Cass District Library Cass District Library Edwardsburg, MI 22-1836

DOCUMENT 00 91 13

ADDENDA

ADDENDUM NUMBER 02

DATE:	January 19, 2024
PROJECT:	Cass District Library Edwardsburg, MI
PROJECT NUMBER:	22-1836
OWNER:	Cass District Library
ARCHITECT:	Abonmarche 315 W. Jefferson Blvd. South Bend, IN 46601
TO:	Prospective Bidders

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated December 20, 2023, with addendum Number issued January 12, 2024, with amendments and additions noted below.

Acknowledge receipt of this Addendum in the space provided in the Bid Form. Failure to do so may disqualify the Bidder.

This Addendum consists of 1,329 pages and the following Drawings:

No.	Drawing Title	Issue Date
T1.1	Title Sheet	01/19/2024
C1.0	Existing Conditions & Demolition Plan	01/19/2024
C2.0	Site Development Plan	01/19/2024
C2.1	Site Plan Layout Details	01/19/2024
C3.0	Overall Grading Plan	01/19/2024
C3.1	Details Grading Plan	01/19/2024
C5.0	Utilities Plan	01/19/2024

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C6.0	Landscape Plan	01/19/2024
C6.1	Landscape Plan	01/19/2024
C7.0	Construction Details	01/19/2024
C7.1	Construction Details	01/19/2024
C8.0	Soil Erosion And Sedimentation Control Plan	01/19/2024
C8.1	Soil Erosion And Sedimentation Control Plan	01/19/2024
C8.2	Soil Erosion And Sedimentation Control Plan	01/12/2024
C8.3	Soil Erosion And Sedimentation Control Plan	01/12/2024
S0.1	Structural Specifications	01/19/2024
S1.0	Foundation Plan	01/19/2024
S1.1	Partial Framing Plans	01/19/2024
S1.2	Roof Framing Plan	01/19/2024
S2.1	Foundation Details	01/19/2024
S2.2	Foundation Details	01/19/2024
S2.3	Foundation Details	01/19/2024
S3.2	Structural Details	01/19/2024
S3.3	Structural Details	01/19/2024
S5.1	Truss Profiles	01/19/2024
A7.1	Plan Details	01/19/2024
A7.3	Section Details	01/19/2024
A7.4	Details	01/19/2024
A8.1	Room Finish Schedules	01/19/2024
A9.1	Furniture Plan	01/19/2024
M0.1	Mechanical Schedules	01/19/2024
M4.2	Mezzanine Hydronic Piping Plan	01/19/2024
M5.1	First Floor HVAC Plan	01/19/2024

M5.2	Mezzanine HVAC Plan	01/19/2024
M6.0	Mechanical Roof Plan	01/19/2024
M8.0	Mechanical Details	01/19/2024
P3.0	Underground Plumbing Plan	01/19/2024
P3.1	First Floor Plumbing Plan	01/19/2024
P3.2	Mezzanine Plumbing Plan	01/19/2024

GENERAL INFORMATION

- 1. **REVISE** Entire Specification Manual (Attached)
 - a. Final dates to submit RFI questions has been extended to January 1st 2024. Bid due date has been extended to February 7th 2024. See below for additional information.

CHANGES TO THE PROJECT MANUAL

SECTION 001113 - ADVERTISMENT FOR BIDS (Re-Issue)

2. **REVISE** Paragraph 1.2 – Section 1: Revised Bid Due Date

SECTION 002213 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS (Re-Issue)

3. **REVISE** Paragraph 0.5.A.4 to delete tax exemption. **REVISE** Paragraph 1.1B Bidding Schedule with new dates.

SECTION 004323 – ALTERNATES FORM (Re-Issue)

- 4. **ADD** the following alternates:
 - a. Alternate No. 9 for Multipurpose room flooring.
 - b. Alternate No. 10 for Landscaping.

SECTION 012300 - ALTERNATES (Re-Issue)

- 5. **ADD** the following alternates:
 - c. Alternate No. 9 for Multipurpose room flooring.
 - d. Alternate No. 10 for Landscaping.

SECTION 087100.13 – DOOR HARDWARE (Re-Issue)

- 6. **ADD** Technical Spec (Attached)
- 7. **REVISE** Hardware Groups (Attached)

SECTION 283101-3 - ADDRESSABLE FIRE ALARM AND DETECTION SYSTEMS

Cass District Library Cass District Library Edwardsburg, MI 22-1836 8. **REVISE** Entire Section (Attached).

CHANGES TO THE DRAWINGS

DRAWING T1.1 – TITLE SHEET (Re-Issued)

9. ADD Alternates #10: base bid to provide CPT-3 to multi-purpose room. Alternate to provide CPT-2 to multi-purpose room.

DRAWING C1.0 – EXISTING CONDITIONS & DEMOLITION PLAN (Re-Issued)

10. **REVISE** Topographic Information On Site

11. ADD Notes Regarding Existing Overhead Utilities To Meet 20' Clearance

DRAWING C2.0 - SITE DEVELOPMENT PLAN (Re-Issued)

12. **REVISE** Concrete Sidewalk Width Details

DRAWING C2.1 - SITE PLAN LAYOUT DETAILS (Re-Issued)

13. **REVISE** Additional Alternate Parking Layout Plans

14. **REVISE** Sidewalk To Be 5' Wide

DRAWING C3.0 – OVERALL GRADING PLAN (Re-Issued)

15. REVISE All Topographic Grading Information Revised In Plan.

DRAWING C3.1 – DETAILED GRADING PLAN (Re-Issued)

16. REVISE All Topographic Grading Information Revised In Plan.

DRAWING C5.0 – UTILTIES PLAN (Re-Issued)

17. REVISE Notes Stating contractor shall be responsible for relocating/ elevating low handing overhead utilities to allow site access; min 20' clearance required.

DRAWING C6.0 – LANDSCAPE PLAN (Re-Issued)

- **18. ADD** Bid Alternate #3A Plan & Notes
- **19**. **ADD** Note: All dead fall shall be cleared

DRAWING C6.1 – LANDSCAPE PLAN (Re-Issued)

20. **REVISE** Plant Schedule List With Changes To Be Coordinated With Landscape Plan

DRAWING C7.0 – CONSTRUCTION DETAILS (Re-Issued)

21. ADD Notes For Landscape Edging At Limestone Path & Concrete Depth As Noted On Site Plan. Contractor shall follow the standard details on the sheet for installation of sidewalk.

DRAWING C7.1 – CONSTRUCTION DETAILS (Re-Issued)

22. REVISE Contractor shall see revised sheet. Only 2: Type K Copper Will Be Accepted For Water Service. 6" Cobble stone and Geotextile fabric located at outlet pipes shall remain. Contractor shall refer to the Stone Apron & Pipe End Section Treatment for the Cobble Stone apron lengths and widths.

DRAWING C8.0 – SOIL EROSION AND SEDIMENTATION CONTROL PLAN (Re-Issued)

23. ADD Existing Soils Notes On Site

24. ADD Location Map & Vicinity Map

DRAWING C8.1 – SOIL EROSION AND SEDIMENTATION CONTROL PLAN (Re-Issued)

25. REVISE Contractor shall see revised Civil sheets. All sidewalks shall be 5" thickness per geotechnical recommendations. Soils report will be provided.

DRAWING C8.2 – SOIL EROSION AND SEDIMENTATION CONTROL PLAN (Re-Issued)

26. ADD General Construction Sequence Schedule To Plan

DRAWING C8.3 – SOIL EROSION AND SEDIMENTATION CONTROL PLAN (Re-Issued)

27. ADD All Soil Erosion and Sedimentation Control plans (Sheets C8.0-C8.3) shall remain in base bid

DRAWING S0.1 – FOUNDATION PLAN (Re-Issued)

28. REVISE Notes On Sips Panel Design – Refer To Note C changes

DRAWING S1.0 - STRUCTURAL SPECIFICATIONS (Re-Issued)

28. REVISE Pergola Structural Details See Detail #3

29. REVISE Foundation Plan & Footing Schedule To Reflect Design Changes From Existin g Soils Conditions on Geotechnical Report. See Attached Geotechnical Report

DRAWING S1.1 – Partial Framing Plans (Re-Issued)

30. REVISE Pergola Framing – See Detail #3

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DRAWING S1.2 - ROOF FRAMING PLAN (Re-Issued)

31. REVISE HSS2- ½"x2-1/2"x1/4" canopy tie off supports – See S3.3 For More Details DRAWING S2.1 – FOUNDATION DETAILS (Re-Issued)

32. REVISE Detail #7, #8, & #9 – Footing Sizes

DRAWING S2.2 – FOUNDATION DETAILS (Re-Issued)

33. REVISE See all details for footing size changes

DRAWING S2.3 – FOUNDATION DETAILS (Re-Issued)

34. **REVISE** Detail #8 For Adjusted Foundation Footing Depth

DRAWING S3.2 - STRUCTURAL DETAILS (Re-Issued)

35. REVISE Details #8, #9, #11 & #12 – Framing Connections For Sip Panel

DRAWING S3.3 – STRUCTURAL SPECIFICATIONS (Re-Issued)

36. REVISE Details #3, #4, #5, #6 – Interior Cloud Framing Details & Mechanical Louvered Dormer Details

DRAWING S5.1 – TRUSS PROFILES (Re-Issued)

37. REVISE Reference Details See S3.2 Detail #9

DRAWING A7.1 – PLAN DETAILS (Re-Issued)

38. REVISE All Details Revised From Redlines To Show Clarity

DRAWING A7.3 – SECTION DETAILS (Re-Issued)

39. REVISE See detail #1 - T1 - 11 boards to be fastened to (2) 2x4 blocking @ 16" o.c. and fastened with #10 tek screws.

DRAWING A7.4 – DETAILS (Re-Issued)

40. REVISE Linear Metal Ceiling System To Be Paraline Plus. See Details #10 – Detail at hall for installation information.

DRAWING A8.1 – ROOM FINISH SCHEDULE AND LEGEND (Re-Issued)

- **41. REVISE** No base required at vestibule 101 & 103.
- 42. **REVISE** Janitor's closet to have conc-1 finish See revised room finish schedule
- 43. ADD New locations designated for roller shades at storefront -

Cass District Library Cass District Library Edwardsburg, MI 22-1836 Addendum 01 00 9113 - 6 See revised room finish plan.

DRAWING A9.1 – FURNITURE PLAN (Re-Issued)

44. **REVISE** Furniture plan for reference only.

DRAWING M0.1 – MECHANICAL SCHEDULES (Re-Issued)

- **45. REVISE** Plumbing Fixture Schedule entry "HB-1" to "NFWH-1" and updated model number for SK-1 to a barrier free model.
- **46. ADD** V/P column to Pumps Schedule, Water Heater Schedule, and Electric Baseboard Heater Schedule.
- 47. **ADD** Note to Air Inlets and Outlets Schedule calling for colors to be selected by architects.
- **48. Revise** Air Handling Unit Schedule to include Fan HP, BHP, and RPM columns, and revise remarks to use Temperature Controlled Thermostat

DRAWING M4.2 – MEZZANINE HYDRONIC PIPING PLAN (Re-Issued)

- **49. ADD** Reference marks to the "Two Way Piping Detail" for AHU-2, 3, and 4.
- **50. ADD** Reference marks to the "Three Way Piping Detail" for AHU-1.

DRAWING M5.1 - FIRST FLOOR HVAC PLAN (Re-Issued)

- **51. ADD** Duct Sizing Chart.
- **52. ADD** AHU-1 Return Duct Section.
- **53. ADD** Note to call out toekick return grilles.
- 54. ADD Note to exhaust duct transition up to mezzanine plan.
- **55. ADD** Duct sizes in Maker's Space, Multipurpose Room, 116 Computer Supply ducts, and 122 Office exhaust ducts.
- **56. ADD** Volume dampers at Return ducts in 107 Men's Bathroom, 105 Women's Bathroom and 120 Family Toilet Exhaust ducts.
- **57. REMOVE** Unnecessary duct break near EF-2.

DRAWING M5.2 – MEZZANINE HVAC PLAN (Re-Issued)

- **58. ADD** Sheet metal plenum box at Fresh Air Intake Louvers.
- **59. ADD** Turns in fresh air intake ducts to meet 10' clearance requirement for economizer exhaust duct.
- 60. ADD Exhaust duct and new exhaust fan <u>EF-3</u> for economizer relief.

DRAWING M6.0 – MECHANICAL ROOF PLAN (Re-Issued)

61. ADD Economizer relief hood for duct through roof, and construction note with model number and required accessory.

DRAWING M8.0 – MECHANICAL DETAILS (Re-Issued)

- **62. REVISE** Condensing Unit Support detail to include a manufactured condenser support pad and note.
- 63. ADD Note to Water Service Detail beneath RPZ calling to drain into Floor Drain.
- **64. REVISE** 3-Way AHU Coil Piping Detail to make sure note leaders point to the correct symbol.

DRAWING P3.0 – UNDERGROUND PLUMBING PLAN (Re-Issued)

- 65. **REVISE** Pipe size tags for sanitary main from 6" SAN to 4" SAN.
- 66. **REMOVE** Extra pipe under service sink.
- 67. **REVISE** Fixture tags for service sink and add one for CO in that area.
- **68. ADD** Pipe Size Tags for lavs in 107 Women's Bathroom.
- **69. REVISE** Underground plumbing for 120 Family Toilet.

DRAWING P3.1 – FIRST FLOOR PLUMBING PLAN (Re-Issued)

- 70. **REVISE** Pipe size tags for Pipe drops in all bathrooms.
- 71. **REMOVE** Extra CW pipe in 106 Janitor Closet.
- 72. **REVISE** Pipe sizes to SK-1 and SS-1 in 106 Janitor Closet.
- **73. REVISE** Note for pipe drops to SK-1 and SS-1 in 106 Janitor Closet.
- 74. ADD Ball valves to HW and CW lines running to SK-1 in 110 Kitchen.
- 75. **REVISE** Pipe size tag and note for drops to SK-1.
- 76. **REVISE** Tags for hose bibbs to "NFWH-1" and add note for pipe drops.
- 77. **ADD** Note to clarify HW and CW going to WH on Mezzanine.
- **78. ADD** Note to clarify pipes going up to P3.2.

DRAWING P3.2 – MEZZANINE PLUMBING PLAN (Re-Issued)

- 79. ADD Note to domestic piping mains coming up from P3.1.
- 80. ADD Note and view reference bubble to refer to Water Heater Detail.
- **81. REVISE** Hot water piping loop and Hot water return connection point in Plan-South-East corner to more efficient route. Also revise pipe size tags, drop notes, and add ball and balance valves to hot water return.
- 82. ADD Hot and cold water pipes up behind WH, with note calling them out.

QUESTIONS AND ANSWERS

83. Structural steel framing performance requirements call for steel to be fabricated in accordance with AISC standards. Can this be waived so that local fabricators can bid the project?

a. Structural steel framing shall meet AISC standards for steel framing performance requirements. Steel fabricator shall meet these performance requirements but does not need to be AISC certified.

84. In cut sheet A8.1 under general notes points E & F call out for plaques and interior room signage other than accessible bathroom signage to be by owner. However, point D calls out to provide room identification signage including ADA restroom signs with braille. Please clarify if room panel signage should be included in scope. If room panels are included in scope, please provide panel designs in drawings.

Addendum 01 00 9113 - 8 **a.** All toilet room facilities to have ADA signage provided by G.C. Please see sheet T1.2 for ADA signage requirements. Dedication plaque and all other room signage to be coordinated and provided by the owner.

85. The cut sheet A7.4 does not provide the material or thickness for the "Teen", Children" & "Welcome" letters. Please advise.

a. Teen, Children, & Welcome letters are to be plastic laminate faced wall panels with dogbone clips installed at all joint locations. Thickness to be between 1"-2".

86. Cut sheet A3.2 item 4 exterior elevation east calls out for dimensional letter signage to be aluminum for the "Drop" with "arrow" letters to be mounted above the book drop. The cut sheet does not provide details to the size or thickness of letters. Please advise.

a. Book drop signage will be integrated into the book drop product. No other signage will be included for this area.

87. Corten steel will continue to patina over time when exposed to moisture this will result in a rust run-off that will bleed onto the acrylic copy staining the white lettering. We propose an aluminum face painted to match a faux Corten steel. Can this be approved?

a. Acrylic white lettering to extend ½" beyond face of Corton steel face of signage. Please see dimension changes on sheet A7.4 detail #1 Section @ Sign A.

88. Do TPO roof areas D, E, F, G, & H fascia trim require wood blocking?
a. Provide blocking as necessary for roof fascia trim at roof areas D, E, F, G, & H.

89. Paper Bark Maple, White Oak, False Salomon are shown on the tree schedule, but not on the Landscape Plan. Please advise.

a. False Salomon Seal will be replaced by "Little Business DayLily" Located At Entry Sign. Please see revised Sheet C6.0 & C6.1 – Landscape Plan for revised plant tree list with Paper Bark Maple Location. White Oak tree was removed in addendum #1 item #38.

90. 101416 Plaque—there are no size dimensions. Please advise.

a. Dedication Plaque to be provided and coordinated by owner.

91. 101419 Dimensional letters- spec calls out cut out letters. From the renderings, these letters appear to be cast aluminum, bottom rail mounted. Flat cut aluminum in this appeared thickness will double the price. Which letter type is preferred.

a. Dimensional lettering to be Plastic laminate faced custom wall panels with dogbone clips installed at all joint locations. Panels shall be attached from behind through joists. See keynote legend on sheet A7.4.

92. Rendering #6 &8 show a monument sign along the driveway. There is no information in the drawings or specs regarding this sign. If this is part of the bid, detailed information is needed.

a. Rendering for reference only. Monument sign at driveway to be coordinated and provided by owner.

93. Rendering # 9 & 11 show an exterior building sign. There are dimensions for this sign on print A7.4. However, there is no spec or information regarding the material from which the sign needs to be manufactured.

a. Exterior building sign to be Corton steel face sheet with Acrylic Lettering. See section 101423 – Part 2: Products for more detailed information.

94. Rendering #14 & 35 show an interior building sign. There is no information in the drawings or specs regarding this sign. If this is part of the bid, detailed information is needed.

a. Rendering for reference purposes only. Interior signage TBD by owner.

95. The mechanical schedule calls for programmable thermostats, but the specification calls for temperature control, and it appears that it was a copy-paste for a hospital. Also, no points or detailed controls drawings are listed under the mechanical drawings. Please clarify; without this information, it will be hard to estimate.

a. Thermostats to be programmable thermostats NOT temperature controlled.

96. Please advise the locations of the roller window shades, as the drawings don't indicate locations.

a. Please see revised room finish plan with roller window shade locations at revised sheet A8.1 – Room Finish Plan.

97. We thought we heard that prevailing wage was going to be waived at the pre-bid meeting. Is this correct?

a. This was supposed to be addressed in addendum #1, Prevailing Wage is NOT required.

98. Is it possible to find out what size the water main is along US 12 that we're to tap into.

a. Our civil team believe this is a 12" water main, but this will need to be confirmed with the Village of Edwardsburg.

99. Type of material the water main is made of? There is asbestos lined water main in parts of Edwardsburg.

a. Our civil team was told by the village that this was an asbestos pipe.

100. What is the vaulted ceiling material for rooms 109 & 113? It appears to be stained T&G in the renderings and elevations, but we cannot find a callout.

a. The ceiling material in rooms 109 & 113 is to be T1-11 boards with stain TBD. See sheet 7.3 – Section Details, detail #1 for more information.

101. Existing power lines along US 12 will interfere with new property athletics and utility. Is the cost to move/bury this powerline to be included in the proposal?

a. Yes, cost for this will need to be addressed in all proposals. The powerline will need to be raised to a height of 20' at the lowest point of the sag. It will not be buried. Contractor to coordinate with the utility provider for the specific line changes.

102. At the pre-bid meeting it was indicated soil boring would be require updated footing designs. Is this still outstanding?

a. Yes, structural updates will be included in addendum #2. See all attached revised structural drawings.

103. The drawings show insulation and plywood under the standing seam roof above the metal deck. I could not find how thick the insulation is. Spec for standing seam says $1\frac{1}{2}$ base layer but nothing for upper layer. Is this intended to be nail base?

a. The energy code requirement for the roof is R-30. Roof insulation thickness to be determined by insulation manufacturer specifications to achieve R-30 rating.

104. 101 Vest calls for CTB-1 base on both the original and ADD 01 room finish schedule. Confirm this to be RB-1.

a. Vestibules 101 & 103 have full storefront systems at all sides at the vestibule. No base is required. Required CPT-1 to be installed and secured with clean, trimmed edges adjacent to storefronts.

105. C5.0 Storm Sewer Notes – Reference ADS Double Wall or SDR35 – Stormwater Conveyance Spec references PVC and RCP? Is RCP preferred over N-12 piping.

a. The specifications shall allow ADS double wall, SDR 35, RCP, or N-12 can be used.

106. The existing elevations do not line up between C1.0 and C3.0. Which print are we to base our grading operations by?

a. Contractor shall see revised sheet C1.0 & C3.0; Grading offset has been corrected.

107. Based on the soil borings, is the native soil accepted as suitable material for the granular subbase of the sidewalk?

a. Native soils are not suitable for sub-base materials. Contractor shall follow the standard details on sheet C7.0 for installation of sidewalks. NOTE: All sidewalks shall be 5" thickness per the Geotechnical recommendations. Soils report will be provided.

108. Is 2" CTS HDPE SDR11 or SDR9 acceptable alternate for the 2" TYPE K water service? Is #53 recycle concrete suitable for asphalt and building slab sub base.

a. Only 2" Type K Copper will be accepted.

109. Can you please direct me on the CDL print where to find the specs for the wood ceilings specified for the library and the community room. Specifically what material and what products are specified. Also, in the finish schedule I did not see a mention of specific grades of paint. other than a mention of satin finish for the doors.

a. The ceiling material in rooms 109 & 113 is to be T1-11 boards with stain TBD. See sheet 7.3 – Section Details, detail #1 for more information. Contractor to submit actual stain sample for approval by Architect.

110. Can you send a question in to the engineer about the asphalt? I cannot find the type of AC liquid going into the mixes. PG 58-28, PG 64-22.

a. The contractor shall use the PG-58-28 for the AC liquid mix.

111. This project requires the steel fabricator to be AISC certified. Can this be waived? SMI is not AISC certified but is a member and implements a quality program that is equal to or exceeds the requirements in the AISC certification program.

a. Structural steel framing shall meet AISC standards for steel framing performance requirements. Steel fabricator shall meet these performance requirements but does not need to be AISC certified.

112. The specified sliding door systems do not integrate with the specified Tubelight storefront system. We do not have a manufacturer in Grand Rapids, MI that uses Tubelight materials to make integral sliding door systems for Tubelight storefront systems. Is this something the customer may be interested in? If not we will need to make opening 114A, 115A, and 118A completely out of one of the specified manufacture's framing, which will not match the rest of the storefront framing in the building.

a. Please provide voluntary alternate and more information for approval consideration for integrated Tubelight sliding door system.

113. Sheet S2.1 detail 8 indicates the use of both a bollard cover and painting as a finish. Sheet A7.6 dumpster enclosure note f states using yellow bollard covers. Please clarify if bollards are to receive covers or to be painted finish.

a. Please see revised sheet S2.1 detail #8 and sheet A7.5 note "F". Bollard cover shall have pvc slip on yellow covers.

114. Alternate #6 requires the contractor to provide 8" SIPS panels in lieu of metal decking and insulation. The interior side of the SIP panel are to have.

a. The ceiling material T1-11 boards with stain TBD. Contractor to submit actual stain sample for approval by Architect.

115. Provide clarification regarding tax exemption for contractors versus owner purchased materials.

a. Refer to Specification Section 002213 "Supplementary Instructions to Bidders". Revise paragraph 0.5.A.4.a as follows:

"4.1.10 - Project will be tax exempt. ID number will be provided to successful bidder. Bids shall include sales and use taxes."

116. Please confirm that property line security fencing is not required.

a. Property line security fencing is not required; however, it is the responsibility of the contractor to secure the materials on the jobsite accordingly. The owner is not responsible for any loss of stolen items.

117. Please provide metal shelving specification 10 56 13.2.1 referenced on drawing A6.3.a. Metal shelving to be provided and selected by owner.

118. Drawings 8.1 – Room finish schedule. 1.) Vestibule 101 shows CTB-1 base with a CPT-1 floor? All four toilets show CTB base. Is this base a bull nose or cut tile with metal cap? Janitor 106 show conc-1 on floor plan and conc-2 on the finish schedule.

a. Please see revised Sheet A8.1 – Room Finish Schedule, A6.1 – Enlarged Floor Plans and Elevations. Vestibule base trim not required. CTB-1 Base to have Schluter Rondec Metal Cap in Brushed Graphite Finish.

119. Spec section 101415 / plaques – what do we include in our bid?

Cass District Library Cass District Library Edwardsburg, MI 22-1836 Addendum 01 00 9113 - 12 **a.** Dedication Plaque to be provided and coordinated by owner.

120. Please confirm that front and rear vestibule soffit are aluminum soffit panels and not an extension of the Paraline Plus cherry material indicated on A2.1. The aluminum soffit specifications 074100.2.1 is not in the specifications.

a. Paraline Plus Cherry material to be used at exterior soffit conditions

APPROVAL OF ADDITIONAL PRODUCTS/SYSTEMS

Section	Acceptable Manufacturers
123216	Custom Millwork & Display
122413	Creative Windows; OpenLight Roller Shades
230529	Big Foot Systems
223100	North Star Water Treatment Systems
081113	Mesker
081416	Five Lakes Wood Doors
087100	Hagar Companies
235216	Camus Hydronics Ltd.
077253	Alpine SnowGuards
74113.16	McElroy Metal
072119	WallTite

1.Include the following acceptable manufacturers in sections indicated:

END OF DOCUMENT

DOCUMENT 001113 - ADVERTISEMENT FOR BIDS

PART 1 - GENERAL

1.1 PROJECT INFORMATION

- A. Notice to Bidders: Bidders may submit bids for project as described in this Document. Submit bids according to the Instructions to Bidders.
- B. Project Identification: 22-1836 CDL Edwardsburg Library.
 - 1. Project Location: 319 M62, Cassopolis, MI 49031.
- C. Owner: Cass District Library Edwardsburg Branch.
 - 1. Owner's Representative: Barbara Gordon, MLS/Director.
- D. Owner's Representative: The Barton Group, 2255 W. Center Ave., Suite 212, Portage MI 49024
 - 1. Owner's Representative: Jen Sawyer, Project Manager, 269-207-3721.
- E. Architect: Abonmarche Consultants, Inc. 315 W. Jefferson Blvd., South Bend, IN 46601.
 - 1. Architect's Representative: Arvin Delacruz, AIA, NCARB 574-232-8700
- F. Project Description: Project consists of a new 9,500 sf Branch Library to be located on 5.4 acres on the north side of US12 in Edwardsburg near the high school. This project centers on the creation of a vibrant library, specifically tailored to meet the needs of the Cass District Library and greater community in Edwardsburg, Michigan.
 - 1. Project cost range is anticipated to be under \$4,900,000.00.
- G. Construction Contract: Bids will be received for the following Work:
 - 1. General Contract (all trades).

1.2 BID SUBMITTAL AND OPENING

- A. Owner will receive sealed lump sum bids until the bid time and date at the location given below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
 - 1. Bid Date: February 07, 2024.
 - 2. Bid Time: 6:00 pm, local time.
 - 3. Location: Cass District Library, Main Branch; 319 M-62; Cassopolis, MI 49031.

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B. Bids will be thereafter opened publicly at a Special Board Meeting.

1.3 BID SECURITY

A. Bid security shall be submitted with each bid in the amount of 5 percent of the bid amount. No bids may be withdrawn for a period of 60 days after opening of bids. Owner reserves the right to reject any and all bids and to waive informalities and irregularities.

1.4 PREBID MEETING

- A. Prebid Meeting: See Document 002513 "Prebid Meetings."
- B. Prebid Meeting: A Prebid meeting for all bidders will be held:
 - 1. Location: Ontwa Township Hall, 26225 US-12 Edwardsburg, MI 49112.
 - 2. Date: January 8, 2024.
 - 3. Time: 1:00 p.m. local time.
- C. Prospective prime bidders are required to attend.

1.5 DOCUMENTS

A. Online Procurement and Contracting Documents: Obtain access after December 11, 2023, by contacting Abonmarche Plan Room at www.abonmarche.com. Online access will be provided to all registered bidders and suppliers.

1.6 TIME OF COMPLETION

A. Successful bidder shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time.

1.7 BIDDER'S QUALIFICATIONS

- A. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work.
- B. A Performance Bond, separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.

- C. Builder's Risk Insurance: The Owner will purchase and maintain property insurance for 100% of actual cash replacement value of the insurable work while in the course of construction, including foundations, additions, attachments, and all fixtures, machinery and equipment belonging to and constituting a permanent part of the building structures. The property insurance also will cover temporary structures, materials and supplies to be used in completing the work, only while on the building site premises or within five hundred feet of the site. The property insurance insures the interests of the Owner, Contractor, and all Subcontractors and Suppliers at any tier as their interest may appear.
- D. Insurance Requirements: The Contractor is required to provide the type and amount of insurance below.
 - 1. Commercial General Liability Insurance with a limit of not less than five million dollars (\$5,000,000.00) per occurance and ten million dollars (\$10,000,000.00) in general aggregate.
 - a. The Contractor must list the Owner as Additional Insureds on the Commercial General Liability policy.
 - 2. Contractor must have vehicle liability insurance for bodily injury and property damage as required by law on any auto including owned, hired and non-owned vehicles used in the Contractor's business.
 - a. The Contractor must list the Owner as Additional Insureds on the vehicle liability policy.
 - 3. Worker's disability compensation, disability benefit or other similar employee benefit act with minimum statutory limits.
 - a. This provision must not be applicable where prohibited or limited by Michigan law.

END OF DOCUMENT 001113

DOCUMENT 002213 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1.1 INSTRUCTIONS TO BIDDERS

- A. Instructions to Bidders for Project consist of the following:
 - 1. AIA Document A701, "Instructions to Bidders," a copy of which is bound in this Project Manual.
 - 2. The following Supplementary Instructions to Bidders that modify and add to the requirements of the Instructions to Bidders.

1.2 SUPPLEMENTARY INSTRUCTIONS TO BIDDERS, GENERAL

A. The following supplements modify AIA Document A701, "Instructions to Bidders." Where a portion of the Instructions to Bidders is modified or deleted by these Supplementary Instructions to Bidders, unaltered portions of the Instructions to Bidders shall remain in effect.

1.3 ARTICLE 2 - BIDDER'S REPRESENTATIONS

- A. Add Section 2.1.3.1:
 - 1. 2.1.3.1 The Bidder has investigated all required fees, permits, and regulatory requirements of authorities having jurisdiction and has properly included in the submitted bid the cost of such fees, permits, and requirements not otherwise indicated as provided by Owner.
- B. Add Section 2.1.5:
 - 1. 2.1.5 The Bidder is a properly licensed Contractor according to the laws and regulations of The State of Michigan, Cass County, Ontwa Township, Village of Edwardsburg and all Authorities having jurisdiction and meets qualifications indicated in the Procurement and Contracting Documents.
- C. Add Section 2.1.6:
 - 1. 2.1.6 The Bidder has incorporated into the Bid adequate sums for work performed by installers whose qualifications meet those indicated in the Procurement and Contracting Documents.

1.4 ARTICLE 3 - BIDDING DOCUMENTS

- A. 3.2 Interpretation or Correction of Procurement and Contracting Documents:
 - 1. Add Section 3.2.2.1:

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- a. 3.2.2.1 Submit Bidder's Requests for Interpretation using form bound in the Project Manual.
- B. 3.4 Addenda:
 - 1. Delete Section 3.4.3 and replace with the following:
 - a. 3.4.3 Addenda may be issued at any time prior to the receipt of bids.
 - 2. Add Section 3.4.4.1:
 - a. 3.4.4.1 Owner may elect to waive the requirement for acknowledging receipt of 3.4.4 Addenda as follows:
 - 3.4.4.1.1 Information received as part of the Bid indicates that the Bid, as submitted, reflects modifications to the Procurement and Contracting Documents included in an unacknowledged Addendum.
 - 2) 3.4.4.1.2 Modifications to the Procurement and Contracting Documents in an unacknowledged Addendum do not, in the opinion of Owner, affect the Contract Sum or Contract Time.

1.5 ARTICLE 4 - BIDDING PROCEDURES

- A. 4.1 Preparation of Bids:
 - 1. Add Section 4.1.1.1:
 - a. 4.1.1.1 Printable electronic Bid Forms and related documents are available from Architect.
 - 2. Add Section 4.1.8:
 - a. 4.1.8 The Bid shall include unit prices when called for by the Procurement and Contracting Documents. Owner may elect to consider unit prices in the determination of award. Unit prices will be incorporated into the Contract.
 - 3. Add Section 4.1.9:
 - a. 4.1.9 Owner may elect to disqualify a bid due to failure to submit a bid in the form requested, failure to bid requested alternates or unit prices, failure to complete entries in all blanks in the Bid Form, or inclusion by the Bidder of any alternates, conditions, limitations or provisions not called for.
 - 4. Add Section 4.1.10:

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- a. 4.1.10 Bids shall include sales and use taxes. Project will be tax-exempt. ID number will be provided to successful bidder.
- B. 4.3 Submission of Bids:
 - 1. Add Section 4.3.1.2:
 - a. 4.3.1.2 Include Bidder's Contractor License Number applicable in Project jurisdiction on the face of the sealed bid envelope.
- C. 4.4 Modification or Withdrawal of Bids:
 - 1. Add the following sections to 4.4.2:
 - a. 4.4.2.1 Such modifications to or withdrawal of a bid may only be made by persons authorized to act on behalf of the Bidder. Authorized persons are those so identified in the Bidder's corporate bylaws, specifically empowered by the Bidder's charter or similar legally binding document acceptable to Owner, or by a power of attorney, signed and dated, describing the scope and limitations of the power of attorney. Make such documentation available to Owner at the time of seeking modifications or withdrawal of the Bid.
 - b. 4.4.2.2 Owner will consider modifications to a bid written on the sealed bid envelope by authorized persons when such modifications comply with the following: the modification is indicated by a percent or stated amount to be added to or deducted from the Bid; the amount of the Bid itself is not made known by the modification; a signature of the authorized person, along with the time and date of the modification, accompanies the modification. Completion of an unsealed bid form, awaiting final figures from the Bidder, does not require power of attorney due to the evidenced authorization of the Bidder implied by the circumstance of the completion and delivery of the Bid.
- D. 4.5 Break-Out Pricing Bid Supplement:
 - 1. Add Section 4.5:
 - a. 4.5 Provide detailed cost breakdowns on forms provided no later than two business days following Architect's request.
- E. 4.6 Subcontractors, Suppliers, and Manufacturers List Bid Supplement:
 - 1. Add Section 4.6:

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a. 4.6 - Provide list of major subcontractors, suppliers, and manufacturers furnishing or installing products on forms provided no later than two business days following Architect's request. Include those subcontractors, suppliers, and manufacturers providing work totaling three percent or more of the Bid amount. Do not change subcontractors, suppliers, and manufacturers from those submitted without approval of Architect.

1.6 ARTICLE 5 - CONSIDERATION OF BIDS

- A. 5.2 Rejection of Bids:
 - 1. Add Section 5.2.1:
 - a. 5.2.1 Owner reserves the right to reject a bid based on Owner's and Architect's evaluation of qualification information submitted following opening of bids. Owner's evaluation of the Bidder's qualifications will include: status of licensure and record of compliance with licensing requirements, record of quality of completed work, record of Project completion and ability to complete, record of financial management including financial resources available to complete Project and record of timely payment of obligations, record of Project site management including compliance with requirements of authorities having jurisdiction, record of and number of current claims and disputes and the status of their resolution, and qualifications of the Bidder's proposed Project staff and proposed subcontractors.

1.7 ARTICLE 6 - POSTBID INFORMATION

- A. 6.1 Contractor's Qualification Statement:
 - 1. Add Section 6.1.1:
 - a. 6.1.1 Submit Contractor's Qualification Statement no later than two business days following Architect's request.

B. 6.3 - Submittals:

- 1. Add Section 6.3.1.4:
 - a. 6.3.1.4 Submit information requested in Sections 6.3.1.1, 6.3.1.2, and 6.3.1.3 no later than two business days following Architect's request.

1.8 ARTICLE 7 - PERFORMANCE BOND AND PAYMENT BOND

A. 7.1 - Bond Requirements:

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- 1. Add Section 7.1.1.1:
 - a. 7.1.1.1 Both a Performance Bond and a Payment Bond will be required, each in an amount equal to 100 percent of the Contract Sum.
- B. 7.2 Time of Delivery and Form of Bonds:
 - 1. Delete the first sentence of Section 7.2.1 and insert the following:
 - a. The Bidder shall deliver the required bonds to Owner no later than 10 days after the date of Notice of Intent to Award and no later than the date of execution of the Contract, whichever occurs first. Owner may deem the failure of the Bidder to deliver required bonds within the period of time allowed a default.
 - 2. Delete Section 7.2.3 and insert the following:
 - a. 7.2.3 Bonds shall be executed and be in force on the date of the execution of the Contract.

1.9 ARTICLE 8 - FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

A. A101-2017 "Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum".

1.10 ARTICLE 9 - EXECUTION OF THE CONTRACT

- A. Add Article 9:
 - 1. 9.1.1 Subsequent to the Notice of Intent to Award, and within 10 days after the prescribed Form of Agreement is presented to the Awardee for signature, the Awardee shall execute and deliver the Agreement to Owner through Architect, in such number of counterparts as Owner may require.
 - 2. 9.1.2 Owner may deem as a default the failure of the Awardee to execute the Contract and to supply the required bonds when the Agreement is presented for signature within the period of time allowed.
 - 3. 9.1.3 Unless otherwise indicated in the Procurement and Contracting Documents or the executed Agreement, the date of commencement of the Work shall be the date of the executed Agreement or the date that the Bidder is obligated to deliver the executed Agreement and required bonds to Owner.
 - 4. 9.1.4 In the event of a default, Owner may declare the amount of the Bid security forfeited and elect to either award the Contract to the next responsible bidder or re-advertise for bids.

END OF DOCUMENT 002213

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DOCUMENT 003113 - PRELIMINARY SCHEDULES

1.1 PROJECT SCHEDULE

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but do not affect Contract Time requirements. This Document and its attachments are not part of the Contract Documents.
- B. Bidding Schedule:
 - 1. Bid documents issued: December 20, 2023.
 - 2. Pre-bid meeting: January 8, 2024.
 - 3. Bid RFI's due by: January 24, 2024; 5:00 pm local time.
 - 4. Last addendum issued: January 31, 2024; 5:00 pm local time.
 - 5. Bids due: February 07, 2024; 6:00 pm local time; special board meeting.
 - 6. Post-bid vetting: February 8-20, 2024
 - 7. Award recommendation, Board approval, and award: February 21, 2024; 6:00 pm local time; regular board meeting.
 - 8. Construction start: March 15, 2024.
 - 9. Substantial completion: March 31, 2025.
 - 10. Final completion: April 11, 2025.
- C. Available Project information includes the following:
 - 1. Project Schedule.
- D. Project schedule including design and construction milestones and Owner's occupancy requirements is available for viewing as appended to this Document.
- E. Related Requirements:
 - 1. Document 004113 "Bid Form Stipulated Sum (Single-Prime Contract)" for Contract Time.
 - 2. Section 013200 "Construction Progress Documentation" for Contractor's construction schedule requirements.

END OF DOCUMENT 003113

SECTION 004323 - ALTERNATES FORM

1.1 BID INFORMATION

- A. Bidder: _____.
- B. Project Name: CDL Edwardsburg Library.
- C. Project Location: 319 M62, Cassopolis, MI 4903.
- D. Owner: Cass District Library Edwardsburg Branch.
- E. Architect: Abonmarche Consultants, Inc. 315 W. Jefferson Blvd., South Bend, IN 46601.
- F. Architect Project Number: 22-1836.

1.2 BID FORM SUPPLEMENT

A. This form is required to be attached to the Bid Form.

1.3 DESCRIPTION

- A. The undersigned Bidder proposes the amount below be added to or deducted from the Base Bid if particular alternates are accepted by Owner. Amounts listed for each alternate include costs of related coordination, modification, or adjustment.
- B. If the alternate does not affect the Contract Sum, the Bidder shall indicate "NO CHANGE."
- C. If the alternate does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."
- D. The Bidder shall be responsible for determining from the Contract Documents the affects of each alternate on the Contract Time and the Contract Sum.
- E. Owner reserves the right to accept or reject any alternate, in any order, and to award or amend the Contract accordingly within 60 days of the Notice of Award unless otherwise indicated in the Contract Documents.
- F. Acceptance or non-acceptance of any alternates by the Owner shall have no affect on the Contract Time unless the "Schedule of Alternates" Article below provides a formatted space for the adjustment of the Contract Time.

1.4 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Performance and Payment Bond:
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- 1.
 ADD_____DEDUCT_____NO CHANGE_____NOT APPLICABLE_____.

 2.
 ________Dollars
- (\$_____).
 3. ADD____DEDUCT____ calendar days to adjust the Contract Time for this alternate.
- B. Alternate No. 2A: Limestone Paths:
 - 1. ADD____DEDUCT____NO CHANGE____NOT APPLICABLE____.
 - 2. _____ Dollars
 - 3. ADD____DEDUCT____ calendar days to adjust the Contract Time for this alternate.

C. Alternate No. 2B: Path Light Fixtures:

- 3. ADD_____DEDUCT_____ calendar days to adjust the Contract Time for this alternate.

D. Alternate No. 3A: Patios:

- 1.
 ADD_____DEDUCT_____NO CHANGE_____NOT APPLICABLE_____.

 2.
 _______Dollars
- (\$_____).
 3. ADD____DEDUCT____ calendar days to adjust the Contract Time for this alternate.

E. Alternate No. 3B: Patio Light Poles:

- 1. ADD____DEDUCT____NO CHANGE____NOT APPLICABLE____.
- 2. _____ Dollars
- 3. ADD_____DEDUCT_____ calendar days to adjust the Contract Time for this alternate.

F. Alternate No. 4: Pergola:

- 1. ADD_____DEDUCT____NO CHANGE____NOT APPLICABLE____.

 2. ______Dollars
- (\$_____).
 3. ADD____DEDUCT____ calendar days to adjust the Contract Time for this alternate.

G. Alternate No. 5: Parking:

- 1. ADD_____DEDUCT_____NO CHANGE_____NOT APPLICABLE_____.

 2. ________Dollars
- 3. ADD_____DEDUCT_____ calendar days to adjust the Contract Time for this alternate.
- H. Alternate No. 6: Roof Insulation:

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- 3. ADD____DEDUCT____ calendar days to adjust the Contract Time for this alternate.
- I. Alternate No. 7: Fencing:

 - 3. ADD____DEDUCT____ calendar days to adjust the Contract Time for this alternate.
- J. Alternate No. 8: Contractor's Warranty:
 - 1.
 ADD_____DEDUCT_____NO CHANGE_____NOT APPLICABLE_____.

 2.
 _______Dollars
 - (\$_____).
 3. ADD____DEDUCT____ calendar days to adjust the Contract Time for this alternate.
- K. Alternate No. 9: Multipurpose Room Flooring:
 - 1.
 ADD_____DEDUCT_____NO CHANGE_____NOT APPLICABLE_____.

 2.
 ________Dollars

 (\$).
).
 - 3. ADD_____DEDUCT_____ calendar days to adjust the Contract Time for this alternate.
- L. Alternate No. 10: Landscaping:
 - 1.
 ADD_____DEDUCT_____NO CHANGE_____NOT APPLICABLE_____.

 2.
 _________Dollars

 (\$).
).
 - 3. ADD____DEDUCT____ calendar days to adjust the Contract Time for this alternate.

1.5 SUBMISSION OF BID SUPPLEMENT

A. Respectfully submitted this _____ day of ______, <Insert year>.

- B. Submitted By:_____(Insert name of bidding firm or corporation).
- C. Authorized Signature:_____(Handwritten signature).
- D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

END OF DOCUMENT 004323

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other Work of the Contract.
- C. Schedule: A Part 3 "Schedule of Alternates" Article is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Performance and Payment Bond:
 - 1. Base Bid: Provide 100% Performance and Payment Bond.
 - 2. Alternate: Delete Performance and Payment Bond.
- B. Alternate No. 2A: Limestone Paths:
 - 1. Base Bid: Provide ADA accessible, crushed limestone paths through woods as shown on the drawings.
 - 2. Alternate: Delete limestone path and all related items.
- C. Alternate No. 2B: Path Light Fixtures:
 - 1. Base Bid: Provide light fixtures along limestone path, refer to the drawings.
 - 2. Alternate: Delete light fixtures along limestone path.
- D. Alternate No. 3A: Patios:
 - 1. Base Bid: Provide ADA accessible patios on north side of the building as shown on the drawings.
 - 2. Alternate: In lieu of patios on north side of the building, provide concrete stoops per detail 4/S2.1. Stoops shall be 5'x5' at doors 113-B and 113-C, and 10'x10' at door 103-A.
- E. Alternate No. 3B: Patio Light Poles:
 - 1. Base Bid: Provide light poles at patios.
 - 2. Alternate: Delete light poles at patios.
- F. Alternate No. 4: Pergola:
 - 1. Base Bid: Provide ADA accessible pergola as shown on the drawings. Refer to Sheet A7.5e.
 - 2. Alternate: Delete pergola and all related items.
- G. Alternate No. 5: Parking:
 - 1. Base Bid: Provide parking as shown on drawings. Refer to civil drawings and specs.
 - 2. Alternate: Reduce parking as shown on revised civil drawings.

- H. Alternate No. 6: Roof Insulation:
 - 1. Base Bid: Provide metal roof deck, 6" polyisocyanurate insulation and roof sheathing with T1-11 architectural wood ceiling at roof areas "A" and "C".
 - 2. Alternate: In lieu of base bid, provide 8" SIPS with architectural exposed interior wood finish.
- I. Alternate No. 7: Fencing:
 - 1. Base Bid: Provide fence at north property line as shown on drawings.
 - 2. Alternate: Provide additional fence along east property line as shown on the drawings. Fence shall match specified fence at the north property line.
- J. Alternate No. 8: Contractor Warranty.
 - 1. Base Bid: One-year Contractor's warranty.
 - 2. Alternate: Two-year Contractor's warranty
- K. Alternate No. 8: Multipurpose Room Flooring.
 - 1. Base Bid: Provide CPT-3 for the Multipurpose Room floor finish.
 - 2. Alternate: Provide CPT-2 for the Multipurpose Room floor finish.
- L. Alternate No. 10: Landscaping.
 - 1. Base Bid: Provide the following:
 - a. Native wildflower seed mix areas as shown on the drawings.
 - b. Sod mow strips in sheet flow areas off the parking asphalt and walks.
 - c. 6" cobble stone and geotextile fabric located at outlet pipes. Contractor shall refer to the Stone Apron & Pipe End Section Treatment for the cobble stone apron lengths and widths.
 - d. Soil Erosion and Sedimentation Control Plans (Sheets C8.0-C8.3).
 - 2. Alternate: Provide the following:
 - a. Provide all landscaping items as shown on the drawings. Including but not limited to:
 - 1) Items above.
 - 2) All trees, evergreen trees, flowering trees, shrubs, ornamental grasses, and perennials.
 - Steel edging, shredded hardwood bark mulch, boulders and 4-6" Glacial Cobble Stone and geotextile fabric.

END OF SECTION

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Mechanical and electrified door hardware.
 - 2. Electronic access control system components.
- B. Section excludes:
 - 1. Windows
 - 2. Cabinets (casework), including locks in cabinets
 - 3. Signage
 - 4. Toilet accessories
 - 5. Overhead doors
- C. Related Sections:
 - 1. Division 01 "General Requirements" sections for Allowances, Alternates, Owner Furnished Contractor Installed, Project Management and Coordination.
 - 2. Division 06 Section "Rough Carpentry"
 - 3. Division 06 Section "Finish Carpentry"
 - 4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
 - 5. Division 08 Sections:
 - a. "Metal Doors and Frames"
 - b. "Flush Wood Doors"
 - c. "Stile and Rail Wood Doors"
 - d. "Interior Aluminum Doors and Frames"
 - e. "Aluminum-Framed Entrances and Storefronts"
 - 6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
 - 7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

- A. UL, LLC
 - 1. UL 10B Fire Test of Door Assemblies
 - 2. UL 10C Positive Pressure Test of Fire Door Assemblies
 - 3. UL 1784 Air Leakage Tests of Door Assemblies
 - 4. UL 305 Panic Hardware
- B. DHI Door and Hardware Institute

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- 1. Sequence and Format for the Hardware Schedule
- Recommended Locations for Builders Hardware
 Keying Systems and Nomenclature
- 4. Installation Guide for Doors and Hardware
- C. NFPA National Fire Protection Association
 - 1. NFPA 70 National Electric Code
 - 2. NFPA 80 2016 Edition Standard for Fire Doors and Other Opening Protectives
 - 3. NFPA 101 Life Safety Code
 - 4. NFPA 105 Smoke and Draft Control Door Assemblies
 - 5. NFPA 252 Fire Tests of Door Assemblies
- D. ANSI American National Standards Institute
 - 1. ANSI A117.1 2017 Edition Accessible and Usable Buildings and Facilities
 - 2. ANSI/BHMA A156.1 A156.29, and ANSI/BHMA A156.31 Standards for Hardware and Specialties
 - 3. ANSI/BHMA A156.28 Recommended Practices for Keying Systems
 - 4. ANSI/WDMA I.S. 1A Interior Architectural Wood Flush Doors
 - 5. ANSI/SDI A250.8 Standard Steel Doors and Frames

1.03 SUBMITTALS

- A. General:
 - 1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
 - 2. Prior to forwarding submittal:
 - a. Comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.
 - b. Review drawings and Sections from related trades to verify compatibility with specified hardware.
 - c. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
- B. Action Submittals:
 - 1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
 - 2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
 - a. Wiring Diagrams: For power, signal, and control wiring and including:
 - 1) Details of interface of electrified door hardware and building safety and security systems.
 - 2) Schematic diagram of systems that interface with electrified door hardware.
 - 3) Point-to-point wiring.
 - 4) Risers.

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- 3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
 - a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.
- 4. Door Hardware Schedule:
 - a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
 - b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
 - c. Indicate complete designations of each item required for each opening, include:
 - 1) Door Index: door number, heading number, and Architect's hardware set number.
 - 2) Quantity, type, style, function, size, and finish of each hardware item.
 - 3) Name and manufacturer of each item.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each hardware set cross-referenced to indications on Drawings.
 - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for hardware.
 - 8) Door and frame sizes and materials.
 - 9) Degree of door swing and handing.
 - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
- 5. Key Schedule:
 - a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
 - b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
 - c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
 - d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
 - e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
 - f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
- C. Informational Submittals:
 - 1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
 - 2. Provide Product Data:

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- a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
- b. Include warranties for specified door hardware.
- D. Closeout Submittals:
 - 1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
 - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Final approved hardware schedule edited to reflect conditions as installed.
 - d. Final keying schedule
 - e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
 - f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
- E. Inspection and Testing:
 - 1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
 - a. fire door assemblies, in compliance with NFPA 80.
 - b. required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

- A. Qualifications and Responsibilities:
 - 1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
 - 2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
 - 3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
 - a. For door hardware: DHI certified AHC or DHC.
 - b. Can provide installation and technical data to Architect and other related subcontractors.
 - c. Can inspect and verify components are in working order upon completion of installation.
 - d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.

- 4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.
- B. Certifications:
 - 1. Fire-Rated Door Openings:
 - a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
 - b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.
 - 2. Smoke and Draft Control Door Assemblies:
 - a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
 - b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.
 - 3. Electrified Door Hardware
 - a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
 - 4. Accessibility Requirements:
 - a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.
- C. Pre-Installation Meetings
 - 1. Keying Conference
 - a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
 - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - 2) Preliminary key system schematic diagram.
 - 3) Requirements for key control system.
 - 4) Requirements for access control.
 - 5) Address for delivery of keys.
 - 2. Pre-installation Conference
 - a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Inspect and discuss preparatory work performed by other trades.
 - c. Inspect and discuss electrical roughing-in for electrified door hardware.
 - d. Review sequence of operation for each type of electrified door hardware.

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- e. Review required testing, inspecting, and certifying procedures.
- f. Review questions or concerns related to proper installation and adjustment of door hardware.
- 3. Electrified Hardware Coordination Conference:
 - a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.
- D. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.
- E. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.
- F. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
- G. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- H. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.
- I. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.05 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- E. Existing Openings: Where existing doors, frames and/or hardware are to remain, field verify existing functions, conditions and preparations and coordinate to suit opening conditions and to provide proper door operation.

1.06 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
 - 1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
 - 2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
 - a. Mechanical Warranty
 - 1) Locks
 - a) Falcon: 10 years
 - 2) Éxit Devices
 - a) Falcon: 10 years
 - 3) Closers
 - a) Falcon SC Series: 10 years
 - 4) Automatic Operators
 - a) LCN: 2 years

1.07 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance in section 01 25 00.
- B. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fabrication
- 1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
- 2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
- 3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.
- B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
 - 1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 HINGES

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Ives 5BB series
 - 2. Acceptable Manufacturers and Products:
 - a. Hager BB1191/1279 series
 - b. McKinney TB series
- B. Requirements:
 - 1. Provide hinges conforming to ANSI/BHMA A156.1.
 - 2. Provide five knuckle, ball bearing hinges.
 - 3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
 - a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
 - b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
 - 4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
 - a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
 - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
 - 5. 2 inches or thicker doors:
 - a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
 - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
 - 6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
 - 7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
 - 8. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.
 - 9. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

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- a. Steel Hinges: Steel pins
- b. Non-Ferrous Hinges: Stainless steel pins
- c. Out-Swinging Exterior Doors: Non-removable pins
- d. Out-Swinging Interior Lockable Doors: Non-removable pins
- e. Interior Non-lockable Doors: Non-rising pins

2.04 CONTINUOUS HINGES

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Ives
 - 2. Acceptable Manufacturers:
 - a. Select
- B. Requirements:
 - 1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
 - 2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
 - 3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
 - 4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
 - 5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
 - 6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
 - 7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 MORTISE LOCKS

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Falcon MA series
 - 2. Acceptable Manufacturers and Products:
 - a. Corbin-Russwin ML2000 series
 - b. Sargent 8200 series
- B. Requirements:

- 1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1, and UL Listed for 3-hour fire doors.
- 2. Provide locks manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.
- 3. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.
- 4. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1-inch (25 mm) throw, constructed of stainless steel.
- 5. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
- 6. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide a request to exit (RX) switch that is actuated with rotation of inside lever.
- 7. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.
 - a. Lever Design: BOG.

2.06 CYLINDRICAL LOCKS - GRADE 1

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Falcon T series
 - 2. Acceptable Manufacturers and Products:
 - a. Corbin-Russwin CL3300 series
 - b. Sargent 10-Line
- B. Requirements:
 - 1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
 - 2. Cylinders: Refer to "KEYING" article, herein.
 - 3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
 - 4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
 - 5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
 - 6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
 - 7. Provide electrified options as scheduled in the hardware sets.
 - 8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
 - a. Lever Design: BRK.

2.07 EXIT DEVICES

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:

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- a. Falcon 24/25 series
- 2. Acceptable Manufacturers and Products:
 - a. Sargent 19-43-GL-80 series
 - b. Precision Apex series
- B. Requirements:
 - 1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
 - 2. Cylinders: Refer to "KEYING" article, herein.
 - 3. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
 - 4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
 - 5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
 - 6. Provide flush end caps for exit devices.
 - 7. Provide exit devices with manufacturer's approved strikes.
 - 8. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
 - 9. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
 - 10. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
 - 11. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
 - 12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
 - 13. Provide electrified options as scheduled.
 - 14. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.08 ACCESS CONTROL READER

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Schlage MTB series (Basis of Design)
- B. Requirements:
 - 1. Provide access control card readers manufactured by a global company who is a recognized leader in the production of access control devices. Card reader manufactured for non-access control applications are not acceptable.
 - 2. Provide multi-technology contactless readers complying with ISO 14443.
 - 3. Provide access control card readers capable of reading the following technologies:
 - a. CSN DESFire® CSN, HID iCLASS® CSN, Inside Contactless PicoTag® CSN, ST Microelectronics® CSN, Texas Instruments Tag-It®, CSN, Phillips I-Code® CSN

- b. 125 KHz proximity Schlage® Proximity, HID® Proximity, GE/CASI® Proximity, AWID® Proximity, LenelProx®
- c. 13.56 MHz Smart card Schlage smart cards using MIFARE Classic® EV1/EV3, Schlage smart cards using MIFARE Plus®, Schlage smart cards using MIFARE® DESFire® EV1/EV3. Schlage smart cards using MIFARE® DESFire® EV2/EV3
- d. 13.56 MHz NFC (mobile), 2.45 GHz Bluetooth (mobile) Mobile means compatible with Bluetooth and NFC-enabled smartphones.

2.09 CREDENTIAL ENROLLMENT READER

- A. Manufacturer and Product:
 - 1. Scheduled Manufacturer and Product:
 - a. Schlage MT20W (Basis of Design)
- B. Requirements:
 - 1. Unit provides simplified credential enrollment via computer connect. USB connection is for power only, enrollment uses Wi-Fi connection.
 - 2. Multi-technology enrollment reader is designed to simplify the enrollment of proximity and smart credentials. The reader is powered by a USB cable via computer's USB port and utilizes a Wi-Fi connection for certain scenarios (enrolling no-tour credentials).
 - The unit is compatible with smart credentials (MIFARE Classic and FIFARE DESFire EV1/EV3), Schlage Mobile credentials, PIV credentials and most proximity credentials up to 37-bits. The unit supports no-tour (with supported locks) via Schlage MIFARE Classic or MIFARE DESFire EV1/EV3 credentials.

2.10 ACCESS CONTROL CREDENTIALS

- A. Manufacturer:
 - 1. Scheduled Manufacturer:
 - a. Schlage (Basis of Design)
- B. Requirements:
 - 1. Provide access control credentials ISO 14443 compliant and GSC-IS® certified compatible with access control readers that allow authorized entry and hold information specific to the user.
 - 2. Provide credentials that have an ISO MIFARE microprocessor, function at 13.56 MHz, 8kbits of memory, open memory architecture, and a passive design requiring no batteries.
 - 3. Provide credentials made of a composite material for added durability that have a read range of up to 4 inches, support up to a 40-bit format.
 - 4. Provide credentials which, when presented to the access control reader at any angle within a minimum distance of one 1-inch, will result in an accurate reading of the card.

2.11 OFFLINE CONTROLLER

- A. Manufacturer and Product:
 - 1. Scheduled Manufacturer and Product:
 - a. Schlage CTE Engage Controller (Basis of Design)
- B. Requirements:
 - 1. Provide an offline single opening controller UL 294 listed and compatible with the Schlage Engage Application. Include a multi-technology reader kit.
 - 2. Provide interfaces for a multi-technology credential reader, powered and dry output relays for strike, alarm, and auxiliary function, and with wireless communication capability.
 - 3. Provide offline controller with the following power options:
 - a. Power Over Ethernet (POE)
 - 1) .5A at 12 VDC for up to 500 feet.
 - 2) 1.5A at 24 VDC for up to 500 feet.
 - b. 12 VDC in 2A at 12 VDC for up to 500 feet.
 - c. 24 VDC in 2A at 24 VDC for up to 500 feet.
 - 4. Provide offline controller with the following communication standards:
 - a. Bluetooth low energy version 4.2.
 - b. 2.4 GHz Wi-Fi (IEEE 802.11b/g/n).
 - c. WPA2, WPA, WEP, 802.1x (PEAP).
 - d. Transport Layer Security (TLS) version 12.
 - e. Advanced Encryption Standard (AES) 256-bit.
 - 5. Provide offline controller with the following signal inputs:
 - a. One Schlage MT11-485 or MT15-485 reader.
 - b. Request to Enter (REN).
 - c. Request to Exit (REX).
 - d. Remote Release hardwired.
 - e. Door Position Switch (DPS).
 - f. Reader tamper (TAMP).
 - 6. Provide offline controller with the following signal outputs:
 - a. Card Reader 0.3A at 12 VDC for up to 500 feet.
 - b. Locking mechanism: 2A at 30 VDC max.
 - c. Auxiliary: 2A at 30 VDC max.
 - d. Alarm: 2A at 30 VDC max.
 - 7. Provide offline controller with the following with operating temperatures between -31 F (-35 C) to 151 F (66 C).
 - 8. Provide offline controller with the following on board database:
 - a. up to 5,000 users
 - b. up to 2,000 audits (FIFO)
 - c. up to 16 Time Zones

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- d. up to 32 Holiday Schedules
- e. up to 16 Schedules (lock & unlock)
- 9. Provide offline controller with the following connectivity options:
 - a. Apple or Droid smart phone Bluetooth updates to CTE.
 - b. Wi-Fi access point automatic daily updates (one time per day) if connected to Wi-Fi.
- C. Provide offline controller with "No-Tour" with MT20W enrollment reader and Schlage 1K smart credentials (13.56 MHz).

2.12 ACCESS CONTROL PLATFORM

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer:
 - a. Schlage Engage (Commercial Basis of Design)
- B. Requirements:
 - 1. Provide a cloud-based platform capable of managing users, credentials, access rights, schedules, and audits.
 - 2. All locks must be supplied in construction mode.
 - 3. Provide a platform that supports a mobile application (app). Mobile application must allow for:
 - a. Commissioning and configuring devices
 - b. Immediately updating door files
 - c. Retrieving audit information
 - d. Performing firmware updates
 - 4. Provide software set up on the owner's workstation and Mobile Device which includes:
 - a. Creation of the Owner's Account
 - b. Creation of the Project Site
 - c. Creation of the Team as directed by the Owner
 - d. Addition of five users
 - e. Set up of MT20W and update firmware
 - f. Create unique credentials and verify proper commissioning of ten locks
 - 5. Provide, at the owner's request, the following on-site training prior to the expiration of the service agreement:
 - a. Completing the following with ENGAGE software:
 - 1) Modifying the Team
 - 2) Move in/move out procedure including
 - a) Adding and Deleting Users
 - b) Adding and Deleting Doors
 - 3) Adding, assigning and programming credentials for access
 - 4) Replacing or deleting lost credentials.
 - 5) Retrieving and viewing of audit information
 - 6) Assigning temporary access

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- b. Commissioning and verifying proper functioning between locks and credentials.
- c. Updating firmware on the locks.
- 6. Must include a service agreement ending a year after Substantial Completion. This service agreement includes being on-site up to 16 hours for set-up and training, as listed above.

2.13 ELECTRIC STRIKES

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. HES 9500 series
 - 2. Acceptable Manufacturers and Products:
 - a. Schlage 6000 series
- B. Requirements:
 - 1. Provide electric strikes designed for use with type of locks shown at each opening.
 - 2. Provide electric strikes UL Listed as burglary resistant that are tested to a minimum endurance test of 1,000,000 cycles.
 - 3. Where required, provide electric strikes UL Listed for fire doors and frames.
 - 4. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

2.14 POWER SUPPLIES

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Schlage/Von Duprin PS900 series
 - 2. Acceptable Manufacturers and Products:
 - a. Securitron BPS series
 - b. Security Door Controls 600 series
- B. Requirements:
 - 1. Provide power supplies approved by manufacturer of supplied electrified hardware.
 - 2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
 - 3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
 - 4. Provide power supplies with the following features:
 - a. 12/24 VDC Output, field selectable.

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- b. Class 2 Rated power limited output.
- c. Universal 120-240 VAC input.
- d. Low voltage DC, regulated and filtered.
- e. Polarized connector for distribution boards.
- f. Fused primary input.
- g. AC input and DC output monitoring circuit w/LED indicators.
- h. Cover mounted AC Input indication.
- i. Tested and certified to meet UL294.
- j. NEMA 1 enclosure.
- k. Hinged cover w/lock down screws.
- I. High voltage protective cover.

2.15 CYLINDERS

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer:
 - a. Falcon
 - 2. Acceptable Manufacturers and Products:
 - a. Corbin-Russwin
 - b. Sargent
- B. Requirements:
 - 1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
 - 2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
 - a. Open: cylinder with small format interchangeable core (SFIC) core with open keyway

2.16 KEYING

- A. Scheduled System:
 - 1. New factory registered system:
 - a. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
- B. Requirements:
 - 1. Construction Keying:
 - a. Replaceable Construction Cores.
 - 1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
 - a) 3 construction control keys

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- b) 12 construction change (day) keys.
- 2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.
- 2. Permanent Keying:
 - a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
 - 1) Master Keying system as directed by the Owner.
 - b. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
 - c. Provide keys with the following features:
 - 1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - 2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
 - d. Identification:
 - 1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
 - 2) Identification stamping provisions must be approved by the Architect and Owner.
 - 3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
 - 4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
 - 5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
 - e. Quantity: Furnish in the following quantities.
 - 1) Change (Day) Keys: 3 per cylinder/core that is keyed differently.
 - 2) Permanent Control Keys: 3.
 - 3) Master Keys: 6.
 - 4) Key Blanks: quantity as determined in the keying meeting.

2.17 KEY CONTROL SYSTEM

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Telkee
 - 2. Acceptable Manufacturers:
 - a. HPC
 - b. Lund
- B. Requirements:
 - 1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and

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standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.

- a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
- b. Provide hinged-panel type cabinet for wall mounting.

2.18 DOOR CLOSERS

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Falcon SC70A series
 - 2. Acceptable Manufacturers and Products:
 - a. LCN 4050A series
 - b. Norton 7500 series
 - c. Sargent 351 series
- B. Requirements:
 - 1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
 - 2. Provide door closers with fully hydraulic, full rack and pinion action with aluminum cylinder.
 - 3. Closer Body: 1-1/2-inch (38 mm) diameter with 5/8-inch (16 mm) diameter heat-treated pinion journal.
 - 4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
 - 5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
 - 6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
 - 7. Pressure Relief Valve (PRV) Technology: Not permitted.
 - 8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.19 DOOR CLOSERS

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Falcon SC80A series
 - 2. Acceptable Manufacturers and Products:
 - a. LCN 1450 series

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- b. Norton 8000 series
- c. Sargent 1331 series
- B. Requirements:
 - 1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory.
 - 2. Provide door closers with fully hydraulic, full rack and pinion action with aluminum cylinder.
 - 3. Closer Body: 1-1/4-inch (32 mm) diameter, with 5/8-inch (16 mm) diameter heat-treated pinion journal.
 - 4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
 - 5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
 - 6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
 - 7. Pressure Relief Valve (PRV) Technology: Not permitted.
 - 8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.20 ELECTRO-HYDRAULIC AUTOMATIC OPERATORS

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. LCN 4600 series
 - 2. Acceptable Manufacturers and Products:
 - a. Norton 6000 series
 - b. Precision D4990 series
- B. Requirements:
 - 1. Provide low energy automatic operator units with hydraulic closer complying with ANSI/BHMA A156.19.
 - 2. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
 - 3. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check, and opening and closing speed adjustment valves to control door
 - 4. Provide units with on/off switch for manual operation, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay.
 - 5. Provide drop plates, brackets, and adapters for arms as required for details.
 - 6. Provide hard-wired actuator switches and receivers for operation as specified.
 - 7. Provide weather-resistant actuators at exterior applications.
 - 8. Provide key switches with LED's, recommended and approved by manufacturer of automatic operator as required for function described in operation description of hardware group below. Cylinders: Refer to "KEYING" article, herein.

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- 9. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.
- 10. Provide units with vestibule inputs that allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

2.21 DOOR TRIM

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Ives
 - 2. Acceptable Manufacturers:
 - a. Burns
 - b. Rockwood
- B. Requirements:
 - 1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.22 PROTECTION PLATES

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Ives
 - 2. Acceptable Manufacturers:
 - a. Burns
 - b. Rockwood
- B. Requirements:
 - 1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
 - Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
 - 3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.23 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

- A. Manufacturers:
 - 1. Scheduled Manufacturers:
 - a. Glynn-Johnson
 - 2. Acceptable Manufacturers:
 - a. Rixson
 - b. ABH
- B. Requirements:
 - 1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.24 DOOR STOPS AND HOLDERS

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Ives
 - 2. Acceptable Manufacturers:
 - a. Burns
 - b. Rockwood
- B. Provide door stops at each door leaf:
 - 1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
 - 2. Where a wall stop cannot be used, provide overhead stop.
- 2.25 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING
 - A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Zero International
 - 2. Acceptable Manufacturers:
 - a. National Guard
 - b. Reese
 - B. Requirements:

- 1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
- 2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
- 3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
- 4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.26 SILENCERS

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Ives
 - 2. Acceptable Manufacturers:
 - a. Burns
 - b. Rockwood
- B. Requirements:
 - 1. Provide "push-in" type silencers for hollow metal or wood frames.
 - 2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
 - 3. Omit where gasketing is specified.

2.27 FINISHES

- A. Finish (wood doors): Generally, Satin Chromium, BHMA 626/652 (US26D). Provide finish for each item as indicated in sets.
- B. Finish (aluminum doors): Generally, matte black, BHMA 622/631 (US19). Provide finish for each item as indicated in sets.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.
- B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

- C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- D. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Custom Steel Doors and Frames: HMMA 831.
 - 3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
 - 4. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.
- C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.
- I. Lock Cylinders:
 - 1. Install construction cores to secure building and areas during construction period.
 - 2. Replace construction cores with permanent cores as indicated in keying section.
 - 3. Furnish permanent cores to Owner for installation.
- J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:
 - 1. Conduit, junction boxes and wire pulls.
 - 2. Connections to and from power supplies to electrified hardware.
 - 3. Connections to fire/smoke alarm system and smoke evacuation system.
 - 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.

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- 5. Connections to panel interface modules, controllers, and gateways.
- 6. Testing and labeling wires with Architect's opening number.
- K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- L. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.
- M. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- N. Overhead Stops/Holders: Mount overhead stopes/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- O. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.
- P. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- Q. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
- R. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- S. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- T. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
 - 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 - 3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

- A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.
- B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

Hardware Group No. 01

For use 117-A	on Doo	or #(s): 117-B						
Each to QTY 2	have: EA	DESCRIPTION DOUBLE ACTING SPRING HINGE	CATALOG NUMBER AS REQUIRED		FINISH BLK	MFR		
2	EA	WALL STOP	WS406/407CVX		630	IVE		
Hardwa	Hardware Group No. 02							
For use 121-A	on Doo	or #(s):						
Each to QTY 3	have: EA	DESCRIPTION HINGE	CATALOG NUMBER 5BB1 4.5 X 4.5 NRP		FINISH FBLK/6 31	MFR IVE		
1 1 3	EA EA EA	PASSAGE SET WALL STOP SILENCER	T101 BRK WS406/407CVX SR64		626 630 GRY	FAL IVE IVE		

For use on Door #(s):

105-A 107-A

Each to have:

Lacrite	mave.					
QTY 3	EA	DESCRIPTION HINGE	CATALOG NUMBER 5BB1 4.5 X 4.5		FINISH FBLK/6	MFR IVE
1	EA	DOOR PULL, 1" ROUND	8103EZHD 10" F		630- 316	IVE
1	EA	PUSH PLATE	8200 6" X 16"		630	IVE
1	EA	SURFACE CLOSER	SC71A RW/PA - PULL-SIDE		689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE
Hardwa	are Grou	ıp No. 04				
For use 120-A	e on Doc A	or #(s):				
Each to	have:	DESCRIPTION			EINISH	MED
3	EA	HINGE	5BB1 4.5 X 4.5		FBLK/6 31	IVE
1	EA	PRIVACY LOCK	MA311 OCCUPIED/VACANT BOGM		626	FAL
1	EA	SURFACE CLOSER	SC71A RW/PA - PULL-SIDE		689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	È	630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	GASKETING	488S	Ē	BK	ZER
Hardwa	are Grou	ıp No. 05				
For use 123-A	e on Doc A	or #(s):				
Each to	have:					
QTY		DESCRIPTION	CATALOG NUMBER	_	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		FBLK/6 31	IVE

1	EA	PRIVACY LOCK	MA311 OCCUPIED/VACANT BOGM	626	FAL
1	EA	SURFACE CLOSER	SC71A SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	GASKETING	488S	BK	ZER

For use on Door #(s): 122-A

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	FBLK/6 31	IVE
1	EA	CLASSROOM LOCK	T561BDC BRK	626	FAL
1	EA	SFIC CORE	C607	626	FAL
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
Hardwa	are Grou	up No. 07			
For use 108-A	e on Do A	or #(s):			
Each to	o have:				
QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	FBLK/6 31	IVE
1	EA	CLASSROOM LOCK	T561BDC BRK	626	FAL
1	EA	SFIC CORE	C607	626	FAL
1	EA	SURFACE CLOSER	SC71A RW/PA - PUSH-SIDE	689	FAL
1	EA	MOUNTING PLATE	SC70A-18PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
Hardwa	are Grou	up No. 08			
For use 112-A	e on Do A	or #(s):			
Each to	o have:				
QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	FBLK/6 31	IVE
1	EA	STOREROOM LOCK	T581BDC BRK	626	FAL
1	EA	SFIC CORE	C607	626	FAL
1	EA	SURFACE CLOSER	SC81A RW/PA - PULL-SIDE	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP/HOLDER	WS40	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

For use on Door #(s): 106-A

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	FBLK/6 31	IVE
1	EA	STOREROOM LOCK	T581BDC BRK	626	FAL
1	EA	SFIC CORE	C607	626	FAL
1	EA	OH STOP & HOLDER	410H	630	GLY
1	EA	SURFACE CLOSER	SC81A RW/PA - PULL-SIDE	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
Hardwa	are Grou	ıp No. 10			
For use 125-A	e on Doo N	or #(s):			
Each to	have:				
QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	FBLK/6 31	IVE
1	EA	CLASSROOM LOCK	T561BDC BRK	626	FAL
1	EA	SFIC CORE	C607	626	FAL
1	EA	SURFACE CLOSER	SC71A RW/PA - PUSH-SIDE	689	FAL
1	EA	ARMOR PLATE	8400 34" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP/HOLDER	WS40	626	IVE
3	EA	SILENCER	SR64	GRY	IVE
Hardwa	are Grou	ıp No. 11			
For use 111-A	on Doo	or #(s):			
Each to	have:				
QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	FBLK/6 31	IVE
1	EA	STOREROOM LOCK	T581BDC BRK	626	FAL
1	EA	SFIC CORE	C607	626	FAL
1	EA	SURFACE CLOSER	SC81A RW/PA - PULL-SIDE	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	GASKETING	488S	BK	ZER

For use on Door #(s): 109-A

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	FBLK/6 31	IVE
1	EA	DUMMY PUSH BAR	250	626	FAL
1	EA	DOOR PULL, 1" ROUND	8103EZHD 10" O	630- 316	IVE
1	EA	SURFACE CLOSER	SC71A RW/PA - PUSH-SIDE	689	FAL
1	EA	MOUNTING PLATE	SC70A-18PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

For use on Door #(s):

101-B 103-B

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD		315AN	IVE
2	EA	DUMMY PUSH BAR	250		626	FAL
2	EA	LONG DOOR PULL	9266F 72" O - ALTERNATE		BLK	IVE
2	EA	LONG DOOR PULL	RM4170 48" - VERIFY WOOD SPECIES WITH ARCHITECT PRIOR TO ORDER		BLK	ROC
1	EA	OH STOP	100S		BLK	GLY
1	EA	SURFACE CLOSER	SC71A SS		622	FAL
1	EA	SURF. AUTO OPERATOR	4642	N	693	LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853T	×	630	LCN
1	EA	SURFACE MOUNT BOX	8310-867S			LCN
1	EA	MOUNTING PLATE	SC70A-18PA		622	FAL
1	EA	CUSH SHOE SUPPORT	SC70A-30		622	FAL
1	EA	BLADE STOP SPACER	SC70A-61 WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		622	FAL

NOTES:

1) VESTIBULE ACTUATOR LISTED WITH EXTERIOR VESTIBULE DOOR.

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

BOTH ACTUATOR BUTTONS ARE ENABLED WHEN THE OPERATOR IS TURNED ON. PUSHING EITHER ENABLED ACTUATOR BUTTON WILL CAUSE THE AUTOMATIC OPERATOR TO MOMENTARILY OPEN THE DOOR. FREE EGRESS AT ALL TIMES.

For use on Door #(s): 109-B

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		315AN	IVE
1	EA	PANIC HARDWARE	25-R-NL-OP		626	FAL
1	EA	SFIC RIM HOUSING (LESS CORE)	C953		622	FAL
1	EA	SFIC CORE	C607		622	FAL
1	EA	SFIC CONST CORE	C607CCA (AS REQ'D)		622	FAL
1	EA	rectifier	2005m3	N		HES
1	EA	ELECTRIC STRIKE	9500	N	BLK	HES
1	EA	90 DEG OFFSET PULL	8190EZHD 10" O		BLK	IVE
1	EA	SURFACE CLOSER	SC71A SS		622	FAL
1	EA	MOUNTING PLATE	SC70A-18PA		622	FAL
1	EA	CUSH SHOE SUPPORT	SC70A-30		622	FAL
1	EA	BLADE STOP SPACER	SC70A-61		622	FAL
1	EA	DOOR SWEEP	8192BK		BK	ZER
1	EA	THRESHOLD	655A		А	ZER
1	EA	CONTROLLER	CTE-MTB11-485-B	×	В	SCE
1	EA	DOOR CONTACT	PROVIDED BY SECURITY CONTRACTOR - CONNECTED TO BURGLAR ALARM	×		
1	EA	POWER SUPPLY	PS902 900-4R - COORDINATE POWER SUPPLY REQUIREMENTS W/SECURITY PROVIDER WEATHERSTRIP BY DOOR/FRAME MANUFACTURER	×		VON

NOTES:

1) POWER SUPPLY SHARED WITH DOOR 125-B.

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS.

ELECTRIC STRIKE IS CAPABLE OF BEING ELECTRONICALLY UNLOCKED FOR CERTAIN TIMES OF THE DAY VIA THE DAY, THUS IN PUSH/PULL MODE.

DOOR TO REMAIN LOCKED WITH LOSS OF POWER. FREE EGRESS AT ALL TIMES.

For use on Door #(s): 125-B

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		315AN	IVE
1	EA	PANIC HARDWARE	25-R-NL-OP		626	FAL
1	EA	SFIC RIM HOUSING (LESS CORE)	C953		622	FAL
1	EA	SFIC CORE	C607		622	FAL
1	EA	SFIC CONST CORE	C607CCA (AS REQ'D)		622	FAL
1	EA	rectifier	2005m3	N		HES
1	EA	ELECTRIC STRIKE	9500	N	BLK	HES
1	EA	90 DEG OFFSET PULL	8190EZHD 10" O		BLK	IVE
1	EA	SURFACE CLOSER	SC71A SS		622	FAL
1	EA	MOUNTING PLATE	SC70A-18PA		622	FAL
1	EA	CUSH SHOE SUPPORT	SC70A-30		622	FAL
1	EA	BLADE STOP SPACER	SC70A-61		622	FAL
1	EA	DOOR SWEEP	8192BK		BK	ZER
1	EA	THRESHOLD	655A		А	ZER
1	EA	CONTROLLER	CTE-MTB11-485-B	N	В	SCE
1	EA	DOOR CONTACT	PROVIDED BY SECURITY CONTRACTOR - CONNECTED TO BURGLAR ALARM WEATHERSTRIP BY DOOR/FRAME MANUFACTURER	×		

NOTES:

1) POWER SUPPLY LISTEDED WITH DOOR 109-B.

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

DOOR NORMALLY CLOSED AND LOCKED. PRESENTING A VALID CREDENTIAL TO THE READER WILL MOMENTARILY UNLOCK THE ELECTRIC STRIKE ALLOWING ACCESS. DOOR TO REMAIN LOCKED WITH LOSS OF POWER. FREE EGRESS AT ALL TIMES.

For use on Door #(s):

101-A 103-A

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD		315AN	IVE
2	EA	PANIC HARDWARE	25-C-EO		626	FAL
2	EA	LONG DOOR PULL	9266F 72" O - ALTERNATE		BLK	IVE
2	EA	LONG DOOR PULL	RM4170 48" - VERIFY WOOD SPECIES WITH ARCHITECT PRIOR TO ORDER		BLK	ROC
1	EA	OH STOP	100S		BLK	GLY
1	EA	SURFACE CLOSER	SC71A SS		622	FAL
1	EA	SURF. AUTO OPERATOR	4642	×	693	LCN
1	EA	WEATHER RING	8310-801			LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853T	×	630	LCN
1	EA	ACTUATOR, WALL MOUNT	8310-855	×	630	LCN
2	EA	SURFACE MOUNT BOX	8310-867S			LCN
1	EA	MOUNTING PLATE	SC70A-18PA		622	FAL
1	EA	CUSH SHOE SUPPORT	SC70A-30		622	FAL
1	EA	BLADE STOP SPACER	SC70A-61		622	FAL
2	EA	DOOR SWEEP	8192BK		BK	ZER
1	EA	THRESHOLD	655A		А	ZER
2	EA	DOOR CONTACT	PROVIDED BY SECURITY CONTRACTOR - CONNECTED TO BURGLAR ALARM WEATHERSTRIP BY DOOR/FRAME MANUFACTURER	M		

NOTES:

1) VESTIBULE ACTUATOR SHARED WITH INSIDE VESTIBULE DOOR.

OPERATIONAL DESCRIPTION: COORDINATE SYSTEM OPERATION AND COMPONENT LOCATIONS WITH THE OWNER, THE ARCHITECT, AND ALL RELATED TRADES.

BOTH ACTUATOR BUTTONS ARE ENABLED WHEN THE OPERATOR IS TURNED ON. PUSHING EITHER ENABLED ACTUATOR BUTTON WILL CAUSE THE AUTOMATIC OPERATOR TO MOMENTARILY OPEN THE DOOR WHEN THE PANIC DEVICES ARE DOGGED DOWN (LATCHES IN RETRACTED POSITION). FREE EGRESS AT ALL TIMES.

For use on Door #(s):

113-C 113-B

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		315AN	IVE
1	EA	PANIC HARDWARE	LD-25-R-EO		626	FAL
1	EA	SURFACE CLOSER	SC71A SS		622	FAL
1	EA	MOUNTING PLATE	SC70A-18PA		622	FAL
1	EA	CUSH SHOE SUPPORT	SC70A-30		622	FAL
1	EA	BLADE STOP SPACER	SC70A-61		622	FAL
1	EA	DOOR SWEEP	8192BK		BK	ZER
1	EA	THRESHOLD	655A		А	ZER
1	EA	DOOR CONTACT	PROVIDED BY SECURITY CONTRACTOR - CONNECTED TO BURGLAR ALARM WEATHERSTRIP BY DOOR/FRAME MANUFACTURER	N		
المعطيب		un No. 10				

Hardware Group No. 18

For use on Door #(s): MISC

Each to have:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	MULTITECH READER	MT20W USB	×	BLK	SCE
50	EA	CREDENTIAL	9651T		BLK	SCE
1	EA	ENGAGE APPLICATION SOFTWARE	ENGAGE APPLICATION			SCE
1	EA	ENGAGE TRAINING	60-070			SCE

For use on Door #(s):

113-A

Each to have:

QTY	•	DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	SFIC MORT HOUSING (LESS CORE)	C987 - VERIFY CAM/BLOCKING RING (AS REQ'D)		622	FAL
1	EA	SFIC CORE	C607 BALANCE OF HARDWARE BY DOOR MANUFACTURER		622	FAL
NOTE 1) VEI ORDE	S: RIFY M(:R.	ORTISE CYLINDER COMPA	TABILITY WITH DOOR MANUFACTU	IRER P	RIOR TO	

Hardware Group No. 20

For use on Door #(s): 114-A 11

118-A

Each to have:

QTY DESCRIPTION

115-A

CATALOG NUMBER HARDWARE BY DOOR MANUFACTURER FINISH MFR

END OF SECTION 087100

SECTION 283101 - ADDRESSABLE FIRE ALARM AND DETECTION SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fire alarm and detection systems.

1.2 RELATED WORK

A. Section 260553 - Electrical Identification: Refer to electrical identification for color and identification labeling requirements.

1.3 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in smoke detection and fire alarm systems with ten years' experience.
- B. Installer: A factory-authorized Electrical or Security Contractor licensed with the State and local jurisdiction with five years' experience in the design, installation, and maintenance of fire alarm systems by that manufacturer.
- C. Qualifications: The person managing/overseeing the preparation of shop drawings and the system installation/programming/testing shall be trained and certified by the system manufacturer and shall be Fire Alarm Certified by NICET, minimum Level 2. This person's name and certification number shall appear on the start-up and testing reports.

1.4 REFERENCES

- A. ASME A17.1 Safety Code for Elevators and Escalators
- B. NFPA 20 Standard for Centrifugal Fire Pumps
- C. NFPA 70 National Electrical Code (NEC)
- D. NFPA 72 National Fire Alarm and Signaling Code
- E. NFPA 101 Life Safety Code
- F. UL 2017 General Purpose Signaling Devices and Systems
- G. UL 217 / 268 Standard for Smoke Alarms / Smoke Detectors for Fire Alarm Systems
- H. UL 2572 Control and Communication Units for Mass Notification Systems

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1.5 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 260500 and as noted below.
 - 1. Failure to comply with all the following and all the provisions in 26 05 00 will result in the shop drawing submittal being rejected without review.
 - 2. Failure to submit the fire alarm without all requirements fulfilled in a single comprehensive submittal will be grounds to require a complete resubmittal.
- B. Provide product catalog data sheets as shop drawings.
 - 1. Provide a product catalog data sheet for each item shown on the Electrical Symbols List and for each piece of equipment that is not shown on the drawings, but required for the operation of the system.
 - 2. Where a particular Electrical Symbols List item has one or more variations (such as those denoted by subscripts, etc.) a separate additional product catalog data sheet shall be provided for each variation that requires a different part number to be ordered. The corresponding Electrical Symbols List symbol shall be shown on the top of each sheet.
 - 3. Where multiple items and options are shown on one data sheet, the part number and options of the item to be used shall be clearly denoted.
- C. Submit CAD Floor Plans as Shop Drawings:
 - 1. The complete layout of the entire system, device addresses, auxiliary equipment, and manufacturer's wiring requirements shall be shown.
 - 2. A legend or key shall be provided to show which symbols shown on the submittal floor plans correspond with symbols shown on the Contract Documents.

1.6 REGULATORY REQUIREMENTS

- A. System: UL listed.
- B. Conform to requirements of NFPA 101.
- C. Conform to requirements of Americans with Disabilities Act (ADA).
- D. Conform to UL 864 Fire Alarm, UL 1076 Security, UL2017 General Signaling, and UL 2572 Mass Notification Communications.

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1.7 SYSTEM DESCRIPTION

- A. Performance Statement: This specification section and the accompanying fire alarm specific design documents describe the minimum material quality, required features, and operational requirements of the system. These documents do not convey every wire that must be installed and every equipment connection that must be made. Based on the equipment described and the performance required of the system, as presented in these documents, the Vendor and the Contractor are solely responsible for determining all wiring, programming and miscellaneous equipment required for a complete and operational system.
- B. This section of the specifications includes the furnishing, installation and connection of the microprocessor controlled, intelligent reporting, fire alarm equipment required to form a complete coordinated system that is ready for operation. It shall include, but is not limited to, alarm initiating devices, control panels, auxiliary control devices, annunciators, power supplies, and wiring as indicated on the drawings and specified herein.
- C. Extending the Existing Fire Alarm System: Provide all items, components, devices, hardware, software, programming, expansion components, conduit, wiring etc. needed to extend fire alarm system. This includes, but is not limited to, additional power supplies, initiating devices and circuits, signaling devices and circuits, monitoring devices and circuits, auxiliary control and related devices such as, door holders and their control, smoke damper control, fan shutdown, etc. The existing fire alarm system shall be extended such that the existing fire alarm system's functionality, integrity and annunciation shall be equivalent to pre-construction conditions, unless noted otherwise. The functionality and integrity shall be maintained during construction. The entire system shall be able to be completely reset from any single reset location point. The entire system shall be annunciated at any annunciation location.
- D. Extending the Existing Gamewell FCI 7100 Fire Alarm System: The existing control panel shall remain and shall be operational throughout construction. The system shall only be disabled to make new connections and to modify the programming. A fire watch shall be provided for all areas affected during outages. All system outages must be scheduled with the Owner at least one week prior. Individual devices may be disabled as needed based on construction activities to reduce the potential for false alarms, but all devices must be operational when the Contractor is not physically on site. New initiating devices may be connected to the existing signaling line circuits where capacity is available. Provide additional signaling line circuits as needed based on existing and new device quantity, including replacement of existing panel components. Provide new notification circuits to serve the new devices, including all necessary power supplies, amplifiers, batteries, and 120-volt input circuits. All new devices of the same type, unless noted otherwise.
- E. Fire Alarm System: NFPA 72; Automatic and manual fire alarm system, non-coded, analog-addressable with automatic sensitivity control of certain detectors, multiplexed signal transmission.
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Cass District Library January 19, 2024 - Addendum 2 ADDRESSABLE FIRE ALARM AND DETECTION SYSTEMS[ADDRESSABLE] 283101-3

- F. System Supervision: Provide electrically supervised system, with supervised Signal Line Circuit (SLC) and Notification Appliance Circuit (NAC). Occurrence of single ground or open condition in initiating or signaling circuit places circuit in TROUBLE mode. Component or power supply failure places system in TROUBLE mode.
- G. Drawings: Only device layouts and some equipment have been shown on the contract drawings. Wiring and additional equipment to make a complete and functioning system has not been shown, but shall be submitted on the shop drawings.

1.8 OPERATION AND MAINTENANCE DATA

- A. Include operating instructions, and maintenance and repair procedures.
- B. Include the CAD floor plan drawings.
- C. Include shop drawings as reviewed by the Architect/Engineer and the local Authority Having Jurisdiction.

PART 2 - PRODUCTS

2.1 SIGNALING LINE CIRCUIT DEVICES

- A. Combination Devices: Subscripts identify combination type devices when applicable. Contractor shall provide the combination device or provide multiple device(s) to meet the functionality when the manufacturer does not offer the required functionality with a single device.
- B. Signal Line Device(s):
 - 1. Subscripts: Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
 - a. Device type as follows:
 - 1) W = Weather Proof
 - 2) Candela Ratings:
 - a) ## = 15 Candela, 30 Candela; 75 Candela; 110 Candela; 177 Candela
 - b) CD = NICET designer shall select Candela rating as required to provide full coverage of the space.
 - b. Sequence of operation as follows:
 - 1) D = HVAC Control

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- C. FA-120; Smoke Detectors:
 - 1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
 - a. Device types as follows:
 - 1) Blank = Photoelectric
 - 2. (BLANK) Analog Photoelectric Type Sensor: Shall use the photoelectric principle to measure smoke density and send data to the control panel representing the analog level of smoke density measured.
 - 3. Each smoke detector shall connect directly to an SLC loop, unless listed as stand alone.
 - 4. Each detector shall be mounted, where shown on the drawings, on a twist-lock base with all mounting hardware provided. Provide a two-piece head/base design.
 - 5. Each detector shall have a manual switching means to set the internal identifying code (address) of that detector, which the control panel shall use to identify its address with the type of sensor connected.
 - 6. Dual alarm and power indicators shall be provided that flash under normal conditions and remain continuous under alarm or trouble conditions. Remote indicator terminals shall be provided. Provide a remote LED indicator device if detector is not visible from a floor standing position.
 - 7. A test means shall be provided to simulate an alarm condition.
 - 8. Where operation is noted as required below 32°F and/or above 120°F, a conventional device shall be installed with a unique monitor module located in the nearest available location with maintained temperatures between 32°F and 120°F.
- D. FA-122; Duct Smoke Detectors, Sampling Tube Type:
 - 1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
 - a. Duct-type smoke detectors shall use the same analog photoelectric sensor technology, with the same features specified for standard smoke detectors, except with additional features as specified below.
 - b. Provide sampling tubes and mounting hardware to match the duct to which it is attached. Where the detector housing is larger than the duct height, Contractor shall fabricate a mounting bracket for the detector and attach according to the fire alarm manufacturer's recommendations.
 - c. Provide a remote alarm LED indicator device (FA-241) or (FA-242) if detector is not visible from a floor-standing position. If detector is located above a suspended ceiling, mount remote indicator in ceiling directly below detector with a white single-gang faceplate labeled: Duct Smoke Detector.

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- E. FA-130; Manual Pull Stations:
 - 1. Manual pull station, addressable, double action, reset key lock, semi-flush mount, red high abuse plastic or cast metal construction with white lettering. Provided with all necessary mounting hardware.
 - 2. Manual stations shall connect directly to an SLC loop. Stations shall provide address setting means using rotary decimal or DIP switches.
 - 3. Where operation is noted as required below 32°F and/or above 120°F, a conventional device shall be installed with a unique monitor module located in the nearest available location, with maintained temperatures between 32°F and 120°F.
- F. FA-160; Monitor Modules:
 - 1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
 - 2. Monitor Module shall connect directly to an SLC loop and receive power from a separate 24 VDC circuit. It shall interface initiating devices with the control panel using Style D or Style B circuits. Contractor Option: Use an interface module (2-wire operation) for Style B circuits connected to normally-open dry contacts, such as a flow switch.
 - 3. The module shall be mounted in an enclosure located in an accessible service location as near as possible to the device(s) being monitored, or where shown on the drawings. All mounting hardware shall be provided.
 - 4. The module shall supply the required power to operate the monitored device(s).
 - 5. The module shall provide address setting means using rotary decimal or DIP switches.

2.2 NOTIFICATION APPLIANCE DEVICES

- A. Combination Devices: Subscripts identify combination type devices when applicable. Contractor shall provide the combination device or provide multiple device(s) to meet the functionality when the manufacturer does not offer the required functionality with a single device.
- B. Notification Appliance Device(s):
 - 1. Subscripts: Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
 - a. Device types as follows:
 - 1) W = Weather Proof
 - 2) Candela Ratings:
 - a) ## = 15 Candela; 30 Candela; 75 Candela; 110 Candela; 177 Candela

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Cass District Library January 19, 2024 - Addendum 2

- b) CD = NICET designer shall select Candela rating as required to provide full coverage of the space.
- C. Notification Device(s):
 - 1. Wall Mounted: Red housing with white lettering or pictogram.
- D. FA-200; Visual Alarm Devices:
 - 1. Wall or ceiling mounted, refer to plans.
 - 2. High intensity (Candela rating as scheduled on the drawings) xenon strobe or equivalent under a lens. Candela rating shall be visible from exterior of the device.
 - 3. The maximum pulse duration shall be 0.2 seconds with a maximum duty cycle of 40%. The flash rate shall be 1 Hz. Where more than two strobes are visible from any one location, the fire alarm visual devices shall be synchronized.
 - 4. Device, housing, and backbox shall be UL listed for fire alarm/emergency applications.
 - 5. (W) Weatherproof Visual Notification Device: High intensity strobe, square housing, 75 Candela rating, suitable for wet locations. Provide with weatherproof back box.
 - a. Mounting: Semi-flush wall.
 - b. Conduit shall not be exposed.
- E. FA-210; Audio Horn Alarm Devices:
 - 1. Subscripts are used to define the device type, installation, and identify the device with a specific sequence of operation.
 - 2. Wall or ceiling mounted, refer to plans.
 - 3. Sound Rating: 85 dB at 10 feet. Sound levels for alarm signals shall not exceed 120 dBA in the occupied area.
 - 4. Device shall be capable of a high and low dB level setting. Unless noted otherwise, the device shall be set to the high setting at building completion.
 - 5. Device, housing, and backbox shall be UL listed for fire alarm/emergency applications.
- F. FA-211; Combination Audio Horn and Visual Alarm Device:
 - 1. Wall or ceiling mounted, refer to plans.
 - 2. Combine audio and visual components into a single device. Refer to the corresponding paragraphs above for requirements of each component.
 - 3. (W) Weatherproof Audio/Visual Notification Device: Electronic horn with high intensity strobe, square housing, 75 Candela, suitable for wet locations. Provide with weatherproof back box.
 - a. Mounting: Semi-flush wall.
 - b. Conduit shall not be exposed.

2.3 NOTIFICATION APPLIANCE CIRCUIT PANEL (NAC)

- A. As shown on the plans or as a Contractor's option if not shown, furnish and install NAC extender panels as necessary to provide remote power supply for notification appliance circuits (NAC). Contractor shall indicate quantity and locations of each NAC on the shop drawing submittals.
- B. Each NAC shall be self-contained remote power supply with batteries, and battery charger mounted in a surface lockable cabinet. Battery capacity shall be sufficient for operation for 24 hours in a non-alarm state followed by alarm for 15 minutes, plus 25% spare capacity for future devices. Each NAC provides a minimum of up to 4 outputs, 2A continuous, or 6A full load total capacity.
- C. Power for each NAC shall be from a local 120 VAC circuit. Provide two #12 conductors and one #12 ground in 1/2" conduit to each NAC from a dedicated 20A/1P circuit breaker with a red handle and a manufacturer's standard handle lock-on device. Coordinate panel and circuit number with the Architect/Engineer prior to installation.
- D. Mounting: Surface.

2.4 WIRING

A. Fire alarm wiring/cabling shall be furnished and installed by the Contractor in accordance with the manufacturer's recommendations and pursuant to National Fire Codes. Cabling shall be UL listed and labeled as complying with the Electrical Code for power-limited fire alarm signal service.

PART 3 - EXECUTION

3.1 SEQUENCES OF FIRE ALARM OPERATION

- A. Panel/Annunciator Alarm, Trouble, Supervisory Indication:
 - 1. Appropriate system Alarm, Trouble, or Supervisory LED shall flash at the control panel, transponder, and annunciator locations.
 - 2. The LCD display shall indicate all information associated with the condition, including the name of the item, type of device and its location within the protected premises.
 - 3. Transmit the appropriate signal (supervisory, trouble, alarm) to the central station via the digital communicator.
- B. Audible Alarms Sequence:
 - 1. Audible alarms throughout the building shall sound.

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- C. Visual Alarms Sequence:
 - 1. Visual alarms throughout the building shall flash.
- D. AHU and Mechanical Fan Shutdown Sequence:
 - 1. The fire alarm system shall utilize addressable relays to de-energize all AHU motor controllers and mechanical fans. Coordinate other requirements with HVAC installer.
 - 2. The fire alarm system shall directly shut down the AHU or mechanical fan through the local HVAC control device (i.e., variable frequency drive or motor starter).
 - 3. Where a facility has more than one AHU or mechanical fan, each shall be shutdown individually based on input from initiation devices in the area served by the unit or designated for each air distribution system.
 - 4. All AHUs and mechanical fans shall be shutdown simultaneously throughout the building.

3.2 INSTALLATION

- A. Install system in accordance with manufacturer's instructions and referenced codes.
- B. Devices:
 - 1. General:
 - a. All ceiling-mounted devices shall be located where shown on the reflected ceiling and floor plans. If not shown on the reflected ceiling or reflected floor drawings, the devices shall be installed in the relative locations shown on the floor drawings in a neat and uniform pattern.
 - All devices shall be coordinated with luminaires, diffusers, sprinkler heads, piping and other obstructions to maintain a neat and operable installation. Mounting locations and spacing shall not exceed the requirements of NFPA 72.
 - c. Where the devices are to be installed in a grid type ceiling system, the detectors shall be centered in the ceiling tile.
 - d. The location of all fire alarm devices shall be coordinated with other devices mounted in the proximity. Where a conflict arises with other items or with architectural elements that will not allow the device to be mounted at the location or height shown, the Contractor shall notify the Architect/Engineer to coordinate a different acceptable location.

- 2. Per the requirements of NFPA, detector heads shall not be installed until after the final construction cleaning unless required by the local Authority Having Jurisdiction (AHJ). If detector heads must be installed prior to final cleaning (for partial occupancy, to monitor finished areas or as otherwise required by the AHJ), they shall not be installed until after the fire alarm panel is installed, with wires terminated, ready for operation. Any detector head installed prior to closeout.
- 3. Protection of Fire Alarm System:
 - a. A smoke detector shall be installed within the vicinity of the main fire alarm panel and every NAC extender panel per NFPA 72. A heat detector may be substituted when a smoke detector is not appropriate for the environment of installation.
- 4. Duct-type Analog Smoke Detectors:
 - a. Duct-type analog smoke detectors shall be installed on the duct where shown on the drawings and details. The sampling tubes shall be installed in the respective duct at the approximate location where shown on the electrical drawings to meet the operation requirements of the system.
 - b. All detectors shall be accessible.
 - c. Duct-type detectors shall be installed according to the manufacturer's instructions.
- 5. Manual Pull Stations:
 - a. Stations shall be located where shown and at the height noted on the drawings.
- 6. Addressable Relays and Monitor Modules:
 - a. Modules shall be located as near to the respective monitor or control devices as possible, unless otherwise indicated on the drawings.
 - b. All modules shall be mounted in or on a junction box in an accessible location.
 - c. Where not visible from a floor standing position, a remote indicator shall be installed to allow inspection of the device status from a local floor standing location.
- 7. Notification Appliance Devices:
 - a. Devices shall be located where shown on the drawings.
 - b. Wall-mounted audio, visual and audio/visual alarm devices shall be mounted as denoted on the drawings.
 - c. Where ceiling mounted visual alarm devices or combination audio/visual alarm devices are shown where the ceiling is greater than 30'-0" high, they shall be stem mounted so that the entire unit is below 30'-0". This does not apply to audio-only alarm devices.

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C. Wiring:

- 1. Fire alarm wiring/cabling shall be provided by the Contractor in accordance with the manufacturer's recommendations and pursuant to National Fire Codes.
- 2. Wiring shall be installed in conduit from device to above accessible ceilings. Exposed plenum-rated cable (FPLP) shall be used above accessible ceilings supported every 4 feet or run in cable trays (if applicable) maintaining a minimum of 5-inches clearance from all lighting ballasts. Fire alarm cabling shall not be installed in the same bridle rings or cable trays designated for the cabling of other systems.
- 3. Notification Appliance Circuits shall provide the features listed below. These requirements may require separate circuits for visual and audible devices.
 - a. Fire alarm temporal audible notification for all audio appliances.
 - b. Synchronization of all visual devices where two or more devices are visible from the same location.
 - c. Ability to silence audible alarm while maintaining visual device operation.
 - d. Emergency communication alert and textual visible appliance notification.
- 4. Notification Appliance Circuits shall not span floors.
- 5. Signal line circuits connecting devices shall not span floors or 2-hour smoke compartments.
- 6. No wiring other than that directly associated with fire alarm detection, alarm or auxiliary fire protection functions shall be in fire alarm conduits. Wiring splices shall be avoided to the extent possible, and if needed, they shall be made only in junction boxes, and enclosed by plastic wire nut type connectors. Transposing or changing color coding of wires shall not be permitted. All conductors in conduit containing more than one wire shall be labeled on each end, in all junction boxes, and at each device with "E-Z Markers" or equivalent. Conductors in cabinets shall be carefully formed and harnessed so that each drops off directly opposite to its terminal. Cabinet terminals shall be numbered and coded, and no unterminated conductors are permitted in cabinets or control panels. All controls, function switches, etc. shall be clearly labeled on all equipment panels.
- D. Devices surface mounted in finished areas shall be mounted on surface backboxes furnished by fire alarm equipment supplier. Backboxes shall be painted to match device, shall be the same shape and size as the device shall not have visible knockouts.
- E. Make conduit and wiring connections to door release devices, sprinkler flow and pressure switches, sprinkler valve monitor switches, fire suppression system control panels, duct analog smoke detectors and all other system devices shown or noted on the Contract Documents or required in the manufacturer's product data and shop drawings.

3.3 MANUFACTURER'S FIELD SERVICES

A. Include services of certified technician to supervise installation, adjustments, final connections, and system testing.

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Cass District Library January 19, 2024 - Addendum 2 B. Note that room numbers depicted on the architectural/engineering drawings will not necessarily reflect the actual room (signage) numbers that the Owner selects. Contractor and fire alarm manufacturer shall coordinate the actual room numbers as the Owner directs to identify each device. This list shall be a part of the floor plan record drawing to be turned in at the project closeout.

END OF SECTION

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Cass District Library January 19, 2024 - Addendum 2

REPORT OF GEOTECHNICAL ENGINEERING INVESTIGATION

CASS DISTRICT LIBRARY EDWARDSBURG, MICHIGAN

PREPARED FOR:

CASS DISTRICT LIBRARY 319 M-62 CASSOPOLIS, MICHIGAN 49031

Patriot Engineering and Environmental, Inc. 1000-C Airport North Office Park Fort Wayne, Indiana 46825

January 5, 2024





January 5, 2024

Ms. Barbara Gordon Cass District Library 319 M-62 Cassopolis, Michigan 49031

Re: Report of Geotechnical Engineering Exploration Cass District Library West Main Street Edwardsburg, Michigan Patriot Project No.: 23-1673-04G

Dear Barbara:

Attached is the report of our geotechnical engineering exploration for the above referenced project. This exploration was completed in general accordance with our Proposal No. P23-1807-04G dated Proposal Date.

This report includes graphic logs of nine (9) soil borings drilled at the proposed project site. Also included in the report are the results of laboratory tests performed on samples obtained from the site, and geotechnical recommendations pertinent to the site development, foundation design, and construction.

We appreciate the opportunity to perform this geotechnical engineering exploration and are looking forward to working with you during the construction phase of the project. If you have any questions regarding this report or if we may be of any additional assistance regarding any geotechnical aspect of the project, please do not hesitate to contact our office.

Respectfully submitted, Patriot Engineering and Environmental, Inc.

lan Grafe, E.I. Geotechnical Engineer



William D. Duboen

William D. Dubois, P.E. Senior Principal Engineer

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REPORT OF GEOTECHNICAL ENGINEERING EXPLORATION

Cass District Library West Main Street Edwardsburg, Michigan Patriot Project No.: 23-1673-04G

1.0 INTRODUCTION

1.1 General

Cass District Library is planning the construction of a library branch to be located north of West Main Street in Edwardsburg, Michigan. The results of our geotechnical engineering exploration for the project are presented in this report.

1.2 Purpose and Scope

The purpose of this exploration is to determine the general near surface and subsurface conditions within the project area and to develop the geotechnical engineering recommendations necessary for the design and construction of the proposed structure. This was achieved by drilling soil borings, and by conducting laboratory tests on samples taken from the borings. This report contains the results of our findings, geotechnical engineering interpretation of these results with respect to the available project information, and recommendations to aid in the design and construction of the proposed structure.

2.0 PROJECT INFORMATION

The proposed project is located north of West Main Street in Edwardsburg, Michigan. The project consists of a high single-story structure of slab-on-grade construction, approximately 130 feet by 50 to 100 feet in plan dimension, with adjacent parking and roadway areas. Additionally, we understand that a storm-water management areas will be associated with the project.

Based on information provided by Abonmarche, we understand that the proposed structure will have wall loads not exceeding 1,000 pounds per lineal foot (plf), isolated column loads not exceeding 38 kips, and that floor loads will not exceed 150 pounds per square foot (psf). Additionally, based on visual observations of the existing site, it is assumed that any grade raise fill to complete the construction of building pads, finished pavement subgrades, etc., will not exceed 2 feet above the existing ground surface.

1

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Site Conditions

The project site is presently a wooded lot. The surrounding area is generally an area of residential and commercial development. The topography in the area proposed for construction is generally slightly rolling.

3.2 General Subsurface Conditions

Our interpretation of the subsurface conditions is based upon nine (9) soil borings drilled at the approximate locations shown on the Boring Location Map (Figure No. 2) in Appendix "A". All depths discussed below refer to depths below the existing ground surface. Based on the results of the soil borings completed at the site, the following subsurface profile is presented. A description of each general soil unit has been identified and is described below:

<u>Topsoil</u> – Topsoil, a surficial layer of material that is a blend of silts, sands, and clays, with varying amounts of organic matter, was encountered at the ground surface at the boring locations. The topsoil layer was about 11 to 12 inches thick in the borings.

<u>Sand (SP-SM)</u> – The topsoil layer is generally underlain by very loose to medium dense sand. The sand layers typically extends to the termination of the borings at 15 to 25 feet below the existing ground surface. Standard Penetration Test N-values in this sand varied from 2 to 19 blows per foot (bpf).

<u>Sandy Clay (CL)</u> – The topsoil layer in Boring S-1 is underlain by medium dense sandy silt encountered from 1 to 7 feet below existing ground surface. Standard Penetration Test N-values (blow counts) in this material ranges from 8 to 15 (bpf).

As previously mentioned, unsuitable very loose sands were encountered in six (6) of the nine (9) borings, at depths up to 6 feet below the existing ground surface. The following table presents the extent of the unsuitable soils encountered in the borings:

Boring Number	Soil Classification	Approximate Depth of Unsuitable Soils (feet) ⁽¹⁾
B-1	Very Loose Sand (SP-SM)	0 to 3.5
B-2	Very Loose Sand (SP-SM)	3.5 to 6
B-4	Very Loose Sand (SP-SM)	0 to 6
S-3	Very Loose Sand (SP-SM)	0 to 3.5
S-4	Very Loose Sand (SP-SM)	0 to 3.5
S-5	Very Loose Sand (SP-SM)	0 to 3.5

Table No.	. 1: Summ	ary of Unsu	itable Soils	Encountered	in Borings

⁽¹⁾Represents depth below existing ground surface.

The soil conditions described above are general, and some variations in the descriptions should be expected; for more specific information, please refer to the boring logs presented in Appendix "A". It should be noted that the dashed stratification lines shown on the soil boring logs indicate approximate transitions between soil types. In-situ stratification changes could occur gradually or at different depths.

3.3 Field Infiltration Testing

Per the Client's request, we performed five (5) percolation tests at the site to get a general idea of the infiltration rates for the storm-water drainage system. The tests were conducted in Borings S-1 through S-5 at a depth of 6 feet below the existing pavement surface. Water percolated too quickly through the holes during testing, so grain size analysis was conducted to estimate the permeability. While permeability and infiltration are not equivalent values, they are relative to each other. Using this correlation, we recommend that an infiltration rate of 1 to 2 inches per hour be used for calculating stormwater management capacity.

3.4 Groundwater Conditions

The term groundwater pertains to any water that percolates through the soil found on site. This includes any overland flow that permeates through a given depth of soil, perched water, and water that occurs below the "water table", a zone that remains saturated and waterbearing year-round.

Groundwater was observed during drilling in seven (7) of the nine (9) soil borings performed at the site at depths between 13.5 and 18.5 feet below the existing ground surface. Groundwater was not observed in the remaining borings during drilling. The borings were dry at the cave-in depths shown on the boring logs immediately after the borings were completed and the augers were removed from the boreholes.

It should be recognized that fluctuations in the groundwater level should be expected over time due to variations in rainfall and other environmental or physical factors. *The true static groundwater level can only be determined through observations made in cased holes over a long period of time, the installation of which was beyond the scope of this exploration.*

4.0 DESIGN RECOMMENDATIONS

4.1 Basis

Our recommendations are based on data presented in this report, which include soil borings, laboratory testing, and our experience with similar projects. Subsurface variations that may not be indicated by a dispersive exploratory boring program can exist on any site. If such variations or unexpected conditions are encountered during construction, or if the project information is incorrect or changed, we should be informed immediately since the validity of our recommendations may be affected.

4.2 Foundations

As previously mentioned, very loose sand was encountered in the six (6) of the nine (9) borings to a depth of about 3.5 to 6 feet below existing grade. *If very loose sands or other unsuitable materials are encountered at the footing level or below, they must be undercut and replaced with well-compacted and tested structural fill prior to construction of foundations or the footings can be extended to suitable natural soils.* Following the excavation of the footing areas, the foundations subgrade should be visually observed and probed by a *Patriot* representative at the direction of a geotechnical engineer at multiple locations at isolated footings and at every 10 feet (maximum) along wall footings to a depth of 3 to 5 feet. Any unsuitable soils encountered at the footing subgrade or below should be removed and replaced with well-compacted and tested structural fill.

Provided the above recommendations are followed, the proposed structures can be supported on spread footings bearing on the native undisturbed loose to medium dense sands encountered at shallow depths or on new well-compacted and tested structural fill overlying the same. These footings should be proportioned using a net allowable soil bearing pressure not exceeding 1,500 pounds per square foot (psf). For proper performance

at the recommended design bearing pressure, foundations must be constructed in compliance with the recommendations for footing excavation inspection that are discussed in Section 5.0 *"Construction Considerations"*.

Alternatively, the foundations may be designed to bear in the loose to medium dense sands (with an average N value of 9 to 10 bpf) encountered at a depth of 6 feet using a net maximum allowable soil bearing pressure not exceeding 2,000 psf. However, it may be necessary to undercut the excavation at isolated locations to accommodate the design bearing capacity. Careful field control during construction by *Patriot* will be necessary to confirm that the exposed material is capable of supporting the design bearing pressure and minimize the post construction settlement potential.

We estimate that the total foundation settlement should not exceed approximately 1 inch and that differential settlement should not exceed about ³/₄ inch. Careful field control during construction is necessary to minimize the actual settlement that will occur.

In using the above net allowable soil bearing pressures, the weight of the foundation and backfill over the foundation need not be considered. Hence, only loads applied at or above the minimum finished grade adjacent to the footing need to be used for dimensioning the foundations. Each new foundation should be positioned so it does not induce significant pressure on adjacent foundations; otherwise the stress overlap must be considered in the design.

All exterior foundations and foundations in unheated areas should be located at a depth of at least 42 inches below final exterior grade for frost protection. However, interior foundations in heated areas can bear at depths of approximately 24 inches below the finished floor. We recommend that wall (strip) footings be at least 18 inches wide and column footings be at least 24 inches wide for bearing capacity considerations.

Positive drainage of surface water, including downspout discharge, should be maintained away from structure foundations to avoid wetting and weakening of the foundation soils both <u>during</u> construction and <u>after</u> construction is complete.

5

4.3 Floor Slabs

The near surface or shallow subgrade soils encountered within the proposed building footprint generally consist of very loose to loose sands, which are not suitable for floor slab support. Very loose sands and other unsuitable materials need to be removed and replaced with well-compacted structural fill.

We recommend that all floor slabs be designed as "floating", that is, fully ground supported and not structurally connected to walls or foundations. This is to minimize the possibility of cracking and displacement of the floor slabs because of differential movements between the slab and the foundation. Although the movements are estimated to be within the tolerable limits for the structural safety, such movements could be detrimental to the slabs if they were rigidly connected to the foundations. Additionally, we recommend that all slabs should be liberally jointed and designed with the appropriate reinforcement for the anticipated loading conditions.

The building floor slabs should be supported on a minimum 6 inch thick well-compacted granular base course (i.e. Michigan Department of Transportation (MDOT) No. 5 G crushed stone) bearing on a suitably prepared subgrade (Refer to Section 5.0 *"Construction Considerations"*). The granular base course is expected to help distribute loads and equalize moisture conditions beneath the slab.

Provided that the recommendations above for floor slab design and construction are followed, a modulus of subgrade reaction, " K_{30} " value of 85 pounds per cubic inch (pci), is recommended for the design of ground supported floor slabs. It should be noted that the " K_{30} " modulus is based on a 30 inch diameter plate load empirical relationship.

4.4 Seismic Considerations

For structural design purposes, we recommend using a **Site Classification of "D"** as defined by the 2015 Michigan Building Code (modified 2015 International Building Code (IBC)). Furthermore, along with using a Site Classification of "D", we recommend the use of the maximum considered spectral response acceleration and design spectral response acceleration coefficients provided in Table No. 2 below. Refer to Appendix "B" for *"Seismic Site Class Evaluation"* report summary.

Period (seconds)	Period (seconds) Maximum Considered Spectral Response Acceleration Coefficient		Design Spectral Response Acceleration Coefficient
0.2	S _S = 0.064 g	1.60	S _{DS} = 0.078 g
1.0	S ₁ = 0.055 g	2.40	S _{D1} = 0.051 g

Table No.	2: Seismic	Design Spect	ral Response	Acceleration	Coefficients

These values were obtained from the *"Earthquake Ground Motion Parameters"* program for seismic design, developed by the United States Geological Survey (USGS) Earthquake Hazard Program, utilizing latitude 41.7979° (degree) north and longitude 86.0881° (degree) west as the designation for identifying the location of the parcel. Other earthquake resistant design parameters should be applied consistent with the minimum requirements of the 2015 Michigan Building Code.

4.5 Pavements

The near surface or shallow subgrade soils encountered within the proposed pavement areas generally consist of very loose to loose sands, which are not suitable for pavement support. Very loose sands and other unsuitable materials need to be removed and replaced with well-compacted structural fill.

If construction is performed during a wet or cold period, the contractor will need to exercise care during the grading and fill placement activities in order to achieve the necessary subgrade soil support for the pavement section (Refer to Section 5.0 "Construction Considerations"). The base soil for the pavement section will need to be firm and dry. The subgrade should be sloped properly in order to provide good base drainage. To minimize the effects of groundwater or surface water conditions, the base section for the pavement system should be sufficiently high above adjacent ditches and properly graded to provide pavement surface and pavement base drainage.

Our recommended minimum pavement design sections provided below are based on a soil support evaluation performed in accordance with generally accepted procedures set forth by the American Association of State Highway and Transportation Officials (AASHTO) *"Guide for Design of Pavement Structures, 1993"*. **No traffic counts were provided by the**

client. Therefore, we estimated the traffic loading for the pavement design values based on our prior experience:

- Design Life or 15 years
- 18-kips Equivalent Single Axle Loading (ESAL) estimated design value:
 - Rigid Pavement (500 passenger vehicle, 6 box truck, and 2 trash truck passes per day) = 142,572
 - Flexible Pavement (500 passenger vehicle, 6 box truck, and 2 trash truck passes per day) = 132,032
- Initial Serviceability:
 - Flexible Pavement = 4.2
 - Rigid Pavement = 4.5
- Terminal Serviceability of 2.0 (for both flexible and rigid pavement)
- Reliability of 80 percent (%) (for both flexible and rigid pavement)
- Standard Deviation
 - Flexible Pavement = 0.45
 - Rigid Pavement = 0.35
- Estimated California Bearing Ratio (CBR) of 3
- The crushed stone base course will not contain more than 10 percent (%) fines and will be compacted to at least 100 percent (%) of the maximum Standard Proctor dry density.
- Asphalt will be placed and compacted in accordance with the MDOT Standard Specification Requirements.
- Good to Excellent Drainage Condition Assumes water in subgrade is removed within 1 day. Please note, the shallow subgrade soils encountered at the site generally consist of clays with Relatively low permeability's; which means the soils have relatively poor drainage characteristics. Therefore, we recommend installing longitudinal subsurface drains throughout the length of the proposed pavement areas. Additionally, we recommend the installation of series of finger drains within the proposed pavement areas; which if appropriate and feasible could be connected to storm-sewer inlets. In addition to providing good drainage, the installation of underdrains underlying pavement sections founded over low permeability soils will generally aid in improving long-term performance of the pavement sections, as well as helping lower maintenance costs.

Based on the above design parameters, provided below are the calculated minimum pavement design thicknesses for rigid (concrete) pavement loading and flexible (asphalt)

pavement for the provided loading. Refer to Appendix "B" "*Pavement Design Evaluation & Design Sections*" for detailed design calculations.

Traffic Loading Conditions ⁽¹⁾	Concrete (Inches) ⁽²⁾	Aggregate Base Course (Inches) ⁽³⁾	Modulus of Subgrade Reactions (psi)	Design Life (Years) ⁽¹⁾
142,572 ESAL's	5	6	100	15

Table 3: Standard Duty Rigid Pavement Design (Minimum Thicknesses)

⁽¹⁾ Estimated ESAL based on estimated number of truck passes per day

⁽²⁾ Minimum of 4,000 pounds per square inch (psi) concrete strength with suitable reinforcement

⁽³⁾ Michigan Department of Transportation (MDOT) approved crushed stone base.

Table 4: Standard Duty Flexible Pavement Design (Minimum Thicknesses)

Traffic Loading Conditions ⁽¹⁾	Asphalt Surface Course HMA 9.5 mm (Inches) ⁽²⁾	Asphalt Base Course HMA 19 mm (Inches) ⁽²⁾	Aggregate Sub-Base (Inches) ⁽³⁾	Design Life (Years) ⁽¹⁾
132,032 ESAL's	2	3.5	6	15

⁽¹⁾ Estimated ESAL based on estimated number of truck passes per day

⁽²⁾ Michigan Department of Transportation (MDOT) Specified Hot Mix Asphalt (HMA)

⁽³⁾ Michigan Department of Transportation (MDOT) approved crushed stone base.

⁽³⁾ Michigan Department of Transportation (MDOT) approved lifts between 3 and 5 inches (see Appendix B).

4.6 Storm-Water Management System

The soils encountered in the area of the proposed storm-water management system (Borings S-1 through S-5) consist of sands which extend to depths of 15 feet below the existing ground surface. The sands are not favorable for a retention basin, due to the estimated high permeability characteristics of the sands. Therefore, if a retention capacity is required for the pond, the pond will require the installation of a clay liner, and/or a synthetic liner. However, if percolation of water into the underlying soil is allowed and maintaining a long-term pond level is not a concern, a liner will not be required.

The soils encountered in our borings should be readily excavated using conventional earthwork equipment. Additionally, depending on the invert elevation of the proposed detention basin, sand layers are expected to be free-flowing and will tend to readily cave and/or slough into excavations; therefore, over-excavation, benching and/or shoring should be expected in order to maintain the side slopes of the excavations.

Depending on seasonal conditions and the invert elevation of the proposed detention basin, localized and sporadic groundwater infiltration should be expected to be encountered in the detention basin excavation (Refer to Section 5.5 *"Groundwater Considerations"*). Furthermore, it should also be noted that there may be the potential for encountering heaving of sand layers near the groundwater elevations during construction.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

All areas that will support foundations, floors, pavements, or newly placed structural fill must be properly prepared. All loose surficial soil or "topsoil" and other unsuitable materials must be removed. Unsuitable materials include frozen soil, relatively soft material, relatively wet soils, deleterious material, or soils that exhibit a high organic content. *Additionally, all existing trees, under-brush and associated root-mass must also be completely removed within the proposed building and pavement areas prior to construction.*

Approximately eleven (11) to twelve (12) inches of loose surficial topsoil was encountered in the borings. The topsoil was measured at discrete locations as shown on the Boring Location Map (Figure No. 2) in Appendix "A". The topsoil thickness measured at the boring locations may or may not be representative of the overall average topsoil thickness at the site. Therefore, it is possible that the actual stripping depth could significantly vary from this data. The data presented should be viewed only as a guide to the minimum stripping depth that will be required to remove organic material at the surface. Additional field exploration by *Patriot* would be required to provide an accurate estimate of the stripping depth. This limited data indicates that a minimum stripping depth will be required to remove the organic material at the surface, followed by the potential for additional stripping and/or scarification and recompaction as may be required to achieve suitable subgrade support. *Additionally, if saturated conditions exist with the surface soils, light tracked equipment could be required to avoid pushing organics deeper into the suitable subgrade soils.* A *Patriot* representative should verify the stripping depth at the time grading operations occur.

Prior to construction of floor slabs, pavements or the placement of new structural fill, the exposed subgrade must be evaluated by a Patriot representative, which will include proofrolling of the subgrade. Proofrolling should consist of repeated passes of a loaded, pneumatic-tired vehicle such as a tandem-axle dump-truck or scraper. The proofrolling operations should be observed by a *Patriot* representative, and the proofrolling vehicle should be loaded as directed by *Patriot*. Any area found to rut, pump, or deflect excessively should be compacted in-place or, if necessary, undercut and replaced with structural fill, compacted as specified in Section 5.3 *"Structural Fill and Fill Placement Control"*.

Care must be exercised during grading and fill placement operations. *The combination of heavy construction equipment traffic and excess surface moisture can cause pumping and deterioration of the near surface soils. The severity of this potential problem depends to a great extent on the weather conditions prevailing during construction.* The contractor must exercise discretion when selecting equipment sizes and also make a concerted effort to control construction traffic and surface water while the subgrade soils are exposed. We recommend that heavy construction equipment (i.e. dump trucks, scrapers, etc.) be rerouted away from the building and pavement areas. If such problems do arise, the operations in the affected area should be halted and the *Patriot* representative contacted to evaluate the condition.

5.2 Foundation Excavations

Excavation will be performed on sandy soils that can be easily disturbed. If the subgrade soil is disturbed, it should be re-compacted or a crushed stone layer should be placed at the subgrade level.

Upon completion of the foundation excavations and prior to the placement of reinforcing steel, a *Patriot* representative should check the exposed subgrade to confirm that a bearing surface of adequate strength has been reached. Any localized soft soil zones encountered at the bearing elevations should be further excavated until adequate support soils are encountered. The cavity should be backfilled with structural fill as defined below, or the footing can be poured at the excavated depth. Structural fill used as backfill beneath footings should be limited to lean concrete, well-graded sand and gravel, or crushed stone placed and compacted in accordance with Section 5.3 *"Structural Fill and Fill Placement Control"*.

If it is necessary to support spread footings on structural fill, the fill pad must extend laterally a minimum distance beyond the edge of the footing. The minimum structural pad width would correspond with a point at which an imaginary line extending downward from the outside edge of the footing at a 1H:2V (horizontal: vertical) slope intersects the surface of the natural soils. For example, if the depth to the bottom of excavation is 4 feet below the

bottom of the foundation, the excavation would need to extend laterally beyond the edge of the footing at least 2 feet, as shown in Illustration "A" found at the conclusion of this report.

Excavation slopes should be maintained within all requirements set-forth by the Occupational Safety and Health Standards (OSHA), but specifically Section 1926 Subpart "P" – *"Excavations"*. We recommend that any surcharge fill or heavy equipment be kept at least 5 feet away from the edge of the excavation.

Construction traffic on the exposed surface of the bearing soil will potentially cause some disturbance of the subgrade and consequently loss of bearing capacity. However, the degree of disturbance can be minimized by proper protection of the exposed surface.

5.3 Structural Fill and Fill Placement Control

Structural fill, defined as any fill which will support structural loads, should be clean and free of organic material, debris, deleterious materials, and frozen soils. Samples of the proposed fill materials should be tested prior to initiating the earthwork and backfilling operations to determine the classification, the natural and optimum moisture contents and maximum dry density and overall suitability as a structural fill. *Structural fill should have a liquid limit less than 40 and a plasticity index less than 20.*

All structural fill beneath floor slabs, adjacent to foundations and over foundations, should be compacted to at least 95 percent (%) of its maximum Standard Proctor dry density (ASTM D-698). This minimum compaction requirement should be increased to 100 percent (%) of the maximum Standard Proctor dry density for fill supporting footings, provided these are designed as outlined Section 4.0 *"Design Recommendations"*.

Structural fill supporting, around and over utilities should be compacted to at least 95 percent (%) of its maximum Standard Proctor dry density (ASTM D-698) for utilities underlying structural areas (i.e. buildings, pavements, sidewalks, etc.). However, the minimum compaction requirement can be reduced for backfill around and over the utilities to 90 percent (%) of the maximum Standard Proctor dry density where utilities underlie greenbelt areas (i.e. grassy lawns, landscaping, etc.). It is recommended that a clean well-grade granular material be utilized as the bedding material, as well as the backfill material around and over the utility lines.

In cut areas, where pavement sections are planned, the upper 10 inches of subgrade should be scarified and compacted to a dry density of at least 100 percent (%) of the

Standard Proctor maximum dry density (ASTM D-698). Any grade-raise fill placed within 1 foot of the base of the pavement section should also be compacted to at least 100 percent (%) of the Standard Proctor maximum dry density. This can be reduced to 95 percent (%) for structural fill placed more than 1 foot below the base of the pavement section.

To achieve the recommended compaction of the structural fill, we suggest that the fill be placed and compacted in layers not exceeding 8 inches in loose thickness (the loose lift thickness should be reduced to 6 inches when utilizing small hand compactors) and within the range of 2 percentage (%) points below or above the optimum moisture content value. All fill placement should be monitored by a *Patriot* representative. *Each lift should be tested for proper compaction at a frequency of at least one (1) test every 2,500 square feet (ft²) per lift for the building areas, at least one (1) test every 10,000 square feet (ft²) per lift for the parking and roadway areas, and at a frequency of at least one (1) test for every 50 lineal feet of utility installation.*

5.4 Groundwater Considerations

Groundwater was observed during our field activities at depths between about 13.5 and 18.5 feet below the existing ground surface; which is expected to be below the anticipated foundation excavation depths, though the groundwater observations could potentially be within the anticipated storm-water management basin excavations and potentially within trench excavation depths for subsurface utilities. Therefore, groundwater infiltration should be expected into the storm-water management basins and subsurface utility excavations, and depending on seasonal conditions, localized and sporadic groundwater infiltration may occur into the building foundation excavations on this site.

Groundwater inflow into shallow excavations **above** the groundwater table is expected to be adequately controlled by conventional methods such as gravity drainage and/or pumping from sumps. More significant inflow can be expected in deeper excavations **below** the groundwater table requiring more aggressive dewatering techniques, such as well or wellpoint systems. For groundwater to have minimal effects on the construction, foundation excavations should be constructed and poured in the same day, if possible.

6.0 EXPLORATIONAL PROCEDURES

6.1 Field Work

A total of nine (9) soil borings were drilled, sampled, and tested at the project site between December 4 and 5, 2023, at the approximate locations shown on the Boring Location Map (Figure No. 2) in Appendix "A". The depths that the soil borings were advanced to are shown on the Boring Logs in Appendix "A". All depths are given as feet below the existing ground surface.

The borings were advanced using $3\frac{1}{4}$ inch inside diameter hollow-stem augers. Samples were recovered in the undisturbed material below the bottom of the augers using the standard drive sample technique in accordance with ASTM D 1586-74. A 2 inch outside diameter by $1^{3}/_{8}$ inch inside diameter split-spoon sampler was driven a total of 18 inches with the number of blows of a 140-pound hammer falling 30 inches recorded for each 6 inches of penetration. The sum of blows for the final 12 inches of penetration is the Standard Penetration Test result commonly referred to as the N-value (or blow-count). Split-spoon samples were recovered at 2.5 feet intervals, beginning at a depth of 1 foot below the existing surface grade, extending to a depth of 10 feet, and at 5 feet intervals thereafter to the termination of the boring.

Water levels were monitored at each borehole location during drilling and upon completion of the boring. The boreholes were backfilled with auger cuttings prior to demobilization for safety considerations.

Upon completion of the boring program, the samples retrieved during drilling were returned to *Patriot*'s soil testing laboratory where they were visually examined and classified. A laboratory-generated log of each boring was prepared based upon the driller's field log, laboratory test results, and our visual examination. Test boring logs and a description of the classification system are included in Appendix "A" in this report. Indicated on each log are the primary strata encountered, the depth of each stratum change, the depth of each sample, the Standard Penetration Test results, groundwater conditions, and selected laboratory test data. The laboratory logs were prepared for each boring giving the appropriate sample data and the textural description and classification.

6.2 Laboratory Testing

Representative samples recovered in the borings were selected for testing in the laboratory to evaluate their physical properties and engineering characteristics. Laboratory analysis included:

- Natural Moisture Content Analysis (ASTM D 2216)
- Particle Size Distribution Analysis (ASTM D 422)

Additionally, an estimate of the cohesive soil strength was determined utilizing a hand penetrometer (q_p). The results of laboratory tests are summarized in Section 3.2 *"General Subsurface Conditions"*, as well as in Appendix "C". Soil descriptions on the boring logs are in accordance with the Unified Soil Classification System (USCS).

7.0 ILLUSTRATIONS

See Illustrations "A" and "B" on the following pages. These illustrations are presented to further visually clarify several of the construction considerations presented in Section 5.2 *"Foundation Excavations"*.





APPENDIX A

SITE VICINITY MAP (FIGURE NO. 1)

BORING LOCATION MAP (FIGURE NO. 2)

BORING LOGS

BORING LOG KEY

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)







01-05-2024 C:\Users\igrafe\Patriot Engineering\GEO - Documents\Mtech\2023 Mtech\1673-04G\b1.bor



01-05-2024 C:\Users\igrafe\Patriot Engineering\GEO - Documents\Mtech\2023 Mtech\1673-04G\b2.bor



01-05-2024 C:\Users\igrafe\Patriot Engineering\GEO - Documents\Mtech\2023 Mtech\1673-04G\b3.bor





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BORING LOG KEY

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

NON-COHESIVE SOILS

(Silt, Sand, Gravel, and Combinations)

Density	Field Identification (SPT Blows/ft)	Grain Size Terminology									
Very Loose	0 - 4 5 - 10	Soil Fraction	Particle Size	US Standard Sieve Size							
Medium Dense	11 - 30	Boulders	> 12 inches	> 12 inches							
Dense	31 - 50	Cobbles	3 - 12 inches	3 - 12 inches							
Very Dense	> 51	Gravel: Coarse Small Sand: Coarse Medium Fine Silt Clay	³ ⁄ ₄ - 3 inches 4.76 mm - 3∕ ₄ inch 2.00 - 4.76 mm 0.42 - 2.00 mm 0.074 - 0.42 mm 0.005 - 0.074 mm < 0.005 mm	3 - 3 inches 3 - 3 inches No. 4 - 3 inches No. 10 - No. 4 No. 40 - No. 10 No. 200 – No. 40 < No. 200 < No. 200							
	Descrir	ntive Term	Percent								
			1 - 10								
	l it	tle	11 - 20								
	S	ome	21 - 35								
	And		36 - 50								
		COHESIVE S	OILS								

(Clay, Silt and Combinations)

Consistency	Unconfined Compressive Strength (tons/ft ²)	Field Identification (SPT Blows/ft)
Verv Soft	Less than 0.25	0 - 2
Soft	0.25 - < 0.5	3 - 4
Medium Stiff	0.5 - < 1.0	5 - 8
Stiff	1.0 - < 2.0	9 -15
Very Stiff	2.0 - < 4.0	16 - 30
Hard	Over 4.0	> 30

Classification: Provided on Boring Logs are made by visual inspection.

Standard Penetration Test: Driving a 2 inch outer-diameter (O.D.) by 1³/₈ inch inner-diameter (I.D.) split-spoon sampler a total of 18 inches into undisturbed soil with the number of blows of a 140 pound hammer free-falling a distance of 30 inches recorded for each 6 inches of penetration. The sum of blows for the final 12 inches of penetration is the Standard Penetration Test result commonly referred to as the "N"-value (or blow-count).

<u>Strata Changes</u>: In the column "Descriptions" on the Boring Logs the horizontal lines represent strata changes. A solid line (----) represents an observed change, a dashed line (----) represents an estimated change.

<u>Groundwater</u>: Observations were made at the times indicated on the Boring Logs. Fluctuations in the groundwater level should be expected over time due to variations in rainfall and other environmental or physical factors. *Groundwater symbols*: (∇)-observed groundwater level and/or elevation during drilling; (∇)-observed groundwater level and/or elevation upon completion of boring.

Unified Soil Classification System (USCS)

	Major Divisio	ns	Group	o Symbol	Typical Names	Classification Criteria for Coarse-Grained Soils				
	No. 4	gravels e or no nes)		GW	Well-graded gravels, gravel-sand mixtures, little or no fines	C _U ≥4 1 ≤ Cc≤3	$C_{U} = \frac{D}{D}$	D ₆₀	$C_{C} = \frac{D_{30}^2}{D_{10} D_{60}}$	
o. 200)	vels lalf of co jer than size)	Clean (little fir		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meetir G\	Not meeting all gradation requirements for GW ($C_U < 4$ or $1 > C_C > 3$)			
s r than No	Gra re than h on is larç sieve	s with es ciable nt of s:	GM	<u>d</u> u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits A line or P _I <	below < 4	Abo	ove A line with 4 < P _l < 7	
uined soils al is large	(mo fracti	Gravel fine (appre amou fine		GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits A line or P ₁ :	above > 7	are borderline cases requiring use of dual symbols		
oarse-gra	arse No. 4	sands or no es)		SW	Well-graded sands, gravelly sands, little or no fines	C _U ≥ 6 1 <u><</u> Cc ≤ 3	C _U = D	9 <u>60 -</u> 910	$C_{C} = \frac{(D_{30})^2}{D_{10} D_{60}}$	
C than half	nds nalf of coe aller than size)	Clean (little fine		SP	Poorly graded sands, gravelly sands, little or no fines	Not meetir S\	ng all grada N (C∪ < 6 o	ation requi or 1 > C _c >	rements for 3)	
(more	Sa ore than h on is sma sieve	s with es ciable int of ss)	SM	<u>d</u> u	Silty sands, sand-silt mixtures	Atterberg limits below A line or $P_1 < 4$ zone with $4 \le P_1 \le 2$				
	(mc fracti	Sands fine (appre amou fine		SC	Clayey sands, sand-clay mixtures	Atterberg limits above A line with P ₁ > 7 A line with P ₁ > 7				
200)	s ()		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	1. Determine p grain size cu 2. Depending c	Determine percentages of sand and g grain size curve. Depending on percentages of fines (frac:			
than No. 2		aud limit <		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	 Depending on percentages of mes (in than 200 sieve size), coarse-grain classified as follows: Less than 5% - GW, GP, SW, SP More than 12% - GM GC SM SC 			-grained soils are	
d soils s smaller	0	, Ë		OL	Organic silts and organic silty clays of low plasticity	5-12% - Bord	derline cas	es requirir	ng dual symbols	
Fine-grainec than half of material is Silts and clays		>50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts					
		d limit		СН	Inorganic clays or high plasticity, fat clays					
		(liqui		ОН	Organic clays of medium to high plasticity, organic silts					
(more	(more t Highly organic soils		PT		Peat and other highly organic soils					





ATC Hazards by Location

A This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

1 The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

ATC Hazards by Location

Search Information

Coordinates:	41.797861298454, -86.08805879021301
Elevation:	860 ft
Timestamp:	2023-12-19T15:52:38.494Z
Hazard Type:	Seismic
Reference Document	: IBC-2015
Risk Category:	III
Site Class:	D



MCER Horizontal Response Spectrum Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
SS	0.094	MCE _R ground motion (period=0.2s)
S ₁	0.055	MCE _R ground motion (period=1.0s)
S _{MS}	0.15	Site-modified spectral acceleration value
S _{M1}	0.132	Site-modified spectral acceleration value
S _{DS}	0.1	Numeric seismic design value at 0.2s SA
S _{D1}	0.088	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	В	Seismic design category
Fa	1.6	Site amplification factor at 0.2s
Fv	2.4	Site amplification factor at 1.0s
CR _S	0.916	Coefficient of risk (0.2s)
CR ₁	0.874	Coefficient of risk (1.0s)

12/19/23, 10:55	5 AM	ATC Hazards by Location
PGA	0.043	MCE _G peak ground acceleration
F _{PGA}	1.6	Site amplification factor at PGA
PGA _M	0.069	Site modified peak ground acceleration
ΤL	12	Long-period transition period (s)
SsRT	0.094	Probabilistic risk-targeted ground motion (0.2s)
SsUH	0.102	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.055	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.063	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)
PGAd	0.6	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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APPENDIX D

GENERAL QUALIFICATIONS

STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS

GENERAL QUALIFICATIONS

of Patriot Engineering's Geotechnical Engineering Investigation

This report has been prepared at the request of our client for his use on this project. Our professional services have been performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report or on the test borings logs regarding vegetation types, odors or staining of soils, or other unusual conditions observed are strictly for the information of our client and the owner.

This report may not contain sufficient information for purposes of other parties or other uses. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field and laboratory data presented in this report. Should there be any significant differences in structural arrangement, loading or location of the structure, our analysis should be reviewed.

The recommendations provided herein were developed from the information obtained in the test borings, which depict subsurface conditions only at specific locations. The analysis, conclusions, and recommendations contained in our report are based on site conditions as they existed at the time of our exploration. Subsurface conditions at other locations may differ from those occurring at the specific drill sites. The nature and extent of variations between borings may not become evident until the time of construction. If, after performing on-site observations during construction and noting the characteristics of any variation, substantially different subsurface conditions from those encountered during our explorations are observed or appear to be present beneath excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we urge that our report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

We urge that Patriot be retained to review those portions of the plans and specifications that pertain to earthwork and foundations to determine whether they are consistent with our recommendations. In addition, we are available to observe construction, particularly the compaction of structural backfill and preparation of the foundations, and such other field observations as may be necessary.

In order to fairly consider changed or unexpected conditions that might arise during construction, we recommend the following verbiage (Standard Clause for Unanticipated Subsurface Conditions) be included in the project contract.

STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS

"The owner has had a subsurface exploration performed by a soils consultant, the results of which are contained in the consultant's report. The consultant's report presents his conclusions on the subsurface conditions based on his interpretation of the data obtained in the exploration. The contractor acknowledges that he has reviewed the consultant's report and any addenda thereto, and that his bid for earthwork operations is based on the subsurface conditions as described in that report. It is recognized that a subsurface exploration may not disclose all conditions as they actually exist and further, conditions may change, particularly groundwater conditions, between the time of a subsurface exploration and the time of earthwork operations. In recognition of these facts, this clause is entered in the contract to provide a means of equitable additional compensation for the contractor if adverse unanticipated conditions are encountered and to provide a means of rebate to the owner if the conditions are more favorable than anticipated.

At any time during construction operations that the contractor encounters conditions that are different than those anticipated by the soils consultant's report, he shall immediately (within 24 hours) bring this fact to the owner's attention. If the owner's representative on the construction site observes subsurface conditions which are different than those anticipated by the consultant's report, he shall immediately (within 24 hours) bring this fact to the consultant's report, he shall immediately (within 24 hours) bring this fact to the consultant's report, he shall immediately (within 24 hours) bring this fact to the contractor's attention. Once a fact of unanticipated conditions has been brought to the attention of either the owner or the contractor, and the consultant has concurred, immediate negotiations will be undertaken between the owner and the contractor to arrive at a change in contract price for additional work or reduction in work because of the unanticipated conditions. The contract agrees that the following unit prices would apply for additional or reduced work under the contract. For changed conditions for which unit prices are not provided, the additional work shall be paid for on a time and materials basis."

Another example of a changed conditions clause can be found in paper No. 4035 by Robert F. Borg, published in <u>ASCE Construction Division Journal</u>, No. CO2, September 1964, page 37.

GENERAL NOTES

- A. ALL CONTRACTORS ARE RESPONSIBLE FOR PROVIDING COMPLETE INSTALLATION OF ALL COMPONENTS AND SHALL COORDINATE THEIR SCOPE OF WORK WITH ALL OTHER TRADES PRIOR TO SUBMITTING BIDS TO ENSURE THERE ARE NO MISSING OR DUPLICATE COMPONENTS WITH-IN THEIR SCOPE
- B. DO NOT SCALE DRAWINGS. USE INDICATED DIMENSIONS ONLY.
- C. SHOULD A CONTRACTOR FIND DISCREPANCIES OR AMBIGUITIES IN OR OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS, OR BE IN DOUBT ABOUT THEIR MEANING, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY.
- D. CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE JOB DURING CONSTRUCTION LAYOUT AND ADVISE THE ARCHITECT OF ANY DISCREPANCIES PRIOR TO PERFORMING ANY WORK.
- E. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS ON-SITE AND ADVISING ARCHITECT OF ANY DISCREPANCIES WITH DEMOLITION OR NEW WORK PLANS PRIOR TO PERFORMING ANY WORK.
- F. CONTRACTOR SHALL NOTIFY ARCHITECT IMMEDIATELY IF ANY UNFORESEEN STRUCTURAL OR UTILITY RELATED ISSUES ARISE DURING DEMOLITION OR EXCAVATION.
- G. ALL SPECIFIED ITEMS SHALL BE PROVIDED AND INSTALLED PER MANUFACTURERS WRITTEN REQUIREMENTS

BUILDING CODE INFORMATION

BUILDING CODE
ENERGY CODE
PLUMBING CODE
MECHANICAL CODE
ELECTRICAL CODE
ACCESSIBILITY

2015 MICHIGAN BUILDING CODE 2015 MICHIGAN ENERGY CODE (ASHRAE 90.1-2013) 2015 MICHIGAN PLUMBING CODE 2015 MICHIGAN MECHANICAL CODE 2017 NATIONAL ELECTRIC CODE (NEC) ICC A117.1-2009

DESIGN CRITERIA

SEE STRUCTURAL DRAWINGS FOR STRUCTURAL DESIGN CRITERIA

PROJECT INFORMATION

OCCUPANCY	В	(MBC 302)		
CONSTRUCTION TYPE	TYPE-VB	(MBC 602)		
BUILDING ELEMENT FIRE RESISTANCE PRIMARY STRUCTURAL FRAME BEARING WALLS EXTERIOR BEARING WALLS INTERIOR NON BEARING INTERIOR WALLS FLOOR CONSTRUCTION ROOF CONSTRUCTION	o Hr o Hr o Hr o Hr o Hr o Hr	(MBC TABLE 601)		
BUILDING EXTERIOR WALL RATING (DISTANCE BELOW FROM BUILDING TO PROPERTY LINE OR ADJACENT BUILDING) X < 5' 5 < x < 10' 10' < X < 30' X > 30'	1 HR 1 HR 0 HR 0 HR	(MBC TABLE 602)		
ALLOWABLE BUILDING HEIGHT	40'	(MBC 504.3)		
ACTUAL HEIGHT OF BUILDING	26'			
Allowable Building Area (Per Story)	9,500 SF	(MBC 506.2)		
Allowable area - Tabular	27,000 SF	(MBC 503)		
Building Area -frontage increase Building Area - total	15,750 SF 47,250 SF	(MBC 506.2) (5-1 EQ)		
ACTUAL AREA OF BUILDING	9,509 SF			
OCCUPANCY SEPARATIONS	N/A	(MBC TABLE508.4)		
INCIDENTAL USES (FURNACE ROOM)	N/A	(MBC TABLE 509)		
BUILDING SPRINKLERED	NO	(MBC 903)		
<u>OCCUPANT LOAD</u> A3 - LIBRARY A3 - READING A3 - UNCONCENTRATED B - BUSINESS <u>M - MECHANICAL</u> TOTAL	30.72 41.16 122.26 6.71 <u>1.64</u> 202.49	(MBC 1004.2)		
REQUIRED EXIT WIDTH AT STAIRS (OCC. LOAD x $0.3 = 0.00$ ") STAIR EGRESS	60.7"	(MBC 1005.3.1)		
REQUIRED EXIT WIDTH (OCC. LOAD x 0.2 = 0.00") EGRESS	40.4"	(MBC 1005.3.2)		
MAX OCCUPANT LOAD WITH (1) EXIT (49 MAX)	49	(MBC 1006.2.1)		
MIN. NUMBER OF EXITS REQUIRED	2	(MBC 1006.3.1)		
EXIT TRAVEL DISTANCE (NON-SPRINKLERED)	75′	(MBC 1006.2.1)		
ACCESSIBLE ENTRANCE	1	(MBC CH 11)		

THERMAL

ASHRAE 90.1-2013 TABLE 5.5-5 CLIMATE ZONE 5 FOR COMMERCIAL PROJECTS (DESCRIBE EACH SYSTEM) ROOF (INSULATION ABOVE DECK) REQUIRED R-30 EXTERIOR WALLS (STEEL FRAMED) R-13 + 4.2 REQUIRED FOUNDATION INSULATION (WALLS BELOW GRADE) REQUIRED R-7.5 OPAQUE DOORS U-FACTOR (SWINGING) 0.50 (MAX) U-FACTOR (NON-SWING) FENESTRATION (FIXED METAL FRAMING) **U-FACTOR** 0.42 (MAX) SHGC 0.40 (MAX)

PERSPECTIVE VIEW



LOCATION MAP



PROJECT TEAM

ABONMARCHE

ARCHITECTURAL / CIVIL / STRUCTURAL / INTERIOR DESIGN/ MECHANICAL / ELECTRICAL / PLUMBING ABONMARCHE CONSULTANTS, INC 315 W. Jefferson BLVD South Bend, IN 46601

NEW CONSTRUCTION FOR: CASS DISTRICT LIBRARY EDWARDSBURG, MI

PROJECT ADDRESS

26977 W. MAIN STREET, EDWARDSBURG, MI

SHEET INDEX **TITLE SHEETS** ARCHITECTURAL DRAWINGS TITLE SHEET A0.1 ARCHITECTURAL SITE PLAN T1.1 T1.2 REFERENCE SHEET A1.1 FIRST FLOOR PLAN T1.3 LIFE SAFETY PLAN A1.2 MEZZANINE FLOOR PLAN A2.1 FIRST FLOOR - REFLECTED CEILING PLAN SITE DRAWINGS A2.2 ROOF PLAN **ROOF DETAILS** A2.3 EXTERIOR ELEVATIONS A3.1 C1.0 SITE - EXISTING CONDITIONS & DEMOLITION PLAN A3.2 EXTERIOR ELEVATIONS C2.0 SITE DEVELOPMENT PLAN A4.1 BUILDING SECTIONS C2.1 SITE PLAN LAYOUT DETAILS A4.2 BUILDING SECTIONS C3.0 OVERALL GRADING PLAN A5.1 WALL SECTIONS C3.1 DETAILED GRADING PLAN A5.2 WALL SECTIONS C5.0 UTILITIES PLAN A5.3 WALL SECTIONS C6.0 LANDSCAPE PLAN A5.4 WALL SECTIONS C6.1 LANDSCAPE PLAN A6.0 ENLARGED FLOOR PLANS AND ELEVATIONS C7.0 CONSTRUCTION DETAILS A6.1 ENLARGED FLOOR PLANS AND ELEVATIONS C7.1 CONSTRUCTION DETAILS ENLARGED FLOOR PLANS AND ELEVATIONS A6.2 C8.0 SOIL EROSION AND SEDIMENTATION CONTROL PLAN ENLARGED FLOOR PLANS AND ELEVATIONS A6.3 C8.1 SOIL EROSION AND SEDIMENTATION CONTROL PLAN ENLARGED FLOOR PLANS AND ELEVATIONS A6.4 C8.2 SOIL EROSION AND SEDIMENTATION CONTROL PLAN A6.5 ENLARGED FLOOR PLANS AND ELEVATIONS SOIL EROSION AND SEDIMENTATION CONTROL PLAN C8.3 A6.6 ENLARGED STAIR PLAN AND ELEVATIONS STRUCTURAL DRAWINGS A7.1 PLAN DETAILS A7.2 ENLARGED PLANS & SECTIONS @ ROOF "D" A7.3 SECTION DETAILS STRUCTURAL SPECIFICATIONS SO.1 A7.4 DETAILS S1.0 FOUNDATION PLAN A7.5 SITE DETAILS PARTIAL FRAMING PLANS S1.1 A8.1 ROOM FINISH SCHEDULE AND LEGEND S1.2 ROOF FRAMING PLAN A8.2 DOOR SCHEDULES S2.1 FOUNDATION DETAILS A8.3 STOREFRONT ELEVATIONS S2.2 FOUNDATION DETAILS A8.4 STOREFRONT ELEVATIONS FOUNDATION DETAILS S2.3 A9.1 FURNITURE PLAN S3.1 STRUCTURAL DETAILS PLUMBING DRAWINGS S3.2 STRUCTURAL DETAILS S3.3 STRUCTURAL DETAILS S4.1 STEEL FRAME ELEVATIONS P3.0 UNDERGROUND PLUMBING PLAN S4.2 STEEL FRAME ELEVATIONS P3.1 FIRST FLOOR PLUMBING PLAN S5.1 TRUSS PROFILES Mezzanine plumbing plan P3.2 MECHANICAL DRAWINGS M0.1 MECHANICAL SCHEDULES M4.2 MEZZANINE HYDRONIC PIPING PLAN M5.1 FIRST FLOOR HVAC PLAN M5.2 MEZZANINE HVAC PLAN M6.0 MECHANICAL ROOF PLAN M8.0 MECHANICAL DETAILS ELECTRICAL DRAWINGS EO.1 ELECTRICAL COVER E2.1 FIRST FLOOR LIGHTING PLAN Mezzanine lighting plan E2.2 E3.1 FIRST FLOOR POWER & SYSTEMS PLAN E3.2 MEZZANINE POWER & SYSTEMS PLAN E8.0 PANEL SCHEDULES, ONELINE DIAGRAMS, & DETAILS EC1.0 ELECTRICAL SITE PLAN

ALTERNATES

NOTE: THIS S	SUMMARY PRO	OVIDED FO	R REFER	REN	NCE	ONL	.Y. 1	REFE	ER TC) TH	IE S.	PEC	CIFIC	ATK	'ON.	'S FC	OR (201	MPLE	TE AL	TERN4	A <i>TE IN</i>	NFORM#	1 <i>110</i> 1	V.		HEET T
<u>ALT #1</u> -	BASE BID: ALTERNATE:	provide Delete pe	'ROVIDE 100% PERFORMANCE AND PAYMENT BOND. DELETE PERFORMANCE AND PAYMENT BOND. MO																								
<u>ALT #2a</u> - <u>ALT #2b</u> -	BASE BID: ALTERNATE: BASE BID: ALTERNATE:	Provide J Delete Lin Provide Delete Lin	ROVIDE ADA ACCESSIBLE, CRUSHED LIMESTONE PATHS THROUGH WOODS AS SHOWN IN CONST. DWGS. ELETE LIMESTONE PATHS AND ALL RELATED ITEMS FROM BASE BID. ROVIDE LIGHT FIXTURES ALONG LIMESTONE PATH - REFER TO ELECT. DWGS. PM PELETE LIGHT FIXTURES ALONG LIMESTONE PATH.										DESI PM I														
<u>ALT #3a</u> -	BASE BID: ALTERNATE:	PROVIDE / IN LIEU OF STOOPS S	ada aco • Patios Hall Be	CCES OS ON E 5F	essie Dn N Ft X	BLE PA Iorth 5ft a	Patic H Sii At D	DS C IDE (DOO	ON NO OF BL DRS 1	iort UILD 13-E	TH S DING B A	side 9, pi Nd	OF ROV 113	BUII /IDE }-C,	ILDII E C(, AN	NG ONC ID 1	AS : CRE OFT	SHC TE S x 1	DWN STOC	IN CO PS PE AT DC	onst. Er det Dor 1	DWC AIL 4 03-A	€S. ON SH - FIELD	eet s Veri!	2.1. FY.		QA/
<u>ALT #3b</u> -	BASE BID: ALTERNATE:	Provide Delete Lik	Light fix Ght fixti	-IXTU (TURE	URES RES A	s at f Alon	Pati Ng L	ios - Lime	- REF Eston	FER 1 NE P	to Pati	ELEC H.	CT. I	DWO	GS.												
<u>ALT #4</u> -	BASE BID: ALTERNATE:	Provide / Delete pe	ADA ACO RGOLA	CCE: A AN	essie ND A	ble pi All ri	PERG	JOL/ NTED	a as Item	SHC 1S.	SW	ΝO	N C	CON	NST.	DW	/GS.	. RI	EFER	to s	HEET A	47.5.					
<u>ALT #5</u> -	BASE BID: ALTERNATE:	PROVIDE IN LIEU OF	Parking ⁼ Base Bi	ig a: Bid,	as si), rei	HOWI DUCE	/N C E PA	on c Arkii	CONS ING A	strl As si	JCT HO	TON WN	I DR. ON	'AWI I RE'	'ING VISE	S. I D C	ref Civil	er _ Di	to c Rawi	ivil e Ngs.	RAWI	NGS	and sp	ECS.			
<u>ALT #6</u> -	BASE BID: ALTERNATE:	PROVIDE IN LIEN OI	PROVIDE MTL DECK & 6" POLY ISO INSULATION AT ROOF "A" & ROOF "C" WITH T1-11ARCHITECTURAL WOOD CLG. IN LIEN OF BASE BID, PROVIDE 8" SIPS WITH ARCHITECTURAL EXPOSED INTERIOR WOOD FINISH.																								
<u>ALT #7</u> -	BASE BID: ALTERNATE:	PROVIDE PROVIDE MATCH SF	PROVIDE FENCE AT NORTH PROPERTY LINE AS SPECIFIED AS SHOWN ON THE DRAWINGS. PROVIDE ADDITIONAL FENCE ALONG EAST PROPERTY LINE AS SHOWN ON CIVIL DRAWINGS. FENCE SHALL																								
<u>ALT #8</u> -	BASE BID: ALTERNATE:	ONE-YEAF	R CONST R CONTR	STRA IRAC		OR'S ' DR'S W	WA Nar	NRRA ZRAN	ANTY NTY						\checkmark	<u> </u>	7										DAT
<u>ALT #9</u> -V	BASE BID: ALTERNATE:	PROVIDE	CPT -3 F	FOR FOR	R MI	ulti-p Jlti-pi	PUP	OSÉ POSE	ED RC		Л FI M F		∼ H FL H FL	00		\$					\frown		\frown				
<u>ALT #10</u> -	 #10- BASE BID: PROVIDE THE FOLLOWING: A. NATIVE WILDFLOWER SEED MIX AREAS AS SHOWN ON THE DRAWINGS. B. SOD MOW STRIPS IN SHEET FLOW AREAS OFF THE PARKING ASPHALT AND WALKS. C. 6" COBBLESTONE AND GEOTEXTILE FABRIC LOCATED AT OUTLET PIPES. CONTRACTOR SHALL REFER TO STONE APRON LENGTHS AND WIDTHS D. SOIL EROSION AND SEDIMENTATION CONTROL PLANS (SHEETS C8.0-C8.3) ALTERNATE: PROVIDE THE FOLLOWING: A. PROVIDE ALL LANSCAPING ITEMS AS SHOWN ON THE DRAWINGS. INCLUDING BUT NOT LIMITED TO: I. ITEMS ABOVE ALL TREES, EVERGREEN TREES, FLOWERING TREES, SHRUBS, ORNAMENTAL GRASSES, AND PERENNIALS. STEEL EDGING, SHREDDED HARDWOOD BARK MULCH, BOULDERS, AND 4-6" GLACIAL COBBLE STONE AND GEOTEXTILE FABRIC. 																										
	\smile												\sim								-						SHEE
λ			2	A	ADD	DEND	NUN	1 #2	2														MHK	01	/19/2	024	
<u>/</u> 2			1	A	ADD	DEND	NUN	1 #1																01	/12/20	024	4

REVISION DESCRIPTION

BY DATE

NO.

AARCHE	Fort Wayne Goshen Benton Harbor Hobart Manistee Lafayette South Haven Valparaiso	Engineering, Architecture, Land Surveying
	315 W JEFFERSON BLVD South Bend, IN 46601 T 574.232.8700 F 574.251 .4440 abonmarche.com	COPYRIGHT 2020 - ABONMARCHE CONSULTANTS, INC.
PROJECT: NEW CONSTRUCTION FOR:	CASS DISTRICT LIBRARY EDWARDSBURG BRANCH 26977 W. MAIN STREET,	EDWARDSBURG, MI
	TITLE SHEET	
HILL HILL MODELED DESIGNED PM REVIEW QA/QC RE DATE: SEAL:	BY: MHK, JCA, A BY: /: ARD, M VIEW: N 12/20/2	ND ARD IDN 023
SIGNATURI DATE: HARD COF 24" x 30 SCALE(S GRAPHIC BE ACCUR SCALE: UNLESS ACI JOB # 222	E: PY IS INTENDED TO S'' WHEN PLOTTED ON INDICATED AN QUALITY MAY N ATE FOR ANY OT SIZES NOTED OTHERWIS 2-1836	D BE D OT HER SE
T	1.1	



EXISTING FEATURES LEGEND

\bigtriangleup T	Telephone Pedestal	Ø	Fire Hydrant
⊖ SMH	Sanitary Sewer Manhole	— w —	Water Main
⊖ ЕМН	Electric Manhole	>>	Sanitary Sewer
	Power Pole	>	Storm Culvert
Ø TLP	Traffic Strain Pole	G	Gas Main
Ø PP/D	Power Pole w/Drop	—— FOC ——	Fiber Optic Marker
Ø PP/L	Power Pole w/Light	—— OH ——	Overhead Electric
\rightarrow	Guy Anchor	X	Fence
STR.	Large Diameter Tree	~~~~~	Tree Line
N. S. S.	5	FIP	Found Iron Pipe
		FIR	Found Iron Rod

GENERAL NOTES

- 1. CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING THE BID.
- 2. Contractor shall request existing utility location prior to commencing construction.
- 3. Contractor shall notify the jurisdictional municipality Engineering Department prior to commencing construction in the R/W.
- 4. Contractor is responsible for contacting & coordinating with Others as needed to complete the Work and is responsible for including any associated costs of the Work in the Bid.
- 6. Contractor shall remove topsoil and stockpile the material onsite at a location approved by the Owner.
- 7. Contractor shall identify any underground utilities, structures, buried debris, etc. not visible from topographic survey. Contact Engineer for determination of removal.
- 8. Removed items shall be disposed off-site in accordance with all applicable local, state and federal codes.

DEMOLITION NOTES

- 1. Remove large diameter trees as noted. Protect and save remaining large diameter trees as specified on the Soil Erosion Control and Sedimentation Control Plan, C8.0.
- 2. Clear all underbrush, small trees and large diameter trees slated for removal within construction limits.
- 3. See Sheet C5.0 for on-site water service and sewer service alignments. Confirm final alignments with Engineer prior to clearing.
- 4. Clear area for proposed limestone path. See Sheet C2.1 for path alignment.
- 5. Contractor shall remove understory growth (less than 18" in diameter) within the construction limits and that is impacted by construction.
- 6. Contractor shall clear 20' beyond all proposed elements. All dead fall shall be cleared.

\ <i>E</i>	R			M	A	G
	Sa	nle	1"	=	10	າ'

	Scale. 1 - 100			
				s
2	ADDENDUM 2 - ADJUST EXIST. SURFACE COORDINATES	NI	01/19/2024	Ì
1	ADDENDUM 1	NI	01/10/2024]
NO.	REVISION DESCRIPTION	BY	DATE]
				-

GENERAL NOTES

- 1. Existing Land Use: Vacant Proposed Land Use: Library
- 2. Building setbacks are in accordance with the requirements of the Service Commercial District zoning ordinance.
- 3. The site will be serviced by municipal sewer and water.
- 4. Drainage will be collected on—site and managed by the Owner.
- 5. Parking areas will be paved and privately owned.
- 6. The site shall conform to area, height and development regulations of the Commercial zoning district unless proper variances are granted.

TABULATED SITE DATA

AREA (SFT)	COVERAGE
9,495	4.2%
47,625	21.2%
167,145	<u>74.6%</u>
224,265	100.0%
	<u>AREA (SFT)</u> 9,495 47,625 <u>167,145</u> 224,265

PARKING SPACE SUMMARY 62 Spaces Provided Including 4 ADA Accessible Spaces

EXISTING FEATURES LEGEND

riangle T	Telephone Pedestal	Ø	Fire Hydrant
⊖ SMH	Sanitary Sewer Manhole	— w —	Water Main
⊖ emh	Electric Manhole	>>	Sanitary Sewer
✓ PP	Power Pole	>	Storm Culvert
Ø TLP	Traffic Strain Pole	—— G ——	Gas Main
Ø PP/D	Power Pole w/Drop	— FOC —	Fiber Optic Marker
Ø PP/L	Power Pole w/Light	—— ОН ——	Overhead Electric
\rightarrow	Guy Anchor	X	Fence
No.	Large Diameter Tree To Remain	~~~~~	Tree Line

PROPOSED FEATURES LEGEND

To Remain

	Full Depth HMA Pavement:	R1—1	"STOP" Sign & Post
	3—1/2" HMA Base 6" Compacted 21AA Aggregate Base on Compacted Subarade	R7-8	"RESERVED PARKING" (ADA Accessible) Sign & Post
	8" Concrete Rad	R7-8P	"VAN ACCESSIBLE" Sign
	X" 5" Concrete Sidewalk;	R-63	"ONE WAY DO NOT ENTER" Sign & Post
	5 wide, U.N.U.	۲	Drainage Structure
G	4"—6" Glacial Cobble Stone over Non—Woven Geotextile;	D	Pipe End Section
	6" Cobble @ Pipe End Sections In Accordance w/"Stone Apron &	CO o	Clean—Out
	Pipe End Section Detail," Sheet C8.1	â₩₩	Pavement Marking Message
(13)	Standard Concrete Curb	AMPI	"ONLY"
(14)	Curb Integral w/Sidewalk	S	Pavement Marking Graphic: Turn Arrow
(15)	Concrete Combined Curb & Gutter	9.	Pavement Marking Graphic:
	Landscape Area	G.	ADA Accessibility Symbol
P	Stop Bar Pavement Marking, 24" Solid Line, White		
R	Curb Ramp		
(\overline{I})	Taper Curb From Full Ht. To 0' in 2'	PAR	KING SPACE NOTES
\bigotimes	Terminate Curb/Curb & Gutter	1. All p noted	arking spaces 9'–0" wide unless d otherwise.
·····	Tree Line	2. All p	avement markings to be 4" solid
80	Boulder Group, See Landscape Plan	paint	innes, color as notea:
_	Concrete Parking Bumper (@ ADA Space);	Bli	ue: ADA Accessible Spaces & Aisles

Contractor to Submit Shop Drawings for Engineer Review & Approval

SITE PLAN CONSTRUCTION NOTES

- 1. Contractor shall request existing utility location from Indiana 811 prior to commencing construction.
- 2. Damage to public and private property shall be repaired to equal or better condition at no additional cost to the Owner.
- 3. No streets shall be closed or restricted without prior approval from the local municipality.
- 4. Contractor shall protect the work and the safety of the public and shall provide, erect and maintain barricades, signals, signs and other traffic control devices in accordance with the Indiana Manual on Uniform Traffic Control Devices.
- 5. Contractor shall follow the latest Michigan Department of Transportation Standard Specifications" for pavement materials and installation procedures.
- 6. Contractor shall construct sidewalks, ramps, parking spaces and ADA accessible areas in accordance with the current ADA standards.
- 7. Traffic sign designations shall comply with the U.S. Dept. of Transportation Federal Highway Administration "Manual on Uniform Traffic Control Devices" (MUTCD).
- 8. Curb radii noted are dimensioned along the face of curb.
- 9. Contractor shall bring Drawing discrepancies and conflicts to the attention of the Engineer as soon as they are noticed, for clarifications and revisions as necessary.
- 10. Contractor shall prepare Record Drawings with field locations and elevations upon completion of the work for submittal to the Engineer.
- 11. Owner to provide bicycle rack.
- 12. Site contractor shall coordinate light pole locations as shown on Site Electrical plan, Sheet EC.1.
- 13. Tree removal for BID ALTERNATE 2A shall be included in BID ALTERNATE 2A and not in the BASE BID.

Ň	Renton Harbor Manistee South Haven Engineering, Architecture, Land Surveying	
	TETERSON BLVD 315 W JEFFERSON BLVD South Bend, IN 46601 574.232.8700 F 574.251.4440 donmarche.com copyright 2020 - ABONMARCHE CONSULTANTS, INC.	
	PROJECT: NEW CONSTRUCTION FOR: CASS DISTRICT LIBRARY EDWARDSBURG BRANCH 26977 W. MAIN STREET EDWARDSBURG, MI	
25	SITE DEVELOPMENT PLAN	
	MODELED BY: MODELED BY: JWL/NI DESIGNED BY: JWL/NI PM REVIEW: SDR QA/QC REVIEW: JWL DATE: 12/20/2023 SEAL: NO. 39676 NO. 39	
2024 2024 2024	C2.0	

2	ADDENDUM 2	NI	01/19/2024
1	ADDENDUM 1	NI	01/10/2024
NO.	REVISION DESCRIPTION	BY	DATE

EXISTING FEATURES LEGEND

\bigtriangleup T	Telephone Pedestal	Q	Fire Hydrant
⊖ SMH	Sanitary Sewer Manhole	— w —	Water Main
О ЕМН	Electric Manhole	>>	Sanitary Sewer
𝒫 PP	Power Pole	>	Storm Culvert
Ø TLP	Traffic Strain Pole	G	Gas Main
Ø PP/D	Power Pole w/Drop	—— FOC ——	Fiber Optic Marker
Ø PP/L	Power Pole w/Light	OH	Overhead Electric
\rightarrow	Guy Anchor	— X —	Fence
STE	- Large Diameter Tree	~~~~~	Tree Line
M. S. K.	To Remain		Contour

PROPOSED FEATURES LEGEND

	Full Depth HMA Pavement
$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 &$	Concrete Pavement
	Glacial Cobble Stone
	Contour
~~~~~	Tree Line
Ó	Drainage Structure
CO •	Clean—Out
>	Storm Sewer
80	Boulder Group, See Landscape Pla

# **DRAINAGE & GRADING CONSTRUCTION NOTES**

- 1. Contractor shall remove topsoil and stockpile the material onsite at a location approved by the Owner.
- 2. All fill material shall be placed and compacted in accordance with the geotechnical report.
- 3. Prior to commencing paving operations, Contractor shall proof roll exposed subgrade with a geotechnical engineer or qualified representative to witness the work. Excavate unsuitable soil and backfill and compact with suitable material capable of supporting the anticipated loads.
- 4. Place site grading backfill in maximum six inch lifts and compact to 100% Standard Proctor to the top of subgrade.
- 5. Paving Contractor is responsible for adjusting all castings located in the pavement to finished grade.
- 6. No construction traffic permitted at bottom of basins.
- 7. Remove silt from bottom of any storm water management basin prior to Owner's acceptance of the Work.
- 8. The proposed contours and spot elevations on these plans show grading intent only. Contractor is responsible for confirming that the provided grading plan maintains positive drainage to prevent ponded water or encroachment onto adjacent properties; and shall contact the Engineer if additional grades are needed, if the design does not provide positive drainage, or if any discrepancies/conflicts are found.
- 9. Contractor shall prepare site in accordance with the geotechnical report. Conflicts between these specifications and the geotechnical report shall be brought to the the attention of the Engineer.

# **GENERAL NOTES**

- 1. See Sheet C3.1 for the Detailed Grading Plan.
- 2. See Sheet C3.1 for Post Construction Maintenance Procedures.

![](_page_123_Picture_20.jpeg)

NO.

![](_page_124_Figure_0.jpeg)

![](_page_125_Figure_0.jpeg)

# EXISTING FEATURES LEGEND

ΔT	Telephone Pedestal	Ø	Fire Hydrant
⊖ SMH	Sanitary Sewer Manhole	— w —	Water Main
⊖ ЕМН	Electric Manhole	>>>	Sanitary Sewer
𝒫 PP	Power Pole	>	Storm Culvert
Ø TLP	Traffic Strain Pole	—— G ——	Gas Main
Ø PP/D	Power Pole w/Drop	—— FOC ——	Fiber Optic Marker
Ø PP/L	Power Pole w/Light	—— ОН ——	Overhead Electric
$\rightarrow$	Guy Anchor	X	Fence
3 Kill	Large Diameter Tree		Tree Line
" BACK	To Remain		Contour

# **PROPOSED FEATURES LEGEND**

	Full Depth HMA Pavement
	Concrete Pavement
	Glacial Cobble Stone
891	Contour
	Tree Line
Ó	Drainage Structure
CO •	Clean—Out
<b>D</b>	Downspout Connection
80	Boulder Group, See Landscape Plan

# STORM SEWER NOTES

- 1. <u>CASTINGS</u> a. Flat Inlet Casting: Neenah R—2502 b. Beehive Casting: Neenah R-2561-A c. Solid Casting: Neenah R-1642
- 2. Storm sewer open grate castings shall be stamped with a fish image and the message: "DUMP NO WASTE - DRAINS TO WATERWAYS"
- 3. Neenah castings specified. Approved equal to specified Neenah Foundry Co. castings may be acceptable if approved by Owner. Contractor to submit casting cut sheets to Owner for review.
- . <u>STORM SEWER PIPE</u> a. ADS Double Wall HPDE or Approved Equal; b. SDR 35 PVC

# **UTILITIES CONSTRUCTION NOTES**

- Contractor is responsible for having existing underground utilities located and field confirming locations and depths prior to commencing construction.
- 2. Contractor shall coordinate utility service locations and depths in the R/Wwith utility companies prior to installation.
- 3. Contractor shall verify utility service locations and depths at the building with the Architect prior to installation.
- 4. Contractor shall coordinate with utility companies as necessary if service interruption is required.
- 5. Materials, construction and testing shall be in accordance with the current construction standards of the local jurisdiction.
- 6. Contractor shall verify the water table depth and include dewatering costs in the Bid. The water table shall be lowered to at least 12 inches below the lowest pipe invert prior to pipe installation.
- 7. Maintain minimum 10 feet clear of horizontal separation between sewer and water pipes. Maintain minimum 18 inches clear of vertical separation at sewer and water pipe crossings. If clearances cannot be met, sewer shall be water grade pipe in accordance with AWWA standards. At crossings, water grade sewer pipe shall extend a minimum of 10 feet past each side of the crossing, and one full length of water pipe shall be centered at the crossing.
- 8. Maintain minimum 5 feet of cover at water mains & services.
- 9. Unsuitable material that may affect the structural integrity of the pipe shall be replaced or treated to support the anticipated loads.
- 10. Sewer Contractor is responsible shall install castings to within 0.1 feet of finished grade.
- 11. Storm and sanitary sewer castings shall be imprinted with the notices as specified on the construction details.
- 12. Sewer Contractor is responsible shall install castings to within 0.1 feet of finished grade.
- 13. Roof downspouts shall connect to the storm sewer. It is the Contractor's responsibility to review the Arch. plans and confirm downspout locations.
- 14. Utilities other than sewer and water shall be installed underground and placed in PVC conduit where located under pavement sidewalk and curb.
- 15. The main lawn sprinkler service line shall branch off the domestic water service line inside the building and shall have a separate service.
- 16. Remove sediment buildup from storm structures prior to Owner's acceptance of the Work.
- 17. Contractor shall coordinate with municipality for water connection.

18. Contractor shall be responsible for obtaining well head protection permit. 10. Contractor shall be responsible for relocating/elevating low hanging overhead utilities to allow site access; minimum 20' clearance required.

![](_page_125_Figure_30.jpeg)

NO.

ADDENDUM 1 REVISION DESCRIPTION

BY DATE

![](_page_126_Figure_0.jpeg)

![](_page_126_Picture_1.jpeg)

# LANDSCAPE NOTES

- 1. Locate all utilities prior to beginning work. Utilities shown were located by field survey, but they may not indicate all underground improvements.
- 2. Examine existing conditions and verify conditions are acceptable for required work. Notify Engineer of any discrepancies with information shown on plans prior to beginning work.
- Protect all existing paving, structures, utilities, and plant material indicated to remain. Contractor responsible for any damage to existing features at no expense to the owner.
- 4. Contractor responsible for removal of any existing grass, weeds, or scrub growth within limits of plant bed edge or within 5' diameter circle around base of each tree.
- 5. Plants and other materials are quantified and summarized for the convenience of the owner and jurisdictional agencies only. Confirm and install sufficient quantities to complete the work as drawn on the plans. No additional payments will be made for materials required to complete the work as drawn. Contractor responsible for verifying all quantities.
- 6. All proposed plant substitutions must be approved by the Engineer.
- 7. All plant material shall be warranted for one (1) year from the date of final acceptance.
- 8. Plants shall confirm to the minimum measurements listed on the plant list.
- 9. All plant material shall comply with all recommendations and requirements of ANSI Z60.1—2004 "American Standard for Nursery Stock." Plant material shall be healthy, vigorous stock grown with good horticultural practice under climactic conditions similar to those of the project site, and installed in accordance with methods established by the American Association of Nurservmen.
- 10. All plant material must be tagged by the nursery of origin for proper identification in the field.
- 11. All trees and shrubs to be be mulched with 3" depth shredded hardwood bark mulch (no dye) free of foreign matter, unless noted otherwise on plan. Perennial beds to receive 2" depth shredded hardwood bark mulch (no dye). Trees outside of bed lines to be mulched with a 5' diameter mulch ring. Mulch shall not be placed within 3" of trunks.
- 12. Rake topsoil to eliminate uneven areas and remove debris, roots, branches, and stones in excess of 1 inch size, and ensure positive drainage is retained away from buildings during landscape construction activities.
- 13. All areas disturbed by construction shall be seeded unless noted otherwise.
- 14. Contractor responsible for erosion control in all seeded areas.
- 15. All planting bed edges not adjacent to paving or curb shall receive a 1/8" x 4" black steel edging, natural mill finish.
- 16. Clean all surfaces of soil, mulch, and landscape debris after work is complete.
- 17. Landscape boulders shall be 3'-5' in diameter unless noted otherwise.
- _____ 18. Contractor shall clear 20' beyond all proposed elements. All dead fall shall be cleared.  $\langle \Delta \Delta \rangle$
- ····· 19. Contractor shall place 1" of mulch over swale seed mix.
- 20. Contractor shall deadfall limbs in woods to 12' and clear all debris.

![](_page_126_Picture_23.jpeg)

G 4"-6" Glacial Cobble Stone over Non-Woven Geotextile; 6" Cobble @ Pipe End Sections In Accordance w/"Stone Apron & Pipe End Section Detail", Sheet C9.1

For Boulder/Stone Placement At Basins, See Detail, Sheet C6.1

![](_page_126_Figure_26.jpeg)

NO.

![](_page_126_Figure_27.jpeg)

ADDENDUM 1

**REVISION DESCRIPTION** 

by date

![](_page_126_Figure_28.jpeg)

![](_page_127_Picture_0.jpeg)

This seed mix includes quick-blooming native wildflowers to provide initial color during native prairie establishment, especially on restoration sites. This mix contains many species beneficial to native bees and pollinators and can be used to supplement other seed mixes or existing natural areas. This seed mix includes at least 10 of 12 native forb species. Apply at 4.63 PLS pounds per acre.

	ooninion Name	I LO OL/ ACIC
Permanent Native Species:		
Asclepias syriaca	Common Milkweed	4.00
Chamaecrista fasciculata	Partridge Pea	16.00
Coreopsis lanceolata	Sand Coreopsis	8.00
Desmanthus illinoensis	Illinois Sensitive Plant	12.00
Echinacea purpurea	Broad-Leaved Purple Coneflower	12.00
Lupinus perennis v. occidentalis	Wild Lupine	4.00
Monarda fistulosa	Wild Bergamot	1.50
Penstemon digitalis	Foxglove Beard Tongue	1.00
Ratibida pinnata	Yellow Coneflower	4.00
Rudbeckia hirta	Black-Eyed Susan	10.00
Solidago speciosa	Showy Goldenrod	0.50
Symphyotrichum laeve	Smooth Blue Aster	1.00
	Total	74.00

![](_page_127_Picture_3.jpeg)

ROCK AREAS AT BASINS Contractor shall use 4-6" cobblestone in rock areas. Boulders shall be 4-6".

5			
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~	NW	<b>U</b>	

Best suited for drainage swales or depressions, the native plants used in this mix help filter pollutants from lawns and pavement runoff. This seed mix can also be applied to areas that temporarily retain water after a rain event or dry-bottomed detention basins. The swale seed mix includes at least 10 of 12 native permanent grass and sedge species and 12 of 17 native forb species to provide diversity for establishment. Apply at 37.00 PLS pounds per acre.

Botanical Name	nical Name Common Name	
Permanent Grasses/Sedges		
Andropogon gerardii	Big Bluestem	4.00
Carex cristatella	Crested Oval Sedge	0.50
Carex lurida	Bottlebrush Sedge	3.00
Carex spp.	Prairie Sedge Species	8.00
Carex vulpinoidea	Brown Fax Sedge	3.00
Elymus canadensis	Canada Wild Rye	16.00
Elymus virginicus	Virginia Wild Rye	16.00
Juncus canadensis	Canadian Rush	1.00
Panicum wirgatum	Switch Grass	3.00
Scirpus atrovirens	Dark Green Rush	2.00
Scirpus cyperinus	Wool Grass	0.50
Spartina pectinata	Prairie Cord Grass	3.00
	Total	60.00
Temporary Cover		
Avena sativa	Common Oat	512.00
	Total	512.00
Forbs		
Alisma subcordatum	Common Water Plantain	1.00
Asclepias incarnata	Swamp Milloweed	2.00
Coreopsis tripteris	Tall Coreopsis	1.00
Euthamia graminifolia	Common Grass-Leaved Goldenrod	0.50
Eutrochium maculatum	Spotted Joe-Pye Weed	1.00
Iris virginica v. shrevel	Blue Flag	4.00
Liatris spicata	Marsh Blazing Star	1.00
Lycopus americanus	Common Water Horehound	0.50
Mimulus ringens	Monkey Flower	0.50
Penthorum sedoides	Ditch Stonecrop	1.00
Pycnanthemum virginianum	Common Mountain Mint	0.50
Rudbeckia triloba	Brown-Eyed Susan	1.00
Sanna hebecarpa	Wild Senna	1.00
Silphium terebinthinaceum	Prairie Dock	1.00
Symphyotrichum novee-angliae	New England Aster	0.50
Verbena hastata	Blue Vervain	1.50
Zizia awea	Golden Alexanders	2.00
	Total	20.00

	SCH	EDUI E				
		BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING
<u>TREES</u>						
AB3	1	Acer buergerianum	Trident Maple	2.5" Cal		
AG	1	Acer griseum	Paperbark Maple	2.5" Cal	B&B	
BN	1	Betula nigra	River Birch Multi–Trunk	8'—10' HT	B&B	40' O.C.
LSR	2	Liquidambar styraciflua 'Rotundiloba'	Round—Lobed Sweet Gum	2.5" Cal	B&B	40' O.C.
EVERG	REEN	TREES				
AB2	1	Abies balsamea	Balsam Fir	10'-12' HT		
AC	3	Abies concolor	White Fir	10'-12' HT		
CN	2	Callitropsis nootkatensis 'Pendula'	Weeping Nootka False Cypress	6'-8' HT		
TA	10	Thuia occidentalis 'Art Boe'	North Pole® Arborvitae	6'-8' HT		
TC	3	Tsuga canadensis	Eastern Hemlock	6'-8' HT		
		TREES				
<u>7 LOWE</u> 464	1	Amelanchier x grandiflera 'Autumn Prilliance'	Autumn Brilliance Serviceberry	8'_10' UT	R&R	15' 00
CC	, 3	Cercis canadensis	Eastern Redbud	2" Cal	B&B B&B	25' 0.C.
		Single Stem				
CF	2	Cornus florida 'Cherokee Chief'	Cherokee Chief Dogwood	2" Cal	B&B	As Shown
СК	5	Cornus kousa 'Milky Way'	Milky Way Kousa Dogwood	8'—10' HT	B&B	Multi-Trun
MR	4	Malus x 'JFS-KW5'	Royal Raindrops® Crabapple	2.5" Cal	B&B	
SHRUE	S					
BGV	16	Buxus x 'Green Velvet'	Green Velvet Boxwood	24" Ht	Cont.	4' O.C.
DK	15	Diervilla x 'Kodiak Oranae'	Kodiak® Orange Diervilla	15" Ht.	Cont.	4' O.C.
FN	13	Forsythia x 'New Hampshire Gold'	New Hampshire Gold Forsythia	1 Gal		4' 0 C
HS	1.5	Hamamelis vernalis	Ozark Witchhazel	2A" Ht		1 0.0.
HN	12	Hydranaea macrophylla 'Nikko Rive'	Nikko Blue Hydranaea	24 IN 24" Ht		
ΗΩ	5	Hydranged macrophyna Nikko blac	Catchy Cal® Oakleaf Hydranaea	27 IN 24" LH	Cont	
	17	nyunungeu querchonu Drennini Dhadadan daan wilkami Classin zi	Many Floming Phododondron	∠# ⊓L 10"/µ	00/10	
км VB	25	knoaoaenaron x Mary Fleming Viburnum x 'Burkwoodii'	Burkwood Viburnum	18 Ht. 24" Ht		
				21 11		
<u>ORNAN</u>	IENTAL	<u>GRASSES</u>	Kard Franker Frather D. 10	1 0-1		
CK2	12	Calamagrostis x acutiflora 'Karl Foerster'	Karl Foerster Feather Reed Grass	1 Gal		
<u>PEREN</u>	<u>NIALS</u>					
AM	109	Allium x 'Millenium'	Millenium Ornamental Chive	1 Gal	Pot	16" O.C.
AX	172	Astilbe x 'Versraspberry'	Younique™ Raspberry Astilbe	1 Gal		
ES2	28	Epimedium stellulatum	Bishops Hat	4" POT		
HHR	265	Hemerocallis x 'Happy Returns'	Happy Returns Daylily	1 Gal	Pot	18" O.C.
HB	58	Hemerocallis x 'l ittle Rusiness'	Little Business Davlilv	1 Gal	Pot	18" 0 C
LSS	265	Leucanthemum x superhum 'Snowcan'	Snowcap Shasta Daisv	1 Gal	Pot	16" 0.0
PA	59	Perovskia atriplicitalia 'Little Spira'	Little Spire Russian Sage	1 Gal	Pot	24" OC
		i Giovania adipilationa Little Spire	Litto opno nuobian ougo			ZT 0.0.

![](_page_127_Figure_11.jpeg)

![](_page_127_Figure_12.jpeg)

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Ζ	ADDENDOM 2		01/19/2024
NO.	<b>REVISION DESCRIPTION</b>	BY	DATE

![](_page_128_Figure_0.jpeg)

![](_page_129_Figure_0.jpeg)

![](_page_130_Figure_0.jpeg)

- 1. All SESC measures shall comply with the Cass County Soil Erosion & Sedimentation Program requirements and Part 91 Sedimentation Control Act PA 451 1994.
- 2. The temporary construction entrance shall be installed and maintained to minimize the amount of soil tracked onto public/private roadways. A tentative location is shown on the plan. The Contractor shall submit actual location(s) to the Owner for approval. Entrance(s) shall be installed prior to any other construction activity. See "Temporary Construction Entrance" detail.
- 3. Storm sewer inlets within the construction limits and existing inlets nearby that may be impacted by construction shall be protected as specified on this plan or an approved equal. The intent of this measure is to prevent sediment from entering the drainage system. See inlet protection detail(s).
- 4. Until the project is accepted by the Owner, the Contractor shall maintain all erosion control measures to prevent sediment from entering public and private storm sewers and from leaving the project site. Contractor shall implement and maintain any additional measures at the request of the Local Inspectors at no additional cost.
- 5. The location of silt fence shown on the drawing shall act as a guide for the Contractor to follow. Actual field conditions shall dictate the location and amount of silt fence required to prevent sediment from entering public and private storm sewers and from leaving the project site. Silt fence shall also be installed at specific down slope areas as shown on the plan. Silt fence or other appropriate sediment barriers shall be installed a minimum of 10 feet from the toe of slope of any onsite or offsite soil stockpile, borrow and/or disposal areas. See "Silt Fence" detail.

- 7.
- Q
- 10.

PRO	POSED FEATURES LEGEN	ID EXISTING FEATURES LEGEND	Goshen Goshen Labart afayette South Bend Valparaiso ind Surveying
Г	Full Depth HMA Pavement	$_{ riangle  au}$ $_{ riangle  au}$ Telephone Pedestal	cture, Icc
	 Concrete Pavement	о sмн Sanitary Sewer Manhole	Archite
	Limestone Path	O EMH Electric Manhole	1 Wayr nton H anistee Uth Ha
No.	Glacial Cobble Stone	Ø TIP Traffic Strain Pole	Eng Soo
	91 — Contour	Ø PP/D Power Pole w/Drop	2
~~~~	Tree Line	Ø PP/L Power Pole w/Light	
ť	Drainage Structure	\rightarrow Guy Anchor	
С	°°° Clean—Out	Large Diameter Tree To Remain	
>	—— Storm Sewer	∀ Fire Hydrant	RSON 1 1N 466 700 140 1e.com
ERC	SION CONTROL LEGE	ND w Water Main	M JEFFE M JEFFE h Bend 1.232.87 1.4.251.44 nmarch
(E1)	Temporary Construction Entrance	> Sanitary Sewer	315 315 7 57 7 57 abo
E2	Temporary Soil Stockpile		З× тг
EJ	Inlet Protection	— FOC — Fiber Optic Marker	
E4	Concrete Washout Structure	OH — Overhead Electric	STR STR
(E5)	Vegetated Area –Seeding & Secured Mulch;Erosion Control	——————————————————————————————————————	
	& on areas that fail to stabilize with seed and mulch	Tree Line	
(F6)	Staging Area w/Posted NOI		AST ISTI SB N. I RD
(E7)	Pipe End Section & Stone Apron	EXISTING SOILS 41C—Spinks—Oshtemo complex, 6 to 12 percent 44B—Urban land—Spinks complex, 0 to 6	
Ē8	Preserve & Protect Tree	slopes percent slopes Typical profile Typical profile Ap - 0 to 9 inches: loamy sand Ap - 0 to 10 inches: loamy sand	AS AS
—SF—	. Temporary Silt Fence	Bw - 9 to 28 inches: sand E and Bt-10 to 53 inches: loamy sand E and Bt - 28 to 69 inches: loamy sand C - 53 to 60 inches: sand	
DND	DO NOT DISTURB — Existing Vegetative Area	C - 69 to 80 inches: sand Capacity of the most limiting layer to Capacity of the most limiting layer to transmit transmit water (Ksat): High to very high	
	Runoff Entering the Site	(1.98 to 19.98 in/hr) (Ksat): Moderately high to high (Ksat): Moderately high to high	
	Limits of Disturbance = 3.75 Acres	(1.42 to 14.17 in/hr) Depth to water table: More than 80 inches Hydrologic Soll Group: A	Z
	Edwardsbur Sports Corre		SEDIWENTEW:
all erosia y ½ inch reviewed neasures	on control devices n rainstorm d and corrected by as directed by the	<image/>	Interpretended Interpretend Interpre
	Lunn	Not To Scale	

PRO	POSED FEATUR	RES LEGEND	EXISTING	EATURES LEGEND		Goshen Hobart Lafayette South Bend Valparaiso	nd Surveying
Г	Full Depth H	MA Pavement	△ T	Telephone Pedestal	I		scture, Lo
	 Concrete Pav	vement	⊖ SMH	Sanitary Sewer Manhole	U	arbor ven	j, Archit∈
	 Limestone Po	ath		Electric Manhole	2	rt Wayı inton H anistee uth Ha	gineerinç
	Glacial Cobbl	e Stone	У ' ' Ø т.р	Power Pole Traffic Strain Pole	2	I S ∰ Z S S	Ē
8	91 — Contour		Ø PP/D	Power Pole w/Drop	2	1	
~~~	Tree Line		Ø PP/L	Power Pole w/Light	Z	1	υ
	Orainage Street	ucture		Guy Anchor	O	)	JLTANTS, IN
(	^{co °} Clean—Out			Large Diameter Tree To Remain	B		CHE CONSI
>	> ——      Storm  Sewer		Ø	Fire Hydrant		ERSON 1, IN 466 700 440 he.com	- ABONMAF
ERC	SION CONTR	OL LEGEND	— w —	Water Main		W JEFF th Bend 4.232.8 4.251.4	RIGHT 2020
<b>E1</b>	Temporary Constructi	on Entrance		Sanitary Sewer		315 315 Sour <b>7</b> 57 <b>7</b> 57 abo	COPI
Ē2	Temporary Soil Stock	pile	G	Gas Main		, ,≻	ı
EJ	Inlet Protection		— FOC —	Fiber Optic Marker	L FC		Z
E4	Concrete Washout St	ructure	OH	Overhead Electric		STF STF	) ()
(E5)	Vegetated Area –See Secured Mulch;Erosio	eding & n Control	— X —	Fence			UR
	& on areas that fail with seed and mulch	to stabilize		Tree Line	RU I		SB
FA	Staaina Area w/Post	ed NOI		Contour		SBI SBI N. /	RD
er Er	Pipe End Section &	Stone Apron	<u>EXISTING SOILS</u> <u>41C—Spinks—Oshtemo complex, 6 to 12</u>	percent <u>44B_Urban land_Spinks compl</u>	ex, 0 to 6		MA
Ē	Preserve & Protect	Tree	<u>slopes</u> Typical profile Ap - 0 to 9 inchos: loamy cand	<u>percent slopes</u> Typical profile An — 0 to 10 inches: loam	y sand → E >	AS: WP 697	Ē
—SF—	<b>.</b> Temporary Silt Fence	>	Bw — 9 to 28 inches: iourny sand Bw — 9 to 28 inches: sand E and Bt — 28 to 69 inches: loamy	E and Bt—10 to 53 inches: sand C — 53 to 60 inches: sand		S G S	
DND	DO NOT DISTURB — I Vegetative Area	Existing	C - 69 to 80 inches: sand	Capacity of the most limiting transmit water (Ksat): High to	layer to }	l 	
	Runoff Entering the	Site	water (Ksat): Moderately high to high	(1.98 to 19.98 in/hr) Depth to water table:More tha	in 80 inches		
	Limits of Disturba	nce =	(1.42 to 14.17 in/hr) Depth to water table: More than 80 inc	Hydrologic Soil Group: A hes	{	7	
		Edwardsburg Borts Complex		<image/>		SEDIMENTATION CON	NI ./NI SDR JWL
view all erosia f every ½ incl iately reviewed	on control devices h rainstorm d and corrected by			<image/>	SEAL:	RE: 20/20/2023 PY IS INTENDED TO 36" WHEN PLOTTED (S) INDICATED ANE C QUALITY MAY NC RES 1" = 30' S NOTED OTHERWIS #	
SC measures	as directed by the		VICINITY MAI	<b>-</b>		2-1836	
						).	

change by the Contractor and Owner prior to construction. See "Concrete Washout" detail.

Soil material shall be temporarily stockpiled onsite as necessary during construction and any excess material not needed shall be hauled away and disposed of in accordance with local, state and federal guidelines.

Locations for temporary construction staging and dewatering operations (if required) shall be determined by the Contractor and Owner prior to construction. These locations shall be provided to the municipality prior to construction of said items and adequate protection installed to protect public and private drainage systems.

All areas disturbed by construction shall be stabilized with seeding measures. Temporary Seeding shall take place as soon as possible on any bare or thinly vegetated areas which have less than 70 percent cover and will remain inactive for a period of 15 days or more. Seeded areas shall be mulched with hydro-mulch, or, with Erosion Control Blanket as noted on plan.

Erosion Control Blankets, where specified, shall be North American Green DS-150 or approved equal. Contractor shall follow the manufacturer's guidelines for installation and maintenance. See temporary slope stabilization detail.

11. All work performed within municipal right-of-way shall conform with municipal standards and details.

12. Distance to nearest lake or stream: 600 feet Pleasant Lake

![](_page_130_Figure_24.jpeg)

# **INSPECTIONS/REPORTING**

- 1. The Owner shall require the Contractor to revie on a weekly basis and/or within 24 hours of e event.Any resulting problems shall be immediate the Contractor.
- 2. The Contractor shall implement additional SESC Owner and Cass County.
- 3. The Contractor shall notify the Cass County Conservation District when construction commences, and, after final stabilization for inspection.

					SHEET NO.
[	1	ADDENDUM 1	PHW	01/10/2024	C80
	NO.	REVISION DESCRIPTION	BY	DATE	

![](_page_131_Figure_0.jpeg)

![](_page_131_Figure_23.jpeg)

<u>MAINTENANCE</u>

- 2. Check for erosion or displacement of the blanket.
- blanket.

![](_page_131_Figure_28.jpeg)

![](_page_131_Figure_29.jpeg)

### SECTION A-A

### <u>INSTALLATION</u>

### <u>MAINTENANCE</u>

![](_page_131_Picture_40.jpeg)

1. Inspect within 24 hours of a half-inch or greater rain event and at least once every week.

3. If any area shows erosion, pull back that portion of the blanket covering the eroded area, add soil and tamp, reseed area, replace and staple the

# **EROSION CONTROL BLANKET SLOPE STABILIZATION**

(Not To Scale)

![](_page_131_Figure_51.jpeg)

2. Place geotextile, overlapping edges at least 12 inches and secure with anchor pins at 3' spacing along overlap.

3. Place stone in one operation. Do not dump through chutes or use any method that causes segregation of stone sizes. If geotextile fabric tears, repair immediately.

4. Blend riprap surface smoothly with surrounding area to eliminate protrusions aor overfalls.

1. Inspection should occur at least once a week and following each  $\frac{1}{2}$  or more rain event.

2. Inspect for stone displacement; replace stones ensuring placement at finished grade.

3. Check for erosion or scouring around sides of the apron; repair immediately.

4. Check for piping or undercutting; repair immediately.

# STONE APRON & PIPE END SECTION TREATMENT

(Not To Scale)

<b>ABONMARCHE</b>	RSON BLVD     Fort Wayne     Goshen       IN 46601     IN 46601     Hobart       D0     Benton Harbor     Hobart       D0     South Haven     Lafayette       A0     South Haven     South Bend       Valparaiso     Valparaiso
PROJECT: NEW CONSTRUCTION FOR:	CASS DISTRICT LIBRARY BOWARDSBURG BRANCH EDWARDSBURG BRANCH 26977 W. MAIN STREET EDWARDSBURG, MI
SHEET TITLE:	SOIL EROSION AND SEDIMENTATION CONTROL PLAN
MODELED DESIGNED	BY: NI BY: JWL/NI
PM REVIEN	N: SDR EVIEW: JWL
DATE:	12/20/2023
+ LICENSED OF	JOHN W. LINN ENGINEER No. 39676
DATE:	120/2023
HARD CO 24" x 3 SCALE( GRAPHIC BE ACCUI	PY IS INTENDED TO BE 36" WHEN PLOTTED S) INDICATED AND C QUALITY MAY NOT RATE FOR ANY OTHER SIZES
UNLESS ACI JOB # 22	AS SHOWN NOTED OTHERWISE <b>2-1836</b>
	.8.1

NO.

by date

![](_page_132_Figure_0.jpeg)

- **INSTALLATION**
- 1. Either excavate the pit or install the containment system. For prefabricated containers, locate, and install according to the manufacturer's recommendations. 2. Prepare a base free of rocks and other debris that may cause tears/punctures in the polyethylene lining.
- 3. Install the polyethylene lining. For excavated systems, extend lining over the entire excavation. For bermed systems, install lining over the pooling area with enough material to extend over the berm or containment system. Secure lining with pins, staples, or other fasteners.
- 4. Place flags, safety fencing, or equivalent for a barrier to construction equipment and other traffic.
- 5. Place a non-collapsing, non-water holding cover over the washout facility prior to a predicted rainfall event to prevent accumulation of water and possible overflow of the system (optional).
- 6. Install signage that identifies concrete washout areas and post signs directing contractors and suppliers to designated locations.
- 7. Where necessary, provide stable ingress and egress or alternative approach pad for concrete washout systems.

#### MAINTENANCE

- 1. Inspect daily and after each storm event Inspect the integrity of the overall structure and containment system where applicable.
- 2. Inspect the system for leaks, spills, and tracking of soil by equipment, and the polyethylene lining for failure, including tears and punctures.
- 3. Once concrete wastes harden, remove and dispose of the material.
- 4. Remove excess concrete when the washout system reaches 50 percent of the design capacity. Discontinue use until appropriate measures can be initiated to clean the structure.
- 5. Upon removal of the solids, inspect the structure. Repair as needed or construct a new system.
- 6. Dispose of all the concrete in a legal manner. Reuse the material on site, recycle, or haul the material to an approved landfill site. Recycling of material is encouraged.
- 7. Replace the plastic liner after every cleaning.
- 8. Repair or replace system as needed.
- 9. Concrete washout systems are designed to promote evaporation. If liquids do not evaporate and the system is near capacity, vacuum or remove liquids or utilize secondary containment. 10. Inspect construction activities on a regular basis to ensure suppliers, contractors, and others are utilizing designated washout areas. If concrete waste is being disposed of improperly, identify violators and take appropriate action.
- 11. When the concrete washout system is no longer required, it shall be closed.
- 12. Backfill, grade and stabilize all holes, depressions and other land disturbances associated with the system.

**CONCRETE WASHOUT STRUCTURE** 

(Not To Scale)

# TREE PRESERVATION & PROTECTION

# <u>PURPOSE</u>

To protect and insure survival of desirable existing trees from the effects of construction activity.

### TREE PROTECTION

problems.)

### MATERIALS REQUIRED

- 1. Fencing (orange safety fencing for increased visibility), snow fence ad support posts.
- 2. Signage.
- 3. Wood mulch, chips, etc.
- 4. Specialized equipment (brush cutter, rotary axe, hand TOOLS)

# <u>APPLICATION</u>

- 1. Flag or mark all trees to be protected.
- 2. AVOID COMPACTION:
- c. Create traffic patters to keep soil compaction to a minimum. d. Store supplies and equipment away from tree areas.
- 3. REDUCE DAMAGE FROM GRADING: a. When clearing, use equipment such as a brush cutter or rotary axe., or cut by hand.
- c. Avoid placing fill over the root system. 4. AVOID WOUNDING TREES:
- snow fencing. b. Prune low hanging limbs that could otherwise be broken by equipment.
- 5. REPAIR TREE DAMAGE:
- (Utilize the services of a consulting forester.) a. Properly prune all damaged limbs. Avoid leaving stubs. b. Aerate soil where compaction has been excessive. c. Fertilize to improve tree growth, vigor and appearance.

# <u>MAINTENANCE</u>

- 1. Inspect at least once every seven calendar days. 2. Repair perimeter barriers if damaged.
- DO NOT USE TREE PAINT.
- 4. Cable and brace any trunk splits, weak forks and large limbs.

ANTICIPATED CONSTRUCTION TASKS
CONSTRUCTION ENTRANCE/SILT FENCE/CONCRETE WA
CLEARING/ STRIP TOPSOIL / ROUGH GRADING
BUILDING FOUNDATIONS
BUILDING CONSTRUCTION
U.G. UTILITIES / STORM BASINS & STRUCTURES /INL
FINE GRADING / BASE COURSES
ASPHALT & CONCRETE PAVING
LANDSCAPING AND FINAL STABILIZATION MEASURES

1. Protect trees from equipment damage. (Wounds provide entry for insects and disease and reduce transport of sap.) 2. If trees are damaged, repair immediately. (Repair of wounded areas allows trees to heal quickly, thus reducing insect and disease

a. Install orange fencing around the tree as far out as its crown to keep equipment off the rooting area. b. If a fence cannot be erected, cushion the rooting area with six inches of wood chips, wood or brick paths.

b. Where root areas must be graded, cur large roots instead of tearing them with equipment.

a. Protect trees from equipment damage by creating some type of barrier, fencing them off or wrapping individual trees with

d. Water during dry periods to help offset soil compaction and root damage.

3. Inspect for damage from construction equipment, etc. Repair wounds simply by removing damaged bark and wood tissue.

![](_page_132_Figure_67.jpeg)

| NO. |

ADDENDUM 1

**REVISION DESCRIPTION** 

![](_page_132_Figure_68.jpeg)

# DORMANT AND FROST SEEDING SPECIFICATIONS

CONTRACTOR TO DETERMINE THE APPROPRIATE SEEDING METHOD BASED ON THE TIME OF YEAR.

#### <u>PURPOSE</u>

- 1. To provide early germination and soil stabilization in the spring.
- To reduce sediment-laden stormwater runoff from being transported to downstream areas.
   To improve visual aesthetics of construction area.
- 4. To repair or enhance previous seeding.

#### MATERIALS REQUIRED

1. Soil amendments based upon analysis of soil by a soil testing service. (fertilizer, etc.)

# 2. Seed (information follows)

3. Mulch (straw, hay, wood fiber, etc.) for protection of seedbed, moisture retention and encouragement of plant growth. mulch must be anchored to prevent dispersal by wind or water. may be covered with manufactured erosion control blankets.

### SEEDING SPECIFICATIONS

Note that seeding done outside of the optimum seeding dates increases the chances of seeding failure. dates may be shortened or extended depending on the location of the site within the State of Indiana. Mulch alone is an acceptable temporary cover and may be used in lieu of temporary seeding, providing that it is appropriately anchored. perennial species may be used as a temporary cover, especially if the area to be seeded will remain idle for more than one year (see permanent seeding).

#### Temporary Dormant or Frost Seeding

<u>Wheat or Rye</u>: 150 pounds per acre/<u>Spring Oats</u>: 150 pounds per acre/<u>Annual Rye Grass</u>: 60 pounds per acre

#### <u>Permanent Dormant or Frost Seeding</u>

OPEN LOW-MAINTENANCE AREAS (REMAINING IDLE MORE THAN 6 MONTHS):

Perennial ryegrass & white clover: ryegrass 75 pounds per acre + 3 pounds of clover per acre, optimum soil ph 5.6 to 7.0 Perennial ryegrass & tall fescue: ryegrass 45 pounds per acre + 45 pounds of fescue per acre, optimum soil ph 5.6 to 7.0 Tall fescue & white clover: fescue 75 pounds per acre + 3 pounds of white clover per acre, optimum soil ph 5.5 to 7.5 Kentucky bluegrass, smooth bromegrass, switchgrass, timothy, perennial ryegrass, & white clover: bluegrass 30 pounds per acre + 15 pounds of bromegrass per acre + 5 pounds of switchgrass per acre + 6 pounds of timothy per acre + 15 pounds of ryegrass per acre + 3 pounds of white clover per acre, optimum soil ph 5.5 to 7.5

#### STEEP BANKS AND CUTS (LOW-MAINTENANCE AREAS, NOT MOWED):

<u>Smooth bromegrass & red clover</u>: brome 50 pounds per acre + 30 pounds of red clover per acre, optimum soil ph 5.5 to 7.0 <u>Tall fescue & white clover</u>: fescue 75 pounds per acre + 30 pounds of white clover per acre, optimum soil ph 5.5 to 7.5 <u>Tall fescue & red clover</u>: fescue 75 pounds per acre + 30 pounds of red clover per acre, optimum soil ph 5.5 to 7.5 <u>Orchard grass, red clover & white clover</u>: orchard grass 45 pounds per acre + 30 pounds of red clover per acre, optimum soil ph 5.5 to 7.5 <u>Orchard grass, red clover & white clover</u>: orchard grass 45 pounds per acre + 30 pounds of red clover per acre per acre + 3 pounds of white clover per acre, optimum soil ph 5.6 to 7.0

#### LAWNS AND HIGH-MAINTENANCE AREAS:

<u>Bluegrass</u>: bluegrass 210 pounds per acre, optimum ph 5.5 to 7.0 <u>Perennial ryegrass & bluegrass</u>: 90 pounds of ryegrass per acre & 135 pounds of bluegrass per acre, optimum ph 5.6 to 7.0 <u>Tall fescue (turf type) & bluegrass</u>: fescue 250 pounds per acre + 45 pounds of bluegrass per acre, optimum soil ph 5.6 to 7.5

#### CHANNELS AND AREAS OF CONCENTRATED FLOW:

<u>Perennial ryegrass & white clover</u>: ryegrass 225 pounds per acre + 3 pounds of white clover per acre, optimum soil ph 5.5 to 7.0 <u>Kentucky bluegrass, smooth bromegrass, switchgrass, timothy, perennial ryegrass, & white clover</u>: bluegrass 30 pounds per acre + 15

pounds of bromegrass per acre + 5 pounds of switchgrass per acre + 6 pounds of timothy per acre + 15 pounds of ryegrass per acre + 3 pounds of white clover per acre, optimum soil ph 5.5 to 7.5

Tall fescue & white clover: fescue 225 pounds per acre + 3 pounds of clover per acre, optimum soil ph 5.5 to 7.5

<u>Tall fescue, perennial rye grass, & Kentucky bluegrass</u>: fescue 225 pounds per acre + 30 pounds of ryegrass per acre + 30 pounds of bluegrass per acre, optimum soil ph 5.5 to 7.5

FOR BEST RESULTS:

- 1. Legume seed should be inoculated.
- Seeding mixtures containing legumes should be spring-seeded; grass may be fall-seeded and the legume frost seeded
   If legumes are fall-seeded, do so in early fall
   If using mixtures other than those listed above, increase seeding rates by 50% over the conventional seeding rates.

#### APPLICATION

- <u>Site Preparation:</u> 1. Grade the site to achieve positive drainage.
- 2. Add topsoil to achieve needed depth for establishment of vegetation.

<u>Dormant Seeding:</u>

1. Test soil to determine ph and nutrient levels.

- Broadcast soil amendments as recommended by soil test and work into the upper 2 to 4 inches of soil. If testing is not done, apply 200 to 300 pounds per acre of 12–12–12 analysis fertilizer, or equivalent.
   Apply anchored mulch immediately after completion of grading and addition of soil amendments.
- Select appropriate seed species (see seed specifications above). Broadcast the seed on top of the mulch and/or into existing ground cover at rates shown. Areas are to be seeded when soil temperatures are below 50 degrees but the soil is not frozen.

Frost Seeding:

- 1. Test soil to determine pH and nutrient levels.
- 2. Broadcast soil amendments as recommended by a soil test and work into the upper 2 to 4 inches of soil before it freezes. If
- testing was not done, apply 200 to 300 pounds per acre of 12–12–12 analysis fertilizer, or equivalent. 3. Select appropriate seed species or mixture (<u>see seed specifications above</u>). Broadcast the seed on the seedbed when the soil is
- frozen. do not work the seed into the soil.

#### MAINTENANCE

- 1. Inspect at least once every seven calendar days.
- 2. Check for erosion or movement of mulch.
- 3. Check for inadequate cover (less than 80 percent density over the soil surface); reseed and mulch in mid to late April if necessary. For best results, reseed within the recommended dates <u>shown under temporary and permanent seeding</u>).
- Apply 200 to 300 pounds per acre of 12–12–12 analysis fertilizer, or equivalent, between April 15 and May 10 or during periods of vigorous growth.
- 5. Fertilize turf areas annually. Apply fertilizer in a split application. For cool—season grasses, apply 1/2 in late Spring and 1/2 in early Fall. For warm—season grasses, Apply  $\frac{1}{3}$  in early Spring,  $\frac{1}{3}$  in late Spring, & the remaining  $\frac{1}{3}$  in middle Summer.

<u>Note</u>: Required density of vegetative cover = 80 percent or greater over the soil surface.

# **TEMPORARY SEEDING SPECIFICATIONS**

TEMPORARY SEEDING SPECIFICATIONS TABLE								
SEED SPECIES (1)	RATE/ACRE	PLANTING DEPTH	OPTIMUM DATES (2)					
Wheat or Rye	150 lbs.	1 to 1–1/2 inches	Sept. 15 – Oct. 30					
Spring Oats	100 lbs.	1 inch	March 1 — April 15					
Annual Ryegrass	40 lbs.	1—1/4 inch	March 1 — May 1 Aug. 1 — Sept. 1					
German Millet	40 lbs.	1 to 2 inches	May 1 — June 1					
Sudangrass	35 lbs.	1 to 2 inches	May 1 — July 30					
Buckwheat	60 lbs.	1 to 2 inches	April 15 – June 1					
Corn (broadcast)	300 lbs.	1 to 2 inches	May 11 — Aug. 10					
Sorghum	35 lbs.	1 to 2 inches	May 1 — July 15					

1)	Perennial species may be used as a
	temporary cover, especially if the
	area to be seeded will remain idle
	for more than one year (See
	Permanent Seeding).

(2) Seeding done outside the optimum seeding dates increases the chances of seeding failure. Dates may be extended or shortened based on the location of the project site within the state.

NOTE: Mulch alone is an acceptable temporary cover and may be used in lieu of temporary seeding, provided that it is appropriately anchored. A high potential for fertilizer, seed, and mulch to wash exists on steep banks, cuts, and in channels and areas of concentrated flow.

# PERMANENT SEEDING SPECIFICATIONS

### **APPLICATION**

- <u>Site Preparation</u> 1. Grade the site to achieve positive drainage.
- 2. Add topsoil or compost mulch to achieve needed depth for establishment of vegetation. (Compost material may be added to improve soil moisture holding capacity, soil friability, and nutrient availability.)

#### <u>Seedbed Preparation</u> 1. Test soil to determine pH and nutrient levels.

- 2. Apply soil amendments as recommended by the soil test and work into the upper two to four inches of soil. If testing is not done, apply 400 to 600 pounds per acre of 12-12-12 analysis fertilizer, or equivalent.
- 3. Till the soil to obtain a uniform seedbed. Use a disk or rake, operated across the slope, to work the soil amendments into the upper two to four inches of the soil.

#### <u>Seeding</u>

Optimum seeding dates are March 1 to May 10 and August 10 to September 30. Permanent seeding done between May 10 and August 10 may need to be irrigated. Seeding outside or beyond optimum seeding dates is still possible with the understanding that reseeding or overseeding may be required if adequate surface cover is not achieved. Reseeding or overseeding can be easily accomplished if the soil surface remains well protected with mulch.

- Select a seeding mixture and rate from Table 1 Permanent Seeding Recommendations. Select seed mixture based on site conditions, soil pH, intended land use, and expected level of maintenance.
   Apply seed uniformly with a drill or cultipacker seeder or by broadcasting. Plant or cover the seed to a depth of one-fourth to one-half inch. If
- drilling or broadcasting the seed, ensure good seed-to-soil contact by firming the seedbed with a roller or cultipacker after completing seeding
- operations. (If seeding is done with a hydroseeder fertilizer and mulch can be applied with the seed in a slurry mixture.) 3. Mulch all seeded areas and use appropriate methods to anchor the mulch in place. Consider using erosion control blankets on sloping areas and conveyance channels.

#### MAINTENANCE

- Inspect within 24 hours of each rain event and at least once every seven calendar days until the vegetation is successfully established
   Characteristics of a successful stand include vigorous dark green or bluishgreen seedlings with a uniform vegetative cover density of 50% or more.
   Check for erosion or movement of mulch.
- 4. Repair damaged, bare, gullied, or sparsely vegetated areas and then fertilize, reseed, and apply and anchor mulch. 5. If plant cover is sparse or patchy, evaluate the plant materials chosen, soil fertility, moisture condition, and mulch application; repair affected
- areas either by overseeding or preparing a new seedbed and reseeding. Apply and anchor mulch on the newly seeded areas. 6. If vegetation fails to grow, consider soil testing to determine soil pH or nutrient deficiency problems. (Contact your soil and water conservation district or cooperative extension office for assistance.)
- 7. If additional fertilization is needed to get a satisfactory stand, do so according to soil test recommendations.
- 8. Add fertilizer the following growing season. Fertilize according to soil test recommendations.
  9. Fertilize turf areas annually. Apply fertilizer in a split application. For cool-season grasses, apply one-half of the fertilizer in late spring and one-half in early fall. For warm-season grasses, apply one-third in early spring, one-third in late spring, and the remaining one-third in middle summer.

These tables provide seed mixture options. Additional seed mixtures are available commercially. When selecting a mixture, consider intended land use and site conditions, including soil properties (e.g., soil pH and drainage), slope aspect, and the tolerance of each species to shade and drought.

							ЛJ
(	(REMAINING	IDLE	FOR	MORE	THAN	6	MONTHS)

LAWNS AND HIGH-MAINTENANCE	AREAS
----------------------------	-------

SEED MIXTURES	RATE/ACRE PURE LIVE SEED	optimum soil ph	SEED MIXTURES	RATE/ACRE PURE LIVE SEED	OPTIMUM SOIL PH
1. Perennial ryegrass	70 lbs.	5.6 to 7.0	1. Bluegrass	140 lbs.	5.5 to 7.0
– white clover (1)	2 lbs.		2 Perennial ryearass	60 lbs	56 to 70
2. Perennial ryegrass	70 lbs.	5.6 to 7.0	(turf type)	90 lbs.	5.0 10 7.0
– tall fescue (2)	50 lbs.		3. Tall fescue, turf type (2)	170 lbs.	5.6 to 7.5
3. Tall fescue (2)	70 lbs.	5.5 to 7.5	-bluegrass	30 lbs.	
– white clover (1)	2 lbs.				

STE	CHANNI	CHANNELS AND AREAS OF CONCENTRATED FLOWS				
STEEP BANKS AND CUTS, LOW-MAINTENANCE AREAS (NOT MOWED)SEED MIXTURESRATE/ACREOPTIMUM SOIL PH1. Smooth brome grass – red clover (1)35 lbs. 20 lbs.5.5 to 7.02. Tall fescue (2) – white clover (1)50 lbs. 2 lbs.5.5 to 7.53. Tall fescue (2) – red clover (1)50 lbs. 2 lbs.5.5 to 7.54. Orchard grass – red clover (1)30 lbs. 20 lbs.5.6 TO 7.0	SEED I	MIXTURES	RATE/ACRE	OPTIMUM SOIL PH		
SEED MIXTURES	RATE/ACRE	OPTIMUM SOIL PH	1. Perennie	al ryegrass	150 lbs.	5.5 to 7.0
1. Smooth brome grass	35 lbs.	5.5 to 7.0	– white	(1)	2 lbs.	
– red clover (1)	20 lbs.		2. Kentuck	ky bluegrass	20 lbs.	
2 Tall fescue (2)	50 lbs	5.5 to 7.5	– smoo	oth bromegrass	10 lbs.	5.5 to 7.5
– white clover (1)	2 lbs.		– switcl	hgrass	3 lbs.	
7 Tell facaus (2)	50 lba	55 to 75	– timot	thy	4 Ibs.	
J. Tall Tescue (2) - red clover (1)	20 lbs.	5.5 10 7.5	– peren	nial ryegrass	10 lbs.	
	20 103.		– white	clover	2 lbs.	
4. Orchard grass	30 lbs.	5.6 TO 7.0	3. Tall fes	cue (1)	150 lbs.	5.5 to 7.5
- red clover (1)	20 lbs.		– white	e clover	2 lbs.	
	2 105.		4. Tall fescue	e (2)	150 lbs.	
5. Crownvetch (1)	12 lbs.	5.6 to 7.0	– perennia	n ryegrass	20 lbs.	5.5 to 7.5
— tall fescue (2)	30 lbs.		– Kentuck	y bluegrass (1)	20 lbs.	

(1) For best results: (a) legume seed should be inoculated; (b) seeding mixtures containing legumes should preferably be spring-seeded; grass may be fall-seeded and the legume frost-seeded (see Dormant Seeding and Frost Seeding on page 41); and (c) if legumes are fall-seeded, do so in early fall.

(2) Tall fescue provides little cover for, and may be toxic to some species of wildlife. The Indiana Department of Natural Resources recognizes the need for additional research on alternatives such as buffalograss, orchardgrass, smooth bromegrass, and switchgrass. This research, in conjunction with demonstration areas, should focus on erosion control characteristics, wildlife toxicity, turf durability, and drought resistance.

NOTES:

1. An oat or wheat companion or nurse crop may be used with any of the above permanent seeding mixtures, at the following rates:

a. spring oats — one—fourth to three—fourths bushel per acre b. wheat — no more than one—half bushel per acre 2. A high potential for fertilizer, seed, and mulch to wash exists on steep banks, cuts, and in channels and areas of concentrated flow.

### <u>APPLICATION</u>

- <u>Seedbed Preparation</u> 1. Test soil to determine pH and nutrient levels.
- 2. Apply soil amendments as recommended by the soil test. If testing is not done, apply 400 to 600 pounds per acre of 12–12–12 analysis
- fertilizer, or equivalent. 3. Work the soil amendments into the upper 2–4 inches of the soil with a disk or rake operated across the slope.

### <u>eedi</u>na

- Select a seed species or an appropriate seed mixture and application rate from Specifications Table.
   Apply seed uniformly with a drill or cultipacker seeder or by broadcasting. plant or cover seed to the depth shown in Specifications Table.
- 3. Notes: a. If drilling or broadcasting the seed, ensure good seed—to—soil contact by firming the seedbed with a roller or cultipacker after completing
- seeding operations. daily seeding when the soil is moist is usually most effective.
- b. If seeding is done with a hydroseeder, fertilizer and mulch can be applied with the seed in a slurry mixture.4. Apply mulch (see mulching and compost mulching requirements below) and anchor it in place.

# MAINTENANCE

- 1. Inspect within 24 hours of each rain event and at least once every seven calendar days.
- Check for erosion or movement of mulch and repair immediately.
   Monitor for erosion damage and adequate cover (80 percent density); reseed, fertilize, and apply mulch where necessary.
- 4. If nitrogen deficiency is apparent, top-dress fall seeded wheat or rye seeding with 50 pounds per acre of nitrogen in February or March.

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# **MULCHING SPECIFICATIONS**

### TABLE 1. MULCH SPECIFICATIONS

MATERIAL (1)	RATE/ACRE	COMMENTS
Straw or Hay	2 tons	Should be dry, free of undesirable seeds. Spread by hand or machine. Must be crimped or anchored (See Table 2).
Wood fiber or cellulose (1)	1 ton	Apply with a hydraulic mulch machine and use with tacking agent.

(1) Mulching is not recommended in concentrated flows. Consider erosion control blankets or other stabilization methods.

NBLE 2. MULCH ANCHOR	PING SPECIFICATIONS All forms of mulch must be anchored.
ANCHORING METHOD	HOW TO APPLY
Mulch anchoring tool or farm disk (dull, serrated, and blades set straight)	Crimp or punch the straw or hay two to four inches into the soil. Operate machinery on the contour of the slope.
Cleating with dozer tracks	Operate dozer up and down slope to prevent formation of rills by dozer cleats
Nood hydromulch fibers	Apply according to manufacturer's recommendations.
Synthetic tackifiers, binders, or soil stabilizers	Apply according to manufacturer's recommendations.
Netting (synthetic or biodegradable material)	Install netting immediately after applying mulch. Anchor netting w/staples. Edges of netting strips should overlap with each up-slope strip overlapping 4"-6" over the adjacent down-slope strip. Best suited to slope applications. installation details are site specific; follow manufacturer's recommendations.

#### MULCH APPLICATION

- . Coverage: Mulch should have a uniform density of at least 75 percent over the soil surface.
- 2. Apply mulch at the recommended rate shown in Table 1. 3. Spread the mulch material uniformly by hand, hayfork, mulch blower, or hydraulic mulch machine.
- After spreading, no more than 25 percent of the ground should be visible. 4. Anchor straw or hay mulch immediately after application. The mulch can be anchored using one of the methods listed below:
- a. Crimp with a mulch anchoring tool, a weighted farm disk with dull serrated blades set straight, or track cleats of a bulldozer.
- b. Apply hydraulic mulch with short cellulose fibers,
- c. Apply a liquid tackifier, or d. Cover with netting secured by staples.

#### MULCH MAINTENANCE

- . Inspect within 24 hours of each rain event and at least once a week.
- 2. Check for erosion or movement of mulch; repair damaged areas, reseed, apply new mulch & anchor mulch in place.
- 3. Continue inspections until vegetation is firmly established.
- 4. If erosion is severe or recurring, use erosion control blankets to protect the area. **COMPOST MULCHING**

### <u>Compost Specifications</u>

- 1. Feedstocks may include but are not limited to well—composted vegetable matter, leaves, yard trimmings, food scraps, composted manures, paper fiber, wood bark, Class A biosolids (as defined in Title 40 of the Code of Federal Regulations at 40 CFR Part 503), or any combination thereof.
- 2. Compost shall be produced using an aerobic composting process meeting 40 CFR Part 503 regulations, including time and temperature data indicating effective weed seed, pathogen, and insect larvae kill.
- 3. Compost shall be well decomposed, stable, and weed free.
- 4. Refuse free (less than one percent by weight).
- Free of any contaminants and materials toxic to plant growth.
   Inert materials not to exceed one percent by dry weight pH of 5.5 to 8.0.
- 7. Carbon-nitrogen ratio not to exceed 100.
- 8. Moisture content not to exceed 45 percent by dry weight.
- 9. Variable particle size with maximum dimensions of 3" in length,  $\frac{1}{2}$ " in width and  $\frac{1}{2}$ " inch in depth. 10.Compost particle size: 100% passing 2" sieve; 99% passing 1" sieve; 90% passing 3/4" sieve; 25% passing > 1/4" sieve

#### passing > 1/4" sieve. <u>Bonding Agents (optional)</u>

Tackifiers, flocculants, or microbial additives may be used to remove sediment and/or additional pollutants from storm water runoff. (All additives combined with compost materials should be tested for physical results at a certified erosion and sediment control laboratory and biologically tested for elevated beneficial microorganisms at a United States Compost Council, Seal of Testing Assurance, approved testing laboratory.)

<u>Soil Material (optional)</u>: 5%–10% sandy loam (as classified by the U.S. Department of Agriculture soil classification system).

<u>Cover Density</u>: 90% or greater over the soil surface.

<u>Anchoring Method</u>: Moisten compost/mulch blanket for min. 60 days. Erosion control netting (optional).

		TABLE 3. COMPOST E	BLANKET THICKNESS
SLOPE THICKNESS OF COMPOST BLANKET THICKNESS OF COMPOST BLANKET WITH EROSION CONTROL NET			
< 25%	< 4:1	1 to 2 inches	Not Applicable
25% to 50%	4:1 to 2:1	1 to 2 inches	2 inches

#### COMPOST BLANKET APPLICATION

> 2:1

> 50%

- Remove existing vegetation, large soil clods, rocks, stumps, large roots, and debris in areas where compost mulch is to be applied and dispose of in designated areas.
   Scarify sloping areas.
- 3. Aerate areas to be covered with compost/mulch blanket. (Proper aeration will require a minimum of two passes oriented in opposite directions.)
- 4. Broadcast a minimum of one pound of nitrogen (N), one-half pound of phosphorous (P205), and one-half pound of potent (K20) por 1,000 powers fact or 200 to 100 powers (100 powers) (100 powers)

2 to 3 inches

- one—half pound of potash (K20) per 1,000 square feet or 300 to 400 pounds per acre of 12—12—12 analysis fertilizer, or equivalent, per acre.
- Apply compost mulch blanket with a pneumatic blower or per manufacturer's directions.
   Apply within three days of completing aeration operations.
- 7. Overlap top of slope shoulder by five to ten feet.
- 8. Seed may be applied at time of installation. (Seed must be evenly blended into the compost if applied with a pneumatic blower or applied with a calibrated seeder attachment prior to installation of the compost blanket.)
- 9. Water compost mulch blanket for a period of 60 days following application. (On steeper slopes, it may
- be necessary to install erosion control netting over the compost blanket.) 10. Mist blanket for first seven days and then every three days throughout the remainder of the 60-day period. 11. Maintain a constant maintum content of 40 percent to 60 percent.
- 11. Maintain a constant moisture content of 40 percent to 60 percent.

### COMPOST BLANKET MAINTENANCE

- Inspect within 24 hours of a rain event and at least once a week.
   Repair eroded areas. Reseed, if applicable.
- 3. Monitor vegetation and apply appropriate soil amendments (if needed) per a soil test.

![](_page_133_Figure_142.jpeg)

1	ADDENDUM 1	PHW	01/10/202
NO.	<b>REVISION DESCRIPTION</b>	ΒY	DATE

3 inches

Ι.	DESIGN BASIS	111.	FOUNDATIONS
	A. BUILDING CODE USED IN THE DESIGN OF THIS STRUCTURE: 2015 MICHIGAN BUILDING CODE.		A. <u>GENERAL</u> 1. FOLLOW ALL RECOMMENDATIONS OF THE GEOTECHNICAL REPORT FOR SITE BY PATRICT ENICIPIEDING AND ENVIRONMENTAL INC. DATED JANUARY 5, 2024
	<ul> <li>FOLLOWING DESIGN STANDARDS:</li> <li>CONCRETE: ACI 318</li> <li>STRUCTURAL STEEL: AISC STEEL CONSTRUCTION MANUAL, LRFD/ASD</li> <li>STEEL JOISTS &amp; GIRDERS: SJI AMERICAN NATIONAL STANDARD (ASD)</li> <li>COLD-FORMED STEEL: AISI S100</li> <li>METAL DECK: SDI MANUALS</li> </ul>		2. FOOTINGS SHALL BEAR ON UNDISTURBED, FIRM, NATURAL SOIL OR COMPACTED FIL CAPABLE OF SUPPORTING THE MINIMUM SOIL BEARING PRESSURE SPECIFIED IN THE "DESIGN BASIS" SECTION OF THESE STRUCTURAL NOTES. A GEOTECHNICAL ENGINEER/TESTING AGENCY SHALL EVALUATE FOUNDATION EXCAVATIONS PRIOR TO PLACING FOUNDATION CONCRETE.
	<ul> <li>6. WOOD: NDS FOR WOOD CONSTRUCTION</li> <li>C. SOIL CAPACITY (ASSUMED AT BOTTOM OF FOOTING)</li> <li>1. MINIMUM SOIL BEARING PRESSURE = 1,500 PSF</li> <li>2. CONTRACTOR MUST VERIFY THAT THE SOILS CAN SUPPORT THIS PRESSURE.</li> <li>3. SOIL CAPACITIES ARE BASED UPON RECOMMENDATIONS OF GEOTECHNICAL REPORT</li> </ul>		3. Contractor shall remove unsuitable soils from below the building and place suitable fill material under the foundation compacted to 100% standard proctor in 8" maximum lifts. A geotechnical engineer licensed in the state where the project is located shall test compacted fill placed under foundations.
Ì	D. GRAVITY DEAD LOADS		<ol> <li>CONCRETE WORK SHALL CONFORM TO THE SPECIFICATIONS IN THE "CAST-IN-PLACE CONCRETE" SECTION OF THESE STRUCTURAL NOTES.</li> </ol>
	<ol> <li>ROOF = 20 PSF</li> <li>ALL OTHER = ACTUAL WEIGHTS</li> </ol>		<ol> <li>IF FOOTINGS ARE NOT PLACED IMMEDIATELY AFTER EXCAVATION, INSTALL A 2" THICK SEAL OF LEAN CONCRETE TO PROTECT THE SOIL FROM MOISTURE DAMAGE.</li> </ol>
	<ul> <li>E. <u>GRAVITY LIVE LOADS</u></li> <li>1. SLAB ON GRADE = 150 PSF (AT LIBRARY STACK ROOM)</li> <li>2. SLAB ON GRADE = 100 PSF (ALL OTHER ROOMS)</li> <li>3. MECHANICAL ATTIC = 80 PSF</li> <li>4. ROOF = 20 PSF</li> </ul>		6. CONTRACTOR MAY LOCATE CONSTRUCTION JOINTS IN FOUNDATION WALLS AN FOOTINGS AT HIS DISCRETION. REINFORCING SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS. IN MAT AND SPREAD FOOTINGS, CONSTRUCTION JOINTS ARE PROHIBITED WITHOUT THE ENGINEER'S APPROVAL.
	<ul> <li>F. <u>WIND LATERAL LIVE LOADS</u></li> <li>1. ULTIMATE DESIGN WIND SPEED = 115 MPH</li> <li>2. RISK CATEGORY = II</li> <li>3. WAND EXPOSITION OF THE COMPARENCE OF THE COM</li></ul>		7. DEPRESS FOUNDATION WALLS 8" AT DOOR OPENINGS, UNLESS NOTED OTHERWISE. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR VERIFICATION OF DOOR OPENING LOCATIONS.
	3. WIND EXPOSURE = C 4. INTERNAL PRESSURE COEFFICIENT, $GC_{PI} = \pm 0.18$ 5. COMPONENTS/CLADDING WIND PRESSURE: ZONE 1 = ±21.8 PSF ZONE 2 = ±37.9 PSF ZONE 3 = ±56.0 PSF ZONE 4 = ±25.8 PSF ZONE 5 = ±31.8 PSF		<ol> <li>SECURE WATER STOPS TO AVOID SHIFTING WHEN CONCRETE IS PLACED.</li> <li>COLUMN CENTERLINES AND PILE CAPS ARE LOCATED ON COLUMN CENTERLINES UNLESS NOTED OTHERWISE.</li> </ol>
	G. <u>SNOW LOADS</u> 1. GROUND SNOW LOAD, $P_G = 50 \text{ PSF}$ 2. SNOW EXPOSURE FACTOR, $C_F = 1.0$	IV.	CONCRETE
	3. SNOW IMPORTANCE FACTOR, $I = 1.0$ 4. THERMAL FACTOR, $C_T = 1.0$ 5. FLAT ROOF SNOW LOAD, $P_F = 35$ PSF 6. UNBALANCED, SLIDING AND DRIFTS PER ASCE 7-10		<ul> <li>A. <u>CAST-IN-PLACE CONCRETE</u></li> <li>1. <u>APPLICABLE SPECIFICATIONS</u></li> <li>a. STRUCTURAL CONCRETE: ACI 301</li> <li>b. HOT WEATHER CONCRETING: ACI 305</li> </ul>
	<ul> <li>H. <u>SEISMIC LATERAL LIVE LOADS</u></li> <li>1. SEISMIC RISK CATEGORY = II</li> <li>2. SEISMIC DESIGN CATEGORY = B</li> <li>3. SITE CLASS = D</li> <li>4. IMPORTANCE FACTOR, Is = 1.0</li> <li>5. RESPONSE MODIFICATION FACTOR, R = 3.0</li> <li>6. SEISMIC RESPONSE COEFFICIENT, Cs = 0.0365</li> <li>7. MAPPED SPECTRAL RESPONSE ACCELERATIONS: Ss = 0.095; S1 = 0.056</li> <li>8. SPECTRAL RESPONSE COEFFICIENTS: SDS = 0.102; SD1 = 0.090</li> <li>9. BASIC SEISMIC FORCE RESISTING SYSTEM: STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE.</li> <li>10. ANALYSIS USED: EQUIVALENT LATERAL FORCE PROCEDURE</li> </ul>		<ul> <li>c. COLD WEATHER CONCRETING: ACI 306</li> <li>d. CONCRETE MIX: ACI 301</li> <li>e. REINFORCEMENT LAP &amp; EMBEDMENT LENGTH: ACI 318</li> <li>f. REINFORCEMENT DETAILING: ACI 315</li> <li>g. WELDING REINFORCING STEEL: AWS D1.4</li> <li>h. PORTLAND CEMENT CONCRETE: ASTM C150</li> <li>i. AGGREGATE: ASTM C33</li> <li>j. REINFORCING STEEL: ASTM A615</li> <li>k. WELDED WIRE FABRIC, MIN. 70 KSI STRENGTH: ASTM A185</li> <li>l. EPOXY COATED REINFORCING STEEL: ASTM A775</li> <li>m. ADMIXTURES: ASTM C494</li> <li>n. AIR-ENTRAINING ADMIXTURES: ASTM C260</li> </ul>
	I. <u>SERVICEABILITY DEFLECTION (L=STRUCTURAL COMPONENT SPAN LENGTH)</u> 1. FLOOR: LIVE LOAD = L/360 2. ROOF: LIVE LOAD = L/240		<ol> <li>READY-INIXED CONCRETE: ASTM C94</li> <li>INTERIOR AND FOUNDATION CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 4,00 PSI AT 28 DAYS.</li> </ol>
II.	OVERVIEW		<ol> <li>CONCRETE EXPOSED TO WEATHER SHALL HAVE A MINIMUM STRENGTH OF 4,000 PSI AT 28 DAYS, LIMESTONE AGGREGATE AND 4%-7% ENTRAINED AIR.</li> </ol>
	<ul> <li>A. <u>GENERAL</u> <ol> <li>ANY CHANGES TO THE STRUCTURAL DESIGN MUST HAVE WRITTEN APPROVAL FROM THE ENGINEER OF CERTIFICATION MAY BE INVALIDATED.</li> <li>THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR FOLLOWING SAFETY PRECAUTIONS AND RECONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR METHODS, TECHNIQUES, SEQUENCING AND OF THE WORK.</li> </ol> </li> <li>THESE DRAWINGS INDICATE GENERAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT DETAILED, CONSTRUCTION SIMILAR TO THE DRAWING DETAILS SHALL BE USED, UNLESS NOTED OTHER</li> </ul>	OR THE GULATIONS. D SUPERVISION SPECIFICALLY ERWISE.	<ul> <li>4. MINIMUM CONCRETE COVER FOR REINFORCING STEEL:</li> <li>a. CAST AGAINST &amp; PERMANENTLY EXPOSED TO EARTH: 3"</li> <li>b. FORMED SURFACES EXPOSED TO WEATHER OR IN CONTACT WITH SOIL: <ol> <li>#5 BARS OR LESS: 1-1/2"</li> <li>#6 BARS OR GREATER: 2"</li> <li>c. FORMED SURFACE NOT EXPOSED TO WEATHER: 1-1/2"</li> <li>G. FORMED SURFACES NOT EXPOSED TO WEATHER: 1-1/2"</li> <li>d. FORMED SURFACES NOT EXPOSED TO WEATHER OR NOT IN CONTACT WITH SOIL</li> <li>SLABS, WALLS, JOISTS: 3/4"</li> <li>BEAMS &amp; COLUMNS - PRIMARY REINFORCEMENT: 1-1/2"</li> </ol> </li> </ul>
	<ol> <li>THE CONTRACTOR SHALL USE THESE DRAWINGS TOGETHER WITH THE DRAWINGS AND SPECIFICATIC OTHER DISCIPLINES ON THE PROJECT AND SHALL VERIFY THE REQUIREMENTS OF OTHER TRADES THA WITH THE STRUCTURAL WORK.</li> <li>THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. IT IS THE SOLE RESPONSIBILITY OF THE CON</li> </ol>	ONS OF ALL AT INTERFACE ITRACTOR TO	<ol> <li>STEEL REINFORCING SHALL BE GRADE 60. TIES AND STIRRUPS SHALL BE GRADE 60.</li> <li>LAP CONTINUOUS REINFORCING STEEL WITH CLASS B SPLICES PER ACI 318, UNLESS NOTED OTHERWISE. PROVIDE MIN. LAP LENGTH PER TABLE ON THIS SHEET.</li> </ol>
	DESIGN, INSTALL AND INSPECT ADEQUATE AND SAFE TEMPORARY BRACING, SHORING, ETC. REQUI CONSTRUCTION UNTIL ALL STRUCTURAL WORK IS COMPLETED.	RED DURING	<ol> <li>PROVIDE PLASTIC OR STAINLESS STEEL SUPPORTS FOR REINFORCING STEEL TO INSURI MINIMUM CONCRETE COVER.</li> <li>SET DEINEODOING STEEL AND SECURE DRIOD TO DIACING CONCRETE MEDICAL</li> </ol>
	7. THE CONTRACTOR SHALL COMPLY WITH THE SUPPLIER'S MANUFACTURING, DELIVERY, HANDLING, ST ERECTION SPECIFICATIONS FOR ALL STRUCTURAL SYSTEM COMPONENTS.	Torage and	<ol> <li>SET REINFORCING STEEL AND SECURE PROR TO PLACING CONCRETE. VERTICAL DOWELS FOR MASONRY WALL REINFORCING MAY BE FLOATED IN PLACE.</li> </ol>
	<ol> <li>THE CURRENT EDITIONS OF ASTM STANDARDS AND ALL REFERENCES SHALL APPLY UNLESS NOTED C</li> <li>DEMOLISHED ITEMS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED SITE, UNLESS NOTED OTHERWISE.</li> </ol>	) Therwise. ) From the	<ol> <li>REINFORCING STEEL SHALL BE CONTINUOUS AT CORNERS. EXTEND WALL VERTICAL REINFORCING INTO FOOTINGS AND PROVIDE DOWELS AS REQUIRED.</li> <li>10. DO NOT FIELD BEND REINFORCING BARS EMBEDDED IN HARDENED CONCRETE.</li> </ol>
	10. DO NOT SCALE DRAWINGS. USE INDICATED DIMENSIONS ONLY.		11. WELDED WIRE FABRIC SHALL CONFORM TO THE SPECIFICATIONS IN THE "SLAB-ON- GRADE" SECTION OF THESE STRUCTURAL NOTES.
	<ul> <li>B. <u>SHOP DRAWINGS</u></li> <li>1. THE GENERAL CONTRACTOR SHALL REVIEW, CHECK AND COORDINATE THE SHOP DRAWINGS AND REVIEW STAMPED SET TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION. SHOP DRAWINGS WIT CONTRACTOR REVIEW STAMP WILL BE REJECTED BY THE ENGINEER.</li> </ul>	submit a Thout a	12. Concrete superstructure formwork shall remain in place until concret has obtained at least 90% of 28 day compressive strength. Contractor shall be responsible for shoring and re-shoring.
	<ol> <li>THE ENGINEER WILL REVIEW SHOP DRAWINGS ONLY FOR CONFORMANCE WITH THE DESIGN CONC GENERAL COMPLIANCE WITH THE DRAWINGS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ERRO OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS.</li> </ol>	CEPT AND ORS AND	<ul> <li>B. <u>SLAB-ON-GRADE</u></li> <li>1. CONCRETE WORK SHALL CONFORM TO THE SPECIFICATIONS IN THE "CAST-IN-PLACE CONCRETE" SECTION OF THESE STRUCTURAL NOTES.</li> </ul>
	3. The Engineer shall review the shop drawings in accordance with a schedule pre-appr Engineer; Or, in the absence of a schedule, in a manner deemed timely by the engineer	OVED BY THE	2. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 SPECIFICATIONS; BE SUPPLIE IN FLAT SHEETS, LAP ADJOINING PIECES BY AT LEAST ONE FULL MESH AND BE HELD IN PLACE AS NEEDED TO REMAIN IN THE PROPER POSITION WHEN CONCRETE IS PLACE
	<ol> <li>AS A MINIMUM, SUBMIT THE FOLLOWING APPLICABLE SHOP DRAWINGS FOR REVIEW: (1) CONCRETE SPECIFICATIONS; (2) CONCRETE REINFORCING STEEL; (3) LOAD BEARING MASONRY REINFORCING STRUCTURAL STEEL; (5) STEEL JOISTS/GIRDERS; (6) METAL DECK; (7) WOOD TRUSSES; (8) LOAD BEARI FORMED STEEL FRAMING: (0) DECASE CONCRETE</li> </ol>	E MIX DESIGN S STEEL; (4) NG COLD-	3. PROVIDE ONE LAYER OF 6X6-W2.1XW2.1 WELDED WIRE FABRIC PLACED 1-1/2" CLEAR BELOW THE TOP OF THE SLAB, UNLESS NOTED OTHERWISE.
	C. <u>SPECIAL INSPECTIONS</u>		4. EXTERIOR SLABS TO BE UNREINFORCED UNLESS NOTED OTHERWISE. WHERE REINFORCING IS NOTED, ALL EXTERIOR SLAB REINFORCING SHALL BE EPOXY COATE
	1. THE <b>CONTRACTOR</b> SHALL EMPLOY ONE OR MORE 3RD PARTY SPECIAL INSPECTORS WHO SHALL PI- INSPECTIONS AND MATERIALS TESTING DURING CONSTRUCTION. ALL SPECIAL INSPECTIONS AND TE CONFORM TO THE REQUIREMENTS OF THE 2015 MICHIGAN BUILDING CODE (MBC).	Rovide Isting Shall	5. POLYPROPYLENE FIBER REINFORCEMENT IS PROHIBITED WITHOUT THE WRITTEN AUTHORIZATION OF THE ENGINEER.
	2. SPECIAL INSPECTIONS ARE IN ADDITION TO THE INSPECTIONS CONDUCTED BY THE LOCAL BUILDING SPECIAL INSPECTIONS SHALL NOT RELIEVE THE OWNER AND CONTRACTOR FROM REQUESTING THE OFFICIAL'S INSPECTIONS REQUIRED BY MBC SECTION 110.	9 OFFICIAL. BUILDING	<ol> <li>PROVIDE 6 MIL POLYETHYLENE VAPOR BARRIER OVER 4" POROUS SUBGRADE OR POROUS FILL COMPACTED TO 95% STANDARD PROCTOR UNDER INTERIOR CONCRETE SLABS.</li> </ol>
	3. SPECIAL INSPECTORS SHALL BE GIVEN PROPER NOTICE AND ACCESS TO THE SITE TO PERFORM TEST INSPECTION AS NECESSARY.	TING AND	7. POROUS FILL SHALL BE CLEAN GRANULAR MATERIAL WITH 100% PASSING THROUGH 1-1/2" SIEVE AND NO MORE THAN 5% PASSING THROUGH A NO. 4 SIEVE.
	<ul> <li>4. REQUIRED CATEGORIES OF SPECIAL INSPECTIONS:</li> <li>a. STEEL CONSTRUCTION (MBC SECTION 1705.2)</li> <li>b. CONCRETE CONSTRUCTION (MBC SECTION 1705.3)</li> <li>c. MASONRY CONSTRUCTION (MBS SECTION 1705.4)</li> <li>d. SOILS (MBC SECTION 1705.6)</li> </ul>		8. MAXIMUM JOINT SPACING SHALL BE 36 TIMES THE SLAB THICKNESS. SAWCUT JOINTS AS SOON AS POSSIBLE AFTER CONCRETE IS PLACED. DO NOT SPALL JOINT EDGES. FILL SAWN JOINTS WITH EPOXY RESIN 4-6 WEEKS AFTER SLAB IS CAST. REMOVE DEBRI FROM JOINTS PRIOR TO FILLING.
	5. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR:		9. PROVIDE EXPANSION JOINTS BETWEEN EXTERIOR SLABS-ON-GRADE AND THE BUILDING.
	<ul> <li>C. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO VERIEY THAT IT CONFORMS TO DOCUMENTS.</li> <li>b. THE SPECIAL INSPECTOR SHALL NOT AUTHORIZE OR APPROVE DEVIATIONS FROM THE CONTRACT DOCUMENTS. ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS MUST BE INITIATED BY THE C VIA A WRITTEN REQUEST FOR INFORMATION (RFI) AND APPROVED BY THE ENGINEER OF RECORD PROCEEDING WITH WORK.</li> <li>C. THE SPECIAL INSPECTOR SHALL FURNISH WRITTEN INSPECTION REPORTS TO THE THE CONTRACT CORRECTION. IF CORRECTIONS ARE NOT MADE, THE BUILDINGOFFICIAL AND ENGINEER AND/O SHALL BE NOTIFIED.</li> </ul>	CT CONTRACTOR D PRIOR TO OR FOR OR ARCHITECT	10. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF DEPRESSED SLABS AND DRAINS SLOPE SLAB TO DRAINS.

VE A MINIMUM STRENGTH OF 4,000

A185 SPECIFICATIONS; BE SUPPLIED IT ONE FULL MESH AND BE HELD IN SITION WHEN CONCRETE IS PLACED.

DTED OTHERWISE. WHERE ORCING SHALL BE EPOXY COATED. BITED WITHOUT THE WRITTEN

WITH 100% PASSING THROUGH A ROUGH A NO. 4 SIEVE.

SLAB THICKNESS. SAWCUT JOINTS . DO NOT SPALL JOINT EDGES. TER SLAB IS CAST. REMOVE DEBRIS

# V. <u>STEEL</u>

# A. STRUCTURAL STEEL

- APPLICABLE SPECIFICATIONS (FY=MINIMUM YIELD STRENGTH) a. W Shapes, Min. FY = 50 KSI: Astm A992
- b. HSS ROUND SHAPES, MIN FY = 42 KSI: ASTM A500, GRADE B
- c. HSS RECTANGULAR SHAPES, MIN. FY = 46 KSI: ASTM A500, GRADE B
- d. M, S, C, MC, L SHAPES, MIN. FY = 36 KSI: ASTM A36 e. HP SHAPES, MIN. FY = 50 KSI: ASTM A572, GRADE 50
- f. BEARING PLATES, MIN. FY = 36 KSI: ASTM A36
- g. ANCHOR BOLTS: ASTM F1554, GRADE 36 h. HIGH STRENGTH BOLTS, MIN. ULTIMATE STRENGTH, FU = 120 KSI: ASTM A325
- i. THREADED RODS, MIN. FY = 36 KSI: ASTM A36
- NON-SHRINK GROUT, MIN. 8,000 PSI STRENGTH: ASTM C1107 k. STRUCTURAL STEEL CONSTRUCTION: AISC, TYPE 2
- I. HOT-DIP GALVANIZING: ASTM A153
- m. Welding, Min. FY = 58 KSI for Filler Material: AWS D1.1
- 2. STEEL FABRICATOR SHALL MAINTAIN DETAILED QUALITY CONTROL PROCEDURES AS REQUIRED BY THE SPECIAL INSPECTION SPECIFICATIONS OF THE INTERNATIONAL BUILDING CODE.
- 3. CONNECTIONS SHALL BE SHEAR TYPE UNLESS NOTED OTHERWISE AND DESIGNED BY THE FABRICATOR FOR SHEAR LOADS INDICATED ON THESE DRAWINGS IN ACCORDANCE WITH THE AISC SPECIFICATIONS DESIGNATED IN THE "DESIGN BASIS" SECTION OF THESE STRUCTURAL NOTES.
- 4. COLUMNS, ANCHOR BOLTS, BASE PLATES, ETC. ARE DESIGNED FOR THE FINAL LOADING CONDITION AND HAVE NOT BEEN INVESTIGATED FOR POTENTIAL LOADINGS DURING ERECTION AND CONSTRUCTION. THIS INVESTIGATION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 5. MOMENT CONNECTIONS ARE DENOTED WITH THE SYMBOL > ON THESE DRAWINGS. THE FABRICATOR SHALL SUBMIT CALCULATIONS AND SHOP DRAWINGS FOR ALL SPECIAL CONNECTIONS, INCLUDING MOMENT CONNECTIONS. CALCULATIONS SHALL BE CERTIFIED BY AN ENGINEER REGISTERED IN THE STATE WHERE INSTALLED.
- 6. BOLTS SHALL BE SNUG-FIT SHEAR/BEARING TYPE WITH MINIMUM 3/4" DIAMETER, UNLESS NOTED OTHERWISE.
- 7. A CERTIFIED WELDER SHALL PERFORM ALL WELDING WORK. USE E70XX ELECTRODES FOR WELDING, UNLESS NOTED OTHERWISE. PROVIDE CONTINUOUS MINIMUM SIZED FILLET WELDS IN ACCORDANCE WITH AISC SPECIFICATIONS. TOUCH UP WELDED CONNECTIONS WITH ZINC RICH PRIMER.
- 8. DRILL OR PUNCH HOLES IN STEEL. PROVIDE SMOOTH EDGES FOR SLOTTED HOLES. BURNING AND TORCH CUTTING AT THE SITE IS NOT PERMITTED.
- 9. SHOP PAINT STRUCTURAL STEEL WITH ONE COAT OF RUST INHIBITIVE ALKYD PRIMER, UNLESS NOTED OTHERWISE.
- 10. HOT-DIP GALVANIZE STRUCTURAL STEEL PERMANENTLY EXPOSED TO THE WEATHER, INCLUDING BRICK SHELF ANGLES AND LINTELS AT EXTERIOR OPENINGS.
- 11. FIELD REPAIR PERMANENT COATINGS DAMAGED DURING TRANSPORT, ERECTING AND FIELD WELDING TO MATCH THE SHOP APPLIED COATING.
- 12. THE STRUCTURAL STEEL ERECTOR SHALL PROVIDE TEMPORARY GUYING AND BRACING. 13. PROVIDE ANGLE FRAMES AT ROOF OPENINGS AND ROOFTOP MECHANICAL UNITS IN ACCORDANCE WITH DETAILS PROVIDED IN THESE DRAWINGS.

B. STEEL JOISTS & JOIST GIRDERS

- 1. STEEL JOIST INSTITUTE (SJI) STANDARDS AND SPECIFICATIONS SHALL APPLY FOR THE DESIGN, FABRICATION, AND ERECTION OF STEEL JOISTS AND GIRDERS, INCLUDING JOIST BRIDGING AND SHOP PAINTING.
- 2. JOIST AND GIRDER MANUFACTURERS SHALL BE SJI CERTIFIED AND MAINTAIN APPROVED FABRICATION PROCEDURES AS REQUIRED BY THE SPECIAL INSPECTION SPECIFICATIONS OF THE INTERNATIONAL BUILDING CODE.
- 3. PRIOR TO FABRICATION, THE JOIST MANUFACTURER SHALL SUBMIT CALCULATIONS TO THE ENGINEER FOR SPECIAL JOISTS AND ALL JOIST GIRDERS, CERTIFIED BY A PROFESSIONAL IN THE STATE WHERE INSTALLED FOR RECORD PURPOSES.
- 4. PROPERLY ANCHOR JOISTS AT BEARINGS. REFER TO ANY DETAILS IN THESE DRAWINGS.
- 5. COMPLETELY INSTALL JOIST BRIDGING AND CONNECTIONS PRIOR TO PLACING ANY CONSTRUCTION LOADS ON THE JOISTS. CONSTRUCTION LOADS SHALL NOT EXCEED JOIST DESIGN LOAD.

MINIMUM REINF. BAR LAP LEGTHS TABLE					
REBAR SIZE	VERT. BARS	HORIZ. BARS			
#3	19"	25"			
#4	25"	33"			
#5	31"	41"			
#6	37"	49"			

# V. STEEL CONT.

- AT STANDING SEAM ROOFS, PROVIDE ADDITIONAL BRIDGIN TOP CHORDS AGAINST LOADS ON THE JOISTS. CONSTRUCT EXCEED JOIST DESIGN LOAD.
- DESIGN ROOF JOISTS AND GIRDERS FOR A NET WIND UPLIF DRAWINGS. MANUFACTURER SHALL PROVIDE BOTTOM CHO AS REQUIRED TO RESIST WIND UPLIFT.
- 8. JOIST ON COLUMN CENTERLINES SHALL HAVE EXTENDED BO CONNECTIONS. REFER TO ANY DETAILS IN THESE DRAWINGS BOTTOM CHORD EXTENSION TO STABILIZER PLATE.
- 9. ATTACH FIELD INSTALLED MEMBERS AT CONCENTRATED LOA PANEL POINTS.
- 10. INSTALL ADDITIONAL JOISTS UNDER PARTITIONS RUNNING PA
- C. LOAD BEARING COLD-FORMED STEEL FRAMING AMERICAN IRON AND STEEL INSTITUTE (AISI) "NORTH AMERIC THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBE DESIGN, FABRICATION AND ERECTION OF COLD-FORMED INCLUDING BRIDGING FOR STUDS AND WEB STIFFENERS AT BEARINGS.
- 2. FORM FRAMING MEMBERS FROM STEEL CONFORMING TO MINIMUM YIELD STRENGTH OF 50 KSI, UNLESS NOTED OTHEI
- 3. FASTENING OF STRUCTURAL MEMBERS SHALL BE MADE WITH OR ADEQUATELY SIZED WELDS.
- 4. WELDING SHALL CONFORM TO AWS D1.3. TOUCH UP WELD 5. PROVIDE THE MANUFACTUER'S STANDARD TRACKS, CLIP AND
- REINFORMENT, FASTENERS, AND ACCESORIES AS RECOMM APPLICATION INDICATED.
- 6. CONTRACTOR SHALL SUBMIT THE FOLLOWING TO THE ENGI a. MANUFACTURER'S PRODUCT AND MOST CURRENT TECH b. ERECTION DRAWINGS WITH THE FRAMING MEMBER QUA AND SPACING, CLEARLY SHOWING ALL CONNECTIONS c. PROPERTIES DEMONSTRATING CONFORMANCE WITH SP NOTES OF FRAMING MEMBERS USED IN LOAD BEARING
- 7. TRACK GAGE SHALL NOT BE LIGHTER THAN THE FRAMING BE CONNECT TRACKS TO CONCRETE WITH 0.205 INCH DIAME FASTENERS SPACED AT 16 INCHED ON CENTER WITH 1.25 IN NOTED OTHERWISE.
- 8. AXIALLY LOADES STUDS SHALL HAVE FULL BEARING AGAINST PRIOR TO STUD AN DTRACK ALIGNMENT. SPLICES IN AXIALLY PERMITTED.
- 9. PROVIDE DOUBLE JACK STUDS AT BEAM BEARINGS, UNLESS
- D. PRE-ENGINEERED COLD FORMED STEEL TRUSSES THE CONTRACTOR SHALL EMPLOY A STRUCTURAL ENGINEER WHERE THE TRUSSED ARE BEING INSTALLED TO DESIGN ALL A INCLUDING MEMBER SIZES, GAGES, CONNECTIONS, BRACI
- 2. DESIGN METAL TRUSSES IN ACCORDANCE WITH AISI PROVISI LOADS SPECIFIED IN THE "DESIGN BASIS" SECTION OF THESE
- 3. THE "LOAD BEARING COLD-FORMED STEEL" SECTION OF THE SHALL APPLY TO FRAMING MEMBERS.
- 4. MAXIMUM LIVE LOAD DEFLECTION IS LIMITED TO L/360. (L=S INDIVIDUAL STRUCTURAL COMPONENT.)
- 5. CONTRACTOR SHALL SUBMIT SHOP DRAWING TO THE ENGIN PROFESSIONAL ENGINEER LISCENSED IN THE STATE WHERE CALCULATIONS. MEMBER SIZES, GAGE, YIELD STRENGTH, CO CAMBER, DIMENSIONS, CHORD PITCH, AND DESIGN LOADS
- 6. CONTRACTOR SHALLL ERECT TRUSSES IN ACCORDANCE WI SPECIFICATIONS AND SHALL PROVIDE TEMPORARY AND PER
- E. METAL ROOF & FLOOR DECK AMERICAN STEEL DECK INSTITUTE "DESIGN MANUAL FOR CC
- DECKS AND ROOF DECKS" SHALL APPLY FOR THE MANUFAC OF METAL DECK.
- 2. CONCRETE TOPPING SHALL HAVE A MINIMUM 28 DAY COM 3,000 PSI WITH MAXIMUM 1/2 INCH AGGREGATE SIZE AND UNLESS NOTED OTHERWISE.
- 3. WELDING SHALL BE IN ACCORDANCE WITH AWS D3.1 SPEC WELDING WASHERS FOR FLOOR DECK WELDS. TOUCH UP D
- 4. CONTRACTOR TO SUBMIT SHOP DRAWINGS PRIOR TO FABR
- DECK TYPES, CONNECTION DETAILS AND OTHER RELATED IT 5. DECK SHALL NOT SUPPORT SUSPENDED CEILINGS, LIGHT FIX
- PERMANENT SUSPENDED LOADS.
- 6. PAINT FLOOR DECK. CONFIRM WITH ENGINEER WHETHER RC PAINTED OR GALVANIZED.
- 7. CONNECT ROOF DECK AS SHOWN IN THESE DRAWINGS. AT ATTACH ROOF DECK SIDELAPS AT A MAXIMUM SPACING OF COMPLETELY ATTACH ROOF DECK TO SUPPORTS AND AT SIE APPLYING ANY LOAD TO THE CANTILEVER.

# VI. WOOD

A. WOOD FRAMING 1. MATERIAL SHALL BE SURFACE DRY AND USED AT 19% MAXIM ALLOWABLE STRESS SHALL BE IN ACCORDANCE WITH THE SPE SECTION.

#### 2. UNLESS NOTED OTHERWISE, JOISTS, RAFTERS EXTERIOR WALL INTERIOR WALL STUDS AND MISCELLANEOUS FRAMING SHALL SOUTHERN YELLOW PINE OR BETTER WITH THE FOLLOWING M MEMBERS 2-4 INCHES THICK:

Width	Fb	Ft	Fv	Fc, parallel
2–4 inches	1,500 psi	1,000 psi	175 psi	1,650 psi
5–6 inches	1,350 psi	875 psi	175 psi	1,550 psi
8 inches	1,250 psi	800 psi	175 psi	1,500 psi
10 inches	1,050 psi	700 psi	175 psi	1,450 psi
12 inches	1,000 psi	650 psi	175 psi	1,400 psi

- 3. PRESSURE TREAT FRAMING EXPOSED TO WEATHER OR IN CO OR CONCRETE IN ACCORDANCE WITH THE AMERICAN WOO ASSOCIATION SPECIFICATIONS. WHERE POSSIBLE, COMPLETE TO TREATMENT. FOR ON-SITE FABRICATION, BRUSH CUTS AND OF COPPER NAPHTHENATE SOLUTION CONTAINING MINIMUM IN ACCORDANCE WITH AWWA STD. M4.
- 4 FOR 2 INCH NOMINAL LOAD BEARING FRAMING, WIDE FACE BE LIMITED TO LESS THAN 1/2 OF THE WIDE FACE DIMENSION OR THICKER LOAD BEARING FRAMING, WIDE FACE LENGTH ( TO LESS THAN 1/2 OF THE NARROW FACE DIMENSION.

IG TO ADEQUATELY BRACE	1. WOOD CONT.         5. PREFABRICATED LAMINATED VENEER LUMBER (LVL) FRAMING FOR HEADERS AND
TION LOADS SHALL NOT	BEAMS SHALL BE "2.0E MICROLLAM LVL" WITH THE FOLLOWING MINIMUM PROPERTIES: $G$ $E$ $Emin$ $Fb$ $Ft$ $Fc,perp.$ $Fc,parallel$ $Fv$ $SG$
T AS SPECIFIED ON THESE DRD BRACING FOR JOISTS	(psi)       (psi)       (psi)       (psi)       (psi)       (psi)       (psi)       (psi)         125,000       2.0x10 ⁶ 1,016,535       2,600       1,555       750       2,510       285       0.50       Unit of the product of the pr
OTTOM CHORD S. DO NOT CONNECT	6. PREFABRICATED PARALLEL STRAND LUMBER (PSL) FRAMING FOR HEADERS AND BEAMS SHALL BE "2.0E PARALLAM PSL" WITH THE FOLLOWING MINIMUM PROPERTIES:
ADS NOT OCCURING AT	G (psi)E (psi)Emin (psi)Fb (psi)Ft (psi)Fc,perp. (psi)Fc,parallel (psi)Fv (psi)SGG (psi)Fb 
ARALLEL TO JOISTS.	125,000 2.0x10 ⁶ 1,016,535 2,900 2,025 625 2,900 290 0.50
CAN SPECIFICATION FOR	7. PREFABRICATED PARALLEL STRAND LUMBER (PSL) FRAMING FOR COLUMNS SHALL BE "1.8E PARALLAM PSL" WITH THE FOLLOWING MINIMUM PROPERTIES:
RS" SHALL APPLY FOR THE STEEL FRAMING MEMBERS JOIST AND RAFTER	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
ASTM A653 WITH A	8 EXTERIOR PREFABRICATED I LIMBER ERAMINIC SHALL BE "PARALLAM PLUS PSL" TREATED
RWISE.	TO RESIST FUNGAL DECAY AND TERMITE ATTACK. $2 \rightarrow 0$ NOT CUIT OR NOTCH LVI AND RSI EDAMING WITHOUT THE MANUEACTURED'S
	APPROVAL.
)s with zinc rich primer. Igles, bracing,	10. PROVIDE DOUBLE JOISTS UNDER PARTITIONS THAT ARE PARALLEL TO THE JOISTS AND UNDER CONCENTRATED LOADS FROM THE FRAMING ABOVE.
1ENDED FOR THE	11. FRAME AROUND PLYWOOD DECK OPENINGS WITH HEADER BEAMS EQUAL TO THE JOIST/RAFTER MEMBER SIZE, UNLESS NOTED OTHERWISE.
NEER: INICAL DATA. ANTITY, TYPE, LOCATION	12. HOLES AND NOTCHES CUT OR DRILLED INTO WOOD FRAMING SHALL BE IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE REQUIREMENTS.
AND ATTACHMENTS. PECIFICATIONS IN THESE	13. HOT DIP GALVANIZE PLATES, ANCHORS, BOLTS, NAILS, NUTS WASHERS AND OTHER MISCELLANEOUS HARDWARE.
, APPLICATIONS. EING CONNECTED.	14. PROVIDE A STEEL BASE PLATE AT COLUMNS TO PREVENT MOISTURE TRANSMISSION.
TER POWER DRIVEN NCH EMBEDMENT, UNLESS	15. PREFABRICATED METAL JOIST HANGERS, HURRICANE CLIPS, HOLD DOWN ANCHORS AND OTHER ACCESSORIES SHALL BE MANUFACTURED BY "SIMPSON STRONG-TIE" OR APPROVED EQUAL. INSTALL ALL ACCESSORIES IN ACCORDANCE WITH THE
THE INSIDETRACK WEB Y LOADED STUDS ARE NOT	MANUFACTURER'S REQUIREMENTS. STEEL SHALL BE ASTM GRADE A STEEL, 0.04 INCHES OR GREATER IN COATED THICKNESS AND HAVE A G60 GALVANIZED COATING IN ACCORDANCE WITH ASTM A653.
NOTED OTHERWISE.	B. <u>PLYWOOD SHEATHING</u> 1. SPECIFICATIONS OF THE APA-THE ENGINEERED WOOD ASSOCIATION SHALL APPLY FOR PLYWOOD CONSTRUCTION
R LISCENSED IN THE STATE	2. UNLESS NOTED OTHERWISE, <u>ROOF PANEL SHEATHING</u> SHALL BE APA RATED SHEATHING PEDEODMANCE CATECODY 19/32, SPAN PATING 49/20, EXPOSURE 1, CONNECTED
ING, WEB STIFFENERS, ETC.	WITH 10D COMMON NAILS (MIN. 0.148 INCH DIA.) SPACED AT 6 INCHES ON CENTER AT SUPPORTED PANEL EDGES AND INTERMEDIATE SUPPORTS. USE PANEL CLIPS OR
Sions to support the E structural notes.	BLOCKING BETWEEN FRAMING FOR SUITABLE EDGE SUPPORT.
IESE STRUCTURAL NOTES	SHEATHING PERFORMANCE CATEGORY 23/32, SPAN RATING 48/24, EXPOSURE 1 WITH TONGUE AND GROOVE EDGES, CONNECTED WITH 10D COMMON NAILS (MIN. 0.148 INCH DIA ) SPACED AT 6 INCHES ON CENTER AT SUPPORTED PANEL EDGES AND
SPAN LENGTH OF	INTERMEDIATE SUPPORTS. FIELD GLUE SHALL BE IN ACCORDANCE WITH APA SPECIFICATION AFG-01 APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S
NEER CERTIFIED BY A INSTALLED WITH	4. UNLESS NOTED OTHERWISE, <u>WALL PANEL SHEATHING</u> SHALL BE APA RATED SHEATHING
ONNECTIONS, SPAN, S. ITH MANUFACTURER'S	WITH 8D COMMON NAILS (MIN. 0.131 INCH DIA.) SPACED AT 6 INCHES ON CENTER         AT SUPPORTED PANEL EDGES AND 12 INCHES ON CENTER AT INTERMEDIATE         SUPPORTS. FIELD GLUE SHALL BE IN ACCORDANCE WITH APA SPECIFICATION AFG-01
RMANENT BRACING.	APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. USE BLOCKING BETWEEN FRAMING FOR EDGE SUPPORT.
OMPOSITE DECKS, FORM CTURING AND ERECTION	5. INSTALL PLYWOOD SHEATHING WITH THE LONG DIMENSION SPANNING ACROSS SUPPORTS AND CONTINUOUS OVER TWO OR MORE SPANS. STAGGER PANEL END JOINTS. ALLOW 1/8 INCH SPACING UNLESS RECOMMENDED OTHERWISE BY SHEATHING MANUFACTURER.
MPRESSIVE STRENGTH OF MAXIMUM 4 INCH SLUMP,	6. DO NOT OVERDRIVE NAILS. THE USE OF STAPLES AND PNEUMATIC GUNS IS PROHIBITED.
CIFICATIONS. PROVIDE DECK WELDS WITH PAINT.	7. PROVIDE 2X BLOCKING AT UNSUPPORTED PANEL EDGES IN ROOFS, FLOORS AND SHEAR WALLS.
ICATION WITH LAYOUT, TEMS.	C. <u>SIPS PANEL</u> 1. THE DELEGATED DESIGN PROFESSIONAL IS RESPONSIBLE FOR THE PANEL DESIGN AND
KTURES, DUCTS AND OTHER	TO BE TI-11 PLYWOOD.
OOF DECK SHALL BE	2. SEE DESIGN BASIS SECTION ON SO.1 FOR ROOF LOADING APPLICABLE TO SIPS PANEL JMC DESIGN.
T ENDS OF CANTILEVERS, F 12 INCHES ON CENTER	3. FASTENING TO STRUCTURAL MEMBERS SHALL BE DESIGNED TO MEET OR EXCEED THE NOTED METAL DECK CONNECTION CAPACITIES.
DELAPS PRIOR TO	4. PROVIDE THE MANUFACTUER'S STANDARD TRACKS, CLIP ANGLES, BRACING, REINFORMENT, FASTENERS, AND ACCESORIES AS RECOMMENDED FOR THE APPLICATION INDICATED BY THE DELEGATED DESIGN PROFESSIONAL.
	5. ALL SIPS PANEL CONNECTORS TO BE BE CONSEALED AND PANEL SPLINES TO ALIGN WITH BEARING LOCATIONS. THE ONLY VISIBLE COMPONENTS OF THE SIPS PANEL IS TO
IUM MOISTURE CONTENT.	6. CONTRACTOR SHALL SUBMIT THE FOLLOWING TO THE ENGINEER:
ECIFICATIONS OF THIS	a. MANUFACTURER'S PRODUCT AND MOST CURRENT TECHNICAL DATA. b. ERECTION DRAWINGS WITH THE FRAMING MEMBER QUANTITY, TYPE, LOCATION AND SPACING, CLEARLY SHOWING ALL CONNECTIONS AND ATTACHMENTS
Studs, load bearing L Be No. 1 grade Iinimum properties for	c. PROPERTIES DEMONSTRATING CONFORMANCE WITH SPECIFICATIONS IN THESE NOTES OF FRAMING MEMBERS USED IN LOAD BEARING APPLICATIONS.
	2 SIGNATURE: SIGNATURE: SIGNATURE:
Fc, perp. E 565 psi 1,600 psi	DATE:
565 psi 1,600 psi	
565 psi 1,600 psi	HARD COPY IS INTENDED TO B 24" x 36" WHEN PLOTTED SCALE(S) INDICATED AND
565 psi 1,600 psi 565 psi 1,600 psi	GRAPHIC QUALITY MAY NOT BE ACCURATE FOR ANY OTHE SIZES
NTACT WITH MASONRY	SCALE:
DD PRESERVERS E CUTS AND HOLES PRIOR D HOLES WITH TWO COATS	
M 2% METALLIC COPPER	22-1836
E LENGTH OF SPLIT SHALL J. FOR 3 INCH NOMINAL	
	ZADDENDUM Z01/19/2024NO.REVISION DESCRIPTIONBYDATE

![](_page_135_Figure_0.jpeg)

		FOOTING SCHEDULE				~
sions	THICK	LOCATION	t/ftg. Elev.	TOP REINF.	BOT. REINF.	QNTY
3′-0"	12"	1P/AP, 1P/BP, 2P/AP, 2P/BP	SEE CIVIL	-	#5 @ 11" E.W.	4 ~
3′-0"	12"	2.8/F, 2.8/G, 8.1/F, 8.1/G	97′-0"	-	#5 @ 11" E.W.	4
3′-6"	12"	3.3/B, 3.3/C, 3.3/D, 3.9/F, 3.9/G, 7.1/F, 7.1/G,7.5/A, 7.5/D, 11/J, 11/K, 11/L	97'-0"	-	#5 @ 12" E.W.	12
4'-0"	16"	4.5/D, 5/D, 5.5/E, 6/B.5	99′-4"	-	#5 @ 11" E.W.	4
4'-0"	12"	3.6/D, 5.3/N, 5.7/N, 6.4/A, 7.5/B, 8/M, 10/H.5	97′-0"	-	#5 @ 12" E.W.	7
4'-6"	16"	5.4/D, 8/K.8	99′-4"	-	#5 @ 12" E.W.	2
4'-6"	12"	1/H, 1/M, 3.3/A, 5.4/A, 7.5/C, 9/M, 10/H, 10/M	97′-0"	-	#5 @ 12" E.W.	8
5′-6"	16"	5/E, 5/G, 6/E, 6/G, 8/J.5	99′-4"	-	#5 @ 12" E.W.	5
5′-6"	12"	1/H.7, 1/L.3, 4/H, 7/H, 10/J, 10/L	97′-0"	-	#5 @ 12" E.W.	6
6′-6"	16"	5/H, 6/H	99′-4"	-	#5 @ 12" E.W.	2
6′-6"	12"	1/K, 2/H, 2/M, 3/H, 3/M, 4/M, 7/M	97′-0"	-	#5 @ 12" E.W.	7
7′-0"	12"	4.4,4.6/A	97′-0"	#5 @ 9" Short Way #5 @ 12" Long Way	#5 @ 9" Short Way #5 @ 12" Long Way	1 -
8′-0"	12"	5.8,6/A, 8,8.2/H	97′-0"	#5 @ 9" Short Way #5 @ 12" Long Way	#5 @ 11" SHORT WAY #5 @ 9" LONG WAY	2
8′-0"	16"	5.8,6/D	99'-4"	-	#5 @ 12" SHORT WAY #5 @ 10" LONG WAY	] -
0'-4"	12"	5/M,N, 6/M,N	97'-0"	-	#5 @ 10" SHORT WAY #5 @ 11" LONG WAY	2

	PEDESTAL SCHEDULE							
VERT. REINF. HORIZ. REINF. QNTY. T/PEDES ELEV			T/PEDESTAL ELEV.					
	(10) #5 DOWELS	#4 TIES @ 8" O.C.	8	99′-4"				
	(10) #5 DOWELS	#4 TIES @ 8" O.C.	4	SEE CIVIL				
	(16) #5 DOWELS	#4 TIES @ 8" O.C.	17	99'-4"				
	(8) #5 DOWELS	#4 TIES @ 8" O.C.	4	SEE CIVIL				
	(20) #5 DOWELS	#4 TIES @ 8" O.C.	3	99'-4"				
	(16) #5 DOWELS	#4 TIES @ 8" O.C.	18	99'-4"				
	(22) #5 DOWELS	#4 TIES @ 8" O.C.	17	99'-4"				

![](_page_136_Figure_0.jpeg)

# <u>GENERAL NOTES</u>

1. TYPICAL TOP OF STEEL ELEVATION NOTED ON PLANS.

<u>COLUMN SCHEDULE</u>						
	SHAPE	BASE PLATE	BRG. ELEV.			
	HSS6X6X5/16	SEE PLAN	99'-4"			
	HSS6X6X3/8	SEE PLAN	99′-4"			
	HSS8X6X3/8	SEE PLAN	99′-4"			
	HSS8X8X3/8	SEE PLAN	99′-4"			
	HSS10X8X3/8	SEE PLAN	99′-4"			
	HSS12X6X3/8	SEE PLAN	99′-4"			
	HSS12X8X3/8	SEE PLAN	99′-4"			

 <u>NOTES:</u>
 SEE ROOF FRAMING PLAN (\$1.2) FOR BASE PLATE CALL-OUTS EA. COLUMN. SEE SHEET \$3.1 FOR BASE PLATE DETAILS.
 CAP TOPS OF ALL COLUMNS W/ MIN. 3/8" CAP PLATE U.N.O. IN DETAILS.

# BEAM KEY PLAN

SHEAR REACTION (KIPS ASD)

SHAPE (T.O.S. ELEVATION) SHEAR REACTION (KIPS ASD)

<b>E ABONMARCHE</b>	315 W JEFFERSON BLVD       Benton Harbor       Goshen         South Bend, IN 46601       Grand Haven       Hobart         504.232.8700       Grand Rapids       Lafayette         F574.251.4440       Fort Wayne       Valparaiso         Donmarche.com       Fort Wayne       Valparaiso         copyright 2020 - ABONMARCHE CONSULTANTS.INC.       Engineering, Architecture, Land Surveying
PROJECT: NEW CONSTRUCTION FOR:	CASS DISTRICT LIBRARY EDWARDSBURG BRANCH 26977 W. MAIN STREEET, EDWARDSBURG, MI
	PARTIAL FRAMING PLANS
MODELED E DESIGNED I PM REVIEW QA/QC REV DATE: SEAL: FRAN	Y: JMO SY: JMO SFL JMO SFL SFL 12/20/2023 OF M/CHIC SCOTT CIS LEBLANG NGINEER No. 01067898 SOUTH SCOTT S
SIGNATURE DATE: DATE: HARD COP 24" x 36 SCALE(S) BE ACCURA SCALE: UNLESS I ACI JOB #	Y IS INTENDED TO BE "WHEN PLOTTED OINDICATED AND QUALITY MAY NOT ATE FOR ANY OTHER SIZES
22 SHEET NO. <b>S</b>	-1836 I.1

2	ADDENDUM 2		01/19/2024
NO.	REVISION DESCRIPTION	BY	DATE

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![](_page_137_Figure_2.jpeg)

![](_page_137_Figure_8.jpeg)

![](_page_137_Figure_9.jpeg)

# GENERAL NOTES

1. TYPICAL TOP OF STEEL ELEVATION NOTED ON PLANS.

2. T/STEEL @ MULTIPURPOSE ROOM = 116' - 31/4" U.N.O.

3. T/STEEL @ LIBRARY = 116' - 1 3/4" U.N.O.

4. SEE 1/S3.1 FOR HORIZONTAL W8 MOMENT CONNECTIONS U.N.O.

5. HEADER IN EXTERIOR WALLS <= 7'-0" TO BE (2) 600\$162-54 (TOE TO TOE) WITH (2) 600\$200-68 JACK STUDS AND (1) 600S200-68. HEADER IN EXTERIOR WALLS > = 7'-0" BUT < = 11'-0" TO BE (2) 600S200-68 (TOE TO TOE) WITH (2) 600S200-68 JACK STUDS AND (2) 600S200-68.>

6. BEARING WALLS @ MECH. MEZZ. TO BE 600\$162-54 @ 16" O.C.

7. PROVIDE 1/4" BENT PLATE EDGE ANGLE CONTINUOUS AT ALL 3" ROOF DECK EDGES.

8. PROVIDE L4X4X1/4 CONTINUOUS ROOF DECK EDGE ANGLE AT ALL 1.5" AND 1.0" ROOF DECK EDGES.

<u>COLUMN SCHEDULE</u>						
	SHAPE	BASE PLATE	BRG. ELEV.			
	HSS6X6X5/16	SEE PLAN	99′-4"			
	HSS6X6X3/8	SEE PLAN	99′-4"			
	HSS8X6X3/8	SEE PLAN	99'-4"			
	HSS8X8X3/8	SEE PLAN	99′-4"			
	HSS10X8X3/8	SEE PLAN	99'-4"			
	HSS12X6X3/8	SEE PLAN	99′-4"			
	HSS12X8X3/8	SEE PLAN	99'-4"			

1. SEE ROOF FRAMING PLAN (S1.2) FOR BASE PLATE CALL-OUTS EA. COLUMN. SEE SHEET \$3.1 FOR BASE PLATE DETAILS. 2. CAP TOPS OF ALL COLUMNS W/ MIN. 3/8" CAP PLATE U.N.O. IN DETAILS.

# BEAM KEY PLAN

SHEAR REACTION (KIPS ASD)

SHAPE (T.O.S. ELEVATION) SHEAR REACTION (KIPS ASD)

<b>ABONMARCHE</b>	ERSON BLVD Benton Harbor Goshen (, IN 46601 Grand Haven Hobart 700 Grand Rapids Lafayette 440 Kalamazoo/Portage South Bend he.com Fort Wayne Valparaiso - abonwarche consultants.INC. Engineering, Architecture, Land Surveying
	315 W JEFFEF South Bend, T 574.232.87C F 574.251.444 abonmarché coPYRIGHT 2020 - A
PROJECT: NEW CONSTRUCTION FO	CASS DISTRICT LIBRARY EDWARDSBURG BRANCH 26977 W. MAIN STREEET EDWARDSBURG, MI
	ROOF FRAMING PLAN
SHEET TITLE:	
	3Y: JMO
PM REVIEW	JMO : SFL
QA/QC RE	VIEW: SFL
SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SE	12/20/2023 OF MICHIC SCOTT ICIS LEBLANG ENGINEER No. 201067898
SIGNATURE	SAU
DATE: HARD COP 24" x 36 SCALE(S GRAPHIC BE ACCURA SCALE:	Y IS INTENDED TO BE WHEN PLOTTED ) INDICATED AND QUALITY MAY NOT ATE FOR ANY OTHER SIZES
UNLESS I ACI JOB #	NOTED OTHERWISE
SHEET NO.	1.2

2	ADDENDUM 2		01/19/2024
NO.	REVISION DESCRIPTION	BY	DATE

![](_page_138_Figure_0.jpeg)

![](_page_138_Figure_2.jpeg)

ON EACH DIRECT ND EACH DIRECT DE CON DI JOINT DETAIL	AX CTION			FROIECT:REDIECT:NEW CONSTRUCTION FOR:NEW CONSTRUCTION FOR:NEW CONSTRUCTION FOR:NEW CONSTRUCTION FOR:NEW CONSTRUCTION FOR:NEW CONSTRUCTION FOR:NEW CONSTRUCTION FOR:CASS DISTRICT LIBRARYCASS DISTRICT LIBRARYSale NameryCASS DISTRICT LIBRARYSale NameryCASS DISTRICT LIBRARYSale NameryCASS DISTRICT LIBRARYSale NameryCASS DISTRICT LIBRARYSale NamerySale Namery
CJ (TVP) BASE PLATE ISOLATION JOINT NON-SHRINK GROUT STEEL COLUMN EXT. CONCRETE WALL	EXTERIOR ISOLAT	NUN JOINT		FOUNDATION DETAILS
LD		WALL REINFORCING WALL REINFORCING WALL REINFORCING NOTES: 1. BAR DEVELOPMENT LENGTH SHALL BE IN ACC WITH ACI 318 AND "MINIMUM REQUIRED LAP DEVELOPMENT LENGTH, LD" TABLE, THIS DETA 2. CORNER REINF. MAY BE AN EXTENSION OF T REINFORCING AT THE CONTRACTOR'S OPTIC	CORDANCE & NL. HE WALL	MODELED BY: MODELED BY: JMO DESIGNED BY: JMO PM REVIEW: SFL QA/QC REVIEW: SFL QA/QC REVIEW: SFL DATE: 12/20/2023 SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SEAL: SIGNATURE: No. 6201067898 SOUTHOUS LEBLANG ENGINEER No. 6201067898 SIGNATURE: MARD COPY IS INTENDED TO BE 24" x 36" WHEN PLOTTED SCALE(S) INDICATED AND GRAPHIC QUALITY MAY NOT BE ACCURATE FOR ANY OTHER SIZES SCALE:
DUNDATION INTERSECTIONS	2 ADDENDUM 2 NO.	REVISION DESCRIPTION	01/19/2024 BY DATE	unless noted otherwise ACI JOB # 22-1836 Sheet no. S2.1

![](_page_139_Figure_0.jpeg)

![](_page_139_Figure_2.jpeg)

![](_page_139_Figure_3.jpeg)

- 3/4" EXP. JOINT -SEE 8/S2.3

![](_page_139_Figure_7.jpeg)

![](_page_139_Figure_8.jpeg)

![](_page_139_Figure_10.jpeg)

![](_page_139_Figure_11.jpeg)

![](_page_139_Figure_13.jpeg)

![](_page_140_Figure_0.jpeg)

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![](_page_140_Figure_3.jpeg)

![](_page_141_Figure_0.jpeg)

2	ADDENDUM 2		01/19/2
NO.	REVISION DESCRIPTION	BY	DATE

![](_page_142_Figure_0.jpeg)

![](_page_143_Figure_0.jpeg)

![](_page_143_Figure_2.jpeg)

# <u>GENERAL NOTES</u>

- 1. SEE ARCH DWGS FOR ARCHITECTUALLY EXPOSED STRUCTURUAL STEEL (AESS) FINISHES.
- 2. ALL STEEL INDICATED ON THIS DWG AS AESS IS TO BE TREATED AS CATEGORY AESS 3.
- 3. GRIND WELDS SMOOTH FOR AESS. FOR GROOVE WELD GRIND TO WITHIN 1/16" OF ORIGINAL THICKNESS.
- 4. CONTOUR AND BLEND WELDS TO PROVIDE A SMOOTH TRANSITION AT ALL LOCATIONS APPLICABLE.
- 5. PROVIDE A UNIFORM GAP OF 1/8" +/- 1/32" AT ALL COPES AND BLOCKING.
- 6. POSITION PIECE MARKS SO THAT THEY WILL BE HIDDEN AFTER FINAL ERECTION.
- 7. PROVIDE A 3/8" CLOSURE PLATE AT ANY OPEN ENDED HOLLOW STEEL SECTION. 8. SEE SPECIFICATIONS SECTION 051213 FOR FURTHER REQUIREMENTS FOR AESS.

![](_page_143_Figure_12.jpeg)


ects\2022\22-1836 CDL Edwardsburg Library\1 Drawing Files_A



	GENERAL NOTES - DETAILS	sshen bart fayette liparaiso d Surveying
06 16 00.2.3	A. BUILDIN ENVELOPE SHALL BE WEATHER PROOF. PROVIDE SELF ADHERED FLEXIBLE	GC GC Contractions and
07 21 00.2.8	B. ROOF N ABRANE SHALL BE CONTINUOUS UP OVER PARAPETS (TYPICAL). EXTEND MEMBRANE 6" (MIN) DOWN EXTERIOR FACE OF WALL BEHIND COPING/ METAL WALL PANEL	and the formation of th
	C. PROVIDE FLASHING ABOVE ALL OPENINGS	Cort Way Senton H Manistee South Ha
05 12 00.2.1		
05 12 00.2.1	Key Value     Keynote Text       05 12 00 2 1     STEEL BEAM - REFER TO STRUCTURAL	
Division 09	05 12 00.2.2       STEEL CLIP ANGLE - REFER TO STRUCTURAL         05 12 00.2.3       STEEL L-ANGLE â□ [™] REFER TO STRUCTURAL	
08 41 13.2.1	05 30 00.2.1       METAL DECK - REFER TO STRUCTURAL         05 50 10.2.1       PREFABRICATED STEEL TRUSS - REFER TO STRUCTURAL         04 10 00 0.0       DEALED WOODD RECEVENCE ON ALL DE DED WOODD RECEVENCE DE DESTRUCTURAL	1 IN 466 1 IN 466 1 IN 466 1 00 1400 1400 10- ABONMA
	MOISTURE, EXTERIOR BUILDING ENVELOPE, ADJACENT TO CONCRETE OR MASONRY, AND AS OTHERWISE REQUIRED.""	5 W JEFI 5 W JEFI 574.232.8 574.251.4 500marc
	06 16 00.2.1 ZIP R-6 INSULATED WALL SHEATHING AND WEATHER BARRIER SYSTEM. PROVIDE ZIP SYSTEM TAPE AT ALL SEAMS AND BETWEEN ROOF AND WALL SHEATHING (TYP) FOR A COMPLETE WEATHER BARRIER SYSTEM BY HUBER ENGINEERED WOODS,	
	WWW.HUBERWOOD.COM, 1-800-933-9220         06 16 00.2.2       5/8" ZIP SYSTEM ROOF SHEATHING AT ALL GABLE ROOFS SHALL BE CONTINUOUS         AROUND ROOF EDGE DETAIL       PROVIDE ZIP SYSTEM TAPE AT ALL SEAMS AND	Ĩ S T S T S T S T S T S T S T S T S T S
	BETWEEN ROOF AND WALL SHEATHING (TYP) FOR A COMPLETE WEATHER BARRIER SYSTEM BY HUBER ENGINEERED WOODS, www.huberwood.com, 1-800-933-9220	
	06 16 00.2.3 1/2" PLYWOOD WALL SHEATHING 06 16 00.2.4 3/4" PLYWOOD ROOF SHEATHING WITH "H" CLIPS OR "T&G" 06 16 00 2.5 3/4" T1-11 APCHITECTURAL GRADE SHEATHING WITH REVEALS @ 6" O.C SHALL BE	CTIC CTIC BR BR N S' IRG
	STAINED AND VARNISHED       06 16 00.2.6       EXPANSION JOINT	RUC JRG AAII SBU
	07 13 00.2.1       "PROVIDE ZIP SYSTEM STRETCH TAPE AT ALL OPENINGS, PENETRATIONS, ETC"         07 21 00.2.8       "XPS RIGID INSULATION - PROVIDE TYPE IV AT ALL CAVITY WALL LOCATIONS, TYPE VI AT ALL FOUNDATION WALL LOCATIONS, AND TYPE VI AT ALL LINDER SLAB LOCATIONS"	NST ISTF SBI V. A KD
	07 21 19.2.1 "3"" (MIN) CLOSED CELL SPRAY POLYURETHANE FOAM INSULATION AND VAPOR BARRIER SYSTEM"	S D ARE 77 V
	07 21 19.2.2       "6" (MIN) CLOSED CELL SPRAY POLYURETHANE FOAM INSULATION AND VAPOR         BARRIER SYSTEM"         07 22 00.2.2       POLYISOCYANURATE INSULATION WITH COVER BOARD AS REQUIRED BY ROOFING	
	MANUFACTURER'S WRITTEN REQUIREMENTS 07 41 00.2.1 PRE-FORMED ALUMINUM SOFFIT PANELS SHALL BE FACTORY MANUFACTURED STANDARD SMOOTH WITH CONTINUIOUS FND POLLING DANELS SHALL BE ELUSH IN 7	
	07 41 13.2.1       PAC CLAD TITE-LOC PLUS STANDIND SEAM METAL ROOF. COLOR SHALL BE	
.2.1	O7 46 19.2.3       QUALITY EDGE VESTA STEEL FASCIA AND TRIM - 480 AUTUMN THISTLE         O7 46 24.2.1       LP SMARTSIDE VERTICAL SIDING BOARD & BATTEN - PANEL SHALL BE SMOOTH -	
<u>3</u> 2.1	COLOR SHALL BE SHERWIN WILLIAMS SW9685 "AFTER THE STORM" 07 46 24.2.2 LP SMARTSIDE 440 SERIES TRIM 5.5"	
2.5	07 46 24.2.3       LP SMARTSIDE 440 SERIES TRIM 3.5"         07 54 23.2.1       "THERMOPLASTIC-POLYOLEFIN ROOFING (TPO) SHALL BE HOCIM ELEVATE ULTRAPLY SINGLE PLY MEMBRANE (OR EQUAL). COLOR SHALL BE WHITE. PROVIDE POLY-ISO	ILS
$\mathbf{\Phi}$	INSULATION AT ALL ROOF LOCATIONS AND INTEGRAL COVER BOARD. ALL MATERIALS AND ACCESSORIES, INCLUDING FLASHING SHALL BE SINGLE SOURCE. PROVIDE 20 YEAR RED SHIELD WARRANTY (WIND SPEEDS UP TO 72 MPH), SEPARATE	ETAI
	20 YEAR FIRESTONE ISO 95 + INSTALLATION WARRANTY WITH NO DOLLAR LIMIT."         07 62 00.2.1         "FASCIA, TRIM, COPING, ETC SHALL BE .080 ALUMINUM. PROVIDE BUTT SEAMS WITH	
	BACK UP PLATES (10 FT MAX LENGTH). CORNERS SHALL BE FULLY WELDED WITH 24"" (MIN) RETURN. ALL FASTENERS SHALL BE CONCEALED. COLOR SHALL MATCH ADJACENT WALL FINISH (U.N.O.)."	N N N N N N N N N N N N N N N N N N N
	07 62 00.2.3 THROUGH WALL FLASHING 07 71 00.2.1 "ALUMINUM GUTTER SHALL BE HEAVY DUTY. PROVIDE ADDITIONAL 1/8""x1 1/2"" SUPPORT BRACKETS AT 36"" O.C. GUTTER PROFILE SHALL BE 6"W x 4.5""D STYLE E	ECT
	PER SMACNA ARCHITECTURAL SHEET METAL MANUAL. GUTTER AND SUPPORT BRACKET - COLOR SHALL BE DARK BLACK."	S
	07 71         MBCI GUTTER STRAP FL-893           00.2.1X         07 71 00.2.4           "GUTTER BRACKET 1 1/2"" X 1/8"" @ 36"" O.C COLOR SHALL MATCH GUTTER"	
	07 71 00.2.5 "ALUMINUM DOWNSPOUT SHALL BE HEAVY DUTY, SMOOTH, 4"" x 4"" RECTANGULAR SHAPE - COLOR SHALL BE BLACK."	
_	07 71 00.2.0       DOWINSPOUL BOOT TO THE INTO STORIVI WATER PIPING - REFER TO CIVIL DRAWINGS         07 72 53.2.1       SNOW GUARDS         07 92 00.2.1       CAULK SHALL BE PROVIDED BETWEEN ALL DISSIMILAR INTERIOR MATERIALS PER	 
	MANUFACTURERS WRITTEN REQUIREMENTS. (TYP) 07 92 00.2.2 SEALANT AND BACKER ROD SHALL BE PROVIDED BETWEEN ALL DISSIMILAR BUILDING ENV/ELOPE MATERIALS PER SEALANT MANIFERCTI DEDS M/DITTEN DEOL/IDEM/ENTS. (TVD)	HEET 11
I	08 18 16.2.1       MULTI-PANEL SLIDING ALUMINUM-FRAMED GLASS DOORS         08 41 13.2.1       "ALUMINUM FRAMED STOREFRONTS SHALL BE TUBELITE 14000T SERIES. ALL EXTERIOR	MODELED BY:
	LOCATIONS SHALL HAVE THERMALLY BROKEN FRAMES. FRAME AND DOOR COLOR SHALL BE BLACK ANODIZED ALUMINUM. PROVIDE ACTUAL SAMPLE FOR FINAL APPROVAL. EXTERIOR DOORS SHALL BE INSULATED MEDIUM STILE WITH 5 VERTICAI	AND, JCA DESIGNED BY:
)	STILES AND TOP RAIL, AND 10 BOTTOM RAIL." 08 91 19.2.1 FIXED LOUVERS 09 22 16 2.2 #4# METAL STUDE DV OLADIZ DISTRICT DV OLADIZ DV OTEM (0.02 500000 500000 5000000 5000000 5000000 5000000	PM REVIEW: ARD, MDN
\	COLD FORMED GALVANIZED STEEL PROSTUD C-STUDS, AND PROTRAK RUNNER AND DRYWALL TRACK. PROVIDE SLIP TYPE HEAD JOINT SLOTTED DEFLECTION TRACK AT	QA/QC REVIEW:
	ALL LOCATIONS (TYP)" 09 22 16.2.3 8" METAL STUD. BY CLARK DIETRICH BUILDING SYSTEMS (OR EQUAL). PROVIDE COLD FORMED GALVANIZED STEEL PROSTUD C-STUDS, AND PROTRAK RUNNER AND	DATE: 12/20/2023 SEA1:
	DRYWALL TRACK. PROVIDE SLIP TYPE HEAD JOINT SLOTTED DEFLECTION TRACK AT ALL LOCATIONS (TYP)"	
	09 29 10.2.1 GYPSUM WALL BOARD SHALL BE 5/8 (TYP). PROVIDE TYPE WR AT ALL TOILET ROOM AND WET WALL LOCATIONS. ALL OTHER LOCATIONS SHALL BE TYPE X (TYP).	
	PROVIDE MUDDABLE CORNER BEAD AND J TRIM AT ALL EXPOSED DRYWALL END AND OPENING LOCATIONS. EXPOSED DRYWALL FINISH SHALL BE LEVEL 4 (TYP). PROVIDE CONTROL JOINTS AT 30FT O.C. (MAX) EQUALLY SPACED. PROVIDE	
$\sum_{i=1}^{n}$	CONTROL JOINTS AT ALL DOOR AND WINDOW LOCATIONS.	
	10 31 06.2.3       IVIAINUFACTURED METAL CHIMINEY CAP         10 31 08.2.4       MANUFACTURED METAL CHIMINEY STRAP         26 56 01.2.1       EXTERIOR LED UP LIGHT	SIGNATURE:
$\mathcal{L}$	99 00 01.2.1 ARCHITECTURAL EYEBROW ABOVE STOREFRONT	DATE:
$\overline{\langle}$		
$\left\langle \right\rangle$		HARD COPY IS INTENDED TO BE 24" x 36" WHEN PLOTTED SCALE(S) INDICATED AND
$\leq$		BE ACCURATE FOR ANY OTHER SIZES
		SCALE:
<u></u>		UNLESS NOTED OTHERWISE ACI JOB #
		22-1836
	2         ADDENDUM #2         MHK         01/19/2024           NO         REVISION DESCRIPTION         BY         DATE	A7.3



2	ELEVATION @ SIGN A (EXTERIOR BLDG WALL)
A7.4	1/2" = 1'-0"



CEILING		<u>GENERAL NOTES</u>	sshen bart fayette uth Bend alparaiso
<b>HEIGHT</b> 11′ - 11"	BULKHEAD REMARKS	A. PREP & PRIME ALL SURFACES TO RECEIVE FINISHES PER MFR	
11′ - 11" 11′ - 11"		C. COORDINATE KEYING REQUIREMENTS WITH OWNER	
10' - 1" 9' - 0"		D. ALL ROOMS TO HAVE ROOM IDENTIFICATION SIGNAGE. AL	
10' - 1" 9' - 0"		SIGNAGE W/ BRAILLE - SEE REFERENCE SHEET T1.2 FOR MOL	
11′ - 7"		E. ALL INTERIOR ROOM SIGNAGE OTHER THAN TOILTE ROOMS PROVIDED BY OWNER. ACCESSIBLE TOILET ROOM SIGNAGE	TO BE COORDINATED AND TO BE PROVIDED BY G.C.
9′ - 0″		F. DEDICATION PLAQUE TO BE COORDINATED AND PROVIDED	D BY OWNER
9' - 0" 10' - 1"		G. CPT-1 AT ENTRY VESTIBULE LOCATIONS INCLUDE NO BASE T SECURED TO PROVIDE CLEAN EDGES AT STOREFRONT PERIM	RIM. CARPET TO BE TRIM AND AETER.
10' - 1" 12' - 1" 12' - 1"		MATERIAL LEGEND	
12 - 1		ACT ACOUSTIC CEILING TILE	RSON E 10 466 00 00 40 e.com
9' - 0"			JEFFEI Bend, 232.87(251.44.2020 -
9" - 0" 10' - 1"		CPT CARPET TILE	315 W South 574.2 aboni
9′ - 0" 10′ - 1"		<b>GFA</b> GLASS FILM APPLICATION	
10' - 1"		GYP GYPSUM WALL BOARD	Ŭ ≿ Ŭ ∺
	I	LVT LUXURY VINYL TILE	
		MFR MANUFACTURER	
		PLAM PLASTIC LAMINATE	
		PT PAINT	
	_		ST S
			N N N N N N N N N N N N N N N N N N N
		SS SOLID SURFACE	SS SS CC
		TL CERAMIC TILE	
		TS TRANSITION STRIP	
		WC WALL COVERING	
		ACP-1 USG RADAR 2X2 TEGULAR ACOUSTICAL CEILING 15/16" L/G	PANELS WITH DONN DX/DXL
	-[]	CONC-1 SEALED CONCRETE	► F
	-[]	CONC-2 POLISHED CONCRETE - GLOSS LEVEL 1 - AGGRE	GATE EXPOSURE CLASS B
		<b>CPT-1</b> MOHAWK - TUFF STUFF II COLLECTION - FIRST STE (MONOLITHIC INSTALLATION)	P II - 989 OBSIDIAN
	4	CPT-2 MOHAWK - ABOVE AND BELOW COLLECTION - M (HALF LAP INSTALLATION)	
		CPT-3 MOHAWK - FRACTAL FLUENCY - SQUARED GT478 INSTALLATION)	3 - 989 CHARCOAL (BRICK ASHLAR
	1	LVT-1 PATCRAFT - AGGREGATE 1333V - BEDROCK 0058	30 (RANDOM INSTALLATION)
		LVT-2 ARMSTRONG - STANDARD EXCELON IMPERIAL TE (BRICK INSTALLATION)	EXTURE - 51941 POLAR WHITE SO
		PLAM-1 WILSONART - ASIAN SAND - 7952K-18 - LINEARITY	Y FINISH (CASEWORK & SHELVING)
/ Â		PLAM-2 FORMICA - MACCHIATO WALNUT 6933 (INTERIOI	R BULKHEAD & ACCENT WALLS)
7 1 1		PT-1 (FIELD - WALLS/CLGS) SHERWIN WILLIAMS - ORIGA	AMI WHITE SW7636
		PT-3 (KIDS PLAY BUILT-IN) SHERWIN WILLIAMS - MOONR	
		PI-4 (RECEPTION BULKHEAD) SHERWIN WILLIAMS - JAC	AKANDA SW6802 MODELED BY:
		PT-5 (FXTERIOR SIDING) SHERWIN WILLIAMS - AFTER TH	EX SW0250 (SAIN) AUTOR E STORM SW9685 DESIGNED BY:
S PLAY	)	<b>RB-1</b> JOHNSONITE - 4" STANDARD TOE - 40 BLACK B	PM REVIEW:
CPT-3		SS-1 CORIAN - ANTARCTICA	ARD, MDN
VWC-2		TL-1 (STAFF & FAMILY TOILET) DALTILE - SOCIETY SERIES	6 - S049 DISTRICT SLATE - 12X24
		TL-2 (CAFE ACCENT WALL) WOW TILE - STRIPES COLLE	CTION - STRIPES SKY &
	Срт-з	TL-3 ISLAND STONE - CRESCENT CRYSTAL WHITE HONE VERTICAL ORIENTATION	ED TILE (FIREPLACE) INSTALLED IN
1	<b> - </b>	TH-1 JOHNSONITE - EG-40-W - BLACK (ADA COMPLIAI	NT)
	I I I I I I I I I I I I I I I I I I I	TS-1 ZERO INTERNATIONAL - J32100 - ALUMINUM	
		S&V-1 (WOOD DOORS) MARSHFIELD - RED OAK - MIST 5	54-02
		S&V-2 (WOOD DOORS) CUSTOM COLOR SHALL MATCH	I PLAM-2
		CG-1 ACROVYN CORNER GUARD (COLOR SHALL MATCHEIGHT @ HALF WALL, 8' HIGH @ FULL HEIGHT W	CH ADJACENT WALL COLOR) FULL SIGNATURE:
		<b>USGSP</b> STRUCTURAL PANEL CONCRETE SUBFLOOR	
		WC-1 UL Greenguard-Gold Certification (CUSTOM Prin	nt TBD)
		WC-2 UL Greenguard-Gold Certification (CUSTOM Prin	ht TBD)       HARD COPY IS INTENDED TO BE         24" x 36" WHEN PLOTTED         SCALE(S) INDICATED AND
*******		WC-3 UL Greenguard-Gold Certification (CUSTOM Prin	GRAPHIC QUALITY MAY NOT BE ACCURATE FOR ANY OTHER
		RT-1 RUBBER STAIR NOSING & TREAD	$\frac{SIZES}{SCALE:}$
			UNLESS NOTED OTHERWISE ACI JOB #
		2 ADDENIDUM #2	XAHK     01/19/2024       SHEET NO.
		2     ADDENDUM #2       1     ADDENDUM #1       NO.     REVISION DESCRIPTION	BY DATE <b>A8.1</b>
		· · · · ·	· · · · · · · · · · · · · · · · · · ·





1 FURNITURE PLAN A9.1 1/8" = 1'-0"

# GENERAL NOTES - FURNITURE PLAN

- A. FURNITURE OWNER
- B. LIBRARY BC (SHELVES BY OWNER
- C. LIBRARY EQUIPMENT BY OWNER
- D. APPLIANCES BY OWNER

Children 147 shelves 441 LF   Young Adult 45 shelves 135 LF   Adult 491 shelves 1,473 LF   Shown 5000000000000000000000000000000000000	Children Vouna Adult	147 shelves		1 1 11
Young Adult       45 shelves       135 LF         Adult       491 shelves       1,473 LF         Shown       1000000000000000000000000000000000000	Vouna Adult		441 LF	
Adult     491 shelves     1,473 LF       Image: Shown     Image: Shown       Children     *     442 LF       Young Adult     45 shelves     135 LF       Adult     525 shelves     1,575 LF	roung naun	45 shelves	135 LF	
Shown         Children       *       442 LF         Young Adult       45 shelves       135 LF         Adult       525 shelves       1,575 LF	Adult	491 shelves	1,473 LF	
Children     *     442 LF       Young Adult     45 shelves     135 LF       Adult     525 shelves     1,575 LF		Shown		
Young Adult 45 shelves 135 LF Adult 525 shelves 1,575 LF	Children	*	442 LF	
Adult 525 shelves 1,575 LF	Young Adult	45 shelves	135 LF	
ä	Adult	525 shelves	1,575 LF	
5	1	1 I		
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				PROJE



**A9.1** 

MHK 01/19/2024 BY DATE

2	ADDENDUM #2
NO	



		Benton Harbor Goshen	Grand Haven Hobart Grand Rapids Lafayette Kalamazoo/Portage South Bend Fort Wayne Valparaiso	Engineering, Architecture, Land Surveying
		306 S KALAMAZOO MALL	KALAMAZOO, MI 4900/ T 269.381.6170 F 269.381.6176 abonmarche.com	COPYRIGHT 2020 - ABONMARCHE CONSULTANTS, INC.
	PROJECT:	CASS DISTRICT LIBRARY	EDWARDSBURG BRANCH 26977 W. MAIN STREEET,	EDWARDSBURG, MI
		UNDERGROUND PLUMBING	PLAN	
	HILL HILL MOD DESIG PM R QA/G DATE SEAL	ELED BY: GNED BY: EVIEW: QC REVIEW: :	Aut Desig Appro Chec 12/20/20	hor ner ver ker 023
	HARI 2 SCAL BE AU SCAL	ATURE: COPY IS II 4" x 36" WH CALE(S) IND APHIC QUA CCURATE F SIZ ICE: VLESS NOTE JOB # <b>22-1</b>	NTENDED TO EN PLOTTED ICATED ANI LITY MAY N OR ANY OT ES D OTHERWIS 836	D BE D OT HER SE
2024.0 BY DA	01.19 TE	г NO. РЗ.	0	

1ADDENDUM 2NO.

**REVISION DESCRIPTION** 





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	ROJECT: ROJECT: REALE CASS DISTRICT LIBRARY CASS DISTRICT LIBRARY CASS DISTRICT LIBRARY BOWARDSBURG BRANCH 26977 W. MAIN STREEET, 26977 W. MAIN STREEET, EDWARDSBURG, M
	FIRST FLOOR PLUMBING PLAN
CH SURROUNDING FINISH	Image: Second system       Modeled by:         Modeled by:       Author         Designed by:       Designer         PM REVIEW:       Approver         QA/QC REVIEW:       Checker         DATE:       12/20/2023         SEAL:       SEAL:
	SIGNATURE: DATE: HARD COPY IS INTENDED TO BE 24" x 36" WHEN PLOTTED SCALE(S) INDICATED AND GRAPHIC QUALITY MAY NOT BE ACCURATE FOR ANY OTHER SIZES SCALE: UNLESS NOTED OTHERWISE ACI JOB # 22-18336



	<b>BONMARCHE BYCE</b>	306 S KALAMAZOO MALL KALAMAZOO, MI 49007 T 269.381.6170 F 269.381.6170 F 269.381.6176 F 269.381.78176 F 269.38176 F 269.38176 F 269.381.78176 F 269.38176 F 269.38176
	PROJECT:	CASS DISTRICT LIBRARY EDWARDSBURG BRANCH 26977 W. MAIN STREEET, EDWARDSBURG, MI
		MEZZANINE PLUMBING PLAN
	HE HE MODELED E DESIGNED PM REVIEW QA/QC RE DATE: SEAL:	BY: BY: Designer : Approver VIEW: Checker 12/20/2023
	SIGNATURE DATE: HARD COP 24" x 36 SCALE(S GRAPHIC BE ACCUR SCALE: UNLESS I ACI JOB # 222	Y IS INTENDED TO BE WHEN PLOTTED INDICATED AND QUALITY MAY NOT ATE FOR ANY OTHER SIZES
2024.01.19 BY DATE	SHEET NO.	3.2

1 ADDENDUM 2 NO.

**REVISION DESCRIPTION** 

### LEGEND:

				_	
— — V — — —	PLUMBING SYSTEM VENT	E	CAP	Q	PRESSURE GAUGE
CW	DOMESTIC COLD WATER	G	DROP	Р/Т	COMBINATION PRESSURE AND TEMPE
SCW	SOFT COLD WATER	0	RISE	_	TEST PLUG WITH EXTENDED NECK AN
TW	- TEPID WATER		REDUCER	Ψ	THERMOMETER
HW	DOMESTIC HOT WATER		UNION		TEMPERATURE WELL
HWR	DOMESTIC HOT WATER RETURN		THREE-WAY CONTROL VALVE		
SAN	- SANITARY SEWER		CONTROL VALVE		
ST	STORM		GATE VALVE		THROUGH WALL SLEEVE
CA	- COMPRESSED AIR		GLOBE VALVE	$\mathbf{\Theta}$	POINT OF NEW CONNECTION TO EXIST
DCA	DRY COMPRESSED AIR	i¢i	BALL VALVE	]	VOLUME CONTROL DAMPER IN DUCT
G	GAS	$\longrightarrow$	CHECK VALVE		FIRE DAMPER IN HORIZONTAL DUCT
HS	HEATING WATER SUPPLY	¥	CALIBRATED BALANCING VALVE		FIRE DAMPER IN VERTICAL DUCT
HR	HEATING WATER RETURN		BUTTERFLY VALVE	Μ	MOTORIZED DAMPER
CS	- CHILLED WATER SUPPLY		PLUG VALVE, GAS COCK	T	THERMOSTAT
CR	- CHILLED WATER RETURN		PRESSURE REDUCING VALVE	S	SENSOR
RS	- REERIGERANT SUCTION	Å	RELIEF VALVE	$\boxtimes$	SUPPLY AIR (SECTION)
RI			STRAINER WITH FULL SIZE BLOWDOWN	$\square$	RETURN / EXHAUST AIR(SECTION)
	- DIRECTION OF FLOW	×, 4	VALVE WITH HOSE END AND CAP	$\longrightarrow$	AIR FLOW DIRECTION
			MANUAL AIK VEN I		DUCT TRANSITION
			PUMP		FLEXIBLE DUCT

									PLUMBING	G FIXTURE SCHEDULE							
MARK	FIXTURE	CW	HW	SAN	V	FIXTURE MODEL	FIXTURE MANUFA	CTURER	TRIM MODEL	TRIM MANUFACTURE	R				DES	CRIPTION	
BF-1	BOTTLE FILLER	1/2"	-	1-1/4"	-	LBWD06	ELKAY		STAINLESS STEEL	ELKAY	EZH2 B DEGRE INCLUE FLOW,	Bottle Fillin Ee F. Drinkin De Automati Real Drain.	IG STATION BUILT G WATER, BASED IC FILTER STATUS	IN FILTERED REFF ON 80 DEGREE F. RESET, CHILLED V	RIGERATED WA INLET WATER / WATER, FILTER	ATER DISPENSER REMOTE CHILLER, CHILLING CAPACITY OF 1.5 GPH OF AND 90 DEGREE F. AMBIENT, PER ASHRAE 18 TESTING. FEATURES SHAL RED, GREEN TICKER, HANDS FREE, VISUAL FILTER MONITOR, LAMINAR	
CO-LD	CLEANOUT	-	-	4"	-	ZN-1400	ZURN		-	-	LIGHT-I	DUTY LEVEL-	TROL ADJUSTABL	E FLOOR CLEANOU	JT - ALL BELOV	V RAISED FLOOR LOCATIONS	
DN-1	DOWNSPOUT NOZZLE	-	-	-	-	ZANB199-SS	ZURN		STAINLESS STEEL BIRD SCREEN	ZURN	DOWNS BIRD S	SPOUT NOZZ	LE, ALL NICKEL BR	RONZE BODY, DEC	ORATIVE FACE	OF WALL FLANGE AND OUTLET NOZZLE, PROVIDE REMOVABLE STAINLE	
FD-1	FLOOR DRAIN	-	-	3", 4"	-	ZN415B	ZURN		SURE SEAL TRAP SEAL	RECTORSEAL	FLOOR WITH S	R DRAIN, DUR/ SEEPAGE SLO	A-COATED CAST IF TS AND "TYP B" P	RON BODY WITH B OLISHED NICKEL B	OTTOM OUTLE RONZE, 5" LIGI	T, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COLI HT DUTY STRAINER. PROVIDE SURE SEAL TRAP SEALS	
FS-1	FLOOR SINK	-	-	4"	-	ZN1926-33	ZURN		SURE SEAL TRAP SEAL	RECTORSEAL	FLOOR SLOTTE PROVIE	R SINK, SANI-F Ed openings de sure sea	LOR RECEPTOR 1 S, WHITE ACID RES L TRAP SEAL	6x16x12 DEEP CAS SISTING EPOXY CC	ST IRON BODY DATED INTERIO	WITH SEEPAGE FLANGE AND SQUARE, HEAVY-DUTY GRATE WITH 9/16 OR AND TOP, WHITE A.R.C. ANTI-SPLASH BOTTOM DOME STRAINER,	
L-1	LAVATORY - BARRIER FREE	1/2"	1/2"	1-3/4"	1-1/2"	037100-U	NAMEEKS	6	EFX 300 FAUCET	SLOAN	WALL N SQUAR	MOUNTED WH RE CERAMIC [	ITE CERAMIC BAT DRAIN COVER. SIN	THROOM SINK, INS IGLE FAUCET HOLE	TALL ACCORDI E FOR SLOAN E	NG TO ADA REGULATIONS, FEATURES OVERFLOW AND INTEGRATED EFX-300 SENSOR FAUCET, PROVIDE ASSE 1070 MIXING VALVE	
MS-1	MOP SINK	1/2"	1/2"	3"	1-1/2"	Z1996-24	ZURN		830-AA	FIAT	24x24 S STAINL PAIL HO	SERVICE SINK LESS HOSE BI OOK, AND 3/4	K, PROVIDE STAINL RACKET, 830-AA SI " HOSE THREAD O	LESS STEEL WALL ERVICE FAUCET - ( IN SPOUT	AND BUMPER ( CHROME PLATI	GUARDS, MOP HANGER, 5' LONG 1/2" DIA. HEAVY DUTY HOSE AND ED WITH VACUUM BREAKER, INTEGRAL STOPS, ADJUSTABLE WALL BRAG	
NFHW-1	HOSE BIBB	3/4"	-	-	-	MODEL 68	WOODFOR	RD	-	-	BACKFI	LOW PROTEC	CTED AUTOMATIC E FINISH, ASSE 10	D AUTOMATIC DRAINING FREEZELESS WALL HYDRANT WITH INTEGRAL, LOCKING STAINLESS STEEL HEAD NISH, ASSE 1053 LISTED HYDRANT, PATENTED HIGH FLOW DOUBLE CHECK BACK PREVENTER, ASSE 1052			
SK-1	BAR SINK - BARRIER FREE	1/2"	1/2"	2"	1-1/2"	ELUHAD161650	ELKAY		4932.410, FINISH: 075 PVD STAINLESS STEEL	AMERICAN STANDAR	D ELKAY WITH L DECK-N STEEL	LUSTERTONI LUSTROUS SA MOUNT, MET SUPPLY HOS	STERTONE CLASSIC STAINLESS STEEL 18-1/2"x18-1/2"x4-7/8" SINGLE BOWL UNDERMOUNT SINK KIT, 18 GAU IROUS SATIN FINISH, REAR CENTER DRAIN PLACEMENT, SIDES AND BOTTOM PADS, EDGEWATER PULL-DO JNT, METAL BODY WITH TWO-PART ADA METAL LEVER HANDLE, CERAMIC DISC VALVE CARTRIDGE, BRAID PPLY HOSE, 1.5 GPM MAXIMUM FLOW RATE, FINISH: PVD STAINLESS STEEL			SINGLE BOWL UNDERMOUNT SINK KIT, 18 GAUGE 304 STAINLESS STEEL, DES AND BOTTOM PADS, EDGEWATER PULL-DOWN BAR FAUCET, DLE, CERAMIC DISC VALVE CARTRIDGE, BRAIDED FLEXIBLE STAINLESS AINLESS STEEL	
UR-1	URINAL	3/4"	-	2"	1-1/2"	6002.001	AMERICAN STAI	NDARD	SOLIS 8186-0.5-SF	SLOAN VALVE	PINTBR FLUSH CARRIE	ROOK 0.5 GPF IOMETER, WIT ER	DOK 0.5 GPF HIGH EFFICIENCY WASHDOWN URINAL, EXPOSED, SOLAR POWERED, SENSOR ACTIVATED SLOAN SOLIS MODEL URIN. METER, WITH SMART SENSE TECHNOLOGY, FINISH: BRUSHED STAINLESS, 3/4" TOP SPUD, 0.5 GPF, PROVIDE FLOOR MOUNTED FIX R				
WB-1	WALL BOX - CLOTHES WASHER	1/2"	-	-	-	SSWB3 GUY GRAY			-	-	CENTE CONNE	ER DRAIN, 20 ( Ection, 32" S	GAUGE 304 STAINL LIPNUT DRAIN, VA	LESS STEEL WASH	ING MACHINE ( TH ASME A112.1	OUTLET BOX WITH QUARTER TURN ARRESTER VALVES, 1/2" MIP/SWEAT 18.1	
WC-1	WATER CLOSET	1"	-	4"	2"	2234.001	AMERICAN STAF	NDARD	SOLIS 8111-1.28-SF	SLOAN VALVE	MADER 1.6 GPF SOLAR BRUSH	DERA FLOWISE TOP SPUD FLOOR MOUNT ELONGATED VITREOUS CHINA TOILET, HIGH EFFICIENCY, OPERATES IN THE RANGE OF 1.1 C GPF, PERMANENT EVERCLEAN SURFACE, FULLY GLAZED 2-1/8" TRAPWAY, 1-1/2" TOP SPUD, PROVIDE HEAVY DUTY TOILET SEAT, EXPC LAR POWERED, SENSOR ACTIVATED SLOAN SOLIS MODEL WATER CLOSET FLUSHOMETER FOR FLOOR MOUNTED TOP SPUD BOWLS, I USHED STAINLESS, 1.28 GPF					
WC-2	WATER CLOSET - BARRIER FREE	1"	-	4"	2"	3043.001	AMERICAN STAI	NDARD	SOLIS 8111-1.28-SF	SLOAN VALVE	MADER OPERA PROVIE FLOOR	MADERA FLOWISE TOP SPUD FLOOR MOUNT ELONGATED VITREOUS CHINA TOILET MOUNTED AT BARRIER FREE HEIGHT, HIGH EFFICIEN OPERATES IN THE RANGE OF 1.1 GPF TO 1.6 GPF, PERMANENT EVERCLEAN SURFACE, FULLY GLAZED 2-1/8" TRAPWAY, 1-1/2" TOP SPUD PROVIDE HEAVY TOILET SEAT, EXPOSED, SOLAR POWERED, SENSOR ACTIVATED SLOAN SOLIS MODEL WATER CLOSET FLUSHOMETER FLOOR MOUNTED TOP SPUD BOWLS, FINISH: BRUSHED STAINLESS, 1.28 GPF				CHINA TOILET MOUNTED AT BARRIER FREE HEIGHT, HIGH EFFICIENCY, CLEAN SURFACE, FULLY GLAZED 2-1/8" TRAPWAY, 1-1/2" TOP SPUD, ACTIVATED SLOAN SOLIS MODEL WATER CLOSET FLUSHOMETER FOR 28 GPF	
WC-3	WATER CLOSET - KIDS	1"	-	4"	2"	2282.001	AMERICAN STAI	NDARD	SOLIS 8111-1.28-SF	SLOAN VALVE	BABY D OPERA TOP SF FLUSH	BABY DEVORO FLOWISE TOP SPUD FLOOR MOUNT VITREOUS CHINA TOILET MOUNTED AT 10-1/4" HEIGHT, HIGH EFFICIENCY, LOW CONSUMPT OPERATING IN THE RANGE OF 1.28 GPF TO 1.6 GPF. 10" ROUGH IN, PERMANENT EVERCLEAN SURFACE, FULLY GLAZED 2-1/8" TRAPWAY, 1-1/2" TOP SPUD, PROVIDE HEAVY TOILET SEAT, EXPOSED, SOLAR POWERED, SENSOR ACTIVATED SLOAN SOLIS MODEL WATER CLOSED FLUSHOMETER FOR FLOOR MOUNTED TOP SPUD BOWLS, FINISH: BRUSGED STAINLESS, 1.28 GPF.					
									E								
	MARK	MOI	)FI		<u> </u>	FM	FSP	W۵٦	TS R		RPM		V/P	SONES		REMARKS	
	EF-1	CSP-A	390-VG		2	75	0.5	6	) 0	0.08	1.320		115/1	2.2	1.2		
	EF-2	CSP-A	390-VG		2	00	0.5	4	0 0	0.05	1,243		115/1	2.2	1, 2		
	EF-3	SQ-1	6-M2		4,8	800	1.09	<u>2</u> F	IP 1	.55	1,750		460/3	18.3	1, 3		
1. BASE 2. TO OF	D ON "GREENHECK." PERATE CONTINUOUSLY.	m	uu	·····	uuu	mmm	mmm	uu	·····	uuuuu	·····	mm	uuuu	······	mm	uuuuuuuuuuuuuuu	
									SI	PLIT SYSTEMS							
	EV	APORAT	OR				CC	ONDENSER	8								
MAR	RK LOCATI	ON		M	DDEL	MARK	LO	CATION	MODE	L TON	S	V/P				REMARKS	
10	5 MAKERS SP			FCO1	8TA\/	CI1-5	011		RZO18TA)			200 / 1	1				

								PLUMBIN	G FIXTURE SCHEDULE				
MARK	FIXTURE	CW	HW	SAN	V	FIXTURE MODEL	FIXTURE MANUFACTUR	ER TRIM MODEL	TRIM MANUFACTURE	2			DESCRIPTION
BF-1	BOTTLE FILLER	1/2"	-	1-1/4"	-	LBWD06	ELKAY	STAINLESS STEEL	ELKAY	EZH2 BOTTLE FILLIN DEGREE F. DRINKIN INCLUDE AUTOMAT FLOW, REAL DRAIN	NG STATION BUILT IG WATER, BASED ( IC FILTER STATUS	IN FILTERED REFRI ON 80 DEGREE F. IN RESET, CHILLED W	IGERATED WATER DISPENSER REMOTE CHILLER, CHILLING CAPACITY OF 1.5 GPH OF NLET WATER AND 90 DEGREE F. AMBIENT, PER ASHRAE 18 TESTING. FEATURES SHAI /ATER, FILTERED, GREEN TICKER, HANDS FREE, VISUAL FILTER MONITOR, LAMINAR
CO-LD	CLEANOUT	-	-	4"	-	ZN-1400	ZURN	-	-	LIGHT-DUTY LEVEL-	-TROL ADJUSTABLE	FLOOR CLEANOU	T - ALL BELOW RAISED FLOOR LOCATIONS
DN-1	DOWNSPOUT NOZZLE	-	-	-	-	ZANB199-SS	ZURN	STAINLESS STEEL BIRD SCREEN	ZURN	DOWNSPOUT NOZZ BIRD SCREEN	LE, ALL NICKEL BR	ONZE BODY, DECO	RATIVE FACE OF WALL FLANGE AND OUTLET NOZZLE, PROVIDE REMOVABLE STAINLE
FD-1	FLOOR DRAIN	-	-	3", 4"	-	ZN415B	ZURN	SURE SEAL TRAP SEAL	RECTORSEAL	FLOOR DRAIN, DUR WITH SEEPAGE SLO	A-COATED CAST IR DTS AND "TYP B" PC	ON BODY WITH BO DLISHED NICKEL BR	)TTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP AND ADJUSTABLE COL RONZE, 5" LIGHT DUTY STRAINER. PROVIDE SURE SEAL TRAP SEALS
FS-1	FLOOR SINK	-	-	4"	-	ZN1926-33	ZURN	SURE SEAL TRAP SEAL	RECTORSEAL	FLOOR SINK, SANI-F SLOTTED OPENING PROVIDE SURE SEA	FLOR RECEPTOR 16 S, WHITE ACID RES AL TRAP SEAL	5x16x12 DEEP CAST ISTING EPOXY COA	T IRON BODY WITH SEEPAGE FLANGE AND SQUARE, HEAVY-DUTY GRATE WITH 9/16 ATED INTERIOR AND TOP, WHITE A.R.C. ANTI-SPLASH BOTTOM DOME STRAINER,
L-1	LAVATORY - BARRIER FREE	1/2"	1/2"	1-3/4"	1-1/2"	037100-U	NAMEEKS	EFX 300 FAUCET	SLOAN	WALL MOUNTED WH SQUARE CERAMIC I	HITE CERAMIC BATI DRAIN COVER. SINC	HROOM SINK, INSTA GLE FAUCET HOLE	ALL ACCORDING TO ADA REGULATIONS, FEATURES OVERFLOW AND INTEGRATED FOR SLOAN EFX-300 SENSOR FAUCET, PROVIDE ASSE 1070 MIXING VALVE
MS-1	MOP SINK	1/2"	1/2"	3"	1-1/2"	Z1996-24	ZURN	830-AA	FIAT	24x24 SERVICE SIN STAINLESS HOSE B PAIL HOOK, AND 3/4	K, PROVIDE STAINL RACKET, 830-AA SE "HOSE THREAD Of	ESS STEEL WALL A RVICE FAUCET - C N SPOUT	AND BUMPER GUARDS, MOP HANGER, 5' LONG 1/2" DIA. HEAVY DUTY HOSE AND HROME PLATED WITH VACUUM BREAKER, INTEGRAL STOPS, ADJUSTABLE WALL BRA
NFHW-1	HOSE BIBB	3/4"	-	-	-	MODEL 68	WOODFORD	-	-	BACKFLOW PROTE STANDARD CHROM	CTED AUTOMATIC E E FINISH, ASSE 105	DRAINING FREEZEL 3 LISTED HYDRAN	LESS WALL HYDRANT WITH INTEGRAL, LOCKING STAINLESS STEEL HEAD COVER, T, PATENTED HIGH FLOW DOUBLE CHECK BACK PREVENTER, ASSE 1052 APPROVED
SK-1	BAR SINK - BARRIER FRE	E 1/2"	1/2"	2"	1-1/2"	ELUHAD161650	ELKAY	4932.410, FINISH: 075 PVD STAINLESS STEEL	AMERICAN STANDARI	ELKAY LUSTERTON WITH LUSTROUS SA DECK-MOUNT, MET STEEL SUPPLY HOS	E CLASSIC STAINLE ATIN FINISH, REAR ( AL BODY WITH TW SE, 1.5 GPM MAXIMU	ESS STEEL 18-1/2"x CENTER DRAIN PLA O-PART ADA METAI JM FLOW RATE, FIN	18-1/2"x4-7/8" SINGLE BOWL UNDERMOUNT SINK KIT, 18 GAUGE 304 STAINLESS STEEL ACEMENT, SIDES AND BOTTOM PADS, EDGEWATER PULL-DOWN BAR FAUCET, L LEVER HANDLE, CERAMIC DISC VALVE CARTRIDGE, BRAIDED FLEXIBLE STAINLESS NISH: PVD STAINLESS STEEL
UR-1	URINAL	3/4"	-	2"	1-1/2"	6002.001	AMERICAN STANDAR	D SOLIS 8186-0.5-SF	SLOAN VALVE	PINTBROOK 0.5 GPF FLUSHOMETER, WI CARRIER	F HIGH EFFICIENCY TH SMART SENSE T	WASHDOWN URIN ECHNOLOGY, FINIS	IAL, EXPOSED, SOLAR POWERED, SENSOR ACTIVATED SLOAN SOLIS MODEL URINAL SH: BRUSHED STAINLESS, 3/4" TOP SPUD, 0.5 GPF, PROVIDE FLOOR MOUNTED FIXTUF
WB-1	WALL BOX - CLOTHES WASHER	1/2"	-	-	-	SSWB3	GUY GRAY	-	-	CENTER DRAIN, 20 CONNECTION, 32" S	GAUGE 304 STAINL SLIPNUT DRAIN, VAL	ESS STEEL WASHIN	NG MACHINE OUTLET BOX WITH QUARTER TURN ARRESTER VALVES, 1/2" MIP/SWEAT H ASME A112.18.1
WC-1	WATER CLOSET	1"	-	4"	2"	2234.001	AMERICAN STANDAR	D SOLIS 8111-1.28-SF	SLOAN VALVE	MADERA FLOWISE 1.6 GPF, PERMANEN SOLAR POWERED, S BRUSHED STAINLES	TOP SPUD FLOOR N NT EVERCLEAN SUF SENSOR ACTIVATE SS, 1.28 GPF	IOUNT ELONGATEI RFACE, FULLY GLA D SLOAN SOLIS MC	D VITREOUS CHINA TOILET, HIGH EFFICIENCY, OPERATES IN THE RANGE OF 1.1 GPF 1 ZED 2-1/8" TRAPWAY, 1-1/2" TOP SPUD, PROVIDE HEAVY DUTY TOILET SEAT, EXPOSED DDEL WATER CLOSET FLUSHOMETER FOR FLOOR MOUNTED TOP SPUD BOWLS, FINIS
WC-2	WATER CLOSET - BARRIE FREE	۲ 1"	-	4"	2"	3043.001	AMERICAN STANDAR	D SOLIS 8111-1.28-SF	SLOAN VALVE	MADERA FLOWISE OPERATES IN THE F PROVIDE HEAVY TO FLOOR MOUNTED T	MADERA FLOWISE TOP SPUD FLOOR MOUNT ELONGATED VITREOUS CHINA TOILET MOUNTED AT BARRIER FREE HEIGHT, HIGH E OPERATES IN THE RANGE OF 1.1 GPF TO 1.6 GPF, PERMANENT EVERCLEAN SURFACE, FULLY GLAZED 2-1/8" TRAPWAY, 1-1/2" TO PROVIDE HEAVY TOILET SEAT, EXPOSED, SOLAR POWERED, SENSOR ACTIVATED SLOAN SOLIS MODEL WATER CLOSET FLUSHC EL OOR MOUNTED TOP SPUD ROWLS, EINISH: BRUSHED STAINLESS, 1.28 GPE		
WC-3	WATER CLOSET - KIDS	1"	-	4"	2"	2282.001	AMERICAN STANDAR	D SOLIS 8111-1.28-SF	SLOAN VALVE	BABY DEVORO FLO OPERATING IN THE TOP SPUD, PROVID FLUSHOMETER FOR	WISE TOP SPUD FL RANGE OF 1.28 GP E HEAVY TOILET SE R FLOOR MOUNTED	OOR MOUNT VITRE F TO 1.6 GPF. 10" R EAT, EXPOSED, SOI 0 TOP SPUD BOWLS	EOUS CHINA TOILET MOUNTED AT 10-1/4" HEIGHT, HIGH EFFICIENCY, LOW CONSUMPT ROUGH IN, PERMANENT EVERCLEAN SURFACE, FULLY GLAZED 2-1/8" TRAPWAY, 1-1/2" LAR POWERED, SENSOR ACTIVATED SLOAN SOLIS MODEL WATER CLOSED S, FINISH: BRUSGED STAINLESS, 1.28 GPF.
								E	XHAUSI FANS				
		M			0		ESP	WATTS	SH5	KPM	V/P	SONES	REMARKS
	EF-1	CSP-/	A390-VG			210	0.5	40	0.00	1,320	115/1	2.2	1,2
	EF-3	reu .SO.	-16-M2		<u>4</u>	800	1 09	2 HP	1.55	1 750	460/3	18.3	1 3
1. BASED 2. TO OP	DON "GREENHECK." PERATE CONTINUOUSLY.			uuu		·····			·····	manana	mmmm	· · · · · · · · · · · · · · · · · · ·	
								S	PLIT SYSTEMS				
	F	VAPORA	TOR				CONDE	NSER					
MAR	K LOCA	TION		Μ	ODEL	MARK	LOCATIO	N MODE	EL TONS	S V/P			REMARKS
AC-	5 MAKERS S	PACE 108	3	FCQ	18TAVJU	CU-5	OUTDOC	R RZQ18TA	VJUA 1.5	208 / 1	1		

1. BASED ON "DAIKIN."

## <u>DIFFUSER / GRILLE LEGEND:</u>

# TAG: DESCRIPTION: <u>S-1</u> (3) 10"Ø 400 <u>SUPPLY DIFFUSER TYPE</u> (# OF SIMILAR DIFFUSER IN ROOM, ONLY USE IF GREATER THAN 1) NECK SIZE OF SQUZRE CEILING DIFFUSER (TYPICALLY 24"x24" FACE FOR LAY-IN CEILINGS SSURE AND TEMPERATURE CFM XTENDED NECK AND CAP S-1 SUPPLY DIFFUSER / GRILLE TYPE (# OF SIMILAR DIFFUSER / GRILLE IN ROOM, ONLY USE IF GREATER THAN 1) 40"x12" SIZE OF SUPPLY GRILLE 1750 CFM 11'-0" AFFMOUNTING HEIGHT ABOVE FINISHED FLOOR (IF WALL MOUNTED)45° DNMOUNTING ANGLE WHEN NEEDED (WHEN MOUNTED ON SPIRAL DUCT) R-1(4)RETURN GRILLE TYPE (# OF SIMILAR GRILLE IN ROOM, ONLY USE IF GREATER THAN 1)14"x6"SIZE OF RETURN GRILLE400CFM (NOTE: IF PLENUM RETURN, NO CFM NEEDED) NNECTION TO EXISTING 11'-0" AFF MOUNTING HEIGHT ABOVE FINISHED FLOOR (IF WALL MOUNTED) E-1 (4) EXHAUST GRILLE TYPE (# OF SIMILAR GRILLE IN ROOM, ONLY USE IF GREATER THAN 1) 14"x6" SIZE OF RETURN GRILLE 400 CFM 4100 CFM 11'-0" AFF MOUNTING HEIGHT ABOVE FINISHED FLOOR (IF WALL MOUNTED)

#### ABBREVIATIONS:

AFF

ATR BF

BOD BOS BTUH

BV CA CEF

CFH CFM СН

CO CONC CW

DB

DN EA

EAL EAT

EDB

ESP EWB EWT EXIST

FD FS GPM HB

HO HP HW

HWR LAV,L LAT LDB LWB

FF

······	······	·····	······	~~~~~	WATER HEATE	 R	~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~	~~~			CHE	
R".		500	JUJ	IJ	7	120/	1 1	1						
MODEL #	SERVICE	INPUT (MBH) C	UTPUT (MBH)	WATER (GPM)	VENT ("Ø) Δ"	V/P	/1	1		REN	MARKS		<u> </u>	
					BOILERS								S	
55EII".	······	······	uuuu	·····	······	uuu	uu	······	·····	····	ז יייייייייייייייייייייייייייייייייייי			
PL-45	17.5	20		3300	1/6	-		-	115/1	1				
E60-1.25-1.25-5.25	27	20		1576	0.5	0.237		5	115/1	1				
MODEL	GPM	HEAD	(FT)	RPM	HP	BHP		IMPELLER DIA	V/P		REMARKS	PRC	~ <u>ш</u> (Л	
					PUMPS							DIECT	<b>4</b> 0 0 5 <b>m</b>	1
AIR TEMPERATU BELOW FLOOR BOTTOM OF DU BOTTOM OF DU BOTTOM OF STI BRITISH THERA BALANCE VALVI COMPRESSED / CEILING EXHAU CUBIC FEET PE CUBIC FEET PE CABINET HEATE CLEAN OUT CONCRETE DOMESTIC COL DECIBELS, SOU DOWN EXHAUST AIR/ E EXHAUST /RELIE ENTERING AIR T ENTERING MAT EXTERNAL STA' ENTERING WET ENTERING WET ENTERING WET ENTERING WET ENTERING WET ENTERING WET ENTERING WET MOSE BIB HUB OUTLET HORSEPOWER DOMESTIC HOT DOMESTIC HOT LAVATORY LEAVING AIR TE LEAVING WET E	JRE RISE JRE RISE CT EEL MAL UNIT PER HOUR E AIR ST FAN R HOUR R MINUTE TO WATER ND PRESSURE LEVEL EACH EF AIR LOUVER TEMPERATURE BULB ER TEMPERATURE MINUTE WATER WATER WATER RETURN EMPEATURE/LATENT HE ULB BULB	MAT MBH MIN MFG NC NO OA OAL OD OF OFCI PD PT RD RH RPM BFP S SA SAN SCW SP S.S. ST TEMP TOD TOS TSP V VTR WC WH WPD XTR WC WH WPD	MIXED AIR 1000 BRITIS MINIMUM MANUFACT NORMALLY OUTSIDE AI OUTISDE AI OVERFLOW OVERFLOW OVERFLOW OVERFLOW OVERFLOW OVERFLOW OVERFLOW OVERFLOW OVERFLOW OWNER FUI INSTALLED PRESSURE PRESSURE PRESSURE ROOF DRAI RELATIVE F REVOLUTIC BACKFLOW SINK SUPPLY AIF SANITARY SPFT COLD STATIC PRE STAINLESS STORM TEMPERATI TOP OF DUU TOP OF STE TOTAL STA' VENT VENT THRCC WATER PRE WALL TO W	TEMPERATURE SH THERMAL UNITS P URER CLOSED OPEN IR IR LOUVER / DRAIN / RNISHED - CONTRAC DROP /TEMPERATURE PLU N UMIDITY/REHEAT DNS PER MINUTE / PREVENTER 2 WATER ESSURE STEEL URE CT EEL URE CT EEL UURE CT EEL UURE CT EEL UURE CT EEL DUGH ROOF DSET ATER ESSURE DROP /ALL	ER HOUR	<ol> <li>ARR WITH COE</li> <li>ARR INSF</li> <li>MAK REG SEW</li> <li>ALL EXP COC MINI</li> <li>COM AND</li> <li>PRO EAC</li> <li>THE CON MINI</li> <li>COM AND</li> <li>PRO ETC INST</li> <li>CON AND</li> <li>PRO ETC</li> <li>NST</li> <li>CON HAW</li> <li>ALL PAR ADJI FIRE</li> <li>FUR PRO PIPII</li> </ol>	ANGE AP PECTIONS ANGE AP PECTIONS ANGE AP PECTIONS AURED B VER SERV WORK SI PEDITIOUS ORDINATE IMIZE ANI MPLETED O GUARAN OVIDE A G CH PIECE E DRAWIN NTRACTO MMER ARI PIPES PA ATTIONS IUSTABLE E TOPPIN RNISH ANI DPER SEC ING SYST	PLICABLE FEDERAL, STATE, AND I INANCES, AND LAWS. ND PAY FOR ALL PERMITS AND S AS REQUIRED. NGEMENTS WITH AND PAY ALL CHY Y UTILITY COMPANIES FOR, WATE //ICES. HALL BE PERFORMED TO FACILIT, S PROGRESS ON THE WHOLE PRO E WORK WITH OTHER TRADES TO D RESOLVE POTENTIAL CONFLICT SYSTEM SHALL BE TESTED, BALA VIEED. SAS SHUTOFF VALVE AND DIRT LE OF GAS FIRED EQUIPMENT. GS ARE DIAGRAMMATIC IN NATUH R SHALL PROVIDE FITTINGS, OFF CESSARY TO PROPERLY COMPLE N OF THE SYSTEMS. R TO FURNISH AND INSTALL WAT RESTERS AT EACH VALVED FIXTU ASSING THRU FINISHED WALLS, AND FLOORS SHALL BE FITTED W ESCUTCHEONS, AND APPROPRI G WHERE REQUIRED. D INSTALL ALL VALVING FOR THE CTIONALIZING AND OPERATION OF EM.	LOCAL IARGES ER, AND ATE DJECT. 'S. NNCED, 'G AT RE. THE SETS, TE THE ER IRE. 'ITH ATE THE	<ol> <li>12.</li> <li>13.</li> <li>14.</li> <li>15.</li> <li>16.</li> </ol>	<ul> <li>OTHER BUILDING COMPONENTS. ESTABLISH ELEVATION OF PUBLIC SEWER SYSTEM.</li> <li>WHERE FIXTURES ARE MOUNTED TO WALLS SEAL ALL INTERSECTIONS WITH SILICONE CAULK.</li> <li>IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY DETAIL OF CONSTRUCTION. CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS NECESSARY FOR A COMPLETE CODE COMPLYING MECHANICAL SYSTEM TO BE IN PROPER WOKRING ORDER.</li> <li>PROVIDE APPROPRIATE FIRE STOPPING MATERIALS WHERE FIRE RATED ASSEMBLIES ARE PENETRATED.</li> <li>MATERIALS EXPOSED WITHIN A PLENUM SHALL BE NONCOMUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTEM E84. EXISTING AND NEW PVC PIPING WILL REQUIRE 1/2 INCH MINERAL FIBER INSULATION WITH VAPOR RETARDER FACING THAT MEETS ASTM E84.</li> <li>CONTROLS: MECHANICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL CONDUIT AND WIRING FOR LOW VOLTAGE AND LINE VOLTAGE REQUIREMENTS FOR PROPER FUNCTION AND COMMUNICATION OF EQUIPMENT.</li> </ul>		ASS DISTRICT LIBRARY306 S KALAMAZOO MALLBenton Harbor(MARDSBURG BRANCH306 S KALAMAZOO, MI 49007306 S KALAMAZOO, MI 49007Benton Harbor(WARDSBURG BRANCH1269.381.6170Grand RepidsGrand Repids(977 W. MAIN STREEET,269.381.6176Anaccole.comFort WayneFDWARDSBURG MIN STREEET,COPYRIGHT 2020 - ABONMARCHE CONSULTANTS.INC.Engineering, Achite	
ABOVE FINISH F AIR TEMPERATI	ELOOR JRE RISE	LWT MAT	LEAVING W. MIXED AIR 1			1. ALL WITI	WORK SI	HALL BE COMPLETED IN ACCORD PLICABLE FEDERAL, STATE, AND I	ANCE LOCAL	11.	LAYOUT PLUMBING WORK TO AVOID CONFLICTS WITH OTHER BUILDING COMPONENTS. ESTABLISH	B	bor en ids VPortage Architecture,	

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								PLIMPS								
MARK	MODE	1	GP	M	HEAD (ET)	)	RPM	HP	BH	IP III			V/P		REMARKS	
P-1	E60-1.25-1.2	25-5.25	27	7	20	)	1576	0.5	0.2	237	5		115/1	1		
P-2	PL-45		17.	5	20		3300	1/6	-	-	-		115/1	1		
ASED ON "BELL	.& GOSSETT".	uuu	·····	mm	un	mm	uuuu	·····	·····	·····	······	·····	un	······	uuuu	uu
								BOILERS								
MARK	MODEL #	SE	RVICE	INPUT (MBH)	OUTP	PUT (MBH)	WATER (GPM)	VENT ("Ø)		V/P				REMARKS		
B-1	KBX0500N	NATU	IRAL GAS	500		485	75	4"	1	120/1 1						
ASED ON "LOCH	HINVAR".															
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								WATER HEAT	rer							
MARK	MODEL	SE	RVICE	STORAGE		GPH REC	INPUT I	BTU	V/P				RE	MARKS		
		NATU	IRAL GAS	75		77	80,00	00  115/1		1						
		uuu	·····	uuuu	uuu	mm	······	uuu	uuu	······	mmm	mm	uuu	······	······	·····
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							A	IR HANDLING	UNITS							
MARK	MODEL		CFM	MAX O.A. CFM	ESP	COOLING ME	HEATING MBH	FAN H	HP	FAN BHP	FAN RPM	V/P			REMARKS	
AHU-1	CAH011GE	DQM	4800	4800	0.75	167	153.5	4.1		1.80	3001	480/3	1,2			
AHU-3	V3-BRB-3-0-14	1D-12M	1600	360	0.75	54.2	76.2	1.5		1.11	3500	460/3	1,2			
AHU-4	V3-BRB-3-0-14	1D-12M	1600	360	0.75	54.2	76.2	1.5		1.11	3500	460/3	1, 2			
							C	CONDENSING U	INITS							
MARK	MODEL		CONNE	ECT TO	TON	15	C SEER (MIN)	CONDENSING U V/P	INITS				REM	ARKS		
MARK CU-1	MODEL CFA-015-B-A-3-D	A00N	CONNE	ECT TO U-1	TON 12.5	<b>IS</b> 5	C SEER (MIN) 12 14 2	CONDENSING U V/P 460/3	INITS	1			REM	ARKS		
MARK CU-1 CU-2 CU-3	MODEL CFA-015-B-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/	400N 400H 400H	Conne Ah Ah Ah	ECT TO U-1 U-2 U-3	<b>TON</b> 12.5 4 4	<b>IS</b> 5	C SEER (MIN) 12 14.2 14.2	CONDENSING U V/P 460/3 460/3 460/3	INITS 1 1 1	1 1 1			REM	ARKS		
MARK CU-1 CU-2 CU-3 CU-4	MODEL CFA-015-B-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/	A00N A00H A00H A00H	Conne Ah Ah Ah Ah	ECT TO U-1 U-2 U-3 U-4	<b>TON</b> 12.5 4 4 4	<b>IS</b> 5	C SEER (MIN) 12 14.2 14.2 14.2 14.2	CONDENSING U V/P 460/3 460/3 460/3 460/3	INITS 1 1 1 1 1 1 1 1	1 1 1 1			REM	ARKS		
MARK CU-1 CU-2 CU-3 CU-4 ASED ON "AAON	MODEL CFA-015-B-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/ N."	A00N A00H A00H A00H	CONNE AH AH AH AH	ECT TO U-1 U-2 U-3 U-4	<b>TON</b> 12.5 4 4 4	<b>IS</b> 5	C SEER (MIN) 12 14.2 14.2 14.2 14.2	CONDENSING U V/P 460/3 460/3 460/3 460/3	INITS 1 1 1 1 1 1 1 1	1 1 1 1			REM	ARKS		
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MARK CU-1 CU-2 CU-3 CU-4 ASED ON "AAON	MODEL CFA-015-B-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, N." MODEL	A00N A00H A00H A00H	Conne Ah Ah Ah Ah	ECT TO U-1 U-2 U-3 U-4	<b>TON</b> 12.5 4 4 4	<b>IS</b> 5	C SEER (MIN) 12 14.2 14.2 14.2 14.2 AIR DESCRIPTION	CONDENSING U V/P 460/3 460/3 460/3 460/3 INLETS AND O	UNITS	1 1 1 1			REM	ARKS	MARKS	
MARK CU-1 CU-2 CU-3 CU-4 ASED ON "AAON KEY E-1	MODEL CFA-015-B-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, N." MODEL 50F	A00N A00H A00H A00H 1/2x1/2x1/2 G	Conne Ah Ah Ah Ah Rid Core, S	ECT TO U-1 U-2 U-3 U-4	TON 12.5 4 4 4 0 0, ALUMINU	IS 5	C SEER (MIN) 12 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DECOREED	CONDENSING U V/P 460/3 460/3 460/3 460/3 NLETS AND O	INITS	1 1 1 1		1,3	REM	ARKS	MARKS	
MARK CU-1 CU-2 CU-3 CU-4 ASED ON "AAON ASED ON "AAON E-1 R-1 R-2	MODEL CFA-015-B-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, N." MODEL 50F 657 50F	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G	Conne Ah Ah Ah Ah RID Core, S CE Steel C RID Core, L	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE ONSTRUCTION,1/3 AY-IN, ALUMINUM,	TON           12.5           4           4           4           0, ALUMINU           3" SPACED F           BAKED ON	JM, BAKED ON I FINS SET AT 20 ENAMEL	C SEER (MIN) 12 14.2 14.2 14.2 14.2 AIR BESCRIPTION ENAMEL DEGREES	CONDENSING U V/P 460/3 460/3 460/3 460/3 NLETS AND O	INITS 1 1 1 1 1 1 1 1 1 UTLETS	1 1 1 1		1,3 2,3 1,3	REM	ARKS	MARKS	
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MARK CU-1 CU-2 CU-3 CU-4 ASED ON "AAON KEY E-1 R-1 R-2 R-3 S-1 S-2	MODEL CFA-015-B-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, N." MODEL 50F 657 50F 657 50F 300RL TMS S300FL	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF	CONNE AH AH AH AH CORE, S ICE STEEL C RID CORE, L LE DEFLECT R FACE, SUF LECTION SIF	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE ONSTRUCTION,1/2 AY-IN, ALUMINUM, TON RETURN GRIL RFACE MOUNTED, PRAL MOUNTED G	TON 12.5 4 4 4 3 5 5 9 7 5 9 7 5 9 7 7 7 7 7 7 7 7 7 7 7	IS 5 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING	C SEER (MIN) 12 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE	CONDENSING U V/P 460/3 460/3 460/3 460/3 1012 INLETS AND O INLETS AND O INLETS AND O INLETS AND O	INITS   INITS  I I I I I I I I I I I I I I I I I I	1 1 1 1 1 1 1 NSION		1,3 2,3 1,3 1,3 1,3 1,3 1,3 1,3	REM	ARKS	MARKS	
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MARK CU-1 CU-2 CU-3 CU-4 ASED ON "AAON KEY E-1 R-1 R-1 R-2 R-3 S-1 S-2 S-3 ASED ON "TITUS ASED ON "HART	MODEL CFA-015-B-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/ N." MODEL 50F 657 50F 657 50F 300RL TMS S300FL 300FL S". AND COOLEY".	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D	Conne AH AH AH AH CORE, S CE STEEL C RID CORE, L LE DEFLECT R FACE, SUF LECTION SIF OUBLE DEFL	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE ONSTRUCTION, 1/2 AY-IN, ALUMINUM, TON RETURN GRIL RFACE MOUNTED, PRAL MOUNTED G LECTION SUPPLY (	TON 12.5 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING RFACE MOUNT	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE ED, 3/4" BLADE SPACII	CONDENSING U V/P 460/3 460/3 460/3 460/3 INLETS AND O	INITS INITS I I I I I I I I I I I I I I I I I I	1 1 1 1 NSION ARALLEL TO THE L	ONG DIMENSION	1,3 1,3 2,3 1,3 1,3 1,3 1,3 1,3 1,3 1,3		ARKS	MARKS	
MARK CU-1 CU-2 CU-3 CU-4 ASED ON "AAON KEY E-1 R-1 R-2 R-3 S-1 S-2 S-3 SED ON "TITUS SED ON "HART DLOR BY ARCH	MODEL CFA-015-B-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/ CFA-005-A-A-3-D/ N." MODEL 50F 50F 50F 50F 300RL TMS S300FL 300FL S". TAND COOLEY". TAND COOLEY".	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D	CONNE AH AH AH AH CORE, S CE STEEL C RID CORE, L LE DEFLECT R FACE, SUF LECTION SIF OUBLE DEFL	ECT TO U-1 U-2 U-3 U-4 U-4 URFACE MOUNTE ONSTRUCTION,1/3 AY-IN, ALUMINUM, 10N RETURN GRIL RFACE MOUNTED, PRAL MOUNTED G LECTION SUPPLY (	TON 12.5 4 4 4 4 5 5 9 8 4 9 8 7 9 8 7 9 8 7 9 8 7 9 8 7 9 8 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	IS 5 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING RFACE MOUNT	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE ED, 3/4" BLADE SPACII	CONDENSING U V/P 460/3 460/3 460/3 460/3 INLETS AND O INLETS AND O	INITS	1 1 1 1 NSION ARALLEL TO THE I		1,3 2,3 1,3 1,3 1,3 1,3 1,3 1,3 1,3		ARKS	MARKS	
MARK           CU-1           CU-2           CU-3           CU-4           SED ON "AAON           KEY           E-1           R-1           R-2           R-3           S-1           S-2           S-3           SED ON "HART           DLOR BY ARCH	MODEL CFA-015-B-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, CFA-005-A-A-3-D, N." MODEL 50F 50F 50F 50F 300RL TMS S300FL 300FL S". TAND COOLEY". ITECT.	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D	CONNE AH AH AH AH RID CORE, S ICE STEEL C RID CORE, L LE DEFLECT R FACE, SUF LECTION SIF OUBLE DEFL	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE ONSTRUCTION,1/3 AY-IN, ALUMINUM, 10N RETURN GRIL RFACE MOUNTED, PRAL MOUNTED G LECTION SUPPLY O	TON 12.5 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING RFACE MOUNTI CONTINUES CONT	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE ED, 3/4" BLADE SPACII	CONDENSING U V/P 460/3 460/3 460/3 460/3 INLETS AND O INLETS AND O E PARALLEL TO L NG WITH FRONT	INITS	1 1 1 1 NSION ARALLEL TO THE L		1,3 2,3 1,3 1,3 1,3 1,3 1,3 1,3 1,3 1,3 1,3	REM	ARKS RE	MARKS	
MARK           CU-1           CU-2           CU-3           CU-4           \SED ON "AAON           KEY           E-1           R-1           R-2           R-3           S-1           S-2           S-3           \SED ON "HART           DLOR BY ARCH	MODEL           CFA-015-B-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           N."           MODEL           50F           657           50F           300RL           TMS           S300FL           300FL           S".           AND COOLEY".	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D	CONNE AH AH AH AH CORE, S CE STEEL C RID CORE, L LE DEFLECT R FACE, SUF LECTION SIF OUBLE DEFL OUBLE DEFL	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE ONSTRUCTION,1/3 AY-IN, ALUMINUM, TON RETURN GRIL RFACE MOUNTED, PRAL MOUNTED G LECTION SUPPLY O CONSTRUCTION SUPPLY O	TON 12.5 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING RFACE MOUNT CONTRACTION CONT	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE ED, 3/4" BLADE SPACII	CONDENSING U V/P 460/3 460/3 460/3 460/3 INLETS AND O INLETS AND O E PARALLEL TO L NG WITH FRONT	INITS			1,3 2,3 1,3 1,3 1,3 1,3 1,3 1,3 1,3 1,3 1,3		ARKS	MARKS	
MARK         CU-1         CU-2         CU-3         CU-4         SED ON "AAON         KEY         E-1         R-1         R-2         R-3         S-1         S-2         S-3         SED ON "HART         DLOR BY ARCH         MARK         EBH-1	MODEL           CFA-015-B-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           V."           MODEL           50F           657           50F           300RL           TMS           S300FL           300FL           S".           TAND COOLEY".           ITECT.           MODEL           SBT	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D COUBLE DEF ALUMINUM D	CONNE AH AH AH AH CORE, S CE STEEL C RID CORE, L LE DEFLECT R FACE, SUF LECTION SIF OUBLE DEFL OUBLE DEFL	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE ONSTRUCTION,1/3 AY-IN, ALUMINUM, TON RETURN GRIL RFACE MOUNTED, PRAL MOUNTED G LECTION SUPPLY ( CONSTRUCTION SUPPLY) CONSTRUCTION SUPPLY CONSTRUCTION SUPPLY CONSTRUCTI	TON 12.5 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING RFACE MOUNTI COG NUMBER 3B-8150	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE ED, 3/4" BLADE SPACII	CONDENSING U         V/P         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         4092	INITS  INITS  I I I I I I I I I I I I I I I I I I	1 1 1 1 1 1 NSION ARALLEL TO THE I		1, 3 2, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1	MENT LIS	ARKS RE	MARKS	
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MARK CU-1 CU-2 CU-3 CU-4 SED ON "AAON KEY E-1 R-1 R-2 R-3 S-1 S-2 S-3 SED ON "TITUS SED ON "TITUS SED ON "HART DLOR BY ARCH MARK EBH-1 EBH-2 EBH-3 EBH-4	MODEL           CFA-015-B-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           N."           MODEL           50F           657           50F           300RL           TMS           S300FL           300FL           SST.           AND COOLEY".           ITECT.           MODEL           SBT           SBT           SBT           SBT           SBT           SBT           SBT           SBT	A00N A00H A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D CONTRACTOR 9'-6" 7'-10" 9'-6"	CONNE	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE ONSTRUCTION,1/2 AY-IN, ALUMINUM, TON RETURN GRIL RFACE MOUNTED, PRAL MOUNTED G LECTION SUPPLY ( CONSTRUCTION SU	TON 12.5 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 5 JM, BAKED ON I 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING RFACE MOUNT O HEATERS OG NUMBER SB-8150 SB-7150 SB-7150 SB-8150	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE ED, 3/4" BLADE SPACII WATTS 1200 1050 1050 1050 1050 1050 1050 1050	CONDENSING U         V/P         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         INLETS AND O         EPARALLEL TO LONG E         PARALLEL TO LONG E         NG WITH FRONT         York         4092         3581         3581         4092	INITS	1 1 1 1 1 1 NSION ARALLEL TO THE I		1, 3 2, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1	REM.           MENT LI           SOFTENER           CTURER: P           450 TCCM-F           Y: 450,000 (0           SIZE: 3"           E FLOW RAT           EMAND FLO	ARKS  RE  RE  ST  EERLESS D-3" GRAINS (EACH)  E: 75 GPM STEADY W RATE: 150 GPM 3	MARKS	
MARK CU-1 CU-2 CU-3 CU-4 SED ON "AAON KEY E-1 R-1 R-2 R-3 S-1 S-2 S-3 SED ON "TITUS SED ON "TITUS SED ON "HART DLOR BY ARCH MARK EBH-1 EBH-2 EBH-3 EBH-4 EBH-5 EPH 0	MODEL           CFA-015-B-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           N."           MODEL           50F           657           50F           300RL           TMS           S300FL           300FL           SST.           AND COOLEY".           ITECT.           MODEL           SBT	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D COUBLE DEF COUBLE DE	CONNE	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE ONSTRUCTION,1/2 AY-IN, ALUMINUM, TON RETURN GRIL RFACE MOUNTED G PRAL MOUNTED G LECTION SUPPLY ( CONSTRUCTION S	TON 12.5 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 JM, BAKED ON I 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING, I KED ON ENAME BLADE SPACING RFACE MOUNT O HEATERS OG NUMBER SB-8150 SB-7150 SB-	C SEER (MIN)  12 14.2 14.2 14.2 14.2 14.2 14.2 14.2	CONDENSING U V/P 460/3 460/3 460/3 460/3 460/3 KILETS AND O E PARALLEL TO LONG E PARALLEL TO LONG E PARALLEL TO LONG E DARALLEL TO LONG E E PARALLEL TO LONG E E DARALLEL TO LONG E E DARALLEL TO LONG E E DARALLEL TO LONG E E AU E D E D E D E D E D E D E D E D E D E	INITS	1 1 1 1 1 1 NSION ARALLEL TO THE I		1, 3 2, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1	REM.	ARKS  ARKS  BERLESS  ARE  BERLESS  ARE  BERLESS  ARE  BRAINS (EACH)  ARE  S GPM STEADY  W RATE: 150 GPM STEADY  C S GPM EACH TANK  C S S S S S S S S S S S S S S S S S S	MARKS	I DROP 5 PSI DROP
MARK CU-1 CU-2 CU-3 CU-4 ASED ON "AAON KEY E-1 R-1 R-2 R-3 S-1 S-2 S-3 SED ON "HART OLOR BY ARCH MARK EBH-1 EBH-2 EBH-3 EBH-4 EBH-5 EBH-6 EBH-7	MODEL           CFA-015-B-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           N."           MODEL           50F           657           50F           300RL           TMS           S300FL           300FL           S".           AND COOLEY".           ITECT.           MODEL           SBT	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D COUBLE DE	CONNE	ECT TO U-1 U-2 U-3 U-4 U-4 U-4 U-4 U-4 U-4 U-4 U-4	TON 12.5 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS         5           5         -           JM, BAKED ON I         -           FINS SET AT 20         -           ENAMEL         -           ADE SPACING, I         -           KED ON ENAME         -           BLADE SPACING         -           FACE MOUNT         -           D HEATERS         -           OG NUMBER         -           3B-8150         -           3B-8150         -           3B-8150         -           3B-8150         -           3B-8150         -	C SEER (MIN)  12 14.2 14.2 14.2 14.2 14.2 14.2 14.2	CONDENSING U         V/P         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         400/3         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581	INITS  INITS  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 NSION ARALLEL TO THE I		1, 3 2, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1, 3 1	REM.	ARKS ARKS BERLESS BO-3" GRAINS (EACH) EERLESS BO-3" GRAINS (EACH) E: 75 GPM STEADY W RATE: 150 GPM 3 5 GPM EACH TANK (2) CLACK WS3" V	MARKS	I DROP 5 PSI DROI NHWB VA
MARK         CU-1         CU-2         CU-3         CU-4         SED ON "AAON         KEY         E-1         R-3         S-1         S-2         S-3         SED ON "HART         DLOR BY ARCH         ★★★★★★★★         MARK         EBH-1         EBH-2         EBH-3         EBH-4         EBH-5         EBH-6         EBH-8	MODEL           CFA-015-B-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           CFA-005-A-A-3-D/           N."           MODEL           50F           657           50F           300RL           TMS           S300FL           300FL           S0F           S0F           S00FL           300FL           S300FL           300FL           SBT	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D COUBLE DE	CONNE	ECT TO U-1 U-2 U-3 U-4 U-4 U-4 U-4 U-4 U-4 U-4 U-4	TON 12.5 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 5 JM, BAKED ON I FINS SET AT 20 ENAMEL ADE SPACING, I KED ON ENAME BLADE SPACING RFACE MOUNTI <b>COMMUNER</b> 3B-8150 3B-7150 3B-7150 3B-7150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150 3B-8150	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE ED, 3/4" BLADE SPACII WATTS I 1200 1050 1050 1050 1200 1050 1200 1200	CONDENSING U         V/P         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         400/3         4092         3581         4092         3581         4092         3581         4092         5560	INITS  INITS  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 NSION ARALLEL TO THE I		1,3         2,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         0.00000000000000000000000000000000000	REM/ MENT LIS SOFTENER CTURER: P 450 TCCM-F TY: 450,000 ( SIZE: 3" E FLOW RAT EMAND FLO SIZE: 3" E FLOW RATE: 2 5 CU. FT. R SI CENTER: 3" 1	ARKS REI ST EERLESS D-3" GRAINS (EACH) E: 75 GPM STEADY W RATE: 150 GPM 3 5 GPM EACH TANK SIN EACH TANK (2) CLACK WS3" V	MARKS	I DROP 5 PSI DROI NHWB VA
MARK         CU-1         CU-2         CU-3         CU-4         \SED ON "AAON         KEY         E-1         R-3         S-1         S-2         S-3         \SED ON "HART         DOR BY ARCH         \SED ON "HART         DLOR BY ARCH         \SED H-1         EBH-1         EBH-2         EBH-3         EBH-4         EBH-5         EBH-6         EBH-7         EBH-8         EBH-9         EBH-10	MODEL           CFA-015-B-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           N."           MODEL           50F           657           50F           300RL           TMS           S300FL           300FL           SS00FL           300FL           SS00FL           300FL           SBT           SBT<	A00N A00H A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D COUBLE DEF ALUMINUM D COU	CONNE	ECT TO U-1 U-2 U-3 U-4 URFACE MOUNTE CONSTRUCTION,1/3 AY-IN, ALUMINUM, TON RETURN GRIL RFACE MOUNTED, PRAL MOUNTED G LECTION SUPPLY O CONSTRUCTION S	TON 12.5 4 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA EL G WITH OUTER BLADE ED, 3/4" BLADE SPACII WATTS I 1200 I 1050 I 1200 I 1 1 I 1 I I I I I I I I I I I I I I	CONDENSING U         V/P         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         400/3         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581         4092         2560	INITS  INITS INIT	1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1 <td< td=""><td>ONG DIMENSION</td><td>1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           0.00000000000000000000000000000000000</td><td>REM/ MENT LIS SOFTENER CTURER: P 450 TCCM-F Y: 450,000 ( SIZE: 3" E FLOW RAT EMAND FLO SIZE: 3" E FLOW RATE: 2 5 CU. FT. R SL CENTER: SJ CU. FT. R</td><td>ARKS REI ST EERLESS D-3" GRAINS (EACH) FE: 75 GPM STEADY W RATE: 150 GPM S 5 GPM EACH TANK SIN EACH TANK (2) CLACK WS3" V</td><td>MARKS</td><td>I DROP 5 PSI DROI NHWB VA</td></td<>	ONG DIMENSION	1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           0.00000000000000000000000000000000000	REM/ MENT LIS SOFTENER CTURER: P 450 TCCM-F Y: 450,000 ( SIZE: 3" E FLOW RAT EMAND FLO SIZE: 3" E FLOW RATE: 2 5 CU. FT. R SL CENTER: SJ CU. FT. R	ARKS REI ST EERLESS D-3" GRAINS (EACH) FE: 75 GPM STEADY W RATE: 150 GPM S 5 GPM EACH TANK SIN EACH TANK (2) CLACK WS3" V	MARKS	I DROP 5 PSI DROI NHWB VA
MARK         CU-1         CU-2         CU-3         CU-4         ASED ON "AAON         KEY         E-1         R-3         S-1         S-2         S-3         S-50 ON "HART         DLOR BY ARCH         ************************************	MODEL           CFA-015-B-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           CFA-005-A-A-3-D,           N."           MODEL           50F           657           50F           300RL           TMS           S300FL           300FL           SST.           AND COOLEY".           ITECT.           MODEL           SBT           SBT <td< td=""><td>A00N A00H A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D CONTRACTOR 9'-6" 7'-10" 9'-6" 8'-0" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-6" 11'-2" 6'-0" 6'-4"</td><td>CONNE</td><td>ECT TO U-1 U-2 U-3 U-4 U-4 U-4 U-4 U-4 U-4 U-4 U-4</td><td>TON 12.5 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5</td><td>IS 5 5 5 5 5 5 5 5 5 5 5 5 5</td><td>C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA L GWATTS FRONT BLADES PARA L GWATTS I 1200 1050 1050 1050 1050 1050 1050 1050</td><td>CONDENSING U         V/P         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         400/3         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581         4092         2560         5120         2560</td><td>INITS INITS INITS</td><td>1         1         1         1         1         1         1         NSION         ARALLEL TO THE I         ARALLEL TO THE I         I, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2</td><td></td><td>1,3           2,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           0.00000000000000000000000000000000000</td><td>REM.</td><td>ARKS ARKS RE B B B B C C C C C C C C C C C C C</td><td>MARKS</td><td>I DROP 5 PSI DROF NHWB VA</td></td<>	A00N A00H A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D CONTRACTOR 9'-6" 7'-10" 9'-6" 8'-0" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-8" 9'-6" 11'-2" 6'-0" 6'-4"	CONNE	ECT TO U-1 U-2 U-3 U-4 U-4 U-4 U-4 U-4 U-4 U-4 U-4	TON 12.5 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 5 5 5 5 5 5 5 5 5 5 5 5	C SEER (MIN) 12 14.2 14.2 14.2 14.2 14.2 14.2 14.2 AIR DESCRIPTION ENAMEL DEGREES FRONT BLADES PARA L GWATTS FRONT BLADES PARA L GWATTS I 1200 1050 1050 1050 1050 1050 1050 1050	CONDENSING U         V/P         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         400/3         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581         4092         3581         4092         2560         5120         2560	INITS	1         1         1         1         1         1         1         NSION         ARALLEL TO THE I         ARALLEL TO THE I         I, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2         1, 2		1,3           2,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           1,3           0.00000000000000000000000000000000000	REM.	ARKS ARKS RE B B B B C C C C C C C C C C C C C	MARKS	I DROP 5 PSI DROF NHWB VA
MARK         CU-1         CU-2         CU-3         CU-4         ASED ON "AAON         KEY         E-1         R-3         S-1         S-2         S-3         SED ON "HART         JLOR BY ARCH         SH-1         EBH-1         EBH-2         EBH-3         EBH-4         EBH-5         EBH-6         EBH-7         EBH-8         EBH-10         EBH-11         EBH-12         FBH-13	MODEL           CFA-015-B-A-3-D.           CFA-005-A-A-3-D.           CFA-005-A-A-3-D.           CFA-005-A-A-3-D.           CFA-005-A-A-3-D.           S0F           50F           50F           50F           300RL           TMS           S300FL           300FL           SST.           AND COOLEY".           ITECT.           MODEL           SBT           SBT     <	A00N A00H A00H A00H 1/2x1/2x1/2 G 24x8 ONE PIE 1/2x1/2x1/2 G STEEL DOUB 24x24 LOUVE DOUBLE DEF ALUMINUM D COUBLE DEF ALUMINUM D ALUMINUM D ALUMINUM D ALUMINUM D ALUMINUM D ALUMINUM D ALUMINUM D ALUMINUM D ALUMINUM D ALUMINUM	CONNE	ECT TO U-1 U-2 U-3 U-4 U-4 U-4 URFACE MOUNTE ONSTRUCTION,1/3 AY-IN, ALUMINUM, TON RETURN GRIL RFACE MOUNTED G ICON SUPPLY ( CONSTRUCTION SUPPLY (	TON 12.5 4 4 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	IS 5 5 5 5 5 5 5 5 5 5 5 5 5	C SEER (MIN)  12 14.2 14.2 14.2 14.2 14.2 14.2 14.2	CONDENSING U         V/P         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         460/3         INLETS AND O         EPARALLEL TO LONG E         PARALLEL TO LONG E         PARALLEL TO LONG E         State         4092         3581         3581         4092         3581         4092         2560         5120         2560         5120         2560         4092         4092	INITS  INITS  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1 <td< td=""><td></td><td>1,3         2,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         0DEL:         CONTRO         MANUFA         MODEL:         TYPE: DI</td><td>REM.</td><td>ARKS ARKS RE BERLESS D-3" GRAINS (EACH) EERLESS D-3" GRAINS (EACH) ESIN EACH TANK S GPM EACH TANK (2) CLACK WS3" V ELL AND GOSSETT</td><td>MARKS</td><td>I DROP 5 PSI DROF NHWB VAI</td></td<>		1,3         2,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         1,3         0DEL:         CONTRO         MANUFA         MODEL:         TYPE: DI	REM.	ARKS ARKS RE BERLESS D-3" GRAINS (EACH) EERLESS D-3" GRAINS (EACH) ESIN EACH TANK S GPM EACH TANK (2) CLACK WS3" V ELL AND GOSSETT	MARKS	I DROP 5 PSI DROF NHWB VAI

#### GENERAL CONTRACTOR REQUIREMENTS:

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QA/QC REVIEW:

DATE:

SEAL:

Author

Designer

Approver

Checker

12/20/2023

A	IR HANDLING UNITS					K	
HEATING MBH	FAN HP	FAN BHP	FAN RPM	V/P	REMARKS		
153.5	4.1	1.80	3001	480/3	1,2	٦Į	
76.2	1.5	1.11	3500	460/3	1,2	R	
76.2	1.5	1.11	3500	460/3	1,2	٦Į	
76.2	1.5	1.11	3500	460/3	1,2	R	
	ONDENSING UNITS					٦	SHEET TITI
	V/D				REMARKS	_	MODELED B
12	460/3	1			IVENINIAA	-	
•=	460/2	1				-	DESIGNED B
14.2	400/5						
14.2	460/3	1					

AIR INLETS AND OUTLETS	
DESCRIPTION	REMARKS
AMEL	1,3
EGREES	2,3
	1, 3
ONT BLADES PARALLEL TO LONG DIMENSION	1,3
	1, 3
VITH OUTER BLADE PARALLEL TO LONG DIMENSION	1,3
, 3/4" BLADE SPACING WITH FRONT BLADES PARALLEL TO THE LONG DIMENSION	1,3

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<u> </u>	······	<u>~~~~~</u>		רבייזי <u>PLUMBI</u>	NG EQUIPMENT LIST			
				3 WE 1				SIGNATURE:
WATTS	BTU/HR	V/P	REMAR	RKS 3 W3-1	MANUFACTURER: PEERLESS			
1200	4092	115/1	1, 2		MODEL: 450 TCCM-FD-3"			DATE:
1050	3581	115/1	1, 2		CAPACITY: 450,000 GRAINS (EACH)			
1050	3581	115/1	1, 2		PIPEING SIZE: 3" SEDVICE ELOW DATE: 75 COM STEADY EACH TANK @			
1200	4092	115/1	1, 2		FLOW DEMAND FLOW RATE: 150 GPM STEADT EACH TAIK (@	15 P SI DROP M @ 15 P SI DF	ROP	
1050	3581	115/1	1, 2	] }	BACKWASH RATE: 25 GPM EACH TANK			HARD COPY IS INTENDED TO BE
1200	4092	115/1	1, 2		MEDIA: 15 CU. FT. RESIN EACH TANK			SCALE(S) INDICATED AND
1200	4092	115/1	1, 2	1 \$	CONTROL CENTER: (2) CLACK WS3" VALVES EACH W	ITH 3" NHWB	VALVES	GRAPHIC QUALITY MAY NOT
750	2560	115/1	1, 2		METERS: 3" \//P: 120/1			SIZES
1500	5120	115/1	1, 2	15	V/F. 120/1			
750	2560	115/1	1, 2		EXPANSION TANK			SCALE:
750	2560	115/1	1, 2	1 <u>₹</u>	MANUFACTURER: BELL AND GOSSETT			
1200	4092	115/1	1, 2	1	MODEL: PTA-20V			UNLESS NOTED OTHERWISE
1200	4092	115/1	1, 2	13				
750	2560	115/1	1, 2		OPERATING PRESSURE: 30 PSI			ACI JOB #
				{{}}	MAXIMUM PRESSURE: 45 PSI TANK VOLUME: 8.0 GAL			22-1836
					ACCEPTANCE VOLUME: 5.3 GAL			SHEET NO.
					ORIENTATION: VERTICAL			
			1	ADDENDUM 2			2024.01.19	
			NO.		REVISION DESCRIPTION	BY	DATE	

-0-0-		URIENTATION: VERTICAL		
1	ADDENDUM 2			2024.01.19
NO.		REVISION DESCRIPTION	BY	DATE
			·	









EHART BZE (in) OR QUIVALENT 6"Ø 8"Ø 10"Ø 12"Ø 14"Ø 16"Ø	<b>BONMARCHE BYCE</b>	306 S KALAMAZOO MALL KALAMAZOO, MI 49007 T 269.381.6170 F 269.381.6176 F 269.381.6176 F 269.381.6176 F 269.381.6176 F 269.381.6176 F 269.381.6176 Fort Wayne Valparatis Fort Wayne Valparatis Corriter 2020 - ABONMARCHE CONSULTANTS, INC. Figineering, Architecture, Land Surveying
	PROJECT:	CASS DISTRICT LIBRARY EDWARDSBURG BRANCH 26977 W. MAIN STREEET, EDWARDSBURG, MI
		MEZZANINE HVAC PLAN
	MODELED DESIGNED PM REVIEW QA/QC RI DATE: SEAL:	BY: BY: Designer V: Approver EVIEW: Checker 12/20/2023
	SIGNATUR DATE: HARD CO 24" x 3 SCALE( GRAPHIC BE ACCUE SCALE: UNLESS ACI JOB # 22 SHEET NO.	E: PY IS INTENDED TO BE 6" WHEN PLOTTED S) INDICATED AND C QUALITY MAY NOT RATE FOR ANY OTHER SIZES NOTED OTHERWISE 2-1836
2024.01.19 BY DATE	SHEET NO.	15.2

DUCT SIZING CHART

AIRFLOW (CFM) SIZE (in) OR EQUIVALENT

0-100

101-250

251-400 401-650

651-1000

1001-1400

1ADDENDUM 2NO.

**REVISION DESCRIPTION** 



<b>BONMARCHE BYCE</b>	306 S KALAMAZOO MALLBenton HarborGoshenXALAMAZOO, MI 49007Grand HavenHobartT 269.381.6170Grand RapidsLafayetteF 269.381.6176Kalamazoo/PortageSouth Benddonmarche.comFort WayneValparaiso	COPVRIGHT 2020 - ABONMARCHE CONSULTANTS, INC. Engineering, Architecture, Land Surveying
PROJECT:	CASS DISTRICT LIBRARY EDWARDSBURG BRANCH 26977 W. MAIN STREEET,	EDWARDSBURG, MI
	MECHANICAL ROOF PLAN	
HILLER MODELED DESIGNED PM REVIEW QA/QC RE DATE: SEAL:	BY: BY: Desig /: Appro VIEW: Chec 12/20/2	hor ner ver ker 023
SIGNATURI DATE: HARD COP 24" x 30 SCALE(S GRAPHIC BE ACCUR SCALE: UNLESS ACI JOB # 222 SHEET NO.	E: PY IS INTENDED TO 6" WHEN PLOTTED 1 INDICATED AN QUALITY MAY N ATE FOR ANY OT SIZES NOTED OTHERWI 2-1836 16.0	D BE D OT HER SE

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1	ADDENDUM 2		2024.01.19	
NO.	REVISION DESCRIPTION	BY	DATE	

