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**\* = Required Field**

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Rev. March 2010

C

Complete set of accurate architectural documentation

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VA250-17-R-1232

10-04-2017

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541310

Department of Veterans Affairs

Ann Arbor Healthcare System

Network Contracting Office 10

2215 Fuller Road

Ann Arbor MI 48105

Darrell Maxwell

See attached Scope of Work.

Darrell.Maxwell@va.gov

Sept 6, 2017

VISN 10 - Update Master Record Drawings (Indiana and Michigan) - BIM

***Project No. 506-17-101***

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**0.5**  **BACKGROUND and OVERVIEW**

VISN 10 lacks a complete set of accurate architectural documentation to manage and track information about its facilities. In particular, up-to-date information about VA facilities, including accurate room and space layouts, square footage, functional use, responsible department, and other information, has become critically important to VA’s ability to manage and report on capital and real estate assets effectively. The lack of accurate records has also hampered the ability to provide correct baseline information for ongoing physical changes to the facilities when new architectural and engineering services are required. It is also important to have accurate spatial information to enable VA’s ability to track inventory and equipment.

To correct this deficiency, VISN 10intends to procure BIM creation using Revit via 3D Laser Scanning or other methodology, to provide accurate, contemporary, up-to-date spatial layout and ownership information for facilities under its stewardship. (Room details such as Department Ownership, Net square footage and Departmental gross square footage will enable improved facility management).

The spatial information from the BIM will be used by the current VA Computer Maintenance & Management System (CMMS)/Maximo. The information shall also be used in Computer Aided Facility Management (CAFM) systems and the VA Real Time Location System (RTLS), ESRI, as well as other yet unidentified systems needing space layout information.

The BIM product, acquired through this procurement shall also provide accurate information for use during facility renovations, and the BIM shall be enhanced over time to include additional levels of development and building systems.

**1.0 SCOPE OF WORK**

1. The A/E shall develop a Master Record Drawing set – BIM - of all buildings and their respective Campus orientation (Floor Plans and site plans with assorted site utilities type information) as listed in this Scope of Work (SOW) for the six (6) VISN 10 VA Medical Center’s as follows: Michigan locations: Ann Arbor, Battle Creek, Saginaw, and Detroit. Indiana locations: Indianapolis, Northern Indiana Health Care System (Marion and Ft. Wayne) and Indianapolis – Cold Springs Road (CSR) campus. In summary, this SOW equates to eight (8) Medical Center Facilities under (6) six campuses. The firm selected shall be AutoDesk Revit Certified. The record drawing set shall contain field verified as-built drawings for general, site (include but not limited to building. orientation, roads, sidewalks, and manhole locations and all underground utilities, Architectural, life Safety (includes Fire Walls and Fire-Suite & Smoke zone designations for Joint Commission), Civil, Structural, and Space Driver drawings. Details of each drawing type are provided in this SOW for the VA Medical Center Campus and follow the latest VA BIM Guidance (<https://www.cfm.va.gov/til/bim/BIMguide/lifecycle.htm>). Compatibility and uniformity with the existing BIM documents of the VISN 10 – Ohio region is of utmost importance. Not included is the interior building MEP information, unless facilities have validated information from recent past design projects which can be easily inserted and incorporated in the complete master as-built document set of the facility. Again, These MEP documents shall be inserted if facility has available.

Space validation measurements may use laser scanning or physical measurement along with Facility Auto-Cad documents and site information as confirmed by aerial site photometry and Global Positioning for Building GSF and orientation on campuses. Any scan information shall use applicable technology to develop required building information to be hosted at each local facility. This will be used as the base to create a BIM[[1]](#footnote-1) life cycle vision (per the latest TIL Standards <https://www.cfm.va.gov/til/projReq.asp>) VA BIM Manual v2.2 and all appendices, in collaboration with the VA - CAI (Capital Asset Inventory) of the building spaces, and include for reporting purposes, room number, room and department square footage, functional use name, department assignment, room name, CAI Space Group, SCIP Space Analysis Grouping, and other data requirements described herein. DWG and DWF files, if required, shall be generated and exported from BIM and shall carry all the required associated data.

1. The A/E shall develop a master set of Building Information Modeling (BIM) documents of all buildings (i.e. entire campuses) listed in the SOW for ALL Six (6) VISN 10 VA Medical Center Campus’ as noted below. The A/E shall also develop a master Campus BIM model that integrates all of the individual BIM building models in addition to campus Civil and Site information. The A/E shall develop a BIM Management Plan (BMP) to provide a master information/data management plan and assignment of roles and responsibilities for model creation and data integration at project initiation. The BIM Models shall incorporate field-verified, as-built, general, architectural, Life Safety, civil, site, structural, and space driver information as outlined below. In addition, the A/E shall provide Revit Training 3 sessions – 8 hours each (i.e.24 hours) for 8 people each for each of the VA (6) six Medical Center Training shall be based on Autodesk Certified mobile lab Training Center. The training program shall include eight (8) copies of all required printed training materials, product manuals, electronic media, text books, templates and training DVDs that will be used during classroom training and that can also be used as a self-study course. The course shall provide general overview and practical how-to information on the use of BIM for facilities management activities for VA,
2. The scope of this project is for VISN 10 - VA comprised of the following Medical Center Campus Facilities:

**Ann Arbor MI VAMC (506)**

2215 Fuller Road  
Ann Arbor MI 48105  
Phone: 734-845-5534

**Battle Creek VAMC (515)**

5500 Armstrong Rd.  
Battle Creek MI 49037  
Phone: 269-223-5142

**Detroit (553)**

John D. Dingell VA Medical Center

4646 John R. StreetDetroit, MI 48201  
Phone: (313)576-1000 X 64507

**Indianapolis VAMC (583)**

Richard L. Roudebush VAMC

1481 W. Tenth St  
Indianapolis, IN 46202  
Phone: (317)988-2362

**Indianapolis CSR division**

2601 Cold Springs Rd

Indianapolis 46224

Phone: (317)988-2362

**NIHCS - Marion VAMC (610)**

Northern Indiana HealthCare System VAMC

1700 E. 38th St.  
Marion, IN 46953  
Phone: 765-674-3321 Ext 73786

**NIHCS – Ft. Wayne VAMC (610A4**)

Northern Indiana HealthCare System VAMC

2121 Lake Avenue  
Ft. Wayne IN 46805  
Phone: 765-674-3321 Ext 73786

**Saginaw VAMC (655)**

Aleda E. Lutz VA Medical Center

1500 Weiss Street

Saginaw MI 48602

Facility Working Hours. – 8:00AM to 4:30PM. The hospitals are functional 24 hours per day 7 days per week.

Summary Details of facilities included in SOW (this is an approximation) – Scope requires all facilities of these locations be developed for BIM:

|  |  |  |  |
| --- | --- | --- | --- |
| **Facility** | **# of Buildings** | **GSF** | **Total Floor Levels** |
| **Ann Arbor Total** | 19 | 956,742 +  247,000 Interstitial | 43 |
| **Battle Creek Total** | 98 | 1,019,343 | 98 |
| **Detroit Total** | 4 | 1,217,000 + 1,174,000 Interstitial | 10 |
| **Indianapolis – Main Total** | 10 | 1,00,027 +  65,317 Interstitial | 20 |
| **Indianapolis – CSR - Total** | 7 | 121,568 | 12 |
| **NIHCS – Marion Total** | 73 | 921,535 | 99 |
| **NIHCS – Ft. Wayne Total** | 19 | 282,607 | 30 |
| **Saginaw Total** | 29 | 406,530 | 40 |

VISN 10 (Indiana & Michigan)

Total – SOW 222 5,925,352 + 352

1,486,317 Interstitial

1. A/E shall field verify all existing conditions, conduct necessary surveys to establish the extent and complexity of the above work. The VA requires that each building within a BIM file shall include a geo-reference to accurately locate that building within the site and to give it a physical location context at larger scales.
2. All work shall be coordinated with upcoming and current projects under construction. Construction which is planned for activation by Dec 31, should be identified as completed. All other Construction areas should be identified as “under Construction”.
3. A/E shall follow the VA- Technical Information Library, VA Construction Standards JH-08-3, all VA Mechanical and Electrical System Design Manuals, VA Sustainable Design and Energy Reduction Manual, ASHRAE Standards 90.1, and the most current VA BIM Guide and shall apply to Record Drawing/BIM model preparation. Particular attention is called to CD5, "Contract Drawings Requirements". Equipment symbols shall be in accordance with Handbook H-08-6, "Standard Drawing Details". Handbook H-08-4, shall be utilized to the greatest extent practicable.

References:

<http://www.cfm.va.gov/TIL/>

<http://www.cfm.va.gov/til/sDetail.asp>

https://www.cfm.va.gov/til/bim/BIMguide/lifecycle.htm

1. A/E will provide one combined and one separate electronic file for each floor of each building. Facility submissions shall also be provided on DVD format for each submission. A/E firm selected shall host an approved FTP site, by which information may be shared electronically as the VA – OIT, Office of Information Technology has restricted much of the Engineering ability to communicate via traditional FTP sites.
2. Project Schedule is 365 days to complete master Record Drawings/BIM Models for all site locations listed in the SOW.
3. As Blueprints and Building drawings are considered sensitive information.
4. All contractors are required to complete at a minimum TMS course #10176, VA Privacy and Information Security Awareness and Rules of Behavior Training.
5. The awarded AE firm will not be permitted to connect Contractor-owned IT device (such as a laptop) to a VA trusted network, the C&A (Certification and Accreditation) Requirements do not apply and a security Accreditation package is not required.
6. Training shall be provided via Mobile lab, where laptops are provided by the vendor and set up with facility contact in advance of the training scheduled. Company shall be Auto-desk Certified. The awarded AE firm shall provide and hold IACT or equivalent accreditation and delivery of continuing education credit. The provider shall ensure that its policies and procedures meet the ANSI/IACT 1 – 2013 Standard.

**2.0 GENERAL**

1. The A/E shall prepare all necessary Record Drawings/BIM Models. The degree of completion and the stages of submission shall be as hereinafter specified. The respective VA CORs will provide access to all existing record drawings for A/E to copy as needed.
2. A/E discussion with the VA Medical Center personnel concerning requirements will be arranged via the assigned COR and participated in by appropriate Engineering and Contracting personnel. The A/E shall participate, when required, with the appropriate Project Chief and Project Engineering and other Services in review of project scope, drawing review, BIM Models and comments.
3. There will be one (1) submission for Preliminary Record Drawing/BIM framework and VA BIM Standards, and two (2) submissions for 2nd record drawing submission of Record Drawings/BIM Models plus one (1) Final Submission which constitutes a complete Master Record Drawing/BIM Models package consisting of Record Drawings, BIM Models, schedules, BIM Management Plan (BMP), and utility site Plans and certification.
4. The floor plan drawings for all building documents shall be at the same scale as the architectural drawings to facilitate review/checking and shall be presented in a uniform manner and size for all buildings. Departmental GSF shall be listed on each sheet identifying total GSF for the Floor.
5. In each submission, the A/E shall re-submit the material specified in the prior submission revised according to the comments made by the VA COR at the prior review.
6. Existing as-built drawings of the buildings are available in files at the Engineering Service, VA Medical Center. Request for existing as-built drawings shall be made via the assigned COR. The existing VA record drawings are not to be expected to be accurate in all respects, and the Architect-Engineer is to verify all features affecting the project by field investigation.
7. The A/E shall develop the master Record Drawings utilizing the master BIM Models to generate and export all of the required data to the Autodesk DWG 2D file format. Autodesk DWG drawing files to be saved into the version which is currently being used by the VA Medical Center. Digitized/scanned plans will not be accepted.
8. 3D visualization models must be prepared using a software system that enables the VAMC to view the 3D model(s) without the need for any additional VA software.
9. The A/E shall develop the BIM Management Plan (BMP) and BIM Models according to the most current version of the VA BIM Guide. BIM Models shall be created to meet the Level of Detail (LOD) 300 requirements as defined in the VA BIM Guide and (LOD-350) for MEP when available.
10. Space validation measurements for the creation of the BIM models may use laser scanning to ensure a high level of accuracy. Any scan information shall use applicable technology to develop a point cloud of the required building and site information identified below. The point cloud information will be used as the basis of the BIM Model development. Total Building GSF should match the GPS coordinates for actual size of the building through Aerial Photometry and/or Survey work of the site. (Again Space measurements do not require scanning technology, but this may be used as an alternative to other manual measurement techniques, provided the firm has past experience and success in accomplishing within Similar Building functions.

**2.1 LASER SCANNING - Option**

**A. Areas/Objects to Survey/Scan**

Building Exterior

Interior:

All rooms/spaces on each floor

Ceilings & Floors

**B. Scanning Criteria**

* Scan shall be performed to standard surveying practice
* All room/space data required as the basis for the BIM modeling of the facility floor plans
* Control survey points clearly located and documented on plans and elevations both vertically and horizontally.
* ASTM-E57-3D standard file format (3D file format for laser scans)
  + Registration error report
  + Ability to collect and process in excess of 150,000 square feet of building data per day
* Registered point cloud files for reference in Autodesk Navisworks (latest release) or Tekla BIMsight (latest release). Acceptable file formats include:

FARO (.fls, .fws)

Leica (.imp)

Reigl (.3DD)

Z+F (.zfc, .zfs)

Generic (.pts, .svy, .ptx)

**C. Scan Accuracy**

The point cloud accuracy shall be of sufficient density to allow for the accurate location of all visible architectural and structural elements (artifacts larger than three inches) such as columns, beams, walls, doors, windows, stairs, ceilings, fixed furniture and casework, and major medical and building equipment fixed to the floor. The point cloud density shall also be adequate to properly define the position of all visible equipment. Registration error shall be reported and shall generally not exceed ½ inch.

High resolution, scaled color aerial photography (AKA orthophotography) should be included with Civil Site BIM documents

* 1. The photography is a helpful tool/resource for any exterior site work planning and design for Engineering staffs and AE firms (the accuracy will match that the BIM data set, or generally +/- 0.5' horizontal accuracy).
  2. The photography can be used as a backdrop to check all BIM civil/site base map data (planimetric features, such as roads, sidewalks, man-holes, etc.) submitted by the BIM contractor.

**D. Coordinate System**

* The survey shall utilize the NAVD 88 (North American Vertical Datum 1988) or equal coordinate system unless there is historical data, such as existing drawings, that uses another datum. Control points shall be provided if available. The surveyor shall coordinate with any existing information provided.
* The file point for each building shall be located at the SW corner of the building structural grid.

**E. Schedule and Access to Facilities**

Because VA medical operations cannot be disrupted by the scanning and room/space data verification efforts, a plan for each building shall be developed by the professional site surveyor (not necessarily a registered surveyor) and the A/E BIM modeler, in conjunction with and approved by the VA COR, who shall also arrange access, an escort, and assistance in identifying the correct data categories for each space (Facility nomenclature and CAI nomenclature), but also to ensure ICRA and other infection control compliance.

The plan shall include an evaluation of existing space and utility information provided by the VA facility (electronic BIM plans, PDF plans, paper plans, and other formats) as to the usefulness of those plans for the validation effort, a scanning schedule for each facility and department, a room data collection plan (which should be technically pre-tested for workability).

**2.2 BIM MODEL DEVELOPED FROM SCAN DATA**

The A/E shall coordinate their work with the scanning team to assure proper integration and accuracy for the BIM model. The VA BIM Guide, National BIM Standard (NBIM), the VA National CAD Standard (NCS), and other information for Space Measurement and Real Property Data Requirements located in VA’s [Technical Information Library](http://www.cfm.va.gov/til/) (TIL) shall be followed.[[2]](#footnote-2)

**A. Software Requirements**

BIM authoring tools must meet the software parametric database requirements as defined in the VA BIM Guide. A 3D Surface Model is not acceptable.

**B. Geo-referencing**

The model shall have the same geo-reference as its base laser scan.

**C. Modeling Requirements for BIM**

* The scans or model shall be the basis for developing a dimensionally accurate BIM model for each facility. *No surface material modeling or other data is required except as noted.*
* All room/spaces shall be modeled and defined with the prescribed data requirements.
* All objects and elements[[3]](#footnote-3) defined below shall be dimensionally accurate and created in the BIM with the appropriate BIM tool. Only the following object/element types are required in the BIM model:

1. Walls[[4]](#footnote-4)
   1. Exterior Walls - *in families or layers, with general materials noted*
   2. Interior Walls and Partitions –*in families or layers. Wall types will be standardized by type on each campus and will be depicted to match thickness and height.*

2. Doors[[5]](#footnote-5) –*w/correct swing and room numbers*

d. Windows[[6]](#footnote-6)

e. Skylights

3. Spaces/Rooms/Zones[[7]](#footnote-7)

4. Slabs/Floors

5. Roofs

6. Space (Ceiling) Heights/Plenums[[8]](#footnote-8)

7. Columns *– dimensionally accurate if existing drawing information is available, otherwise model to outside of column cover.*

8. Beams *– dimensionally accurate if existing drawing information is available*

9. Exterior Shading Devices *– modeled as an individual slab object (not as a slab extension), dimensionally accurate and in families or layers, labeled with basic material type.*

10*. Ceilings – Provide Ceiling types in each room showing height and type*

**D. Data Requirements**

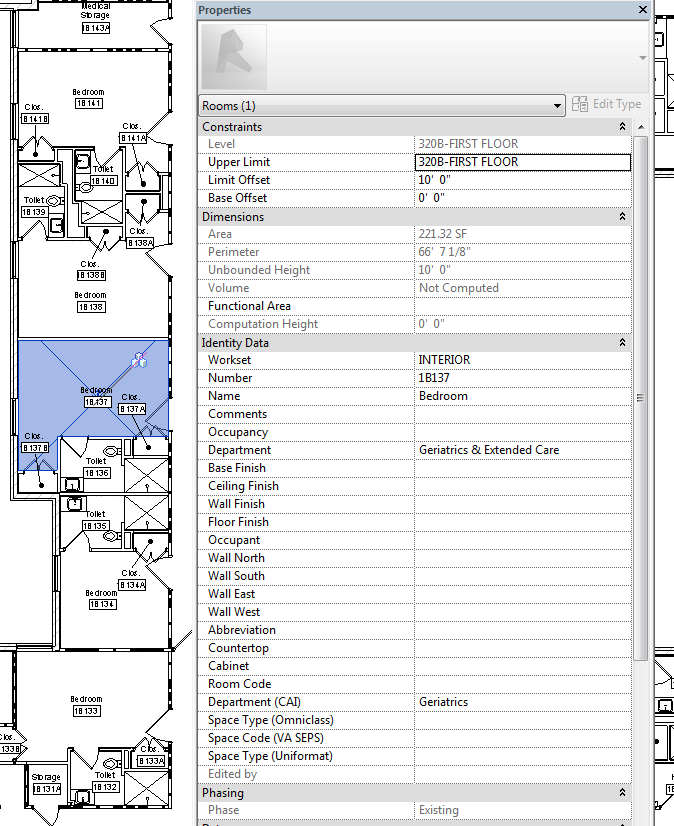
The BIM shall carry the following coding fields for each room/space object:

1. Building
   1. Building Name
   2. Building Unique ID—*GUID* *(provided by VA[[9]](#footnote-9))*
   3. Building Gross Square Feet (BGSF)[[10]](#footnote-10)
2. Wing
   1. Wing Name—*English Name*
   2. Wing Unique ID—*GUID* *(created by BIM software)*
3. Floor
   1. Floor Number
   2. Floor Gross Square Feet (GSF)[[11]](#footnote-11)
4. Room/Space
   1. Room Name—*English Name & Abbreviation*
   2. Room Number— *Room Number* *(on outside wall of room)*
   3. Room Unique Space Number—*GUID* *(created by BIM software)*
   4. Room Function—*OmniClass* *Table 13 (Number or GUID)*
   5. Room Measurement—*Net Square Footage (NSF)[[12]](#footnote-12)*
   6. Room Barcode number
   7. Space Height *-* *Spaces for measurement shall be defined and modeled from finished floor to finished ceiling*
5. Department/Service (Zones)
   1. Department/Service Name—*VA Space Planning Chapter Name (i.e. the department to which the space is assigned)(follows CAI and SCIP space types)*
   2. Department Net Square Footage (DNSF)[[13]](#footnote-13) and Departmental Gross Square Footage (DGSF)

\*\* See below Sample from one of the rooms completed for VISN 10 – Ohio Region. Detailed information can be provided upon request.

**Department Gross Square Feet (DGSF)** used for **VA owned** facilities, is a measurement of an assemblage of rooms and spaces as assigned to a department or service (generally defined by the appropriate VA Space Planning Criteria Chapter) and includes internal departmental or service circulation and walls, columns and projections enclosing the structural elements of the building within the space. The boundary defining DGSF is drawn from the inside finish of the permanent exterior building walls to the room side finish of building common areas or the centerline of department-separating wall partitions. The following building common areas, including the area of the enclosing walls, are not included in DGSF:

* Areas required to support the entire building but are not assigned to a tenant, service, or department
* Building equipment, support areas, and housekeeping closets supporting more than one department or service
* Public restrooms and lounges not contained in a VA Space Planning Criteria Chapter
* Public corridors and entrance lobbies (with the exception of Lobby spaces normally assigned to Space Planning Criteria Chapter 244)
* Vertical circulation (elevators, escalators, and stairs)
* Shafts, risers, and stacks



**G. Use of Drawing Layers for BIM Objects**

If the BIM-authoring software uses layers as the methodology to filter and structure information, the National CAD Standards shall apply.

**H. Professional Qualifications**

The BIM modeling and file exports shall be performed by a licensed professional architect/engineer (AE) with extensive (5 years minimum) BIM modeling experience on facilities of comparable data complexity to VA facilities. In addition, firm must be AutoDesk – Revit Certified.

1. Symbol Identification of Master Record Drawings: Symbols shall be reduced so as not to utilize significant memory.

G - Project Title Sheet

LS - Life Safety Drawings

C - Civil Drawings

SP - Site Plan Drawings

S - Structural Drawings

A - Architectural Drawings

SD - Space Driver Drawings

1. Deliverable requirements:
2. Record Drawings: Paper Prints - Black line on white background, "E" Size (30" x 42") (Full size) – Half size (15”x21”)
3. Record Drawings: Electronic Media – CD-ROM/ DVD – DWG drawing files using the most current VA version of Revit.
4. Record Drawings: Drawing Data Information – Shall provide all basic information and dependent files including, but not limited to the following: File names, fonts, font map, external reference files, layer names and attributes, blocks used, hatches, shape files, pen table, ctb file, logo images, etc…
5. BIM Management Plan (BMP), BIM Models and associated deliverables as outlined in the VA BIM Guide
6. utility systems information identified
7. Each floor plan shall identify the specific aggregated departmental gross square footage and total for the floor. (color coded)

**3.0 PROPOSED RECORD DRAWING/ TRAINING/ BIM MODEL SCHEDULE**

**(for Each Medical Center)**

1. Preliminary Record Drawing/ BIM Framework and BIM Standards Submission

a) This Submission shall be submitted within sixty (60) days after award of contract and shall include the following:

- Proposed BIM Standards including but not limited to drawing index,

layering and attributes, proposed blocks, etc…

- Proposed BIM Management Plan – this should include how the project will be completed as balanced against all site locations

b) There will be a fourteen (14) day review of the Preliminary Record Drawing Framework

and BIM Standards Submission by the VAMC.

2. First Record Drawing/BIM Model Submission

a) This submission shall be submitted 75 days after receipt of VA review comments from the Preliminary Record Drawing Framework and BIM Standards Submission and shall include the following:

- Record Drawings: Electronic and Three (3) sets of full size drawings (prints);.

-

b) There will be a fourteen (14) day review of the First Record Drawing Submission by the VAMC by facility.

3. Second Record Drawing/BIM Model Submission

a) This submission shall be submitted 150 days after receipt of VA review comments from the First Record Drawing Submission and shall include the following:

- Record Drawings: Electronic and Three (3) full size sets of drawings (prints);

- BIM Models and associated deliverables as outlined.

b) Provide a one day (8 hour) BIM onsite training session for up to 8 Technicians each of the six (6) locations. Training to build on previous training modules and prepare staff to maintain the system, add new buildings to the system and make appropriate changes as buildings are renovated. Training shall include delivery of all manuals and training materials requisite with this stage of the project

c) There will be a fourteen (14) day review of the Second Record Drawing Submission by the VAMC

4. Final Record Drawing/ BIM Model Submission

a) This submission shall be submitted 60 days after receipt of VA review comments from the Second

Record Drawing Submission and shall include the following:

- Record Drawings: Electronic and Three (3) full size sets of drawings (prints); .

- BIM Models and associated deliverables as outlined.

b) Provide a two (8 hour) day BIM onsite training session for up to 8 Technicians each of the six (6) locations. Training to build on previous training modules and prepare staff to maintain the system, add new buildings to the system and make appropriate changes as buildings are renovated. Training to include how to maintain a master record document set and extraction and edits of Departmental GSF for CAI update. Training shall include delivery of all manuals and training materials requisite with this stage of the project.

5. A/E shall note that the above schedule is for guidance only. This schedule may be adjusted to meet the needs of the VA Medical Center for obligation of funds and other considerations. The above proposed master Record Drawing/ BIM Model schedule includes government review time.

**4.0 RECORD DRAWING/ BIM MODEL SUBMISSIONS**

There will be the following Record Drawing/ BIM Model submissions.

1. Preliminary Record Drawing/BIM Framework and BIM Standards submission
2. First Record Drawing/BIM Model Submission
3. Second Record Drawing/BIM Model Submission
4. Final Record Drawing/BIM Model Submission

The requirement for each design submission is described below.

**4.1 PRELIMINARY RECORD DRAWING/ BIM FRAMEWORK AND BIM STANDARDS SUBMISSION**

Submission Intention: The intent of the Preliminary Record Drawing/BIM Framework and BIM Standards Submission is to establish a uniform and comprehensive Record Drawing/BIM framework and BIM standard that will guide the development and completion of the master Record Drawing/BIM Model Submissions.

The Record Drawings/BIM Models and their associated BIM Standards shall include, but not be limited to the following items listed beneath each drawing type and shall conform to industry standards for scope of information provided.

1. General Drawings

- title sheet information

- drawing index

- general notes

- standard abbreviations

- symbol legend

- campus/ building key plan(s)

1. Life Safety Drawings

- architectural background

- structural grid, columns and column designations

- fire rated walls

- smoke walls

- smoke barriers

- location of suites

1. Civil Drawings

- Separate Drawings will include, but not be limited to:

1) Site Utilities: Water, Sanitary, Storm, Electrical, Lighting, Snow melt system, Steam,

Gas, Tele-Data, Chilled Water, Underground Storage Tanks

2) Site Survey: Property lines, plat information, topography,

existing structures, elevation benchmarks, paved areas

1. Site Plan Drawings

- campus plan

- accurate building outlines

- paved areas

- topography

- property line

- landscaping

- light fixtures

- existing structures

1. Structural Drawings

- Separate Drawings will include, but not be limited to:

1) Foundation Plans

- structural grid

- columns

- elevation designations

2) Framing Plans

- structural grid

- columns

1. Architectural

- Separate Drawings will include, but not be limited to:

1. Floor Plans

- structural grid

- columns/ structural elements

- exterior/ interior walls

- exterior dimensions

- expansion joints

- vertical shafts/ chases

- floor finish elevation designations

- designation of areas under construction

- room numbers (confirm in field)

- room square foot area

- stairs/ elevators/ dumbwaiters and their designations

- ramps

- exterior/ interior windows/ sidelights/ sills

1. Reflected Ceiling Plans

- architectural background

- structural grid, columns and column designations

- acoustical ceiling grid

- gypsum board ceilings

- moveable partition locations

- soffits/ bulkheads

- ceiling finish elevations designation (AFF)

1. Roof Plans

- structural grid, column designations

- parapets and their elevation

- roof slope

- skylights

- roof access (hatches, stair access, etc…)

- rooftop equipment (AHU’s, exhaust fans, etc)

1. Exterior Elevations

- column lines and designations

- mechanical exhausts / intake grilles

- floor elevation benchmarks

1. Space Driver Drawings
2. Space Driver Plans

- architectural backgrounds

- room numbers

- suite/ dept designations/ CAI and Facility nomenclature Ownership

- room areas/ Ownership

**4.2 FIRST RECORD DRAWING/BIM MODEL SUBMISSION**

Submission Intention: The intent of the First Record Drawing/ BIM Model Submission is to incorporate all of the available existing as-built drawings and backgrounds into the master Record Drawings/ BIM Models following the Record Drawing/ BIM Framework and BIM standards developed during the Record Drawing/BIM Framework and BIM Standards Submission. Comments from the Preliminary Record Drawing/ BIM Framework and BIM Standards Submission should be incorporated into this submission.

1. General Drawings

- Consolidation of all available project as-built drawings and backgrounds

1. Life Safety Drawings

- Consolidation of all available project as-built drawings and backgrounds.

1. Civil Drawings

- Conduct engineering site survey.

- Consolidation of all available project as-built drawings and backgrounds and site survey.

1. Site Plan Drawings

- Consolidation of all available project as-built drawings and backgrounds

1. Structural Drawings

- Consolidation of all available project as-built drawings and backgrounds.

1. Architectural Drawings

-Consolidation of all available project as-built drawings and backgrounds

1. Fire Protection Drawings

- Consolidation of all available project as-built drawings and backgrounds

1. Space Driver Drawings

- Consolidation of all space driver update drawings.

**4.3 SECOND RECORD DRAWING/ BIM MODEL SUBMISSION**

Submission Intention: The intent of the Second Record Drawing/BIM Model Submission is to validate the existing as-built drawing and background information previously incorporated into the Record Drawings/ BIM Models through a thorough and extensive field verification process. The Second Record Drawing/BIM Model Submission should correct inaccurate information obtained from the existing as-built drawings and backgrounds and incorporate new information collected during the field verification process. Comments from the First Record Drawing/BIM Model Submission should be incorporated into this submission. This Submission should represent a 100% complete set of Record Drawings, 3D models and BIM Models associated deliverables identified in the Preliminary Record Drawing/BIM Framework and BIM Standards Submission, including any other drawings/BIM Models that have been added in prior VAMC review comments and meetings with the A/E.

**4.4 FINAL RECORD DRAWING/ BIM MODEL SUBMISSION**

Submission Intention: The intent of the Final Record Drawing/BIM Model Submission is to provide a comprehensive, 100% complete set of master Record Drawings/BIM Models and associated deliverables. Comments from the Second Record Drawing/BIM Model Submission should be incorporated into this submission. This final deliverable will specifically identify room ownership and also departmental ownership which links with CAI Mapping.

- - - END OF SCOPE - - -

1. As defined in AIA Document E202 [↑](#footnote-ref-1)
2. In the case of conflicts, this document shall govern. [↑](#footnote-ref-2)
3. BIM users can make critical mistakes by creating Building Elements (Objects) using the wrong toolset. For example, inclined beams are sometimes modeled as roof elements, and columns are often modeled as very short walls. Although such cases may serve the purposes for drawing production (they look correct in the drawing), they become an issue when using the model for data mining purposes as they will be exported as the wrong object types*.* [↑](#footnote-ref-3)
4. Wall elements must be associated with the floor level to which the space is assigned. [↑](#footnote-ref-4)
5. Doors and windows shall be created by inserting the window into the wall component and they must not extend beyond the wall geometry. [↑](#footnote-ref-5)
6. Curtainwall objects may be used if they support glass measurement and energy calculation software. [↑](#footnote-ref-6)
7. In BIM, the space itself is a 3-D object. If two areas have different functional space classifications, even though they are within the same physical space, they shall be modeled as two separate spaces. Spaces shall be generated as a volume as measured from the interior face of the walls and from the floor to the bottom of the slab above the space. These measurements will be used to generate square feet and volume calculations. [↑](#footnote-ref-7)
8. Spaces shall be defined and modeled with a vertical dimension from the finished floor to finished ceiling. Space above the ceiling shall be modeled as a separate space [↑](#footnote-ref-8)
9. If not available, a field shall be provided for future use [↑](#footnote-ref-9)
10. **Building Gross Square Feet (BGSF**) is the sum of the GSF on each floor of the building. [↑](#footnote-ref-10)
11. **Gross Square Feet (GSF)** is defined as the area that includes all enclosed space as measured from the *exterior* face of the building walls. [↑](#footnote-ref-11)
12. **Net Square Footage (NSF)** is the area of an individual room/space that is available for use by personnel, furnishings, and equipment. NSF for each room or space is measured from the inside finished surface of surrounding permanent walls, excluding the area bounded by the outside finished surfaces of structural columns and shafts.  [↑](#footnote-ref-12)
13. [↑](#footnote-ref-13)