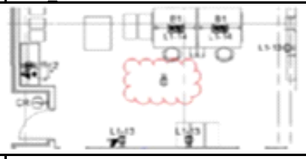
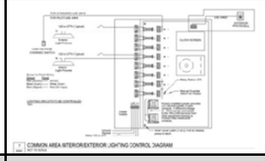
24-0449 RFB Bid Questions and Responses

Response Category	#	Questions	Received	Response
CIVIL	1	Question 1: Is the bidding contractor responsible for assessing soil state and removing surcharge? Question 2: What state will the site be in at the beginning of our construction scope?	4/10/2024	Question 1: Yes: Phase 1 contractor is responsible for assessing the soil state; Phase 2 Contractor is responsible for removing the surcharge. The phase 2 contractor is responsible for obtaining the soil state reports from Phase 1 contractor. Question 2:The state of the site at the beginning of phase 2 will be; The sediment control pond will be in place; the surcharge will be in place; the site will be stabilized;
ARCH	2	1) This project location is showing up in a high wind zone area (impact zone for wind borne debris) and the structural drawings are calling for designed wind loads of 153 mph exposure category B, but the products specified for the storefront and curtain walls are not impact resistance to wind borne debris, can we get confirmation that hurricane, missile, or wind borne debris impact resistance will not be a requirement for this project? 2) Will products manufactured by Tubelite be acceptable for the storefronts and curtain walls in lieu of the Basis of design: EFCO Storefront BoD: EFCO 403T: Alternate- Tubelite T14000 CW BoD: EFCO 5600: Alternate- Tubelite 400CW	4/11/2024	1) Impact resistant glazing/storefront system is not required for the project. 2) Tubelite is not an acceptable substitution. Please use on the manufacturers listed in specifications.
ARCH/INTERIORS	3	1. Are there any supplementary conditions for this project (I couldn't find any in the spec manual) – i.e. any LD's, bonds, etc. required? 2. Sheet General Note 6 on A831 calls for laminate edges (also known as self-edge). Would machine applied PVC edging that matches the laminate be acceptable? Self-edge construction is edging technology that chips and peels away from the substrate. Newer PVC edging is virtually indestructible and does not delaminate. If desired, letters from both Wilsonart and Formica are available and can be provided addressing the shortcomings of self-edge vs. PVC edging. 3. Casework notes on A831 call for plywood construction at cabinets. Plywood is not a recommended core material for door and drawer fronts and is not required to meet AWI custom grade standards. Industrial grade particleboard is a more stable core material than plywood for laminating (plywood buckles and warps over time), and particularly for door and drawer fronts. Is Industrial grade particleboard construction with a lifetime warranty acceptable? 4. Please confirm that QZ-1 and QZ-2 materials are to be 3cm. Thickness is not specified in 123661.19 but 4A/A831 indicates 1.25" quartz (i.e. 3cm) at that one section but not indicated on any other casework sections. 5. Please confirm that the ceiling subcontractor is to provide the Armstrong Soundscape blades (Sheet Keyed Notes 51 and 52 on A122) at the ceiling. 6. Please confirm that the ceiling subcontractor is to provide the wood ceiling (WPC-1 material on A121). 7. Please confirm that your specialties subcontractor is to provide the cork wall surface (TS-1 material). 8. Please confirm that no WB-1 wood base material is required on the project. None is identified for any of the rooms on A810 that we can find. 9. Please confirm that the steel framing at the lavatories (see 4A/A831) will be provided by others (not the millwork subcontractor). 10. Section 064116 Part 2.1 F 2 and 3 calls for hardwood drawer boxes with plywood bottoms. We are asking for your acceptance of our standard engineered drawer construction which meets AWI custom grade requirements. See below for construction details. Is this drawer construction acceptable? **(Substitution Request 01)** https://nhcgov-my.sharepoint.com/personal/dking_nhcgov_com/Documents/Northchase%20Library/RFB/RFIs/RFI%20Drawer%20Substitution%20Diagram.pdf	4/15/2024	1/ Please find all requirements available within the public posting @ https://www.nhcgov.com/bids.aspx?bidID=83 2/ Machine applied PVC edges (3 mm) are allowable where coordinating PVC is available in back of house casework (non-public areas, workrooms). The self-edge should be utilized at public areas such as front desk, gaming areas, business center. 3/ Requested particleboard construction is not accepted. It is acceptable to use MDF for the door and drawer fronts only. The MDF product should be formaldehyde and urea free. Cabinets box should remain as specified. 4/ 3 cm materials are to be used for QZ-2. For QZ-1: 3 cm materials should be used for countertops and vertical waterfall edge. Use 1.2 cm for veneering conditions. All joints should be mitered to provide monolithic appearance, no butt joints. 5/ Each General Contractor will determine their own trade package scope. 6/ Each General Contractor will determine their own trade package scope. 7/ Each General Contractor will determine their own trade package scope. 8/ WB-1 is located around the outside walls of Huddle Rooms 114-116, Small meeting rooms 117 & 118 and Large Multi-purpose Room 109. This is indicated on Finish plan A810. 9/ Each General Contractor will determine their own trade package scope. 10/ Requested drawer construction is not accepted. Please proceed with bidding as specified in documents.
OWNER	4	1. Can you direct me to or provide the Geotechnical Report by S&ME? 2. Is there a published budget for this project? 3. What is the process if all bidders are over budget? 4. Should we anticipate an Addendum 3 with the Add Alternates on the Bid Form?	4/15/2024	1) Please find the S&ME Geotechnical report included with Addendum #4 2) There is no published budget, our anticipated construction budget is in the $8MM to $9.2MM range 3) If all bidders are in excess of our anticipated budget range then our next steps would be to internally re-evaluate the project 4) Yes. Addendum 3 had been released with these RFI questions being contained in Addendum #4
CIVIL/ LAND	5	Subcontractor proposing alternates: pavers in lieu of permeable concrete_ (**Substitution Request 02)** https://nhcgov-my.sharepoint.com/personal/dking_nhcgov_com/Documents/Northchase%20Library/RFB/RFIs/Jennsllc%20-%20pavers%20as%20substitution.pdf https://nhcgov-my.sharepoint.com/personal/dking_nhcgov_com/Documents/Northchase%20Library/RFB/RFIs/Aqualine%204.5x9%20Submittal%20-%20JENNS.pdf	4/15/2024	Accepted By Curtis Day & Madison Sweitzer_ Email 4/17; Added as an Alternate

CIVIL	6	1) Phase 2 requirements for surcharge	4/15/2024	1) Removing the surcharge is a Phase 2 requirement
ARCH/ OWNER	7	Section 013233 Photographic Documentation – can photos be provided by PM with camera phone in lieu of professional photographer.	4/15/2024	Contractor can take the photos as long as they comply with sections 1.5 and 1.6.
ARCH	8	1/ Who will be responsible for furnishing and installing the Auto Slide Entrances @ Dr. #'s: 100A, & 100B 2/ Who will be responsible for furnishing the custom hardware sets for the aluminum storefront door leaves? 3/ Who will be responsible for the Vertical Solar Fins at the Main building? 4/ Who will be responsible for the Horizontal Airfoil Assembly at the Storytime pavilion? 5/ Drawing A920 Glazing legend and General Notes indicates that all glass should be EG.1 UNO. Glass type EG.1 is 1" Insulated glass, None of the interior aluminum frames shown on A920 are indicating a glass type so based on the legend and notes all of the interior glass would be 1" insulated. Is that correct? Or should all of the interior glass be type IG.1 1/4" clear tempered?	4/15/2024	1-2: Each General Contractor will determine their own trade package scope. 3.Vertical Solar Fin Assembly is provided by solar fin contractor. Steel infrastructure is provided at top by structural and base to be anchored into concrete curb. All components of system, including miscellaneous steel to connect to building structure to be by solar fin contractor. 4.Horizontal Airfoil Assembly is provided by airfoil assemby contractor. Steel infrastructure is provided at top by structural and base to be anchored into concrete curb. All components of system, including miscellaneous steel to connect to building structure to be by solar fin contractor. There is a section though horizontal fins on Sheet A402. 5. All interior glazing to be type IG.1 unless otherwise noted. We have corrected the legend and will re-issue sheet.
OWNER	9	1. I don't see anywhere that show a duration for construction. What is the expected time frame? 2. Is it possible to get a copy of the pre=bid meeting minutes? 3. We are currently not pre-qualified with New Hanover County. We can get the prequal done, but would we be approved in time to bid this project?	4/15/2024	1) Duration for construction is anticipated at 12 - 18 months 2) The pre-bid meeting was non-mandatory with all questions directed to formal email. All responses are included here and within previous addendums 3) All prospective bidders are encouraged to begein the preqalification immediately and are often able to be requailified in advance of the final bid date. Begin the process @ https://www.nhcgov.com/316/Contractors-Approved-for-Bidding
LAND	10	Architect's Note: Please note/clarify regarding the landscape irrigation well: the irrigation system is in the contractor's scope but the actual drilling of the well is not (notes on L200)	4/15/2024	The irrigation system is in the contractor's scope but the actual drilling of the well is not (notes on L200); Coordination with Well Driller required.
ARCH	11	Are we able to receive an unlocked specification?	4/15/2024	Unlocked specifications are not available
1- STUCTURAL // 2-ARCH	12	Question 1: The exterior wall along column line 11, between column lines L and E is scheduled to be a WS04. There is no supplemental steel along this wall except a brace frame between column lines L and G. There is a 28' wide, 10' tall window in this wall and the wall is nearly 30' tall at column line E. Has the EOR checked to see if the large window opening is achievable with cold-formed metal framing? Also, they may want to consider putting a horizontal wind brace along this column line to break up the span if it's to be a 6" stud. As designed, a 6" wall is going to be a very heavy gauge stud, with a really big flange, and is going to be spaced very close together ($$$). If supplemental steel is not an option, one way to reduce the cost is to change the wall framing along this column line to an 8" stud. Question 2: A020 is showing R25 Batt insulation (8" thick) inside of 6" stud cavities. Is the intent to put 8" batts in the 6" walls and compress it? Energy code summary on G002 is showing R25 insulation as well.	4/16/2024	Question 1: Structural posts/beam will be added in this location. Revised Structural/Architectural dwgs will be provided in Addendum. Question 2: Provide R-21 batt insulation instead of R-25 since R-value will be better uncompressed in 6" wall with R-21. We will update sheets A020 and G002 to reflect this change.
OWNER	13	Can you provide project duration. Can you clarify that the owner will be paying for all permits.	4/16/2024	1) Construction duration is anticipated at 12 - 18 months 2) Yes, the owner will be responsible for paying any permit fees required

ARCH	14	can you have the Architect provide details of the Aluminum Horizontal Solar Fins. I cannot find any details of attachment or how product is to be fabricated.	4/16/2024	The aluminum horizontal solar fins are part of a turn key system in which prefabricated components are welded or mechanically fastened to steel infrastructure. The subcontractor for the system will engineer sizing of aluminum substructure (outriggers and vertical supports). There is a section though horizontal fins on Sheet A402.
OWNER	15	**Request for substitution 03**// "Northchase Branch Library Substitution Request.pdf" // "CSG RFQ.pdf"	4/16/2024	1) All subtrades and material providers must be included within a General Contractor's bid 2) Requests for substitutions must be product for product specific.
STRUCTURAL	16	**Request for substitution 04** "Substitution Request - Northchase Branch Library.pdf" / Suggested Water Cure Equal Concrete Curing Agent Substitute for Moisture-Retaining Cover: ASTM C171; Water Cure; Liquid Membrane Forming Curing Compound - ASTM C309; - LithiumCure 2000	4/17/2024	AS PER THE DATA SHEET FOR LITHIUM 2000, IT IS TO BE USED FOR INTERNAL CONCRETE SURFACE. USE CURING METHOD AS SPECIFIED IN SPECS FOR EXTERNAL CONCRETE SURFACES.

ELECTRICAL	17	We have a few questions on the division 26 drawings. 1- Floor boxes please clarify the labeling on drawing matches what is speced in sheet E0000 2- One line drawing on E700 have pipe layout based on feeder schedules provided. Want to confirm that no division 27 is included in bid, sleeves and boxes are included per division 26.	4/17/2024	1. We have gone through labelling on floor boxes _ they match. 2. Only raceways, boxes and pathways provided under Division 26 for Division 27 systems.
OWNER	18	We will be bidding the referenced project. I have a quick question, what is the duration of the project. I could not find it in the specs. Please advise.	4/17/2024	Anticipated duration of the project is 12 - 18 months
ARCH	19	I wanted to reach out to see what steps I need to take to potentially be a supplier for the acoustic baffles that are called out per the drawings (Pg. 47/48 Sheet Notes 51/52) for the Northchase Branch Library project. We manufacture these locally in house in Charlotte, NC.	4/18/2024	Needed to submit a substitution request by 4/18
STRUCTURAL	20	It appears the specifications are calling for our Toris4A in the addendum. However, the structural drawings are showing commodity deck (1.5 B and 3" N deck) with an add alternate for commodity N acoustic deck. I was wondering if the Toris 4A was indeed the intent or maybe just a typo from a previous project. Also, there appears to be a fair amount of deck covered where acoustic would not be required. I figured I would reach out to see the intent before we invest any time in taking it off and potentially pricing this. If Toris 4A is intended I would respectfully ask that this be updated as bidders will be more likely to reach out to me.	4/18/2024	Refer to BID SET Drawings dated 3.28.24 - NOT the PERMIT SET dated 3.18.24;
ARCH	21	RFI 07 04 23 Composite Wall Panels. // Can you please clarify if the designers and owners' intent is to have a unique pattern embossed wood HPL. The Basis of Design is the Parklex Naturclad B Cinder. This uses embossed technology on the HPL panel to create unique pattern and texture in each panel. The equals or alternates use a film technology to create a wood appearance without texture with a repetitive pattern. Please confirm if both technologies are acceptable options or if the BOD and embossed technology is expected. Please review and let me know if you have any questions.	4/18/2024	Manufactured composite wall system is expected to have embossed pattern, not smooth finish. The design intent was to provide product with tactile pattern (not just visual printed graphic representation) and visible joint via space or reveal between panels. If the alternate manufacturers listed in specifications can provide the described conditions, it is acceptable to use product. Alternate product must must also match general appearance and coloration of basis of design.
	22	Per the RFP instructions, attached you will find our Pre-Bid RFI log and a Request for Alternate.	4/18/2024	
OWNER	*22-01*	The Project Manual references a Geotechnical Report by S&ME, can this be provided?		Please find the S&ME Geotechnical report included with Addendum #4
OWNER	*22-02*	Is there a published budget for this project?		There is no published budget, our anticipated construction budget is in the $8MM to $9.2MM range
OWNER	*22-03*	What is the process if all bidders are over budget?		If all bidders are in excess of our anticipated budget range then our next steps would be to internally re-evaluate the project
ARCH	*22-04*	A920_ Drawing A920 Glazing legend and General Notes indicates that all glass should be EG.1 UNO. Glass type EG.1 is 1" Insulated glass, None of the interior aluminum frames shown on A920 are indicating a glass type so based on the legend and notes all of the interior glass would be 1" insulated. Is that correct? Or should all of the interior glass be type IG.1 1/4" clear tempered?		All interior glazing to be type IG.1 unless otherwise noted. We have corrected the legend and will re-issue sheet.
ARCH	*22-05*	This project location is showing up in a high wind zone area (impact zone for wind borne debris) and the structural drawings are calling for designed wind loads of 153 mph exposure category B, but the products specified for the storefront and curtain walls are not impact resistance to wind borne debris, can we get confirmation that hurricane, missile, or wind borne debris impact resistance will not be a requirement for this project?		Impact resistant glazing/storefront system is not required for the project.
ARCH/ OWNER	*22-06*	DOOR HARDWARE_ Is this going to be keyed to an existing system ? If yes, what is that system is? Specs call for Schlage cylinders (no more specific than that), but project has Yale locks (less cylinder) with no cylinder scheduled in the spec set. Is the system I/C core or standard; restricted keyway or standard?		Owner has requested Schlage cylinders. Standard/Standard
ARCH	*22-07*	DOOR HARDWARE_Request for Alternate attached.(**Substitution Request 05)**		The submitted alternates are acceptable contingent on whether they meet all the specified requirements. (We have no issue with manufacturers, but due to time constraints and quantity of substitutions we could not evaluate every single product. There were products included in substitution request that were not specified). Any hardware reviewed during shop drawing process that doesn't meet specifications will be rejected without any compensation from Owner. They must all be available in the finish specified. The pulls for interior storefront doors need to have same general aesthetic as specified (a squared profile "D' shape without curves. A 'T' shaped bar handle would also be acceptable).
ARCH	*22-08*	A020_ Description states that all exterior wall systems have an R-Value of insulation for cavity bass insulation of R25/inch. Please confirm/clarify if it should read R-2.5/inch or an R-15 at a 6" stud cavity?		Provide R-21 batt insulation instead of R-25 since R-value will be better uncompressed in 6" wall with R-21. Update sheets A020 and G002 reflect this change.
ARCH	*30-09*	Insulation_ Is the foam-in-place insulation referring to a spray foam or an acoustical foam?		Foamed-in-place insulation in section 07 21 19-00 is to provide some thermal protection of steel members/components (to prevent condensation) where continuous insulation was not an option in area. It occurs in metal roof overhang and at the internal roof gutters.

ELECTRICAL	*22-10*	E111 _"Work Room 130". Is this a ceiling mounted receptacle? 		Removed from Floor Plan- belongs on Roof Plan
ELECTRICAL	*22-11*	E600 Detail 1_ Please provide the location for the lighting control panel. 		Location provided on revised drawing
ARCH	23	I am contacting you from Architectural Systems Group about the Northchase Library Phase 1 project. I see that it is in the bidding phase, and I would like to send in a **Substitution Request 06** for etalbond® FR by Elval Color aluminum composite panels (ACM) so that our products may be considered – in Section 074213.23. Please know that Architectural Systems Group is the North American distributor of etalbond® FR. Elval has been producing ACM panels since 1996 and are fully tested with third party verification in both the United States and Canada. We have many of fabricator customers and adding us to the specification will ensure you have the best market number on these panels. I have attached our Substitution Package that is compiled with Fire Testing, Building Codes, etc. Please let me know if there are any additional information/samples that I could send to help you during the design process. Thank you in advance for your time and consideration of our product. I look forward to hearing back from you	4/18/2024	Proposed Substitution is acceptable
ELECTRICAL	24	Overcurrent to large on panel “H 1”, 400a breaker on 4/0 feeder. Overcurrent to large on “T2” feeder, 100a breaker on #4 feeder. Please resubmit a complete set of drawings with corrections. Recommendation (1) Overcurrent to large on panel “H 1”, 400a breaker on 4/0 feeder. Overcurrent to large on “T2” feeder, 100a breaker on #4 feeder. Please resubmit a complete set of drawings with corrections. 4-8-24	4/8/2024	Drawings updated to reflect comment

Geotechnical Exploration Report
NHC Library at North Chase
Wilmington, North Carolina
S&ME Project No. 22060142

PREPARED FOR:

New Hanover County Property Management
200 Division Drive
Wilmington, North Carolina 28405

PREPARED BY:

S&ME, Inc.
3006 Hall Waters Drive, Suite 100
Wilmington, North Carolina 28405

July 25, 2023

July 25, 2023

New Hanover County Property Management
200 Division Drive
Wilmington, North Carolina 28405

Attention: Mr. Kevin Caison

Reference: **Geotechnical Exploration Report**
NHC Library at North Chase
Wilmington, North Carolina
S&ME Project No. 22060142
N.C. PE Firm License No. F-0176

Dear Mr. Caison:

S&ME, Inc. (S&ME) is pleased to submit this geotechnical exploration report for the referenced project. Our services were performed in general accordance with S&ME Proposal No. 22060142R1, dated June 7, 2023, and the executed agreement for services between New Hanover County and S&ME, dated June 23, 2023.

This report presents a brief discussion of our understanding of the project, results of the exploration, and our geotechnical conclusions and recommendations regarding the proposed construction.

We appreciate the opportunity to work with you on this project. Please contact us with any questions, or if you need additional information.

Sincerely,
S&ME, Inc.

Nathan Buffum, P.E.
Office Principal/Senior Engineer
NC Registration No. 042575

Thomas C. Still, P.E.
Principal Engineer
NC Registration No. 023923

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Appendices

♦ Report at a Glance

Key geotechnical findings based on our current understanding of the proposed project are presented below. These findings are presented as an overview and should not be used in place of the more detailed recommendations presented in the remainder of this report.

Category	Key Geotechnical Finding
Site Development Challenges	Specific geotechnical issues identified on this site that should be considered include: • Control of surface water and perched groundwater within the upper 5 feet during wet periods of weather. • Moisture sensitive upper sands may require stabilization during wet weather grading. • Surcharging program is recommended to mitigate excessive settlements due to highly compressible soils.
Subsurface Conditions	• Medium dense to dense silty sands within the upper 5 to 6 feet of test locations. • Beneath upper sands, very soft silts, clays, sensitive fine-grained soils, and organic soils to exploration depths of 14 to 16 feet. • Beneath cohesive soils, interbedded layers of loose to dense sand mixtures, and firm to stiff clays and silt mixtures, to depths of about 25 to 30 feet, underlain by dense to very dense sands to sounding termination depths of 35 to 50 feet. • Subsurface water at depths ranging from 5.7 to 8.6 feet below existing ground surface feet at the time of soundings.
Seismic Considerations	Liquefaction risk during seismic shaking is low. Site Class D based on sounding data.
Foundation Types	• CPT data indicates very soft cohesive soils are highly compressible under structural and fill loading. • After site grading to approximate subgrade elevations, we recommend an additional surcharge fill of 3 feet or more be constructed and allowed time for consolidation settlement to occur and be monitored. Depending upon surcharge height and other factors, the idle time for consolidation will vary, but is expected to require about 60 to 90 days. • Foundations can be designed using an allowable soil bearing pressure of 2,000 psf. This bearing pressure assumes that footings will bear in compacted structural fill or natural soils, and that the site is prepared as recommended in this report.
Use of Site Soil as Fill	• Near-surface soils encountered as silty sands, within the upper 5 feet, are suitable for re-use as structural fill but are moisture sensitive. Discing and drying of soils may be required when reusing on site materials, especially considering the potential for perched water conditions at the site. • The silts and clays below the upper sands appear unsuitable for use as structural fill. The use of imported borrow soils should be anticipated.
Excavation Conditions	Hydraulic excavators should be able to excavate throughout the soil profile. Continuous dewatering may be required below depths of about 5 to 9 feet. Shallower subsurface water depths should be anticipated across the site.

1.0 Project and Site Information

Project information was initially provided during conversations and email correspondence between Mr. Caison (NHC) and Nate Buffum (S&ME) in August and September 2022. Additional project information was provided by Matthew Winkel (NHC) to Mr. Buffum on June 2, 2023, which included a site survey document, prepared by Little, that included the location of the proposed building and three requested exploration locations within the building. On June 22, 2023, Mr. Winkel provided an updated site plan identifying the proposed site layout and eight requested exploration locations at the site.

The project site is located in the southeast quadrant of the intersection of N. College Road and North Chase Parkway, in Wilmington, North Carolina. The project will include construction of a single-story building approximately 23,000 square feet in plan area, a stormwater pond, drive and parking areas, and associated underground utilities. New asphalt paved parking and drives are proposed to access the library building and a concrete dumpster pad will be constructed.

Anticipated structural loading information was provided by Charlie Hagen-Cazès (Little) in an email on July 11, 2023. Maximum column and wall loads are expected to be 75 kips and 1.5 kips per foot, respectively. The maximum floor load is expected to be 150 pounds per square foot (psf).

We were not provided grading plans at the time of this report; however, based on an email from Ms. Hagen-Cazès on July 12, 2023, design subgrades are anticipated to generally match existing grades near the front of the proposed building and up to 3 ½ feet of fill will be required along the rear of the building.

2.0 Field Exploration Program

Our exploration included a site reconnaissance by a geotechnical professional and the performance of seven cone penetrometer test (CPT) soundings and eight shallow hand auger borings. CPT soundings and hand auger boring locations were selected and established in the field by S&ME using a handheld GPS unit and should be considered approximate. Figure 1 in Appendix I presents the Test Location Sketch and approximate test locations.

2.1 CPT Soundings

Soundings B-1 through B-3 were performed within the proposed building footprint to the target depth of 50 feet at location B-2, and a depth of 35 feet at locations B-1 and B-3. Shear wave velocity measurements were obtained in conjunction with advancement of sounding B-2.

Soundings B-4 through B-7 were performed within proposed pavement or pond areas at the site to the target depth of 15 feet.

In a CPT sounding (ASTM D5778), an electronically instrumented cone penetrometer is hydraulically pushed through the soil to measure point stress, pore water pressure, and sleeve friction. The CPT data is used to determine soil stratigraphy and to estimate soil parameters such as friction angle, and undrained shear strength. Soil types presented on CPT sounding logs are derived from Robertson's (1990) Soil Behavior Type (SBT) Index.

The soil type determined from the SBT index is more representative of soil behavior characteristics than traditional soil classification that is based on grain size and plasticity. Sounding logs are included in Appendix II.

2.2 Hand Auger Borings

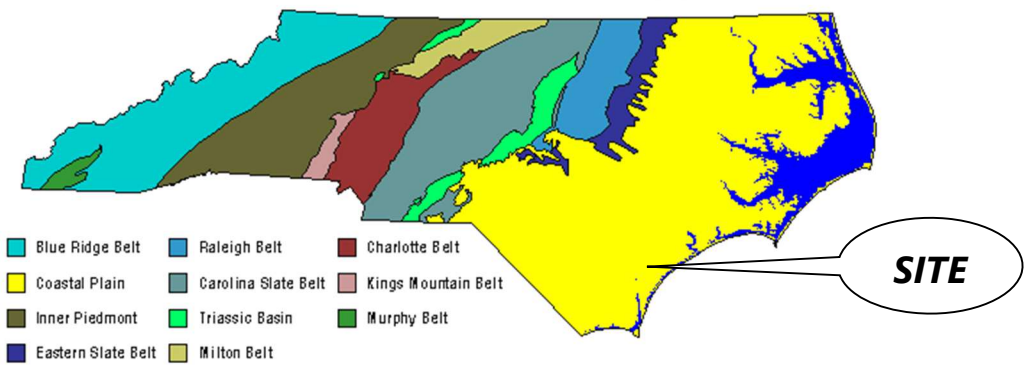
Our exploration also included performance of eight shallow hand auger borings. Seven of the hand auger borings (B-1 through B-7) were located within approximately five feet of each associated cone penetration test (CPT) sounding to evaluate near surface soil types to depths of approximately four feet below current ground surfaces. One additional hand auger boring (B-8) was performed within the central proposed pavement area of the site.

Conventional Dynamic Cone Penetrometer (DCP) testing was performed within hand auger borings B-4 through B-6 and B-8, at regular depth intervals of approximately one foot each. DCP testing was performed in general accordance with ASTM STP 399 procedures to help us estimate the relative density and consistency of the subgrade soils within proposed pavement areas.

During hand auger operations, representative soil cuttings were visually classified in general accordance with Unified Soil Classification System (USCS) guidelines. Upon completion of the hand auger borings, subsurface water levels were measured before the augered boreholes were backfilled with soil cuttings. Hand auger boring logs are included in Appendix II.

3.0 Regional Geology

Figure 1 - Physiography



The site is located within the Coastal Plain Physiographic Province of North Carolina as shown in Figure 1 above. The Coastal Plain Province is typically characterized by marine, alluvial, and aeolian sediments that were deposited during periods of fluctuating sea levels and moving shorelines. The soils and basal formations in the North Carolina Coastal Plain Physiographic Province are typical of those laid down in a shallow sloping sea bottom; interbedded sands and clays with irregular deposits of shells and layers of limestone and cemented sands. Alluvial sands, silts, and clays are typically present near rivers and creeks. Deposits of peat, organic silt, and organic clay are also typically present in or near current or former tidal marsh areas in the outer portion of the Coastal Plain.

According to the 1985 Geologic Map of North Carolina, the site is underlain by the Peedee formation. The Peedee deposits of the Cretaceous Age typically consist of greenish gray to olive black sands, clayey sands, and clays.

4.0 Surface and Subsurface Conditions

General descriptions of encountered soils are presented below. More detailed information is available on individual CPT and hand auger boring logs. Subsurface stratifications may be more gradual than indicated, and conditions may vary between test locations.

4.1 Surface Conditions

The site was heavily wooded at the time of our exploration. A surficial layer of topsoil and rootmat, approximately 4 to 8 inches in thickness, was encountered at the hand auger locations. Topsoil is typically a dark-colored soil material containing roots, fibrous matter, and/or other organic components, and is unsuitable for engineering purposes. The topsoil depths provided in this report are based on measurements made during hand auger borings and should be considered approximate. We note that the transition from topsoil to underlying natural soils may be gradual and stripping depths will typically exceed topsoil measurements during our exploration. Actual topsoil depths should be expected to vary across the site.

4.2 Coastal Plain Soils

Coastal Plain (native) soils were encountered underlying the topsoil and extended to sounding termination depths at all test locations.

The upper 5 to 6 feet of the subsurface profile consisted of silty sands (SM), based on samples recovered from our hand auger borings and sandy soil types based on CPT data. Tip resistances ranged from about 40 to 200 tons per square foot (tsf), indicative of medium dense to dense relative densities.

Below the near-surface sands, layers of very soft cohesive soils were encountered within all soundings to depths of about 14 to 16 feet. These soils exhibited variable SBT soil types of silts, clays, sensitive fine-grained soils, and organic soils. Tip resistances were less than 2 tsf within these soils.

Beneath the very soft cohesive soils, soundings B-1 through B-3 encountered interbedded layers of loose to dense sand mixtures, and firm to stiff clays and silt mixtures, to depths of about 25 to 30 feet. Soundings then encountered dense to very dense sands to the sounding termination depths. Recorded tip resistances within the lower sands generally ranged from about 200 tsf to greater than 400 tsf.

4.3 Subsurface Water

Water levels were measured upon completion of the CPT soundings and hand auger borings. Subsurface water at the time of the exploration was encountered at depths of about 5.7 to 8.6 feet below existing ground surface in our CPT soundings and was not encountered in our hand auger borings. Subsurface water levels can be expected to fluctuate due to seasonal variations in rainfall, evaporation, tidal influences, and other factors. Additionally, perched water conditions may exist during the typically wetter winter months above less permeable fine-grained

soils or very dense sands encountered within the upper soil profile. Thus, shallower water levels may be encountered during wet weather grading.

5.0 Laboratory Test Results

Laboratory testing was performed on a bulk sample obtained from hand auger borings B-4 and B-6. The bulk sample was taken from cuttings from approximate depths of 0.5 to 2 feet below ground surface. Laboratory testing included natural moisture content, grain size analysis, Atterberg limits, standard Proctor, and California Bearing Ratio (CBR). Nine additional soil samples were subjected to moisture content determinations and four samples subjected to Atterberg limits tests and fines content determinations.

All laboratory testing was performed in general accordance with applicable ASTM standards. A portion of the test results are summarized below and individual laboratory test records are included in Appendix III.

Table 1 – Summary of Laboratory Test Results

Sample Location (Depth- ft)	Soil Classification	Proctor Values (MDD/OMC)	Fines Content (%)	Atterberg Limits	CBR (%)
B-4/B-6 (0.5-2.0)	SM	112.0 pcf 12.5%	23.3	Non-plastic	5.9
B-1 (1.0-2.0)	SM	--	23.9	--	--
B-3 (2.0-3.0)	SM	--	18.9	--	--
B-4 (1.0-2.0)	SM	--	19.5	--	--
B-5 (2.0-3.0)	SM	--	20.2	--	--

6.0 Construction Recommendations

The following conclusions and recommendations are based on our field exploration, our understanding of the proposed construction, our engineering analyses, experience with similar projects and subsurface conditions, and our correspondence with you. If structural loads and/or proposed site grades are different from those indicated, we should be provided the opportunity to review and comment upon the recommendations of this report so that they may be confirmed, extended, or modified as necessary. If subsurface conditions adverse to those indicated by this report are encountered during construction, those differences should be reported to us for review and comment.

6.1 General Discussion

Based on our review of the provided project information and geotechnical analyses of field and laboratory testing data, this site is suitable for the planned construction provided that site preparation recommendations presented herein are implemented during construction.

To reduce potential earthwork problems, site preparation and grading should be scheduled during the typically drier months of May through November, if possible. If late fall or winter grading is attempted, repair of near-surface soils and possible use of select off-site borrow will be necessary to adequately prepare subgrades for new construction. Heavy rubber-tired construction equipment should not be allowed to operate on exposed subgrades during wet conditions. Even during drier periods of the year, we recommend that exposed subgrades be sloped and sealed at the end of each day to promote runoff and reduce infiltration from rainfall. Water should not be allowed to pond on exposed subgrades. To further reduce potential deterioration of exposed subgrades, construction traffic patterns should be managed to limit equipment passes across the site. An all-weather surface may be necessary for heavy construction traffic to reduce degrading the soil subgrade during construction.

The following sections present our geotechnical conclusions and recommendations regarding site development.

6.2 Earthwork

6.2.1 Site Preparation

Initial site preparation should begin by clearing vegetation and stripping and grubbing of organics and topsoil, and any other deleterious materials for a lateral distance of at least 5 feet beyond the limits of new construction.

Based on the hand auger borings and experience at the site, we anticipate topsoil thicknesses will typically be about 6 to 8 inches in the grassy areas and/or deeper in the wooded areas. The site should be stripped with light, tracked equipment to avoid mixing the topsoil into the loose near surface silty sands and creating thicker stripping depths.

After initial site preparation is complete, the exposed subgrade of areas to receive fill and areas near final grades should be evaluated by an S&ME geotechnical engineer or their representative. This evaluation should include proofrolling with a fully-loaded tandem-axle dump truck or similar rubber-tired construction equipment. Any areas that deflect excessively and cannot be densified by rolling should be repaired by undercutting to suitable soils and replacing with compacted structural fill or aggregate base course (ABC) stone. Densification or undercutting existing near-surface soils may be required depending on weather conditions at the time of construction.

6.2.2 Subgrade Repair and Improvement Methods

The exposed subgrade of both cut and fill areas can deteriorate and lose support when exposed to construction traffic and adverse weather conditions. Deterioration can occur in the form of rutting, pumping, freezing, or erosion. We recommend that, during construction, exposed subgrade surfaces be sealed at the end of each day or when wet weather is forecast. Water should not be allowed to pond in fill or cut areas. Immediately prior to foundation or floor slab construction, exposed subgrade soils should be evaluated by proofrolling to determine

their stability. Soils which rut, pump, or deflect under proofrolling should be repaired prior to ABC stone placement. Repair measures may include scarifying/drying/recompacting, undercutting, placement of geotextiles, or some combination of these. Actual repair measures will be influenced by project schedule and weather conditions and can only be determined in the field.

6.2.3 Excavations

Based on subsurface conditions encountered and assumed site grading, medium dense to dense silty sands will be encountered within anticipated shallow excavation depths at the site. Local excavations within these materials for shallow utility trenches and foundations can be accomplished by a conventional backhoe or track-mounted backhoe.

The upper 5 feet to 6 feet within our CPT soundings and hand auger borings indicate that the material should be suitable for re-use as structural fill. However, depths may vary throughout the site. For excavations deeper than 5 feet, the design team should anticipate that this material may not be suitable for re-use as structural fill as fine grained materials, such as clays, silts, and silty clays will be encountered. These cohesive materials may need to be hauled from the site, used in non-structural areas of the site, and either suitable on-site or off-site borrow soils be used to backfill deeper excavations. This should be anticipated for all utility trenches and stormwater excavations which extend beneath these depths.

Subsurface water was encountered at depths of about 6 to 9 feet at the time of performing the CPT soundings. Note that water may be shallower during wet periods of the year, after rainfall events, or in unexplored areas. The contractor should be prepared to dewater where utility or foundation excavations extend beneath subsurface water levels and control any water that collects in excavations. Temporary ditches or the use of French drains may be needed to assist in dewatering the site for construction. The contractor should be responsible for determining water control measures.

Excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The contractor is usually responsible for site safety. This information is provided only as a service and under no circumstances should we be assumed responsible for construction site safety.

6.2.4 Structural Fill Placement and Compaction

Soils used as structural fill should meet the following requirements:

- USCS classification of SM, SC, SP, SW, or some combination of these.
- Contain less than 3 percent organics.
- Be free of trash or other deleterious materials.
- Have a maximum particle size of 2 inches or less.
- Have a minimum standard Proctor maximum dry density of 100 pounds per cubic foot.

All new structural fill soil should be placed in 8 to 10-inch loose lifts and compacted to at least 95 percent of the standard Proctor maximum dry density (MDD) (ASTM D698). The top 12 inches should be compacted to at least 98 percent of the materials standard Proctor MDD. The moisture content of structural fill should be maintained at +/- 3% of optimum moisture during compaction. S&ME construction services personnel, working under the supervision of the geotechnical engineer, should observe fill placement and compaction. An appropriate number of soil density tests should be conducted to confirm that adequate fill compaction is achieved.

7.0 Initial Surcharge and Idle Period Recommendations

Information provided to us indicates that maximum column and wall loads for the new building will be 75 kips and 1.5 kips per linear foot, respectively. Maximum floor loads will be 150 psf. In addition, based on the provided site grading information, up to 3 ½ feet of structural fill will be required to reach finished subgrade elevation in the building pad area. Please let us know if the structural loads change or are different than assumed or provided. Shallow foundations can be used to support the proposed buildings, provided the surcharge program described herein is performed prior to foundation construction.

The building and fill loads will induce estimated settlements of about 2.2 to 4.3 inches within the building pad where there is zero fill and 3½ feet of fill, respectively. The resulting total and differential settlements will exceed typically tolerable magnitudes. Based on the CPT data and our previous experience with similar profiles in the site vicinity, our analysis indicated that 300 to 400 days may be required for the total settlement to occur.

To mitigate excessive total and differential settlement, at least 3 feet of temporary surcharge fill should be placed across the building pad after permanent fill placement to achieve design subgrade elevations has been completed. After the surcharge fill is placed, an idle period should pass and the results of the monitoring program confirmed by the geotechnical engineer before the surcharge is removed and the site graded to the design subgrade elevation. If one inch of post construction settlement can be tolerated by the building structure, then at least an 11-week idle period is estimated to be required before final grading. If ½ inch of post construction settlement is required, then an estimated idle period of at least 15 weeks will be needed to mitigate excessive settlements. The idle periods may be reduced by increasing the initial surcharge fill height across the site. Actual settlements that are induced by surcharging and the time rate of settlement will vary and must be confirmed by implementation of the monitoring program outlined in the following section.

In Appendix I, we have provided Figure 2 - Surcharge Summary, which graphically presents the estimated time rate of settlement of various initial surcharge fill heights relative to the estimated settlement due to the building and fill loads. From the graph, an approximate idle period can be selected based on the initial surcharge fill height and the tolerable post construction settlement. The table below is based on Figure 2 and summarizes idle periods for 3, 4, and 5 feet of surcharge fill, considering ½ inch and 1 inch of post construction settlement.

Table 2 – Surcharge Summary

Surcharge Height (ft)	Post Construction Settlement of 1 inch	Post Construction Settlement of ½ inch
3	11 weeks	15 weeks
4	9 weeks	12 weeks
5	7 weeks	10 weeks

The initial fill and surcharge fill placement should extend at least 10 feet beyond the perimeter of the building pad areas. The fill used to reach finished subgrade should meet the recommendations in our Earthwork section. Above the design subgrade elevation, the surcharge fill could be placed in horizontal lifts of 12 inches or less thickness and be tracked in by a bulldozer.

7.1 Surcharge Monitoring

After stripping and site stabilization, if needed, but prior to fill placement, four settlement plates should be installed within the building pad as determined by the S&ME geotechnical engineer. The project surveyor should measure the elevations of the settlement plates and/or tops of the metal riser pipes prior to fill placement. If only the elevations of the plates are measured, the installer of the settlement plates should measure the vertical distance from the plates to the tops of the riser pipes.

As fill placement and then surcharge placement proceeds, the elevations of the tops of the metal riser pipes should be measured by the project surveyor every 2 to 3 days, and the elevation measurements should be forwarded to S&ME for analysis. Then throughout the settlement period, the settlement plates should be surveyed weekly, and the measurements forwarded to S&ME. S&ME will then determine when sufficient settlement has occurred and when the surcharge fill can be removed. The settlement plate PVC outer protective pipe should be painted or flagged, and care should be taken to prevent damage to the settlement plates and pipes during surcharge fill placement.

8.0 Design Recommendations

8.1 Foundation Support

Provided that the above recommendations for fill placement and compaction, and surcharging and idle periods are followed, the structure can be supported on shallow spread footings bearing in compacted structural fill or natural soils and designed for a net allowable bearing pressure of 2,000 pounds per square foot (psf). Based on encountered subsurface conditions, provided structural loads, and assuming the subgrades are properly prepared as discussed herein, total settlement of building foundations will be 1 inch or less with differential settlements of about ½ inch.

Footings should bear at least 18 inches below exterior grade to avoid frost penetration and develop the design bearing capacity. Continuous wall footings should be at least 18 inches wide, and isolated column footings should be at least 24 inches wide. This recommendation is made to prevent a localized or "punching" shear failure condition which can occur with very narrow footings.

8.1.1 Footing Evaluations

The bottom of all footing excavations for the structure should be evaluated by the S&ME project geotechnical engineer or their representative using a hand auger and dynamic cone penetrometer (DCP). Repairs may include undercutting and replacing with washed stone (#57) prior to foundation construction. Because the need for undercut is heavily dependent upon prevailing weather conditions at the time of construction, a quantity of undercut should be provided for the contractor to bid on with an associated unit price such that undercut can be added or deducted based on actual site conditions. Due to the potential of perched water conditions at the site, the contractor should be prepared to dewater footing excavations.

8.2 Floor Slabs

A slab-on-grade floor system can be adequately supported on newly placed and compacted structural fill or approved natural soils, provided the site preparation and fill placement procedures outlined in this report are implemented.

We recommend that at least 6 inches of compacted select granular material be placed beneath all ground floor slabs to provide a capillary break, provide more uniform slab support, and reduce damage to subgrade soils during construction. The select granular fill should classify as SP, SP-SM, SW, or SW-SM in accordance with the Unified Soil Classification System, which requires that these soils have less than 12 percent passing the No. 200 sieve. Manufactured materials such as aggregate base course (ABC) or processed fill (i.e., screenings) meeting this specification can be used. A modulus of subgrade reaction value of 175 psi/in may be used to design floor slab on subgrades consisting of these soils compacted to at least 98 percent of the soil's standard Proctor maximum dry density.

Exposure to the environment and construction activities will weaken the floor slab subgrade soils. Therefore, we recommend that subgrade soils in slab areas be evaluated prior to placement of the select granular fill. If near surface deterioration of the soils has occurred, undercutting or reworking of the fill may be necessary.

Based on the water levels measured during the time of our field exploration and the assumed finish floor elevation, the floor slab will not be below the exterior grade and will not be subjected to hydrostatic pressure from groundwater. However, water vapor transmission through the slab is still a design consideration. Evaluating the need for and design of a vapor retarder or vapor barrier for moisture control is outside our scope of services and should be determined by the project architect/structural engineer based on the planned floor coverings and the corresponding design constraints, as outlined in ACI 302.1R-04 Guide for Concrete Floor and Slab Construction. Further, health and environmental considerations with respect to any potentially harmful vapor transmission are also outside of our scope.

8.3 Seismic Design Considerations

8.3.1 General

There are no known mapped faults in the area of the site. Five minor earthquakes with epicenters in the Wilmington area with magnitudes of 3.0 to 3.9 occurred between 1871 and 1968[1]. The historic earthquake event which influences the design seismicity of the site the most is the 1886 Charleston, South Carolina earthquake with a magnitude of approximately 7.3.

A seismic site classification and liquefaction potential evaluation were performed based on the field data collected from the CPT soundings and shear wave velocity measurements recorded in sounding B-2. The following sections discuss the results of the seismic evaluation.

8.3.2 Seismic Site Class

Seismic site classification is based on the top 100 feet of a site's subsurface profile. A shear wave velocity profile was developed from measurements recorded in Seismic CPT sounding B-2. Using the collected data, an average shear wave velocity of 515 ft/sec was computed for the upper 47 ft of the subsurface profile before sounding termination. Based on S&ME's knowledge of the local geology, the final measured shear wave velocity (at a depth of 47 ft) of 698 ft/sec was extrapolated to a depth of 100 ft. Figure 3 in Appendix I presents the Shear Wave Velocity Profile developed from measurements recorded in sounding B-1. Per Section 1613 of the *2018 North Carolina State Building Code* the site is designated as **Seismic Site Class D**.

8.3.3 Design Spectral Accelerations

The current North Carolina Building Code (NCBC) references the 2015 International Building Code and ASCE 7-10 for determining the design spectral accelerations and liquefaction potential. Ground motion parameters are provided in the table below.

Table 3 - Ground Motion Parameters

Method	Site Class	S_S	S_1	S_{DS}	S_{D1}	PGA	PGA_M
2018 North Carolina Building Code (ASCE 7-10)	D	0.209 g	0.089 g	0.223 g	0.143 g	0.107 g	0.169 g

8.3.4 Liquefaction Triggering Evaluations

A liquefaction triggering evaluation was performed using the methods presented by Youd et. al. (2001) and Boulanger and Idriss (2014). These analysis methods calculate seismic shear stress ratios (SSR) induced by ground motions causing liquefaction and compare the SSR to seismic shear stress resistance ratios (SRR) that are

[1] Map of Earthquake Epicenters in North Carolina and Portions of Adjacent States (1698-2006), North Carolina Geologic Survey.

correlated to recorded CPT cone tip resistances. A site is considered resistant to liquefaction if its resisting shear stresses (SRR) are greater than earthquake induced shear stresses (SSR).

Per the 2018 NC Building Code, the design earthquake has a 2 percent probability of exceedance in a 50-year period (2,475 year return period). For Seismic Site Class D in Wilmington, NC the site modified peak ground acceleration is 0.169 g for an earthquake having a magnitude of 7.3. The seismic hazard information (peak ground motion, earthquake magnitude) was obtained from the United States Geologic Survey (USGS).

Liquefaction triggering evaluation methods have been primarily based on evaluation/observation of events that occurred in the western U.S. in cohesionless materials that are much younger than deposits in the central and eastern U.S. An age correction factor that accounts for the increased liquefaction resistance of older Holocene and Pleistocene soils has been developed by Andrus et al (2009). Following the method developed by Andrus, the shear wave velocity profiles have been used to determine measured-to estimated-velocity-ratio (MEVR) which in turn is related to an age correction factor (K_{DR}) utilized in the liquefaction triggering evaluation.

Based on our evaluations, the site is considered to resist liquefaction and no further seismic considerations are necessary for the design and construction of the project.

9.0 Pavement Section Design and Construction

9.1 Asphalt Pavement – Parking and Access Roads

S&ME was not provided traffic loading conditions at the time of this report. The below recommendations were based on typical loading conditions and our experience at this site, local practice, and similar projects. This information and our assumptions should be confirmed by the project Civil Engineer or their pavement design representative.

Based on the laboratory remolded CBR from the bulk sample at B-4 and B-6, and past experience at the site, a design CBR value of 6 percent was used for pavement design. This CBR value is based on the subgrade soils consisting of sandy soils and the top 12 inches being uniformly compacted to at least 98% of the soil's standard Proctor MDD.

Traffic volumes for the proposed pavement areas were not provided to us; therefore, we have performed our calculations based on typical pavement section thicknesses for this site and assumed traffic demand volumes. For the standard duty pavement areas (i.e., parking stalls) an 18-kip equivalent single axle loads (ESAL) value of 10,000 was used. For heavy-duty pavement areas (i.e., access drives and route to dumpster pad) an ESAL value of 30,000 was used. Once traffic volumes are known please provide that information to S&ME for review and comment.

Recommendations for the anticipated standard and heavy-duty pavements are provided in the table below.

Table 4 – Flexible Pavement Section Thicknesses

Material Type	Light Duty	Heavy Duty
Asphalt Surface Course	2.0 inches (S-9.5B)	3.0 inches* (S-9.5B or S-9.5C)
Aggregate Base Course	8 inches	8 inches

*Placed in two 1½-inch thick lifts

All materials and construction methods should conform to the 2012 edition of the NCDOT "Standard Specifications for Roads and Structures." The aggregate base course (ABC) stone should consist of stone meeting the requirements under Section 520. ABC stone should be compacted to at least 98 percent of the maximum dry density as determined by the modified Proctor compaction test, AASHTO T-180M as modified by NCDOT. To confirm that the base course stone has been uniformly compacted, in place density tests should be performed by S&ME construction services staff and the area should be thoroughly proofrolled under their observation.

Asphaltic concrete should conform to Section 610 in the 2012 edition of the NCDOT "Standard Specifications for Roads and Structures." Sufficient testing and observation should be performed during pavement construction to confirm that the required thickness, density, and quality requirements of the specifications are achieved.

Although our analysis was based on traffic loading for a 20-year design life, our experience indicates that pavement maintenance is necessary due to normal weathering of the asphaltic concrete. Normal weathering (i.e., oxidation) causes asphalt to become more brittle resulting in loss of tensional strength. This loss in strength can cause minor cracking which provides access for water infiltration into the stone base and subgrade. As the degree of saturation of the subgrade increases, the strength of the subgrade decreases leading to pavement failure. Routine maintenance in the form of sealing, patching, and maintaining proper drainage is required to increase pavement life. It is not uncommon for overlays to be required after 10 to 12 years.

9.2 Concrete Pavement

The concrete pavement design was performed using the same design traffic as in the heavy-duty asphalt pavement areas (30,000 ESALs). The compressive strength of the concrete was assumed to be 4,000 psi. A modulus of subgrade reaction of 175 pci was used for design assuming 6-inches of compacted ABC stone is placed beneath the concrete pavement. We have assumed that load transfer across contraction (saw) joints will be handled by aggregate interlock. ABC should meet the material and compaction requirements stated in the "Flexible (Asphalt) Pavement" section above.

Concrete pavement is recommended for heavily loaded traffic and dumpster pad areas. The table below presents our recommended concrete pavement section thicknesses.

Table 5 – Rigid Pavement Section Thicknesses

Material Type	Concrete Pavement Design
Air Entrained Concrete (4,000 psi)	6.0 inches
Aggregate Base Course (ABC) stone	6.0 inches
Maximum Joint Spacing	12 feet in all directions

Saw joints should be cut to a depth of at least ¼ of the thickness of the concrete pavement to promote shrinkage cracking along the joint. The ABC stone should be compacted to at least 98 percent of its modified Proctor maximum dry density by AASHTO T180M.

10.0 Limitations of Geotechnical Report

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other representation or warranty, either express or implied, is made.

We relied on project information given to us to develop our conclusions and recommendations. If project information described in this report is not accurate, or if it changes during project development, we should be notified of the changes so that we can modify our recommendations based on this additional information if necessary.

Our conclusions and recommendations are based on limited data from a field exploration program. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site.

Unless specifically noted otherwise, our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants or presence of any biological materials (mold, fungi, bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services if requested.

S&ME should be retained to review the final plans and specifications to confirm that earthwork, foundation, and other recommendations are properly interpreted and implemented. The recommendations in this report are contingent on S&ME's review of final plans and specifications followed by our observation and monitoring of earthwork and foundation construction activities.

Appendices

Appendix I– Figures

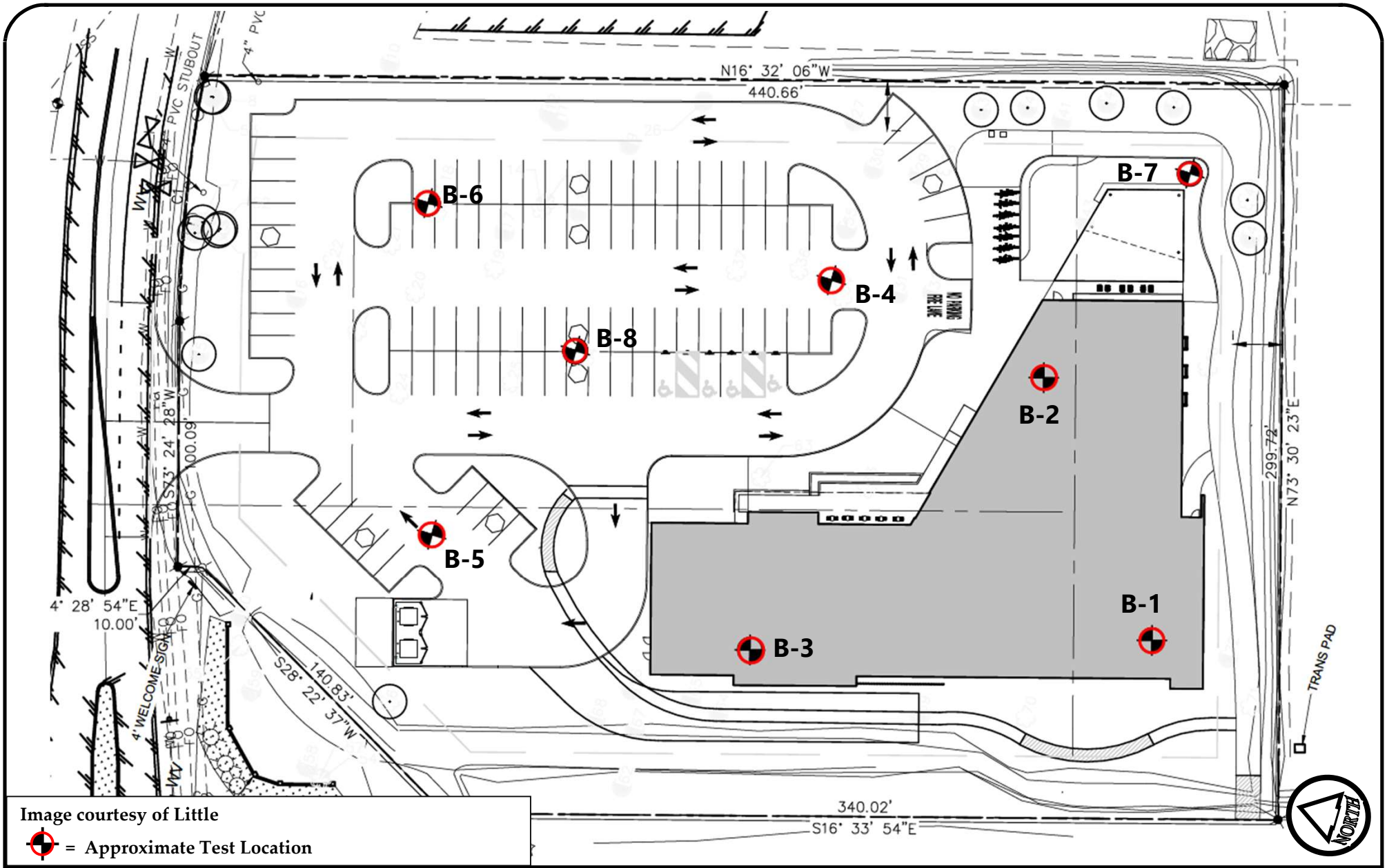


Image courtesy of Little

= Approximate Test Location

Test Location Sketch

NHC Library at North Chase
Wilmington, North Carolina

SCALE: AS SHOWN

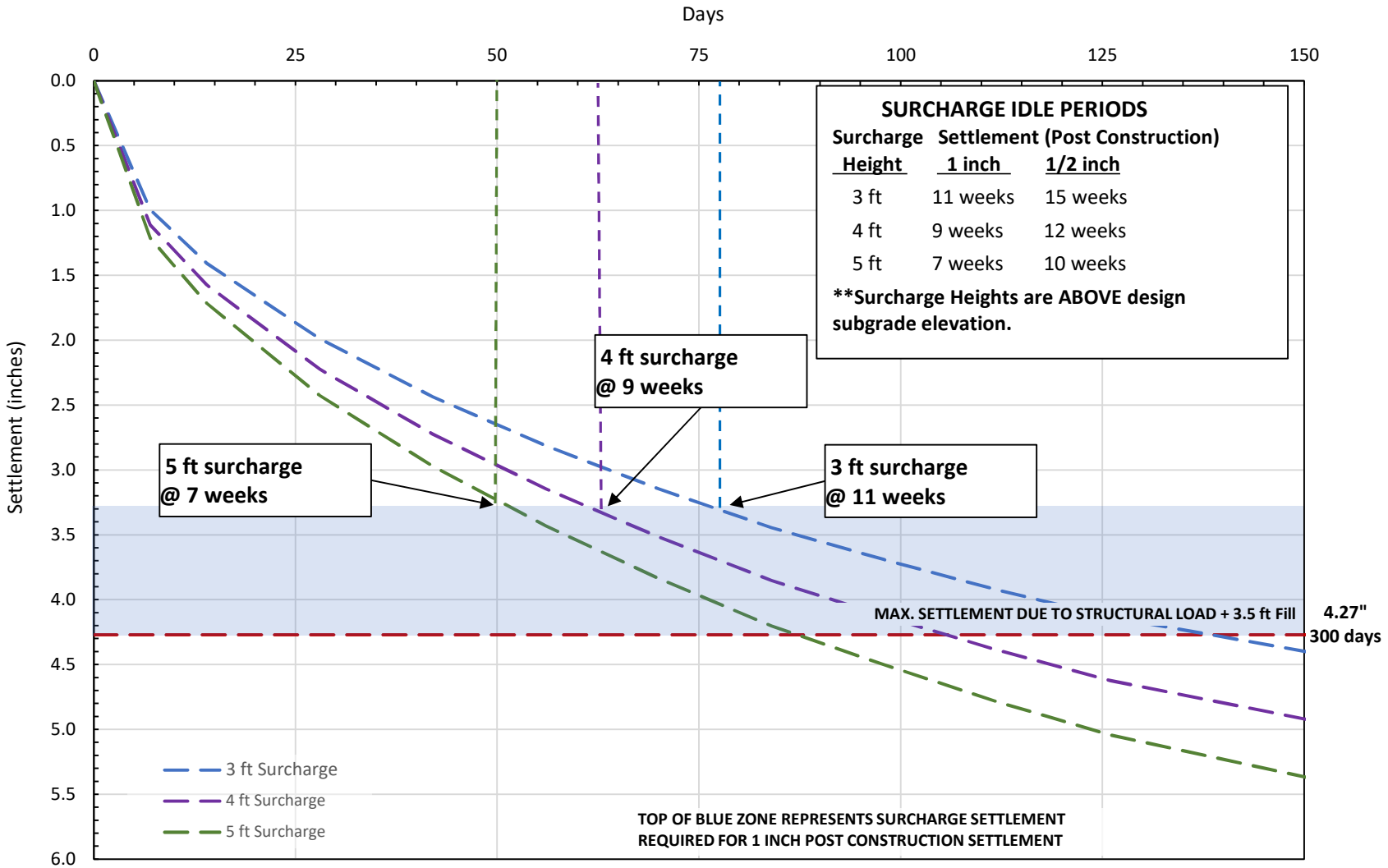
DATE: 7/13/2023

PROJECT NUMBER 22060142

FIGURE NO. 1

Sounding B-2

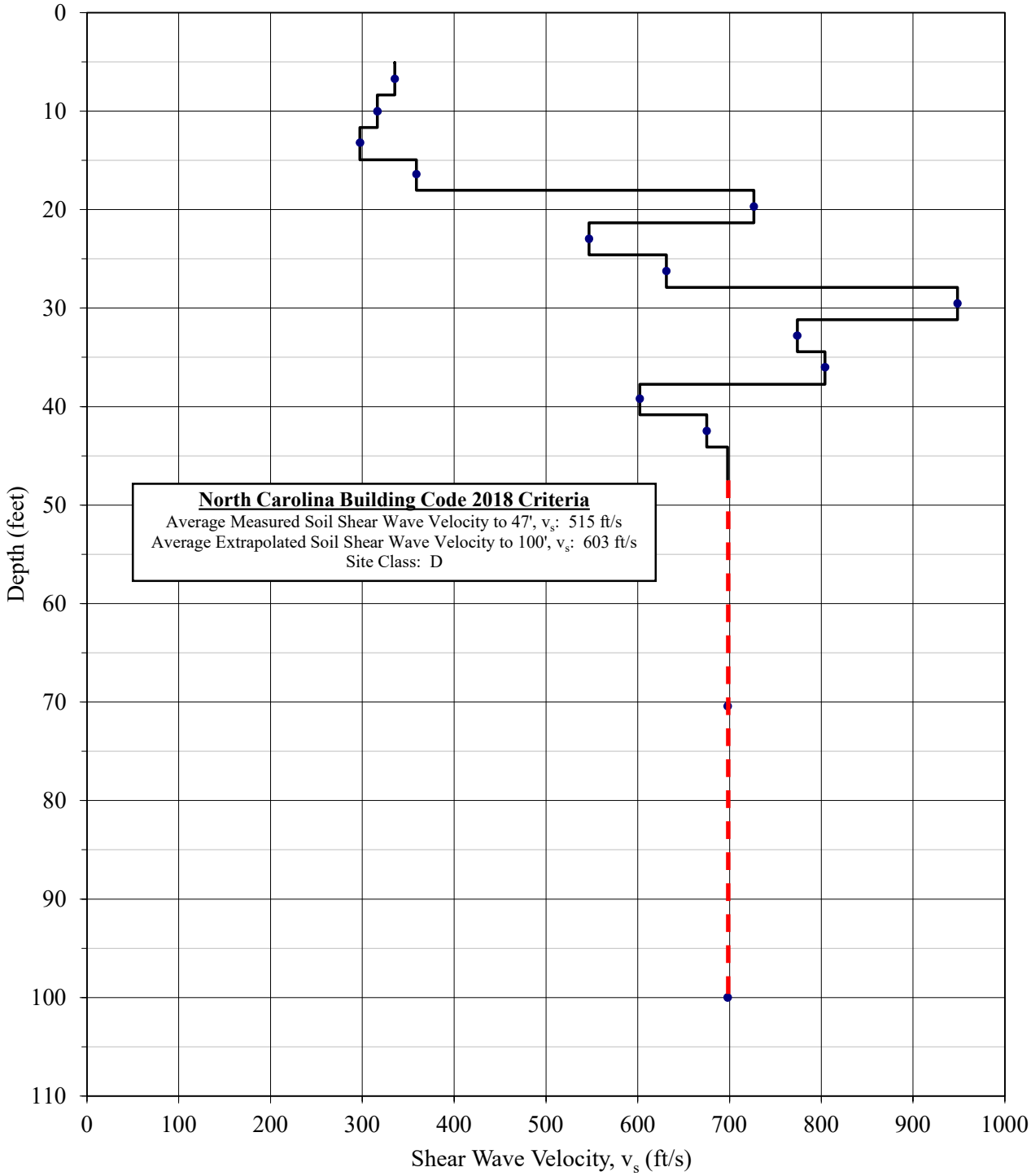
FIGURE 2 - SURCHARGE SUMMARY - 3.5 ft of Permanent Fill
NHC Library at North Chase
Wilmington, NC



Shear Wave Velocity Calculations - Figure 3

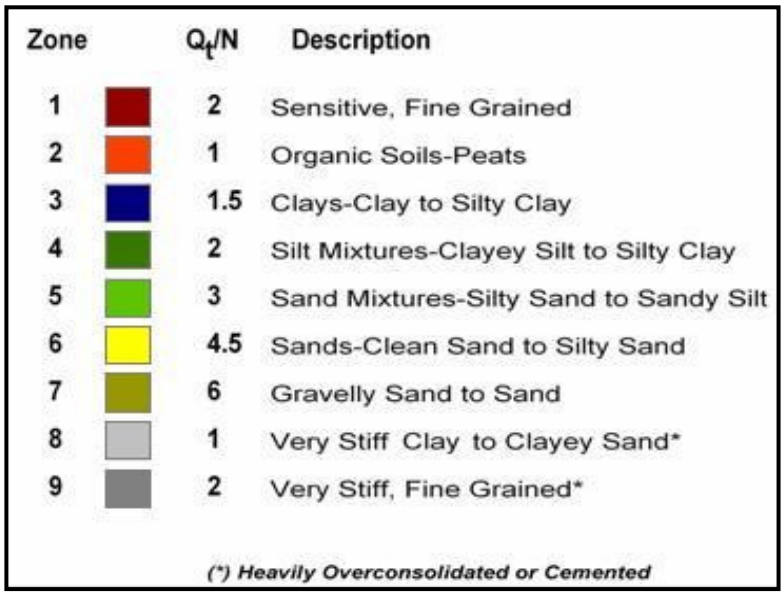
New Hanover County Library at North Chase
Wilmington, North Carolina

Sounding ID: **B-2** Project Number: **22060142**
Date: 06/28/23



Appendix II– CPT/Hand Auger Logs

CPT Soil Classification Legend



Robertson's Soil Behavior Type (SBT), 1990			
Group #	**Description**	**Ic**	
		Min	**Max**
1	Sensitive, fine grained	N/A	
2	Organic soils - peats	3.60	N/A
3	Clays - silty clay to clay	2.95	3.60
4	Silt mixtures - clayey silt to silty clay	2.60	2.95
5	Sand mixtures - silty sand to sandy silt	2.05	2.60
6	Sands - clean sand to silty sand	1.31	2.05
7	Gravelly sand to dense sand	N/A	1.31
8	Very stiff sand to clayey sand (High OCR or cemented)	N/A	
9	Very stiff, fine grained (High OCR or cemented)	N/A	

Soil behavior type is based on empirical data and may not be representative of soil classification based on plasticity and grain size distribution.

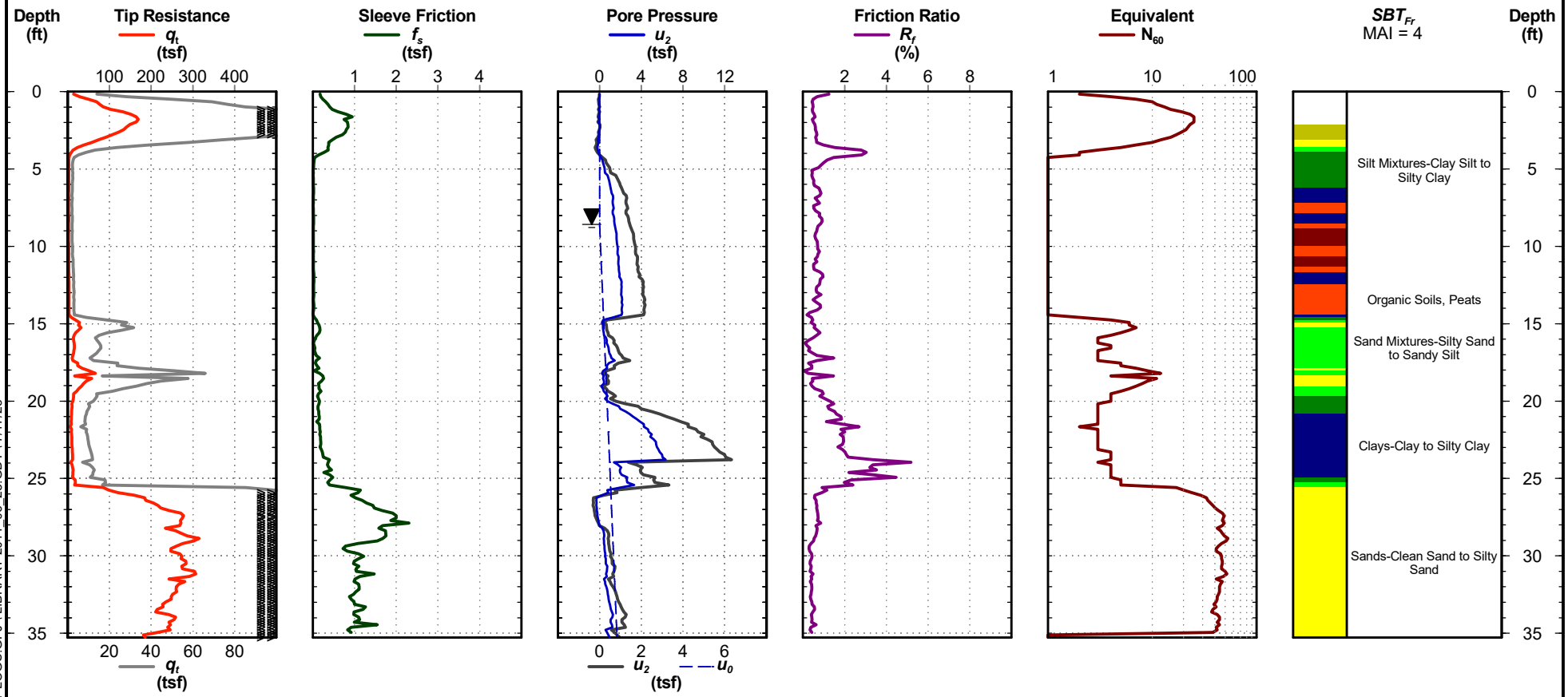
Relative Density and Consistency Table			
SANDS		SILTS and CLAYS	
Cone Tip Stress, qt (tsf)	Relative Density	Cone Tip Stress, qt (tsf)	Consistency
Less than 20	Very Loose	Less than 5	Very Soft
20 - 40	Loose	5 - 15	Soft to Firm
40 - 120	Medium Dense	15 - 30	Stiff
120 - 200	Dense	30 - 60	Very Stiff
Greater than 200	Very Dense	Greater than 60	Hard

Sounding ID: B-1

New Hanover County Library at North Chase
Wilmington, North Carolina
S&ME Project No: 22060142

Date: Jun. 28, 2023
Estimated Water Depth: 8.58 ft
Rig/Operator: Jared Duffy

Total Depth: 35.3 ft
Termination Criteria: Target Depth
Cone Size: 1.75



Cone Penetration Test

Electronic Filename: NHC Library B-1.cpt

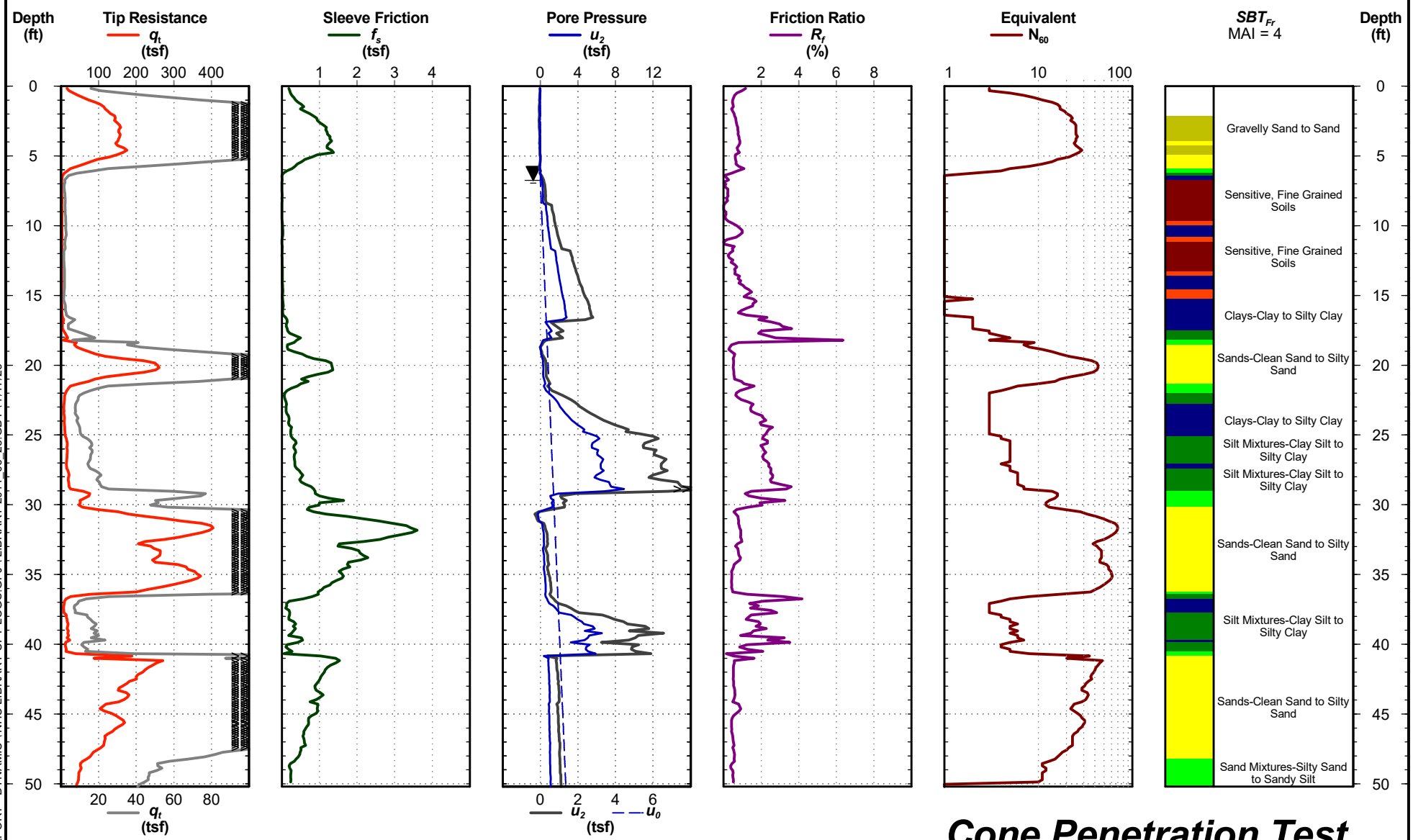
CPT REPORT - DYNAMIC \ NHC LIBRARY CPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 7/17/23

New Hanover County Library at North Chase
Wilmington, North Carolina
S&ME Project No: 22060142

Sounding ID: B-2

Date: Jun. 28, 2023
Estimated Water Depth: 6.75 ft
Rig/Operator: Jared Duffy

Total Depth: 50.2 ft
Termination Criteria: Target Depth
Cone Size: 1.75



Cone Penetration Test

Electronic Filename: NHC Library B-2.cpt

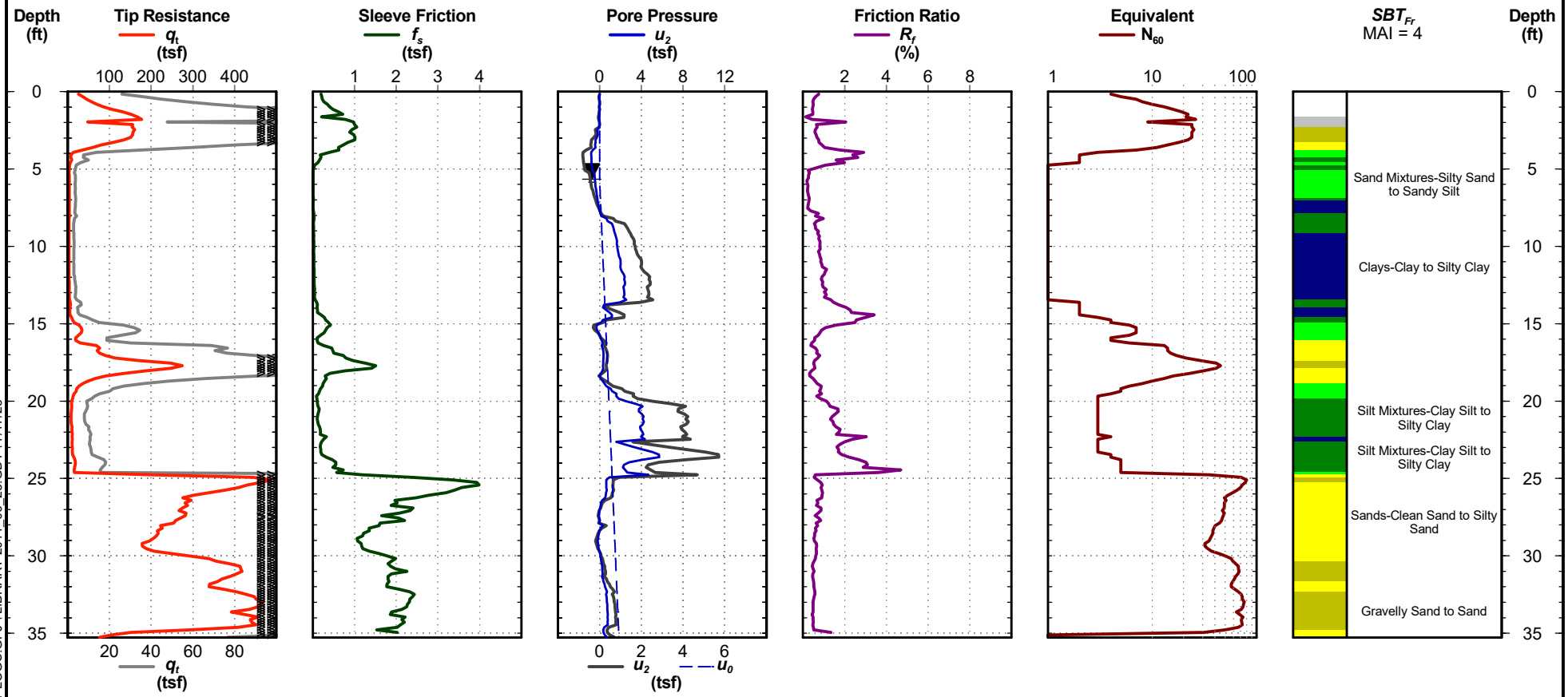
CPT REPORT - DYNAMIC \ NHC LIBRARY CPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 7/17/23

Sounding ID: B-3

New Hanover County Library at North Chase
Wilmington, North Carolina
S&ME Project No: 22060142

Date: Jun. 28, 2023
Estimated Water Depth: 5.67 ft
Rig/Operator: Jared Duffy

Total Depth: 35.3 ft
Termination Criteria: Target Depth
Cone Size: 1.75



Cone Penetration Test

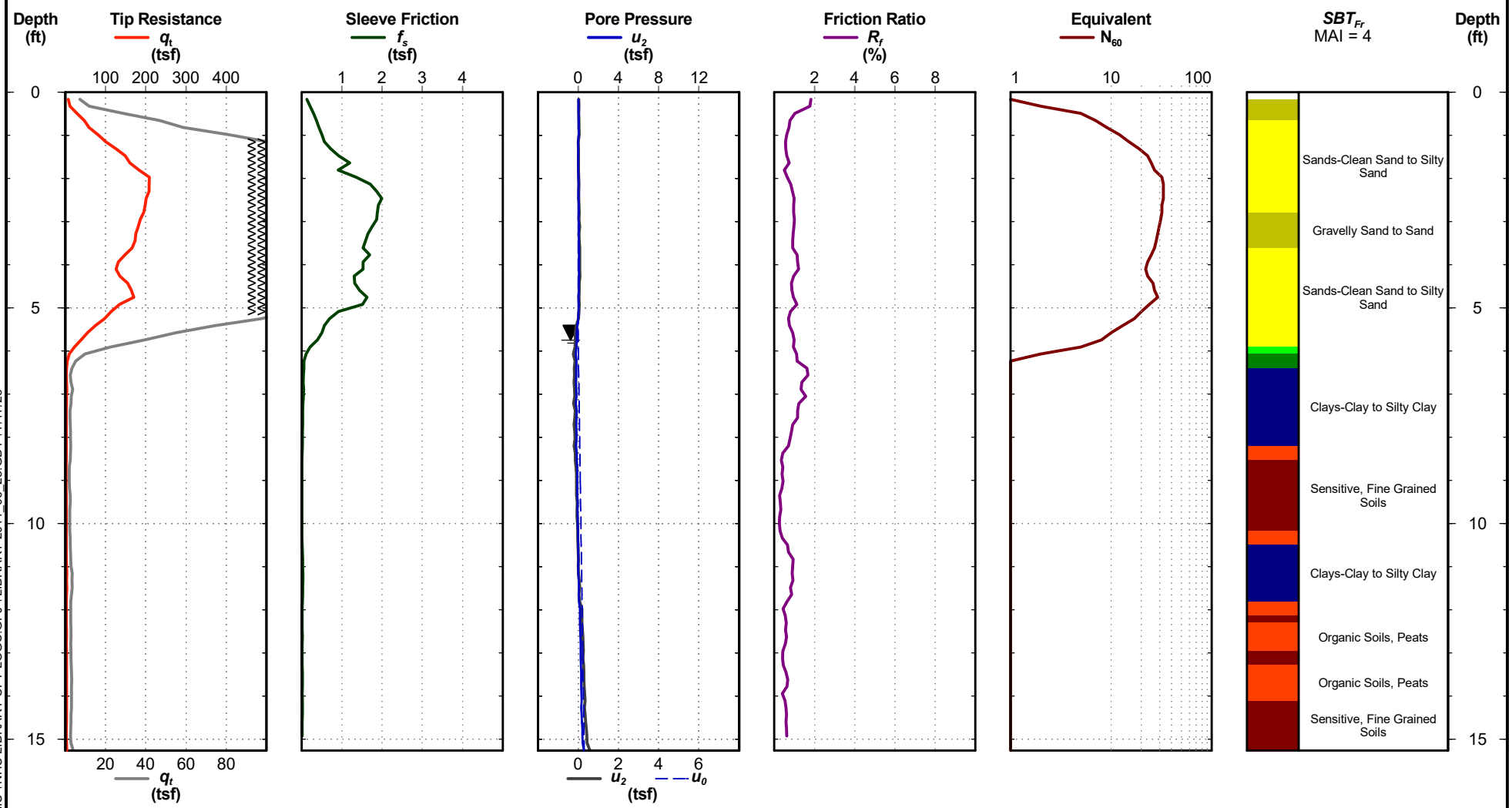
Electronic Filename: NHC Library B-3.cpt

Sounding ID: B-4

New Hanover County Library at North Chase
Wilmington, North Carolina
S&ME Project No: 22060142

Date: Jun. 28, 2023
Estimated Water Depth: 5.75 ft
Rig/Operator: Jared Duffy

Total Depth: 15.3 ft
Termination Criteria: Target Depth
Cone Size: 1.75



Cone Penetration Test

Electronic Filename: NHC Library B-4.cpt

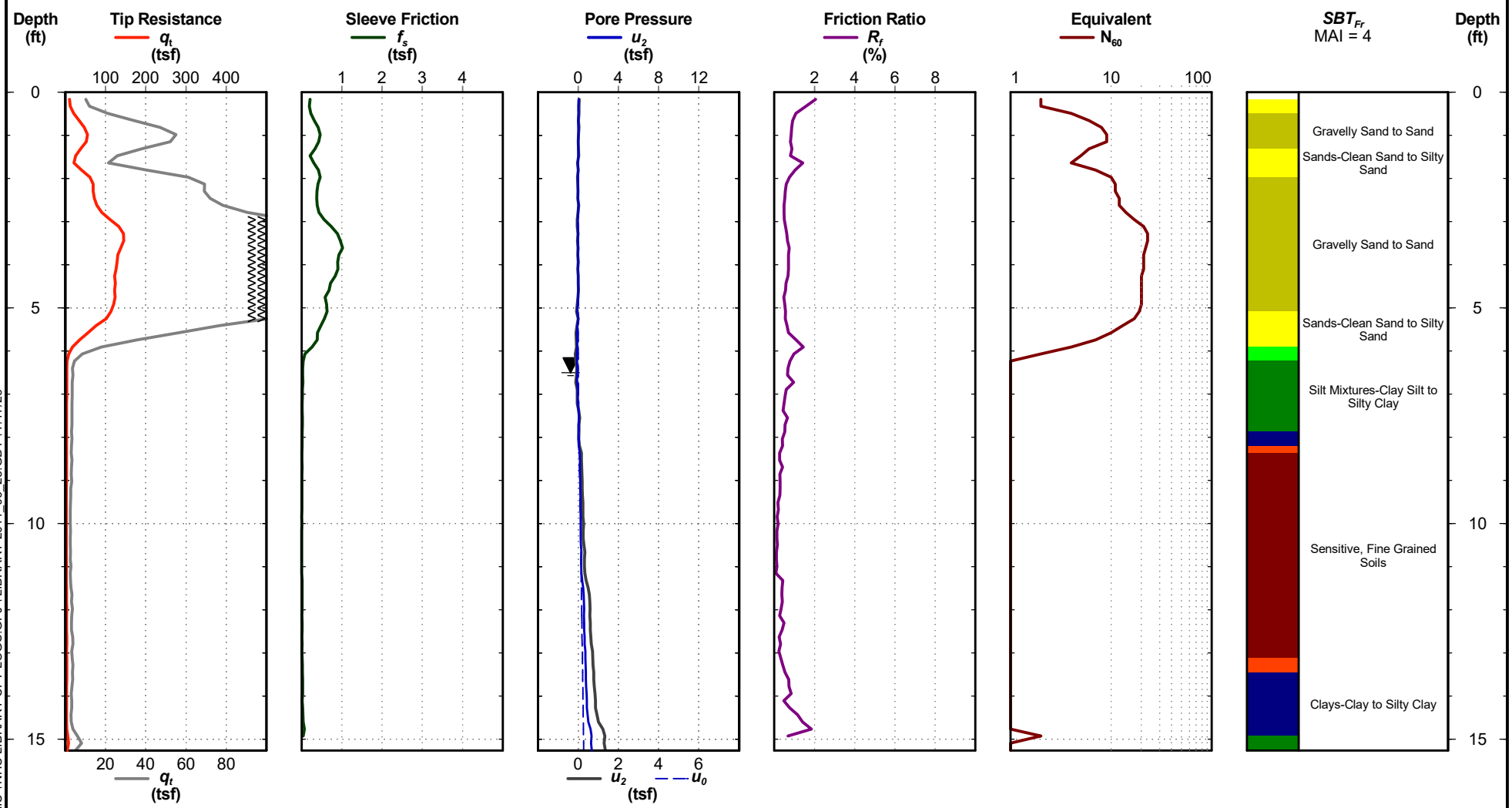
CPT REPORT - DYNAMIC \ NHC LIBRARY CPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 7/17/23

New Hanover County Library at North Chase
Wilmington, North Carolina
S&ME Project No: 22060142

Sounding ID: B-5

Date: Jun. 28, 2023
Estimated Water Depth: 6.5 ft
Rig/Operator: Jared Duffy

Total Depth: 15.3 ft
Termination Criteria: Target Depth
Cone Size: 1.75



Cone Penetration Test

Electronic Filename: NHC Library B-5.cpt

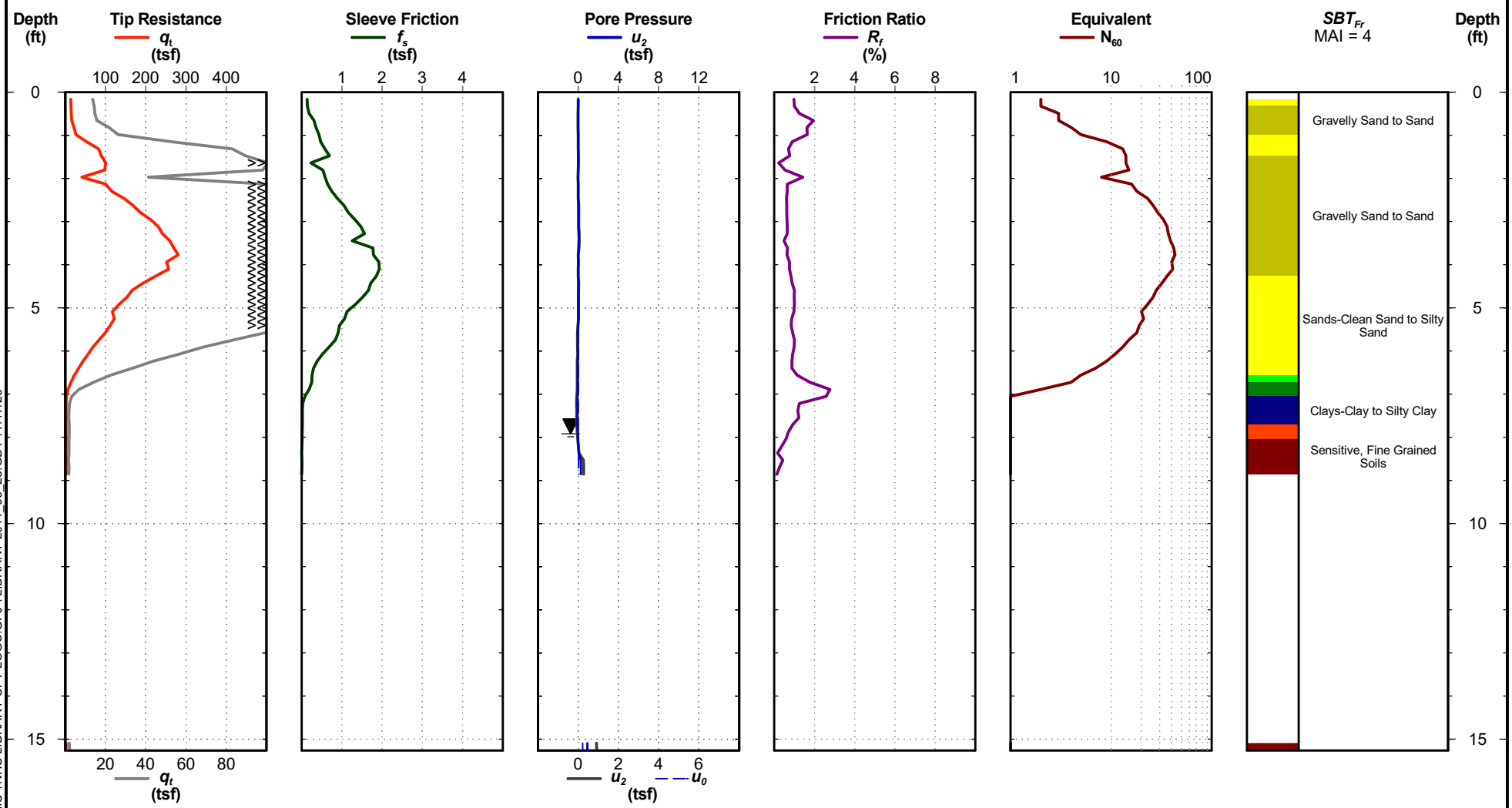
CPT REPORT - DYNAMIC \ NHC LIBRARY CPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 7/17/23

Sounding ID: B-6

New Hanover County Library at North Chase
Wilmington, North Carolina
S&ME Project No: 22060142

Date: Jun. 28, 2023
Estimated Water Depth: 7.92 ft
Rig/Operator: Jared Duffy

Total Depth: 15.3 ft
Termination Criteria: Target Depth
Cone Size: 1.75



Cone Penetration Test

Electronic Filename: NHC Library B-6.cpt

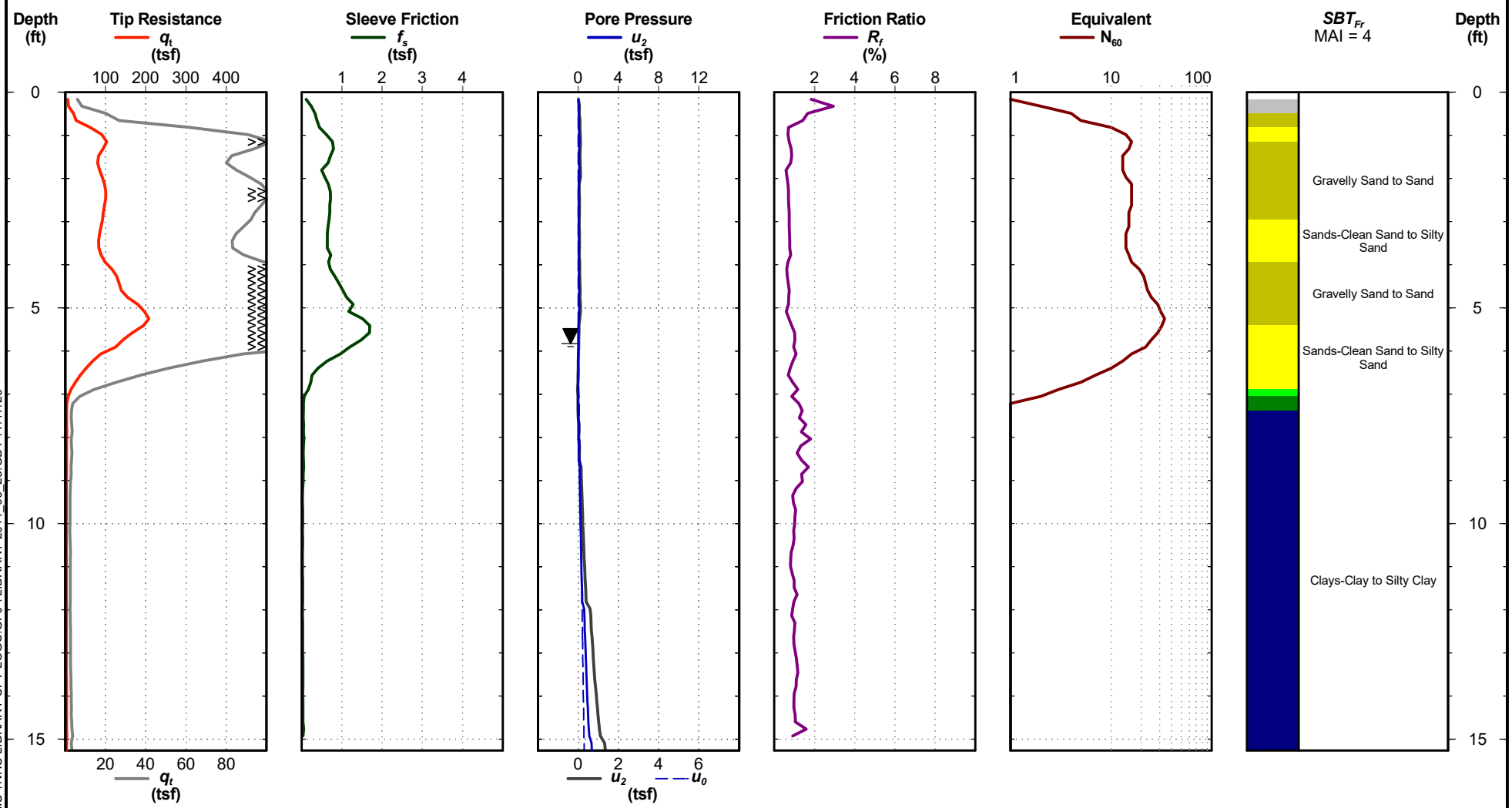
CPT REPORT - DYNAMIC \ NHC LIBRARY CPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 7/17/23

Sounding ID: B-7

New Hanover County Library at North Chase
Wilmington, North Carolina
S&ME Project No: 22060142

Date: Jun. 28, 2023
Estimated Water Depth: 5.83 ft
Rig/Operator: Jared Duffy

Total Depth: 15.3 ft
Termination Criteria: Target Depth
Cone Size: 1.75



Cone Penetration Test

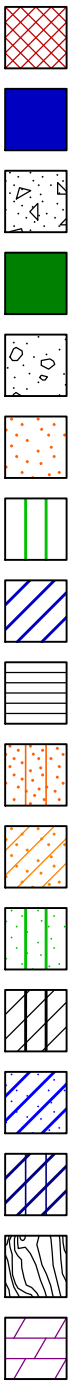
Electronic Filename: NHC Library B-7.cpt

CPT REPORT - DYNAMIC \ NHC LIBRARY CPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 7/17/23

LEGEND TO SOIL CLASSIFICATION AND SYMBOLS

SOIL TYPES

(Shown in Graphic Log)



- Fill
- Asphalt
- Concrete
- Topsoil
- Gravel
- Sand
- Silt
- Clay
- Organic
- Silty Sand
- Clayey Sand
- Sandy Silt
- Clayey Silt
- Sandy Clay
- Silty Clay
- Partially Weathered Rock
- Cored Rock

WATER LEVELS

(Shown in Water Level Column)

▽ = Water Level At Termination of Boring
▼ = Water Level Taken After 24 Hours
◄ = Loss of Drilling Water
HC = Hole Cave

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	STD. PENETRATION RESISTANCE BLOWS/FOOT
Very Soft	0 to 2
Soft	3 to 4
Firm	5 to 8
Stiff	9 to 15
Very Stiff	16 to 30
Hard	31 to 50
Very Hard	Over 50

RELATIVE DENSITY OF COHESIONLESS SOILS

RELATIVE DENSITY	STD. PENETRATION RESISTANCE BLOWS/FOOT
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	Over 50

SAMPLER TYPES

(Shown in Samples Column)

- Shelby Tube
- Split Spoon
- Rock Core
- No Recovery

TERMS

Standard Penetration Resistance - The Number of Blows of 140 lb. Hammer Falling 30 in. Required to Drive 1.4 in. I.D. Split Spoon Sampler 1 Foot. As Specified in ASTM D-1586.

REC - Total Length of Rock Recovered in the Core Barrel Divided by the Total Length of the Core Run Times 100%.

RQD - Total Length of Sound Rock Segments Recovered that are Longer Than or Equal to 4" (mechanical breaks excluded) Divided by the Total Length of the Core Run Times 100%.

PROJECT:	NHC Library at Northchase Wilmington, North Carolina 22060142	**HAND AUGER BORING LOG: B-1**
DATE STARTED: **7/6/23**	DATE FINISHED: **7/6/23**	NOTES:
SAMPLING METHOD: **Hand Auger**	PERFORMED BY: **S&ME/M. Looney**	
WATER LEVEL: **Not Encountered.**		

Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		Topsoil - 6 inches.		
1		**SILTY SAND (SM)** - Gray, some low plasticity to non-plastic fines, moist		
2		- - - Tan		
3				
4		Boring terminated at 4 ft Target Depth		

PROJECT:	NHC Library at Northchase Wilmington, North Carolina 22060142	**HAND AUGER BORING LOG: B-2**
DATE STARTED: **7/6/23**	DATE FINISHED: **7/6/23**	NOTES:
SAMPLING METHOD: **Hand Auger**	PERFORMED BY: **S&ME/M. Looney**	
WATER LEVEL: **Not Encountered.**		

Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		Topsoil - 4 inches.		
1		**SILTY SAND (SM)** - Tan, some low plasticity to non-plastic fines, moist.		
2				
3		- - - White		
4		Boring terminated at 4 ft Target Depth		

PROJECT:	NHC Library at Northchase Wilmington, North Carolina 22060142	**HAND AUGER BORING LOG: B-3**
DATE STARTED: **7/6/23**	DATE FINISHED: **7/6/23**	NOTES:
SAMPLING METHOD: **Hand Auger**	PERFORMED BY: **S&ME/M. Looney**	
WATER LEVEL: **Not Encountered.**		

Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		Topsoil - 4 inches.		
1		**SILTY SAND (SM)** - Tan, some low plasticity to non-plastic fines, moist.		
2		- - - White		
3				
4		Boring terminated at 4 ft Target Depth		

PROJECT: **NHC Library at Northchase**
Wilmington, North Carolina
22060142

HAND AUGER BORING LOG: B-4

DATE STARTED: **7/6/23** DATE FINISHED: **7/6/23**

NOTES:

SAMPLING METHOD: **Hand Auger** PERFORMED BY: **S&ME/M. Looney**

WATER LEVEL: **Not Encountered.**

Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL	DYNAMIC CONE PENETRATION RESISTANCE (blows/1.75 in.) 10 20 30 60 80	DCP VALUE
		Topsoil - 4 inches.				11
		SILTY SAND (SM) - Medium Dense, tan, some low plasticity to non-plastic fines, moist.				
1		- - - Loose				9
2		- - - Medium dense				11
3						11
4		Boring terminated at 4 ft Target Depth				13

PROJECT: **NHC Library at Northchase**
Wilmington, North Carolina
22060142

HAND AUGER BORING LOG: B-5

DATE STARTED: **7/6/23** DATE FINISHED: **7/6/23**

NOTES:

SAMPLING METHOD: **Hand Auger** PERFORMED BY: **S&ME/M. Looney**

WATER LEVEL: **Not Encountered.**

Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL	DYNAMIC CONE PENETRATION RESISTANCE (blows/1.75 in.) 10 20 30 60 80	DCP VALUE
		Topsoil - 4 inches.				8
		SILTY SAND (SM) - Loose, tan, some low plasticity tonon-plastic fines, moist.				
1		- - - Medium Dense				13
2						11
3		- - - Loose				10
4		Boring terminated at 4 ft Target Depth				10

PROJECT: **NHC Library at Northchase**
Wilmington, North Carolina
22060142

HAND AUGER BORING LOG: B-6

DATE STARTED: **7/6/23** DATE FINISHED: **7/6/23**

NOTES:

SAMPLING METHOD: **Hand Auger** PERFORMED BY: **S&ME/M. Looney**

WATER LEVEL: **Not Encountered.**

Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL	DYNAMIC CONE PENETRATION RESISTANCE (blows/1.75 in.) 10 20 30 60 80	DCP VALUE
		Topsoil - 8 inches.				9
1		**SILTY SAND (SM)** - Loose, brown, some low plasticity to non-plastic fines, moist.				9
2		- - - Medium dense				13
3		- - - Tan				14
4		Boring terminated at 4 ft Target Depth				20+

PROJECT:	NHC Library at Northchase Wilmington, North Carolina 22060142	**HAND AUGER BORING LOG: B-7**
DATE STARTED: **7/6/23**	DATE FINISHED: **7/6/23**	NOTES:
SAMPLING METHOD: **Hand Auger**	PERFORMED BY: **S&ME/M. Looney**	
WATER LEVEL: **Not Encountered.**		

Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL
		Topsoil - 4 inches.		
1		**SILTY SAND (SM)** - Tan, some low plasticity to non-plastic fines, moist.		
2				
3		- - - White		
4		Boring terminated at 4 ft Target Depth		

PROJECT:	NHC Library at Northchase Wilmington, North Carolina 22060142	**HAND AUGER BORING LOG: B-8**
DATE STARTED: **7/6/23**	DATE FINISHED: **7/6/23**	NOTES:
SAMPLING METHOD: **Hand Auger**	PERFORMED BY: **S&ME/M. Looney**	
WATER LEVEL: **Not Encountered.**		

Depth (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (feet)	WATER LEVEL	DYNAMIC CONE PENETRATION RESISTANCE (blows/1.75 in.) 10 20 30 60 80	DCP VALUE
		Topsoil - 6 inches.				13
1		**SILTY SAND (SM)** - Medium dense, tan, some low plasticity to non-plastic fines, moist.				12
2						14
3		- - - White				12
4		Boring terminated at 4 ft Target Depth				15

Appendix III– Laboratory Testing

Form No: TR-D2216-T265-2
Revision No. 1
Revision Date: 08/16/17

LABORATORY DETERMINATION OF WATER CONTENT

ASTM D 2216 ☑ *AASHTO T 265* ☐

S&ME, Inc. - Wilmington: 3006 Hall Waters Drive, Suite 100, Wilmington, NC 28405

Project #:	22060142	Report Date:	7/9/23
Project Name:	New Hanover County Library at North Chase	Test Date(s):	7/6-7/9/23
Client Name:	New Hanover County Property Management (NHC)		
Client Address:	200 Division Dr., Wilmington, NC 28405		
Sample by:	S&ME(J.Prevatte)	Sample Date(s):	7/6/23
Sampling Method:	N/A	Drill Rig :	N/A

Method: **A (1%)** **B (0.1%)** ☑ Balance ID. 14862 Calibration Date: 7/1/23 Oven ID. 14993 Calibration Date: 7/20/22

Boring No.	Sample No.	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Weight	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
B-1	S-1	1'-2'	W	0.00	244.76	222.10	22.66	10.2%
B-2	S-1	1'-2'	Z	0.00	255.35	244.65	10.70	4.4%
B-3	S-1	1'-2'	A	0.00	241.94	222.39	19.55	8.8%
B-3	S-2	2'-3'	D	0.00	259.63	235.76	23.87	10.1%
B-4	S-1	1'-2'	H	0.00	242.51	227.66	14.85	6.5%
B-5	S-1	1'-2'	1	0.00	242.75	219.55	23.20	10.6%
B-5	S-2	2'-3'	520	0.00	261.08	234.57	26.51	11.3%
B-6	S-1	1'-2'	M	0.00	248.51	229.14	19.37	8.5%
B-7	S-1	1'-2'	C	0.00	242.83	224.23	18.60	8.3%
B-4 to B-6	Bulk(Comp)	0.5'-2.0'	#	0.00	228.28	210.21	18.07	8.6%

Notes / Deviations / References

Tests Performed By: J.FAUCETTE

AASHTO T 265: Laboratory Determination of Moisture Content of Soils

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Jason Faucette	Jason Faucette Jul 9 2023 11:07 AM	Laboratory Supervisor	7/9/2023
Technical Responsibility	*Signature*	*Position*	*Date*

Results shown in this report, relate only to the samples noted above.

Form No: TR-D1140-1
Revision No. 1
Revision Date: 8/2/17

MATERIAL FINER THAN THE #200 SIEVE

ASTM D1140

S&ME, Inc. - Wilmington: 3006 Hall Waters Drive, Suite 100, Wilmington, NC 28405

Project #:	22060142	Report Date:	7/9/23
Project Name:	New Hanover County Library at North Chase	Test Date(s):	7/6-7/9/23
Client Name:	New Hanover County Property Management (NHC)		
Client Address:	200 Division Dr., Wilmington, NC 28405		
Sample by:	J.Prevatte	Sample Dates:	7/6/23
Sampling Method:	N/A	Drill Rig :	N/A

Method; A ☐ **B** ☑ Soaked ☑ Soak Time **2.0 hrs**

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Tare Wt. + Dry Wt. after Wash	% Passing #200
				grams	grams	grams	grams	%
B-1	S-1	1.0'-2.0'	W	0.00	244.76	222.10	169.04	**23.9%**
B-3	S-2	2.0'-3.0'	D	0.00	259.63	235.76	191.20	**18.9%**
B-4	S-1	1.0'-2.0'	H	0.00	242.51	227.66	183.19	**19.5%**
B-5	S-2	2.0'-3.0'	520	0.00	261.08	234.57	187.09	**20.2%**
B-4 to B-6	Bulk(Comp.)	0.5'-2.0'	#	0.00	228.28	210.21	164.19	**21.9%**

Balance ID. *14862* *Calibration Date:* *7/1/23* *#200 Sieve* *14977* *Calibration Date:* *1/26/23*

Notes / Deviations / References: ASTM D1140: Amount of Material in Soil Finer Than the No. 200 (75-um)) Sieve

All Taken from building/pavement footprint **All Samples soaked 2.0 hours**

B-1/S-1- Gray-Brown Silty SAND (SM)

B-3/S-2- Tan Silty SAND (SM)

B-4/S-1- Gray-Brown Silty SAND (SM)

B-5/S-2- Tan Silty SAND (SM)

B-4 toB-6 (Composite/Bulk): Gray-Brown Silty SAND (SM) **Tests Performed By: J.FAUCETTE**

Jason Faucette	Jason Faucette Jul 11 2023 1:56 PM	Laboratory Supervisor	7/9/2023
Technical Responsibility	*Signature*	*Position*	*Date*

Results shown in this report, relate only to the samples noted above.

Form No. TR-D698-2
Revision No. : 1
Revision Date: 07/25/17

MOISTURE - DENSITY REPORT

Quality Assurance

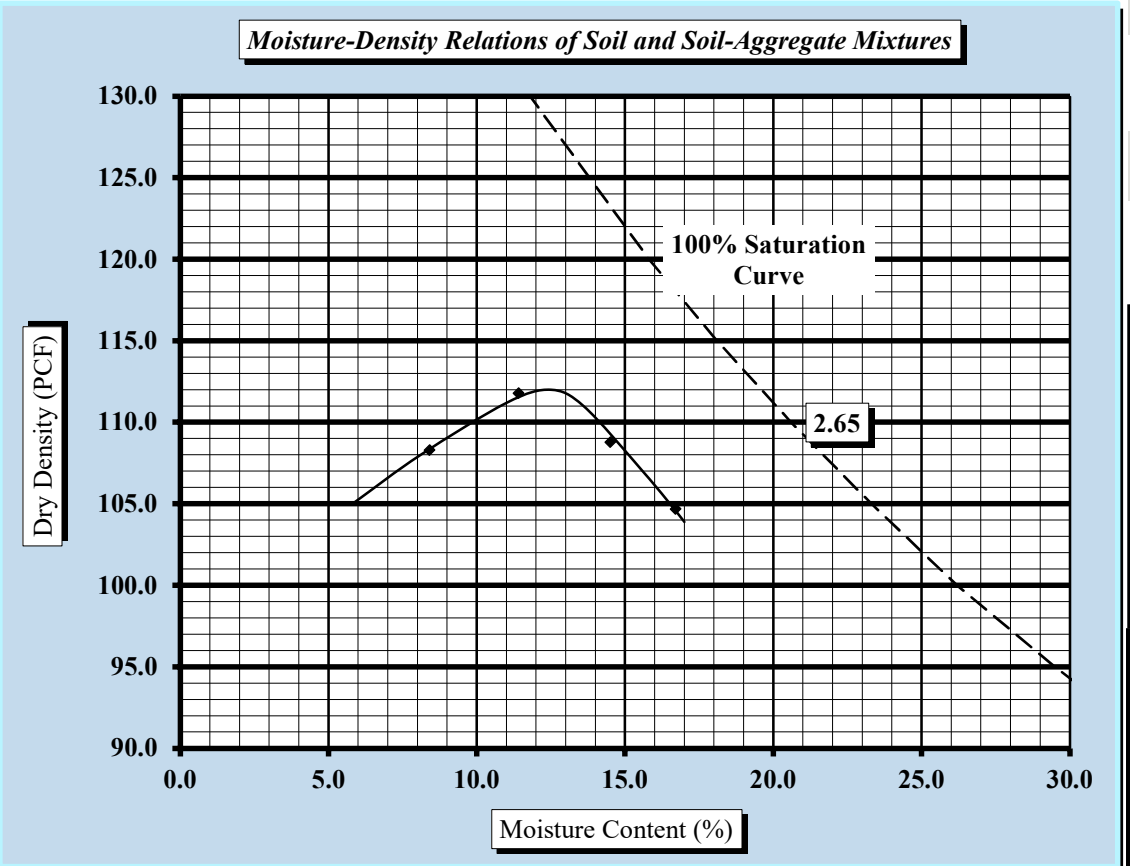
S&ME, Inc. - Wilmington: 3006 Hall Waters Drive, Suite 100, Wilmington, NC 28405

S&ME Project #:	22060142	Report Date:	7/8/23
Project Name:	New Hanover County Library at North Chase	Test Date(s):	7/6-7/8/23
Client Name:	New Hanover County Property Management (NHC)		
Client Address:	200 Division Dr., Wilmington, NC 28405		

Sample Id:	110(2023)	Type:	Site Material	Sample Date:	7/6/2023
Location:	Pavement (Composite)	Source Loc:	B4 to B6(Bulk)	Depth:	0.5'-2.0'
Sample Description:	Gray-Brown Silty SAND (SM)				

Maximum Dry Density 112.0 PCF. Optimum Moisture Content 12.5%

ASTM D 698 - - Method A



Soil Properties	
Natural Moisture Content	8.6%
Assumed S.G. of Soil	2.650
Liquid Limit	NP
Plastic Limit	NP
Plastic Index	NP

% Passing	
3/4"	100.0%
3/8"	100.0%
#4	100.0%
#10	100.0%
#40	98.4%
#60	92.0%
#100	54.7%
#200	23.3%

Oversize Fraction	
Bulk Gravity	
% Moisture	N/A
% Oversize	
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Rammer ☐ Manual Rammer ☒ Moist Preparation ☐ Dry Preparation ☒

References / Comments / Deviations: **Tests Performed By: J.FAUCETTE**

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Jason Faucette	Jason Faucette Jul 8 2023 12:51 PM	Laboratory Supervisor	7/8/2023
Technical Responsibility	*Signature*	*Position*	*Date*

Results shown in this report, relate only to the sample noted above.

Form No. TR-D1883-T193-3
Revision No. 2
Revision Date: 08/11/17

CBR (CALIFORNIA BEARING RATIO) OF LABORATORY COMPACTED SOIL

ASTM D 1883

S&ME, Inc. - Myrtle Beach: 1330 Highway 501 Business, Conway, SC 29526

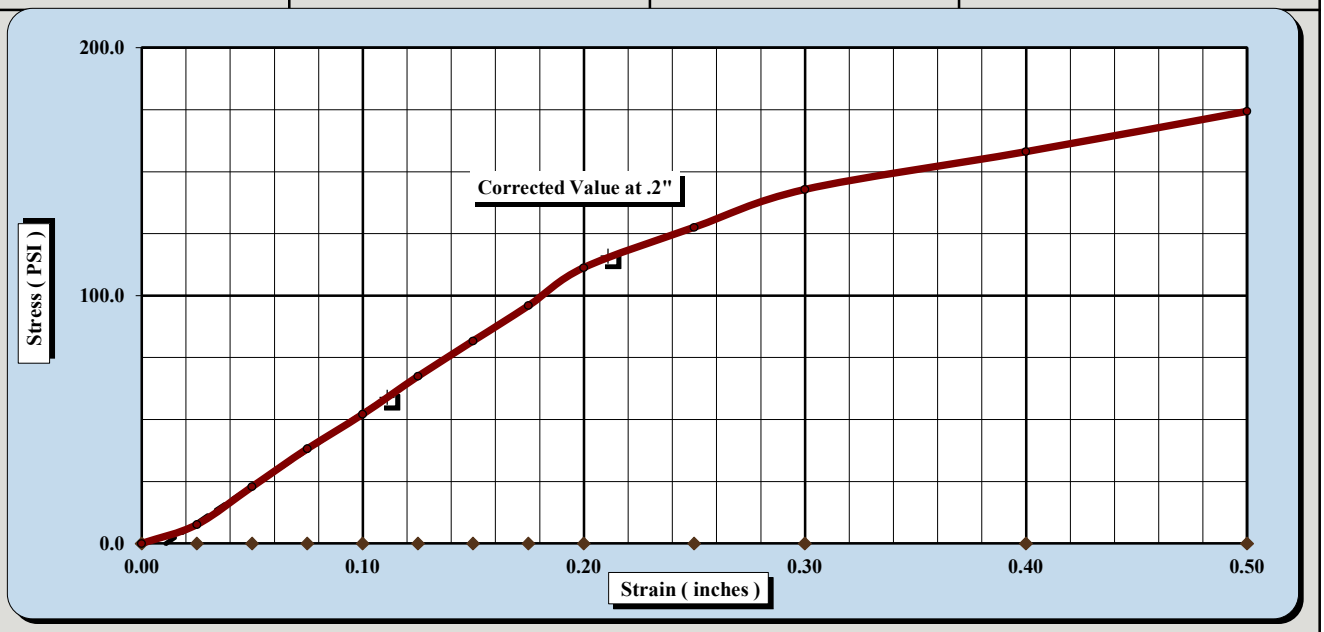
Project #:	22060142	Report Date:	7/25/2023
Project Name:	New Hanover County Library at North Chase	Test Date(s)	7/21/2023
Client Name:	New Hanover County Property Management (NHC)	Amended Report	
Client Address:	200 Division Dr., Wilmington, NC 28405	Original Report 2/31/07	
Sample Id:	110(2023)	Type: Site Material	Sample Date: 7/6/2023
Location:	Pavement (Composite)	Source Loc: B4 to B6(Bulk)	Depth: 0.5'-2.0'

Sample Description: Gray-Brown Silty SAND (SM)

ASTM D 698 *Method A* Maximum Dry Density: 112.0 PCF Optimum Moisture Content: 12.5%

Compaction Test performed on grading complying with CBR spec. % Retained on the 3/4" sieve: 1.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in. 5.2	CBR at 0.2 in. 7.4	CBR at 0.1 in. 5.9	CBR at 0.2 in. 7.7



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		*After Soaking*	
Compactive Effort (Blows per Layer)	43		
Initial Dry Density (PCF)	109.5	Final Dry Density (PCF)	109.6
Moisture Content of the Compacted Specimen	12.7%	Moisture Content (top 1" after soaking)	17.4%
Percent Compaction	97.8%	Percent Swell	-0.1%

Soak Time: 96 hrs. Surcharge Weight 20.0 Surcharge Wt. per sq. Ft. 101.9

Liquid Limit [ ] Plastic Index [ ] Apparent Relative Density --

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Specific Gravity: ASTM D 854, Classification: ASTM D 2487

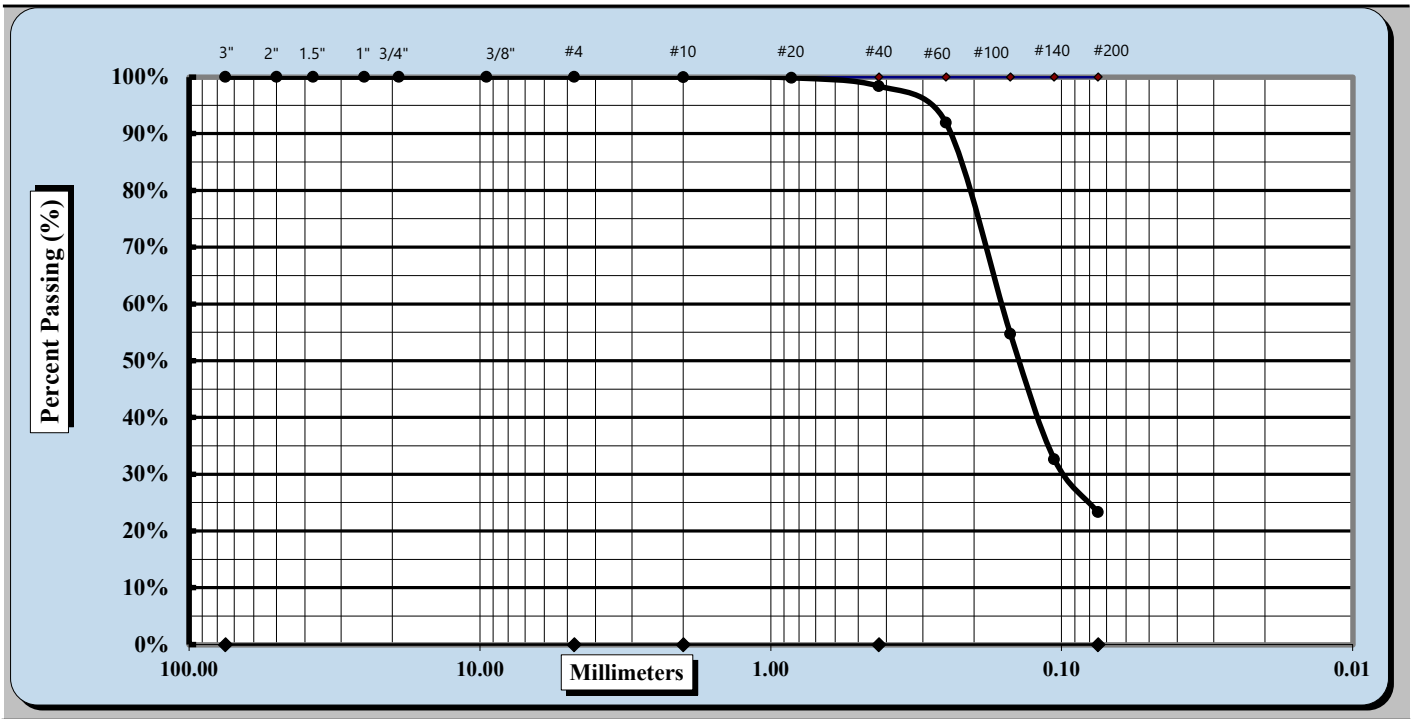
Tommy Still	TCS	Principal Engineer	7/25/2023
Technical Responsibility	*Signature*	*Position*	*Date*

SIEVE ANALYSIS OF SOIL

ASTM D6913

S&ME, Inc. - Wilmington: 3006 Hall Waters Drive, Suite 100, Wilmington, NC 28405

Project #:	22060142	Record Date:	7/8/23
Project Name:	New Hanover County Library at North Chase	Lab Report #:	1 of 1
Client Name:	New Hanover County Property Management (NHC)	Date Received:	7/6/23
Received By:	J. Faucette Sampled by: M. Looney	Date Sampled:	7/6/23
Location:	Site (Pavement Area Composite from B4 to B-6)		
Log/Sample Id.	110(Bulk) Type: Site Material	Elev/Depth:	0.5'-2.0'
Sample Description:	Gray-Brown Silty SAND (SM)		



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Method: B Procedure for obtaining Specimen: Moist Dispersion Process: soaked with dispersant

Maximum Particle Size	#10	Coarse Sand	0.0%	Fine Sand	75.1%
Gravel	0.0%	Medium Sand	1.6%	Silt & Clay	23.3%
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP
Maximum Dry Density	112.0 PCF	Assumed SG(D854)	2.650	% Absorption	N/A
Optimum Moisture	12.5%	Natural Moisture	8.6%	CBR	N/A

Notes / Deviations / References:

Material tested was from on site (Bulk Composite Sample from B-4, B-5 and B-6/Pavement Area).

Tests Performed By: J.FAUCETTE

Jason Faucette	Jason Faucette Jul 8 2023 12:40 PM	Laboratory Supervisor	7/8/2023
Technical Responsibility	*Signature*	*Position*	*Date*

Results shown in this report, relate only to the sample noted above

Form No. TR-D4318-T89-90
Revision No. 1
Revision Date: 7/26/17

LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX

ASTM D 4318 ☒ AASHTO T 89 ☐ AASHTO T 90 ☐

S&ME, Inc. - Wilmington: 3006 Hall Waters Drive, Suite 100, Wilmington, NC 28405

Project #:	22060142	Report Date:	7/8/23
Project Name:	New Hanover County Library at North Chase	Test Date(s)	7/6-7/8/23
Client Name:	New Hanover County Property Management (NHC)		
Client Address:	200 Division Dr., Wilmington, NC 28405		

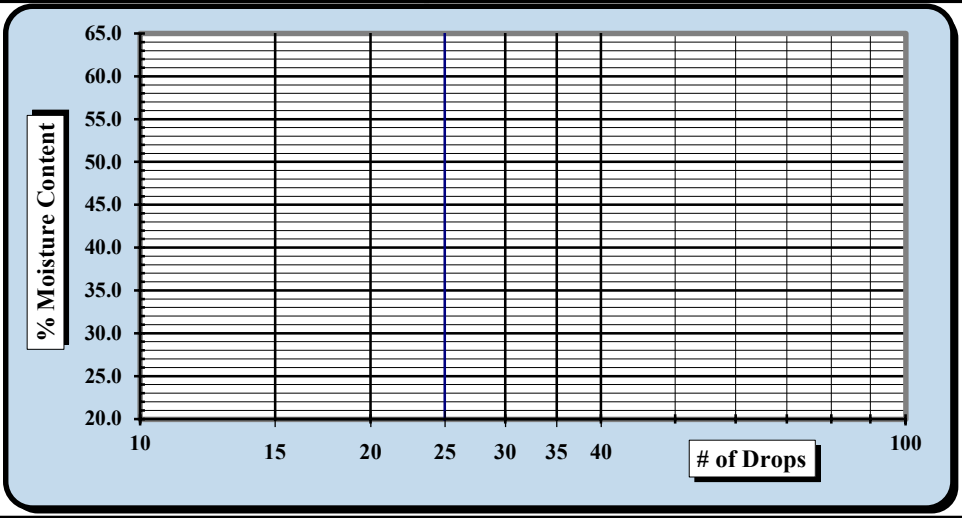
Sample Id: 110 Type: Site Material Sample Date: 7/6/23

Location: Pavement Area Source Loc.: B-4 to B-6/Bulk(Comp) Depth(ft): 0.5'-2.0'

Sample Description: Gray-Brown Silty SAND (SM)

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	14862	7/1/2022	Grooving tool	14947(A)	7/11/2022
LL Apparatus	14958	7/11/2022	Grooving tool		
Oven	14993	7/20/2022	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	1	2	3				4	5	
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = **F** * FACTOR									
Ave.	*Average*									



One Point Liquid Limit

N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☒

Liquid Limit	
Plastic Limit	
Plastic Index	
Group Symbol	**NP**

Multipoint Method ☑
One-point Method ☐

Wet Preparation Dry Preparation Air Dried *Estimate the % Retained on the #40 Sieve: 2%*

Notes / Deviations / References: *ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils*

Tests Performed By: J.FAUCETTE ***No LL or PL could be determined, therfore classified as NP***

Jason Faucette	Jason Faucette Jul 8 2023 12:36 PM	Laboratory Supervisor	7/8/2023
Technical Responsibility	*Signature*	*Position*	*Date*

Results shown in this report, relate only to the sample noted above

Form No. TR-D4318-T89-90
Revision No. 1
Revision Date: 7/26/17

LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX

ASTM D 4318 ☒ AASHTO T 89 ☐ AASHTO T 90 ☐

S&ME, Inc. - Wilmington: 3006 Hall Waters Drive, Suite 100, Wilmington, NC 28405

Project #:	22060142	Report Date:	7/9/23
Project Name:	New Hanover County Library at North Chase	Test Date(s)	7/6-7/9/23
Client Name:	New Hanover County Property Management (NHC)		
Client Address:	200 Division Dr., Wilmington, NC 28405		

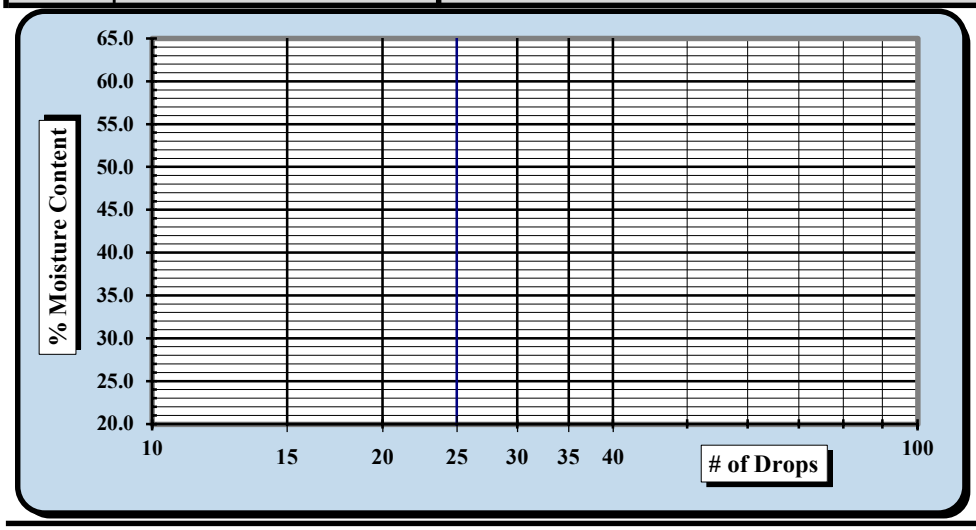
Sample Id: 112 Type: Site Material Sample Date: 7/6/23

Location: Bldg/Pavement FP Source Loc.: B-1/S-1 Depth(ft): 1.0'-2.0'

Sample Description: Gray-Brown Silty SAND

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	14862	7/1/2023	Grooving tool	14947(A)	7/11/2022
LL Apparatus	14958	7/11/2022	Grooving tool		
Oven	14993	7/20/2022	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	1	2	3				4	5	
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = **F** * FACTOR									
Ave.	*Average*									



One Point Liquid Limit

N	Factor	N	Factor
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21	0.979	27	1.009
22	0.985	28	1.014
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24	0.995	30	1.022
25	1.000		

NP, Non-Plastic ☒

Liquid Limit	
Plastic Limit	
Plastic Index	
Group Symbol	**NP**

Multipoint Method ☑
One-point Method ☐

Wet Preparation Dry Preparation Air Dried *Estimate the % Retained on the #40 Sieve:* N/A

Notes / Deviations / References: *ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils*

Tests Performed By: J.FAUCETTE ***No LL or PL could be determined, therfore classified as NP***

Jason Faucette	Jason Faucette Jul 9 2023 11:12 AM	Laboratory Supervisor	7/9/2023
Technical Responsibility	*Signature*	*Position*	*Date*

Results shown in this report, relate only to the sample noted above

Form No. TR-D4318-T89-90
Revision No. 1
Revision Date: 7/26/17

LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX

ASTM D 4318 ☒ AASHTO T 89 ☐ AASHTO T 90 ☐

S&ME, Inc. - Wilmington: 3006 Hall Waters Drive, Suite 100, Wilmington, NC 28405

Project #:	22060142	Report Date:	7/9/23
Project Name:	New Hanover County Library at North Chase	Test Date(s)	7/6-7/9/23
Client Name:	New Hanover County Property Management (NHC)		
Client Address:	200 Division Dr., Wilmington, NC 28405		

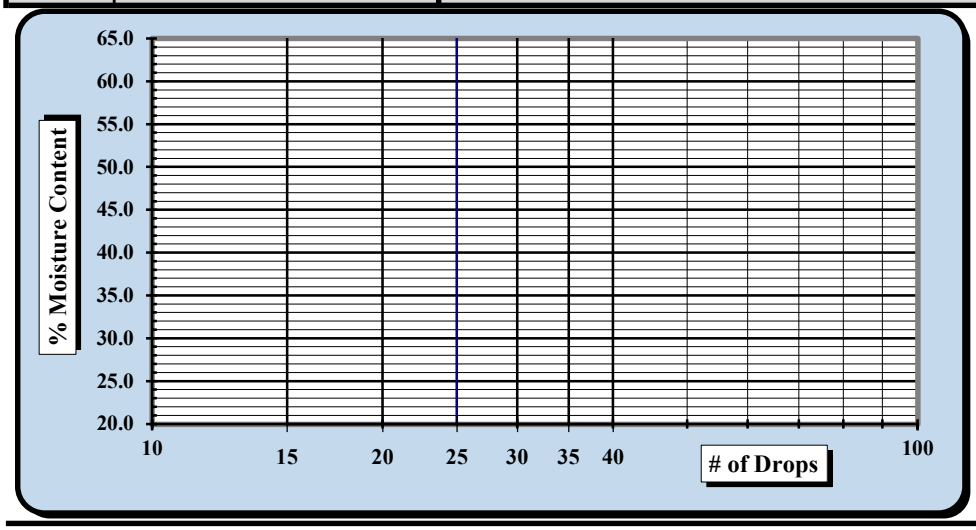
Sample Id: 112 Type: Site Material Sample Date: 7/6/23

Location: Bldg/Pavement FP Source Loc.: B-3/S-2 Depth(ft): 2.0'-3.0'

Sample Description: Tan Silty SAND (SM)

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	14862	7/1/2023	Grooving tool	14947(A)	7/11/2022
LL Apparatus	14958	7/11/2022	Grooving tool		
Oven	14993	7/20/2022	Grooving tool		

Pan #		Liquid Limit						Plastic Limit		
	Tare #:	1	2	3				4	5	
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = **F** * FACTOR									
Ave.	*Average*									



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25	1.000		

NP, Non-Plastic ☒

Liquid Limit	
Plastic Limit	
Plastic Index	
Group Symbol	**NP**

Multipoint Method ☑
One-point Method ☐

Wet Preparation Dry Preparation Air Dried *Estimate the % Retained on the #40 Sieve:* N/A

Notes / Deviations / References: *ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils*

Tests Performed By: J.FAUCETTE ***No LL or PL could be determined, therfore classified as NP***

Jason Faucette	Jason C. Faucette Jul 9 2023 11:13 AM	Laboratory Supervisor	7/9/2023
Technical Responsibility	*Signature*	*Position*	*Date*

Results shown in this report, relate only to the sample noted above

Form No. TR-D4318-T89-90
Revision No. 1
Revision Date: 7/26/17

LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX

ASTM D 4318 ☒ AASHTO T 89 ☐ AASHTO T 90 ☐

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Project Name:	New Hanover County Library at North Chase	Test Date(s)	7/6-7/9/23
Client Name:	New Hanover County Property Management (NHC)		
Client Address:	200 Division Dr., Wilmington, NC 28405		

Sample Id: 112 Type: Site Material Sample Date: 7/6/23

Location: Bldg/Pavement FP Source Loc.: B-4/S-1 Depth(ft): 1.0'-2.0'

Sample Description: Gray-Brown Silty SAND (SM)

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	14862	7/1/2023	Grooving tool	14947(A)	7/11/2022
LL Apparatus	14958	7/11/2022	Grooving tool		
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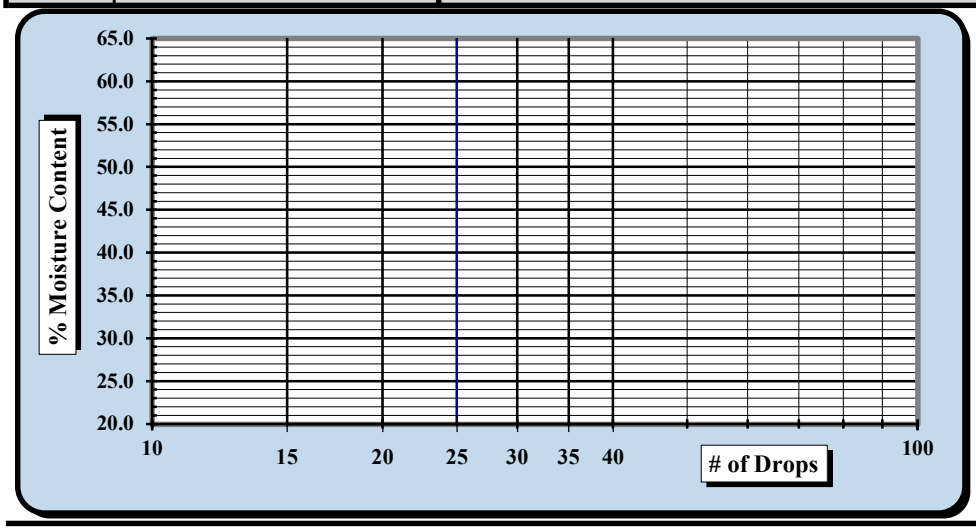
Pan #		Liquid Limit						Plastic Limit		
	Tare #:	1	2	3				4	5	
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = **F** * FACTOR									
Ave.	*Average*									



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Liquid Limit	
Plastic Limit	
Plastic Index	
Group Symbol	**NP**

Multipoint Method ☑
One-point Method ☐

Wet Preparation Dry Preparation Air Dried *Estimate the % Retained on the #40 Sieve:* N/A

Notes / Deviations / References: *ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils*

Tests Performed By: J.FAUCETTE ***No LL or PL could be determined, therfore classified as NP***

Jason Faucette — Jason Faucette Jul 9 2023 11:15 AM — Laboratory Supervisor — 7/9/2023

Technical Responsibility *Signature* *Position* *Date*

Results shown in this report, relate only to the sample noted above

Form No. TR-D4318-T89-90
Revision No. 1
Revision Date: 7/26/17

LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX

ASTM D 4318 ☒ AASHTO T 89 ☐ AASHTO T 90 ☐

S&ME, Inc. - Wilmington: 3006 Hall Waters Drive, Suite 100, Wilmington, NC 28405

Project #:	22060142	Report Date:	7/9/23
Project Name:	New Hanover County Library at North Chase	Test Date(s)	7/6-7/9/23
Client Name:	New Hanover County Property Management (NHC)		
Client Address:	200 Division Dr., Wilmington, NC 28405		

Sample Id: 112 Type: Site Material Sample Date: 7/6/23

Location: Bldg/Pavement FP Source Loc.: B-5/S-2 Depth(ft): 2.0'-3.0'

Sample Description: Tan Silty SAND (SM)

Type and Specification	*S&ME ID #*	*Cal Date:*	*Type and Specification*	*S&ME ID #*	*Cal Date:*
Balance (0.01 g)	14862	7/1/2023	Grooving tool	14947(A)	7/11/2022
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	Tare #:	1	2	3				4	5	
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B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
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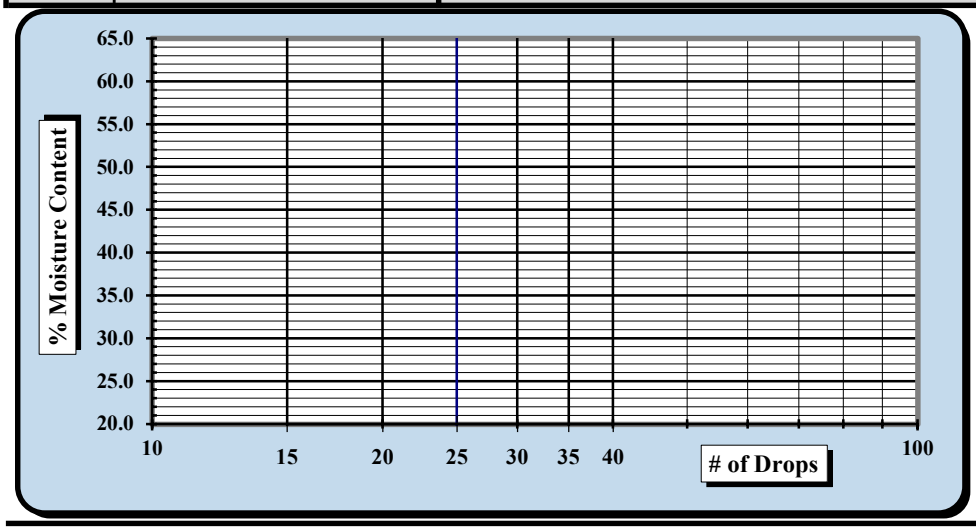
LL	LL = **F** * FACTOR									
Ave.	*Average*									



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Liquid Limit	
Plastic Limit	
Plastic Index	
Group Symbol	**NP**

Multipoint Method ☑
One-point Method ☐

Wet Preparation Dry Preparation Air Dried *Estimate the % Retained on the #40 Sieve:* N/A

Notes / Deviations / References: *ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils*

Tests Performed By: J.FAUCETTE ***No LL or PL could be determined, therfore classified as NP***

Jason Faucette — Jason Faucette Jul 9 2023 11:17 AM — Laboratory Supervisor — 7/9/2023

Technical Responsibility *Signature* *Position* *Date*

Results shown in this report, relate only to the sample noted above

LITTLE
DIVERSIFIED ARCHITECTURAL CONSULTING

Addendum

TO:	Bidders
FROM:	Little Diversified Architectural Consulting
	410 Blackwell Street, Suite 10
	Durham, NC 27701
DATE:	April 22, 2024
PROJECT:	Northchase Branch Library
	4400 Northchase Parkway NE
	Wilmington, NC 28405
PROJECT NO:	Little Job Number: 514.18349.00
ADDENDUM NO:	Addendum 4

Addendum 4:

The attention of the contractor(s) is called to the following clarifications, additions and changes in plans and specifications regarding the project referenced above. It shall be the responsibility of the contractor(s) to include these clarifications, additions, and changes to the Bid Set dated March 18, 2024, Addendum 1 dated April 04, 2024, Addendum 2 dated April 04, 2024 and Addendum 3 dated April 15, 2024.

Addendum: Clarification Items

General Clarifications:

- The Bid RFIs received to date and the responses to date have been attached to this summary.

Drawings:

General:

- G002 – Revised R-value of roof and exterior walls.

Landscape

- L200 – Note F revised to clarify contractor scope of work.
- L201 – Note F revised to clarify contractor scope of work.

Architecture:

- A020 – Revised R-value of roof and exterior walls. Batt insulation revised to R-21 instead of R-25.
- A210 – Mockup location added to elevation.
- A220 – Glazing legend/notes revised.
- A221 – Glazing legend/notes revised.
- A322 – Wall Section 2A/A322 revised (MCM joints added for clarity).
- A511 – Plan details revised. Enlarged Plan Detail 6A/A511 added.
- A523 – Section detail 3D/A523 revised to add beam above storefront.
- A821 – Elevation 4C/A821 revised.
- A822 – Elevation 1C/A822 revised to remove excess linework for clarity.
- A832 – Elevation 6A/A832 revised. Detail 3E/A832 & 4E/A832 added.
- A920 – Glazing legend/notes revised.

Structural

- S101 – Updated to show the location of the wind post for the window header and added a section reference to clarify slab edge condition
- S102 – Updated to show window header along GL 11 and updated the size of window sill along GL 1
- S103 – Added a reference note to clarify the connection of the wind post to the roof beam.
- S302 – Added a note to clarify the detail
- S312 – The size of the window sill update shown in detail 1D

Electrical Drawings:

- E111 – Panel L1 shifted plan north on wall. Lighting Control Panel (LCP) added in Mech/Elec Room.

- E121 – Lighting Control Panel (LCP) added in Mech/Elec Room
- E700 – Transformer in IDF/AV relabeled to “TRANSFORMER T-2” on riser diagram.
- E701 – Circuit breaker in Panel MDP (31,33,35) changed to 225A, smaller size/lower trip rating for corresponding conductor size. Circuit breaker in Panel MDP (38,40,42) changed to 70A, smaller size/lower trip rating for corresponding conductor size.

Attachments

- **Drawings:**
  - General: G002
  - Landscape; L200, L201
  - Architecture: A020, A210, A220, A221, A322, A511, A523, A821, A822, A832, A920
  - Structural: S101, S102, S103, S302, S312
  - Electrical: E111, E121, E700, E701

- RFI responses

END OF ADDENDUM

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: NORTHCASE BRANCH LIBRARY
Address: 4400 NORTHCHASE PARKWAY NE WILMINGTON, NC Zip Code: 28405
Owner/Authorized Agent: KEVIN CASON Phone # (910) 798-4338 E-Mail kcatson@mtgov.com
Owned By: ■ City/County ☐ Private ☐ State
Code Enforcement Jurisdiction: ■ City WILMINGTON ■ County NEW HANOVER ☐ State

CONTACT:

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural	Little Diversified Arch Cons	Charlotte Hagen	18219	(919) 474-2561	charlie.hagercrest@littleonline.com
Civil	Davenport	Curtis Day	055567	(202) 240-9066	CDay@davenportenvtl.com
Electrical	Little Diversified Arch Cons	Herb Bendillo	15363	(919) 474-2552	herbert.bendillo@littleonline.com
Fire Alarm				( )	
Plumbing	Little Diversified Arch Cons	Miles Grubbs	039783	(919) 474-2551	fred.jones@littleonline.com
Mechanical	Little Diversified Arch Cons	Miles Grubbs	039783	(919) 474-2558	miles.grubbs@littleonline.com
Sprinkler-Standpipe	TBD - delegated design by contractor			( )	
Structural	Little Diversified Arch Cons	Sohan Shetty	052684	(919) 474-2554	sohan.shetty@littleonline.com
Retaining Walls >5' High				( )	
Other				( )	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ■ New Building ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core- Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: EXISTING: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): _____
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): S33

RISK CATEGORY (Table 1604.5): **Current:** ☐ I ☐ II ☐ III ☐ IV
Proposed: ☐ I ☐ II ■ III ☐ IV

BASIC BUILDING DATA
Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ I-B ■ II-B ☐ III-B ☐ V-B
Sprinklers: ☐ No ☐ Partial ■ Yes ■ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ■ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ■ No ☐ Yes **Flood Hazard Area:** ■ No ☐ Yes
Special Inspections Required: ☐ No ■ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor		19,941	19,941
Basement			
TOTAL		19,941	19,941

ALLOWABLE AREA

Primary Occupancy Classification(s):
Assembly ☐ A-1 ☐ A-2 ■ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☐

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): _____
Special Uses (Chapter 4 – List Code Sections): _____
Special Provisions: (Chapter 5 – List Code Sections): _____
Mixed Occupancy: ■ No ☐ Yes Separation: N/A Hr. Exception: N/A

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

$$\frac{\text{N/A}}{} + \frac{\text{N/A}}{} + \ldots = \frac{\quad}{} \leq 1.00$$

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,2]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]
LEVEL 01	LIBRARY A-3	19,941 SF	38,000 SF	N/A	38,000 SF

[1] Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. Ratio (F/P) = _____ (F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase I_f = 100[F/P – 0.25] x W/30 = _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE [1]
Building Height in Feet (Table 504.3) [2]	30ft	28.5	2018 NC State Building Code: Fire Prevention Code [4]
Building Height in Stories (Table 504.4) [3]	3	1	

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1.
[3] The maximum height of open parking garages must comply with Table 406.5.4.
*Appendix D, Section D104.D105

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (w/ REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses		0 HR	N/A				
Bearing Walls							
Exterior							
North	> 30	0 HR					
East	> 30						
West	> 30						
South	> 30						
Interior							
Nonbearing Walls and Partitions							
Exterior walls							
North	> 30	0 HR					
East	> 30						
West	> 30						
South	> 30						
Interior walls and partitions							
Floor Construction Including supporting beams and joists		N/A					
Floor Ceiling Assembly							
Columns Supporting Floors							
Roof Construction, including supporting beams and joists							
Roof Ceiling Assembly							
Columns Supporting Roof							
Shaft Enclosures - Exit							
Shaft Enclosures - Other							
Corridor Separation							
Occupancy/Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ■ Yes
Exit Signs: ☐ No ■ Yes
Fire Alarm: ☐ No ■ Yes
Smoke Detection Systems: ☐ No ☐ Yes ■ Partial _____
Carbon Monoxide Detection: ■ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: G100

■ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations (if not on the site plan)
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
■ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
■ Occupant loads for each area
■ Exit sign locations (1013)
■ Exit access travel distances (1017)
☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☐ Dead end lengths (1020.4)
■ Clear exit widths for each exit door
■ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
■ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
■ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

UNIT CLASSIFICATION	TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED		TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	96" SPACES	132" SPACES	
LOT 1	50	105			5
TOTAL					

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATER CLOSETS			URINALS	LAVATORIES			SHOWERS /TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE	UNISEX		MALE	FEMALE	UNISEX		REGULAR	ACCESSIBLE
SPACE	EXIST'G										
	NEW	2*	4	3	2	2	2	3		2	2
	REQ'D	3	4	1	1	2	2	1		2	2

* 2 WC + 1 Urinal = 66.6% WC & 33.3% urinal Urinal substituted for less than 67% of required WC NCBC section 419.2

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ No ☐ Yes (The remainder of this section is not applicable)

Exempt Building: ■ No ☐ Yes (Provide code or statutory reference): _____

Climate Zone: ■ 3A ☐ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ■ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
(If "Other" specify source here) _____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly: SEE SHEET A020 - EXTERIOR SYSTEMS - ROOF
U-Value of total assembly: max. U-0.041
R-Value of insulation: R-30 cont. + R-30
Skylights in each assembly: 1
U-Value of skylight:
total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)
Description of assembly: SEE SHEET A020 - EXTERIOR SYSTEMS - WALL
U-Value of total assembly: max. U-0.077
R-Value of insulation: R-21 + R-3.8ci = (7.5 Ci) = R28ci
Openings (windows or doors with glazing): 1
U-Value of assembly: _____
Solar heat gain coefficient: _____
projection factor: _____
Door R-Values: _____

Walls below grade (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: NR

Floors over unconditioned space (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: NR

Floors slab on grade
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: R-15
Horizontal/vertical requirement: _____
slab heated: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

SEE ELECTRICAL DRAWINGS

Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive

Lighting schedule:
lamp type required: _____
number of lamps in fixture: _____
ballast type used in the fixture: _____
number of ballasts in fixture: _____
total wattage per fixture: _____
total interior wattage specified vs. allowed (whole space): _____
total exterior wattage specified vs. allowed: _____

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)
☐ C406.2 More Efficient HVAC Equipment Performance
☐ C406.3 Reduced Lighting Power Density
☐ C406.4 Enhanced Digital Lighting Controls
☐ C406.5 On-Site Renewable Energy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_s) _____
Seismic (I_E) _____

Live Loads: Roof _____ psf
Mezzanine _____ psf
Floor _____ psf

Ground Snow Load: _____ psf

Wind Load: Ultimate Design Wind Speed _____ mph (ASCE-7)
Exposure Category _____

SEE STRUCTURAL DRAWINGS

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration S_s_____ %g S_1_____ %g
Site Classification (ASCE 7) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data
Basic structural system ☐ Bearing Wall ☐ Dual w/Special Moment Frames
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☐

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) 2000 psf
Presumptive Bearing capacity _____ psf
Pile size, type, and capacity _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: _____
summer dry bulb: _____

Interior design conditions
winter dry bulb: _____
summer db _____
rh _____

SEE MECHANICAL DRAWINGS

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
Unitary
description of unit: _____
heating efficiency: _____
cooling efficiency: _____
size category of unit: _____
Boiler
Size category. If oversized, state reason.: _____
Chiller
Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

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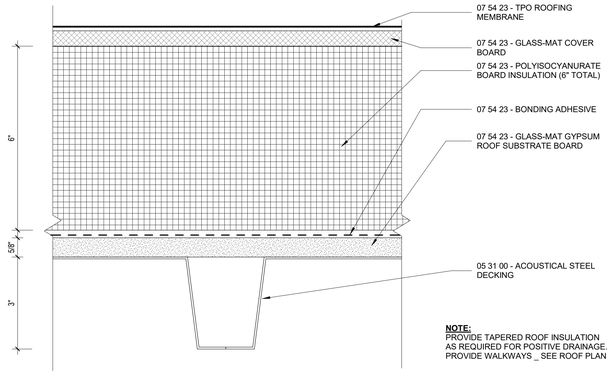
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Designer

PROJECT NAME
NORTHCHASE BRANCH LIBRARY
4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
BUILDING CODE SUMMARY-NC APPENDIX B

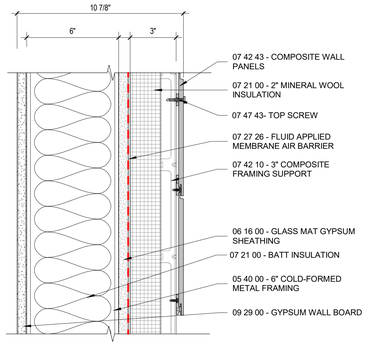
SHEET NUMBER
G002



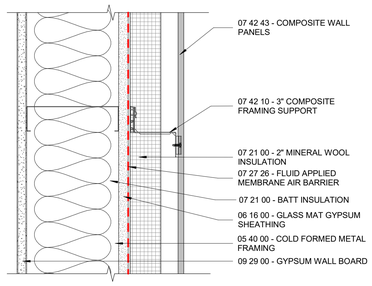
NOTE:
PROVIDE TAPERED ROOF INSULATION AS REQUIRED FOR POSITIVE DRAINAGE. PROVIDE WALKWAYS _ SEE ROOF PLAN

RS01

Description of Assembly	Thermoplastic PolyOlefin (TPO) Roofing Membrane , Cover Board, Insulation, Vapor Retarder, Substrate Board, Roof Deck
U-Value of Assembly	0.025
R-Value of Insulation	Rigid Insulation @ R-6.5 per inch



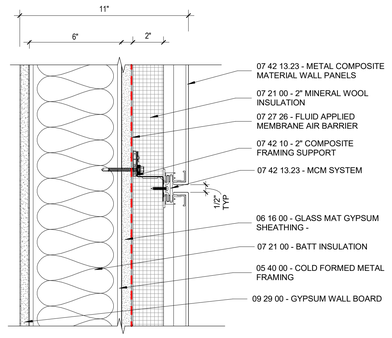
SECTION



PLAN

WS01

Description of Assembly	High Pressure Laminatel Rainscreen (HPL), Green Girt & Furring Channel Attachment, Mineral Wool CI, Air Barrier, Sheathing, Metal Framing w/ Cavity Insulation, Interior Finish
U-Value of Assembly	0.065
R-Value of Insulation	Cavity Batt Insulation R-21; Mineral Wool Board Insulation @ R-3.8 / inch



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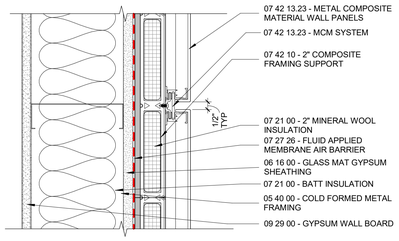
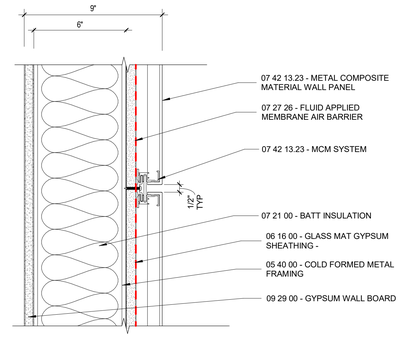


PLAN

WS02

Description of Assembly	Metal Composite Material (MCM) Rainscreen, Mineral Wool Insulation & Knight MFI System (Horizontal), Air Barrier, Sheathing, Metal Framing w/ Cavity Insulation
U-Value of Assembly	0.065
R-Value of Insulation	Cavity Batt Insulation R-21; Mineral Wool Board Insulation @ R-3.8 / inch



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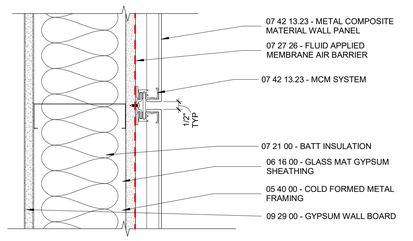
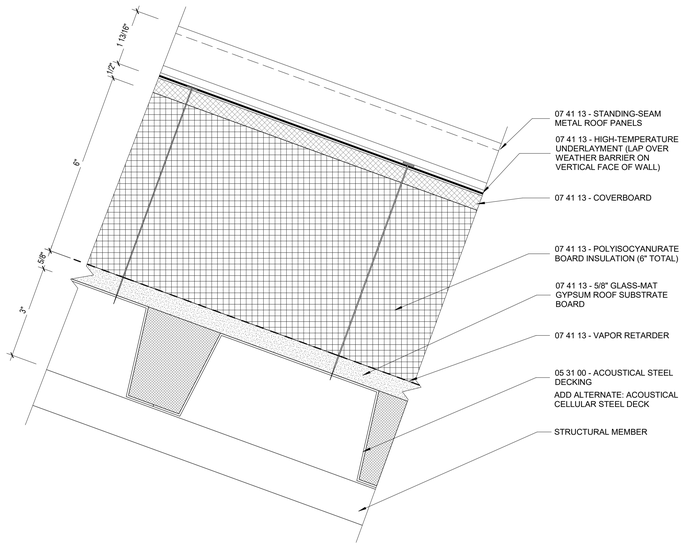


PLAN

WS02A

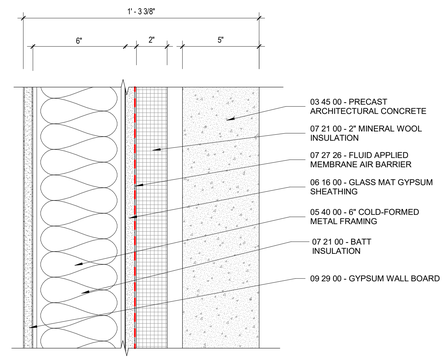
Description of Assembly	Metal Composite Material (MCM) Rainscreen, Air Barrier, Sheathing, Metal Framing w/ Cavity Insulation
U-Value of Assembly	0.065
R-Value of Insulation	Cavity Batt Insulation R-21

NOTE: THIS WALL TYPE OCCURS AT EDGE OF EXTERIOR CANOPY ONLY



RS02

Description of Assembly	Standing Seam Metal (SMS) Roof Panel, Self-adhering High Temperature Underlayment, Continuous Zee Purlin, 6" Rigid Insulation, Corrugated Metal Deck
U-Value of Assembly	0.072
R-Value of Insulation	Rigid Insulation @ R-6.5 per inch



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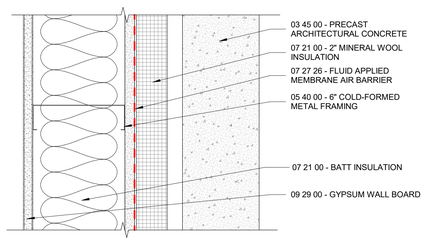
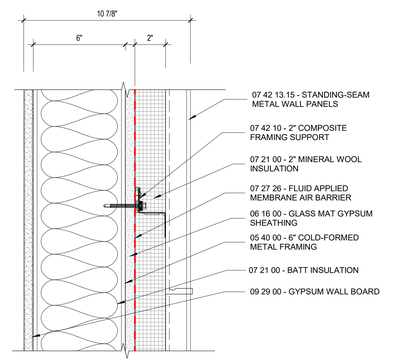


PLAN

WS03

Description of Assembly	Pre-cast Concrete Panel, Mineral Wool CI, Air Barrier, Sheathing, Metal Framing w/ Cavity Insulation, Interior Finish
U-Value of Assembly	0.065
R-Value of Insulation	Cavity Batt Insulation R-21; Mineral Wool Board Insulation @ R-3.8 / inch



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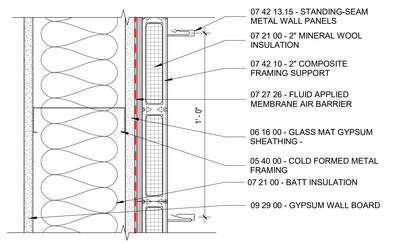

PLAN

WS04

Description of Assembly	Standing Seam Metal (SSM) Snap Lock Panels, Green Girt & Furring Channel Attachment, Mineral Wool CI, Air Barrier, Sheathing, Metal Framing w/ Cavity Insulation, Interior Finish. Continuous from Roof to Wall Panel.
U-Value of Assembly	0.065
R-Value of Insulation	Cavity Batt Insulation R-21; Mineral Wool Board Insulation @ R-3.8 / inch

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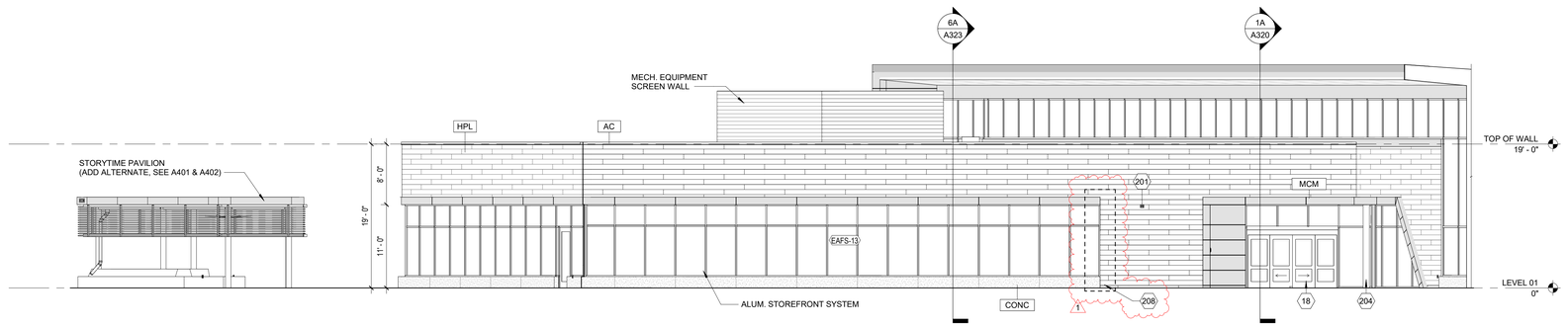
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Designer

PROJECT NAME
NORTHCHASE BRANCH LIBRARY
4400 Northchase Parkway NE
Wilmington NC 28405

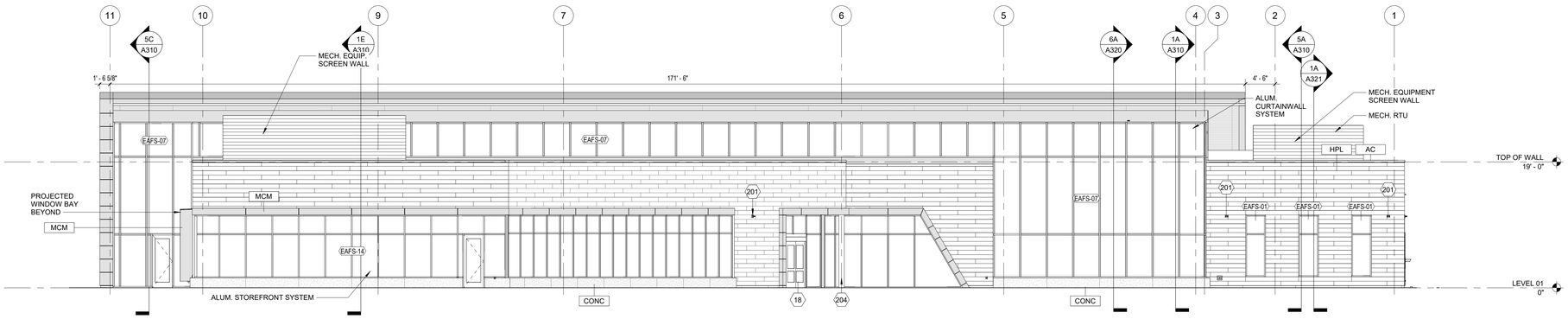
PROJECT NO.
514.18349.00

SHEET TITLE
EXTERIOR SYSTEMS - WALL AND ROOF

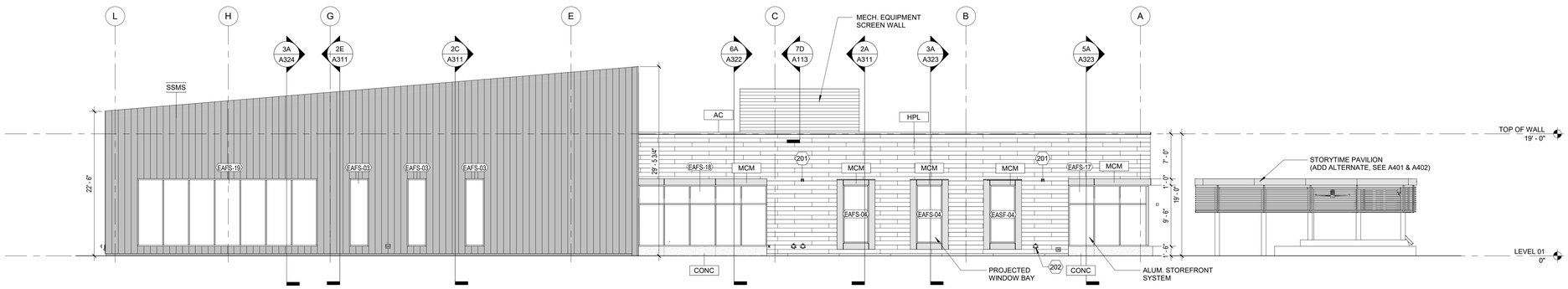
SHEET NUMBER
A020



1E ELEVATION - PLAN NORTHWEST (TRUE NORTH)
A210 1/8" = 1'-0"



1C ELEVATION - PLAN NORTH
A210 1/8" = 1'-0"



1A ELEVATION - PLAN EAST
A210 1/8" = 1'-0"

SHEET KEYNOTES

18	AUTOMATIC SLIDING ALUMINUM STOREFRONT DOORS (MATCH STOREFRONT SYSTEM).
201	EXTERIOR WALL SCONCE
202	OVERFLOW DRAIN OUTLET (CENTER BETWEEN WALL PANEL SEAMS AT WS04 WALL TYPE. COORDINATE WITH SHOP DRAWINGS PRIOR TO INSTALLATION)
204	EXPOSED STRUCTURAL STEEL COLUMN, PAINTED.
208	PROVIDE 4' WIDE MOCKUP OF AREA DASHED. INCLUDE ALL WALL COMPONENTS IN SPECIFIED/REVIEWED SHOP DRAWING COLOR.

1

MATERIALS LEGEND

AC	ALUMINUM COPING
CONC	5" DEEP PRECAST CONCRETE PANELS
HPL	HIGH PRESSURE LAMINATE WALL PANELS
MCM	METAL COMPOSITE MATERIAL PANELS
SSMS	STANDING SEAM METAL SYSTEM

BASIS OF DESIGN

HPL PRODUCT

PARKLEX PRODEMA - NATURSIDING ONESIDING
- 8" x 96" PANEL SIZE
- 'CINDER' COLOR
- CONCEALED FASTENERS WITH ONESIDING CLIP

ACM AND COPING

MATCH TO STOREFRONT COLOR

SSMS WALL

METAL ROOFING SYSTEMS: MRS S-2000 WALL PANEL
- 1.75" SNAP LOCK
- 'CHARCOAL GREY' COLOR

SSMS ROOF

METAL ROOFING SYSTEMS: MRS S-2500 PANEL
- 2" DOUBLE LOCK SEAM
- 'CHARCOAL GREY' COLOR

ALUMINUM VERTICAL SOLAR FINS (VERTICAL FIN ASSEMBLY)

OHIO GRATINGS, INC.
- 15" TALL, 8" AIRFOIL EXTRUSION
- CUSTOM KYNAR PAINT FINISH
- TOP AND BOTTOM MOUNTS

ALUMINUM HORIZONTAL SOLAR FINS (HORIZONTAL FIN ASSEMBLY)

OHIO GRATINGS, INC.
- 4" AIRFOIL EXTRUSION
- FACTORY MADE CORNERS
- END CAPS AT TERMINATIONS
- CUSTOM KYNAR PAINT FINISH
- ATTACHED TO ALLIGATOR CLIPS ON SUBSTRUCTURE

MECH SCREEN WALL / DUMPSTER WALL (LOUVERED EQUIPMENT ENCLOSURES)

ARCHITECTURAL LOUVERS
- FORMED ALUMINUM PANEL
- V2TH5 SCREEN
- 5" OC BLADE SPACING
- COLOR TO MATCH MCM

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DESIGN TEAM
Designer

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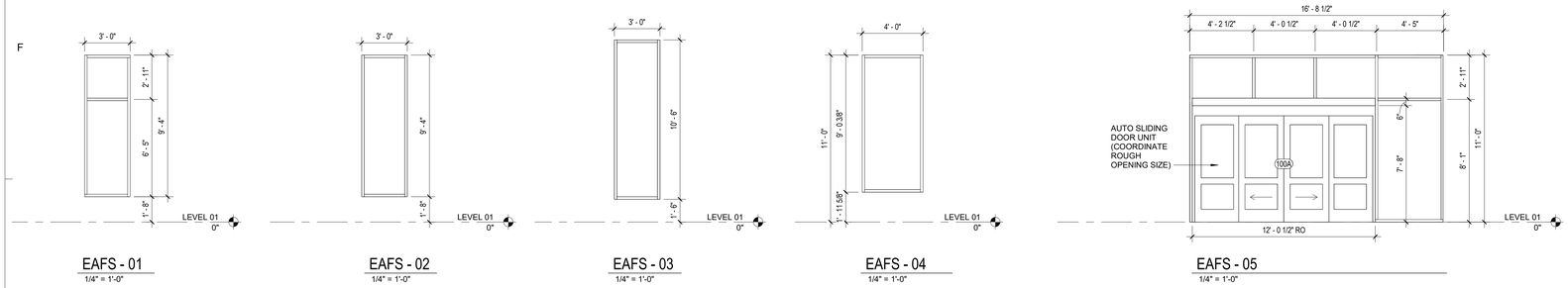
4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
EXTERIOR ELEVATIONS

SHEET NUMBER
A210



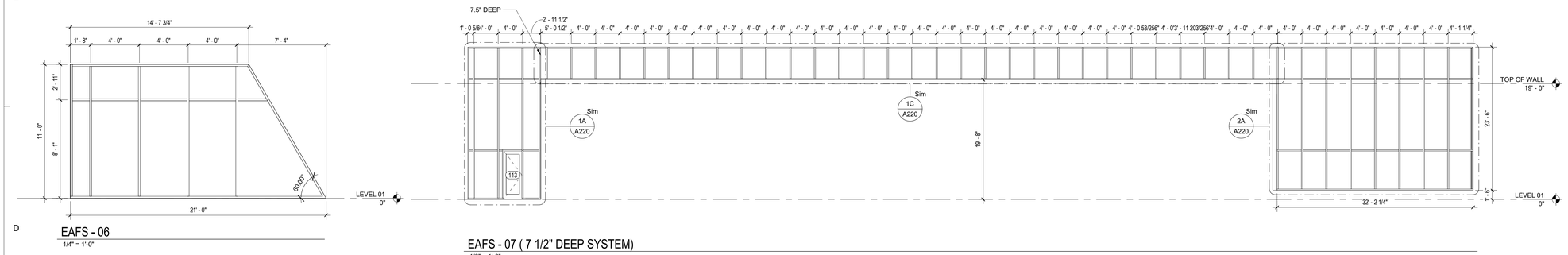
EAFS - 01
1/4" = 1'-0"

EAFS - 02
1/4" = 1'-0"

EAFS - 03
1/4" = 1'-0"

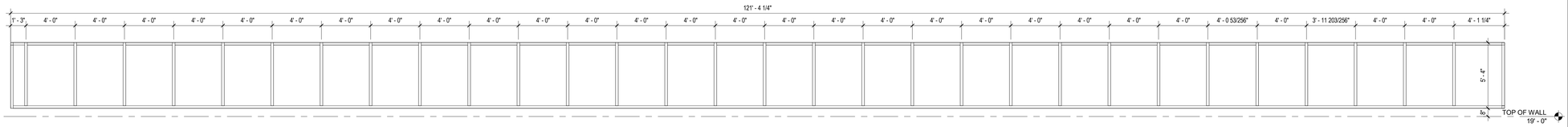
EAFS - 04
1/4" = 1'-0"

EAFS - 05
1/4" = 1'-0"

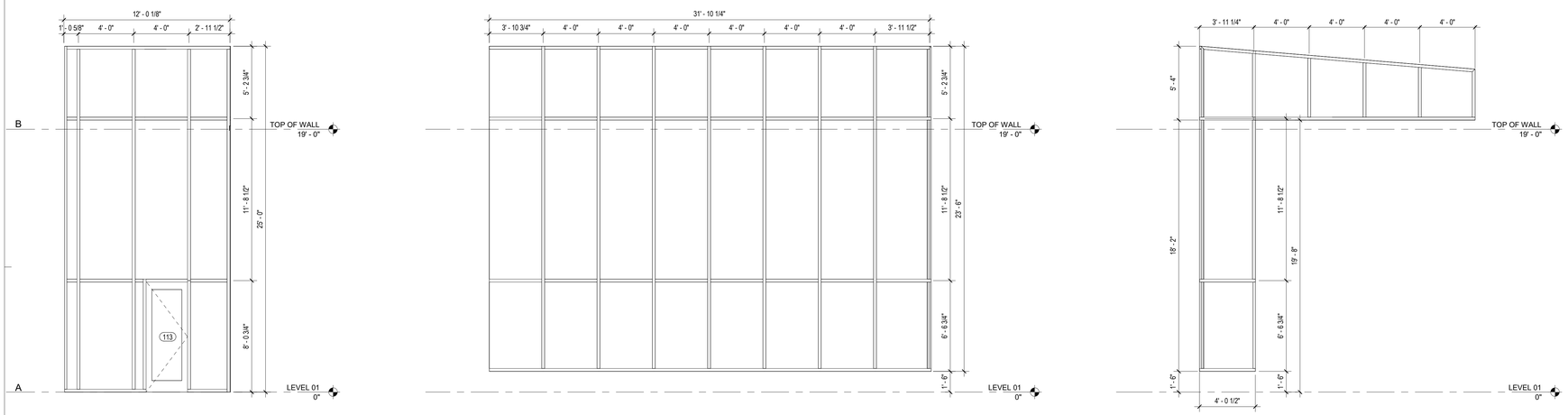


EAFS - 06
1/4" = 1'-0"

EAFS - 07 (7 1/2" DEEP SYSTEM)
1/8" = 1'-0"



1C A220 EAFS - 07A (7 1/2" DEEP SYSTEM)
1/4" = 1'-0"



1A A220 EAFS - 07B (7 1/2" DEEP SYSTEM)
1/4" = 1'-0"

2A A220 EAFS - 07C (7 1/2" DEEP SYSTEM)
1/4" = 1'-0"

EAFS - 08 (7 1/2" DEEP SYSTEM)
1/4" = 1'-0"

X GLAZING LEGEND

IG.1 1/4" TEMPERED GLASS
IG.2 1/4" TEMPERED GLASS (BACKPAINTED)
IG.3 1/4" TEMPERED GLASS (FROSTED)
IG.4 1/4" TEMPERED FIRE GLASS

EG.1 1" TEMPERED INSULATED GLASS
EG.2 1" TEMPERED INSULATED FIRE GLASS
EG.3 1" TEMPERED SPANDREL GLASS
EG.4 1" TEMPERED FRITTED GLASS

GENERAL NOTES

1. ALL ALUMINUM FRAMING SYSTEMS ARE 4 1/2" DEEP UNLESS INDICATED OTHERWISE
2. ALL ALUMINUM FRAMING SYSTEMS TO BE PREFINISHED.
3. ALL EXTERIOR GLAZING TO BE EG.1 UNLESS NOTED OTHERWISE.
4. ALL INTERIOR GLAZING TO BE IG.1 UNLESS NOTED OTHERWISE.
5. ALL STRUCTURAL SUPPORTS FOR ALUMINUM FRAMING SYSTEM TO BE CONCEALED INSIDE MULLIONS OR ABOVE CEILING.
6. OVERALL DIMENSIONS OF ALUMINUM FRAMING SYSTEM TO BE ADJUSTED FOR REQUIRED ROUGH OPENING/CONSTRUCTION TOLERANCES.

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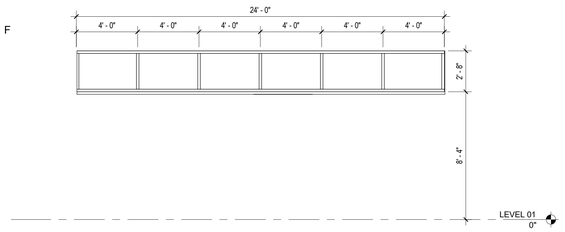
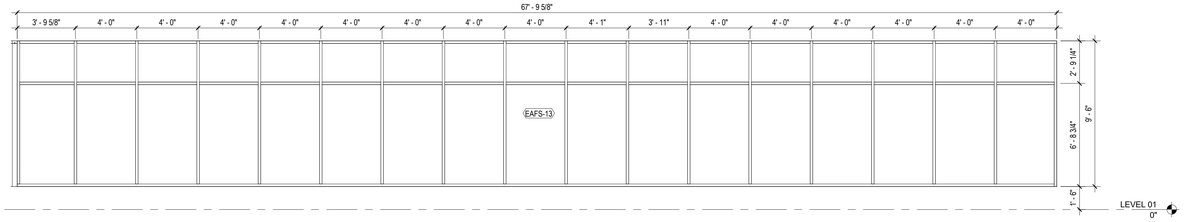
SHEET TITLE
EXTERIOR FRAMING SYSTEM ELEVATIONS

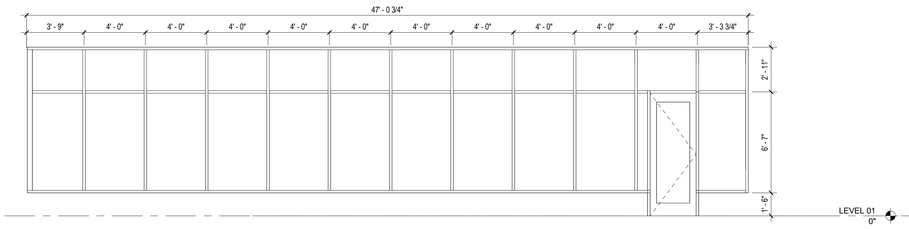
SHEET NUMBER
A220



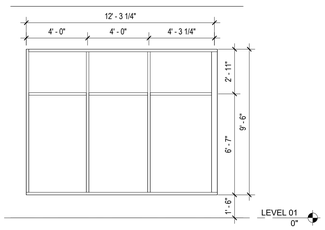
EAFS - 12
1/4" = 1'-0"



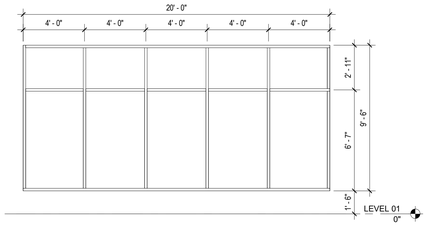
EAFS - 13
1/4" = 1'-0"



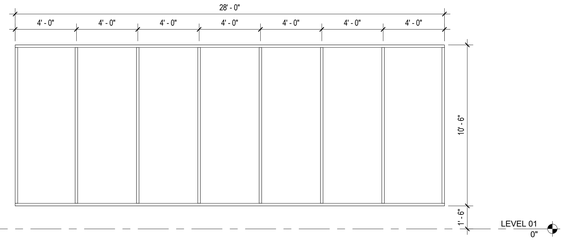
EAFS - 14
1/4" = 1'-0"



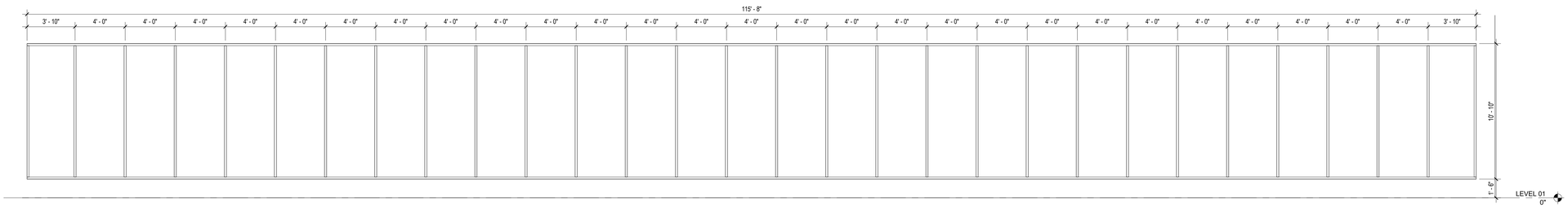
EAFS - 17
1/4" = 1'-0"



EAFS - 18
1/4" = 1'-0"



EAFS - 19
1/4" = 1'-0"



EAFS - 20
1/4" = 1'-0"

X GLAZING LEGEND

IG.1 1/4" TEMPERED GLASS
IG.2 1/4" TEMPERED GLASS (BACKPAINTED)
IG.3 1/4" TEMPERED GLASS (FROSTED)
IG.4 1/4" TEMPERED FIRE GLASS

EG.1 1" TEMPERED INSULATED GLASS
EG.2 1" TEMPERED INSULATED FIRE GLASS
EG.3 1" TEMPERED SPANDREL GLASS
EG.4 1" TEMPERED FRITTED GLASS

GENERAL NOTES

1. ALL ALUMINUM FRAMING SYSTEMS ARE 4 1/2" DEEP UNLESS INDICATED OTHERWISE
2. ALL ALUMINUM FRAMING SYSTEMS TO BE PREFINISHED.
3. ALL EXTERIOR GLAZING TO BE EG.1 UNLESS NOTED OTHERWISE
4. ALL INTERIOR GLAZING TO BE IG.1 UNLESS NOTED OTHERWISE
5. ALL STRUCTURAL SUPPORTS FOR ALUMINUM FRAMING SYSTEM TO BE CONCEALED INSIDE MULLIONS OR ABOVE CEILING.
6. OVERALL DIMENSIONS OF ALUMINUM FRAMING SYSTEM TO BE ADJUSTED FOR REQUIRED ROUGH OPENING/CONSTRUCTION TOLERANCES.

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Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Designer

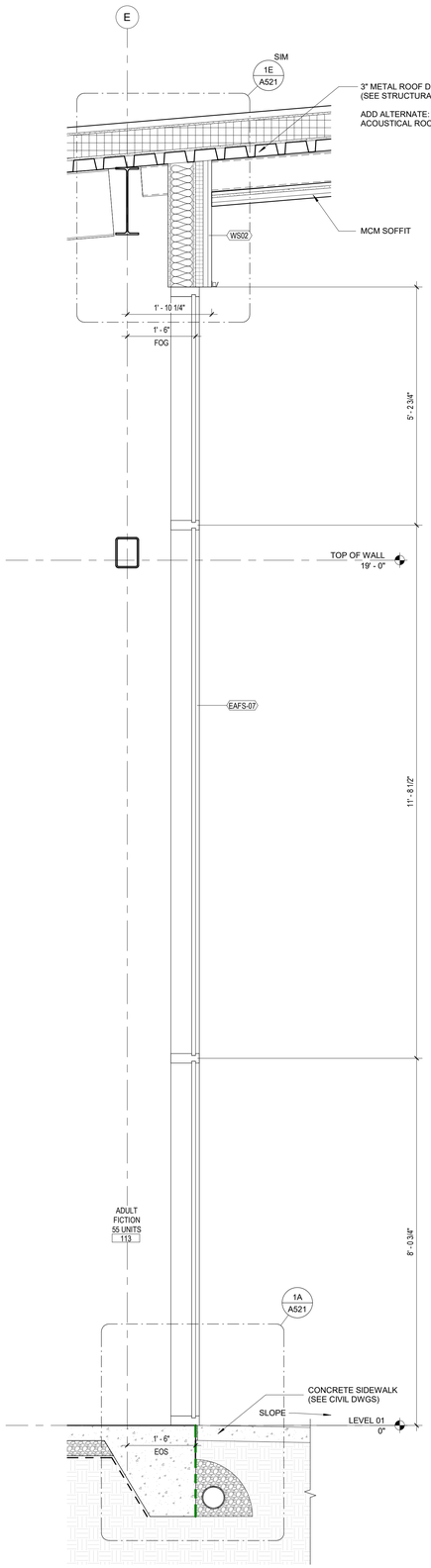
PROJECT NAME
NORTHCHASE BRANCH LIBRARY

4400 Northchase Parkway NE
Wilmington NC 28405

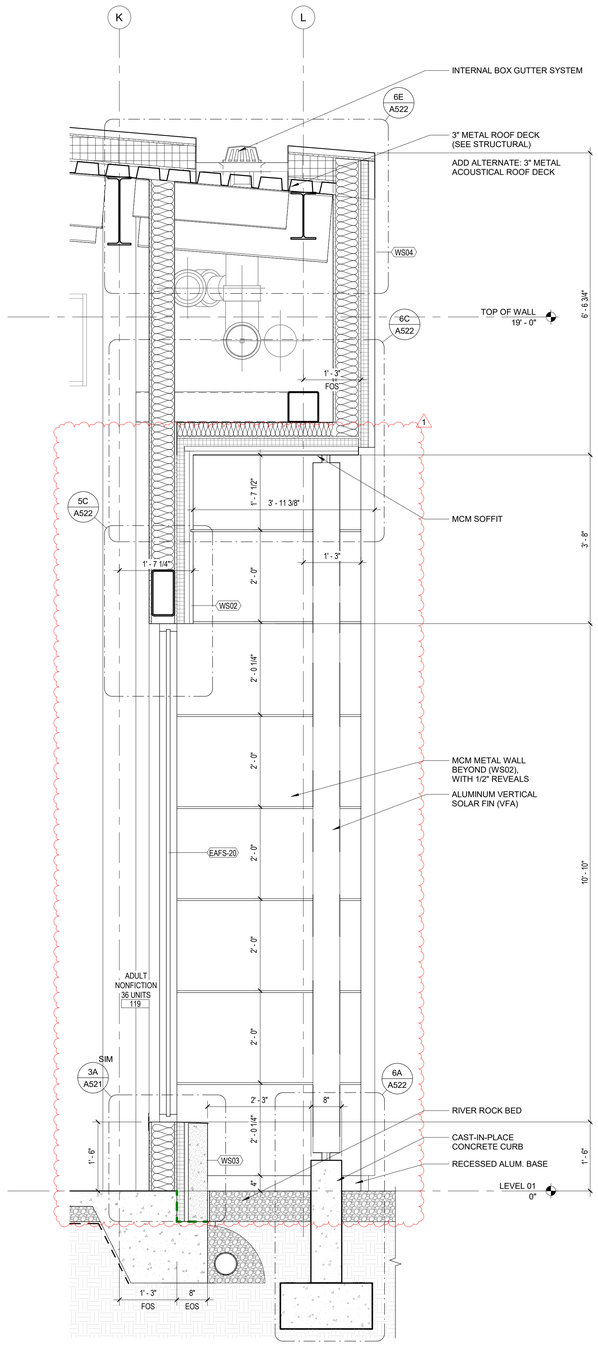
PROJECT NO.
514.18349.00

SHEET TITLE
EXTERIOR FRAMING SYSTEM ELEVATIONS

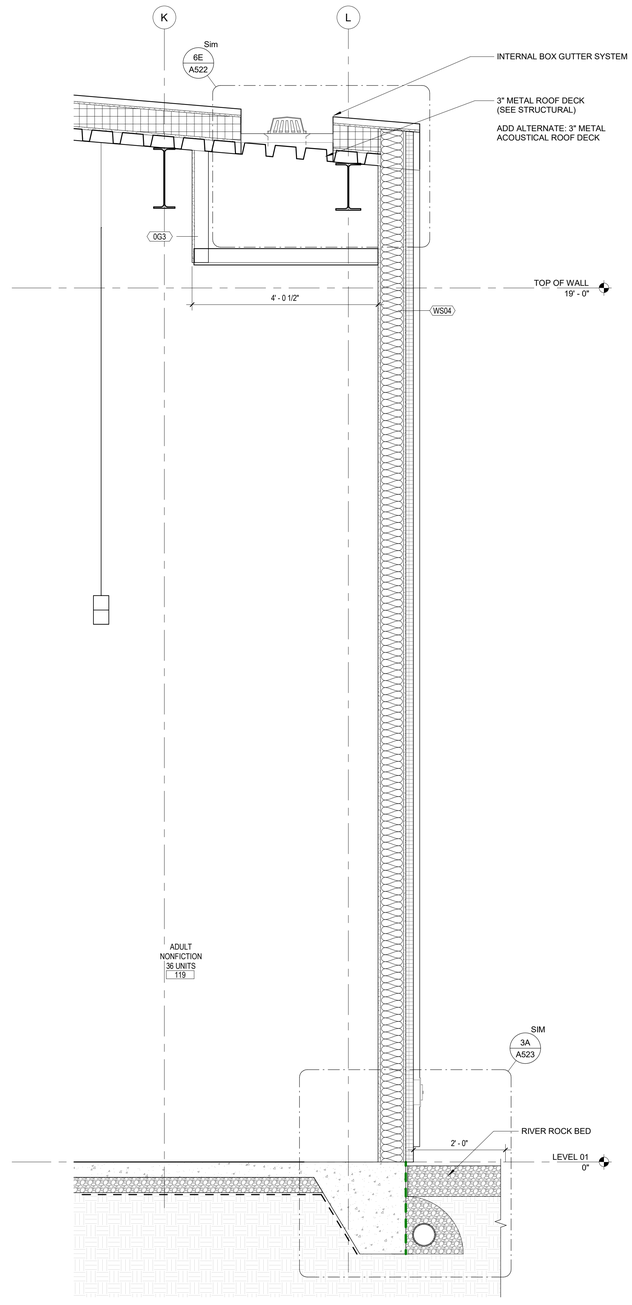
SHEET NUMBER
A221



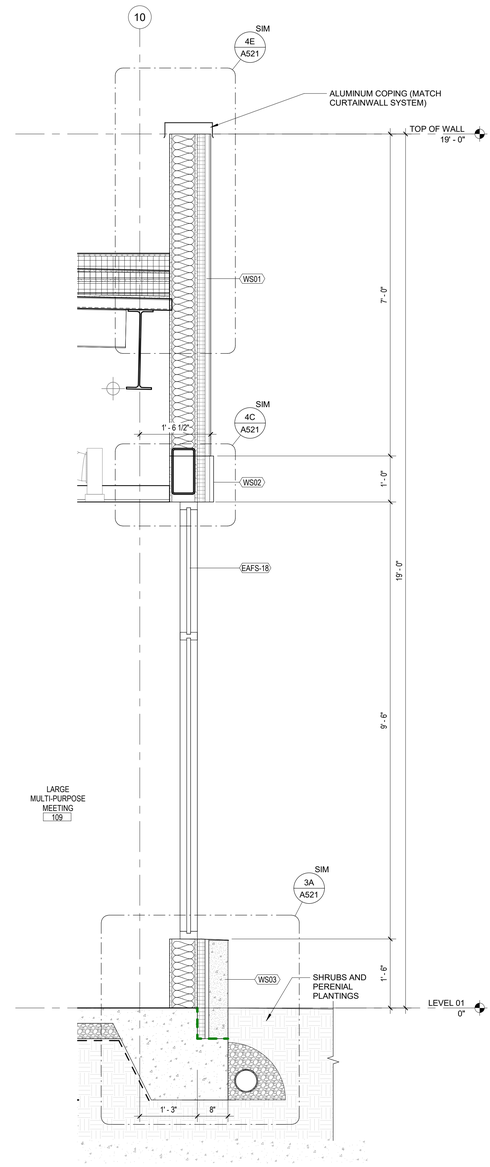
1A WALL SECTION - ADULT FICTION EXIT
A322 3/4" = 1'-0"



2A WALL SECTION - ADULT NONFICTION SOLAR FINS
A322 3/4" = 1'-0"



5A WALL SECTION - ADULT NON-FICTION
A322 3/4" = 1'-0"



6A WALL SECTION - MULTI-PURPOSE
A322 3/4" = 1'-0"

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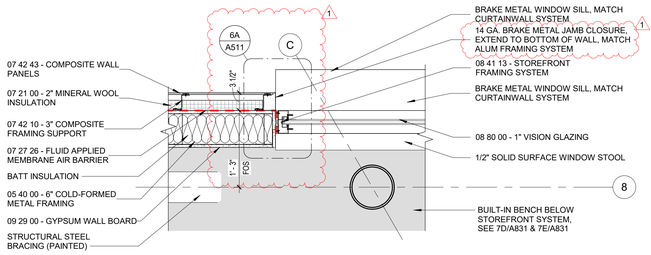
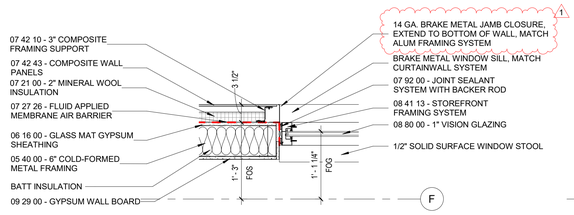
SHEET TITLE
WALL SECTIONS

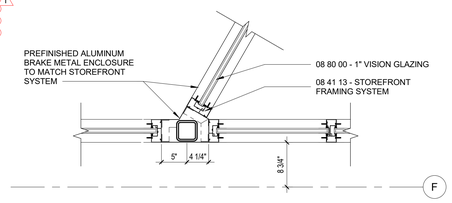
SHEET NUMBER
A322



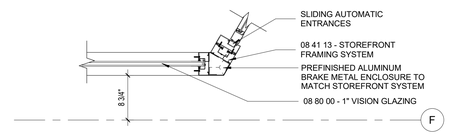
1E A511 PLAN DETAIL - JAMB - HPL/CONCRETE AT STOREFRONT
1" = 1'-0"



3E A511 PLAN DETAIL - JAMB - HPL AT STOREFRONT
1" = 1'-0"

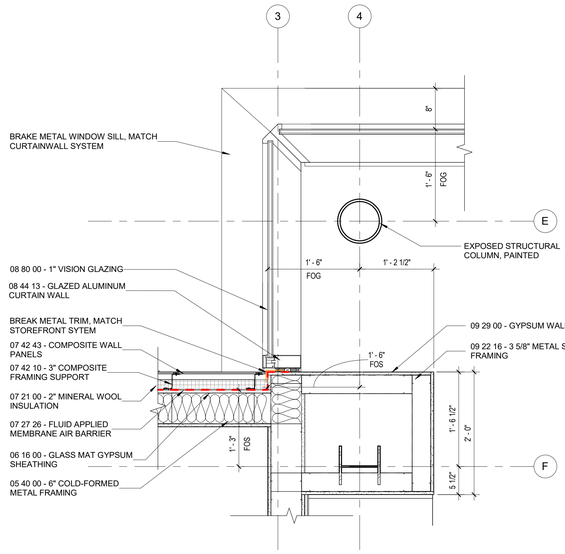


5E A511 PLAN DETAIL - ENTRY VESTIBULE CORNER
1" = 1'-0"

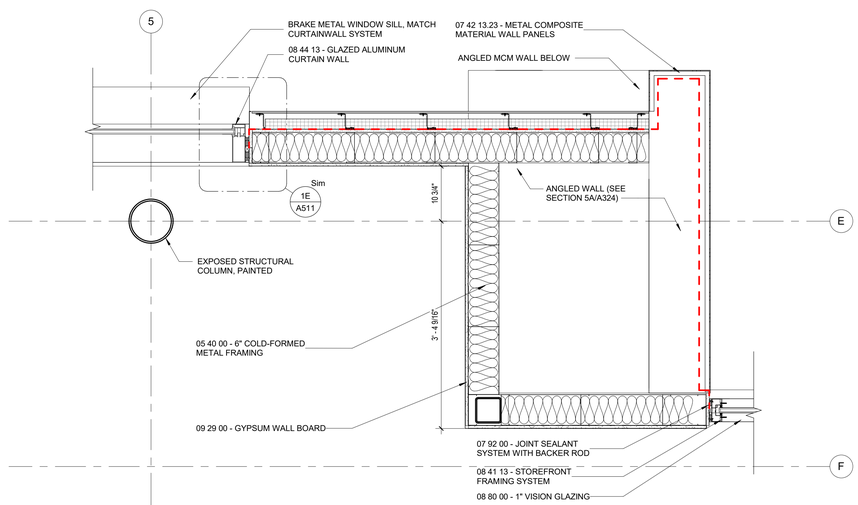


6E A511 PLAN DETAIL - ENTRY VESTIBULE INTERIOR
1" = 1'-0"

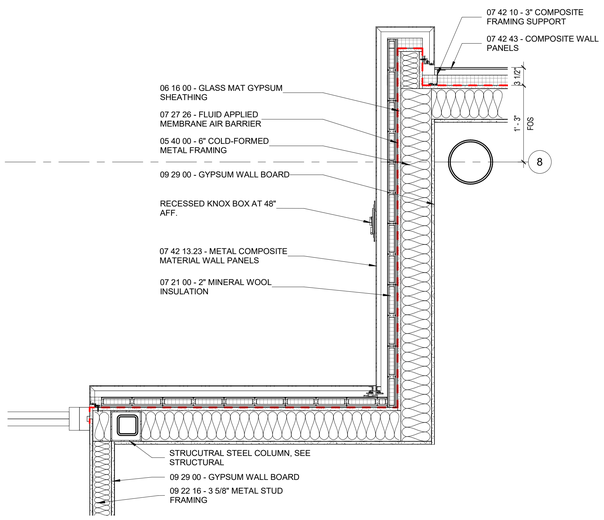
E



1C A511 PLAN DETAIL - CAFE'
1" = 1'-0"

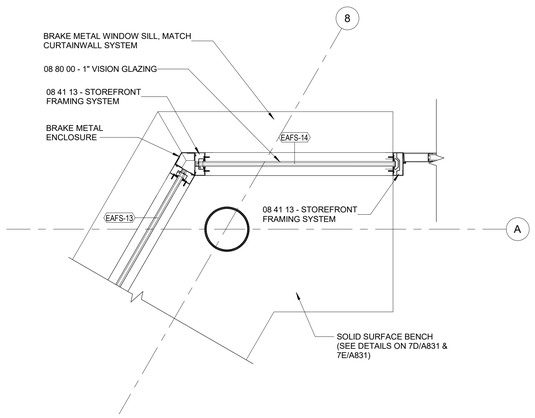


3C A511 PLAN DETAIL - ANGLED WALL AT ENTRY
1" = 1'-0"

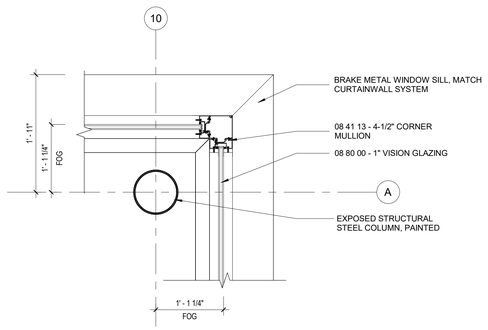


6C A511 PLAN DETAIL - ENTRY VESTIBULE
1" = 1'-0"

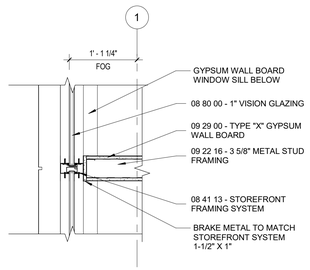
B



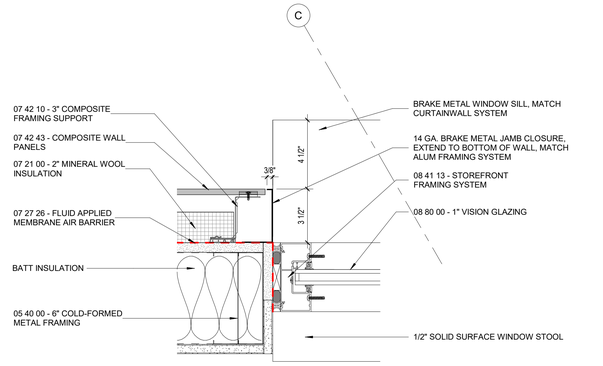
1A A511 PLAN DETAIL - CHILDREN'S WING ENTRY
1" = 1'-0"



3A A511 PLAN DETAIL - STOREFRONT CORNER AT CHILDREN'S
1" = 1'-0"



4A A511 PLAN DETAIL - RATED WALL AT MULLION - BOOK DROP
1" = 1'-0"



6A A511 ENLARGED PLAN DETAIL - JAMB HPL/CONCRETE
3" = 1'-0"

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W:\StudioFolder\Subfolder\######## JobName\2 Design\4 Drawings\Revit\

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1 2 3 4 5 6 7

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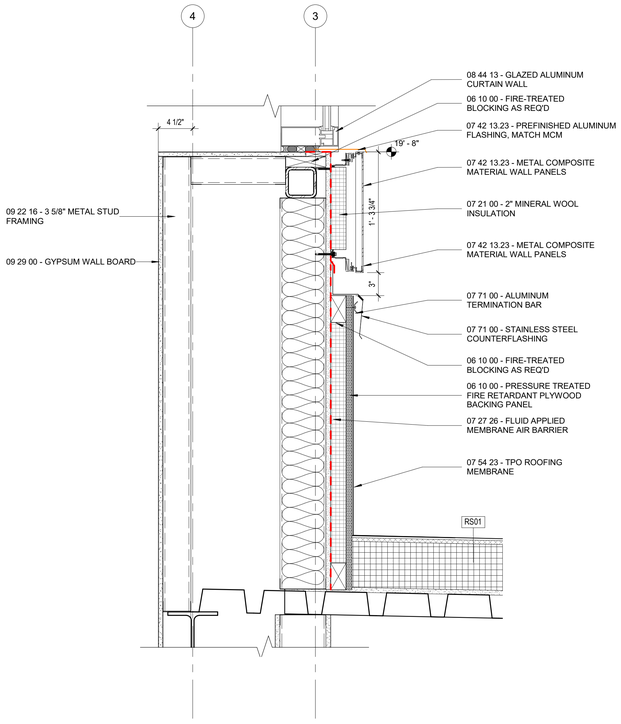
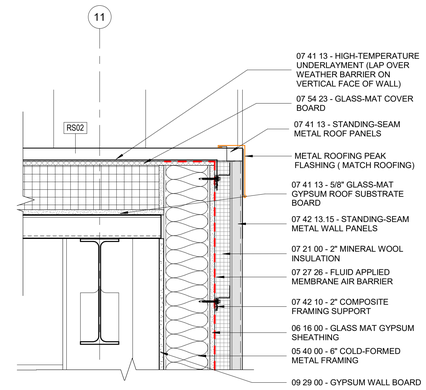
SHEET TITLE
PLAN DETAILS

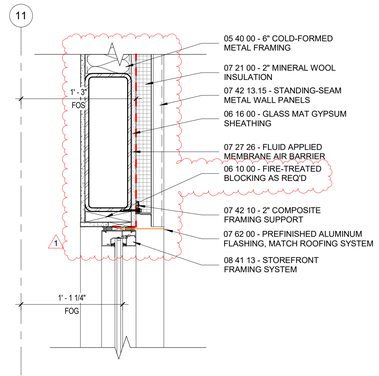
SHEET NUMBER
A511



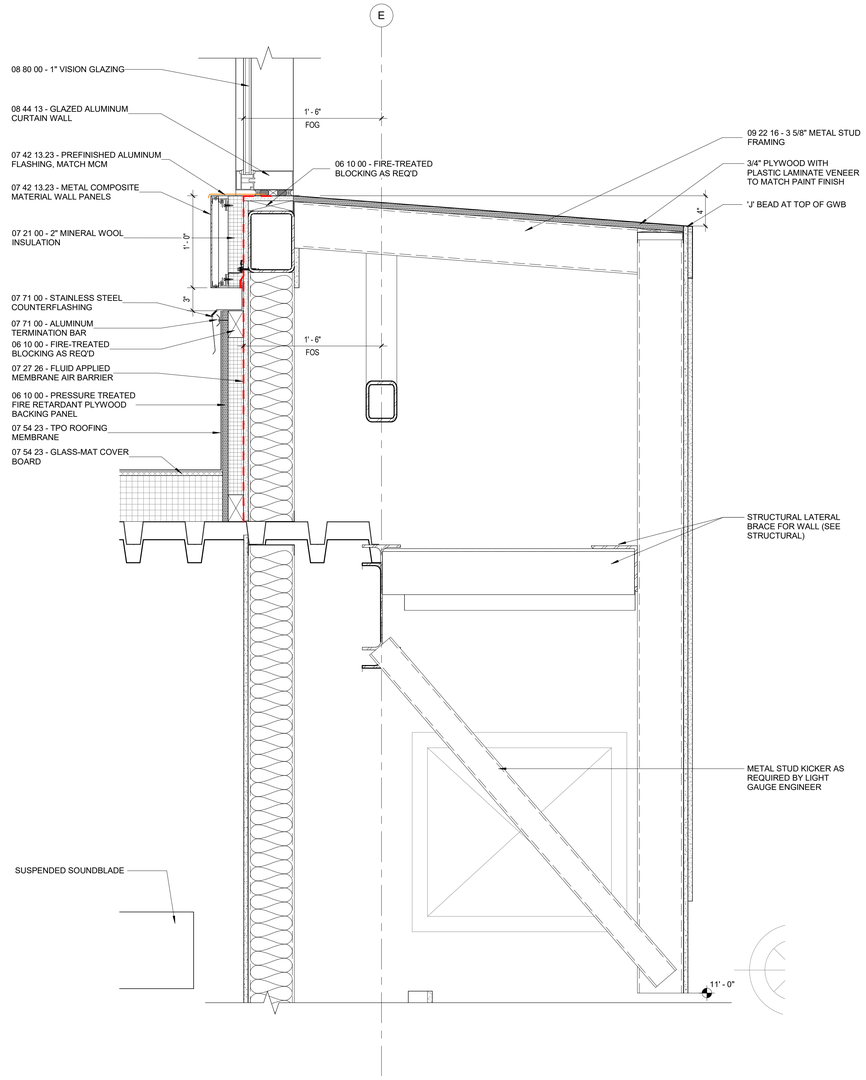
1D SECTION DETAIL - SILL AT CAFE CLERESTORY
A523 1 1/2" = 1'-0"



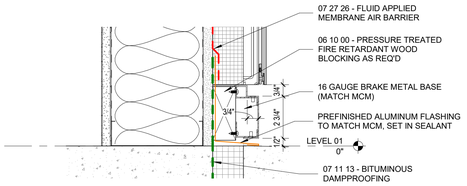
3E SECTION DETAIL - TOP OF SSM WALL & SSM ROOF SYSTEM
A523 1 1/2" = 1'-0"



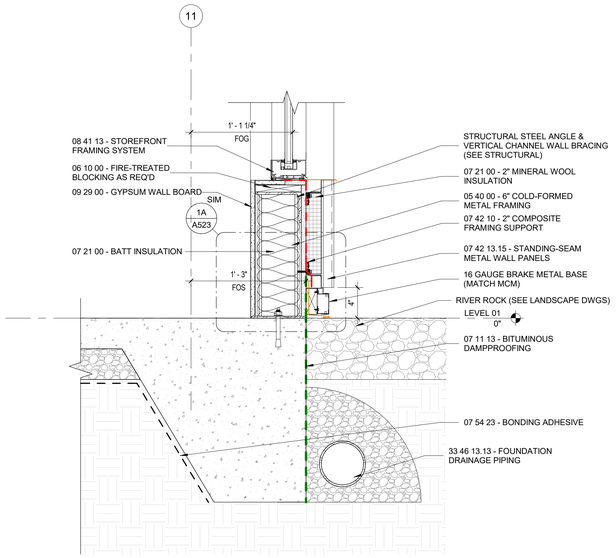
3D SECTION DETAIL - HEAD AT SSM PANEL
A523 1 1/2" = 1'-0"



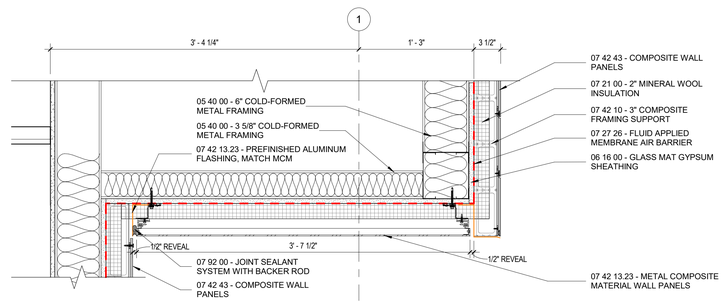
5C SECTION DETAIL - CLERESTORY LIGHT SHELF
A523 1 1/2" = 1'-0"



1A SECTION DETAIL - METAL BASE
A523 3" = 1'-0"



3A SECTION DETAIL - SILL AT SSM PANELS
A523 1 1/2" = 1'-0"



5A SECTION DETAIL - WORK ROOM SOFFIT
A523 1 1/2" = 1'-0"

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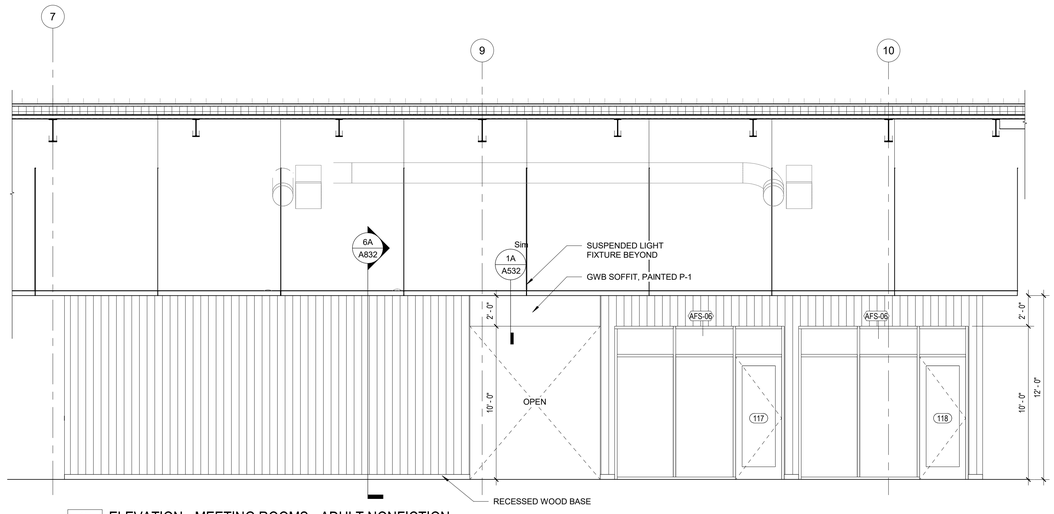
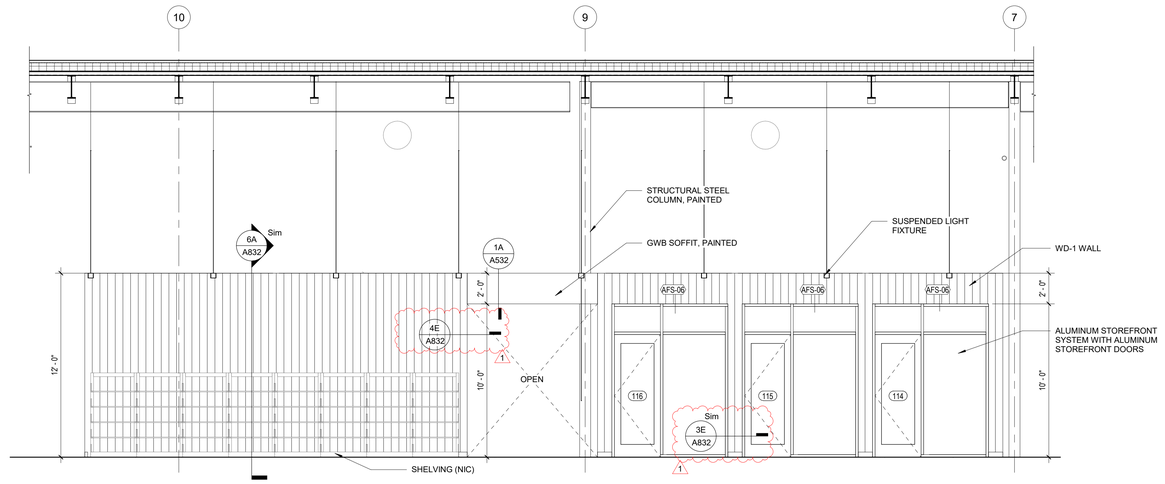
SHEET TITLE
SECTION DETAILS

SHEET NUMBER
A523



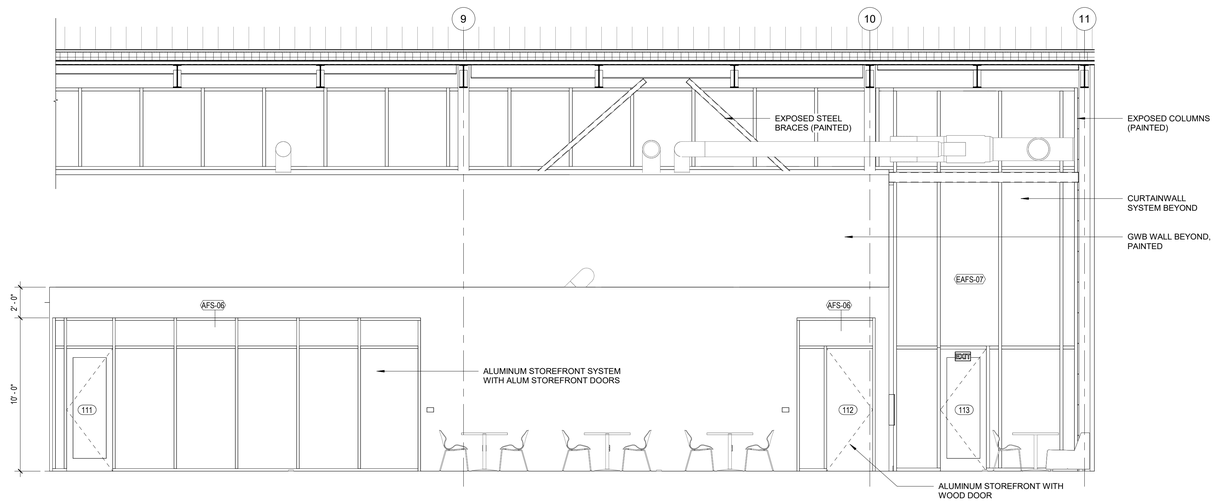
4E A821 ELEVATION - MEETING ROOMS - ADULT NONFICTION

1/4" = 1'-0"



4C A821 ELEVATION - MEETING ROOMS - ADULT FICTION

1/4" = 1'-0"



4A A821 ELEVATION - TEEN

1/4" = 1'-0"

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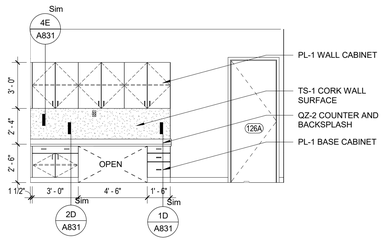
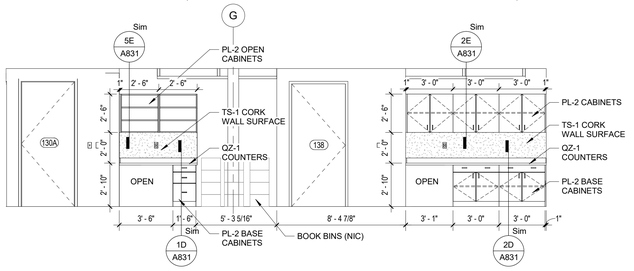
SHEET TITLE
INTERIOR ELEVATIONS

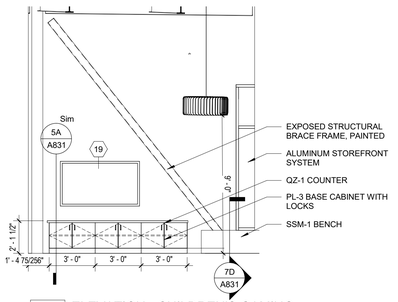
SHEET NUMBER
A821



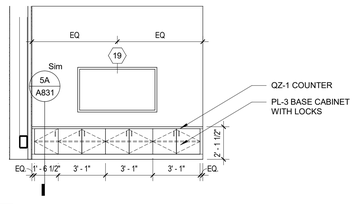
1F ELEVATION - WORK ROOM / STORAGE
A822 1/4" = 1'-0"



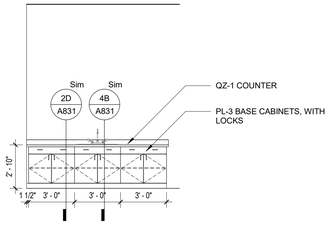
2F ELEVATION - WORK ROOM
A822 1/4" = 1'-0"



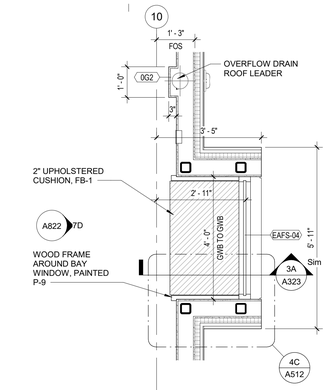
1D ELEVATION - CHILDREN'S GAMING
A822 1/4" = 1'-0"



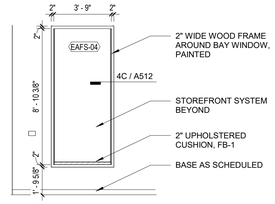
2D ELEVATION - TEEN GAMING
A822 1/4" = 1'-0"



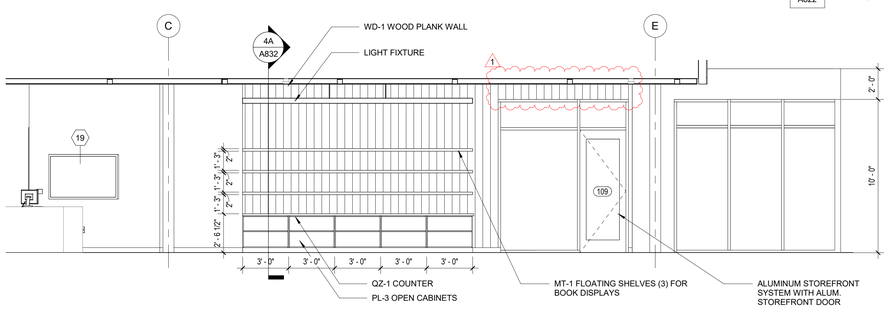
4D ELEVATION - MULTI-PURPOSE
A822 1/4" = 1'-0"



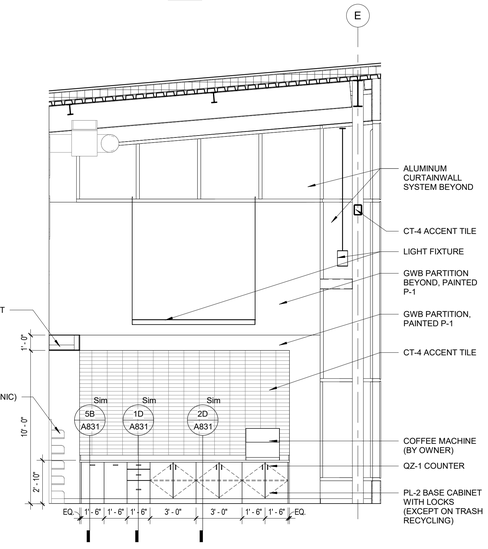
5D ENLARGED PLAN - READING BAY WINDOW
A822 1/2" = 1'-0"



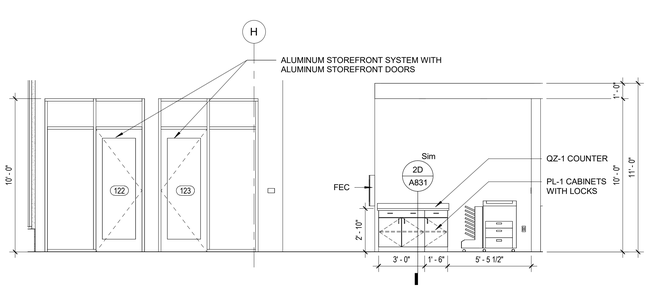
7D ELEVATION - BAY WINDOW
A822 1/4" = 1'-0"



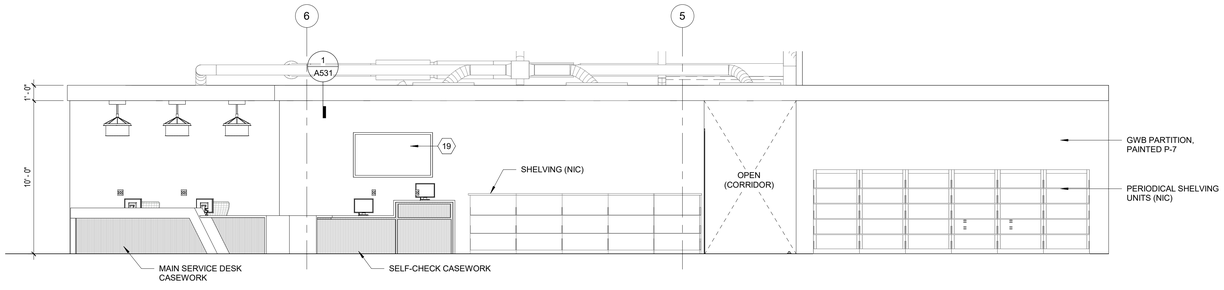
1C ELEVATION - NEW BOOKS
A822 1/4" = 1'-0"



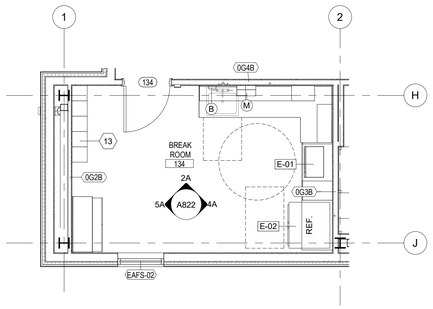
4C ELEVATION - CAFE
A822 1/4" = 1'-0"



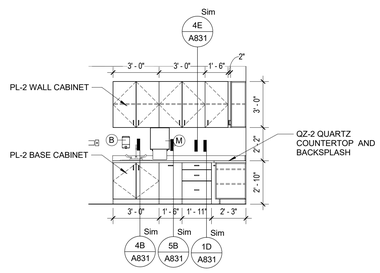
1B ELEVATION - BUSINESS CENTER / MEETING ROOMS
A822 1/4" = 1'-0"



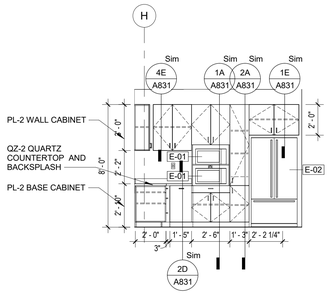
3B ELEVATION - FRONT DESK, SELF-CHECK & PERIODICALS
A822 1/4" = 1'-0"



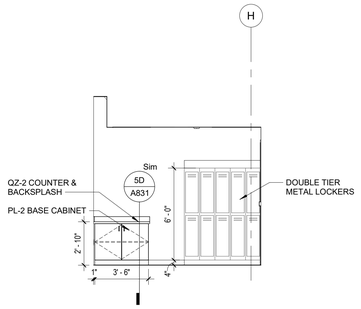
1A ENLARGED PLAN - BREAK ROOM
A822 1/4" = 1'-0"



2A ELEVATION - BREAK ROOM - 1
A822 1/4" = 1'-0"



4A ELEVATION - BREAK ROOM - 2
A822 1/4" = 1'-0"



5A ELEVATION - BREAK ROOM - 3
A822 1/4" = 1'-0"

SHEET KEYNOTES

13 2-TIER LOCKERS.
19 WALL MOUNTED TV.

SHEET GENERAL NOTES

RATED WALLS & PARTITIONS

	FIRE BARRIER	FIRE & SMOKE BARRIER
1-HOUR		1-HOUR
2-HOUR		2-HOUR
3-HOUR		3-HOUR
	FIRE WALL	**FIRE PARTITION**
2-HOUR		0.5-HOUR
3-HOUR		1-HOUR
4-HOUR		
	SMOKE PARTITION	**SMOKE BARRIER**
0-HOUR		1-HOUR

TOILET ACCESSORIES LEGEND

A	TOILET TISSUE DISPENSER (BY OWNER)	-	-
B	WALL MOUNTED AUTOMATIC SOAP DISPENSER (BY OWNER)	-	-
D	GRAB BAR 18" VERTICAL	BOBRICK	5806 X 18
E	GRAB BAR 36"	BOBRICK	5806 X 36
F	GRAB BAR 42"	BOBRICK	5806 X 42
G	DIAPER CHANGING STATION, STAINLESS STEEL	KOALA KARE	KB300-SS
H	FRAMED MIRROR (24"W x 48"H)	BOBRICK	B165-24X48
J	FRAMED MIRROR (24"W x 36"H)	BOBRICK	B165-24X36
K	SURFACE-MTD. SANITARY NAPKIN DISPOSAL	BOBRICK	B-221
L	PARTITION-MTD. SANITARY NAPKIN DISPOSAL	BOBRICK	B-354
M	PAPER TOWEL DISPENSER (BY OWNER)	-	-
P	36" UTILITY SHELF WITH 4 MOP HOLDERS AND 3 RAG HOOKS	BOBRICK	B-224 X 36

APPLIANCE LEGEND

E-01	MICROWAVE (BY OWNER)
E-02	FRENCH DOOR REFRIGERATOR, STAINLESS STEEL, ADA COMPLIANT (BY OWNER)

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PROJECT TEAM
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Designer

PROJECT NAME
NORTHCHASE BRANCH LIBRARY

4400 Northchase Parkway NE
Wilmington NC 28405

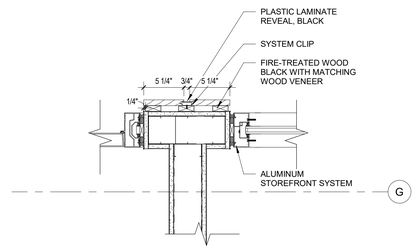
PROJECT NO.
514.18349.00

SHEET TITLE
INTERIOR ELEVATIONS

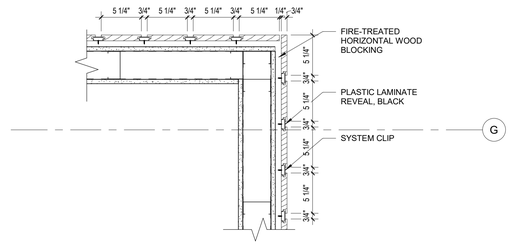
SHEET NUMBER
A822

SHEET GENERAL NOTES

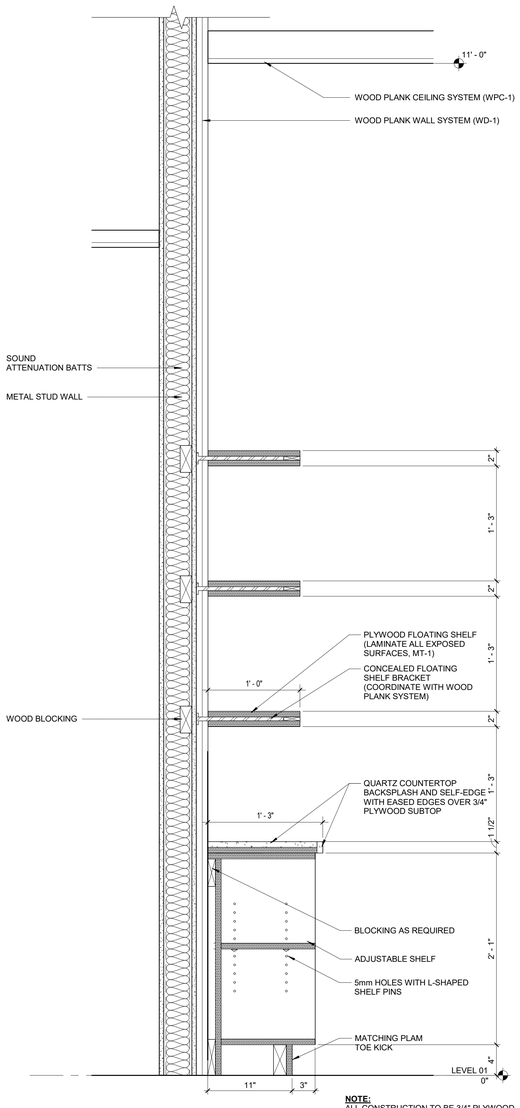
1. TYPICAL CABINET PULLS: HAFELE BLACK BAR HANDLE (155.99.017)
2. ALL WOOD GRAIN TO RUN VERTICALLY.
3. NO EXPOSED FASTENERS.
4. PROVIDE CONTINUOUS MATCHING TOEKICK ON BASE CABINETS UNLESS NOTED OTHERWISE.
5. ALL EDGES OF SHELVING TO BE EDGEBANDED TO MATCH PLASTIC LAMINATE, UNLESS NOTED OTHERWISE.
6. ALL EXPOSED CABINET SURFACES ON OPEN CABINETS TO HAVE MATCHING PLASTIC LAMINATE FINISH UNLESS NOTED OTHERWISE.



3E A832 DETAIL - WOOD PLANK WALL - STOREFRONT JAMB
1 1/2" = 1'-0"

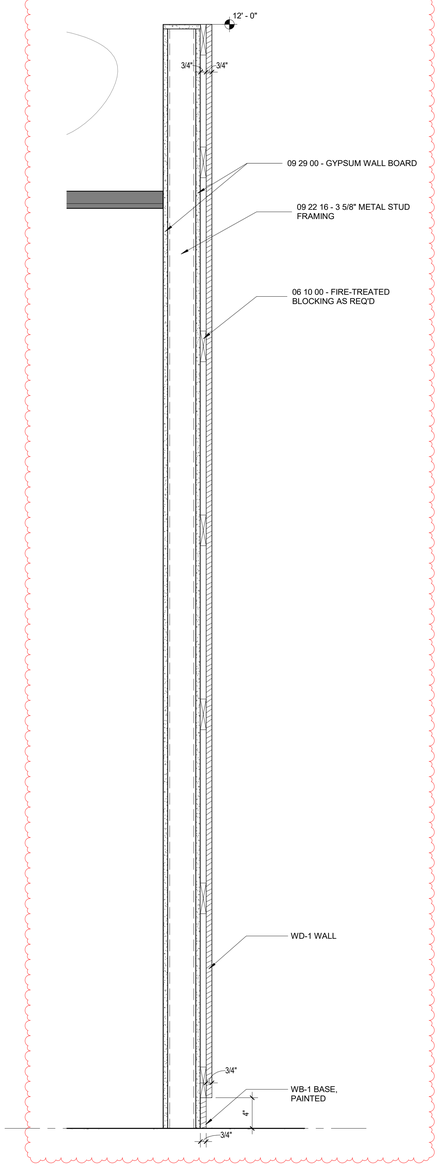


4E A832 DETAIL - WOOD PLANK CORNER
1 1/2" = 1'-0"



NOTE:
ALL CONSTRUCTION TO BE 3/4" PLYWOOD WITH SCHEDULED PLASTIC LAMINATE

4A A832 SECTION - WOOD PLANK WALL AT POPULAR BOOKS
1 1/2" = 1'-0"



6A A832 WALL SECTION - WOOD PLANK WALL AND BASE
1 1/2" = 1'-0"

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SHEET TITLE
CASEWORK SECTIONS

SHEET NUMBER
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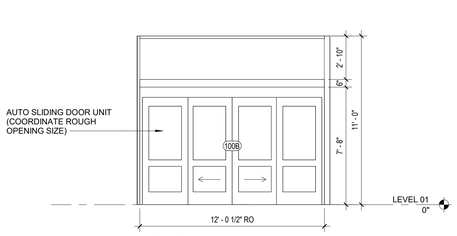
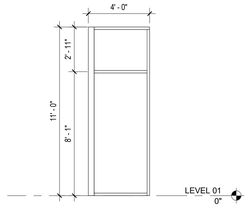


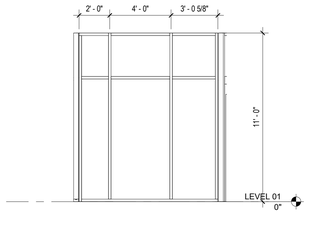
AFS - 01

1/4" = 1'-0"



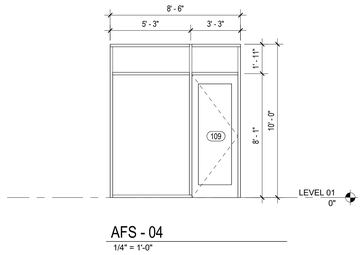
AFS - 02

1/4" = 1'-0"



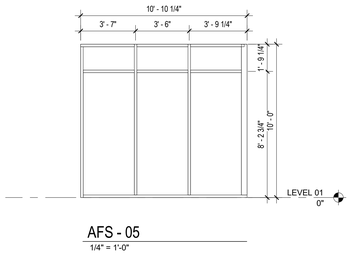
AFS - 03

1/4" = 1'-0"



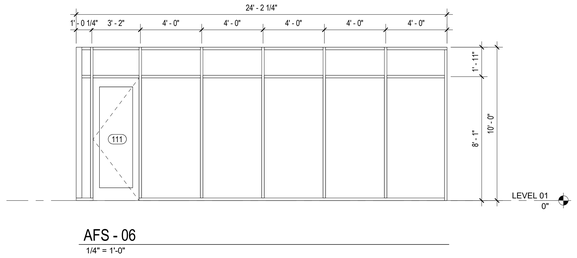
AFS - 04

1/4" = 1'-0"



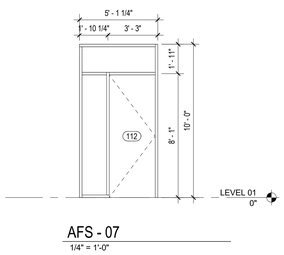
AFS - 05

1/4" = 1'-0"



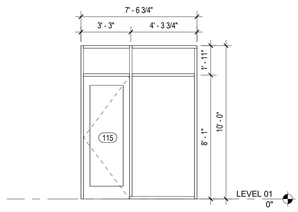
AFS - 06

1/4" = 1'-0"



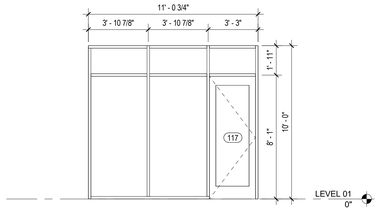
AFS - 07

1/4" = 1'-0"



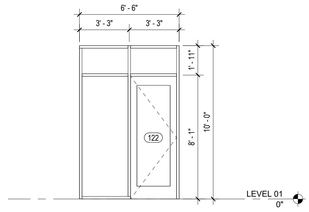
AFS - 08

1/4" = 1'-0"



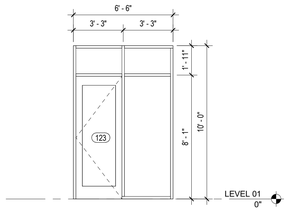
AFS - 09

1/4" = 1'-0"



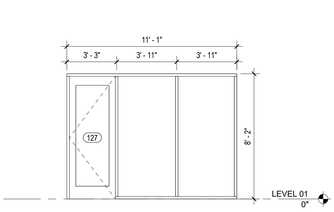
AFS - 10

1/4" = 1'-0"



AFS - 11

1/4" = 1'-0"



AFS - 12

1/4" = 1'-0"

X GLAZING LEGEND

IG.1 1/4" TEMPERED GLASS
IG.2 1/4" TEMPERED GLASS (BACKPAINTED)
IG.3 1/4" TEMPERED GLASS (FROSTED)
IG.4 1/4" TEMPERED FIRE GLASS

EG.1 1" TEMPERED INSULATED GLASS
EG.2 1" TEMPERED INSULATED FIRE GLASS
EG.3 1" TEMPERED SPANDREL GLASS
EG.4 1" TEMPERED FRITTED GLASS

GENERAL NOTES

1. ALL ALUMINUM FRAMING SYSTEMS ARE 4 1/2" DEEP UNLESS INDICATED OTHERWISE
2. ALL ALUMINUM FRAMING SYSTEMS TO BE PREFINISHED. 1
3. ALL EXTERIOR GLAZING TO BE EG.1 UNLESS NOTED OTHERWISE.
4. ALL INTERIOR GLAZING TO BE IG.1 UNLESS NOTED OTHERWISE.
5. ALL STRUCTURAL SUPPORTS FOR ALUMINUM FRAMING SYSTEM TO BE CONCEALED INSIDE MULLIONS OR ABOVE CEILING.
6. OVERALL DIMENSIONS OF ALUMINUM FRAMING SYSTEM TO BE ADJUSTED FOR REQUIRED ROUGH OPENING/CONSTRUCTION TOLERANCES.

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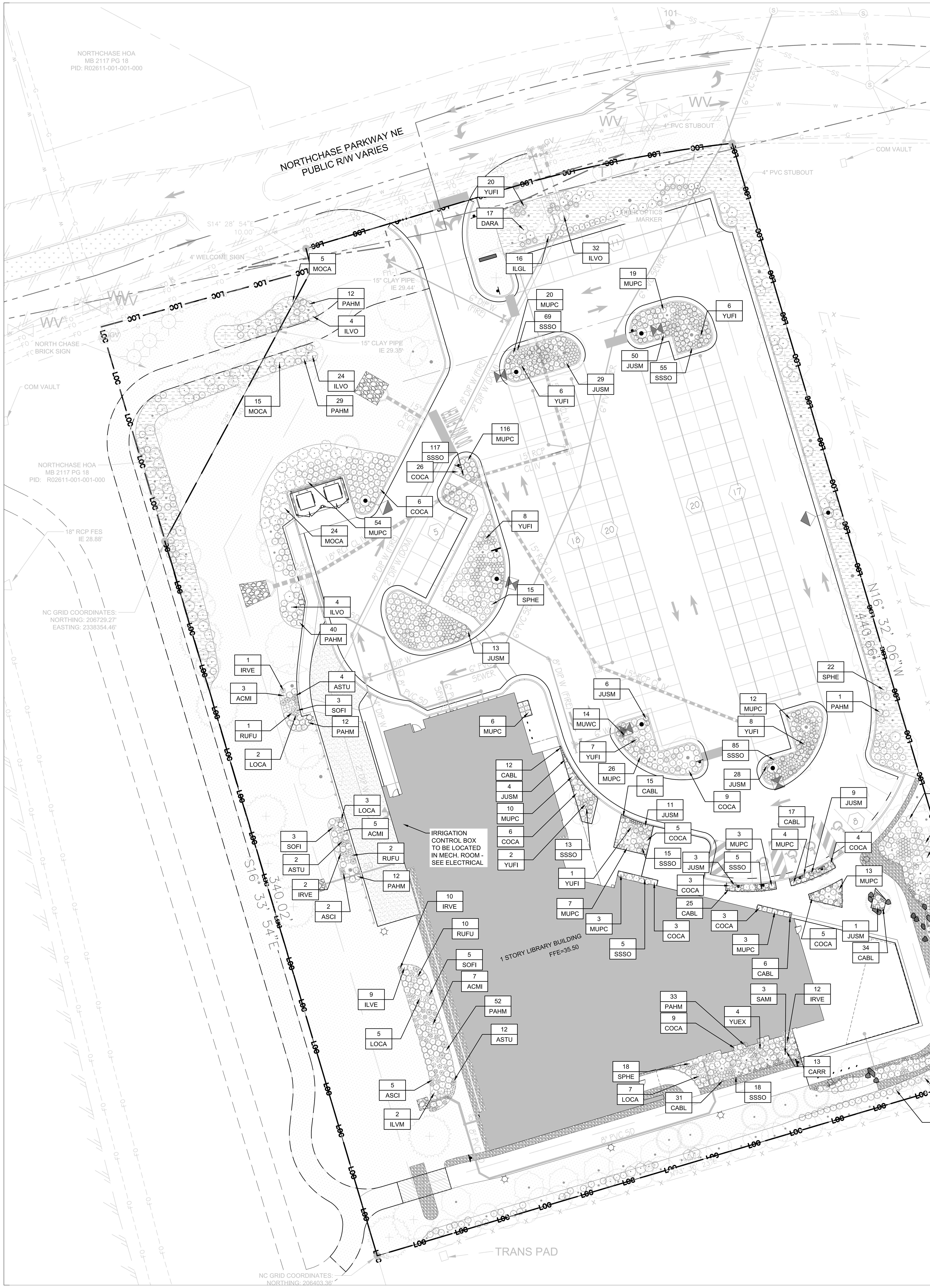
SHEET TITLE
INTERIOR FRAMING SYSTEM ELEVATIONS

SHEET NUMBER
A920



IRRIGATION NOTES

A. ALL SODDED TURF AREAS (SEEDED AREAS EXCLUDED) ARE TO BE IRRIGATED WITH SPRAY HEADS AND ALL PLANTING AREAS TO BE IRRIGATED WITH DRIP IRRIGATION. ALL PHASES OF INSTALLATION TO BE INSPECTED BY LANDSCAPE ARCHITECT.

B. CONTRACTOR TO PROVIDE IRRIGATION CONTROLLER WITH WEATHER STATION TO OPTIMIZE WATER CONSERVATION.

C. CONTRACTOR SHALL VERIFY THAT AVAILABLE WATER PRESSURE IS ADEQUATE FOR IRRIGATION SYSTEM. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY ANY DISCREPANCIES AND REPORT SAID DISCREPANCIES TO THE LANDSCAPE ARCHITECT.

D. CONTRACTOR TO PROVIDE IRRIGATION LAYOUT DESIGN TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO MOBILIZATION.

E. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF BACKFLOW PREVENTORS, VALVES, ELECTRIC WIRING FOR THE IRRIGATION SYSTEM, ALL SLEEVING, ALL FITTINGS, ADAPTERS, ETC. TO COMPLETE THE IRRIGATION SYSTEM.

F. PER OWNER, ALL IRRIGATION SYSTEMS ARE TO BE FED FROM A WELL DRILLED ON-SITE. CONTRACTOR IS RESPONSIBLE FOR LOCATING, PERMITTING, AND DRILLING THE WELL. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE DESIGN, PERMITTING, AND INSTALLATION OF ALL PUMPS, FILTRATION SYSTEMS, OR ANY ADDITIONAL INFRASTRUCTURE THAT MAY BE REQUIRED TO PROVIDE A COMPLETE OPERATING WELL SYSTEM AS PART OF THE IRRIGATION SYSTEM. 1

G. CONTRACTOR SHALL ADJUST ALL HEADS IN FIELD TO ENSURE MAXIMUM COVERAGE, AND ELIMINATE OVERTHROW ONTO PAVED AREAS, BUILDING AND WALL SURFACES (LOCATE HEADS 3" CLEAR OF ALL HARDSCAPE SURFACES). ALL AUTOMATIC VALVES SHALL BE INSTALLED IN A VALVE BOX AS SPECIFIED. COORDINATE SLEEVES WITH GENERAL CONTRACTOR.

H. CONTRACTOR SHALL COORDINATE PIPING LAYOUT WITH LANDSCAPE PLAN TO ENSURE PIPES DO NOT INTERFERE WITH ROOT BALLS OF TREES OR ROWS OF SHRUBS. REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.

I. CONTRACTOR SHALL VERIFY THAT ALL LOCAL AND STATE CODES ARE BEING OBSERVED.

J. CONTRACTOR TO PROVIDE THRUST BLOCKS ON 3" MAIN AT ALL BENDS AND TURNS.

K. PROVIDE IRRIGATION TO ALL STREET TREES WITHIN PROJECT LIMITS.

L. PROVIDE GATE VALVES AT DOWNSTREAM SIDE OF BACKFLOW AND AT HYDRAULIC CONTROLLERS.

M. CONTRACTOR SHALL DESIGN AND INSTALL A COMPLETE FUNCTIONING IRRIGATION SYSTEM FOR ALL GRASS/TURF AND PLANTING AREAS WITHIN PROJECT CONSTRUCTION LIMITS.

N. PLANS SHALL INCLUDE A COMPLETE SEPARATION OF SHRUB AND TURF AREAS. PLANS SHALL INCLUDE CONTROLLER, ALL SLEEVING, ELECTRIC VALVES, HEADS LATERALS, MAINS, DRIP LINES CONNECTIONS TO EQUIPMENT, AND ALL OTHER COMPONENTS NECESSARY FOR A WORKING IRRIGATION SYSTEM.

O. ALL CONTROLLERS, VALVES AND HEADS TO BE MADE BY THE SAME MANUFACTURER.

P. BACKFLOW PREVENTOR TO BE PROVIDED BY CONTRACTOR AND SHALL CONFORM TO REQUIREMENTS OF LOCAL AUTHORITIES.

Q. SEE ELECTRICAL PLANS FOR LOCATION OF CONTROLLER BOX.

LANDSCAPE AND PLANTING NOTES

A. MINIMUM TREE SIZE AT PLANTING IS 2" CALIPER (FOR SINGLE STEM TREES).

B. ALL MULTI-STEM PLANTS MUST BE TREE FORM, MAXIMUM 3" TO 5" TRUNKS, AND MINIMUM 8' TALL.

C. ALL NEW PLANTING AREAS (GRASS/TURF, SOD, PLANTS, TREES, SHRUBS, GROUNDCOVER, ETC.) SHALL BE FINE GRADED PRIOR TO INSTALLATION. FINE GRADING SHALL CONSIST OF UNCOMPACTED SOIL THAT IS HAND RAKED, SMOOTH, AND FREE OF DEBRIS (NO STONES, ROOTS, OR ANY OTHER MATERIAL GREATER THAN 1" IN SIZE).

D. TILL SOIL TO A DEPTH OF 24" FOR TREES AND SHRUBS AND 6" FOR GRASS/TURF. AMEND THE TOP 24" OF SOIL FOR TREES AND SHRUBS AND TOP 6" OF SOIL FOR GRASS/TURF TO MEET TOPSOIL/PLANTING MIX STANDARDS AS REQUIRED BY SPECIFICATIONS.

E. CONTRACTOR IS REQUIRED TO PERFORM SOIL TESTS TO DETERMINE SOIL NUTRIENT REQUIREMENTS FOR ALL GRASS/TURF, SOD, PLANT, TREE, SHRUB, AND GROUNDCOVER AREAS. CONTRACTOR TO SUBMIT SOIL TEST TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO MOBILIZATION.

F. IN ADDITION TO THE SOIL MIXTURE, CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING SOIL AMENDMENTS, AS INDICATED BY SOIL TESTS, AS WELL AS, AN ADEQUATE DRAINAGE SYSTEM FOR PLANTING BEDS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ENVIRONMENT SUITABLE FOR THE GROWTH OF HEALTHY PLANT MATERIAL. THE LANDSCAPE ARCHITECT MAY REQUIRE ADDITIONAL SOIL AMENDMENTS AND EXCAVATION OF EXISTING SOIL DURING ONSITE OBSERVATIONS PRIOR TO OR AFTER CONSTRUCTION. REFER TO PLANTING DETAILS FOR INFORMATION ON PLANTING BED PREPARATIONS. ALL PLANTING BEDS WILL BE PROBED BY THE LANDSCAPE ARCHITECT TO DETERMINE DEPTH AND SOIL QUALITY FOLLOWING INSTALLATION.

G. ALL PLANTING BEDS AND SOD/TURF/SEEDED AREAS TO RECEIVE AN AMENDED SOIL MIXTURE. SOIL MIX SHALL BE COMPOSED OF 75% EXISTING SOIL, 15% ORGANIC MATERIAL, AND 10% SAND. SUPPLEMENT SOIL MIX WITH NITROGEN CONCENTRATION AS DETERMINED BY SOIL TEST RESULTS.

H. SITE LIGHT POLES GREATER THAN 15' TALL MUST BE A MINIMUM OF 30' AWAY FROM ALL TREES. SITE LIGHT POLES LESS THAN 15' TALL MUST BE A MINIMUM OF 15' AWAY FROM ALL TREES.

I. ENSURE ALL TREES ARE A MINIMUM OF 15' FROM ALL UNDERGROUND UTILITIES (GAS, WATER, PHONE, AND ELECTRICAL LINES). CONTACT LANDSCAPE ARCHITECT IF FIELD MODIFICATIONS ARE REQUIRED.

J. NOTIFY LANDSCAPE ARCHITECT OF ANY SITE CONDITIONS WHICH MAY NECESSITATE MODIFICATIONS TO THE APPROVED PLANS. LANDSCAPE ARCHITECT SHALL, IF NECESSARY, MAKE "IN-FIELD MODIFICATIONS".

K. ALL DISTURBED AREAS SHALL BE LANDSCAPED (GRASS/TURF, SOD, PLANTS, TREES, SHRUBS, GROUNDCOVER, ETC.). ALL AREAS NOT DESIGNATED AS PLANTING BEDS OR SOD ARE TO BE SEEDED WITH GRASS SEED UNTIL A PERMANENT STAND OF GRASS IS ESTABLISHED PER THE SPECIFICATIONS.

L. CONTRACTOR IS RESPONSIBLE FOR INSPECTION OF EXISTING CONDITIONS AND PROMPTLY REPORTING ANY DISCREPANCIES TO LANDSCAPE ARCHITECT.

M. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.

N. LARGE MATURING TREES MAY NOT BE PLANTED WHERE OVERHEAD DISTRIBUTION OR TRANSMISSION LINES EXIST. IF TREES CONFLICT WITH POWER LINES, SIGNS, UNDERGROUND UTILITIES, OR ANY OTHER SITE FEATURES, CONTACT LANDSCAPE ARCHITECT BEFORE PLANTING.

O. CONTRACTOR VERIFIES THAT ALL PLANT MATERIAL IS AVAILABLE AS SPECIFIED WHEN BID/PROPOSAL IS SUBMITTED AND SAID MATERIAL AS SPECIFIED IS ALSO AVAILABLE AT TIME OF INSTALLATION. NO SUBSTITUTIONS DUE TO PLANT AVAILABILITY WILL BE APPROVED.

P. PLANT SCHEDULE WAS PREPARED FOR ESTIMATING PURPOSES. CONTRACTOR SHALL MAKE OWN QUANTITY TAKEOFFS USING PLANS TO DETERMINE FINAL QUANTITIES. PROMPTLY REPORT ANY DISCREPANCIES WHICH MAY AFFECT BIDDING. GRAPHIC REPRESENTATION OF PLANTS SHALL SUPERCEDE QUANTITIES LISTED IN THE PLANT SCHEDULE.

Q. ROOT TYPE MAY BE FREELY SUBSTITUTED FOR BALLED AND BURLAPPED OR CONTAINER GROWN PLANTS (UNLESS NOTED AS SPECIMEN TREES ON PLANT SCHEDULE). ALL OTHER SPECIFICATIONS ARE TO REMAIN UNCHANGED (HEIGHT, WIDTH, ETC.).

R. FOR ALL TREES, SHRUBS, GROUNDCOVERS AND SOD - CONTRACTOR TO APPLY A PRE-EMERGENT HERBICIDE, 'PREEN' OR EQUAL TO ALL PLANT BED AREAS AND PROVIDE DOCUMENTATION OF QUANTITY AND PRODUCT USED TO LANDSCAPE ARCHITECT PRIOR TO FINAL PROJECT APPROVAL.

S. FOR ALL SEEDED GRASS/TURF - REMOVE WEEDS BEFORE SEEDING. WHERE WEEDS ARE PRESENT, APPLY SELECTIVE HERBICIDES TO ELIMINATE ALL WEEDS. DO NOT USE PRE-EMERGENCE HERBICIDES.

T. CONTRACTOR IS TO PROVIDE OWNER AN ESTABLISHED, HEALTHY, UNIFORM, CLOSE STAND OF GRASS, FREE OF WEEDS AND SURFACE IRREGULARITIES, WITH COVERAGE EXCEEDING 90% OVER ANY 10 SQ FT AREA AND BARE SPOTS ARE NOT TO EXCEED 5 BY 5 INCHES.

U. ALL PLANT MATERIAL MUST BE PLANTED IN CORRELATION WITH THE APPROPRIATE GROWING SEASON OF INDIVIDUAL PLANT REQUIREMENTS. SOME PERENNIALS MAY REQUIRE A SPRING PLANTING IN ORDER TO SURVIVE A FULL WINTER DORMANCY.

V. ALL PLANT MATERIAL AND WORKMANSHIP TO BE GUARANTEED FOR ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. REPLACEMENT PLANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS DOCUMENT AND SPECIFICATIONS. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR DEFECTS RESULTING FROM NEGLECT BY THE OWNER, ABUSE OR DAMAGE BY OTHERS.

W. ALL STRAPPING AND TOP 2/3 OF WIRE BASKET MUST BE CUT AWAY AND REMOVED FROM ROOT BALL PRIOR TO BACKFILLING THE PLANTING PIT. REMOVE TOP 1/3 OF THE BURLAP FROM ROOT BALL.

MAINTENANCE NOTES

A. OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL REQUIRED LANDSCAPING BY KEEPING LAWNS MOWED, ALL PLANTS MAINTAINED AS DISEASE FREE, ALL PLANTING BEDS GROOMED AND KEPT WEED FREE (EXCEPT IN AREAS OF PRESERVED EXISTING NATURAL VEGETATION (I.E., THICKETS), AND KEPT FREE FROM TRASH, DEBRIS AND OTHER OBJECTIONABLE MATERIALS.

B. THE REPLACEMENT OF ANY REQUIRED PLANTING, WHICH IS REMOVED OR DIES AFTER THE DATE OF PLANTING, SHALL BE REPLACED DURING THE NEXT PLANTING SEASON; AND THE REPLACEMENT OF ANY TREE IN A TREE SAVE AREA, WHICH IS REMOVED OR DIES AFTER THE DATE OF APPROVAL OF A PRESERVATION LANDSCAPE PLAN, SHALL BE DURING THE NEXT PLANTING SEASON.

LANDSCAPE CALCULATIONS & UDO REQUIREMENTS:

A. STREET YARD REQUIREMENTS (5.4.6.C) NORTHCHASE PKWY (EXCLUDING DRIVES & EASEMENTS)

1. **ZONING: PD, WITH B-2 UNDERLYING ZONING**, STREETYARD FACTOR = 25
   7 TREES REQUIRED. | 9 PROVIDED
   177 LF * 25= 4,425/ 600=7.38
   44 SHRUBS REQUIRED. | 58 PROVIDED
   7.38*6

-- N COLLEGE ST: EXEMPT, AREAS DESIGNATED FOR STORMWATER FUNCTIONS SHALL NOT BE INCLUDED IN THE REQUIRED STREET YARD AREA.

B. GENERAL STANDARDS (5.4.2.B):

1. EXISTING TREES RETAINED: 2
2. NEW TREES PLANTED (2" cal. min.): 128
3. **REQUIRED: 45 | PROVIDED: 151**
   (2.9 ACRES * 15 = 45)

C. PARKING LOT INTERIORS (5.4.5.C)

1. 8% OF TOTAL AREA FOR PARKING TO BE LANDSCAPED
   1.1. REQUIRED: 4051.2 SQ FT | PROVIDED 4170.6 SQ FT
   50,640 SQ FT * .08 = 4051.2
2. 1 TREE REQUIRED PER 144 SQ FT OF LANDSCAPED AREA
   2.1. REQUIRED: 28 TREES | PROVIDED 45 TREES

D. FOUNDATION PLANTINGS (5.4.7)

1. 12% OF THE AREA OF THE FIRST FLOOR BUILDING FACE ADJACENT TO THE PARKING AREA
   1.1. REQUIRED: 496 SQ FT | PROVIDED: 639 SQ FT
   4134 SQ FT * .12 = 496 SQ FT

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CAUTION!!!

THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESS OR IMPLIED AS TO THE COMPLETENESS OF ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

GRAPHIC SCALE

20 0 10 20 40 80

1" = 20'-0"

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 885 — David Powlen 3/27/24

ISSUE FOR
BID SET

ISSUE DATE
03.28.2024

REVISIONS

NO.	REASON	DATE
1	ADDENDUM 4	04.22.2024

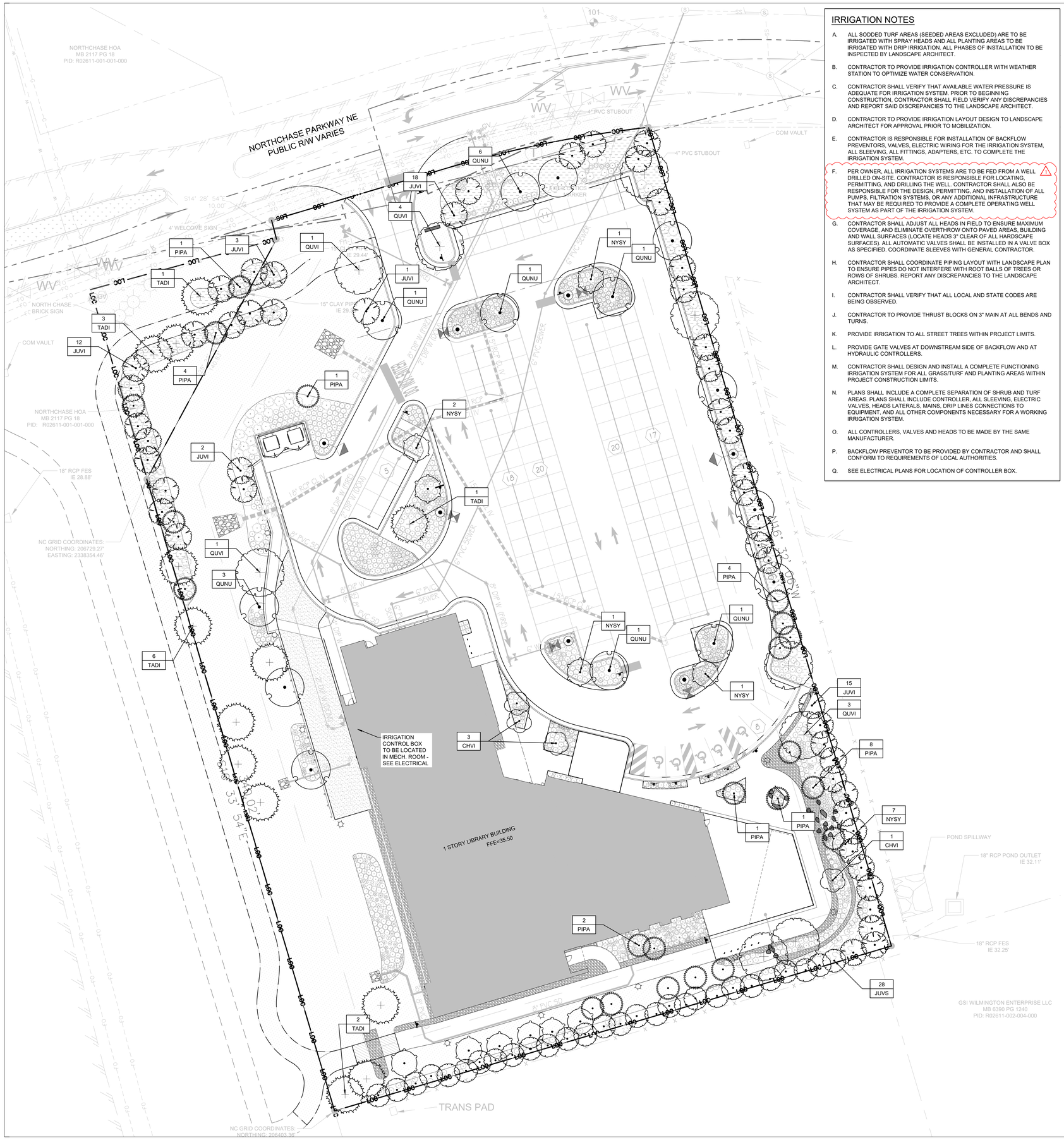
PROJECT TEAM
Jerry Guerrier, AIA
Charlie Hagen-Cazés, AIA
D. Powlen, PLA, M. Sweitzer

PROJECT NAME
NORTHCHASE BRANCH LIBRARY
4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
UNDERSTORY PLANTING PLAN

SHEET NUMBER
L201



IRRIGATION NOTES

A. ALL SODDED TURF AREAS (SEEDED AREAS EXCLUDED) ARE TO BE IRRIGATED WITH SPRAY HEADS AND ALL PLANTING AREAS TO BE IRRIGATED WITH DRIP IRRIGATION. ALL PHASES OF INSTALLATION TO BE INSPECTED BY LANDSCAPE ARCHITECT.

B. CONTRACTOR TO PROVIDE IRRIGATION CONTROLLER WITH WEATHER STATION TO OPTIMIZE WATER CONSERVATION.

C. CONTRACTOR SHALL VERIFY THAT AVAILABLE WATER PRESSURE IS ADEQUATE FOR IRRIGATION SYSTEM. PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY ANY DISCREPANCIES AND REPORT SAID DISCREPANCIES TO THE LANDSCAPE ARCHITECT.

D. CONTRACTOR TO PROVIDE IRRIGATION LAYOUT DESIGN TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO MOBILIZATION.

E. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF BACKFLOW PREVENTORS, VALVES, ELECTRIC WIRING FOR THE IRRIGATION SYSTEM, ALL SLEEVING, ALL FITTINGS, ADAPTERS, ETC. TO COMPLETE THE IRRIGATION SYSTEM.

F. PER OWNER, ALL IRRIGATION SYSTEMS ARE TO BE FED FROM A WELL DRILLED ON-SITE. CONTRACTOR IS RESPONSIBLE FOR LOCATING, PERMITTING, AND DRILLING THE WELL. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE DESIGN, PERMITTING, AND INSTALLATION OF ALL PUMPS, FILTRATION SYSTEMS, OR ANY ADDITIONAL INFRASTRUCTURE THAT MAY BE REQUIRED TO PROVIDE A COMPLETE OPERATING WELL SYSTEM AS PART OF THE IRRIGATION SYSTEM.

G. CONTRACTOR SHALL ADJUST ALL HEADS IN FIELD TO ENSURE MAXIMUM COVERAGE, AND ELIMINATE OVERTHROW ONTO PAVED AREAS, BUILDING AND WALL SURFACES (LOCATE HEADS 3" CLEAR OF ALL HARDSCAPE SURFACES). ALL AUTOMATIC VALVES SHALL BE INSTALLED IN A VALVE BOX AS SPECIFIED. COORDINATE SLEEVES WITH GENERAL CONTRACTOR.

H. CONTRACTOR SHALL COORDINATE PIPING LAYOUT WITH LANDSCAPE PLAN TO ENSURE PIPES DO NOT INTERFERE WITH ROOT BALLS OF TREES OR ROWS OF SHRUBS. REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.

I. CONTRACTOR SHALL VERIFY THAT ALL LOCAL AND STATE CODES ARE BEING OBSERVED.

J. CONTRACTOR TO PROVIDE THRUST BLOCKS ON 3" MAIN AT ALL BENDS AND TURNS.

K. PROVIDE IRRIGATION TO ALL STREET TREES WITHIN PROJECT LIMITS.

L. PROVIDE GATE VALVES AT DOWNSTREAM SIDE OF BACKFLOW AND AT HYDRAULIC CONTROLLERS.

M. CONTRACTOR SHALL DESIGN AND INSTALL A COMPLETE FUNCTIONING IRRIGATION SYSTEM FOR ALL GRASS/TURF AND PLANTING AREAS WITHIN PROJECT CONSTRUCTION LIMITS.

N. PLANS SHALL INCLUDE A COMPLETE SEPARATION OF SHRUB AND TURF AREAS. PLANS SHALL INCLUDE CONTROLLER, ALL SLEEVING, ELECTRIC VALVES, HEADS LATERALS, MAINS, DRIP LINES CONNECTIONS TO EQUIPMENT, AND ALL OTHER COMPONENTS NECESSARY FOR A WORKING IRRIGATION SYSTEM.

O. ALL CONTROLLERS, VALVES AND HEADS TO BE MADE BY THE SAME MANUFACTURER.

P. BACKFLOW PREVENTOR TO BE PROVIDED BY CONTRACTOR AND SHALL CONFORM TO REQUIREMENTS OF LOCAL AUTHORITIES.

Q. SEE ELECTRICAL PLANS FOR LOCATION OF CONTROLLER BOX.

LANDSCAPE AND PLANTING NOTES

A. MINIMUM TREE SIZE AT PLANTING IS 2" CALIPER (FOR SINGLE STEM TREES).

B. ALL MULTI-STEM PLANTS MUST BE TREE FORM, MAXIMUM 3" TO 5" TRUNKS, AND MINIMUM 8' TALL.

C. ALL NEW PLANTING AREAS (GRASS/TURF, SOD, PLANTS, TREES, SHRUBS, GROUNDCOVER, ETC.) SHALL BE FINE GRADED PRIOR TO INSTALLATION. FINE GRADING SHALL CONSIST OF UNCOMPACTED SOIL THAT IS HAND RAKED, SMOOTH, AND FREE OF DEBRIS (NO STONES, ROOTS, OR ANY OTHER MATERIAL GREATER THAN 1" IN SIZE).

D. TILL SOIL TO A DEPTH OF 24" FOR TREES AND SHRUBS AND 6" FOR GRASS/TURF. AMEND THE TOP 24" OF SOIL FOR TREES AND SHRUBS AND TOP 6" OF SOIL FOR GRASS/TURF TO MEET TOPSOIL/PLANTING MIX STANDARDS AS REQUIRED BY SPECIFICATIONS.

E. CONTRACTOR IS REQUIRED TO PERFORM SOIL TESTS TO DETERMINE SOIL NUTRIENT REQUIREMENTS FOR ALL GRASS/TURF, SOD, PLANT, TREE, SHRUB, AND GROUNDCOVER AREAS. CONTRACTOR TO SUBMIT SOIL TEST TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO MOBILIZATION.

F. IN ADDITION TO THE SOIL MIXTURE, CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING SOIL AMENDMENTS, AS INDICATED BY SOIL TESTS, AS WELL AS, AN ADEQUATE DRAINAGE SYSTEM FOR PLANTING BEDS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ENVIRONMENT SUITABLE FOR THE GROWTH OF HEALTHY PLANT MATERIAL. THE LANDSCAPE ARCHITECT MAY REQUIRE ADDITIONAL SOIL AMENDMENTS AND EXCAVATION OF EXISTING SOIL DURING ONSITE OBSERVATIONS PRIOR TO OR AFTER CONSTRUCTION. REFER TO PLANTING DETAILS FOR INFORMATION ON PLANTING BED PREPARATIONS. ALL PLANTING BEDS WILL BE PROBED BY THE LANDSCAPE ARCHITECT TO DETERMINE DEPTH AND SOIL QUALITY FOLLOWING INSTALLATION.

G. ALL PLANTING BEDS AND SOD/TURF/SEEDED AREAS TO RECEIVE AN AMENDED SOIL MIXTURE. SOIL MIX SHALL BE COMPOSED OF 75% EXISTING SOIL, 15% ORGANIC MATERIAL, AND 10% SAND. SUPPLEMENT SOIL MIX WITH NITROGEN CONCENTRATION AS DETERMINED BY SOIL TEST RESULTS.

H. SITE LIGHT POLES GREATER THAN 15' TALL MUST BE A MINIMUM OF 30' AWAY FROM ALL TREES. SITE LIGHT POLES LESS THAN 15' TALL MUST BE A MINIMUM OF 15' AWAY FROM ALL TREES.

I. ENSURE ALL TREES ARE A MINIMUM OF 15' FROM ALL UNDERGROUND UTILITIES (GAS, WATER, PHONE, AND ELECTRICAL LINES). CONTACT LANDSCAPE ARCHITECT IF FIELD MODIFICATIONS ARE REQUIRED.

J. NOTIFY LANDSCAPE ARCHITECT OF ANY SITE CONDITIONS WHICH MAY NECESSITATE MODIFICATIONS TO THE APPROVED PLANS. LANDSCAPE ARCHITECT SHALL, IF NECESSARY, MAKE "IN-FIELD MODIFICATIONS".

K. ALL DISTURBED AREAS SHALL BE LANDSCAPED (GRASS/TURF, SOD, PLANTS, TREES, SHRUBS, GROUNDCOVER, ETC.). ALL AREAS NOT DESIGNATED AS PLANTING BEDS OR SOD ARE TO BE SEEDED WITH GRASS SEED UNTIL A PERMANENT STAND OF GRASS IS ESTABLISHED PER THE SPECIFICATIONS.

L. CONTRACTOR IS RESPONSIBLE FOR INSPECTION OF EXISTING CONDITIONS AND PROMPTLY REPORTING ANY DISCREPANCIES TO LANDSCAPE ARCHITECT.

M. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.

N. LARGE MATURING TREES MAY NOT BE PLANTED WHERE OVERHEAD DISTRIBUTION OR TRANSMISSION LINES EXIST. IF TREES CONFLICT WITH POWER LINES, SIGNS, UNDERGROUND UTILITIES, OR ANY OTHER SITE FEATURES, CONTACT LANDSCAPE ARCHITECT BEFORE PLANTING.

O. CONTRACTOR VERIFIES THAT ALL PLANT MATERIAL IS AVAILABLE AS SPECIFIED WHEN BID/PROPOSAL IS SUBMITTED AND SAID MATERIAL AS SPECIFIED IS ALSO AVAILABLE AT TIME OF INSTALLATION. NO SUBSTITUTIONS DUE TO PLANT AVAILABILITY WILL BE APPROVED.

P. PLANT SCHEDULE WAS PREPARED FOR ESTIMATING PURPOSES. CONTRACTOR SHALL MAKE OWN QUANTITY TAKEOFFS USING PLANS TO DETERMINE FINAL QUANTITIES. PROMPTLY REPORT ANY DISCREPANCIES WHICH MAY AFFECT BIDDING. GRAPHIC REPRESENTATION OF PLANTS SHALL SUPERCEDE QUANTITIES LISTED IN THE PLANT SCHEDULE.

Q. ROOT TYPE MAY BE FREELY SUBSTITUTED FOR BALLED AND BURLAPPED OR CONTAINER GROWN PLANTS (UNLESS NOTED AS SPECIMEN TREES ON PLANT SCHEDULE). ALL OTHER SPECIFICATIONS ARE TO REMAIN UNCHANGED (HEIGHT, WIDTH, ETC.).

R. FOR ALL TREES, SHRUBS, GROUNDCOVERS AND SOD - CONTRACTOR TO APPLY A PRE-EMERGENT HERBICIDE, 'PREEN' OR EQUAL TO ALL PLANT BED AREAS AND PROVIDE DOCUMENTATION OF QUANTITY AND PRODUCT USED TO LANDSCAPE ARCHITECT PRIOR TO FINAL PROJECT APPROVAL.

S. FOR ALL SEEDED GRASS/TURF - REMOVE WEEDS BEFORE SEEDING. WHERE WEEDS ARE PRESENT, APPLY SELECTIVE HERBICIDES TO ELIMINATE ALL WEEDS. DO NOT USE PRE-EMERGENCE HERBICIDES.

T. CONTRACTOR IS TO PROVIDE OWNER AN ESTABLISHED, HEALTHY, UNIFORM, CLOSE STAND OF GRASS, FREE OF WEEDS AND SURFACE IRREGULARITIES, WITH COVERAGE EXCEEDING 90% OVER ANY 10 SQ FT AREA AND BARE SPOTS ARE NOT TO EXCEED 5 BY 5 INCHES.

U. ALL PLANT MATERIAL MUST BE PLANTED IN CORRELATION WITH THE APPROPRIATE GROWING SEASON OF INDIVIDUAL PLANT REQUIREMENTS. SOME PERENNIALS MAY REQUIRE A SPRING PLANTING IN ORDER TO SURVIVE A FULL WINTER DORMANCY.

V. ALL PLANT MATERIAL AND WORKMANSHIP TO BE GUARANTEED FOR ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. REPLACEMENT PLANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS DOCUMENT AND SPECIFICATIONS. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR DEFECTS RESULTING FROM NEGLECT BY THE OWNER, ABUSE OR DAMAGE BY OTHERS.

W. ALL STRAPPING AND TOP 2/3 OF WIRE BASKET MUST BE CUT AWAY AND REMOVED FROM ROOT BALL PRIOR TO BACKFILLING THE PLANTING PIT. REMOVE TOP 1/3 OF THE BURLAP FROM ROOT BALL.

MAINTENANCE NOTES

A. OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL REQUIRED LANDSCAPING BY KEEPING LAWNS MOWED, ALL PLANTS MAINTAINED AS DISEASE FREE, ALL PLANTING BEDS GROOMED AND KEPT WEED FREE (EXCEPT IN AREAS OF PRESERVED EXISTING NATURAL VEGETATION (I.E., THICKETS), AND KEPT FREE FROM TRASH, DEBRIS AND OTHER OBJECTIONABLE MATERIALS.

B. THE REPLACEMENT OF ANY REQUIRED PLANTING, WHICH IS REMOVED OR DIES AFTER THE DATE OF PLANTING, SHALL BE REPLACED DURING THE NEXT PLANTING SEASON; AND THE REPLACEMENT OF ANY TREE IN A TREE SAVE AREA, WHICH IS REMOVED OR DIES AFTER THE DATE OF APPROVAL OF A PRESERVATION LANDSCAPE PLAN, SHALL BE DURING THE NEXT PLANTING SEASON.

LANDSCAPE CALCULATIONS & UDO REQUIREMENTS:

A. STREET YARD REQUIREMENTS (5.4.6.C) NORTHCHASE PKWY (EXCLUDING DRIVES & EASEMENTS)

1. **ZONING: PD, WITH B-2 UNDERLYING ZONING**, STREETYARD FACTOR = 25
   7 TREES REQUIRED. | 9 PROVIDED
   177 LF * 25= 4,425 /490=7.38
   44 SHRUBS REQUIRED. | 58 PROVIDED
   7.5x6
   -- N COLLEGE ST: EXEMPT, AREAS DESIGNATED FOR STORMWATER FUNCTIONS SHALL NOT BE INCLUDED IN THE REQUIRED STREET YARD AREA.

B. GENERAL STANDARDS (5.4.2.B):

1. NEW TREES PLANTED (2" cal. min.): 153
2. **REQUIRED: 45 | PROVIDED: 153**
   (2.9 ACRES * 15 = 45)

B. PARKING LOT INTERIORS (5.4.5.C)

1. 8% OF TOTAL AREA FOR PARKING TO BE LANDSCAPED
   1.1. REQUIRED: 4051.2 SQ FT | PROVIDED 4170.6 SQ FT
   50,640 SQ FT * .08 = 4051.2
2. 1 TREE REQUIRED PER 144 SQ FT OF LANDSCAPED AREA
   2.1. REQUIRED: 28 TREES | PROVIDED 45 TREES

D. FOUNDATION PLANTINGS (5.4.7)

1. 12% OF THE AREA OF THE FIRST FLOOR BUILDING FACE ADJACENT TO THE PARKING AREA
   1.1. REQUIRED: 496 SQ FT | PROVIDED: 639 SQ FT
   4134 SQ FT * .12 = 496 SQ FT

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GRAPHIC SCALE

20 0 10 20 40 80

1" = 20'-0"

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT 885 David Powlen 3/27/24

ISSUE FOR
BID SET

ISSUE DATE
03.28.2024

REVISIONS

NO.	REASON	DATE
1	ADDENDUM 4	04.22.2024

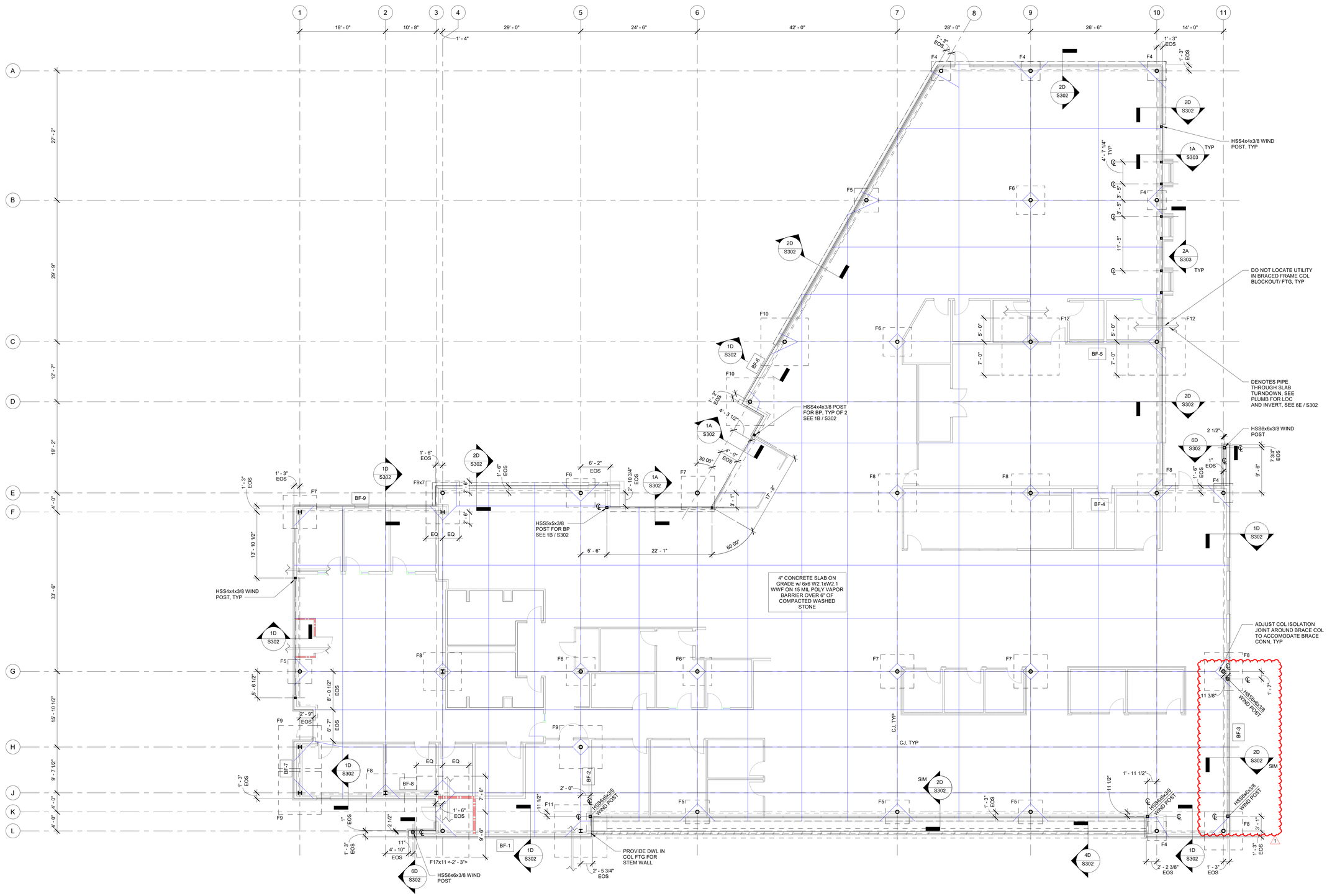
PROJECT TEAM
Jerry Guerrier, AIA
Charlie Hagen-Cazés, AIA
D. Powlen, PLA, M. Sweitzer

PROJECT NAME
NORTHCHASE BRANCH LIBRARY
4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
TREE PLANTING PLAN

SHEET NUMBER
L200



1A FOUNDATION PLAN

S101 — 1/8" = 1'-0"

NOTES:

1. SEE S001 FOR GENERAL NOTES AND ABBREVIATIONS.
2. FINISHED FLOOR ELEVATION 35.50', UNO. REFERENCE ELEVATION 0' - 0", DATUM.
3. TOP OF FOOTING 2' - 0" BELOW FINISHED FLOOR ELEVATION, UNO. <No> INDICATES TOP OF FOOTING ELEVATION, SEE PLAN.
4. "F#" INDICATES FOOTING TYPE, SEE S301.
5. "BF#" INDICATES BRACED FRAME TYPE. SEE S201 FOR ELEVATIONS AND DETAILS.
6. SEE S301 FOR COLUMN SCHEDULE.
7. SEE S301 FOR TYPICAL SLAB CONSTRUCTION DETAILS.
8. ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED.
9. WIND POST BASE PLATE CONNECTION, SEE 1B / S302

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BID SET

ISSUE DATE
03.28.2024

REVISIONS

NO.	REASON	DATE
1	ADDENDUM 4	04.22.2024

PROJECT TEAM
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Sohan Shetty, P.E.

PROJECT NAME
NORTHCHASE BRANCH LIBRARY
4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
FOUNDATION PLAN

SHEET NUMBER
S101

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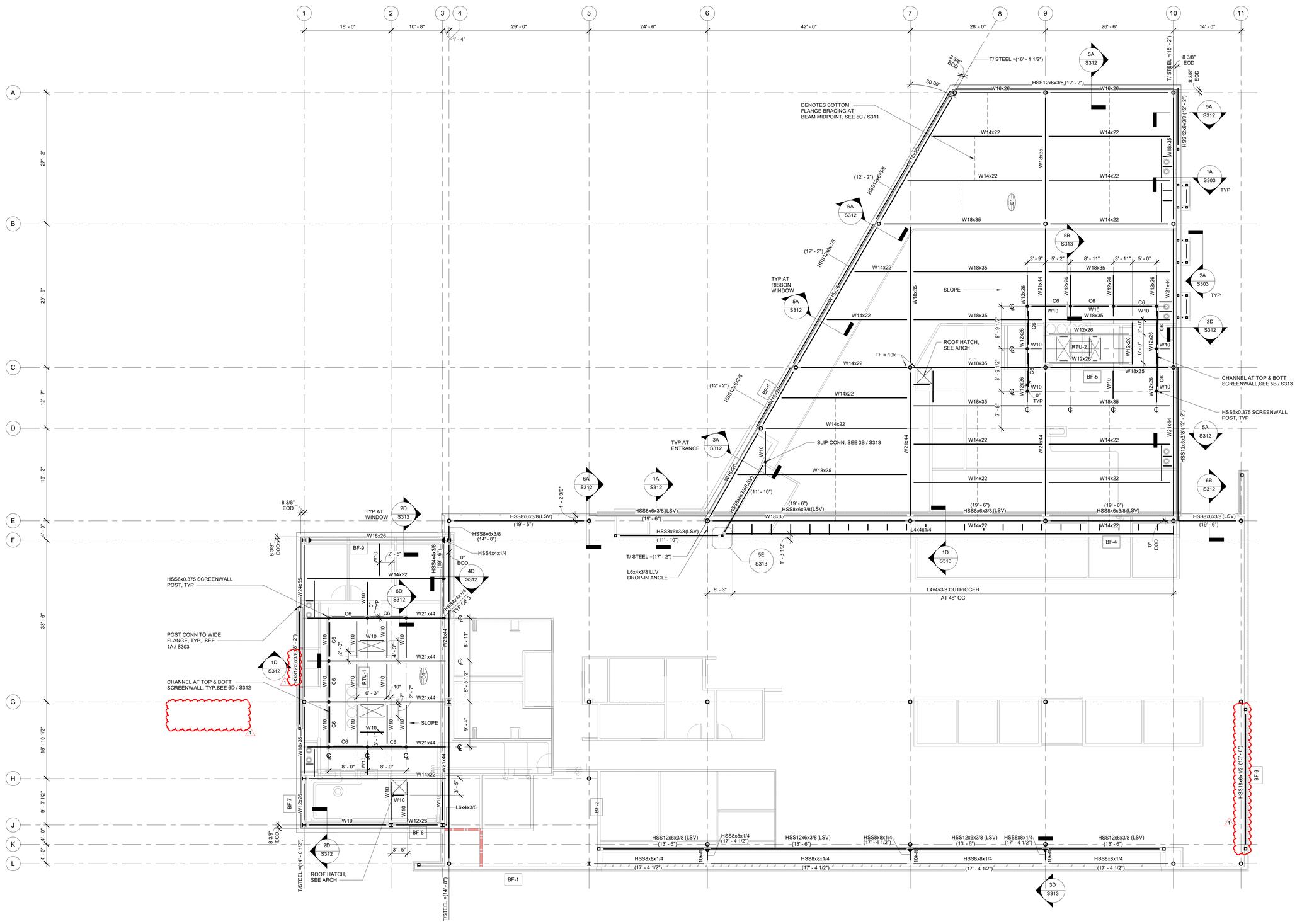

1A S102 **LOW ROOF FRAMING PLAN**

1/8" = 1'-0"

NOTES:

1. SEE S001 FOR GENERAL NOTES AND ABBREVIATIONS.
2. (No) INDICATES TOP OF STEEL ELEVATION ABOVE REFERENCE DATUM ELEVATION.
3. "BF#" INDICATES BRACED FRAME TYPE. SEE S201 FOR ELEVATIONS AND DETAILS.
4. SEE S311 FOR TYPICAL ROOF FRAMING DETAILS.
5. SEE S301 FOR COLUMN SCHEDULE.
6. MAXIMUM WEIGHTS FOR RTUs = 7,000 LBS. CONTRACTOR TO NOTIFY EOR IF RTU WEIGHTS ARE HIGHER THAN INDICATED. RTU SUPPORTS LOCATIONS BASED ON BASIS OF DESIGN MECH UNIT. FINAL LOCATIONS TO BE DETERMINED ONCE FINAL SELECTION IS MADE.
7. W10 INDICATES W10x15
8. C6 INDICATES C6x10.5

D1 METAL ROOF DECK, 3" TYPE "NA" ACOUSTICAL, 18 GA, GALV G60 FINISH, SEE S311 FOR ATTACHMENT. BASE BID TO BE 3" ACOUSTICAL METAL DECK. ALTERNATE TO BE 3" TYPE "NPA" CELLULAR ACOUSTIC METAL DECK SYSTEM.

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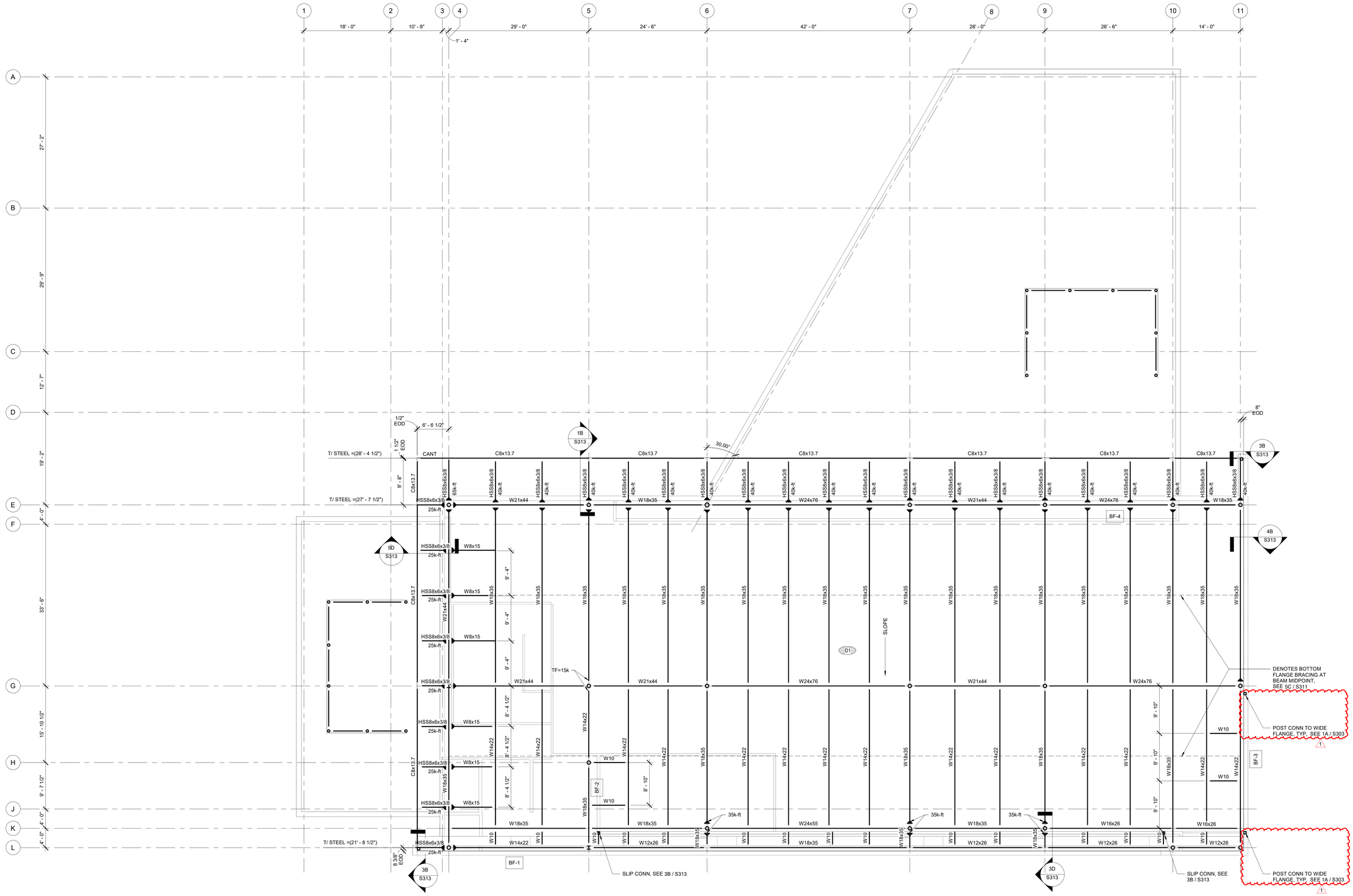
PROJECT TEAM
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Sohan Shetty, P.E.

PROJECT NAME
NORTHCHASE BRANCH LIBRARY
4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
LOW ROOF FRAMING PLAN

SHEET NUMBER
S102



1A HIGH ROOF FRAMING PLAN

S103 1/8" = 1'-0"

NOTES:

1. SEE S001 FOR GENERAL NOTES AND ABBREVIATIONS.
2. (No) INDICATES TOP OF STEEL ELEVATION ABOVE REFERENCE DATUM ELEVATION.
3. "BF#" INDICATES BRACED FRAME TYPE. SEE S201 FOR ELEVATIONS AND DETAILS.
4. SEE S311 FOR TYPICAL ROOF FRAMING DETAILS.
5. SEE S301 FOR COLUMN SCHEDULE.
6. ▶ INDICATES MOMENT CONNECTION, SEE PLAN

(D1) :METAL ROOF DECK, 3" TYPE "NA" ACOUSTICAL, 18 GA, GALV G60 FINISH, SEE S311 FOR ATTACHMENT. BASE BID TO BE 3" ACOUSTICAL METAL DECK. ALTERNATE TO BE 3" TYPE "NPA" CELLULAR ACOUSTIC METAL DECK SYSTEM.

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NO.	REASON	DATE
1	ADDENDUM 4	04.22.2024

PROJECT TEAM
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Sohan Shetty, P.E.

PROJECT NAME
NORTHCHASE BRANCH LIBRARY

4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
HIGH ROOF FRAMING PLAN

SHEET NUMBER
S103

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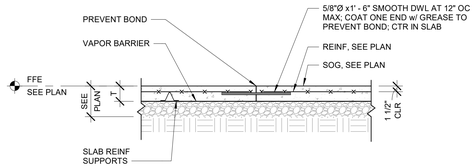
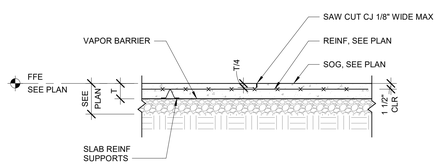


1E SLAB ON GRADE CONSTRUCTION JOINT DETAIL

S302 — 3/4" = 1'-0"

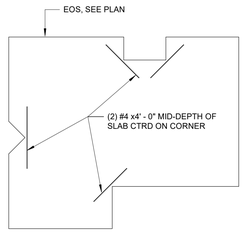
NOTES:
1. DO NOT RUN WWF THROUGH CONSTRUCTION JOINT.



2E SLAB ON GRADE CONTRACTION JOINT DETAIL

S302 — 3/4" = 1'-0"

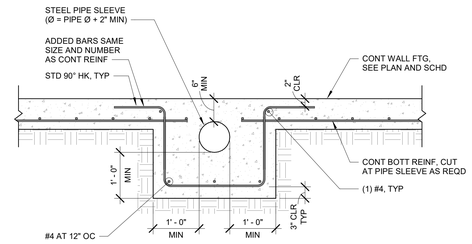
NOTES:
1. CUT EVERY OTHER WIRE WHERE CONTRACTION JOINTS ARE TO BE CUT.
2. SAW CUT SLAB WITHIN 8 HOURS OF CONCRETE POUR.



4E SLAB RE-ENTRANT CORNER REINFORCING

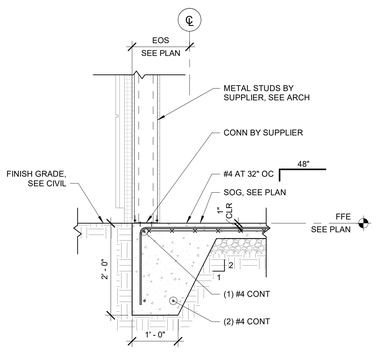
S302 — NOT TO SCALE

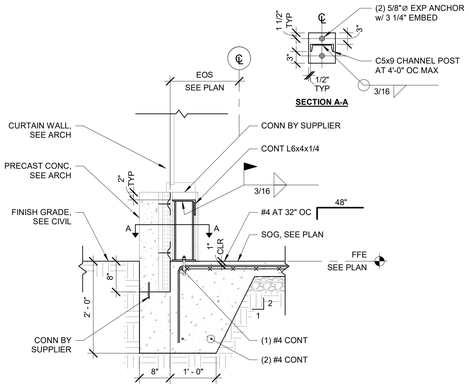
NOTES:
1. WHERE SLAB CONTRACTION JOINT INTERSECTS RE-ENTRANT CORNER ADDED SLAB REINFORCING IS NOT REQUIRED. SEE PLAN FOR JOINT LOCATIONS.

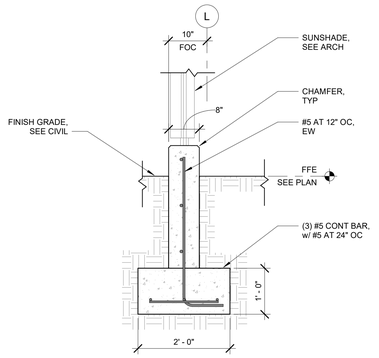


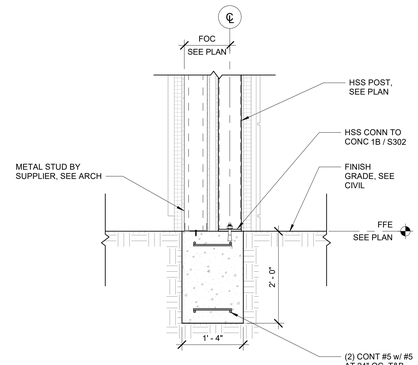
6E TYPICAL PIPE SLEEVE THROUGH FOOTING

S302 — 3/4" = 1'-0"



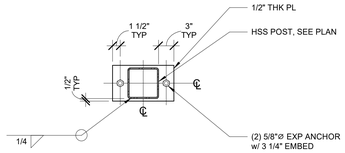






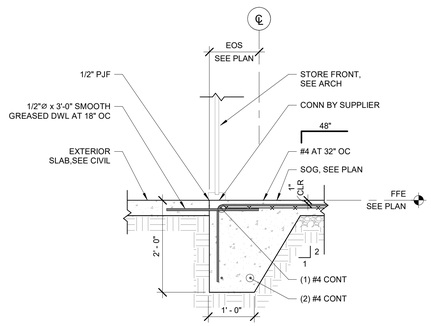
1D SECTION

S302 — 3/4" = 1'-0"



1B WINDPOST BASE PLATE DETAIL

S302 — 1" = 1'-0"



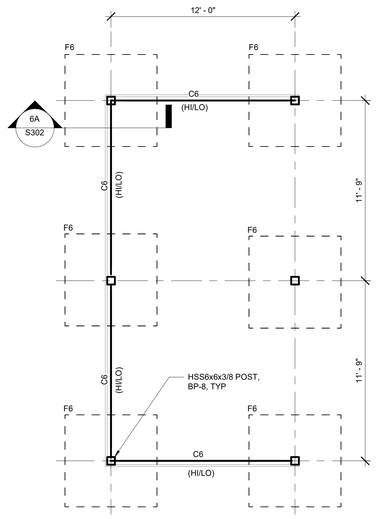
1A SECTION

S302 — 3/4" = 1'-0"

2D SECTION

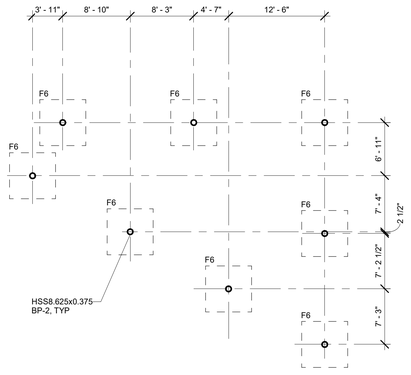
S302 — 3/4" = 1'-0"

NOTE:
1. AT SIM SECTION AT SUNSHADE LOCATION THE SUNSHADE FOUNDATION IS NOT SHOWN, SEE 4D/S302 FOR SUNSHADE FOUNDATION.
2. AT SIM SECTION AT WINDOW THERE IS NO PRECAST CONC, SEE ARCH. /1



4D SECTION

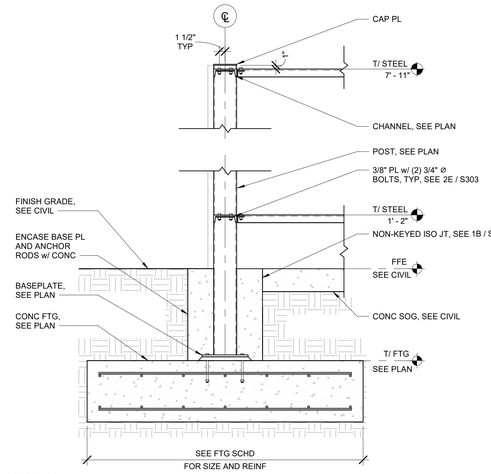
S302 — 3/4" = 1'-0"



6D SECTION

S302 — 3/4" = 1'-0"

NOTES:
1. EXTEND CONTINUOUS BARS INTO TURNED DOWN SLAB EDGE FOR CLASS B LAP LENGTH MINIMUM



3A DUMPSTER SCREEN WALL PLAN

S302 — 1/4" = 1'-0"

NOTES:
1. SEE S001 FOR GENERAL NOTES AND ABBREVIATIONS.
2. FINISHED FLOOR ELEVATION 35.50', UNO. REFERENCE ELEVATION 0' - 0", DATUM.
3. TOP OF FOOTING 2' - 0" BELOW FINISHED FLOOR ELEVATION, UNO. <No> INDICATES TOP OF FOOTING ELEVATION, SEE PLAN.
4. "F#" INDICATES FOOTING TYPE, SEE S301.
5. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF DUMPSTER STRUCTURE.
6. C6 DENOTES C6x10.5

4A ADD ALTERNATE - STORYTIME AREA FND PLAN

S302 — 1/8" = 1'-0"

NOTES:
1. SEE S001 FOR GENERAL NOTES AND ABBREVIATIONS.
2. FINISHED FLOOR ELEVATION 35.50', UNO. REFERENCE ELEVATION 0' - 0", DATUM.
3. TOP OF FOOTING 2' - 0" BELOW FINISHED FLOOR ELEVATION, UNO. <No> INDICATES TOP OF FOOTING ELEVATION, SEE PLAN.
4. "F#" INDICATES FOOTING TYPE, SEE S301.
5. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF STORY TIME STRUCTURE.

6A SECTION

S302 — 3/4" = 1'-0"

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NEW HANOVER COUNTY PUBLIC LIBRARY

NORTH CAROLINA PROFESSIONAL SEAL 052654 ENGINEER SOHAN P SHETTY
04.22.2024

ISSUE FOR
BID SET

ISSUE DATE
03.28.2024

REVISIONS

NO.	REASON	DATE
1	ADDENDUM 4	04.22.2024

PROJECT TEAM
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Sohan Shetty, P.E.

PROJECT NAME
NORTHCHASE BRANCH LIBRARY

4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
FOUNDATION DETAILS-II

SHEET NUMBER
S302

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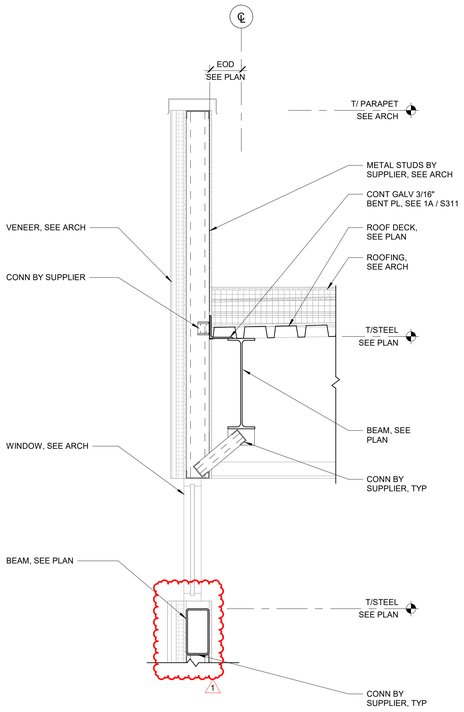
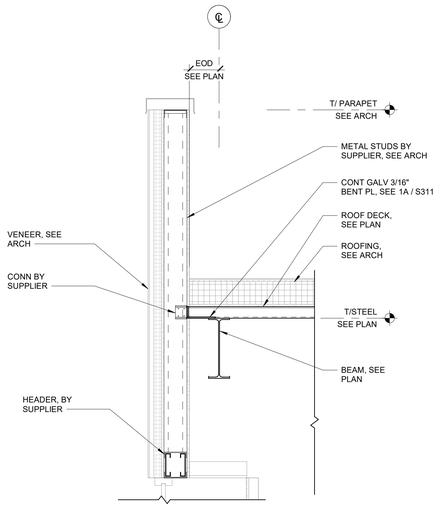
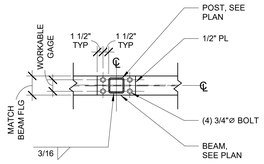


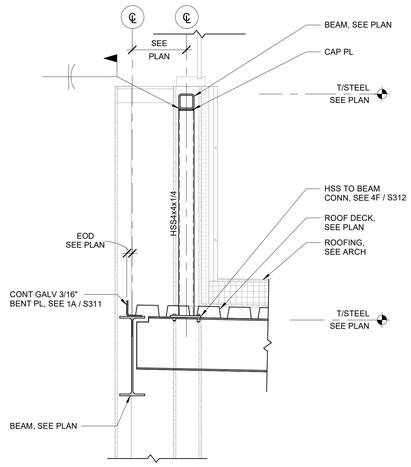
1D SECTION
S312 3/4" = 1'-0"



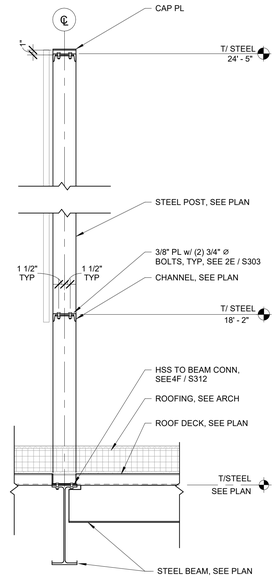
2D SECTION
S312 3/4" = 1'-0"



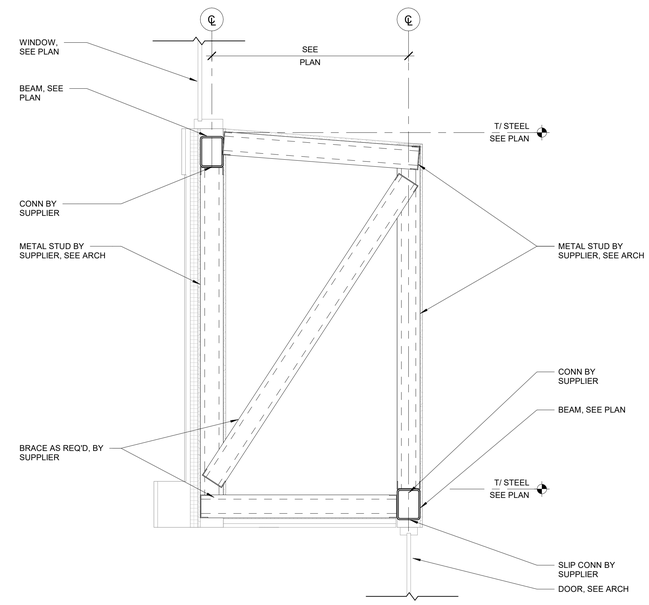
4F HSS POST TO STEEL BEAM
S312 3/4" = 1'-0"



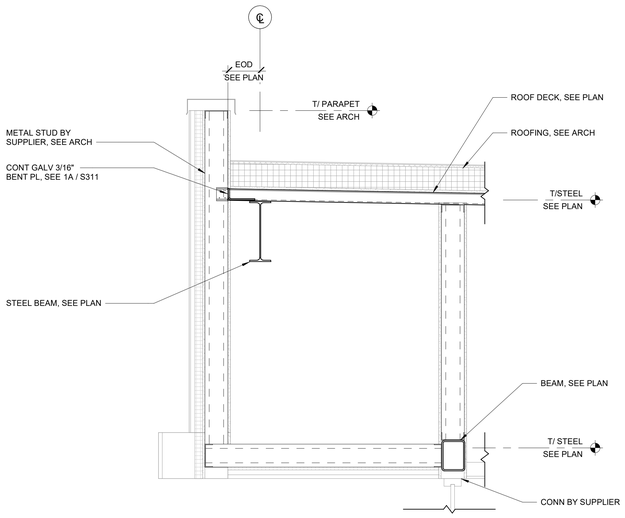
4D SECTION
S312 3/4" = 1'-0"



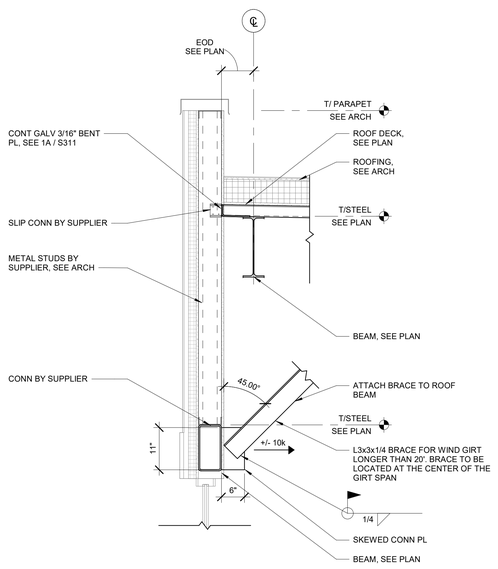
6D SECTION
S312 3/4" = 1'-0"



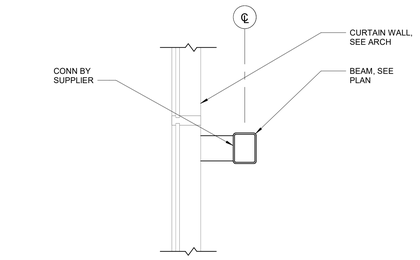
1A SECTION
S312 3/4" = 1'-0"



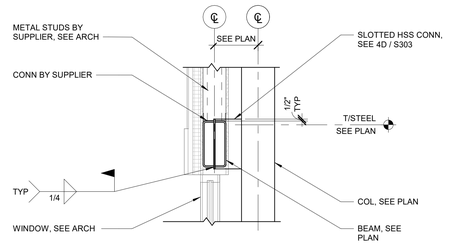
3A SECTION
S312 3/4" = 1'-0"



5A SECTION
S312 3/4" = 1'-0"



6B SECTION
S312 3/4" = 1'-0"



6A SECTION
S312 3/4" = 1'-0"

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PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
Sohan Shetty, P.E.

PROJECT NAME
NORTHCHASE BRANCH LIBRARY

4400 Northchase Parkway NE
Wilmington NC 28405

PROJECT NO.
514.18349.00

SHEET TITLE
ROOF FRAMING DETAILS-II

SHEET NUMBER
S312

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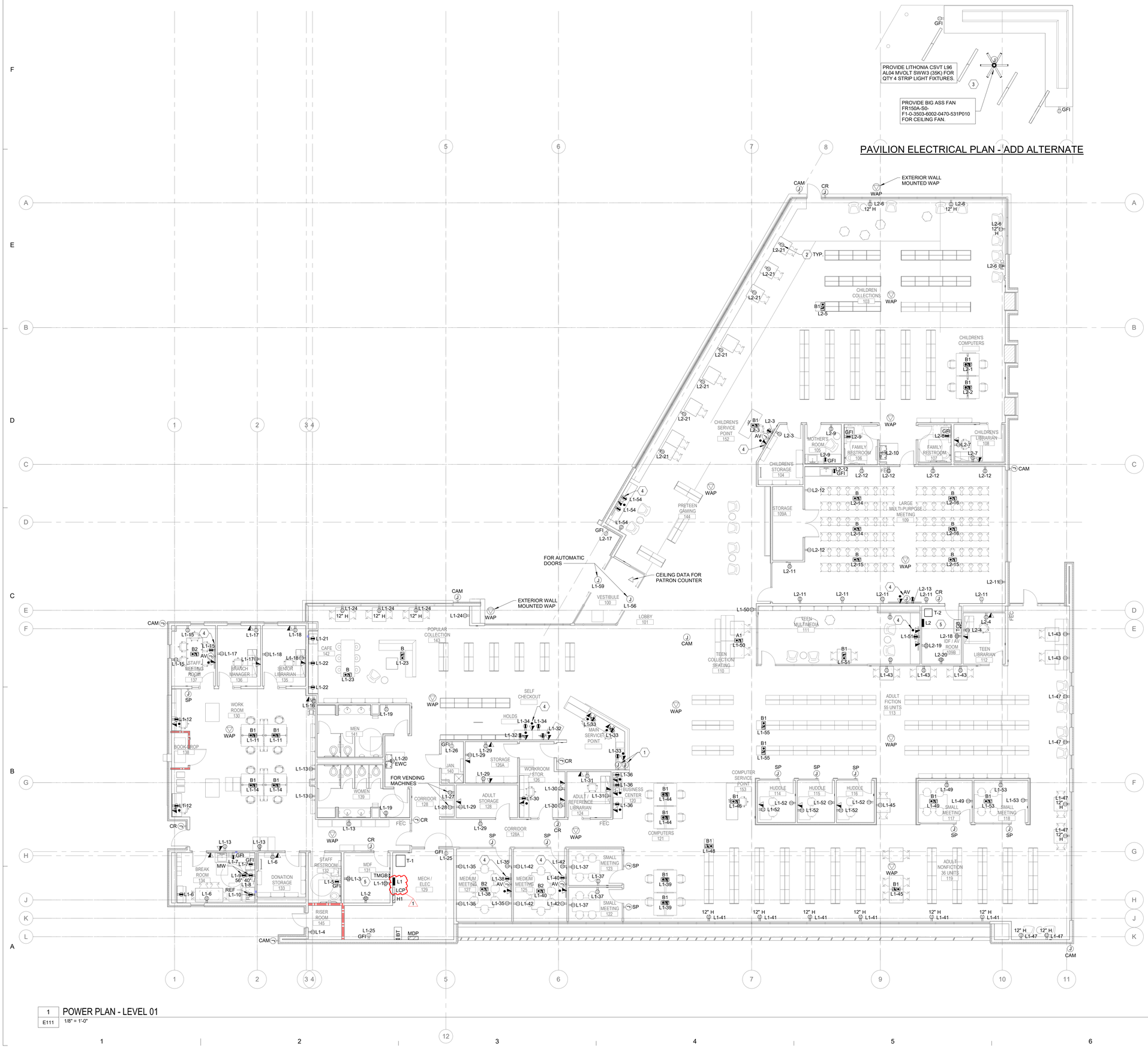

KEY NOTES

1. JUNCTION BOXES FOR POWER AND DATA TO OUTLETS IN MILLWORK. INSTALL BELOW COUNTER.
2. COORDINATE HEIGHT FOR RECEPTACLES ON BENCH.
3. ADD ALTERNATE: PROVIDE POWER (2 RECEPTACLES), CEILING FAN, AND QTY 4 LIGHT FIXTURES (ON CEILING) IN PAVILION. COORDINATE DEVICE SELECTIONS WITH CONTRACTOR PRIOR TO INSTALLATION.
4. COORDINATE MOUNTING HEIGHTS FOR POWER AND DATA FOR WALL MONITORS WITH OWNER.
5. LINE THE WALLS OF THE ROOM WITH FIRE TREATED PLYWOOD. CONFIRM THE EXTENT WITH THE OWNER.

GENERAL SHEET NOTES

A. ALL NEW RECEPTACLES AND TELEPHONE/DATA OUTLETS SHALL BE FLUSH-MOUNTED. ALL NEW CONDUIT AND RACEWAY SHALL BE CONCEALED. PROVIDE CUTTING AND PATCHING AS REQUIRED. VERIFY EXTENT OF NEW AND EXISTING PARTITIONS WITH ARCHITECTURAL DRAWINGS.

B. CONTRACTOR TO VERIFY ALL TELE/DATA LOCATIONS WITH OWNER, PRIOR TO ROUGH-IN.

C. ALL SCHEDULING PANELS SHALL BE MOUNTED ON GLASS SURFACE, WHERE NECESSARY.

D. DATA RACEWAY FOR FLOOR BOXES SHALL BE INSTALLED UNDERGROUND TO THE CLOSER OF THE MDF OR IDF ROOM. GROUP TOGETHER AT A CLEAR SPACE AT WALL OF THE RESPECTIVE ROOM.

RATED WALL LEGEND

FIRE BARRIER		FIRE & SMOKE BARRIER	
1-HOUR		1-HOUR	
2-HOUR		2-HOUR	
3-HOUR		3-HOUR	
FIRE WALL		**FIRE PARTITION**	
2-HOUR		0.5-HOUR	
3-HOUR		1-HOUR	
4-HOUR			
SMOKE PARTITION		**SMOKE BARRIER**	
0-HOUR		1-HOUR	

KEY PLAN

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NORTH CAROLINA PROFESSIONAL SEAL 15363 ENGINEER HERBERT N. BENDILLO
04-22-2024

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BID SET

ISSUE DATE
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REVISIONS

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PROJECT TEAM
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
RCK

PROJECT NAME
NORTHCHASE BRANCH LIBRARY

PROJECT NO.
514.18349.00

SHEET TITLE
ELECTRICAL POWER PLAN

SHEET NUMBER
E111

2 LIGHTING PLAN - CLERESTORY - NEW WORK
E121 1/8" = 1'-0"

1 LIGHTING PLAN - LEVEL 01
E121 1/8" = 1'-0"

KEY NOTES

1 CONNECT TO LIGHTING CIRCUIT H1-3.

2 FOR MAIN SERVICE POINT LIGHTING. CONTROLS BOTH CAN LIGHTS AND PENDANTS.

GENERAL SHEET NOTES

A. ALL EXIT SIGNS SHALL BE ON UNSWITCHED "HOT" LEG SERVING THE AREA, CONNECTED AHEAD OF SWITCH SERVING AREA/ROOM.

B. ALL EXIT SIGNS SHALL BE INSTALLED AS PER NFPA. WALL MOUNTED EXIT SIGNS SHALL BE MOUNTED SO THAT THE BOTTOM EDGE OF THE SIGN IS 2" CLEAR OF THE DOOR LINTEL OR FINISHED DOOR TRIM. WHERE WALL MOUNTING AFFECTS FIRE RATING OF THE AREA (SUCH AS STAIR ENCLOSURES), EXIT SIGN SHALL BE CEILING MOUNTED. THE BOTTOM OF THE SIGN MUST BE OUT OF THE EGRESS PATH OR ABOVE THE MINIMUM HEADROOM HEIGHT.

C. CONTRACTOR SHALL COORDINATE NUMBER AND LOCATION OF OCCUPANCY/VACANCY SENSORS AS PER MANUFACTURER RECOMMENDATIONS TO ASSURE COVERAGE IN ALL OCCUPIABLE AREAS OF ROOMS COVERED. CONTRACTOR SHALL COORDINATE FINAL LOCATIONS WITH ACTUAL INSTALLATION OF OTHER CEILING DEVICES (INCLUDING DIFFUSERS). LOCATE TO ENSURE ADEQUATE FUNCTIONALITY AND OPERATION.

D. IN ROOMS WITH LOW VOLTAGE DIMMER SWITCHES: PROVIDE A COMPLETE INSTALLATION INCLUDING BUT NOT LIMITED TO POWER PACK, LOW VOLTAGE WIRING FROM EACH DIMMING DIMMER DRIVER TO RELAY/POWER PACK, AND CAT5 CABLING FROM POWER PACK TO SWITCH, AS REQUIRED. PROVIDE 4"X4" JUNCTION BOX FOR POWER PACKS. REFER TO LIGHTING CONTROL DIAGRAMS FOR ADDITIONAL REQUIREMENTS.

E. ALL SITE/EXTERIOR LIGHTS SHALL TURN 'ON' VIA PHOTOCELL, ADJUSTABLE TIME 'OFF'.

F. FOR ALL EMERGENCY LIGHTS SHOWN ON PLANS, LAMPS SHALL TURN 'ON' FULL BRIGHTNESS WHEN BUILDING IS POWERED BY THE GENERATOR, REGARDLESS OF SWITCH POSITION. PROVIDE A TRANSFER DEVICE (BODINE GTD OR EQUAL) OR ADDITIONAL RELAYS AS REQUIRED. IF A TRANSFER DEVICE IS PROVIDED, EACH EMERGENCY FIXTURE SHALL BE CONNECTED TO BOTH NORMAL POWER AND EMERGENCY POWER. CONNECT TO NORMAL CIRCUIT WHICH SERVES SAME ROOM OR NEARBY CIRCUIT ON SAME PHASE IN SAME PANEL.

G. COORDINATE AND ADJUST ALL LIGHTING FIXTURES IN MECHANICAL ROOMS AND OTHER OPEN CEILING ROOMS (TYPICAL) WITH ACTUAL INSTALLATION OF PIPING, DUCTS, SPECIAL EQUIPMENT, ETC. COORDINATE PRIOR TO ROUGH-IN.

H. SEE E121 FOR ADD ALTERNATE LIGHTING IN PAVILION. CONNECT LIGHTING TO LOCAL 277V LIGHTING CIRCUIT.

RATED WALL LEGEND

FIRE BARRIER		FIRE & SMOKE BARRIER	
1-HOUR		1-HOUR	
2-HOUR		2-HOUR	
3-HOUR		3-HOUR	
FIRE WALL		**FIRE PARTITION**	
2-HOUR		0.5-HOUR	
3-HOUR		1-HOUR	
4-HOUR			
SMOKE PARTITION		**SMOKE BARRIER**	
0-HOUR		1-HOUR	

KEY PLAN

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PROJECT NO.
514.18349.00

SHEET TITLE
ELECTRICAL LIGHTING PLAN

SHEET NUMBER
E121

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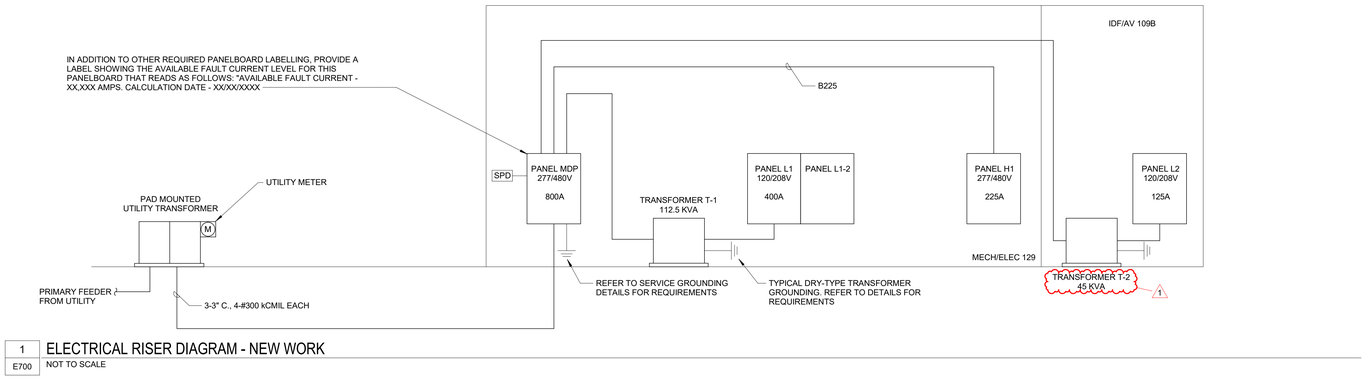

1 E700 **ELECTRICAL RISER DIAGRAM - NEW WORK**

NOT TO SCALE

TRANSFORMER SCHEDULE									
KVA Rating	Primary Section 480V Delta				Secondary Section 208Y/120V				GROUND
	FLA	125% FLA	OC Protection	Feeder Size	FLA	125% FLA	OC Protection	Feeder Size	
3	4	5	15 A	3#12, 1#12G IN 1/2"C	8	10	20 A	4#12, 1#12G IN 1/2"C	1#8:1/2"C
6	7	9	15 A	3#12, 1#12G IN 1/2"C	17	21	25 A	4#10, 1#10G IN 1/2"C	1#8:1/2"C
9	11	14	15 A	3#12, 1#12G IN 1/2"C	25	31	35 A	4#8, 1#10G IN 1"C	1#8:1/2"C
15	18	23	25 A	3#10, 1#10G IN 3/4"C	42	52	60 A	4#6, 1#8G IN 1-1/4"C	1#8:1/2"C
30	36	45	45 A	3#8, 1#10G IN 3/4"C	83	104	100 A	4#1, 1#6G IN 1-1/2"C	1#6:1/2"C
45	54	68	70 A	3#4, 1#8G IN 1"C	125	156	150 A	4#1/0, 1#6G IN 2"C	1#6:1/2"C
75	90	113	125 A	3#1/0, 1#6G IN 1-1/2"C	208	260	250 A	4-250KCMIL, 1#2G IN 3"C	1#2:3/4"C
112.5	135	169	175 A	3#2/0, 1#6G IN 2"C	312	390	400 A	2 SETS (4-3/0, #1/0G IN 2-1/2"C) OR 4-600KCMIL, 1#1/0G IN 3-1/2"C	1#1/0:3/4"C
150	180	226	225 A	3#4/0, 1#4G IN 2-1/2"C	416	520	500 A	2 SETS OF (4-250KCMIL, 1#1/0G IN 3"C)	1#1/0:1"C
225	271	338	350 A	3-500KCMIL, 1#3G IN 3"C	625	781	800 A	3 SETS OF (4-300KCMIL, 1#2/0G IN 3-1/2"C) OR 2 SETS OF (4-600KCMIL, 1#3/0G IN 4"C)	1#2/0:1-1/4"C
300	361	451	450 A	2 SETS OF (3-4/0, 1#1G IN 2-1/2"C)	833	1041	1000 A	3 SETS OF (4-400KCMIL, 1#3/0G IN 3"C)	1#3/0:1/2"C
500	601	752	800 A	2 SETS OF (3-500KCMIL, 1#1/0G IN 3-1/2"C)	1388	1735	1600 A	5 SETS OF (3-400KCMIL, 1#3/0G IN 3"C)	1#3/0:1/2"C

FEEDER SCHEDULE B								
4 WIRE + EGC (100% NEUTRAL)								
TAG	MINIMUM CONDUIT		Cu CONDUCTORS PER CONDUIT					
			PHASE		NEUTRAL		EGC	
AMPS	QTY	SIZE	QTY	AWG	QTY	AWG	QTY	AWG
B20	1	3/4	3	12	1	12	1	12
B30	1	3/4	3	10	1	10	1	10
B40	1	1	3	8	1	8	1	10
B50	1	1-1/4	3	6	1	6	1	10
B70	1	1-1/4	3	4	1	4	1	8
B80	1	1-1/2	3	3	1	3	1	8
B100	1	2	3	1	1	1	1	8
B125	1	2	3	1/0	1	1/0	1	6
B150	1	2	3	1/0	1	1/0	1	6
B175	1	2	3	2/0	1	2/0	1	6
B200	1	2-1/2	3	3/0	1	3/0	1	6
B225	1	2-1/2	3	4/0	1	4/0	1	4
B250	1	3	3	250	1	250	1	4
B300	1	3-1/2	3	350	1	350	1	4
B350	1	4	3	500	1	500	1	2
B400	2	2-1/2	3	3/0	1	3/0	1	3
B500	2	3	3	250	1	250	1	1
B600	2	3-1/2	3	350	1	350	1	1
B700	2	4	3	500	1	500	1	1/0
B800	3	3-1/2	3	300	1	300	1	1/0
B1000	3	3-1/2	3	400	1	400	1	2/0
B1200	4	3-1/2	3	350	1	350	1	3/0
B1600	5	3-1/2	3	400	1	400	1	4/0

FEEDER SCHEDULE A						
3 WIRE + EGC						
TAG	MINIMUM CONDUIT		Cu CONDUCTORS PER CONDUIT			
			PHASE		EGC	
AMPS	QTY	SIZE	QTY	AWG	QTY	AWG
A20	1	3/4	3	12	1	12
A30	1	3/4	3	10	1	10
A40	1	1	3	8	1	10
A50	1	1	3	6	1	10
A70	1	1-1/4	3	4	1	8
A80	1	1-1/4	3	2	1	8
A100	1	1-1/2	3	1	1	8
A125	1	1-1/2	3	1/0	1	6
A150	1	2	3	1/0	1	6
A175	1	2	3	2/0	1	6
A200	1	2	3	3/0	1	6
A225	1	2-1/2	3	4/0	1	4
A250	1	2-1/2	3	250	1	4
A300	1	3	3	350	1	4
A350	1	3-1/2	3	500	1	2
A400	2	2-1/2	3	3/0	1	2
A500	2	2-1/2	3	250	1	1
A600	2	3	3	350	1	1
A700	2	3-1/2	3	500	1	1/0
A800	3	3	3	300	1	1/0
A1000	3	3	3	400	1	2/0
A1200	3	3	3	350	1	3/0
A1600	4	3	3	400	1	4/0

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Durham, NC 27701
(919) 474-2500
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04-22-2024

ISSUE FOR
BID SET

ISSUE DATE
03.28.2024

REVISIONS

NO.	REASON	DATE
1	ADDENDUM 4	04.22.2024

PROJECT TEAM
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
RCK

PROJECT NAME
NORTHCHASE BRANCH LIBRARY

PROJECT NO.
514.18349.00

SHEET TITLE
SINGLE LINE DIAGRAM

SHEET NUMBER
E700

Branch Panel: MDP

Location: MECH / ELEC 129
Supply From:
Mounting: Surface
Enclosure: Type 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 30,000
Mains Type: MCB
Mains Rating: 800 A
MCB Rating: 800 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	BP-1	50 A	3	10.34	8.15					3	40 A	HVAC: FPB-1-05A, -1-05B	2
3	--	--	--			10.34	8.15			--	--	--	4
5	--	--	--					10.34	8.15	--	--	--	6
7	HVAC: FPB-1-06, -1-07	45 A	3	7.82	10.23					3	50 A	HVAC: FPB-2-01, -2-02A, -2-02B	8
9	--	--	--			7.82	10.23			--	--	--	10
11	--	--	--					7.82	10.23	--	--	--	12
13	HVAC: VAV-2-03A, -2-03B	40 A	3	8	9.06					3	45 A	HVAC: FPB-2-03, -2-04, -2-05	14
15	--	--	--			8	9.06			--	--	--	16
17	--	--	--					8	9.06	--	--	--	18
19	HVAC: RTU-1	150 A	3	33.87	33.87					3	150 A	HVAC: RTU-2	20
21	--	--	--			33.87	33.87			--	--	--	22
23	--	--	--					33.87	33.87	--	--	--	24
25	SPACE	--	3	--	--					3	--	SPACE	26
27	--	--	--			--	--			--	--	--	28
29	--	--	--					--	--	--	--	--	30
31	PANEL H1	225 A	3	51.51	0					3	60 A	SURGE PROTECTION DEVICE (SPD)	32
33	--	--	--			46.88	0			--	--	--	34
35	--	--	--					38.93	0				36
37	TRANSFORMER T-1	125 A	3	23.39	8.51					3	70 A	TRANSFORMER T-2	38
39	--	--	--			21.17	10.73			--	--	--	40
41	--	--	--					24.83	8.75	--	--	--	42
		Total Load:		204.72 kVA		200.1 kVA		193.83 kVA					
		Total Amps:		743 A		726 A		700 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	544.13 kVA	100.00%	544.13 kVA		
Lighting	11.69 kVA	100.00%	11.69 kVA	**Total Conn. Load:**	598.64 kVA
Other	2 kVA	100.00%	2 kVA	**Total Est. Demand:**	588.79 kVA
Receptacle	29.7 kVA	66.84%	19.85 kVA	**Total Conn. Current:**	720 A
Misc Load	11.16 kVA	100.00%	11.16 kVA	**Total Est. Demand Current:**	708 A

Notes:
1. PROVIDE SERVICE RATED SURGE PROTECTIION DEVICE. REFER TO SPECIFICATIONS FOR RATING REQUIREMENTS. PROVIDE INTEGRAL OR SEPARATE DEVICE. CONFIRM CIRCUIT BREAKER SIZE ACCORDING TO MANUFACTURES RECOMMENDATIONS.

Branch Panel: H1

Location: MECH / ELEC 129
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MCB
Mains Rating: 225 A
MCB Rating: 225 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	L: PLAN MIDDLE	20 A	1	2.58	3.14					1	20 A	L: PLAN NORTH	2
3	L: PLAN WEST	20 A	1			2.61	2.79			1	20 A	L: PLAN SOUTH (ADULT NON-FICTION)	4
5	L: EXTERIOR PATH LIGHTING	20 A	1					0.59	5.82	1	30 A	HVAC: FPB-1-02, -1-03	6
7	HVAC: FPB-1-01	25 A	3	5.4	3.33					3	20 A	HVAC: VAV-1-03, -1-04	8
9	--	--	--			5.4	3.33			--	--	--	10
11	--	--	--					5.4	3.33	--	--	--	12
13	HVAC: FPB-1-08	25 A	3	5.08	5.16					3	25 A	HVAC: VAV-2-01, -2-02	14
15	--	--	--			5.08	5.16			--	--	--	16
17	--	--	--					5.08	5.16	--	--	--	18
19	HVAC: FPB-1-09B	30 A	3	6.42	6.42					3	30 A	HVAC: FPB-1-09A	20
21	--	--	--			6.42	6.42			--	--	--	22
23	--	--	--					6.42	6.42	--	--	--	24
25	HVAC: VAV-1-01, -1-02	25 A	1	4.99	9					1	40 A	EWH-3-2	26
27	EWH-3-1	40 A	1			9	0.72			1	20 A	HVAC: EF-2	28
29	HVAC: EF-1	20 A	1					0.72	0	1	20 A	SPARE	30
31	SPARE	20 A	1	0	0					1	20 A	SPARE	32
33	SPARE	20 A	1			0	0			1	20 A	SPARE	34
35	SPARE	20 A	1					0	0	1	20 A	SPARE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		Total Load:		51.51 kVA		46.88 kVA		38.93 kVA					
		Total Amps:		190 A		174 A		141 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	125.66 kVA	100.00%	125.66 kVA		
Lighting	11.69 kVA	100.00%	11.69 kVA	**Total Conn. Load:**	137.32 kVA
				Total Est. Demand:	137.32 kVA
				Total Conn. Current:	165 A
				Total Est. Demand Current:	165 A

Notes:

Branch Panel: L1

Location: MECH / ELEC 129
Supply From: T-1
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22,000
Mains Type: MCB
Mains Rating: 400 A
MCB Rating: 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	R: QUAD MDF 131	20 A	1	0.36	0.36					1	20 A	R: QUAD MDF 131	2
3	R: QUAD MDF 131	20 A	1			0.36	0.18			1	20 A	R: RISER ROOM 145	4
5	R: STAFF RESTROOM 132	20 A	1					0.18	0.54	1	20 A	R: BREAK ROOM 134/DONATION STOR 135	6
7	R: BREAKROOM 134	20 A	1	0.36	0.18					1	20 A	R: BOT MICROWAVE BREAK ROOM 134 (GFI)	8
9	R: TOP MICROWAVE BREAK ROOM 134 (GFI)	20 A	1			0.18	0.18			1	20 A	R: REFRIGERATOR BREAK ROOM 134 (GFI)	10
11	R: DESKS WORK ROOM 130	20 A	1					0.72	0.36	1	20 A	R: WORK ROOM 130 BOOK DROP AREA	12
13	R: WORK ROOM 130	20 A	1	0.9	0.72					1	20 A	R: WORK ROOM 130 DESKS	14
15	R: STAFF MEETING ROOM 137	20 A	1			0.9	0.18			1	20 A	R: COPY/PRINTER WORK ROOM 130	16
17	R: BRANCH MANAGER 136	20 A	1					0.54	0.54	1	20 A	R: SENIOR LIBRARIAN 135	18
19	R: MEN 141/WOMEN 139	20 A	1	0.36	0.18					1	20 A	R: EWC (GFI)	20
21	R: COFFEE MACHINE CAFE 142 (GFI)	20 A	1			0.18	0.36			1	20 A	R: COUNTERTOPS CAFE 142	22
23	R: FLOORBOXES CAFE 142	20 A	1					0.72	0.72	1	20 A	R: CAFE 142/POPULAR COLLECT 143	24
25	R: MECH/ELEC 129	20 A	1	0.36	0.18					1	20 A	R: JAN. 140	26
27	R: VENDING CORRIDOR 128 (GFI)	20 A	1			0.18	0.18			1	20 A	R: VENDING CORRIDOR 128 (GFI)	28
29	R: STORAGE 126A/ADULT STORAGE 128	20 A	1					0.9	0.54	1	20 A	R: WORKROOM/STOR. 126	30
31	R: ADULT/REFERENCE LIBRARIAN 124	20 A	1	0.36	0.36					1	20 A	R: SELF CHECKOUT DESKS	32
33	R: MAIN SERVICE POINT	20 A	1			0.9	0.36			1	20 A	R: HOLDS WALL MONITOR	34
35	R: MEDIUM MEETING 127	20 A	1					0.72	0.54	1	20 A	R: BUSINESS CENTER 120	36
37	R: SMALL MEETING 123, 122	20 A	1	0.72	0.54					1	20 A	R: FLRBOX/WALL MEDIUM MEETING 127	38
39	R: FLRBOX COMPUTERS 121	20 A	1			0.72	0.54			1	20 A	R: FLRBOX/WALL MEDIUM MEETING 125	40
41	R: WALLS NONFICTION 119	20 A	1					1.08	0.72	1	20 A	R: MEDIUM MEETING 125	42
43	R: WALLS ADULT FICTION 113	20 A	1	0.9	0.72					1	20 A	R: FLRBOX COMPUTERS 121	44
45	R: FLRBOX ADULT NONFICTION 119	20 A	1			0.54	0.36			1	20 A	R: COMPUTER SERVICE POINT 153	46
47	R: WALLS NONFICTION 119/FICTION 113	20 A	1					1.08	0.36	1	20 A	R: FLRBOX FOR NONFICTION KIOSK	48
49	R: SMALL MEETING 117	20 A	1	0.36	0.54					1	20 A	R: TEEN COLLECTION 110	50
51	R: FLRBOX/MONITOR TEEN MULTIMEDIA 111	20 A	1			0.72	1.08			1	20 A	R: HUDDLE ROOMS 114, 115, 116	52
53	R: SMALL MEETING 118	20 A	1					0.72	0.54	1	20 A	R: MONITOR PRETEEN GAMING 144	54
55	R: FLRBOX FOR FICTION KIOSK	20 A	1	0.72	0.5					1	20 A	MOTORIZED DOOR VESTIBULE	56
57	R: ROOFTOP RECEPTACLES	20 A	1			0.36	2.24			2	25 A	HVAC: ODU-1B/IDU-1B	58
59	MOTORIZED DOOR VESTIBULE	20 A	1					0.5	2.24	--	--	--	60
61	HVAC: ODU-1A/IDU-1A	25 A	2	2.24	2.24					2	25 A	HVAC: ODU-3/IDU-3	62
63	--	--	--			2.24	2.24			--	--	--	64
65	HVAC: ODU-2/IDU-2	25 A	2					2.24	2.34	2	20 A	HVAC: EUH-1-1	66
67	--	--	--	2.24	2.34					--	--	--	68
69	EWH-1	40 A	3			3.67	2.34			2	20 A	HVAC: EUH-1-2	70
71	--	--	--					3.67	2.34	--	--	--	72
73	--	--	--	3.67	1					1	20 A	L: MONUMENT SIGN	74
75	SPARE	20 A	1			0	0			1	20 A	SPARE	76
77	SPARE	20 A	1					0	0	1	20 A	SPARE	78
79	SPARE	20 A	1	0	0					1	20 A	SPARE	80
81	SPARE	20 A	1			0	--			1	--	SPACE	82
83	SPARE	20 A	1					0	--	1	--	SPACE	84
		Total Load:		23.39 kVA		21.17 kVA		24.83 kVA					
		Total Amps:		198 A		176 A		210 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	38.24 kVA	100.00%	38.24 kVA		
Other	2 kVA	100.00%	2 kVA	**Total Conn. Load:**	69.4 kVA
Receptacle	21.6 kVA	73.15%	15.8 kVA	**Total Est. Demand:**	63.6 kVA
Misc Load	7.56 kVA	100.00%	7.56 kVA	**Total Conn. Current:**	193 A
				Total Est. Demand Current:	177 A

Notes:
1. "(GFI)" INDICATES GROUND FAULT INTERRUPTER CIRCUIT BREAKER

Branch Panel: L2

Location: IDF / AV ROOM 109B
Supply From: T-2
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 14,000
Mains Type: MCB
Mains Rating: 125 A
MCB Rating: 125 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	R: CHILDREN'S COMPUTERS	20 A	1	0.36	0.36					1	20 A	R: CHILDREN'S COMPUTERS	2
3	R: CHILDREN'S SERVICE POINT 152	20 A	1			0.9	0.36			1	20 A	R: TEEN LIBRARIAN 109B	4
5	R: FLRBOX CHILDREN'S COLLECT 103 KIOSK	20 A	1					0.36	0.72	1	20 A	R: WALL CHILDREN'S COLLECTION 103	6
7	R: CHILDREN'S LIBRARIAN 108	20 A	1	0.36	0.18					1	20 A	R: FAMILY RESTROOM 107	8
9	R: FAMILY RESTROOM 106/MOTHER'S 105	20 A	1			0.54	0.18			1	20 A	R: EWC (GFI)	10
11	R: LARGE M-P MEETING 109	20 A	1					1.26	1.26	1	20 A	R: LARGE M-P MEETING 109	12
13	R: MONITOR LARGE M-P MEETING 109	20 A	1	0.18	0.72					1	20 A	R: FLRBOX LARGE M-P MEETING 109	14
15	R: FLRBOX LARGE M-P MEETING 109	20 A	1			0.72	0.72			1	20 A	R: FLRBOX LARGE M-P MEETING 109	16
17	R: EXTERIOR RECEPTACLE	20 A	1					0.18	0.36	1	20 A	R: IDF/AV ROOM 109B	18
19	R: IDF/AV ROOM 109B	20 A	1	0.36	0.36					1	20 A	R: IDF/AV ROOM 109B	20
21	R: CHILDREN'S SERVICE PT/COLLECT	20 A	1			1.26	2.3			1	20 A	HVAC: HVLS-1-1,2,3	22
23	HVAC: HVLS-1-4,5,6	20 A	1					2.3	2.3	1	20 A	HVAC: HVLS-1-7,8,9	24
25	EWH-2-1	30 A	1	3.5	2.12					1	25 A	HVAC: FPB-1-04	26
27	RP-1	15 A	1			0.24	3.5			1	30 A	EWH-2-2	28
29	SPARE	20 A	1					0	0	1	20 A	SPARE	30
31	SPARE	20 A	1	0	0					1	20 A	SPARE	32
33	SPARE	20 A	1			0	0			1	20 A	SPARE	34
35	SPARE	20 A	1					0	0	1	20 A	SPARE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		Total Load:		8.51 kVA		10.73 kVA		8.75 kVA					
		Total Amps:		71 A		90 A		73 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	16.28 kVA	100.00%	16.28 kVA		
Receptacle	8.1 kVA	100.00%	8.1 kVA	**Total Conn. Load:**	27.98 kVA
Misc Load	3.6 kVA	100.00%	3.6 kVA	**Total Est. Demand:**	27.98 kVA
				Total Conn. Current:	78 A
				Total Est. Demand Current:	78 A

Notes:
1. "(GFI)" INDICATES GROUND FAULT INTERRUPTER CIRCUIT BREAKER

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NORTH CAROLINA PROFESSIONAL SEAL 15363 ENGINEER HERBERT N. BENDOLO
04-22-2024

ISSUE FOR
BID SET

ISSUE DATE
03.28.2024

REVISIONS

NO.	REASON	DATE
1	ADDENDUM 4	04.22.2024

PROJECT TEAM
PRINCIPAL IN CHARGE
Jerry Guerrier, AIA
PROJECT MANAGER
Charlotte Hagen, AIA
DESIGN TEAM
RCK

PROJECT NAME
NORTHCHASE BRANCH LIBRARY

PROJECT NO.
514.18349.00

SHEET TITLE
PANEL SCHEDULES

SHEET NUMBER
E701

King, David

From: Brian Stamp <bstamp@monteithco.com>
Sent: Monday, April 15, 2024 8:32 AM
To: King, David
Subject: FW: NHC Northchase Branch Library Project - Casework RFIs

Categories: Red Category

Please see attached questions.

Brlan Stamp
Vice President/Chief Estimator
monteithco.com
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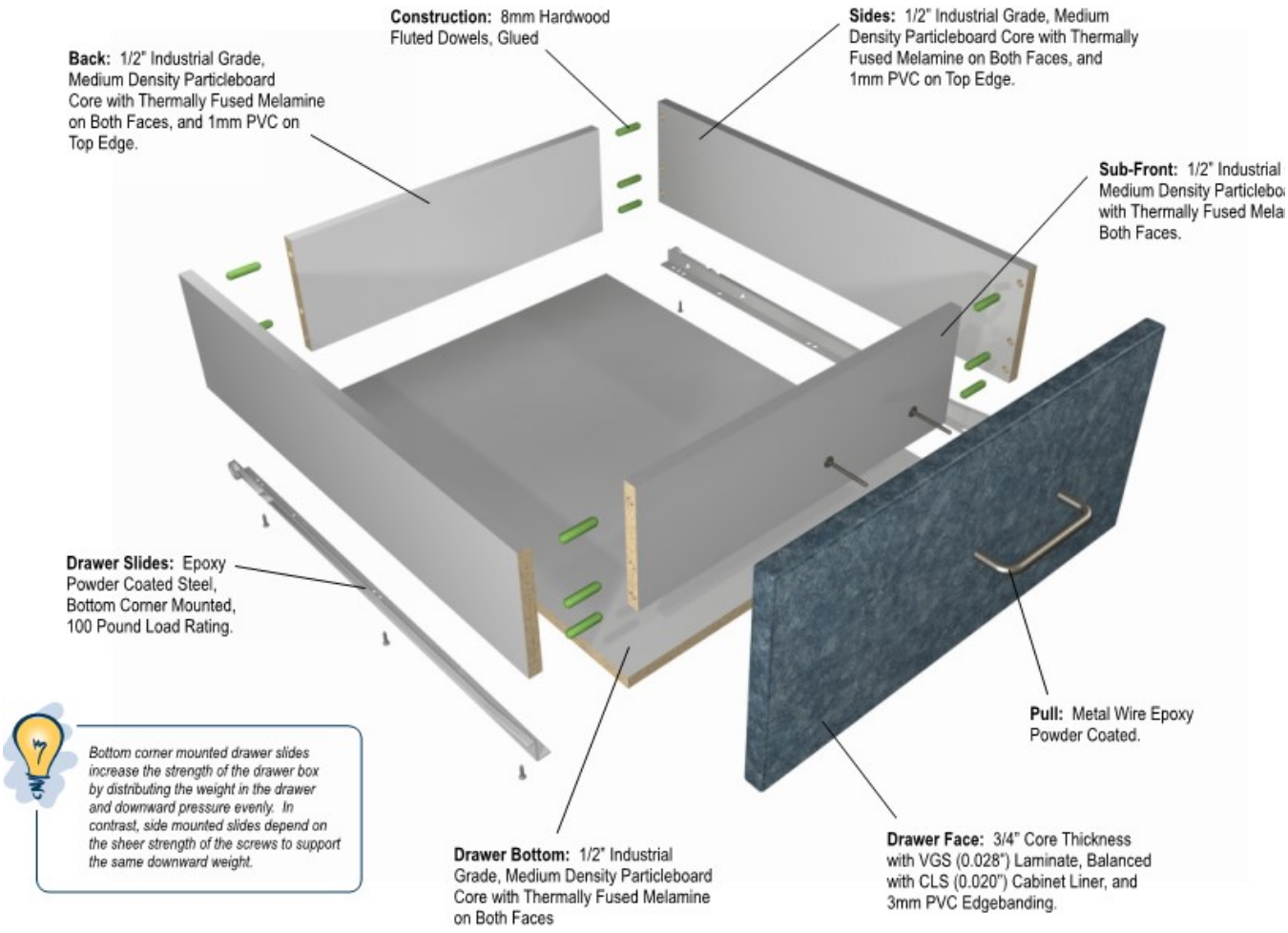
From: Mark Trail <mtrail@blankenshipassociates.com>
Sent: Friday, April 12, 2024 9:39 AM
To: Brian Stamp <bstamp@monteithco.com>
Subject: NHC Northchase Branch Library Project - Casework RFIs

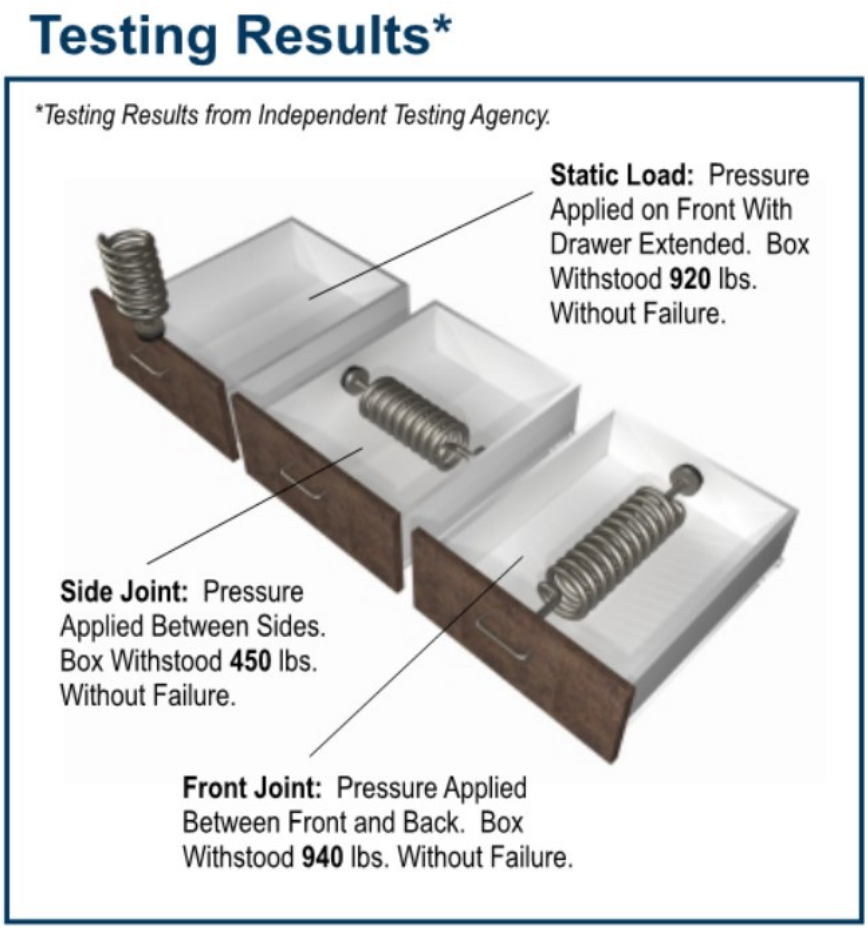
Good morning Brian,

I noticed on the Monteith bid list that you all are planning to bid this project. We're looking closely at it but have a few questions that are going to be critical to us pursuing it or not. Questions 2 and 3 are particularly important. Can you please provide answers to the ones that you can answer and forward to the architect the ones that will need their input?

1. Are there any supplementary conditions for this project (I couldn't find any in the spec manual) – i.e. any LD's, bonds, etc. required?
2. Sheet General Note 6 on A831 calls for laminate edges (also known as self-edge). Would machine applied PVC edging that matches the laminate be acceptable? Self-edge construction is edging technology that chips and peels away from the substrate. Newer PVC edging is virtually indestructible and does not delaminate. If desired, letters from both Wilsonart and Formica are available and can be provided addressing the shortcomings of self-edge vs. PVC edging.
3. Casework notes on A831 call for plywood construction at cabinets. Plywood is not a recommended core material for door and drawer fronts and is not required to meet AWI custom grade standards. Industrial grade particleboard is a more stable core material than plywood for laminating (plywood buckles and warps over time), and particularly for door and drawer fronts. Is Industrial grade particleboard construction with a lifetime warranty acceptable?

4. Please confirm that QZ-1 and QZ-2 materials are to be 3cm. Thickness is not specified in 123661.19 but 4A/A831 indicates 1.25” quartz (i.e. 3cm) at that one section but not indicated on any other casework sections.
5. Please confirm that the ceiling subcontractor is to provide the Armstrong Soundscape blades (Sheet Keyed Notes 51 and 52 on A122) at the ceiling.
6. Please confirm that the ceiling subcontractor is to provide the wood ceiling (WPC-1 material on A121).
7. Please confirm that your specialties subcontractor is to provide the cork wall surface (TS-1 material).
8. Please confirm that no WB-1 wood base material is required on the project. None is identified for any of the rooms on A810 that we can find.
9. Please confirm that the steel framing at the lavatories (see 4A/A831) will be provided by others (not the millwork subcontractor).
10. Section 064116 Part 2.1 F 2 and 3 calls for hardwood drawer boxes with plywood bottoms. We are asking for your acceptance of our standard engineered drawer construction which meets AWI custom grade requirements. See below for construction details. Is this drawer construction acceptable?


Construction: 8mm Hardwood Fluted Dowels, Glued
Sides: 1/2" Industrial Grade, Medium Density Particleboard Core with Thermally Fused Melamine on Both Faces, and 1mm PVC on Top Edge.
Back: 1/2" Industrial Grade, Medium Density Particleboard Core with Thermally Fused Melamine on Both Faces, and 1mm PVC on Top Edge.
Sub-Front: 1/2" Industrial Medium Density Particlebo with Thermally Fused Mela Both Faces.
Drawer Slides: Epoxy Powder Coated Steel, Bottom Corner Mounted, 100 Pound Load Rating.
Bottom corner mounted drawer slides increase the strength of the drawer box by distributing the weight in the drawer and downward pressure evenly. In contrast, side mounted slides depend on the sheer strength of the screws to support the same downward weight.
Pull: Metal Wire Epoxy Powder Coated.
Drawer Face: 3/4" Core Thickness with VGS (0.028") Laminate, Balanced with CLS (0.020") Cabinet Liner, and 3mm PVC Edgebanding.
Drawer Bottom: 1/2" Industrial Grade, Medium Density Particleboard Core with Thermally Fused Melamine on Both Faces



Thanks for your guidance on these at your earliest chance, Brian. Have a nice weekend!

Mark

Mark Trail
Laboratory Specialist | Blankenship Associates
phone: 919.787.1346
mobile: 919.570.1330
site: blankenshipassociates.com
email: mtrail@blankenshipassociates.com
Installation portfolio: See the Spaces!

METEOR EDUCATION + Blankenship Associates

STRONGER TOGETHER

King, David

From: Jonathan McCarthy <jmccarthy@jennsllc.com>
Sent: Monday, April 15, 2024 11:31 AM
To: King, David
Cc: Mia DeCarlo; Joe DeCarlo
Subject: North Chase Library - NCH - Permeable Pavers
Attachments: Aqualine 4.5x9 Submittal - JENNS.pdf

Good Morning,
Thank you for considering the permeable pavers we discussed as an alternative to the specified permeable concrete on the above mentioned project. I have attached a submittal package for the Permeable Pavers JENNS would propose for use. In addition, below you will find additional details regarding previous projects and some of the key advantages of permeable pavers over concrete. Thank you again for your time and consideration.

Permeable Paver Projects in NHC:

1. Fort Fisher Visitor Center - Parking Lot Installation - A/E Clark Nexsen 919-828-1876
2. ABC Store Wrightsville Beach - Parking Lot Installation - A/E Paramounte Engineering 910-791-6707
3. Social on Second Carolina Beach - Roadway Installation - A/E McKim & Creed 910-343-1048

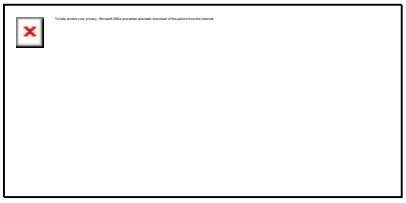
Pervious Concrete Cons:

- Mixing and installation must be done correctly or PC will not function properly. This includes temperature at installation, water to cement ratio, batch time, tools and installation method.
- Curing time for permeable concrete is extended, requires specific steps and durations to include no activity atop the system for a period of time.
- PC can be subject to surface raveling and degradation of not designed and constructed properly. Several projects throughout NHC are experiencing raveling.
- Permeability and overall function of the system is very temperamental and greatly depends on the factors above. Testing the permeability is not something that is generally completed post construction.

Permeable Paver Pros:

- PICP can be designed for a significant amount of heavy vehicles and does not require any curing time.
- PICP are less costly to renovate if the system becomes clogged or requires repair.
- Lugs on sides of pavers properly space voids making permeability at stated flow guaranteed at time of installation
- With mechanical installation, costs can be kept relatively comparable to permeable concrete with added advantages.

Jonathan McCarthy



Direct: 336-399-6813
Website: WWW.JENNSHardscape.com
P.O. Box 896 Wrightsville Beach, NC 28480 | 1809 Colwell Ave. Wilmington, NC 28403

Controls ServiceGroup

Qualifications and Company Information

Controls Service Group
1064 Van Buren Ave, Suite 2
Indian Trail, NC 28079
Phone: 704-684-4055

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Sections:

INTRODUCTION

Controls Service Group (CSG) is an independent controls contracting firm specializing in the installation and commissioning of Building Automation and Energy Management Systems. Our control department comprises of project managers, engineers, controls technicians, electricians, customer support staff and sales personnel with an average 20 years of experience in the HVAC Building Automation industry. We are able to offer to our customers the latest advances in Direct Digital Controls (DDC) backed by our extensive knowledge of some of the industry's leading systems.

We cover all facets of the controls market including layout and design assistance, service and repair, system maintenance, custom graphics, and integration. Controls Service Group is well versed in the cornerstones of the controls industry with over 30 years of controls experience, Tridium certification in both R2 and AX, a wealth of knowledge covering several lighting controls products, and a proud designation as a KMC Controls dealer.

KMC Controls building automation can be traced back to 1969 when the company established itself as an independent American manufacturer of open, secure and scalable building automation and technology solutions. KMC has teamed up with leading technology providers to create innovative products that help customers increase operating efficiency, optimize energy usage, maximize comfort and improve safety.

Controls Service Group is dedicated to customer satisfaction and will provide the quality, top of the line products and experience needed on your jobsite. As a partner of KMC Controls, we offer some of the most competitive pricing in our service area. We look forward to the opportunity to work with you and appreciate your consideration of our business.

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Indian Trail, NC 28079

KMC CONTROLS

SERVICE CAPACITY

We design, provide, install, integrate and service “Smart” control systems for residential, commercial, institutional and industrial customers. CSG represents proven industry leaders in building control manufactured equipment in the following fields of service:

HVAC Controls (TAC)

Network Controllers, Field Controllers.

Servicing KMC Controls, Tridium, Carrier, Johnson Controls.

Supported by HTML, BACnet, LON, Modbus, XML, OPC, SNMP, and ODBC Standards.

Custom Integration

Web Interfaces, Custom Alarming, BACnet, Lonworks, PLC’s, Modbus, Point-to-Point Third Party Interfacing and more.

Access Control

Card Access, CCTV, Elevator Controls, Cameras, Digital Video Recording, Badging, Integration to HVAC Controls.

Lighting Control

Custom Lighting Control, Indoor and Outdoor Lighting Control, Light Level Sensing.

Energy Savings

Fossil Fuel and Electric Energy Savings via Customized HVAC Control, Recommissioning, Sub-metering.

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KMC CONTROLS

SERVICE CAPACITY

Controls Service Group is also an experienced provider of the following services and products:

Training

We offer on-site training in service, installation, programming, and operation as well as opportunities for KMC Controls corporate training.

Air Quality Devices

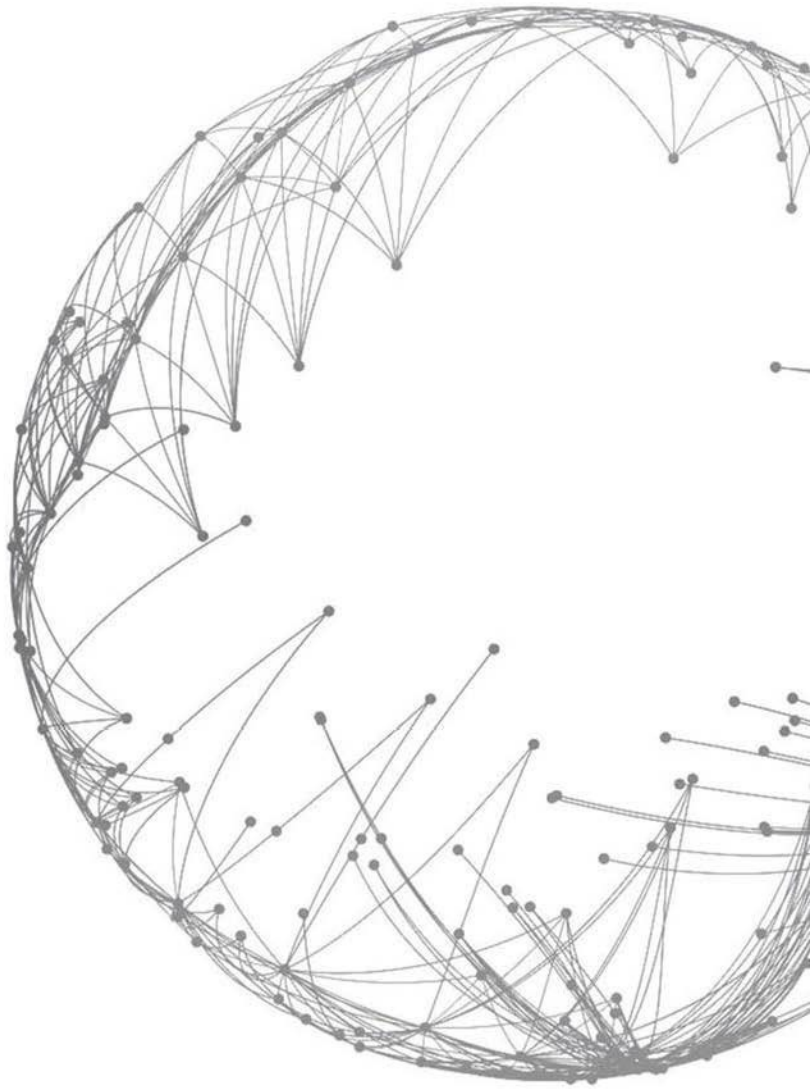
CSG also installs and services a variety of CO_2/CO and specialty gas sensors used monitoring and control.

Peripheral Devices

We provide wireless sensors, devices for flow measurement, and many different styles of temperature and humidity sensors.

Actuators and Valves

CSG carries valves and actuators from the following brands: Belimo, Barber Coleman, Siemens, Spartan.



Controls Service Group offers a multitude of different services and products and will go the extra mile to meet the custom needs of our customers. If there are any questions regarding our products or service capabilities, please feel free to contact our estimation department anytime to see what CSG can do for you.

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Estimation Department : (704)-684-4725
amandac@csg-nc.com

KMC CONTROLS

KEY PERSONNEL

Donald O'Neil – General Manager

Donald wears many hats at Controls Service Group. He is the General Manager and Lead Controls Engineer at our office as well as an acting Project Manager and Certified Controls Technician. Donald is recognized for his excellent project management and commitment to customer satisfaction and quality work.

Education
Andover Controls certification and training
Schneider Electric workstation certification and training.

John Lloyd – Owner

As the owner of Controls Service Group, John oversees each project from start to finish. John has more than 35 years of HVAC and controls experience. His expertise is carried through our devotion to quality work and lasting customer relationships.

Amanda Cook – Bid Coordination and Estimation

Amanda joined Controls Service Group's Bid Coordination and Estimation Department in 2010. She has quickly become the lead contact for all upcoming projects and has a strong dedication to providing outstanding customer satisfaction.

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KMC CONTROLS

PROJECT EXPERIENCE

St. Peter's Episcopal Church

CSG was proud to take part in this renovation. The worship center received a new Carrier Aqua snap Chiller, Boiler package and custom built AHU with ERU. CSG provided a new controls system for this project. With the new pipe organ installation humidity control was of upmost importance for this project. CSG was able to install the new control system to maintain the tight humidity control requirements on the project. The system was completed, providing the system operator with a user friendly graphical front-end that can monitor, trend, create reports and much more.

St. Peter's Episcopal Church

Rider Transportation Center

CSG provided the controls package for the new Rider Transportation Center in Concord, North Carolina. The bathroom and building exhaust control system and 4 York rooftop units (two of which had baseboard electric heaters as their heat source) were installed by CSG technicians.

Rider Transportation Center

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KMC CONTROLS

PROJECT EXPERIENCE

Crate & Barrel South Park

CSG was contacted by TEC of Chicago in 2006 to install and configure the controls for a Crate and Barrel retail outlet in South Park, North Carolina. The project required 28 zones and three rooftop units on a fast-paced timeline, but CSG was able to complete the installation with time to spare.

Crate & Barrel South Park

Chester County Law Enforcement & Detention Center

Controls Service Group Inc. installed the new HVAC controls system for the Chester County SC Law Enforcement and Detention Center. The project consisted of four buildings, three new and one retrofitted building. The system has a central Boiler chiller plant with one Carrier 400 ton chiller, three boilers and associated pumps. We have three VAV AHUs with forty VAV hot-water reheat boxes, eleven constant volume AHUs with hot and chilled water and demand ventilation. The new cell block building has two AHUs one with an ERU the other with demand ventilation both units are tied into a central smoke evacuation panel

Chester County Law Enforcement & Detention Center

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KMC CONTROLS

PROJECT EXPERIENCE

MAHEC – Asheville, NC

Campus Wide Building Management System (260+ controllers) in 3 newly constructed buildings. Multiple integrations via BACnet and Modbus protocols: Trane Intellipak RTUs (13), Kohler generators (2), Parking garage CO controls (3), Motion and CO_2 zone control, etc. Web Server and Programmer Workstation graphical user interface.

Mountain Area Health Education

Union General Hospital

Originally opened in 1959 as a small outpatient clinic, Union General Hospital has evolved into a 160,000 square-foot healthcare facility. Located in Northern Georgia, the facility recently completed a $34 million, 80,000 square-foot expansion and renovation of existing structures. Union General employs state of the art technology in all departments, including the Reliable Controls MACH system which allows building managers and health care providers to manage and control energy usage and environmental conditions.

Union General Hospital

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KMC CONTROLS

WHY KMC MATTERS

BUILDING GENIUSES™
THE NEXT GENERATION OF BUILDING AUTOMATION

CORPORATE OVERVIEW

KMC Controls is an American manufacturer of open, secure, and scalable building automation solutions. KMC provides smart, connected systems globally that deliver embedded intelligence and optimized control at the network edge.

For nearly 50 years, KMC Controls has helped facilities achieve higher levels of energy efficiency and indoor environmental quality by automating and controlling building systems. KMC develops and markets innovative and intuitive building automation solutions for system integrators, system distributors, and OEM partners.

KMC IS DEDICATED TO:

- Designing automation solutions that are easy to purchase, install, and use.
- Providing open, secure, and scalable systems.
- Facilitating reductions of energy consumption and building operating costs.
- Increasing occupant safety, productivity, and comfort.

KMC's solutions are designed and manufactured in the U.S.A. under the ISO-9001 registered quality system. KMC offers a 5-year product warranty and unparalleled after-sale support from the most responsive and supportive team in the industry.

SOLUTION OVERVIEW

KMC COMMANDER™ IoT SYSTEM

KMC Commander provides secure, cloud-based data normalization, tagging, analytics, visualization, and customizable reporting tools for your system on any mobile device.

KMC Commander BX™ quickly integrates to existing BAS and IT infrastructure, using technology from Intel® and Dell OEM.

KMC SOFTWARE & APPLICATIONS

- KMC TotalControl™, KMC Connect™, and KMC Connect Lite™ for device configuration and project commissioning.

TRIDIUM® NIAGARA® SOLUTION

- Tridium JACE®, Tridium Niagara Workbench, and KMC Converge™ Niagara application.

KMC CONQUEST™ EDGE DEVICES

Fully Programmable BACnet® Advanced Application Controllers:

- KMC Conquest and KMC FlexStat™ for equipment control, unitary, VAV, and other applications.

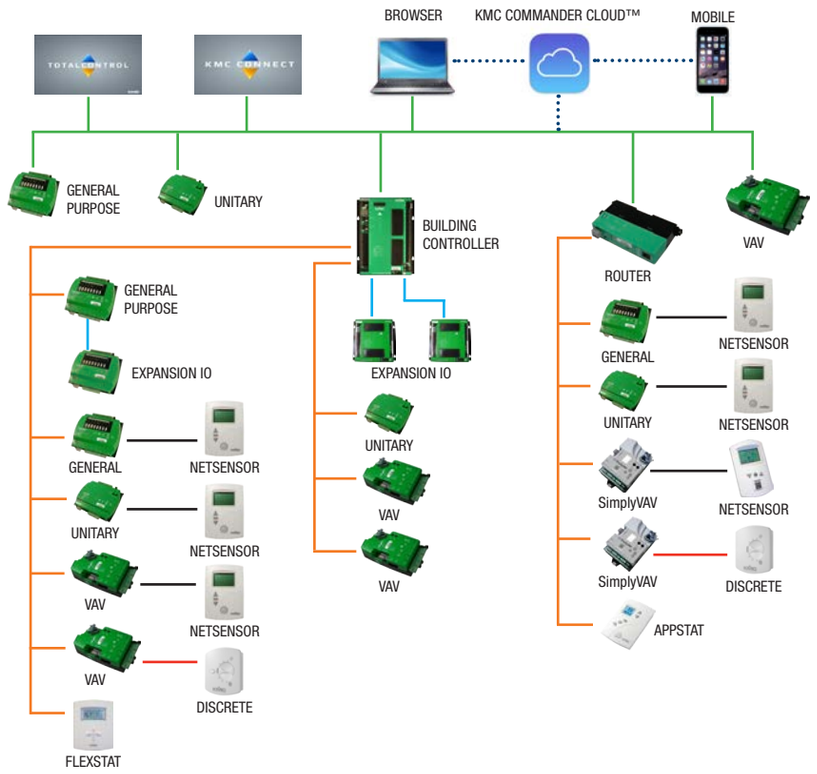
Configurable BACnet Application Specific Controllers:

- KMC AppStat™ and KMC SimplyVAV™ for FCU, RTU, HPU, and VAV applications.

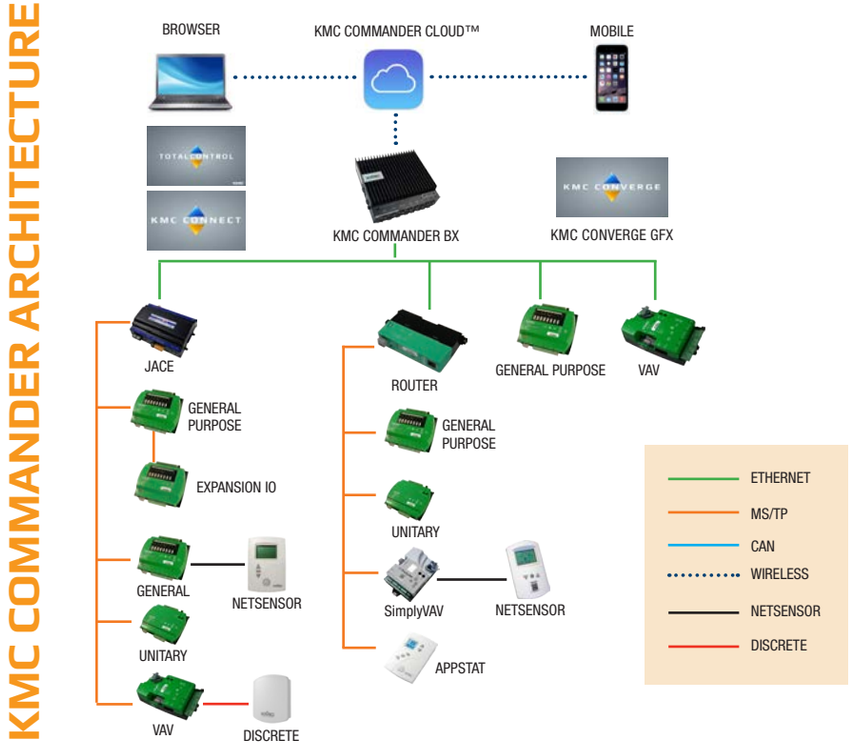
PERIPHERAL DEVICES

- Sensors for temperature, humidity, occupancy/motion, CO, and CO_2.
- Electronic actuators for damper and valve applications.

KMC CONQUEST ARCHITECTURE



KMC COMMANDER ARCHITECTURE



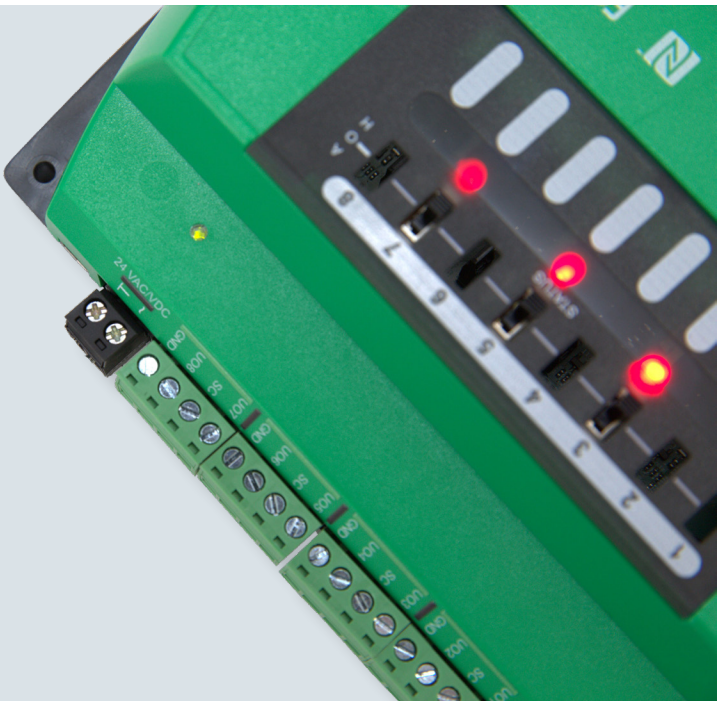
KMC CONTROLS

KMC Product Overview

KMC Conquest™
Automation Hardware

The latest in building automation

KMC Conquest™ is our latest line of BACnet® advanced application digital controllers and sensors for controlling building automation systems and HVAC equipment.



Great flexibility and control

- BTL-listed automation hardware for use across a variety of system types
- Dual Ethernet and MS/TP versions available
- Near-field Communication (NFC) built in for pre-commissioning while unpowered and in the box

BAC-5901 General Purpose

- Used for AHU, chillers, boilers, cooling towers, and more
- Highly customizable outputs with HPO-6700 series cards
- 10 inputs / 8 outputs / expansion modules available

CAN-5900 Series Expansion Modules

- 8 inputs, 8 outputs, and 16 input versions available
- Up to 4 expansions per general purpose controller
- Output configurable with HPO-6700 series cards

BAC-9000 Series VAV

- Pressure independent and dependent applications
- Integrated differential pressure sensor, triacs, and universal outputs
- Single and Dual Duct applications

BAC-9300 Series Unitary

- RTU, HPU, FCU, and AHU applications
- Optional integrated differential pressure sensor
- 6 inputs, 6 triac outputs, and 4 universal outputs

STE-9000 Netsensors

- Temperature, Humidity, Motion, and CO2 Sensor Options
- Built-in controller configuration
- Up to 8 can be linked to one controller with use of distribution module

BAC-5051E BACnet Router

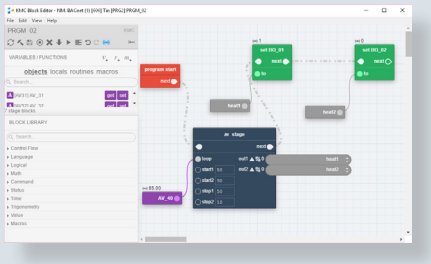
- Route BACnet MS/TP to BACnet IP with ease
- Embedded HTML5 webpages for configuration
- Integrated diagnostics, network capture, and VAV utilities

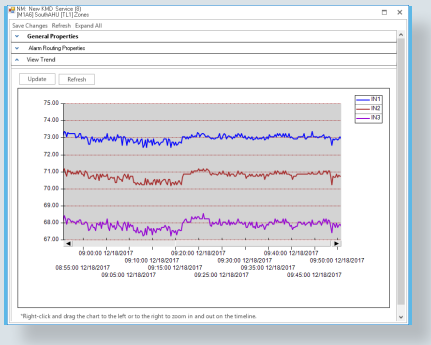
KMC Connect™

Hardware Configuration Software

Full-featured configuration software

KMC Connect is a configuration software tool with which you can configure KMC® BACnet controllers for a building automation system.





Key time-saving features of KMC Connect:

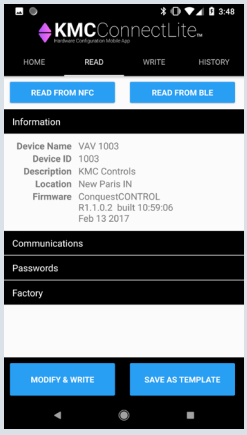
- Build jobs offline and then deploy them on-site with a single click
- Use the wizards to quickly and easily configure alarms, schedules, and trends on native BACnet devices
- Choose from a library of hundreds of HVAC applications, with preconfigured set-ups for KMC controllers and accompanying documentation
- Set up continuous commissioning with the Audit tool
- Quickly balance VAV units with the VAV Balancing tool
- Block and Line editor for Control Basic programming

KMC ConnectLite™

Hardware Configuration Mobile App

Configure KMC Conquest™ controllers wirelessly

KMC Connect Lite saves up to 75% of your pre-commissioning labor by using NFC (Near Field Communication) technology on your smartphone.



With KMC Connect Lite, you can:

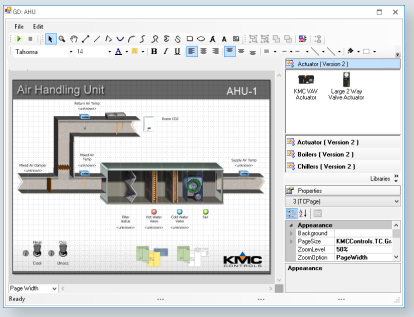
- Interact with KMC Conquest controllers while unpowered and still inside the factory packaging
- Read, Modify, and Write communication and application points
- View Read and Write device information history

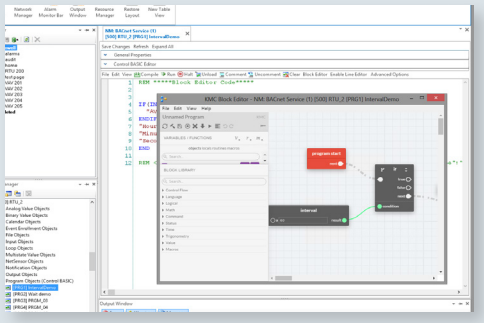
KMC TotalControl®
Automation Software

Complete building services solution

The TotalControl® 4.0 Building Services applications are a combined software solution for providing facility management. This set of services collects, stores, and routes data between a building automation network and an operator interface or workstation. Once configured with TotalControl Design Studio, operators need only an internet browser for daily building management.

- BTL-certified Advanced Operator Workstation with trends, alarms, and schedules
- Automatic graphic page display with optional kiosk functionality
- Internet browser accessibility

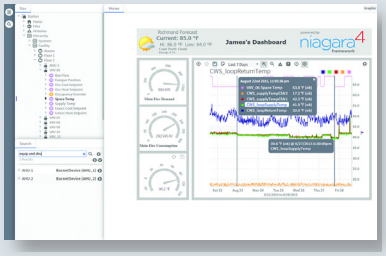


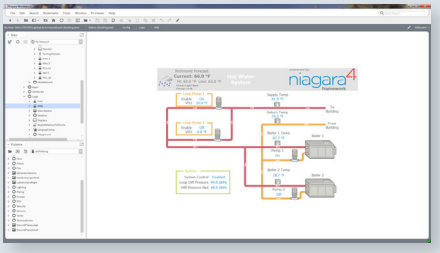


niagara4

Power at your convenience

Niagara® is a building management system that utilizes an HTML framework to connect embedded devices or systems across a large number of manufacturers and communication protocols. Through the Building Geniuses® at KMC, you can order Niagara, drivers, licenses, and JACE hardware.



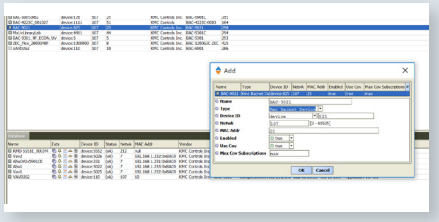


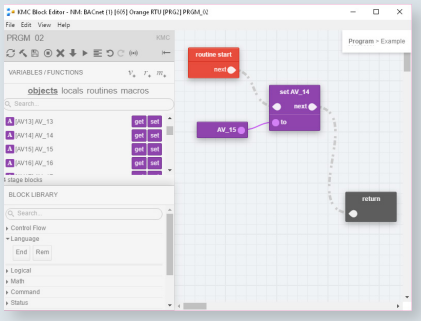
KMC Converge™

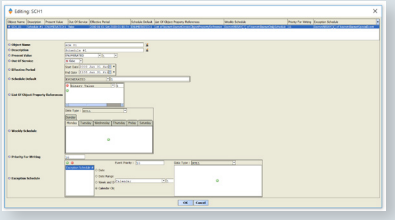
Automation Software Built on Niagara

Bring complete KMC customization to Niagara

KMC Converge™ is a software module used with Niargara Workbench to customize KMC BACnet hardware and deploy KMC's application library. You can also use KMC Converge for offline programming with either Line or Block Programming. Using the audit tool, you can capture a baseline for a controller configuration and detect changes in the future.

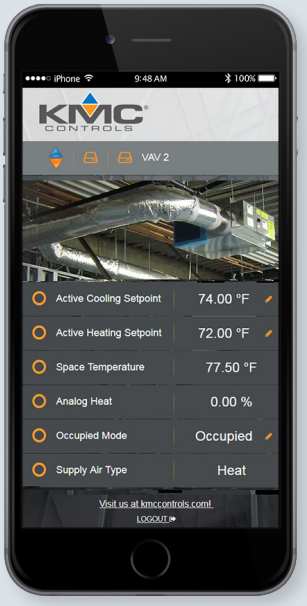






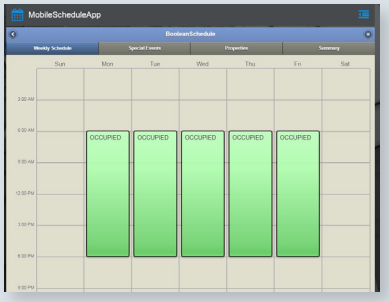
KMC ConvergeGFX™

Responsive Mobile Graphics for Niagara



Easily develop mobile responsive graphics

KMC Converge GFX™ is an advanced HTML5 graphics package for the creation and display of mobile-friendly dashboards. It can be used in conjunction with KMC Converge or any other open brand of Niagara. It allows you to interact with alarms, schedules, histories, and more. You can also create your own style and branding with custom CSS.



KMC FlexStat™
Advanced application controller

Power and flexibility all in one package

The KMC FlexStat™ is a BACnet advanced application controller and room sensor. It is a flexible solution for stand-alone control and BACnet network challenges in any size commercial and industrial building.

FlexStat is available with multiple configurations of inputs and outputs as well as sensing options for humidity, CO2, and motion. Our special ZEC (Zoning Equipment Controller) version of the FlexStat includes a polling routine to determine the heating or cooling needs of individual zone controllers, all without additional software.

Additional features include:

- Built-in applications that are fully customizable for AHU, RTU, HPU, and FCU applications
- Configuration with screen UI
- 72-hour capacitor backed real-time clock
- Equipment status and diagnostics

KMC AppStat™
Application specific controller

Powerful controllers for specific applications

The KMC AppStat™ combines the power of a space-mounted equipment controller with the convenience of built-in temperature, humidity, and motion sensors. The controllers include a wide range of factory-supplied programs for the following applications.

- 2 and 4 pipe Fan Coil Units
- Roof Top Units
- Heat Pump Units
- Packaged and split unitary systems

Additional benefits include:

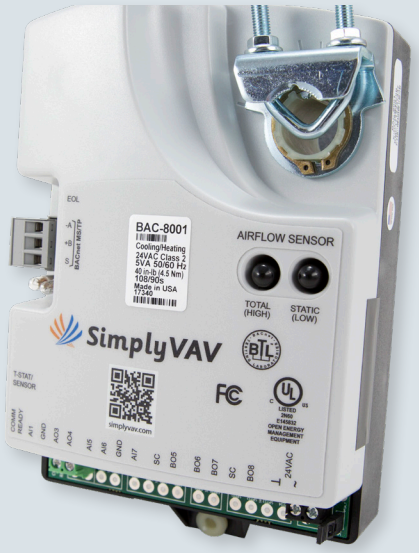
- Stand-alone operation requiring no configuration software
- Perfect form factor for new or retrofit applications
- Bright, full color display

SimplyVAV

Take the complexity out of it

The SimplyVAV™ controllers are an easy and unique approach to operating a wide variety of VAV terminal units. The integrated actuator, internal airflow sensors, and wide variety of application programs make these BACnet Application Specific controllers ideal for either new or retrofit installations.

The controllers feature simple, menu driven setup choices when used with a SimplyVAV digital sensor. No special programming skills or software tools are required to choose applications, enter setpoints, set network addressing, and balance airflow. All options can be set by using only an STE-8001 digital sensor which can be installed as the permanent room sensor or temporarily connected as a technician's service tool.

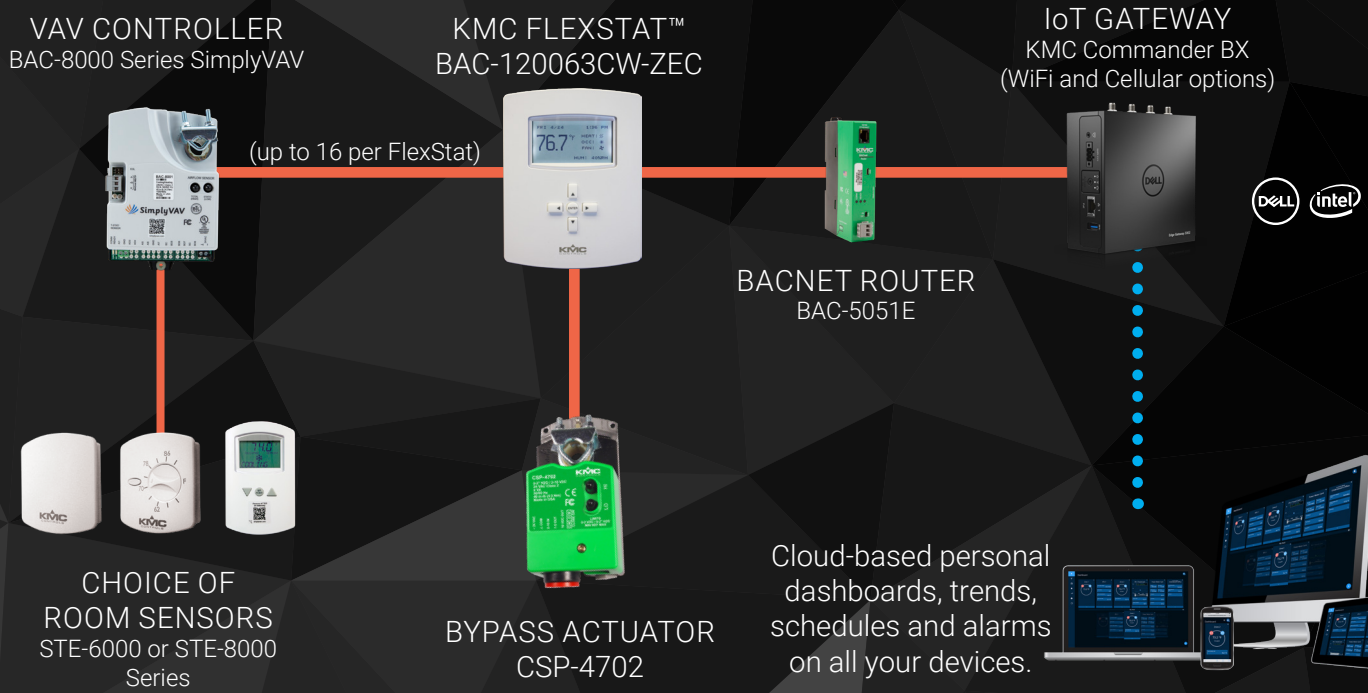


All models are BACnet Application Specific Controllers that are ready to connect to a BACnet MS/TP network. Device instance, MAC address, and baud rate are set from an STE-8001 without special software.

- Easy to install, set up, commission, and balance
- Models and options to meet every need and every budget
- BTL-listed

Bring IoT connectivity to your zoning retrofits

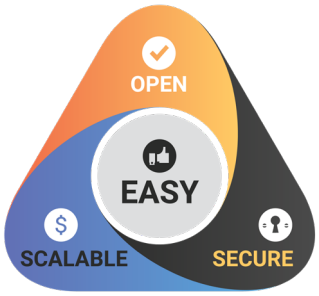
KMCCommander™ IoT and Automation Platform



KMCCommander™

IoT and Automation Platform

Relevant data, real time: The Internet of Things is here



KMC Commander™ is an IoT platform designed to help businesses affordably solve immediate problems while providing a long-term solution for their IoT strategy. In its most basic form, KMC Commander helps to optimize energy usage, increase operational efficiency, maximize occupant comfort, and ensure a safe environment. By utilizing common protocols for sensors, devices, controllers, and building systems, KMC Commander collects data using an on-premise gateway and sends that data to the cloud. It then tracks, trends, and triggers that data based on user preferences, all while making the data available on any device with an internet connection. It does all this securely, while providing an optimized, open platform on which to build.

Open & scalable platform: From a single device to a portfolio of buildings.

KMC Commander is an affordable solution for connecting to existing equipment and easily scales to multiple locations.

Open Device Protocols

KMC Commander communicates over these common protocols:

- BACnet IP
- BACnet MS/TP
- Modbus TCP
- SNMP V1, V2C, and V3
- More coming soon

Unmatched Scalability

KMC Commander is an affordable solution for monitoring a single asset and can easily expand across multiple properties at the enterprise level. Whether you're aggregating data for remote buildings or ensuring energy efficiency for a multi-building campus, KMC Commander scales to meet the needs of any project.

Dashboard Features

Using HTML5, KMC Commander makes it easy to monitor your IoT network. Be it on your desktop, tablet, or smartphone, the modern UI scales to fit your device, showing your data real-time. By displaying key metrics on individual cards and dashboard elements, KMC Commander always shows relevant data responsively.

Learn more at **KMC**Commander.com

Security: Built-in and prioritized

KMC Commander uses leading technology and best practices to ensure your **IoT platform is secure.**

Ubuntu Snappy OS: From limited user and program permissions to the ability to secure boot, Ubuntu provides a secure foundation.

Whitelisting: If you haven't explicitly authorized an IP connection, a physical port, or a process, the hardware and software won't allow it.

Push Communication: To servers or devices, KMC Commander initiates all communication links.

Data Encryption: Data is encrypted at the box and cloud levels, and communicated over SSL/TLS.

Cloud-Only Interface: Remote user interaction with KMC Commander is limited at the cloud level, isolating the physical layer.

Custom User Permissions: Easily customize the levels and groups of users for your platform, limiting the most sensitive interactions to the most appropriate people.

No Back Doors: There are no back doors built into KMC Commander installations, eliminating the threat of compromise-by-design.

Trusted Platform Module (TPM): Encryption keys are stored on a separate chip in the gateway apart from the primary storage & memory.

No Data Masking or Obfuscation: By using best security practices, we choose not to use "security through obscurity."

Key Features:

- Track, trend, and trigger your IoT data
- Multiple device protocols supported
- Easily set up alarms and notifications
- KMC Commander BX™ is built on the Dell® Edge Gateway series with Intel® Inside
- Cellular capability available
- Cloud service powered by AWS
- Open API available
- Over a dozen cybersecurity features built-in
- Simple, clean, responsive HTML5 interface
- Setup users with different permissions

KMC Commander BX: Your IoT platform gateway

Built on Dell, the KMC Commander BX is the connection between your IoT network and the cloud. It's constructed to withstand harsh environments and connects directly to a number of port types, adapting to your architecture.

Features and options:

- Intel® Atom processor
- Ethernet and USB ports
- Wi-Fi (WAP or Client)
- Cellular capability
- DIN rail or panel mountable

As we set out to develop the KMC Commander IoT platform, we knew we needed partners who understood the vision and potential of IoT. That's why KMC partnered with tech leaders Intel and Dell. As an Intel IoT Market Ready Solution, a Dell IoT Partner, and with a representative on Intel's North American Board of Advisors, these relationships help shape the features of KMC Commander and the breadth and depth of its benefits and use cases.

KMDigital®
Automation Hardware

Proprietary digital control provided by KMC

KMDigital® is a full building automation solution, providing select customers with our proprietary KMD protocol. Complete with programmable controllers, VAV controllers, and wall sensors, the KMDigital product line works across a majority of BAS applications.

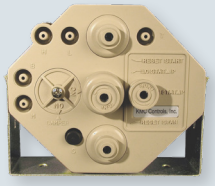
Now, with the addition of the KMD-5551 translator (same form factor as our BACnet router), KMDigital controllers can be added as BACnet devices within the Niagara framework. This brings unprecedented flexibility to the KMDigital product line.

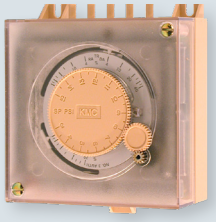
Analog & Pneumatic Controls

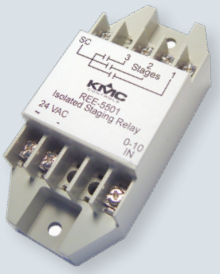
Legacy equipment and maintenance

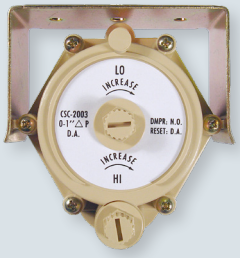
KMC has the legacy products you need

Having been in business since 1969, issued over 40 patents, and an OEM partner for major industry players, we have a vast knowledge base and product offering of legacy and pneumatic solutions.









TotalControl Building Services

Building Automation Software

DESCRIPTION

TotalControl Building Services collect, store, and route data between a building automation network and an Internet or intranet accessible web site. Built on the Microsoft® .NET Framework, these programs are one part of a powerful suite of software tools from KMC Controls. TotalControl Building Services include the following components:

- An alarm management service
- A Trend logging service
- Internet browser accessibility modules
- A Protocol Gateway to transfer values between controllers on dissimilar protocols
- A SQL database for centralized data storage
- A Protocol Driver Service (PDS) that links TotalControl Building Services to a specific building automation protocol

TotalControl Design Studio

Site setup with Design Studio

All TotalControl Building Services are set up with Design Studio, a BACnet Advanced Operator Workstation (B-AWS). Once a site is set up with Design Studio, day-to-day tasks are performed from browser pages.

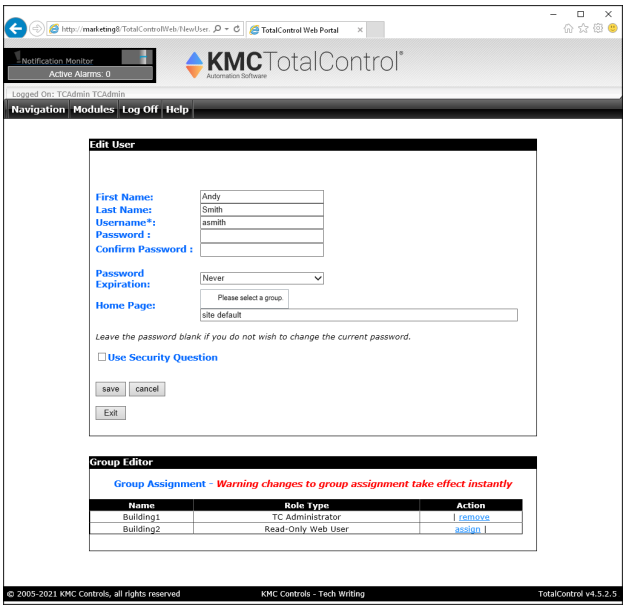
With TotalControl Design Studio you can:

- Build operator graphic pages and then publish them for Internet browser access.
- View or change controller operation.
- Manage alarms and notifications.
- Set up and view historical trend data.
- Set schedules.
- Edit Control Basic programs.

KMC TotalControl® Automation Software

Internet browser site access

Once a TotalControl site is configured and the graphic pages are constructed with Design Studio, operators manage the site with an HTML5-compliant Internet browser. Design Studio is not required for daily operation.



Add or delete users with the web administration module

Browser requirements

Browser pages set up with Design Studio are accessible through an intranet or over the Internet with an HTML5 browser that meets the following requirements.

- Microsoft Internet Explorer 11 or later for best viewing
- If using Flash, Adobe Flash Player version 11 or later
- Monitor resolution 1280 x 1024 pixels (1024 x 768 minimum)

Supported protocols

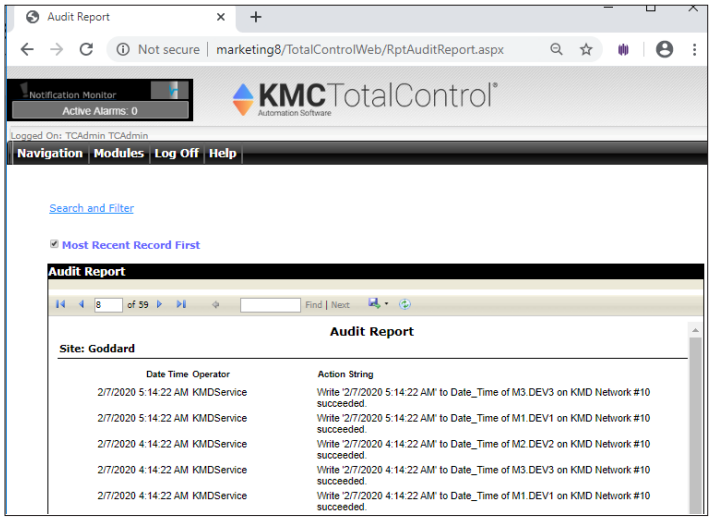
The TotalControl Building Services components support the following building automation systems.

- BACnet–IP, 8802.3, Foreign Device, BBMD
- KMDigital–Tier 1, Tier 2 connected to Tier 1 controllers, Tier 2 direct serial connection
- OPC data acquisition client

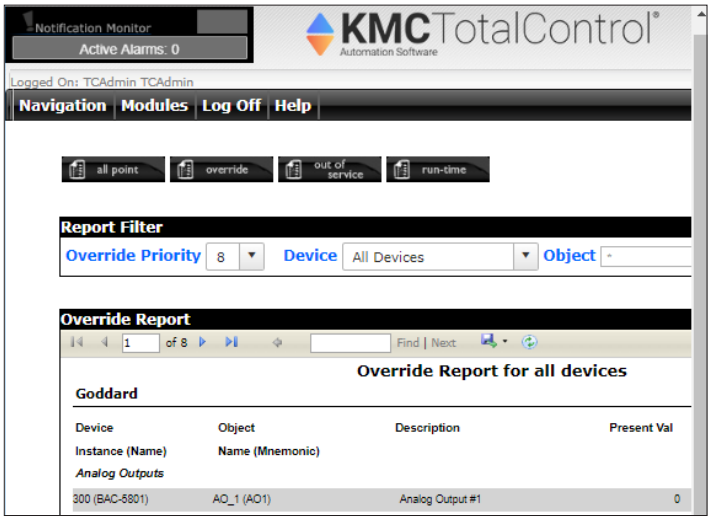
View reports

Use TotalControl reports for site commissioning and recording system operations.

- An All-Points report includes key objects and points in the connected system.
- The Audit report is a journal of changes performed by operators.
- A Run-time report captures equipment start and stop times and calculates run times.
- The Override report lists all equipment in a manual override state.
- The Out-of-Service report lists non-functioning objects and points.
- Save and export reports in Microsoft Excel©, Microsoft Word©, or Adobe Acrobat© formats.



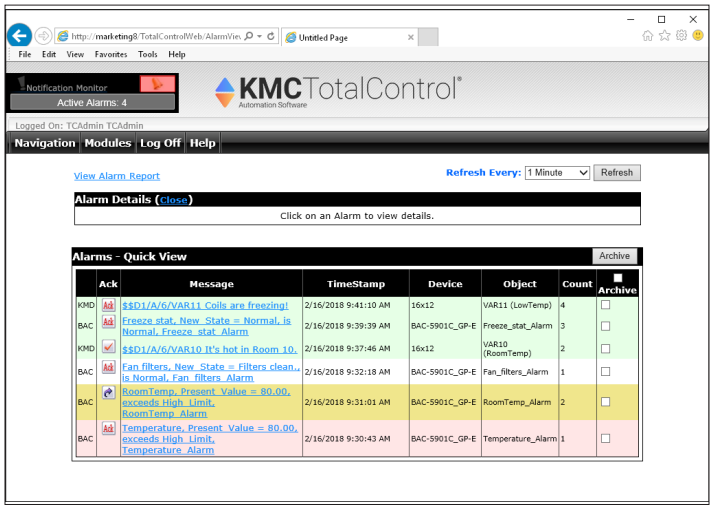
Web Portal Audit Report



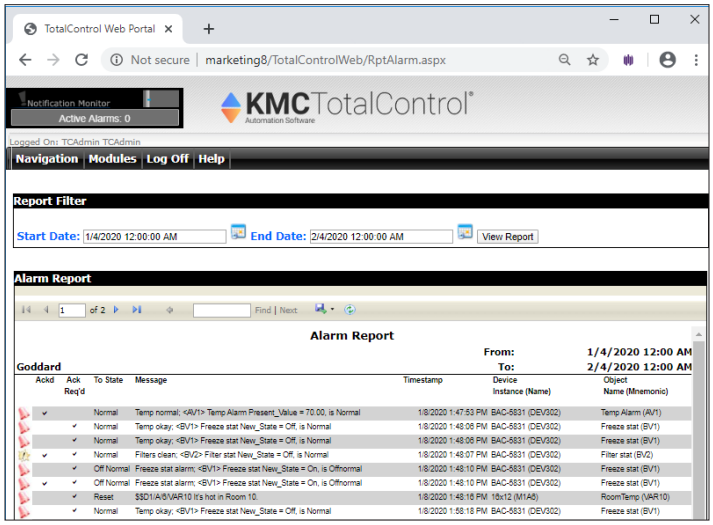
Web Portal Override Report

Manage Alarms

Use the TotalControl Web Portal to view and acknowledge alarms.



Web Portal Alarm Viewer module



Web Portal Alarm Report

Run kiosk slide show displays

A kiosk is a specially designated computer that automatically displays only selected graphic pages from the Web Portal. Pages that have been selected for the kiosk display in a browser window as a continuously playing slide show.

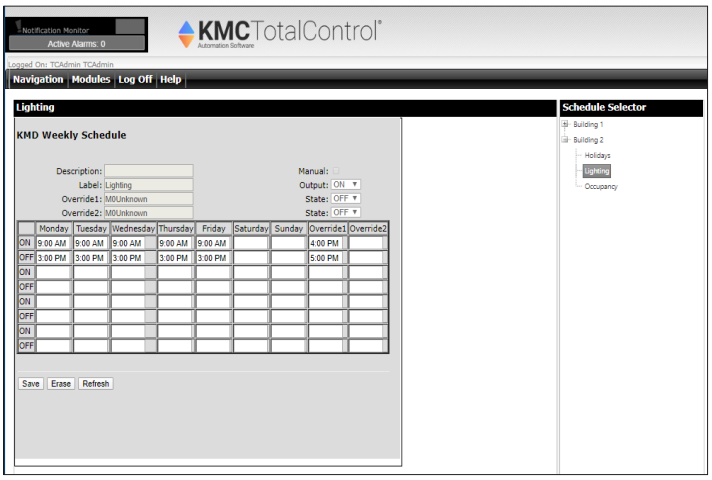
Protocol Gateway

The Protocol Gateway service shares the values of setpoints, temperatures, occupancy status and other critical information among controllers regardless of protocol. The service continuously monitors data in one or more controllers and then transfers that data to other controllers regardless of their protocol. The transfer can be set to occur at intervals ranging from every few seconds to once a month. A license is required for each computer on which the gateway service operates.

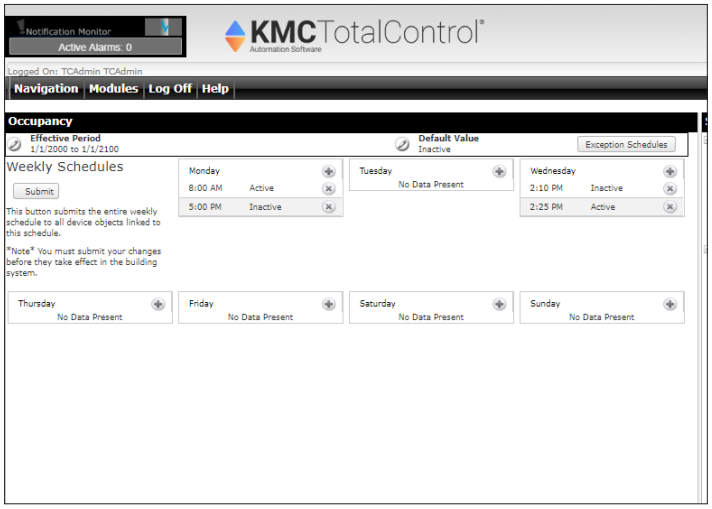
Scheduling

Control the schedule for holidays, maintenance, and special days.

Schedule Manager module



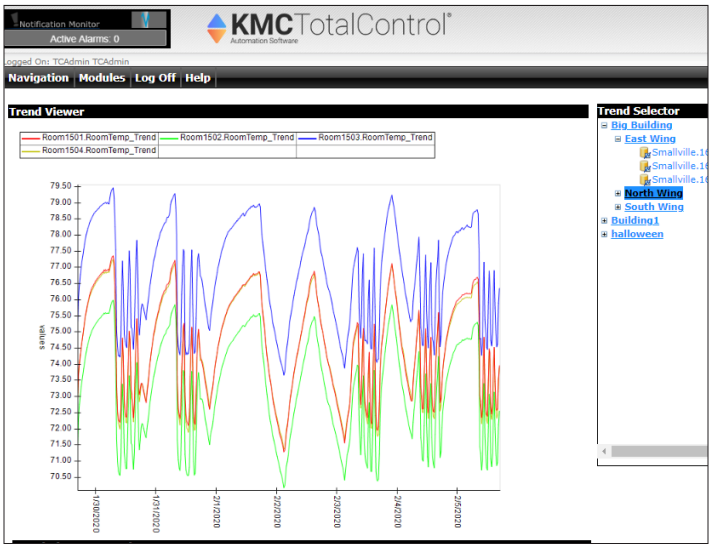
Schedule Viewer module with a KMD Weekly Schedule



Schedule Viewer module with a BACnet Weekly Schedule

View historical trend data

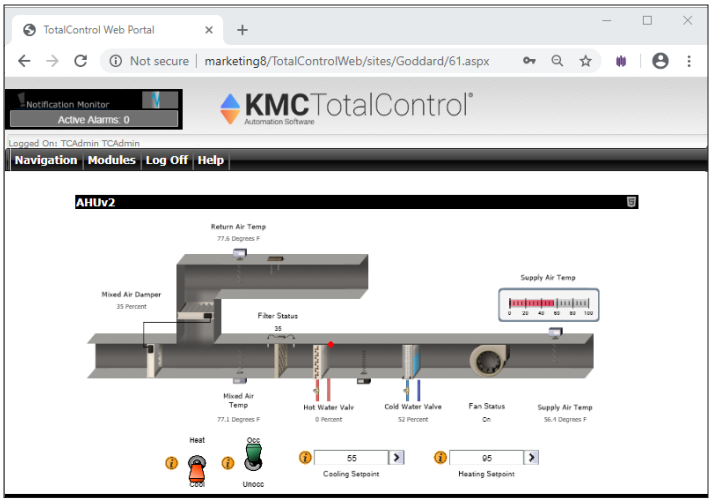
Use the Trend Viewer to monitor system performance over time. Choose which trend data to view, select the period to display, apply an averaging filter, and save the results as a CSV file.



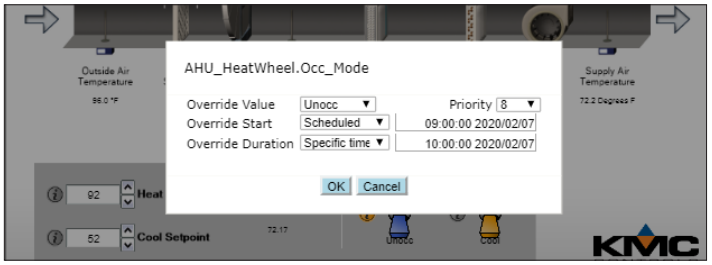
View and save performance data with the Trend Viewer module.

Custom graphic pages

Use graphic pages connected to the network through TotalControl Building Services for routine and day-to-day operations.



View custom web pages served from the TotalControl Web Portal.



Manage operations from TotalControl Web Portal pages.

Computer system requirements

TotalControl Building Services run only on the following operating systems:

- Windows 7 Professional
- Windows 7 Ultimate
- Windows 8 and 8.1 Professional
- Windows 10 Professional
- Windows Server 2008 R2
- Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

TotalControl Building Services run on 32-bit or 64-bit versions of Windows. TotalControl Building Services can be installed on hot-swappable or replicated servers as long as the servers meet the operating system requirements of TotalControl.

For the complete list of computer requirements, refer to the document *Installing TotalControl* available on our **website**.

SQL server included

TotalControl Building Services store data in a Structured Query Language (SQL) database. Microsoft SQL Server 2014 Express, a limited version of the Microsoft SQL Server family, is included with Building Services. KMC Controls recommends upgrading to Microsoft SQL Server Workgroup, Standard or Enterprise edition on sites with more than 300 controllers.

A TotalControl site requires one of the following versions of Microsoft SQL Server.

- Microsoft SQL Server 2008
- Microsoft SQL Server 2014
- Microsoft SQL Server 2016
- Microsoft SQL Server 2017
- Microsoft SQL Server 2019

BTL Advanced Operator Workstation

TotalControl TC-BAC and TC-BACUNL, when used with TotalControl Design Studio, is a BACnet Testing Laboratories-listed Advanced Operator Workstation (B-AWS).

ORDERING INFORMATION

A job site name is required to place an order. All software is distributed through our web site at **www.kmccontrols.com**. A user name and password is required to download software.

DESCRIPTION	MODEL
TotalControl AWS for BACnet, 50 controllers, 1 web seat, HW-KEY included.	TC-BAC
TotalControl AWS for BACnet, unlimited controllers and web seats (License added to TC-BAC)	TC-BACUNL
TotalControl OWS for KMDigital, 50 controllers, 1 web seat, HW-KEY included.	TC-KMD
TotalControl OWS for KMDigital, unlimited controllers and web seats (License added to TC-KMD)	TC-KMDUNL
Building Services - OPC Data Acquisition Client (License only for a new or existing site)	TC-OPC
Building Services - Protocol Gateway Service (License only for a new or existing site)	TC-GATE
Additional Web Seat for TC-BAC or TC-KMD	TC-WEB1ADD
License to activate one remote computer as a kiosk	TC-KIOSK
KMC Controls Hardware License Key	HW-KEY

SUPPORT

Additional resources for installation, configuration, application, operation, programming, upgrading, and much more are available on the web at **www.kmccontrols.com**. To see all available files, log-in to the KMC Partners area.

 Specifications and design subject to change without notice

SUBSTITUTION REQUEST

Project: Northchase Branch Library

Substitution Request Number:

To: Little Diversified Architecture

Attn: Miles Grubbs

From: Grant Clayton
Controls Service Group

Date: 4/12/2024

Re: Substitution request for HVAC Controls

A/E Project Number:

Contract For:

Specification Title: Direct Digital Control (DDC) System for HVAC

Description: DDC System Manufacturers

Section: 230923 Page: 13 Article/Paragraph: 2.1 A

Proposed Substitution: **KMC Controls** by Controls Service Group as approved manufacturer and installer.

Manufacturer: KMC Controls Address: 19476 Industrial Dr, New Paris, IN 46553 Phone: 877-444-5622

Trade Name: KMC Controls Model No:

Installer: Controls Service Group Address: 1064 Van Buren Ave, Ste 2, Indian Trail, NC 28079 Phone: 704-684-4055

History: ☐ New Product ☐ 5-10 years old
☐ 2-5 years old ☑ More than 10 years old

Differences between proposed substitution and specified product: None. KMC Controls is consistent with the contract documents
KMC Controls products are engineered to provide convenient access, flexible application, and easy expansion capabilities.
All controllers are BACnet listed with the BACnet Testing Laboratory and come with a standard five year warranty.

Reason for not providing the specified item: Approval of our request would provide the owner with an opportunity for greater product selection and pricing competition.

Similar Installation:

Project: Please see attached references. Architect:

Address: Owner:

Date Installed:

Proposed substution affects other parts of work: ☑ No
☐ Yes, explain:

Savings to owner for accepting substitution: N/A ($ N/A)

Proposed substitution changes contract time: ☑ No
☐ Yes [Add] [Deduct] _____ days.

Supporting data attached: ☐ Drawings ☑ Product Data
☐ Samples ☐ Tests
☐ Reports ☐ _____

SUBSTITUTION REQUEST

Continued

- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted By: Amanda Cook

Signed By: Amanda Cook

Firm: Controls Service Group

Address: 1064 Van Buren Ave, Suite 2

Indian Trail, NC 28079

Phone: 704-684-4055

Attachments: Request for Qualifications Page

SUBSTITUTION REQUEST
(During the Bidding/Negotiating Stage)

Project:	Northchase Branch Library	Substitution Request Number:	Spec-0001582
	Wilmington, NC	From:	Jim Foster, SINAK Corporation
To:	David King, New Hanover County - Facilities Management	Date:	04/17/2024
	dking@nhcgov.com,	A/E Project Number:	5141834900
Re:	CAST-IN-PLACE CONCRETE	Contract For:	New Hanover County - Facilities Management

Specification Title:	CAST-IN-PLACE CONCRETE	Description:	CURING MATERIALS/APPLICATION OF CONCRETE CURI
Section:	033000 Page: 6,14	Article/Paragraph:	2.5 / 3.11

Proposed Substitution: LithiumCure 2000

Manufacturer: SINAK Address: 4901 Morena Blvd #505 San Diego, California 92117 Phone: (800) 523-3147

Trade Name: LithiumCure 2000 Model No. : N/A

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.

Submitted by: Jim Foster

Signed by: Jim Foster

Firm: SINAK Corporation

Address: 4901 Morena Blvd #505
San Diego, California 92117

Telephone: (434) 214-8066, jim@sinak.com

A/E' s REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Substitution Procedures.

☑ Substitution approved as noted - Make submittals in accordance with Specification Substitution Procedures. AS PER THE DATA SHEET FOR LITHIUM 2000, IT IS TO BE USED FOR INTERNAL CONCRETE SURFACE. USE CURING METHOD AS SPECIFIED IN SPECS FOR EXTERNAL CONCRETE SURFACES.

☐ Substitution rejected - Use specified materials.

☐ Substitution Request received too late - Use specified materials.

Signed by: SOHAN SHETTY **Date:** 4/19/2024

Supporting Data

Attached:	☐	Drawings	☐	Product Data	☐	Samples	☐	Tests	☐	Reports	☐ ___

SUBSTITUTION REQUEST
(During the Bidding/Negotiating Stage)

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The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.

Submitted by: Jim Foster

Signed by: Jim Foster

Firm: SINAK Corporation

Address: 4901 Morena Blvd #505
San Diego, California 92117

Telephone: (434) 214-8066, jim@sinak.com

A/E' s REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Substitution Procedures.

☐ Substitution approved as noted - Make submittals in accordance with Specification Substitution Procedures.

☐ Substitution rejected - Use specified materials.

☐ Substitution Request received too late - Use specified materials.

Signed by: **Date:**

Supporting Data

Attached:	☐	Drawings	☐	Product Data	☐	Samples	☐	Tests	☐	Reports	☐ ___

SUBSTITUTION REQUEST
(During the Bidding/Negotiating Phase)

PROJECT: Northchase Library Phase 1

SUBSTITUTION REQUEST NUMBER: 053

FROM: Kaleigh Izaguirre

TO: New Hanover County

DATE: 4/18/2024

A/E PROJECT NUMBER: 5141834900

RE:

CONTRACT FOR: New Hanover County

SPECIFICATION TITLE: Metal Composite Material Wall Panels

DESCRIPTION: Metal Composite Material Sheets

SECTION: 07 42 13.23

PAGE: 39

ARTICLE/PARAGRAPH: 2.2A

PROPOSED SUBSTITUTUION: etalbond® 4MM FR Composite Materials

MANUFACTURER: Elval Colour

ADDRESS: 7925 E Ray Rd. Ste 133, Mesa, AZ85212

PHONE: 480-899-3955

TRADE NAME: etalbond® 4mm FR

MODEL NO.: 4mm FR

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.
Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

SUBMITTED BY: Kaleigh Izaguirre

SIGNED BY:

FIRM: Architectural Systems Group, LLC

ADDRESS: 7925 E Ray Rd. Ste 133, Mesa, AZ 85212

TELEPHONE: 480-899-3955

A/E's REVIEW AND RECOMMENDATION:

- ☐ Approve Substitution—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.
- ☐ Approve Substitution as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.
- ☐ Reject Substitution—Use specified materials.
- ☐ Substitution Request received too late—Use specified materials.

SIGNED BY: **DATE:**

SUPPORTING DATA ATTACHED: ☒ Drawings ☒ Product Data ☐ Samples ☒ Tests ☒ Reports ☐ _____

CSI Form 1.5C (August 2020 version)

etalbond® Composite Materials

Digital Submittal Package
Table of Contents

2024

- **etalbond® Composite Materials Brochure**
- **USA Color Chart Brochure**
- **Finished Color Comparison Guide**
- **20 Year Warranty**
- **Industry Specific Product Comparison Data and Performance Properties**
- **Intertek CCRR - 0474 Report**

Architectural Systems Group, LLC
7925 E Ray Road, Suite 133
Mesa, AZ 85212
P-480 899 3955

Architectural Systems Group, LLC
200 Bluffs Court Unit 100
Canton, GA 30114
P-770 345 9550

Website: www.asg-rep.com
LinkedIn: Architectural Systems Group
Email: orders@asg-rep.com

EN

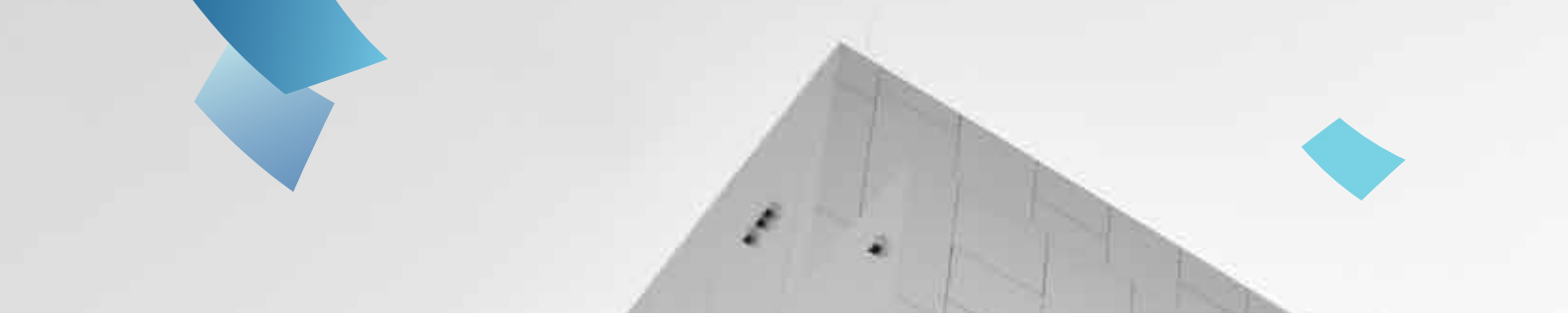
etalbond®

COMPOSITE MATERIALS

bond with excellence

ELVAL COLOUR

Power to imagine



Elval Colour is a leading European coated aluminium manufacturer that produces and markets a full range of building envelope products of superior quality and latest technology, like façade, roofing, rain gutters and corrugated sheets. More than 98% of the company's sales revenue comes from exporting our goods to a total of 70 countries. With over 40 years of experience in coating and colour matching, Elval Colour is a reliable partner that offers value added services to our customers by assisting them in product specification and selection to best suit the needs of the specified project/application. Customer orientation and dedication accompanies production and product delivery.

We are committed to our customers and to the excellence of our products from the early stages of production till final delivery.
Elval Colour takes great pride in its employees - for they are hardworking individuals, diligently pursuing perfection in all they do and our customers always remain their number one focus.
Elval Colour, as one of the leaders in the industry-aspiring always to superior product quality and excellent service - remains dedicated to our customers' specific needs and is always glad to respond in the most effective and efficient way to those needs.
Always applying cutting-edge technology and innovative applications, our R&D works tirelessly in various areas, thus allowing continuous improvements in our product quality while remaining respectful to our environment and the standards that are set worldwide.

Elval Colour is a member of the European Coil Coating Association(ECCA), the European Aluminium Association, and is ISO 9001-2008, ISO 14001-2004, and OHSAS 18001 certified.

etalbond®

Known for its unmatched resilience and unique appearance, **etalbond**® offers sustainable construction quality and high creative standards. With its outstanding product properties, this façade material stands-out among its competitors.

etalbond® for rear-ventilated façades combines with the features of energy-efficient construction, is cost-efficient and speaks volumes in its architectural quality. The technique of the rear-ventilated construction is suitable to those who want to create façades on both new and old buildings as well as roof constructions and interior applications.

Long lifespan, easy maintenance and a balanced combination of insulation, ventilation and moisture control are equally important to appearance and constitute a perfect building envelope.

The projects presented in the next pages, feature highly refined building envelopes, that are functional and emphasize the autonomy and the specific identity of the building.
etalbond® gives architects the power to imagine and the tools to create.

CONTENTS

THE COMPOSITE PANEL

etalbond® is an Aluminium Composite Material (ACM) for construction projects worldwide.

etalbond® panels are designed with a special aluminium alloy that presents the right balance between rigidity and flexibility. High wind load capacity and strong penetration resistance are complemented with soft bending for the most demanding façade formations. The strips are rolled and coated in the company's facilities with the outmost care and in strict compliance with the most rigid European and global norms. The panels are light, highly rigid, absolutely flat and are presented with the most durable coating qualities.

etalbond® is available in three different cores. **etalbond**® **PE** with low-density polyethylene, **etalbond**® **FR** with a fire-retardant core and **etalbond**® **A2** with an incombustible core, suitable for the most demanding applications, which complies with all fire safety requirements for external cladding.

Composition of **etalbond**® **PE, FR** & **A2**

> Protective plastic film
> High Quality Coating System
> Aluminium Alloy EN 3105, H44
> Adhesion Promoter
> Adhesive layer
> LD Polyethylene / Fire Retardant / Incombustible*
> Adhesive layer
> Aluminium Alloy EN 3105, H44
> High Quality Coating System or Primer Coating

** Please see page fire classification section or inquire for local certificates*

THE COMPOSITION **A2**

etalbond® A2 - THE NON-combustible aluminium panel

Nowdays, the need for innovative and sustainable materials is greater than ever before, so as to realize the creative visions of architects and designers. Contemporary buildings not only have to comply with the highest design standards, but also must meet the latest technical requirements in the fields of sustainability, energy efficiency, noise protection, fire protection, etc.

Thanks to its mineral-filled core, **etalbond® A2** is non-flammable and meets the strictest demands of fire regulations. **etalbond® A2** works ideally everywhere fire protection is necessary: High-rise buildings, buildings with high visitation/occupancy, such as airports, metro stations, shopping malls, hotels, and buildings of high sensitivity, such us schools, kindergartens, hospitals, and elderly care centers to name a few.

etalbond® A2 is a construction material, which allows the freedom of design in combination with superior technological features. Attractive and flexible it is easily installed and formed and is available in a wide array of highly durable and custom-made coatings, providing architects and designers with numerous possibilities to bring their ideas to life.

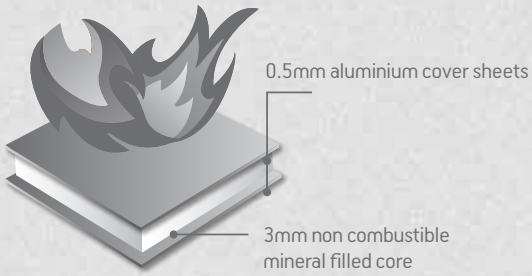
The advantages of **etalbond® A2**

- Lightweight combined with flexural strength and absolute flatness
- Simple and fast to process and fabricate - can be easily folded and bent with the use of simple tools
- Formable in the most intricate 2-D and 3-D shapes
- Easy to handle on site with pre-fabricated panels, shorter construction times and cost reduction
- Because of the exceptional high material quality used during the manufacturing process, it is weather-proof and easy to clean
- Noise and vibration-absorption - no extra sound-damping needed
- Ideal for back ventilated façades
- Large variety of colours and custom-made shades available thus providing literally unlimited design options
- In case of fire, no toxic gas is produced
- Produced with Cr-free and Lead Free materials in an environmentally responsible manner
- Fully Recyclable, environmentally friendly - scrap can be recycled for the production of new material

Fire behaviour

etalbond® A2 composite panels are non-flammable and do not actively contribute to combustion. During the life cycle of **etalbond® A2**, there are no emissions of environmentally hazardous substances and there is no production of toxic fumes in the case of fire.

etalbond® A2 is classified as A2 for incombustibility, s1 lowest possible smoke emission and d0 for no droplets when the panel is exposed to fire according to the most strictest European Norm EN 13501-1.



YOUR PARTNER TO CUSTOMIZATION

Power to Imagine

Elval Colour's specialized personnel will assist you and guide you in identifying and implementing the optimum coating system for your construction project and your specific requirements.

Full optimization on cost-efficiency, quality, aesthetics and delivery time result in performance maximization, solid weathering resistance and the visual impact your project can have.

Applications

etalbond® in its application, is an absolutely flat panel with extreme strength and low weight. This very flexible material, can add a touch of architectural elegance and an attractive design in both low and high rising buildings, canopies, fascia, roof edges and building interiors.

You can use it for:

- *> Building Renovations*
- *> Internal Partitions*
- *> False Ceilings*
- *> Bus Terminals*
- *> Gas Stations*
- *> Column Covers*
- *> Curved Fascia*
- *> Building Entranceways*
- *> Toll Stations*
- *> Container Constructions*
- *> Machine Coverings*
- *> Equipment Enclosures*
- *> Architectural Claddings*
- *> Internal Wall Coverings*
- *> Internal Decoration*
- *> Signage*
- *> Exhibition Stands*

AN INSPIRING RANGE OF COLOURS AND SURFACES

In Architecture, colour is a major medium of expression and it can take different meanings for every investor, architect, building occupant or observer. That is why **etalbond®** is produced in a variety of coating surfaces to match imagination, feeling and inspiration – total freedom of expression!

Solid Colours

From vibrant colours to conservative shades, solid colours create a unified appearance without the need of special effects. The whole range of RAL and Pantone is at your disposal, dedicated to help bring forth all your visions and inspirations.

Gloss: from 5% to 80+%

Premium Metallic and Dual/Prismatic

Changing light conditions and perspectives give these elegant colours a glowing, vivid appearance.

Gloss: from 5% to 80+%

The "space effect" is created by colour and light. As an essential component of architecture, a colour combination creates individual space and supports perfectly the utilization of the building.

Textured

The elements of nature and their textures, inspired the **Ceramic/TX** line which creates a special structured effect. A specially developed coating enables aluminium to be used as a substitute for ceramic or stone material. The **Ceramic/TX** line offers the lower construction weight of the coil coated aluminium and tailor made natural looking finishes.

Gloss: <10%

Special Imitations

Corten (Oxidised Steel), Patinated Copper, Marble, Granite and Wood Imitations. Our cutting-edge technology and expert know-how give us the edge to match the aesthetic appeal of natural materials with a texture that is identical to the real thing.

FUNCTIONALITY MEETS AESTHETICS

Elval Colour produces a special treatment of coated aluminium products with significant anti-graffiti properties. This is achieved by a transparent coating which preserves the colour and the appearance of your building façade or corporate identity.

A permanent treatment of coated aluminium products that provides "Easy to Clean" surfaces with the help of nano-technology. These fluoropolymers react with the coating surface to create a low energy coating that can be cleaned very easily.

A certified coating based on silver Ions which capture the bacteria. The Anti-bacterial coating is applied on top of the aluminium and is suitable only for interior applications. It has been tested and certified successfully against a multitude of bacteria.

Phosphorescent Coatings

A specially developed, innovative, and highly durable polyurethane coating that glows intensively when it gets dark. Useful for highly crowded places, such as conference rooms, corridors, staircases. When the lights go out, the room is intensively lit for a short period of time avoiding outbreaks of panic. Phosphorescent Coatings have a cream white appearance in daylight and are also suitable for applications on the outside.

High Reflectivity Coatings

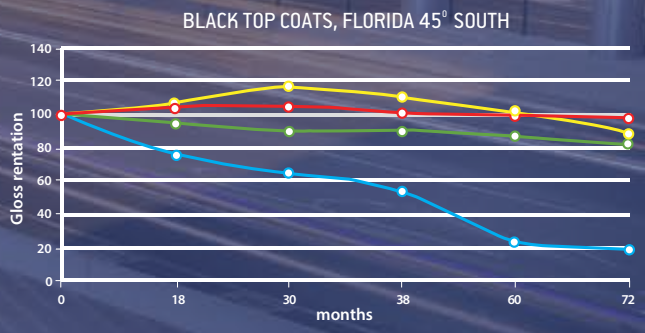
A certified innovative coating system offering more heat reflectivity than virtually any other roofing and cladding material available, letting the user realize significant energy savings in a wide variety of colours.

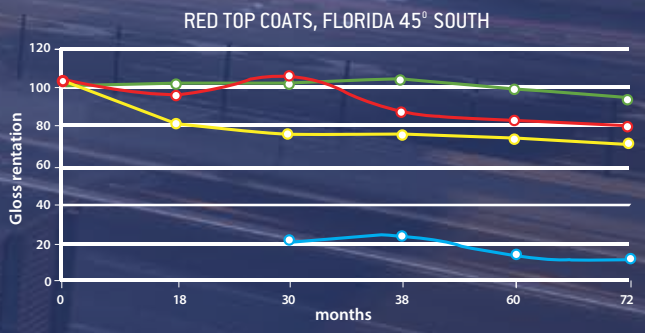
COATING QUALITY with RESPONSIBILITY, GLOBAL REACH and HIGH DEGREE OF CUSTOMISATION

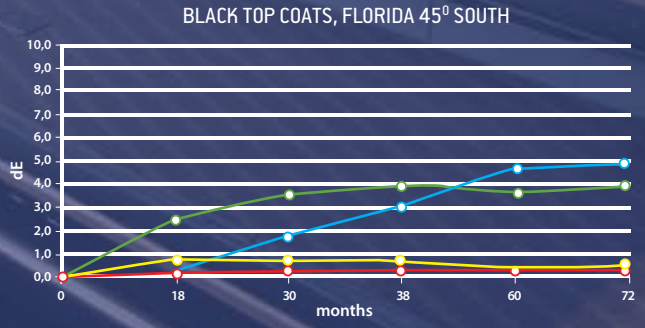
Our skilled personnel apply coatings and colours in modern lines to ensure consistent and superior quality.
We use coatings that are Chrome and Lead Free and provide a safe working environment for all our workers.
Our manufacturing facilities utilize cutting-edge technology thus ensuring environmental responsibility.
Our products come with extreme care in mind as to their quality, our environment, our responsibility and sustainability.
Our coatings can be designed to match the most vivid architectural imagination and adhere to the strictest durability criteria.
No matter where you are located, we will meet you and discuss with you how Elval Colour can be of the best service to you!

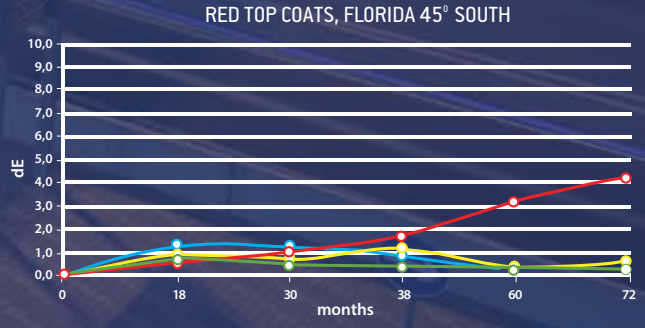
A Highly Weatherable and Sustainable Coating 80% PVDF

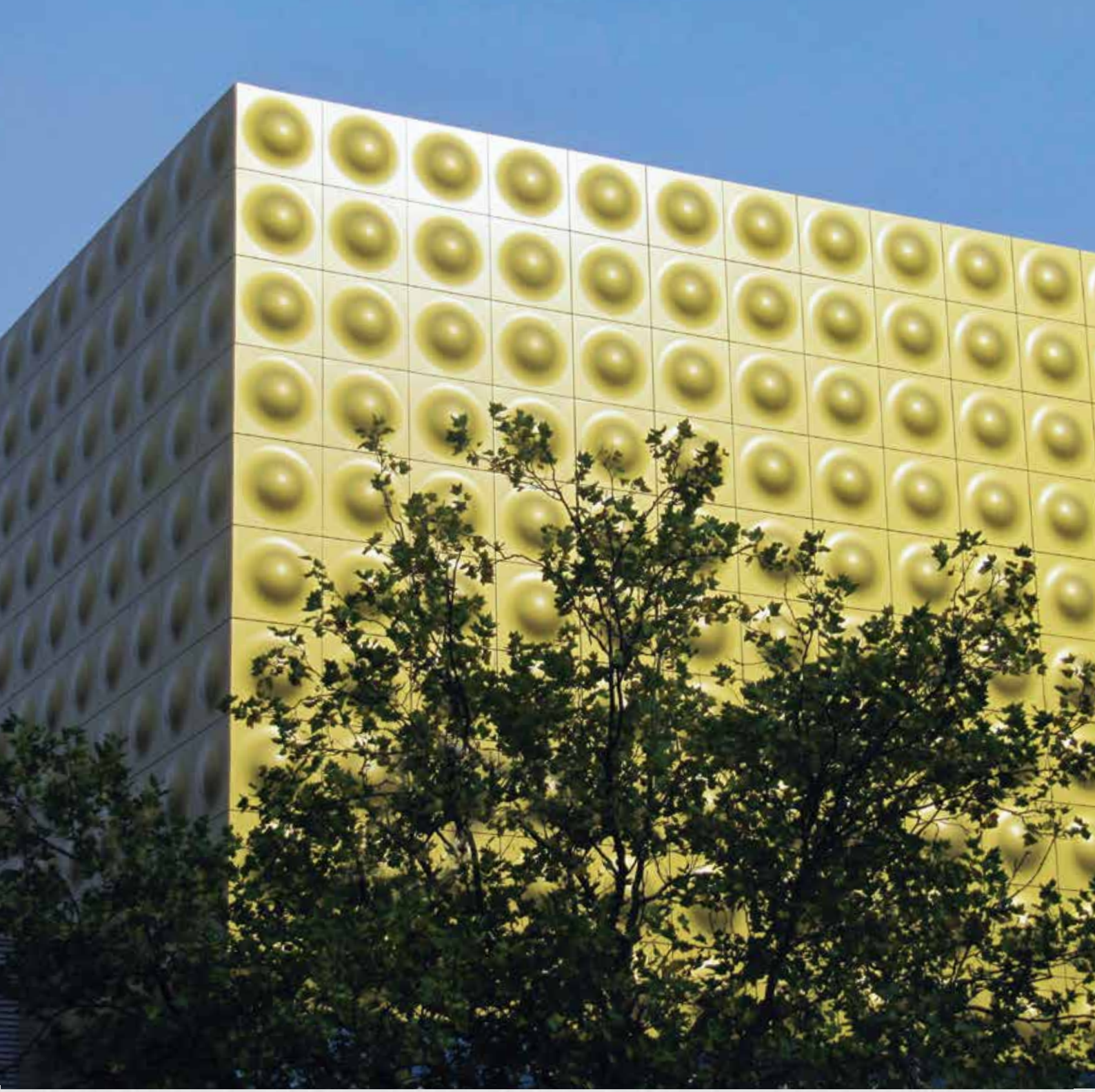
High-performance 80% polyvinylidene fluoride (PVDF) coatings offer the flexibility to select nearly any colour, while shielding the construction against aging, harsh weather and pollution. Tested under time, 80% PVDF coatings meet the most demanding, exterior architectural specifications and exhibit the best possible bending performance. The resin system incorporated into the paint coating present the key properties that determine the coating's characteristics and ultimate performance.
The PVDF bond, with every carbon-hydrogen (C-H) bond adjacent to four C-F bond, provides a chemically inert coating, with the ultimate resistance to ultraviolet (UV) light degradation. In the recent years, PVDF systems are used more and more, while exerting even higher degrees of UV resistance and better coating elongation properties. Elval Colour offers also coating PVDF 80/20 that is superior than the normal 70/30.











SHAPING ADVANTAGES

• **etalbond®** composite panels consist of advanced pre-painted aluminium for building and construction industry.

• **etalbond®** offers architects, constructors and designers, a lightweight, versatile, strong and aesthetically appealing solution for all kinds of buildings and environments.

• Should a parametric design of bold 3D formations is the scope of construction, **etalbond®** aluminium alloys and coatings are produced under the strictest and most demanding standards so as to sustain and cope with the most demanding formations.

• **etalbond® A2** is the only A2 panel in the world that can be curved with exceptional ease.

etalbond®
COMPOSITE MATERIALS

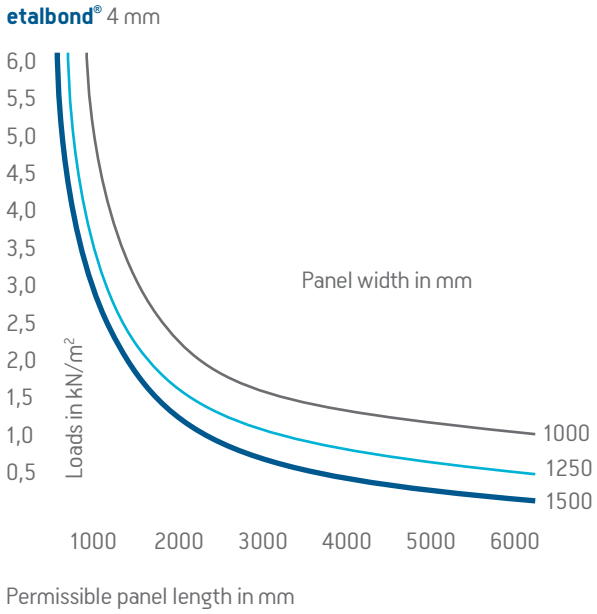
Comparison of thickness and weight with the same flexural rigidity

FLEXURAL RIGIDITY

Aluminium cover sheets and a mineral core ensure an impressive weight/flexural rigidity ratio, even in large panel sizes. Thanks to its excellent flexural rigidity, **etalbond®** remains stable in terms of shape and flatness, even under extreme temperature fluctuations.

LOADING AND PANEL DIMENSIONS

This chart helps us to determine the maximum panel size of **etalbond**® panels supported on all 4-sides based on the characteristic stress of 79 N/mm².



etalbond®

	Standards	Unit	3mm	4mm	6mm
PANEL DIMENSIONS					
Thickness of Aluminium Layers		mm	0.5	0.5	0.5
Width		mm	standard: 1250, 1500 upon agreement: min 1000 - max 2000		
PANEL TOLERANCES					
Panel thickness		mm	±0.2		
Panel width		mm	-0.0 / +4.00		
Panel length		mm	≤4000mm: -0.0 / +4.00		
			4001 - 6000mm: -0.0 / +6.00		
			6001 - 8000mm: -0.0 / +10.00		
Diagonal difference		mm	3.00mm		
TECHNICAL PROPERTIES					
Section modulus (W)	DIN 53293	cm^3/m	1.05	1.54	2.53
Effective Stiffness ($ExJ_{eff,cal}$)		Nm^2/m	111	206	531
Alloy	EN 573-3		EN AW - 3105		
Temper of Aluminium sheets	EN 515 / EN 1396		H44 (Painted)		
Modulus of Elasticity (E)	EN 1999 1-1	N/mm^2	70000		
Tensile Strength (Rm)	EN 1396	N/mm^2	≥150		
Yield Strength (Rp0.2)	EN 1396	N/mm^2	≥120		
Elongation (A_{50})	EN 1396	%	≥3%		
Linear Thermal Expansion		mm/m	2.4 for temperature difference of 100°C		
SURFACE PREPARATION & PAINT CHARACTERISTICS					
Surface Preparation			With chemical preparation (Degreasing, Passivation)		
Lacquering			Coil Coating		
Visible Surface			PVDF, FEVE		
			or VHDPE		
Back Surface			Protective Primer		
TEMPERATURE BEHAVIOUR					
Excellent behaviour in temperatures			From -20 to +80		
SURFACE QUALITY					
Dents, marks, hits, grooves, stains etc		Acceptable when not visible at a distance ≥2m at an angle of 90°			

etalbond® PE

CORE: LDPE	Unit	3mm	4mm	6mm
PANEL DIMENSIONS				
Weight	kg/m^2	4.6	5.5	7.4
Length	mm	standard: 3200 upon agreement: 1000-13000		
ACOUSTICAL PROPERTIES				
Sound Transmission Loss (Rw)	dB	≥23	≥24	≥25

etalbond® FR

CORE: Fire Retardant core	Unit	3mm	4mm	6mm
PANEL DIMENSIONS				
Weight	kg/m^2	5.8	7.4	10.5
Length	mm	standard: 3200 upon agreement: 1000-13000		

etalbond® A2

CORE: Mineral filled core	Unit	4mm
PANEL DIMENSIONS		
Weight	kg/m^2	7.9 ± 0.4
Length	mm	standard: 3200 upon agreement: 1000-8000

The technical characteristics and colour shades are indicative and Elval Colour retains the right to change any technical characteristics of the products if deemed necessary.

The company maintains the right to change the Technical specs of the product at any time without any further notice.

FIRE CLASSIFICATION

	etalbond® PE		etalbond® FR		etalbond® A2	
Country	Test according to	Classification	Test according to	Classification	Test according to	Classification
EU	EN 13501-1	Class E	EN 13501-1	**B - s1, d0**	EN 13501-1	**A2 - s1, d0**
Austria			ONORM B3800-5	Passed	ONORM B3800-5	Passed
France			NF P 92-501	Class M1	NF P 92-501 NF EN ISO 1716	Class M0
Germany	DIN 4102-1	Class B2	DIN 4102	Class B1		
Hungary			MSZ 14800-6	Passed	MSZ 14800-6	Passed
United Kingdom	BS 476 part 6 BS 476 part 7	Class 0 (Building Regulations)	BS 476 part 6 BS 476 part 7	Class 0 (Building Regulations)	BS 476 part 6 BS 476 part 7 BS 8414-2 (SZ-20 system: BML 120)	Class 0 (Building Regulations) Passed, meets the classification Criteria of BR135
Italy	CSE RF 2/75/A, RF 3/77	Class 1				
Poland			PN-90/B-02867	NRO	PN-90/B-02867	NRO
Switzerland	VKF	Fire index, Panel: 5.2 Fire index, Core: 4.2	VKF	Fire index: 5.3	VKF	Fire index: 6q.3
Singapore			BS 476 part 7 (*) (top aluminium removed) BS 476 part 6 (*) (top aluminium removed) (*) material tested, etalbond® FR+	Class 0	BS 476 part 7 (top aluminium removed) BS 476 part 6 (top aluminium removed)	Class 0
USA / UAE			ASTM E84 - Panel ASTM E84 - Core ASTM D1929-16 - Panel ASTM D1929-16 - Core NFPA 285 Cassette System (Closed Joints)	Class A Self Ignition = 470° C Flash Ignition = 470° C Self Ignition = 470° C Flash Ignition = 470° C Passed	ASTM E84 - Panel ASTM E84 - Core ASTM D1929-16 - Panel ASTM D1929-16 - Core BS 8414-1 (cassette system) BS 8414-2 (rivet system) NFPA 285 Cassette System (Closed Joints)	Class A Self Ignition = 470° C Flash Ignition = 470° C Self Ignition = 530° C Flash Ignition = 530° C Passed
Ukraine			ГОСТ 30244-94 ГОСТ 30402-96 ГОСТ 30444-97 4.18 ГОСТ 12.1.044-89 4.20 ГОСТ 12.1.044-89	Г1 В1 РП1 Д2 Т1	ГОСТ 30244-94 ГОСТ 30402-96 ГОСТ 30444-97 4.18 ГОСТ 12.1.044-89 4.20 ГОСТ 12.1.044-89	Г1 В1 РП1 Д2 Т1
Malaysia			PN-90/B-02867	NRO	BS 8414-1 (cassette system)	Complies with SIRIM QAS FPST/DOC/14-1 criteria


etalbond
COMPOSITE MATERIALS

etalbond®
COMPOSITE MATERIALS

PROCESSING - ROUTING - FOLDING

Thanks to its adaptability **etalbond®** can be shaped by means of simple processing techniques. This routing and folding technique, enables a variety of shapes and sizes to be manufactured.
After having routed the material (on one side) the untouched outer cover sheet can be bent manually giving an exact and clean folding line which follows the routed groove. All standard machinery devices can be used for the following pictogram below.

CUTTING & SAWING

DRILLING

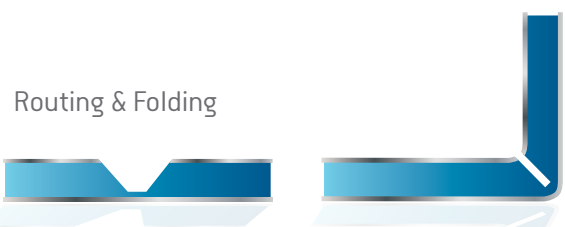
PUNCHING

CONTOUR MILLING

JOINING
& FIXING TECHNIQUES

BENDING - FORMING

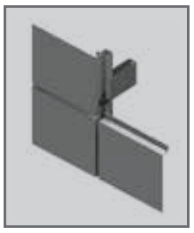
Routing & Folding



VFS SYSTEMS
AXONOMETRIC DEPICTIONS

Bravo W Suspended Cassette System

Bravo W is the optimal solution for large and flat façades, ensuring fast and secure installation of cassettes from aluminium composite materials (**etalbond**®). The system allows the movement of the façade material due to various thermal expansions without compromising the secure attachment of the cassettes.



Omega Cassette System

Omega cassette system is a simple and efficient cladding system, incorporating **etalbond**® cassettes using the hanging technique, secure and easy installation. Optimal for large and flat vertical layout.

Riveted Panel System (on T-profile)

The system is specially designed for mounting of composite material (**etalbond**®). The system offers easy, fast and secure mounting of **etalbond**® flat sheets while it exhibits optimal behavior as far as the thermal expansion of the composite panels is concerned.

Riveted Panel System (on Omega profile)

Riveted Panel System is designed for installation of flat riveted **etalbond**® panels using screws or rivets, with Omega supporting profile, achieving easy and secure installation with optimal aesthetic results.

Horizontal Cassette System (SZ-20)

SZ-20 is the ideal solution for horizontal cassettes layout. The system utilizes horizontal profiles at the back of the cassette secure and easy installation, while achieving large spans between vertical supports. The system allows the movement of the façade material due to thermal expansion without compromising the integrity of the system.

Vario etalbond® Riveted Cassette System

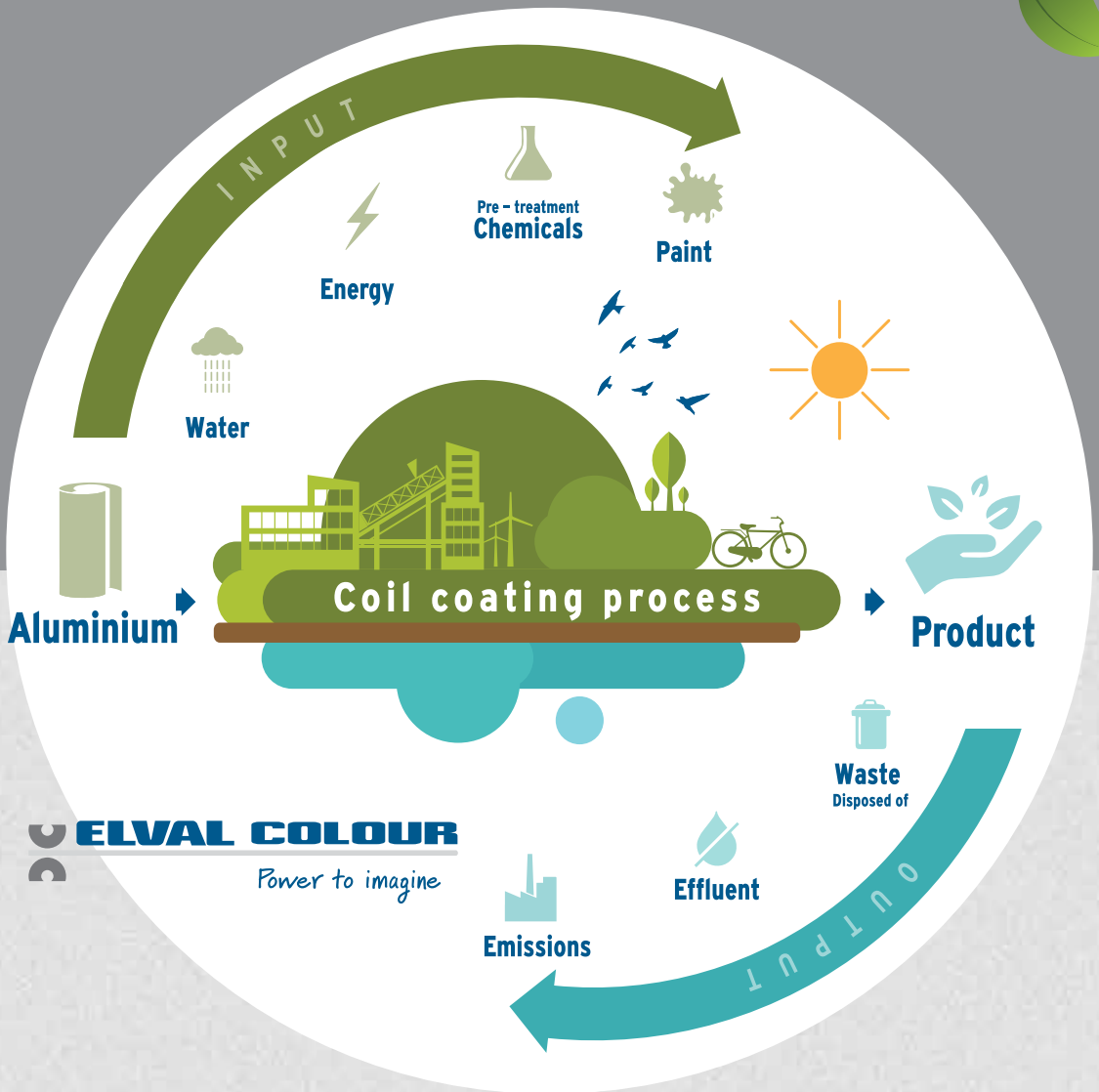
The system is specially designed for mounting of composite material (**etalbond**®), produced by Elval Colour. The system offers:

- Optimal solution for large and flat façades
- Assuring easy, fast and secure mounting of the composite panel
- Optimal behaviour to the thermal expansion of the composite panel

SUSTAINABILITY - RECYCLABILITY

- **etalbond®** is Fully Recyclable.
- **etalbond®** has low waste both during manufacturing process and in use.
- Elval Colour uses controlled processes with a focus on energy, emissions, resource usage and environment.
- Coil coating is the best technology available today, for applying paint to metal and the most environmental friendly as it helps minimizing environmental problems such as emission of volatile organic compounds (VOC), high usage of chemicals, water, and energy, and the disposal of waste.
- Emissions of volatile organics are very tightly controlled by the coil coating process to the extent that they are virtually eliminated.
- Pre-painted metal consistently out-performs post-painted metal in longevity, corrosion protection, and long-term aesthetics.
- **etalbond® FR** and **A2** have been awarded with the Green Certificates by the Singapore Green Building Council SGBC.

- Water used in our processes is 100% re-utilized resulting in no water wastage.
- The continuous nature of the coil coating process and the efficiency of roller coating means that waste is very much reduced and wastage of paint is virtually eliminated, with most potential waste being re-used in paint formulation.
- Most coatings are produced without harsh heavy metals or hazardous solvents.



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www.elval-colour.com

ELVAL COLOUR
Power to imagine

ELVAL COLOUR
Power to imagine

USA ESSENTIAL
STOCK COLORS

Energy G® P. 5988, 04/2023 V.2

etalbond® COMPOSITE MATERIALS
etalbond® A2 COMPOSITE MATERIALS
etalbond® FR COMPOSITE MATERIALS
etalbond® d³ COMPOSITE MATERIALS
ELVAL ENF
orofe®
YDORAL®
agraphon®
arypon®
ELVAL ENF CORRUGATED

evo+ ARCHITECTURAL PANEL SYSTEM
ASG ARCHITECTURAL SYSTEMS GROUP
fusion™ DRILLFREE™

Office: 7925 E Ray Rd. Suite 133,
Mesa, AZ 85212
tel: 480 899 3955

ELVAL COLOUR
Power to imagine

Dark Brown 318

Acropolis White 211

Silver Smoke Metallic 103

Noval Argent Metallic 111

Grey Metallic 104

Silver White Metallic 916

Angel White 201

Silver Metallic 102

Cadet Grey 319

Charcoal 320

Orbit Black 430

Champagne Metallic 105

Graphite Grey 427

Dark Grey Metallic 310

* 040" 48"x120" color match flat stock available.

EVO ARCHITECTURAL PANEL SYSTEM

ASG ARCHITECTURAL SYSTEMS GROUP

fusion™ DRILLFREE™

ACM BRAND COLOR COMPARISON GUIDE

ASG ARCHITECTURAL SYSTEMS GROUP
asg-rep.com

KEY
Color Match Completed
ASG STOCK PROGRAM COLORS 4MM FR 63.78" x 196"
In Stock

.040" Flat Stock Available

etalbond FR COMPOSITE MATERIALS	Reynobond	Alucobond	Alpolic	Alfrex
Angel White 201	Pure White	Alabaster	Mist White	Classic White
Acropolis White 211	Bone White	Bone White	Bone White	Bone White
Graphite Grey 427			CVG Grey	Dark Gray
Cadet Grey 319	Cadet Grey	Cadet Grey	Aluminum Grey	Dove Gray
Charcoal 320	Charcoal	Dusty Charcoal	CNC Charcoal	Charcoal
Dark Brown 318	Classic Bronze	Satuary Bronze	Bronze	Bronze
*Orbit Black 430	Deep Black	Focus Black	TOB Black	Midnight Black
Silver Metallic 102	Anodic Clear	Anodic Clear Mica	Anodic Clear	Anodic Clear Mica
Silver White Metallic 916	Platinum	Platinum Mica	Mica Platinum	Silversmith
Champagne Metallic 105	Silversmith			Champagne Metallic
Dark Grey Metallic 310	Pewter			Pewter Mica
Grey Metallic 104		MZG Gray Mica II	MZG Gray	JLR Gray Metallic
Novel Argent Metallic 111	Bright Silver Met	Sunrise Silver Metallic	BSX Silver	Bright Silver Metallic
Silver Smoke Metallic 103				PEX Pewter Metallic
Novel Bronze Metallic 112	Champagne Mica	Anodic Satin	Mica Champagne	
Color Matched	Frisco White			
Color Matched				
Color Matched				
Color Matched	Vancouver Copper	Harvest Gold		
Color Matched				
Color Matched	Champagne Metallic	Champagne Metallic	Champagne Metallic	
Color Matched				
Pure White 918		RVW White	RVW White	
Oyster White 202	Oyster White	Oyster White	Oyster White	Oyster White
Acropolis Marble 212	Pueblo Tan			
Sandstone 213	Castle Grey	Castle Grey		Castle Gray
Sugar White 432	Limestone			Ascot White
Anthracite 428			BGY Grey	
Earth Grey 114				
Canyon Grey 203				
Coffee Brown Metallic 316				
Laser Red 209		Patriot Red	TOR Red	Patriot Red
Pacific Blue 205				Harmony Blue
Vulcan Copper Metallic 314	Copper Penny		Dark Copper Metallic	Copper Penny Metallic
Anodized Look Clear 955				
Anodized Look Silver 953				Clear Anodized
Anodized Look Champagne 958				Champagne
Anodized Look Light Bronze 960				Light Bronze
Anodized Look Medium Bronze 957				Medium Bronze
Anodized Look Dark Bronze 956				Dark Bronze
Anodized Look Black 954				Electrolytic Black
Anodized Look Dark Brown 959				
Patina Verde 905	Copper Patina	Patina Copper		
Patina Rame 906				
Corten 915	Aciero Corten	Coracero		
Natural Brushed 963				Blue Grey
Gold Brushed 704				
Zinc Light Brown 928				
Zinc Dark Brown 929				
Zinc Light Grey 962	Zinc Patina			Faux Zinc Light

Arizona Office Phone: 480-899-3955
7925 East Ray Road STE 133, Mesa, AZ 85212

Georgia Office Phone: 770-345-9550
200 Bluffs Court, Canton, GA 30114

ASG ARCHITECTURAL SYSTEMS GROUP

Industry Specific Product Comparison Data and Performance Properties.

etalbond® FR COMPOSITE MATERIALS

				Etalbond	Alfrex	Reynobond	Alpolic	Alucobond
#	Property	Test	Unit	4MM FR Core	4MM FR Core	4MM FR Core	4MM FR Core	4MM FR Core
1	Thickness	N/A	mm	4.0	4.0	4.0	4.0	4.0
			in	0.157	0.157	0.157	0.157	0.157
2	Weight	N/A	kg/m2	7.40	7.37	7.48	7.60	N/A
			lb/ft2	1.52	1.51	1.53	1.56	N/A
3	Alloy	N/A	Grade/Temper	3105 H44	3003 H14	3105 H25	3105 H14	AA 3000
4	Bond	ASTM D1781	Nm/m	*≥167 _	≥100 _	≥100 _	≥100 _	≥100 _
			in-lb/in	*≥37.5_	≥22.5_	≥22.5 _	≥22.5 _	≥22.5 _
5	Expansion	Based on Skin	mm/mm/*C	2.36 x 10 5	2.59 x 10 5	2.36 x 10 5	2.36 x 10 5	2.36 x 10 5
			in/in*F	1.31 x 10 5	1.44 x 10 5	1.31 x 10 5	1.31 x 10 5	1.31 x 10 5
6	Core	N/A		Polymer with FR Filler	FR Mineral Filled	Polymer with FR Filler	Polymer with FR Filler	Polymer with FR Filler
7	Flame Spread	ASTM E84	N/A	Pass = Class A	Pass = Class A	Pass = Class A	Pass = Class A	Pass = Class A
8	Smoke Developed	ASTM E84	N/A	Pass = Class A	Pass = Class A	Pass = Class A	Pass = Class A	Pass = Class A
9	Multi-Story Test	NFPA 285	N/A	Passed	Passed	Passed	Passed	Passed
10	Panel + System Strength Test	AC25	N/A	Yes	Yes	No	No	No
11	Panel Strength Test	E72	N/A	Yes	Yes	Yes	Yes	Yes
12	Florida Building Code	HVHZ	N/A	Yes	Yes	N/A	N/A	N/A
13	Legitiment IBC Report	ICC/CCRR	N/A	**Yes**	No	No	No	No
14	Self Ignition	ASTM D1929	>650*F	Passed	Passed	Passed	Passed	Passed
15	Tensile Strength	ASTM E8	Mpa	≥150	≥ 48	≥159	≥159	≥159
			ksi	≥21.8	≥ 7	≥23	≥23	≥23
16	Yield Strength	ASTM E8	Mpa	≥120	≥ 43	≥131	≥131	≥131
			ksi	≥17.4	≥ 6.2	≥19	≥19	≥19
17	Skin Thickness	N/A	mm	0.5 ± 0.05	0.5 ± 0.05	0.5 ± 0.05	0.5 ± 0.05	0.5 ± 0.05
			in	Nom 0.020	Nom 0.020	Nom 0.020	Nom 0.020	Nom 0.020
18	Bond Waranty	N/A	Years	***20**	10	5	5	5
19	Paint Warranty	N/A	Years	30	30	30	30	30
20	Max Sheet Width	N/A	mm	***1625**	1575	1575	1575	1575
21	Custom Sheet Widths	N/A	N/A	**Yes**	No	No	No	No
22	Aluminum Coil Manufacturer	N/A	N/A	**Yes**	No	No	No	No
23	In House Coil Coating	N/A	N/A	**Yes**	No	No	No	No

ELVAL COLOUR up to 20-years limited warranty

The etalbond-fr panels with the appropriate VHDPE OR PVDF Paint finish when installed properly and subjected to the conditions set herein are warranted to be free from defects for a time period of up to TWENTY (20) years and:

A. When installed in the absence of standing water, the product will have a uniform and controlled colour and gloss evolution, under the same exposure, without affecting the aesthetics of the building.

For the first 10 years also:

B. Not to peel, check, blister, flake or crack (except when slight cracking or crazing is a result of metal fracture or the result of too much severe deformation on tightly roll-formed edges or brake bends at the forming stage of precoated sheets).

C. Not to fade or change in colour in excess of six (6) colour difference units, measured on the exposed painted surfaces which have been cleaned of external deposits and chalk and the corresponding values measured on the original or unexposed painted surfaces. It is understood that fading or colour changes may not be uniform if the surfaces are not equally exposed to the sun and elements. Testing shall be conducted in accordance with the most current issue of ECCA-T3 “Colour difference”.

● This warranty is applicable when:
- etalbond®-fr panels used are from the same global order (same batch for the communicated specific project)
- etalbond®-fr panels are placed by following the same arrow directions
- etalbond®-fr panels are surface covered with self-adhesive film for protection against damage from handling and placing of the material. Removal of self adhesive film should take place within 30 days after placing on the building.
- etalbond®-fr panels have not been exposed to temperatures exceeding 70º C prior to usage.
- etalbond®-fr panels have been installed in such a way as to avoid accumulation of water on their surfaces.
- etalbond®-fr panels are documented cleaned at least TWICE per year in accordance to the ELVAL COLOUR ‘S cleaning instructions for etalbond-fr (shown on page 2).
- etalbond®-fr panels not been damaged through mechanical agencies or exposed to emissions or fumes, harmfull to the stove lacquered coatings.
- etalbond®-fr panels have been handled, transported, stored, cleaned, maintained and the additional precautions have been respected by following the ELVAL COLOUR ‘S guidelines at the end of this warranty.

●This warranty applies when more than 20% of the surface of any single panel (i.e one wall or one roof slope) of the building is affected by any of the above defects.

●This warranty shall apply only under the environmental conditions that exist in the project location under normal conditions (which term excludes corrosive or aggressive atmospheres contaminated with chemical fumes, or location less than 1,5 km from the seashore) unless otherwise proved by the project location

●The customer has to follow and document, etalbond-fr cleaning and Maintenance procedures incorporated at the etalbond®-fr cleaning instructions paragraph at the end of this document, in order to fulfil his responsibility, set in this warranty agreement.

● In addition, when installed properly and subjected to the conditions set herein, etalbond®-fr panels covered by this warranty are warranted not to delaminate for a period of up to TWENTY (20) years.

● This warranty does not apply to etalbond®-fr composite panels which have been or are exposed to smoke, fire, lighting. Windstorm(s), hail or other acts of God, radiation, salt-spray, harmful fumes or surface scratches caused by foreign substances in the atmosphere that can scratch the coated surfaces or chemical pollution, including but not limited to organic solvents, concentrated detergents, wetting agents or to panels damaged by malicious mischief, vandalism, impact, misuse, abuse or negligence in cleaning by direct and indirect influences that are generally known to affect the quality of stove- lacquered surface coatings.

WARRANTY DURATION: The duration of this warranty is up to TWENTY (20) years for etalbond®-fr VHDPE OR PVDFpaint finish used at the Project under the conditions set herein:

Project:

Customer name: Architectural Systems Group, LLC

●The duration of this warranty shall be only half of the above stated periods if when the product is installed within 20° North or South of the Equator unless the project location that is stated is within this range.

●This warranty begins from the delivery date of the Etalbond-fr material from ELVAL COLOUR S.A. to the customer.

ELVAL COLOUR up to 20-years limited warranty

Sole and Exclusive Remedy: The sole and exclusive remedy, with respect to any failure of any panel covered by this warranty to comply with this warranty is as follows: SHOULD ANY PANEL COVERED BY THIS WARRANTY FAIL TO COMPLY WITH THIS WARRANTY, ELVAL COLOUR 'S SOLE AND EXCLUSIVE OBLIGATION WILL BE AT ITS OWN SELECTION TO MAKE AN ALLOWANCE EQUAL TO ETALBOND'S ORIGINAL SELLING PRICE TIMES **(X-Y) / X,** WHERE "X" EQUALS THE WARRANTY PERIOD IN YEARS, TWENTY (20) AS APPLICABLE AND "Y" EQUALS THE NUMBER OF YEARS AFTER THE SHIPPING DATE OF SUCH PANEL, provided however, that ELVAL COLOUR S.A. must be given notice in writing within thirty (30) days after discovery of such non-compliance and a reasonable opportunity to inspect the panel prior to any action.

ELVAL COLOUR 'S SOLE RESPONSIBILITY IS AS STATED HEREIN, AND ELVAL COLOUR S.A. SHALL NOT BE LIABLE, IN ANY EVENT, FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, OR ANY SPECIAL DAMAGES.

EXCEPTIONS TO PRODUCTS COVERED BY THIS WARRANTY:
This warranty does not cover: (a) panels not coming from the same global order (project orders should be communicated to ELVAL COLOUR S.A.) (b) panels not installed in a clean, dry condition or not installed properly and NOT maintained and cleanings (documented) TWICE per year in accordance with ELVAL COLOUR S.A. guidelines (c) panels damaged from physical forces such as corrosion, abrasion, impact, or abuse, or unattended surface scratches (d) panels that fail caused by exposure to chemical atmospheres, or to salt air or spray; (e) damage or failure which is attributable to acts of God, falling objects, abnormal weather conditions, explosions, fire, riots, civil commotion, acts of war, or other similar occurrences beyond ELVAL COLOUR S.A. control. ELVAL COLOUR S.A. shall not be responsible for any representations, whether expressed or implied, made by its employees, agents, representatives, distributors, contractors or other similar persons that conflict with the terms of this limited warranty unless such representations are contained in writing and signed by an authorized representative of ELVAL COLOUR S.A. In no event shall ELVAL COLOUR S.A. waiver of any of the terms and conditions hereunder be deemed a continuing waiver or constitute a waiver, whether expressed or implied, of any of the remaining terms and conditions hereof. Specially prepared modifications to this product warranty exclusion may be extended elsewhere at ELVAL COLOUR S.A.sole option.

● Please inquire by writing to ELVAL COLOUR S.A. 3RD km. Oinofyta Peripheral Rd., 32011 Saint Thomas, Viotia, GREECE or by calling ELVAL COLOUR S.A. at 0030- 22620 53564.

DISCLAIMER:
EXCEPT AS DESCRIBED IN THE ABOVE WARRANTY, ELVAL COLOUR S.A. EXPRESSLY DISCLAIMS WITH RESPECT TO ITS PANELS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE.

STATUTE OF LIMITATIONS:
Any action for breach of this warranty or any related contract of sale must be commenced by Buyer solely within three (3) months after the cause of action has accrued.

Important note: This limited warranty document is consisted of a total of 5 pages. Page 3 should be filled out completely and sealed in order this warranty to be considered valid.

APPLICABLE LAW: This warranty is governed by Greek Law.

ETALBOND CLEANING INSTRUCTIONS

Etalbond panels for the **project:** _____are factory coil coated with VHDPE OR PVDF paint finish.
Routine maintenance and inspection **(established with record keeping of the building owner's responsibility)** is required -**at least TWICE per year**- to clean the Etalbond-fr panel coated surfaces and restore panels to their original appearance, as well as perform any repairing if necessary.
The finish should be washed gently with a mild solution of soap or mild detergent and lukewarm water (1/3 cup mild detergent per gallon of lukewarm water). Using a soft cloth or sponge, gently wash the coated surface to loosen dirt and grim and rinse well with clean water.
To minimize streaking, wash from bottom to top. An adequate rinse should be assured to cleanse the finish and also further dilute the solution.
To prevent water spotting, thoroughly dry with cellulose sponge. Avoid the use of abrasive cleaners, squeegees and/or other cleaning implements that may mar or gouge the coating.
ELVAL COLOUR S.A. recommends either EN 1396 ANNEX D "Guidelines for storage and subsequent processing" or AAMA's "Voluntary Guide Specification for Cleaning and Maintenance of Painted Aluminium Extrusions and Curtain wall Panels", Publication 610.1-79 as a suitable reference.

ELVAL COLOUR up to 20-years limited warranty

This section is completed based on the information provided by the customer in environmental questionnaire dated _to be completed after questionnaire completion

●CUSTOMER NAME:

●PROJECT:

●PRODUCT: **etalbond fr**

●Quantity: ***to be completed after invoicing*** **m²**

●DATE**:** ***to be completed after invoicing***
SINGNED BY: See signature of _____representative on the environmental questionnaire.

THIS SECTION TO BE COMPLETED BY ELVAL COLOUR S.A.

■ELVAL COLOUR PRODUCT ***to be completed after invoicing***
■INVOICE(S) No: ***to be completed after invoicing***

Invoice no	m²	date

■LAST SHIPMENT: ***to be completed after invoicing***

■WARRANTY CERTIFICATE No: ***to be completed after invoicing***

■WARRANTY ISSUANCE DATE: ***to be completed after invoicing***
■SIGNED BY: M. Latsa/Quality Control and R&D Manager

- **SIGNATURE and SEAL:**

Etalbond®-fr: Analytic Instructions for cleaning (documented), maintenance, transportation and handling, storage, protective film usage.

■ Complementary instructions for Etalbond®-fr Cleaning

Removal of light surface soil: An initial step recommended is the rinse cleaning with forceful water starting from the top to down the building wall.
Low water volume with moderate pressure is a good practice to start with in order to dislodge excess dust, soil and fumes from the etalbond-fr surface.
Next light rubbing of the etalbond surface with soft sponges or soft rags dipped in water with a mild detergent soap should take place.

The washing should be performed by applying uniform pressure, cleaning first with a horizontal motion and when finished the cleaning should be repeated with a vertical motion. Follow with a thorough rinsing with clean water. This way the panel surface will be cleaned adequately and uniformly.
Rundown of cleaner to the lower part of the buildings should be minimized and these areas should be kept wet and next adequately rinsed to lessen stains from the unavoidable rundown.
In low elevation buildings it is suggested to clean from bottom up and rinse from top to bottom.
Always test clean small areas first to make sure that the mild soap used does not cause any problem on the etalbond®-fr surface. Keep in mind that cleaners should not be used indiscriminately. Do not use excessive and abrasive rubbing as may alter or change the surface gloss. Always rinse thoroughly with clean water after finishing with cleaning.

Removal of heavy surface soil, accumulated dust and heavy fumes
In this case some type of mild solvent such as Isopropyl alcohol, ethanol or deluted N-hexane may be needed to remove caulking compounds, grease or sealant.

Stronger solvents may be detrimental to the coated surface.
To prevent any damage to the finish these solvents should be spot-tested at a small invisible area. Remaining residues should be washed with mild soap and rinsed with water.

Avoid strong solvents or strong concentrations of other cleaners as they can damage the etalbond®-fr coated surface. Keep away abrasive cleaners from etalbond®-fr coated surface.
Remove rundown soapy waters as soon as possible.
Never use on etalbond®-fr coated surface any paint removers, aggressive alkali, acid or abrasive cleaners. Never use strong organic solvents on etalbond®-fr.
Follow manufacturer's recommendations for diluting cleaners.

■ Etalbond-fr Maintenance

All aspects of the building work are to be maintained as per manufacturer recommendations and or available technical information.

The performance of the maintenance in respect to the etalbond-fr facades is the responsibility of the existing owner to carry out. It is also the responsibility of the building owner to ensure that any future owners are fully aware of their responsibilities in respect to carrying out the required maintenance provided in the etalbond Maintenance instructions.

The nature and extent of the etalbond-fr maintenance will depend on the material or system, its geographical location, its position on the building and can include the replacement of components or parts subjected to wear.

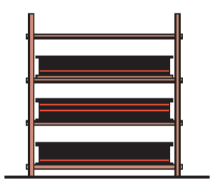
Maintenance of etalbond-fr elements include but are not limited to the following.
i) Follow manufacturers' maintenance recommendations
ii) Inspect regularly -TWICE per year- and replace system components like joint sealants where required
iii) Test panel stability by both visual inspections for loose or corroded connections and applying pressure and suction on the panel surfaces
iv) Washing down surfaces TWICE per year as recommended
v) Were there are elements added to the building façade at a later stage like signage, light fittings or penetrations that have not been initially considered by the supplier take note that this could affect the material itself and weather tightness.
Maintenance does not include any type of upgrading of etalbond-fr façade elements to meet new aesthetics or increased environmental expectations of users.
Clean regularly etalbond coated surfaces found in the project _____**USA TWICE per year**.

■ Transportation and Handling

- Etalbond-fr panels should be handled with care in order not to damage the high quality material surface.
- Despite of the hardness of the coating and the presence of the protection film the self-weight of the Etalbond-fr stack is always a potential mechanism of damage.
- Etalbond-fr panels should be handled carefully. Long sheets will sag under their own weight thus when lifted at ends should be supported at additional points, lengthwise.
- The etalbond-fr panels should be secured against slippage during transport. Never pull or push panels over the edge during loading or unloading situations as there is the potential to scratch the coated surface.
  Instead the panels should be lifted by holding them from both ends.
- Transport protection films must not be exposed to direct sunshine or to heat for periods longer than 15 Days.

Forklift unloading: When loading or unloading etalbond-fr panels with the use of a forklift, make sure that the lifts are set to their maximum distance apart and located centrally between the pallets. Pallets should be unloaded one by one and placed on even ground.

Crane unloading: When unloading the panels lifting slings will be required. Make sure that that lifting slings are in place, in good condition, located with protection to the bottom panel and that package is balanced. Ensure that no people are below the pallet during a lifting operation.



Lifting equipment: ELVAL COLOUR S.A. recommends the use of approved types of lifting or suction equipment or panel clamps for the safe and easy installation of etalbond-fr panels.

■ Storage of Etalbond-fr Panels

- Etalbond-fr panels should be kept stored in dry and well ventilated areas under normal temperatures.
- Protect etalbond pallets during storage against rain, penetration of moisture and condensation.
- Only pallets of identical size should be stacked, with a maximum of 3 pallets (not more than 40 sheets per pallet) stacked on top of each other.
- When Etalbond-fr has to be stacked in high piles use intermediate layers of wood or plastic and protected against humidity.
- The right storage of Etalbond-fr panels or pallets is on horizontal racks. Flat storage protects Etalbond panels from warping. Caution should be paid that the precoated surface is protected from any potential scratching. It is suggested to do not unpack etalbond pallettes until use. After unpacking, restore remaining panels horizontally into the palette. Do not store Etalbond-fr in dusty or humid places.

Compatibility To prevent electro-chemical corrosion direct contact with copper or water run-off from copper installations, or direct contact with lead in coastal environments, should be avoided. Fixing devices must be of, or compatible with aluminium. Precautions must also be taken (e.g by using a strip sealant) to prevent direct contact with timber preserved with copper or fluoride compounds or treated with a fire retardant.

• Panel Protective foil

Protective film guarantees panel finish protection during packaging, transportation, shaping and installation. The film must remain on the panels for a short time and should be removed as soon as possible after the panel has been put on the building façade (film should be removed within 1 month after installation). Arrows that are marked on the film show the direction of coating and should be taken into account during shaping and installation of the panels.

Always observe closely the following rules regarding protective film.

-To avoid residuals of adhesive on to the surface of the panels due to UV radiation, it is recommended to remove the protective film in less than 30 days after the installation.

-The protective films and the panel surfaces should not come in contact with any kind of inks, adhesive tapes or stickers, as the lacquered surfaces could be damaged by the included solvents or plasticizers.

-Make sure to remove the protective film as soon as possible after installation as weathering for a longer period could make the film removal difficult if not impossible (as a rule of thump, the protective film should not remain -on panels put in position on a building- longer than 30 days).

END OF WARRANTY

Code Compliance Research Report
CCRR-0474

Issue Date: 11-08-2022
Revision Date: 11-20-2023
Renewal Date: 11-30-2024

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION
Section: 07 42 13 – Metal Wall Panels

REPORT HOLDER:
Carter Architectural Panels, Inc.
7925 East Ray Road., Suite 133
Mesa, Arizona 85212
480-899-3955
www.carterpanels.com

REPORT SUBJECT:
Exterior Cladding System:
etalbond® FR MCM Panels
EVO™ RIVETLESS™ Extrusion System
FUSION™ DRILLFREE™ Extrusion System

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2021, 2018 *International Building Code®* (IBC)
- 2023, 2020 *Florida Building Code* (FBC) including High Velocity Hurricane Zones (See Section 9)

NOTE: This report references the most recent edition of the Codes cited. Section numbers from earlier editions of the Code may differ.

1.2 The exterior cladding systems recognized in this report have been evaluated for the following properties:

- Structural
- Interior Finish Classification
- Durability

1.3 The exterior cladding systems recognized in this report have been evaluated for the following uses:

- Non-loadbearing exterior wall cladding in accordance with IBC Section 1406
- Use on exterior walls of all Types of construction (Types I, II, III, IV and V)
- Use in fire-resistance-rated construction

2.0 STATEMENT OF COMPLIANCE

The cladding systems described in this report comply with the Codes listed in Section 1.1, for the properties stated in Section 1.2, and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.0.

3.0 DESCRIPTION

3.1 FUSION™ DRILLFREE™ Extrusion System:

The FUSION™ DRILLFREE™ system consists of the following components: 6061-T6 Perimeter Extrusion, Starter, Integrated Stiffener Mid Clip and Half Clip attachment profiles.

3.2 EVO™ RIVETLESS™ Extrusion System:

The EVO™ RIVETLESS™ system consists of the following components: 6061-T6 Perimeter Extrusion, Starter, Integrated Stiffener Mid Clip and Half Clip attachment profiles.

3.3 etalbond® FR MCM Panels:

etalbond® FR MCM panels consist of two nominal 0.5mm (0.020 in.) thick aluminum skins, bonded to both surfaces of a mineral-filled polymer core. The panels are available in two overall panel thicknesses, 4mm (0.16 in.) and 6mm (0.24 in.). Both surfaces are covered with a proprietary coating.

The etalbond® FR panels are available in widths from 31 inches to 64 inches and in lengths from 6 feet to 24 feet.

The etalbond® FR panels are recognized in CCRR-0473.

3.4 Panel Fabrication:

3.4.1 FUSION™ DRILLFREE™ System: The perimeter of the etalbond® FR panels are routed and returned to form an L-shape having a height of 1 in. Each corner is mitered and

interlocked. Custom extruded FUSION™ perimeter rails are placed inside the single return track around the perimeter of the interior side of the panel. The rails are attached to the panels with proprietary nominal 3/16 in "double-bulb" aluminum rivets placed 1.75 in. from each edge and spaced 16 in. on center. The meeting points of the rails at each corner are reinforced with 2-1/2 in. x 2-1/2 in. x 0.080 in. vertical aluminum corner brackets, fastened with two Carter #8 x 3/4 in. self-drilling Torxlig screws.

3.4.2 EVO™ RIVETLESS System: The perimeter of the etalbond® FR panels are double routed and returned to form a C-shape having a height and return of 1 in. around the perimeter. Each corner is mitered and interlocked. Custom extruded EVO™ perimeter rails are placed inside the double returned perimeter track around the interior side of the panel. The meeting points of the rails at each corner are reinforced with 2-1/2 in. x 2-1/2 in. x 0.080 in. flat aluminum corner brace fastened with two Carter #8 x 3/4 in. self-drilling Torxlig screws.

3.4.3 Panel Stiffeners: Installation of the panels requires the use of Carter's patented 2 in. wide x 1-1/2 in. tall integrated extruded aluminum stiffeners installed at 16 in. on center on the interior of the panel, secured at the ends with 2-1/2 in. x 2-1/2 in. x 0.080 in. aluminum angle, fastened with two Carter #8 x 3/4 in. self-drilling Toraxlig screws to the panel perimeter. The stiffeners are secured by Carter's proprietary "Structural Stiffener Tape" and a secondary bead of structural silicone on each beveled edge of the stiffener.

4.0 PERFORMANCE CHARACTERISTICS

4.1 Physical Properties:

The exterior cladding system incorporating the etalbond® FR panels and the EVO™ RIVETLESS™ or FUSION™ DRILLFREE™ extrusion systems MCM Panel systems comply with IBC Section 1406 and ICC-ES AC25.

4.2 Surface Burning Characteristics:

The etalbond® FR panels have a flame spread index of not more than 25 and a smoke developed index of not more than 450, when tested in accordance with ASTM E84, and have a Class A interior finish classification.

4.3 Wind Resistance:

When installed in accordance with this report, the maximum allowable transverse loads are as follows:

EVO™ RIVETLESS™ Extrusion System:
- 39 psf negative, 40 psf positive

FUSION™ DRILLFREE™ Extrusion System:
- 41 psf negative, 43 psf positive

5.0 DESIGN AND INSTALLATION

5.1 General:

The exterior cladding systems described in this report must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer's instructions must be available on the jobsite during installation.

The cladding system must be installed over a base wall system covered with a water-resistive barrier complying with IBC Sections 1402 and 1403.2, except as noted in Sections 5.2.2 and 5.2.3 for use in Types I, II, III, and IV construction.

The panels must be fabricated by a fabricator acceptable to the building official. Fabrication must be in accordance with the approved building plans and with Section 3.4 of this report.

The maximum ACM panel span between horizontal attachments is 48 inches. Both EVO™ and FUSION™ panel installation starts at the bottom of the wall with Carter's patented 1-1/2 in. x 1/2 in. deep extruded aluminum retaining strip attached to the bottom galvanized channel, fastened with 1/4-14 screws spaced at 16 in. on center. The perimeter extrusion in the bottom panel is interlocked with the starter profile. The fabricated panels are attached to minimum No. 18 gage G-90 galvanized steel hat channel and Z-girts with clips spaced a maximum of 16 inches on center on vertical edges and 24 inches on center on the top edge. The EVO™ and FUSION™ clips must be attached with one #14-14 x 7/8 in. corrosion-resistant screw. Design of the hat channel and Z-girts and their attachment to the base wall construction must be provided, to the satisfaction of the building official, for each project.

See Figures 1 through 6 for typical installation details.

5.2 Exterior Walls of Buildings of Type I, II, III, or IV Construction:

5.2.1 General: etalbond® FR panels installed with the FUSION™ DRILLFREE™ Extrusion System may be used on exterior walls in Type I, II, III, or IV construction as described in Section 5.2.2.

The etalbond® FR panels installed with either the FUSION™ DRILLFREE™ Extrusion System or EVO™ RIVETLESS™ Extrusion System may be installed on buildings a maximum height of 40 feet above the grade plane, under the limitations specified in IBC Section 1406.10.1 and 1406.10.2. Alternatively, for buildings exceeding 40 feet above the grade plane, data demonstrating compliance with IBC Section 1406.10.1, 1406.102 and 1406.10.3 shall be submitted to the local building official.

5.2.2 FUSION™ DRILLFREE™ System:

The FUSION™ DRILLFREE™ System may be used on buildings of Types I, II, III, or IV construction for installations greater than 40 feet above grade plane when installed as described in this section.

Interior Sheathing: Minimum 5/8 in. USG/Tremco SECUROCK® EXOAIR® 430 Air & Water Barrier, installed horizontally and attached to framing with #14 x 1-1/4 in. self-tapping bugle-head screws spaced at 8 in. on center on the perimeter and 12 in. on center in the field of the panels. Joints and screw heads must be covered with Tremco Dymonic® 100 High Performance Polyurethane Sealant.

Framing: Minimum 3-5/8 in. x 1-1/4 in., 20 gage steel studs and tracks. No insulation is used in the stud cavities. Floorlines must be protected with minimum 4 pcf mineral wool insulation between the floor and the exterior cladding.

Exterior Sheathing: Minimum 5/8 in. Type X gypsum sheathing, installed horizontally and attached to framing with #14 x 1-1/4 in. self-tapping bugle-head screws spaced at 8 in. on center on the perimeter and 12 in. on center in the field of the panels. All joints and screw heads must receive a Level 2 finish.

Exterior Insulation: Johns Manville 2 in. JM CladStone® Water and Fire Block insulation is attached to the wall with Ultrafast® Phillips 5 in. roofing fasteners and Ultrafast® CI Plates.

Openings: Openings must be framed with 20 gage steel framing, must be finished with Tremco Exoair 110AT tape, followed by Tremco Spectrem®1 Moisture-Cure Silicone Sealant used to secure Tremco 40 in. one-sided single-ribbed Proglaze ETA on the header and uprights of the opening. The header must be covered with 26 gage flashing followed by 18 gage aluminum flashing flush with the exterior edge and with a 2 in. leg on the interior side of the opening. TENMAT FIREFLY 102 is applied around the window opening.

Exterior Cladding: Minimum 4mm etalbond® FR panels are installed as described in this report using the FUSION™ DRILLFREE™ attachment system. The water-resistive barrier required by IBC Section 1402.5 is provided by the EXOAIR 430 system when installed in accordance with ICC-ES ESR-4423.

5.2.3 EVO™ RIVETLESS™ System:

The EVO™ RIVETLESS™ System may be used on buildings of Types I, II, III, or IV construction for installations greater than 40 feet above grade plane when installed as described in this section.

Interior Sheathing: Minimum 5/8 in. Type X gypsum sheathing complying with ASTM C1396, installed vertically and attached to framing with #6 x 1-1/4 in. self-drilling bugle-head screws spaced at 8 in. on center on the perimeter and 12 in. on center in the field of the panels. Joints and screw heads must be covered with joint compound.

Framing: Minimum 3-5/8 in. x 1-1/4 in., 18 gage steel studs and tracks. No insulation is used in the stud cavities. Floorlines must be protected with minimum 4 pcf mineral wool insulation between the floor and the exterior cladding.

Exterior Sheathing: Minimum 5/8 in. Type X gypsum sheathing complying with ASTM C1177, installed horizontally and attached to framing with #6 x 1-1/4 in. self-drilling bugle-head screws spaced at 8 in. on center on the perimeter and 12 in. on center in the field of the panels.

Exterior Insulation: Johns Manville 3-1/2 in. JM AP™ Foil Faced Polyisocyanurate Continuous Insulation Sheathing (see CCRR-0444) is cut to fit between the horizontal Z-bars and is attached to the wall with 5 in. JM Ultrafast® Fasteners and 2 in. JM Ultrafast Plates, installed 24 in. below the Z-bars

spaced at 24 in. in the field of the foam. 4 in. wide 3M All Weather Flashing Tape 8067 is applied over the horizontal and vertical sheathing joints. 4 in. squares of the tape must be applied over the JM Ultrafast® CI Plates.

Openings: Openings must be framed with minimum 20 gage galvanized steel framing. 16 gage, 3-1/2 in. deep continuous "U" bar must be installed over the exterior sheathing around the window opening perimeter. 26 gage window flashing is installed on the window header and jambs, extending from the interior edge of the framing to even with the exterior surface of the panels. On the sill, 26 gage flashing must extend from the interior edge of the framing over the exterior cladding by 2 in. The window flashing is fastened to the continuous "U" bar around the window perimeter with # 10 hex-head fasteners spaced 8 in. on center.

Exterior Cladding: Minimum 4mm etalbond® FR panels are installed as described in this report using the EVO™ RIVETLESS™ system. The water-resistive barrier required by IBC Section 1402.5 is provided by the AP Foil insulation boards when taped with 4 in. wide 3M All Weather Flashing Tape 8067 and installed as described in CCRR-0444.

5.3 Fire-resistance-rated Construction:

Use in fire-resistance-rated construction is outside the scope of this report.

5.4 Interior Wall Covering:

The panels may be used as an interior wall finish in compliance with IBC Chapter 8. The panels must be installed on the interior side of the wall in accordance with Section 5.1 above. The panels have a Class A interior finish classification.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

6.2 The design of the structural support system (building framing, panel mounting hardware, attachment accessories, and silicone adhesive) and panels' connections to their supporting mounting bars, provided by the MCM system's fabricator, must be submitted to and approved by the Code official for each project.

6.3 The allowable transverse load capacity for the MCM panels and their interlock with their attachment accessories must be submitted to and approved by the Code official for each project. The allowable transverse load capacity must equal or exceed the design loads determined in accordance with Chapter 16 of the IBC. Allowable transverse loads for the MCM materials are set forth in Section 4.2 of this report.

6.4 The MCM system's fabricator must provide a certificate of compliance to the Code official attesting that the MCM system fabrication includes the use of adhesive approved for use, that the adhesive application complies with the adhesive manufacturer's installation guidelines, and that the MCM system fabrication complies with approved construction documents. Additionally, the use of adhesives for the installation of stiffeners to the back of the panels requires special inspections in accordance with IBC Section 1704.2, or the fabricator must be approved by the Code official in accordance with IBC Section 1704.2.5.

6.5 Where the panels are installed on exterior walls on buildings of Type I, II, III, and IV construction, the walls must be constructed in accordance with Section 5.2 of this report.

6.6 Evidence of weather tightness of the wall cladding system in accordance with IBC Section 1406.6 must be submitted to the Code official.

6.7 The extrusions are manufactured in Ontario, Canada, under a quality control program with inspections by Intertek Testing Services NA Inc.

7.0 SUPPORTING EVIDENCE

7.1 Data in accordance with ICC-ES Acceptance Criteria for Metal Composite Material (AC25), dated October 2010 (editorially revised November 2015).

7.2 Reports of tests in accordance with NFPA 285, TAS 201, TAS 202, and TAS 203.

7.3 Intertek Listing Report titled *"Carter Architectural Panels - EVO™ RIVETLESS™ and FUSION™ DRILLFREE™ ACM Mounting Systems."*

8.0 IDENTIFICATION

The EVO™ RIVETLESS™ and FUSION™ DRILLFREE™ system components are labeled on packaging with the company name (Carter Architectural Panels, Inc.), the product name, the Intertek Mark as shown below, the Intertek Control Number and the Code Compliance Research Report number, CCRR-0474.

The etalbond® FR panels are labeled as described in CCRR-0473.

9.0 OTHER CODES

9.1 Florida Building Code:

When installed in accordance with Sections 2 through 7 of this report, the etalbond® FR panels used in conjunction with the FUSION™ DRILLFREE™ and EVO™ RIVETLESS™ systems comply with the 2023 and 2020 *Florida Building Code - Building,* including High-velocity Hurricane Zones, subject to the following conditions:

- The systems have been evaluated for maximum design pressures of 100 psf positive and 75 psf negative, in accordance with FBC Section 1626.
- The systems may be used on the exterior walls of any and all structures, except buildings classified as Risk Category IV – Essential Facility Buildings or Structures, on which the systems may not be installed below 30 feet, in accordance with FBC Section 1626.2.
- The systems must be installed over minimum 18 gage steel framing spaced 16 inches on center and minimum 5/8 in. gypsum sheathing.
- When used within the HVHZ, the FUSION™ DRILLFREE™ system must be installed as described in Sections 3, 4, and 5 of this report.
- When used within the HVHZ, the EVO™ RIVETLESS™ system installation requires the following, in addition to the construction detailed in Sections 3, 4, and 5 of this report:

  etalbond® FR panels must be backed by 0.038 in. thick sheet of G-90 galvanized steel, adhered to the interior of the panel using Carter's proprietary Structural Stiffener Tape. In addition to the horizontal hat channels at 16 in. on center, No. 18 gage G-90 galvanized J-bar must be attached to framing at the exterior panel edge. On vertical edges, two of the panel clips must penetrate through the J-bar and into the hat channel. Clips attaching the panels must be attached to the supporting structure a maximum of 13.5 in. on vertical edges and 16 in. on center on the top edge.

Intertek is an approved evaluation entity and quality assurance entity pursuant to Florida Statute 553.842 – *Product Evaluation and Approval*.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

10.3 Reference to the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

TABLE 1 - PROPERTIES EVALUATED

PROPERTY	2021 IBC SECTION	2023 FBC SECTION
Physical Properties	1406	1407
Surface Burning Characteristics	803	803
Use in Types I, II, III, and IV Construction	1406.10	1407.10
Fire-resistance Rated Construction	1406.8	1407.8
High-velocity Hurricane Zones	NA	1626

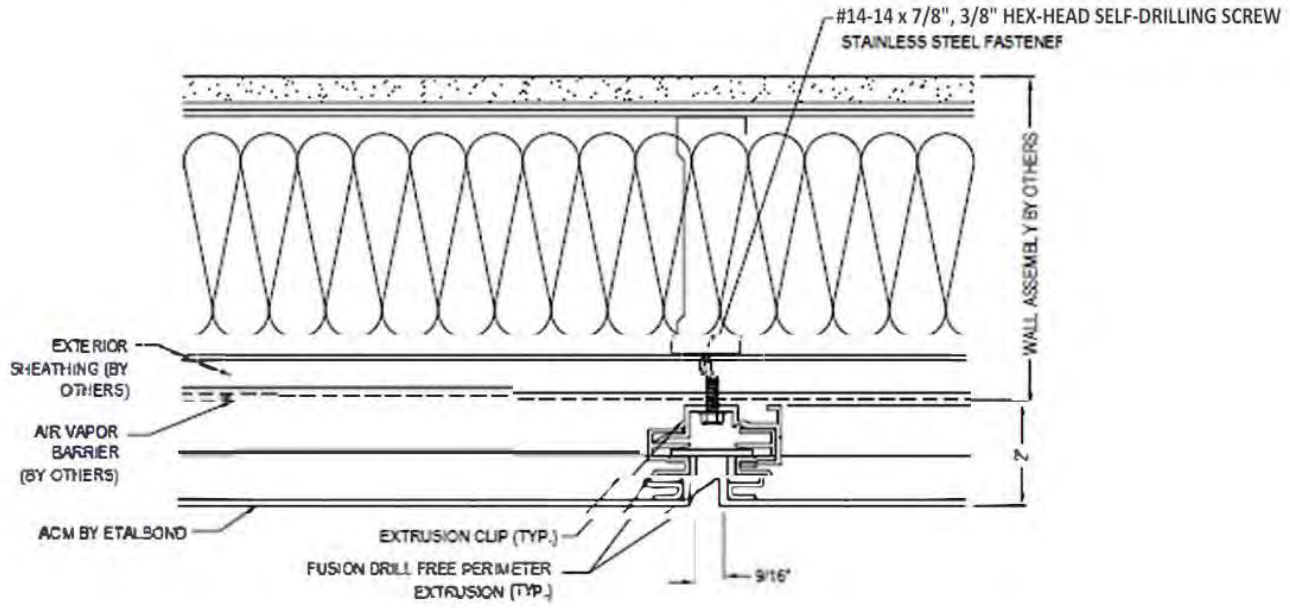


Figure 1 - FUSION™ DRILLFREE™ System - Typical Vertical Joint
(See Section 5 for component requirements)

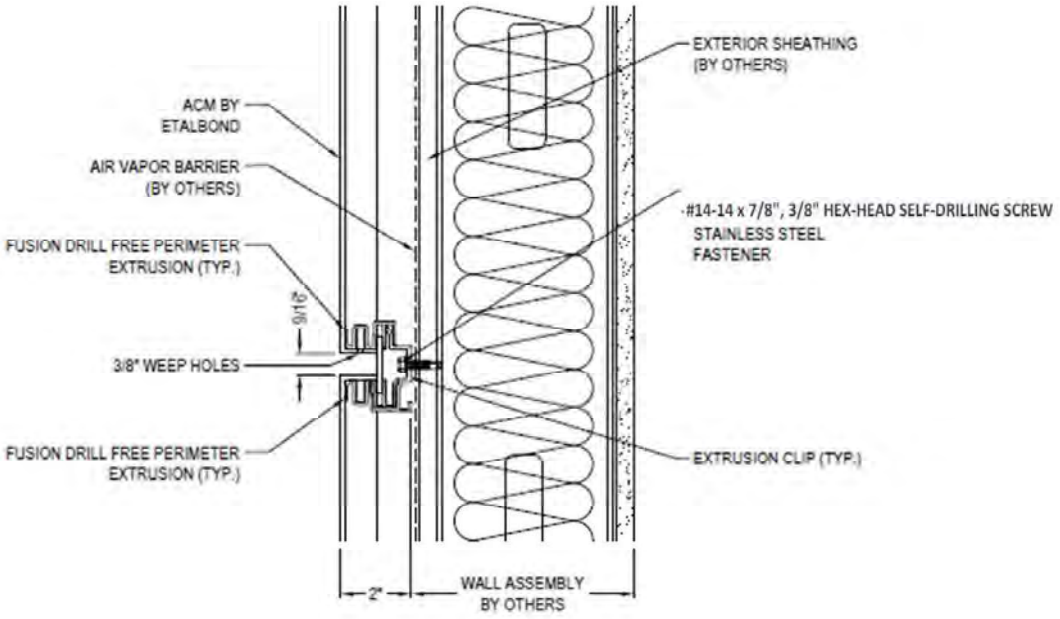


Figure 2 - FUSION™ DRILLFREE™ System - Typical Horizontal Joint
(See Section 5 for component requirements)

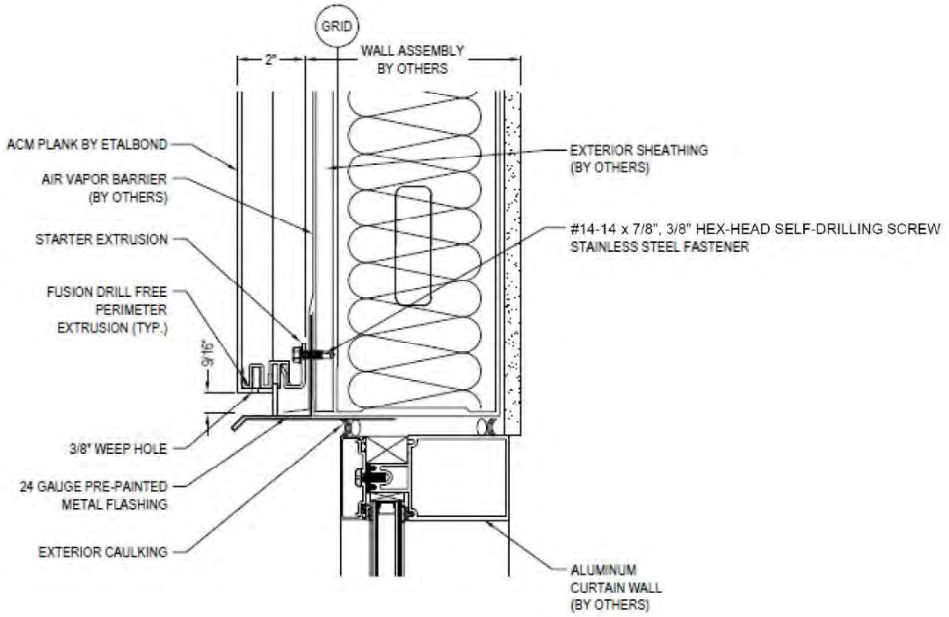


Figure 3 - FUSION™ DRILLFREE™ System - Typical Head Detail
(See Section 5 for component requirements)

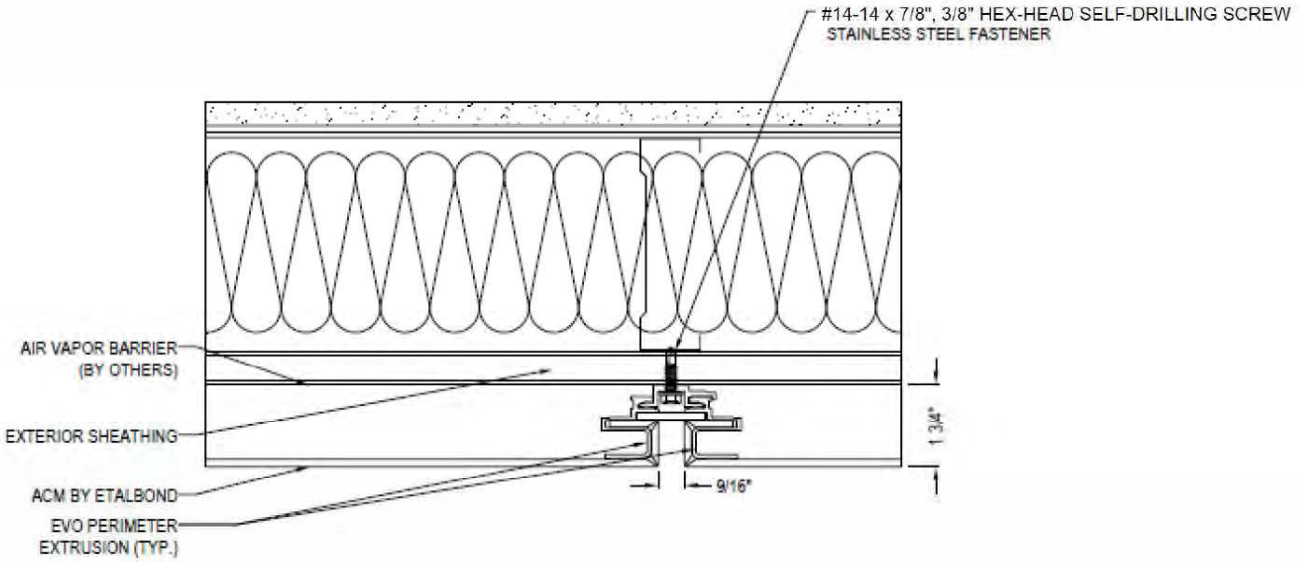


Figure 4 - EVO™ RIVETLESS™ System - Typical Vertical Joint
(See Section 5 for component requirements)

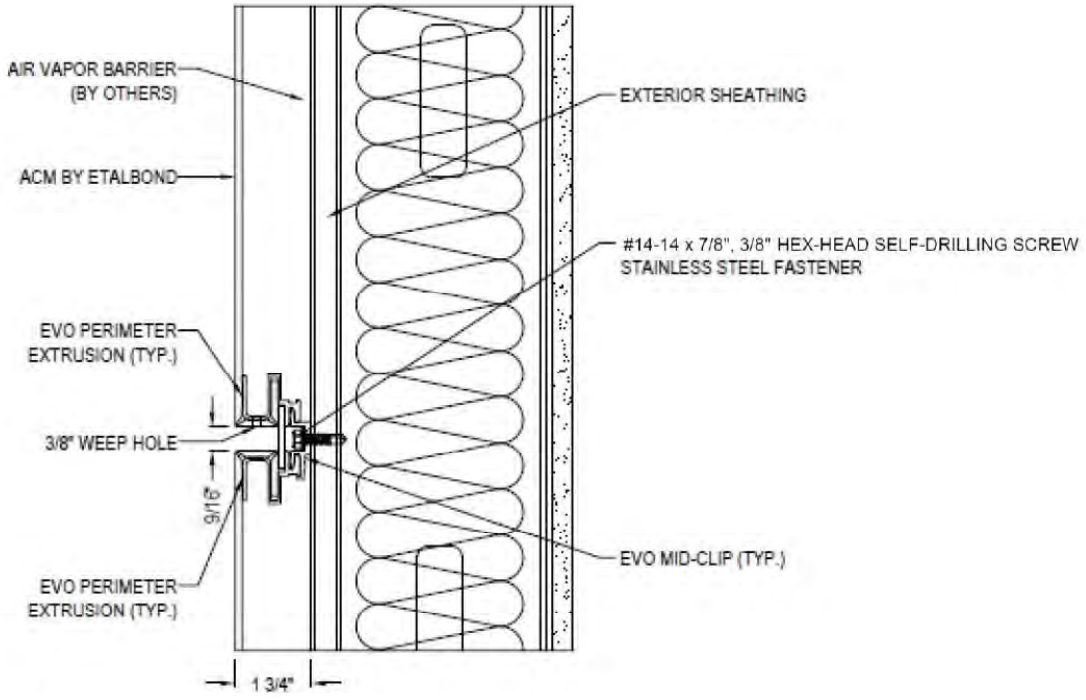


Figure 5 - EVO™ RIVETLESS™ System - Typical Horizontal Joint
(See Section 5 for component requirements)

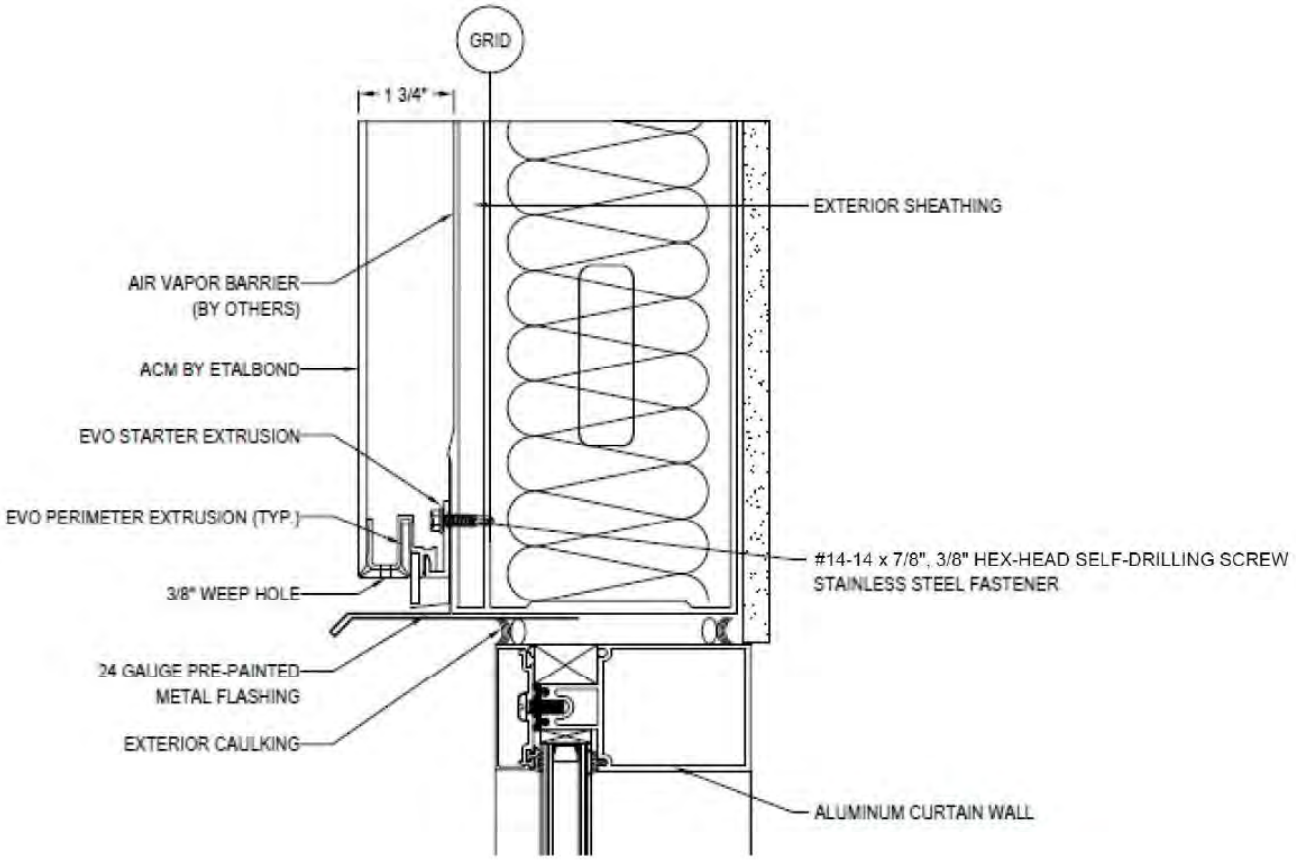


Figure 6 - EVO™ RIVETLESS™ System - Typical Head Detail
(See Section 5 for component requirements)