BUFFALO
SEWER AUTHORITY

**APPENDIX B: CAPITAL PROJECTS PROGRAM MANAGEMENT
SECTION 10 BIM DESIGN PLAN AND STANDARDS**

Program Management Plan

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List of Acronyms

BIM	Building Information Modeling
BSA	Buffalo Sewer Authority
CAD	Computer-Aided Design
CC	Cost Controller
CIP	Capital Improvement Plan
CPI	Cost Performance Index
CPM	Critical Path Method
CPPM	Capital Projects Program Management
CPOC	Capital Program Oversight Committee
CRC	Change and Reporting Coordinator
DC	Document Controller
DPM	Deputy Program Manager
FCN	Field Change Notice
FCR	Field Change Request
HASP	Health and Safety Plan
LTCP	Long-Term Control Plan
NFA	No Feasible Alternative
OCO	Office Construction Oversight
PCD	Project Controls Director
PCM	Program Controls Manager
PCN	Project Change Notice
PCR	Project Change Request
PD	Program Director
PDE	Project Design Engineer
PDFs	Portable Document Format
PDT	Project Design Team
PM	Program Manager
PMIS	Project Management Information System
PMP	Program Management Plan
PMT	Program Management Team
PS	Program Schedular
PSE	Principal Sanitary Engineer
QA/QC	Quality Assurance and Quality Control
QC	Quality Control
QCCW	Queen City Clean Waters
QM	Quality Management
QMP	Quality Management Plan
RA	Risk Analysis or Risk Assessment
RAR	Risk Assessment Report
RFI	Request for Information
RFQ	Request for Qualification
RFP	Request for Proposal

List of Acronyms

RM	Risk Management
RMP	Risk Management Plan
RR	Risk Register
SMEs	Subject Matter Experts
SPI	Schedule Performance Index
TIA	Time Impact Analysis
TOR	Task Order Request
WBS	Work Breakdown Structure
WWTP	Wastewater Treatment Plant

SECTION 10   BIM STANDARDS

This Building Information Model (BIM) Design Plan and Standards document has been prepared for the Buffalo Sewer Authority Capital Projects Program (Program) to facilitate the establishment, communication and implementation of procedures, protocol and standards that are specifically applicable to the preparation of the figures and drawings. It is important that this plan be followed by all design professionals on the team so the Program's drawings can be developed and produced efficiently and be of high quality.

10.1   BIM Standards Introduction

This BIM Design Plan document will be submitted to all design professionals that are responsible for preparing the figures and drawings for the Program. The current revision of this document, and related standards, will reside on the Program SharePoint site in the BIM Design Plan and Standards folder. It is suggested that staff responsible for implementing the BIM Plan set an ALERT (e-mail notification) on this SharePoint folder to be notified of the latest revisions to this document.

10.2   Program Management

Program Manager	Edmund Aplerh-Doku, P.E., DBA, ENV SP	TYLIN | Greeley and Hansen
Deputy Program Manager	Nadia Mugisha, P.E.	Arcadis
Program Director	Walt Walker, P.E., ENV SP	TYLIN | Greeley and Hansen
CAD & BIM Manager	Oscar Roman	TYLIN | Greeley and Hansen
BIM Advisor	John Schmidt	TYLIN | Greeley and Hansen
Task Manager	To be assigned per Task	
Task BIM Coordinator	To be assigned per Task	

The Program Manager, Task Manager, and BIM Manager will decide if individual tasks require a Task BIM Coordinator based on the scope of each Task.

Refer to the *Quality Management Plan* for complete information on individual roles, responsibilities, and contact information.

10.3   BIM Design Plan and Standards Revisions and Updating

The BIM Manager prepared this document in conjunction with the Program Manager and the Deputy Program Manager.

Requests for revision and updates to this document should be brought to the attention of the BIM Manager, listed above. Requests will be reviewed by the Program Manager and BIM Manager. Appropriate revision requests require approval by the Program Manager. The approved revision(s) will be implemented and issued to the individual Program Team.

The current version of this document will always be posted to the Program SharePoint site in the BIM Design Plan and Standards folder.

A revision date will be added to the cover page documenting the date of the latest version. A corresponding revision history note will be entered below with the current revision date and a description of the revision(s) that were implemented.

10.4   BIM Software and Program Standards

The BIM software and standards approved for this Program are based on the use of *AutoCAD Civil 3D 2023* and *Revit 2023*. The BIM standards define the electronic file and folder setup standards put in place to efficiently coordinate and better manage BIM data and develop consistent figures and drawings between all disciplines and team members.

10.4.1   BIM Software

This Program requires the use of both 2D drafting and 3D modeling software to create the figures and drawings for the Program. No version of the software, other than that listed herein, previous or subsequent, can be used due to upward and downward incompatibility between versions. No other CAD/BIM design software manufacturer packages can be use during the design and documentation phase of this Program. When scope is limited, project teams may request to use regular AutoCAD if approved by the Program Manager in advance. Other software may contribute design information only if approved by the Program Manager in advance.

Following is the approved CAD and BIM software for this Program:

10.4.1.1   AutoCAD Civil 3D 2023

All General/Civil/Site drawings related to the cover sheet, signature/seal sheets, list of figures and drawings, general notes, abbreviations, location, site, yard piping, grading, plan and profile, erosion and sedimentation control, paving and restoration, landscaping, traffic control, staging plans as well as diagrams and utility details will be produced with AutoCAD Civil 3D 2023.

10.4.1.2   REVIT 2023

All structural, architectural, process mechanical, HVAC, plumbing, fire protection, electrical and instrumentation and control will be produced with REVIT 2023.

AutoCAD Civil 3D and REVIT files are to remain in the 2023 file format for the duration of this Program unless updated by newer versions of this BIM Design Plan. Drawing files cannot be moved to newer versions without the prior approval of the Program Manager and reissuance of this BIM Design Plan

10.4.2   BIM Standards

Templates and support files will be provided on the ACC site for AutoCAD Civil 3D and REVIT. These files are to be setup according to the Program specific BIM and Drafting Standards as determined by Program Manager. The understanding and implementation of these standards will produce consistent development of figures and drawings between all design disciplines, team members, and tasks.

Included in the AutoCAD Civil 3D template files are:

- Drawing Templates
- Title Blocks
- Title Block Attributes
- General AutoCAD Blocks
- Line Type Definition File
- Color Plot Style Table File

Included in the REVIT template files are:

- Standard Worksets
- Levels and Grids
- Standard Annotation Families
- Annotation and Dimension Styles
- Title Blocks

10.4.3   Initial AutoCAD Civil 3D and Revit Design Files

File names are constructed from the following Client\Program Parameters and then the subsequent Base or Sheet File Parameters as defined below.

10.4.3.1   Client Program File Naming for PDFs

Format:	BSACPP- Field 1	aa000- Field 2	XXX- Field 3	[_ _ _ _ _ _]_ Field 4	yyyy-mm-dd. Field 5	pdf Field 6

Table 10-1: Client/program File Naming

Field	No. of Characters	Text Description	Followed By:	Example
1	6	Program Abbreviation	Dash	BSACPP
2	5	Task / Package No.	Dash	CP001, FP001 See *Table 3-1* for examples.
3	Varies	Task Description / Package Abbreviation (Optional for Internal docs)	Dash	1st Street Sewer, Admin Bldg Improvements
4	Varies	Discipline and description (For Internal docs) or Submittal Name	Underscore	G, C, S, etc See *Table 3-2* for examples or 30% Submittal Drawings
5	10	Date Document was created (Optional for Internal docs)	Period	2024-05-20
6	3	Document File Extension		doc, pdf

Examples:

BSACPP-CP001-1stStreetSewer-30%Submittal.pdf	Combined 30% Submittal Drawings
BSACPP-FP001-AdminBldgImprovements-60% QAQC.pdf	Combined 60% QAQC Drawings
BSACPP-CP002-Civil Combined_2024-05-20.pdf	Civil Drawing Set
BSACPP-FP002-Arch Combined_2024-05-20.pdf	Architectural Drawing Set

10.4.4   AutoCAD Civil 3D Figures and Drawings File Naming

10.4.4.1   AutoCAD Civil 3D Base File Naming

Base file drawing names shall start with the same Client\Program and task file naming parameters as above followed by a dash and a simple description of the file contents. There may be a suffix to designate EXISTING or NEW. See sample below.

Base File Description: Simple description of what the base file content represents.

Existing\New\(Blank):   Additional hyphen for EXISTING (-EX) Condition or NEW (-NEW)

Design Base Elements: The description may be clear enough, and thus, the existing or new suffix may not be required.

Format:	BSACPP-	aa000-	XXX-	[_ _ _ _ _ _]_	NEW.	dwg
	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6

Table 10-2: AutoCAD Civil 3D Basefile Naming

Field	No. of Characters	Text Description	Followed by:	Example
1	6	Program Abbreviation	Dash	BSACCP
2	5	Task / Package No.	Dash	CP001, FP001 See *Table 3-1* for examples.
3	4	Discipline Designator + 00x sequential numbering where X indicates the file is a Basefile	Dash (Period when Field 5 is not used)	G, C, S, etc. See *Table 3-2* for examples.
4	3-7	Description	Dash	SURV, TIN, SITE, MODEL, PROFILE, etc.
5	2-3	Phase Indicator (Optional)	Period	EX, DEMO, NEW
6	3	AutoCAD Civil 3D file Extension	NA	dwg

Examples:

BSACPP-CP001-C01x-SURV.dwg	Existing surface features and underground utilities, excluding points, contours and existing surface TIN
BSACPP-CP001-C02x-TIN-EX.dwg	Existing surface TIN, Points, Breaklines/features lines and contours
BSACPP-CP001-C03x-SITE-NEW.dwg	2D line work for building, structures and underground utilities
BSACPP-CP001-C04x-TIN-NEW.dwg	New Surface TIN, new points, feature lines, grading objects, corridors
BSACPP-CP001-C05x-MODEL.dwg	Alignments, pipe networks, pressure pipe networks and design profile views
BSACPP-CP001-C06x-PROFILE.dwg	Final profile views with full annotation that appears on figure and drawing sheets

All AutoCAD Civil 3D External References (Xrefs) are required to be RELATIVE PATH based on the Program Directory Structure per Section *10.1: File Location and Structure*. All Xrefs are to be RELATIVE PATH, OVERLAY, inserted/located in MODELSPACE at 0,0,0 with a SCALE for X, Y and Z to be 1.00.

10.4.4.2   AutoCAD Civil 3D Sheet File Naming

Sheet File names will start with the same Client\Program file naming parameters as above followed by a hyphen, the appropriate Structure\Discipline Designator and Drawing Number as defined in the sample below.

Format:	BSACPP-	aa000-	a-	00.	dwg
	Field 1	Field 2	Field 3	Field 4	Field 5

Table 10-3: AutoCAD Civil 3D Sheet File Naming

Field	No. of Characters	Text Description	Followed by:	Example
1	4-5	Program Abbreviation	Dash	BSACPP
2	2-3	Task / Package No.	Dash	CP001, FP001 See *Table 3-1* for examples.
3	1	Discipline Designator	Dash	G, C, L, S, etc. See *Table 3-2* for examples.
4	2	Drawing Number	Period	01.
5	3	AutoCAD Civil 3D file Extension	NA	DWG

Examples:

BSACPP-CP001-G-00.dwg	Cover Sheet for task CP001
BSACPP-CP001-G-01.dwg	Index Sheet fG1 for Task CP001

10.4.5   Revit Central File Naming

10.4.5.1   Revit Files

The Revit files for the Program are specific to each Task, Structure and Consultant. Multiple disciplines from the same company are allowed within one file. These files are to be set up as Central Files and saved to the Program Autodesk Construction Cloud (ACC) service. Each file is to contain the standard set of work sets in addition to discipline specific work sets for each discipline working within the specific file.

The Survey Basepoint for all Central files are coordinated with a central point in the Site Survey, both share the same Northing and Easting Coordinate. The Survey Point is to be pinned in place. No one other than the BIM Manager or BIM Coordinator is to change any settings to the Survey Basepoint.

The Program Basepoint and Angle From Program North to True North is to be set for each individual structure by the BIM Manager or BIM Coordinator. The Program Basepoint is to be pinned in place. No one other than the BIM Manager or BIM Coordinator is to change any setting to the Program Basepoint or to the Angle From Program North.

Maintaining these settings will ensure that all Discipline Central files are on the same coordinates and will align on the site.

10.4.5.2 Revit File Naming

The following is the format that is to be used for naming Revit files for the Program. This format is to be used by all Program participants for all Revit files.

Format:	BSACPP-	aa000-	aaa-	Aaa	a-	R23.	Rvt
	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6	Field 7

Table 10-4: Revit File Naming

Field	No. of Characters	Text Description	Followed by:	Examples
1	4-5	Program Abbreviation	Dash	BSACPP
2	2-3	Task / Package No.	Underscore	CP001, FP002 See *Table 3-1* for examples.
3	2-3	Structure Abbreviation	Dash	PSPS = Primary Sludge Pumping Station, HW = Headworks See Appendix C:Structure / Construction Area Designations List for others.
4	2-5	Company / Firm Abbreviation	Underscore	TYL, ADS, E3C See *Table 2-5* for others examples.
5	1+	Discipline Designator(s)	Dash	See *Table 3-2* for examples.
6	3	Revit Version	Period	R23.
7	3	Revit file Extension	NA	rvt

Examples:

BSACPP-FP001-PSPS-A_M-R23.rvt	Process File
BSACPP-FP001-PSPS-K_S-R23.rvt	Structural File
BSACPP-FP001-PSPS-T_A-R23.rvt	Architectural File
BSACPP-FP002-HW-A_M-R23.rvt	Process File
BSACPP-FP002-HW-K_S-R23.rvt	Structural and Architectural File
BSACPP-FP002-HW-T_HPEN-R23.rvt	MEPIC File

Table 10-5: Field No. 5, Company Abbreviations

Company	Abbreviations
TYLin | Greeley and Hansen Water Solutions	T
Arcadis	A
JM Davidson Engineering	J
Watts Architecture & Engineering	W
CORE Environmental	C
Frandina Engineering and Land Surveying	F
KHEOPS Architecture, Engineering and Survey	K
Jade Stone Engineering	J

10.5　General Drafting Standards

The general drafting standards detailed below apply to both AutoCAD Civil 3D and REVIT for the production and coordination of figures and drawings between all design disciplines.

10.5.1　Figure and Drawing Format

10.5.1.1　Figures

Figures for this Program are to be developed to scale on 11"x17" sheets, printed to full size.

10.5.1.2　Contract Drawings

The Contract Drawings for this Program will be developed based on 22"x34", full size, to scale sheet. Final Contract Drawings used for bidding purposes will bear the appropriate professional seal and signature.

Reduced size working drawings will be the preferred design format size during the design process for printed drawings from full-size PDF's. Reduced size drawings shall be 11"x17" (these drawings are not to scale).

The 11"x17" working drawings are not the drawings of record.

10.5.2　Sheet Layout and Drawing Scale

All Task Leaders, Task BIM Coordinators, and discipline leads should go through the exercise of story boarding all discipline sheets to determine the sheet layout and the scale needed to represent their design intent. Coordination with other disciplines working in the same space should be maintained in order to present consistent plans and sections across all discipline's drawings of the same content. Work through the BIM Coordinator to achieve continuity across the entire set of Contract Documents.

10.5.2.1　Typical Drawing Scales

Drawing scale varies based on the type of drawing. The following are guidelines for basic scales to be used for the different types of drawing on this Program:

- Basic Scale By Drawing Type
  - Site and Civil drawings are to use Engineering scales:
    - Overall Site Plan:　　　　　1" = 50' to 1" = 20'
    - Site Plan:　　　　　　　　1" = 100'
    - Plan and Profile:　　　　　1" = 40' (Horizontal)
      　　　　　　　　　　　　1" = 4" (Vertical)
  - Building/Structure drawings are to use Architectural scales:
    - Plans, Elevations, and Sections:　1/8" = 1'-0"
    - Enlarged Views:　　　　　　1/4" = 1'-0"
    - Details:　　　　　　　　　1/2" = 1'-0" and smaller scales
- Most drafting should be done to scale, with the scale clearly indicated on the drawings.
- Drawings that can be drawn not to scale include diagrams, schematics, and selected details.
- Views which only show the relative positions of components may, if circumstances warrant, be shown without being to scale. In this case, all important dimensions must be shown and the notation "NOT TO SCALE" must be placed in the view title.
- Drawing revisions are generally made to scale; however, if this is not practical, a changed dimension may be noted as not being to scale by placing the letters "NTS" below the dimension and a note defining the "NTS" abbreviation as "NOT TO SCALE" should be included in the drawing legend.

- Schematics and diagrams that do not have dimensions should be noted as "NO SCALE" in their view titles. Schematics and diagrams that show dimensions should be noted as "NOT TO SCALE" in their view titles.
- Each scale used on a drawing must be accompanied by a graphic scale in the appropriate space on the title block.
- The number of scales used on a drawing should be kept to a minimum

10.5.2.2 Graphic Scales for Plan and Profile Drawings

Plan and profile drawings shall generally use a horizontal and a vertical scale. When applying graphic scales to plan and profile drawings the following guidelines should be considered:

- A (storyboard) preliminary plan layout is recommended using the following criteria:
  - Plan view at a horizontal scale of 1"=20' will yield up to 500 LF on the sheet
  - Plan view at a horizontal scale of 1"=30' will yield up to 700 LF on the sheet
  - Plan view at a horizontal scale of 1"=40' will yield up to 1000 LF on the sheet
  - Plan view at a horizontal scale of 1"=50' will yield up to 1200 LF on the sheet
- A buffer of space may be needed at the beginning and end of a plan view for irregular shaped centerline alignments or additional pertinent content required to be shown on said plan view.
- The horizontal scale shall be the same in each corresponding plan and profile.
- The vertical scale can vary depending on the profile elevation range.
- For plan and profile drawings, both horizontal and vertical graphic scales must be shown in the appropriate space on the title block.

10.5.3 Annotation

Text and dimension annotations need to be consistent across all disciple drawings. The following are the standard annotation setting for this Program:

- Font: Arial
- Line weight (AutoCAD):   By Layer
- Annotations Sizes: As shown below
  - 1/16"   Notation on crowded figures that will not be reduced in size
  - 3/32"   Standard notations; dimension numerals and notations; scale designations in view titles, property parcel/owner information
  - 1/8"   Structural Column identifiers in column "bubbles", Section cut Identifiers
  - 1/8" Underlined   Names of major structures and equipment; room names, street names
  - 5/32" Underlined   Titles for Legends, Notes, and Key Plans; Sub-view titles
  - 7/32" Underlined   View Titles; group view titles

10.5.4 Drafting Standards

See **Appendix B**: for examples of Program Text styles, Dimensions, Grid Lines, Level Symbols, Section Symbols, Spot Elevations, North Arrows, Flow Arrows, View Labels, Graphic Scales, and other typical symbols.

10.5.5   Task Designations

Task numbers will be determined throughout the duration of the Program as new tasks begin.

Table 10-6: Task Designations

Task Designator	Discipline Description	Example
CP	Collections Projects	CP001, CP002, CP003, Etc
FP	Facilities Projects	FP001, FP002, FP003, Etc

10.5.6   Structure / Construction Area Designations

Structure names and abbreviations will be determined and updated throughout the duration of the Program as new tasks are added to the Program, see *Appendix C: Structure / Construction Area Designations List*.

Table 10-7: Discipline Designations

Discipline Designator	Discipline Description
G	General and Permitting related
C	Civil and Site
L	Landscape
T	Traffic Control
S	Structural
A	Architectural
M	Process Mechanical
H	HVAC
P	Plumbing
F	Fire Protection
E	Electrical
N	Instrumentation and Control

10.6   Program Horizontal and Vertical Datums

The Program Horizontal and Vertical Datum's to be referenced for the design of this Program are:

- Horizontal Datum: NYS State Plan Coordinate System NAD83
- Vertical Datum: City of Buffalo Datum

All NORTHING, EASTING AND ELEVATION values (NEZ Coordinates) in AutoCAD Civil 3D 2023 and REVIT 2023 Design Files are representative of the Program datum's listed above.

10.7   Governing Agencies Standards

The Program involves work that are regulated by federal, State Agencies and/or Local Municipalities. The Figures and drawings need to adhere to these agencies documented rules, codes and/or standards. Refer to the *Program Performance Plan*, for the list of governing agencies, with potential jurisdiction over properties that are within Task boundaries.

10.8   Program Drawing List

The BIM Coordinator all disciplines and subconsultant are responsible for updating and keeping their portions of the Task drawing list(s) current. All changes to the list(s) are to be provided to the BIM Coordinator in a timely manner well in advance of any deliverable deadline dates. The BIM Coordinator

will review the drawing list(s) with the Program and/or Deputy Program Managers for approval before updating the Figures and drawings index sheets.

The Program's template Task Drawing List is shown in Appendix A.

10.8.1   Figure and Drawing Lists

There are individual Figures and drawings Lists for each Task (CP001 or FP001). Each figure and drawing lists contains the following:

- Sheet No. = The Sequential Number assigned to the sheet
    - (i.e. 16 = the 16th physical sheet of the set)
- Drawing No. = Discipline specific abbreviation and Sequential Number
    - i.e. G1, C9, S14, A6, H17, P5, E26, N8
- Drawing Title
- Submittal Milestones
- Assigned Responsibility
- Production Software (Civil 3d or Revit)

The Template Drawings Lists resides on the Program SharePoint Site in the Task Contract Documents. Task specific drawing lists are to be prepared by the task BIM or CAD Manager using the Template Drawing List.

All staff responsible for submitting deliverables based on the Task Drawing Lists should setup e-mail notification on the SharePoint folder in order to keep track of the latest Figures and drawings Lists

10.9   Drawing Submittals, Deliverables and Schedule

Listed here are the various types of Figures and Drawings Submittals that may be required for various tasks under this Program:

- Weekly Progress Set Submittals for Discipline Coordination and BIM Standards Review
- Internal Figure and Drawing Set Submittals for QA/QC Review prior to submittals to the client
- Formal Client Milestone Submittals for Review and Comment
- Final Deliverable of the 100% Figures and drawings BID Set

Task Leads will need to evaluate their scope of work individually and establish the schedule and list of specific deliverables to the Task as needed.

10.9.1   Internal Figure and Drawing QA/QC Review Sets

All internal drawing QA/QC review set submittals to the BIM coordinator shall be an 11"x17" landscape oriented multi-paged PDF organized by Structure Designator and discipline. An overall Task PDF shall be created from the discipline submitted PDFs and will be available, in the same folder on the Task SharePoint Site, for weekly coordination review.

10.9.1.1   PDF Naming

PDF submittals shall be named as shown in Section *2.4.1: Client Program File Naming*, of this document.

10.10   BIM Drafting QA/QC

A BIM and Drafting standards review will periodically be performed by the BIM Manager and BIM Coordinator. BIM and drafting markups will be provided to each discipline as required and shall be incorporated by each discipline.

Refer to the *Program Quality Management Plan* for specific roles, responsibilities, review objectives, schedules and quality review process details.

10.11 Task File Sharing

The Program file sharing will be split between ACC and SharePoint. All design file exchanges for Civil3D are to be done using the Program's SharePoint site. All design file exchanges for Revit are to be done using the Program's ACC site. Access shall be provided by the BIM Manager.

The Program SharePoint is located here: https://tylin1.sharepoint.com/teams/GH-30350014125000 The Program ACC site will be set up as needed as Tasks are identified to include Revit content.

The Program Name for both SharePoint and ACC is: **BSA Capital Projects Program**

All non-Revit file (doc, dwg, pdf, xlsx, etc) exchanges shall be done using this SharePoint. Login information and access shall be provided by the Program Manager.

10.11.1 Task Design and Support Files Coordination / Exchange

A file upload schedule will be developed and shared for each Task by the Task Lead and BIM Coordinator

10.11.1.1 AutoCAD Civil 3D Basefiles

Base files are to be saved on SharePoint here:

- Documents/600_DSGN/ *[aa000]*/Civil3D/CD/Xref

10.11.1.2 Revit Support and Central Files

Common Family files, such as Title blocks, North Arrows, Scales, Logos, and others are saved on ACC here:

- Project Files/600_DSGN/Water Resources/01_Standards

Central Files are to be saved and worked on ACC here:

- Project Files/600_DSGN/Water Resources/03_Models/ *[Company Name]*

10.11.2 Task Contract Document Files Coordination / Exchange

PDF files containing Markups, Sketches, Progress Sets, and Submittals are to be stored on the Project SharePoint site in the associated Task folder as indicated below.

See *Section 2.4: Drawing File Naming* for examples of typical File Names.

10.11.2.1 Weekly Progress PDF Files

Review sets are to be uploaded to the project Bluebeam session.

10.11.2.2 Drawing Set Submittal PDF Files

Location Format:

- Documents/600_DSGN/ *[Task Name]* / *[Submittal Name/No.]* / *[File Name]*

Examples:

- Documents/600_DSGN/CP001/00_Current PDF/30%Submittal/ *[File Name]*
- Documents/600_DSGN/CP001/00_Current PDF/BidSet/ *[File Name]*

10.11.2.3   Drawing Set Markup PDF Files

A Bluebeam session is to be created for each milestone set and shared with the Task team for review.

10.12 Program Task File Location and Structure

Program file locations and structure needs to be consistent across the design team, both internally and externally with the subconsultants on the Program. Consistency of file location and structure will allow all electronic files to link and reference properly throughout the Program design and provide a high-quality deliverable of Program design files to the client at final submittals.

10.12.1 File Location and Structure

All electronic Program files utilized in the design and production of the figures and drawings are required to be saved on ACC by Task, working files may be saved on a Server or Computer that is on a Weekday Backup Schedule.

AutoCAD Civil 3D and REVIT are being utilized to design the components of collection systems and facilities that are represented in all of the Task figures and drawings. Described below are the File Location and Structure requirements for each piece of design software.

The AutoCAD Civil 3D File Directory Structure is driven by the way that AutoCAD Xref Files and Links to Data Shortcuts for Civil 3D elements operate within the software. The following directory structure is to be used for all AutoCAD Civil 3D related files in use on this Program. This directory structure can be setup within the Subconsultants Task Directory on their Servers due to the required use of RELATIVE PATH for all Xrefs. If needed, at the time of project closeout, bound DWG files may be saved to SharePoint for record keeping purposes.

Table 10-8: Subfolders for Civil 3D Design Files on ACC

Folder	Location	Contents	Sub Folder Template and Notes
▼ Documents	SharePoint, See Section 9.	Folders Only	
▼ 600_DSGN	Documents	Folders Only	
▼ Water Resources	600_DSGN	Folders Only	Task Folders and subfolders are to be added as required.
▼ 00_Standards	Water Resources	Folders Only	
▼ Civil 3D Templates	00_Standards	Civil 3D Templates	
▼ Titleblocks	Templates	Civil 3D Border Templates	Images, Stamps, Blocks, Graphic Scales, North Arrows, Etc…
▼ Blocks	Titleblocks	Blocks, Images	
▼ Graphic Scales	Titleblocks	Blocks, Images	
▼ Images	Titleblocks	Blocks, Images	
▼ North Arrows	Titleblocks	Blocks, Images	
▼ Stamps	Titleblocks	Blocks, Images	
▼ Misc	Titleblocks	Blocks, Images	
▼ Revit Templates	00_Standards	Revit Templates	
▼ Revit Titleblocks	00_Standards	Revit Families	
▼ Sub Families	Revit Titleblocks	Revit Families, Images	
▼ aa000	Water Resources	Task Folders and Files	

Folder	Location	Contents	Sub Folder Template and Notes
▾ 00_Current PDF	aa000	Not used	PDFs to be saved on SharePoint
▾ 01_References	aa000	Task Reference Files	Archive
▾ 03_Models	aa000	Folders	
▾ Revit	03_Models	Folders (Prime & Subs)	
▾ [Company Name]	Revit	Central Files	Archive
▾ Civil 3D	aa000	Folders	
▾ CD	Civil 3D	Sheet Files	
▾ Xref	CD	Basefiles	
▾ Fig	Civil 3D	Sheet Files	
▾ 06_SubmittalPrep	aa000	PDF Files	YYYY-MM-DD_Description

REVIT File Location and Structure requirements utilize ACC for Central Files and the support files that REVIT creates links to. Subconsultants are responsible for obtaining a license to access the ACC services.

10.13 Backup and Milestone Archival Procedures

The TYLin Backup and Archival Procedures for recording interim and archiving final electronic files are defined below. TYLin as well as all other design discipline Subconsultants need to follow these procedures to ensure that no figures and drawings design effort and content is lost due to a loss of electronic files.

10.13.1 Weekday Backup Requirements

Weekday Backup procedures shall be in place for all Servers and/or Computers that host the Program design electronic files. Weekday Backup is defined by having a routine daily backup that is separate from the server or computer that hosts Program data. The backup data is then stored in a different location so that a single event does not destroy the original data and the backup.

10.13.2 Milestone Archival Procedure

Milestone Archival is the procedure for creating a backup of the electronic files at task milestone submittals (i.e. 30%, 60%, 90%, and 100%). At the completion of a milestone submittal all of the AutoCAD Civil 3D, REVIT and their related support files are archived (copied) into archival folders within the Program directory. These archival files are created in case the design needs to be rolled back to a previous stage.

Milestone Archival of the AutoCAD Civil 3D and REVIT files needs to be submitted to the BIM Coordinator at TYLin so that a complete set of milestone electronic files are being retained. TYLin will prepare electronic submittals of final deliverable milestones to the client as determined by the Program Manager. After 100%, the previous milestones will be deleted.

10.14 References

Program Performance Plan

Quality Management Plan

APPENDIX A: Template Task Drawing List Excel File

[Task No]   [Task Name Here]

Sheet No.	Disc Abrv	Disc Seq No.	Drawing No.	Drawing Title (Level 1 Designator)	Drawing Title (Level 2 Designator)	Production Software	Assigned Responsibility	30%	60%	90%	100%
0	G	0	G-00		COVER SHEET	Civil 3D	TYLIN				
1	G	1	G-01		DRAWING INDEX AND GENERAL NOTES	Civil 3D	TYLIN				
2	G	2	G-02		ABBREVIATIONS	Civil 3D					
3	C	1	C-01		SYMBOLS LEGEND	Civil 3D					
4	C	2	C-02			Civil 3D					
5	C	3	C-03			Civil 3D					
6	L	1	L-01		SYMBOLS LEGEND	Civil 3D					
7	L	2	L-02			Civil 3D					
8	L	3	L-03			Civil 3D					
9	T	1	T-01		SYMBOLS LEGEND	Civil 3D					
10	T	2	T-02			Civil 3D					
11	T	3	T-03			Civil 3D					
12	S	1	S-01		SYMBOLS LEGEND	Revit					
13	S	2	S-02			Revit					
14	S	3	S-03			Revit					
15	A	1	A-01		SYMBOLS LEGEND	Revit					
16	A	2	A-02			Revit					
17	A	3	A-03			Revit					
18	M	1	M-01		SYMBOLS LEGEND	Revit					
19	M	2	M-02			Revit					
20	M	3	M-03			Revit					
21	H	1	H-01		SYMBOLS LEGEND	Revit					
22	H	2	H-02			Revit					
23	H	3	H-03			Revit					
24	P	1	P-01		SYMBOLS LEGEND	Revit					
25	P	2	P-02			Revit					
26	P	3	P-03			Revit					
27	F	1	F-01		SYMBOLS LEGEND	Revit					
28	F	2	F-02			Revit					
29	F	3	F-03			Revit					
30	E	1	E-01		SYMBOLS LEGEND	Revit					
31	E	2	E-02			Revit					
32	E	3	E-03			Revit					
33	N	1	N-01		SYMBOLS LEGEND	Revit					
34	N	2	N-02			Revit					
35	N	3	N-03			Revit					

APPENDIX B: Typical Program Drafting Standards

BUFFALO SEWER AUTHORITY

9/25/2024 11:15:18 AM

FILE: T:\OIGH-CHILL\Cad Projects\Revit 2023\Template File\BSACCP-aa000_GH - R23.rte

GREELEY AND HANSEN - STANDARD GRAPHIC SCALES

TYPICAL DIVISION OF DETAIL SHEETS IS:
6 EQUAL COLUMNS
4 EQUAL ROWS

FT		IN
10 0 10 20 FT 1"=10'	0 4 8 12 IN 3"=1'-0"	
20 0 20 40 FT 1"=20'	1 0 1 FT 1 1/2"=1'-0"	
30 0 30 60 FT 1"=30'	1 0 1 2 FT 1"=1'-0"	
40 0 40 80 FT 1"=40'	1 0 1 2 3 FT 3/4"=1'-0"	
50 0 50 100 FT 1"=50'	2 0 2 4 FT 1/2"=1'-0"	
60 0 60 120 FT 1"=60'	2 0 2 4 6 FT 3/8"=1'-0"	
80 0 80 160 FT 1"=80'	4 0 4 8 FT 1/4"=1'-0"	
100 0 100 200 FT 1"=100'	4 0 4 8 12 FT 3/16"=1'-0"	
200 0 200 400 FT 1"=200'	8 0 8 16 FT 1/8"=1'-0"	
400 0 400 800 FT 1"=400'	8 0 8 16 24 FT 3/32"=1'-0"	
800 0 800 1600 FT 1"=800'	16 0 16 32 FT 1/16"=1'-0"	
1000 0 1000 2000 FT 1"=1000'	16 0 16 32 48 FT 3/64"=1'-0"	
	16 0 16 32 48 FT 3/64"=1'-0"	

GREELEY AND HANSEN - STANDARD SYMBOLS

FIRST COLUMN ON RIGHT IS RESERVED FOR NOTES, LEGENDS, AND OTHER SHEET RELATED INFORMATION.

LINE STYLE: CENTERLINE
TEXT STYLE: GH 1/8" ARIAL
COLUMN BUBBLE AND LINE

TEXT STYLE: GH 3/32" ARIAL — INTERIOR ELEVATION CALLOUT

PRIMARY NORTH ARROW IS LOADED FROM THE TITLE BLOCK. IF NO PLANS APPEAR ON A SHEET IT IS TO BE TURNED OFF USING THE "NORTH ARROW" PARAMETER UNDER VISIBILITY.

TEXT STYLE: GH 1/8" ARIAL
TEXT STYLE: GH 3/32" ARIAL
EXTERIOR ELEVATION CALLOUT

WALL SECTION CALLOUT

USE BROKEN SECTION LINE - TYP
INDICATES JOGGED SECTION
BUILDING SECTION CALLOUT

CALLOUT WITH BOUNDARY

TRUE NORTH

GH_Project North Arrow.rfa
USE ON ALL D AND E SIZE DRAWINGS WHEN PROJECT NORTH IS NOT TRUE NORTH

SET THE LABEL VISIBILITY TO "OFF" WHEN THE VIEWS ORIENTATION MATCHES TRUE NORTH

TRUE NORTH

TEXT STYLE: GH 7/32" ARIAL
TITLE ON SHEET
SCALE: 1/4" = 1'-0"
VIEW TITLE - TYPE 1 FOR PLAN VIEWS

TEXT STYLE: GH 1/4" ARIAL
TEXT STYLE: GH 7/32" ARIAL
TITLE ON SHEET
SCALE: 1/4" = 1'-0"
VIEW TITLE - TYPE 1 FOR UNREFERENCED VIEWS

TEXT STYLE: GH 1/8" ARIAL
TEXT STYLE: GH 7/32" ARIAL
TITLE ON SHEET
SCALE: 1/4" = 1'-0"
VIEW TITLE - TYPE 2 FOR REFERENCED VIEWS

GH_North Arrow - Key Plans.rfa
USE ON ALL A,B AND C SIZE DRAWINGS

GH_North Arrow - Small.rfa
USE ON ALL A,B AND C SIZE DRAWINGS

GH_North Arrow.rfa
USE ON ALL D AND E SIZE DRAWINGS

NORTH ARROWS

MATCHLINE A: SEE DWG ##/XX-### FOR CONTINUATION

FOR PLAN AND PROFILE SHEETS, 1/2" OVERLAP SHOULD APPEAR PAST THE MATCHLINE
MATCHLINE VIEW REFERENCE

TEXT STYLE: GH 5/32" ARIAL - MASKED

CONTROL ROOM
100   CONTROL ROOM   100
FL EL: +0.00
ROOM TAGS

PROJECT STATUS STAMPS:
ARE GENERIC ANNOTATION FAMILIES INCLUDED AS SYMBOLS ON EACH SHEET. INFORMATION IS FILLED OUT ON THE PROJECT INFORMATION DIALOGUE FOUND UNDER THE MANAGE TAB. THREE LOCATIONS ARE AVAILABLE AND ARE CONTROLLED BY VISIBILITY PARAMETERS WITHIN THE TITLEBLOCK FAMILY.

ROOM NUMBER ONLY:
USED ON MODEL VIEWS 1/16"=1'-0" AND LOWER.
NOTE: A CUSTOM ROOM SCHEDULE IS REQUIRED ON THE SAME SHEET WHEN THIS TAG IS USED

ROOM NAME ONLY:
USED AS NEEDED BY DISCIPLINES OTHER THEN ARCHITECTURE

TEXT STYLE: GH 1/8" ARIAL - MASKED

ROOM NAME, NUMBER AND ELEV:
USED ON ALL MODEL VIEWS 1/8"=1'-0" AND HIGHER

TEXT STYLE: GH 3/32" ARIAL - MASKED

[Proj Status xx%]
NOT FOR CONSTRUCTION

SUB CONSULTANTS LOGOS ARE LOADED FROM THE TITLE BLOCK AND ARE TO BE TURNED ON/OFF USING THE CHECKMARK PARAMETERS "LOGO - SUB" & "LOGO - SUB 2" UNDER VISIBILITY. THE BSA LOGO IS TO BE LOCATED ONTOP OF ALL SUB LOGOS.

ELECTRONIC SEALS TO BE IMPORTED INTO TITLE BLOCK FAMILY AS SYMBOL AND CONTROLLED USING A VISIBILITY PARAMETER. ALL SEALS TO BE IMAGES OF CAD LINEWORK.

REVISION CLOUD TAGS ARE LOADED FROM THE ANNOTATION TAB > TAG PANEL

REVISION CLOUDS ARE LOADED FROM THE ANNOTATION TAB > DETAIL PANEL

REVISION DATA MANAGED ON SHEET AS REVISION CLOUDS ARE ADDED.

GRAPHIC SCALES TO BE ADDED MANUALLY WHEN SHEET IS CREATED.

NOTE STATING "VIEWS ARE NOT TO SCALE" ARE TO BE TURNED OFF MANUALLY WHEN SCALES ARE ADDED.
SCALES ARE TO BE LOADED IN ASCENDING ORDER.

PARAMETERS FILLED OUT UNDER MANAGE TAB > SETTINGS PANEL > PROJECT INFORMATION

INFORMATION FILLED OUT MANUALLY IN THE TITLE BLOCK FAMILY.

KEY PLANS:
ARE GENERIC ANNOTATION FAMILIES ADDED TO SHEET AS REQUIRED. GRAPHICS ARE TO BE CONTROLLED BY VISIBILITY PARAMETERS WITHIN THE FAMILY.

INFORMATION FILLED ON THE SHEET WHEN SELECTED IN THE PROJECT BROWSER. CAN BE ADDED TO A SHEET LIST SCHEDULE

IN THE TITLEBLOCK FAMILY. PLACE SUB CONSULTANT LOGO AND ADDRESS HERE AND ASSIGN VISIBILITY TO PARAMETER "Logo">"Sub".

IN THE TITLEBLOCK FAMILY, PLACE LEAD CONSULTANT LOGO AND ADDRESS HERE AND ASSIGN VISIBILITY TO PARAMETER "Logo">"Lead".

LEAD CONSULTANTS LOGO

DESIGNED	--	APPROVED	PLACE SEAL HERE	NO.	DATE	APPD	DESCRIPTION
DRAWN	--			1	Date 1		Revision 1
CHECKED	--						

SCALE

VIEWS ARE NOT TO SCALE

BUFFALO SEWER AUTHORITY
BSA CAPITAL PROJECTS PROGRAM MANAGEMENT
CONTRACT NO. 82000075

[Facility Name]

"Name of Structure"
"Name of Discipline"

BUILDING INFORMATION MODELING EXECUTION PLAN

"PROJECT ISSUE DATE" PARAMETER

STREET NAME

TRUE NORTH

| A | B | C |

STREET NAME

KEY PLAN - FABV

PROJ. 14125	PKG: [aa000]
DWG	
SHEET	OF ###
DATE SEP 2024	REV 1

BIM-01

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APPENDIX C: Structure / Construction Area Designations List

(To be developed as tasks are added to the program)