



**FIRST AMENDMENT TO THE AGREEMENT BETWEEN BROWARD COUNTY
AND LEO A DALY COMPANY FOR CONSULTANT SERVICES FOR BROWARD COUNTY'S
MEDICAL EXAMINER'S OFFICE AND BSO'S CRIME LAB COMBINED FACILITY
(RFP # S2115731P1)**

This First Amendment ("First Amendment"), to the February 7, 2019 Agreement between Broward County, a political subdivision of the State of Florida ("County"), and LEO A DALY Company, a Nebraska corporation having an office at 1400 Centrepark Boulevard, Suite 500, West Palm Beach, FL 33401 ("Consultant") (collectively referred to as the "Parties"), is entered into and effective as of the date this First Amendment is fully executed by the Parties (the "Effective Date").

RECITALS

- A. On February 7, 2019, the Parties entered into an Agreement for Consultant Services for New Facilities for Broward County's Medical Examiner's Office and BSO's Crime Lab Combined Facility.
- B. The parties desire to amend the Agreement to revise terms, add various phases to the scope, increase compensation for Basic Services, and update various exhibits to the Agreement.

NOW THEREFORE in consideration of the mutual terms, conditions, promises, covenants, and payments hereinafter set forth, COUNTY and CONSULTANT agree as follows:

1. Except as expressly set forth herein, all references to "Exhibit A" throughout the Agreement shall be amended to read "Exhibit A and First Amendment Exhibit A."
2. The following forms and exhibits to the Agreement are hereby amended as shown below:
 - a) Exhibit A, Scope of Work is hereby amended to add the services set forth in First Amendment Exhibit A, Scope of Work;
 - b) Attachment 1 to Exhibit A (Project Schedule) is hereby amended to add the Project Schedule set forth in the attached First Amendment Attachment 1: Project Schedule;
 - c) Attachments 2 and 2a to Exhibit A (Electronic Media Submittal Requirements and BIM/CADD Standards of Care) are hereby replaced with the attached First Amendment Exhibit A, Attachment 2: BIM Requirements & Electronic Media Submittal Requirements;
 - d) Attachment 3 to Exhibit A (Architectural Program) is hereby replaced with the attached First Amendment Exhibit A, Attachment 3: Preliminary Project Budget;

- e) Exhibit B (Salary Costs) is hereby amended, as more particularly set forth in the First Amendment Exhibit B, to modify Leo A. Daly, Garth Solutions, Inc., and TLC Engineering for Architecture, Inc.'s Salary Costs (underlined text is hereby added and stricken text is hereby deleted in the First Amendment Exhibit B) and to insert Buford Goff, & Associates, Inc., Traf Tech Engineering, Inc., and Visual Communication's salary costs; all other pages of Exhibit B (Salary Costs) not amended hereby shall remain in full force and effect;
 - f) Exhibit C (Schedule of Subconsultant Participation) is hereby amended as set forth in the attached First Amendment Exhibit C: Schedule of Subconsultant Participation (underlined text is hereby added in the First Amendment Exhibit C);
 - g) Exhibit D (Schedule of CBE Participation) is hereby amended as set forth in the attached First Amendment Exhibit D Schedule of CBE Participation (underlined text is hereby added and stricken text is hereby deleted in the First Amendment Exhibit D);
 - h) Exhibit D-1 (Letters of Intent) is hereby replaced with the attached First Amendment Exhibit D-1 Letters of Intent, which replaces the Letters of Intent for CMS Construction Management Services, Garth Solutions Inc. Gartek Engineering Corp., and RADISE, International, L.C.
3. Section 3.3 is hereby amended as follows (underlined text is hereby added and stricken text is hereby deleted):

~~Exhibit A to the original Agreement established is for the first portion of services related to the Project, and First Amendment Exhibit A provides for subsequent phases and additional services related to the Project and that additional negotiations will be required for subsequent phases or for additional services except as otherwise provided herein. County and Consultant may negotiate additional scopes of services, compensation, time of performance, and other related matters for future phases of Project. If County and Consultant cannot contractually agree, County shall have the right to immediately terminate negotiations at no cost to County and procure services for future Project phases from another source.~~

4. The table set forth in Section 4.6 of the Agreement is hereby deleted and replaced as follows:

Project Phase	Amount
Pre-Design Services/Programming Phase	\$ 450
Predesign Phase – Stakeholder Coordination and Public Outreach	\$0
Schematic Design Phase	\$ 450
Design Development Phase	\$ 450
50% Construction Documents Phase	\$ 450
75% Construction Documents Phase	\$ 450

100% Construction Documents Phase	\$ 450
Bidding and Award Phase	\$ 450
Construction Administration Phase	\$ 450
Warranty Administration and Post-Occupancy Services	\$ 0

5. Article 5, COMPENSATION AND METHOD OF PAYMENT, is hereby amended as follows (underlined text is hereby added and stricken text is hereby deleted):

5.1 Amount and Method of Compensation

...

5.1.2 Lump Sum Compensation. Compensation to Consultant for the performance of all Basic Services identified in Exhibit A and First Amendment Exhibit A as payable on a "Lump Sum" basis, and as otherwise required by this Agreement, shall be not more than a total lump sum of ~~\$597,361.00.~~ \$13,005,883.00.

5.1.3 Optional Services. County has established an amount of ~~\$50,000.00~~ \$1,700,000.00 for potential Optional Services which may be utilized pursuant to Article 6. Unused amounts of these Optional Services monies shall be retained by County. A Work Authorization for Optional Services shall specify the method of payment, Maximum Amount Not-To-Exceed, Lump Sum, or combination thereof, applicable to that Work Authorization.

5.1.4 Reimbursable Expenses. County has established a maximum amount not-to-exceed of ~~\$5,000.00~~ \$250,000.00, for potential reimbursable expenses which may be utilized in excess of travel expenses associated with attending the meetings and the reproduction expenses identified within First Amendment Exhibit A pursuant to Section 5.3. Unused amounts of those monies established for reimbursable expenses shall be retained by County.

...

5.1.6 Phased Payments. Payments for Basic Services shall be paid out pursuant to the project phasing specified in First Amendment Exhibit A and in accordance with the percentage amount set forth below. The retainage amount set forth in Section 5.5 shall be applied to the percentage amount for each phase stated herein.

[The remainder of this page is intentionally left blank.]

Project Phase	<u>Original Fee %</u>	Lump Sum Fee Amount/Phase	<u>Amendment Fee %</u>	<u>Amendment Lump Sum Fee Amount/Phase</u>
Predesign Phase - Programming 1 and 2	56%	\$335,042	<u>3%</u>	<u>\$335,042</u>
Predesign Phase - Site Analysis and Project Estimate	35%	\$211,754	<u>2%</u>	<u>\$211,754</u>
Predesign Phase – Stakeholder Coordination and Public Outreach	8%	\$50,565	<u>0%</u>	<u>\$50,565</u>
<u>Phase I: Schematic Design Phase</u>	%	\$ N/A	<u>14%</u>	<u>\$1,813,130</u>
<u>Phase II: Design Development Phase</u>	%	\$ N/A	<u>23%</u>	<u>\$3,001,430</u>
<u>Phase III: 50% Construction Documents Phase</u>	%	\$ N/A	<u>17%</u>	<u>\$2,198,985</u>
<u>75% Construction Documents Phase</u>	%	\$ N/A	<u>8%</u>	<u>\$1,099,492</u>
<u>100% Construction Documents Phase</u>	%	\$ N/A	<u>8%</u>	<u>\$1,099,492</u>
<u>Phase IV: Bidding and Award of Contract Negotiation Phase</u>	%	\$ N/A	<u>2%</u>	<u>\$299,733</u>
<u>Phase V: Construction Administration of the Construction Contract Phase</u>	%	\$ N/A	<u>22%</u>	<u>\$2,842,818</u>
<u>Phase VI: Warranty Administration and Post-Occupancy Services</u>	%	\$ N/A	<u>0%</u>	<u>\$53,440</u>
Total Basic Services Fee	100%	<u>\$597,361</u>	100%	<u>\$13,005,883</u>

...

6. Section 6.4.1 is hereby amended as follows (underlined text is hereby added and stricken text is hereby deleted):

6.4.1 Before any Optional Service is commenced pursuant to a Work Authorization, Consultant shall supply the Contract Administrator with a written estimate for all charges expected to be incurred for such Optional Service, which estimate shall be reviewed by Contract Administrator and a final amount for Consultant's compensation shall be approved as follows:

6.4.1.1 Work Authorizations that will cost County not more than ~~Thirty~~ Fifty Thousand Dollars (~~\$30,000.00~~ \$50,000) in the aggregate may be signed by Contract Administrator and Consultant.

6.4.1.2 Work Authorizations that will cost County ~~not more than One Hundred Thousand Dollars (\$100,000.00)~~ in the aggregate not more than the total amount within the Purchasing Director's delegated authority may be signed by County's Purchasing Director and Consultant.

6.4.1.3 Any Work Authorization above County's Purchasing Director's authority in subsection 6.4.1.2 must be expressly approved by the Board.

7. Except as set forth in this First Amendment to the Agreement, all other terms, conditions and covenants contained in the original Agreement between the Parties shall remain in full force.
8. In the event of any conflict or ambiguity between this First Amendment and the original Agreement, the Parties agree that this First Amendment shall control.
9. All capitalized terms not identified in this First Amendment shall have the same meaning as the defined terms found in the original Agreement.

(The remainder of this page is intentionally left blank.)

END OF SECTION

IN WITNESS WHEREOF, the Parties hereto have made and executed this First Amendment to the Agreement: BROWARD COUNTY, through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Mayor or Vice-Mayor authorized to execute same by Board action on the _____ day of _____, 20____, and LEO A DALY COMPANY, signing by and through its President/Vice President, duly authorized to execute same.

COUNTY

ATTEST:

Broward County Administrator, as
ex officio Clerk of the Broward County
Board of County Commissioners

BROWARD COUNTY, by and through
its Board of County Commissioners

By: _____
_____ day of _____, 20__

Approved as to form by
Andrew J. Meyers
Broward County Attorney
Governmental Center, Suite 423
115 South Andrews Avenue
Fort Lauderdale, Florida 33301
Telephone: (954) 357-7600
Telecopier: (954) 357-7641

By: Benjamin Crego 11/18/2020
Benjamin D. Crego (Date)
Assistant County Attorney

By: Michael J. Kerr 11/19/2020
Michael J. Kerr (Date)
Deputy County Attorney


FIRST AMENDMENT TO THE AGREEMENT BETWEEN BROWARD COUNTY AND LEO A DALY COMPANY FOR CONSULTANT SERVICES FOR BROWARD COUNTY'S MEDICAL EXAMINER'S OFFICE AND BSO'S CRIME LAB COMBINED FACILITY,

FOR CORPORATION:

Consultant

WITNESSES:

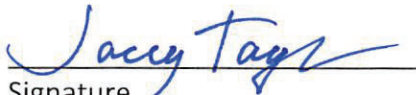
LEO A DALY COMPANY



Signature

Jaime E. Sobrino

Print/Type Name



Signature

Jacey Taylor

Print/Type Name

By 

President/Vice President

William A. Hanser, AIA Vice President,
Managing Principal
(Typed Name and Title)

16 day of November, 2020

ATTEST:

Secretary

(Typed Name of Secretary)

CORPORATE SEAL



Cheri Paulik



Stella Perio

Exhibit A
FIRST AMENDMENT
EXHIBIT A - SCOPE OF SERVICES

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1.00 Definitions

ADA – Americans with Disabilities Act.

AHJ – Authority Having Jurisdiction.

ASPE - American Society of Professional Estimators. ASPE defines estimate levels per Project phase.

Bid Set – the Drawings, Project Manual and all other documents used for bidding the Project.

Charrette – a short, collaborative meeting during which members of a team quickly generate ideas to explore and share a broad diversity of design concepts.

Color Board – a display board which contains the proposed building colored finish sample materials for the interior (for example: floor finish, base, wall finish, ceiling) or exterior sample materials (for example: brick, EIFS, window framing, glass, metal) or other materials deemed necessary to convey the design intent

Commissioning - the process of assuring that all systems and components of a building are designed, installed, tested, operated, and maintained according to the operational requirements of the County, basis of design and construction documents. A commissioning process may be applied not only to building projects but also to systems such as HVAC, facade and roofing.

Contract Documents – As defined in Section 3.09. herewith.

Construction Documents – all documents including the Drawings and Project Manual which reflects revisions from bidding and permitting that are used for construction.

Cost Estimate (also known as Opinion of Probable Construction Cost) - the total estimated cost to construct a project.

Deliverable – a tangible product, service or electronic file produced as a result of the Project that is intended to be delivered as contractually required.

Permit Set – all documents including the Drawings and Project Manual submitted to the local municipality for a building permit.

Record Set - all documents including the Drawings and Project Manual revised to illustrate a compendium of the original drawings, incorporating on-site changes known to the Consultant and information taken from the Contractor's As-Constructed drawings.

1.01 Project Description and Program

- 1.01.01 The following paragraphs form a general description of the professional services required for the design and construction of new facilities. As such, it is not all inclusive and County does not represent that it is a complete inventory of the professional services necessary to achieve County's goals for the new facility. The following paragraphs represent County's minimum level of performance but do not limit the professional services that may be required during any Project phase described herein.

1.01.02 Project Description

(A) The project entails the design and construction of a new Medical Examiner's Office for the Broward County Office of the Medical Examiner and Trauma Services ("OMETs") and Crime Laboratory for the Broward Sheriff's Office ("BSO") in the City of Fort Lauderdale, Florida. The parcel is approximately 7.29 acres.

The new combined facility will be a multi-story building or series of buildings with a final square footage of 175,000 square feet plus a parking garage, responsive to the LEO A DALY – 100% Submission - Pre-Design Report, Site Analysis, Volume I and Volume II, dated November 17, 2019, including the facility's program.

The facility shall be designed under Leadership in Environmental and Engineering Design ("LEED") guidelines version V4.1 or current available version and "WELL" Building Standard principles.

The intent is to design and construct a facility suitable for accreditations for forensic toxicology through the American Board of Forensic Toxicologists (ABFT) and Federal Standards (ISO 17205 Standards) and Quality Assurance Standards by the ANSI National Accreditation Board (ANAB) under ISO/IEC 17025:2017 and in compliance with AR3125, National Association of Medical Examiner's (NAME) and International Association of Coroners and Medical Examiner's (IACME), latest applicable version.

(B) The Project Site is located at:

1625 NW 23RD Avenue
Fort Lauderdale, Florida
(Broward Folio # 4942-32-22-0012)

1.02 Deliverables

1.02.01 Consultant shall submit eight (8) copies of all deliverable documents required (except where otherwise specified), without additional printing cost or other charges, for approval or use by the Contract Administrator. The Contract Administrator may review submitted documents and provide written review comments to Consultant following each deliverable submission. Consultant shall revise and resubmit eight (8) copies of documents (if not initially satisfactory to the Contract Administrator), as required to fulfill the submittal requirements without additional printing cost or other charges, until approved by Contract Administrator. Such resubmittals shall be made within fourteen (14) calendar days from the receipt of review comments.

Upon request of the Contract Administrator, the direct cost of printing copies in addition to the required deliverables and resubmittals described in the process above, will be compensated as a reimbursable expense.

1.02.02 Consultant shall be required to submit the various documents further defined below in both hardcopy and electronic media formats. Requirements for electronic media submittals are contained in the Agreement (First Amendment Exhibit A, Attachment 2: BIM Requirements & Electronic Media Submittal Requirements). Requests for deviations from those electronic media submittal requirements shall be submitted in advance by Consultant in writing for the consideration of the Contract Administrator.

1.02.03 Documents, electronic media and other materials submitted to Contract Administrator by Consultant shall be retained by the Contract Administrator except as otherwise noted herein and are subject to the ownership provisions of this Agreement.

1.02.04 All deliverables shall be accompanied by a "Project Transmittal Form" as required by County's Construction Management Division. In the absence of a proprietary form issued by County's Construction Management Division, Consultant shall utilize its own office standard transmittal form (or an equivalent document such as that published by the American Institute of Architects. The Project Transmittal Form must accurately delineate the date of the submittal and list each component document of the submittal with its applicable date.

1.02.05 Preliminary Architectural Program:

A detailed architectural program as approved by the Contract Administrator and issued by LEO A DALY entitled Pre-Design Report Site Analysis Volume I and II for the Broward County Forensic Science Center date November 27th, 2019.

2.01 Basic Services

2.01.01 The services listed below, in addition to those specified by Consultant's Agreement with County, are related to the specific Project or other professional services as necessary to meet the needs of Broward County.

2.01.02 The listed services below shall not limit those activities or services that may be requested by the Contract Administrator.

3.01 Basic Services by Project Phase

3.01.01 Consultant agrees to:

- (A) Provide complete professional architectural, engineering and/or other professional design services set forth in the activities enumerated hereinafter and all necessary personnel, equipment and materials to perform services;
 - (B) Complete those design services in accordance with the Project schedule (See First Amendment - Attachment 1, Project Schedule);
 - (C) Complete those services that will deliver a facility (or facilities) within County's established budget for the Project (See First Amendment - Attachment 4, Preliminary Project Budget);
 - (D) Prepare a schedule of services in compliance with Project Schedule and for approval by County. Such schedule shall show activities including but not limited to Consultant efforts and County (and other municipal/agency) reviews and approvals required to complete the design services. This schedule shall initially be submitted to the Contract Administrator for approval within fourteen (14) calendar days of execution of this Agreement.
 - (E) Participate in the Contract Administrator's programs of Value Engineering and Constructability Reviews throughout Schematic Design, Design Development and Construction Documents activities.
- 3.01.02 Consultant shall schedule and attend Project review and coordination meetings every two (2) weeks with representatives of the Contract Administrator throughout all activities of the Project. At each of these meetings, Consultant and Contract Administrator shall review the Project's budget, schedule, and scope along with Consultant's development and progress to date on the respective activities of the Project and any special problems related to the continuing progress of the Project. Consultant shall attend weekly meetings during the Construction activities as required elsewhere in this Agreement. For each Project review meeting, and as may be otherwise appropriate during any Project phase, Consultant shall provide progress sketches and other documents enough to illustrate progress and the issues at hand for the Contract Administrator's review. Consultant shall not be entitled to claims for delays to the Project Schedule due to Consultant's provision of such documents.
- 3.01.03 Consultant and representatives of each sub-consulting firm shall attend a Design Kick-Off meeting and a Design Debriefing meeting which will be scheduled by the Contract Administrator at the beginning and end of each of the Project's activities. The Design Kick-Off meetings will provide a forum for the entire Project team to review Project goals, continuing issues, and review performance expectations for the respective phase of the Project. The Design Debriefing Meeting will provide a forum in which the entire Project team can provide feedback concerning team performance,

communications, procedures, quality control and other related issues for the current and future projects.

- 3.01.04 Consultant and its interior designer and/or interior architect shall attend periodic furnishings and equipment coordination meetings as scheduled by the Contract Administrator during the Schematic, Design Development, and Construction Documents activities of the Project. These meetings will be scheduled to address and coordinate the layout, selection, specification and documentation of furniture and equipment items for the Project. Members of County's using agencies will attend these meetings to coordinate and communicate their functional requirements and preferences.
- 3.01.05 Consultant, the Contract Administrator and the artist(s) selected by County shall attend periodic coordination meetings throughout the Project as scheduled by the Contract Administrator to address the incorporation of public art into the facility. These meetings will focus on the nature of the proposed artwork, the opportunities for integrating artwork into an efficient, economical building design, coordination of building systems and components with proposed artwork, coordination and documentation of artwork within the construction contract documents, and the artists' involvement and responsibilities during the construction process.
- 3.01.06 Consultant's services shall conform to Contract Administrator's specifications (as they may be made available to Consultant), including but not limited to, Contract Administrator's Design and Materials Standards Manuals, and Contract Administrator's Guidelines and Procedures Manual and Forms for capital projects, provided, however, that in the event of conflict the provisions of this agreement shall govern and Consultant shall remain, as the Architect or Engineer of Record, responsible for the content and accuracy of Consultant's documents generated for this Project.
- 3.01.07 Consultant shall keep Contract Administrator informed of any proposed changes in requirements or in construction materials, systems or equipment as the drawings and specifications are developed. Proposed changes must be reviewed and approved in writing by Contract Administrator prior to incorporation into the design or construction documents.
- 3.01.08 Consultant shall cooperate with Contract Administrator by participating in, reviewing and commenting on Constructability and Value Engineering studies performed by Contract Administrator, and attending meetings, where the content of design and construction contract documents will be coordinated and reconciled, scheduled during any phase of the Project. In the event Contract Administrator accepts recommendations from Value Engineering and Constructability studies, Consultant shall, upon review and agreement, implement same, including providing revised

drawings and specifications or other documents, as a part of Basic Services. If bids or cost estimates indicate the Project is at or below the construction budget, Consultant shall be compensated for implementing Value Engineering and Constructability changes.

- 3.01.09 Consultant shall be required to submit various documents further defined below in both hardcopy and electronic media formats. The parties shall agree to requirements for electronic media submittals consistent with the requirements contained in First Amendment - Attachment 2 – BIM and Electronic Media Submittal Requirements. First Amendment - Attachment 2 is provided as a template for the Parties and sets forth the expectations of the Parties regarding electronic media submittals. The specific requirements for electronic media submittals shall be further negotiated by the Parties subsequent to the execution of this Agreement. Once the Parties have agreed upon electronic media submittal requirements, requests for deviations from those electronic media submittal requirements shall be submitted in advance by Consultant in writing for the consideration of the Contract Administrator.
- 3.01.10 Documents, electronic media and other materials submitted to Contract Administrator by Consultant shall be retained by the Contract Administrator except as otherwise noted herein and are subject to the ownership provisions of this Agreement.
- 3.01.11 Consultant shall make complete document submittals at the various activities listed below. Incomplete or partial submittals may be requested in advance through the Contract Administrator and may be allowed only when Consultant has received advance approval in writing by the Contract Administrator. Incomplete or partial submittals made without advance approval shall be returned to Consultant unreviewed and unaccepted by the Contract Administrator and subject to any liquidated damages applicable as provided for elsewhere in this Agreement.
- 3.01.12 Consultant shall pursue LEED principles (latest version) established by the United States Green Building Council (“USGBC”) for achieving a Silver Rating for building and site development for the Project as part of Basic Services. Professional services required for the achievement of any additional level of LEED certification through the USGBC may be elected by the Contract Administrator for the Project and will be provided under Optional Services.
- 3.01.13 Consultant shall incorporate the WELL Building Standard design principles as a guideline. Professional services required for the achievement of any specific level of WELL certification as may be elected by the Contract Administrator for the Project will be provided under Optional Services.

3.01.14 The Consultant shall incorporate resilient design, which is the intentional design of buildings and landscapes in order to respond to natural disasters and disturbances such as hurricanes. Specification of impact glass, protection of mechanical equipment, system redundancy, building entrance location and elevation are some of the issues to consider.

3.01.15 Probable Construction Costs Review Process:

a. Consultant shall submit deliverables as required under each project phase to Contract Administrator and Contractor. Upon issuance of a Notice to Proceed for estimating, Consultant shall furnish a probable construction cost estimate, within Thirty (30) calendar days after the effective date.

b. After completion of probable construction cost estimates, Consultant and Contractor will review and reconcile all estimates developed under each phase, within Twenty-One (21) calendar days of receipt. Consultant and Contractor shall meet and hold workshops to reconcile probable construction cost statements.

c. Probable construction cost estimates shall be based on the ASPE standards as stated in each project phase.

d. Contract Administrator may choose not to issue Notices to Proceed for subsequent phases, until construction cost estimates are fully reconciled.

3.01.16 Stakeholder Coordination and Public Outreach Process:

Based on the public outreach findings in the Pre-Design Report Site Analysis Volume I and II for the Broward County Forensic Science Center, dated November 27th, 2019, Consultant and its public outreach Subconsultant shall further develop and manage a stakeholder coordination and public outreach action plan that will further identify and confirm surrounding community stakeholders. Activities shall include a combination of public meetings and individual stakeholder meetings in coordination with the County.

Consultant and its Public Outreach Subconsultant shall research and identify any other stakeholder that may be impacted by the project. Consultant, through its public outreach subconsultant, shall have up to two (2) meetings with each Stakeholder.

(A) Outreach effort will focus on:

1. Addressing the project's image with the surrounding community. Topics shall include community improvement, security, safety, environmental concerns, and any other topic of concern to the surrounding community.
2. Engaging with the community including one Public Workshop during the Schematic Design Phase and one Community Forum meeting during the

Construction Document Phase, to manage and facilitate public discourse about key issues of the project, including site utilization.

3. Presenting final report wherein Consultant, and its public outreach subconsultant shall illustrate how the Community dialogue has been incorporated into the final design of the project.

(B) Key Activities shall include:

1. Five (5) to seven (7) targeted stakeholder meetings;
2. Public Workshops;
3. Stakeholder communication;
4. Ongoing outreach efforts.

(C) Deliverables for this activity shall include:

1. Agendas and meeting notes summary.
2. Stakeholder Coordination Report, that includes at a minimum, overall findings, survey results and summaries of interviews describing objectives and goals to be set for the project.
3. Presentation and communication materials.
4. Final report on incorporation of community input.
5. Community report presentation at the completion of the construction phase.

3.02 Predesign Phase: NOT USED

3.03 Schematic Design Phase:

3.03.01 After written Notice to Proceed from County, Consultant shall confer with representatives of County to verify and confirm the Pre-Design Report Site Analysis Volume I and II for the Broward County Forensic Science Center dated November 27th, 2019.

3.03.02 NOT USED

3.03.03 In the event that Consultant believes that the project scope, schedule or budget is not achievable, Consultant shall immediately notify County in writing as to the reasons one or all of them are unreasonable or not achievable immediately upon discovery.

3.03.04 Consultant shall develop and present a minimum of three alternative design solutions based on the preferred Pre-Design and Site Analysis, focusing on exterior articulation, materials, façade options, and other building elements, to the Contract Administrator to illustrate optional creative responses to the architectural program. The Contract Administrator will convene a schematic design review conference at which Consultant shall review with the Contract Administrator (and using agency and other concerned parties) these alternative solutions. Alternative approaches should address both

design and construction of the Project; site use and improvements; preliminary selections of materials, building systems and equipment; potential construction methods and methods of project delivery; and Consultant's recommendations concerning the presented alternatives. The Contract Administrator shall identify a preferred design solution which shall then form the basis of Consultant's continuing work on the Project and the primary content of the Schematic Design Report further described below.

3.03.05 Consultant shall prepare, submit and present for approval by County a Schematic Design Report, comprised of the Schematic Design Documents listed below including an identification of any special requirement(s) affecting the Project:

(A) "Project Transmittal Form" in accordance with Section 1.02.04.

(B) "Updated Space Chart Form" formatted to list all spaces within the Project by room number, room title and net square foot area. The Space Chart Form must also include a listing of the Project's total net square foot area, total gross square foot area, and an efficiency percentage derived from the ratio of total net to total gross square foot areas. Note any deviations from Contract Administrator approved programmatic documents for the Project.

Submittal shall incorporate the County provided site survey dated: September 24, 2018.

(C) Concept Drawings. These documents shall be schematic drawings responding to the Predesign Report and architectural program requirements, referenced in Section 1.01.01, illustrating the general scope, scale, and relationship of Project components. All plan drawings to include points of the compass, scale, drawing title, dimensions as appropriate, legends, title block, and other graphic information appropriate to the drawing, (i.e. preliminary building code information on architectural floor plan). Documents shall include as a minimum, the following scaled drawings in addition to other graphic or descriptive materials Consultant may deem necessary to adequately communicate the Project:

1. Site Plan showing:

- a. Contours and general topographical conditions, flood plain elevation, and over-all property and structure dimensions.
- b. Existing site features such as: adjacent highways, roads, on and off-site improvements, fire hydrants, power transmission lines, and adjacent land use.
- c. Proposed structures such as: walks and paths, vehicle and bike parking areas, preliminary chiller plant/cooling tower/electrical vault locations, service areas, loading docks, play areas, athletic fields, bus and car loading

zones, existing buildings and use, location of proposed building(s) and future additions (where applicable), relocatable or temporary structures, community use buildings and phased construction where applicable.

2. Floor plans showing:
 - a. Architectural floor plans including: Over-all dimensions, identity of each space, room sizes, proposed door locations, room numbers, occupant loads for gathering spaces, proposed passive design and low energy usage features, outdoor areas , mechanical and electrical rooms, any existing buildings and use, future additions, and phased construction.
 - b. Life-safety plan(s) delineating exits, fire walls, travel distance, protected corridors, smoke partitions, room names and numbers, and any other life-safety features relevant to the facility. Indicate those facilities, or portions thereof, that will serve as emergency shelters or which have been designed to incorporate special emergency preparedness features or equipment including a brief notation of those design features and/or equipment.
 - c. Accessibility Plan(s) delineating provisions for accessibility/universal design and compliance with the Florida Accessibility Code for Building Construction (most current edition). Include graphics and notations delineating accessible routes, parking, elevators/ramps/lifts, accessible toilet facilities, and other preliminary building features that will support accessibility.
3. Elevations and Longitudinal and Cross-Sections of the building to fully illustrate and indicate the mass and character of the facility including:
 - a. Fenestration, openings, walkways, vertical transportation (elevators, escalators, lifts, ramps and stairs).
 - b. Preliminary material selections, and other building features and spatial relationships.
 - c. Heights of proposed structures, floor to floor levels and ceilings.
4. Landscape Concept Drawings indicating:
 - a. Preliminary locations and character of proposed landscaped areas that will conform to required zoning and development codes and other jurisdictional requirements of Project's location.
5. Preliminary graphics, concept sketches and other supplementary materials suggesting:
 - a. Proposed locations for integrated public art, thematic design treatments for special areas, and/or other spaces which have been programmed for special or thematic design content.
6. Preliminary phasing plans to address:

- a. Project sequencing, temporary buildings or structures, and other proposed approaches to separate staff and the public from construction activities and traffic. Consultant shall provide illustrative diagrams needed to convey intent as provided by the Contractor as approved by Contract Administrator, for permitting purposes.
- (D) Preliminary Project Description, formatted to match that specified by the latest edition of the Construction Specifications Institute's "Manual of Practice." The narrative to be comprised of:
1. Preliminary material selections, components, assemblies, and systems (including proposed landscape, civil, structural, mechanical, and electrical design elements, components and systems) to be used in the Project.
 2. Coordinated points of service and preliminary service requirements with Florida Power and Light (FPL), telephone and cable TV provider and other utility services as required by the Project's scope and program and describe preliminary approaches to the provision of applicable utilities to the project.
 3. Value Engineering and Constructability issues specifically raised during this Project phase.
 4. Recommendations to improve traffic flow and enhance safety based on field observations by Consultant and its traffic subconsultant, and present such recommendations in a report.
 5. Other concerns or issues related to the project type or approach, (i.e. resiliency, sustainability).
- (E) Mechanical Requirements:
1. Provide a narrative on the proposed system(s) type.
- (F) Provide a Building Automation System narrative:
1. Describe the type of proposed system(s).
 2. Determine spaces required to house technology equipment required to serve the building.
 3. Identify shafts and any horizontal race chases.
 4. Develop initial power estimates for technology to inform electrical loads.
 5. Develop preliminary riser diagrams.
 6. Initiate coordination with telecommunications service providers for site planning.
- (G) Electrical requirements:
1. Electrical load analysis.
- (H) Project Schedule: Consultant shall update the initial project schedule of services in compliance with the Project Schedule (First Amendment - Attachment 1 of this Agreement) and for approval by County. Prepare schedule in a bar chart format,

or other format as required by County, which may be further developed and updated for submittal during subsequent activities of the Basic Services. Consultant shall not be permitted to deviate from the milestones indicated on the Project Schedule for Consultant's work without specific written authorization from County. Consultant shall notify County in writing of any circumstances which impact Consultant's ability to meet designated milestones in the Project Schedule. Such schedule shall show activities including but not limited to:

1. Consultant efforts and County (and other municipal/agency) reviews and approvals required to complete the design services and other activities.
 2. All activities known at this stage of the Project's development for the entire Project.
 3. Illustrate all Project activities including any projected or preliminary requirements for creating temporary facilities, relocating County's staff and/or other personnel, removing and storing furniture, equipment and/or other appurtenances, hazardous material abatement, work by County, work by separate Contractors, and any other activities that relate to or may impact construction of the Project as provided by Contract Administrator (including offsite work and related site reviews, permitting, etc.).
- (I) Preliminary color boards and interior design sketch perspectives to communicate spatial relationships, preliminary furniture selections, material types, proposed colorways and texture palette/selections for preliminary finish materials with County. Provide three (3) copies of preliminary color boards.
- (J) Consultant and its security subconsultant shall provide narrative for the following security items:
1. Access control system
 2. Video surveillance system and digital recording
 3. Door control security intercom
 4. Motion detection system
 5. Vehicle detectors for gate controls
 6. Security system LAN
 7. Security miscellaneous
 8. Security detection
 9. UPS.
- (K) The Statement of Probable Construction Cost: Consultant shall verify the Contractor's Schematic Design Estimate of Probable Construction Cost and submit to County for review and approval. The estimate will be itemized by major categories and projected to the expected time of bid. If, in the Contract Administrator's sole opinion, the Project merits a design estimate, it shall be prepared per the American Society of Professional Estimators' (ASPE Tenth or latest Edition) of Standard Estimating Practice (ASPE Level 2) and shall be prepared

by an independent cost estimator. Contract Administrator may authorize Consultant to obtain independent cost estimating services as an Optional Service. Estimating format ASPE Level 1-4 shall include contingencies, general conditions, acceleration, escalation, construction duration, site work, arsenic, mobilization, MGC profit and any other pertinent markup.

(L) If the Statement of Probable Construction Cost exceeds the reconciled Direct Construction Cost for construction, per section 3.01.15, Consultant shall review the scope of the Project, specified materials, equipment, component systems, and types of construction and recommend changes and/or reasonable adjustments to those items to align the Probable Construction Cost to the County's available funds to eliminate the estimated cost over-run. (to be made at no additional cost to County, if attributable to Consultant.)

- 3.03.06 Consultant shall coordinate with County to determine the municipal, county and other jurisdictional agency (such as the South Florida Water Management District, City of Fort Lauderdale development Review Committee, etc.) coordination required for the Project and, through County, make applications for site plan and other review as appropriate to this phase of the Project. Consultant shall attend and provide representation at all review meetings, workshops, hearings and Commission, Town or City Council meetings concerning the Project as conducted by all other agencies having jurisdiction over the Project.
- 3.03.07 Consultant shall submit copies of all deliverables in accordance with Section 1.02.01.
- 3.03.08 Consultant shall provide presentations of the Schematic Design to County's staff and to the Broward County Board of County Commissioners or their designee as required.
- 3.03.09 Consultant shall not proceed with the next Phase until the acceptance of all required presentations and reports, reconciliation or correction of all outstanding County review comments, and receipt of a written Notice to Proceed with the next phase.
- 3.03.10 Consultant shall review County's sustainability goals and define how they will be accomplished with respect to siting, energy use reduction, potable water use reduction, sustainable materials, renewable energy, and protecting indoor environmental quality within a sustainable charrette. Provide daylighting narrative explaining strategy to incorporate natural daylighting into building configuration and design. Summarize inclusion of renewable energy technologies in design. Perform a schematic level energy model of the building envelope to attain the best energy efficiency for the building type and function. Provide a summary of LEED credits being pursued and anticipated point levels to be achieved.

3.03.11 Preliminary mood boards and sketch perspectives to communicate spatial relationships, preliminary finish materials for discussion with County. Provide three (3) copies of preliminary mood boards.

3.03.12

Consultant shall conduct, in addition to regularly scheduled meetings, the following workshops as part of the lab planning efforts for this phase:

(A) Workshop SD 1 – Review plans with user groups

(B) Workshop SD 2 – Second review with user groups

(C) Workshop SD 3 – Final plan review and engineering planning

3.03.13 Consultant shall provide preliminary building envelope analyses to study cladding and glazing systems under consideration, as they pertain to the building program. Develop conceptual approaches to moisture migration and mitigation, insulation, solar gain factors, solar controls, High Velocity Hurricane Zones, for essential facility requirements, daylighting, color rendition, and any other major relevant elements or concerns.

3.03.14 Consultant shall develop a comprehensive signage package to minimally include the following:

1. Research and analysis of city signage code for exterior and interior signage.
2. Provide building wayfinding verbiage and name review recommendations.
3. Identify and provide ambiguous terminology locations.
4. Provide complete analysis document with photos of existing signage types, new construction and remodeling, or replacement upgrade recommendation throughout campus.
5. Provide map depicting high traffic points and signage centers.
6. Provide schematic design of Signage Hierarchy (provide two options) for exterior and interior wayfinding and identity signage elements.
7. Provide preliminary location plans and message schedules for all exterior and interior wayfinding and identity signage elements.
8. Identify proposed budgets for all buildings including interior and exterior signage.
9. Provide initial samples/color samples for approvals.
10. Provide phased approach to updating all signage within the floor area on a priority basis, i.e. Priority One: within six months; Priority Two: within two years; Priority Three: within two to five years.

3.03.15 Schematic Design Deliverables (Section reference in parentheses):

- 1) Transmittal Form (3.03.05A).

- 2) Program Confirmation (3.03.01) which includes Updated Space Chart Form (3.03.05B).
- 3) Design Solutions (3) with preferred option (3.03.04)
- 4) Site Survey (3.03.05(C)1)
- 5) Geotechnical Report (3.02.02E), signed and sealed reports.
- 6) Schematic Drawings (3.03.05D)
 - A) Site Plan
 - B) Landscape Plan
 - C) Floor Plans
 - D) Phasing Plans
 - E) Elevations
 - F) Sections
 - G) Three-dimensional views
- 7) Preliminary Project Description (3.03.05D)
- 8) MEP requirements (including building system automation narrative) (3.03.05E,F, G)
- 9) Project Schedule (3.03.05H)
- 10) Verification of Contractor's Cost Estimate (3.03.05J)
- 11) Summary of AHJ Approval (3.03.06)
- 12) LEED Requirements (3.03.10)
- 13) Mood Boards (3.03.11)
- 14) Hard copies as specified in 3.03.07.
- 15) BIM Model, BIM Execution Plan (BIMPxP), model progression schedule and Electronic Media per First Amendment - Attachment 2 – BIM and Electronic Media Submittal Requirements.
- 16) Stakeholder Coordination Report
- 17) Traffic recommendation study report (counts to be provided by County) Security System narrative
- 18) Site Lighting design and photometrics
- 19) Preliminary Lab equipment data book
- 20) Preliminary Room data sheets

3.04 Design Development Phase:

3.04.01 After written Notice to Proceed from County and based on the approved Schematic Design Documents and any adjustments authorized by County in the Project Scope or Project Budget, Consultant shall prepare, submit and present for approval by County, Design Development Phase documents, comprised of the following:

(A) "Project Transmittal Form" in accordance with Section 1.02.04

(B) Documents: Including, in addition to Schematic Design Phase requirements, the following:

1. Civil site plan(s) showing, in addition to Schematic Design Phase site survey requirements, landscaping, drainage, water retention ponds, sewage disposal and water supply system, chilled water supply and return piping and such physical features that may adversely affect or enhance the safety, health, welfare, visual environment, or comfort of the occupants.
2. A statement, signed and dated by Consultant or designated Subconsultant, included on the site plan identifying the number of existing trees, the number of required trees, and the number of new trees to be planted.
3. Recommendations from Consultant and its traffic subconsultant on traffic, access, traffic visibility and sight lines, parking layout, and internal site circulation based on site plan and landscape plan review, reflected on the drawings.
4. Soil testing results including a copy of the Geotechnical Engineer's report on the site including soil borings and other testing necessary to determine the subsurface conditions on site. When unusual soil conditions or special foundation problems are indicated, submit the proposed method of treatment and any recommendations for additional special testing.
5. Floor plan(s) including, but not limited to, the following:
 - a. A floor plan drawn at an architectural scale that will allow the entire facility to be shown on one sheet, without break lines and which indicates Project phasing as applicable to the Project.
 - b. Floor plans drawn at 1/8 inch or larger scale showing occupied spaces or special rooms with dimensions, equipment and furnishing layouts, sanitary facilities, stairs, elevators, and identification of accessible areas for the disabled.
 - c. Furniture and equipment plan at an architectural scale that will allow the entire facility (or respective floor of a multi-story building) on a single drawing sheet.
 - d. Large scale plans (at a minimum of ¼ inch scale) for restrooms, kitchens, stairs, and other spaces that require detailed delineation of furniture, fixture and equipment. Provide detailed plans (at a minimum of ½ inch scale) for mechanical rooms, electrical rooms, PBX rooms, and elevator machine rooms.
 - e. Reflected ceiling plan(s) (corresponding to scale, orientation and layout of building floor plans) indicating light fixture layout, air diffusers and return grilles, other ceiling mounted mechanical/plumbing system components, ceiling mounted electrical system components, proposed soffits, ceiling height changes, ceiling material changes, access panels, and other principal ceiling design features.

- f. Formatting (using break lines as necessary) allowing the use of standard 24" x 36" drawing sheets. (Larger sheet sizes may be used only with advance written authorization of the Contract Administrator.)
6. Preliminary Room Finish Schedule.
7. Preliminary Door Schedule.
8. Life-safety plans to show exit strategy, rated doors, rated walls and partitions, emergency wall openings, ramps, and other life safety equipment applicable to the Project such as working stage protection, range and fume hoods, eye wash, emergency showers, etc.
 - a. Indicate and provide information concerning occupancy type, construction type, building area(s) (in square feet), total building occupancy, fire zone, maximum travel distances allowed/provided, maximum dead-end corridor allowed/provided, minimum exit corridor width allowed/provided.
 - b. By symbol, indicate exits (required/provided) fire extinguishers, exit signs, generator(s) and other life-safety equipment relevant to the facility.
 - c. By symbol, indicate connections and tie-ins to existing equipment if applicable.
9. A phasing plan to delineate the order of the construction and delineating staging and storage areas, and temporary buildings or structures, and other area designations and approaches to control and separate staff and the public from construction activities and traffic. Consultant shall provide illustrative diagrams needed to convey intent as provided by the Contractor as approved by Contract Administrator, for permitting purposes.
10. Updated Accessibility Plan(s) indicating the further development of the facility's accessible/universal design features and compliance with the ADA.
 - a. When planning open space office or administrative spaces, submit a floor plan showing the methods used to permanently define the means of egress, such as surface finish or color.
11. Plumbing fixture locations, fixture schedule and fixture unit calculations.
12. All exterior building elevations and enough building sections as necessary to fully illustrate and indicate the scale, massing and spatial relationships of the facility.

13. Typical building sections to show dimensions, proposed construction materials, and relationship of finished floors to finished grades.
14. Preliminary Structural Drawings including plans and sections indicating systems, connections and foundations. These drawings may be structural roughs.
15. Mechanical Drawings including floor plans, reflected ceiling plans and diagrams of the facility's air conditioning (HVAC), plumbing and other mechanical building systems required for distribution and disposal of solids, fluids and gases within the facility. Include duct layout, air handling equipment, return air systems, fresh air intakes, air handling equipment, plumbing lines, equipment and fixtures, location of grease trap(s), LP gas tank location, and natural gas pipe lay out. Enhance systems description to include a description of proposed HVAC system equipment including the chiller, pumps, AHU's, cooling tower, electric duct heaters, etc. Ductwork may be presented as single line diagrams except for those areas in which ductwork or other air handling equipment is large, within tightly confined or unusually configured spaces, or within proximity to other duct runs and/or equipment.
16. Building Automation System narrative describing the type of proposed system(s). Provide a list of primary equipment that will be interfacing with the system(s). Provide a preliminary sequence of operations for occupied, unoccupied and standby modes.
17. Consultant shall coordinate with telecommunication service providers, determine riser diagrams for all systems, coordinate pathways, verify shaft sizes, determine rooftop antenna locations, develop preliminary wireless access point heat map, develop specifications, coordinate preliminary door hardware, finalize power requirements for technology systems and HVAC loads, review initial equipment specifications, and coordinate data needs.
18. Electrical Drawings including reflected ceiling plans, lighting layouts for the outdoors and interior spaces, and a one-line diagram of the electrical distribution showing electrical outlets for all systems in all spaces. Location of all the main components of the electrical system such as transformers, panels, and main switch board, and emergency generator and fuel storage, location of communications consoles, cable or closed circuit television head-ins, radio antennas, and satellite and short wave dish antennas and equipment, master clock, fire alarm panel. Include principal equipment and rack locations for computer networking systems. Show locations of all primary building mechanical equipment such as chillers, air handler units, etc. and their respective electrical connections.

19. Landscape and Irrigation Drawings including preliminary designs for a code conforming landscape layout and supporting irrigation system. Landscape drawings should indicate preliminary locations of major planting areas (trees and planting beds), existing plant materials designated to remain and requiring protection, preliminary plant species selections, and any “special” landscape features. Irrigation system drawings should indicate preliminary system selections, water sources and schematic distribution concept.
20. Equipment and Furnishing Schedules: Indicating equipment and furnishing items that will be provided by the Contractor and those that will be provided by County or others.
21. Outline specifications:
 - a. Organized and formatted according to the Specification Section numbering system for outline specifications as established by the Construction Specifications Institute's latest edition of MasterFormat current on the date of execution of the Contract.
 - b. With the exception of Divisions 00 and 01, provide outline specifications or provide detailed notes on drawings giving general description of all finishes, materials, and systems including civil, structural, HVAC, electrical, plumbing, and specialty items, including fire sprinklers, alarm systems, electronic controls and computer networking components.
 - c. Supplement (but do not replace) outline specification sections with “cut-sheets”, product information, data, and samples as requested by Contract Administrator or as necessary to communicate Consultant's design intent to the Contract Administrator.
 - d. Provide content edited on a Project specific basis for the Project described in this agreement. Outline specifications reflecting Consultant's other or past projects submitted in an unedited or partially edited form obvious to the Contract Administrator will be returned un-reviewed to Consultant. For any such returned outline specifications, Consultant shall prepare and re-submit at no additional cost to County replacement outline specifications edited to specifically describe the Project described in this agreement. Initiate Project specific specifications, including the following:
 - 11 27 00 - Photographic Equipment
 - 11 53 00 - Laboratory Equipment
 - 11 53 13 - Fume Hoods
 - 11 53 53 - Biological Safety Cabinets
 - 11 53 60 - Autopsy & Morgue Equipment
 - 11 67 23 - Firing Range Equipment
 - 12 35 53 - Lab Casework & Accessories, etc.;

13 21 26 - Cold Rooms

- e. In consultation with County, provide Life Cycle Cost Analysis (“LCCA”) for predetermined elements of the Project to County for review and approval.
- f. Florida Energy Code (“FEC”). FEC forms, including preliminary calculations for mechanical systems, documenting energy efficiency ratio rating of HVAC equipment, electrical systems, insulation, and building envelope shall be submitted to County for review and approval with the Design Development Phase documents. The Statement of Probable Construction Cost: Consultant shall verify the Contractor’s Design Development Estimate of Probable Construction Cost and submit to County for review and approval. The estimate will be itemized by major categories and projected to the expected time of bid. If, in the Contract Administrator’s sole opinion, the Project merits a Design Development estimate (ASPE Level 3) prepared by an independent cost estimator, then Contract Administrator may authorize Consultant to obtain those independent cost estimating services as an Optional Service. Utilize the Construction Specification Institute’s (“CSI”) latest edition of MasterFormat to organize the estimate.
- g. If the Latest Statement of Probable Construction Cost exceeds the reconciled Direct Construction Cost for construction, per section 3.01.15, Consultant shall review the scope of the Project, specified materials, equipment, component systems, and types of construction and recommend changes and/or reasonable adjustments to those items to align the Probable Construction Cost to the County’s available funds to eliminate the estimated cost over-run. (to be made at no additional cost to County, if attributable to Consultant.)
- h. An updated Project Schedule reflecting development and anticipated schedules for all subsequent Project activities. A letter from Consultant and each of the major technical disciplines and any necessary subconsultants explaining how each previous review comment (as generated by County and/or other reviewing agencies) concerning the Project have been addressed and/or corrected.
- i. A simplified single line Floor plan of the Project; a database format schedule reflecting the room numbers; the name of the room or space; the net square footage of the space and the occupant capacity of the space on electronic media and on a single 24" x 36" sheet conforming to County’s standards for graphics and for electronic media submittals. This drawing and database information will be used in preparing facilities management information by County. Consultant shall coordinate with County and utilize County’s requirements for room numbers, room name assignments and electronic media (format, layering, etc.) prior to developing final documents for this submittal. Hardcopy graphics shall be suitable for

clearly legible half size reductions. Comply with County's requirements for electronic media specified in First Amendment Attachment 2.

- j. A letter indicating, after coordination with County's Construction Management Division (and other agencies at its direction), the extent of any known or suspected hazardous materials (PCB's, arsenic, groundwater contaminants, etc.) which might require mitigation by County prior to or during construction of the Project. Establish and confirm responsibility for removing hazardous materials in the design development documents and coordinate with Project Development Schedule, Statement of Probable Construction Cost and other documentation.
- k. Color boards to review the color selections for all finish materials with County.

- 3.04.02 Staff from each of Consultant's major technical disciplines, and subconsultants as necessary shall attend coordination, review and presentation meetings with County to explain the design concept and technical resolution of their respective building or site systems.
- 3.04.03 Consultant shall submit copies of all deliverables in accordance with Section 1.02.01.
- 3.04.04 Consultant shall not proceed with the next Phase until the acceptance of all required presentations and reports, reconciliation or correction of all outstanding County review comments, and receipt of a written Notice to Proceed with the next phase.
- 3.04.05 Consultant shall provide assessment of compliance with ASHRAE 90.1 baseline requirements. Update daylighting strategy to incorporate natural daylighting into building configuration and design. Consider renewable energy technologies in design. Update results of energy model. Conduct integrated design charette meeting with review of sustainable goals. Provide a summary of LEED credits being pursued and anticipated point levels to be achieved with assignment to responsible party.
- 3.04.06 Provide Equipment and Furnishing Drawings: Provide layout elevations, preliminary systems furniture workstation plates and isometric drawings indicating the locations, scale and proposed arrangement of all furniture and equipment items including those that will be provided by the Contractor and those that will be provided by County. Provide a symbols legend and unique identifiers for each piece of furniture or equipment corresponding to those established in the Equipment and Furnishing Schedules described above. Coordinate with County concerning standardized color coding of Equipment and Furnishing drawings necessary to facilitate internal County review and coordination of equipment and furnishings. Ensure that all illustrated furniture items are drawn to manufacturer's dimensions and are not generic templates or blocks which may not accurately reflect the size and configuration of proposed furniture or equipment items.

- 3.04.07 Provide Equipment and Furnishing Schedules: Provide a basis of design for each furniture type. Provide documentation for each furniture item which includes dimensions, selected finishes and furniture features.
- 3.04.08 Consultant shall develop a comprehensive signage package to minimally include the following:
1. Provide building final wayfinding verbiage and name review recommendations.
 2. Provide map depicting all signage locations and signage centers.
 3. Provide final design of Signage Hierarchy for exterior and interior wayfinding and identity signage elements.
 4. Provide final location plans and message schedules for all exterior and interior wayfinding and identity signage elements.
 5. Provide refined budget planning for all exterior and interior components.
 6. Provide final samples/color approvals.
 7. Provide revised phased approach to updating all signage within the area on a priority basis, i.e. Priority One: within six months; Priority Two: within two years; Priority Three: two to five years.
- 3.04.09 Consultant shall conduct, in addition to regularly scheduled meetings, the following workshops as part of the lab planning efforts for this phase:
- (A) Workshop DD 1 – Lab Casework/Plan/Equipment meeting with user groups
(B) Workshop DD 2 – Lab Casework/Plan/Equipment meeting with user groups
(C) Workshop DD 3 – Engineering Coordination meetings (MEPS)
- 3.04.10 Consultant and Security Subconsultant shall provide design development for the following security items:
1. Access control system
 2. Video surveillance and digital recording system
 3. Door control security intercom
 4. Motion detection system
 5. Vehicle detectors for gate controls
 6. Security system Local Area Network (LAN)
 7. Security miscellaneous
 8. Security detection
 9. Uninterrupted Power Supply (UPS)
- 3.04.11 Consultant shall Coordinate security requirements with:
1. Door hardware specifier for selection of electric door hardware.
 2. Electrical Consultant for electrical service to security electronics equipment

rooms.

3. Mechanical Consultant for equipment room conditioning

3.04.12 Consultant shall coordinate building envelope reviews for:

1. Moisture assessment design compliance.
2. HVAC System and Controls Review.

3.04.13 Design Development Deliverables (Section reference in parentheses):

1. Transmittal Form (3.04.01A).
2. Design Development Drawings (3.04.01B)
 1. Civil Site Plan
 2. Landscape Plan with tree survey
 3. Geotechnical Report
 4. Floor Plans
 - a. Furniture/Equipment Plans
 - b. Detailed Plans
 - c. Reflected Ceiling Plans
 - d. Life Safety/Accessibility Plans
 - e. Phasing Plans
 5. Elevations
 6. Sections
 7. Structural Drawings
 8. Mechanical Drawings (including building automation system narrative)
 9. Electrical Drawings
 10. Finish/Equipment Plans and Schedules
 11. Three-dimensional views
 12. Outline Specifications (3.04.01B19)
 13. Energy Code Forms (3.04.01B19f)
 14. Project Schedule (3.04.01B19h)
 15. Cost Estimate – Level 3 (3.04.01B19g)
 16. Color Boards (3.04.01B19i)
 17. Response to Comments issued in previous phases (3.04.01B19i)
 18. LEED Requirements (3.04.05)
 19. Hard copies as specified in (3.04.03)
 20. BIM Model, BIM Execution Plan (BIMPxP), model progression schedule and electronic media per First Amendment - Attachment 2 – BIM and Electronic Media Submittal Requirements.
 21. Site lighting design
 22. Diagrammatic security plan
 23. Lab casework/equipment plans
 24. Lab casework schedule
 25. Lab equipment schedule

26. Sink Schedule
27. Fume Hood Schedule
28. Biological Safety Cabinet Schedule
29. Critical Specialty details
30. Lab Finishes Discussion and Check
31. Update room data sheets
32. Update equipment data book

3.05 50% Construction Documents Phase:

3.05.01 After written Notice to Proceed from County and based on the approved Design Development Phase documents and any adjustments in the scope or quality of the Project or in the Fixed Limit of Construction Cost authorized by County, Consultant shall prepare for approval by County and in accordance with County's requirements for format and organization, Final Construction Documents setting forth in detail the requirements for the construction of the Project. Consultant is responsible for the full compliance of the design with all applicable codes.

3.05.02 Consultant shall make a 50% Construction Documents submittal, for approval by County, which shall include ten (10) drawing sets total. Drawings shall be provided as three (3) full size sets and seven (7) half-size sets. Submittals shall include the following:

(A) "Project Transmittal Form" in accordance with Section 1.02.04

(B) Updated FEC compliance forms. Submit five (5) copies signed and sealed by a State of Florida registered design professional.

(C) Drawings:

1. Cover sheet/table of contents including:

- a. Project title.
- b. Sheet index including sheet identification and title.
- c. List of current Broward County Board of County Commissioners.
- d. Location plan.

2. Site Plans and detailing which, in addition to the requirements, indicate:

- a. Legal description, property lines, location of applicable easement lines, setback lines, other restrictive lines or limits, existing site features or amenities to remain, limits of Work area, locations of temporary structures,

and preliminary identification of staging areas and related Contractor facilities for use during execution of the Work.

- b. Site Demolition plans.
 - c. Spot elevations, based on the civil grading plan, for the perimeter of the new additions, sidewalk, or any other areas pertinent to the drainage of rainwater.
 - d. Parking lot lighting poles location and type.
 - e. Final location for maintenance access holes, handholes, pull boxes.
 - f. Layout of underground distribution systems (normal power emergency power, fire alarm, master clock, intercommunication, computer networking, television, telephone, radio (or other communications systems, antennas, etc.), security, control and spares).
 - g. Details of all curbing, typical parking spaces (regular and accessible), accessibility ramps and curb cuts, light fixtures, flagpole and fence foundations, and any other site improvement or condition pertinent to the scope of work.
 - h. Plans and details of new site equipment or furnishings including equipment, accessory structures, signage and kiosks, planters, seating areas and other site furniture, book drops, postal equipment, vehicular and parking equipment, landscape accessories, site and security lighting, art work (and associated footings, supports, lighting and other accessories), security and pedestrian safety devices, traffic control devices, loading dock equipment, dumpster and recycling areas, and other equipment or improvements appropriate and necessary for the Project as determined by County.
3. Life-safety plans updated to show exit strategy, occupant load, path of travel, rated doors, rated walls and partitions, ramps, vertical lifts and other life safety equipment applicable to the Project.
- a. In addition to previous information, provide UL, flame spread and/or other classification(s) of proposed finishes, determination that building has fire sprinklers, notations concerning installation of life safety equipment by certified specialty sub-contractors pursuant to Florida Administrative Code Rule 4a-b and section 489.105(n), Florida Statutes and other applicable rules and regulations.
 - b. By symbol, indicate exits (required/provided), fire extinguishers, fire alarm equipment, annunciator panels, smoke vents, master valves and emergency disconnects, emergency exit lighting, emergency power equipment, fire sprinklers, fire valve cabinets, exit signs, smoke and fire dampers, generator(s) and other life-safety equipment relevant to the facility.
 - c. By symbol, indicate connections and tie-ins to existing equipment.

4. Phasing plans to delineate the order of the construction and delineating staging and storage areas, maintenance of traffic, temporary buildings or structures, temporary utilities, other temporary constructions, construction access (including parking and delivery locations), haul routes, site barriers, traffic control devices, and other area designations and protective measures to control and separate staff and the public from construction activities and traffic. Consultant shall provide illustrative diagrams needed to convey intent as provided by the Contractor as approved by Contract Administrator, for permitting purposes.
5. Landscape plans and detailing including a plant list clearly referenced and targeted, details for shrub and tree plantings, identification of plants and trees to remain (with associated plans and details of their protection, maintenance and care during the Project), identification of plants to be removed or relocated (including details and specifications for their preparation, replanting, maintenance or disposal), and other necessary documentation to ensure healthy and vigorous plant growth.
6. Irrigation plans and details delineating the entire area of the Project, and addressing necessary connections, alteration, repair or replacement of any existing irrigation systems and irrigation requirements for plant materials provided or retained on site during the Project.
7. Full floor plans including:
 - a. All dimensions and any target notes explaining the extent of Work, wall types, or other component, assembly or directions regarding the Construction.
 - b. Note all chases and delineate all rainwater leaders.
 - c. Show structural tie columns and coordinate with the floor plan.
 - d. Target interior elevations.
 - e. Delineate and note all built-in cabinetry or equipment.
 - f. Identify room numbers (using County standard room number system) and door numbers with all spaces and doors having individual numbers.
8. Demolition Plans: NOT APPLICABLE
9. Provide separate demolition plan(s) and other drawings (elevations, sections, etc.), if the scope of work includes demolition which is too excessive to indicate on the drawings that depict new construction.
10. Indicate notes on the extent of the demolition: address dimensions at locations where partial walls are being removed or altered, existing room

names and numbers, existing partitions, equipment, plumbing, HVAC or electrical elements.

- a. Include notes dealing with repair of existing areas as a result of demolition.
- b. Delineate any modifications to existing buildings involving structural elements within the structural documents rather than on the architectural.
- c. Provide detailing for protective barriers and safeguards (indoor and outdoor) to provide separation of construction activities and protection of County's existing facilities.

11. Building elevations developed further than at the Design Development Phase and including delineation of building joints (including dimensionally located stucco control joints if applicable), material locations, elevation heights, color scheme, special finishes, and other building features.
12. Building and wall sections to establish vertical controls and construction types for the Project. Include clear graphics, and notes on construction assemblies and systems to be used, dimensions, heights. Provide associated detailing to delineate solutions for difficult connections.
13. Reflected ceiling plans indicating ceiling types, heights, light fixture types, mechanical diffuser locations, sprinkler heads if area is sprinklered. Delineate and detail any dropped soffits or joint conditions between different materials. Ensure coordination with architectural, electrical, mechanical and plumbing disciplines and work of any applicable subconsultants.
14. Roof plans:
 - a. Indicating all roof penetrations, including drains, scupper, mechanical exhaust fans, any other equipment on the roof, slopes of roof with elevations shown, type of roofing system to be used, expansion joints.
 - b. Dimensions to locate the items noted previously, and detail targets shown.
15. Large scale building sections as appropriate to this level of document development and as required to establish vertical controls for the Project. Include clear graphics, and notes on construction assemblies and systems to be used, dimensions, heights. Provide associated detailing to delineate solutions for difficult or unique connections.
16. Interior elevations of all room designs (where those rooms house casework, built-in furniture, variations in material finishes, wall mounted equipment or specialty items, graphics, artworks, plumbing, mechanical or electrical fittings, fixtures or equipment, or other improvement that cannot be shown as a standard detail for several similar rooms) including detail targets referencing

cabinetry details, dimensions and heights, notes indicating type of equipment (and whether equipment is in or out of contract), wall materials, finishes, and accessories.

17. Details of casework as necessary to appropriately delineate custom or pre-manufactured casework. Provide appropriate schedules referencing manufacturer's numbers or catalogs, finishes, hardware and other construction characteristics.
18. Details of the following:
 - a. Door jamb, head and sill conditions including delineation of required fire ratings for assemblies and components, electrical power requirements and connections to fire alarm, security and other building automation systems within the Project or the existing facility.
 - b. Wall and partition types including identification of rated assemblies and product limitations and tolerances relative to those ratings.
 - c. Window head, sill and jamb conditions, and anchorage methods shown, in lieu of referencing to manufacturer's standards.
 - d. Interior signage to include room and building identification, monument sign, directional signage, wayfinding, directories, emergency exiting and equipment signs, occupancy and other code mandated signage, and any other items pertinent to the identification of the Project. Coordinate and delineate electrical connections and power requirements.
 - e. Interior or exterior expansion control connections and related flashings, cover plates, applied sealants, etc.
 - f. Two (2) flag poles for one (1) United States and one (1) Florida flag that comply with federal and state statues for flag and pole size. Illumination to comply with LEED standards.
 - g. Any other specialized items necessary to clearly express the intent of the Project design.
19. Room finish, door and window schedules coordinated with the floor plans.
20. Structural foundation and framing plans, with associated diagrams, schedules, notes, detailing and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.
21. Mechanical Drawings:
 - a. Provide double line duct work layout and HVAC equipment layout drawings with related diagrams, schedules, notes, detailing and section

drawings completed sufficiently to communicate the design intent and coordination with other disciplines.

- b. Provide a Building Automation System narrative describing the type of system(s).
- c. Provide plumbing equipment and fixture layout drawings with related diagrams, schedules, fixture schedules, notes, detailing and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.
- d. Provide 1/2-inch scale plans, elevations and sections of the mechanical rooms showing service clearance, room openings, nominal equipment size, ceiling height, duct clearance between bottom of joist and top of ceiling and any ceiling mounted lighting fixtures, electrical equipment or other building assembly or component, etc.

22. Fire Sprinkler Drawings:

- a. Provide a performance-based piping and sprinkler head layout and equipment layout drawings with related diagrams, notes, detailing and section drawings completed sufficiently to communicate the design intent and coordination with other disciplines.

23. Electrical: Provide drawings for the following systems:

- a. Lighting including circuiting and luminaire identification and switching. Also provide illuminance diagrams for all typical indoor spaces and parking lots.
- b. Convenience outlets and circuiting, special outlets and circuiting, television outlets, and power systems and equipment. Provide riser diagrams for all electrical systems including master clock, intercom, fire alarm, cable television, computer networking/telephone. Also, provide for emergency and normal power distribution. Provide luminaire schedule.
- c. Panel schedule may be in preliminary form, but circuitry must be included.
- d. Applicable installation details.
- e. General legend and list of abbreviations.
- f. Voltage drop computation for all main feeders.
- g. Short circuit analysis
- h. Provide 1/2" scale floor plan and wall elevations for all electrical rooms.
- i. Indicate surge protector for main switchboard and electrical panels.

24. Voice and Data Plans with final technology device locations including CCTV, equipment and panels in telecommunication rooms, door hardware, wireless access point layout, roof mounted antennas and cable trays, grounding systems, and rack and equipment cabinet elevations.

25. Furniture and Equipment Plans and Furniture and Equipment Schedules indicating "In Contract" and "Not in Contract" furniture and equipment items, loose furniture and systems furniture and their location within the facility.
26. Finish Plans and Schedules indicating limits of finishes, identifying transitions and details of same. Provide elevations where more than one wall finish is to be applied. Include building section and elevation references on these plans.

(D) Progress specifications:

1. Provide Project Manual excluding Procurement documents.
2. Provide a Division 00 and 01 based upon the standard documents provided by County and edited by Consultant after consultation with County to establish Project specific requirements.
3. Include progress set of all other Sections in all Divisions or detailed notes on drawings with each section developed to demonstrate to County an understanding of the Project and an appropriate level of developmental progress comparable to that of the drawings. Specifications will include:
 - 11 27 00 - Photographic Equipment
 - 11 53 00 - Laboratory Equipment
 - 11 53 13 - Fume Hoods
 - 11 53 53 - Biological Safety Cabinets
 - 11 53 60 - Autopsy & Morgue Equipment
 - 11 67 23 - Firing Range Equipment
 - 12 35 53 - Lab Casework & Accessories, etc.
 - 13 21 26 - Cold Rooms
4. Specification sections shall be organized to follow the CSI's latest edition of MasterFormat with each section developed to include CSI's standard 3-part section and page formats with full paragraph numbering.

- (E) Updated Project Schedule, formatted as a preliminary construction schedule reflecting continued Project development and illustrating anticipated schedules for all subsequent Project phases, including permitting and submittal coordination with all agencies having jurisdiction on the Project, Project phasing, site mobilization, temporary facilities, general construction sequencing, anticipated substantial completion dates, County occupancy, and all other significant Project events. Format updated schedule as a Bar Chart (Gantt Chart) type schedule with milestones.

- (F) Color boards, (minimum 2 for County), illustrating the selection of colors, finishes, textures and aesthetic qualities for all finish materials for final review and approval by County and to establish a final palette of material selections for development of subsequent specifications, schedules and other requirements for incorporation into the Construction Documents.
- (G) A letter from Consultant and each of the major technical disciplines and any necessary Subconsultants or explaining how each previous comment concerning the Project have been addressed and/or corrected.
- (H) The Statement of Probable Construction Cost: Consultant shall verify the Contractor's 50% Construction Documents Estimate of Probable Construction Cost and submit to County for review and approval. The estimate will be itemized by major categories and projected to the expected time of bid. If, in the Contract Administrator's sole opinion, the Project merits a 50% Construction Documents estimate (ASPE Level 4) prepared by an independent cost estimator, then Contract Administrator may authorize Consultant to obtain those independent cost estimating services as an Optional Service. Utilize the CSI's latest edition of MasterFormat to organize the estimate.
- (I) If the Latest Statement of Probable Construction Cost exceeds the reconciled Direct Construction Cost for construction, per section 3.01.15, Consultant shall review the scope of the Project, specified materials, equipment, component systems, and types of construction and recommend changes and/or reasonable adjustments to those items to align the Probable Construction Cost to the County's available funds to eliminate the estimated cost over-run (to be made at no additional cost to County, if attributable to Consultant.)
- (J) An overall keying strategy diagram and proposed schedule based on county requirements.

3.05.03 Consultant shall make all changes to the documents as required by the County's review of the documents and resolve all questions of constructability, code compliance, compliance with County standards, or other issues raised by County during its review of the documents. County will retain the documents submitted at this phase.

- 3.05.04 Consultant shall not proceed with the completion of 75% Construction Documents until the acceptance of all required presentations and reports, County approval of all required submittals, and receipt of a written Notice to Proceed with the next phase.
- 3.05.05 Consultant shall provide updated assessment of compliance with ASHRAE 90.1 baseline requirements. Update daylighting strategy to incorporate natural daylighting into building configuration and design. Incorporate renewable energy technologies. Update results of energy model. Submit project's commissioning report by independent commissioning agent. Provide an updated summary of LEED credits being pursued and anticipated point levels to be achieved with assignment to responsible party.
- 3.05.06 Consultant shall develop a comprehensive signage package to minimally include the following:
1. Provide building final wayfinding verbiage and name review recommendations.
 2. Provide map depicting all signage locations and signage centers.
 3. Provide final design of Signage Hierarchy for exterior and interior wayfinding and identity signage elements.
 4. Provide final location plans and message schedules for all exterior and interior wayfinding and identity signage elements.
 5. Provide refined budget planning for all exterior and interior components.
 6. Provide final samples/color approvals.
 7. Provide revised phased approach to updating all signage within the area on a priority basis, i.e. Priority One: within six months; Priority Two: within two years; Priority Three: two to five years.
- 3.05.07 Consultant shall Coordinate security requirements with:
1. Door hardware specifier for selection of electric door hardware.
 2. Electrical Consultant for electrical service to security electronics equipment rooms.
 3. Mechanical Consultant for equipment room conditioning.
- 3.05.08 Consultant shall coordinate building envelope reviews for:
1. Moisture assessment design compliance.
 2. HVAC System and Controls Review.
- 3.05.09 Consultant shall conduct in addition to regularly scheduled meetings, the following workshops, as part of the lab planning efforts for this phase,
1. Workshop CD 50% – Final County reviews

3.05.10 Construction Documents (50% Deliverables (Section reference in parentheses):

1. Transmittal Form (3.05.02A).
2. Construction Document Drawings (3.05.02C)
3. Title Sheet
4. Site Demolition Plan
5. Civil Site Plan
6. Landscape Plan
7. Irrigation Plan
8. Site Lighting Plan
9. Geotechnical Report
10. Full Floor Plans
 - a. Demolition Plans
 - b. Furniture/Equipment Plan
 - c. Detailed Plans
 - d. Reflected Ceiling Plans
 - e. Life Safety/Accessibility Plans
 - f. Roof Plans
 - g. Phasing Plans
11. Elevations
12. Interior Elevations
13. Sections
14. Wall Sections
15. Building Details
16. Interior Signage
17. Structural Drawings
18. Mechanical Drawings
19. Fire Sprinkler Drawings
20. Electrical Drawings
21. Furniture, Fixtures and Equipment Plans and Schedules
22. Finish Plans and Schedules
23. Three-dimensional views
24. Project Manual (3.05.02D)
25. Energy Code Forms (3.05.02B)
26. Project Schedule (3.05.02E)
27. Cost Estimate (3.05.02H)
28. Color Boards (3.05.02F)
29. Response to Previous Comments (3.05.02G)
30. LEED Requirements (3.05.05)
31. Hard copies as specified in 3.05.02
32. BIM Model (LOD 300), BIM Execution Plan (BIMPxP), model progression schedule and electronic media per First Amendment - Attachment 2 – BIM and Electronic Media Submittal Requirements.

- 33. Lab casework/equipment plans
- 34. Lab casework schedule
- 35. Lab equipment schedule
- 36. Sink schedule
- 37. Fume Hood Schedule
- 38. Biological Safety Cabinet schedule
- 39. Specialty construction details

3.06 75% Construction Documents Phase

3.06.01 After written Notice to Proceed from County and based on the approved 50% Construction Documents submittal and any adjustments in the scope or quality of the Project or in the Fixed Limit of Construction Cost authorized by County, Consultant shall prepare for approval by County and in accordance with County's requirements for format and organization, 75% Construction Documents setting forth in greater detail the requirements for the construction of the Project. Consultant is responsible for the full compliance of the design with all applicable codes. Submittals shall include check sets of the Drawings, Specifications, reports, programs, a final up-dated Project Development Schedule, a verification of the Contractor's Updated Statement of Probable Construction Cost and such other documents as reasonably required by County based upon the Consultant's cost estimate review, or as reconciled with Contractor and approved by County Administrator. The construction documents shall conform to County's requirements, all mandatory requirements cited by County's Construction Management Division (or its designated reviewers). Consultant shall, through the Construction Management Division, coordinate Project specific requirements with other participating County review agencies (Office of Economic and Small Business Development ("OESBD"), Risk Management Division, County Attorney, etc.) and others listed below or having jurisdiction or special interest in the Project.

3.06.02 Consultant shall make a 75% Construction Documents submittal, for approval by County, which shall include ten (10) drawing sets total. Drawings shall be provided as three (3) full size sets and seven (7) half-size sets. All documents for this phase shall be provided in both hard copy and in electronic media. Submittals shall include the following:

(A) "Project Transmittal Form" in accordance with Section 1.02.04.

(B) Drawings: The drawings shall include the following:

1. Site plans including, but not limited to, area location map, legal description of property, demolition, excavation, utilities, finish grading, landscaping, mechanical, electrical, civil/structural, and architectural site plans.
2. Plans and details including, but not limited to:
 - a. Title sheet utilizing County's Construction Management Division's standard cover sheet format including a table of contents and statement of compliance by the architect and engineer of record.
 - b. Abbreviations and Symbols: Each discipline shall have a list of abbreviations, schedule of material indications, and schedule of notations and symbols at the beginning of their section of the plans. (Alternatively, Consultant may provide a complete, fully coordinated set of abbreviations, material indications, notations and symbols for the entire Project following the cover sheet.)
 - c. Information Available to Bidders: Drawing sheets such as surveys, "as-constructed" drawings, and other graphic material provided and clearly marked as "Information Available to Bidders" shall be provided within the drawing set after coordination with County's Construction Management Division.
 - d. Architectural sheets including floor plans with room numbers (using County standard room number system), door, window and finish schedules, roof plans, elevations, sections, and details.
 - e. Interior signage to include room and building identification, monument sign, directional signage, wayfinding, directories, emergency exiting and equipment signs, occupancy and other code mandated signage, and any other items pertinent to the identification of the Project. Coordinate and delineate electrical connections and power requirements.
 - f. Civil/Structural sheets including paving; drainage; foundation plans; floor plans; roof plans; structural plans; sections; details; pipe, culvert, beam, and column schedules.
 - g. Mechanical sheets including floor plans; elevations, sections; details; riser and other diagrams; kitchen exhaust hoods; and, equipment, fan, fixture and other necessary schedules and drawing information with an indication that the mechanical/electrical systems from the Phase II FEC/LCCA analysis have been incorporated into the documents.
 - h. Fire sprinkler sheets as performance based documents including reflected ceiling plans, sections, other diagrams, and equipment locations.
 - i. Electrical sheets including floor plans; sections; elevations; details; riser and other diagrams; fixture, panel and other schedules; and other drawing information with an indication that the mechanical/electrical systems from the Phase II FEC/LCCA analysis have been incorporated into the documents.

- j. Landscape Architecture, Interior Design, and other subconsultant prepared sheets including plans, sections, elevations, details, diagram, schedules and other drawing information necessary to communicate the complete and integrated scope of work related to that discipline.
- k. A phasing plan to delineate the order of the construction and delineating staging and storage areas, temporary buildings or structures, temporary utilities, other temporary constructions, construction access (including parking and delivery locations), haul routes, site barriers, traffic control devices, and other area designations and protective measures to control and separate staff and the public from construction activities and traffic. Consultant shall provide illustrative diagrams needed to convey intent as provided by the Contractor as approved by Contract Administrator, for permitting purposes.

(C) Project Manual. Consultant shall review and coordinate with County regarding the preparation of the following:

1. Any supplemental information required from Consultant to assist in County's completion of Division 00 procurement and contracting requirements with respect to the foregoing documents and regarding any other agreements necessary for construction of the Project. Include documents made necessary by the Bidding Method chosen by County. However, in no case will Consultant amend or delete items from these documents without prior written approval from County.
2. A specific set of Division 01 specifications based upon guide documents provided by County (or, in the absence of County guide specification documents, from Consultant's own specifications as previously coordinated with County), including all schedules, lists and inventories as required to complete County's guide documents including Contractor's Submittal schedules, warranty schedules, salvage schedules, etc.
3. Specification sections for remaining Divisions or detailed notes on drawings organized and formatted. Project specific specifications shall include:
 - 11 27 00 - Photographic Equipment
 - 11 53 00 - Laboratory Equipment
 - 11 53 13 - Fume Hoods
 - 11 53 53 - Biological Safety Cabinets
 - 11 53 60 - Autopsy & Morgue Equipment
 - 11 67 23 - Firing Range Equipment
 - 12 35 53 - Lab Casework & Accessories, etc.
 - 13 21 26 - Cold Rooms

4. Approved alternate bid items, if required and authorized by County, to bring the Project within the Fixed Limit of Construction Cost ("FLCC") which would permit County in its sole discretion to accept or reject portions of the construction of the Project.

(D) The Statement of Probable Construction Cost: Consultant shall verify the Contractor's 75% Construction Documents Estimate of Probable Construction Cost and submit to County for review and approval. The estimate will be itemized by major categories and projected to the expected time of bid. If, in the Contract Administrator's sole opinion, the Project merits a 75% Construction Documents estimate (ASPE Level 4) prepared by an independent cost estimator, then Contract Administrator may authorize Consultant to obtain those independent cost estimating services as an Optional Service. Utilize the CSI's latest edition of MasterFormat to organize the estimate. Include an estimate for all furnishings including loose furniture, equipment, shipping and installation labor.

(E) A letter from Consultant and each of the major technical disciplines and any necessary subconsultants explaining how each previous review comment (as generated by County and/or other reviewing agencies) concerning the Project have been addressed and/or corrected.

(F) A proposed overall keying organizational diagram and proposed schedule based on county requirements.

3.06.03 If the Latest Statement of Probable Construction Cost exceeds the reconciled Direct Construction Cost for construction, per section 3.01.15, Consultant shall review the scope of the Project, specified materials, equipment, component systems, and types of construction and recommend changes and/or reasonable adjustments to those items to align the Probable Construction Cost to the County's available funds to eliminate the estimated cost over-run (to be made at no additional cost to County, if attributable to Consultant).

3.06.04 If, in the Contract Administrator's sole opinion, the Project merits a construction documents phase estimate prepared by an independent cost estimator, the Contract Administrator may authorize Consultant to obtain those independent cost estimating services as an Optional Service expense. If an estimate or cost analysis was required by the Contract Administrator for a previous phase of the Project, Consultant shall utilize the previously established independent cost estimator, or a replacement acceptable to the Contract Administrator

3.06.05 Consultant shall make all required changes or additions and resolve all questions on the documents. The Check Set shall be returned to County. Upon final approval by County, Consultant shall furnish record copy, signed and sealed by the Florida

registered design professionals responsible for their preparation, of all Drawings, Specifications and other documents required during this project phase to County without additional charge.

3.06.06 Consultant shall, with County's assistance, file the required documents for approval by governmental authorities having jurisdiction (including Broward County and municipalities and their constituent departments, the South Florida Water Management District, and other state, local or federal agency with jurisdictional authority over some aspect of the Project) and obtain certifications of "permit approval" by reviewing authorities prior to the commencement of the Bidding and Procurement activities and early enough to ensure that the eventual contractor is not delayed by permit processing by Broward County, a municipality or other jurisdictional agency. Consultant shall provide the original documents or reproducible copies as may be required for submittal to all governmental authorities.

(A) Consultant or its licensed subconsultants shall provide services to apply for all jurisdictional approvals.

(B) Consultant shall attend and provide representation at all review meetings, workshops, hearings and Commission/Council meetings concerning the Project as conducted by other jurisdictional agencies. Consultant shall submit documents, attend meetings and provide other support as necessary to fully participate in any submittals, resubmittals, review meetings, presentations or negotiations required to obtain jurisdictional approval for the Project.

(C) Any changes to the Project drawings or Project Manual or other supporting document made necessary by jurisdictional reviews shall be made by Consultant at no additional cost to County. Consultant shall be compensated for any revisions to the contract documents made necessary by such jurisdictional reviews if the requisite compliance requirement or interpretation was not available to Consultant in written form prior to the review.

(D) County will notify Consultant when permits shall be transferred to the responsibility of the Contactor for the Project.

3.06.07 Staff from each of Consultant's major technical disciplines and subconsultants as necessary shall attend coordination, review and presentation meetings with County to explain the development of the design concept and technical resolution of their respective building or site systems.

3.06.08 The Contract Administrator's review and approval of the drawings, specifications, calculations and other construction documents shall not relieve Consultant of any responsibility for their accuracy, adequacy and completeness.

3.06.09 Provide updated equipment, furnishing plans and equipment and furnishing schedules. Indicate "In Contract" and "Not in Contract" furniture and equipment items, loose furniture and systems furniture. Consultant shall specify three equipment and furnishings "basis of design," based on County's performance standards for furniture:

(A) Systems Furniture: Provide systems furniture workstation template drawings including a Panel Plan (showing panel widths, heights and finishes), a Component Plan and Isometric (indicating all components to be provided within the Project with a written description of each component by size, type and quantity and with an isometric drawing of workstations) and an Electrical Panel Plan (indicating electrical outlets, locations of system power entry, computer data and telephone receptacle)s.

(B) Loose Furniture and Equipment: Provide updated furniture floor plans indicating loose furniture and equipment items with symbols, legends, notes and indicators required for earlier submittals. Supplement with drawing notations concerning installation.

(C) Loose furniture detailed specifications and descriptive data coordinated through County's Purchasing Division (via the Contract Administrator) in enough detail to allow procurement through the Purchasing Division:

1. Manufacturer's Information
2. Vendor State and Local Contract Listings
3. Vendor Information
4. Quantities
5. Item numbers keying specifications to Furniture Floor Plans
6. Manufacturer's Model Numbers
7. Description, size, finishes and other information required to order furniture.
8. Installation General Notes

(D) Systems furniture detailed specifications and descriptive data coordinated through County's Purchasing Division (via the Contract Administrator) in enough detail to allow procurement through the Purchasing Division:

1. Manufacturer's Information
2. Vendor State and Local Contract Listings
3. Vendor Information
4. Quantities
5. Item numbers keying specifications to Furniture Floor Plans
6. Manufacturer's Model Numbers

7. Description, size, finishes and other information required to order furniture
8. Installation General Notes

(E) Two (2) updated color boards illustrating furniture selections and the selection of colors, finishes, textures and aesthetic qualities of all finish materials for final review and approval by County and to establish a final palette of material selections for development of subsequent specifications, schedules and other requirements for incorporation into the Contract Documents.

(F) Finish Plans indicating limits of finishes, identifying transitions and details of same. Provide elevations where more than one wall finish is to be applied to a vertical surface. Include building section and elevation references, room names and numbers. Provide Finish Schedules and Legends for floors, walls, ceilings and all prominent elements; identify materials associated with specified finishes. Identify location specification for colors and finishes of all trim, doors, baseboards, etc.

3.06.10 Consultant shall, in addition to regularly scheduled meetings, conduct the following workshop as part of the lab planning efforts for this phase:

Workshop CD 75% – Engineering Coordination meetings

3.06.11 Construction Documents (75%) Deliverables (Section reference in parentheses):

1. Transmittal Form (3.06.02A).
2. Construction Document Drawings (3.06.02B) which are signed and sealed
3. Title Sheet
4. Site Demolition Plan
5. Civil Site Plan
6. Landscape Plan
7. Site Lighting Plan
8. Irrigation Plan
9. Geotechnical Report
10. Full Floor Plans
 - a. Demolition Plans
 - b. Furniture/Equipment Plan
 - c. Detailed Plans
 - d. Reflected Ceiling Plans
 - e. Life Safety/Accessibility Plans/Code Analysis
 - f. Roof Plans
 - g. Phasing Plans
11. Exterior Elevations
12. Interior Elevations
13. Building Sections

14. Wall Sections
15. Building Details
16. Interior Signage
17. Structural Drawings
18. Mechanical Drawings
19. Plumbing Drawings
20. Fire Sprinkler Drawings
21. Electrical and Low Voltage Drawings
22. Furniture, Fixtures and Equipment Plans and Schedules
23. Finish Plans, (Elevations if needed) and Schedules
24. Three-dimensional views
25. Project Manual (3.06.02C)
26. Project Schedule (3.05.02E).
27. Cost Estimate (3.06.02D)
28. Color Boards (3.06.10C)
29. Response to Previous Comments (3.06.02E)
30. LEED Requirements (3.05.05)
31. Hard copies as specified in 3.06.01.
32. BIM Model, BIM Execution Plan (BIMPxP), model progression schedule and electronic media per First Amendment - Attachment 2 – BIM and Electronic Media Submittal Requirements.
33. Lab casework/equipment plans
34. Lab casework schedule
35. Lab equipment schedule
36. Sink schedule
37. Fume hood Schedule
38. Biological Safety Cabinet schedule
39. Specialty construction details

3.07 100% Construction Documents Phase:

3.07.01 After written Notice to Proceed from County and based on the approved 75% Construction Documents submittal and any adjustments in the scope or quality of the Project or in the Fixed Limit of Construction Cost authorized by County, Consultant shall prepare for approval by County and in accordance with County's requirements for format and organization, 100% Construction Documents setting forth in greater detail the final requirements for the construction of the Project. Upon 100% completion of the Construction Documents, Consultant shall submit to County Eight (8) drawing sets total. Drawings shall be provided as four (4) full size copies and four (4) half-size sets of check sets of the Drawings, Specifications, reports, programs, a final up-dated Project Development Schedule, a final up-dated Statement of Probable Construction Cost and such other documents as reasonably required by County. The 100% construction documents shall conform to County's requirements, all mandatory requirements cited by County's Construction Management Division (or its designated reviewers). Consultant shall, through the Construction Management Division, coordinate Project specific requirements with other participating County review agencies (OESBD, Risk Management Division, County Attorney, etc.) and others listed below or having jurisdiction or special interest in the Project.

3.07.02 All documents for this phase shall be provided in both hard copy and in electronic media. County will approve 100% Construction Documents Phase documents prior to submittal for permitting or bidding. 100% Construction Documents Phase contract documents shall be included with the 100% Construction Documents Phase submittal:

(A) "Project Transmittal Form" in accordance with Section 1.02.04

(B) General Requirements:

1. Bid Set. This submittal is the official construction document set and shall be the bid documents.
2. Signed and Sealed/Statements of Compliance: Only complete documents, properly signed and sealed by Consultant and respective subconsultants, will be accepted for review; in addition, these documents shall contain a statement of compliance by the architect or engineer of record that "To the best of my knowledge these drawings and the Project Manual are complete, and comply with the current edition of the Florida Building Code.
3. When requested by County, engineering calculations for mechanical, electrical, and structural systems shall be submitted separately from drawings and the Project Manual.

4. Changes to the Contract Documents may be made by addenda or resubmittal of documents graphically indicating the changes. Addenda shall be signed and sealed by the design professionals and submitted to the Contract Administrator in duplicate as they occur during the bidding process. Documents resubmitted shall bear the appropriate signatures and seals.
- (C) Drawings: The drawings shall include, in addition to the document requirements specified above, the following:
1. Site plans including, but not limited to, area location map, legal description of property, demolition, excavation, utilities, finish grading, landscaping, mechanical, electrical, civil/structural, and architectural site plans.
 2. Plans and details including, but not limited to:
 - a. Title sheet utilizing County's Construction Management Division's standard cover sheet format including a table of contents and statement of compliance by the architect and engineer of record.
 - b. Abbreviations and Symbols: Each discipline shall have a list of abbreviations, schedule of material indications, and schedule of notations and symbols at the beginning of their section of the plans. (Alternatively, Consultant may provide a complete, fully coordinated set of abbreviations, material indications, notations and symbols for the entire Project following the cover sheet.)
 - c. Information Available to Bidders: Drawing sheets such as surveys, "as-constructed" drawings, and other graphic material provided and clearly marked as "Information Available to Bidders" shall be provided within the drawing set after coordination with County's Construction Management Division.
 - d. Architectural sheets including floor plans with room numbers (using County standard room number system), door, window and finish schedules, roof plans, interior and exterior elevations, multiple building, wall and assembly sections, details and all appropriate cross-references.
 - e. Interior signage to include room and building identification, monument sign, directional signage, wayfinding, directories, emergency exiting and equipment signs, occupancy and other code mandated signage, and any other items pertinent to the identification of the Project. Coordinate and delineate electrical connections and power requirements.
 - f. Civil/Structural sheets including paving; drainage; foundation plans; floor plans; roof plans; structural plans; sections; details; and pipe, culvert, beam and column schedules.
 - g. Mechanical sheets including floor plans; elevations, sections; details; riser and other diagrams; kitchen exhaust hoods; and, equipment, fan, fixture

and other necessary schedules and drawing information with an indication that the mechanical/electrical systems from the 75% Construction Documents Phase FEC/LCCA analysis have been incorporated into the documents.

- h. Fire sprinkler sheets as performance-based documents including reflected ceiling plans, sections, details, riser and other diagrams, equipment locations. Identify all fire hazard groups and sprinkler head types.
- i. Electrical sheets including floor plans; sections; elevations; details; riser and other diagrams; fixture, panel and other schedules; and other drawing information with an indication that the mechanical/electrical systems from the 75% Construction Documents Phase FEC/LCCA analysis have been incorporated into the documents.
- j. Landscape Architecture, Interior Design, and other subconsultant prepared sheets including plans, sections, elevations, details, diagram, schedules and other drawing information necessary to communicate the complete and integrated scope of work related to that discipline.
- k. A phasing plan to delineate the order of the construction and delineating staging and storage areas, maintenance of traffic, temporary buildings or structures, temporary utilities, other temporary constructions, construction access (including parking and delivery locations), haul routes, site barriers, traffic control devices, and other area designations and protective measures to control and separate staff and the public from construction activities and traffic.

(D) Project Manual. Consultant shall review and coordinate with County regarding the preparation of the following:

1. Any supplemental information required from Consultant to assist in County's completion of Division 00 procurement and contracting requirements with respect to the foregoing documents and regarding any other agreements necessary for construction of the Project. Include documents made necessary by the Bidding Method chosen by County. However, in no case will Consultant amend or delete items from these documents without prior written approval from County.
2. A Project specific set of Division 01 specifications based upon guide documents provided by County (or, in the absence of County guide specification documents, from Consultant's own specifications as previously coordinated with County), including all schedules, lists and inventories as required to complete County's guide documents including Contractor's Submittal schedules, warranty schedules, salvage schedules, etc.

1. Final specification sections for remaining Divisions or detailed notes on drawings organized and formatted as required for the set of 50% progress specifications. Final Project specific Specifications to include:

- 11 27 00 - Photographic Equipment
- 11 53 00 - Laboratory Equipment
- 11 53 13 - Fume Hoods
- 11 53 53 - Biological Safety Cabinets
- 11 53 60 - Autopsy & Morgue Equipment
- 11 67 23 - Firing Range Equipment
- 12 35 53 - Lab Casework & Accessories, etc.
- 13 21 26 - Cold Rooms

3. Approved alternate bid items, if required and authorized by County, to bring the Project within the FLCC which would permit County in its sole discretion to accept or reject portions of the construction of the Project.

(E) A letter from Consultant and each of the major technical disciplines and any necessary subconsultants explaining how each previous review comment (as generated by County and/or other reviewing agencies) concerning the Project have been addressed and/or corrected.

(F) A final keying organizational diagram and keying schedule based on County requirements.

3.07.03 If the Guaranteed Maximum Price exceeds the reconciled Direct Construction Cost for construction, per section 3.01.15, Consultant shall review the scope of the project, specified materials, equipment, component systems, and types of construction and recommend changes and/or reasonable adjustments to those items to align the Probable Construction Cost to the County's available funds to eliminate the estimated cost over-run (to be made at no additional cost to County, if attributable to Consultant.)

3.07.04 If, in the Contract Administrator's sole opinion, the Project merits a construction documents phase estimate prepared by an independent cost estimator, then Contract Administrator may authorize Consultant to obtain those independent cost estimating services as an Optional Service expense. If an estimate or cost analysis was required by the Contract Administrator for a previous phase of the Project, Consultant shall utilize the previously established independent cost estimator, or a replacement acceptable to the Contract Administrator.

3.07.05 Consultant shall make all required changes or additions and resolve all questions on the documents. The 100% complete Check Set shall be returned to County. Upon final approval by County, Consultant shall furnish to County without additional charge,

three (3) record copies, signed and sealed by the Florida registered design professionals responsible for their preparation, of all Drawings, Specifications and other documents required during this Project.

3.07.06 Consultant shall, with County's assistance, file the required documents for approval by governmental authorities having jurisdiction over the Project (including Broward County and municipalities and their constituent departments, the South Florida Water Management District, and other state, local or federal agency with jurisdictional authority over some aspect of the Project) and obtain certifications of "permit approval" by reviewing authorities prior to the commencement of Bidding and Award Phase and early enough to ensure that the eventual contractor is not delayed by permit processing by Broward County, a municipality or other jurisdictional agency. Consultant shall provide the original documents or reproducible copies as may be required for submittal to any and all governmental authorities.

(A) Consultant or its licensed subconsultants shall provide services to apply for all jurisdictional approvals.

(B) Consultant shall attend and provide representation at all review meetings, workshops, hearings and Commission/Council meetings concerning the Project as conducted by other jurisdictional agencies. Consultant shall submit documents, attend meetings and provide other support as necessary to fully participate in any submittals, resubmittals, review meetings, presentations or negotiations required to obtain jurisdictional approval for the Project.

(C) Any changes to the Project drawings or Project Manual or other supporting document made necessary by jurisdictional reviews shall be made by Consultant at no additional cost to County. Consultant shall be compensated for any revisions to the contract documents made necessary by such jurisdictional reviews if the requisite compliance requirement or interpretation was not available to Consultant in written form prior to the review.

(D) County will notify Consultant when permits will be transferred to the responsibility of the Contactor for the Project.

3.07.07 Staff from each of Consultant's major technical disciplines and subconsultants as necessary shall attend coordination, review and presentation meetings with County to explain the development of the design concept and technical resolution of their respective building or site systems.

3.07.08 The Contract Administrator's review and approval of the drawings, specifications, calculations and other construction documents shall not relieve Consultant of any responsibility for their accuracy, adequacy and completeness.

3.07.09 County's review and approval of the drawings, specifications, calculations and other construction documents shall not relieve Consultant of any responsibility for their accuracy, adequacy and completeness.

3.07.10 Provide updated equipment and furnishing drawings and equipment and furnishing schedules. Indicate "In Contract" and "Not in Contract" furniture and equipment items, loose furniture and systems furniture. Consultant shall specify three equipment and furnishings "basis of design," based on County's performance standards for furniture. Consultants to recommend (3) or with an approved equal manufacturer's with 'bases of performance' criteria, quality standards, and warrantee period. Provide updated equipment and furnishing plans and equipment and furnishing schedules.

(A) Systems Furniture: Provide systems furniture workstation template drawings including a Panel Plan (showing panel widths, heights and finishes), a Component Plan and Isometric (indicating all components to be provided within the Project with a written description of each component by size, type and quantity and with an isometric drawing of workstations) and an Electrical Panel Plan (indicating electrical outlets, locations of system power entry, computer data and telephone receptacles).

(B) Loose Furniture and Equipment: Provide updated furniture floor plans indicating loose furniture and equipment items with symbols, legends, notes and indicators required for earlier submittals. Supplement with drawing notations concerning installation.

(C) Final Color boards illustrating furniture selections and the selection of colors, finishes, textures and aesthetic qualities of all finish materials for final review and approval by County and to establish a final palette of material selections for development of subsequent specifications, schedules and other requirements for incorporation into the Contract Documents.

(D) Loose furniture detailed specifications and descriptive data coordinated through County's Purchasing Division (via the Contract Administrator) in enough detail to allow procurement through the Purchasing Division:

1. Manufacturer's Information
2. Vendor State and Local Contract Listings
3. Vendor Information
4. Quantities
5. Item numbers keying specifications to Furniture Floor Plans
6. Manufacturer's Model Numbers

7. Description, size, finishes and other information required to order furniture.
8. Installation General Notes

(E) Systems furniture detailed specifications and descriptive data coordinated through County's Purchasing Division (via the Contract Administrator) in enough detail to allow procurement through the Purchasing Division:

1. Manufacturer's Information
2. Vendor State and Local Contract Listings
3. Vendor Information
4. Quantities
5. Item numbers keying specifications to Furniture Floor Plans
6. Manufacturer's Model Numbers
7. Description, size, finishes and other information required to order furniture.
8. Installation General Notes

(F) Finish Plans indicating limits of all finishes, identifying transitions and details of same. Provide elevations where more than one wall finish is to be applied to a vertical surface. Include building section and elevation references, ceiling heights if above 9' above finish floor, room names and numbers. Provide Finish Schedules and Legends for floors, walls and ceilings, at a minimum; identifying materials and their associated finish. Provide or identify where to find specification for colors and finishes of all trim, doors, baseboards, etc.

3.07.11 Consultant shall develop a comprehensive signage package to minimally include the following:

1. Detail drawings (fabrication techniques, materials, colors, lighting requirements).
2. Provide revisions to location plans and message schedules as deemed necessary due to construction changes.
3. Bid Procurement - preparation and distribution of bid documents.
4. Review & provide analysis of competitive bids.

3.07.12 Consultant and its security subconsultant shall submit construction documents for the following Security items:

1. Access Control System
2. Video Surveillance System and Digital Recording
3. Door Control Security Intercom
4. Motion Detection System
5. Vehicle Detectors for Gate Controls

6. Security System LAN
7. Security Miscellaneous
8. Security Detection
9. UPS

3.07.13 Consultant shall coordinate building envelope reviews for:

1. Moisture Assessment Design
2. HVAC System and Controls Review

3.07.14 Consultant shall, in addition to regularly scheduled meetings, conduct the following workshop as part of the lab planning efforts for this phase:

Workshop CD 100% – Engineering Coordination meetings

3.07.15 Construction Documents (100%) Deliverables (Section reference in parenthesis):

2. Transmittal Form (3.07.02A).
3. Construction Document Drawings (3.07.02C) which are signed and sealed
4. Title Sheet
5. Site Demolition Plan
6. Civil Site Plan
7. Landscape Plan
8. Site Lighting Plan
9. Irrigation Plan
10. Geotechnical Report
11. Full Floor Plans
 - a. Demolition Plans
 - b. Furniture/Equipment Plan
 - c. Detailed Plans
 - d. Reflected Ceiling Plans
 - e. Life Safety/Accessibility Plans/Code Analysis
 - f. Roof Plans
 - g. Phasing Plans
12. Exterior Elevations
13. Interior Elevations
14. Building Sections
15. Wall Sections
16. Building Details
17. Interior Signage
18. Structural Drawings
19. Mechanical Drawings
20. Fire Sprinkler Drawings

21. Electrical Drawings
22. Furniture, Fixtures and Equipment Plans and Schedules
23. Finish Plans, (Elevations if needed) and Schedules
24. Three-dimensional views
25. Engineering Calculations (3.07.02B3)
26. Project Manual (3.07.02D)
27. Energy Code Forms (3.05.02B)
28. Project Schedule (3.05.02E)
29. Color Boards (3.07.10C)
30. Response to Previous Comments (3.07.02E)
31. LEED Requirements (3.05.05)
32. Hard copies as specified in 3.07.01.
33. Report on incorporation of community input.
34. BIM Model, BIM Execution Plan (BIMPxP), model progression schedule and electronic media per First Amendment - Attachment 2 – BIM and Electronic Media Requirements.
35. Lab casework/equipment plans
36. Lab casework schedule
37. Lab equipment schedule
38. Sink schedule
39. Fume hood Schedule
40. Biological Safety Cabinet schedule
41. Specialty construction details

3.08 Bidding and Award Phase

- 3.08.01 Upon obtaining all necessary approvals of the Construction Documents, approval by County of the latest Statement of Probable Construction Cost, and a specific Notice to Proceed with the Bidding and Award phase of the Project, Consultant shall assist County in obtaining bids and awarding construction contracts. Bidding and award of the construction contract shall be a Negotiated Agreement as further detailed below.
- 3.08.02 Consultant shall assist County in conducting negotiations with a Contractor or other similar entity to establish a Guaranteed Maximum Price and other contractual issues related to the reconciliation establishment of the construction contract with the Contractor.
- 3.08.03 Consultant will incorporate County's Standard Form Construction Documents (as provided by County for alternative construction delivery) for this into the Project Manual and shall make final modifications to the Project Manual to reflect results of County's negotiations with the Contractor. County will coordinate any deviations

from the Standard Form Construction Documents in advance with Consultant and County's Office of the County Attorney.

- 3.08.04 Consultant shall assist County and the Contractor in obtaining permits, approvals and authorizations from jurisdictional agencies with authority over the Project. Consultant shall, as requested by County, meet on an as-needed basis with jurisdictional agencies in order to clarify or explain submitted documents and to ascertain the scope and intent of review comments made by those jurisdictional agencies. Consultant shall provide graphic and written documents as necessary to facilitate these jurisdictional reviews, including issuing revised drawings and specifications in response to review comments and/or other concerns generated by those jurisdictional agencies without additional cost to County.
- 3.08.05 Consultant shall assist County's review of the Contractor's bidding activities and make recommendations concerning the conduct and result of that bidding. These activities shall include investigating the qualifications of bidders and provision of a written recommendation for bid award. Consultant shall review and, upon request of County, prepare Contract Price Element Adjustment Memoranda made necessary by the Contractor's bidding activities, changes requested by County, and/or other circumstances affecting the Project's GMP structure.
- 3.08.06 Consultant shall provide to County's Contract Administrator two (2) reproducible copies of the finalized construction contract documents, including all drawings and specifications. County will be responsible for printing the documents and distributing them to the Contractor. County reserves the right to instruct Consultant to print the construction contract documents (including drawings and specifications) and distribute them to the Contractor, either through its open agreements with printing firms or as a reimbursable service through Consultant.
- 3.08.07 Consultant shall render interpretations and clarifications of the drawings and specifications in a written format, supplemented by appropriate graphics, acceptable to County.
- 3.08.08 Consultant shall attend coordination meetings, negotiation meetings, pre-bid conferences and bid openings as scheduled by County and the Contractor.
- 3.08.09 Consultant shall prepare addenda, if any are required, for County to issue to the Contractor. No addenda shall be issued without County's approval and if dimensional changes or extensive graphic changes are required the full drawing sheets shall be revised, signed, sealed, and issued as addendum drawings as directed by County. Extensive modifications to specification section(s) shall be prepared as replacements of the entire specification section(s).

- 3.08.10 Consultant shall advise and consult with County in awarding and assisting in the preparation of any agreements necessary for the construction of the Project, including, without limitation, that form of agreement between County and Contractor.
- 3.08.11 If the Guaranteed Maximum Price exceeds County's funds available for the Project, the Contract Administrator will either: (A) approve the increase in Project cost and award a contract or, (B) reject the negotiations with the Contractor and initiate negotiations with alternatively selected firms within a reasonable time with no change in the Project, (C) direct Consultant to revise the Project scope or quality, or both, as approved by the Contract Administrator, and reinstate negotiations with the Contractor, or (D) suspend or abandon the Project.
- 3.08.12 Under Article 3.08.11(C) above, Consultant shall, without additional compensation, modify the Construction Documents as necessary to bring the Guaranteed Maximum Price within County's available funds for the Project. County may recognize exceptional construction market cost fluctuations before exercising the option provided in Article 3.08.11(C) above. County agrees to discuss this issue with Consultant prior to exercising this option. (to be made at no additional cost to County, if attributable to Consultant.)
- 3.08.13 If an estimate or cost analysis was required by County for this phase, Consultant shall utilize Consultant's cost estimator, or a replacement acceptable to County, to analyze bids and to assist in the preparation of any modified documents that may be required to ensure successful negotiations with the Contractor.

3.09 Construction Administration Phase:

- 3.09.01 Construction activities will begin with the award of the Construction Contract and will end when the Contractor's final Payment Certificate is approved by County. During this period, Consultant shall provide Administration of the Construction Contract as set forth in the construction contract documents (hereafter referred to and defined as the "Contract Documents") between County and the Contractor.
- 3.09.02 Consultant, as the representative of the County during Construction, shall advise and consult with County and shall have authority to act on behalf of County within the limits established by this Agreement and the Contract Documents. Consultant shall contemporaneously provide County with copies of all communications between Consultant and Contractor and others concerning matters material to the cost, time, sequence, scope, performance or requirements of the Project.
- 3.09.03 Consultant and Consultant's respective Subconsultants shall attend all key construction events as necessary to ascertain the progress of the Project and to

determine in general if the Work is proceeding in accordance with the Contract Documents and the Project Schedule. A minimum of at least one site visit per week will be required by Consultant. The Subconsultant will be required to visit the site at least once a week when their respective portion of the work is in progress.

(A) Consultant shall visit the site at least once per week from the time construction begins until substantial completion on an ongoing periodic basis to become familiar with the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents and Project Schedule. Consultant shall coordinate the timing of these visits with County's Representative to permit joint observations of the progress of the Work and discussions about Project issues. Based on on-site observations, Consultant shall keep County informed of the progress and quality of the Work. Consultant shall promptly submit to County a detailed written report of the results of each visit to the site, and copies of all field reports and notes of meetings with contractor, subcontractors of any tier or suppliers.

(B) Consultant shall, based upon its on-site visits, promptly report to County any defects and deficiencies in the Work coming to the attention of Consultant and shall endeavor to guard County against defects and deficiencies in the Work. This obligation is not reduced or limited by the fact that others, such as County's staff, are also observing the work on behalf of County. Consultant shall make on-site observations utilizing the same personnel over the course of the Work and shall, if requested by County, replace personnel whom County has found to be incompetent or unacceptable.

(C) Consultant shall not have control over, or charge of, nor be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work.

3.09.04 Consultant shall always have access to the Work wherever it is in preparation or progress. Consultant and the subconsultants shall review and assess as to whether the Contractor is making timely, accurate, and complete notations on the "Project Record Documents" and maintaining various other administrative records as required by the Contract Documents. In addition, County may at its discretion require Consultant and all subconsultants to regularly submit additional written materials or forms to County relating to or regarding the Project or its progress.

3.09.05 Consultant shall assist County in determining the amounts owing to Contractor based on observations at the site and on evaluations of Contractor's Applications for Payment and shall certify Certificates for Payment in such amounts as provided in the Contract Documents and in such form as County may request. The certification of a Certificate for Payment shall constitute a representation by Consultant to County,

based on Consultant's observations at the site and on the data comprising Contractor's Application for Payment, that the Work has progressed to the point indicated; that the quality of the Work is in substantial accordance with the contract documents (subject to an evaluation of the Work for substantial conformance with the Contract Documents upon substantial completion, to the results of any subsequent tests required by or performed under the Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in the Certificate for Payment); and that Contractor is entitled to payment in the amount certified. However, the certification of a Certificate for Payment shall not be a representation that Consultant has made any examination, other than information which has come to Consultant's attention, to ascertain how and for what purpose Contractor has used the moneys paid by County.

- 3.09.06 Requests for Information (RFIs): Consultant shall interpret submitted requests and provide recommendations and/or instructions concerning the requirements of the Contract Documents by the written request of either the County or Contractor. Consultant's response to such requests shall be made within fourteen (14) calendar days or within any prior time limits agreed upon by the County. Consultant shall render written advisory decisions on all claims, disputes and other matters in question between County and Contractor relating to the execution or progress of the Work or the interpretation of the Contract Documents. RFI's are not intended to replace routine communications, a submittal, a safety plan or schedule, transmittal, or a documentation method.

If insufficient information is provided to allow the Consultant to offer a recommendation or instructions, Consultant shall request Contractor to provide the additional information required in a timely manner.

- 3.09.07 All interpretations and advisory decisions of Consultant shall be consistent with the intent of, and reasonably inferable from, the Contract Documents and shall be in writing or in the form of drawings. In the capacity of interpreter, Consultant shall endeavor to secure faithful performance by both County and Contractor and shall not show partiality to either.
- 3.09.08 Consultant shall have authority to recommend rejection of Work which does not conform to the Contract Documents. Consultant shall not have authority to stop the Work without approval of County. Whenever, in Consultant's reasonable opinion, it is necessary or advisable for the implementation of the intent of the Contract Documents, Consultant may recommend special inspection or testing of the Work in accordance with the provisions of the Contract Documents, whether or not such Work can then be fabricated, installed or completed, but Consultant shall take such action only after consultation with County. Consultant's monitoring of such additional special testing or inspections is a part of the Basic Services. County shall furnish all

- such tests inspections and reports that are required by law or by the Contract Documents or that it has previously approved in writing, without waiving its right to reimbursement from Contractor. However, neither this authority of Consultant nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty of responsibility of Consultant to Contractor or other third parties performing portions of the Work.
- 3.09.09 Contractor Submittals: Consultant shall promptly review and take other appropriate action upon Contractor's submittals such as shop drawings, product data and samples, but only for conformance with the design concept of the Contract Documents. Such action shall be taken within fourteen (14) calendar days of receipt by Consultant unless County and Consultant otherwise mutually agree. In special case of large complex and multi-disciplined submittals, the County may allow action to be taken within twenty-one (21) calendar days of receipt by Consultant.
- (A) Consultant's review shall not constitute review or approval of safety precautions or of construction means, methods, techniques, sequences or procedures. Consultant shall maintain a log of all submittals made and shall compare the submittals with Contractor's progress schedule. Consultant shall not approve changes to the contract or substitutions through the regular submittal process but will utilize those respective methods specified in the Contract Documents.
- (B) Should Consultant have to reject submittals of shop drawings, product data, samples or other required Contractor submittal due to Contractor's non-compliance more than two (2) times, then Consultant shall be due additional services for each subsequent review. Fees for such additional services shall be negotiated by Contract Administrator as Optional Services with Consultant according to Article 6 of the Agreement and for an hourly rate not to exceed the average hourly rate for all personnel specified in this Agreement's Exhibit B, Maximum Billing Rates.
- 3.09.10 Consultant shall coordinate with and assist County concerning contract modifications including the development, review, recommendation for approval, and processing of Contract Price Element Adjustment Memoranda ("CPEAMs"), Change Orders and Amendments to the construction contract including County's or other jurisdictional authority's required review of such Contract Modifications for Code Compliance. Consultant shall:
- (A) Meet with County prior to the preparation of CPEAMs, change order items or Amendments to ensure that proposed changes comply with applicable codes.

- (B) Reconcile Consultant's analysis of proposed Change Order amounts with an analysis provided by Consultant's cost estimator and provide County with a recommendation concerning the respective cost studies.
- (C) Submit written and graphic information documenting proposed changes for formal review by County and municipal or other jurisdictional agencies for code compliance and any necessary permitting.
- (D) Consultant shall review and indicate concurrence through signing CPEAM forms, change orders and Amendments for County's authorization in accordance with the Contract Documents, shall have authority to order minor changes in the Work not involving an adjustment in the contract sum or an extension of the contract time and which are not inconsistent with the intent of the Contract Documents. Such minor changes shall be affected by written order issued through County. The Basic Services shall include providing recommendations concerning proposed change orders and minor changes, and the preparation and processing of change orders and construction change directives.
- (E) Consultant shall process, prepare and issue request for proposals and other contract modification documents in a timely manner and not allow the period required for evaluation, preparation or to issue such documents to exceed twenty-one (21) calendar days. Consultant shall provide written notification to County concerning those modification documents requiring more than twenty-one (21) calendar days processing time with an attached explanation of the circumstances requiring longer processing time.
- (F) All final decisions with respect to substitutions, change orders, and other contract modifications shall be at the sole determination of County.

3.09.11 Consultant shall conduct thorough site observations, make recommendations and otherwise assist County in determining the dates of substantial completion and final completion, shall review, approve and forward to County for County's review, written warranties and related documents required by the Contract Documents and assembled by Contractor, and shall certify a final Certificate for Payment. At substantial completion, Consultant shall prepare a punch list of observed items requiring correction, completion or replacement by Contractor. Consultant shall administer the Contractor's submittal of various closeout submittals including warranty documents, complete versions of final, approved shop drawings and other submittals organized by specification section, operations and maintenance materials, extra materials, and other closeout submittals as required by the Contract Documents. Consultant shall provide electronic versions of these materials. Consultant and the subconsultants shall verify and confirm the Contractor's successful demonstration of equipment and systems and the training of County's personnel as

- required by the Contract Documents. Consultant shall inspect the Project upon final completion to determine compliance with the Contract Documents and, upon so determining, prepare and execute the required forms and other documents indicating that the Work is completed in compliance with the Contract Documents and ready for use by the County.
- 3.09.12 Consultant shall review, approve and/or certify Contractor's submittal of as-constructed survey documentation, (including Computer Aided Design (CAD) and/or other hardcopy or electronic media documents) as may be required by jurisdictional agencies with authority over the Project.
- 3.09.13 NOT USED.
- 3.09.14 Consultant shall assist the Contract Administrator in coordinating and supervising vendor delivery and set-up of those "not-in-contract" furniture and equipment items.
- 3.09.15 Consultant and its lab Subconsultant shall provide up to 12 site visits (tri-weekly) during construction phase, and an additional 10 site visits as follows:
CA1-Site visit pre-installation of casework
CA2-Site visit mockup casework review
CA3-Site visit intermediate review
CA4-Site visit intermediate review
CA5-Site visit intermediate review
CA6-Site visit intermediate review
CA7-Site visit intermediate review
CA8-Site visit punch list preparation 1
CA9-Site visit punch list preparation 2
CA10-Site visit punch list final inspection
- 3.09.16 Consultant shall develop a comprehensive signage package to minimally include the following:
1. Fabrication contract negotiation.
2. Shop drawing review.
3. Construction supervision.
4. System implementation.
- 3.09.17 Consultant and Security Subconsultant shall review product data, shop drawings, RFI responses, factory demonstration review, and installed system.
- 3.09.18 Consultant and its public relations subconsultant shall present a final community report.

3.10 Warranty Administration and Post-Occupancy Services

3.10.01 For one year following substantial completion of the Project, Consultant shall assist County, without additional compensation, in securing correction of design related defects, and shall in the sixth and eleventh months make observations of the Project with County and report any observed discrepancies to County and Contractor.

3.10.02 Consultant, with Subconsultants who contributed to the design of the Project, shall participate in a Post-Occupancy walk through and Evaluation which will be scheduled by County's Construction Management Division at a time subsequent to the eleventh month warranty inspection specified above. During this Walkthrough and Evaluation, Consultant shall:

(A) Assist County in reviewing the built Project on site.

(B) Participate in and assist County's Construction Management Department in conducting interviews with principal building occupants and users.

(C) Generate written commentary concerning the relative success or failure of the facilities design; specified materials, equipment and systems; the Project's design, bidding and construction process; construction cost, schedule and quality concerns that affected the Project, the effectiveness of administrative and managerial procedures utilized by County, Consultant and the Contractor, and recommendations concerning future design and construction of the same or similar building types.

(D) Assist County's Construction Management Division in preparing and distributing a Post-Occupancy Evaluation Report that presents the findings and recommendations generated during the Post-Occupancy Walkthrough and Evaluation.

(E) Participate in presentations of the Post-Occupancy report as required to County Commissioner, County Administrator, and/or the public as required.

3.10.03 Provide Warranty Administration and support for furniture, fixtures and equipment for a minimum one-year post-installation period (starting from date of installation, inspection and final acceptance by the Contract Administrator) and extending through any extended or special warranty periods associated with individual furniture, fixture or equipment items.

4.01.01 Optional Services:

4.01.01 The services listed below may be obtained as optional services by the County, and if authorized in advance by an appropriate written authorization, will be compensated for as provided under Article 5:

- (A) Record Drawings (Optional Service): Consultant shall provide the Contract Administrator with prints and electronic media copies of the original drawings, which Consultant has revised to conditions based on information furnished by the Contractor (redlined prints and other “as-constructed” information) as Project Record Documents (hereinafter referred to as the “Record Set”). The Contractor's original marked drawings shall be submitted to the Contract Administrator with the updated prints and electronic media files prepared by Consultant. These prints and electronic media copies shall become the property of County. Electronic media shall comply with negotiated electronic media submittal requirements premised on First Amendment Exhibit A,- Attachment 2, BIM Requirements & Electronic Media Submittal Requirements.
- (B) Acoustical design approaches for the building enclosure to address the intrusion of environmental noise into the sound-critical spaces.
- (C) Any other services not otherwise included in this Agreement and not customarily furnished in accordance with generally accepted architectural practice related directly to design, construction or project administration.

END OF SECTION

**FIRST AMENDMENT
EXHIBIT A, SCOPE OF SERVICES
ATTACHMENT 1:
PROJECT SCHEDULE**

Project No.: 104134
 RFP No.: S2115731P1
 Project Title: Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility
 Facility Name: Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility

The required project schedule milestones for this project are presented below. Items marked undetermined require additional development and submittal of the Consultant's Project Development Schedule as required by the Professional Services Agreement for this Project.

PHASE	DATE REQUIRED OR ESTIMATED TIME PERIOD (CALENDAR DAYS)	
Schematic Design Phase		
Consultant's Document Preparation and Submittal	112 Days	<input type="checkbox"/> Undetermined
County Review and Cost Estimate Reconciliation	52 Days	<input type="checkbox"/> Undetermined
Consultant's Document Correction and Re-Submittal	14 Days	<input type="checkbox"/> Undetermined
Design Development Phase		
Consultant's Document Preparation and Submittal	140 Days	<input type="checkbox"/> Undetermined
County Review and Cost Estimate Reconciliation	52 Days	<input type="checkbox"/> Undetermined
Consultant's Document Correction and Re-Submittal	14 Days	<input type="checkbox"/> Undetermined
50% Construction Documents Phase		
Consultant's Document Preparation and Submittal	42 Days	<input type="checkbox"/> Undetermined
County Review	52 Days	<input type="checkbox"/> Undetermined
Consultant's Document Correction and Re-Submittal	14 Days	<input type="checkbox"/> Undetermined

75% Construction Documents Phase

Consultant's Document Preparation and Submittal	42 Days	<input type="checkbox"/> Undetermined
County Review and Cost Estimate Reconciliation	60 Days	<input type="checkbox"/> Undetermined
Consultant's Document Correction and Re-Submittal	14 Days	<input type="checkbox"/> Undetermined

100% Construction Documents Phase

Consultant's Document Preparation and Submittal	42 Days	<input type="checkbox"/> Undetermined
County Review	60 Days	<input type="checkbox"/> Undetermined
Consultant's Document Correction and Re-Submittal	21 Days	<input type="checkbox"/> Undetermined

Bidding and Award Phase

Guaranteed Maximum Price Reconciliation	0 Days	<input checked="" type="checkbox"/> Undetermined
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Construction Administration Phase

Substantial Completion Date:	700 Days	<input type="checkbox"/> Undetermined
Final Completion Date:	30 Days	<input type="checkbox"/> Undetermined
Warranty Administration and Post-Occupancy	365 Days	<input type="checkbox"/> Undetermined

**FIRST AMENDMENT
EXHIBIT A, SCOPE OF SERVICES
ATTACHMENT 2:
BIM REQUIREMENTS & ELECTRONIC MEDIA SUBMITTAL REQUIREMENT**

Introduction

The Contract Administrator will be utilizing electronic media as the principal way it develops, communicates and archives information concerning its various construction programs for the County. To that end, County's standard Professional Services Agreements for Consultant services and Construction Agreements for construction services require submittal of documents produced on electronic media. The County requires Building Information Modeling (BIM) based design, documentation and construction deliverables, scaled to the County's needs, especially for all major projects, including all new construction. These requirements shall also apply to County Managing General Contractor Agreements. In the event of a Design-Bid-Build construction delivery procurement, a second, modified BIM Project Execution Plan (BIM PxP) will be required to clarify the contractor's involvement to further develop and complete the project BIM and all related activities.

For projects utilizing BIM delivery, Consultant and Contractor will include native BIM format and Industry Foundation Class (IFC) electronic BIM deliverables in addition to all other electronic copies of hardcopy submissions and other files that support the intent of the project at all project milestones. Data interoperability is important to the County and is in line with our life cycle vision. Design Authoring software shall be used throughout the project lifecycle and shall be parametric. It is also important that nationally defined standards and protocols be used when developing BIM's so that data may be normalized for multiple uses, now and in the future. Most current versions of standards such as the National BIM Standards, BIMForum LOD Specification Part 1 and Commentary, OmniClass, Unifomat and MasterFormat, should be used whenever possible.

The Consultant will derive any two-dimensional (2D) deliverables from the Building Information Model. Further, it is the intent of the County to require open-standard facility management data as a project deliverable at all milestones. Project Consultant shall initiate and jointly develop BIM and Construction Operations Building Information Exchange (COBie) information to be completed by the Contractors throughout their corresponding phases of the project.

Definitions and Identifications for BIM terms used in this Attachment, requirements for electronic media, the BIM/CADD Standard of Care, Level of Development (LOD), COBie and other requirements are presented in Sections 1, 2 and 3 of this Attachment 2. The detailed (BIM PxP) Template is provided in Section 4 and is required to be developed at project initiation to provide a master information and data management plan and assignment of roles and responsibilities for model creation and data integration. Wherever possible, the BIM PxP will be developed through a collaborative approach involving all Project Consultants, Contractors and applicable County staff. A small sample of the Model Progression Schedule/Agent Responsible Matrix Template (MPS) is provided in Section 5 and will be made available in its native Excel format upon request. An Introduction and directions for completion are described on the first page of the document.

An important goal for the Construction Management Division is to not only enhance the value of all team efforts to efficiently design and construct lean, new and renovated construction projects using BIM, but also to assist in achieving a consistent use and development of BIM across multiple building types and for a wide range of County agencies. Predictable and uniform data will help to ensure a building dataset that will facilitate ongoing building operation and maintenance protocols, and perhaps someday be called upon to provide usable and reliable data to support other SMART City / SMART County initiatives.

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Section 1 Definitions and Identifications

The following definitions and identifications set forth below apply to this Attachment 2 unless the context, the Agreement, Exhibit A, Scope of Work in which the word or phrase is used requires a different definition. In the event of a conflict, the Contract Administrator will determine its final resolution:

- 1.1 **3D Coordination & Conflict Analysis:** A process in which clash detection software is utilized during the coordination process to determine field conflicts by comparing 3D models of building systems. The goal of clash detection is to eliminate the major system conflicts prior to installation.
- 1.2 **As-Constructed BIMs:** Multiple Construction BIMs, delivered and validated by the Contractor before closing-up spaces and reviewed by the Consultants that represent the final As-Constructed building and components, including embedded data as required by the Contract Documents.
- 1.3 **Asset Management:** A process in which an organized management system will efficiently aid in the maintenance and operation of a facility and its assets. Asset Management utilizes the data contained in a record model to determine cost implications of changing or upgrading building assets, segregate costs of assets for financial tax purposes, and maintain a current comprehensive database that can produce the value of a company's assets.
- 1.4 **Augmented Reality Simulation (AR):** A Model Use where 3D models - combined with other technologies - allow users to experience virtual objects superimposed on top of physical objects or places, thus allowing images from the physical and virtual worlds to appear as one. AR is typically experienced through hand-held screens, wearables, holograms and projections.

- 1.5 **BIM:** Building Information Modeling (sometimes redundantly identified as a BIM model). BIM is not a specific product or technology, instead it's a collection of software applications and processes designed to facilitate coordination and project collaboration through a facilities lifecycle. BIM is a digital representation of physical and functional characteristics of a facility and is used as a process for developing design, construction and operations and maintenance documentation by virtually constructing a building, bridge or other form of infrastructure – before anything is built.
- 1.6 **BIM Project Execution Plan (BIM PxP / PxP):** A document that defines the appropriate uses for Building Information Modeling on a project (e.g., design authoring, design review and 3D coordination), along with a detailed design and documentation process for executing BIM throughout a facility's lifecycle, team contacts, team responsibilities, team roles, definitions, delivery methods / formats, LOD matrix, work flow and process maps are among other information outlined in the BIM PxP.
- 1.7 **Building Maintenance Scheduling:** A process in which the functionality of the building structure (walls, floors, roof, etc.) and equipment serving the building (mechanical, electrical, plumbing, etc.) are maintained over the operational life of a facility.
- 1.8 **BIM2Field:** See definition for Digital Layout.
- 1.9 **CAD/CADD:** Computer Aided Design/Computer Aided Design and Drafting. Interchangeably used terms interpreted as 2D, (Two Dimensional) representations in electronic format. CAD represents all pre-BIM digital tools and their 2D/3D deliverables.
- 1.10 **CAD/BIM Manager:** The System Administrator and/or person responsible for leading the BIM implementation processes within an organization and supporting it in developing/delivering new BIM services and model-based efficiencies. Also responsible for the management of all CAD and BIM data and processes.
- 1.11 **CIM / Sub-Surface:** Civil Information Modeling and subsurface utility mapping that relates and is coordinated with the building modeling.
- 1.12 **Clash Detection/ Clash Rendition:** A process in which clash detection software is used during the coordination process to determine field conflicts by comparing 3D models of building systems prepared by different disciplines. Rendition or the visual representation of the native-format model file is be used specifically for spatial coordination processes. The key benefit is to eliminate major system conflicts prior to installation, reducing errors, and hence costs, prior to commencement of construction.
- 1.13 **COBie:** Construction Operations Building Information Exchange specifications as administered through the buildingSMART alliance, National Institute of building Sciences, Washington, DC. http://www.nibs.org/?page=bsa_cobie.
- 1.14 **Code Validation:** A process in which code validation software is utilized to check model parameters against specific codes.
- 1.15 **Commissioning:** The process of verifying in new construction that agreed upon building systems achieve the County's project requirements.
- 1.16 **Compatible Data:** Data that can be accessed directly by the target BIM or CADD system upon delivery to the County, without further translation or post-processing of the electronic digital data files. It is the responsibility of Consultant to ensure this minimum level of compatibility.

- 1.17 **Constructability / PEER Review:** Constructability can be defined as a review of the building model along with drawings, specifications to determine feasibility to assembly the project in the manner documented. The review includes, but does not limit, evaluating and identifying efficiencies, assemblies, systems and obstacles to construction.
- 1.18 **Construction System Design:** A process in which 3D System Design Software is utilized to design and analyze the construction of a complex building system (e.g. form work, glazing, tiebacks, etc.) in order to improve planning.
- 1.19 **Coordination BIM:** A model prepared for the physical coordination of systems between disciplines, involving Clash Detection reports, Constructability reviews, virtual and/or personal coordination meetings with architects, engineers, consultants, construction manager(s) and sub-contractors.
- 1.20 **Cost Analysis:** A process in which a BIM can offer a preliminary analysis of the costs of constructing a Project during the design process and provide cost benefit effects of additions and modifications with potential to save time and avoid budget overruns. The accumulation, examination, and manipulation of cost data for comparisons and projections.
- 1.21 **Cost Estimation:** A process in which a BIM is used to develop accurate quantity take-offs for the purpose of creating or validating cost estimates.
- 1.22 **Design Authoring:** A process in which 3D software is used to develop a BIM based on criteria that is important to the translation of the building's design. Design authoring tools are a first step towards BIM, connecting the 3D model with a database of properties, quantities, means and methods, costs and schedules.
- 1.23 **Design for Maintenance:** An evaluation process where each object selected during design for inclusion in a BIM are evaluated for maintenance issues, such as recommended, or code required clearances to perform routine maintenance activates to include complete replacement of the object or any of its components.
- 1.24 **Design Model:** is an object-based 3D model generated by the Design Team (individually or as a group) for the purposes of design analysis, Clash Detection and documentation.
- 1.25 **Design Reviews:** A process in which a 3D model is used to showcase the proposed design to the stakeholders and to help evaluate whether it has met deliverable requirements.
- 1.26 **Digital Fabrication:** A process that utilizes machine technology to prefabricate objects directly from a 3D Model. The Model is spooled into appropriate sections and input into fabrication equipment for production of system assemblies.
- 1.27 **Digital Layout - BIM2Field:** A process that allows information in a BIM to be transferred to digital layout tools for layout in conformance to the model. This information can be used to validate (QA/QC) the physical facility against the model.
- 1.28 **Disaster Planning / EM Preparation:** A process in which emergency responders would have access to critical building information in the form of model and information system. The BIM would provide critical building information to the responders, that would improve the efficiency of the response and, more importantly, minimize the safety risks. The dynamic building information would be provided by a building automation system (BAS), while the static building information, such as floor plans and equipment schematics, would reside in a BIM model. These two systems would be integrated via a wireless connection and emergency responders would be linked to an overall system. The

- BIM coupled with the BAS would be able to clearly display where the emergency was located within the building, possible routes to the area, and any other harmful locations within the building.
- 1.29 **Electrical Analysis:** A process in which intelligent modeling software uses the BIM model to determine the most effective electrical system based on engineering and design specifications. These analysis tools and performance simulations can significantly improve the design of the facility and its energy consumption during its lifecycle in the future.
 - 1.30 **Energy Analysis:** A process in which intelligent modeling software uses the BIM model to determine the most effective facility energy plan based on engineering and design specifications. These analysis tools and performance simulations can significantly improve the design of the facility and its energy consumption during its lifecycle in the future.
 - 1.31 **Existing Conditions Modeling:** A process in which a project team develops a parametric 3D model of the existing conditions for a site, facilities on a site, or a specific area within a facility. This model can be developed in multiple ways depending on what is desired and what is most efficient. Once the model is constructed, it can be queried for information, whether it be for new construction or a modernization project.
 - 1.32 **Facility Data Exchange:** A process where a facility data schema is developed to ensure information is supplied to the BIM in electronic form so that it can be easily exchanged between the BIM and the organizations selected tool. The capability should include textural as well as graphic entities.
 - 1.33 **Federated BIM:** A BIM model which links (does not merge) several single-discipline models together. Federated Models do not merge the properties of individual models into a single database. A federated model is useful for design co-ordination, clash avoidance and clash detection, approvals processes, design development, estimating and so on, but the individual models do not interact, they have clear authorship and remain separate. This means that the liabilities of the originators of the separate models are not changed by their incorporation into the federated model.
 - 1.34 **IFC:** Industry Foundation Classes, open sharable standards for building information as defined by the buildingSMART alliance, National Institute of building Sciences, Washington, DC. <http://www.buildingSmart.org/compliance/certified-software>
 - 1.35 **Information Manager:** The BIM Protocol refers to and provides for the appointment of an 'Information Manager' by the employer. This is the project manager, or BIM Manager who is responsible for managing the processes of information exchange on projects, using BIM procedures and methods. This is expected to form part of a wider set of duties under an existing appointment and is likely to be performed either by the Design Lead or the Project Lead.
 - 1.36 **Integrated Project Delivery* (IPD):** The owner's goal who's primary motive is to bring the teams together early on in the project. A full implementation of BIM also requires the project teams to collaborate from the inception stage and formulate model sharing and ownership contract documents. *NOTE: True IPD employs various constructs, many of which the County is precluded from using by state law. (such as the use of multi-party contracts, and profit sharing). The County's integrated delivery approach leverages many aspects of IPD that are allowed by law.

- 1.37 **Laser Scanning and Point Cloud Integration:** A process where the application is the controlled steering of laser beams followed by a distance measurement at every pointing direction. This is used to rapidly capture shapes of objects, buildings and landscapes. The point cloud generated is then interpreted by software to create a BIM of the existing conditions.
- 1.38 **Life Cycle Assessment** - Life-cycle assessment (LCA, also known as life-cycle analysis) is a cradle-to-grave environmental impact assessment for built assets, in terms of materials and energy. The energy and materials used, along with waste and pollutants produced as a consequence of a product or activity, are quantified over the whole life cycle; the result representing the environmental load of that asset. ISO 14040 defines LCA methodology.
- 1.39 **Lighting Analysis:** A process in which intelligent modeling software uses the BIM model to determine the most effective lighting method based on engineering and design specifications. These analysis tools and performance simulations can significantly improve the design of the facility and its energy consumption during its lifecycle in the future.
- 1.40 **LOD:** Level Of Development Specification for Building Information Models. See Section 3 – BIM/CADD Standards of Care and the current edition (2019 or later), of the BIMForum LOD Specification for additional information. <http://BIMForum.org/lod>
- 1.41 **Maintenance & Repair Information:** A function to allow the collection and storage of maintenance and repair information about objects brought into a BIM.
- 1.42 **Mechanical Analysis:** A process in which intelligent modeling software uses the BIM model to determine the most effective mechanical system design based on engineering and design specifications. These analysis tools and performance simulations can significantly improve the design of the facility and its energy consumption during its lifecycle in the future.
- 1.43 **Model Progression Schedule/Agent Responsible Matrix (MPS):** A worksheet that is a guide for the project team to define model creation scope of work, minimum model level of development and responsible agent. The LOD will aid in determining the level of involvement of the project stakeholders from planning through facility turnover. This worksheet is intended to guide the project team in achieving project goals, accommodate required BIM uses, meet schedule requirements for the project and identify the responsible agents at differing phases of the project.
- 1.44 **OmniClass:** OmniClass Construction Classification System (OCCS), is a means of organizing and retrieving information specifically designed for the construction industry. This agreement incorporates Table 23 establishing National Standards for the classification of construction products. Most recent release date May 16, 2012. OmniClass uses MasterFormat and UniFormat as the basis of its Tables wherever possible. <http://www.omniclass.org/about>
- 1.45 **Owner Approval:** A business process which takes advantage of information stored in a BIM to help validate progress as well as observing that the Owner's intent for the facility is being honored both conceptually and contractually.
- 1.46 **Phase Planning - 4D Modeling:** A process in which a 4D model (3D models with the added dimension of time) is utilized to effectively plan the phased occupancy in a renovation,

- retrofit, addition, allow construction scheduling or to show the construction sequence and space requirements on a building site.
- 1.47 **Programming:** A process in which a spatial program is utilized to efficiently and accurately assess design performance in regard to spatial requirements. Use of the BIM model allows the project team to critically analyze space and understand the complexity of space standards and regulations for discussion with the County and other stakeholders.
- 1.48 **PxP:** Abbreviated form of (BIM PxP). See definition for BIM Project Execution Plan.
- 1.49 **Quality Assurance/Quality Control - QA/QC:** QA/QC as a BIM Use refers to ensuring that the BIMs follow County requirements and all components of the approved BIM Execution Plan, and that the BIMs accurately represent the building geometry and data to meet the purposes for which they are developed.
- 1.50 **Quantity Take Off (QTO):** A model use representing how 3D models are used to calculate the quantity of Furniture, Fixtures and Equipment or building material to create a detailed measurement of materials and labor needed to complete a construction project. Estimators review drawings, specifications and BIMs to find these quantities.
- 1.51 **Record BIMs:** The updated BIMs generated by the Architecture/Engineering Team of record that includes the Contractors' As-Constructed BIMs.
- 1.52 **Security / Key Management:** A process to identify and evaluate the security zones in the facility using BIM. The process includes identifying the door keys required for openings through the security perimeters established to ensure that the level of security defined is maintained.
- 1.53 **Site Analysis:** A process in which BIM/GIS tools are used to evaluate properties in a given area to determine the most optimal site location for a future project. The site data collected is used to first select the site and then the position the building based on engineering criteria (e.g. solar path, utility availability, hazardous material).
- 1.54 **Site Utilization Planning:** A process in which a 4D model is used to graphically represent both permanent and temporary facilities on site, with the construction activity schedule. Additional information incorporated into the model can include labor resources, materials and associated deliveries, and equipment location.
- 1.55 **Space Management:** A process in which BIM is utilized to effectively allocate, manage, and track space types, workspaces, occupancy and resources within physical assets.
- 1.56 **Specification Production:** A data based three-part specification system linked to the objects selected in a BIM which responds to any changes or alternatives items added or subtracted from the model.
- 1.57 **Structural Analysis:** A process in which analytical modeling software utilizes the BIM design authoring model to determine the behavior of a given structural system. Based on this analysis further development and refinement of the structural design takes place to create effective, efficient, and constructible structural systems.
- 1.58 **Sustainability & LEED Evaluation:** A BIM process in which a project is evaluated based on LEED or other sustainability criteria. This can refer to materials, performance, or a process. Sustainability evaluations can be applied across all four phases of a construction project, Planning, Design, Construction, and Operation. Sustainability evaluation is most effective when it is done in planning and design stages and then applied in construction and operations phase.

- 1.59 **Tolerance:** Acceptable dimension or variation from precise material, fabrication, or assembled condition as a unit of measure to be specified allowable variations in strength, stability, dimension, the mix of a material, the performance of a system, temperature ranges and so on.
- 1.60 **Total Cost of Ownership / Service Life:** A financial estimate intended to help buyers and owners determine all direct and indirect costs of a product or system.
- 1.61 **Virtual Design and Construction (VDC):** The management of integrated multi-disciplinary performance models of design-construction projects, the work processes and organization of the teams to support business objectives.
- 1.62 **Virtual reality Simulation (VR):** A Model Use where 3D models are part of an Immersive Environment where users experience simulated places, objects and processes. As opposed to Augmented Reality Simulation, VR may require full 'immersion' within multi-projection rooms (CAVE) and/or through stereoscopic goggles and other specialized gear.
- 1.63 **Visualization:** Any technique for creating images, diagrams, or animations to communicate information. BIM can be used as a tool to show visual clarity of simple and complex systems and data to help understand project scope, design options, constructability, coordination and QA/ QC.

Section 2 Electronic Media

2.1 General Requirements:

2.1.1 All Work, including drawings, land surveying work, maps, details or other drawing information to be provided in electronic media by Consultant shall be accomplished and developed using Computer-Aided Design and Drafting (CADD), or Building Information Modeling (BIM), or a coordinated combination of both as determined by the Contract Administrator and may also include other software and procedures conforming to the following criteria.

2.2 BIM and CAD/CADD Graphic Formats:

2.2.1 Provide all CAD/CADD data in Autodesk, Inc.'s AutoCAD release 2019 or higher for Windows in native .dwg electronic digital format. CAD/CADD data required for Contract submittals shall be provided in native .dwg format. Provide copies of all drawing sheets or other CAD/CADD and/or PDF format produced documents intended for hardcopy plotting or printing in plot (.plt) and drawing web format (.dxf) versions of all sheets/documents.

2.2.2 Provide all BIM models and data in Autodesk Revit 2019 or higher. Provide all BIM and data in any of the following software formats:

- a. Autodesk, Inc. Revit 2019 or higher.
- b. Alternative compatible BIM software formats that conform to the requirements of Section 2.2 of this Attachment if accepted in writing by the County's Contract

Administrator.

2.2.3 BIM data required for Contract submittals shall be provided in their native (.rvt typical) format as well as .ifc format in conformance with IFC (Industry Foundation Classes) IFC2x4 or higher, as established by the buildingSMART International Alliance for Interoperability. Use of BIM vendor's or systems that incorporate the International Alliance for Interoperability IFC standard above are acknowledged but their use must be approved in writing in advance by the County's Contract Administrator and otherwise comply with this Attachment.

2.2.4 Building Positioning to be accomplished for the intended project site by using "Auto – by Shared Coordinates" process or similar. Obtain State Plane Coordinates from Project survey information and utilize this same positioning process for all BIM files.

2.2.5 CAD/CADD data required for Contract submittals shall be provided in native .dwg format or be contained within the structure of the BIM data required in Section 2.2.2.

- a. Ensure that all digital files and data (e.g., constructs, elements, base files, prototype drawings, reference files and images, blocks, attribute links, pen settings and all other files external to the drawing itself) are Compatible Data with the Contract Administrator's target BIM and/or CADD system (i.e., BIM and CADD software, platform, database software), and adhere to the standards and requirements specified herein.

2.2.6 Target platform: A personal computer with Windows 10 operating system that meets or exceeds the minimum manufacturer's requirements to operate the version of software utilized for the project.

2.2.7 Any non-graphical database delivered with prepared drawings must be provided in relational database format compatible with Microsoft Access 2016 or higher, or other compatible SQL format database. All database tables must conform to the structure and field-naming guidance provided upon request by the Contract Administrator.

- a. Maintain all linkages of non-graphical data with graphic elements, relationships between database tables, and report formats.

2.2.8 CAD/CADD Standards:

- a. Standard plotted drawing size: 24-inch x 36-inch sheets (Arch D-sized sheet)
- b. Coordinate with the Contract Administrator concerning the standard file naming protocol to be utilized.
- c. Drawing Set Organization and Sheet Identification per the United States National CAD Standard - V5. Provide dots in lieu of dashes at all uses.

2.2.9 CAD/CADD Layering:

- a. Conform to the guidelines defined by the American Institute of Architect's (AIA) standard document, U.S. National CAD standards version 5 (V5). "CAD Layer

Guidelines”, 2nd edition or later.

- b. Provide an explanatory list of which layers are used at which drawing and an explanatory list of all layers which do not conform to the standard AIA CAD Layer Guidelines including any user definable fields permitted by the guidelines.
 - c. Layering: The Contract Administrator may, from time to time, supplement the AIA CAD Layer Guidelines with the Contract Administrator's specific requirements for Facilities or Construction Management and other related information. Obtain latest Contract Administrator specific layering from Contract Administrator prior to production of documents and incorporate into drawings.
- 2.2.10 Attribute Definitions:
- a. Obtain latest guidance from the Contract Administrator concerning attribute definition, database linking and other information embedding requirements prior to production of documents.
- 2.2.11 Federated Models: The following colors shall be utilized for all federated models including Design, Construction, Coordination, As-Constructed, and Record Models:
- a. Architectural Models
 1. Architectural - Default
 2. Envelope (Curtainwall, Precast, Other) - Default
 3. Masonry - Gray
 - b. Civil & Site Improvement Model
 1. TBD
 - c. Structural Models
 1. Steel – Rust
 2. Concrete - Gray
 3. Masonry - Gray
 - d. MEP/FP Models
 1. Mechanical Ductwork Supply - Magenta
 2. Mechanical Ductwork Return - Plum
 3. Mechanical Ductwork Exhaust – Medium Orchid
 4. Mechanical Piping Supply – Hot Pink
 5. Mechanical Piping Return- Violet
 6. Electrical Conduit - Orange
 7. Cable Tray- Yellow
 8. Electrical Lighting – Light Golden Rod Yellow
 9. Plumbing Domestic Water - Lime
 10. Plumbing Storm / Roof Drain – Dark Green
 11. Plumbing Waste / Vent - Olive

12. Medical Gas – Light Green
13. Fire Protection - Red
14. Fire Alarm – Golden Rod
15. Data/IT / Controls - Aqua
16. Pneumatic Tubing – Dark Slate Gray

e. Miscellaneous Models

1. Framing – Sandy Brown
2. Equipment Models (by Equip. Planners) – Burly Wood
3. Clearances - Dark Red

2.2.12 Deviations from Standards:

- a. Submit a written request for approval of any deviations from the Contract Administrator's established electronic media standards. Pre-coordinate the development, use and submittal of 3-D modeling, Building Information Models (BIM), photo-realistic renderings, animations, presentations and other visualization/information tools utilized during the design and construction process to ensure compatibility of submittal with County's uses and information systems.
- b. No deviations from the Contract Administrator's established BIM/CADD standards will be permitted unless prior written approval of such deviation has been received from the Contract Administrator.
- c. County or its Owner's Designated Representative reserves the right to review, accept or reject AutoCAD files, BIMs and other Digital Deliverables. If the Digital Deliverables do not comply with the provisions of the agreement between County and the External Project Team member, the External Project Team member will be required to correct the work at no additional cost to County or delay to the Project Schedule.
- d. County or its Owner's Designated Representative also reserves the right to review, accept or reject Facility Data deliverables when required by contractual agreements. To ensure successful integration into County's computer aided facility management software, milestone reviews may be conducted by County to export or link BIM data into these designated programs to ensure compatibility and capability. During the development of the BIM PxP, the required BIM outputs allowing for this integration will be determined. If the Facility Data integration with the computer aided facility management software fails because of the BIMs non-compliance with the provisions of the agreement between County and the External Project Team member, or the data imported does not accurately reflect the current state of the Project, the External Project Team member will be required to correct the work at no additional cost to the owner or delay to the Project Schedule.

2.3 Non-BIM/CADD Graphic Format:

2.3.1 Provide digital photography files and other miscellaneous graphics in High Resolution JPEG, PDF in 600 dots per inch (dpi) or higher resolution or PNG format. Provide RAW files when available.

2.4 Non-Graphic Format:

2.4.1 Provide word processing files in Microsoft Word 2016 or higher compatible file formats including all fonts, typefaces, bitmap and vector graphics and other information necessary for remote printing.

2.4.2 Provide spreadsheet files in Microsoft Excel 2016 or higher for windows compatible file formats including all fonts, typefaces, bitmap and vector graphics and other information necessary for remote printing.

2.4.3 Provide database files in relational database format compatible with Microsoft Access 2016 or higher, PDF or other compatible SQL format database including all tables, form and report formats, fonts, typefaces, bitmap and vector graphics and other information necessary for remote printing. Ensure integrity of relational database structure.

2.5 Delivery Media and Format:

2.5.1 Submit copies of all BIM/CADD data and other electronic files developed under this contract on electronic digital media as required for project phase submittals to 400 dots per inch (dpi) resolution.

2.5.2 Provide electronic digital data and files on labeled ISO-9660 CD-ROM., DVD's, Flash drives or other acceptable alternatives if approved by the Contract Administrator. Each Device or Disc shall contain identifying County project information in their disk name.

2.5.3 The electronic digital media shall be in the format which can be read and processed by the Contract Administrator's target CADD or BIM system. See also Section 2.2.

2.5.4 The external label or archival case for each electronic digital media shall contain, as a minimum, the following information:

- a. The Project Number, Project Title and date.
- b. The Facility Name
- c. The format and version of operating system software.
- d. The name and version of utility software used for preparation (e.g., compression/decompression) and copying files to the media.
- e. A list of the filenames, (a separate sheet will be accepted).

2.5.5 Before a BIM/CADD file is placed on the delivery electronic digital media, the following procedures shall be performed:

- a. Detach all BIM's from the Central File.
- b. Ensure the proper and updated completion of all information on the 'Start Screen' page for all Revit models.
- c. Scrub and remove all unused or alternative versions, elements and objects from the model.
- d. Ensure that drawing sheets, viewports, paper-space, line weights, fonts, and other drawing components are correctly configured for Contract Administrator's viewing and plotting.
- e. Make sure all reference files are attached using a "relative" path setting and without device or directory specifications.
- f. "Transmit a Model" function should be used in Revit or AutoCAD to assemble files for submittal. For each 2D drawing, provide one bound file containing drawing sheet with associated XREFs and one un-bound file containing the associated XREFs.
- g. Compress and reduce all design files using PKZIP, WINZIP or other compatible file compression/decompression software approved by the Contract Administrator. If the file compression/decompression software is different from that specified above, then an electronic digital media copy of the file compression/decompression software shall be purchased for the Contract Administrator and provided to the Contract Administrator with the delivery media.
- h. Include all files, both graphic and non-graphic, required for the project (i.e., color tables, pen tables, font libraries, block libraries, user command files, plot files, and other elements of drawing definition). All blocks not provided as Contract Administrator-furnished materials must be provided to the Contract Administrator as a part of the electronic digital deliverables.
- i. Make sure that all support files such as those listed above are in the same directory and that references to those files do not include device or directory specifications.
- j. Document any fonts, tables, or other similar customized drawing element developed by Consultant or not provided among Contract Administrator-furnished materials. Contractor shall obtain Contract Administrator approval before using anything other than Contract Administrator's standard fonts, line types, tables, blocks, or other drawing elements available from Contract Administrator.
- k. Include any standard sheets (i.e., abbreviation sheets, standard symbol sheets, or other listing) necessary for a complete project.
- h. Check completed files are free of any known viruses or unrequired attachments.

2.6 Drawing Development Documentation:

2.6.1 Provide the following information for each finished drawing in the nonplot layer X****-NPLT:

- a. How the data were input (e.g., keyed in, downloaded from a survey total station instrument (include name and model), and other identification data).
- b. Brief drawing development history (e.g., date started, modification date(s) with brief description of item(s) modified, author's name, and other identifying data.).
- c. The names of the reference, blocks, symbols, details, tables, and schedule files required for the finished drawing.
- d. Layer assignments and lock settings.
- e. Text fonts, line styles/types used, and pen settings.

2.7 Submittal:

2.7.1 Document any fonts, tables, or other similar customized drawing element developed by Consultant or not provided among the Contract Administrator-furnished materials. The contractor shall obtain Contract Administrator approval before using anything other than the Contract Administrator's standard fonts, line-types, tables, blocks, or other drawing elements available from the Contract Administrator.

2.8 Submittals / Deliverables:

2.8.1 Submit as Project Record Documents specified above and as required for project phase submittals and project record documents.

2.8.2 Submit electronic media with a transmittal letter containing, as a minimum, the following information:

- a. The information included on the external label of each media unit (e.g., CD, DVD, flash drive, etc.), along with the total number being delivered, and a list of the names and issue dates of all files on the media.
- b. Brief instructions for transferring the files from the media.
- c. Confirm that all delivery media is free of known computer viruses. A statement including the name(s) and release date(s) of the virus-scanning software used to analyze the delivery media, the date the virus-scan was performed, and the operator's name shall also be included with the certification. The release or version date of the virus-scanning software shall be the current version that has detected the latest known viruses at the time of delivery of the digital media.
- d. The following "Plot File Development and Project Documentation Information" as an enclosure or attachment to the transmittal letter provided with each electronic digital media submittal:
 1. List of all new figures, symbols, tables, schedules, details, and other blocks created for the project, which were not provided to Consultant with the Contract Administrator-furnished materials, and any associated properties.
 2. List of all database files associated with each drawing, as well as a description and documentation of the database format and schema design.
 3. Recommended modifications which will be necessary to make the data available for GIS use.

2.8.3 Prime Contractors are responsible for ensuring that the Digital Deliverables prepared by their Subcontractors or Subconsultants comply with the standards and policies outlined in this document.

2.9 Ownership:

2.9.1 County has ownership and all rights to all finished or unfinished Digital Deliverables developed for this Project. Any Digital Deliverables generated under any County design and construction Contract, including those generated by the External Project Team Members' Subcontractors or Subconsultants, shall become the property of County. County will have unlimited use of the Digital Deliverables produced for the Project. County acknowledges that the Digital Deliverables are an Instrument of Service of the External Project Team member and that the author of the Digital Deliverable does not represent or guarantee that the Digital Deliverable will be useful to County for any purposes beyond those uses that they were authored.

2.9.2 County will have unlimited rights under the Agreement of which this document is a part to all information and materials developed under these and other contractual requirements and furnished to the Contract Administrator and documentation thereof, reports, and listings, and all other items pertaining to the work and services pursuant to this agreement including any copyright.

2.9.3 Unlimited rights under this contract are rights to use, duplicate, or disclose text, data, drawings, and information, in whole or in part in any manner and for any purpose whatsoever without compensation to or approval from author except where otherwise limited within the Contract.

2.9.4 The Contract Administrator will at all reasonable times have the right to inspect the work and will have access to and the right to make copies of the above-mentioned items.

2.9.5 All text, electronic digital files, data, and other products generated under this contract shall become the property of County except where otherwise limited within the Contract.

2.10 Contract Administrator-Furnished Materials to the Construction Contractor:

2.10.1 The Contract Administrator and Consultant may make various electronic information available to the Contractor during the Pre-Construction and Construction phases of the Project. To this end, Consultant shall make the following information available to the Contractor in electronic format:

- a. Work-files: Selected work product files, copies of BIM and/or CAD files, reports, spreadsheets, databases, specifications, drawings and other documentation of

Consultant's work in progress may be provided to the Contractor, Managing General Contractor, or other County consultant on an as required basis. Consultant shall cooperate and facilitate the secure exchange of these electronic media documents.

- b. Where electronic media submittals of final site surveys are required: Provide electronic copies of any existing site survey data already on electronic media conforming to Section 2.2 of this Attachment.
- c. Where Electronic Project Record Documents are required, Consultant will provide the Contractor one set of contract drawings in an electronic file format conforming to Section 2.2 of this Attachment, to be used for as-constructed drawing markups at the Contractor's option. Make electronic file drawings available on media in conformance with Section 2.5 of this Attachment.

2.11 Other Digital Information:

2.11.1 A variety of digital information may be generated by participants in the design process including the Contract Administrator, Consultant, Subconsultants, Contractor, subcontractors, the Contract Administrator's commissioning authority, local jurisdictional authorities and other project team members.

2.11.2 Consultant shall facilitate and participate in this digital exchange of information by conforming to the standards expressed above and as further described in attachments and Exhibit A Scope of Works.

Section 3 BIM/CADD Standards of Care

3.1 General Provisions:

3.1.1 The Model(s) shall be developed to include the systems described below as they would be built, the processes of installing them, and to reflect final As-Constructed construction conditions. The deliverable 3D Model at all phases shall be developed to include as many of the systems described below as are necessary and appropriate to the design/construction stage. The BIM shall be provided in an editable form and from its inception shall include automatic model positioning using a common reference point (Point of Origin), based on "Florida State Plane Coordinates" derived from the project survey.

3.1.2 The Model shall be developed using Building Information Modeling ("BIM") supplemented with Computer Aided Drafting and Design ("CADD") content as necessary to produce a complete set of Construction Documents.

3.1.3 Provide all Building Information Modeling (BIM) for Space Management and Program Validation in conformance to the General Service Administration's (GSA)

“Building Information Modeling Guide 02 -Spatial Program Validation,” dated May 21, 2015 or later. Provide space identification, charts and information in conformance with this Guide.

3.1.4 The parties shall utilize the appropriate Levels of Development (LOD) described below in completing the Model, which establishes the required LOD for each Model Element at each phase of the Project.

3.1.5 The following Level of Development (LOD) descriptions are summaries of Level Of Development Specification for Building Information Models as developed by BIMForum. (<http://bimforum.org/lod>), current edition (2017 or later). **Each subsequent LOD builds on the previous level and includes all the characteristics of previous levels.** See also “Section 5 BIM Model Progression Schedule” for examples and graphic descriptions of Levels of Development. The following list is a simplified summary of the adopted Levels of Development:

- **LOD 100** elements are not geometric presentations. They may be symbols or other generic representations of information that can be derived from other model elements. Any information derived from LOD 100 elements must be considered approximate.
- **LOD 200** elements are represented graphically but are generic placeholders, e.g., volume, quantity, location, or orientation. Any information derived from LOD 200 elements must be considered approximate.
- **LOD 300** elements are graphically represented as specific systems, objects, or assemblies from which quantity, shape, size, location, and orientation can be measured directly, without having to refer to non-modeled information such as notes or dimension callouts.
- **LOD 350** elements are enhanced beyond LOD 300 by the addition of information regarding interfaces with other building systems. For example, an LOD 350 masonry wall element would include jamb conditions, bond beams, grouted cells, dowel locations, and joints – information that enables the model user to coordinate the wall element with other systems in the structure.
- **LOD 400** elements are modeled at sufficient detail and accuracy for fabrication of the represented component.

NOTE - County and the LOD Specification do not address **LOD 500** since that LOD relates to field verification and is not an indication of progression to a higher level of geometry or information.

3.1.6 The parties shall utilize the appropriate Levels of Development (LOD) described below in completing the Model, which establishes the required LOD for each Model Element at each phase of the Project. LODs and Model Definition: There is no such thing as an “LOD ### model.” As previously noted, project models at any stage of delivery will invariably contain elements and assemblies at various levels of development. As an

example, it is not logical to require an “LOD 200 model” at the completion of the schematic design phase. Instead, the “100% SD Model” will contain modeled elements at LOD 100 as well as various other levels of development. Consultants will be required to submit a LOD Model Progression as part of the Project Execution Plan.

3.2 **Level of Development (LOD) – Expanded Descriptions**

3.2.1 **LOD 100:** (Predesign preferred) and Schematic Design (Basic Services)

- a. **Model Content Requirements:** Overall building massing indicative of area, height, volume, location, and orientation may be modeled in three dimensions or represented by other data.
- b. **Potential Uses:**
 1. **Analysis:** The Model may be analyzed based on volume, all spaces, area, solar orientation and configuration by application of generalized performance criteria assigned to the representative Model Elements.
 2. **Cost Estimating:** The Model may be used to develop a cost estimate based on current area, volume or similar conceptual estimating techniques (e.g., square feet of floor area, etc.), as opposed to components.
 3. **Schedule:** The Model may be used for project phasing and overall duration.

3.2.2 **LOD 200:** Design Development (Basic Service)

- b. **Model Content Requirements:** Model Elements are modeled as generalized systems or assemblies with approximate quantities, size, shape, location, and orientation. Non-geometric information may also be attached to Model Elements. Partitions and simple furniture models shall be included at this phase.
- c. **Potential Uses:**
 1. **Analysis.** The Model may be analyzed for performance of selected systems and orientation by application of generalized performance criteria assigned to the representative Model Elements.
 2. **Cost Estimating.** The Model may be used to develop cost estimates based on the approximate data provided and conceptual estimating techniques (e.g., volume and quantity of elements or type of system selected).
 3. **Schedule.** The Model may be used to show ordered, time-scaled appearance of major elements and selected systems.

3.2.3 **LOD 300:** Construction Documents (Basic Service)

- a. **Model Content Requirements:** Model Elements are modeled as specific assemblies accurate in terms of quantity, size, shape, location, and orientation. Non-geometric information may also be attached to Model Elements.
- b. **Facility Management information:** Consultant will be required to input all new products installed under the scope of work for this project in conformance with an agreed upon list in OmniClass Table 23 format per Table 1 herein. County and Consultant to meet to refine the scope of the COBie information following

issuance of the Schematic Phase NTP.

c. Potential Uses:

Suitable for the generation of traditional construction documents and shop drawings.

1. Analysis. The Model may be analyzed for performance of selected systems by application of specific performance criteria assigned to the representative Model Elements.
2. Cost Estimating. The Model may be used to develop cost estimates based on the specific data provided and industry estimating techniques.
3. Schedule. The Model may be used to show ordered, time-scaled appearance of detailed elements and systems.
4. Clash Detection. The Model may be used to identify architectural and engineering conflicts for primary systems and elements. Areas of study include HVAC ductwork and equipment, structural elements, above ground plumbing and drainage piping, fire sprinklers and risers.

3.2.4 **LOD 350:** Construction (Contractor to provide this LOD as part of its Scope of Work, using the Consultants model unless County elects Consultant to provide as Optional Service)

a. Model Content Requirements: Model Elements are modeled as constructed assemblies, actual and accurate in terms of size, shape, location, quantity, and orientation. Clearances and access requirements to be included in model elements where applicable, (e.g. VAV access, HVAC access panels, equipment door swings, maintenance panel access, etc.). Non-geometric information may also be attached to modeled elements.

b. Facilities Management information: Consultant to provide complete BIM model(s) to Contractor for its use containing Construction Operations Building Information Exchange (COBIE) standards in conformance with Table 1 herein.

c. Potential Uses:

1. Clash Detection. The model may be used to coordinate the configuration, installation and positioning of all building elements.
2. Facility Management. The Model may be utilized for maintaining, altering, and adding to the Project. Update and confirm As-Constructed COBie data and Space Management information.
3. Analysis. The Model may be analyzed for performance of selected systems by application of specific performance criteria assigned to the representative Model Elements.
4. Cost Estimating. The Model may be used to develop cost estimates due to change in project scope based on the specific data provided and estimating techniques.
5. Schedule. The Model may be used to show ordered, time-scaled appearance of detailed elements and systems.

3.2.5 **Detailed BIM Delivery Breakdown for LOD 300 and 350:**

- a. **Architectural/Interior Design.** The Architectural systems Model may vary in level of detail for individual building elements, but at a minimum the model must include all features that would be included on a quarter inch (1/4" = 1'-0") scaled drawing. Where applicable and as required for construction documents, the model, or host platform will include additional scales as required to show necessary details. Additional minimum Model requirements include:
 1. **Spaces.** The Model shall include spaces defining actual net square footage, net volume and holding data to develop the room finish schedule including room names and numbers. Include program information to verify design space against programmed space, using this information to validate area quantities.
 2. **Walls and Curtain Walls.** Each wall shall be depicted to the exact height, length, width, materiality and ratings (thermal, acoustic, fire) to properly reflect wall types. The Model shall include all walls, both interior and exterior, and the necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.
 3. **Doors, Windows and Louvers.** Doors, windows and louvers shall be depicted to represent their actual size, type and location. Doors and windows shall be modeled with the necessary intelligence to produce accurate window and door schedules.
 4. **Roof.** The Model shall include the roof configuration, drainage system, penetrations, specialties, and the necessary intelligence to produce accurate plans, building sections and wall sections where roof design elements are depicted.
 5. **Floors.** The floor slab(s) shall be developed in the Structural Model and then referenced by the Architectural Model.
 6. **Ceilings.** All heights and other dimensions of ceilings, including soffits, ceiling materials, or other special conditions shall be depicted in the Model with the necessary intelligence to produce accurate plans, building sections and wall sections where ceiling design elements are depicted.
 7. **Vertical Circulation.** All continuous vertical components (i.e., non-structural shafts, architectural stairs, ramps, conveying systems, handrails and guardrails) shall be accurately depicted and shall include the necessary intelligence to produce accurate plans, elevations and sections in which such design elements are referenced.
 8. **Architectural Specialties.** All architectural specialties (i.e., toilet room accessories, toilet partitions, grab bars, lockers, and display cases) and millwork (i.e., cabinetry and counters) shall be accurately depicted with the necessary intelligence to produce accurate plans, elevations, sections and schedules in which such design elements are referenced.
 9. **Signage.** The Model shall include all signage and the necessary intelligence to produce accurate plans and schedules.
 10. **Schedules.** Provide door, window, hardware sets using Builders Hardware Manufacturers Association (BHMA) designations, flooring, wall finish, and

signage schedules from the Model, indicating the type, materials and finishes used in the design.

- b. **Furniture**. The furniture Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4" = 1'-0") scaled drawing and have necessary intelligence to produce accurate plans. Where applicable and as required for construction documents, the model, or host platform will include additional scales as required to show necessary details. Representation of furniture elements is to be 3D. 3D Examples of furniture include, but are not limited to, desks, furniture systems, seating, tables, and office storage. Additional minimum Model requirements include:
 1. **Furniture Coordination**. Furniture that makes use of electrical, data or other features shall include the necessary intelligence to produce coordinated documents and data. Models shall be sufficient to enable their use to demonstrate complete furniture mounted electrical and data installation locations.
- c. **Equipment**. The Model may vary in level of detail for individual elements. Equipment shall be depicted to meet layout and clearance requirements with the necessary intelligence to produce accurate plans and schedules, indicating the configuration, materials, finishes, mechanical, electrical requirements and all other related utilities. Examples of equipment include but are not limited to copiers, printers, refrigerators, ice machines, microwaves, and equipment specifically related to the operations and functions of the facility.
 1. **Schedules**. Provide furniture and equipment schedules from the model indicating the materials, finishes, mechanical, and electrical requirements.
- d. **Structural**. The Structural systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4" = 1'-0") scaled drawing. Where applicable and as required for construction documents, the model, or host platform will include additional scales as required to show necessary details. Additional minimum Model requirements include:
 1. **Foundations**. All necessary foundation and/or footing elements, with necessary intelligence to produce accurate plans and elevations.
 2. **Floor Slabs**. Structural floor slabs shall be depicted with all necessary recesses, curbs, pads, closure pours, and major penetrations accurately depicted. Major penetrations shall include A/C duct chases and pipes larger than 6" dia. only.
 3. **Structural Steel**. All steel columns, primary and secondary framing members, and steel bracing for the roof and floor systems (including decks), including all necessary intelligence to produce accurate structural steel framing plans, related building/wall sections, and schedules.
 4. **Cast-in-Place Concrete**. All walls, columns, beams, including necessary

- intelligence to produce accurate plans and building/wall sections, depicting cast-in-place concrete elements.
5. Precast/Tilt-up/CMU. All walls, columns, beams, including necessary intelligence to produce accurate plans and building/wall sections, depicting such elements.
 6. Expansion Joints. Joints shall be accurately depicted.
 7. Stairs. All framing members for stair systems, including necessary intelligence to produce accurate plans and building/wall sections depicting stair design elements.
 8. Shafts and Pits. All shafts and pits, including necessary intelligence to produce accurate plans and building/wall sections depicting these design elements.
 9. Openings and Penetrations. All major openings and penetrations.
- e. **Mechanical**. The Mechanical systems Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4" = 1'-0") scaled drawing. Where applicable and as required for construction documents, the model, or host platform will include additional scales as required to show necessary details. Small diameter (less than 1-1/2" NPS) field-routed piping is not required to be depicted in the Model. Additional minimum Model requirements include:
1. HVAC. All necessary heating, ventilating, air-conditioning and specialty equipment, including air distribution for supply, return, ventilation and exhaust ducts, control systems, chillers, registers, diffusers, grills, and hydronic baseboards with necessary intelligence to produce accurate plans, elevations, building/wall sections and schedules.
 2. Mechanical Piping. All necessary piping and fixture layouts, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, and schedules.
 3. Equipment Clearances. All Mechanical equipment clearances shall be modeled for use in interference management and maintenance access requirements.
- f. **Plumbing**. All necessary plumbing piping and fixture layouts, floor and area drains, and related equipment, including necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules. Piping shall include slope requirements.
1. Equipment Clearances. All equipment clearances shall be modeled for use in interference management and maintenance access requirements.
 2. Elevator Equipment. All necessary equipment and control systems, including necessary intelligence to produce accurate plans, sections and elevations depicting these design elements.
- g. **Electrical/Telecommunications/Data**. The Electrical and Telecommunications systems Model may vary in level of detail for individual elements, but at a

minimum must include all features that would be included on a quarter inch (1/4" = 1'-0") scaled drawing. Where applicable and as required for construction documents, the model, or host platform will include additional scales as required to show necessary details. Small diameter (less than 1-1/2" Ø) field-routed conduit is not required to be depicted in the Model unless banks of 3 or more conduits are run on racks. Additional *minimum* Model requirements include:

1. Interior Electrical Power and Lighting. All necessary interior electrical components (i.e., lighting, receptacles, special and general-purpose power receptacles, lighting fixtures, panel boards, cable trays and control systems), including necessary intelligence to produce accurate plans, details and schedules. Lighting and power built into furniture/equipment shall be modeled. Whips servicing lighting fixtures are required to be modeled.
 2. Special Electrical. All necessary special electrical components (i.e., security, mass notification, public address, nurse call and other special electrical occupancy sensors, and control systems), including necessary intelligence to produce accurate plans, details and schedules.
 3. Grounding. All necessary grounding components (i.e., lightning protection systems, static grounding systems, communications grounding systems, and bonding), including necessary intelligence to produce accurate plans, details and schedules.
 4. Telecommunications/Data. All existing and new telecommunications service controls and connections, both above ground and underground, with necessary intelligence to produce accurate plans, details and schedules. Cable tray routing shall be modeled without detail of cable contents.
 5. Exterior Building Lighting. All necessary exterior lighting including all lighting fixtures, relevant existing and proposed support utility lines and equipment with necessary intelligence to produce accurate plans, details and schedules.
 6. Equipment Clearances. All Electrical equipment clearances shall be modeled for use in interference management and maintenance access requirements.
- h. Fire Protection. The fire protection system Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4" = 1'-0") scaled drawing. Where applicable and as required for construction documents, the model, or host platform will include additional scales as required to show necessary details. All Fire Protection piping should be modeled. Additional minimum Model requirements include:
1. Fire Alarms. Fire alarm/mass notification devices and detection systems, audible and visual, shall be indicated with necessary intelligence to produce accurate plans depicting them.
 2. Fire Protection System. All relevant fire protection components (i.e., branch piping, sprinkler heads, fittings, drains, pumps, tanks, sensors, control panels) with necessary intelligence to produce accurate plans, elevations, building/wall sections, riser diagrams, and schedules. All fire protection piping shall be modeled.

- i. **Security.** Both facilities require a level of security to ensure record and evidence integrity. The security system Model may vary in level of detail for individual elements, but at a minimum must include all devices and components that would be included on a quarter inch (1/4" = 1'-0") scaled drawing. Where applicable and as required for construction documents, the model, or host platform will include additional scales as required to show necessary details. Additional minimum Model requirements include, but not limited to:
 1. **Closed Circuit Television (CCTV).** Security Cameras, devices, components, and detection systems shall be indicated with necessary intelligence to produce accurate plans depicting them on drawings.
 2. **Emergency Notification Systems.** All relevant security protection components (i.e. panic buttons, card readers, door controls, monitoring stations, security computer room, room/ corridor sensors, audible/visible annunciators, and security control panels) with necessary intelligence to produce accurate plans depicting the system(s).
 3. **Burglar Alarm Systems.** Building security including motion detectors, glass-break sensors, audible devices, and other intrusion detection devices as well control system for above shall be indicated on plans.
 4. **Public address system –** Speakers, zone control reflected on plan.
 5. **Low-voltage systems –** Various systems for communication, or customer services including Wi-Fi, FIBS/BIDS boards, phone chargers, lighting, Public Art, induction systems, wayfinding, solar PV, wind, and other systems.
 6. **Bi-Directional Antenna systems (BDA) –** Antennas, trunk lines, branch line, control boxes, repeaters, emergency or redundant power sources, primary interface components, & home run room.

- j. **Conveying Systems.** The conveying systems models should indicate primary equipment, all necessary plumbing piping, electrical panels, fixture layouts and other related equipment, that would appear on a quarter inch (1/4" = 1'-0") scaled drawing. Clearly indicate equipment clearances.
 1. **Elevator Equipment.** All necessary equipment and control systems, including necessary intelligence to produce accurate plans, sections and elevations depicting these design elements. Provide indicators and call buttons.
 2. **Escalator and other Conveyance Equipment.** All relevant components of the escalator/conveyance system including accurate modeling of stair tread, size and placement. Indicate areas where 6'-8" clear headroom exists below the finished escalator if applicable.

- k. **Landscape.** The Landscape Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a quarter inch (1/4" = 1'-0") scaled drawing and have necessary intelligence to produce accurate plans. Representation of Landscape elements is to be diagrammatic. Examples of landscape material include but are not limited to trees

and shrubs.

- i. **Civil.** The Civil Model may vary in level of detail for individual elements, but at a minimum must include all features that would be included on a one inch (1" = 100' to 1" = 20') scaled drawing. Additional *minimum* Model requirements include:
 1. **Terrain (DTM).** All relevant site conditions and proposed grading, including necessary intelligence to produce accurate Project site topographical plans and cross sections.
 2. **Drainage.** All existing and new drainage piping, including upgrades thereto, including necessary intelligence to produce accurate plans and profiles for the Project site.
 3. **Storm Water and Sanitary Sewers.** All existing and new sewer structures and piping, including upgrades thereto, with necessary connections to mains or other distribution points as appropriate, including necessary intelligence to produce accurate plans and profiles.
 4. **Utilities.** All necessary new utilities connections from the Project building(s) to the existing or newly created utilities, and all existing above ground and underground utility conduits, including necessary intelligence to produce accurate plans and site-sections.
 5. **Roads and Parking.** All necessary roadways, parking lots, and parking structures, including necessary intelligence to produce accurate plans, profiles and cross-sections.

 - m. **Potential Uses:**
 - a. Suitable for the generation of traditional construction documents and shop drawings.
 - b. **Analysis.** The Model may be analyzed for performance of selected systems by application of specific performance criteria assigned to the representative Model Elements.
 - c. **Cost Estimating.** The Model may be used to develop cost estimates based on the specific data provided and conceptual estimating techniques.
 - d. **Schedule.** The Model may be used to show ordered, time-scaled appearance of detailed elements and systems.
- 3.2.6 **LOD 400:** BIM for Fabrication. (Optional Service).
- a. **Model Content Requirements.** Model Elements are modeled as specific assemblies that are accurate in terms of size, shape, location, quantity, and orientation with complete fabrication, assembly, and detailing information. Non-geometric information may also be attached to Model Elements.
 - b. **Potential Uses:**
 1. **Construction.** Model Elements are virtual representations of the proposed element and are suitable for construction.
 2. **Analysis.** The Model may be analyzed for performance of approved selected systems based on specific Model Elements.

3. Cost Estimating. Costs are based on the actual cost of specific elements at buyout.
4. Schedule. The Model may be used to show ordered, time-scaled appearance of detailed specific elements and systems including construction means and methods.

3.3 BIM for Facility Management

3.3.1 BIMs shall be provided by Contractor or Managing General Contractor (MGC). Contractor or MGC shall submit an As Constructed BIM to the A/E Consultant demonstrating the successful extraction and validation of COBie in Excel format for building operations, maintenance and management.

3.4 As-Constructed Model Content Requirements

- a. Model Content Requirements. Contractor shall model Elements as constructed assemblies, actual and accurate in terms of size, shape, location, quantity, and orientation. Provide Non-geometric information may also be attached to modeled elements. Facilities Management information completed with all requested information developed to County required Construction Operations Building Information Exchange (COBIE) standards. A model that accurately depicts rooms, names, uses, final room numbering, sizes and identifiers for on-going Space Management of the completed facility.
- b. Potential Uses:
 1. Facility & Construction Management. The Model may be utilized for maintaining, altering, and adding to the Project and generating reports.
 2. Project Record Documents. As-Constructed data accurately portrayed in the BIM model for future reference and reuse.

3.5 COBie Data

- a. **Within 30 days from the issuance of the Notice To Proceed (NTP) for Schematic Design**, the County and Consultant shall finalize and select items from the following OmniClass 23 table to establish the basis of COBie elements to be tracked and delivered in the completed model.

23-11	Products
23-13	Structural and Exterior Enclosure Products
23-15	Interior and Finish Products
23-17	Openings, Passages, and Protection Products
23-21	Furnishings, Fixtures and Equipment Products
23-23	Conveying Systems and Material Handling Products
23-27	General Facility Services Products
23-29	Facility and Occupant Protection Products
23-31	Plumbing Specific Products and Equipment
23-33	HVAC Specific Products and Equipment

23-35	Electrical and Lighting Specific Products and Equipment
23-37	Information and Communication Specific Products and Equipment

Table 1.0 – Selected Excerpt from OmniClass Table 23

3.6 **BIM Project Execution Plan (BIM PxP or PxP)**

3.6.1 The BIM PxP template is included in this Attachment 2, as “Section 4 - Project Execution Plan (BIM PxP). The Consultants BIM PxP Coordinator for the Project has the responsibility of documenting the Project Execution Plan (PxP), gathering the required information from the External Project Team, scheduling and leading the PxP meetings and establishing and implementing protocols for revisions and sharing the PxP

3.6.2 The development of the PxP is a collaborative effort by all members of the Project team and will be reviewed and updated in meetings specifically scheduled for this purpose. All members of the Project team are required to submit initial information for their scope to the designated PxP Coordinator within 15 calendar days of commencing work. At a minimum PxP meetings shall be conducted at the end of each project phase and a revised PxP shall be issued to County and the External Project Team. A record PxP shall be provided to the owner at handover including all updated requirements.

3.6.3 The PxP is subject to review and approval by County at each project phase.

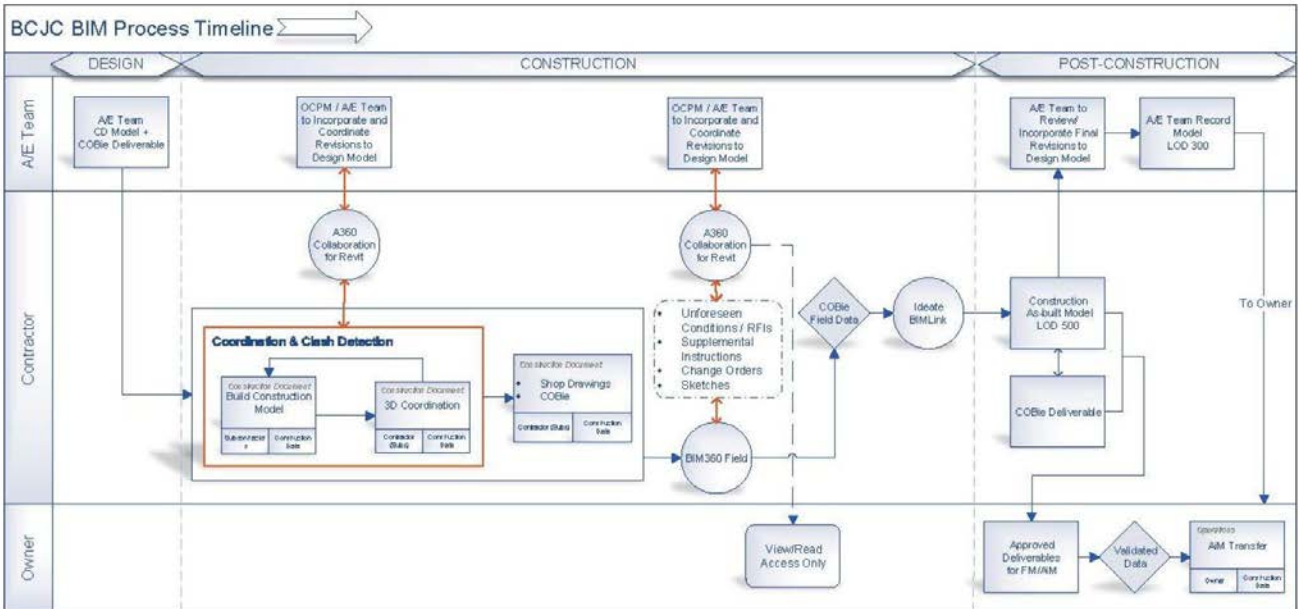
3.6.4 The design & construction teams shall submit a written BIM PxP subject to review and written approval by County prior to proceeding with the process. The BIM PxP will outline all methods and procedures for collaboration between the design and construction teams as well as coordination of VDC/BIM efforts of the subcontractors. The Contract Administrator, Design Team and all sub-consultants engaged in the BIM process will sign agreement to adhere to the BIM Project Execution Plan.

3.6.5 The BIM Project Execution Plan shall include as a minimum:

- a. Project Information
- b. Key Project Contacts
- c. Project VDC / BIM Uses
- d. Organizational Roles and Staffing
- e. VDC / BIM Process for preconstruction, construction and handover
- f. BIM Information Exchanges
- g. BIM and Facility Data Requirements
- h. Collaboration and coordination procedures
- i. Quality Control
- j. Technological Infrastructure Needs
- k. A Model Progression Schedule identifying LODs and Authors for each category of model (built) element.
- l. Clash detection approach
- m. Cost estimating level

n. BIM Deliverables

3.6.6 A BIM Process Flow Chart provides a graphic visualization of the processes and approval points to be used during the life of the project. The County encourages the development of this chart as an effective practice and communication tool. An example BIM Flow Chart is provided below:



3.6.7 To promote efficiency and continuity, the 2D construction documents must be extracted directly from the Design Model and both the BIMs and the 2D Deliverables will be integral parts of the contract documents. Two dimensional (2D) details, enlargements, General Notes, externally generated Schedules, and specifications will take precedence over the Design Models.

3.7 **BIM Use Agent Responsibility Matrix**

3.7.1 County has identified the Required, Preferred and Optional BIM uses as it relates to this project. The County acknowledges that Design and Construction Consultants will work together to achieve these Uses. Implementation of these uses should be explained by the Consultant in the BIM PxP, Section F. Roles, responsibilities and timing are to be documented.

3.7.2 The County’s typical BIM Uses for New Construction Projects are as follows:

County Typical BIM Use - New Construction

BIM Use	County Intent
3D Coordination / Conflict Analysis	Required
As Constructed Model	Required
Asset Management	Required
CIM / Subsurface	Required
Constructability/Peer Review	Required
Design 4 Maintenance (D4M)	Required
Design Authoring	Required
Design Reviews	Required
Existing Conditions Modeling	Required
Facility Data Exchange	Required
Owner Approvals	Required
QA/QC	Required
Record Modeling	Required
Site Utilization Planning	Required
Spatial Analysis	Required
Visualization	Required
Commissioning	Preferred
Cost Estimation	Preferred
Energy / Mechanical Analysis	Preferred
Programming	Preferred
Program / Code Validation	Preferred
Quantity Take-Off	Preferred
Site Analysis	Preferred
Space Management / Tracking	Preferred
Structural Analysis	Preferred
Sustainability / LEED	Preferred
Total Cost Of Ownership	Preferred
BIM2field - Digital Layout	Optional
Building Maintenance Scheduling	Optional
Building System Analysis	Optional
Code Analysis	Optional
Construction System Design	Optional
Digital Fabrication	Optional
Disaster Planning	Optional
Electrical Analysis	Optional
Field and Material Tracking	Optional
Laser Scanning	Optional
Lighting Analysis	Optional

BIM Use	County Intent
Pay Applications	Optional
Phase Planning 4D	Optional
Security / Key Management	Optional
Specification Production	Optional

3.8 **3D Coordination and Conflict Analysis**

3.8.1 The Design Team shall use BIM to employ a managed approach to advanced collaborative reviews, including automated element collision detection using software such as Autodesk Navisworks and model checkers such as Solibri by Nemetschek. By coordinating BIM data during the design phases, this can reduce the number of potential major conflicts that might arise during the construction phase.

3.8.2 This approach is not meant to replace the traditional quality control process, or the early airspace zone MEP strategy approach used by the project team and participating consultants but will enhance the ability of the project team to visualize the design and detect interferences between discipline components.

3.8.3 Design Team Coordination

- a. The Design Team shall produce a design in which all MEP/FP systems fit within the intended spaces provided, including necessary and required clearances, egress zones, and access zones. To help achieve this goal, the Design Team shall have a formal 3D spatial analysis and clash resolution process that forms the backbone of the QA/QC process. The spatial analysis and clash resolution process shall include regularly scheduled clash review meetings and the use of software tools to analyze and resolve clashes.
- b. County does not expect a “clash-free” design, however County expects a design that has been spatially analyzed and validated such that all systems are constructible within the space designed.
- c. Clash reports will be required at project milestone deliverables for both Design and Construction.
- d. Cost estimating – Level 1 thru 4
- e. Construction Schedule & Duration
- f. Utilities coordination & invert elevations

3.8.4 Contractor Team Coordination

- a. Contractor shall carry out clash detection analysis and complete preliminary virtual design and construction (VDC) activities as part of the Constructability Reviews.
- b. Weekly, the CM shall conduct coordination meetings with each Contractor, Subcontractor, PM, County and Design Team as needed.

- c. The CM shall prepare clash detection reports and distribute minutes/ reports to all attendees.

3.9 **Model Content Requirements**

3.9.1 A Model Progression Schedule/Agent Responsibility Matrix (MPS) shall be used as a tool to help Model Contributors throughout the Design, Construction and Operation phases understand what should be included in the BIMs when at each project milestone.

- a. The Construction Models should reflect the exact geometric properties of the materials and/or systems being submitted. These models should reflect the exact material properties and performance data.
- b. It is the responsibility of the Design and Construction Team to use the MPS as part of the BIM PxP or JBIM PxP to establish how they progressively reach the County's expectations.
- c. See also Section 4 - BIM Project Execution Plan and Section 5 - Model Progression Schedule/Agent Responsibility Matrix templates for additional required information.

3.10 **Shop Drawings, Sleeve Drawings and Fabrication**

3.10.1 Shop Drawings shall be produced directly from the construction BIMs. No parallel 2D process will be accepted

- a. Sleeve Drawings -Sleeve drawings for cast-in-place or precast systems shall be produced after BIM Coordination is completed for the area of construction requiring the sleeve drawings.
- b. Fabrication & Preassembly -Whenever possible the Construction Team shall use the Construction BIMs to fabricate or preassemble their systems.

3.11 **BIM in the field for Installation**

3.11.1 The Contractor shall take measures to assure that what is being installed at the field is what was agreed upon on the Coordinated Federated Construction BIM. Any deviations must be documented as updates to the BIMs and the party responsible for resulting conflicts will be liable for costs associated with such deviations.

3.12 **Submittals**

3.12.1 Upon Substantial Completion, BIM files shall be submitted to County, and shall be cleaned of extraneous "scrap" or "working space", stories, abandoned designs, object creation and testing places, and other content which is typically produced in or during BIM construction coordination.

- a. The Contractor shall be responsible for providing the County a Federated, As-Constructed Model that includes all building systems. The Model shall be coordinated and "clash free" except as noted.

- b. Contractor shall provide a native file of the final Federated As-Constructed Model for building systems used in the multi-discipline coordination process (version as agreed in BIM PxP)
- c. Contractor shall identify native file formats used in the final Federated As-Constructed Model for building systems for the multi-discipline coordination process (version as agreed in BIM PxP)
- d. Contractor shall provide IFC files (ISO 16739) of As-Constructed models (version as agreed in BIM PxP)
- e. Contractor shall provide COBie / data compliant file containing room and product data information (version as agreed in BIM PxP)

3.12.2 County will not accept BIM files that have become un-useable, or too heavy for normal use. Proper care shall be taken to strip all BIMs of any and all miscellaneous files that are not directly part of the BIMs. The BIM Compliance Checklist, shown below, is required to be submitted with each BIM Deliverable as part of the QA/QC process and to show compliance.

BIM Compliance Checklist	
Description	Y / N
Model content is representative of their discipline developments according to the MPS.	
Model file name and folder structure conforms to County Standards.	
All annotations and title blocks are per the County standards.	
All floor plans types have been created for each floor or mezzanine in the project model.	
All schedules are populated with all the required data for the project.	
The model is correctly assembled as per visual inspection.	
The color code for Federated BIMs conforms to County Standards.	
All the model contents are correctly placed per their element categorization in the correct work set and conform to standards.	
All non-transmittal linked-in files (CAD/Revit) have been removed from the model.	
All non-required views / legends / schedules / sheets / images have been removed from the model.	
Unwanted Design Options have been removed from the model (applicable for Contract Document Phase through Project completion and handover).	
All unnecessary groups have been removed from the model. All groups used to model the building have been ungrouped and purged from the deliverables to reduce the file size of the model.	
As a last step, the model has been purged (repeat the process three times -- materials are only removed after the parent object has been removed). This will reduce the file size.	
3D Solids Check – No wireframe or lines are accepted. Surface modeling shall be reserved for Topography modeling only. Other use of surface modeling shall require prior approval by County.	

BIM Compliance Checklist	
Errors or Warnings - check that there are not any generated within the BIM Authoring software. It is the Design & Construction Teams' responsibility to ensure BIM quality and data integrity.	
Model Elements are not duplicated. i.e. Columns in both Architectural and Structural models.	
Objects are correctly defined under the proper Revit Family Category and sub-category.	

3.13 **Responsibilities Related to the Final Record BIM**

3.13.1 Design Team Responsibilities

- a. The Design Team will update the Architectural and Structural Design Models as changes occur throughout the construction phase, incorporating all updates and/or revisions to the models as necessary to reflect design changes initiated by Architectural Supplemental Instructions (ASI), Request for Information (RFI), Conformed Documents, Owner Changes, coordination with existing conditions or other changes to the work.

3.13.2 Construction Team Responsibilities

- a. During the construction phase, and while the work is still visible, the Construction Team will maintain "red-line" As-Constructed drawings or demonstrate regular updates to the BIM models during the progress of the work.
- b. In preparation for Substantial Completion, the Construction Team will:
 1. Make all necessary final updates and/or revisions to the models to reflect the As-Constructed information to the tolerance specified in the Standard or agreed upon in the BIM PxP. It is the responsibility of each subcontractor to keep accurate "red-line" markups and records from the field in order to produce accurate As-Constructed models and drawings.
 2. Final updates to material/equipment data and properties where installations differ from the "basis of design" included in the Design Team Models.
 3. Incorporation or linking of certain close-out documents to the Federated Model (as agreed in BIM PXP).
- c. All model updates by the Construction Team shall be complete one (1) week prior to Final Completion at which time all the required close out BIM deliverables shall be transmitted to the Consultant for review and to be incorporated with the updated Design Models to create the Record Model deliverable. (as agreed in BIM PXP).

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Section 4 BIM Execution Plan



**BIM PROJECT EXECUTION PLAN
(BIM PxP)**

FOR

Insert Project Name Here in Black Font

DEVELOPED BY

**Broward County - Construction Management Division
(County)**

This template is a required tool that is provided to assist in the development of a BIM Project Execution Plan (BIM PxP) as required by Contract.

Consultants are required to "Track" changes when editing this document so BROWARD COUNTY - CONSTRUCTION MANAGEMENT DIVISION (County) can review and accept any additions and modifications as part of the review process.

BIM PROJECT EXECUTION PLAN

FOR

Insert Project Name Here in Black font

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Introduction

This template exists to document the decisions made by the Design and Construction Teams working through the BIM process. To successfully implement BIM on both the project and organizational levels, Broward County Construction Management Division has developed this BIM Project Execution Plan (BIM PxP) to improve accuracy and consistency of BIM deliverables. This plan will delineate roles and responsibilities while detailing BIM scope of information to be shared that is relevant to the BIM project process. The document is intended to cover both model creation and data integration.

Instructions

Submission Schedule

The Design and Construction Teams are required to submit a completed BIM PxP within 30 days of contract execution. This plan shall identify the entire project team including consulting engineers, specialty consultants and contractors. The BIM PxP should be considered a living document and maintained and updated throughout the project.

Please note: Instructions and examples to assist with the completion of this guide are displayed in italicized blue font. The text can and should be modified to suit the needs of the organization filling out the template. If modified, the format of the text should be changed to match the rest of the document (non- italicized and in black, 12-point, Calibri font typical) and “tracked changes” shall be submitted in electronic form for Broward County Construction Management Division review and approval.

The overall section headings of this template shall remain, but the BIM PxP Coordinator may propose any other changes or additions to this template including expansion of the content of the sections and additional sections and attachments. Changes & additions shall be agreed to by the project team and submitted to Broward County Construction Management Division for approval.

This BIM PxP document is based on the National BIM Standard-United States™ Version 3 and the Pennsylvania State University BIM Project Execution Plan Version 2.0 and customized for Broward County Construction Management Division.

Section A: BIM Project Execution Plan Overview

The Broward County Construction Management Division requires the use of Building Information Modeling (BIM) as a tool in the planning, design, construction and operation of our facilities worldwide. A well-executed BIM project facilitates the collaboration and communication between the owner, the design team and the construction team in order to best meet the project's goals.

The purpose of this process change is to ensure maximum benefit from our assets by improving the building's design and construction, reduce the total cost and time of delivery and improve operations and management after handover. BIM allows for a more complete, efficient, iterative design and construction process. The clearest benefits are the enhanced visualization of the project at all stages of development, the creation of higher quality design and construction deliverables and the reduction of construction coordination conflicts in the field. At the end of construction, the Building Information Models serve as rich databases of digital data captured during design and construction about the building's assets. This single centralized source of information is invaluable to the Facilities Department for the on-going operations and management of the building to ensure our facilities are sustainable and resilient.

To successfully implement Building Information Modeling (BIM) on a project, the project team has developed this detailed template BIM Project Execution Plan.

INSERT ADDITIONAL INFORMATION HERE IF APPLICABLE.

With the help of the project team, develop a brief mission statement here that will give an overview of BIM objectives that are specific to this project. This can be developed at a collaborative brainstorming session at the first BIM PxP meeting. Extensive additional information can be included as an attachment to this document.

Section B: Project Information

This section defines basic project reference information and determined project milestones

1. Client Name: Broward County Construction Management Division
2. Project Name:
3. Project Location and Address:
4. Contract Type / Delivery Method: Managing General Contractor (MGC)
5. Brief Project Description: Refer to Exhibit A, Scope of Work
6. Additional Project Information: none
7. Project Identification Numbers: *Please complete table below*

Team Member	Project Number
Broward County Construction Management Division	
Architect	
MEP Engineers	
Structural Engineer	
Contractor	

Section C: Delivery Strategy

Delivery and Contracting Strategy for the project:

This section is useful primarily when design delivery methods are being utilized that involve early collaboration of the design and construction teams (IPD, Design Assist, etc.). List the Project Delivery strategy for the project below (Design-Bid-Build, CM at Risk, IPD, Design Assist, etc.).

Please note what additional measures need to be taken to successfully use BIM with the selected delivery method and contract type?

Section C.1 - Project Schedule / Phases / Milestones:

In coordination with the project schedule, include BIM milestones, pre-design activities, major design reviews, stakeholder reviews and any other major events which occur during the project lifecycle.

Project Phase / Milestone	Estimated Start Date	Estimated Completion Date	Project Stakeholders Involved
Notice to Proceed			
BIM PxP Kick-off			
Programming			
County Review & Comments			
Design Team Review & Resubmit			
Schematic Design			
County Review & Comments			
Design Team Review & Resubmit			
Design Development			
County Review & Comments			
Design Team Review & Resubmit			
50% CD's			
County Review & Comments			
Design Team Review & Resubmit			
___% CD's			
County Review & Comments			
Design Team Review & Resubmit			
100% CD's			
County Review & Comments			

Project Phase / Milestone	Estimated Start Date	Estimated Completion Date	Project Stakeholders Involved
Design Team Review & Resubmit			
Award / Permit			
Pre-Construction			
Project Coordination Kickoff			
Underground Coordination			
Site Coordination			
Building Exterior Coordination			
Building Interior Coordination (First Floor)			
Building Roof Coordination			
Coordination Sign-Off			

Section C.2 - Project Deliverables

In this section, please check off the BIM Deliverables from Consultant and Contractor on the appropriate tables below that are relevant for this project. Note any and all deviations to these required deliverables below.

Schedule of Deliverables to Broward County Construction Management Division				
CONSULTING ARCHITECTURE AND ENGINEERING TEAM				
Phase	Deliverable	Include Y/N	Due	File Type
Contract Award	BIM PxP		30 days of ATP	Native & PDF
Programming / Feasibility Models	Massing models & Narrative Space & Program Validation Report		Per BIM PxP	Native & IFC & PDF Native & PDF
Planning	Design Models -		Per BIM PxP	Native & IFC (2x3) files
Schematic Design	Design Models -		Per BIM PxP	Native & IFC (2x3) files
Design	Existing Conditions Model		Per BIM PxP	Native & IFC (2x3) files

Development	Design & Analysis Models - Updated BIM PxP Coordination Reports BIM Compliance Checklist			Native & IFC Native & PDF PDF PDF
Construction Documents	Design & Analysis Models 2D documents & Clash Report Updated BIM PxP Coordination Reports BIM Compliance Checklist COBie Data Set - Del 1		Per BIM PxP	Native & IFC (2x3) files PDF Native & PDF PDF PDF COBie2 2.40
Permitting / Conformance	Federated Design Model 2D Documents		Per BIM PxP	Native files PDF
Construction - Approved Submittals	COBie Data Set - Del 2		Per BIM PxP	Native & IFC (2x3) files
Construction- Close-Out Close-Out Close-Out Close-Out Close-Out Close-Out	COBie Data Set - Del 3 COBie Data Set – Final Record Floor Plans Record BIMs Federated Record BIM Coordination Report Record Model Instruction Rpt. Final BIM PxP		Per BIM PxP	COBie2 2.40 COBie2 2.40 DWG Native & IFC (2x3) Native Native & PDF Native & PDF Native & PDF

**Schedule of Deliverables to
Broward County Construction Management
Division**

CONSTRUCTION TEAM				
Phase	Deliverable	Include Y/N	Due	File Type
Contract Award	BIM PxP		Within 30 days	Native & PDF
Pre-Construction	Coordination BIMs BIM Compliance Checklist		Per BIM PxP	
Project Close out	COBie Data Set – Del 3 As-Constructed BIMs BIM Compliance Checklist Coordination Report Federated As-Constructed BIM Final BIM PxP		Per BIM PxP	COBie2 2.40 Native & IFC (2x3) PDF PDF .NWD Native & PDF

Section D: Key Project Contacts

ROLE	CONTACT NAME	ORGANIZATION	EMAIL	PHONE
Owner PM		Broward County CMD		
Owners BIM Manager		Broward County CMD		
BIM PxP Coordinator				
Design Professional's Principal in Charge				
Design Professional's Project Manager				
Design Professional's BIM Manager				
Design Professional's BIM Project Lead				
Consultant's Principal in Charge				
Consultant's Project Manager				
Consultant's BIM Manager				
Consultant's BIM Project Lead (per discipline)				
Contractors PM				
Contractors BIM Manager				
Others				

Section E: Organizational Roles / Staffing

This section should be filled in at the choice of the BIM PxP Coordinator and extended team

BIM Roles and Responsibilities:

Broward County Construction Management Division (CMD): Broward County’s Construction Management Division is responsible for BIM, CAD support, coordination and integration. It is also their responsibility to ensure design and construction document/model compliance with Broward County Construction Management Division Standards while maintaining and facilitating access to record drawings and models.

Describe BIM roles and responsibilities such as BIM Managers, Project Managers, Draftspersons, etc.

Titles	Roles in Design	Roles in Construction
Broward County Construction Management Division	<ul style="list-style-type: none"> • BIM Oversight and Compliance Reviews 	<ul style="list-style-type: none"> • BIM Oversight and Compliance Reviews
Project Manager		
Model Manager		
BIM Coordinator		
Modeler		
COBie Coordinator		

Section F: BIM Uses

Broward County Construction Management Division has developed a BIM Use/Consultant Responsible Matrix for use in the planning and procurement of BIM projects. This matrix defines Broward County Construction Management Division’s priorities for the application of BIM Uses, the responsibilities of the External Team Members, and the phases to which the BIM Uses apply. BIM Uses should only be employed if they offer significant benefit to the Project without compromising cost or schedule.

Insert additional information as needed for this specific project. Items in RED are minimal required by Broward County Construction Management Division.

BIM Use	Consultant Responsible for Implementation	Required Proposed	Plan Design Construct Operate			
			P	D	C	O
Visualization	A & C.	Required	X	X	X	X
Programming						
Site Analysis						
Design Authoring	A, Trades	Required	X	X	X	
Design Reviews	A	Required	X	X		
3D Coordination	A & C.	Required	X	X	X	
Constructability Review	C	Required	X	X		
Structural Analysis						
Lighting Analysis						
Energy Analysis						
Mechanical Analysis						
Other Eng. Analysis						
Sustainability Evaluation						
Design4Maintenance Review	A & C.	Required		X	X	
3D Coordination and Conflict Analysis	A & C.	Required	X	X	X	
Facility Data Exchange	A & C.	Required		X	X	X
Quality Assurance / Quality Control						
Owner Approvals	A	Required	X	X		
Code Validation						
Commissioning						
Site Utilization Planning	A or C.	Required		X	X	
Construction System Design						
Digital Fabrication						
3D Control and Planning						
4D Phase Planning						
5D Cost Estimation						
Quantity Take Off						
BIM2Field						

Laser Scanning						
Point Cloud integration						
Security Key Management						
Building Maintenance Scheduling						
Record Modeling	A	Required		X		
Way finding						
Virtual / Mixed Reality						
As-Constructed Modeling	C	Required			X	
Building System Analysis						
Asset Management	A & C	Required		X	X	X
Space Management / Tracking	A	Required		X	X	X
Disaster Planning						
Existing Conditions Model						

Section G: BIM Process Design

Define the BIM Process and Workflows that the External Project Team will be implementing on this project as it relates to the BIM Uses that have been selected and contracted for this project. Define a detailed plan for implementing each BIM Use, define the specific exchanges of information and/or BIMs for each activity, the party responsible for each activity, and when in the schedule of the project it should occur. Process maps like those in the Penn State BIM Execution Plan may be included but are optional.

Section H: Model Progression Schedule / LOD

A template Model Progression Schedule/Agent Responsibility Matrix (MPS) template defining minimum requirements for model handover will be provided by the Project Manager and examples are included and referenced in Section 5 of this Attachment 2. The LOD levels and tolerances in the Handover section of the sample MPS define Broward County Construction Management Division's requirements for the Existing Conditions, As-Constructed and Record BIMs. The External Project Team is to complete and submit a project specific MPS for this project for all project phases as applicable. The columns pertaining to Existing Conditions, As-Constructed Modeling and Record Modeling along with requirements for tolerances and allowable deviations are to be included in the MPS.

The Model Element Rows in Broward County Construction Management Division's template MPS are high level. The rows in the final project MPS may have a higher level of granularity to be used as required to address the needs of the project and the best practices of the External Project Team.

The executed MPS shall be attached to this BIM PxP.

Section I: BIM and Facility Data Requirements

Shown In	BCAD Preliminary Asset Type List	OmniClass- Products Classification - Table 23
ARCH Model	AUTOMATIC EXTERNAL DEFIBULATOR (AED)	23-25 21 13
	BAGGAGE HANDLING CONVEYOR	23-23 17 15
	ELEVATOR	23-23 11 11
	ESCALATOR	23-23 11 13
	FIRE DOOR	23-17 11 32
	ICE MACHINE	23-21 21 29
	MOVING WALKWAY	23-23 15 11
	SLIDING DOOR	23-17 11 23
	TICKET COUNTER	23-21 19 15
ELECT Model	WATER COOLER	23-31 31 00
	FIELD CONTROL PANEL	23-35 31 15
	GENERATOR	23-35 11 15
	LINE CONTROL PANEL	23-35 31 15
	MOTOR CONTROL CENTER	23-35 31 23
	MOTOR CONTROL PANEL	23-35 31 15
MECH Model	VARIABLE FREQUENCY DRIVE	23-35 17 15
	VARIABLE SPEED DRIVE	23-35 17 00
	AC UNIT	23-33 39 11
	AIR HANDLER	23-33 25 00
	CHILLER	23-33 21 00
	CONDENSER WATER PUMP	23-27 17 00
	CONDENSING UNIT	23-33 43 00
	COOLING TOWER	23-33 23 00
	EXHAUST FAN	23-33 31 19
	FAN COIL UNITS	23-33 33 11
	FAN POWERED BOX	23-33 41 11
	FAN TERMINAL BOX	23-33 41 11
	FAN VARIABLE VOLUME BOX	23-33 41 11
	OUTSIDE AIR HANDLER UNIT	23-33 25 13
	PACKAGE AIR CONDITIONING UNIT	23-33 39 17
	PRIMARY CHILLED WATER PUMP	23-27 17 00
	ROOF TOP UNIT	23-33 25 17
SECONDARY CHILLED WATER PUMP	23-27 17 00	
SPLIT SYS CONDENSING UNIT	23-33 43 00	
SUPPLY FAN	23-33 31 19	
VARIABLE AIR VOLUME BOX	23-33 41 17	
PLUM Model	AIR COMPRESSOR	23-27 21 00
	CHEMICAL STATION	23-27 55 31
	ELECTRIC HOT WATER BOILER	23-33 11 22
	HEAT EXCHANGER	23-27 23 00
	HEAT PUMPS	23-33 17 00
	HOT WATER PUMP REHEAT	23-27 17 00
	SUMP PUMP	23-27 17 00
	TRASH PUMP	23-27 17 00
WATER CIRCULATING PUMP	23-27 17 00	
These assets types may be found in consultant 3D CAD models with limited information embedded. The information required on these asset types would be manual entered into the COBie deliverable worksheets.		
CIVIL	AIR FIELD LIGHTING RUNWAY	N/A
	AIRFIELD BEACON	N/A
	CRASH GATE	23-11 25 15
	CRASH PERIMETER GATE	23-11 25 15
	ENGINEERED MATERIAL ARRESTING SYSTEM - EMAS	N/A
	PEDESTRIAN GATE	23-11 25 15
CONSULTANT	PERIMETER GATE	23-11 25 15
	ABOVE GROUND STORAGE TANK	23-27 29 19
	BAG MEASUREMENT EQUIPMENT	23-23 17 15
	BAGGAGE DIMENSIONER	23-23 17 15
	BAGGAGE HANDLING CAROUSEL	23-23 17 15
	DIESEL FUEL STORAGE TANK	23-27 29 19
	HIGH SPEED DIVERTER	23-23 17 15
	JETWAY	23-23 15 15
OVER SIZE BAG DOOR	23-23 17 15	
SCALE	N/A	

At a minimum and not limited to, Broward County Construction Management Division will require COBie data sets for all components on the Equipment List per the Construction Documents that require any of the following:

- ✓ Scheduled preventative maintenance i.e. Mechanical, Electrical,
- ✓ Routine maintenance/inspections: i.e. Plumbing
- ✓ Regulatory inspections i.e. life safety related: fire extinguisher, fire dampers, backflow preventers

The list to the right shows a sample Preliminary Asset Type List for Broward County Construction Management Division Projects. This list should be used and further detailed in the BIM PxP Template.

Section J: Collaboration Procedures

Collaboration Strategy:

Provide a brief, general description of how the project team will collaborate. Include items such as communication methods, document management and transfer, and record storage, etc.

FILE LOCATION	FILE STRUCTURE/ NAME	FILE TYPE	PASSWORD PROTECT	FILE OWNER	UPDATED
Collaboration SITE: SITE	Root Project Folder	FOLDER	YES	PT Project Mgr.	ONCE
Provide Further Information on Structure of Collaboration Site	Root Project Folder	FOLDER	YES	PMG Project Mgr.	ONCE
Provide Further Information on Structure of Collaboration Site	TBD	RVT	YES	PMG Project Mgr.	WEEKLY

Section J.1 - BIM Meeting Procedures:

There will be several types of collaboration and model review meetings needed for the project, including general progress meetings, design coordination meetings, etc. The following table includes, but is not limited to, some of the types of potential meetings necessary for the project, meeting host(s), required attendees, and required technology. Broward County Construction Management Division understands that these meetings may be in-person, virtual and/ or a combination of both. The following table describes the schedule for coordination meetings, clash detection meetings, and model walkthroughs. Items marked in Red will be REQUIRED.

The meetings listed below reflect typical Broward County Construction Management Division expectations for a project and should be customized for the needs of a project.

MEETING TYPE	DESIGN INTENT MODELS			
	STAGE	FREQUENCY	LOCATION	COMMENTS / PARTICIPANTS
Design Phase BIM Kick-off		1X within 15 days of start of project	On-site	General discussion to make sure all parties are aligned on BIM Requirements

BIM Project Execution Plan Presentation		1X within 30 days of start of project	On-site	BIM PxP Coordinator presents completed BIM PxP to entire team for final sign-off
Design Authoring Coordination Meetings		Weekly	In-Cloud	Coordination and Federation of Design Team Models.
Design Presentations/ Model Walk-throughs		As Needed	On-site	BIM presentations to Project Team for approval and reviews. Geared towards Owner and User Groups.
Design4Maintenance		DD / CD Phases 1X	On-site	BIMs to review equipment maintainability and “soft clash” for clearances.
Data Meeting		DD / CD Phases 1X	In-Cloud / On-site	Review BIMs for data compliance and test import.
Model Handover Meeting		1X	On-site	Meeting to discuss and test interoperability and file exchange.
Design Close-out		2X	On-site	Meeting to finalize Record BIMs and As-Constructed BIMs for close-out.
Construction Phase BIM Kick-off Meeting	STAGE	FREQUENCY	LOCATION	COMMENTS / PARTICIPANTS
Clash / Cord Meetings			On-site	General Guidelines for model laying, area, trade sequencing and reserved zones.
Design4Maintenance			In-Cloud / On-site	
Contractor Handover/ Close-out			On-site	BIMs to review equipment maintainability and “soft clash” for clearances.
Contractor Handover/ Close-out			TBD	Meeting to finalize Record BIMs and As-Constructed BIMs for close-out.

Section J.2 - Model Delivery Schedule of Information Exchange for Submission and Approval:

Document the information exchanges and file transfers that will occur on the project. Modify the DISCIPLINE column to match the way that content is segregated into different models on a project.

DISCIPLINE	FILE TYPE	UPLOAD FREQUENCY	DOWNLOAD FREQUENCY
Architectural (Exterior)			
Architectural (Interior)			
Specialty Equipment			
Furniture			
Structural			
Mechanical			
Electrical			
Plumbing			
Civil			
Landscape			

Section J.3 - Electronic Communication Procedures:

The following document management issues should be resolved, and a procedure should be defined for each: Permissions / access, File Locations, FTP Site Location(s), File Transfer Protocol, File / Folder Maintenance, etc.

Section K: Quality Control

Overall Strategy for Quality Control:

Describe the strategy to control the quality of the model.

Quality Control Checks: The following checks should be performed to assure quality:

CHECKS	DEFINITION	RESPONSIBLE PARTY	SOFTWARE PROGRAM(S)	FREQUENCY
VISUAL CHECK	Ensure there are no unintended model components and that the design intent has been followed	A/E/C	REVIT / NAVIS	Ongoing

INTERFERENCE CHECK	Detect problems in the model where two building components are clashing including soft and hard	A/E/C	NAVIS	Bi-weekly
STANDARDS CHECK	Ensure that the BIM and County Standards have been followed (fonts, dimensions, line styles, family naming, shared coordinates, etc.)	A/E/C	REVIT / DATA NORMALIZATION	Weekly
MODEL INTEGRITY CHECKS	Describe the QC validation process used to ensure that the Project Facility Data set has no undefined, incorrectly defined or duplicated elements and the reporting process on non-compliant elements and corrective action plans	A/E/C	REVIT	Ongoing
DATA CONTENT CHECK	Conform to County BIM Requirements	A/E/C	DATA NORMALIZATION / MAXIMO	Weekly then monthly
ERROR / WARNING CHECK	Conform to County BIM Requirements	A/E/C	REVIT	Weekly

Section K.1 - Model Maintenance

The following table describes the recommended process for model maintenance. Each discipline shall be responsible for the maintenance of their models. Broward County Construction Management Division requires that all the below be conducted before submitting model at the completion of each phase of the development of the project. All the below except for removing unused design options shall be conducted before uploading models for exchange with other team members.

PROCESS	FREQUENCY (MINIMUM)
Auditing Central Files	
Compacting	
Removal of Unused Design Options	
Correcting Warning Messages where applicable	On-going (Warnings that have significance shall be resolved. Warnings shall be kept to a reasonable number. An export of warnings in the model shall accompany major milestone deliverables.)
Purging unused objects	
Purging DWG links/imports	

Deletion of unused Sheets & Views	
Resolve duplicate elements	

Section K.2 - Document Revisions

Revisions to documents will be tracked as follows:

DESCRIPTION	DESIGN/ RECORD	AS-CONSTRUCTED MODEL	DESCRIPTION
RFI's			
Revit Model			
Navisworks			
CCD's			
ASI's			
CO's			

Section K.3 - Model Accuracy and Tolerances:

Models should include all appropriate dimensioning as needed for design intent, analysis, and construction.

PHASE	DISCIPLINE	TOLERANCE
EXISTING CONDITIONS MODEL	CIVIL (UNDERGROUND)	ACCURATE TO +/- (6") OF ACTUAL SIZE ACCURATE TO +/- (12") OF ACTUAL LOCATION
EXISTING CONDITIONS MODEL (ACCESSIBLE ITEMS)	ARCHITECTURAL STRUCTURAL MEPFP	ACCURATE TO +/- (1/8") OF DESIGN INTENT SIZE ACCURATE TO +/- (2") OF DESIGN INTENT LOCATION
DESIGN DOCUMENT MODELS	CIVIL ARCHITECTURAL STRUCTURAL MEP FP	ACCURATE TO +/- (1/8") OF DESIGN INTENT SIZE ACCURATE TO +/- (2") OF DESIGN INTENT LOCATION

PHASE	DISCIPLINE	TOLERANCE
SHOP DRAWINGS MODELS	CIVIL INTERIORS ENVELOPE STRUCTURAL MEPFP	ACCURATE TO +/- (1/16") OF ACTUAL SIZE ACCURATE TO +/- (1") OF ACTUAL LOCATION
AS-CONSTRUCTED MODELS	INTERIORS NOT RELATED TO CODE	ACCURATE TO +/- (1/8") OF ACTUAL SIZE ACCURATE TO +/- (2") OF ACTUAL LOCATION
AS-CONSTRUCTED MODELS	INTERIORS RELATED TO CODE	ACCURATE TO +/- (1/8") OF ACTUAL SIZE ACCURATE TO +/- (1/4") OF ACTUAL LOCATION
AS-CONSTRUCTED MODELS	CIVIL INTERIORS ENVELOPE STRUCTURAL MEP FP	ACCURATE TO +/- (1/16") OF ACTUAL SIZE ACCURATE TO +/- (1") OF ACTUAL LOCATION

Section K.4 - BIM Folder Structure for Deliverables:

The following folder structure is the standard folder structure for BIM-related files that will be used on Broward County Construction Management Division projects. No deviations from this folder structure will be permitted without a Proposed Variance Request. However, if desired, each project team may add subfolders where necessary, as defined in the BIM PxP and approved by Broward County Construction Management Division.

Project Documents for Design BIMs

- Design BIM Execution Plan (Owner, AE)
- Design BIM Analysis Reports (Owner, AE)
- Coordination Logs and Reports
- Design Model Deliverables (Public)
 - Models Used to Produce Schematic Design
 - Models Used to Produce Design Development
 - Models Used to Produce Construction Documents
 - Models Used to Produce Agency Submittals
 - Models for Permitting/ Conformance
 - Models for Construction Manager
- COBie Data Deliverables
- BIM Project Close-out
 - Record Floor Plans
 - Record BIMs
 - Federated Record BIM
 - COBie Data Final Deliverable

- Other

Project Documents for Construction BIMs

- Owner BIM Execution Plan (Owner, CM, BIM Subs)
- Construction BIM Analysis Reports (Owner, GC)
- Coordination Logs and Reports
- Coordination Models
- Trade Models
 - Models Used to Produce Final Shop Drawings
 - Models Used to Produce 4D
 - Schedule Data Used to Produce 4D
 - Models Used to Produce 5D
 - Model Quantities Used to Produce 5D
- COBie Data Deliverables
- BIM Project Close-Out
 - As-Constructed Models
 - Federated As-Constructed Models
 - Record Models
 - Federated Record Models
 - COBie Data Final Deliverable
- Other

Section L: Technological Infrastructure Needs

1. Software:

Broward County Construction Management Division uses Autodesk Revit for projects. Use of other IFC Compatible software than what is listed in the Broward County Construction Management Division BIM Standard requires approval by Broward County Construction Management Division.

List software used to deliver BIM. List any add-on software that is required to open, read or manipulate files as well. Indicate the 2D export deliverable file format for each software. The lines listed below are a sample and shall be modified for a project.

BIM USE	DISCIPLINE(S)	SOFTWARE	VERSION / BUILD	2D FILE FORMAT DELIVERABLE
Authoring				
Authoring				
Authoring				
Authoring				
Authoring				
Clash Detection				
Energy Analysis				

Cost Analysis				

Section M: Model Structure

Section M.1 - File Naming Structure:

Determine and list the structure for model file names. Design Team CAD File names shall be listed in the Drawing List with Authoring Company and File Names attachment.

FILE NAMES (Design Intent Models)	
Architectural Model	
Civil Model	
Mechanical Model	
Plumbing Model	
Electrical Model	
Structural Model	
Energy Model	
Coordination Model	

FILE NAMES (Construction Models)	
Steel Model	
Mechanical Model	
Plumbing Model	
Electrical Model	
Construction Model	
Coordination Model	

Section M.2 - Model Structure:

Describe how the Model is separated, e.g., by building, by floors, by zone, by areas, and/or discipline. Indicate the connections and hierarchy of linked files, including CAD files. Broward County Construction Management Division requires that all paths in Revit files be relative and that files be overlaid instead of attached unless the project team makes a strong case for alternate strategies.

1. DESIGN PHASE MODEL STRUCTURE:

2. CONSTRUCTION PHASE MODEL STRUCTURE:

Section M.3 - Measurement and Coordinate Systems:

Broward County Construction Management Division requires use of State Plane Coordinates to place the Building on its site to act as the Site origin Point and to provide for future GIS integration. See Section 2.2.4 of this Attachment 2. Broward County Construction Management Division will also provide 2D and 3D AutoCAD blocks and a 3D generic model family to be placed at the origin of ALL Design Intent BIMs, Construction BIMs and CAD files to confirm that files are aligned.

All Revit files shall have their project base point at the Revit project startup location. All CAD and Revit files that are to be linked to the Revit file using the "Origin to Origin" option. All plan-based CAD files shall use the Broward County Construction Management Division Site Origin Point as well as their 0,0 WCS origin. The 0 level in the "Z" coordinate shall match the survey datum of "0" used by the Civil Engineer in their surveys. This will ensure that all files for all buildings across the Broward County Construction Management Division campus will align to a single origin and that Revit level tags will report the true elevations of the floors.

Civil AutoCAD 2D and Civil 3D files will need to be modified prior to linking because they use an origin point that is different than the Broward County Construction Management Division Site Origin Point. It is typically outside the distance allowed by Revit. Broward County Construction Management Division's CAD-BIM Manager can provide instructions on this.

Units shall be Imperial units. Civil 2D AutoCAD or Civil 3D files may be set with 1 unit equals 1 foot. Revit files will be set with 1 unit equals 1 foot. All other AutoCAD files including Revit exports shall be set with 1 unit equals 1 inch.

Section M.4 - Worksets:

Each discipline shall be responsible for the naming of the worksets within their files. The only required worksets are LinkCAD-Description and LinkBIM-Description. Any linked CAD files or BIM files shall be placed on these worksets so that Revit files can be opened without loading these worksets for ease of upgrading the files.

List Worksets used by discipline below:

DISCIPLINE	WORKSET	DESCRIPTION
Arch, M, E, P, Struct	LinkCAD-All	Workset for all CAD links
M, E, P, Struct	LinkBIM-Arch	Workset for Architectural Revit file
Arch, E, P, Struct	LinkBIM-Mech	Workset for Mechanical Revit file
Arch, M, P, Struct	LinkBIM-Elec	Workset for Electrical Revit file
Arch, M, E, Struct	LinkBIM-Plumb	Workset for Plumbing Revit file
Arch, M, E, P	LinkBIM-Struct	Workset for Structural Revit file
Arch, M, E, P, Struct	Levels and Grids	Levels, Grids
Arch	Shell	Building Shell
Arch	Core	Elevators, Stairs
Arch	Interior-B	Basement Interior Fit-out
Arch	Interior-1	1 st floor Interior Fit-out

Section M.5 - Color Coding:

Federated models shall adhere to Exhibit "A" – Scope of Work Attachment 2, Section 2.2.12. If approved by the Contract Administrator, a modified color coding may be revised to follow the agreed upon trade colors listed below:

(insert any modified, Contract Administrator approved, color coding selections for this project below)

- a. Architecture: White
- b. Structural Steel: Maroon
- c. Concrete and Masonry: Gray
- d. HVAC Equipment: Gold
- e. HVAC Supply Duct/Diffuser: Blue
- f. HVAC Return Duct/Diffuser: Magenta
- g. HVAC Exhaust Ventilation Ductwork: Medium Orchid

- h. HVAC Piping Supply: Gold
- i. HVAC Piping Return: Violet
- j. Electrical Equipment: Dark Yellow
- k. Electrical Conduits: Light Yellow
- l. Communication Conduit: Light Blue
- m. Electrical Cable Tray: Dark Orange
- n. Electrical Lighting: Light Golden Rod Yellow
- o. Plumbing Domestic Water: Lime
- p. Plumbing Sewer Waste / Vent: Olive
- q. Plumbing Storm/Roof Drain: Dark Green
- r. Fire Protection: Red
- s. Fire Alarm: Golden Rod
- t. Pneumatic Tube: Dark Slate Gray
- u. Equipment: Burly Wood
- v. Specialty Gas: Light Green
- w. Steel: Rust
- x. Security Systems: Orange

Section N: Attachments

1. *List any project specific BIM PxP Attachments here*
- 2.

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Approvals:

By signing below, this BIM Project Execution Plan is adopted and agreed upon between the signed companies.

DISCIPLINE	NAME	SIGNATURE	DATE
Broward County Construction Management Division			
Architect			
Mechanical Engineer			
Electrical Engineer			
Plumbing Engineer			
Fire Protection Engineer			
Structural Engineer			
Civil Engineer			
Surveyor			
Geotech/ Soil borings			
BIM Consultant			
Construction Manager			
Construction Consultants			
Other			

End of Section 4 BIM Execution Plan

Section 5 BIM Model Progression Schedule/Agent Responsible Matrix (MPS) (Example of "Overview" Tab)

The MPS will be distributed by the Project Manager in an electronic format for use



Model Progression Schedule (MPS) Agent Responsible Matrix (ARM)

Overview and Intent of this Document.

Broward County Public Works Department and the Construction Management Division have created this Model Progression Schedule (MPS) and Agent Responsible Matrix (ARM) for use in the planning and procurement of BIM projects. This Matrix is based upon BIMForum's 2017 LOD (Level of Development) Specification and serves as a reference document. The BIMForum Specification reference enables practitioners to specify and articulate with a high level of clarity the content and reliability of BIMs at various stages in the design and construction process.

The County has prescribed minimum LOD's that are required at project milestones, but does not dictate workflow to achieve these requirements leaving the completion of the Model Progressions to the users in consultation with the County and project team.

This matrix defines Broward County's priorities for the development of project BIMs, the responsibilities of the External Team Members, and the phases to which the BIMs will be delivered and the LOD expected. The "Model Element Table" Tab includes the BIM Elements that are to be defined and the "LOD Definitions" tab includes example Level of Development definitions. This chart will be included in RFP's that require BIM and is a tool to be used for contract negotiation upon project award.

Instructions for completing this Document.

- 1 This MPS/ ARM will be included in the RFP for all BIM Projects. Upon Contract award, your team shall complete the MPS as part of the contract negotiation process, and be prepared to discuss "hand-off" & coordination of the BIM's.
- 2 Click on the "Model Element Table" Tab below to complete the MPS as is applicable to your project.
- 3 Insert the Level of Development (LOD) and the Agent Responsible and contracted to deliver that element.
- 4
- 5 Once agreed upon, this document will become a contract document and will be attached to the teams BIMXP. When completing the MPS, Please check the box on the top of the MPS to show the stage of the MPS submittal i.e. RFP, Proposed, Approved as described below:
 - RFP:** Required for this Project by Broward County, the initial stage of review.
 - Proposed:** The Design or Construction Professional changes the status to "Proposed" for all elements that are to be included in the project models.
 - Approved:** The Model Elements and Progression Schedule that is contracted by the Design Consultants and Contractors to be included in their Team's scope of work.

Please Note:

Questions, suggestions or concerns with completing this document during the RFP selection process should be directed to the BC-PurchasingAgent listed on the RFP. The Broward County Project Manager will serve as the primary contact and address all discussions or concerns during negotiations and subsequent Project Phases.



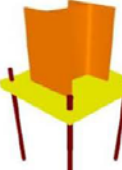

Model Progression Schedule/Agent Responsible Matrix
(“Model Element Table” Tab - Partial Example)

ID	Date	Programing		Initial Condition		SD		DD		50% CD		RIBZ CD		Tolerances for Design Models		Construction		Handover		Tolerances Installation Accuracy	
		LOD	Date	LOD	Date	LOD	Date	LOD	Date	LOD	Date	LOD	Date	LOD	Date	LOD	Date	LOD	Date	LOD	Date
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
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10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
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15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
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18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
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22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
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30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32

BIMForum Level of Development (LOD) Definitions

Overview Model Element Table LOD Definitions

(“LOD Definitions” Tab - Example)

Fundamental LOD Definitions		
LOD 100 - Massing / Planning Level		
<p>The Model Element may be graphically represented in the Model with a symbol or other generic representation, but does not satisfy the requirements for LOD 200. Information related to the Model Element (i.e. cost per square foot, tonnage of HVAC, etc.) can be derived from other Model Elements.</p>		
<p>BIMForum Interpretation: LOD 100 elements are not geometric representations. Examples are information attached to other model elements or symbols showing the existence of a component but not its shape, size, or precise location. Any information derived from LOD 100 elements must be considered approximate.</p>		
LOD 200 - Generic Design Level		
<p>The Model Element is graphically represented within the Model as a generic system, object, or assembly with approximate quantities, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.</p>		
<p>BIMForum interpretation: At this LOD elements are generic placeholders. They may be recognizable as the components they represent, or they may be volumes for space reservation. Any information derived from LOD 200 elements must be considered</p>		
LOD 300 - Design Coordination Level		
<p>The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of quantity, size, shape, location, and orientation. Non-graphic information may also be attached to the Model Element.</p>		
<p>BIMForum interpretation: The quantity, size, shape, location, and orientation of the element as designed can be measured directly from the model without referring to non-modeled information such as notes or dimension call-outs. The project origin is defined and the element is located accurately with respect to the project origin.</p>		
LOD 350 - Construction Coordination Level		
<p>The Model Element is graphically represented within the Model as a specific system, object, or assembly in terms of quantity, size, shape, location, orientation, and interfaces with other building systems. Non-graphic information may also be attached to the Model Element.</p>		
<p>BIMForum interpretation: Parts necessary for coordination of the element with nearby or attached elements are modeled. These parts will include such items as supports and connections. The quantity, size, shape, location, and orientation of the element as designed can be measured directly from the model without referring to non-modeled information such as notes or dimension call-outs.</p>		
LOD 400 - Fabrication Level		
<p>The Model Element is graphically represented within the Model as a specific system, object or assembly in terms of size, shape, location, quantity, and orientation with detailing, fabrication, assembly, and installation information. Non-graphic information may also be attached to the Model Element.</p>		
<p>BIMForum interpretation: An LOD 400 element is modeled at sufficient detail and accuracy for fabrication of the represented component. The quantity, size, shape, location, and orientation of the element as designed can be measured directly from the model without referring to non-modeled information such as notes or dimension call-outs.</p>		

* Definition from the "Level of Development Specification Part 1. November 2017 BIMFORUM.

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End of Attachment 2: BIM and Electronic Media Submittal Requirements

**FIRST AMENDMENT
EXHIBIT A, SCOPE OF SERVICES
ATTACHMENT 3:
PRELIMINARY PROJECT BUDGET**

Project No.: 104134
 RFP No.: S2115731P1
 Project Title: Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility
 Facility Name: Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility

Consultant's use of this budget is described within the Professional Services Agreement and its First Amendment Exhibit A, Scope of Services, for this Project. Preliminary Project Budget is subject to change at the Contract Administrator's discretion.

Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility - (Partial) Estimated Guaranteed Maximum Price	
	Value
Estimated Direct Costs	\$125,009,713
Estimated General Conditions	\$22,990,287
Total Estimated (Partial) GMP	\$148,000,000

**FIRST AMENDMENT
EXHIBIT B
SALARY COSTS**

Broward County's Medical Examiner's Office and BSO's Crime Lab Combined Facility

RFP No: S2115731P1
 Consultant Name: Leo A. Daly
 Sub Consultant Name:

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE (\$/HR)
Vice President, Managing Principal	\$102.66		2.99		\$306.95
Vice President, Market Sector Leader	\$86.77		2.99		\$259.44
Vice President, Director of Operations	\$84.05		2.99		\$251.31
Project Executive QA/QC	\$70.70		2.99		\$211.39
Vice President, Director of Design	\$70.77		2.99		\$211.60
Senior Project Manager	\$61.09		2.99		\$182.66
Project Manager	\$57.86		2.99		\$173.00
Senior Project Engineer	\$54.64		2.99		\$163.37
Senior Architect	\$54.64		2.99		\$163.37
Senior Engineer	\$54.64		2.99		\$163.37
Senior Interior	\$53.03		2.99		\$158.56
Visualization	\$51.41		2.99		\$153.72
Job Captain	\$46.83		2.99		\$140.02
Junior Architect	\$44.99		2.99		\$134.52
Planner	\$44.99		2.99		\$134.52
Manager CAD/BIM	\$42.14		2.99		\$126.00
Senior Technician	\$37.90		2.99		\$113.32
Administrative Assistant	\$35.55		2.99		\$106.29

Junior Interior	\$25.68		2.99		\$76.78
Junior Technician	\$25.57		2.99		\$76.45
Junior Administrative Assistant	\$22.40		2.99		\$66.98
<u>High Performance Engineer</u>	<u>\$57.69</u>		<u>2.99</u>		<u>\$172.49</u>
<u>Project Architect - Sustainability</u>	<u>\$43.27</u>		<u>2.99</u>		<u>\$129.38</u>

Multiplier of 2.99 is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (126.8%)

FRINGE = HOURLY RATE X FRINGE (59.08%)

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (10%)

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING MARGIN) / HOURLY RATE

2.99

*Negotiated Multiplier

**FIRST AMENDMENT
EXHIBIT B
SALARY COSTS**

Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility

RFP No: S2115731P1
 Consultant Name: LEO A DALY
 Sub Consultant Name: Buford Goff & Associates, Inc.

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE (\$/HR)
Principal	\$84.42		2.31		\$195.01
Project Manager	\$71.43		2.31		\$165.00

Multiplier of 2.31 is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (100%)

FRINGE = HOURLY RATE X FRINGE (10%)

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (10%)

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING
MARGIN) / HOURLY RATE

2.31

Notes:

Consultant has elected to use “Safe Harbor” combined fringe benefit and overhead rate of 110% in accordance with Section 5.2.5.

**FIRST AMENDMENT
EXHIBIT B
SALARY COSTS**

Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility

RFP No: S2115731P1
 Consultant Name: Leo A. Daly
 Sub Consultant Name: Garth Solutions, Inc.

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE (\$/HR)
Principal	\$85.00		2.31		\$196.35
Public Outreach Manager	\$65.00		2.31		\$150.15
Outreach Coordinator	\$45.00		2.31		\$103.95
Graphic Designer	\$45.00		2.31		\$103.95
<u>Administrative Assistant</u>	<u>\$19.23</u>		<u>2.31</u>		<u>\$44.42</u>

Multiplier of 2.31 is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (100%)

FRINGE = HOURLY RATE X FRINGE (10%)

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (10%)

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING MARGIN) / HOURLY RATE

2.31

Notes:

Consultant has elected to use “Safe Harbor” combined fringe benefit and overhead rate of 110% in accordance with Section 5.2.5.

**FIRST AMENDMENT
EXHIBIT B
SALARY COSTS**

Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility

RFP No: S2115731P1
 Consultant Name: Leo A. Daly
 Sub Consultant Name: TLC Engineering for Architecture, Inc.

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE (\$/HR)
Principal	\$84.31		2.93		\$247.03
Project Manager	\$50.78		2.93		\$148.79
Job Captain	\$38.43		2.93		\$112.60
Energy Modeler	\$38.43		2.93		\$112.60
Senior Engineer	\$60.95		2.93		\$178.58
Junior Technician	\$33.58		2.93		\$98.39
Drafter	\$21.09		2.93		\$61.79
Administrative Assistant	\$23.10		2.93		\$67.68
<u>Director</u>	<u>\$71.02</u>		<u>2.93</u>		<u>\$208.09</u>
<u>Cx Agent</u>	<u>\$51.69</u>		<u>2.93</u>		<u>\$151.45</u>
<u>Cx Manager</u>	<u>\$50.10</u>		<u>2.93</u>		<u>\$146.79</u>
<u>Energy Modeler</u>	<u>\$46.73</u>		<u>2.93</u>		<u>\$136.92</u>
<u>LEED Administrator</u>	<u>\$32.78</u>		<u>2.93</u>		<u>\$96.05</u>
<u>Technology Manager</u>	<u>\$46.15</u>		<u>2.93</u>		<u>\$135.22</u>
<u>Technology Engineer</u>	<u>\$34.13</u>		<u>2.93</u>		<u>\$100.00</u>

Multiplier of 2.93* is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (133.66%)
 FRINGE = HOURLY RATE X FRINGE (50.08%)

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (10%)

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING
MARGIN) / HOURLY RATE

2.93*

*Negotiated Rate

**FIRST AMENDMENT
EXHIBIT B
SALARY COSTS**

Broward County’s Medical Examiner’s Office and BSO’s Crime Lab Combined Facility

RFP No: S2115731P1
 Consultant Name: LEO A DALY
 Sub Consultant Name: Traf Tech Engineering, Inc.

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE (\$/HR)
Senior Project Engineer	\$ 75.00		2.31		\$ 173.25

Multiplier of 2.31 is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (100%)

FRINGE = HOURLY RATE X FRINGE (10%)

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (10%)

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING MARGIN) / HOURLY RATE

2.31

Notes:

Consultant has elected to use “Safe Harbor” combined fringe benefit and overhead rate of 110% in accordance with Section 5.2.5.

**FIRST AMENDMENT
EXHIBIT B
SALARY COSTS**

Broward County's Medical Examiner's Office and BSO's Crime Lab Combined Facility

RFP No: S2115731P1
 Consultant Name: LEO A DALY
 Sub Consultant Name: Visual Communications

TITLE	MAXIMUM HOURLY RATE (\$/HR)	X	MULTIPLIER	=	MAXIMUM BILLING RATE (\$/HR)
Principal	\$ 65.00		2.31		\$ 150.15
Project Manager	\$ 62.77		2.31		\$ 145.00
Senior Wayfinder	\$ 62.77		2.31		\$ 145.00
Senior Designer	\$ 62.77		2.31		\$ 145.00
Designer	\$ 50.00		2.31		\$ 115.50
Graphic Designer	\$ 25.00		2.31		\$ 57.75
Accounting/Clerical	\$ 25.00		2.31		\$ 57.75

Multiplier of 2.31 is calculated as follows:

OVERHEAD = HOURLY RATE X OVERHEAD (100%)

FRINGE = HOURLY RATE X FRINGE (10%)

OPERATING MARGIN = (HOURLY RATE + OVERHEAD + FRINGE) X OPERATING MARGIN (10%)

MULTIPLIER = (HOURLY RATE + OVERHEAD + FRINGE + OPERATING MARGIN) / HOURLY RATE

2.31

Notes:

Consultant has elected to use "Safe Harbor" combined fringe benefit and overhead rate of 110% in accordance with Section 5.2.5.

**FIRST AMENDMENT
EXHIBIT C
SCHEDULE OF SUBCONSULTANT PARTICIPATION**

RFP No: S2115731P1
Project Title: Broward County's Medical Examiner's Office and BSO's Crime Lab Combined Facility

No.	Firm Name	Discipline
1.	Bliss and Nyitray, Inc.	Structural Engineering
2.	CMS-Construction Management Services, Inc.	Cost Estimating
3.	Gartek Engineering Corporation	MEP Engineering
4.	Garth Solutions, Inc.	Public Relations
5.	McClaren, Wilson & Lawrie, Inc.	Laboratory Planning Design
6.	Miller, Legg and Associates, Inc.	Civil Engineering and Land Planning
7.	RADISE International, LC	Geotechnical Engineering
8.	James Santiago	Landscape Architecture
9.	Timothy Haas & Associates, Inc.	Parking Consultant
10.	TLC Engineering for Architecture, Inc.	Sustainability, Telecommunications, Audio Visual Design, Security
<u>11.</u>	<u>Buford Goff & Associates, Inc.</u>	<u>Security</u>
<u>12.</u>	<u>Traf Tech Engineering, Inc.</u>	<u>Transportation Engineering</u>
<u>13.</u>	<u>Visual Communications</u>	<u>Signage/Graphics</u>

**FIRST AMENDMENT
EXHIBIT D
SCHEDULE OF CBE PARTICIPATION**

RFP No: S21157311

Project Title: Broward County's Medical Examiner's Office and BSO's Crime Lab Combined Facility

CBE/Firm	CBE Category	Description	Fees	Percentage %
Gartek Engineering Corporation	CBE	MEP Engineering	\$40,350.78 <u>\$2,943,303.96</u>	22.8% <u>23%</u>
Garth Solutions, Inc.	CBE	Public Relations	\$45,564.75 \$135,548.16	1%
RADISE International, LC	CBE	Geotechnical Engineering	\$6,060.12 <u>\$23,337.78</u>	1% 0.18%
CMS - Construction Management Services, Inc.	CBE	Cost Estimating	\$10,590.60 <u>\$173,944.38</u>	0.2% 1%
Total CBE Participation			\$102,566.25 \$ 3,276,133.28	25%

**FIRST AMENDMENT
EXHIBIT D-1
LETTERS OF INTENT**

Consultant represents that the CBE participants referenced in the attached Letters of Intent have agreed by written subcontract to perform the percentage of work amounts set forth and that the following information regarding participating Subconsultants is true and correct to the best of his/her knowledge.

SEE NEXT PAGE FOR EXECUTED LETTERS OF INTENT



LETTER OF INTENT
BETWEEN BIDDER/OFFEROR AND
COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: No. S2115731P1

Project Title: Broward County's Medical Examiner's Office and Broward Sheriff's Office Crime Laboratory Facility

Bidder/Offeror Name: LEO A DALY

Address: 1400 Centrepark Boulevard Suite 500 City: West Palm Beach State: FL Zip: 33401

Authorized Representative: William A. Hanser Phone: 561-688-2111

CBE Firm/Supplier Name: Radise International, LC

Address: 3296 NW 9th Avenue City: Oakland Park State: FL Zip: 33309

Authorized Representative: Panneer Shanmugam Phone: 954-881-3473

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

Work to be performed by CBE Firm

Description	NAICS ¹	CBE Contract Amount ²	CBE Percentage of Total Project Value
Geotechnical Engineering	541330	\$ 23,337.12	0.18 %
			%
			%

AFFIRMATION: I hereby affirm that the information above is true and correct.

CBE Firm/Supplier Authorized Representative

Signature: [Signature] Title: Vice President Date: 10/13/2020

Bidder/Offeror Authorized Representative

Signature: [Signature] Title: Vice President, Managing Principal Date: 10/13/2020

¹ Visit Census.gov and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

² To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.



LETTER OF INTENT
BETWEEN BIDDER/OFFEROR AND
COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: No. S2115731P1

Project Title: Broward County's Medical Examiner's Office and Broward Sheriff's Office Crime Laboratory Facility

Bidder/Offeror Name: LEO A DALY

Address: 1400 Centrepark Boulevard Suite 500 City: West Palm Beach State: FL Zip: 33401

Authorized Representative: William A. Hanser Phone: 561-688-2111

CBE Firm/Supplier Name: CMS Construction Management Services

Address: 10 Fairway Drive Suite 301 City: Deerfield Beach State: FL Zip: 33441

Authorized Representative: Keith Emery Phone: 954-481-1600

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

Work to be performed by CBE Firm

Description	NAICS ¹	CBE Contract Amount ²	CBE Percentage of Total Project Value
Cost Estimator	236220	\$ 173,944.38	1.00 %
			%
			%

AFFIRMATION: I hereby affirm that the information above is true and correct.

CBE Firm/Supplier Authorized Representative

Signature: [Signature] Title: President Date: 10/20/2020

Bidder/Offeror Authorized Representative

Signature: [Signature] Title: Vice President, Managing Principal Date: 10/20/2020

¹ Visit Census.gov and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

² To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.



LETTER OF INTENT
BETWEEN BIDDER/OFFEROR AND
COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: No. S2115731P1 _____

Project Title: Broward County's Medical Examiner's Office and Broward Sheriff's Office Crime Laboratory Facility _____

Bidder/Offeror Name: LFO A DALY _____

Address: 1400 Centrepark Boulevard Suite 500 _____ **City:** West Palm Beach _____ **State:** FL _____ **Zip:** 33401 _____

Authorized Representative: William A. Hanser _____ **Phone:** 561-688-2111 _____

CBE Firm/Supplier Name: Garth Solutions, Inc. _____

Address: 7951 Riviera Boulevard Suite 411 _____ **City:** Miramar _____ **State:** FL _____ **Zip:** 33023 _____

Authorized Representative: Yvonne Garth _____ **Phone:** 954-727-3001 _____

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

Work to be performed by CBE Firm

Description	NAICS ¹	CBE Contract Amount ²	CBE Percentage of Total Project Value
Public Relations	541820	\$ 135,518.16	1.00 %
			%
			%

AFFIRMATION: I hereby affirm that the information above is true and correct.

CBE Firm/Supplier Authorized Representative

Signature: [Signature] Title: President / CEO _____ Date: 10/20/2020 _____

Bidder/Offeror Authorized Representative

Signature: [Signature] Title: Vice President, Managing Principal _____ Date: 10/20/2020 _____

¹ Visit Census.gov and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

² To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.



LETTER OF INTENT BETWEEN BIDDER/OFFEROR AND COUNTY BUSINESS ENTERPRISE (CBE) FIRM/SUPPLIER

This form is to be completed and signed for each CBE firm. If the PRIME is a CBE firm, please indicate the percentage performing with your own forces.

Solicitation No.: No. S2115731P1

Project Title: Broward County's Medical Examiner's Office and Broward Sheriff's Office Crime Laboratory Facility

Bidder/Offeror Name: LEO A DALY

Address: 1400 Centrepark Boulevard Suite 500 **City:** West Palm Beach **State:** FL **Zip:** 33401

Authorized Representative: William A. Hanser **Phone:** 561-688-2111

CBE Firm/Supplier Name: Gartek

Address: 2700 N. 29th Avenue Suite 303 **City:** Hollywood **State:** FL **Zip:** 33441

Authorized Representative: Robert Betancourt **Phone:** 954-357-6400

- A. This is a letter of intent between the bidder/offeror on this project and a CBE firm for the CBE to perform work on this project.
- B. By signing below, the bidder/offeror is committing to utilize the above-named CBE to perform the work described below.
- C. By signing below, the above-named CBE is committing to perform the work described below.
- D. By signing below, the bidder/offeror and CBE affirm that if the CBE subcontracts any of the work described below, it may only subcontract that work to another CBE.

Work to be performed by CBE Firm

Description	NAICS ¹	CBE Contract Amount ²	CBE Percentage of Total Project Value
Mechanical, Electrical & Plumbing Engineering	541330	\$ 2,943,302.96	23.00 %
			%
			%

AFFIRMATION: I hereby affirm that the information above is true and correct.

CBE Firm/Supplier Authorized Representative

Signature: Digitally signed by Robert L. Betancourt
Date: 2020.10.20 12:28:26-0400 _____ **Title:** President **Date:** 10/20/2020

Bidder/Offeror Authorized Representative

Signature: _____ **Title:** Vice President, Managing Principal **Date:** 10/20/2020

¹ Visit Census.gov and select [NAICS](#) to search and identify the correct codes. Match type of work with NAICS code as closely as possible.

² To be provided only when the solicitation requires that bidder/offeror include a dollar amount in its bid/offer.

In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.