014).

CHAPTER 4 CRITICAL PATH

Typical construction contracts require that delays be critical to justify a time extension. How the critical path is defined influences quantification of delay and ultimately whether a party was damaged by a delay. The critical path may change during the course of the project. Activities that were critical at one point in the project may later become not critical and vice versa. The following guidelines are intended to assist schedule experts in evaluating and determining how the critical path is used in a schedule delay analysis.

4.1 BECAUSE THE CRITICAL PATH IS DYNAMIC, DELAYS SHOULD BE EVALUATED BASED ON THE CRITICAL PATH DURING EACH DELAY

The critical path is dynamic and may change during the course of the project depending on when the project status is evaluated and completion is forecasted. Critical path method (CPM) techniques are the industry's preferred practice for planning how to best complete a project. They are also extremely useful in determining the effects of delays and changes to the project. The critical path may shift throughout the course of construction on the basis of delays, progress, and circumstances resulting in changes to the plan at different times on the project. These changes are intended to be identified and tracked in contemporaneous project schedules.

4.2 CONTEMPORANEOUS SCHEDULES SHOULD BE MAINTAINED TO REFLECT ACTUAL PERFORMANCE, THE PLAN TO COMPLETE THE WORK, AND DELAY, SHOULD IT OCCUR

For use in a schedule delay analysis, an accurate status of the project should be assessed. An accurate status of the project may be assessed primarily if the schedules are kept up to date, reflecting work taking place in the field, delays, and the sequence of remaining work to be performed. Contemporaneous schedule updates should be maintained reflecting all changes and should include changes to the critical path, the creation and consumption of float, baseline adjustments, changes based on contemporaneous decisions made by the participants, and the plan to complete all remaining work.

4.3 DELAY MUST BE CRITICAL TO THE CURRENT ADJUSTED COMPLETION DATE FOR CONSIDERATION OF A TIME EXTENSION

When assessing a delay that has occurred, one needs to consider prior and pending entitlements. When evaluating a delay, it is recommended to check schedule updates to determine the completion date and any pending excusable delays that need to be considered. The delay could be critical at the project level or for a

certain contractor's scope of work depending on established contractual milestones.

Different contract milestones may have an excusable delay to each milestone, which needs to be evaluated separately for criticality. Excusable delays to contract milestones that are not the contract completion date typically will not provide a contractor with additional compensation for delay; only an excusable time extension will be granted to offset liquidated damages to that milestone. However, there may be exceptions where the contractor incurs separate costs tied specifically to that milestone.

4.4 DELAY SHOULD GENERALLY BE MEASURED BY THE CHANGE TO THE SCHEDULED COMPLETION DATE CAUSED BY THE DELAY

Delay should generally be evaluated by comparing the schedules before, during, and after the delay.⁴ Critical delay can be shorter or longer than the delay (impacting event). Examples of critical delays shorter than the impacting event are when the impacting event absorbs float or succeeding activities are able to progress without further effects from the impacting event. Examples of critical delay longer than the impacting event can include when the impacting event pushes the contractor into a constrained work period or requires reordering of long lead time materials. The effects of a critical path delay also may affect the progress of work on noncritical paths.⁵

In the event of major concerns with the accuracy of the schedules, expert analysis may be required after the fact to determine whether adjustments are necessary or an alternative method for evaluating delay is to be used.⁶

Measuring changes to the projected completion date between updates accounts for ordinary mitigation efforts that may have been made to reduce any prior delay in the schedule. Acceleration measures that require additional cost may be identified separately from the delay quantification.

⁴ See, e.g., *George Sollitt Const. Co. v. U.S.*, 64 Fed. Cl. 229, 252 (2005) "The better methodology for a critical path delay analysis is to use the updated CPM schedules, not the baseline schedule prepared before construction began. See *Blinderman*, 39 Fed.Cl. at 585 (stating that 'the only way to accurately assess the effect of the delays alleged . . . on the . . . project's progress is to contrast updated CPM schedules prepared immediately before and immediately after each purported delay'); *Fortec*, 8 Cl.Ct. at 505 (stating that 'if the CPM is to be used to evaluate delay on the project, it must be kept current and must reflect delays as they occur'); *Sollitt Br.* at 44 (admitting that *Sollitt* prepared the updated analysis 'in recognition of the widely accepted practice of using the updated schedules for the analysis')."

⁵ In some cases, delay analysis to separate milestone dates may be required.

⁶ For more information on changing project schedules for a delay analysis, see Chapter 10, *Changing Schedules After the Fact*.

4.5 EXCUSABLE DELAYS ARE TYPICALLY EVENTS OUTSIDE THE CONTRACTOR'S CONTROL AND ENTITLE THE CONTRACTOR TO A TIME EXTENSION

Excusable delays typically include third-party events, force majeure events, unusually severe weather, and owner-caused delays. Excusable delays mean that the contractor is entitled to a time extension for critical delay to a contractual completion date. Excusable delays may be noncompensable or compensable depending on the provisions of the contract. Typically, delays outside the control of both the owner and the contractor are excusable but noncompensable.

4.6 IN SITUATIONS WHERE THE COMPLETION DATE IS ADJUSTED PROPERLY FOR CHANGE ORDERS AND THE CONTRACTOR IS BEHIND SCHEDULE, OWNER DELAYS THAT OCCUR THEREAFTER ON A SEPARATE PATH MAY HAVE A MITIGATING EFFECT ON ASSESSMENT OF DAMAGES

In certain situations when the current as adjusted contract completion date has passed or the current updated schedule is projecting a completion date that is later than the contract completion date, owner-responsible delays occurring thereafter may mitigate the assessment of liquidated damages. This type of delay is referred to as "offsetting delay," recognizing that an owner-caused delay may result in recognizing a noncompensable time extension to offset all or a portion of any potential liquidated damages.

Delay damages can be measured and determined by the effect of each path on activities that impact the current contract completion date, based on chronology of delay, responsibility for delay, magnitude of delay, and how both contractor and

owner delays affect the current contract completion date at specific times. Such situations may affect the assessment of owner damages previously projected as a result of the contractor's late performance and the owner's right to assess damages for late completion.

4.7 FOR A DELAY TO BE COMPENSABLE, IT SHOULD BE THE SOLE CAUSE OF DELAY

For compensable delay, the delaying event should be the sole cause of longest path delay. Typically, a delay solely caused by the owner is required to qualify as compensable. However, third-party delay may be compensable depending on the provisions of the contract. For compensable delay, the delay should extend the scheduled completion date of the project. For example, activities with float can fall on the longest path because of schedule constraints and multiple calendars (e.g., weekend nonwork restrictions), and critical activities can fall on paths of work that are not the longest path (again because of constraints and multiple calendars).

Delay to intermediary contract milestones typically do not result in additional delay costs, because the contractor would have been on-site until completion of the project, and as a result, delays to intermediary milestones are not typically compensable to the contractor, even if excusable. However, liquidated damages attached to intermediary milestones by contract may be assessed for failure to meet each milestone and may be cumulative.

In some cases where multiple subcontractors or multiple prime contractors are simultaneously responsible for delay, the contractor or owner may still be able to recover its costs split between the responsible parties as long as the claiming party had no fault or responsibility for delay during the period claimed.

CHAPTER 5

FLOAT

There are several types of float, including "total float" and "free float." The most useful for delay analysis is total float. Float generally refers to total float unless specified otherwise. Generally, total float is the amount of time an activity can be delayed before it delays the contract completion date in the CPM network.⁷ Total float is the mathematical difference between late dates and early dates for each activity.⁸ The calculated early dates (early start and early finish) track the earliest dates each activity can take place by the logic in the schedule. The late dates (late start and late finish) are the latest scheduled finish dates each activity can take place while still finishing by the constrained completion date⁹ and proceeding backward (i.e., "the backward pass") through the CPM network until it reaches the earliest activity. Total float tracks completion in relation to the latest scheduled finish date in the CPM network.¹⁰ When the constrained completion date is earlier than the earliest finish date of the network, total float becomes negative. The following guidelines reflect general use of float in a schedule analysis.

5.1 ACTIVITIES WITH FLOAT ARE NOT CRITICAL

Generally, just because an activity falls on the longest path does not necessarily mean it is critical. Activities with float can fall on the longest path, and critical activities with no float can fall on paths that are not the longest path.¹¹ For example, the use of multiple calendars may result in additional float on activities that fall on the longest path and cause fluctuation between float values along a continuous path of work.

5.2 FLOAT IS OWNED BY THE PROJECT

In the absence of contract language shifting float "ownership," float is owned by the project. This means that float goes to the first party to use it. Other methods of allocating float to different parties are available but should be specified by the contract for

use in delay evaluation. Whereas contract provisions may make float only available to one party, it may be difficult to recover delay damages from the other party when delays solely absorb float with no impact to the completion date.

5.3 EXCESSIVE CONSTRAINTS ON ACTIVITIES THAT INTERFERE WITH A LOGIC-DRIVEN CRITICAL PATH MAY COMPLICATE EVALUATION OF CRITICAL DELAYS AND SHOULD BE CONSIDERED IN A DELAY ANALYSIS

Excessive constraints on activities that interfere with a logic-driven critical path should generally be avoided. In a constrained schedule, total float may be driven by constrained dates instead of the project end date. This becomes even more confusing when multiple constraints are used in the schedule, because which constrained date the total float value relates to must be determined, as there may be several in the CPM network. As a result, the use of constraints complicates the use of total float as a time-prioritizing tool. Particularly, the use of specified constraints on individual activities or specifying float values on individual activities may interrupt a logic-driven critical path and is not preferred.

5.4 IF MULTIPLE MILESTONES HAVE DELAY DAMAGES ASSOCIATED WITH THEM, A SEPARATE DELAY ANALYSIS SHOULD BE PERFORMED FOR EACH MILESTONE

Float values are affected by different constraints in the CPM network. In instances where the schedule contains milestone constraints, it may be more accurate to identify the critical path through the subject milestone or the activities that must be progressed to keep that milestone on time.

⁷ Absent multiple constraints in the schedule.

⁸ However, the start float and finish float may be different as a result of schedule constraints and logic ties.

⁹ In an unconstrained schedule, the latest scheduled activity date is used, and there would be no negative float in the schedule.

¹⁰ For example, if the latest scheduled finish date in the CPM network is Activity 500, *Project Completion*, then the total float values are relevant to prioritizing time for *Project Completion*. If the latest scheduled finish date in the CPM network is Activity 600, *1-Year Landscape Maintenance*, then the total float values are relevant to prioritizing time for *1-Year Landscape Maintenance*.

¹¹ For additional examples and explanation, see D'Onofrio, R. M. (2009). "Can there be float on the critical path?" *Under Construction*, 11(3) 1, 4-5. See also Furniss, B. J., and Trauner, T. J. (2010). "The critical path: Definition vs. understanding, *Construct!* 19(1) 2-5.

CHAPTER 6

EARLY COMPLETION

Generally, the contractor has the right to finish early. The owner gains the benefit of early project use, and the contractor gets off-site and no longer incurs general conditions costs. The additional contractor cost savings of early completion also are reflected in a lower bid price anticipating early completion. Although the owner should not have to spend additional costs to meet a contractor's early completion schedule, the owner should not interfere with the contractor's ability to finish early.

6.1 A PLAN TO FINISH EARLY SHOULD BE REASONABLE

Parties should address early completion as early in the project as possible. It is good practice for the contractor to inform the owner that the contractor plans on finishing early. An owner should review and validate the potential of the contractor to finish early. If an owner takes exception, the owner should inform and discuss this with the contractor before making a decision to acknowledge the contractor's intent. For the contractor to recover compensation for compensable delays prior to the contract completion date, the contractor's plan to perform the work and finish prior to the contract completion should be reasonable and achievable.

6.2 GENERALLY, THE CONTRACTOR MAY BE ALLOWED TO COLLECT DELAY DAMAGES TO AN EARLY COMPLETION SCHEDULE BUT MAY NOT COLLECT AN EXCUSABLE TIME EXTENSION UNTIL THE SCHEDULED COMPLETION DATE EXCEEDS THE CONTRACT COMPLETION DATE

If entitlement and responsibility are shown, a contractor should generally be able to collect delay damages for compensable delay to an early completion schedule. However, a contractor would not be granted an excusable time extension to the contract completion date until the scheduled completion date is delayed beyond the contract completion date. If the parties intend otherwise, they should agree on how to assess delays to the early finish date.¹²

Any delay to the early completion date that is still prior to the contract completion date and beyond the control of the contractor should be addressed and documented contemporaneously using delay analysis procedures and providing supporting documentation.

¹² This includes whether the buffer between early completion and contract completion is available for the contractor's exclusive use. If it is not, parties should consider a change order adjusting the completion date or adding a contractor schedule contingency activity with a duration equal to the difference between the early finish and the contract schedule completion date. Critical contractor delays reduce contingency until it expires. Owner critical delays adjust both the early finish date and the contract completion date.

CHAPTER 7 CHRONOLOGY OF DELAY

The chronology of delay is defined as the order in which delays should be considered in a schedule evaluation. Chronology of delay is an important part of a critical path analysis as the basis for segregation of delays to allow related costs and time impacts to be attributed to the parties involved. A chronological evaluation is critical in determining when events occurred, their impact on the contemporaneous project schedules, and the contemporaneous decisions made by the parties, emphasizing the importance of keeping project records and schedule updates throughout the project. The schedule is not static and changes continually on the basis of events as they unfold on a project, and this must be reflected in a proper evaluation of project delays.

The following guidelines reflect an understanding of the chronology of the delays and potential mitigation efforts that can be incorporated in a contract or specification to mitigate uncertainty in evaluation method.

7.1 DELAYS SHOULD BE EVALUATED AS THEY OCCUR IN CHRONOLOGICAL SEQUENCE

Generally, delays should be evaluated chronologically and cumulatively in the order in which they occur on the project. The delay recognized to have started first in time that affects the schedule will be fully evaluated until that delay is resolved. This may have no impact on the critical path or directly affect or change the critical path. It may absorb float on one or more paths and/or create float on others. Likewise, changes to the work through change orders should be incorporated into the schedules as they occur, whether they have a direct overall schedule impact to the critical path or they only reflect the absorption of float.

7.2 A SCHEDULE DELAY ANALYSIS SHOULD REFLECT AN ANALYSIS OF PRIOR ENTITLEMENT SO AS TO REFLECT A CURRENT ADJUSTED COMPLETION DATE PRIOR TO EVALUATING DELAY

Typically, engineering and construction decisions regarding delays are made as each occurs, and the delay analysis should follow the same logic. Each delay evaluation is based on the then-current conditions, which would include any schedule impacts from prior delays, along with any schedule revisions on the project. Decisions on a project are made with the available information at the time. Evaluation of impacts caused by prior

delays should be included in the schedule delay analysis to be able to distinguish the impact of the current delay from prior impacts.

Using a current, updated, and adjusted schedule prior to delay evaluation is consistent with the critical path and concurrent delay principles outlined in Chapters 4 and 8. Delays considered in sequence are evaluated chronologically. Similarly, the schedule needs to be updated and adjusted prior to evaluating concurrent delays. For more information on evaluating concurrent delays, see the guidance in Chapter 8.

7.3 CONSIDERATION SHOULD BE INCLUDED AS TO HOW DELAYS WERE EVALUATED BY THE PARTICIPANTS DURING THE PROJECT

Schedule delay evaluations should consider the information available to project participants at the time of the delay. That information may define the actions of the various parties with regard to decisions made on the project. Actions taken by the participants during the project could have a direct impact on the schedule, determination of damages, and the right of one party over the other to recover damages.

Although delay events should be recognized and measured during the project as the project progresses, in practice they are not always identified contemporaneously. During expert analysis, the more common industry practice is to measure the delays in an after-the-fact analysis, which more accurately defines the delay events that occurred on a project. Although this process may reveal what may be considered bad decisions with hindsight, contemporaneous decisions affecting project delay still may be justifiable.

7.4 EVALUATION OF DELAY CHRONOLOGY SHOULD BE DOCUMENTED AND SUPPORTED WITH CONTEMPORANEOUS RECORDS

Documenting the chronological order of delays is an important aspect of delay analysis. This requires a factual analysis of each delay based on the contemporaneous documentation confirming the order and relationship of delays involved. Whether a particular delay is compensable or to whom responsibility is attributable should not be the controlling factor on which delay is evaluated first.¹³

¹³ For more information on changing project schedules for a delay analysis, see Chapter 10, Changing Schedules After the Fact.

CHAPTER 8 CONCURRENT DELAY

In general terms, concurrent delay can be described as a situation where two or more critical delays are occurring at the same time during all or a portion of the delay time frame in which the delays are occurring. Concurrent delay is a position often taken by both contractors for avoidance of liquidated damages and owners for mitigation of contractor claims for compensable delay.

Whether such delays are excusable depends on the terms of the contract, chronological sequence of the delays involved, cause of delays, responsibility for delays, timing and duration of the delays, availability of float, and the effect any delay has on a contract milestone or the project completion date.

The guidelines in this section reflect an understanding of concurrent delay, how it can have differing effects, and how it can be apportioned.

8.1 CONCURRENT DELAY CAN BE DESCRIBED AS A SITUATION WHERE TWO OR MORE CRITICAL DELAYS ARE OCCURRING AT THE SAME TIME DURING ALL OR A PORTION OF THE DELAY TIME FRAME IN WHICH THE DELAYS ARE OCCURRING

There are different situations in which concurrent delays may occur. For example, there is the situation with two separate delays by an owner and a contractor (two parties), each simultaneously delaying work on separate critical paths. There can be more than two parties concurrently delaying a contract milestone or the project completion date. Concurrent delays do not need to have the same start or finish dates.

8.2 CONCURRENT DELAY TYPICALLY IS EXCUSABLE BUT NONCOMPENSABLE, MEANING A TIME EXTENSION IS GIVEN BUT NO COSTS ARE RECOVERED BY EITHER PARTY

For the purposes of assessing liquidated damages, the general rule is that contractors will not be charged for critical delays they cause that are concurrent with owner-caused critical delays that cannot be apportioned in terms of responsibility and damages.

Likewise, an owner will not be responsible for a contractor's delay damages when the contractor simultaneously caused critical delay that is concurrent with owner-caused critical delay of equal time that cannot be apportioned.

8.3 CONCURRENT DELAY SHOULD BE APPORTIONED WHERE POSSIBLE

Conditions that allow concurrent delays to be apportioned include situations where there is overlapping of simultaneous delays on the start or finish of either delay or both. Another is when one or more of the simultaneous delays are absorbed partially by available float on an activity path before they become critical. A further example is when one or more of the simultaneous delays have different start or finish dates and one or more are critical activities.

To consider apportionment of concurrent delays, consideration needs to be given to facts, criticality, timing, responsibility for delay, duration of delay, method used to measure delay, and ability to mitigate.

CHAPTER 9

RESPONSIBILITY FOR DELAY

After the impact of a delay event has been quantified, opining on which party was responsible for the delay event often falls to a schedule expert. This assessment is ultimately necessary for determining entitlement and aiding in determining quantum.

9.1 A SCHEDULE EXPERT TYPICALLY CAN IDENTIFY THE PARTY RESPONSIBLE FOR A DELAY FROM THE CONTEMPORANEOUS RECORDS, INTERVIEWING PROJECT PERSONNEL, AND READING DEPOSITION TESTIMONY, AND MAY RELY ON TECHNICAL EXPERTS OR FACT WITNESSES IN OPINING ON LIABILITY.

Responsibility for delay can be classified as

- Owner-caused,
- Contractor-caused, or
- Beyond the control of the parties involved (i.e., third-party-caused).

Determination of responsibility requires a review of the contract and also may require outside expertise on specific issues or a legal opinion. Examples of owner responsibility for delay may include directed or other changes that have merit, late approvals (shop drawings, schedule, changes, etc.), late owner-furnished equipment, late site access, delay in acquiring right of way, suspension of work, or actions or the lack of actions of the owner's agents (architect, engineer, construction manager, or specialty consultant), and regulatory and sponsor agencies.

Contractor-caused delays may include late performance, defective and corrective work, late shop drawings, late equipment or material deliveries, poor subcontractor performance or financial failure, labor issues, or failure to schedule and coordinate subcontractors.

There are also delays beyond the control of the parties. Examples include unusually severe weather¹⁴ and force majeure events. The excusability and compensability of these issues may depend on the contract.

9.2 DURING A PROJECT, THE CONTRACTOR SHOULD PROVIDE THE OWNER WITH A NOTICE OF DELAY FOR EXCUSABLE DELAYS, FOLLOWED BY A REQUEST FOR A CHANGE IN ACCORDANCE WITH THE CONTRACT

Determination of delay responsibility on a contemporaneous basis is essential for owners and contractors to manage a project

¹⁴ Ordinary weather is typically the responsibility of the contractor, and adverse weather must be unusually severe to warrant a time extension as outside the control of either party.

successfully. When a contractor believes a delay is occurring or has occurred and for which that contractor has no responsibility, the contractor has the burden of proof to support a request for additional time (and potentially, additional cost) by preparing a time extension analysis using the project schedule to demonstrate the delay.

9.3 RESPONSIBILITY ANALYSIS SHOULD BE SUPPORTED BY A FACTUAL CHRONOLOGY BASED ON THE CONTEMPORANEOUS PROJECT PERFORMANCE RECORDS AND REFERENCING THE REMEDY-GRANTING CLAUSE OF THE CONTRACT

Determination of delay responsibility also can occur on an after-the-fact basis. Typically this is achieved as part of an overall and comprehensive schedule and delay analysis prepared for pursuing or defending a claim involving delay, impact, disruption, acceleration, cumulative impact, or liquidated damages. Proof of delay generally requires an overall determination of excusable and nonexcusable delay and compensable and noncompensable delay, identifying any concurrent delay that is involved and mitigating compensability, proof of any acceleration claimed, or any determination of liquidated damages.

The chronology generally should be supported by project records. Some examples of project records include daily logs, RFIs, photographs, change directives, drawings and specifications, schedules, or test reports. The schedule expert should check the construction contract carefully for provisions related to the delay event. Typical provisions include the notice, changes, differing site conditions, and force majeure clauses.

It should be noted that it is not always expected for the schedule expert to assess liability on an after-the-fact basis. Therefore, a schedule expert should confer with legal counsel before opining in this regard.

9.4 THE SCHEDULE EXPERT SHOULD ATTEMPT TO DISCUSS THE ISSUE WITH THE INDIVIDUAL DIRECTLY INVOLVED AND WHO HAS FACTUAL KNOWLEDGE OF THE DELAY ISSUE, WHERE FEASIBLE

Generally, it is good practice to discuss an issue with project personnel who are directly involved in dealing with that issue during the project for knowledge and background information on the associated issue where accessible. This information may be helpful in preparation of the delay analysis and associated determination of causation and responsibility. The schedule expert should not solely rely on interviews with project personnel, but consider them within the context of contemporaneous project records.

9.5 SCHEDULE EXPERTS SHOULD NOT OPINE BEYOND THEIR EXPERTISE. IF NECESSARY, A TECHNICAL EXPERT SHOULD BE ENGAGED ON WHOSE OPINION THE SCHEDULE EXPERT CAN RELY

Schedule experts typically can identify the party responsible for a delay from the contemporaneous project records.

However, in some instances, the determination of liability will require technical engineering or constructability expertise (e.g., differing site conditions, structural calculations, etc.). In such cases, schedule experts should take care not to opine beyond their capabilities and instead rely on the opinion of other technical experts or even fact witnesses.

When these technical issues arise, professional expertise should be engaged to conduct an investigation and fact finding of the issue to determine the contractual and legal basis for identifying responsibility and to identify the particulars that will be required to establish and prove such responsibility.

defective drawing

9.6 ONCE A TECHNICAL EXPERT'S FINDING AS TO WHICH PARTY WAS LIABLE FOR THE DELAY EVENT IS FORMED, A LEGAL REVIEW MAY BE MADE WITH COUNSEL CONSISTENT WITH LEGAL PRECEDENT IN THE PROJECT JURISDICTION

Once a technical expert has conducted an investigation and formed an opinion, a legal review should be made with counsel to determine whether the legal basis being pursued is sound and whether the elements of proof required to support the issue or theory are present and fully supported by proper documentation and consistent with legal precedent. If these conditions are met, then the schedule expert can rely on the findings and opinions of the technical expert in assessing liability.

CHAPTER 10

CHANGING SCHEDULES AFTER THE FACT

Changes to schedules made after the fact, such as after project completion, should be limited to special circumstances. Changes to the schedules may include changing activity durations, logic, as-built dates, constraints, or other schedule information often kept in the schedule software. Generally, there is a rebuttable presumption of correctness attached to the contemporaneous CPM schedules the parties used on the project. Therefore, the burden of proof of changing the schedules after they are prepared and used during the project lies with the party making the changes. As a result, any changes made after the fact should be made with good justification and be carefully documented and explained. Although changes are situation specific, the following guidelines are intended to help clarify when the schedules should or should not be changed from the version that was submitted and used during the project.

10.1 THE SCHEDULES SHOULD BE PRESUMED CORRECT AS THEY WERE USED DURING THE PROJECT, UNLESS OTHERWISE SHOWN TO BE INACCURATE

Critical path method (CPM) schedules used by project management to manage a project best reflect the plan the parties used to perform, manage, and monitor the work. CPM schedules with regular updates typically are required by contract. Schedules that are created and updated during the course of contract performance determine which activities are critical and which have float at different points on the project. The schedules can be used to plan work, allocate resources, track progress, and make time-related decisions. As such, the contemporaneous project schedules generally are considered one of the best tools for measuring delays in an after-the-fact analysis. Courts and boards typically attach a presumption that contemporaneous CPM schedules are correct.¹⁵

¹⁵ See, e.g., *Appeal of Santa Fe, Inc.*, VABCA No. 2168, 87-3 B.C.A. (CCH) ¶ 20104 (Aug. 25, 1987) "We do not find that the November revisions were necessary to 'correct' the October CPM. Rather, the November CPM merely reflected a different plan for further prosecution of the work which differed from the previous plan. However, the adoption of an alternate method of performance in the later CPM does not, of itself, contradict the existence of a delay as shown in the preceding CPM. There is a rebuttable presumption of correctness attached to CPM's upon which the parties have previously mutually agreed. In the absence of probative evidence, not present in this appeal, that the delay shown was not in fact sustained we will rely on the October CPM for the period it was in effect, i.e., through the end of November 1981. For the subsequent period, we will rely on the November CPM. To put it another way, in the absence of compelling evidence of actual errors in the CPM's, we will let the parties 'live or die' by the CPM applicable to the relevant time frames."

10.2 AFTER-THE-FACT CHANGES TO SCHEDULES USED DURING THE PROJECT SHOULD BE MINIMIZED AND ONLY MADE WHERE NECESSARY

Although keeping the contemporaneous CPM schedules unchanged is preferred, there are situations where changes may be appropriate. When significant errors are found in the schedule, after-the-fact schedule adjustment to fix the errors may be allowable.¹⁶ For example, logic errors, missing scope, or palpable incorrect durations may have to be adjusted before utilizing the schedule for delay analysis purposes.¹⁷ The need for after-the-fact schedule changes is fact and situation dependent and may require the support of expert opinion.

10.3 ANY CHANGES MADE TO THE CONTEMPORANEOUS RECORD OF PROJECT SCHEDULES SHOULD BE CAREFULLY IDENTIFIED AND DOCUMENTED

After-the-fact changes to the schedules used on the project typically are greeted with skepticism.¹⁸ Therefore, if changes are made to the contemporaneous project schedules, the preferred practice is to document both the schedule change and the reasons for the change.

¹⁶ See, e.g., *Neal & Company, Inc. v. U.S.*, 36 Fed. Cl. 600 (1996) analysis accepted where government's expert prepared a new baseline schedule after the project to add in logic ties for labor that were missing, then re-updated the schedule.

¹⁷ See, e.g., *Appeals of States Roofing Corp.*, ASBCA No. 54860, 10-1 B.C.A. (CCH) ¶ 34356 (Jan. 12, 2010) "In any event, the credible evidence supports the finding that the adjustments [contractor's expert] made were exactly as he described them: minor corrections to logic errors relating to submittals. The Navy did not dispute that there were such logic errors in the schedule and, to the extent there were, we consider correction of them to be in keeping with good scheduling practices."; *Hensel Phelps Constr. Co.*, ASBCA 49270, 99-2 BCA ¶ 30,531 (1999) (changes were considered appropriate when the contemporaneous CPM schedules developed and updated by the contractor were unreliable because they hid work that would not have been completed in the allowable time period).

¹⁸ See, e.g., *J. A. Jones Construction Co.*, ENGBCA No. 6252, 97-1 B.C.A. ¶ 28,918 (1997) "The more a contractor departs in litigation from its contemporaneously-prepared schedules, the greater the need to explain and justify the reasons and assumptions underlying such departures."

10.4 WHEN POSSIBLE, THE PREFERENCE FOR DEALING WITH INACCURATE SCHEDULES AFTER THE FACT IS TO MAKE CORRECTIONS, RATHER THAN ABANDON THE SCHEDULES, SUBJECT TO THE NATURE AND SCOPE OF THE CORRECTIONS

Generally, there is no "perfect" schedule that exactly matches project performance on the project and the plan to perform the work at any given update. Schedules typically reflect best estimates for performance of the remaining work. The parties often have had an opportunity to object or identify errors contemporaneously during the project. A schedule with errors still reflects information that the parties used and acted on during the project. As a result, most schedules can be used, with some modification, to reflect the intentions of the parties. Generally, to abandon the schedules and exclude them from a schedule delay analysis, they must have significant flaws. The decision regarding whether the errors in the schedules require them to be abandoned or corrected may require expert opinion.

10.5 CHANGES TO SCHEDULES GENERALLY MAY BE MADE TO CORRECT NECESSARY PHYSICAL OR CONTRACTUAL CONSTRAINTS BUT TYPICALLY NOT THE CONTRACTOR'S PREFERENTIAL SEQUENCING

Generally, there are three categories of constraints that define the logic relationship among activities and in a schedule: physical constraints,¹⁹ contractual constraints,²⁰ and preferential constraints.²¹

¹⁹ Physical constraints are those that are a physical necessity in the sequence of construction of the project. For example, the third floor of a building cannot be constructed until the second floor is constructed.

²⁰ Contractual constraints are those required by the contract. For example, if the contract specifications in a road construction project do not allow asphalt paving during winter months, scheduling paving activities outside those months constitutes a contractual constraint. Other examples of common contractual constraints include

- Site access restrictions;
- Federally mandated nonwork periods, such as endangered species breeding nonwork periods;
- Noise or vibration restrictions at different times of the day; and
- Required settlement compaction waiting periods.

²¹ Preferential constraints reflect the contractor's discretionary plan to perform the work. These constraints typically include crew sequencing and nonwork periods where the contractor could work but elects not to do so, such as weekends and other voluntary calendar restrictions. Preferential sequencing typically is identified in the baseline schedule as part of the contractor's plan to perform the work in accordance with the bid.

For schedule delay analysis, CPM schedules generally should be modified only after the fact to correct errors in physical constraints or contractual constraints where the contract could not have been constructed as planned in the original CPM schedules. The contractor's preferential sequencing typically should not be changed after the fact.

Additional schedule issues that may or may not necessitate correction depending on the circumstances include leads and lags,²² mandatory start dates, finish dates, and float values,²³ and correcting out-of-sequence logic.²⁴ Fixing constraints and out of sequence work in the schedule may be necessary to achieve a logic-driven critical path that reflects the way work actually proceeded on the project. However, changes to the schedules that the parties used on the project are still situation dependent and after-the-fact modifications should require expert opinion.

²² Leads and lags may result in incorrect progress tracking if delays prevent the project from being performed as planned. A preferred alternative to leads and lags is to break activities up into smaller segments and use finish-to-start relationships.

²³ These constraints affect the CPM calculations for that path of work and limit the functionality of a CPM schedule.

²⁴ Normally corrected by breaking activities and logic ties down to additional activities to more accurately reflect the sequence of work performed on the project.

CHAPTER 11 ACCELERATION

Acceleration is the process of expending additional resources and/or costs to expedite contract performance. Typical examples of acceleration include adding crews, adding equipment, increasing work hours, increasing work days, increasing resources, and expediting material delivery times. During the project, it is preferable to communicate anticipated acceleration plans to achieve time savings on the project. The communication of acceleration plans should focus on being open and proactive, identifying the steps necessary to execute the plan successfully, identifying potential risks, and noting the potential or quoted costs resulting from the acceleration plan. Opportunities to accelerate may be missed when parties do not communicate effectively the need to accelerate the essential steps needed to achieve the acceleration, or when a party fails to take action within a time frame necessary to execute the acceleration plan.

Acceleration generally is segregated into three types: voluntary, directed, and constructive.

11.1 PARTIES HAVE THE RIGHT TO VOLUNTARILY ACCELERATE, SUBJECT TO CONTRACT TERMS AND CONDITIONS

Voluntary acceleration occurs when a party accelerates to take advantage of weather, finish earlier than planned, or recover its own delays and acknowledges responsibility for its own costs. Voluntary acceleration typically is undertaken by a contractor or subcontractor but may also be undertaken by an owner.²⁵ Each party on a construction project generally has the right to recover its own delays through voluntary acceleration, where possible.

11.2 FOR OWNER-DIRECTED ACCELERATION, THE PARTIES SHOULD AGREE ON THE ACCELERATION PLAN PRIOR TO IMPLEMENTATION. THE RIGHT TO DIRECT ACCELERATION UNILATERALLY SHOULD BE ADDRESSED BY CONTRACT

Directed acceleration occurs when an owner requires a contractor to accelerate work.²⁶ For directed acceleration, the parties should agree on the compensation and revised completion date ahead of accelerating. If no agreement is reached and an owner plans on unilaterally requiring or directing a contractor to accelerate, such a right should require contractual authority.

If an owner prefers to pay for acceleration to recover its own delay instead of paying delay costs, it should request an alternative proposal from the contractor. Parties that desire the receipt of an alternate acceleration plan when receiving time extension requests should include such a provision in the contract.

11.3 CONSTRUCTIVE ACCELERATION CAN BE PROVED

Constructive acceleration may occur when an owner requires a contractor to accelerate work but the parties disagree on whether the acceleration is a change to the contract. As such, most acceleration disputes arise from alleged constructive acceleration issues.

Constructive acceleration may be proved by showing that (1) the contractor encountered an excusable delay, (2) the contractor made an appropriate time extension request, (3) the owner denied all or part of the time extension request or failed to act on it within a reasonable time, (4) the owner insisted the earlier completion date must be met or insinuated liquidated damages and the contractor notified the owner that the alleged acceleration order was regarded as a constructive change, and (5) the contractor expended additional costs to accelerate performance.²⁷

11.4 WHEN IMPLEMENTING AN ACCELERATION PLAN, ACCELERATION OF MULTIPLE PATHS IN THE SCHEDULE MAY BE REQUIRED

Accelerating the schedule involves careful thought and focus on implementation. The acceleration focus should be on the items necessary to improve the scheduled finish date—items on the critical path. However, after reduction of the longest path, other paths may require further recovery of time in the schedule. As a result, the contractor may need to accelerate multiple paths to recover all delays and get back on schedule.

Where different parties are responsible for delays to different critical paths, an acceleration effort may require each party to recover its own delay, depending on the timing and sequence of the delays.

²⁵ For example, owners may expedite review or inspection times to recover their own delay.

²⁶ Directed acceleration also applies to the contractor-subcontractor relationship.

²⁷ See, e.g., *Fraser Constr. Co. v. United States*, 384 F.3d at 1360–361 Cf. *Norair Engineering Corp. v. U.S.*, 229 Ct. Cl. 160, 666 F.2d 546, 548, 29 Cont. Cas. Fed. (CCH) ¶ 82055 (1981); *Appeal of McNutt Const. Co., Inc.*, E.N.G.B.C.A. No. 4724, 85-3 B.C.A. (CCH) ¶ 18397, 1985 WL 17278 (Corps Eng'rs B.C.A. 1985); *Sherman R. Smoot Co. v. Ohio Dept. of Adm. Serv.*, 136 Ohio App. 3d 166, 736 N.E.2d 69 (10th Dist. Franklin County 2000).

CHAPTER 12

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Prepared by the Schedule Delay Analysis Standard Committee of the Construction Institute of ASCE

Schedule Delay Analysis, Standard ANSI/ASCE/CI 67-17, presents guiding principles that can be used on construction projects to determine the impact of delays. Critical path method (CPM) schedules can be of evidential value to demonstrate causation and liability and to apportion delays when they occur on a project. CPM schedules will influence the quantification of delay and, ultimately, whether a party was damaged by a delay.

This standard provides 35 guidelines that allow for segmentation of responsibility for delays to intermediary milestones and project completion dates. The guidelines enable the calculation of delay damages or liquidated damages by using CPM schedule techniques and preparing a schedule delay analysis. Each guideline is accompanied by commentary that explains the reasoning behind and application of that principle. Topics include scope and definitions; critical path, float, and early completion; chronology of delay, concurrent delay, and responsibility for delay; changing schedules after the fact; and acceleration.

Standard ASCE 67-17 reflects the best engineering principles associated with schedule delay analysis, as well as the standard of practice in the U.S. construction industry. It is an important reference for construction engineers, project managers, owners, and contracting agents.

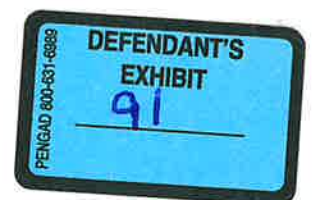
DEFENDANT LIBRARY ASSOCIATES,

LLC'S TRIAL EXHIBIT #91

91; 91-1 through 91-39

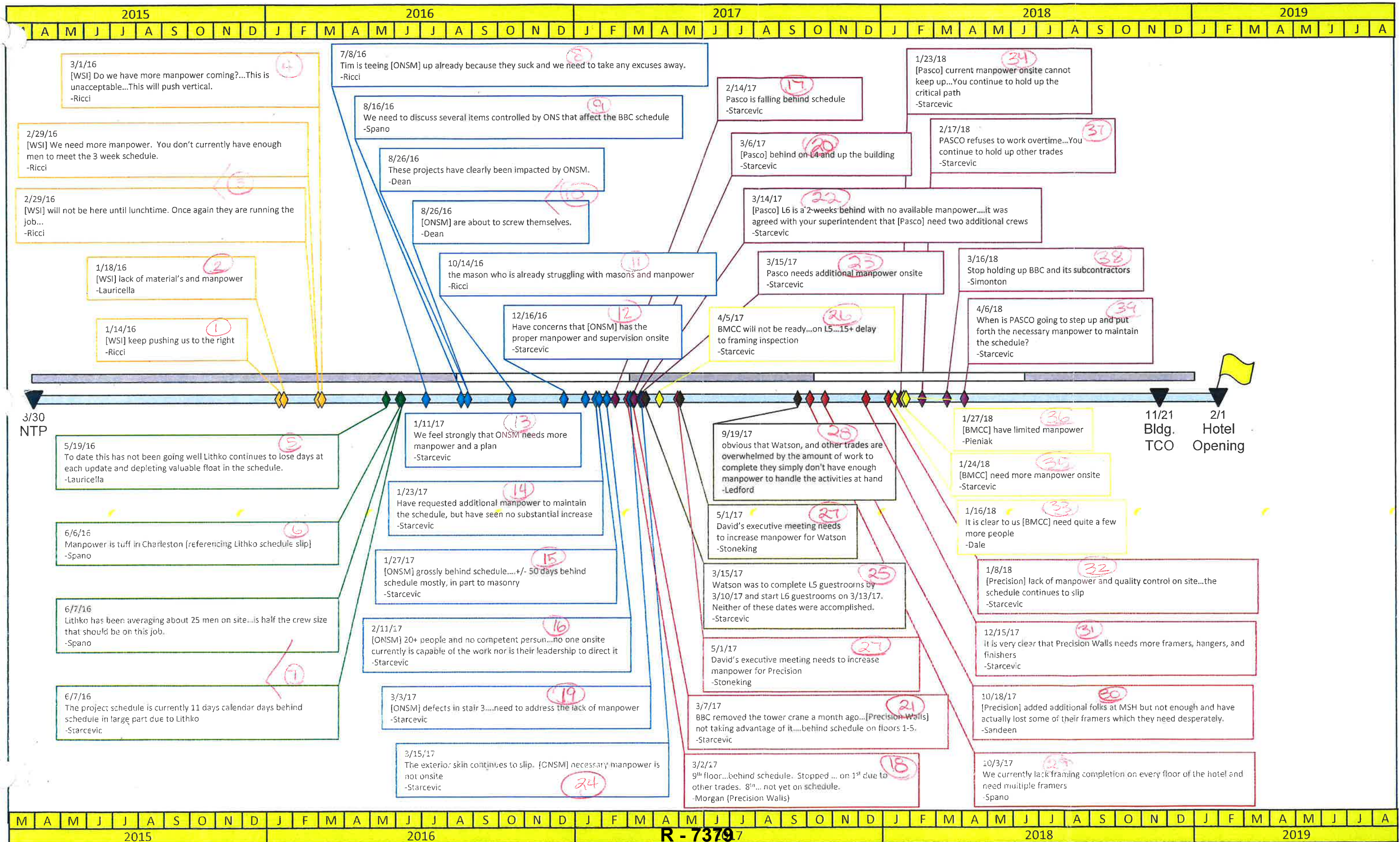
91-13 was Withdrawn

R - 7378





Hotel Bennett – Manpower Issues



Message

From: Ricci, Daniel [DRicci@Balfourbeattyus.com]
Sent: 1/14/2016 10:51:28 AM
To: Spano, Tim [timspano@Balfourbeattyus.com]; Cotherman, Robert [RCotherman@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]
Subject: Fwd: Marion Square Notic of delay for lack of manpower and materials

How much more do I need to take from them. They keep pushing us to the right. Why is Lithko the only sub making things work out here and sacrificing to move the train...Please help. I thought I was back in commercial and done with these bullshit excuses.

Dan Ricci
Balfour Beatty Construction
(704)400-2290

Begin forwarded message:

From: rauben919 <rauben919@aol.com>
Date: January 14, 2016 at 11:21:48 AM EST
To: "Ricci, Daniel" <DRicci@Balfourbeattyus.com>
Cc: Rob Greer WSI <robg@wsi-nc.com>, "Spano, Tim" <timspano@Balfourbeattyus.com>, "Cotherman, Robert" <RCotherman@Balfourbeattyus.com>
Subject: Re: Marion Square Notic of delay for lack of manpower and materials

At this minute every single crew its real busy
That means if you do not have nothing for us to continue today and tomorrow seems like the best day we can go back is going to be on Monday

Raunel Benitez
Field operations manager
WSI
Direct: 919-868-8807
Office: 704-489-2099
Fax: 704-489-2265
www.wsi-nc.com

----- Original message -----

From: "Ricci, Daniel" <DRicci@Balfourbeattyus.com>
Date: 01/14/2016 11:10 AM (GMT-05:00)
To: rauben919 <rauben919@aol.com>
Cc: Rob Greer WSI <robg@wsi-nc.com>, "Spano, Tim" <timspano@Balfourbeattyus.com>, "Cotherman, Robert" <RCotherman@Balfourbeattyus.com>
Subject: Re: Marion Square Notic of delay for lack of manpower and materials

So I guess we will see a different crew on Saturday at Marion Square. Thanks

Dan Ricci
Balfour Beatty Construction
(704)400-2290

On Jan 14, 2016, at 11:05 AM, rauben919 <rauben919@aol.com> wrote:

Daniel just like I said too many times angel will be working tomorrow and another project if he not finish in the GC want us to work on Saturday I cannot pull it out and send it over to you just like I can not pull them out when they are on you job site without finish what do you need as to do

Raunel Benitez
Field operations manager
WSI
Direct: 919-868-8807
Office: 704-489-2099
Fax: 704-489-2265
www.wsi-nc.com

----- Original message -----

From: "Ricci, Daniel" <DRicci@Balfourbeattyus.com>
Date: 01/14/2016 10:45 AM (GMT-05:00)
To: rauben919 <rauben919@aol.com>
Cc: Rob Greer WSI <rob@wsi-nc.com>, "Spano, Tim" <timspano@Balfourbeattyus.com>, "Cotherman, Robert" <RCotherman@Balfourbeattyus.com>
Subject: Re: Marion Square Notic of delay for lack of manpower and materials

I am saying this Saturday 1/16 like I said in an email yesterday. We are tracking on next section.

Dan Ricci
Balfour Beatty Construction
[\(704\)400-2290](tel:(704)400-2290)

On Jan 14, 2016, at 10:25 AM, rauben919 <rauben919@aol.com> wrote:

Are you saying Saturday the 23rd?

Raunel Benitez
Field operations manager
WSI
Direct: 919-868-8807
Office: 704-489-2099
Fax: 704-489-2265
www.wsi-nc.com

----- Original message -----

From: "Ricci, Daniel" <DRicci@Balfourbeattyus.com>
Date: 01/14/2016 10:13 AM (GMT-05:00)
To: rauben919 <rauben919@aol.com>
Cc: Rob Greer WSI <rob@wsi-nc.com>, "Spano, Tim" <timspano@Balfourbeattyus.com>, "Cotherman,

Robert" <RCotherman@Balfourbeattyus.com>

Subject: Re: Marion Square Notic of delay for lack of manpower and materials

Saturday

Dan Ricci

Balfour Beatty Construction

(704)400-2290

On Jan 14, 2016, at 9:39 AM, rauben919 <rauben919@aol.com> wrote:

Tim/ Daniel. Like I said yesterday after 9:00 am this morning we do not have nothing else to do we finish 100% at this minute everything we can do I guess we going to go and come back on Monday if you have areas available by than please let us know thanks

Raunel Benitez

Field operations manager

WSI

Direct: 919-868-8807

Office: 704-489-2099

Fax: 704-489-2265

www.wsi-nc.com

----- Original message -----

From: "Ricci, Daniel" <DRicci@Balfourbeattyus.com>

Date: 01/13/2016 4:16 PM (GMT-05:00)

To: rauben919 <rauben919@aol.com>

Cc: "Spano, Tim" <timspano@Balfourbeattyus.com>, "Cotherman, Robert" <RCotherman@Balfourbeattyus.com>

Subject: Re: Marion Square Notic of delay for lack of manpower and materials

Yes

Dan Ricci

Balfour Beatty Construction

(704)400-2290

On Jan 13, 2016, at 4:11 PM, rauben919 <rauben919@aol.com> wrote:

Do you have more areas ready after 9 a.m. tomorrow for us to continue?

Raunel Benitez

Field operations manager

WSI

Direct: 919-868-8807

Office: 704-489-2099

Fax: 704-489-2265

----- Original message -----

From: "Ricci, Daniel" <DRicci@Balfourbeattyus.com>
Date: 01/13/2016 3:54 PM (GMT-05:00)
To: rauben919 <rauben919@aol.com>
Cc: "Spano, Tim" <timspero@Balfourbeattyus.com>, "Cotherman, Robert" <RCotherman@Balfourbeattyus.com>
Subject: Re: Marion Square Notic of delay for lack of manpower and materials

Raunel what about the material? If you look on the camera now you will see the next section is coming available and with 2 guys you should keep going. Plan is to pour section A Friday morning at 4am before rain comes. Strip on Saturday which will require you guys to be here for repairs and also keep going on section B and finish end of day Saturday for rod busters to be here Monday to install rebar in section B. If you were in sub meeting we could have discussed. Need your cooperation on this please to make schedule.

Dan Ricci
Balfour Beatty Construction
(704)400-2290

On Jan 13, 2016, at 2:46 PM, rauben919 <rauben919@aol.com> wrote:

Tim. I do not know where you have this information but we were on site at 7:am yesterday nothing was ready for us to do that's why we left and came back at lunch
I just finish talking with Angel he will finish 100% the area that you have ready for us no later than tomorrow at 9 a.m. so after that is nothing for us to do

Raunel Benitez
Field operations manager
WSI
Direct: 919-868-8807
Office: 704-489-2099
Fax: 704-489-2265
www.wsi-nc.com

----- Original message -----

From: "Spano, Tim" <timspero@Balfourbeattyus.com>
Date: 01/13/2016 2:10 PM (GMT-05:00)
To: rauben919 <rauben919@aol.com>
Cc: "Cotherman, Robert" <RCotherman@Balfourbeattyus.com>, Rob Greer <robg@wsi-nc.com>, "Ricci, Daniel" <DRicci@Balfourbeattyus.com>
Subject: Marion Square Notic of delay for lack of manpower and materials

Raunel, I thought we were past showing up at noon and running out of materials on site. Your crew didn't show up yesterday until lunch and ran out of materials early this morning. three of your men left this morning to get material at the warehouse and had only one man on site working. Can someone please project material for the portion of work your doing that week? due to the late start and lack of material, we had to push the rod busters to tomorrow and have lost a day in the schedule. We need your men completing the next section

pour today no matter how late. Dan has offered our shed to store some material on site so we don't run into this again but its not being used.

On another note, pursuant to the contract, you are to have a competent person at our office every Wednesday morning at 8:30 am for a sub meeting while you are performing work on this job. No one was in our meeting again. This is when we go over issues and schedules. Have Angel or yourself here next Tuesday. thanks

R - 7386

Message

From: Lauricella, Joe [JLauricella@Balfourbeattyus.com]
Sent: 1/18/2016 1:23:41 PM
To: Spano, Tim [timspano@Balfourbeattyus.com]; Cotherman, Robert [RCotherman@Balfourbeattyus.com]; Ricci, Daniel [DRicci@Balfourbeattyus.com]; Denney, Brandon [BDenney@Balfourbeattyus.com]
CC: Stoneking, Tony [tstoneking@balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Goodwin, Shelly [sgoodwin@balfourbeattyus.com]
Subject: MSH-004 Updated Schedule & Reports
Attachments: MSH-004 BiWeekly Update Report thru 1-26-16.pdf; MSH-004 Comparison Schedule vs 003 1-18-16.pdf; MSH-004 Critical Path Schedule 1-18-16.pdf; MSH-004 Delivery Schedule PLOT 1-18-16.pdf; MSH-004 Detailed Project Schedule 1-18-16.pdf; MSH-004 PM Report 1-18-16.pdf; MSH-004 Pull Planning 2 Week Look Ahead 1-18-16.pdf; Marion Sq Project Overview .xlsx
Importance: High

Team, attached is the updated schedule and reports based on last week's site visit. Below I have listed a few of the issues that have or are still impacting the job over the past month.

- Waterproofing Subcontractor both lack of material's and manpower.
- Tower Crane down for approx. 7 days.
- Dirt removal from hole is moving slowly due to detail on bracing and the process in which we are using to remove dirt. (Team can provide more detail)
- BBC has sent dates to Owner for Design shop drawings at each level. These activities have been added into the schedule and tied to the proper Successors. These will be tracked on a Bi Weekly basis along with construction.

Attached Reports:

- Detailed project Schedule
- Critical Path Schedule
- Delivery Plot (Will be delivered)
- BI Monthly Update report thru 1-26-16
- 2 Week Pull Planning Plot (Will be delivered)
- MSH-003 VS MSH-004 Comparison Schedule
- PM / Procurement Update

I will be plotting out 2 of these reports and bringing them to the site on Thursday for your use.

Bob & Dan. Please use these attached reports for our next update. Also the update report should be issued to all subcontractors so that everyone is using the same schedule to build by.

Joe

Joe Lauricella | Scheduling Manager

office: 704.295.4773 | mobile: 704.770.5974 | email: jlauricella@balfourbeattyus.com

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Message

From: Ricci, Daniel [DRicci@Balfourbeattyus.com]
Sent: 2/29/2016 7:19:07 AM
To: Spano, Tim [timspano@Balfourbeattyus.com]; Cotherman, Robert [RCotherman@Balfourbeattyus.com]
Subject: Re: Monday 7am

Yes. Everything Lithko and I said we were going to do we accomplished. I called Raunel yesterday at 6pm and he said they would be here. The jobsite hours are 7am to 6pm. If they can not do their work during that time than we should be able to slap a notice to them. Bob please make sure we close tonight at 6pm and we will just push the schedule. I am tired of staying late for these ass clowns because they do and work when they want to. They were given 2 days to be on this section. Their is no excuse here and I need you all to support me.

Dan Ricci
Balfour Beatty Construction
(704)400-2290

On Feb 29, 2016, at 8:02 AM, Spano, Tim <timspano@Balfourbeattyus.com> wrote:

I will call Raunel but did the half day worked yesterday get Section 7 done per your email below?

From: Ricci, Daniel
Sent: Monday, February 29, 2016 7:56 AM
To: Spano, Tim; Cotherman, Robert
Subject: Re: Monday 7am

I just called Jose. They will not be here until lunchtime. Once again they are running the job...

Dan Ricci
Balfour Beatty Construction
(704)400-2290

On Feb 29, 2016, at 7:40 AM, Ricci, Daniel <DRicci@Balfourbeattyus.com> wrote:

Raunel can I get an ETA for the guys please? It is almost 8am

From: Ricci, Daniel
Sent: Friday, February 26, 2016 9:10 AM
To: Raunel Marion Waterproofer
Cc: Spano, Tim; Cotherman, Robert; Rob Greer
Subject: Monday 7am

Raunel to follow up on my phone call yesterday and keep everyone in the loop. We are working Sat and Sun and section 7 will be ready on Monday @ 7am for a full crew. You are looking at a good 2 days in that section. That crew should then be able to move to the rest of the foundations in section 5 on Wednesday. I will call you over the weekend with an update on our progress.

Dan Ricci
Balfour Beatty Construction
(704)400-2290

Message

From: Ricci, Daniel [DRicci@Balfourbeattyus.com]
Sent: 2/29/2016 11:21:38 AM
To: Raunel Marion Waterproofor [rauben919@aol.com]; Rob Greer [robg@wsi-nc.com]; Cotherman, Robert [RCotherman@Balfourbeattyus.com]; Spano, Tim [timspano@Balfourbeattyus.com]
Subject: WSI

We need more manpower. You don't currently have enough men to meet the 3 week schedule. We made an effort to give you available sections and Angel makes it a point to take pictures of small areas that need adjustment. I can not get on board with a subcontractor that says "we can't". I am tired of the bullshit every time your guys come to the site. Starting at 11 and then taking a lunch does not help the fact....The jobsite is open from 7am to 6pm. BBC will no longer stay late to accommodate WSI getting to work at 11am. The schedule will continue to push...

You all need to figure it out if we are ever going to get out of this hole.

Dan Ricci
Balfour Beatty Construction
(704)400-2290

Message

From: DRicci@Balfourbeattyus.com [DRicci@Balfourbeattyus.com]
Sent: 3/1/2016 8:07:38 AM
To: Raunel Marion Waterproofer [rauben919@aol.com]; Rob Greer [rob@wsi-nc.com]
CC: Spano, Tim [timspano@Balfourbeattyus.com]; Cotherman, Robert [RCotherman@Balfourbeattyus.com]
Subject: Re: Ready

Do we have more manpower coming? We just spoke with your guy (Jose the translator not the competent person) and he said it will be end of the day tomorrow before half of section 7 (east wall) is ready and it won't be until Saturday until the remainder is finished. This is unacceptable. Get me another crew in Charleston today. We can not let the schedule push a week. This will push vertical. At this rate we will have the elevator deck poured before section 7...

I need an answer in the next 30 minutes on what your plan is.

Dan Ricci
Balfour Beatty Construction
(704)400-2290

On Feb 29, 2016, at 1:14 PM, Ricci, Daniel <DRicci@Balfourbeattyus.com> wrote:

What about all these areas that are ready and have been since 7am. I can take pictures too but it will not speed up the job. If you had a competent person here we might be able to get something done. Send more men and a competent person. It's 1:30pm and no waterproofing on sheet pile. Let me guess... Not ready

<IMG_0904.JPG>

<IMG_0903.JPG>

<IMG_0902.JPG>

<IMG_0901.JPG>

<IMG_0900.JPG>

Dan Ricci
Balfour Beatty Construction
(704) 400-2290

Message

From: Lauricella, Joe [JLauricella@Balfourbeattyus.com]
Sent: 5/19/2016 8:43:54 AM
To: Spano, Tim [timspano@Balfourbeattyus.com]; Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]; Denney, Brandon [BDenney@Balfourbeattyus.com]; Ricci, Daniel [DRicci@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]
CC: Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Stoneking, Tony [tstoneking@balfourbeattyus.com]; Goodwin, Shelly [sgoodwin@balfourbeattyus.com]
Subject: MSH-011 Updated Schedule & Reports
Attachments: MSH-011 BI Monthly Update Schedule thru 5-31-16.pdf; MSH-011 Detailed Project Schedule 5-19-16.pdf; MSH-011 Detailed Project Schedule OWNER 5-19-16.pdf

Team, attached is the updated schedule and reports thru 5/10/16. Based on our meeting with the leadership team we have gone thru the schedule and completed the following tasks.

- Review the structure with Lithko to improve on cycle time. – To date this has not been going well Lithko continues to lose days at each update and depleting valuable float in the schedule.
- Review the drywall durations with Pwalls.- This went very well Both Dale and Michael were very cooperative in committing to working the drywall process on a SS-4 duration between floors as well as maintain levels 1.2 and 9 when they are available. It was clearly discussed with them that they would need to provide the adequate manpower to achieve this schedule.
- Review and add detail to Level 9 breaking it into 3 areas, East, West and Pool area. – This was done with Dan Ricci and I feel that both the West & East are realistic and have the detail needed to communicate to the subcontractors BBC plan on building these areas. The Pool area still needs a additional meeting with the subcontractors to make sure we have everything that need to be captured in the schedule shown. Dan Ricci is setting up a meeting to get this completed.
- Hotel Milestones. These Key Milestones were added into the schedule and tied with the buy in from the team on the correct predecessors. I reviewed these with the team this morning and we have completed our 1st pass at these. Jeff & Tony please review the durations for each of the milestones and provide feedback where required. The team has revised what they feel they should be, but based on your site visit to Texas you may be able to provide additional input.

Please let me know if you have any questions.

Team I have included the procurement portion of the update into the overall master update so that both Dan & Marty can be aware of when key equipment will be hitting the site. So Please fill out just (1) report and insure that Dan & Marty review the procurement and Bim activities so they can of if there has been any impacts to those areas of the schedule.

Joe

Joe Lauricella | Scheduling Manager of Carolina's
office: 704-295-4773 | mobile: 704-770-5974 | email: JLauricella@Balfourbeattyus.com
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Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 6/6/2016 9:08:42 PM
To: Ricci, Daniel [DRicci@Balfourbeattyus.com]
CC: Spano, Tim [timspano@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]; Eldridge, Johnny [JEldridge@Balfourbeattyus.com]
Subject: RE: Schedule Deep Dive
Attachments: 1302600-14-01 Notice of Delay and Demand for Cure.doc

See attached notification. I can put in a letter as well.

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

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From: Starcevic, Nicholas
Sent: Monday, June 06, 2016 6:09 PM
To: Ricci, Daniel <DRicci@Balfourbeattyus.com>
Cc: Spano, Tim <timspano@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>; Eldridge, Johnny <JEldridge@Balfourbeattyus.com>
Subject: Re: Schedule Deep Dive

I'll draft up a notice this evening.

Nick Starcevic
Balfour Beatty Construction
704-361-3265

On Jun 6, 2016, at 5:29 PM, Ricci, Daniel <DRicci@Balfourbeattyus.com> wrote:

10-4. We can discuss further tomorrow. Have we put Lithko on notice yet? How many times have we put them on official notice to date? I will send them an email tomorrow to document a recovery plan since we have only had verbal discussions about recovery. Let me know how many so I can capture it in my email to them and I will copy you guys.

Dan Ricci
Balfour Beatty Construction
(704)400-2290

On Jun 6, 2016, at 5:17 PM, Spano, Tim <timspano@Balfourbeattyus.com> wrote:

Marty, per our discussion, look hard at getting the first two floors dried in ASAP and think outside the box. Johnny, look at ways to get all equipment into the basement for us to install CMU. We also need to look at pumping concrete down in the hole for the raised slab at the mechanical/Electric room before CMU can start. Dan, let's be prepared to respond to the schedule slip and plan for recovery. Tony will not be happy that there is no recovery plan with Lithko after asking for 6-8 weeks last visit. We can not tell him that its hot and manpower is tuff in Charleston. Lithko knew where they were bidding the job and they need to spend some extra money to make it happen. We're about to light them up because

after Lithko is done with the shell and on another job, we will all be working double shifts to finish the hotel. Let's all put our heads together on Wednesday afternoon to be prepared. Thanks

Tim Spano | Sr. Project Manager **Carolina's**

office: 843.974.4590 | mobile: 813.917.1656 | email: timspano@balfourbeattyus.com

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306 Meeting St., Suite 300, Charleston, SC 29401

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<image001.jpg>

Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 6/7/2016 9:19:01 AM
To: Rohrer, Michael [rohrerm@Lithko.com]
CC: Ricci, Daniel [DRicci@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]; Beech, Joshua [beechj@Lithko.com]; Hazen, Anthony [hazena@Lithko.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]
Subject: 13026000-14-01 Notice of Delay and Demand for Cure - Hotel at Marion Square
Attachments: 1302600-14-01 Notice of Delay and Demand for Cure.pdf
Importance: High

Mike,

See attached Notice of Delay and Demand for Cure for the Hotel at Marion Square. The project schedule is currently 11 days calendar days behind schedule in large part due to Lithko Contracting with no indication of recovery. BBC has notified Lithko verbally and via email multiple times requesting Lithko cure the schedule delay. We continually miss coordination and pull planning dates (deck completion, PT stressing, pours, etc.) causing other subcontractors to incur costs, add manpower, and work overtime to make up for Lithko's delays. For example, the last 2 deck completion durations (L3 West and L3 East) were missed by at least one day each resulting in the subcontractor coordination issues and ultimately pushing the pour date in both instances. BBC has committed an additional crane operator so the project has a minimum hook time of 15 hours per day Monday thru Friday and 12 hours on Saturdays starting on 6/13.

BBC is formally demanding a recovery plan including a combination of additional manpower, longer working hours, and weekend work until the 4/11/16 contractual schedule is recovered. Please send the recovery schedule to myself, Dan Ricci, and Tim Spano's attention by 12:00pm Wednesday, June 8 to address these concerns.

Respectfully,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

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From: Spano, Tim
Sent: Tuesday, June 07, 2016 9:48 AM
To: Hazen, Anthony <hazena@Lithko.com>
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Ricci, Daniel <DRicci@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>; Rohrer, Michael <rohrerm@Lithko.com>; Beech, Joshua <beechj@Lithko.com>
Subject: FW: schedule Delay/ Manpower Issues/ QC issues/ Recovery Schedule
Importance: High

Anthony, after our last schedule discussion with you, Mike & Josh, you guys brought in a 10k to help with the front entrance which definitely helped but the L3 west pour still slipped. As you see below, we are tracking 11 days behind the 4/11 structure schedule and were to be making up time. I have grave concerns about the manpower and the fact that tables and columns are not continually going up. The table crew is pushing to get 1/4 of the deck up then drops back to do drop down beams and fill in while more tables stop being set. Getting 1/4 deck only allows MCC to start layout. BBC needs 1/2 deck to set our controls and the same goes for Watsons electrical layout. Our MEP trades have been crunching their allotted schedule layout duration on the deck because Lithko is behind. This shortened layout time has only benefitted Lithko not to slip further behind when in reality it should have gained BBC days on the schedule. I am not

BBC_EMAILS_00120803

R - 7399

disregarding the control/crane BBC issue that accounts for 4 days since the 4/11 schedule that BBC should have already had back due to shortened MEP layout durations. Lithko has been averaging about 25 men on site which as we both know, is half the crew size that should be on this job. We currently have no rhythm in the sequencing. There should be a table erecting crew, a drop beam and infill crew, a column steel tie/set crew and a column/wall form/pour/strip crew meaning two shifts as we previously talked about. There could also be a small strip and re-shore crew. BBC is implementing two crane operators to work 14 -16 hour days, 6 days per week moving forward until the structure is complete. Dan has asked for a plan to get back on track and we are giving you the hook time to make it happen, we just need Lithko to man up the job. Formal Delay/ Notice to cure will be coming shortly.

QC Concerns

We currently have several second floor columns that are too short pultruding through the L3 West slab so we had to ask for an engineering fix yesterday and may not have the fix resolved until tomorrow, losing 3 days on the L4 West columns that are not being formed and poured.

The Most urgent issue is that per spec, we are to stress within 72 hours from the pour but received a permission to stress the morning of Monday if we pour on a Friday. You poured L3 west completing about 7am last Friday morning (6/3/16) that has still not been stressed because edge forms were not stripped Saturday so you stress man could start first thing Monday. The edge form stripping started yesterday and your stress man showed up at 11 am when the rain started and everyone left the site. As of this morning the cables were not stressed and the Structural Engineer is going to be very upset when the third party send the stress report.

Please address the manpower/QC issues immediately and give us a plan tomorrow by noon per Dan's request. Thanks

Tim Spano | Sr. Project Manager **Carolina's**

office: 843.974.4590 | mobile: 813.917.1656 | email: timspano@balfourbeattyus.com

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From: Ricci, Daniel
Sent: Tuesday, June 07, 2016 8:10 AM
To: hazena@lithko.com; beechj@lithko.com
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>
Subject: Recovery Schedule
Importance: High

Guys as Anthony already knows from our conversation yesterday, we have the big dogs coming into town on Thursday morning at 7am for a site visit and then a schedule and budget review meeting. Structure will be a big part of the discussion and I want to be prepared to explain to them what our recovery plan is to get us not just back on schedule but also pull it in as discussed the last time they were here to beat the 9-22-16 top out date from the 4-11-16 schedule. Please email me your plan and updated schedule by 12pm on Wednesday if not sooner so my team and I can review it and be prepared for the meeting. Overall we are tracking 11 calendar days behind the next pour which is L3 East that was scheduled to pour 6/3 and as of today, we are tracking 6/14 for a pour date. Just so you guys are aware we are all tied to calendar days for LD's.... Call me with any questions

BBC_EMAILS_00120804

R - 7400

Dan Ricci | Superintendent

office: 704.319.4000 | mobile: 704.400.2290 | email: dricci@balfourbeattyus.com

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Message

From: DRicci@Balfourbeattyus.com [DRicci@Balfourbeattyus.com]
Sent: 7/8/2016 7:48:33 AM
To: Anthony Hazen [hazena@lithko.com]
Subject: Fwd: Masonry Start at HMS

See below. Tim is teeing these guys up already because they suck and we need to take any excuses away. Are we good on all Masonry dowels on levels 1, 2 and 3? Mason is coming in hot and heavy Monday on level 1

Dan Ricci
Balfour Beatty Construction
(704)400-2290

Begin forwarded message:

From: "Spano, Tim" <timspano@Balfourbeattyus.com>
Date: July 8, 2016 at 8:39:25 AM EDT
To: Toby Holloway <tholloway@oldnorthstatemasonry.com>
Cc: "Starcevic, Nicholas" <NStarcevic@Balfourbeattyus.com>, "Ricci, Daniel" <DRicci@Balfourbeattyus.com>, "Dale, Marty" <mdale@balfourbeattyus.com>, Chip Venable <cvenable@oldnorthstatemasonry.com>, "Dooley, Alec" <adooley@Balfourbeattyus.com>, "Dale, Marty" <mdale@balfourbeattyus.com>
Subject: RE: Masonry Start at HMS

Thanks Tobey. Per my calculations on CMU per floor and re-shore removal on upper levels. With two trowels, you will be in the basement most of next week and laying out/staging 1st floor. We will need the 1st floor staged with CMU/scaffold on Monday and 5 trowels by Tuesday next week and 10 the following week and you will not catch the re-shore removal. We will need each floor punched completely before leaving that floor, meaning all cut pieces, floating, grouting, cleaning up to allow P-walls to layout and go to town framing behind you. Please start ramping up now for the added trowels needed the next two weeks. There's allot of CMU work on Floors 1,2 & 3 for you guys. We are currently checking and installing any missing rebar so you can run starting next week. Thanks

Tim Spano | Sr. Project Manager **Carolina's**
office: 843.974.4590 | mobile: 813.917.1656 | email: timspano@balfourbeattyus.com
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From: Toby Holloway [<mailto:tholloway@oldnorthstatemasonry.com>]
Sent: Thursday, July 07, 2016 4:17 PM
To: Spano, Tim <timspano@Balfourbeattyus.com>
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Ricci, Daniel <DRicci@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>; Chip Venable <cvenable@oldnorthstatemasonry.com>; Dooley, Alec <adooley@Balfourbeattyus.com>
Subject: Re: Masonry Start at HMS

One foreman two masons three labors

Toby Holloway
Old North State Masonry
Vice President of operations
Mobile:704-622-0803

On Jul 7, 2016, at 3:49 PM, Spano, Tim <timspano@Balfourbeattyus.com> wrote:

Again Toby, How many trowels are scheduled to be here Monday? To be clearer, how many masons ____ How many Tenders ____ How Many Laborers ____? We need to know what the manpower plan is for next week. We have framers starting also that will be chasing you guys up the structure and need to know your manpower plan to stick with the schedule.

Tim Spano | Sr. Project Manager **Carolina's**
office: 843.974.4590 | mobile: 813.917.1656 | email:timspano@balfourbeattyus.com
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306 Meeting St., Suite 300, Charleston, SC 29401
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<image001.jpg>

From: Spano, Tim
Sent: Thursday, July 07, 2016 12:46 PM
To: Toby Holloway <tholloway@oldnorthstatemasonry.com>
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Ricci, Daniel <DRicci@Balfourbeattyus.com>; Waterfield, Peter <PWWaterfield@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Chip Venable <cvenable@oldnorthstatemasonry.com>; Dale, Marty <mdale@balfourbeattyus.com>
Subject: Re: Masonry Start at HMS

How many trowels will be here Next week?

Sent from my iPhone

On Jul 7, 2016, at 11:06 AM, Toby Holloway <tholloway@oldnorthstatemasonry.com> wrote:

It is scheduled to start on Monday as planned

Toby Holloway
Old North State Masonry
Vice President of operations
Mobile:704-622-0803

On Jul 7, 2016, at 11:00 AM, Spano, Tim <timspano@Balfourbeattyus.com> wrote:

Is the first floor scheduled to be staged Monday with CMU and mortar? How many trowels will be on site to install CMU exterior walls on Monday? Thanks

Tim Spano | Sr. Project Manager **Carolina's**
office: 843.974.4590 | mobile: 813.917.1656 | email:timspano@balfourbeattyus.com
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<image001.jpg>

From: Toby Holloway [<mailto:tholloway@oldnorthstatemasonry.com>]

Sent: Thursday, July 07, 2016 10:14 AM

To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>

Cc: Ricci, Daniel <DRicci@Balfourbeattyus.com>; Waterfield, Peter <PWaterfield@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Chip Venable <cvenable@oldnorthstatemasonry.com>

Subject: Re: Masonry Start at HMS

The remaining material needed to lay that wall will be on site this afternoon same guy that lay the block yesterday will lay that block in the morning and complete it tomorrow before leaving

Toby Holloway
Old North State Masonry
Vice President of operations
Mobile:704-622-0803

On Jul 7, 2016, at 10:09 AM, Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com> wrote:

Toby,

Per our conversation, please confirm your mason is still onsite as I'm hearing conflicting stories. Let's not wait on rebar to drill and epoxy, Lithko owns that scope and will do so once your 1st course is down.

Also, attached (19/A201) is the detail showing the block wall needed to start on the ramp.

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
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From: Dooley, Alec

Sent: Thursday, July 07, 2016 8:25 AM

To: Chip Venable <cvenable@oldnorthstatemasonry.com>; tholloway@oldnorthstatemasonry.com

Cc: Ricci, Daniel <DRicci@Balfourbeattyus.com>; Waterfield, Peter <PWaterfield@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>

Subject: MSH - Preconstruction Meeting

Chip/Toby,

We are looking to set up a formal preconstruction meeting with Old North State. Does Tuesday early afternoon work with your schedule? Please advise.

Thanks,

Alec Dooley | Senior Project Engineer
mobile: 704.614.4907 | email: adooley@balfourbeattyus.com

BBC_EMAILS_01569057

R - 7405

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<image001.jpg>

<S201 - SECTIONS AND DETAILS .pdf>

Message

From: Spano, Tim [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=71519E3198A841C98B6B70E6FEBEDED-SPANO, TIM]
Sent: 8/16/2016 2:08:30 PM
To: Toby Holloway [tholloway@oldnorthstatemasonry.com]
CC: Joe Anastasi [Janastasi@oldnorthstatemasonry.com]; Chip Venable [cvenable@oldnorthstatemasonry.com]; Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]; Ricci, Daniel [DRicci@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]
Subject: RE: MSH - Masonry progress/issues for Basement and 1st floor completion
Flag: Follow up

I appreciate that but I want to make sure that Joe, Chip, you and my team are all on the same page. This is why I set up the conference call. It shouldn't take long. Thanks

Tim Spano | Sr. Project Manager Carolina's
office: 843.974.4590 | mobile: 813.917.1656 | email:timspano@balfourbeattyus.com
Balfour Beatty Construction | www.balfourbeattyus.com
306 Meeting St., Suite 300, Charleston, SC 29401
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-----Original Message-----

From: Toby Holloway [mailto:tholloway@oldnorthstatemasonry.com]
Sent: Tuesday, August 16, 2016 3:06 PM
To: Spano, Tim <timspano@Balfourbeattyus.com>
Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Chip Venable <cvenable@oldnorthstatemasonry.com>; Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Ricci, Daniel <DRicci@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>
Subject: Re: MSH - Masonry progress/issues for Basement and 1st floor completion

I can call you now

Toby Holloway
Old North State Masonry
Vice President of operations
Mobile:704-622-0803

> On Aug 16, 2016, at 3:02 PM, Spano, Tim <timspano@Balfourbeattyus.com> wrote:
>
> I hear you but we need to discuss several items controlled by ONS that affect the BBC schedule on the call today.
>
> Tim Spano | Sr. Project Manager Carolina's
> office: 843.974.4590 | mobile: 813.917.1656 |
> email:timspano@balfourbeattyus.com
> Balfour Beatty Construction | www.balfourbeattyus.com
> 306 Meeting St., Suite 300, Charleston, SC 29401 Connect with us:
> Facebook | Twitter | YouTube | LinkedIn
>
>
>
> -----Original Message-----
> From: Toby Holloway [mailto:tholloway@oldnorthstatemasonry.com]
> Sent: Tuesday, August 16, 2016 2:59 PM
> To: Spano, Tim <timspano@Balfourbeattyus.com>
> Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Chip Venable
> <cvenable@oldnorthstatemasonry.com>; Starcevic, Nicholas
> <NStarcevic@Balfourbeattyus.com>; Ricci, Daniel
> <DRicci@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>
> Subject: Re: MSH - Masonry progress/issues for Basement and 1st floor
> completion
>
> I will be on site all day tomorrow as well as attending the sub
> meeting and will be able to get any and all input as it relates to
> schedule

>
> Toby Holloway
> Old North State Masonry
> Vice President of operations
> Mobile:704-622-0803
>
>> On Aug 16, 2016, at 1:51 PM, Spano, Tim <timspero@Balfourbeattyus.com> wrote:
>>
>> Please call 1-888-354-0094 passcode 826803 to discuss, .crews,
>> schedule, concrete scheduling, manpower, Basement/1st floor
>> completion, staging, competent person and wed. sub meeting
>> representation. Thanks
>>
>> <meeting.ics>

Message

From: Goodwin, Shelly [sgoodwin@balfourbeattyus.com]
Sent: 8/26/2016 5:35:02 PM
To: Sandeen, Jeff [JSandeen@Balfourbeattyus.com]
CC: Dean, Pat [pdean@balfourbeattyus.com]
Subject: Re: The Mint and Cresent Dilworth

Got it, have a, have good weekend too.

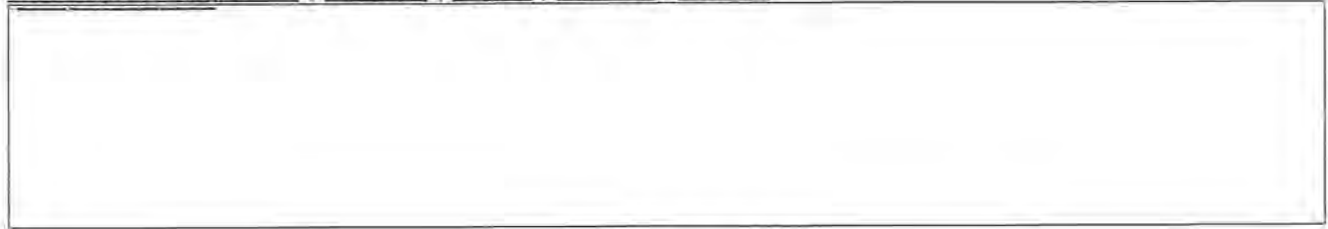
Shelly Goodwin

cell: [919.796.6011](tel:919.796.6011) | email: sgoodwin@balfourbeattyus.com

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On Aug 26, 2016, at 6:29 PM, Sandeen, Jeff <JSandeen@Balfourbeattyus.com> wrote:

Thanks Shelly but I am good right now. If you talk to them I would reiterate that we are serious and this is going to be painful for them if they don't get onboard.

Have a good weekend!

Jeffrey Sandeen | Vice President / Business Unit Leader, Carolinas

office: [704.319.4029](tel:704.319.4029) | mobile: [704.534.8522](tel:704.534.8522) | email: JSandeen@balfourbeattyus.com

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On Aug 26, 2016, at 6:23 PM, Goodwin, Shelly <sgoodwin@balfourbeattyus.com> wrote:

You want me to help?

Shelly Goodwin

cell: [919.796.6011](tel:919.796.6011) | email: sgoodwin@balfourbeattyus.com

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On Aug 26, 2016, at 6:13 PM, Dean, Pat <pdean@balfourbeattyus.com> wrote:

Check with Jeff,

Thanks,

Pat Dean

On Aug 26, 2016, at 6:10 PM, Goodwin, Shelly <sgoodwin@balfourbeattyus.com> wrote:

Would you like me help with this?

Get [Outlook for iOS](#)

From: Dean, Pat
Sent: Friday, August 26, 2016 5:28:54 PM
To: Goodwin, Shelly
Subject: Fwd: The Mint and Cresent Dilworth

They are about to screw themselves.

Thanks,

Pat Dean

Begin forwarded message:

From: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>
Date: August 26, 2016 at 2:35:31 PM EDT
To: "Dean, Pat" <pdean@balfourbeattyus.com>
Cc: "Sandeem, Jeff" <JSandeem@Balfourbeattyus.com>, Toby Holloway <tholloway@oldnorthstatemasonry.com>, "Andrew S. Culicerto (aculicerto@slk-law.com)" <aculicerto@slk-law.com>
Subject: RE: The Mint and Cresent Dilworth

Pat,

We'll be more than happy to meet, but in three months we have not received any information to suggest fault.

As for the other projects we'll have to take them on a case by case basis, but your statement below is not accurate.

Please confirm what time you would like to meet.

Thanks,
Joe Anastasi

From: Dean, Pat [<mailto:pdean@balfourbeattyus.com>]
Sent: Friday, August 26, 2016 2:23 PM
To: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>
Cc: Sandeen, Jeff <JSandeem@Balfourbeattyus.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Andrew S. Culicerto (aculicerto@slk-law.com) <aculicerto@slk-law.com>
Subject: Re: The Mint and Cresent Dilworth

Joe,

I would encourage you to meet and come to an agreement. There was fault there.

Jeff,

Let's make sure we have properly notified ONSM on 300 south Tryon, JM Alexander, kimpton hotel and Hotel at Marion Square, if they have not already been notified. These projects have clearly been impacted by ONSM and I don't want there to be any misunderstandings as suggested below.

Thanks,

Pat Dean

On Aug 26, 2016, at 1:07 PM, Joe Anastasi <Janastasi@oldnorthstatemasonry.com> wrote:

Jeff,

ONSM disagrees with your characterization of our previous conversations and the history of ONSM's performance on the Projects. ONSM has not been given any formal notice of delay on either Project as required by our Subcontract. (However, ONSM did give notice on multiple occasions that it was being delayed on the Project due to other trades not completing their work as originally scheduled.) One can only assume Balfour's claims of "notice of delay" are a few isolated emails sent regarding manpower. After these emails were received, ONSM responded denying it was delaying the Project and then met at the Project site with Balfour to demonstrate how we did not need additional manpower because the proceeding work was not completed to the point of allowing us to efficiently add more manpower. After our responsive emails and site meeting, ONSM never heard any whispers, much less direct conversation, regarding ONSM delaying the Projects until almost two years later when Balfour was attempting to close the Projects out. These concerns were raised by Balfour after you specifically stated you all had lost money on the Project and were trying to "share" the Projects losses with the subcontractors. In our meeting of July 24th, you simply took your total loss of approximately 8.5 million dollars (no documentation of this figure) and based on our contract value for the two projects as compared to your overall contract value you determined ONSM should absorb approximately 4% of your loss. (in excesses of \$300,000). This approach is not justified for ONSM, who performed above and beyond what was required on the Projects.

ONSM has repeatedly stated it was not responsible for any delays on either Project. At the same time, Balfour has never provided any notice of delay to ONSM and has not presented any schedule analysis or claimed costs from ONSM newly alleged "delays." As we stated at the previous meeting, if Balfour provides documentation supporting what it feels are delays by ONSM, we will certainly look at any legitimate analysis and give it proper consideration. However, you are currently asking ONSM to consider adjusting the amounts owed under the contracts based on delay we do not believe exists. To even consider such a reduction, actual detail needs to be provided to ONSM for consideration.

If Balfour contends ONSM should accept some sort of delay based on the information provided to it thus far, I agree there might not be anything to discuss on 8/31/16. Nevertheless, if you would like to meet to discuss documented and supported claims, and how each may be resolved in light of the outstanding balances due to ONSM, I'll be available.

Additionally, while ONSM will continue to work for Balfour to close these Projects out, it will have to move forward with bond and lien claims if resolution cannot be reached prior to September 8, 2016.

Best regards,

Joe Anastasi
President
Cell (704) 400-6802
janastasi@onsmllc.com

BBC_EMAILS_00004592

R - 7413

From: Sandeen, Jeff [<mailto:JSandeen@Balfourbeattyus.com>]
Sent: Friday, August 26, 2016 8:03 AM
To: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>
Cc: Dean, Pat <pdean@balfourbeattyus.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Andrew S. Culicerto (aculicerto@slk-law.com) <aculicerto@slk-law.com>
Subject: RE: The Mint and Crescent Dilworth

Joe-

I appreciate you following up from our discussion last week and as I stated during our conversation I am continuing to work through the closeout process on both of the projects. As it currently stands, ONSM was notified of their impacts throughout both projects and all BBC is seeking to recover are the costs associated with those impacts.....this has nothing to do with absorbing a portion of any perceived loss on the project. All I intend to do is recover those costs that are solely attributed to ONSM's lack of performance and this has been clearly communicated to ONSM.

If ONSM is truly interested in resolving these project impacts as it states below I am more than willing to discuss a settlement but to assume that ONSM has had no impact on these projects is not a starting point that I am willing to accept. I am available on Wednesday, 8/31 at 2:00 if you would like to discuss further.

Thanks,

Jeffrey Sandeen | Vice President / Business Unit Leader, Carolinas
office: [704.319.4029](tel:704.319.4029) | mobile: [704.534.8522](tel:704.534.8522) | email: JSandeen@balfourbeattyus.com
Balfour Beatty Construction | [1930 Camden Road, Suite 280, Charlotte, NC 28203](https://www.balfourbeattyus.com) | www.balfourbeattyus.com
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From: Joe Anastasi [<mailto:Janastasi@oldnorthstatemasonry.com>]
Sent: Thursday, August 25, 2016 10:54 AM
To: Sandeen, Jeff <JSandeen@Balfourbeattyus.com>
Cc: Dean, Pat <pdean@balfourbeattyus.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Andrew S. Culicerto (aculicerto@slk-law.com) <aculicerto@slk-law.com>
Subject: The Mint and Crescent Dilworth

Jeff,

We initially met on June, 23rd in regards to closing out the Mint project, and then we met on July 14th to discuss the closing out of both the Mint and Crescent. At that time you requested ONSM to absorb a portion of your loss on these projects without providing adequate support. Based on the lack of information and documentation to support your request we ended that meeting with an understanding you were to provide proper documentation. To date we have not received any additional information.

As I explained the other day on the phone, we are concerned for our lien rights on these project. Our attorney is going to handle both of these jobs simultaneously. The last day we worked on the Mint project was June 28th, 2016 with some touchup veneer cleaning. In order to provide for adequate time to process our liens; our attorney has requested to start processing these no later than September 8th, 2016. As we discussed we wanted to provide you with adequate notice so we have ample time to resolve this matter and we didn't want to surprise anyone.

Thank you,

Joe Anastasi
President

BBC_EMAILS_00004593

R - 7414

Cell (704) 400-6802
janastasi@onsmllc.com

Message

From: Spano, Tim [timspano@Balfourbeattyus.com]
Sent: 10/17/2016 5:57:53 AM
To: Ricci, Daniel [DRicci@Balfourbeattyus.com]; Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Subject: FW: Re-shores on Level 5
Attachments: Marion Square RS-2-April 6 Rev-PE.pdf

This is good.

Tim Spano | Sr. Project Manager **Carolina's**
office: 843.974.4590 | mobile: 813.917.1656 | email: timspano@balfourbeattyus.com
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From: Quinn, Timothy [mailto:quinnt@Lithko.com]
Sent: Friday, October 14, 2016 4:08 PM
To: Ricci, Daniel <DRicci@Balfourbeattyus.com>; Beech, Joshua <beechj@Lithko.com>
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>
Subject: RE: Re-shores on Level 5

Dan,

See attached. The 3 floors of reshore is per the professional engineer stamped reshore drawings.

Timothy Quinn

980-621-5552 (Mobile)
quinnt@lithko.com

From: Ricci, Daniel [mailto:DRicci@Balfourbeattyus.com]
Sent: Friday, October 14, 2016 4:00 PM
To: Quinn, Timothy <quinnt@Lithko.com>; Beech, Joshua <beechj@Lithko.com>
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>
Subject: Re-shores on Level 5

Tim/Josh, did you ever hear back from the Doka engineer on whether we need to leave the re-shores in place on Level 5 in order to pour Level 9? I could not find the info in the attached but I am just a dumb GC... To recap, that is 4 floors re-shored compared to the 3 floors we have been doing...If that is the case we won't be able to pull the re-shores on 5 West until 11/1 which is the day the mason is due to start on Level 5 and will need all the re-shores removed. In turn we won't be able to pull the East side of 5 until 11/14. Please advise as it would really help us stocking ahead of time to hit

production work on 11/1 and have the entire floor cleared of re-shores and not stop the mason who is already struggling with masons and manpower...

Dan Ricci | Superintendent

office: 704.319.4000 | mobile: 704.400.2290 | email: dricci@balfourbeattyus.com

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Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 12/16/2016 3:26:24 PM
To: Joe Anastasi [Janastasi@oldnorthstatemasonry.com]
CC: Chip Venable [cvenable@oldnorthstatemasonry.com]; Toby Holloway [tholloway@oldnorthstatemasonry.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Ricci, Daniel [DRicci@Balfourbeattyus.com]; Goodwin, Shelly [sgoodwin@balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Stoneking, Tony [tstoneking@balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]
Subject: 13026000-020-01 Notice of Delay and Demand for Cure - Hotel at Marion Square
Attachments: 13026000-020-01 Notification of Delay and Demand for Cure.pdf

Joe,

See attached notice of delay and demand for cure. The detail below provides additional clarification for items that Old North State needs immediate attention to. We have concerns that Old North State Masonry ("ONSM") has the proper manpower and supervision onsite to meet the schedule and quality necessary to complete this project. We continue to get excuses on why work cannot be done instead of solutions to make this project a success. A recovery plan needs to be submitted to my attention by close of business 12/20/16.

1. Housekeeping – all CMU, trash, debris, and equipment needs to be removed from basement. There is no lay down on this project. CMU is to be delivered and staged in locations as it is required. We have agreed to allow precast storage in the basement, but all CMU needs to be delivered as it is required.
2. Quality Assurance and Control – ONSM needs to immediately address the distributed Field Report "Q245 Hotel at Marion Square FR-2". This was to be completed by 12/12/16. Additional manpower to be allocated to remedial work and not taken away from scheduled activities.
 - a. Window openings incorrectly located need to be addressed.
 - b. Control joints improperly located need to be corrected. A plan to correct and install control joints after walls have been grouted needs to be submitted immediately.
3. Schedule – ONSM needs to submit a plan to address all areas that are behind schedule with appropriate manpower.
 - a. Stairs – are to be completed in sequence with the floors
 - b. Front Entry in South West corner – well behind schedule and still needs to be grouted, keyed out, and scaffold broken down
 - c. Precast on L5 – additional certified masons needed to set precast so other areas do not fall behind. An additional crew needs to be available to start precast on L1 East when ready. We were told that the masons onsite would be setting the precast, but that will take manpower away from other areas.
 - d. L6 parapets – should have crew working on parapets and balconies.
 - e. Roof - crew needed on roof to start immediately
4. Hoisting – original schedule has tower crane removal at end of January. ONSM needs to submit hoisting plan for once the tower crane is removed. Any overtime and extended Tower Crane rental will be the responsibility of ONSM.

This notice is meant to draw attention to all the areas that we feel are lacking in production and quality. This is by no means a complete list of areas that are behind or need to be addressed, but some glaring deficiencies on the project. At the same time, we feel that Old North State can properly address these concerns in a timely fashion to get back on track. Please review and respond accordingly.

Thanks,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

BBC_EMAILS_01577247

R - 7420

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Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 1/23/2017 4:25:53 PM
To: Joe Anastasi [Janastasi@oldnorthstatemasonry.com]
CC: Chip Venable [cvenable@oldnorthstatemasonry.com]; Toby Holloway [tholloway@oldnorthstatemasonry.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Cossette, Jeni [JCossette@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Goodwin, Shelly [sgoodwin@balfourbeattyus.com]
Subject: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS
Attachments: MSH-019 Detailed Schedule 12-13-16.pdf; 13026000-20-02 ONSM Notice of Delay and Demand for Cure.pdf

Joe,

See attached 72 hour Notice to Cure. Below is a detailed breakout of areas that are in delay, mostly based on the attached 12/13 schedule and conversation onsite. We feel we have been more than lenient with Old North State and given ample opportunity for ONSM to cure their deficiencies. We have requested additional manpower to maintain the schedule, but have seen no substantial increase to the current production. Provide a recovery schedule with adequate manpower addressed to each activity by COB 1/24/17. This schedule needs to provide a plan for all deficient areas listed below to be complete by 1/28/17 and Level 7 complete by 2/3/17.

Southwest Front Entry – still incomplete. Was scheduled to complete in November 16.

Arches – notified to start 1/13/17. Scaffold still not complete and no masonry started. Needs to be complete by 1/27/17.

L3 Low Grout Break – identified on 11/28. ONSM denied responsibility, SM&E performed core test and ONSM maintains not a grout issue. ONSM verbally proposed fix on 1/18, BBC Rfid and gave direction to ONSM on 1/19. Activity still not started, causing delay.

All low breaks – direction provided on 11/19, still no action by ONSM.

Window in 309 – still wrong and in delay. Identified in November.

Control Joints – identified in October and November, multiple wrong, will slow down stucco if fixed on scaffold.

Stair 3 – not complete, in delay

Stair 4 – not complete, in delay

Level 3 Windows – opening 4" too large. Not complete and fix not started, in delay.

Level 5 – not complete, in delay. 12/13/16 schedule included precast activity completing on 1/16/17 and CMU finishing 1/23/17.

Level 6 – not complete, in delay. 12/13/16 schedule showed 1/11/17 completion.

Level 7 – not started, in delay. 12/13/16 schedule showed activity 1/12/17-1/25/17.

Level 8 – not started, not yet in delay. 12/13/16 schedule shows this activity starting 1/26/17.

See link for 1 23 17 Masonry Progress Photos

<https://bbcus.egnyte.com/fl/hOTgdZIPnm>

Thanks,

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 1/27/2017 3:17:59 PM
To: Chip Venable [cvenable@oldnorthstatemasonry.com]
CC: Joe Anastasi [Janastasi@oldnorthstatemasonry.com]; Toby Holloway [tholloway@oldnorthstatemasonry.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Cossette, Jeni [JCossette@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Goodwin, Shelly [sgoodwin@balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]
Subject: RE: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS
Importance: High

Chip,

Manpower is onsite and has had time acclimate. The dates in your 1/24 response letter need to be updated on Monday and in line with the Notice to Cure dates set forth in our 1/23 demand.

There are few clarifications to your letter that need to be made...

1. BBC has acknowledged the extended dates and change in scope. We have committed to pay every penny and give every requested schedule extension to ONSM for the sleeve issue, but ONSM has not committed to keep the schedule. 80% of that value was been paid, but we're grossly behind schedule AFTER incorporating your requested extensions. See below for ACTUAL dates this project has experienced.
 - a. L1 – ONSM requested 6 additional days bringing activity to 20 total days. 7/11 S – 8/23F, 32 days to complete, 12 days over schedule
 - i. 8/23 is substantial completion, but we're still chasing down punch issues so this floor is not complete.
 - b. L2 – no additional days requested. We're starting fresh here since there were multiple issues on L1 that contributed to the 32 days to complete.
 - i. ONSM started 8/15 and "finished" 10/7 – 40 days, 26 days over schedule.
 - ii. 10/7 is substantial completion, but we're still chasing down punch issues so this floor is not complete.
 - c. L3 – ONSM requested 8 additional days (22 total days). Scheduled activity was 9/1 – 9/30. Actual was 10/10 - 11/15
 - i. 32 days over schedule, we're still chasing down punch issues so this floor is not complete.
 - d. L4 – ONSM requested 8 additional days. Scheduled activity was 10/3 - 10/26. Actual was 10/31 - 12/14?
 - i. +/-32 days behind schedule, we're still chasing down punch issues so this floor is not complete.
 2. L5 is an anomaly and we can admit that we were not prepared for the precast band. However, you start on 12/15 and it is 1/27. That's 35 working days and you're projecting completion by 2/3, 40 days. The slow down on this floor was lack of sleeves in the cast stone for rebar. ONSM admittedly missed this detail, but made no provisions to core the precast to keep schedule (i.e. coring 12 hours a day, bringing additional machines, etc). You have had 2 lifting mechanisms here for 4 weeks, but just finished with precast Monday. 24 days of setting ~130 precast pieces, or 2.5 per day per hook. That's nowhere near the 10 per hook that ONSM committed to.
 3. L6 started 12/16 and you're projecting a 2/20 completion. This makes no sense given your requesting more than the 10 days per contract and you're already 60% complete with CMU.
 4. L7 can start where you topped out which is enough to start. ONSM needs to top on East, West, and North walls on L7 by end of next week so it can start setting precast on L8 by 2/6.

The 1/24 response shows no commitment by Old North State Masonry to cure the schedule. We're now +/- 50 days behind schedule mostly, in part to masonry, after we acknowledge and pay for the added time on L1, L3 and L4. We have tried to be team players on this project and understood the difficulty of the logistics on this project; however, ONSM bid a job that had tight logistics, no lay down, an aggressive schedule, and tiered coordination. Old North State needs to provide, in writing, a commitment to finishing the CMU on this project by 2/24. That includes all punch, rework, topping out, misc walls, stairs, etc.

Thank you,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

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From: Chip Venable [<mailto:cvenable@oldnorthstatemasonry.com>]
Sent: Wednesday, January 25, 2017 9:01 AM
To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>
Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Cossette, Jen <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>
Subject: RE: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Nick,

Let us get the additional manpower on-site and let Toby distribute them. Once we have them rolling we will be able to discuss.

Best Regards,

Chip Venable
Project Manager
Old North State Masonry

From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]
Sent: Tuesday, January 24, 2017 6:24 PM
To: Chip Venable <cvenable@oldnorthstatemasonry.com>
Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Cossette, Jen <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>
Subject: Re: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Chip -

This isn't going to work as there is no plan on recovering L5, L6, L7, and L8. The durations you are proposing are longer than contractual and egregious. There appears to be no sense of urgency and acknowledgment that you need to accelerate.

Are you available to discuss tomorrow morning at 9:30?

Nick Starcevic | Balfour Beatty Construction
Cell: 704.361.3265

On Jan 24, 2017, at 6:07 PM, Chip Venable <cvenable@oldnorthstatemasonry.com> wrote:

Nick,

BBC_EMAILS_00107146

R - 7427

Please see the attached letter in response to your Notice of Delay and Demand for Cure dated 1.23.2017,

Best Regards,

Chip Venable
Project Manager
Old North State Masonry

From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]
Sent: Monday, January 23, 2017 5:26 PM
To: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>
Cc: Chip Venable <cvenable@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Spano, Tim <timsSpano@Balfourbeattyus.com>; Cossette, Jen <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sGoodwin@balfourbeattyus.com>
Subject: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Joe,

See attached 72 hour Notice to Cure. Below is a detailed breakout of areas that are in delay, mostly based on the attached 12/13 schedule and conversation onsite. We feel we have been more than lenient with Old North State and given ample opportunity for ONSM to cure their deficiencies. We have requested additional manpower to maintain the schedule, but have seen no substantial increase to the current production. Provide a recovery schedule with adequate manpower addressed to each activity by COB 1/24/17. This schedule needs to provide a plan for all deficient areas listed below to be complete by 1/28/17 and Level 7 complete by 2/3/17.

Southwest Front Entry – still incomplete. Was scheduled to complete in November 16.

Arches – notified to start 1/13/17. Scaffold still not complete and no masonry started. Needs to be complete by 1/27/17.

L3 Low Grout Break – identified on 11/28. ONSM denied responsibility, SM&E performed core test and ONSM maintains not a grout issue. ONSM verbally proposed fix on 1/18, BBC Rfid and gave direction to ONSM on 1/19. Activity still not started, causing delay.

All low breaks – direction provided on 11/19, still no action by ONSM.

Window in 309 - still wrong and in delay. Identified in November.

Control Joints – identified in October and November, multiple wrong, will slow down stucco if fixed on scaffold.

Stair 3 – not complete, in delay

Stair 4 – not complete, in delay

Level 3 Windows – opening 4" too large. Not complete and fix not started, in delay.

Level 5 – not complete, in delay. 12/13/16 schedule included precast activity completing on 1/16/17 and CMU finishing 1/23/17.

Level 6 – not complete, in delay. 12/13/16 schedule showed 1/11/17 completion.

Level 7 – not started, in delay. 12/13/16 schedule showed activity 1/12/17-1/25/17.

Level 8 – not started, not yet in delay. 12/13/16 schedule shows this activity starting 1/26/17.

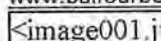
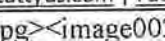
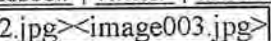
See link for 1 23 17 Masonry Progress Photos

<https://bbcus.egnyte.com/fl/hQTgdZlPnm>

Thanks,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

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R - 7428

<1259-ONSM Response to Notice of Delay and Demand for Cure dated 1.23.2017.pdf>

BBC_EMAILS_00107148

R - 7429

Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 2/11/2017 8:24:04 AM
To: Joe Anastasi [Janastasi@oldnorthstatemasonry.com]; Toby Holloway [tholloway@oldnorthstatemasonry.com]
CC: Chip Venable [cvenable@oldnorthstatemasonry.com]; Cossette, Jen [JCossette@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Goodwin, Shelly [sgoodwin@balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]; Spano, Tim [timspano@Balfourbeattyus.com]
Subject: Re: Stone setting

Toby / Joe,

I am very disappointed that you have 20+ people onsite and no competent person. We are dismantling scaffold, laying block on multiple floors, working on perimeters at heights, etc and Jamaica is the most qualified person onsite. While he works hard, he is not a competent person for ONSM.

Secondly, all the precast in the window openings needs to be cleaned by Tuesday. Be prepared Monday because no one onsite currently is capable of the work nor is their leadership to direct it. Our carpenters are each spending 25% of their time cleaning precast sills for the window bucks as are the window installers. We accept no liability for any damage and will charge their time to ONSM accordingly.

Further, I'm very surprised and again disappointed by the lack of protection on the precast. I have seen multiple attempts fail to clean minor scuffs and mortar spillage on the mock up and no successful attempts to clean it on the building. I would also estimate 95% of the precast onsite has mortar on it with some as much as 1.5" of build up to exposed surfaces. Since ONSM has not shown an ability to successfully clean the precast in place, we are demanding that you clean it prior to installing or replace it. As soon as the windows opening are cleaned, notify me in writing so I can inspect.

Thank you,

Nick Starcevic | Balfour Beatty Construction
Cell: 704.361.3265

On Feb 11, 2017, at 8:36 AM, Spano, Tim <timspano@Balfourbeattyus.com> wrote:

Toby, as I do not agree with this timing of the flashing order release, I am aware of the delivery date. There are allot of stone pieces that need to be set prior to any flashing install and allot of staging materials from the basement to roof, terraces and East and Southeast locations that will take the latter part of next week to do so. The terrace flashing cap should be arriving about the same time as your flashing which will allow full install capabilities on the building. We need as much base stone and window/ door surrounds installed as possible to allow Premier Exterior to scaffold up to the second floor for waterproofing CMU prior to setting the second floor cast. I am hearing that you will be weening of the site soon and Hat Karla will be the ONS competent person on site overseeing all stone install. Is that correct?

Tim Spano | Sr. Project Manager **Carolina's**
office: 843.974.4590 | mobile: 813.917.1656 | email:timspano@balfourbeattyus.com
Balfour Beatty Construction | www.balfourbeattyus.com
306 Meeting St., Suite 300, Charleston, SC 29401
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On Feb 10, 2017, at 4:50 PM, Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com> wrote:

ONSM needs to provide the lull to feed the RT. We are simply providing one as an extra hook so if it's not being used solely for that reason we need at the very least share the cost for how it's being used.

Nick Starcevic | Balfour Beatty Construction
Cell: 704.361.3265

On Feb 10, 2017, at 4:47 PM, Toby Holloway <tholloway@oldnorthstatemasonry.com> wrote:

As well the lull will only be able to set a handful of pieces it will mainly be used to feed the RT and the RT will be feeding the mini a portion of the time . To be clear that will not be three hooks setting 8 stones per day from a schedule standpoint
Thank you

Toby Holloway
Vice president operations
Old North State Masonry
704-622-0803

On Feb 10, 2017, at 4:41 PM, Joe Anastasi <Janastasi@oldnorthstatemasonry.com> wrote:

Tim,
FYI
Please check with Nick—the Flashing was just released today and hopefully will be delivered to site Feb 21st or 22nd.

Joe A.

From: Spano, Tim [<mailto:timspano@Balfourbeattyus.com>]
Sent: Friday, February 10, 2017 4:30 PM
To: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Chip Venable <cvenable@oldnorthstatemasonry.com>
Cc: Toby Holloway <tholloway@oldnorthstatemasonry.com>; Cossette, Jenö <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>
Subject: RE: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Joe, Toby and Chip, I know Jenö and Toby have gone over this but I want to inform you all that we currently have a lull on site to set lower cast stone with, the RT Crane will be delivered Tuesday morning (2/14/17) and the mini crane for the terraces/roof will be delivery Wednesday morning 2/15/17. Make sure the stone setting manpower is ready to go for three hooks next week. Thanks

Tim Spano | Sr. Project Manager **Carolina's**
office: 843.974.4590 | mobile: 813.917.1656 | email: timspano@balfourbeattyus.com
Balfour Beatty Construction | www.balfourbeattyus.com
306 Meeting St., Suite 300, Charleston, SC 29401
Connect with us: [Facebook](#) | [Twitter](#) | [YouTube](#) | [LinkedIn](#)
<image001.jpg>

From: Joe Anastasi [<mailto:Janastasi@oldnorthstatemasonry.com>]
Sent: Wednesday, February 08, 2017 11:44 AM
To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Chip Venable <cvenable@oldnorthstatemasonry.com>
Cc: Toby Holloway <tholloway@oldnorthstatemasonry.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Cossette,

Jeno <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>
Subject: RE: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Nick,

From our conference call on 2/2/16 you are right Toby and Jeno were to get together on Monday. They met this morning. Right now it appears the crane will arrive on site Friday and after set up will hoist joist to the roof initially. Afterwards we will begin setting precast. It does not appear the cherry picker will be on site this week. I need to make sure we clarify a couple points to your item number 1 below.

- A) ONSM will need the crane continuously for the 8 hours, if other picks are needed ONSM has to have priority in order to install as many pcs. as possible.
- B) The 8 pcs. per day is an average—you should expect that number fluctuate. This information was provided to assist in scheduling, you folks have the hoisting regardless of the number installed, which will be effected by site conditions encountered. It is our intent to work closely together to install as many pcs. as possible each and every day. We cannot agree to your prorated scenario.
- C) The number of hooks will be layout and agreed to by Toby and Jeno. But based on the site conditions and the lack of lay down space; physically 4 hooks will be improbable and 3 will be difficult. This conditions have not changed and have been known. All hooks need to work efficiently.
- D) There are still some open items regarding the flashing we are providing as well as the flashing provided by other at the 6th floor parapet as well as the approval of our additional labor costs.

The balance of the outstanding items will be addressed by Toby later today.

We as we discussed we will do everything in our power to beat the scheduling information previously provided. The 8th floor, precast included, required 18 to 19 work days.

For months now, you have told me, the change order for the Time and Material work performed at first floor would be written. During our discussions on Thursday you said you would send to purchasing by Friday. In good faith can you please get this written.

Sincerely,

Joe Anastasi
President
Cell (704) 400-6802
janastasi@onsmllc.com

From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]
Sent: Tuesday, February 07, 2017 11:08 AM
To: Chip Venable <cvenable@oldnorthstatemasonry.com>
Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Cossette, Jeno <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>
Subject: RE: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS
Importance: High

Chip,

See below updates from today's pull planning meeting that ONSM was not in attendance

BBC_EMAILS_00711798

R - 7433

1. Our team is unaware if Toby is back onsite. Jen0 and Toby were supposed to meet yesterday re hoisting for crane, but this did not happen. We have a RT 90T crane and cherry picker for the roof showing up Thursday afternoon / Friday AM for cast stone. ONSM has the RT crane for a minimum 8 hours a day and needs to set, at minimum, 8 pieces per day. If this is not hit, ONSM will pay for the rental and operator at a prorated rate.
 - a. Before we order additional hoisting, we need Toby back onsite to review with Jen0. Our intention is to have 3-4 hooks on site to average setting 30 piece per week over the next 4 months.
2. Multiple locations where grout is not in walls as indicated on the contract documents. BBC determining the best way to test and proceed, but all identified areas need to be correct within 72 hours.
 - a. Parapet clean outs with no grout
 - b. Window headers and jambs not grouted.
3. SW front entry – ONSM 1.24.17 Response Letter (“ONSM RL”) indicated it would be complete 2.3.17. Still not complete, need radius windows cut and lintels installed.
4. L3 Low Grout Break – not complete
5. All other low grout breaks – not complete
6. Stair 3– will not be complete today as indicated
7. L3 angels not complete, not started. We will supplement this activity, but need confirmation that all headers and jambs are grouted.
 - a. There will be a back charge for MSI attempting to install the lintel in the mock ups. Which they were unable to complete because the header and jambs were not grouted.

We have also not seen a response with dates for the CMU based on our conversation last Thursday. Please advise.

Nick Starcevic | Project Manager

mobile: 704-351-3265 | email: NStarcevic@Balfourbeattyus.com

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From: Chip Venable [<mailto:cvenable@oldnorthstatemasonry.com>]

Sent: Friday, January 27, 2017 4:41 PM

To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>

Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Cossette, Jen0 <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>

Subject: RE: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Nick,

We are going get the CMU completed as quickly as possible. Your responses below still fail to acknowledge items we have told your team and documented in our daily reports, notices and emails. The complete evaluation of time lost and cost associated will be conducted at a later time. it is Friday evening and I don't feel like arguing. This is the last email that I will reply to you today about the schedule.

Best Regards,

Chip Venable

BBC_EMAILS_00711799

R - 7434

Project Manager
Old North State Masonry

From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]
Sent: Friday, January 27, 2017 4:18 PM
To: Chip Venable <cvenable@oldnorthstatemasonry.com>
Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Spano, Tim <tspano@Balfourbeattyus.com>; Cossette, Jeno <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>
Subject: RE: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS
Importance: High

Chip,

Manpower is onsite and has had time acclimate. The dates in your 1/24 response letter need to be updated on Monday and in line with the Notice to Cure dates set forth in our 1/23 demand.

There are few clarifications to your letter that need to be made...

1. BBC has acknowledged the extended dates and change in scope. We have committed to pay every penny and give every requested schedule extension to ONSM for the sleeve issue, but ONSM has not committed to keep the schedule. 80% of that value has been paid, but we're grossly behind schedule AFTER incorporating your requested extensions. See below for ACTUAL dates this project has experienced.
 - a. L1 – ONSM requested 6 additional days bringing activity to 20 total days. 7/11 S – 8/23F, 32 days to complete, 12 days over schedule
 - i. <!--[if !supportLists]--><!--[endif]-->8/23 is substantial completion, but we're still chasing down punch issues so this floor is not complete.
 - b. L2 – no additional days requested. We're starting fresh here since there were multiple issues on L1 that contributed to the 32 days to complete.
 - i. <!--[if !supportLists]--><!--[endif]-->ONSM started 8/15 and "finished" 10/7 – 40 days, 26 days over schedule.
 - ii. <!--[if !supportLists]--><!--[endif]-->10/7 is substantial completion, but we're still chasing down punch issues so this floor is not complete.
 - c. L3 – ONSM requested 8 additional days (22 total days). Scheduled activity was 9/1 – 9/30. Actual was 10/10 - 11/15
 - i. <!--[if !supportLists]--><!--[endif]-->32 days over schedule, we're still chasing down punch issues so this floor is not complete.
 - d. L4 – ONSM requested 8 additional days. Scheduled activity was 10/3 - 10/26. Actual was 10/31 - 12/14?
 - i. <!--[if !supportLists]--><!--[endif]--> +/-32 days behind schedule, we're still chasing down punch issues so this floor is not complete.
2. L5 is an anomaly and we can admit that we were not prepared for the precast band. However, you start on 12/15 and it is 1/27. That's 35 working days and you're projecting completion by 2/3, 40 days. The slow down on this floor was lack of sleeves in the cast stone for rebar. ONSM admittedly missed this detail, but made no provisions to core the precast to keep schedule (i.e. coring 12 hours a day, bringing additional machines, etc). You have had 2 lifting mechanisms here for 4 weeks, but just finished with precast Monday. 24 days of setting ~130 precast pieces, or 2.5 per day per hook. That's nowhere near the 10 per hook that ONSM committed to.
3. L6 started 12/16 and you're projecting a 2/20 completion. This makes no sense given your requesting more than the 10 days per contract and you're already 60% complete with CMU.
4. L7 can start where you topped out which is enough to start. ONSM needs to top on East, West, and North walls on L7 by end of next week so it can start setting precast on L8 by 2/6.

The 1/24 response shows no commitment by Old North State Masonry to cure the schedule. We're now +/- 50 days behind schedule mostly, in part to masonry, after we acknowledge and pay for the added time on L1, L3 and L4. We

BBC_EMAILS_00711800

R - 7435

have tried to be team players on this project and understood the difficulty of the logistics on this project; however, ONSM bid a job that had tight logistics, no lay down, an aggressive schedule, and tiered coordination. Old North State needs to provide, in writing, a commitment to finishing the CMU on this project by 2/24. That includes all punch, rework, topping out, misc walls, stairs, etc.

Thank you,

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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<image002.jpg><image003.jpg><image004.jpg>

From: Chip Venable [<mailto:cvenable@oldnorthstatemasonry.com>]

Sent: Wednesday, January 25, 2017 9:01 AM

To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>

Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>;

Spano, Tim <timspano@Balfourbeattyus.com>; Cossette, Jen <JCossette@Balfourbeattyus.com>; Sandeen, Jeff

<JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>

Subject: RE: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Nick,

Let us get the additional manpower on-site and let Toby distribute them. Once we have them rolling we will be able to discuss.

Best Regards,

Chip Venable
Project Manager
Old North State Masonry

From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]

Sent: Tuesday, January 24, 2017 6:24 PM

To: Chip Venable <cvenable@oldnorthstatemasonry.com>

Cc: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>;

Spano, Tim <timspano@Balfourbeattyus.com>; Cossette, Jen <JCossette@Balfourbeattyus.com>; Sandeen, Jeff

<JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>

Subject: Re: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Chip -

This isn't going to work as there is no plan on recovering L5, L6, L7, and L8. The durations you are proposing are longer than contractual and egregious. There appears to be no sense of urgency and acknowledgment that you need to accelerate.

Are you available to discuss tomorrow morning at 9:30?

Nick Starcevic | Balfour Beatty Construction
Cell: 704.361.3265

On Jan 24, 2017, at 6:07 PM, Chip Venable <cvenable@oldnorthstatemasonry.com> wrote:

Nick,

Please see the attached letter in response to your Notice of Delay and Demand for Cure dated 1.23.2017.

Best Regards,

Chip Venable
Project Manager
Old North State Masonry

From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]
Sent: Monday, January 23, 2017 5:26 PM
To: Joe Anastasi <Janastasi@oldnorthstatemasonry.com>
Cc: Chip Venable <cvenable@oldnorthstatemasonry.com>; Toby Holloway <tholloway@oldnorthstatemasonry.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Cossette, Jeno <JCossette@Balfourbeattyus.com>; Sandeen, Jeff <JSandeen@Balfourbeattyus.com>; Goodwin, Shelly <sgoodwin@balfourbeattyus.com>
Subject: 13026000-20-2 Notice of Delay and Demand to Cure - 72 Hours - HMS

Joe,

See attached 72 hour Notice to Cure. Below is a detailed breakout of areas that are in delay, mostly based on the attached 12/13 schedule and conversation onsite. We feel we have been more than lenient with Old North State and given ample opportunity for ONSM to cure their deficiencies. We have requested additional manpower to maintain the schedule, but have seen no substantial increase to the current production. Provide a recovery schedule with adequate manpower addressed to each activity by COB 1/24/17. This schedule needs to provide a plan for all deficient areas listed below to be complete by 1/28/17 and Level 7 complete by 2/3/17.

Southwest Front Entry – still incomplete. Was scheduled to complete in November 16.
Arches – notified to start 1/13/17. Scaffold still not complete and no masonry started. Needs to be complete by 1/27/17.
L3 Low Grout Break – identified on 11/28. ONSM denied responsibility, SM&E performed core test and ONSM maintains not a grout issue. ONSM verbally proposed fix on 1/18, BBC RFId and gave direction to ONSM on 1/19. Activity still not started, causing delay.
All low breaks – direction provided on 11/19, still no action by ONSM.
Window in 309 - still wrong and in delay. Identified in November.
Control Joints – identified in October and November, multiple wrong, will slow down stucco if fixed on scaffold.
Stair 3 – not complete, in delay
Stair 4 – not complete, in delay
Level 3 Windows – opening 4" too large. Not complete and fix not started, in delay.
Level 5 – not complete, in delay. 12/13/16 schedule included precast activity completing on 1/16/17 and CMU finishing 1/23/17.
Level 6 – not complete, in delay. 12/13/16 schedule showed 1/11/17 completion.
Level 7 – not started, in delay. 12/13/16 schedule showed activity 1/12/17-1/25/17.
Level 8 – not started, not yet in delay. 12/13/16 schedule shows this activity starting 1/26/17.

See link for 1 23 17 Masonry Progress Photos
<https://bbcus.egnetye.com/fl/hOTgdZIPnm>

Thanks,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

BBC_EMAILS_00711802

R - 7437

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<image001.jpg><image002.jpg><image003.jpg>

<1259-ONSM Response to Notice of Delay and Demand for Cure dated 1.23.2017.pdf>

Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 2/14/2017 6:56:51 AM
To: Leonce Vidal [lvidal@pasco-inc.com]
CC: Dale, Marty [mdale@balfourbeattyus.com]
Subject: Manpower and Scope Add - HMS
Importance: High

Leonce,

Pasco is falling behind schedule and we need a few things addressed. The intent was to hang drywall ceilings on L1 yesterday, but we still do not have fire protection finals. What is going on here?

We also reached out to Jack about providing the flange at the basement fire line. He said you guys could do this, can you take a look and provide a price to complete this work?

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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Message

From: Morgan, Troy [tmorgan@precisionwalls.com]
Sent: 3/2/2017 8:50:44 PM
To: Sandeen, Jeff [JSandeen@Balfourbeattyus.com]
Subject: Marion

Jeff

Gathered intel from our troops today and here is our position:

1. 9th floor we are behind schedule
2. Tidying up loose ends on 1st and 2nd. Some we own, majority we don't.
3. We have been stopped hanging some ceilings on 1st due to other trades
4. Hanging on 3rd full tilt but still leaving loose ends behind out of our control such as pocket doors.
6. Framed up to 7th for the most part except for areas out of our control.
7. 8th is laid out 100% and ready to frame but not yet on schedule. We are getting metal to jump this floor and frame it.

Our plan is to have 9, 1 and 2 complete with what is available by end of next week. Start framing on 8 next week. We will hang on 4 on up but leaving behind areas around windows because they are not in and pocket doors.

Your team is on us to close up shafts that are not on critical path. We will close those up as we go up. This is a loose end but unavoidable.

Next week we will up our manpower a bit and by the end of next week all the mechanics on 1,2 and 9 can concentrate on 3-8.

Electrician seems to be blaming us for holding him up but from what I gather that is not the case. When 8 is framed he will be exposed.

Anything you can do to let us hang ceilings on 1 and 2 would be appreciated.

Apologies for not calling you back today but we can talk tomorrow.

Have a good evening

Thanks Troy

Troy Morgan
Precision Walls Inc.
843-860-6647

Message

From: Cossette, Jeno [JCossette@Balfourbeattyus.com]
Sent: 3/4/2017 6:28:27 AM
To: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]; Ledford, Ryan [RLedford@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]; Waterfield, Peter [PWaterfield@Balfourbeattyus.com]; Eldridge, Johnny [JEldridge@Balfourbeattyus.com]
Subject: RE: Stair #3 block/concrete alignment issues

Carla has been sending them to Ryan, I've asked to be copied as well but they have not so Ryan is forwarding to me, on these they are noting any reason/excuse for not being able to set stone. I guess we need to respond to each report that they send to offset the incomplete or incorrect Part of her report, will catch that up on Monday.

I have been reluctant to get in an e-mail war with ONS because I'm trying to take the approach with these guys of help them help us but obviously we are not getting the same in return, all they are doing at this point is making excuses (in addition to any legitimate reasons which we are addressing as they surface) as to why they can't install stone at a reasonable pace.

This past week is an example of why ONS is failing and averaging 3 to 4 pieces installed a day:

1. 2 to 3 people setting stone at the East side got the 2nd floor stone that sits on the angle done as much as scaffold allows but did not move forward to door surrounds on the SE end of East side which we need to install to complete 2nd floor cornice to the SE corner to raise scaffold to 6th floor here.
2. The South side stone began at the beginning of the week with (2) men setting and went to (1) man setting on Wednesday then he was gone Thursday and Friday. No attempt was made by ONS to correct (1) of the (3) door surrounds that is so badly out of plumb we cannot put wood blocking here, been asking them to do that for a week. Crane sitting idle while they have no manpower to set here. ONS waited a week to set the bearing block at the SW entry which would have given them that stone to set and made no attempt to install anchors to keep us going with hot mop to prep for base stone at the West elevation.
3. ONS brought in a truck load of stone last week that had pieces we could set in line with our sequence, that was a lot of stone and if manpower and prep had been applied this at the end of last week and this week we could have installed some of it and we would not have what we have now, stone unusable for the short term schedule and laying in the way. In addition to this ONS decided to ship an entire truck load of stone to send the (2) pieces of cornice stone needed to complete at the East elevation. This stone included some base stone West but a lot of the 2nd floor West 2nd level cornice stone that should not have been on-site yet, was not asked for and now is embarrassingly clogging up the site. In addition to this ONS has laid (2) pallets at the NW elevation which cuts off our access road around the West elevation. I have asked ONS to organize this stone to the order of erection but ONS has requested to store some of this stone at the 6th floor terrace, clogging up the terraces (because they have no good method to move this stone around once on the terrace) along with the South elevation and I've told them no way at this point as scissor lift work is getting ready to begin up there at the West terrace.

I talked to Toby Thursday and just said that ONS has to want to set stone to make production but just like Tim says, any looking forward and pre-planning work is not happening by ONS even though I am sending them a heads up for the next day each day. Instead of doing what they need to do, add qualified manpower, preplan their work and be sensible and organized with their deliveries at this point they are not heading in any kind of positive direction, compounded by the stair 3 debacle.

I anticipate Monday for Toby to be on-site, the other (2) stone setters to be on-site and door surrounds started at the East side South end. At this point ONS just needs to keep Toby on-site along with manpower and start getting ahead on prep for stone, even if the cap flashing was installed last week by Baker, ONS had no one on site to install.

Time to require this of ONS or we will just continue to lose time against our schedule,

Thanks guys, I'm as frustrated with this as you are,

Jeno Cossette | General Superintendent

office: 919-840-7936 | mobile: 919-291-1683 | email: jcossette@balfourbeattyus.com

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From: Starcevic, Nicholas

Sent: Friday, March 03, 2017 7:38 PM

To: Ledford, Ryan <RLedford@Balfourbeattyus.com>; Cossette, Jeno <JCossette@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Waterfield, Peter <PWaterfield@Balfourbeattyus.com>; Eldridge, Johnny <JEldridge@Balfourbeattyus.com>

Subject: Fwd: Stair #3 block/concrete alignment issues

Where are the daily reports he mentions?

Nick Starcevic | Balfour Beatty Construction

Cell: 704.361.3265

Begin forwarded message:

From: Toby Holloway <tholloway@oldnorthstatemasonry.com>

Date: March 3, 2017 at 5:00:07 PM EST

To: "Starcevic, Nicholas" <NStarcevic@Balfourbeattyus.com>

Cc: Chip Venable <cvenable@oldnorthstatemasonry.com>, "Cossette, Jeno" <JCossette@Balfourbeattyus.com>, "Spano, Tim" <timspano@Balfourbeattyus.com>, "Dooley, Alec" <adooley@Balfourbeattyus.com>, Joe Anastasi <Janastasi@oldnorthstatemasonry.com>

Subject: Re: Stair #3 block/concrete alignment issues

You obviously forgot the conversation we had on Wednesday as well as you are not looking at any of our daily reports as a relates to the precast setting I will formally respond to you on Monday I suggest you go through our daily reports before writing an email like this, as well we could be setting all of the parapet Stone had you had the flashing that you you committed to have two months ago while we are correcting the deficiencies in the concrete on the lower floor where your shelf has no consistency in elevation

Toby Holloway

Old North State Masonry

Vice President of operations

Mobile:704-622-0803

On Mar 3, 2017, at 3:39 PM, Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com> wrote:

Toby,

Per the below email and attached survey from Jeno, see attached notice to cure the masonry defects in stair 3 They walls out of plumb are to be demoed, rebuilt, and cleaned up by 3/17/17.

We also need to address the lack of manpower and efficiency in stone setting. I have attached daily and weekly summaries from Jenó. There were difficulties getting started, but 0 pieces set in consecutive days with the RT crane and <10 all week is a failure. ONSM has set 20 piece of precast in 15 days with the RT crane. ONSM has set 14 pieces of precast in 8 days with the deck crane. At this pace, we will literally still be setting stone in 2018. Our agreement was that ONSM would have a 4 man crew per hook (2 guys prepping and rigging, 2 guys setting) setting 8 piece per day. We counted 10 people working for ONSM onsite yesterday for both CMU and precast work.

We are back in the same position with ONSM when we sent the first two letters to cure. Your presence is needed on site for us to have any chance of success. Unfortunately, when you are not here the production and quality suffer. If there are ways we are holding you up that are not addressed in Jenó's attached pre-cast summary, please advise.

Thanks,

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com <<mailto:NStarcevic@Balfourbeattyus.com>>

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From: Cossette, Jenó

Sent: Friday, March 03, 2017 9:19 AM

To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>

Subject: Fwd: Stair #3 block/concrete alignment issues

Sent from my iPhone

Begin forwarded message:

From: "Cossette, Jenó" <JCossette@Balfourbeattyus.com> <<mailto:JCossette@Balfourbeattyus.com>>>

To: "Toby Holloway"

<tholloway@oldnorthstatemasonry.com> <<mailto:tholloway@oldnorthstatemasonry.com>>>

Cc: "Spano, Tim" <timspano@Balfourbeattyus.com> <<mailto:timspano@Balfourbeattyus.com>>>, "Ledford, Ryan" <RLedford@Balfourbeattyus.com> <<mailto:RLedford@Balfourbeattyus.com>>>, "cdharwell@gmail.com" <<mailto:cdharwell@gmail.com>> <<mailto:cdharwell@gmail.com>>>

Subject: Stair #3 block/concrete alignment issues

Toby,

As discussed yesterday we surveyed stair #3 today for out of plumb block and concrete. The survey is attached, note that the dimensions shown are estimated. We would ask that

ONS provide a lift and operator and we can put a tape measure to each level to confirm but it is quite obvious that the block face is not workable with the finish surface which is stucco (5/8" thick).

We can verify tomorrow but the remedy appears to be that this stair will have to be taken down from level 2 to 5 to match the block faces adjacent to it.

If you have any questions please do not hesitate to call,

Jeno Cossette | General Superintendent

office: 919-840-7936 | mobile: 919-291-1683 | email:

jcossette@balfourbeattyus.com <<mailto:tjohnson@balfourbeattyus.com>>

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<Stair 3 CMU Survey (3-2-17).pdf>

<Pre-cast summary to date Marion Square.eml>

<13026000-20-03 ONSM Notice of Delay and Demand for Cure.pdf>

Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 3/6/2017 3:17:28 PM
To: Leonce Vidal [lvidal@pasco-inc.com]; Todd Jeffers [TJeffers@pasco-inc.com]
CC: Eldridge, Johnny [JEldridge@Balfourbeattyus.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]; Cossette, Jeno [JCossette@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]
Subject: RE: Manpower and Scope Add - HMS

Please review with Todd tomorrow and confirm you'll hit the scheduled inspection date by COB tomorrow. Waiting until the end of the week will be too late to address the issue.

Thanks,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
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From: Leonce Vidal [mailto:lvidal@pasco-inc.com]
Sent: Monday, March 06, 2017 4:18 PM
To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Todd Jeffers <TJeffers@pasco-inc.com>
Cc: Eldridge, Johnny <JEldridge@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Cossette, Jeno <JCossette@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>
Subject: RE: Manpower and Scope Add - HMS

Nicholas

This should be achievable with the men we have out there. Todd and I will reevaluate at the end of this week and if more crews are needed we will send them out there.

From: Starcevic, Nicholas [mailto:NStarcevic@Balfourbeattyus.com]
Sent: Monday, March 06, 2017 2:00 PM
To: Leonce Vidal <lvidal@pasco-inc.com>
Cc: Eldridge, Johnny <JEldridge@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Cossette, Jeno <JCossette@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>
Subject: RE: Manpower and Scope Add - HMS
Importance: High

Leonce,

We're back in the same position of being behind on L4 and up the building. We need to man up and get through L7 by 3/20. In my opinion, you need 3 crews out here working on all 3 floors to hit these dates. Please respond with your plan to get caught back up and finished OH rough in by 3/20 thru L7.

L5 OH Rough In Act ID 8814 – 2/28 to 3/8
L6 OH Rough In Act ID 9264 - 2/27 – 3/20
L7 OH Rough In Act ID 9714 – 2/22 - 3/15

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
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From: Leonce Vidal [<mailto:lvidal@pasco-inc.com>]
Sent: Tuesday, February 14, 2017 9:29 AM
To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>
Subject: Re: Manpower and Scope Add - HMS

Level one is getting air and water starting Friday last week. Yesterday the had caught all air leaks and was putting water on. Once confirmed there is no leaks a final will be called in. We will have to make adjustments in the oval shaped room now that lights are being installed.

L6 is about to be started. We have had an illness running through our crews the last two weeks. We will meet schedule with finishing L6.

Sent from my iPad

On Feb 14, 2017, at 9:21 AM, Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com> wrote:

Also, L6 was scheduled to start yesterday, please confirm you have adequate manpower to meet these dates.

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
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From: Starcevic, Nicholas
Sent: Tuesday, February 14, 2017 7:57 AM
To: 'Leonce Vidal' <lvidal@pasco-inc.com>
Cc: Marty Dale (mdale@balfourbeattyus.com) <mdale@balfourbeattyus.com>
Subject: Manpower and Scope Add - HMS
Importance: High

Leonce,

BBC_EMAILS_00308585

R - 7450

Pasco is falling behind schedule and we need a few things addressed. The intent was to hang drywall ceilings on L1 yesterday, but we still do not have fire protection finals. What is going on here?

We also reached out to Jack about providing the flange at the basement fire line. He said you guys could do this, can you take a look and provide a price to complete this work?

Nick Starcevic | Project Manager

mobile: 704-351-3265 | email: NStarcevic@Balfourbeattyus.com

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To: Dooley, Alec[adooley@Balfourbeattyus.com]; Dale, Marty[mdale@balfourbeattyus.com]; Eldridge, Johnny[J.Eldridge@Balfourbeattyus.com]; Cossette, Jeni[JCossette@Balfourbeattyus.com]
From: Starcevic, Nicholas[O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=65F22BA2C54F4D0F843FDB8B842E3115-NICHOLAS ST]
Sent: Tue 3/7/2017 10:31:29 PM (UTC)
Subject: Fwd: Marion - Manpower needed

Nick Starcevic | Balfour Beatty Construction
Cell: 704.361.3265

Begin forwarded message:

From: "Zinna, Michael" <MZinna@precisionwalls.com>
Date: March 7, 2017 at 5:25:39 PM EST
To: "Spano, Tim" <timspano@Balfourbeattyus.com>, "Williams, Troy" <TWilliams@precisionwalls.com>
Cc: "Starcevic, Nicholas" <NStarcevic@Balfourbeattyus.com>, "Vega, Navor" <NVega@precisionwalls.com>
Subject: RE: Marion - Manpower needed

Tim

Your assessment of available work is correct which is in line with the concerns of our schedule activities being stacked and accelerated which we brought up in previous correspondence. Please keep the following in mind as we do our best to build this project with quality and minimal loose ends:

- While we are actively working on framing out the missing shaftwalls at the vertical chases it is a much more labor intensive for our scope of work that the duct insulator. It is unrealistic to expect us to keep pace with the insulator on this activity. In speaking with Troy we do have two men working on these however he moved them off this task for today only to take care of another pressing issue regarding the 5th floor electrical rough-in. We will continue utilizing our two man crew for this work starting back tomorrow and progress them up from level 4 to levels 5 & 6 as they complete a floor.
- The loose ends of level 5 other than the duct chases will be complete today and this same crew will move up to 6 after the build the 2 missing walls on level 4 and work on any framing loose ends not related to the duct chases.
- Level 7 has missing layout due to various reasons. We will be actively working on completing the layout today and tomorrow. We also noted many locations where cleanup of other trades materials and trash is in the way of completing our work. Please make sure this is taken care of and we will schedule framers to start on level 7 once the layout is complete and our work areas are clean.
- Level 8 framing is not yet scheduled and as you mention below not 100% available. The rest of our material for this floor will be delivered tomorrow and we will start per the schedule update.
- Level 3 insulation failed due to all of the voids in the exterior rigid insulation. The vast majority of these issues are related to rigid insulation we installed either being cut out for electrical or removed from the wall by others. We found one instance of a piece of rigid that we cut short during installation and will go through each room and make sure any other issue regarding this is addressed by 11:30am tomorrow. In the mean time we will continue insulating all available walls.
- Level 2 has a vast list of loose ends and unanswered issues that were not created by Precision Walls. While we do not disagree there is work available on this floor we do not believe adding man power is justified due to the below list of issues:
 - o Missing and unpunched steel members delaying operable wall track installation which is required to complete soffit framing. Precision Walls had installers onsite for the operable wall tracks but had to leave due to the incomplete and unpunched steel. We need a date on when we can return to complete that track after the steel is corrected.
 - o Missing board room ceiling feature framing due to lack of information that was answered in an RFI. This material is now custom and has been ordered through radius track. I will provide a ship date

BBC_EMAILS_00589495

R - 7453

- once I receive one.
- o The design was changed for the gable end framing of the 3rd floor terraces causing a delay to this framing because new clips had to be ordered. These will be in next week and we will complete this framing. The delay to this work will delay the start to the barrel vault framing.
- o There are numerous pipes that are out of the plane of fire walls on level 2 that PWI has brought to BBC's attention for months. We still do not have clear direction on how to proceed here. These are listed in the plan grid reports we send periodically.
- o The 2nd floor overhead inspection failed again today and from what we walked with Marty there was no evidence of any issues related to Precision Walls causing this inspection to fail. The only issue pointed out to us was a hole in a finished wall above ceiling where temporary power was removed. The delays to the 2nd floor overhead are costly to Precision Walls as we have a boom lift in the front area which has been sitting idle waiting to hang/finish the high ceilings.

Precision Walls can work extended hours Monday through Saturday to catch up the areas where loose ends have been left behind but is requesting that our premium time be picked up by Balfour Beatty. It is our position that adding man power for these tasks is unnecessary and the increase in man power would not be able to be sustained once the framing is caught up. By working longer hours with the crew we have we can accomplish the same results you are looking for without adding men and avoiding spikes in man power. Please confirm if Balfour Beatty is willing to pay for the premium time to work our crews extended hours and we will get that plan in place to catch up the activities that have been stacked or accelerated.

Thanks

Michael Zinna
Project Manager



mzinna@precisionwalls.com

P: (843) 793-6020

M: (843) 991-0528

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N. Charleston, SC 29418

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From: Spano, Tim [<mailto:timspano@Balfourbeattyus.com>]
Sent: Tuesday, March 07, 2017 2:33 PM
To: Zinna, Michael <MZinna@precisionwalls.com>; Williams, Troy <TWilliams@precisionwalls.com>
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>
Subject: Marion - Manpower needed

Michael, Per our walk today. Framing on floors 5 & 6 needs to have framing punched including shaft walls to be completed by Friday for MEP's starting Monday on floor 6. Floor seven is wide open and has been for a week and the 8th floor is ready for framing in all areas except the horse shoe that will be complete by close of business tomorrow giving P-walls the entire floor. There are some random RFI's and missing frames affecting some areas that BBC is expediting resolution on.

We also have allot of areas available on floor two for ceiling framing, ISO rod install, AC framing, Barrel ceiling etc.. BBC removed the tower crane a month ago so P-walls could get these areas and we are not taking advantage of it with a few guys working ceilings on 2. There is allot of open areas ready to run and we need P-wall to attack them with more men and stay ahead of all other trades. I am fully aware of areas that you are still held up for some decisions or door dimensions that BBC is working to resolve ASAP. I look forward to next Tuesdays walk to see all the

BBC_EMAILS_00589496

R - 7454

progress that was made the rest of this week but please send me a manpower report for floors 1,2,3,4,5,6,7,8 & 9 as soon as you get with Troy so that I can relay that information to the rest of the subs to plan their manpower accordingly. We need the Roof dried Monday as Conditioned air will be running next week for paint and millwork to start on the lower floors. We are behind schedule on floors 1-5 and have a chance to pull a few days back on the upper floors and streamline the process on floors 5-9. Thanks

Tim Spano | Sr. Project Manager **Carolina's**

office: 843.974.4590 | mobile: 813.917.1656 | email: timspano@balfourbeattyus.com

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Message

Sent: 3/7/2017 4:39:25 PM
To: Zinna, Michael [MZinna@precisionwalls.com]; Williams, Troy [TWilliams@precisionwalls.com]
CC: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]; Vega, Navor [NVega@precisionwalls.com]
Subject: RE: Marion - Manpower needed

Tim Spano | Sr. Project Manager Carolina's
office: 843.974.4590 | mobile: 813.917.1656 | email: tspano@balfourbeattyus.com
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From: Zinna, Michael [mailto:MZinna@precisionwalls.com]
Sent: Tuesday, March 07, 2017 5:26 PM
To: Spano, Tim <tspano@Balfourbeattyus.com>; Williams, Troy <TWilliams@precisionwalls.com>
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Vega, Navor <NVega@precisionwalls.com>
Subject: RE: Marion - Manpower needed

Tim

Your assessment of available work is correct which is in line with the concerns of our schedule activities being stacked and accelerated which we brought up in previous correspondence. Please keep the following in mind as we do our best to build this project with quality and minimal loose ends:

- While we are actively working on framing out the missing shaftwalls at the vertical chases it is a much more labor intensive for our scope of work that the duct insulator. It is unrealistic to expect us to keep pace with the insulator on this activity. I don't expect pace of the insulator In speaking with Troy we do have two men working on these however he moved them off this task for today only to take care of another pressing issue regarding the 5th floor electrical rough-in. We will continue utilizing our two man crew for this work starting back tomorrow and progress them up from level 4 to levels 5 & 6 as they complete a floor.
- The loose ends of level 5 other than the duct chases will be complete today and this same crew will move up to 6 after the build the 2 missing walls on level 4 and work on any framing loose ends not related to the duct chases. How many men on this crew?
- Level 7 has missing layout due to various reasons. We will be actively working on completing the layout today and tomorrow. We also noted many locations where cleanup of other trades materials and trash is in the way of completing our work. Please make sure this is taken care of and we will schedule framers to start on level 7 once the layout is complete and our work areas are clean. Our men cleaned today
- Level 8 framing is not yet scheduled and as you mention below not 100% available. The rest of our material for this floor will be delivered tomorrow and we will start per the schedule update. This is the unwillingness to pull a schedule back that has pushed before and my biggest concern.
- Level 3 insulation failed due to all of the voids in the exterior rigid insulation. The vast majority of these issues are related to rigid insulation we installed either being cut out for electrical or removed from the wall by others. We found one instance of a piece of rigid that we cut short during installation and will go through each room and make sure any other issue regarding this is addressed by 11:30am tomorrow. In the mean time we will continue insulating all available walls. P-walls was a part of the failure today and I appreciate the quick response.

BBC_EMAILS_01106225

R - 7456

- Level 2 has a vast list of loose ends and unanswered issues that were not created by Precision Walls. While we do not disagree there is work available on this floor we do not believe adding man power is justified due to the below list of issues: Totally disagree with Ballrooms & barrel ceiling.

- o Missing and unpunched steel members delaying operable wall track installation which is required to complete soffit framing. Precision Walls had installers onsite for the operable wall tracks but had to leave due to the incomplete and unpunched steel. We need a date on when we can return to complete that track after the steel is corrected.
- o Missing board room ceiling feature framing due to lack of information that was answered in an RFI. This material is now custom and has been ordered through radius track. I will provide a ship date once I receive one.
- o The design was changed for the gable end framing of the 3rd floor terraces causing a delay to this framing because new clips had to be ordered. These will be in next week and we will complete this framing. The delay to this work will delay the start to the barrel vault framing. This design change is 6 months old. BBC has been asking for the completion of that framing for Months
- o There are numerous pipes that are out of the plane of fire walls on level 2 that PWI has brought to BBC's attention for months. We still do not have clear direction on how to proceed here. These are listed in the plan grid reports we send periodically. BBC walked that area last week and today for Pwalls to box around on T&M. You said you want to bid it.
- o The 2nd floor overhead inspection failed again today and from what we walked with Marty there was no evidence of any issues related to Precision Walls causing this inspection to fail. The only issue pointed out to us was a hole in a finished wall above ceiling where temporary power was removed. The delays to the 2nd floor overhead are costly to Precision Walls as we have a boom lift in the front area which has been sitting idle waiting to hang/finish the high ceilings.

Precision Walls can work extended hours Monday through Saturday to catch up the areas where loose ends have been left behind but is requesting that our premium time be picked up by Balfour Beatty. It is our position that adding man power for these tasks is unnecessary and the increase in man power would not be able to be sustained once the framing is caught up. By working longer hours with the crew we have we can accomplish the same results you are looking for without adding men and avoiding spikes in man power. Please confirm if Balfour Beatty is willing to pay for the premium time to work our crews extended hours and we will get that plan in place to catch up the activities that have been stacked or accelerated. You are talking out of both sides of your mouth. Thanks

Michael Zinna

Project Manager



mzinna@precisionwalls.com

P: (843) 793-6020

M: (843) 991-0528

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N. Charleston, SC 29418

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From: Spano, Tim [<mailto:timspano@Balfourbeattyus.com>]

Sent: Tuesday, March 07, 2017 2:33 PM

To: Zinna, Michael <MZinna@precisionwalls.com>; Williams, Troy <TWilliams@precisionwalls.com>

Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>

Subject: Marion - Manpower needed

BBC_EMAILS_01106226

R - 7457

Michael, Per our walk today. Framing on floors 5 & 6 needs to have framing punched including shaft walls to be completed by Friday for MEP's starting Monday on floor 6. Floor seven is wide open and has been for a week and the 8th floor is ready for framing in all areas except the horse shoe that will be complete by close of business tomorrow giving P-walls the entire floor. There are some random RFI's and missing frames affecting some areas that BBC is expediting resolution on.

We also have allot of areas available on floor two for ceiling framing, ISO rod install, AC framing, Barrel ceiling etc.. BBC removed the tower crane a month ago so P-walls could get these areas and we are not taking advantage of it with a few guys working ceilings on 2. There is allot of open areas ready to run and we need P-wall to attack them with more men and stay ahead of all other trades. I am fully aware of areas that you are still held up for some decisions or door dimensions that BBC is working to resolve ASAP. I look forward to next Tuesdays walk to see all the progress that was made the rest of this week but please send me a manpower report for floors 1,2,3,4,5,6,7,8 & 9 as soon as you get with Troy so that I can relay that information to the rest of the subs to plan their manpower accordingly. We need the Roof dried Monday as Conditioned air will be running next week for paint and millwork to start on the lower floors. We are behind schedule on floors 1-5 and have a chance to pull a few days back on the upper floors and streamline the process on floors 5-9. Thanks

Tim Spano | Sr. Project Manager **Carolina's**

office: 843.974.4590 | mobile: 813.917.1656 | email: tmspano@balfourbeattyus.com

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Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 3/14/2017 8:00:03 AM
To: Leonce Vidal [lvidal@pasco-inc.com]; Todd Jeffers [TJeffers@pasco-inc.com]
CC: Eldridge, Johnny [JEldridge@Balfourbeattyus.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]; Cossette, Jen [JCossette@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]
Subject: RE: Manpower and Scope Add - HMS
Importance: High

Leonce,

L5 is a 2 weeks behind with no available manpower and we also need guys in the basement and L5. It was agreed with your superintendent that you need two additional crews onsite to get caught up and stay up to speed through your testing through 8. Consider this a notice to cure and get additional manpower onsite within 48 hours.

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
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From: Leonce Vidal [mailto:lvidal@pasco-inc.com]
Sent: Monday, March 06, 2017 4:18 PM
To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Todd Jeffers <TJeffers@pasco-inc.com>
Cc: Eldridge, Johnny <JEldridge@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Cossette, Jen <JCossette@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>
Subject: RE: Manpower and Scope Add - HMS

Nicholas

This should be achievable with the men we have out there. Todd and I will reevaluate at the end of this week and if more crews are needed we will send them out there.

From: Starcevic, Nicholas [mailto:NStarcevic@Balfourbeattyus.com]
Sent: Monday, March 06, 2017 2:00 PM
To: Leonce Vidal <lvidal@pasco-inc.com>
Cc: Eldridge, Johnny <JEldridge@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Cossette, Jen <JCossette@Balfourbeattyus.com>; Dale, Marty <mdale@balfourbeattyus.com>
Subject: RE: Manpower and Scope Add - HMS
Importance: High

Leonce,

We're back in the same position of being behind on L4 and up the building. We need to man up and get through L7 by 3/20. In my opinion, you need 3 crews out here working on all 3 floors to hit these dates. Please respond with your plan to get caught back up and finished OH rough in by 3/20 thru L7.

L5 OH Rough In Act ID 8814 – 2/28 to 3/8
L6 OH Rough In Act ID 9264 - 2/27 – 3/20
L7 OH Rough In Act ID 9714 – 2/22 - 3/15

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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From: Leonce Vidal [<mailto:lvidal@pasco-inc.com>]

Sent: Tuesday, February 14, 2017 9:29 AM

To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>

Subject: Re: Manpower and Scope Add - HMS

Level one is getting air and water starting Friday last week. Yesterday the had caught all air leaks and was putting water on. Once confirmed there is no leaks a final will be called in. We will have to make adjustments in the oval shaped room now that lights are being installed.

L6 is about to be started. We have had an illness running through our crews the last two weeks. We will meet schedule with finishing L6.

Sent from my iPad

On Feb 14, 2017, at 9:21 AM, Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com> wrote:

Also, L6 was scheduled to start yesterday, please confirm you have adequate manpower to meet these dates.

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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From: Starcevic, Nicholas

Sent: Tuesday, February 14, 2017 7:57 AM

To: 'Leonce Vidal' <lvidal@pasco-inc.com>

Cc: Marty Dale (mdale@balfourbeattyus.com) <mdale@balfourbeattyus.com>

Subject: Manpower and Scope Add - HMS

Importance: High

Leonce,

Pasco is falling behind schedule and we need a few things addressed. The intent was to hang drywall ceilings on L1 yesterday, but we still do not have fire protection finals. What is going on here?

We also reached out to Jack about providing the flange at the basement fire line. He said you guys could do this, can you take a look and provide a price to complete this work?

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 3/15/2017 9:19:01 AM
To: Leonce Vidal [lvidal@pasco-inc.com]
CC: Spano, Tim [timspano@Balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]; Cossette, Jeno [JCossette@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; dsmith@pasco-inc.com
Subject: 13026000-004-02 PASCO Demand for Cure
Attachments: CONSTRUCTION LOGISTICS PLAN 3.14.17.pdf; 13026000-004-02 PASCO Demand for Cure.pdf

Leonce,

See attached Notice of Demand for Cure for the Hotel at Marion Square. Per yesterday's meeting onsite, there are a handful of issues that need to be addressed, see below.

1. Clean Up –
 - a. Clean all working spaces daily. All areas you are currently working need to be broom swept and trash disposed of daily. No exceptions.
 - b. Neatly organize, stacked, and locate material as indicated on the attached logistics plan. This is mandatory and must be strictly adhered to.
 - c. Remove all excess material from the site by COB 3/17/17.
 - d. Only bring material that will be used in the next two weeks to the project, all other material will be rejected.
2. Schedule –
 - a. It is evident that PASCO needs additional manpower onsite. Please provide a manpower count and recovery schedule to show your plan to get back on schedule.
- i. Include all rough in, testing and inspection dates through L9.
3. Material Delivery
 - a. All material deliveries are to be coordinated with Jeno Cossette or Marty Dale.
 - b. Any rigging, equipment, etc needed for the deliveries is to be provided by PASCO. BBC does not provide rigging, equipment, or labor to assist with material deliveries.

Do not hesitate to contact me if you have any questions or concerns.

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
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Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 3/15/2017 11:48:07 AM
To: Chip Venable [cvenable@oldnorthstatemasonry.com]
CC: Joe Anastasi [Janastasi@oldnorthstatemasonry.com]; Toby Holloway [tholloway@oldnorthstatemasonry.com]; Cossette, Jeni [JCossette@Balfourbeattyus.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Goodwin, Shelly [sgoodwin@balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]
Subject: 13026000-20-04 ONSM Demand for Cure
Attachments: 13026000-20-04 ONSM Demand for Cure.pdf; CONSTRUCTION LOGISTICS PLAN 3.14.17.pdf

Chip,

See attached Notice of Demand for Cure for the Hotel at Marion Square. Per yesterday and multiple coordination meetings onsite, these issues remain deficient and need to be addressed, see below.

1. Clean Up –
 - a. Overall cleanup, material storage, staging, etc, needs to be improved immediately. For clarity, Old North State Masonry is to clean all working spaces, remove mortar, remove grout, broom sweep, and dispose of trash **daily**. No exceptions.
 - b. Neatly organize, stack, and locate material as indicated on the attached logistics plan. This is mandatory and must be strictly adhered to.
 - c. Remove all excess material from the site by COB 3/17/17.
 - d. Only bring material that will be used in the next two weeks to the project, all other material will be rejected.
2. Schedule –
 - a. The exterior skin continues to slip. It is evident that we are not achieving the agreed to rate of installation due to a multitude of issues (BBC acknowledges not all issues are 100% ONSM). BBC has gone above and beyond to coordinate with ONSM on the precast setting and provide the hooks necessary for installation. If precast needs to be cut, modified, repaired, etc it needs to be done in a manner that does not delay the installation. It is clear that the necessary manpower is not onsite as Toby Holloway promised an expert crew onsite 3/13/17 to speed up installation and that crew is not onsite as of 3/15/17.
 - b. Due to lack of production, ONSM is directed to work on L9 Parapet, Southeast Door Surrounds, and L2 Cornice. Provide completion dates for these activities so we can plan accordingly.
 1. Southeast Door Surrounds
 2. L2 Band
 3. L9 Parapet Cap
 4. L8 Band
 - c. All open SME discrepancies
 - d. L6 grout fix – confirm 3/22/17 completion
 - e. L3 stair completion
 - f. L3 stair repair (see 13026000-20-03 Demand for Cure)
 - g. Control Lines fixed (scaffold will not be used). All float in schedule has been removed due to delays by ONSM so provide hoisting to fix deficient control lines.
 - h. Repair any damage caused to other trades
 - i. Mock Up completion
 - j. See BBC daily masonry reports at the following link. BBC Masonry Daily Report
<https://bbcus.egnyte.com/fl/xaqYqgPp2G>
3. Material Delivery
 - a. All material deliveries are to be coordinated with Jeni Cossette or Marty Dale.
 - b. Provide a forklift to move material.
 - c. Any rigging, equipment, etc needed for the deliveries is to be provided by ONSM. BBC does not provide rigging, equipment, or labor to assist with material deliveries.
4. Quality Control

- a. Provide a written quality control plan for review. BBC remains concerned about the lack of protection on the precast and ONSM's ability to repair.
- b. BBC has witnessed chips in precast that need repaired or replaced.
- c. BBC has witnessed discolored precast that needs to be cleaned or replaced
- d. Walls out of tolerance need to be addressed.

Do not hesitate to contact me should you have any question or concerns

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 3/15/2017 10:02:44 AM
To: Winovich, Dale (DWinovich@watsonelec.com) [DWinovich@watsonelec.com]
CC: Lewis, Everette [ELewis@watsonelec.com]; Brittelli, William [WBrittelli@watsonelec.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Sandeen, Jeff [JSandeen@Balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]; Cossette, Jeni [JCossette@Balfourbeattyus.com]; Farmer, David (DFarmer@watsonelec.com) [DFarmer@watsonelec.com]
Subject: 13026000-003-01 Watson Demand for Cure
Attachments: 13026000-003-01 Watson Demand for Cure.pdf; CONSTRUCTION LOGISTICS PLAN 3.14.17.pdf

Dale,

See attached Notice of Demand for Cure for the Hotel at Marion Square. Per yesterday's meeting onsite, there are a handful of issues that need to be addressed, see below.

1. Clean Up –
 - a. Clean all working spaces daily. All areas you are currently working need to be broom swept and trash disposed of daily. No exceptions.
 - b. Neatly organize, stack, and locate material as indicated on the attached logistics plan. This is mandatory and must be strictly adhered to.
 - c. Remove all excess material from the site by COB 3/17/17.
 - d. Only bring material that will be used in the next two weeks to the project, all other material will be rejected.
2. Schedule –
 - a. Per our meeting last week, Watson was to complete L5 guestrooms by 3/10/17 and start L6 guestrooms on 3/13/17. Neither of these dates were accomplished. We also failed multiple overhead inspection on L2 and L3 partly due to Watson deficiencies. Provide a manpower count and recovery schedule to show your plan to get back on schedule.
 - i. Include all rough in, testing and inspection dates through L9.
 - ii. Completion of all loose ends, fire caulking, punch on L1-L5.
 - iii. Repair any damage caused to other trades (i.e. holes in walls, removed insulation, etc).
3. Material Delivery
 - a. All material deliveries are to be coordinated with Jeni Cossette or Marty Dale.
 - b. Any rigging, equipment, etc needed for the deliveries is to be provided by Watson. BBC does not provide rigging, equipment, or labor to assist with material deliveries.

Do not hesitate to contact me should you have any question or concerns,

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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BBC_EMAILS_00144470

R - 7469

Message

From: Scott Shiner [sshiner@bernhardmcc.com]
Sent: 4/7/2017 12:47:35 PM
To: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]; Eric Stoehr [estoehr@bernhardmcc.com]
CC: Scott Delbridge [sdelbridge@bernhardmcc.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Dale, Marty [mdale@balfourbeattyus.com]; Eldridge, Johnny [JEldridge@Balfourbeattyus.com]; Michael Schneida [mschneida@bernhardmcc.com]; Stanton, David [DStanton@Balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]
Subject: RE: HMS - L5 Completion - Cure Notice

Mr. Starcevic, Thank you for taking the time to discuss the Marion Square project and I look forward to meeting you Monday. BMCC is committed to bring the schedule back to where it needs to be and moving forward we are complying a schedule in house to meet or either bet the Construction Schedule issued with the run date of 3/6/17. We were able to have the insulation Sub Contractor man up and work this weekend in an effort to possibly beat the Wednesday inspection for 5th floor. I'm also having our General Superintendent, Rusty Williams onsite for the next several weeks to assist the project TEAM and provide additional supervision along with adding six Plumbers Monday. I myself will be on site next week for however long it takes to assure BBC moving forward you have our full attention. As requested during our conversation I would like until the end of the day Monday 4/10/17 to provide you with our detailed recovery plan. This will allow me along with the project Team to regroup and compile completion dates for the remaining activities on levels 6,7, and 8th floor.

Scott Shiner
Operations Manager



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(704) 587-0774 fax
(704) 817-1828 direct
(865) 323-0050 mobile
www.bernhard.com

From: Starcevic, Nicholas [mailto:NStarcevic@Balfourbeattyus.com]
Sent: Wednesday, April 05, 2017 3:11 PM
To: Eric Stoehr
Cc: Scott Delbridge; Spano, Tim; Dale, Marty; Eldridge, Johnny; Michael Schneida; Scott Shiner; Stanton, David; Dooley, Alec
Subject: HMS - L5 Completion - Cure Notice

Eric,

It was brought to our attention that BMCC will not be ready for the framing inspection on L5 until next Wednesday, April 12. This is a 15+ day delay to the framing inspection on L5 and must be cured immediately. We need a plan from BMCC by COB Friday, April 7 for completion of L5 and how you intend to make up the lost time on L6, L7, and L8. Call me with questions.

Thanks,

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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Message

From: Stoneking, Tony [tstoneking@balfourbeattyus.com]
Sent: 5/1/2017 6:03:16 AM
To: Sandeen, Jeff [JSandeen@Balfourbeattyus.com]
Subject: RE: Marion Square Contacts

Added #10 sorry

Tony Stoneking

Balfour Beatty Construction, LLC

phone: 919-795-4954

email: tstoneking@balfourbeattyus.com

mailing address: 405 South McDowell St.; Suite 200, Raleigh, NC 27601

From: Stoneking, Tony

Sent: Monday, May 01, 2017 6:50 AM

To: Sandeen, Jeff <JSandeen@Balfourbeattyus.com>

Subject: RE: Marion Square Contacts

Jeff – see below my notes from Friday and fix anything you see and send out to group.....I added Bakers list below

Notes from Friday

1. Jeff/Pat/Shelly/Tony to contact higher executives of subcontractors to make sure project has support and to use as a resource when David feels his leadership meeting needs support
2. David's executive meeting needs to increase manpower for Precision and Watson
3. Jeff to confirm Mike Janson is coming on May 15
4. David to make recommended staffing revisions with Jeff
 - a. Tim Spano = skin and hardscape
- i. Add an hourly person / PE / intern for support to Tim
 - b. Ryan Ledford = move him to 9th floor under Mike Janson
 - c. Mike Janson to manage floors 3-9
- i. Johnny and Pete to fall under Mike now
- ii. Will support all floors with Marty is out for surgery
 - d. Marty Dale
- i. Having both knee surgeries this year
- ii. Move Alec Dooley to field under Marty to shore that up with all details
 - e. Add new PE or interns to help Nick in office with paperwork/closeout so Alec can go to field
5. Leave material hoist up to help move men and materials under July 4th when skin scaffold comes around
6. Joe L is making colored floor plan for turnover dates to match schedule, and adhere too
7. Joe L and David need to look at schedule for tile to make sure manpower is okay and we are giving them areas. Joe L is updating sub sort for David Allen
8. Joe L needs to fly up to NY to get Hope Glass here.....get with Tim on frequency. We need job team to stay on project site.
9. Do we need hourly folks to do room punch / need to develop a plan to punch rooms.
10. We need to start doing following on pending changes:
 - a. If owner wants or thinking a change, we need to send out immediately a "best guess impact notice" cost/delay to job with Joe L....don't wait until we price formal change.

Tony Stoneking

Balfour Beatty Construction, LLC

phone: 919-795-4954

email: tstoneking@balfourbeattyus.com

mailing address: 406 South McDowell St.; Suite 200, Raleigh, NC 27601

From: Sandeen, Jeff

Sent: Friday, April 28, 2017 2:47 PM

To: Goodwin, Shelly <sgoodwin@balfourbeattyus.com>; Stoneking, Tony <tstoneking@balfourbeattyus.com>; Dean, Pat <pdean@balfourbeattyus.com>; Stanton, David <DStanton@Balfourbeattyus.com>

Subject: Marion Square Contacts

Subcontractor	Executive/Owner	Local Contact
Watson	Billy Brittelli	Billy Brittelli
MCC	Mike Cooper	Scott Delbridge
David Allen	Martin Howard	Clovis Locure
Baker	Prentiss Baker	Matt
ONSM	Scott Griffen	Toby
Precision Wall	Brian Allen	Troy Morgan
Otis	Jim Atkins	Ben Synder

BBC
Shelly/Tony
David
Shelly/Tony
Shelly/Tony
Jeff
Shelly/Tony
Jeff

Jeffrey Sandeen | Vice President / Business Unit Leader, Carolinas

office: 704.319.4029 | mobile: 704.534.8522 | email: JSandeen@balfourbeattyus.com

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Message

From: Ledford, Ryan [RLedford@Balfourbeattyus.com]
Sent: 9/19/2017 3:31:44 PM
To: Eldridge, Johnny [JEldridge@Balfourbeattyus.com]
CC: Pieniak, Shanti [SPieniak@Balfourbeattyus.com]
Subject: FW: MHS Walk Through Feedback
Attachments: Watson_Open_Issues_List_(9-19-17).pdf

FYI

Ryan Ledford | Sr. Project Engineer
mobile: (828)545-7759 | email: rledford@balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401
ZERO HARM Make Safety Personal

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From: Ledford, Ryan
Sent: Tuesday, September 19, 2017 4:25 PM
To: Stanton, David <DStanton@Balfourbeattyus.com>
Cc: Spano, Tim <timspano@Balfourbeattyus.com>; Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>
Subject: RE: MHS Walk Through Feedback

David,

See attached BIM360 list for Watson's open items. There are probably a few items on the lower floors that can be marked as complete, but I know 6th and 7th floor are up to date as of 3pm today. While Kevin does attempt to stay on top of the issues, it is obvious that Watson, and other trades are overwhelmed by the amount of work to complete they simply don't have enough manpower to handle the activities at hand.

As you know, It's a red herring to state that design issues are holding up work. The design issues are probably less than 10% of the list. The bulk of the list contains issues like fire caulking, moving outlets or lights that were not installed per the dimensions on the contract drawings, missing (or covered up) devices. there are over 66 issues (that we have caught so far) just on level 7, just to allow us to get an overhead inspection.

It is due to poor QC that we are in the position now where multiple trades must be involved to fix these issues and disrupt the flow of work. BBC has tried to help by going above and beyond, logging literally thousands of issues into BIM360 trying to spoon feed these guys and help push the job. Johnny and I have been on 6th and 7th floor constantly trying to help work these items off the list, but it's clear more qualified help is needed by Watson.

Please let me know if you need anything else.

Thanks,
Ryan Ledford | Sr. Project Engineer
mobile: (828)545-7759 | email: rledford@balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401
ZERO HARM Make Safety Personal

From: Stanton, David
Sent: Tuesday, September 19, 2017 3:44 PM
To: Ledford, Ryan <RLedford@Balfourbeattyus.com>
Cc: Spano, Tim <tims Spano@Balfourbeattyus.com>; Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>
Subject: FW: MHS Walk Through Feedback

Ryan – can you send me all open items that Watson has on BIM 360.

David Stanton CHC, 
office: 704.295-4746 | cell: 704.506-0977 | fax: 704.319.4001 | email: dstanton@balfourbeattyus.com
Balfour Beatty Construction | 1930 Camden Road, Suite 280, Charlotte, NC 28203
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From: Winovich, Dale [<mailto:DWinovich@watsonelec.com>]
Sent: Tuesday, September 19, 2017 3:28 PM
To: Stanton, David <DStanton@Balfourbeattyus.com>
Cc: Brittelli, William <WBrittelli@watsonelec.com>; Farmer, David <DFarmer@watsonelec.com>; Sloan, Kevin <KSloan@watsonelec.com>; Lewis, Everette <ELewis@watsonelec.com>; Spano, Tim <tims Spano@Balfourbeattyus.com>; Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>
Subject: MHS Walk Through Feedback

David,

Per my walk through this morning it is clear that the project is still struggling to establish a work flow and sequence. We continue to be re-tasked to multiple different areas when changes, design detail clarifications, or predecessor work is completed or clarified.

As far as the Level 6, we have had our overhead and in wall inspection since the beginning of September. I'm not sure how the feedback is that we continue to fail inspections. That is inaccurate. We received an RFI on 09-16-17 to demo downlights in the manager's apartment which as of today is still being framed. We also received and priced SI 54 which will rework electrical in the kitchen of the manager's apartment. These are just typical and common examples of the work disruptions we are encountering every week, and are expected to accommodate with unplanned manpower.

Level 9 in wall is complete and as discussed and planned we are working on finishing overhead light fixtures and mechanical equipment.

In walking L9-L6 there is still incomplete or missing framing, as well as continual changes. There is FCU rework on going, soffit and miscellaneous wall framing/rework on going.

David, we can continue to go in circles as to who caused what issue but to say that we are lacking manpower and are responsible for incorrect work is over generalized. We continually reworking due to incorrect framing, design clarification and changes. After today's walk I have about a dozen pictures of work that was installed that is now hanging or removed with no notice. I also respectfully disagree with the notion that the schedule has activities over due by 30 days as change orders and rolling design issues are not effectively accounted for in the schedule.

If you would like to walk the jobsite Thursday after our executive meeting we can do so. I do agree that there are loose ends everywhere but I think we are ignoring the reasons why, and IF we can even complete the work with the information we have. And when I reference work flow and sequence it's not an accusation against BBC but reinforcement that the owner and design team have left loose ends of their own and disrupted ours, and BBC's work. Just let me know if you'll be in town Thursday to walk.

Respectfully,

Dale J Winovich, LEED AP BD & C

Project Manager

dwinovich@watsonelec.com

843-414-0700 Office

843-371-2265-Cell

Watson Electrical Construction Company



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If you would like to walk the jobsite Thursday after our executive meeting we can do so. I do agree that there are loose ends everywhere but I think we are ignoring the reasons why, and IF we can even complete the work with the information we have. And when I reference work flow and sequence it's not an accusation against BBC but reinforcement that the owner and design team have left loose ends of their own and disrupted ours, and BBC's work. Just let me know if you'll be in town Thursday to walk.

Respectfully,

Dale J Winovich, *LEED AP BD & C*

Project Manager

dwinovich@watsonelec.com

843-414-0700 Office

843-371-2265-Cell

Watson Electrical Construction Company



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Message

From: Morgan, Troy [tmorgan@precisionwalls.com]
Sent: 10/5/2017 8:38:04 AM
To: Stanton, David [DStanton@Balfourbeattyus.com]
CC: Zinna, Michael [MZinna@precisionwalls.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Vega, Navor [NVega@precisionwalls.com]
Subject: Re: Grae Framers

28

Framers are in stairs need a few answers before we can complete

Hangers are on 6. Will be done with ceilings today

Finishers are coming behind them

Two on BIM 360 on 7th tidying up for tile guys

Hangers on roof one siding

Insulating on 2 and will move to roof tomorrow

8th floor is insulated

Framers on eight finishing up loose ends at ceiling framing 95% complete

One guy fixing vanity issue

Thanks Troy

Troy Morgan
Precision Walls Inc.
843-860-6647

On Oct 5, 2017, at 9:13 AM, Stanton, David <DStanton@Balfourbeattyus.com> wrote:

Can you give us a breakdown of your total manpower on site and show the areas that they will be working.

David Stanton, VP/Operations
O: (704) 295-4746 | C: (704) 506-0977 | www.balfourbeattyus.com
1930 Camden Road, Suite 280, Charlotte, NC 28203

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From: Zinna, Michael [<mailto:MZinna@precisionwalls.com>]
Sent: Thursday, October 05, 2017 9:11 AM
To: Spano, Tim <tspano@Balfourbeattyus.com>; Morgan, Troy <tmorgan@precisionwalls.com>
Cc: Vega, Navor <NVega@precisionwalls.com>; Stanton, David <DStanton@Balfourbeattyus.com>
Subject: RE: Grae Framers

David/Tim

Thanks for passing along this information. I finally had the opportunity to speak to Grae yesterday and he was under the impression that he would be dealing directly with Balfour Beatty and was never expecting a call from Precision Walls. He also mentioned that he was approached by Mike Bennett about providing labor for not only our scope but others as well and even was asked to furnish a superintendent to help out. Grae was very receptive to the conversation and very helpful, however I told him we are comfortable with the number of men we are currently working onsite.

We added 4 framers last week, 4 more framers this week, as well as 2 finishers to address the loose ends that have been left behind on this project for various reasons. It is our plan to start at least one crew in the basement level and progressively work them up through the building to catch all remaining loose ends. We would appreciate Balfour's help in making sure this crew is productive and can complete everything possible as they move up. If there are any cost issues involved with these loose ends we will need to work together to resolve them quickly so we do not continue to leave incomplete areas behind.

Your willingness to help is apparent and we certainly appreciate it. If you guys have any further questions or concerns please let us know.

Thanks

Michael Zinna

Project Manager

<image001.jpg>

mzinna@precisionwalls.com

P: (843) 793-6020

M: (843) 991-0528

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N. Charleston, SC 29418

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From: Spano, Tim [<mailto:tspano@Balfourbeattyus.com>]
Sent: Tuesday, October 03, 2017 8:00 AM
To: Morgan, Troy <tmorgan@precisionwalls.com>
Cc: Zinna, Michael <MZinna@precisionwalls.com>; Vega, Navor <NVega@precisionwalls.com>; Stanton, David <DStanton@Balfourbeattyus.com>
Subject: Re: Grae Framers

10-4, Thanks for the info. Keep us posted.

Sent from my iPhone

On Oct 3, 2017, at 7:13 AM, Morgan, Troy <tmorgan@precisionwalls.com> wrote:

BBC_EMAILS_00994504

R - 7483

Good morning Tim

I forwarded the message to Navor who called them last week. He left a message and no one has returned the call yet. We discussed this again yesterday and Michael was going to call them today. I will as well. CPI is a general contractor who specializes in building hotels. I'm not sure how Trey could be much help. From what I have gathered he would pick out of the same limited labor pool that is out there now

Thanks troy

Troy Morgan
Precision Walls Inc.
843-860-6647

On Oct 3, 2017, at 7:06 AM, Spano, Tim <timspano@Balfourbeattyus.com> wrote:

Guys, We provided Pwalls a contact to Grae framing that the Marion Owner provided us and we heard they were contacted by Pwalls about working on another job, not Marion. We don't know if this is the case so can you comment on it? We currently lack framing completion on every floor of the hotel and need multiple framers. Thanks

Tim Spano | Sr. Project Manager **Carolina's**
office: 843.974.4590 | mobile: 813.917.1656 | email: timspano@balfourbeattyus.com
Balfour Beatty Construction | www.balfourbeattyus.com
306 Meeting St., Suite 300, Charleston, SC 29401
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<image003.jpg>

Message

From: Sandeen, Jeff [JSandeen@Balfourbeattyus.com]
Sent: 10/18/2017 10:59:51 AM
To: Dean, Pat [pdean@balfourbeattyus.com]
Subject: RE: Marion Square
Attachments: Re: Change Orders

They have added additional folks (total count approx. 45) at MSH but not enough and have actually lost some of their framers which they need desperately. The team is telling me they have walked these areas with P-Wall and their management and they know what they need. I will be able to give additional specifics later.

With regards to 300... I spoke with Beth yesterday about the status of their changes and getting them into this month's billing. She reached out to their PM (attached) and copied myself and Troy on the correspondence for a wrap up by next Tuesday for their billing. She is also claiming that they have a number of B/C's that need to be cleaned up. Not certain the specifics around the B/C's but will follow up tomorrow when I am onsite. We are not all clean on the submission of these changes but I have been on Wick for months to get these approved and we are slowly getting them approved. We also negotiated a retainage reduction on their behalf last month to help with cash flow.

We can discuss further tomorrow – Thanks,

Jeffrey Sandeen | Vice President / Business Unit Leader, Carolinas
office: [704.319.4029](tel:704.319.4029) | mobile: [704.534.8522](tel:704.534.8522) | email: JSandeen@balfourbeattyus.com
Balfour Beatty Construction | [1930 Camden Road, Suite 280, Charlotte, NC 28203|www.balfourbeattyus.com](https://www.balfourbeattyus.com)
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From: Dean, Pat
Sent: Wednesday, October 18, 2017 11:31 AM
To: Sandeen, Jeff <JSandeen@Balfourbeattyus.com>
Subject: Fwd: Marion Square

Sent from my iPad

Begin forwarded message:

From: "Allen, Brian" <ballen@precisionwalls.com>
Date: October 18, 2017 at 11:24:51 AM EDT
To: "Dean, Pat" <pdean@balfourbeattyus.com>
Subject: Re: Marion Square

Update: We have added additional crews to get floor 8 moving along faster.

The change orders that we have been waiting on for several months now are mods 7 and 8.

Brian C. Allen, *LEED AP*
President

Precision Walls, Inc.
[1230 NE Maynard Road](https://www.precisionwalls.com)
[Cary, NC 27513-4174](https://www.precisionwalls.com)
[919.832.0380](tel:919.832.0380) office
[919.422.5865](tel:919.422.5865) cell

919.839.1402 fax
ballen@precisionwalls.com
www.precisionwalls.com

Raleigh - Greensboro - Charlotte - Wilmington - Greenville, NC - Columbia - Greenville/Spartanburg -
Charleston; SC - Nashville, TN - Richmond, VA

On Oct 16, 2017, at 6:06 PM, Dean, Pat <pdean@balfourbeattyus.com> wrote:

Will do.

Thanks,

Pat Dean

On Oct 16, 2017, at 6:03 PM, Allen, Brian <ballen@precisionwalls.com> wrote:

Pat,

I spoke to our guys this afternoon. None of them knows anything about a commitment to add 20 more workers to the job.

Troy Morgan talked to David Stanton this afternoon and David told him that the inspections on the 8th floor that we have been waiting on for 6-8 weeks were signed off late Friday afternoon. That does free up more work for us and should give us more productive places to work.

We had 29 people there today and will work to get 4-6 more workers there by Wednesday. We will then look at what is available and plan any future manpower accordingly.

We are losing \$ on this job already based on all the owner delays and jumping around the job to try to keep our manpower productive. We can not afford to flood the job with workers any more without productive work out ahead of us.

Anything you can do to get the change orders moving on this job and 300 South Tryon would really help us. Cash is really upside down for us on both projects.

Thanks for your help.

Brian C. Allen, LEED AP
President

Precision Walls, Inc.
[1230 NE Maynard Road](http://1230%20NE%20Maynard%20Road)
[Cary, NC 27513-4174](http://Cary,%20NC%2027513-4174)
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ballen@precisionwalls.com
www.precisionwalls.com

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Charleston, SC - Nashville, TN - Richmond, VA

On Oct 16, 2017, at 3:51 PM, Dean, Pat <pdean@balfourbeattyus.com> wrote:

Brian,

I hope you are doing well and thanks again for the invite to the race. I guess we were promised some additional manpower down at Marion Square today off around 20 people but got only 2? Can you jump in the middle of it and let us know.

Thanks

Pat Dean | Chief Operating Officer | Carolinas and Georgia
office: 704.295.4757 | mobile: 704.840.4205 | email: pdean@balfourbeattyus.com
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<image001.jpg>

<image001.jpg>

Message

From: Starcevic, Nicholas [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=65F22BA2C54F4D0F843FDB8B842E3115-NICHOLAS ST]
Sent: 12/15/2017 12:30:25 PM
To: Zinna, Michael [MZinna@precisionwalls.com]; Morgan, Troy [tmorgan@precisionwalls.com]
CC: Spano, Tim [timspano@Balfourbeattyus.com]; Dooley, Alec [adooley@Balfourbeattyus.com]; Vega, Navor [NVega@precisionwalls.com]; Simonton, David [dsimonton@balfourbeattyus.com]; David Stanton [DStanton@Balfourbeattyus.com]
Subject: RE: MSH - Precision Walls Area of Concern

Mike / Troy,

It is very clear that Precision Walls needs more framers, hangers, and finishers on the project. We have walked this list twice now and they mostly remain status quo, and now we have already lost 2 days on hanging L8. If we don't see the appropriate actions taken in the next 48 hours, we bring in the necessary manpower to get this job finished.

Thanks,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 305 Meeting St. Suite 300, Charleston, SC 29401

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From: Starcevic, Nicholas
Sent: Tuesday, December 12, 2017 4:57 PM
To: 'Zinna, Michael' <MZinna@precisionwalls.com>; Morgan, Troy <tmorgan@precisionwalls.com>
Cc: Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Vega, Navor <NVega@precisionwalls.com>
Subject: RE: MSH - Precision Walls Area of Concern

Mike – the agreement was to hit those 2 floors hard and get off of them in a week. We'll discuss the next steps tomorrow, but the walk tomorrow is to be focused on reviewing deficiencies and loose ends on L3-L8.

Thanks,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

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From: Zinna, Michael [<mailto:MZinna@precisionwalls.com>]
Sent: Tuesday, December 12, 2017 4:08 PM
To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Morgan, Troy <tmorgan@precisionwalls.com>
Cc: Spano, Tim <timspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>; Vega, Navor

<NVega@precisionwalls.com>

Subject: RE: MSH - Precision Walls Area of Concern

Nick

We may need some more time than COB tomorrow to get everything below addressed. Troy Williams is back onsite and is currently reviewing this list and will get what has not been addressed on the below list taken care of as we always do. Some of the change order items fall back on me as far as the delay to get them going however I will make sure Troy is caught up tomorrow and ready to move forward.

See you tomorrow morning.

Thanks

Michael Zinna
Project Manager



mzinna@precisionwalls.com

P: (843) 793-6020

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N. Charleston, SC 29418

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From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]

Sent: Tuesday, December 12, 2017 1:00 PM

To: Zinna, Michael <MZinna@precisionwalls.com>; Morgan, Troy <tmorgan@precisionwalls.com>

Cc: Spano, Tim <tspano@Balfourbeattyus.com>; Dooley, Alec <adooley@Balfourbeattyus.com>

Subject: RE: MSH - Precision Walls Area of Concern

Troy / Michael,

The below areas still have open issues, whether it be clean up, framing, executed change orders, finishers, etc. Most of these areas were walked Wednesday of last week and still have open Precision Walls issues. As agreed to last week, they need to be addressed by end of day tomorrow, December 13. If they are not complete by COB tomorrow, we will bring in additional help to close out these floors.

Patisserie
Spa Retail
Retail
Concierge
Foyer / Rotunda
Stair 3
Stair 4 / Dining
Plaster Ceilings (all 3 areas)
Hope's Pockets

BBC_EMAILS_00603680

R - 7491

Pump Room

Level 2

Back of House Corridor

Spa

Bridal

Spa Elevator

Boardroom Alcove

Wardrobe (Layout)

IDF Closet

Ballroom

- Columns
- Arches Windows
- Modern fold Ceilings
- Dining Clean up

Hose Reel Cab

Storage 238

See you tomorrow after the PM Meeting.

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

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From: Zinna, Michael [<mailto:MZinna@precisionwalls.com>]

Sent: Tuesday, December 05, 2017 4:25 PM

To: Dooley, Alec <adooley@Balfourbeattyus.com>; Morgan, Troy <tmorgan@precisionwalls.com>

Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>

Subject: RE: MSH - Precision Walls Area of Concern

I printed this out and will bring a copy with me tomorrow to review. Thanks for putting this together Alec.

Michael Zinna

Project Manager



mzinna@precisionwalls.com

P: (843) 793-6020

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N. Charleston, SC 29418

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From: Dooley, Alec [<mailto:adooley@Balfourbeattyus.com>]
Sent: Tuesday, December 5, 2017 4:21 PM
To: Morgan, Troy <tmorgan@precisionwalls.com>; Zinna, Michael <MZinna@precisionwalls.com>
Cc: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>
Subject: MSH - Precision Walls Area of Concern

Troy,

Please see the attached list of incomplete items that are adversely affecting our completion schedule. We would like to walk these with you tomorrow. Please review with your team and we will discuss in depth during the 930 walk.

Thanks,

Alec Dooley | Assistant Project Manager
mobile: 704.614.4907 | email: adooley@balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting Street, Suite 300, Charleston, SC 29401 | www.balfourbeattyus.com

Message

From: Starcevic, Nicholas [NStarcevic@Balfourbeattyus.com]
Sent: 1/8/2018 12:02:05 PM
To: Zinna, Michael [MZinna@precisionwalls.com]
CC: Dooley, Alec [adooley@Balfourbeattyus.com]; Spano, Tim [timspano@Balfourbeattyus.com]; Hotelat Marion [HotelatMarion@balfourbeattyus.com]
Subject: Schedule and Quality Concerns - HMS

Michael –this is not just an observation made over the last 3 weeks, but rather an ongoing concern that we routinely share with Precision Walls. The only schedule relief will be on holidays already built into the schedule and days received from the owner for inclement weather.

Nick Starcevic | Project Manager
mobile: 704-351-3265 | email: NStarcevic@Balfourbeattyus.com
Balfour Beatty Construction | 306 Meeting St. Suite 300, Charleston, SC 29401

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From: Zinna, Michael [mailto:MZinna@precisionwalls.com]
Sent: Saturday, January 06, 2018 11:00 AM
To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>
Cc: Dooley, Alec <adooley@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>
Subject: RE: Concealed Sprinkler Heads in Guestrooms - HMS

Nick

Precision Walls disagrees with your statement that we are struggling to staff our work on this project. The past three weeks were Christmas, New Years, and Winter Storm Grayson. This is the time of the year where many employees take time off to spend with their families and our branch was shutdown Tuesday January 2nd through Monday January 8th for the safety of our employees and subcontractors during Winter Storm Grayson. Precision Walls will have a full staff back onsite Monday January 8th to continue our work.

As far as our pricing for this work, it was reviewed on more than one occasion with our team and will not be changing.

Thanks

Michael Zinna
Project Manager



mzinna@precisionwalls.com

P: (843) 793-6020

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N. Charleston, SC 29418

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R - 7495

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From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]
Sent: Friday, January 5, 2018 1:54 PM
To: Zinna, Michael <MZinna@precisionwalls.com>
Cc: Dooley, Alec <adooley@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>
Subject: RE: Concealed Sprinkler Heads in Guestrooms - HMS

Mike,

Between the amount of work that you're struggling to staff already and the exorbitant pricing, we are not asking PWalls to perform this work currently. If you can reasonably price the scope and catch up your contracted work, we can reevaluate.

Thanks,

Nick Starcevic | Project Manager
mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com
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From: Zinna, Michael [<mailto:MZinna@precisionwalls.com>]
Sent: Friday, January 05, 2018 1:01 PM
To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>
Cc: Dooley, Alec <adooley@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>
Subject: RE: Concealed Sprinkler Heads in Guestrooms - HMS

Nick

I am told that Level 5 is doing the sprinkler head patching. Please confirm so I can void this change order request if that is the case.

Thanks

Michael Zinna
Project Manager



mzinna@precisionwalls.com

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R - 7496

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From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]
Sent: Tuesday, December 26, 2017 4:00 PM
To: Zinna, Michael <MZinna@precisionwalls.com>
Cc: Dooley, Alec <adooley@Balfourbeattyus.com>; Spano, Tim <timspano@Balfourbeattyus.com>
Subject: Re: Concealed Sprinkler Heads in Guestrooms - HMS

Really? Those 3 really told you it takes 12 hours to patch a 10x10 hole?

Nick Starcevic | Balfour Beatty Construction
Cell: 704.361.3265

On Dec 26, 2017, at 3:17 PM, Zinna, Michael <MZinna@precisionwalls.com> wrote:

12 man hours per patch X 350 locations. The man hours were revised and discussed in the field with Troy M, Navor, and Troy W.

Michael Zinna
Project Manager

<image001.png>
mzinna@precisionwalls.com
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N. Charleston, SC 29418

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From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]
Sent: Tuesday, December 26, 2017 3:15 PM
To: Zinna, Michael <MZinna@precisionwalls.com>
Cc: Dooley, Alec <adooley@Balfourbeattyus.com>
Subject: Re: Concealed Sprinkler Heads in Guestrooms - HMS

Please provide more detail on how you came up with 4,200 hours. I do not know where to start with evaluating this proposal.

Nick Starcevic | Balfour Beatty Construction
Cell: 704.361.3265

On Dec 26, 2017, at 3:06 PM, Zinna, Michael <MZinna@precisionwalls.com> wrote:

Nick

BBC_EMAILS_01244807

R - 7497

See attached change order request. Per your request we included clean up. Please note we believe there is going to be issues on the punch list with 350 patches in the room ceilings and we have accounted for that in our pricing. It is going to be very difficult to make a patch disappear in a level 4 ceiling. If you have any questions please let me know.

Thanks

Michael Zinna
Project Manager

<image001.png>

mzinna@precisionwalls.com

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From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]

Sent: Friday, December 15, 2017 8:04 AM

To: Zinna, Michael <MZinna@precisionwalls.com>; Scott McCormack <scottm@meritnow.com>

Cc: Dooley, Alec <adooley@Balfourbeattyus.com>; Spano, Tim <tims Spano@Balfourbeattyus.com>

Subject: RE: Concealed Sprinkler Heads in Guestrooms - HMS

Not on this one. We only have 1 staff member that handles clean up and he's running around the building. Vacuum sanders and clean up after please.

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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From: Zinna, Michael [<mailto:MZinna@precisionwalls.com>]

Sent: Thursday, December 14, 2017 12:26 PM

To: Starcevic, Nicholas <NStarcevic@Balfourbeattyus.com>; Scott McCormack <scottm@meritnow.com>

Cc: Dooley, Alec <adooley@Balfourbeattyus.com>; Spano, Tim <tims Spano@Balfourbeattyus.com>

Subject: RE: Concealed Sprinkler Heads in Guestrooms - HMS

Nick

Would BBC be willing to take care of the floor protection and clean up at all locations so PWI and Merit can focus on getting the work done and save on having to charge for those costs? Just a suggestion, let me know what you think.

Thanks

BBC_EMAILS_01244808

R - 7498

Michael Zinna

Project Manager

<image001.png>

mzinna@precisionwalls.com

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From: Starcevic, Nicholas [<mailto:NStarcevic@Balfourbeattyus.com>]

Sent: Thursday, December 14, 2017 9:19 AM

To: Zinna, Michael <MZinna@precisionwalls.com>; Scott McCormack <scottm@meritnow.com>

Cc: Dooley, Alec <adooley@Balfourbeattyus.com>; Spano, Tim <timspero@Balfourbeattyus.com>

Subject: Concealed Sprinkler Heads in Guestrooms - HMS

Importance: High

Guys –

We have an issue with the sprinkler heads in the guestrooms and all will need to be replaced. Please price a small patch for each pendant (assume completing a floor at a time) in every guestroom. There is between 350 and 400 in total, but it should really be 1 trip to each room. We will need to execute this work as swiftly and cleanly as possible since we ARE NOT stopping with other activities.

Thanks,

Nick Starcevic | Project Manager

mobile: 704-361-3265 | email: NStarcevic@Balfourbeattyus.com

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<MSH - Concealed sprinkler head patching COR.pdf>

